

TIP PROJECT: BR-0048

CONTRACT: C204621

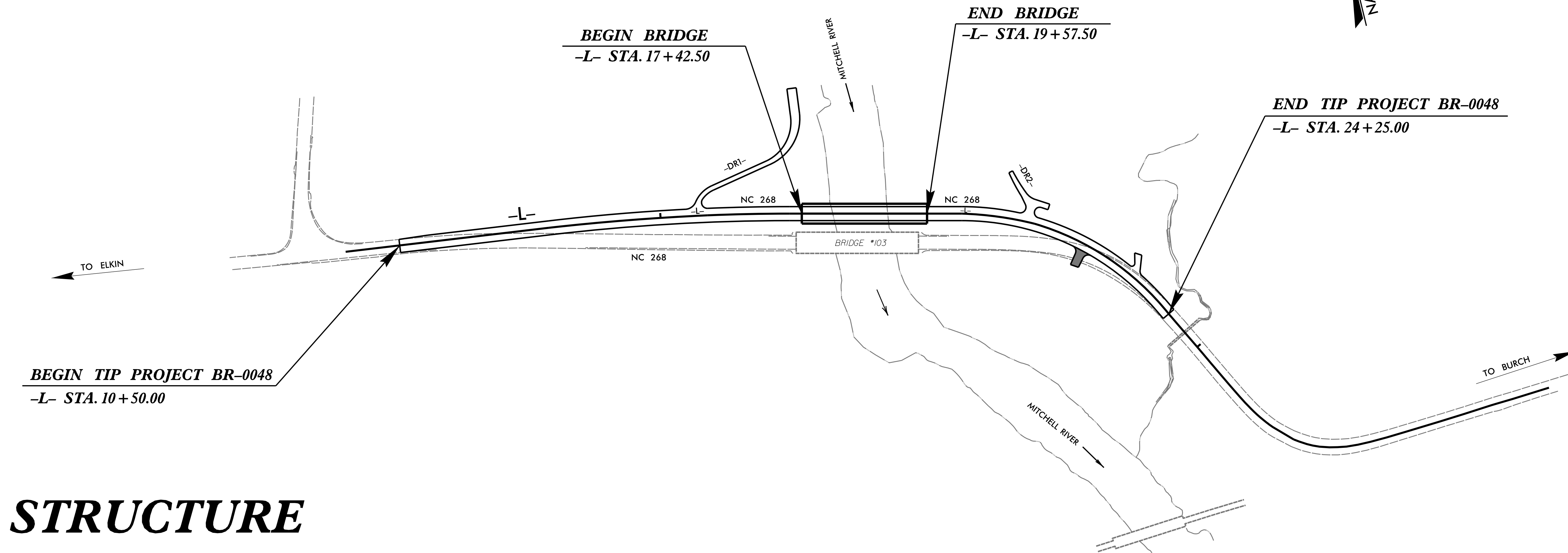
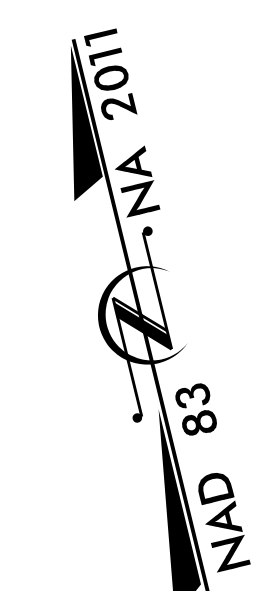
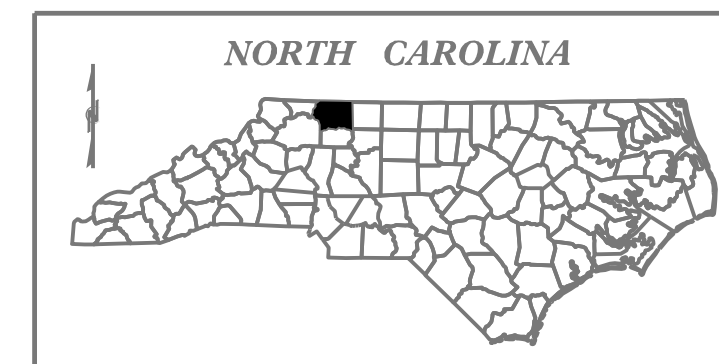
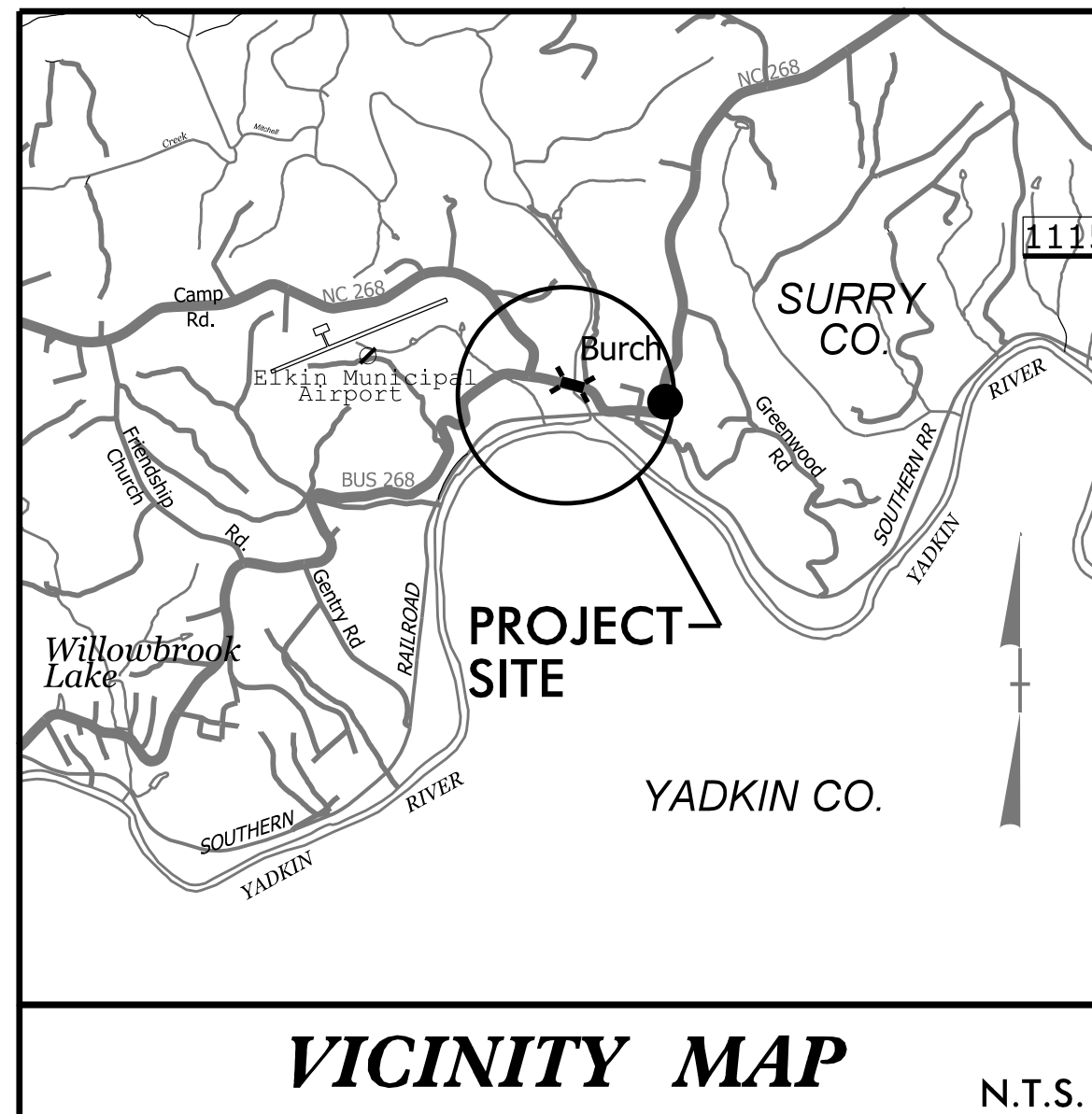
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SURRY COUNTY

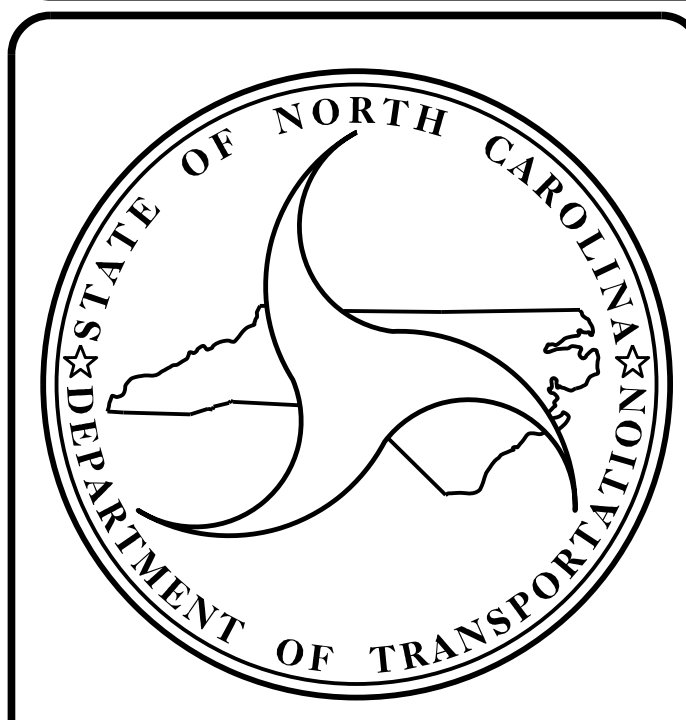
LOCATION: BRIDGE #103 ON NC 268 OVER MITCHELL RIVER

TYPE OF WORK: GRADING, DRAINAGE, PAVING & STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BR-0048	1	
STATE PROJ. NO.	P.A. PROJ. NO.	DESCRIPTION	
49079.1.1	-	P.E.	
49079.2.1	-	ROW/UTILITIES	
49079.3.1	-	CONST.	



STRUCTURE



DESIGN DATA

ADT 2020 =	3,520
ADT 2040 =	3,720
K =	10%
D =	60%
T =	10%*
V =	60 MPH

FUNC. CLASSIFICATION:
MAJOR COLLECTOR
* (TTST 5% + DUALS 5%)
REGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT BR-0048 =	0.219 MILES
LENGTH OF STRUCTURE TIP PROJECT BR-0048 =	0.041 MILES
TOTAL LENGTH OF TIP PROJECT BR-0048 =	0.260 MILES

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

2018 STANDARD SPECIFICATIONS

LETTING DATE : MAY 17, 2022

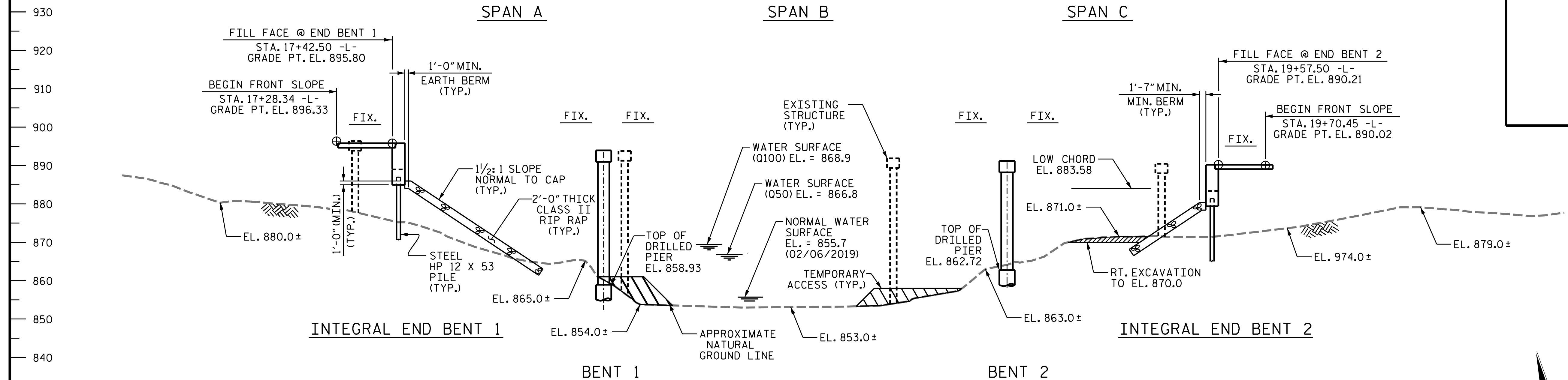
ADAM A. COLE, P.E.
PROJECT ENGINEER

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

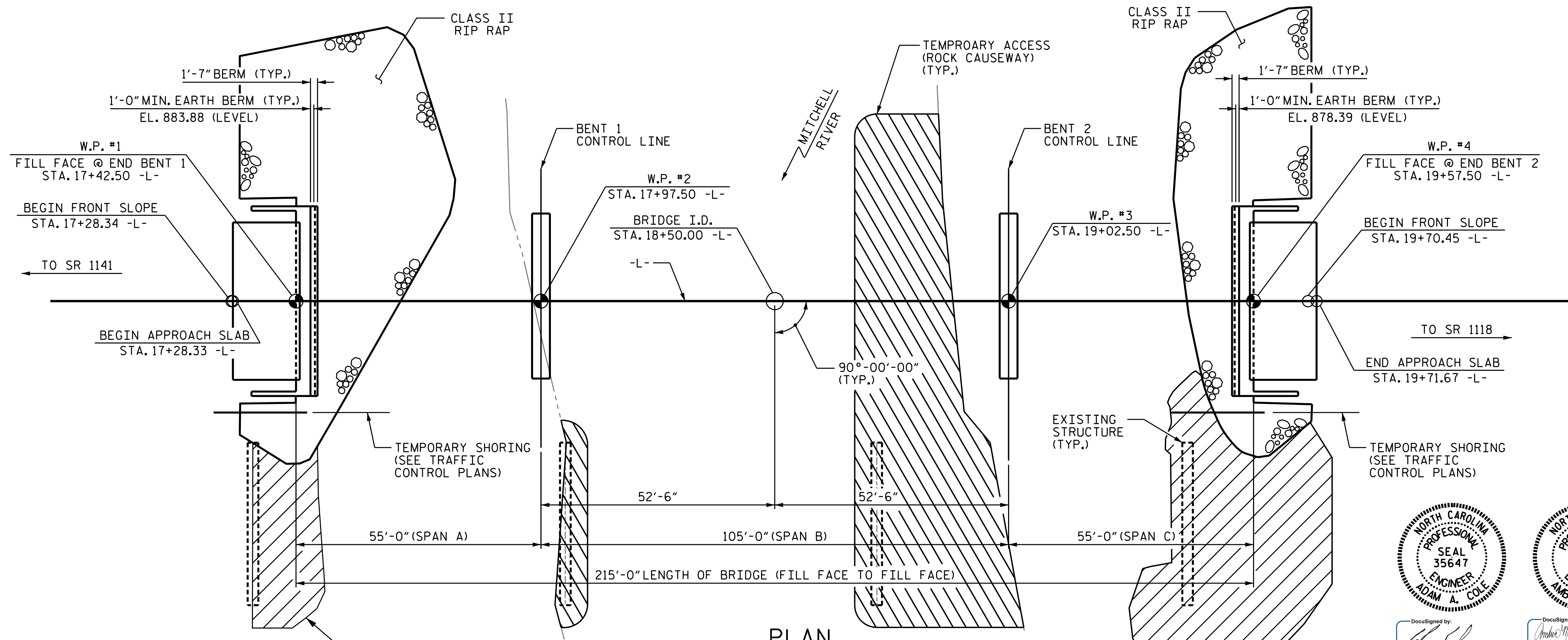
17+00 17+50 18+00 18+50 19+00 19+50 20+00 20+50

(-).5.2412% (-).0.3571%
P.I. STA. = 18+30.00 -L-
EL. = 890.0
V.C. = 485'
GRADE DATA

I HEREBY CERTIFY THESE PLANS
ARE THE AS-BUILT PLANS



SECTION ALONG -L-

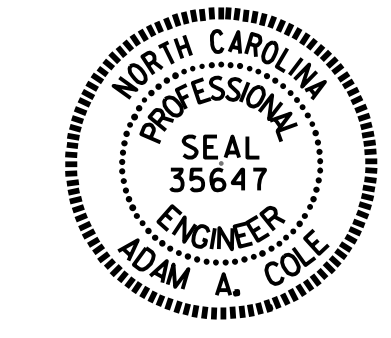


PLAN
(PILES NOT SHOWN FOR CLARITY)

PROJECT NO. BR-0048
SURRY COUNTY
STATION: 18+50.00 -L-

SHEET 1 OF 3 REPLACES BRIDGE NO. 103

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
GENERAL DRAWING
FOR BRIDGE OVER
MITCHELL RIVER
ON NC 268 BETWEEN
SR 1141 AND SR 1118



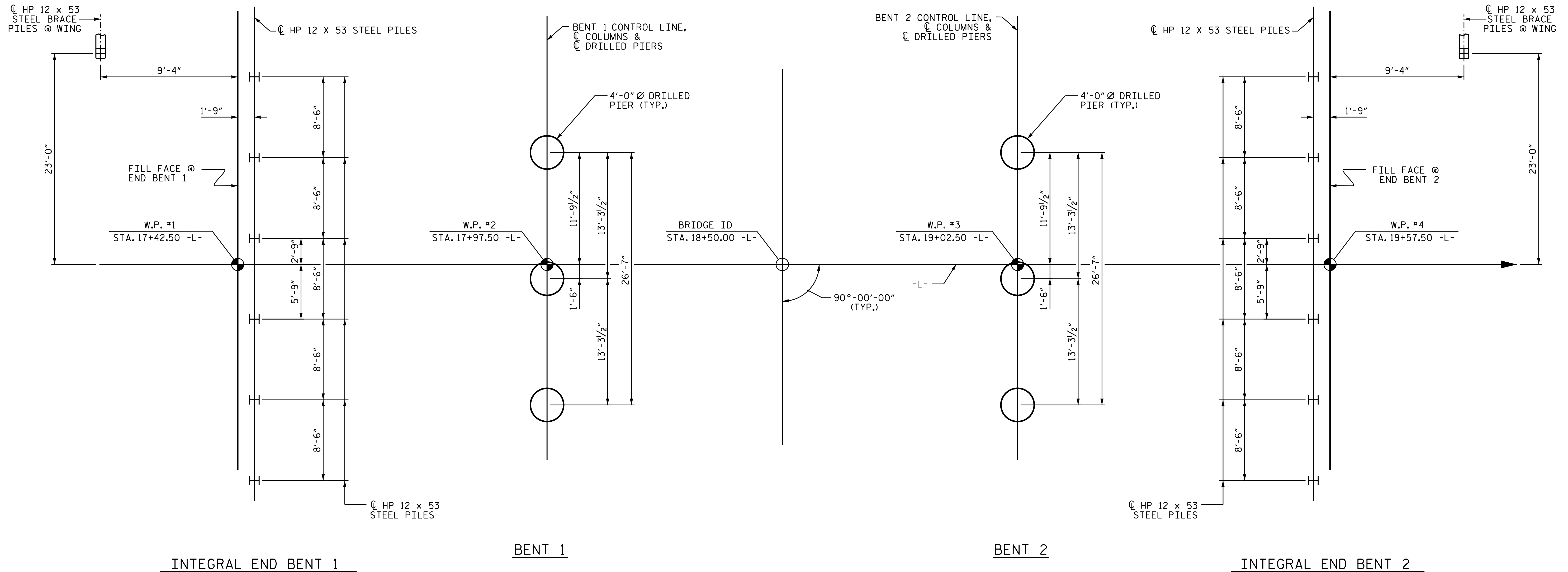
DocuSigned by:
02E838FAB7F484
03/18/2022

DRAWN BY: M. G. SHAIKH DATE: 12/2020
CHECKED BY: J. A. TILLMAN DATE: 02/2021
DESIGN ENGINEER OF RECORD: E. T. C. DATE: 08/2020

3/17/2022
RA\Structures\FINAL PLANS OBD\400.003.BR-0048.SMU. GD.001.850103.dgn
omlee

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-01
1			3			TOTAL SHEETS
2			4			33



FOUNDATION LAYOUT

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

INDICATES PILE BATTER IN DIRECTION SHOWN

NOTES

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENTS 1 & 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 110 TONS PER PILE.

DRIVE PILES AT END BENTS 1 & 2 TO A REQUIRED DRIVING RESISTANCE OF 185 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 595 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 80 TSF.

INSTALL DRILLED PIERS AT BENT 1 TO A TIP ELEVATION NO HIGHER THAN EL. 839.5 FT. WITH THE REQUIRED RESISTANCE AND A PENETRATION OF AT LEAST 10 FT. INTO WEATHERED ROCK AND 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. 827.0 FT. WITH THE REQUIRED RESISTANCE AND A PENETRATION OF AT LEAST 8 FT. INTO ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.

OBSERVE A 2 MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT TO FINISHED GRADE BEFORE BEGINNING END BENT CONSTRUCTION, WHICH INCLUDES PILE DRIVING, AT END BENT NOS. 1 AND 2. FOR BRIDGE WAITING PERIODS, SEE ROADWAY PLANS AND SECTION 235 OF THE STANDARD SPECIFICATIONS.

PERMANENT STEEL CASINGS ARE REQUIRED FOR DRILLED PIERS AT BENT 1. DO NOT EXTEND PERMANENT CASINGS BELOW EL. 850.0 FT. WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

PERMANENT STEEL CASINGS ARE REQUIRED FOR DRILLED PIERS AT BENT 2. DO NOT EXTEND PERMANENT CASINGS BELOW EL. 848.5 FT. WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

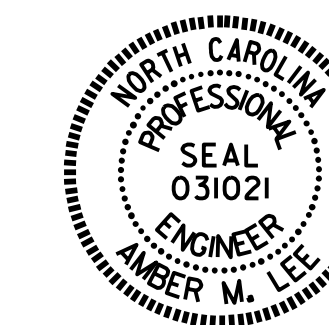
THE SCOUR CRITICAL ELEVATION FOR BENT 1 IS ELEVATION 848.5 FT. THE SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

THE SCOUR CRITICAL ELEVATION FOR BENT 2 IS ELEVATION 839.0 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.

DRAWN BY : M. G. SHAIKH DATE : 12/2020
 CHECKED BY : J. A. TILLMAN DATE : 02/2021
 DESIGN ENGINEER OF RECORD: E. T. C. DATE : 08/2020

3/17/2022 R:\Structures\FINAL PLANS OBD\400.005.BR-0048.SMU.FL.002.850103.dgn omlee



Drawn/Checked by:
 Amber M. Lee
 BO4848F7FAD484
 03/18/2022

PROJECT NO. BR-0048
 SURRY COUNTY
 STATION: 18+50.00 -L-

SHEET 2 OF 3

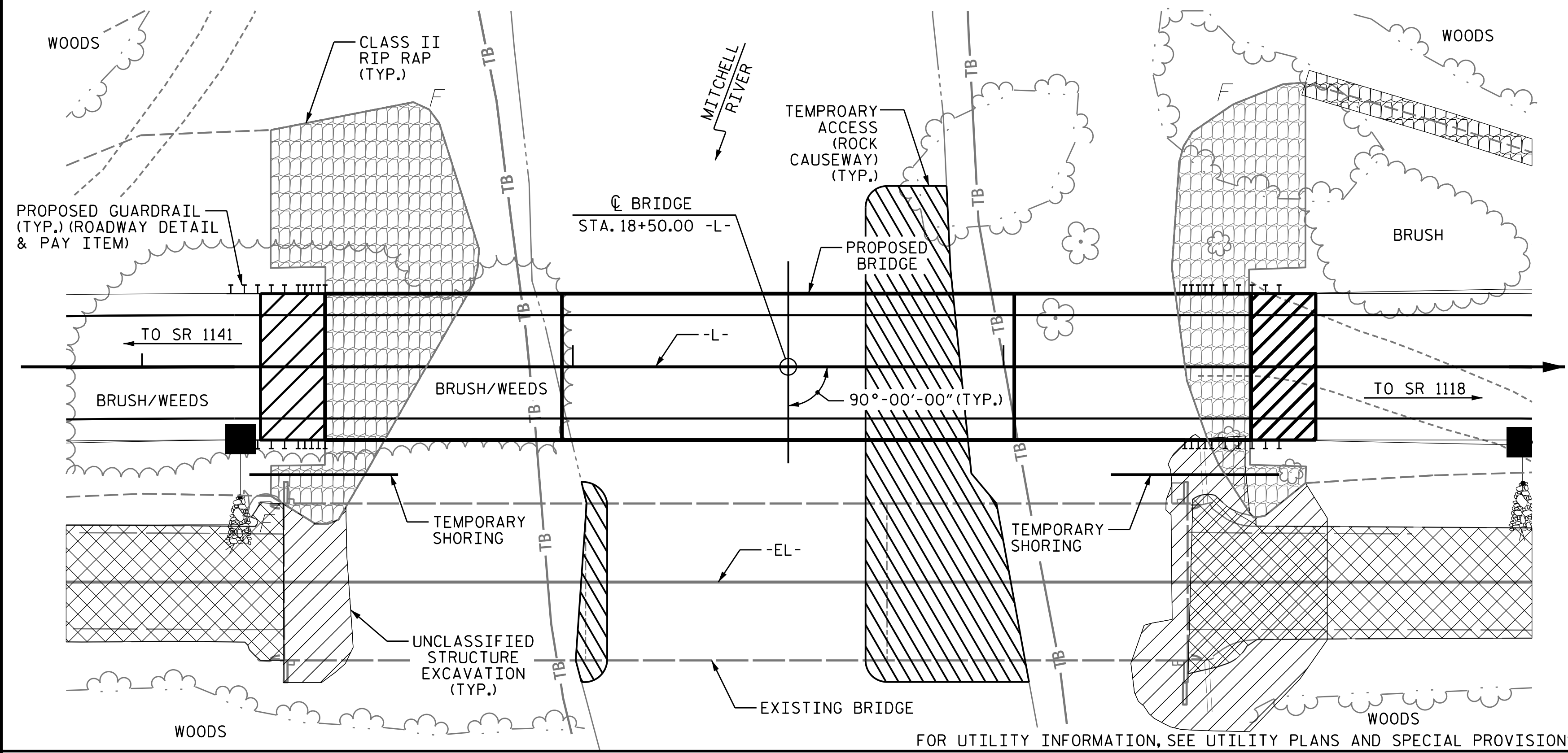
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE OVER
 MITCHELL RIVER
 ON NC 268 BETWEEN
 SR 1141 AND SR 1118

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-02
1			3			TOTAL SHEETS
2			4			33

BENCHMARK #1 RR SPIKE SET IN BASE 15" WALNUT TREE AT STA. 17+61 -L- ; 135' LT., ELEVATION =867.43 NGVD 88



LOCATION SKETCH

HYDRAULIC DATA

DESIGN DISCHARGE _____ 11,000 C.F.S.
 FREQUENCY OF DESIGN FLOOD _____ 50 YRS.
 DESIGN HIGH WATER ELEVATION _____ 866.8 FT.
 DRAINAGE AREA _____ 108 SQ.MI.
 BASIC DISCHARGE (Q100) _____ 14,057 C.F.S.
 BASIC HIGH WATER ELEVATION _____ 868.9 FT.

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE _____ N/A
 FREQUENCY OF OVERTOPPING FLOOD _____ 500+ YRS.
 OVERTOPPING FLOOD ELEVATION _____ 883.7 FT.
 * OVERTOPPING ELEV. OCCURS AT NATURAL GROUND BANK AT STA. 23+50 -L- RT.

NOTES

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 3 @ 70'-0 SPANS WITH RC SLAB ON I-BEAM AND A CLEAR ROADWAY WIDTH OF 34'-0" ON A SUBSTRUCTURE, END BENTS CONSISTING OF RC CAPS ON STEEL H PILES, AND INT. BENTS CONSISTING OF RC CAPS ON COLUMN 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.

IN AS MUCH 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 18+50.00 -L-.

FOR GROUT FOR STRUCTURES, 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.

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.

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 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 MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 85.0 FT RIGHT 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.

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 18+50.00 -L-.

TOTAL BILL OF MATERIAL

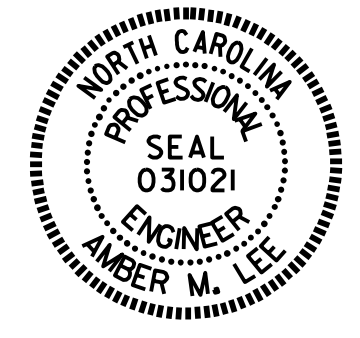
	CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS	REMOVAL OF EXISTING STRUCTURE	ASBESTOS ASSESSMENT	4'-0" Ø DRILLED PIERS IN SOIL	4'-0" Ø DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 4'-0" Ø DRILLED PIER	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL
	LUMP SUM	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	EA.	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.
SUPERSTRUCTURE								LUMP SUM	8587	8217		LUMP SUM	
END BENT 1											40.4		5,041
BENT 1				25.5	33.0	26.8	1				51.6		10,422
BENT 2				73.0	35.0	42.7	1				44.7		11,712
END BENT 2											40.4		4,983
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	98.5	68.0	69.5	2	LUMP SUM	8587	8217	177.1	LUMP SUM	32,158

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	CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS
	LBS.	NO. LIN. FT.	EA.	NO. LIN. FT.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM
SUPERSTRUCTURE		12 845.0		7 175	426.67			LUMP SUM
END BENT 1			7	7		600	640	
BENT 1	3342							
BENT 2	4005							
END BENT 2			7	7	245	400	450	
TOTAL	7347	12 845.0	14	14	420	426.67	1090	LUMP SUM

PROJECT NO. BR-0048
 SURRY COUNTY
 STATION: 18+50.00 -L-

SHEET 3 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 FOR BRIDGE OVER
 MITCHELL RIVER
 ON NC 268 BETWEEN
 SR 1141 AND SR 1118

DRAWN BY : M. G. SHAIKH DATE : 12/2020
 CHECKED BY : A.M. LEE DATE : 03/2021
 DESIGN ENGINEER OF RECORD : E.T.C. DATE : 08/2020

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-03
1			3			TOTAL SHEETS 33
2			4			

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

LOAD FACTORS:

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

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

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVE-LOAD FACTORS (γ_{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVE-LOAD FACTORS (γ_{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	①	1.149	--	1.75	0.931	1.320	B	EL	51.38	0.990	1.149	A	I	41.7	0.80	0.931	1.182	B	EL	51.38		
	HL-93 (OPERATING)	N/A		1.489	--	1.35	0.931	1.712	B	EL	51.38	0.990	1.489	A	I	41.7	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	②	1.369	49.278	1.75	0.931	1.855	B	EL	51.38	0.990	1.369	A	I	41.7	0.80	0.931	1.661	B	EL	51.38		
	HS-20 (OPERATING)	36.000		1.774	63.879	1.35	0.931	2.405	B	EL	51.38	0.990	1.774	A	I	41.7	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		3.776	50.980	1.40	1.017	5.381	A	EL	26.06	0.990	3.776	A	I	41.7	0.80	0.931	3.959	B	EL	51.38	
		SNGARBS2	20.000		2.775	55.496	1.40	0.931	3.991	B	EL	51.38	0.990	2.775	A	I	41.7	0.80	0.931	2.859	B	EL	51.38	
		SNAGRIS2	22.000		2.612	57.455	1.40	0.931	3.728	B	EL	51.38	0.990	2.612	A	I	41.7	0.80	0.931	2.671	B	EL	51.38	
		SNCOTTS3	27.250		1.894	51.615	1.40	1.017	2.683	A	EL	26.06	0.990	1.894	A	I	41.7	0.80	0.931	1.967	B	EL	51.38	
		SNAGGRS4	34.925		1.609	56.186	1.40	0.931	2.246	B	EL	51.38	0.990	1.636	A	I	41.7	0.80	0.931	1.609	B	EL	51.38	
		SNS5A	35.550		1.576	56.011	1.40	0.931	2.200	B	EL	51.38	0.990	1.692	A	I	41.7	0.80	0.931	1.576	B	EL	51.38	
		SNS6A	39.950		1.431	57.178	1.40	0.931	1.998	B	EL	51.38	0.990	1.572	A	I	41.7	0.80	0.931	1.431	B	EL	51.38	
	SNS7B	42.000		1.362	57.223	1.40	0.931	1.902	B	EL	51.38	0.990	1.583	A	I	41.7	0.80	0.931	1.362	B	EL	51.38		
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.741	57.457	1.40	0.931	2.431	B	EL	51.38	0.990	1.848	A	I	41.7	0.80	0.931	1.741	B	EL	51.38	
		TNT4A	33.075		1.745	57.714	1.40	0.931	2.436	B	EL	51.38	0.990	1.771	A	I	41.7	0.80	0.931	1.745	B	EL	51.38	
		TNT6A	41.600		1.413	58.797	1.40	0.931	1.973	B	EL	51.38	0.990	1.735	A	I	41.7	0.80	0.931	1.413	B	EL	51.38	
		TNT7A	42.000		1.413	59.364	1.40	0.931	1.973	B	EL	51.38	0.990	1.608	A	I	41.7	0.80	0.931	1.413	B	EL	51.38	
		TNT7B	42.000		1.445	60.697	1.40	0.931	2.018	B	EL	51.38	0.990	1.518	A	I	41.7	0.80	0.931	1.445	B	EL	51.38	
		TNAGRIT4	43.000		1.387	59.659	1.40	0.931	1.937	B	EL	51.38	0.990	1.459	A	I	41.7	0.80	0.931	1.387	B	EL	51.38	
TNAGT5A		45.000		1.314	59.137	1.40	0.931	1.835	B	EL	51.38	0.990	1.495	A	I	41.7	0.80	0.931	1.314	B	EL	51.38		
TNAGT5B	45.000	③	1.304	58.664	1.40	0.931	1.820	B	EL	51.38	0.990	1.383	A	I	41.7	0.80	0.931	1.304	B	EL	51.38			
EV RATING	EV2	28.750		2.01	57.790	1.30	0.931	3.022	B	EL	51.38	0.990	2.107	A	I	41.7	0.80	0.931	2.01	B	EL	51.38		
	EV3	43.000		1.325	56.990	1.30	0.931	1.993	B	EL	51.38	0.990	1.428	A	I	41.7	0.80	0.931	1.325	B	EL	51.38		

NOTES:

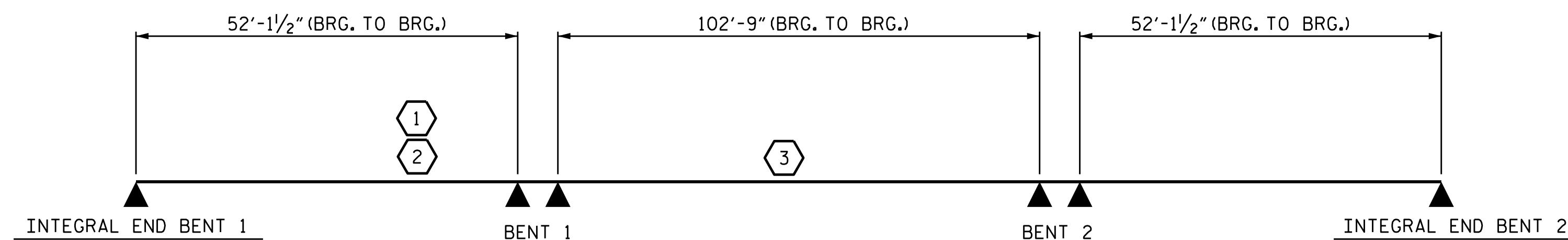
MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

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

COMMENTS:

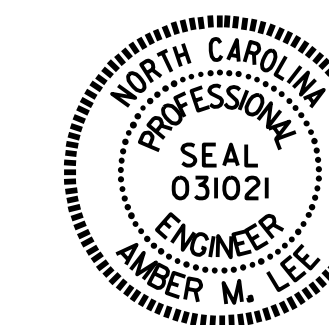
-
-
-
-

#	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-0048
 SURRY COUNTY
 STATION: 18+50.00 -L-



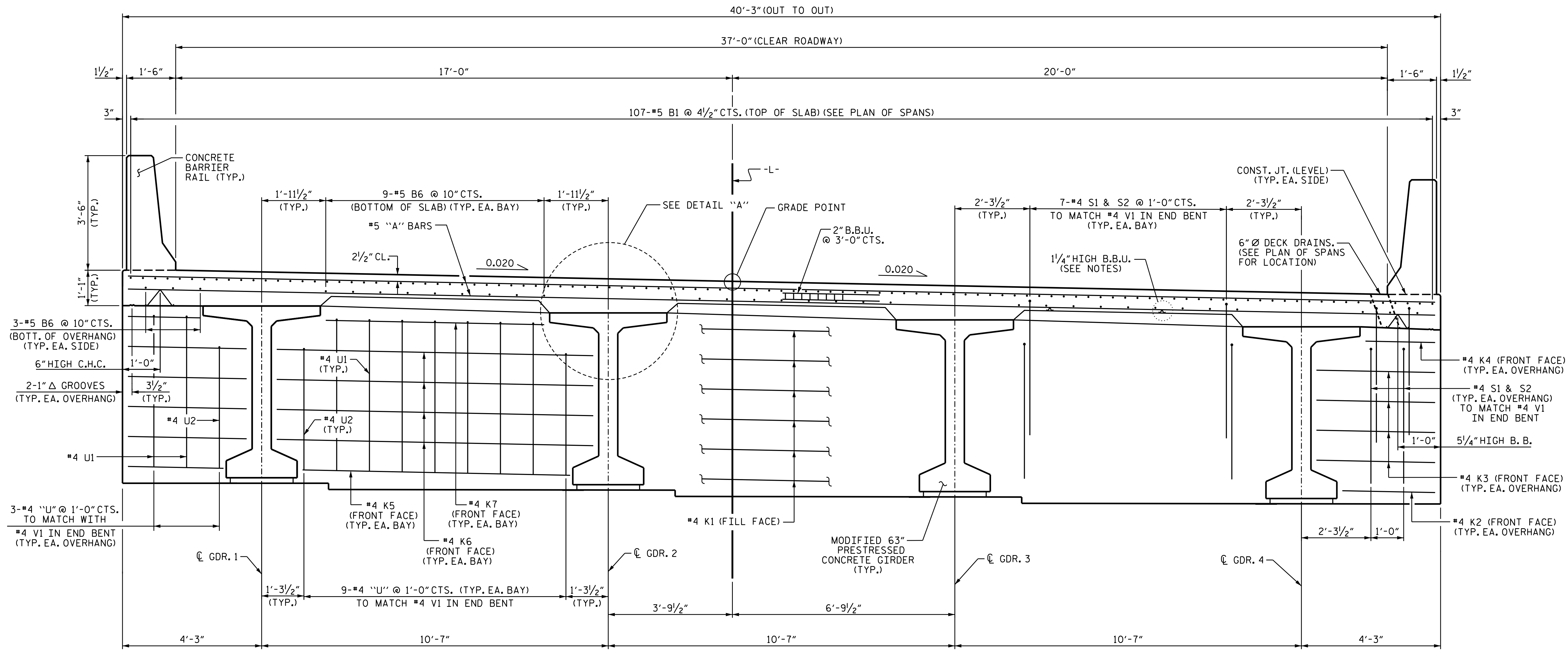
DocuSigned by:
 Amber M. Lee
 B0B5A4F2FAD484
 03/18/2022

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 LRFR SUMMARY FOR
 PRESTRESSED
 CONCRETE GIRDERS
 (NON-INTERSTATE TRAFFIC)

ASSEMBLED BY : M. G. SHAIKH	DATE : 12/2020
CHECKED BY : J. A. TILLMAN	DATE : 02/2021
DRAWN BY : MAA 1/08	REV. 11/2/08RR MAA/GM
CHECKED BY : GM/DI 2/08	REV. 10/1/11 MAA/GM
	REV. 12/17 MAA/THC

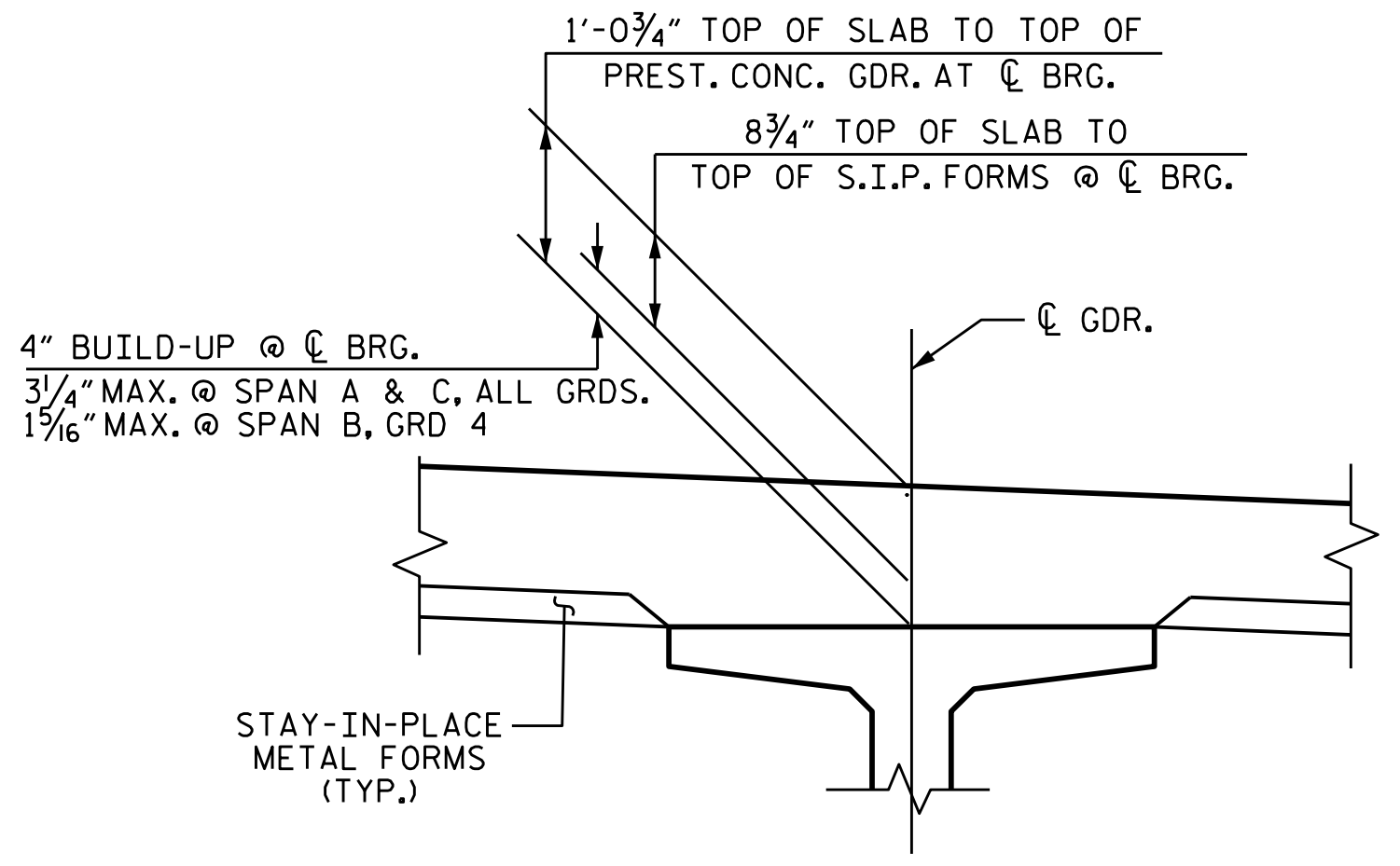
DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-04
1			3			TOTAL SHEETS
2			4			33



TYPICAL SECTION @ INTEGRAL END BENT DIAPHRAGMS

APPROACH SLAB BLOCKOUT IS NOT SHOWN FOR CLARITY. SEE PLAN OF SPANS, SHEETS S-08 THRU S-10.



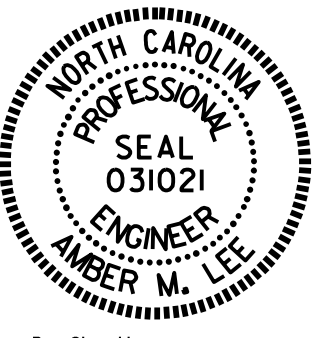
DETAIL A

NOTES

- PROVIDE 1 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 1/2" 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.
- APPROACH SLAB BLOCKOUT NOT SHOWN FOR CLARITY.

PROJECT NO. BR-0048
SURRY COUNTY
 STATION: 18+50.00 -L-

SHEET 1 OF 3



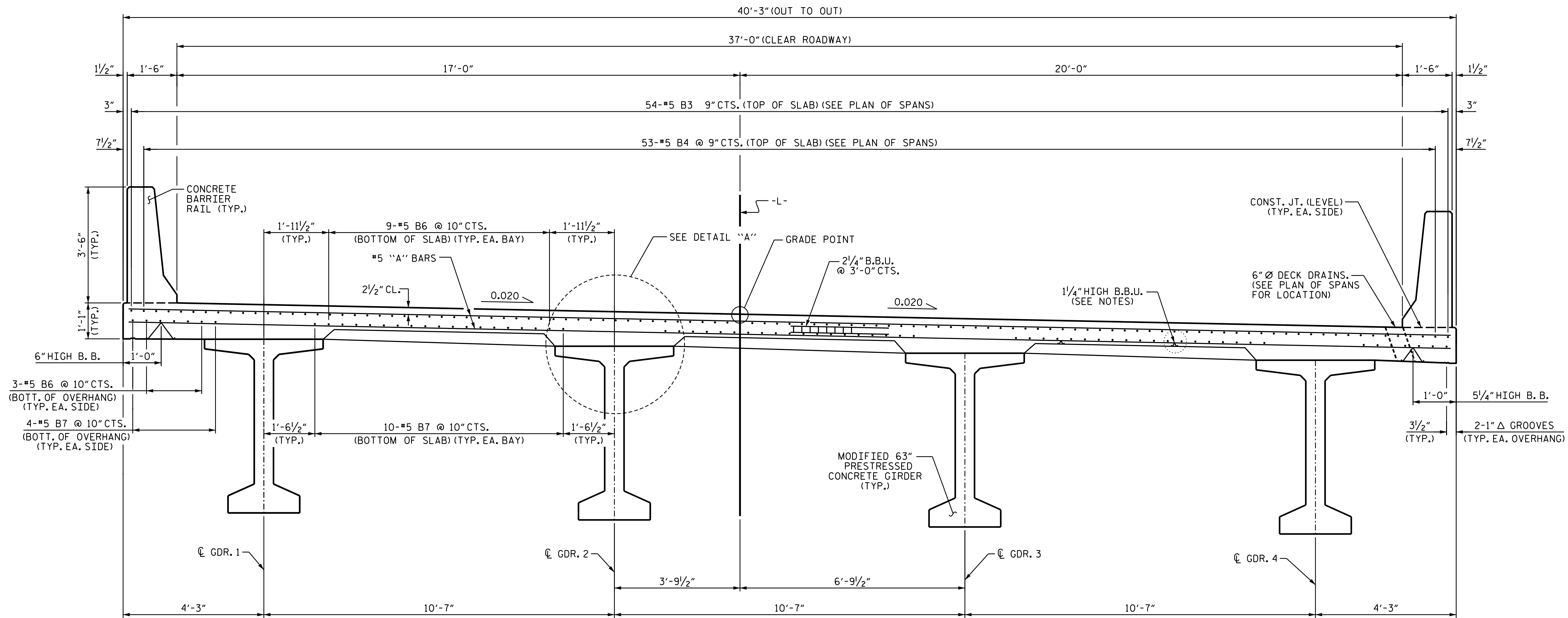
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 TYPICAL SECTION**

DRAWN BY : M. G. SHAIKH DATE : 12/2020
 CHECKED BY : J. A. TILLMAN DATE : 02/2021
 DESIGN ENGINEER OF RECORD: E.T.C. DATE : 08/2020

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-05
1			3			TOTAL SHEETS 33
2			4			



LINK SLAB AT BENT

PROJECT NO. BR-0048
SURRY COUNTY
 STATION: 18+50.00 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 TYPICAL SECTION

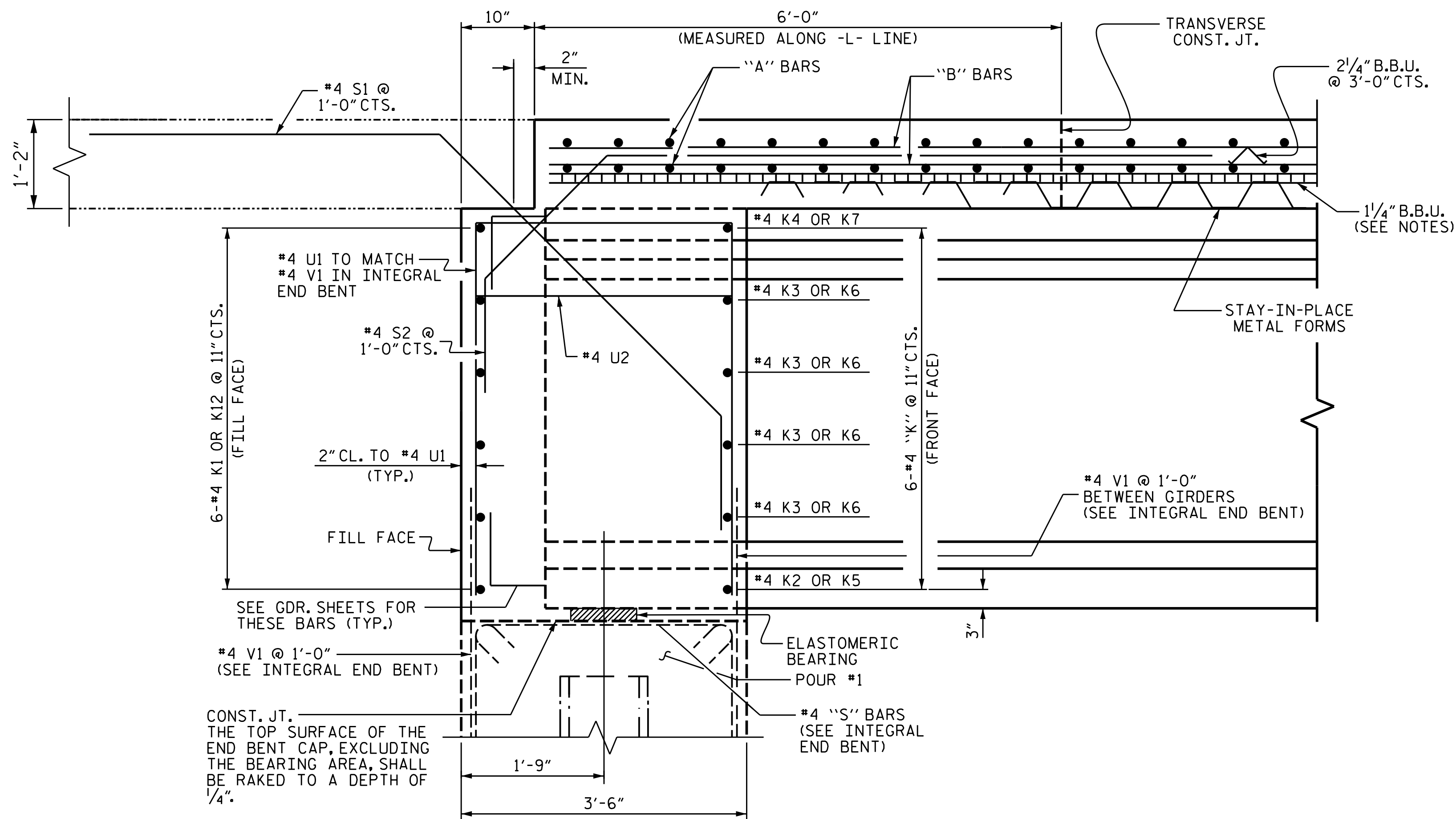


DocuSigned by:
 Amber M. Lee
 B0485A9F7AD484
 03/18/2022

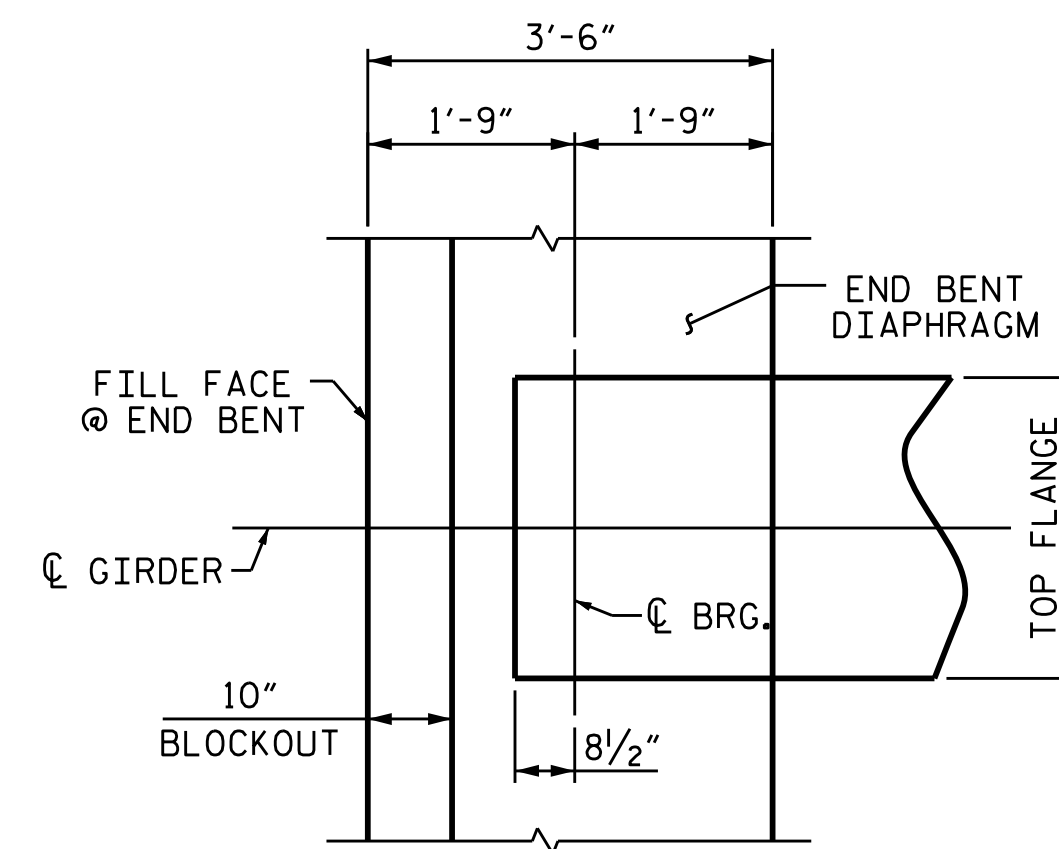
DRAWN BY : M. G. SHAIKH DATE : 12/2020
 CHECKED BY : J. A. TILLMAN DATE : 02/2021
 DESIGN ENGINEER OF RECORD: E.T.C. DATE : 08/2020

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-06
1			3			TOTAL SHEETS
2			4			33

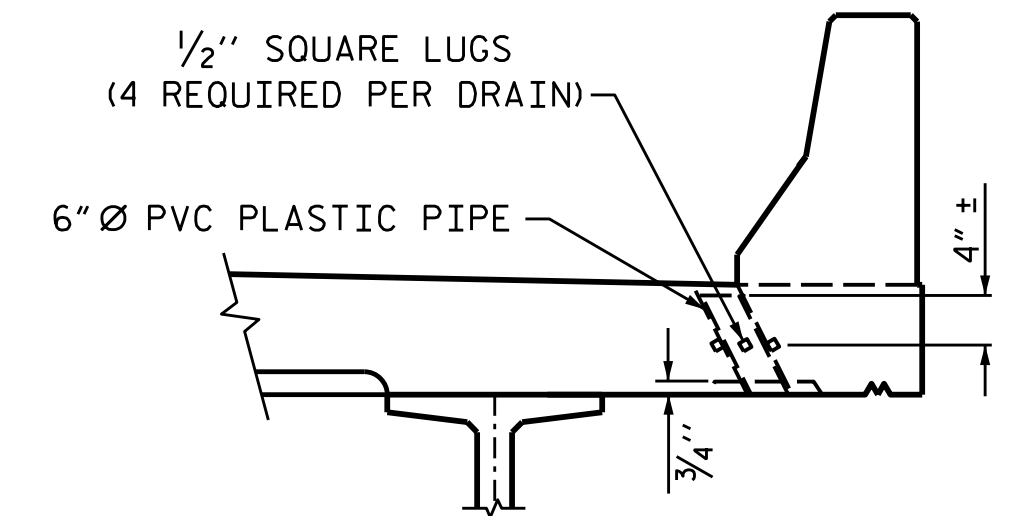
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



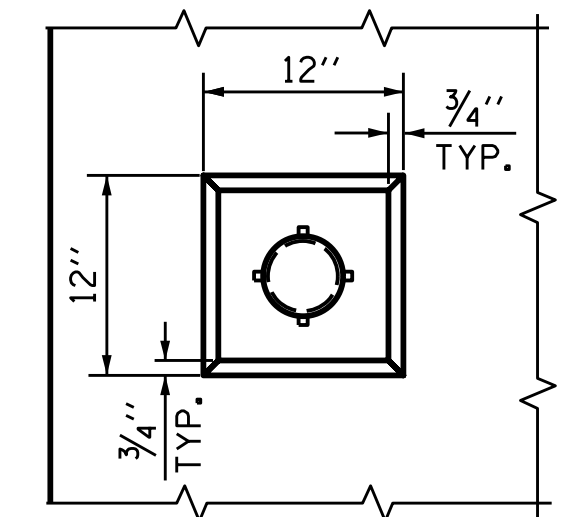
SECTION THRU INTEGRAL END BENT



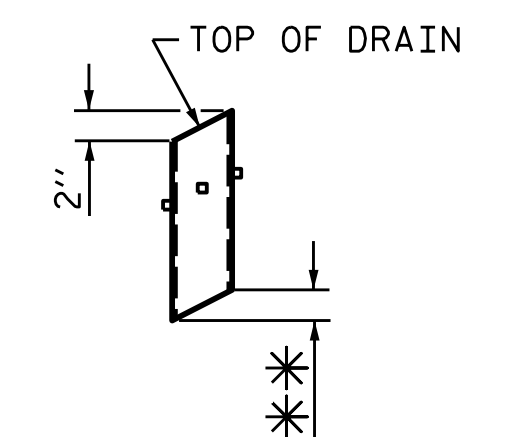
PLAN OF GIRDER AT INTEGRAL END BENT



ELEVATION



PLAN OF RECESS



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

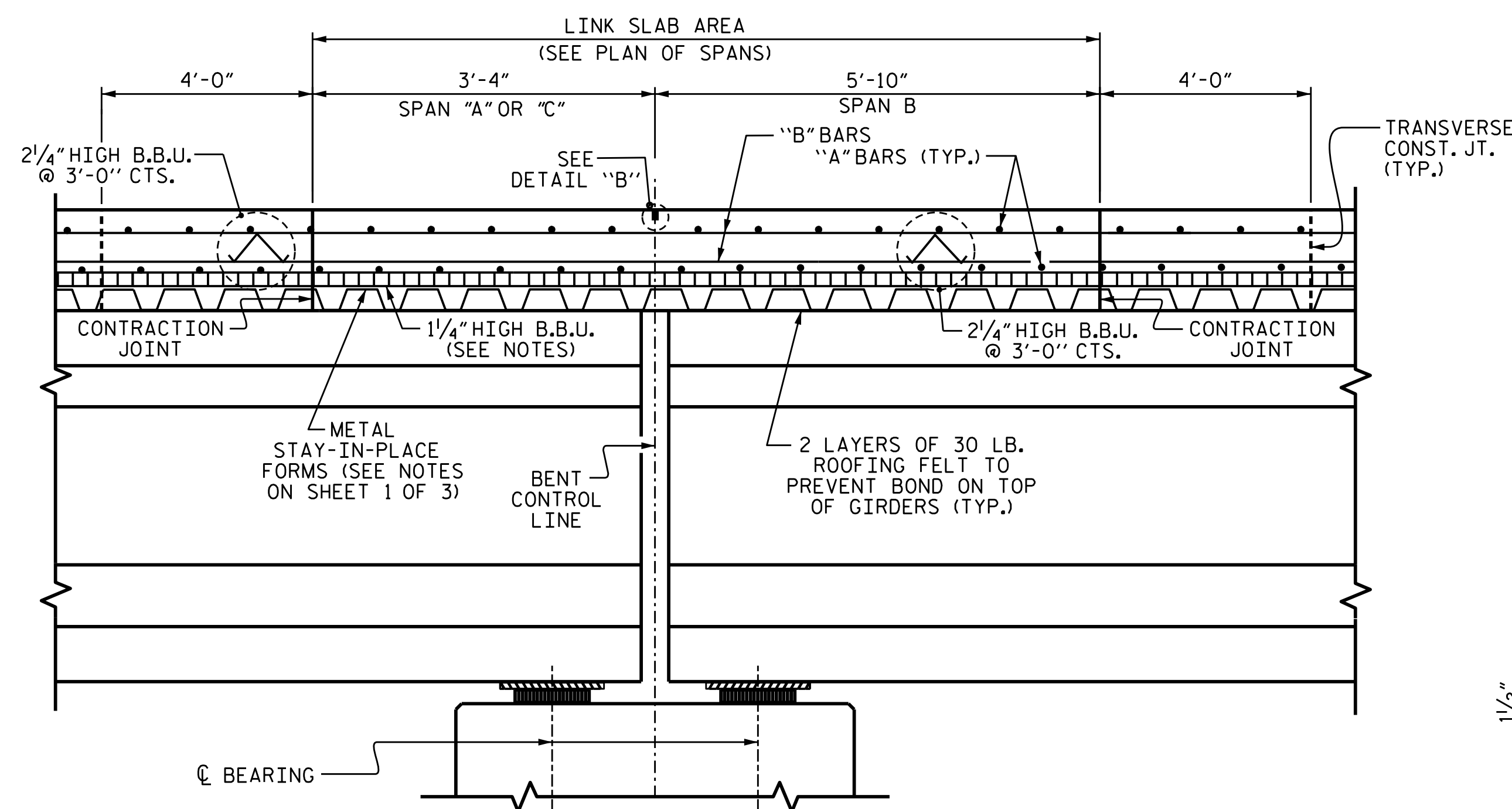
PIPE DETAIL

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

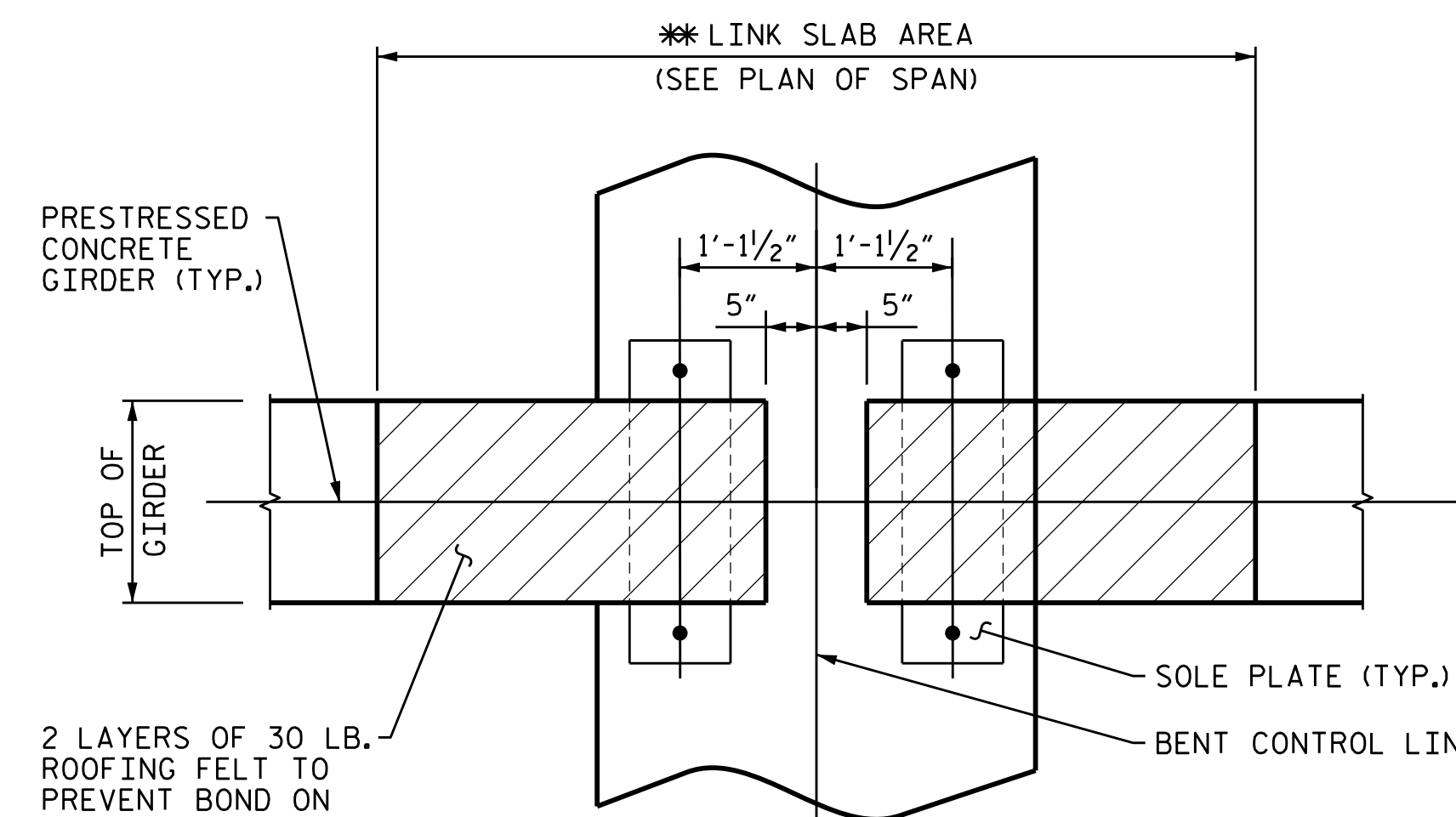
4 - 1/2" SQUARE LUGS TO BE GLUED TO THE P.V.C. PLASTIC PIPE AT EQUAL SPACES AROUND THE PIPE DRAIN APPROXIMATELY 4" FROM THE TOP OF THE PIPE.

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

DRAIN DETAILS

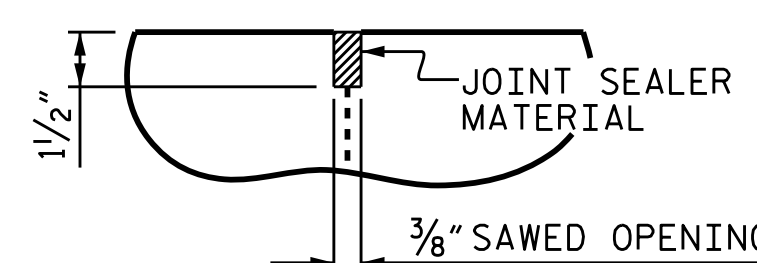


SECTION @ LINK SLAB



PLAN @ BENT

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



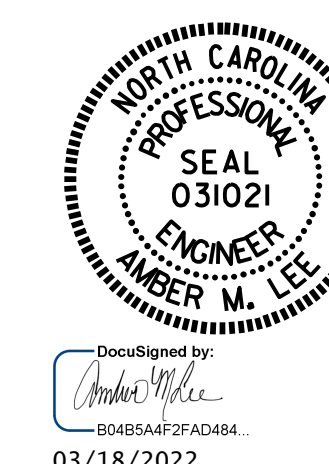
DETAIL "B"

A 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.

DRAWN BY : M. G. SHAIKH DATE : 12/2020
 CHECKED BY : J. A. TILLMAN DATE : 02/2021
 DESIGN ENGINEER OF RECORD: E.T.C. DATE : 08/2020

3/17/2022
 R:\Structures\FINAL PLANS OBD\400.015.BR-0048.SMU. TS.007.850103.dgn
 mlee

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED



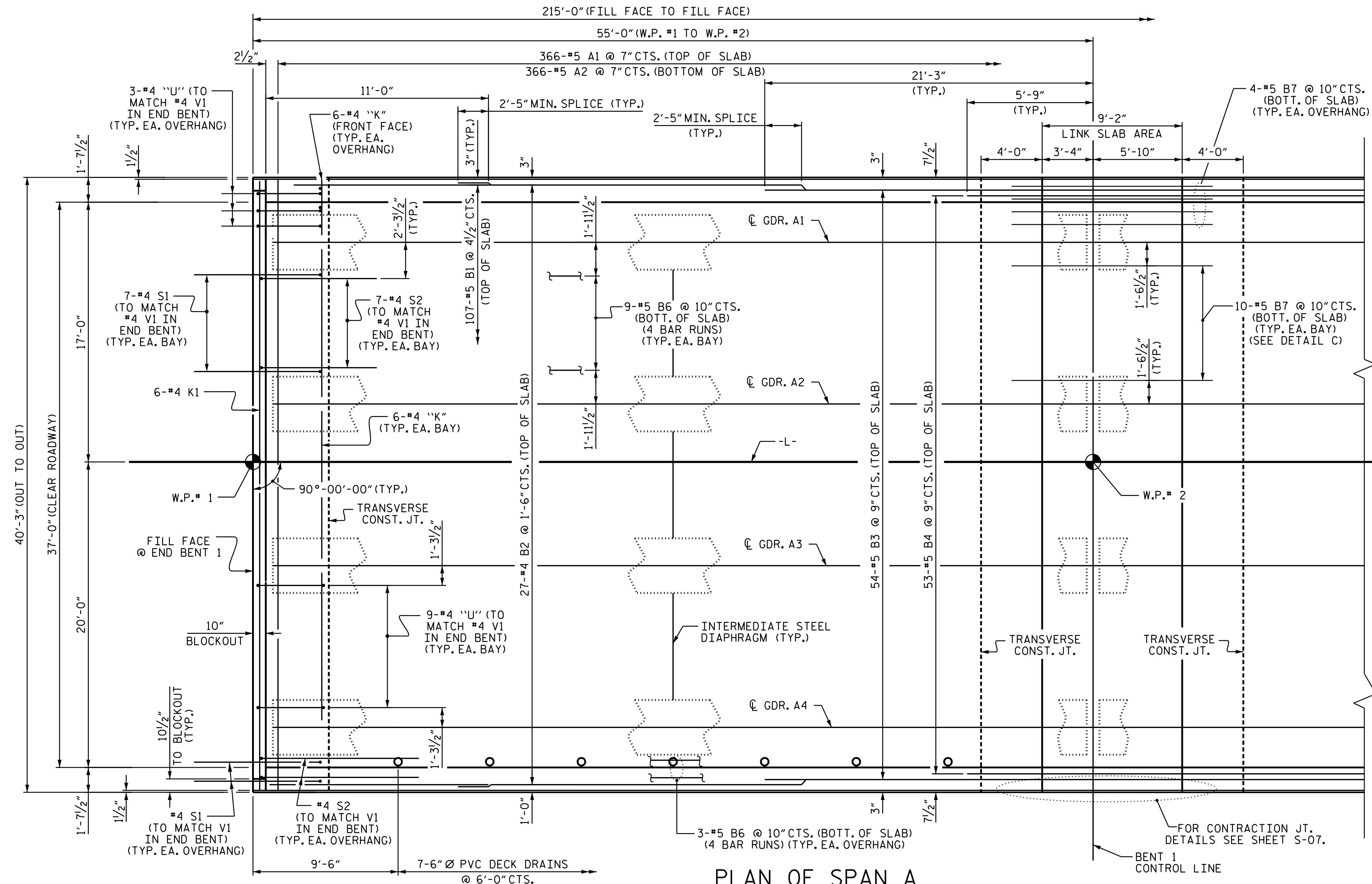
PROJECT NO. BR-0048
 SURRY COUNTY
 STATION: 18+50.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

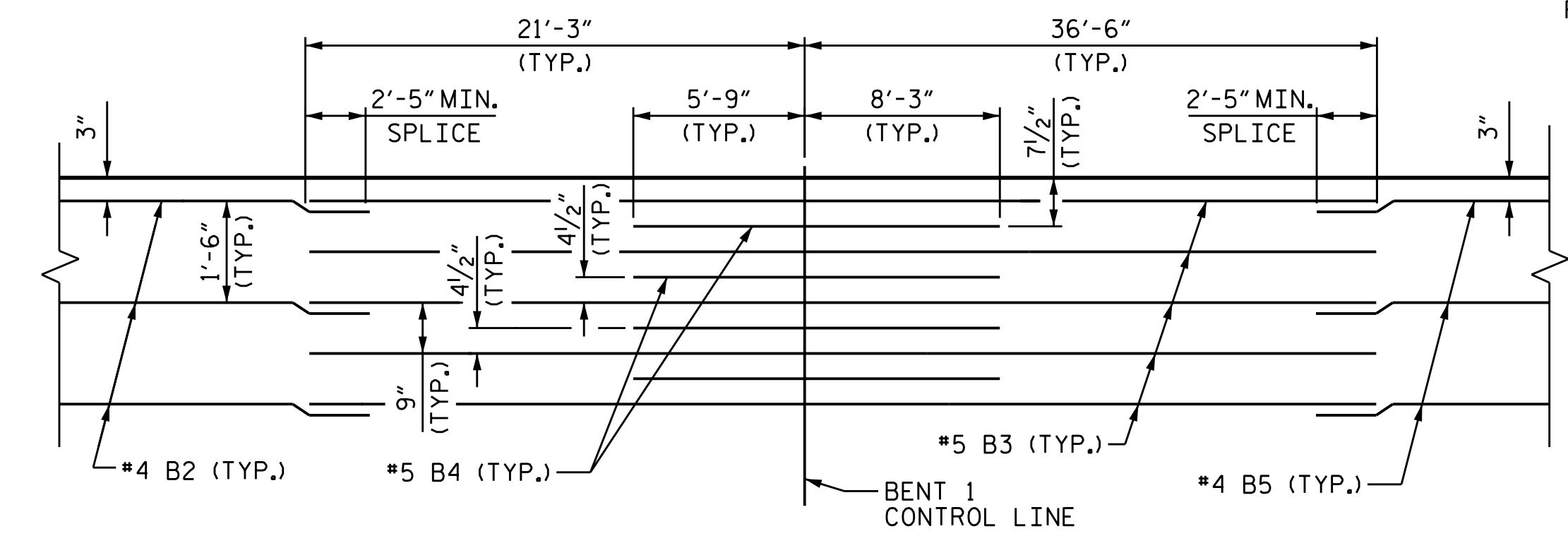
SUPERSTRUCTURE
 TYPICAL SECTION

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-07
1			3			TOTAL SHEETS
2			4			33

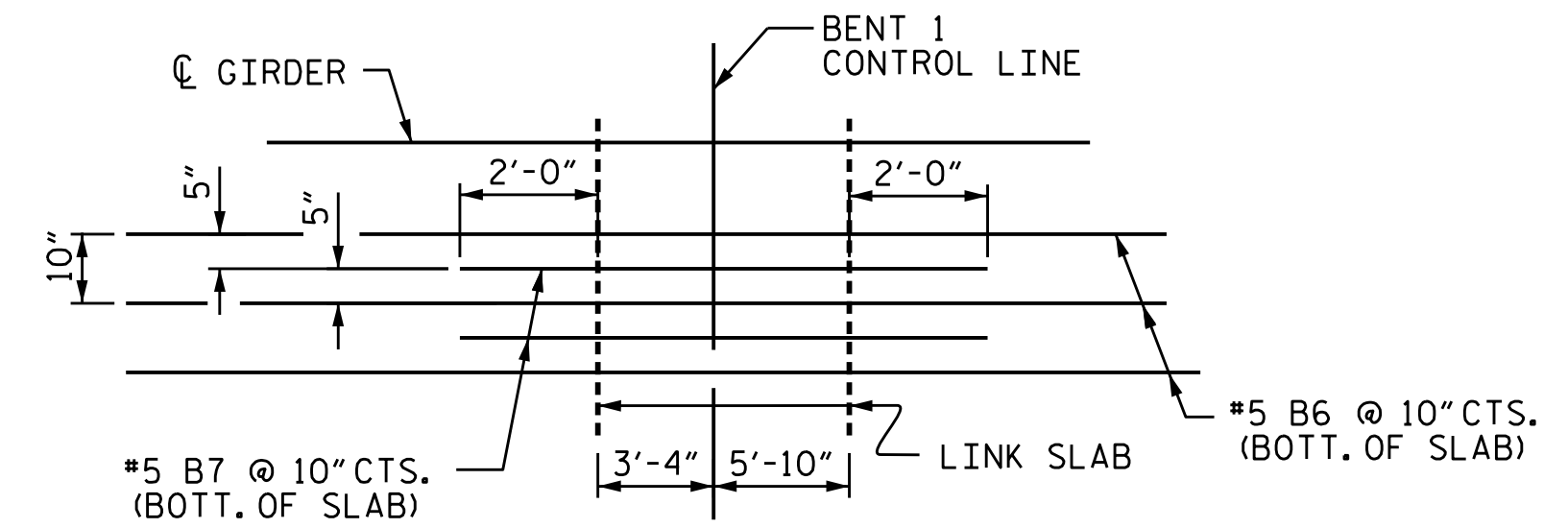


PLAN OF SPAN A

FOR INTERMEDIATE STEEL DIAPHRAGMS, SEE "INTERMEDIATE STEEL DIAPHRAGMS" SHEET.
 FOR TOP OF SLAB REINFORCING AT BENT, SEE DETAIL B AT BENT 1.
 FOR BOTTOM OF SLAB REINFORCING AT BENT, SEE DETAIL C AT BENT 1.



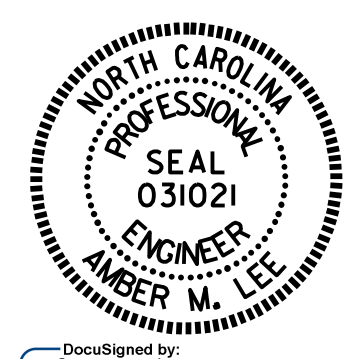
DETAIL B AT BENT 1



DETAIL C AT BENT 1

PROJECT NO. BR-0048
 SURRY COUNTY
 STATION: 18+50.00 -L-

SHEET 1 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

PLAN OF SPAN A

DRAWN BY: M. G. SHAIKH DATE: 12/2020
 CHECKED BY: J. A. TILLMAN DATE: 02/2021
 DESIGN ENGINEER OF RECORD: E.T.C. DATE: 11/2019

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-08
1			3			TOTAL SHEETS
2			4			33

215'-0" (FILL FACE TO FILL FACE)

105'-0" (W.P. #2 TO W.P. #3)

366-#5 A1 @ 7" CTS. (TOP OF SLAB)
366-#5 A2 @ 7" CTS. (BOTTOM OF SLAB)

36'-6" (TYP.)
2'-5" MIN. SPLICE (TYP.)

2'-5" MIN. SPLICE (TYP.)

36'-6" (TYP.)

4-#5 B7 @ 10" CTS. (BOTT. OF SLAB) (TYP. EA. OVERHANG)

4-#5 B7 @ 10" CTS. (BOTT. OF SLAB) (TYP. EA. OVERHANG)

10-#5 B7 @ 10" CTS. (BOTT. OF SLAB) (TYP. EA. BAY) (SEE DETAIL C)

9-#5 B6 @ 10" CTS. (BOTT. OF SLAB) (4 BAR RUNS) (TYP. EA. BAY)

10-#5 B7 @ 10" CTS. (BOTT. OF SLAB) (TYP. EA. BAY) (SEE DETAIL C)

W.P. # 2

90°-00'-00" (TYP.)

W.P. # 3

TRANSVERSE CONST. JT.

TRANSVERSE CONST. JT.

INTERMEDIATE STEEL DIAPHRAGM (TYP.)

INTERMEDIATE STEEL DIAPHRAGM (TYP.)

TRANSVERSE CONST. JT.

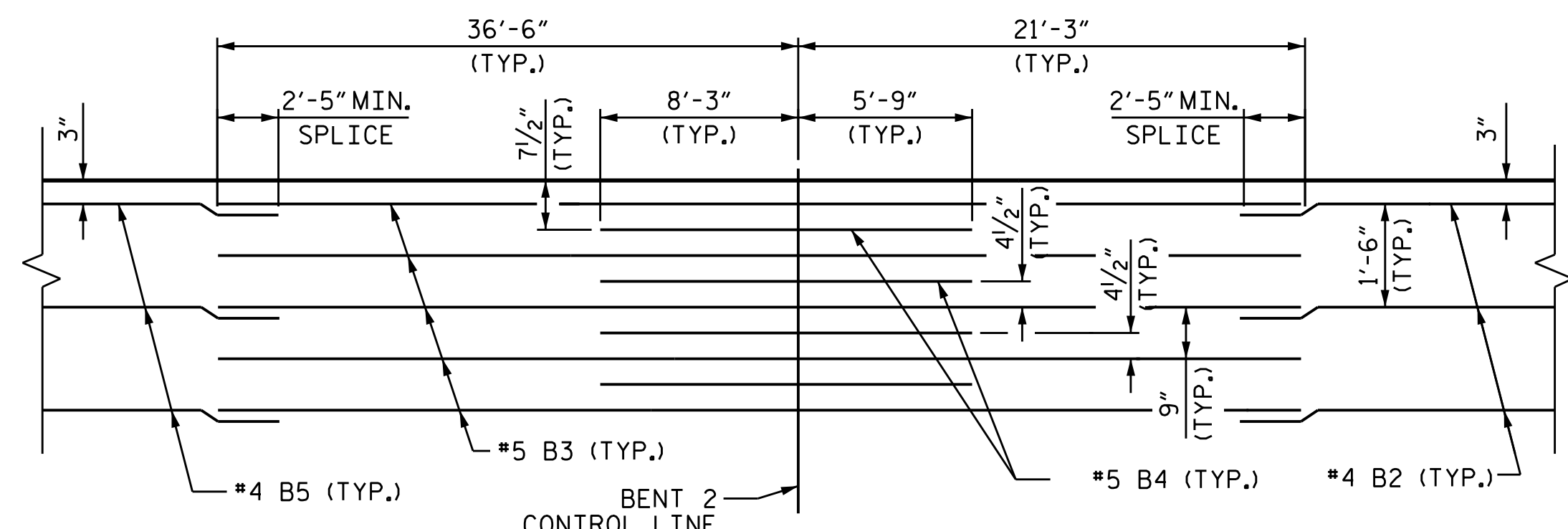
TRANSVERSE CONST. JT.

FOR CONTRACTION JT. DETAILS SEE SHEET S-07.

FOR CONTRACTION JT. DETAILS SEE SHEET S-07.

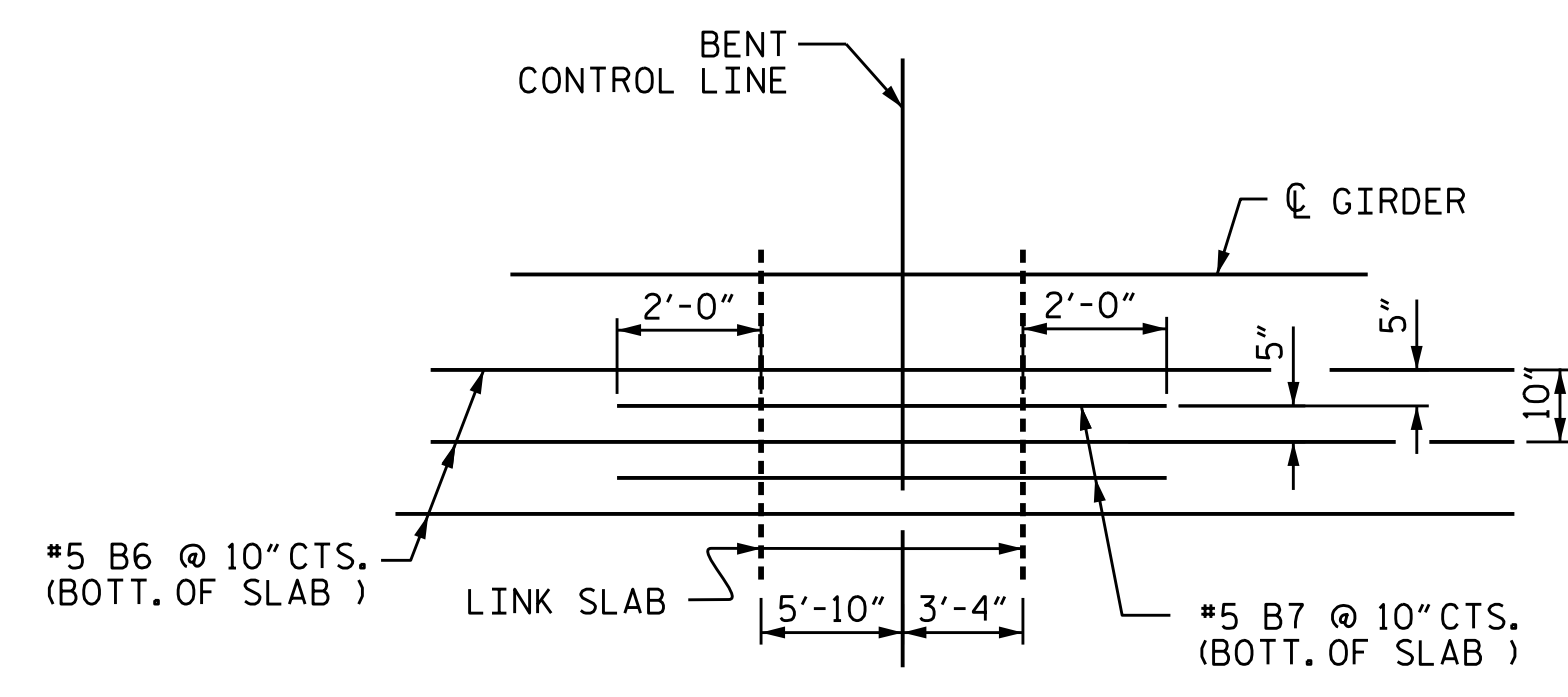
PLAN OF SPAN B

FOR INTERMEDIATE STEEL DIAPHRAGMS, SEE "INTERMEDIATE STEEL DIAPHRAGMS" SHEET.
FOR TOP OF SLAB REINFORCING AT BENT, SEE DETAIL B AT BENT 1 & 2.
FOR BOTTOM OF SLAB REINFORCING AT BENT, SEE DETAIL C AT BENT 1 & 2.



DETAIL B AT BENT 1 & 2

(BENT 2 SHOWN, FOR BENT 1 SEE SHEET S-08)



DETAIL C AT BENT 1 & 2

(BENT 2 SHOWN, FOR BENT 1 SEE SHEET S-08)

DRAWN BY : M. G. SHAIKH DATE : 12/2020
 CHECKED BY : J. A. TILLMAN DATE : 02/2021
 DESIGN ENGINEER OF RECORD : E.T.C. DATE : 08/2020

3/17/2022 R:\Structures\FINAL PLANS OBD\400.019_BR-0048.SMU. S*-009.850103.dgn omlee

PROJECT NO. BR-0048
 SURRY COUNTY
 STATION: 18+50.00 -L-

SHEET 2 OF 3

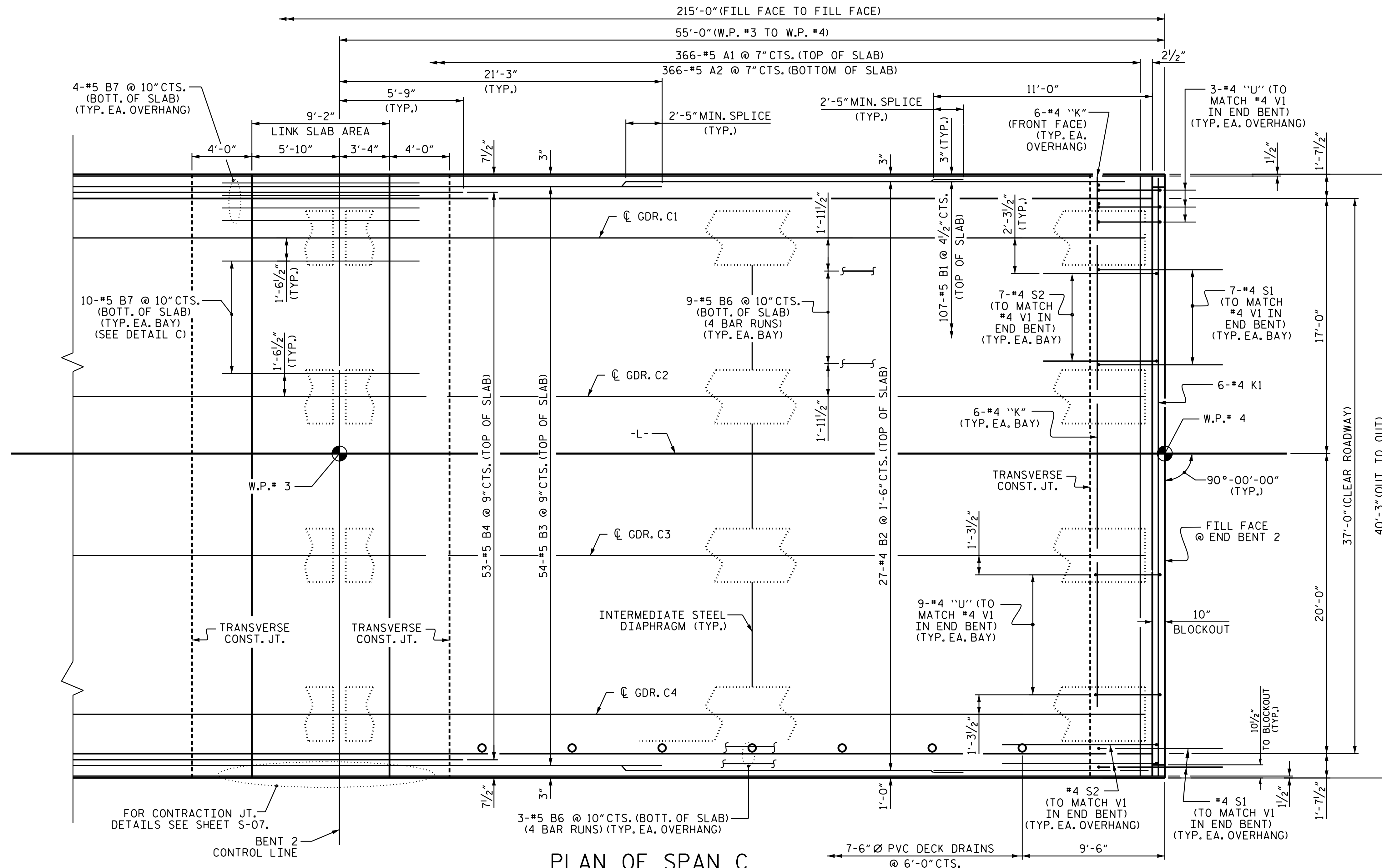


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

PLAN OF SPAN B

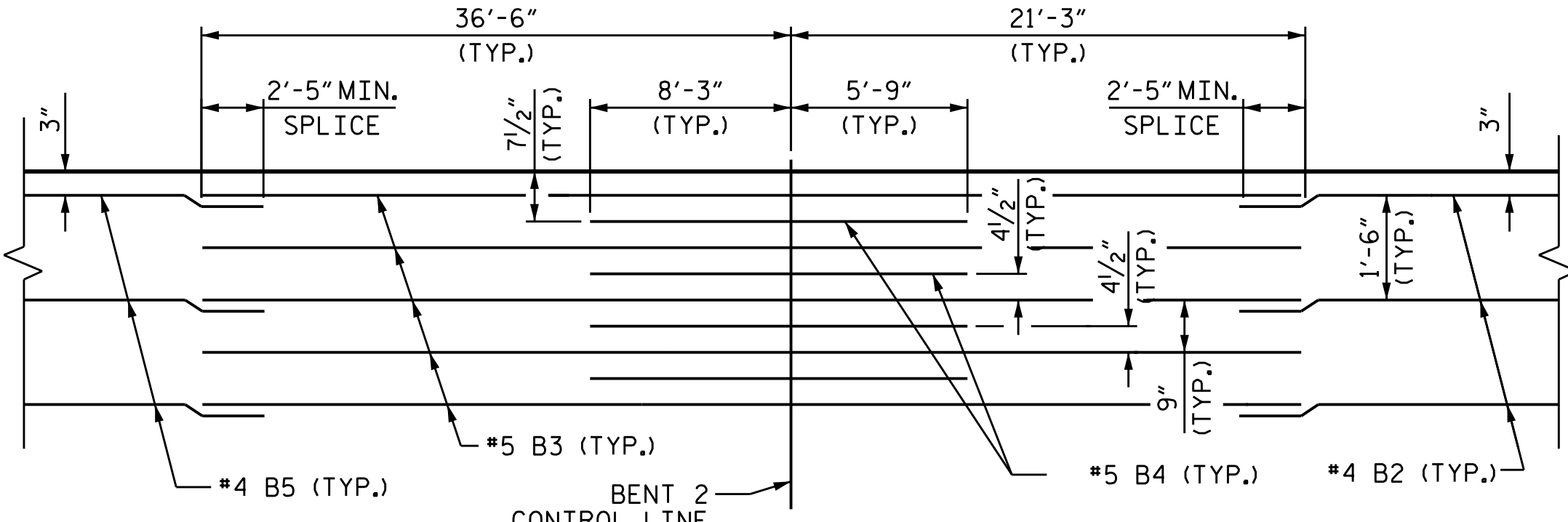
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-09
1			3			TOTAL SHEETS
2			4			33

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

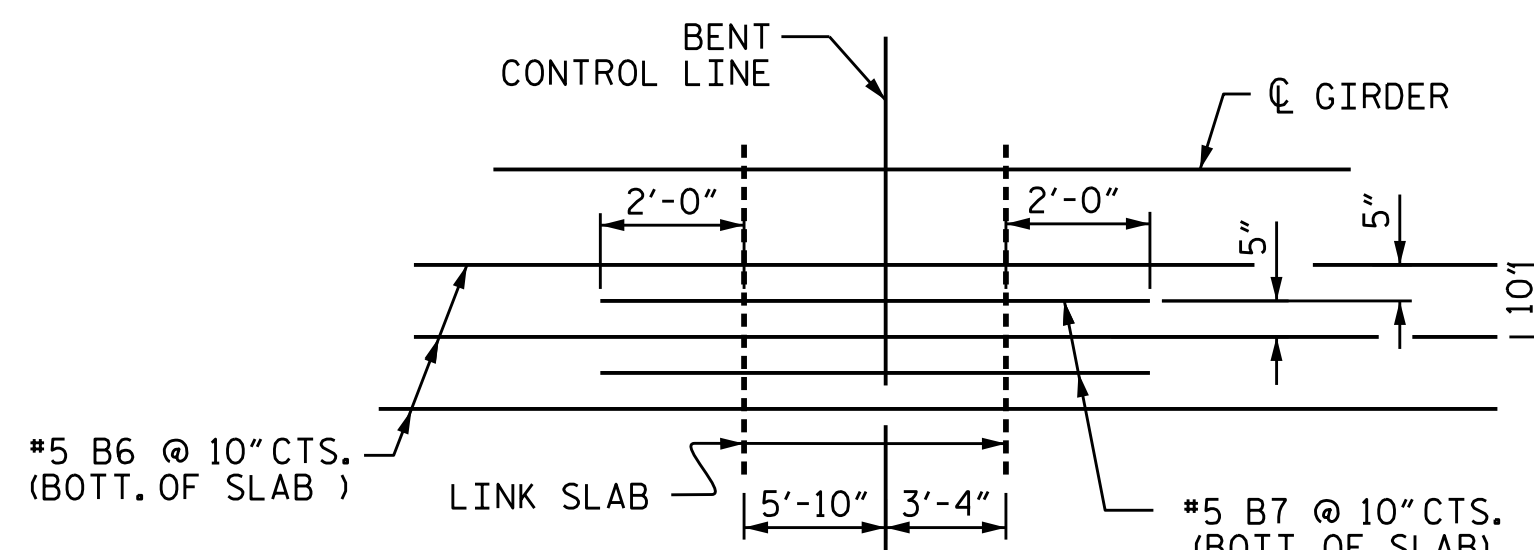


PLAN OF SPAN C

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.



DETAIL B AT BENT 2



DETAIL C AT BENT 2

DRAWN BY : M. G. SHAIKH DATE : 12/2020
 CHECKED BY : J. A. TILLMAN DATE : 02/2021
 DESIGN ENGINEER OF RECORD: E.T.C. DATE : 08/2020

3/17/2022
 RA Structures\FINAL PLANS OBD\400.021.BR-0048.SMU. 5*.0010.850103.dgn
 omlee

PROJECT NO. BR-0048
 SURRY COUNTY
 STATION: 18+50.00 -L-

SHEET 3 OF 3

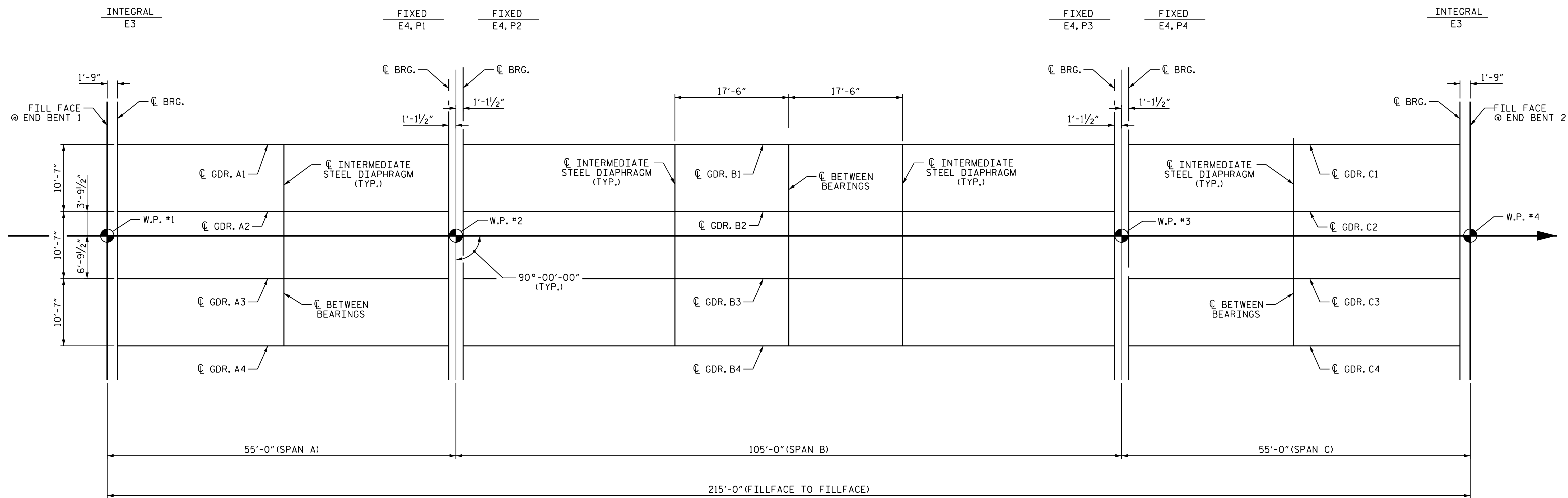


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

PLAN OF SPAN C

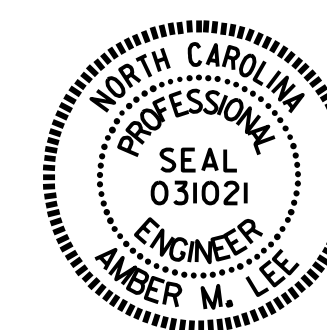
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			33

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



FRAMING PLAN

PROJECT NO. BR-0048
SURRY COUNTY
 STATION: 18+50.00 -L-



DocuSign by
 Amber M. Lee
 03/18/2022

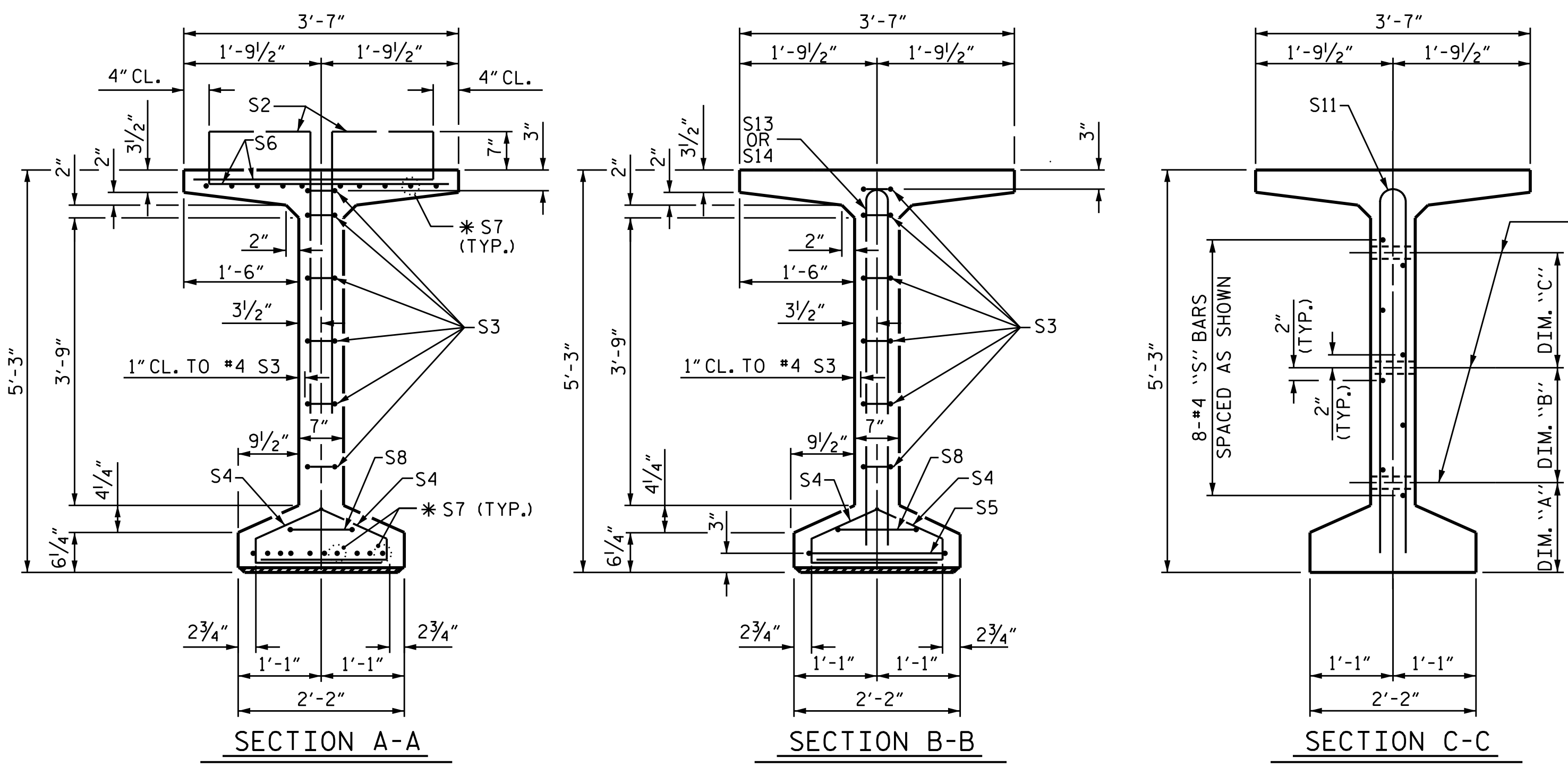
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

FRAMING PLAN

DRAWN BY : M. G. SHAIKH DATE : 12/2020
 CHECKED BY : J. A. TILLMAN DATE : 02/2021
 DESIGN ENGINEER OF RECORD: E.T.C. DATE : 11/2019

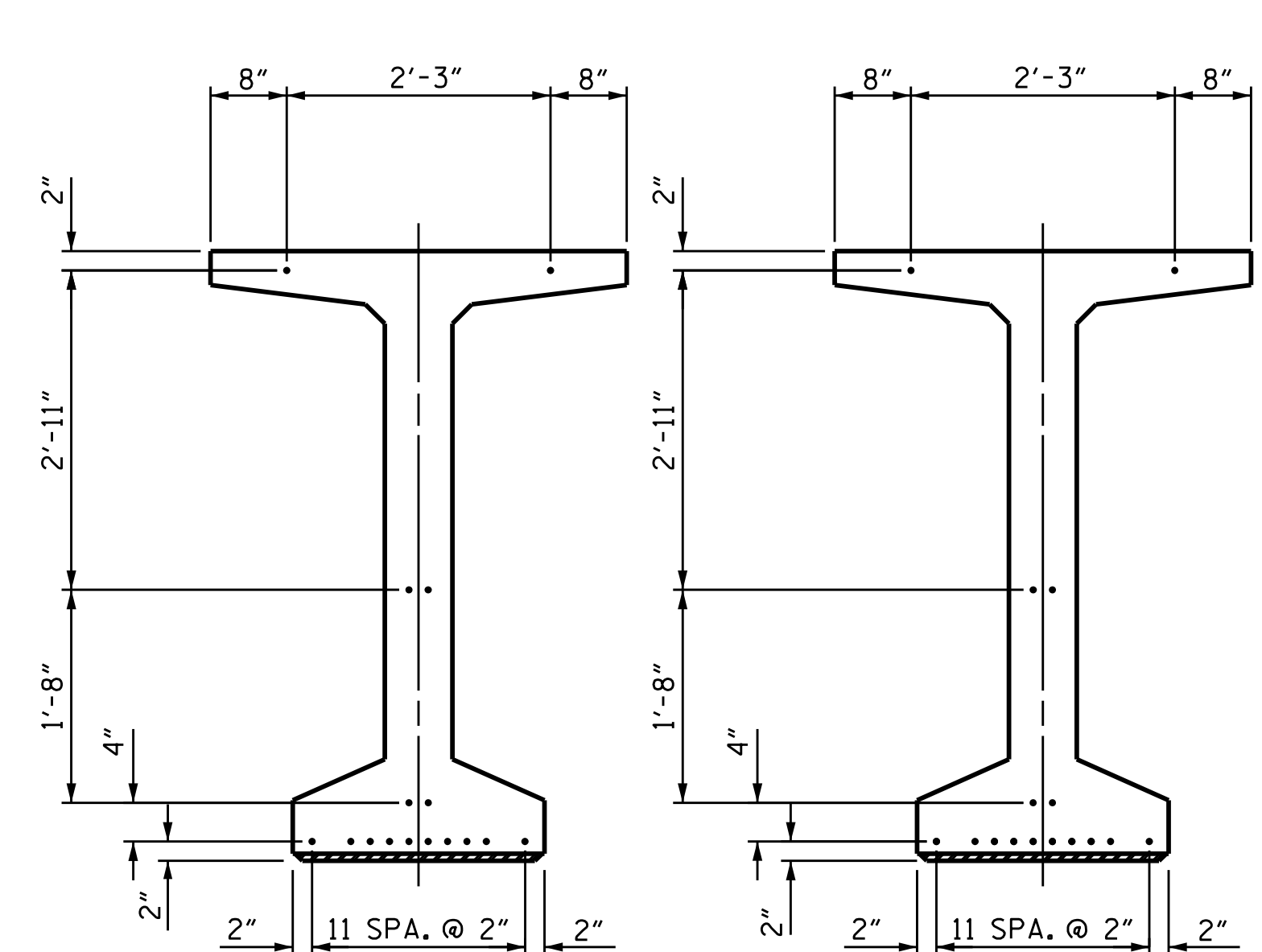
DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			33



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

* FOR S7 BARS, SEE DETAIL 'C' OF PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS SHEET



AT END OF GIRDER AT C OF GIRDER
0.6" Ø LOW RELAXATION STRAND LAYOUT

DEBONDING LEGEND
● FULLY BONDED STRANDS

* DO NOT RAKE TOP OF THE GIRDER IN THIS AREA

0.6" Ø L. R. GRADE 270 STRANDS

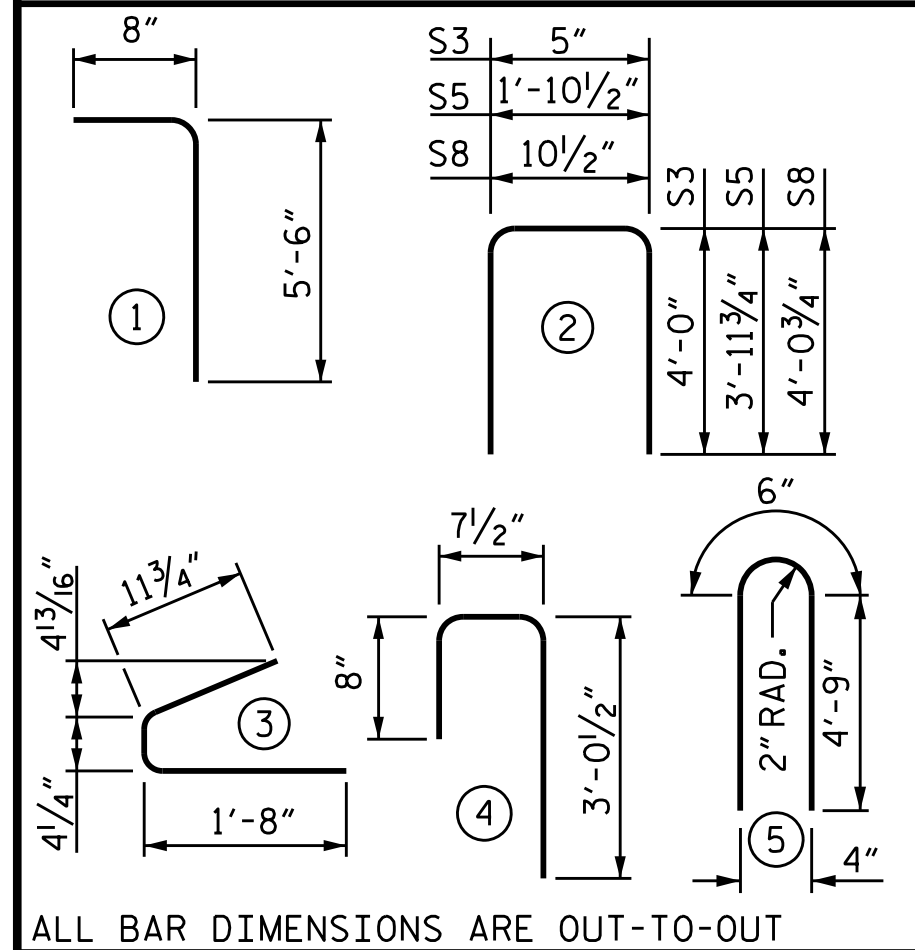
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GDR

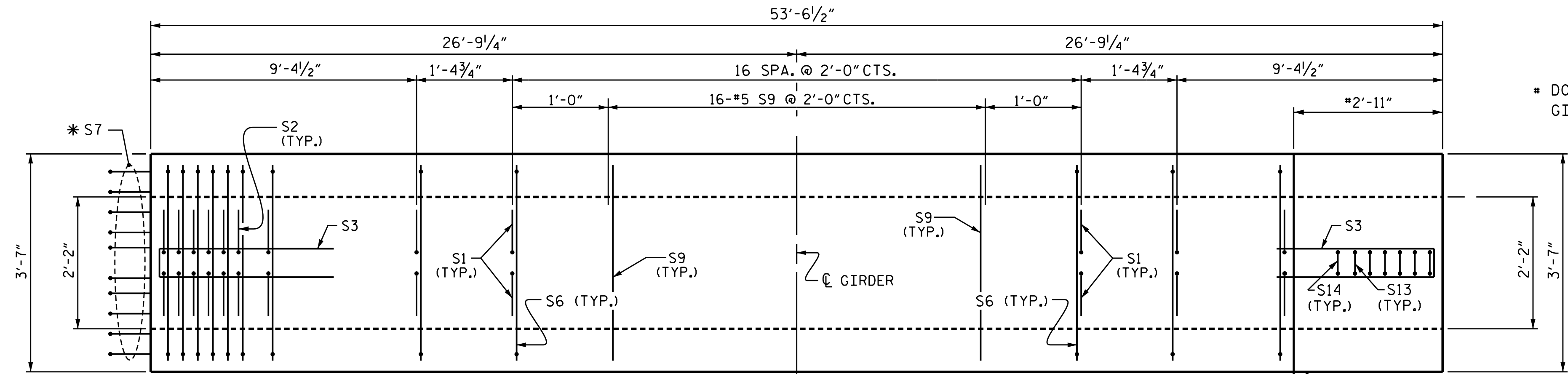
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	92	#4	1	6'-2"	379
S2	12	#5	1	6'-2"	77
S3	12	#4	2	8'-5"	67
S4	84	#4	3	3'-0"	168
S5	1	#5	2	9'-10"	10
S6	104	#5	4	4'-4"	470
* S7	10	#5	STR	3'-8"	38
S8	2	#5	2	9'-0"	19
S9	16	#5	STR	3'-3"	54
S10	1	#3	STR	1'-10"	1
S11	4	#5	5	10'-0"	42
S12	8	#4	STR	8'-0"	43
S13	6	#5	5	10'-0"	63
S14	2	#4	5	10'-0"	13

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

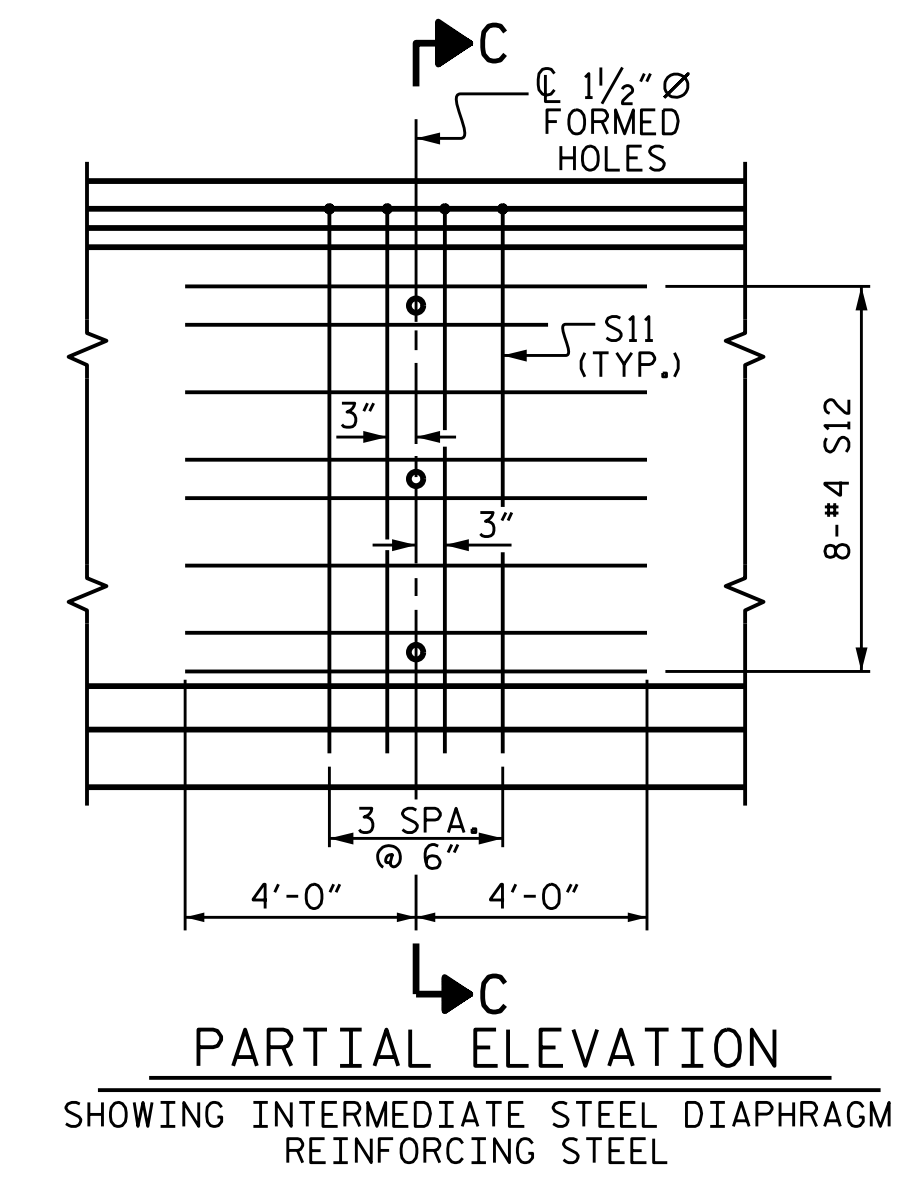
BAR TYPES



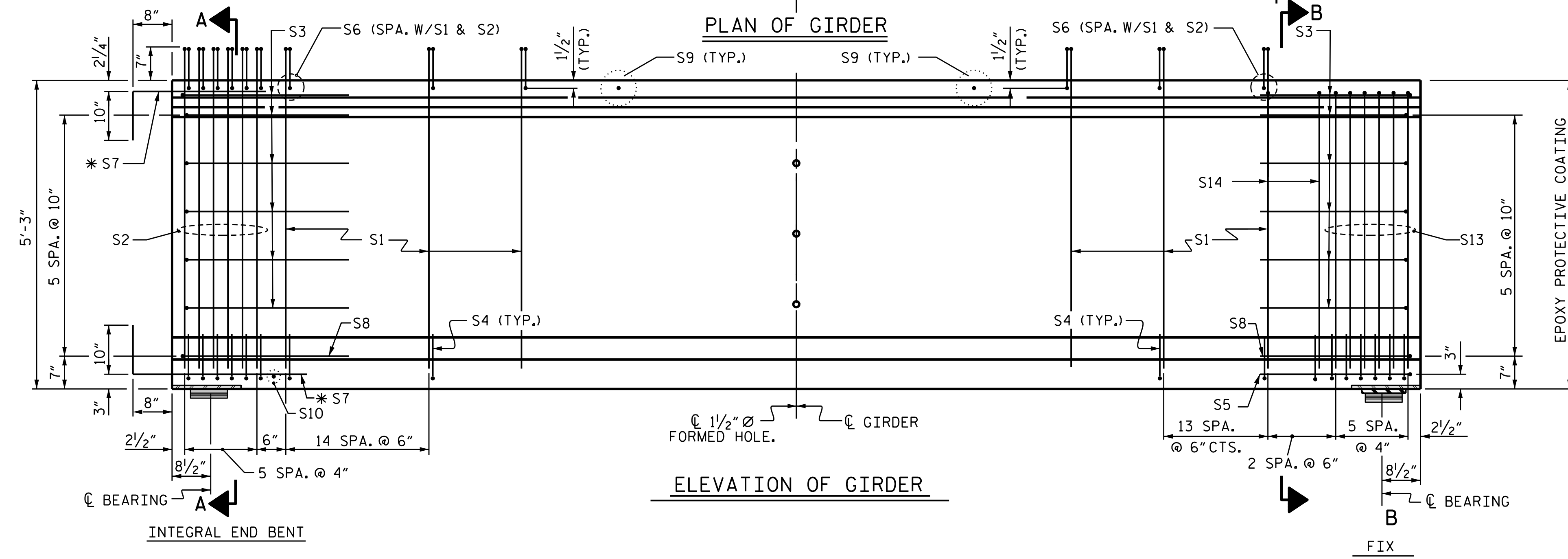
ALL BAR DIMENSIONS ARE OUT-TO-OUT



PLAN OF GIRDER



PARTIAL ELEVATION
SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL



ELEVATION OF GIRDER

QUANTITIES FOR ONE GIRDER

REINFORCING STEEL	5,000 PSI CONCRETE	0.6" Ø L.R. STRANDS
LB.	C.Y.	No.
1444	10.6	16

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
4	53'-6 1/2"	214'-2"

PROJECT NO. BR-0048
SURRY COUNTY
STATION: 18+50.00 -L-

SHEET 1 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

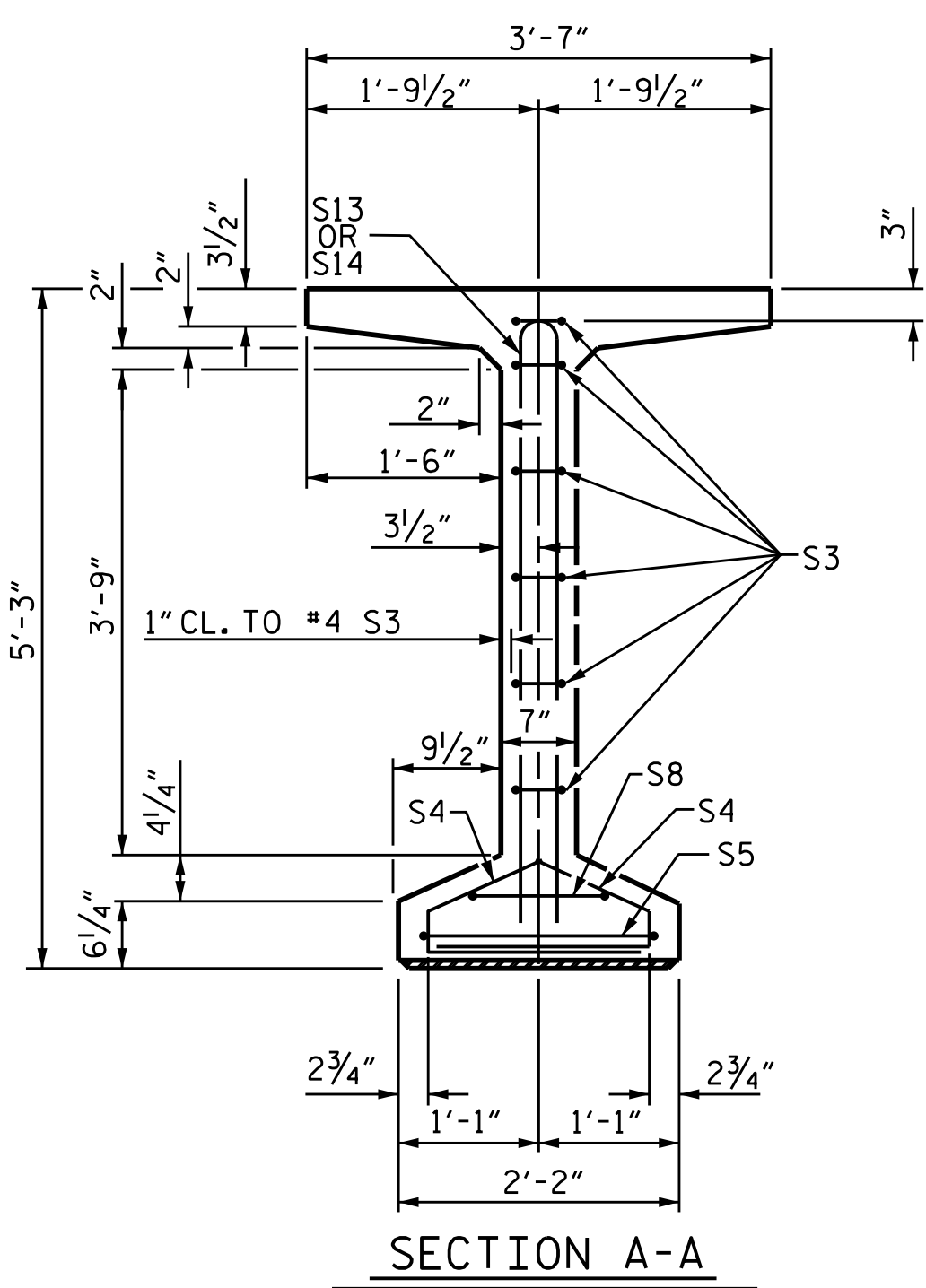
63" PRESTRESSED CONCRETE
MODIFIED BULB TEE
CONTINUOUS FOR LIVE LOAD
(SPAN A OR C)



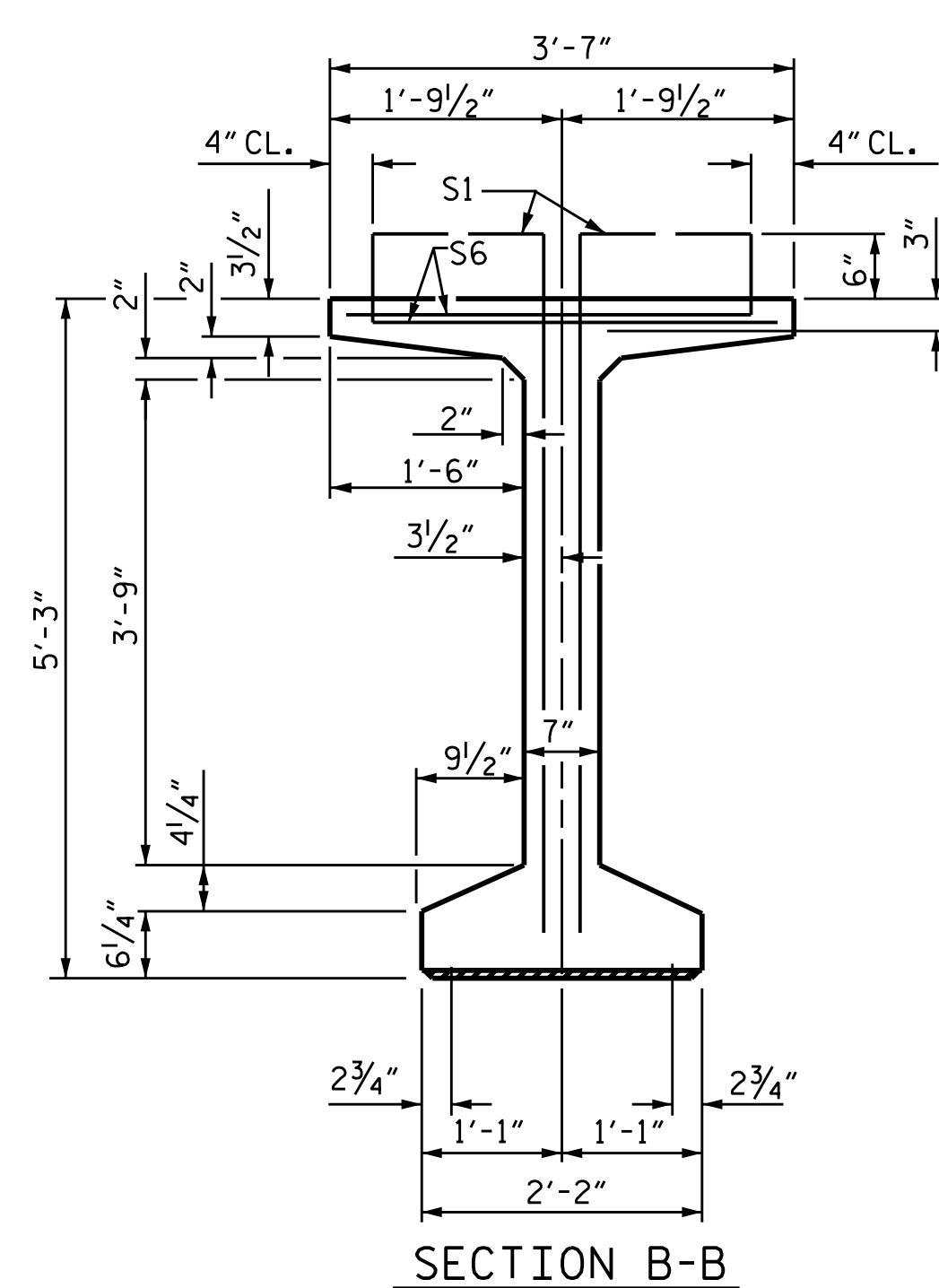
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS 33
2			4			

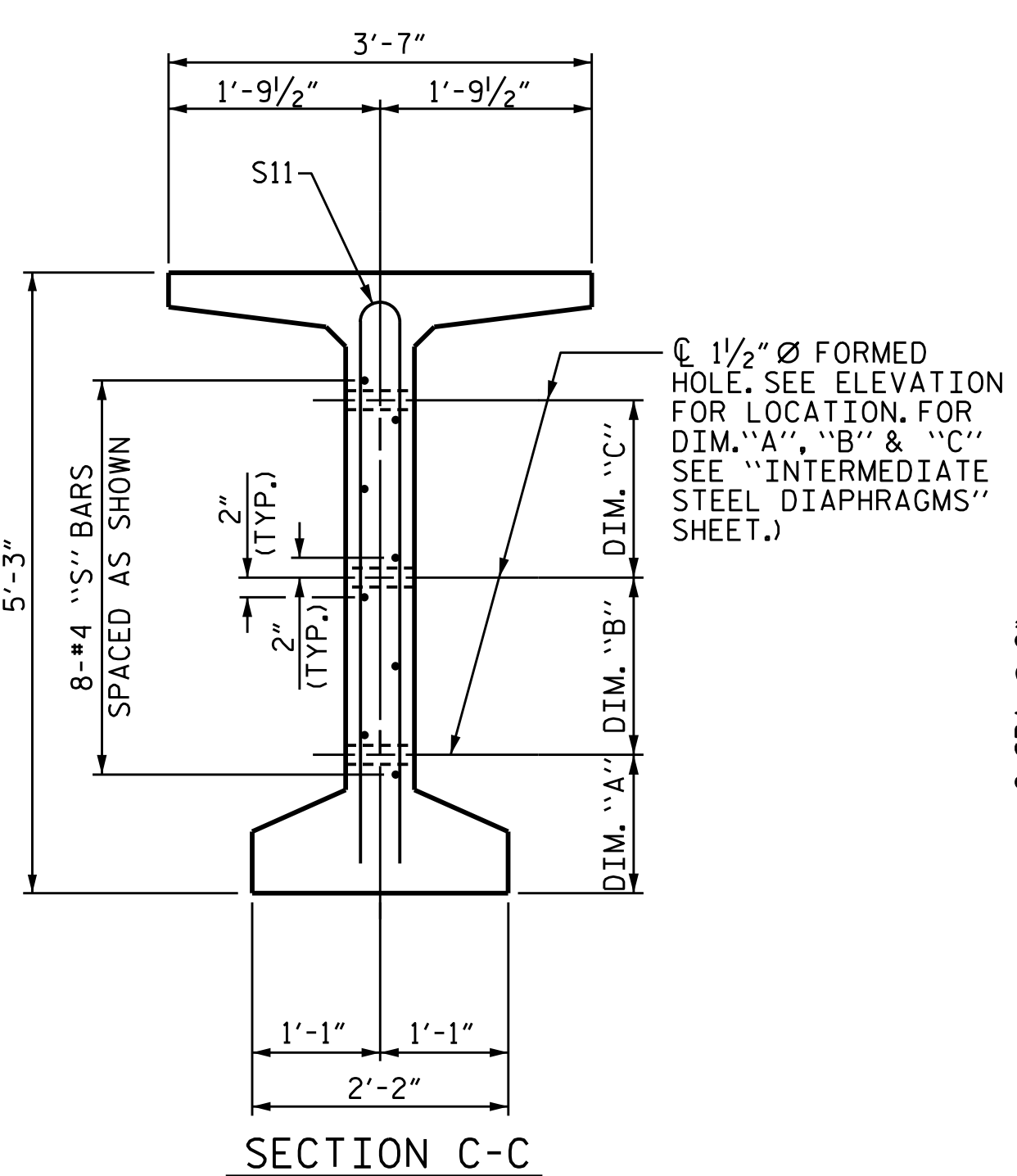
ASSEMBLED BY : E. CABBELL	DATE : 12/2020
CHECKED BY : J. A. TILLMAN	DATE : 02/2021
DRAWN BY : EEM 2/6/97	REV. 6/13 MAA/GM
CHECKED BY : VAP 2/6/97	REV. 1/15 MAA/TMG
	REV. 12/17 MAA/THC



SECTION A-A

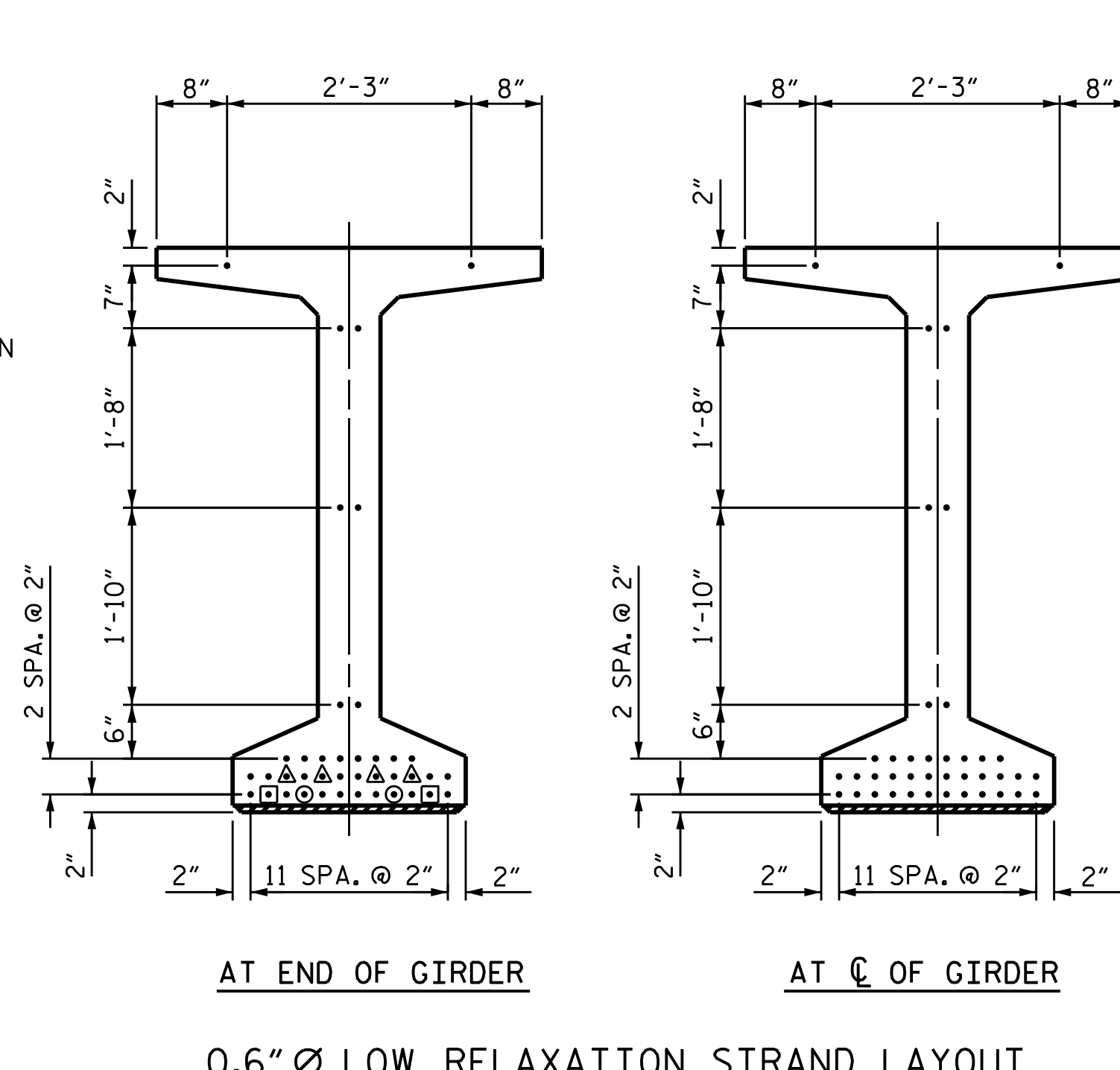


SECTION B-B



SECTION C-C

(S1, S6 AND S9 BARS NOT SHOWN)



AT END OF GIRDER

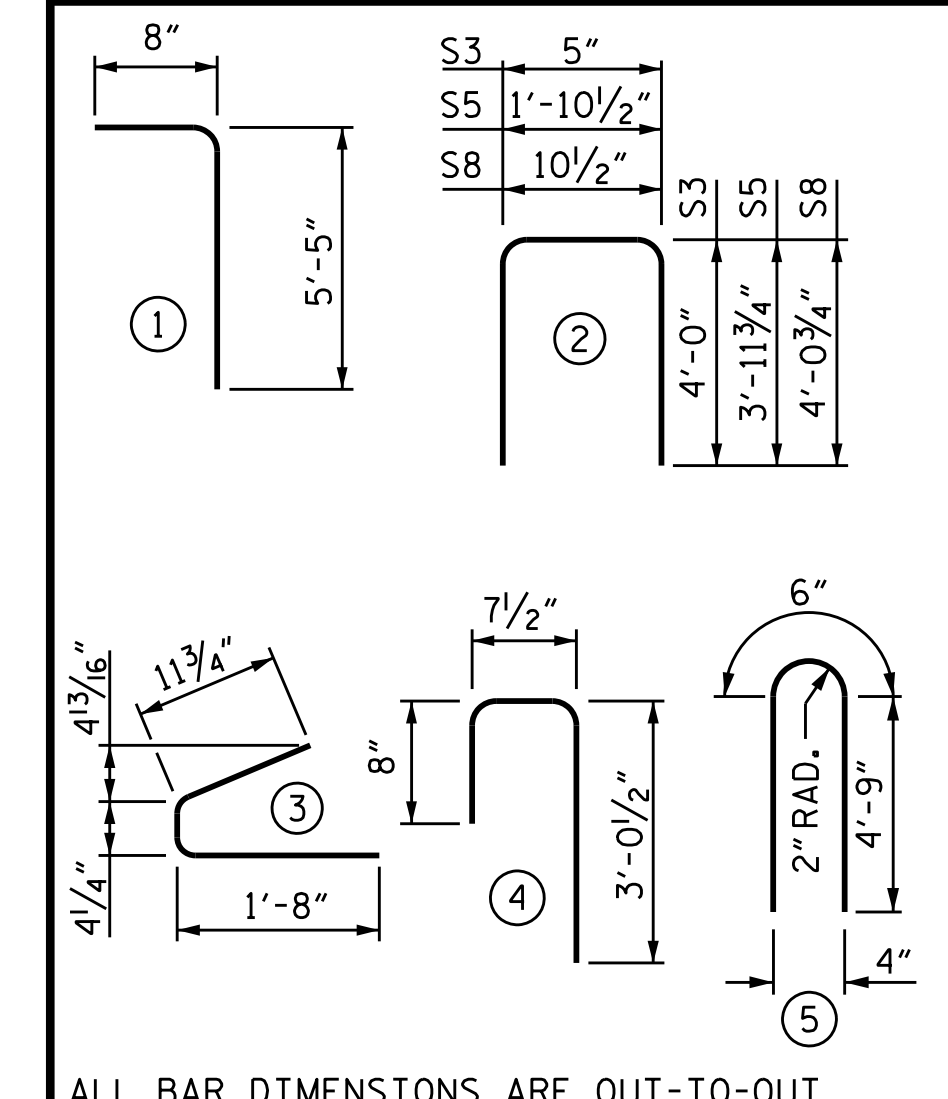
AT C OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

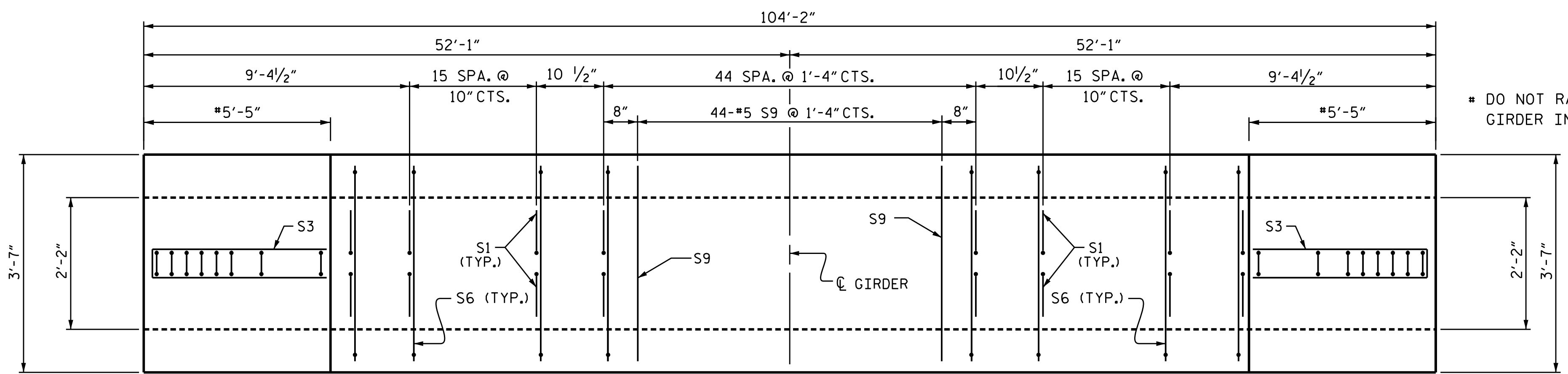
0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GDR						
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	
S1	182	#4	1	6'-1"	740	
S3	12	#4	2	8'-5"	67	
S4	84	#4	3	3'-0"	168	
S5	2	#5	2	9'-10"	21	
S6	182	#5	4	4'-4"	823	
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	14	#4	5	10'-0"	94	

BAR TYPES



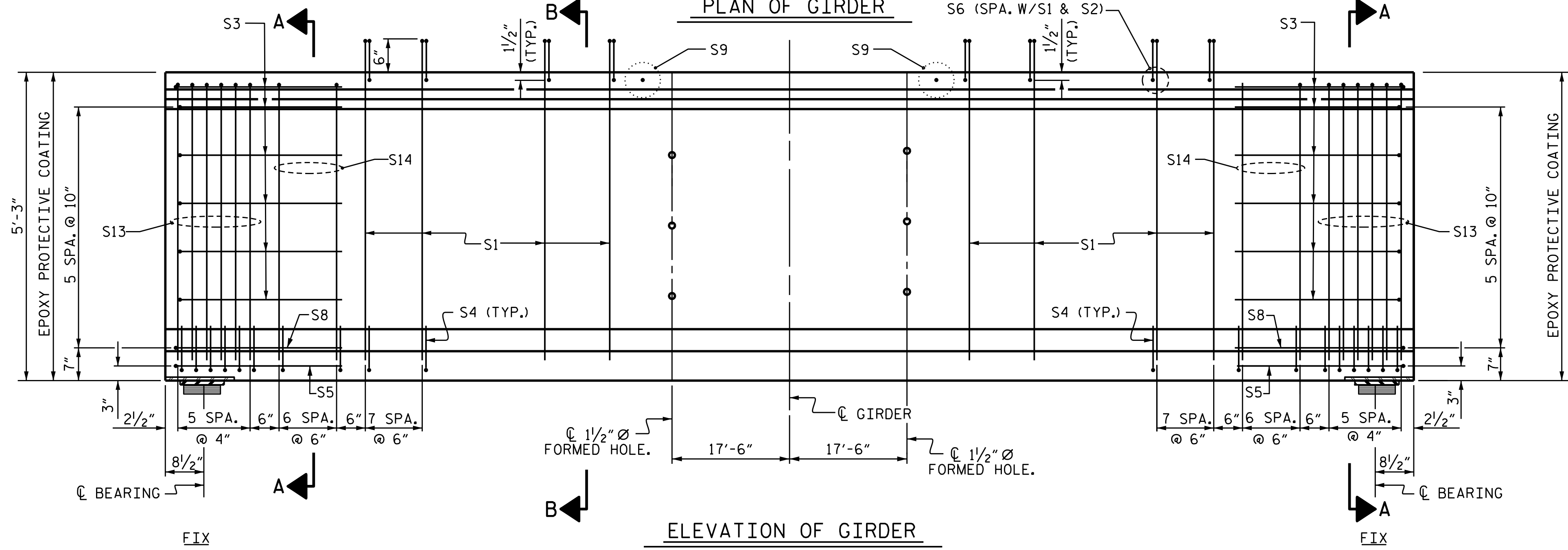
ALL BAR DIMENSIONS ARE OUT-TO-OUT



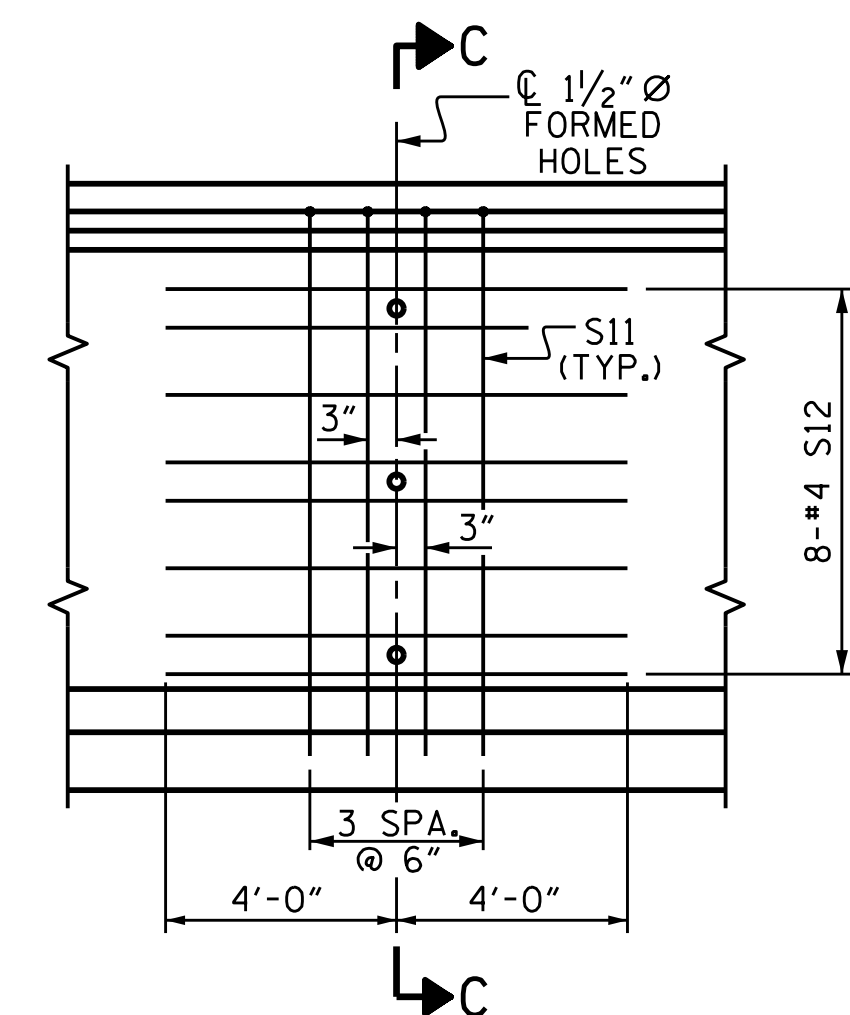
PLAN OF GIRDER

DO NOT RAKE TOP OF THE GIRDER IN THIS AREA

- DEBONDING LEGEND**
- FULLY BONDED STRANDS
 - ▲ STRANDS DEBONDED FOR 10'-0" FROM END OF GIRDER
 - STRANDS DEBONDED FOR 20'-0" FROM END OF GIRDER
 - STRANDS DEBONDED FOR 16'-0" FROM END OF GIRDER



ELEVATION OF GIRDER



PARTIAL ELEVATION

SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR ALL GIRDERS

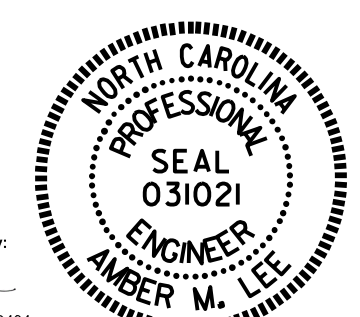
QUANTITIES FOR ONE GIRDER		
REINFORCING STEEL	7,500 PSI CONCRETE	0.6" Ø L.R. STRANDS
LB.	C.Y.	No.
2375	20.6	40

GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
4	104'-2"	416'-8"

PROJECT NO. BR-0048
 SURRY COUNTY
 STATION: 18+50.00 -L-

SHEET 2 OF 5

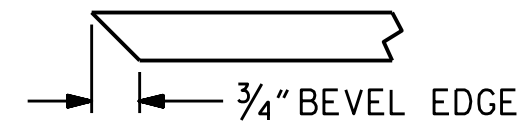
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 63" PRESTRESSED CONCRETE
 MODIFIED BULB TEE
 CONTINUOUS FOR LIVE LOAD
 (SPAN B)



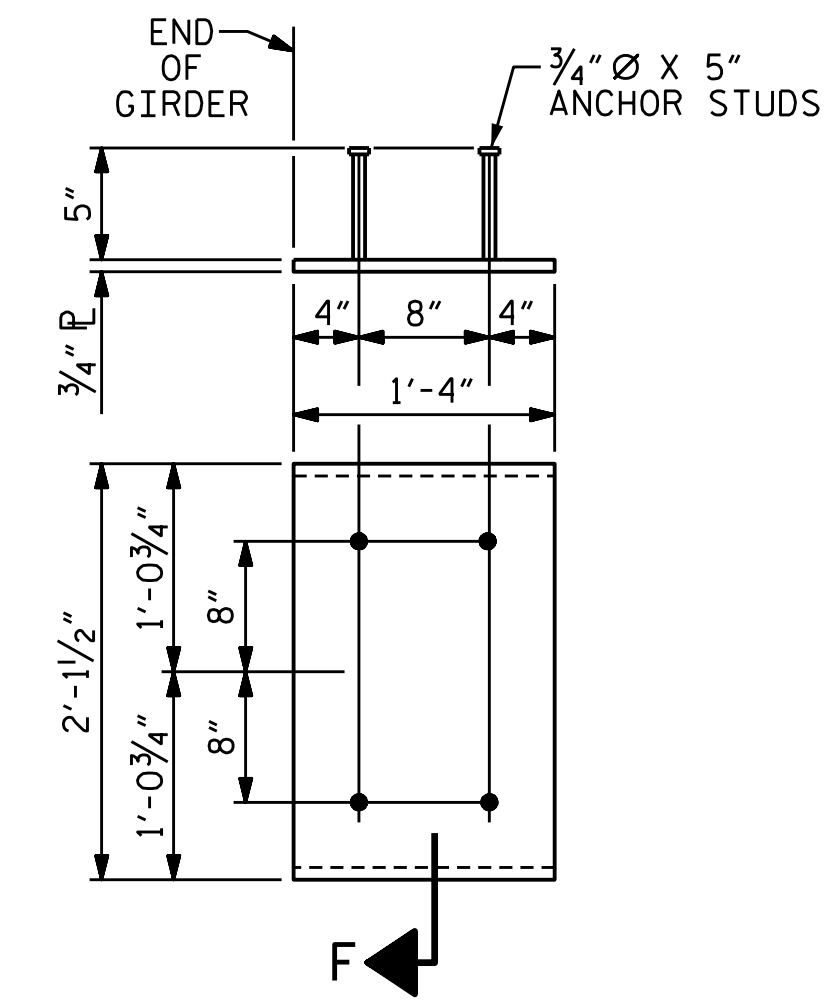
ASSEMBLED BY : M. G. SHAIKH	DATE : 12/2020
CHECKED BY : J. A. TILLMAN	DATE : 02/2021
DRAWN BY : EEM 2/6/97	REV. 6/13 MAA/TMG
CHECKED BY : VAP 2/6/97	REV. 1/15 MAA/TMG
	REV. 12/17 MAA/THC

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			33



SECTION "F"
(SEE NOTES)



EMBEDDED PLATE "B-1" DETAILS
FOR AASHTO TYPE IV GIRDER AND
63" MODIFIED BULB TEES

(2 REQ'D PER GIRDER)

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 SPANS A AND C, AND 6800 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.

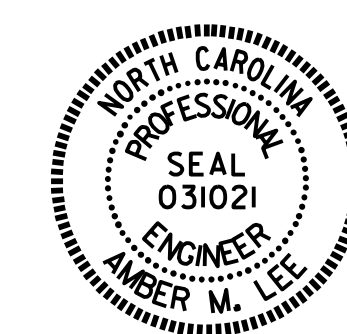
THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4", SHALL BE RAKED TO A DEPTH OF 1/4".

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.

PROJECT NO. BR-0048
SURRY COUNTY
STATION: 18+50.00 -L-

SHEET 3 OF 5



DocuSigned by:
Amber M. Lee
B04B5A4F2FAD484
03/18/2022

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
DETAILS

ASSEMBLED BY :	M. G. SHAIKH	DATE :	12/2020
CHECKED BY :	J. A. TILLMAN	DATE :	02/2021
DRAWN BY :	ELR 11/91	REV. 1/15	MAA/TMG
CHECKED BY :	GRP 11/91	REV. 2/15	MAA/TMG
		REV. 12/17	MAA/THC

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			33

STD. NO. PCG9

DEAD LOAD DEFLECTION TABLE FOR SPAN B																																										
0.6" Ø LOW RELAXATION		GIRDER 1																																								
FORTIETH 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)	†	0.233	0.463	0.691	0.914	1.130	1.339	1.539	1.729	1.907	2.074	2.227	2.367	2.492	2.601	2.695	2.772	2.833	2.876	2.902	2.911	2.902	2.876	2.833	2.772	2.695	2.601	2.492	2.367	2.227	2.074	1.907	1.729	1.539	1.339	1.130	0.914	0.691	0.463	0.233	0	
* DEFLECTION DUE TO SUPERIMPOSED D.L.	†	0.151	0.301	0.448	0.593	0.734	0.869	0.999	1.122	1.238	1.346	1.446	1.536	1.617	1.688	1.749	1.799	1.838	1.867	1.884	1.889	1.884	1.867	1.838	1.799	1.749	1.688	1.617	1.536	1.446	1.346	1.238	1.122	0.999	0.869	0.734	0.593	0.448	0.301	0.151	0	
FINAL CAMBER	†	0	1/16"	3/16"	1/4"	5/16"	3/8"	1/2"	9/16"	5/8"	11/16"	3/4"	13/16"	13/16"	7/8"	15/16"	15/16"	1"	1"	1"	1"	1"	1"	1"	1"	1"	15/16"	15/16"	7/8"	13/16"	13/16"	3/4"	11/16"	5/8"	9/16"	1/2"	3/8"	5/16"	1/4"	3/16"	1/16"	0

DEAD LOAD DEFLECTION TABLE FOR SPAN B																																									
0.6" Ø LOW RELAXATION		GIRDER 2 & 3																																							
FORTIETH 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)	†	0.232	0.463	0.69	0.912	1.128	1.336	1.536	1.725	1.904	2.070	2.223	2.362	2.487	2.596	2.689	2.767	2.827	2.870	2.896	2.905	2.896	2.870	2.827	2.767	2.689	2.596	2.487	2.362	2.223	2.070	1.904	1.725	1.536	1.336	1.128	0.912	0.69	0.463	0.232	0
* DEFLECTION DUE TO SUPERIMPOSED D.L.	†	0.155	0.309	0.461	0.610	0.754	0.893	1.027	1.153	1.273	1.384	1.486	1.579	1.662	1.735	1.798	1.849	1.890	1.919	1.936	1.942	1.936	1.919	1.890	1.849	1.798	1.735	1.662	1.579	1.486	1.384	1.273	1.153	1.027	0.893	0.754	0.610	0.461	0.309	0.155	0
FINAL CAMBER	†	0	1/16"	1/8"	1/4"	5/16"	3/8"	1/2"	9/16"	5/8"	11/16"	3/4"	13/16"	13/16"	7/8"	7/8"	15/16"	15/16"	15/16"	15/16"	15/16"	15/16"	15/16"	15/16"	15/16"	7/8"	7/8"	13/16"	13/16"	3/4"	11/16"	5/8"	9/16"	1/2"	7/16"	3/8"	5/16"	1/4"	1/8"	1/16"	0

DEAD LOAD DEFLECTION TABLE FOR SPAN B																																												
0.6" Ø LOW RELAXATION		GIRDER 4																																										
FORTIETH 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)	†	0.233	0.463	0.691	0.914	1.130	1.339	1.539	1.729	1.907	2.074	2.227	2.367	2.492	2.601	2.695	2.772	2.833	2.876	2.902	2.911	2.902	2.876	2.833	2.772	2.695	2.601	2.492	2.367	2.227	2.074	1.907	1.729	1.539	1.339	1.130	0.914	0.691	0.463	0.233	0			
* DEFLECTION DUE TO SUPERIMPOSED D.L.	†	0.148	0.295	0.440	0.582	0.720	0.853	0.980	1.101	1.215	1.321	1.419	1.508	1.587	1.657	1.716	1.766	1.804	1.832	1.849	1.854	1.849	1.832	1.804	1.766	1.716	1.657	1.587	1.508	1.419	1.321	1.215	1.101	0.980	0.853	0.720	0.582	0.440	0.295	0.148	0			
FINAL CAMBER	†	0	1/16"	3/16"	1/4"	5/16"	3/8"	1/2"	9/16"	5/8"	11/16"	3/4"	13/16"	7/8"	7/8"	15/16"	1"	1"	1"	11/16"	11/16"	11/16"	11/16"	11/16"	11/16"	1"	1"	1"	15/16"	7/8"	7/8"	13/16"	3/4"	11/16"	5/8"	9/16"	1/2"	7/16"	3/8"	5/16"	1/4"	3/16"	1/16"	0

DEAD LOAD DEFLECTION TABLE FOR SPAN A OR C																							
0.6" Ø LOW RELAXATION		GIRDER 1																					
TWENTIETH POINTS	0	.05	.1	.15	.2	.25	.3	.35	.4	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	1.0		
CAMBER (GIRDER ALONE IN PLACE)	†	0.000	0.086	0.17	0.25	0.322	0.387	0.441	0.485	0.517	0.536	0.543	0.536	0.517	0.485	0.441	0.387	0.322	0.25	0.17	0.086	0.000	
* DEFLECTION DUE TO SUPERIMPOSED D.L.	†	0.000	0.023	0.046	0.068	0.087	0.105	0.119	0.131	0.140	0.145	0.147	0.145	0.140	0.131	0.119	0.105	0.087	0.068	0.046	0.023	0.000	
FINAL CAMBER	†	0	1/16"	1/8"	3/16"	1/4"	5/16"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	5/16"	1/4"	1/4"	3/16"	1/8"	1/16"	0

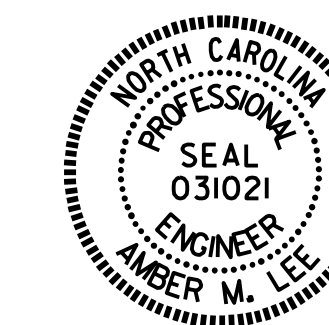
DEAD LOAD DEFLECTION TABLE FOR SPAN A OR C																							
0.6" Ø LOW RELAXATION		GIRDERS 2 & 3																					
TWENTIETH POINTS	0	.05	.1	.15	.2	.25	.3	.35	.4	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	1.0		
CAMBER (GIRDER ALONE IN PLACE)	†	0.000	0.086	0.170	0.249	0.322	0.386	0.441	0.484	0.516	0.536	0.542	0.536	0.516	0.484	0.441	0.386	0.322	0.249	0.170	0.086	0.000	
* DEFLECTION DUE TO SUPERIMPOSED D.L.	†	0.000	0.024	0.047	0.069	0.089	0.107	0.122	0.134	0.143	0.148	0.150	0.148	0.143	0.134	0.122	0.107	0.089	0.069	0.047	0.024	0.000	
FINAL CAMBER	†	0	1/16"	1/8"	3/16"	1/4"	1/4"	5/16"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	5/16"	1/4"	1/4"	3/16"	1/8"	1/16"	0

DEAD LOAD DEFLECTION TABLE FOR SPAN A OR C																						
0.6" Ø LOW RELAXATION		GIRDER 4																				
TWENTIETH POINTS	0	.05	.1	.15	.2	.25	.3	.35	.4	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	1.0	
CAMBER (GIRDER ALONE IN PLACE)	†	0.000	0.086	0.170	0.250	0.322	0.387	0.441	0.485	0.517	0.536	0.543	0.536	0.517	0.485	0.441	0.387	0.322	0.250	0.170	0.086	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L.	†	0.000	0.023	0.046	0.067	0.086	0.103	0.118	0.130	0.138	0.143	0.145	0.143	0.138	0.130	0.118	0.103	0.086	0.067	0.046	0.023	0.000
FINAL CAMBER	†	0	1/16"	1/8"	3/16"	1/4"	5/16"	5/16"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	5/16"	5/16"	1/4"	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).

PROJECT NO. BR-0048
SURRY COUNTY
STATION: 18+50.00 -L-

SHEET 4 OF 5



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
DETAILS

ASSEMBLED BY : M. G. SHAIKH DATE : 12/2020
CHECKED BY : J. A. TILLMAN DATE : 02/2021
DRAWN BY : ELR 11/91 REV. 1/15 MAA/TMG
CHECKED BY : GRP 11/91 REV. 2/15 MAA/TMG
REV. 12/17 MAA/THC

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			33

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.

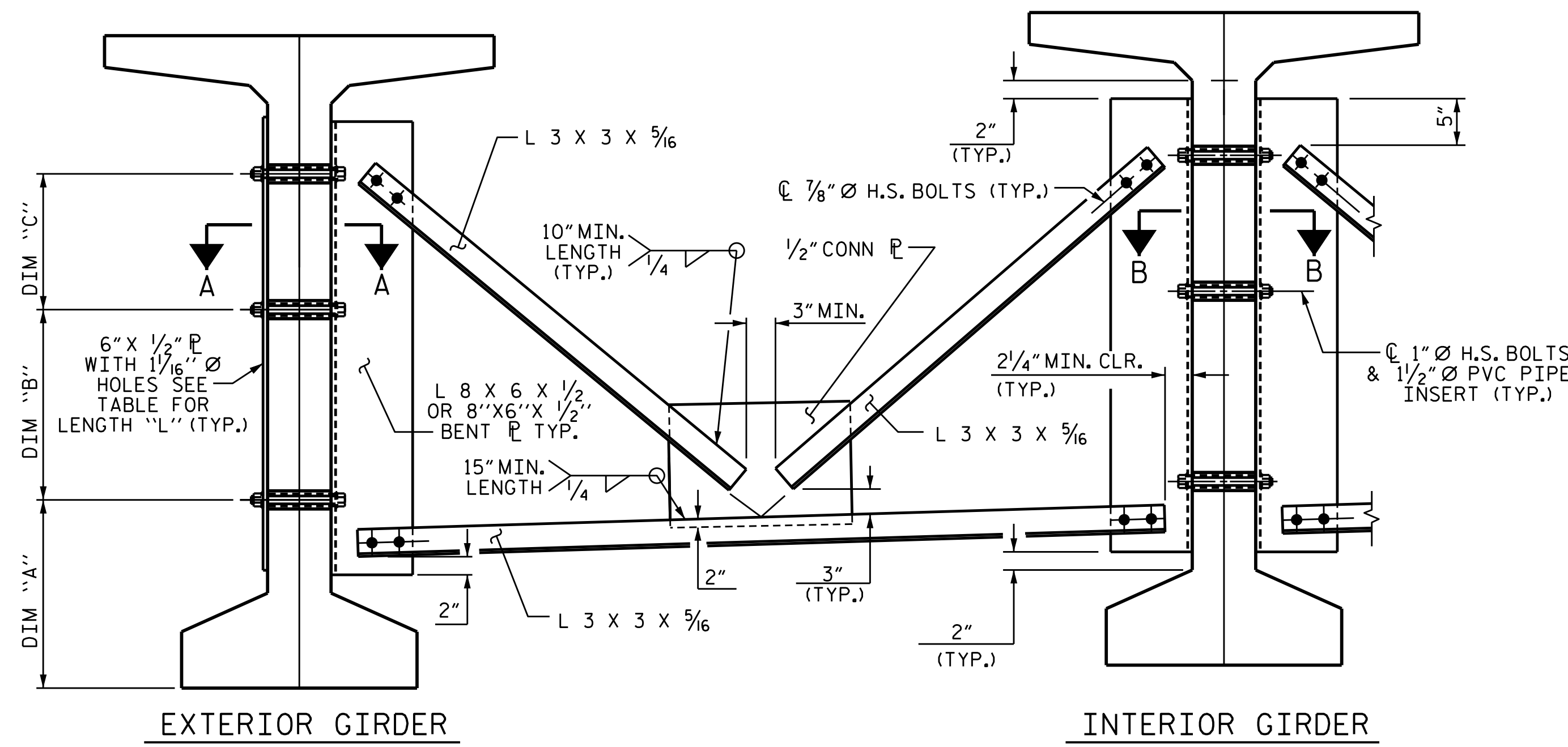
FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

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

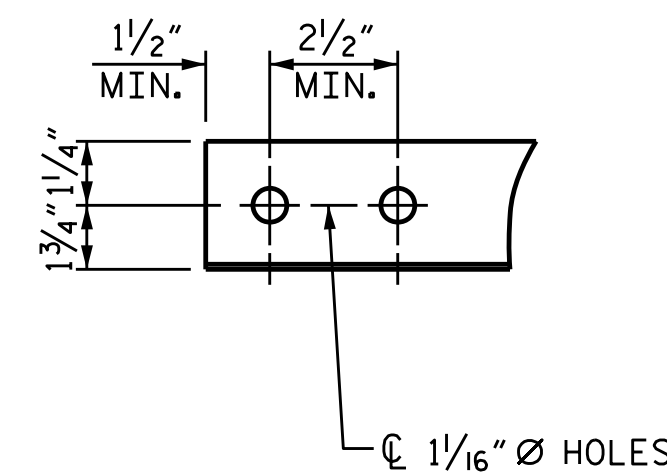
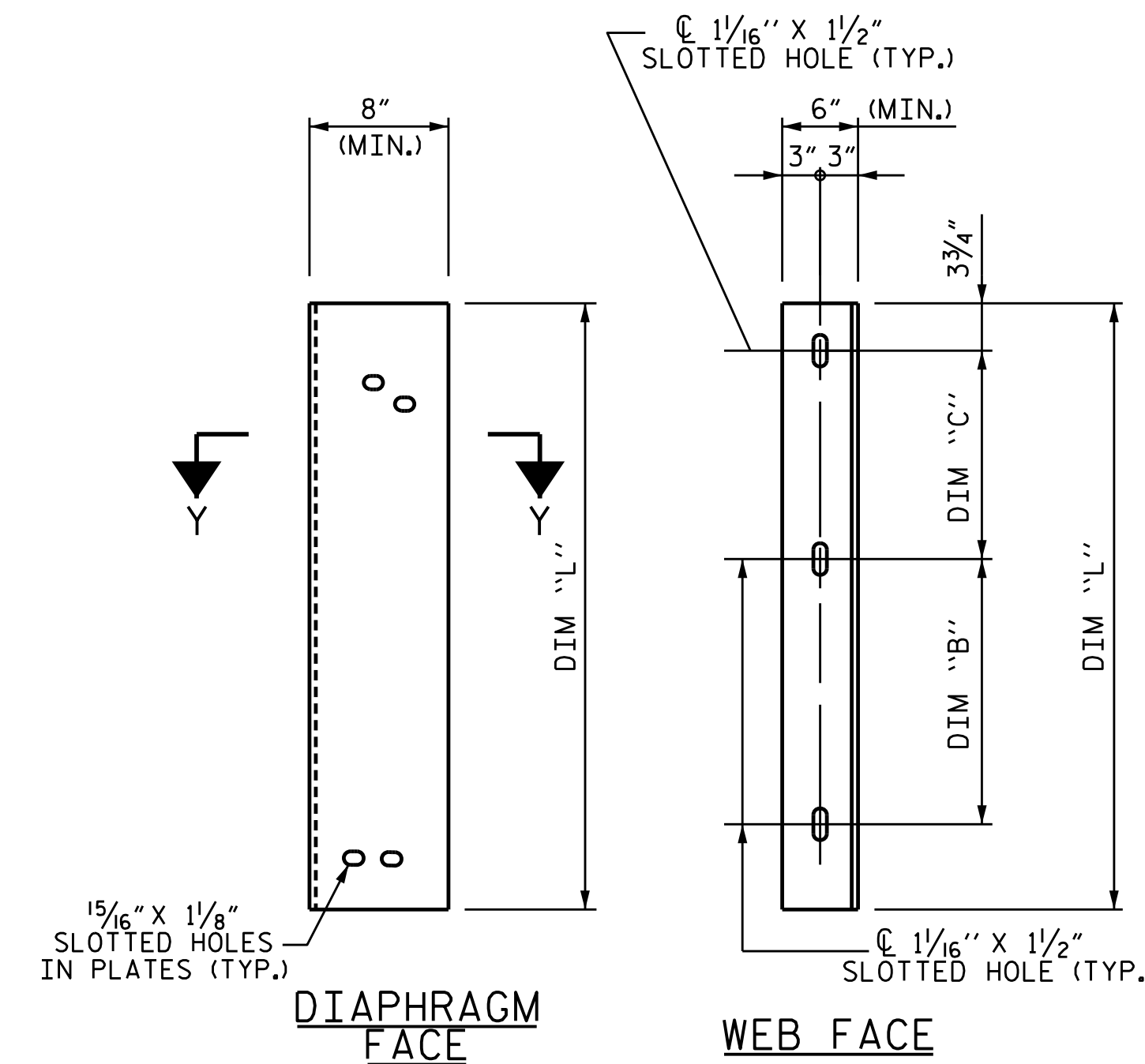
SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

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.

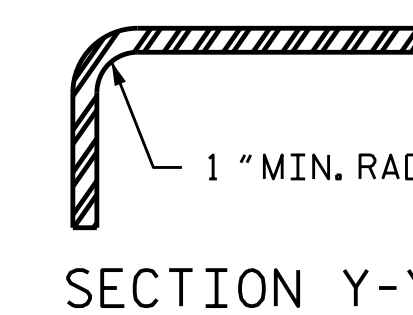
THE COST OF THE STEEL DIAPHRAGMS AND ASSEMBLIES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE GIRDERS.



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



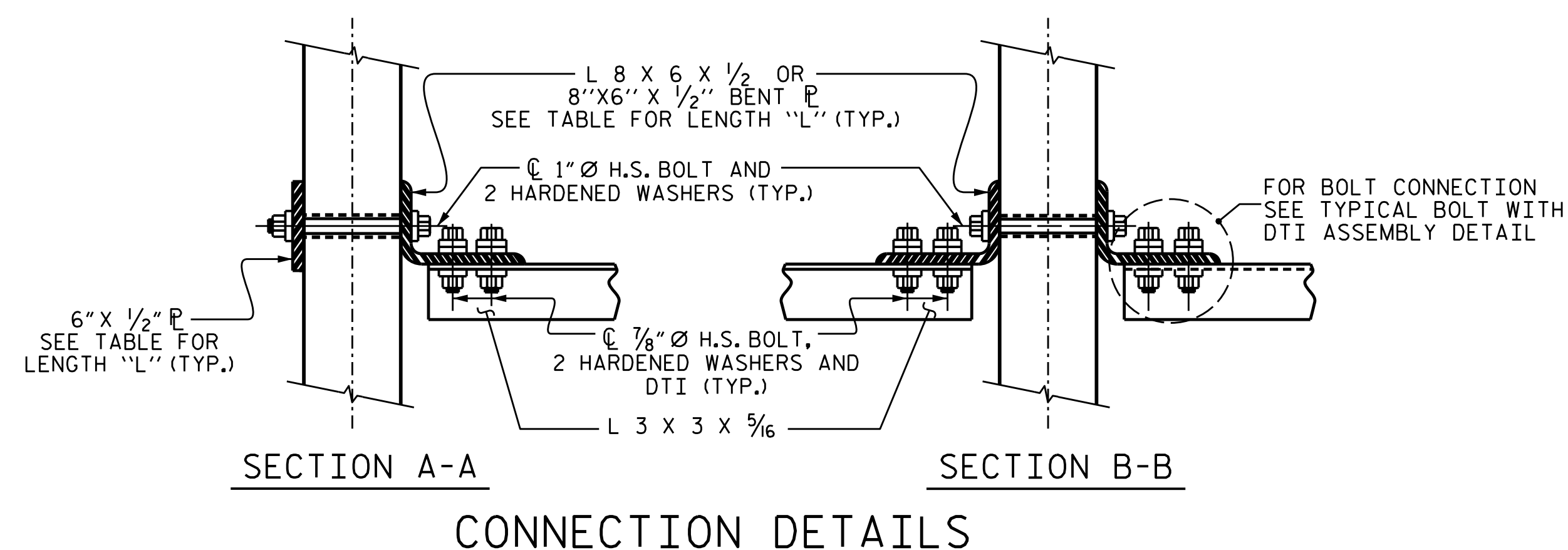
ANGLE END
(L 3 x 3 x 5/16)



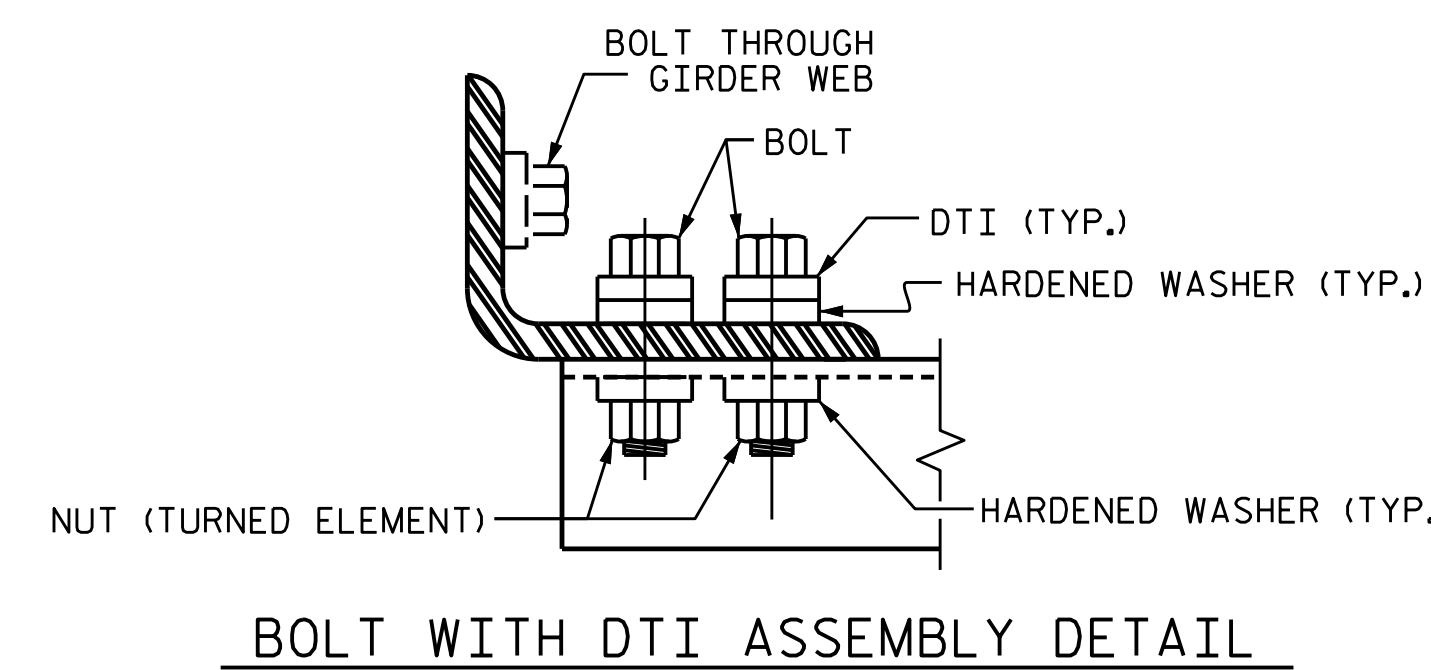
CONNECTOR PLATE DETAIL

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-0048
SURRY COUNTY
 STATION: 18+50.00 -L-

SHEET 5 OF 5



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-16
1			3			TOTAL SHEETS
2			4			33

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ASSEMBLED BY : M. G. SHAIKH DATE : 12/2020
 CHECKED BY : J. A. TILLMAN DATE : 02/2021
 DRAWN BY : RWW 11/09 REV. 10/11 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.

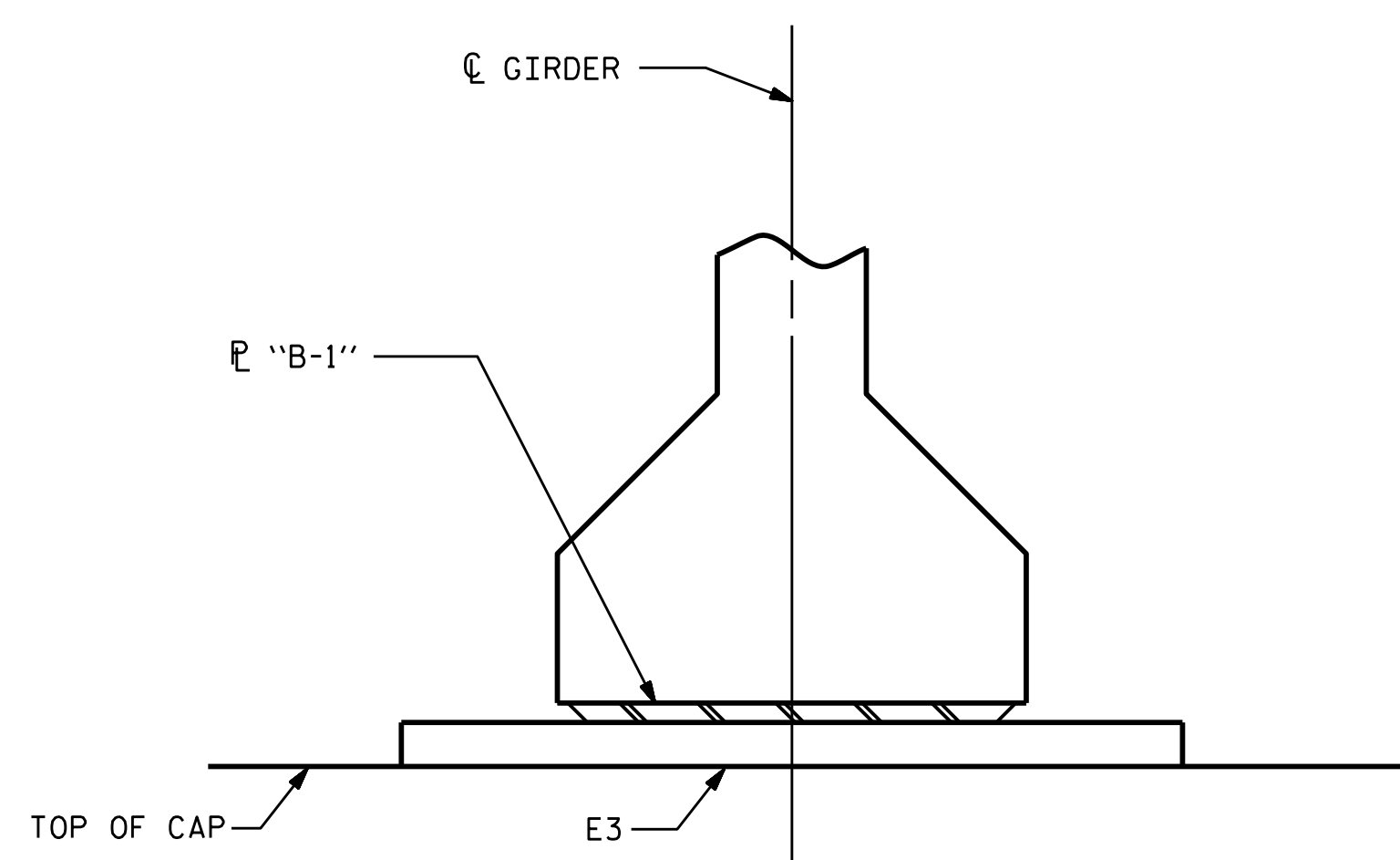
ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. NO SHOP DRAWINGS ARE REQUIRED FOR ANCHOR BOLTS, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

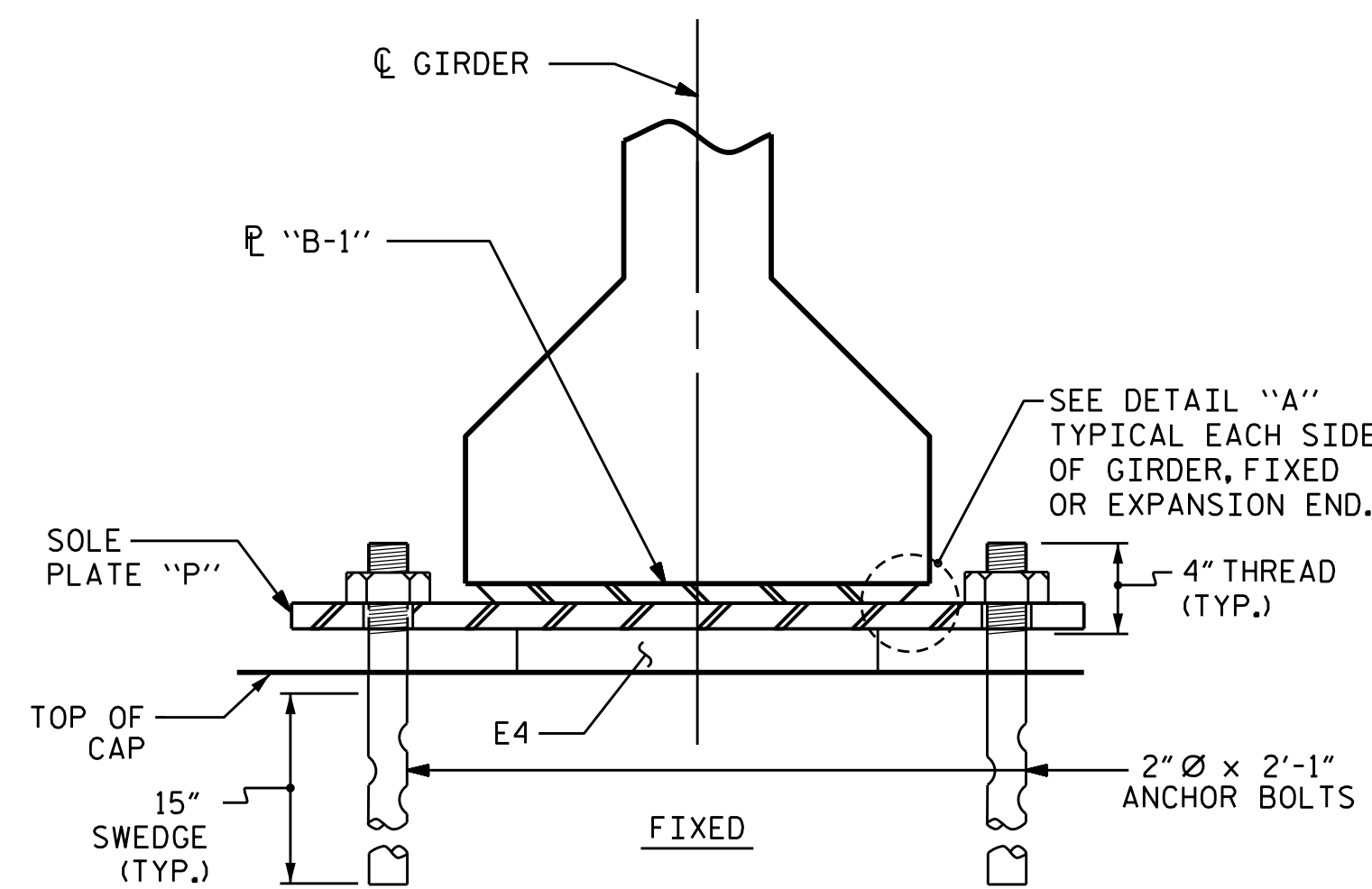
THE ELASTOMER IN THE STEEL REINFORCED BEARINGS SHALL HAVE A SHEAR MODULUS OF 0.160 KSI, IN ACCORDANCE WITH AASHTO M251.

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

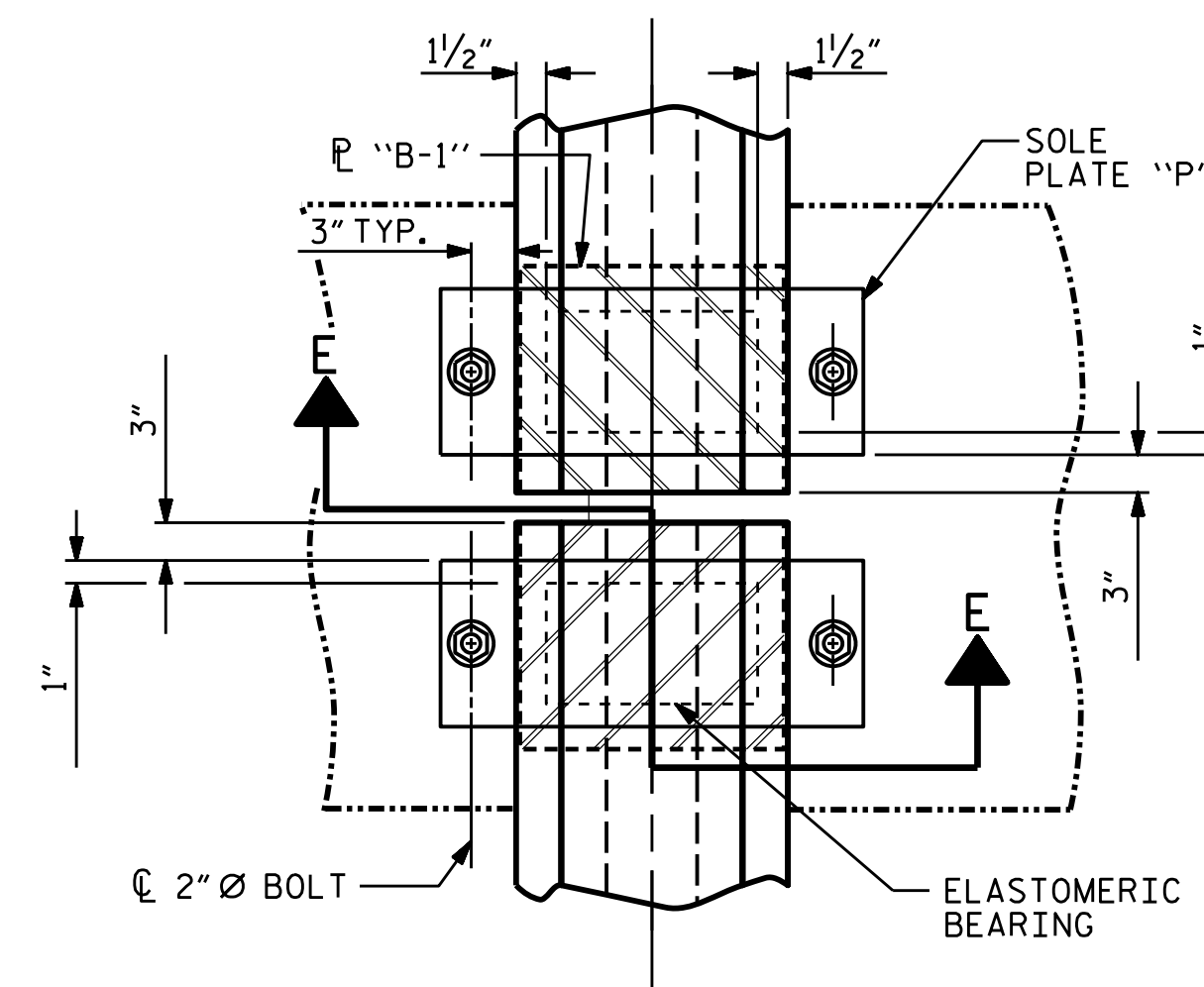
ALL SOLE PLATES SHALL BE AASHTO M270 GRADE 36.



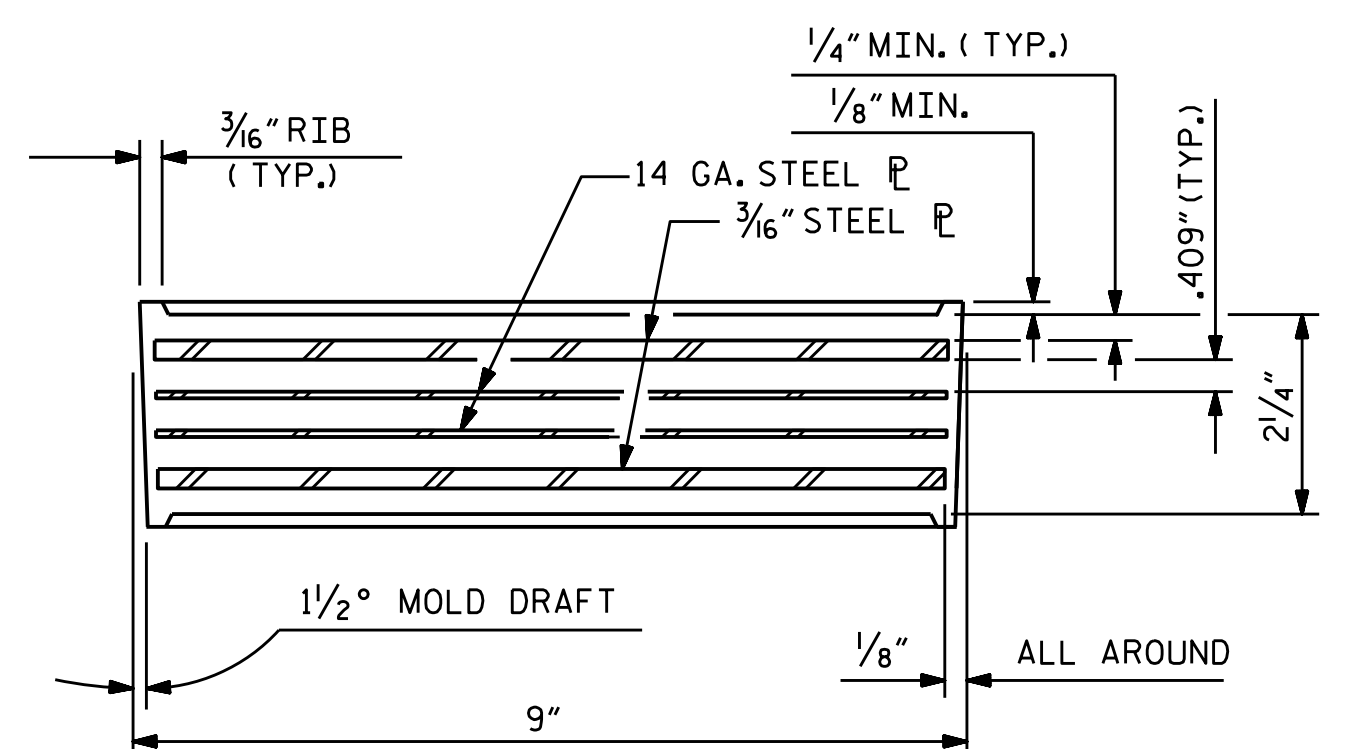
SECTION D-D
SHOWING SECTION AT INTEGRAL END BENT



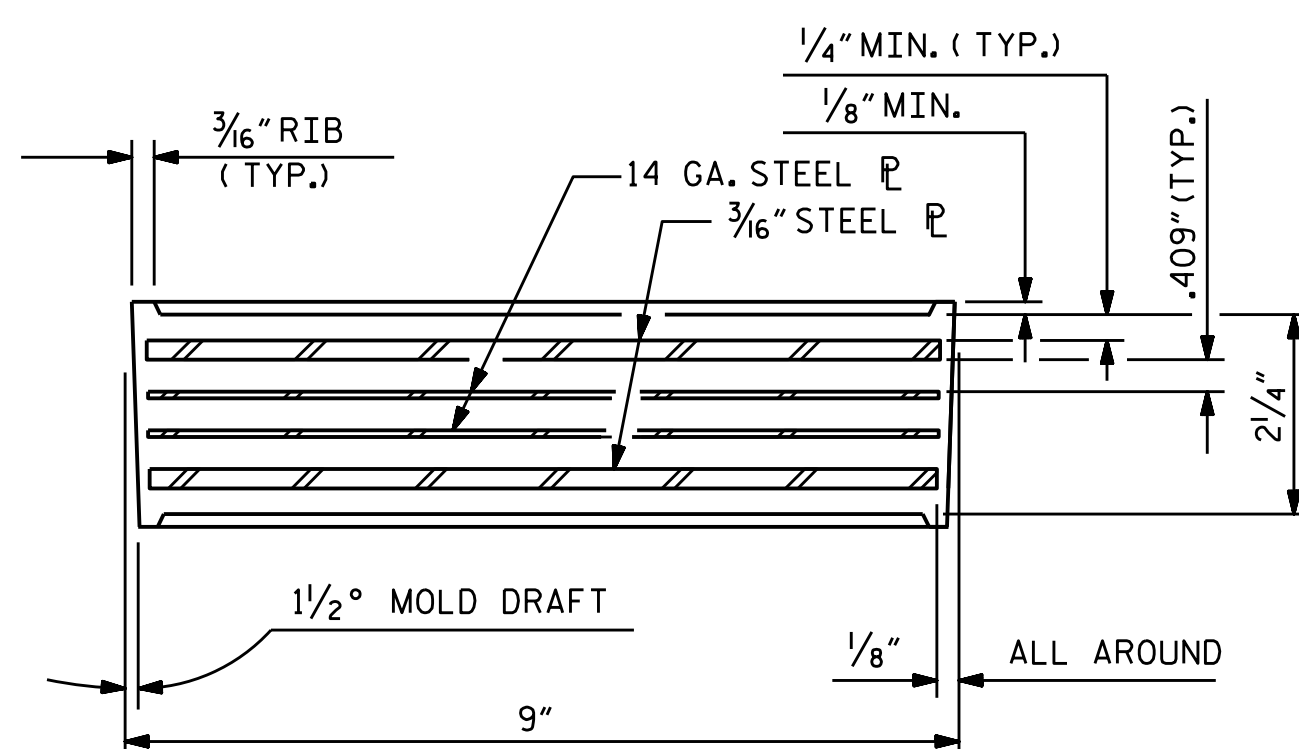
SECTION E-E
SHOWING SECTION AT BENT



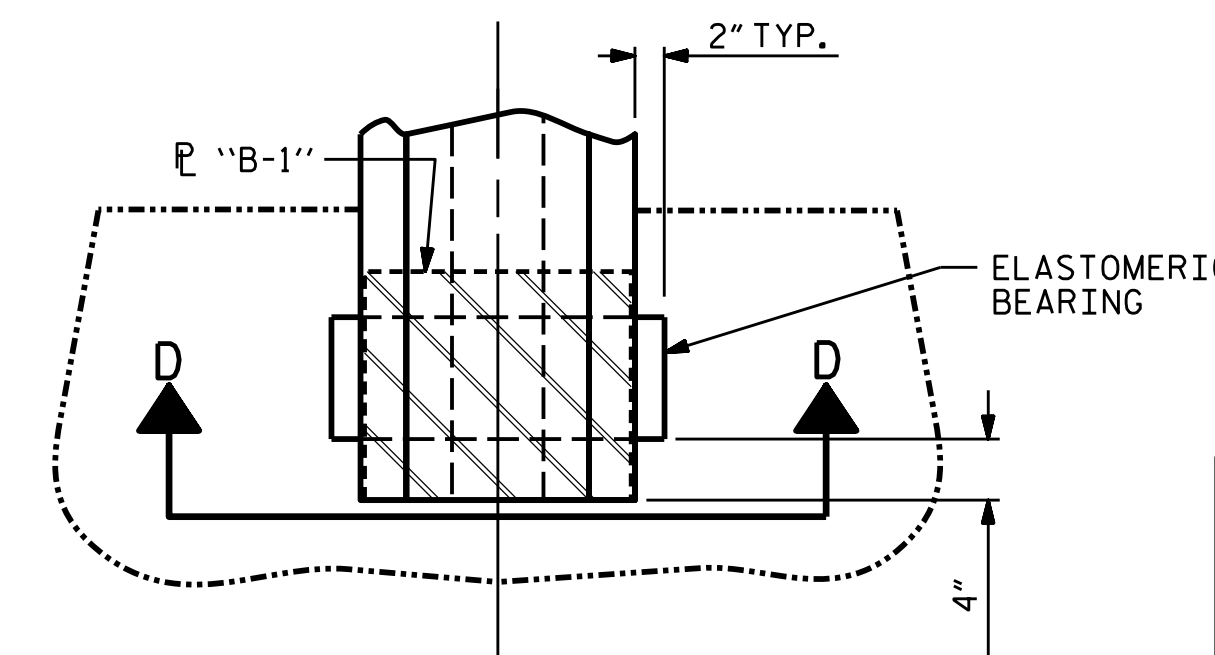
TYPICAL HALF-PLAN
(SHOWING CONTINUOUS BENT)



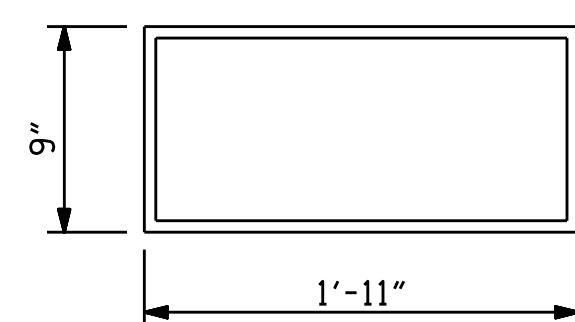
TYPICAL SECTION OF ELASTOMERIC BEARINGS



TYPICAL SECTION OF ELASTOMERIC BEARINGS



TYPICAL HALF-PLAN
(SHOWING INTEGRAL END BENT)

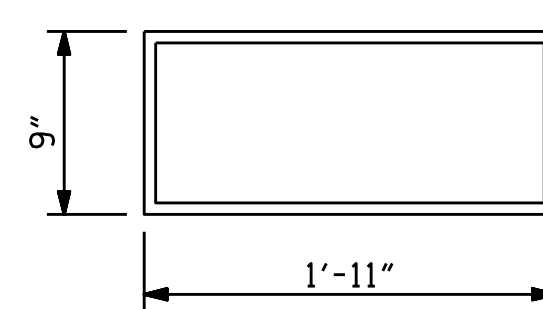


E3 (8 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING

TYPE V

(FOR INTEGRAL END BENTS ONLY)



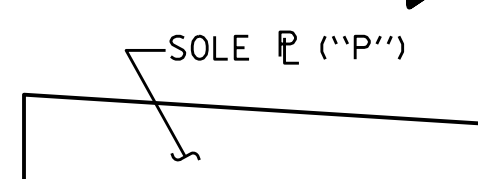
E4 (16 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING

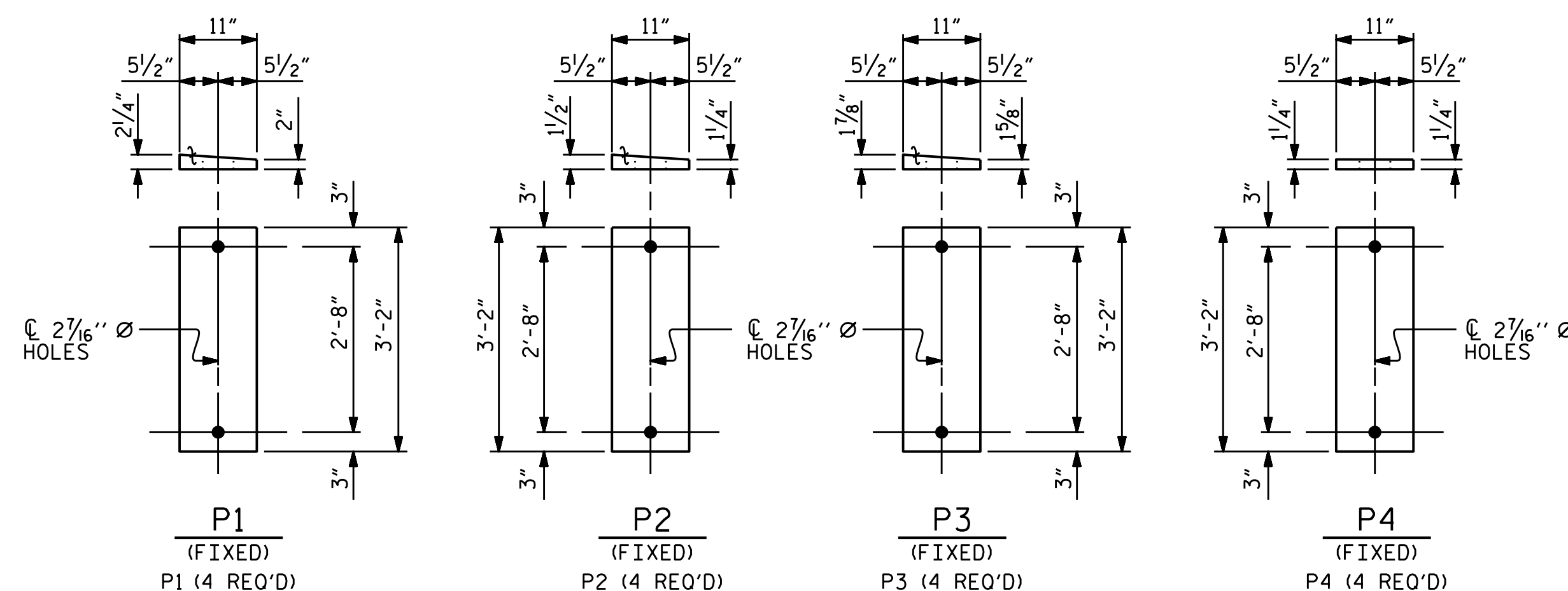
TYPE V

(FOR BENT ONLY)

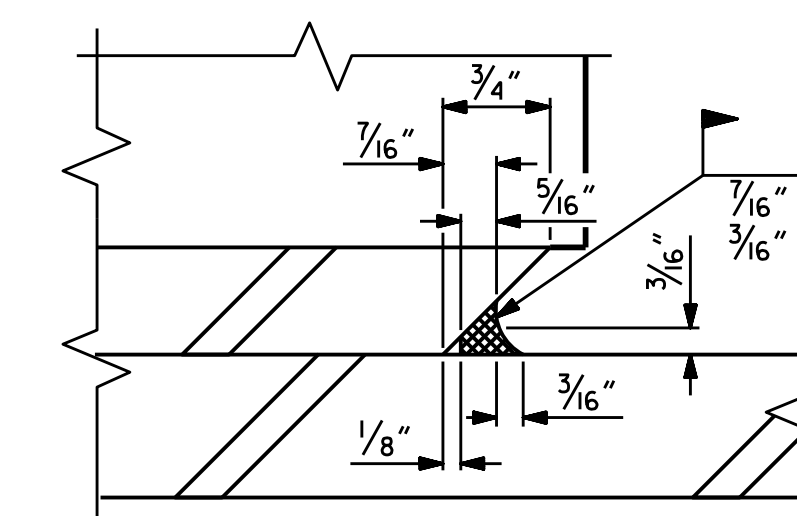
UP-STATION →



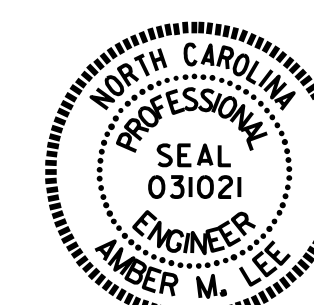
SOLE P PLACEMENT DETAIL



SOLE PLATE DETAILS ("P")



DETAIL "A"



DocuSigned by:
Amber M. Lee
03/18/2022

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

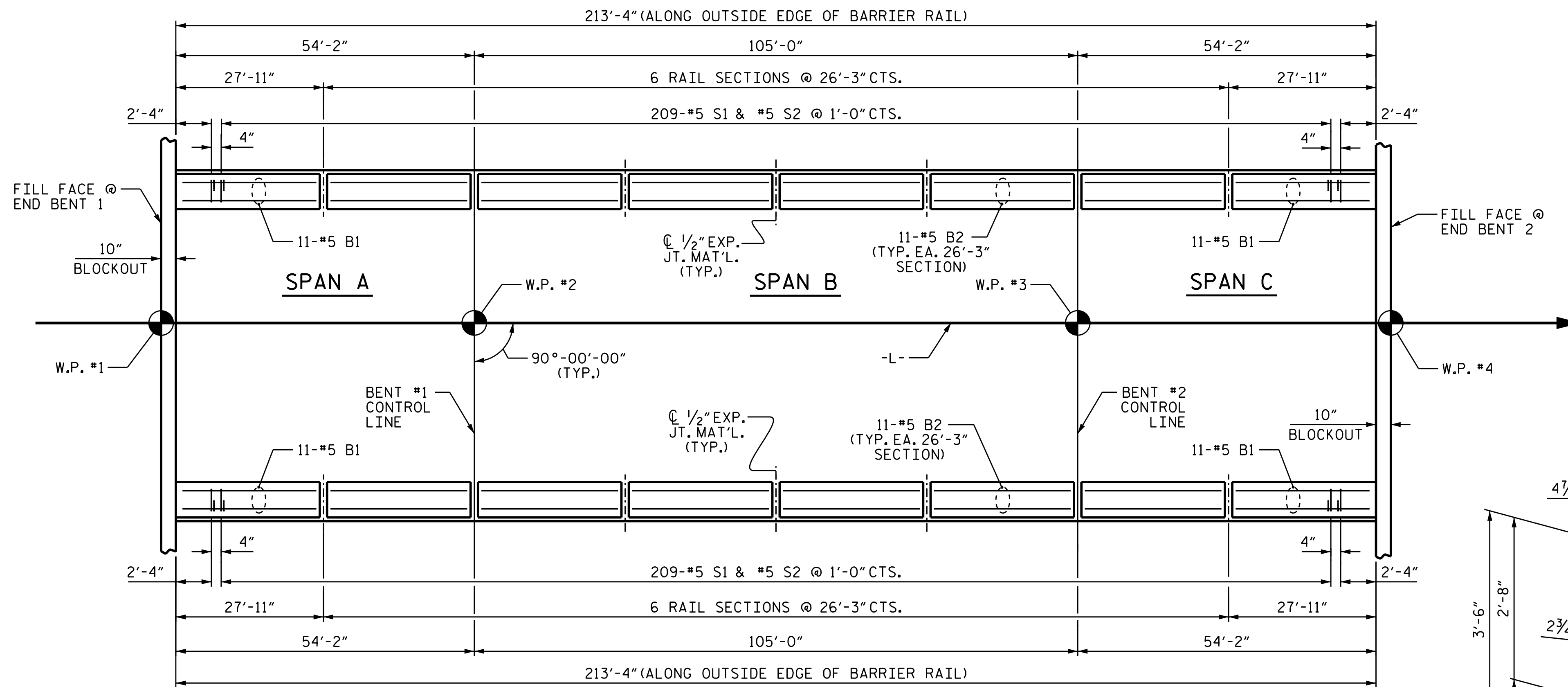
MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE V	365 k

PROJECT NO. BR-0048
SURRY COUNTY
STATION: 18+50.00 -L-

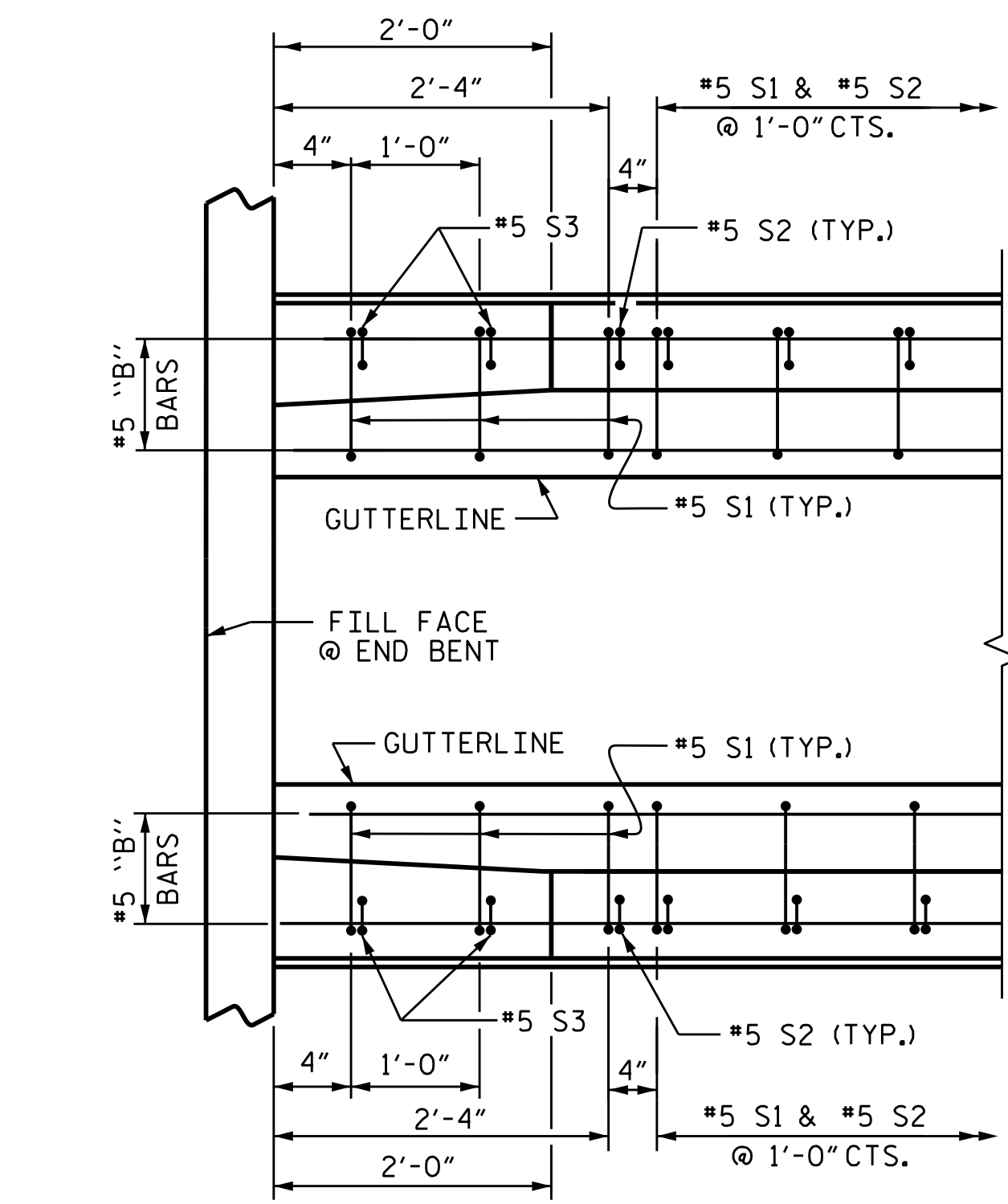
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
**ELASTOMERIC BEARING
DETAILS**
PRESTRESSED CONCRETE GIRDER
SUPERSTRUCTURE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			33

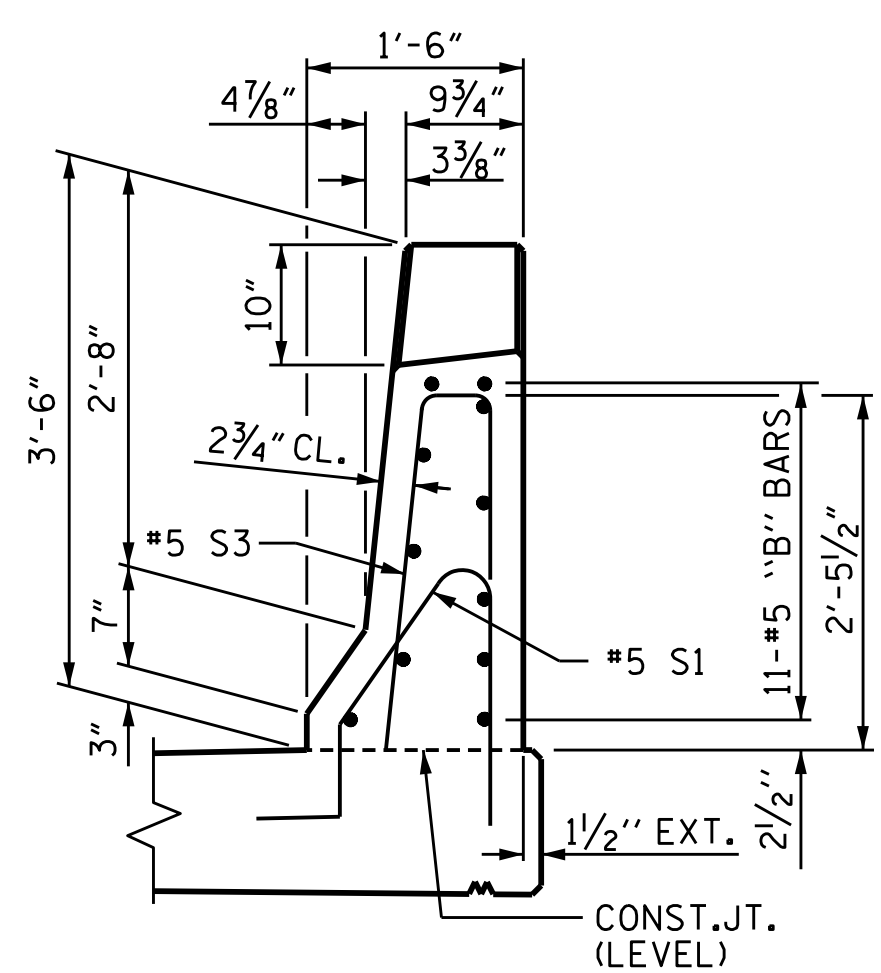
ASSEMBLED BY : M. G. SHAIKH DATE : 12/2020
CHECKED BY : J. A. TILLMAN DATE : 02/2021
DRAWN BY : EEM 2/97 REV. 6/13 AAC/MAA
CHECKED BY : VAP 2/97 REV. 1/15 MAA/TMG
REV. 12/17 MAA/THC



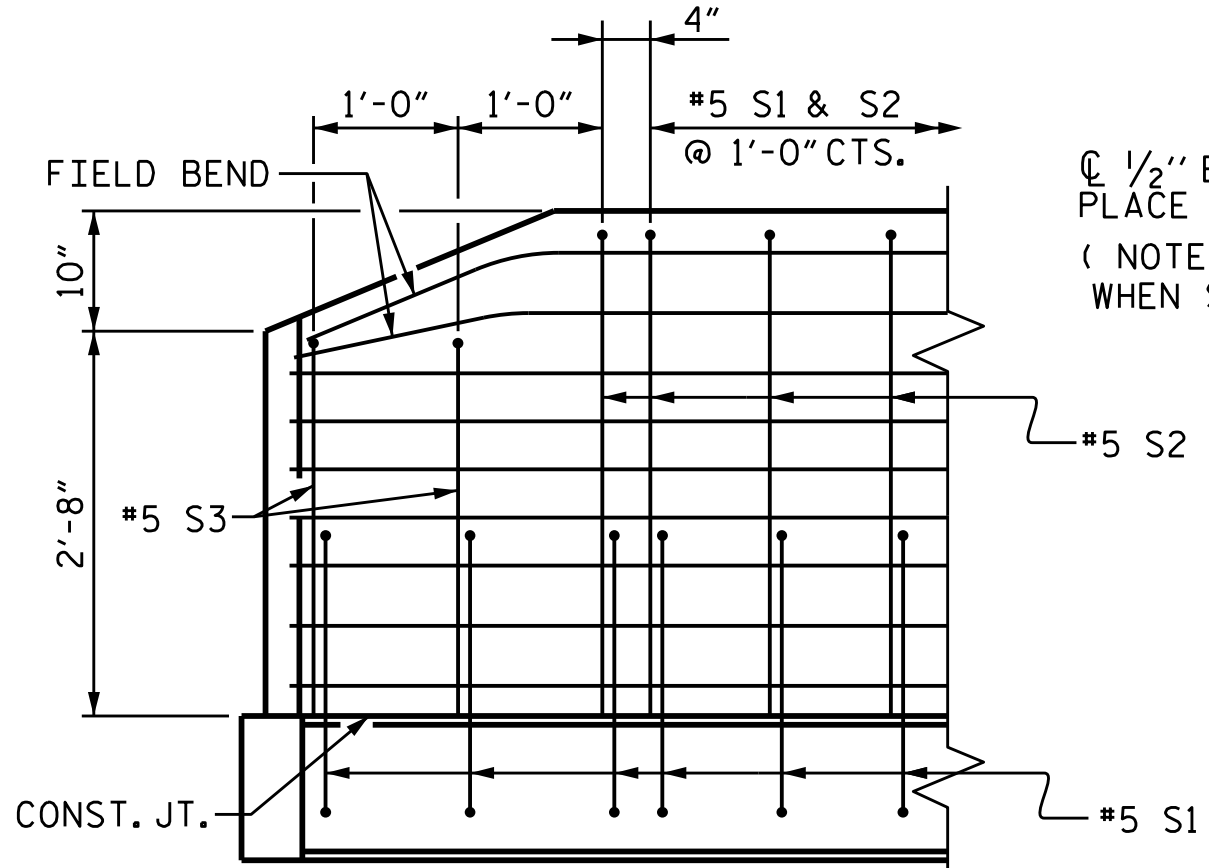
PLAN



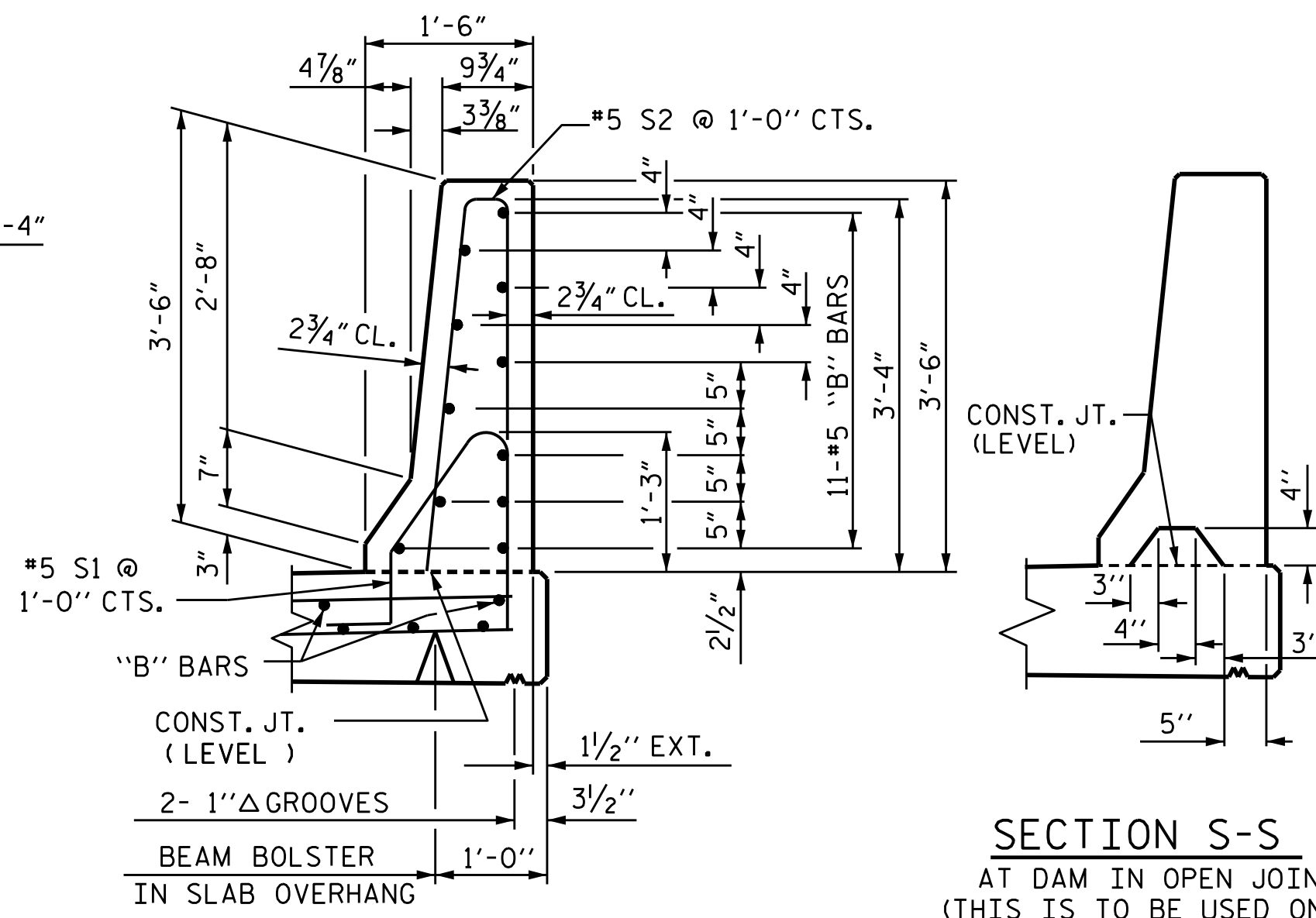
PLAN



END VIEW

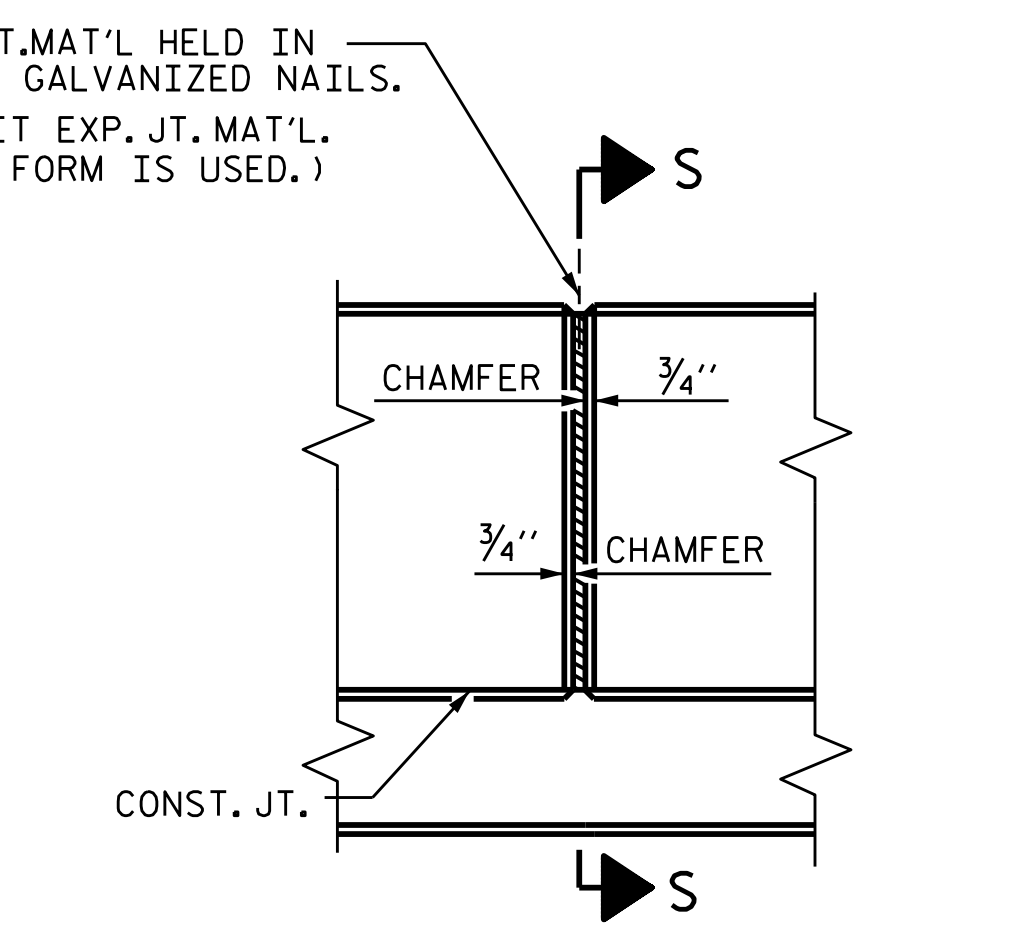


SIDE VIEW



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

SECTION THRU RAIL



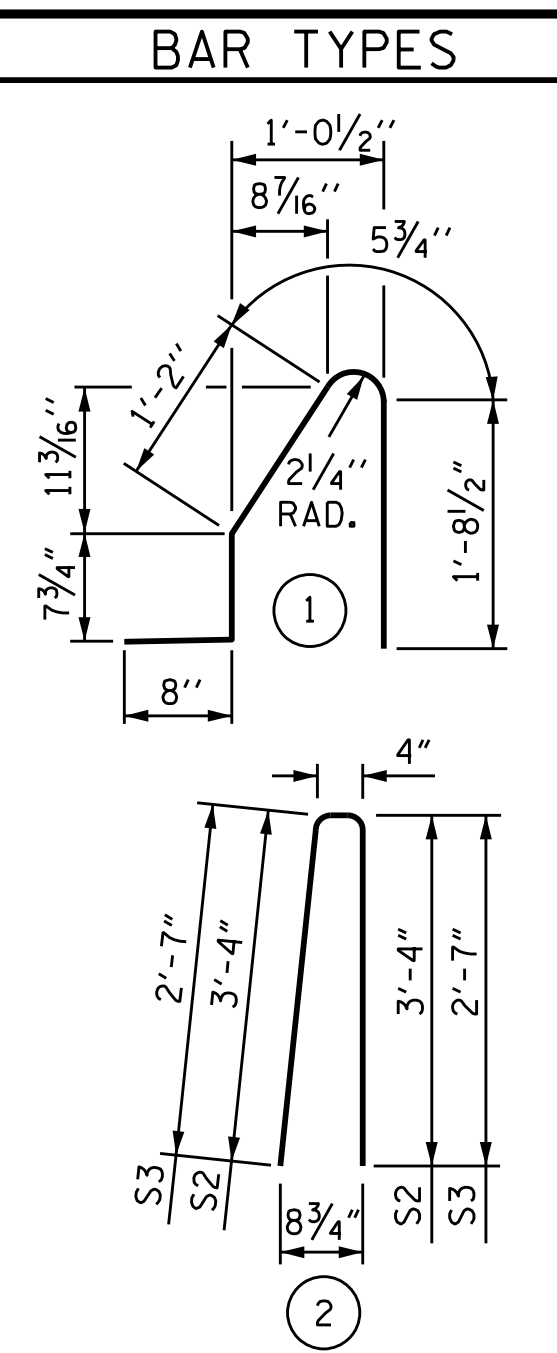
ELEVATION AT EXPANSION JOINTS
BARRIER RAIL DETAILS

NOTES

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

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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	27'-6"	1262
* B2	132	#5	STR	25'-10"	3557
* S1	430	#5	1	4'-8"	2093
* S2	422	#5	2	7'-0"	3081
* S3	8	#5	2	5'-6"	46
* EPOXY COATED REINFORCING STEEL					10,039 LBS.
CLASS AA CONCRETE					58.0 CU. YDS.
CONCRETE BARRIER RAIL					426.67 LIN. FT.

PROJECT NO. BR-0048
SURRY COUNTY
STATION: 18+50.00 -L-



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

DRAWN BY : M. G. SHAIKH DATE : 12/2020
CHECKED BY : J. A. TILLMAN DATE : 02/2021
DESIGN ENGINEER OF RECORD: E.T.C. DATE : 11/2019

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

REVISIONS						SHEET NO. S-18
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 33
2			4			

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD-DOWN PLATE AND 4 - 1/8" 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 1/8" 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.)

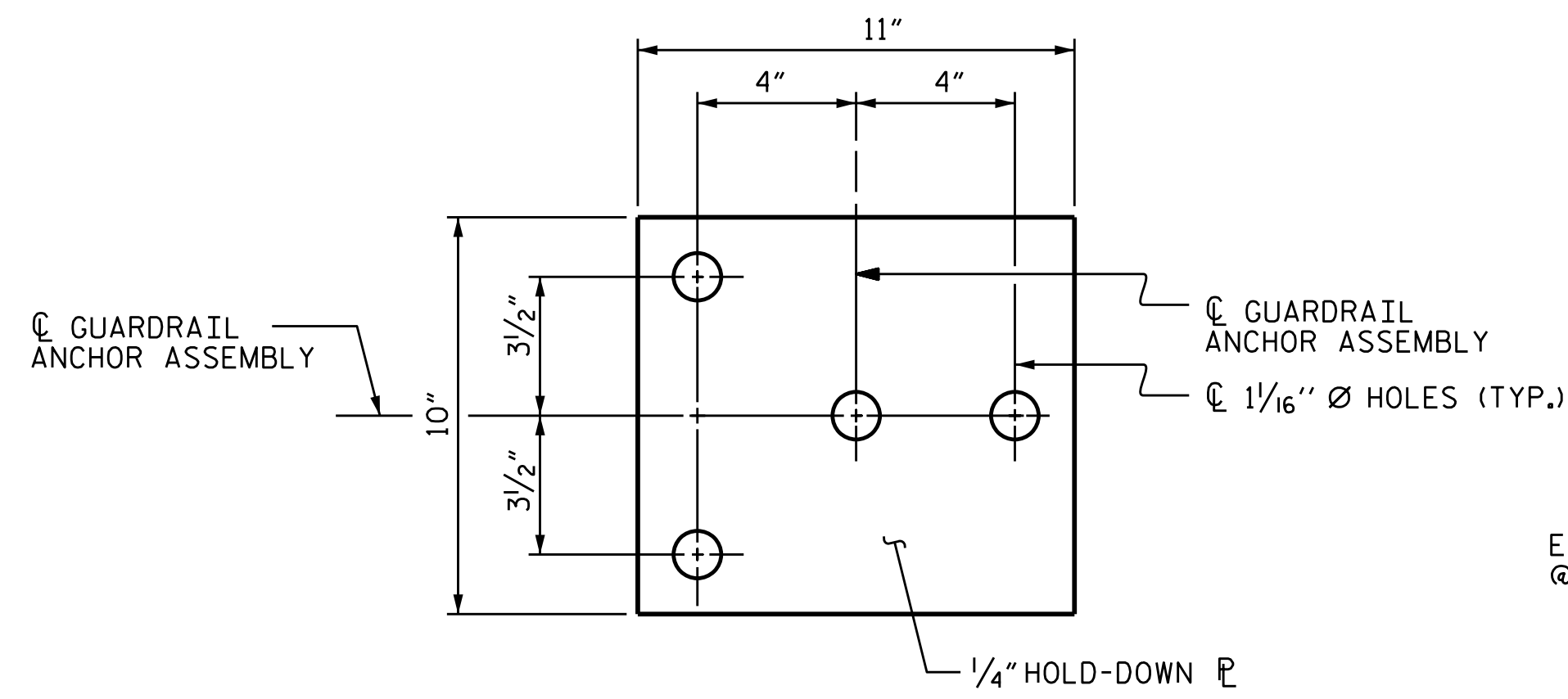
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

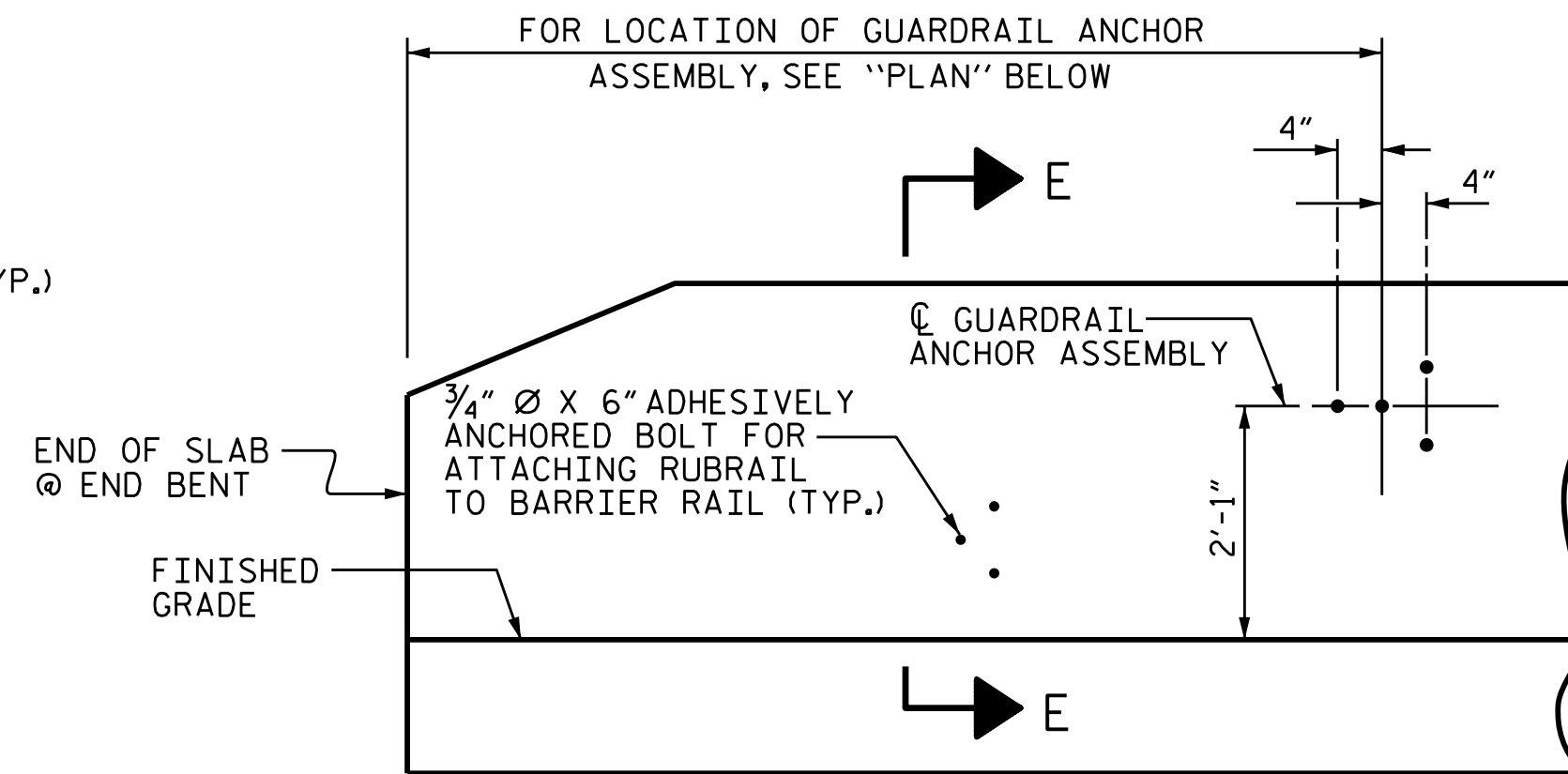
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.

THE 1 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.

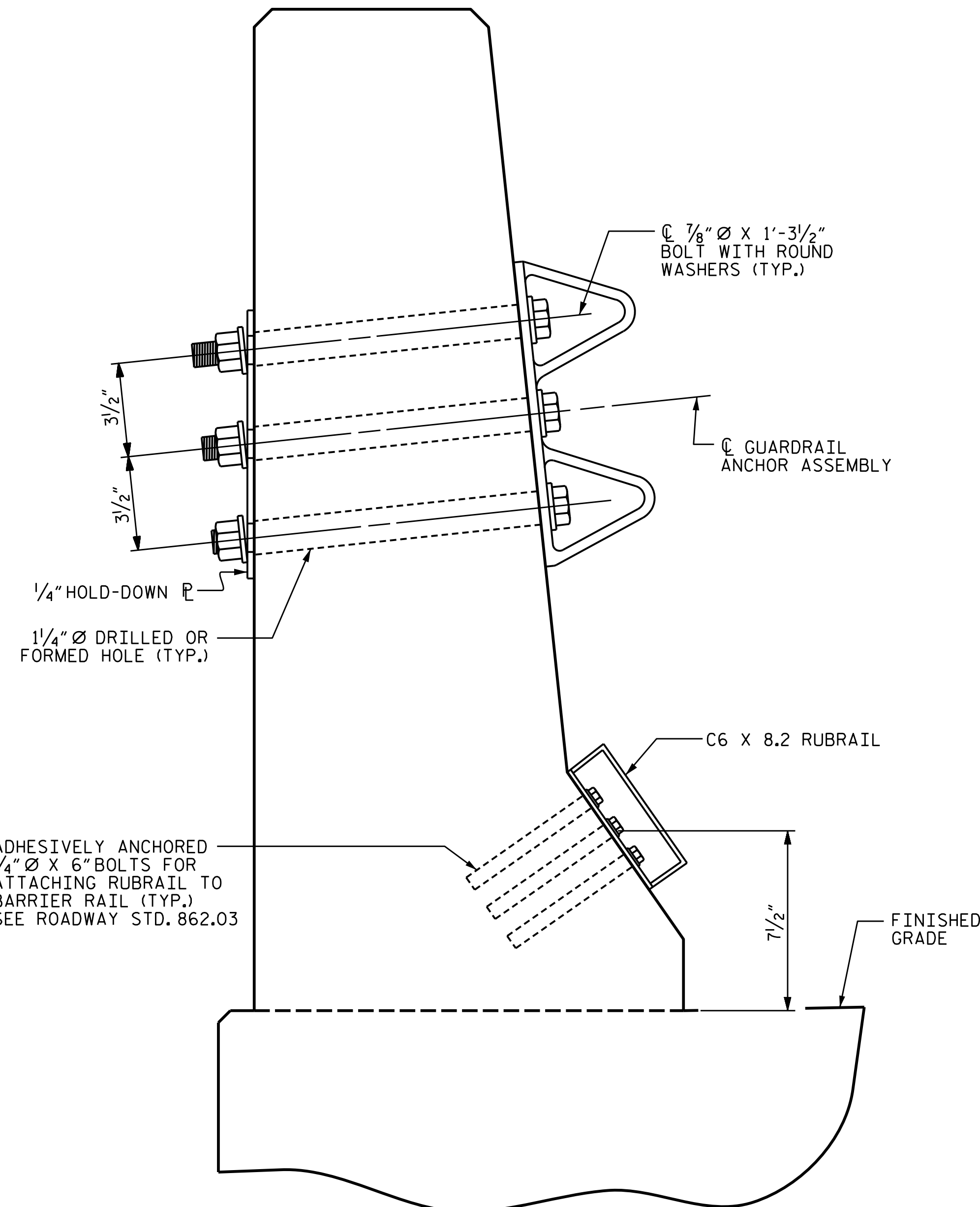
THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 3/4" Ø X 6" BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS. SEE ROADWAY STANDARD 862.03 FOR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



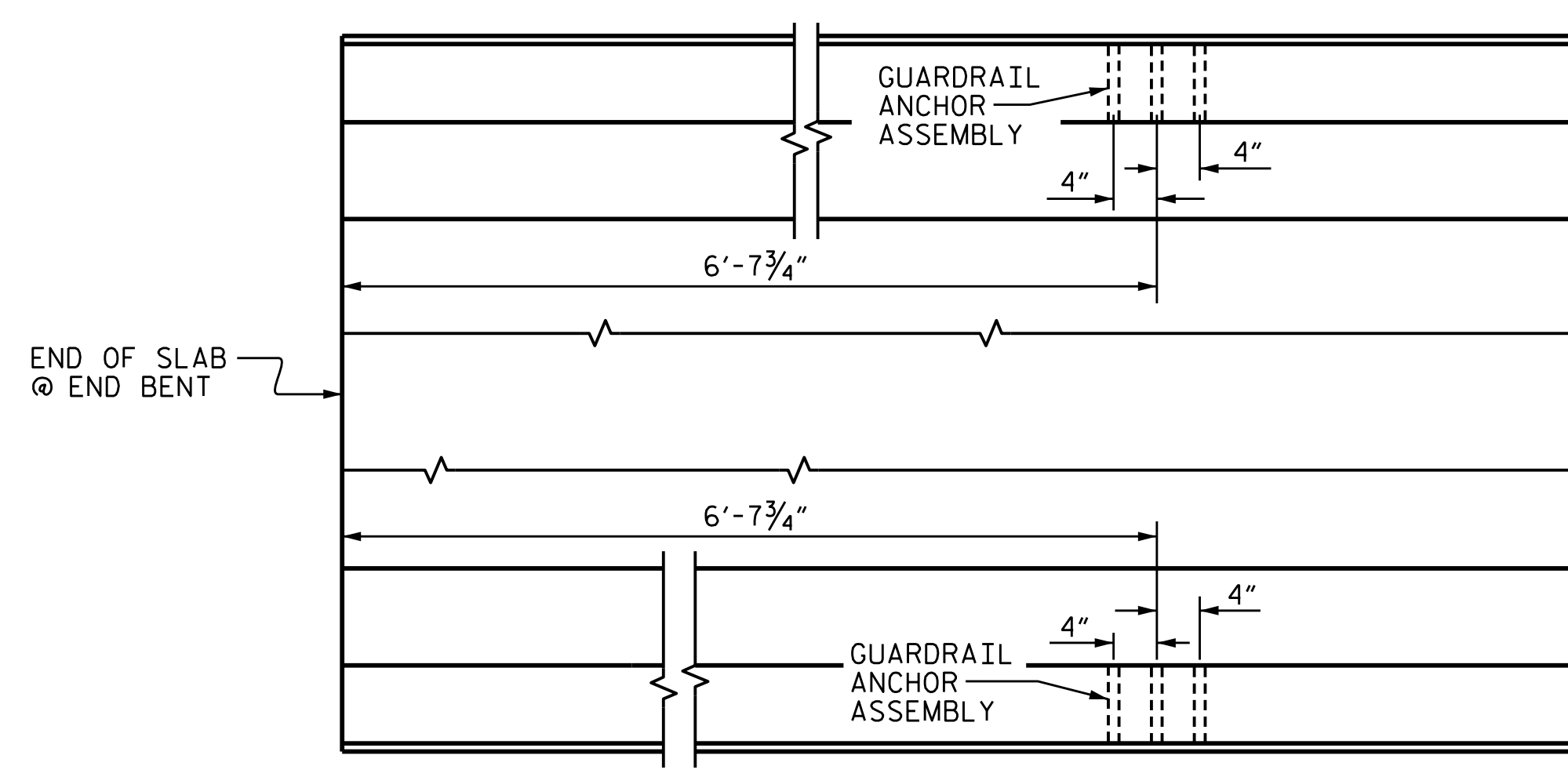
PLAN



ELEVATION



SECTION E-E
GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

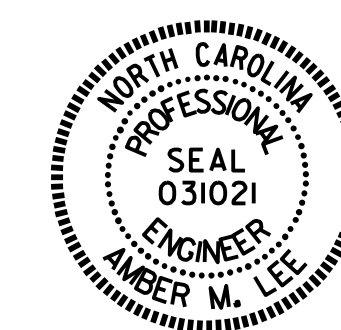
END BENT #1 SHOWN, END BENT #2 SIMILAR.



SKETCH SHOWING POINTS OF ATTACHMENTS

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. BR-0048
SURRY COUNTY
STATION: 18+50.00 -L-



DocuSigned by:
Amber M. Lee
BR085A4F2FAD484
03/18/2022

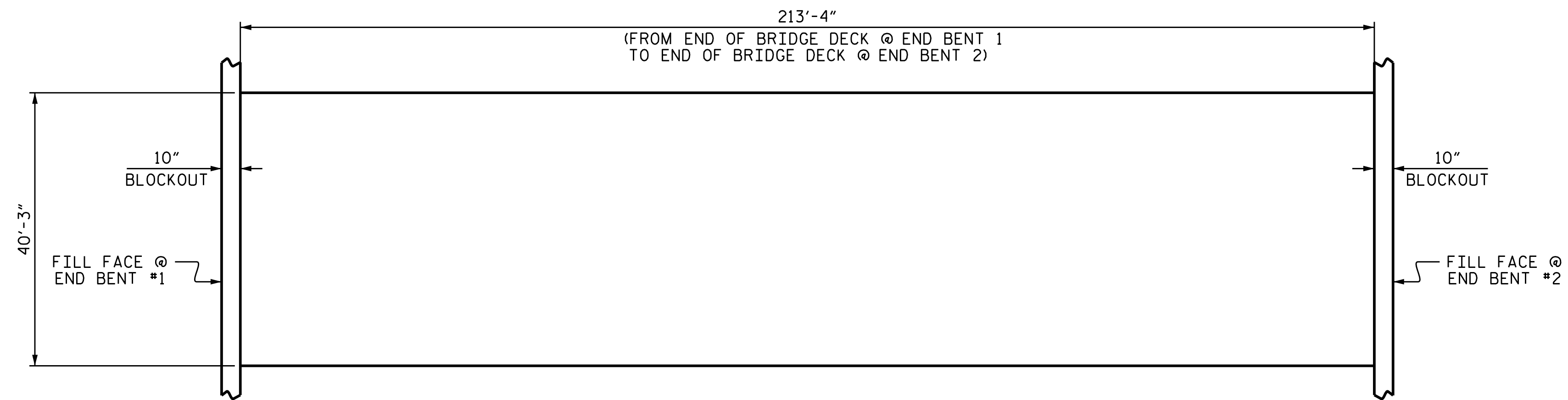
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
GUARDRAIL ANCHORAGE
FOR BARRIER RAIL

ASSEMBLED BY : M. G. SHAIKH	DATE : 12/2020
CHECKED BY : J. A. TILLMAN	DATE : 02/2021
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

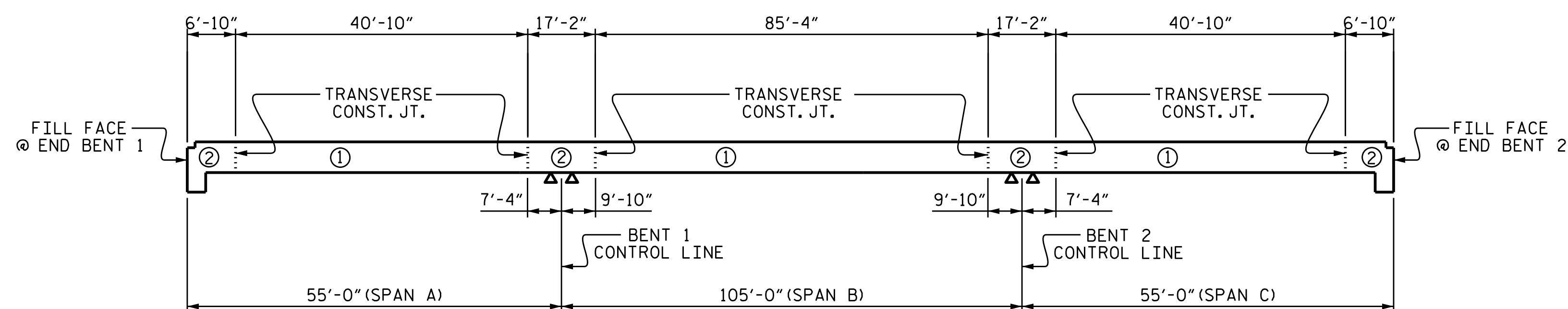
3/17/2022
RA Structures\FINAL PLANS OBD\400.039.BR-0048.SMU.GR.0019.850103.dgn
omlee

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

REVISIONS						SHEET NO. S-19
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			33



LAYOUT FOR COMPUTING AREA
REINFORCED CONCRETE DECK SLAB
(SQ. FT. = 8587)



POUR SEQUENCE

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

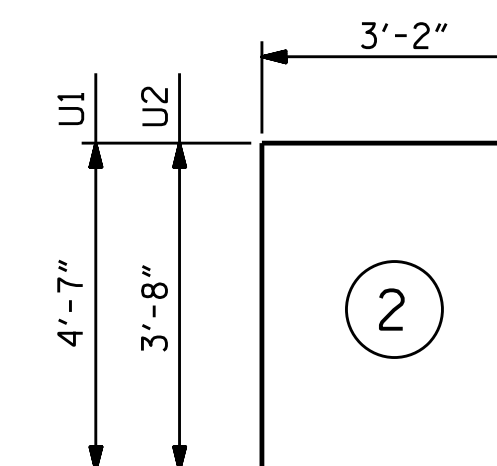
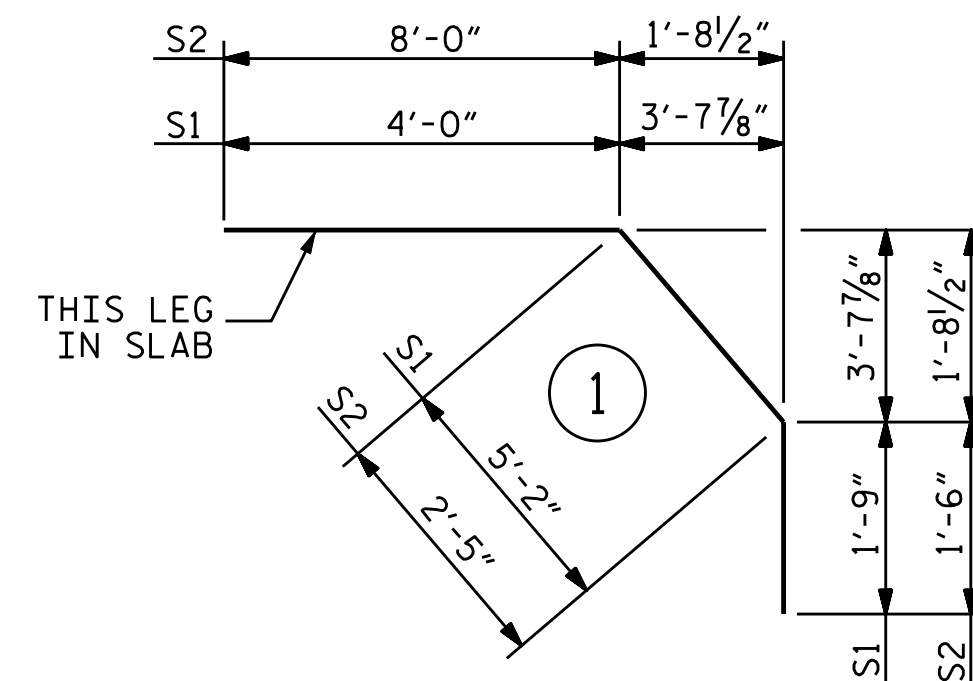
BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	366	#5	STR	39'-11"	15,238
A2	366	#5	STR	39'-11"	15,238
* B1	214	#5	STR	11'-0"	2455
* B2	54	#4	STR	26'-7"	959
* B3	108	#5	STR	57'-9"	6505
* B4	106	#5	STR	14'-0"	1548
* B5	27	#4	STR	36'-10"	664
B6	132	#5	STR	54'-9"	7538
B7	76	#5	STR	13'-2"	1044
K1	12	#4	STR	39'-11"	320
K2	4	#4	STR	2'-10"	8
K3	16	#4	STR	3'-7"	38
K4	4	#4	STR	2'-1"	6
K5	6	#4	STR	8'-2"	33
K6	24	#4	STR	9'-8"	155
K7	6	#4	STR	6'-8"	27
* S1	50	#4	1	10'-11"	365
* S2	50	#4	1	11'-11"	398
U1	50	#4	2	12'-4"	412
U2	16	#4	2	10'-6"	112

REINFORCING STEEL 24,931 LBS.

* EPOXY COATED REINF. STEEL 28,132 LBS.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

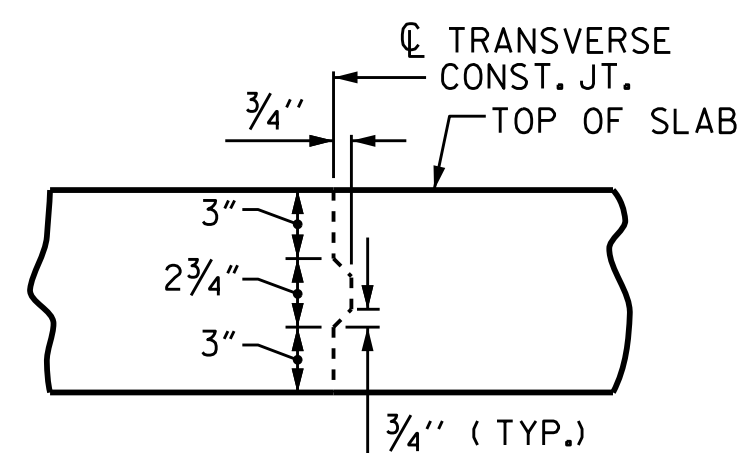
SUPERSTRUCTURE BILL OF MATERIAL

	CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	(CU. YDS.)	(LBS.)	(LBS.)
POUR #1	236.2	24,931	28,132
POUR #2	118.9		
TOTALS **	355.1	24,931	28,132

** QUANTITIES FOR BARRIER RAIL IS NOT INCLUDED

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"			



TRANSVERSE CONSTRUCTION JOINT DETAIL

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

GROOVING BRIDGE FLOORS

APPROACH SLABS	975 SQ.FT.
BRIDGE DECK	7242 SQ.FT.
TOTAL	8217 SQ.FT.

PROJECT NO. BR-0048
SURRY COUNTY
STATION: 18+50.00 -L-



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
BILL OF MATERIAL

ASSEMBLED BY : M. G. SHAIKH DATE : 12/2020
CHECKED BY : J. A. TILLMAN DATE : 02/2021
DRAWN BY : JMB 5/87 EEM/GRP
CHECKED BY : SJD 9/87 REV. 8/16/99 RWW/LES
REV. 5/1/06 TLA/GM

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS
2			4			33

NOTES:

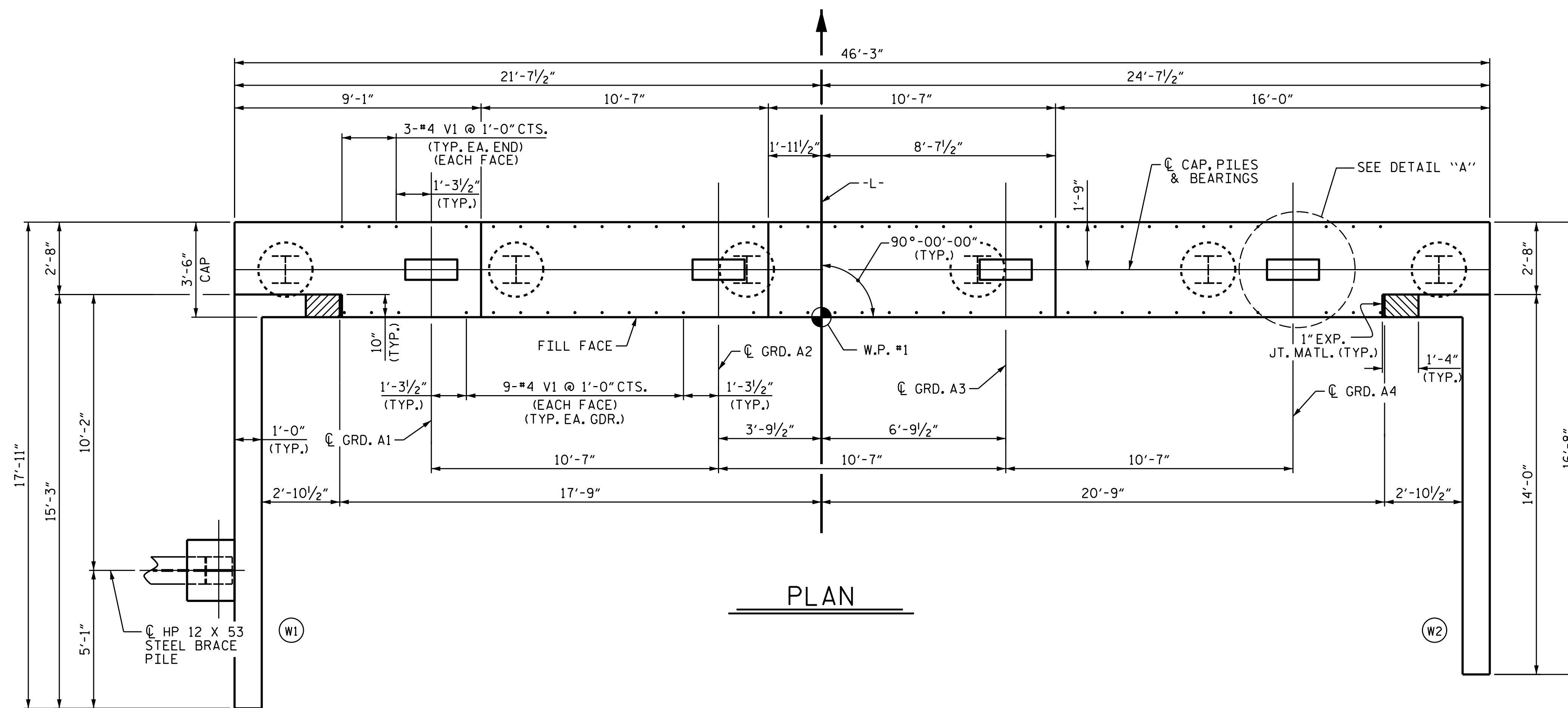
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #4 V1 BARS.

THE TOP PART OF THE END BENT CAP, EXCEPT THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4".

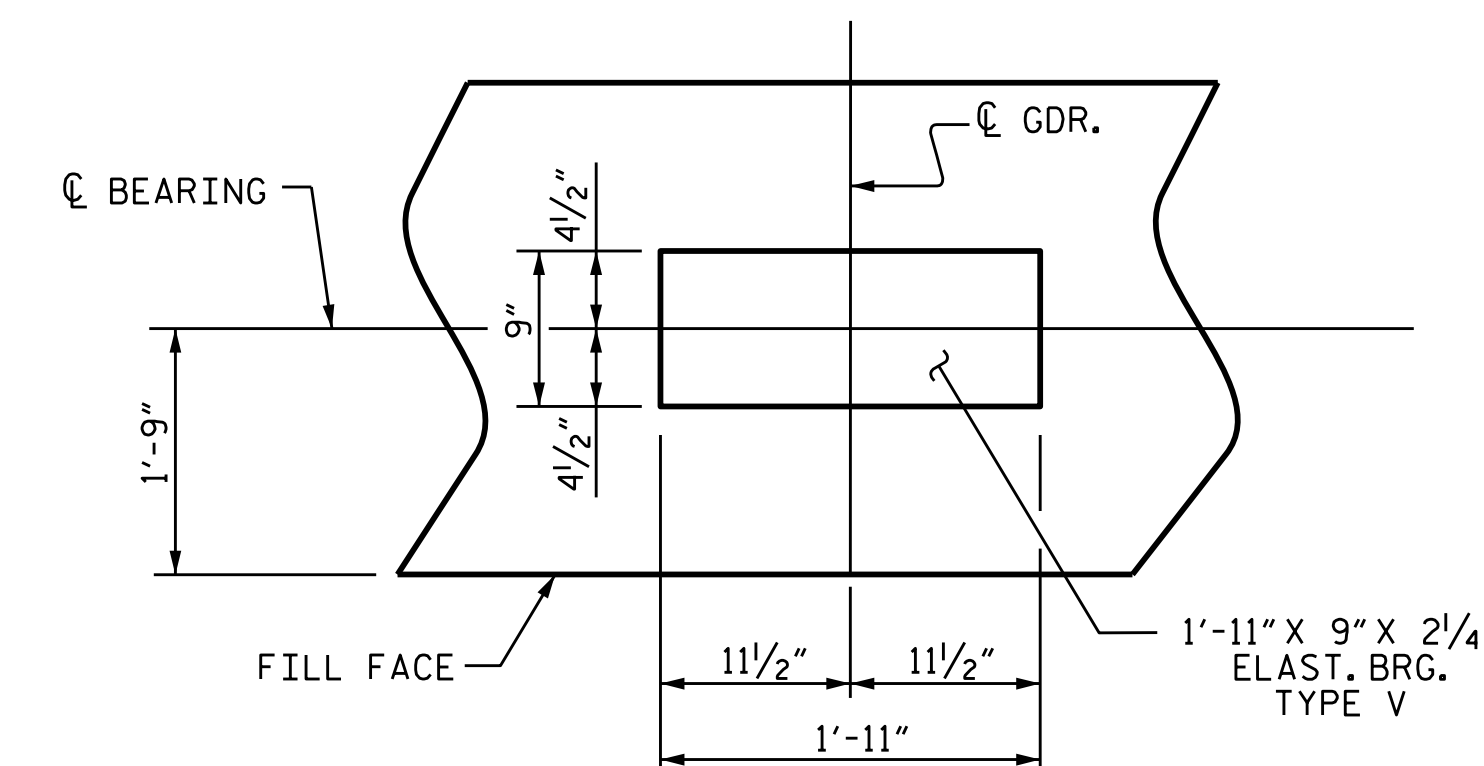
THE CONTRACTOR SHALL BE RESPONSIBLE FOR TEMPORARY DRAINAGE AND EROSION CONTROL AT THE END BENT.

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

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

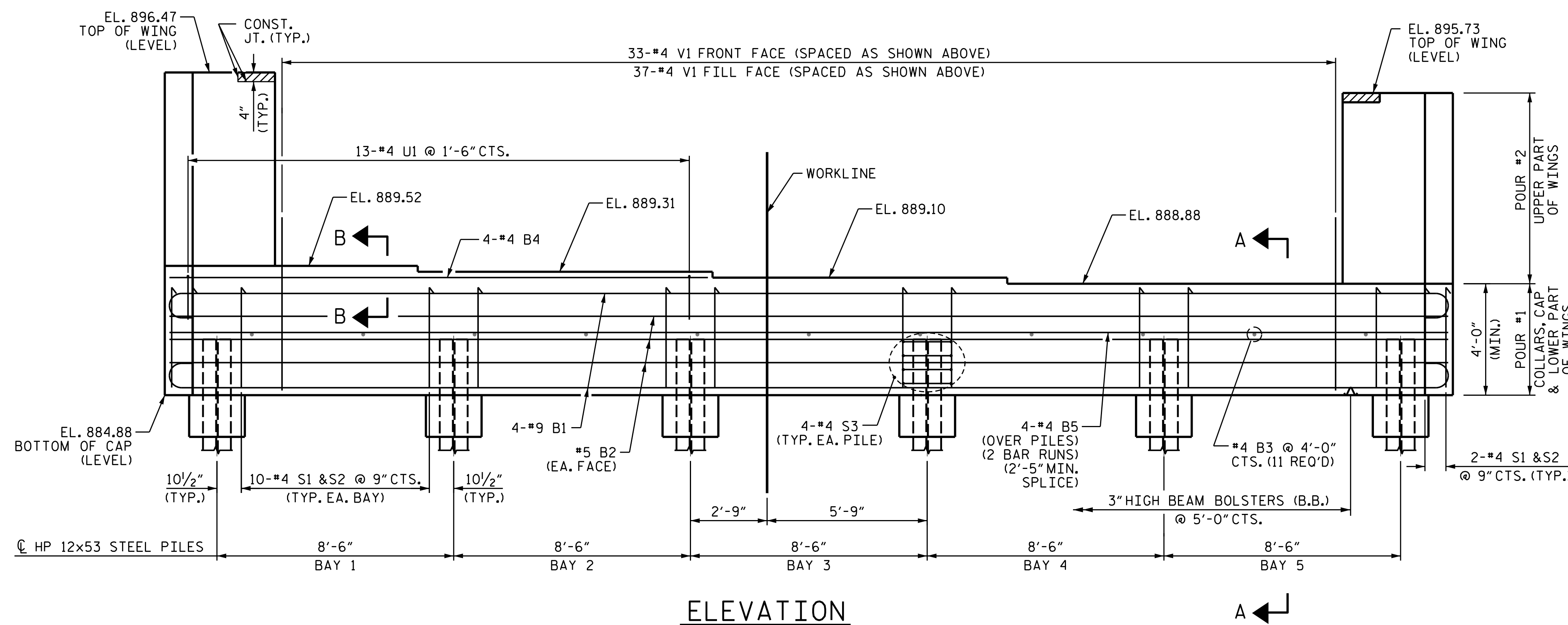


PLAN



DETAIL "A"

(TYP. EA. GDR.)



ELEVATION

POUR #2 UPPER PART OF WINGS
POUR #1 COLLARS, CAP & LOWER PART OF WINGS (MIN.)

PROJECT NO. BR-0048
SURREY COUNTY
STATION: 18+50.00 -L-

SHEET 1 OF 3



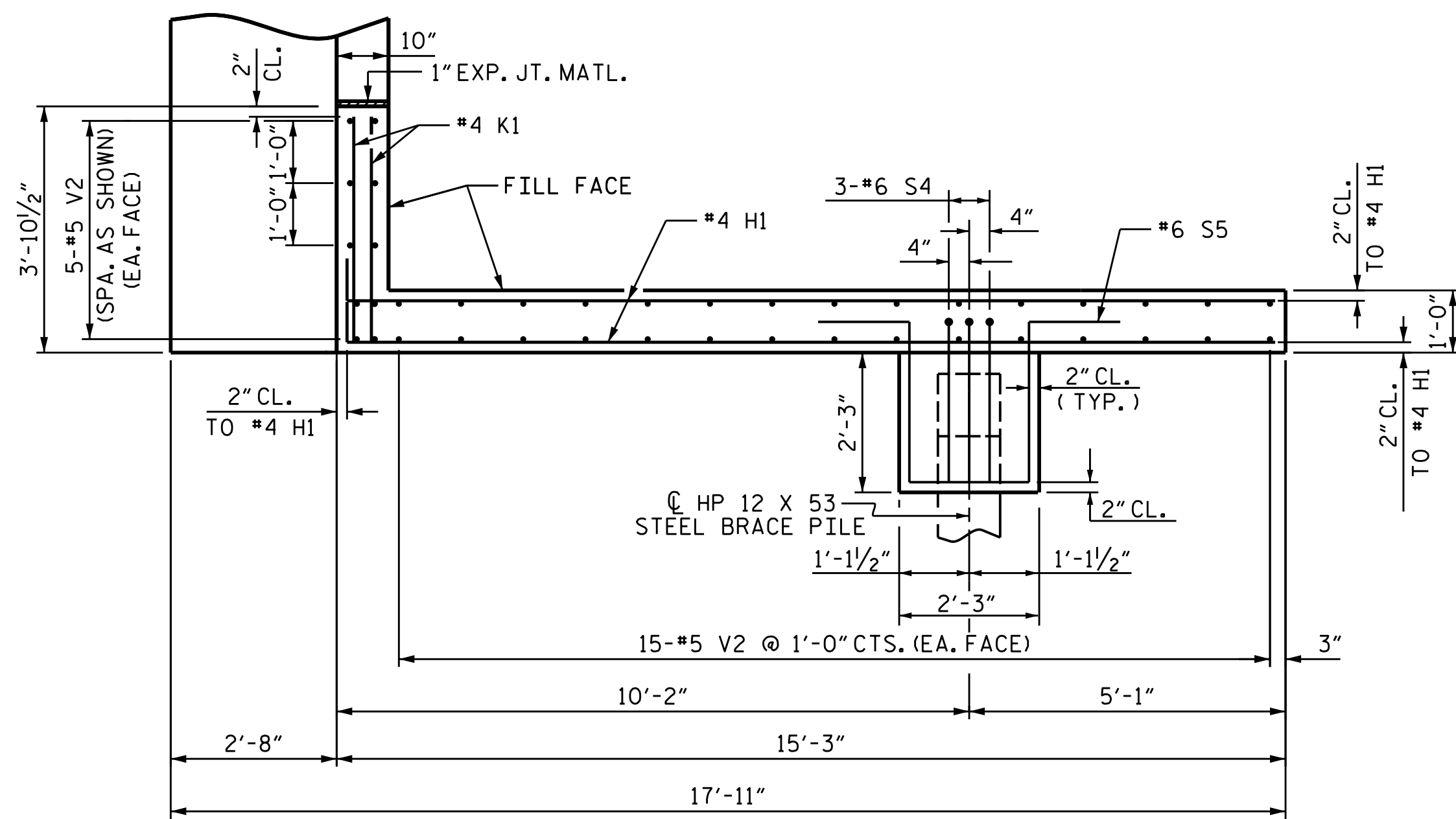
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
INTEGRAL
END BENT 1

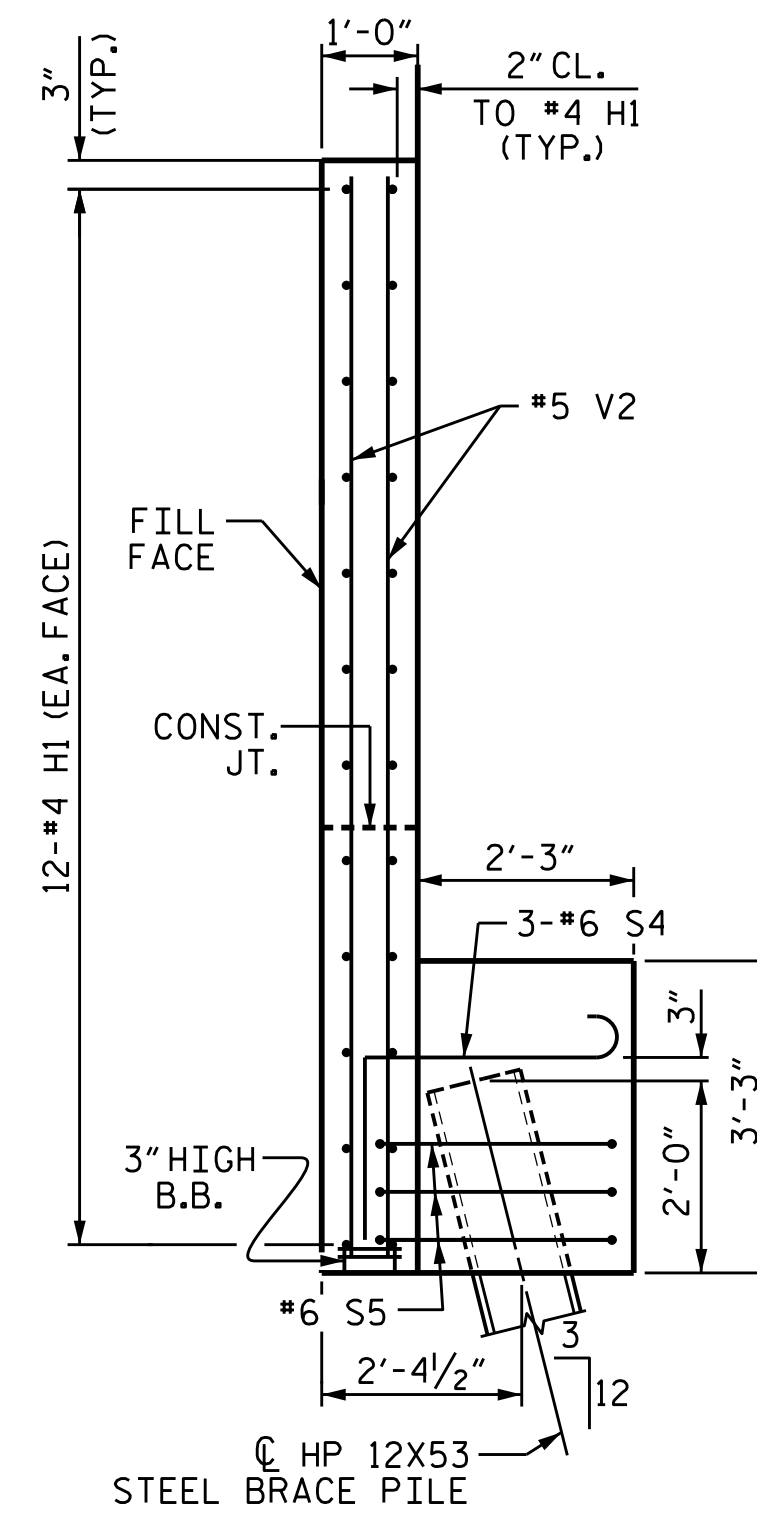
DRAWN BY : M. G. SHAIKH DATE : 09/2020
CHECKED BY : K. PUROHIT DATE : 02/2021
DESIGN ENGINEER OF RECORD: J. A. I. DATE : 07/2020

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

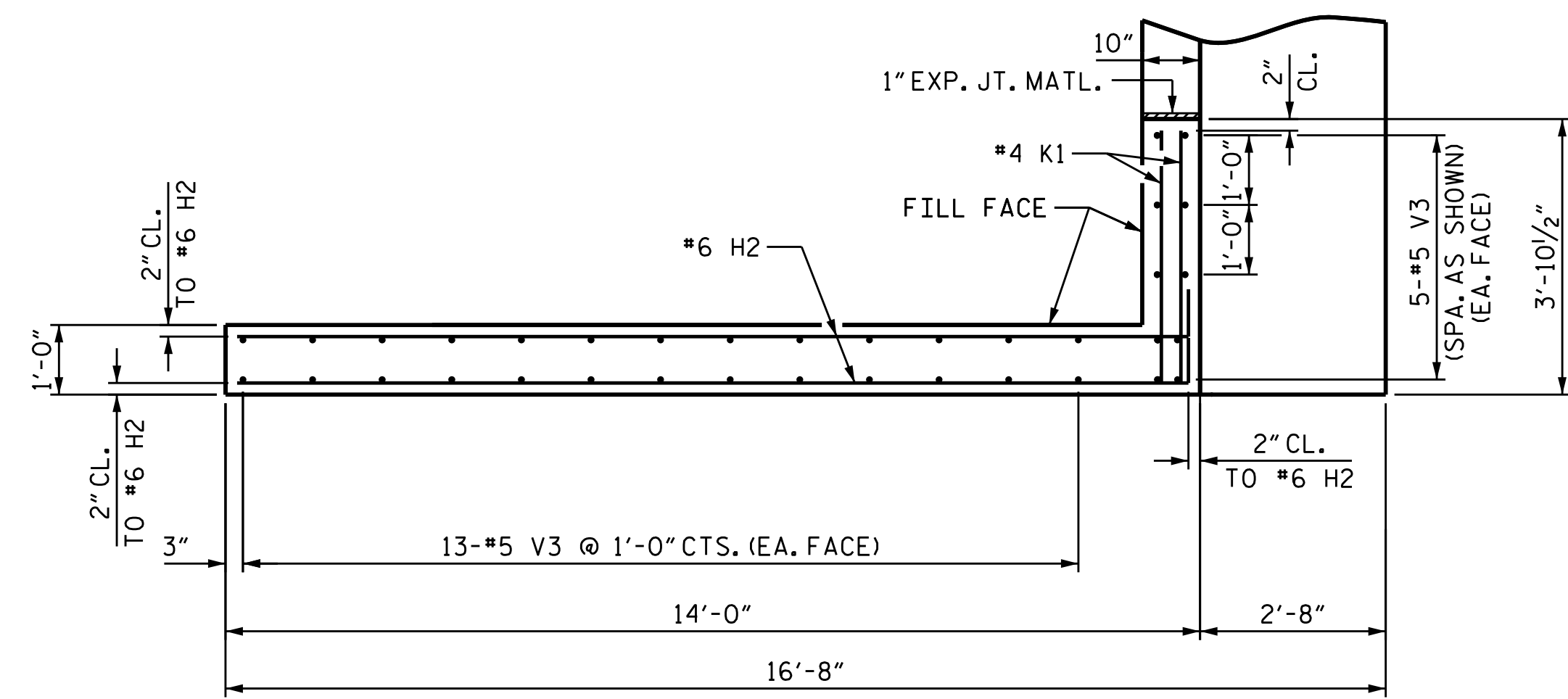
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS
2			4			33



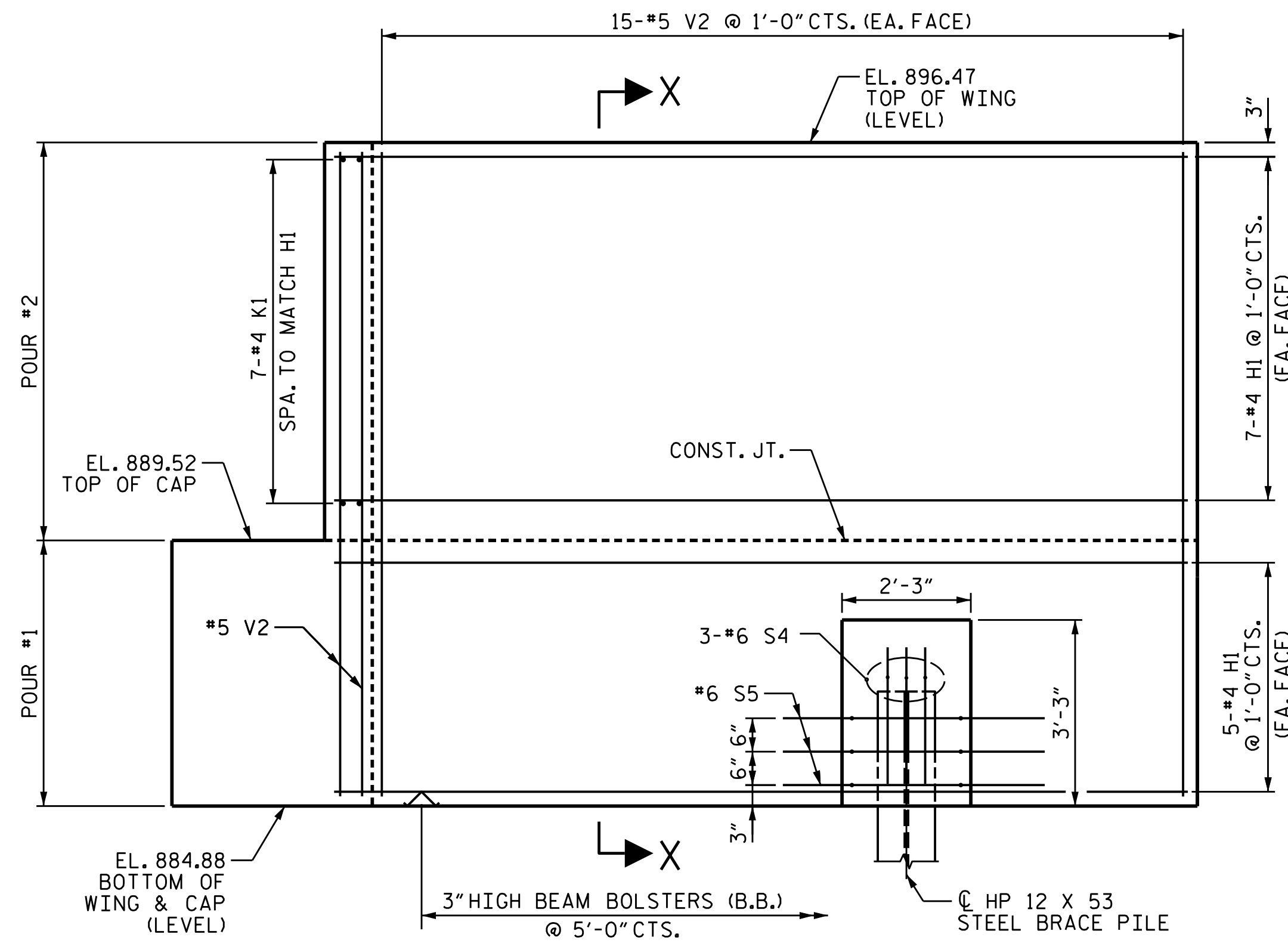
PLAN OF LEFT WING - W1



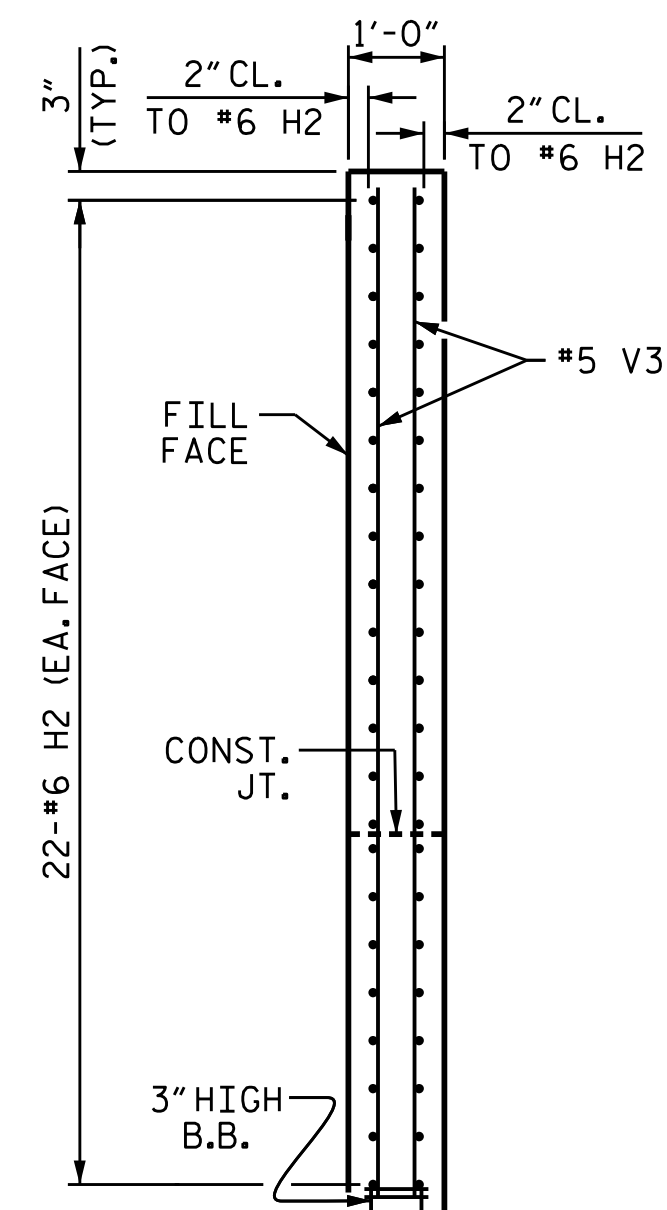
SECTION X-X



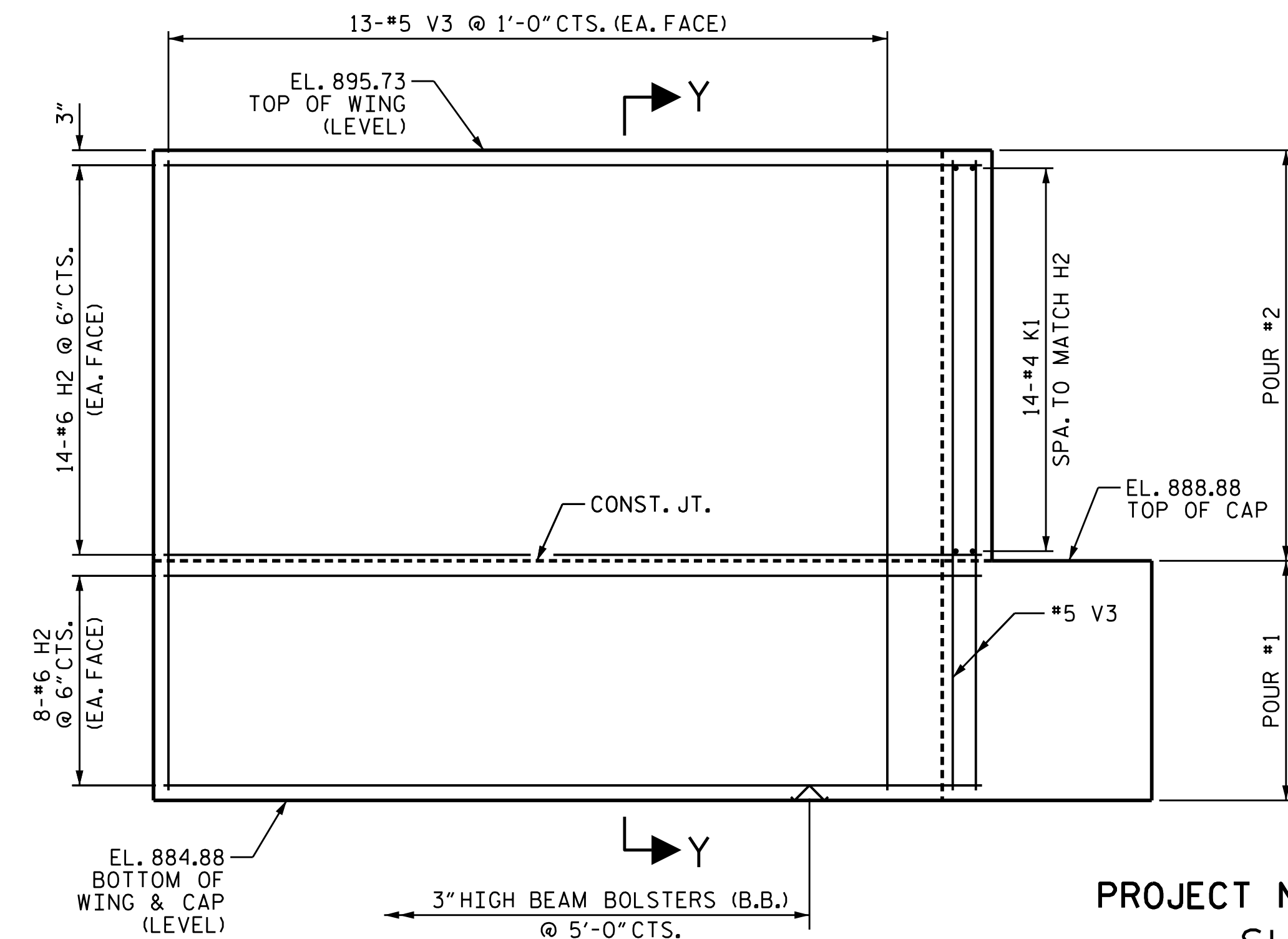
PLAN OF RIGHT WING - W2



ELEVATION OF LEFT WING - W1



SECTION Y-Y



ELEVATION OF RIGHT WING - W2

PROJECT NO. BR-0048
 SURRY COUNTY
 STATION: 18+50.00 -L-

SHEET 2 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

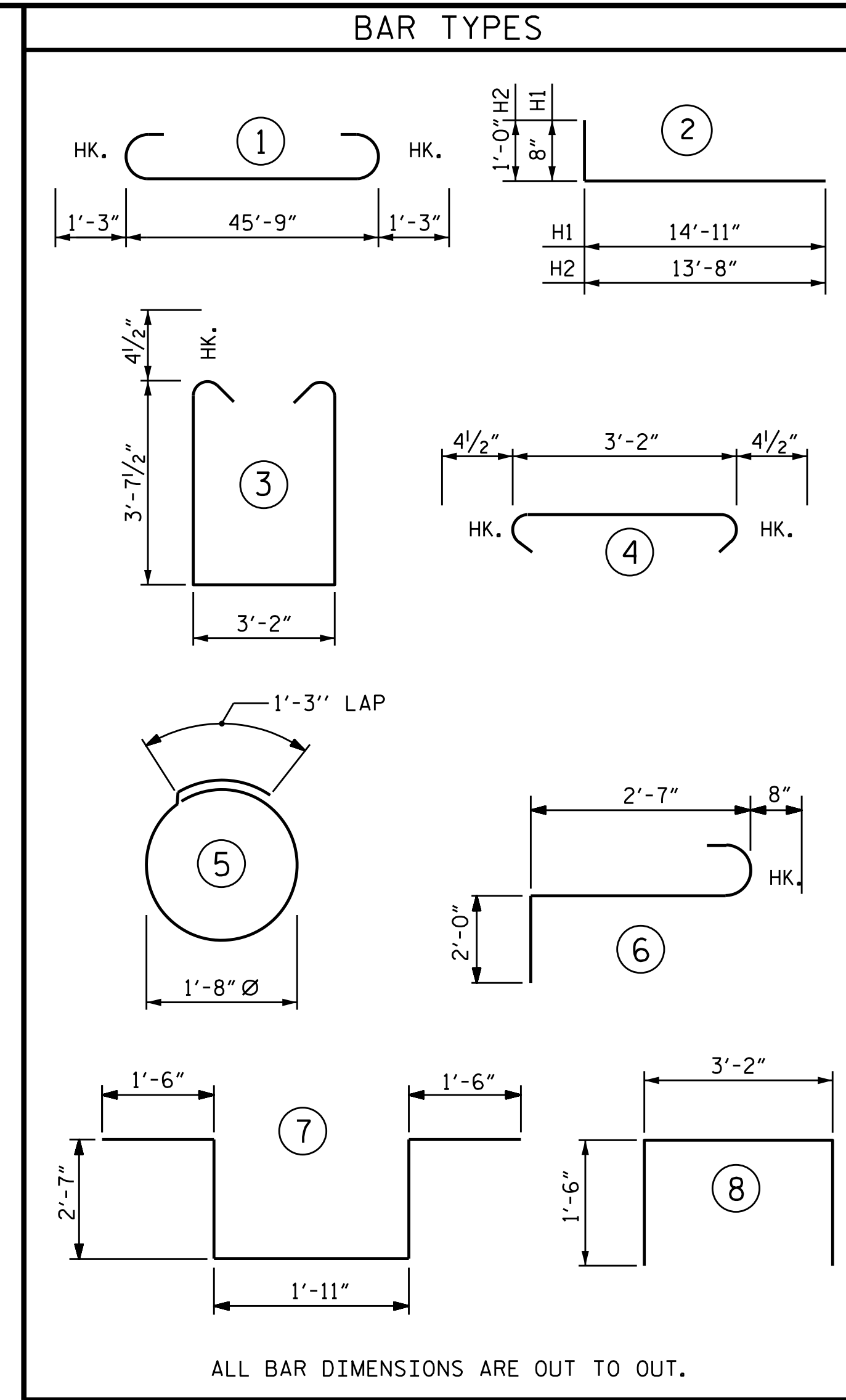
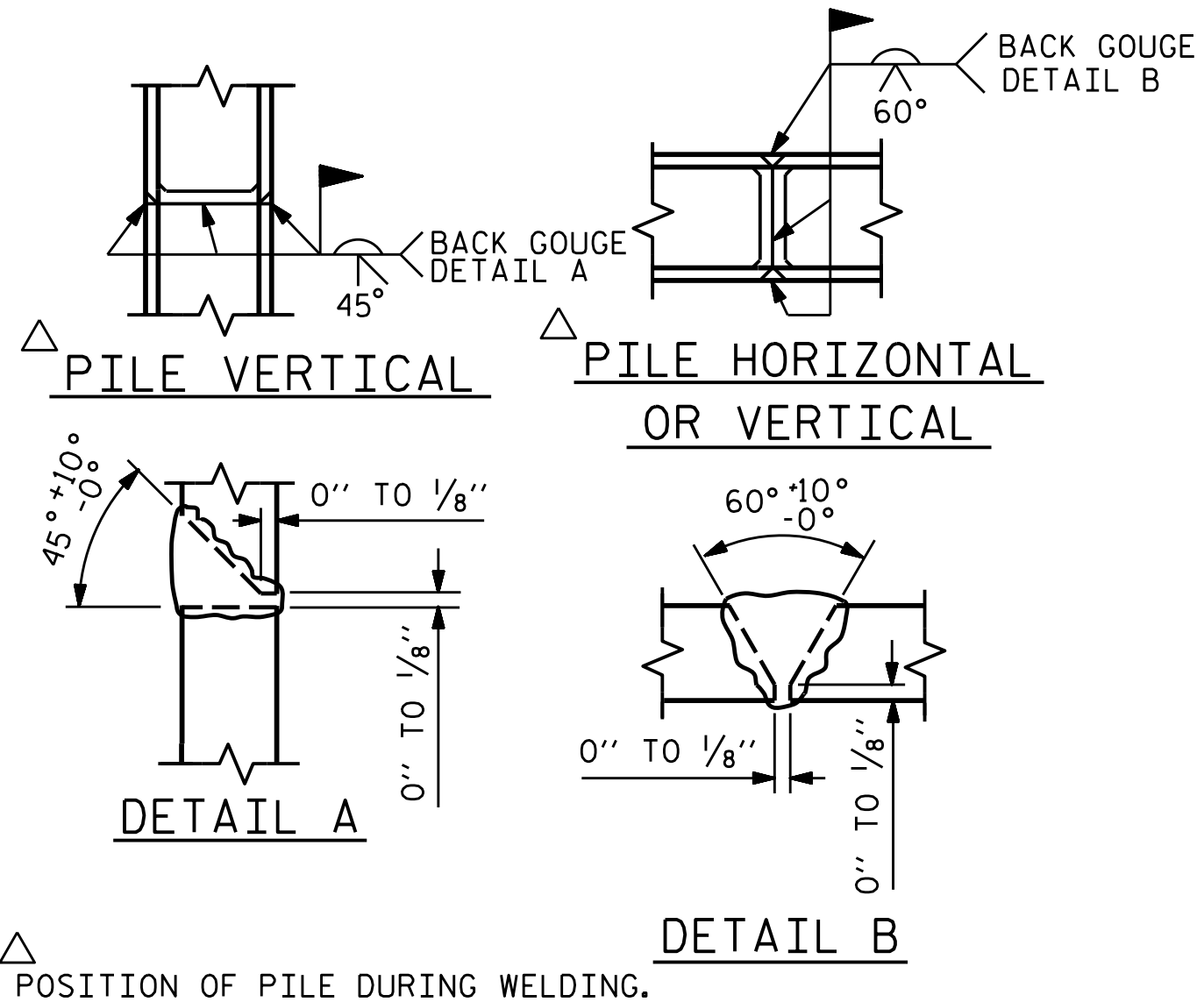
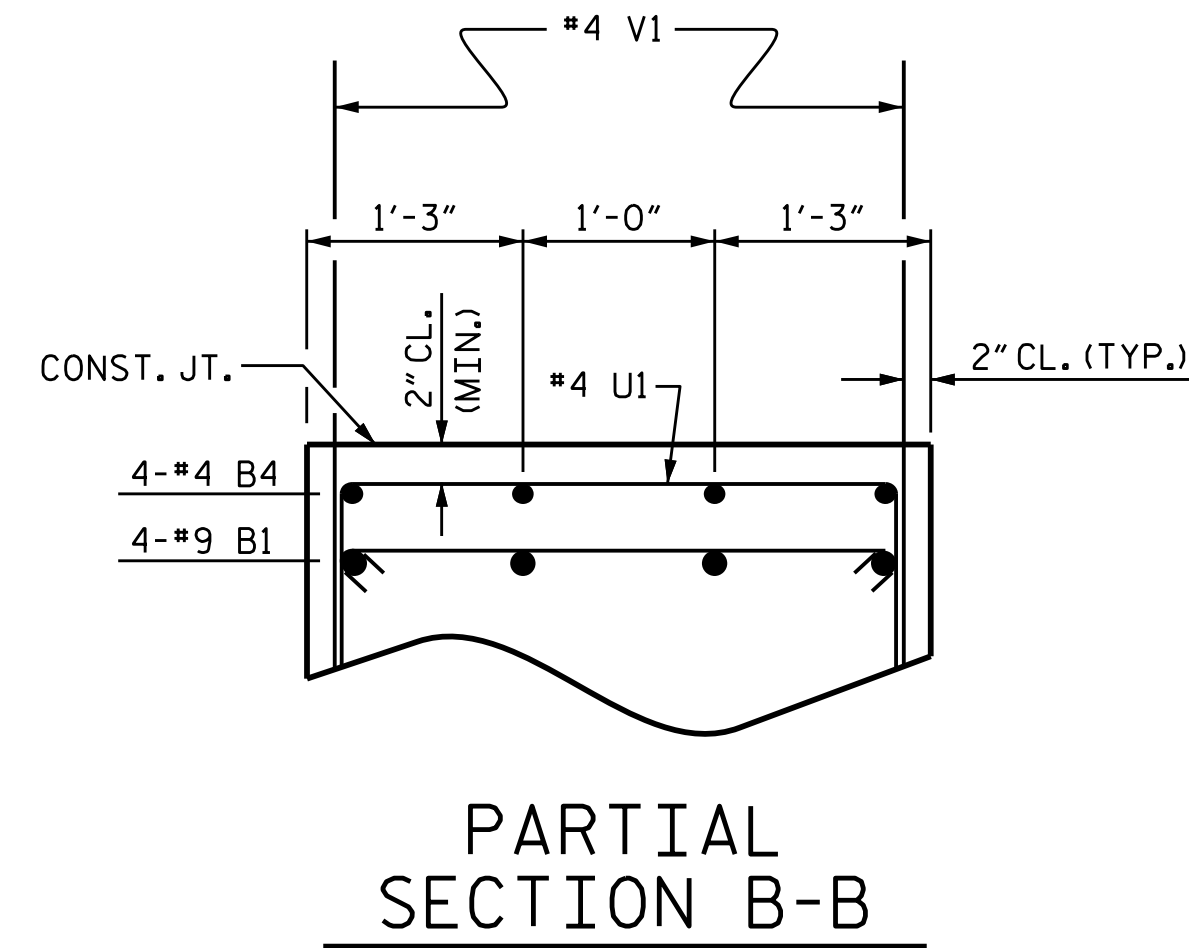
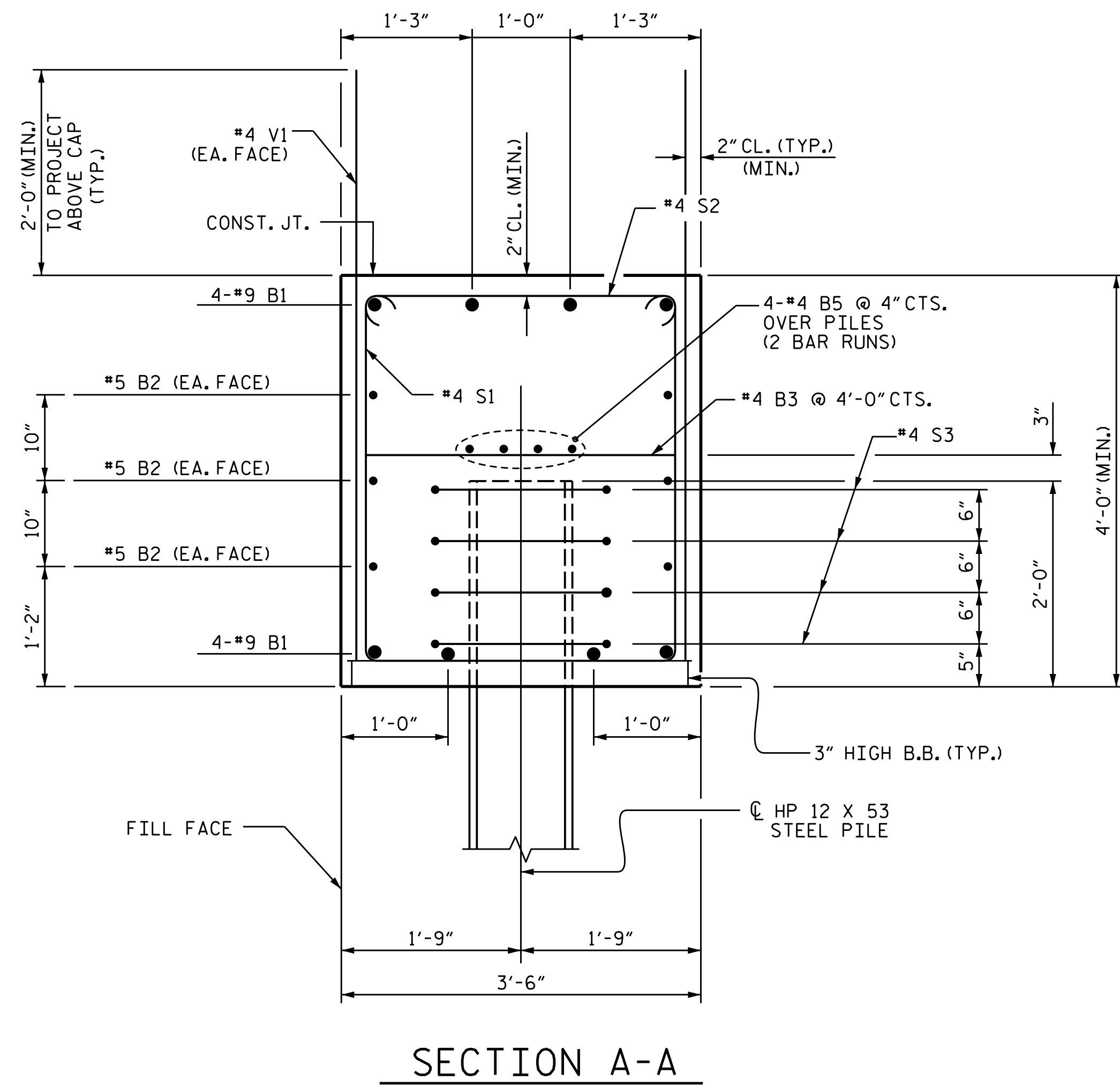
SUBSTRUCTURE
 INTEGRAL
 END BENT 1

DRAWN BY: M. G. SHAIKH DATE: 10/2020
 CHECKED BY: K. PUROHIT DATE: 02/2021
 DESIGN ENGINEER OF RECORD: J. A. I. DATE: 07/2020

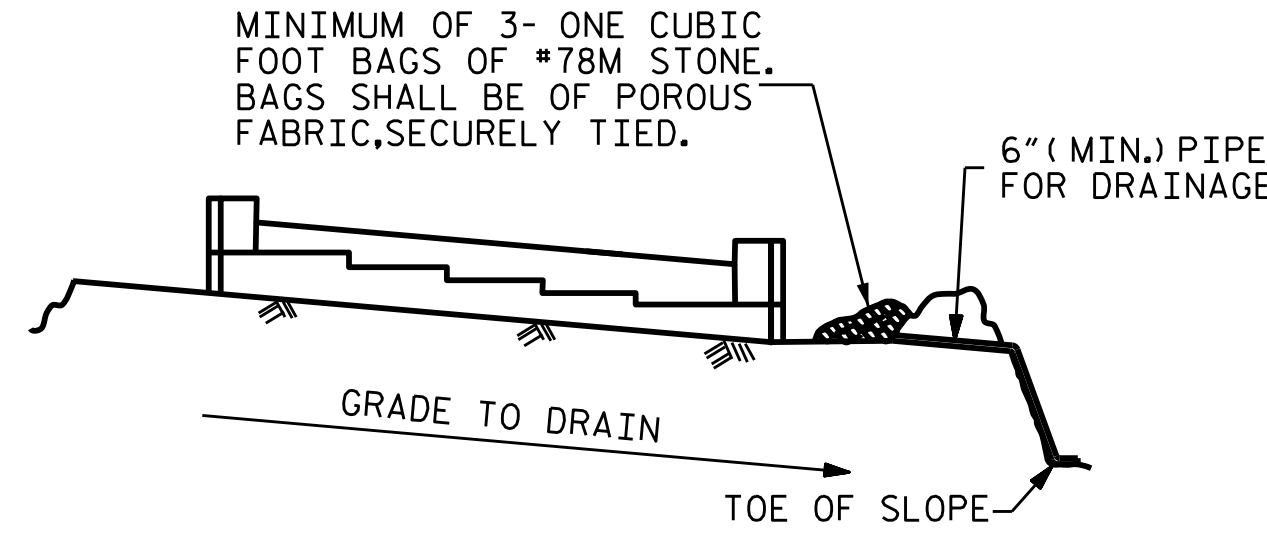
3/17/2022
 R:\Structures\FINAL PLANS OBD\400.045.BR-0048.SMU. E1.0022.850103.dgn
 omlee

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
1			3			TOTAL SHEETS
2			4			33



BILL OF MATERIAL					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9		48'-3"	1312
B2	6	#5	STR	45'-11"	287
B3	11	#4	STR	3'-2"	23
B4	4	#4	STR	19'-4"	52
B5	8	#4	STR	24'-2"	129
H1	24	#4		15'-7"	250
H2	44	#6		14'-8"	969
K1	42	#4	STR	3'-6"	98
S1	54	#4		11'-2"	403
S2	54	#4		3'-11"	141
S3	24	#4		6'-6"	104
S4	3	#6		5'-3"	24
S5	3	#6		10'-1"	45
U1	13	#4		6'-2"	54
V1	66	#4	STR	6'-6"	287
V2	40	#5	STR	11'-3"	469
V3	36	#5	STR	10'-6"	394
REINFORCING STEEL					= 5041 LBS.
CLASS AA CONCRETE					
POUR #1 (CAP, CON. COLLARS, & LOWER PART OF WINGS)					= 31.7 C.Y.
POUR #2 (UPPER PART OF WINGS)					= 8.7 C.Y.
TOTAL					= 40.4 C.Y.
HP 12 X 53 STEEL PILES					
No. 7					LIN FT. 175
PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES					7 EA.



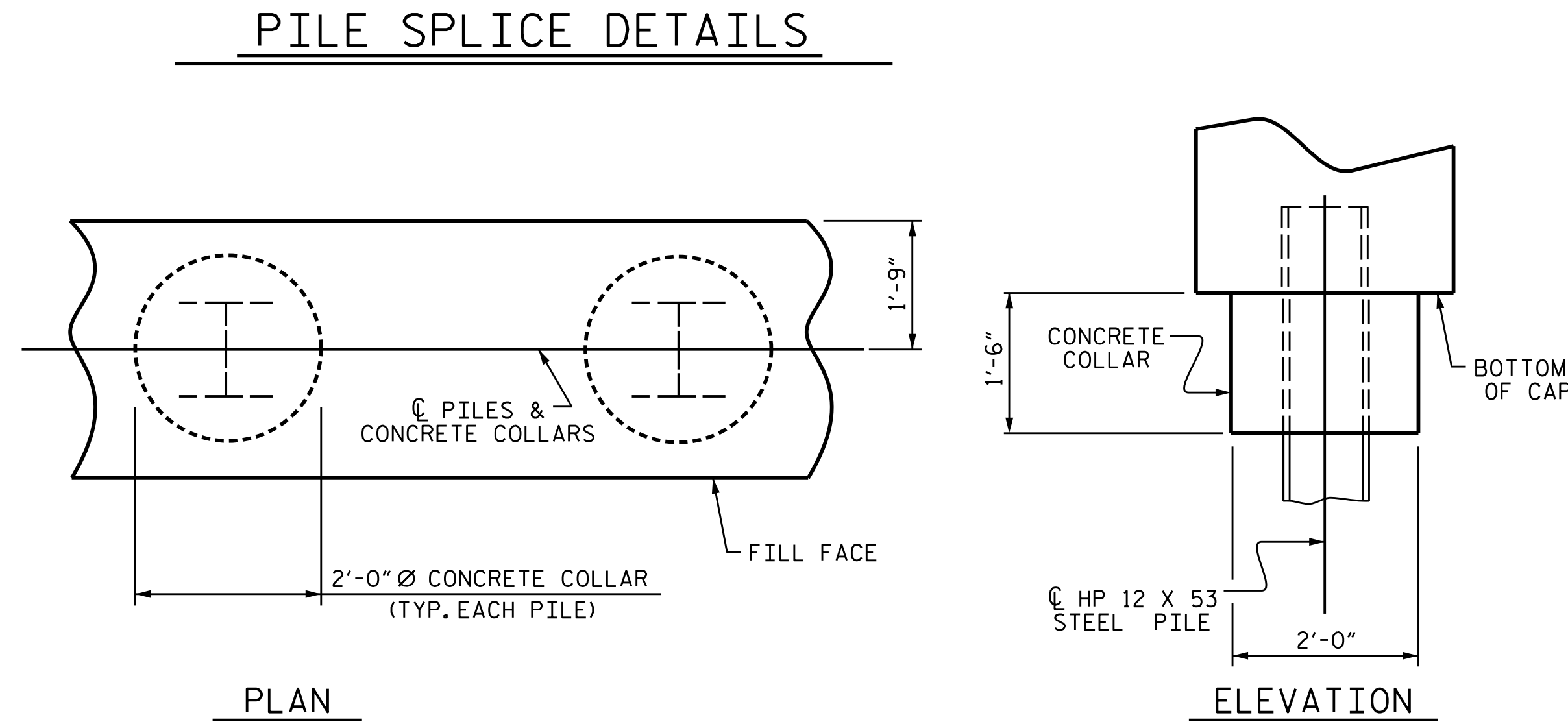
MINIMUM OF 3- ONE CUBIC FOOT BAGS OF #78M STONE. BAGS SHALL BE OF POROUS FABRIC, SECURELY TIED.

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.

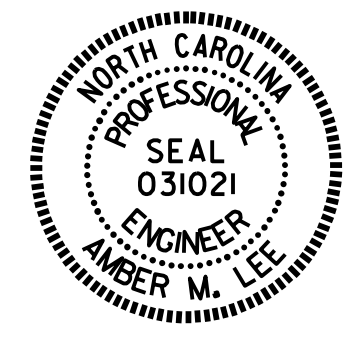
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



CORROSION PROTECTION FOR STEEL PILES DETAIL

PROJECT NO. BR-0048
 SURRY COUNTY
 STATION: 18+50.00 -L-
 SHEET 3 OF 3

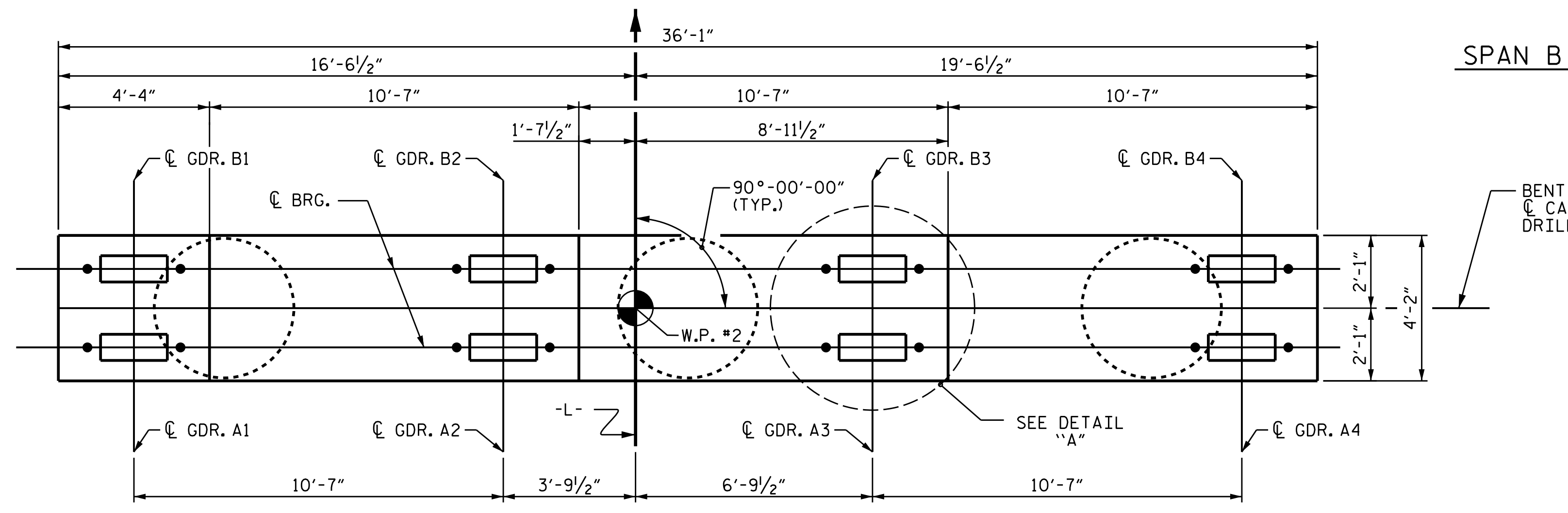


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 INTEGRAL
 END BENT 1

DRAWN BY: M. G. SHAIKH DATE: 10/2020
 CHECKED BY: K. PUROHIT DATE: 02/2021
 DESIGN ENGINEER OF RECORD: J. A. T. DATE: 07/2020

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-23
1			3			TOTAL SHEETS
2			4			33

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



PLAN

NOTES

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

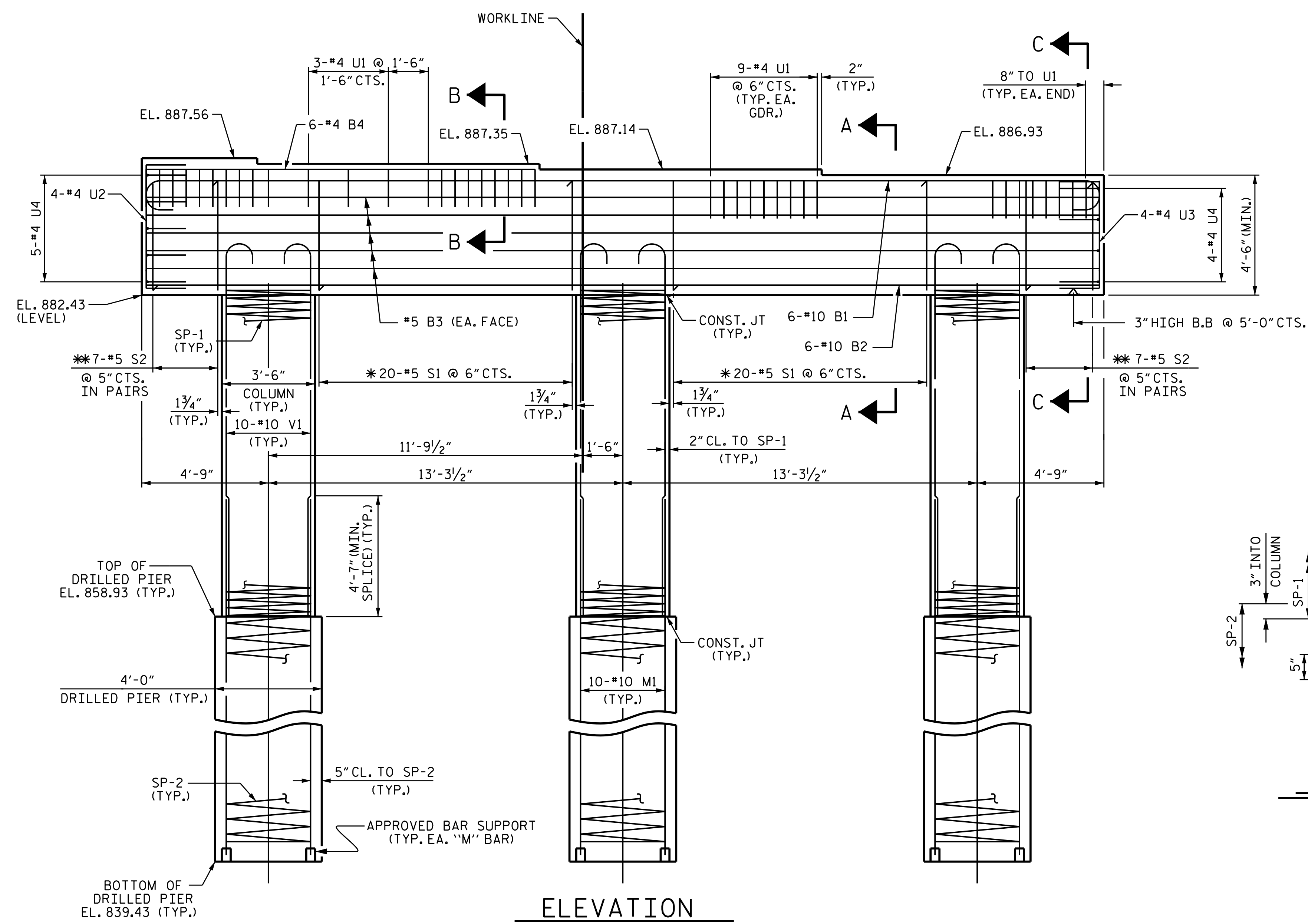
THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.

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

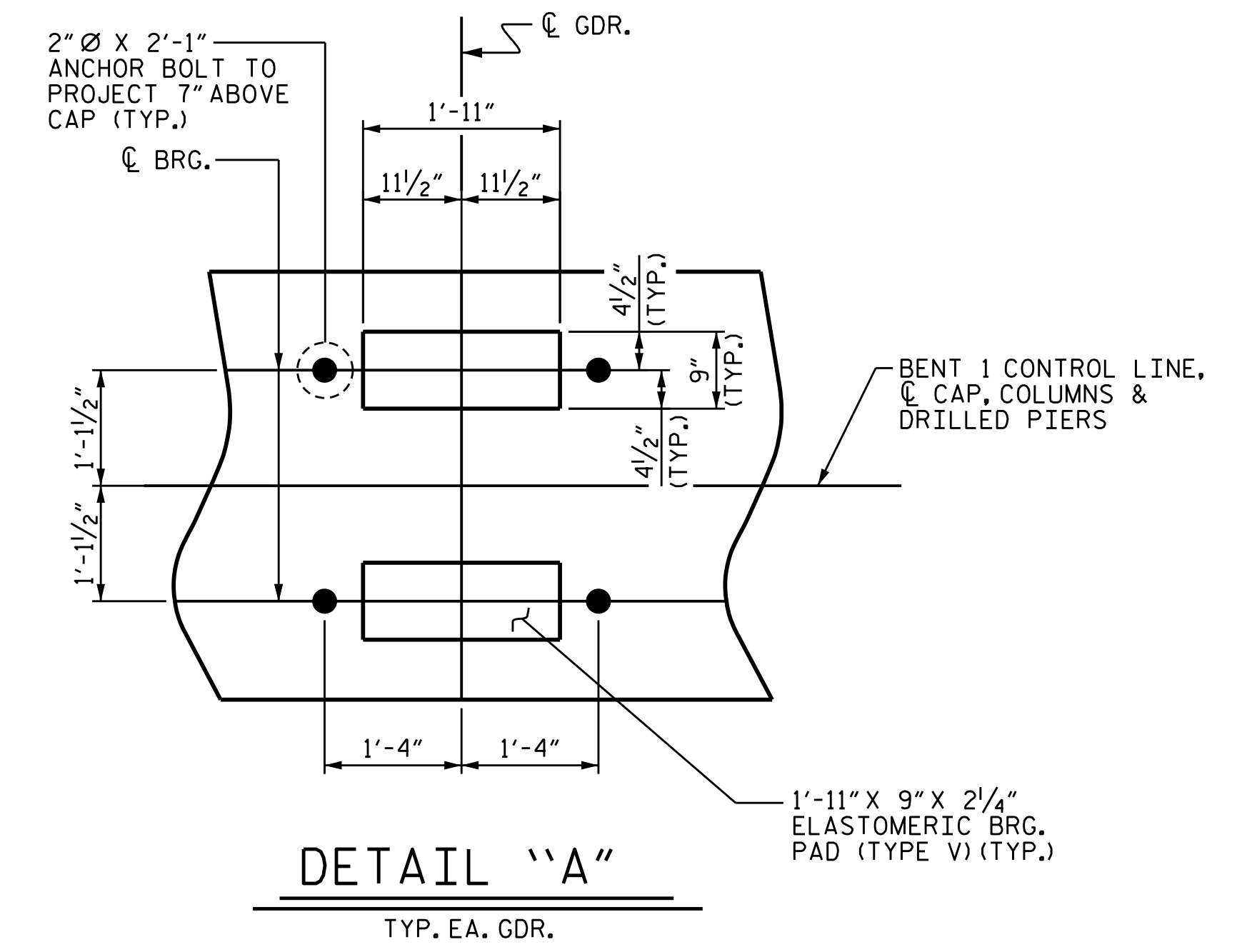
HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

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.

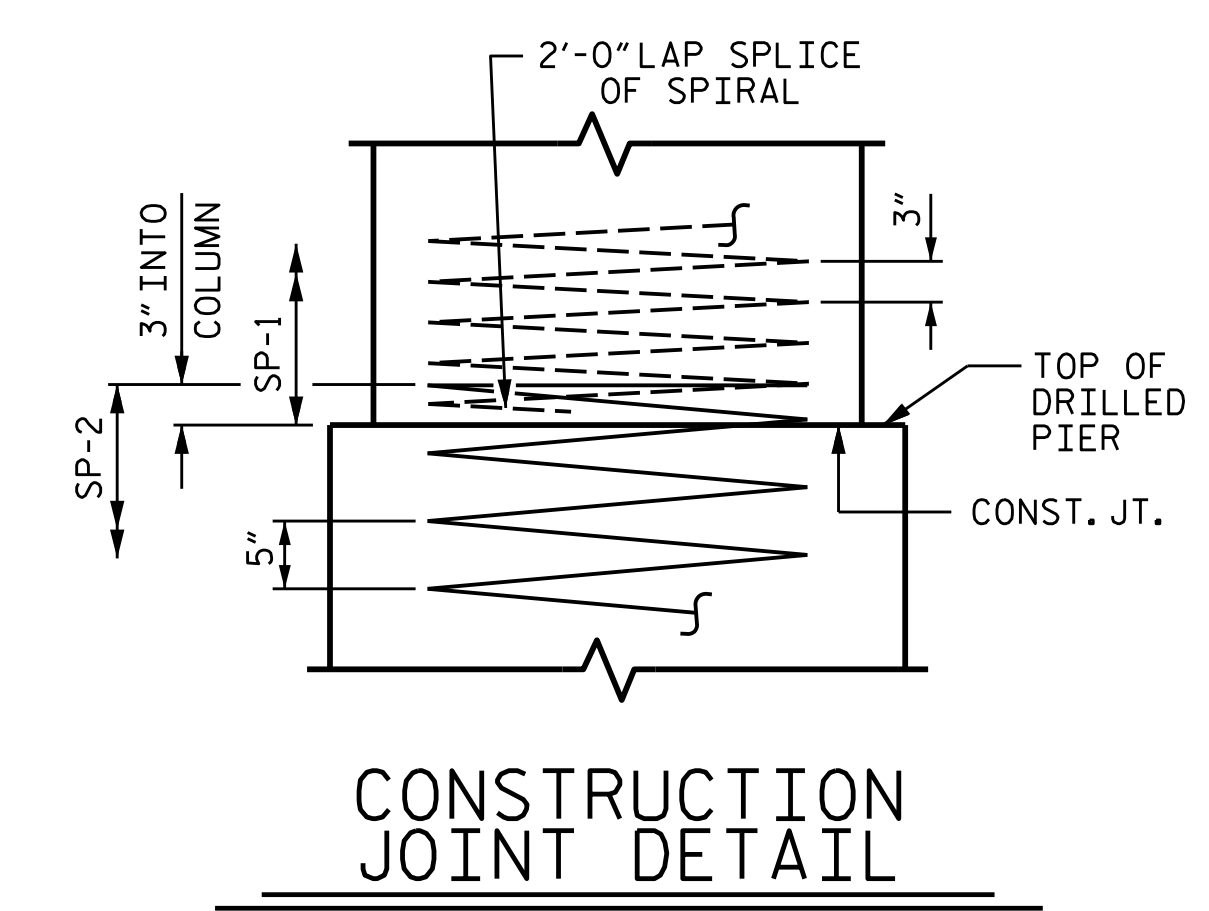
SPLICING OF THE LONGITUDINAL BARS IN THE DRILLED PIER WILL NOT BE PERMITTED.



ELEVATION



DETAIL "A"



CONSTRUCTION JOINT DETAIL

* INVERT ALTERNATE STIRRUPS
 ** INVERT ALTERNATE STIRRUPS PAIRS

DRAWN BY : M. G. SHAIKH DATE : 11/2020
 CHECKED BY : K. PUROHIT DATE : 02/2021
 DESIGN ENGINEER OF RECORD : J. A. I. DATE : 07/2020

3/17/2022
 RA Structures\FINAL PLANS OBD\400.049.BR-0048.SMU. B1.0024.850103.dgn
 omlee

PROJECT NO. BR-0048
 SURRY COUNTY
 STATION: 18+50.00 -L-

SHEET 1 OF 2

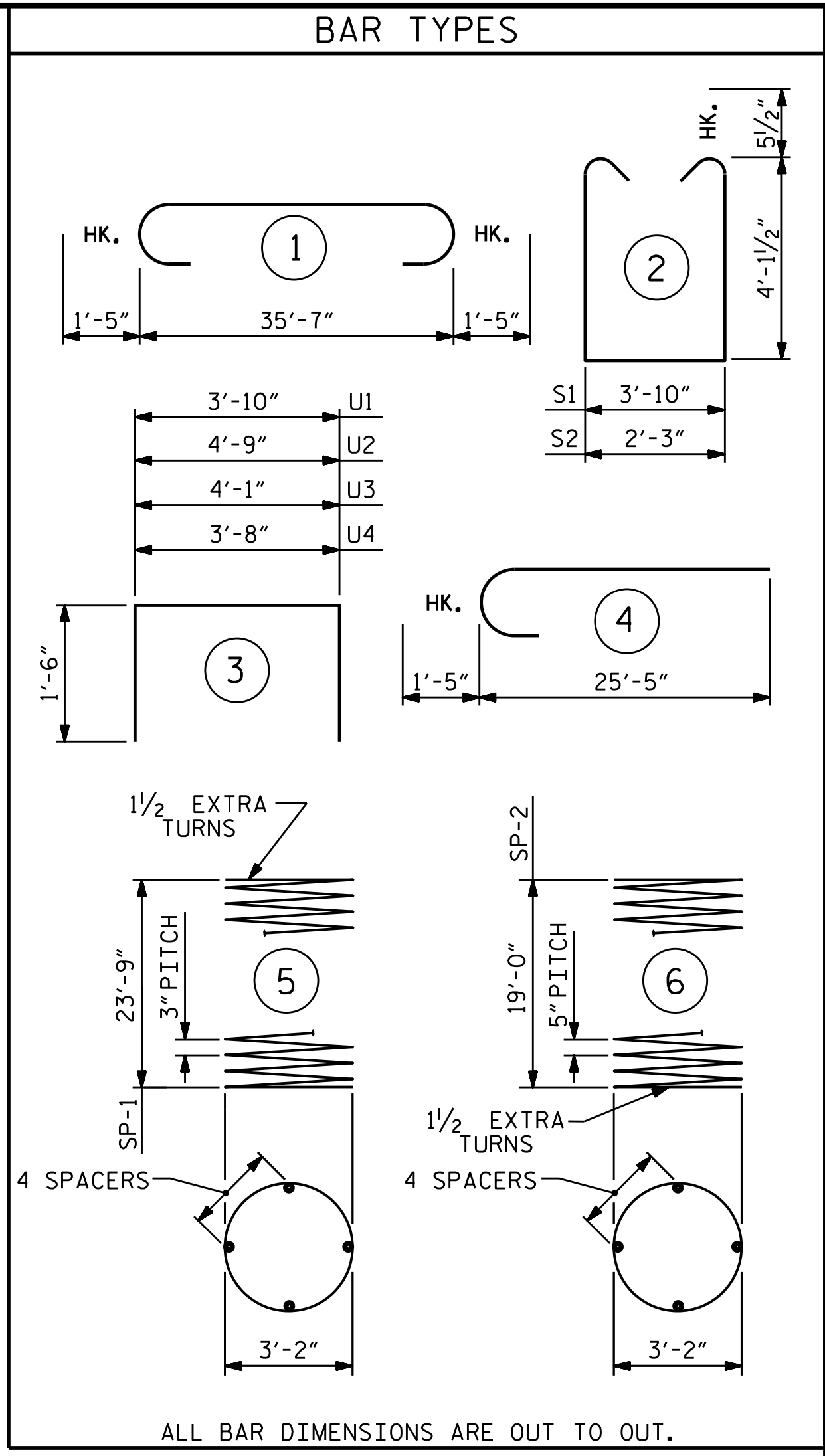
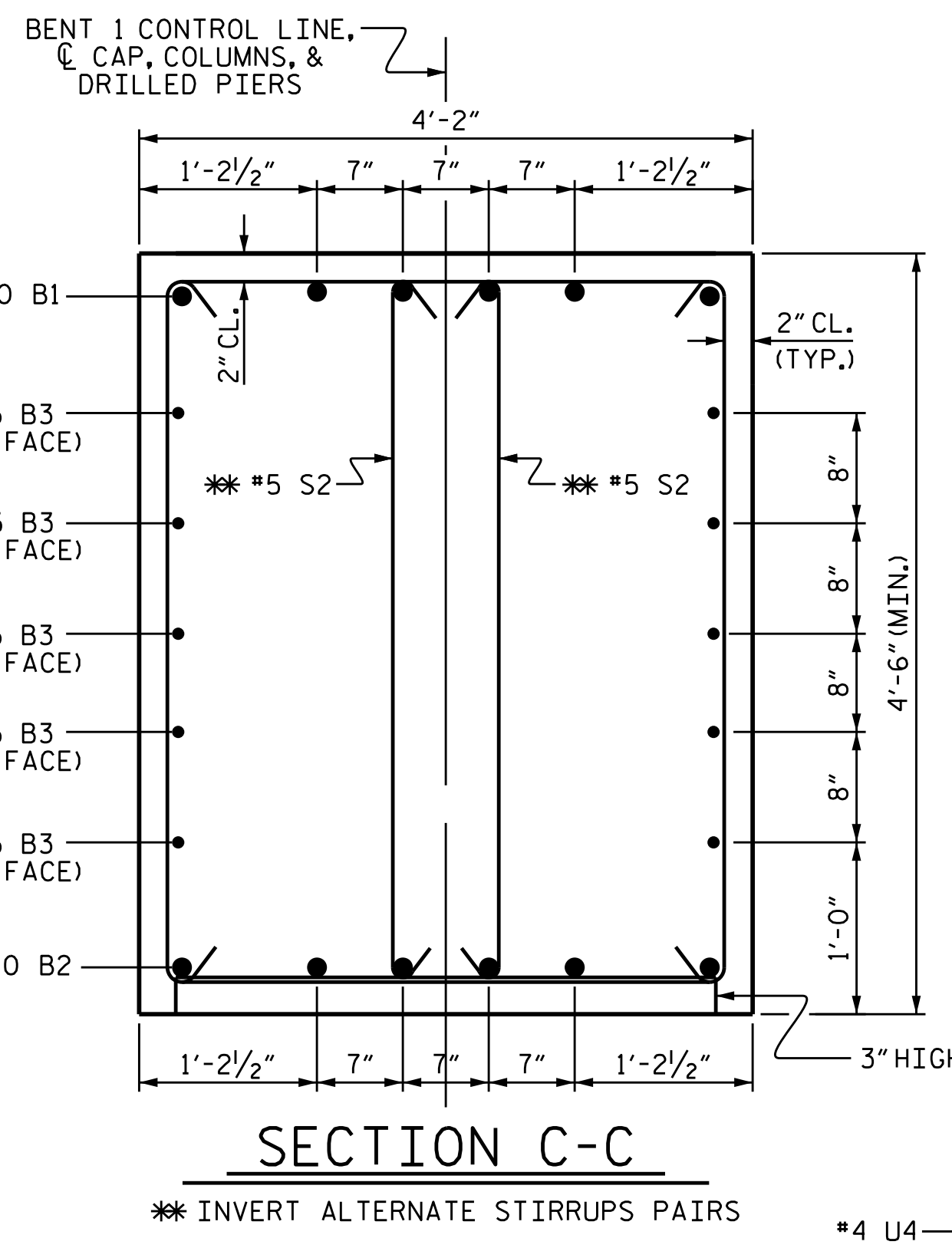
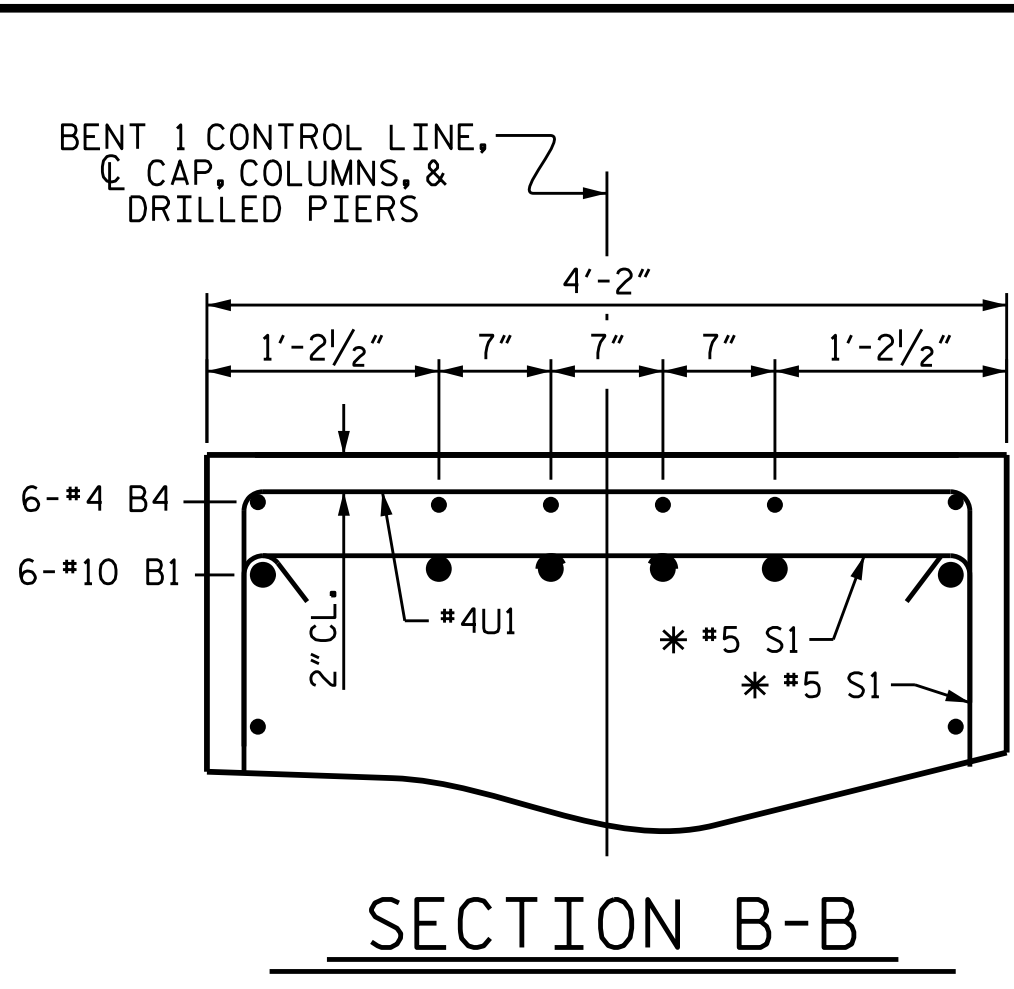
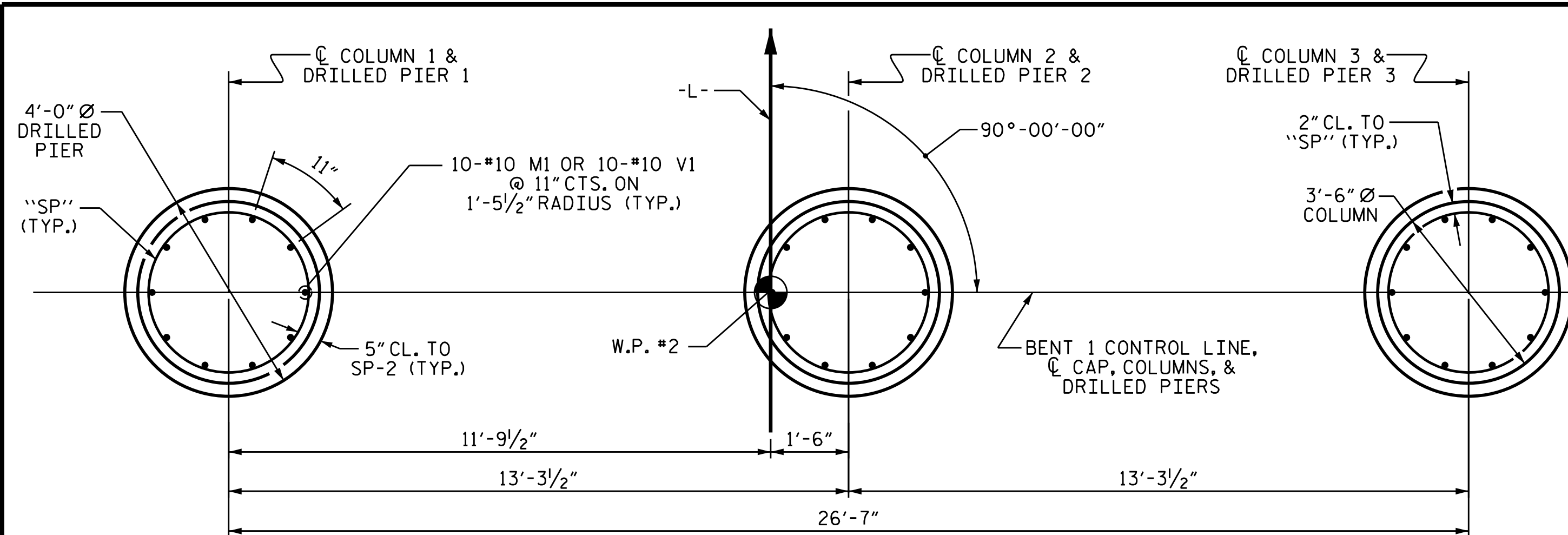


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

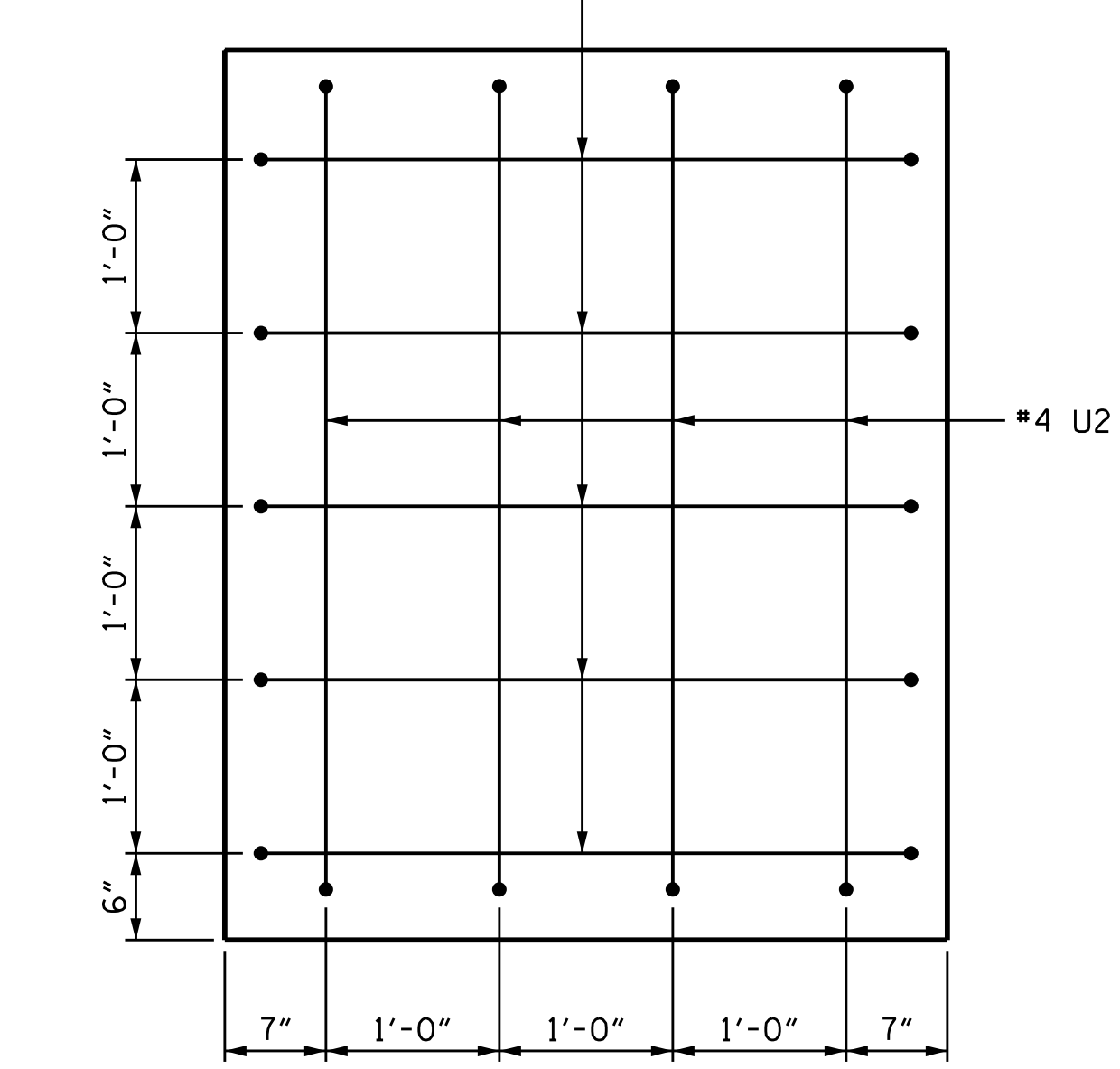
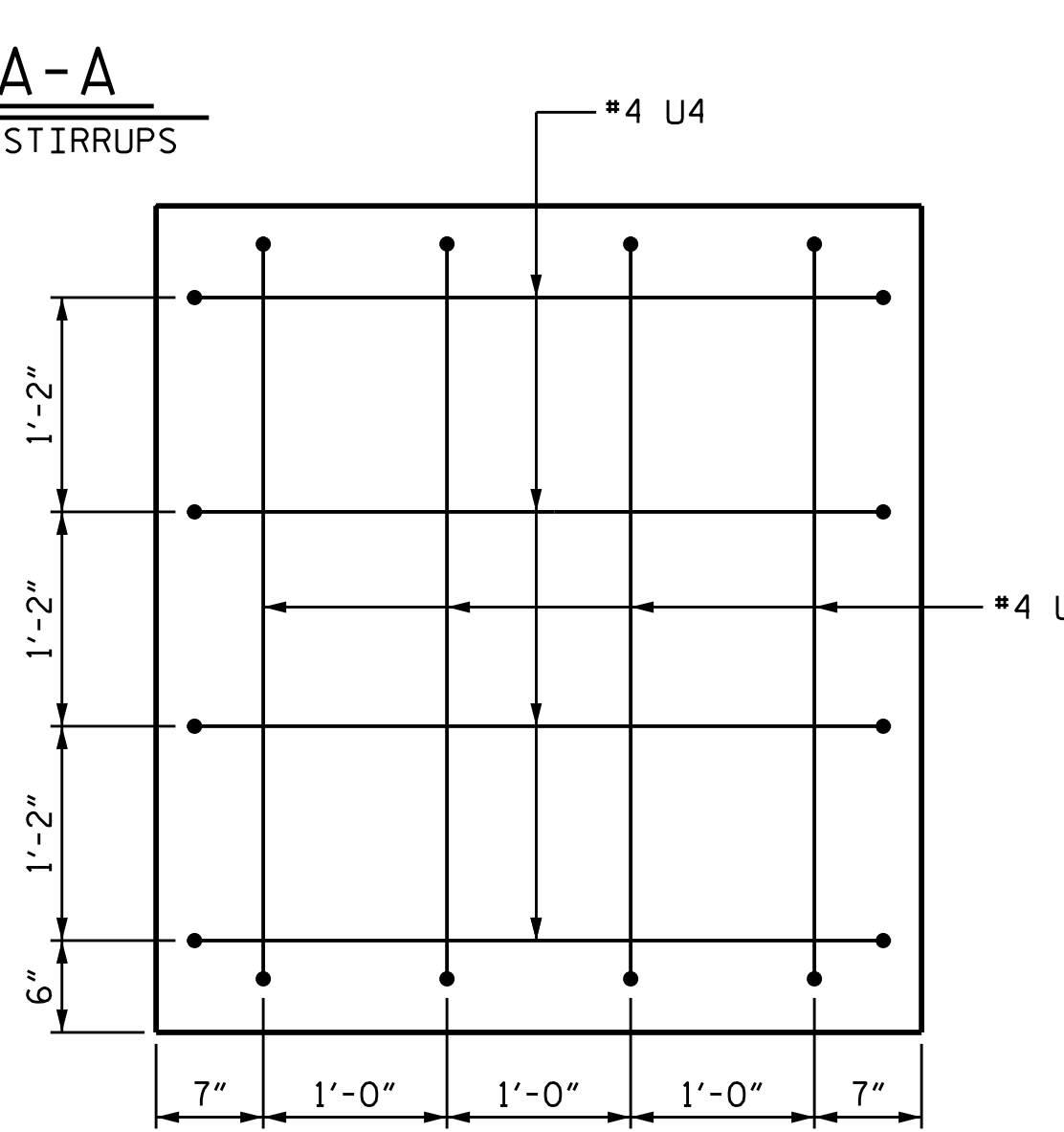
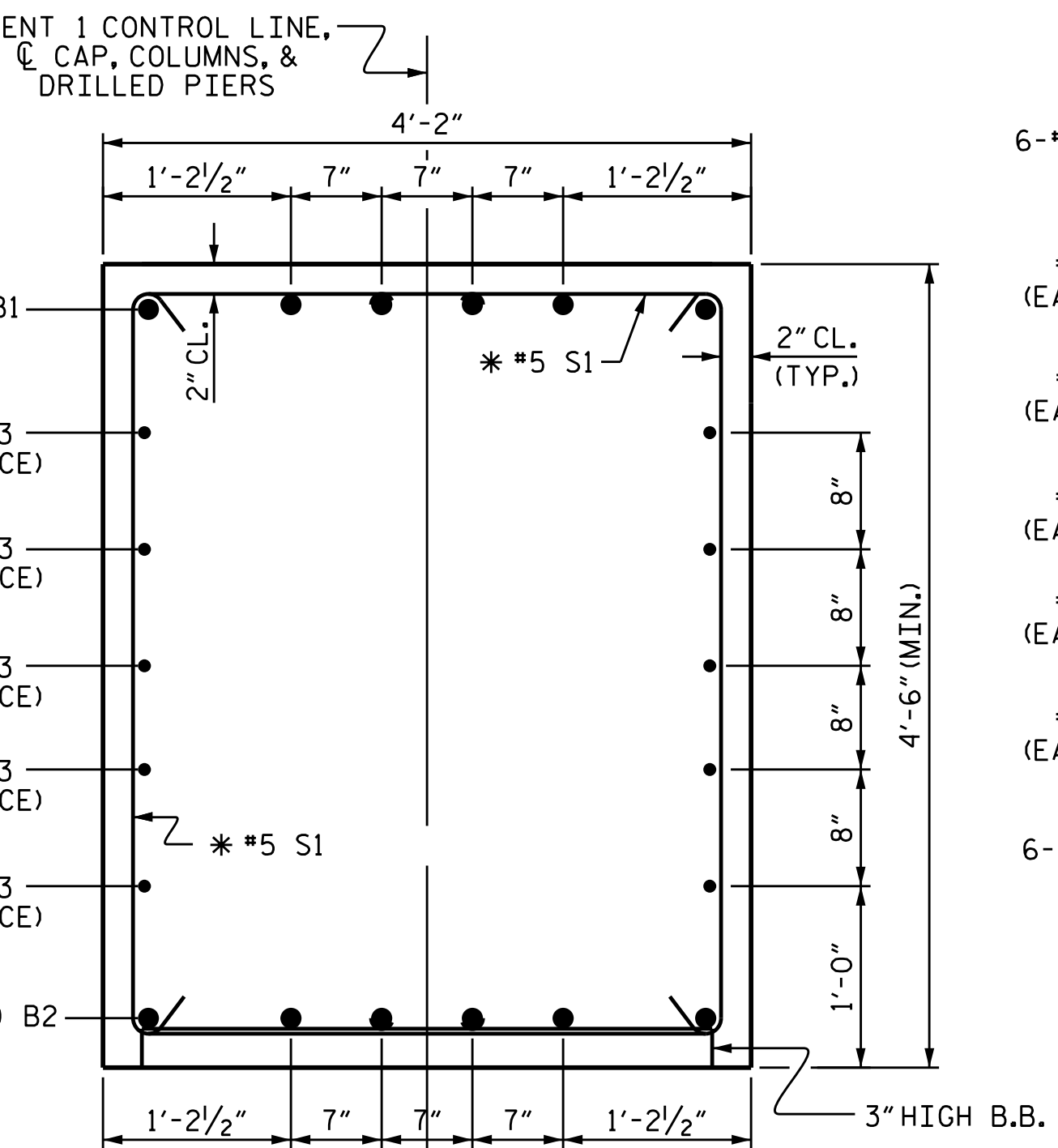
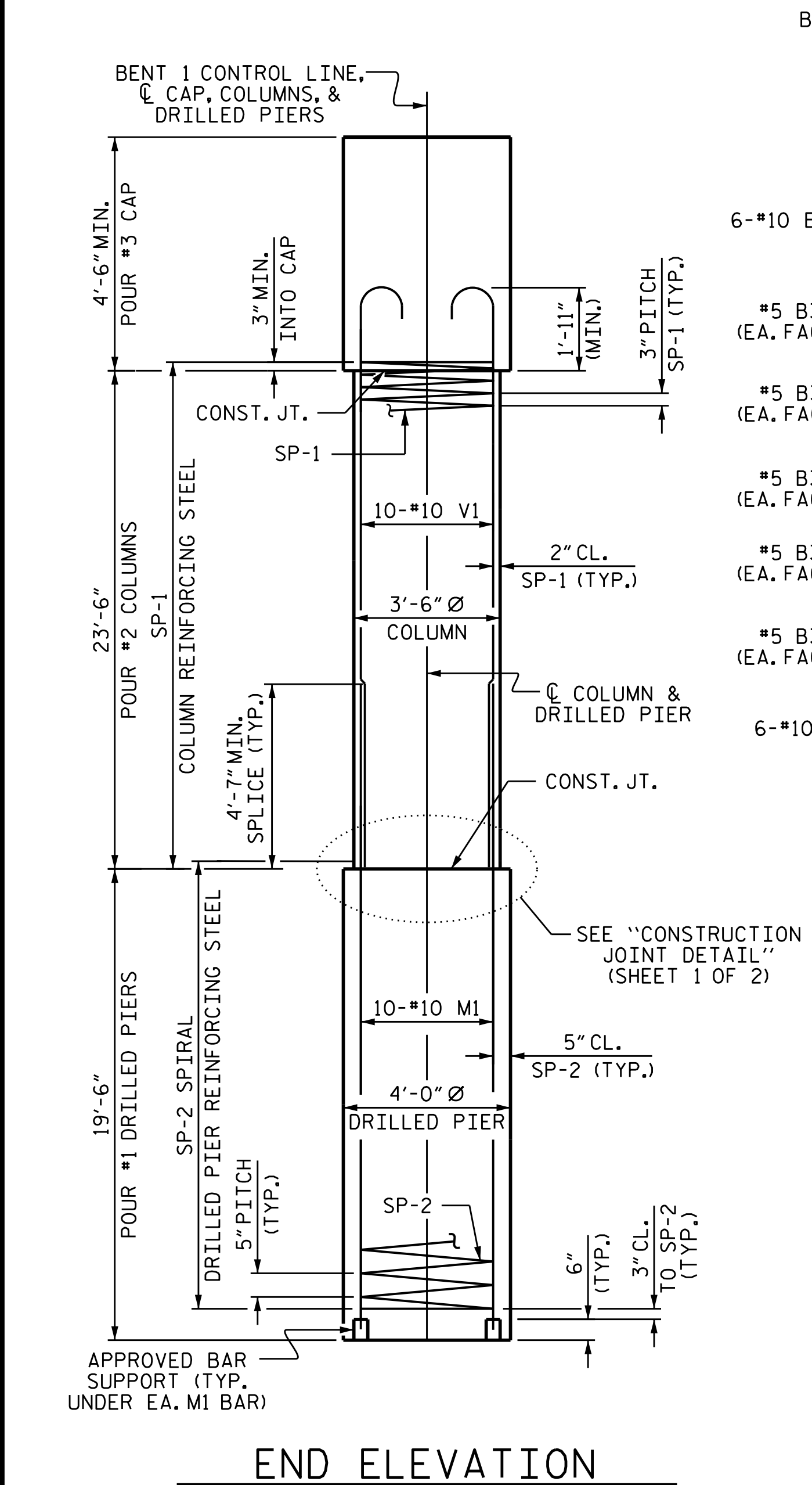
SUBSTRUCTURE
 BENT 1

REVISIONS						SHEET NO. S-24
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 33
2			4			

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



BILL OF MATERIAL					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#10	1	38'-5"	992
B2	6	#10	STR	35'-9"	923
B3	10	#5	STR	35'-9"	373
B4	6	#4	STR	14'-7"	58
M1	30	#10	STR	26'-11"	3475
S1	40	#5	2	13'-0"	542
S2	28	#5	2	11'-5"	333
U1	39	#4	3	6'-10"	178
U2	4	#4	3	7'-9"	21
U3	4	#4	3	7'-1"	19
U4	9	#4	3	6'-8"	40
V1	30	#10	4	26'-10"	3464
REINFORCING STEEL					LBS. 10,418
SP-1	3	*	5	946'-2"	1896
SP-2	3	**	6	462'-0"	1446
SPIRAL COLUMN REINFORCING STEEL					LBS. 3342
* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.					
** THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.					
CLASS A CONCRETE					
POUR #3 (CAP)				C.Y.	26.5
POUR #2 (COLUMNS)				C.Y.	25.1
TOTAL CLASS A CONCRETE				C.Y.	51.6
DRILLED PIER QUANTITIES					
DRILLED PIER CONCRETE					
POUR #1 (DRILLED PIERS)				C.Y.	27.2
4'-0" Ø DRILLED PIERS IN SOIL				LIN. FT.	25.5
4'-0" Ø DRILLED PIERS NOT IN SOIL				LIN. FT.	33.0
PERMANENT STEEL CASING FOR 4'-0" Ø DRILLED PIER				LIN. FT.	26.8
CSL TESTING				EA.	1
CSL TUBES				LIN. FT.	252

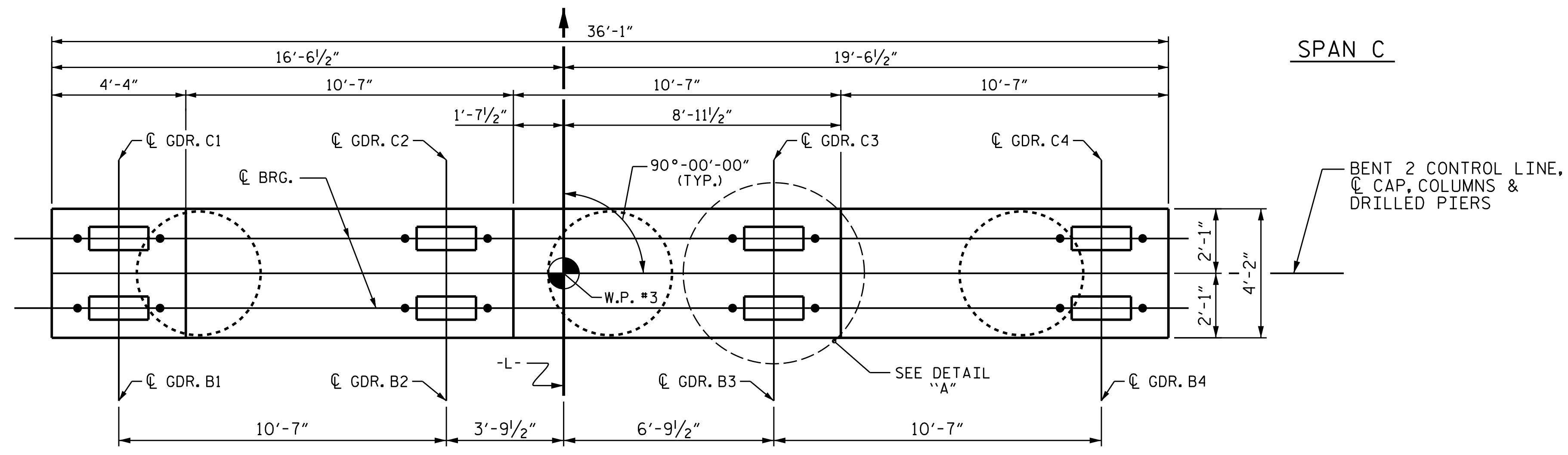


PROJECT NO. BR-0048
 SURRY COUNTY
 STATION: 18+50.00 -L-
 SHEET 2 OF 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-25
1			3			TOTAL SHEETS
2			4			33

DRAWN BY : M.G. SHAIKH DATE : 12/2020
 CHECKED BY : K. PUROHIT DATE : 02/2021
 DESIGN ENGINEER OF RECORD : J.A.T. DATE : 07/2020

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



NOTES

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

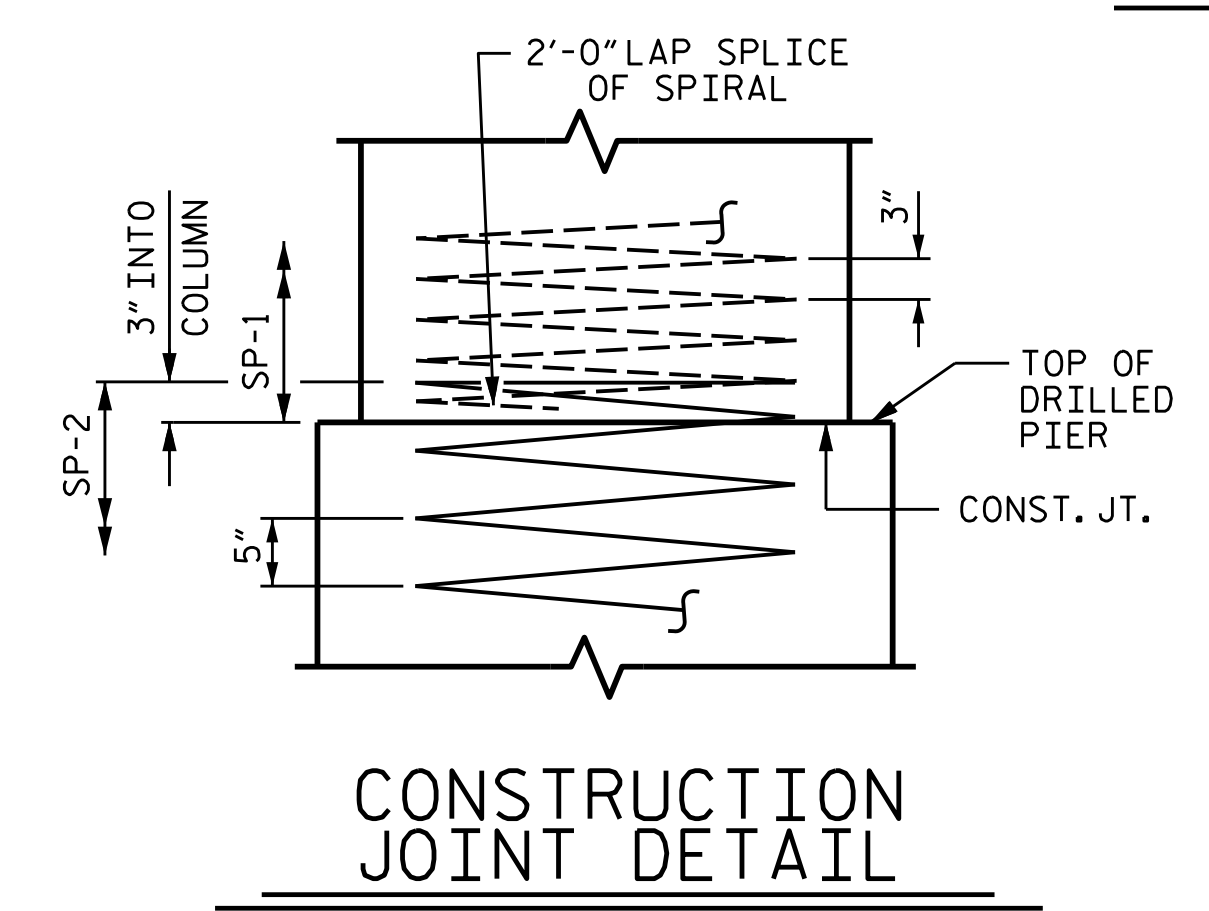
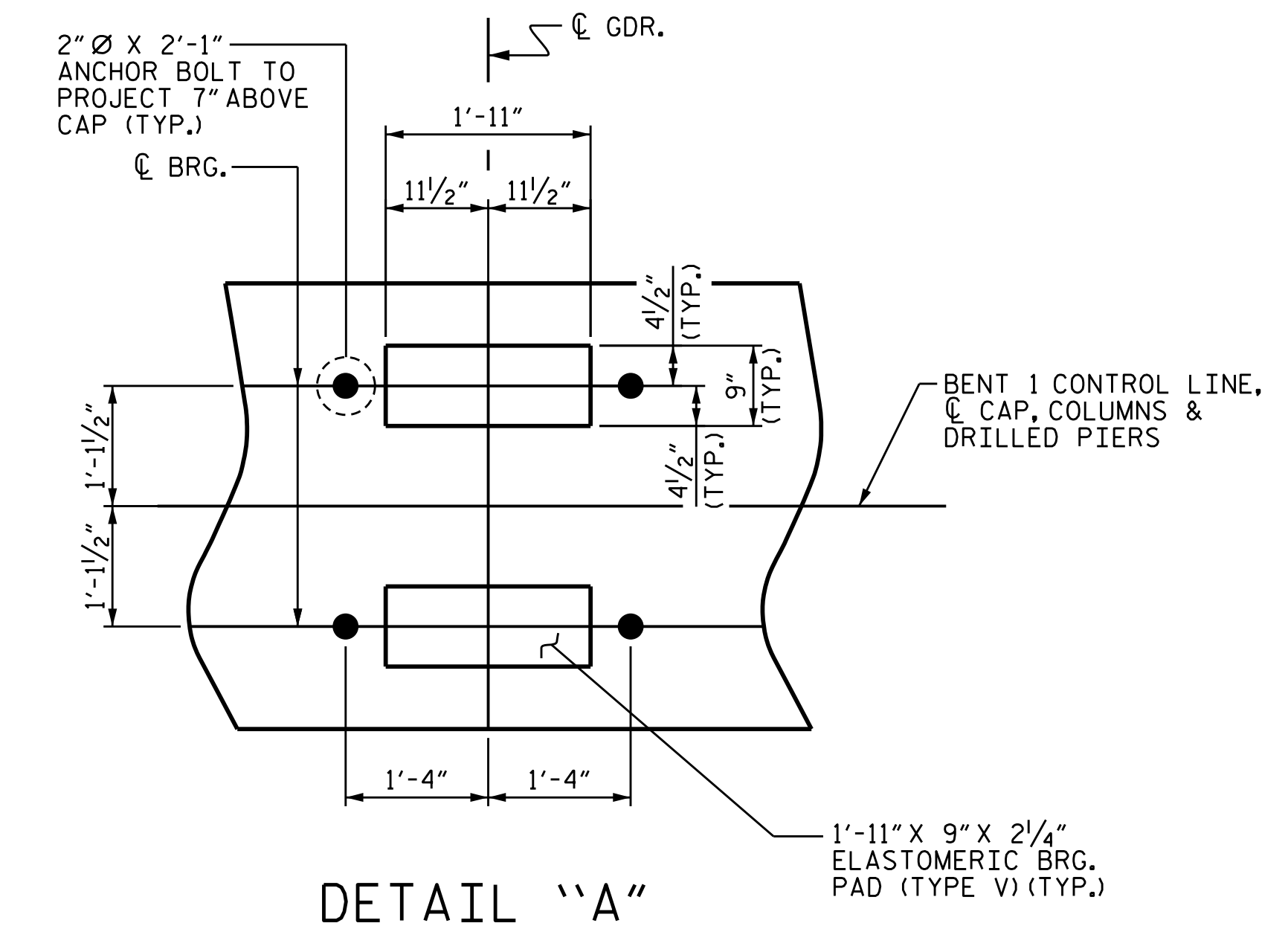
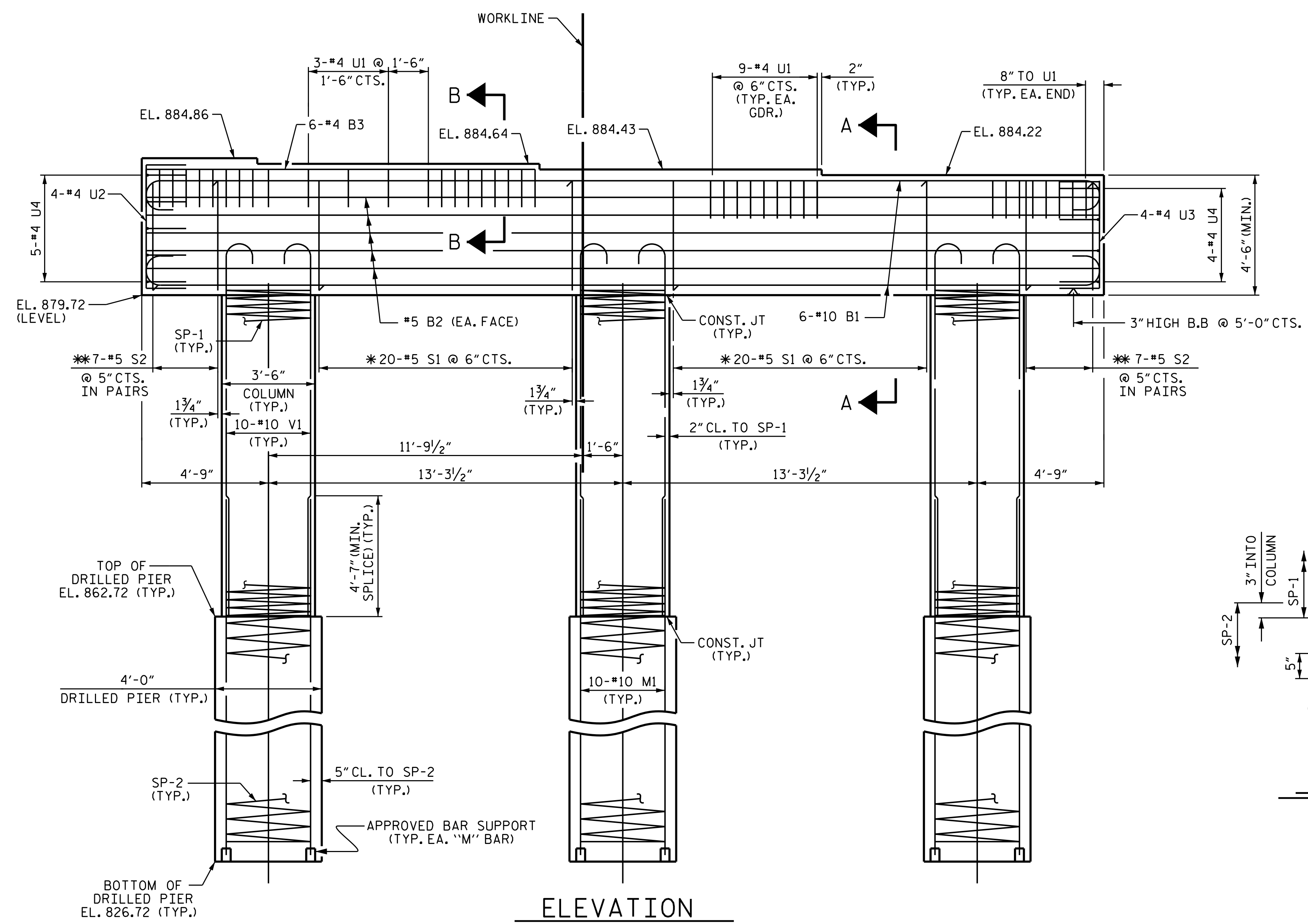
THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.

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.

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.

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



PROJECT NO. BR-0048
 SURRY COUNTY
 STATION: 18+50.00 -L-

SHEET 1 OF 2



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

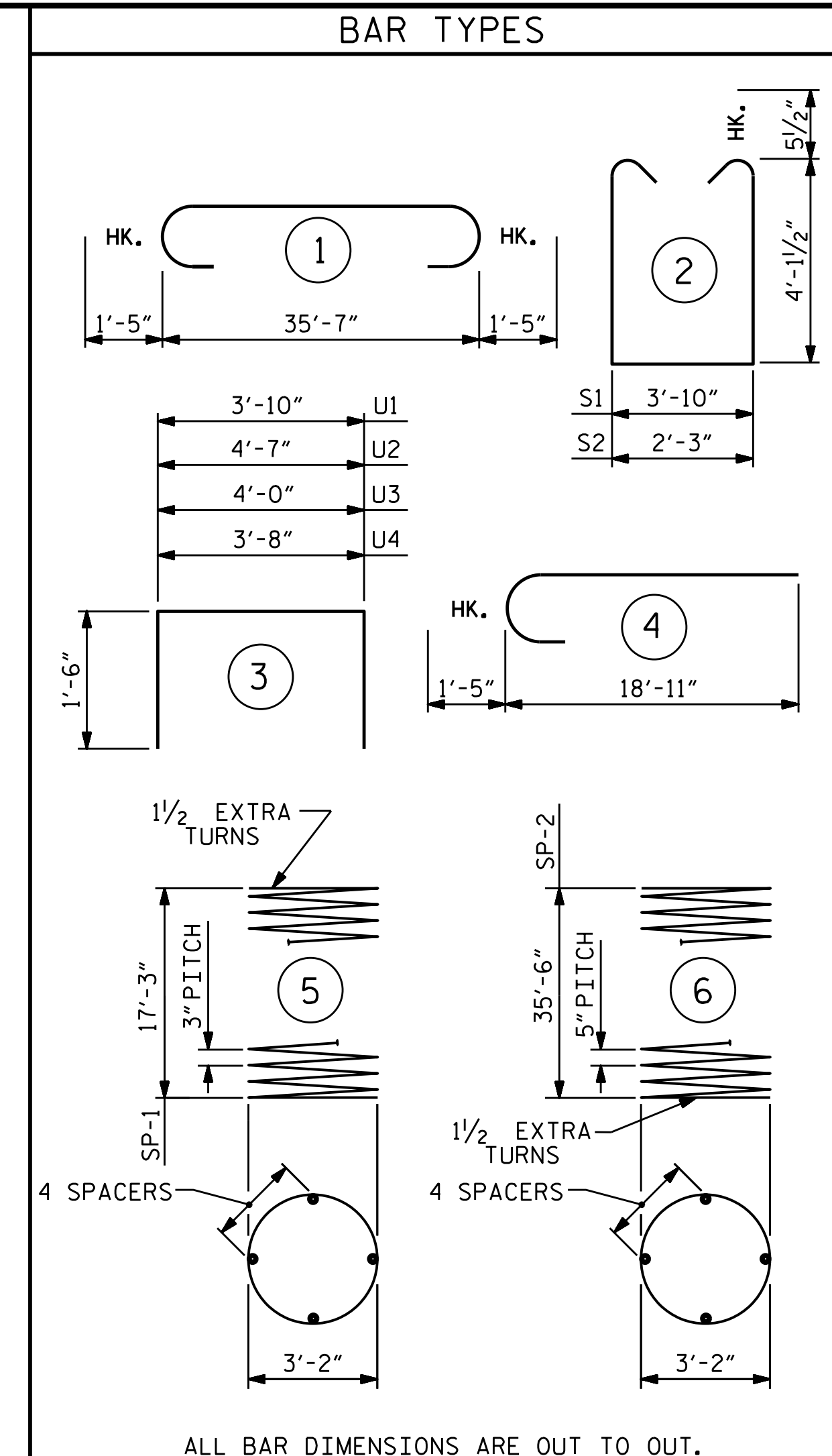
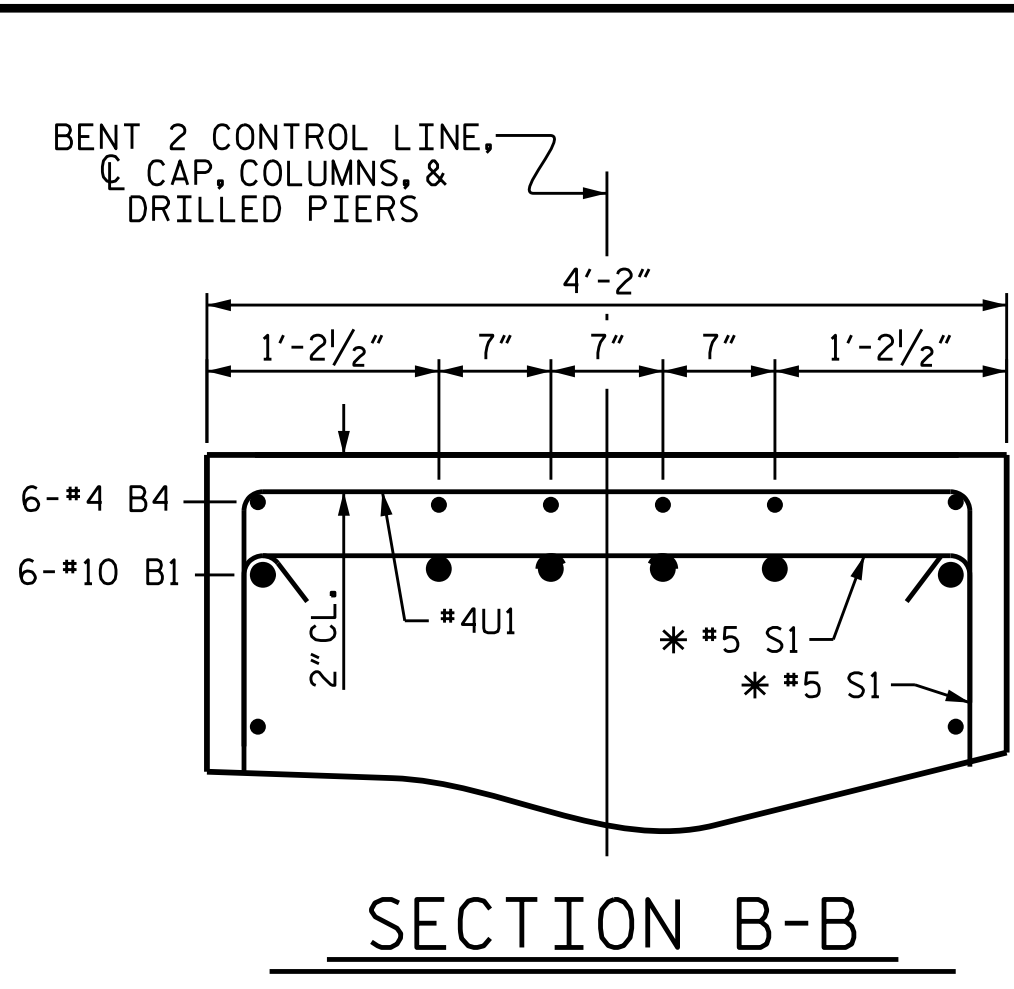
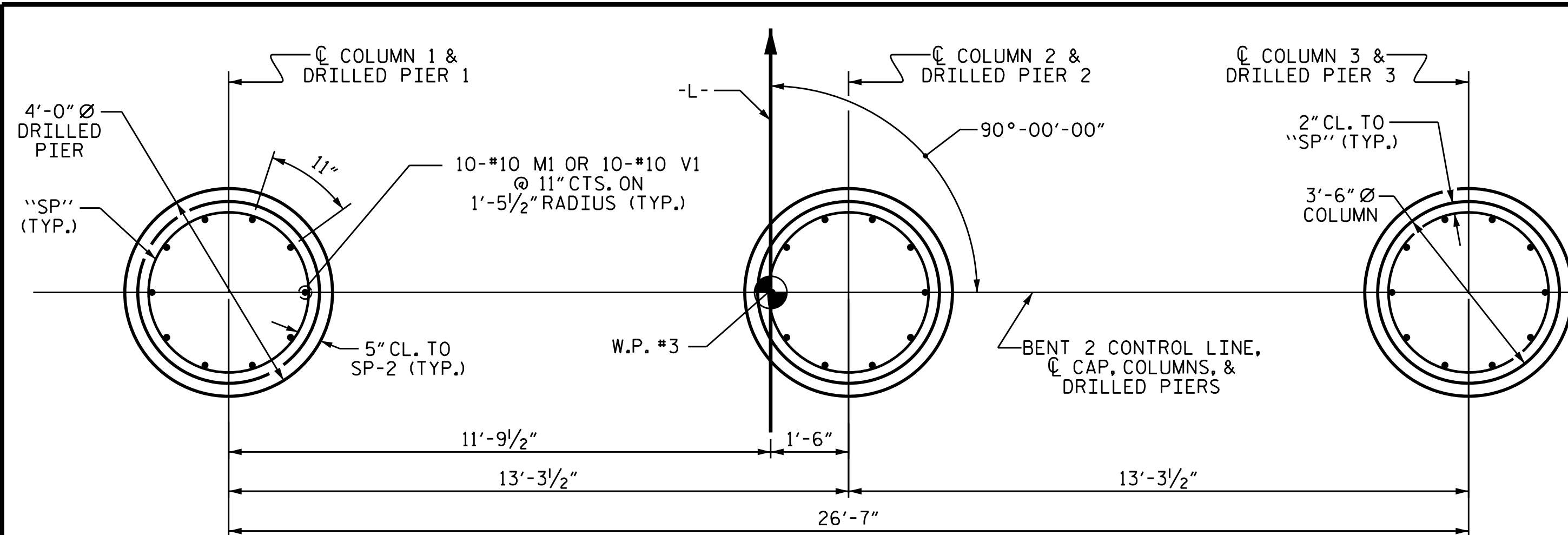
SUBSTRUCTURE
 BENT 2

DRAWN BY: M. G. SHAIKH DATE: 12/2020
 CHECKED BY: K. PUROHIT DATE: 02/2021
 DESIGN ENGINEER OF RECORD: J. A. I. DATE: 07/2020

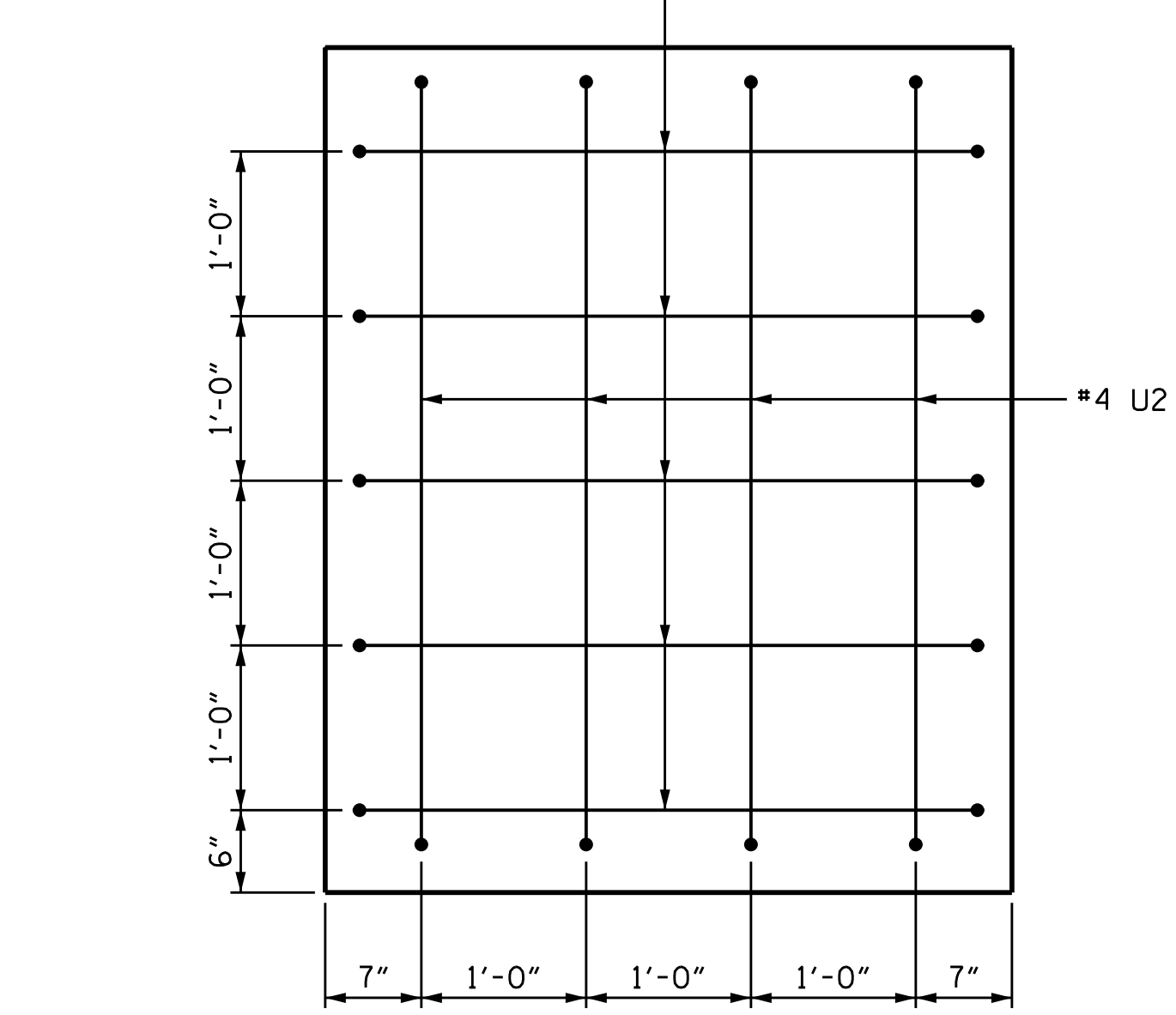
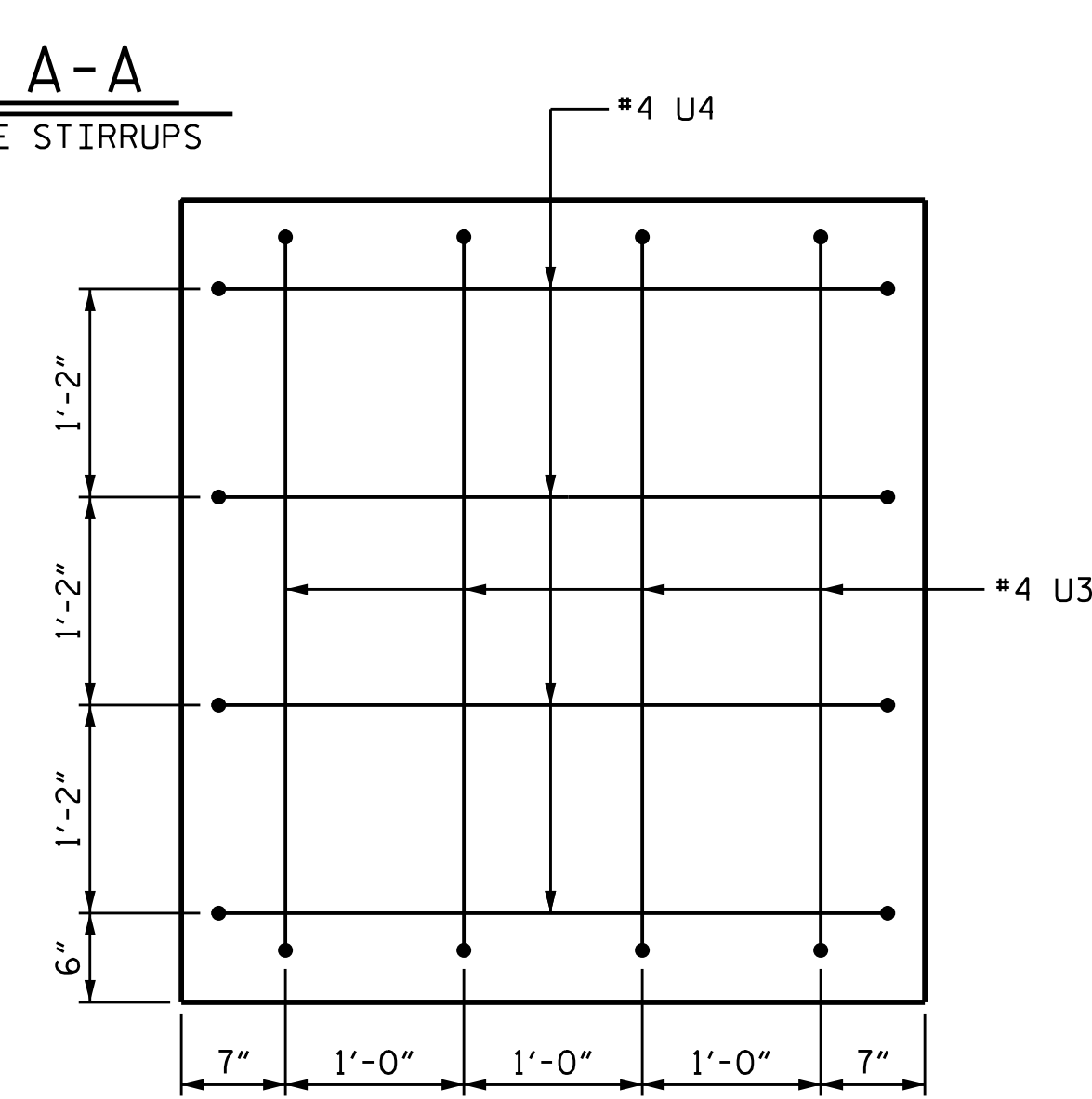
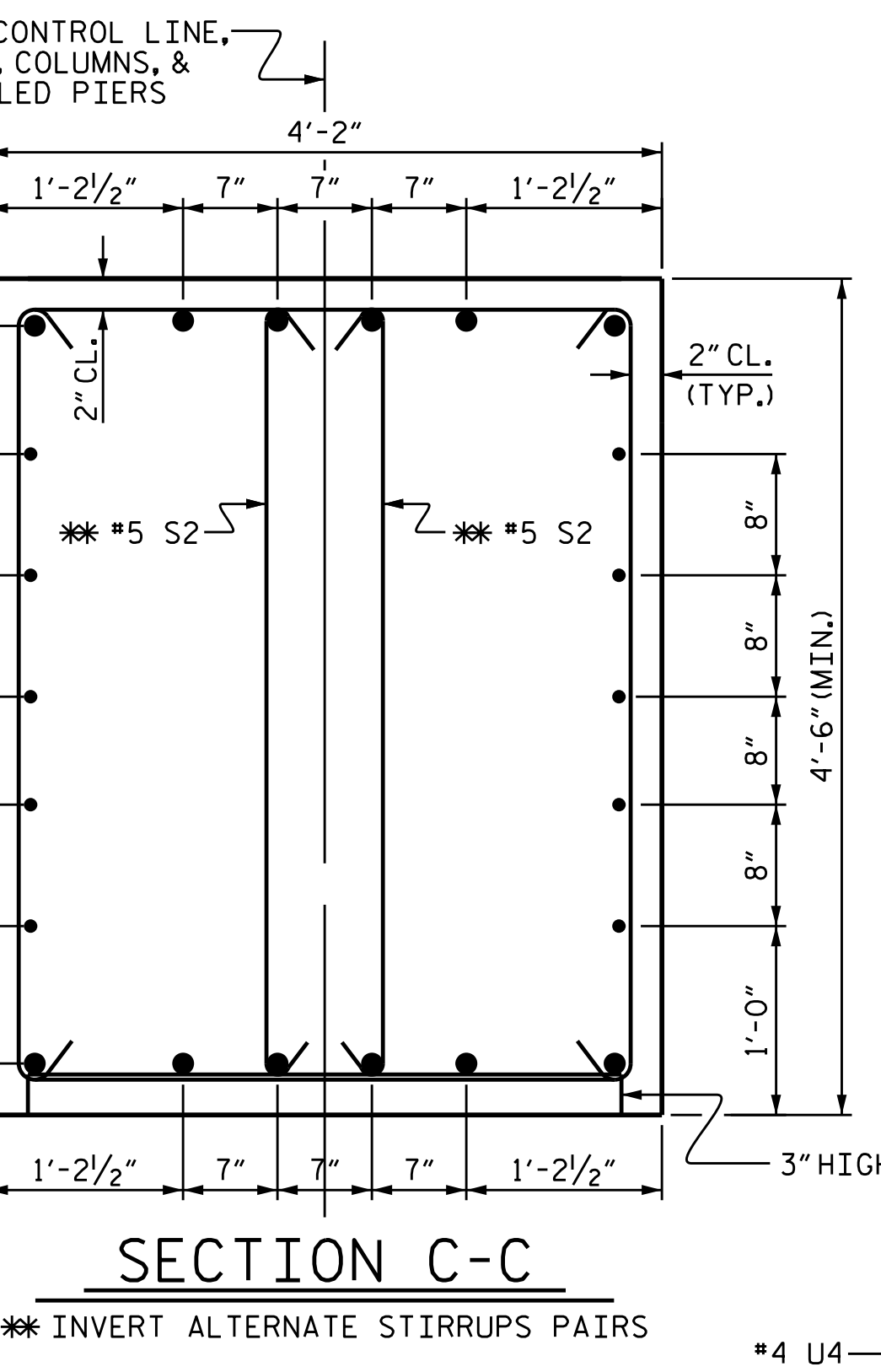
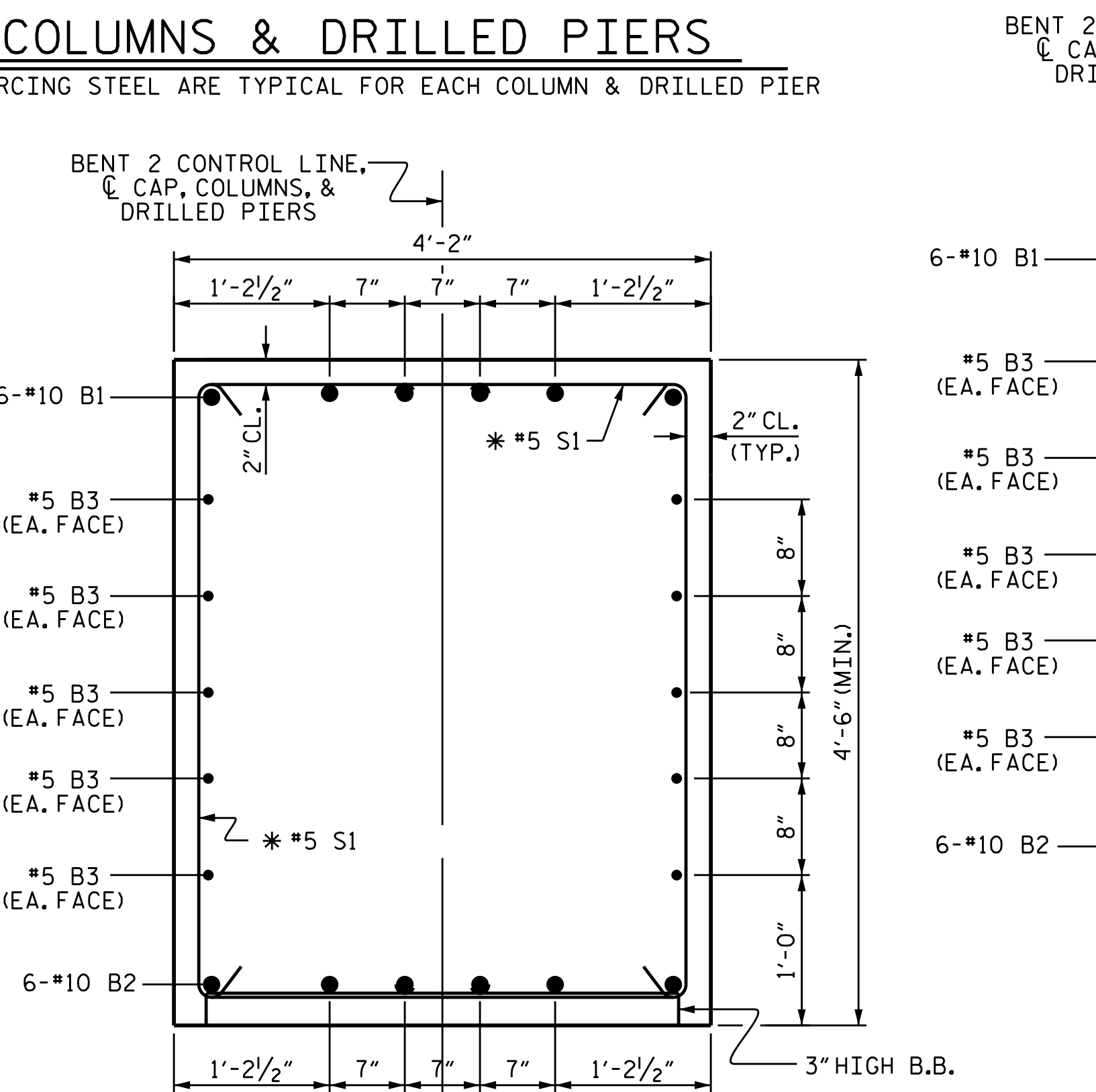
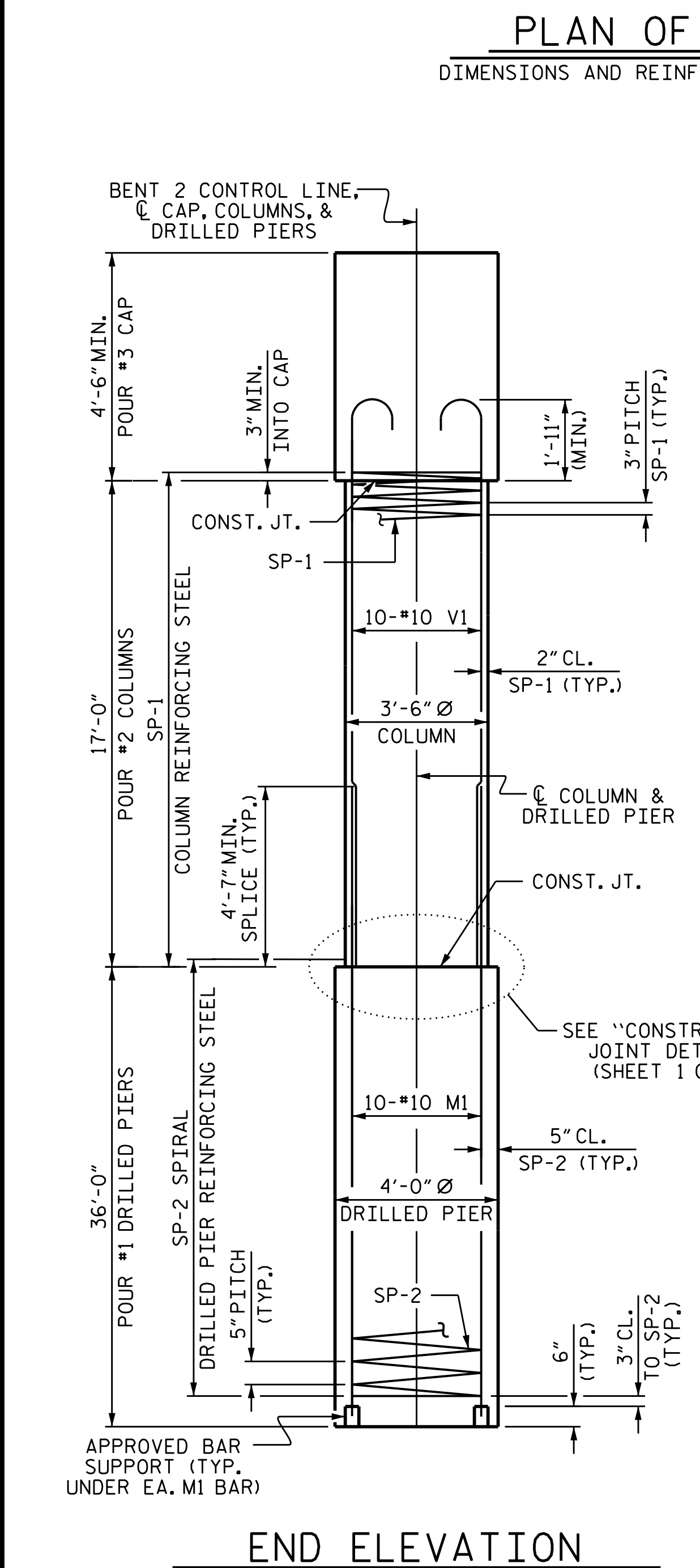
* INVERT ALTERNATE STIRRUPS
 ** INVERT ALTERNATE STIRRUPS PAIRS

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-26
1			3			TOTAL SHEETS
2			4			33



BILL OF MATERIAL					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#10	1	38'-5"	992
B2	6	#10	STR	35'-9"	923
B3	10	#5	STR	35'-9"	373
B4	6	#4	STR	14'-7"	58
M1	30	#10	STR	43'-5"	5604
S1	40	#5	2	13'-0"	542
S2	28	#5	2	11'-5"	333
U1	39	#4	3	6'-10"	178
U2	4	#4	3	7'-9"	21
U3	4	#4	3	7'-1"	19
U4	9	#4	3	6'-8"	40
V1	30	#10	4	20'-4"	2625
REINFORCING STEEL					LBS. 11,708
SP-1	3	*	5	681'-5"	1366
SP-2	3	**	6	843'-4"	2639
SPIRAL COLUMN REINFORCING STEEL					LBS. 4005
* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.					
** THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.					
CLASS A CONCRETE					
POUR #3 (CAP)				C.Y.	26.5
POUR #2 (COLUMNS)				C.Y.	18.2
TOTAL CLASS A CONCRETE				C.Y.	44.7
DRILLED PIER QUANTITIES					
DRILLED PIER CONCRETE					
POUR #1 (DRILLED PIERS)				C.Y.	50.2
4'-0" Ø DRILLED PIERS IN SOIL				LIN. FT.	73.0
4'-0" Ø DRILLED PIERS NOT IN SOIL				LIN. FT.	35.0
PERMANENT STEEL CASING FOR 4'-0" Ø DRILLED PIER				LIN. FT.	42.7
CSL TESTING				EA.	1
CSL TUBES				LIN. FT.	450



DRAWN BY : M. G. SHAIKH DATE : 12/2020
 CHECKED BY : K. PUROHIT DATE : 02/2021
 DESIGN ENGINEER OF RECORD : J. A. T. DATE : 07/2020

3/17/2022
 R:\Structures\FINAL PLANS OBD\400.055.BR-0048.SMU. B2.0027.850103.dgn
 amlee

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. BR-0048
 SURRY COUNTY
 STATION: 18+50.00 -L-
 SHEET 2 OF 2



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENT 2					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-27
					TOTAL SHEETS 33

NOTES:

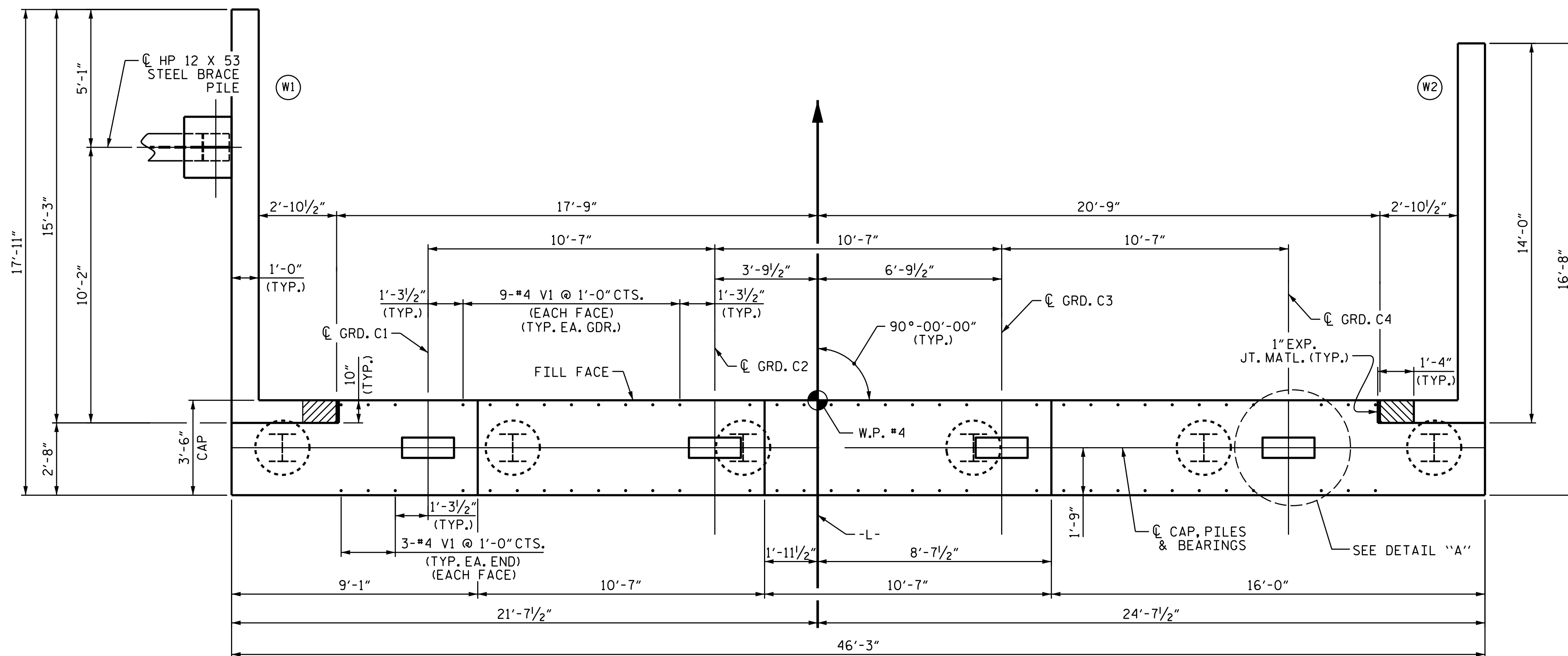
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #4 V1 BARS.

THE TOP PART OF THE END BENT CAP, EXCEPT THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4".

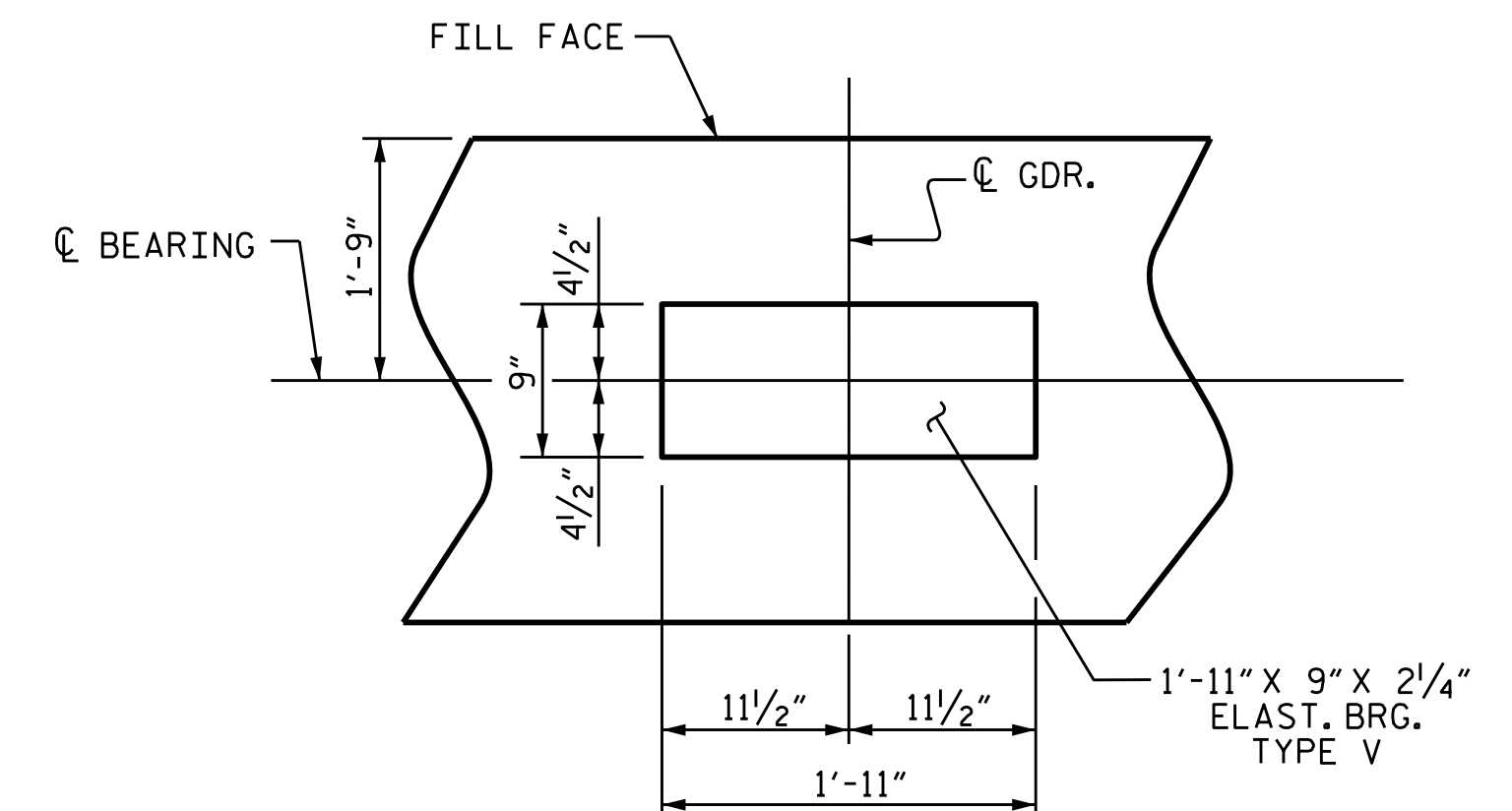
THE CONTRACTOR SHALL BE RESPONSIBLE FOR TEMPORARY DRAINAGE AND EROSION CONTROL AT THE END BENT.

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

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

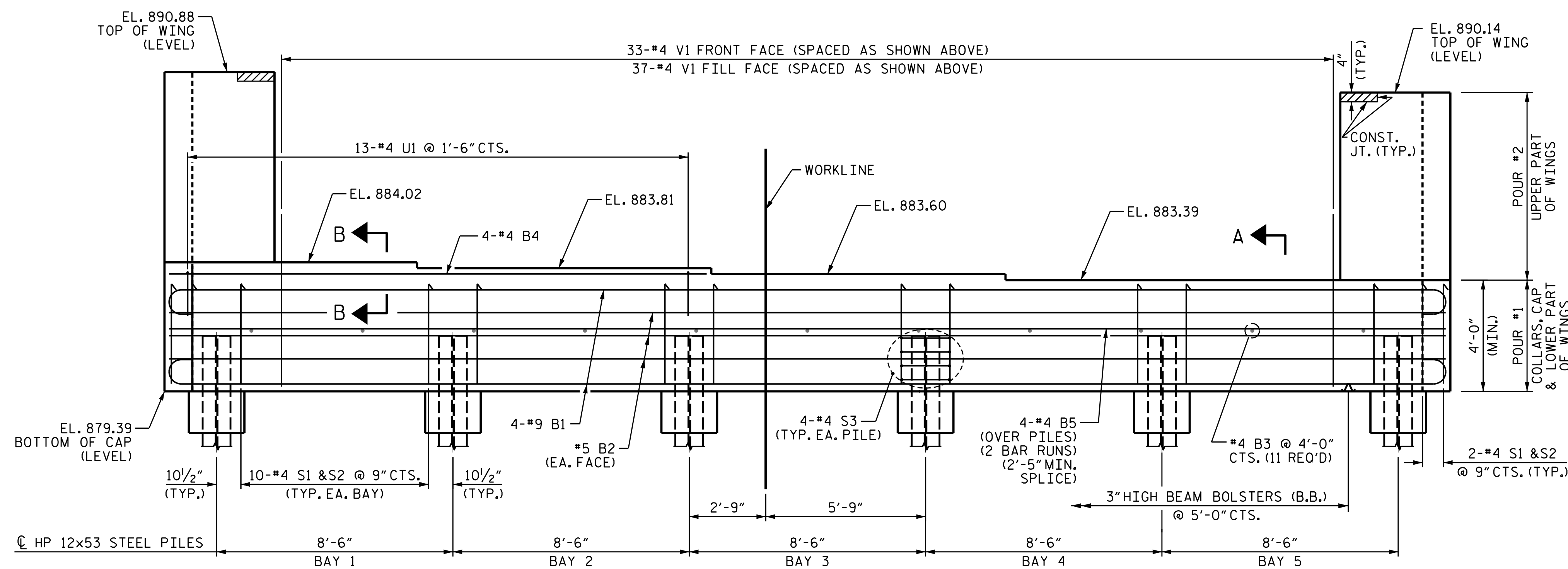


PLAN

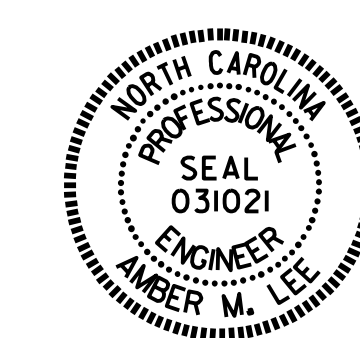


DETAIL "A"

(TYP. EA. GDR.)



ELEVATION



DocuSigned by:
Amber M. Lee
03/18/2022

PROJECT NO. BR-0048
SURREY COUNTY
STATION: 18+50.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

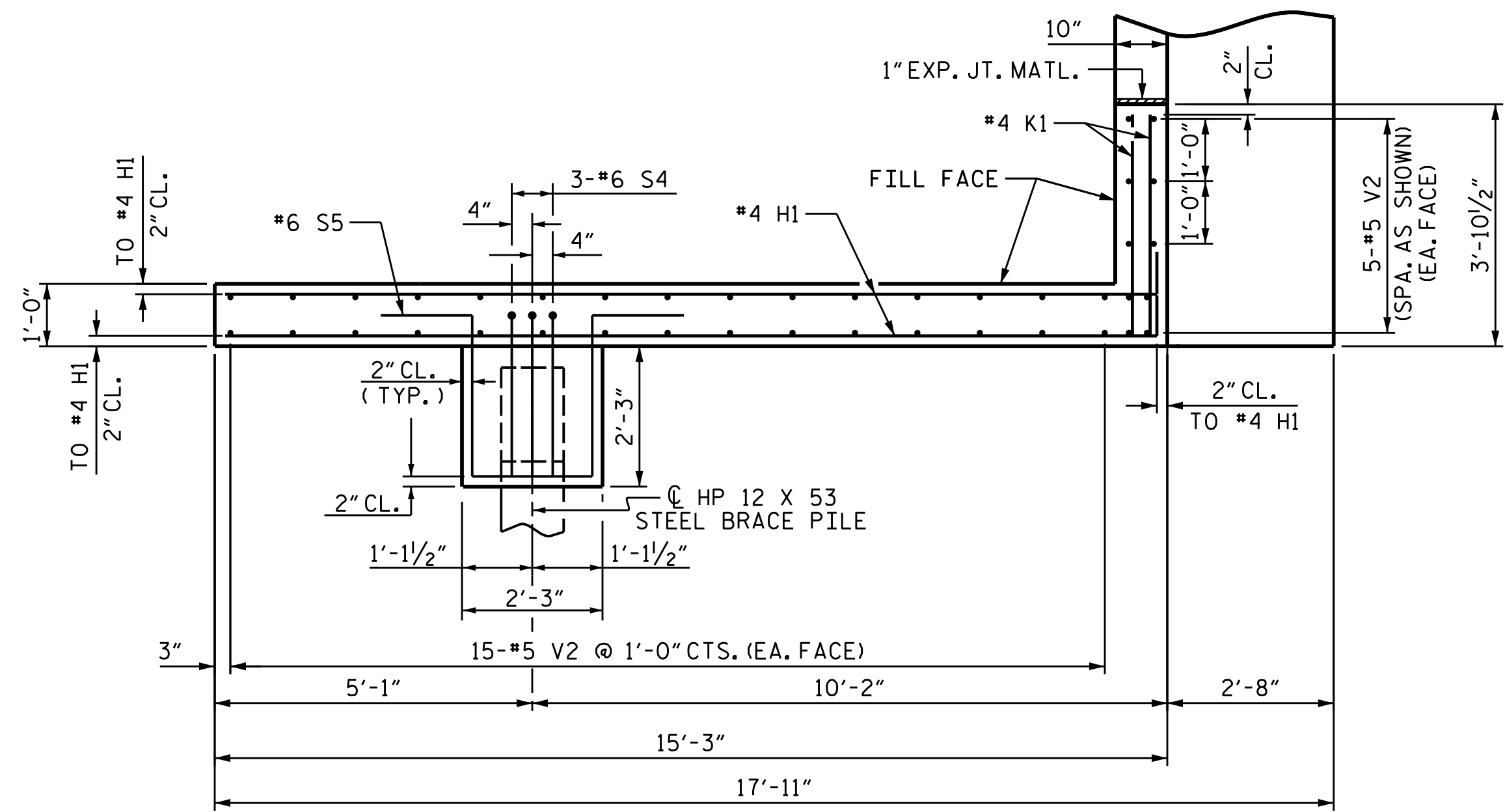
SUBSTRUCTURE
INTEGRAL
END BENT 2

DRAWN BY: M. G. SHAIKH DATE: 12/2020
CHECKED BY: K. PUROHIT DATE: 02/2021
DESIGN ENGINEER OF RECORD: J. A. I. DATE: 07/2020

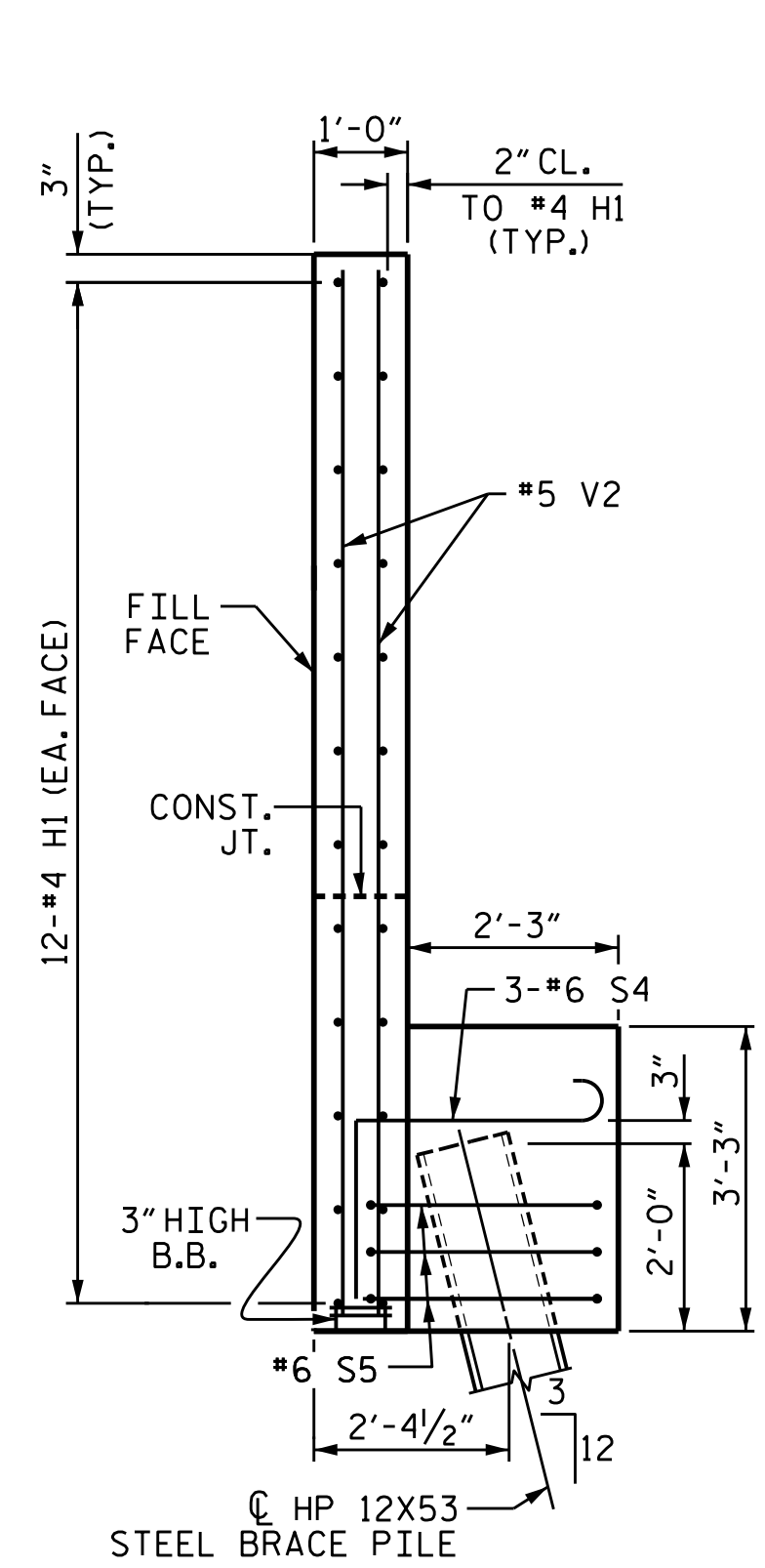
3/17/2022
RA\Structures\FINAL PLANS OBD\400.057_BR-0048.SMU. E2.0028.850103.dgn
amlee

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

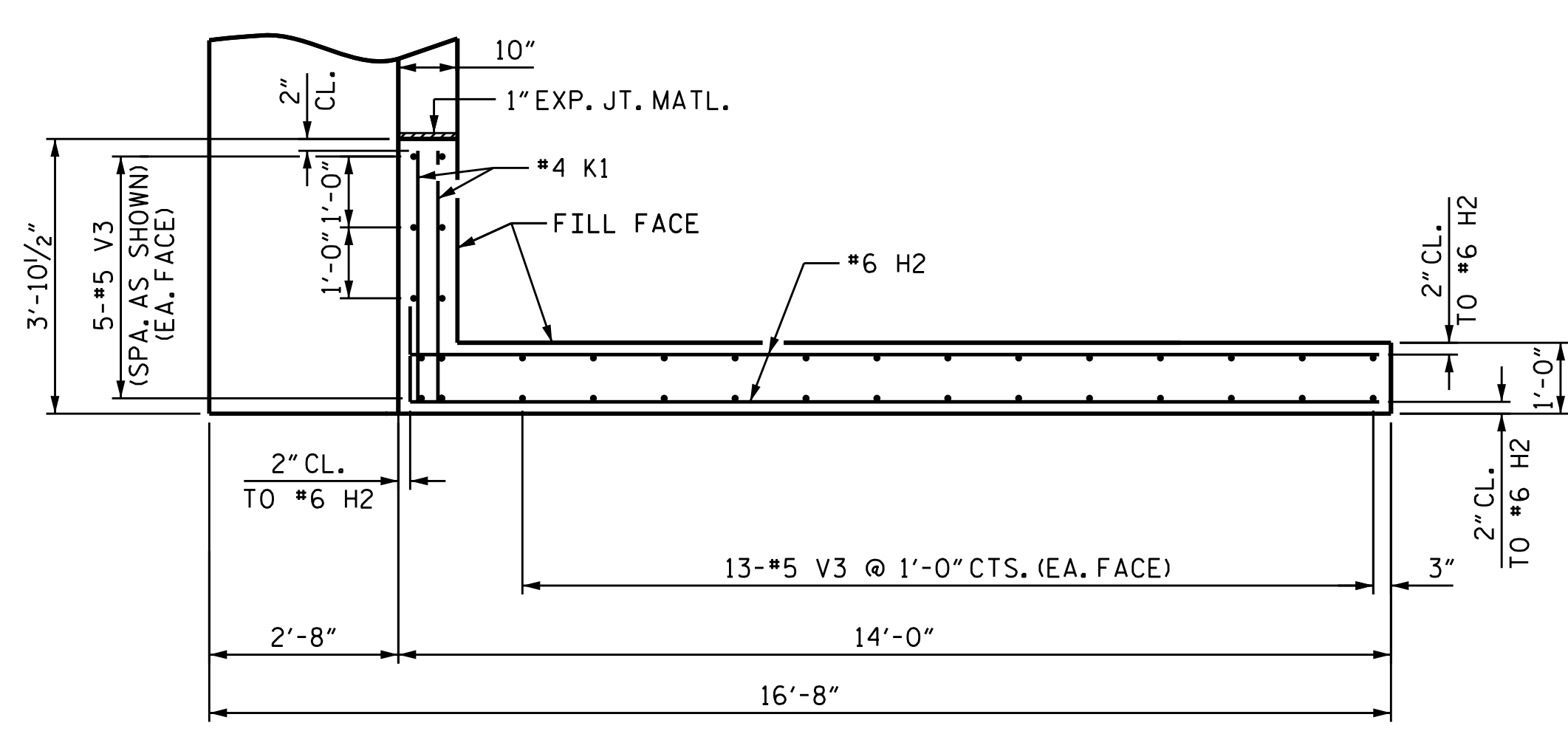
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-28
1			3			TOTAL SHEETS
2			4			33



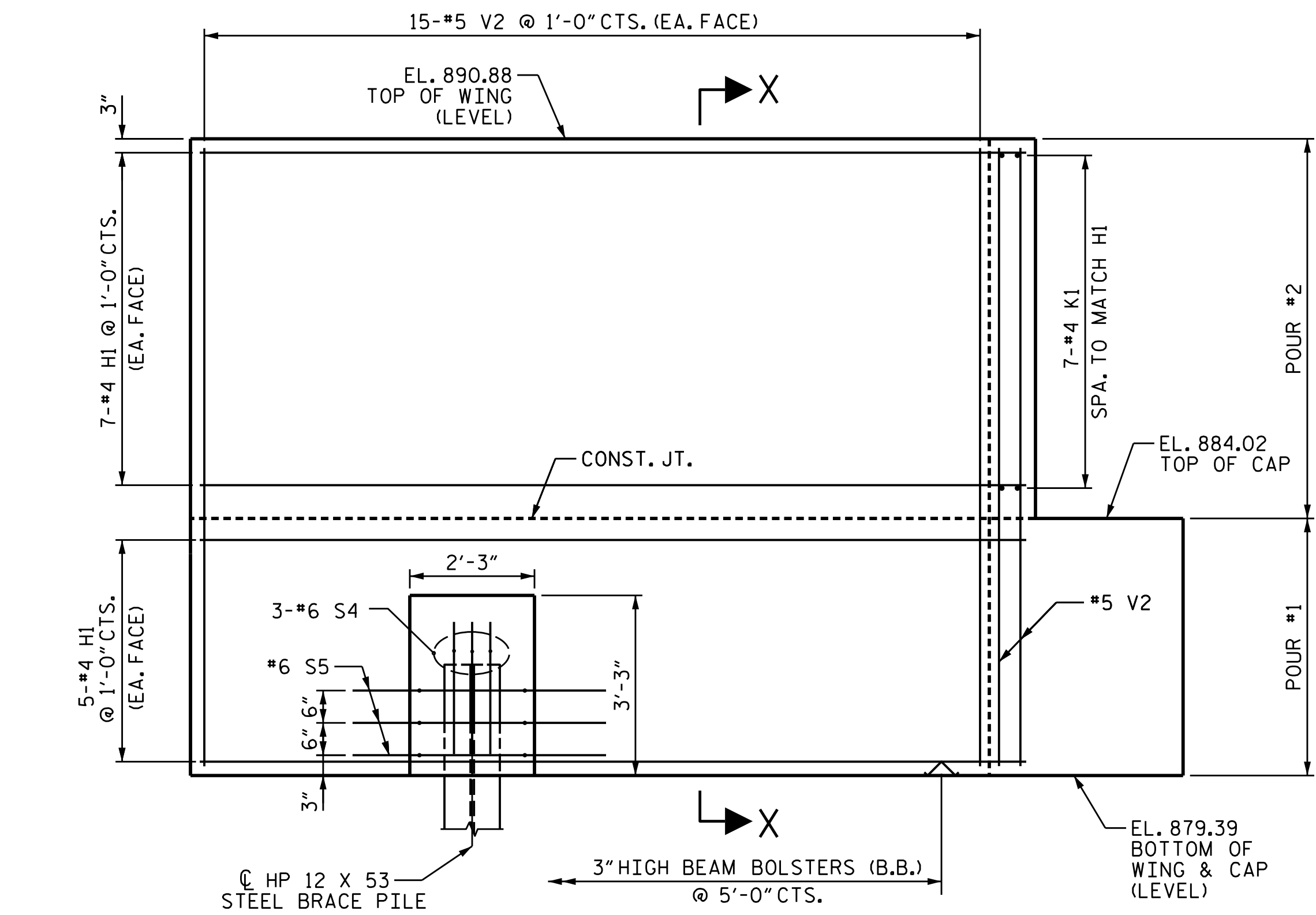
PLAN OF LEFT WING - W1



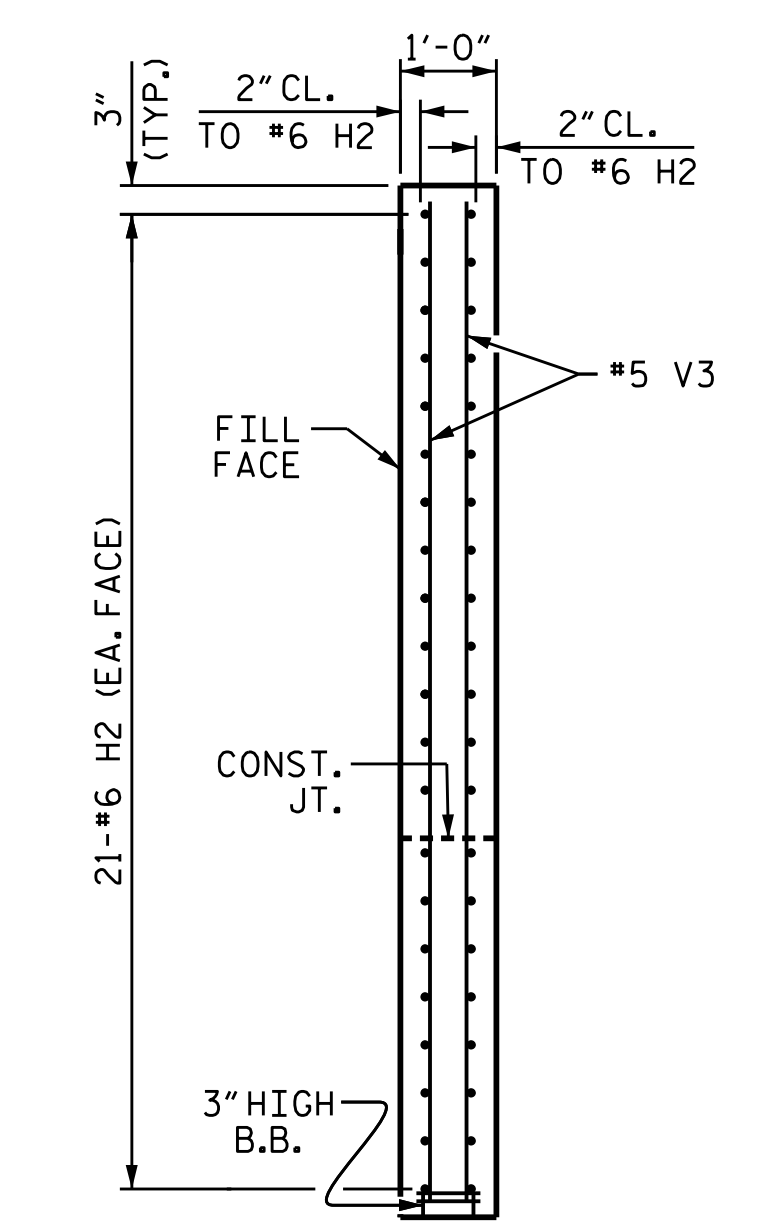
SECTION X-X



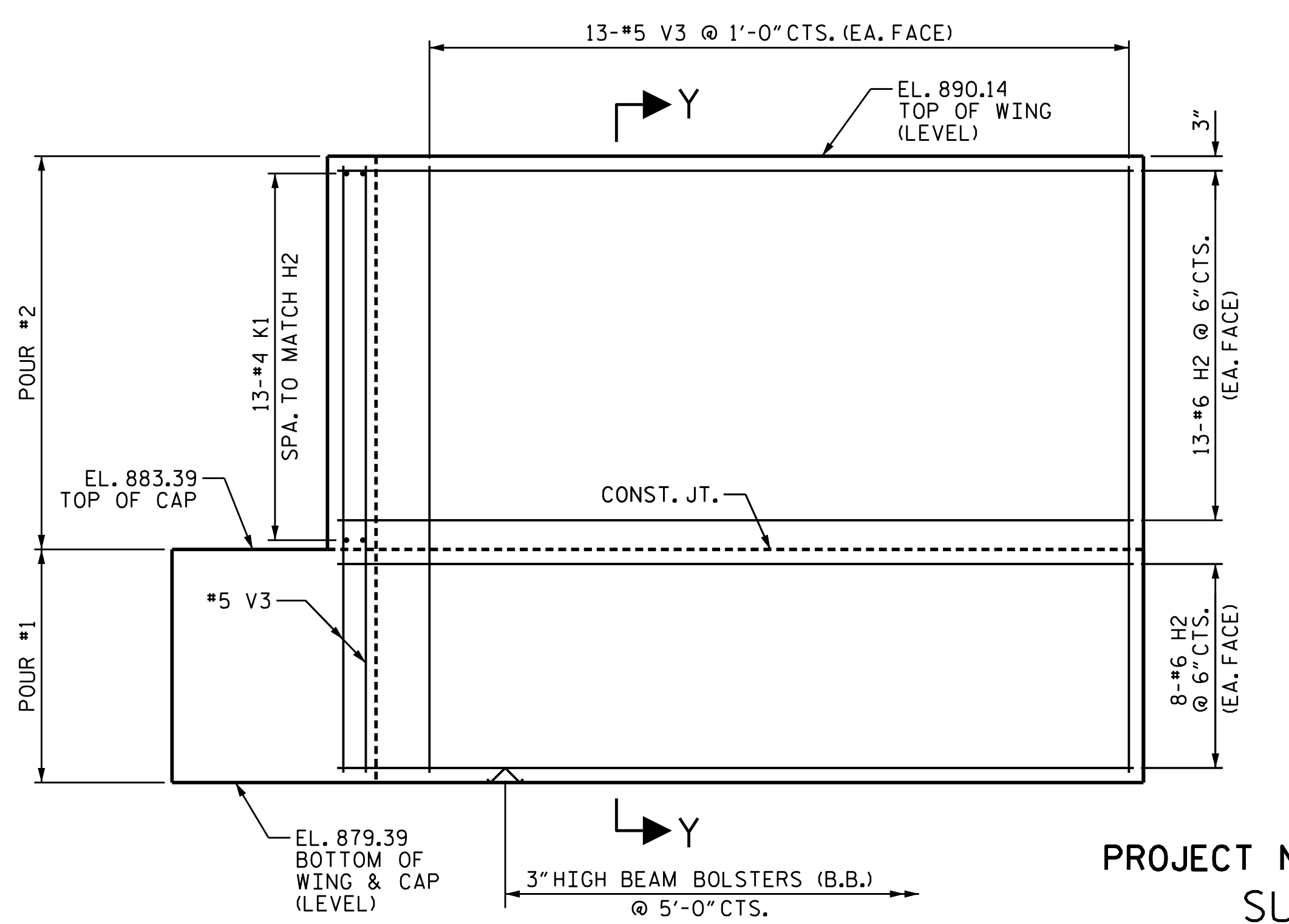
PLAN OF RIGHT WING - W2



ELEVATION OF LEFT WING - W1



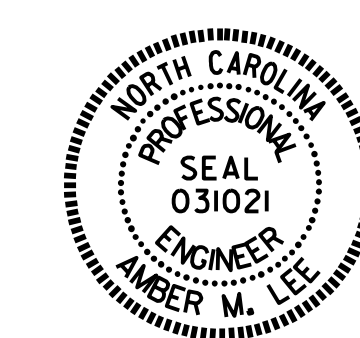
SECTION Y-Y



ELEVATION OF RIGHT WING - W2

PROJECT NO. BR-0048
 SURRY COUNTY
 STATION: 18+50.00 -L-

SHEET 2 OF 3

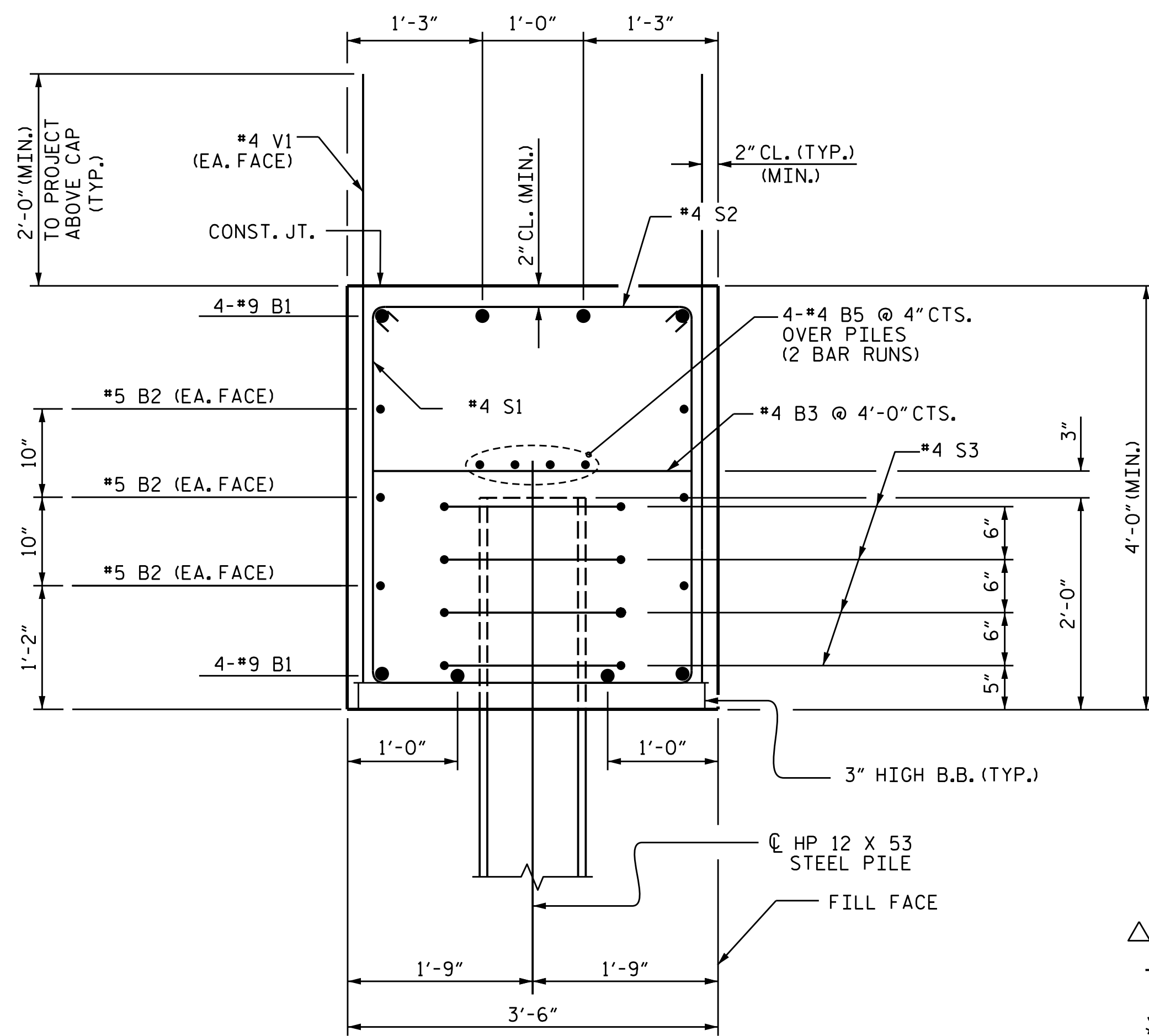


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 INTEGRAL
 END BENT 2

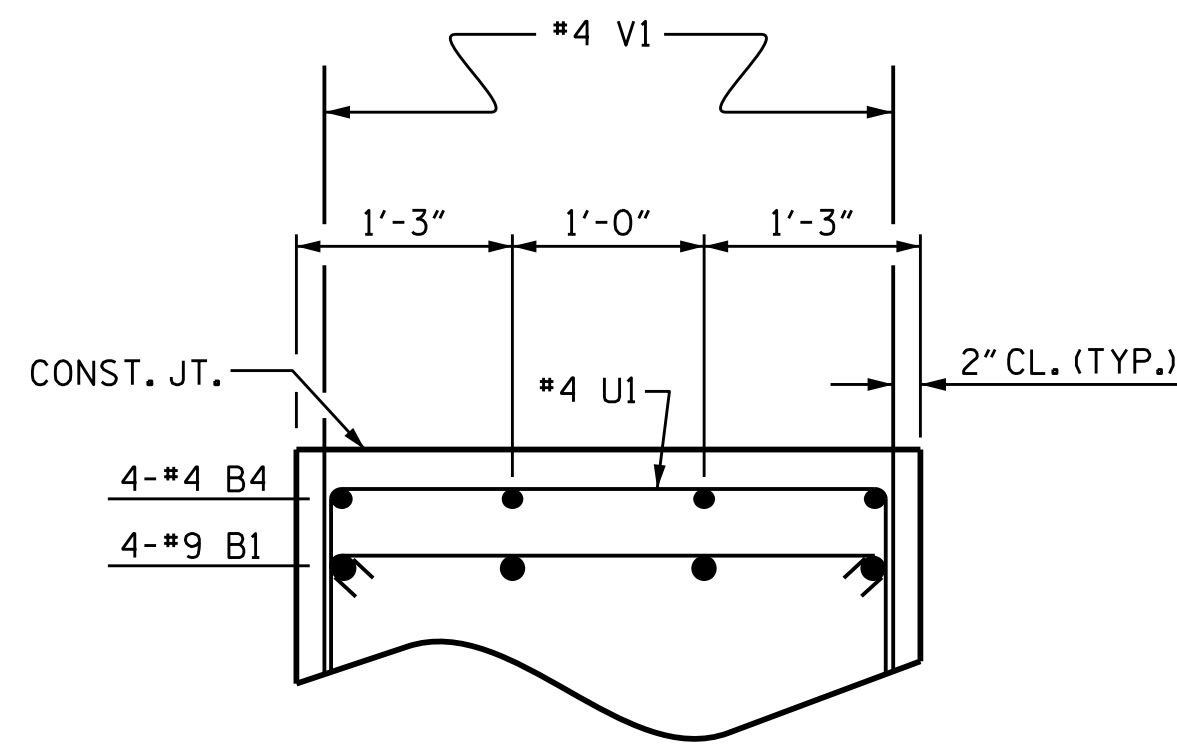
DRAWN BY : M. G. SHAIKH DATE : 12/2020
 CHECKED BY : K. PUROHIT DATE : 02/2021
 DESIGN ENGINEER OF RECORD: J. A. I. DATE : 07/2020

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

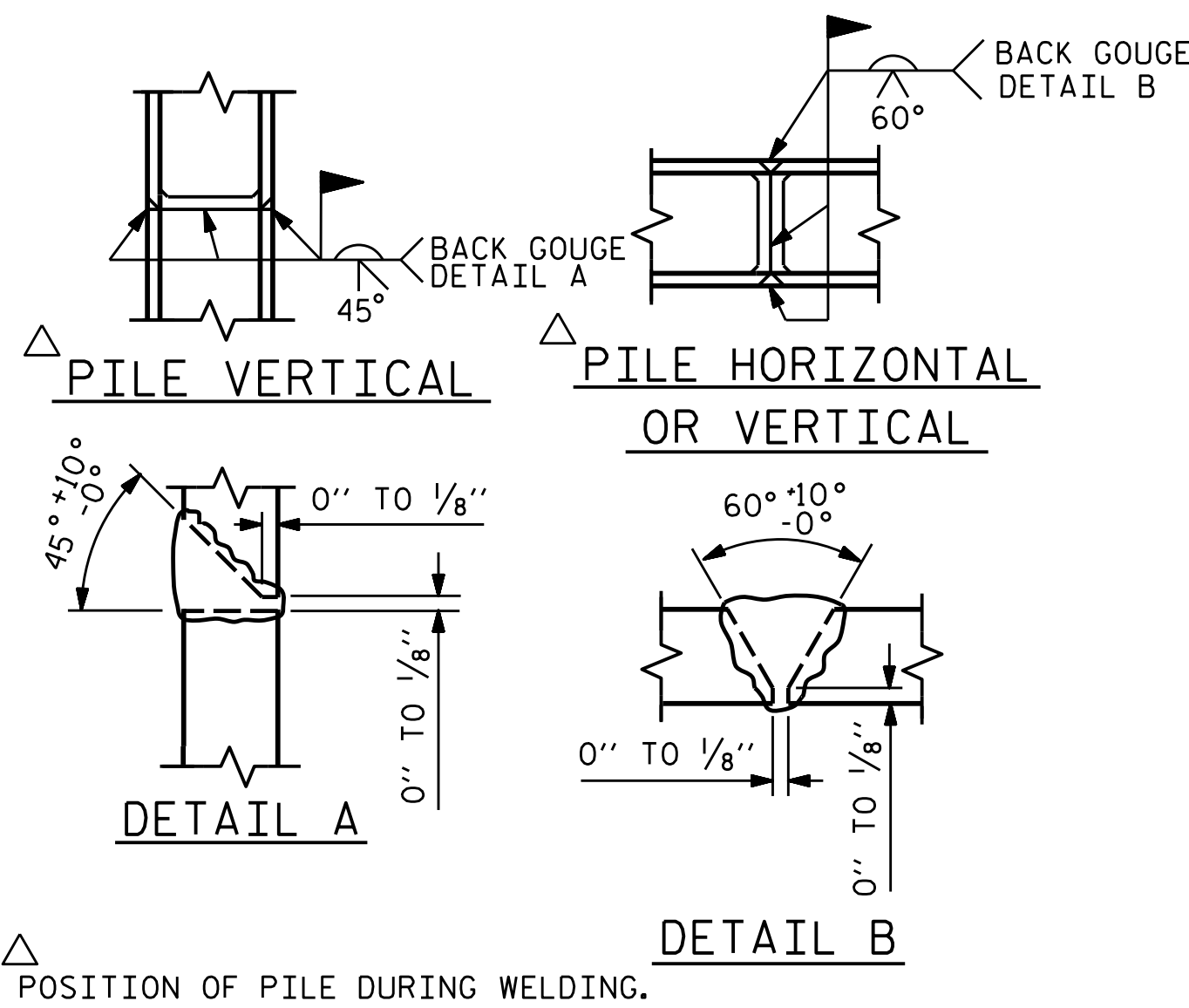
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-29
1			3			TOTAL SHEETS
2			4			33



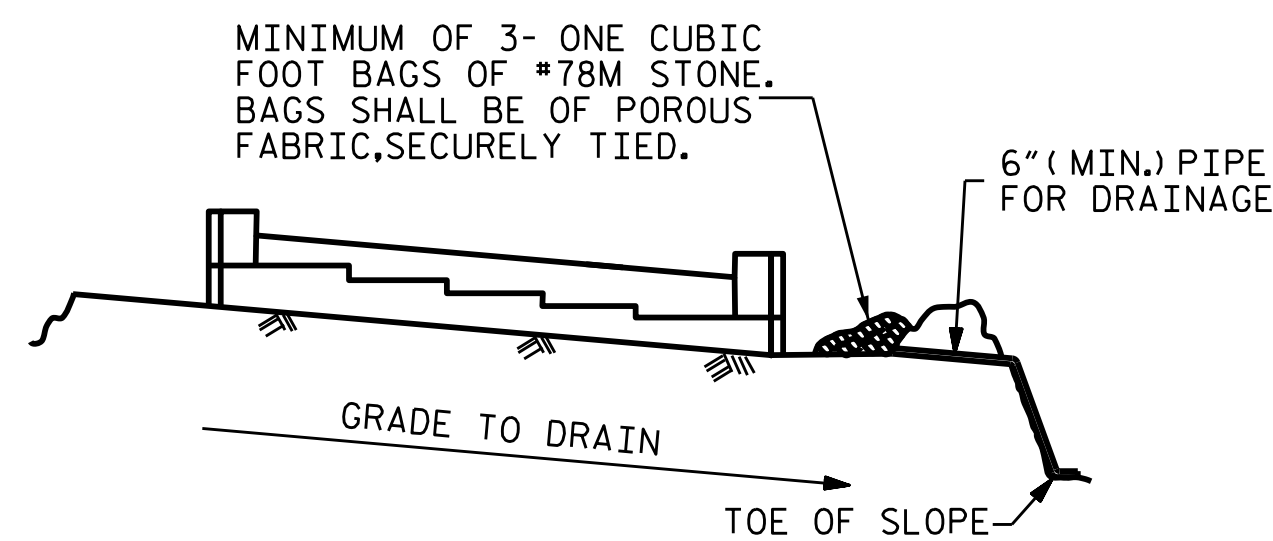
SECTION A-A



PARTIAL SECTION B-B



PILE SPLICE DETAILS

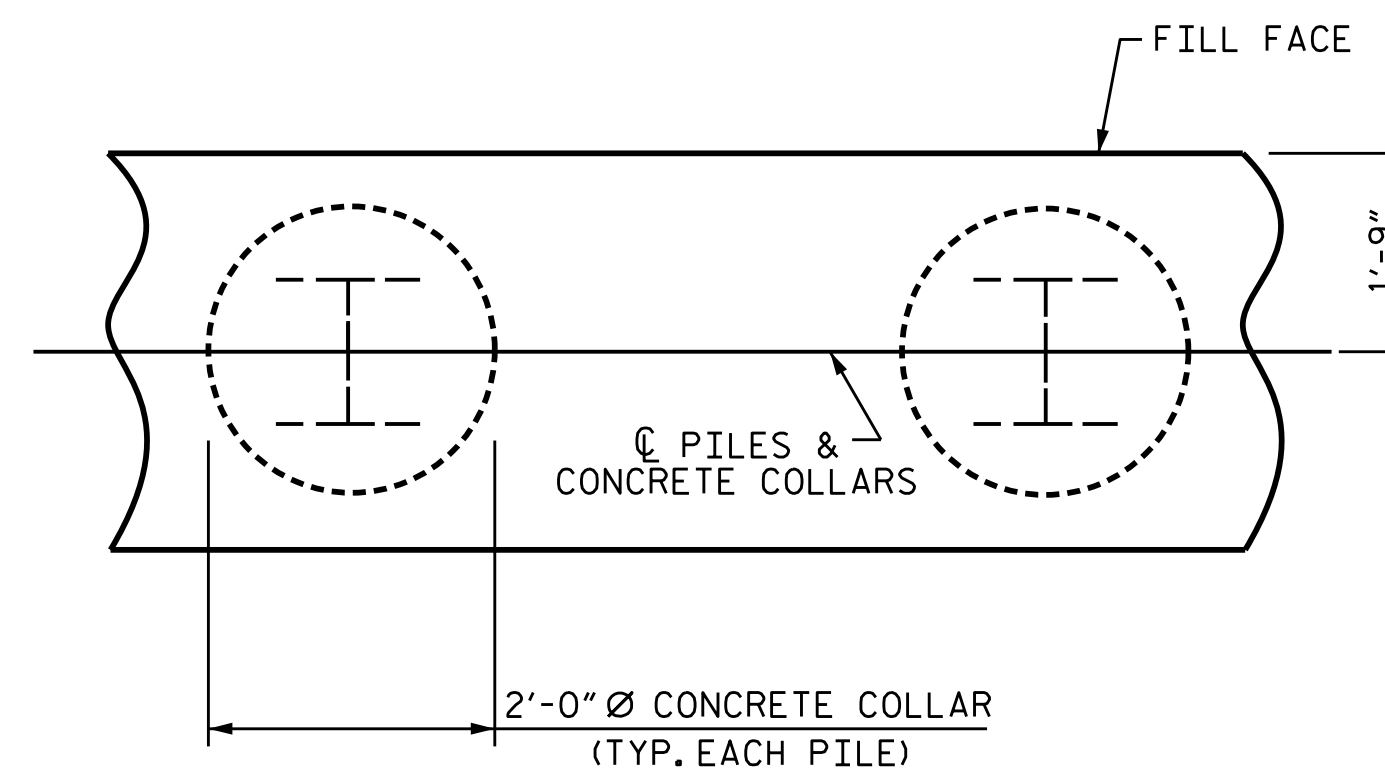


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

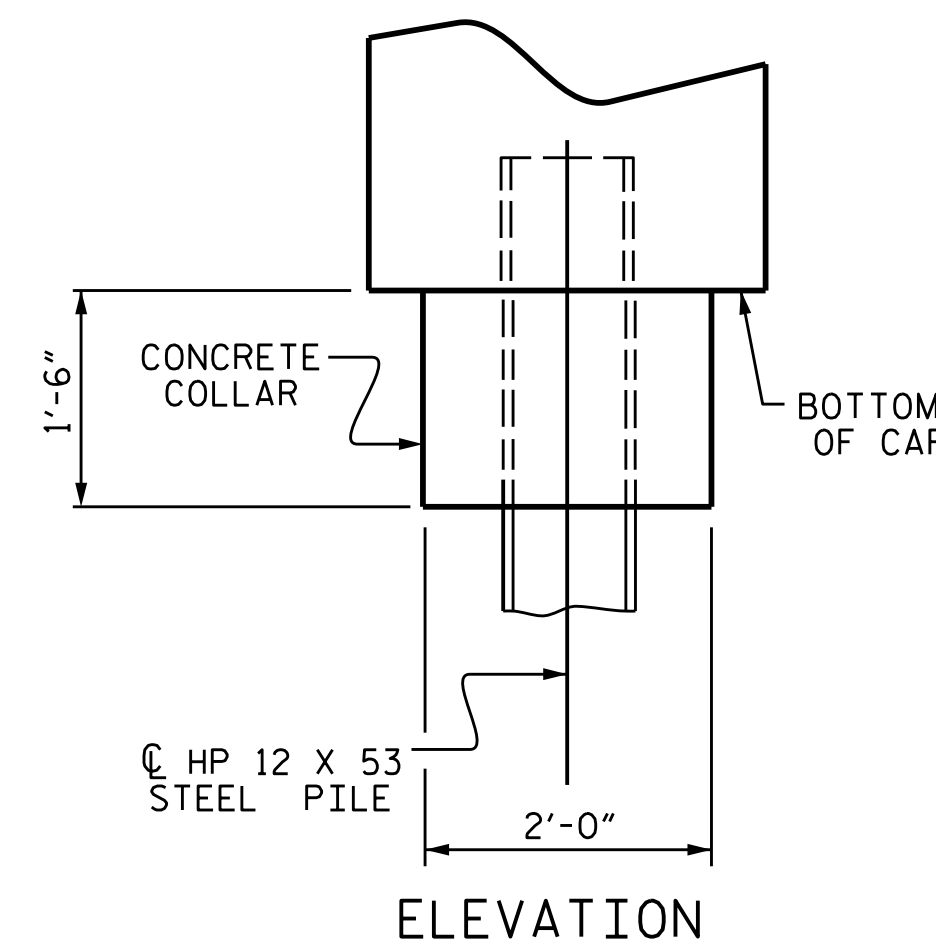
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

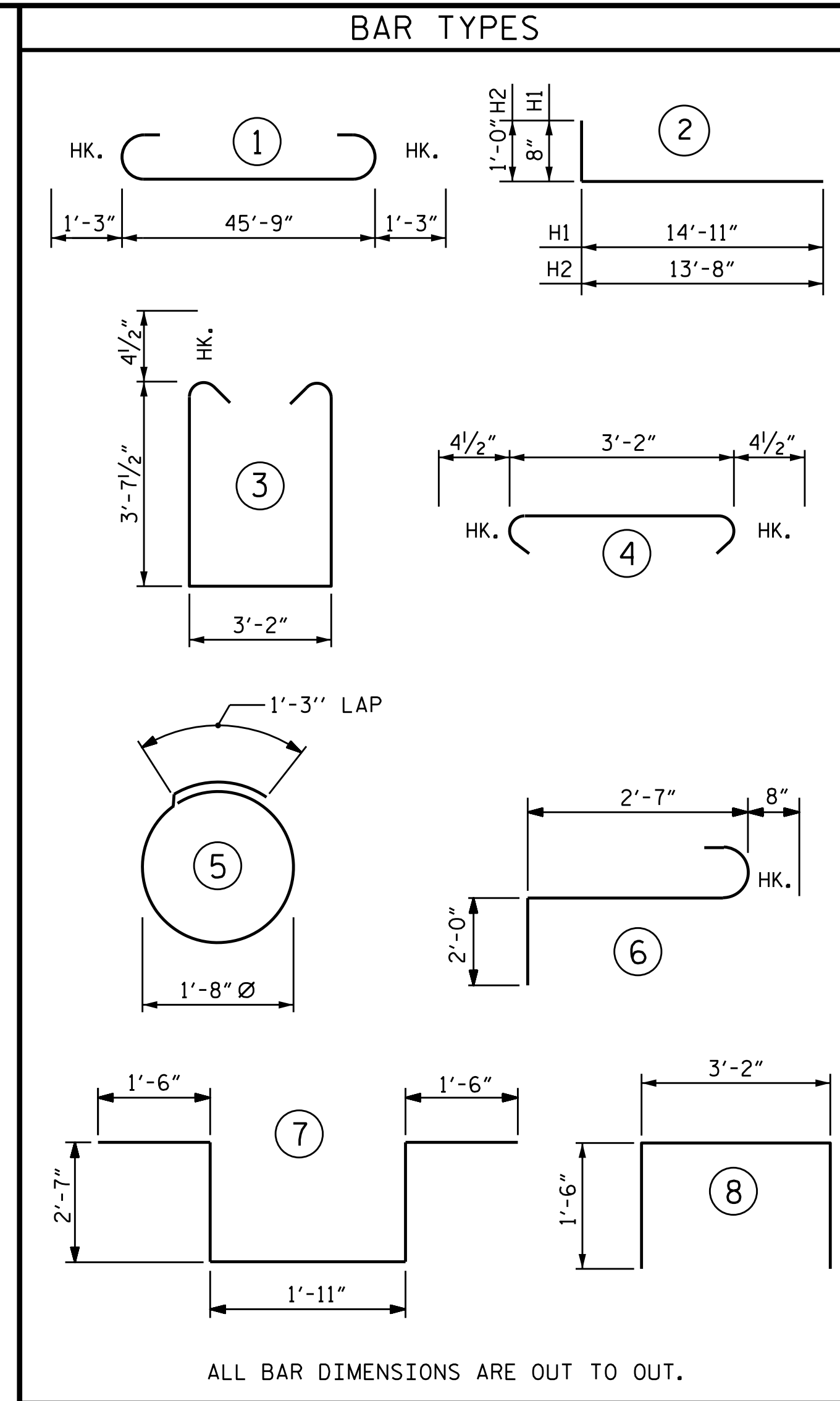


PLAN



ELEVATION

CORROSION PROTECTION FOR STEEL PILES DETAIL



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	48'-3"	1312
B2	6	#4	STR	45'-11"	287
B3	11	#4	STR	3'-2"	23
B4	4	#4	STR	19'-4"	52
B5	8	#4	STR	24'-2"	129
H1	24	#4	2	15'-7"	250
H2	42	#6	2	14'-8"	925
K1	40	#4	STR	3'-6"	94
S1	54	#4	3	11'-2"	403
S2	54	#4	4	3'-11"	141
S3	24	#4	5	6'-6"	104
S4	3	#6	6	5'-3"	24
S5	3	#6	7	10'-1"	45
U1	13	#4	8	6'-2"	54
V1	66	#4	STR	6'-6"	287
V2	40	#5	STR	11'-1"	462
V3	36	#5	STR	10'-5"	391

REINFORCING STEEL = 4983 LBS.

CLASS AA CONCRETE

POUR #1 (CAP, CON. COLLARS, & LOWER PART OF WINGS) = 31.7 C.Y.

POUR #2 (UPPER PART OF WINGS) = 8.7 C.Y.

TOTAL = 40.4 C.Y.

HP 12 X 53 STEEL PILES

No. 7 _____ LIN FT. 245

PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES 7 EA.

PROJECT NO. BR-0048

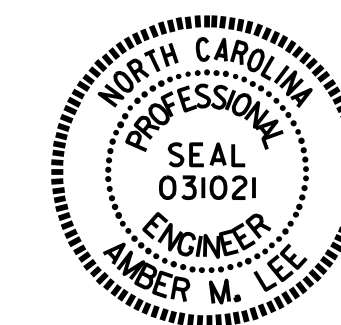
SURRY COUNTY

STATION: 18+50.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
INTEGRAL
END BENT 2



DocuSigned by:
Amber M. Lee
B0485A4F2FAD484
03/18/2022

REVISIONS

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

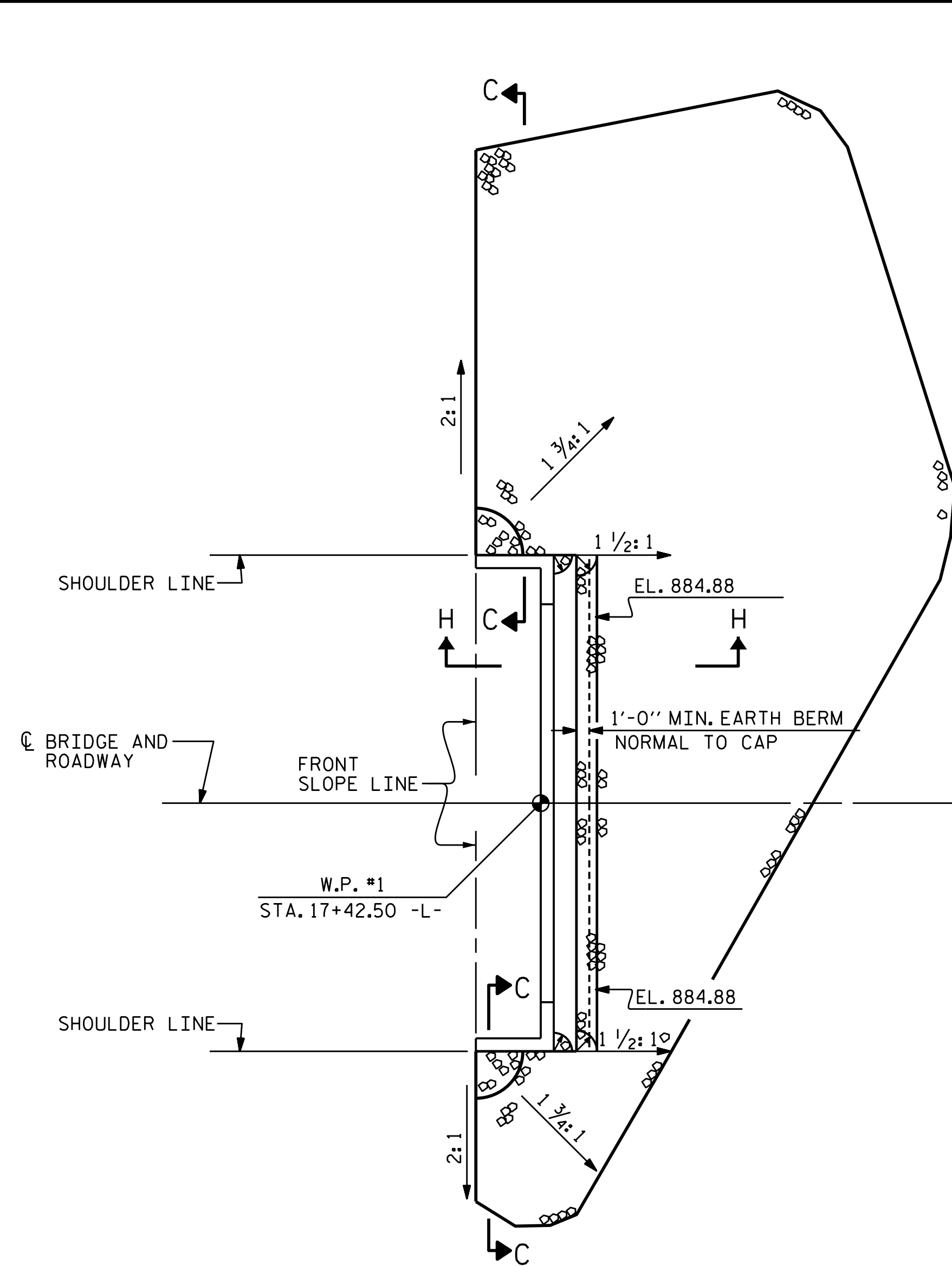
SHEET NO.
S-30

TOTAL SHEETS
33

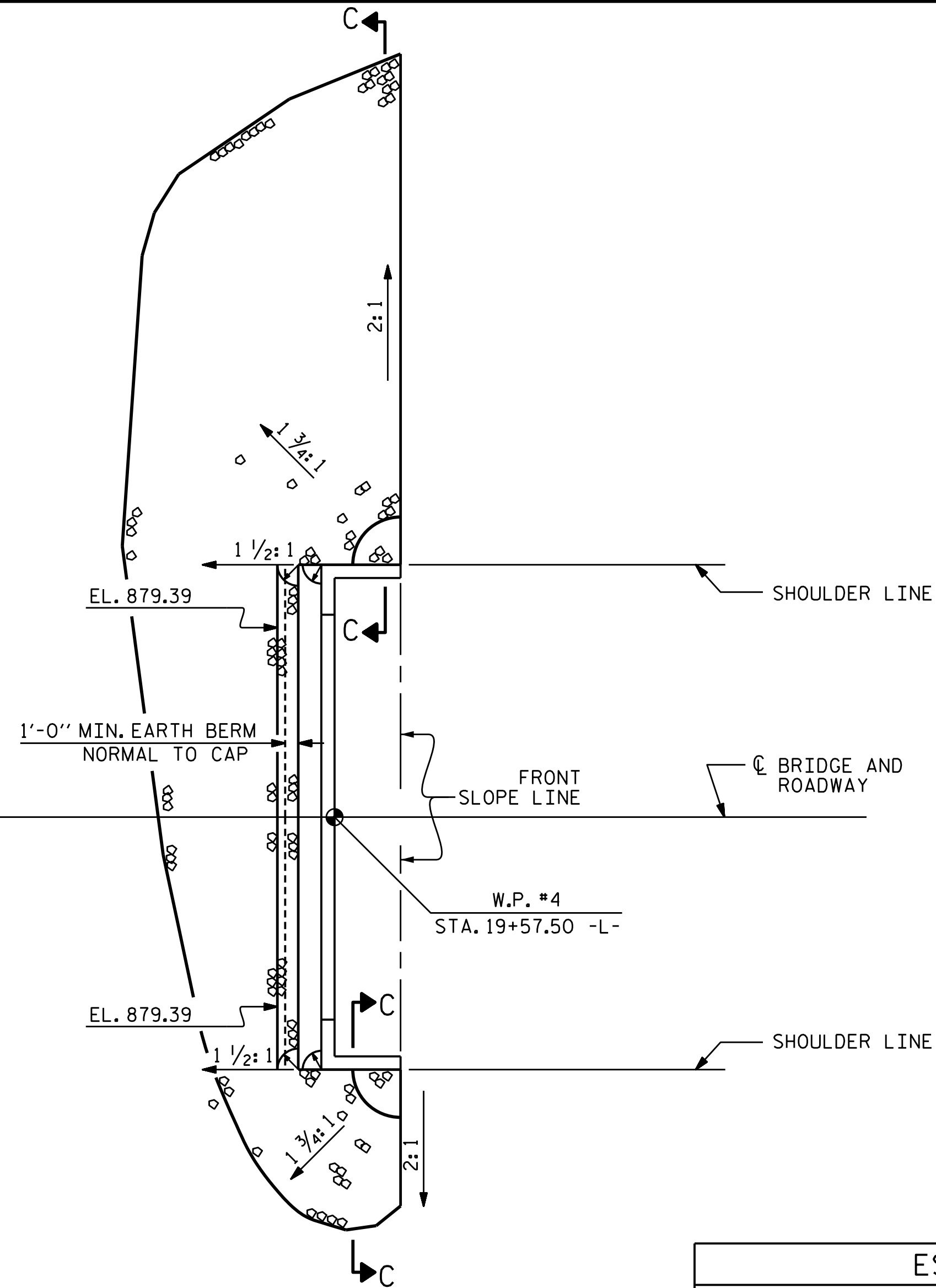
DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

DRAWN BY: M. G. SHAIKH DATE: 12/2020
CHECKED BY: K. PURHIT DATE: 02/2021
DESIGN ENGINEER OF RECORD: J. A. T. DATE: 07/2020

NOTES :
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.

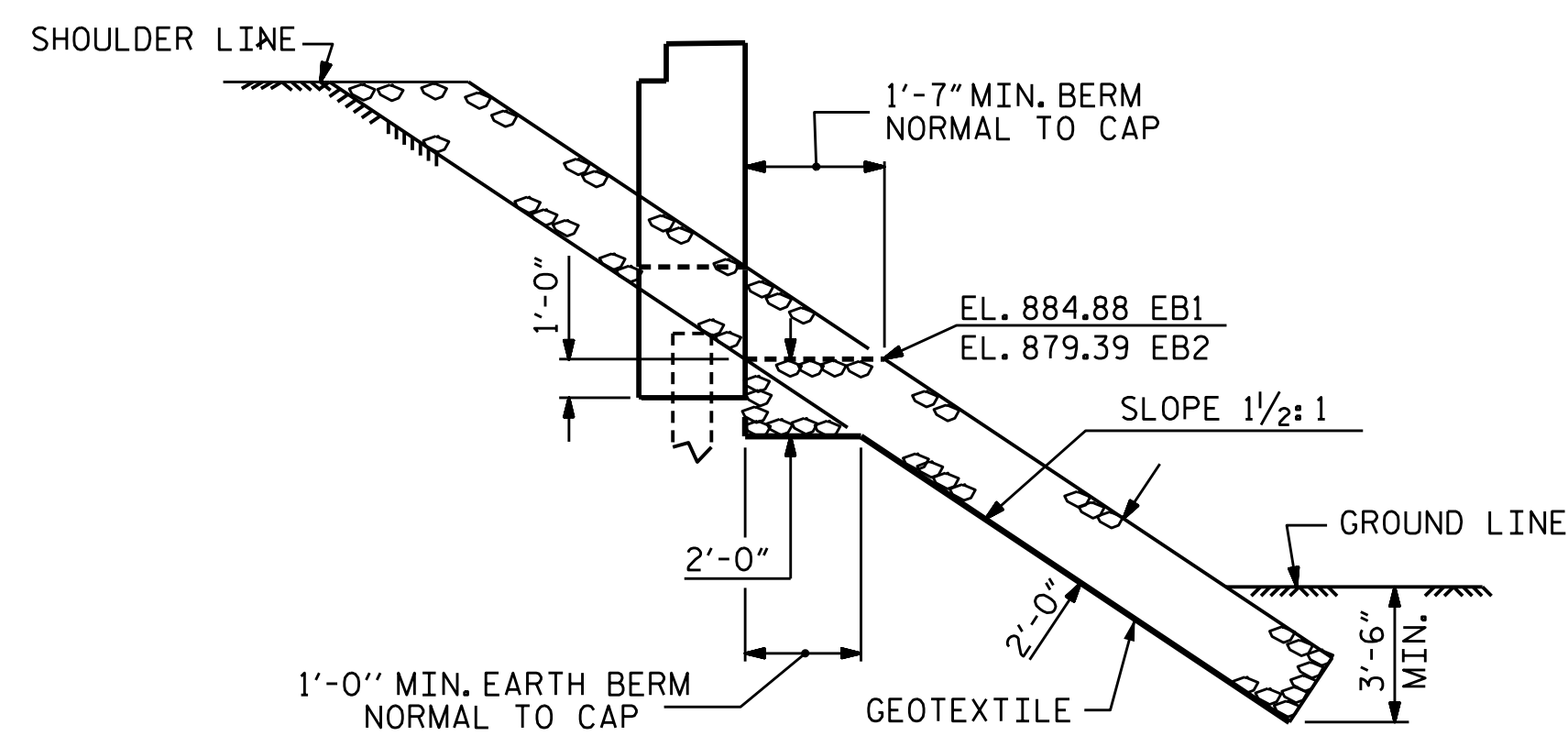


INTEGRAL END BENT 1

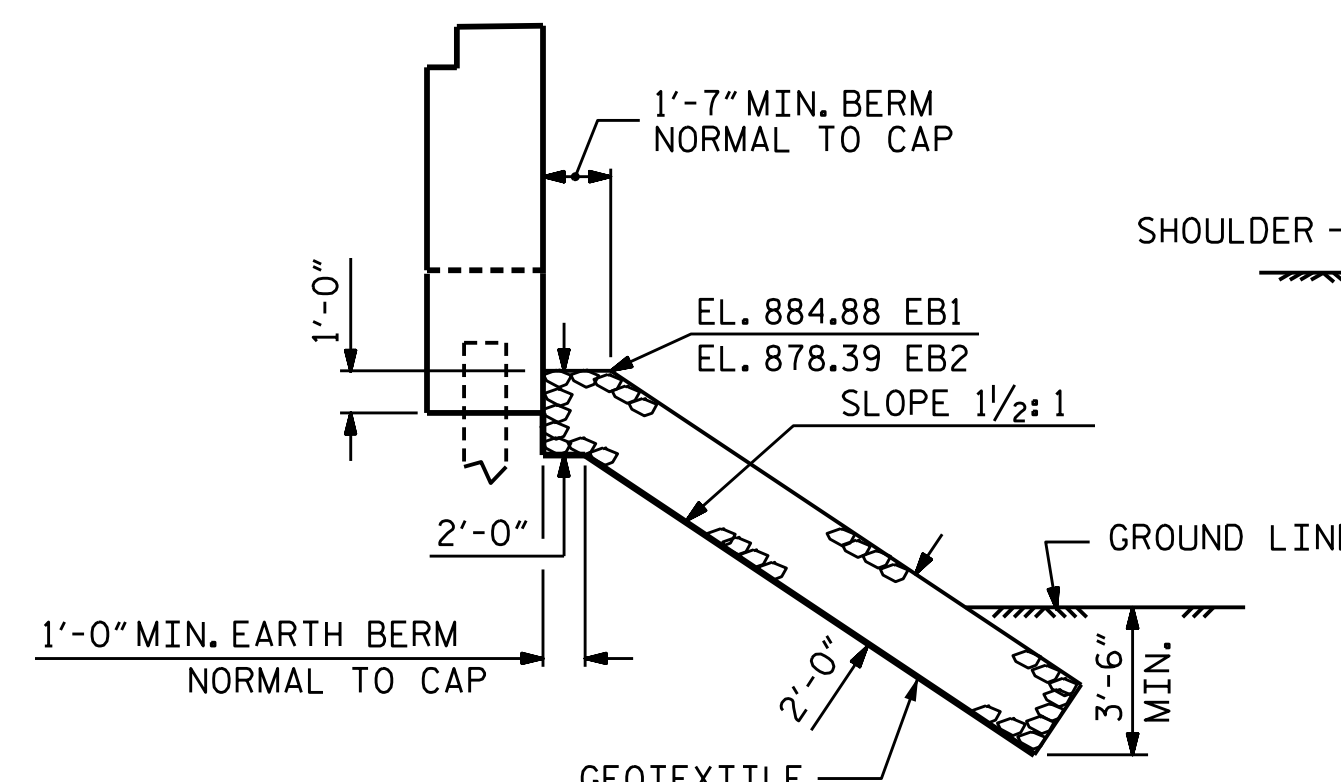


INTEGRAL END BENT 2

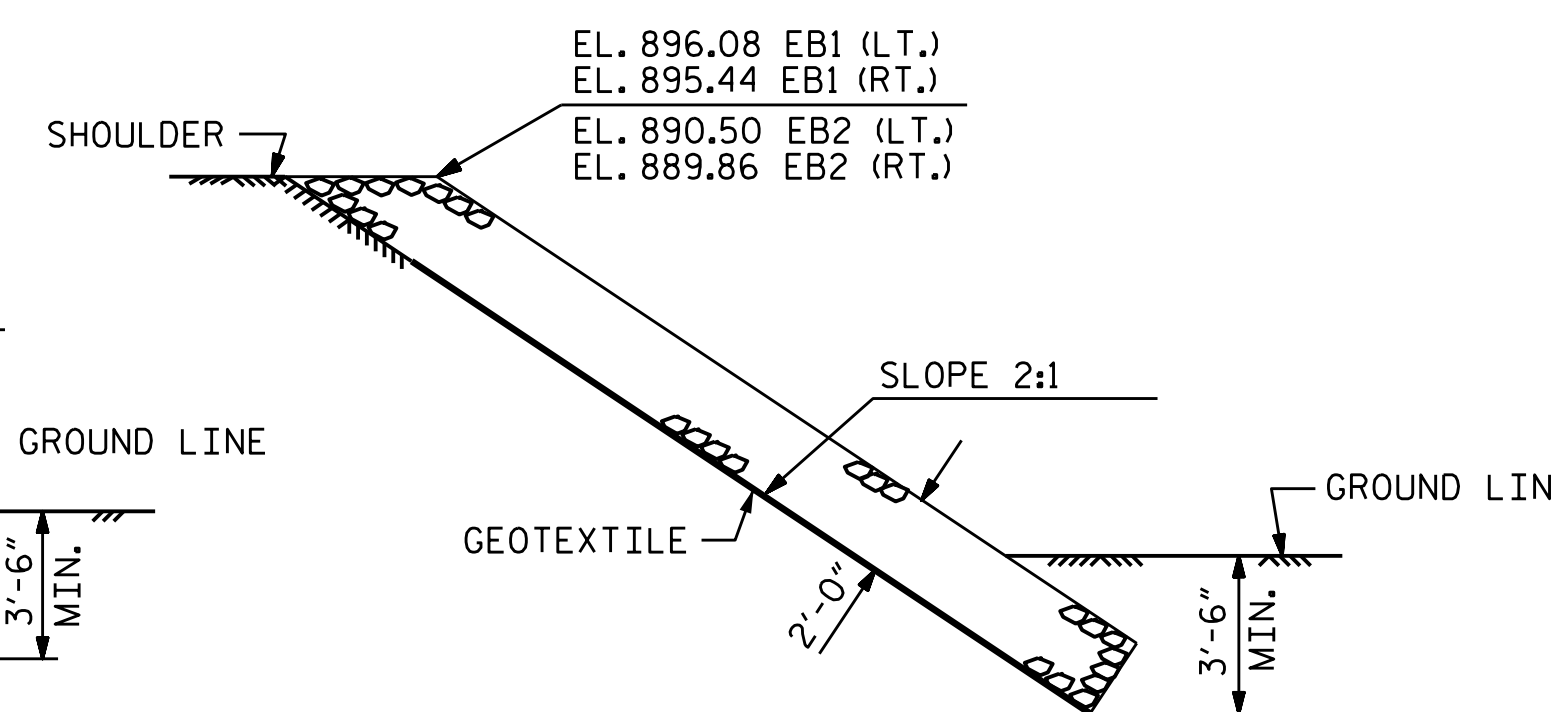
ESTIMATED QUANTITIES		
BRIDGE @ STA. 18+50.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	600	640
END BENT 2	400	450



SECTION H-H

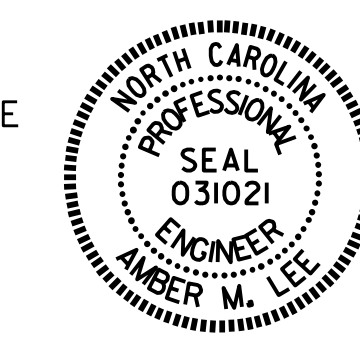


**SECTION C-C
BERM RIP RAPPED**



SECTION C-C

PROJECT NO. BR-0048
SURRY COUNTY
STATION: 18+50.00 -L-

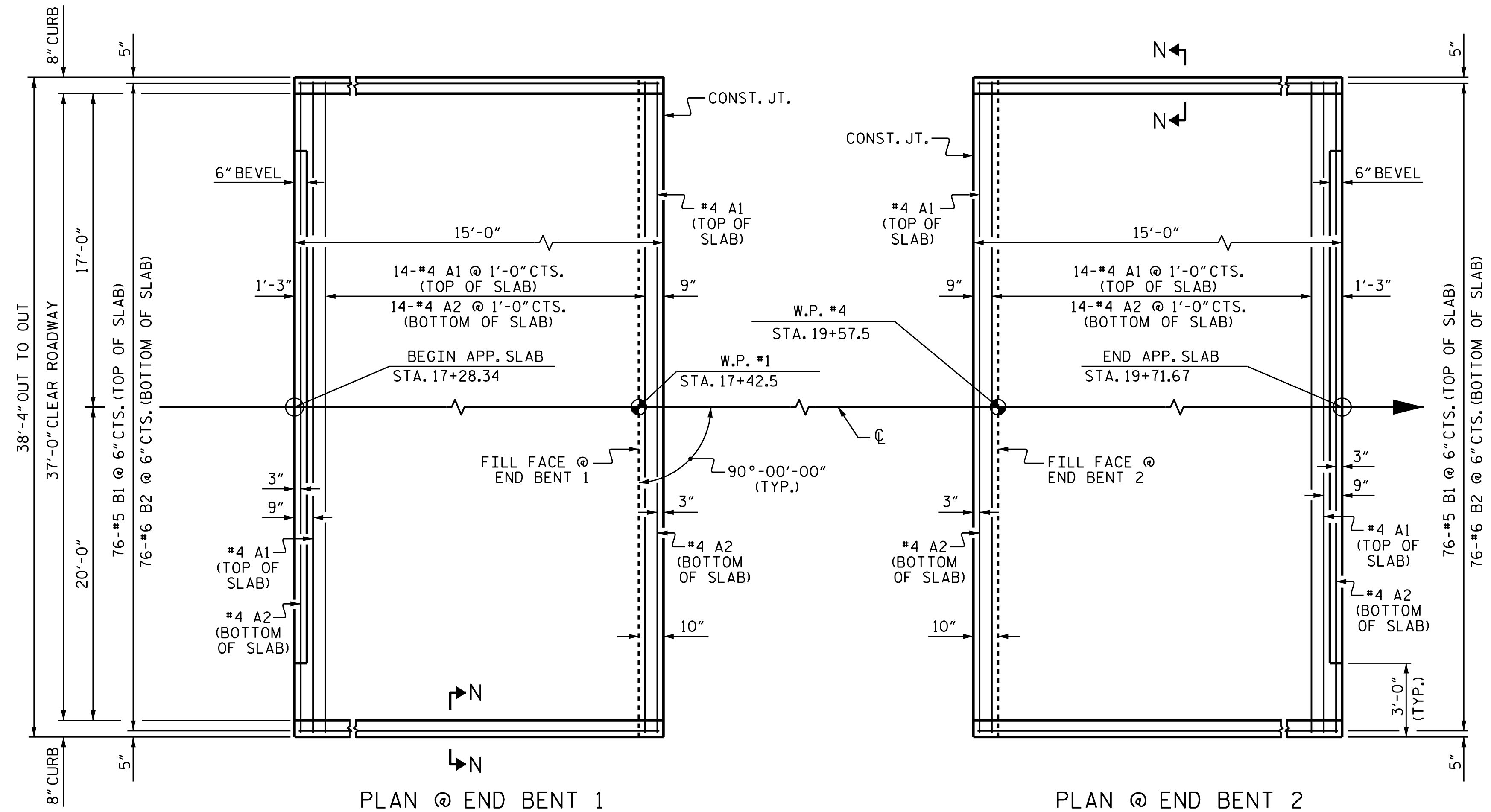


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
== RIP RAP DETAILS ==

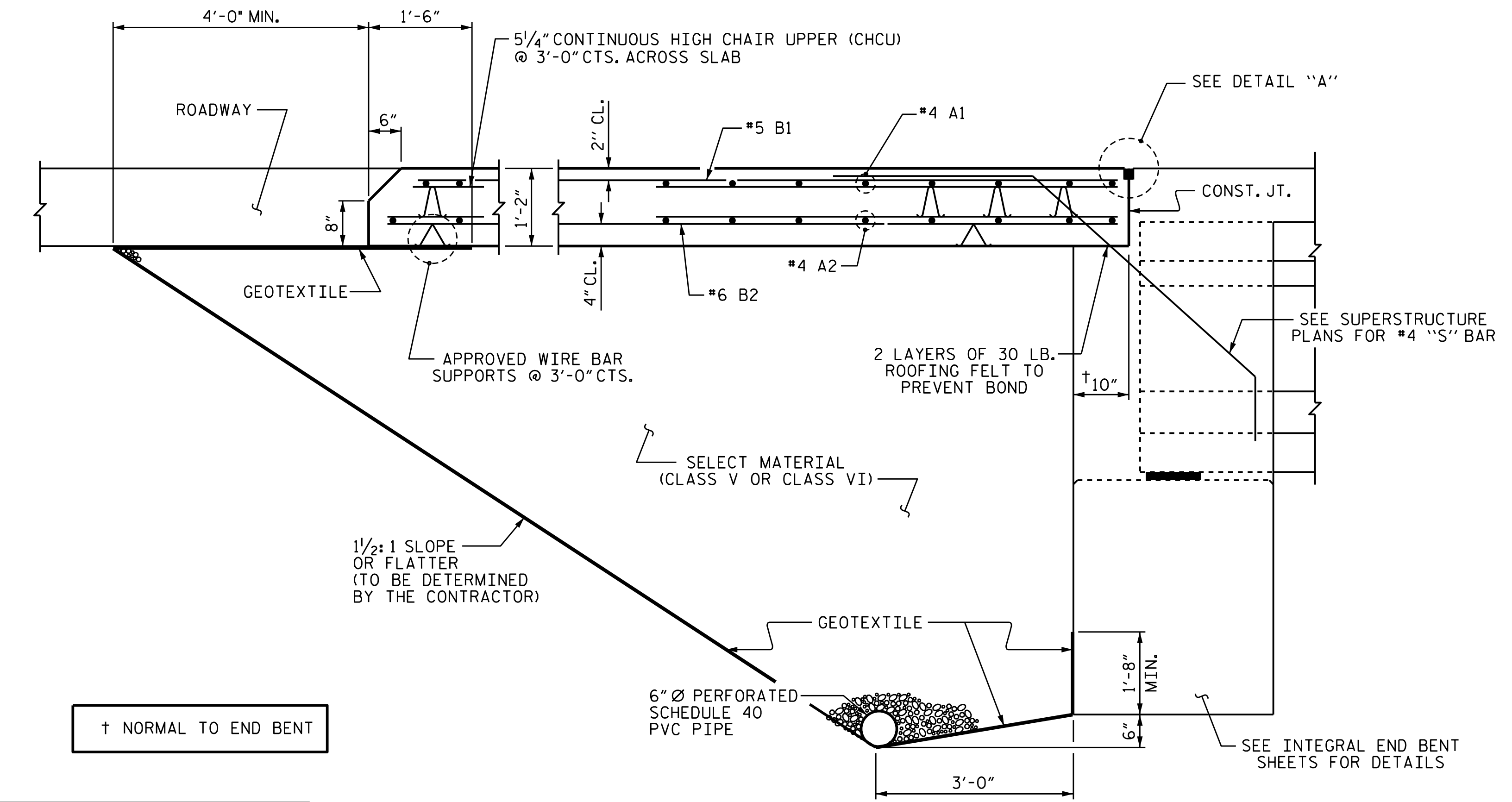
ASSEMBLED BY : C. RUIZ	DATE : 02/2021
CHECKED BY : K. PUROHIT	DATE : 03/2021
DRAWN BY : REK 1/84	REV. 5/1/06R TLA/GM
CHECKED BY : RDU 1/84	REV. 10/1/11 MAA/GM
	REV. 12/21/11 MAA/GM

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-31
1			3			TOTAL SHEETS
2			4			33



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



SECTION THRU SLAB
 (TYPE I - STANDARD APPROACH FILL)

NOTES

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

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 6" Ø DRAINAGE PIPE, AND SELECT MATERIAL, SEE ROADWAY PLANS.

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

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

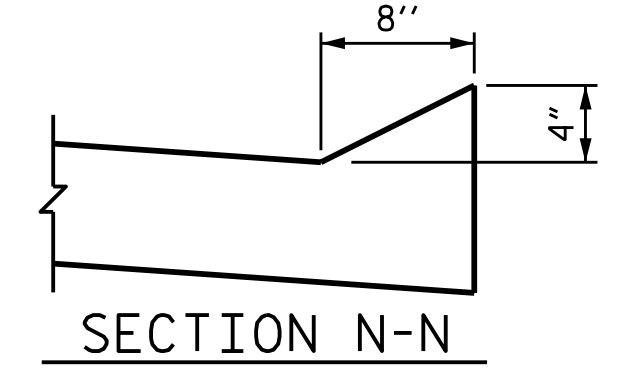
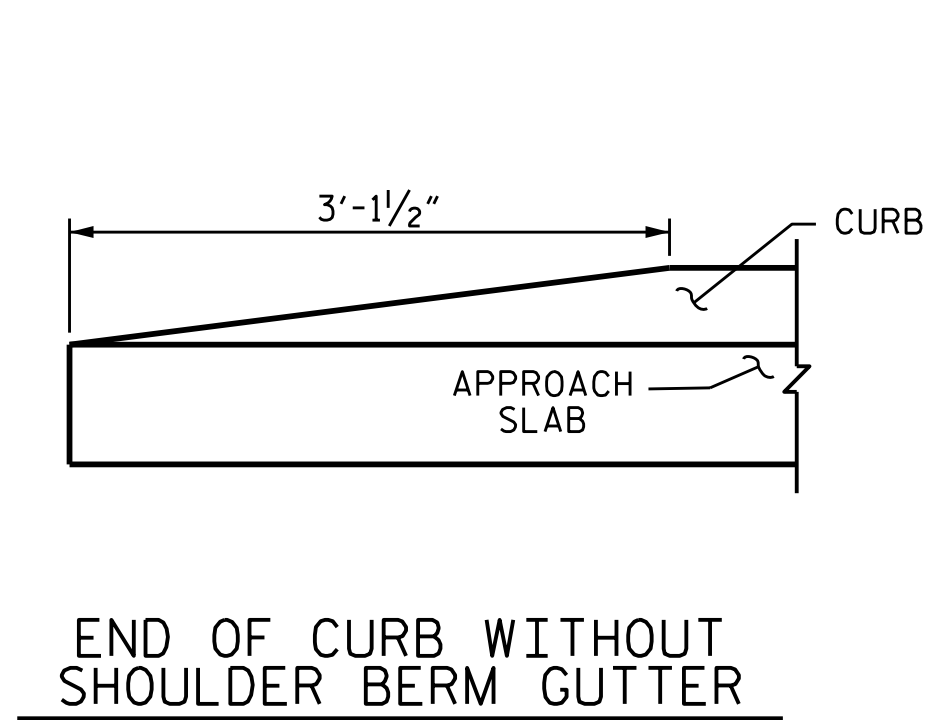
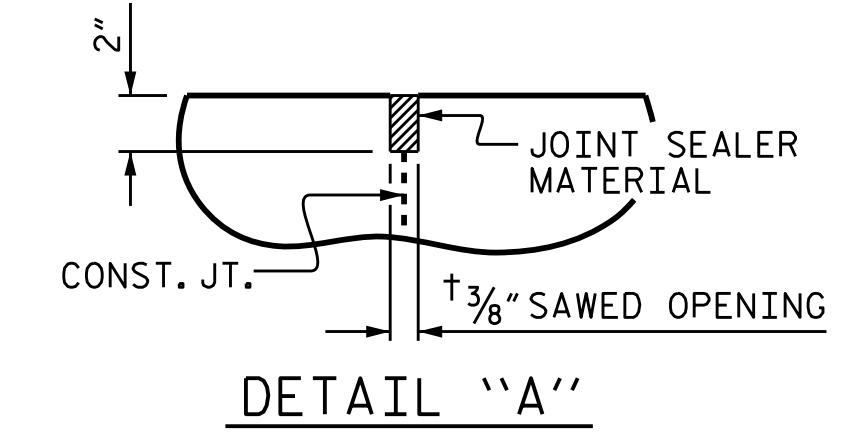
SELECT MATERIAL BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

FOR THE 6" 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.

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

AT THE CONTRACTORS OPTION, "TYPE A - ALTERNATE APPROACH FILL" IN LIEU OF "TYPE I - STANDARD APPROACH FILL" MAY BE CONSTRUCTED AT NO ADDITIONAL COST TO THE DEPARTMENT. SEE SHEET 2 OF 2 FOR DETAILS AND NOTES.



BILL OF MATERIAL

FOR ONE APPROACH SLAB (2 REQ'D)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	16	#4	STR	38'-0"	406
A2	16	#4	STR	38'-0"	406
* B1	76	#5	STR	14'-2"	1123
B2	76	#6	STR	14'-8"	1674
REINFORCING STEEL				LBS.	2080
* EPOXY COATED REINFORCING STEEL				LBS.	1529
CLASS AA CONCRETE				C. Y.	24.8

SPLICE LENGTHS

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

PROJECT NO. BR-0048
 SURRY COUNTY
 STATION: 18+50.00 -L-

SHEET 1 OF 2

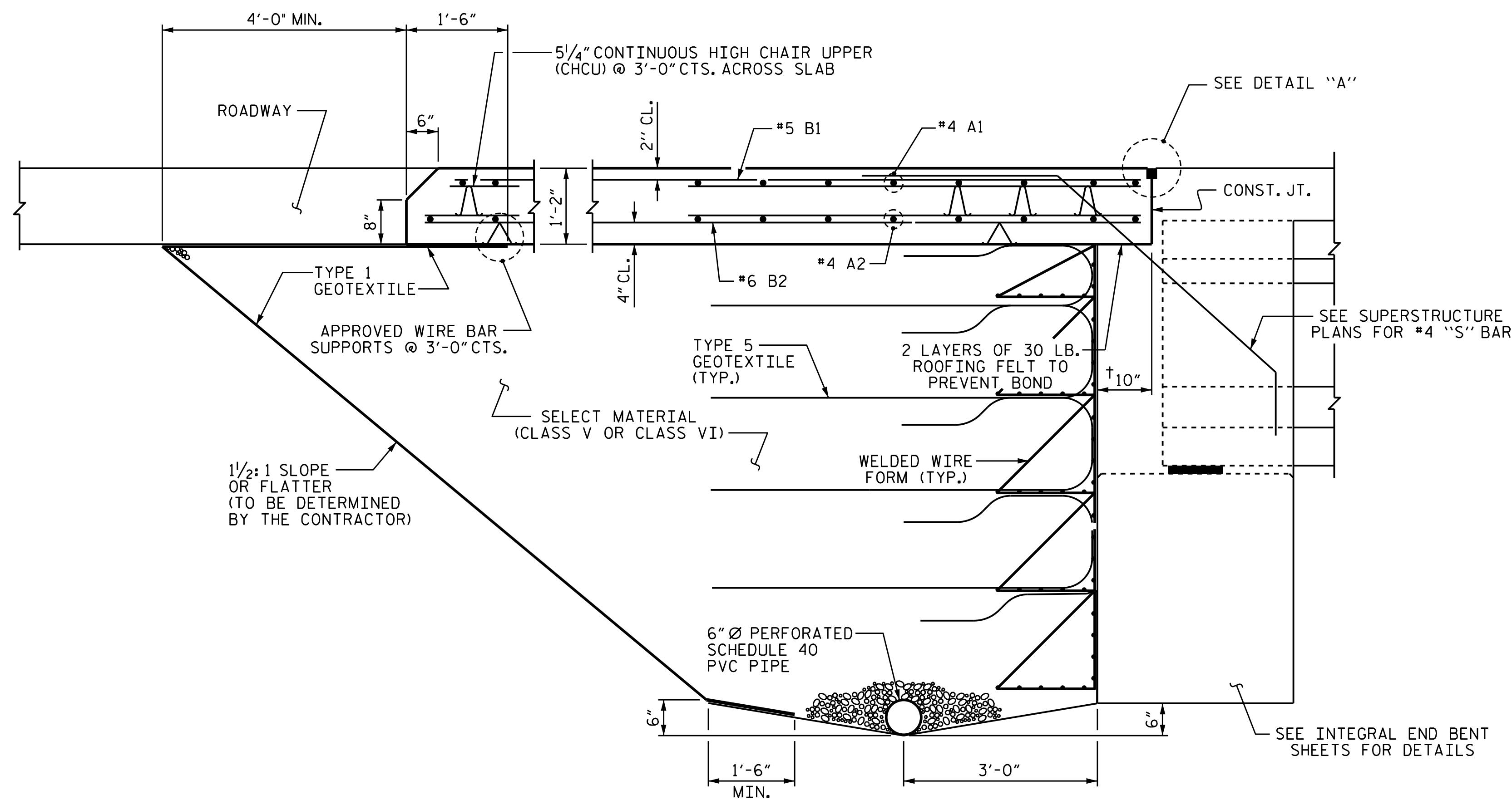
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 BRIDGE APPROACH SLAB
 FOR INTEGRAL ABUTMENT
 WITH FLEXIBLE PAVEMENT



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

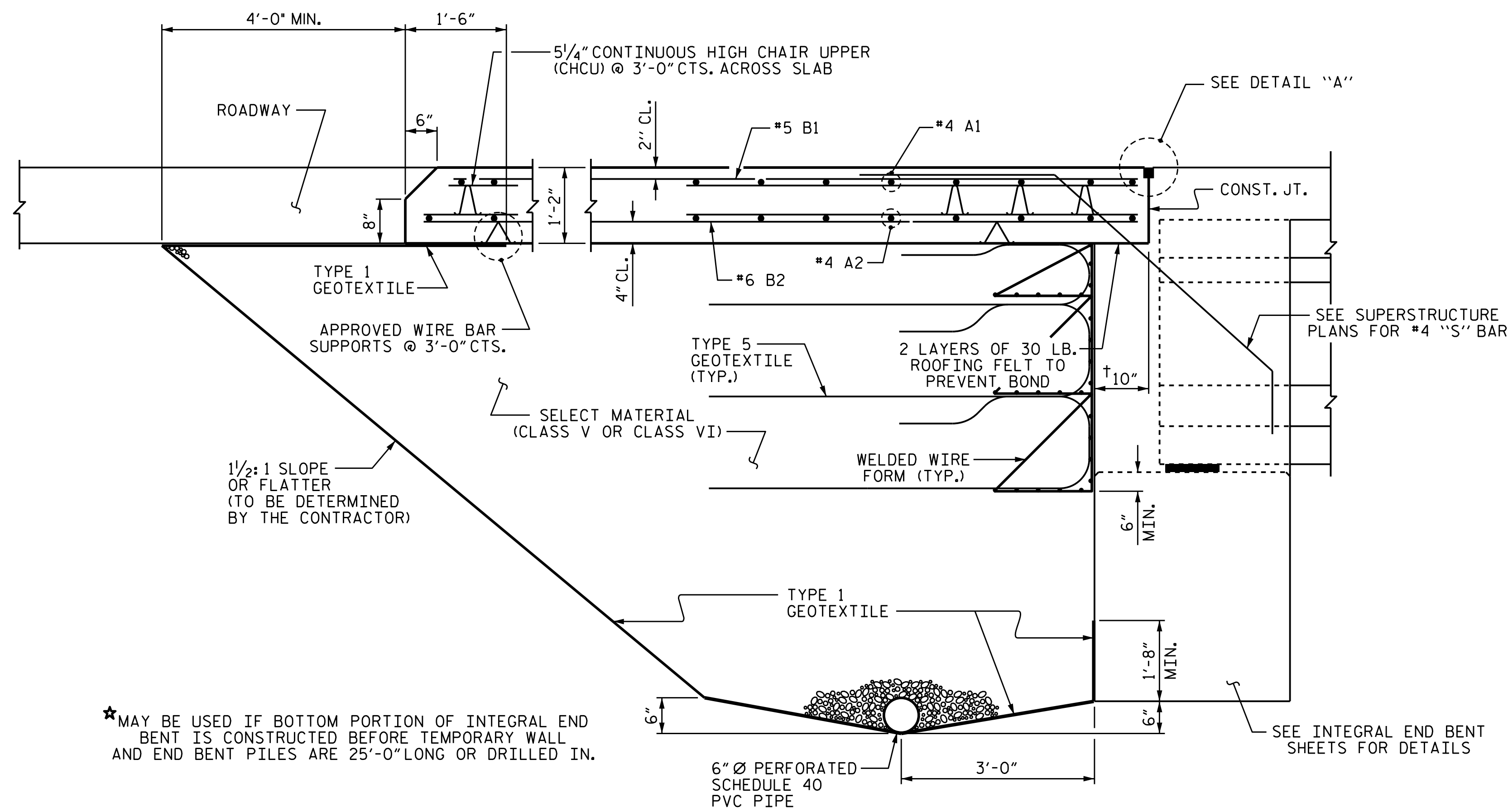
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-32
1			3			TOTAL SHEETS 33
2			4			

ASSEMBLED BY :	E. CABELL	DATE :	03/2021
CHECKED BY :	K. PUROHIT	DATE :	03/2021
DRAWN BY :	TLA 10/05	REV. 6/13	MAA/GM
CHECKED BY :	GM 5/06	REV. 12/17	MAA/THC
		REV. 06/19	BNB/THC



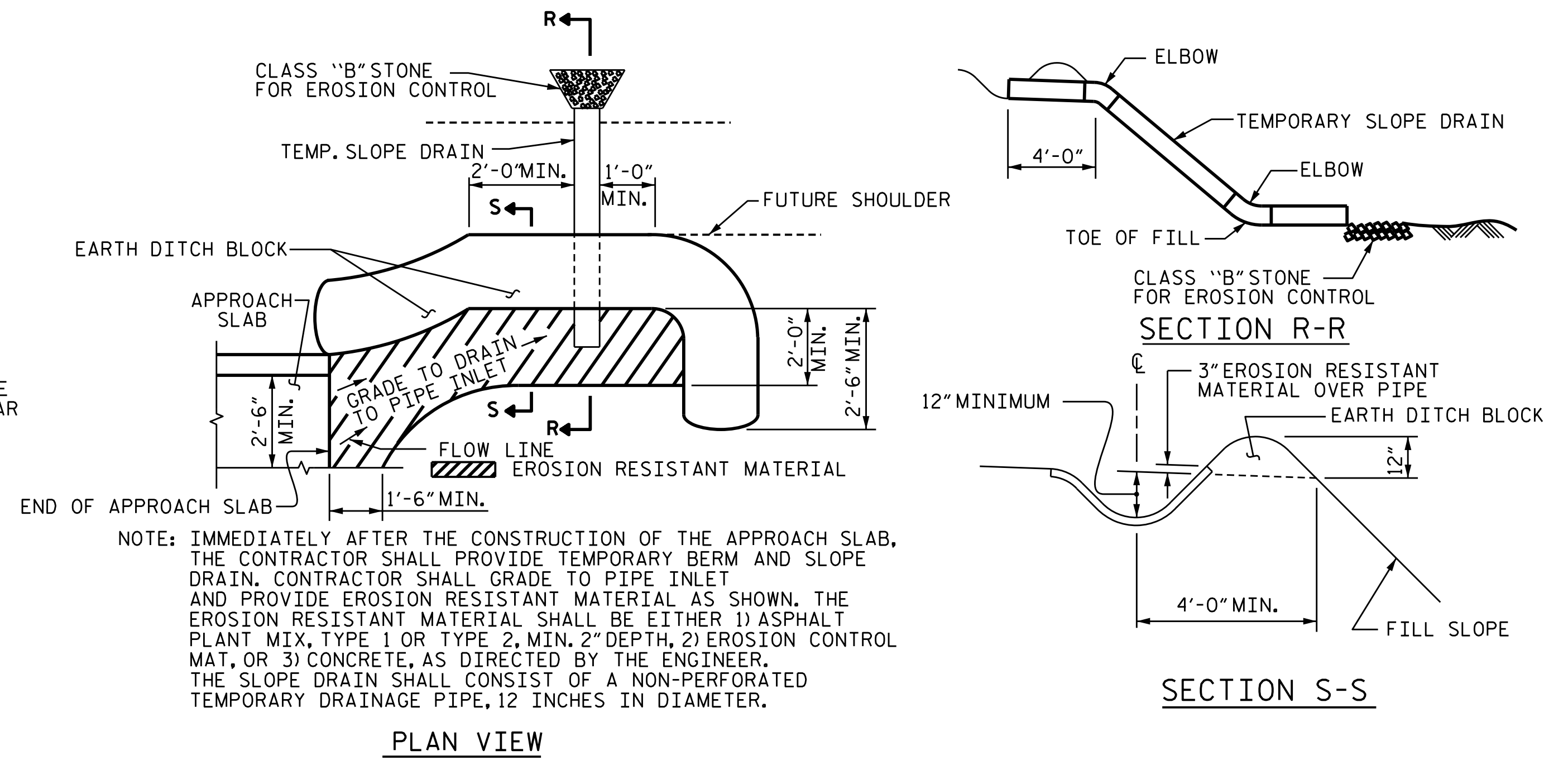
SECTION THRU SLAB

(TYPE A - ALTERNATE APPROACH FILL)



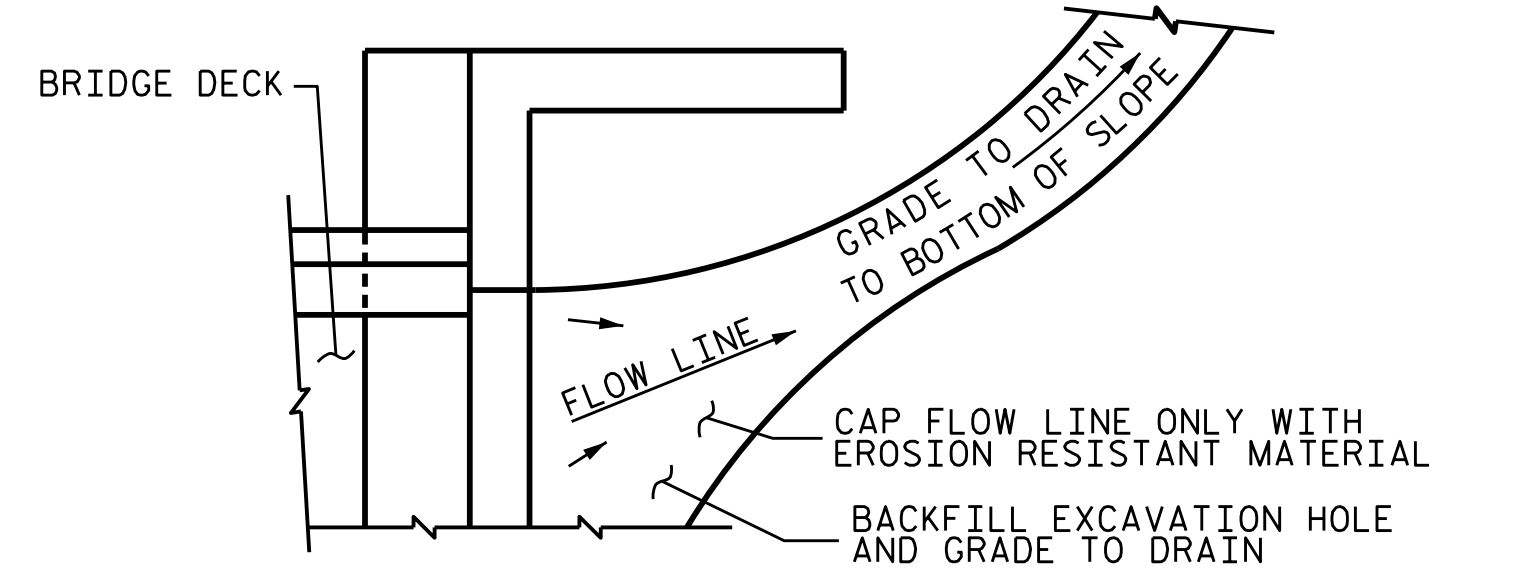
SECTION THRU SLAB

(TYPE A - ALTERNATE APPROACH FILL)



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.

TEMPORARY DRAINAGE DETAIL

NOTES

- APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.
- FOR TEMPORARY GEOTEXTILE WALL INCLUDING GEOTEXTILE, 6" Ø DRAINAGE PIPE, WELDED WIRE FORM, AND SELECT MATERIAL, SEE ROADWAY PLANS.
- GEOTEXTILE (TYPE 1 OR TYPE 5) SHALL BE 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.
- FOR THE 6" 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.
- THE JOINT OPENING AT THE APPROACH SLAB/DECK INTERFACE SHALL BE SAWED NO MORE THAN 12 HOURS AFTER THE APPROACH SLAB IS CAST. THE JOINT SHALL BE CLEANED OF ALL DEBRIS BEFORE THE SEALANT IS APPLIED. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1028-3 OF THE STANDARD SPECIFICATIONS.

*MAY BE USED IF BOTTOM PORTION OF INTEGRAL END BENT IS CONSTRUCTED BEFORE TEMPORARY WALL AND END BENT PILES ARE 25'-0" LONG OR DRILLED IN.

ASSEMBLED BY : E. CABELL	DATE : 03/2021
CHECKED BY : K. PUROHIT	DATE : 03/2021
DRAWN BY : TLA 10/05	REV. 12/21/11 MAA/GM
CHECKED BY : GM 5/06	REV. 6/13 MAA/GM
	REV. 12/17 MAA/THC



PROJECT NO. BR-0048
 SURRY COUNTY
 STATION: 18+50.00 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO.
STANDARD BRIDGE APPROACH SLAB DETAILS						S-33
REVISIONS						TOTAL SHEETS
NO.	BY:	DATE:	NO.	BY:	DATE:	33
1			3			
2			4			

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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.
	--	27,000 LBS. PER SQ. IN.
	--	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 $\frac{7}{8}$ " \emptyset SHEAR STUDS FOR THE $\frac{3}{4}$ " \emptyset STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - $\frac{7}{8}$ " \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 $\frac{7}{8}$ " \emptyset STUDS ALONG THE BEAM AS SHOWN FOR $\frac{3}{4}$ " \emptyset STUDS BASED ON THE RATIO OF 3 - $\frac{7}{8}$ " \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. FINS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

SPECIAL NOTES:

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

ENGLISH

JANUARY, 1990

STD. NO. SN