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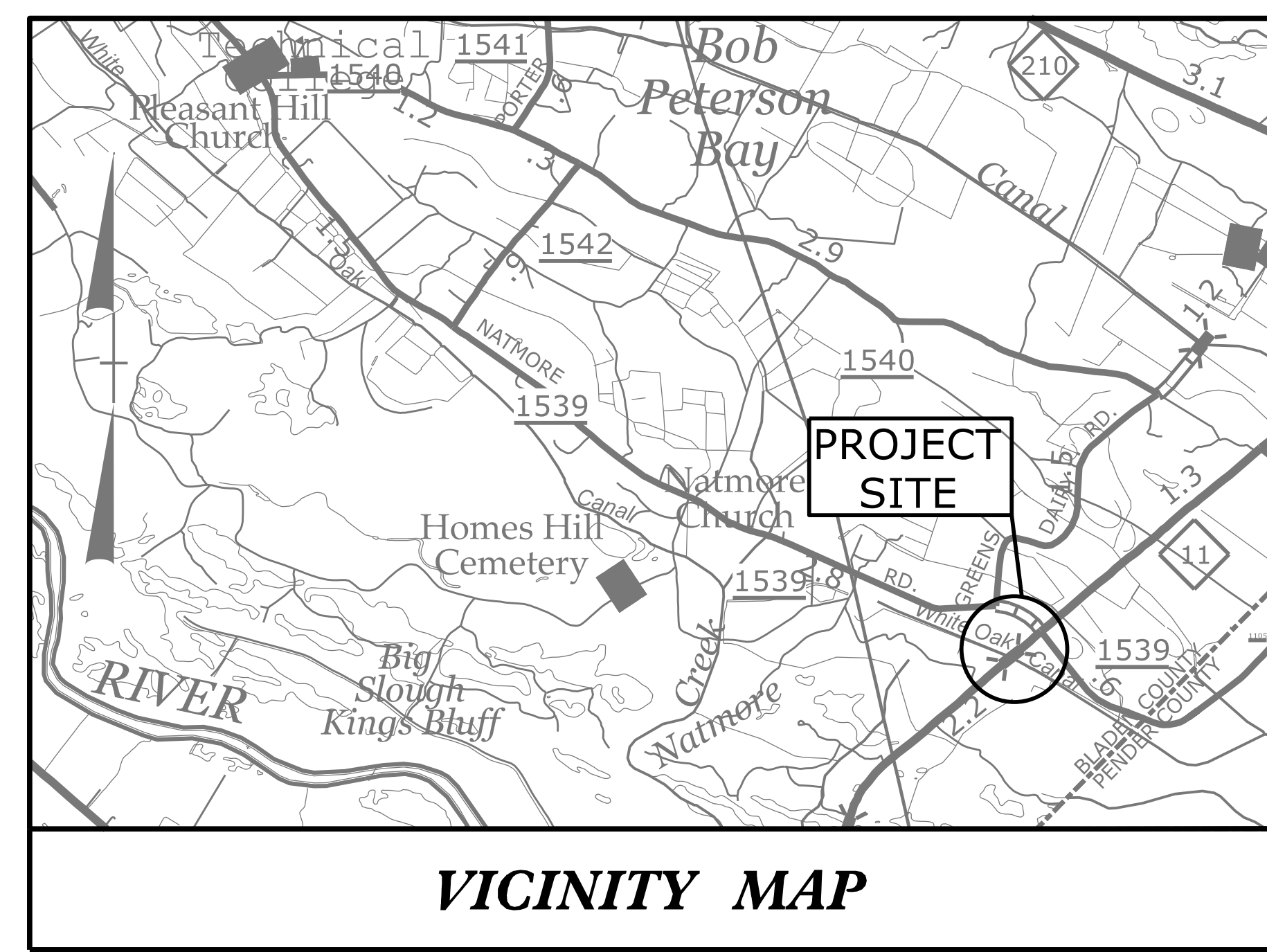
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TIP PROJECT: B-5694

CONTRACT: C204362

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
BLADEN COUNTY

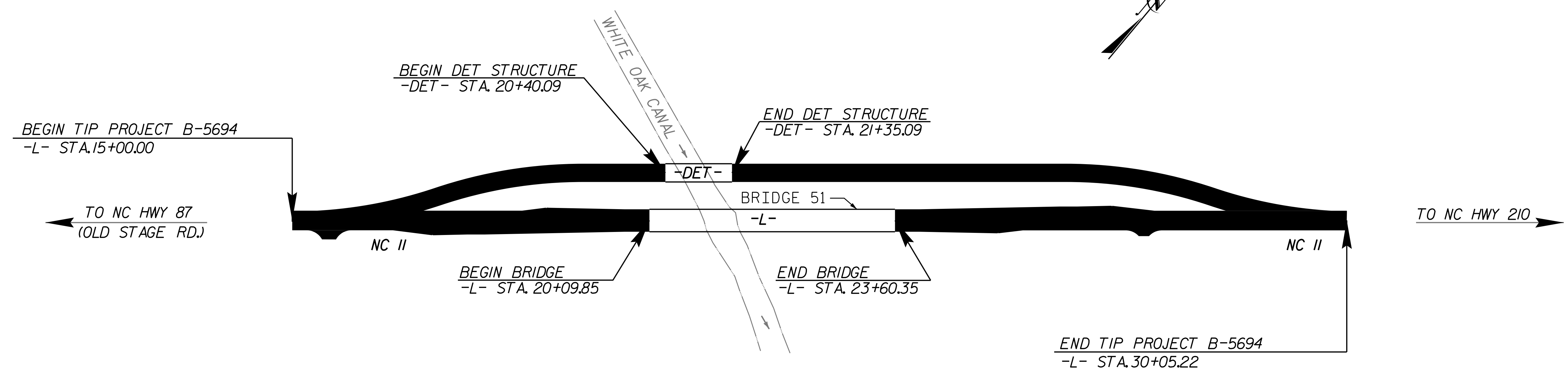
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5694		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
45648.1.1	-	P.E.	
45648.2.1	-	ROW & UTIL.	
45648.3.1	-	CONST.	



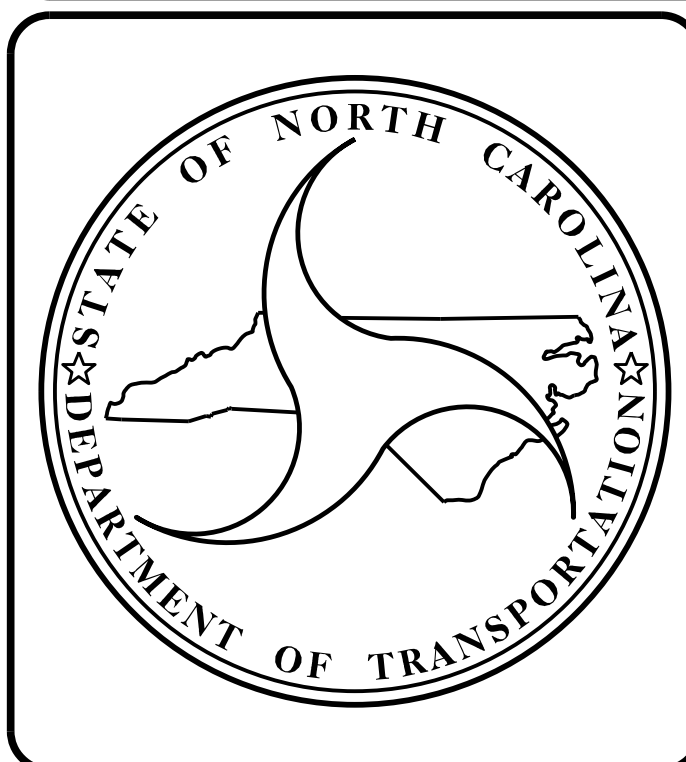
VICINITY MAP

LOCATION: REPLACE BRIDGE #11 OVER WHITE OAK CANAL ON NC II

TYPE OF WORK: GRADING, DRAINING, PAVING, AND STRUCTURE



STRUCTURE



DESIGN DATA

ADT 2019 =	3,213
ADT 2040 =	4,000
K =	10 %
D =	55 %
T =	13 % **
* V =	60 MPH
V (DET) =	45 MPH
** (TTST 11 %, DUAL 2 %)	
FUNC CLASS =	MAJOR COLLECTOR
REGIONAL TIER	

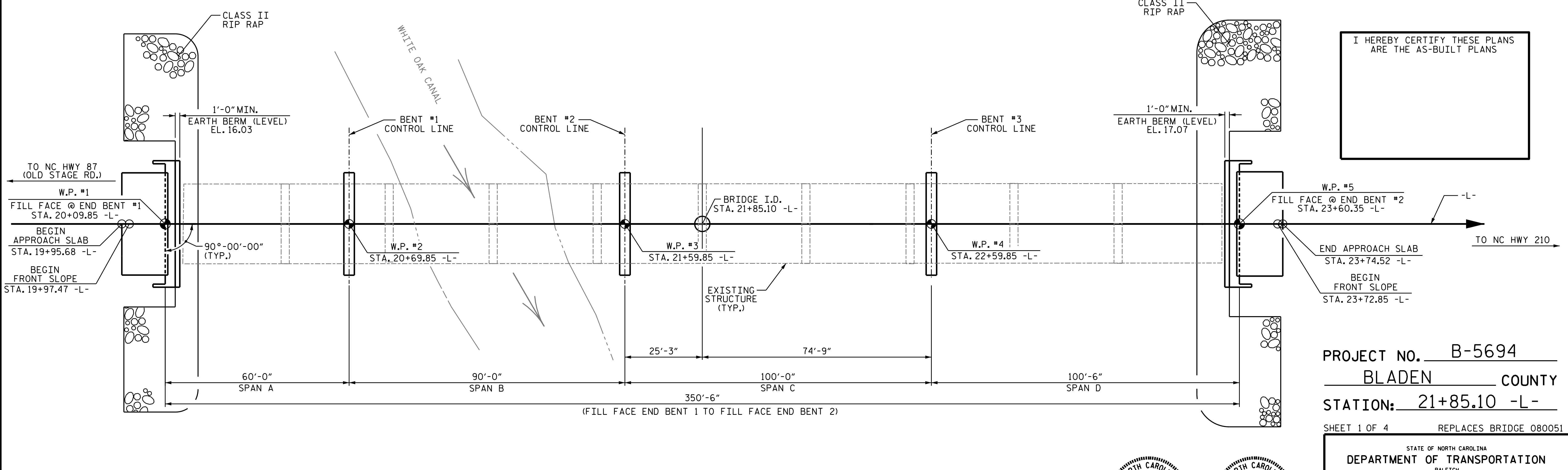
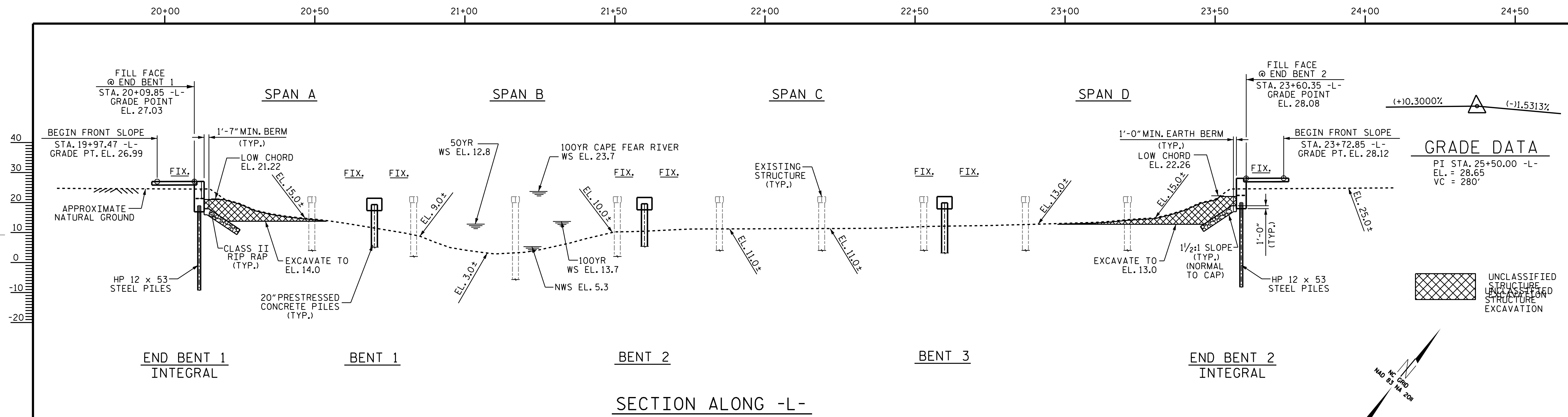
PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-5694 =	0.219 MILES
LENGTH STRUCTURE TIP PROJECT B-5694 =	0.066 MILES
TOTAL LENGTH TIP PROJECT B-5694 =	0.285 MILES

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

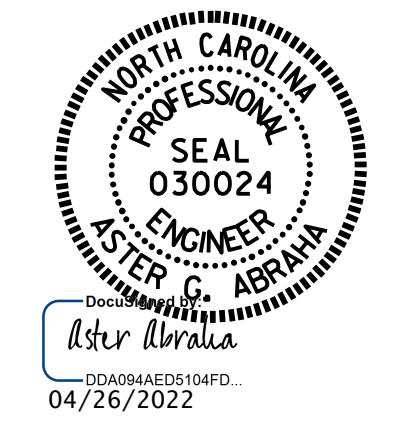
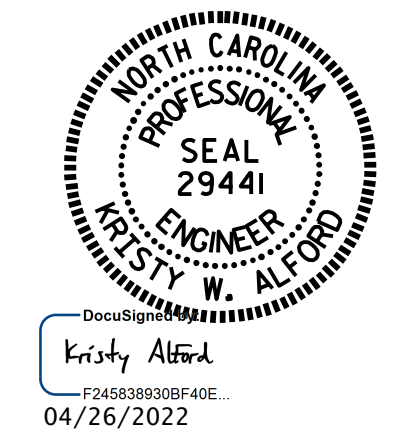
2018 STANDARD SPECIFICATIONS

<p>LETTING DATE :</p> <p style="text-align: center;">JUNE 21, 2022</p>	<p style="text-align: center;">KRISTY W. ALFORD, P.E. <small>PROJECT ENGINEER</small></p> <p style="text-align: center;">ASTER G. ABRAHA, P.E. <small>PROJECT DESIGN ENGINEER</small></p>
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DRAWN BY: M.M. AHMED DATE: AUG 2019
 CHECKED BY: S. WANCE DATE: AUG 2019
 DESIGN ENGINEER OF RECORD: M.M. AHMED DATE: JUNE 2019

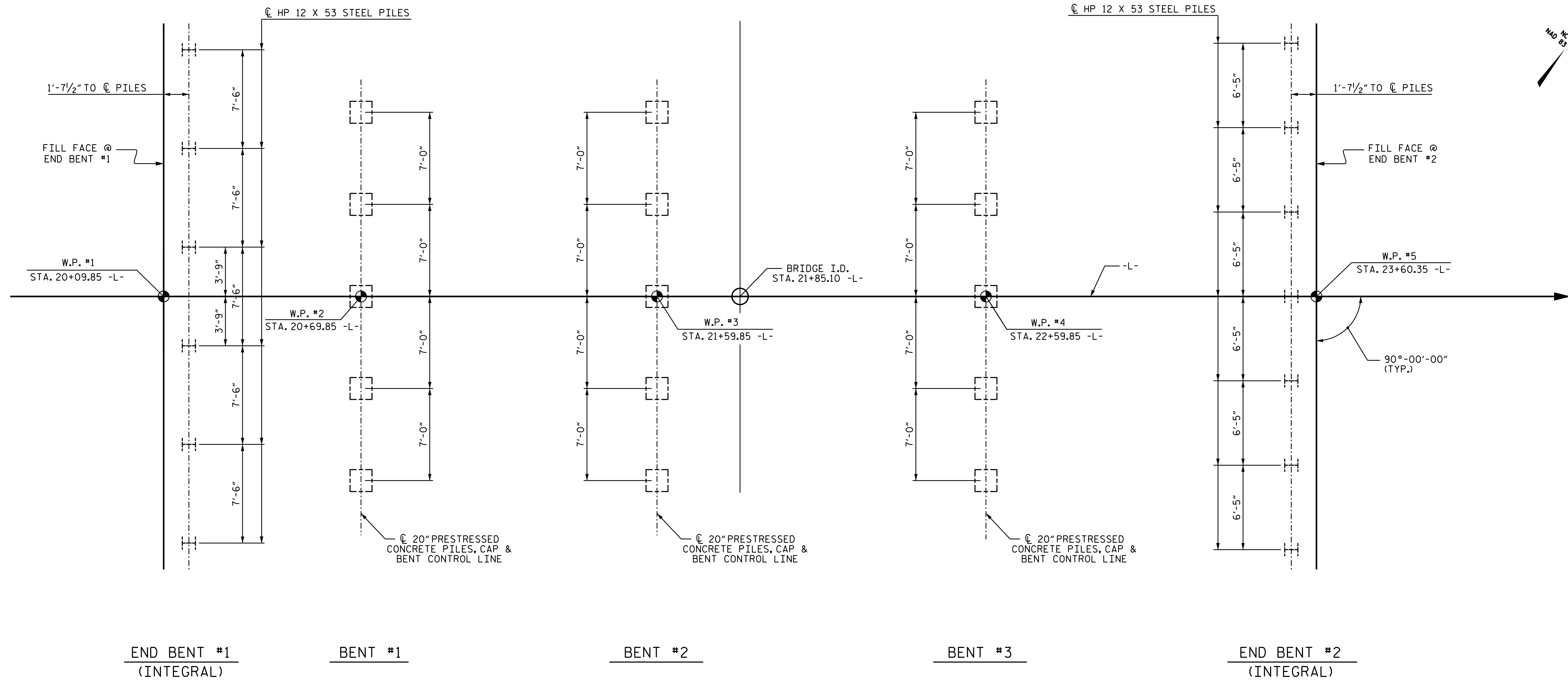
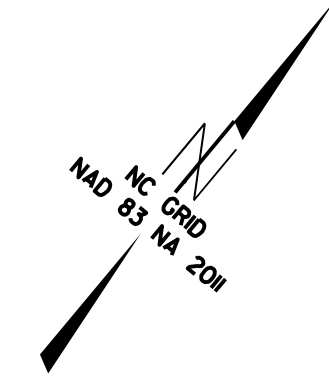
4/20/2022
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 aygodfrey



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. B-5694
 BLADEN COUNTY
 STATION: 21+85.10 -L-
 SHEET 1 OF 4 REPLACES BRIDGE 080051

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
GENERAL DRAWING BRIDGE OVER WHITE OAK CANAL ON NC HWY 11 BETWEEN NC HWY 87 & NC HWY 210					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-1
					TOTAL SHEETS 37



FOUNDATION LAYOUT
DIMENSIONS LOCATING PILES ARE SHOWN TO PILE CENTERLINE.

NOTES:

FOR PILES, SEE PILES PROVISION AND SECTION 450 OF THE STANDARD SPECIFICATIONS.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 80-170 FT-KIPS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT BENT NO.1 THROUGH BENT NO.3. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

OBSERVE A ONE MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT, END BENT AND REINFORCED BRIDGE APPROACH FILL, IF APPLICABLE, BEFORE BEGINNING APPROACH SLAB CONSTRUCTION AT END BENT NO.1. FOR BRIDGE WAITING PERIODS, SEE ROADWAY PLANS AND SECTION 235 OF THE STANDARD SPECIFICATIONS.

PROJECT NO. B-5694
BLADEN COUNTY
STATION: 21+85.10 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
BRIDGE OVER WHITE OAK CANAL
ON NC HWY 11 BETWEEN
NC HWY 87 & NC HWY 210



DRAWN BY : M.M. AHMED DATE : SEP 2019
CHECKED BY : S. WANCE DATE : SEP 2019
DESIGN ENGINEER OF RECORD: M.M. AHMED DATE : JUNE 2019

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

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

SUMMARY OF PILE INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pile(s) # (e.g., "Bent 1, Piles 1-5")	Factored Resistance per Pile TONS	Pile Cut-Off (Top of Pile) Elevation FT	Estimated Pile Length per Pile FT	Scour Critical Elevation FT	Driven Piles			Predrilling for Piles*			Drilled-In Piles		
					Min Pile Tip (Tip No Higher Than) Elev FT	Required Driving Resistance (RDR)** per Pile TONS	Total Pile Redrives Quantity EACH	Predrilling Length per Pile Lin FT	Predrilling Elevation (Elev Not To Predrill Below) FT	Maximum Predrilling Dia INCHES	Pile Excavation (Bottom of Hole) Elev FT	Pile Exc Not In Soil per Pile Lin FT	Pile Exc In Soil per Pile Lin FT
End Bent 1, Piles 1-6	100	19.03	65			170							
Bent 1, Piles 1-5	225	19.10	60	3	-20.0	305	16						
Bent 2, Piles 1-5	265	19.37	55	1	-20.0	360							
Bent 3, Piles 1-5	285	19.67	55	3	-20.0	385							
End Bent 2, Piles 1-7	110	20.07	60			185							

*Predrilling for Piles is required for end bents/bents with a predrilling length and at the Contractor's option for end bents/bents with predrilling information but no predrilling length.

**RDR =
$$\frac{\text{Factored Resistance} + \text{Factored Downdrag Load} + \text{Factored Dead Load}}{\text{Dynamic Resistance Factor}} + \text{Nominal Downdrag Resistance} + \frac{\text{Nominal Scour Resistance}}{\text{Scour Resistance Factor}}$$

SUMMARY OF PDA/PILE ORDER LENGTHS

(Blank entries indicate item is not applicable to structure)

Pile Driving Analyzer (PDA)				Pile Order Lengths	
End Bent/ Bent No	PDA Testing Required? YES or MAYBE	PDA Test Pile Length FT	Total PDA Testing Quantity EACH	End Bent/ Bent No(s)	Pile Order Length Basis* EST or PDA
Bent 1	Yes	70	2	Bent 1	PDA
Bent 2, 3	Yes	65		Bent 2, 3	PDA

*EST = Pile order lengths from estimated pile lengths; PDA = Pile order lengths based on PDA testing. For groups of end bents/bents with pile order lengths based on PDA testing, the first end bent/bent no. listed for each group is the representative end bent/bent with the PDA.

PILE DESIGN INFORMATION

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pile(s) # (e.g., "Bent 1, Piles 1-5")	Factored Axial Load per Pile TONS	Factored Downdrag Load per Pile TONS	Factored Dead Load* per Pile TONS	Dynamic Resistance Factor	Nominal Downdrag Resistance per Pile TONS	Nominal Scour Resistance per Pile TONS	Scour Resistance Factor (Default = 1.00)
End Bent 1, Piles 1-6	98.5			0.60			1.00
Bent 1, Piles 1-5	224.5		2.0	0.75		2.0	1.00
Bent 2, Piles 1-5	264.5		1.9	0.75		2.5	1.00
Bent 3, Piles 1-5	282.0		1.2	0.75		1.5	1.00
End Bent 2, Piles 1-7	109.5			0.60			1.00

*Factored Dead Load is factored weight of pile above the ground line.

PROJECT NO. B-5694

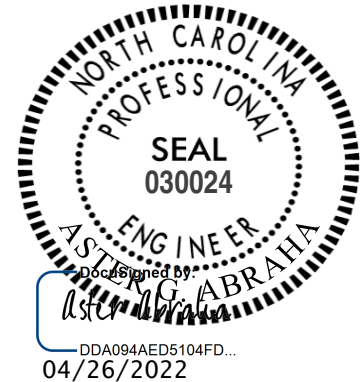
Bladen COUNTY

STATION: 21+85.10 -L-

SHEET 3 OF 4

NOTES:

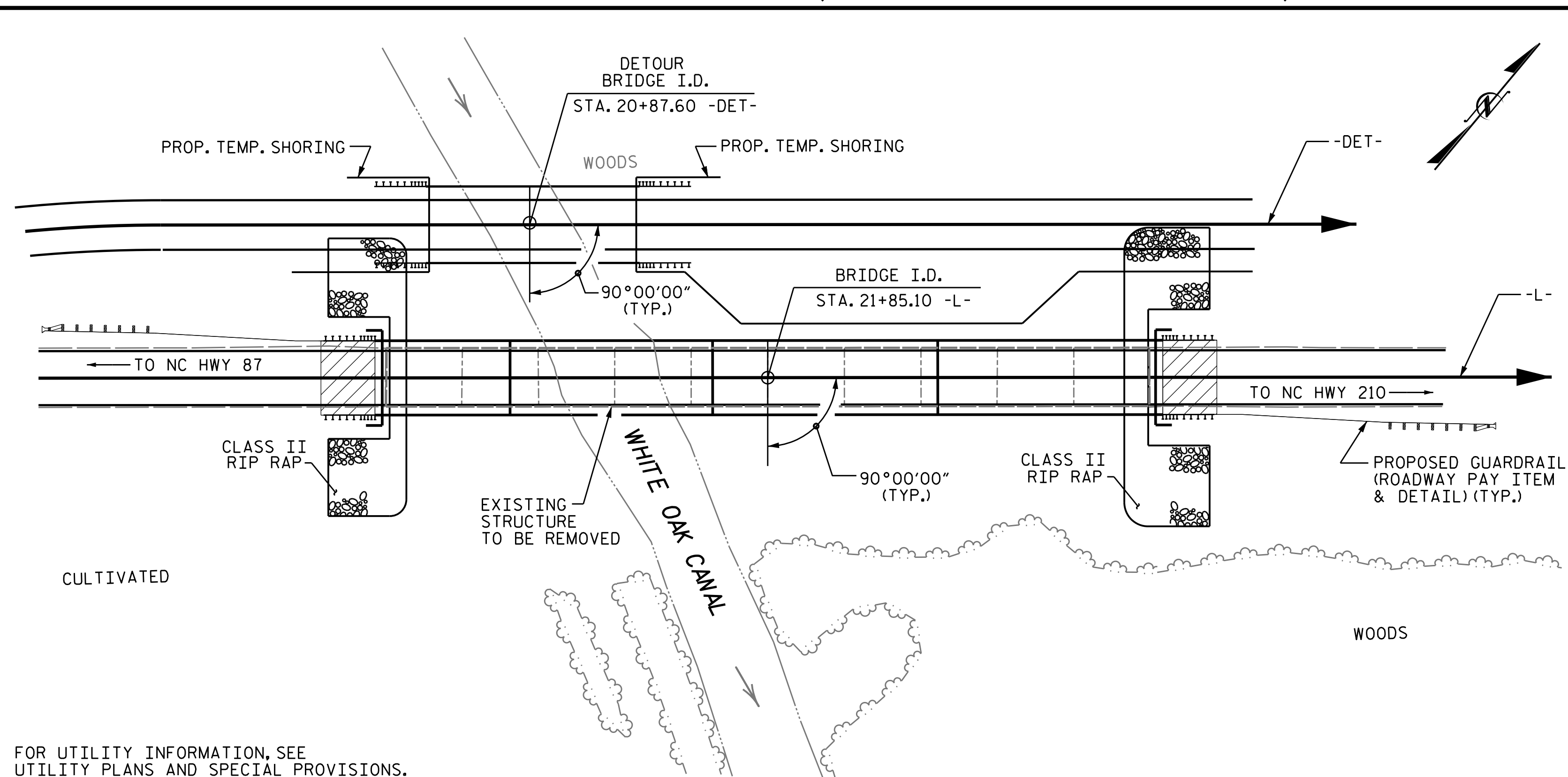
- The Pile Foundation Tables are based on the bridge substructure design and foundation recommendations revision sealed by a North Carolina Professional Engineer (Jinyoung Park, PE # 032171) on 6-14-2021.
- Total Pile Driving Equipment Setup quantity (not shown in Pile Foundation Tables) equals the number of driven piles, i.e., the number of piles with a Required Driving Resistance.

	STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						PILE FOUNDATION TABLES
	SIGNATURE _____	DATE _____	REVISIONS			SHEET NO. S-3	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	NO. <u>1</u>	BY: _____	DATE: _____	NO. <u>3</u>	BY: _____	DATE: _____	TOTAL SHEETS 37
	NO. <u>2</u>			NO. <u>4</u>			

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE AT STA. 21+85.10 -L-	CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY STRUCTURE AT STA. 20+87.60 -DET-	ASBESTOS ASSESSMENT	PDA TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	54" PRESTRESSED CONCRETE GIRDERS		PILE DRIVING EQUIPMENT SETUP FOR 20" PRESTRESSED CONCRETE PILES	PILE DRIVING EQUIPMENT SETUP FOR HP 12 x 53 STEEL PILES	20" PRESTRESSED CONCRETE PILES		HP 12 x 53 STEEL PILES	PILE REDRIVES	CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	
	LUMP SUM	LUMP SUM	LUMP SUM	EACH	LUMP SUM	SO. FT.	SO. FT.	CU. YDS.	LUMP SUM	LBS.	NO.	LIN. FT.	EACH	EACH	LIN. FT.	NO.	LIN. FT.	NO.	EACH	LIN. FT.	TONS	SO. YDS.	LUMP SUM
SUPERSTRUCTURE					LUMP SUM	12,297	10,929		LUMP SUM		16	1384.67							697.67			LUMP SUM	
END BENT 1								26.9		4596				6			390	6			231	256	
BENT 1								13.5		2076			5		300	5							
BENT 2								17.5		2418			5		275	5							
BENT 3								17.5		2418			5		275	5							
END BENT 2								26.9		5008				7			420	7	4		292	324	
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	2	LUMP SUM	12,297	10,929	102.3	LUMP SUM	16,516	16	1384.67	15	13	850	15	810	13	16	697.67	523	580	LUMP SUM

BENCH MARK: B.M.#1 R/R SPIKE IN BASE OF 18" PINE, 95.4' RIGHT OF STA. 16+00.71 -L-, ELEV. 18.15



LOCATION SKETCH

HYDRAULIC DATA

DESIGN DISCHARGE	= 950 CFS
FREQUENCY OF DESIGN FLOOD	= 50 YRS.
DESIGN HIGH WATER ELEVATION	= 12.8 FT.
DRAINAGE AREA	= 6.5 SQ. MI.
BASE DISCHARGE (Q100)	= 1200 CFS
BASE HIGH WATER ELEVATION	= 13.7 FT.

OVERTOPPING FLOOD DATA

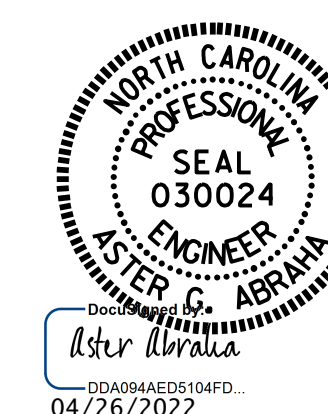
OVERTOPPING DISCHARGE	= 17000 CFS
FREQUENCY OF OVERTOPPING FLOOD	= 500+ YRS.
OVERTOPPING FLOOD ELEVATION	= 20.2 FT.

NOTES:

- ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
- THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
- THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.
- FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- FOR ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.
- PRESTRESSED CONCRETE DECK PANELS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
- 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.
- FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
- THE EXISTING STRUCTURE CONSISTING OF 10 SPANS @ 34.0 FT. WITH A CLEAR ROADWAY WIDTH OF 26.0 FT. WITH RC FLOOR AND RC DECK GIRDERS ON RC END BENT AND BENT ON PRECAST RC PILES, AND LOCATED AT PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.
- 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 PALNS.
- THE CONTRACTOR WILL BE REQUIRED TO CONSTRUCT, MAINTAIN AND AFTERWARDS REMOVE A TEMPORARY STRUCTURE AT STA. 20+87.60 -DET- FOR USE DURING CONSTRUCTION OF THE PROPOSED STRUCTURE. FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY STRUCTURE, SEE SPECIAL PROVISIONS.
- TEMPORARY FILL SHALL NOT BLOCK MORE THAN 50 PERCENT OF THE CHANNEL AT ANY TIME.
- THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. 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.
- REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL 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 MATERIAL SHOWN IN THE CROSS HATCHED AREA ON SHEET 1 OF 3 SHALL BE EXCAVATED FOR A DISTANCE OF 40' LEFT AND 45' RIGHT OF CENTERLINE ROADWAY AT END BENT #1, AND 50' LEFT AND 45' RIGHT OF CENTERLINE ROADWAY AT END BENT #2, OR AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION.
- THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18-EVALUATING SCOUR AT BRIDGES."
- THE DESIGN SCOUR ELEVATIONS ARE 5.5', 3.7', AND 5.5', FOR BENT 1 THROUGH 3.
- FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

PROJECT NO. B-5694
BLADEN COUNTY
 STATION: 21+85.10 -L-

SHEET 4 OF 4



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 BRIDGE OVER WHITE OAK CANAL
 ON NC HWY 11 BETWEEN
 NC HWY 87 & NC HWY 210

DRAWN BY : M.M. AHMED DATE : JUNE 2019
 CHECKED BY : S. WANCE DATE : JUNE 2019
 DESIGN ENGINEER OF RECORD: M.M. AHMED DATE : JUNE 2019

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

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	1.119	0.000	1.75	0.745	1.452	C	I	48.88	0.918	2.375	C	I	48.88	0.80	0.745	1.119	C	I	48.88		
	HL-93 (OPERATING)	N/A		1.119	0.000	1.35	0.745	1.883	C	I	48.88	0.918	3.078	C	I	48.88	N/A	0.745	1.119	C	I	48.88		
	HS-20 (INVENTORY)	36.000	②	1.444	51.987	1.75	0.846	1.444	A	I	28.63	0.918	1.851	A	I	34.35	0.80	0.846	1.567	A	I	28.63		
	HS-20 (OPERATING)	36.000		1.553	55.915	1.35	0.745	2.615	C	I	48.88	0.918	3.701	C	I	48.88	N/A	0.745	1.553	C	I	48.88		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		3.347	45.182	1.40	0.846	3.855	A	I	28.63	0.918	4.860	A	I	34.35	0.8	0.846	3.347	A	I	28.63	
		SNGARBS2	20.000		2.574	51.475	1.40	0.846	2.964	A	I	28.63	0.918	3.646	A	I	34.35	0.8	0.846	2.574	A	I	28.63	
		SNAGRIS2	22.000		2.472	54.391	1.40	0.846	2.848	A	I	28.63	0.918	3.463	A	I	34.35	0.8	0.846	2.472	A	I	28.63	
		SNCOTTS3	27.250		1.668	45.445	1.40	0.846	1.921	A	I	28.63	0.918	2.445	A	I	34.35	0.8	0.846	1.668	A	I	28.63	
		SNAGGRS4	34.925		1.424	49.730	1.40	0.846	1.640	A	I	28.63	0.918	2.165	A	I	34.35	0.8	0.846	1.424	A	I	28.63	
		SNS5A	35.550		1.390	49.427	1.40	0.846	1.601	A	I	28.63	0.918	2.272	A	I	34.35	0.8	0.846	1.390	A	I	28.63	
		SNS6A	39.950		1.289	51.483	1.40	0.846	1.484	A	I	28.63	0.918	2.138	A	I	34.35	0.8	0.846	1.289	A	I	28.63	
	SNS7B	42.000		1.228	51.563	1.40	0.846	1.414	A	I	28.63	0.918	2.192	A	I	34.35	0.8	0.846	1.228	A	I	28.63		
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.575	51.987	1.40	0.846	1.814	A	I	28.63	0.918	2.491	A	I	34.35	0.8	0.846	1.575	A	I	28.63	
		TNT4A	33.075		1.586	52.455	1.40	0.846	1.827	A	I	28.63	0.918	2.360	A	I	34.35	0.8	0.846	1.586	A	I	28.63	
		TNT6A	41.600		1.310	54.476	1.40	0.846	1.508	A	I	28.63	0.918	2.524	A	I	34.35	0.8	0.846	1.310	A	I	28.63	
		TNT7A	42.000		1.321	55.482	1.40	0.745	2.144	C	I	48.88	0.918	3.465	C	I	48.88	0.8	0.745	1.321	C	I	48.88	
		TNT7B	42.000		1.352	56.804	1.40	0.745	2.195	C	I	48.88	0.918	3.145	C	I	48.88	0.8	0.745	1.352	C	I	48.88	
		TNAGRIT4	43.000		1.297	55.774	1.40	0.745	2.105	C	I	48.88	0.918	3.033	C	I	48.88	0.8	0.745	1.297	C	I	48.88	
TNAGT5A		45.000		1.225	55.127	1.40	0.846	1.411	A	I	28.63	0.918	2.078	A	I	34.35	0.8	0.846	1.225	A	I	28.63		
TNAGT5B	45.000	③	1.205	54.224	1.40	0.846	1.388	A	I	28.63	0.918	1.876	A	I	34.35	0.8	0.846	1.205	A	I	28.63			

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.

CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

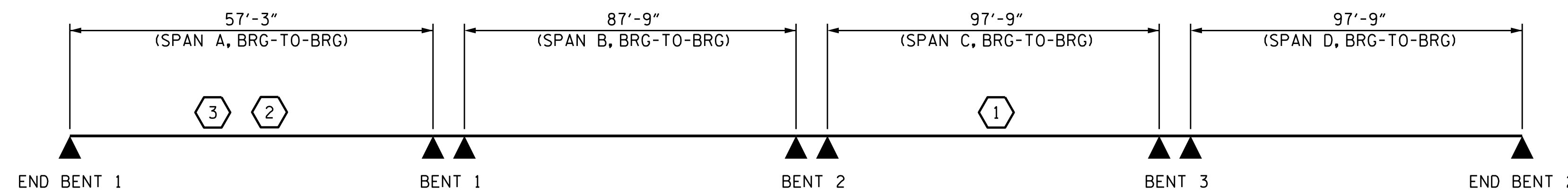
② DESIGN LOAD RATING (HS-20)

③ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

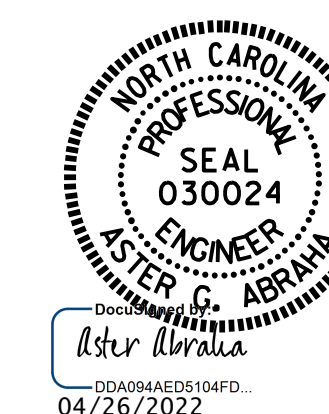
GIRDER LOCATION

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



LRFR SUMMARY

PROJECT NO. B-5694
BLADEN COUNTY
 STATION: 21+85.10 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

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

ASSEMBLED BY : A. Y. GODFREY	DATE : 06/20/2020
CHECKED BY : G. AYES	DATE : 01/20/2022
DRAWN BY : MAA 1/08	REV. 11/2/08RR MAA/CM
CHECKED BY : GM/DI 2/08	REV. 10/1/11 MAA/CM
	REV. 12/17 MAA/THC

NO.	REVISIONS			NO.	REVISIONS			SHEET NO.
	BY:	DATE:	DESCRIPTION		BY:	DATE:	DESCRIPTION	
1				3				S-5
2				4				TOTAL SHEETS 37

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NOTES

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

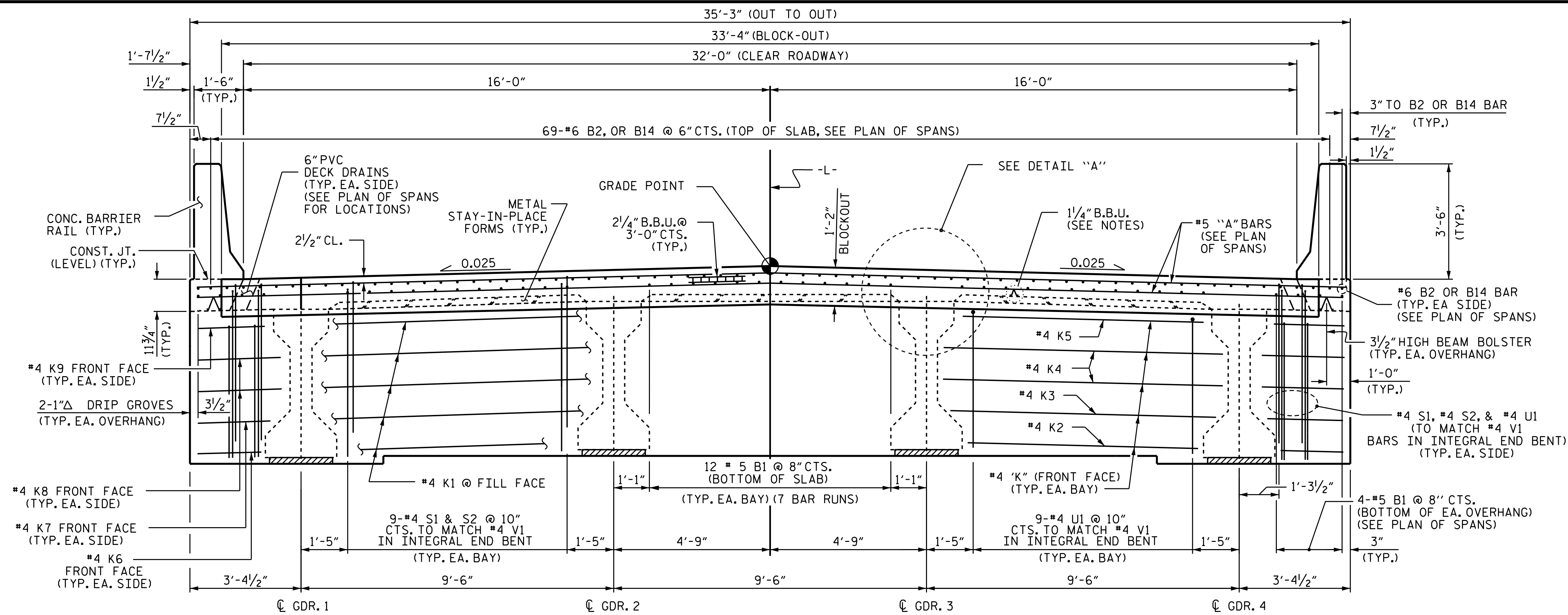
PREVIOUSLY CAST CONCRETE IN A CONTINUOUS UNIT SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE UNIT.

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.

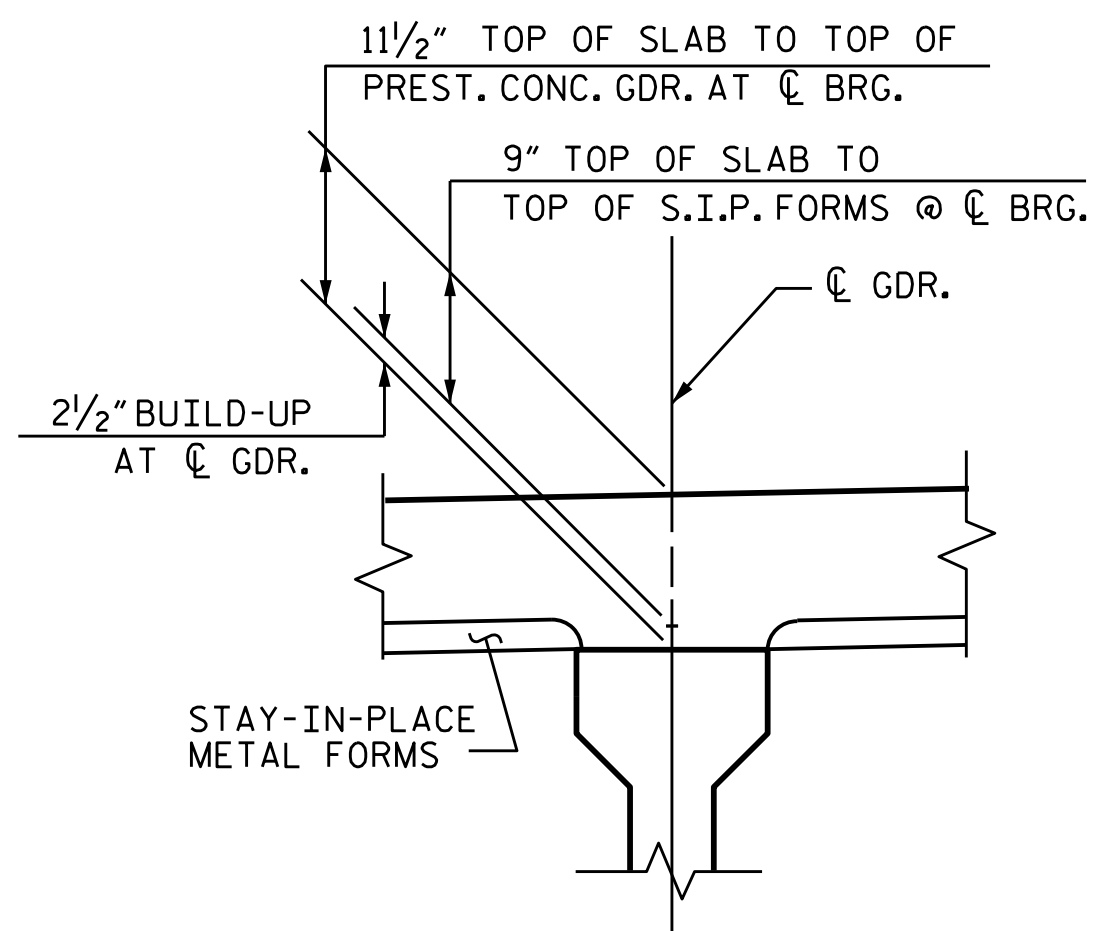
THE TOP SURFACE OF THE END BENT CAP AND WINGS, EXCLUDING THE BEARING AREA AND NON-INTEGRAL AREA AT ENDS OF CAP, SHALL BE RAKED TO A DEPTH OF 1/4".

FOR 6" PVC DECK DRAINS, SEE DRAIN DETAILS IN TYPICAL SECTION SHEET 2 OF 2, AND "PLAN OF SPANS".

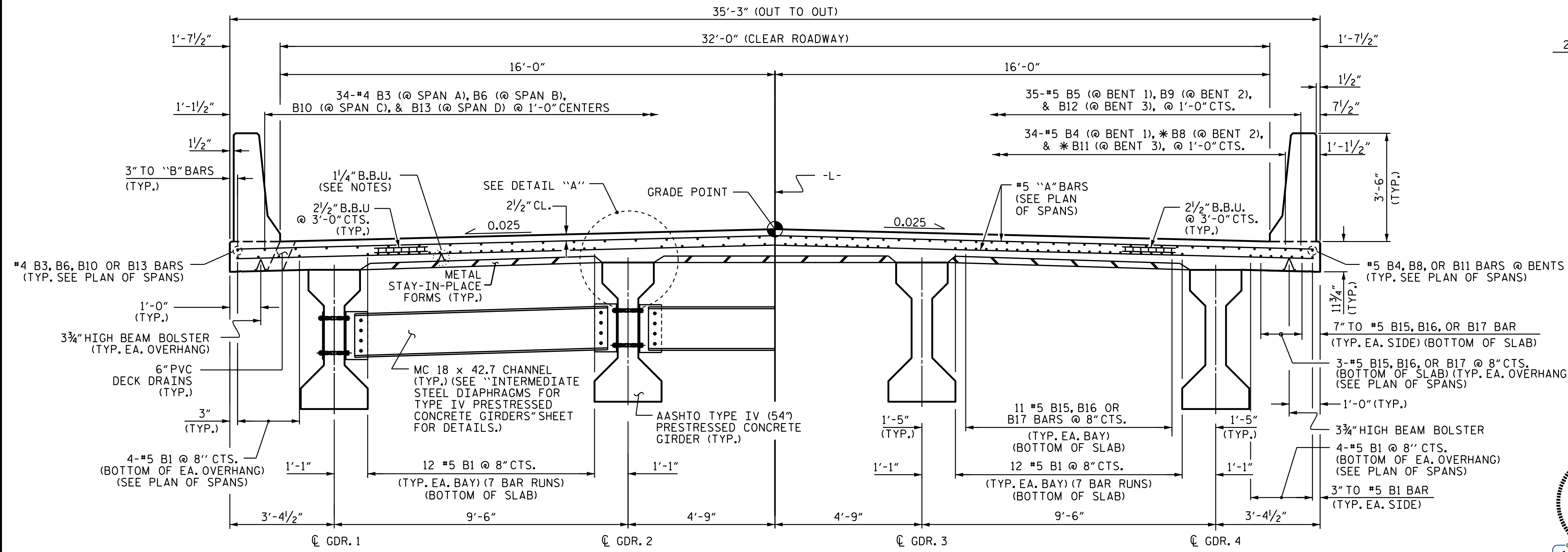
* SPLICE #5 B7 BARS TO THE ALTERNATING ENDS OF THE B8 AND B11 BARS. (SEE "PLAN OF SPANS")



TYPICAL SECTION AT INTEGRAL END BENT
SHOWING ABUTMENT WALL AT FILL FACE OF END BENTS. WINGS NOT SHOWN FOR CLARITY.



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



HALF SECTION AT MIDSPAN

HALF SECTION - LINK SLAB AREA AT BENTS

TYPICAL SECTION

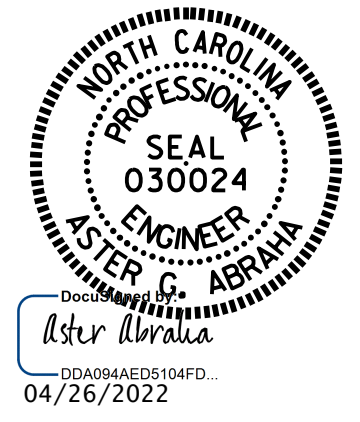
PROJECT NO. B-5694
BLADEN COUNTY
STATION: 21+85.10 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

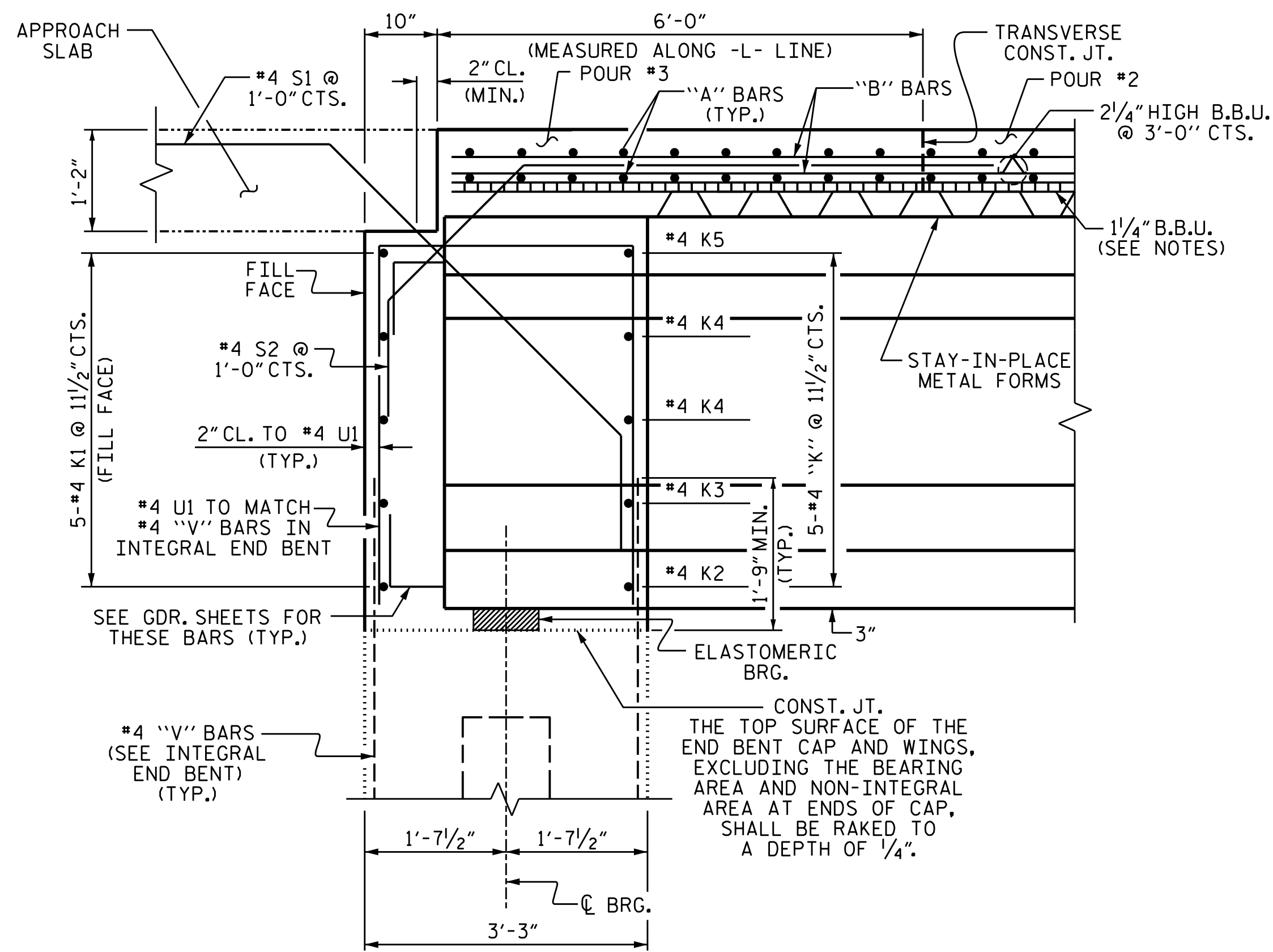
SUPERSTRUCTURE

TYPICAL SECTIONS



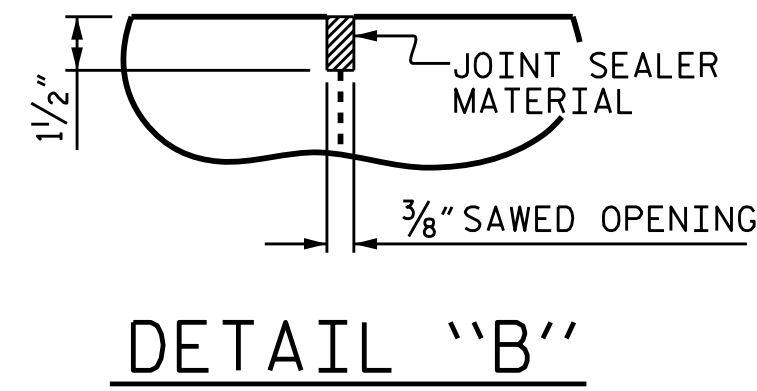
DRAWN BY:	A. Y. GODFREY	DATE:	07/2020
CHECKED BY:	S. WANCE	DATE:	09/2020
DESIGN ENGINEER OF RECORD:	M. M. AHMED	DATE:	08/2019

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-6
2			4			TOTAL SHEETS 37



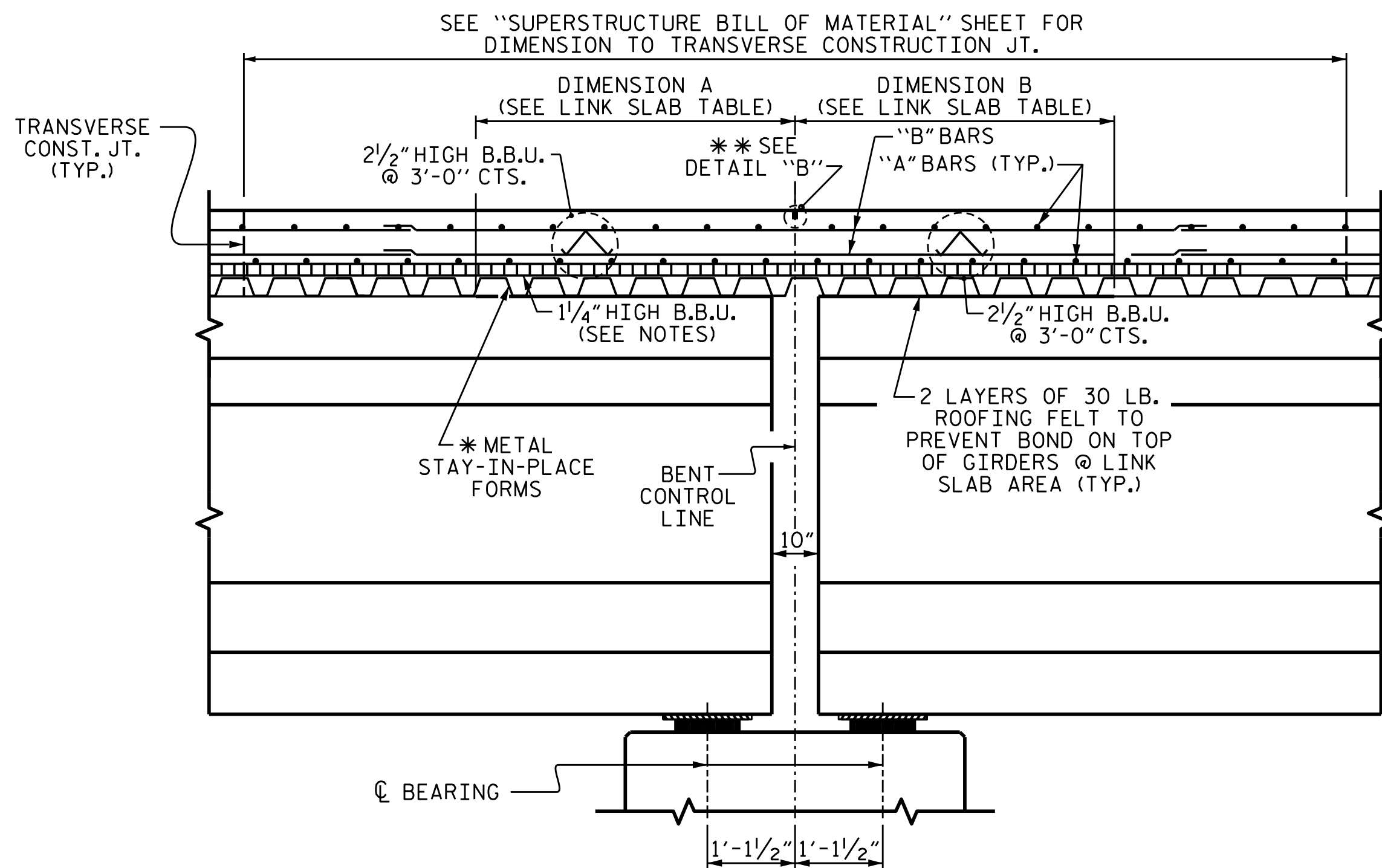
SECTION THRU INTEGRAL END BENT
INTEGRAL END BENTS

LINK SLAB TABLE		
BENT NO.	DIMENSION A	DIMENSION B
1	3'-6"	5'-0"
2	5'-0"	5'-6"
3	5'-6"	5'-6"

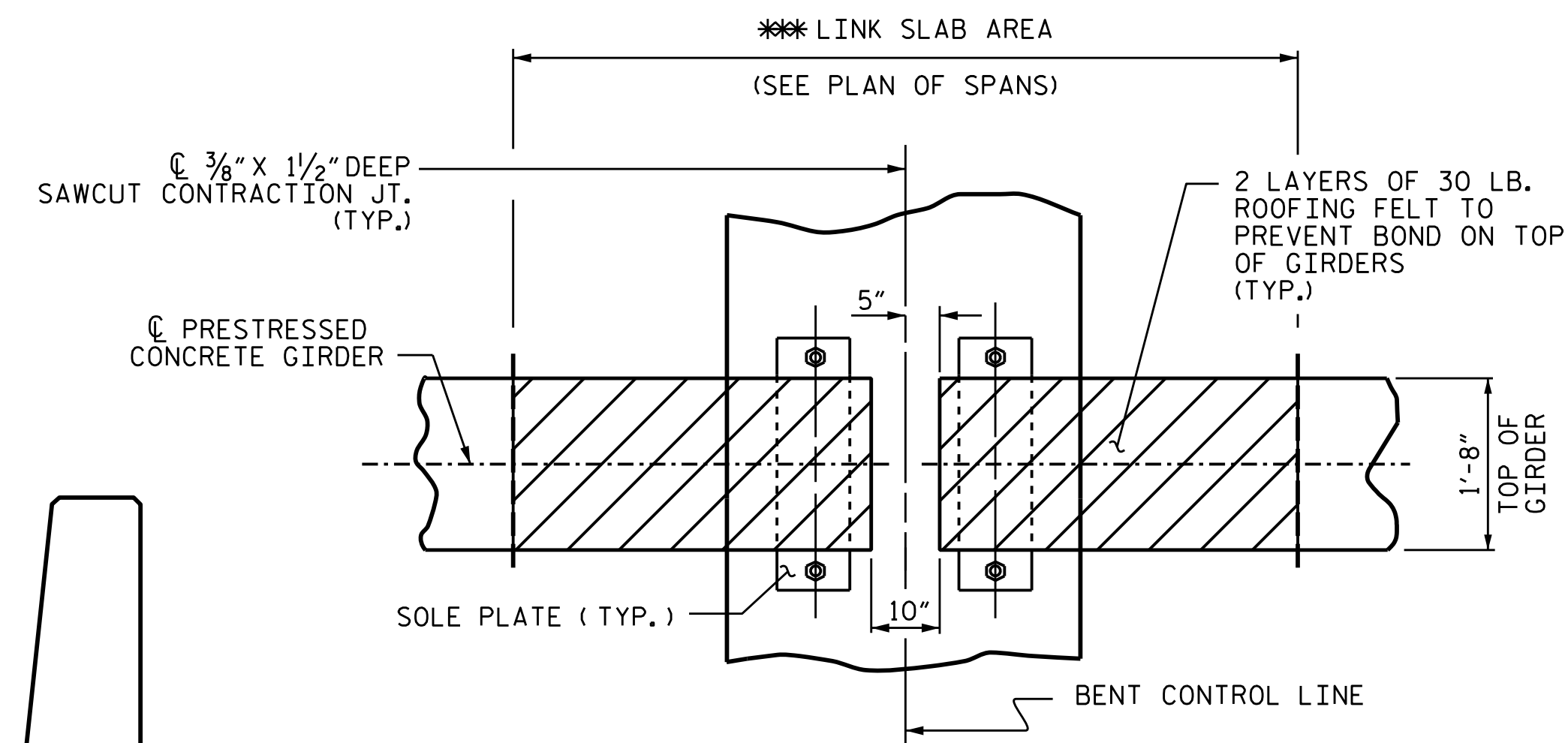


* METAL STAY-IN-PLACE FORMS SHALL NOT BE WELDED TO THE GIRDER FLANGES IN THE REGION OF THE LINK SLAB.

** A 1/2" DEEP 3/8" WIDE 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 SECTION 1028-3 OF THE STANDARD SPECIFICATIONS.



SECTION THRU LINK SLAB

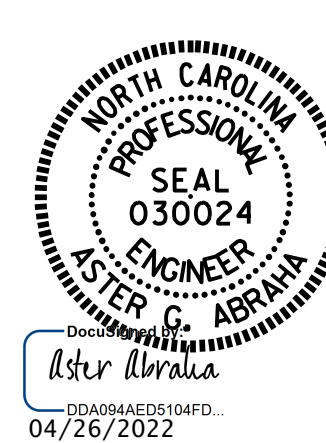


PLAN AT INTERIOR BENTS

** THE TOP OF GIRDER IN THE REGION OF THE LINK SLAB SHALL BE SMOOTH (NOT RAKED) AND FREE OF STIRRUPS, ANCHOR STUDS, DECK FORMWORK ATTACHMENTS, AND OVERHANG FALSEWORK/FORMWORK ATTACHMENTS.

PROJECT NO. B-5694
BLADEN COUNTY
STATION: 21+85.10 -L-

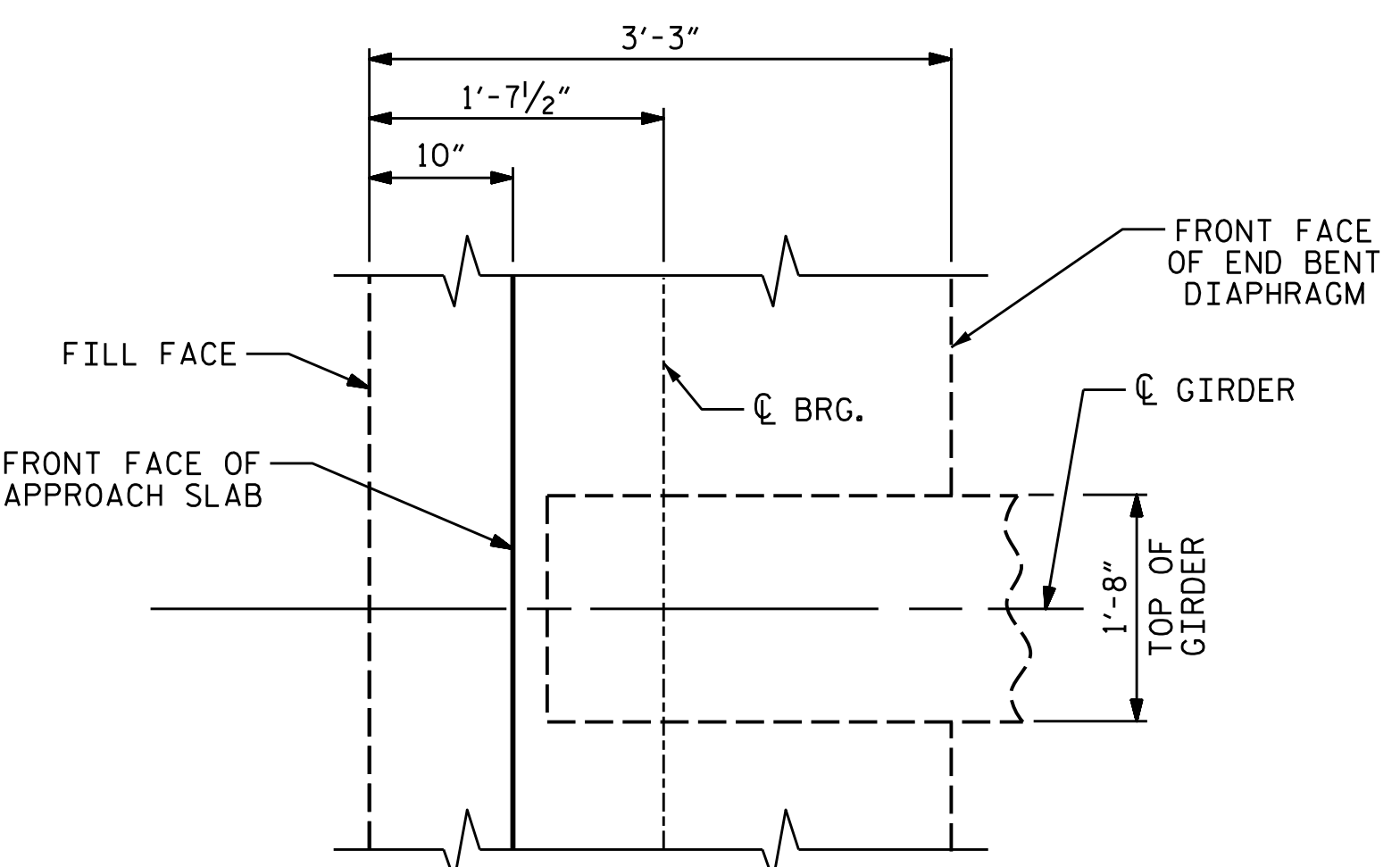
SHEET 2 OF 2



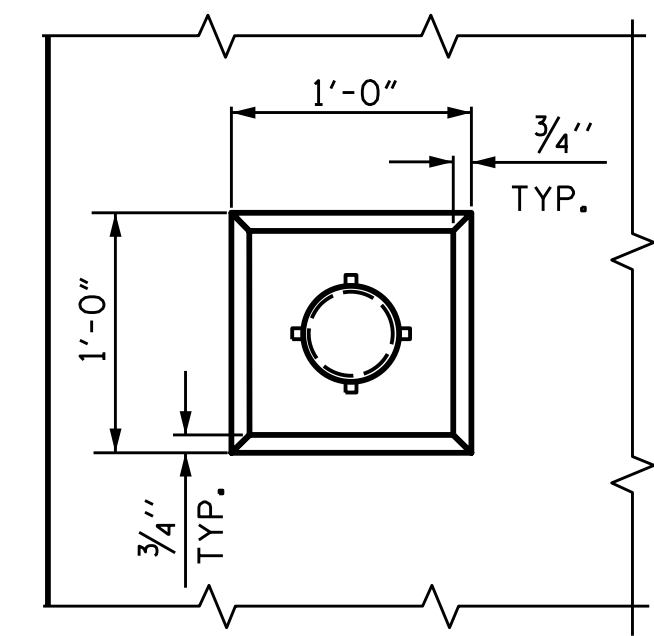
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
TYPICAL SECTION
DETAILS

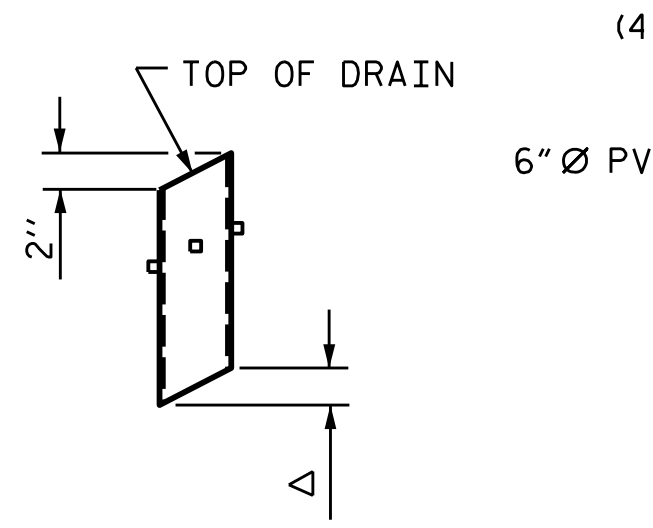
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-7	
1			3			TOTAL SHEETS 37	
2			4				



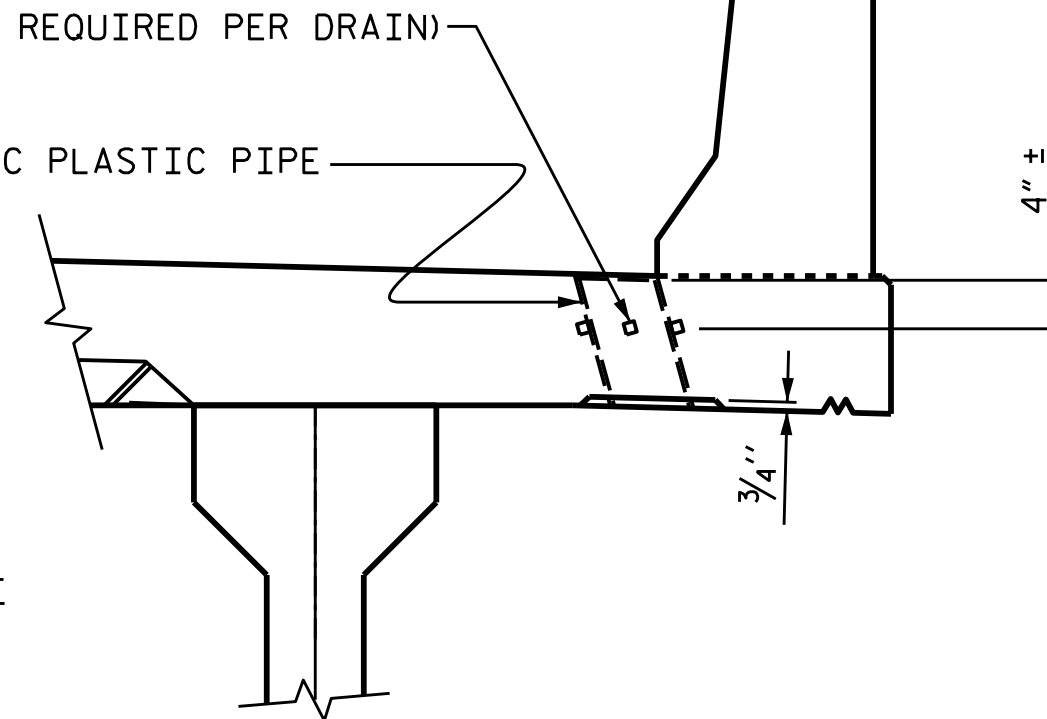
PLAN @ INTEGRAL END BENT



PLAN OF RECESS



PIPE DETAIL



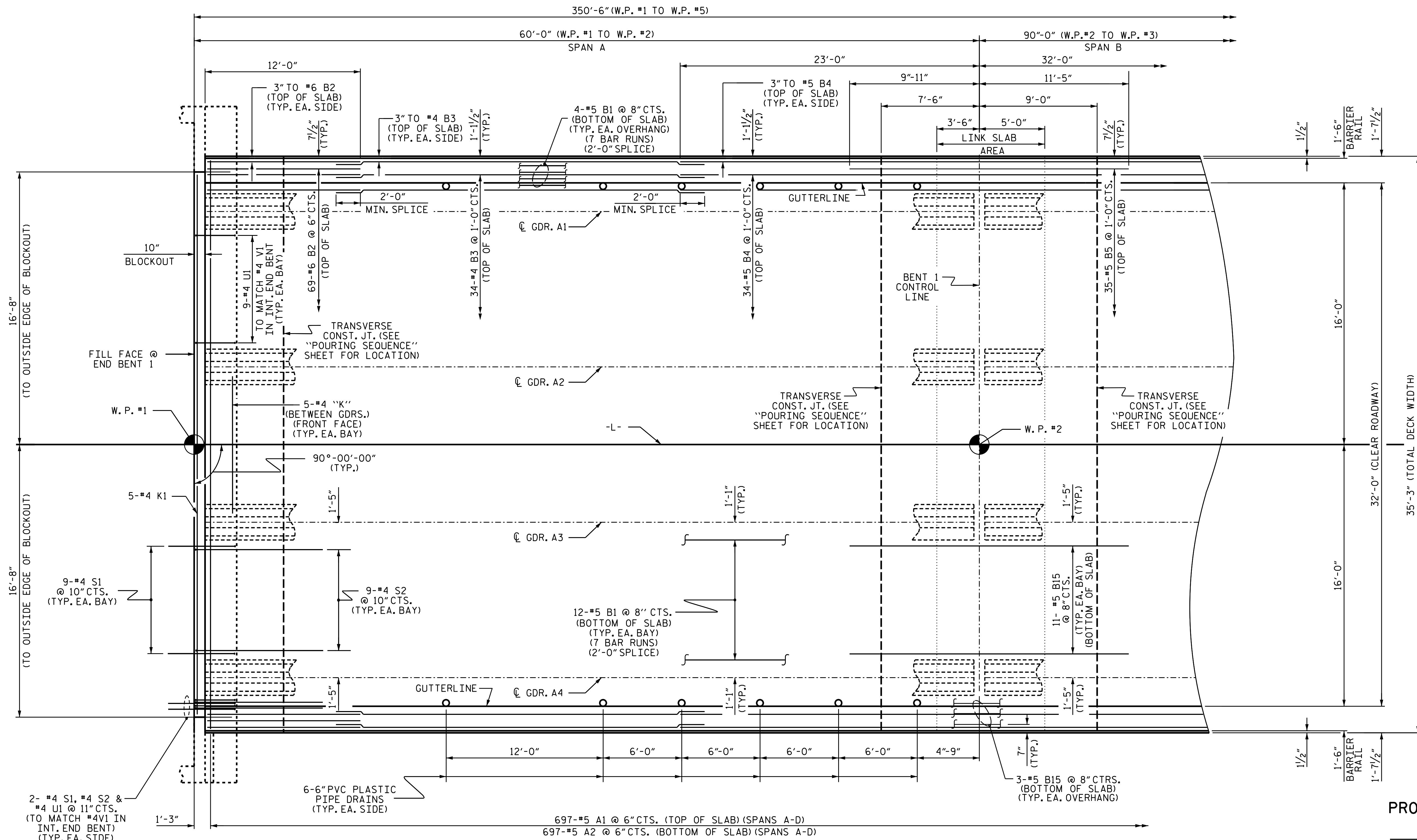
ELEVATION

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.
SEE PLAN OF SPANS FOR SPACING AND LOCATIONS

DRAIN DETAILS

DRAWN BY : A. Y. GODFREY DATE : 07/2020
CHECKED BY : S. WANCE DATE : 09/2020
DESIGN ENGINEER OF RECORD: M. M. AHMED DATE : 08/2019

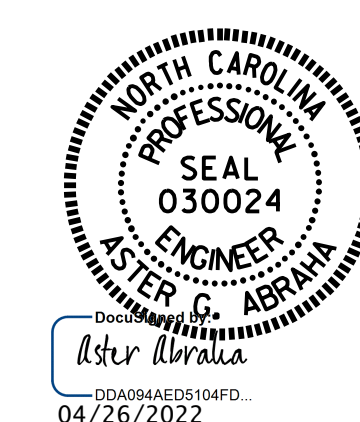
DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED



PLAN OF SPAN A

PROJECT NO. B-5694
BLADEN COUNTY
 STATION: 21+85.10 -L-

SHEET 1 OF 4



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPANS

DRAWN BY : A. Y. GODFREY DATE : 07/2020
 CHECKED BY : S. WANCE DATE : 09/2020
 DESIGN ENGINEER OF RECORD: M. M. AHMED DATE : 08/2019

4/20/2022
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 aygodfrey

DOCUMENT NOT CONSIDERED
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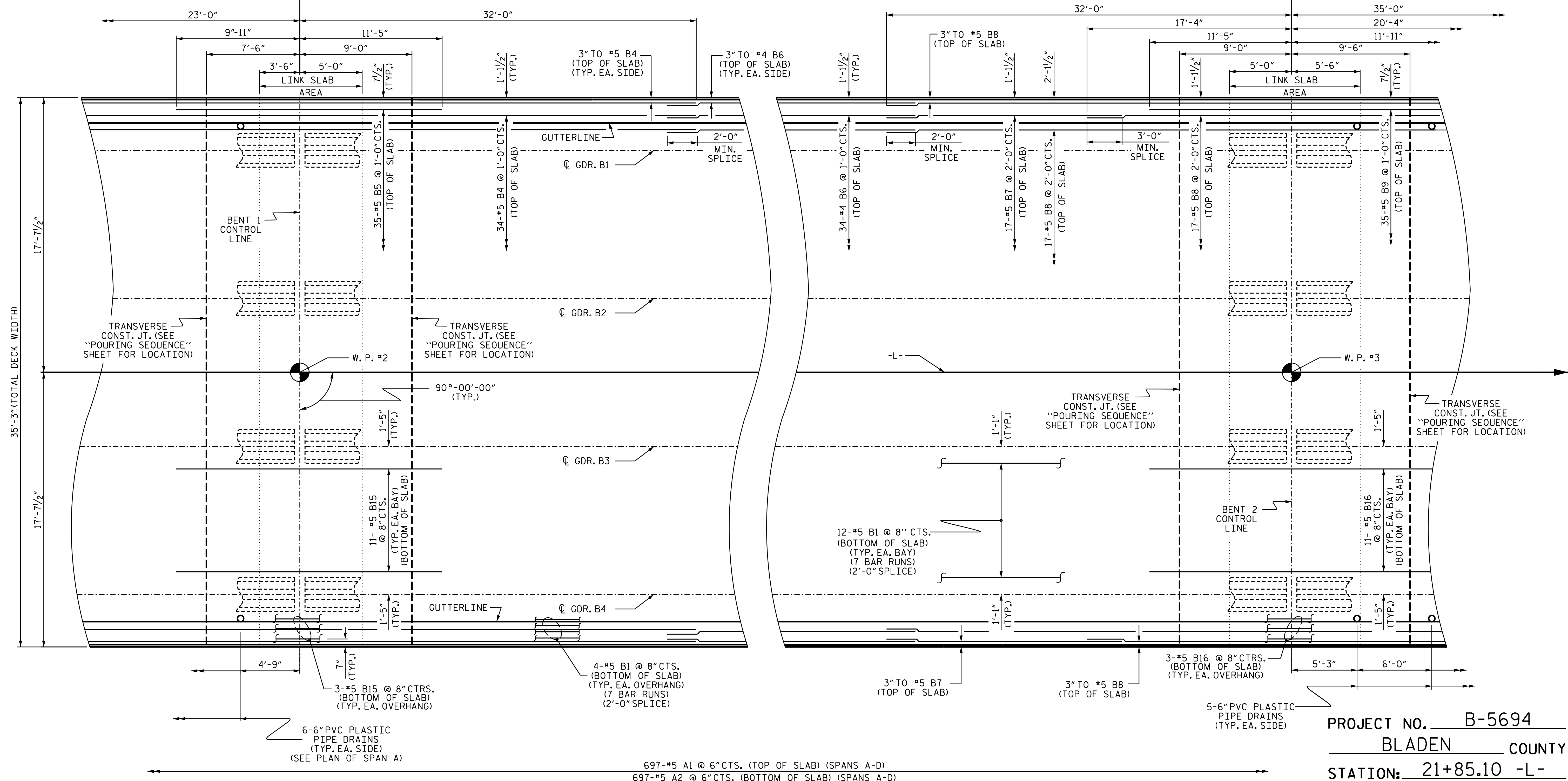
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			37

350'-6" (W.P. #1 TO W.P. # 5)

60'-0" (W.P. #1 TO W.P. #2)
SPAN A

90'-0" (W.P. #2 TO W.P. #3)
SPAN B

100'-0" (W.P. #3 TO W.P. #4)
SPAN C



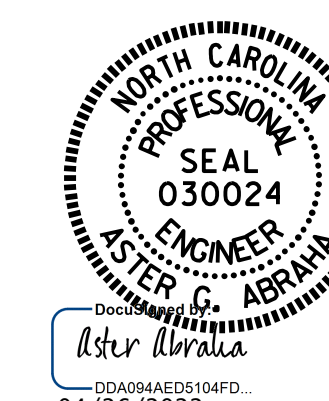
PLAN OF SPAN B

PROJECT NO. B-5694
BLADEN COUNTY
 STATION: 21+85.10 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 PLAN OF SPANS



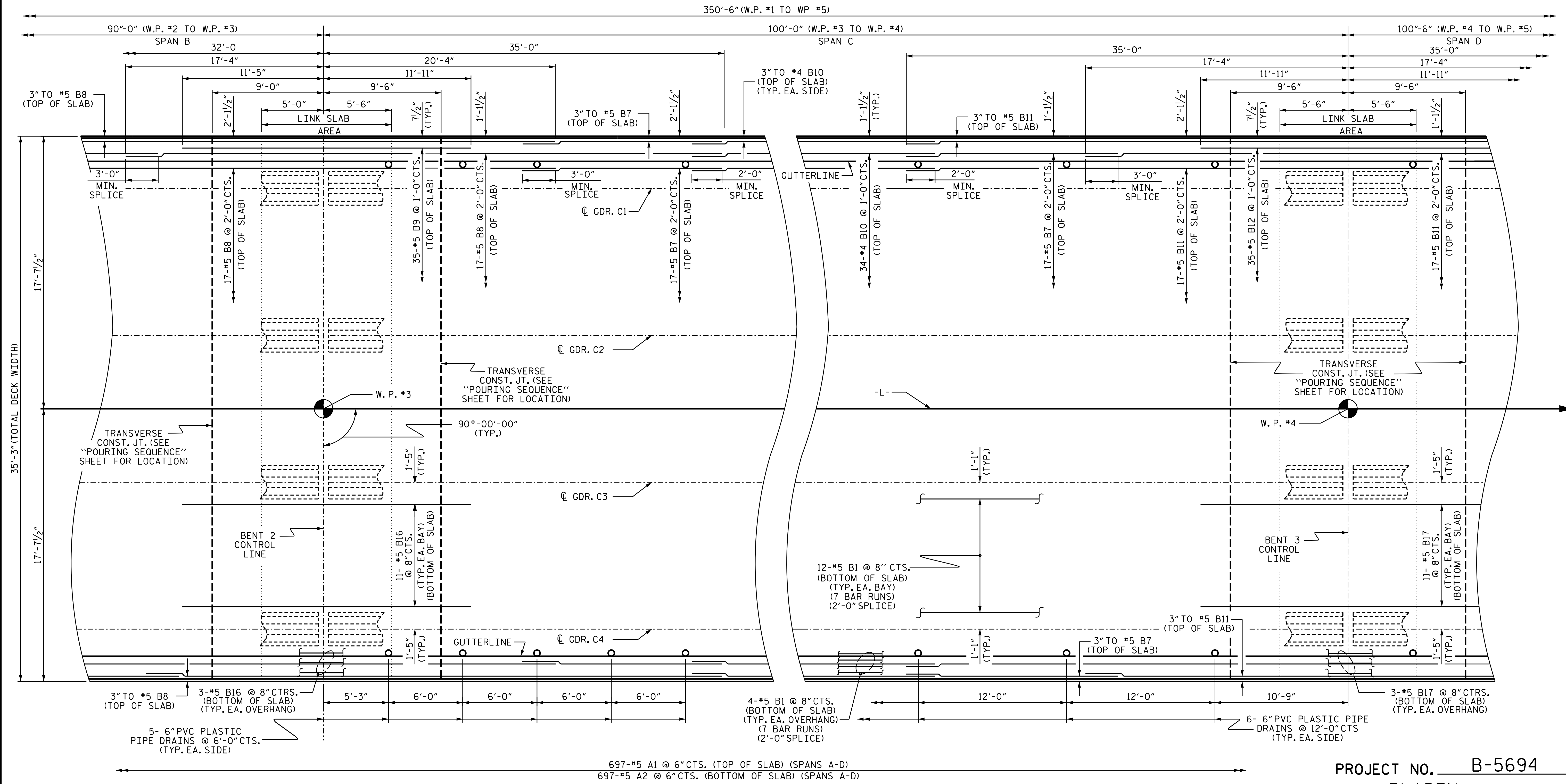
Doc No: 04/26/2022

DRAWN BY: A. Y. GODFREY DATE: 07/2020
 CHECKED BY: S. WANCE DATE: 09/2020
 DESIGN ENGINEER OF RECORD: M. M. AHMED DATE: 08/2019

4/20/2022
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			37



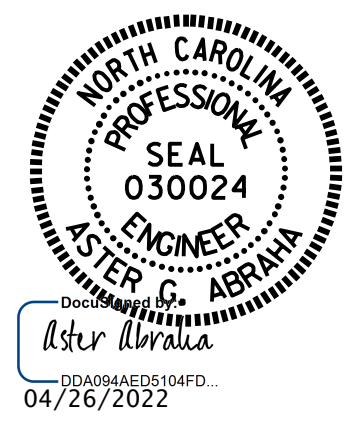
PLAN OF SPAN C

PROJECT NO. B-5694
 BLADEN COUNTY
 STATION: 21+85.10 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

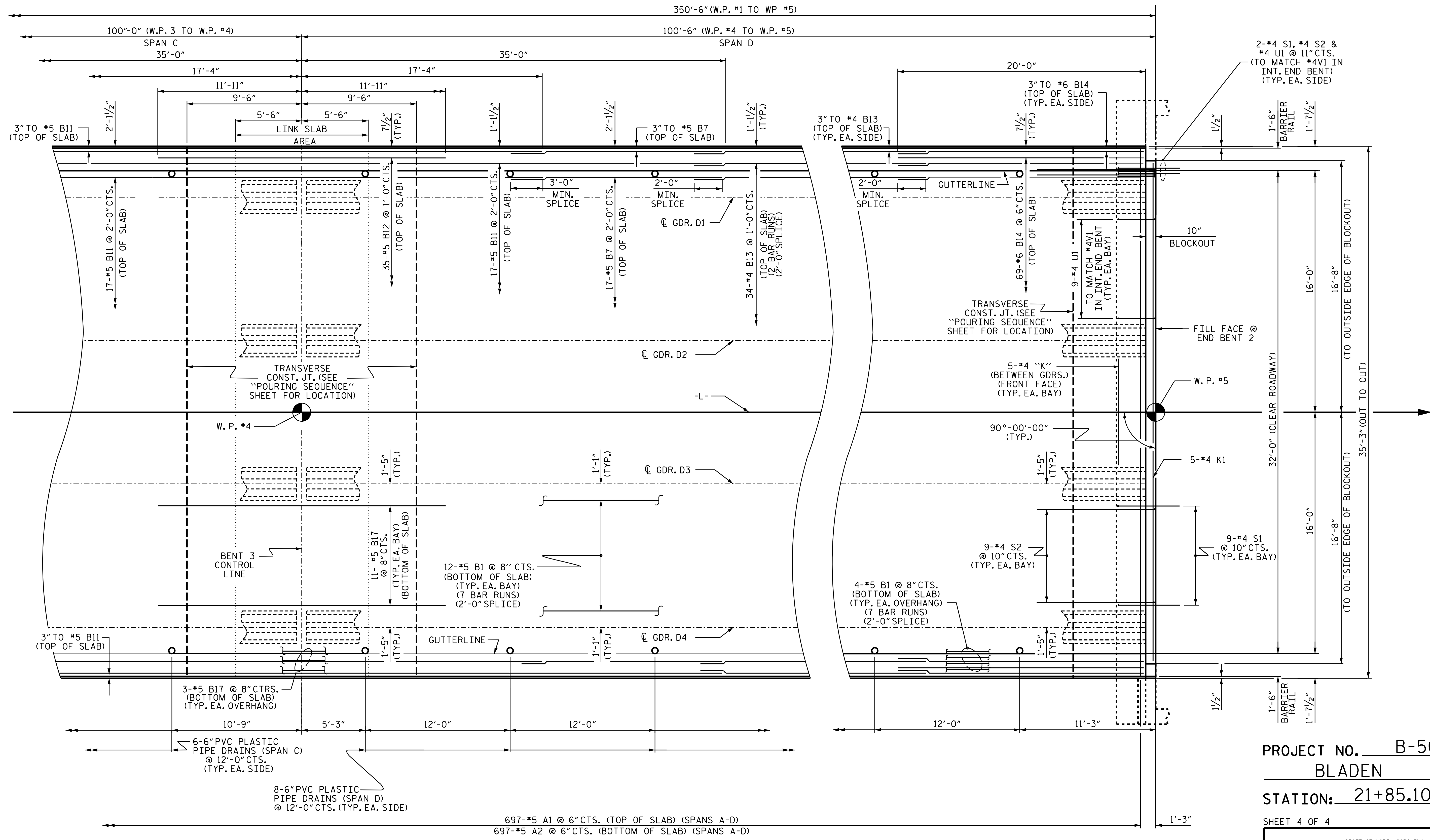
SUPERSTRUCTURE
 PLAN OF SPANS



DRAWN BY : A. Y. GODFREY DATE : 07/2020
 CHECKED BY : S. WANCE DATE : 09/2020
 DESIGN ENGINEER OF RECORD : M. M. AHMED DATE : 08/2019

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			37

4/20/2022
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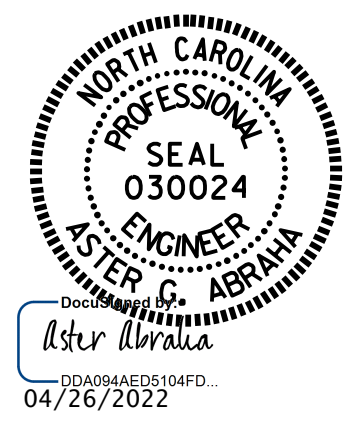
PLAN OF SPAN D

PROJECT NO. B-5694
BLADEN COUNTY
 STATION: 21+85.10 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

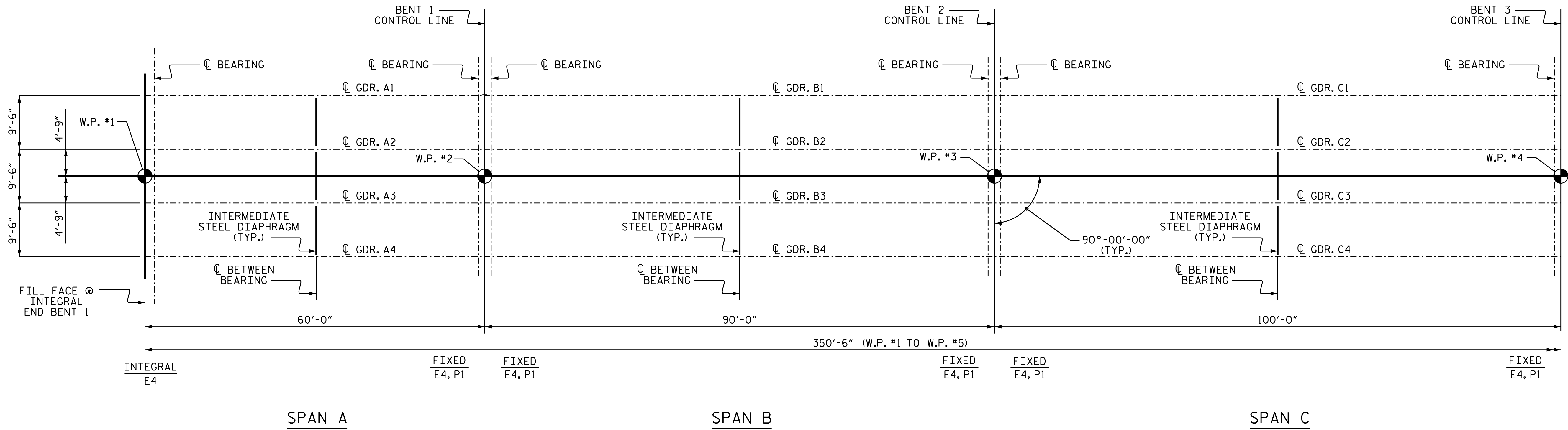
SUPERSTRUCTURE
 PLAN OF SPANS



DRAWN BY : A. Y. GODFREY DATE : 07/2020
 CHECKED BY : S. WANCE DATE : 09/2020
 DESIGN ENGINEER OF RECORD: M. M. AHMED DATE : 08/2019

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			37

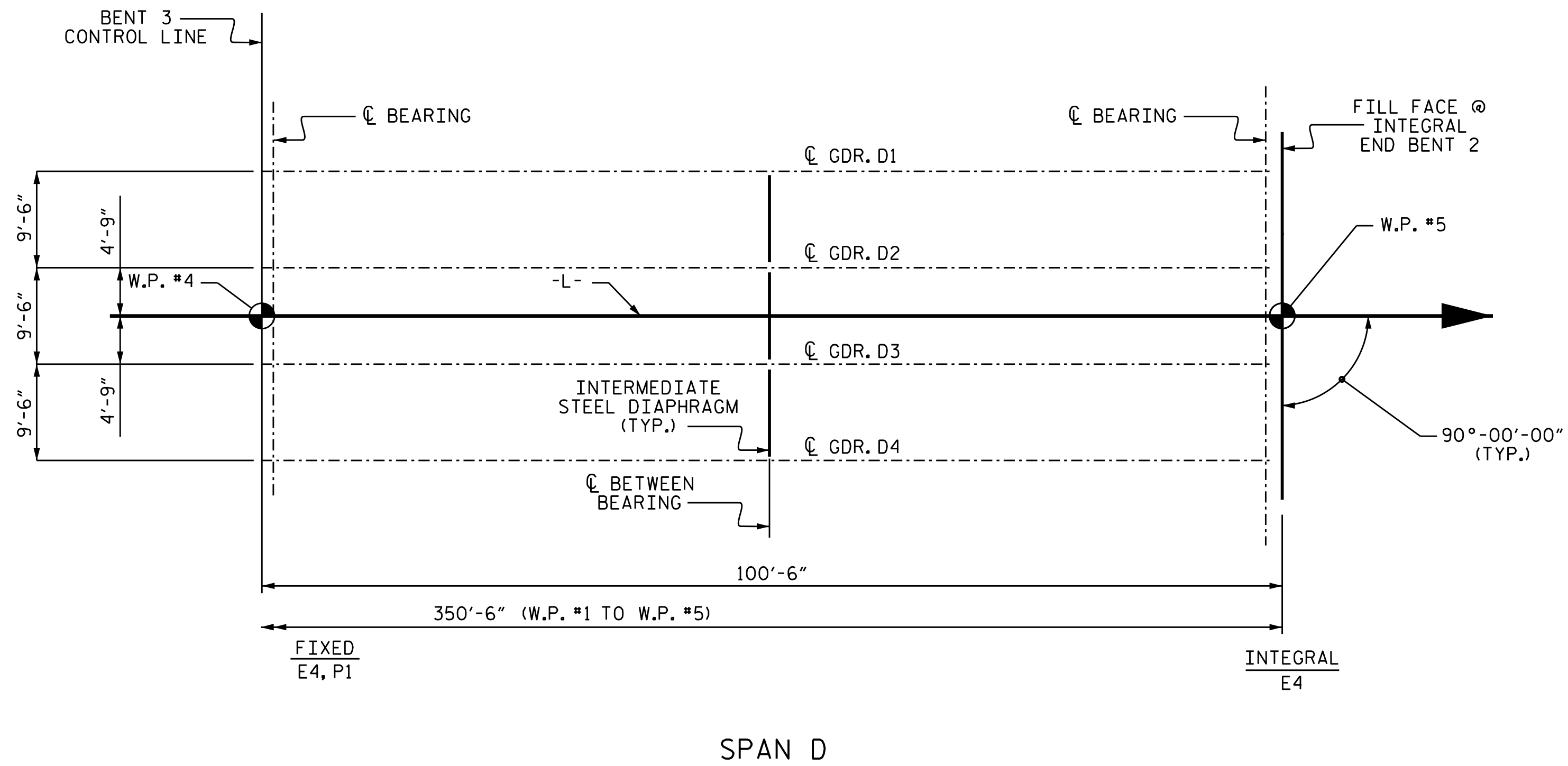
4/20/2022
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 cygodfrey



SPAN A

SPAN B

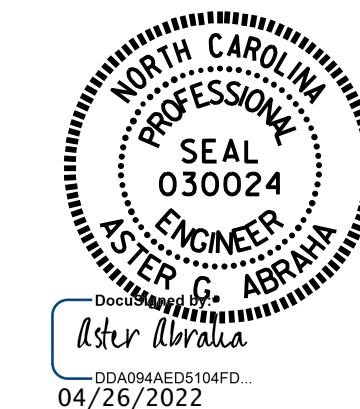
SPAN C



SPAN D

NOTE: FOR INTERMEDIATE STEEL DIAPHRAGMS SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR 54" PRESTRESSED CONCRETE GIRDERS" SHEET.

PROJECT NO. B-5694
BLADEN COUNTY
 STATION: 21+85.10 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
FRAMING PLAN

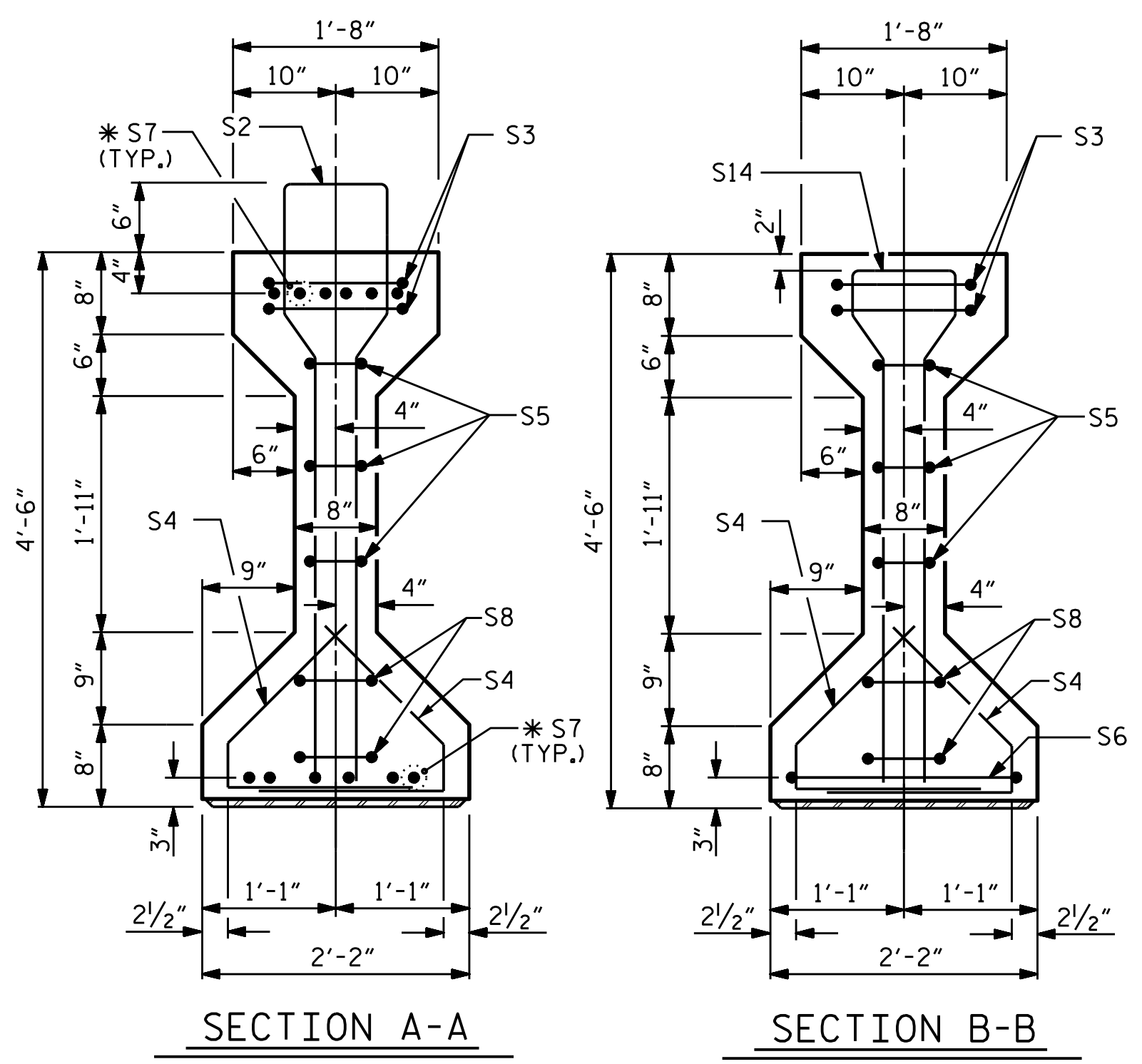
DRAWN BY: M.AHMED DATE: 05/31/19
 CHECKED BY: S. WANCE DATE: 09/20/20
 DESIGN ENGINEER OF RECORD: M.AHMED DATE: 05/20/20

4/20/2022
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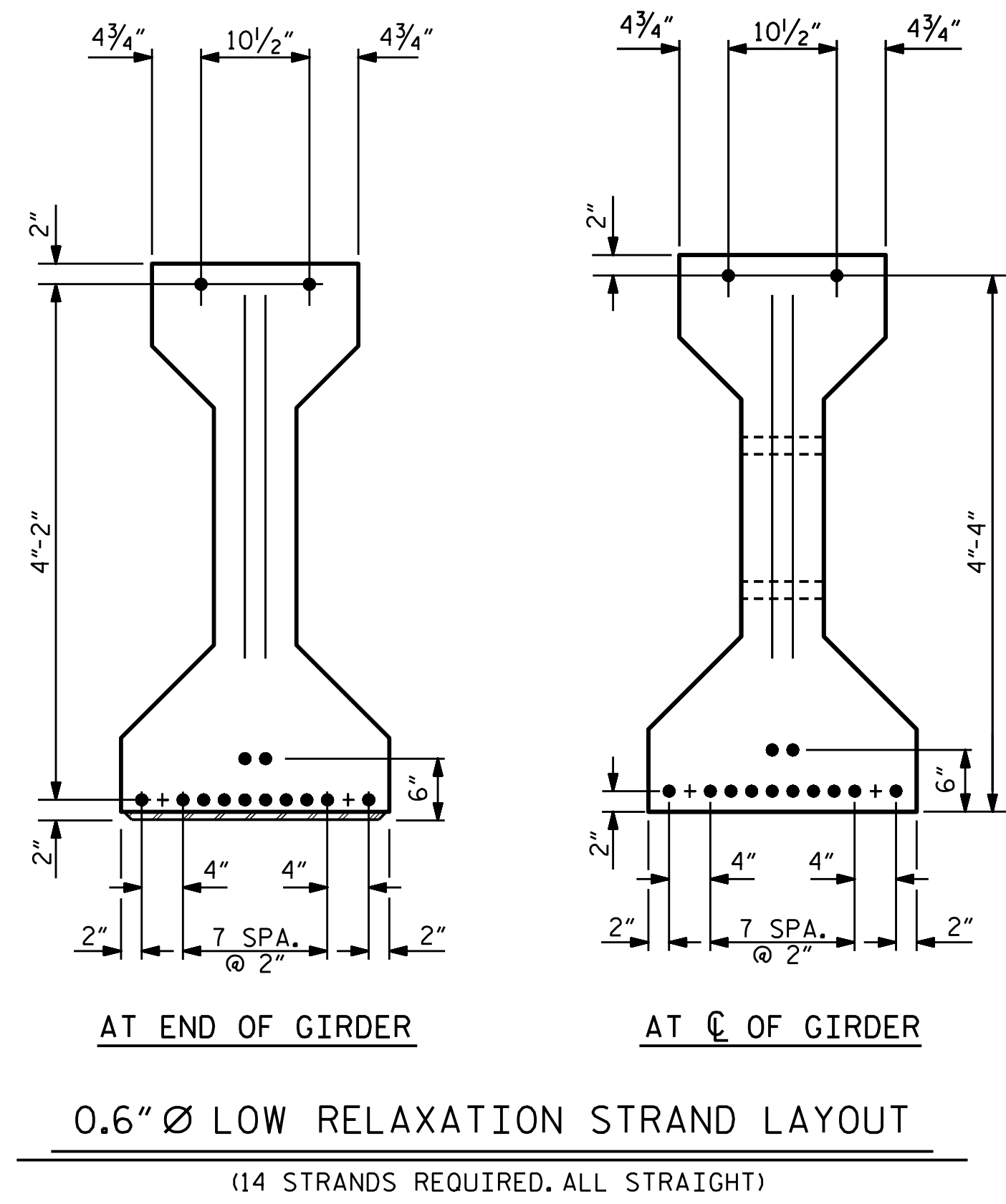
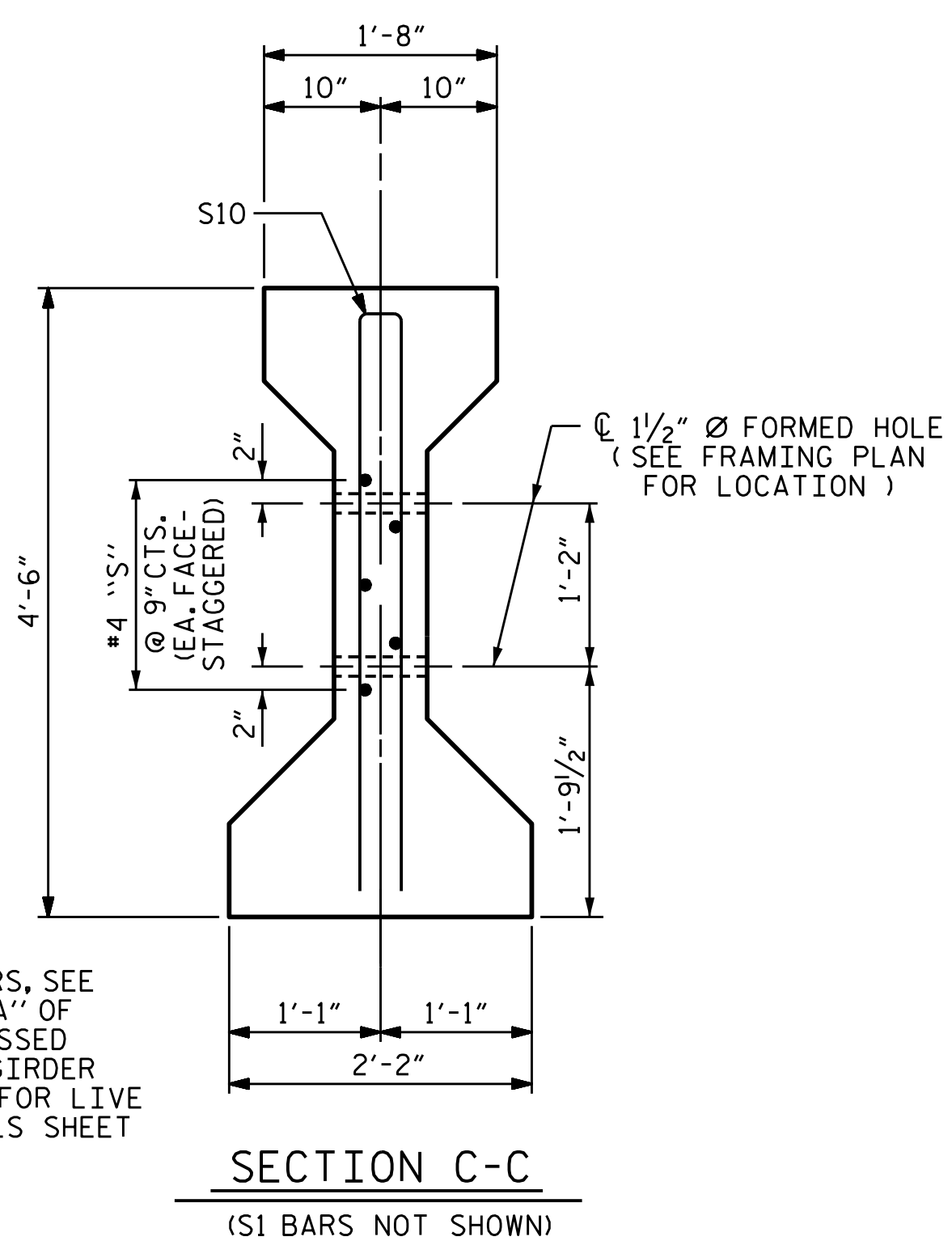
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-12
2			4			TOTAL SHEETS 37

GIRDER LAYOUT



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



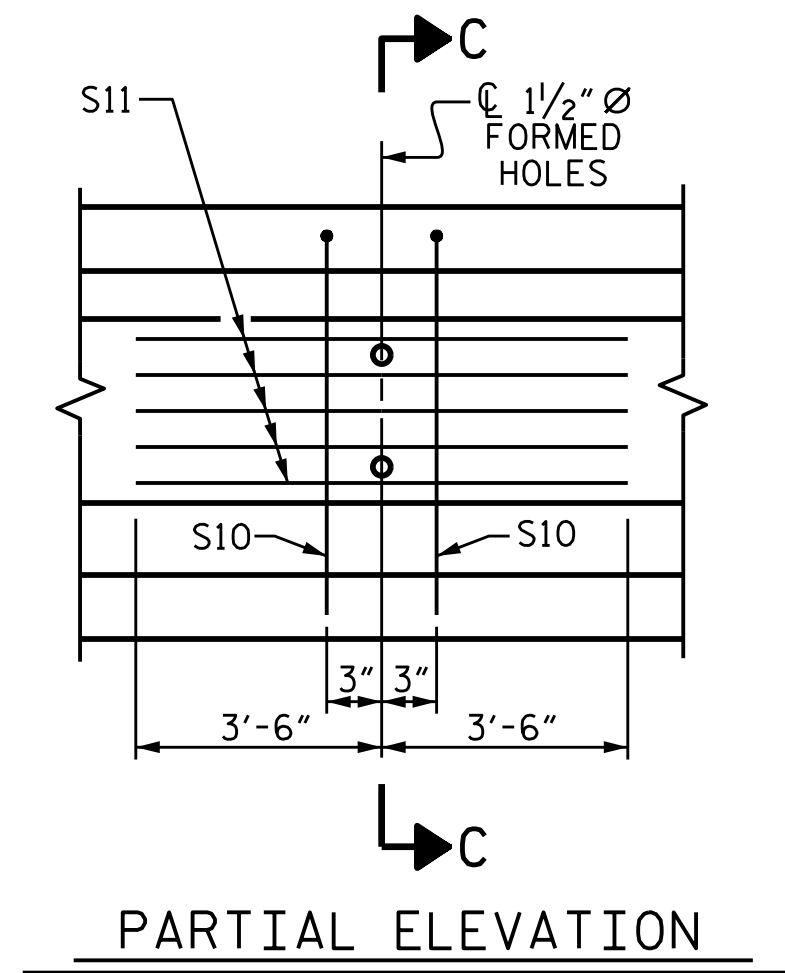
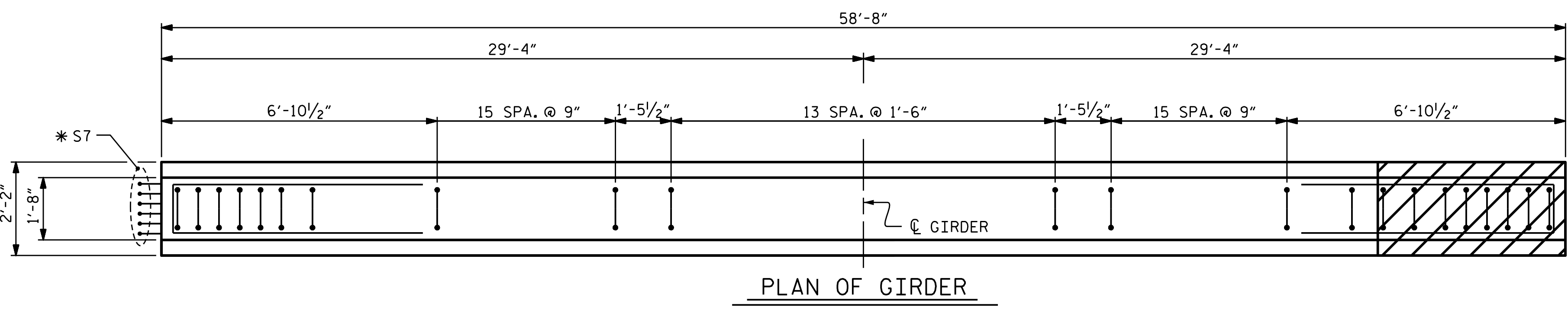
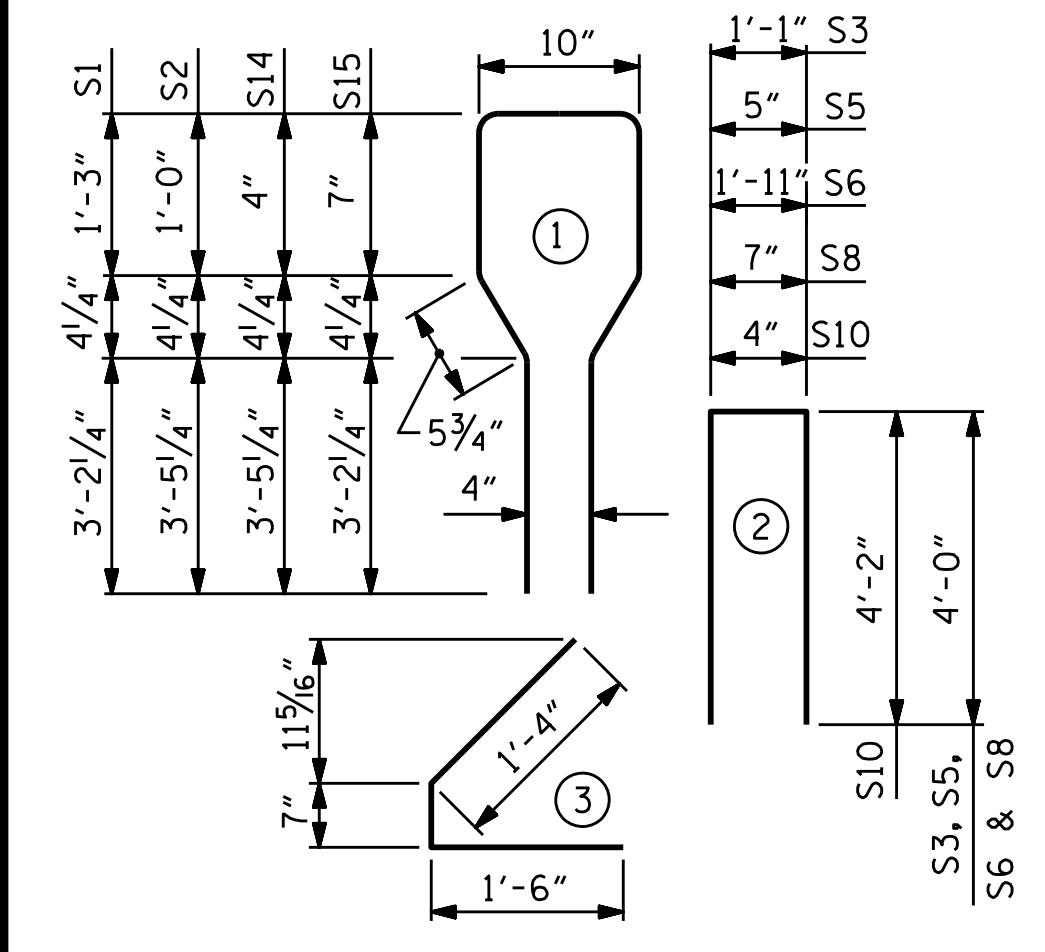
DEBONDING LEGEND
● FULLY BONDED STRANDS

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 GIRDER					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	62	#4	1	10'-8"	442
S2	6	#6	1	10'-8"	96
S3	4	#4	2	9'-1"	24
S4	64	#4	3	3'-5"	146
S5	6	#4	2	8'-5"	34
S6	1	#4	2	9'-11"	7
* S7	12	#5	STR	3'-8"	46
S8	4	#4	2	8'-7"	23
S9	1	#3	STR	1'-10"	1
S10	2	#5	2	8'-8"	18
S11	5	#4	STR	7'-0"	23
S13	1	#3	STR	1'-4"	1
S14	6	#6	1	9'-4"	84
S15	2	#4	1	9'-4"	12

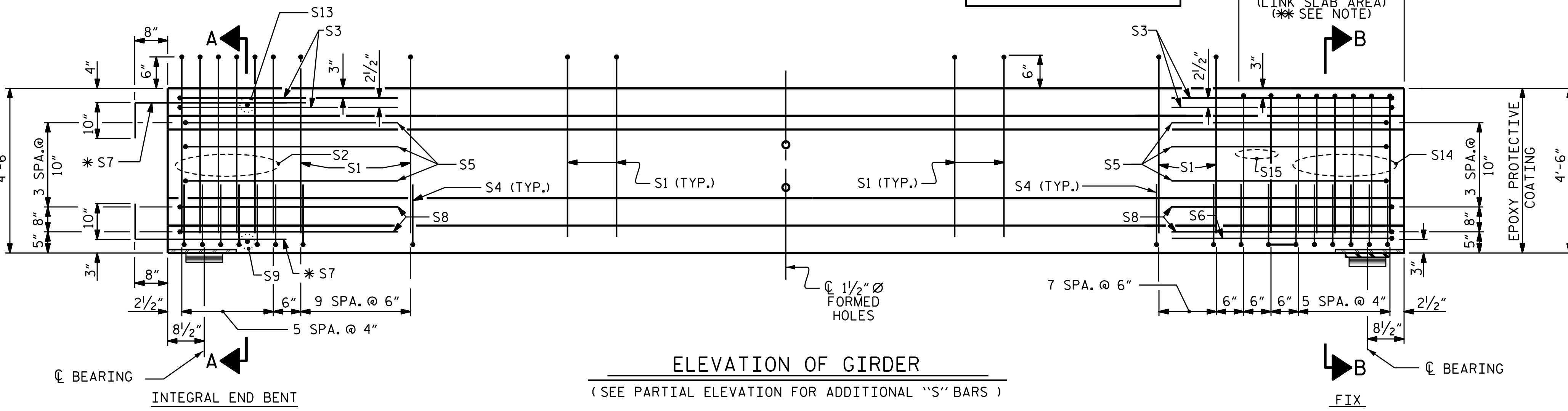
* NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES
ALL BAR DIMENSIONS ARE OUT-TO-OUT



SHOWING INTERMEDIATE DIAPHRAGM
REINFORCING STEEL FOR ALL GIRDERS

** DO NOT RAKE TOP OF GIRDER IN THIS AREA



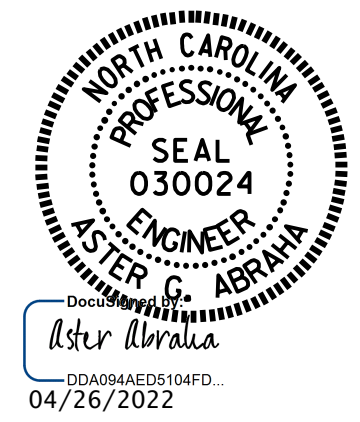
ELEVATION OF GIRDER
(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

QUANTITIES FOR ONE GIRDER			
SPAN A	REINFORCING STEEL	5000 PSI CONCRETE	0.6" Ø L. R. STRANDS
	LB.	C.Y.	No.
SPAN A	957	11.9	14

GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
4	58'-8"	234'-8"

PROJECT NO. B-5694
BLADEN COUNTY
STATION: 21+85.10 -L-

SHEET 1 OF 6

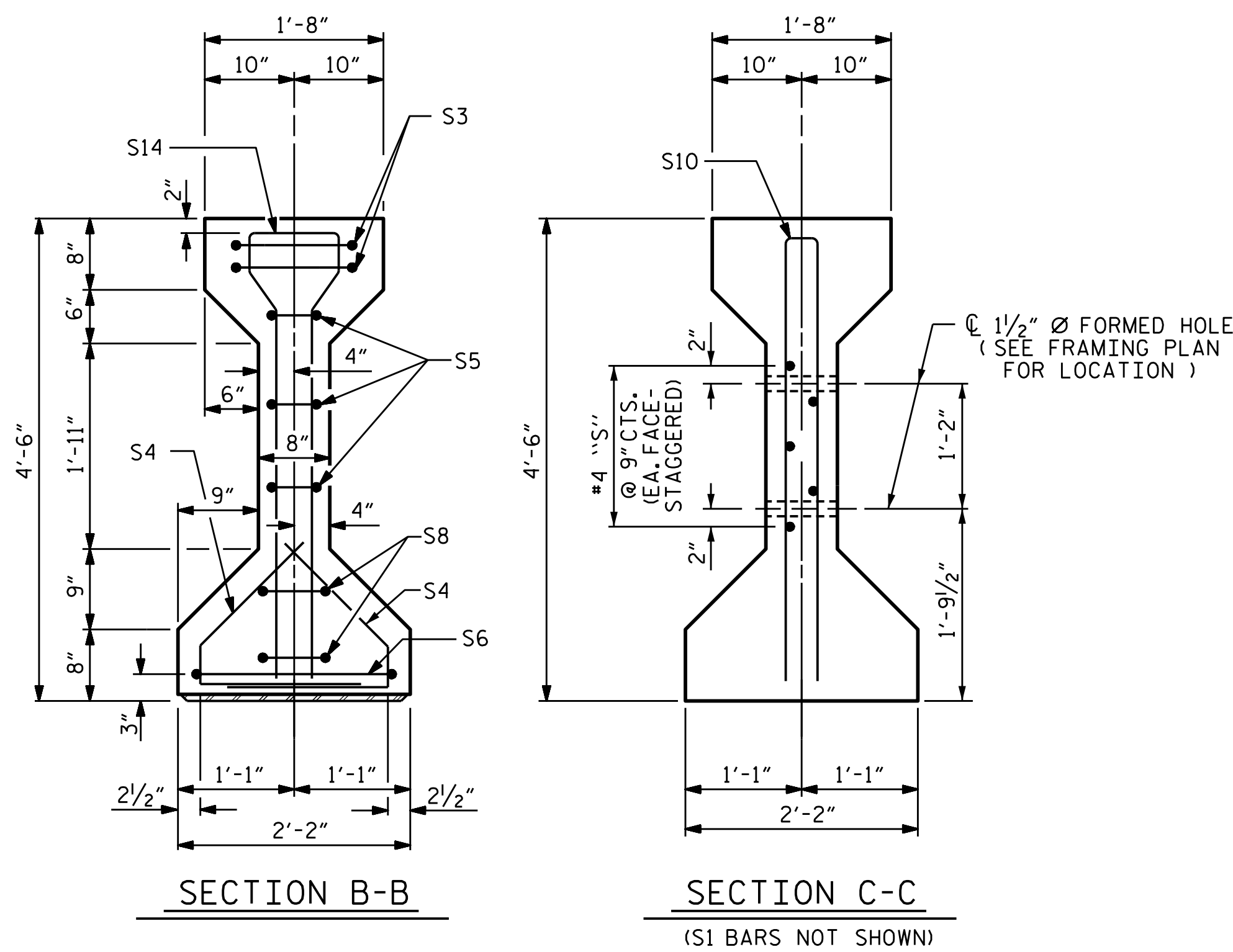


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
AASHTO TYPE IV
PRESTRESSED CONCRETE
GIRDER - LINK SLAB
SPAN A

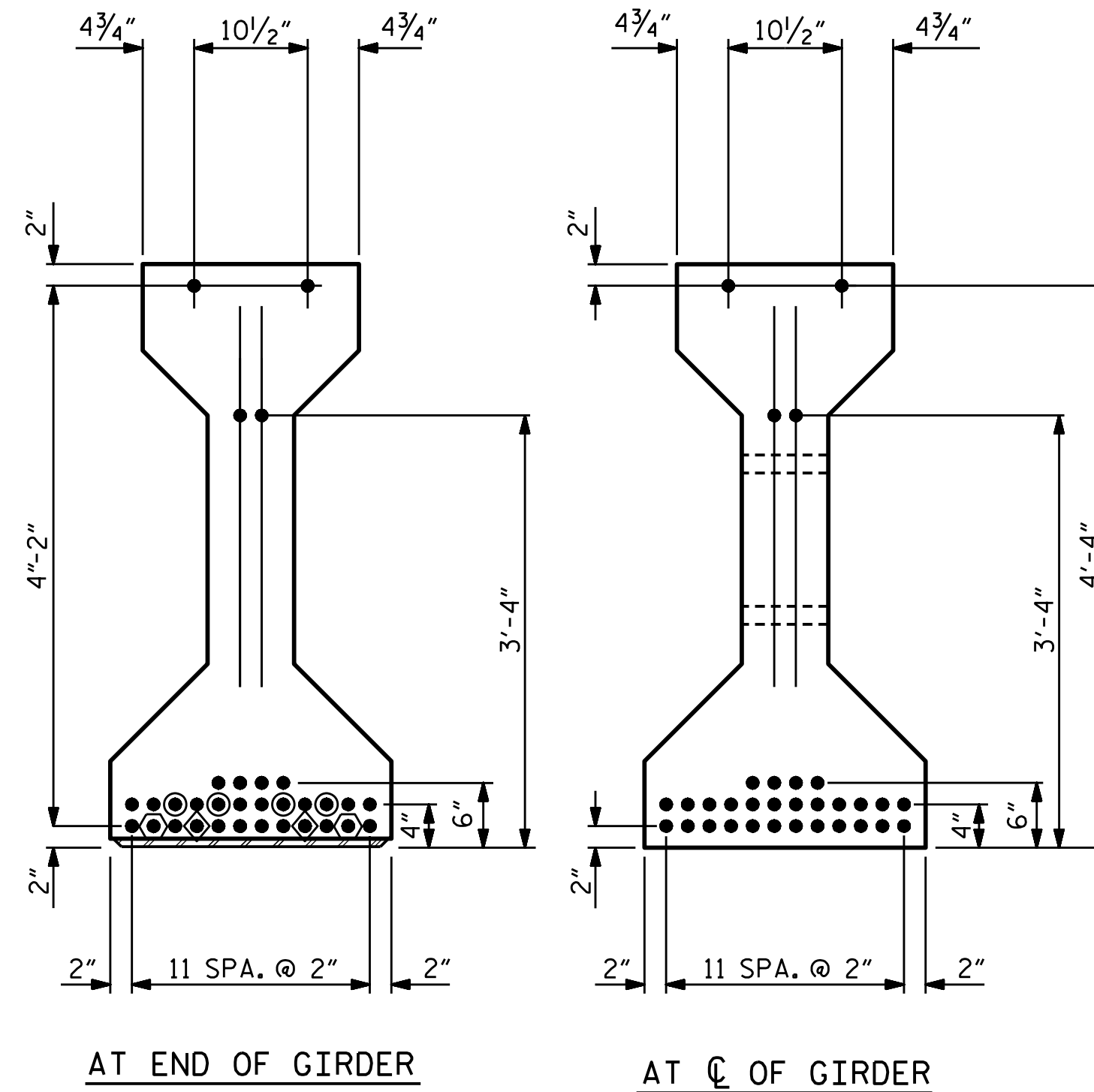
ASSEMBLED BY : A. Y. GODFREY	DATE : 07/2020
CHECKED BY : M. M. AHMED	DATE : 08/2020
DESIGN ENGINEER OF RECORD : M. M. AHMED	DATE : 08/2019
DRAWN BY : ELR 8/91	REV. 10/1/11 MAA/GM
CHECKED BY : GRP 8/91	REV. 1/15 MAA/TMG
	REV. 12/17 MAA/THC

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SIGNATURES COMPLETED

REVISIONS						SHEET NO. S-13 TOTAL SHEETS 37
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			



1/2" Ø FORMED HOLE
(SEE FRAMING PLAN
FOR LOCATION)



0.6" Ø LOW RELAXATION STRAND LAYOUT

(32 STRANDS REQUIRED, ALL STRAIGHT, PARTIALLY DEBONDED)

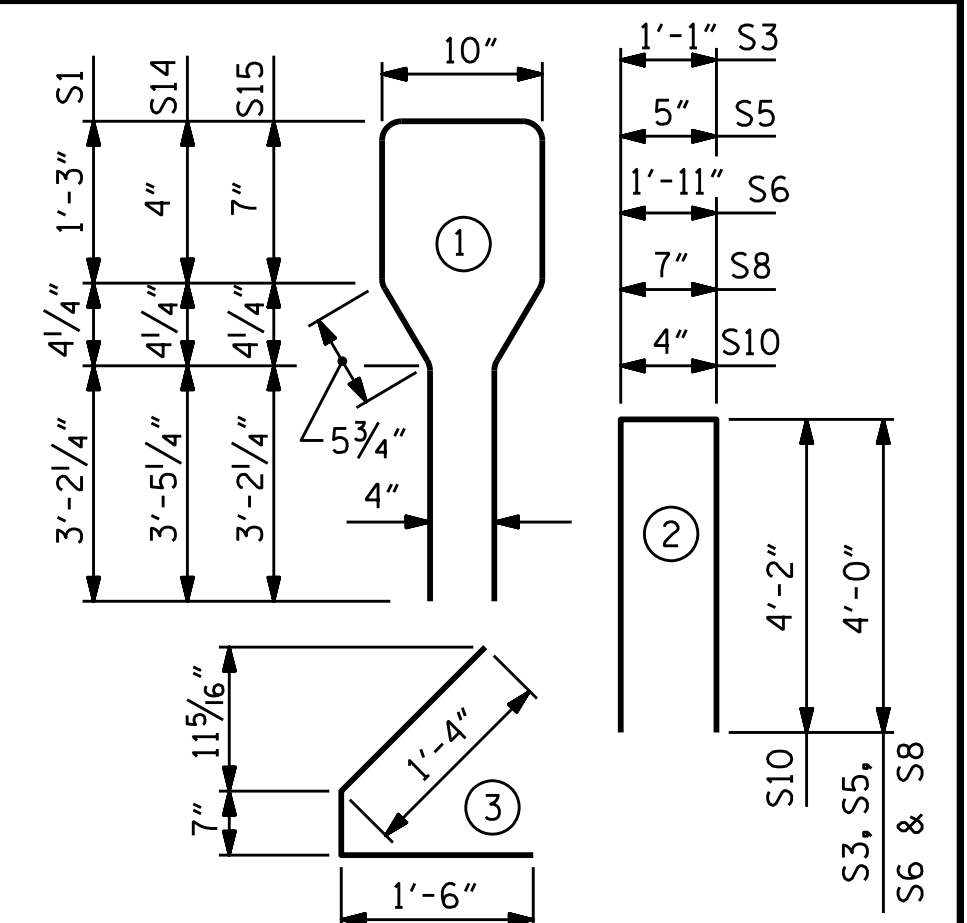
- DEBONDING LEGEND**
- FULLY BONDED STRANDS
 - STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
 - ◇ STRANDS DEBONDED FOR 10'-0" FROM END OF GIRDER
 - ⊙ STRANDS DEBONDED FOR 12'-0" FROM END OF GIRDER

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

REINFORCING STEEL FOR ONE GIRDER					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	120	#4	1	10'-8"	855
S3	4	#4	2	9'-1"	24
S4	64	#4	3	3'-5"	146
S5	6	#4	2	8'-5"	34
S6	2	#4	2	9'-11"	13
S8	4	#4	2	8'-7"	23
S10	2	#5	2	8'-8"	18
S11	5	#4	STR	7'-0"	23
S14	12	#6	1	9'-4"	168
S15	10	#4	1	9'-4"	62

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT

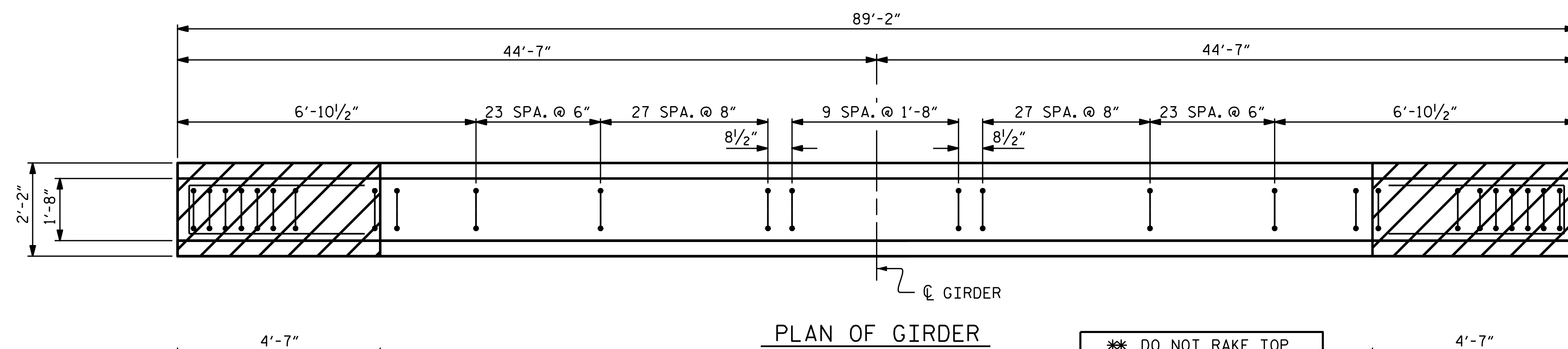


QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL	8000 PSI CONCRETE	0.6" Ø L. R. STRANDS
	LB.	C.Y.	No.
SPAN B	1366	18.1	32

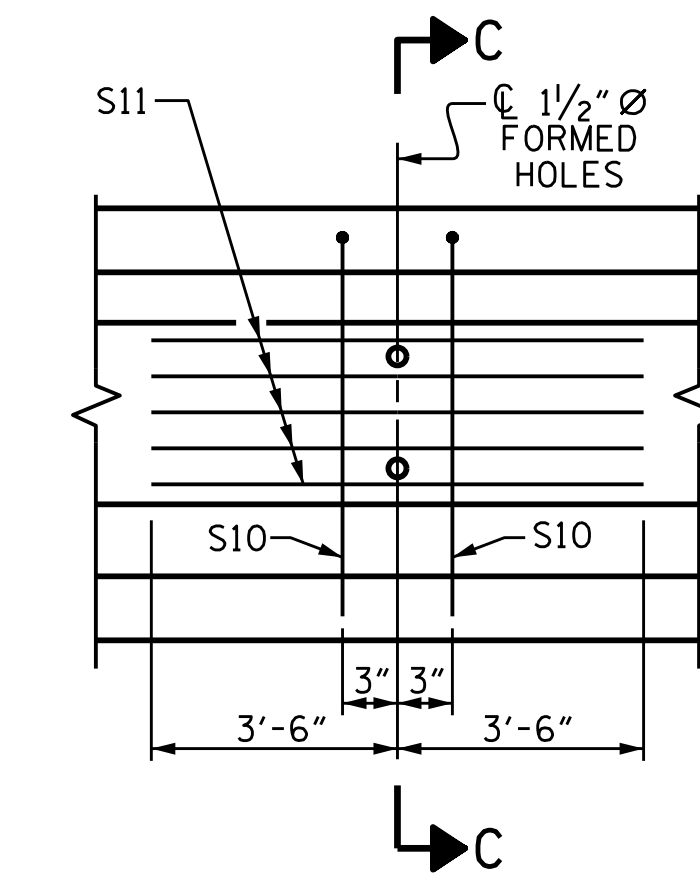
GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
4	89'-2"	356'-8"



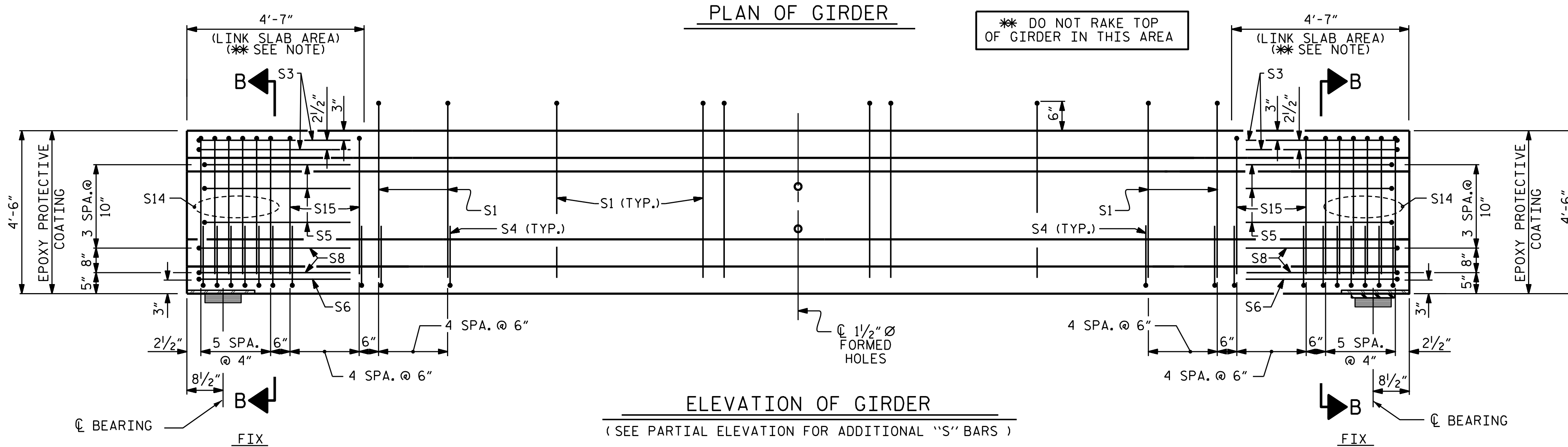
PLAN OF GIRDER

* DO NOT RAKE TOP OF GIRDER IN THIS AREA



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR ALL GIRDERS

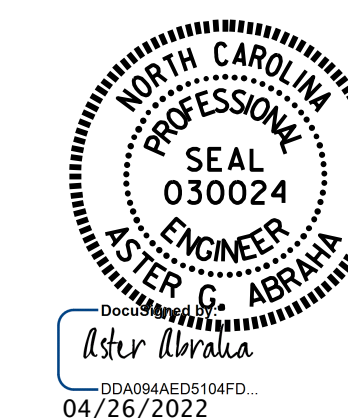


ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

ASSEMBLED BY : A. Y. GODFREY	DATE : 07/2020
CHECKED BY : M. M. AHMED	DATE : 08/2020
DESIGN ENGINEER OF RECORD : M. M. AHMED	DATE : 08/2019
DRAWN BY : ELR 8/91	REV. 10/1/11 MAA/GM
CHECKED BY : GRP 8/91	REV. 1/15 MAA/TMG
	REV. 12/17 MAA/THC

4/20/2022
R:\Structures\Plans\OBD\401.B5694.SMU. G2.S13.080051.dgn
aygodfrey



DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

PROJECT NO. B-5694
BLADEN COUNTY
STATION: 21+85.10 -L-

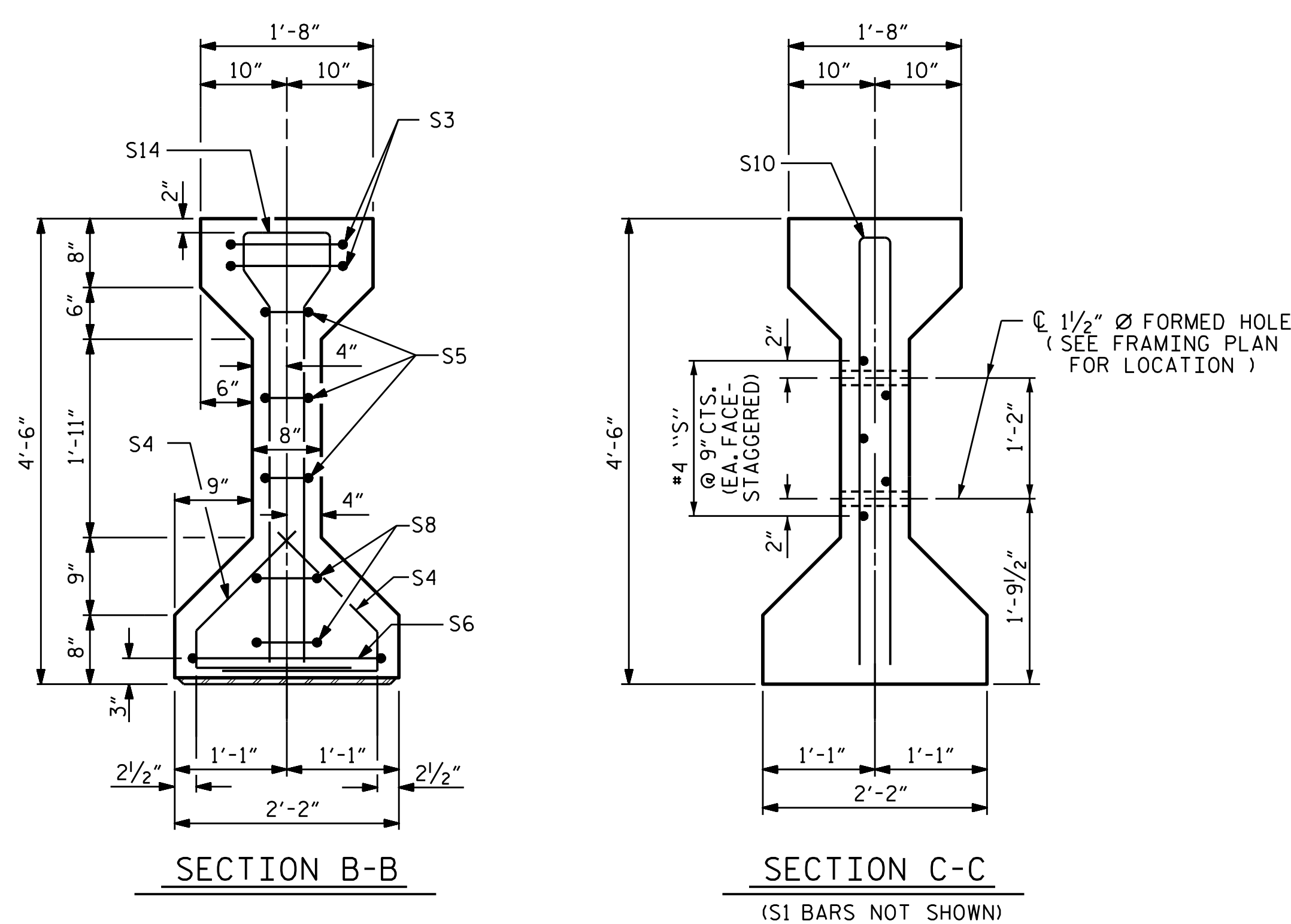
SHEET 2 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

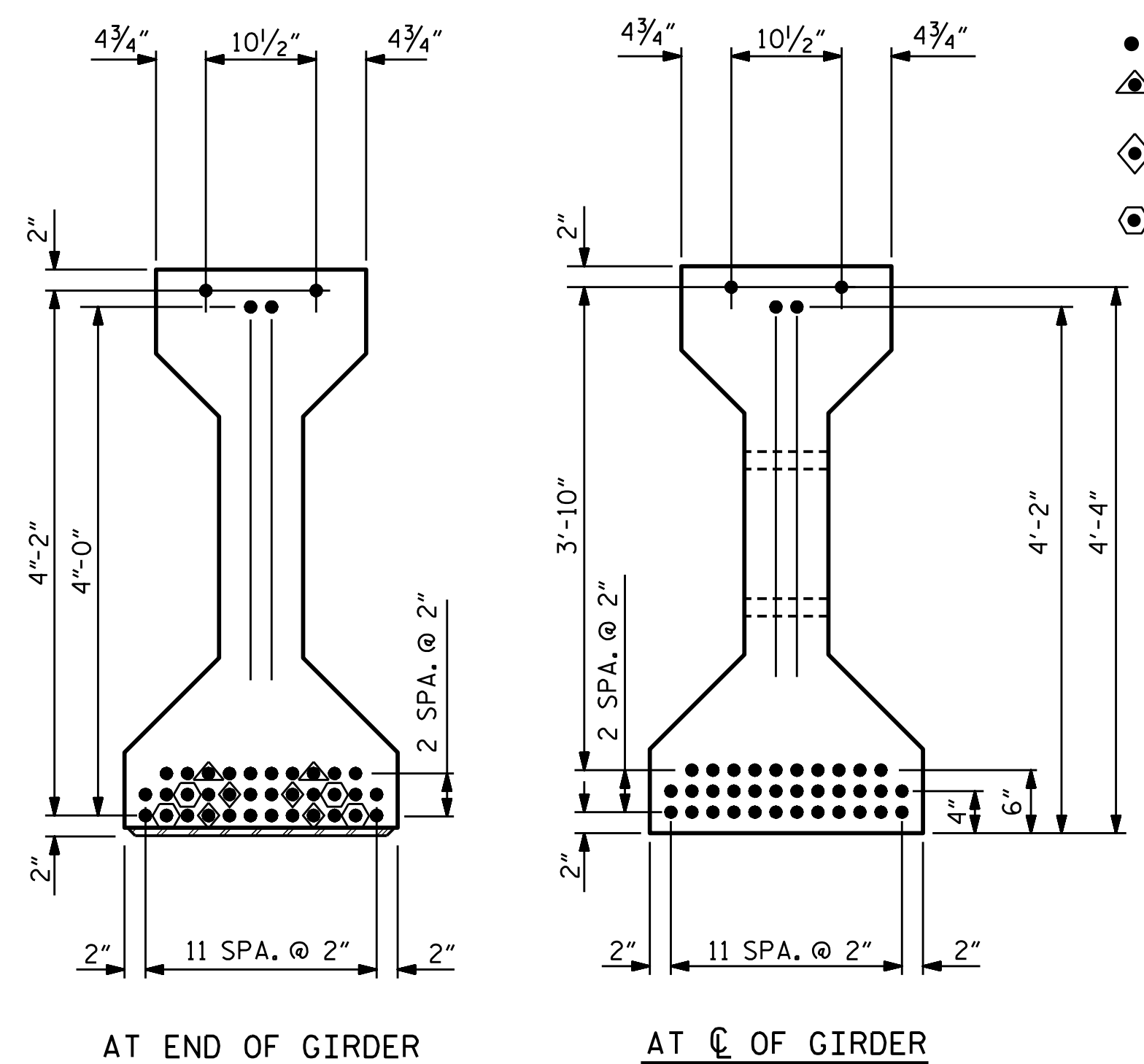
AASHTO TYPE IV
PRESTRESSED CONCRETE
GIRDER - LINK SLAB
SPAN B

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-14
2			4			TOTAL SHEETS 37

STD. NO. PCG6 (Sht. 1)



1 1/2" Ø FORMED HOLE
(SEE FRAMING PLAN FOR LOCATION)



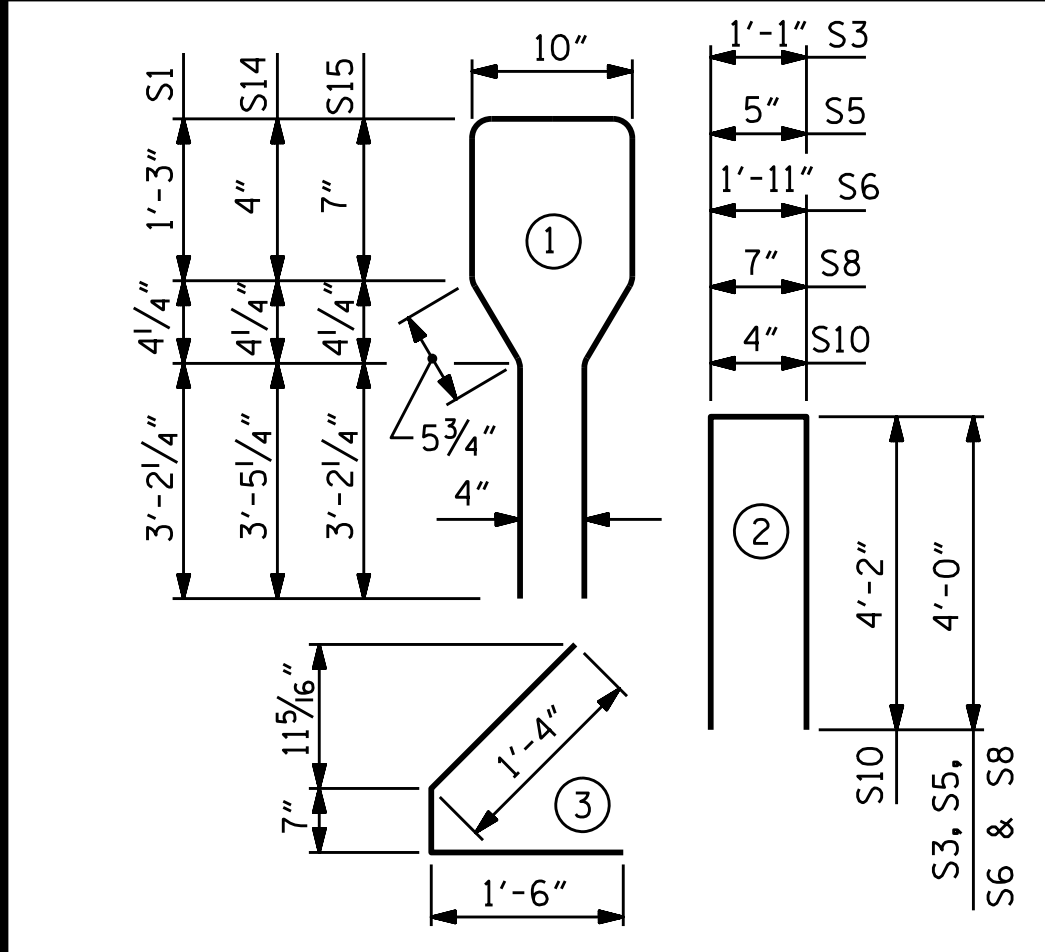
0.6" Ø LOW RELAXATION STRAND LAYOUT
(38 STRANDS REQUIRED. ALL STRAIGHT, PARTIALLY DEBONDED)

- DEBONDING LEGEND**
- FULLY BONDED STRANDS
 - STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
 - STRANDS DEBONDED FOR 10'-0" FROM END OF GIRDER
 - STRANDS DEBONDED FOR 12'-0" FROM END OF GIRDER

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

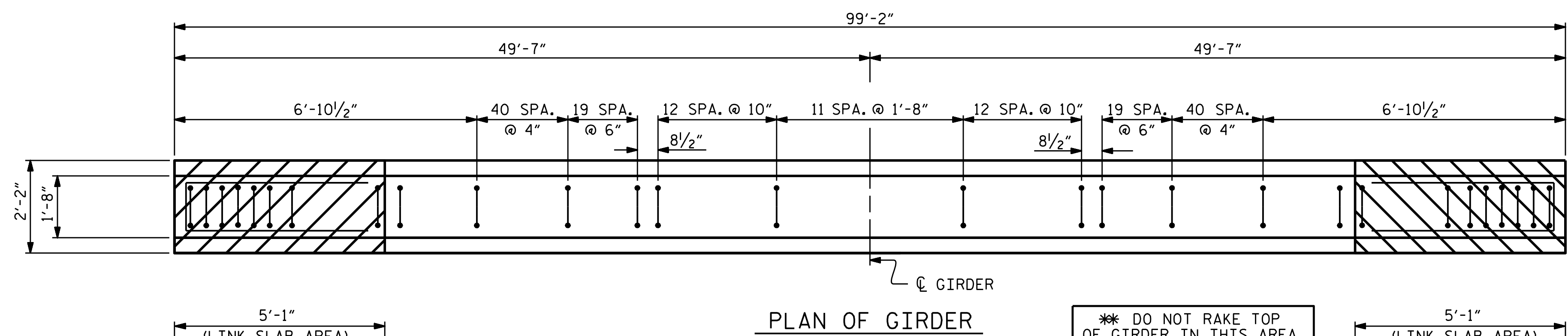
REINFORCING STEEL FOR ONE GIRDER					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	167	#4	1	10'-8"	1190
S3	4	#4	2	9'-1"	24
S4	84	#4	3	3'-5"	192
S5	6	#4	2	8'-5"	34
S6	2	#4	2	9'-11"	13
S8	4	#4	2	8'-7"	23
S10	2	#5	2	8'-8"	18
S11	5	#4	STR	7'-0"	23
S14	12	#6	1	9'-4"	168
S15	18	#4	1	9'-4"	112

BAR TYPES
ALL BAR DIMENSIONS ARE OUT-TO-OUT



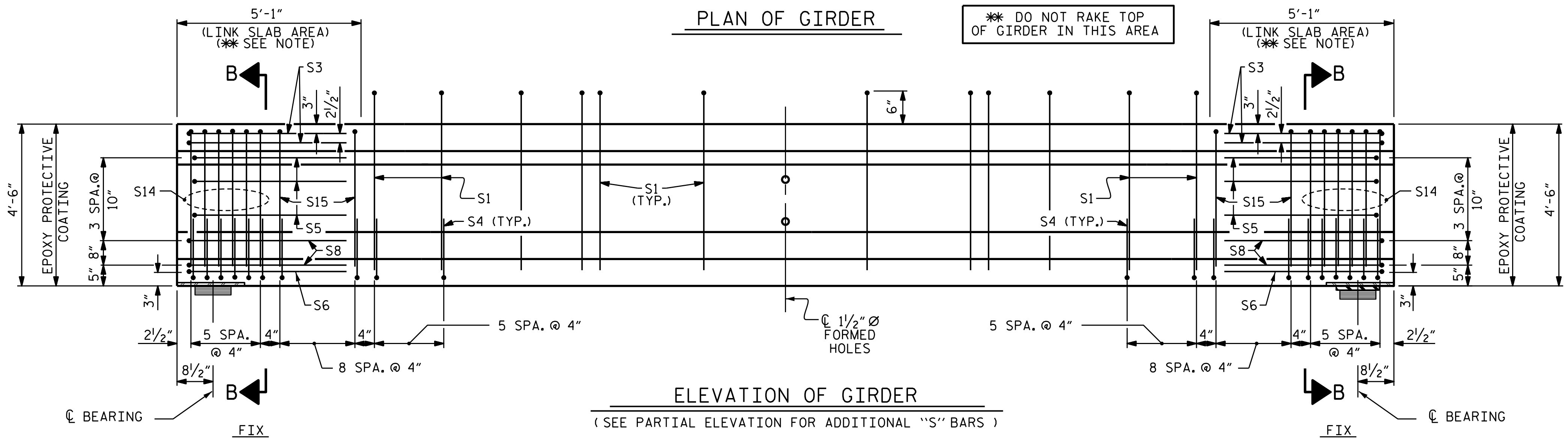
QUANTITIES FOR ONE GIRDER			
REINFORCING STEEL	9000 PSI CONCRETE	0.6" Ø L. R. STRANDS	
LB.	C.Y.	No.	
1797	20.1	38	

GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
4	99'-2"	396'-8"



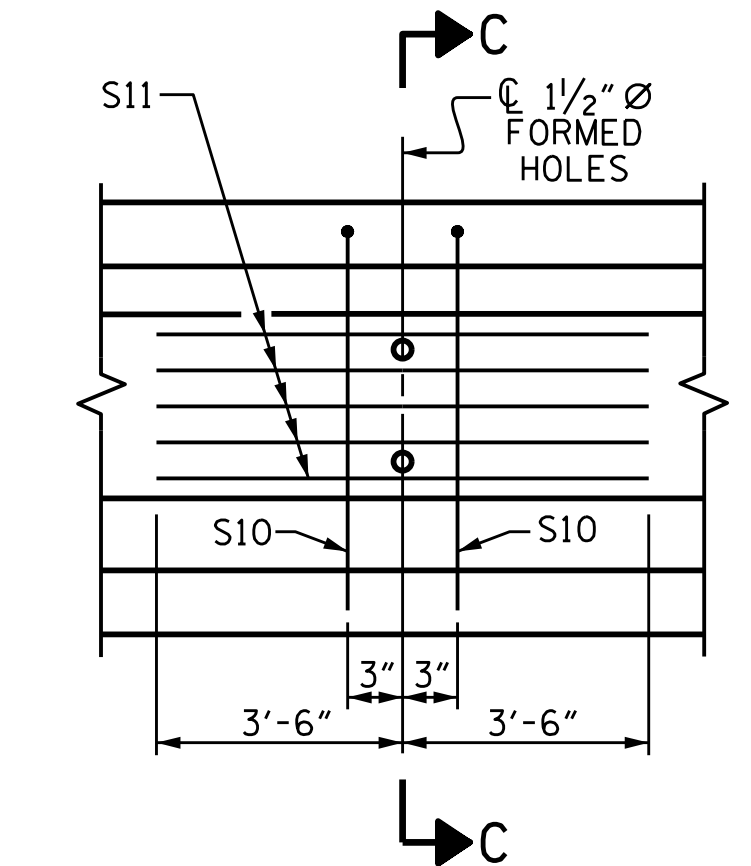
PLAN OF GIRDER

** DO NOT RAKE TOP OF GIRDER IN THIS AREA



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)



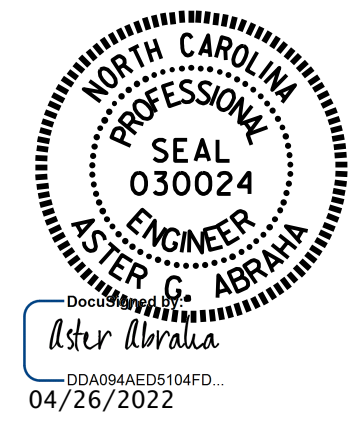
PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR ALL GIRDERS

ASSEMBLED BY : A. Y. GODFREY DATE : 07/2020
 CHECKED BY : M. M. AHMED DATE : 08/2020
 DESIGN ENGINEER OF RECORD : M. M. AHMED DATE : 08/2019
 DRAWN BY : ELR 8/91
 CHECKED BY : GRP 8/91

REV. 10/1/11 MAA/GM
 REV. 1/15 MAA/TMG
 REV. 12/17 MAA/THC

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

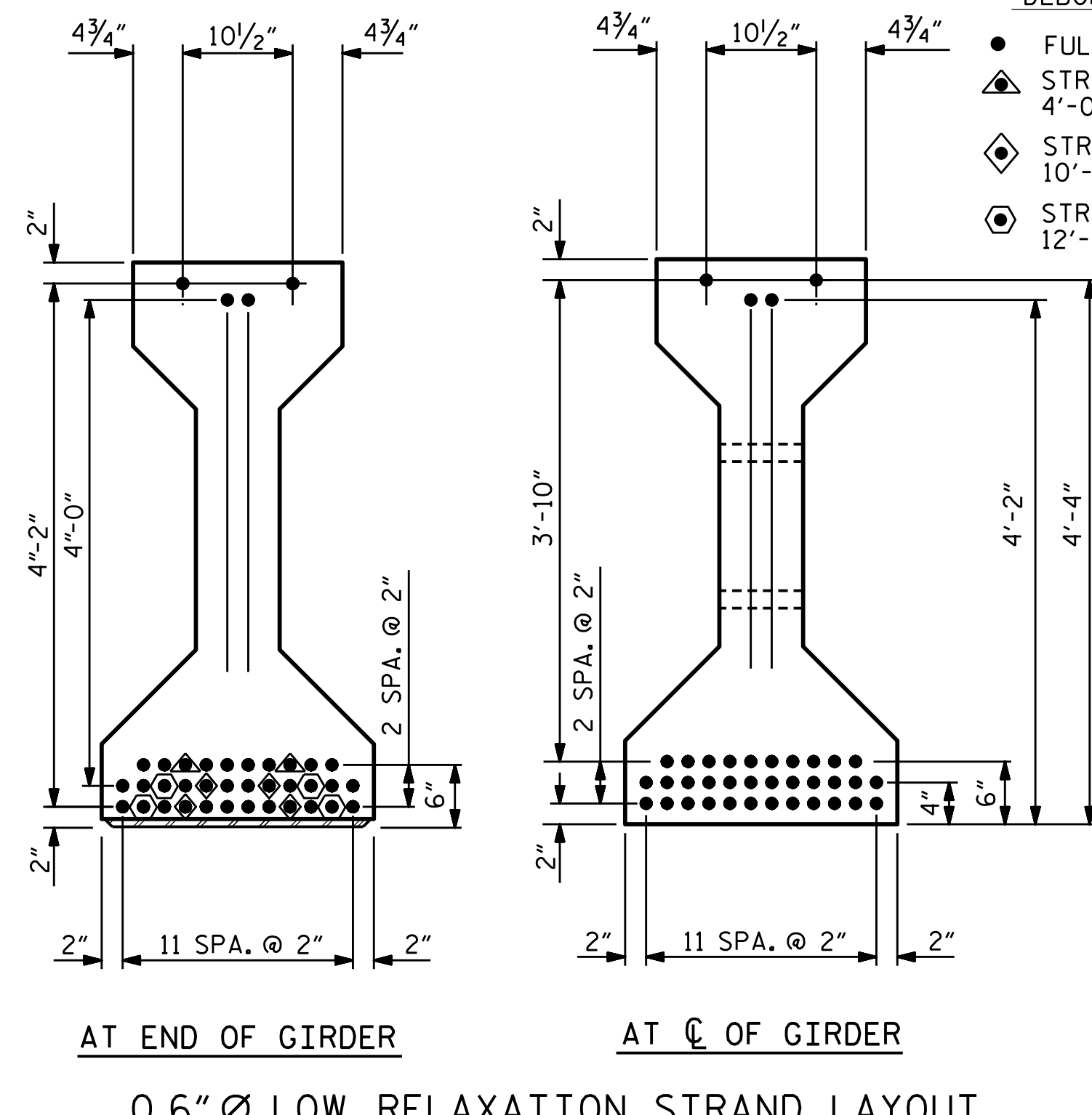
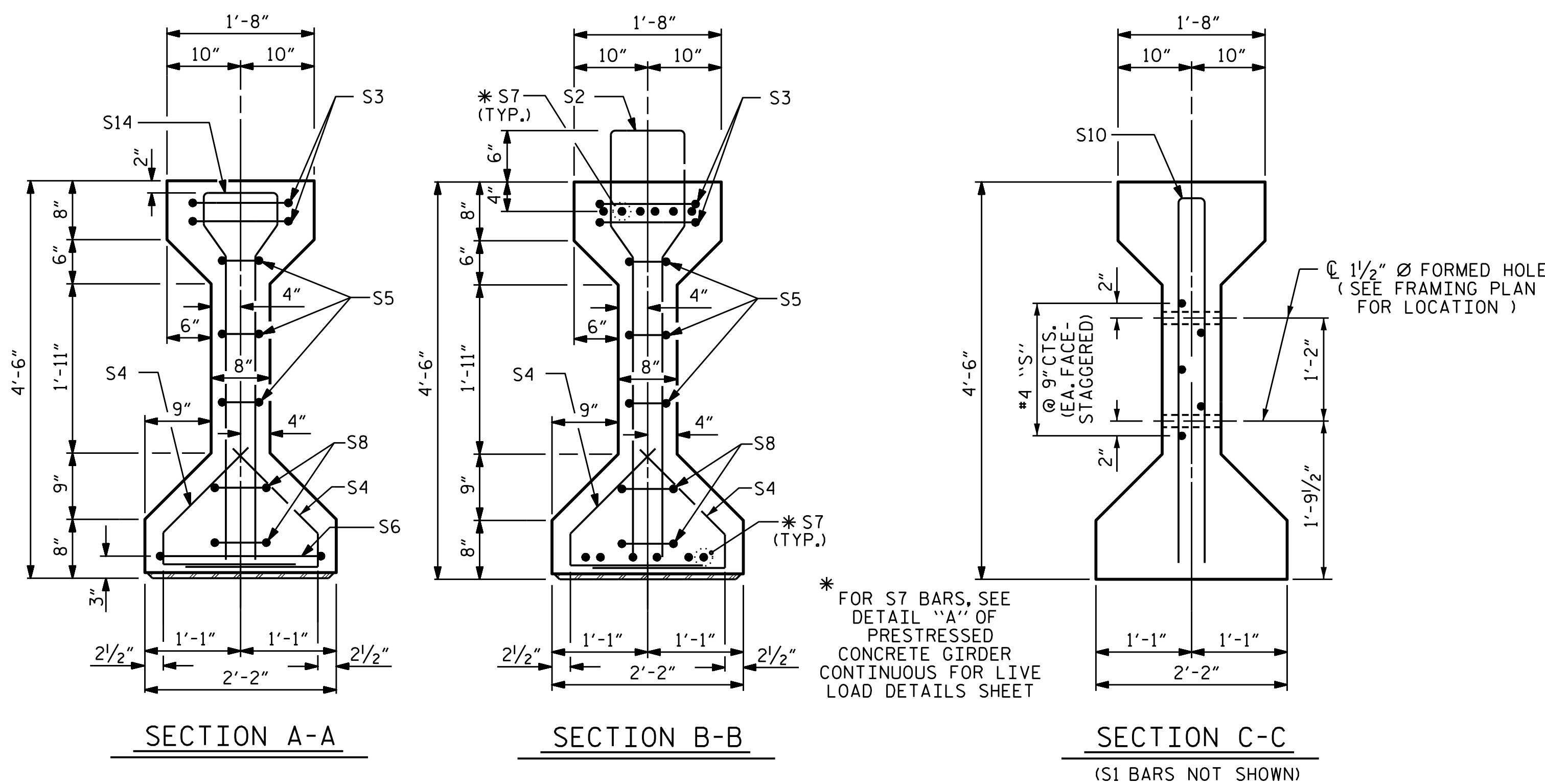


PROJECT NO. B-5694
 BLADEN COUNTY
 STATION: 21+85.10 -L-

SHEET 3 OF 6

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 AASHTO TYPE IV
 PRESTRESSED CONCRETE
 GIRDER - LINK SLAB
 SPAN C

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-15
2			4			TOTAL SHEETS 37



DEBONDING LEGEND

- FULLY BONDED STRANDS
- STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 10'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 12'-0" FROM END OF GIRDER

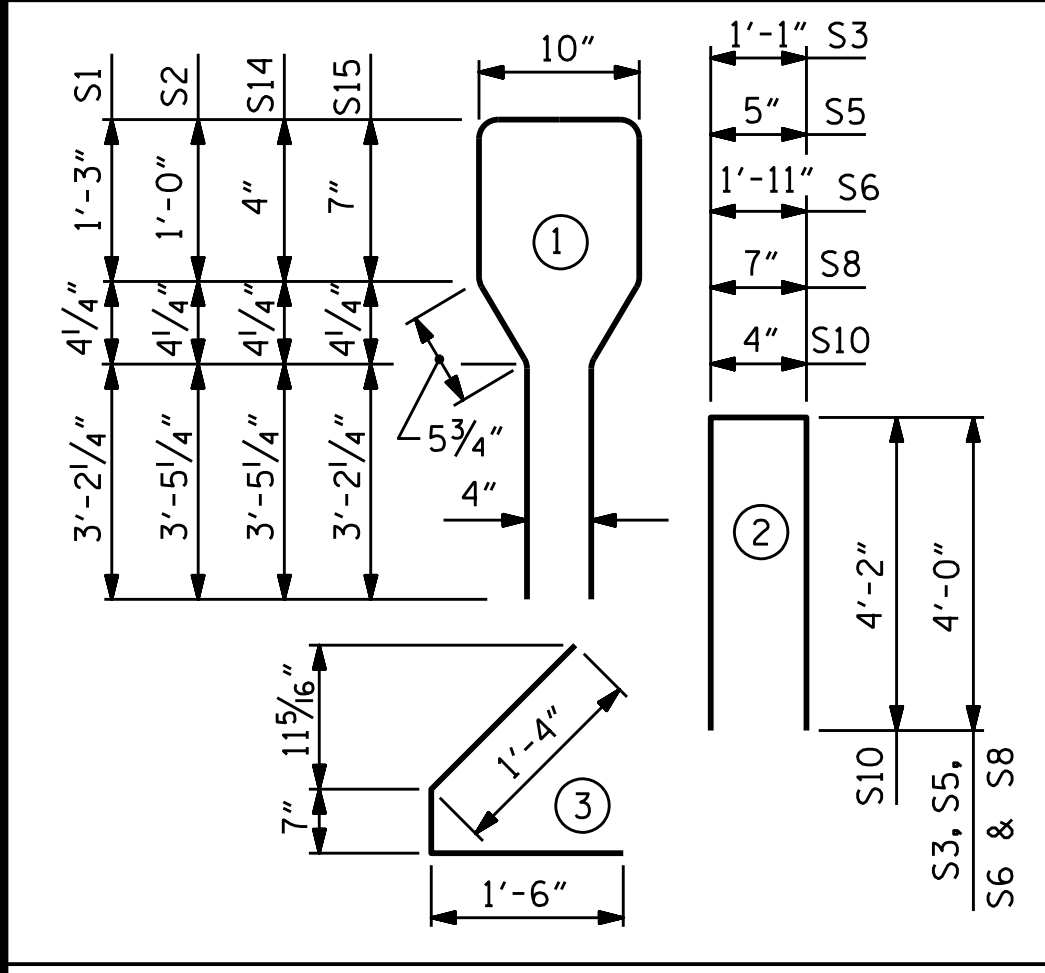
0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	176	#4	1	10'-8"	1254
S2	6	#6	1	10'-8"	96
S3	4	#4	2	9'-1"	24
S4	84	#4	3	3'-5"	192
S5	6	#4	2	8'-5"	34
S6	1	#4	2	9'-11"	7
* S7	12	#5	STR	3'-8"	46
S8	4	#4	2	8'-7"	23
S9	1	#3	STR	1'-10"	1
S10	2	#5	2	8'-8"	18
S11	5	#4	STR	7'-0"	23
S13	1	#3	STR	1'-4"	1
S14	6	#6	1	9'-4"	84
S15	9	#4	1	9'-4"	56

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

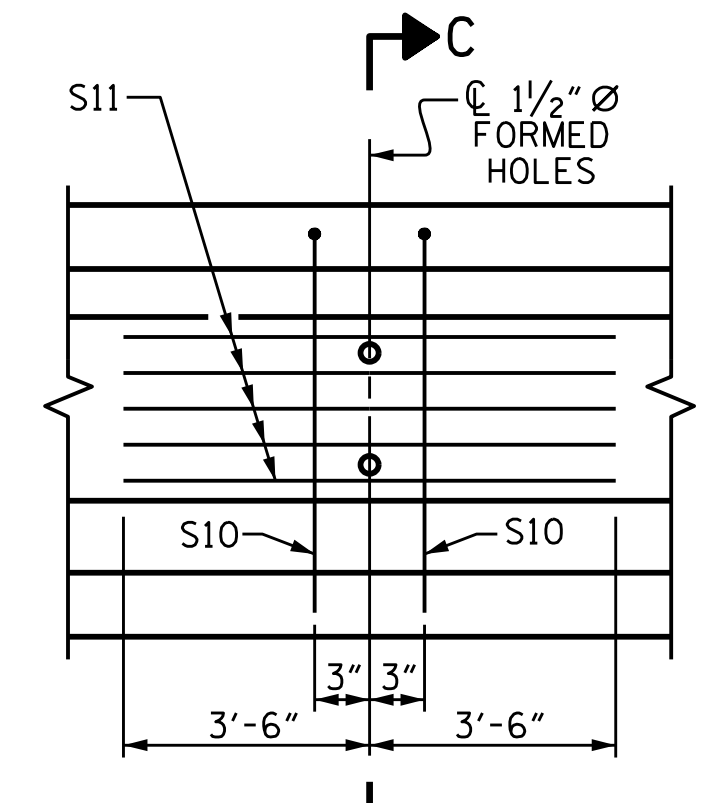
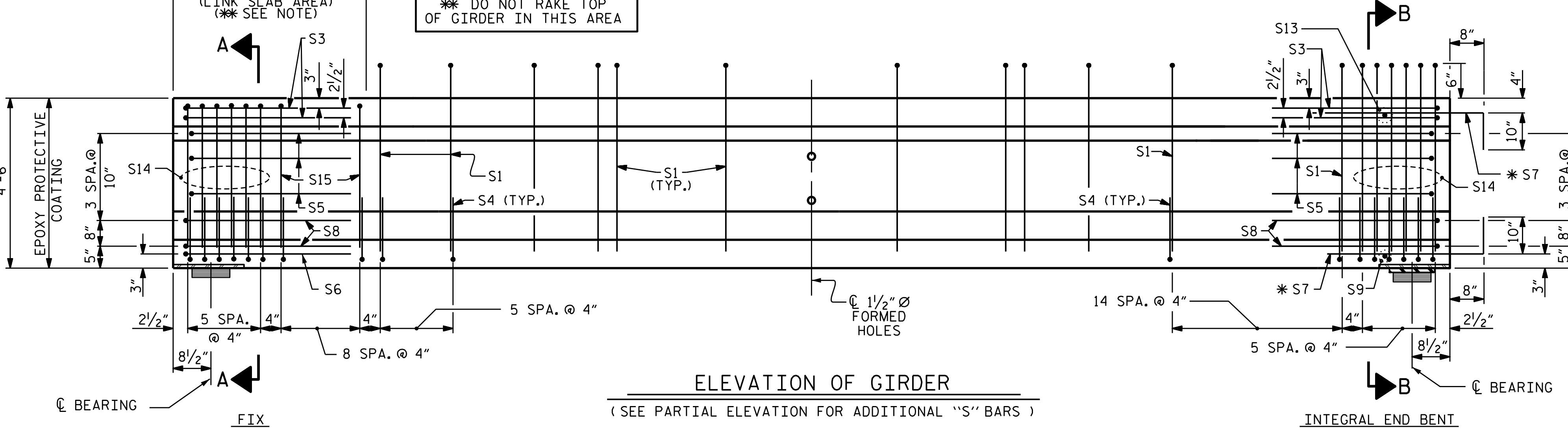
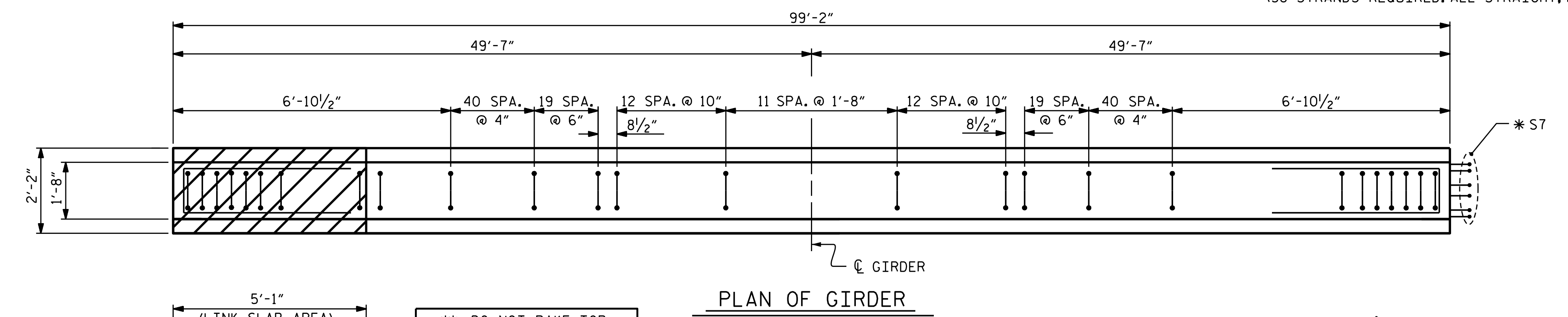
BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



QUANTITIES FOR ONE GIRDER			
SPAN D	REINFORCING STEEL	9000 PSI CONCRETE	0.6" Ø L. R. STRANDS
	LB.	C.Y.	No.
SPAN D	1859	20.1	38

GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
4	99'-2"	396'-8"

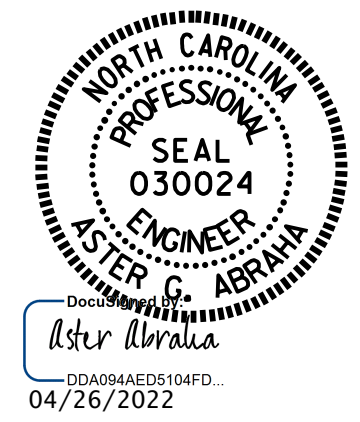


ASSEMBLED BY : A. Y. GODFREY DATE : 07/2020
 CHECKED BY : M. M. AHMED DATE : 08/2020
 DESIGN ENGINEER OF RECORD : M. M. AHMED DATE : 08/2019

DRAWN BY : ELR 8/91
 CHECKED BY : GRP 8/91

REV. 10/1/11 MAA/GM
 REV. 1/15 MAA/TMG
 REV. 12/17 MAA/THC

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



PROJECT NO. B-5694
 BLADEN COUNTY
 STATION: 21+85.10 -L-

SHEET 4 OF 6

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

AASHTO TYPE IV
 PRESTRESSED CONCRETE
 GIRDER - LINK SLAB
 SPAN D

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-16
2			4			TOTAL SHEETS 37

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.

APPLY EPOXY PROTECTIVE COATING TO END OF GIRDER SURFACES INDICATED IN ELEVATION VIEW.

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 END WALLS, PRESTRESSING STRANDS MAY EXTEND A MAXIMUM OF 2" BEYOND THE GIRDER ENDS, OTHERWISE, PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE GIRDER ENDS.

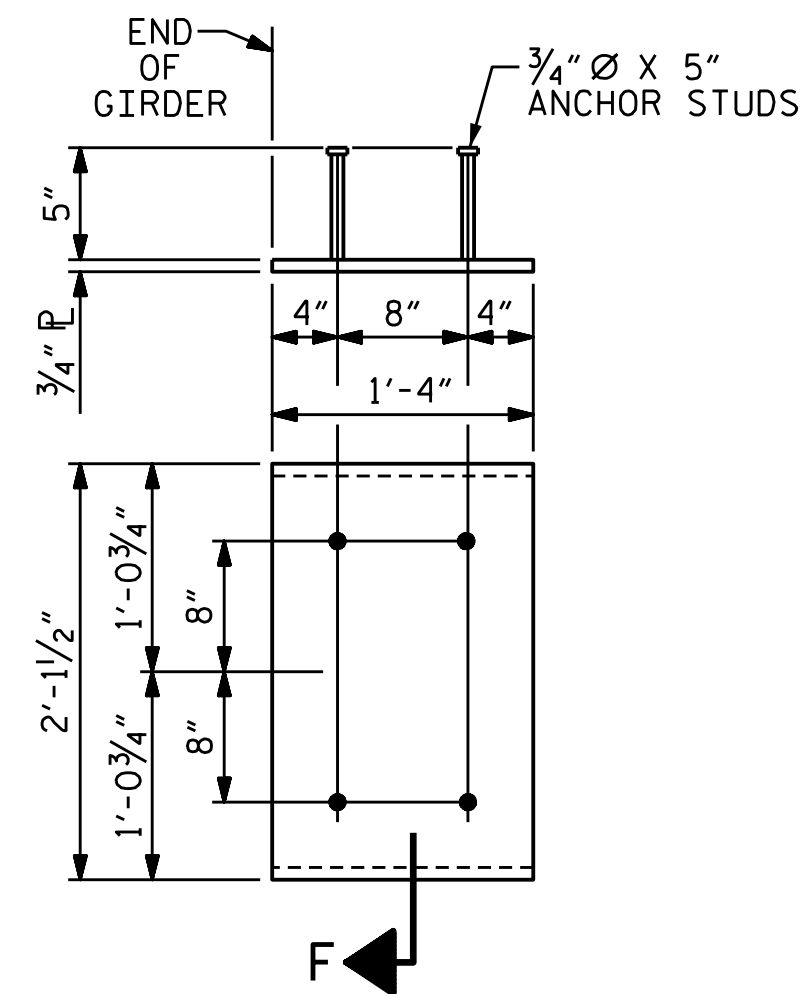
THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 4000 PSI FOR SPAN A, NOT LESS THAN 5500 PSI FOR SPAN B, AND NOT LESS THAN 6800 PSI FOR SPAN C AND D.

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

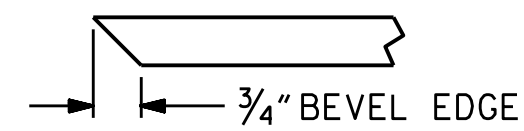
THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4" AND LINK SLAB AREA, SHALL BE RAKED TO A DEPTH OF 1/4".

NO WELDING OF THE FORMS OR FALSEWORK TO THE TOP OF THE GIRDER WILL BE PERMITTED IN THE LINK SLAB AREA.

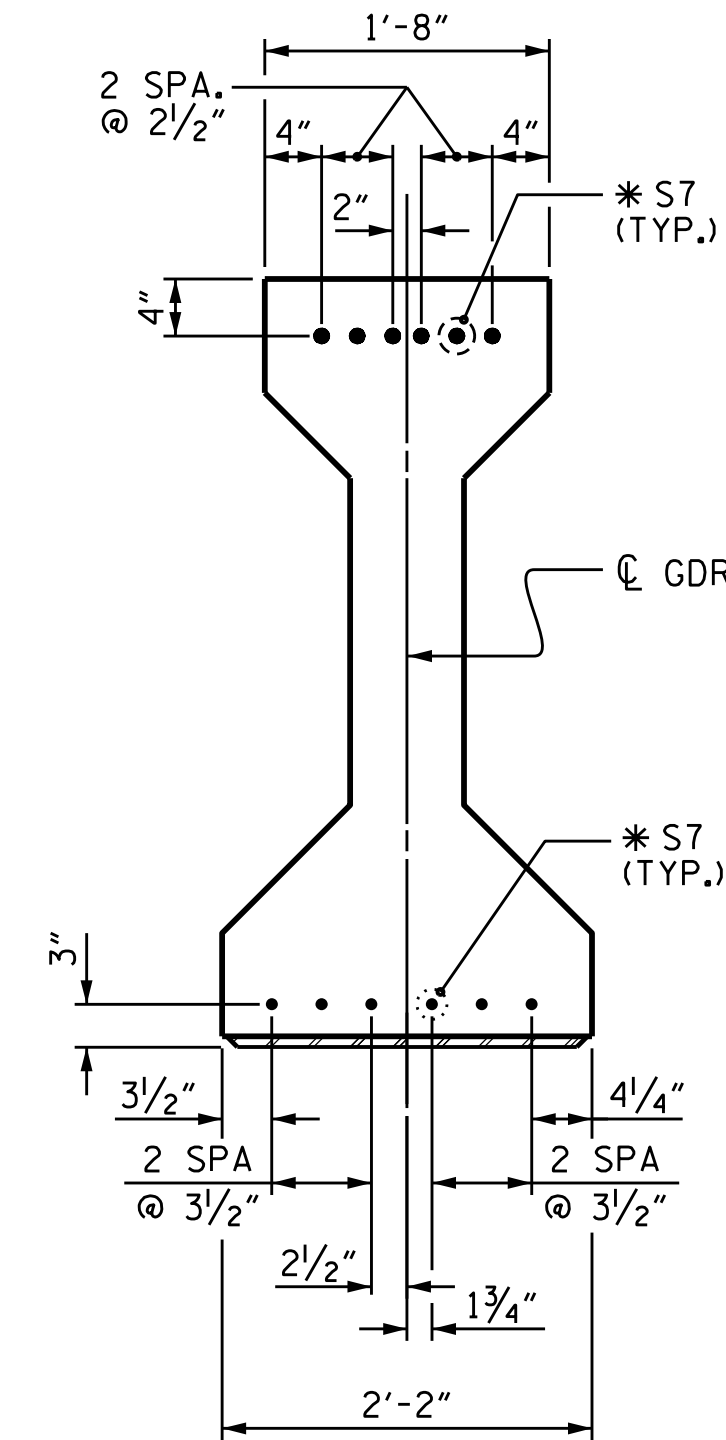
THE CONTRACTOR HAS THE OPTION TO PROVIDE, AT NO ADDITIONAL COST TO THE DEPARTMENT, 2 ADDITIONAL STRANDS AT THE TOP OF THE GIRDER TO FACILITATE TYING OF THE REINFORCING STEEL. THESE STRANDS SHALL BE PULLED TO A LOAD OF 4500 LBS.



EMBEDDED PLATE "B1" DETAILS FOR AASHTO TYPE IV GIRDERS
(2 REQ'D PER GIRDER)



SECTION "F"
(SEE NOTES)

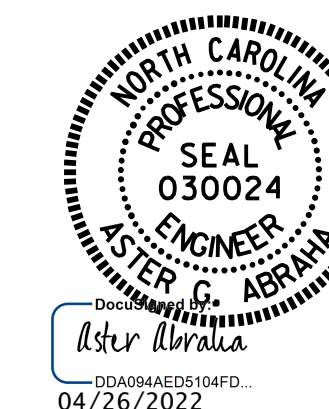


AT END INTEGRAL END BENT END

DETAIL "A"
(FOR AASHTO TYPE IV GIRDERS)

PROJECT NO. B-5694
BLADEN COUNTY
STATION: 21+85.10 -L-

SHEET 5 OF 6



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

ASSEMBLED BY : A. Y. GODFREY DATE : 06/27/19
CHECKED BY : S. WANCE DATE : 08/2019
DESIGN ENGINEER OF RECORD : M. M. AHMED DATE : 08/2019

DRAWN BY : ELR 8/91
CHECKED BY : GRP 8/91

REV. 10/1/11 MAA/GM
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-17
1			3			TOTAL SHEETS
2			4			37

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

SPAN A

0.6" Ø LOW RELAXATION		GIRDERS 1 & 4																				
TWENTIETH POINTS		0	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	.55	.6	.65	.7	.75	.8	.85	.9	.95	0
CAMBER (GIRDER ALONE IN PLACE)	↑	0	0.007	0.013	0.019	0.024	0.029	0.033	0.036	0.039	0.040	0.041	0.040	0.039	0.036	0.033	0.029	0.024	0.019	0.013	0.007	0
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0	0.003	0.007	0.010	0.013	0.015	0.018	0.019	0.021	0.021	0.022	0.021	0.021	0.019	0.018	0.015	0.013	0.010	0.007	0.003	0
FINAL CAMBER	↑	0	1/16"	1/16"	1/8"	1/8"	3/16"	3/16"	3/16"	1/4"	1/4"	1/4"	1/4"	1/4"	3/16"	3/16"	3/16"	1/8"	1/8"	1/16"	1/16"	0

GIRDERS 2 & 3

0.6" Ø LOW RELAXATION		GIRDERS 2 & 3																				
TWENTIETH POINTS		0	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	.55	.6	.65	.7	.75	.8	.85	.9	.95	0
CAMBER (GIRDER ALONE IN PLACE)	↑	0	0.007	0.013	0.019	0.024	0.029	0.033	0.036	0.039	0.040	0.041	0.040	0.039	0.036	0.033	0.029	0.024	0.019	0.013	0.007	0
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0	0.004	0.008	0.011	0.015	0.018	0.020	0.022	0.024	0.024	0.025	0.024	0.024	0.022	0.020	0.018	0.015	0.011	0.008	0.004	0
FINAL CAMBER	↑	0	0	1/16"	1/16"	1/8"	1/8"	1/8"	3/16"	3/16"	3/16"	3/16"	3/16"	3/16"	3/16"	1/8"	1/8"	1/8"	1/16"	1/16"	0	0

SPAN B

0.6" Ø LOW RELAXATION		GIRDERS 1 & 4																				
TWENTIETH POINTS		0	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	.55	.6	.65	.7	.75	.8	.85	.9	.95	0
CAMBER (GIRDER ALONE IN PLACE)	↑	0	0.026	0.051	0.074	0.097	0.115	0.133	0.144	0.155	0.159	0.163	0.159	.155	0.144	0.133	0.115	0.097	0.074	.051	0.026	0
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0	0.017	0.033	0.047	0.062	0.073	0.085	0.092	0.099	0.102	0.104	0.102	0.099	0.092	0.085	0.073	0.062	0.047	0.033	0.017	0
FINAL CAMBER	↑	0	1/8"	1/4"	5/16"	7/16"	1/2"	9/16"	5/8"	11/16"	11/16"	11/16"	11/16"	11/16"	5/8"	9/16"	1/2"	7/16"	5/16"	1/4"	1/8"	0

GIRDERS 2 & 3

0.6" Ø LOW RELAXATION		GIRDERS 2 & 3																				
TWENTIETH POINTS		0	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	.55	.6	.65	.7	.75	.8	.85	.9	.95	0
CAMBER (GIRDER ALONE IN PLACE)	↑	0	0.026	0.051	0.074	0.096	0.114	0.132	0.143	0.155	0.158	0.162	0.158	0.155	0.143	0.132	0.114	0.096	0.074	0.051	0.026	0
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0	0.019	0.037	0.053	0.070	0.083	0.096	0.104	0.112	0.115	0.118	0.115	0.112	0.104	0.096	0.083	0.070	0.053	0.037	0.019	0
FINAL CAMBER	↑	0	1/16"	3/16"	1/4"	5/16"	3/8"	7/16"	1/2"	1/2"	1/2"	9/16"	1/2"	1/2"	1/2"	7/16"	3/8"	5/16"	1/4"	3/16"	1/16"	0

SPAN C & D

0.6" Ø LOW RELAXATION		GIRDERS 1 & 4																				
TWENTIETH POINTS		0	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	.55	.6	.65	.7	.75	.8	.85	.9	.95	0
CAMBER (GIRDER ALONE IN PLACE)	↑	0	0.032	0.063	0.091	0.119	0.140	0.162	0.176	0.190	0.195	0.200	0.195	0.190	0.176	0.162	0.140	0.119	0.091	0.063	0.032	0
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0	0.025	0.048	0.070	0.092	0.109	0.125	0.136	0.147	0.151	0.154	0.151	0.147	0.136	0.125	0.109	0.092	0.070	0.048	0.025	0
FINAL CAMBER	↑	0	1/16"	3/16"	1/4"	5/16"	3/8"	7/16"	1/2"	1/2"	9/16"	9/16"	9/16"	1/2"	1/2"	7/16"	3/8"	5/16"	1/4"	3/16"	1/16"	0

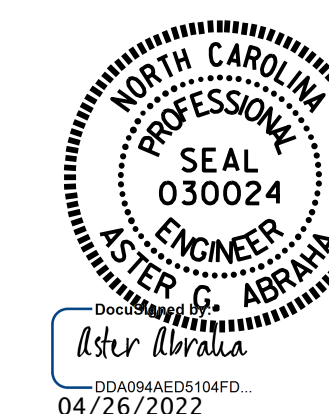
GIRDERS 2 & 3

0.6" Ø LOW RELAXATION		GIRDERS 2 & 3																				
TWENTIETH POINTS		0	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	.55	.6	.65	.7	.75	.8	.85	.9	.95	0
CAMBER (GIRDER ALONE IN PLACE)	↑	0	0.032	0.062	0.090	0.118	0.140	0.162	0.175	0.189	0.194	0.199	0.194	0.189	0.175	0.162	0.140	0.118	0.090	0.062	0.032	0
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0	0.028	0.055	0.079	0.104	0.123	0.142	0.154	0.166	0.170	0.174	0.170	0.166	0.154	0.142	0.123	0.104	0.079	0.055	0.028	0
FINAL CAMBER	↑	0	1/16"	1/16"	1/8"	3/16"	3/16"	1/4"	1/4"	1/4"	5/16"	5/16"	5/16"	1/4"	1/4"	1/4"	3/16"	3/16"	1/8"	1/16"	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. B-5694
BLADEN COUNTY
STATION: 21+85.10 -L-

SHEET 6 OF 6



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
DEFLECTION TABLE

ASSEMBLED BY : A. Y. GODFREY DATE : 06/2020
CHECKED BY : G. AYES DATE : 01/2022
DESIGN ENGINEER OF RECORD : M. M. AHMED DATE : 08/2019

DRAWN BY : ELR 8/91 MAA/GM
CHECKED BY : GRP 8/91 MAA/TMG
REV. 10/1/11 MAA/THC
REV. 1/15
REV. 12/17

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			37

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 CHANNEL 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, CHANNELS, 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.

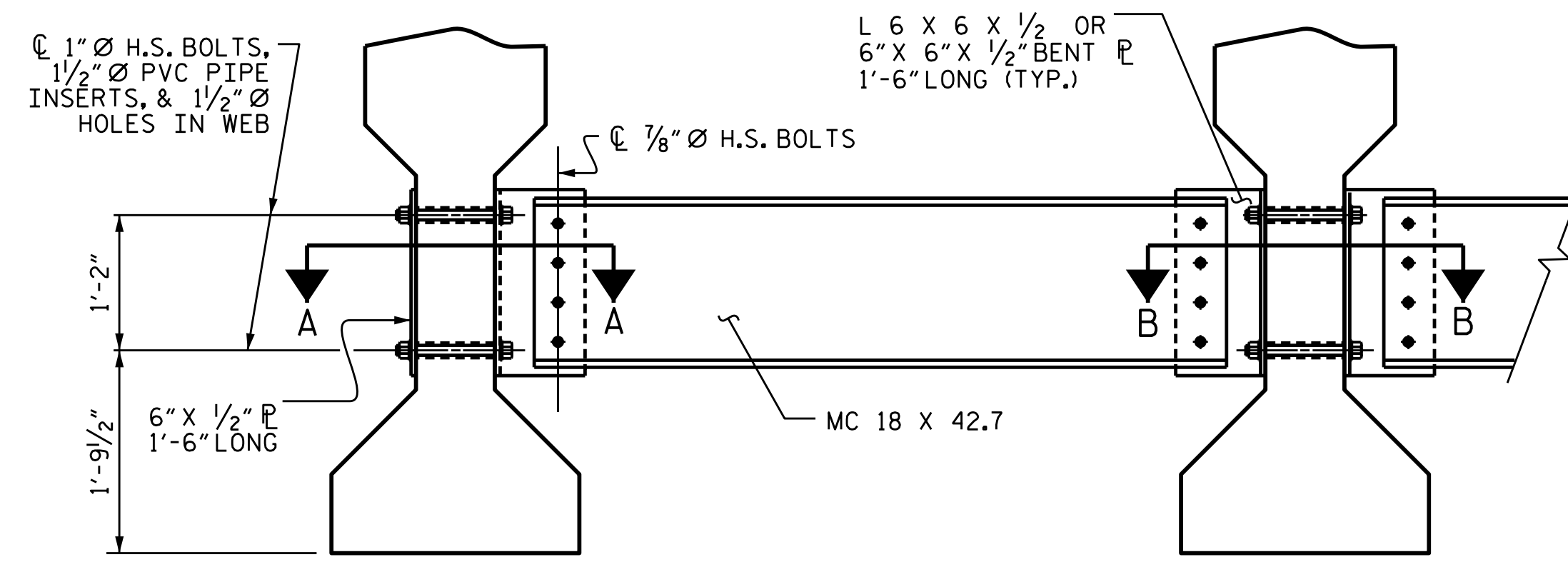
FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

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

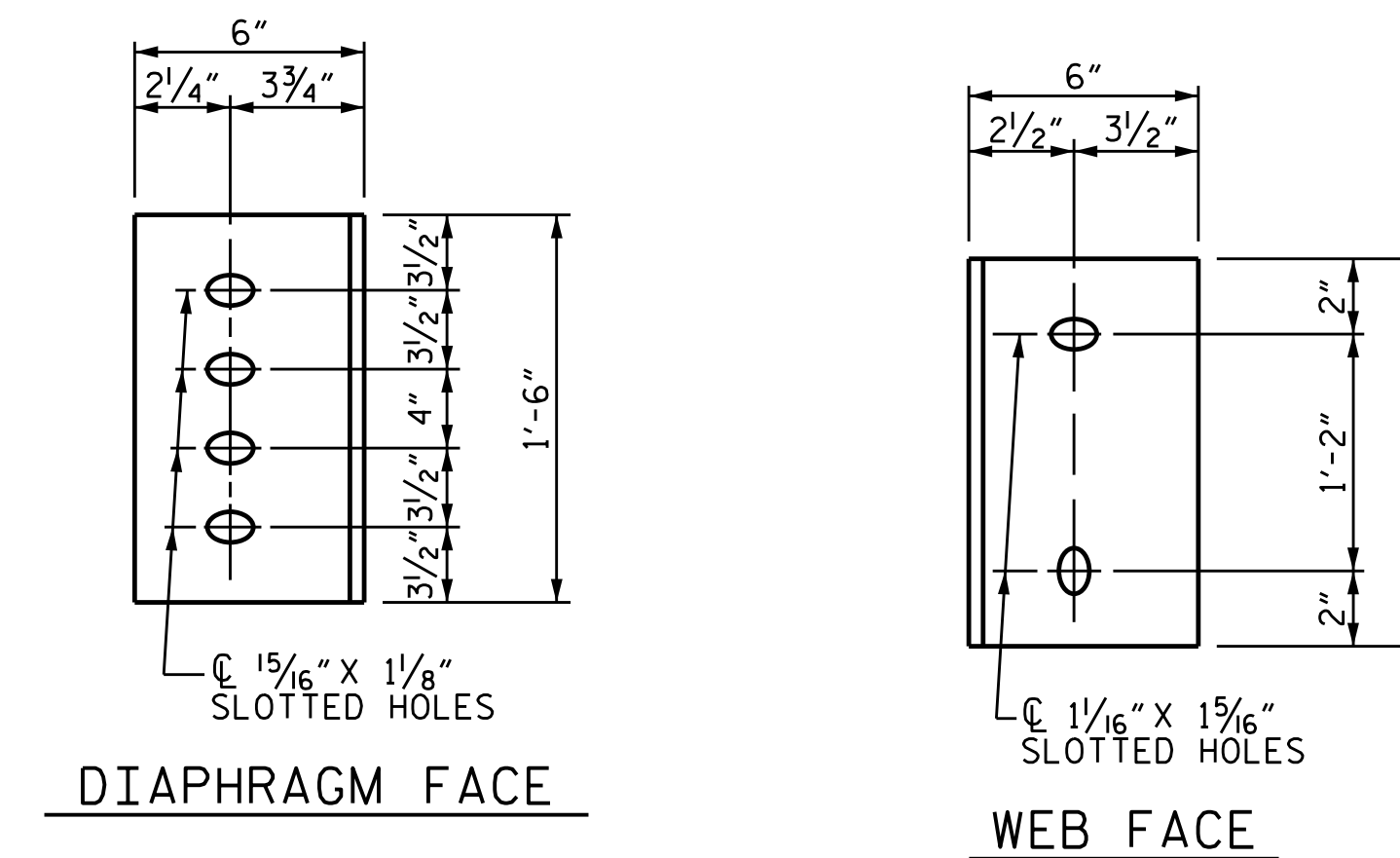
SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

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.

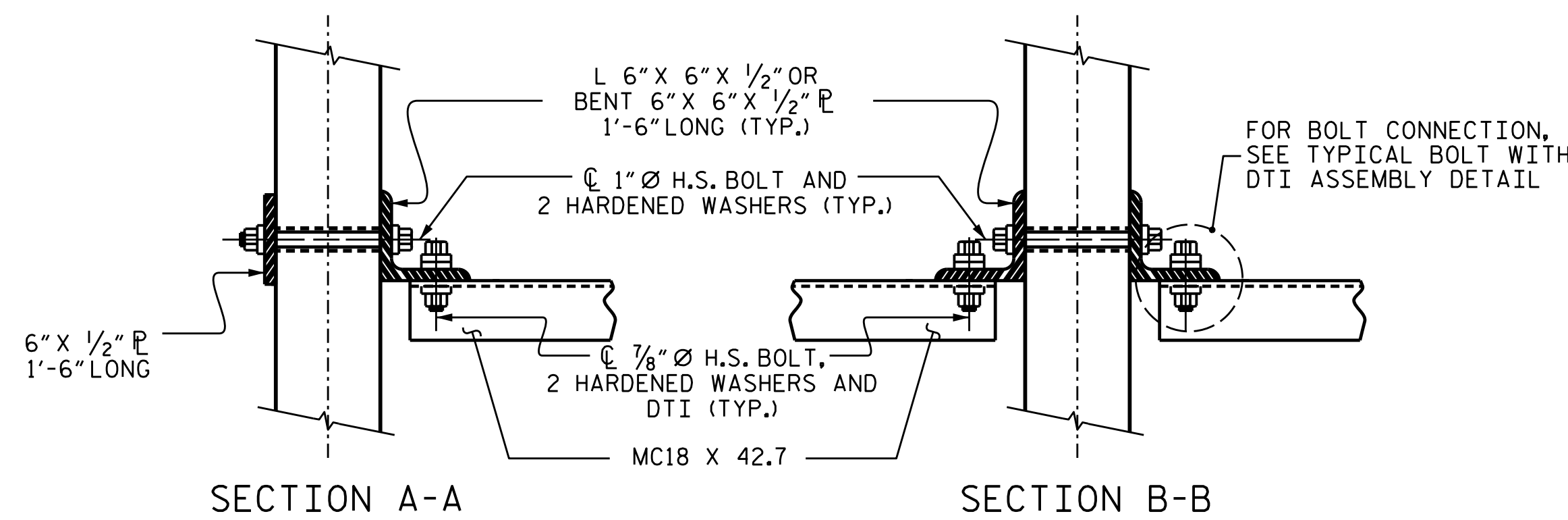
THE COST OF THE STEEL DIAPHRAGMS AND ASSEMBLIES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE GIRDERS.



EXTERIOR GIRDER **INTERIOR GIRDER**
PART SECTION AT INTERMEDIATE DIAPHRAGM
 (TYPE IV GIRDER)



DIAPHRAGM FACE **WEB FACE**
CONNECTOR PLATE DETAILS
 (TYPE IV GIRDER)



SECTION A-A **SECTION B-B**
CONNECTION DETAILS

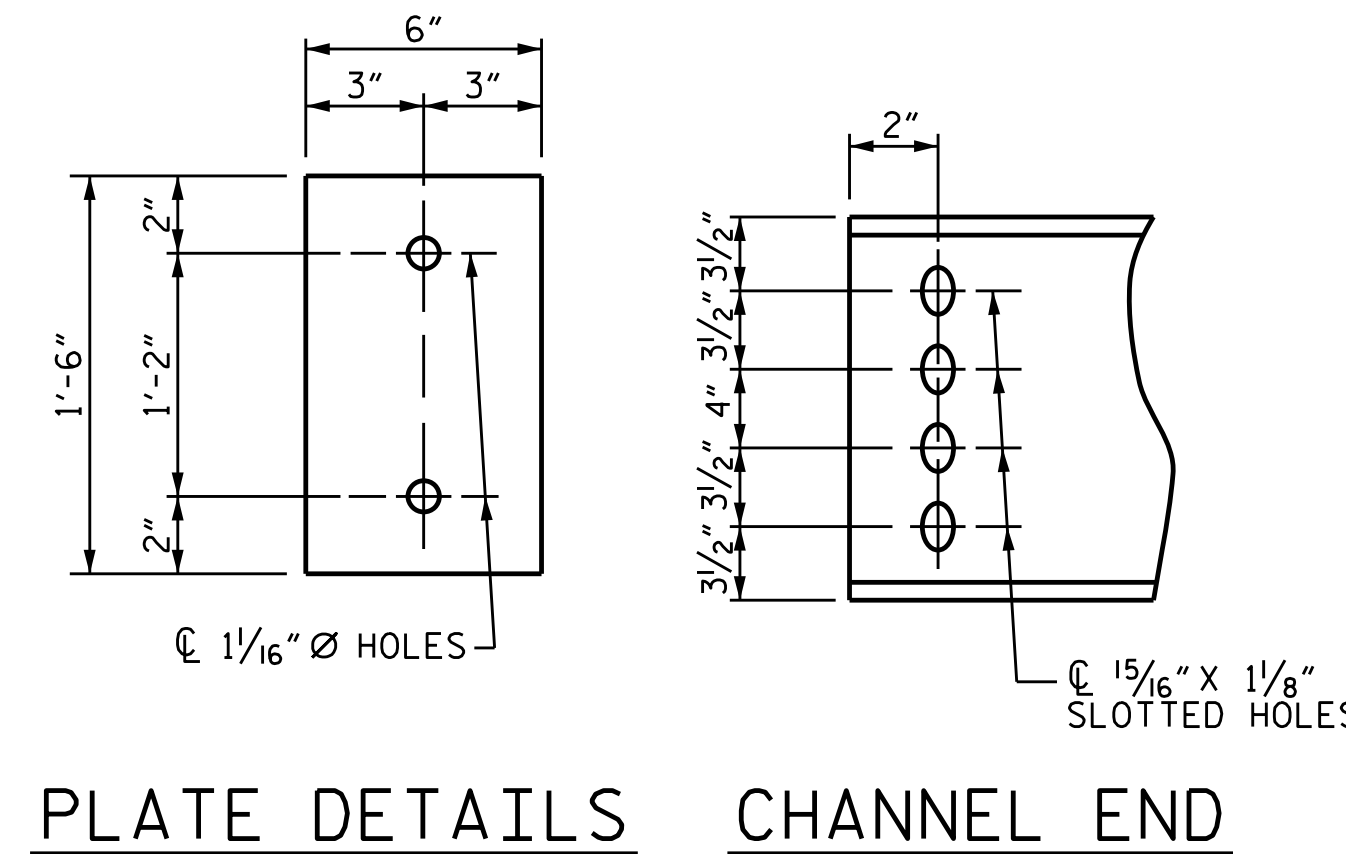
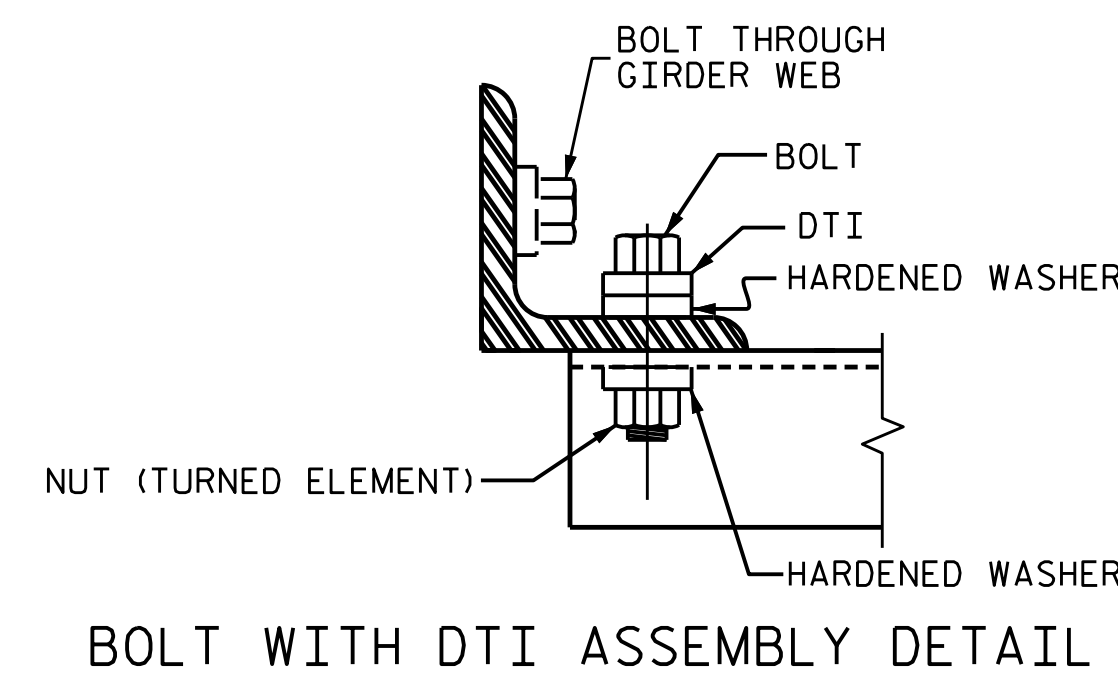
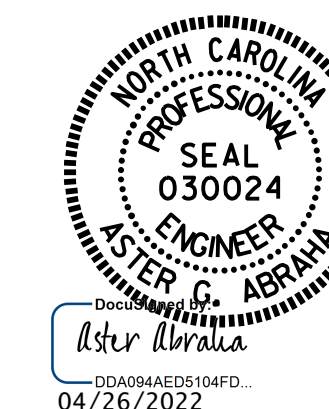


PLATE DETAILS **CHANNEL END**



BOLT WITH DTI ASSEMBLY DETAIL

PROJECT NO. B-5694
BLADEN COUNTY
 STATION: 21+85.10 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 INTERMEDIATE
 STEEL DIAPHRAGMS
 FOR TYPE IV
 PRESTRESSED CONCRETE
 GIRDERS

ASSEMBLED BY :	A. Y. GODFREY	DATE :	06/26/19
CHECKED BY :	S. WANCE	DATE :	08/2019
DRAWN BY :	TLA 6/05	REV. 5/1/06RRR	KMM/GM
CHECKED BY :	VC 6/05	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-19
1			3			TOTAL SHEETS
2			4			37

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.

STEEL SOLE PLATES, ANCHOR BOLTS, AND NUTS 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, AND NUTS SHALL BE INCLUDED IN THE PAY ITEM FOR PRESTRESSED CONCRETE GIRDERS.

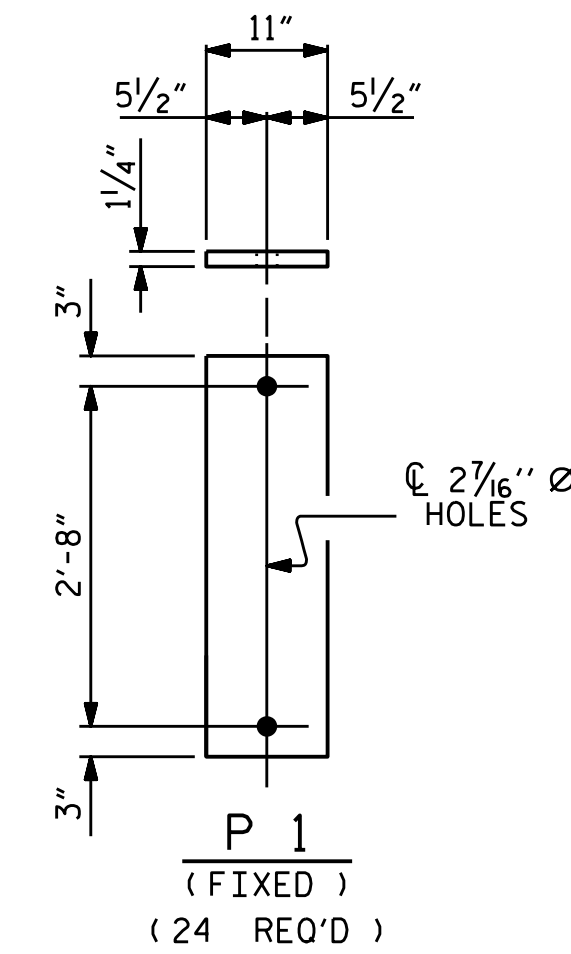
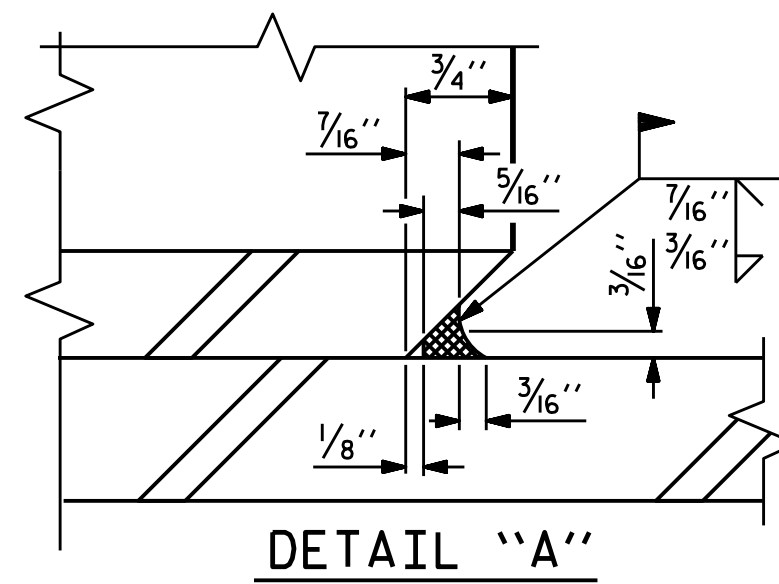
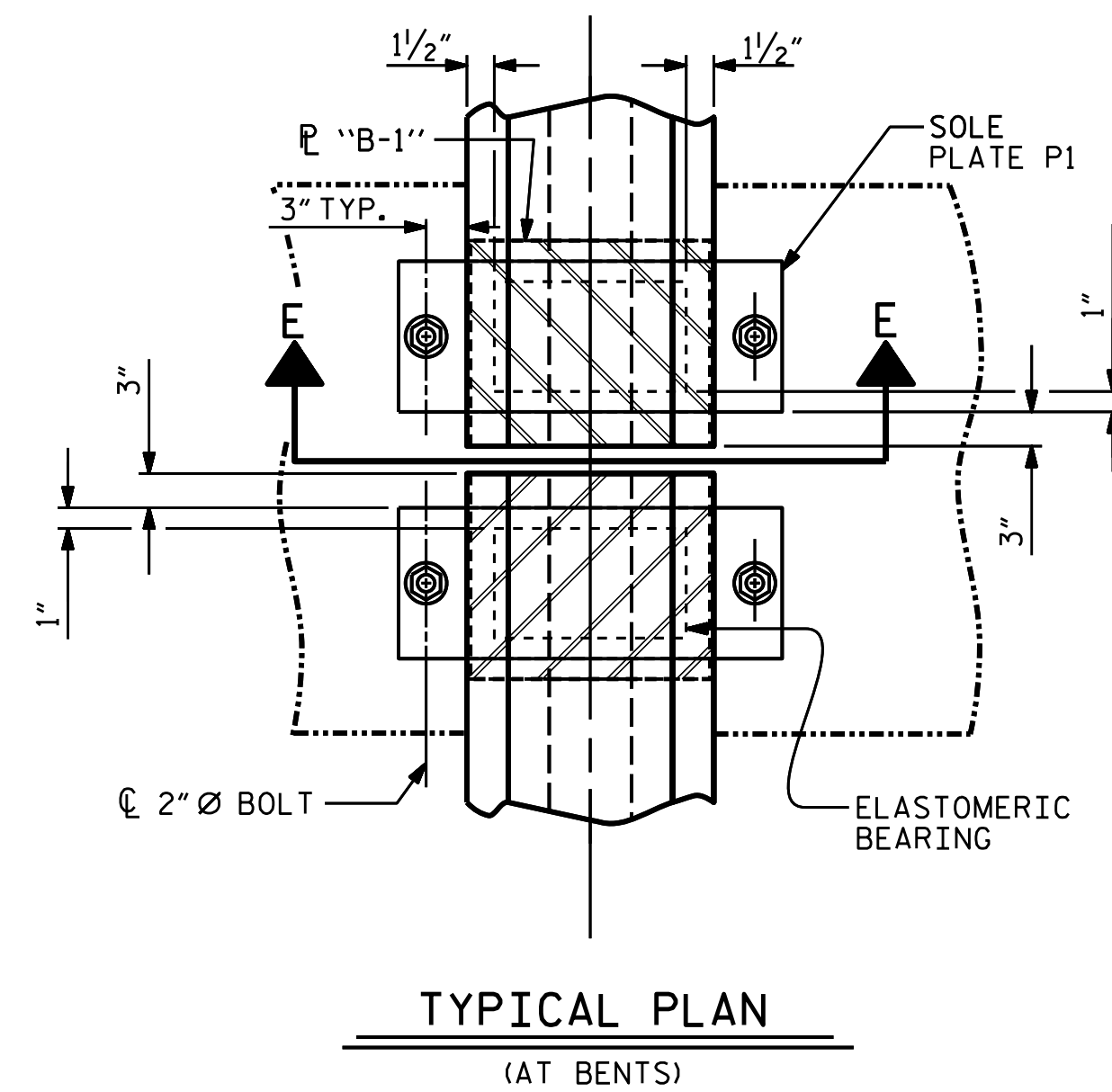
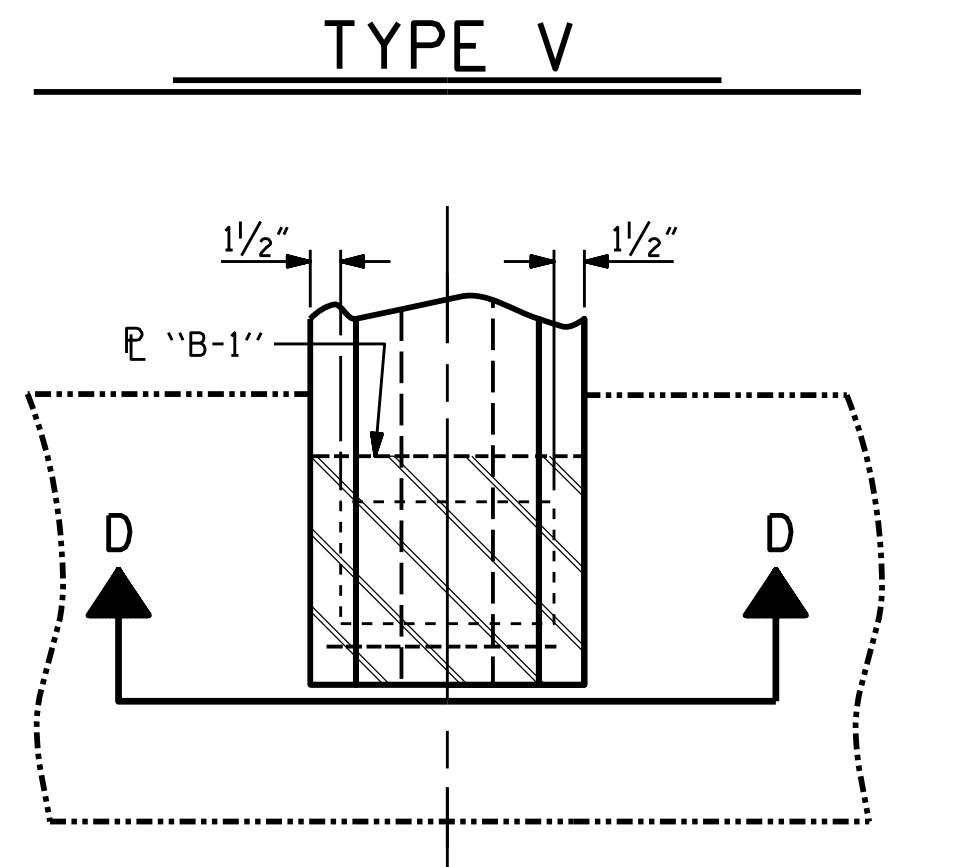
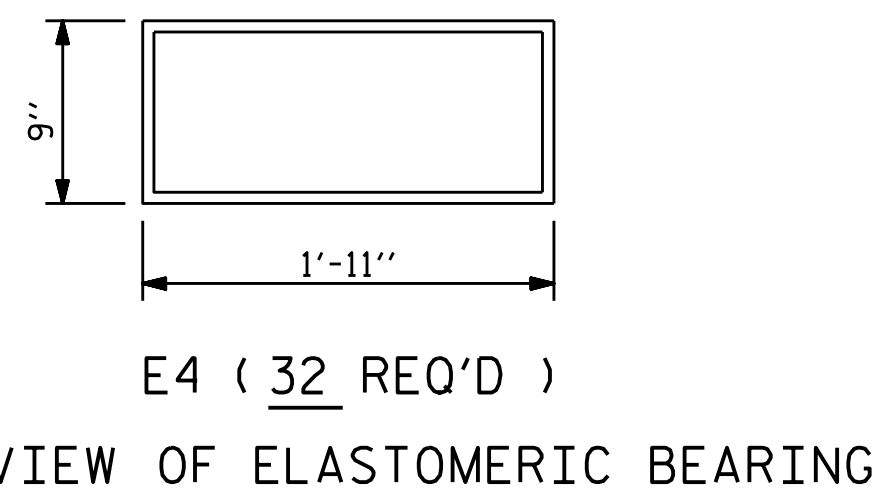
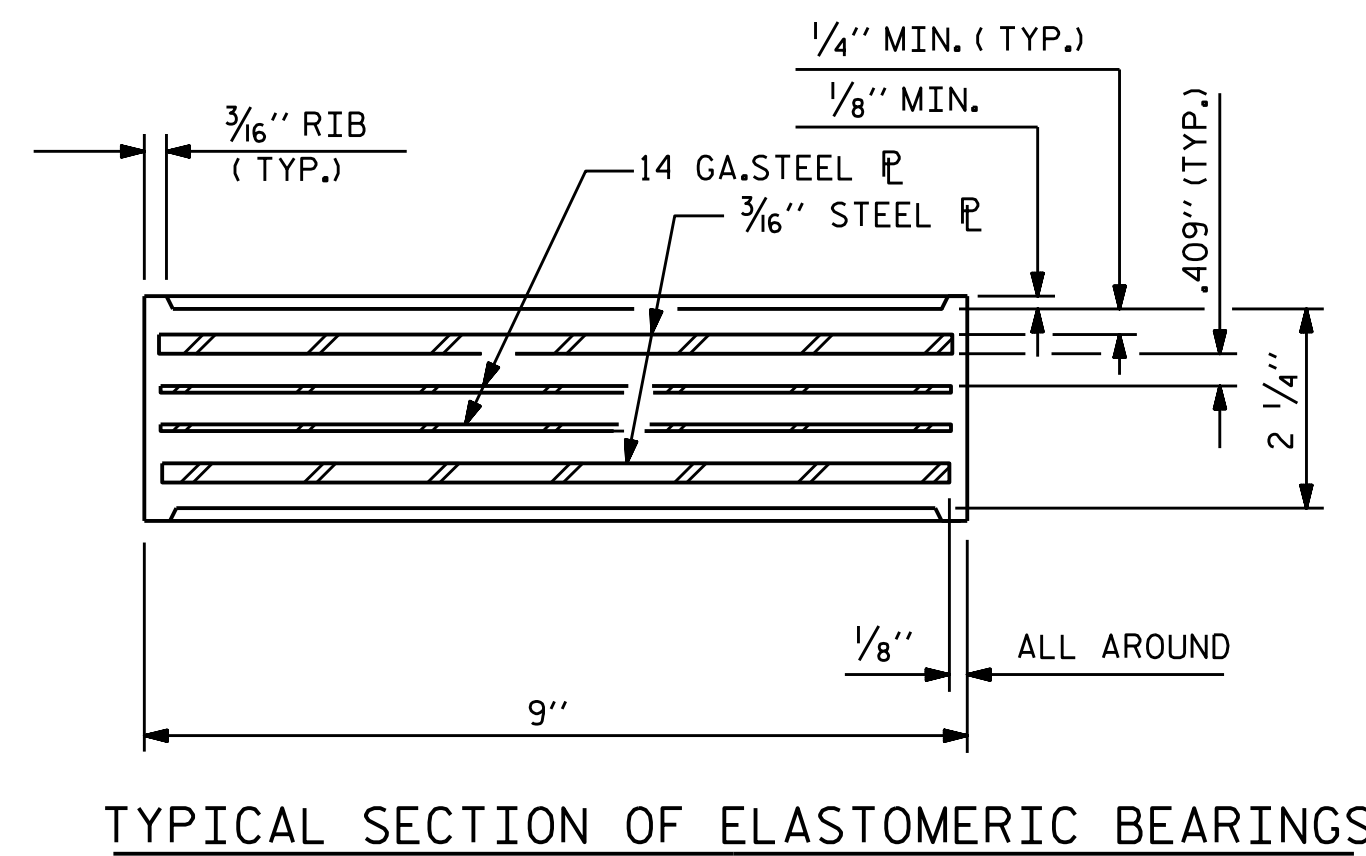
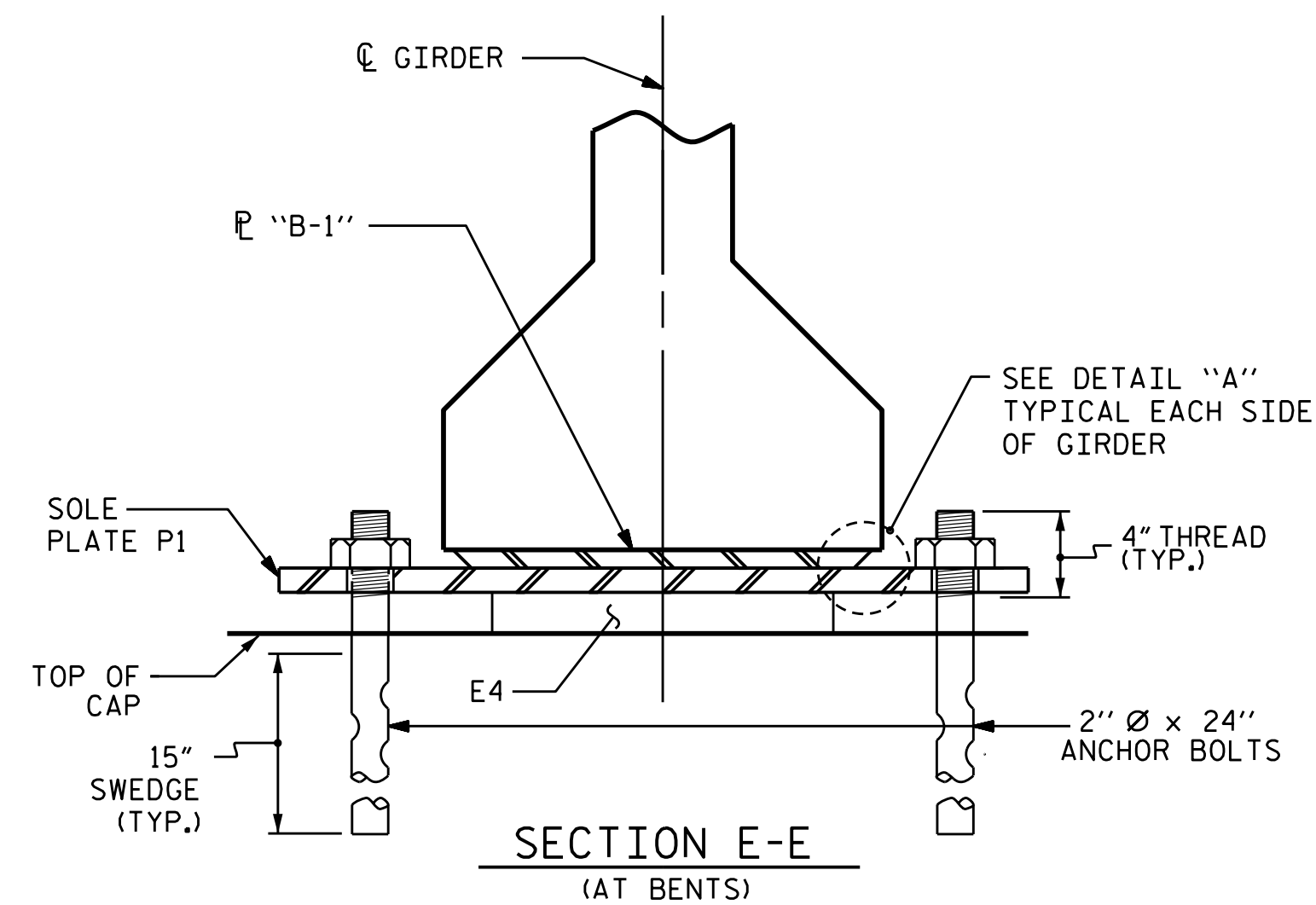
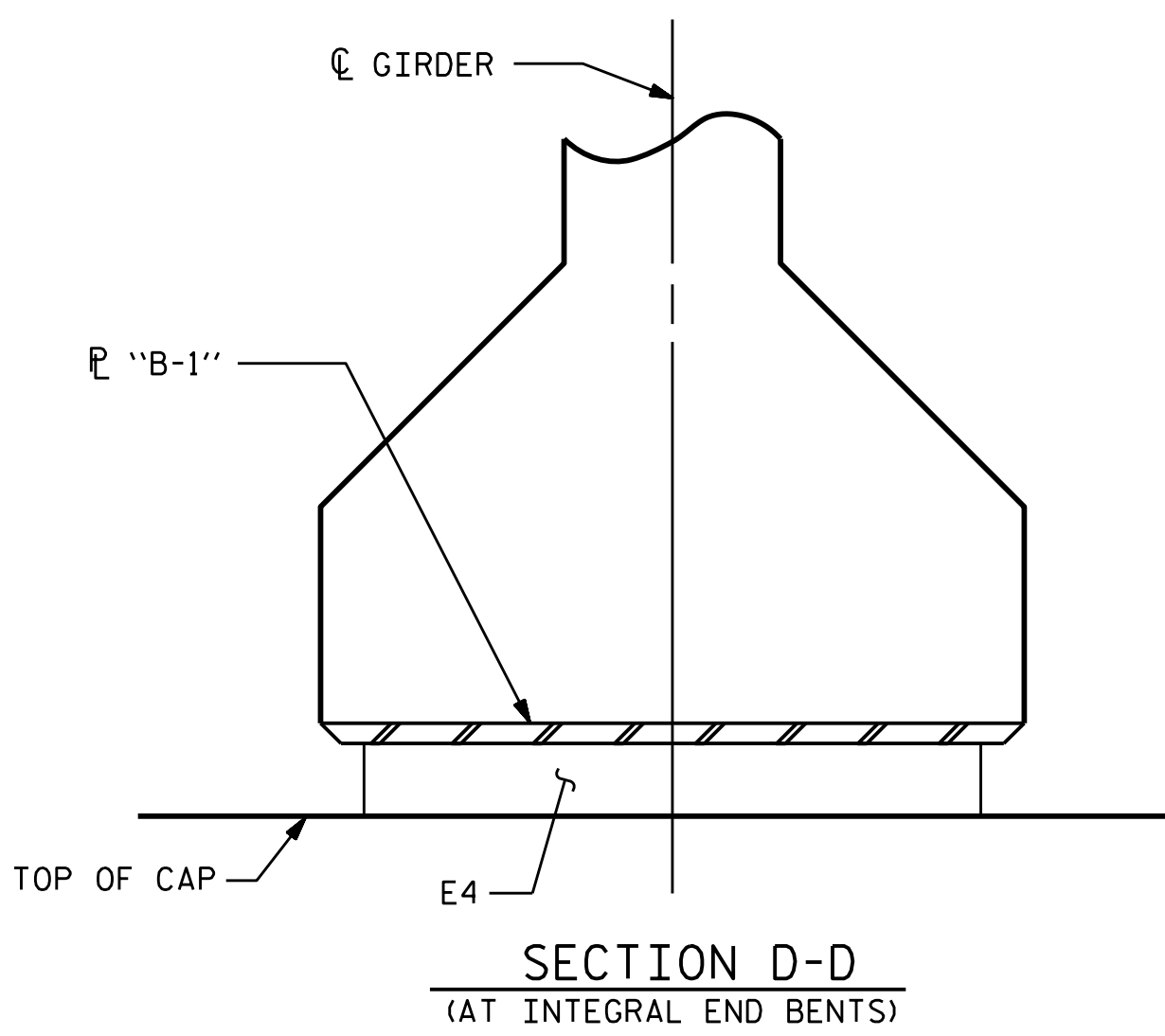
ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. NO SHOP DRAWINGS ARE REQUIRED FOR ANCHOR BOLTS, AND NUTS. SHOP INSPECTION IS REQUIRED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

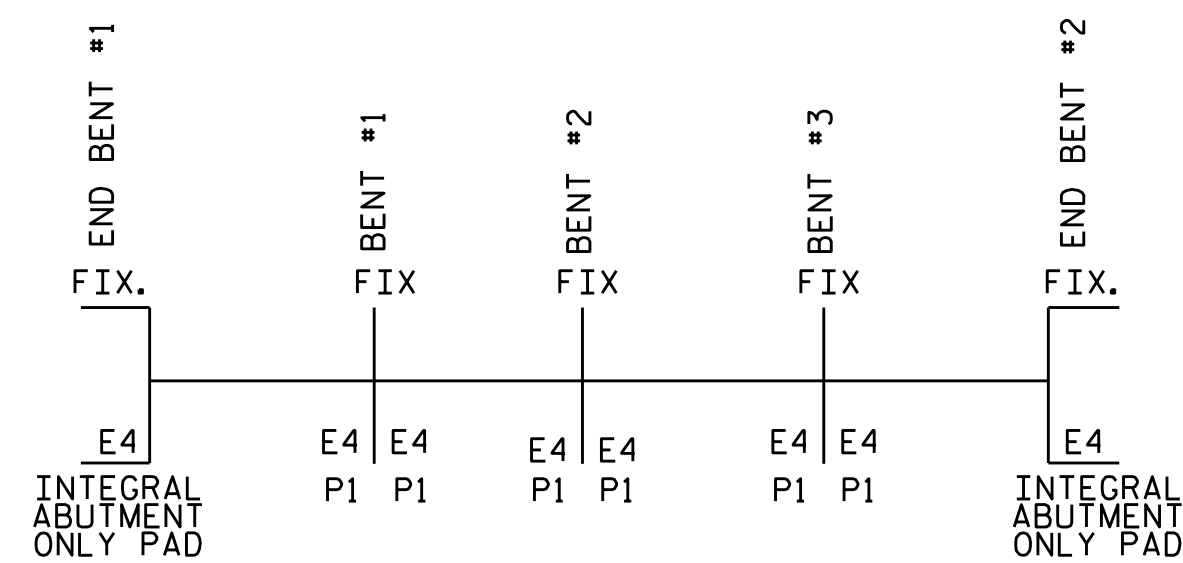
THE ELASTOMER IN THE STEEL REINFORCED BEARINGS SHALL HAVE A SHEAR MODULUS OF 0.160 KSI, IN ACCORDANCE WITH AASHTO M251.

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

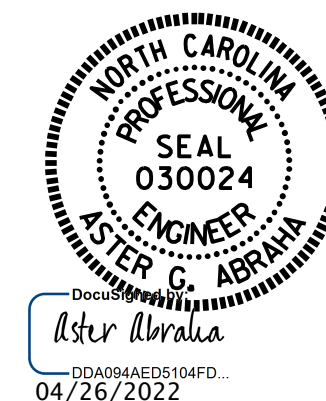
ALL SOLE PLATES SHALL BE AASHTO M270 GRADE 36.



MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE V	320 k



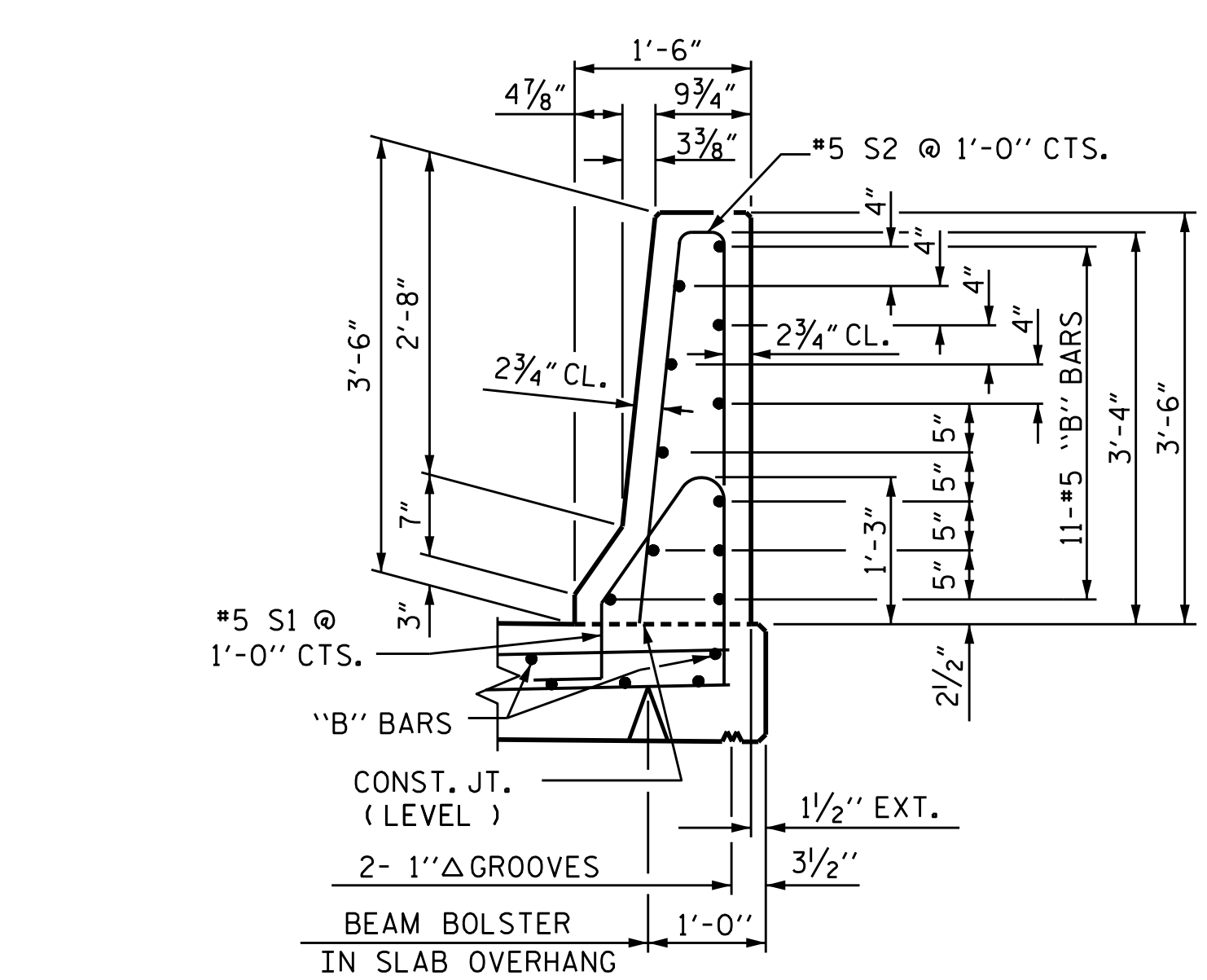
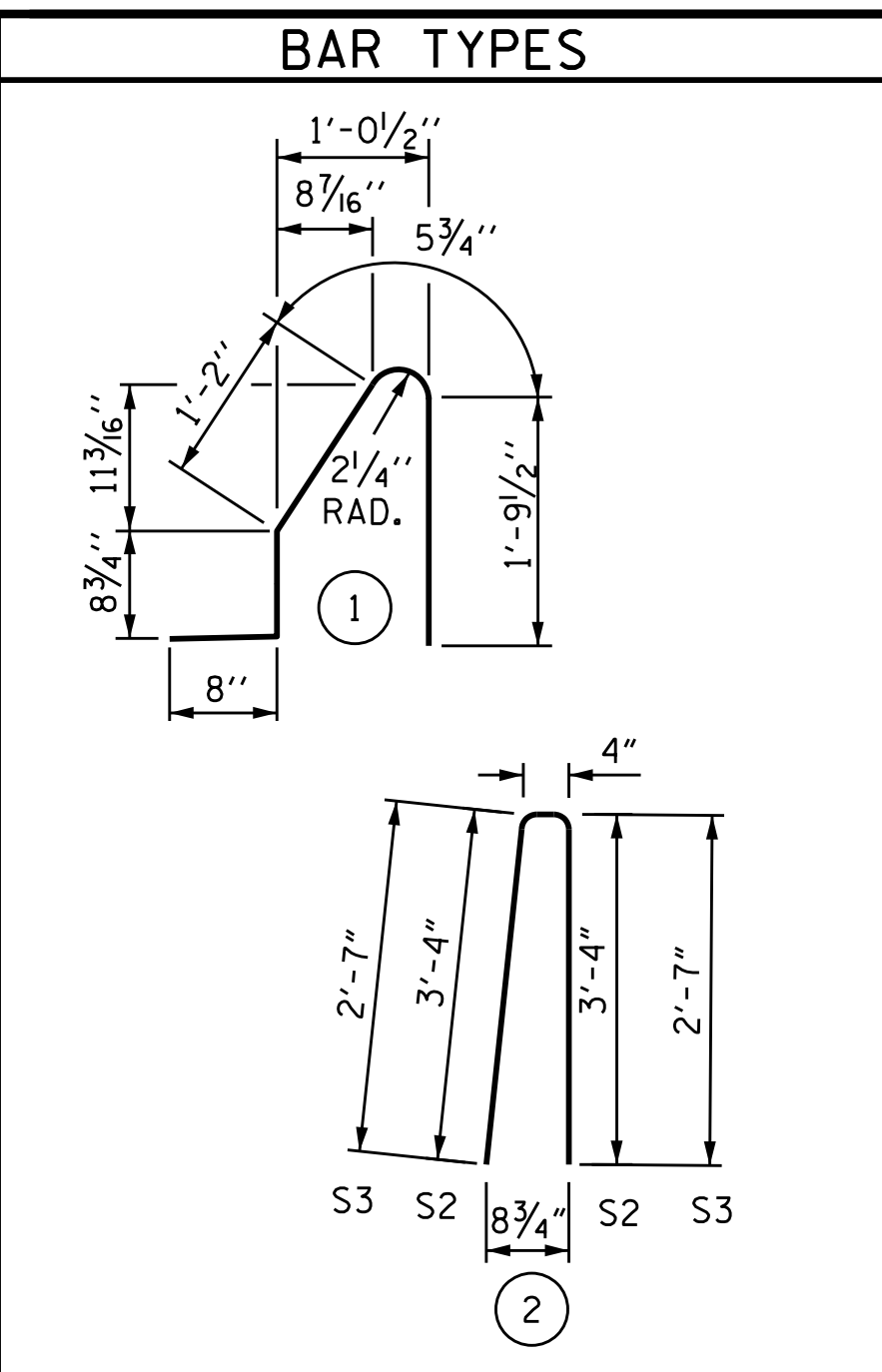
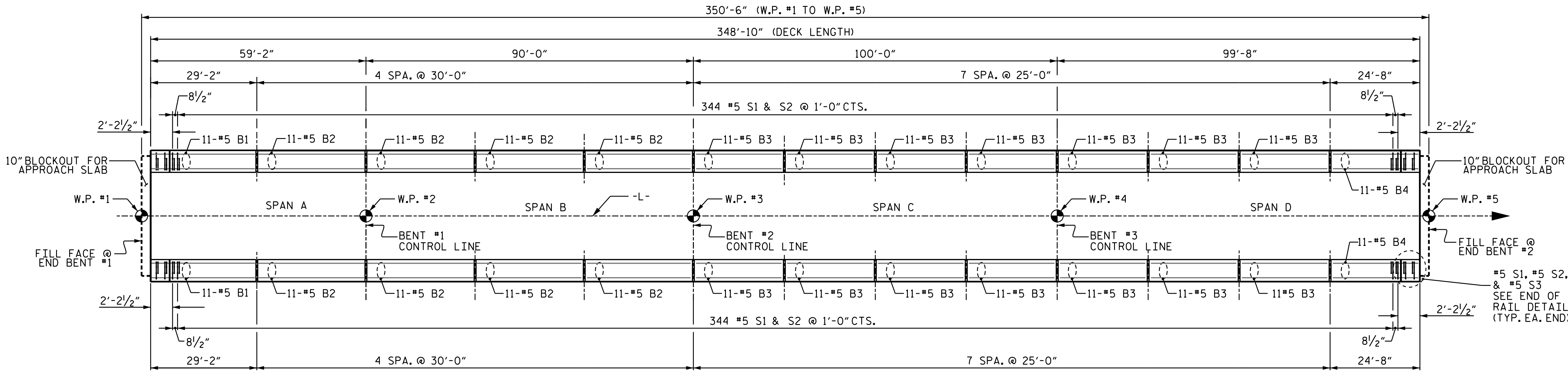
PROJECT NO. B-5694
BLADEN COUNTY
STATION: 21+85.10 -L-



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

ASSEMBLED BY : A.Y. GODFREY	DATE : 06/27/19
CHECKED BY : S. WANCE	DATE : 08/2019
DRAWN BY : WJH 8/89	REV. 1/15 MAA/TMG
CHECKED BY : CRK 8/89	REV. 12/17 MAA/THC
	REV. 10/21 BNB/AAI

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	REVISIONS						SHEET NO. S-20 TOTAL SHEETS 37
	NO.	BY:	DATE:	NO.	BY:	DATE:	
	1			3			
	2			4			



PLAN OF CONCRETE BARRIER RAIL

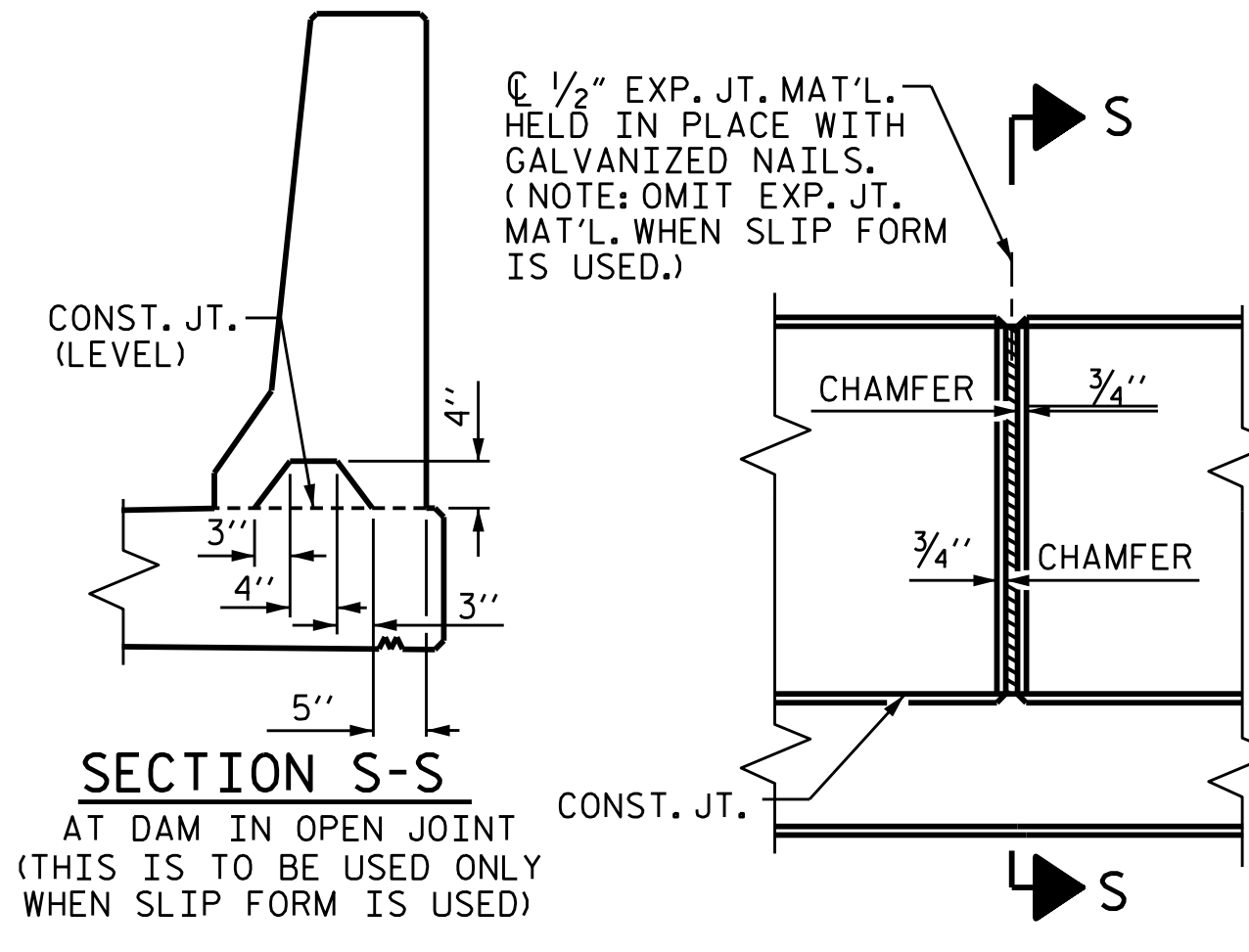
NOTES

THE BARRIER RAIL IN A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT 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.

THE #5 S1 AND #5 S2 BARS MAY BE SHIFTED SLIGHTLY IN ORDER TO MAINTAIN A 2" MINIMUM CLEARANCE TO THE 1/2" EXPANSION JOINT MATERIAL IN THE BARRIER RAIL.

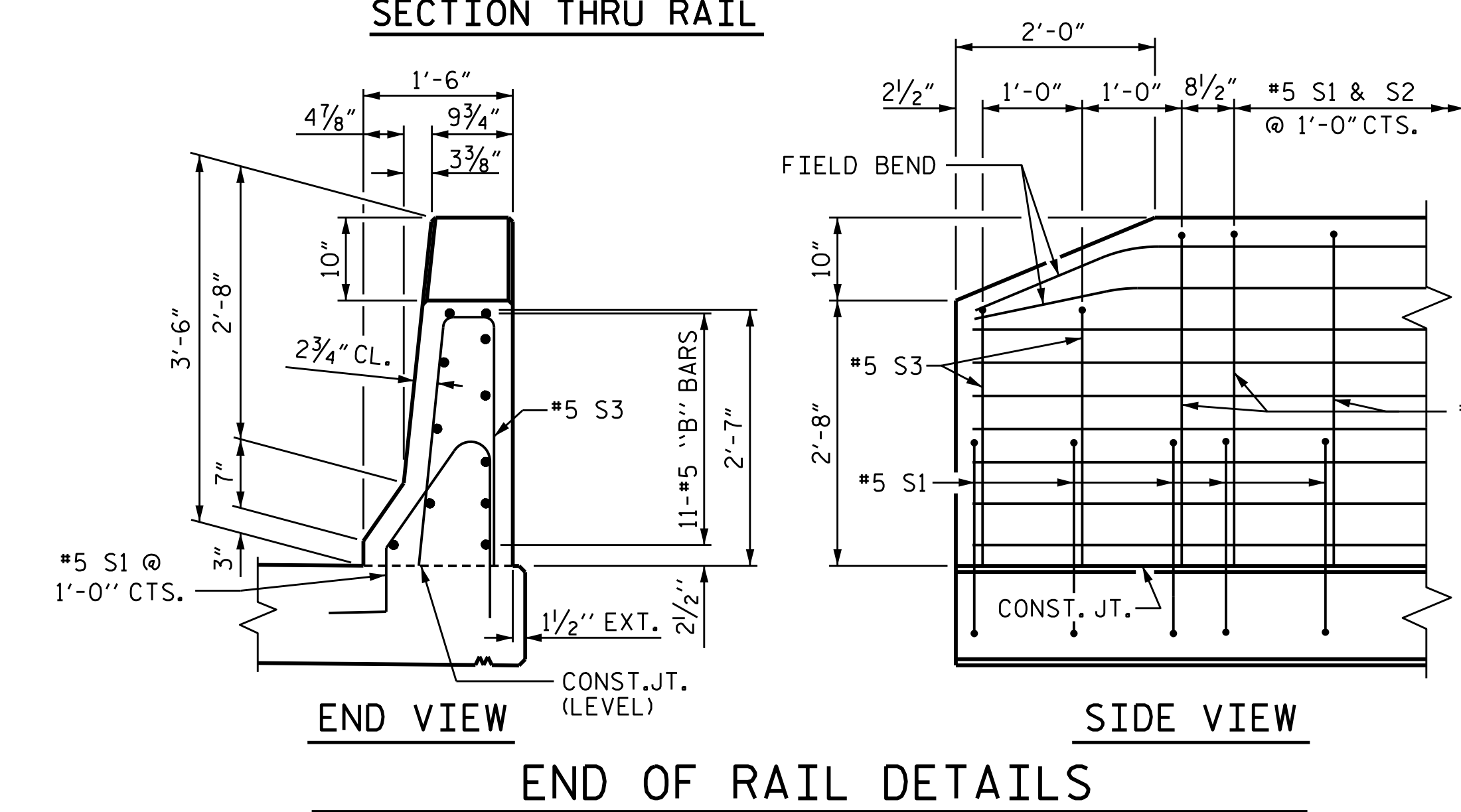
GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS 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.



BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	22	#5	STR	28'-9"	660
* B2	88	#5	STR	29'-7"	2,715
* B3	154	#5	STR	24'-7"	3,948
* B4	22	#5	STR	24'-3"	556
* EPOXY COATED					
* S1	700	#5	1	4'-10"	3,529
* S2	692	#5	2	7'-0"	5,052
* S3	8	#5	2	5'-6"	46
REINFORCING STEEL					16,506 LBS.
CLASS AA CONCRETE					95 CU. YDS.
CONCRETE BARRIER RAIL					697.67 LIN. FT.



ASSEMBLED BY : S. WANCE DATE : 09/2020
 CHECKED BY : G. AYES DATE : 01/2022

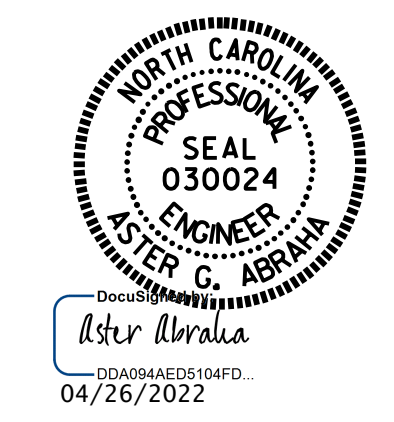
DRAWN BY : ARB 5/87 REV. 7/12 MAA/GM
 CHECKED BY : SJD 9/87 REV. 6/13 MAA/GM
 REV. 12/17 MAA/THC

REVISIONS

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

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PROJECT NO. B-5694
 BLADEN COUNTY
 STATION: 21+85.10 -L-



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

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.)

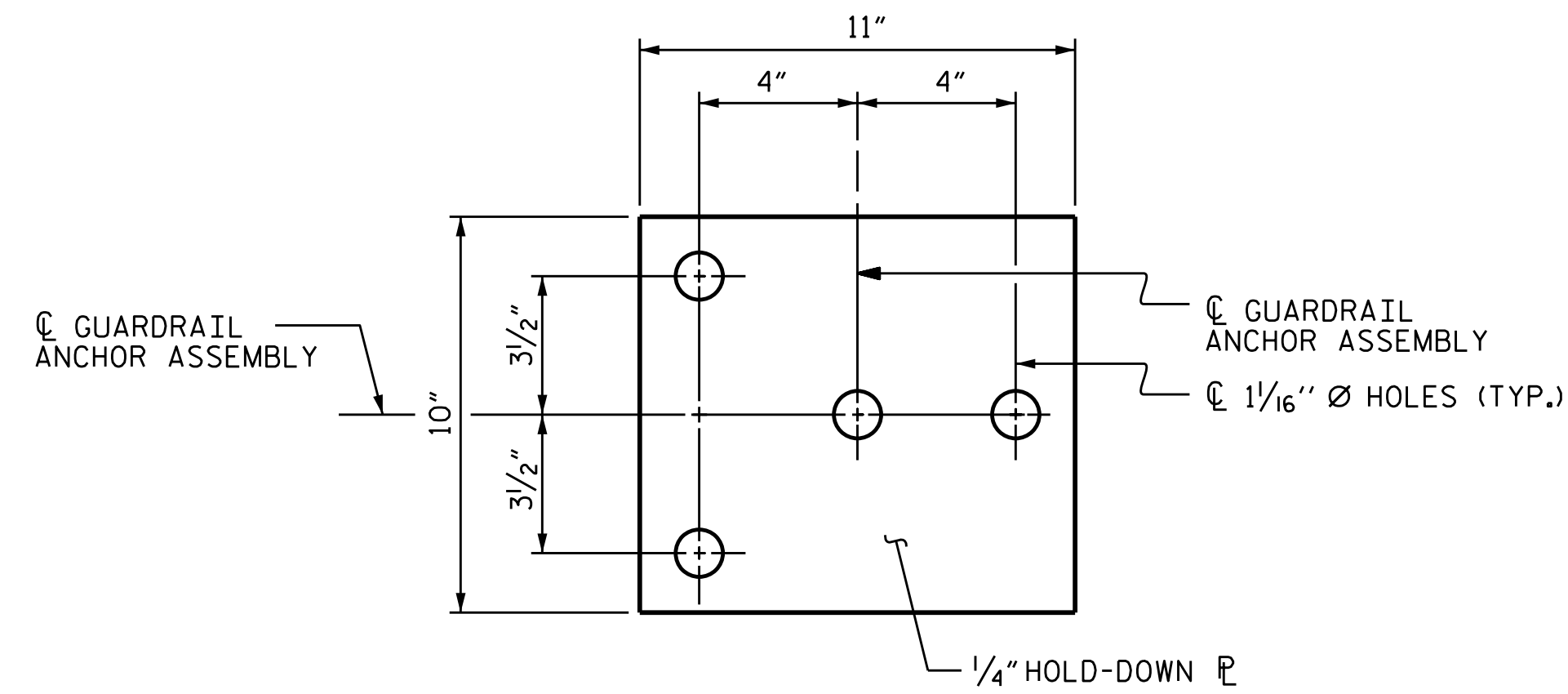
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

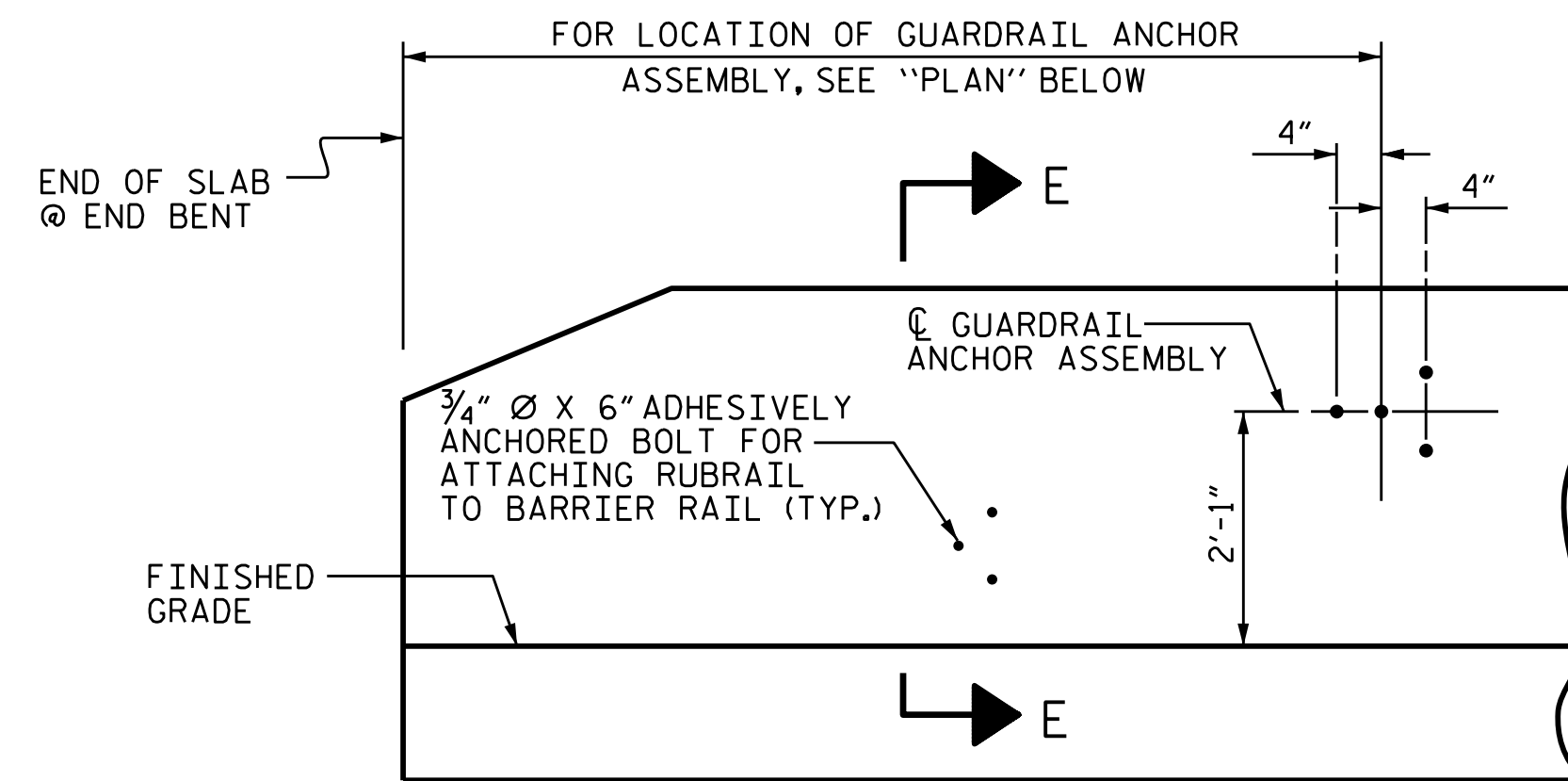
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.

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.

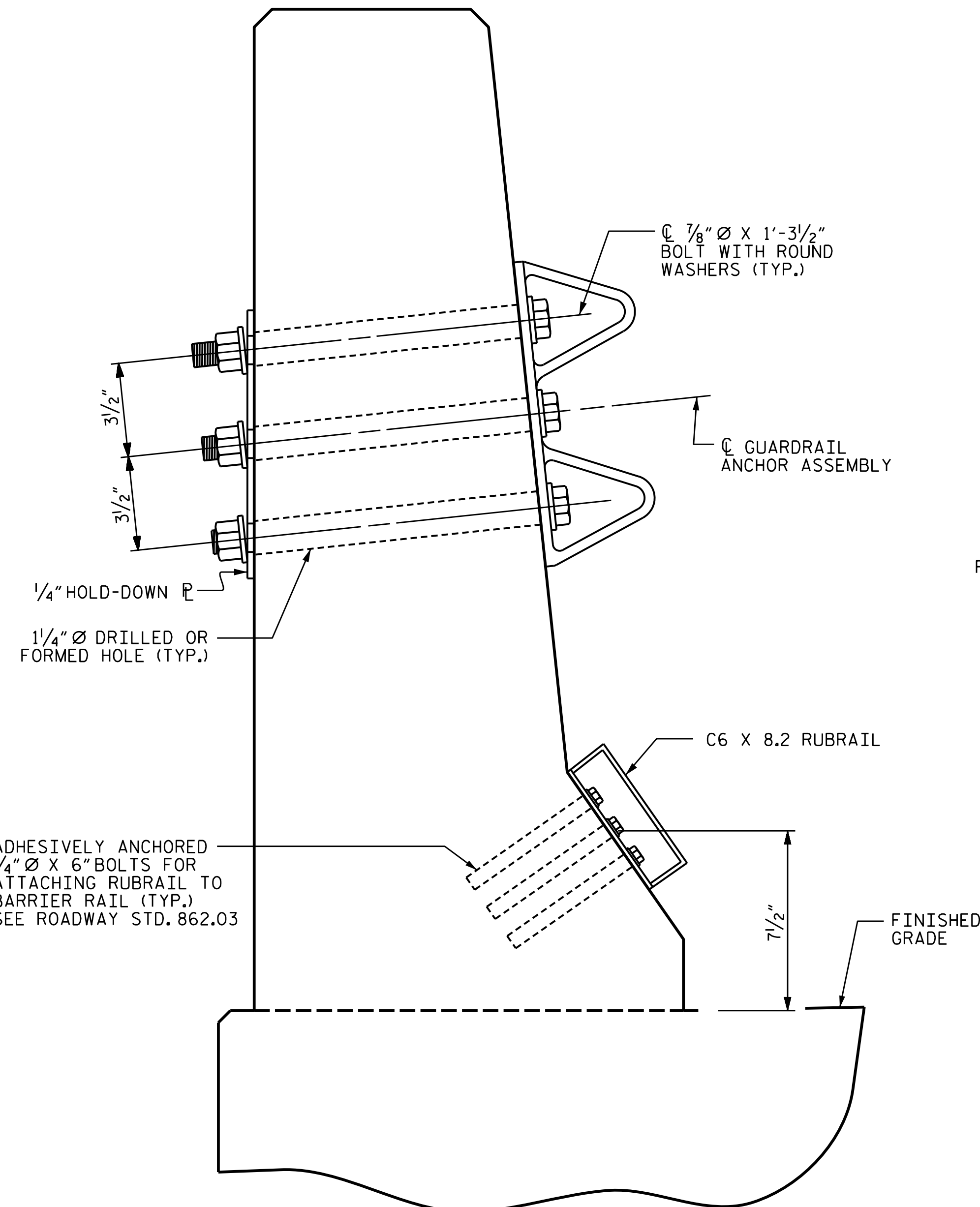
THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 3/4" Ø X 6" BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS. SEE ROADWAY STANDARD 862.03 FOR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



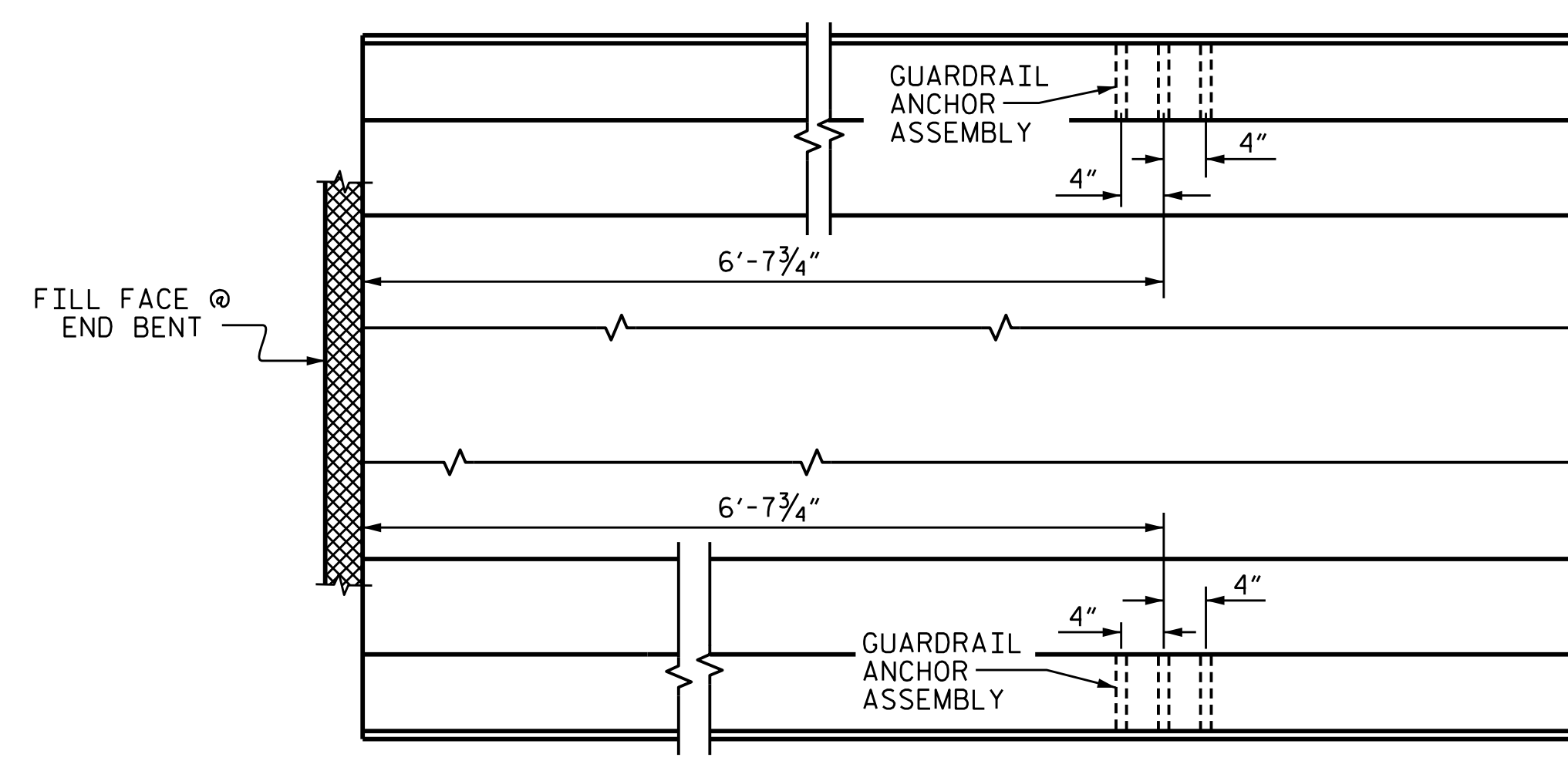
PLAN



ELEVATION



SECTION E-E
GUARDRAIL ANCHOR ASSEMBLY DETAILS



LOCATION OF ANCHORS FOR GUARDRAIL

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

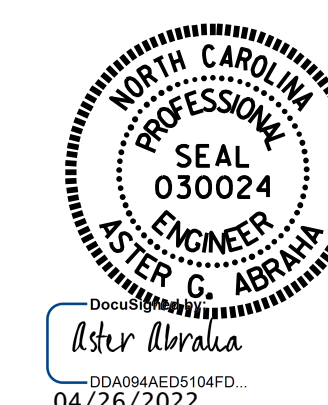


SKETCH SHOWING POINTS OF ATTACHMENTS

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. B-5694
BLADEN COUNTY
STATION: 21+85.10 -L-

SHEET 2 OF 2



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

ASSEMBLED BY : S. WANCE	DATE : 09/2020
CHECKED BY : G. AYES	DATE : 01/2022
DRAWN BY : TLA 5/06	REV. 7/12 MAA/GM
CHECKED BY : GM 5/06	REV. 6/13 MAA/GM
	REV. 12/17 MAA/THC

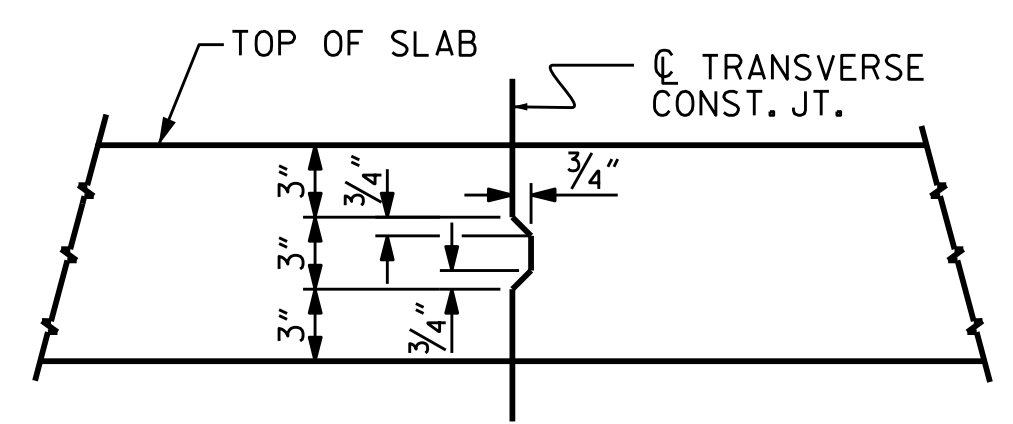
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
1			3			TOTAL SHEETS
2			4			37

GROOVING BRIDGE FLOORS		
APPROACH SLABS	822	SO.FT.
BRIDGE DECK	10,107	SO.FT.
TOTAL	10,929	SO.FT.

—SUPERSTRUCTURE BILL OF MATERIAL—			
	CLASS AA CONCRETE (CU. YDS.)	REINFORCING STEEL (LBS.)	EPOXY COATED REINFORCING STEEL (LBS.)
POUR #1	333.4	—	—
POUR #2	63.6	—	—
POUR #3	51.8	—	—
TOTALS**	448.8	45,574	42,989

**QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED



TRANSVERSE CONSTRUCTION JOINT DETAIL

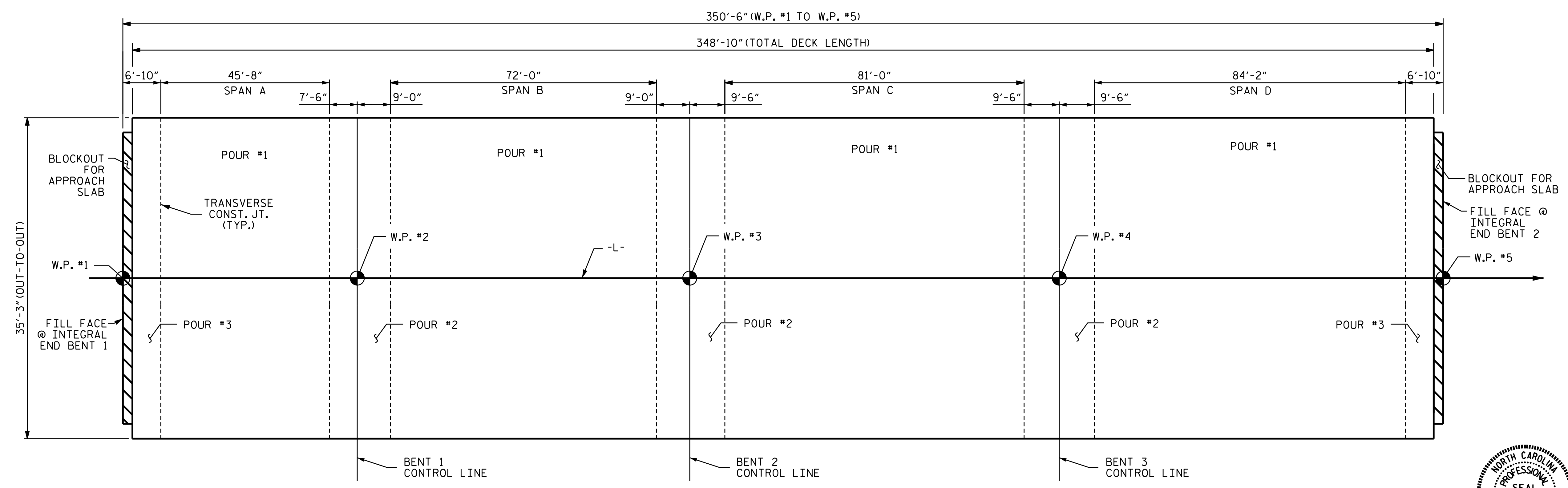
NOTE: REINFORCING STEEL IN SLAB NOT SHOWN. LONGITUDINAL REINFORCING STEEL SHALL BE CONTINUOUS THROUGH JOINT.

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	2'-0"	1'-7"	1'-11"	1'-7"	2'-6"
#5	2'-5"	2'-2"	2'-5"	2'-0"	3'-1"
#6	3'-0"	2'-5"	3'-7"	2'-5"	3'-8"
#7	4'-2"	2'-9"			
#8	4'-9"	3'-2"			

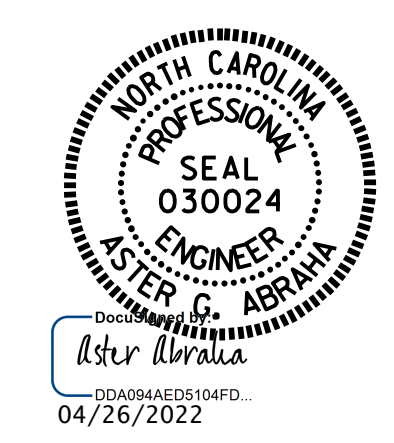
BAR TYPES		REINFORCING BAR SCHEDULE				
		—SPANS "A-B-C-D"—				
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	697	#5	STR.	34'-10"	25,323	
A2	697	#5	STR.	34'-10"	25,323	
B1	308	#5	STR.	51'-8"	16,598	
*B2	71	#6	STR.	11'-10"	1,262	
*B3	36	#4	STR.	28'-2"	677	
*B4	36	#5	STR.	55'-0"	2,065	
*B5	35	#5	STR.	21'-4"	779	
*B6	36	#4	STR.	30'-0"	721	
*B7	72	#5	STR.	17'-8"	1,327	
*B8	36	#5	STR.	52'-4"	1,965	
*B9	35	#5	STR.	23'-4"	852	
*B10	36	#4	STR.	34'-0"	818	
*B11	36	#5	STR.	55'-4"	2,078	
*B12	35	#5	STR.	23'-10"	870	
*B13	72	#4	STR.	25'-4"	1,218	
*B14	71	#6	STR.	19'-10"	2,115	
B15	39	#5	STR.	21'-4"	868	
B16	39	#5	STR.	23'-4"	949	
B17	39	#5	STR.	23'-10"	970	
K1	10	#4	STR.	34'-9"	232	
K2	6	#4	STR.	7'-0"	28	
K3	6	#4	STR.	8'-1"	32	
K4	12	#4	STR.	8'-6"	68	
K5	6	#4	STR.	7'-6"	30	
K6	4	#4	STR.	1'-11"	5	
K7	4	#4	STR.	2'-4"	6	
K8	8	#4	STR.	2'-8"	14	
K9	4	#4	STR.	2'-2"	6	
*S1	62	#4	1	10'-3"	425	
*S2	62	#4	1	11'-11"	494	
U1	62	#4	2	10'-9"	445	
REINFORCING STEEL					45,574 LBS.	
* EPOXY COATED REINFORCING STEEL					42,989 LBS.	

ALL BAR DIMENSIONS ARE OUT TO OUT



POURING SEQUENCE AND LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB (SQ. FT. = 12,297)

PROJECT NO. B-5694
BLADEN COUNTY
STATION: 21+85.10 -L-



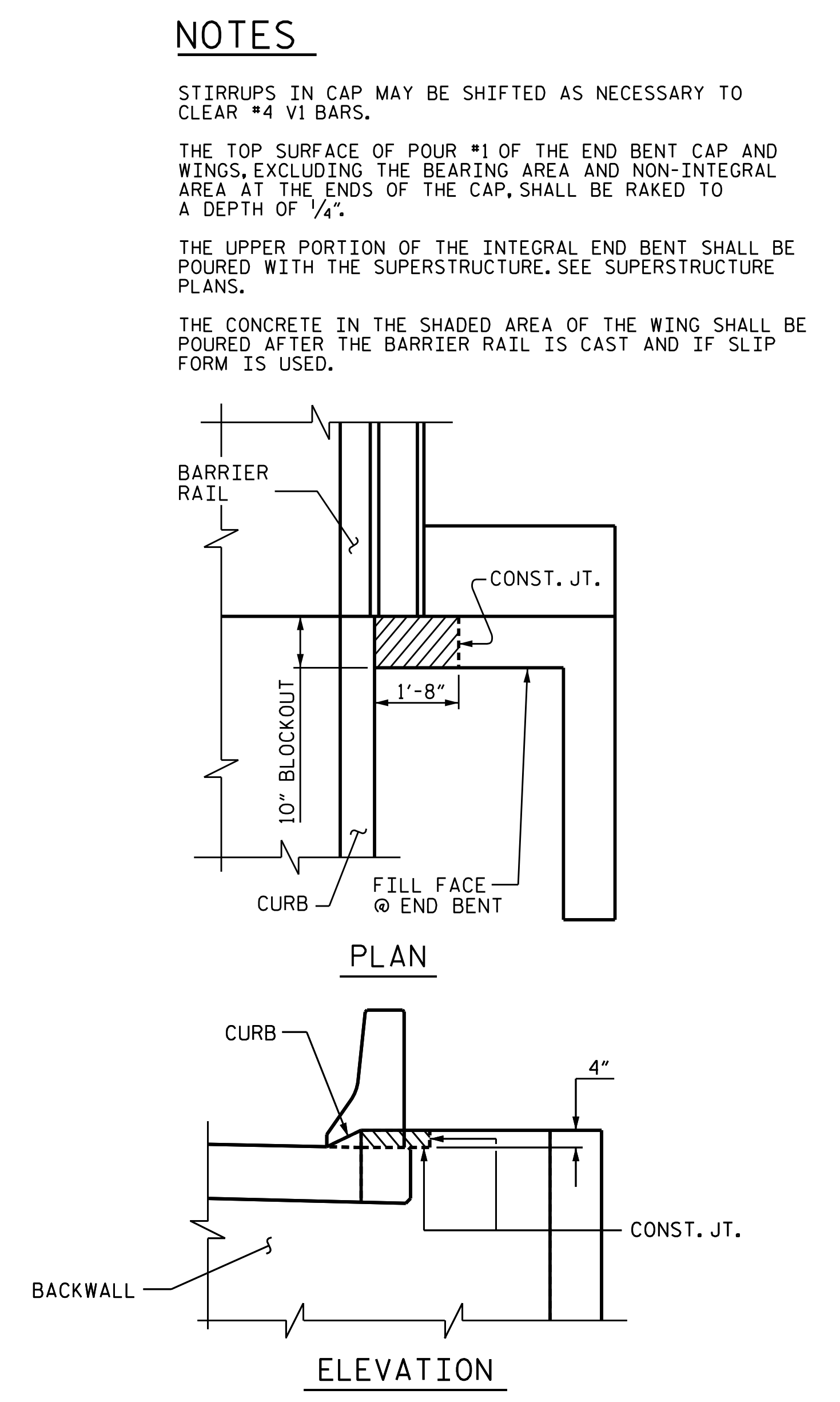
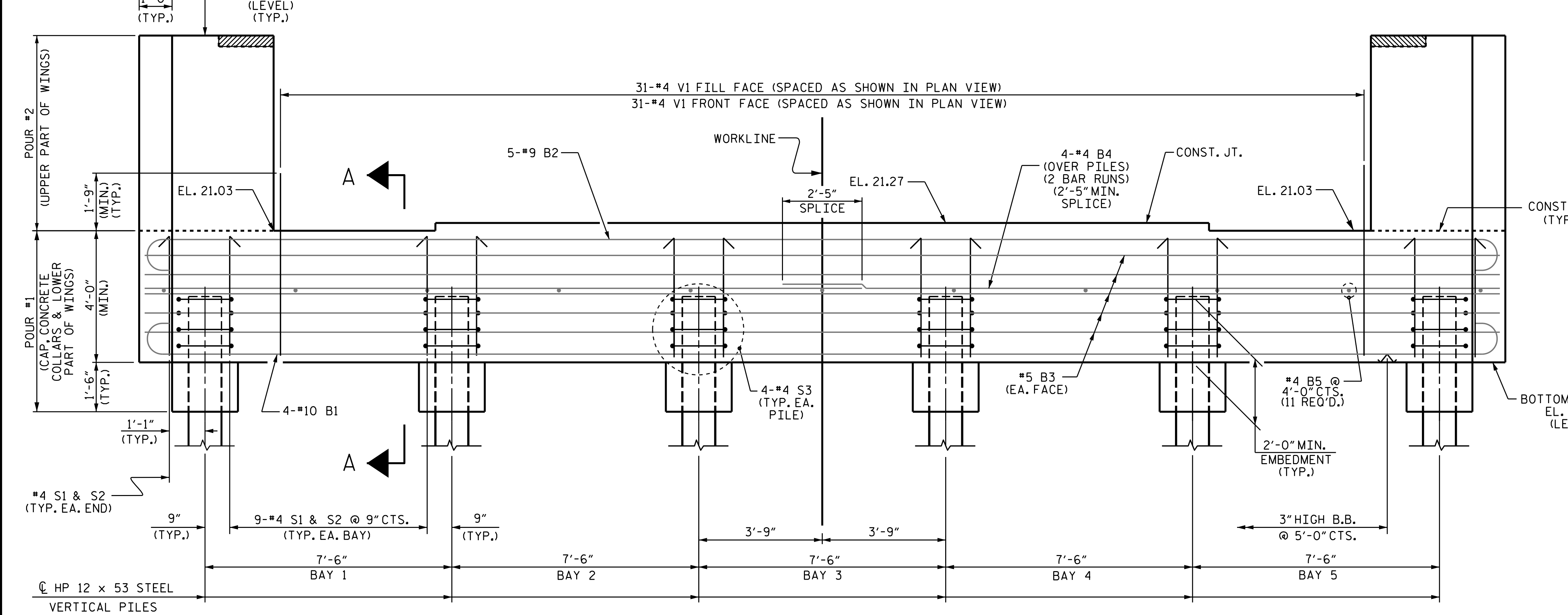
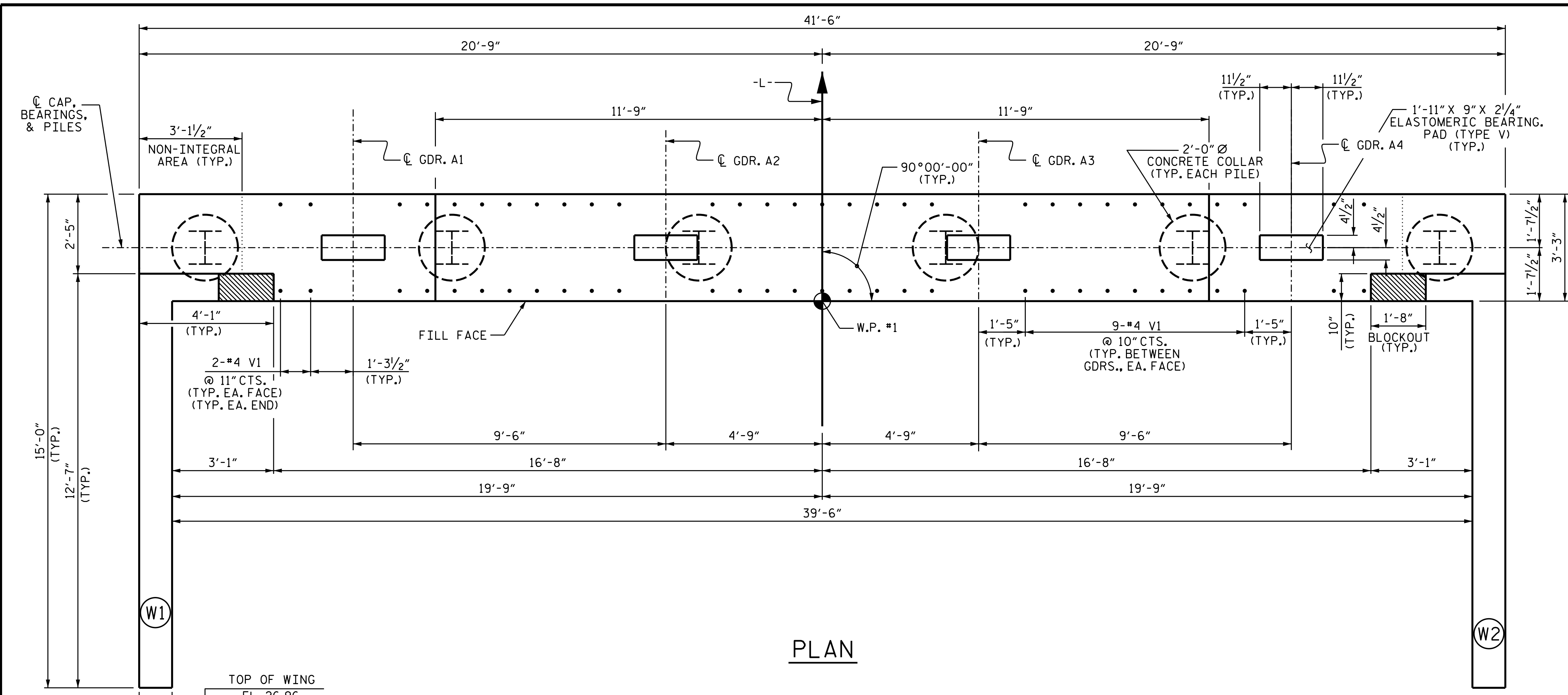
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE BILL OF MATERIAL

DRAWN BY: A. Y. GODFREY DATE: 07/2020
CHECKED BY: S. WANCE DATE: 09/2020
DESIGN ENGINEER OF RECORD: M. M. AHMED DATE: 08/2019

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-23
1			3			TOTALS
2			4			37



BLOCKOUT IN WING WALL

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

PROJECT NO. B-5694
BLADEN COUNTY
 STATION: 21+85.10 -L-
 SHEET 1 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

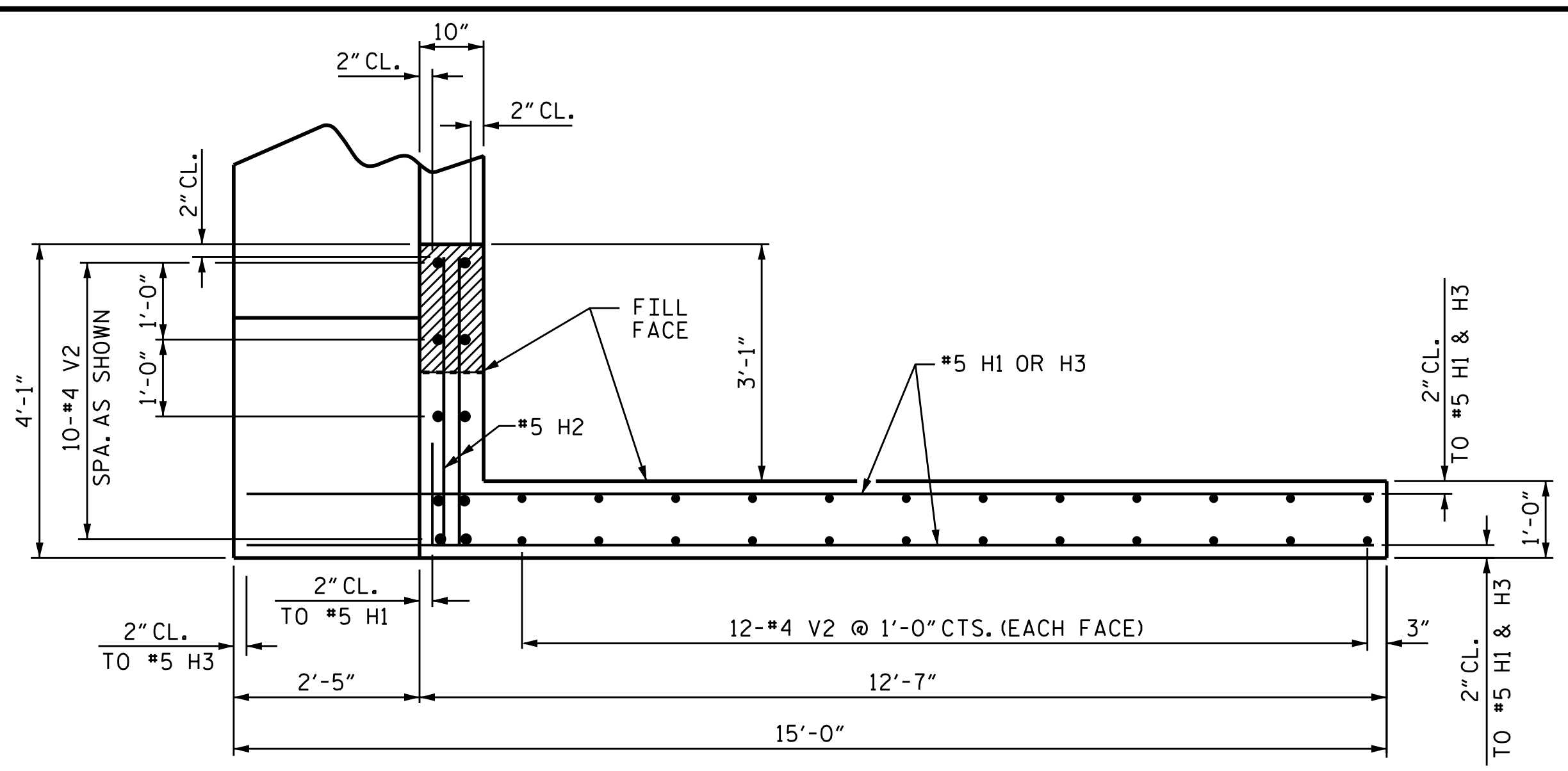
**SUBSTRUCTURE
 INTEGRAL
 END BENT 1**

DRAWN BY: M.M. AHMED DATE: 8/2019
 CHECKED BY: S. WANCE DATE: 08/2019
 DESIGN ENGINEER OF RECORD: M.M. AHMED DATE: 07/2019

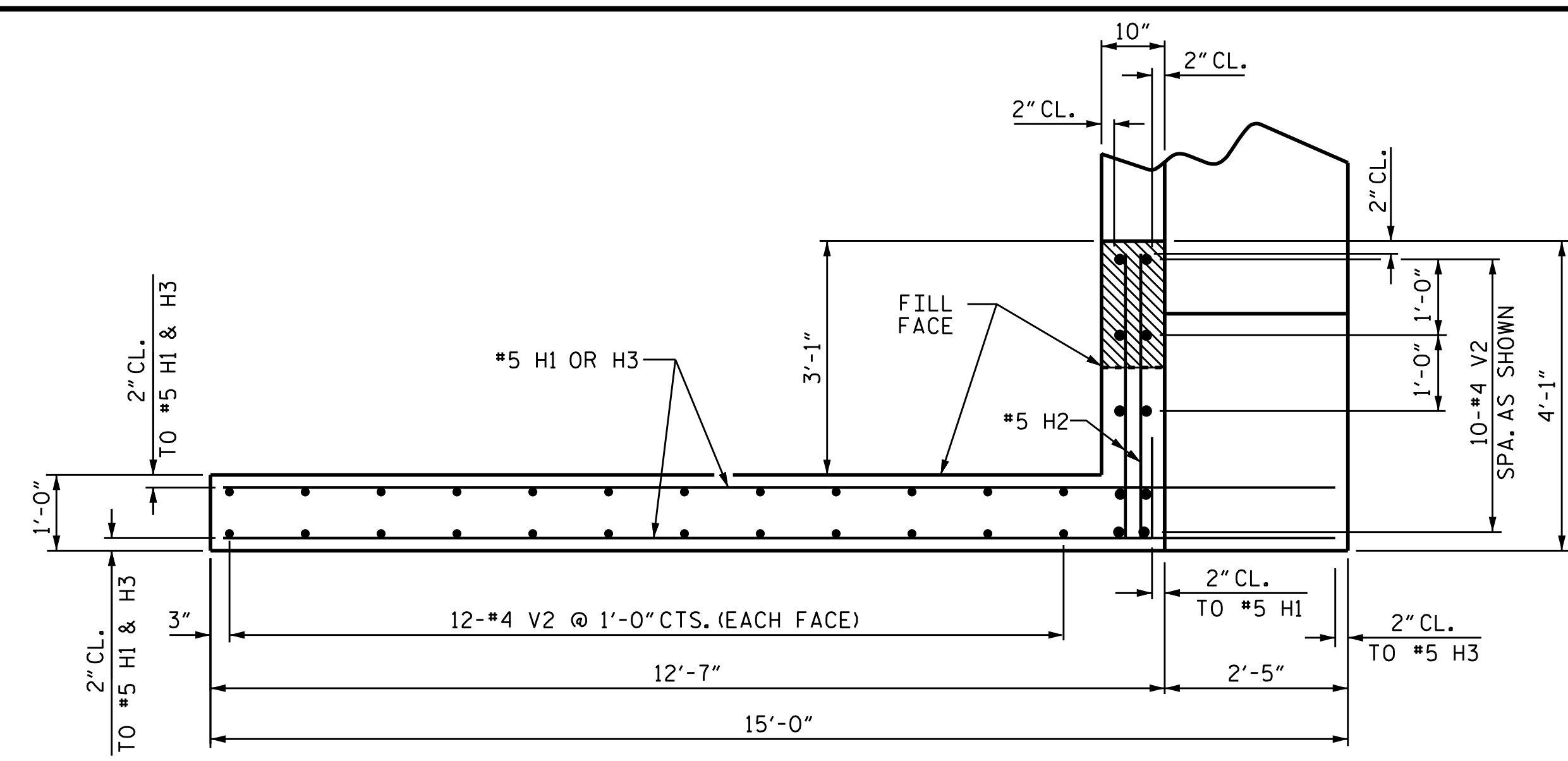
ELEVATION
 FOR SECTION A-A, SEE SHEET 3 OF 3

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-24
1			3			TOTAL SHEETS
2			4			37

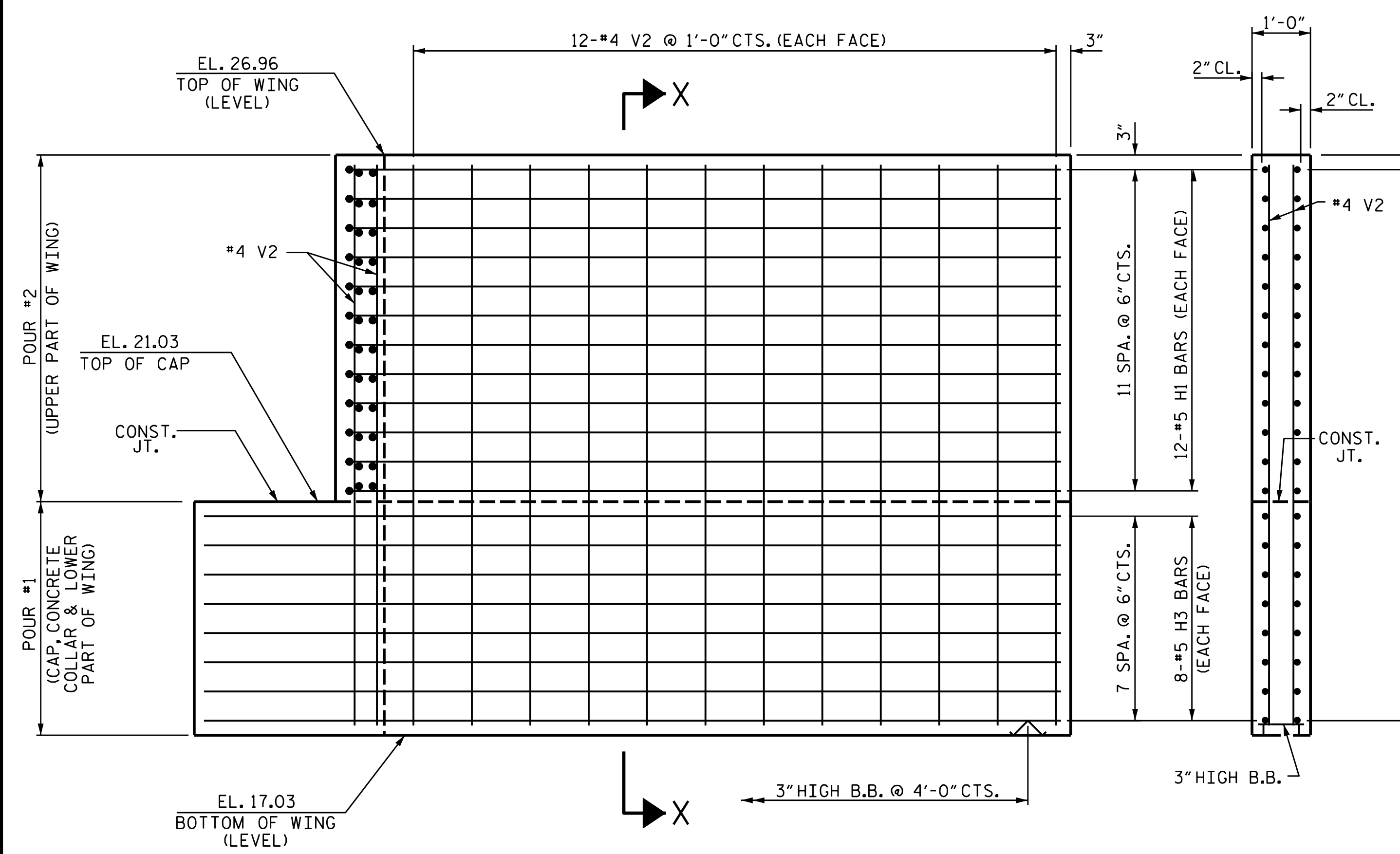
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PLAN OF WING-W1

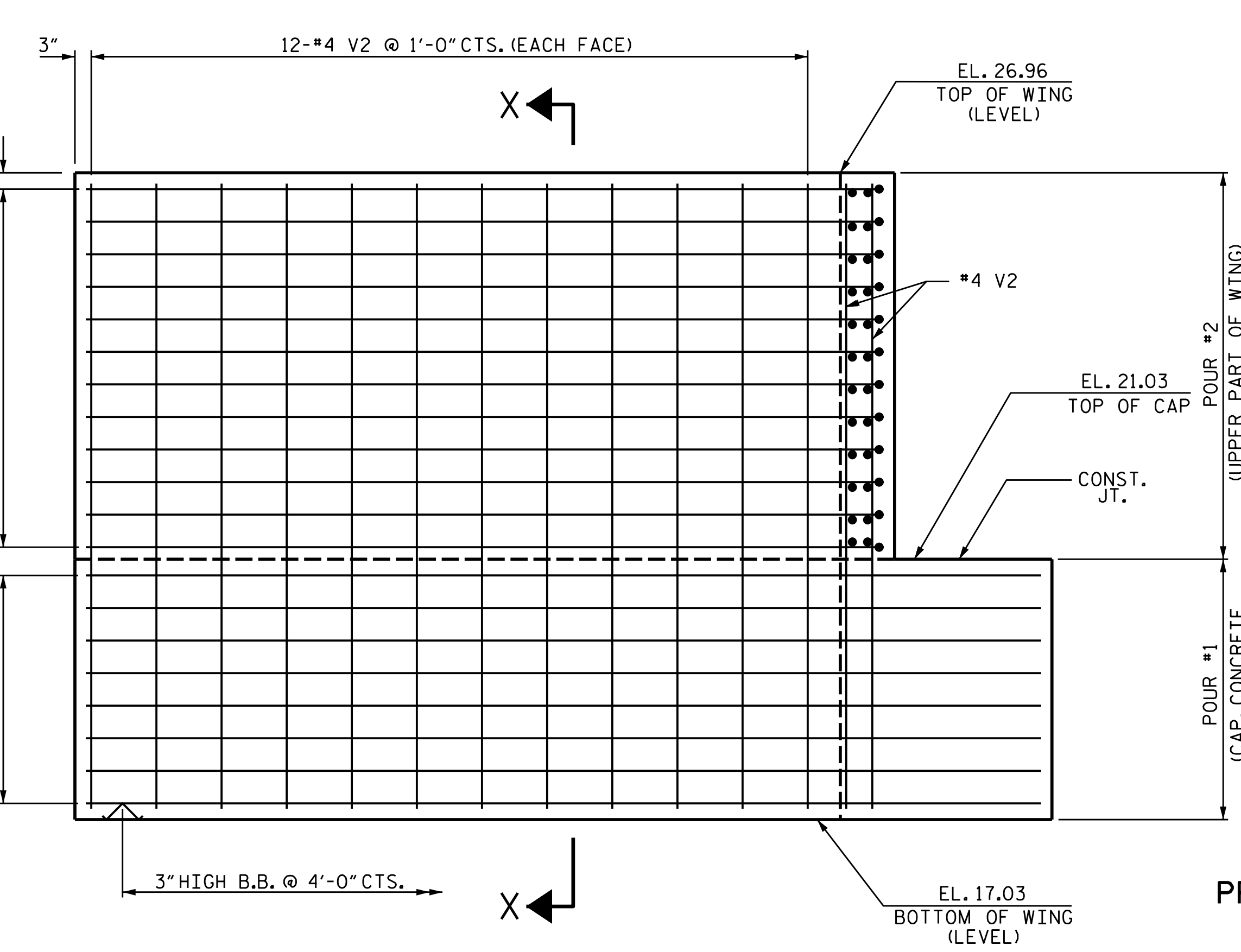


PLAN OF WING-W2



ELEVATION OF WING-W1

SECTION X-X



ELEVATION OF WING-W2

PROJECT NO. B-5694
BLADEN COUNTY
 STATION: 21+85.10 -L-

SHEET 2 OF 3

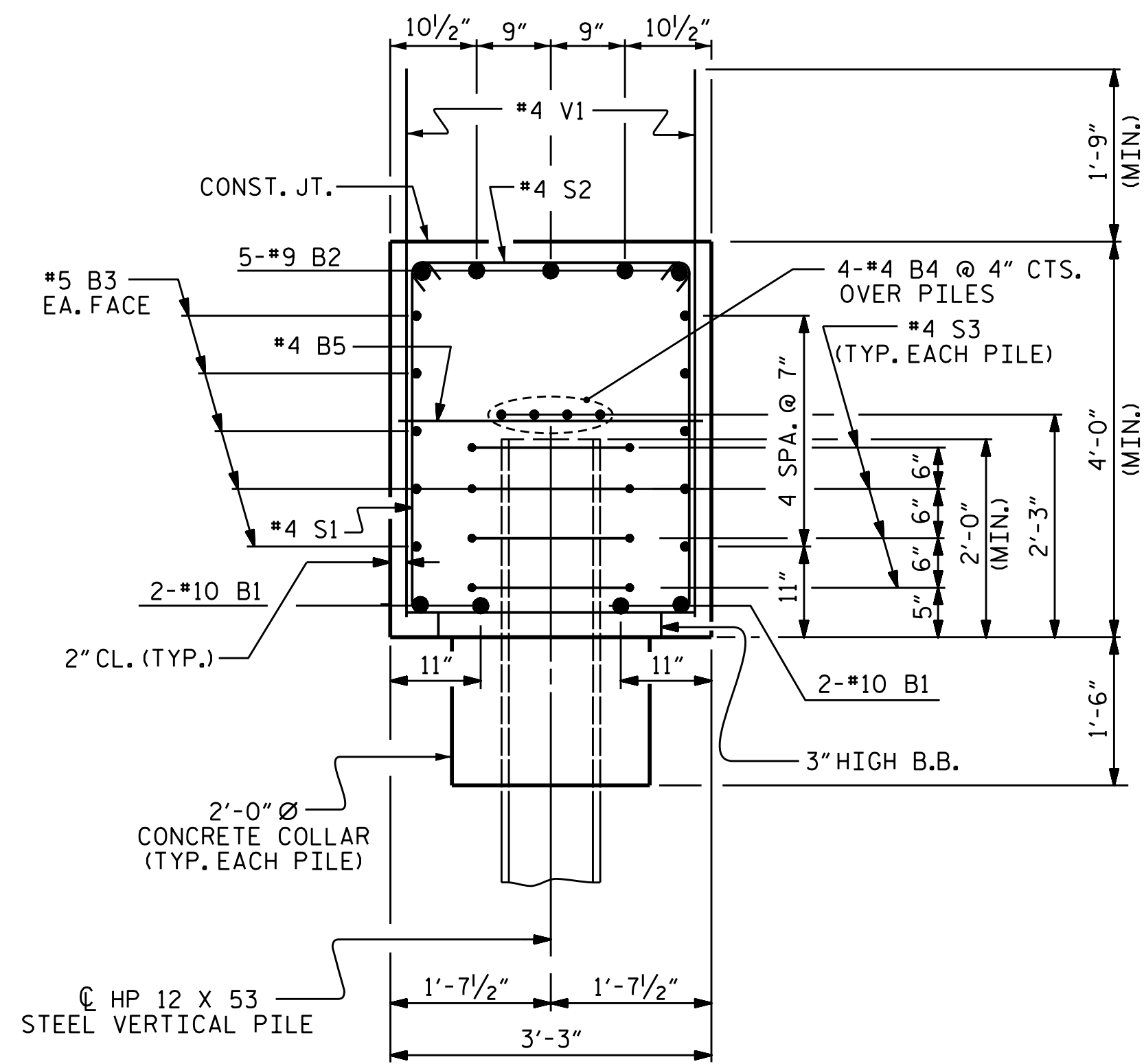


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 INTEGRAL
 END BENT 1

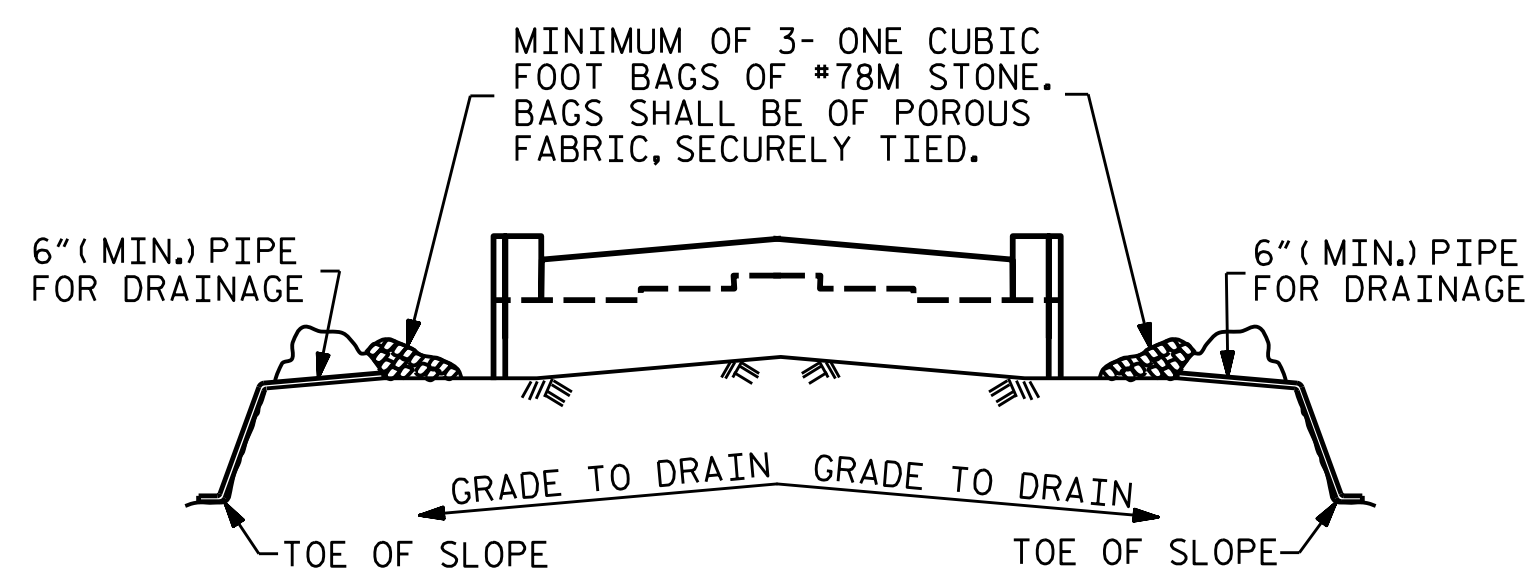
DRAWN BY: M.M. AHMED DATE: 8/21/19
 CHECKED BY: S. WANCE DATE: 08/2019
 DESIGN ENGINEER OF RECORD: M.M. AHMED DATE: 07/2019

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-25
1			3			TOTAL SHEETS
2			4			37



SECTION A-A



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.

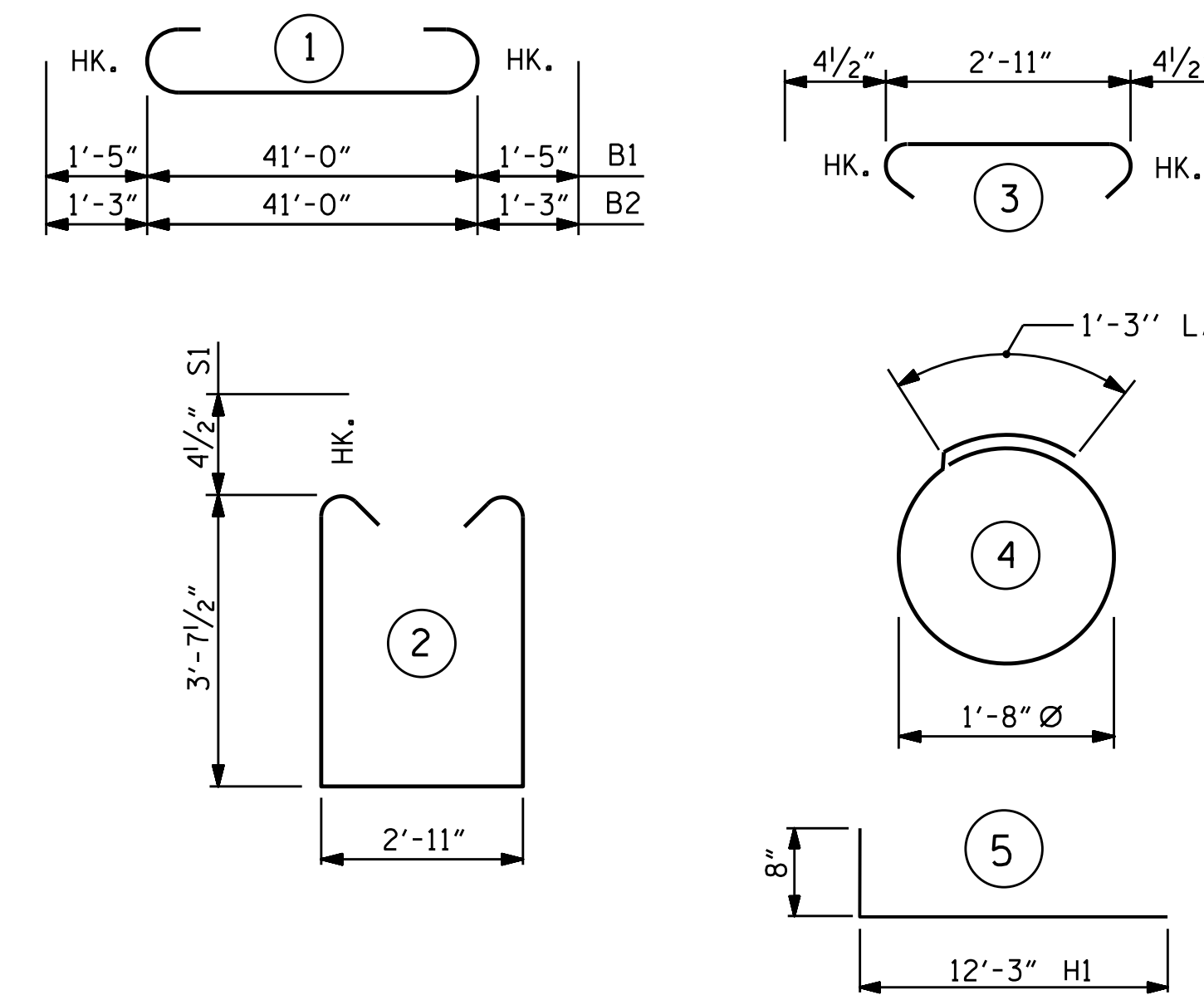
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

DRAWN BY : M.M. AHMED DATE : 8/21/19
 CHECKED BY : S. WANCE DATE : 08/19
 DESIGN ENGINEER OF RECORD: M.M. AHMED DATE : 07/19

4/20/2022
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 oygodfrey

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

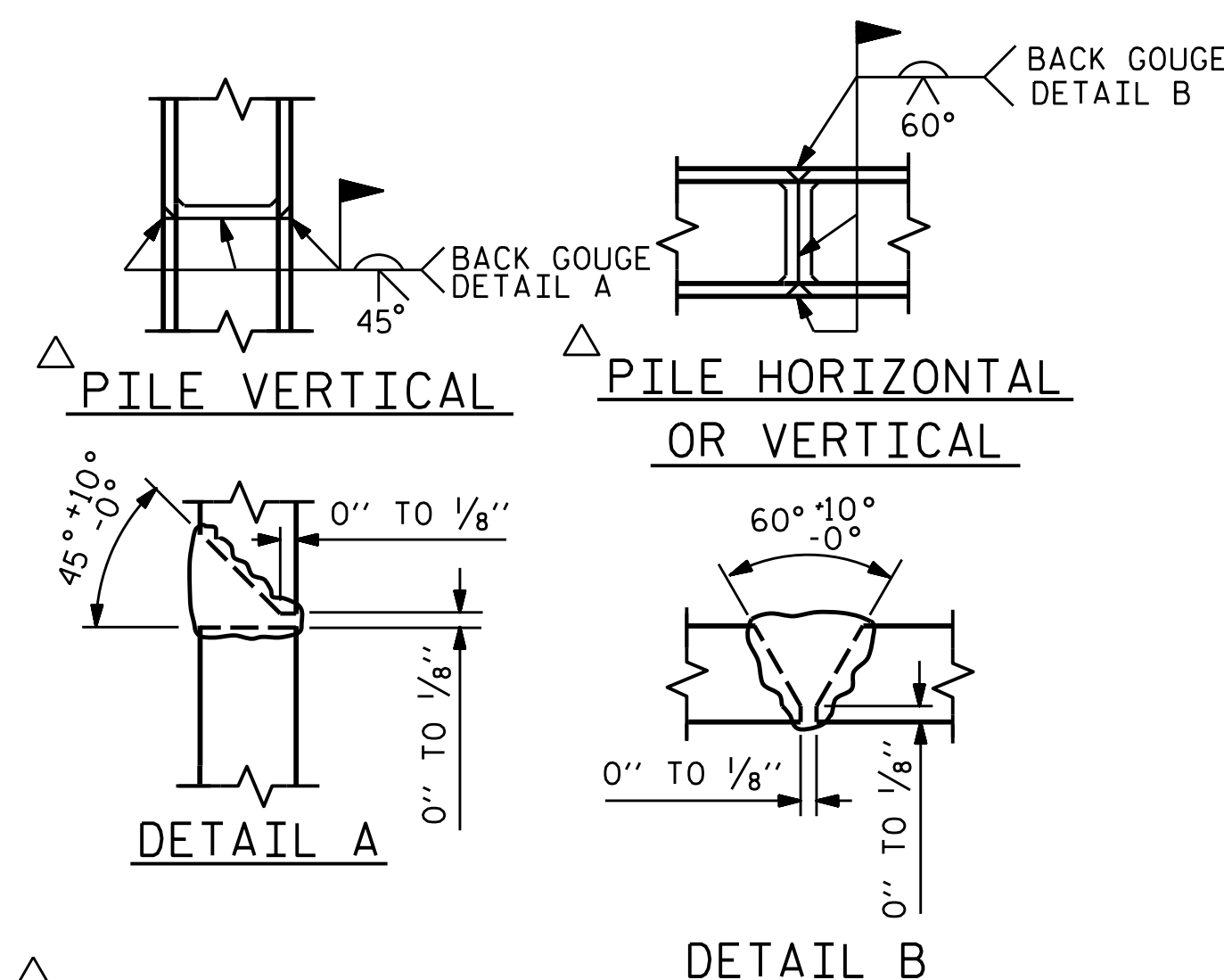
BILL OF MATERIAL

INTEGRAL END BENT #1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	1	43'-10"	754
B2	5	#9	1	43'-6"	740
B3	10	#5	STR	41'-0"	428
B4	8	#4	STR	21'-9"	116
B5	11	#4	STR	2'-11"	21
H1	48	#5	5	12'-11"	647
H2	44	#5	STR	3'-9"	172
H3	32	#5	STR	14'-8"	490
S1	47	#4	2	10'-11"	343
S2	47	#4	3	3'-8"	115
S3	24	#4	4	6'-6"	104
V1	62	#4	STR	5'-7"	231
V2	68	#4	STR	9'-7"	435

REINFORCING STEEL = 4596 LBS

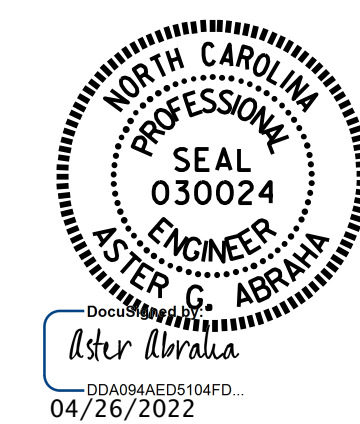
CLASS A CONCRETE
 POUR #1 (CAP, CONCRETE COLLARS & LOWER PART OF WINGS) 25.2 C.Y.
 POUR #2 (UPPER PART OF WINGS AND BACKWALL) 1.7 C.Y.
 TOTAL 26.9 C.Y.



PILE SPLICE DETAILS

PROJECT NO. B-5694
 BLADEN COUNTY
 STATION: 21+85.10 -L-

SHEET 3 OF 3

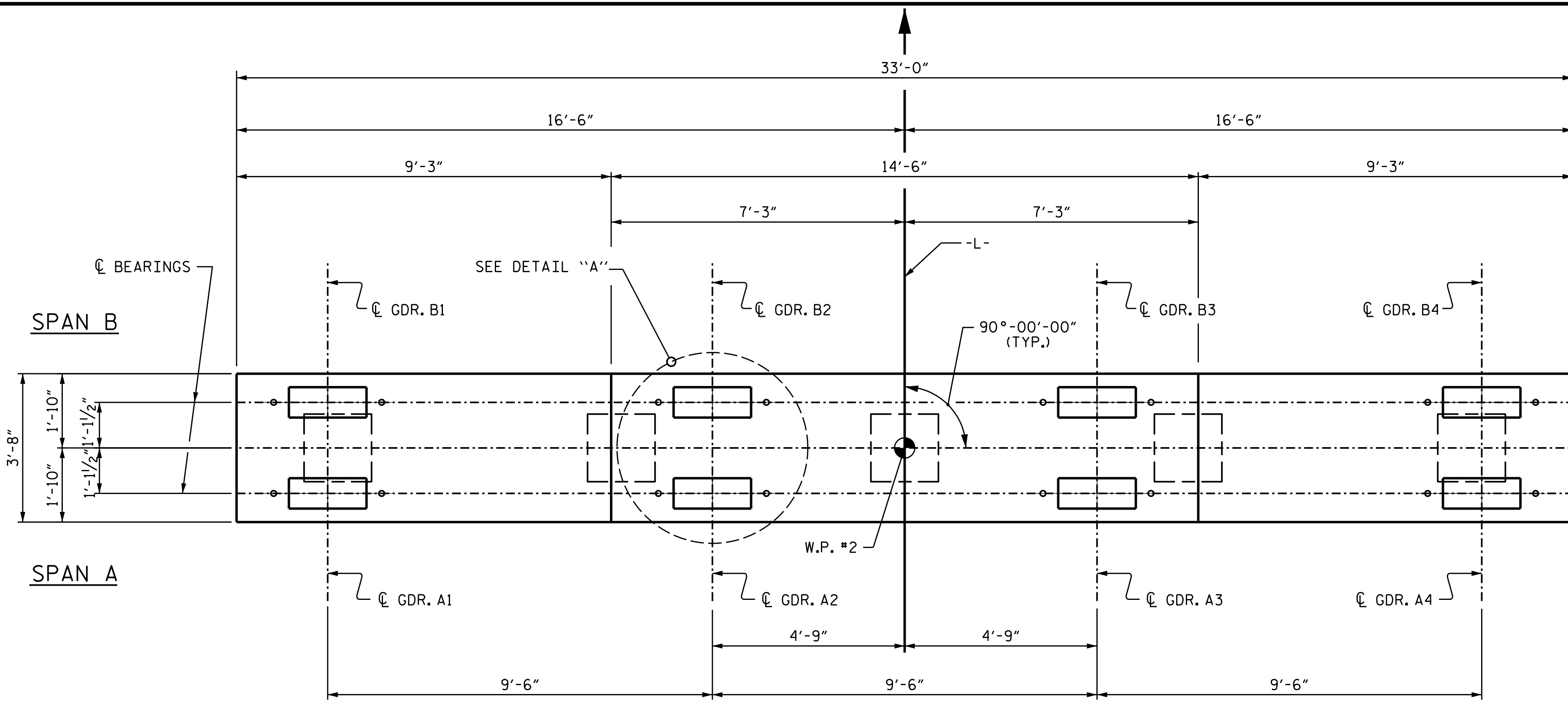


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 INTEGRAL
 END BENT 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-26
1			3			TOTAL SHEETS
2			4			37

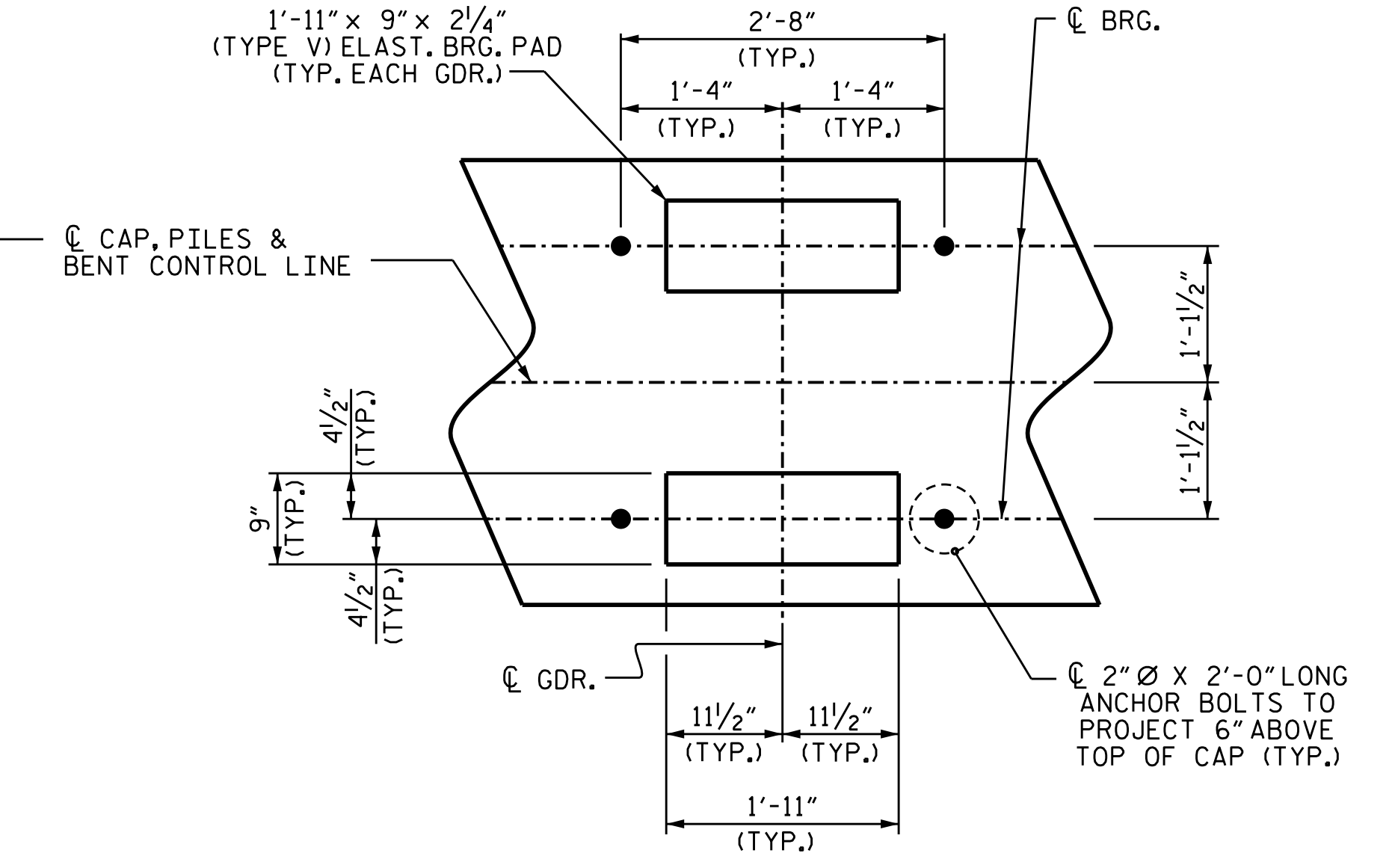
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



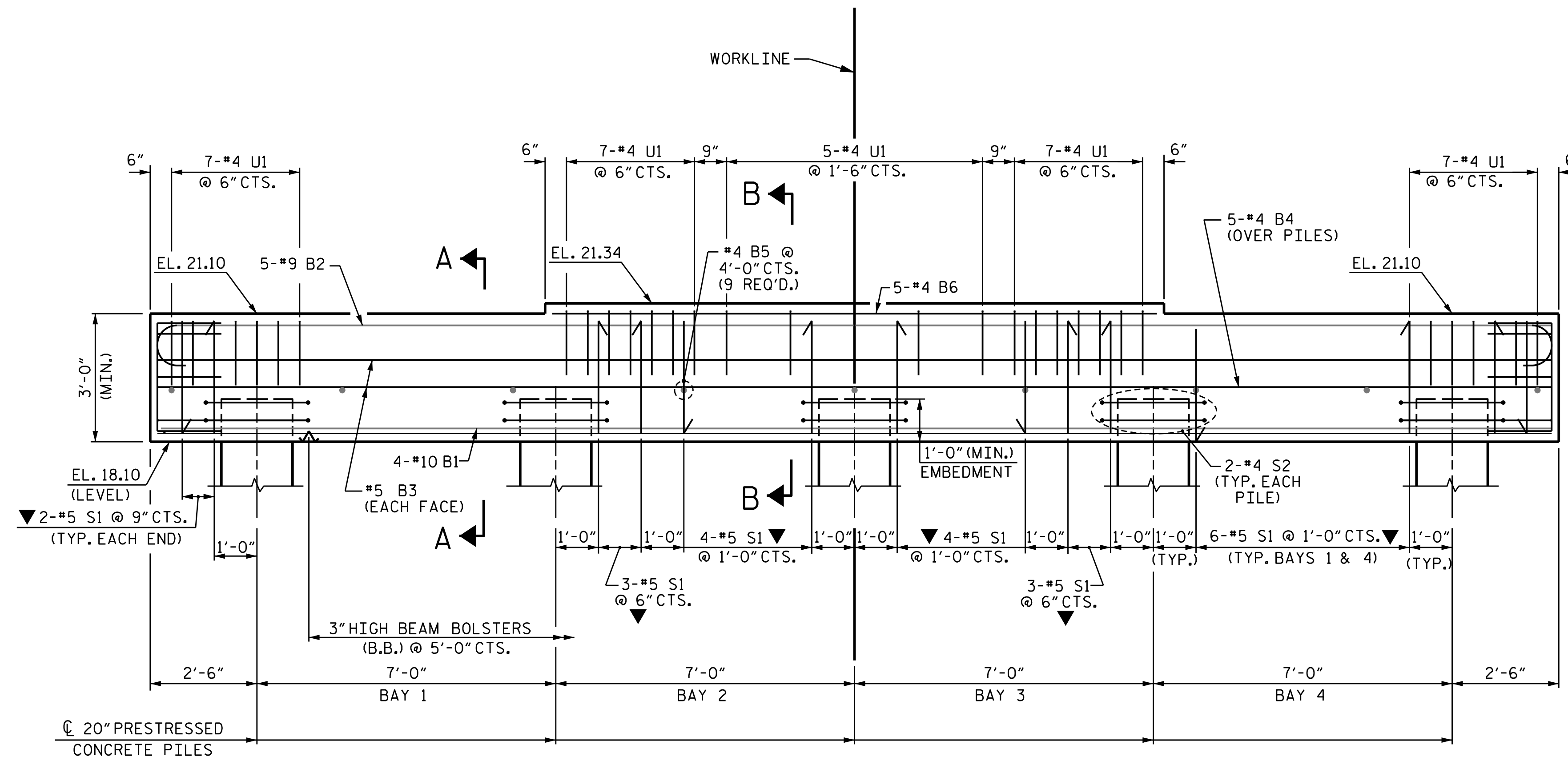
PLAN

NOTES:

STIRRUPS AND U1 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 FOR PRESTRESSED CONCRETE PILE DETAILS, SEE SHEET 5 OF 5



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



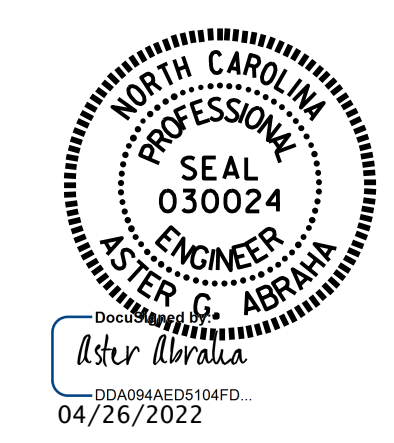
ELEVATION

FOR ADDITIONAL REINFORCING STEEL IN ENDS OF CAP, SEE SHEET 2 OF 5.

▼ INVERT ALTERNATE STIRRUPS

PROJECT NO. B-5694
 BLADEN COUNTY
 STATION: 21+85.10 -L-

SHEET 1 OF 5



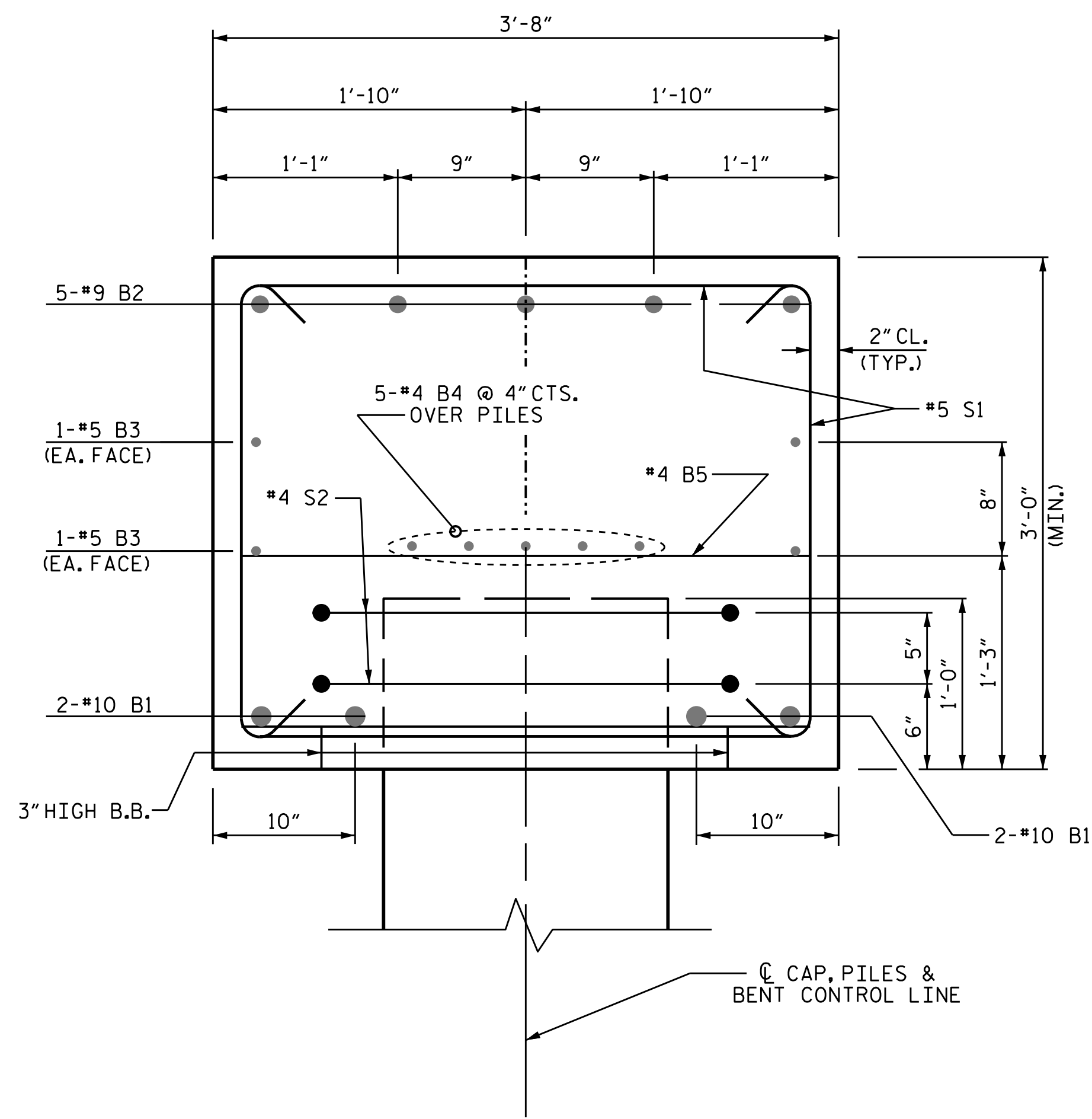
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT 1

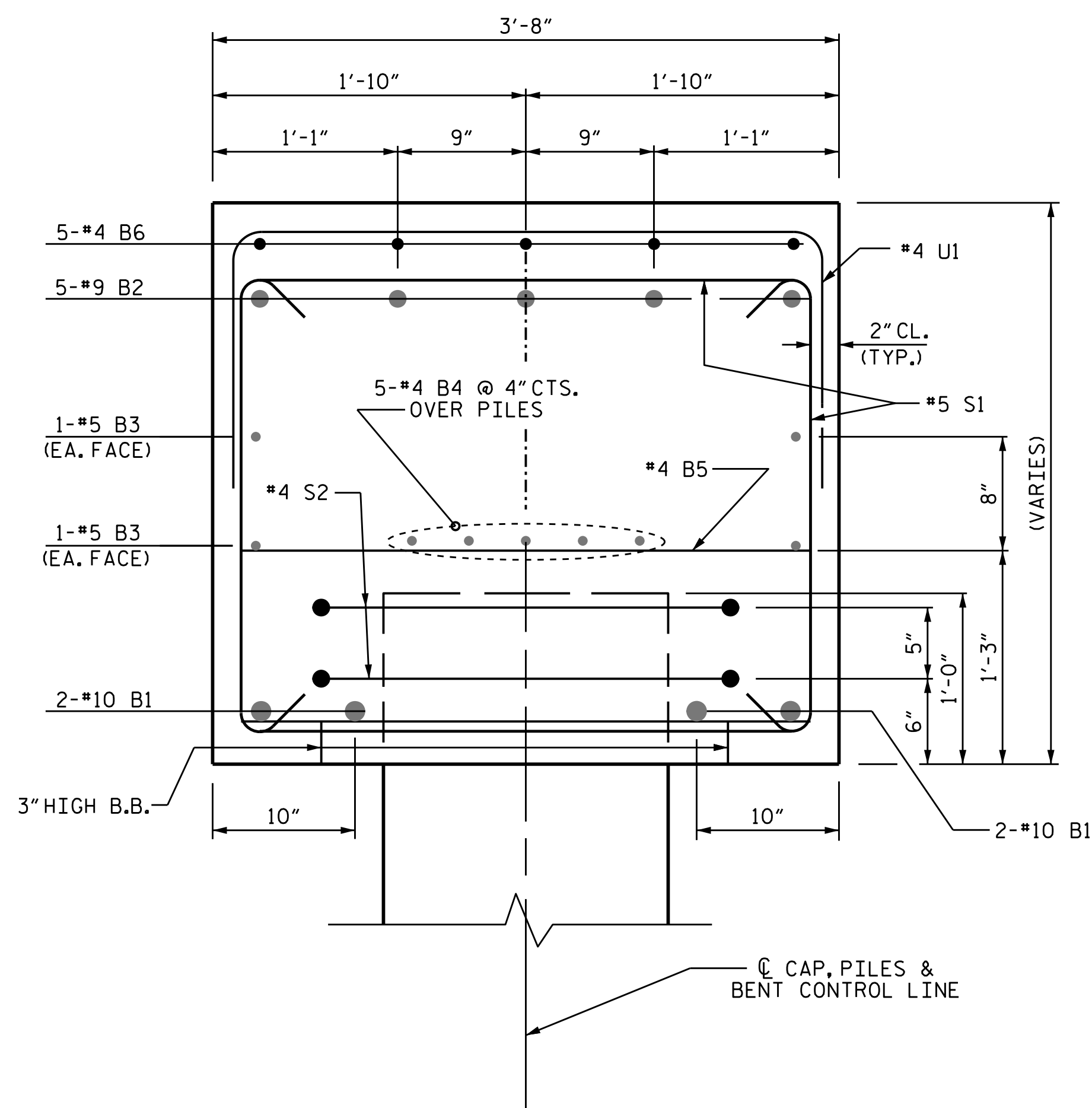
DRAWN BY: M.M. AHMED DATE: 8/27/19
 CHECKED BY: S. WANCE DATE: 8/19
 DESIGN ENGINEER OF RECORD: M.M. AHMED DATE: 07/19

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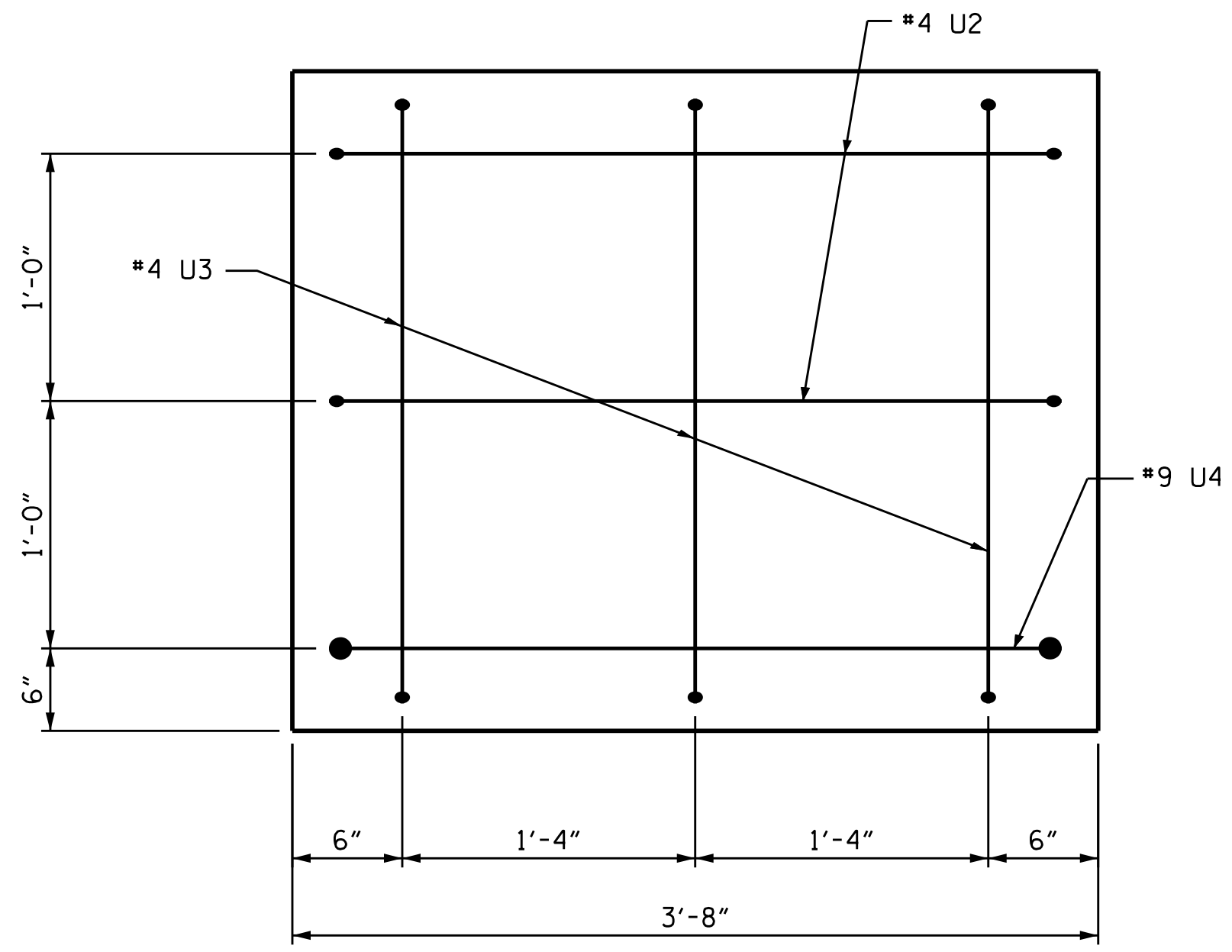
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-27
1			3			TOTAL SHEETS
2			4			37



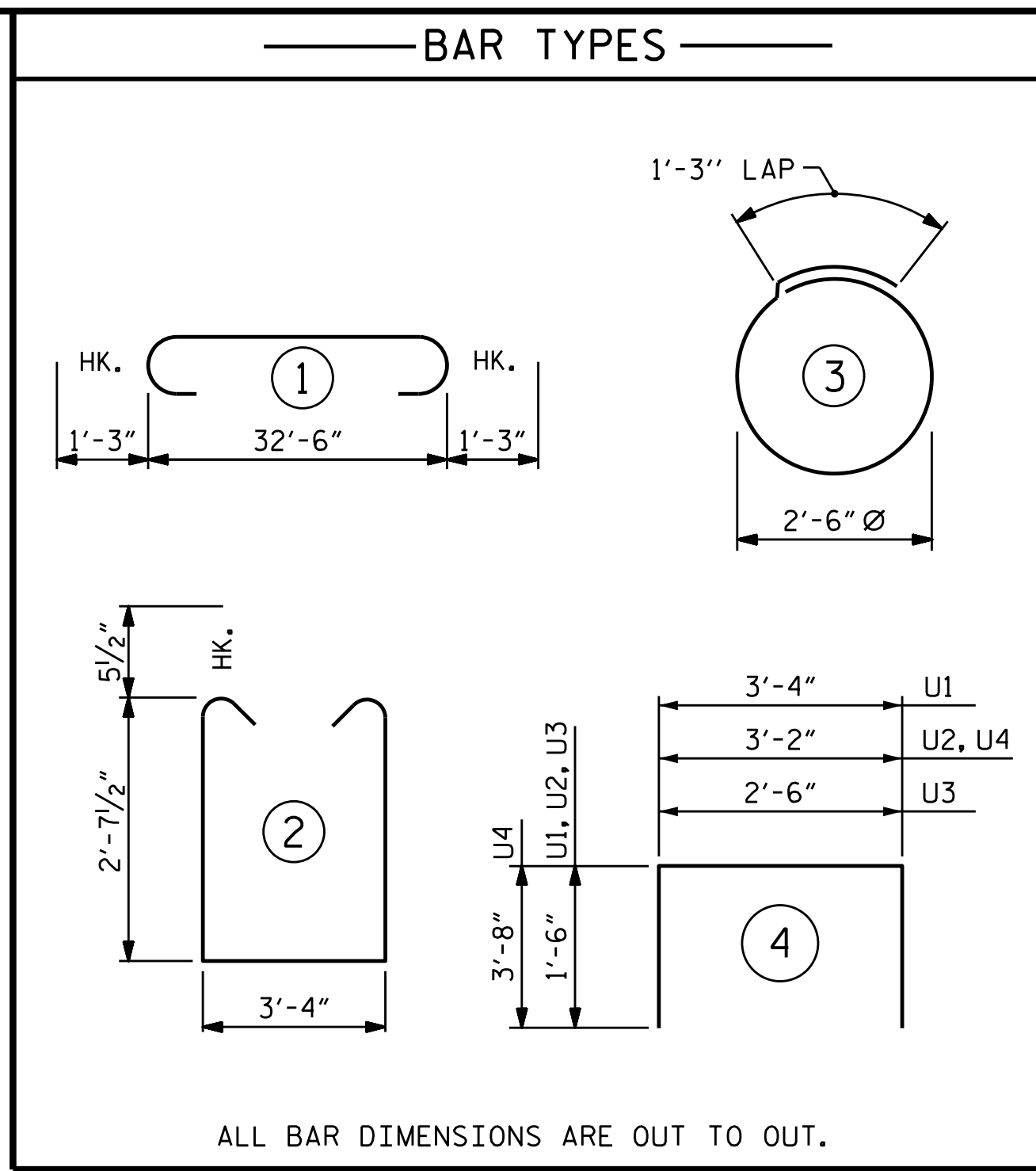
SECTION A-A



SECTION B-B



END OF CAP VIEW
(TYPICAL BOTH ENDS)



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	STR	32'-8"	562
B2	5	#9	1	35'-0"	595
B3	4	#5	STR	32'-8"	136
B4	5	#4	STR	32'-8"	109
B5	9	#4	STR	3'-4"	20
B6	5	#4	STR	14'-2"	47
S1	30	#5	2	9'-6"	297
S2	10	#4	3	9'-2"	61
U1	33	#4	4	6'-4"	140
U2	4	#4	4	6'-2"	16
U3	6	#4	4	5'-6"	22
U4	2	#9	4	10'-6"	71

REINFORCING STEEL _____ 2076 LBS

CLASS A CONCRETE

TOTAL CLASS A CONCRETE _____ ▲13.5 C.Y.

▲ CONCRETE DISPLACED BY THE 20" PRESTRESSED CONCRETE PILES HAS BEEN DEDUCTED FROM THE CONCRETE QUANTITY.

PROJECT NO. B-5694
BLADEN COUNTY
 STATION: 21+85.10 -L-

SHEET 2 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

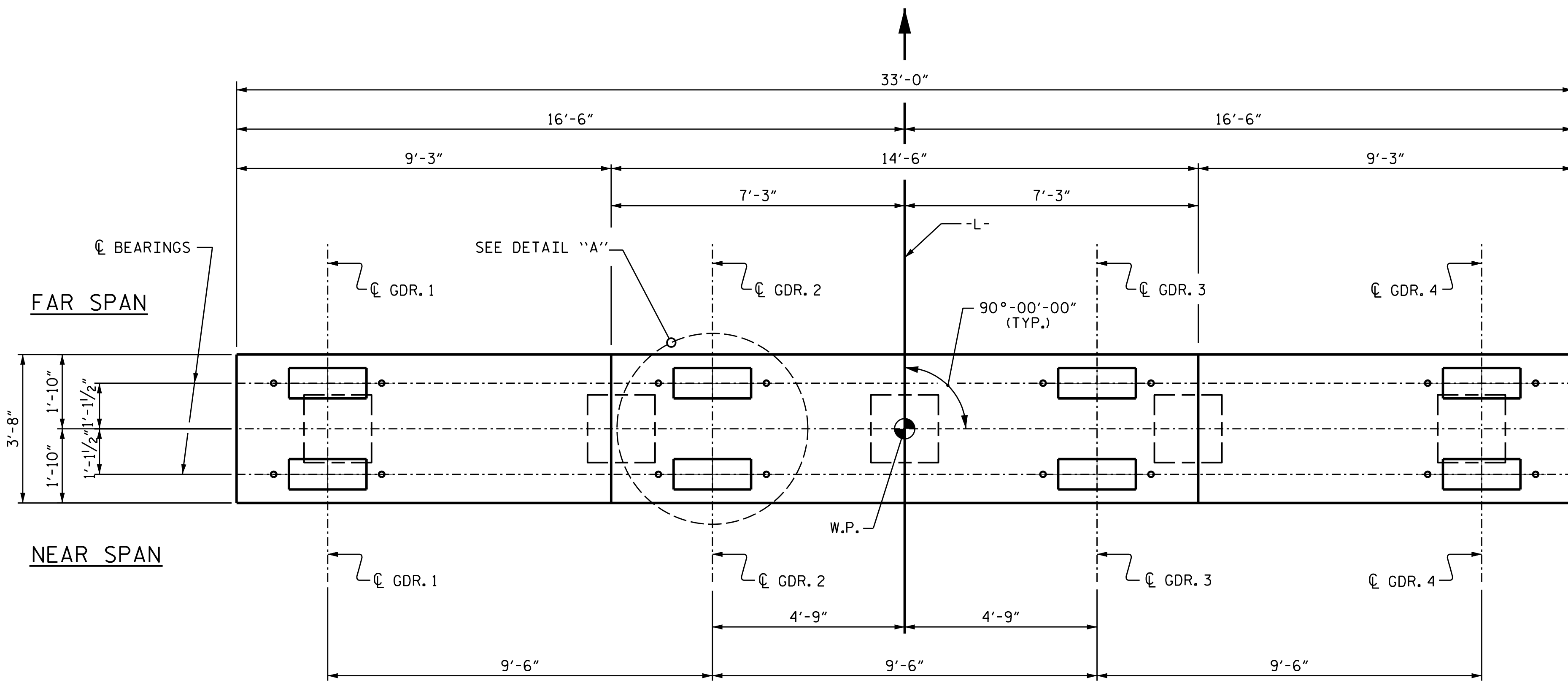
SUBSTRUCTURE
 BENT 1



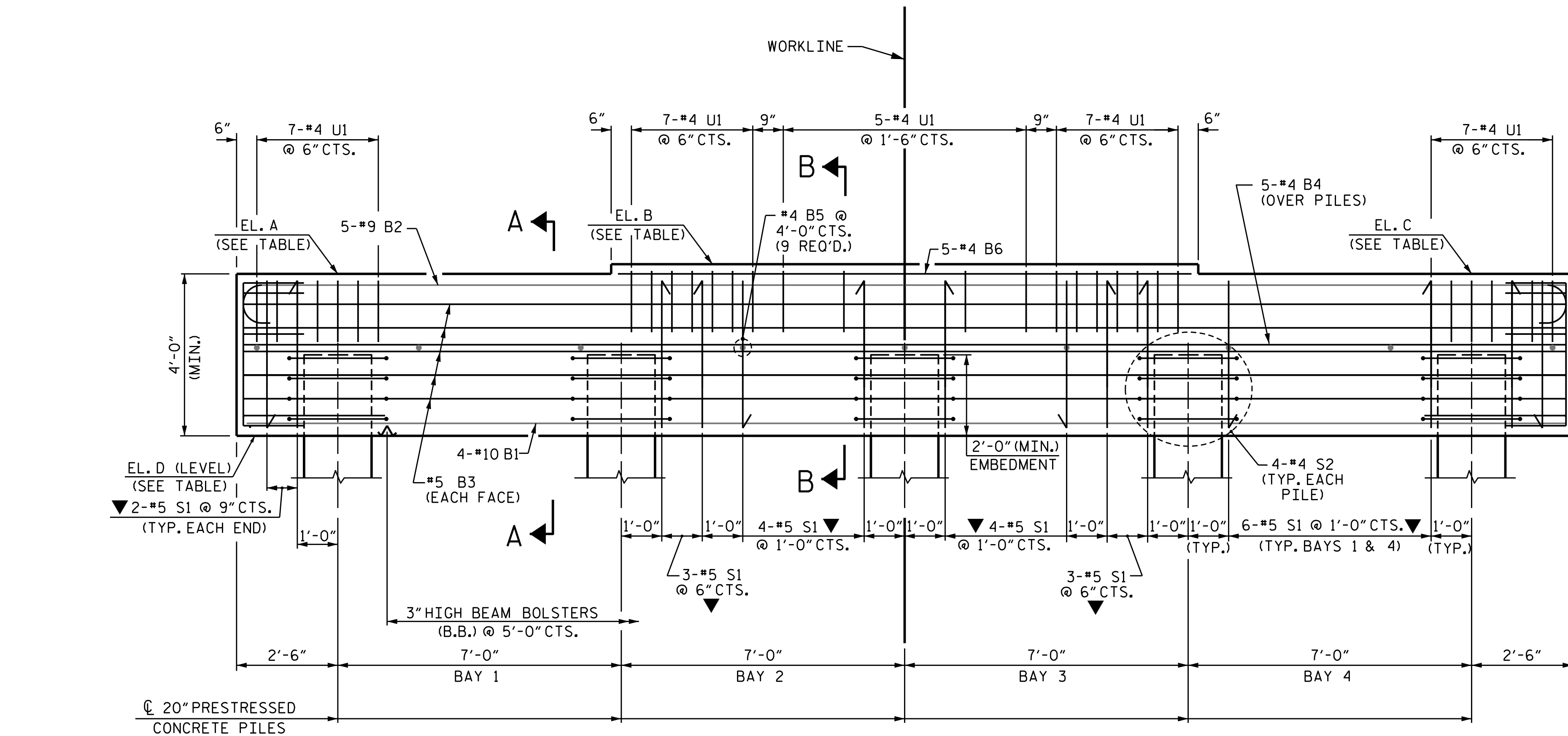
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-28
1			3			TOTAL SHEETS
2			4			37

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DRAWN BY: M.M. AHMED DATE: 8/27/19
 CHECKED BY: S. WANCE DATE: 8/19
 DESIGN ENGINEER OF RECORD: M.M. AHMED DATE: 07/19



PLAN

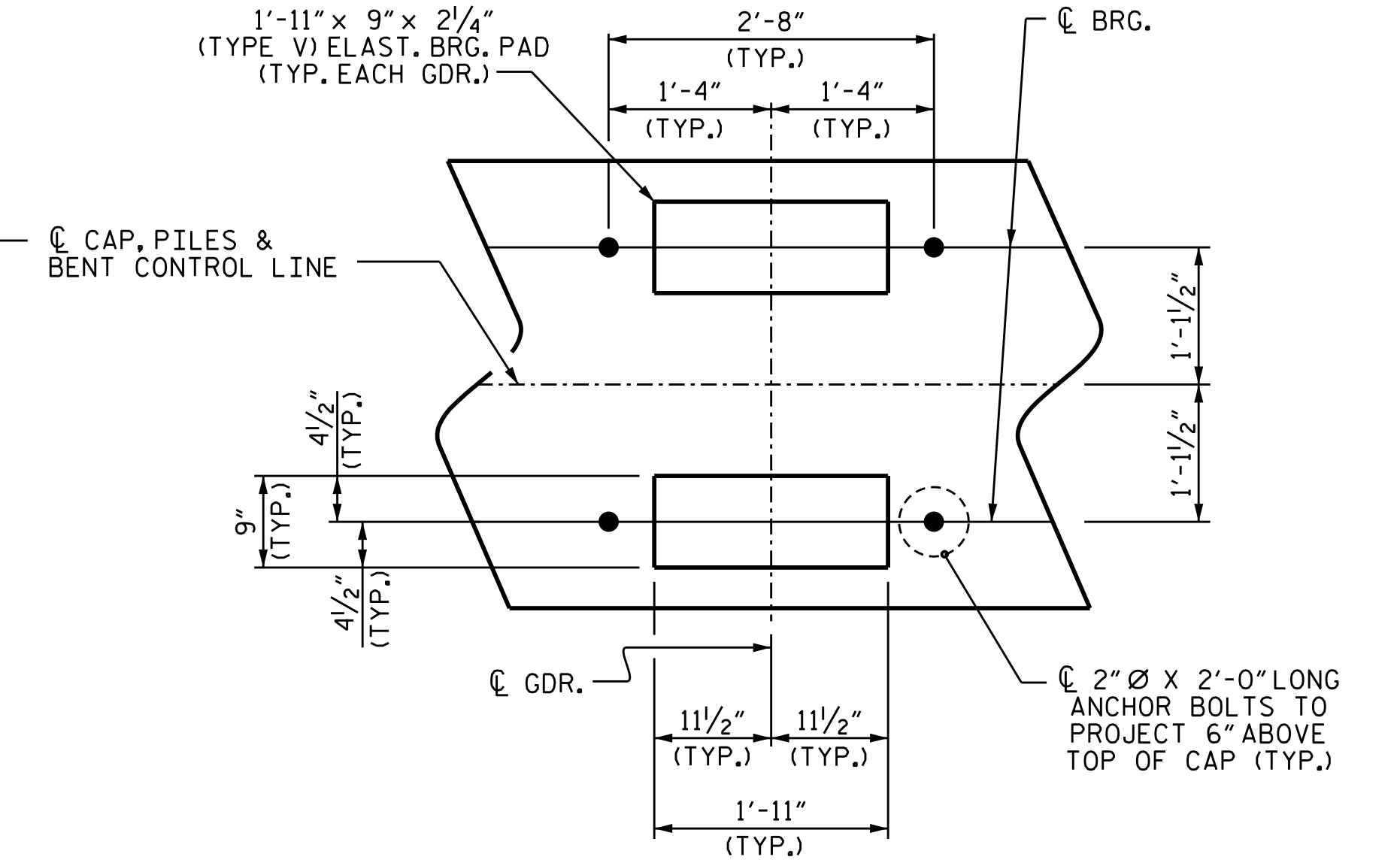


ELEVATION

NOTES:

STIRRUPS AND U1 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

FOR PRESTRESSED CONCRETE PILE DETAILS, SEE SHEET 5 OF 5



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

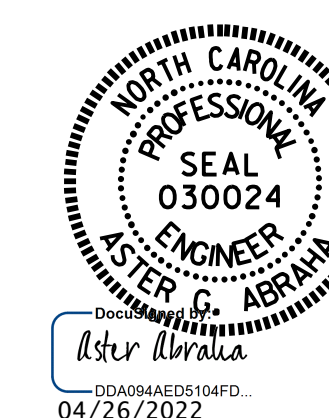
ELEVATION	A	B	C	D
BENT 2	21.37	21.61	21.37	17.37
BENT 3	21.67	21.91	21.67	17.67

FOR ADDITIONAL REINFORCING STEEL IN ENDS OF CAP, SEE SHEET 4 OF 5.

▼ INVERT ALTERNATE STIRRUPS

PROJECT NO. B-5694
BLADEN COUNTY
 STATION: 21+85.10 -L-

SHEET 3 OF 5



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

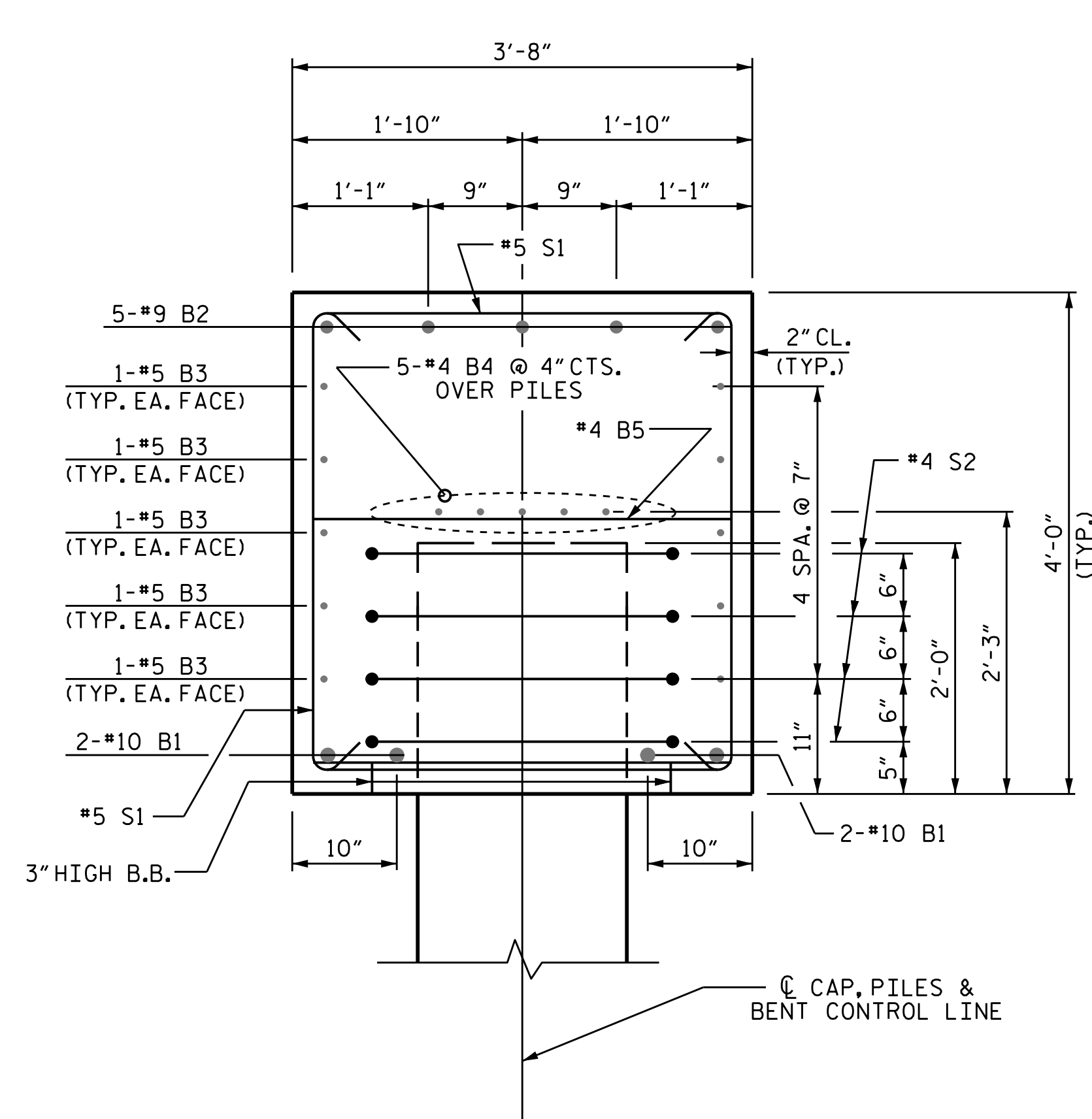
SUBSTRUCTURE
 BENT 2 & 3

DRAWN BY: M.M. AHMED DATE: 8/27/19
 CHECKED BY: A ABRAHA DATE: 3/3/22
 DESIGN ENGINEER OF RECORD: M.M. AHMED DATE: 07/19

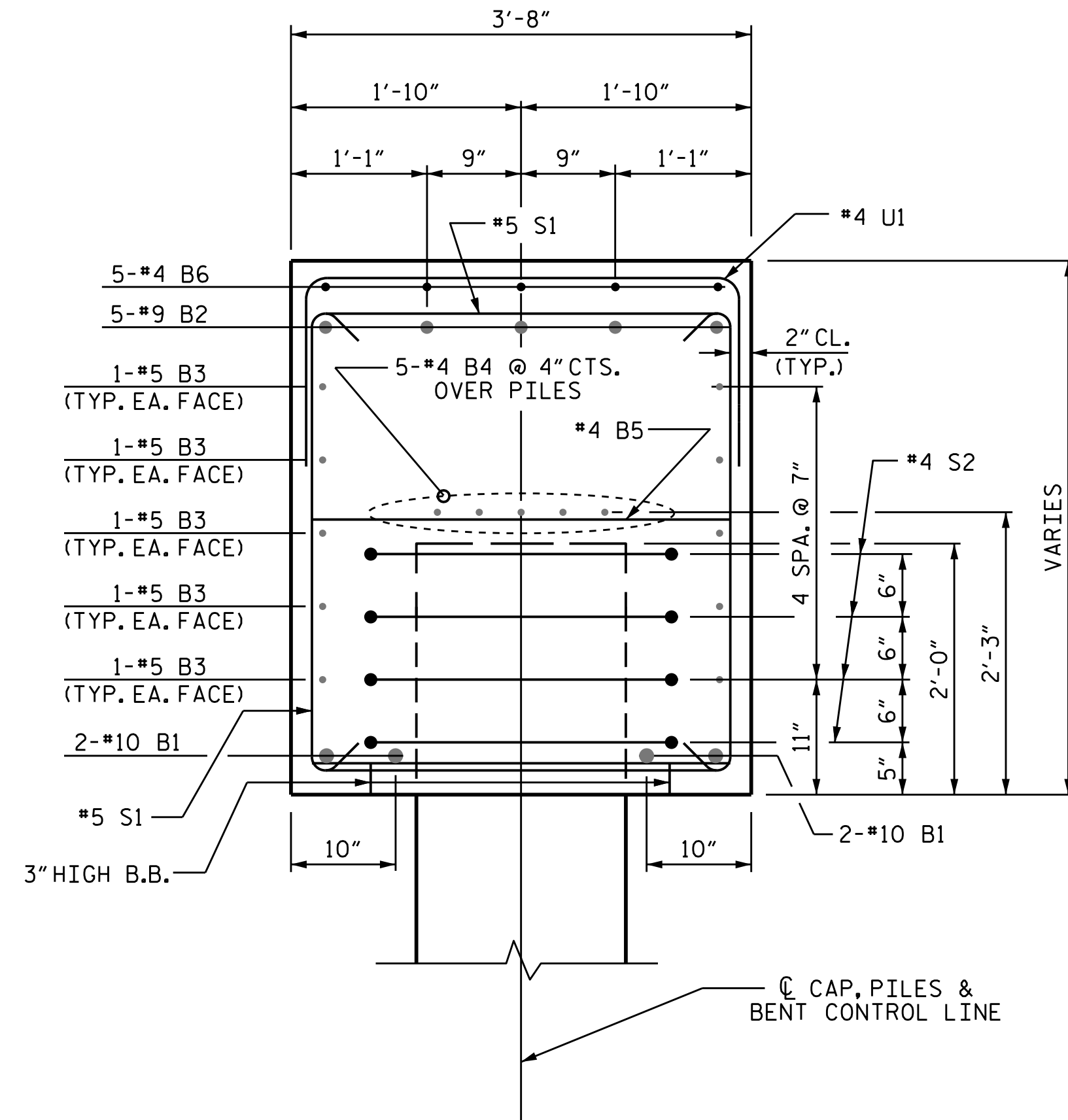
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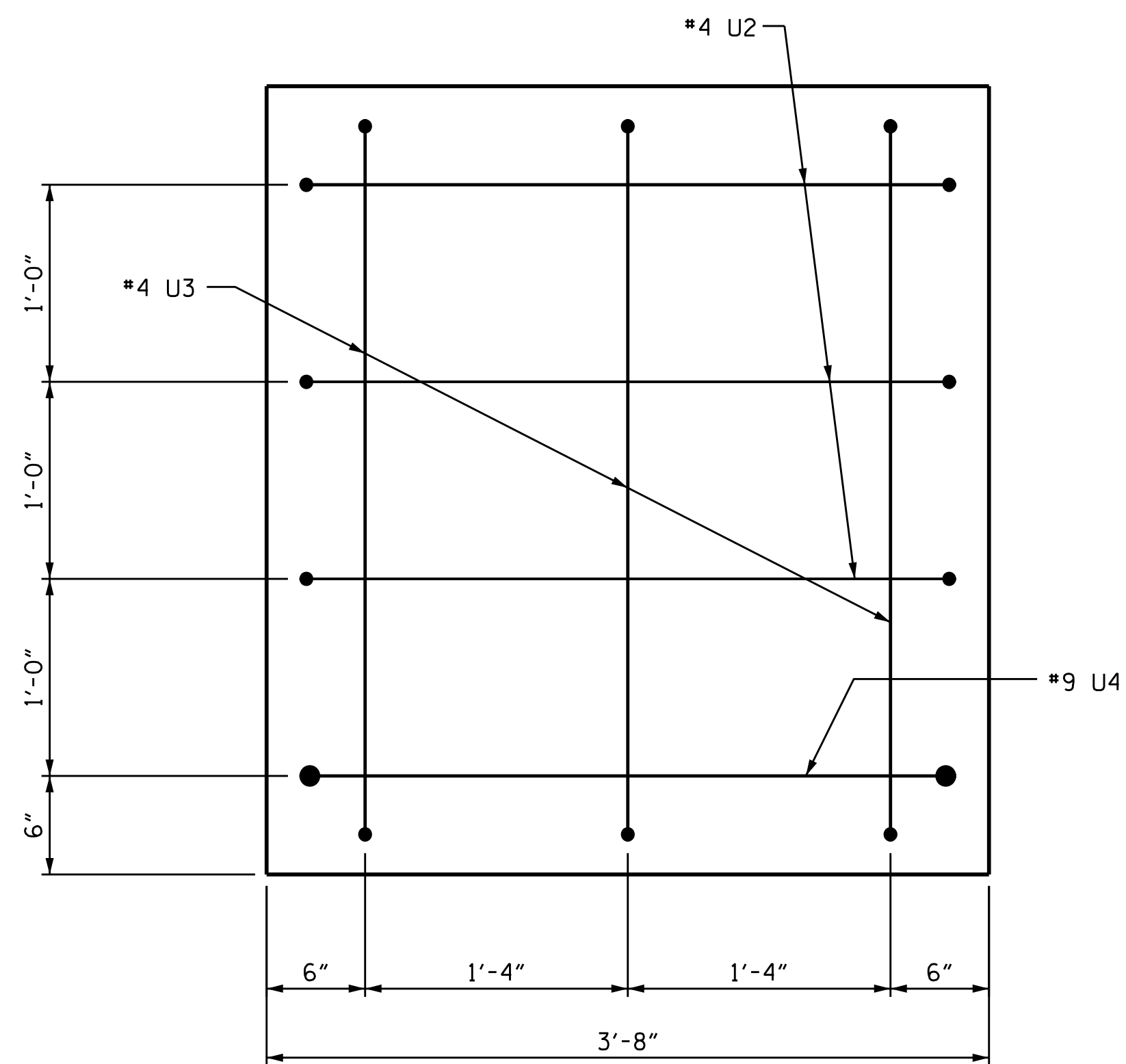
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-29
1			3			TOTAL SHEETS
2			4			37



SECTION A-A



SECTION B-B



END OF CAP VIEW
(TYPICAL BOTH ENDS)

— BAR TYPES —

BILL OF MATERIAL					
FOR ONE BENT (2 REQUIRED)					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	STR	32'-8"	562
B2	5	#9	1	35'-0"	595
B3	10	#5	STR	32'-8"	341
B4	5	#4	STR	32'-8"	109
B5	9	#4	STR	3'-4"	20
B6	5	#4	STR	14'-2"	47
S1	30	#5	2	11'-6"	360
S2	20	#4	3	9'-2"	122
U1	33	#4	4	6'-4"	140
U2	6	#4	4	6'-2"	25
U3	6	#4	4	6'-6"	26
U4	2	#9	4	10'-6"	71
REINFORCING STEEL					2418 LBS
CLASS A CONCRETE					
TOTAL CLASS A CONCRETE					▲17.5 C.Y.
▲ CONCRETE DISPLACED BY THE 20" PRESTRESSED CONCRETE PILES HAS BEEN DEDUCTED FROM THE CONCRETE QUANTITY.					

ALL BAR DIMENSIONS ARE OUT TO OUT.

DRAWN BY : M.M. AHMED DATE : 8/27/19
 CHECKED BY : S. WANCE DATE : 8/19
 DESIGN ENGINEER OF RECORD: M.M. AHMED DATE : 07/19

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PROJECT NO. B-5694
 BLADEN COUNTY
 STATION: 21+85.10 -L-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT 2 & 3

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-30
1			3			TOTAL SHEETS
2			4			37

NOTES

PRESTRESSED CONCRETE STRENGTH : $f'_c = 7,500$ PSI

BUILD-UP CONCRETE STRENGTH : $f'_c = 7,500$ PSI

STRAND DATA:

SIZE	GRADE	AREA	ULTIMATE STRENGTH	APPLIED PRESTRESS FORCE
1/2"	270 L.R.	0.153	41,300* PER STRAND	30,980* PER STRAND
0.6"	270 L.R.	0.217	58,600* PER STRAND	43,940* PER STRAND

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW-RELAXATION GRADE 270 STRANDS CONFORMING TO AASHTO M203. STRAND SAMPLING REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

AT THE CONTRACTOR'S OPTION, 1/2" OR 0.6" STRANDS MAY BE USED IN THE STRAND CONFIGURATION SHOWN IN THE TYPICAL SECTION DETAIL. MIXING OF STRAND SIZE IS NOT ALLOWED.

THE SLIP-FORM METHOD OF CASTING PILES WILL NOT BE PERMITTED.

TRANSFER THE LOAD FROM THE ANCHORAGES TO THE PILE AFTER THE CONCRETE HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI.

IF STRAND STRESS IS RELIEVED BY BURNING, THE STRANDS SHALL BE BURNED IN OPPOSITE PAIRS AS INDICATED IN THE TYPICAL PATTERN SHOWN. FOR ANY NUMBER OF STRANDS, BURN IN OPPOSITE PAIRS AND SYMMETRICALLY ABOUT BOTH THE VERTICAL AND HORIZONTAL AXES. STRANDS 1-1 SHALL BE BURNED BEFORE 2-2, ETC. NOT MORE THAN 4 STRANDS, SAY 5-5 AND 6-6, MAY BE BURNED AT ANY ONE SECTION BEFORE THESE SAME PAIRS OF STRANDS ARE BURNED AT BOTH ENDS OF THE BED AND BETWEEN EACH PAIR OF PILES IN THE BED.

PROPOSED DEVICES FOR LIFTING PILES, RECESS DETAILS, AND PATCHING MATERIAL SHALL BE DETAILED IN SHOP DRAWINGS. AFTER ATTACHMENTS HAVE BEEN REMOVED, OPENINGS SHALL BE REPAIRED SUCH THAT THE APPEARANCE OF THE PILE IS UNIFORM.

WHERE CAST-IN-PLACE LIFTING DEVICES ARE NOT USED, PICK-UP POINTS ARE TO BE INDICATED WITH A 2" WIDE BLACK MARK.

DRIVE PILES USING A METHOD APPROVED BY THE ENGINEER, WHEREBY THE HEAD OF THE PILE IS NOT DAMAGED.

DRIVING OF THE BUILT-UP PILE WILL NOT BE PERMITTED UNTIL THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF 5,000 PSI AND UNTIL A PERIOD OF SEVEN DAYS HAS ELAPSED SINCE CASTING OF THE BUILD-UP.

DOWEL INSTALLATION FOR OPTIONAL BUILD-UP

GROUT COMPRESSIVE STRENGTH: $f'_c = 5,000$ PSI

BEFORE DRILLING DOWEL HOLES, REMOVE THE UPPER 3" OF CONCRETE FROM THE TOP OF THE PILE WITHOUT DAMAGE TO THE REINFORCING STEEL. THE REMOVAL PLANE SHOULD BE NORMAL TO THE EDGE OF THE PILE.

DOWEL HOLES SHALL BE POSITIONED TO MAINTAIN 1/2" CLEAR TO ALL EXISTING PRESTRESSING STRANDS IN THE CONCRETE PILE.

FIELD DRILLED HOLES SHALL BE CLEAN AND FREE OF ANY OBSTRUCTIONS BEFORE GROUTING OF DOWELS. DOWEL BARS SHALL BE INSTALLED AND GROUTED WITH AN APPROVED NON-SHRINK GROUT.

THE SPIRAL REINFORCING IN ALL BUILD-UPS SHALL BE W4.0 COLD DRAWN WIRE WHICH SHALL BE SECURED TO THE LONGITUDINAL REINFORCEMENT TO MAINTAIN PITCH.

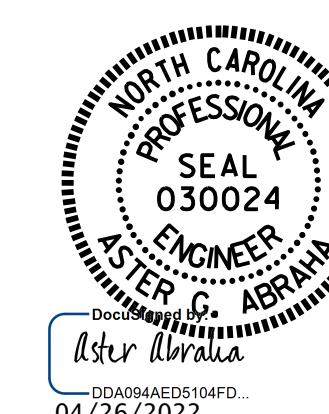
THE SPIRAL REINFORCING IN THE BUILD-UP AND THE PRESTRESSED CONCRETE PILE SHALL BE SPLICED BY OVERLAPPING A MIN. OF ONE TURN.

PROJECT NO. B-5694
BLADEN COUNTY
 STATION: 21+85.10 -L-

SHEET 5 OF 5

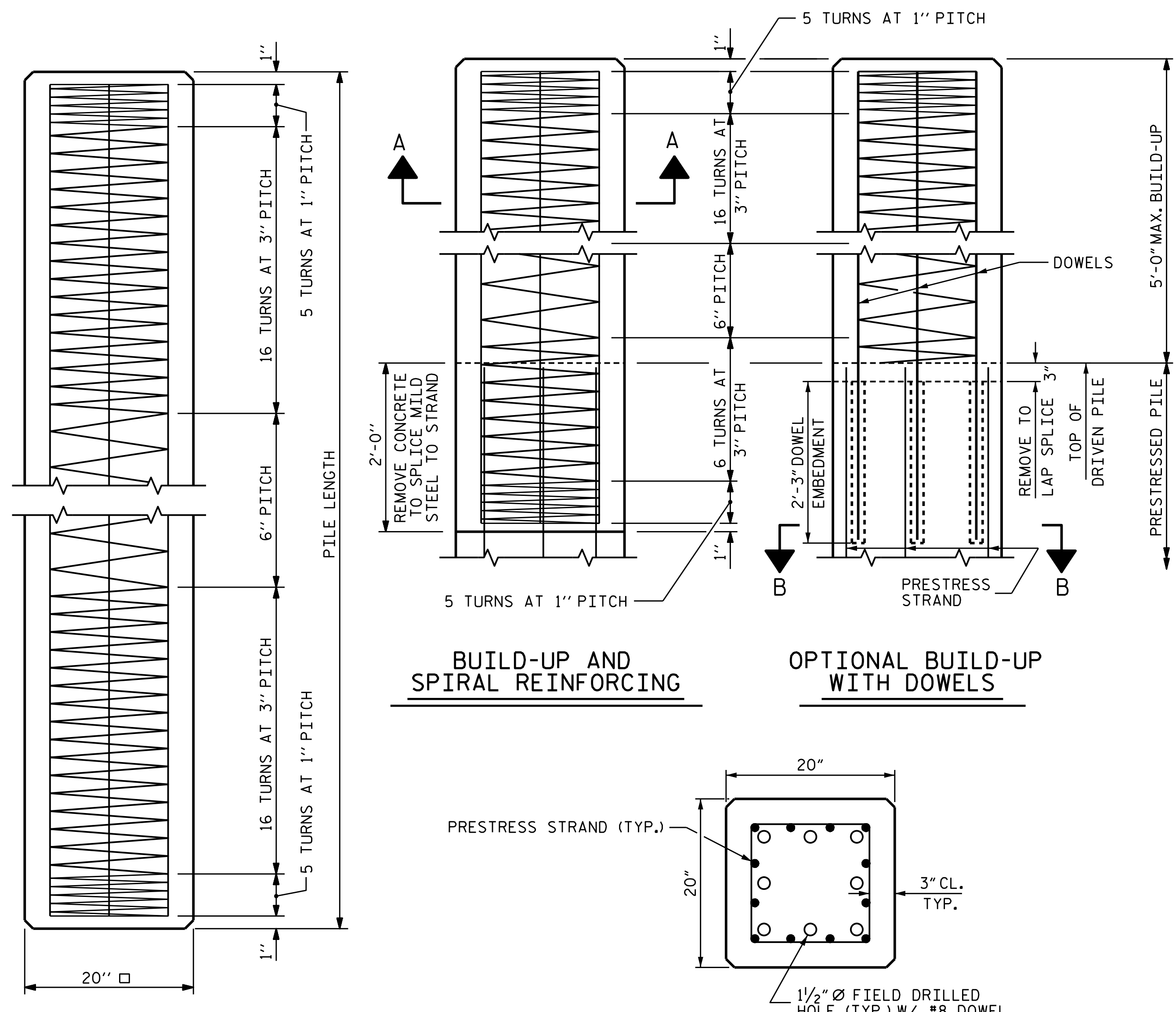
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
 20" PRESTRESSED
 CONCRETE PILE



NO.	REVISIONS			SHEET NO.
	BY:	DATE:	DATE:	
1				S-31
2				TOTAL SHEETS
				37

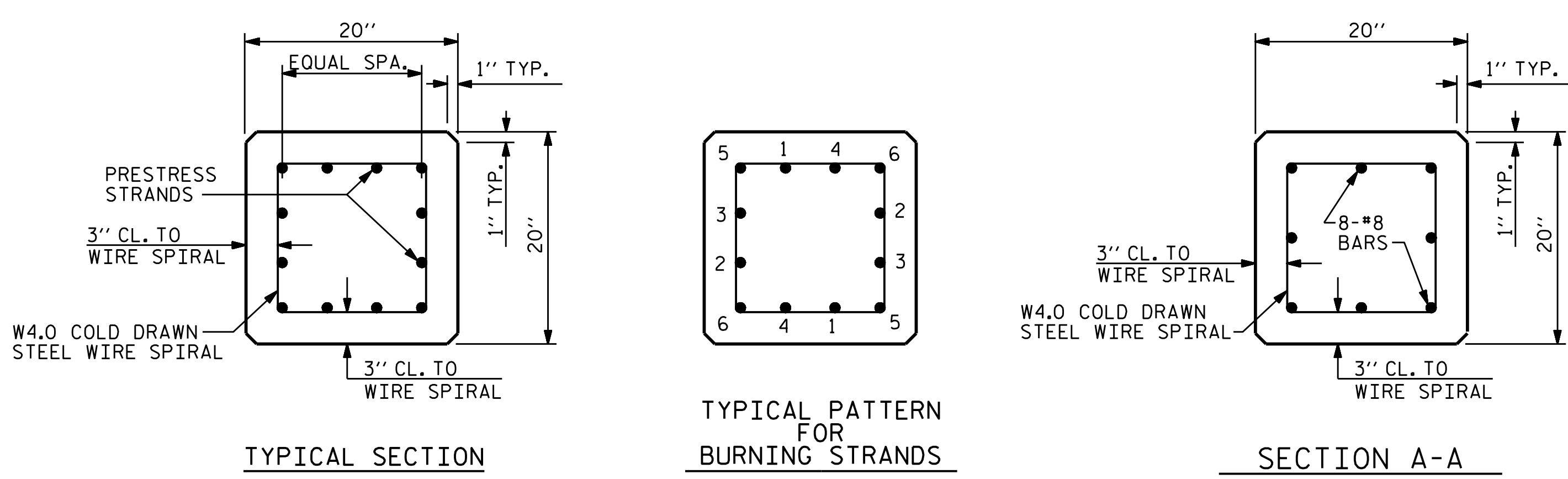
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QUANTITIES FOR ONE 20" SQUARE PILE

LENGTH	CONCRETE CU. YDS.	PILE WT. TONS	ONE POINT PICK-UP		TWO POINT PICK-UP	
			0.3L	0.7L	0.207L	0.586L
25'-0"	2.56	5.18	7'-6"	17'-6"		
30'-0"	3.07	6.22	9'-0"	21'-0"		
35'-0"	3.58	7.26	10'-6"	24'-6"		
40'-0"	4.09	8.29	12'-0"	28'-0"		
45'-0"	4.61	9.33	13'-6"	31'-6"		
50'-0"	5.12	10.36	15'-0"	35'-0"		
55'-0"	5.63	11.40	16'-6"	38'-6"		
60'-0"	6.14	12.44	18'-0"	42'-0"		
65'-0"	6.65	13.47			13'-5 1/2"	38'-1"
70'-0"	7.17	14.51			14'-6"	41'-0"
75'-0"	7.68	15.55			15'-6 1/2"	43'-11"
80'-0"	8.19	16.58			16'-6 1/2"	46'-11"
85'-0"	8.70	17.62			17'-7"	49'-10"

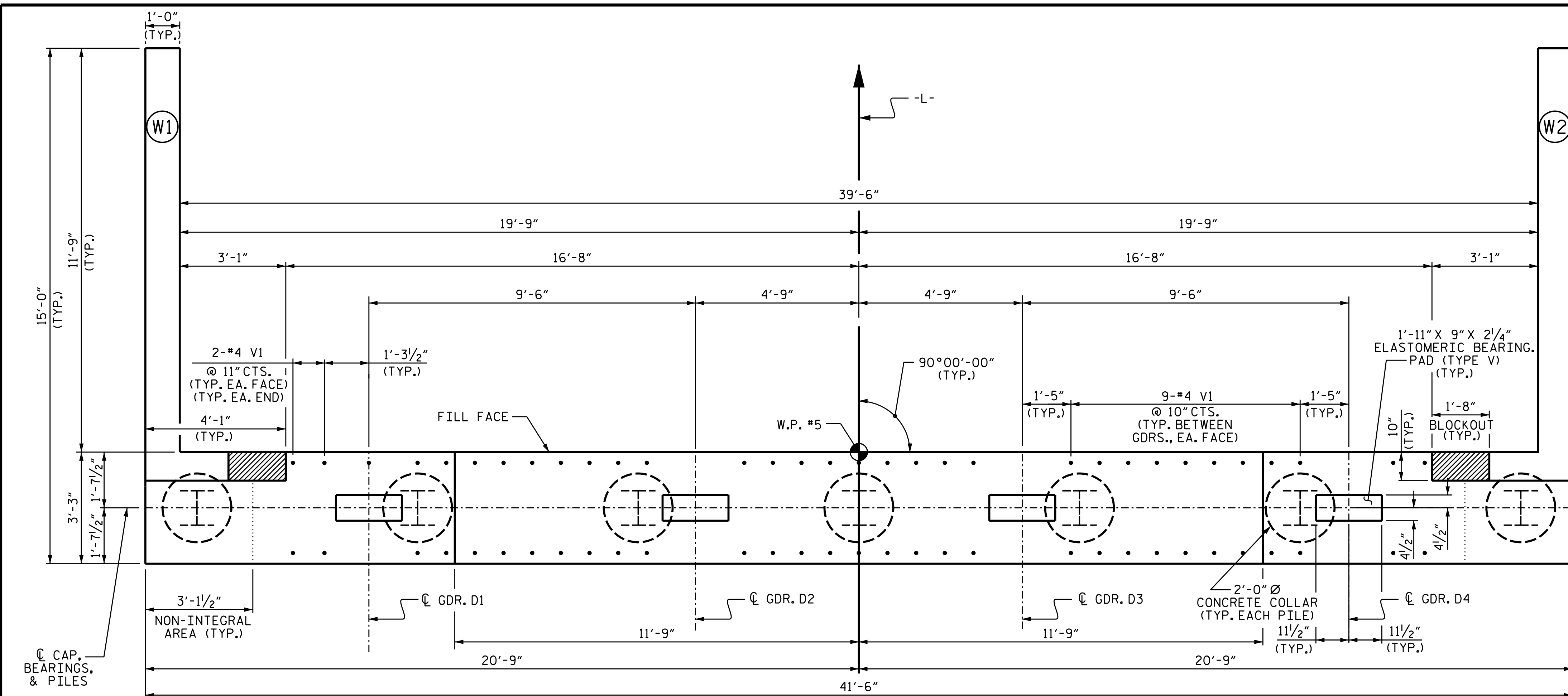
SECTION "B-B"
 (AT THE CONTRACTOR'S OPTION, PILE BUILD-UP MAY BE CONSTRUCTED WITH DOWELS.)



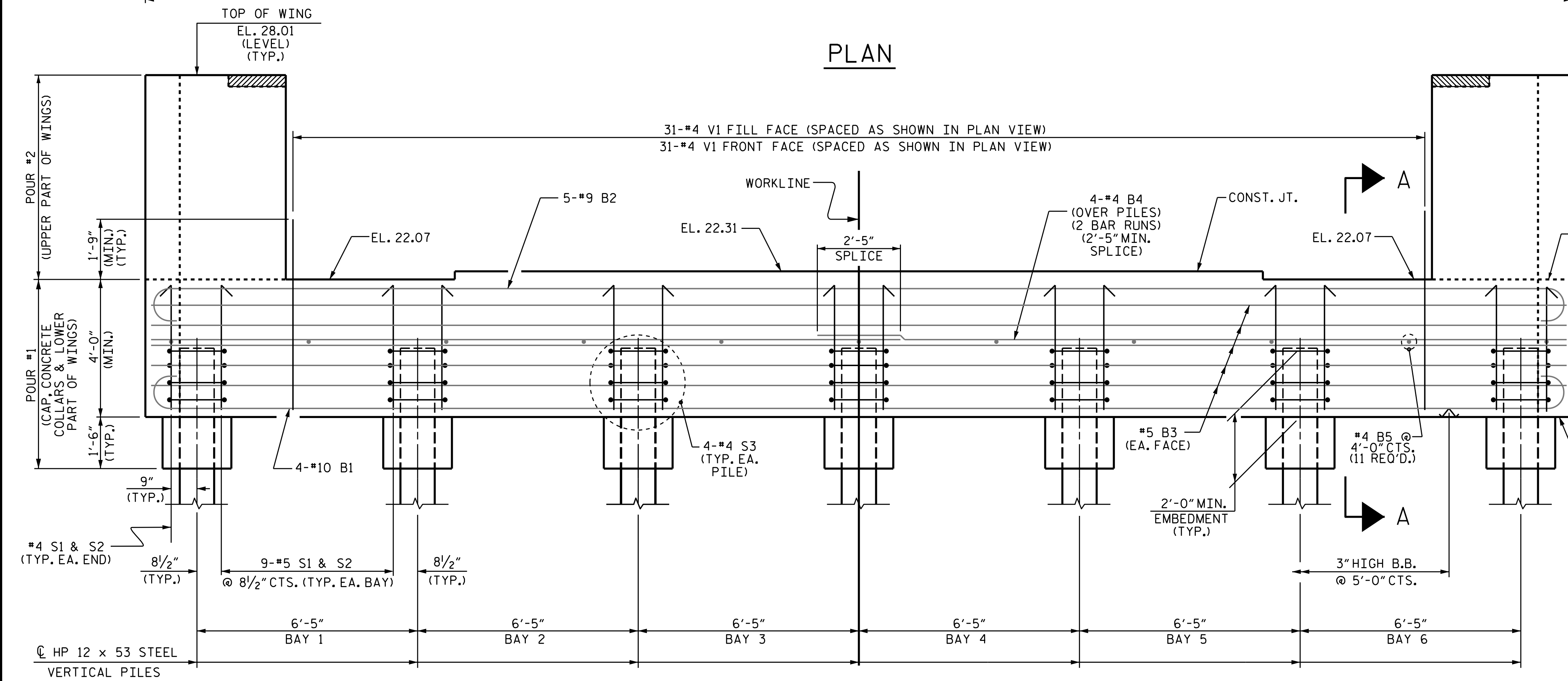
1/2" OR 0.6" Ø GRADE 270 L.R. PRESTRESS STRANDS

ASSEMBLED BY : M.M. AHMED DATE : 8/22/19
 CHECKED BY : S. WANCE DATE : 8/22/19
 DRAWN BY : WJH 1/89
 CHECKED BY : CRK 3/89

REV. 10/11 MAA/GM
 REV. 12/14 MAA/TMG
 REV. 12/17 MAA/THC



PLAN

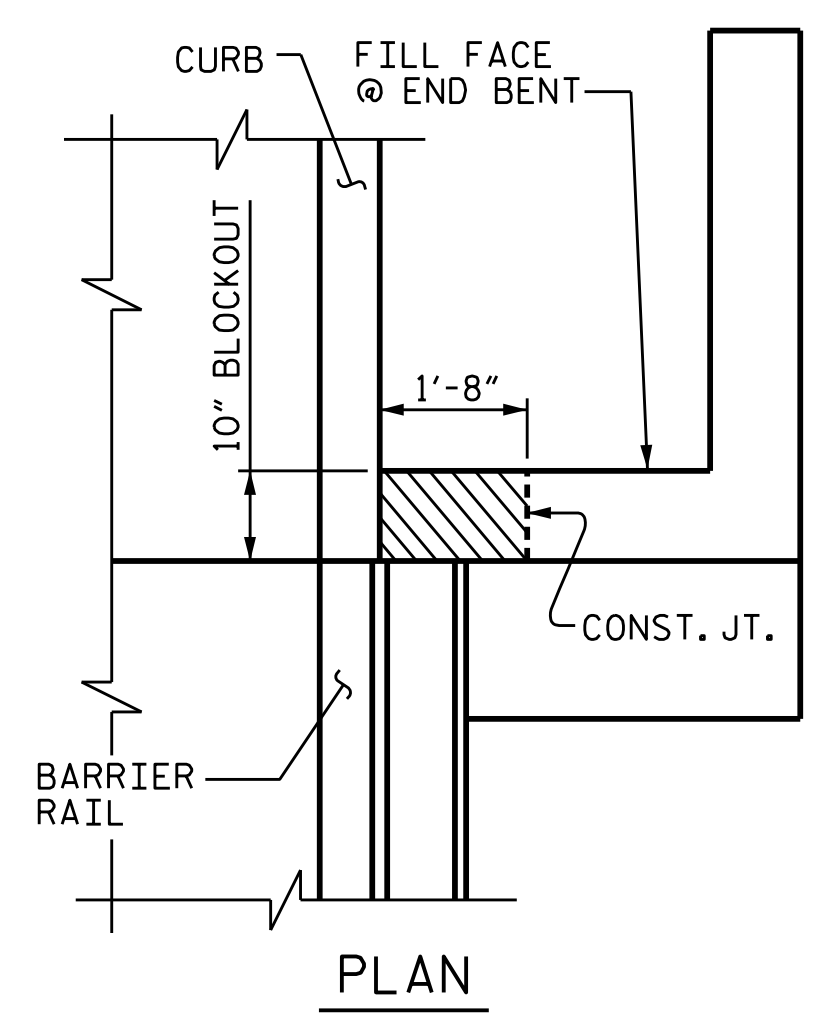


ELEVATION

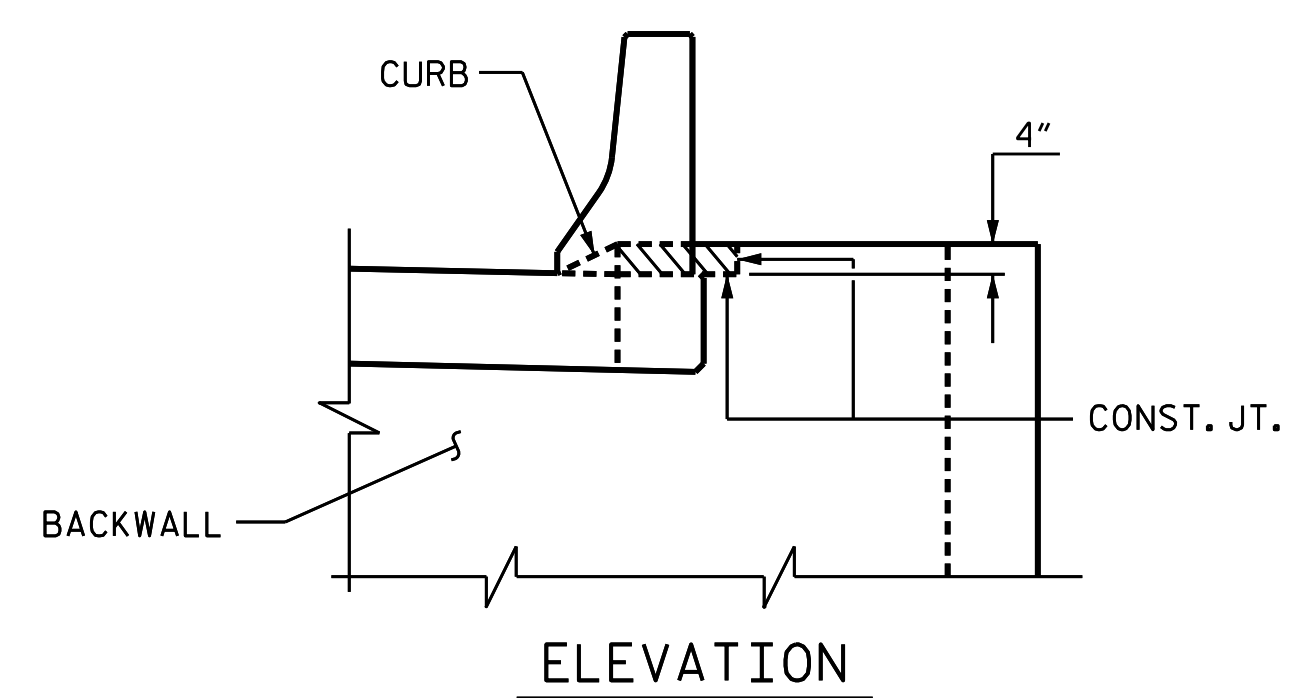
FOR SECTION A-A, SEE SHEET 3 OF 3

NOTES

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #4 VI BARS.
- THE TOP SURFACE OF POUR #1 OF THE END BENT CAP AND WINGS, EXCLUDING THE BEARING AREA AND NON-INTEGRAL AREA AT THE ENDS OF THE CAP, SHALL BE RAKED TO A DEPTH OF 1/4".
- THE UPPER PORTION OF THE INTEGRAL END BENT SHALL BE POURED WITH THE SUPERSTRUCTURE. SEE SUPERSTRUCTURE PLANS.
- THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAIL IS CAST AND IF SLIP FORM IS USED.



PLAN



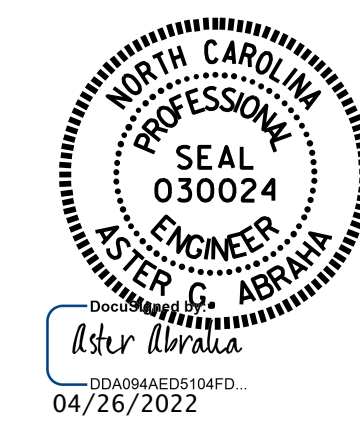
ELEVATION

BLOCKOUT IN WING WALL

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

PROJECT NO. B-5694
 BLADEN COUNTY
 STATION: 21+85.10 -L-

SHEET 1 OF 3



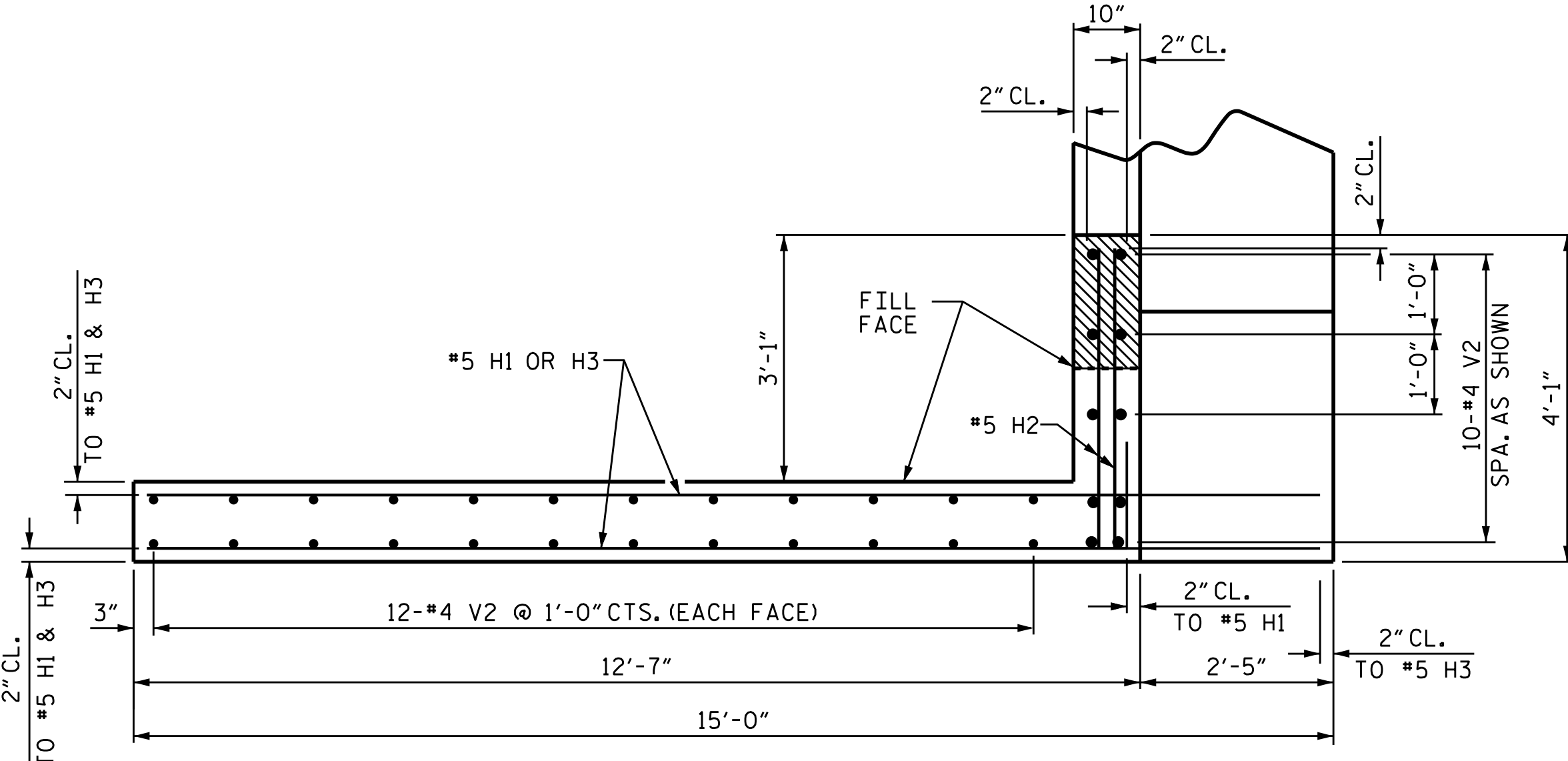
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 INTEGRAL
 END BENT 2**

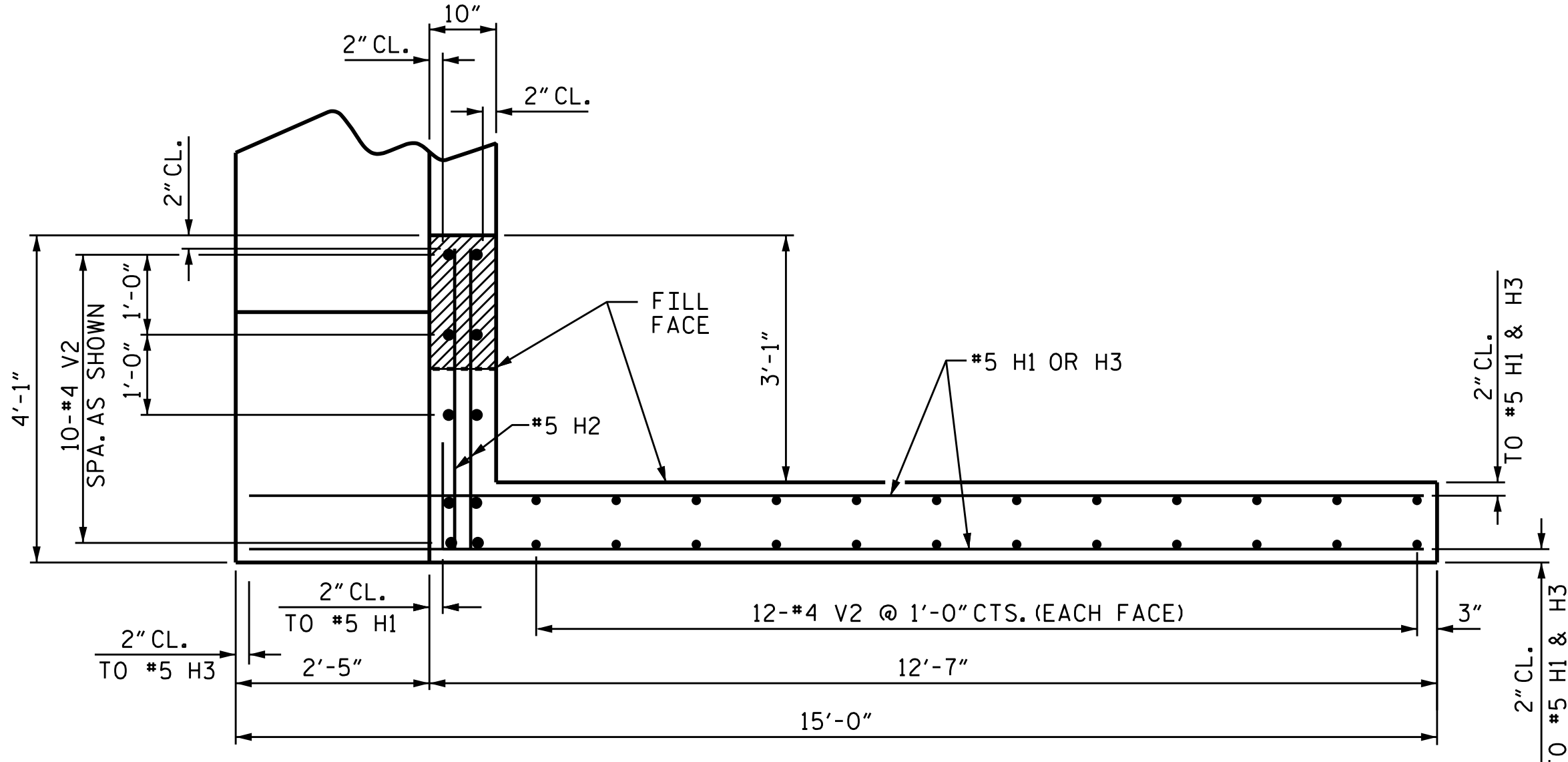
DRAWN BY: M.M. AHMED DATE: 8/22/19
 CHECKED BY: S. WANCE DATE: 8/19
 DESIGN ENGINEER OF RECORD: M.M. AHMED DATE: 07/19

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-32
1			3			TOTAL SHEETS 37
2			4			

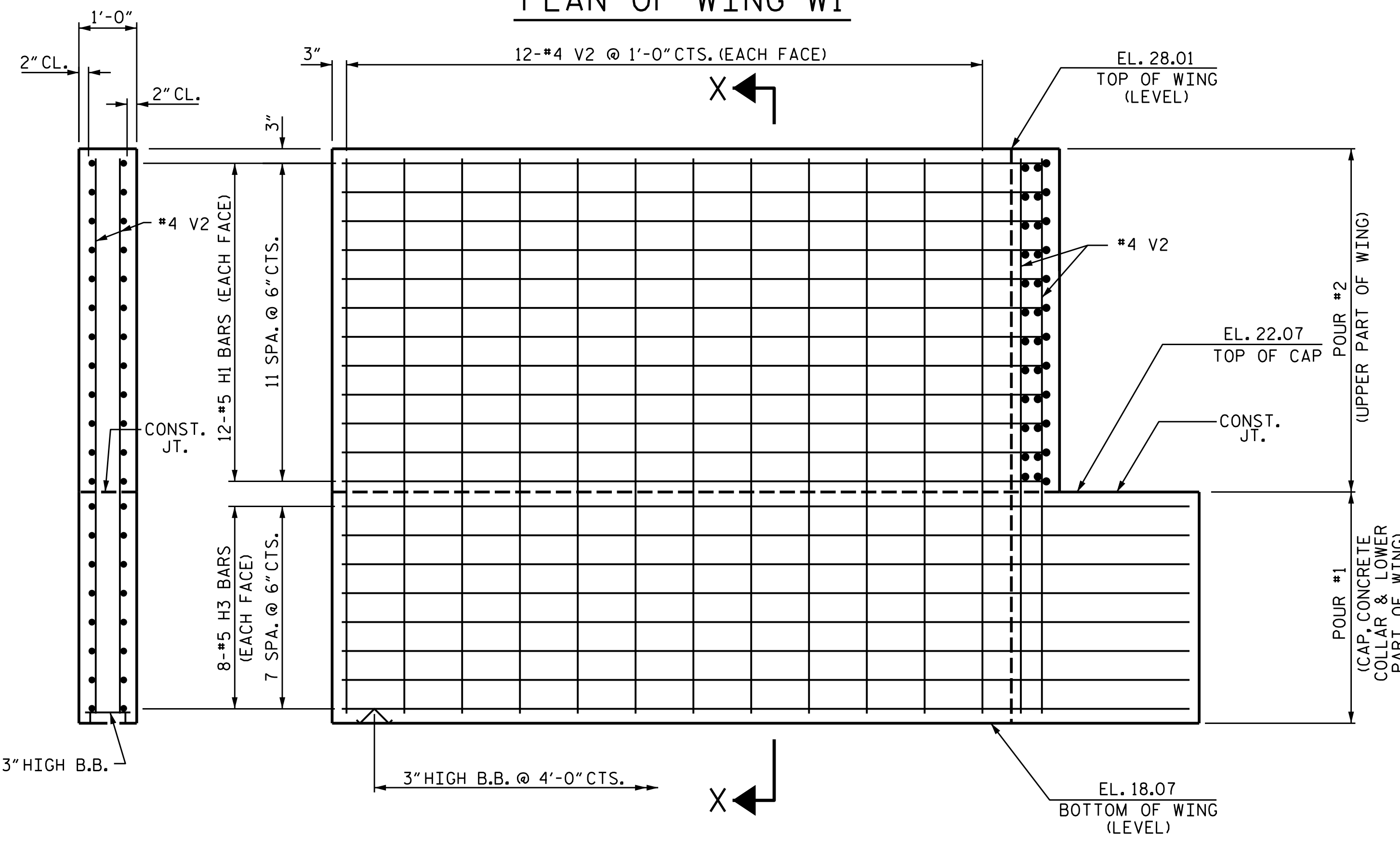
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



PLAN OF WING-W1

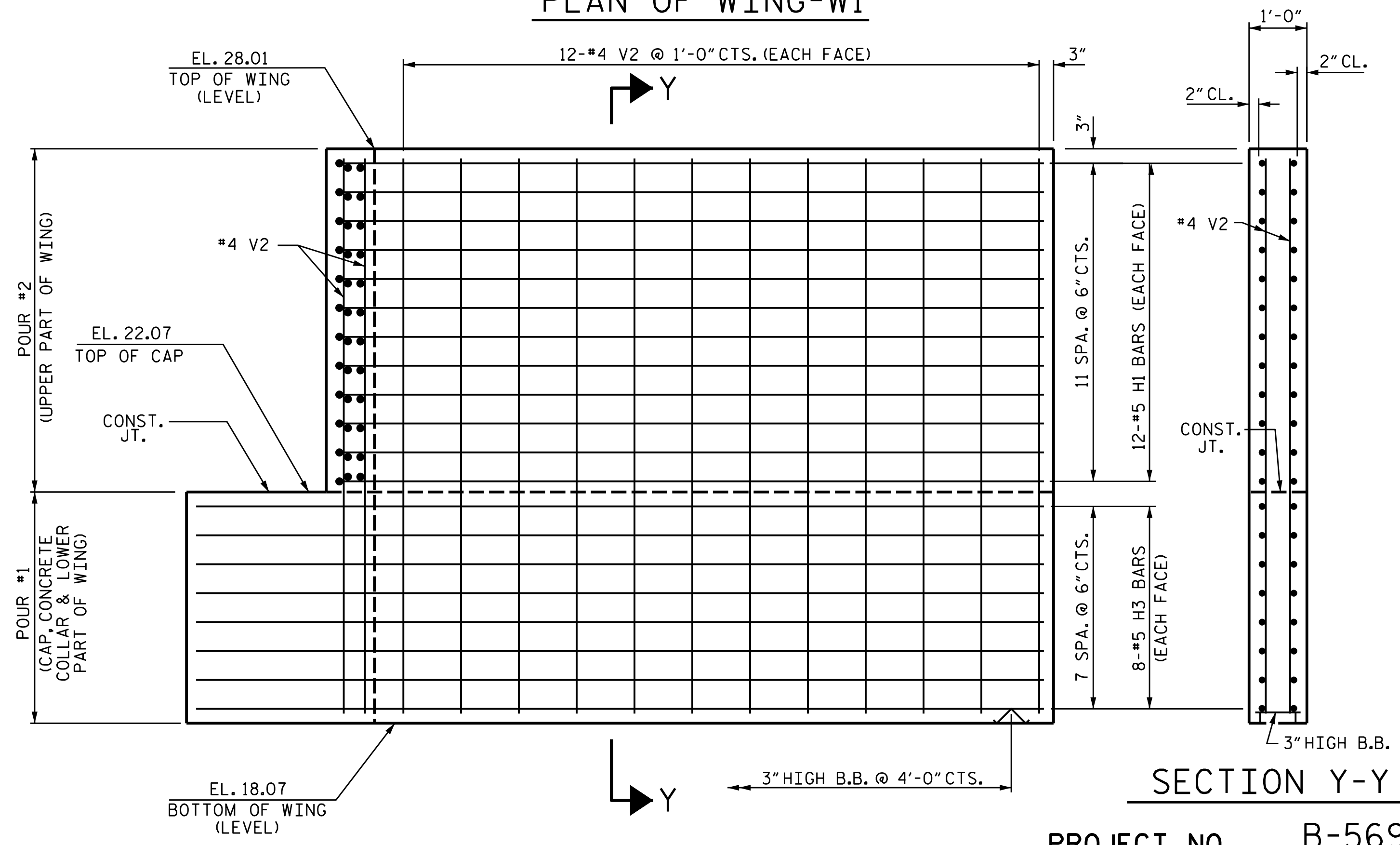


PLAN OF WING-W1



SECTION X-X

ELEVATION OF WING-W1



ELEVATION OF WING-W2

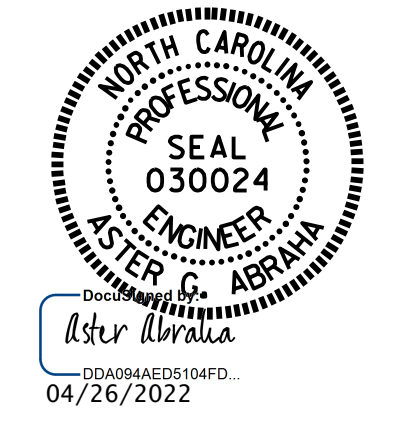
SECTION Y-Y

PROJECT NO. B-5694
BLADEN COUNTY
 STATION: 21+85.10 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

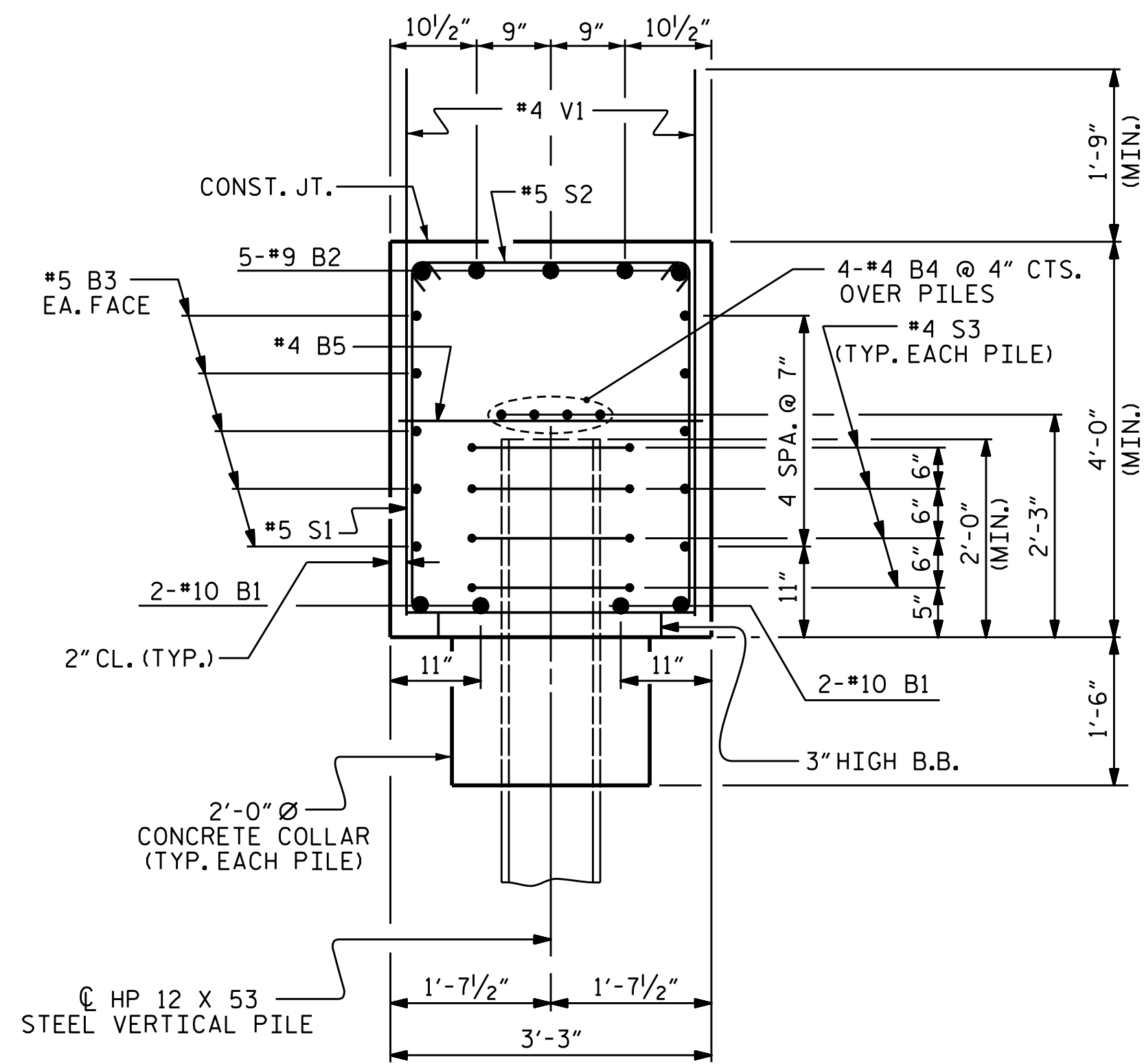
SUBSTRUCTURE
 INTEGRAL
 END BENT 2



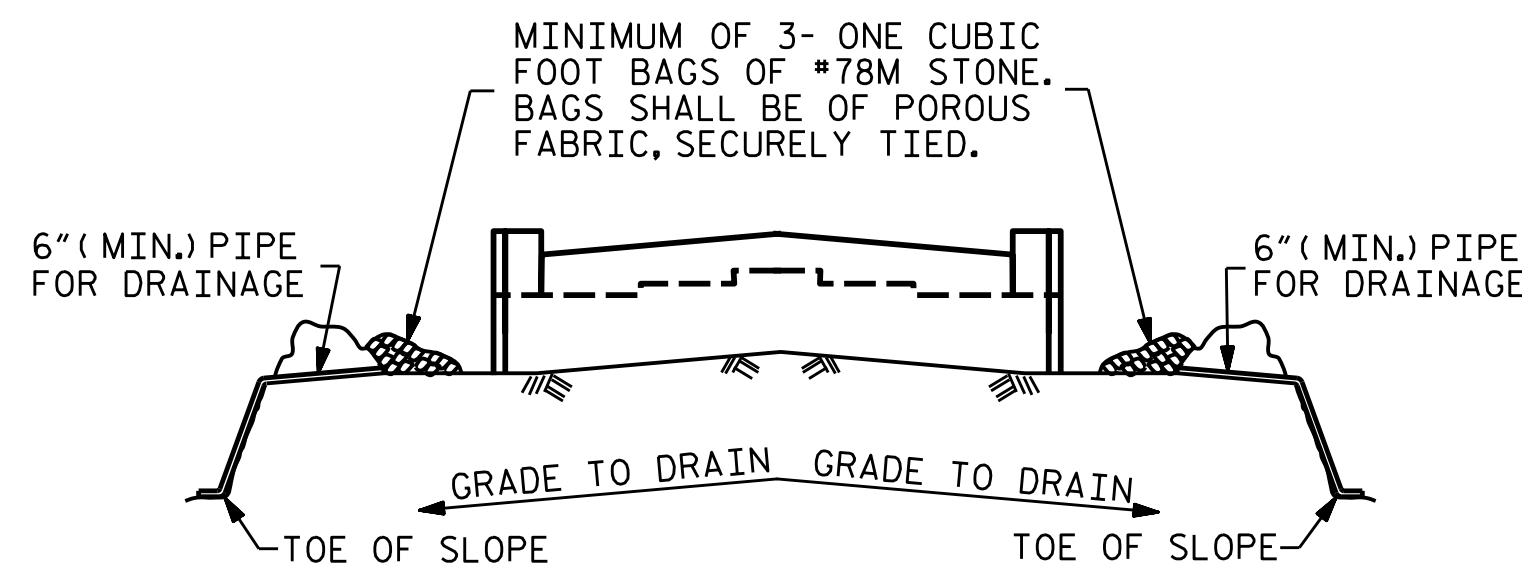
DRAWN BY : M.M. AHMED DATE : 8/22/19
 CHECKED BY : S. WANCE DATE : 8/19
 DESIGN ENGINEER OF RECORD: M.M. AHMED DATE : 07/19

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 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-33
1			3			TOTAL SHEETS
2			4			37



SECTION A-A



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.

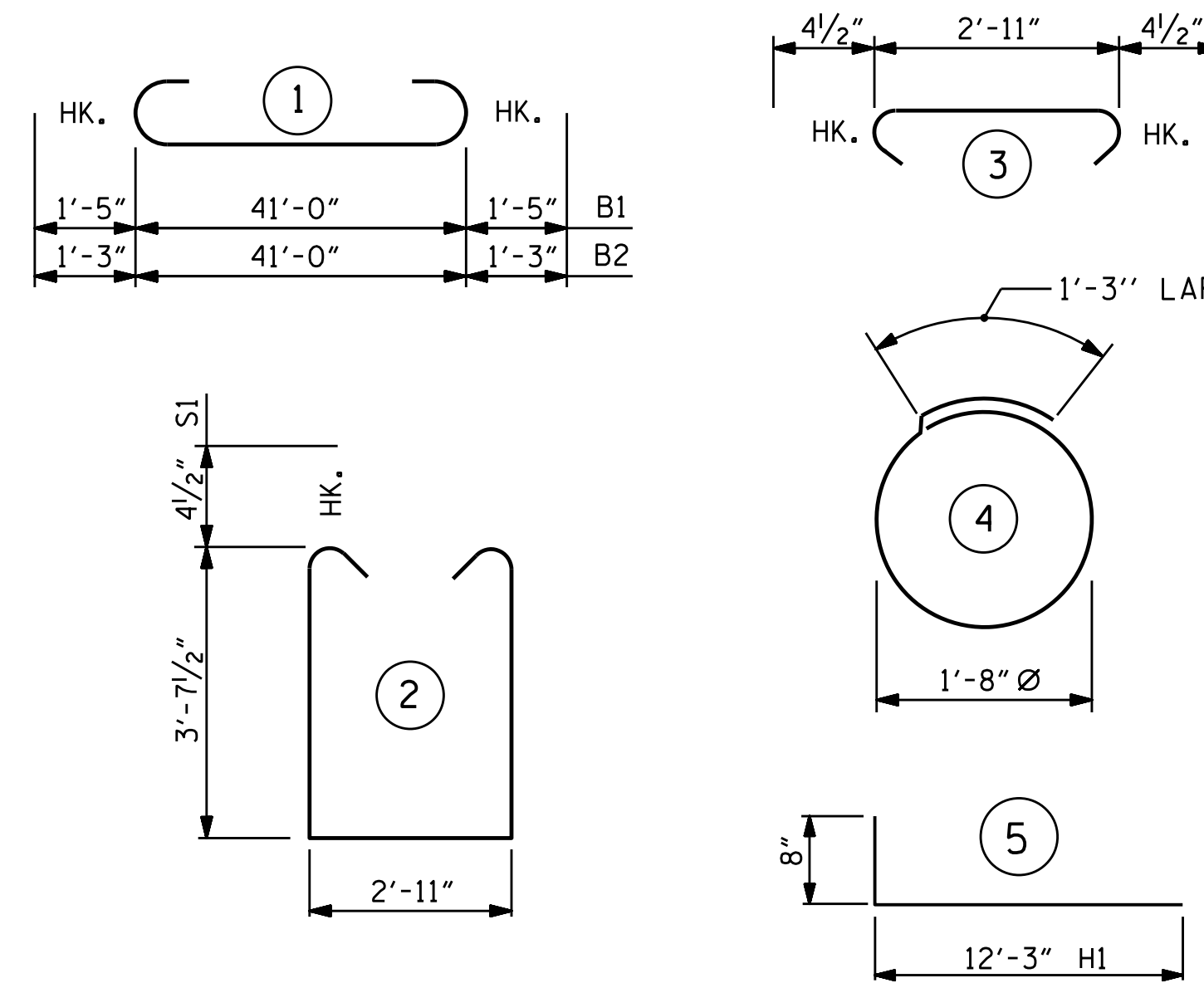
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

DRAWN BY : M.M. AHMED DATE : 8/23/19
 CHECKED BY : S. WANCE DATE : 08/19
 DESIGN ENGINEER OF RECORD: M.M. AHMED DATE : 07/19

4/20/2022
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 aygodfrey

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

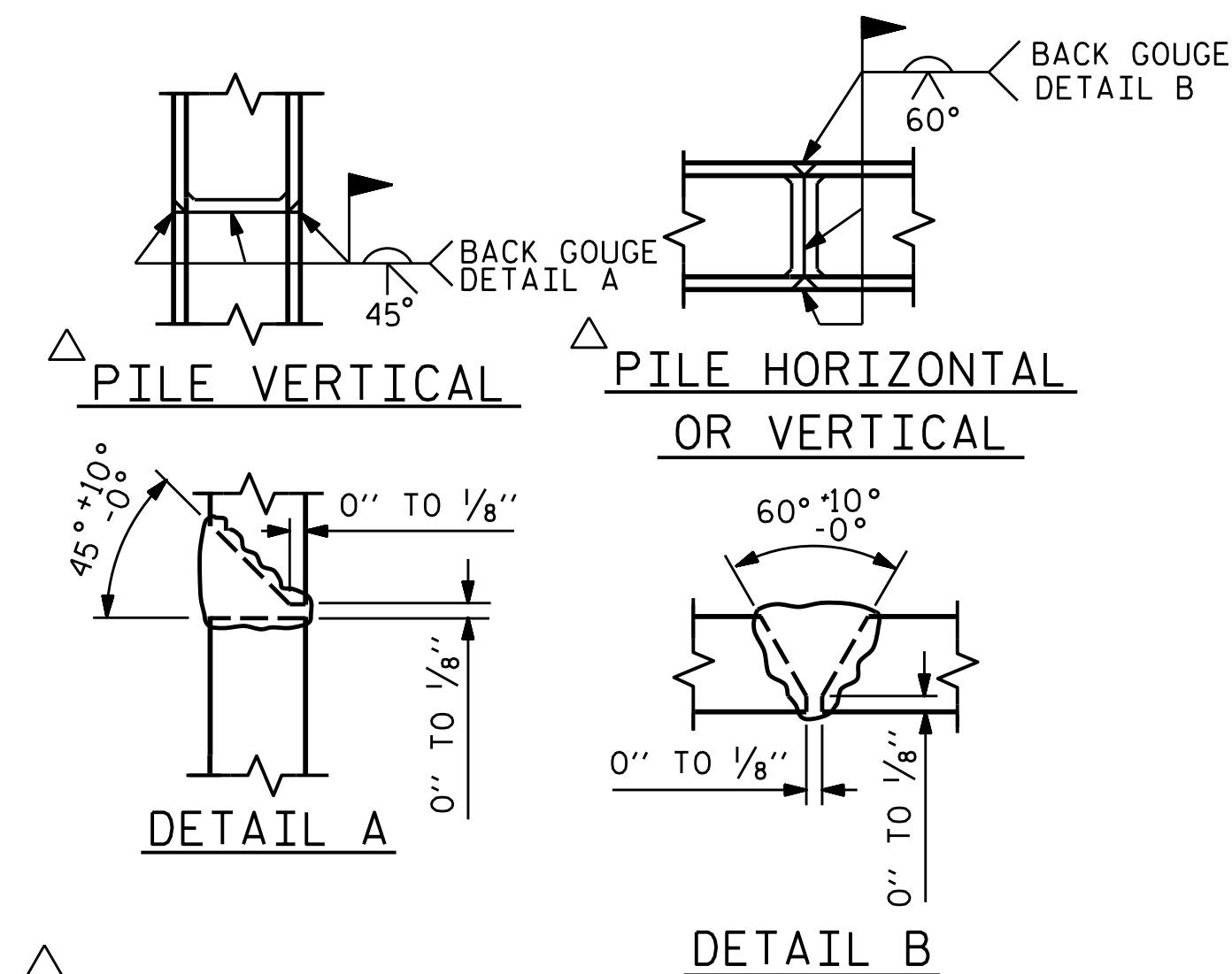
BILL OF MATERIAL

INTEGRAL END BENT #2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	1	43'-10"	754
B2	5	#9	1	43'-6"	740
B3	10	#5	STR	41'-0"	428
B4	8	#4	STR	21'-9"	116
B5	11	#4	STR	2'-11"	21
H1	48	#5	5	12'-11"	647
H2	44	#5	STR	3'-9"	172
H3	32	#5	STR	14'-8"	490
S1	56	#5	2	10'-11"	638
S2	56	#5	3	3'-8"	214
S3	28	#4	4	6'-6"	122
V1	62	#4	STR	5'-7"	231
V2	68	#4	STR	9'-7"	435

REINFORCING STEEL = 5008 LBS

CLASS A CONCRETE
 POUR #1 (CAP, CONCRETE COLLARS & LOWER PART OF WINGS) 25.2 C.Y.
 POUR #2 (UPPER PART OF WINGS AND BACKWALL) 1.7 C.Y.
 TOTAL 26.9 C.Y.

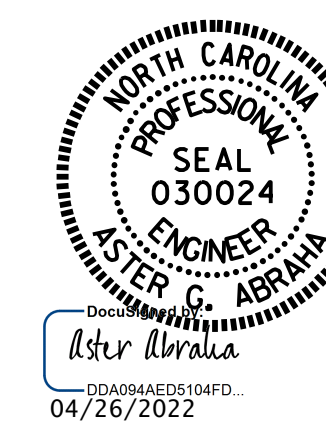


POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

PROJECT NO. B-5694
 BLADEN COUNTY
 STATION: 21+85.10 -L-

SHEET 3 OF 3



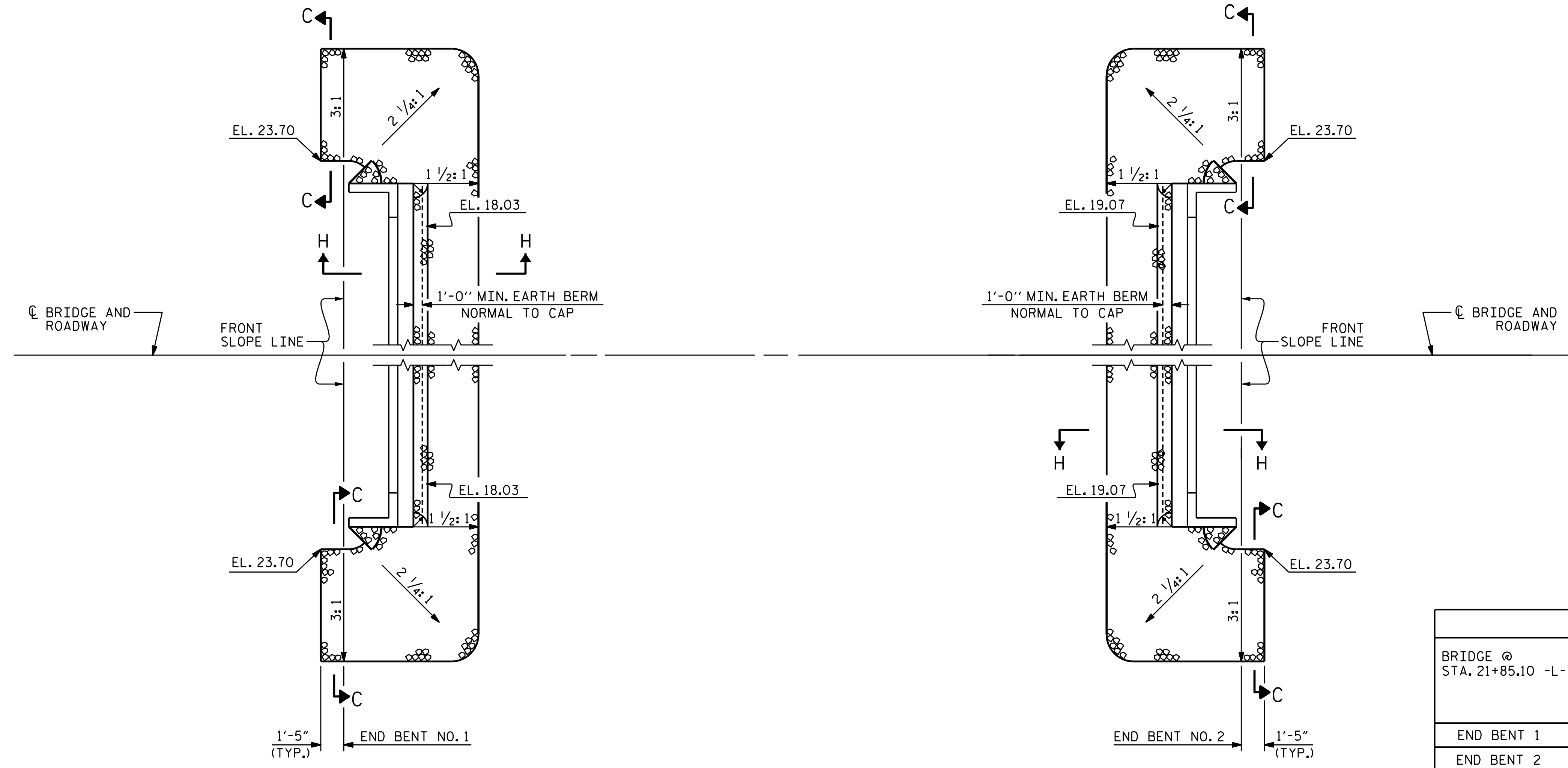
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 INTEGRAL
 END BENT 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-34
1			3			TOTAL SHEETS
2			4			37

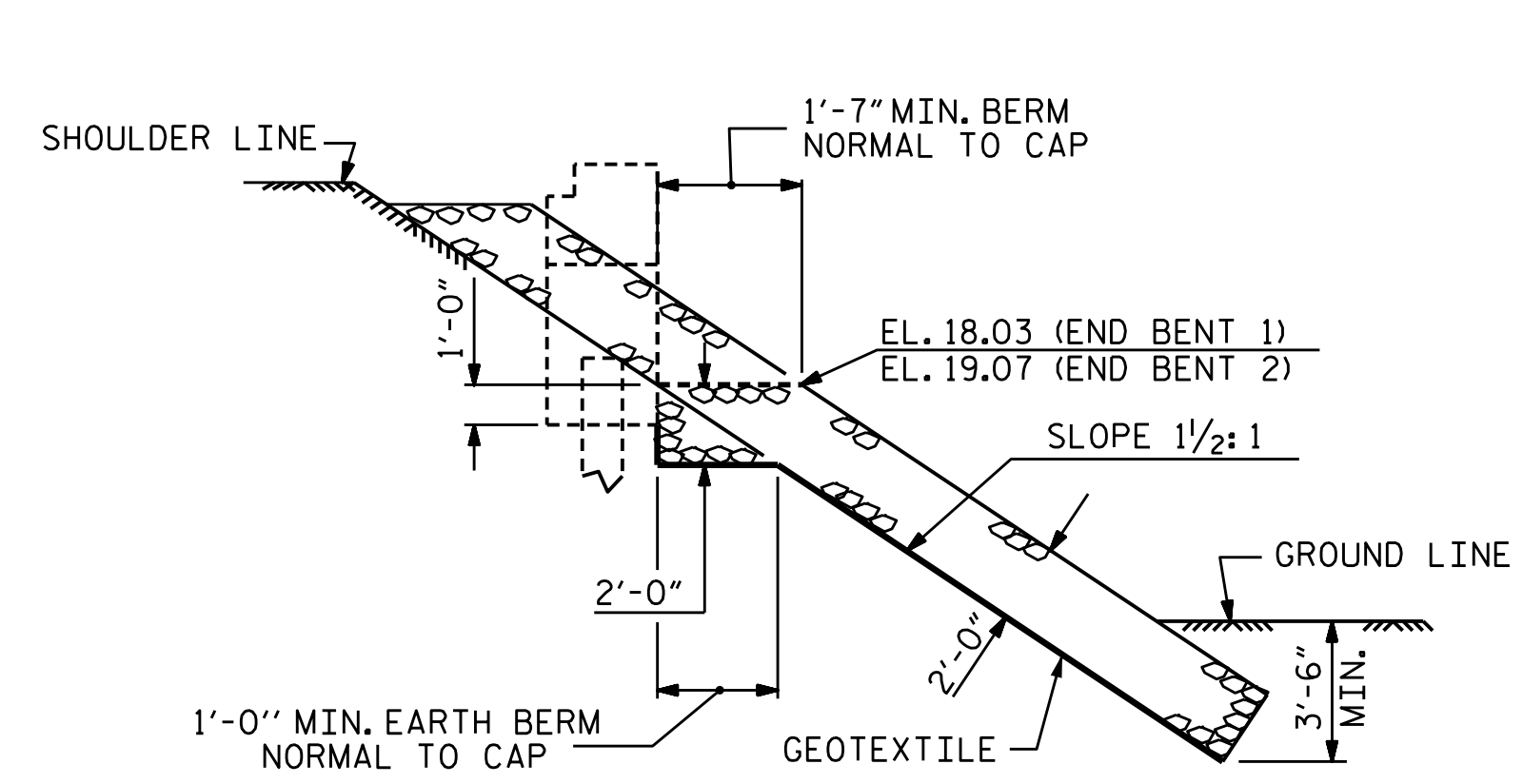
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NOTES :
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.

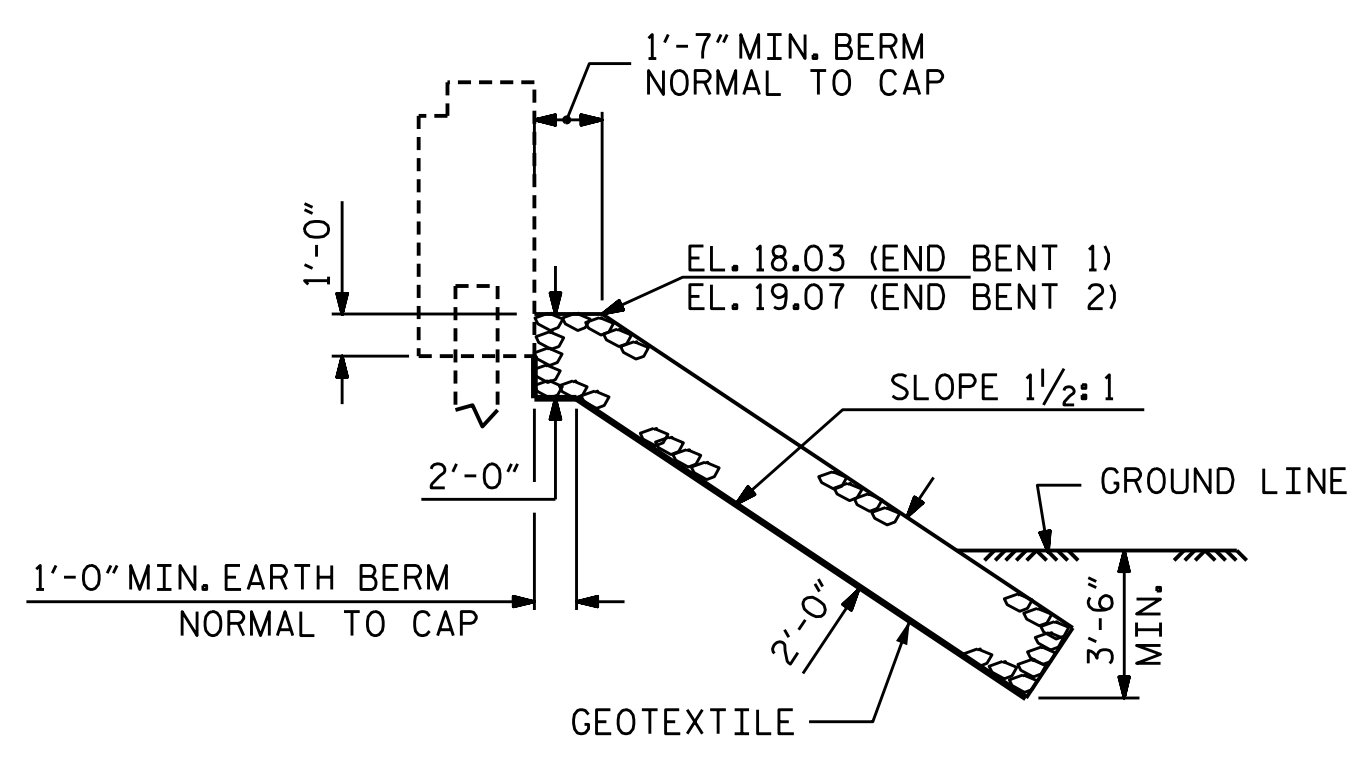


ESTIMATED QUANTITIES		
BRIDGE @ STA. 21+85.10 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	231	256
END BENT 2	292	324

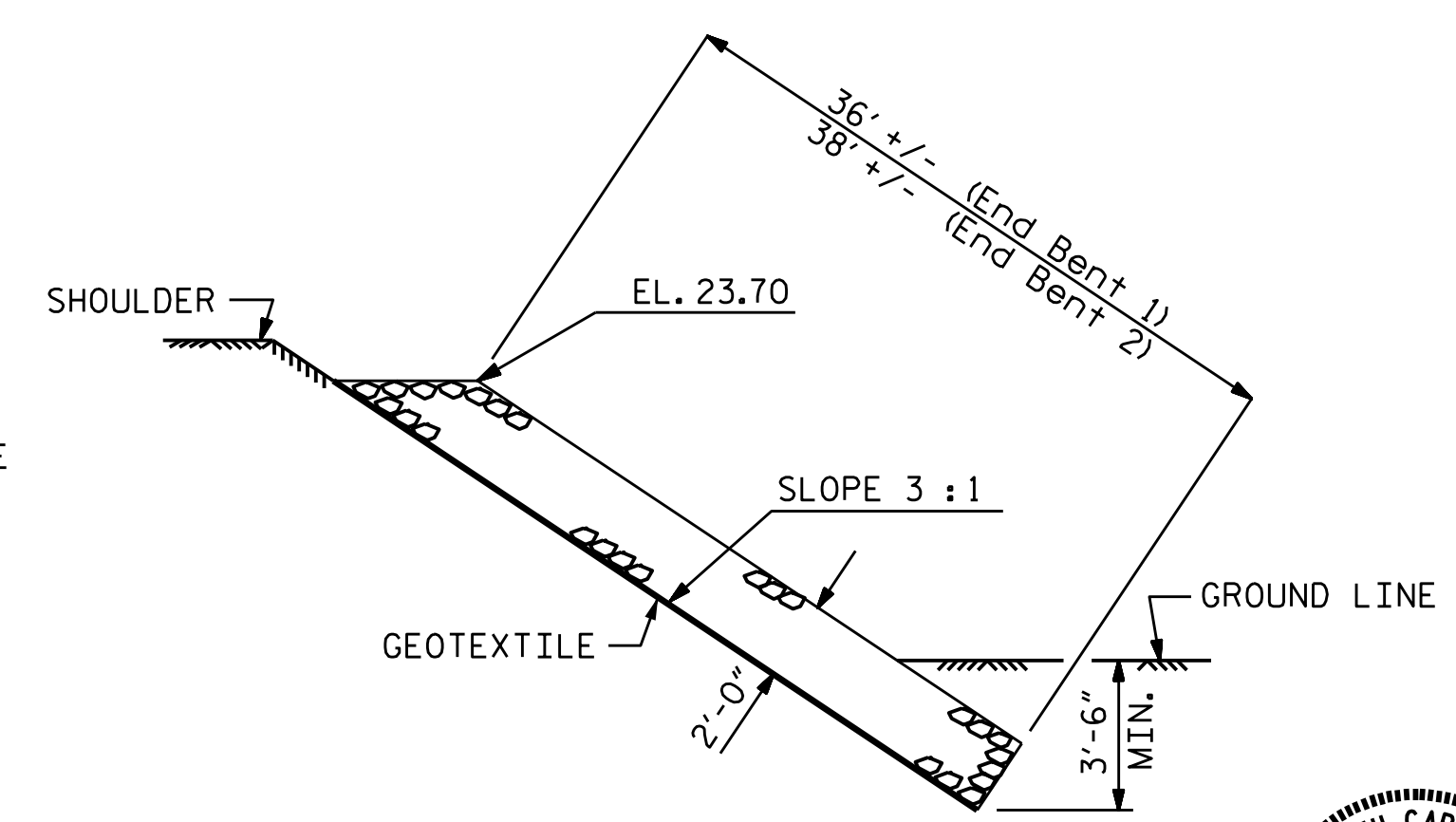
SHOULDER RIP RAP IS HIGHER THAN BERM RIP RAP



SECTION H-H

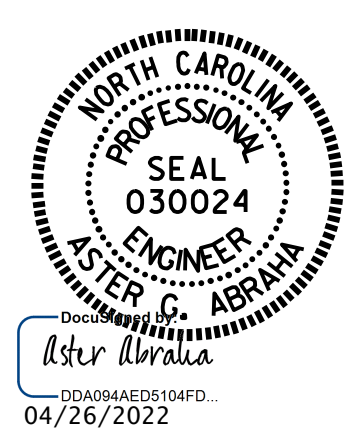


SECTION C-C
BERM RIP RAPPED



SECTION C-C

PROJECT NO. B-5694
BLADEN COUNTY
STATION: 21+85.10 -L-



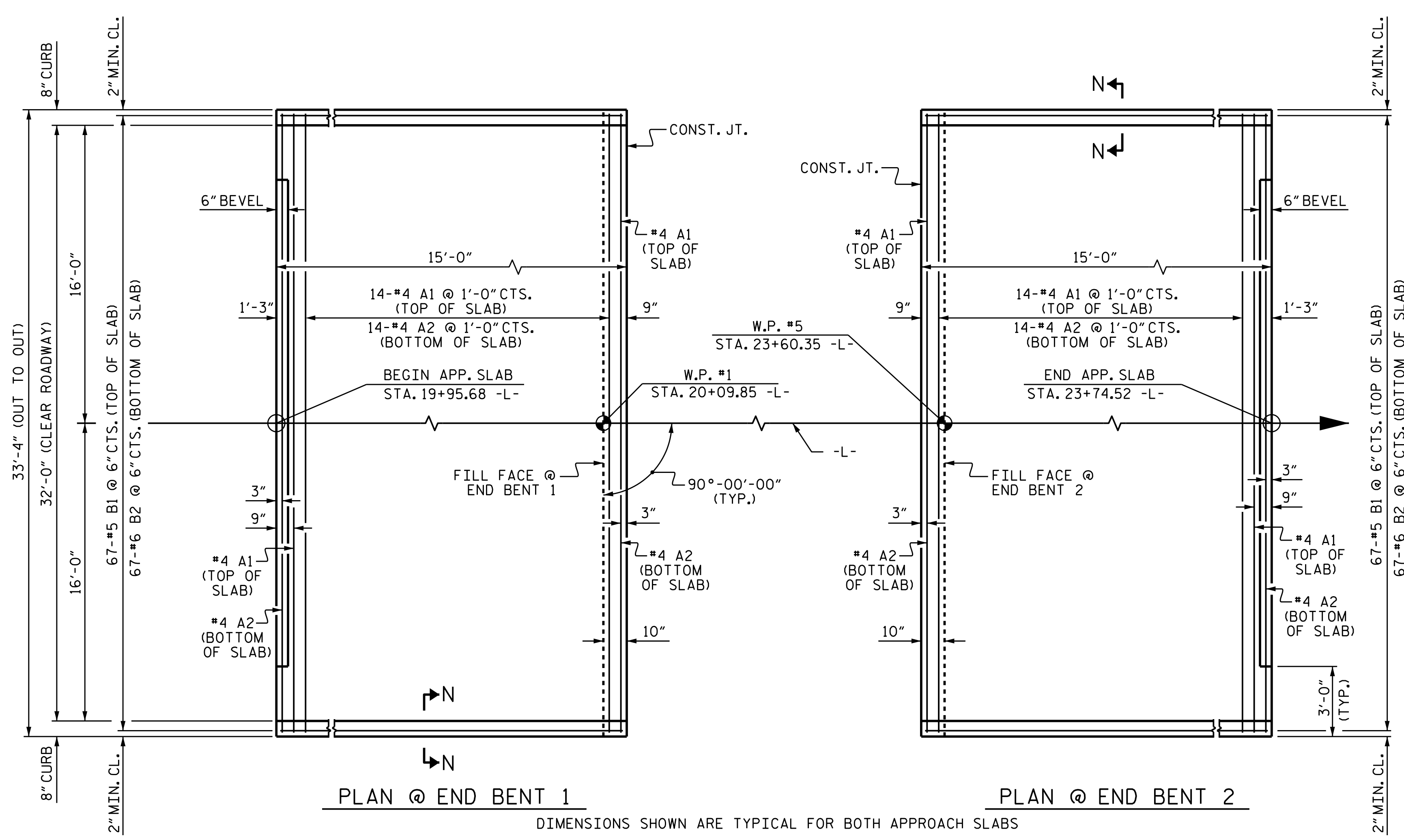
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

RIP RAP DETAILS

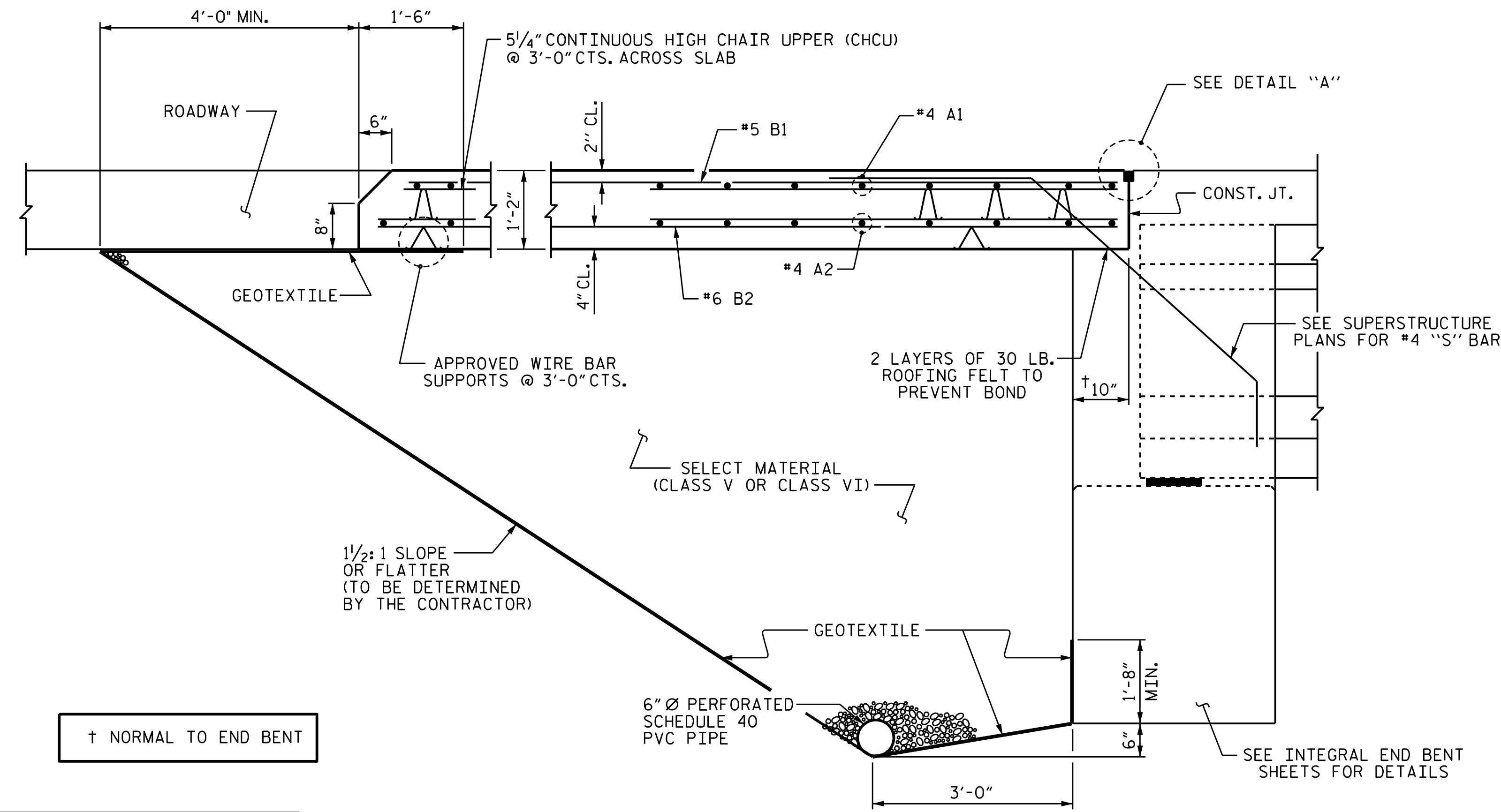
ASSEMBLED BY : S. WANCE	DATE : 07/2020
CHECKED BY : M.M.AHMED	DATE : 09/2020
DRAWN BY : REK 1/84	REV. 10/1/11 MAA/GM
CHECKED BY : RDU 1/84	REV. 12/21/11 MAA/GM
	REV. 12/17 MAA/THC

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-35
1			3			TOTAL SHEETS
2			4			37

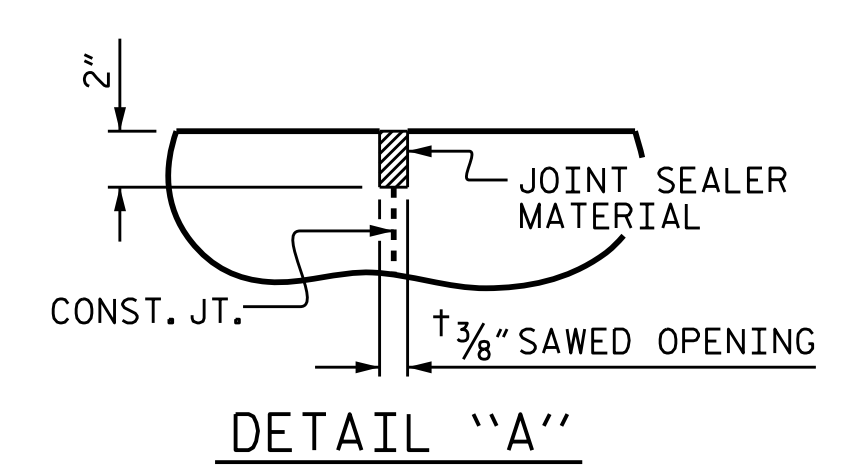
DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED



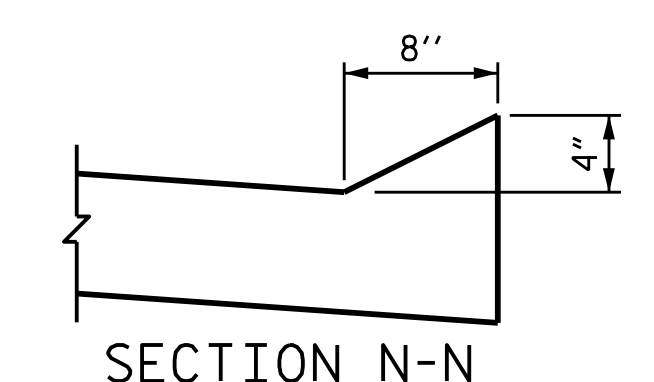
PLAN @ END BENT 1
 PLAN @ END BENT 2
 DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



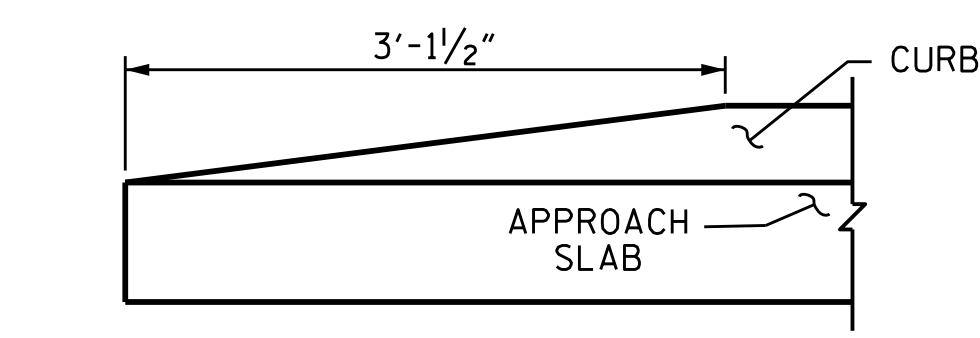
SECTION THRU SLAB
 (TYPE I - STANDARD APPROACH FILL)



DETAIL "A"



SECTION N-N



END OF CURB AT END BENT 2
 WITHOUT SHOULDER BERM GUTTER

NOTE: SHOULDER BERM GUTTER AT END BENT 1. SEE ROADWAY PLANS.

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.

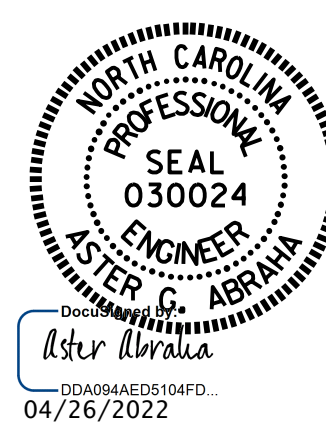
BILL OF MATERIAL					
FOR ONE APPROACH SLAB (2 REQ'D)					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	16	#4	STR	33'-0"	353
A2	16	#4	STR	33'-0"	353
* B1	67	#5	STR	14'-2"	990
B2	67	#6	STR	14'-8"	1476
REINFORCING STEEL				LBS.	1829
* EPOXY COATED REINFORCING STEEL				LBS.	1343
CLASS AA CONCRETE				C. Y.	21.6

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

ASSEMBLED BY : S. WANCE DATE : 03/2020
 CHECKED BY : M.M.AHMED DATE : 09/2020
 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

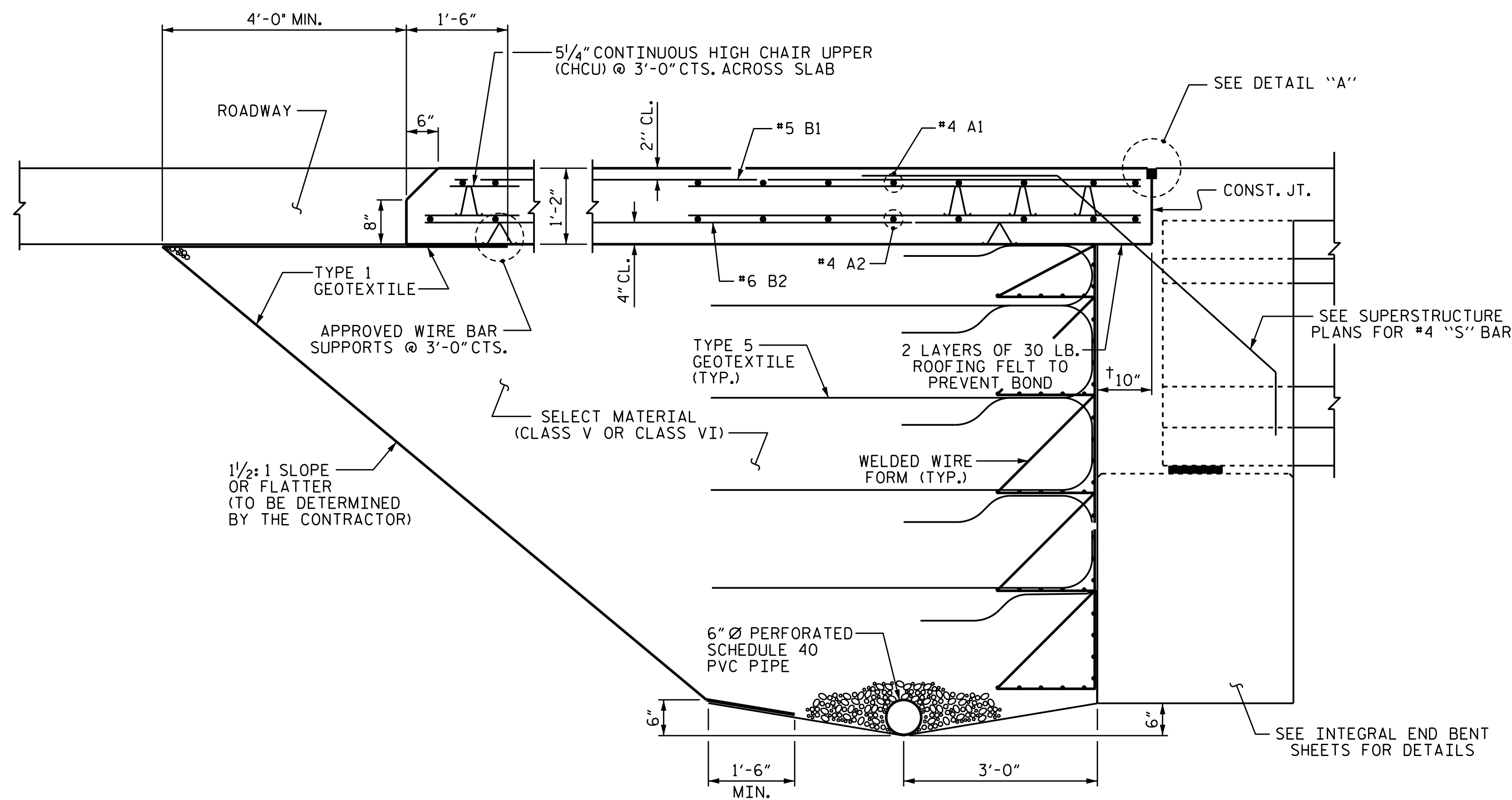
REVISIONS						SHEET NO. S-36
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 37
2			4			

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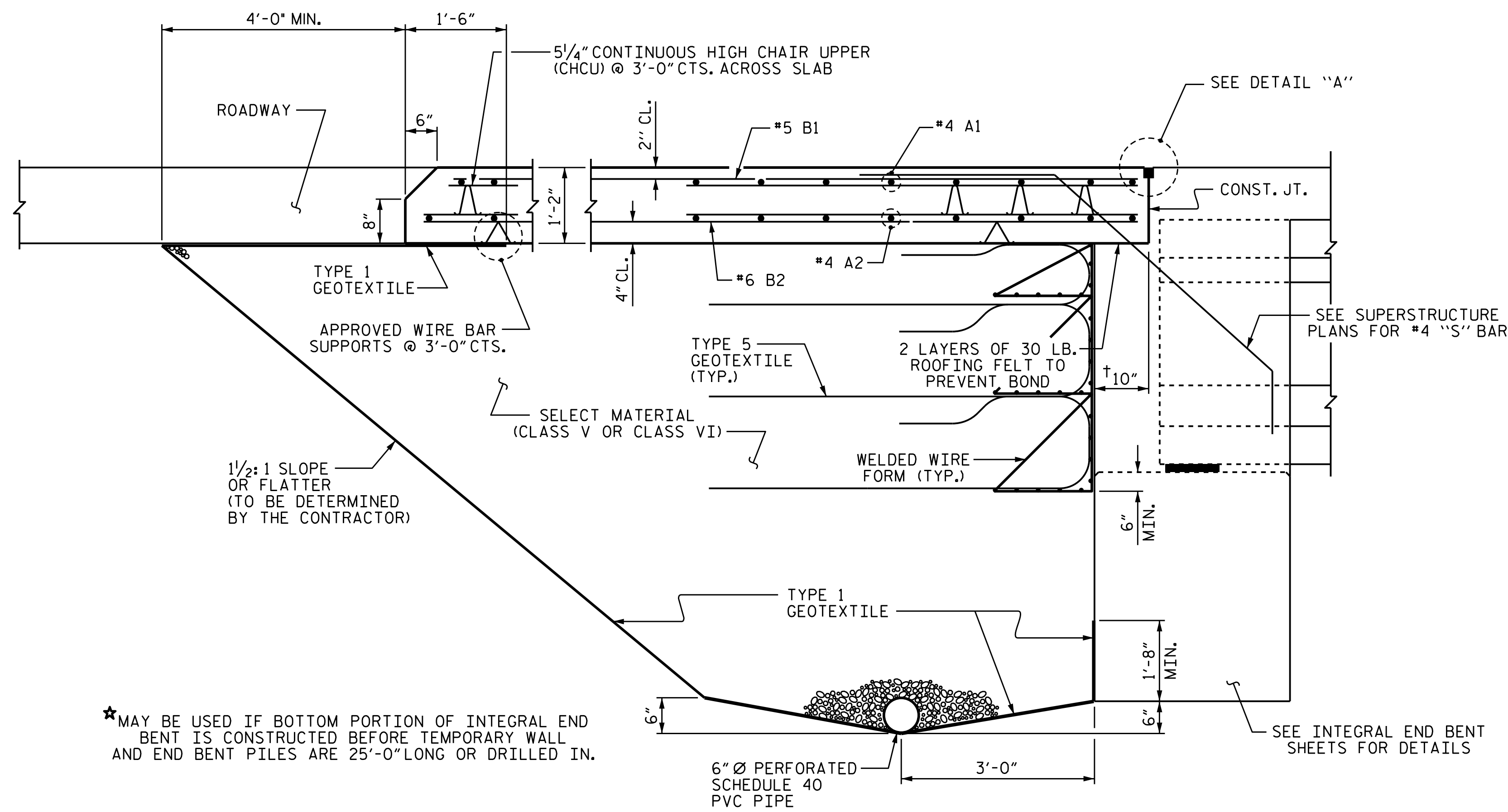
PROJECT NO. B-5694
 BLADEN COUNTY
 STATION: 21+85.10 -L-

SHEET 1 OF 2
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 BRIDGE APPROACH SLAB FOR INTEGRAL ABUTMENT WITH FLEXIBLE PAVEMENT



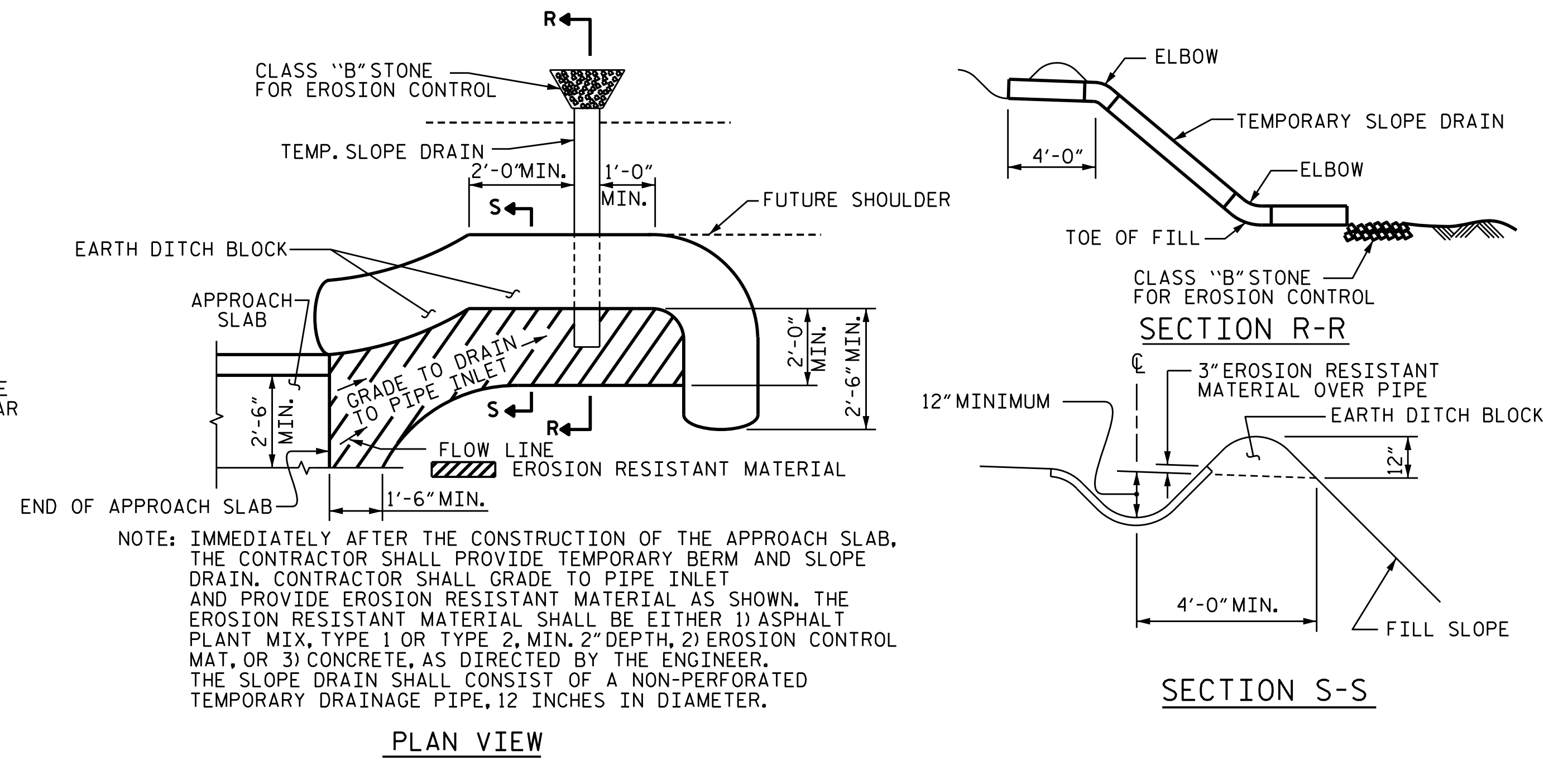
SECTION THRU SLAB

(TYPE A - ALTERNATE APPROACH FILL)



SECTION THRU SLAB

(TYPE A - ALTERNATE APPROACH FILL)

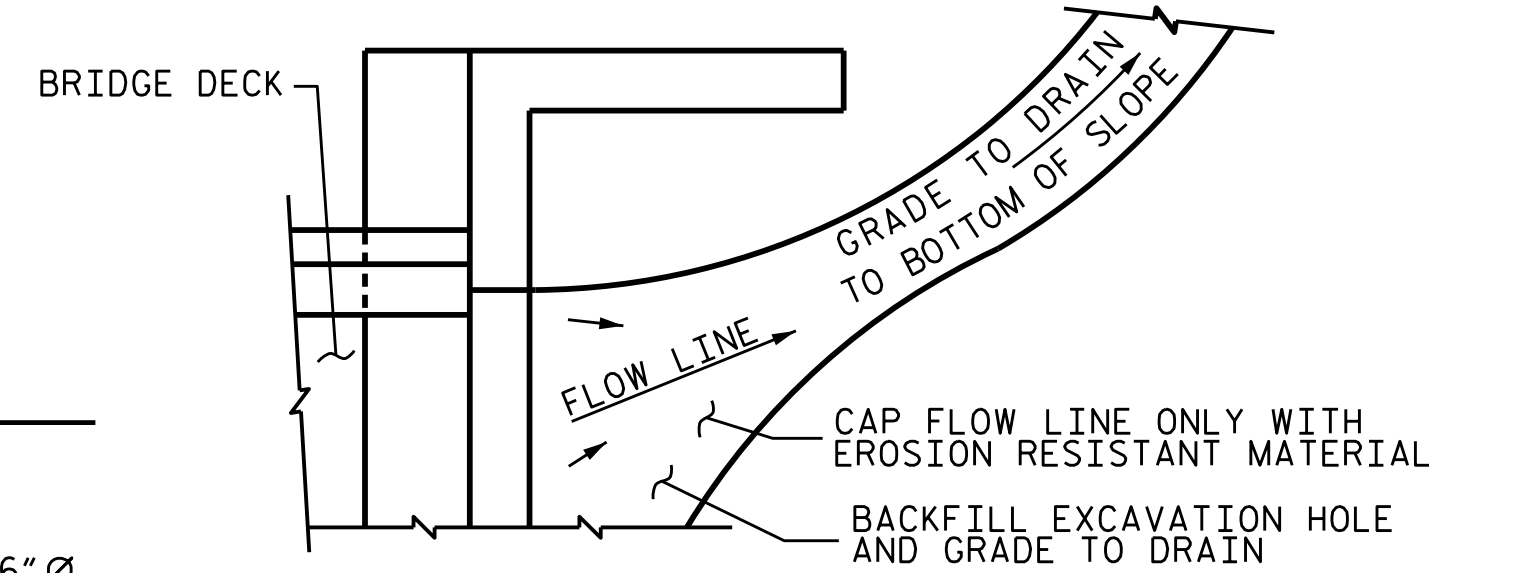


TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

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 SAWS 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.

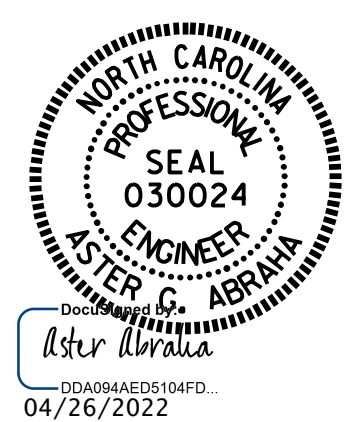


NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL

PROJECT NO. B-5694
 BLADEN COUNTY
 STATION: 21+85.10 -L-

SHEET 2 OF 2



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**BRIDGE APPROACH
 SLAB DETAILS**

ASSEMBLED BY : S. WANCE	DATE : 03/2020
CHECKED BY : M.M.AHMED	DATE : 09/2020
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

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

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 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 $1\frac{1}{2}$ " 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