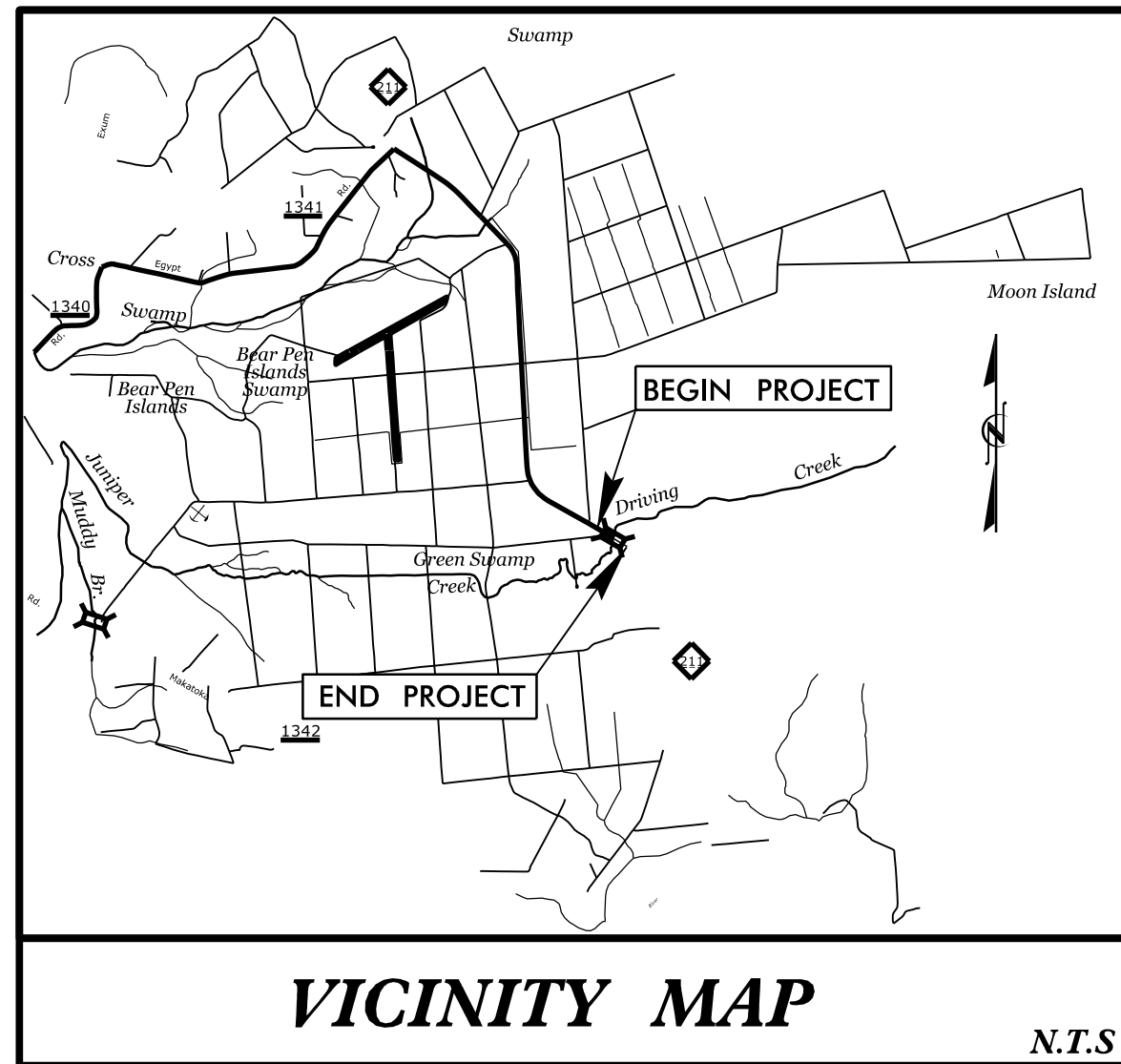


CONTRACT: C204629 TIP PROJECT: B-5624

STRUCTURE



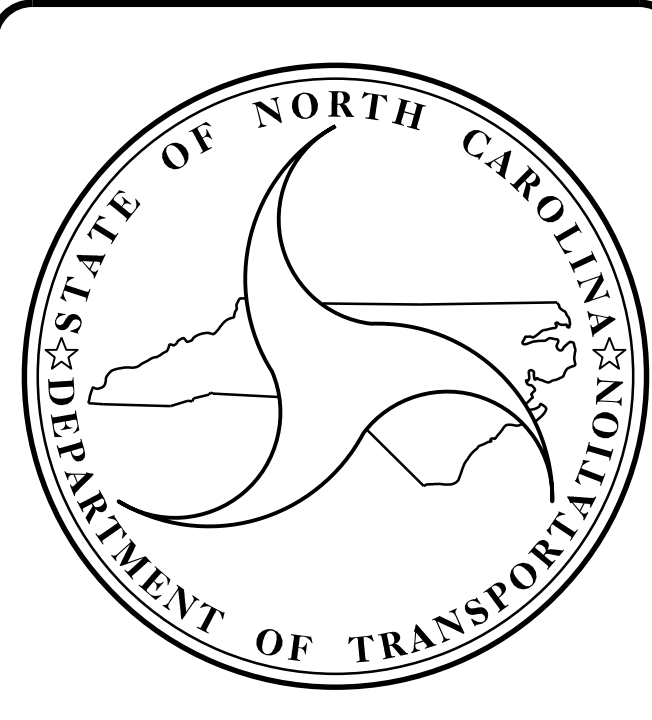
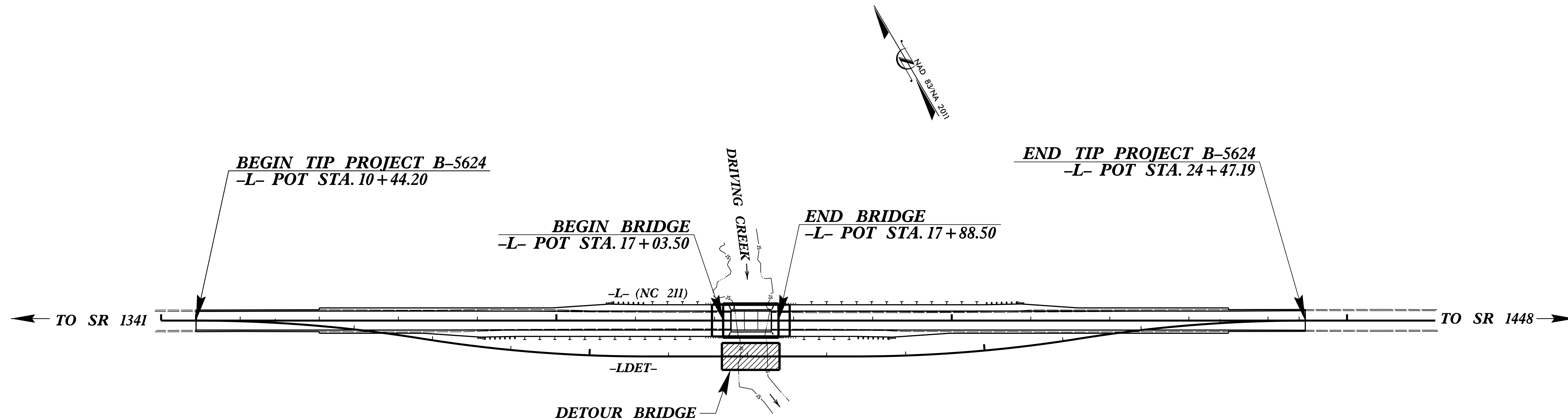
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

BRUNSWICK COUNTY

**LOCATION: REPLACE BRIDGE NO. 57 OVER DRIVING CREEK
ON NC 211 (GREEN SWAMP ROAD NW)**

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5624		20
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
45579.1.1	N/A	P.E.	
45579.2.1	N/A	UTIL & R/W	
45579.3.1	N/A	CONST.	



DESIGN DATA

ADT 2020 =	1,917
ADT 2040 =	3,000
K =	9 %
D =	55 %
T =	15 % *
V =	60 MPH
* TTST =	9% DUAL 6%
FUNC CLASS =	MAJOR COLLECTOR
	REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-5624	=	0.250 MILES
LENGTH STRUCTURE TIP PROJECT B-5624	=	0.016 MILES
TOTAL LENGTH TIP PROJECT B-5624	=	0.266 MILES

Prepared in the Office of:

CDM Smith
5400 Glenwood Avenue, Suite 400
Raleigh, NC 27612-3228
NC COA No. F-1255

FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2018 STANDARD SPECIFICATIONS

LETTING DATE : JANUARY 18, 2022

ADAM M. CONRAD, P.E.
PROJECT ENGINEER

TING H. FANG, P.E.
PROJECT DESIGN ENGINEER

DAVID STUTTS, P.E.
NCDOT CONTACT

11/29/2021

16+50 17+00 17+50 18+00 18+50

$+0.9046\%$ (-0.5862%)
 PVI STA. = 16+83.00 -L-
 PVI EL. = 68.63'
 V.C. = 230'

GRADE DATA -L-

FILL FACE @ END BENT 1
 STA. 17+03.50 -L-
 GRADE POINT EL. 68.22

BEGIN FRONT SLOPE
 STA. 16+97.64 -L-
 GRADE POINT EL. 68.22

EARTH BERM 5'-0"±

EXISTING SUBSTRUCTURE (TYP.)

SPAN A

1'-6" TO LIMITS OF UNCLASSIFIED STRUCTURE EXCAVATION (TYP.)

FILL FACE @ END BENT 2
 STA. 17+88.50 -L-
 GRADE POINT EL. 68.01

BEGIN FRONT SLOPE
 STA. 17+94.64 -L-
 GRADE POINT EL. 67.98

EARTH BERM 4'-8"±

APPROXIMATE NATURAL GROUND LINE

EL. 65.0±

EL. 64.0±

EL. 55.0±

EL. 63.10

EL. 63.0±

UNCLASSIFIED STRUCTURE EXCAVATION

HP12X53 STEEL PILES

LOW CHORD EL. 63.31

2'-0" (TYP.)

EXCAVATE TO EL. 60.0 (GRADE TO DRAIN)

RIP RAP CLASS II 2'-0" THK. (TYP.)

EL. 50.0±

EL. 49.0±

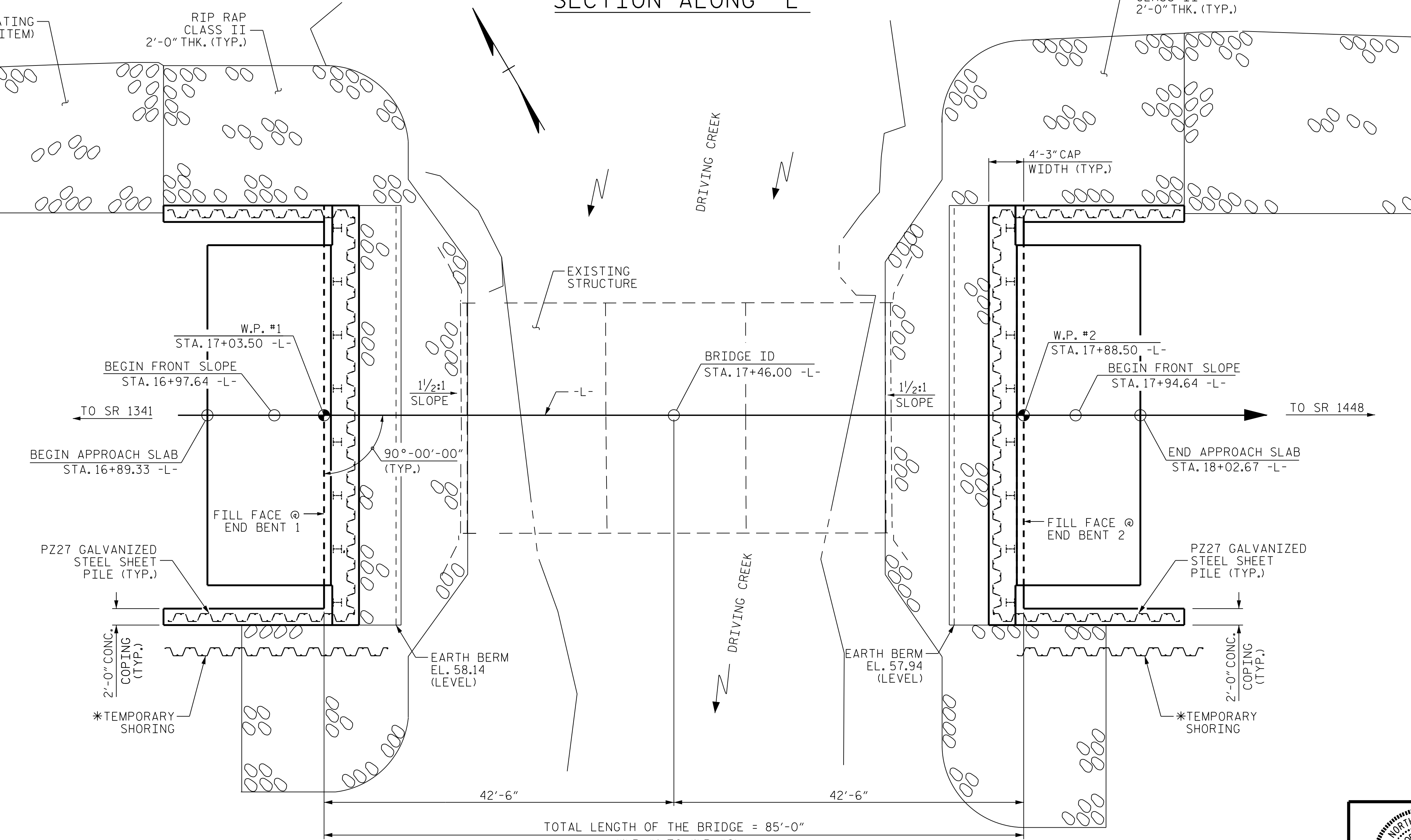
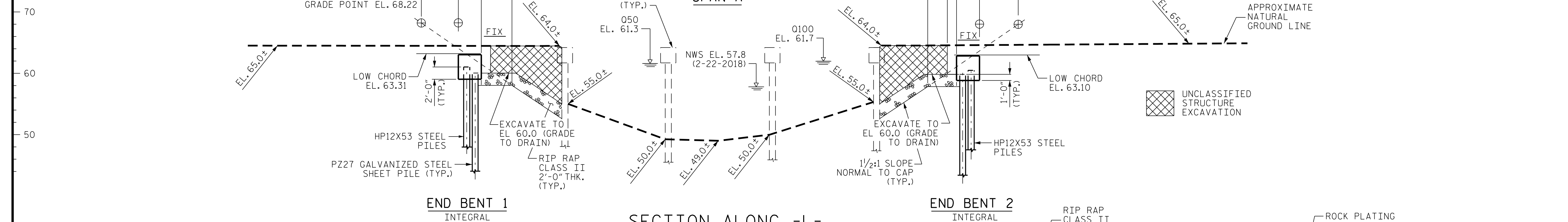
EL. 50.0±

1 1/2:1 SLOPE NORMAL TO CAP (TYP.)

1'-0" (TYP.)

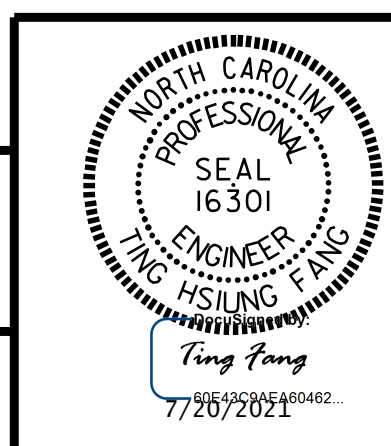
HP12X53 STEEL PILES

LOW CHORD EL. 63.10



PROJECT NO. B-5624
 BRUNSWICK COUNTY
 STATION: 17+46.00 -L-
 SHEET 1 OF 3 REPLACES BRIDGE NO. 57

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE OVER DRIVING CREEK ON NC 211 BETWEEN SR 1341 AND SR 1448



CDM Smith
 CDM SMITH
 5400 Glenwood Avenue, Suite 400
 Raleigh, NC 27612-3228
 NC COA No. F-1255

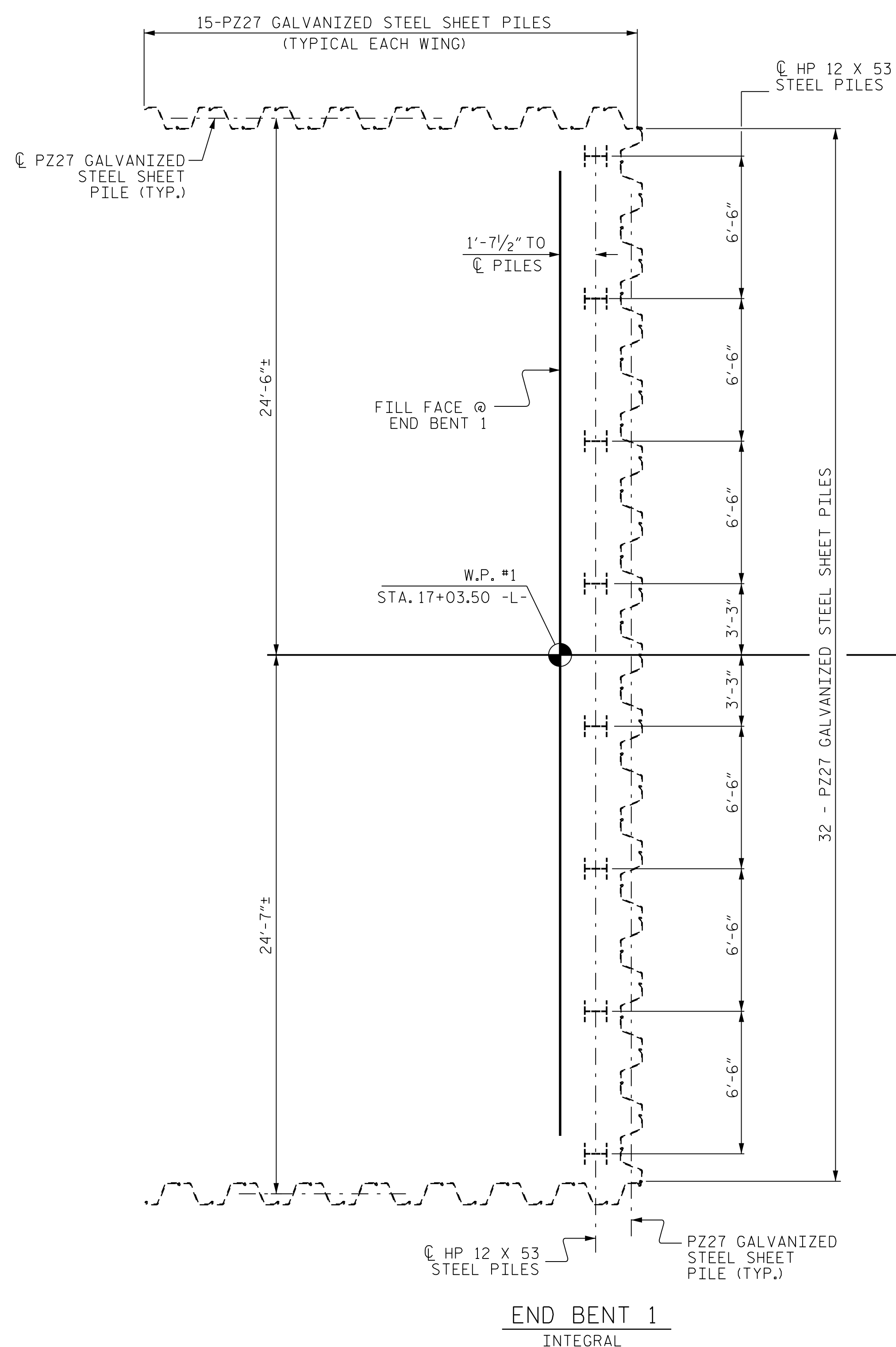
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DWG. No. _____

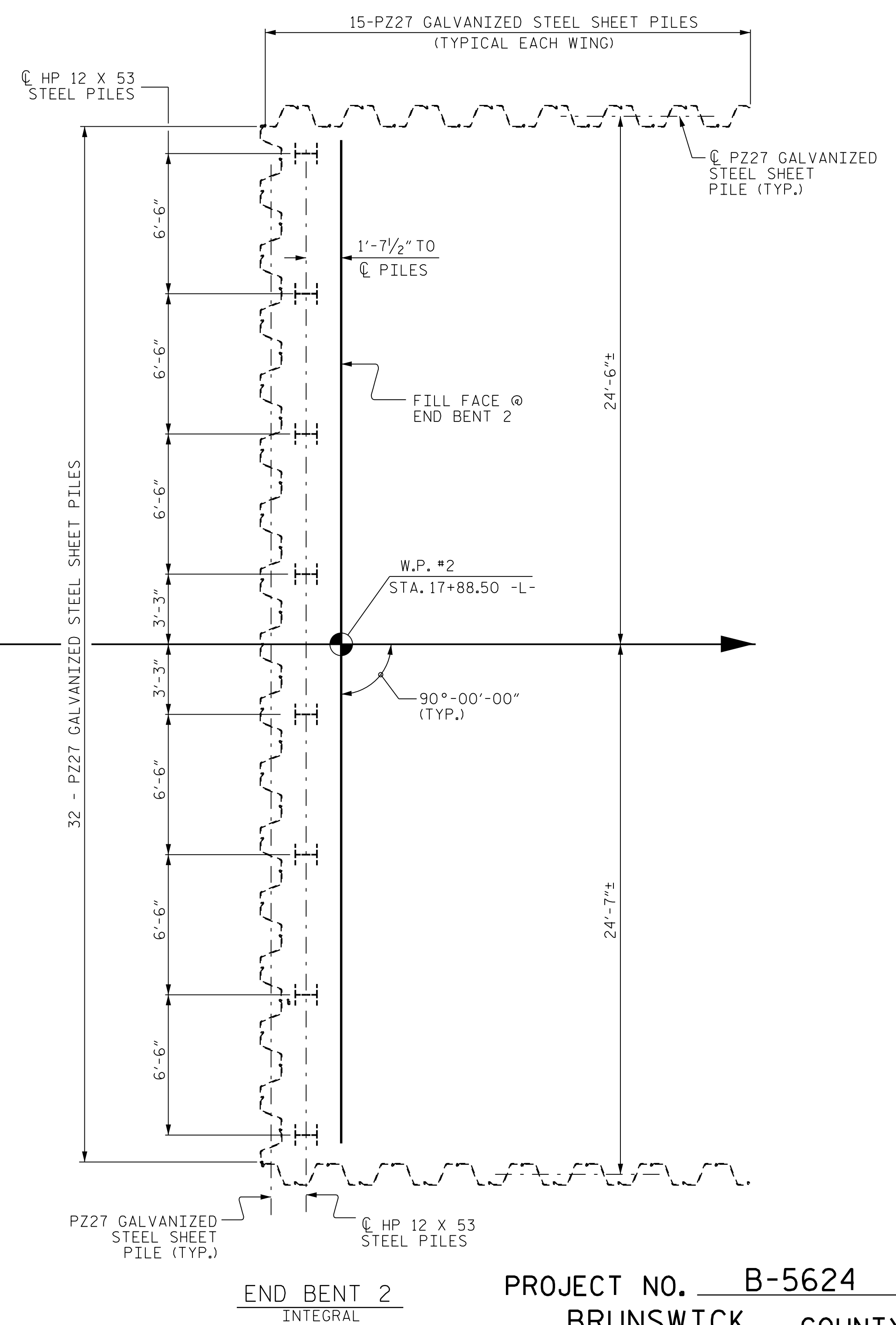
DRAWN BY: JJR DATE: 9/20
 CHECKED BY: THF DATE: 10/20
 DESIGN ENGINEER: VDK DATE: 11/20

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-01
1			3			TOTAL SHEETS
2			4			20

FILE: SPILES
 DATE: 02/05/20



END BENT 1
INTEGRAL



END BENT 2
INTEGRAL

FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO THE CENTERLINE OF PILES. ALL PILES ARE VERTICAL.

NOTES

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENTS 1 AND 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 100 TONS PER PILE.

DRIVE PILES AT END BENTS 1 AND 2 TO A REQUIRED DRIVING RESISTANCE OF 170 TONS PER PILE.

INSTALL PILES AT END BENTS 1 AND 2 TO A TIP ELEVATION NO HIGHER THAN 28 FT.

TESTING PILES WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING MAY BE REQUIRED. THE ENGINEER WILL DETERMINE THE NEED FOR PDA TESTING. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

DRIVE PILES AT END BENTS 1 AND 2 AFTER INSTALLING SHEET PILE ABUTMENT WALLS.

NO WAITING PERIOD REQUIRED AT END BENTS 1 AND 2 AFTER CONSTRUCTING THE END BENT FOUNDATIONS.

INSTALL PZ27 AND PZ90 GALVANIZED SHEET PILES OR EQUIVALENT FOR ABUTMENT WALL INCLUDING WING WALLS AT BOTH END BENTS AND INSTALL TO A TIP ELEVATION 38.0 FT.

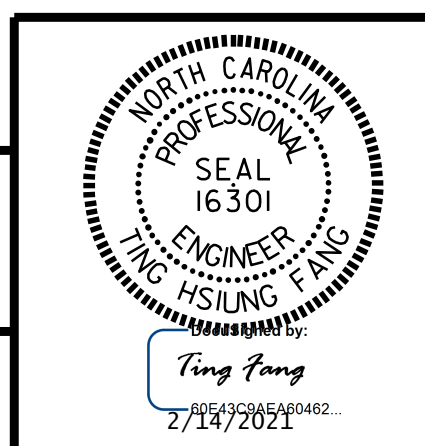
PROJECT NO. B-5624
BRUNSWICK COUNTY
STATION: 17+46.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE OVER DRIVING CREEK ON NC 211 BETWEEN SR 1341 AND SR 1448



CDM Smith
CDM SMITH
5400 Glenwood Avenue, Suite 400
Raleigh, NC 27612-3228
NC COA No. F-1255

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	DRAWN BY : JJR DATE : 9/20	DWG. No.
	CHECKED BY : THF DATE : 10/20	
	DESIGN ENGINEER : VDK DATE : 11/20	

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-02
1			3			TOTAL SHEETS
2			4			20

FILE: SPILES
DATE: 02/04/2021

TOTAL BILL OF MATERIAL

	CONST., MAINT. & REMOVAL OF TEMP. STRUCTURE	REMOVAL OF EXISTING STRUCTURE	ASBESTOS ASSESSMENT	PDA TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	45" PRESTRESSED CONCRETE GIRDERS	PILE DRIVING EQUIPMENT SETUP FOR HP 12X53 GALVANIZED STEEL PILES	HP 12 X 53 STEEL PILES	PILE REDRIVES	CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	18" GALVANIZED STEEL SHEET PILE SYSTEM		
	LUMP SUM	LUMP SUM	LUMP SUM	EA.	LUMP SUM	SO. FT.	SO. FT.	CU. YDS.	LUMP SUM	LBS.	NO.	EA.	NO.	EA.	NO.	EA.	SO. YD.	LUMP SUM	SO. FT.		
SUPERSTRUCTURE						3,604	4,119				6	498.50				166.67		LUMP SUM			
END BENT 1					LUMP SUM			38.8		5,543		8	8	520	4		152	169		2,425	
END BENT 2					LUMP SUM			38.8		5,543		8	8	520	4		168	187		2,425	
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	1	LUMP SUM	3,604	4,119	77.6	LUMP SUM	11,086	6	498.50	16	16	1,040	8	166.67	320	356	LUMP SUM	4,850

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 2.

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

FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.

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

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL REMOVE THE BRIDGE AND SUBMIT PLANS FOR DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 46 FT. RIGHT SIDE OF CENTERLINE ROADWAY AT END BENT 1 AND 27 FT. LEFT SIDE AND 30 FT. RIGHT SIDE OF CENTERLINE ROADWAY AT END BENT 2 AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

THE EXISTING STRUCTURE CONSISTING OF 3 SPANS: 1 @ 17'-10", 1 @ 17'-0" AND 1 @ 17'-8" WITH A CLEAR ROADWAY WIDTH OF 23'-2" AND REINFORCED CONCRETE FLOOR ON TIMBER JOISTS; SUBSTRUCTURE CONSISTING OF RC CAPS ON TIMBER PILES AT END BENTS AND BENTS 1 & 2, WITH STEEL HP CRUTCHES ON BENTS LOCATED AT THE SITE OF THE PROPOSED BRIDGE 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.

THE CONTRACTOR WILL BE REQUIRED TO CONSTRUCT, MAINTAIN AND AFTERWARDS REMOVE A TEMPORARY STRUCTURE AT STATION 17+08.00 -LDET- FOR USE DURING CONSTRUCTION OF THE PROPOSED STRUCTURE. FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY STRUCTURE, 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.

FOR PAYMENT OF THE TIE ROD ANCHOR ASSEMBLY, SEE SPECIAL PROVISION FOR 18" GALVANIZED STEEL SHEET PILE SYSTEM.

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

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

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

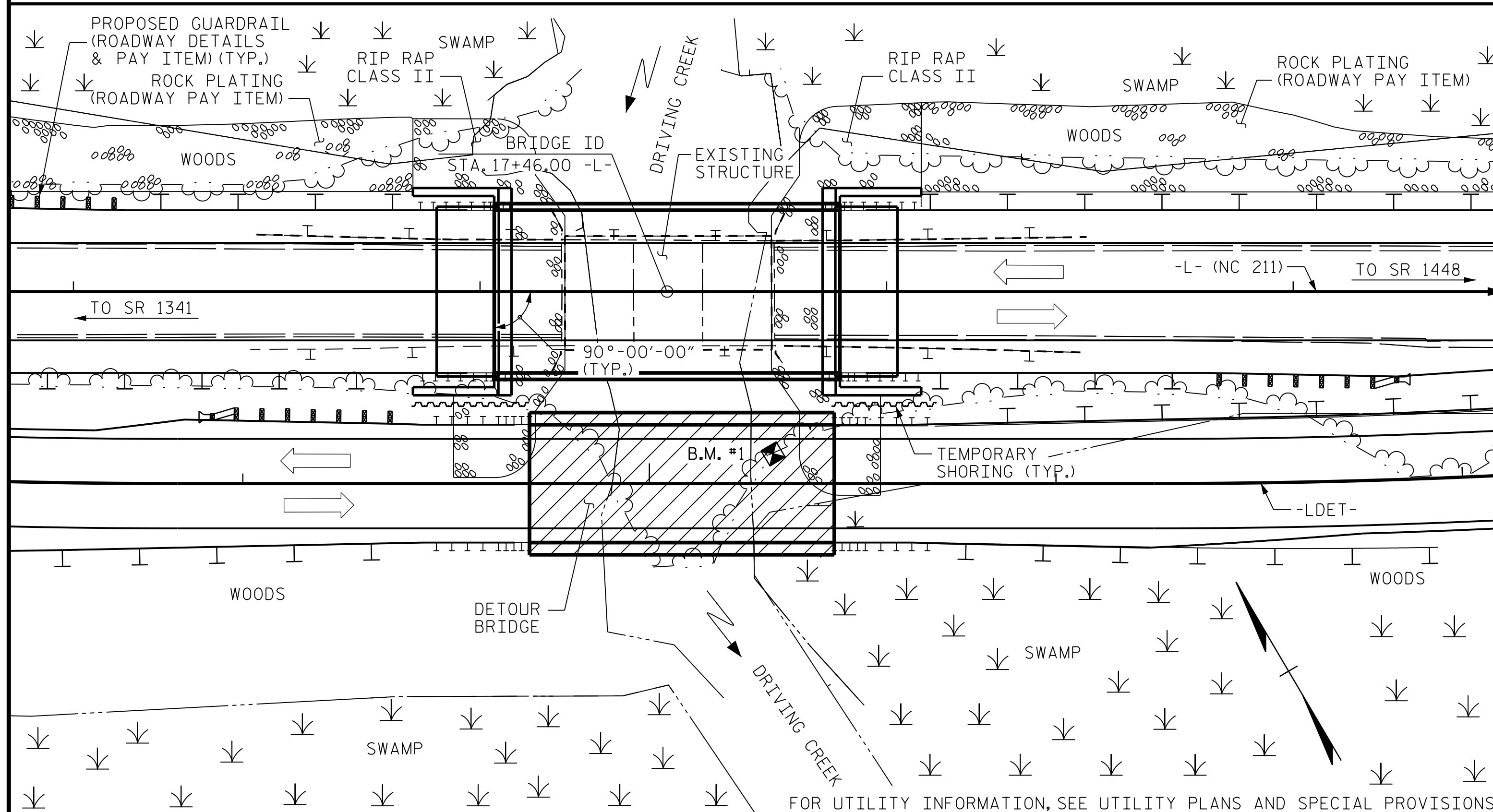
FOR 18" GALVANIZED STEEL SHEET PILE SYSTEM, SEE SPECIAL PROVISIONS.

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

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

B.M. #1: RR SPIKE IN 10" CEDAR, STA. 17+72.1 -L-, 39.9' RT. EL. 62.57



LOCATION SKETCH

HYDROGRAPHIC DATA

DESIGN DISCHARGE = 1300 CFS
 FREQUENCY OF DESIGN FLOOD = 50 YRS.
 DESIGN HIGH WATER ELEVATION = 61.3 FT
 DRAINAGE AREA = 10.8 SQ. MI.
 BASE DISCHARGE (Q100) = 1600 CFS
 BASE HIGH WATER ELEVATION = 61.7 FT.

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE = >2200 CFS
 FREQUENCY OF OVERTOPPING FLOOD = 500+ YRS.
 OVERTOPPING FLOOD ELEVATION = 64.4 FT.*
 *ELEVATION IS TAKEN AT SAG STA. 24+40.0 -L-

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

PROJECT NO. B-5624
BRUNSWICK COUNTY
 STATION: 17+46.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING

FOR BRIDGE OVER DRIVING
 CREEK ON NC 211
 BETWEEN SR 1341 AND SR 1448

REVISIONS

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

SHEET NO.

S-03

TOTAL SHEETS

20

CDM Smith
 CDM SMITH
 5400 Glenwood Avenue, Suite 400
 Raleigh, NC 27612-3228
 NC COA No. F-1255

NORTH CAROLINA
 PROFESSIONAL ENGINEER
 SEAL 16301
 TING FANG
 7/26/2021

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	DRAWN BY: JJR DATE: 9/20	DWG. No.
	CHECKED BY: THF DATE: 10/20	
	DESIGN ENGINEER: VDK DATE: 11/20	

FILE: SFILES
 DATE: SDATE
 STAGES

LOAD AND RESISTANCE FACTOR RATING (LRFD) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS																							
LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE								SERVICE III LIMIT STATE								COMMENT NUMBER	
						MOMENT				SHEAR				MOMENT									
						LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION		DISTANCE FROM LEFT END OF SPAN (ft)
DESIGN LOAD RATING	HL-93(Inv)	N/A	1	1.57	--	1.75	0.63	1.99	85'	I	40.9	0.78	1.57	85'	I	7.6	0.80	0.63	1.75	85'	I	40.9	
	HL-93(Opr)	N/A	--	2.07	--	1.35	0.63	2.58	85'	I	40.9	0.78	2.07	85'	I	7.6	N/A	--	--	--	--	--	
	HS-20(Inv)	36.000	2	2.05	73.80	1.75	0.63	2.66	85'	I	40.9	0.78	2.05	85'	I	7.6	0.80	0.63	2.34	85'	I	40.9	
	HS-20(Opr)	36.000	--	2.70	97.20	1.35	0.63	3.45	85'	I	40.9	0.78	2.70	85'	I	7.6	N/A	--	--	--	--	--	
LEGAL LOAD RATING	SV	SNSH	13.500	--	5.06	68.31	1.4	0.68	7.04	85'	EL	40.9	0.68	7.38	85'	EL	7.6	0.80	0.68	5.06	85'	EL	40.9
		SNGARBS2	20.000	--	3.72	74.40	1.4	0.68	5.18	85'	EL	40.9	0.68	5.17	85'	EL	7.6	0.80	0.68	3.72	85'	EL	40.9
		SNAGRIS2	22.000	--	3.51	77.22	1.4	0.68	4.88	85'	EL	40.9	0.68	4.77	85'	EL	7.6	0.80	0.68	3.51	85'	EL	40.9
		SNCOTTS3	27.250	--	2.51	68.40	1.4	0.68	3.50	85'	EL	40.9	0.68	3.60	85'	EL	7.6	0.80	0.68	2.51	85'	EL	40.9
		SNAGGRS4	34.925	--	2.08	72.64	1.4	0.68	2.90	85'	EL	40.9	0.68	2.94	85'	EL	7.6	0.80	0.68	2.08	85'	EL	40.9
		SNS5A	35.550	--	2.04	72.52	1.4	0.68	2.84	85'	EL	40.9	0.68	2.97	85'	EL	7.6	0.80	0.68	2.04	85'	EL	40.9
		SNS6A	39.950	--	1.86	74.31	1.4	0.68	2.59	85'	EL	40.9	0.68	2.66	85'	EL	7.6	0.80	0.68	1.86	85'	EL	40.9
	TTST	SNS7B	42.000	--	1.77	74.34	1.4	0.68	2.47	85'	EL	40.9	0.68	2.62	85'	EL	7.6	0.80	0.68	1.77	85'	EL	40.9
		TNAGRIT3	33.000	--	2.27	74.91	1.4	0.68	3.16	85'	EL	40.9	0.68	3.23	85'	EL	7.6	0.80	0.68	2.27	85'	EL	40.9
		TNT4A	33.075	--	2.28	75.41	1.4	0.68	3.17	85'	EL	40.9	0.68	3.16	85'	EL	7.6	0.80	0.68	2.28	85'	EL	40.9
		TNT6A	41.600	--	1.86	77.38	1.4	0.68	2.58	85'	EL	40.9	0.68	2.78	85'	EL	7.6	0.80	0.68	1.86	85'	EL	40.9
		TNT7A	42.000	--	1.86	78.12	1.4	0.68	2.59	85'	EL	40.9	0.68	2.71	85'	EL	7.6	0.80	0.68	1.86	85'	EL	40.9
		TNT7B	42.000	--	1.92	80.64	1.4	0.68	2.67	85'	EL	40.9	0.68	2.55	85'	EL	7.6	0.80	0.68	1.92	85'	EL	40.9
		TNAGRIT4	43.000	--	1.83	78.69	1.4	0.68	2.55	85'	EL	40.9	0.68	2.48	85'	EL	7.6	0.80	0.68	1.83	85'	EL	40.9
TNACT5A	45.000	--	1.73	77.85	1.4	0.68	2.41	85'	EL	40.9	0.68	2.45	85'	EL	7.6	0.80	0.68	1.73	85'	EL	40.9		
TNACT5B	45.000	3	1.71	76.95	1.4	0.68	2.38	85'	EL	40.9	0.68	2.36	85'	EL	7.6	0.80	0.68	1.71	85'	EL	40.9		

LOAD FACTORS:

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

NOTES:
 MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.
 ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:
 1.
 2.
 3.
 4.

CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

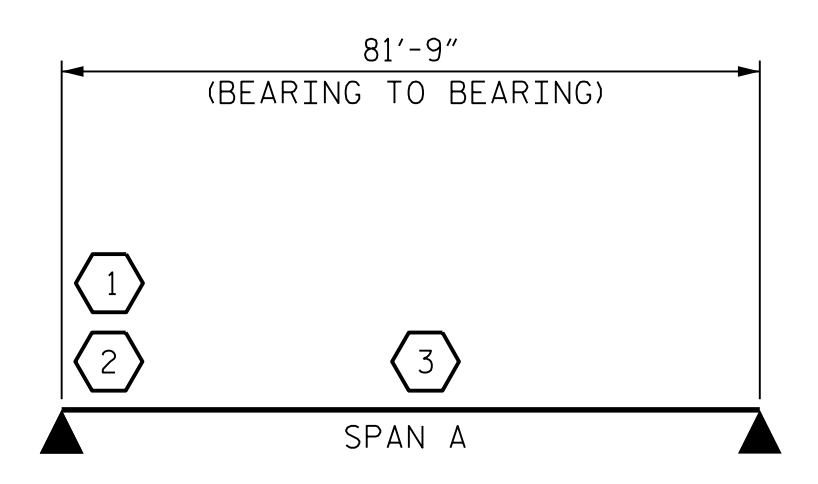
2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



LRFR SUMMARY

PROJECT NO. B-5624
BRUNSWICK COUNTY
 STATION: 17+46.00 -L-

CDM Smith

CDM SMITH
 5400 Glenwood Avenue, Suite 400
 Raleigh, NC 27612-3228
 NC COA No. F-1255

NORTH CAROLINA
 PROFESSIONAL
 SEAL
 16301
 ENGINEER
 TING FANG
 2/14/2021

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	DRAWN BY: JJR DATE: 8/19	CHECKED BY: VDK DATE: 8/19	DESIGN ENGINEER: THF DATE: 11/20	DWG. No.
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-04
1			3			TOTAL SHEETS
2			4			20

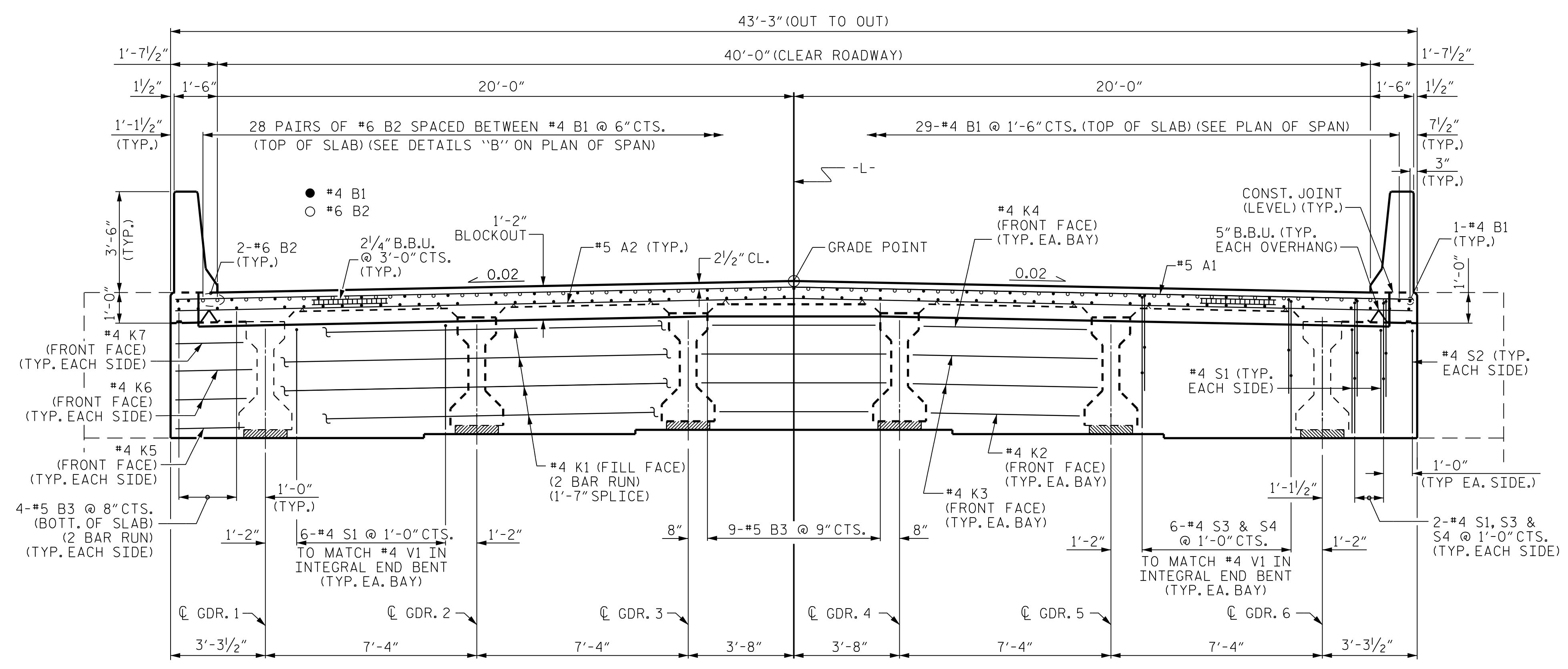
NOTES

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.

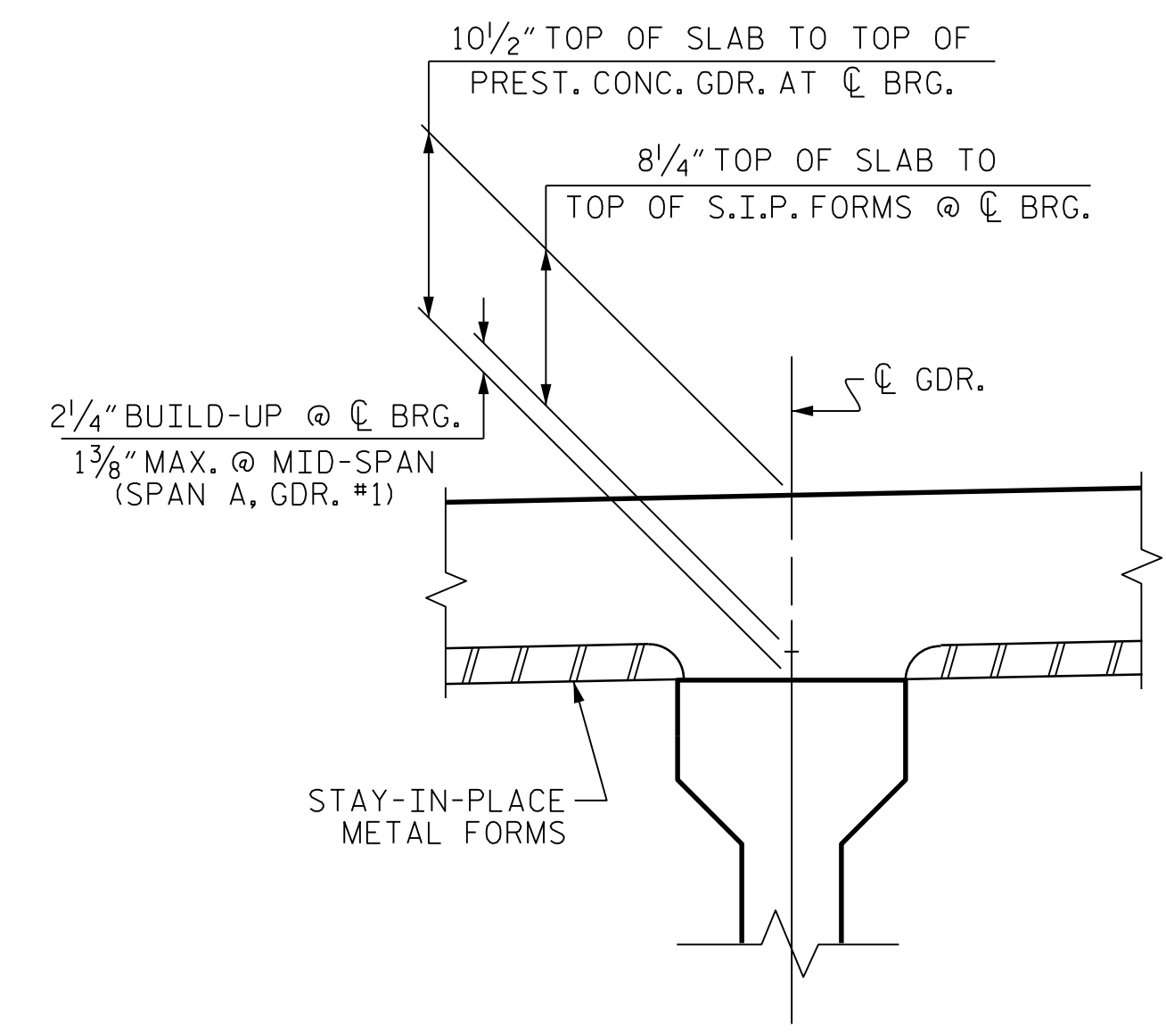
LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS.

BARRIER RAILS 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.

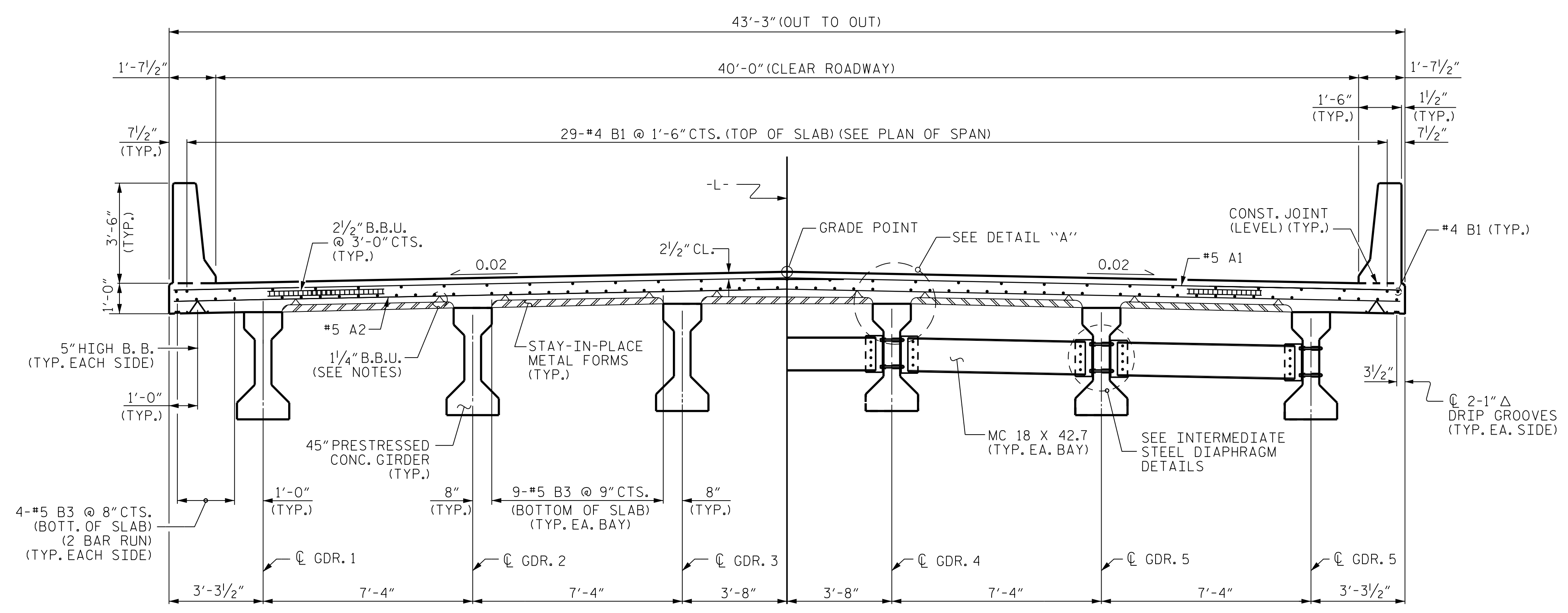
FOR INTERMEDIATE STEEL DIAPHRAGMS DETAILS, SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE III PRESTRESSED CONCRETE GIRDERS" SHEET.



TYPICAL SECTION
SHOWING ABUTMENT WALL AT END BENT



DETAIL "A"

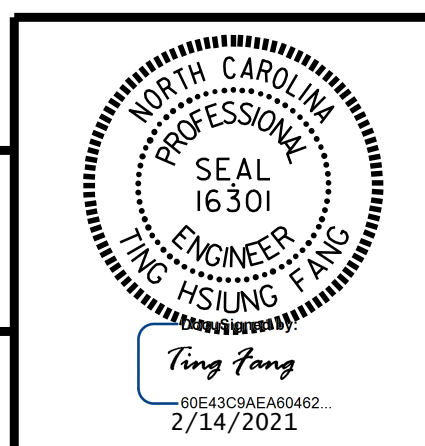


HALF TYPICAL SECTION
SHOWING DECK

HALF TYPICAL SECTION
SHOWING INTERMEDIATE DIAPHRAGMS

PROJECT NO. B-5624
BRUNSWICK COUNTY
STATION: 17+46.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
TYPICAL SECTION



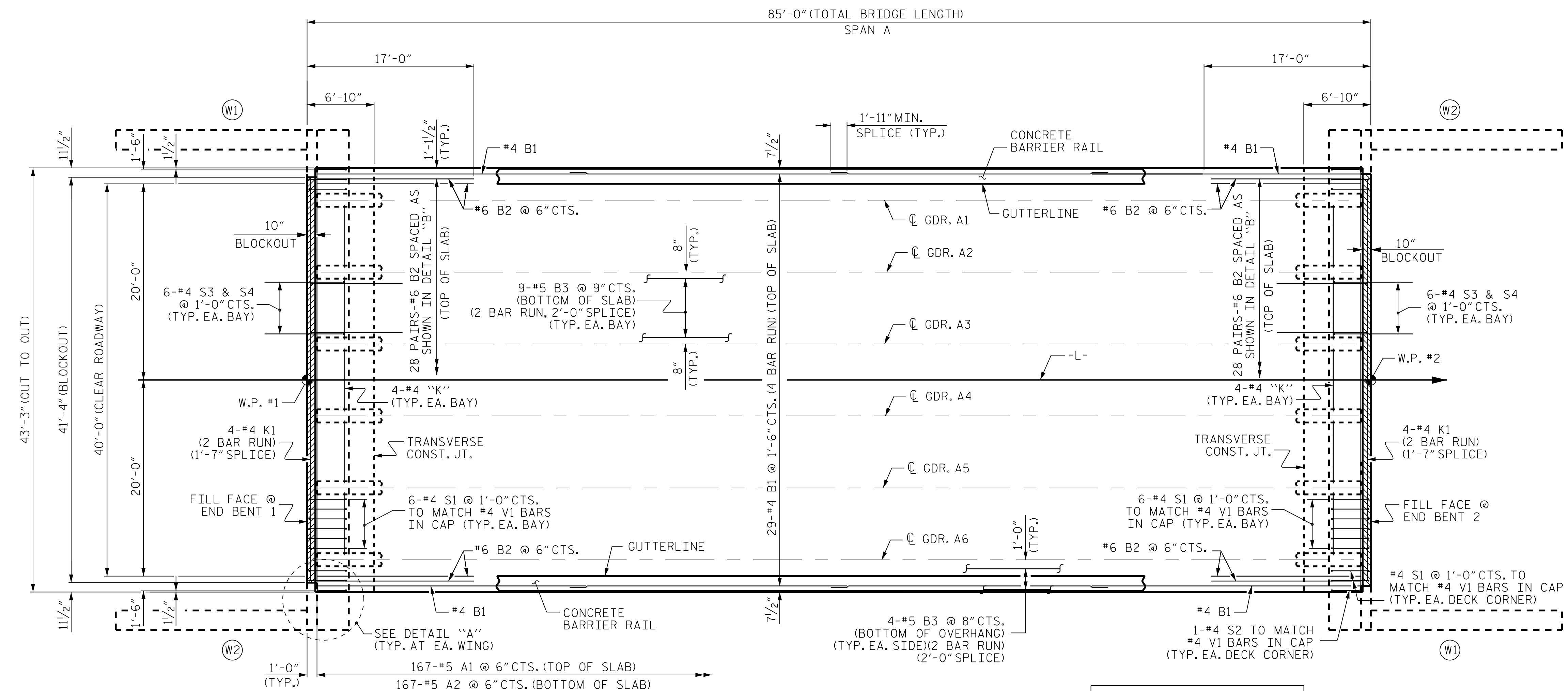
CDM Smith
CDM SMITH
5400 Glenwood Avenue, Suite 400
Raleigh, NC 27612-3228
NC COA No. F-1255

DWG. No. _____
DRAWN BY: JJR DATE: 9/20
CHECKED BY: THF DATE: 10/20
DESIGN ENGINEER: VDK DATE: 11/20

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

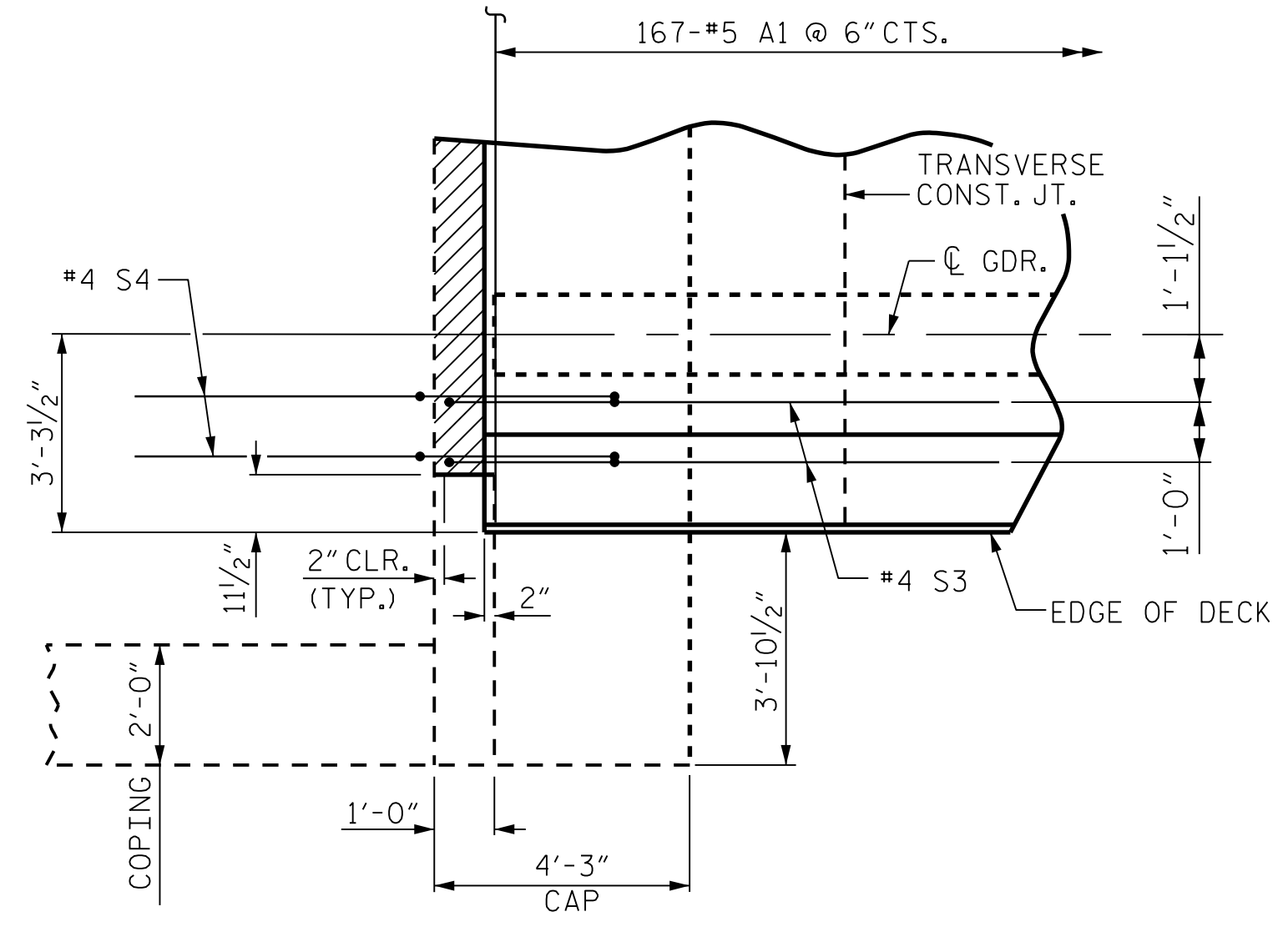
REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

TOTAL SHEETS: 20



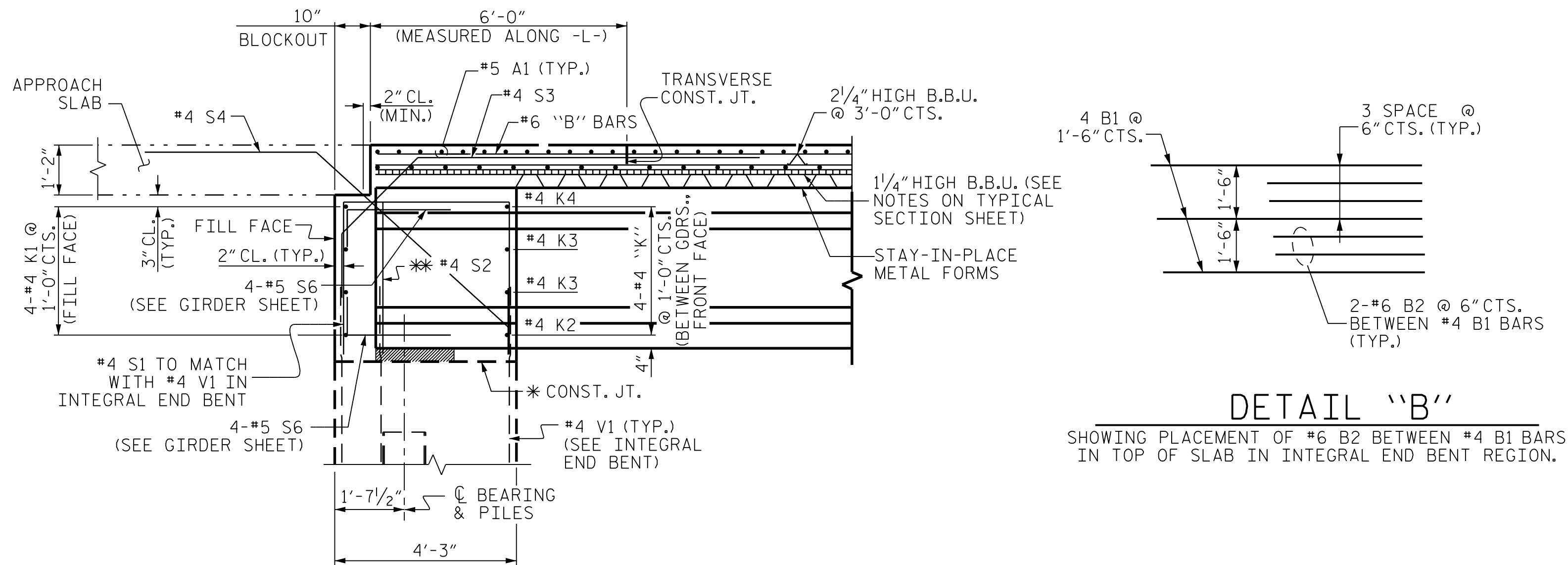
PLAN OF SPAN

MINIMUM SPLICE LENGTH FOR ALL #4 "B" EPOXY COATED BARS ON THIS SHEET IS 1'-11"



DETAIL "A"

S1 & S5 BARS ARE NOT SHOWN FOR CLARITY.



SECTION THROUGH INTEGRAL END BENT

* THE TOP SURFACE OF THE END BENT CAP EXCLUDING THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4"

* #4 S2 LOCATED AT OUTSIDE EDGES OF INTEGRAL END BENT DIAPHRAGM. SEE PLAN OF SPANS AND TYPICAL SECTION FOR PLACEMENT DETAILS.

DETAIL "B"

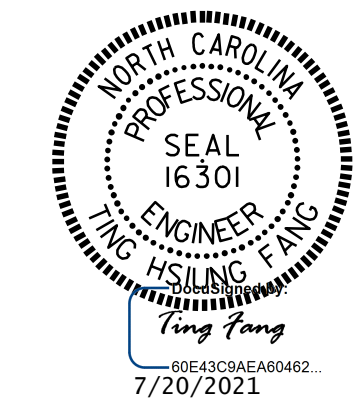
SHOWING PLACEMENT OF #6 B2 BETWEEN #4 B1 BARS IN TOP OF SLAB IN INTEGRAL END BENT REGION.

PROJECT NO. B-5624
BRUNSWICK COUNTY
STATION: 17+46.00 -L-

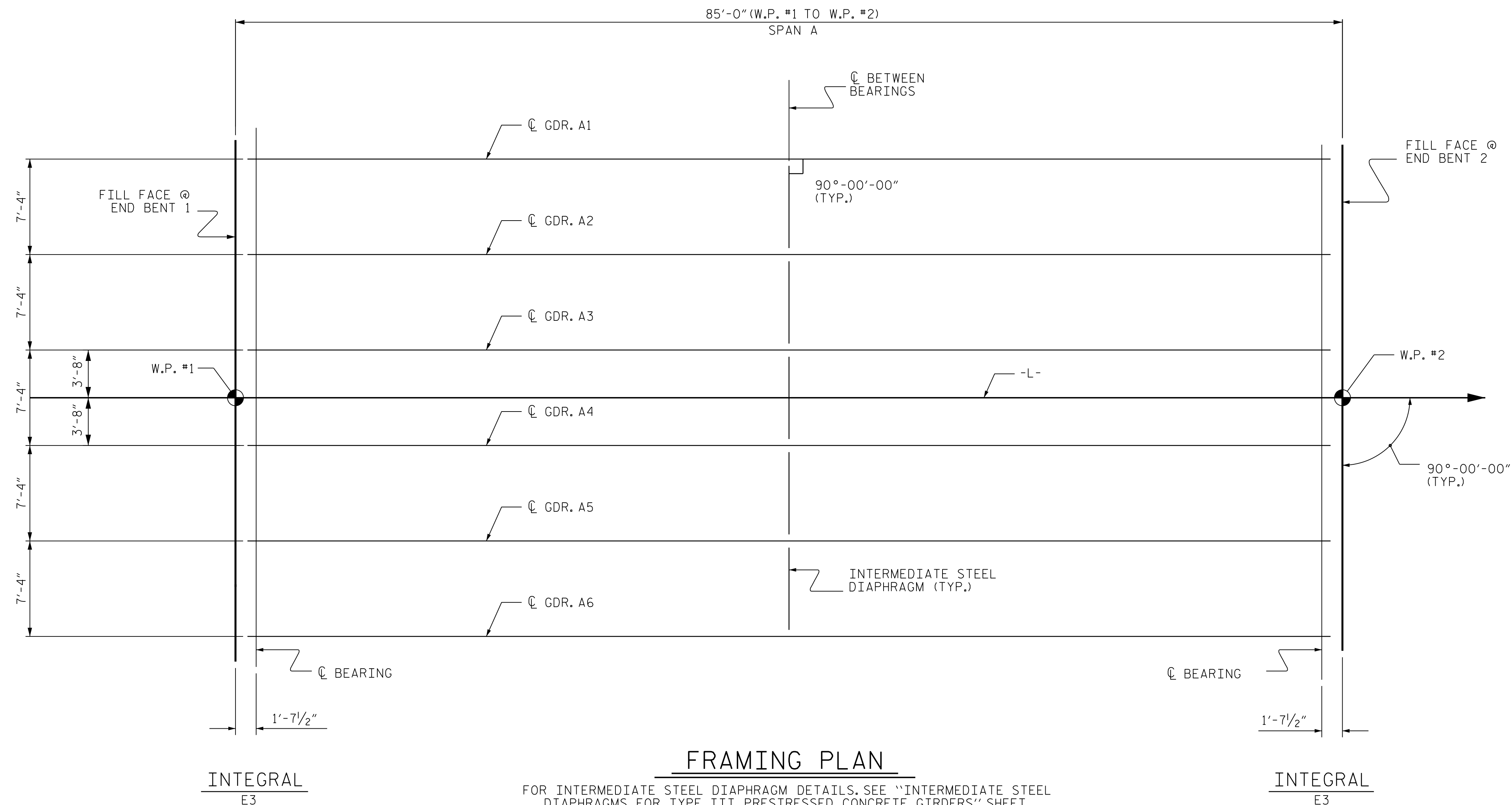
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
PLAN OF SPAN
SPAN A

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-06	
1			3			TOTAL SHEETS	
2			4			20	

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CDM SMITH
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	DESIGN ENGINEER: VDK DATE: 11/20	



DEAD LOAD DEFLECTION TABLE																						
		SPAN A																				
		GIRDERS 1 & 6																				
	BRG.	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	BRG.	
CAMBER (GIRDER ALONE IN PLACE)	↑	0	0.029	0.057	0.084	0.108	0.130	0.148	0.163	0.174	0.180	0.182	0.180	0.174	0.163	0.148	0.130	0.108	0.084	0.057	0.029	0
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0	0.016	0.032	0.048	0.064	0.077	0.088	0.097	0.104	0.108	0.109	0.108	0.104	0.097	0.088	0.077	0.064	0.048	0.032	0.016	0
FINAL CAMBER	↑	0	1/8"	5/16"	7/16"	1/2"	5/8"	3/4"	13/16"	13/16"	7/8"	7/8"	7/8"	13/16"	13/16"	3/4"	5/8"	1/2"	7/16"	5/16"	1/8"	0
		GIRDERS 2 THRU 5																				
	BRG.	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	BRG.	
CAMBER (GIRDER ALONE IN PLACE)	↑	0	0.029	0.057	0.084	0.108	0.130	0.148	0.163	0.174	0.180	0.182	0.180	0.174	0.163	0.148	0.130	0.108	0.084	0.057	0.029	0
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0	0.017	0.034	0.050	0.066	0.080	0.092	0.101	0.108	0.113	0.114	0.113	0.108	0.101	0.092	0.080	0.066	0.050	0.034	0.017	0
FINAL CAMBER	↑	0	1/8"	1/4"	7/16"	1/2"	5/8"	11/16"	3/4"	13/16"	13/16"	13/16"	13/16"	13/16"	3/4"	11/16"	5/8"	1/2"	7/16"	1/4"	1/8"	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-5624
BRUNSWICK COUNTY
 STATION: 17+46.00 -L-

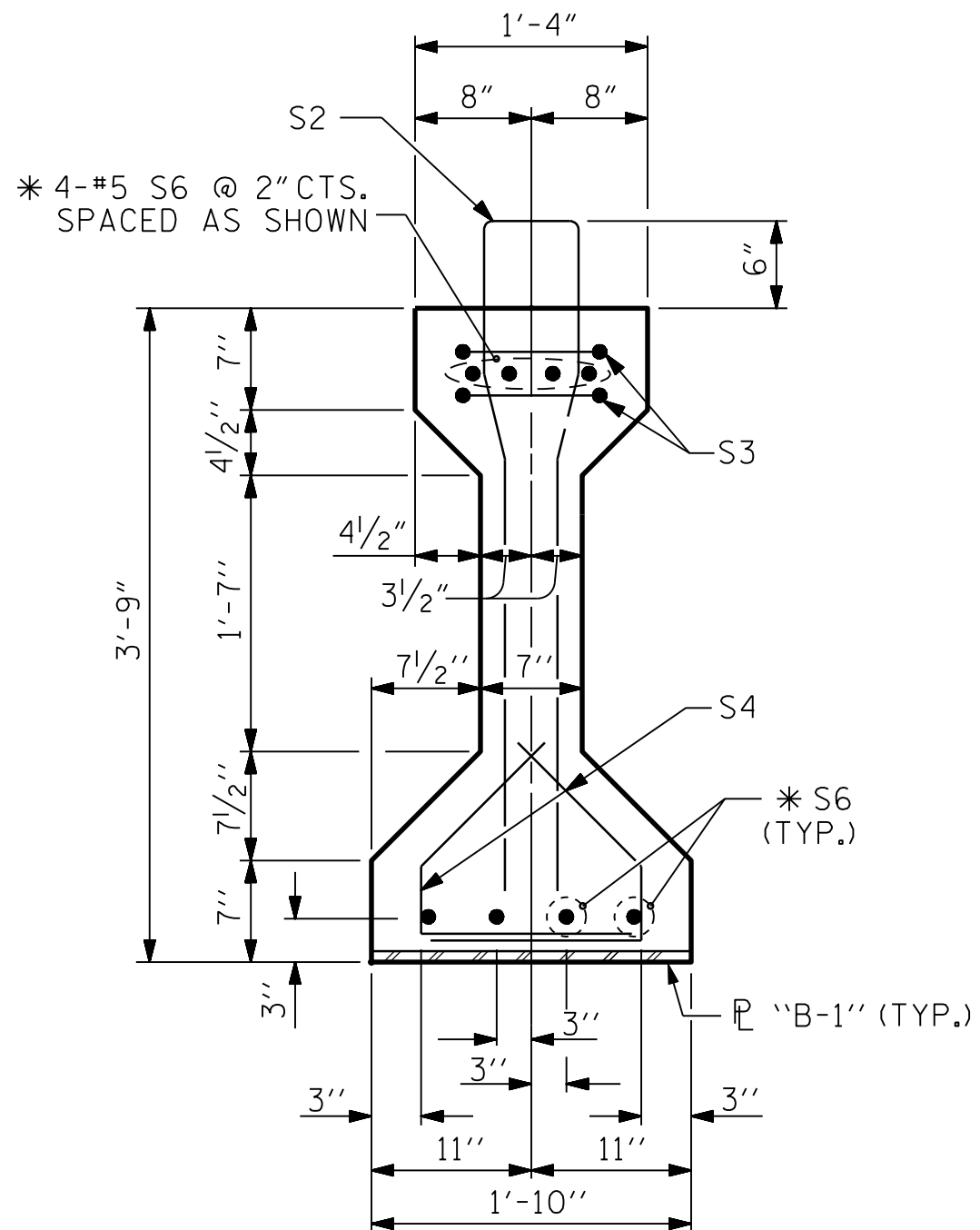
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
**FRAMING PLAN
 AND DEAD LOAD
 DEFLECTIONS**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-07
1			3			TOTAL SHEETS
2			4			20

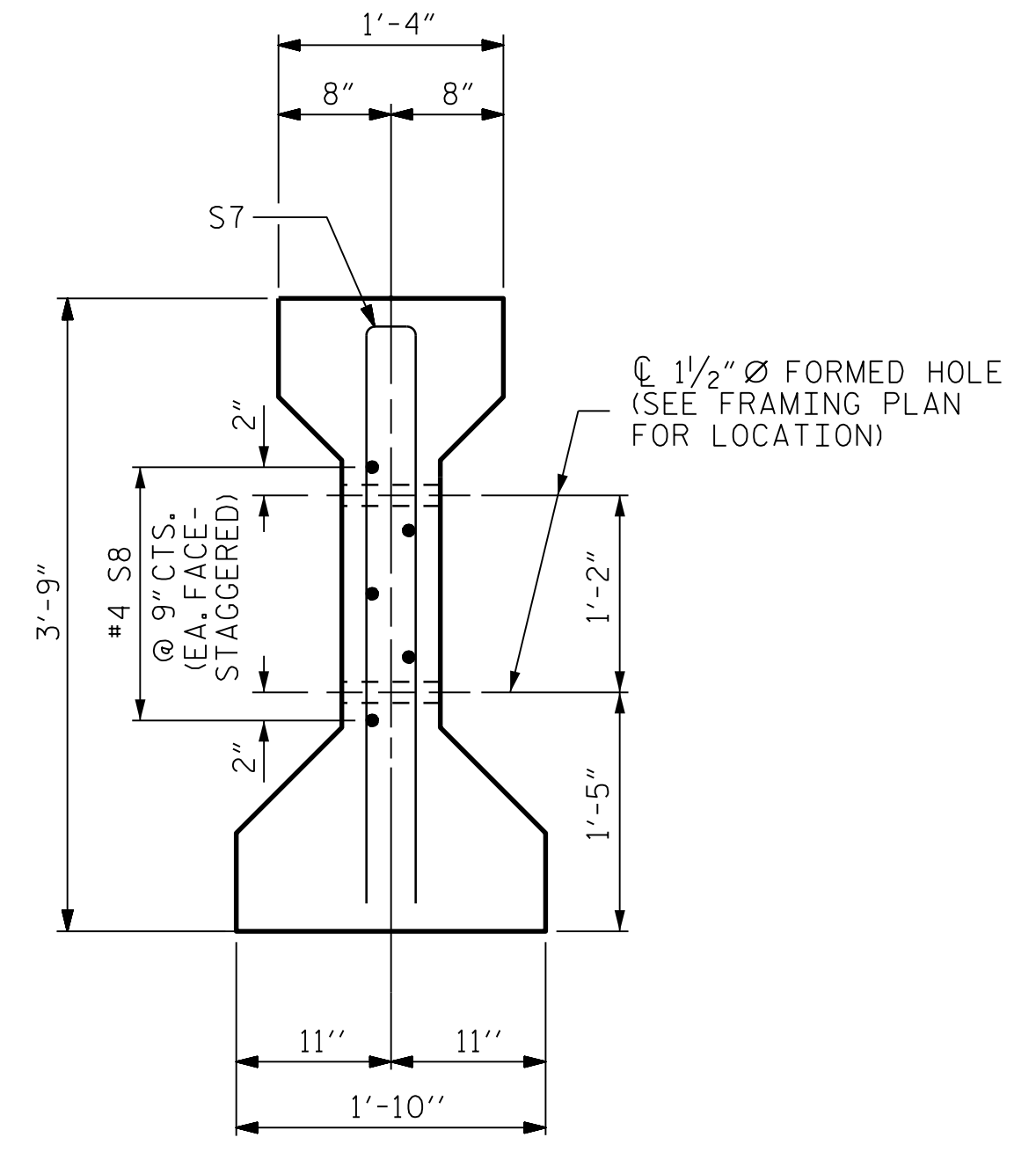
CDM Smith
 CDM SMITH
 5400 Glenwood Avenue, Suite 400
 Raleigh, NC 27612-3228
 NC COA No. F-1255



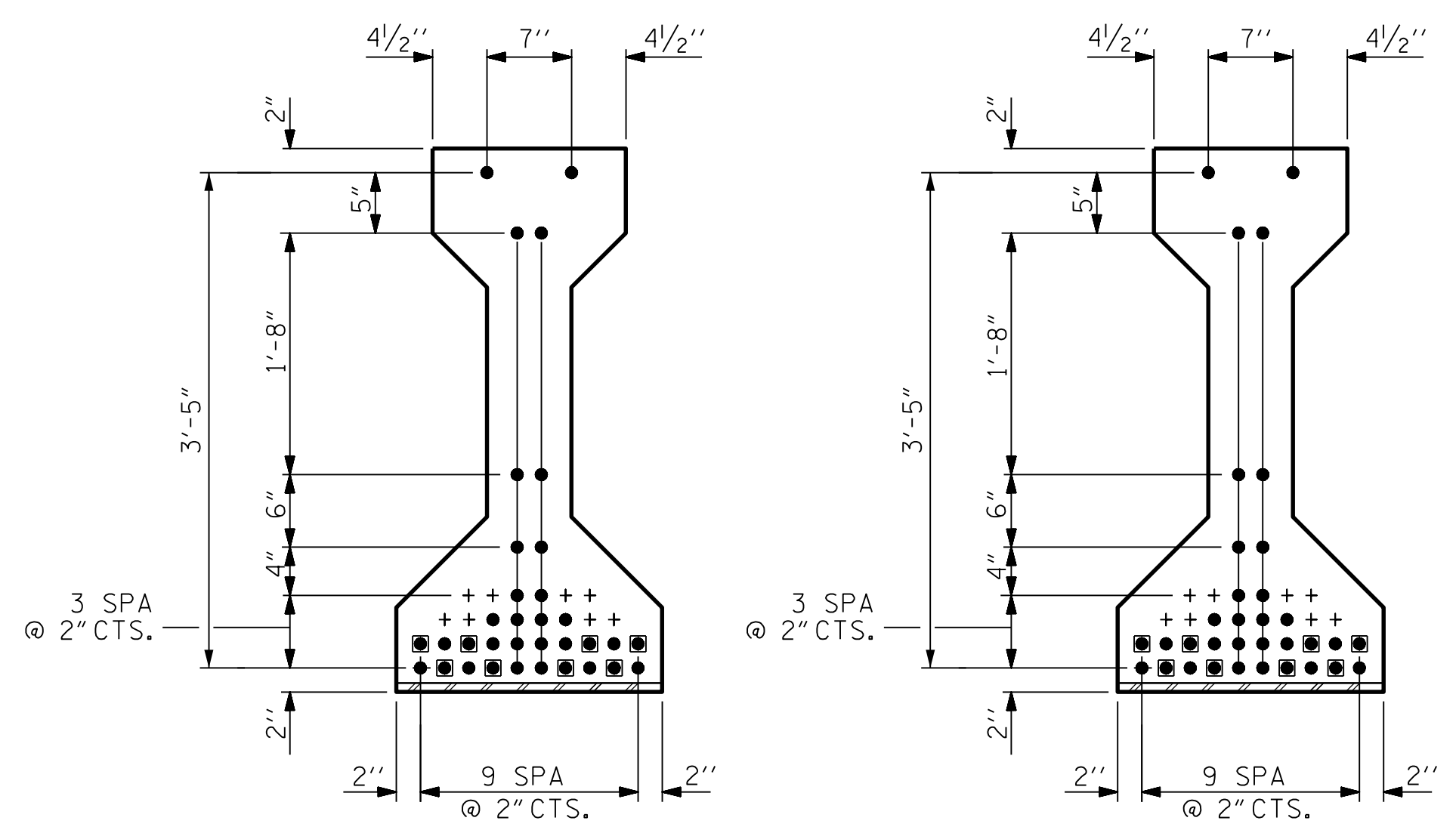
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	CHECKED BY : THF DATE : 10/20	
	DESIGN ENGINEER : VDK DATE : 11/20	



SECTION A-A
(FOR EMBEDDED "B-1" DETAILS
SEE SHEET 2 OF 2)



SECTION C-C
(S1 BARS NOT SHOWN)



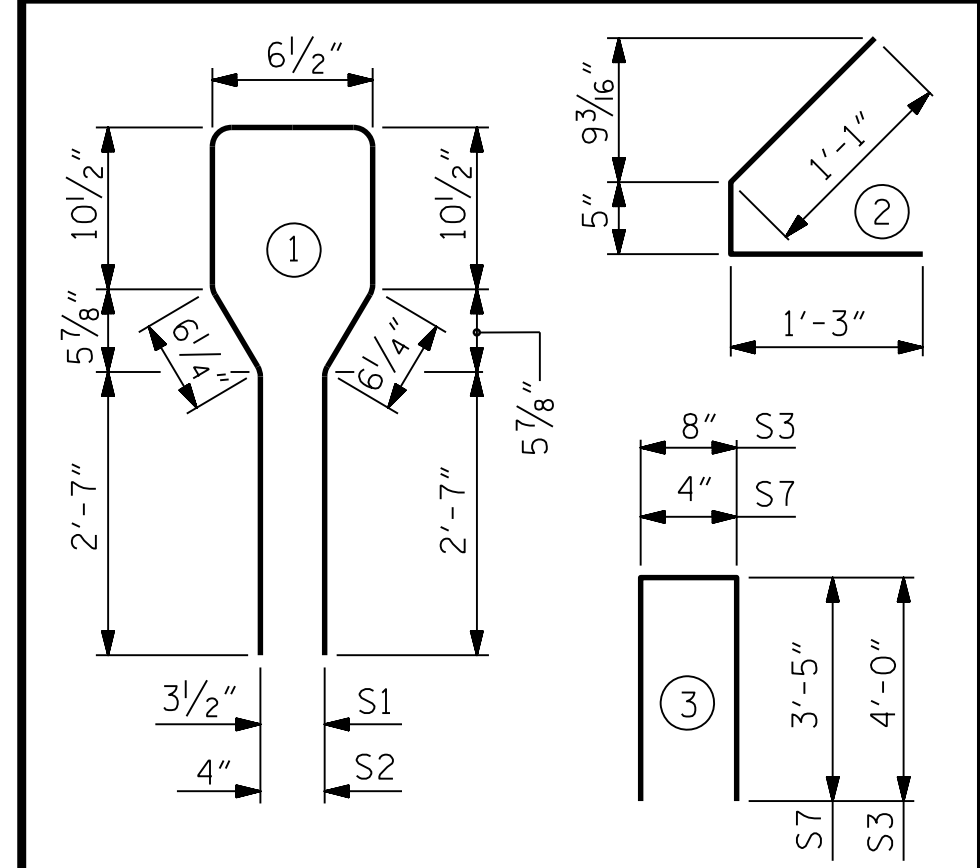
0.6" Ø LOW RELAXATION STRAND LAYOUT
(34 STRANDS, ALL STRAIGHT, 8 DEBONDED STRANDS)
DEBONDING LEGEND
● FULLY BONDED STRANDS
■ STRANDS DEBONDED FOR 12'-0" FROM END OF GIRDER

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	76	#4	1	8'-6"	432
S2	12	#6	1	8'-6"	153
S3	4	#4	3	8'-8"	23
S4	60	#4	2	2'-9"	110
*S6	16	#5	STR	3'-8"	61
S7	2	#5	3	7'-2"	15
S8	5	#4	STR	7'-0"	23
S10	2	#3	STR	1'-0"	1

*S6 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT TREATING SHALL NOT BE ALLOWED.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT-TO-OUT

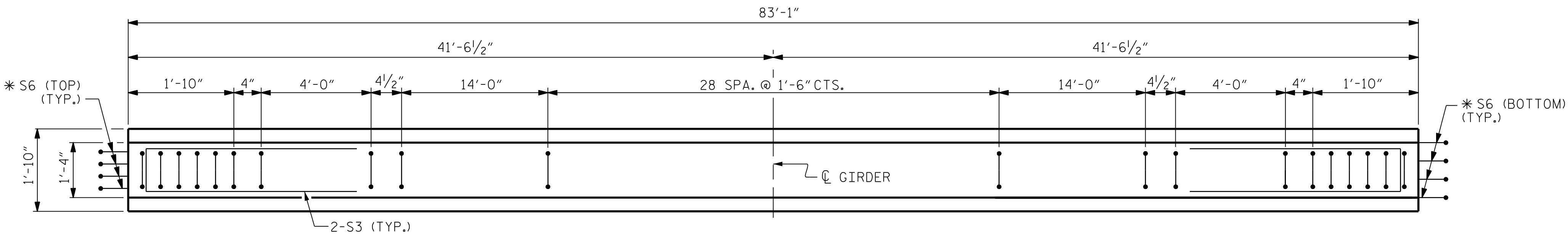
QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL	9000 PSI CONCRETE	0.6" Ø L. R. STRANDS
	LB.	C.Y.	No.
	817	12.0	34

GIRDERS REQUIRED

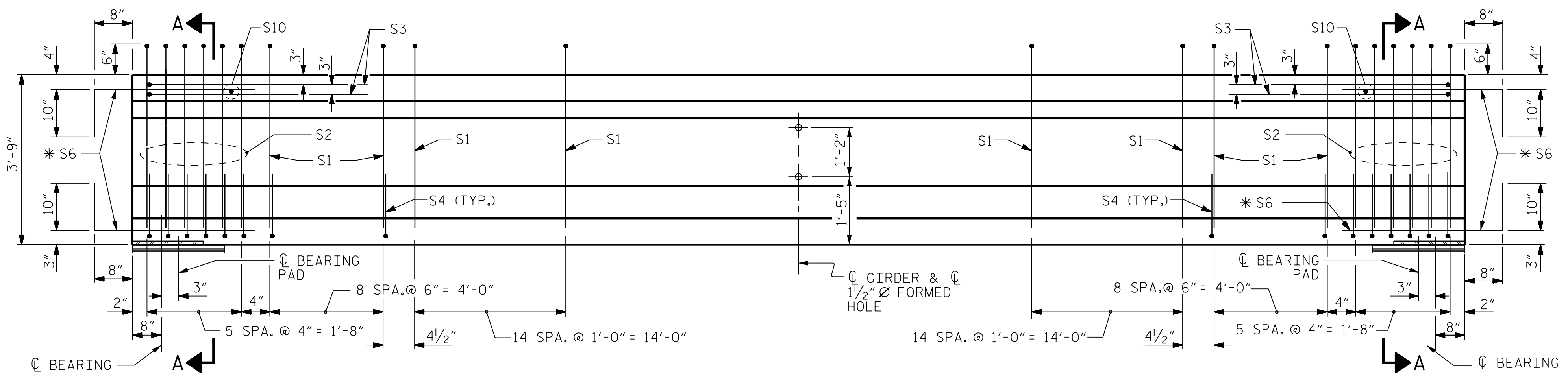
NUMBER	LENGTH	TOTAL LENGTH
6	83'-1"	498.50'

FOR PRESTRESSED GIRDER NOTES, SEE SHEET 2 OF 2.

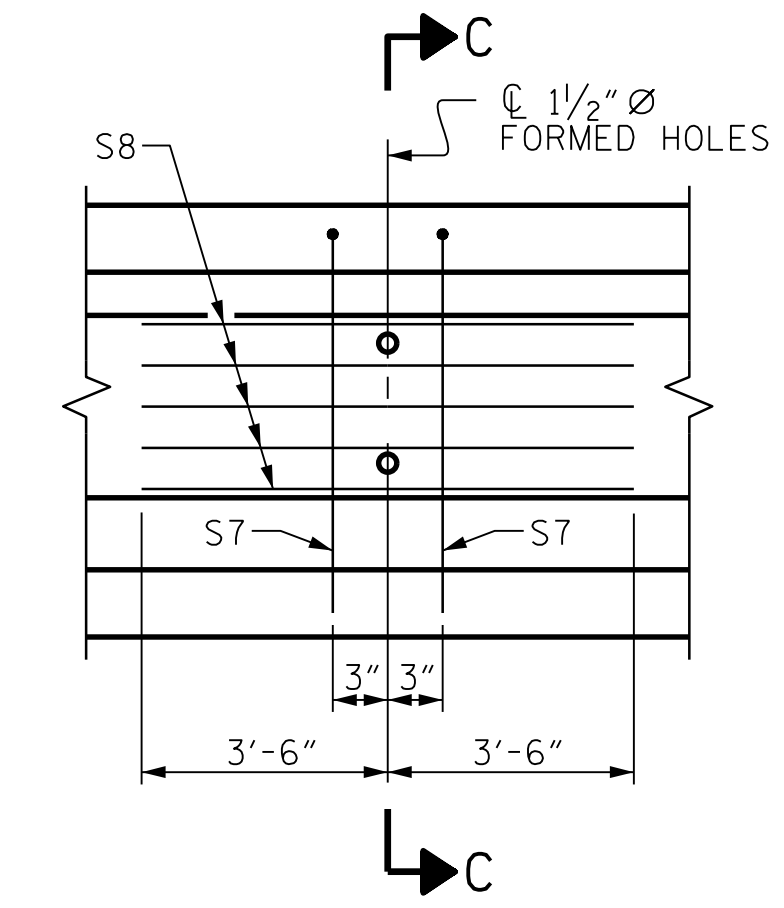


PLAN OF GIRDER

NO BEVEL REQUIRED AT END OF GIRDERS, ALL DIMENSIONS SHOWN ARE HORIZONTAL DISTANCE.



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



PARTIAL ELEVATION
SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR ALL GIRDERS

END BENT 1
INTEGRAL

END BENT 2
INTEGRAL

PROJECT NO. B-5624
BRUNSWICK COUNTY
STATION: 17+46.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
AASHTO TYPE III
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
SPAN A

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

TOTAL SHEETS: 20

CDM Smith
CDM SMITH
5400 Glenwood Avenue, Suite 400
Raleigh, NC 27612-3228
NC COA No. F-1255

PROFESSIONAL ENGINEER
SEAL 16301
TUNG FANG
2/14/2021

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PRESTRESSED CONCRETE GIRDER NOTES

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

ALL REINFORCING STEEL SHALL BE GRADE 60.

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

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

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

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6900 PSI.

THE TOP SURFACE OF THE GIRDER SHALL BE RAKED TO A DEPTH OF 1/4" EXCEPT IN THE AREA BETWEEN THE STIRRUP AND THE EDGE OF THE GIRDER.

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 AN 8 MIL THICK 99.50 PERCENT 1350 ALUMINUM (W-AL-1350) THERMAL SPRAY COATING WITH A 0.5 MIL THICK SEAL COAT TO ALL PLATES, BENT PLATES, CHANNELS, ANGLES, AND PLATE WASHERS IN ACCORDANCE WITH THE 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.

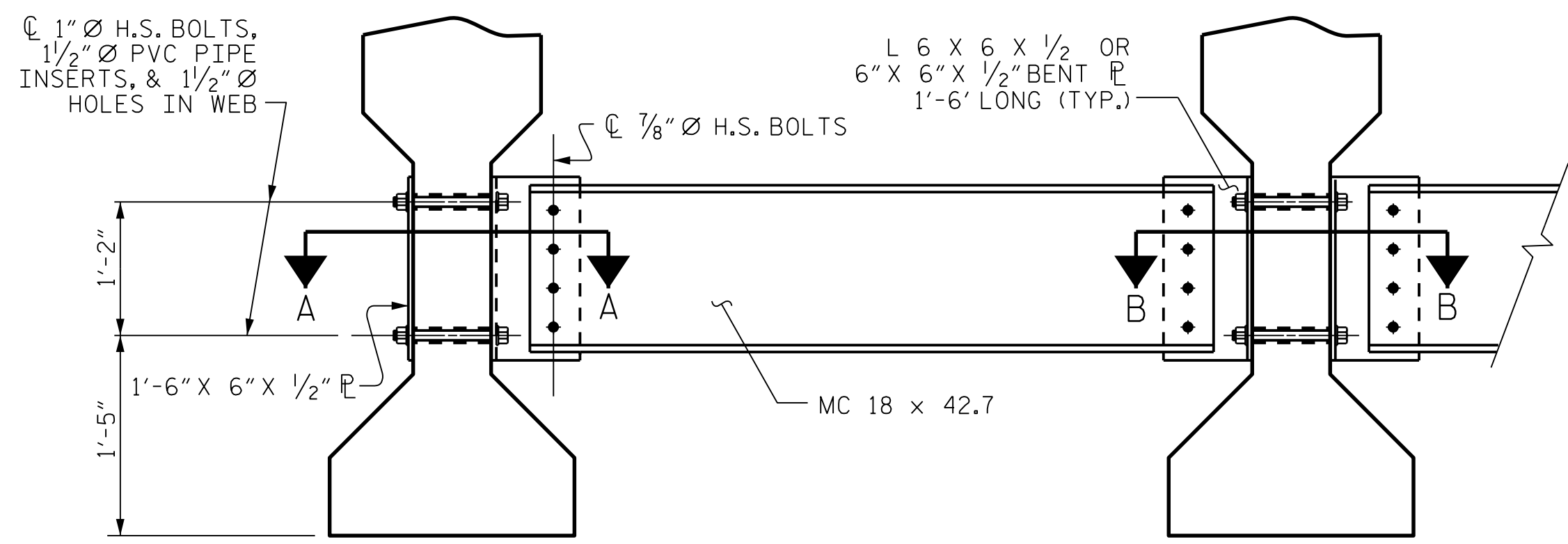
FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

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.

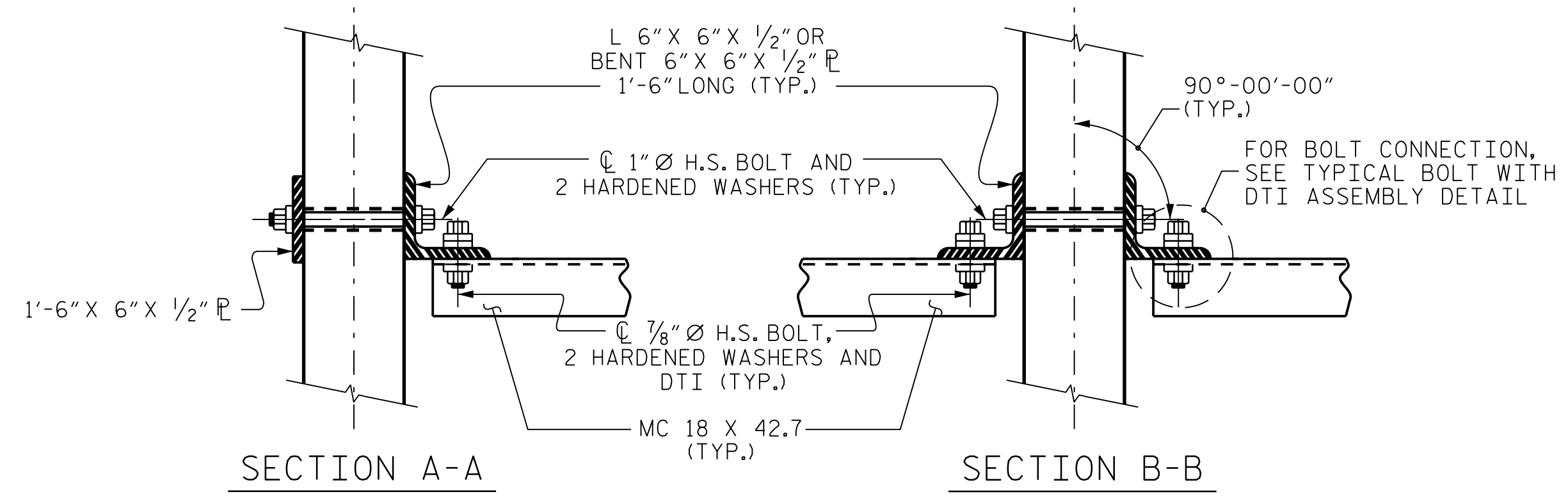
THE COST OF THE STEEL DIAPHRAGMS AND ASSEMBLIES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE GIRDERS.



EXTERIOR GIRDER INTERIOR GIRDER

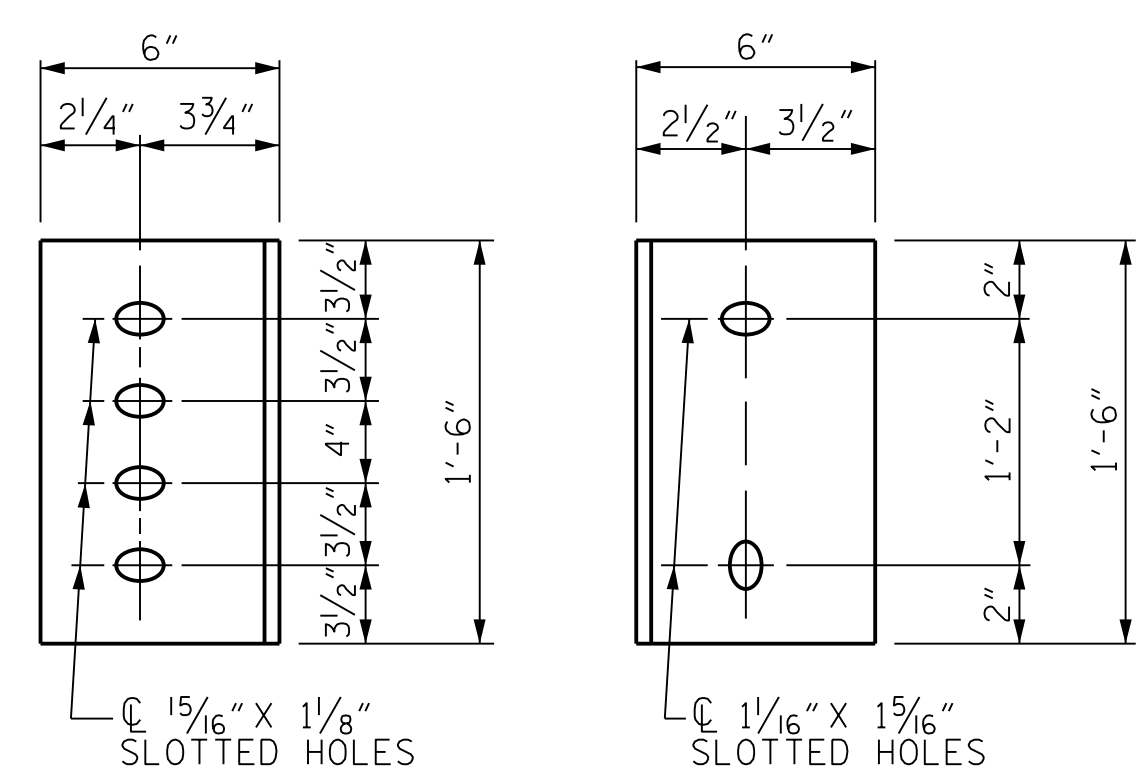
PART SECTION AT INTERMEDIATE DIAPHRAGM

(TYPICAL FOR EACH BAY)



CONNECTION DETAILS

FOR LOCATION OF INTERMEDIATE DIAPHRAGMS, SEE "FRAMING PLAN" SHEET.



DIAPHRAGM FACE WEB FACE

CONNECTOR PLATE DETAILS

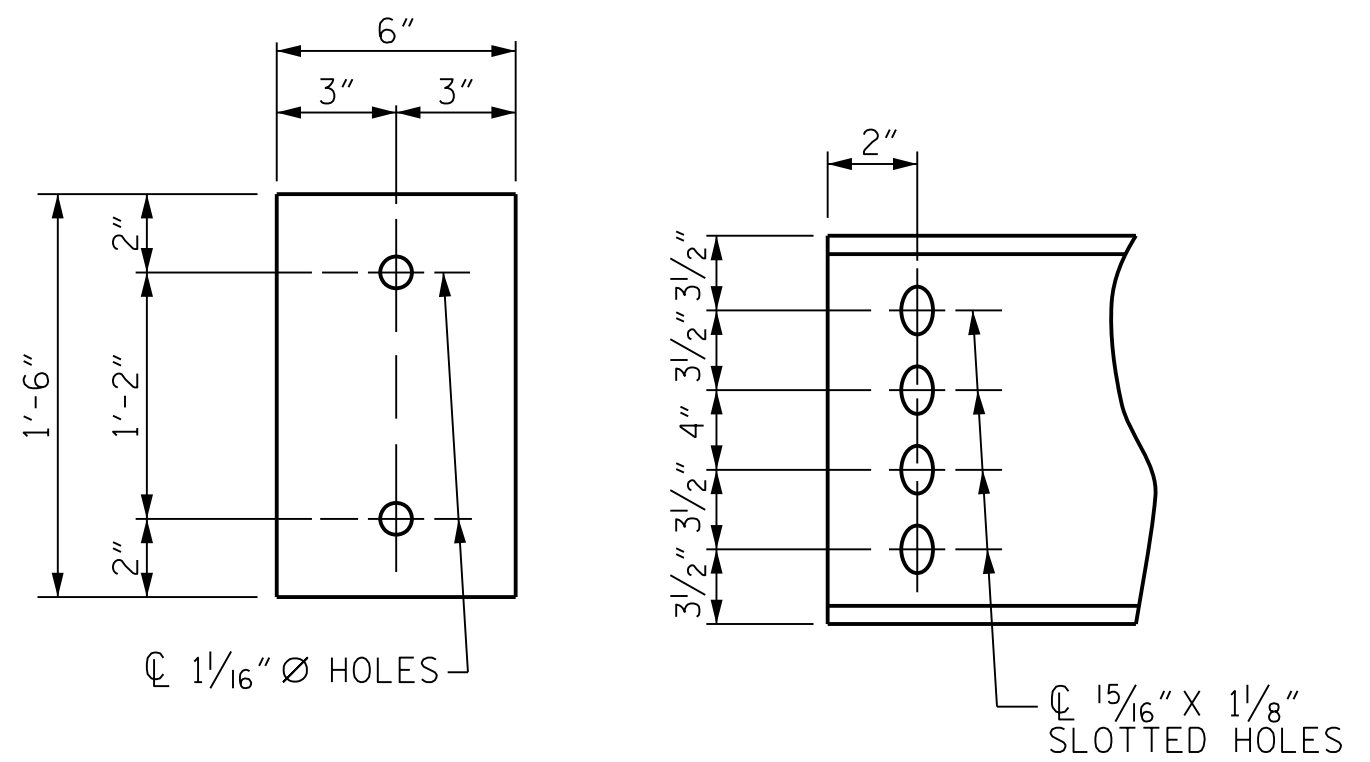
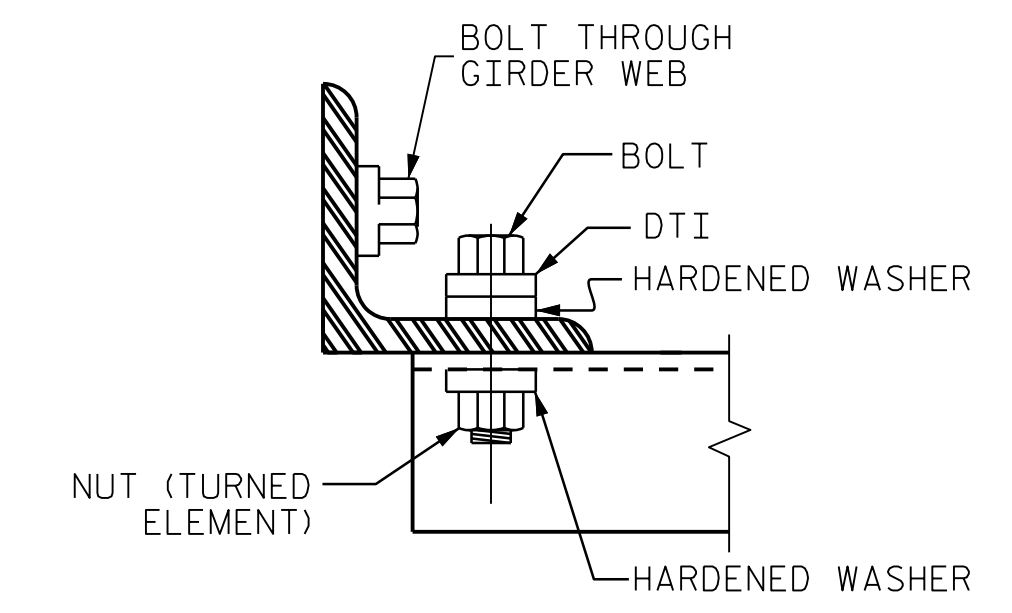
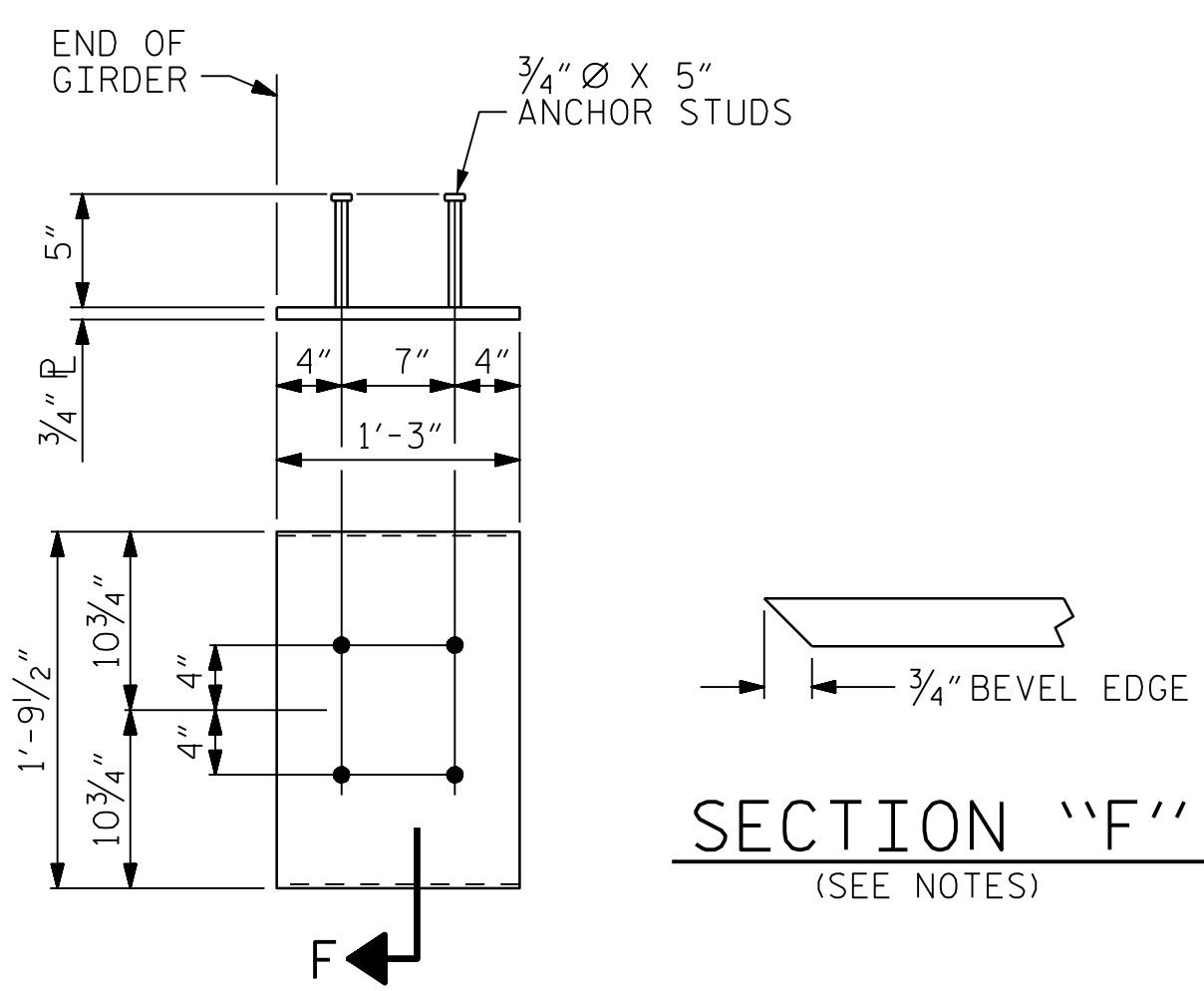


PLATE DETAILS CHANNEL END



BOLT WITH DTI ASSEMBLY DETAIL



EMBEDDED PLATE "B-1" DETAILS

(2 REQ'D PER GIRDER)

PROJECT NO. B-5624
BRUNSWICK COUNTY
STATION: 17+46.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

INTERMEDIATE
STEEL DIAPHRAGMS
FOR TYPE III
PRESTRESSED CONCRETE
GIRDERS

NORTH CAROLINA
PROFESSIONAL
SEAL
16301
ENGINEER
TING FANG
HSIUNG FANG

Ting Fang
00E43C3BAE60482
2/14/2021

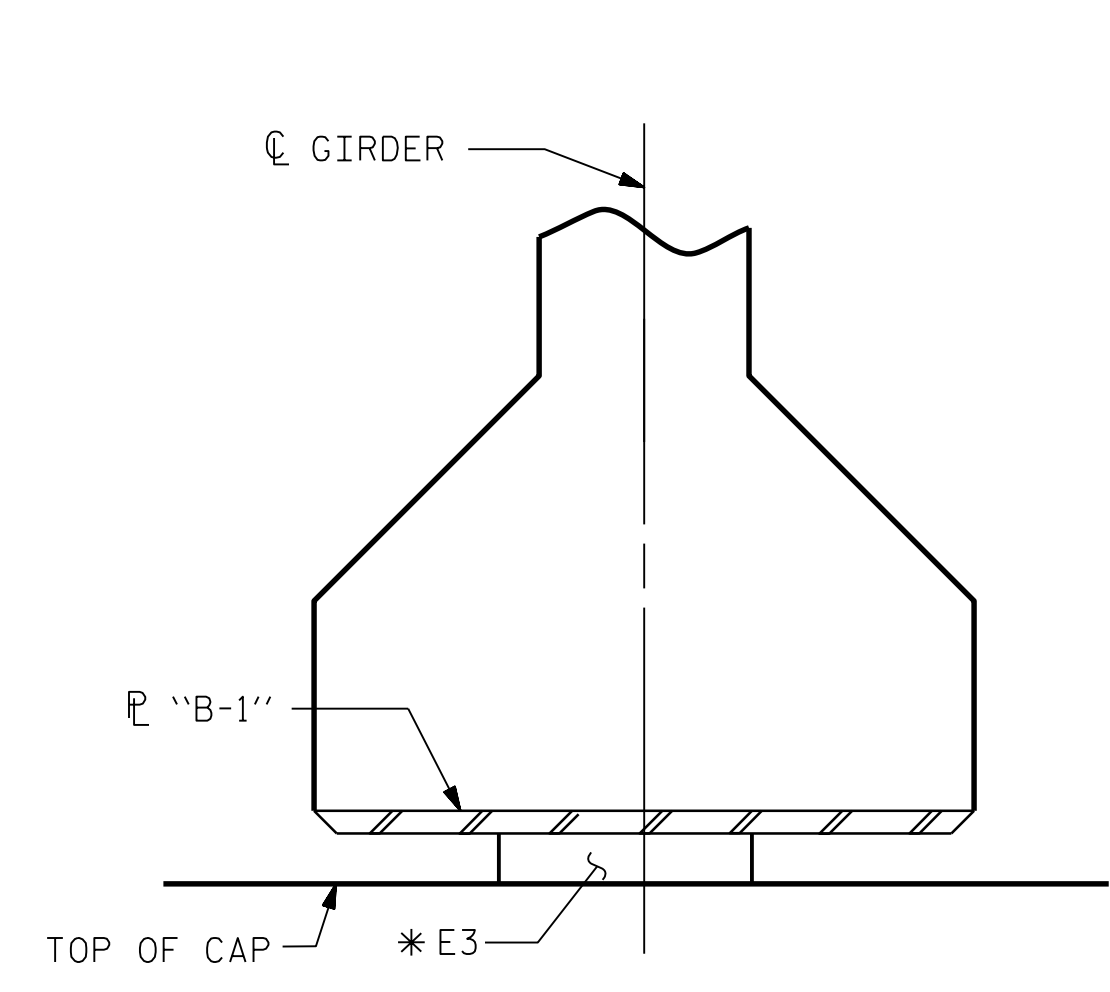
CDM Smith
CDM SMITH
5400 Glenwood Avenue, Suite 400
Raleigh, NC 27612-3228
NC COA No. F-1255

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	DRAWN BY: JJR DATE: 9/20	DWG. No.
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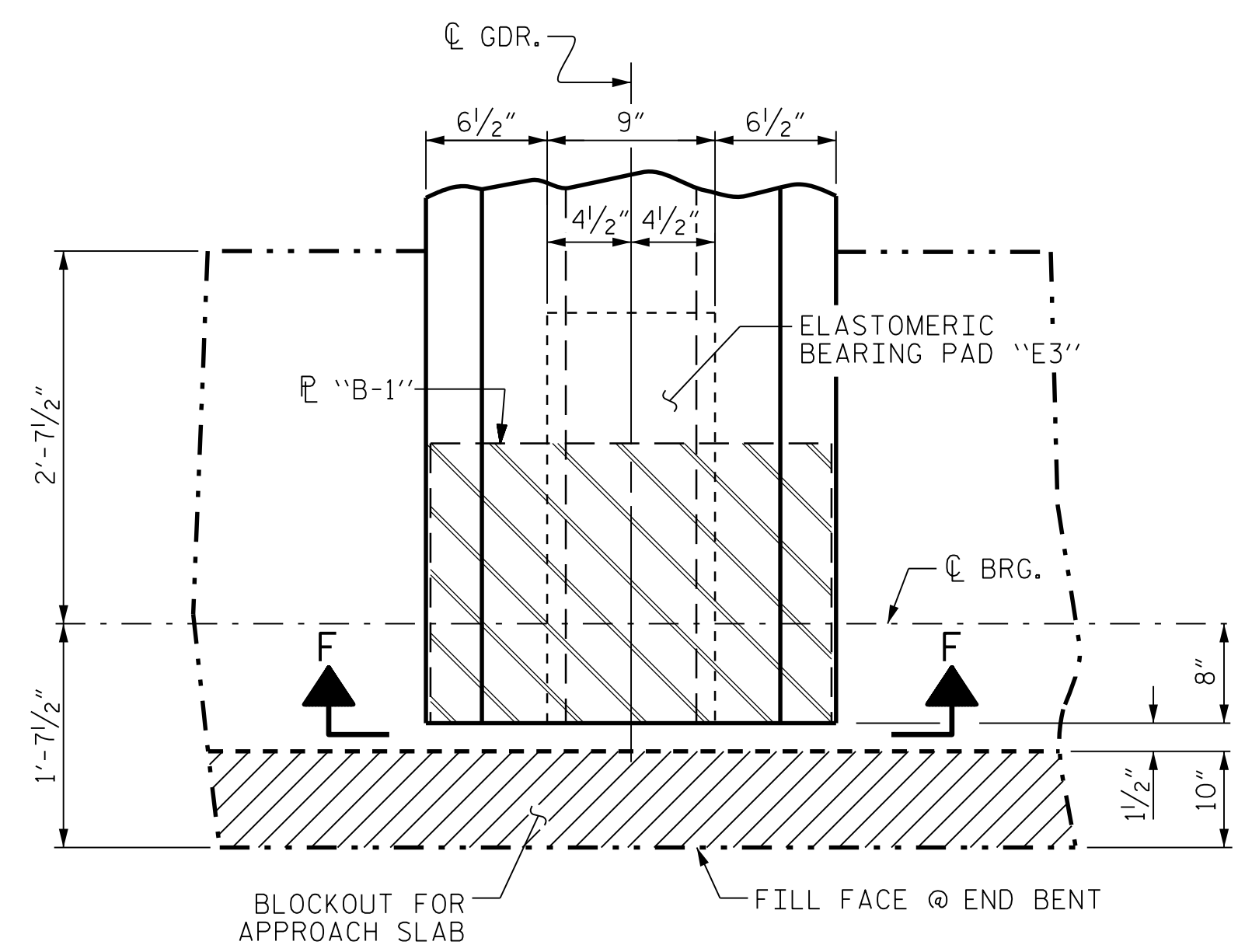
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-09
1			3			TOTAL SHEETS
2			4			20

NOTES

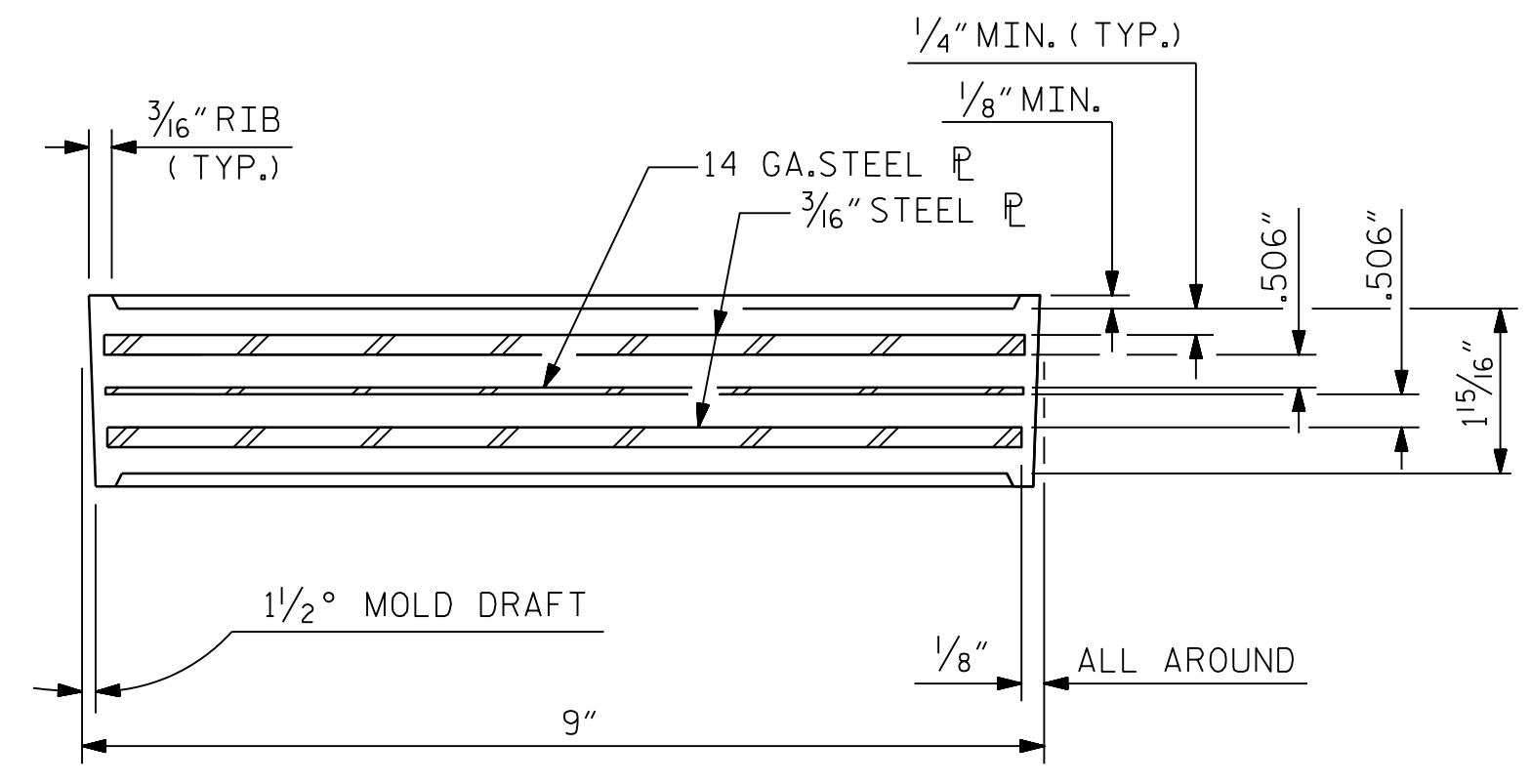
FOR EMBEDDED "B-1" DETAILS, SEE SHEET S011.
 THE ELASTOMER IN THE STEEL REINFORCED BEARINGS SHALL HAVE A SHEAR MODULUS OF 0.160 KSI, IN ACCORDANCE WITH AASHTO M251.



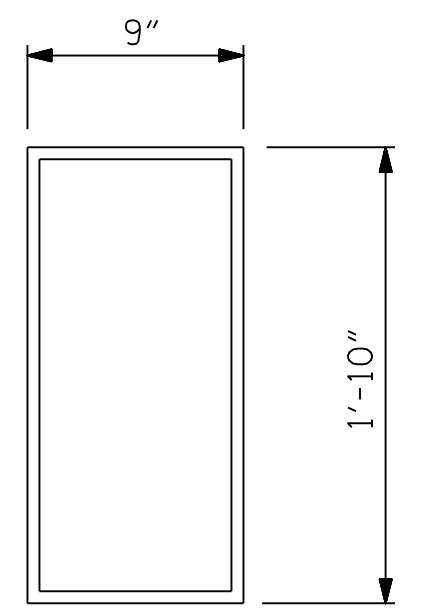
SECTION F-F
 (AT INTEGRAL END BENT)
 * ROTATE BEARING PAD "E3" BY 90°



TYPICAL PLAN @ END BENT
 (INTEGRAL)



TYPICAL SECTION OF ELASTOMERIC BEARINGS



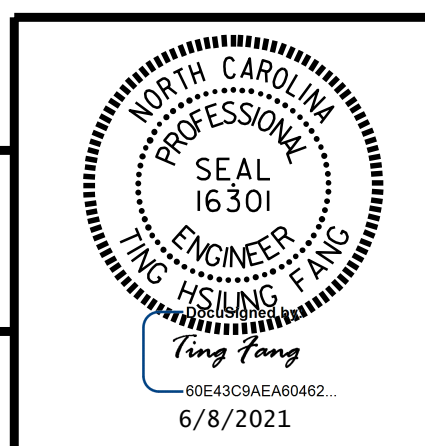
E3 (12 REQ'D)
PLAN VIEW OF ELASTOMERIC BEARING

TYPE IV

MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE IV	225 k

PROJECT NO. B-5624
BRUNSWICK COUNTY
 STATION: 17+46.00 -L-

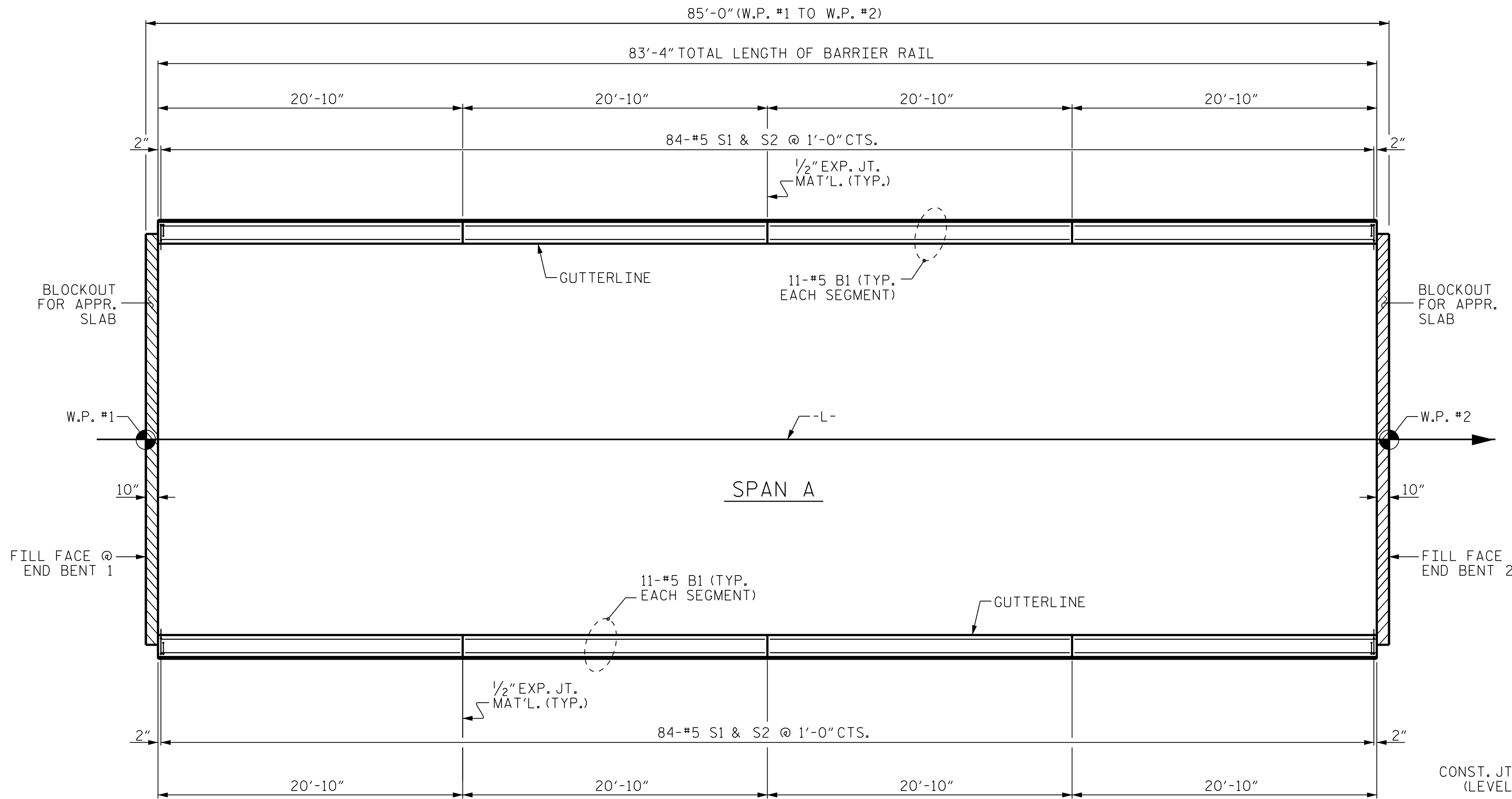
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
ELASTOMERIC BEARING
DETAILS
 PRESTRESSED CONCRETE GIRDER
 SUPERSTRUCTURE



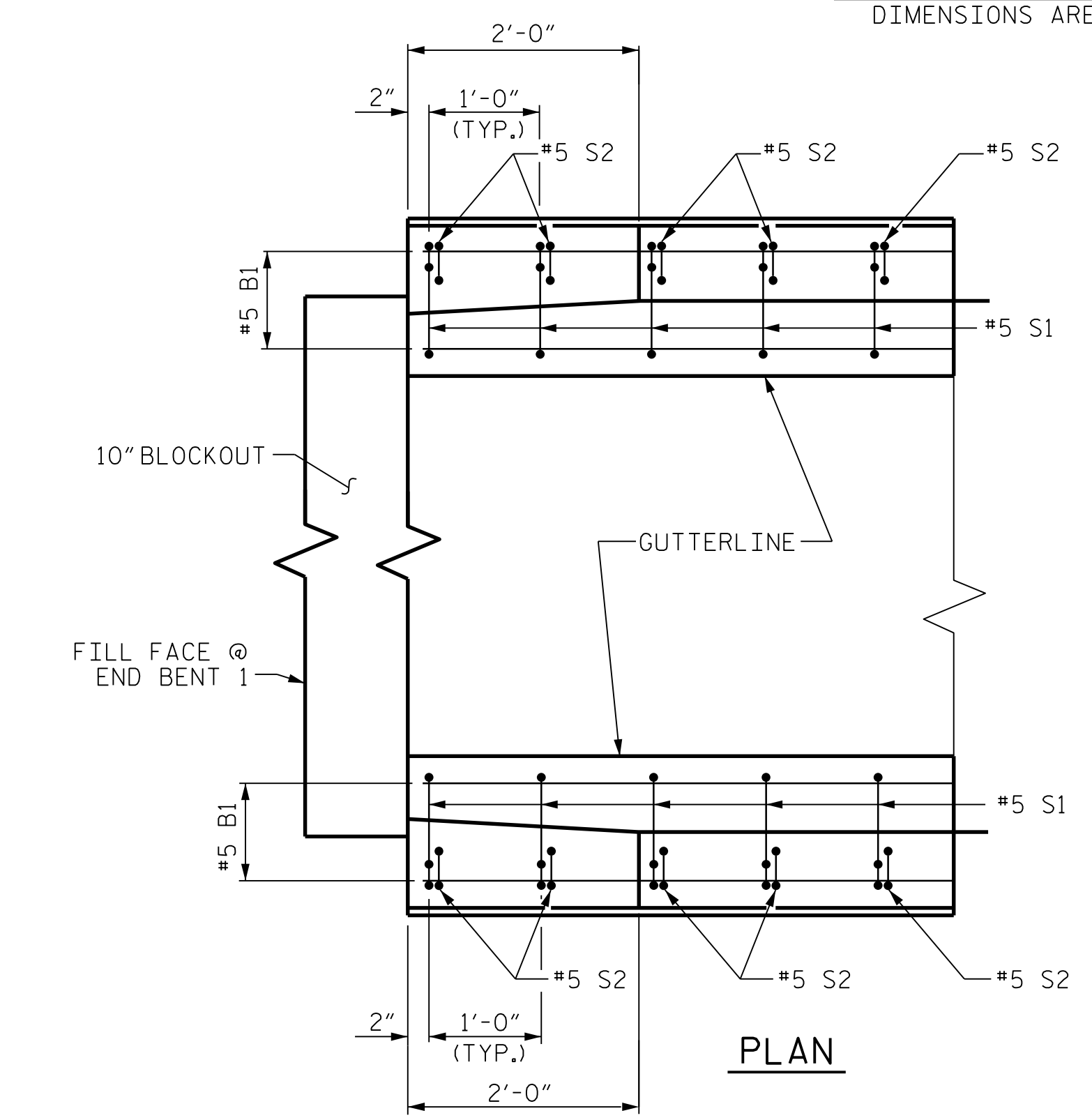
CDM Smith
 CDM SMITH
 5400 Glenwood Avenue, Suite 400
 Raleigh, NC 27612-3228
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	DESIGN ENGINEER : VDK DATE : 11/20	DATE : 11/20	

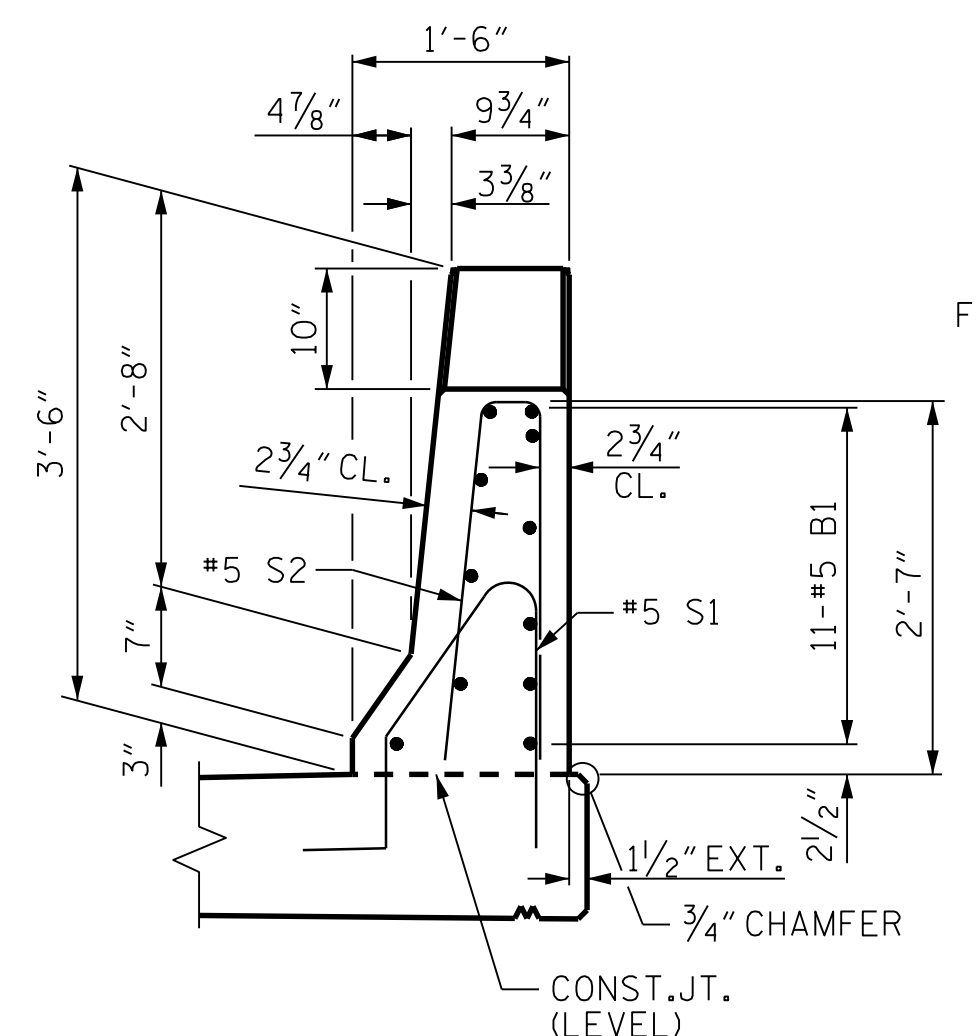
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			20



PLAN OF CONCRETE BARRIER RAIL
DIMENSIONS ARE MEASURED ALONG OUTSIDE FACE OF BARRIER RAIL.

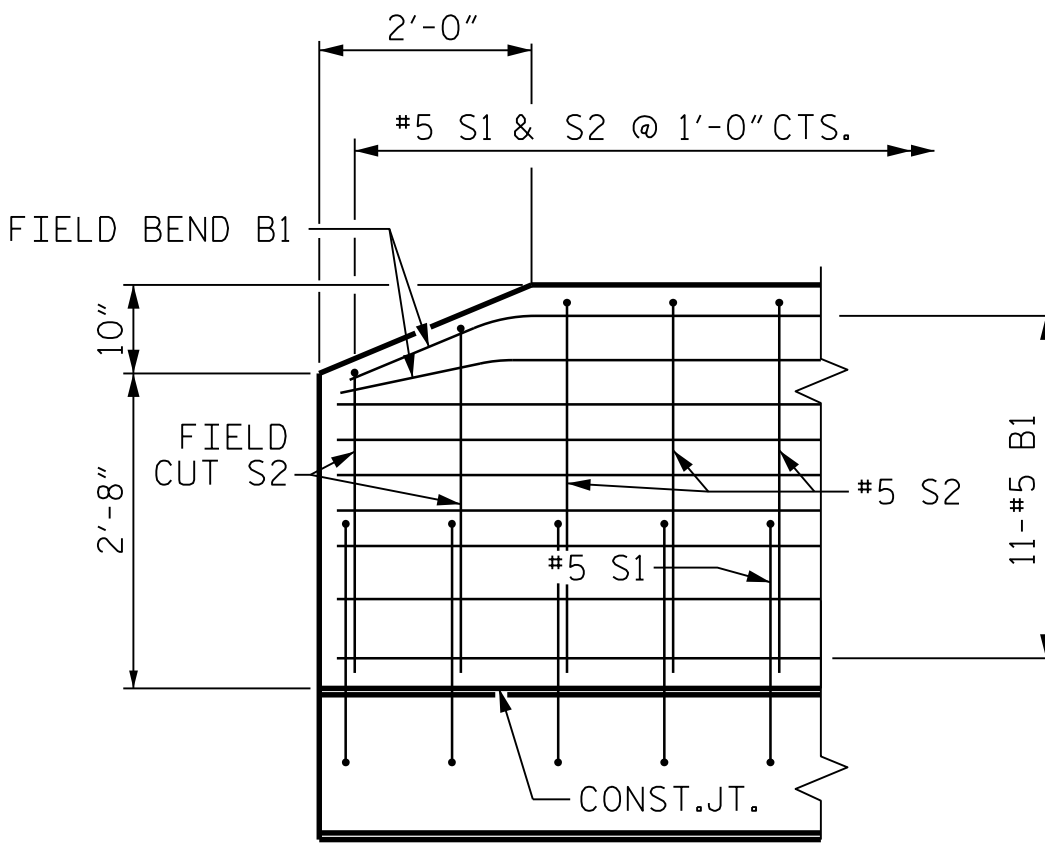


PLAN



END VIEW

END OF RAIL DETAILS



SIDE VIEW

NOTES

THE BARRIER RAIL 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.

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.

BAR TYPES

ALL BAR DIMENSIONS ARE OUT TO OUT

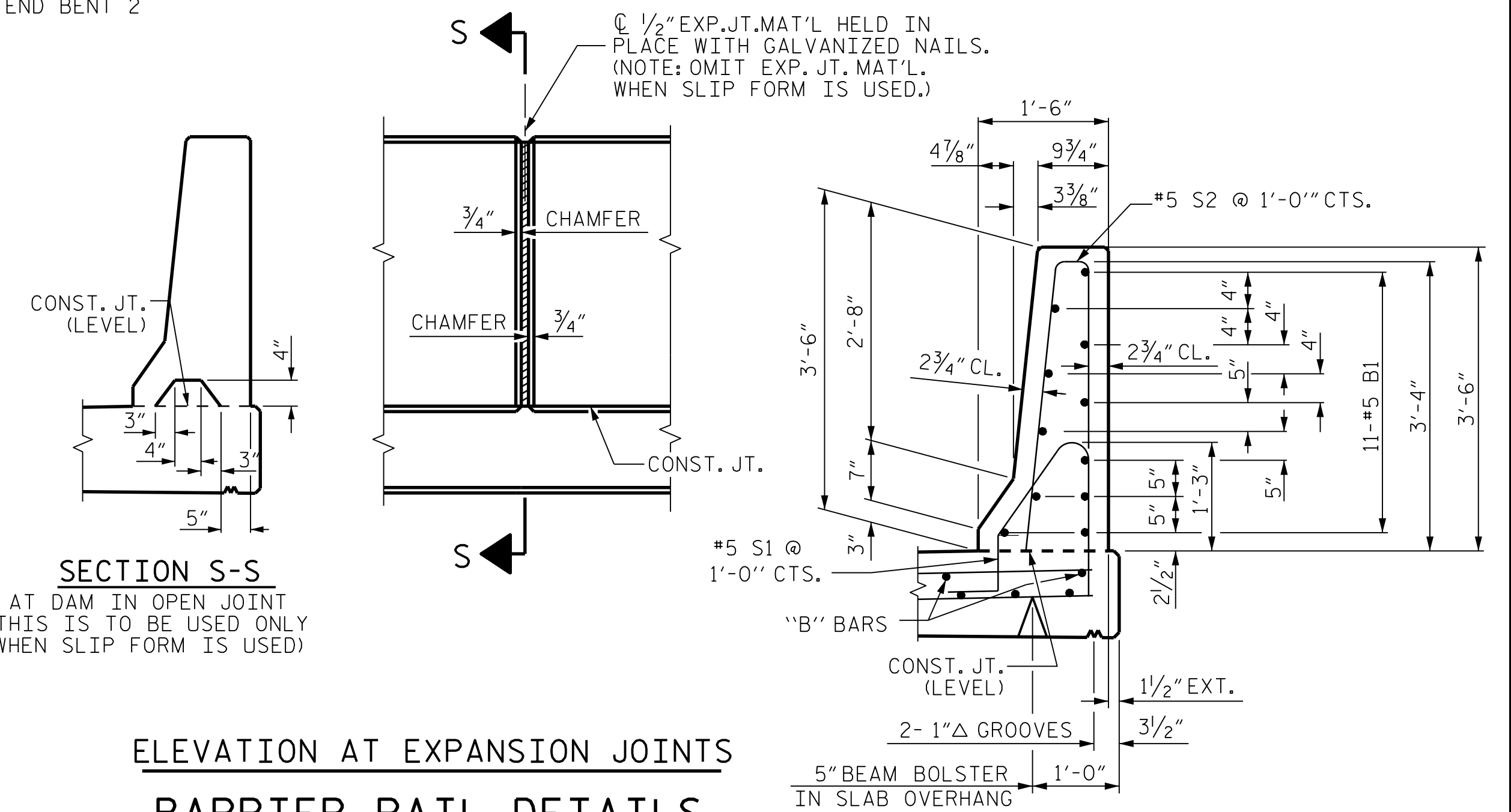
BILL OF MATERIAL
FOR CONCRETE BARRIER RAIL ONLY

BAR NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	#5	STR	20'-6"	1882
* S1	#5	1	4'-8"	818
* S2	#5	2	7'-0"	1226

* EPOXY COATED REINFORCING STEEL 3,926

CLASS AA CONCRETE 22.6 CU. YDS.

CONCRETE BARRIER RAIL 166.67 LIN. FT.



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

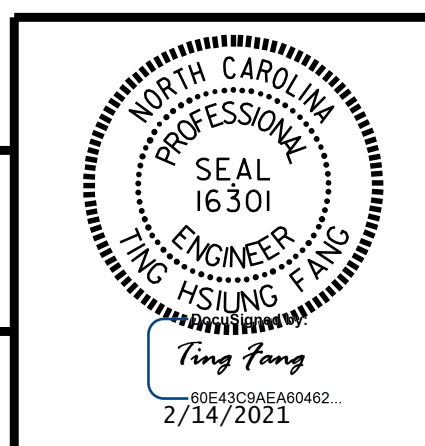
ELEVATION AT EXPANSION JOINTS
BARRIER RAIL DETAILS

SECTION THRU RAIL

PROJECT NO. B-5624
BRUNSWICK COUNTY
STATION: 17+46.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
CONCRETE
BARRIER RAIL



CDM Smith
CDM SMITH
5400 Glenwood Avenue, Suite 400
Raleigh, NC 27612-3228
NC COA No. F-1255

DRAWN BY : JJR DATE : 9/20
CHECKED BY : THF DATE : 10/20
DESIGN ENGINEER : J.B. WALKER DATE : 11/20

DWG. No.

REVISIONS

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

SHEET NO. **S-11**
TOTAL SHEETS **20**

FILE: SFILES DATE: SDATES

DRAWN BY : ARB	5/87	REV. 10/1/11	MAA/GM
CHECKED BY : SJD	9/87	REV. 7/12	MAA/GM
		REV. 6/13	MAA/GM

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NOTES

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

THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

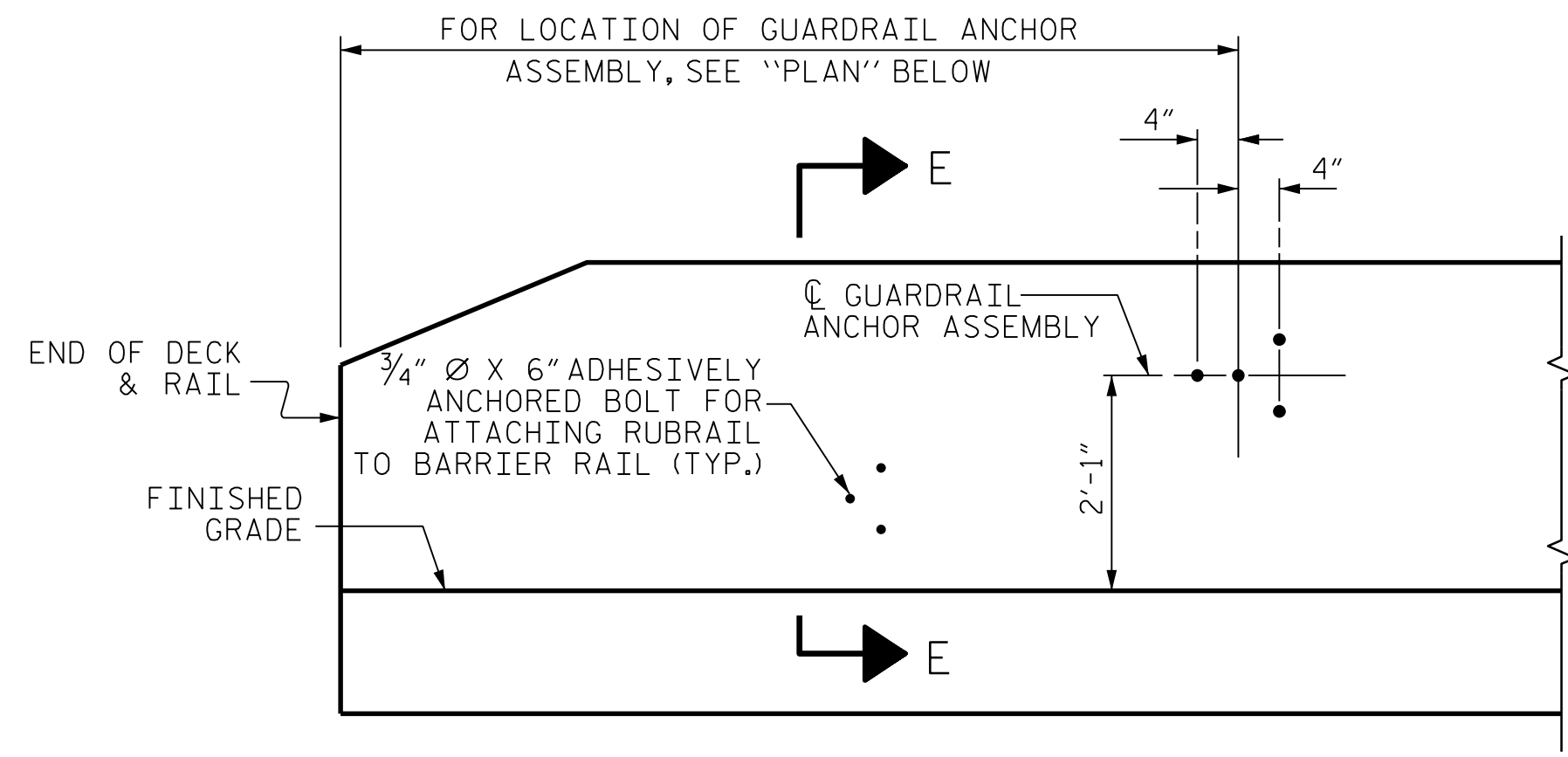
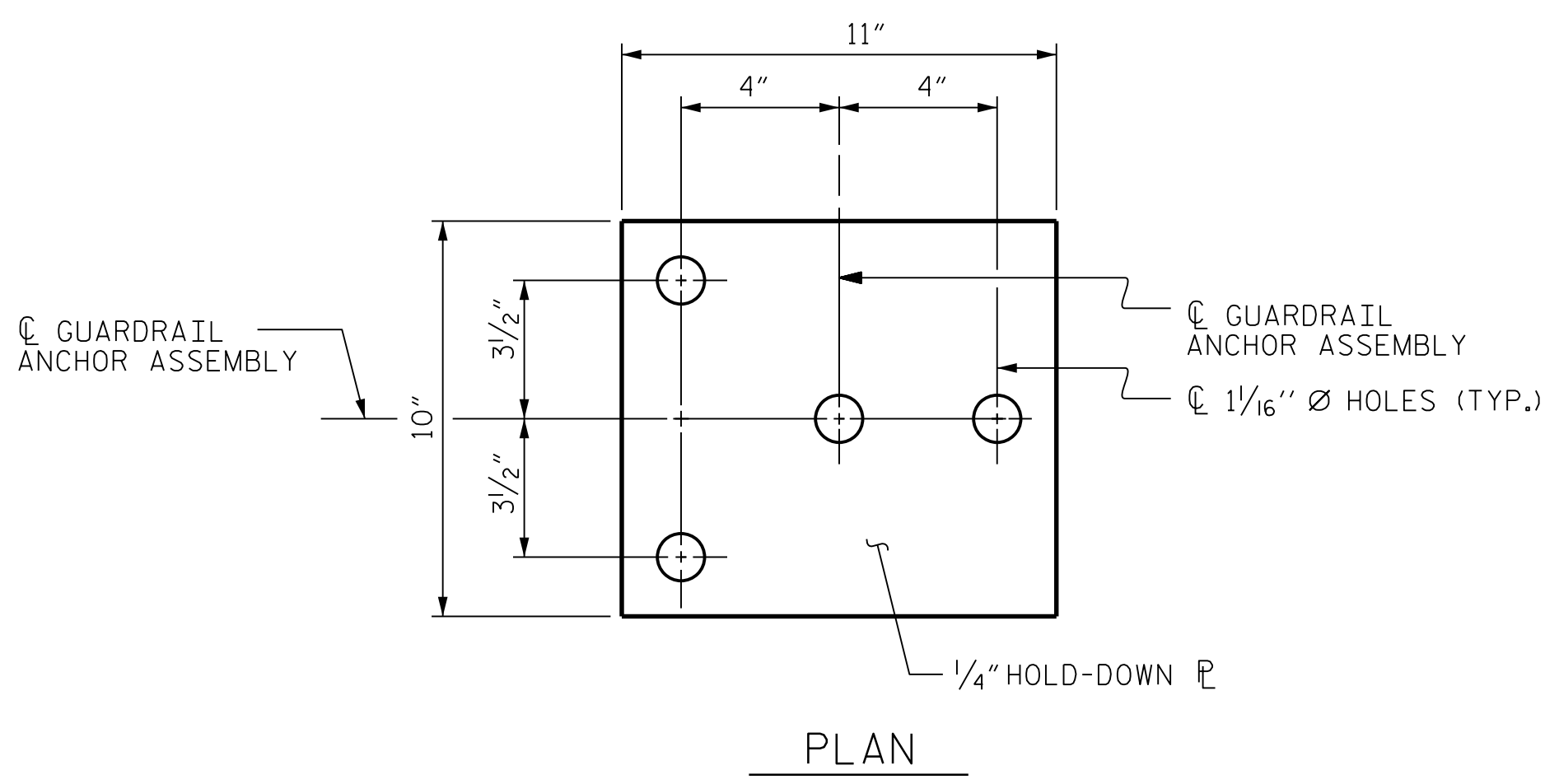
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

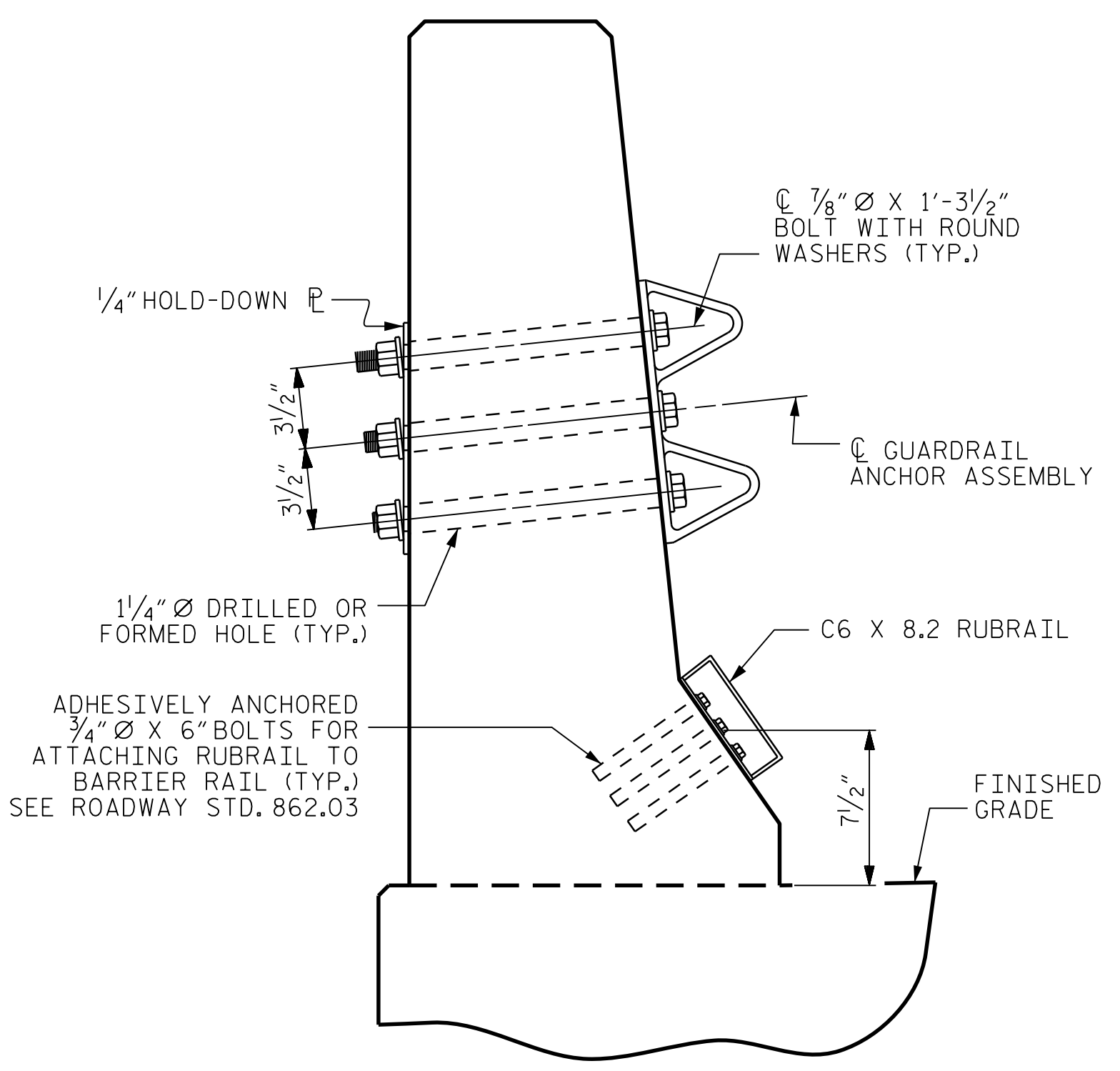
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.

THE 1 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.

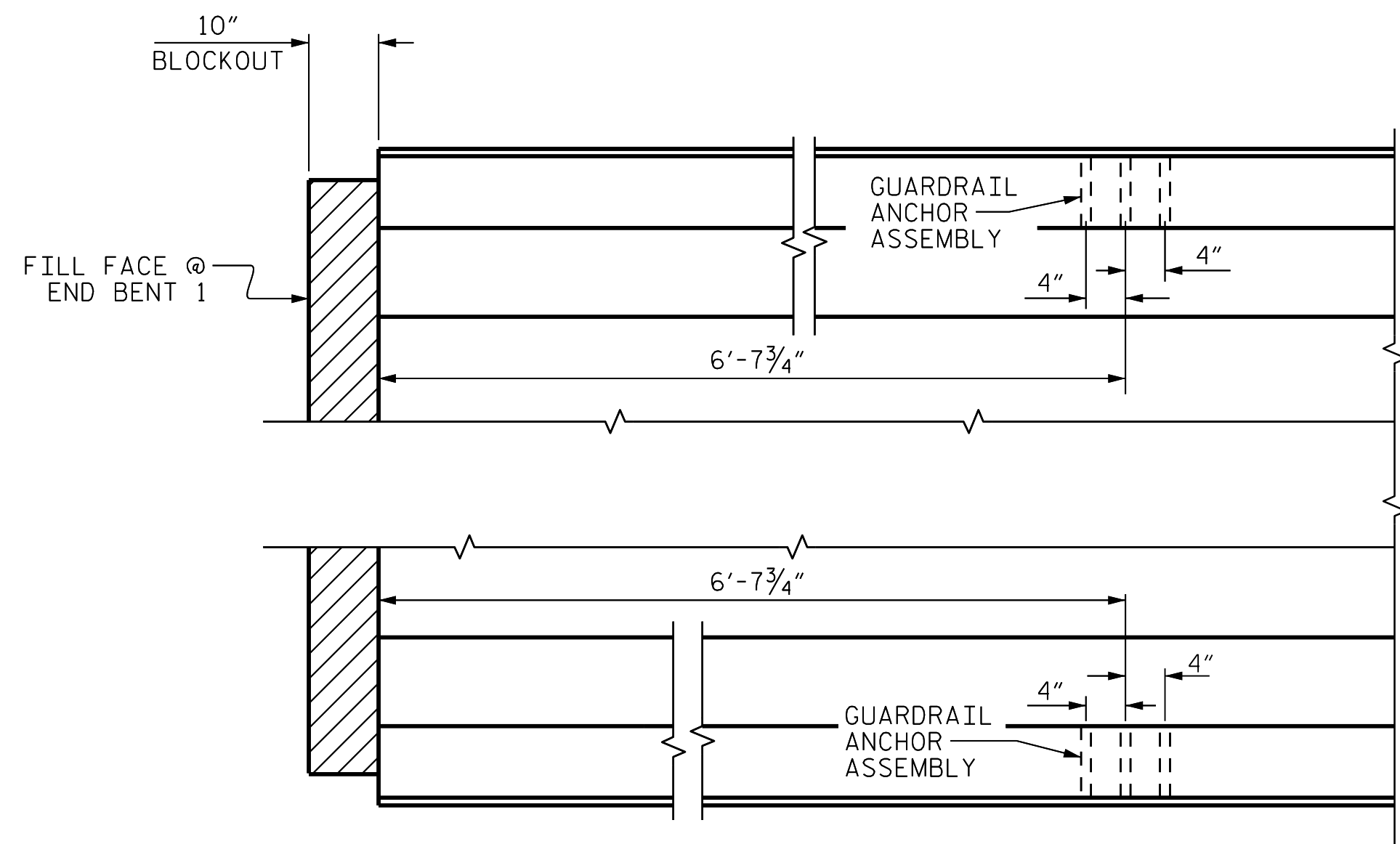
THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 3/4" Ø X 6" BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS. SEE ROADWAY STANDARD 862.03 FOR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



ELEVATION



SECTION E-E



PLAN

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

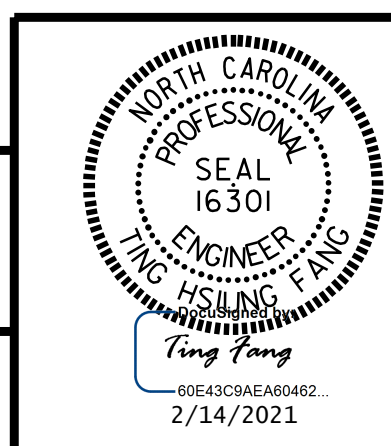


SKETCH SHOWING POINTS OF ATTACHMENTS
* DENOTES GUARDRAIL ANCHOR ASSEMBLY

GUARDRAIL ANCHOR ASSEMBLY DETAILS

PROJECT NO. B-5624
BRUNSWICK COUNTY
STATION: 17+46.00 -L-

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



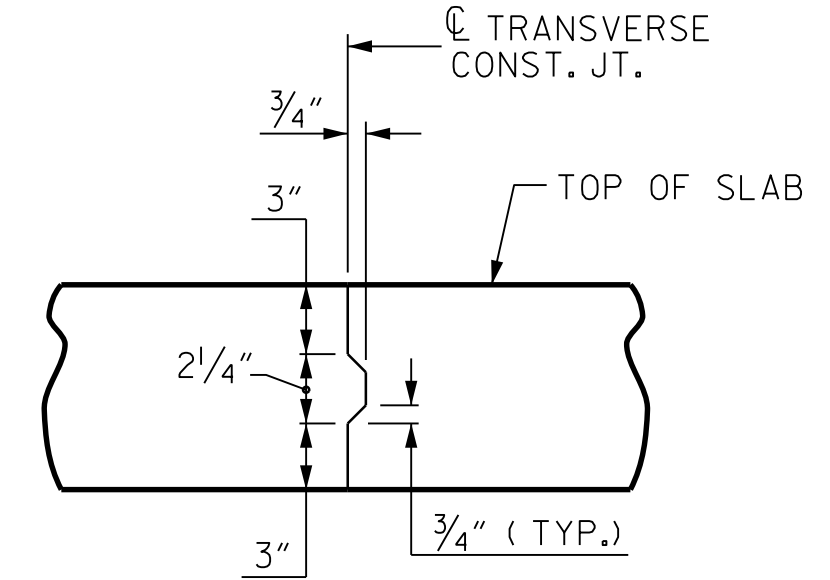
CDM Smith
CDM SMITH
5400 Glenwood Avenue, Suite 400
Raleigh, NC 27612-3228
NC COA No. F-1255

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	DESIGN ENGINEER : VDK DATE : 11/20	

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

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

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



TRANSVERSE CONSTRUCTION JOINT DETAIL

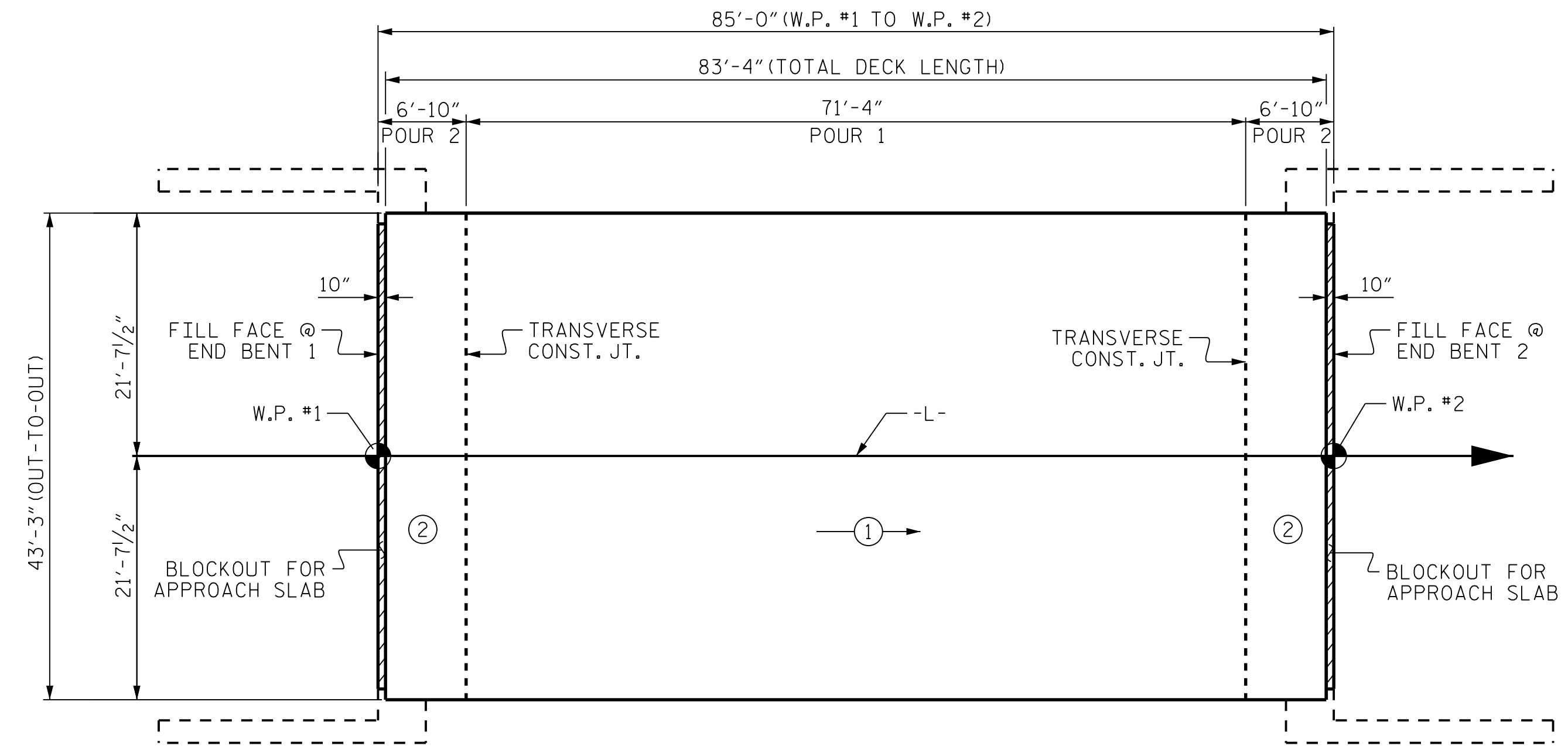
BAR TYPES						BILL OF MATERIAL					
						BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
						* A1	167	#5	STR	42'-11"	7475
						A2	167	#5	STR	42'-11"	7475
						* B1	124	#4	STR	23'-2"	1919
						* B2	112	#6	STR	17'-0"	2860
						B3	106	#5	STR	42'-9"	4726
						K1	16	#4	STR	22'-3"	238
						K2	10	#4	STR	5'-2"	35
						K3	20	#4	STR	6'-5"	86
						K4	10	#4	STR	5'-8"	38
						K5	4	#4	STR	2'-0"	5
						K6	8	#4	STR	2'-8"	14
						K7	8	#4	STR	2'-3"	6
						S1	68	#4	1	10'-5"	473
						S2	4	#4	1	9'-10"	26
						* S3	68	#4	2	11'-11"	541
						* S4	68	#4	2	11'-7"	526
						REINFORCING STEEL = 13,122 LBS					
						* EPOXY COATED REINF. STEEL = 13,322 LBS					

ALL BAR DIMENSIONS ARE OUT TO OUT

SUPERSTRUCTURE BILL OF MATERIAL			
	CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	(CU. YDS.)	(LBS.)	(LBS.)
POUR 1	96.4		
POUR 2	64.6		
TOTAL *	161.0	13,122	13,322

** QUANTITY FOR BARRIER RAILS ARE NOT INCLUDED

GROOVING BRIDGE FLOORS	
APPROACH SLABS	1,048 SQ.FT.
BRIDGE DECK	3,071 SQ.FT.
TOTAL	4,119 SQ.FT.



POURING SEQUENCE AND LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB (SQ. FT. = 3,604)

PROJECT NO. B-5624
BRUNSWICK COUNTY
 STATION: 17+46.00 -L-

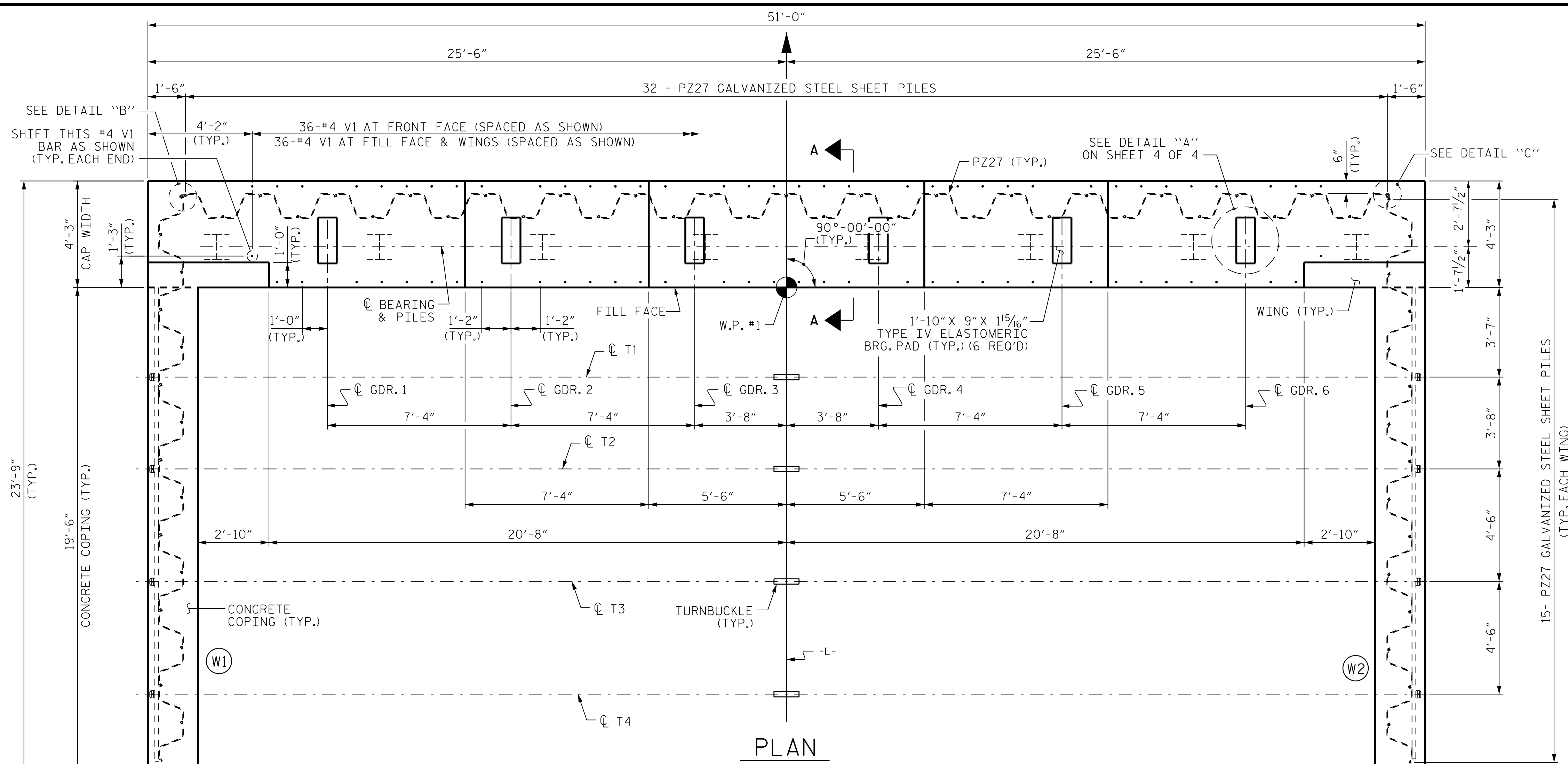
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 BILL OF MATERIAL & POUR SEQUENCE

CDM Smith
 CDM SMITH
 5400 Glenwood Avenue, Suite 400
 Raleigh, NC 27612-3228
 NC COA No. F-1255

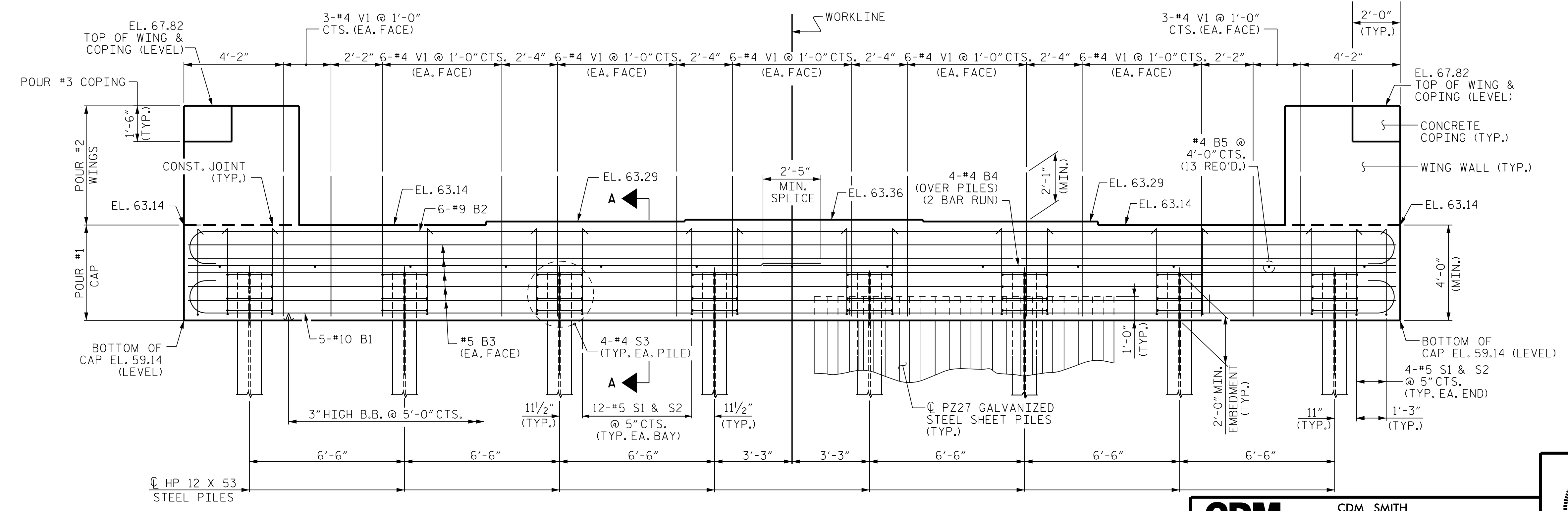
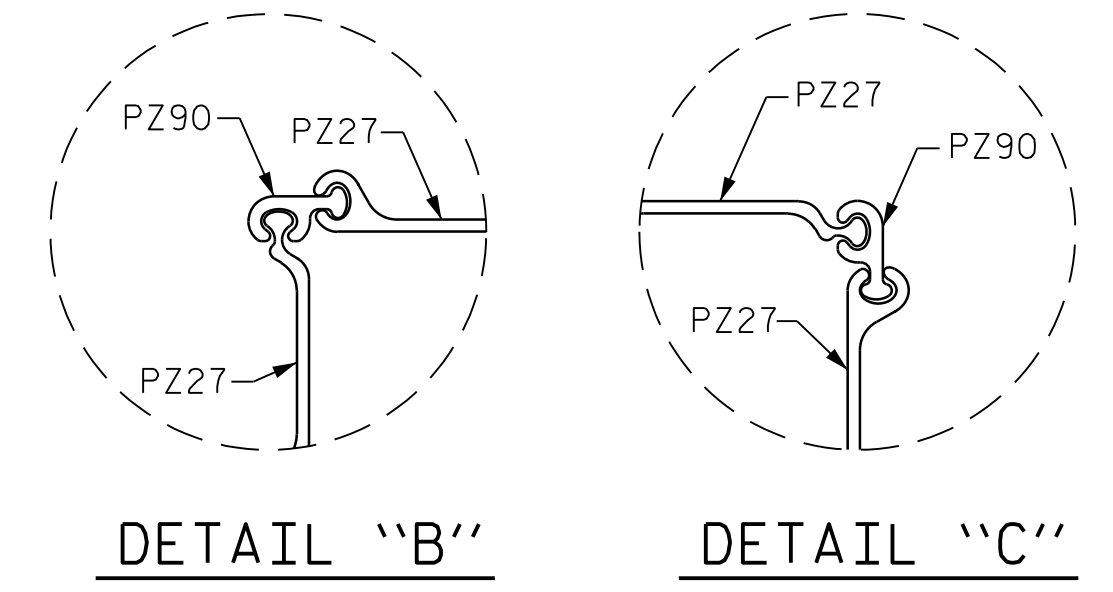
PROFESSIONAL SEAL
 16301
 ENGINEER
 TING FANG
 2/14/2021

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			20



- NOTES**
- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #4 V1 BARS.
 - THE TOP SURFACE OF THE END BENT CAP EXCEPT THE BEARING AREA, 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.
 - FOR CONCRETE AND GALVANIZED STEEL SHEET PILE WINGS DETAILS, SEE SHEET 3 OF 4.
 - FOR HP STEEL PILE SPLICE DETAILS, SEE SHEET 4 OF 4.
 - FOR TIE ROD ANCHOR SYSTEM AND CONCRETE COPING DETAILS, SEE SHEET 3 OF 4.
 - FOR PAYMENT OF THE TIE ROD ANCHOR ASSEMBLY, SEE SPECIAL PROVISION FOR 18" GALVANIZED STEEL SHEET PILE SYSTEM.
 - FOR 18" GALVANIZED STEEL SHEET PILE SYSTEM, SEE SPECIAL PROVISIONS.
 - GALVANIZE THE FULL LENGTH OF PZ27 AND PZ90 STEEL SHEET PILES IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.
 - THE CONSTRUCTION SEQUENCE FOR THE 18" GALVANIZED STEEL SHEET PILE SYSTEM SHALL BE AS FOLLOWS, UNLESS DIRECTED BY THE ENGINEER:
 - INSTALL ALL GALVANIZED SHEET PILES TO THE REQUIRED TIP ELEVATIONS AS SHOWN ON THE PLANS.
 - END BENT PILES SHALL BE DRIVEN BEFORE PLACING BACKFILL.
 - CONSTRUCT THE CAST-IN-PLACE CONCRETE COPING.
 - THE CONCRETE COPING SHALL HAVE A SMOOTH FINISH. THE CONCRETE COPING IS REQUIRED ALONG THE ENTIRE LENGTH OF GALVANIZED STEEL SHEET PILE WINGS.



PROJECT NO. B-5624
 BRUNSWICK COUNTY
 STATION: 17+46.00 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE

END BENT 1 (INTEGRAL)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			20

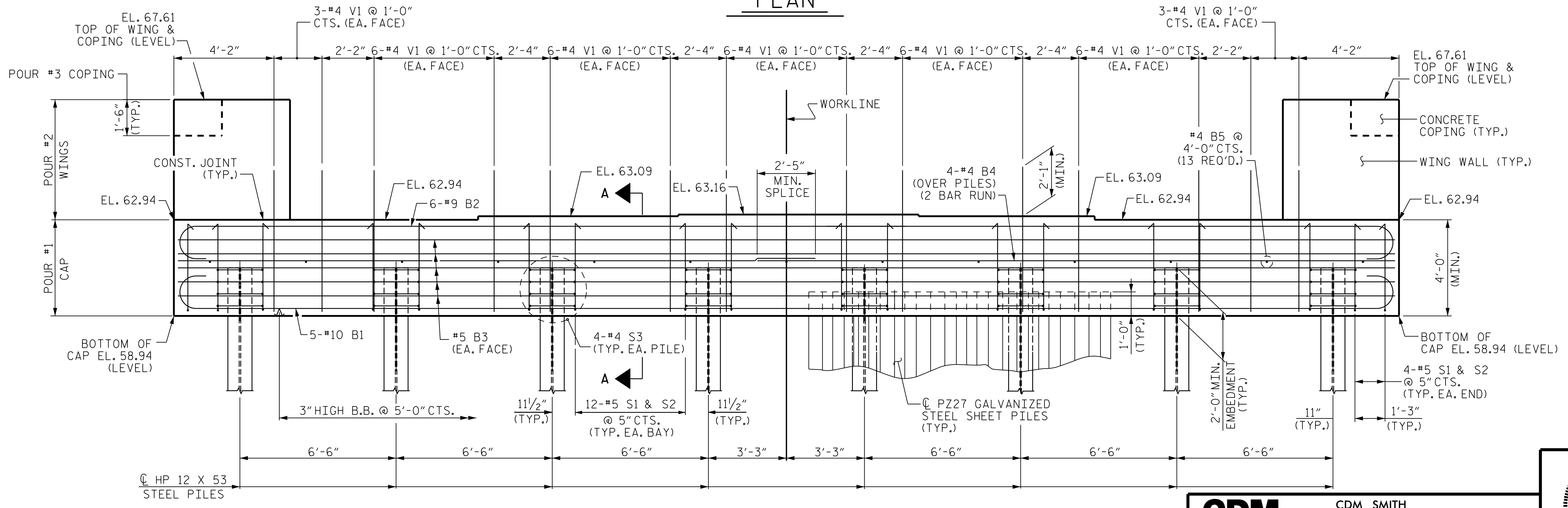
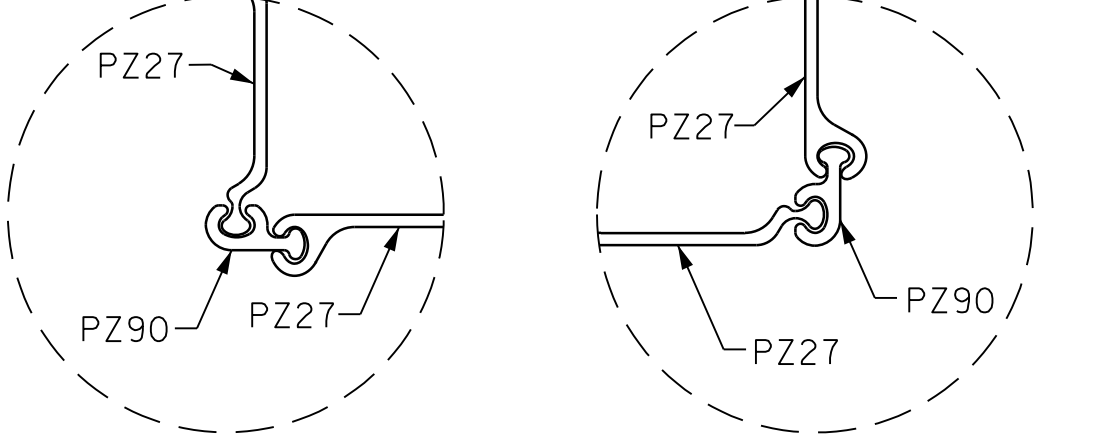
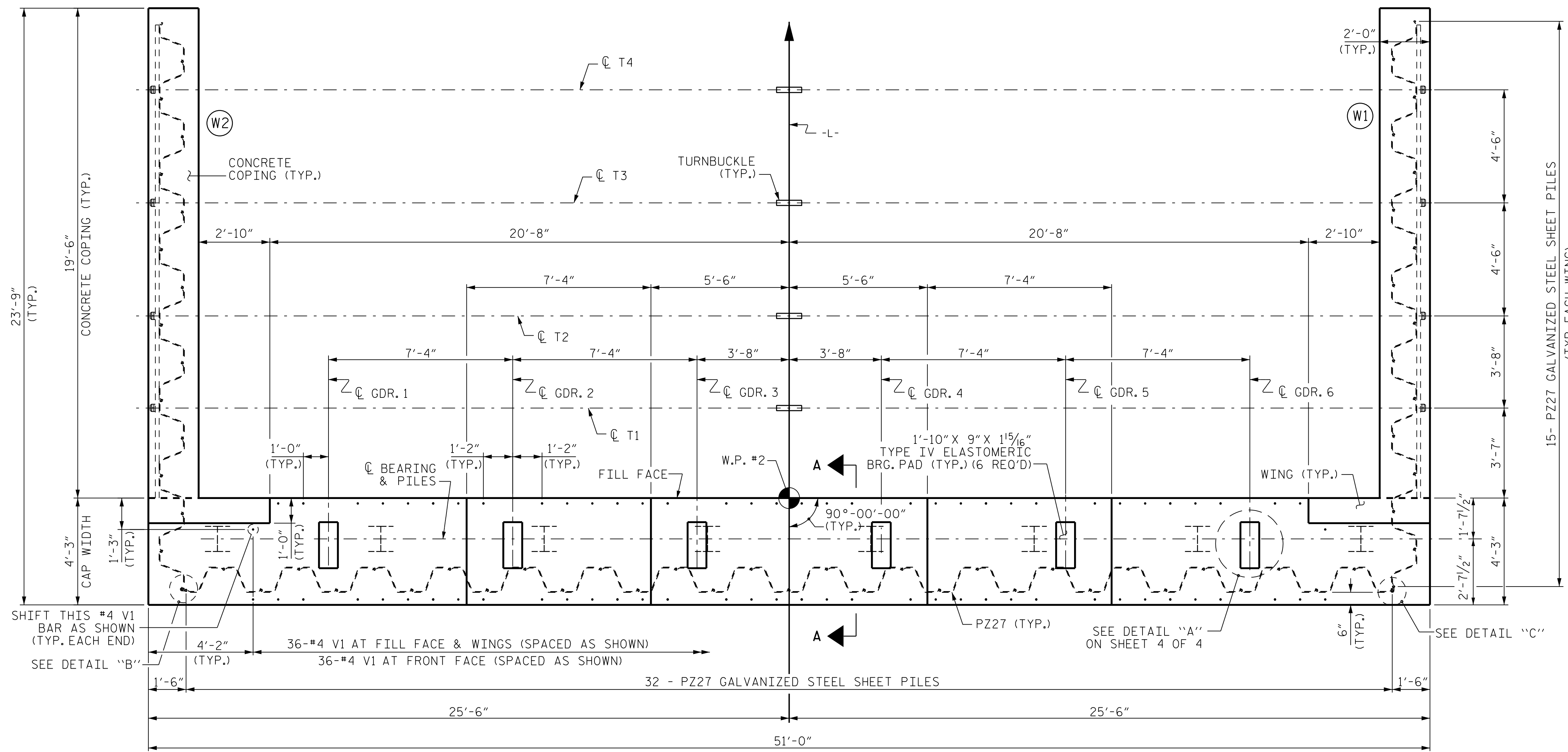
CDM Smith
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 5400 Glenwood Avenue, Suite 400
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 NC COA No. F-1255

DRAWN BY: JJR DATE: 9/20
 CHECKED BY: THF DATE: 10/20
 DESIGN ENGINEER: VDK DATE: 11/20

DWG. No.



FILE: SPILES
 DATE: 5/20/21



PROJECT NO. B-5624
 BRUNSWICK COUNTY
 STATION: 17+46.00 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE

END BENT 2 (INTEGRAL)

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 Raleigh, NC 27612-3228
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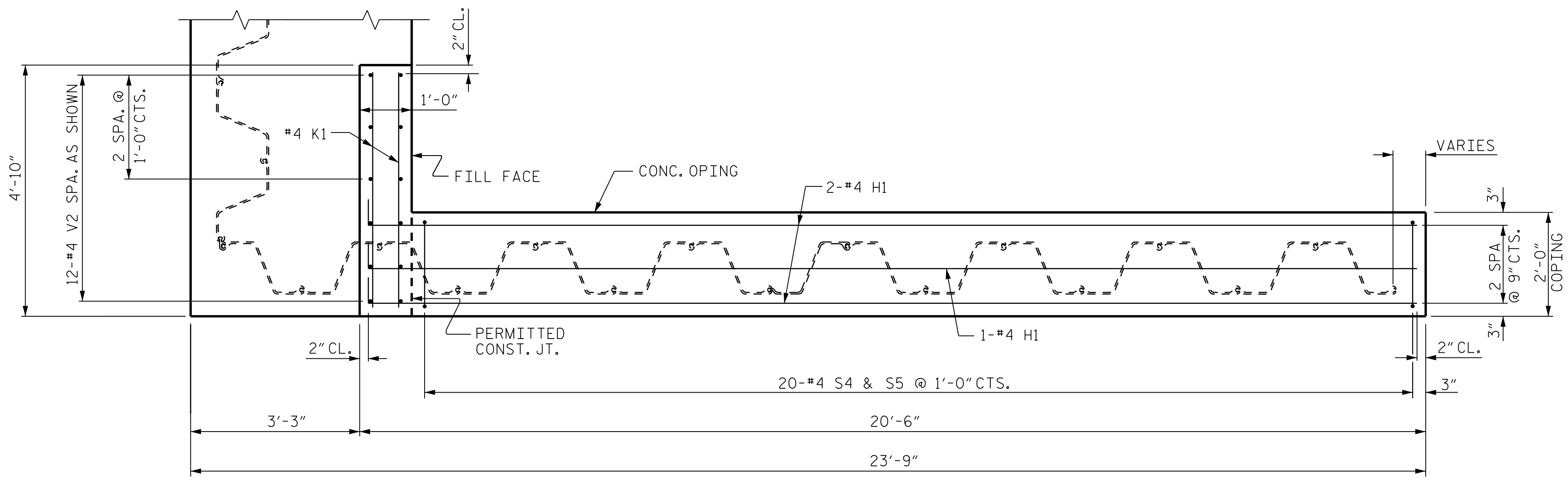


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

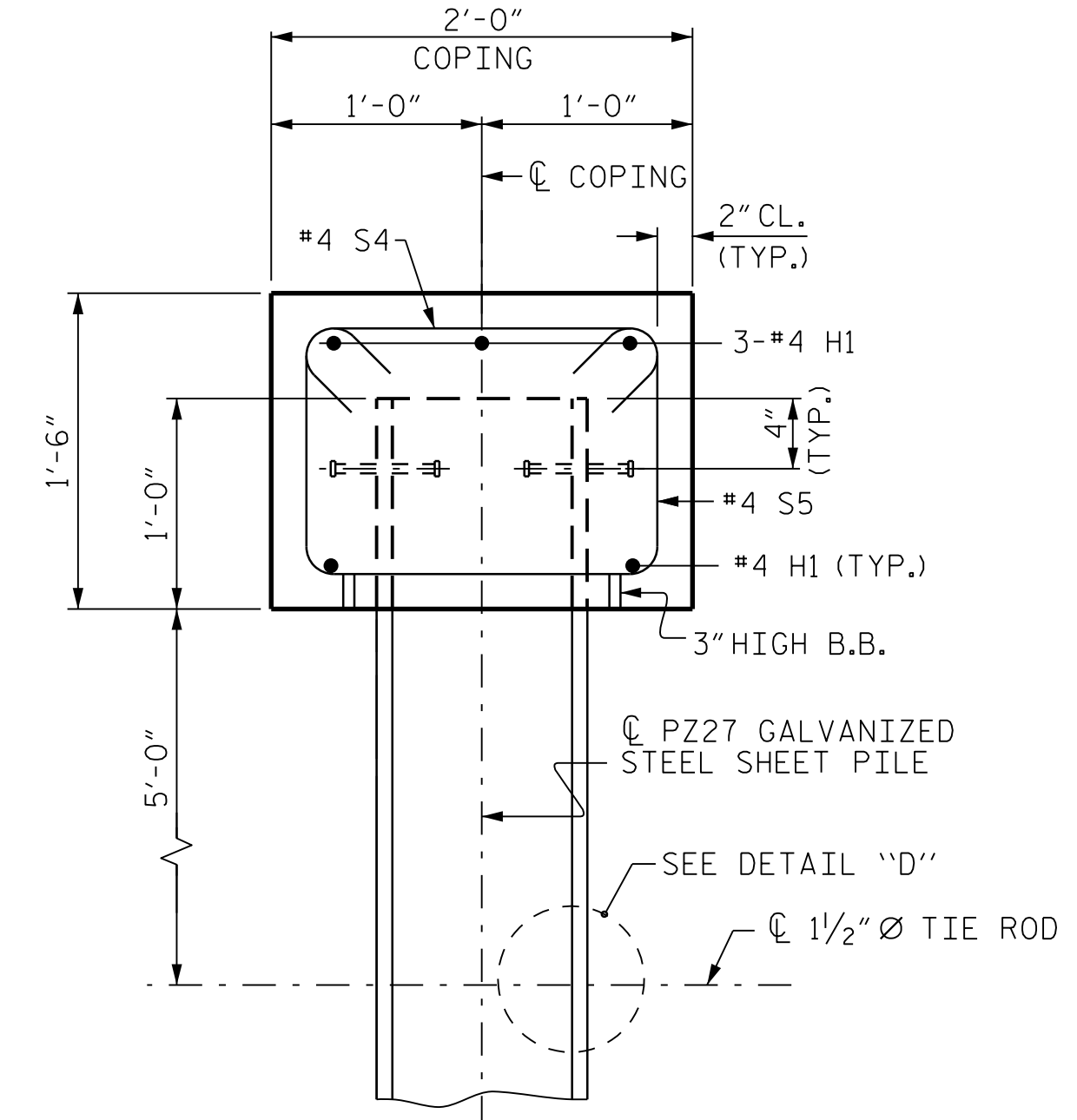
DRAWN BY: JJR DATE: 9/20
 CHECKED BY: THF DATE: 10/20
 DESIGN ENGINEER: VDK DATE: 11/20

DWG. No. _____

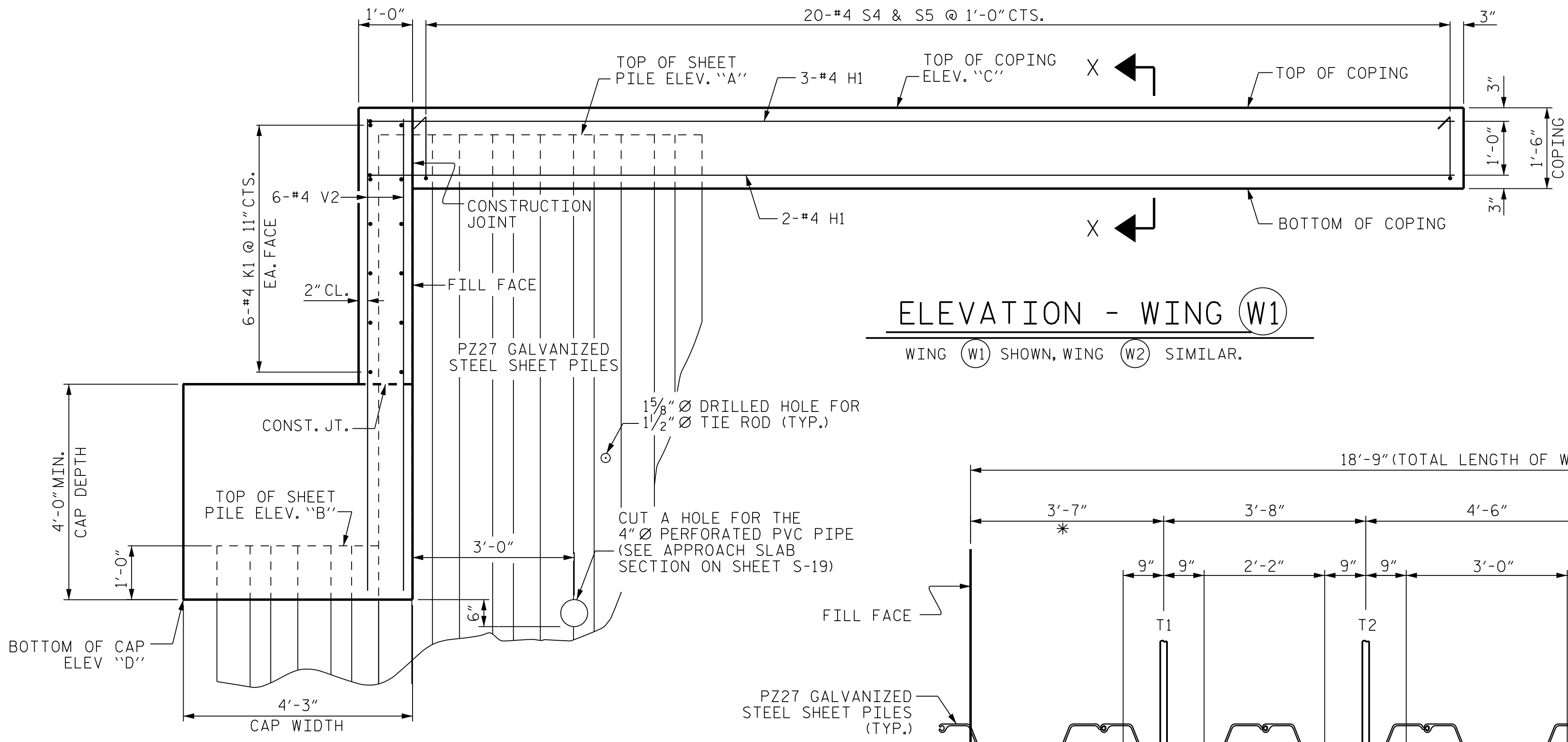
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			20



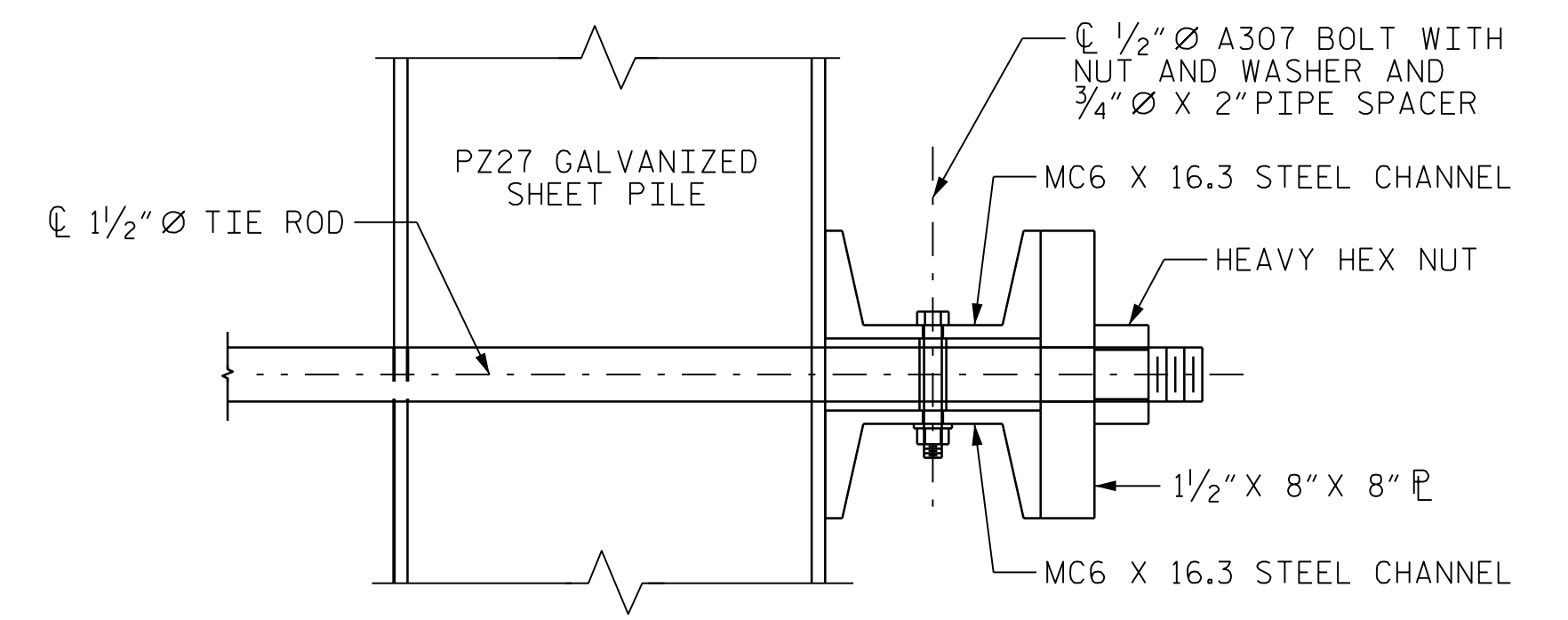
PLAN - WING (W1)
WING (W1) SHOWN, WING (W2) SIMILAR.



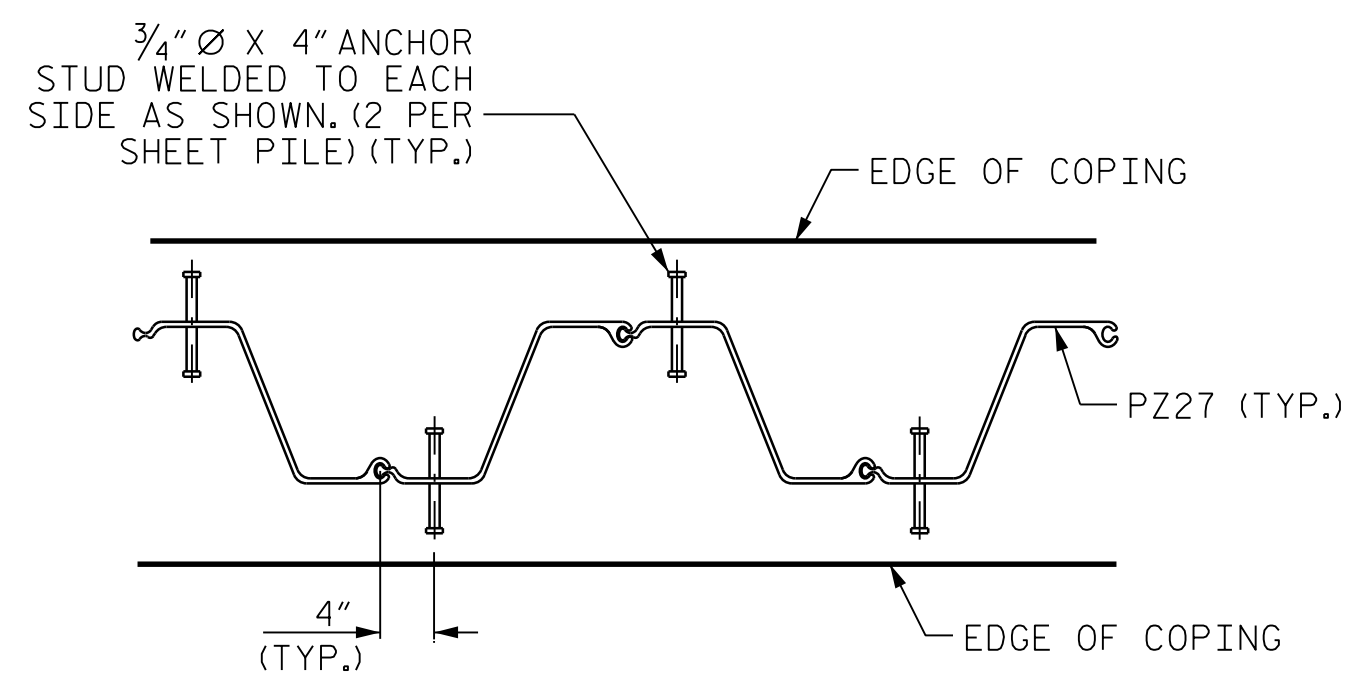
SECTION X-X
SHOWING ANCHOR STUDS AND ANCHORAGE SYSTEM
BURN 1/2" Ø MAX. HOLE IN SHEET PILE FOR #4 S4 BARS.



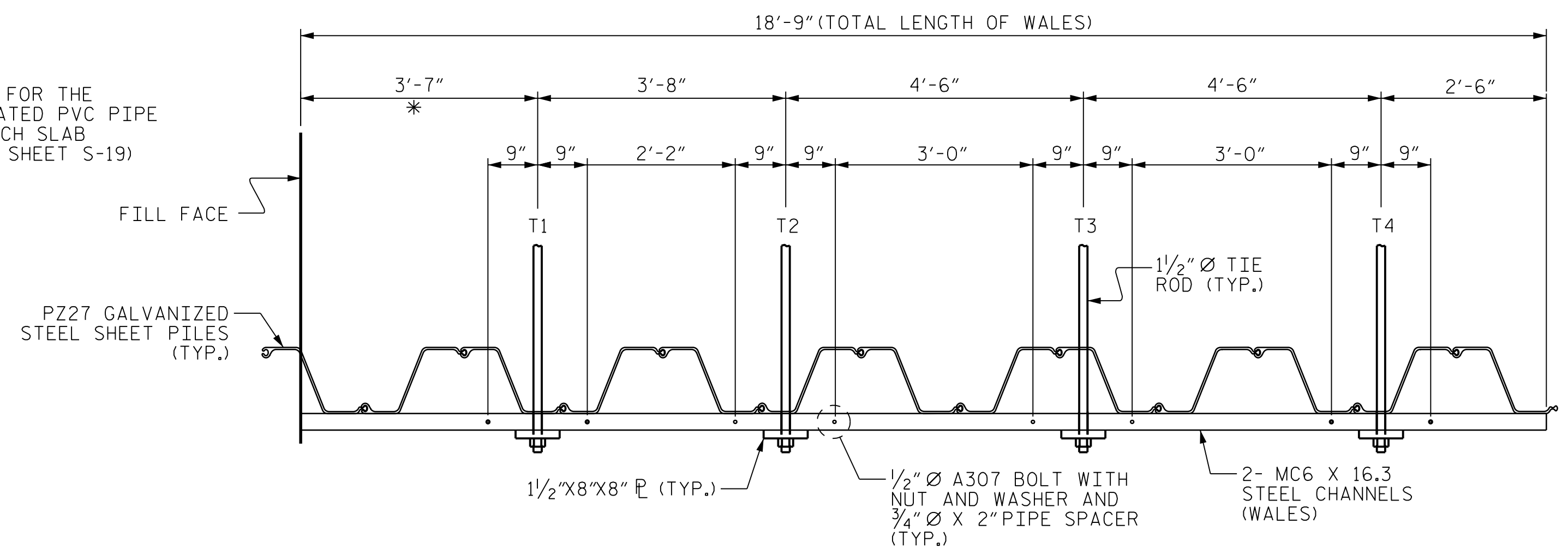
ELEVATION - WING (W1)
WING (W1) SHOWN, WING (W2) SIMILAR.



DETAIL "D"



ANCHORAGE LAYOUT
IN CONCRETE COPING



TIE ROD ANCHOR SYSTEM - (W1)
WING (W1) SHOWN, (W2) SIMILAR BY ROTATION

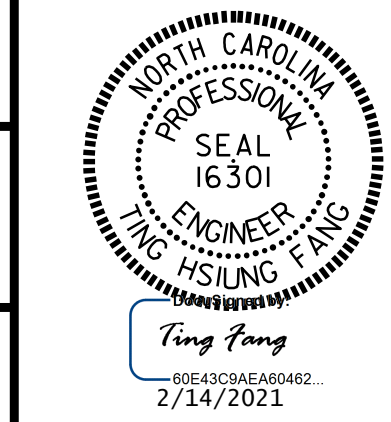
*FIELD VERIFY BEFORE BEGINNING OF CONSTRUCTION. ADJUSTMENT MAY BE MADE AS NECESSARY AND AS DIRECTED BY THE ENGINEER.

ELEVATION TABLE					
ELEVATION		"A"	"B"	"C"	"D"
END BENT 1	W1	67.32	60.14	67.82	59.14
	W2	67.32	60.14	67.82	59.14
END BENT 2	W2	67.11	59.94	67.61	58.94
	W1	67.11	59.94	67.61	58.94

PROJECT NO. B-5624
BRUNSWICK COUNTY
STATION: 17+46.00 -L-

SHEET 3 OF 4

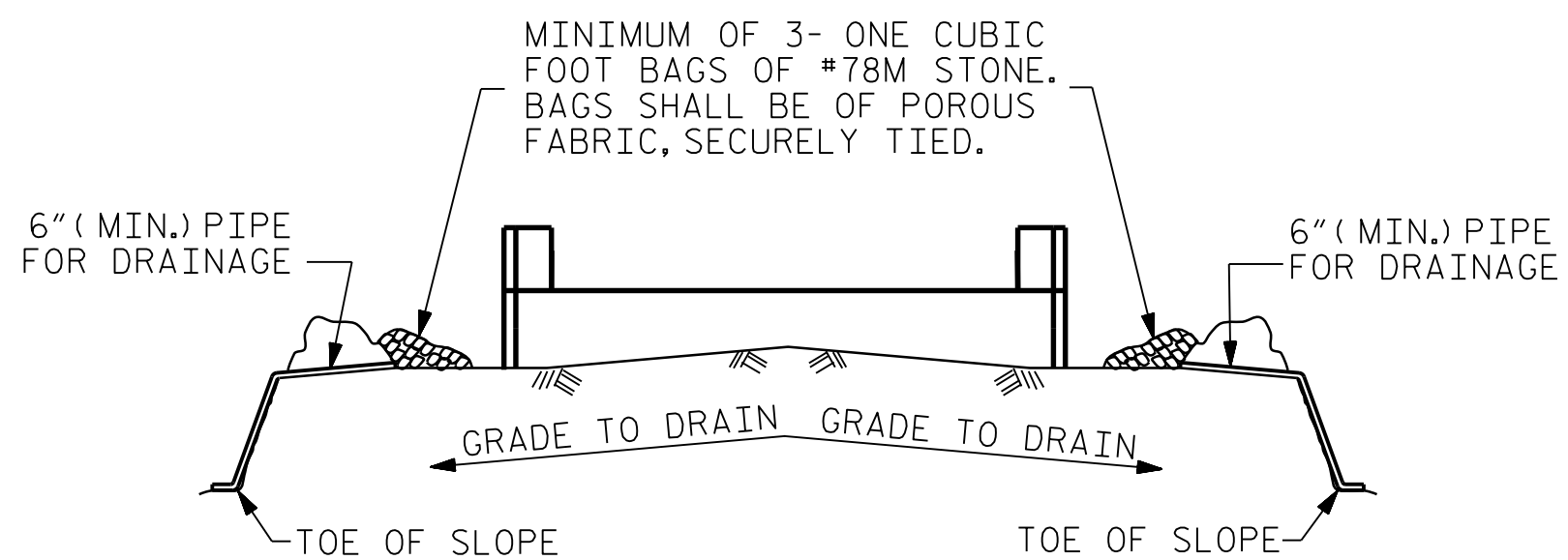
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
END BENTS 1 & 2
18" GALVANIZED STEEL
SHEET PILE
SYSTEM DETAILS



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			20

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5400 Glenwood Avenue, Suite 400
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NC COA No. F-1255

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DWG. No.

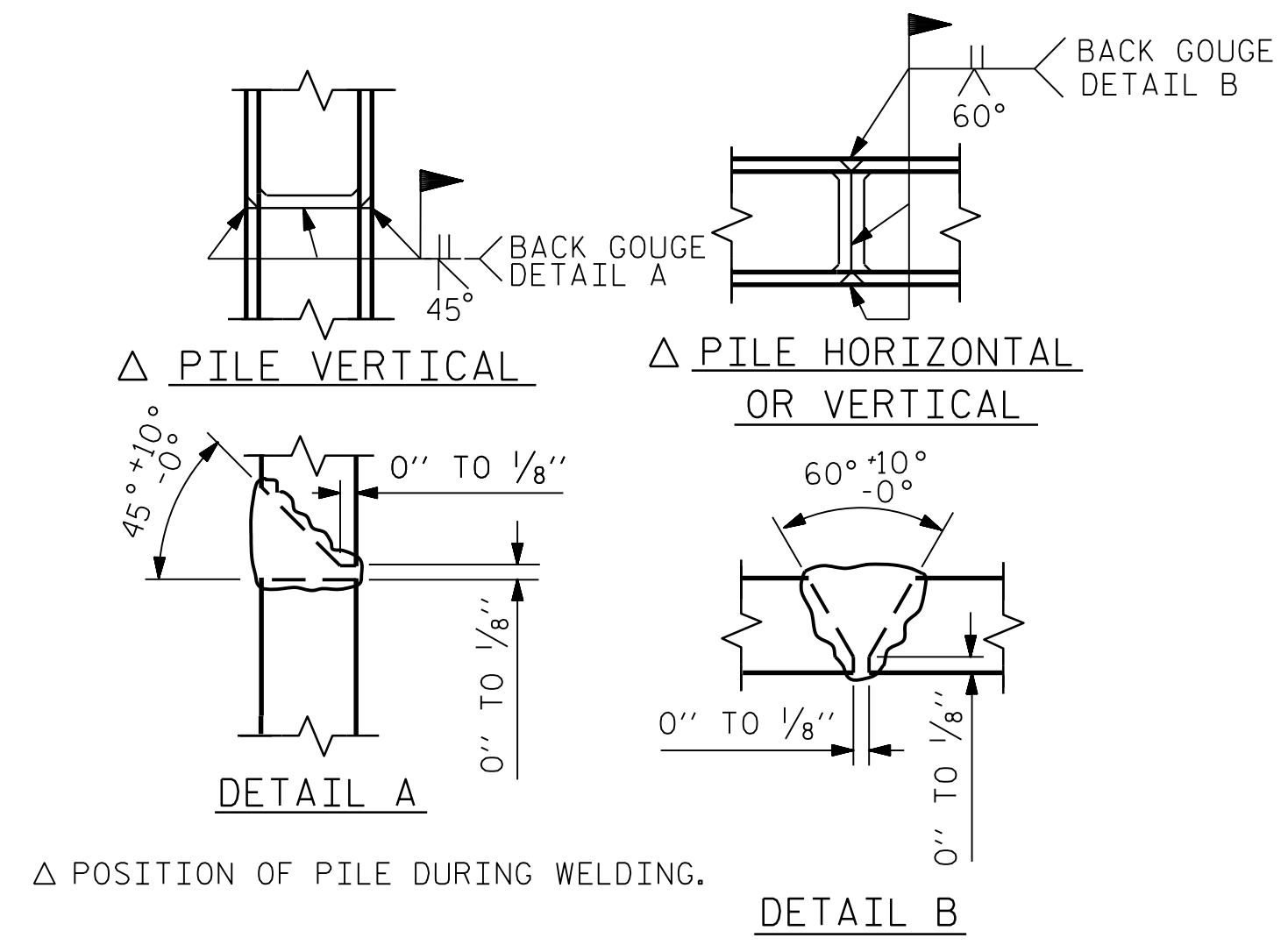


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

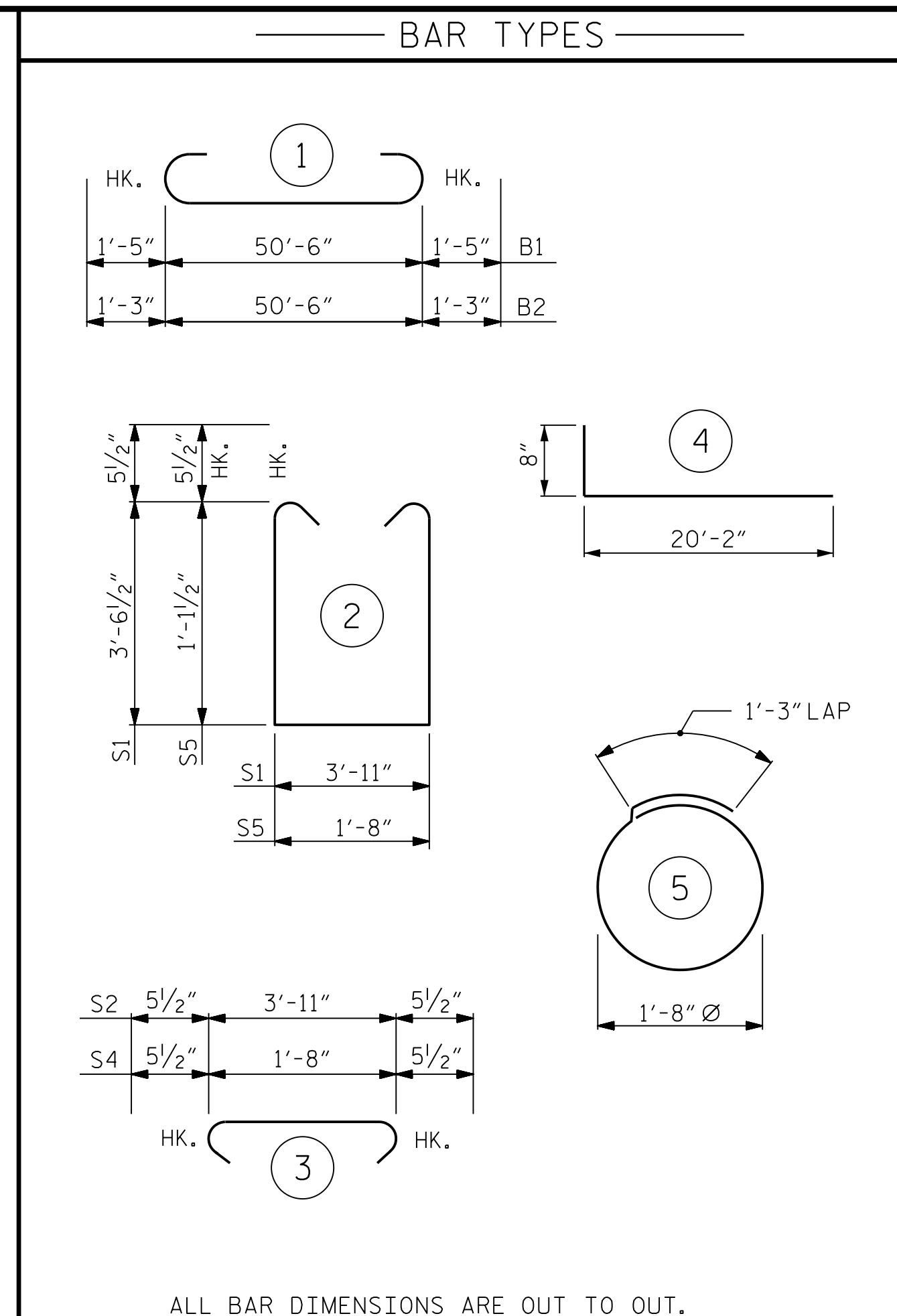
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



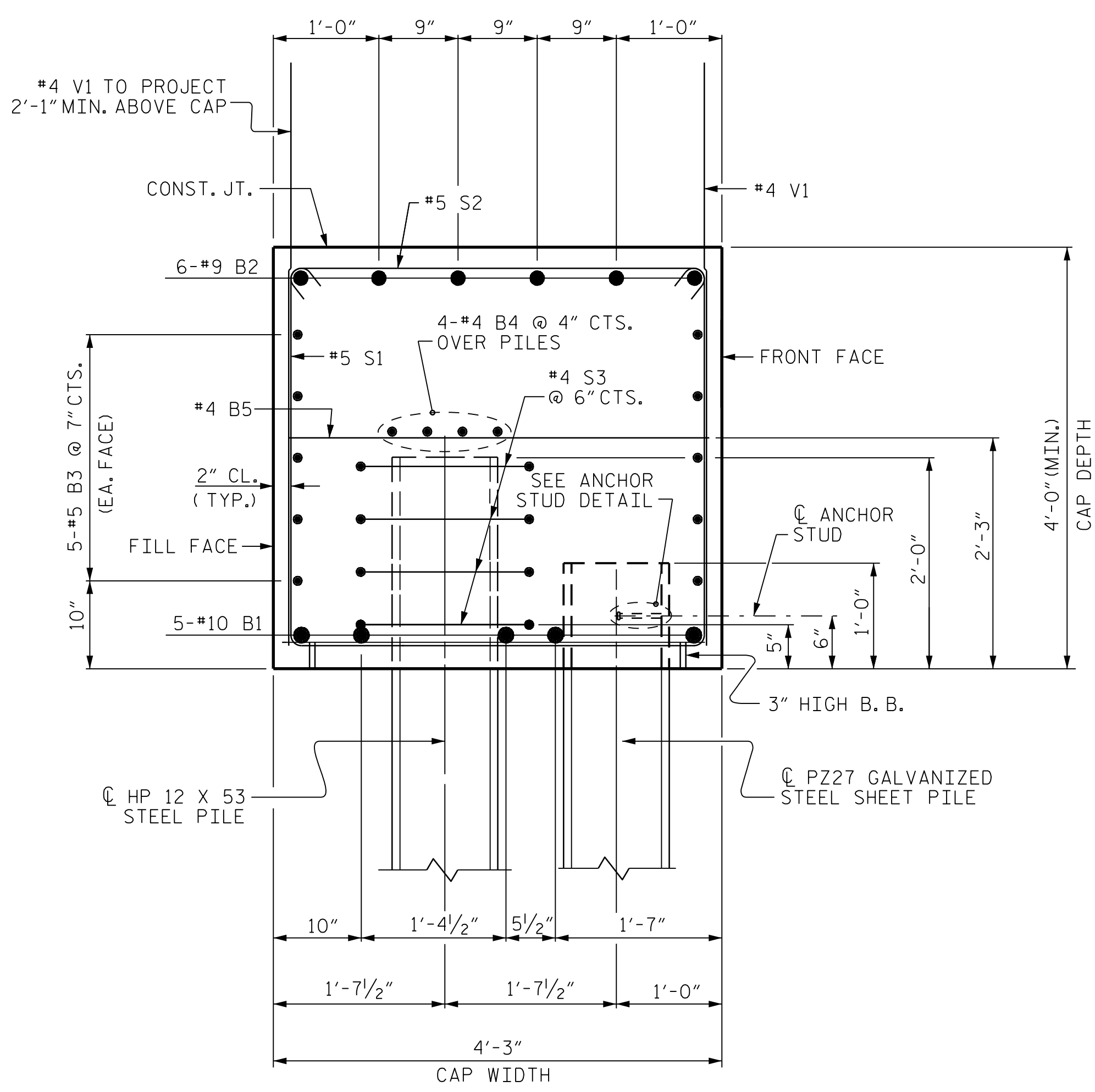
△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS



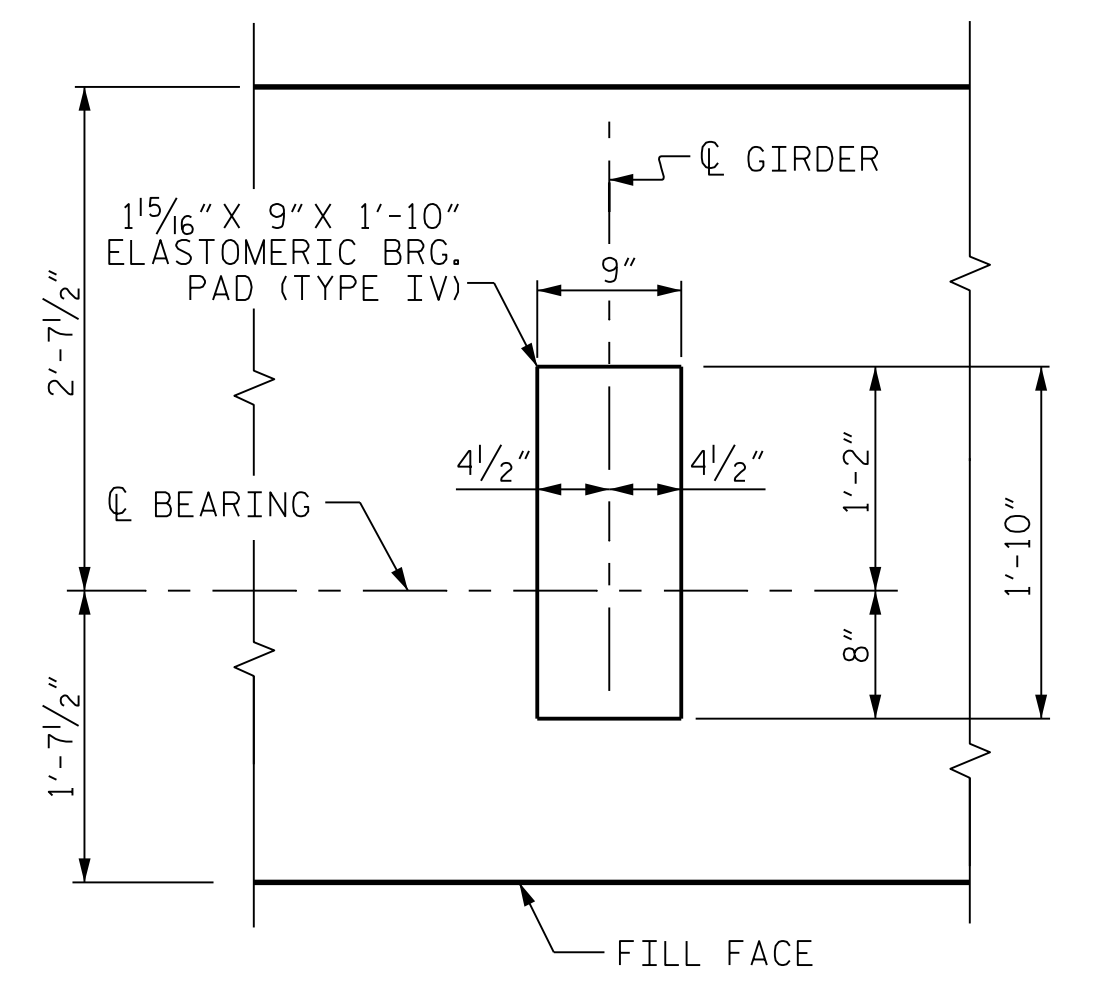
ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
FOR ONE END BENT (2 REQUIRED)					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	5	#10	1	53'-4"	1147
B2	6	#9	1	53'-0"	1081
B3	10	#5	STR	50'-8"	528
B4	8	#4	STR	26'-7"	142
B5	13	#4	STR	3'-11"	34
H1	10	#4	4	20'-10"	139
K1	24	#4	STR	4'-6"	72
S1	92	#5	2	12'-1"	1159
S2	92	#5	3	4'-10"	464
S3	32	#4	5	6'-6"	139
S4	40	#4	3	2'-7"	69
S5	40	#4	2	4'-10"	129
V1	72	#4	STR	6'-2"	305
V2	24	#4	STR	8'-4"	134
REINFORCING STEEL					LBS. 5,543
CLASS A CONCRETE BREAKDOWN :					
POUR #1 - CAP					C.Y. 32.8
POUR #2 - WINGS					C.Y. 1.7
POUR #3 - COPINGS					C.Y. 4.3
TOTAL CLASS A CONCRETE					C.Y. 38.8
HP 12 x 53 STEEL PILES					
NO. = 8					LIN. FT. 520
PILE DRIVING EQUIPMENT					EA. 8
SETUP FOR HP 12x53 STEEL PILES					
PDA TESTING					EA. 1
PILE REDRIVES					EA. 4
18" STEEL SHEET PILE SYSTEM:					
PZ27 - NO: 62					SO. FT. = 2,384
PZ90 - NO: 2					SO. FT. = 41
TOTAL NO: 64					SO. FT. = 2,425



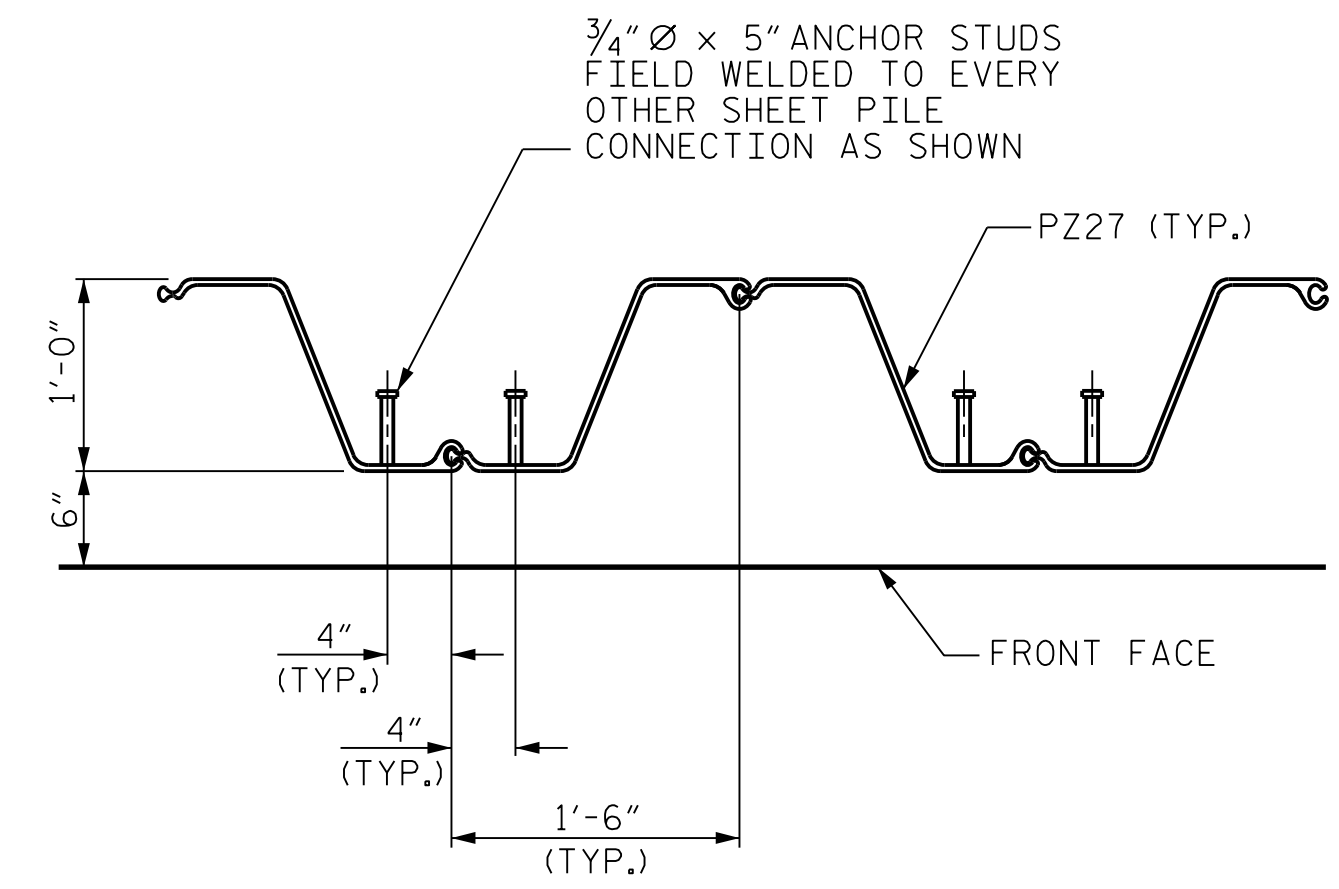
SECTION A-A

BURN 1/2" Ø MAX. HOLE IN SHEET PILE FOR #4 S1 BARS



DETAIL "A"

(END BENT 1 SHOWN, END BENT 2 SIMILAR BY ROTATION)



ANCHOR STUD DETAIL

CDM Smith

CDM SMITH
5400 Glenwood Avenue, Suite 400
Raleigh, NC 27612-3228
NC COA No. F-1255



PROJECT NO. B-5624
BRUNSWICK COUNTY
STATION: 17+46.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENTS 1 & 2
(INTEGRAL)

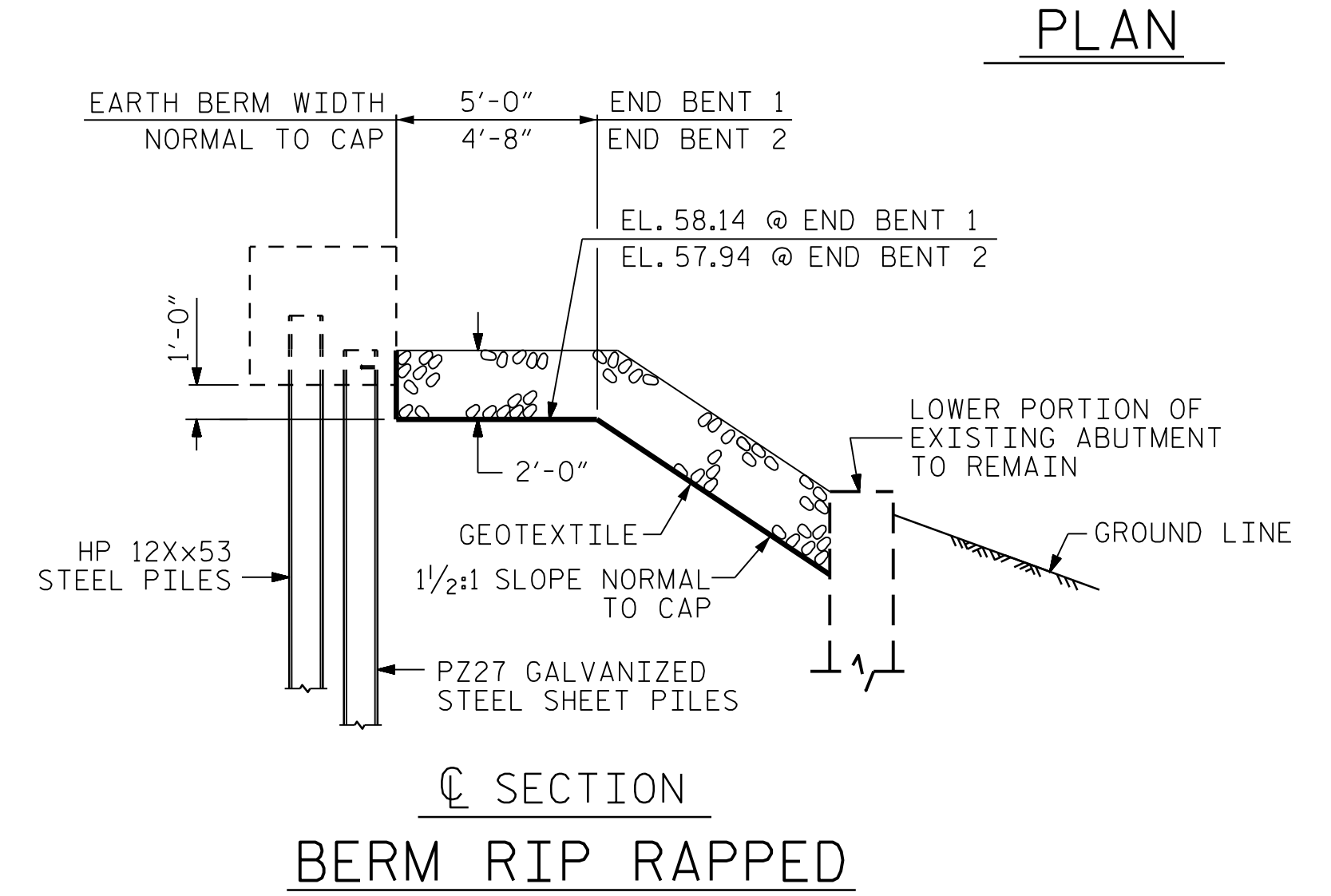
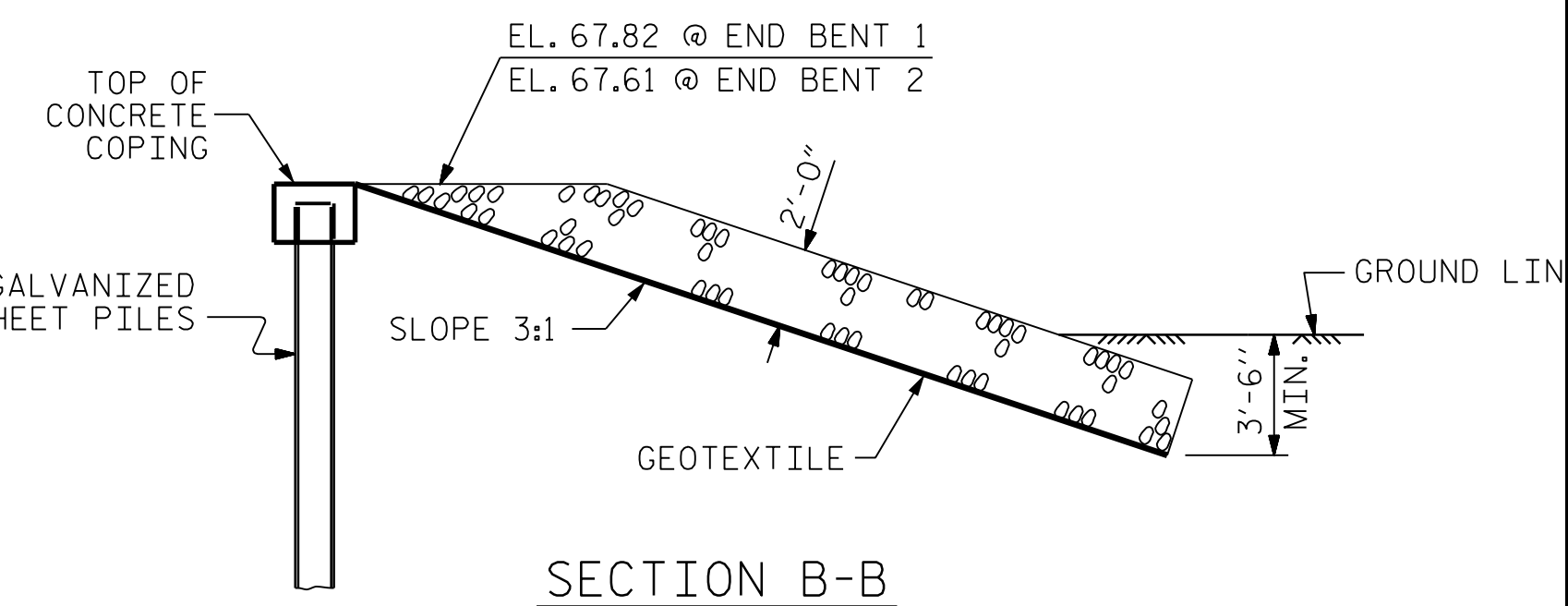
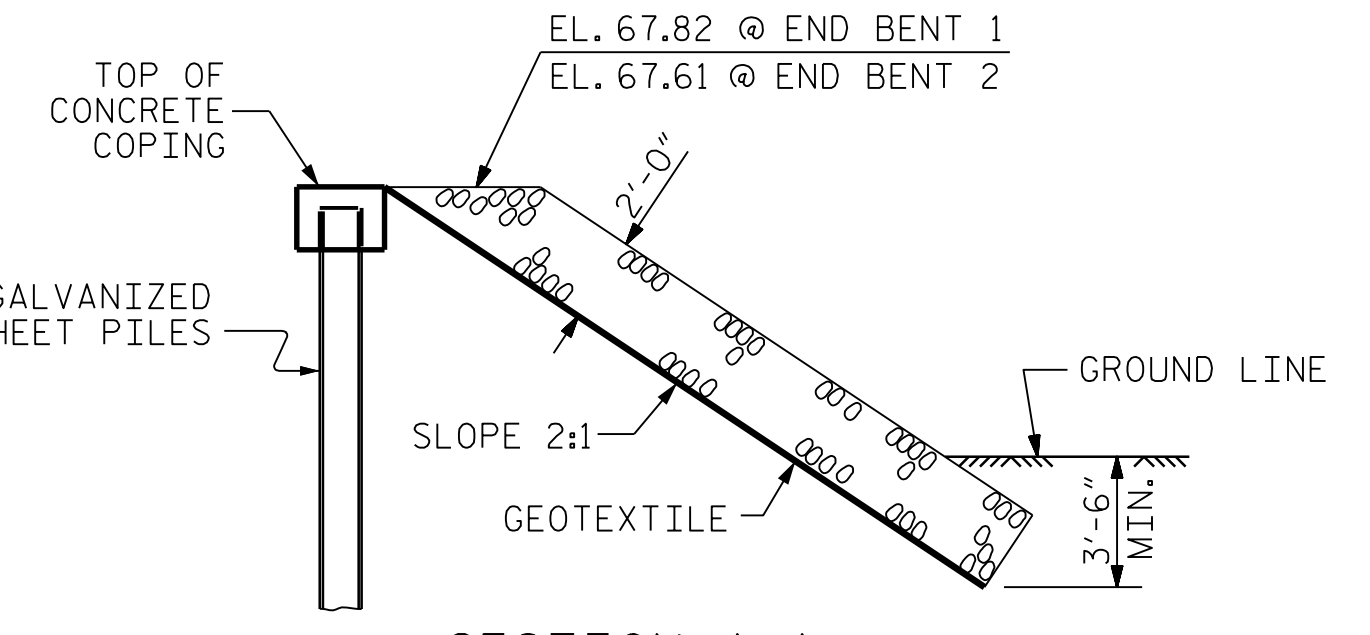
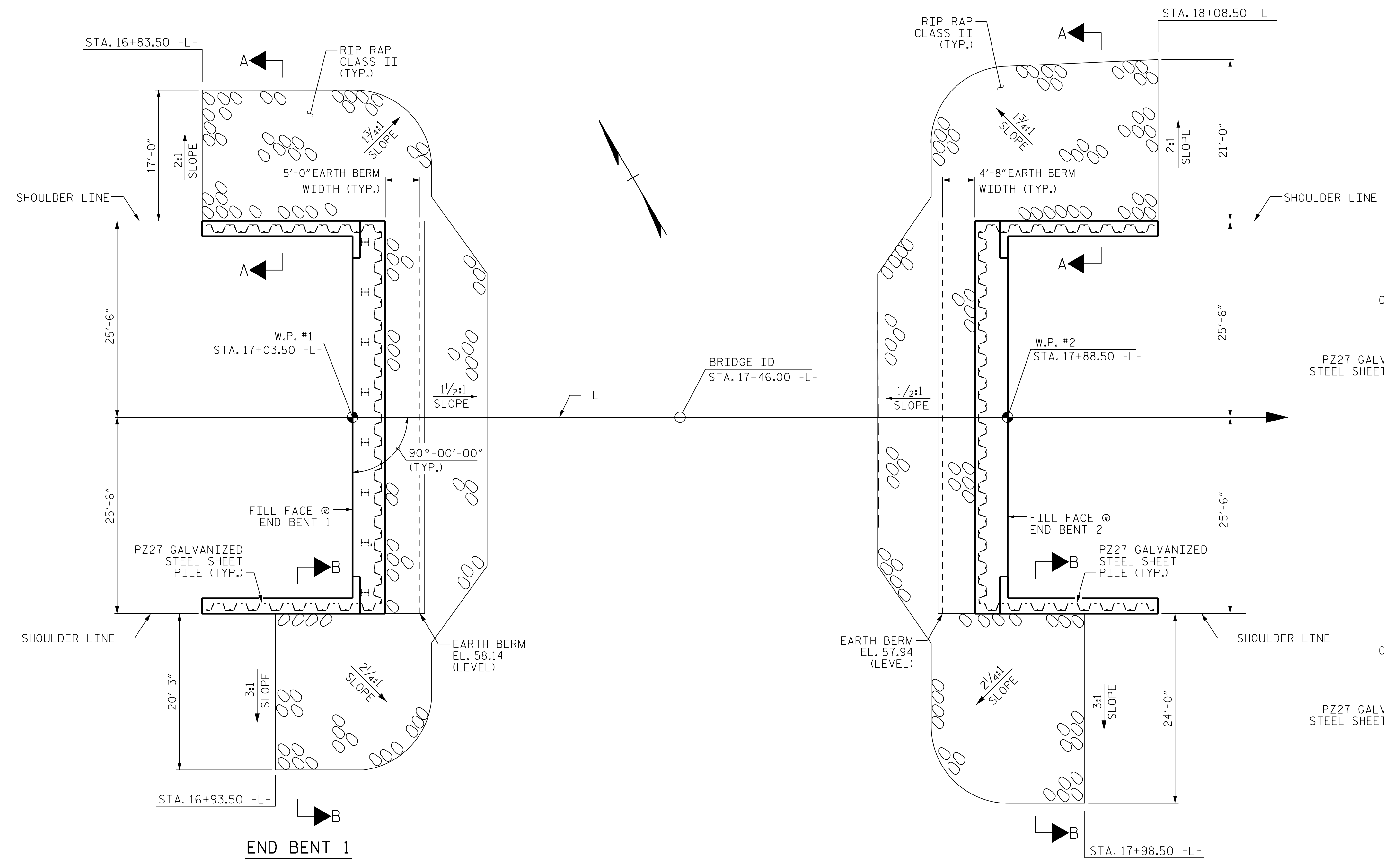
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			20

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DRAWN BY: JJR DATE: 9/20
CHECKED BY: THF DATE: 10/20
DESIGN ENGINEER: VDK DATE: 11/20

DWG. No.

ESTIMATED QUANTITIES		
BRIDGE @ STA. 17+46.00 -L-	RIP RAP CLASS II	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	152	169
END BENT 2	168	187
TOTAL	320	358



PLAN

END BENT 2

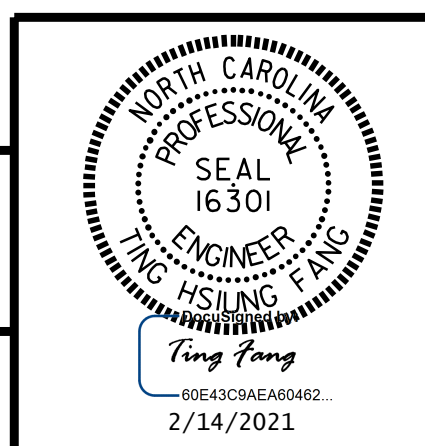
SECTION C-C
BERM RIP RAPPED

PROJECT NO. B-5624
BRUNSWICK COUNTY
 STATION: 17+46.00 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH			
STANDARD			
RIP RAP DETAILS			
REVISIONS			
NO.	BY:	DATE:	SHEET NO.
1			S-18
2			TOTAL SHEETS
			20

CDM Smith
 CDM SMITH
 5400 Glenwood Avenue, Suite 400
 Raleigh, NC 27612-3228
 NC COA No. F-1255

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 CHECKED BY: THF DATE: 10/20
 DESIGN ENGINEER: VDK DATE: 11/20



FILE: SFILES
 DATE: SDATE
 STIMES

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

BILL OF MATERIAL

FOR ONE APPROACH SLAB
(2 REQUIRED)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	32	#4	STR	21'-6"	460
A2	32	#4	STR	21'-4"	460
* B1	83	#5	STR	14'-2"	1226
B2	83	#6	STR	14'-8"	1828
REINFORCING STEEL				LBS.	2,284
* EPOXY COATED REINFORCING STEEL				LBS.	1,666
CLASS AA CONCRETE				C. Y.	26.6

NOTES

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

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4" 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 4" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

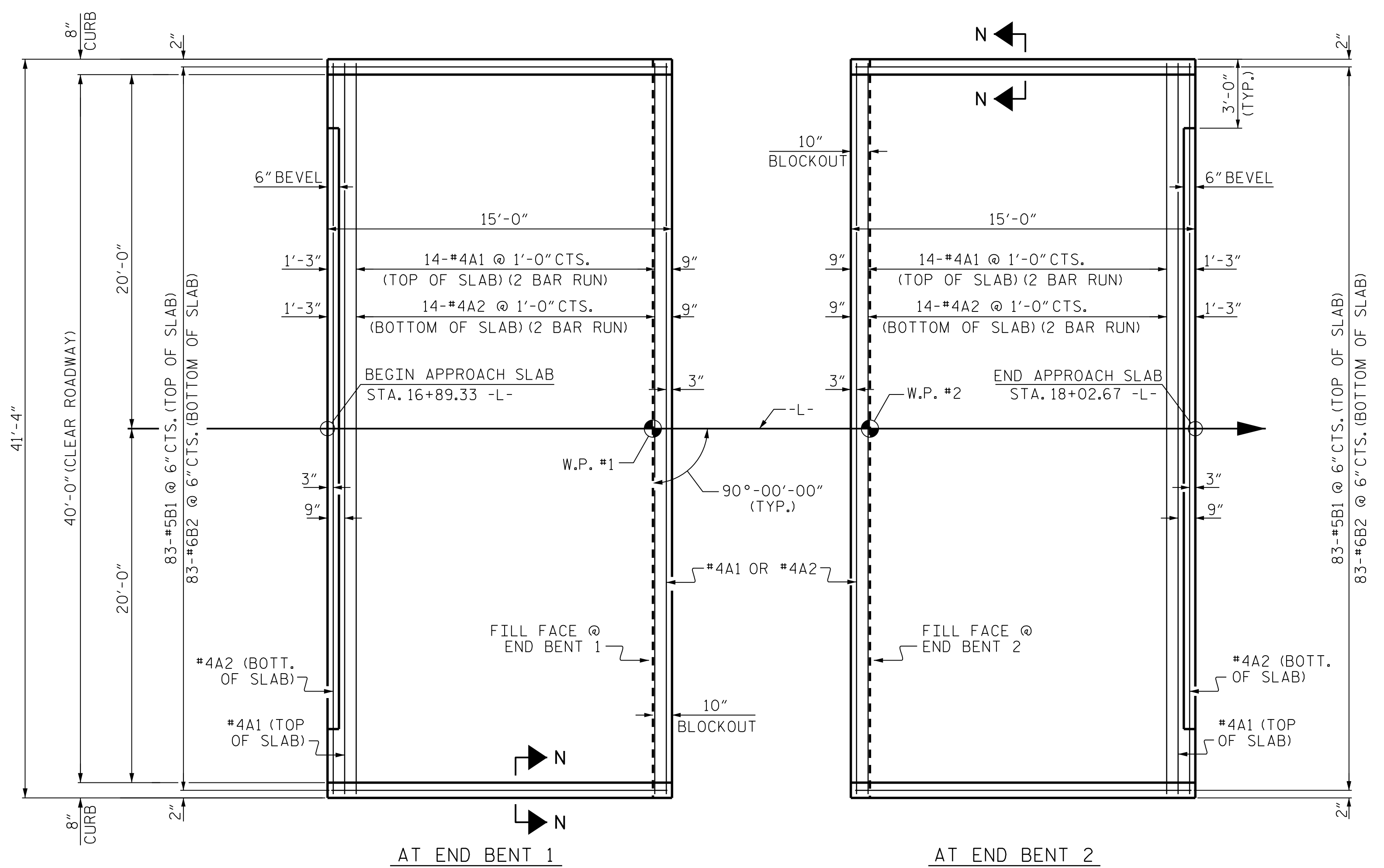
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

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.

FOR TEMPORARY BERM AND SLOPE DRAIN DETAILS, SEE SHEET 2 OF 2.

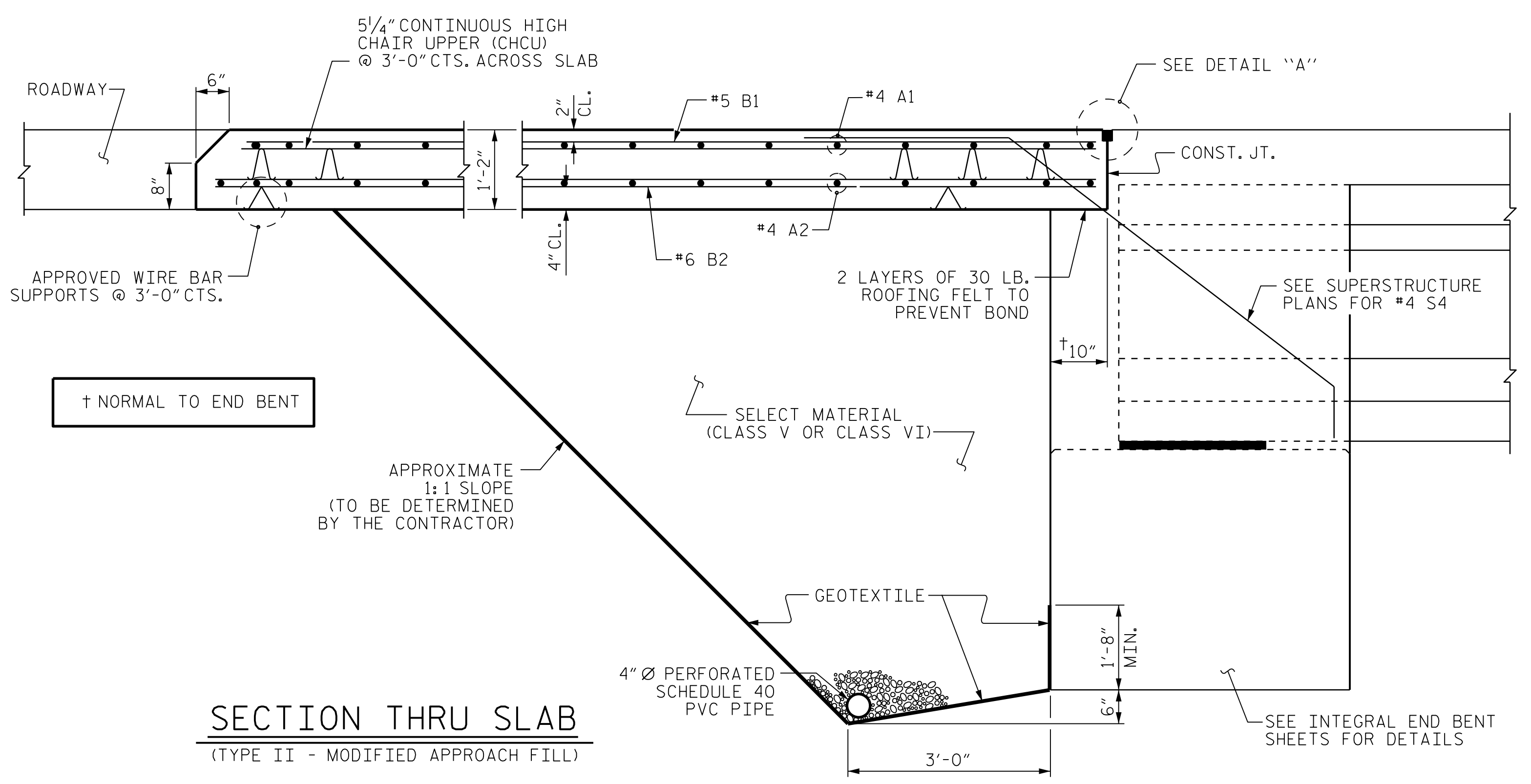
SPLICE LENGTHS

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

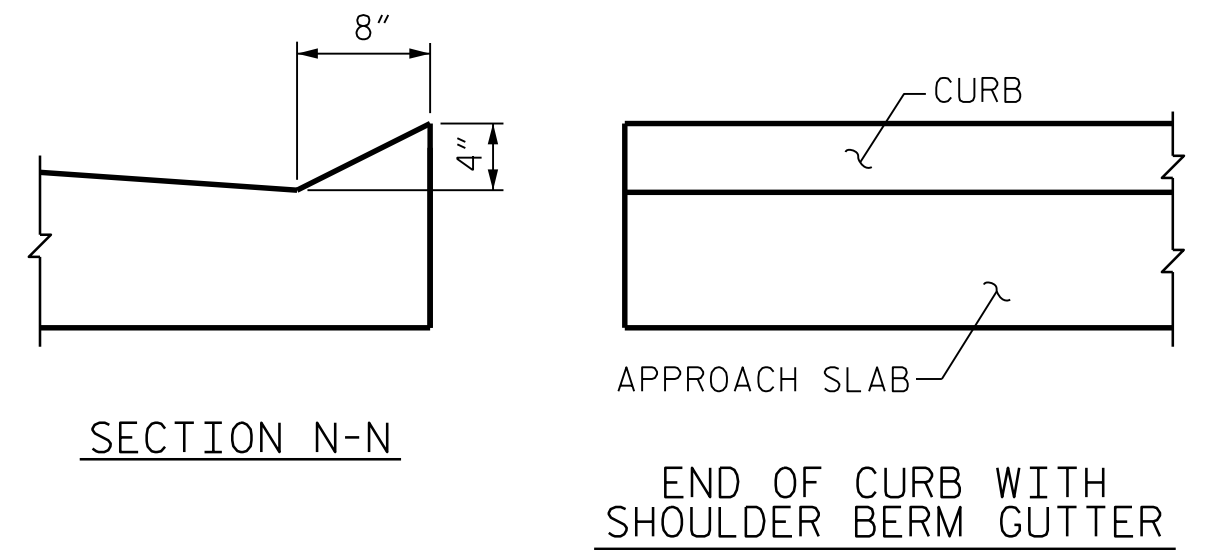


PLAN

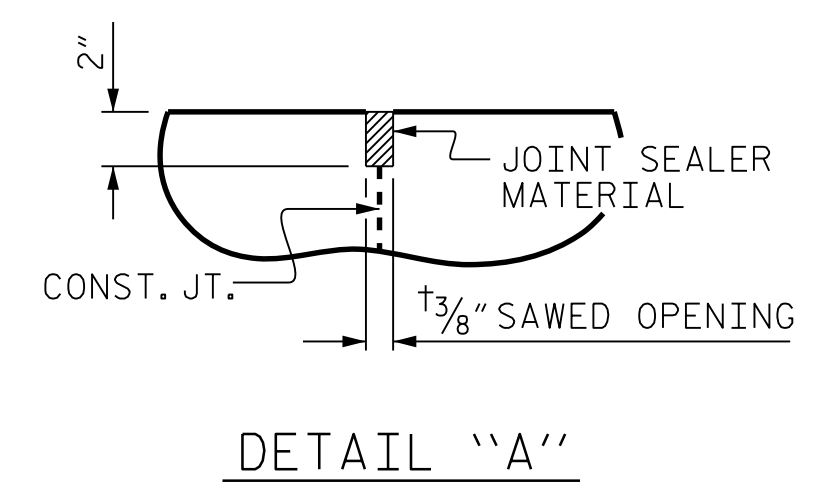
DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



SECTION THRU SLAB
(TYPE II - MODIFIED APPROACH FILL)



CURB DETAILS

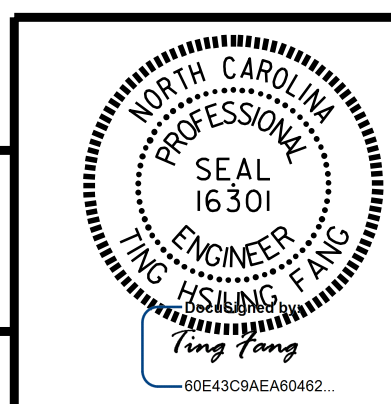


DETAIL 'A'

PROJECT NO. B-5624
BRUNSWICK COUNTY
 STATION: 17+46.00 -L-

SHEET 1 OF 2

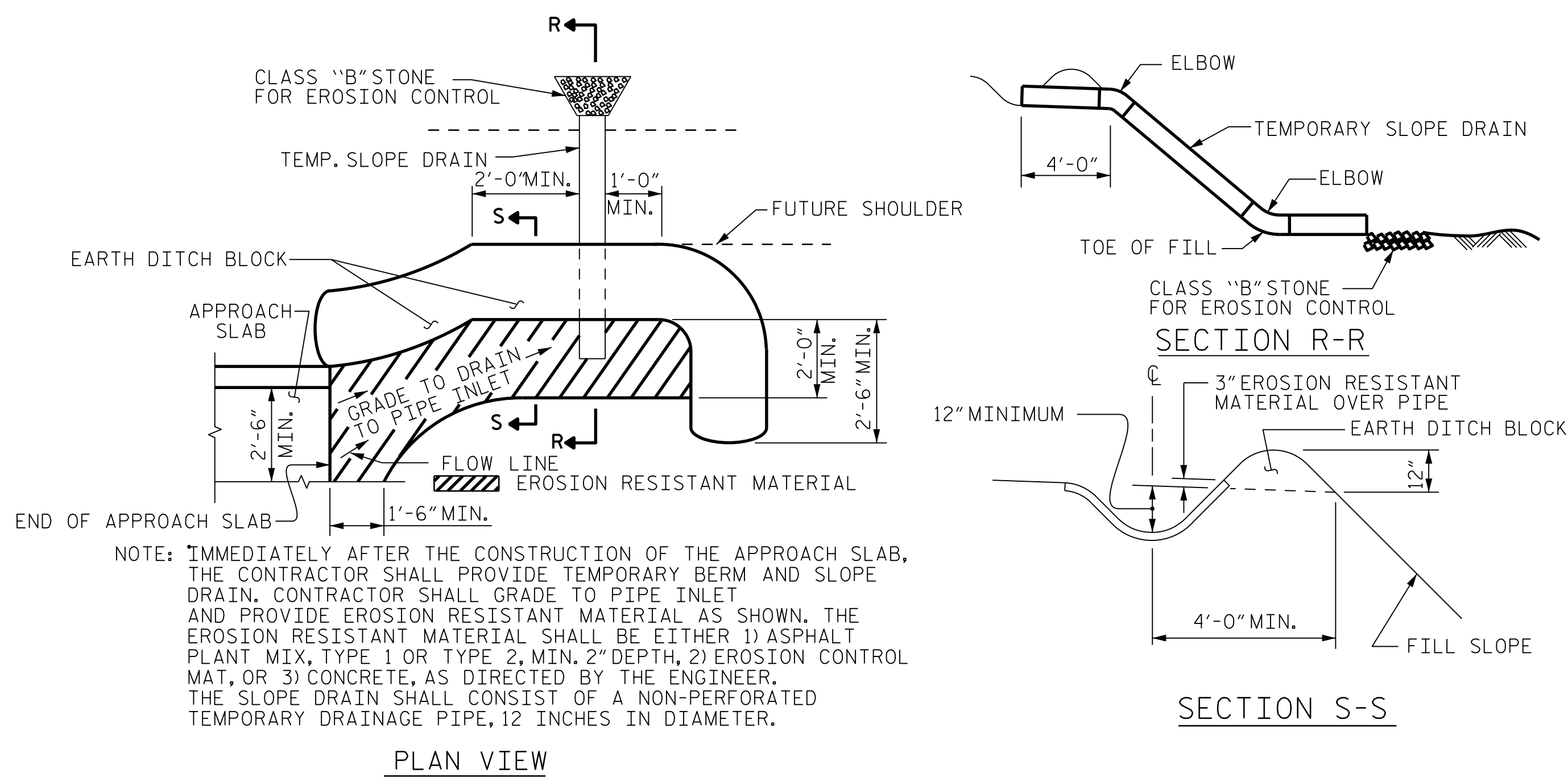
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**BRIDGE APPROACH SLAB
 FOR INTEGRAL
 ABUTMENT WITH
 FLEXIBLE PAVEMENT**



CDM Smith
 CDM SMITH
 5400 Glenwood Avenue, Suite 400
 Raleigh, NC 27612-3228
 NC COA No. F-1255

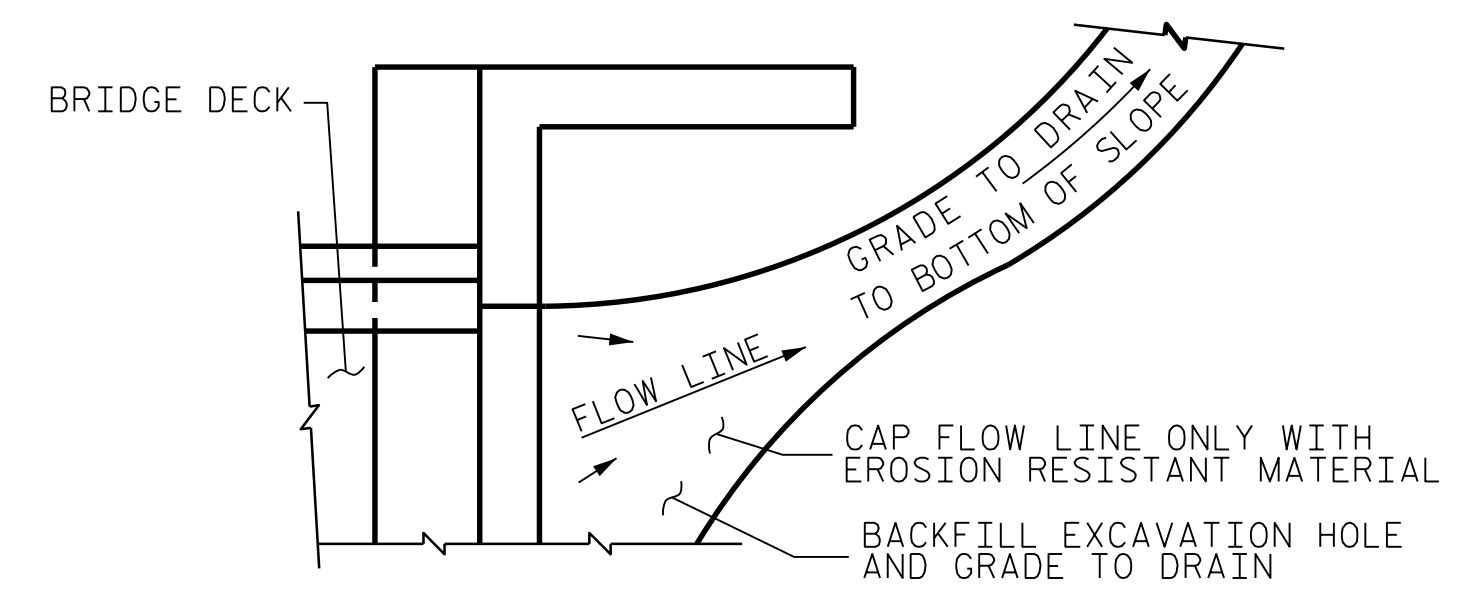
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	DRAWN BY : JJR DATE : 9/20	DWG. No.
	CHECKED BY : THF DATE : 10/20	
	DESIGN ENGINEER : VDK DATE : 11/20	

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			20



NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 2" DEPTH, 2) EROSION CONTROL MAT, OR 3) CONCRETE, AS DIRECTED BY THE ENGINEER. THE SLOPE DRAIN SHALL CONSIST OF A NON-PERFORATED TEMPORARY DRAINAGE PIPE, 12 INCHES IN DIAMETER.

TEMPORARY BERM AND SLOPE DRAIN DETAILS
 (TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



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

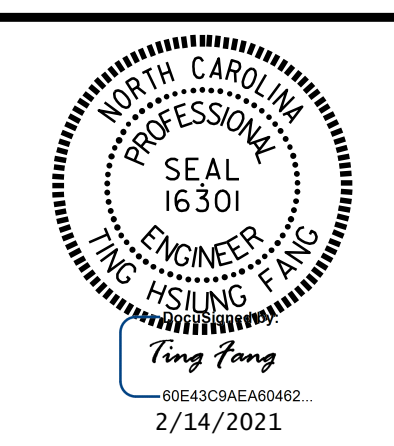
TEMPORARY DRAINAGE DETAIL

PROJECT NO. B-5624
BRUNSWICK COUNTY
 STATION: 17+46.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
BRIDGE APPROACH SLAB FOR INTEGRAL ABUTMENT WITH FLEXIBLE PAVEMENT					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 20

CDM Smith
 CDM SMITH
 5400 Glenwood Avenue, Suite 400
 Raleigh, NC 27612-3228
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	CHECKED BY : THF DATE : 10/20	
	DESIGN ENGINEER : VDK DATE : 11/20	

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

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

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

CONCRETE:

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

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED 3/4" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1-1/2" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 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 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 7/8" Ø SHEAR STUDS FOR THE 3/4" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø 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 5/16" 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 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