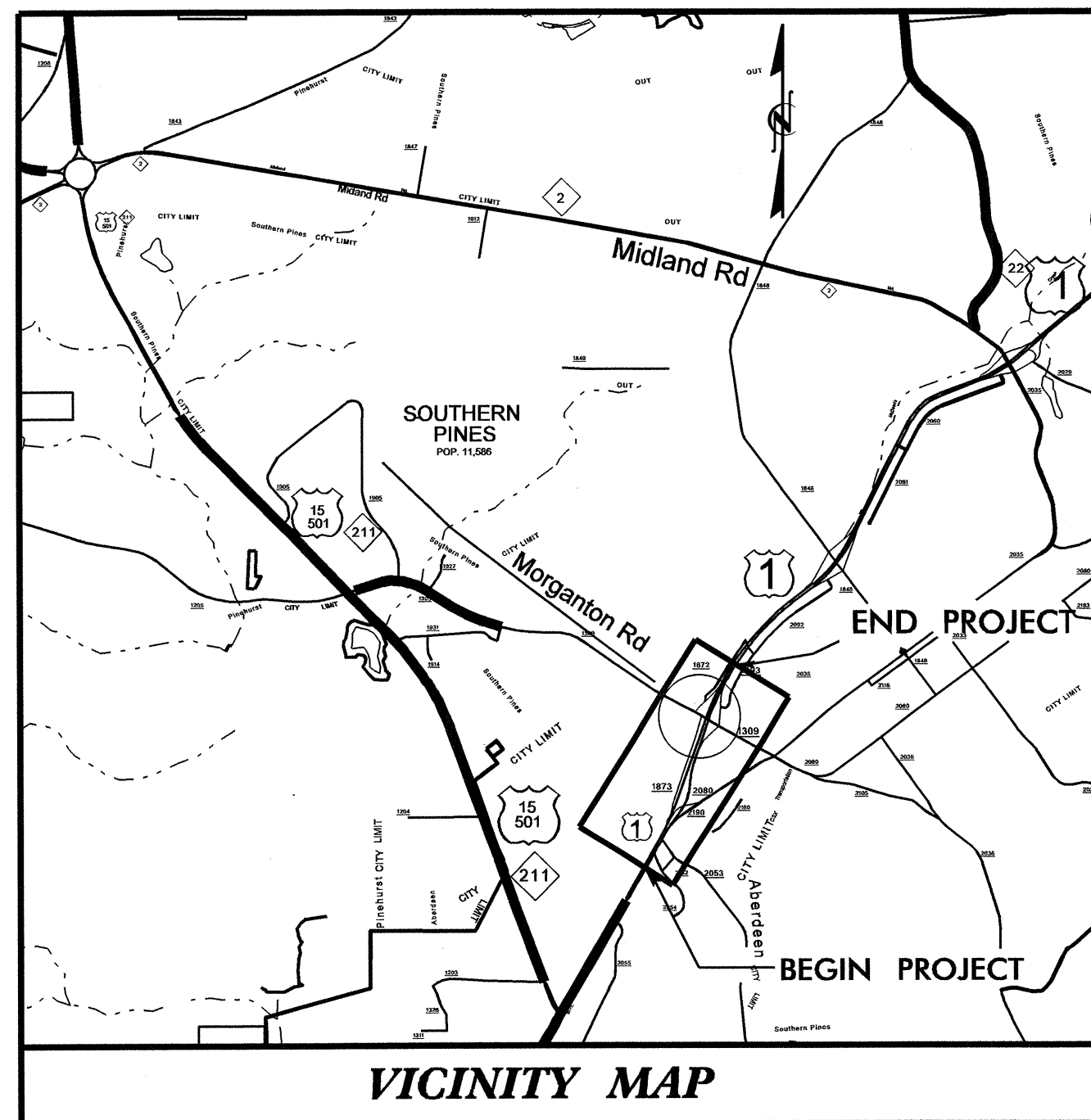


CONTRACT: C202886 TIP PROJECT: U-3324

STRUCTURES

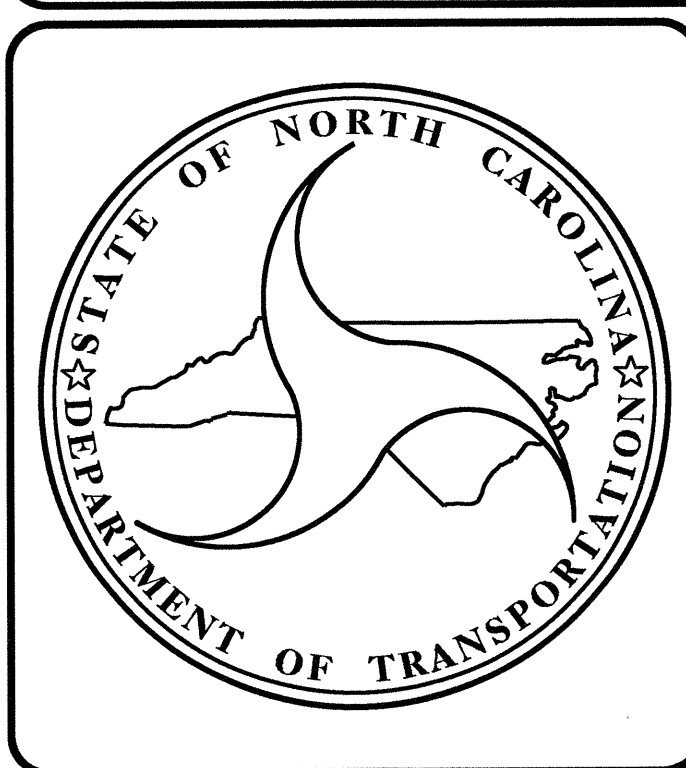
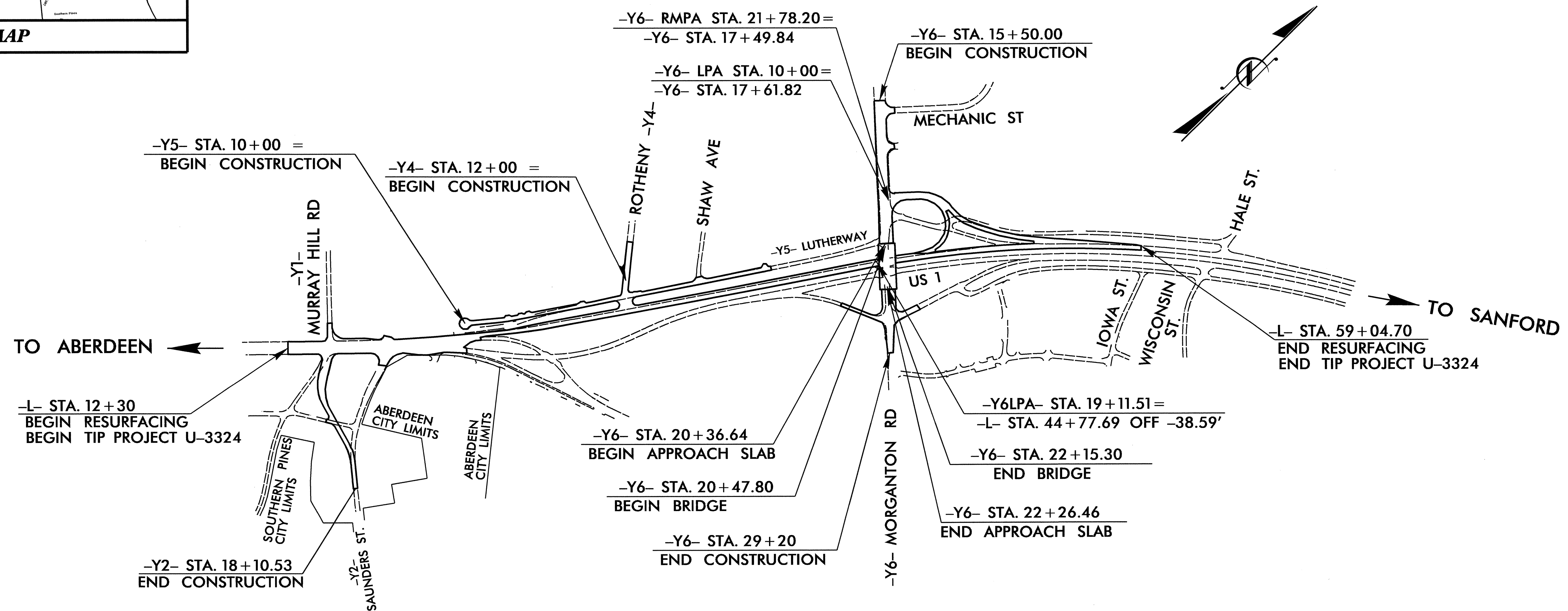


STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
MOORE COUNTY

**LOCATION: ABERDEEN-SOUTHERN PINES - INTERSECTION OF
SR 1309 (MORGANTOWN RD.) AND US 1 (SANDHILLS BLVD.)**

**TYPE OF WORK: RESURFACING, PAVING, GRADING, DRAINAGE,
SIGNALS, STRUCTURE AND RETAINING WALLS**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-3324		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34923.1.1	STPNHF-1(10)	P.E.	
34923.2.2	STPNHF-1(10)	UTIL. & RAW	
34923.3.1	STPNHF-1(10)	CONST.	



-Y6- DESIGN DATA

AADT 2008 =	19,600
AADT 2035 =	32,200
DHV =	10 %
D =	55 %
T =	3 %
V =	35 MPH
TTST 1% =	DUAL 2%

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT U-3324 =	0.907 MI.
LENGTH OF STRUCTURE ON -Y6- =	0.032 MI.
TOTAL LENGTH OF TIP PROJECT U-3324 =	0.907 MI.

Prepared in the Office of:
DIVISION OF HIGHWAYS
2012 STANDARD SPECIFICATIONS

LETTING DATE :
SEPTEMBER 18, 2012

STRUCTURE MANAGEMENT UNIT
1000 BIRCH RIDGE DR.
RALEIGH, N.C. 27610

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

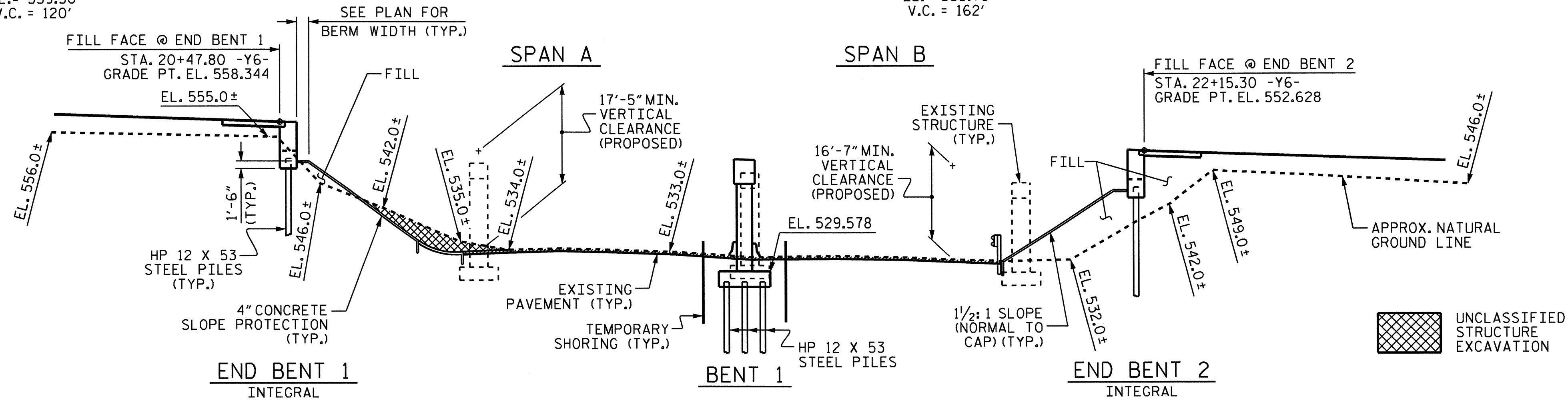
P.E.
STATE DESIGN ENGINEER
DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED _____ DATE _____
DIVISION ADMINISTRATOR

GRADE DATA
 0.4476% -2.0000%
 P.I. STA. = 20+00.00 -Y6-
 EL. = 559.30
 V.C. = 120'

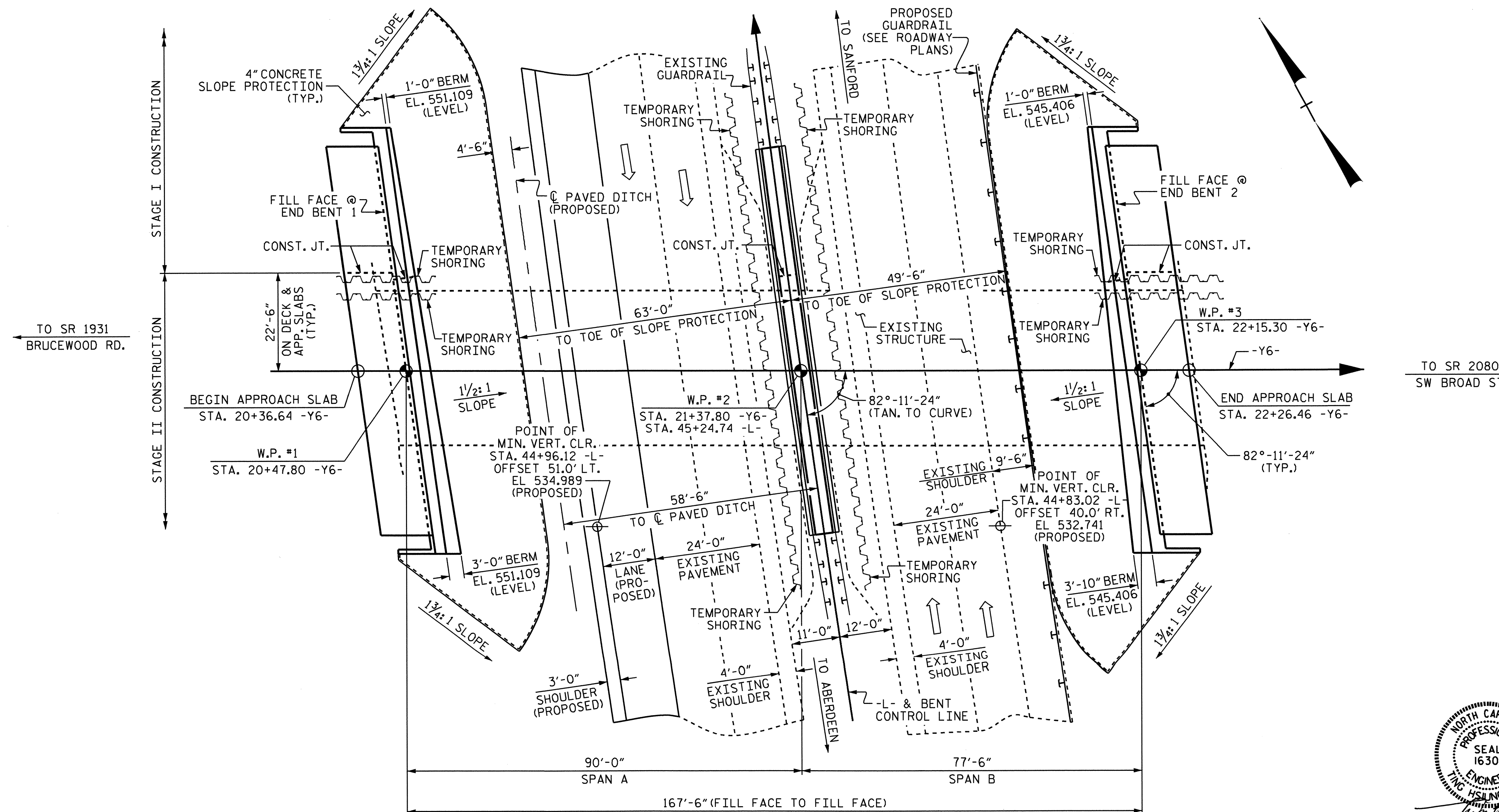
GRADE DATA
 -2.0000% -7.3862%
 P.I. STA. = 21+77.00 -Y6-
 EL. = 555.76
 V.C. = 162'

560
550
540
530



SECTION ALONG -Y6-

SECTIONS AT END BENTS AND BENTS ARE AT RIGHT ANGLES.



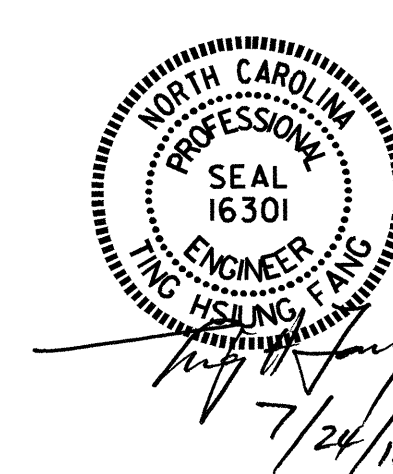
PLAN

PILES NOT SHOWN FOR CLARITY.

HORIZONTAL CURVE DATA -L-

PI STA. 57+27.60 -L-
 Δ = 25°-19'-08.5" (RT)
 D = 1°-00'-00.0"
 L = 2531.90'
 T = 1286.96'
 R = 5729.58'

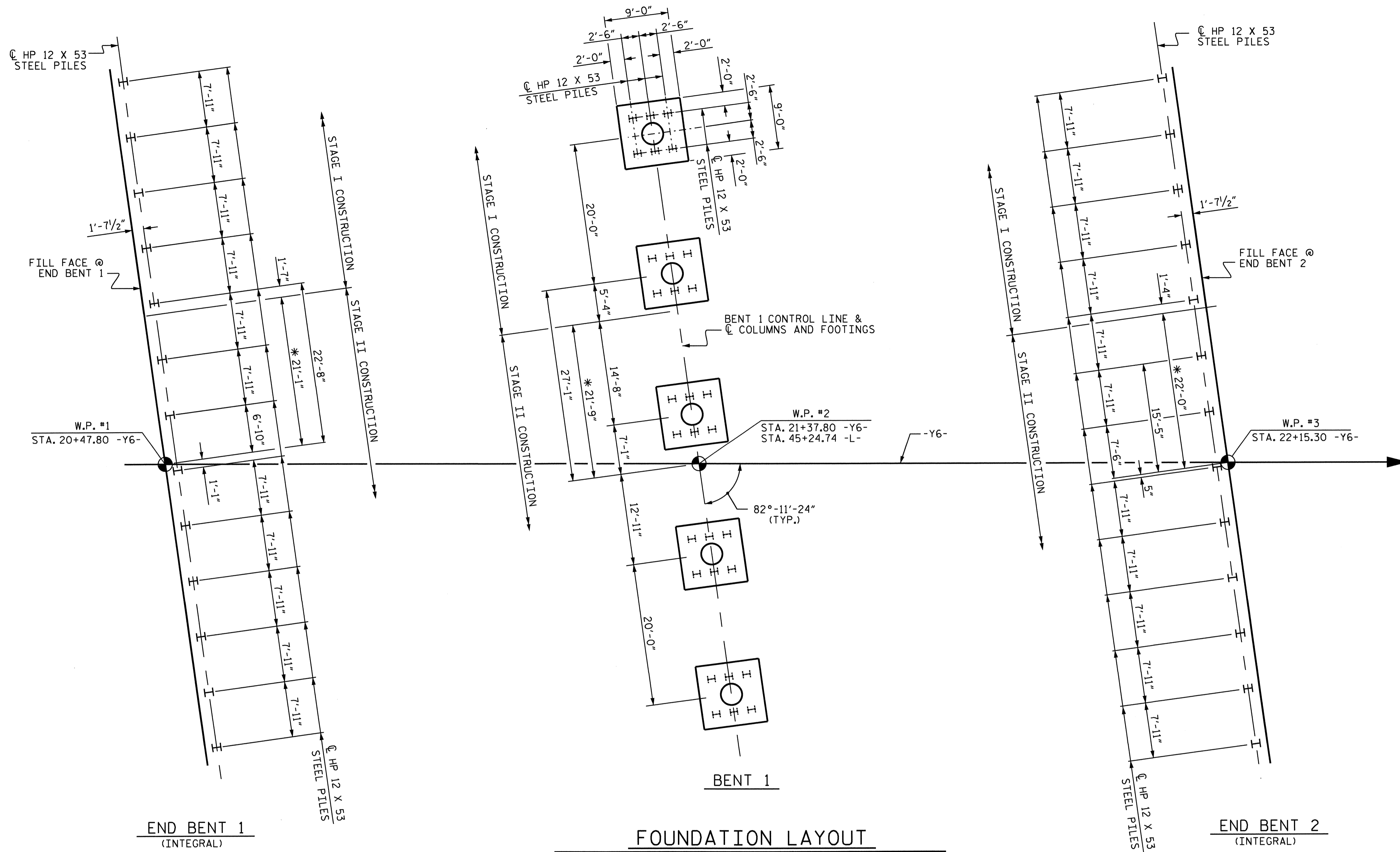
PROJECT NO. U-3324
 MOORE COUNTY
 STATION: 21+37.80-Y6-
45+24.74-L-
 SHEET 1 OF 3 REPLACES BRIDGE #41



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE ON SR 1309
 (MORGANTON RD.)
 OVER US 1 BETWEEN
 SR 1931 AND SR 2080

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS 44
2			4			

DRAWN BY : E.C. LOCKLEAR DATE : 10-2-09
 CHECKED BY : T.H. FANG DATE : 6-8-12

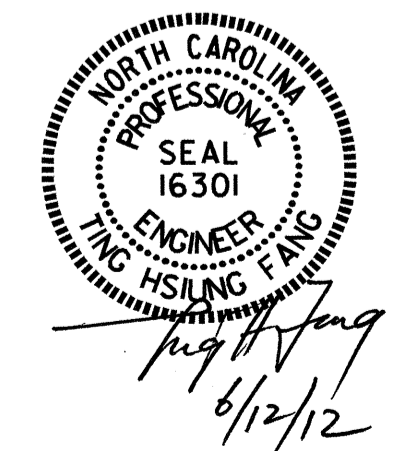


FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO THE PILE CENTERLINE.
 * DIMENSION TO THE CONSTRUCTION JOINT ON END BENT CAPS, BENT CAP AND SLOPE PROTECTIONS.

NOTES

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
 PILES AT END BENT 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 95 TONS PER PILE.
 DRIVE PILES AT END BENT 1 TO A REQUIRED DRIVING RESISTANCE OF 158 TONS PER PILE.
 PILES AT BENT 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 115 TONS PER PILE.
 DRIVE PILES AT BENT 1 TO A REQUIRED DRIVING RESISTANCE OF 192 TONS PER PILE.
 PILES AT END BENT 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 85 TONS PER PILE.
 DRIVE PILES AT END BENT 2 TO A REQUIRED DRIVING RESISTANCE OF 142 TONS PER PILE.
 TESTING PILES WITH THE PILE DRIVING ANALYZER (PDA) DURING DRIVING, RESTRIKING OR REDRIVING MAY BE REQUIRED. THE ENGINEER WILL DETERMINE THE NEED FOR PDA TESTING. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.



PROJECT NO. U-3324
MOORE COUNTY
 STATION: 21+37.80 -Y6-

SHEET 2 OF 3
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE ON SR 1309
 (MORGANTON RD.)
 OVER US 1

DRAWN BY : HARISH SHAH DATE : 10-11-11
 CHECKED BY : TING FANG DATE : 4-13-12

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2	
1			3			TOTAL SHEETS	44
2			4				

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	FOUNDATION EXCAVATION	PDA TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	APPROX. STRUCTURAL STEEL	HP 12 X 53 STEEL PILES	PILE REDRIVES	4" SLOPE PROTECTION	POT BEARINGS	ELASTOMERIC BEARINGS	CLASSIC CONCRETE BRIDGE RAIL	
	LUMP SUM		EACH	LUMP SUM	SO.FT.	SO.FT.	CU.YDS.	LUMP SUM	LBS.	LBS.	APPROX.LBS.	NO.	LN.FT.	EACH	SO. YDS.	LUMP SUM	LUMP SUM	LN.FT.
SUPERSTRUCTURE					15,298	14,074					412,000					LUMP SUM	LUMP SUM	335.0
END BENT 1									7,269			13	650	13	470			
BENT 1		LUMP SUM							18,254	1,902		30	1,350	30				
END BENT 2									7,470			13	650	13	460			
TOTAL	LUMP SUM	LUMP SUM	1	LUMP SUM	15,298	14,074	229.0	LUMP SUM	32,993	1,902	412,000	56	2,650	56	930	LUMP SUM	LUMP SUM	335.0

NOTES

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

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

FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE BARS FROM WHICH THE SAMPLES ARE TAKEN MUST THEN BE SPICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE, PLUS A MINIMUM LAP SPICE OF THIRTY BAR DIAMETERS. PAYMENT FOR THE SAMPLES OF REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 21+37.80 -Y6-".

AFTER SERVING AS A TEMPORARY STRUCTURE, THE EXISTING STRUCTURE CONSISTING OF 4 SPANS: 1 @ 42'-6", 1 @ 52'-6", 1 @ 52'-7" & 1 @ 38'-0" 28'-2" CLEAR ROADWAY WIDTH AND A REINFORCED CONCRETE DECK ON 5 I-BEAMS; END BENTS AND INTERIOR BENTS CONSISTING OF RC CAPS ON PPC PILES, LOCATED AT THE PROPOSED STRUCTURE SITE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE FURTHER DETERIORATE, THIS LOAD LIMITATION MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 20 FT. EACH SIDE AT END BENT 1 CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

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.

ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 50W.

FOR MAINTENANCE AND PROTECTION OF TRAFFIC BENEATH PROPOSED STRUCTURE, SEE SPECIAL PROVISIONS.

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

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.

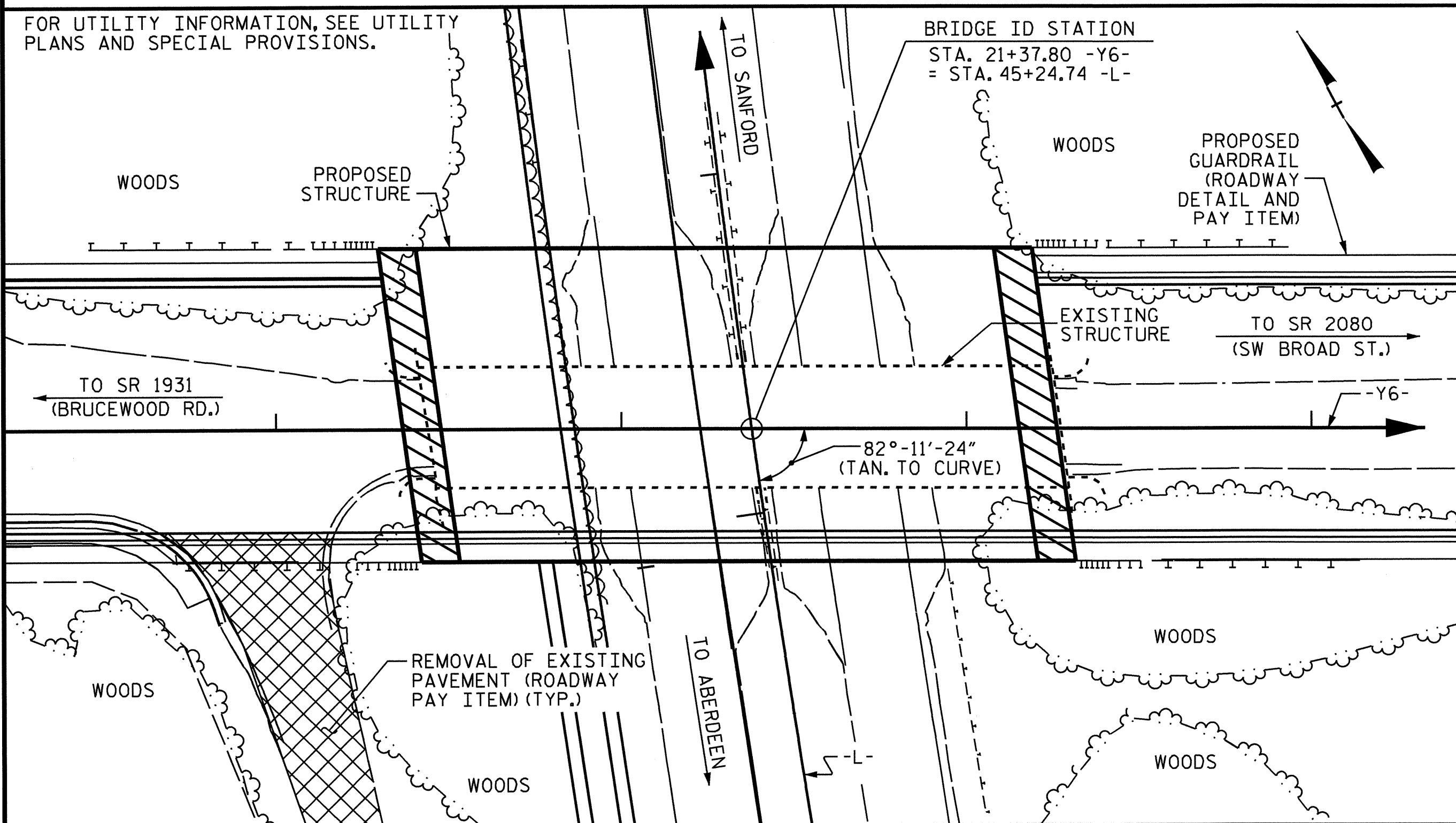
FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

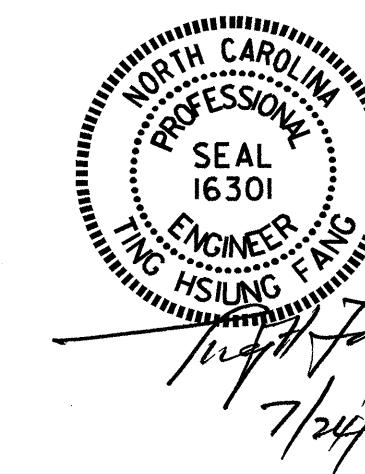
BM #4: CHISELED X IN CONC. BASE OF METAL LIGHT POLE (CP&L #V6987), 202' RT. OF STA. 51+76.00 -L-, EL. 511.81



LOCATION SKETCH

PROJECT NO. U-3324
MOORE COUNTY
STATION: 21+37.80 -Y6-

SHEET 3 OF 3



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
GENERAL DRAWING
FOR BRIDGE ON SR 1309
(MORGANTON RD.)
OVER US 1 BETWEEN
SR 1931 AND SR 2080

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS
2			4			44

DRAWN BY: H. B. SHAH DATE: 3-22-10
CHECKED BY: T. H. FANG DATE: 5-28-12

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR STEEL GIRDERS

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE II LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVE-LOAD FACTORS (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 (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	1.03	--	1.75	0.685	1.03	A	I	88.36	0.861	1.83	A	I	79.52	1.30	0.685	1.14	A	I	88.36	1	
	HL-93 (OPERATING)	N/A		1.34	--	1.35	0.685	1.34	A	I	88.36	0.861	2.37	A	I	79.52	1.00	0.685	1.48	A	I	88.36	1	
	HS-20 (INVENTORY)	36.00	2	2.09	75.24	1.75	0.685	2.09	A	I	88.36	0.861	2.48	A	I	79.52	1.30	0.644	2.24	A	I	35.34	1	
	HS-20 (OPERATING)	36.00		2.71	97.56	1.35	0.685	2.71	A	I	88.36	0.861	3.22	A	I	79.52	1.00	0.644	2.91	A	I	35.34	1	
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		5.11	68.99	1.40	0.644	6.53	A	I	35.34	0.861	7.77	A	I	79.52	1.30	0.644	5.11	A	I	35.34	1
		SNGARBS2	20.000		3.77	75.40	1.40	0.685	4.64	A	I	88.36	0.861	5.39	A	I	79.52	1.30	0.644	3.77	A	I	35.34	1
		SNAGRIS2	22.000		3.55	78.10	1.40	0.685	4.30	A	I	88.36	0.861	4.95	A	I	79.52	1.30	0.644	3.55	A	I	35.34	1
		SNCOTTS3	27.250		2.56	69.76	1.40	0.685	3.17	A	I	88.36	0.861	3.86	A	I	79.52	1.30	0.644	2.56	A	I	35.34	1
		SNAGGRS4	34.925		2.13	74.39	1.40	0.685	2.48	A	I	88.36	0.861	3.12	A	I	79.52	1.30	0.644	2.13	A	I	35.34	1
		SNS5A	35.550		2.09	74.30	1.40	0.685	2.44	A	I	88.36	0.861	3.10	A	I	79.52	1.30	0.644	2.09	A	I	35.34	1
		SNS6A	39.950		1.91	76.30	1.40	0.685	2.19	A	I	88.36	0.861	2.80	A	I	79.52	1.30	0.644	1.91	A	I	35.34	1
		SNS7B	42.000		1.83	76.86	1.40	0.685	2.08	A	I	88.36	0.861	2.72	A	I	79.52	1.30	0.644	1.83	A	I	35.34	1
	TRUCK TRACTOR SEMI-TRAILER (T/S/T)	TNAGRIT3	33.000		2.35	77.55	1.40	0.685	2.67	A	I	88.36	0.861	3.36	A	I	79.52	1.30	0.644	2.35	A	I	35.34	1
		TNT4A	33.075		2.32	76.73	1.40	0.685	2.66	A	I	88.36	0.861	3.32	A	I	79.52	1.30	0.644	2.32	A	I	35.34	1
		TNT6A	41.600		1.91	79.46	1.40	0.685	2.14	A	I	88.36	0.861	2.83	A	I	79.52	1.30	0.644	1.91	A	I	35.34	1
		TNT7A	42.000		1.91	80.22	1.40	0.685	2.13	A	I	88.36	0.861	2.78	A	I	79.52	1.30	0.644	1.91	A	I	35.34	1
		TNT7B	42.000		1.94	81.48	1.40	0.685	2.15	A	I	88.36	0.861	2.69	A	I	79.52	1.30	0.644	1.94	A	I	35.34	1
		TNAGRIT4	43.000		1.88	80.84	1.40	0.685	2.06	A	I	88.36	0.861	2.60	A	I	79.52	1.30	0.644	1.88	A	I	35.34	1
TNAGT5A	45.000		1.79	80.55	1.40	0.685	1.97	A	I	88.36	0.861	2.55	A	I	79.52	1.30	0.644	1.79	A	I	35.34	1		
TNAGT5B	45.000		3	1.76	79.20	1.40	0.685	1.96	A	I	88.36	0.861	2.48	A	I	79.52	1.30	0.644	1.76	A	I	35.34	1	
FATIGUE	HL-93 (INVENTORY)	γ _{LL} =0.75																						

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ _{DC}	γ _{DW}
	STRENGTH I	1.25	1.50
	SERVICE II	1.00	1.00

NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE II LIMIT STATES.
ALLOWABLE STRESS FOR SERVICE II LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

1. LOAD RATINGS CONTROLLED BY INTERIOR GIRDERS ARE FOR GIRDERS 2, 3, 9, AND 10. OTHER GIRDERS HAVE HIGHER LOAD RATINGS.

CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93) **

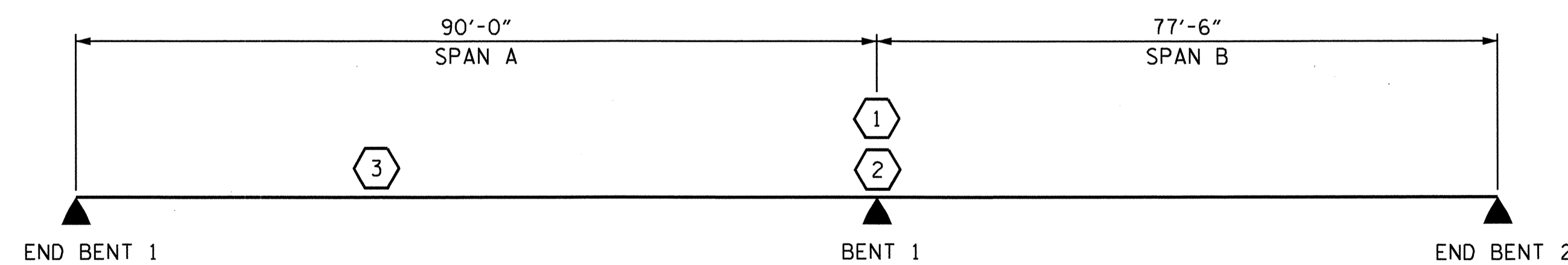
2 DESIGN LOAD RATING (HS-20) **

3 LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER
EL - EXTERIOR GIRDER LEFT SIDE OF BRIDGE
ER - EXTERIOR GIRDER RIGHT SIDE OF BRIDGE



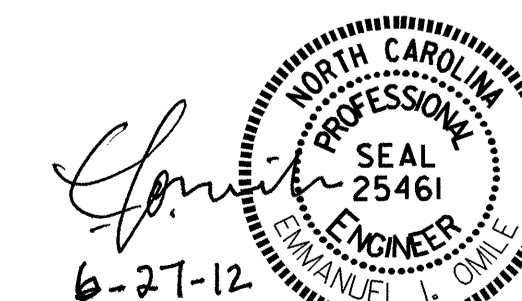
LRFR SUMMARY

PROJECT NO. U-3324
MOORE COUNTY
STATION: 21+37.80 -Y6-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
LRFR SUMMARY FOR
STEEL GIRDERS
(NON-INTERSTATE TRAFFIC)

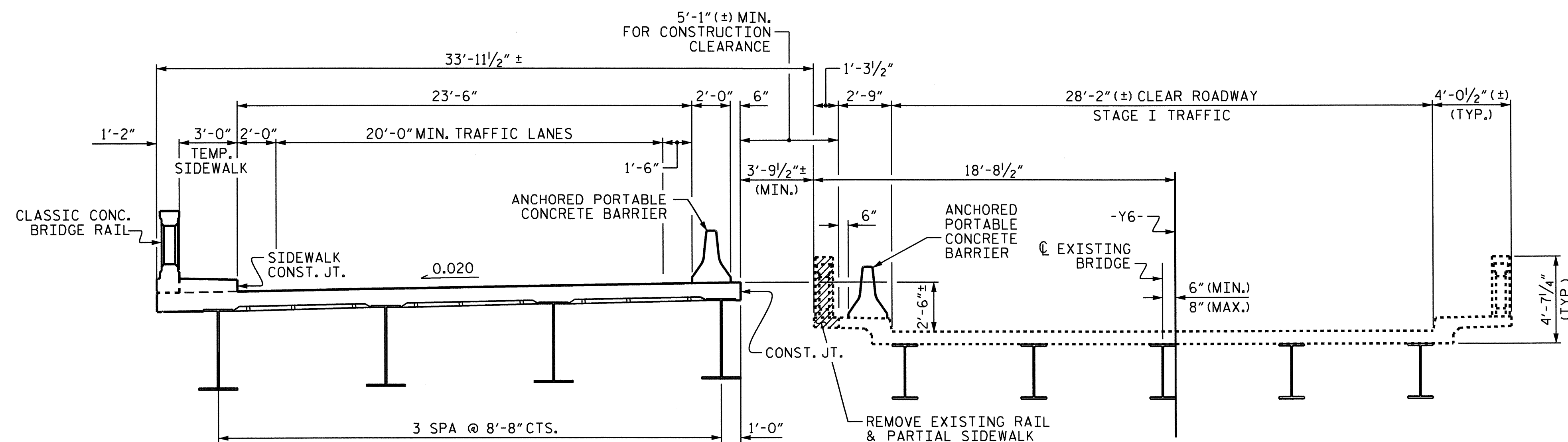
REVISIONS						SHEET NO. S-4
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 44
2			4			



ASSEMBLED BY : E. I. OMILE DATE : 6/19/12
CHECKED BY : P. K. NEWTON DATE : 6/19/12
DRAWN BY : MAA 1/08 REV. 11/2/08RR MAA/GM
CHECKED BY : GM/DI 2/08

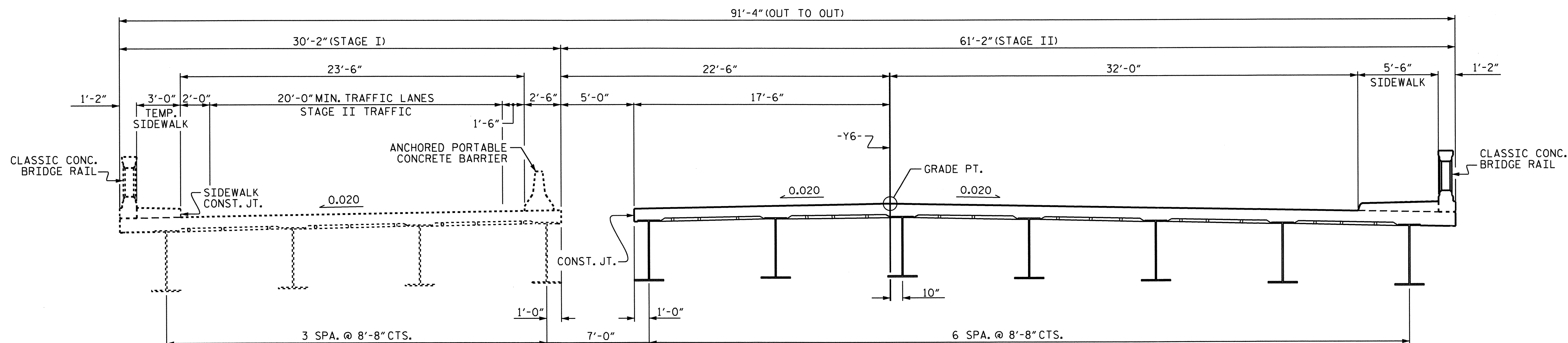
NOTE

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



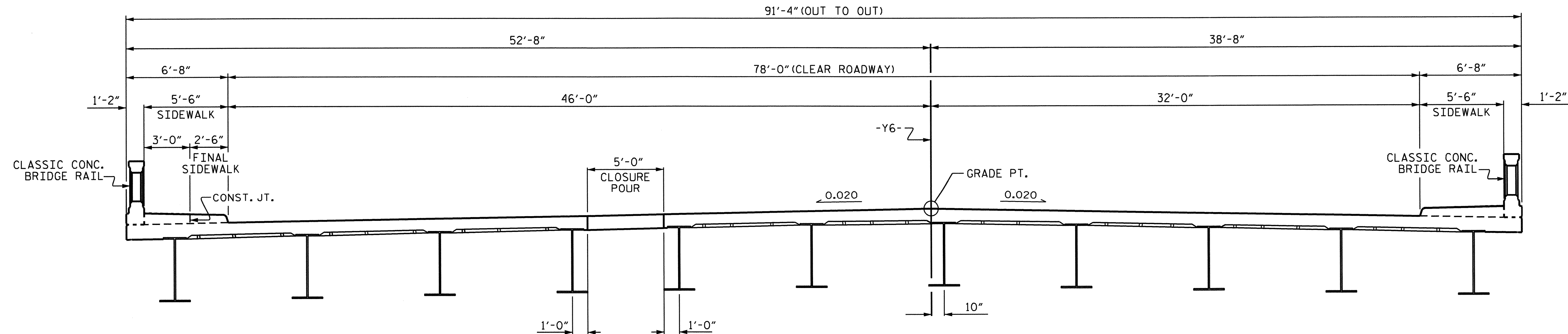
STAGE I CONSTRUCTION

CONSTRUCT LEFT SIDE OF PROPOSED BRIDGE, REMOVE RAIL & PARTIAL SIDEWALK ON LEFT SIDE OF EXISTING BRIDGE, MAINTAIN TRAFFIC ON EXISTING STRUCTURE



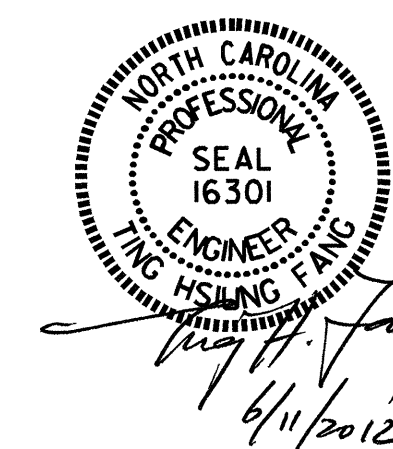
STAGE II CONSTRUCTION

MOVE TRAFFIC ONTO THE NEW PART OF BRIDGE, REMOVE EXISTING BRIDGE, CONSTRUCT RIGHT SIDE OF PROPOSED BRIDGE.



FINAL STAGE

CONSTRUCT THE CLOSURE POUR & THE REMAINING PORTION OF SIDEWALK ON LEFT SIDE OF PROPOSED BRIDGE



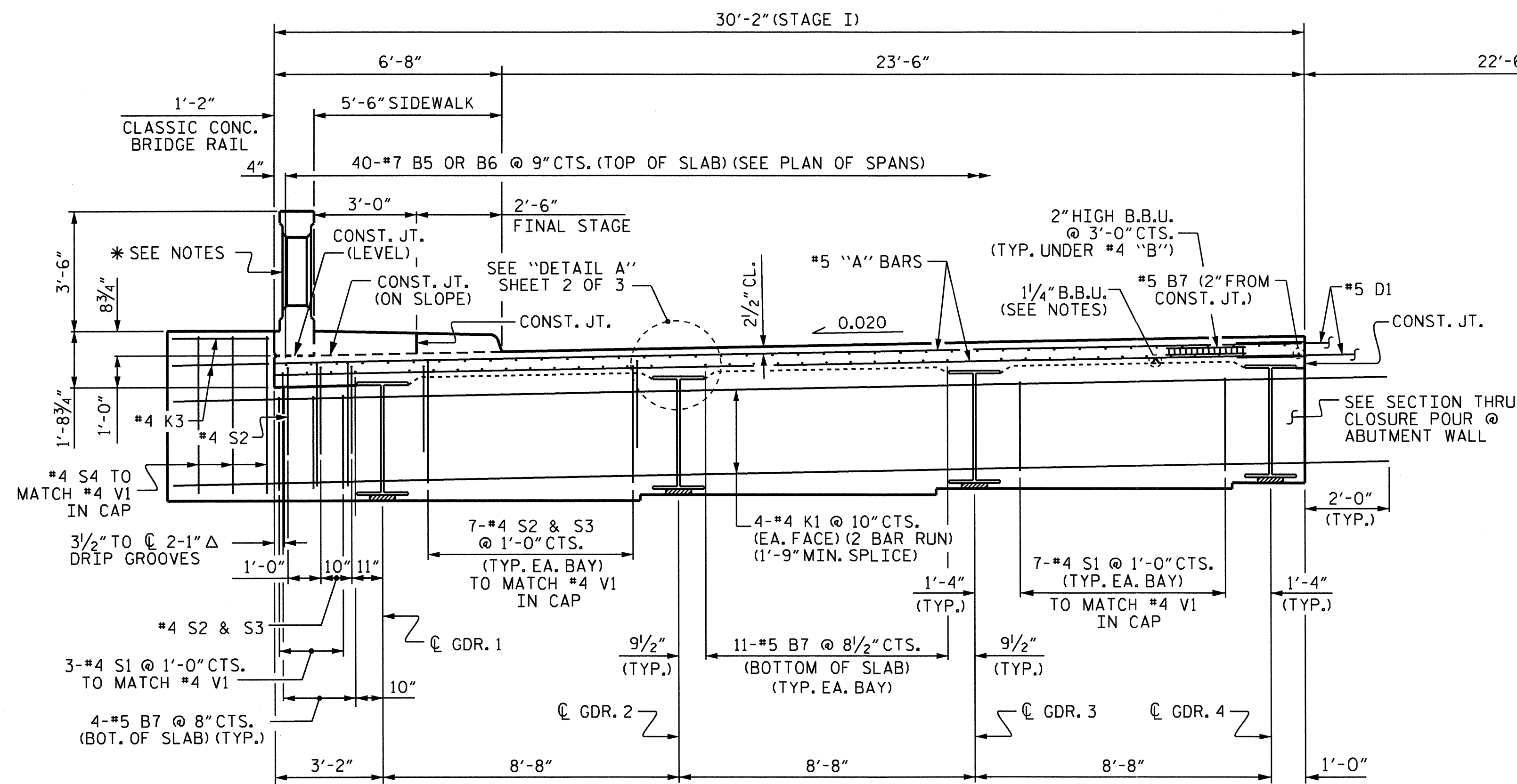
PROJECT NO. U-3324
 MOORE COUNTY
 STATION: 21+37.80 -Y6-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

CONSTRUCTION SEQUENCE

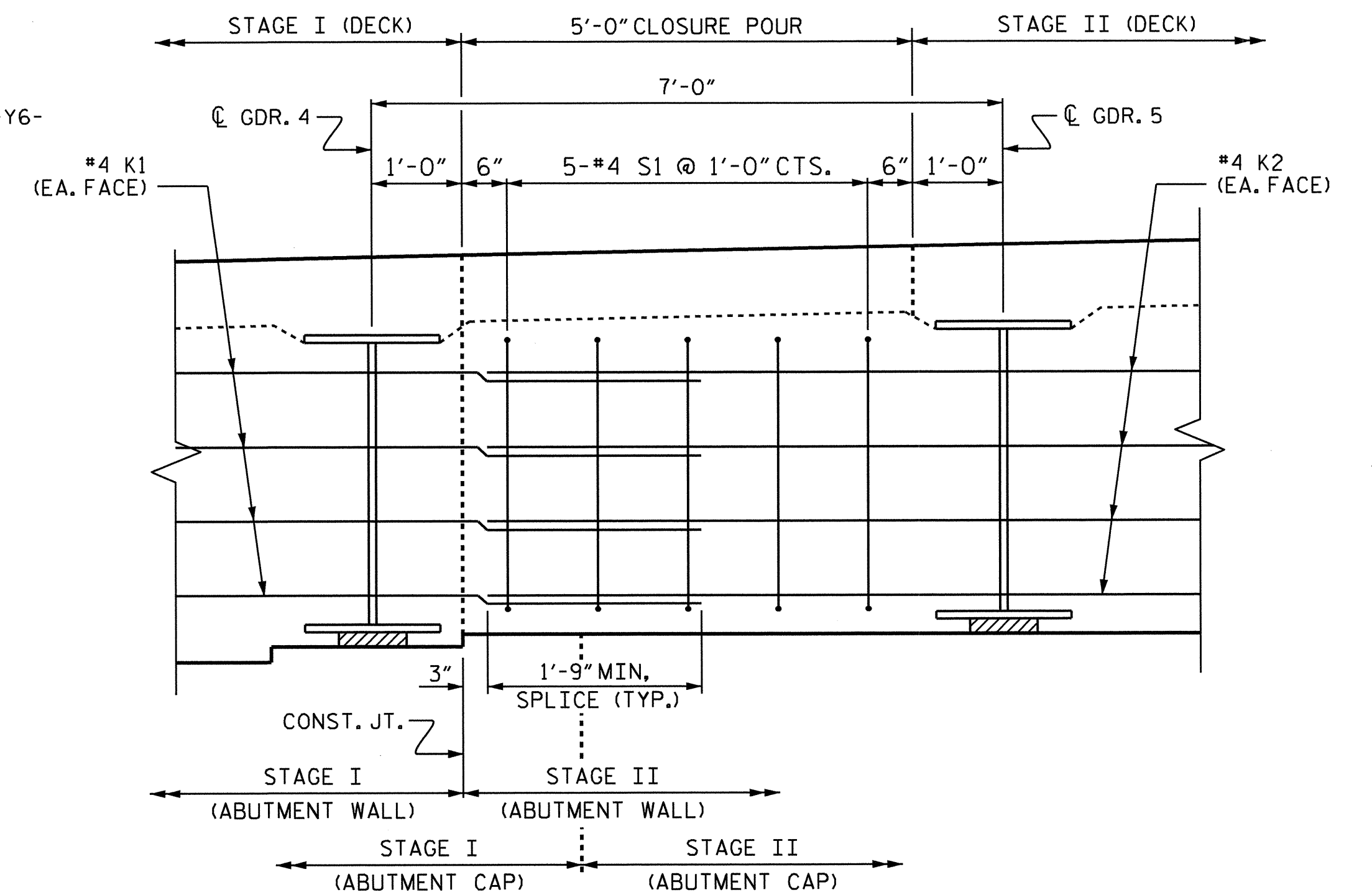
REVISIONS						SHEET NO. S-5
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 44
2			4			

DRAWN BY : E.C. LOCKLEAR DATE : 10-2-09
 CHECKED BY : T.H. FANG DATE : 10-13-09



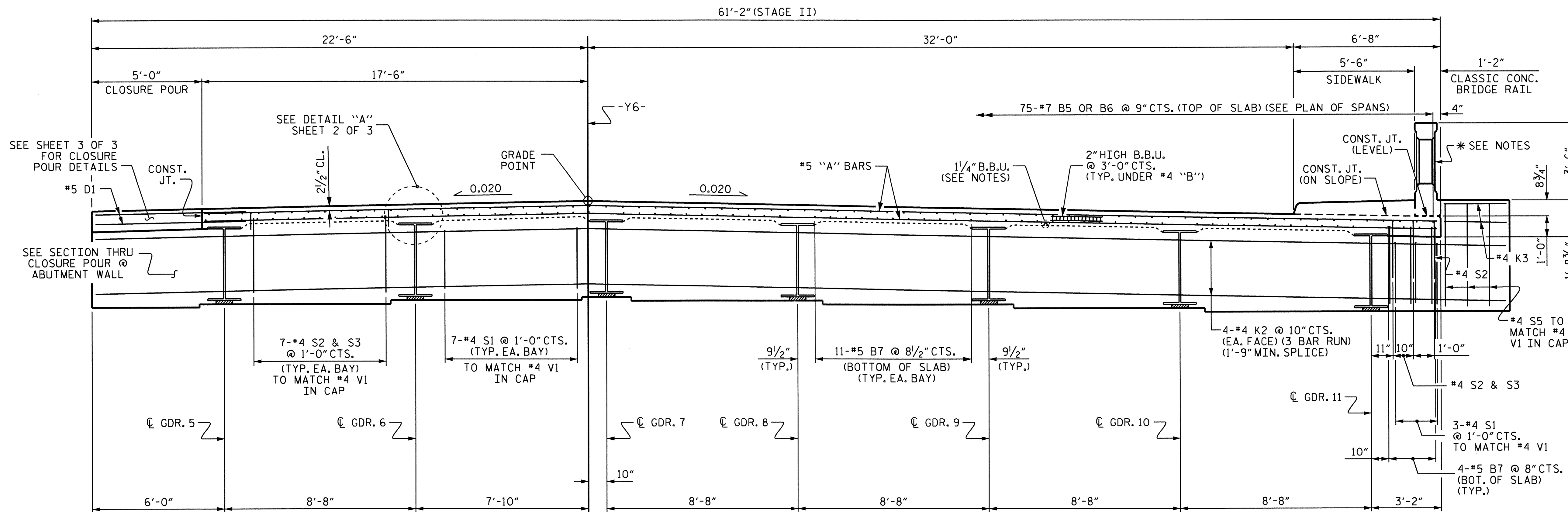
TYPICAL SECTION - STAGE I

(SHOWING ABUTMENT WALL AT END BENT)
(APPROACH SLAB BLOCKOUT & SIP FORMS NOT SHOWN FOR CLARITY.)



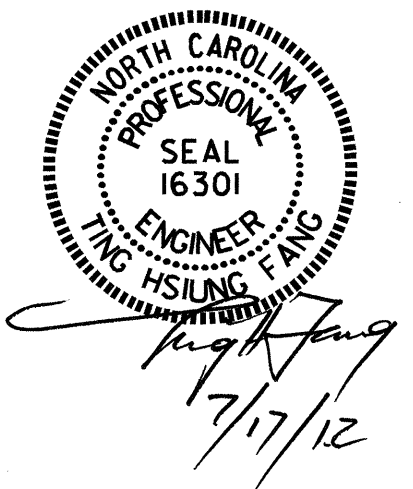
SECTION THRU CLOSURE POUR @ ABUTMENT WALL

#4 S2 & S3 NOT SHOWN FOR CLARITY.
CAST ABUTMENT WALLS BETWEEN GIRDERS 4 & 5
WITH STAGE II CONSTRUCTION, SEE "POUR SEQUENCE" DETAILS.



TYPICAL SECTION - STAGE II

(SHOWING ABUTMENT WALL AT END BENT)
(APPROACH SLAB BLOCKOUT & SIP FORMS NOT SHOWN FOR CLARITY.)



PROJECT NO. U-3324
MOORE COUNTY
STATION: 21+37.80 -Y6-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION

DRAWN BY: E.C. LOCKLEAR DATE: 2-26-10
CHECKED BY: Q.T. NGUYEN DATE: 8-12-10

17-JUL-2012 13:50
Y:\Structures\Final Plans\U3324.sd., ts.dgn
Tfang

REVISIONS						SHEET NO. S-6
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 44
2			4			

NOTES:

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

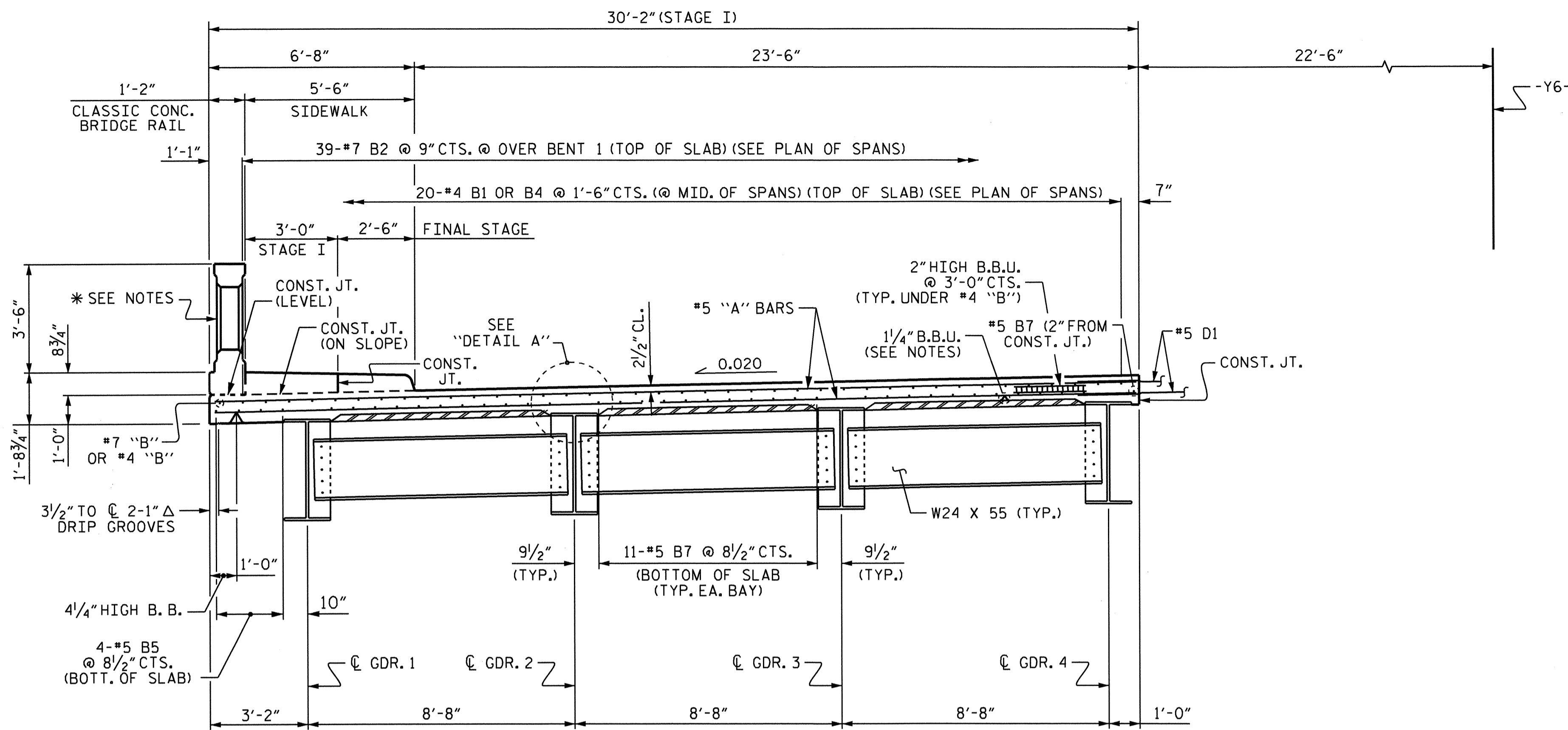
THE CONTRACTOR MAY, WHEN NECESSARY, PROPOSE A SCHEME FOR AVOIDING INTERFERENCE BETWEEN METAL STAY-IN-PLACE FORM SUPPORTS OR FORMS AND GIRDER STIFFENERS OR CONNECTOR PLATES. THE PROPOSAL SHALL BE INDICATED, AS APPROPRIATE, ON EITHER THE STEEL WORKING DRAWINGS OR THE METAL STAY-IN-PLACE FORM WORKING DRAWINGS.

FOR WING ELEVATIONS AND DETAILS, SEE PLAN OF SPAN DETAILS SHEET.

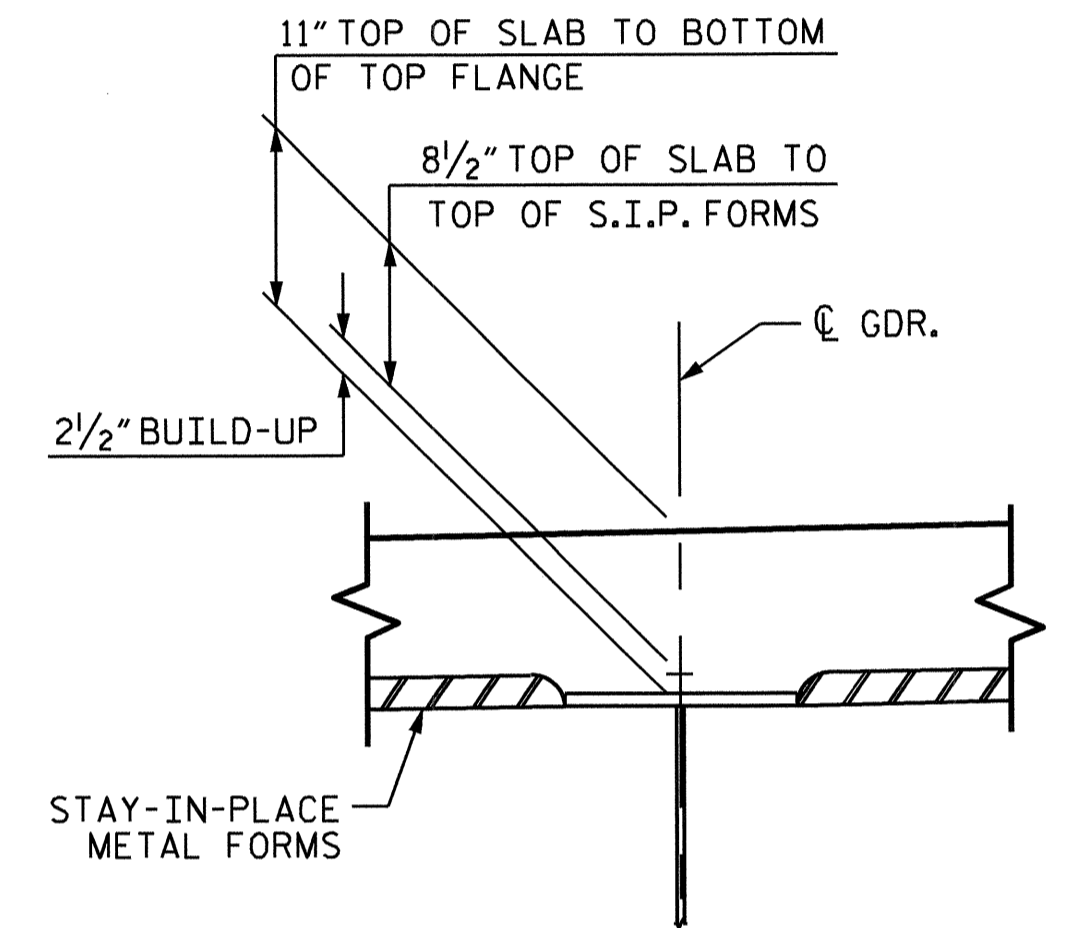
FOR SIDEWALK REINFORCING STEEL, SEE "SIDEWALK DETAILS" SHEET.

* FOR CLASSIC BRIDGE RAIL REINFORCING STEEL AND DETAIL, SEE "CLASSIC CONCRETE BRIDGE RAIL WITH SIDEWALK SHEETS."

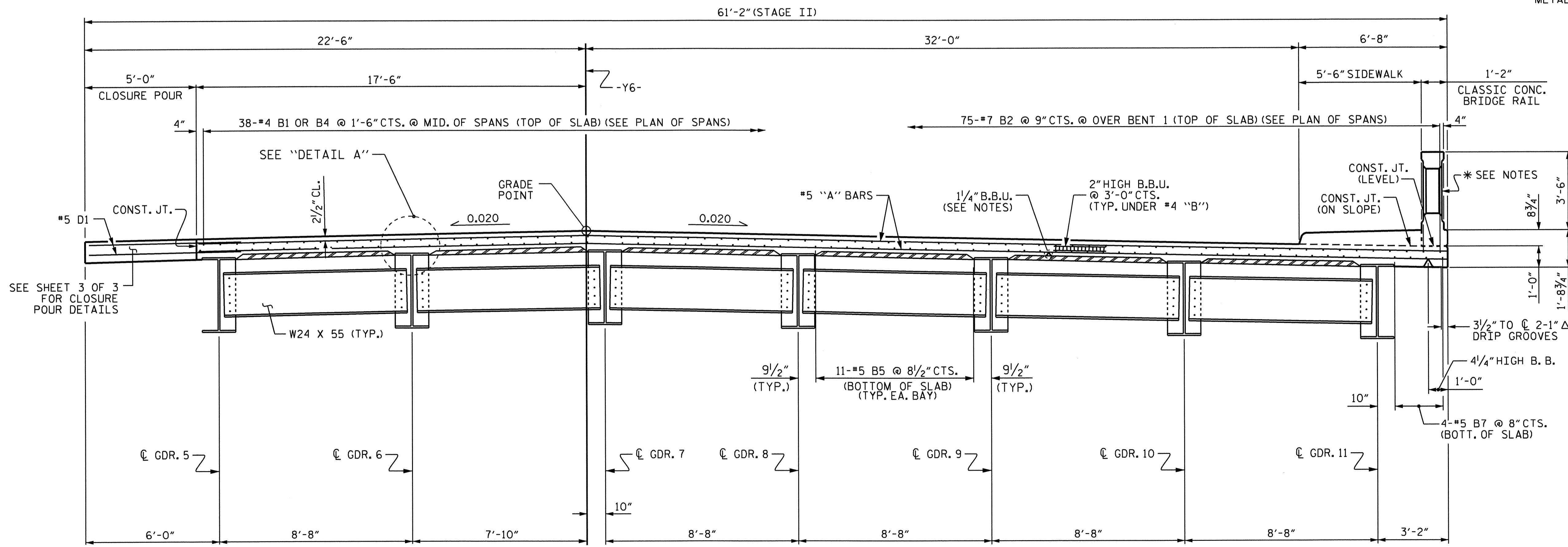
METAL STAY-IN-PLACE FORMS SHALL NOT BE WELDED TO BEAM OR GIRDER FLANGES IN THE ZONES REQUIRING CHARPY V-NOTCH TEST. SEE STRUCTURAL STEEL DETAILS SHEETS.



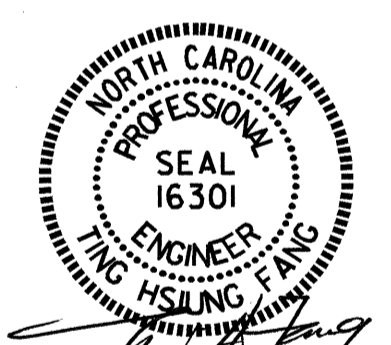
TYPICAL SECTION - STAGE I
(SHOWING INTERMEDIATE DIAPHRAGMS)



DETAIL "A"



TYPICAL SECTION - STAGE II
(SHOWING INTERMEDIATE DIAPHRAGMS)



PROJECT NO. U-3324
MOORE COUNTY
 STATION: 21+37.80 -Y6-

SHEET 2 OF 3

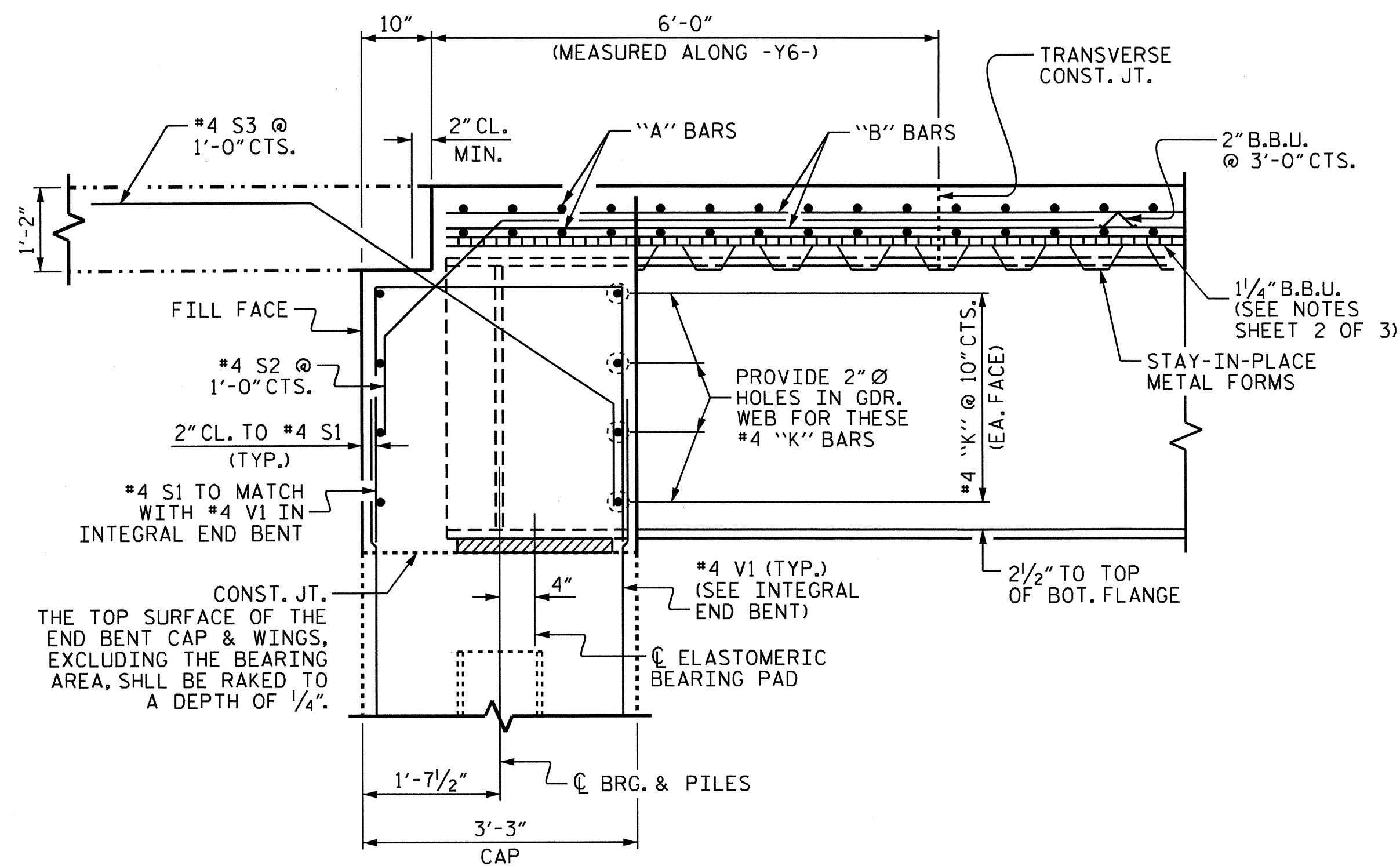
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

TYPICAL SECTION

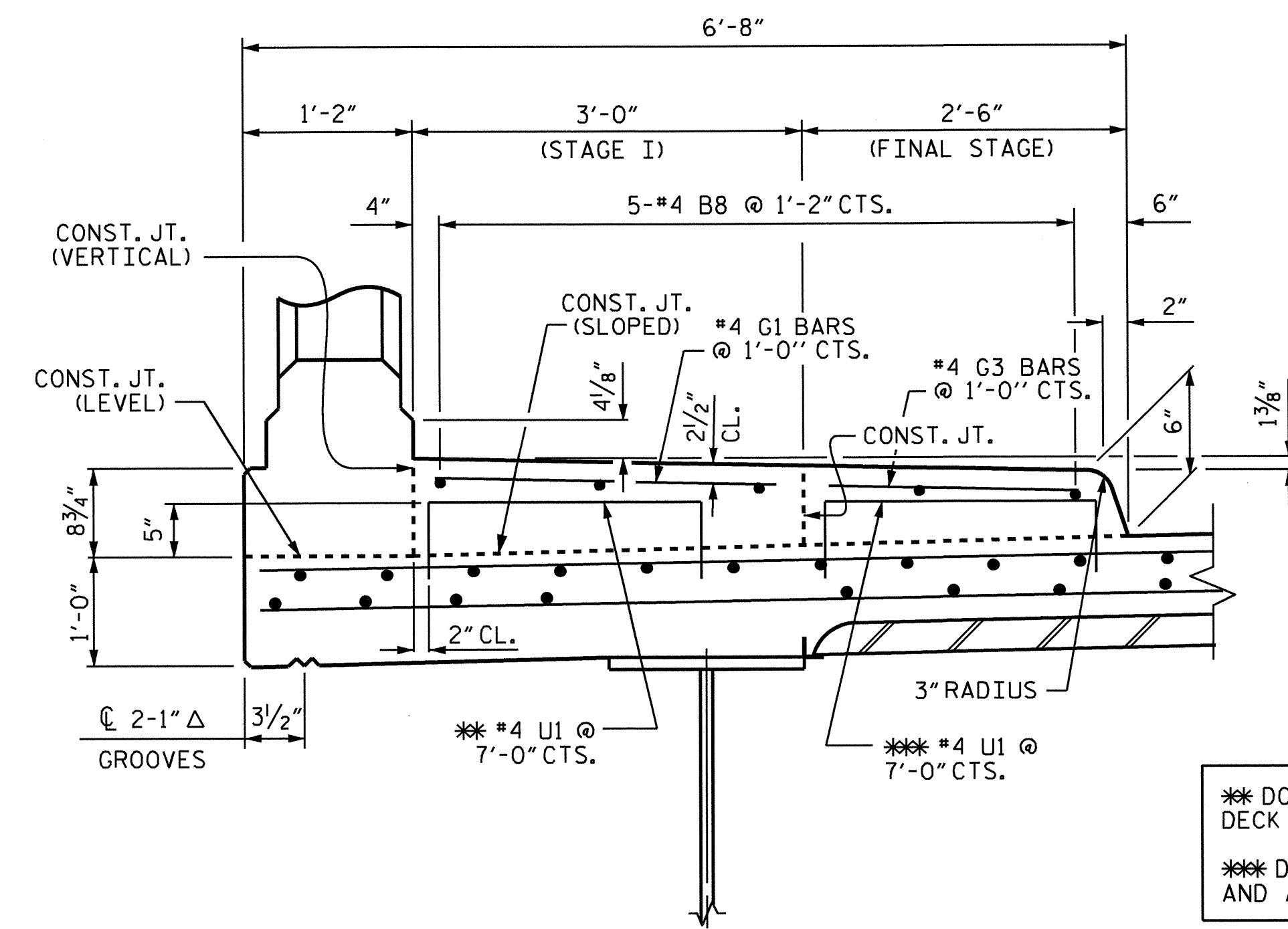
DRAWN BY: E.C. LOCKLEAR DATE: 2-26-10
 CHECKED BY: O.T. NGUYEN DATE: 8-12-10

20-JUL-2012 14:45
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REVISIONS						SHEET NO. S-7
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 44
2			4			

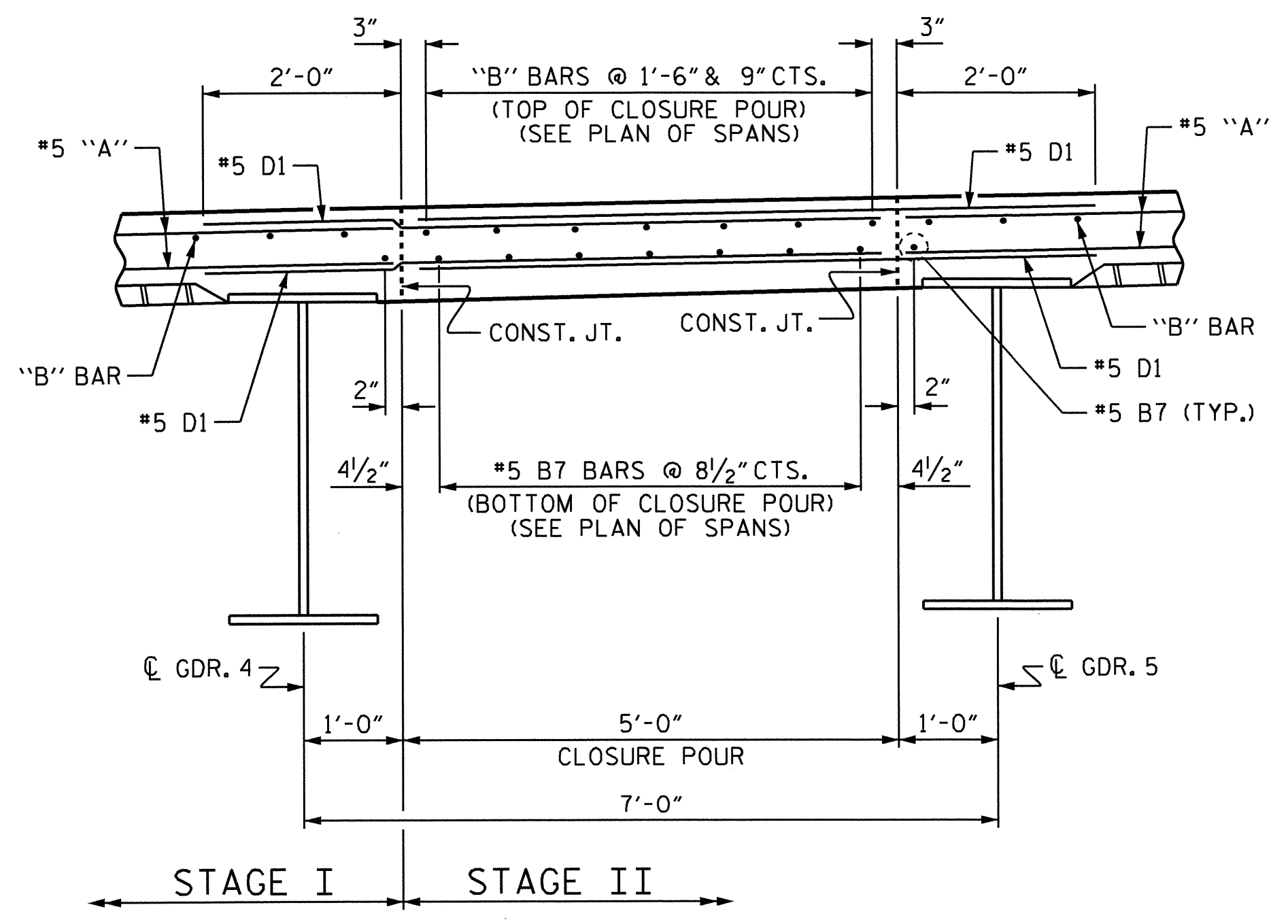


SECTION THRU INTEGRAL END BENT
ORIENT ELASTOMERIC BEARING PAD AS SHOWN.

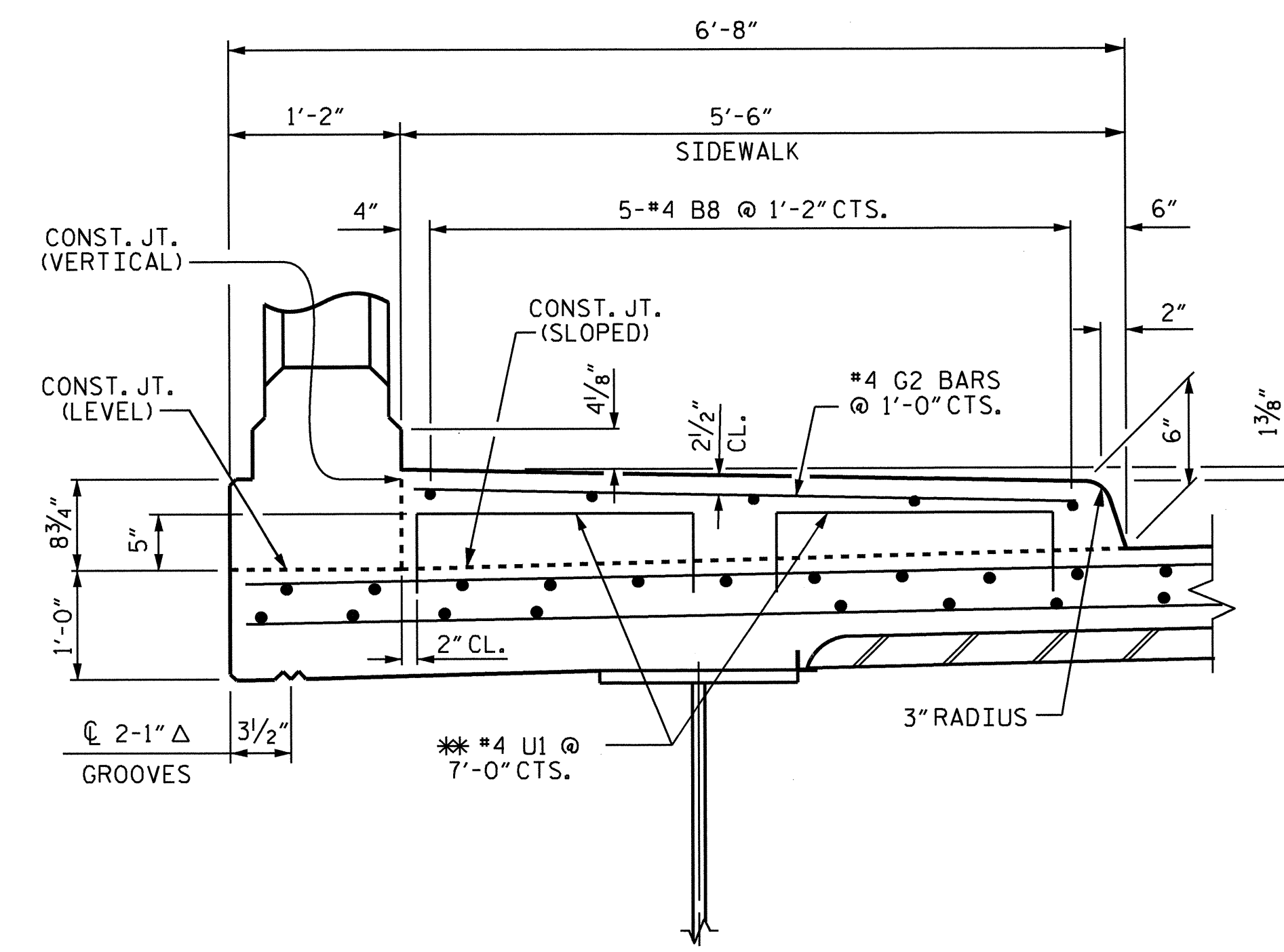


** DOWELS MAY BE PUSHED INTO GREEN CONCRETE AFTER DECK OR APPROACH SLAB HAS BEEN SCREEDED OFF.
*** DOWELS SHALL BE DRILLED AND GROUTED INTO DECK AND APPROACH SLAB.

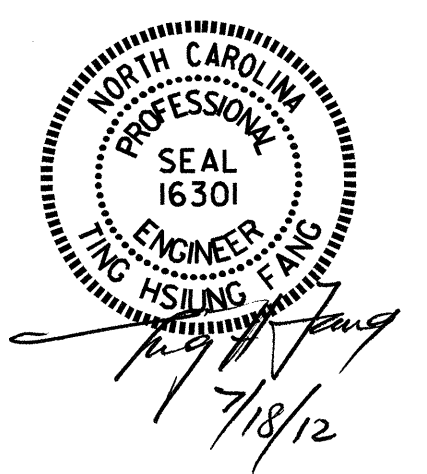
SECTION A-A THRU SIDEWALK
(FOR SIDEWALK STAGE CONSTRUCTION)



DECK CLOSURE POUR DETAIL
#5 D1 DOWELS SHALL BE PLACED IN THE SAME HORIZONTAL PLANE AS THE TOP SLAB REINFORCING STEEL.



SECTION B-B THRU SIDEWALK

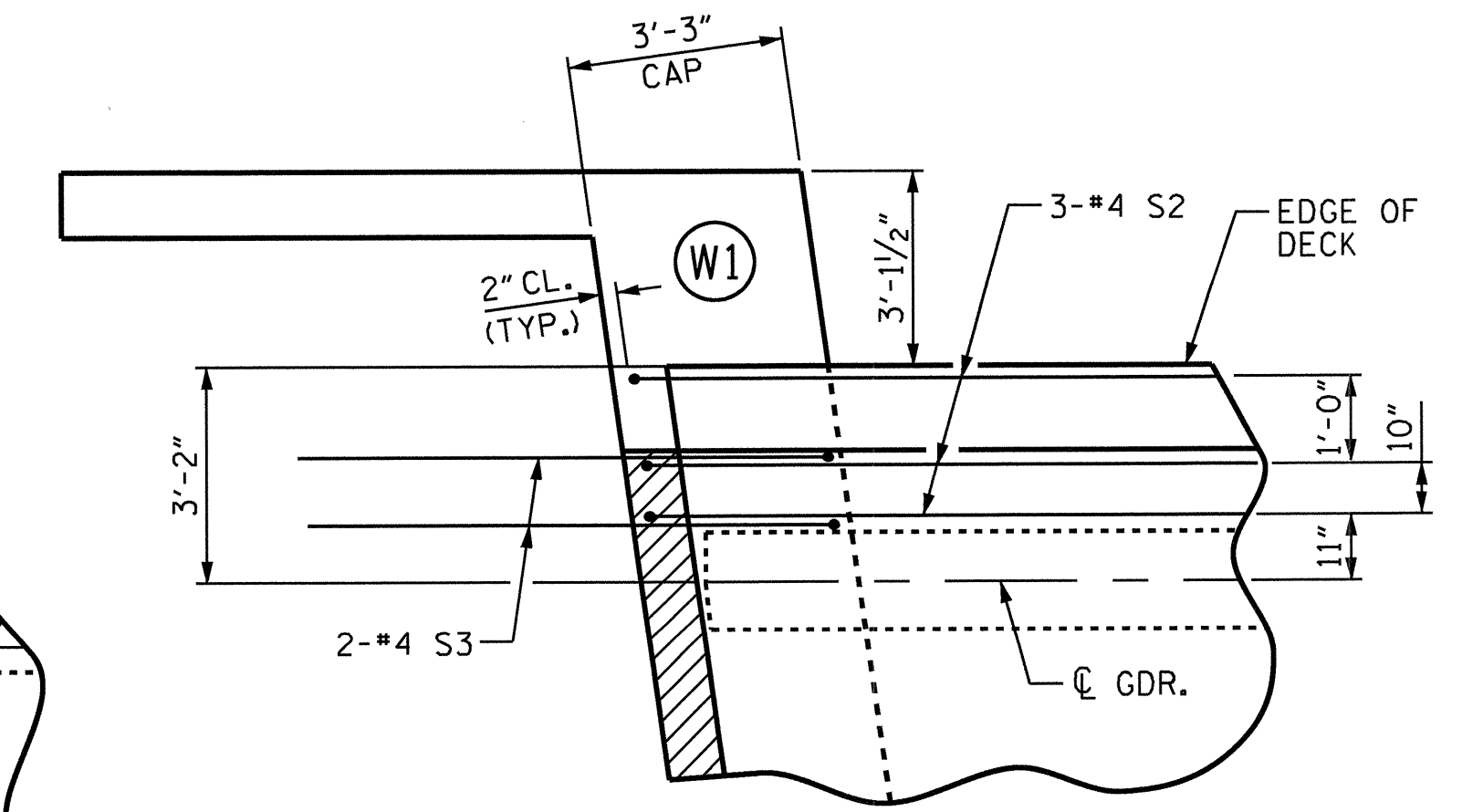
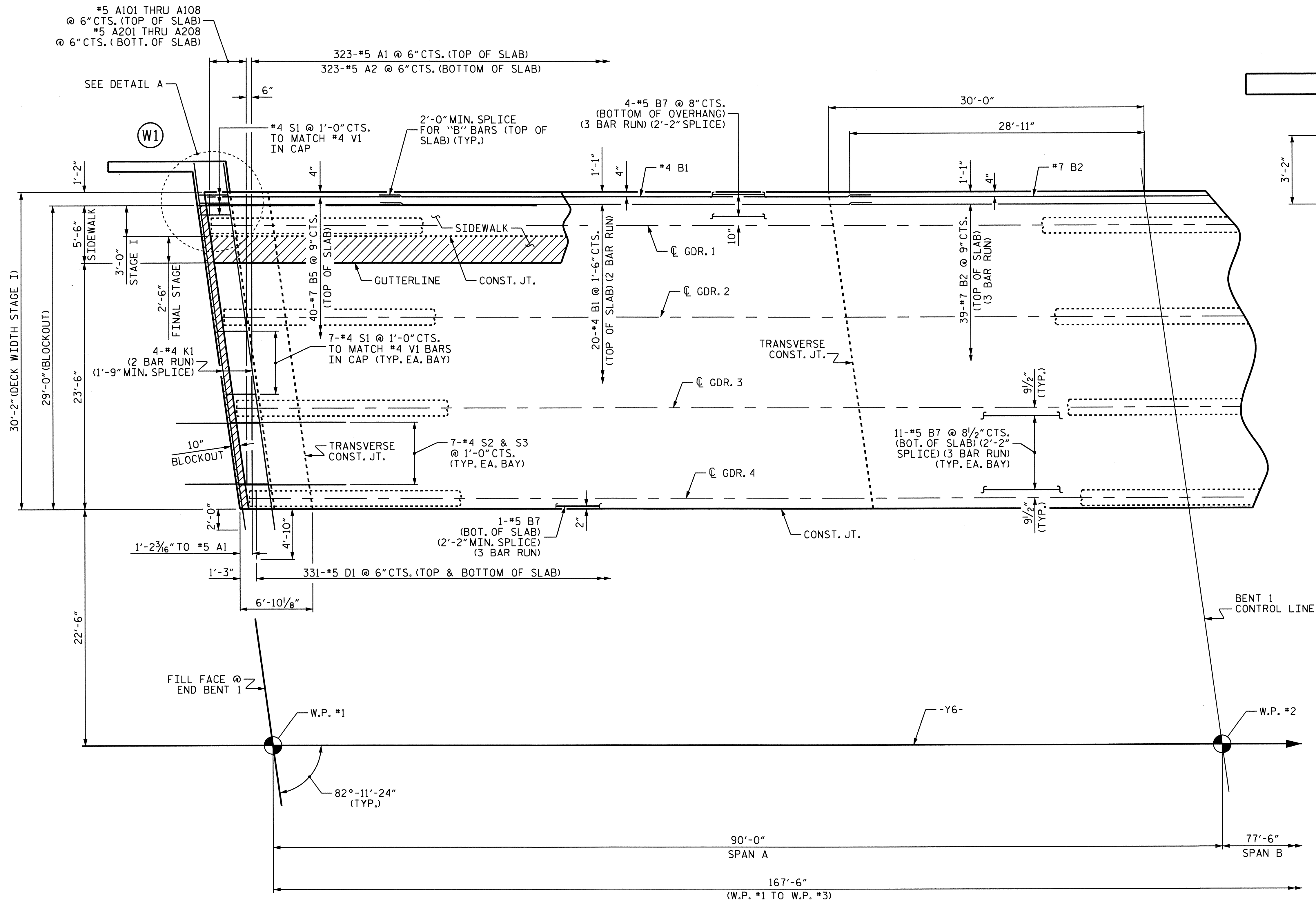


PROJECT NO. U-3324
MOORE COUNTY
STATION: 21+37.80 -Y6-

SHEET 3 OF 3
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
TYPICAL SECTION
DETAILS

DRAWN BY: E.C. LOCKLEAR DATE: 3-5-10
CHECKED BY: T. H. FANG DATE: 5-12-12

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			44



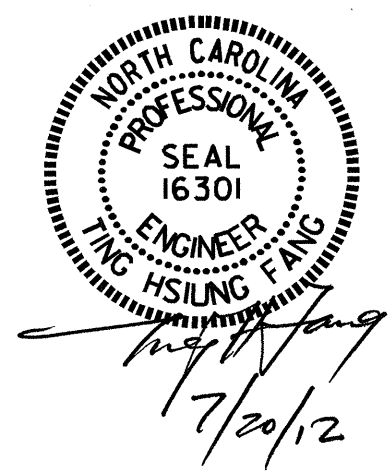
DETAIL A
(S1 BARS NOT SHOWN FOR CLARITY)

PLAN OF SPAN A

PROJECT NO. U-3324
MOORE COUNTY
 STATION: 21+37.80 -Y6-

SHEET 1 OF 6

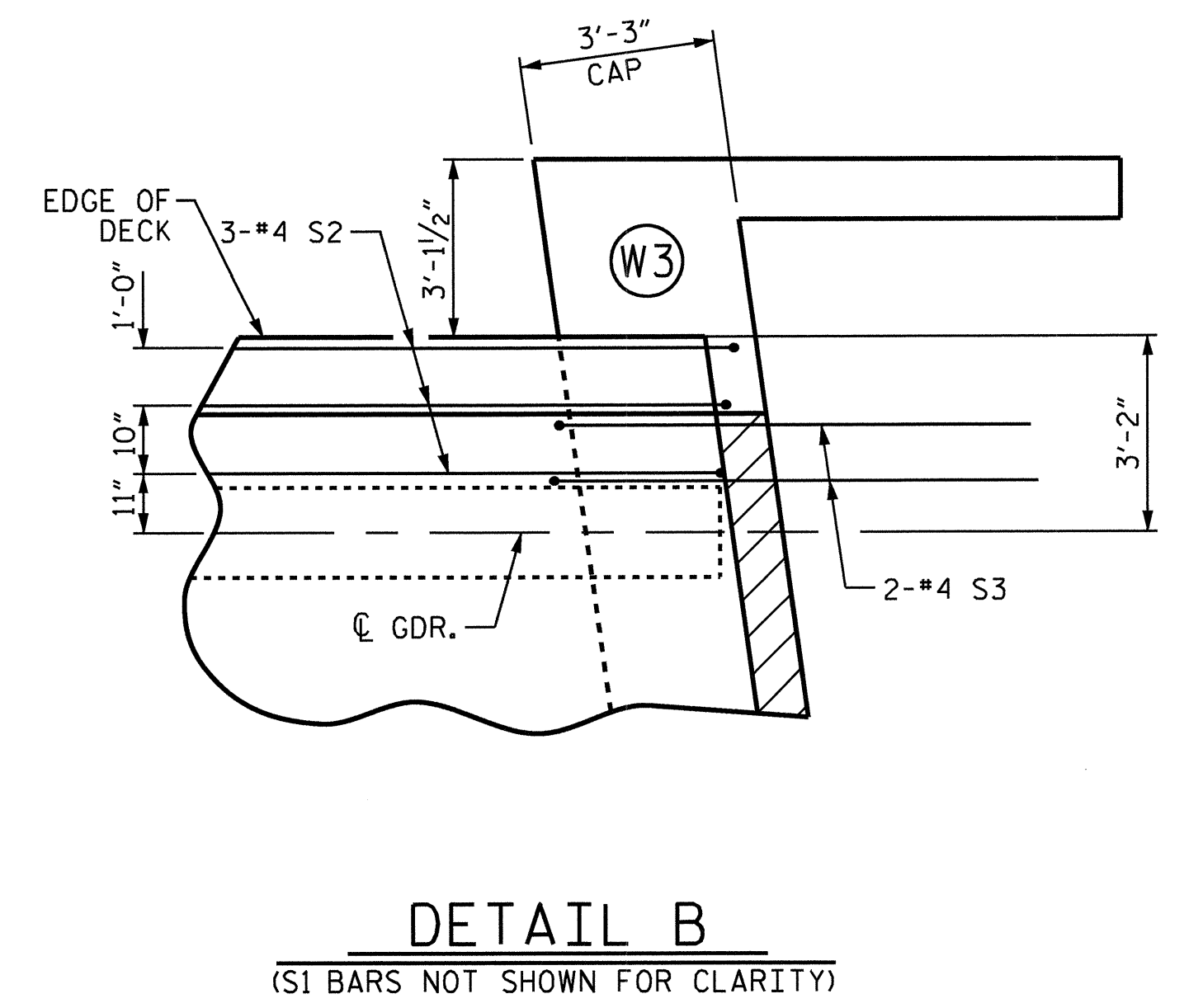
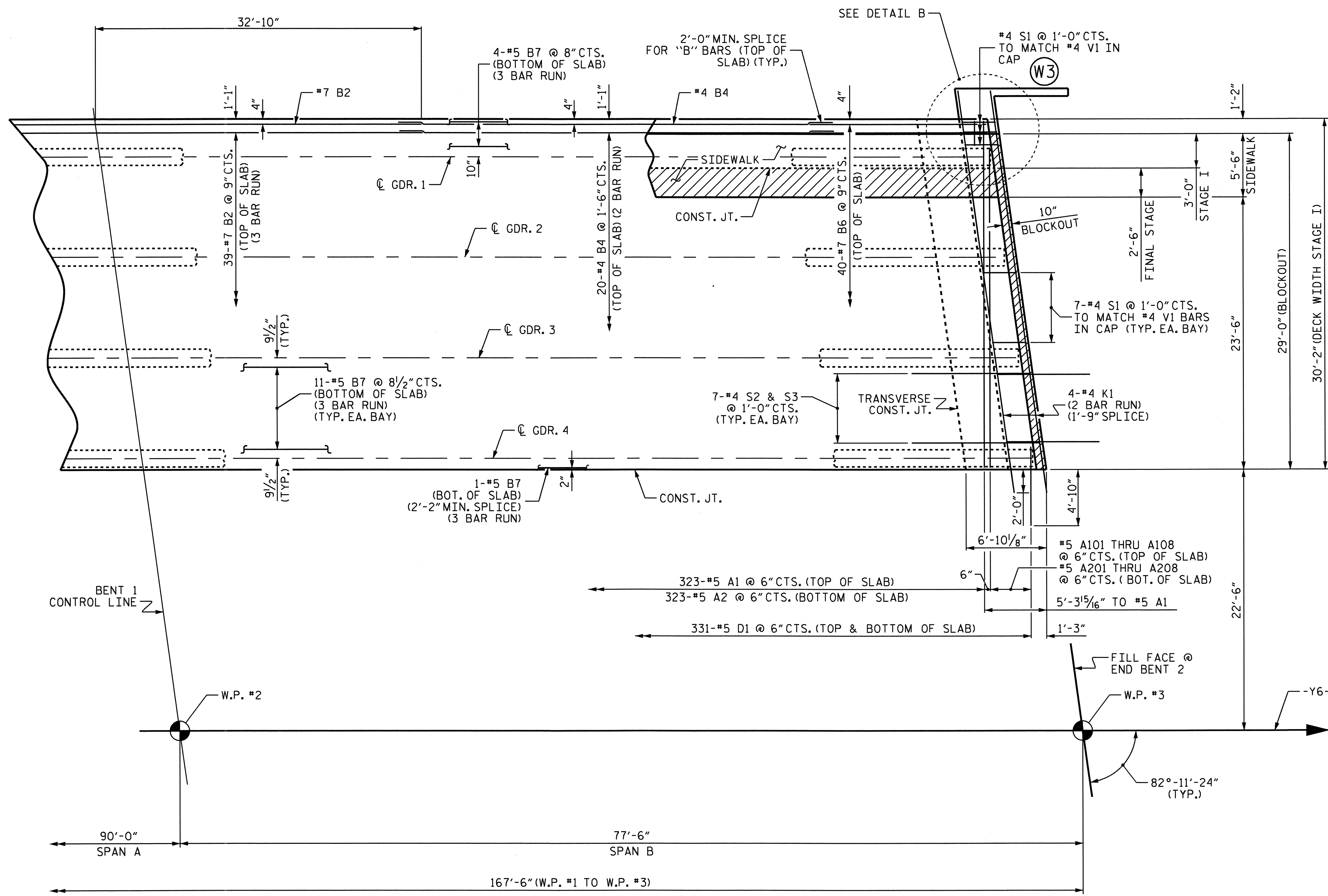
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPAN A
 STAGE I



DRAWN BY: E.C. LOCKLEAR DATE: 2-11-10
 CHECKED BY: Q.T. NGUYEN DATE: 8-12-10

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9	
1			3			TOTAL	44
2			4			SHEETS	

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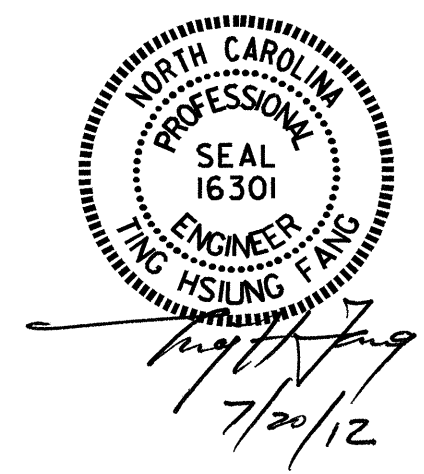


PLAN OF SPAN B

PROJECT NO. U-3324
 MOORE COUNTY
 STATION: 21+37.80 -Y6-

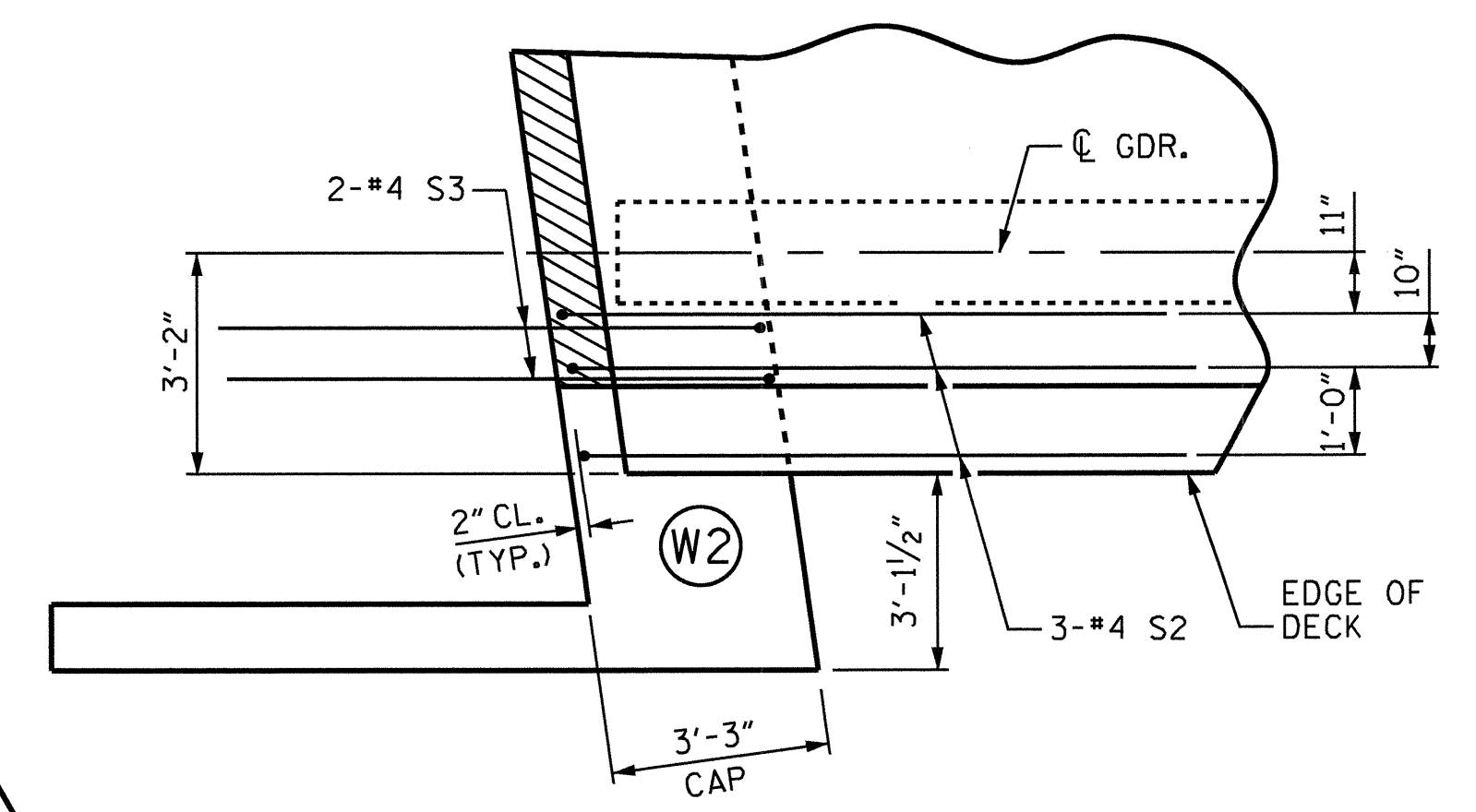
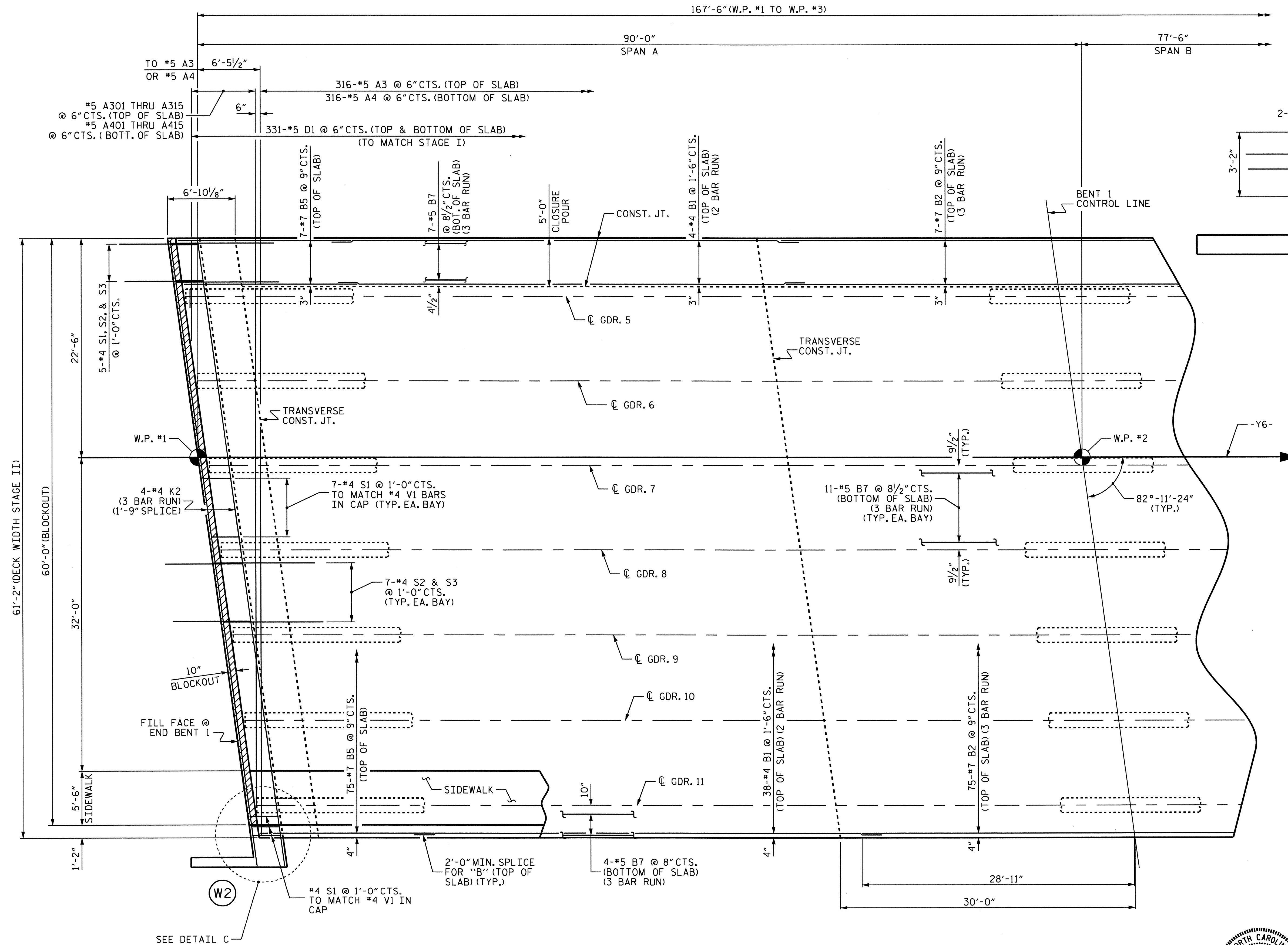
SHEET 2 OF 6

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPAN B
 STAGE I



DRAWN BY : E.C. LOCKLEAR DATE : 2-11-10
 CHECKED BY : O.T. NGUYEN DATE : 8-12-10

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10	
1			3			TOTAL SHEETS	44
2			4				



DETAIL C
(SI BARS NOT SHOWN FOR CLARITY)

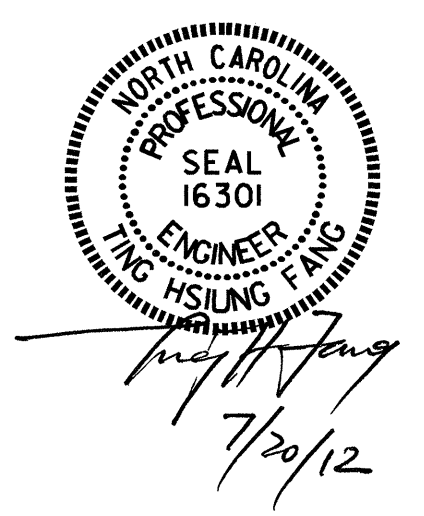
PLAN OF SPAN A

PROJECT NO. U-3324
MOORE COUNTY
 STATION: 21+37.80 -Y6-
 SHEET 3 OF 6

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE

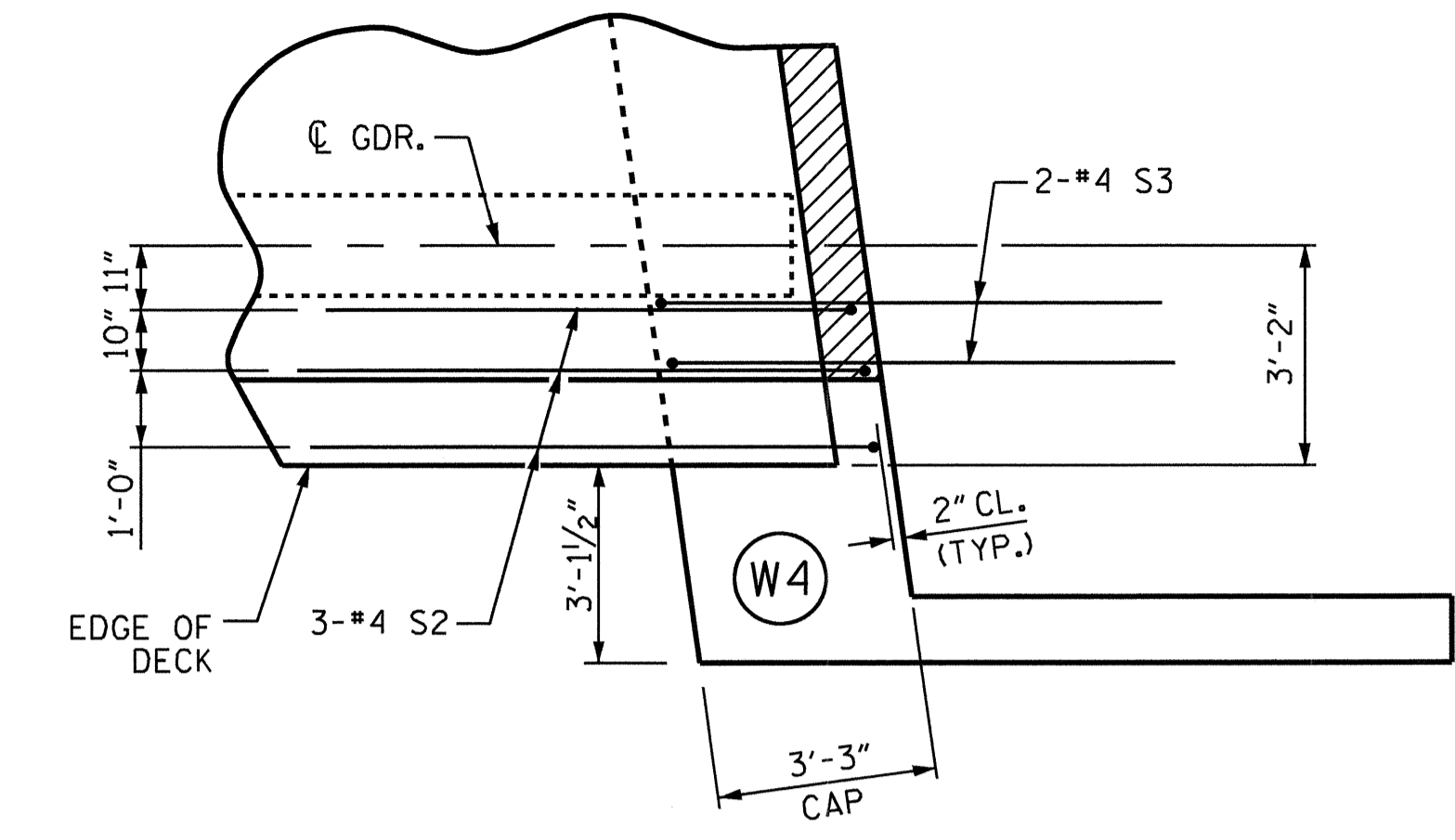
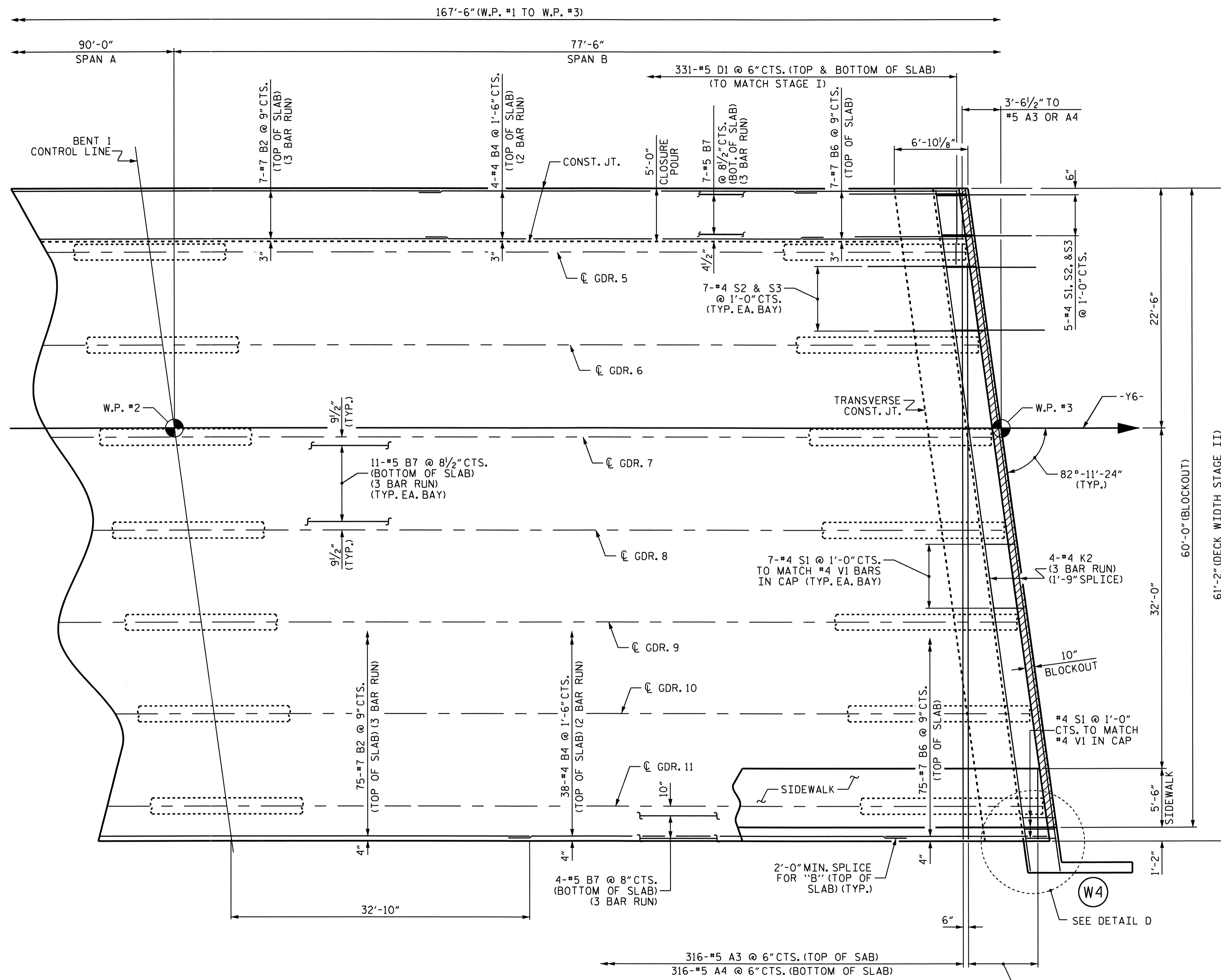
**PLAN OF SPAN A
 STAGE II**



DRAWN BY: E.C. LOCKLEAR DATE: 2-11-10
 CHECKED BY: Q.T. NGUYEN DATE: 8-12-10

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			44

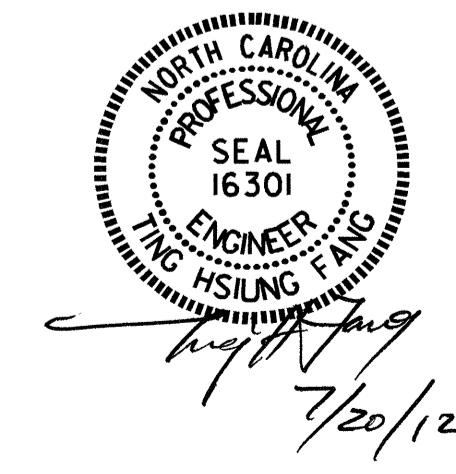
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DETAIL D
(S1 BARS NOT SHOWN FOR CLARITY)

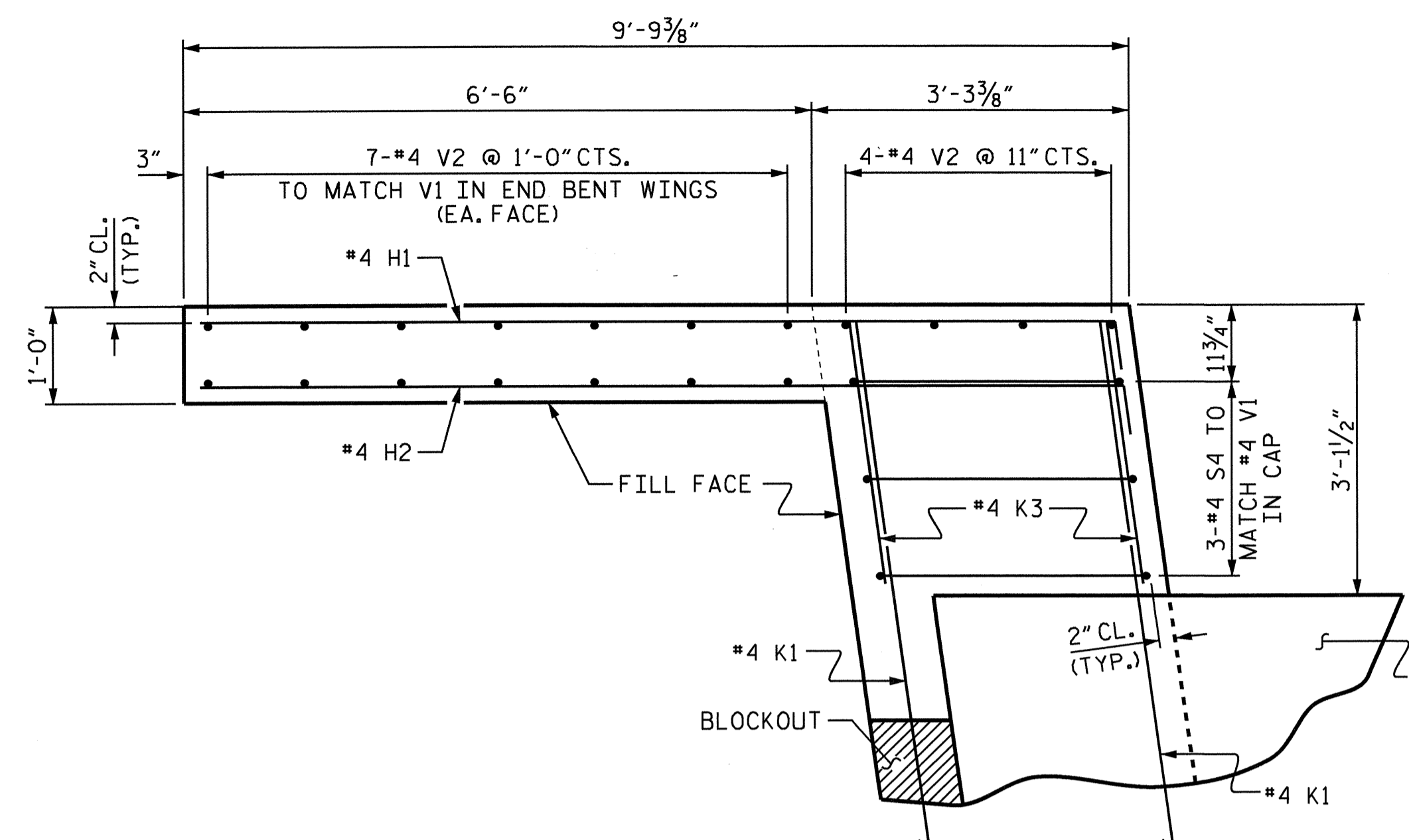
PLAN OF SPAN B

PROJECT NO. U-3324
MOORE COUNTY
 STATION: 21+37.80 -Y6-
 SHEET 4 OF 6

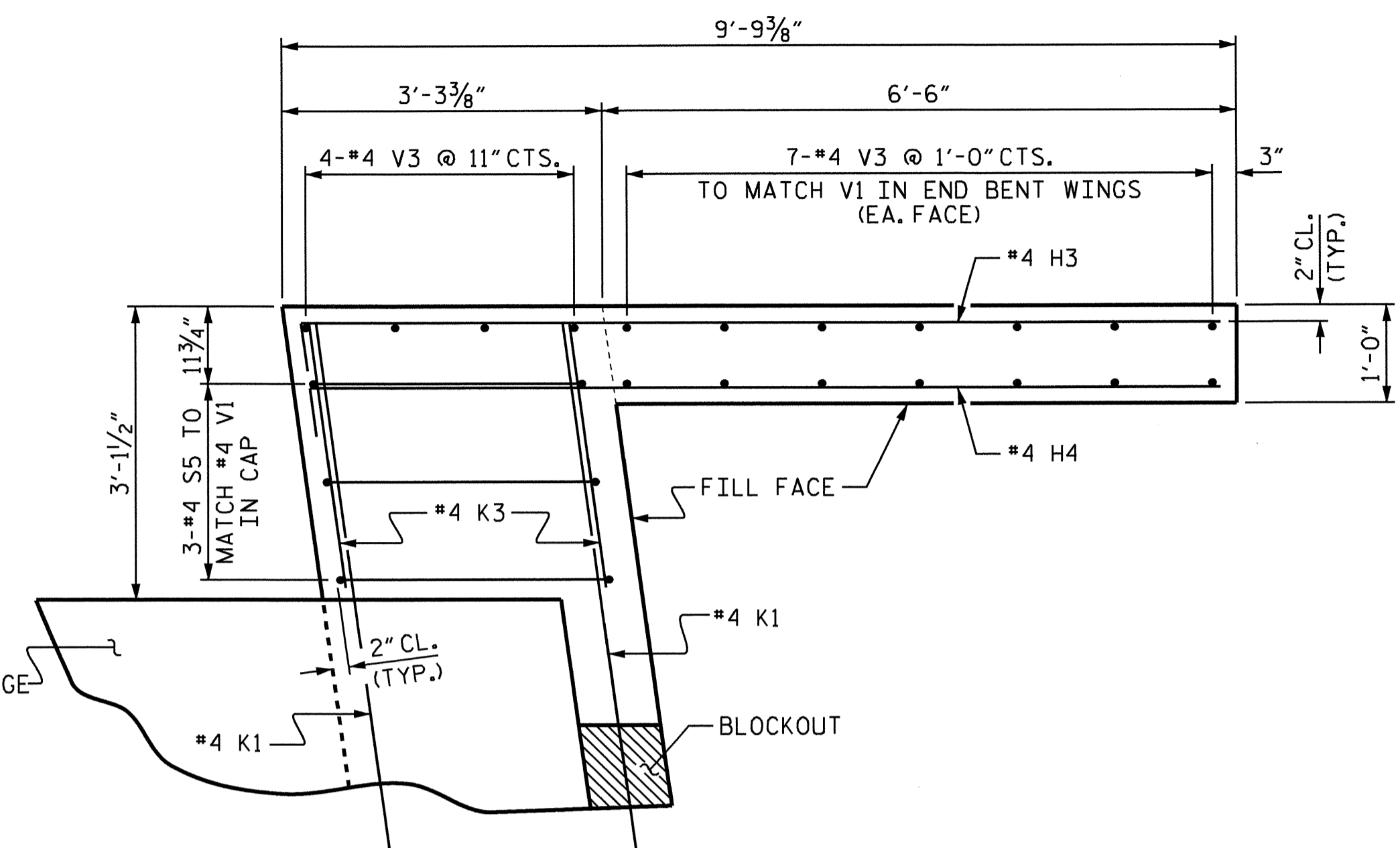


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE PLAN OF SPAN B STAGE II					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-12
					TOTAL SHEETS 44

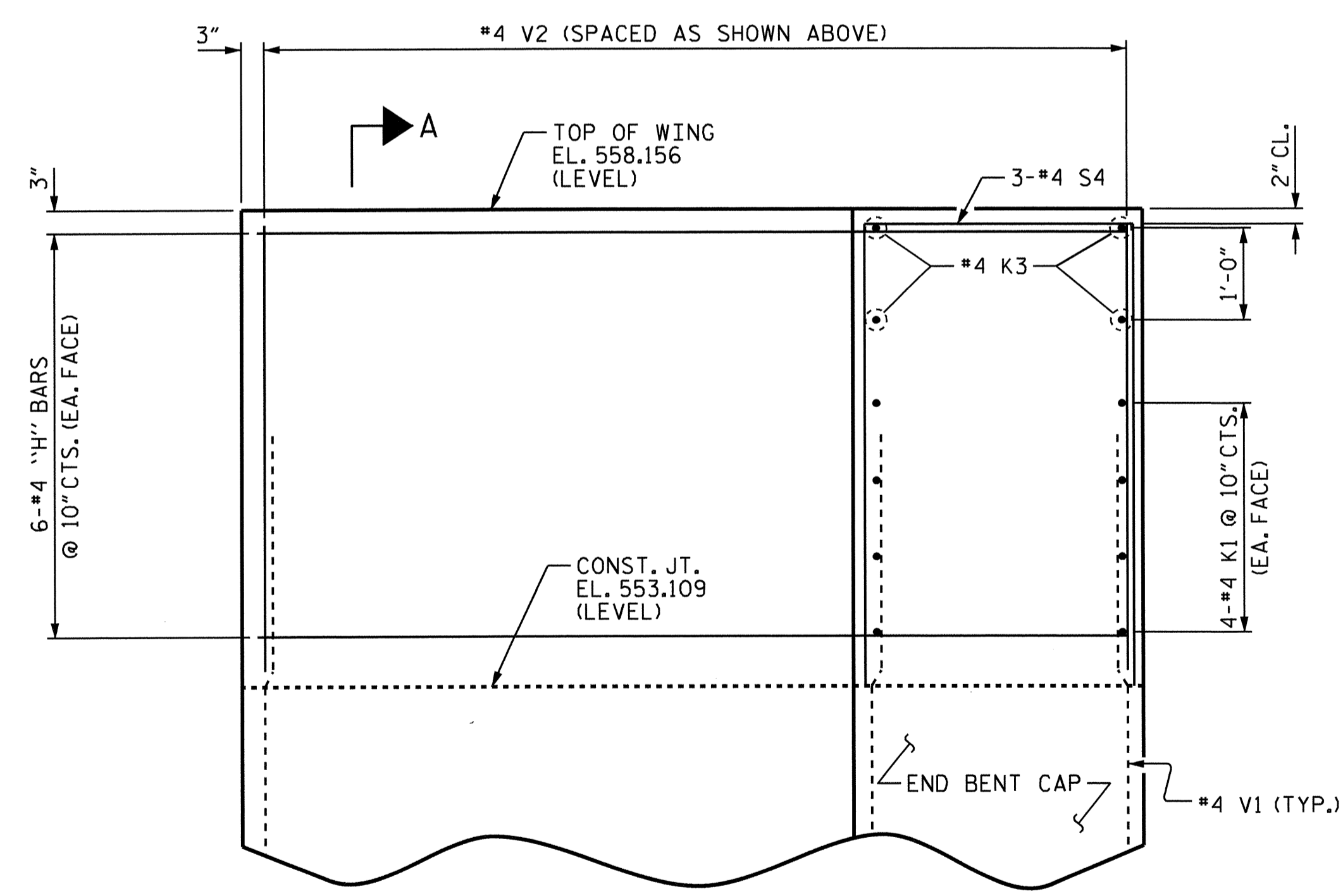
DRAWN BY: E.C. LOCKLEAR DATE: 2-11-10
 CHECKED BY: Q.T. NGUYEN DATE: 8-12-10



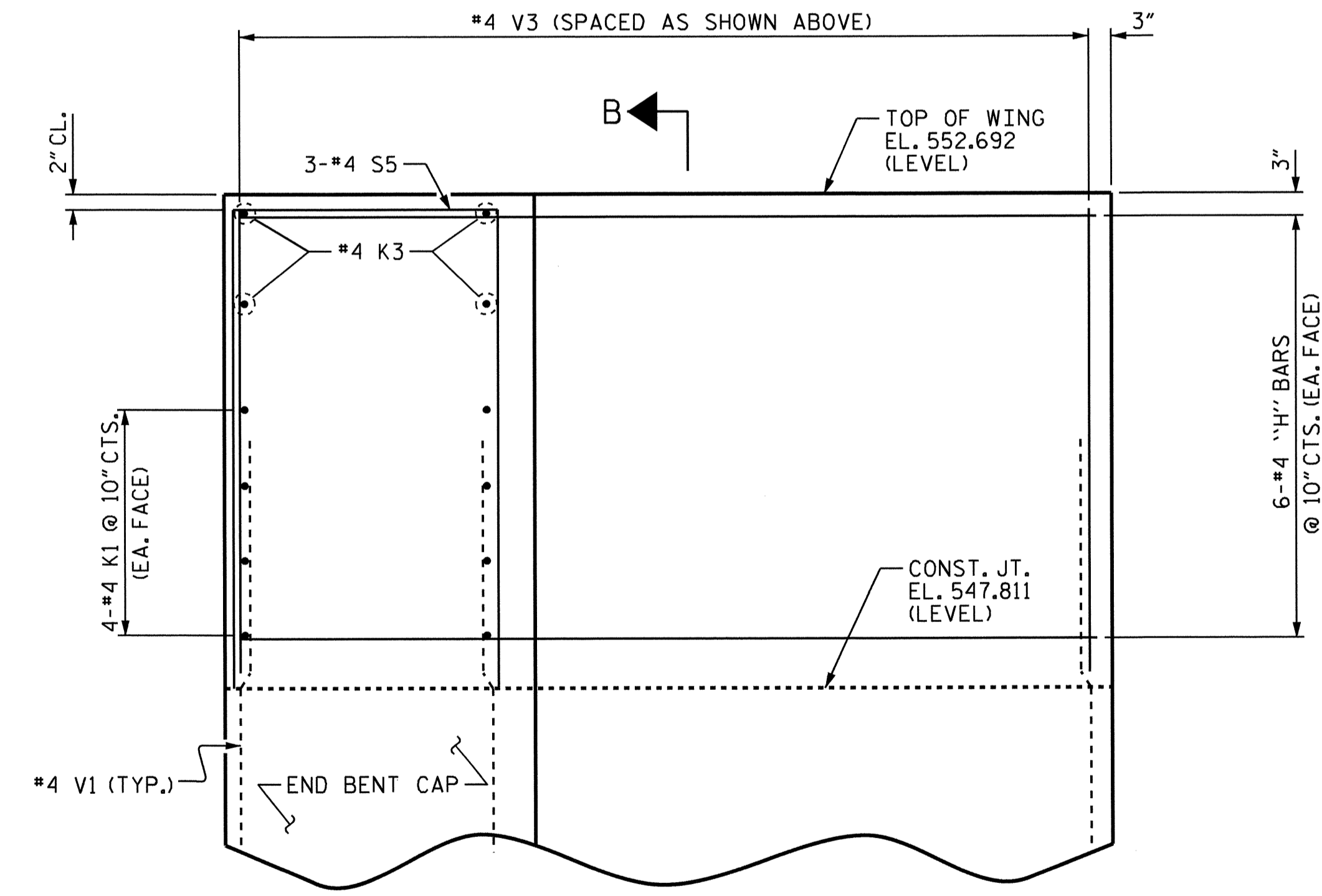
PLAN OF WING (W1)
AT END BENT 1



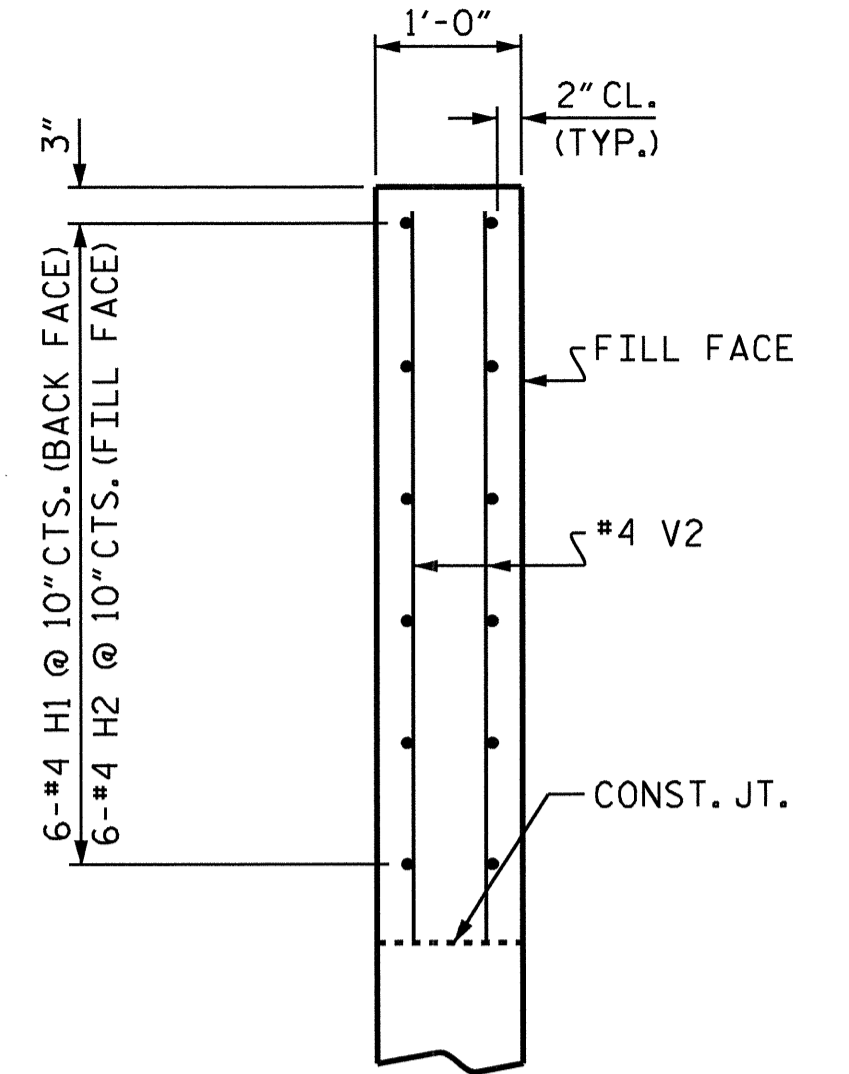
PLAN OF WING (W3)
AT END BENT 2



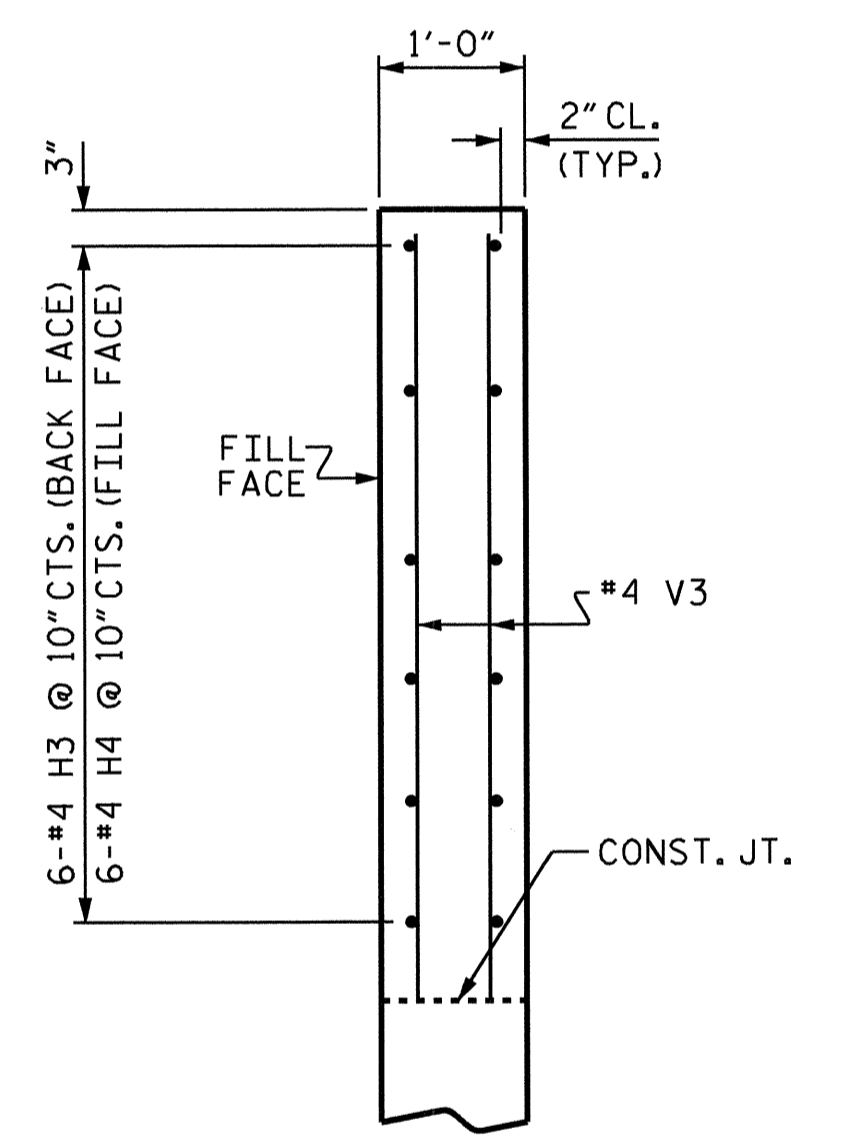
ELEVATION OF WING (W1)
AT END BENT 1



ELEVATION OF WING (W3)
AT END BENT 2



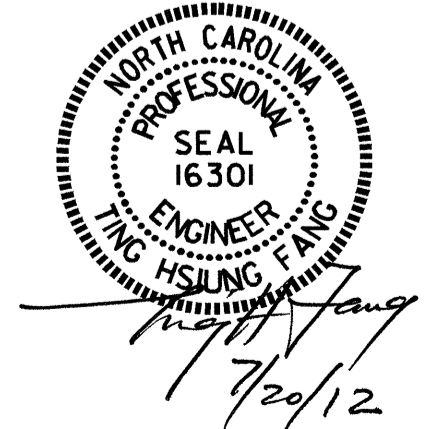
SECTION A-A



SECTION B-B

ABUTMENT WINGS

FOR END BENT REINFORCING STEEL AND DETAILS,
SEE "SUBSTRUCTURE END BENTS 1 & 2" SHEETS.



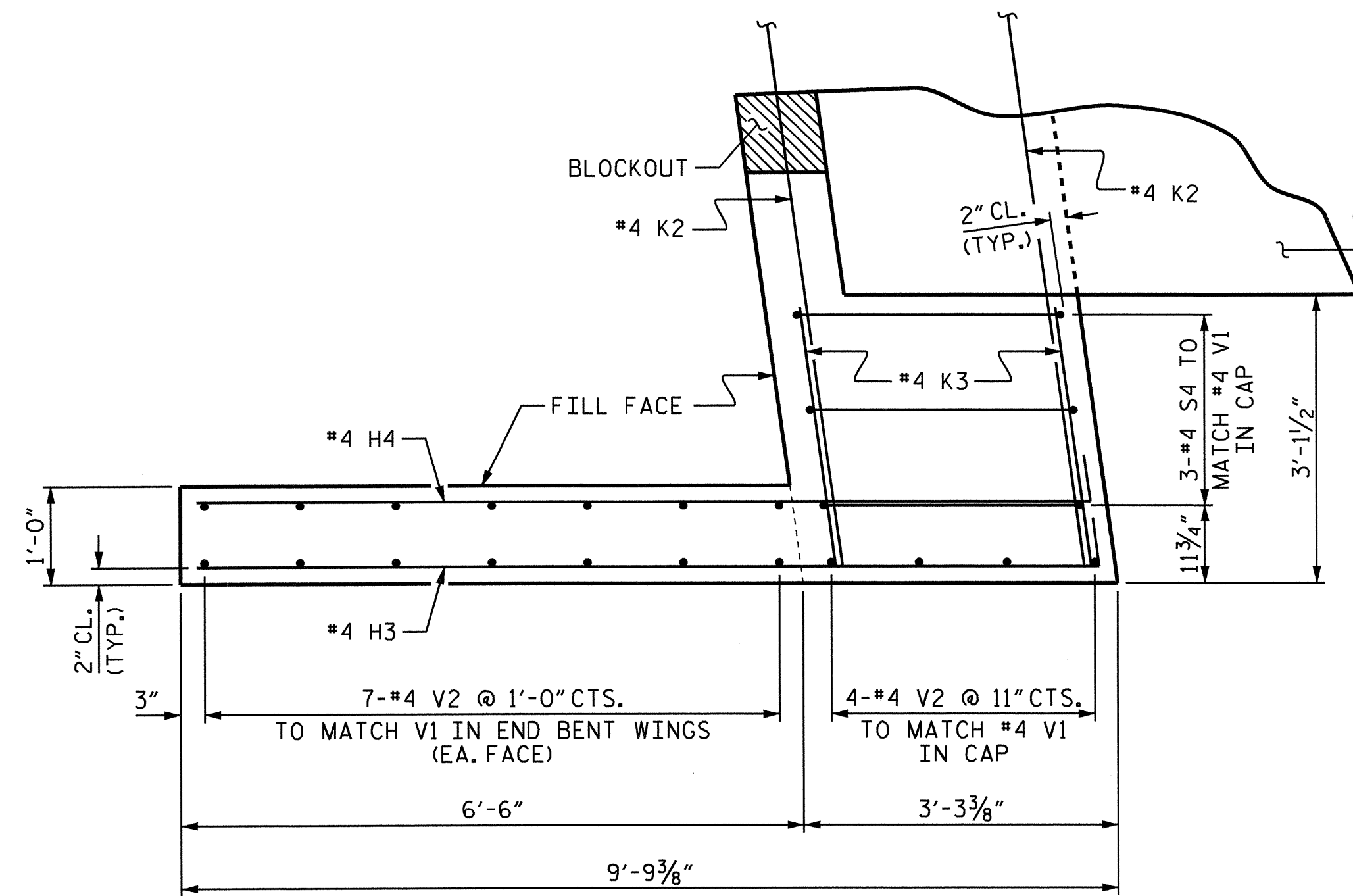
PROJECT NO. U-3324
MOORE COUNTY
STATION: 21+37.80 -Y6-

SHEET 5 OF 6

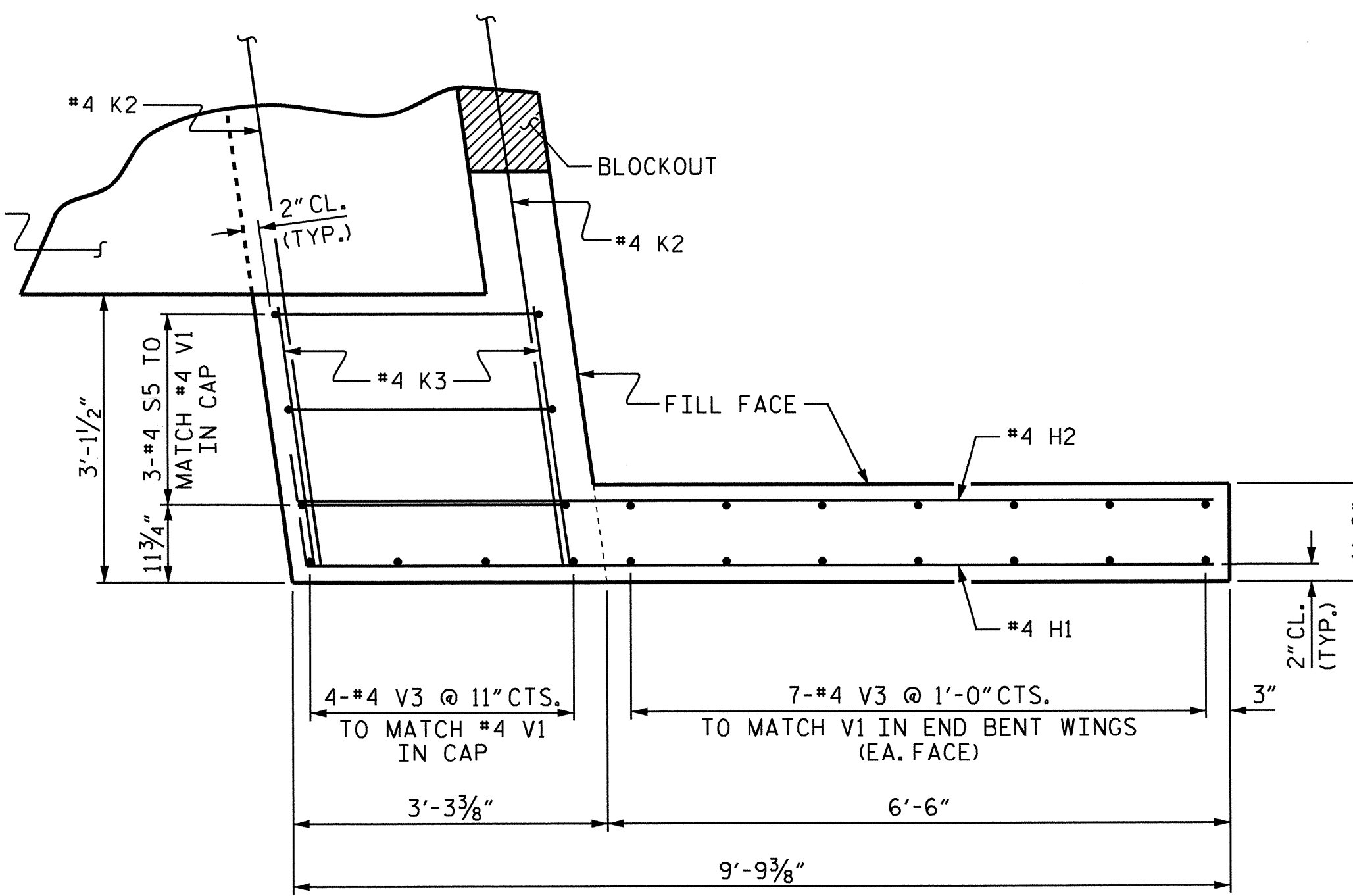
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
PLAN OF SPAN
DETAILS
STAGE I

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13	
1			3			TOTAL SHEETS 44	
2			4				

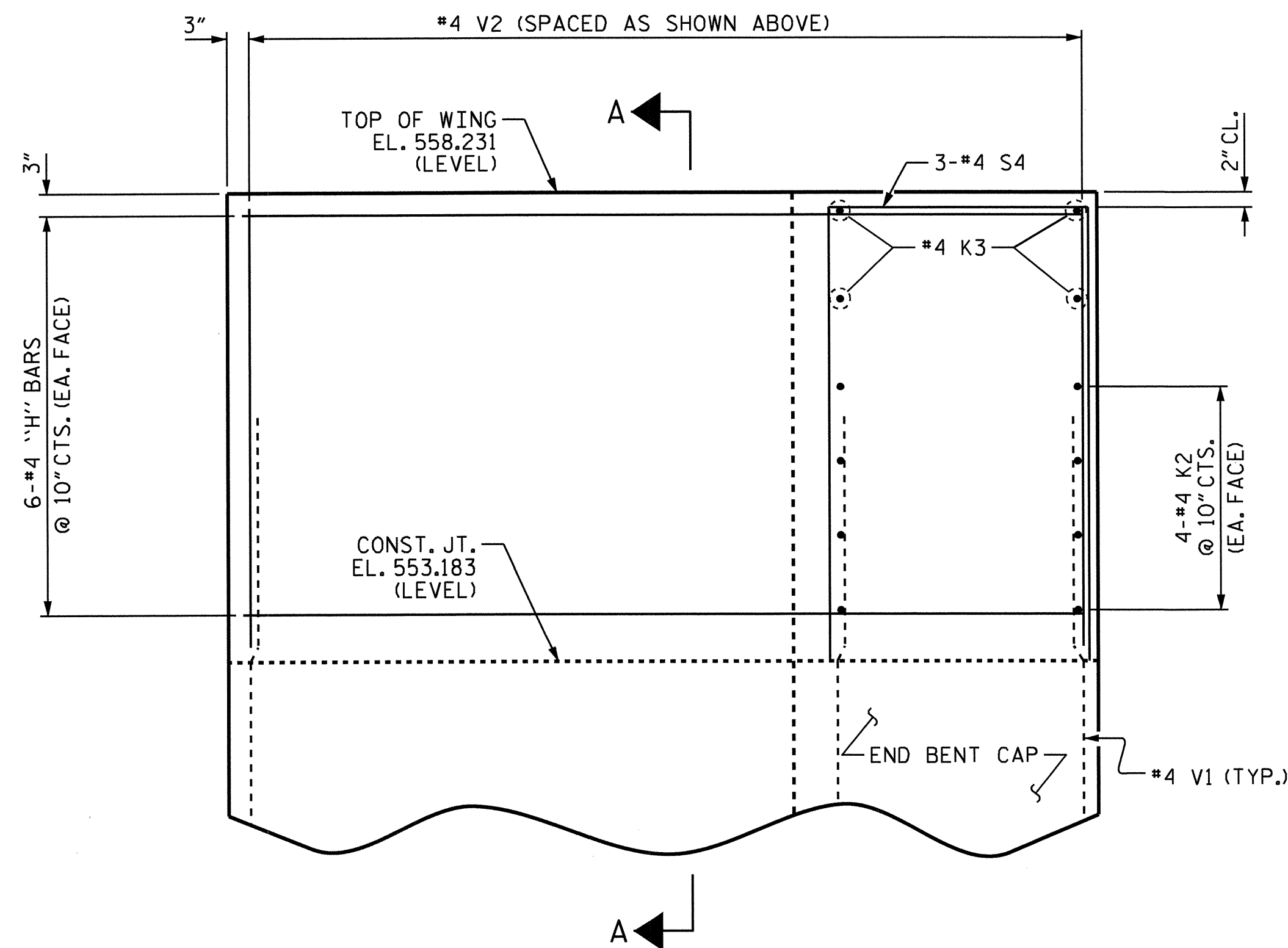
DRAWN BY: E.C. LOCKLEAR DATE: 1-29-10
CHECKED BY: Q.T. NGUYEN DATE: 8-12-10



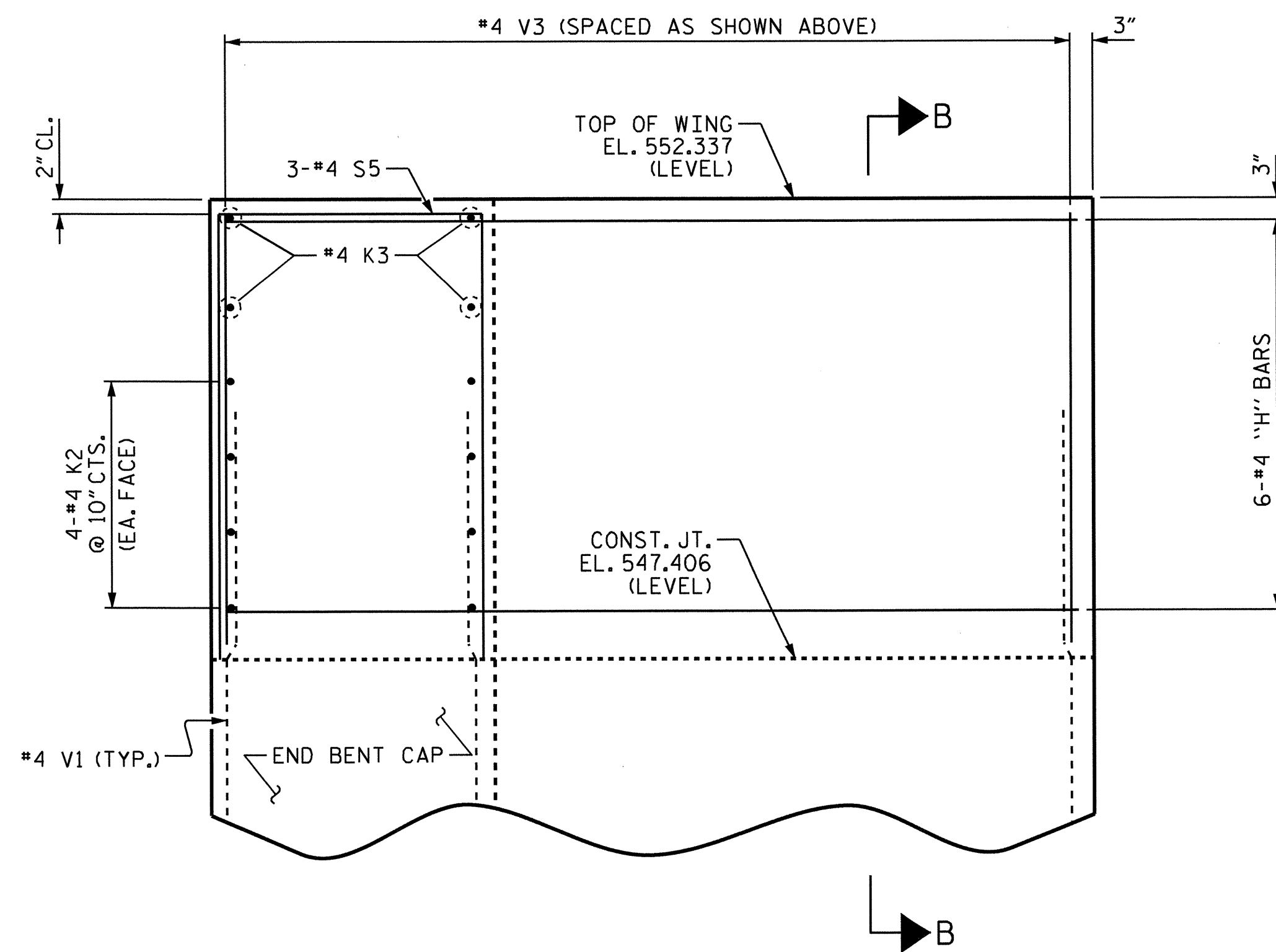
PLAN OF WING (W2)
AT END BENT 1



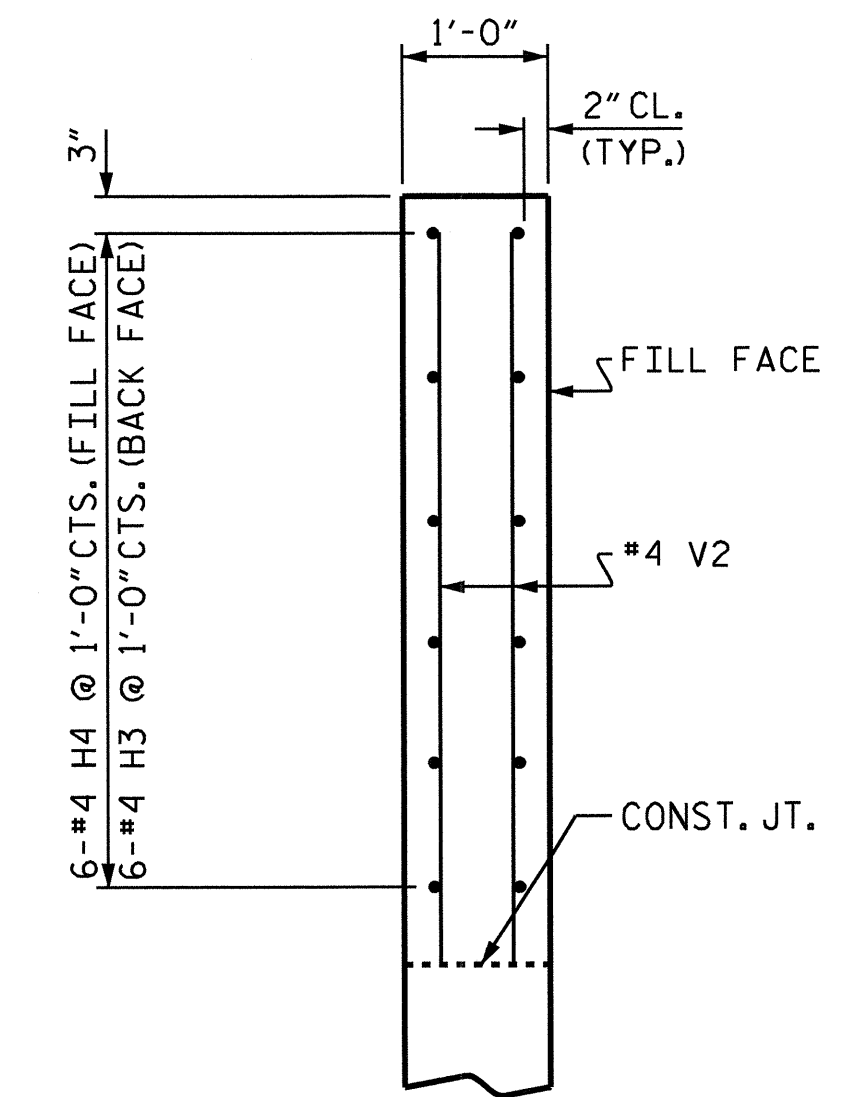
PLAN OF WING (W4)
AT END BENT 2



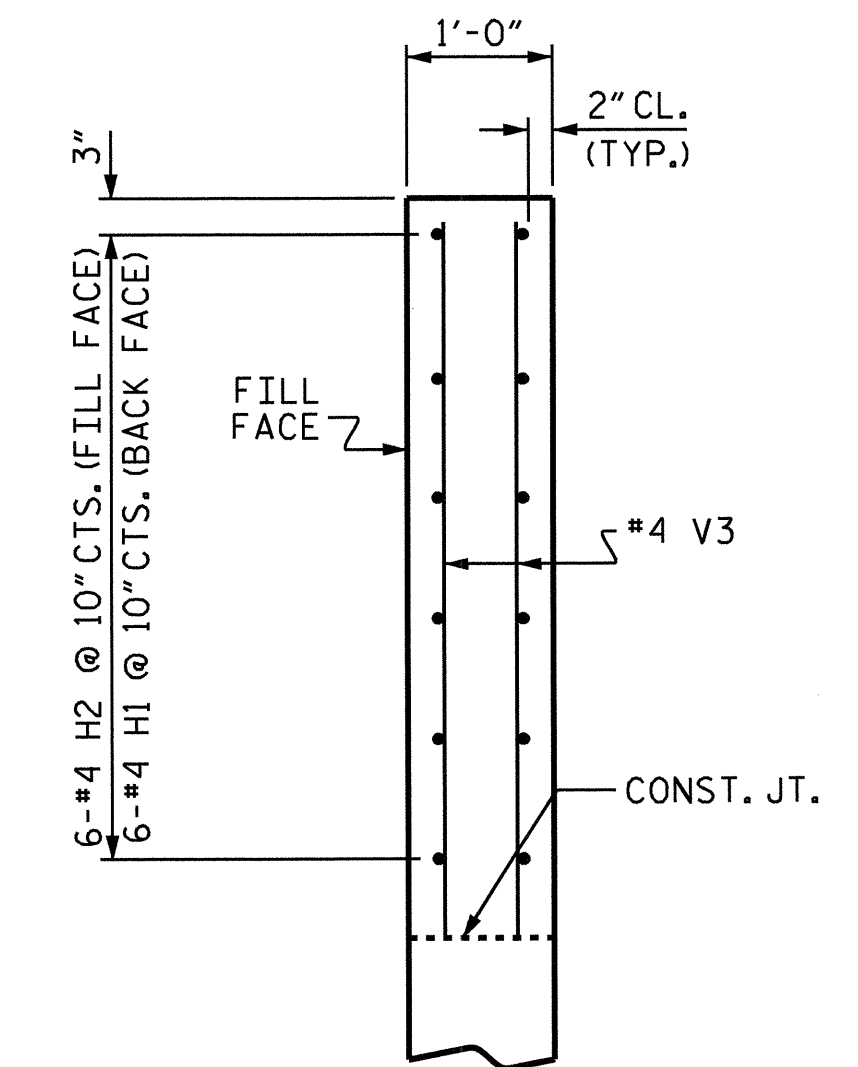
ELEVATION OF WING (W2)
AT END BENT 1



ELEVATION OF WING (W4)
AT END BENT 2



SECTION A-A



SECTION B-B

ABUTMENT WINGS

FOR END BENT REINFORCING STEEL AND DETAILS, SEE "SUBSTRUCTURE END BENTS 1 & 2" SHEETS.

PROJECT NO. U-3324
MOORE COUNTY
STATION: 21+37.80 -Y6-

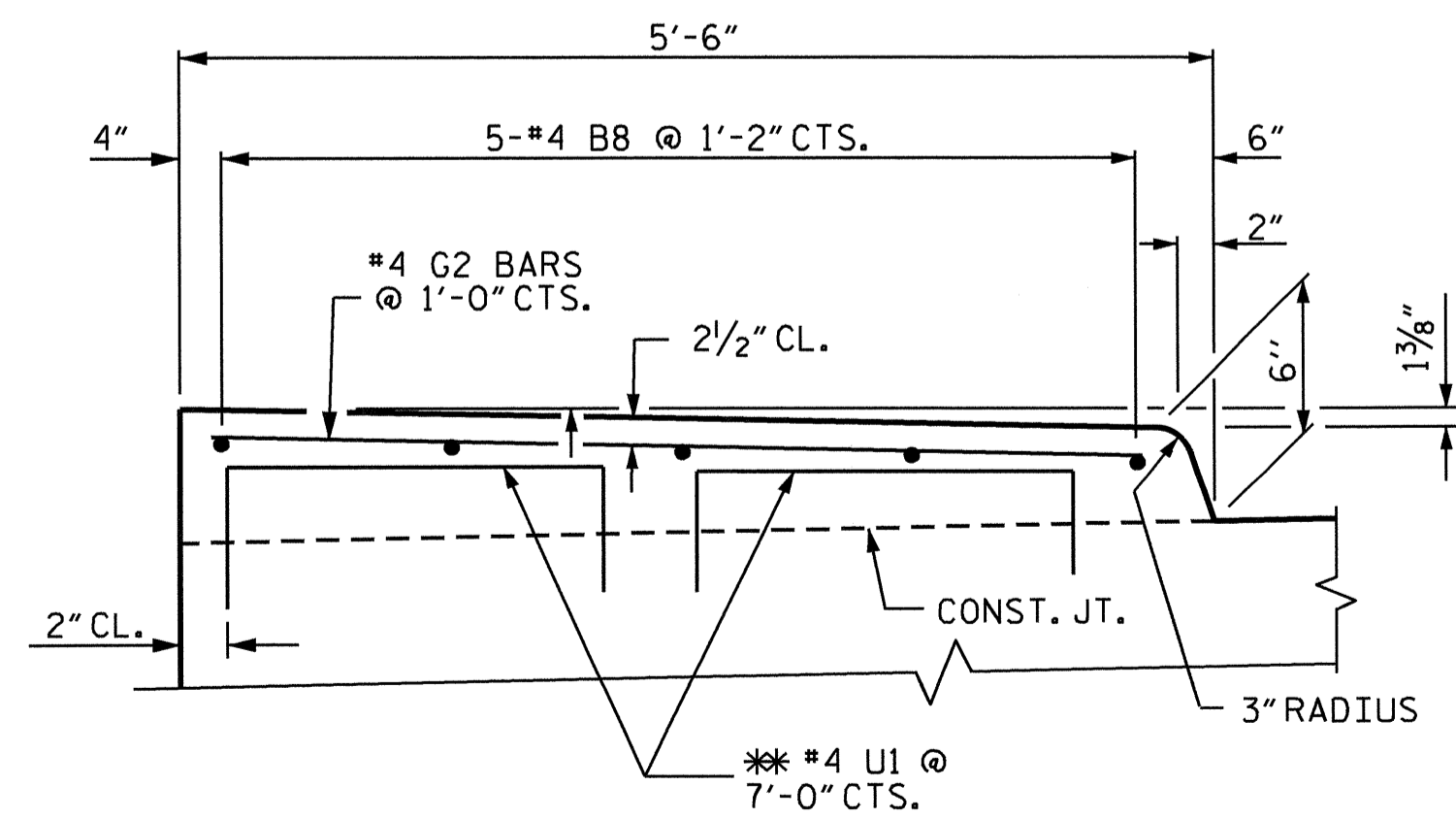
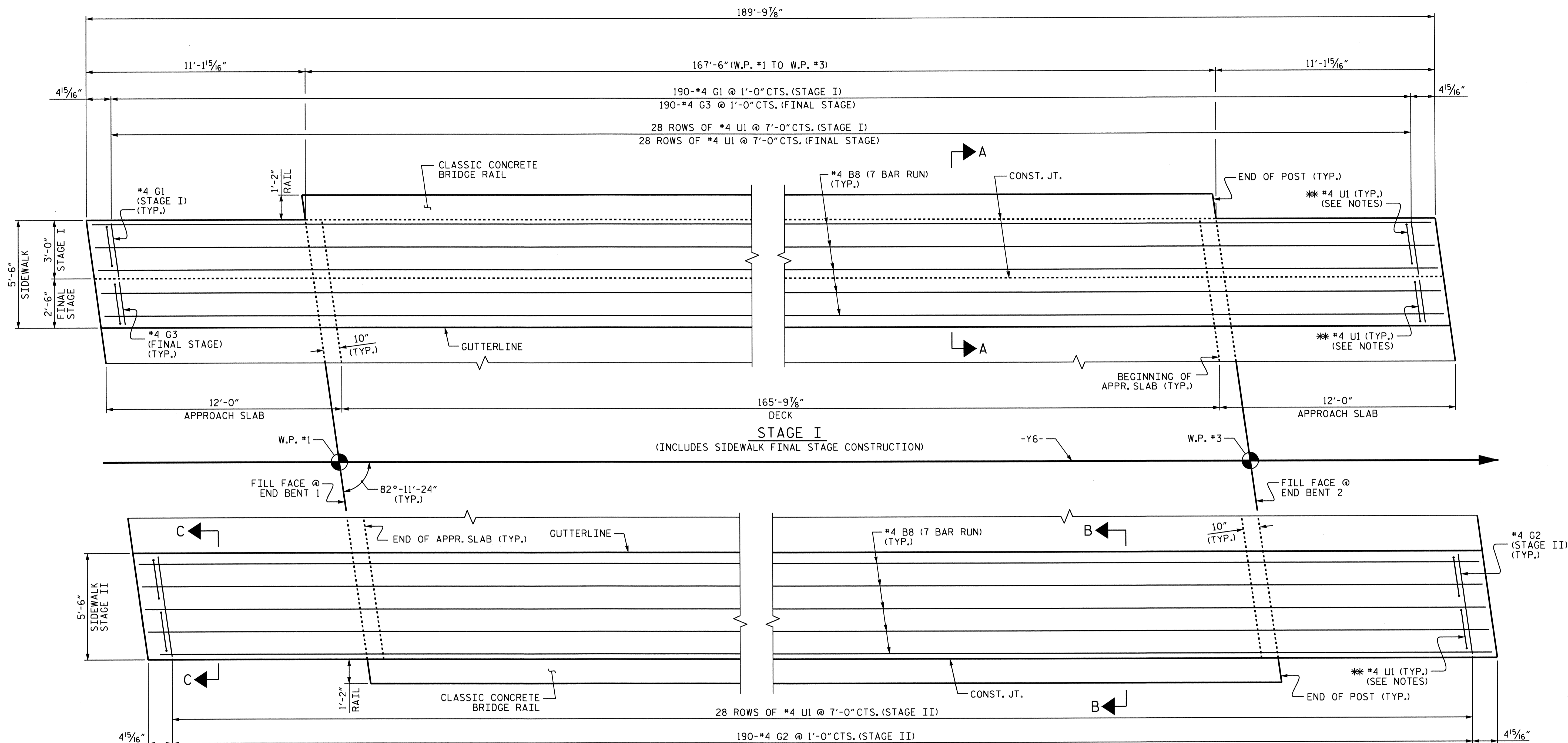
SHEET 6 OF 6

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE PLAN OF SPAN DETAILS STAGE II					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-14
					TOTAL SHEETS 44



Ting Hsiung Fang
7/20/12

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SECTION C-C
SHOWING STAGE II, STAGE I SIMILAR EXCEPT
ADD A CONSTRUCTION JT. ON SIDEWALK.

PLAN OF SIDEWALK

NOTES:

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

ALL REINFORCING STEEL IN THE SIDEWALK AND END POSTS SHALL BE EPOXY COATED.

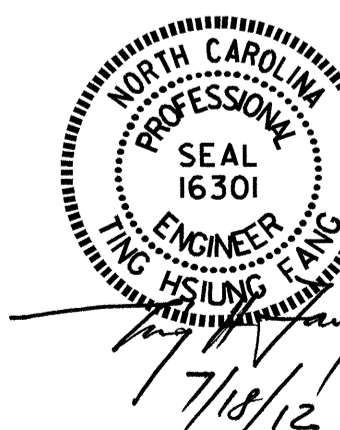
GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE SIDEWALK IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JT. SHALL BE LOCATED AT A SPACING OF 8 TO 10 FT. BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINT WILL BE REQUIRED FOR SEGMENTS LESS THAN 10 FEET IN LENGTH.

FOR SECTIONS A-A & B-B THRU SIDEWALK ON DECK, SEE "TYPICAL SECTION DETAILS" SHEET.

* THE #4 U1 DOWELS IN STAGE I & II CONSTRUCTIONS MAY BE PUSHED INTO GREEN CONCRETE AFTER DECK AND APPROACH SLAB HAS BEEN SCREEDED OFF. THE #4 U1 DOWELS IN FINAL STAGE CONSTRUCTION SHALL BE DRILLED AND GROUTED INTO DECK AND APPROACH SLAB.

SIDEWALKS ON THE BRIDGE EXTENDING TO THE END OF THE APPROACH SLABS ARE INCLUDED IN THE SUPERSTRUCTURE BILL OF MATERIAL AND PAID FOR AS PART OF THE REINFORCED CONCRETE DECK PAY ITEM.

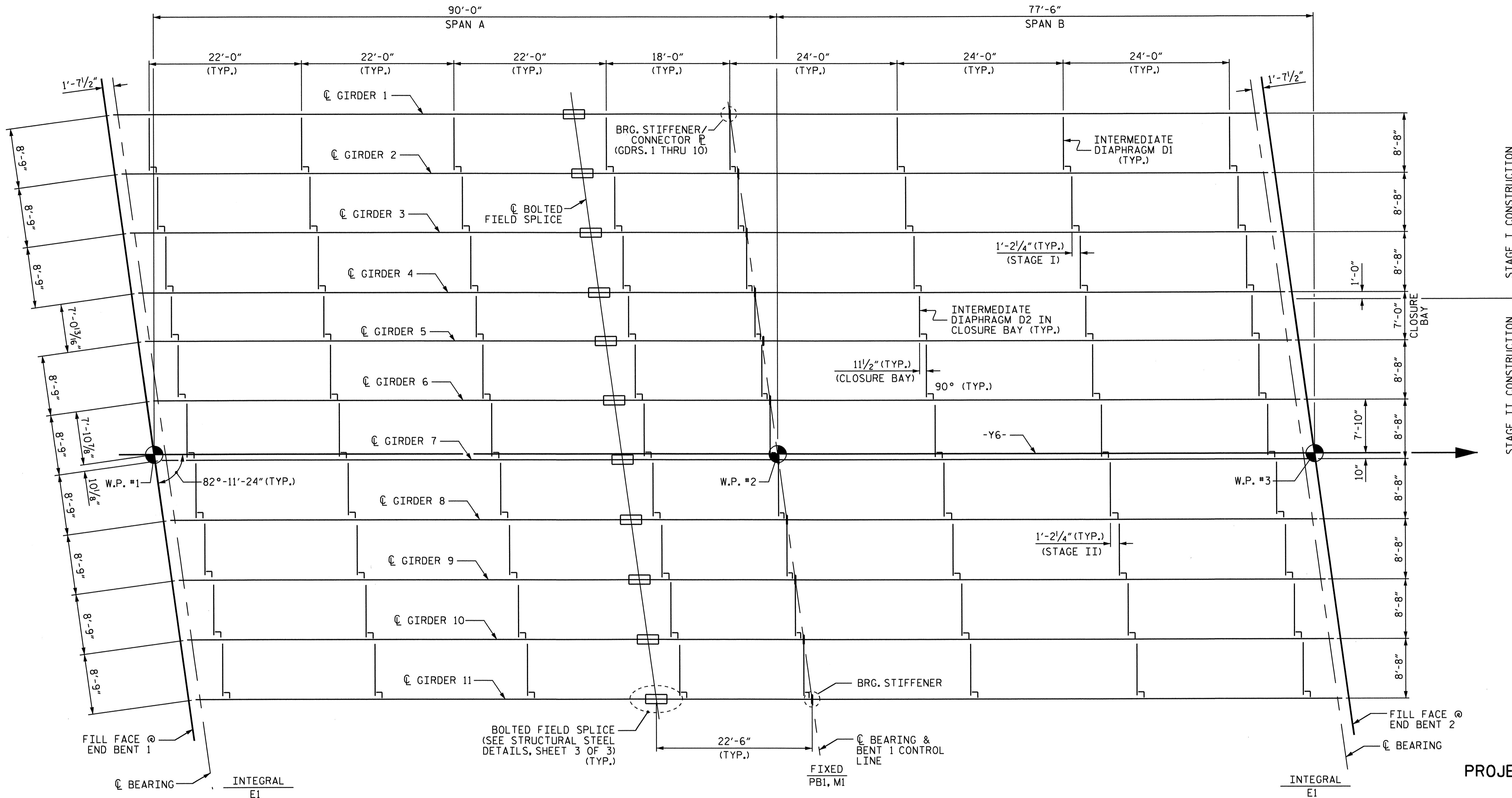
MINIMUM SPLICE LENGTH
FOR ALL #4 "B" BARS
ON THIS SHEET IS 2'-0"



PROJECT NO. U-3324
MOORE COUNTY
STATION: 21+37.80 -Y6-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SUPERSTRUCTURE	
SIDEWALK DETAILS							
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15	
1			3			TOTAL SHEETS	
2			4			44	

DRAWN BY : E.C. LOCKLEAR DATE : 5-3-10
CHECKED BY : T. H. FANG DATE : 5-12-12



STAGE I CONSTRUCTION
STAGE II CONSTRUCTION

FRAMING PLAN

PROJECT NO. U-3324
MOORE COUNTY
 STATION: 21+37.80 -Y6-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 FRAMING PLAN

DRAWN BY : S. DOMBROWSKI DATE : 2/25/10
 CHECKED BY : T. H. FANG DATE : 5/25/12

REVISIONS						SHEET NO. S-16
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 44
2			4			

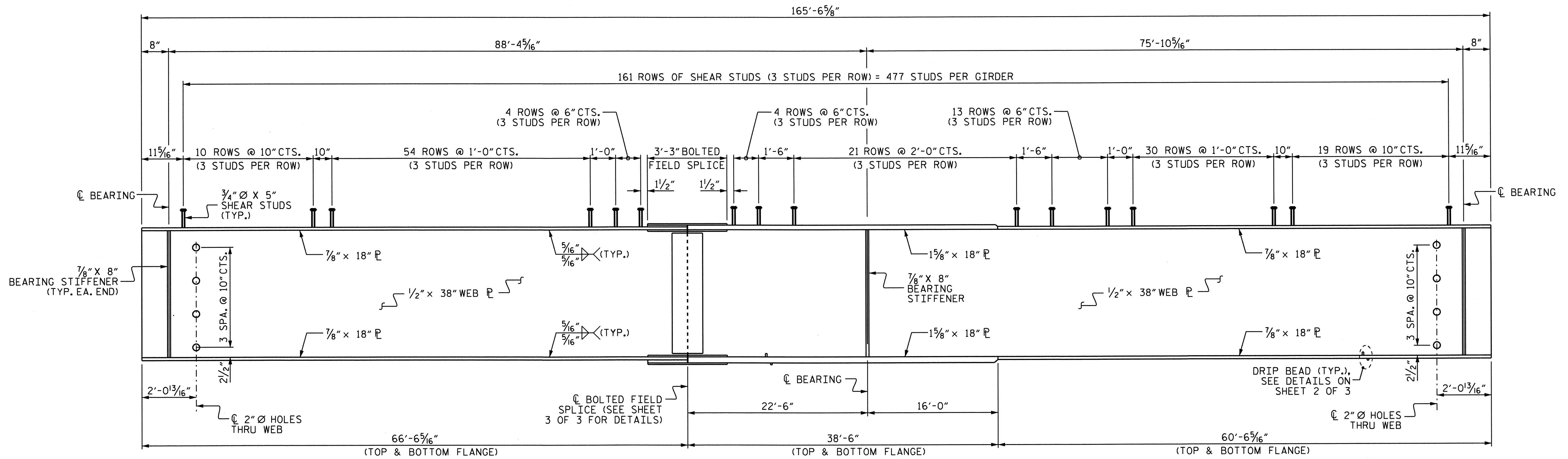
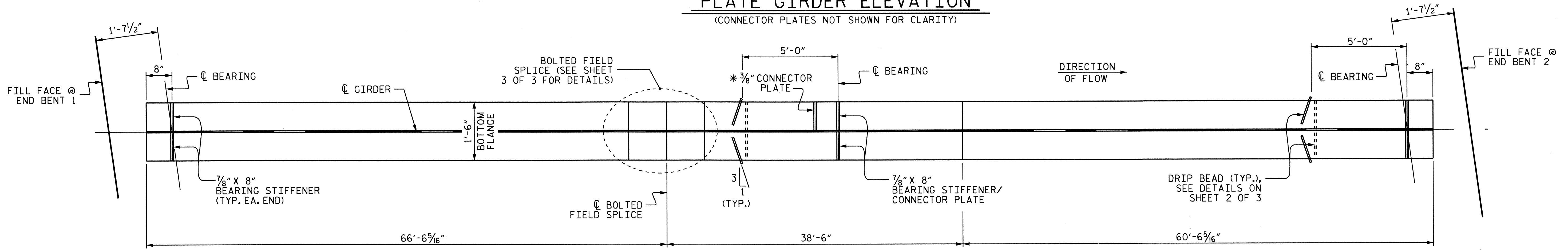
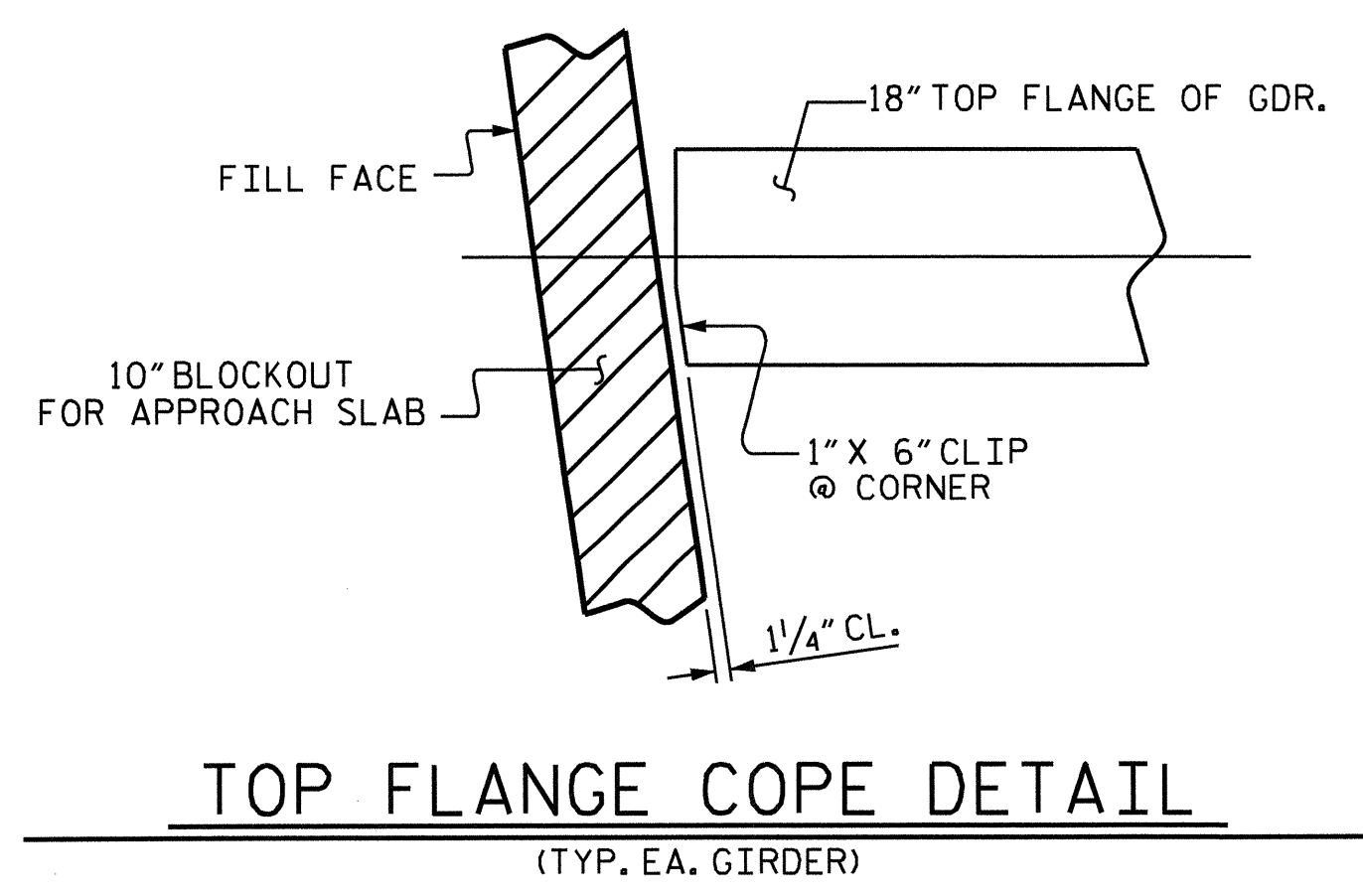


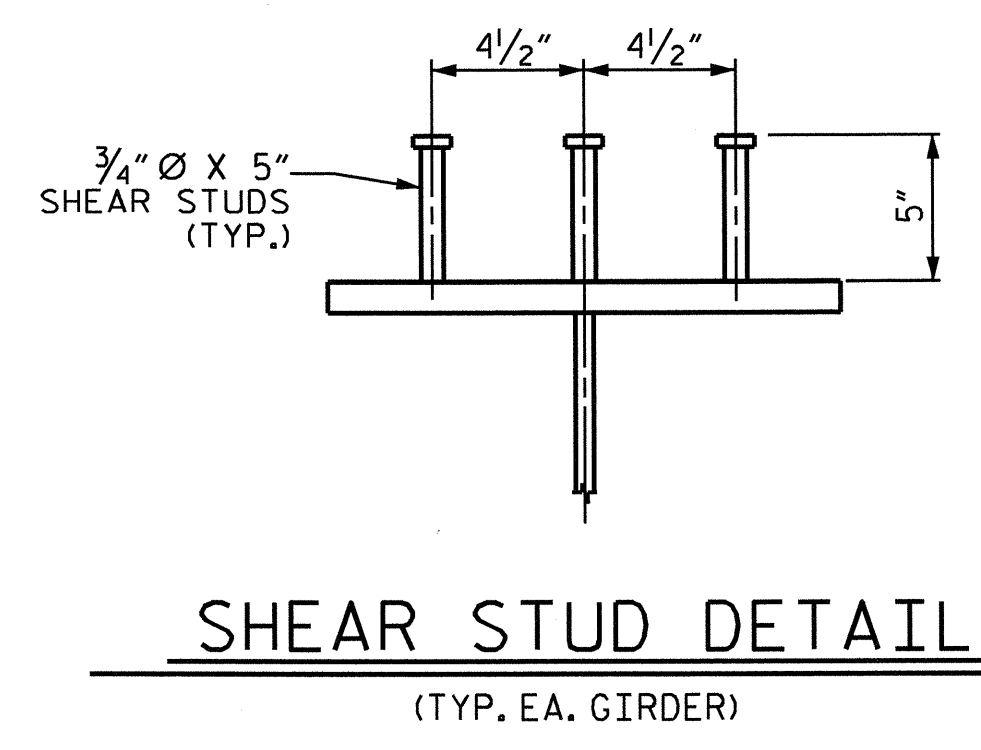
PLATE GIRDER ELEVATION
(CONNECTOR PLATES NOT SHOWN FOR CLARITY)



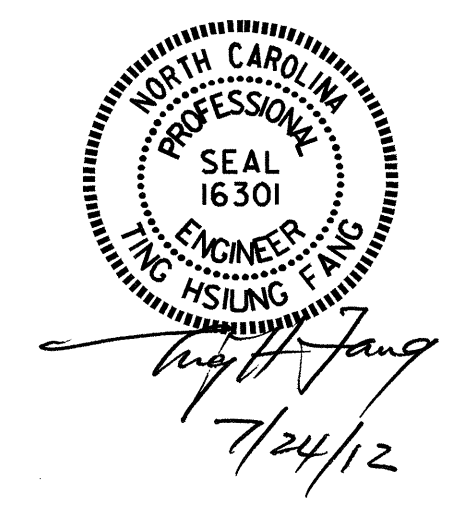
BOTTOM FLANGE DETAIL
* FOR GIRDERS #2 THRU #11



TOP FLANGE COPE DETAIL
(TYP. EA. GIRDER)



SHEAR STUD DETAIL
(TYP. EA. GIRDER)

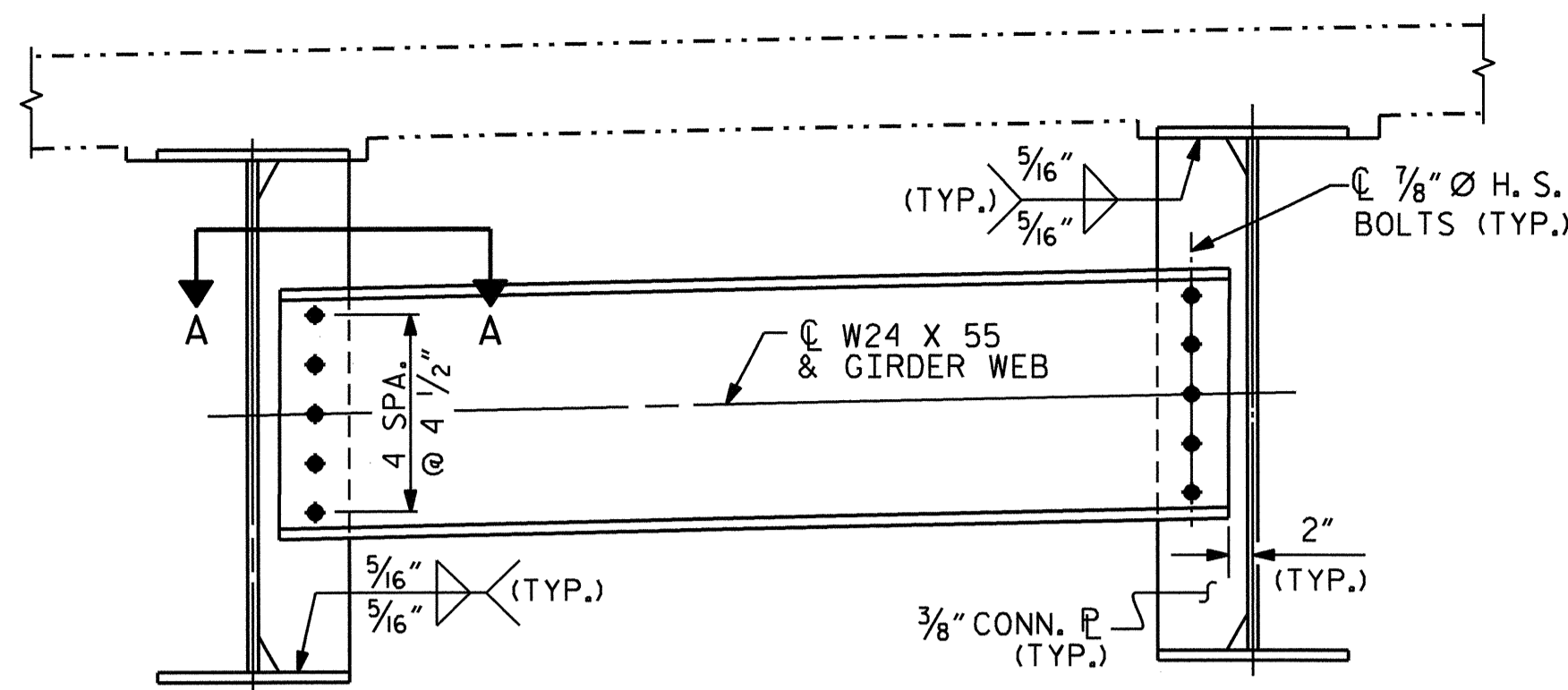


PROJECT NO. U-3324
MOORE COUNTY
 STATION: 21+37.80 -Y6-
 SHEET 1 OF 3

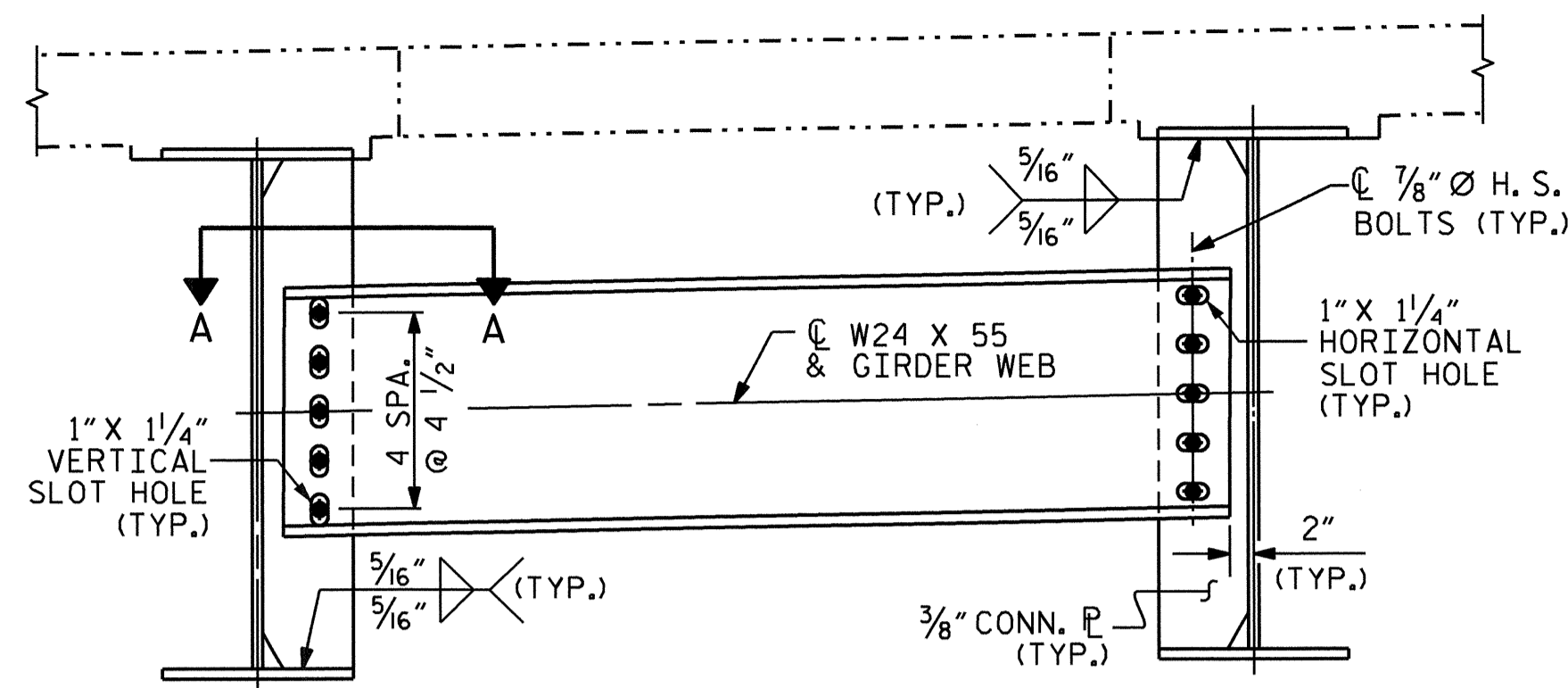
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE					
STRUCTURAL STEEL DETAILS					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-17
					TOTAL SHEETS 44

DRAWN BY : S. DOMBROWSKI DATE : 2/23/10
 CHECKED BY : T. H. FANG DATE : 5/23/12

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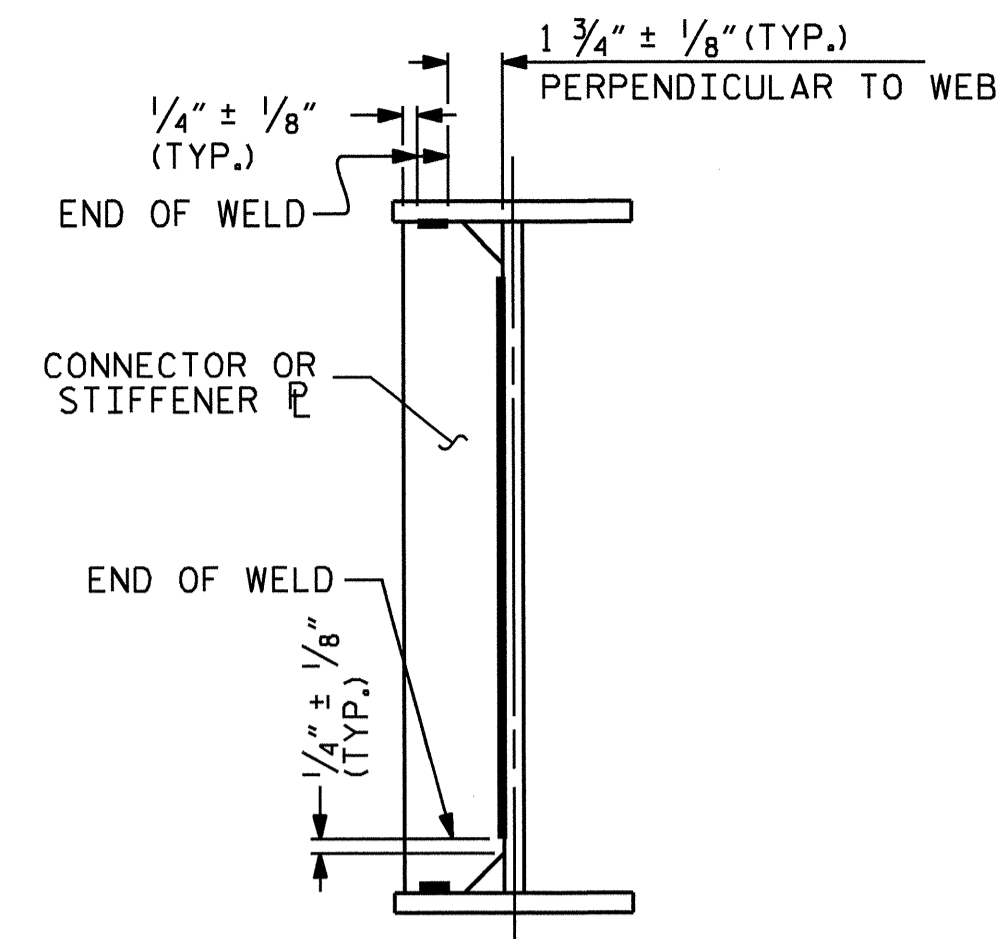


INTERMEDIATE DIAPHRAGM D1



INTERMEDIATE DIAPHRAGM D2

IN CLOSURE BAY



TYP. STIFFENER OR CONNECTOR PLATE CONNECTION
WELD TERMINATION DETAILS

NOTES:

ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 50W.
ALL DIMENSIONS SHOWN ARE HORIZONTAL OR VERTICAL, UNLESS OTHERWISE NOTED.
ALL FIELD CONNECTIONS TO BE 7*8" DIA. HIGH STRENGTH BOLTS UNLESS OTHERWISE NOTED.
BEARING STIFFENERS ARE TO BE PLACED NORMAL TO THE WEB OF THE GIRDER AND SHALL BE PLUMB.
PERMITTED FLANGE AND WEB SHOP SPLICES SHALL NOT BE LOCATED WITHIN 15 FEET OF MAXIMUM DEAD LOAD DEFLECTION (OR WITHIN 15 FEET OF INTERMEDIATE BEARINGS OF CONTINUOUS UNITS). KEEP 2 FEET MINIMUM BETWEEN WEB AND FLANGE SHOP SPLICES. KEEP 6" MINIMUM BETWEEN CONNECTOR PLATE OR TRANSVERSE STIFFENER WELDS AND WEB OR FLANGE SHOP SPLICES.
STUDS ON GIRDERS MAY BE SHIFTED UP TO 1" IF NECESSARY TO CLEAR FLANGE SPLICE WELD.
TENSION ON THE AASHTO M164 BOLTS SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH ARTICLE 440-8 OF THE STANDARD SPECIFICATIONS.

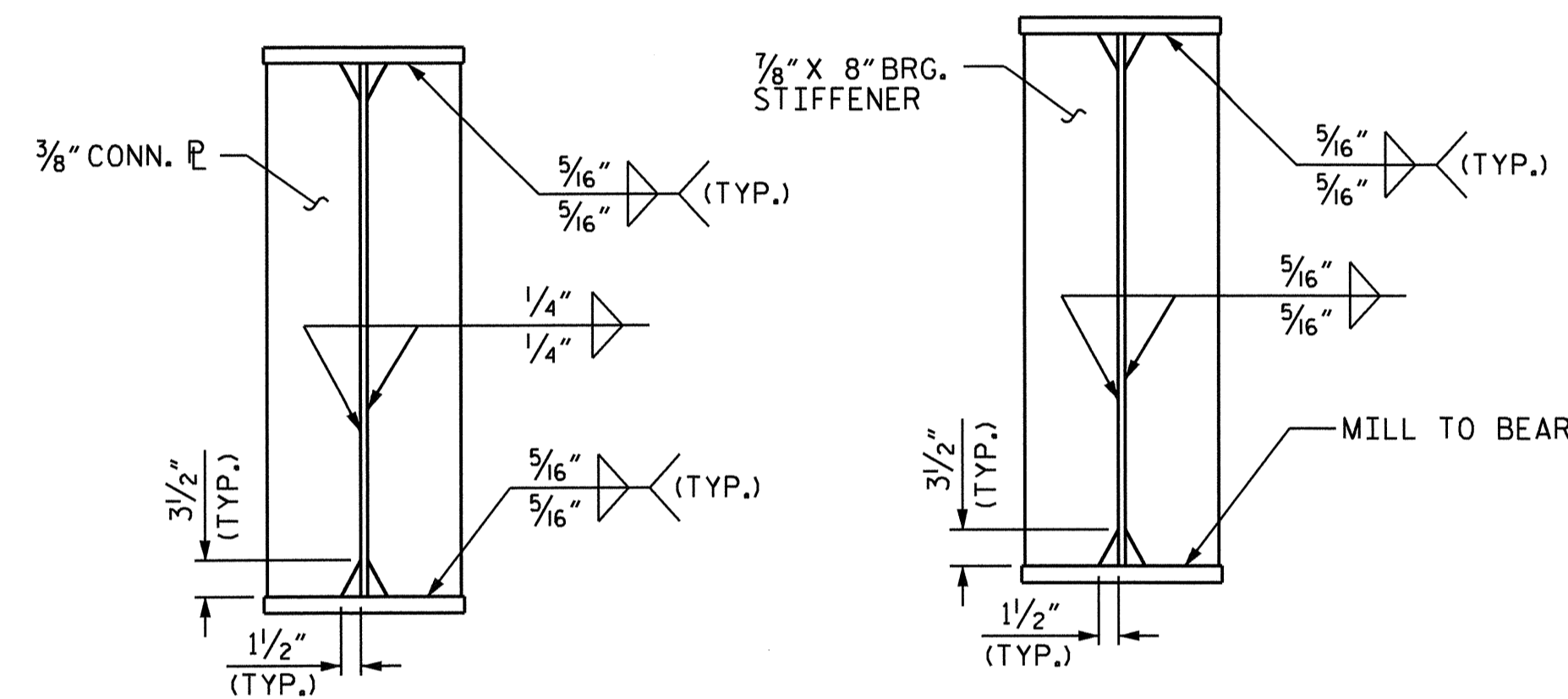
NUTS ON BOLTS FOR CONNECTING DIAPHRAGM TO CONNECTOR PLATE SHALL BE LEFT LOOSE FOR PURPOSE OF ADJUSTMENT UNTIL BOTH SIDES OF SLAB IN CLOSURE BAY HAVE BEEN POURED.

BEARING STIFFENER MAY REQUIRE COPING IF WIDER THAN BOTTOM FLANGE TO AVOID INTERFERENCE WITH THE ANCHOR BOLT.

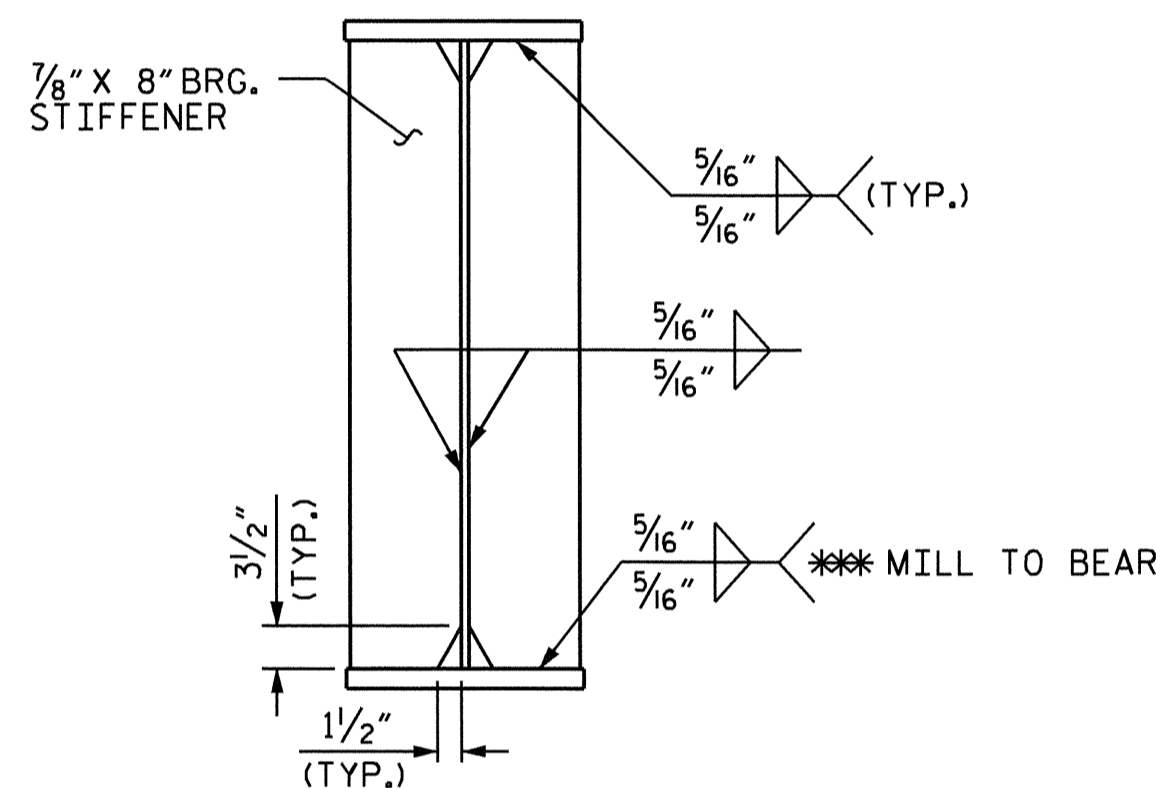
PERMITTED FLANGE AND WEB SHOP SPLICES SHALL NOT BE LOCATED WITHIN 15 FEET OF MAXIMUM DEAD LOAD DEFLECTION (OR WITHIN 15 FEET OF INTERMEDIATE BEARINGS OF CONTINUOUS UNITS). KEEP 2 FEET MINIMUM BETWEEN WEB AND FLANGE SHOP SPLICES. KEEP 6" MINIMUM BETWEEN CONNECTOR PLATE OR TRANSVERSE STIFFENER WELDS AND WEB OR FLANGE SHOP SPLICES.

STRUCTURAL STEEL ERECTION IN A CONTINUOUS UNIT SHALL BE COMPLETE BEFORE FALSEWORK OR FORMS ARE PLACED ON THE UNIT.

END OF GIRDERS SHALL BE PLUMB.

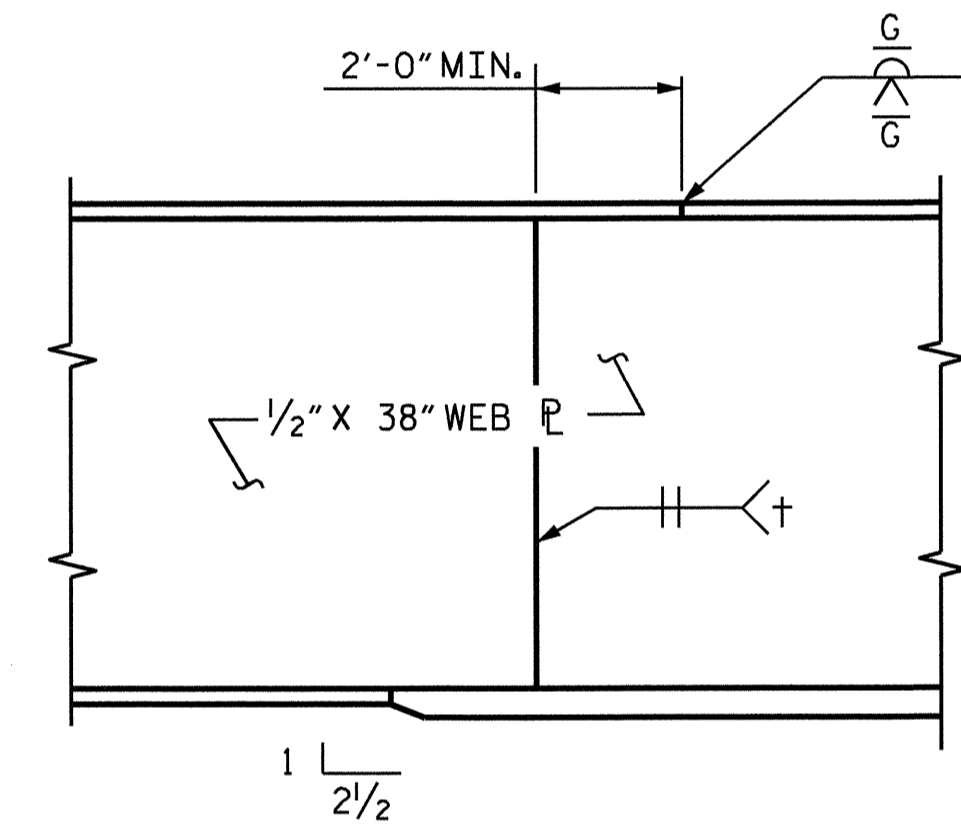


CONNECTOR PLATE BEARING STIFFENER



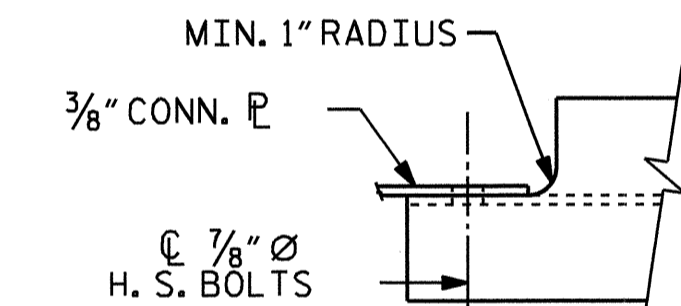
BEARING STIFFENER/CONNECTOR PLATE

*** WELD TO BOTTOM FLANGE IS ONLY REQUIRED WHEN BEARING STIFFENER IS ALSO CONNECTOR PLATE.

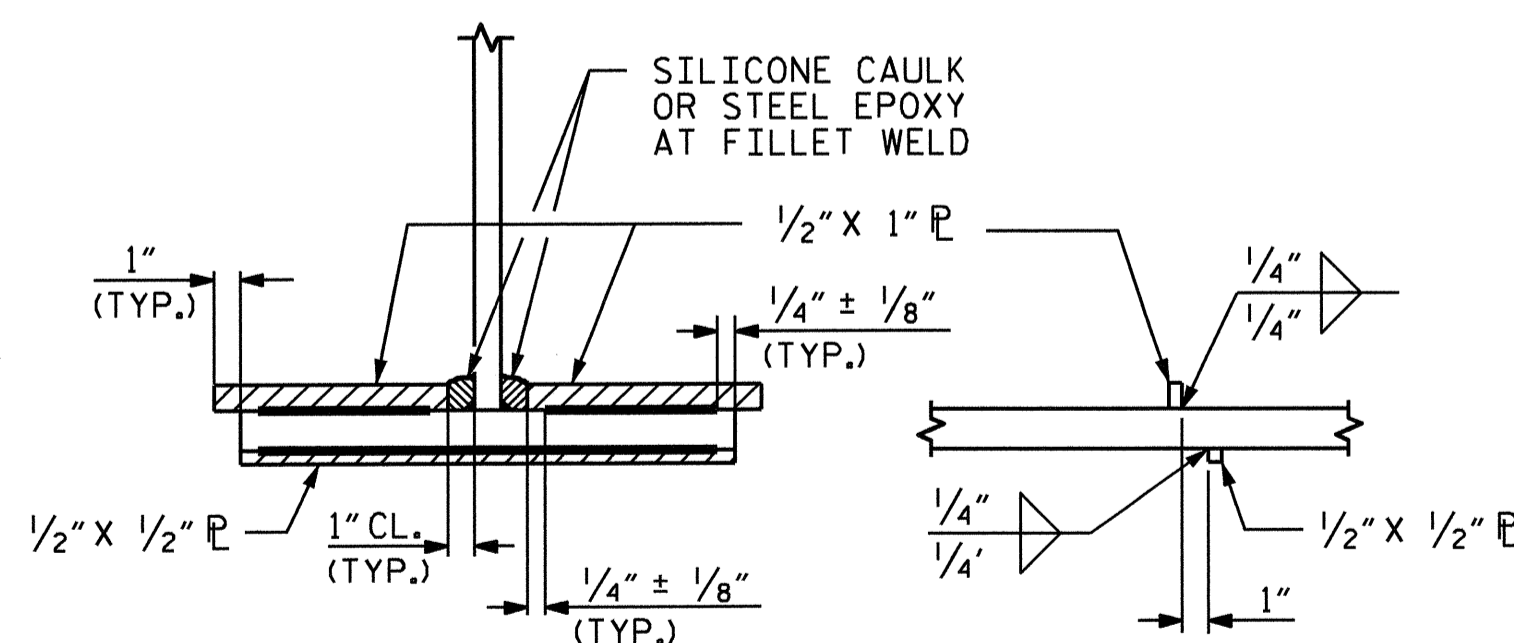


TYPICAL FLANGE & WEB BUTT JOINT

+ GRIND SMOOTH AND FLUSH ON OUTER FACE OF EXTERIOR GIRDERS

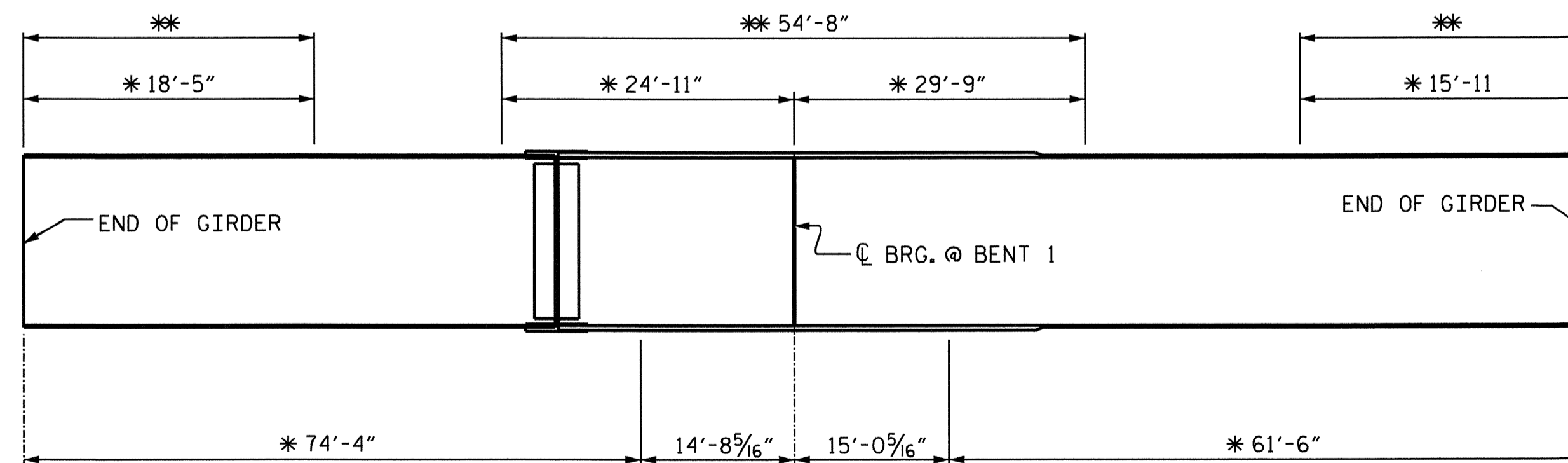


SECTION A-A



SECTION SIDE VIEW

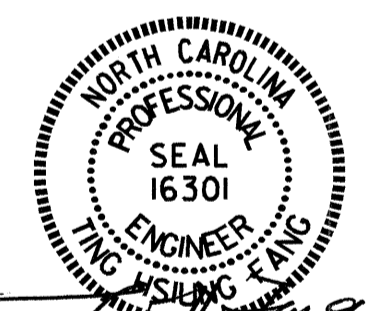
DRIP BEAD DETAILS



CHARPY V-NOTCH TEST FOR PLATE GIRDERS

* CHARPY V-NOTCH TESTS ARE REQUIRED FOR ALL TOP OR BOTTOM FLANGE PLATES WHICH FALL WITHIN THESE LIMITS, ALL WEB PLATES, AND ALL SPLICE PLATES. IF A PERMITTED SHOP FLANGE SPLICE IS NOT USED, CHARPY V-NOTCH TESTS WILL BE REQUIRED FOR THE ENTIRE TOP FLANGE PLATE. FOR CHARPY V-NOTCH TESTS, SEE ARTICLE 1072-9 OF THE STANDARD SPECIFICATIONS.

*** NO WELDING OF FORMS OR FALSEWORK TO THE TOP FLANGE WILL BE PERMITTED IN THIS REGION.



PROJECT NO. U-3324
MOORE COUNTY
STATION: 21+37.80 -Y6-

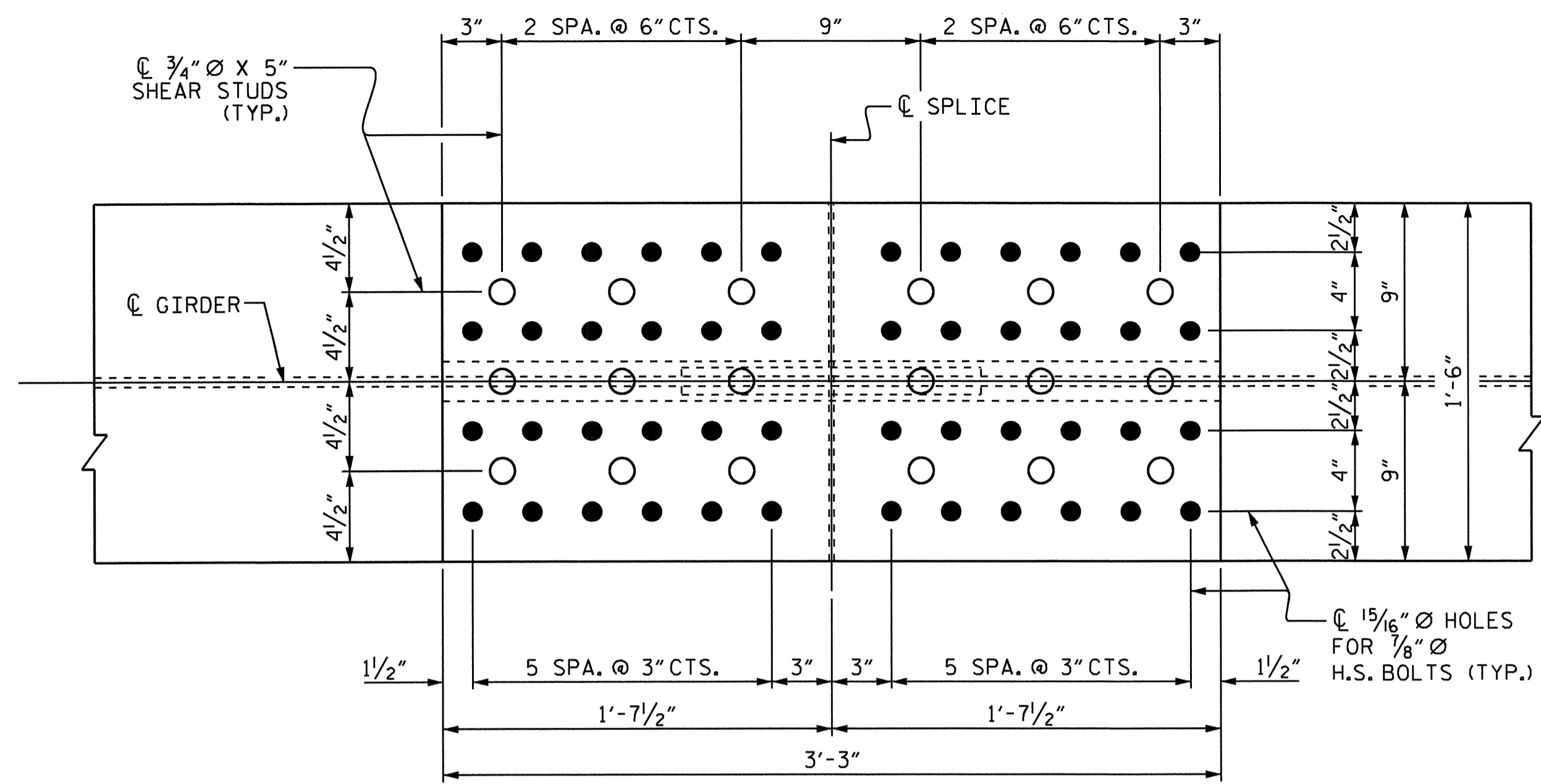
SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
STRUCTURAL STEEL
DETAILS AND
BEARING DETAILS

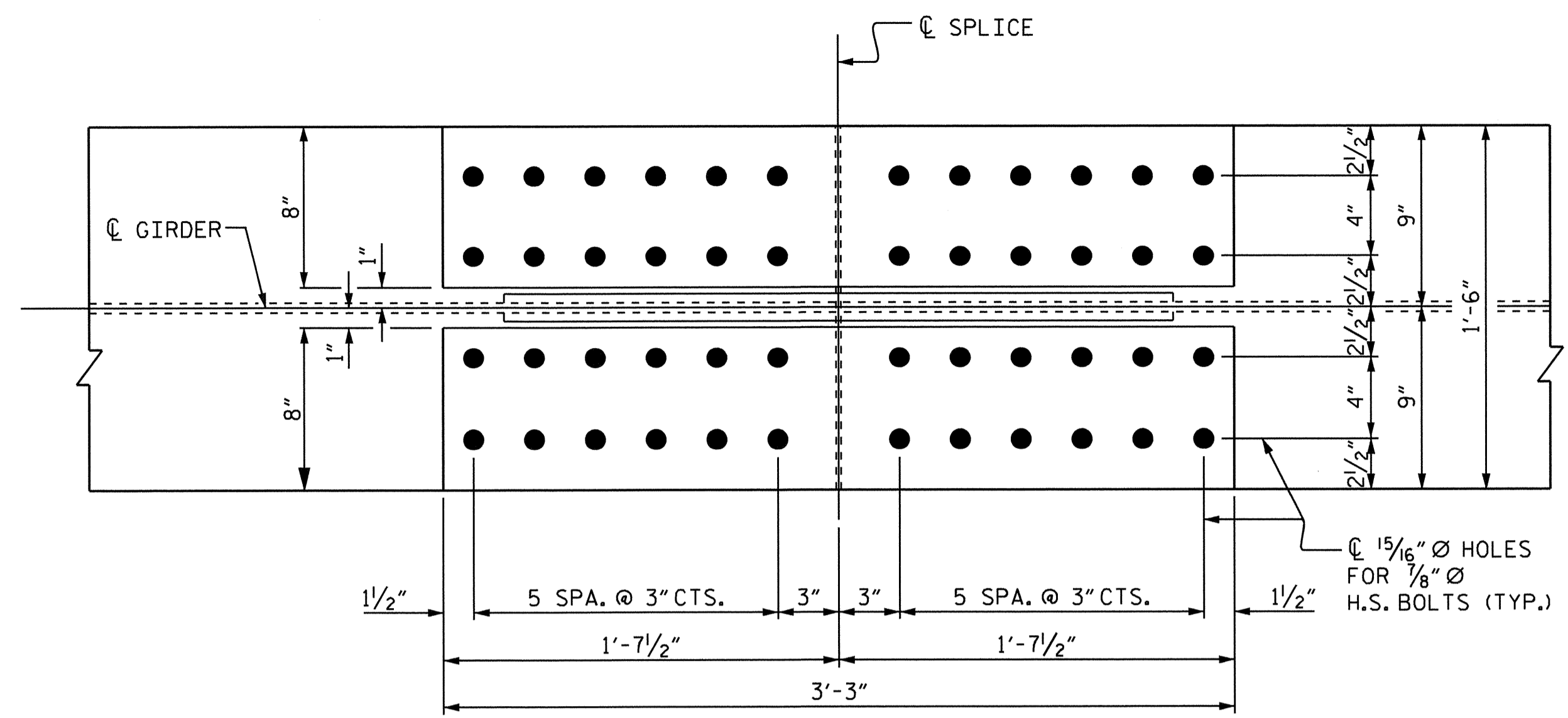
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			44

DRAWN BY: QT NGUYEN DATE: 12-09
CHECKED BY: I. H. FANG DATE: 1-21-10

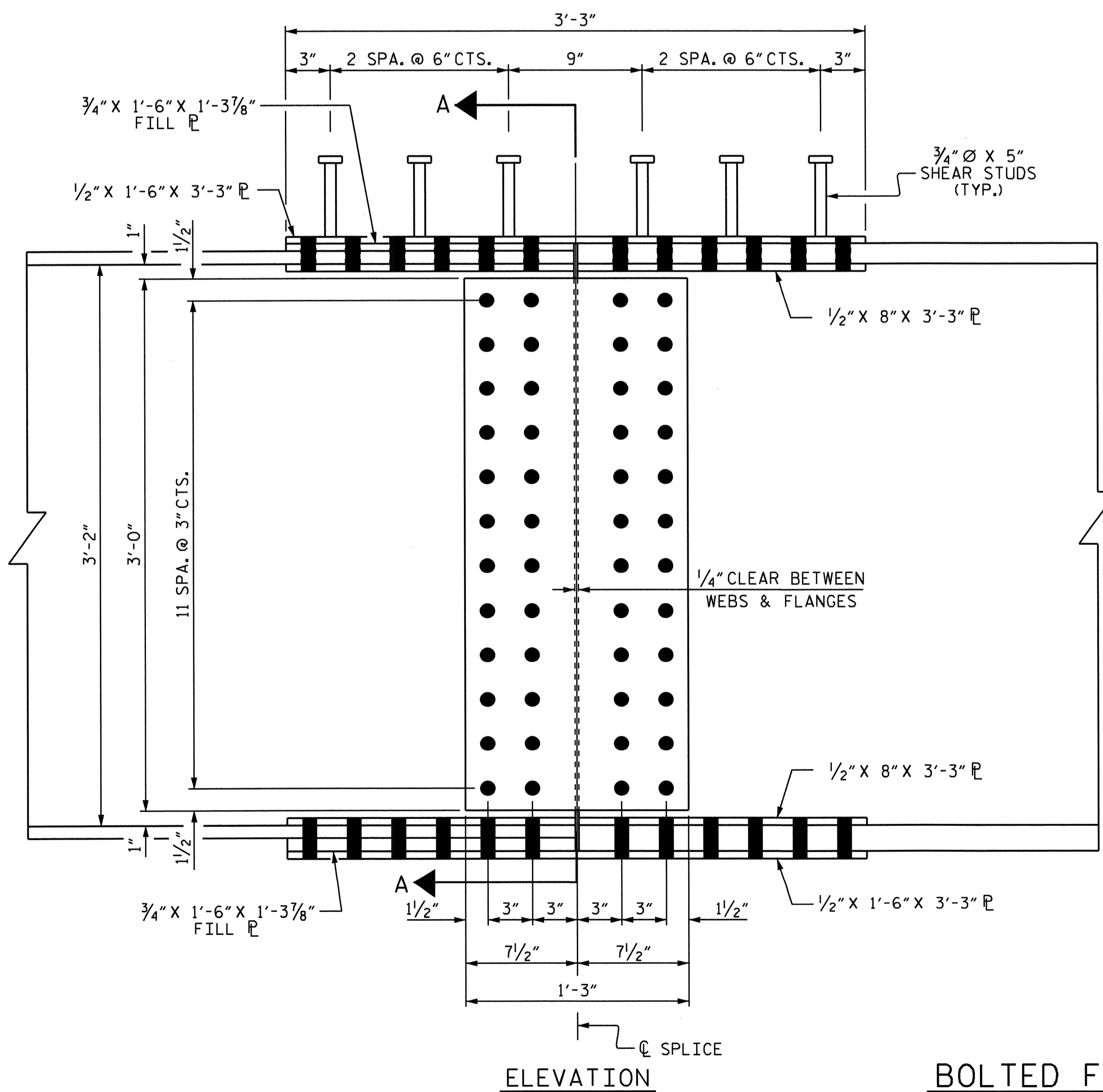
24-JUL-2012 11:55
\\s\Structures\Final Plans\U3324.sd.ss.dgn
ifang



PLAN (TOP OF TOP FLANGE)

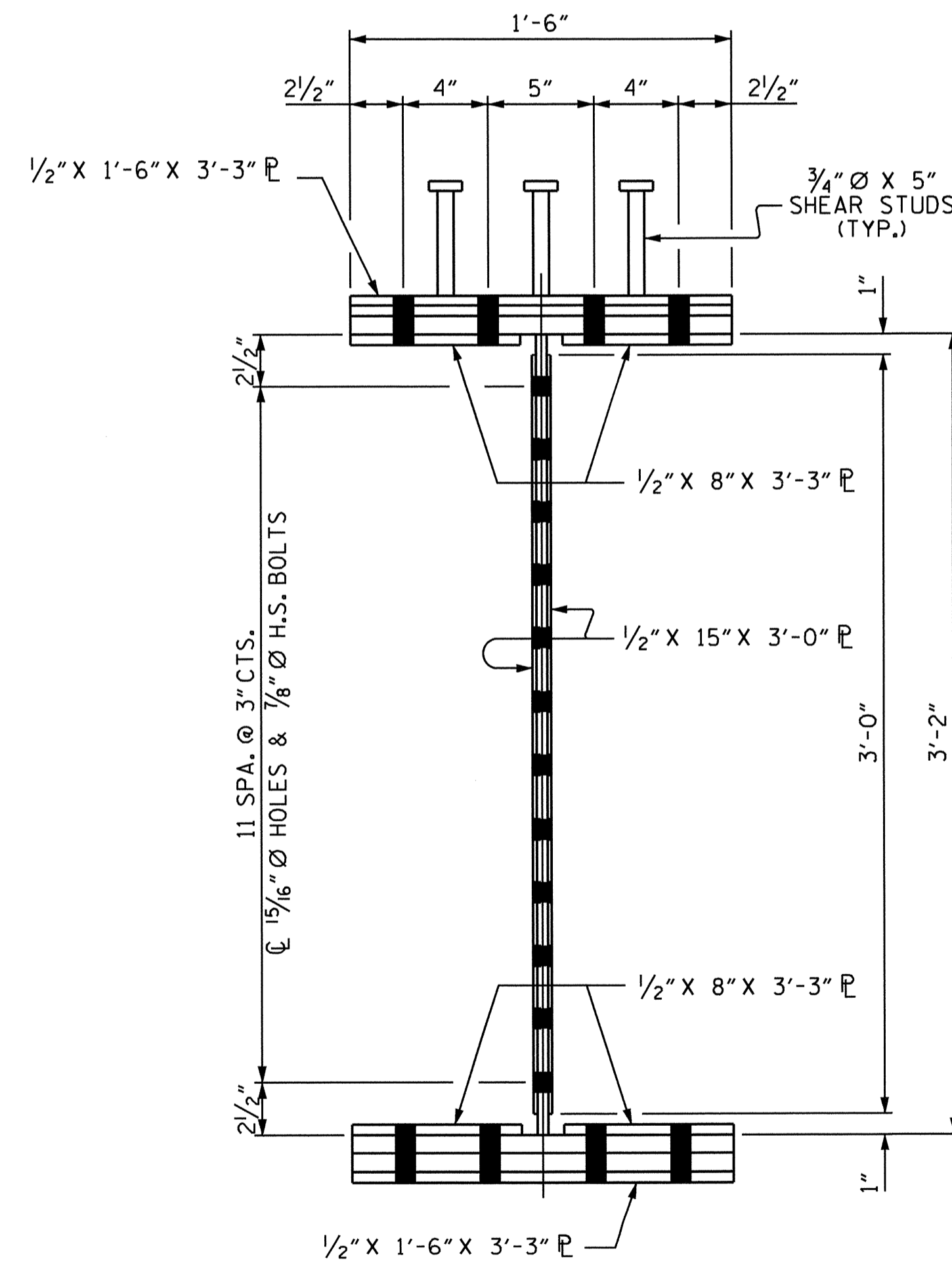


PLAN (TOP OF BOTTOM FLANGE)



ELEVATION

BOLTED FIELD SPLICE DETAILS



SECTION A-A



SHEAR STUD DETAIL FOR TOP FLANGE SPLICE PLATE
SHEAR STUDS ARE TO BE SHOP WELDED ON TOP OF PLATE BEFORE FIELD ASSEMBLY.

PROJECT NO. U-3324
MOORE COUNTY
STATION: 21+37.80 -Y6-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
STRUCTURAL STEEL DETAILS

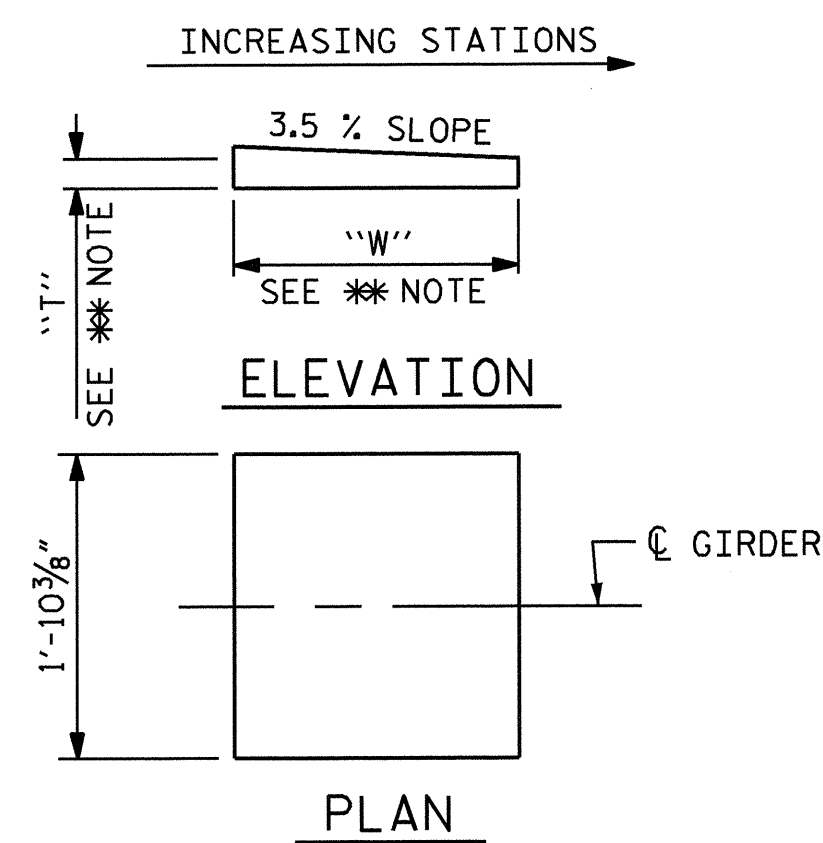
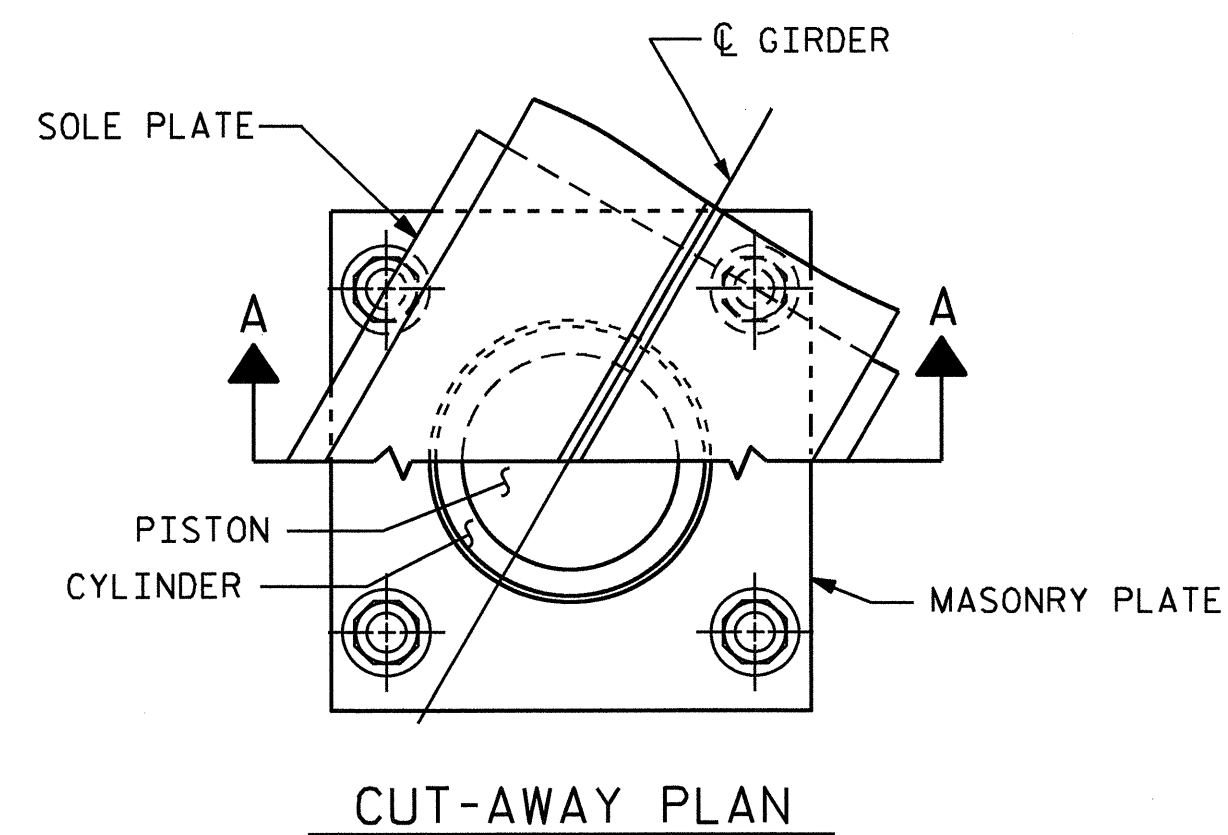
BOLTED FIELD SPLICE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS 44
2			4			

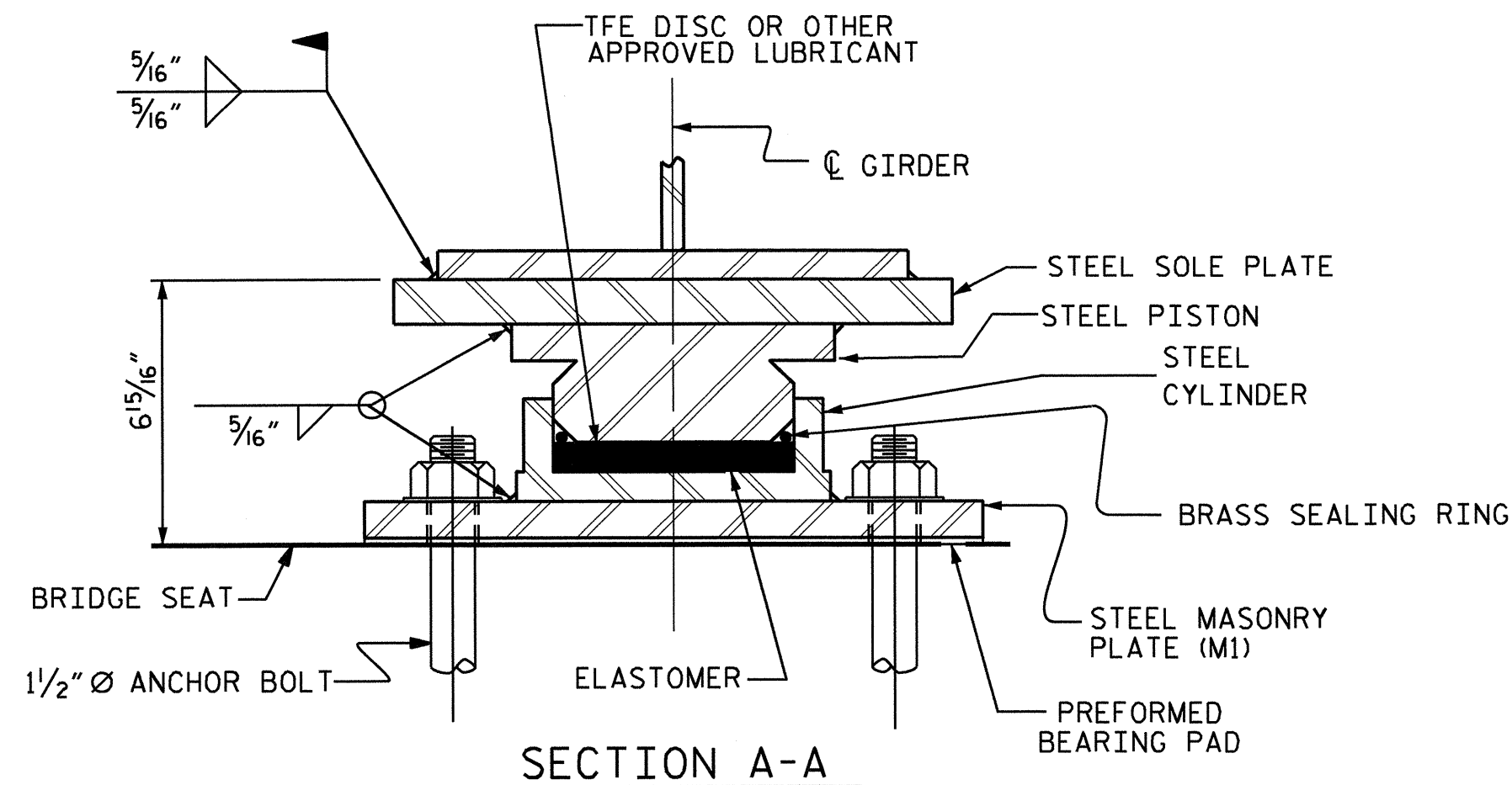
DRAWN BY: S. DOMBROWSKI DATE: 2/23/10
CHECKED BY: E.I. OMILE DATE: 11/21/11

24-JUL-2012 11:55
Y:\Structures\Final Plans\U3324.sd,ss.dgn
Tfang

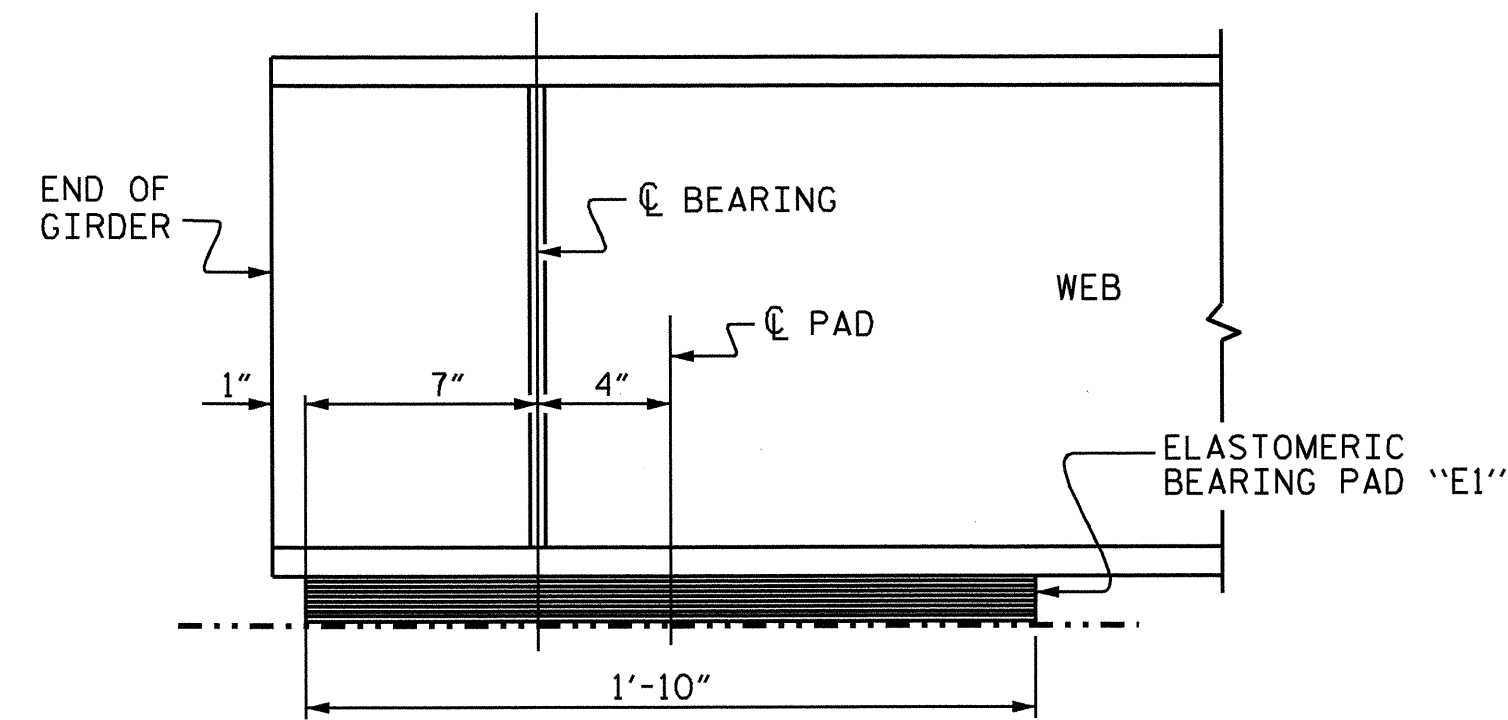
NC006



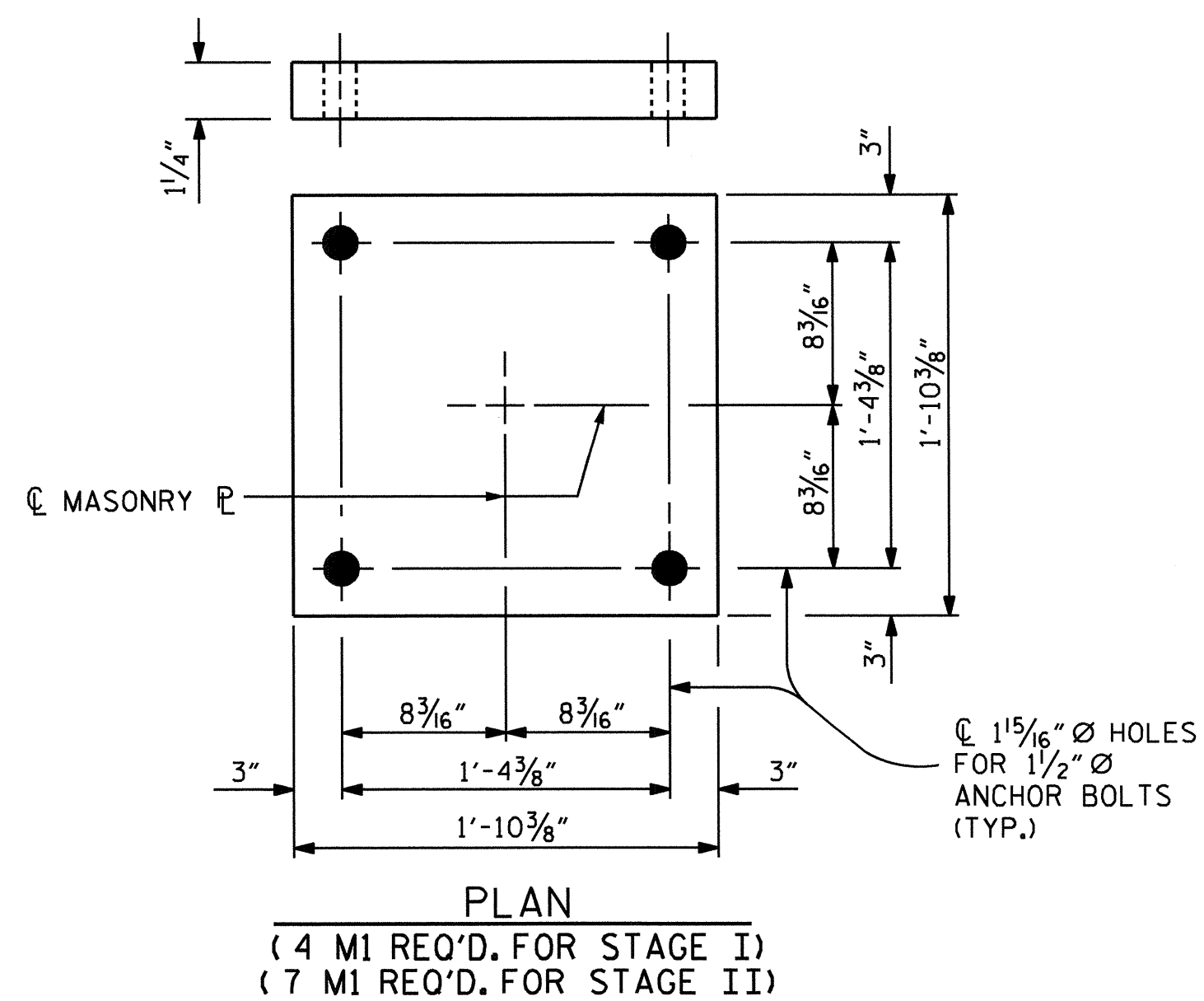
** NOTE:
DIMENSIONS "W" AND "T" ARE TO BE DETERMINED BY THE MANUFACTURER.



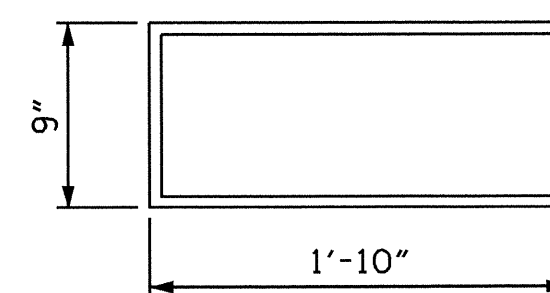
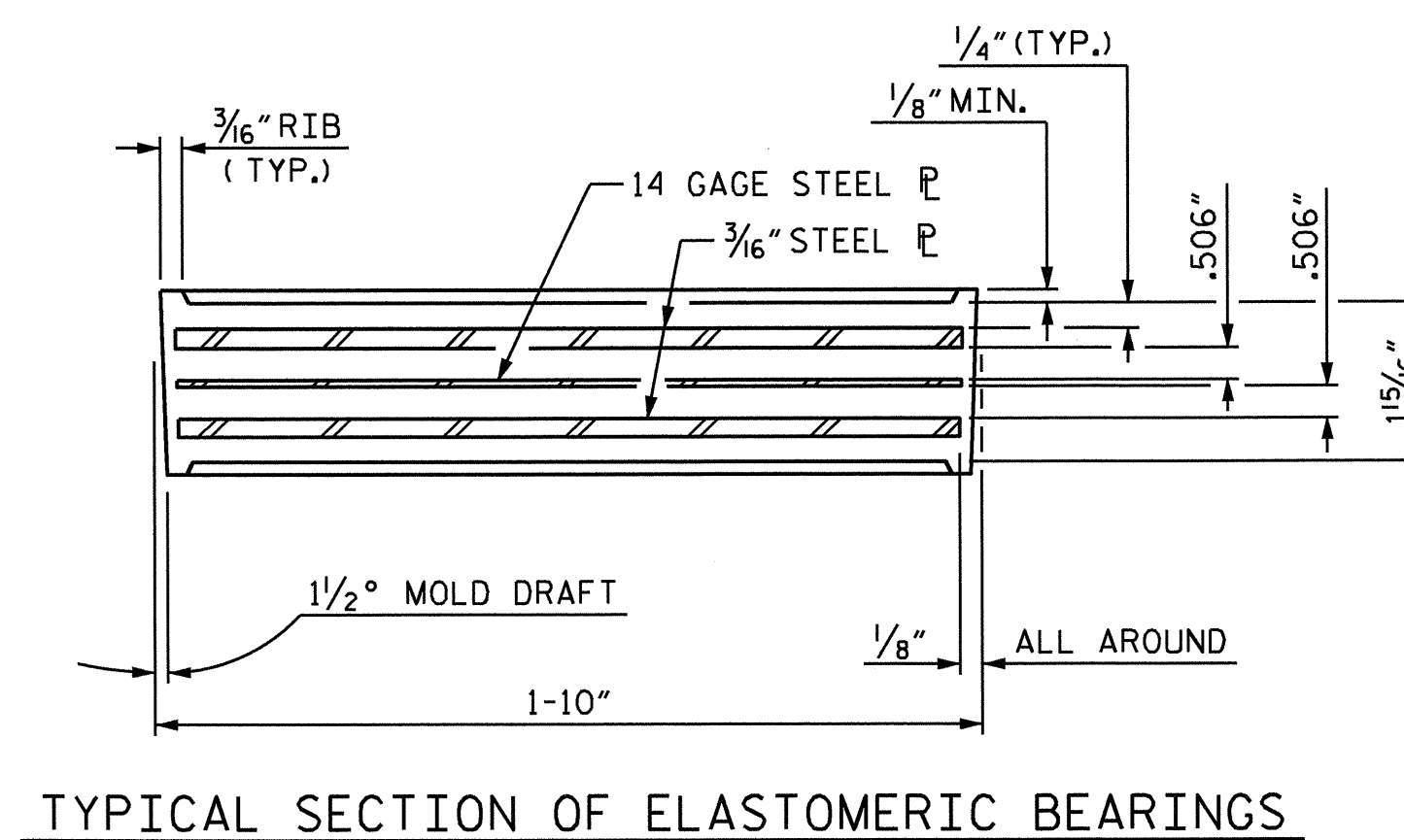
PB1, FIXED @ BENT 1
(4 REQ'D. FOR STAGE I)
(7 REQ'D. FOR STAGE II)



POT BEARING DETAILS



MASONRY PLATE DETAILS



E1 (22 REQ'D)

PLAN VIEW

ELASTOMERIC BEARING PAD AT END BENTS

NOTES

FOR POT BEARINGS, SEE SPECIAL PROVISIONS.

AT ALL POINTS OF SUPPORT IN SPANS A & B, NUTS FOR ANCHOR BOLTS SHALL BE TIGHTENED FINGER TIGHT AND GIVEN AN ADDITIONAL 1/4 TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

WHEN WELDING THE SOLE PLATE TO THE GIRDER, USE TEMPERATURE INDICATING WAX PENS, OR OTHER SUITABLE MEANS, TO ENSURE THAT THE TEMPERATURE OF THE BEARING DOES NOT EXCEED 250°F. TEMPERATURES ABOVE THIS MAY DAMAGE THE TFE OR ELASTOMER.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

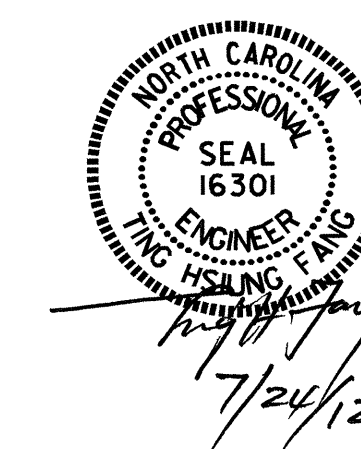
FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

THE CONTRACTOR MAY SUBSTITUTE DISC BEARINGS FOR THE POT BEARINGS SHOWN. FOR OPTIONAL DISC BEARINGS, SEE SPECIAL PROVISIONS.

TABLE FOR UNFACTORED LOADS AND MOVEMENT

POT BEARING	LOCATION	VERTICAL LOAD (KIPS)			LATERAL LOAD (KIPS)	TOTAL MOVEMENT (INCHES)	
		DC	DW	TOTAL			
PB1 (FIXED)	BENT 1	177	23	187	387	74	0

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MOORE COUNTY
STATION: 21+37.80 -Y6-



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
POT BEARING AND
ELASTOMERIC BEARING
DETAILS
(STEEL SUPERSTRUCTURE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			SUBS
2			4			44

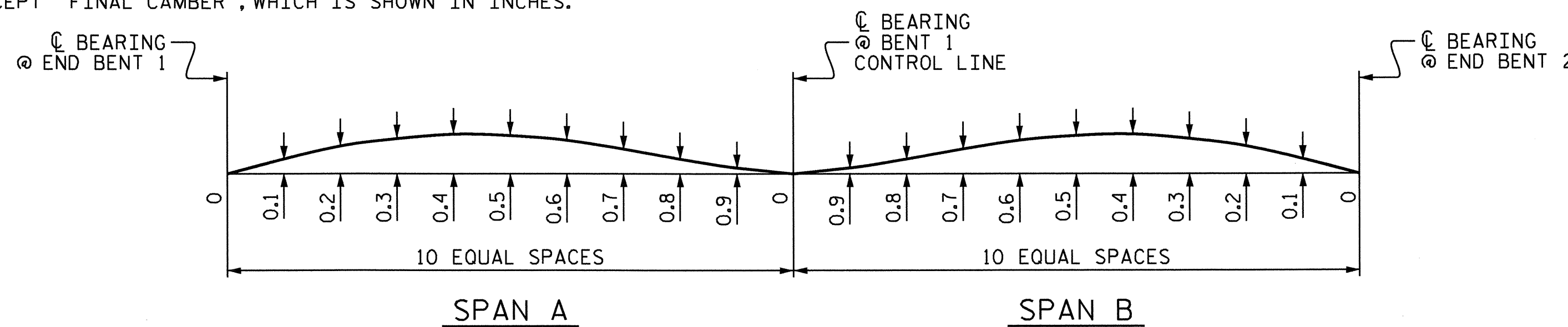
ASSEMBLED BY : E.C. LOCKLEAR DATE : 4-14-10
CHECKED BY : O.T. NGUYEN DATE : 8-12-10
DRAWN BY : EEM 10/95 REV. 7/10/01 LES/RDR
CHECKED BY : PEK 10/95 REV. 5/1/03 RWW/JTE
REV. 5/1/06R TLA/GM

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

	SPAN A											SPAN B										
	GIRDER 1											GIRDER 1										
	TENTH POINTS	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	0	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
DEFLECTION DUE TO WEIGHT OF GIRDER ↓	0	0.009	0.017	0.023	0.025	0.024	0.021	0.015	0.009	0.004	0	0	-0.001	0.000	0.002	0.004	0.006	0.007	0.007	0.005	0.003	0
DEFLECTION DUE TO WEIGHT OF SLAB * ↓	0	0.043	0.079	0.103	0.114	0.111	0.095	0.070	0.042	0.017	0	0	-0.004	0.000	0.009	0.020	0.029	0.034	0.033	0.027	0.015	0
DEFLECTION DUE TO WEIGHT OF CLASSIC RAIL & SW ↓	0	0.014	0.026	0.035	0.038	0.037	0.032	0.024	0.014	0.006	0	0	-0.001	0.001	0.004	0.008	0.011	0.012	0.012	0.009	0.005	0
TOTAL DEAD LOAD DEFLECTION ↓	0	0.066	0.122	0.161	0.177	0.172	0.148	0.109	0.065	0.027	0	0	-0.006	0.001	0.015	0.032	0.046	0.053	0.052	0.041	0.023	0
VERTICAL CURVE ORDINATE ↑	0	0.041	0.063	0.083	0.100	0.117	0.135	0.140	0.119	0.073	0	0	0.086	0.153	0.201	0.230	0.239	0.230	0.201	0.153	0.086	0
REQUIRED CAMBER ↑	0	1 ⁵ / ₁₆ "	2 ¹ / ₄ "	2 ⁵ / ₁₆ "	3 ⁵ / ₁₆ "	3 ⁷ / ₁₆ "	3 ³ / ₈ "	3"	2 ³ / ₁₆ "	1 ³ / ₁₆ "	0	0	0 ¹⁵ / ₁₆ "	1 ⁷ / ₈ "	2 ³ / ₁₆ "	3 ¹ / ₈ "	3 ¹ / ₁₆ "	3 ³ / ₈ "	3 ¹ / ₁₆ "	2 ⁵ / ₁₆ "	1 ⁵ / ₁₆ "	0
	GIRDER 2											GIRDER 2										
DEFLECTION DUE TO WEIGHT OF GIRDER ↓	0	0.009	0.017	0.023	0.025	0.024	0.021	0.015	0.009	0.004	0	0	-0.001	0.000	0.002	0.004	0.006	0.007	0.007	0.005	0.003	0
DEFLECTION DUE TO WEIGHT OF SLAB * ↓	0	0.043	0.079	0.103	0.114	0.111	0.095	0.070	0.042	0.017	0	0	-0.004	0.000	0.009	0.020	0.029	0.034	0.033	0.027	0.015	0
DEFLECTION DUE TO WEIGHT OF CLASSIC RAIL & SW ↓	0	0.007	0.013	0.017	0.018	0.018	0.015	0.011	0.007	0.007	0	0	-0.001	0.000	0.002	0.004	0.005	0.006	0.006	0.004	0.003	0
TOTAL DEAD LOAD DEFLECTION ↓	0	0.059	0.109	0.143	0.157	0.153	0.131	0.096	0.058	0.024	0	0	-0.006	0.000	0.013	0.028	0.040	0.047	0.046	0.036	0.021	0
VERTICAL CURVE ORDINATE ↑	0	0.040	0.065	0.084	0.103	0.122	0.141	0.145	0.123	0.074	0	0	0.086	0.153	0.201	0.230	0.239	0.230	0.201	0.153	0.086	0
REQUIRED CAMBER ↑	0	1 ³ / ₁₆ "	2 ¹ / ₁₆ "	2 ³ / ₄ "	3 ¹ / ₈ "	3 ⁵ / ₁₆ "	3 ¹ / ₄ "	2 ⁷ / ₈ "	2 ³ / ₁₆ "	1 ³ / ₁₆ "	0	0	0 ¹⁵ / ₁₆ "	1 ³ / ₁₆ "	2 ⁵ / ₁₆ "	3 ¹ / ₈ "	3 ⁵ / ₁₆ "	3 ⁵ / ₁₆ "	2 ⁵ / ₁₆ "	2 ¹ / ₄ "	1 ⁵ / ₁₆ "	0
	GIRDER 3											GIRDER 3										
DEFLECTION DUE TO WEIGHT OF GIRDER ↓	0	0.009	0.017	0.023	0.025	0.024	0.021	0.015	0.009	0.004	0	0	-0.001	0.000	0.002	0.004	0.006	0.007	0.007	0.005	0.003	0
DEFLECTION DUE TO WEIGHT OF SLAB * ↓	0	0.043	0.079	0.103	0.114	0.111	0.095	0.070	0.042	0.017	0	0	-0.004	0.000	0.009	0.020	0.029	0.034	0.033	0.027	0.015	0
DEFLECTION DUE TO WEIGHT OF CLASSIC RAIL & SW ↓	0	0.002	0.004	0.006	0.006	0.006	0.005	0.004	0.002	0.001	0	0	0.000	0.000	0.001	0.001	0.002	0.002	0.002	0.002	0.001	0
TOTAL DEAD LOAD DEFLECTION ↓	0	0.054	0.100	0.132	0.145	0.141	0.121	0.089	0.053	0.022	0	0	-0.005	0.000	0.012	0.025	0.037	0.043	0.042	0.034	0.019	0
VERTICAL CURVE ORDINATE ↑	0	0.040	0.065	0.086	0.107	0.128	0.148	0.150	0.126	0.076	0	0	0.086	0.153	0.201	0.230	0.239	0.230	0.201	0.153	0.086	0
REQUIRED CAMBER ↑	0	1 ¹ / ₈ "	2"	2 ⁵ / ₈ "	3"	3 ¹ / ₄ "	3 ¹ / ₄ "	2 ⁷ / ₈ "	2 ¹ / ₈ "	1 ³ / ₁₆ "	0	0	1"	1 ³ / ₁₆ "	2 ⁵ / ₁₆ "	3 ¹ / ₁₆ "	3 ⁵ / ₁₆ "	3 ¹ / ₄ "	2 ⁵ / ₁₆ "	2 ¹ / ₄ "	1 ¹ / ₄ "	0
	GIRDER 4											GIRDER 4										
DEFLECTION DUE TO WEIGHT OF GIRDER ↓	0	0.009	0.017	0.023	0.025	0.024	0.021	0.015	0.009	0.004	0	0	-0.001	0.000	0.002	0.004	0.006	0.007	0.007	0.005	0.003	0
DEFLECTION DUE TO WEIGHT OF SLAB * ↓	0	0.043	0.079	0.103	0.114	0.111	0.095	0.070	0.042	0.017	0	0	-0.004	0.000	0.009	0.020	0.029	0.034	0.033	0.027	0.015	0
DEFLECTION DUE TO WEIGHT OF CLASSIC RAIL & SW ↓	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0
TOTAL DEAD LOAD DEFLECTION ↓	0	0.052	0.096	0.126	0.139	0.135	0.116	0.085	0.051	0.021	0	0	-0.005	0.000	0.011	0.024	0.035	0.041	0.040	0.032	0.018	0
VERTICAL CURVE ORDINATE ↑	0	0.040	0.065	0.088	0.111	0.133	0.154	0.155	0.129	0.078	0	0	0.086	0.153	0.201	0.230	0.239	0.230	0.201	0.153	0.086	0
REQUIRED CAMBER ↑	0	1 ¹ / ₈ "	1 ⁵ / ₁₆ "	2 ⁵ / ₁₆ "	3"	3 ⁵ / ₁₆ "	3 ¹ / ₄ "	2 ⁷ / ₈ "	2 ³ / ₁₆ "	1 ³ / ₁₆ "	0	0	1"	1 ³ / ₁₆ "	2 ⁵ / ₁₆ "	3 ¹ / ₁₆ "	3 ⁵ / ₁₆ "	3 ¹ / ₄ "	2 ⁵ / ₁₆ "	2 ¹ / ₄ "	1 ¹ / ₄ "	0
	GIRDER 5											GIRDER 5										
DEFLECTION DUE TO WEIGHT OF GIRDER ↓	0	0.009	0.017	0.023	0.025	0.024	0.021	0.015	0.009	0.004	0	0	-0.001	0.000	0.002	0.004	0.006	0.007	0.007	0.005	0.003	0
DEFLECTION DUE TO WEIGHT OF SLAB * ↓	0	0.043	0.079	0.103	0.114	0.111	0.095	0.070	0.042	0.017	0	0	-0.004	0.000	0.009	0.020	0.029	0.034	0.033	0.027	0.015	0
DEFLECTION DUE TO WEIGHT OF CLASSIC RAIL & SW ↓	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0
TOTAL DEAD LOAD DEFLECTION ↓	0	0.052	0.096	0.126	0.139	0.135	0.116	0.085	0.051	0.021	0	0	-0.005	0.000	0.011	0.024	0.035	0.041	0.040	0.032	0.018	0
VERTICAL CURVE ORDINATE ↑	0	0.040	0.065	0.090	0.114	0.138	0.160	0.159	0.132	0.079	0	0	0.086	0.153	0.201	0.230	0.239	0.230	0.201	0.153	0.086	0
REQUIRED CAMBER ↑	0	1 ¹ / ₈ "	1 ⁵ / ₁₆ "	2 ⁵ / ₁₆ "	3 ¹ / ₁₆ "	3 ¹ / ₄ "	3 ⁵ / ₁₆ "	2 ⁵ / ₁₆ "	2 ³ / ₁₆ "	1 ³ / ₁₆ "	0	0	1"	1 ³ / ₁₆ "	2 ⁵ / ₁₆ "	3 ¹ / ₁₆ "	3 ⁵ / ₁₆ "	3 ¹ / ₄ "	2 ⁵ / ₁₆ "	2 ¹ / ₄ "	1 ¹ / ₄ "	0

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE DEAD LOAD DEFLECTIONS AND REQUIRED CAMBERS SHOWN IN THE TABLE ARE BASED UPON LOADING FOR THE FINAL STAGE ONLY. THE DEFLECTIONS OF THE GIRDERS DURING STAGE I OR STAGE II CONSTRUCTION MIGHT BE DIFFERENT THAN THOSE SHOWN IN THE TABLE.

* INCLUDES SLAB, BUILDUPS, AND STAY-IN-PLACE FORMS.
ALL VALUES ARE SHOWN IN FEET, EXCEPT "FINAL CAMBER", WHICH IS SHOWN IN INCHES.



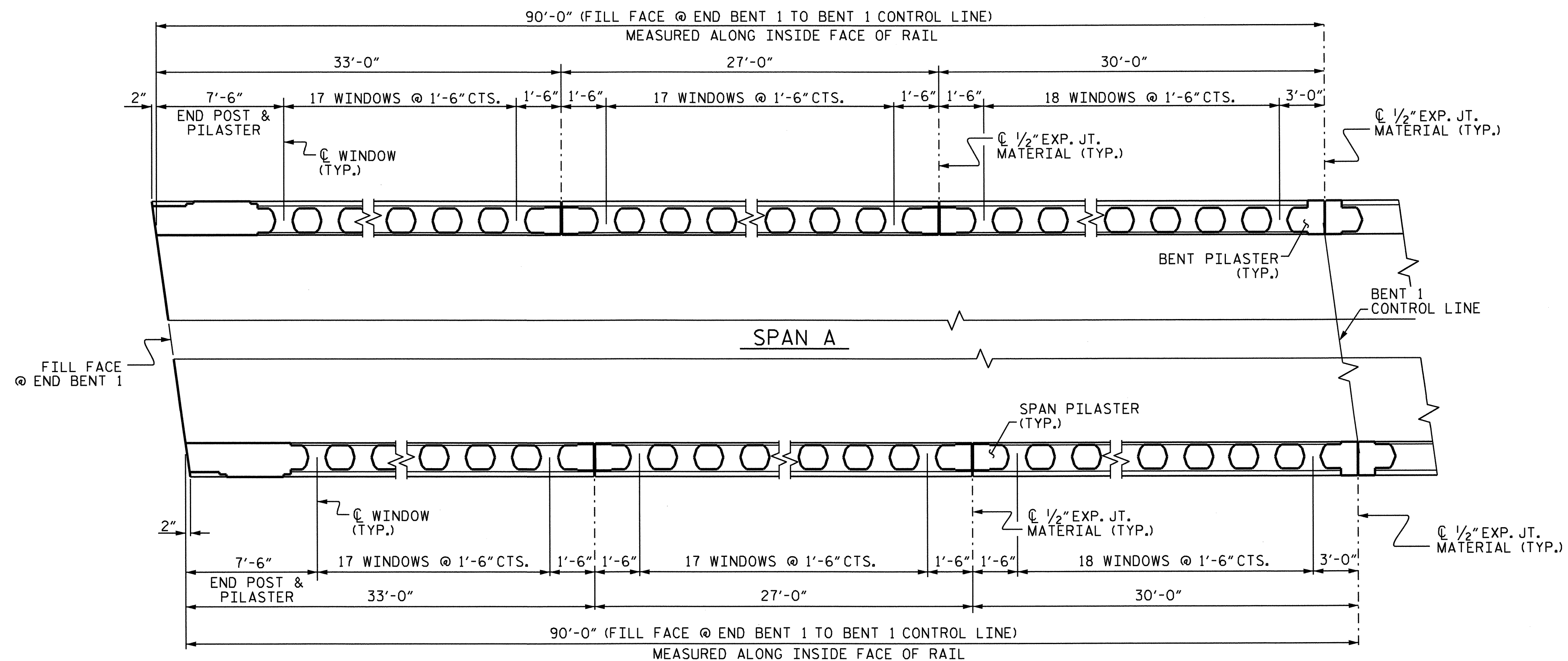
FOR CAMBER VALUES AT EACH GIRDER TENTH POINTS, SEE TABLE ABOVE.
SLOPE FOR ZERO CAMBER BASE LINE VARIES.

6/27/2012

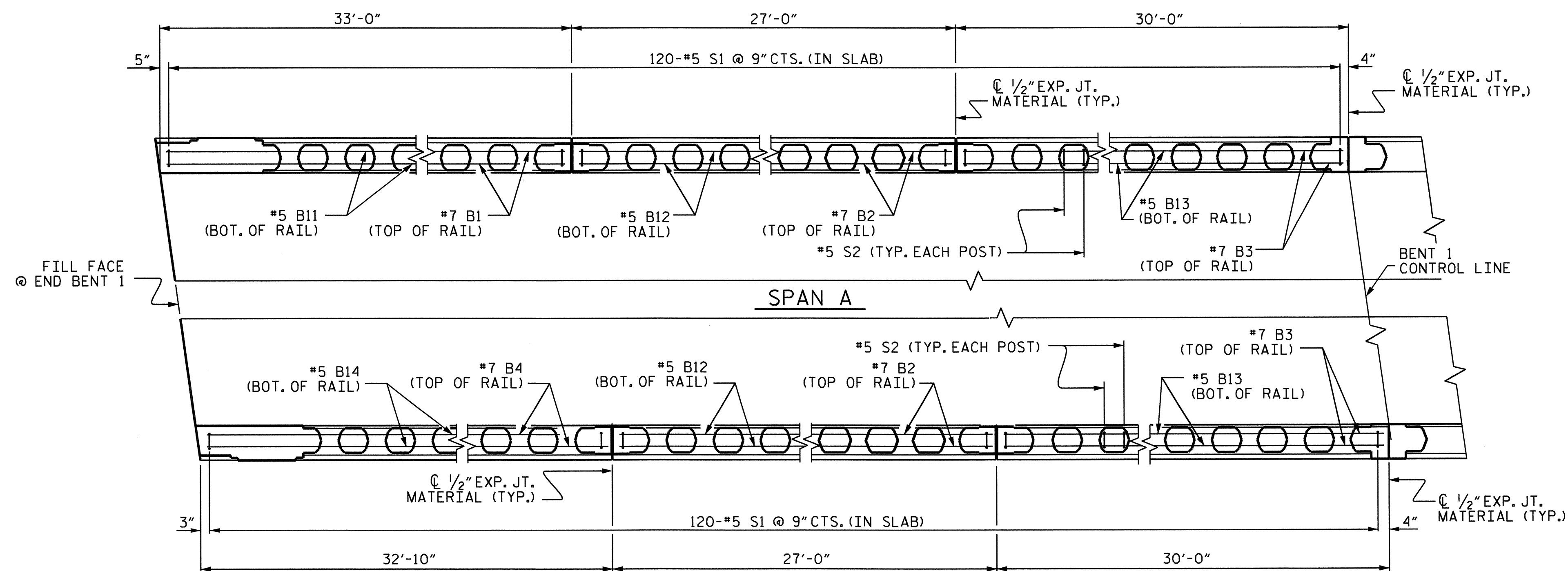
PROJECT NO. U-3324
MOORE COUNTY
 STATION: 21+37.80 -Y6-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH SUPERSTRUCTURE					
DEAD LOAD DEFLECTION TABLES					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-21
					TOTAL SHEETS 44

DRAWN BY : P. K. NEWTON DATE : 6/18/12
 CHECKED BY : E. I. OMILE DATE : 6/18/12

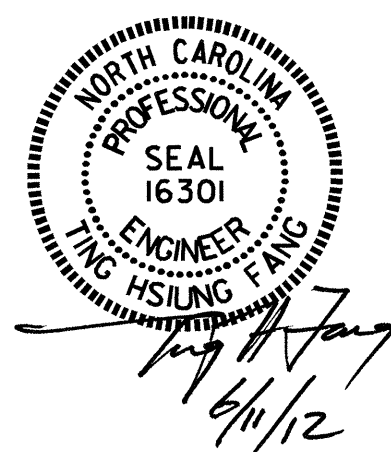


RAIL POST SPACING



REINFORCING STEEL PLACEMENT

FOR PLACEMENT OF S2 BARS IN PILASTERS & POSTS SEE SHEET 3 OF 5.

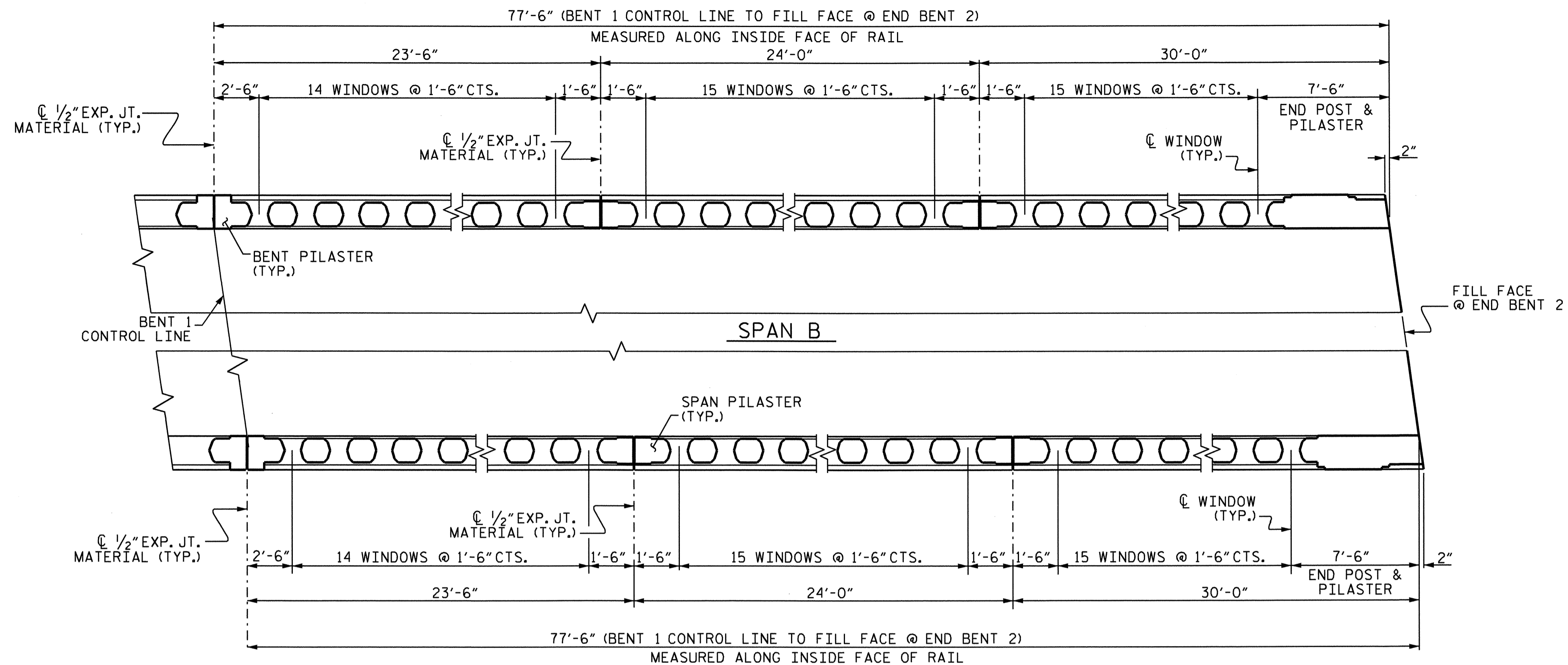


PROJECT NO. U-3324
MOORE COUNTY
 STATION: 21+37.80 -Y6-
 SHEET 1 OF 5

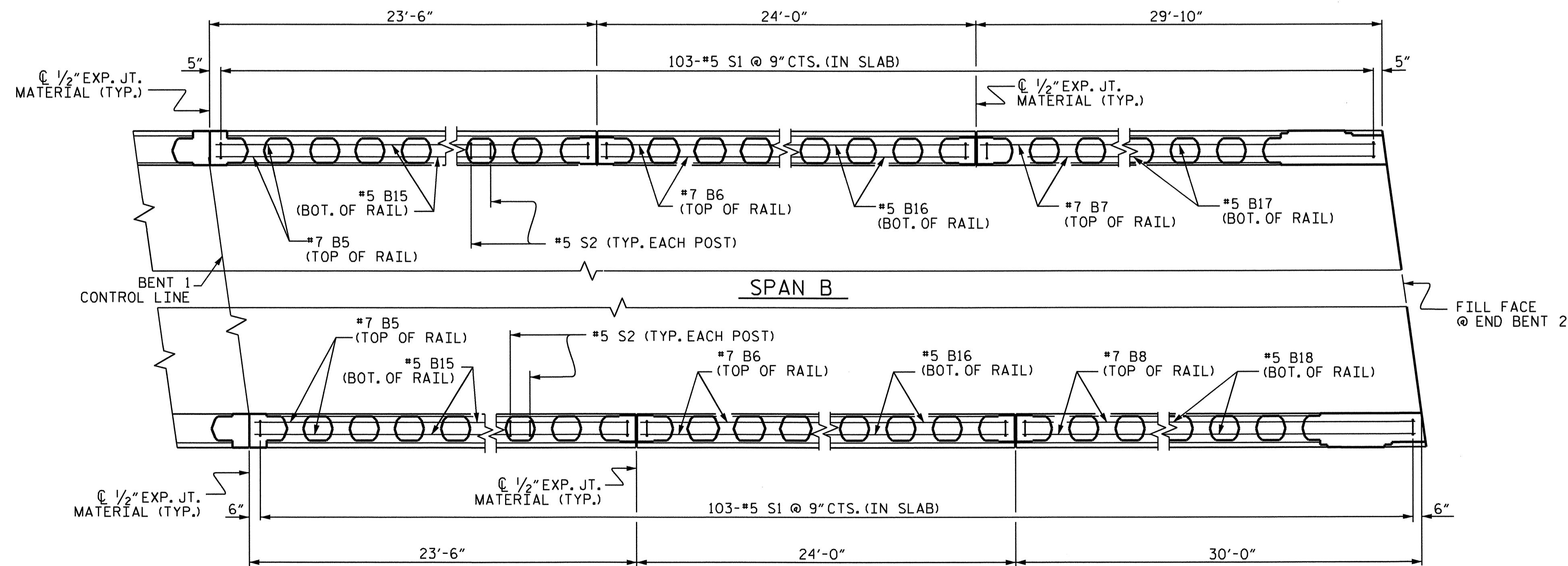
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 CLASSIC CONCRETE
 BRIDGE RAIL
 SPAN A

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-23
1			3			TOTAL SHEETS
2			4			44

DRAWN BY : T. H. FANG DATE : 5/1/12
 CHECKED BY : B. MATHEW DATE : 5/4/12



RAIL POST SPACING



REINFORCING STEEL PLACEMENT

FOR PLACEMENT OF
S2 BARS IN PILASTERS
& POSTS SEE SHEET 3 OF 5.



Ting Hsiang Fang
6/11/12

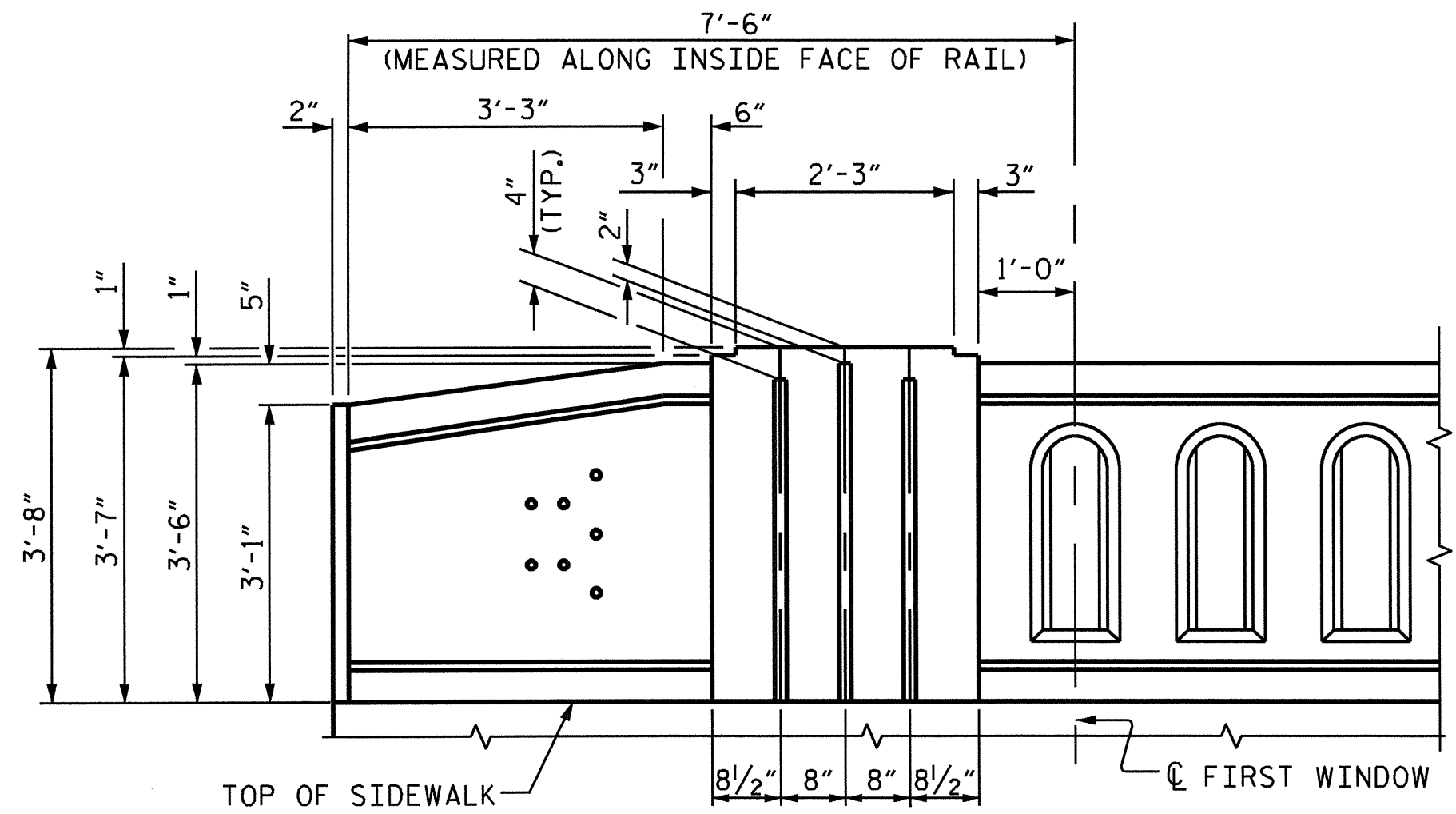
PROJECT NO. U-3324
MOORE COUNTY
STATION: 21+37.80 -Y6-

SHEET 2 OF 5

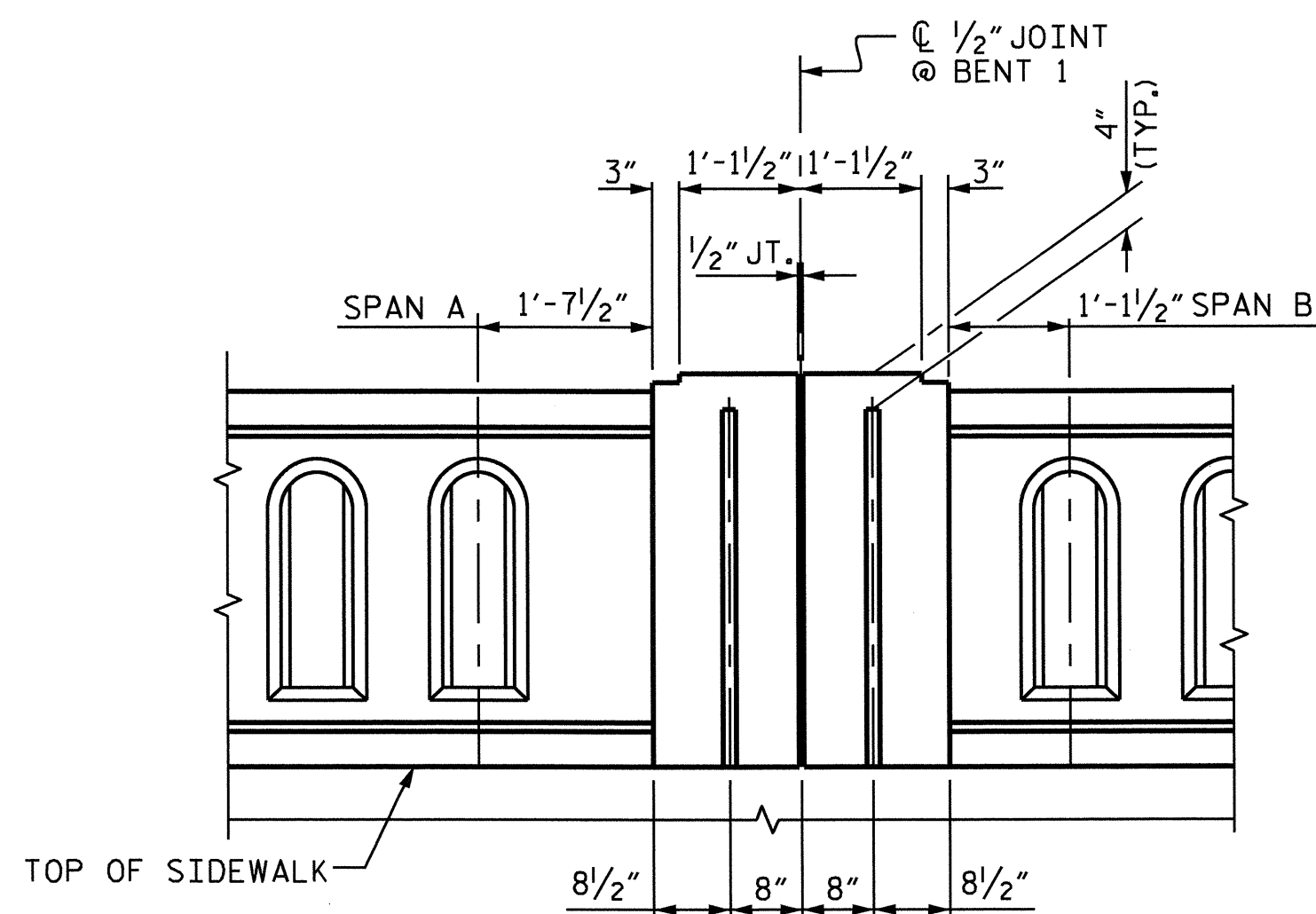
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
CLASSIC CONCRETE
BRIDGE RAIL
SPAN B

REVISIONS						SHEET NO. S-24
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 44
2			4			

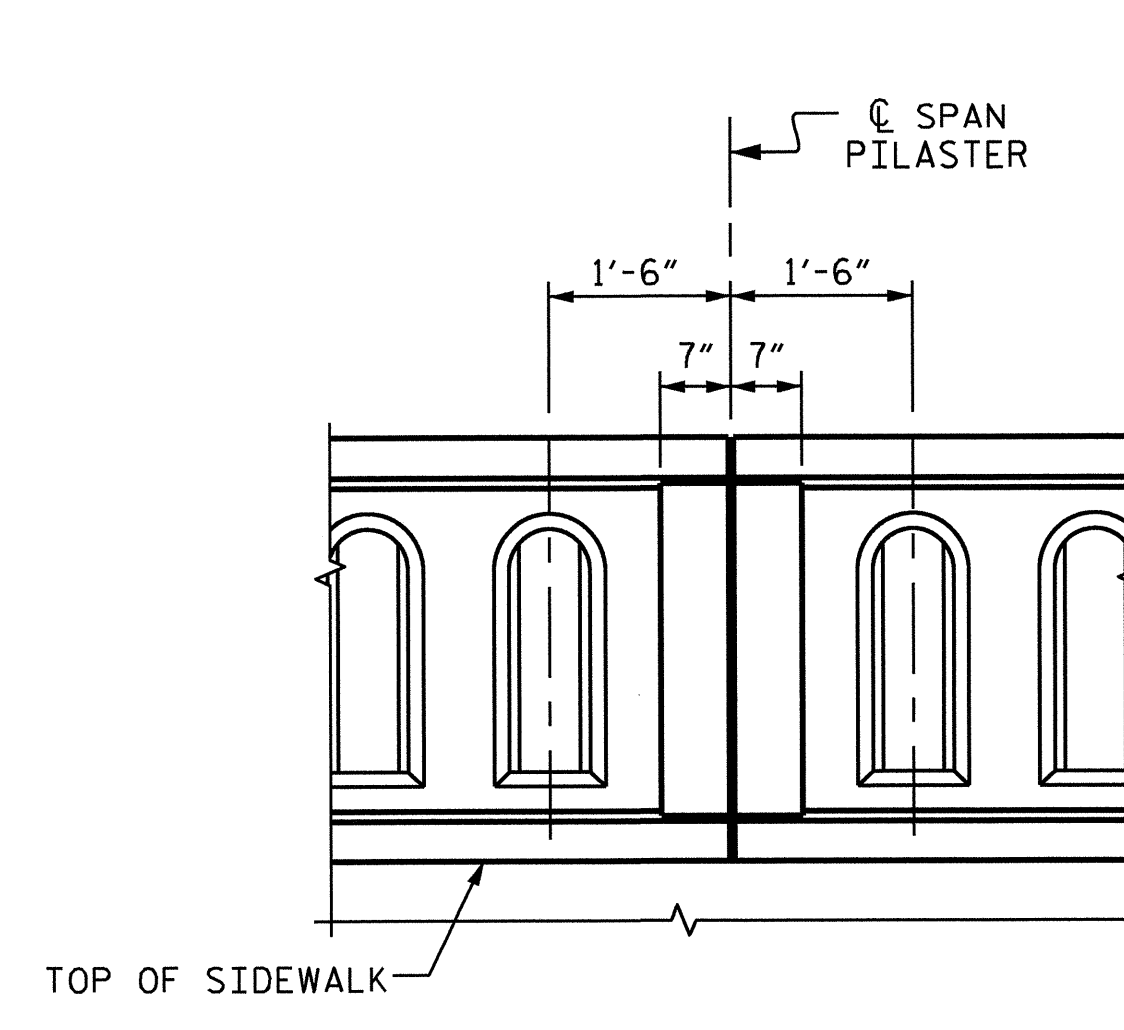
DRAWN BY : T. H. FANG DATE : 5/1/12
CHECKED BY : B. MATHEW DATE : 5/4/12



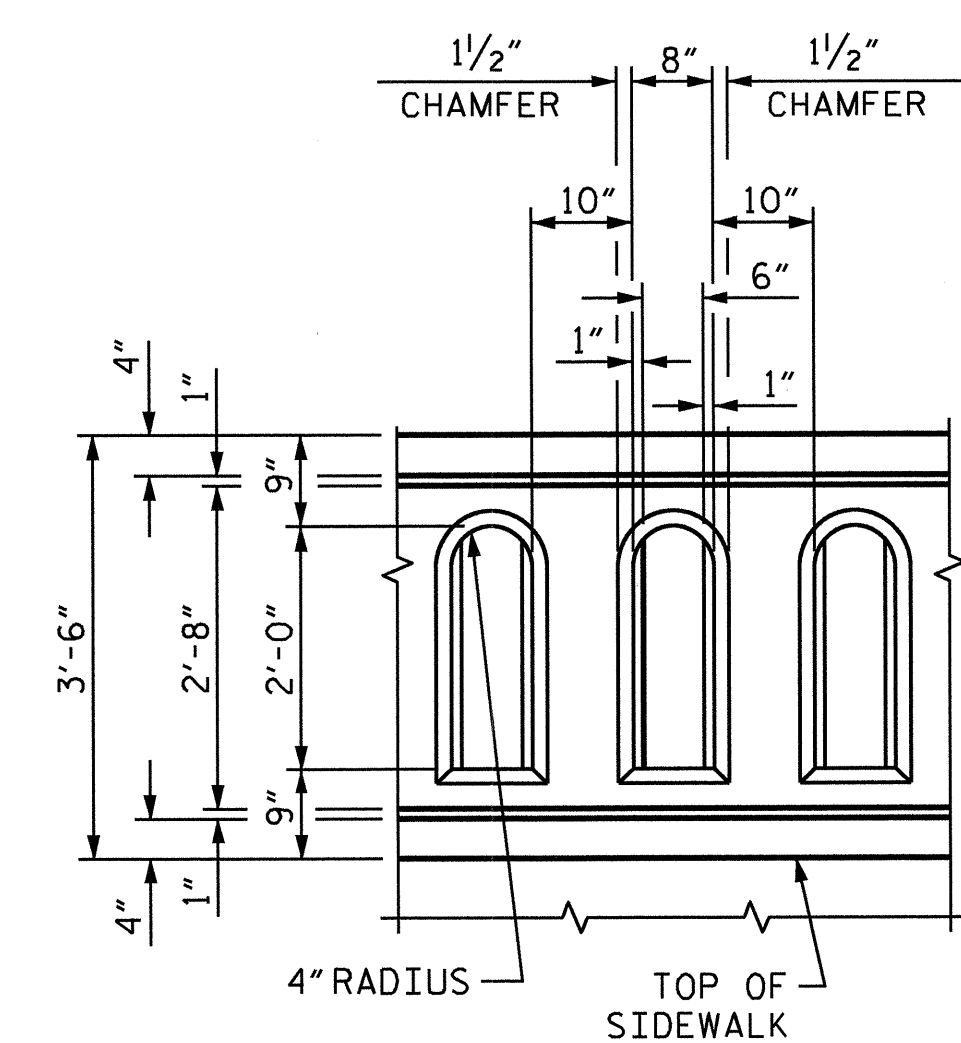
LEFT INTERIOR ELEVATION



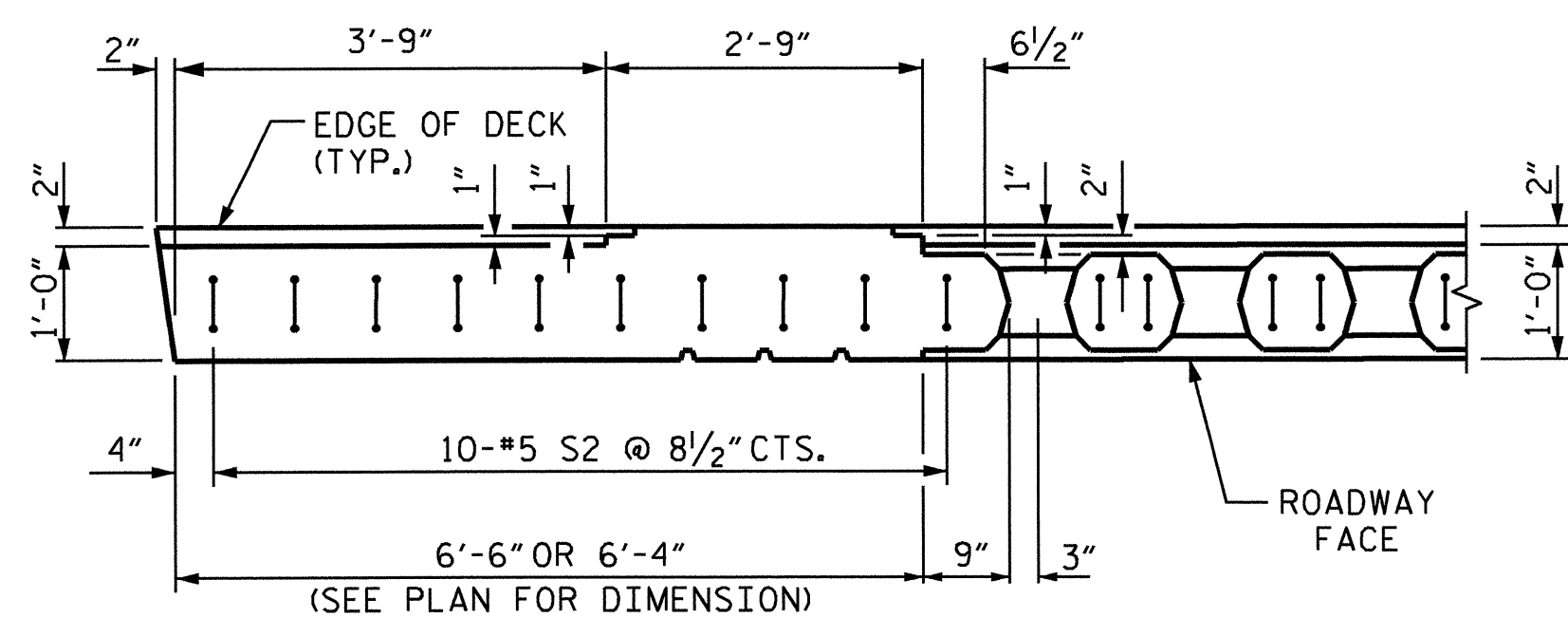
LEFT INTERIOR ELEVATION



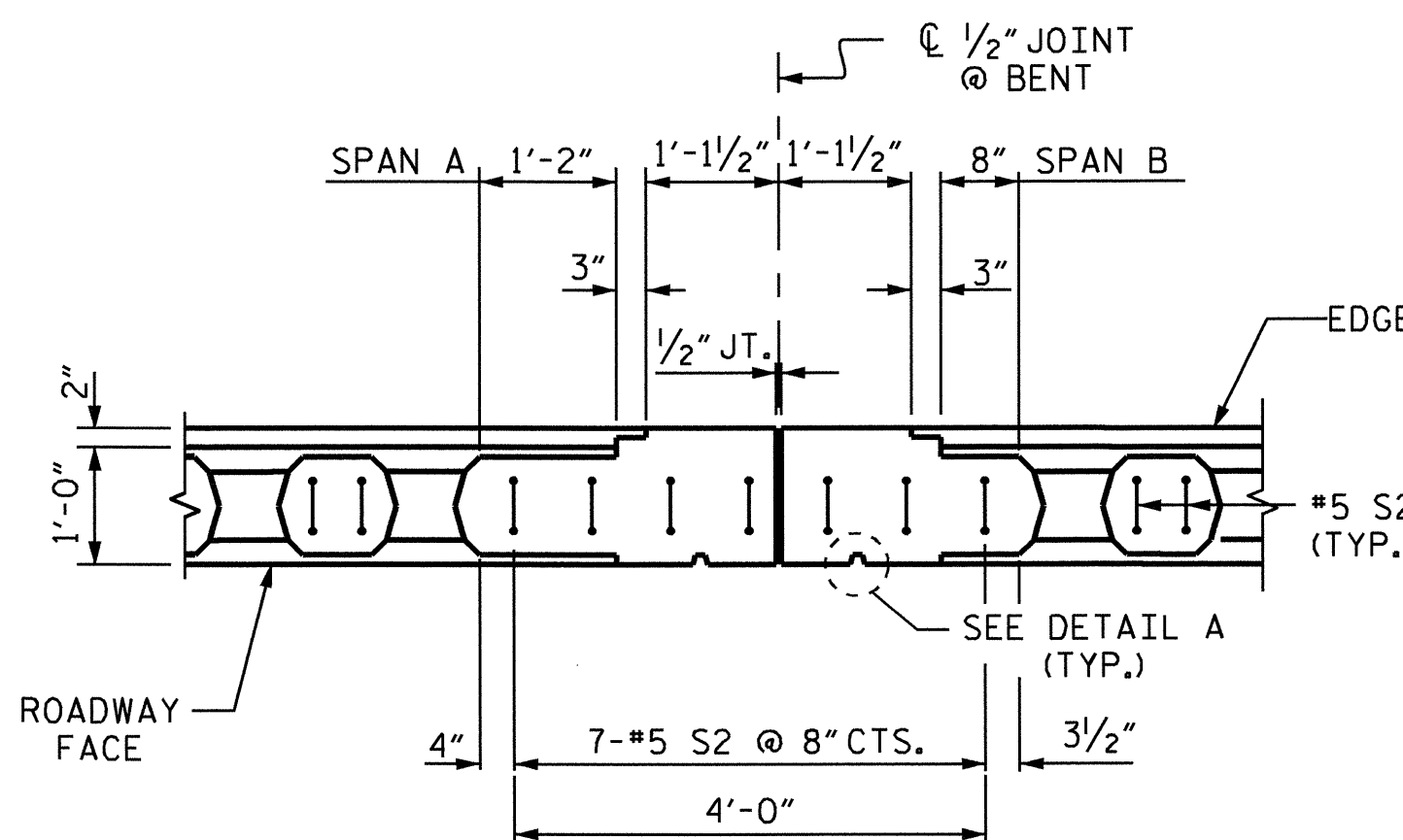
LEFT INTERIOR ELEVATION



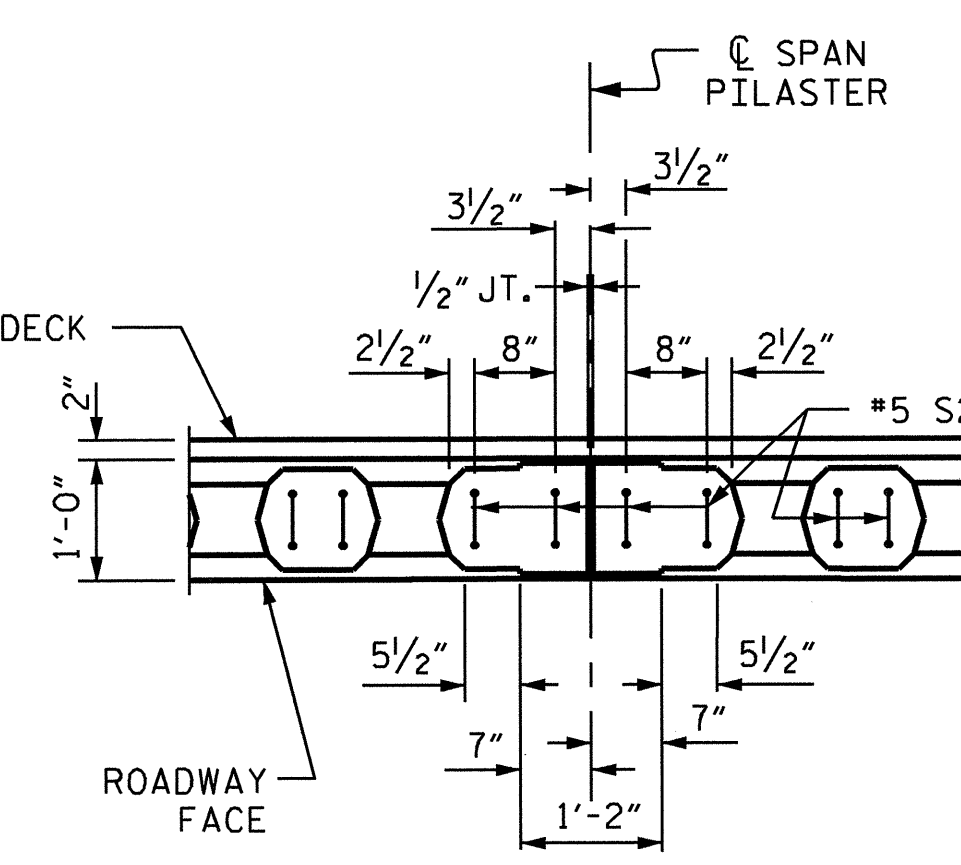
ELEVATION



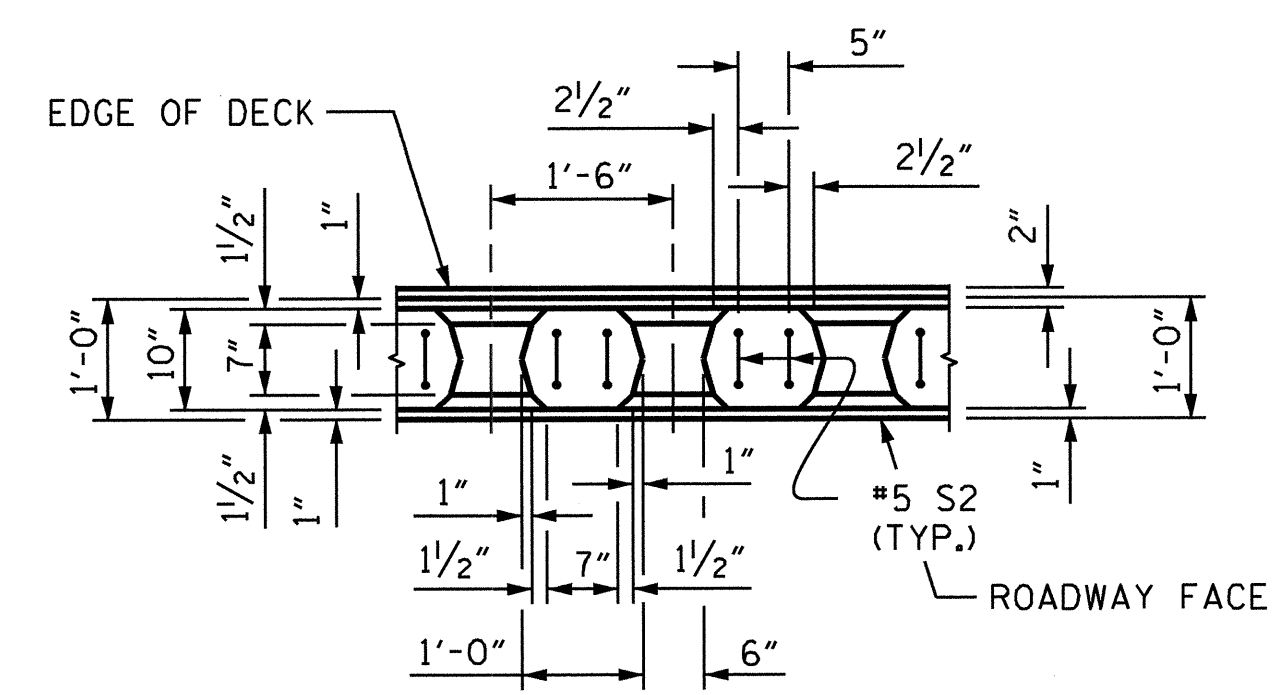
LEFT SIDE PLAN
(LEFT SHOWN, RIGHT SIMILIAR)



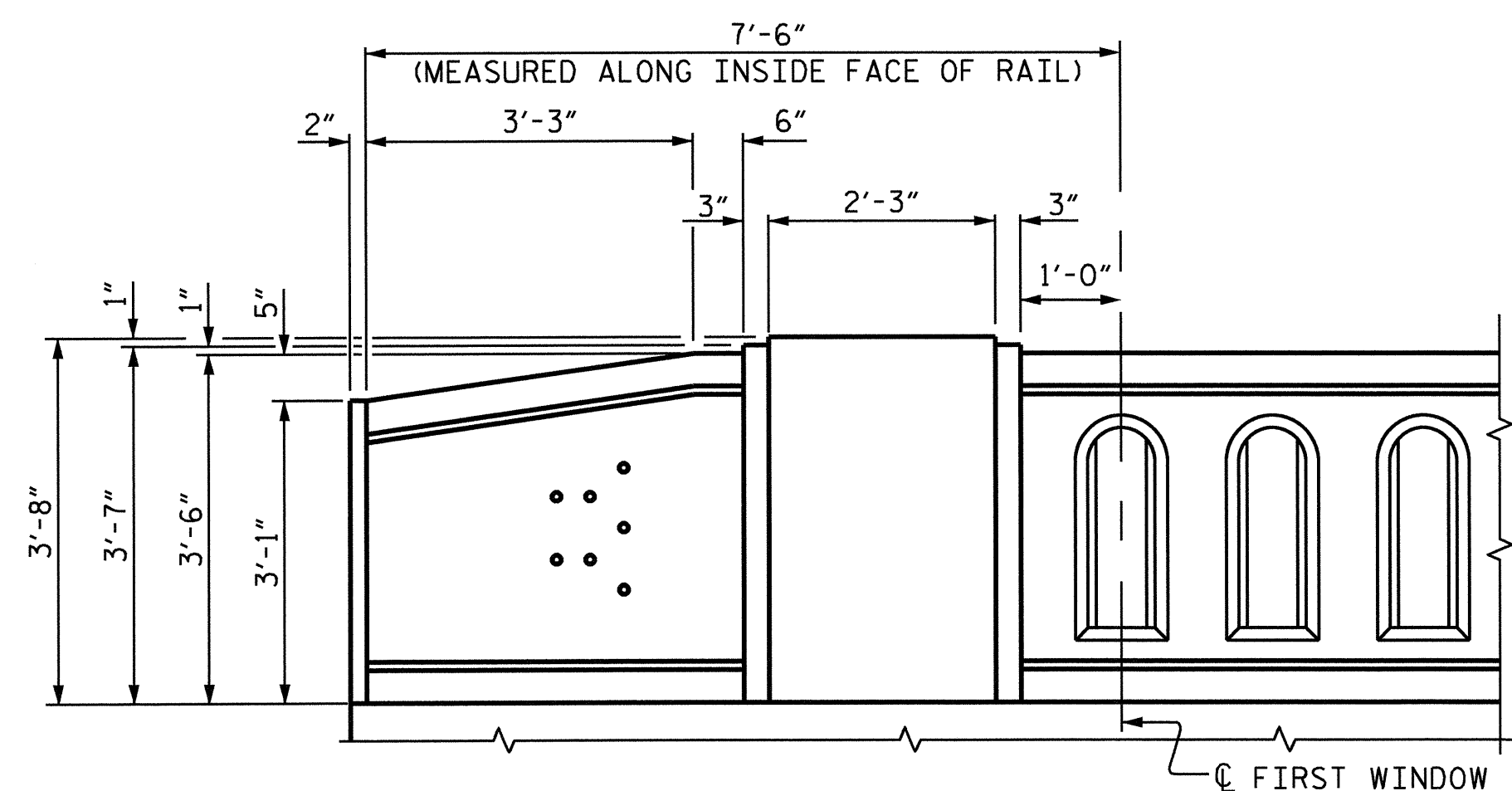
LEFT SIDE PLAN
(LEFT SHOWN, RIGHT SIMILIAR)



PLAN

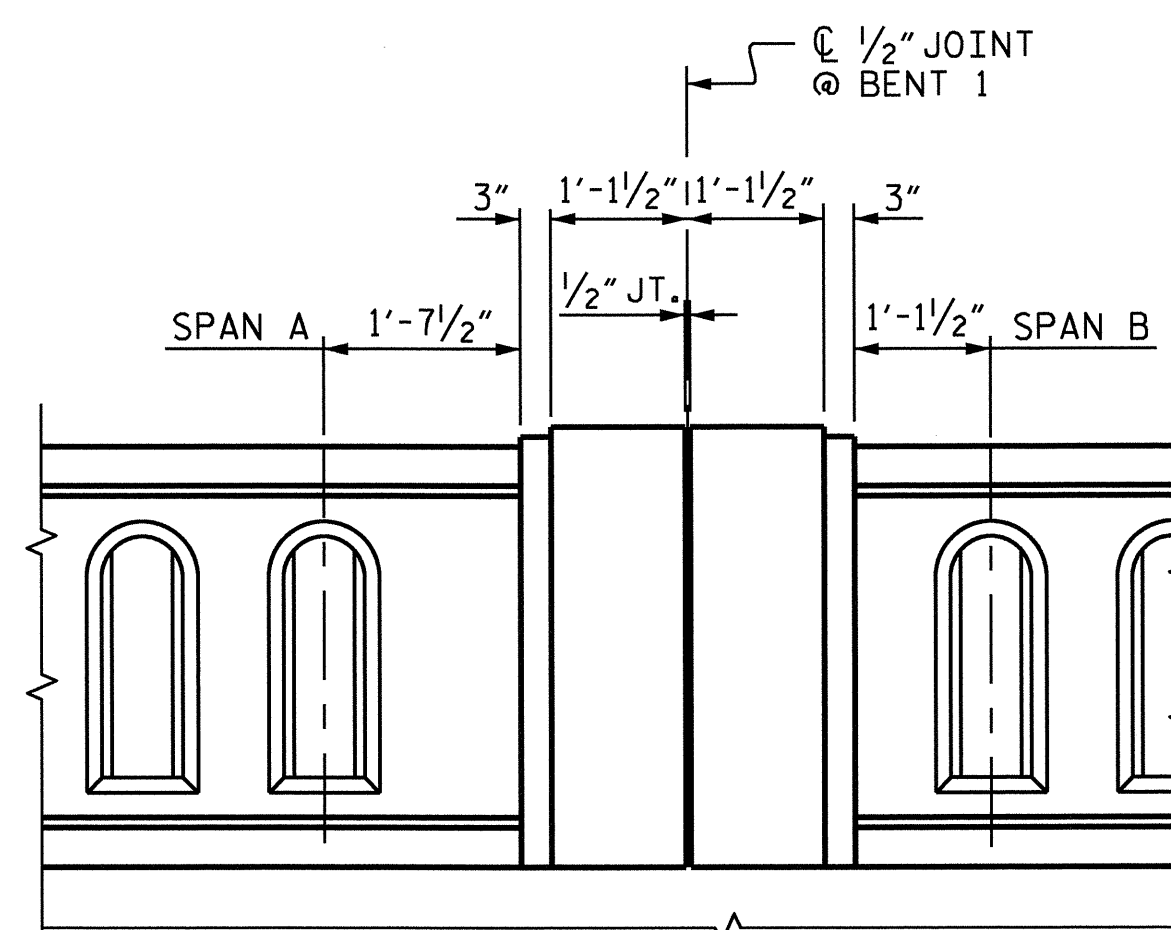


PLAN



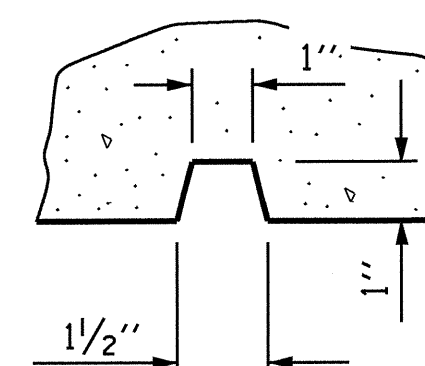
RIGHT EXTERIOR ELEVATION

END BENT PILASTER
END BENT 1 SHOWN, END BENT 2 SIM. BUT OPPOSITE



RIGHT EXTERIOR ELEVATION

BENT PILASTER

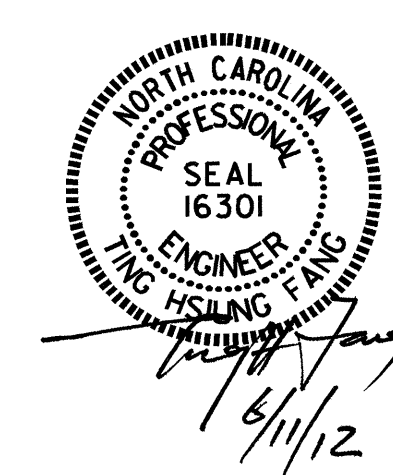


DETAIL A

PROJECT NO. U-3324
MOORE COUNTY
STATION: 21+37.80 -Y6-

SHEET 3 OF 5

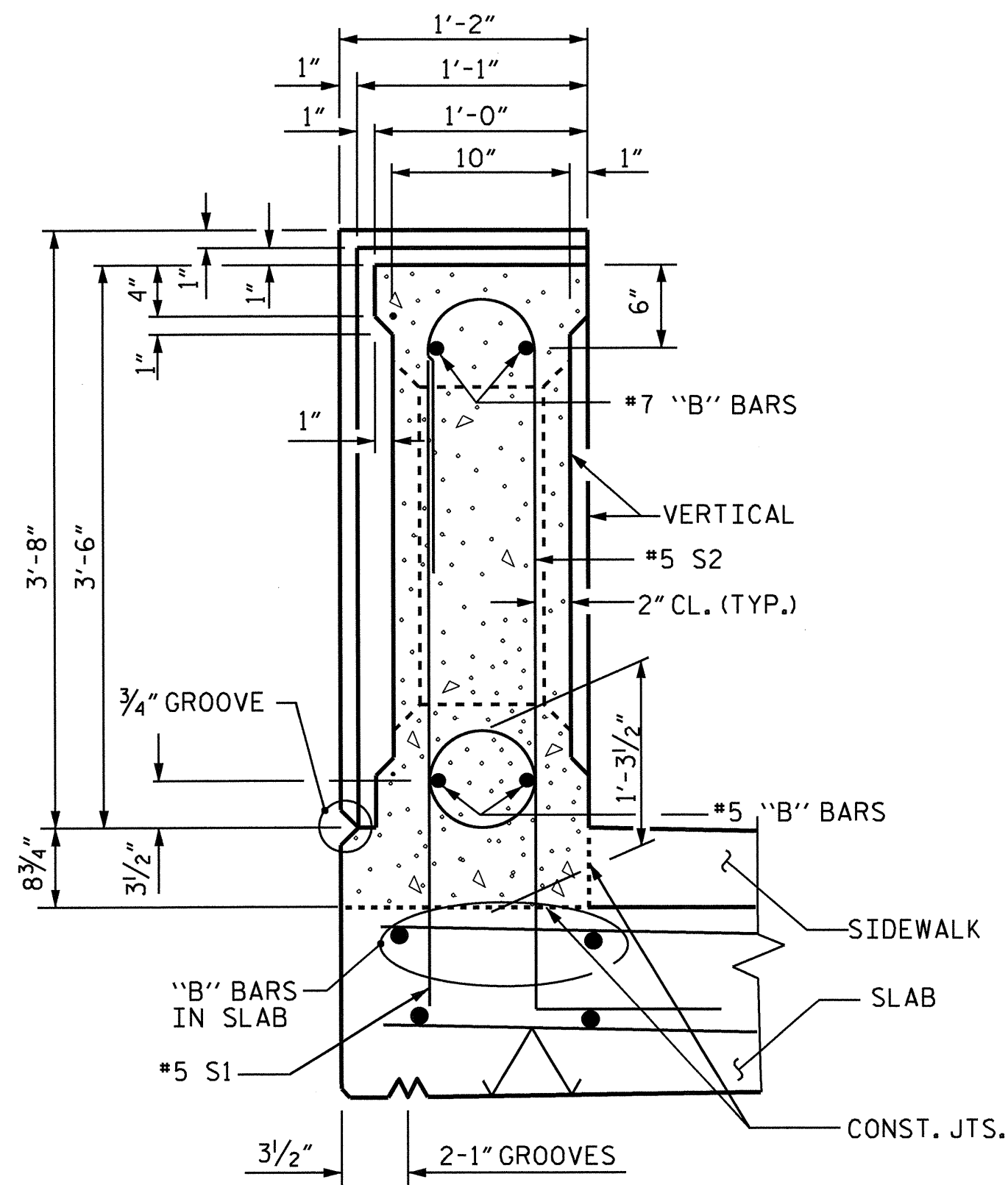
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
CLASSIC CONCRETE
BRIDGE RAIL
DETAILS



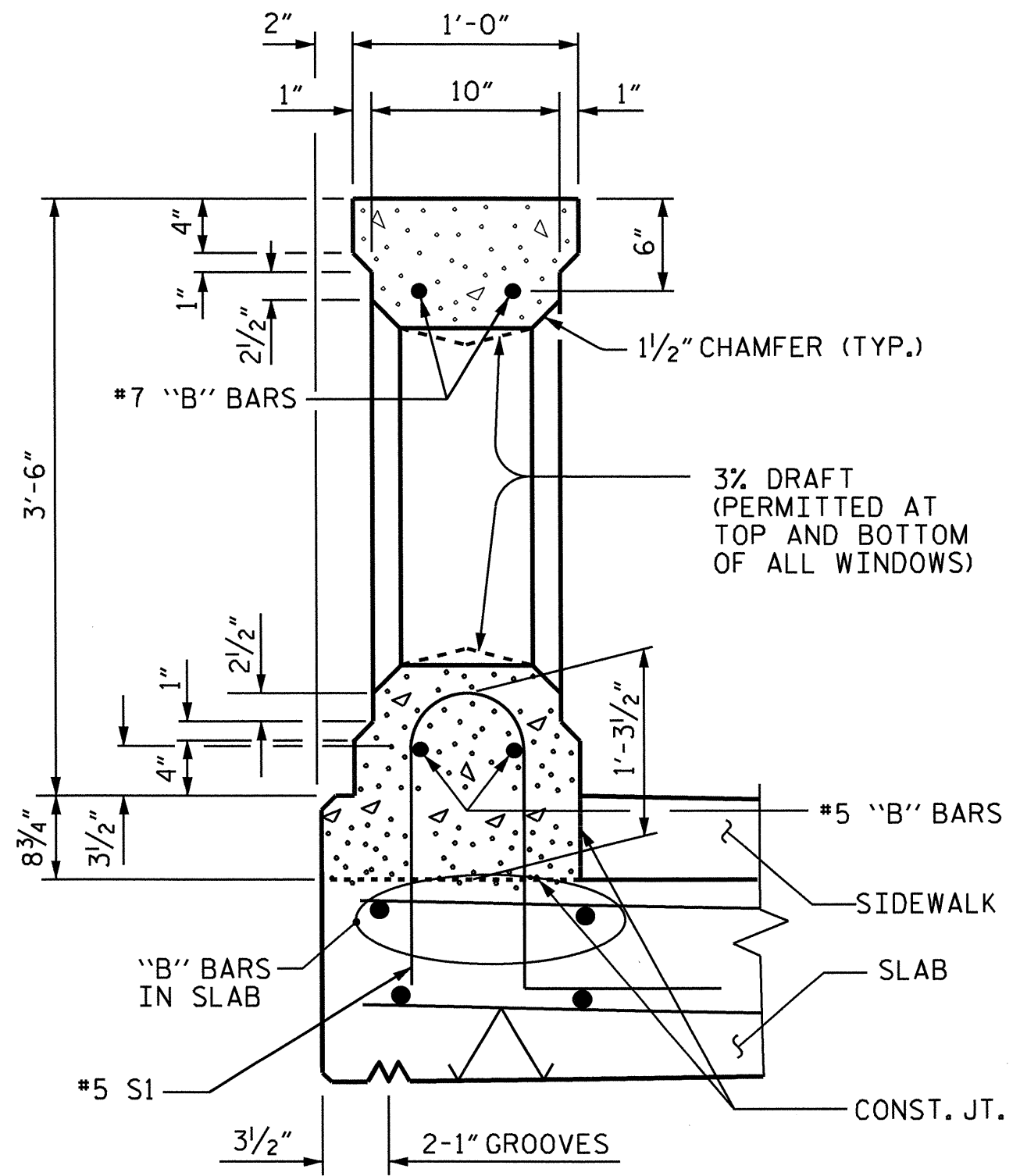
DRAWN BY : T. H. FANG DATE : 5/1/12
CHECKED BY : B. MATHEW DATE : 5/4/12

11-JUN-2012 14:43
Y:\Structures\Final Plans\U3324.sd.txb.r.dgn
rppafel

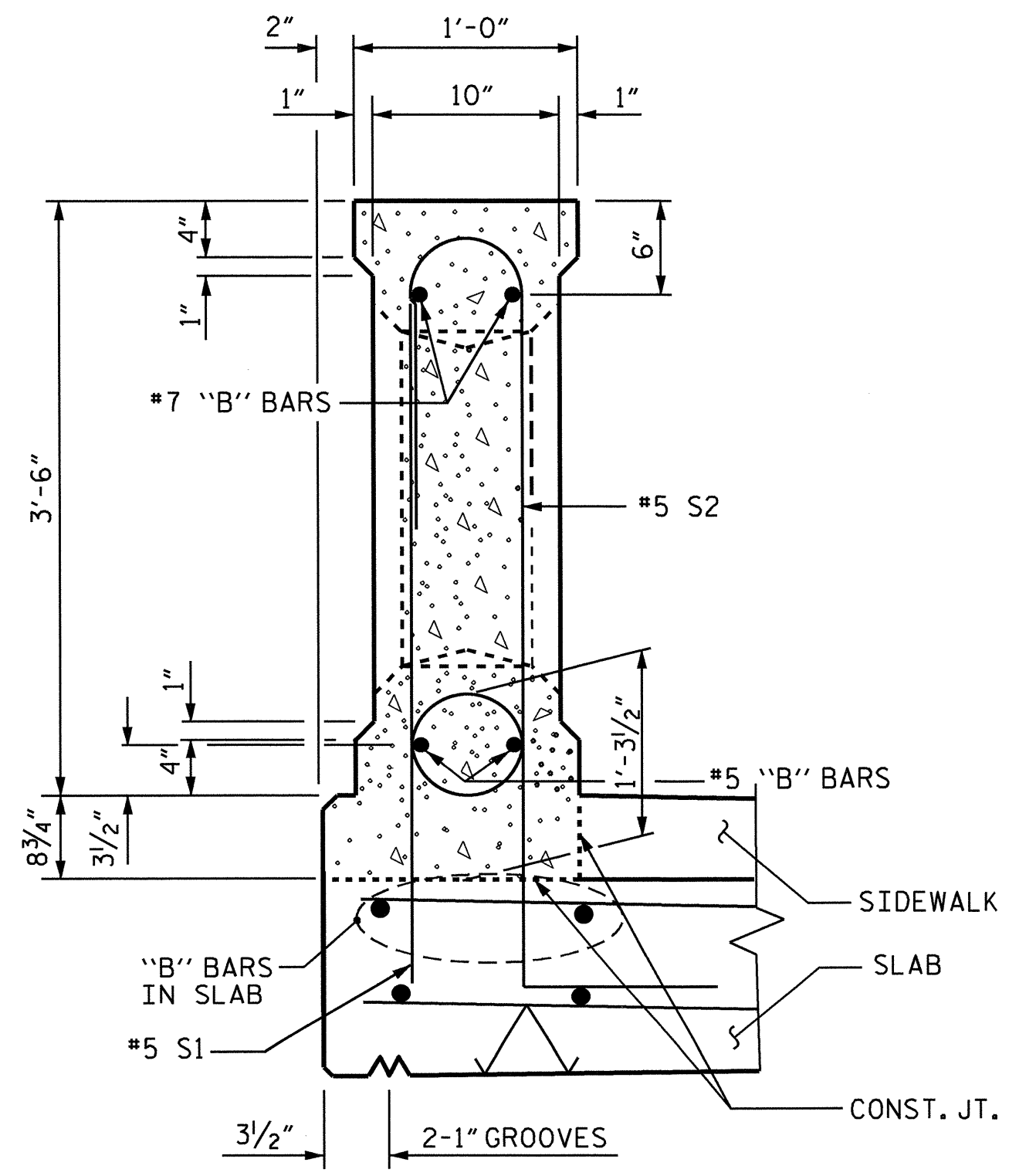
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-25
1			3			TOTAL SHEETS
2			4			44



SECTION THRU PILASTER
(AT END BENTS & BENT)



SECTION THRU WINDOW OF RAIL



SECTION THRU POST

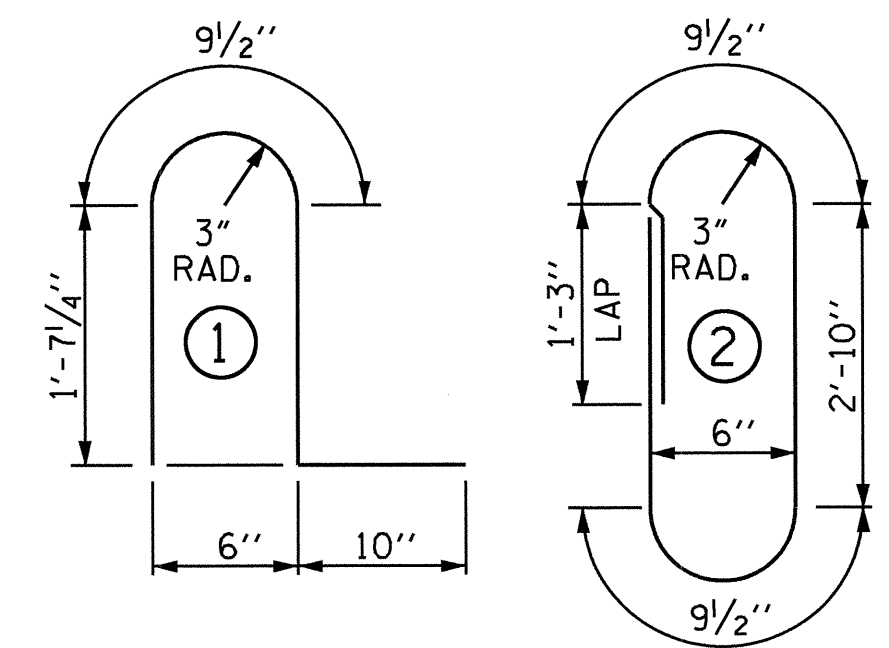
NOTES :

- CLASSIC CONCRETE BRIDGE RAIL IN A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE UNIT HAS BEEN CAST AND HAS REACHED MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI.
- ALL REINFORCING STEEL IN CLASSIC CONCRETE BRIDGE RAIL SHALL BE EPOXY COATED.
- PROVIDE A CLASS I SURFACE FINISH FOR ALL EXPOSED SURFACES.
- FOR CLASSIC CONCRETE BRIDGE RAIL, SEE SPECIAL PROVISIONS.

BILL OF MATERIAL

STAGE I						STAGE II					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*B1	2	#7	STR	32'-8"	134	*B2	2	#7	STR	26'-8"	109
*B2	2	#7	STR	26'-8"	109	*B3	2	#7	STR	29'-8"	121
*B3	2	#7	STR	29'-8"	121	*B4	2	#7	STR	32'-6"	133
*B5	2	#7	STR	23'-2"	95	*B5	2	#7	STR	23'-2"	95
*B6	2	#7	STR	23'-8"	97	*B6	2	#7	STR	23'-8"	97
*B7	2	#7	STR	29'-6"	121	*B8	2	#7	STR	29'-8"	121
*B11	2	#5	STR	32'-8"	68	*B12	2	#5	STR	26'-8"	56
*B12	2	#5	STR	26'-8"	56	*B13	2	#5	STR	29'-8"	62
*B13	2	#5	STR	29'-8"	62	*B14	2	#5	STR	32'-6"	68
*B15	2	#5	STR	23'-2"	48	*B15	2	#5	STR	23'-2"	48
*B16	2	#5	STR	23'-8"	49	*B16	2	#5	STR	23'-8"	49
*B17	2	#5	STR	29'-6"	62	*B18	2	#5	STR	29'-8"	62
*S1	223	#5	1	4'-10"	1124	*S1	223	#5	1	4'-10"	1124
*S2	223	#5	2	8'-6"	1977	*S2	223	#5	2	8'-6"	1977
* EPOXY COATED REINFORCING STEEL					4,122 LBS.	* EPOXY COATED REINFORCING STEEL					4,122 LBS.
CLASS AA CONCRETE					20.9 C.Y.	CLASS AA CONCRETE					20.9 C.Y.
CLASSIC CONCRETE BRIDGE RAIL					167.5 LIN. FT.	CLASSIC CONCRETE BRIDGE RAIL					167.5 LIN. FT.
TOTAL LENGTH OF CLASSIC CONCRETE BRIDGE RAIL = 335.0 LIN. FT.											

BAR TYPES

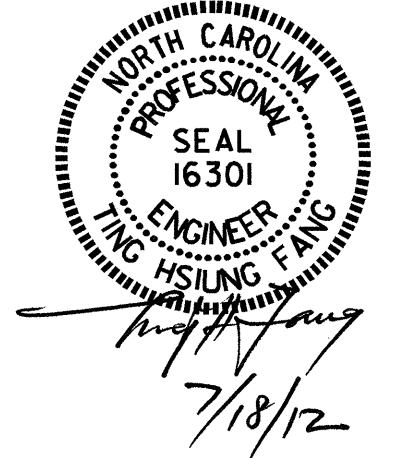


ALL BAR DIMENSIONS ARE OUT TO OUT

PROJECT NO. U-3324
MOORE COUNTY
STATION: 21+37.80 -Y6-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
CLASSIC CONCRETE
BRIDGE RAIL
DETAILS



DRAWN BY : T. H. FANG DATE : 5/1/12
CHECKED BY : B. MATHEW DATE : 5/4/12

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-26
1			3			TOTAL SHEETS
2			4			44

NOTES

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

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

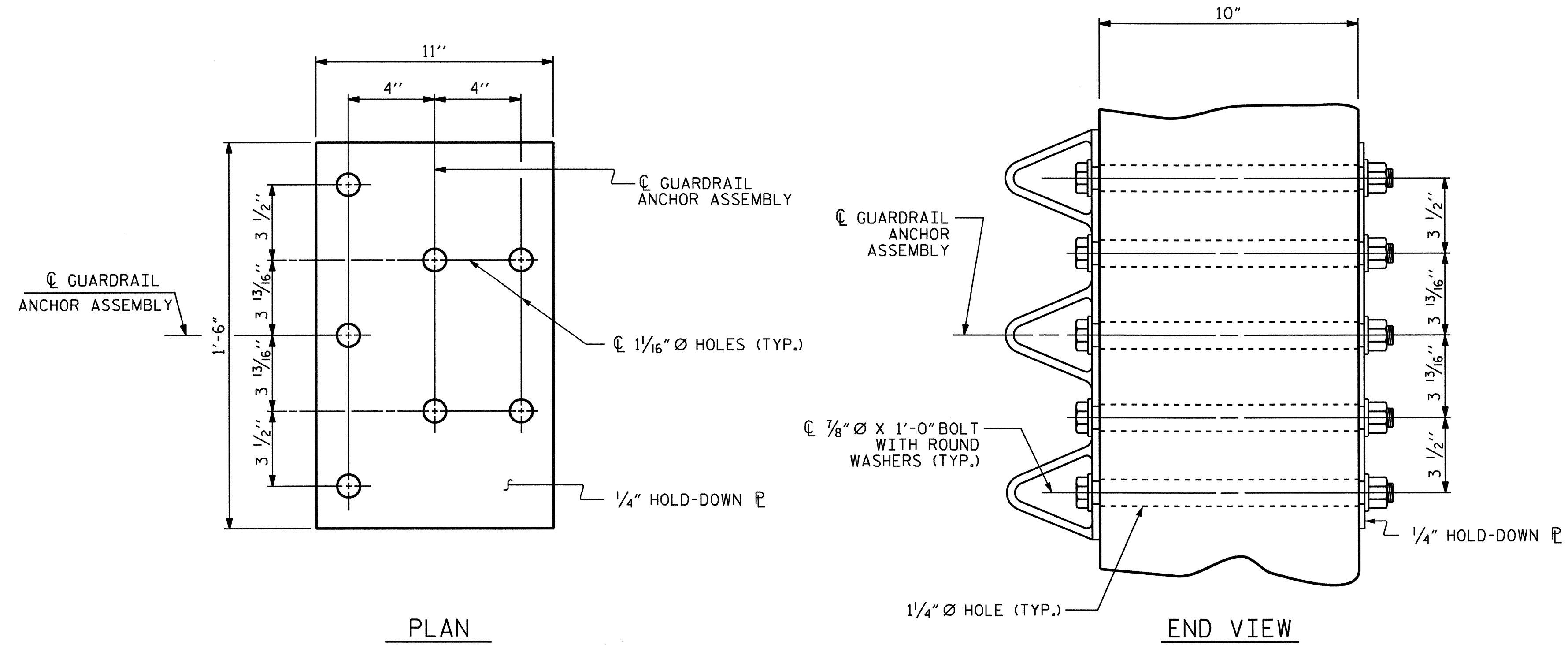
BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS.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

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

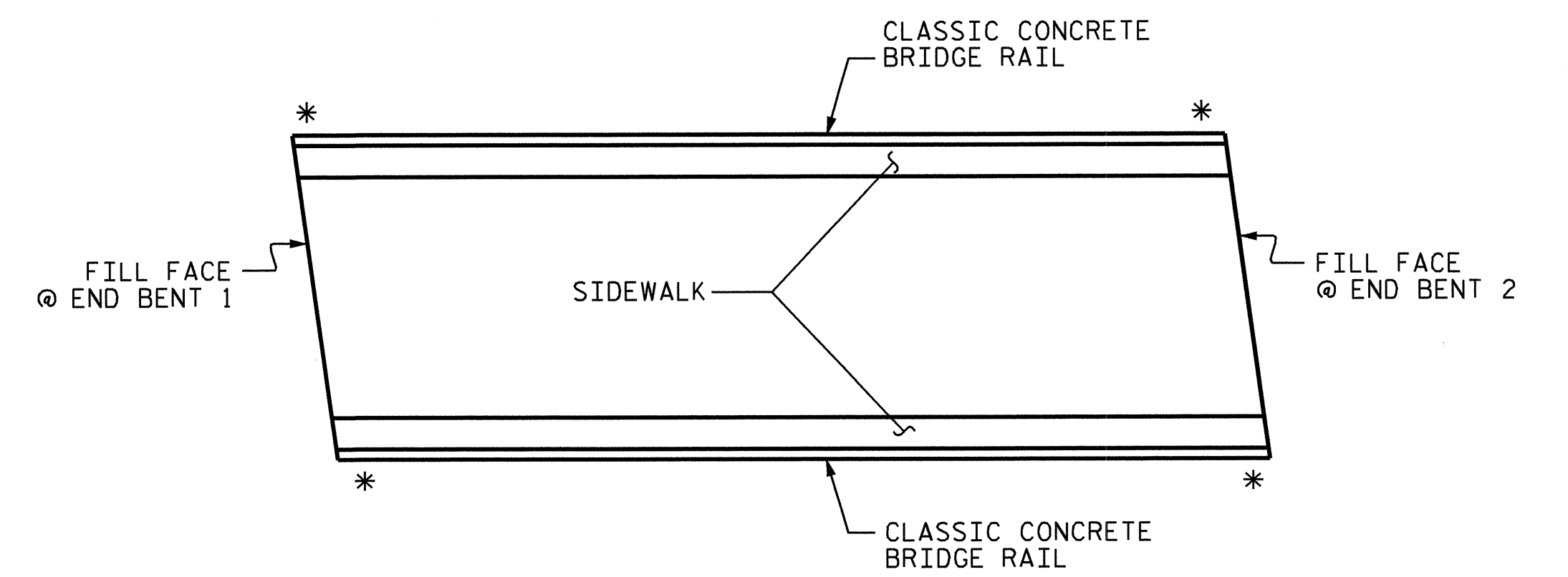
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE END POST TO CLEAR ASSEMBLY BOLTS.

THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

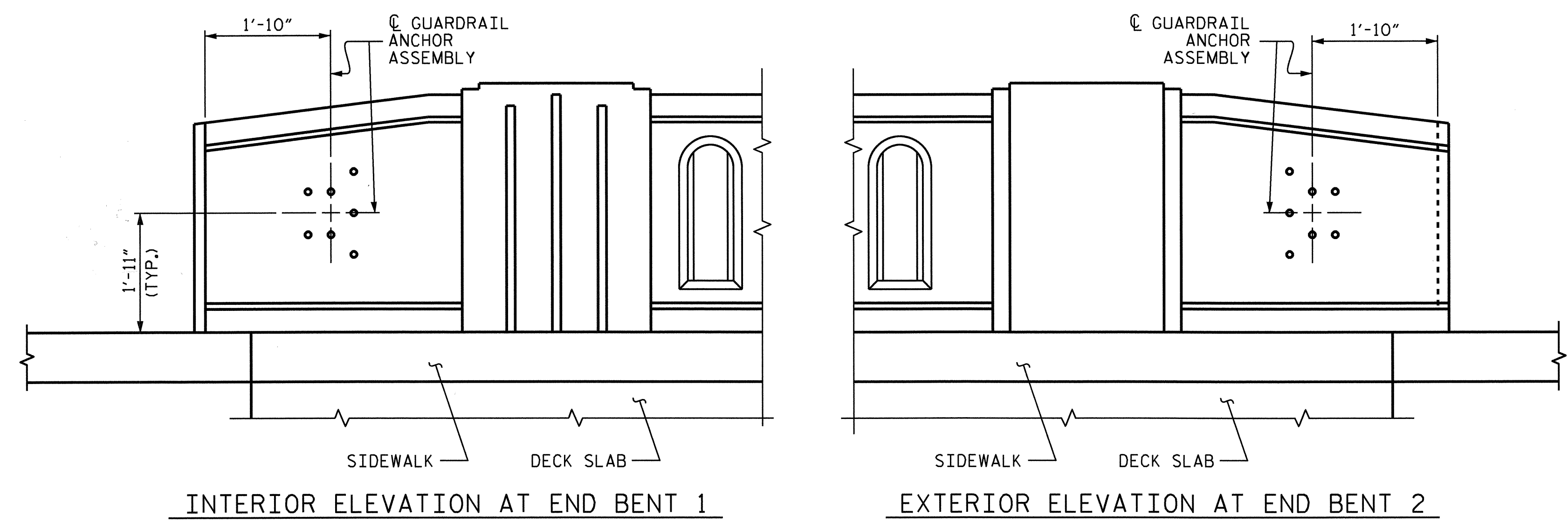


GUARDRAIL ANCHOR ASSEMBLY DETAILS



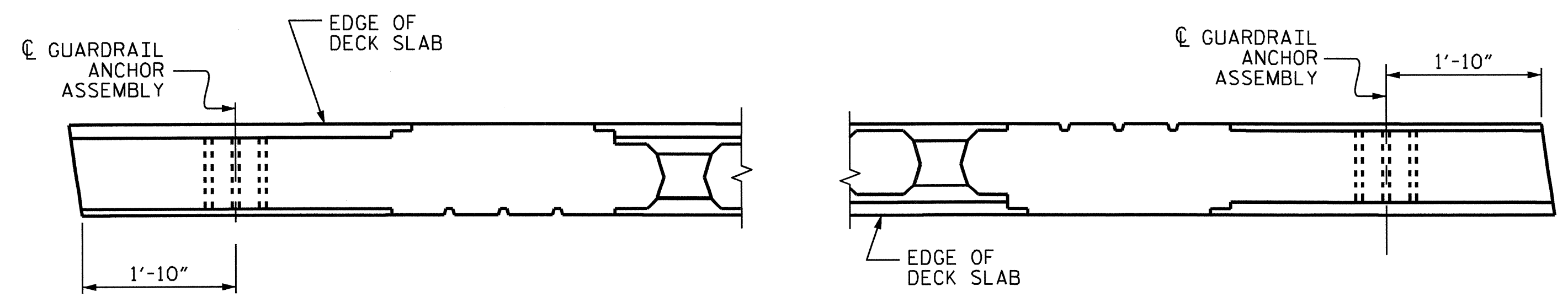
SKETCH SHOWING POINTS OF ATTACHMENT

* LOCATION OF GUARDRAIL ATTACHMENT



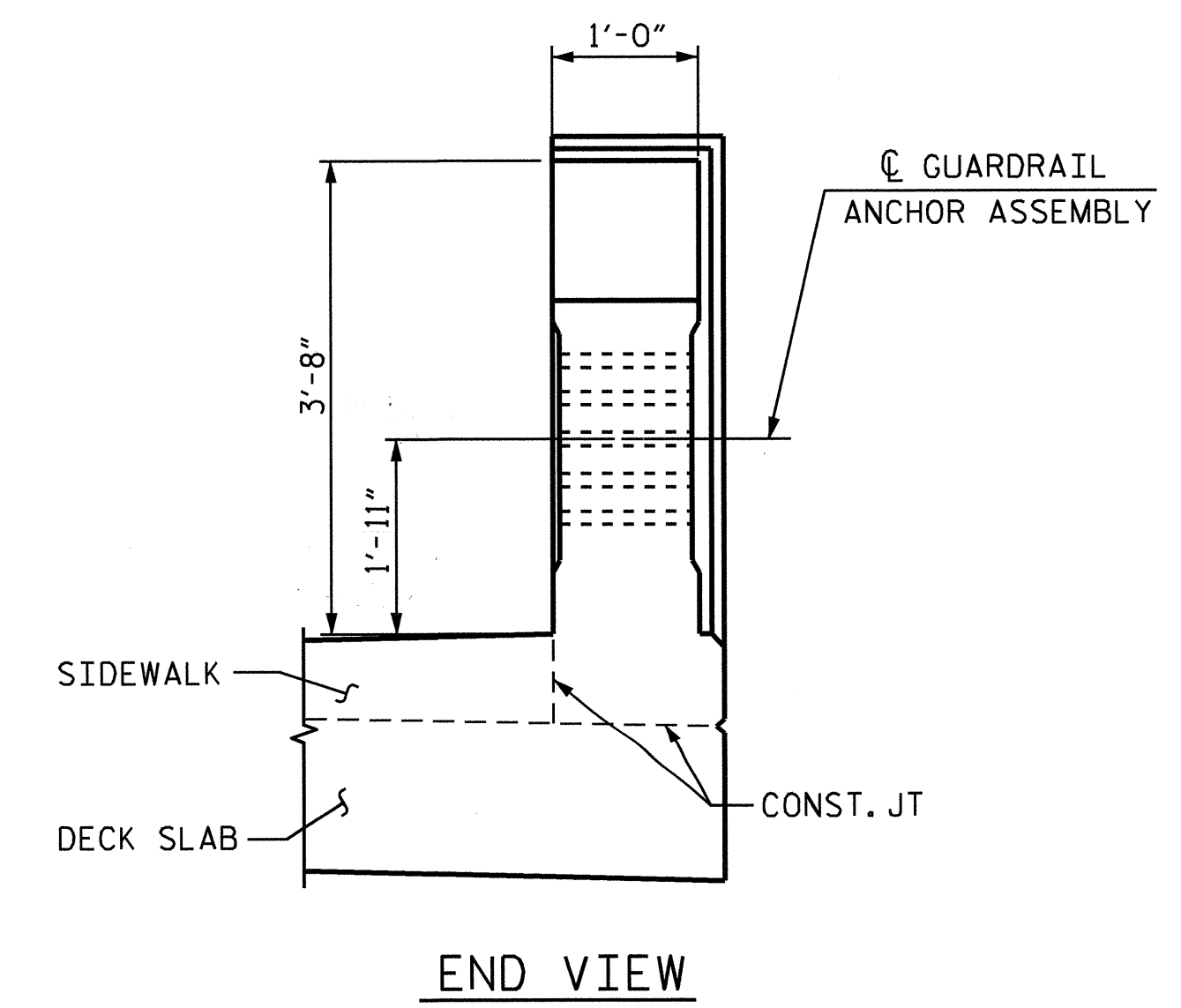
INTERIOR ELEVATION AT END BENT 1

EXTERIOR ELEVATION AT END BENT 2

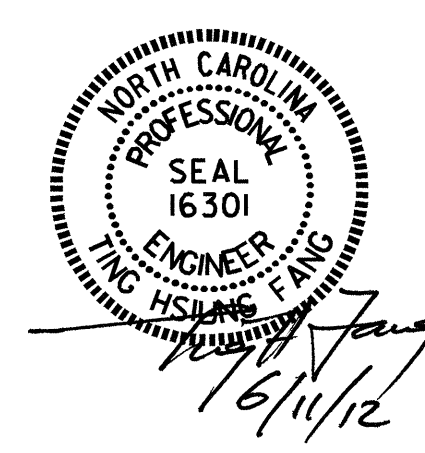


PLAN AT END BENT 1

PLAN AT END BENT 2



END VIEW



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MOORE COUNTY
 STATION: 21+37.80 -Y6-

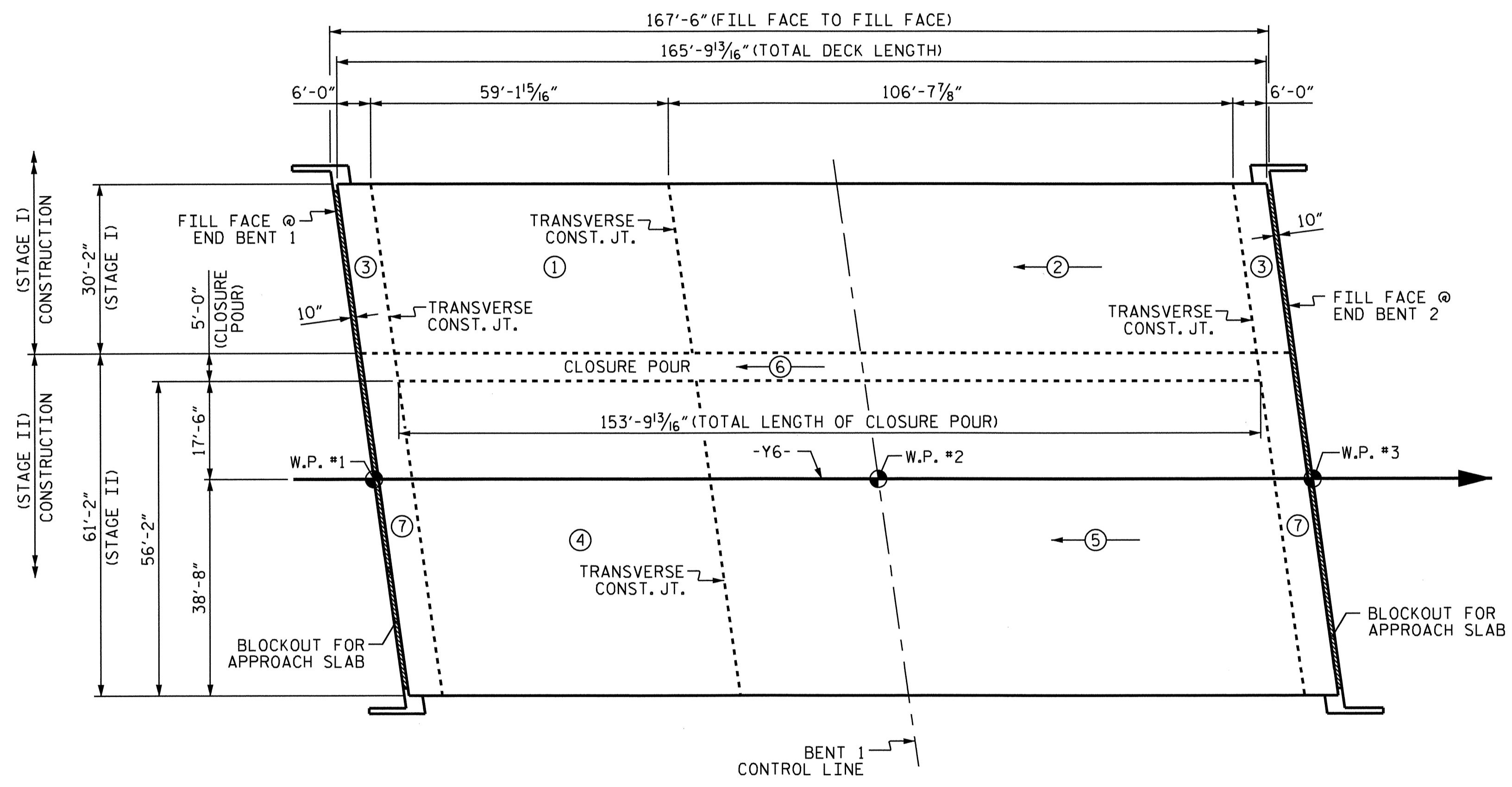
SHEET 5 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
GUARDRAIL ANCHORAGE DETAILS

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-27	
1			3			TOTAL SHEETS 44	
2			4				

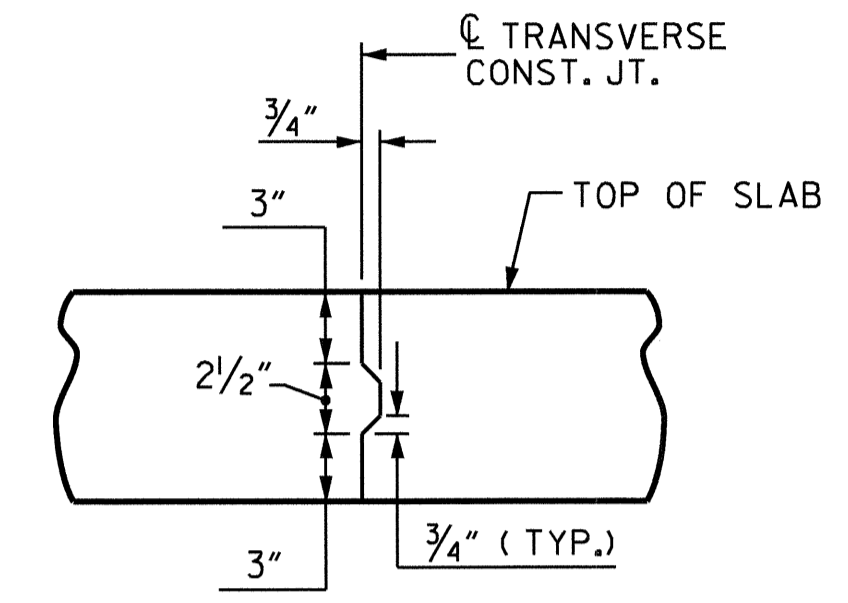
LOCATION OF GUARDRAIL ANCHOR AT END POST

ASSEMBLED BY : T. H. FANG	DATE : 5/1/12
CHECKED BY : B. MATHEW	DATE : 5/4/12
DRAWN BY : EEM 6/94	REV. 10/17/00 RWW/LES
CHECKED BY : RGW 6/94	REV. 5/7/03 RWW/JTE
	REV. 5/1/06 TLA/GM



POURING SEQUENCE

SEE TRANSVERSE CONSTRUCTION JOINT DETAIL
 ⊕ → = INDICATES POUR NUMBER AND DIRECTION

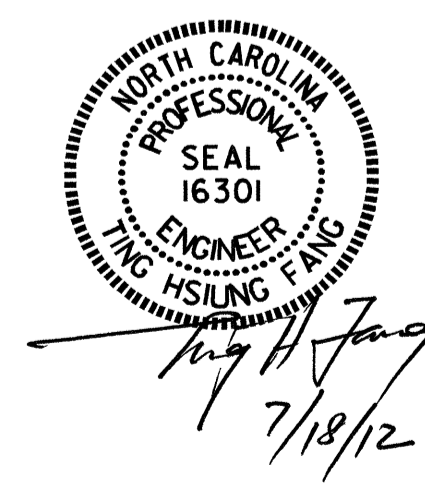


TRANSVERSE CONSTRUCTION JOINT DETAIL

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

NOTE: THE UPPER PORTION OF THE WINGS SHALL BE POURED WITH THE SUPERSTRUCTURE.

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MOORE COUNTY
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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 POUR SEQUENCE

REVISIONS						SHEET NO. S-28
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 44
2			4			

DRAWN BY : S. DOMBROWSKI DATE : 1/27/10
 CHECKED BY : T. H. FANG DATE : 5/22/12

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

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

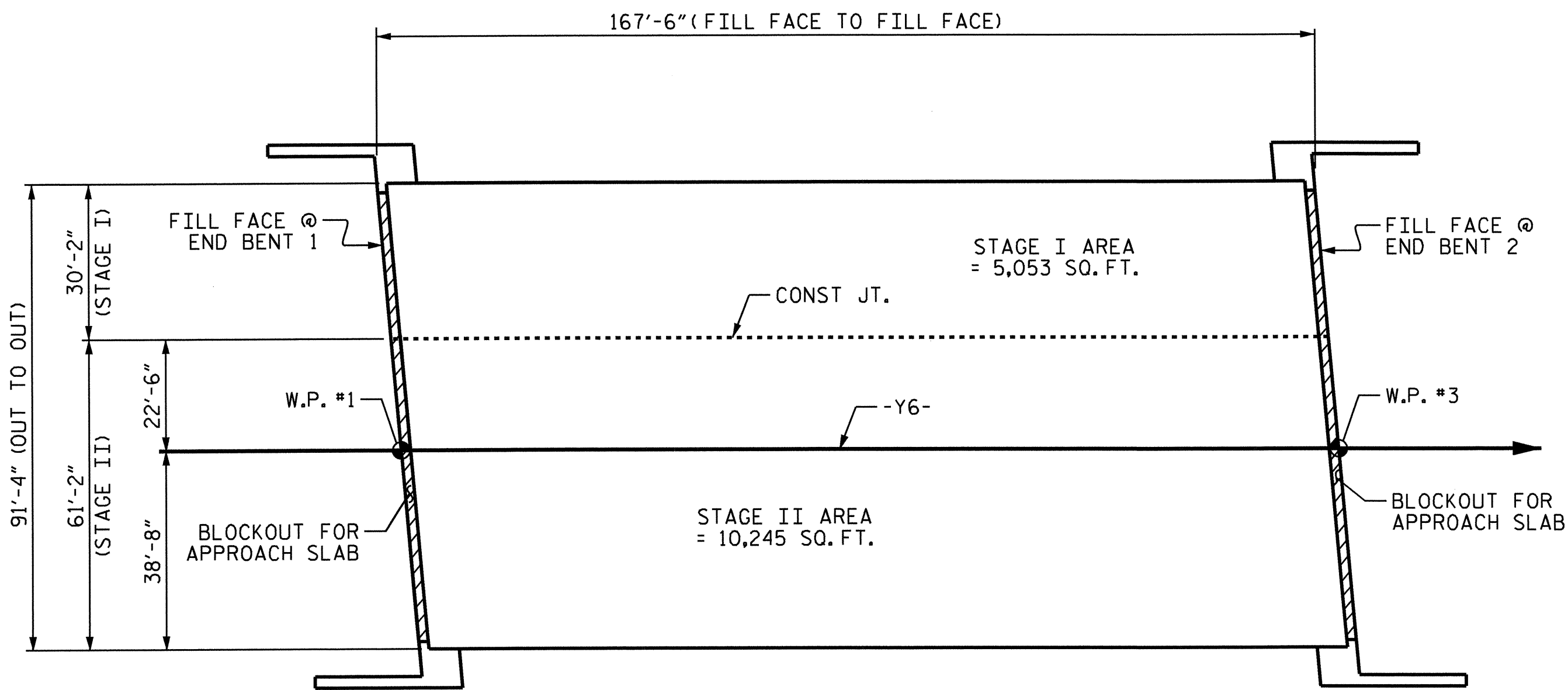
GROOVING BRIDGE FLOORS

STAGE I		
APPROACH SLABS	495	SO.FT.
BRIDGE DECK	3,620	SO.FT.
TOTAL	4,115	SO.FT.
STAGE II		
APPROACH SLABS	1,198	SO.FT.
BRIDGE DECK	8,761	SO.FT.
TOTAL	9,959	SO.FT.
TOTAL		
APPROACH SLABS	1,693	SO.FT.
BRIDGE DECK	12,381	SO.FT.
TOTAL	14,074	SO.FT.

SUPERSTRUCTURE BILL OF MATERIAL

	CLASS AA CONCRETE (CU. YD.)				REINFORCING STEEL (LBS)	EPOXY COATED REINFORCING STEEL (LBS)
	POUR NO.	#1	#2	#3		
STAGE I						
DECK	49.7	94.2	45.7	189.6	18,082	26,372
*** 3'-0" SIDEWALK				14.1		**
STAGE II						
DECK	99.5	188.4	82.6	370.5	34,603	47,004
*** 5'-6" SIDEWALK				23.5		**
*** 2'-6" SIDEWALK (FINAL STAGE)				9.4		584
CLOSURE POUR #6				26.1		**
TOTALS **				633.2	52,685	73,960

** QUANTITIES INCLUDED WITH SPAN TOTALS
 *** QUANTITIES INCLUDED SIDEWALKS ON DECK AND APPROACH SLABS.

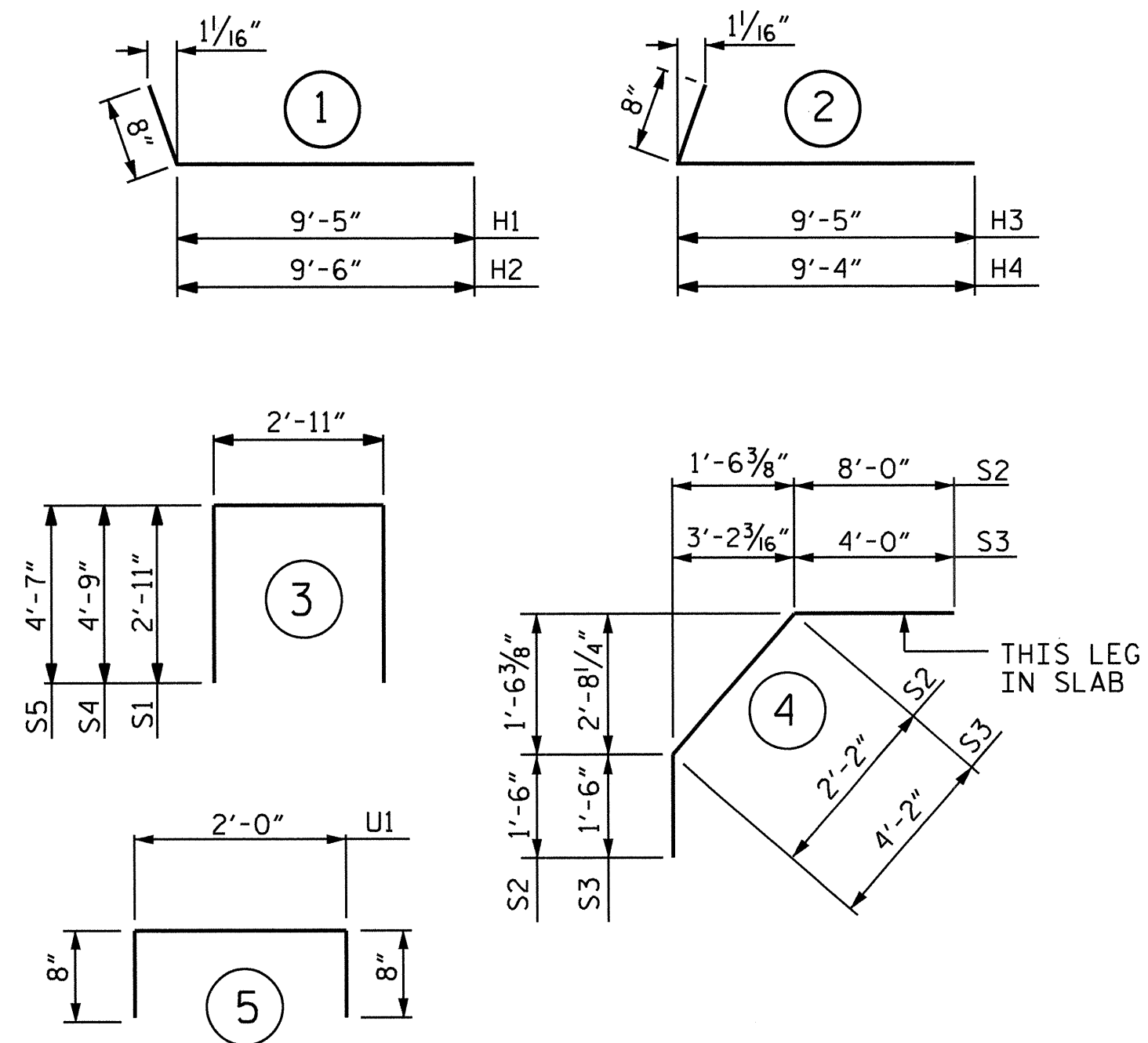


LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB (SQ. FT. = 15,298)

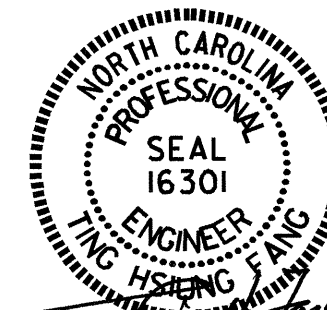
REINFORCING STEEL

STAGE I						STAGE II					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	323	#5	STR	29'-11"	10079	* A3	316	#5	STR	55'-11"	18429
A2	323	#5	STR	29'-11"	10079	A4	316	#5	STR	55'-11"	18429
* A101	2	#5	STR	27'-8"	58	* A301	2	#5	STR	53'-5"	111
* A102	2	#5	STR	24'-0"	50	* A302	2	#5	STR	49'-9"	104
* A103	2	#5	STR	20'-4"	42	* A303	2	#5	STR	46'-2"	96
* A104	2	#5	STR	16'-9"	35	* A304	2	#5	STR	42'-6"	89
* A105	2	#5	STR	13'-1"	27	* A305	2	#5	STR	38'-10"	81
* A106	2	#5	STR	9'-5"	20	* A306	2	#5	STR	35'-3"	74
* A107	2	#5	STR	5'-9"	12	* A307	2	#5	STR	31'-7"	66
* A108	2	#5	STR	2'-2"	5	* A308	2	#5	STR	27'-11"	58
						* A309	2	#5	STR	24'-3"	51
A201	2	#5	STR	27'-8"	58	* A310	2	#5	STR	20'-8"	43
A202	2	#5	STR	24'-0"	50	* A311	2	#5	STR	17'-0"	35
A203	2	#5	STR	20'-4"	42	* A312	2	#5	STR	13'-4"	28
A204	2	#5	STR	16'-9"	35	* A313	2	#5	STR	9'-8"	20
A205	2	#5	STR	13'-1"	27	* A314	2	#5	STR	6'-0"	13
A206	2	#5	STR	9'-5"	20	* A315	2	#5	STR	2'-5"	5
A207	2	#5	STR	5'-9"	12						
A208	2	#5	STR	2'-2"	5	A401	2	#5	STR	53'-5"	111
						A402	2	#5	STR	49'-9"	104
* B1	42	#4	STR	24'-0"	673	A403	2	#5	STR	46'-2"	96
* B2	120	#7	STR	24'-1"	5907	A404	2	#5	STR	42'-6"	89
						A405	2	#5	STR	38'-10"	81
* B4	42	#4	STR	17'-0"	477	A406	2	#5	STR	35'-3"	74
* B5	40	#7	STR	18'-4"	1499	A407	2	#5	STR	31'-7"	66
* B6	40	#7	STR	15'-10"	1295	A408	2	#5	STR	27'-11"	58
B7	114	#5	STR	56'-8"	6738	A409	2	#5	STR	24'-3"	51
* B8	21	#4	STR	28'-10"	404	A410	2	#5	STR	20'-8"	43
						A411	2	#5	STR	17'-0"	35
* D1	662	#5	STR	6'-10"	4718	A412	2	#5	STR	13'-4"	28
						A413	2	#5	STR	9'-8"	20
* G1	190	#4	STR	2'-8"	338	A414	2	#5	STR	6'-0"	13
						A415	2	#5	STR	2'-5"	5
H1	6	#4	1	10'-1"	40						
H2	6	#4	1	10'-2"	41	* B1	84	#4	STR	24'-0"	1347
H3	6	#4	2	10'-1"	40	* B2	246	#7	STR	24'-1"	12110
H4	6	#4	2	10'-0"	40						
						* B4	84	#4	STR	17'-0"	954
K1	32	#4	STR	18'-6"	399	* B5	82	#7	STR	18'-4"	3073
K3	8	#4	STR	2'-8"	14	* B6	82	#7	STR	15'-10"	2654
						B7	231	#5	STR	56'-8"	13653
S1	48	#4	3	8'-9"	281	* B8	35	#4	STR	28'-10"	674
* S2	48	#4	4	11'-8"	374						
* S3	46	#4	4	9'-8"	297	* D1	662	#5	STR	6'-10"	4718
S4	3	#4	3	12'-5"	25	* G2	190	#4	STR	5'-0"	635
S5	3	#4	3	12'-1"	24						
* U1	28	#4	5	3'-4"	62	H1	6	#4	1	10'-1"	40
						H2	6	#4	1	10'-2"	41
V2	18	#4	STR	4'-8"	56	H3	6	#4	2	10'-1"	40
V3	18	#4	STR	4'-7"	55	H4	6	#4	2	10'-0"	40
						K2	48	#4	STR	22'-8"	727
						K3	8	#4	STR	2'-8"	14
REINFORCING STEEL = 18,082 LBS						REINFORCING STEEL = 34,603 LBS					
* EPOXY COATED REINF. STEEL = 26,372 LBS						* EPOXY COATED REINF. STEEL = 47,004 LBS					
FINAL STAGE - SIDEWALK											
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B8	14	#4	STR	28'-10"	269	* S1	100	#4	3	8'-9"	585
* U1	28	#4	STR	3'-4"	62	* S2	100	#4	4	11'-8"	779
* G3	190	#4	STR	2'-0"	253	* S3	98	#4	4	9'-8"	633
						S4	3	#4	3	12'-5"	25
						S5	3	#4	3	12'-1"	24
						* U1	56	#4	5	3'-4"	125
						V2	18	#4	STR	4'-8"	56
						V3	18	#4	STR	4'-7"	55

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT



PROJECT NO. U-3324
 MOORE COUNTY
 STATION: 21+37.80 -Y6-

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-29
1			3			TOTAL SHEETS 44
2			4			

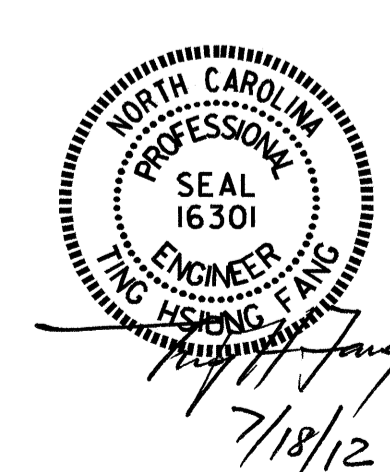
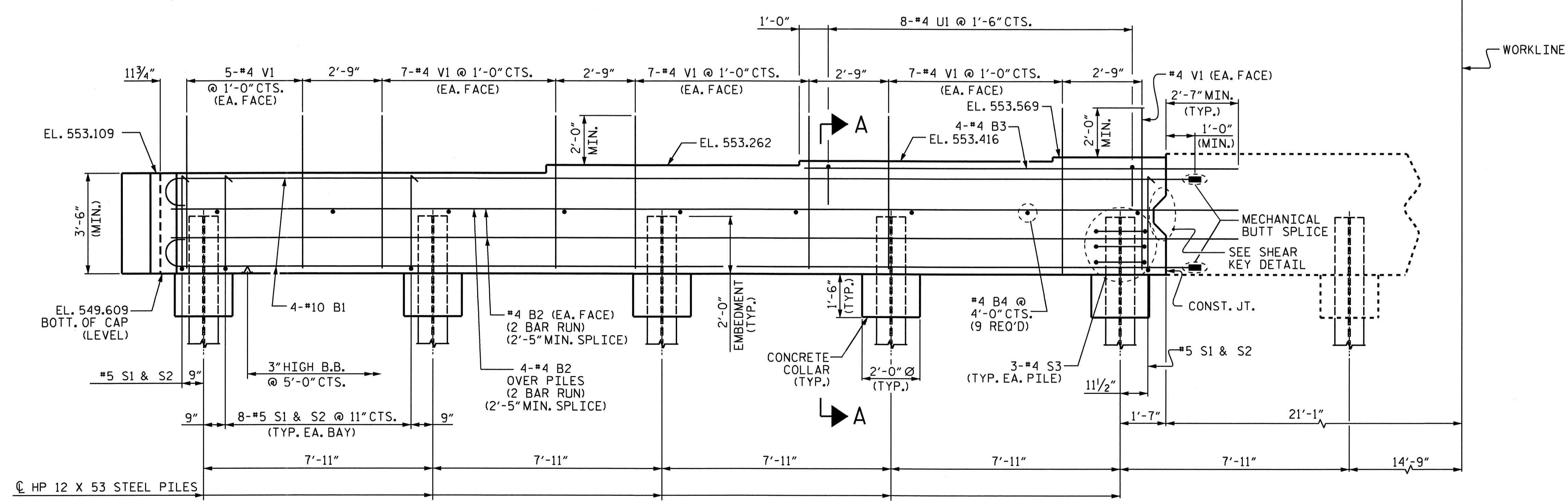
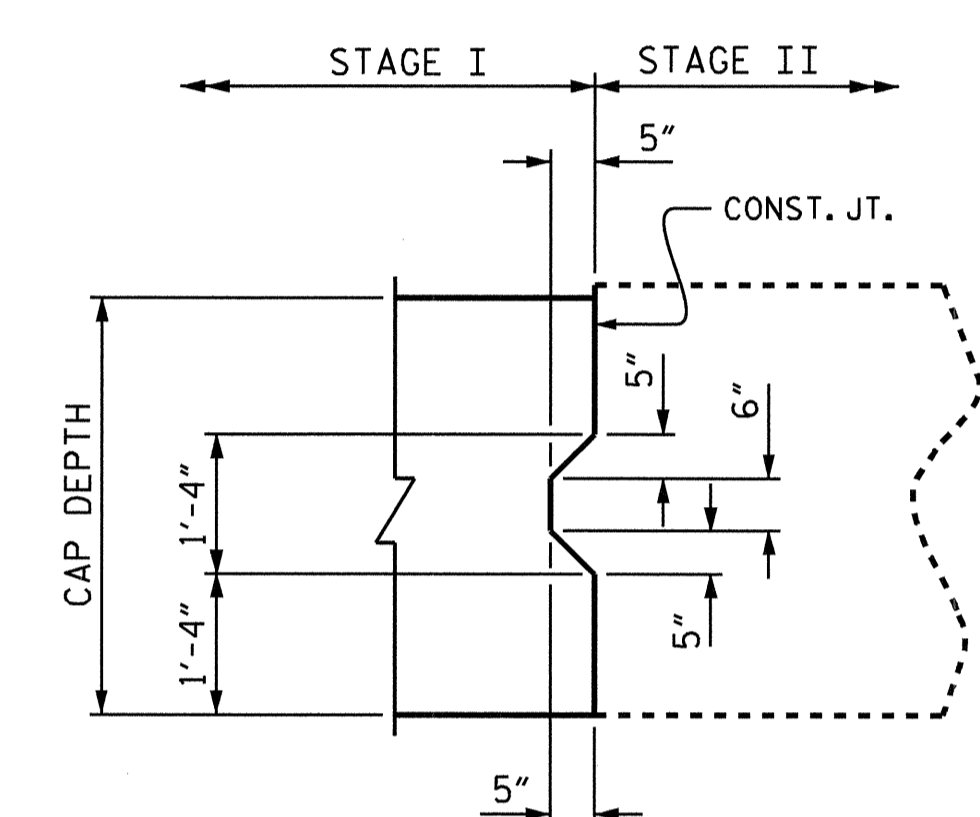
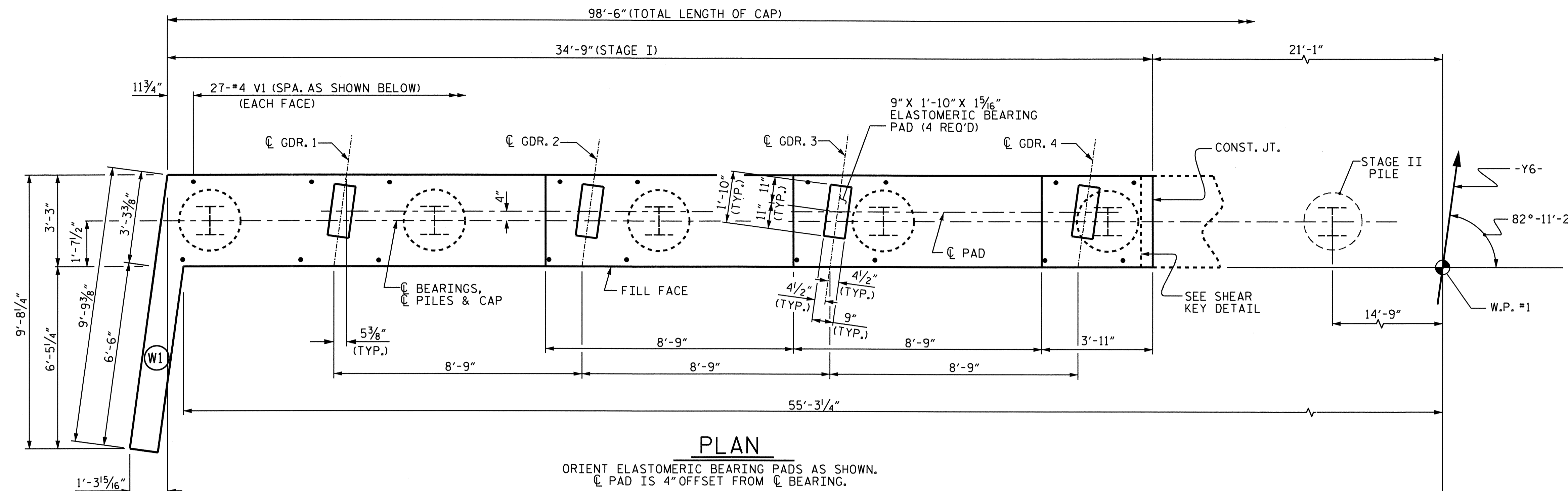
ASSEMBLED BY: E.C. LOCKLEAR	DATE: 5-6-10
CHECKED BY: T. H. FANG	DATE: 5-22-12
DRAWN BY: JMB 5/87	REV. 6/1/94 EEM/GRP
CHECKED BY: SJD 9/87	REV. 8/16/99 RWW/LES
	REV. 5/1/06 TLA/GM

NOTES:

THE TOP SURFACE OF THE END BENT CAP AND LOWER WINGS, EXCLUDING THE OUTSIDE 4" AND THE BEARING AREA SHALL BE RAKED TO THE DEPTH OF 1/4".

THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

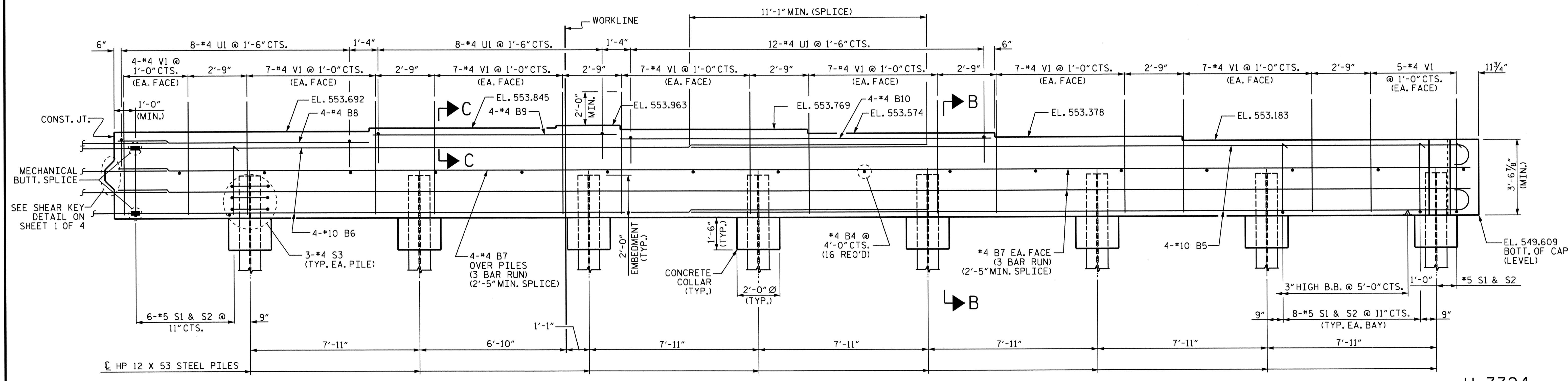
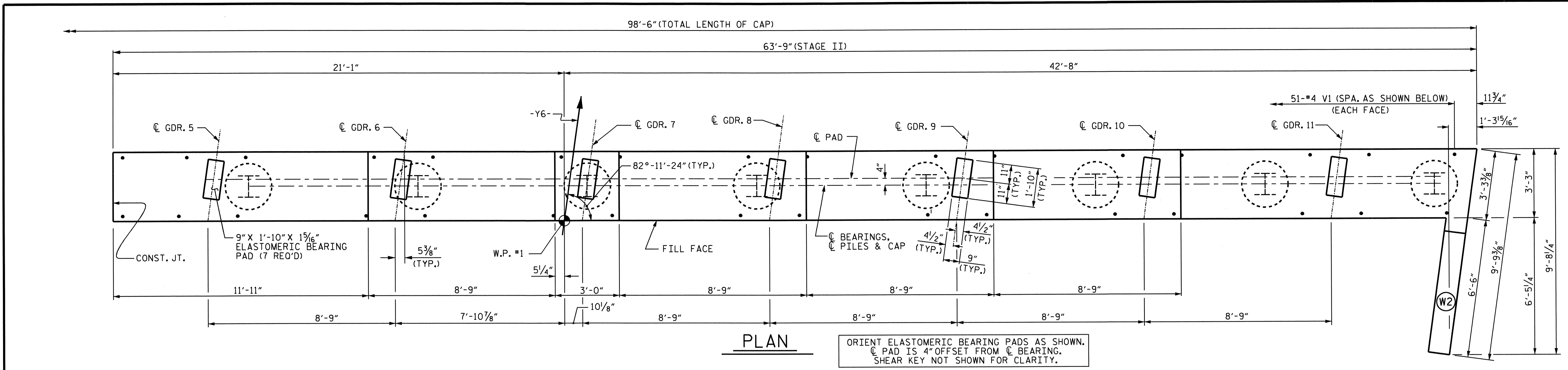
SEE SUPERSTRUCTURE SHEETS FOR THE ABUTMENT DETAILS.



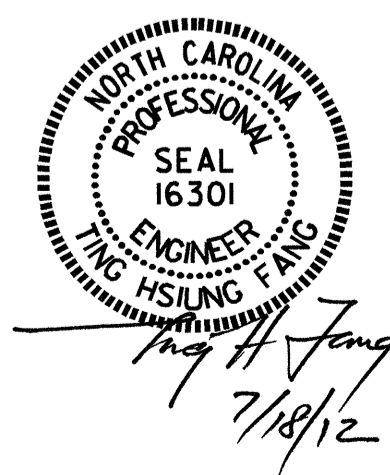
PROJECT NO. U-3324
MOORE COUNTY
STATION: 21+37.80 -Y6-
SHEET 1 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S-30
SUBSTRUCTURE END BENT 1 (INTEGRAL) STAGE I						
REVISIONS						TOTAL SHEETS 44
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

DRAWN BY: QT NGUYEN DATE: 4-10
CHECKED BY: S.H.SOCKWELL DATE: 4-12



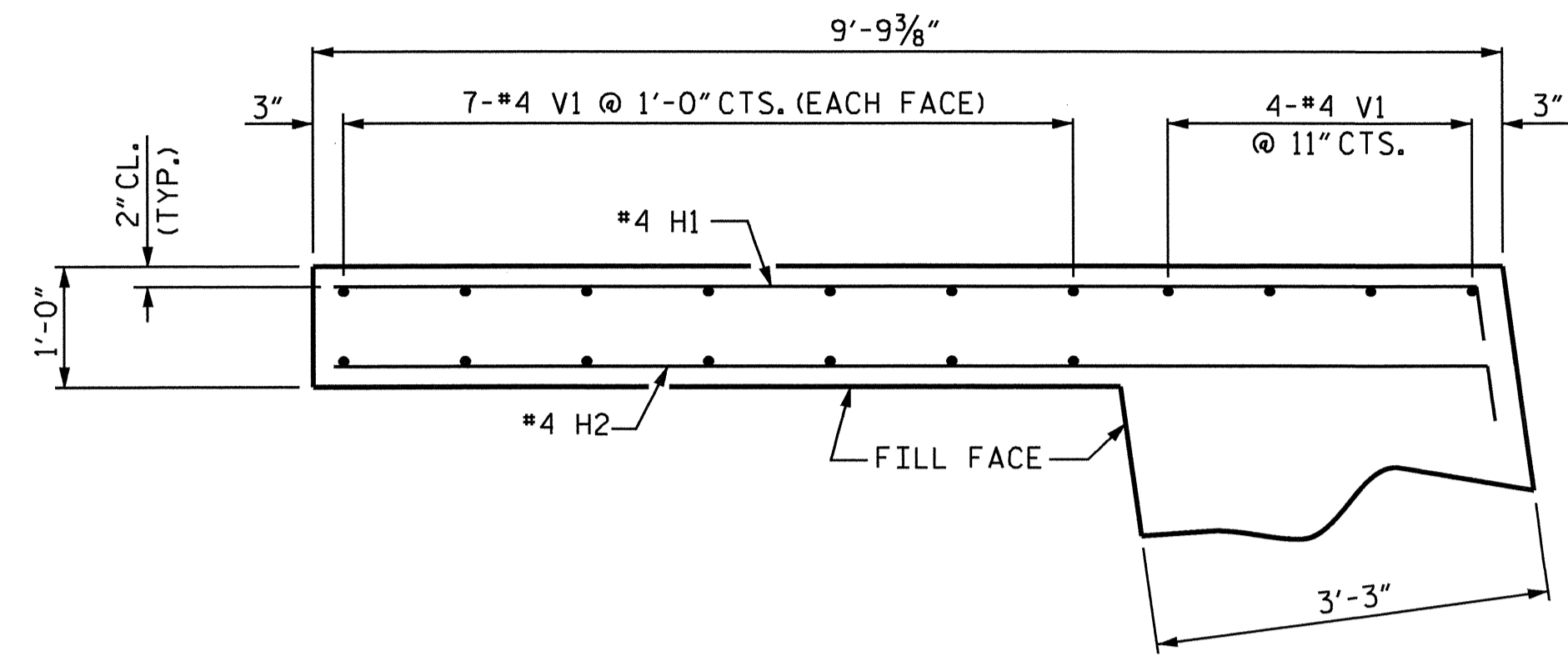
PROJECT NO. U-3324
MOORE COUNTY
STATION: 21+37.80 -Y6-
SHEET 2 OF 4



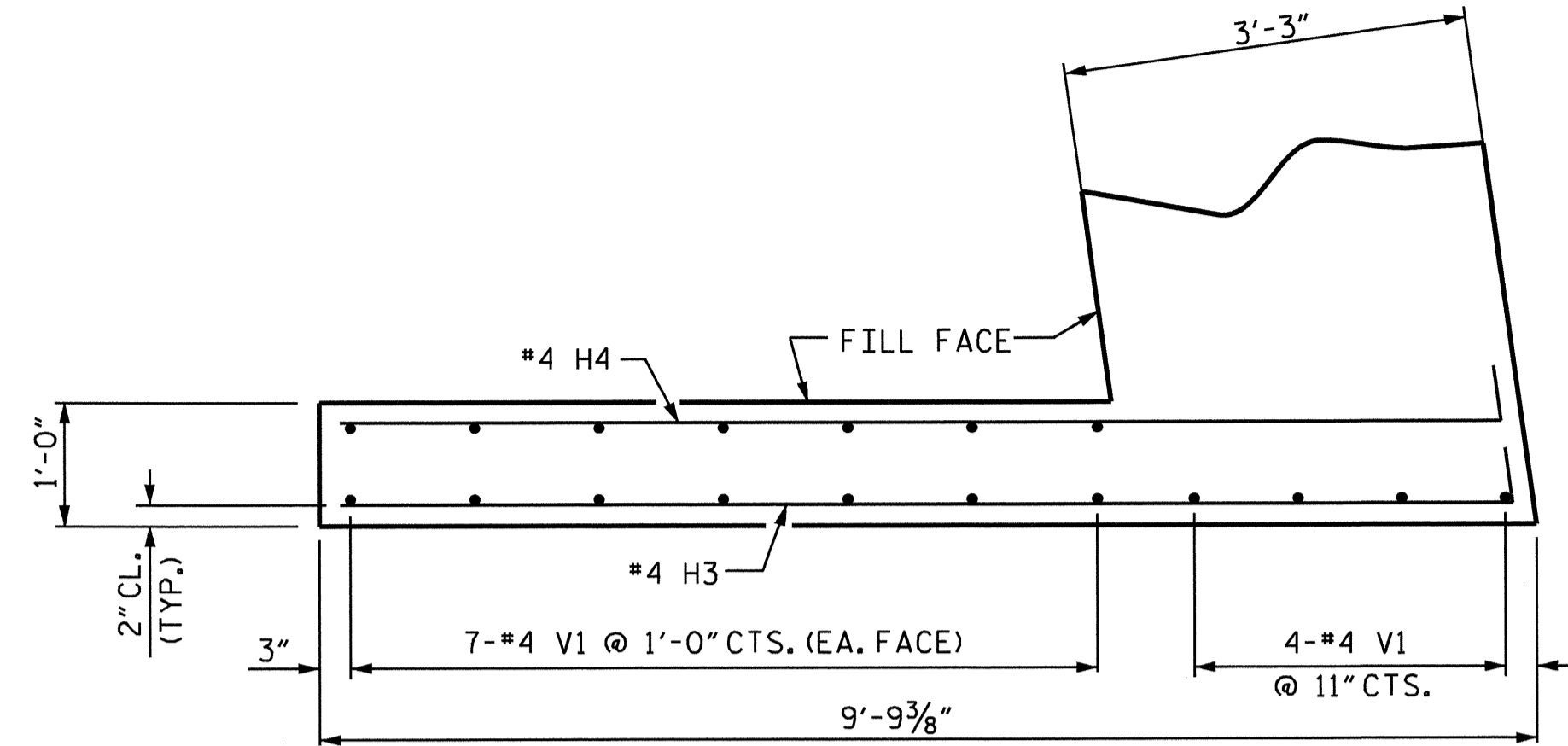
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE					
END BENT 1 (INTEGRAL)					
STAGE II					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S-31
TOTAL SHEETS 44

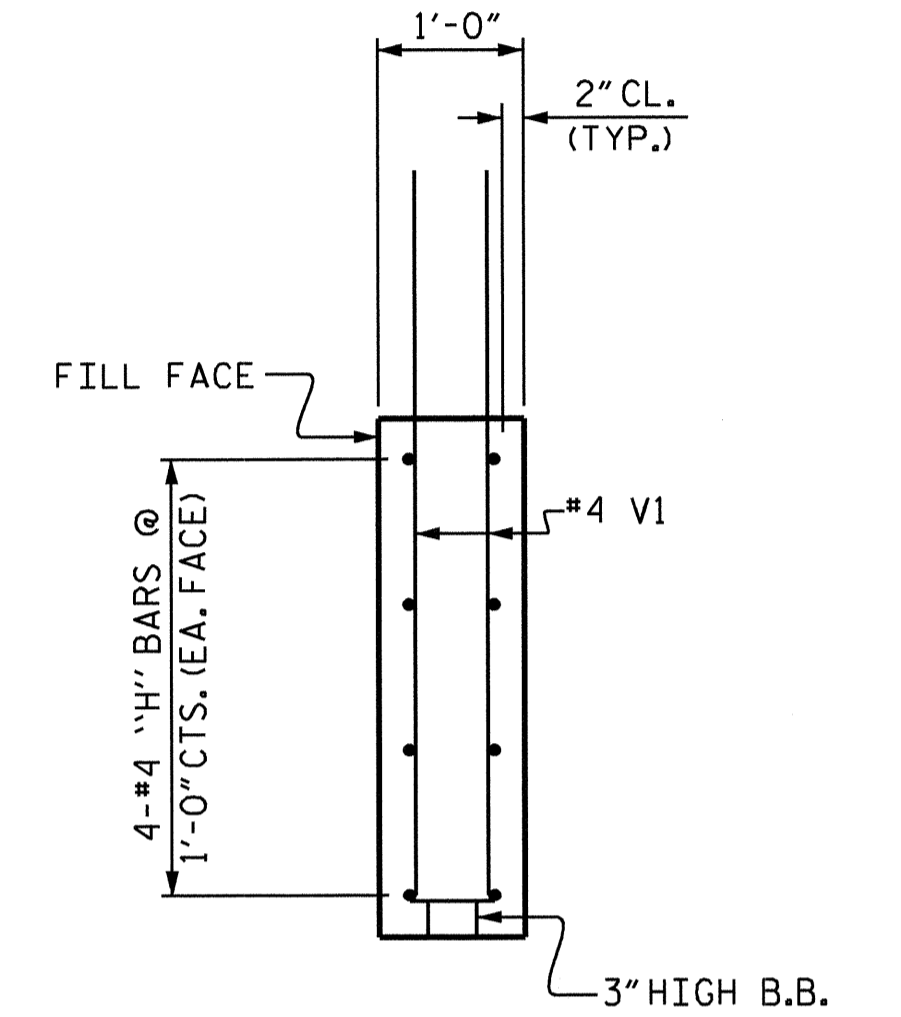
DRAWN BY : QT NGUYEN DATE : 4-10
CHECKED BY : S.H.SOCKWELL DATE : 4-12



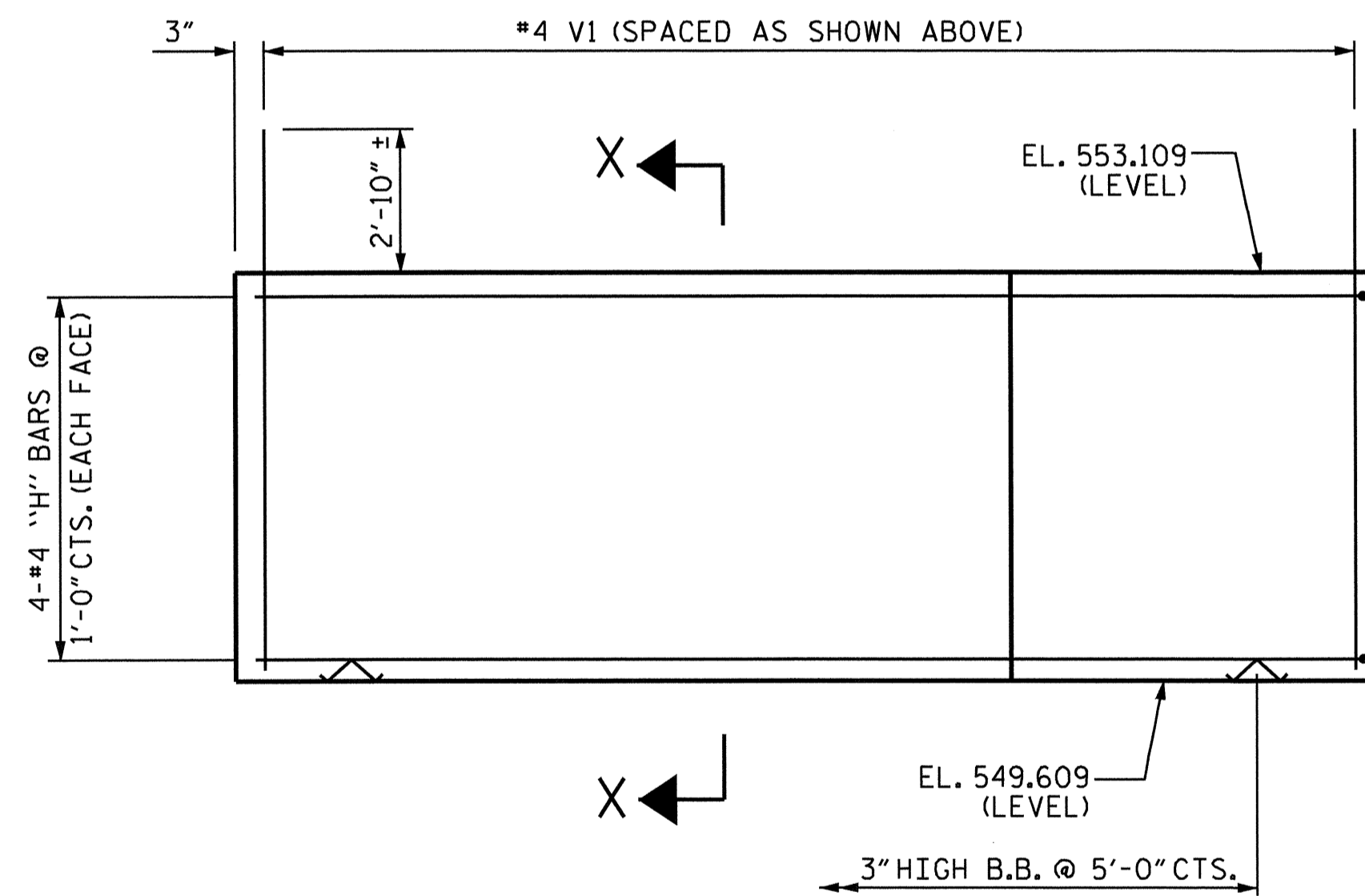
PLAN OF WING (W1)
(STAGE I)



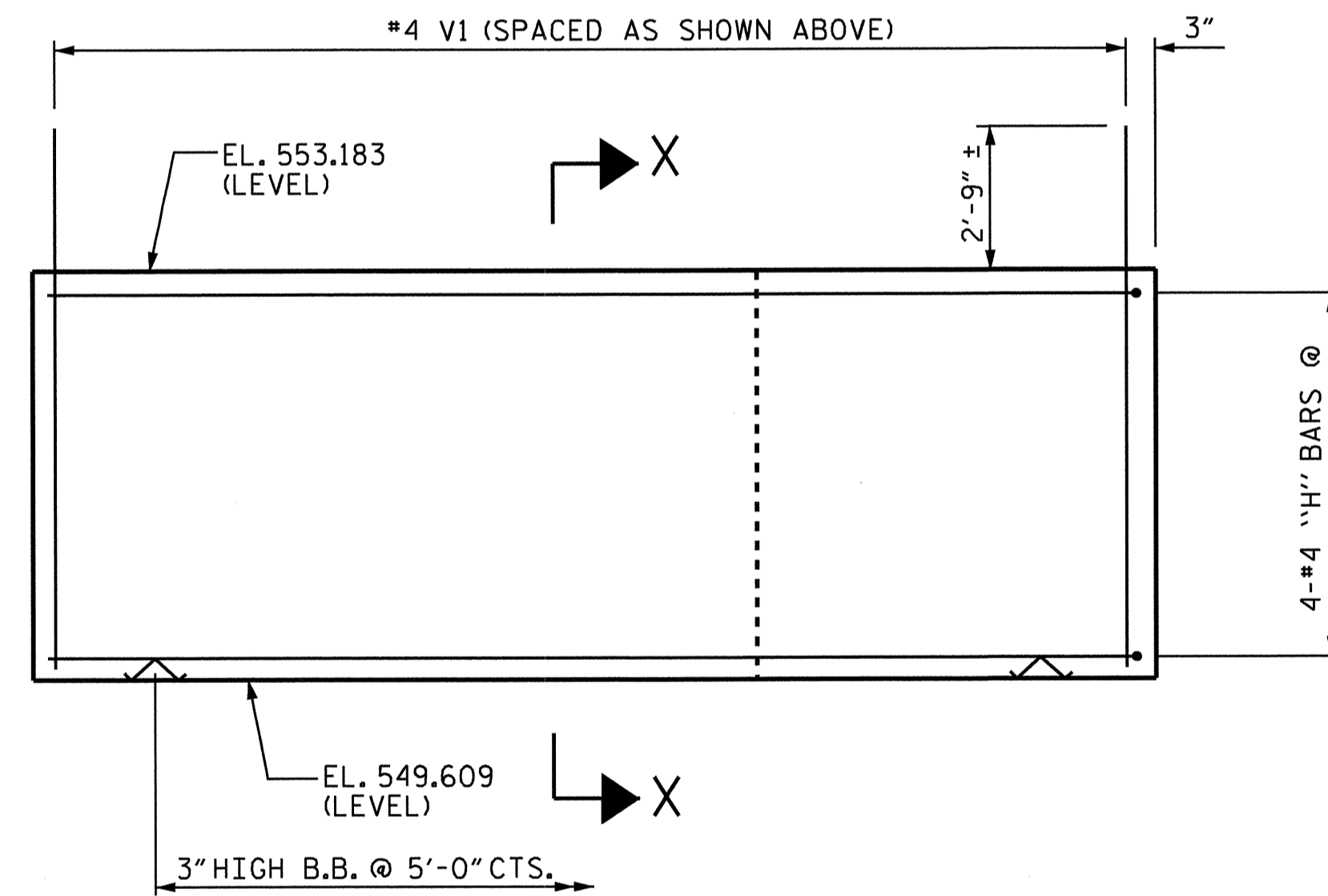
PLAN OF WING (W2)
(STAGE II)



SECTION X-X



ELEVATION OF WING (W1)
(STAGE I)

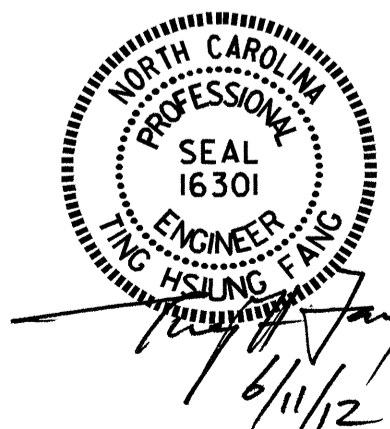


ELEVATION OF WING (W2)
(STAGE II)

PROJECT NO. U-3324
MOORE COUNTY
STATION: 21+37.80 -Y6-

SHEET 3 OF 4

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



DRAWN BY : QT NGUYEN DATE : 4-10
CHECKED BY : S.H.SOCKWELL DATE : 4-12

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-32
1			3			TOTAL SHEETS
2			4			44

BILL OF MATERIAL

END BENT 1

STAGE I						STAGE II					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#10	1	37'-5"	1288	B4	16	#4	STR	2'-11"	31
B2	16	#4	STR	20'-1"	215	B5	8	#10	1	38'-0"	1308
B3	4	#4	STR	15'-1"	40	B6	8	#10	STR	37'-0"	1274
B4	9	#4	STR	2'-11"	18	B7	24	#4	STR	22'-11"	367
H1	4	#4	3	10'-1"	27	B8	4	#4	STR	11'-9"	31
H2	4	#4	3	10'-2"	27	B9	4	#4	STR	11'-5"	31
S1	34	#5	4	10'-1"	358	B10	4	#4	STR	17'-4"	46
S2	34	#5	5	3'-10"	136						
S3	15	#4	6	6'-6"	65	S1	63	#5	4	10'-1"	663
U1	8	#4	7	5'-11"	32	S2	63	#5	5	3'-10"	252
V1	72	#4	STR	6'-2"	297	S3	24	#4	6	6'-6"	104
						U1	28	#4	7	5'-11"	111
						V1	120	#4	STR	6'-2"	494

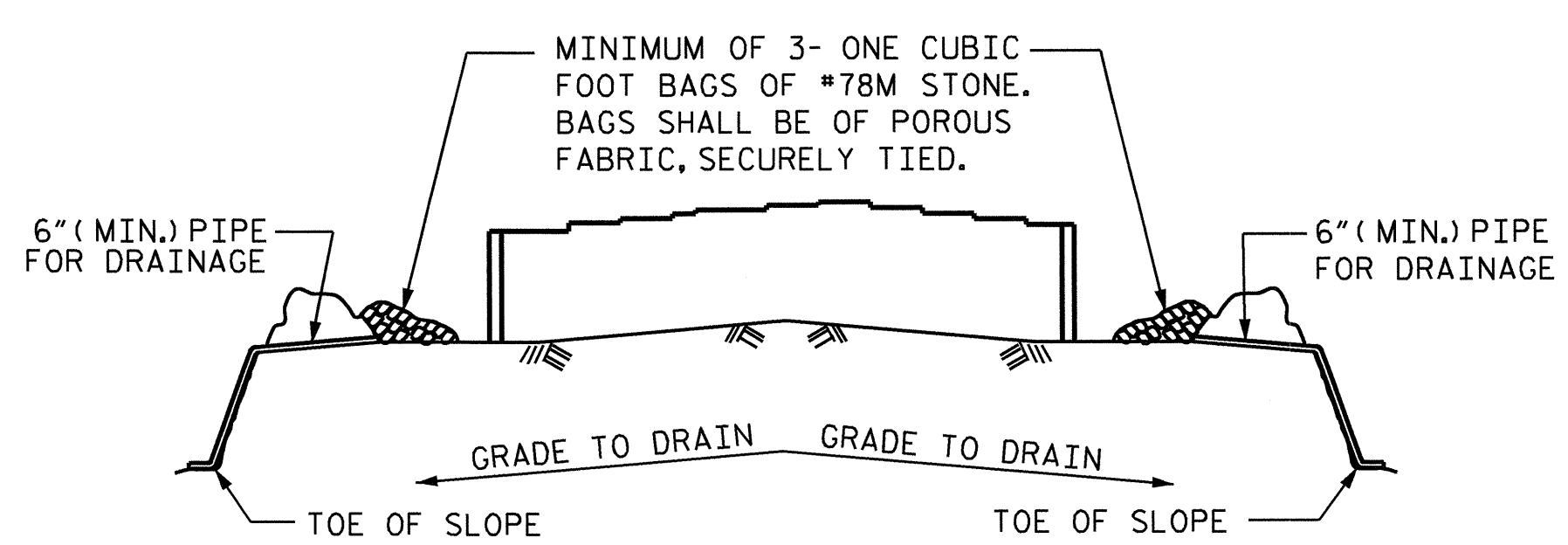
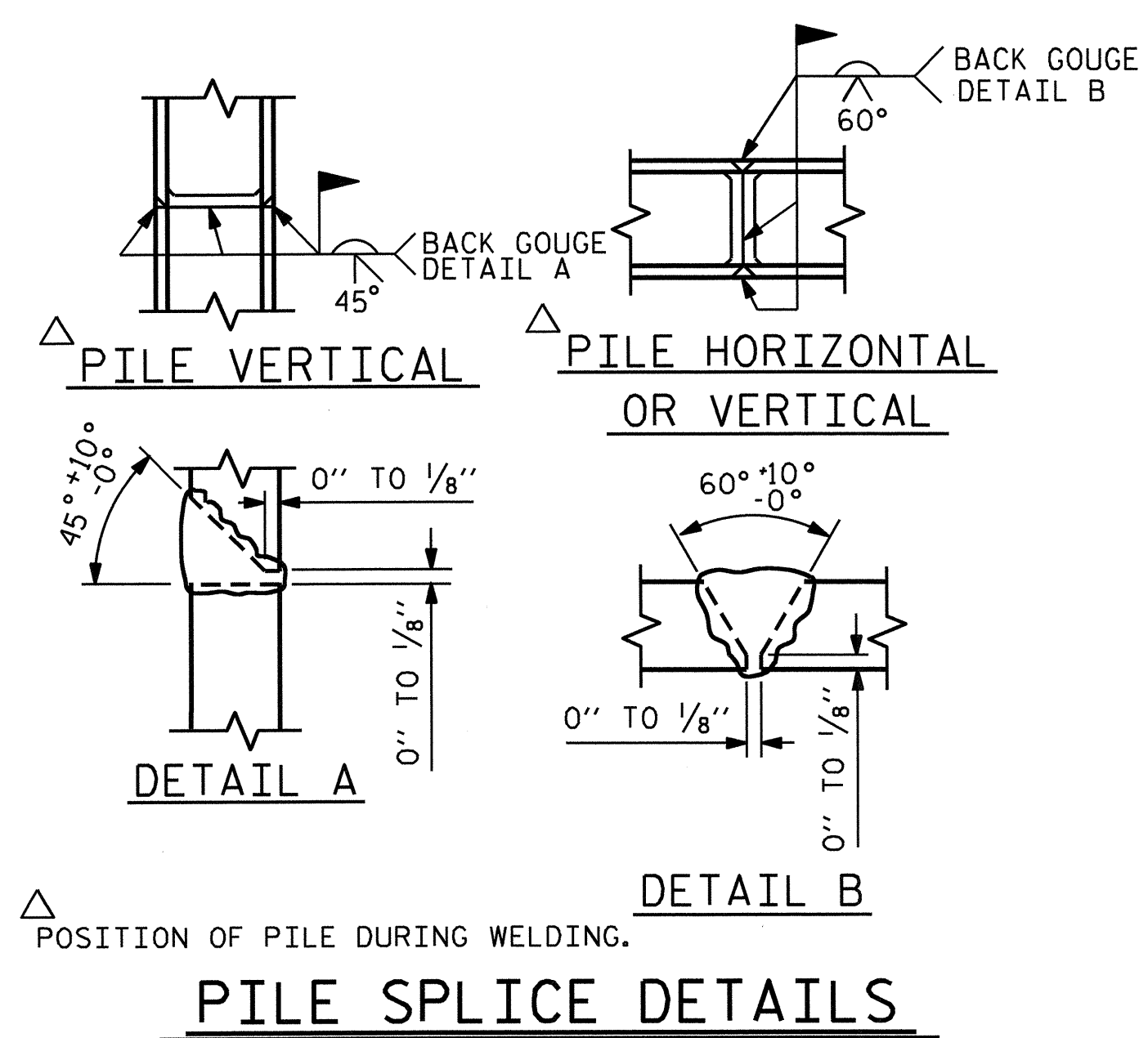
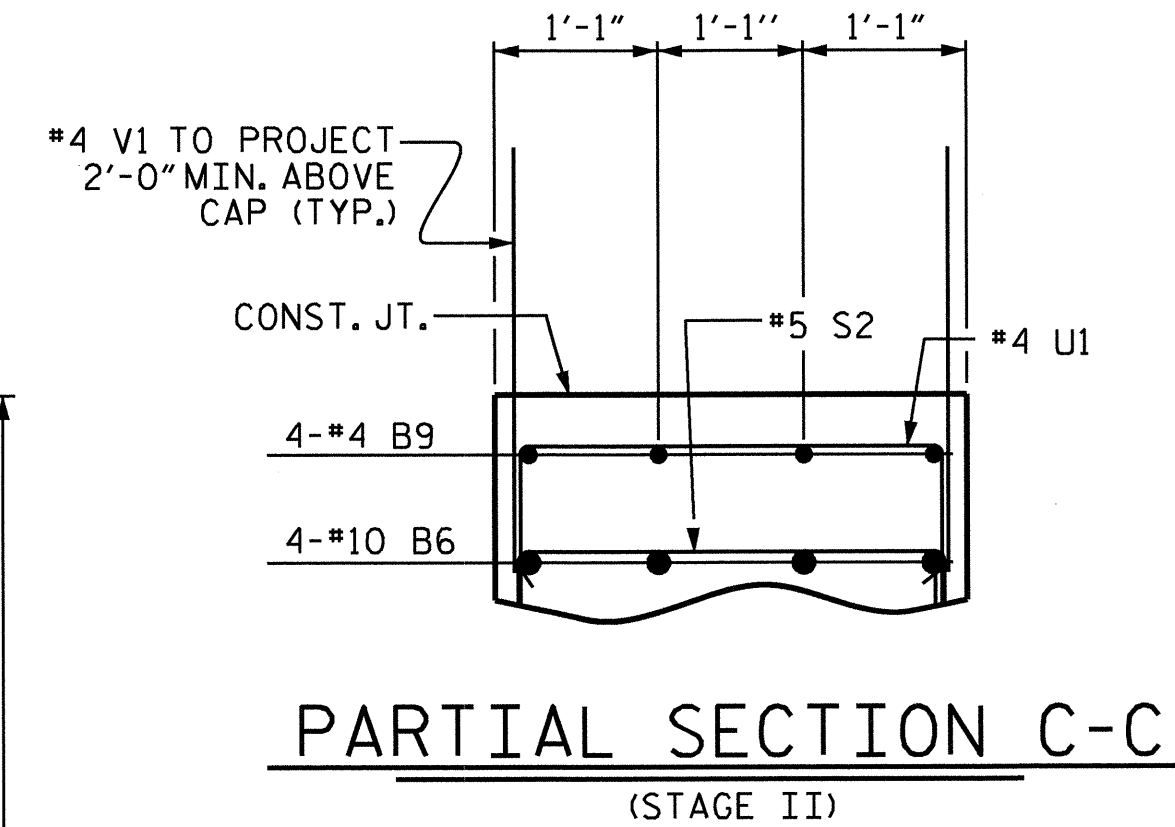
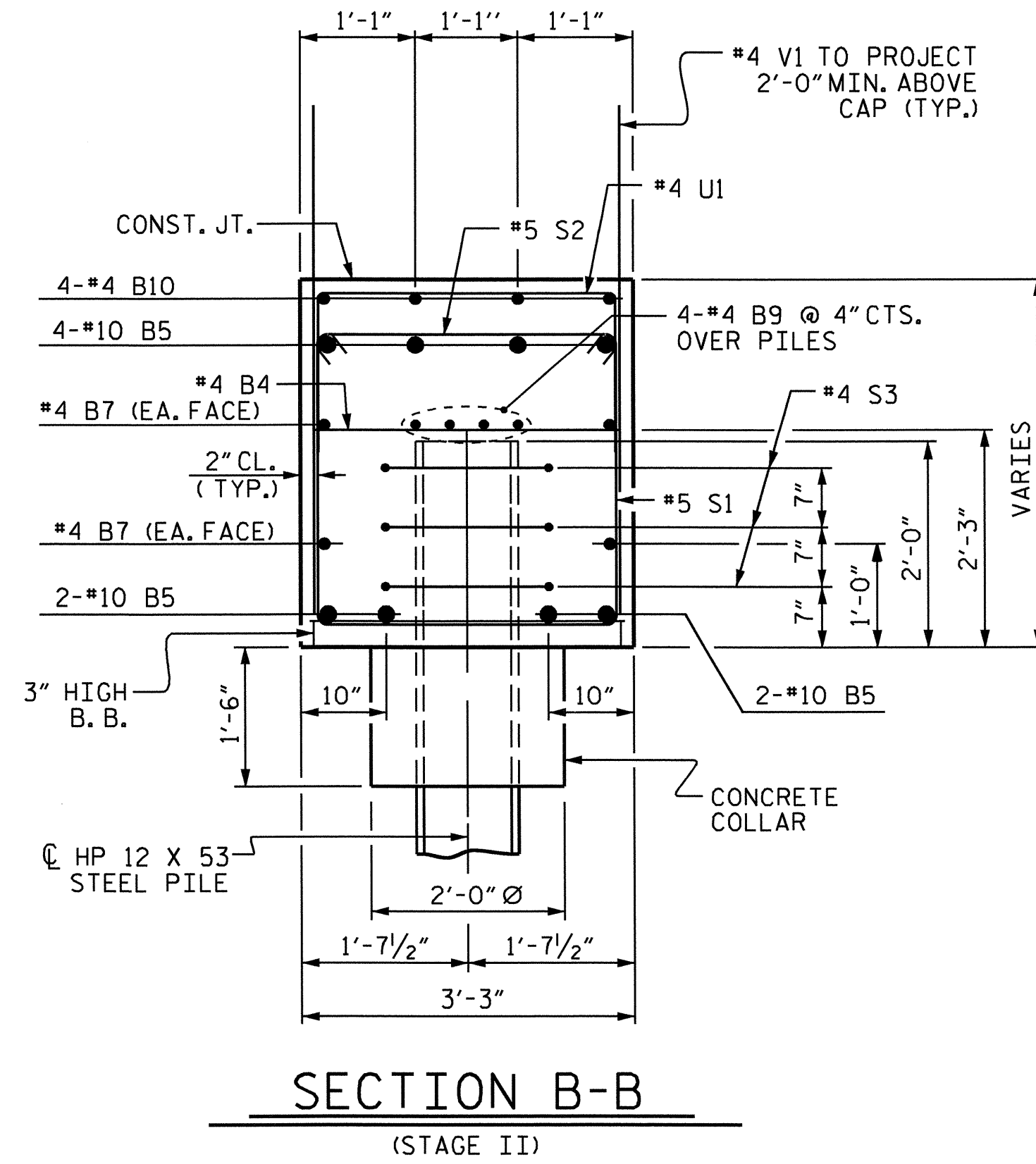
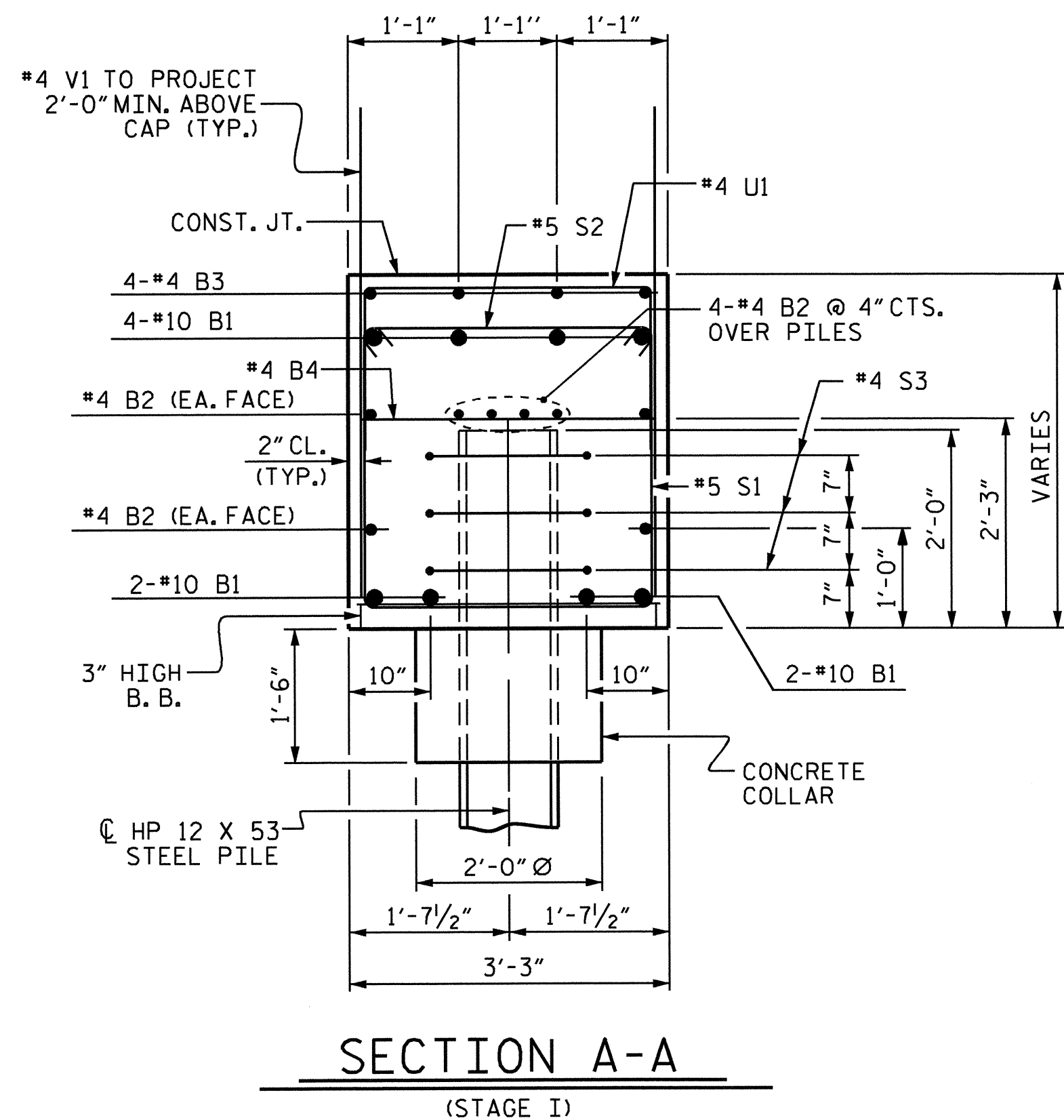
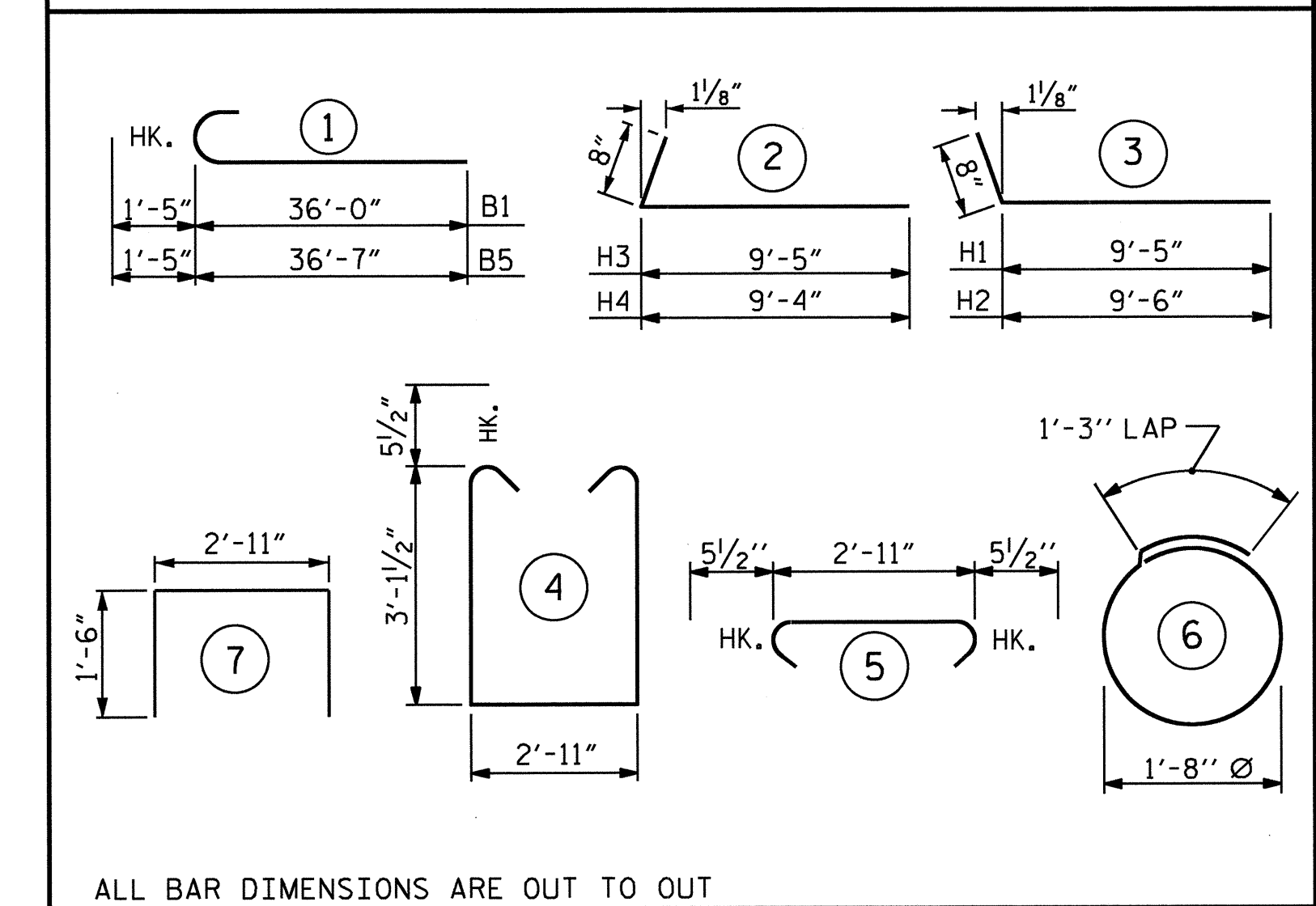
REINFORCING STEEL = 2,503 LBS REINFORCING STEEL = 4,766 LBS

CLASS A CONCRETE:
CAP, WING, & COLLARS 17.2 C.Y. CLASS A CONCRETE:
CAP, WING, & COLLARS 33.1 C.Y.

HP 12 X 53 STEEL PILES:
NO. 5 LIN. FT. 250 HP 12 X 53 STEEL PILES:
NO. 8 LIN. FT. 400

PILE REDRIVES: 5 EA. PILE REDRIVES: 8 EA.

BAR TYPES



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

PROJECT NO. U-3324
MOORE COUNTY
STATION: 21+37.80 -Y6-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 1
(INTEGRAL)

NORTH CAROLINA PROFESSIONAL SEAL 16301
ENGINEER HSIUNG FANG
7/18/12

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-33
1			3			TOTAL SHEETS
2			4			44

DRAWN BY: QT NGUYEN DATE: 4-10
CHECKED BY: S.H.SOCKWELL DATE: 4-12

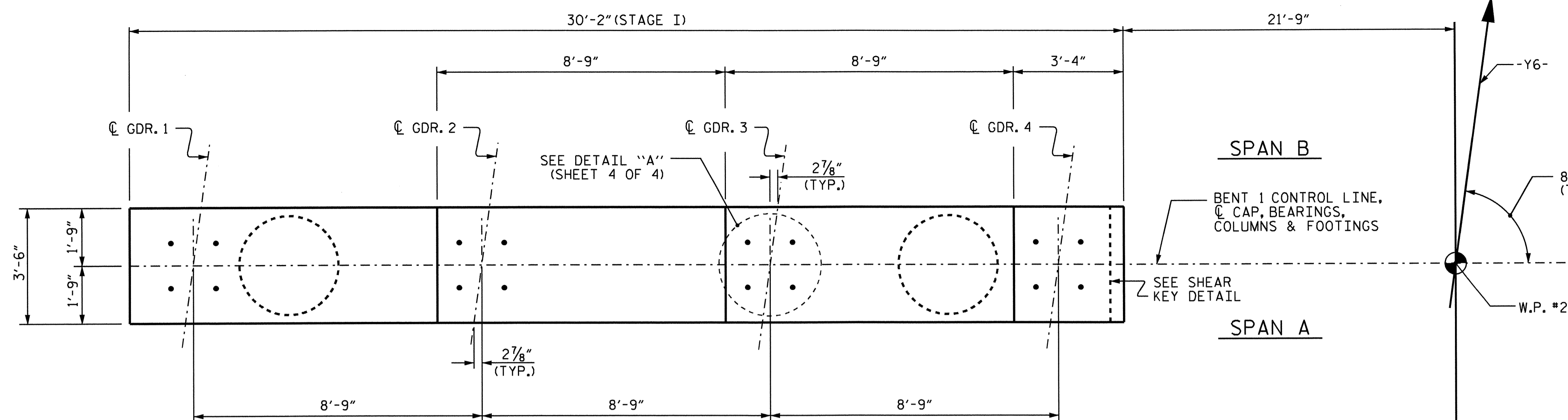
NOTES

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

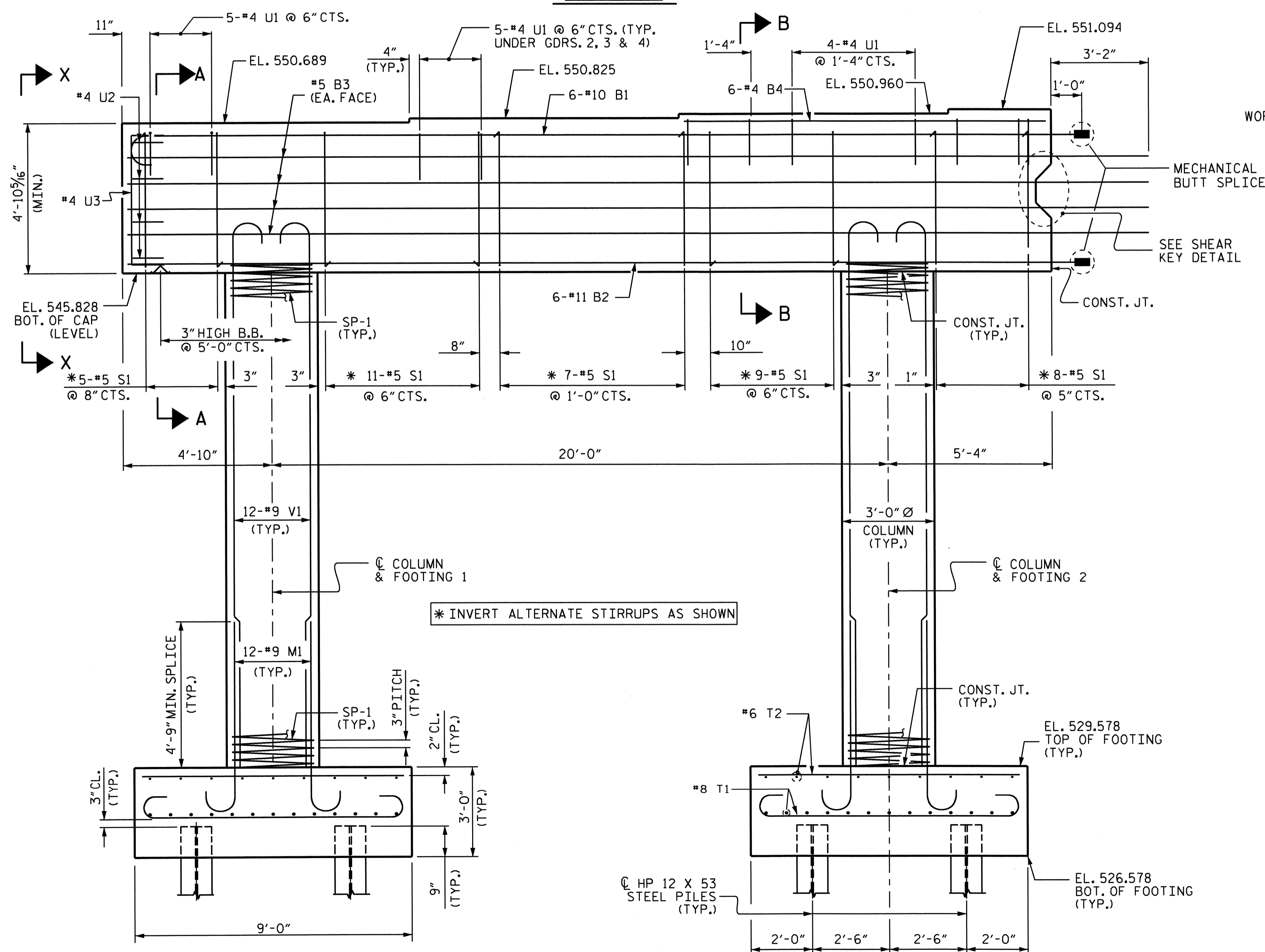
HOOKS ON M1 & V1 BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

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

FOR PILE SPLICE DETAIL, SEE SHEET 2 OF 4.

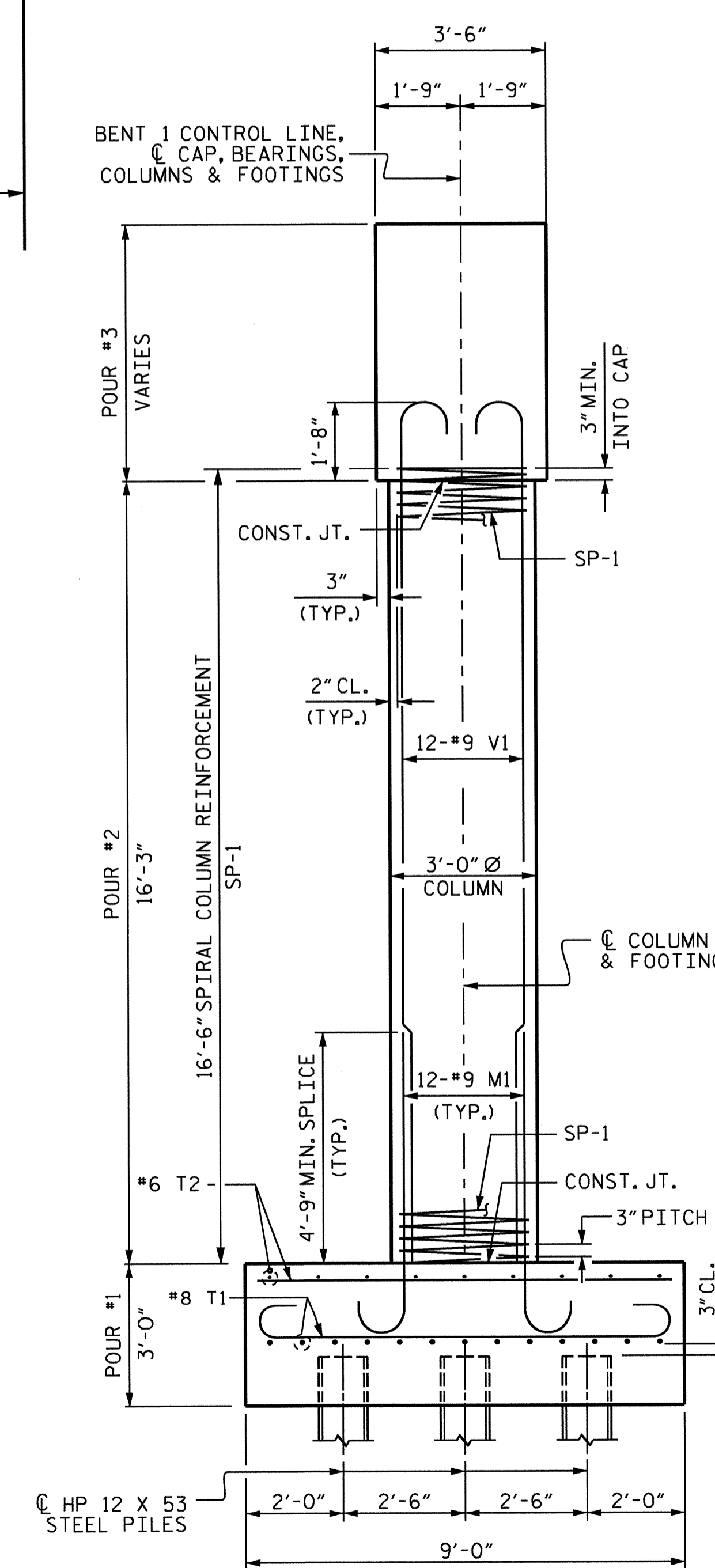


PLAN

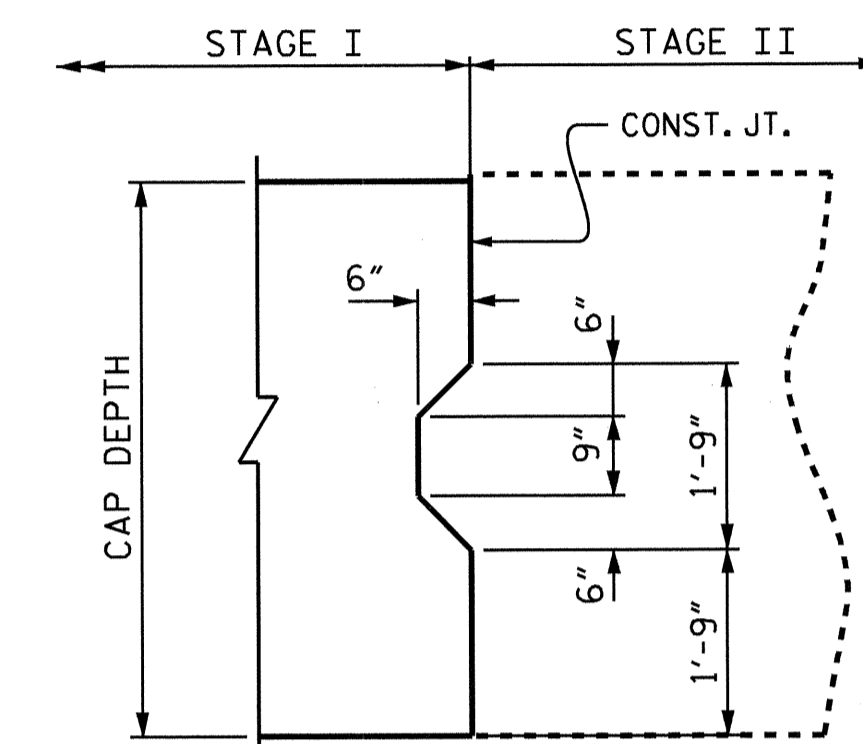


ELEVATION

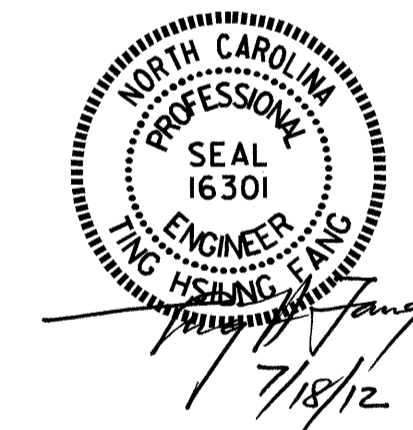
REINFORCING STEEL, DIMENSIONS AND DETAILS ARE TYPICAL FOR EACH COLUMN AND FOOTING



END ELEVATION



SHEAR KEY DETAIL



PROJECT NO. U-3324
MOORE COUNTY
STATION: 21+37.80 -Y6-

SHEET 1 OF 4

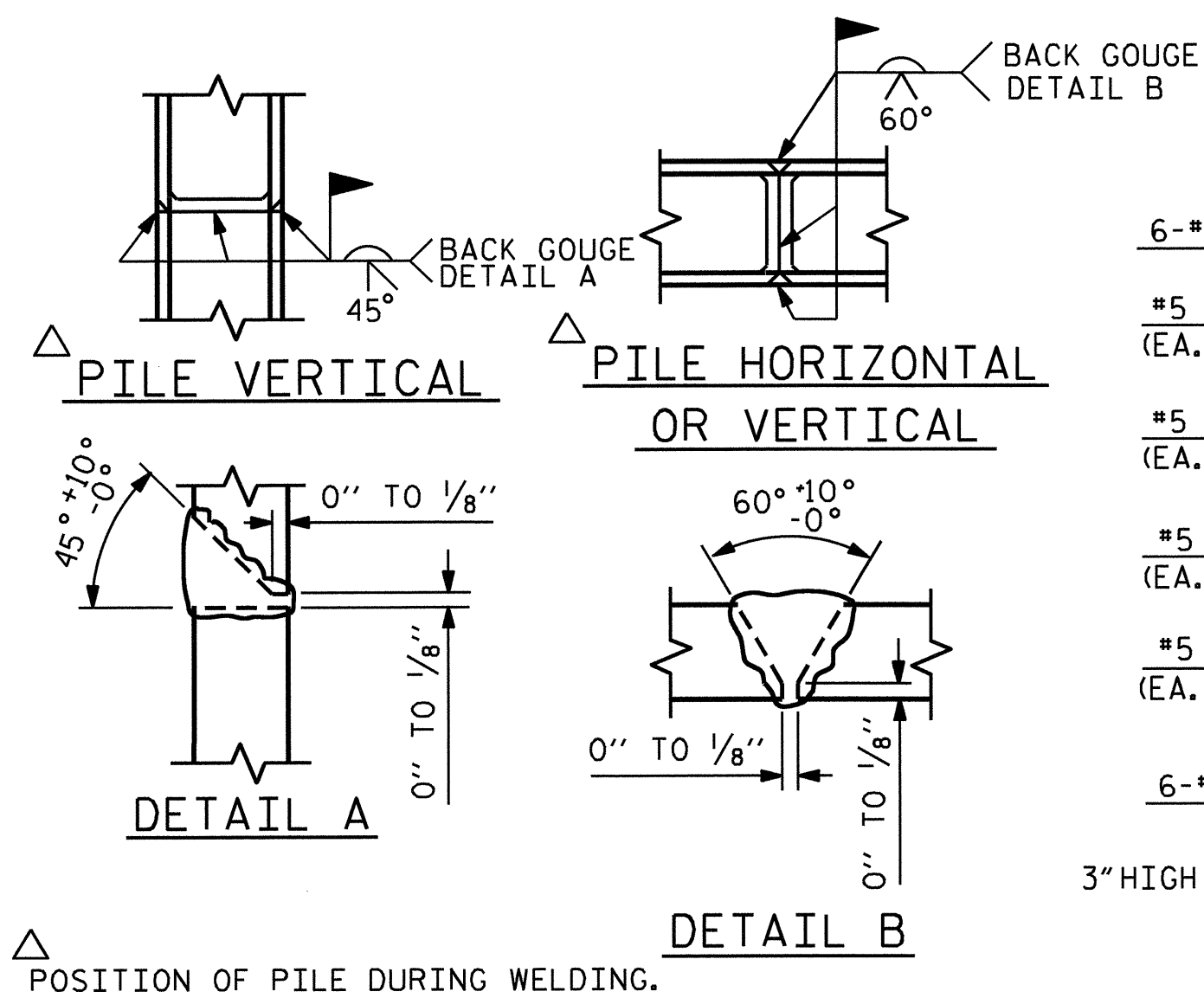
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT 1
(STAGE I)

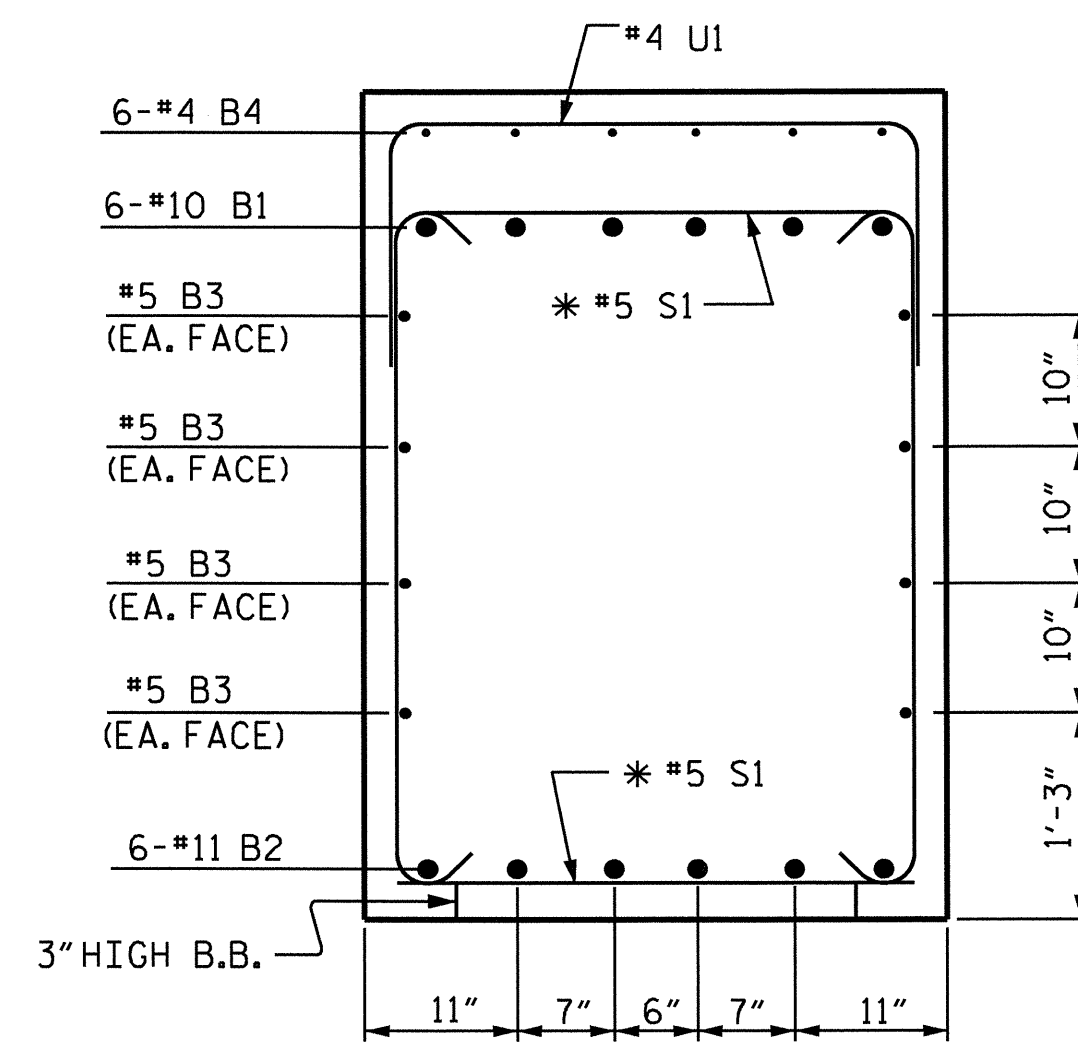
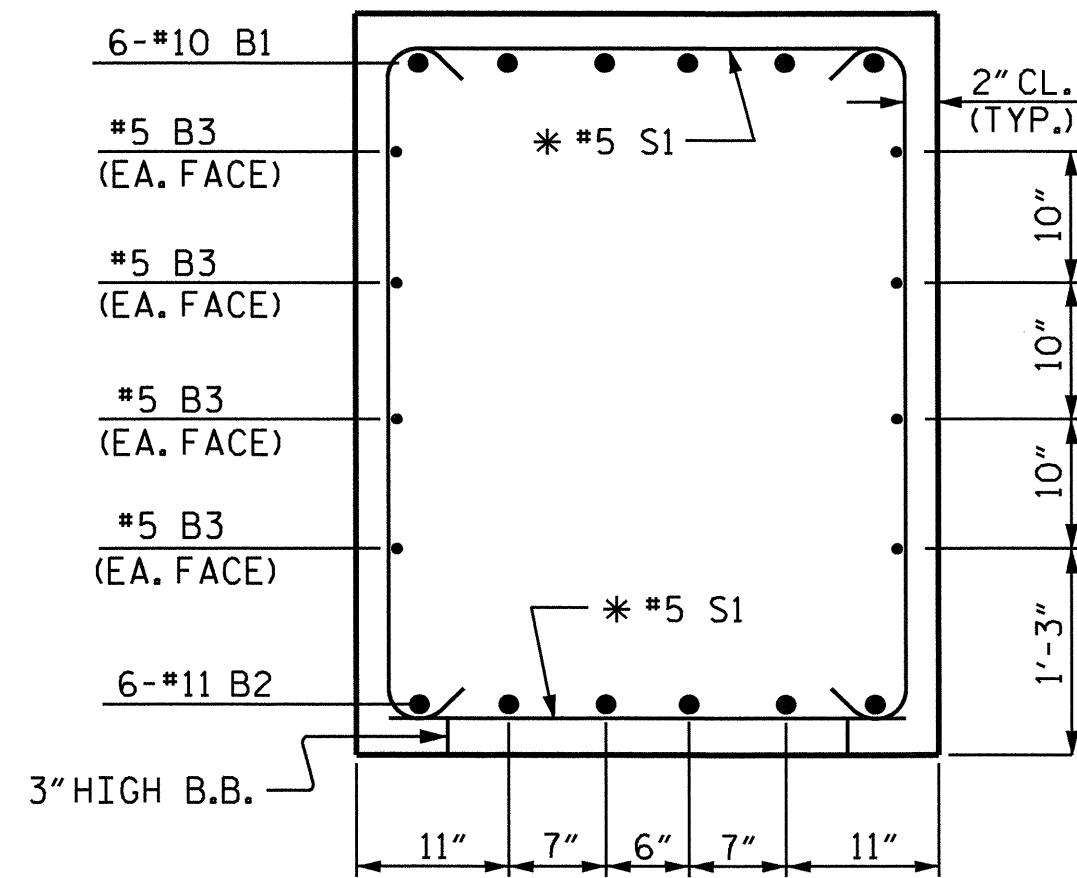
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-34	
1			3			TOTAL SHEETS	44
2			4				

DRAWN BY : HARISH SHAH DATE : 6-8-10
CHECKED BY : Q.T. NGUYEN DATE : 8-18-10

18-JUL-2012 15:23
Y:\Structures\Final Plans\U3324.sd.b1.dgn
frang



PILE SPLICE DETAILS



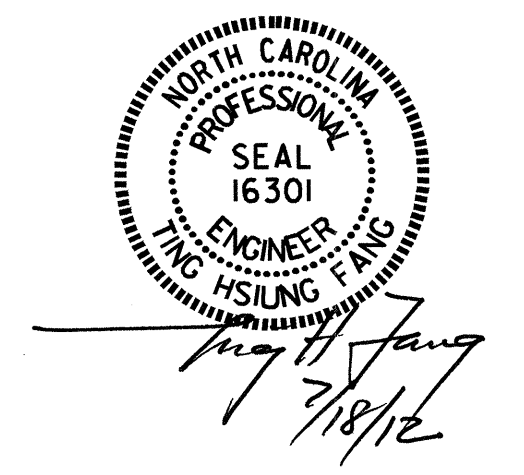
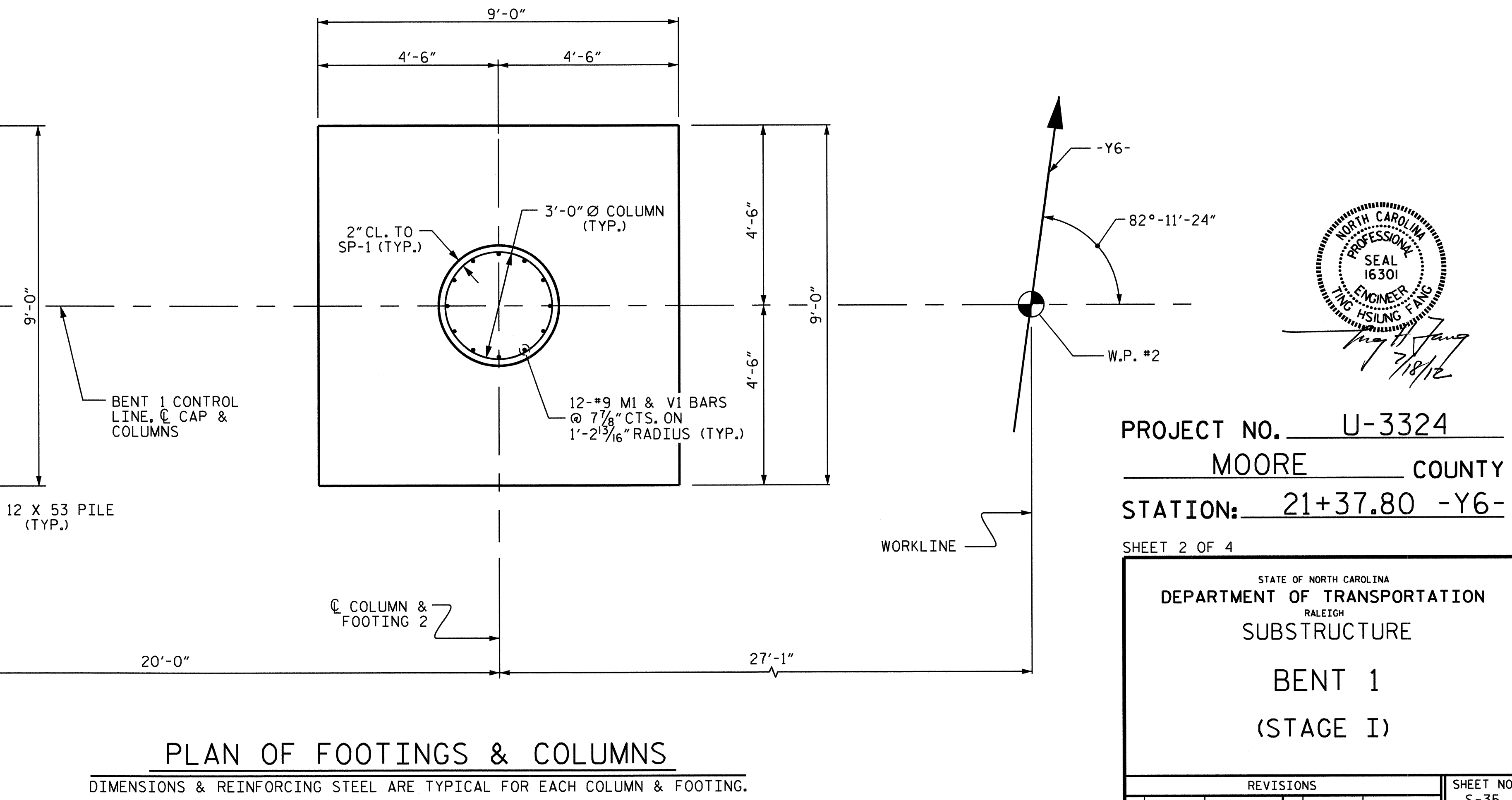
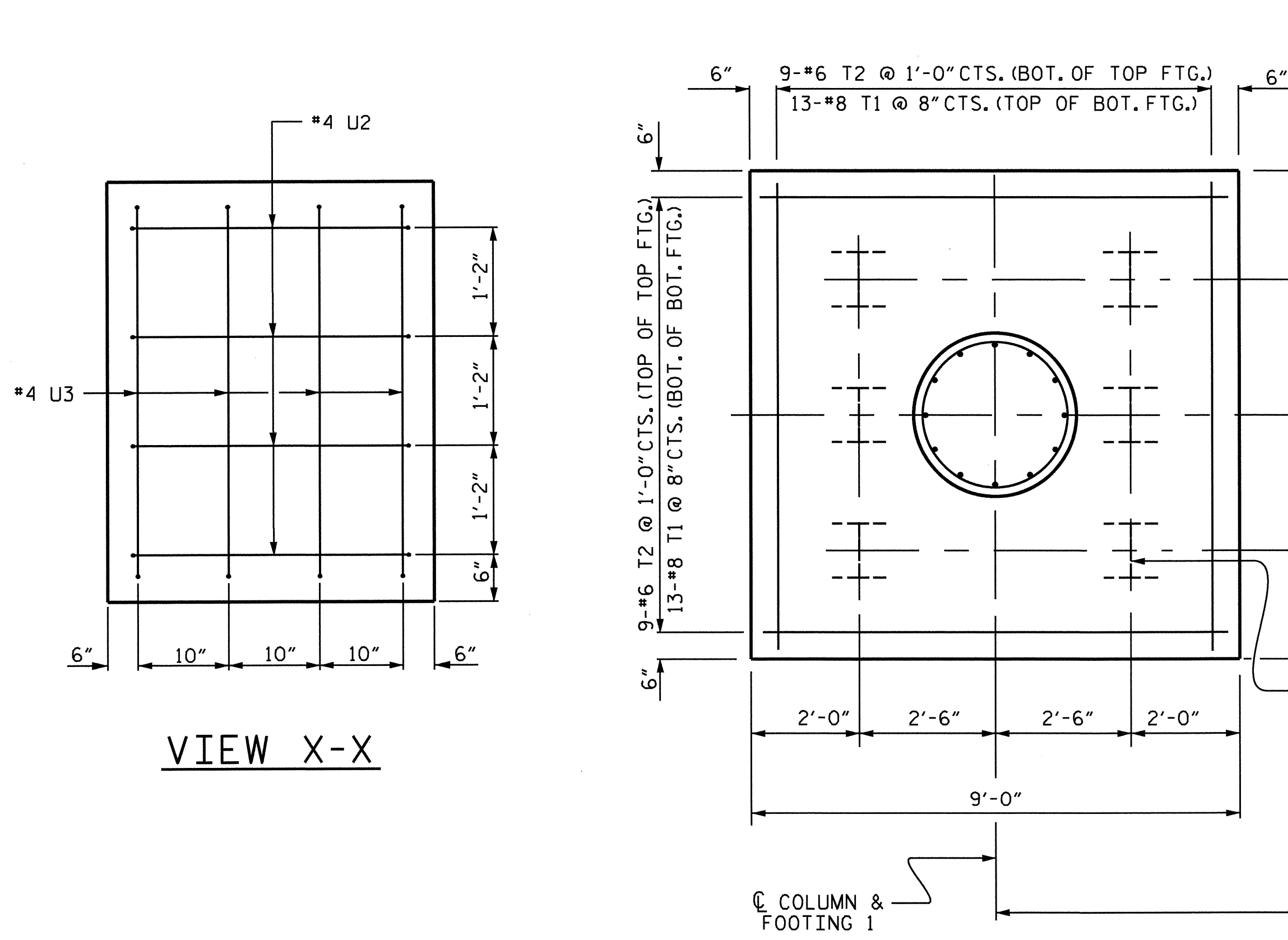
BAR TYPES

BILL OF MATERIAL

STAGE I					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#10	STR	32'-4"	835
B2	6	#11	STR	31'-0"	988
B3	8	#5	STR	33'-2"	277
B4	6	#4	STR	11'-9"	47
M1	24	#9	1	7'-10"	639
S1	40	#5	3	13'-1"	546
T1	52	#8	2	10'-4"	1435
T2	36	#6	STR	8'-6"	460
U1	24	#4	4	6'-2"	99
U2	4	#4	4	6'-0"	16
U3	4	#4	4	7'-4"	20
V1	24	#9	1	19'-2"	1564
REINFORCING STEEL					6,926
SP-1	2	*	5	569'-4"	761
SPIRAL COLUMN REINFORCING STEEL					LBS. 761
CLASS A CONCRETE BREAKDOWN					
POUR #1 - FOOTINGS	C.Y.	18.0			
POUR #2 - COLUMNS	C.Y.	8.5			
POUR #3 - CAP	C.Y.	19.6			
TOTAL	C.Y.	46.1			
HP 12 X 53 STEEL PILES					
No. 12	LIN. FT.	540			
PILE REDRIVES		12 EA.			

ALL BAR DIMENSIONS ARE OUT TO OUT.

* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.



PROJECT NO. U-3324
MOORE COUNTY
 STATION: 21+37.80 -Y6-
 SHEET 2 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
BENT 1
 (STAGE I)

REVISIONS						SHEET NO. S-35
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 44
2			4			

DRAWN BY : HARISH SHAH DATE : 6-8-10
 CHECKED BY : Q.T. NGUYEN DATE : 8-18-10

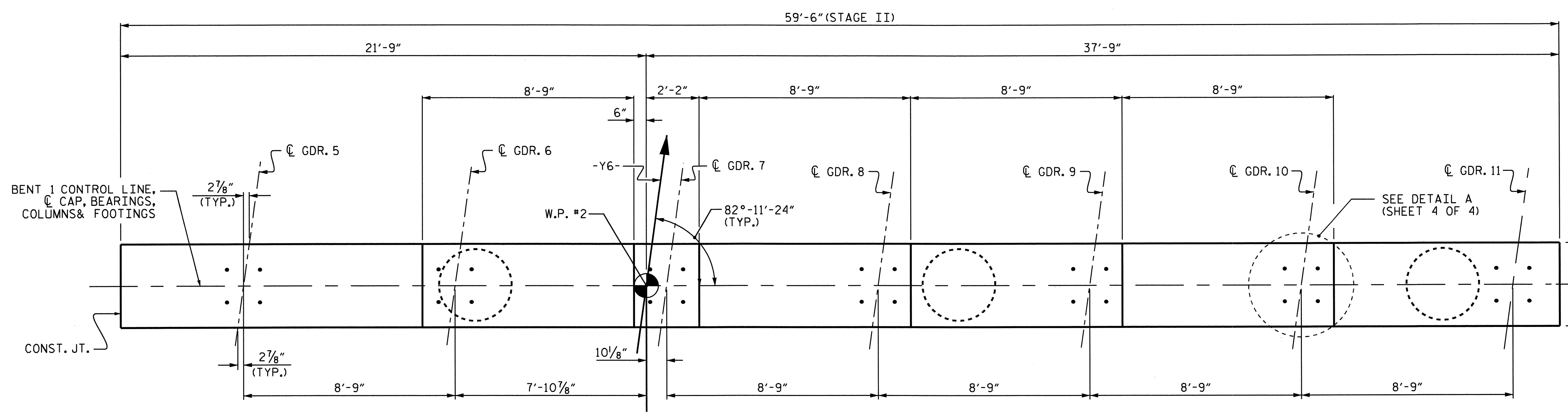
NOTES

STIRRUPS AND UI BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS AND MECHANICAL BUTT SPLICE.

HOOKS ON M1 & V1 BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

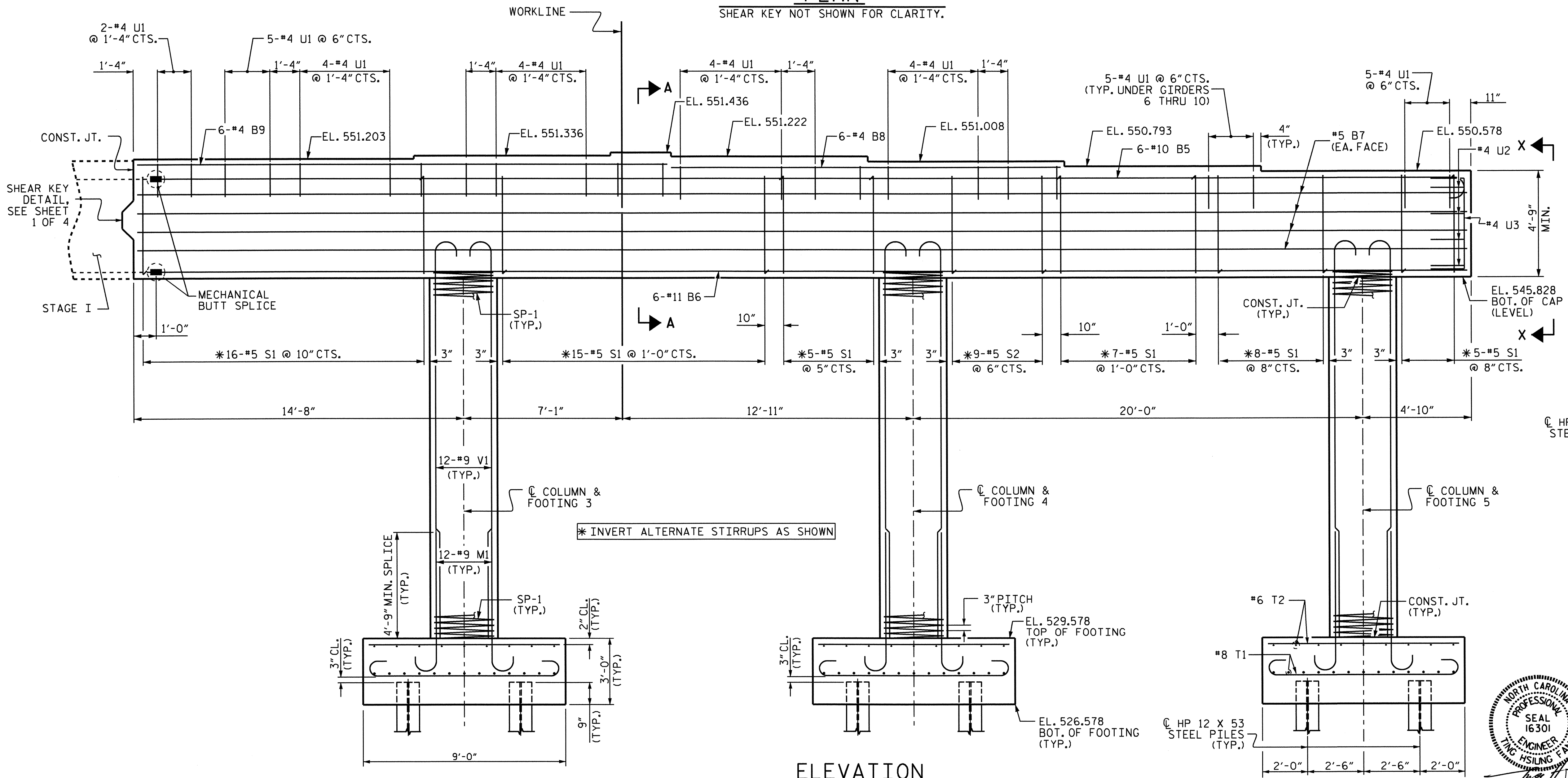
THE TOP SURFACE AREAS OF THE BENT CAPS SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

FOR PILE SPLICE DETAIL, SEE SHEET 2 OF 4.



PLAN

SHEAR KEY NOT SHOWN FOR CLARITY.

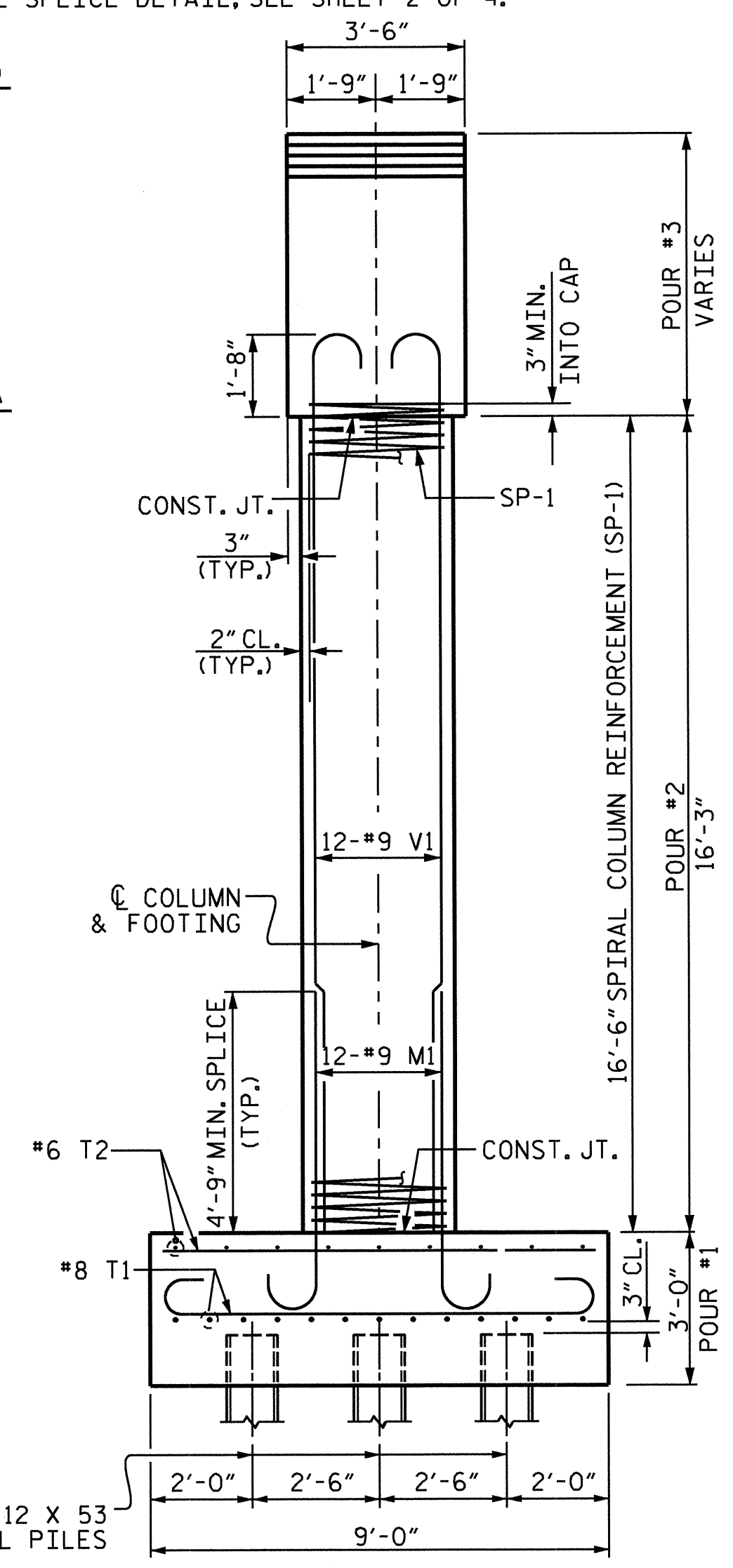


ELEVATION

REINFORCING STEEL, DIMENSIONS AND DETAILS ARE TYPICAL FOR EACH COLUMN AND FOOTING

SPAN B

SPAN A

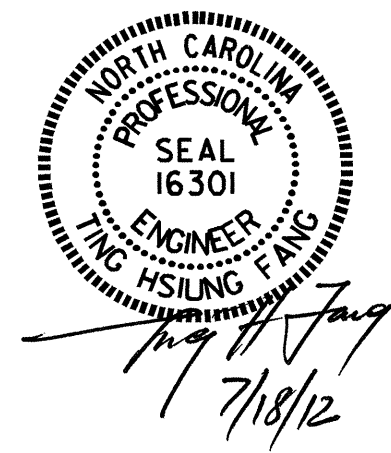


END ELEVATION

PROJECT NO. U-3324
 MOORE COUNTY
 STATION: 21+37.80 -Y6-

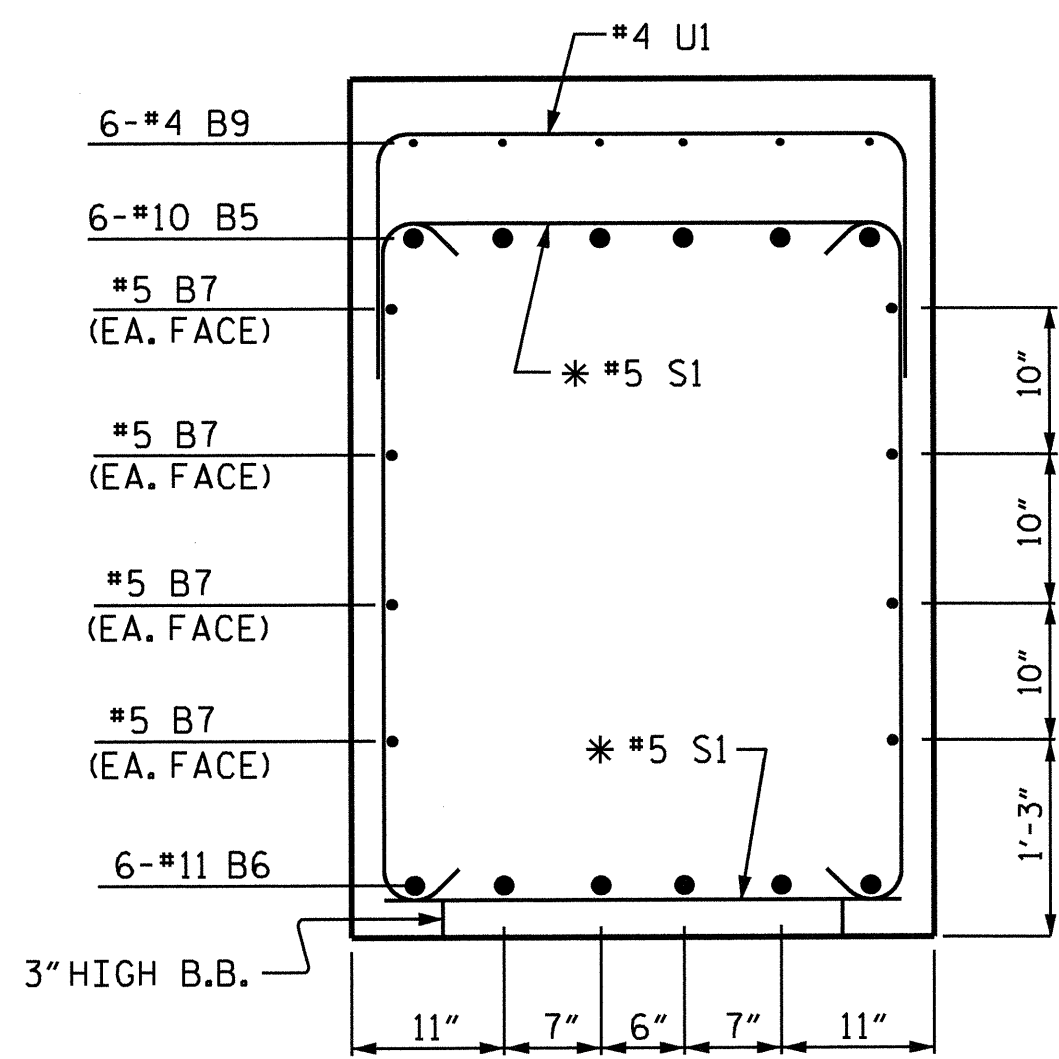
SHEET 3 OF 4

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

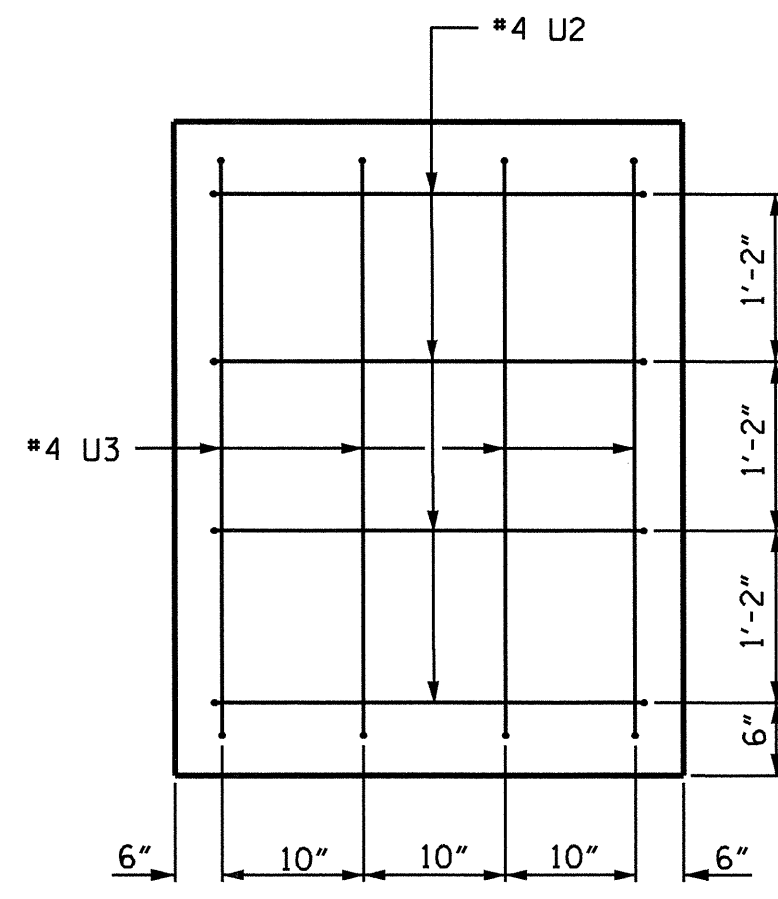


REVISIONS						SHEET NO. S-36
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 44
2			4			

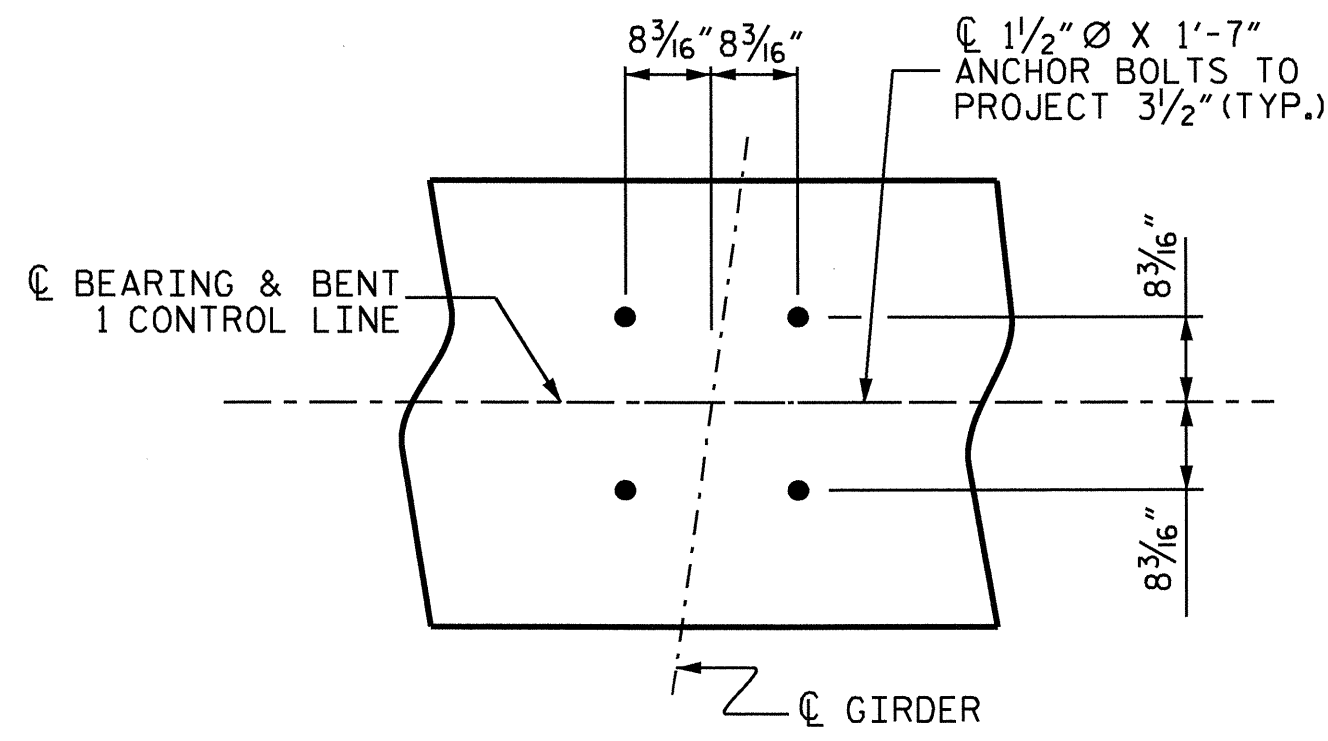
DRAWN BY: HARISH SHAH DATE: 6-10-10
 CHECKED BY: Q.T. NGUYEN DATE: 8-18-10



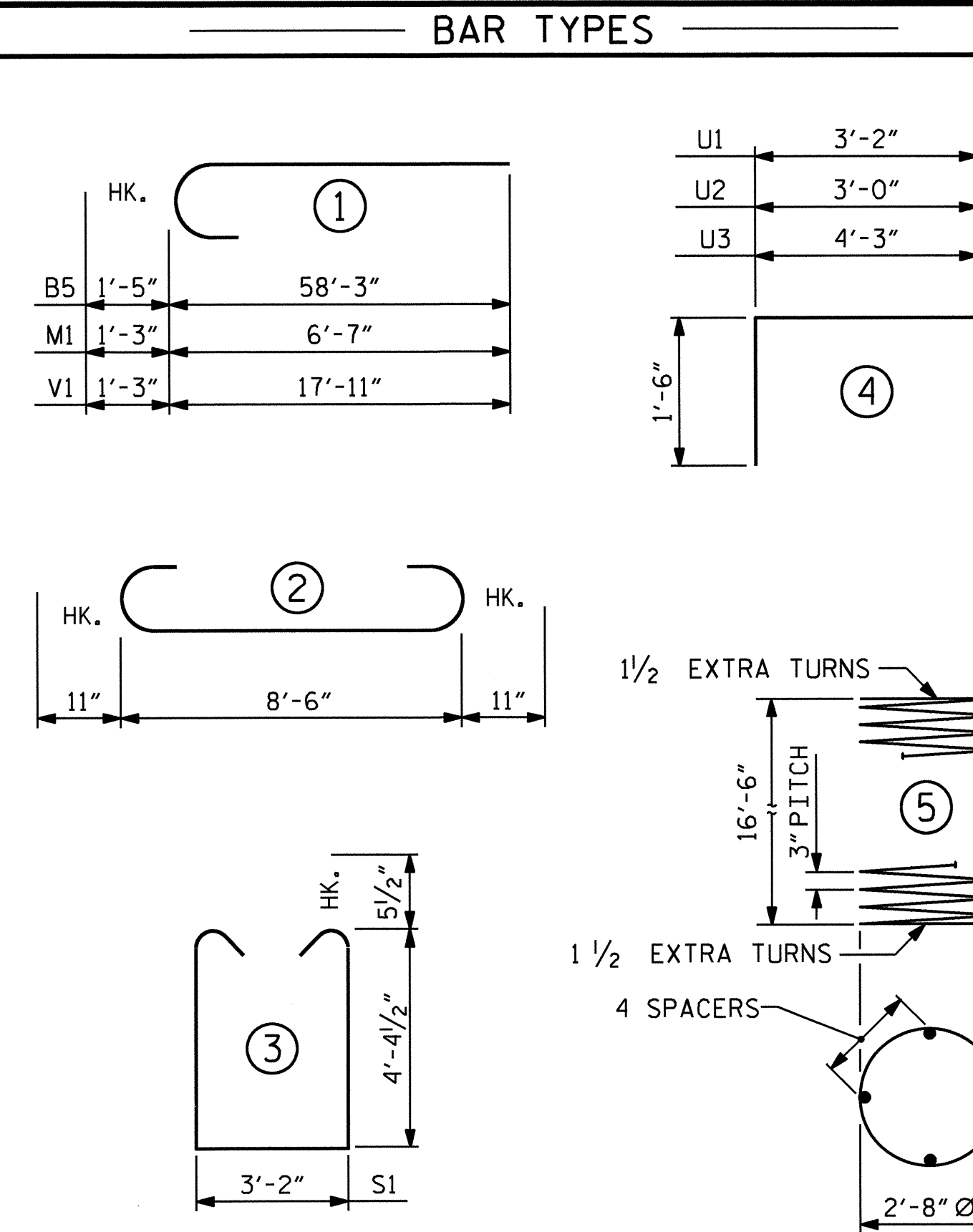
SECTION A-A
* INVERT ALTERNATE STIRRUPS



VIEW X-X



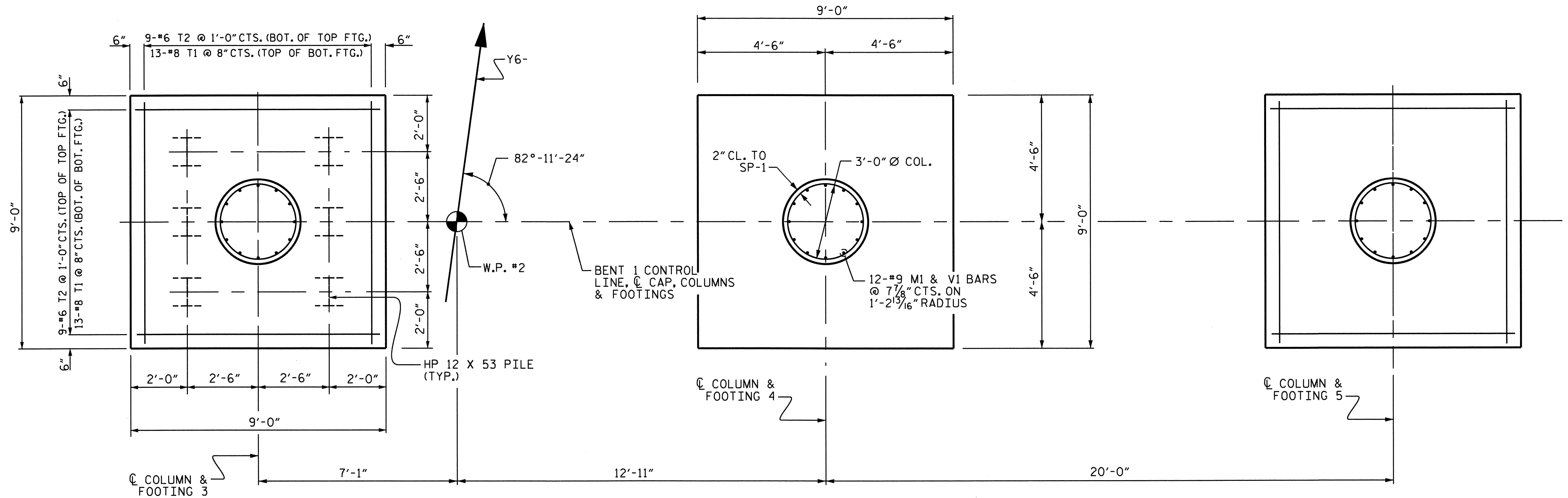
DETAIL A



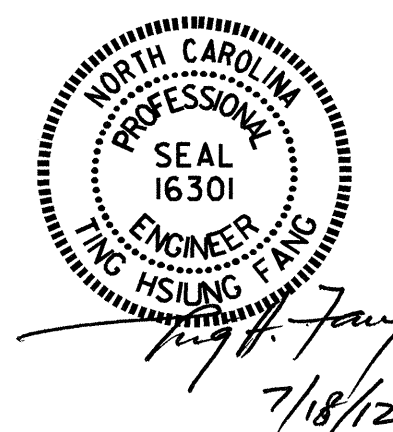
ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL						
STAGE II						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
B5	6	#10	1	59'-8"	1540	
B6	6	#11	STR	58'-4"	1860	
B7	8	#5	STR	59'-2"	494	
B8	6	#4	STR	17'-4"	69	
B9	6	#4	STR	23'-7"	95	
M1	36	#9	1	7'-10"	959	
S1	65	#5	3	12'-10"	870	
T1	78	#8	2	10'-4"	2152	
T2	54	#6	STR	8'-6"	689	
U1	53	#4	4	6'-2"	218	
U2	4	#4	4	6'-0"	16	
U3	4	#4	4	7'-3"	19	
V1	36	#9	1	19'-2"	2346	
REINFORCING STEEL				LBS.	11328	
SP-1	3	#	5	569'-4"	1141	
SPIRAL COLUMN REINFORCING STEEL				LBS.	1141	
CLASS A CONCRETE BREAKDOWN						
POUR #1 - FOOTINGS				C.Y.	27.0	
POUR #2 - COLUMNS				C.Y.	12.8	
POUR #3 - CAP				C.Y.	40.3	
TOTAL				C.Y.	80.1	
HP 12 X 53 STEEL PILES						
No. 18				LIN. FT.	810	
PILE REDRIVES					18 EA.	

* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.



PLAN OF FOOTINGS & COLUMNS
DIMENSIONS & REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & FOOTING.

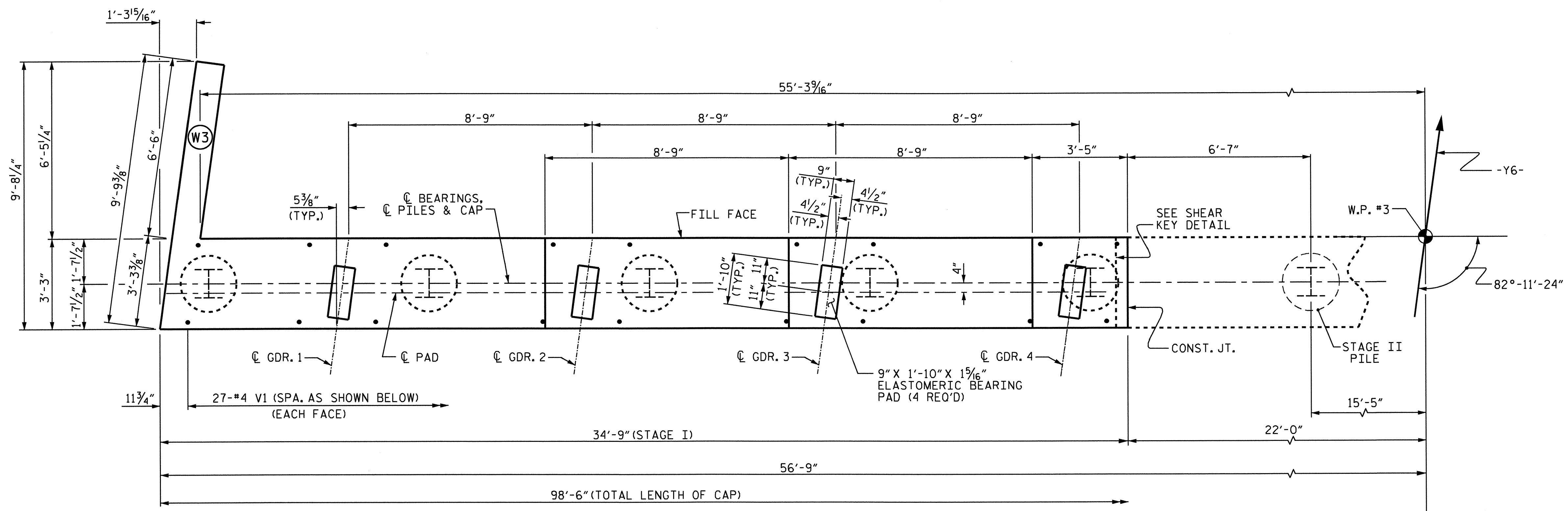


PROJECT NO. U-3324
MOORE COUNTY
STATION: 21+37.80 -Y6-

SHEET 4 OF 4
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
BENT 1
(STAGE II)

DRAWN BY: HARISH SHAH DATE: 6-10-10
CHECKED BY: Q.T. NGUYEN DATE: 8-18-10

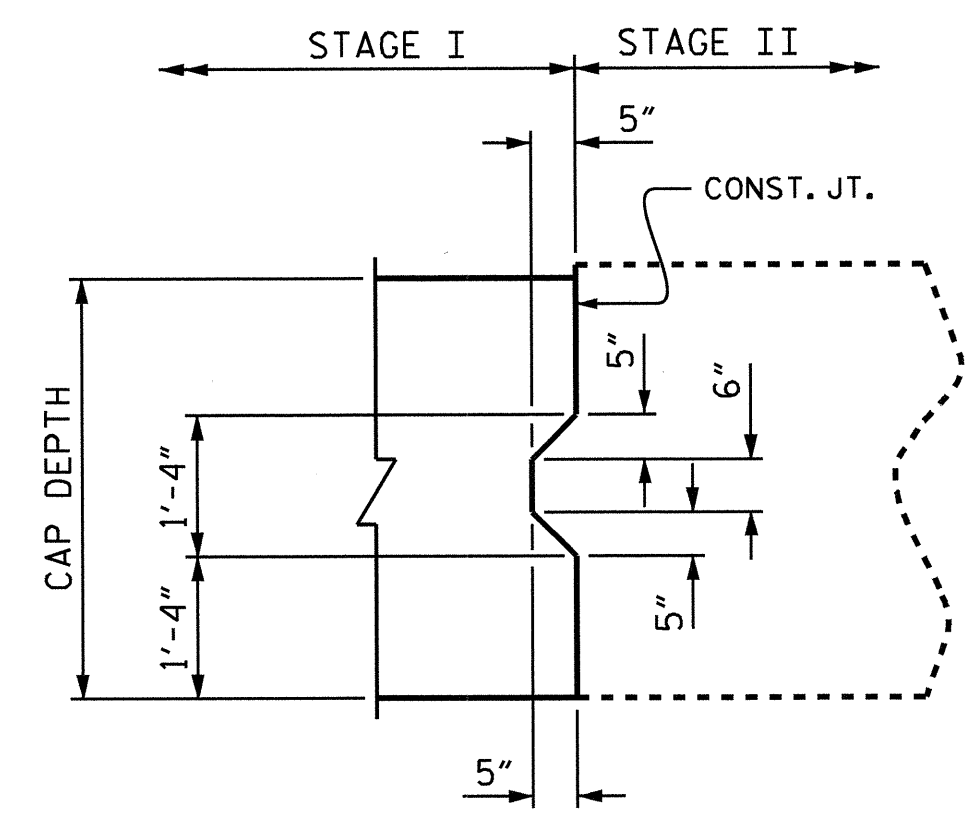
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-37
1			3			TOTAL SHEETS 44
2			4			



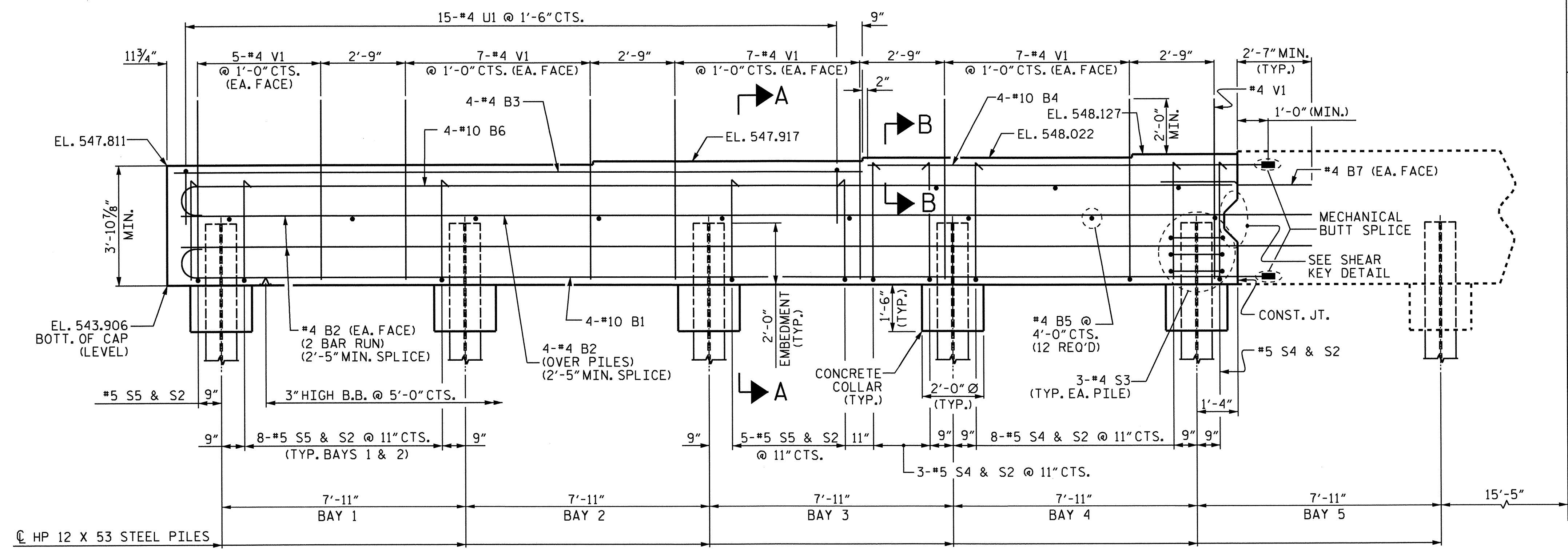
PLAN

ORIENT ELASTOMERIC BEARING PADS AS SHOWN.
CL PAD IS 4" OFFSET FROM CL BEARING.

NOTES:
THE TOP SURFACE OF THE END BENT CAP AND LOWER WINGS, EXCLUDING THE OUTSIDE 4" AND THE BEARING AREA SHALL BE RAKED TO THE DEPTH OF 1/4".
THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.
SEE SUPERSTRUCTURE SHEETS FOR THE ABUTMENT DETAILS.



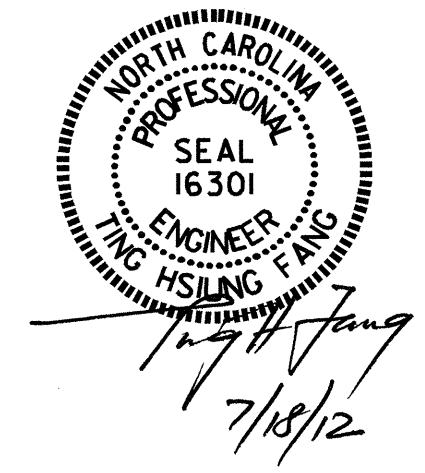
SHEAR KEY DETAIL



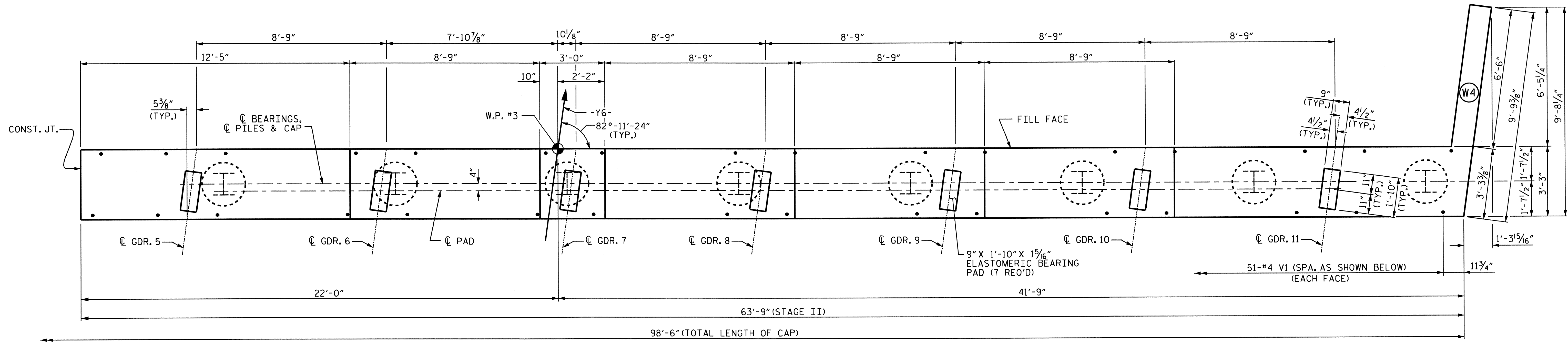
ELEVATION

PROJECT NO. U-3324
MOORE COUNTY
STATION: 21+37.80 -Y6-
SHEET 1 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE					
END BENT 2 (INTEGRAL)					
STAGE I					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-38					TOTAL SHEETS 44

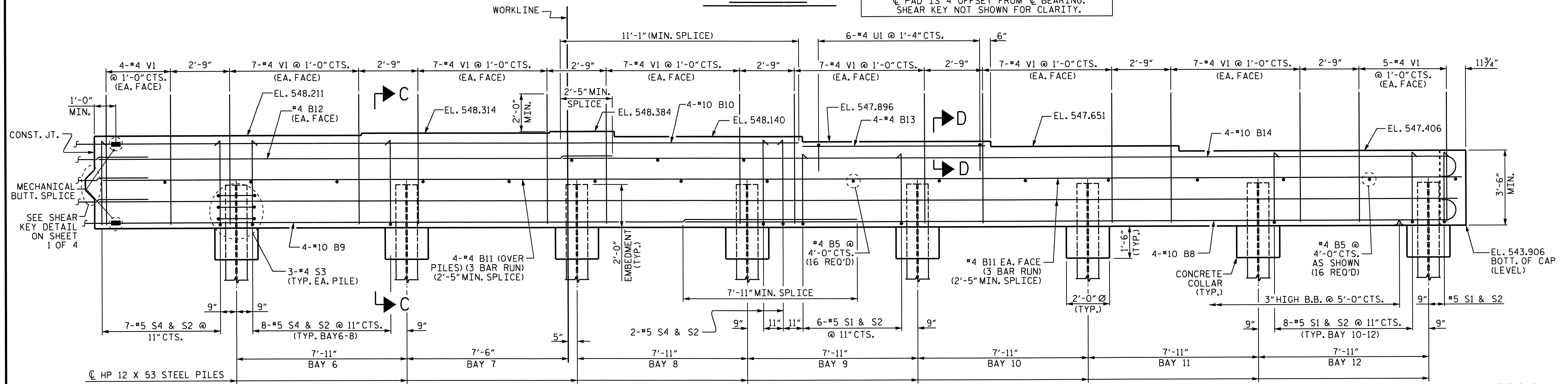


DRAWN BY : QT NGUYEN DATE : 4-10
CHECKED BY : S.H.SOCKWELL DATE : 4-12



PLAN

ORIENT ELASTOMERIC BEARING PADS AS SHOWN.
 C PAD IS 4" OFFSET FROM C BEARING.
 SHEAR KEY NOT SHOWN FOR CLARITY.

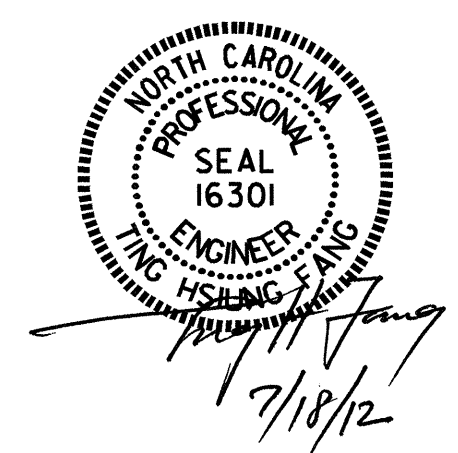


ELEVATION

ORIENT ELASTOMERIC BEARING PADS AS SHOWN

PROJECT NO. U-3324
 MOORE COUNTY
 STATION: 21+37.80 -Y6-

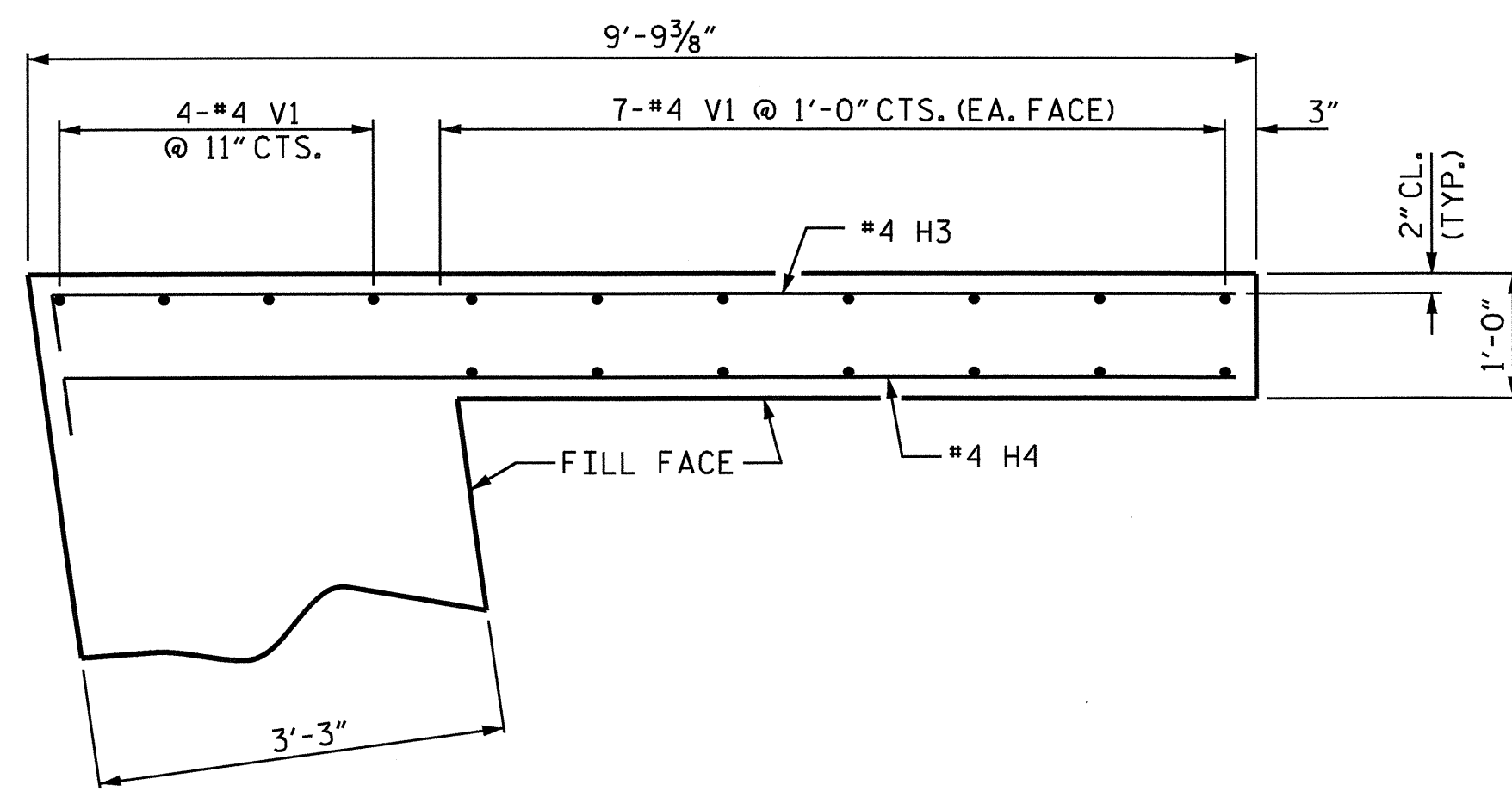
SHEET 2 OF 4



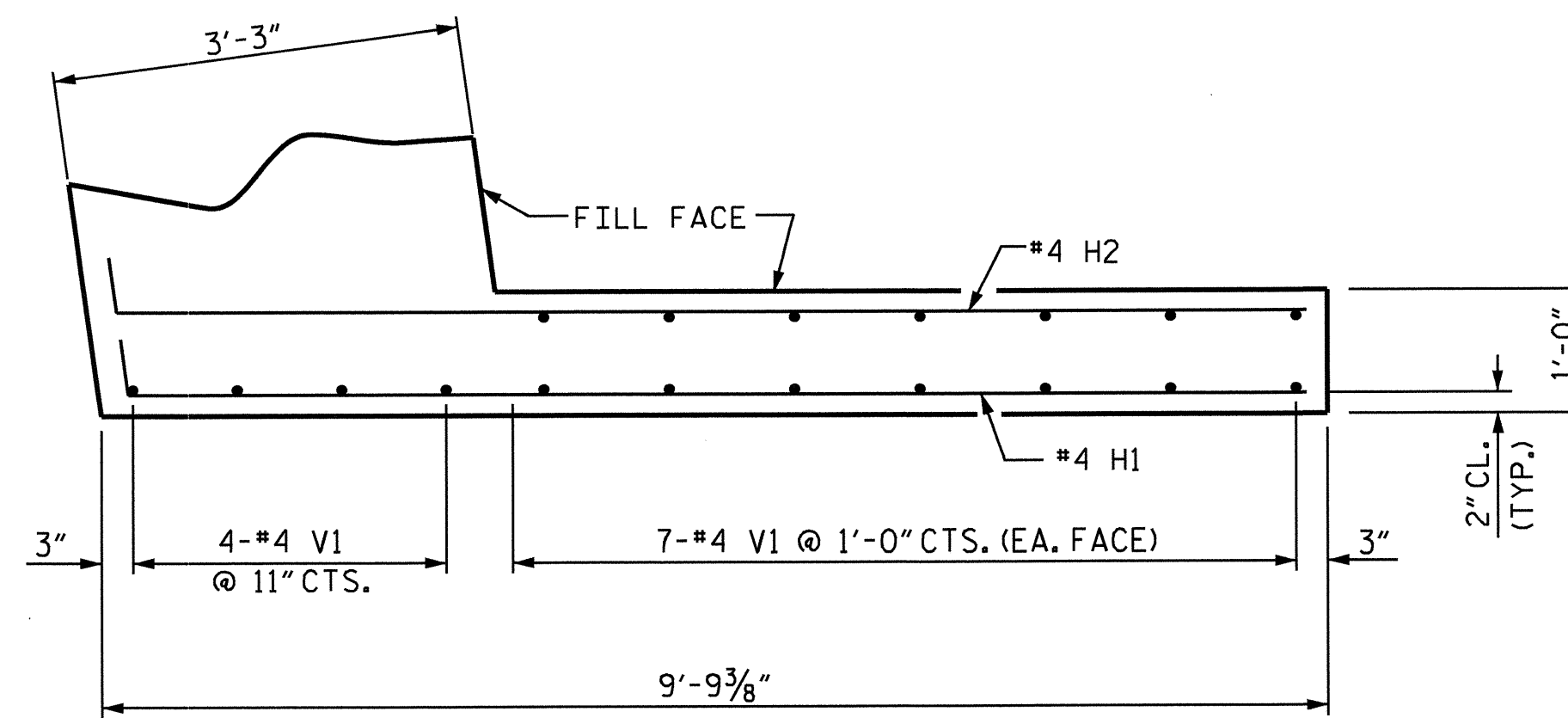
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT 2
 (INTEGRAL)
 STAGE II

DRAWN BY: QT NGUYEN DATE: 4-10
 CHECKED BY: S.H.SOCKWELL DATE: 4-12

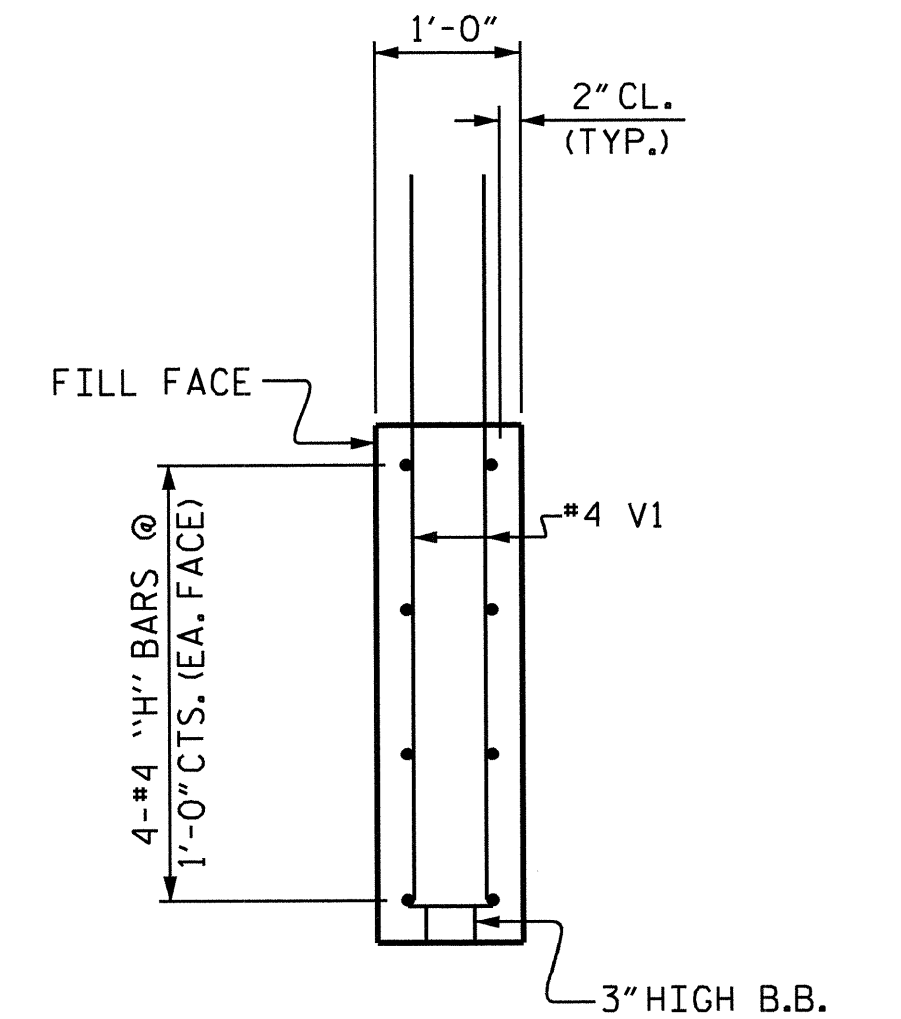
REVISIONS						SHEET NO. S-39
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 44
2			4			



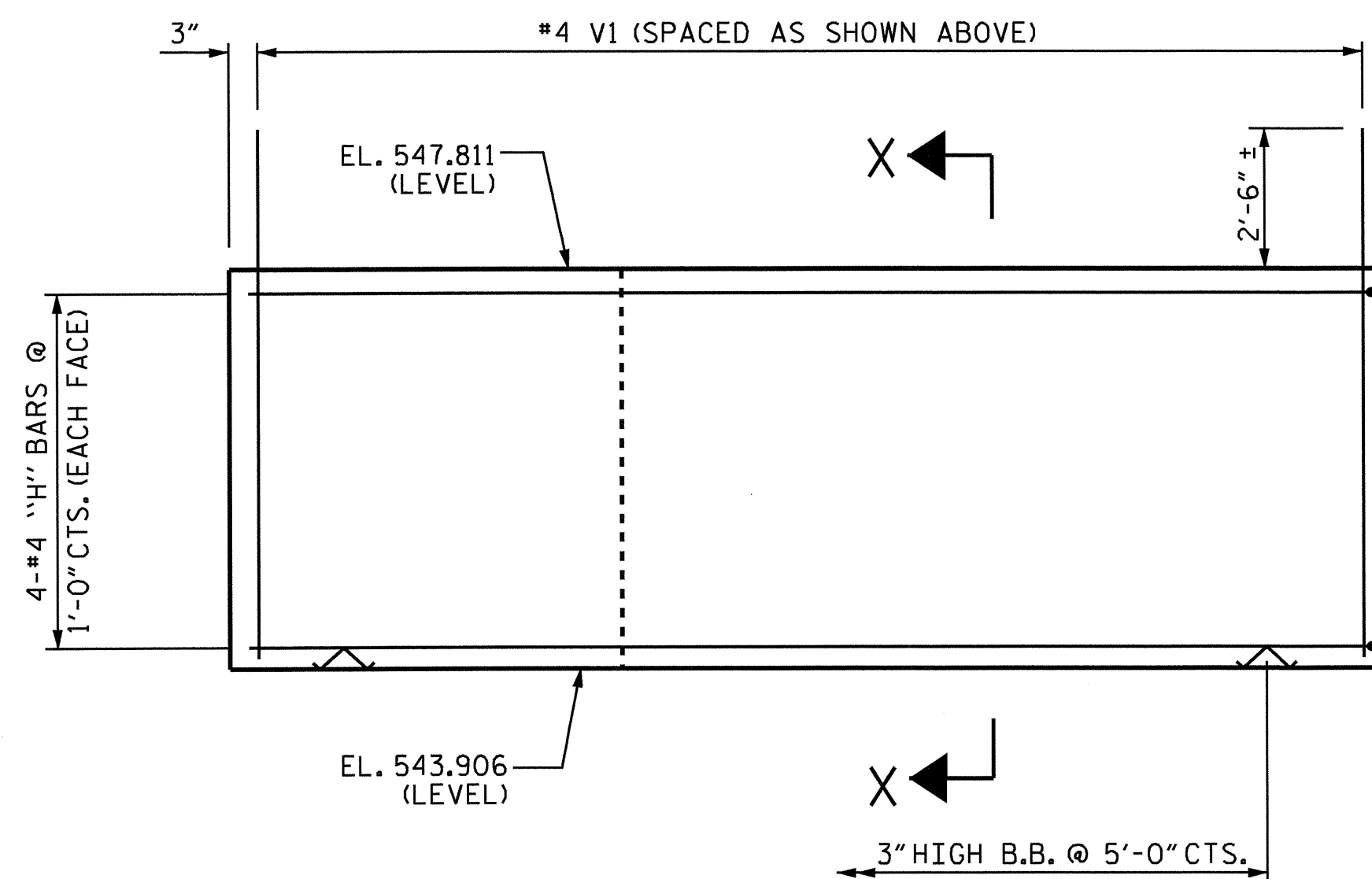
PLAN OF WING (W3)
(STAGE I)



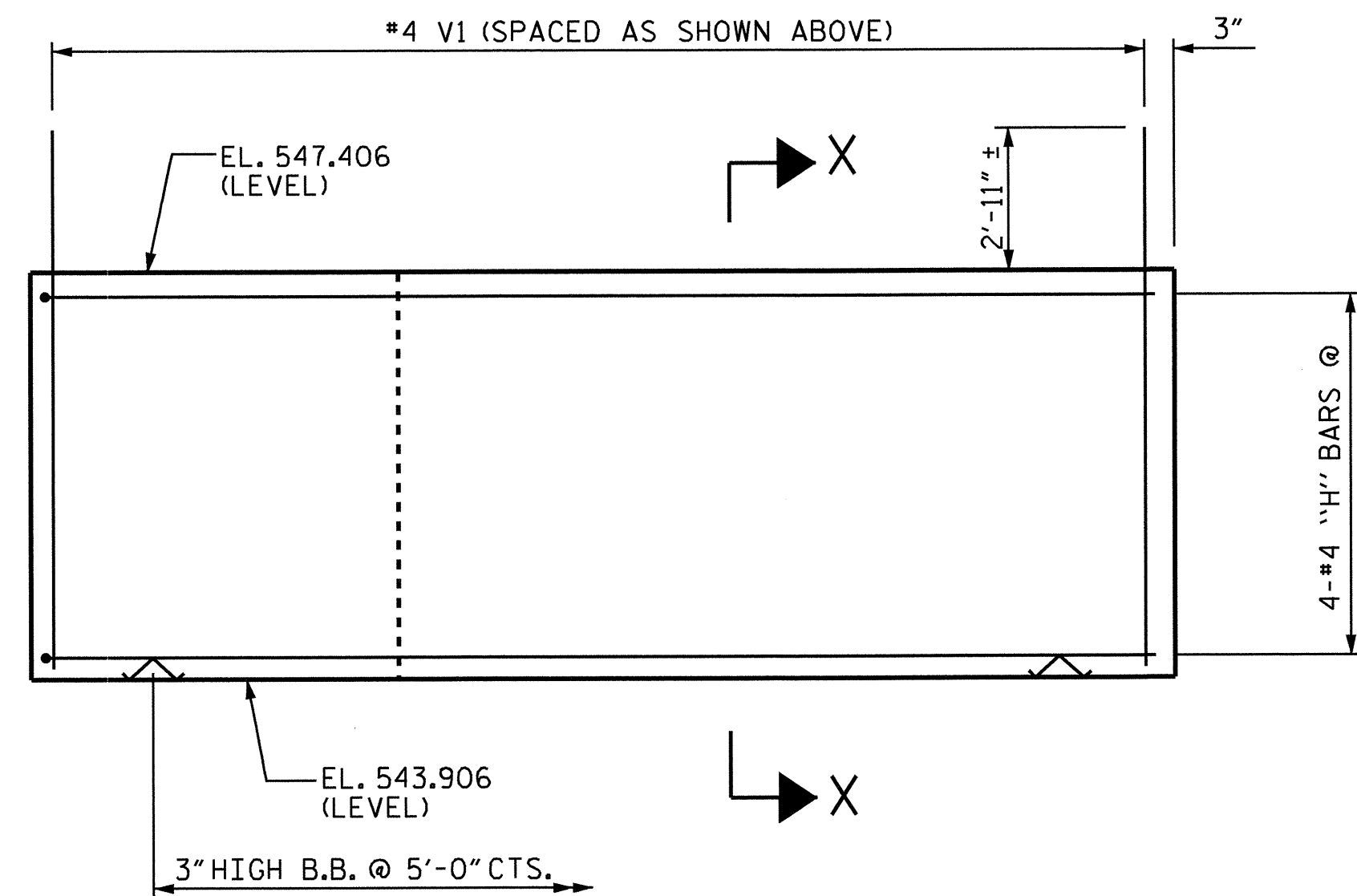
PLAN OF WING (W4)
(STAGE II)



SECTION X-X



ELEVATION OF WING (W3)
(STAGE I)

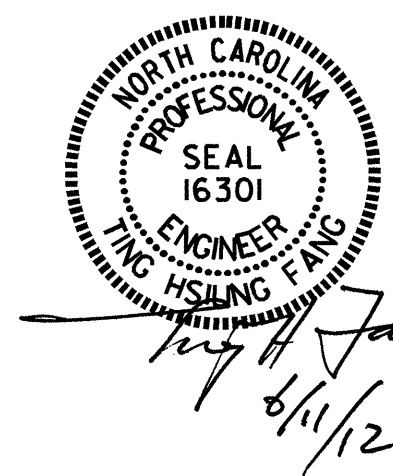


ELEVATION OF WING (W4)
(STAGE II)

PROJECT NO. U-3324
MOORE COUNTY
 STATION: 21+37.80 -Y6-

SHEET 3 OF 4

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



DRAWN BY : QT NGUYEN DATE : 4-10
 CHECKED BY : S.H.SOCKWELL DATE : 4-12

11-JUN-2012 14:43
 Y:\S\structures\Final Plans\U3324.sd.e*.dgn
 rppatel

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-40
1			3			TOTAL SHEETS
2			4			44

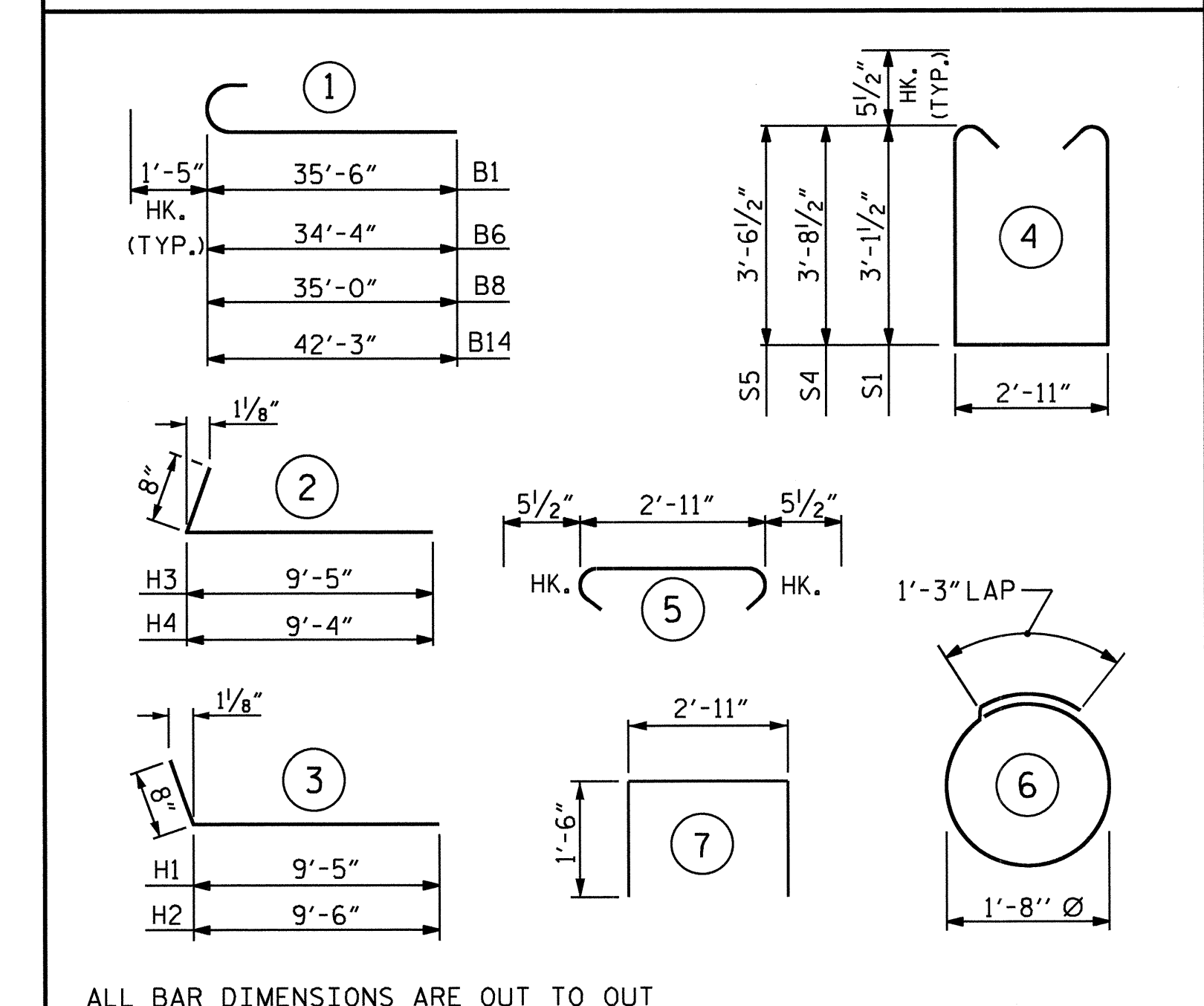
BILL OF MATERIAL

END BENT 2

STAGE I					STAGE II				
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	#4	STR	36'-11"	635	B5	#4	STR	2'-11"	37
B2	#4	STR	19'-10"	212	B8	#4	STR	36'-5"	627
B3	#4	STR	22'-0"	59	B9	#4	STR	35'-10"	617
B4	#4	STR	13'-0"	224	B10	#4	STR	31'-9"	546
B5	#4	STR	2'-11"	23	B11	#4	STR	22'-11"	367
B6	#4	STR	35'-9"	615	B12	#4	STR	24'-0"	64
B7	#4	STR	5'-4"	7	B13	#4	STR	8'-7"	23
					B14	#4	STR	43'-8"	752
H3	#4	STR	10'-1"	27	H1	#4	STR	10'-1"	27
H4	#4	STR	10'-0"	27	H2	#4	STR	10'-2"	27
S2	#5	STR	3'-10"	136	S1	#5	STR	10'-1"	326
S3	#4	STR	6'-6"	65	S2	#5	STR	3'-10"	256
S4	#5	STR	11'-3"	141	S3	#4	STR	6'-6"	104
S5	#5	STR	10'-11"	250	S4	#5	STR	11'-3"	387
U1	#4	STR	5'-11"	59	U1	#4	STR	5'-11"	28
V1	#4	STR	6'-3"	301	V1	#4	STR	6'-3"	501

REINFORCING STEEL = 2,781 LBS	REINFORCING STEEL = 4,689 LBS
CLASS A CONCRETE: CAP, WING, & COLLARS 18.8 C.Y.	CLASS A CONCRETE: CAP, WING, & COLLARS 33.7 C.Y.
HP 12 X 53 STEEL PILES: NO. 5 LIN. FT. 250	HP 12 X 53 STEEL PILES: NO. 8 LIN. FT. 400
PILE REDRIVES: 5 EA.	PILE REDRIVES: 8 EA.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

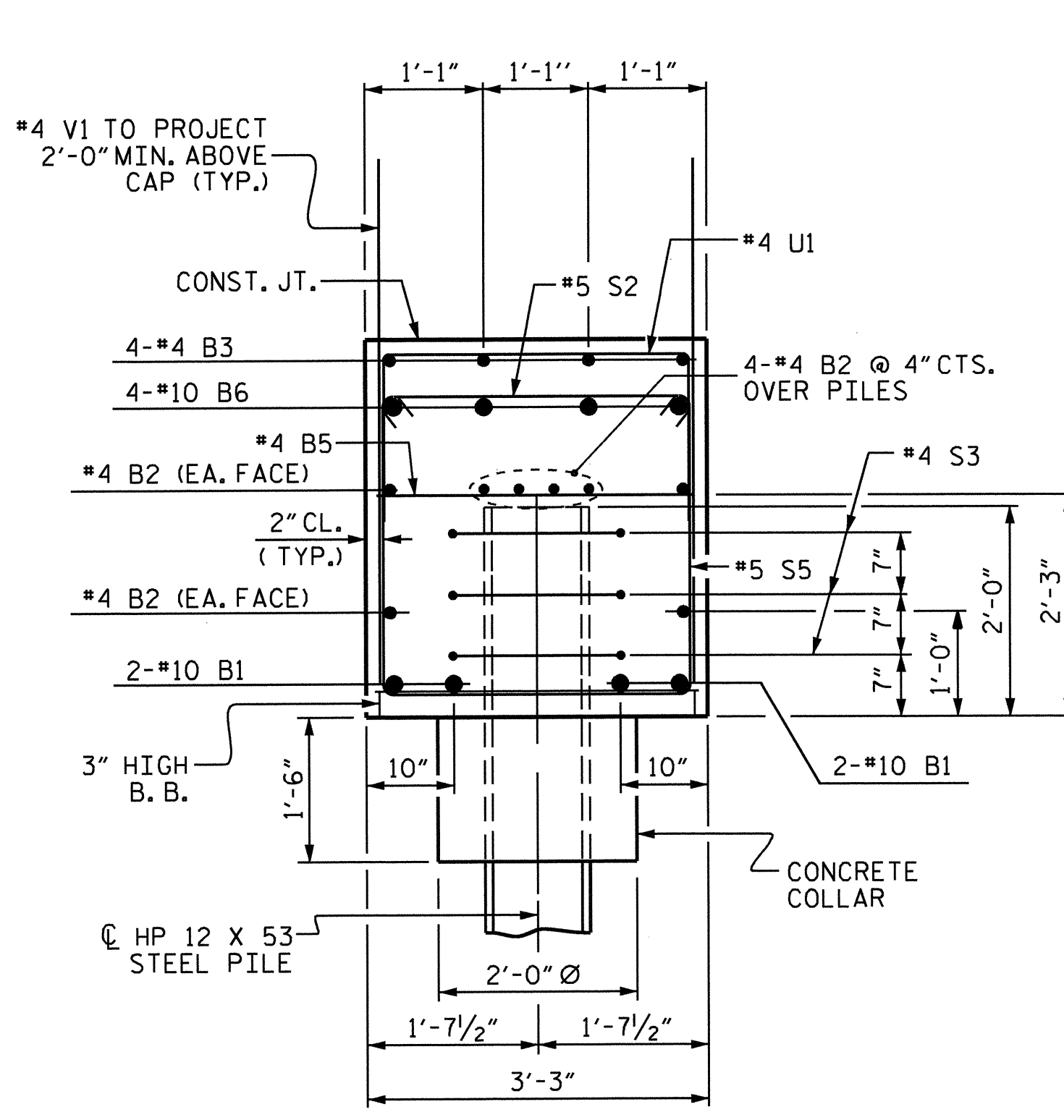
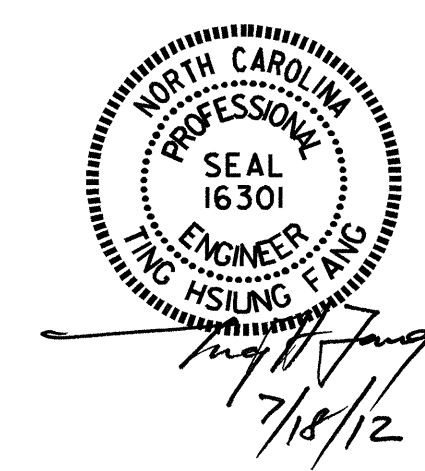
PROJECT NO. U-3324
MOORE COUNTY
 STATION: 21+37.80 -Y6-

SHEET 4 OF 4

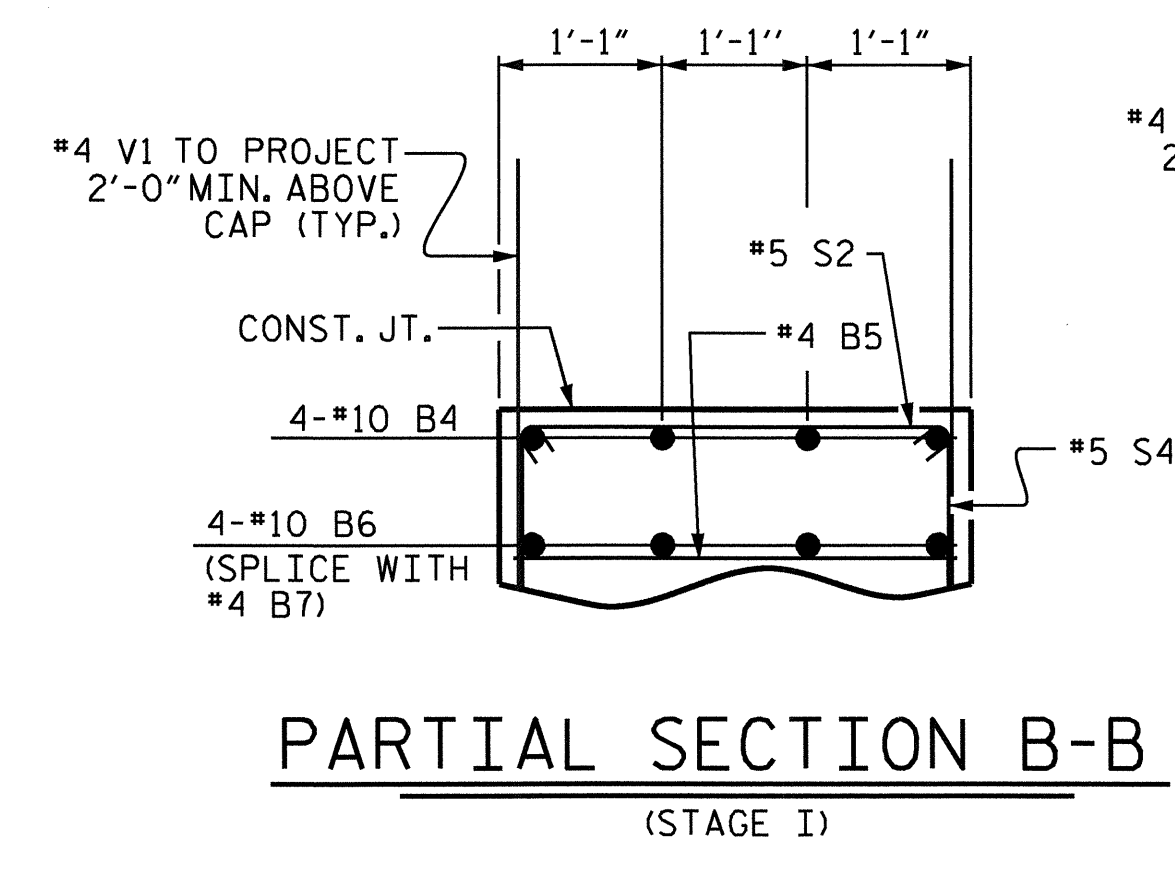
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
END BENT 2
 (INTEGRAL)

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

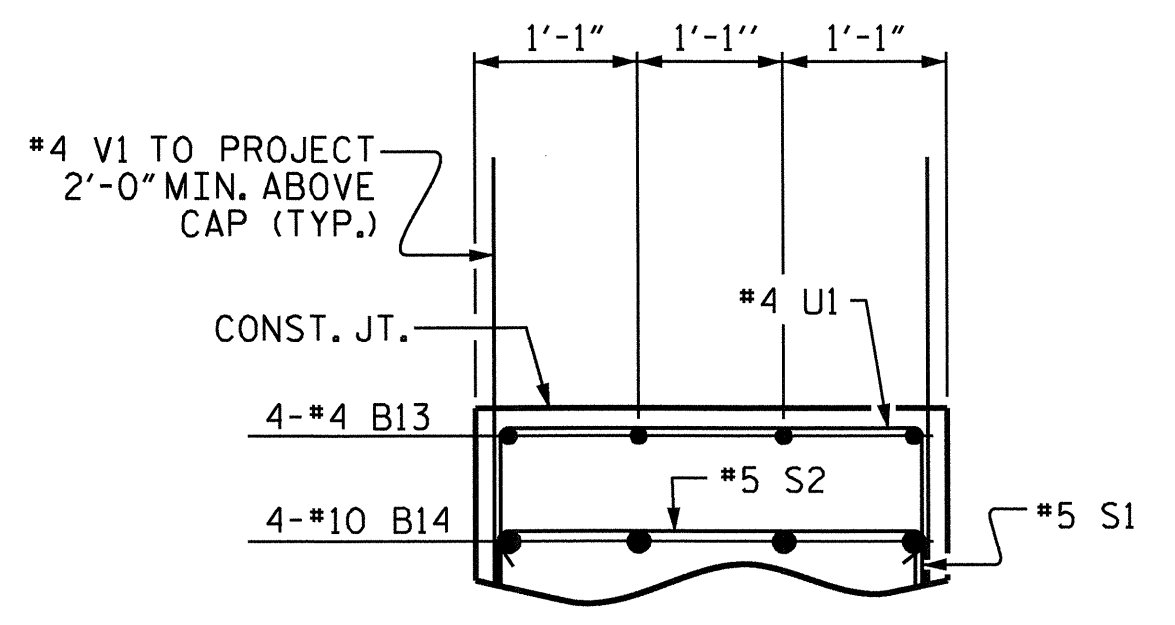
TOTAL SHEETS 44



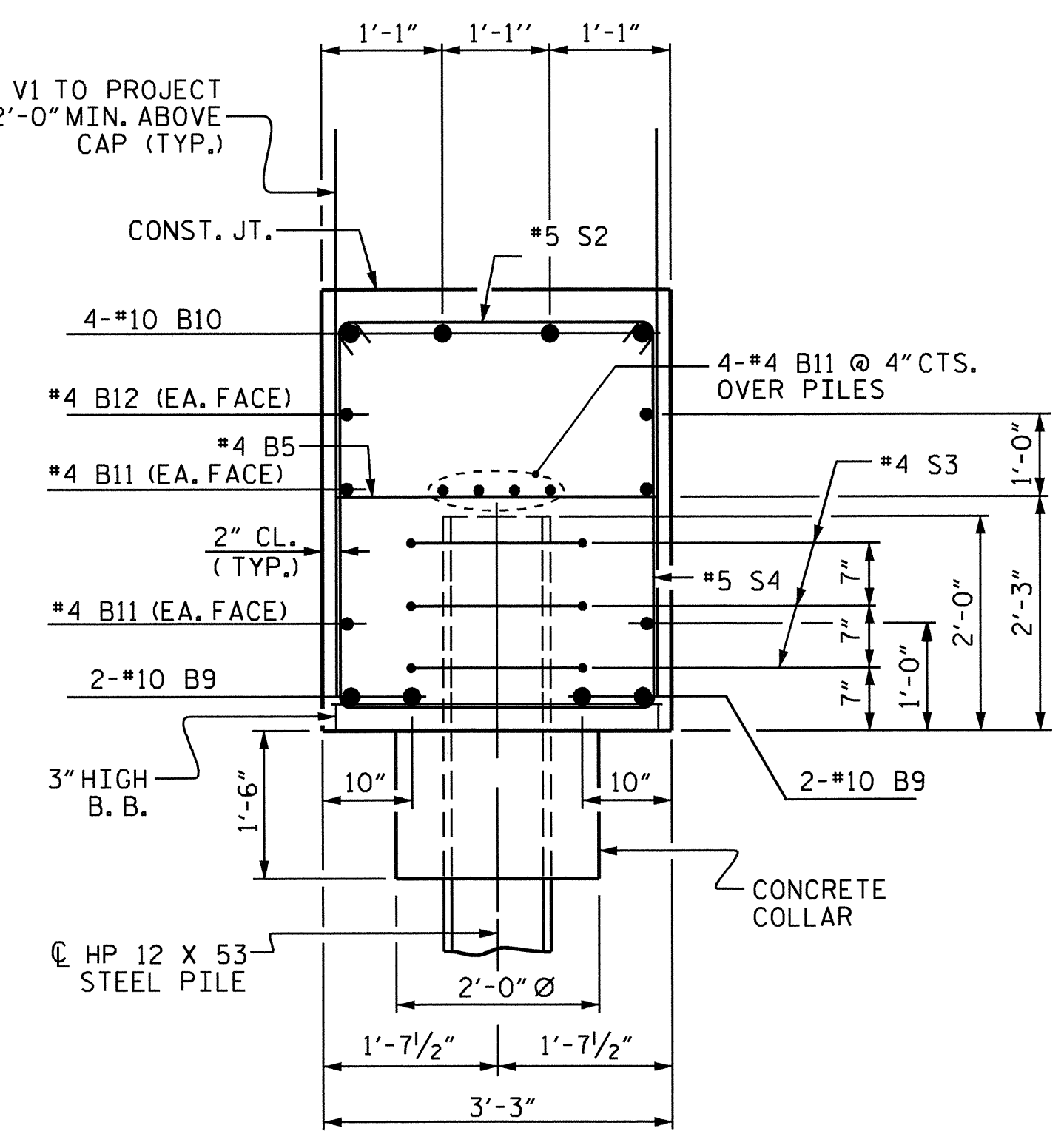
SECTION A-A
(STAGE I)



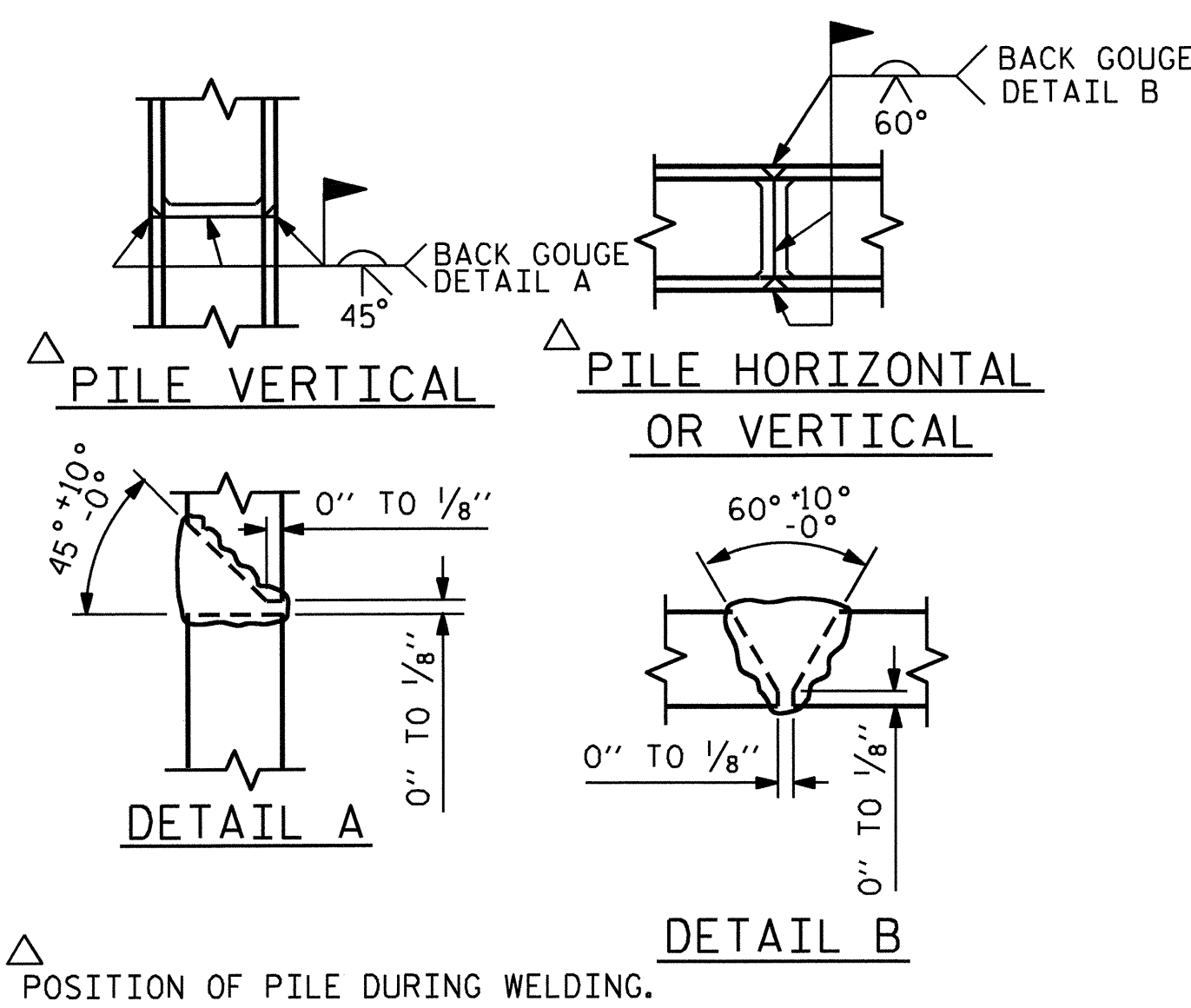
PARTIAL SECTION B-B
(STAGE I)



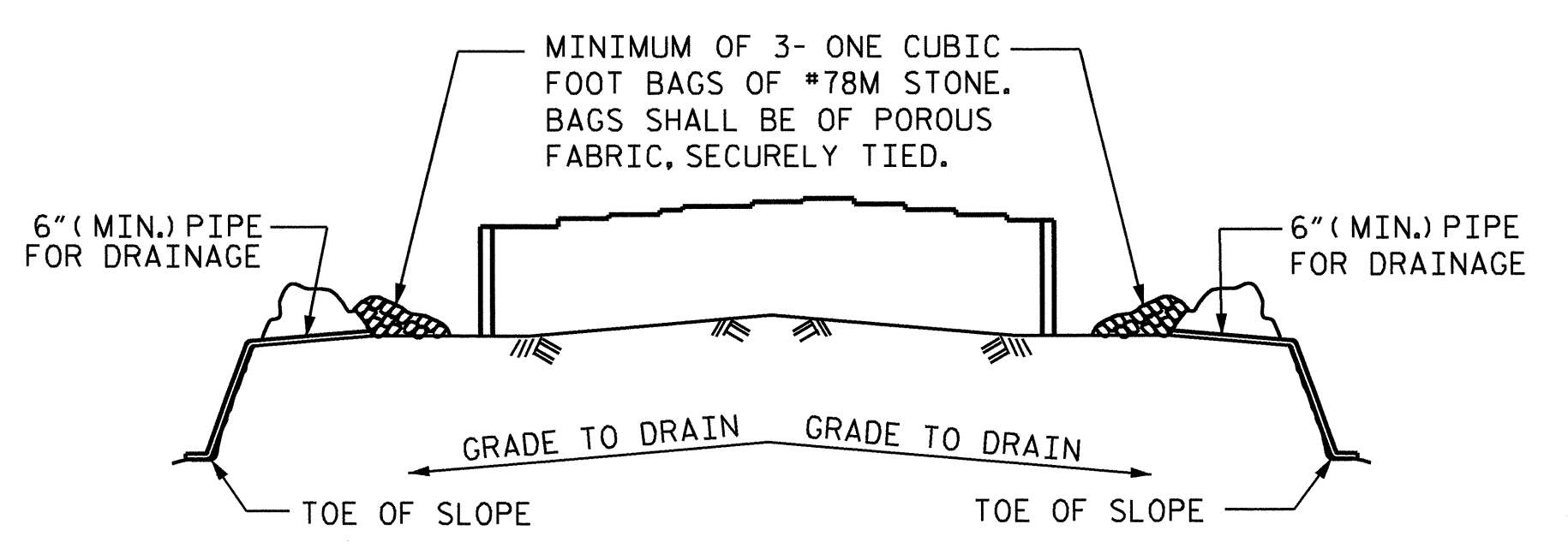
PARTIAL SECTION D-D
(STAGE II)



SECTION C-C
(STAGE II)



PILE SPLICE DETAILS



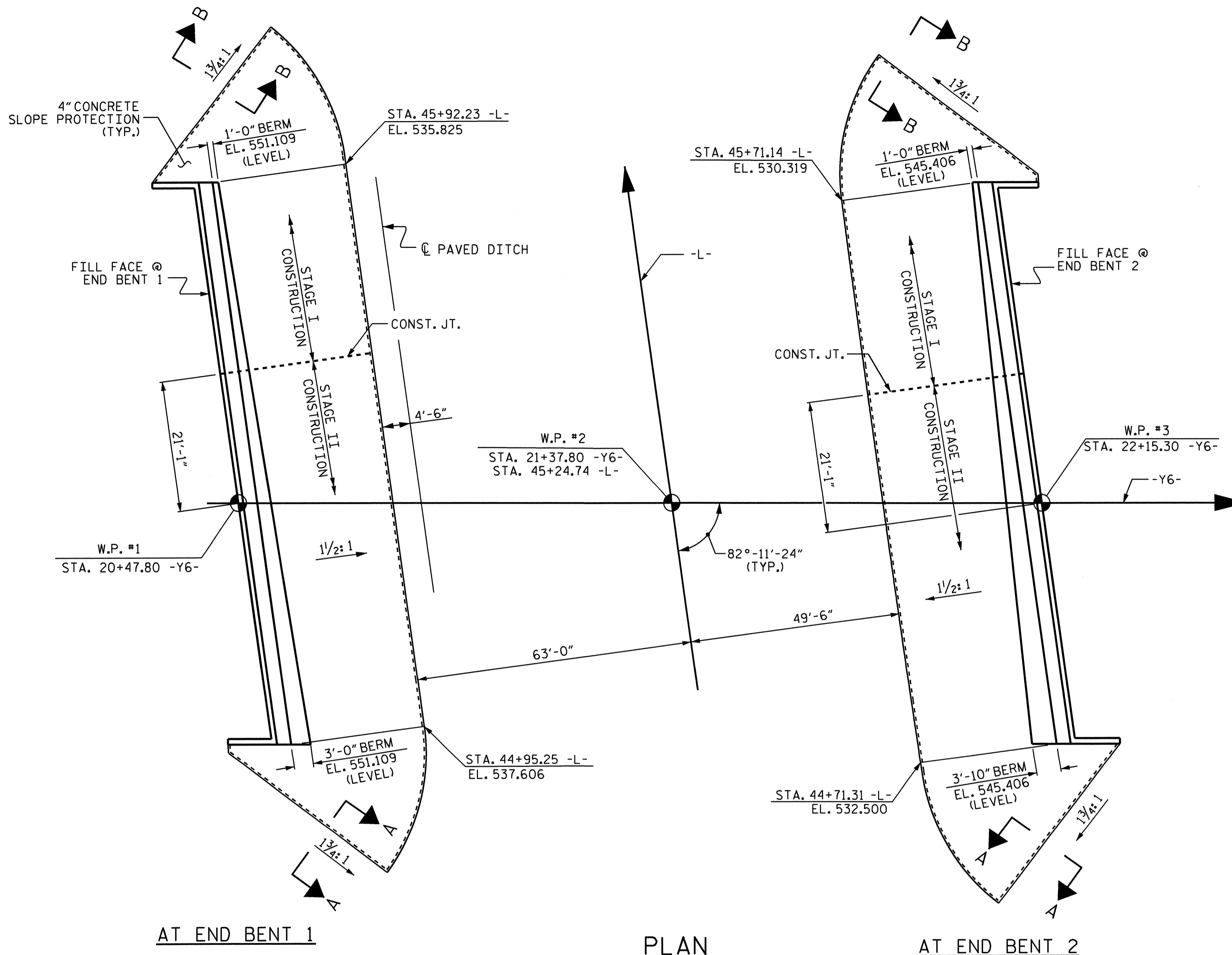
BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

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

TEMPORARY DRAINAGE AT END BENT

DRAWN BY: QT NGUYEN DATE: 4-10
 CHECKED BY: S.H. SOCKWELL DATE: 4-12



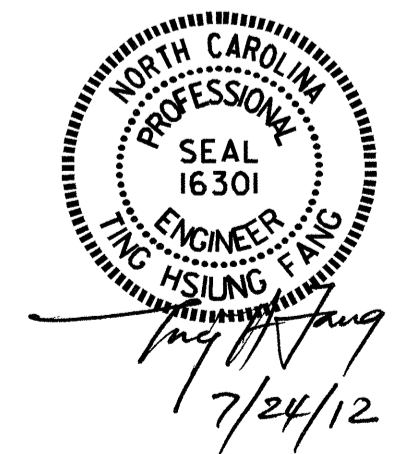
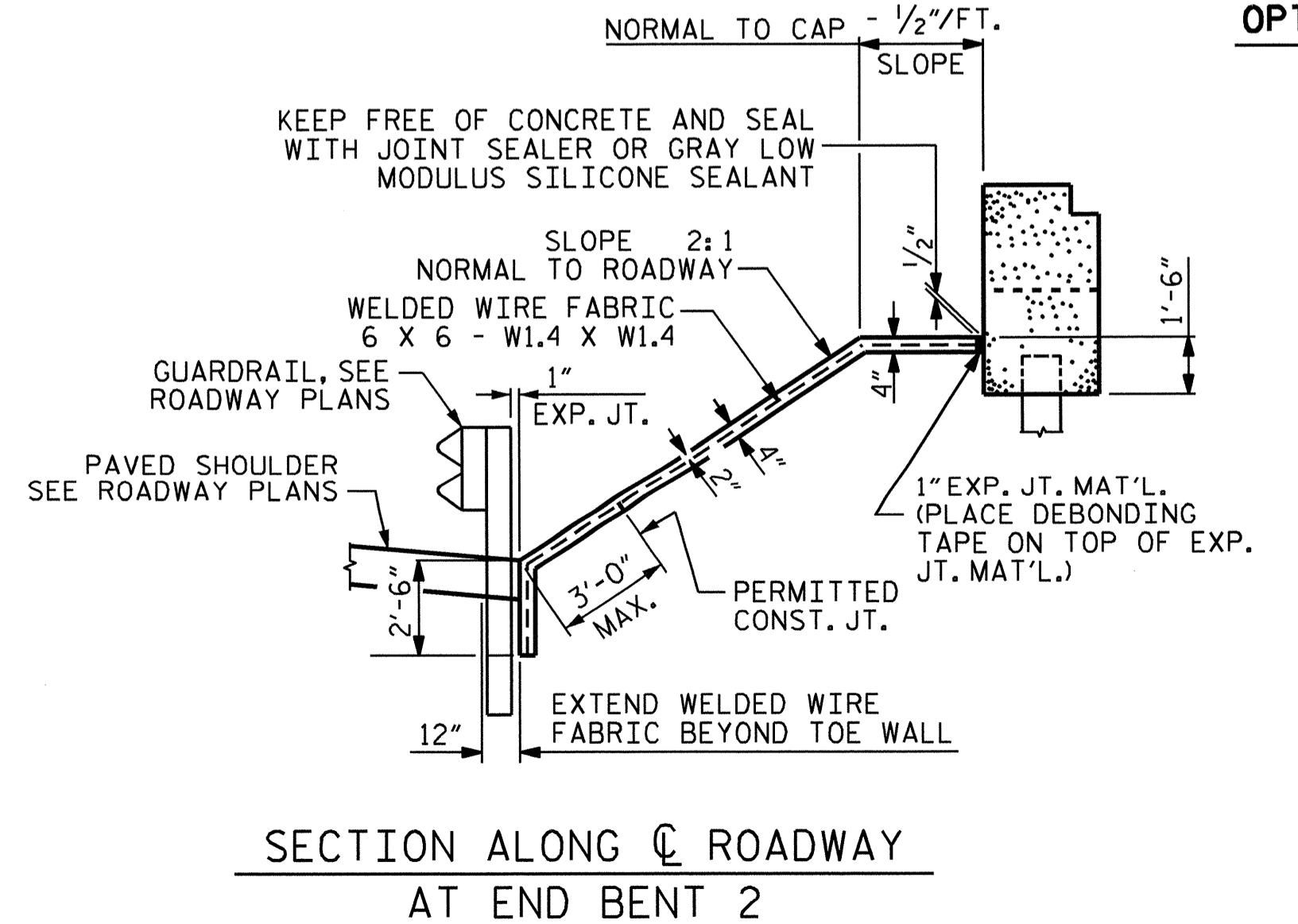
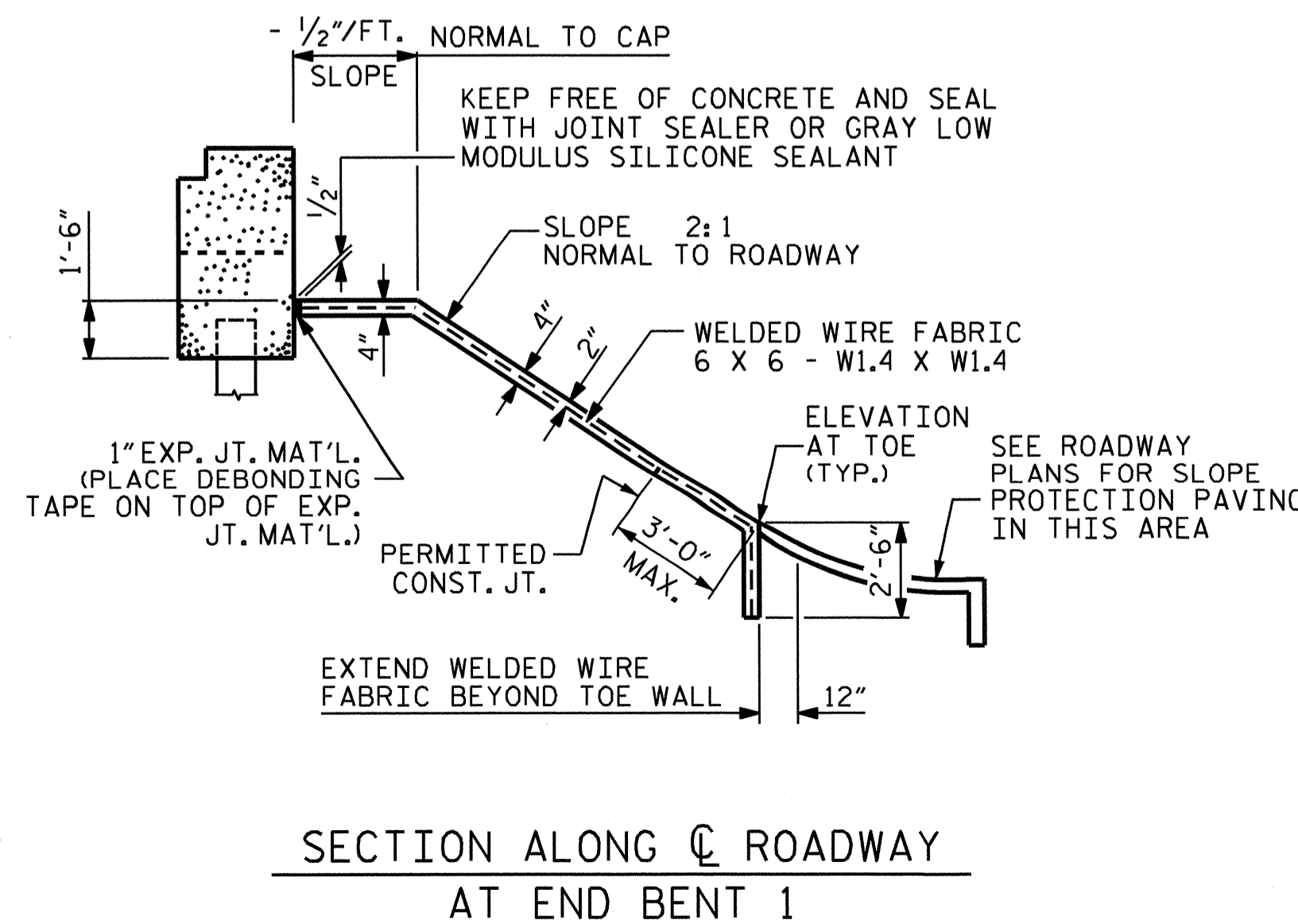
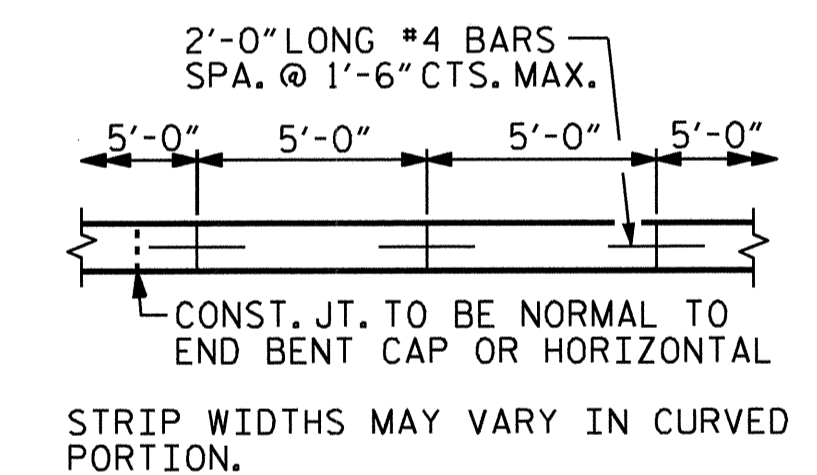
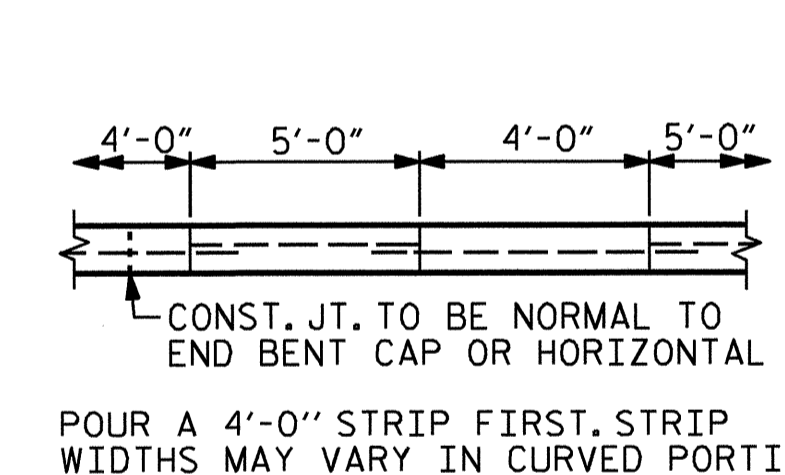
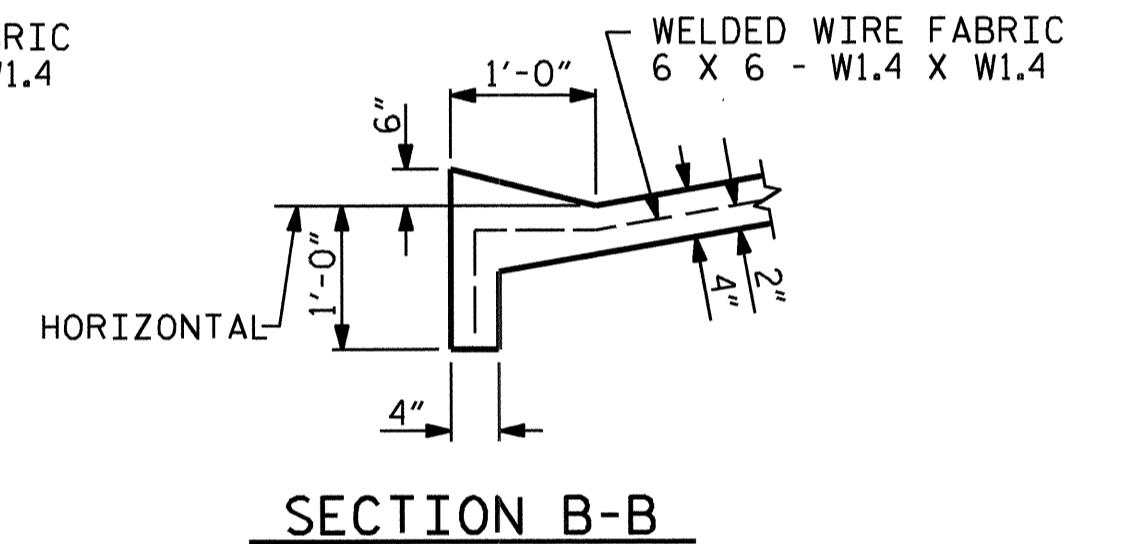
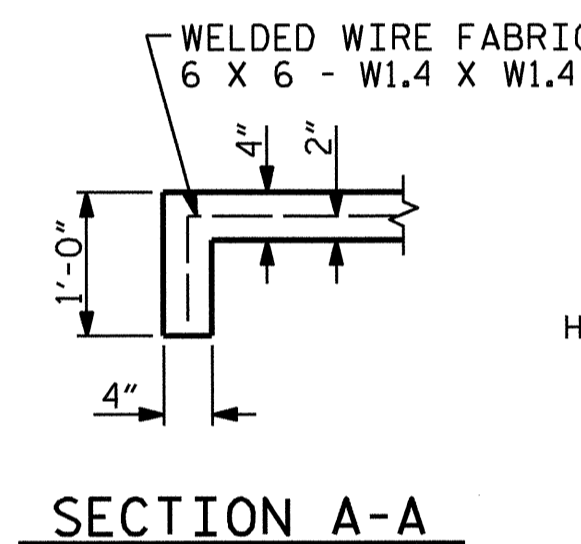
GENERAL NOTES

SLOPE PROTECTION SHALL BE PLACED UNDER THE ENDS OF THE BRIDGE AS SHOWN IN THE DETAILS. STRAIGHT EDGING WILL NOT BE REQUIRED UNLESS, IN THE OPINION OF THE ENGINEER, VISUAL INSPECTION INDICATES A NEED FOR IT. MEASUREMENT AND PAYMENT SHALL BE AS PRESCRIBED IN SECTION 462 OF THE STANDARD SPECIFICATIONS.

SLOPE PROTECTION SHALL CONSIST OF 4\"/>

ESTIMATED QUANTITIES						
BRIDGE @ STA. 21+37.80 -Y6-	4\"/>			* WELDED WIRE FABRIC 60 INCHES WIDE		
	SQUARE YARDS			APPROX. L.F.		
	STAGE I	STAGE II	TOTAL	STAGE I	STAGE II	TOTAL
END BENT 1	195	275	470	390	545	935
END BENT 2	180	280	460	355	560	915
TOTAL			930			1,850

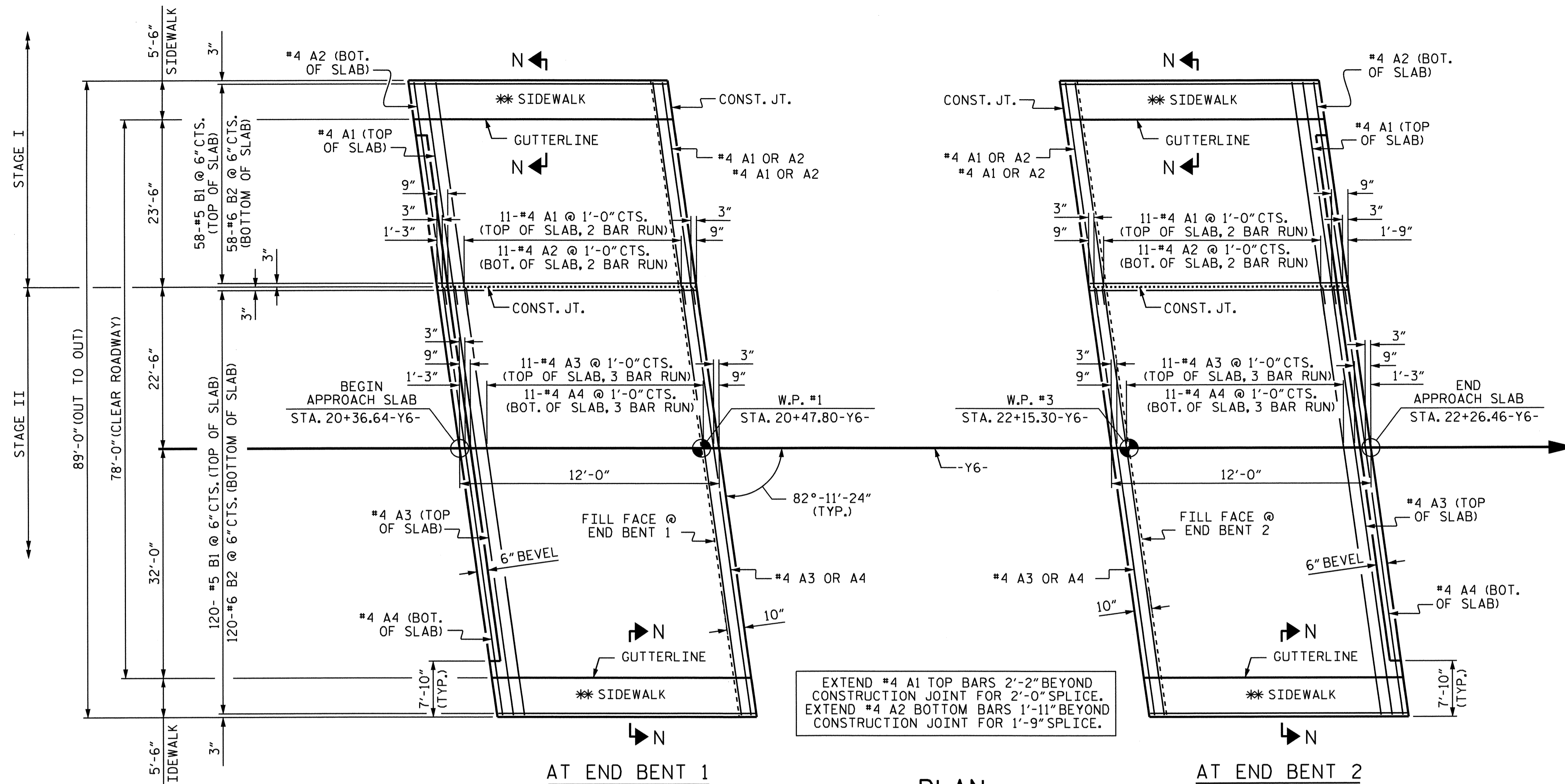
* QUANTITY SHOWN IS BASED ON 5' POURS.



PROJECT NO. U-3324
 MOORE COUNTY
 STATION: 21+37.80 -Y6-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD SLOPE PROTECTION DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-42
					TOTAL SHEETS 44

ASSEMBLED BY : R. P. PATEL	DATE : 6-5-12
CHECKED BY : T. H. FANG	DATE : 6-8-12
DRAWN BY : ELR 5/92	REV. 5/1/06 TLA/GM
CHECKED BY : GRP 6/92	REV. 10/1/11 MAA/GM
	REV. 12/21/11 MAA/GM



BAR	SIZE	SPLICE
*A1, *A3	#4	2'-0"
A2, A4	#4	1'-9"

STAGE I					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	26	#4	STR	16'-8"	289
A2	26	#4	STR	16'-5"	285
*B1	58	#5	STR	11'-2"	675
B2	58	#6	STR	11'-8"	1016
REINFORCING STEEL				LBS.	1301
*EPOXY COATED REINFORCING STEEL				LBS.	965
CLASS AA CONCRETE				C. Y.	15.0
STAGE II					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A3	39	#4	STR	21'-5"	558
A4	39	#4	STR	21'-4"	554
*B1	120	#5	STR	11'-2"	1398
B2	120	#6	STR	11'-8"	2103
REINFORCING STEEL				LBS.	2657
*EPOXY COATED REINFORCING STEEL				LBS.	1956
CLASS AA CONCRETE				C. Y.	31.0

* QUANTITIES FOR SIDEWALKS ARE NOT INCLUDED.

NOTES

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

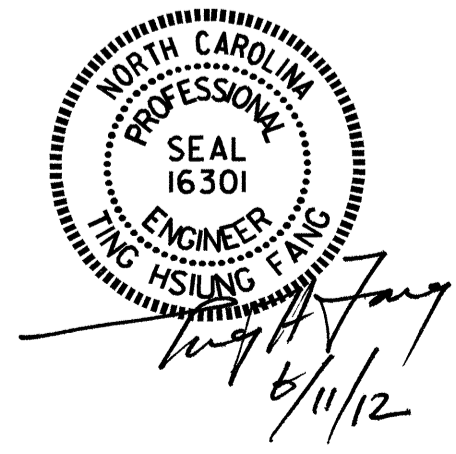
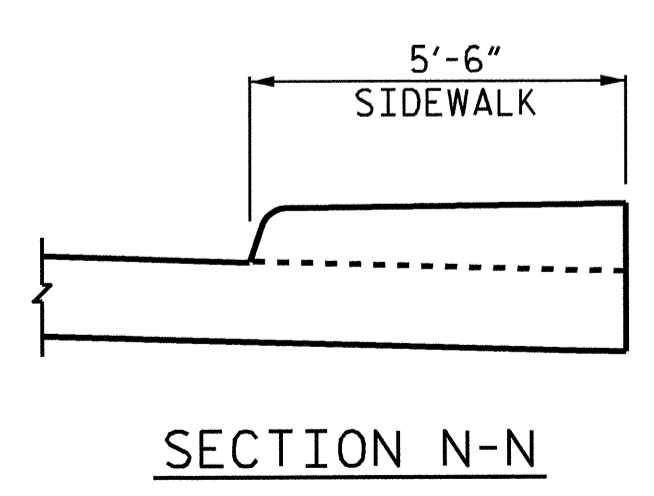
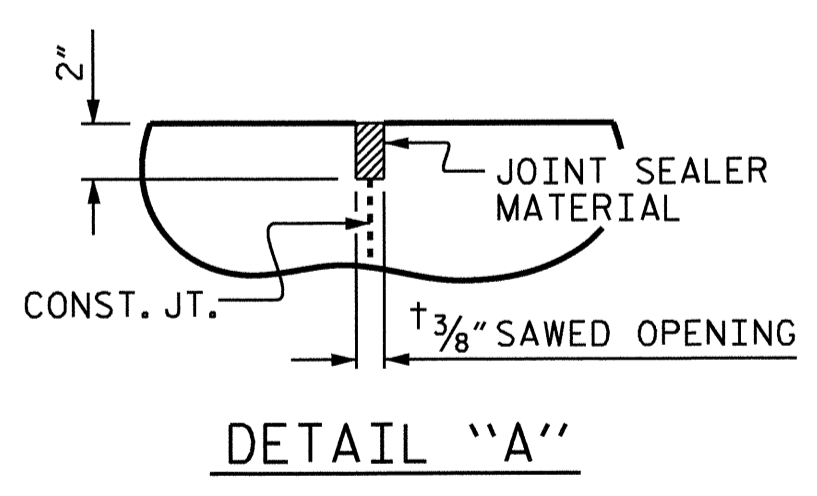
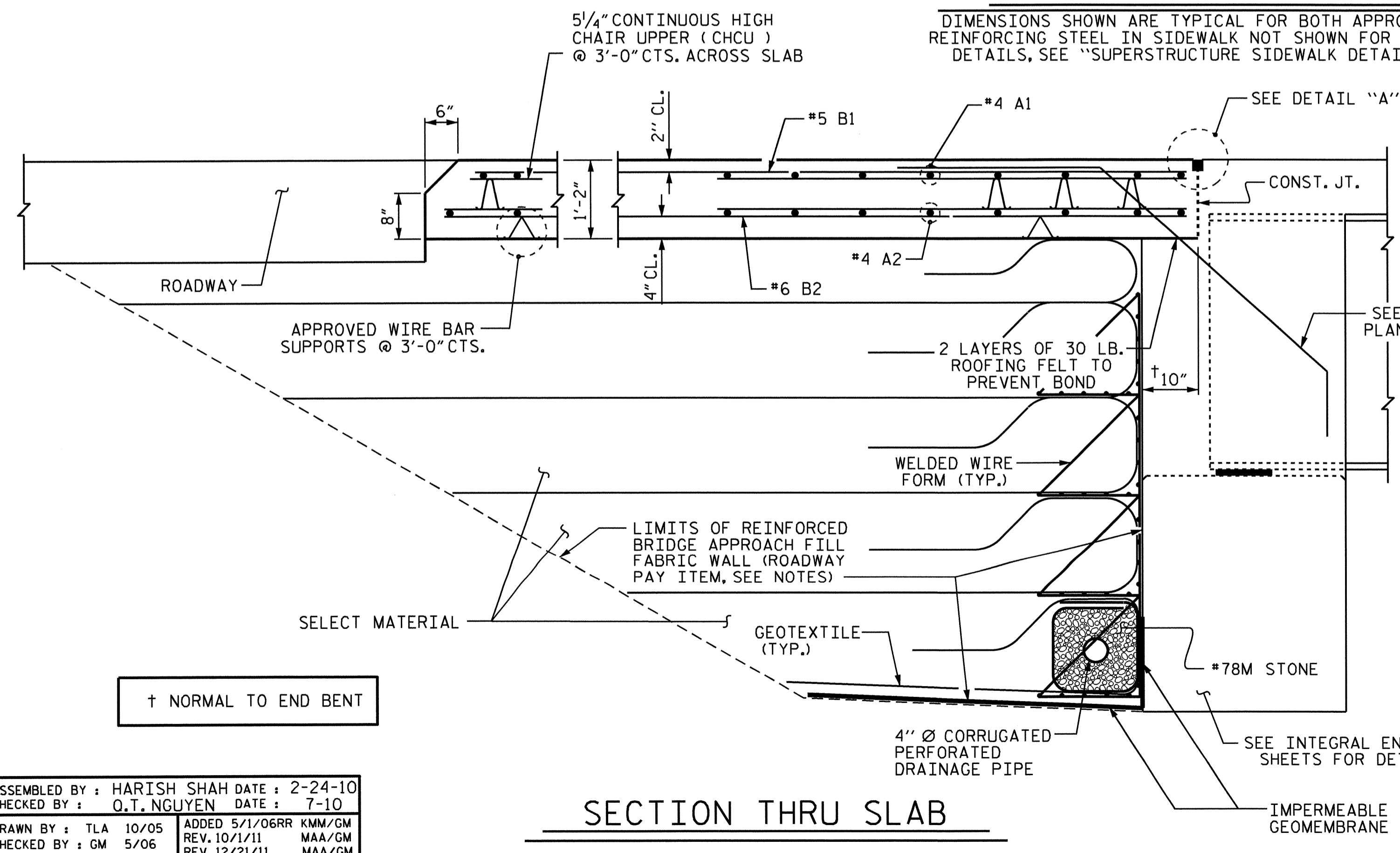
FOR REINFORCED BRIDGE APPROACH FILL FABRIC WALL INCLUDING GEOTEXTILE, IMPERMEABLE GEOMEMBRANE, 4" Ø DRAINAGE PIPE, #78M STONE, WELDED WIRE FORM, AND SELECT MATERIAL, SEE ROADWAY PLANS.

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.

PLAN

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS. REINFORCING STEEL IN SIDEWALK NOT SHOWN FOR CLARITY. FOR DETAILS, SEE "SUPERSTRUCTURE SIDEWALK DETAILS" SHEET.



PROJECT NO. U-3324
MOORE COUNTY
 STATION: 21+37.80 -Y6-

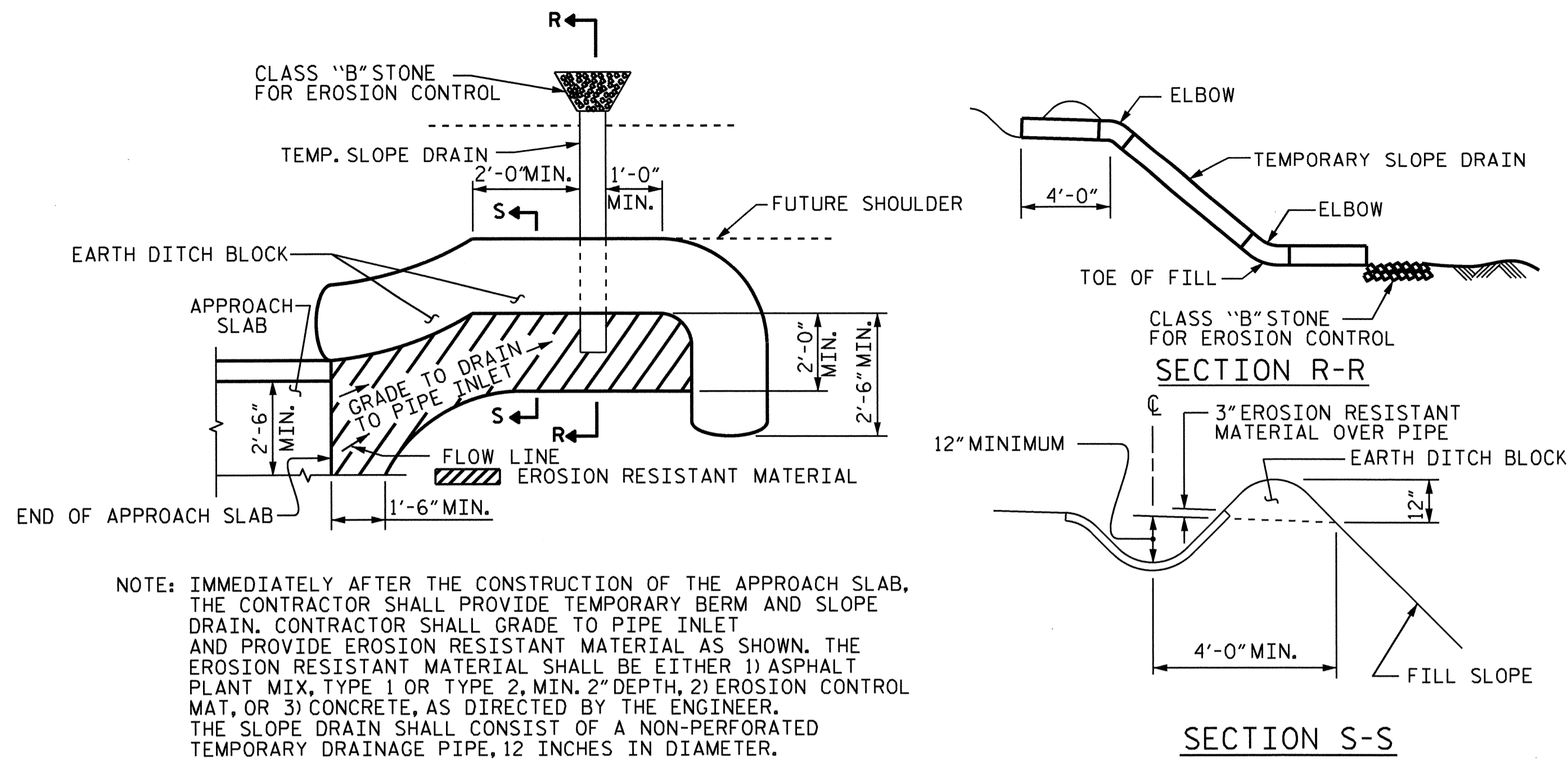
SHEET 1 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. 5-43
STANDARD						
BRIDGE APPROACH SLAB FOR INTEGRAL ABUTMENT						TOTAL SHEETS 44
REVISIONS						
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

ASSEMBLED BY : HARISH SHAH DATE : 2-24-10
 CHECKED BY : O.T. NGUYEN DATE : 7-10
 DRAWN BY : TLA 10/05
 CHECKED BY : GM 5/06

ADDED 5/1/06RR KMM/GM
 REV. 10/1/11 MAA/GM
 REV. 12/21/11 MAA/GM

SECTION THRU SLAB

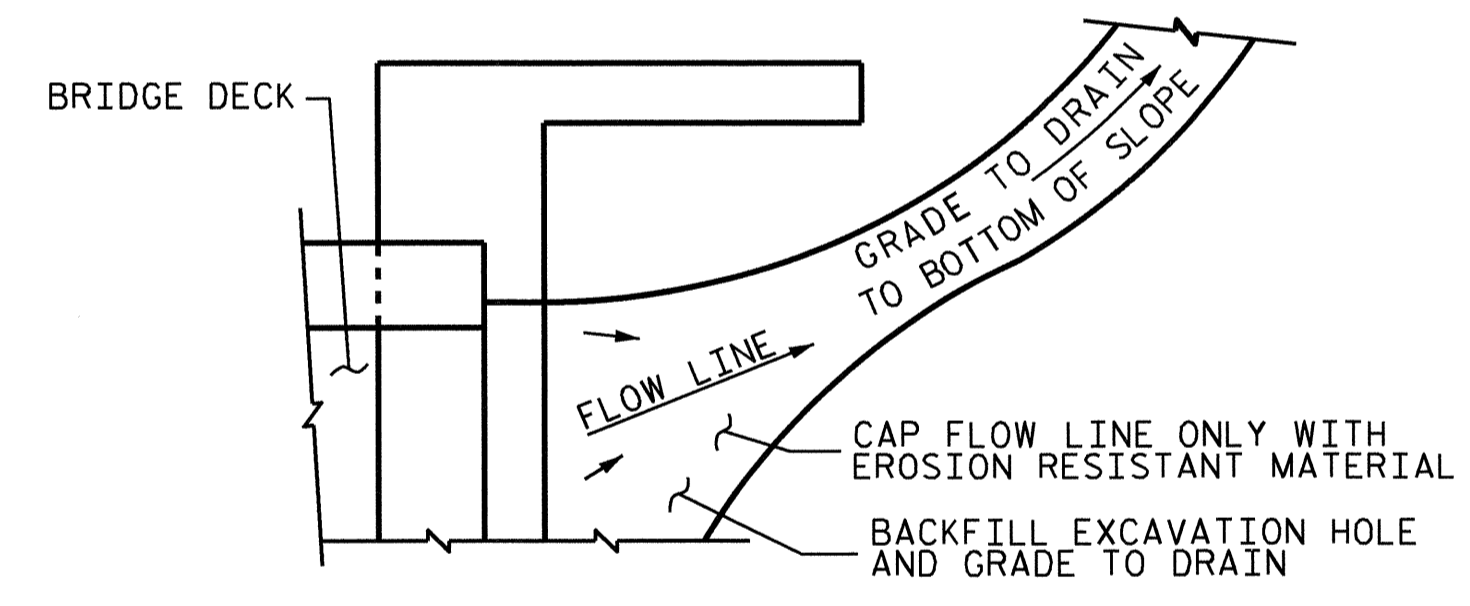


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 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.

PLAN VIEW

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

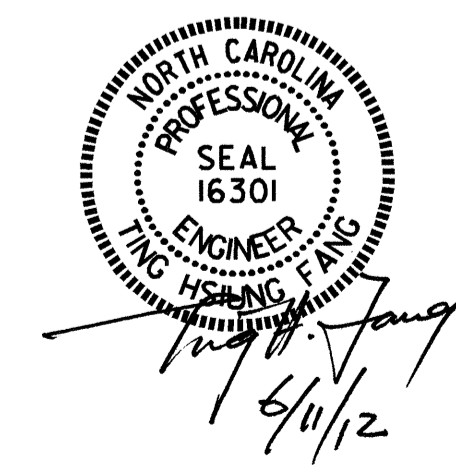


NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL

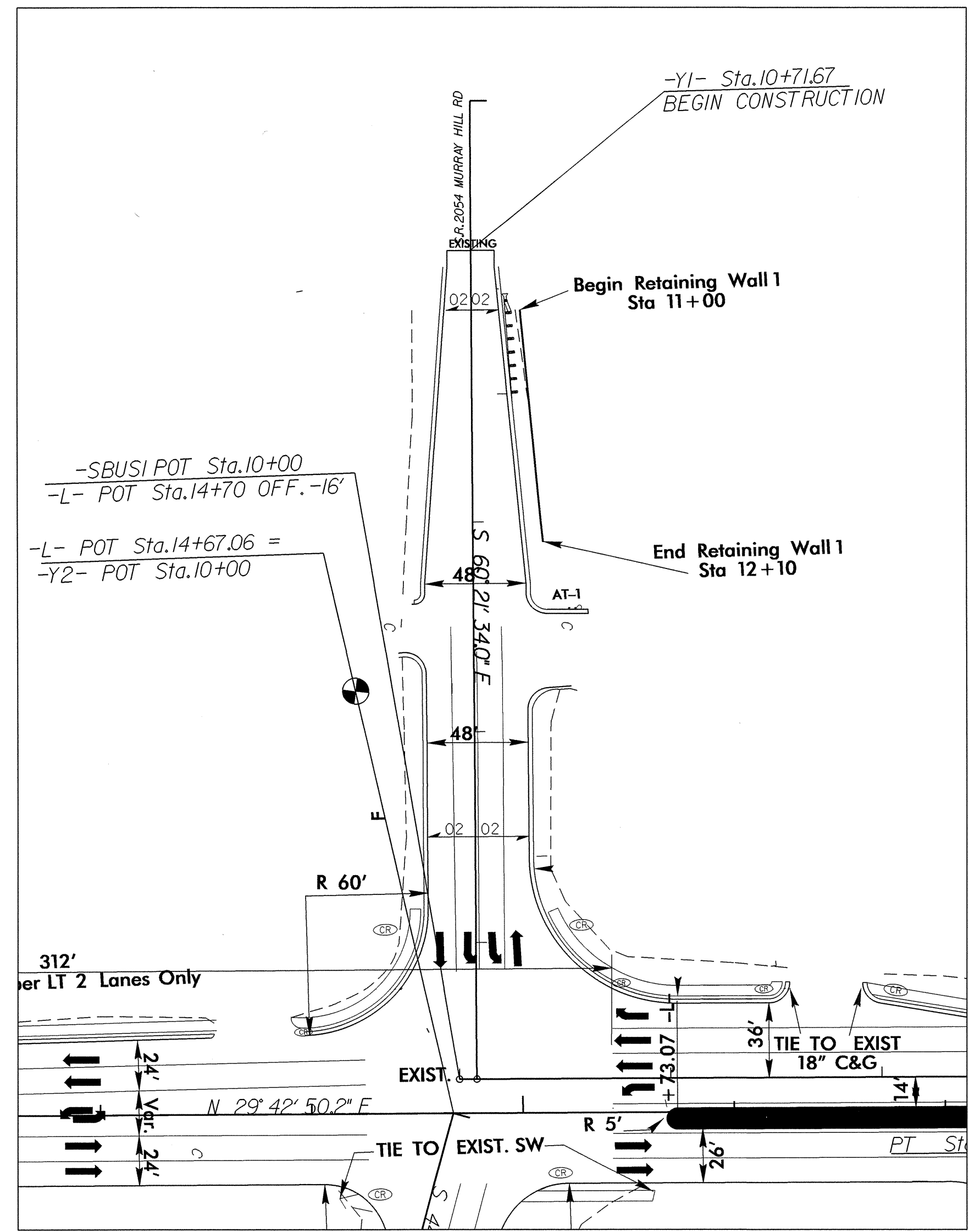
PROJECT NO. U-3324
MOORE COUNTY
 STATION: 27+37.80 -Y6-

SHEET 2 OF 2

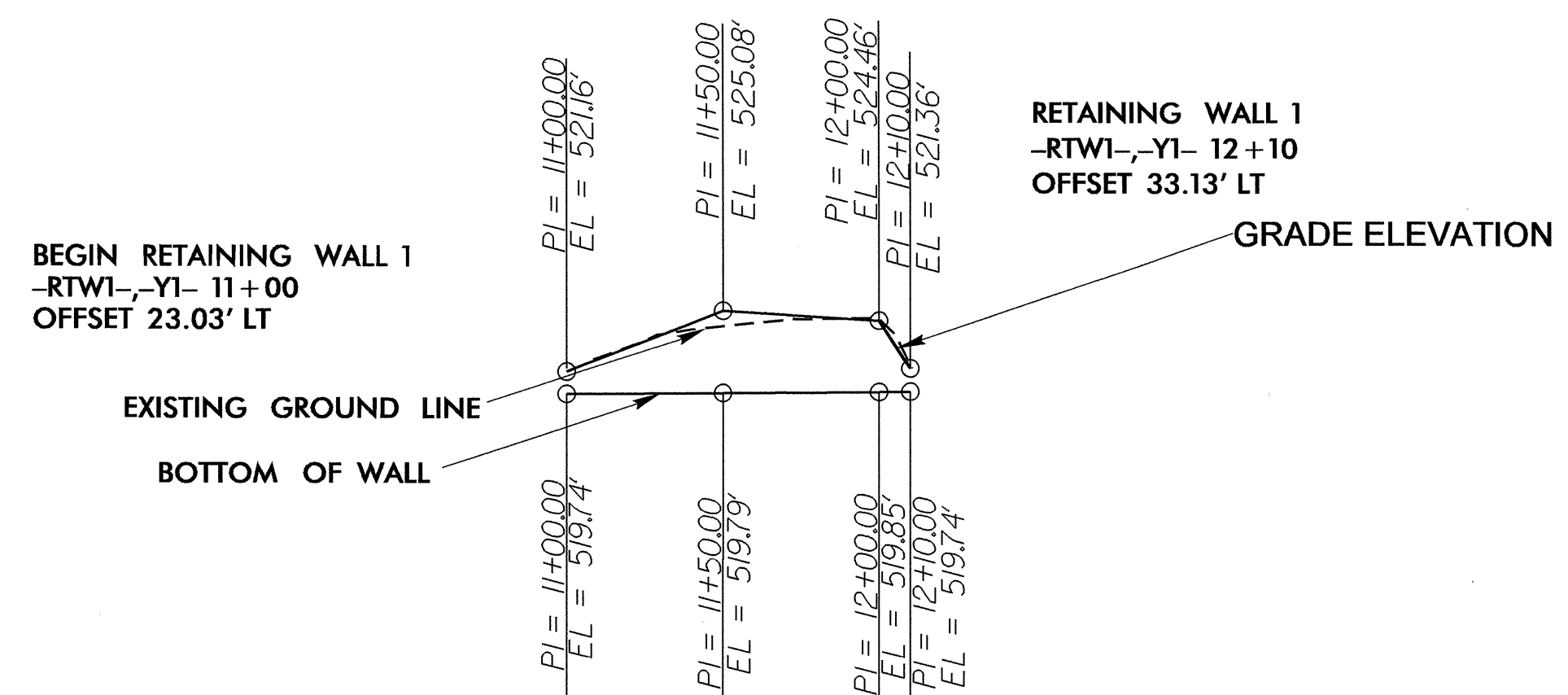


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO.
STANDARD						S-44
BRIDGE APPROACH SLAB DETAILS						TOTAL SHEETS
REVISIONS						44
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

ASSEMBLED BY :	HARISH SHAH	DATE :	2-25-10
CHECKED BY :	T. H. FANG	DATE :	1-17-12
DRAWN BY :	FCJ	11/88	REV. 10/17/00 RWW/LES
CHECKED BY :	ARB	11/88	REV. 5/1/03 RWW/JTE
			REV. 5/1/06R MAA/KMM



RETAINING WALL NO. 1 - PLAN VIEW



RETAINING WALL NO. 1 - WALL ENVELOPE

NOTES:

- FOR SOLDIER PILE RETAINING WALLS, SEE SOLDIER PILE RETAINING WALLS PROVISION.
- A FENCE OR HANDRAIL IS REQUIRED ON TOP OF RETAINING WALL NO. 1. SEE ROADWAY PLANS FOR FENCE OR HANDRAIL ATTACHMENT DETAILS.
- DRILLED-IN H-PILES ARE REQUIRED FOR RETAINING WALL NO. 1.
- BEFORE BEGINNING SOLDIER PILE WALL DESIGN FOR RETAINING WALL NO. 1, SURVEY WALL LOCATION AND SUBMIT A REVISED WALL PROFILE VIEW (WALL ENVELOPE) FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THE REVISED WALL ENVELOPE IS ACCEPTED.
- DESIGN RETAINING WALL NO. 1 FOR THE FOLLOWING:
 - 1) H = DESIGN HEIGHT + EMBEDMENT
 - 2) DESIGN LIFE = 100 YEARS
 - 3) IN-SITU ASSUMED MATERIAL PARAMETERS:
 - UNIT WEIGHT, $\gamma = 120$ LB/CF
 - FRICTION ANGLE, $\phi = 30$ DEGREES
 - COHESION, $c = 0$ LB/SF

ESTIMATED QUANTITIES	
RETAINING WALL NO.	SOLDIER PILE RETAINING WALLS (SQUARE FEET)
1	450

PROJECT NO.: 34923.1.1 (U-3324)

MOORE COUNTY

STATION: 11+00 -Y1- TO 12+10 -Y1-

SHEET 1 OF 2

PREPARED BY: D. TEAGUE DATE: 6/2012

REVIEWED BY: E. WILLIAMS DATE: 6/2012

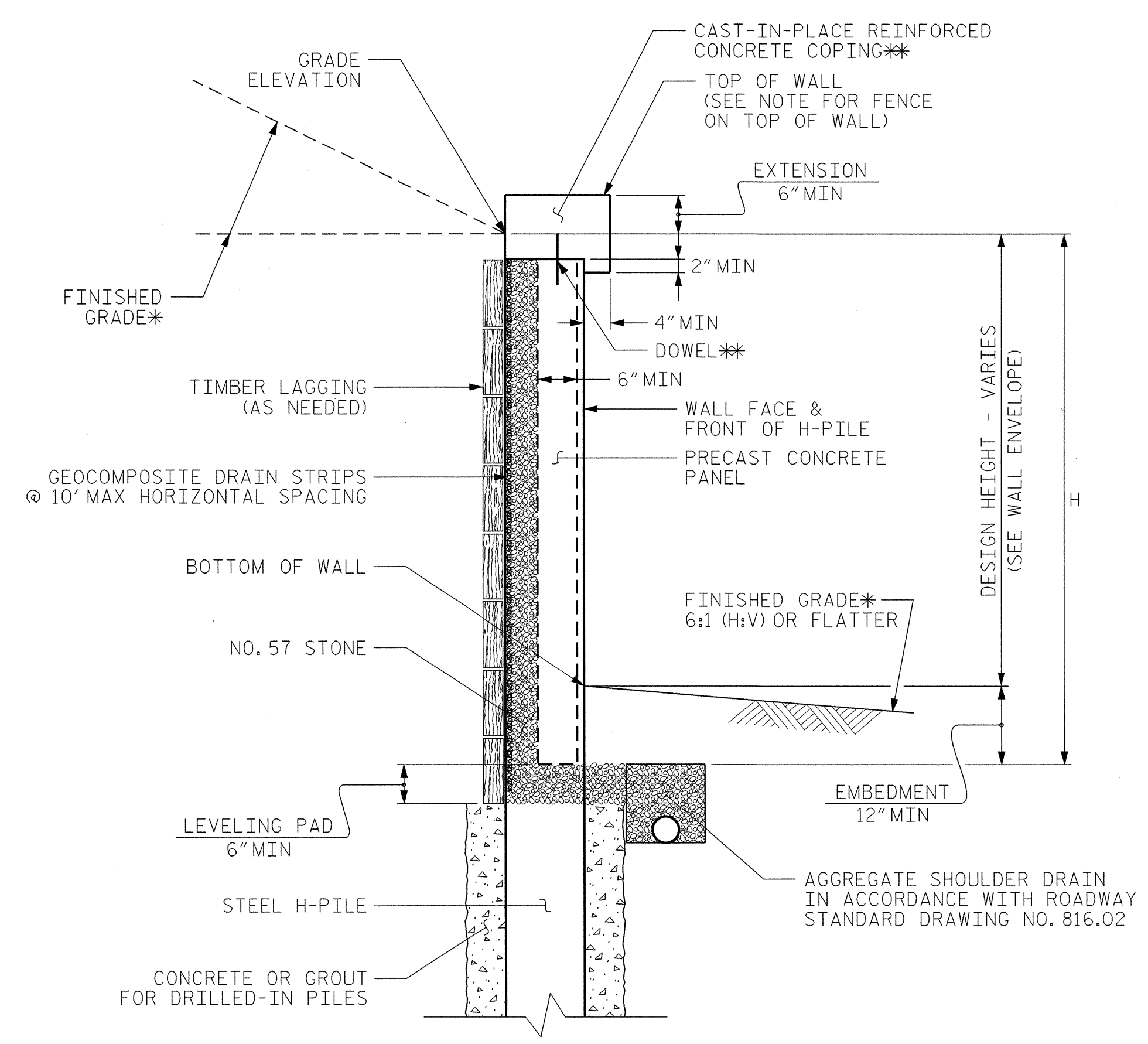
GEOTECHNICAL ENGINEERING UNIT

EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE
 CONTRACT OFFICE

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

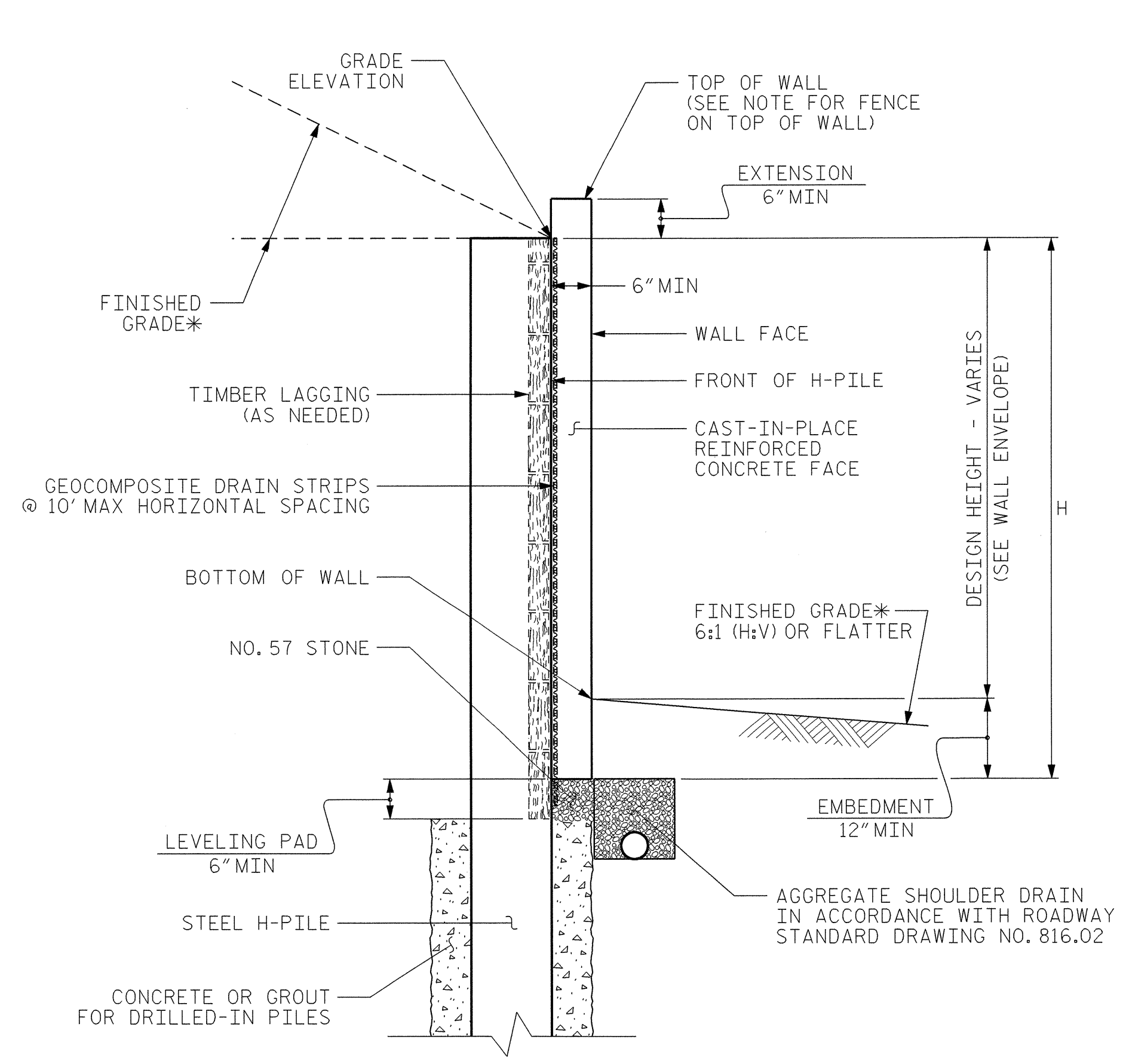
RETAINING WALL NO. 1
WALL ENVELOPE AND
PLAN VIEW
SOLDIER PILE WALL

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	W-1
1	-	-	3	-	-	TOTAL SHEETS
2	-	-	4	-	-	9



SOLDIER PILE WALL WITH PRECAST PANEL - TYPICAL SECTION

*SEE ROADWAY PLANS FOR FINISHED GRADE AND DITCH DETAILS.
**AT THE CONTRACTOR'S OPTION, EXTEND COPING DOWN BACK OF PANELS AT LEAST 2" INSTEAD OF USING DOWELS.



SOLDIER PILE WALL WITH CAST-IN-PLACE FACE - TYPICAL SECTION

*SEE ROADWAY PLANS FOR FINISHED GRADE AND DITCH DETAILS.

PROJECT NO.: 34923.1.1 (U-3324)
MOORE COUNTY
STATION: 11+00 -Y1- TO 12+10 -Y1-
SHEET 2 OF 2

PREPARED BY: D. TEAGUE	DATE: 6/2012
REVIEWED BY: E. WILLIAMS	DATE: 6/2012

GEOTECHNICAL ENGINEERING UNIT

EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE
 CONTRACT OFFICE

**STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH**

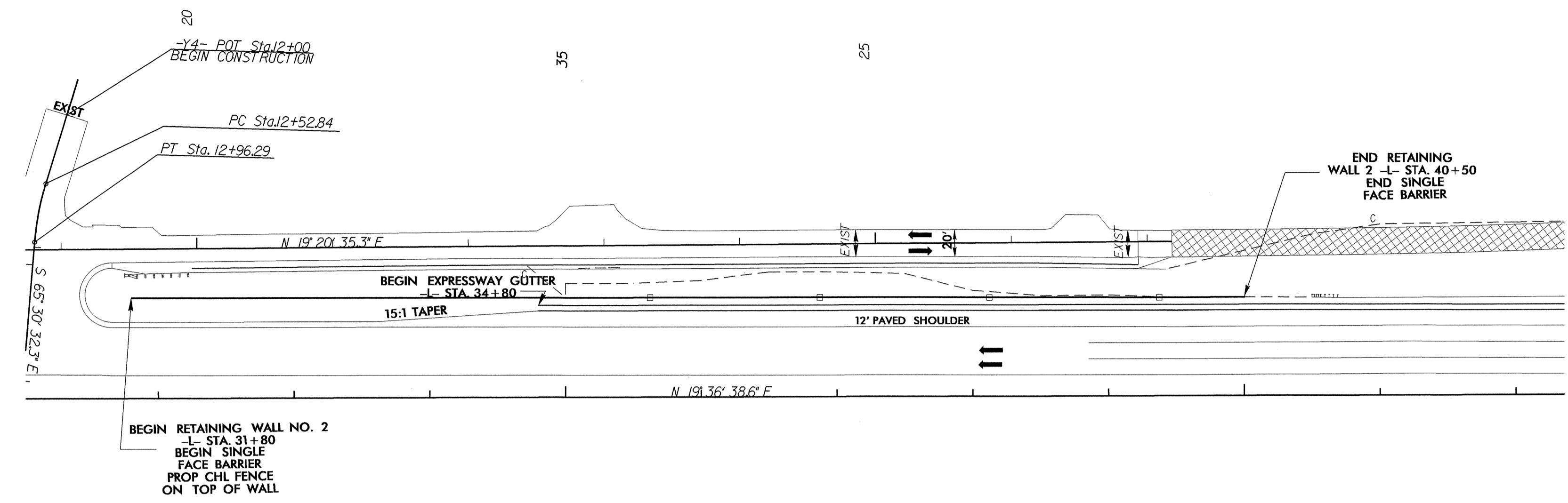
REVISIONS						SHEET NO. W-2
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 9
2			4			

**RETAINING WALL NO. 1
TYPICAL SECTIONS
SOLDIER PILE WALL**

GEOTECHNICAL ENGINEER

ENGINEER

Do L. Teague
SIGNATURE DATE SIGNATURE DATE



RETAINING WALL NO. 2 - PLAN VIEW

NOTES:

FOR SOLDIER PILE RETAINING WALLS, SEE SOLDIER PILE RETAINING WALLS PROVISION.

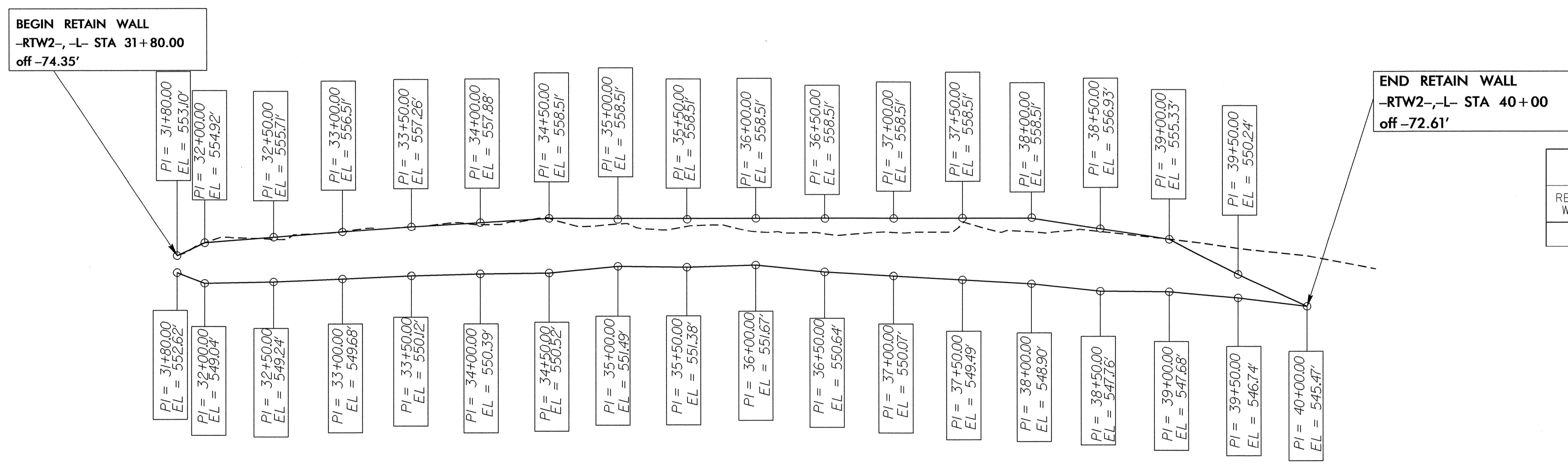
FOR SINGLE FACED PRECAST CONCRETE BARRIER, SEE ROADWAY PLANS AND SECTION 857 OF THE STANDARD SPECIFICATIONS.

A FENCE OR HANDRAIL IS REQUIRED ON TOP OF RETAINING WALL NO. 2. SEE ROADWAY PLANS FOR FENCE OR HANDRAIL ATTACHMENT DETAILS.

DRILLED-IN H-PILES ARE REQUIRED FOR RETAINING WALL NO. 2

BEFORE BEGINNING SOLDIER PILE WALL DESIGN FOR RETAINING WALL NO. 2, SURVEY WALL LOCATION AND SUBMIT A REVISED WALL PROFILE VIEW (WALL ENVELOPE) FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THE REVISED WALL ENVELOPE IS ACCEPTED.

DESIGN RETAINING WALL NO. 2 FOR THE FOLLOWING:
 1) H = DESIGN HEIGHT + EMBEDMENT
 2) DESIGN LIFE = 100 YEARS
 3) IN-SITU ASSUMED MATERIAL PARAMETERS:
 UNIT WEIGHT, γ = 120 LB/CF
 FRICTION ANGLE, ϕ = 30 DEGREES
 COHESION, c = 0 LB/SF



RETAINING WALL NO. 2 - WALL ENVELOPE

ESTIMATED QUANTITIES	
RETAINING WALL NO.	SOLDIER PILE RETAINING WALLS (SQUARE FEET)
2	5800

PROJECT NO.: 34923.1.1 (U-3324)

MOORE COUNTY

STATION: 31+80.00 -L- TO 40+50.00 -L-

SHEET 1 OF 2

PREPARED BY: D. TEAGUE DATE: 6/2012

REVIEWED BY: E. WILLIAMS DATE: 6/2012

GEOTECHNICAL ENGINEERING UNIT

EASTERN REGIONAL OFFICE

WESTERN REGIONAL OFFICE

CONTRACT OFFICE

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

RETAINING WALL NO. 2
WALL ENVELOPE AND
PLAN VIEW
SOLDIER PILE WALL

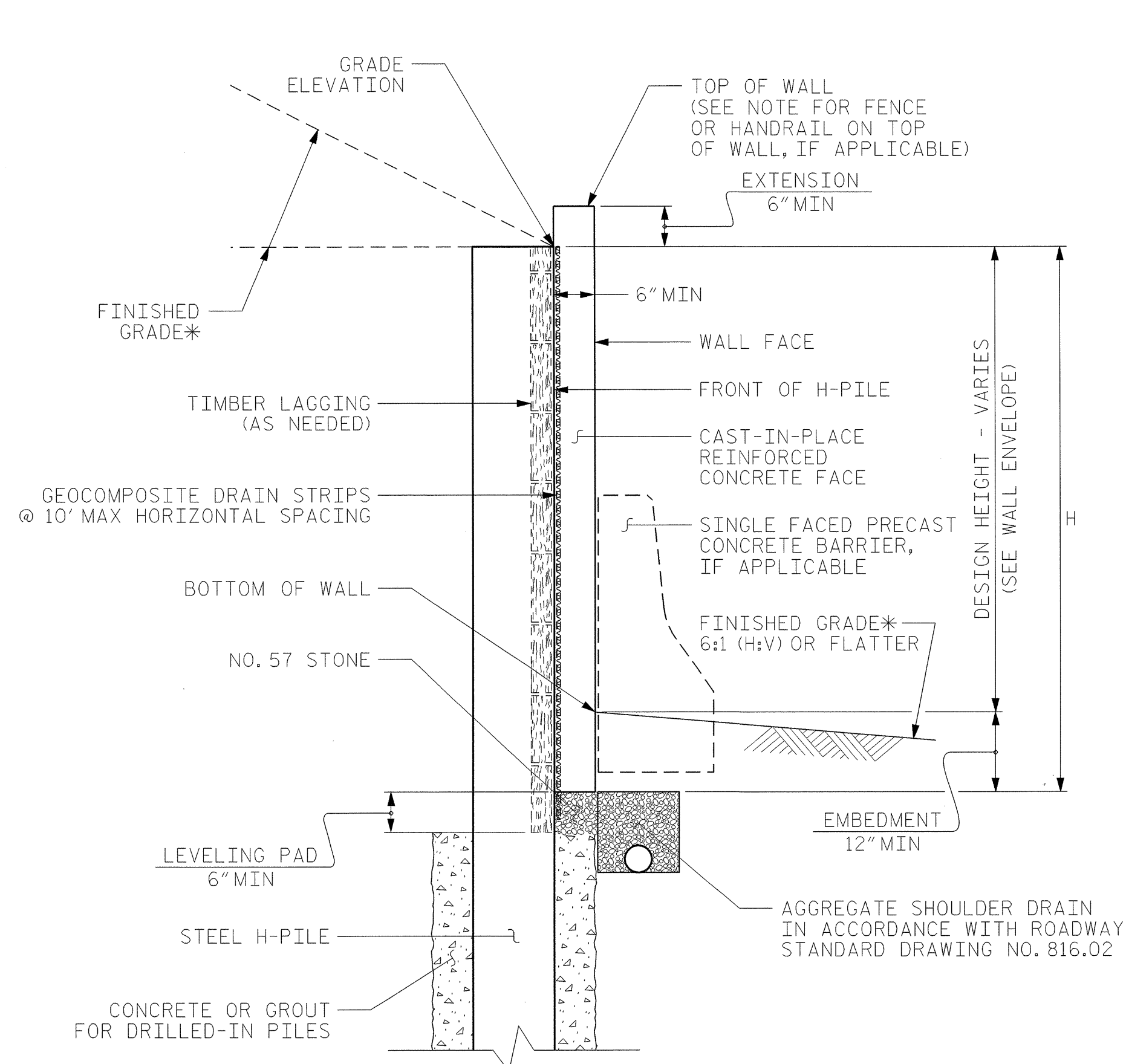
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1	-	-	3	-	-
2	-	-	4	-	-

SHEET NO. W-3
TOTAL SHEETS 9



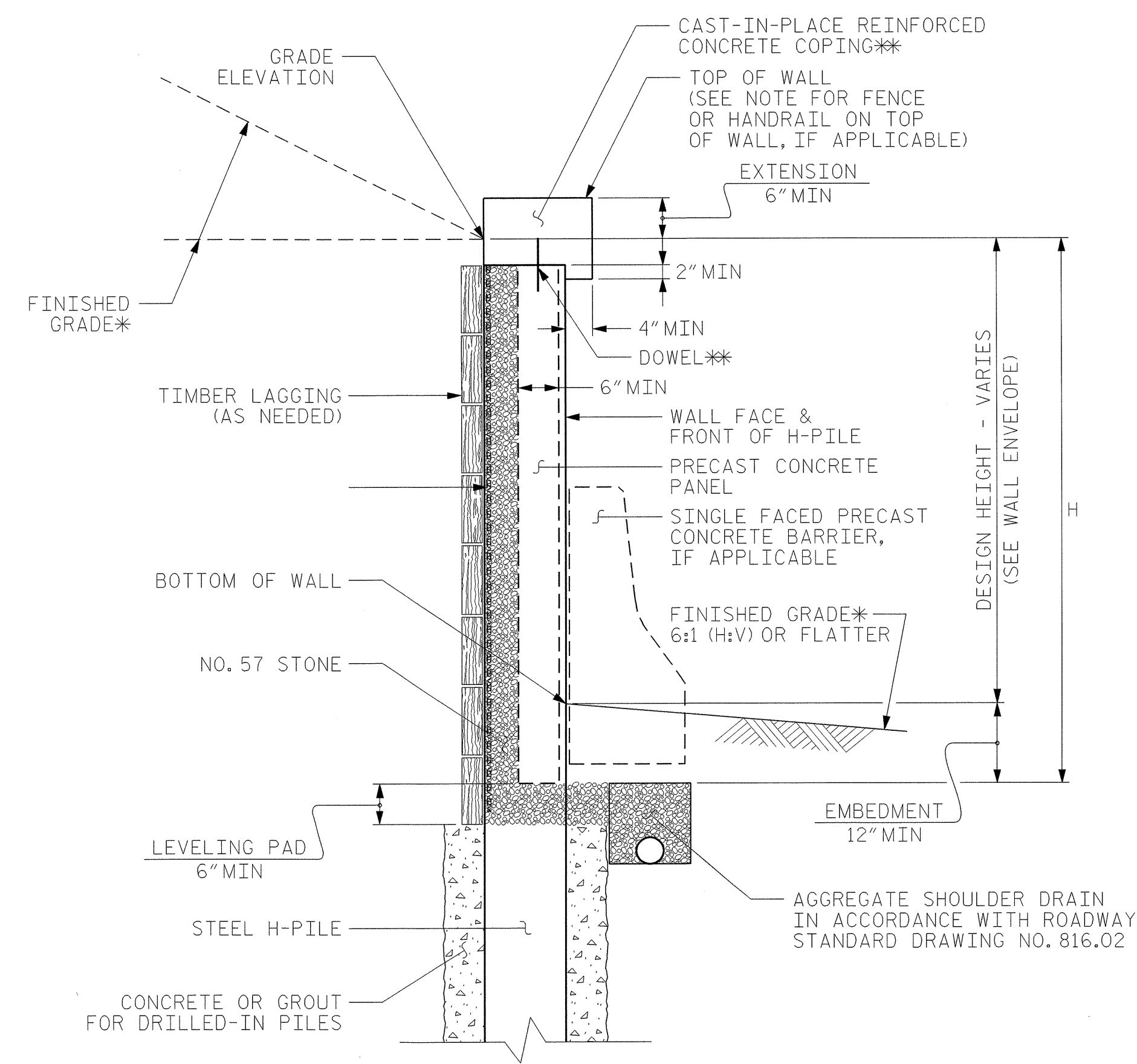
David L. Teague
SIGNATURE DATE

SIGNATURE DATE



SOLDIER PILE WALL WITH CAST-IN-PLACE FACE - TYPICAL SECTION

*SEE ROADWAY PLANS FOR FINISHED GRADE AND DITCH DETAILS.



SOLDIER PILE WALL WITH PRECAST PANEL - TYPICAL SECTION

*SEE ROADWAY PLANS FOR FINISHED GRADE AND DITCH DETAILS.
**AT THE CONTRACTOR'S OPTION, EXTEND COPING DOWN BACK OF PANELS AT LEAST 2" INSTEAD OF USING DOWELS.

PROJECT NO.: 34923.1.1 (U-3324)
MOORE COUNTY
STATION: 31+80.00 -L- TO 40+50.00 -L-
SHEET 2 OF 2

PREPARED BY: D. TEAGUE DATE: 6/2012
REVIEWED BY: E. WILLIAMS DATE: 6/2012

GEOTECHNICAL ENGINEERING UNIT

- EASTERN REGIONAL OFFICE
- WESTERN REGIONAL OFFICE
- CONTRACT OFFICE

**STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH**

**RETAINING WALL NO. 2
TYPICAL SECTIONS
SOLDIER PILE WALL**

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1	-	-	3	-	-	W-4
2	-	-	4	-	-	9

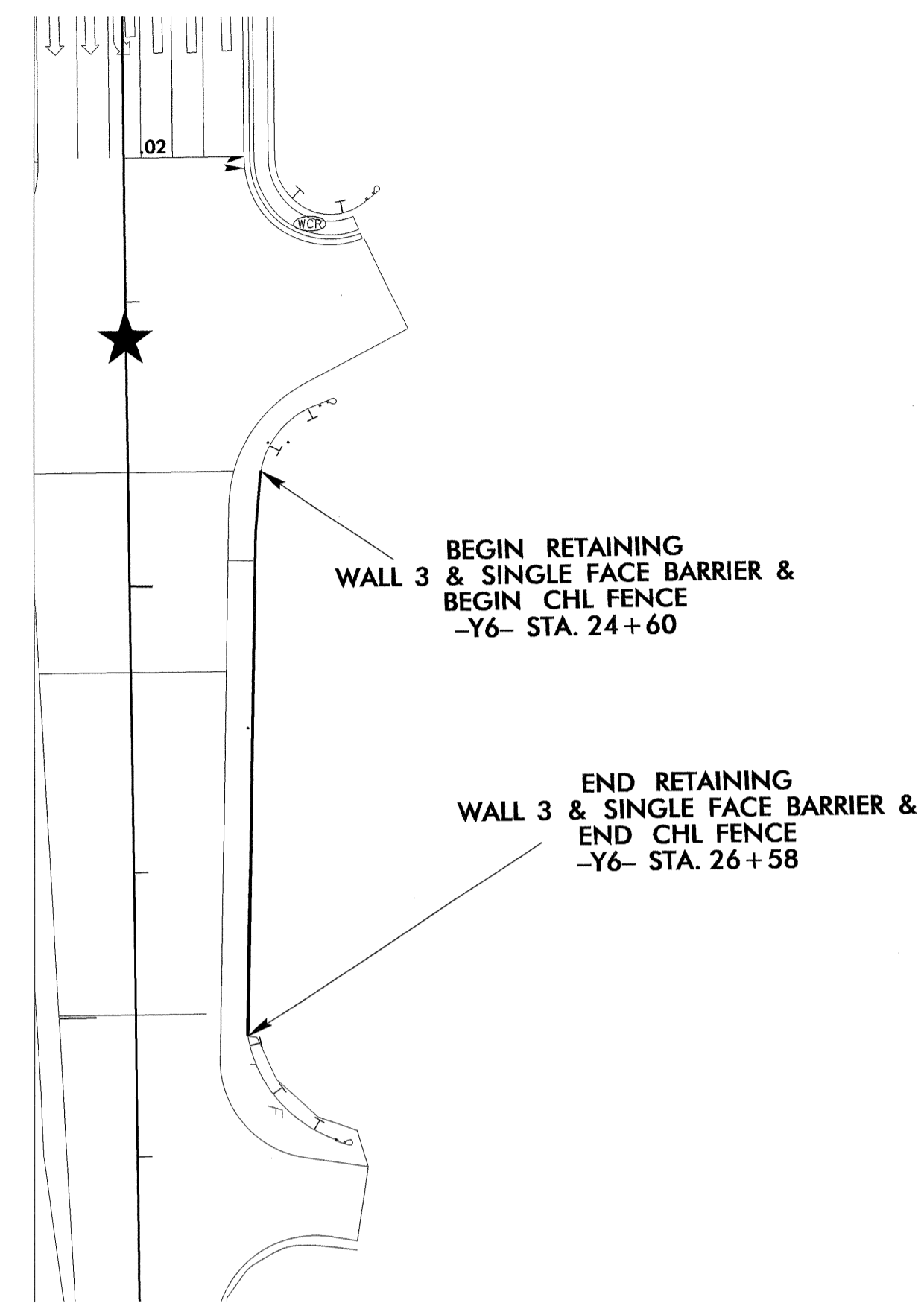
TOTAL SHEETS

GEOTECHNICAL ENGINEER

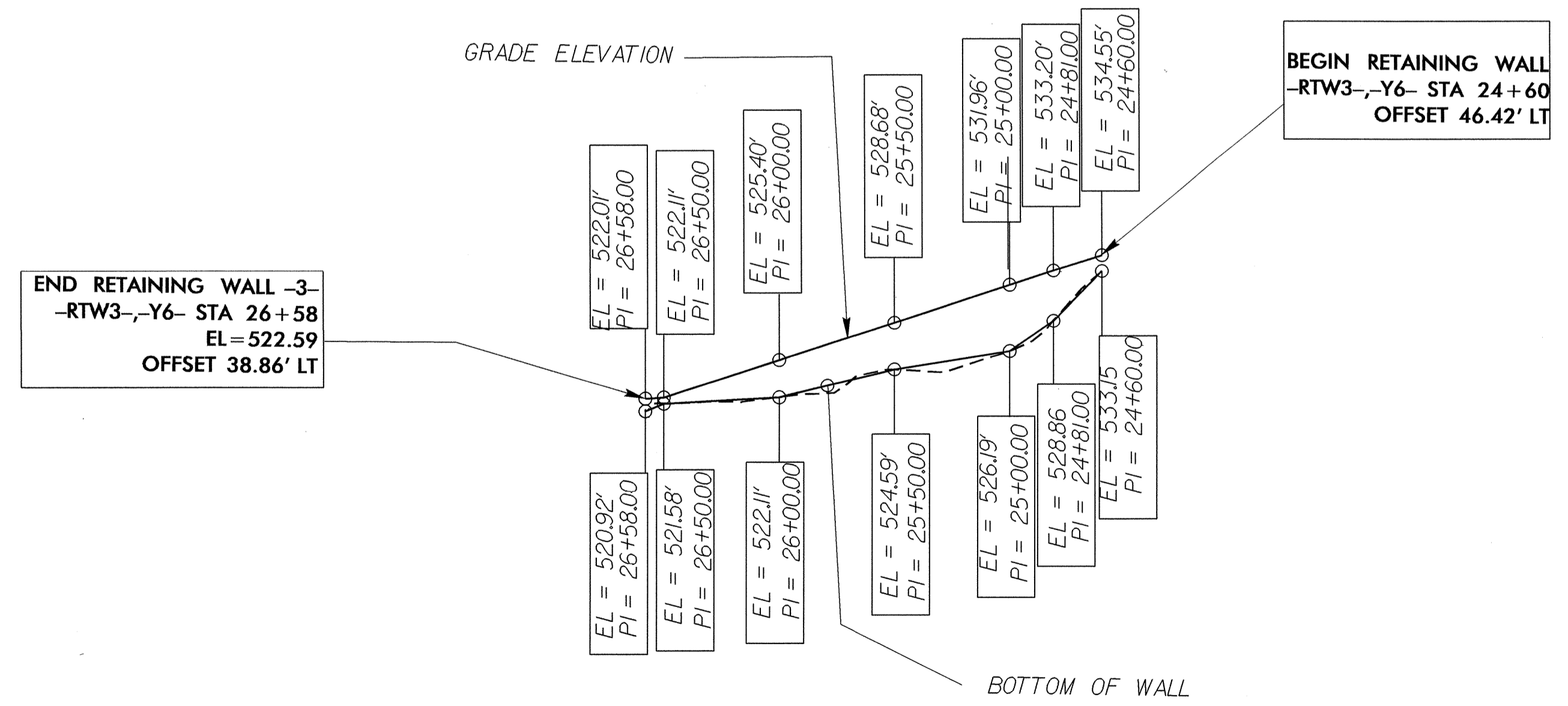
ENGINEER

STATE OF NORTH CAROLINA
PROFESSIONAL SEAL
027869
ENGINEER
DAVID L. TEAGUE

Signature: *David L. Teague* 6/15/12
Date: _____



RETAINING WALL #3 ENVELOPE - PLAN VIEW



RETAINING WALL #3 ENVELOPE - FRONT FACE

NOTES:

- FOR MECHANICALLY STABILIZED EARTH (MSE) RETAINING WALLS, SEE MECHANICALLY STABILIZED EARTH RETAINING WALLS PROVISION.
- A CONCRETE BARRIER RAIL WITH MOMENT SLAB IS REQUIRED ABOVE RETAINING WALL NO. 3. SEE PLANS FOR CONCRETE BARRIER RAIL WITH MOMENT SLAB DETAILS.
- A FENCE OR HANDRAIL IS REQUIRED ON TOP OF RETAINING WALL NO. 3. SEE ROADWAY PLANS FOR FENCE OR HANDRAIL ATTACHMENT DETAILS.
- USE AN MSE WALL SYSTEM WITH SRW UNITS THAT MEET ARTICLE 1040-4 OF THE STANDARD SPECIFICATIONS FOR RETAINING WALL NO. 3.
- A DRAIN IS REQUIRED FOR RETAINING WALL NO. 3.
- BEFORE BEGINNING MSE WALL DESIGN FOR RETAINING WALL NO. 3, SURVEY WALL LOCATION AND SUBMIT A REVISED WALL PROFILE VIEW (WALL ENVELOPE) FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THE REVISED WALL ENVELOPE IS ACCEPTED.
- DESIGN RETAINING WALL NO. 3 FOR THE FOLLOWING:
 - 1) H = DESIGN HEIGHT + EMBEDMENT
 - 2) DESIGN LIFE = 100 YEARS
 - 3) MAXIMUM FACTORED VERTICAL STRESS ON FOUNDATION MATERIAL = 2,000 LB/SF
 - 4) MINIMUM REINFORCEMENT LENGTH (L) = 6 FT
 - 5) AGGREGATE PARAMETERS:

AGGREGATE TYPE*	UNIT WEIGHT (γ) LB/CF	FRICTION ANGLE (φ) DEGREES	COHESION (c) LB/SF
COARSE	110	38	0
FINE	125	34	0

*SEE MSE RETAINING WALLS PROVISION FOR COARSE AND FINE AGGREGATE MATERIAL REQUIREMENTS.

7) IN-SITU ASSUMED MATERIAL PARAMETERS:

MATERIAL TYPE	UNIT WEIGHT (γ) LB/CF	FRICTION ANGLE (φ) DEGREES	COHESION (c) LB/SF
BACKFILL	120	30	0
FOUNDATION	120	30	0

- DESIGN RETAINING WALL NO. 3 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.
- DO NOT PLACE LEVELING PAD CONCRETE, AGGREGATE OR REINFORCEMENT FOR RETAINING WALL NO. 3 UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.
- "TEMPORARY SHORING" MAY BE REQUIRED FOR RETAINING WALL NO. 3 IN ACCORDANCE WITH THE TEMPORARY SHORING PROVISION. SEE TRAFFIC CONTROL PLANS.
- AT THE CONTRACTOR'S OPTION, "TEMPORARY SHORING FOR WALL CONSTRUCTION" MAY BE USED TO CONSTRUCT RETAINING WALL NO. 3. SEE MSE RETAINING WALLS PROVISION FOR TEMPORARY SHORING FOR WALL CONSTRUCTION.

MSE WALL QUANTITIES (SQUARE FEET)	
MSE RETAINING WALL NO. 3	700 SF

PROJECT NO.: 34923.1.1 (U-3324)
 MOORE COUNTY
 STATION: 24+60.00 TO 26+58.00 -Y6-
 SHEET 1 OF 2

GEOTECHNICAL ENGINEERING UNIT

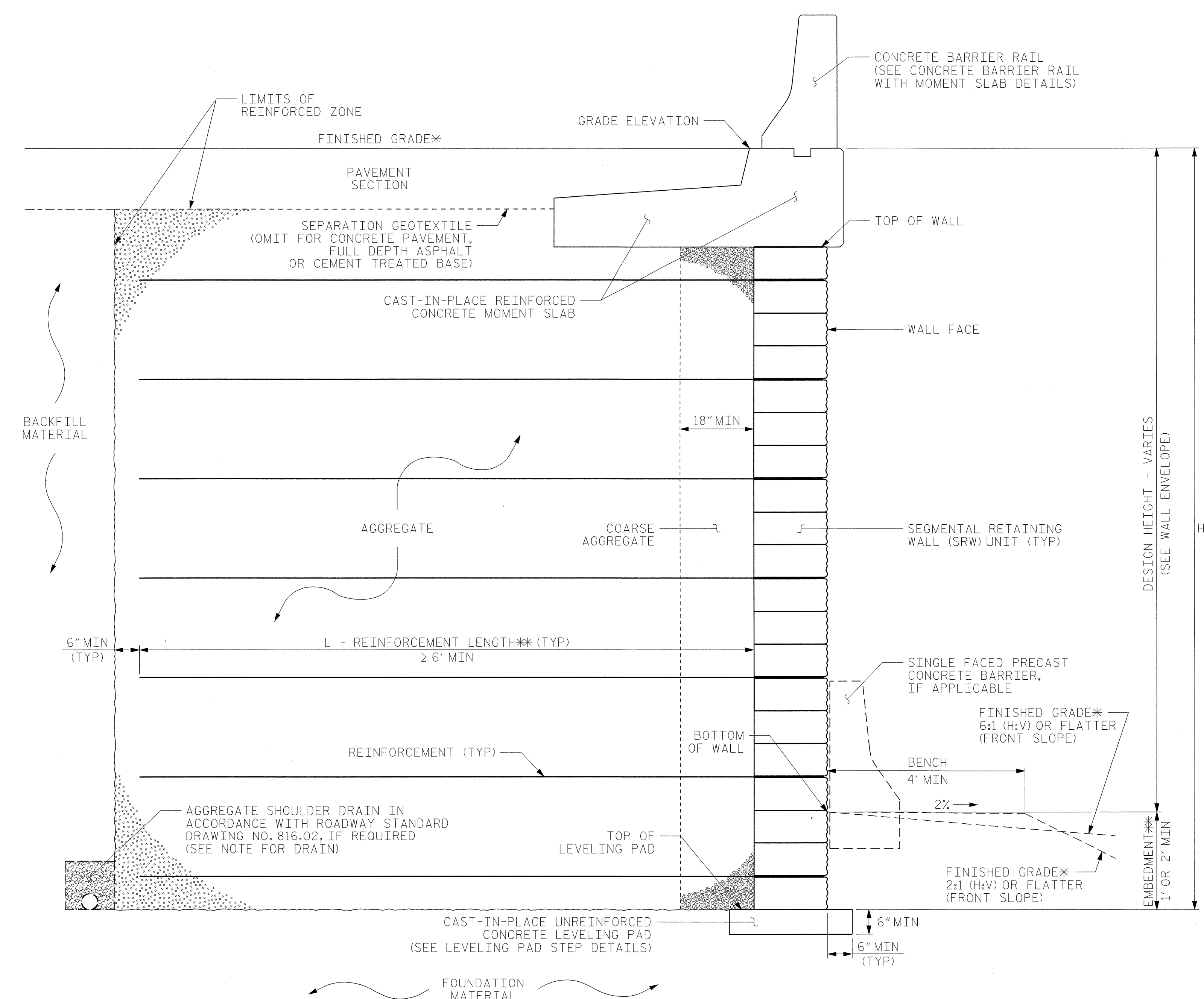
EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE
 CONTRACT OFFICE

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

MSE RETAINING WALL NO. 3
 WALL ENVELOPE AND
 PLAN VIEW

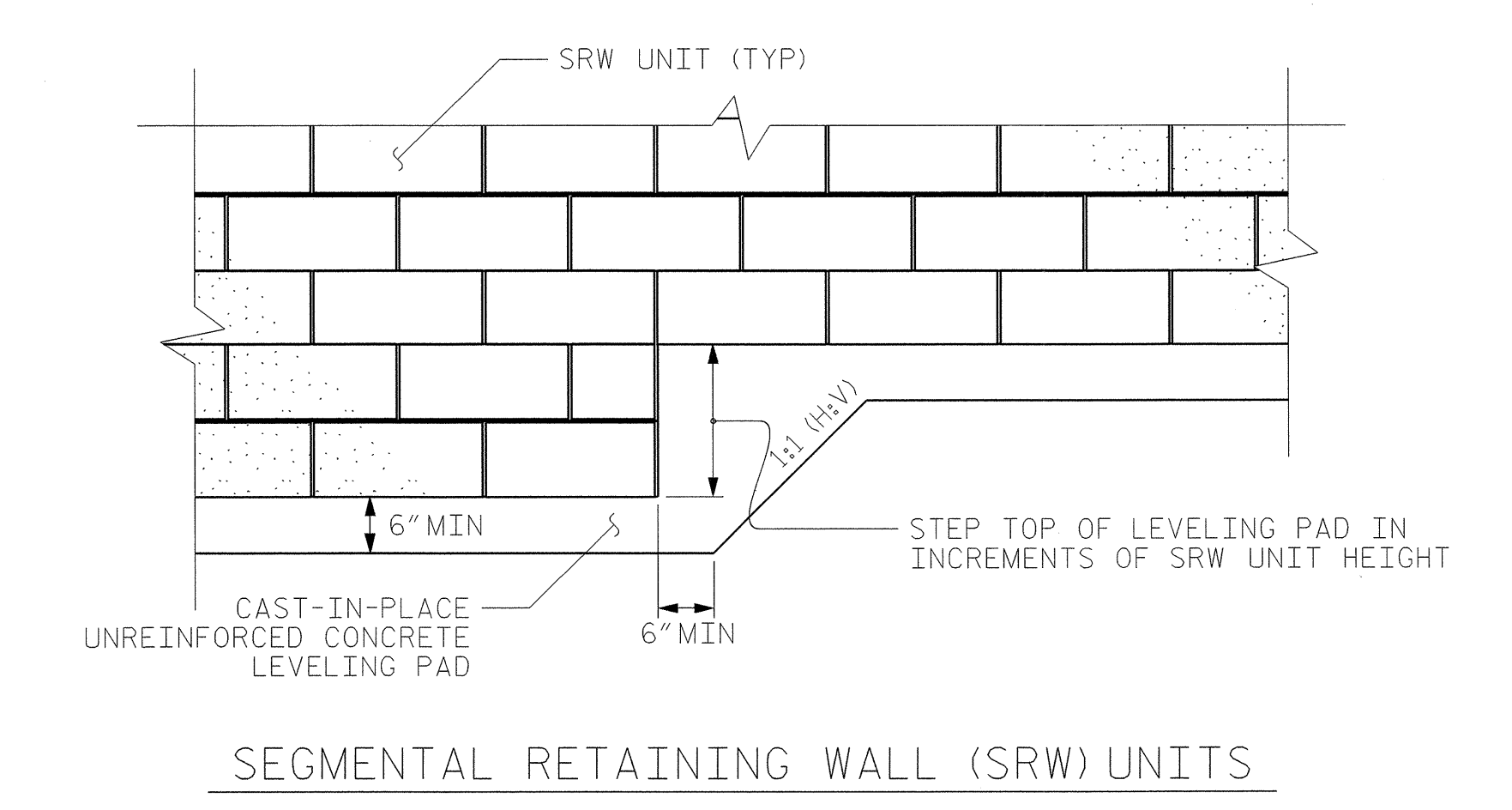
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	W-5
1	-	-	3	-	-	TOTAL SHEETS
2	-	-	4	-	-	9

PREPARED BY: D. TEAGUE DATE: 6/2012
 REVIEWED BY: E. WILLIAMS DATE: 6/2012



MSE WALL WITH SRW UNITS - TYPICAL SECTION

*SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.
 **SEE MSE RETAINING WALLS PROVISION FOR EMBEDMENT AND REINFORCEMENT LENGTH REQUIREMENTS.



SEGMENTAL RETAINING WALL (SRW) UNITS

PROJECT NO.: 34923.1.1 (U-3324)
MOORE COUNTY
STATION: 24+60.00 TO 26+58.00 -Y6-
 SHEET 2 OF 2

**MSE RETAINING WALL NO. 3
 TYPICAL SECTION**

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	TOTAL SHEETS
1	-	-	3	-	-	9
2	-	-	4	-	-	9

GEOTECHNICAL ENGINEERING UNIT

EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE
 CONTRACT OFFICE

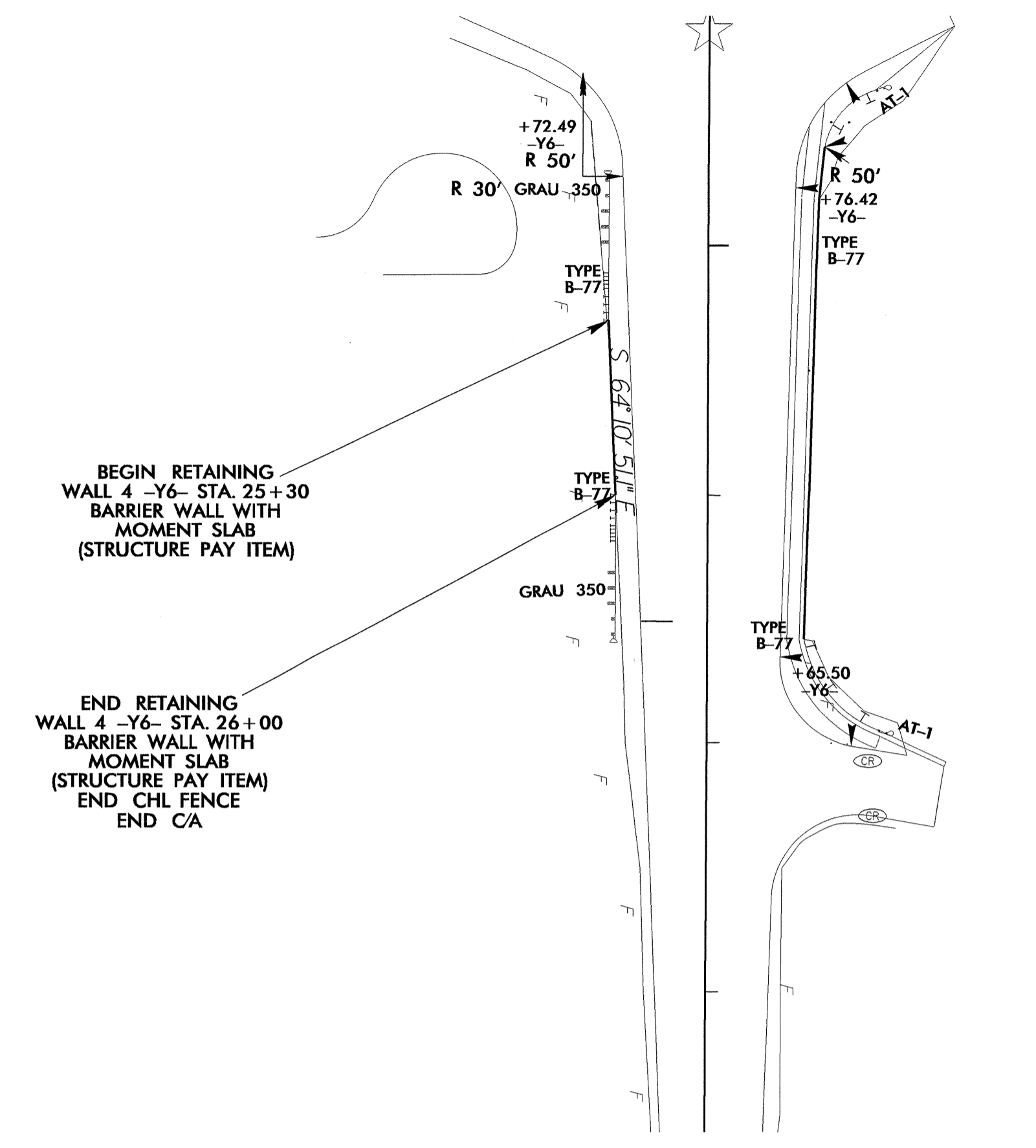
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

PREPARED BY: D. TEAGUE	DATE: 6/2012
REVIEWED BY: E. WILLIAMS	DATE: 6/2012

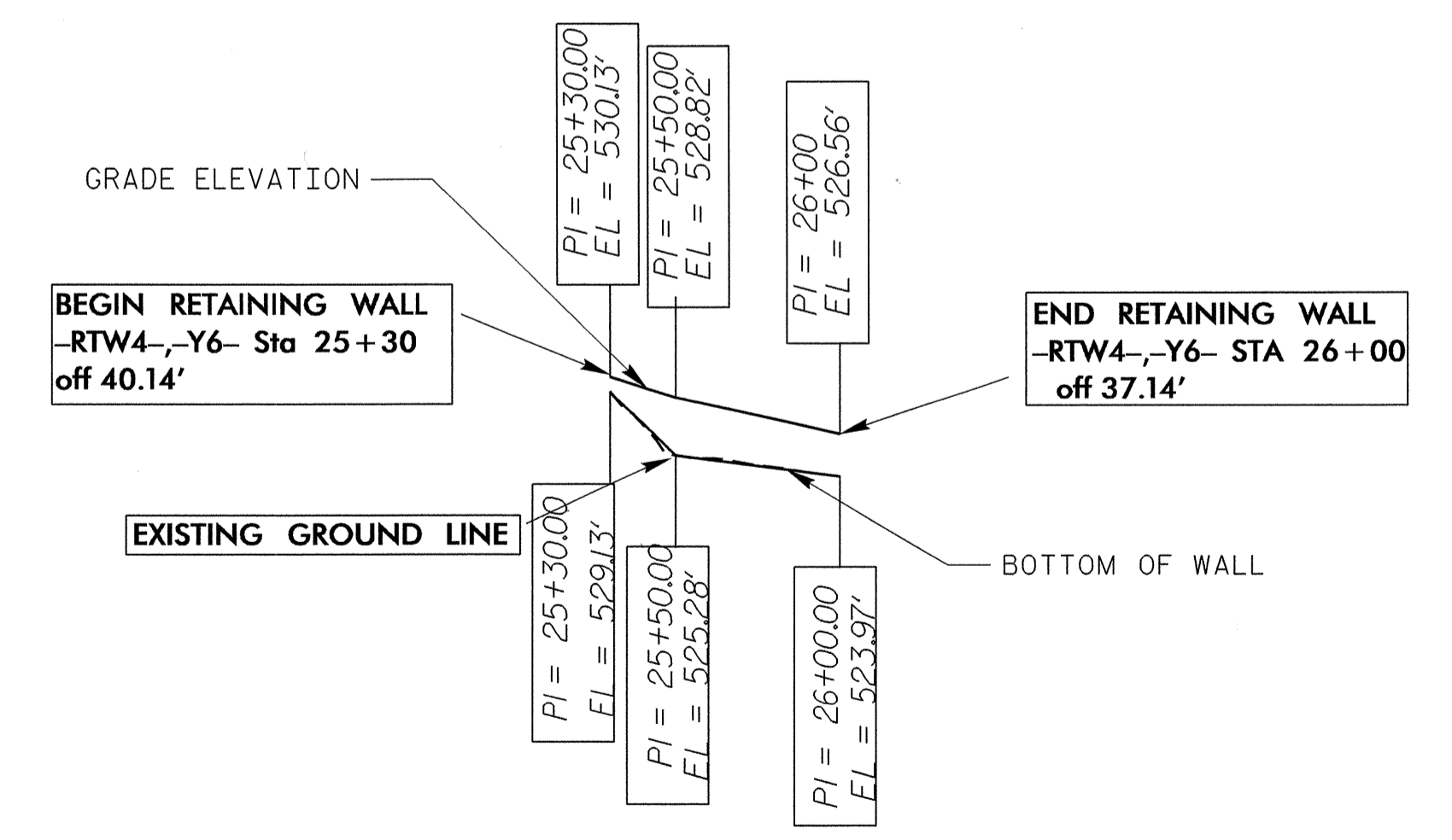
GEOTECHNICAL ENGINEER

ENGINEER

David L. Teague
SIGNATURE DATE SIGNATURE DATE



MSE RETAINING WALL NO. 4 - PLAN VIEW



MSE RETAINING WALL NO. 4 - WALL ENVELOPE

NOTES:

- FOR MECHANICALLY STABILIZED EARTH (MSE) RETAINING WALLS, SEE MECHANICALLY STABILIZED EARTH RETAINING WALLS PROVISION.
- A CONCRETE BARRIER RAIL WITH MOMENT SLAB IS REQUIRED ABOVE RETAINING WALL NO. 4. SEE PLANS FOR CONCRETE BARRIER RAIL WITH MOMENT SLAB DETAILS.
- A FENCE OR HANDRAIL IS REQUIRED ON TOP OF RETAINING WALL NO. 4. SEE ROADWAY PLANS FOR FENCE OR HANDRAIL ATTACHMENT DETAILS.
- USE AN MSE WALL SYSTEM WITH SRW UNITS THAT MEET ARTICLE 1040-4 OF THE STANDARD SPECIFICATIONS FOR RETAINING WALL NO. 4.
- A DRAIN IS REQUIRED FOR RETAINING WALL NO. 4.
- BEFORE BEGINNING MSE WALL DESIGN FOR RETAINING WALL NO. 4, SURVEY WALL LOCATION AND SUBMIT A REVISED WALL PROFILE VIEW (WALL ENVELOPE) FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THE REVISED WALL ENVELOPE IS ACCEPTED.
- DESIGN RETAINING WALL NO. 4 FOR THE FOLLOWING:
 - 1) H = DESIGN HEIGHT + EMBEDMENT
 - 2) DESIGN LIFE = 100 YEARS
 - 3) MAXIMUM FACTORED VERTICAL STRESS ON FOUNDATION MATERIAL = 1,500 LB/SF
 - 4) MINIMUM REINFORCEMENT LENGTH = 6 FT.

5) AGGREGATE PARAMETERS:

AGGREGATE TYPE*	UNIT WEIGHT (γ) LB/CF	FRICTION ANGLE (φ) DEGREES	COHESION (c) LB/SF
COARSE	110	38	0
FINE	125	34	0

*SEE MSE RETAINING WALLS PROVISION FOR COARSE AND FINE AGGREGATE MATERIAL REQUIREMENTS.

6) IN-SITU ASSUMED MATERIAL PARAMETERS:

MATERIAL TYPE	UNIT WEIGHT (γ) LB/CF	FRICTION ANGLE (φ) DEGREES	COHESION (c) LB/SF
BACKFILL	120	30	0
FOUNDATION	120	30	0

DESIGN RETAINING WALL NO. 4 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.
DO NOT PLACE LEVELING PAD CONCRETE, AGGREGATE OR REINFORCEMENT FOR RETAINING WALL NO. 4 UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.

MSE WALL QUANTITIES (SQUARE FEET)	
MSE RETAINING WALL NO. 4	200 SF

PROJECT NO.: 34923.1.1 (U-3324)
MOORE COUNTY
STATION: 25+30.00 TO 26+00.00 -Y6-
SHEET 1 OF 2

PREPARED BY: D. TEAGUE DATE: 6/2012
REVIEWED BY: E. WILLIAMS DATE: 6/2012

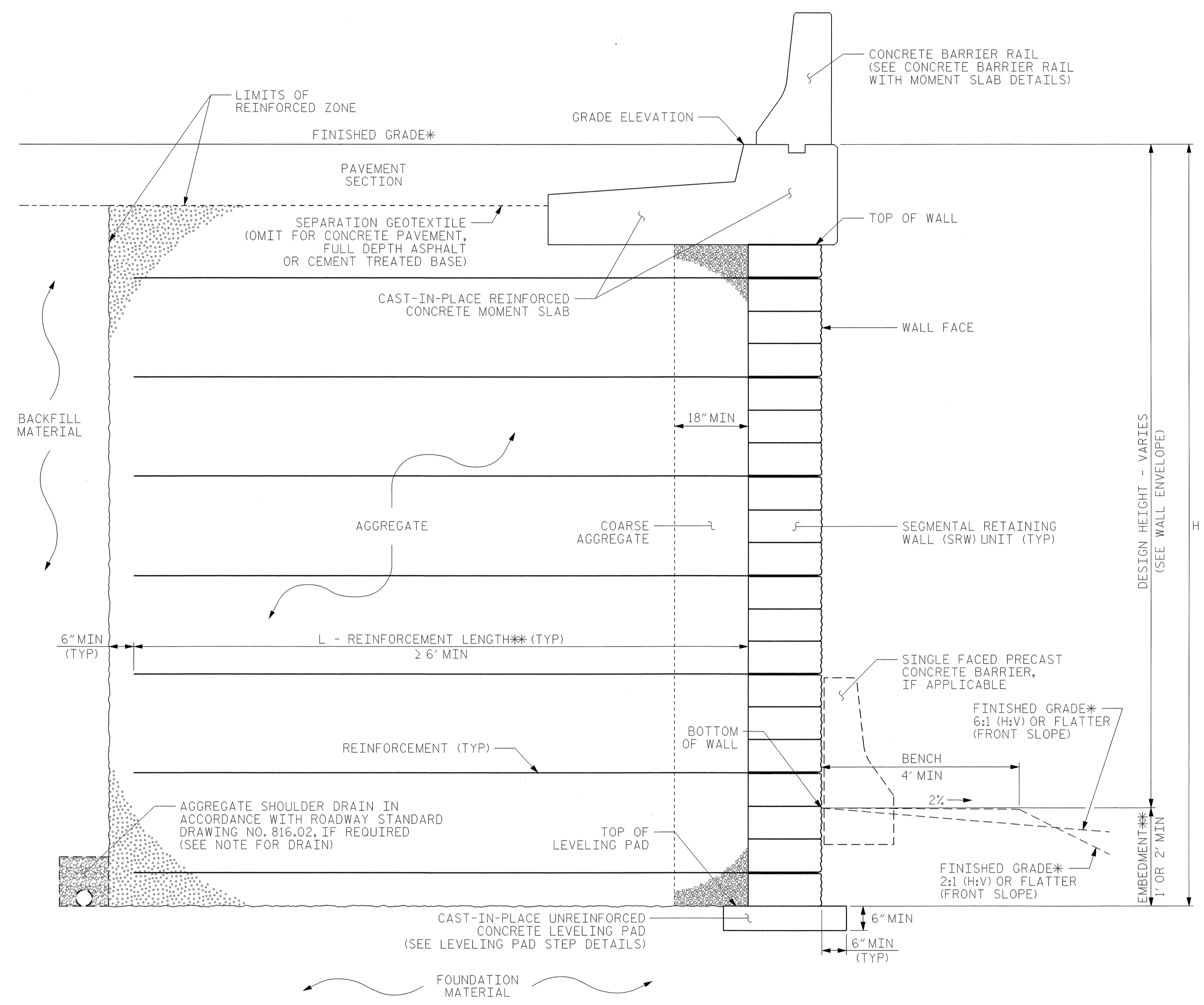
GEOTECHNICAL ENGINEERING UNIT

EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE
 CONTRACT OFFICE

**STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH**

MSE RETAINING WALL NO. 4 WALL ENVELOPE AND PLAN VIEW					
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1	-	-	3	-	-
2	-	-	4	-	-

SHEET NO. W-7
TOTAL SHEETS 9



MSE WALL WITH SRW UNITS - TYPICAL SECTION

*SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.
 **SEE MSE RETAINING WALLS PROVISION FOR EMBEDMENT AND REINFORCEMENT LENGTH REQUIREMENTS.

PROJECT NO.: 34923.1.1 (U-3324)
 MOORE COUNTY
 STATION: 25+30.00 TO 26+00.00 -Y6-
 SHEET 2 OF 2

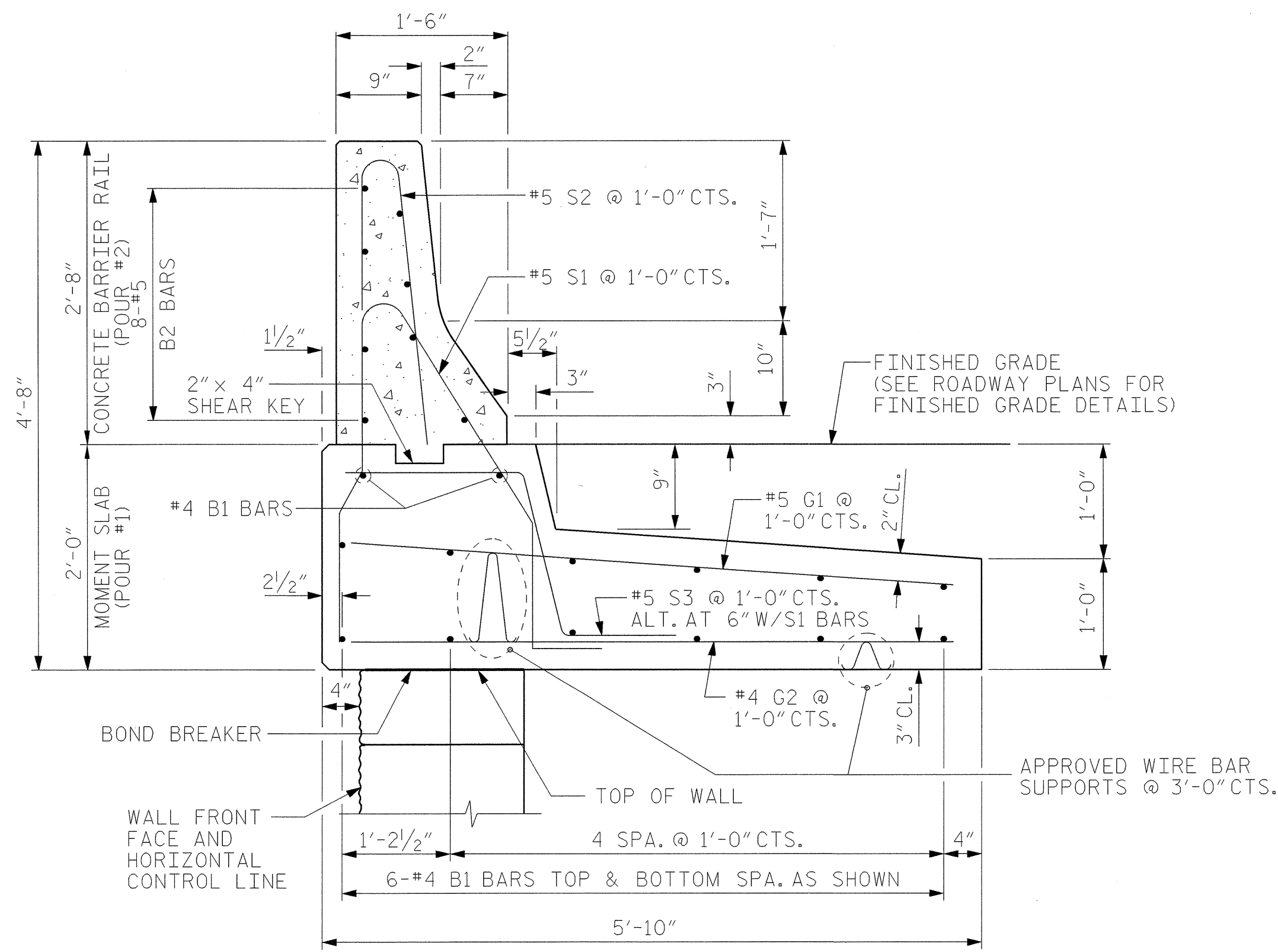
PREPARED BY: D. TEAGUE	DATE: 6/2012
REVIEWED BY: E. WILLIAMS	DATE: 6/2012

GEOTECHNICAL ENGINEERING UNIT

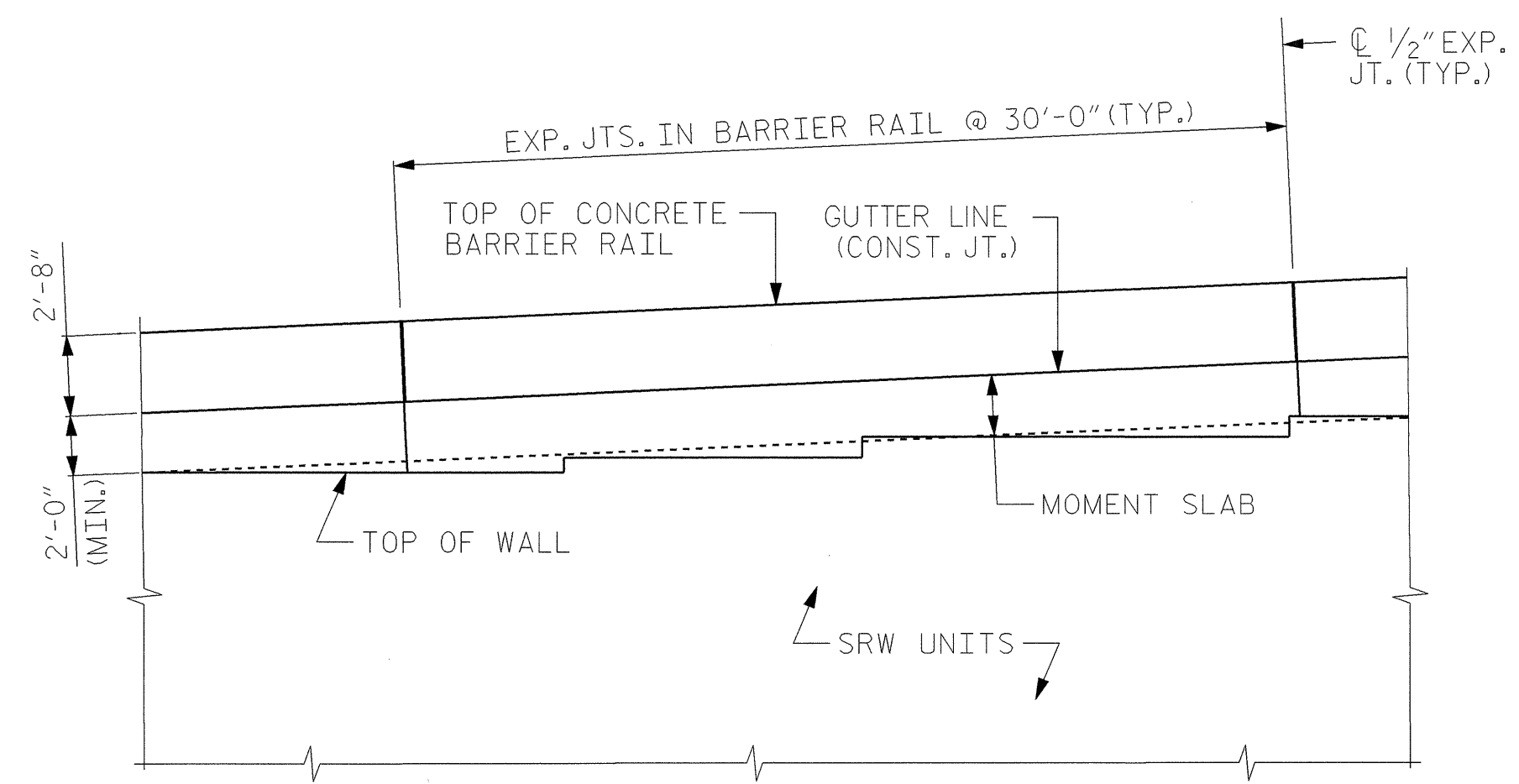
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 WESTERN REGIONAL OFFICE
 CONTRACT OFFICE

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

REVISIONS						SHEET NO. W-3	TOTAL SHEETS 9
NO.	BY	DATE	NO.	BY	DATE		
1	-	-	3	-	-		
2	-	-	4	-	-		



CONCRETE BARRIER RAIL WITH MOMENT SLAB



CONCRETE BARRIER RAIL WITH MOMENT SLAB - PARTIAL ELEVATION

NOTES:

FOR CONCRETE BARRIER RAIL WITH MOMENT SLAB, SEE CONCRETE BARRIER RAIL WITH MOMENT SLAB PROVISION.

CONCRETE BARRIER RAIL WITH MOMENT SLAB SHALL BE A MINIMUM OF 15' IN LENGTH.

EXPANSION JOINTS SHALL BE PLACED IN THE BARRIER RAIL AND MOMENT SLAB AT A MAXIMUM SPACING OF 30'.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED SURFACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MID-POINT OF BARRIER RAIL SEGMENTS LESS THAN 20' IN LENGTH.

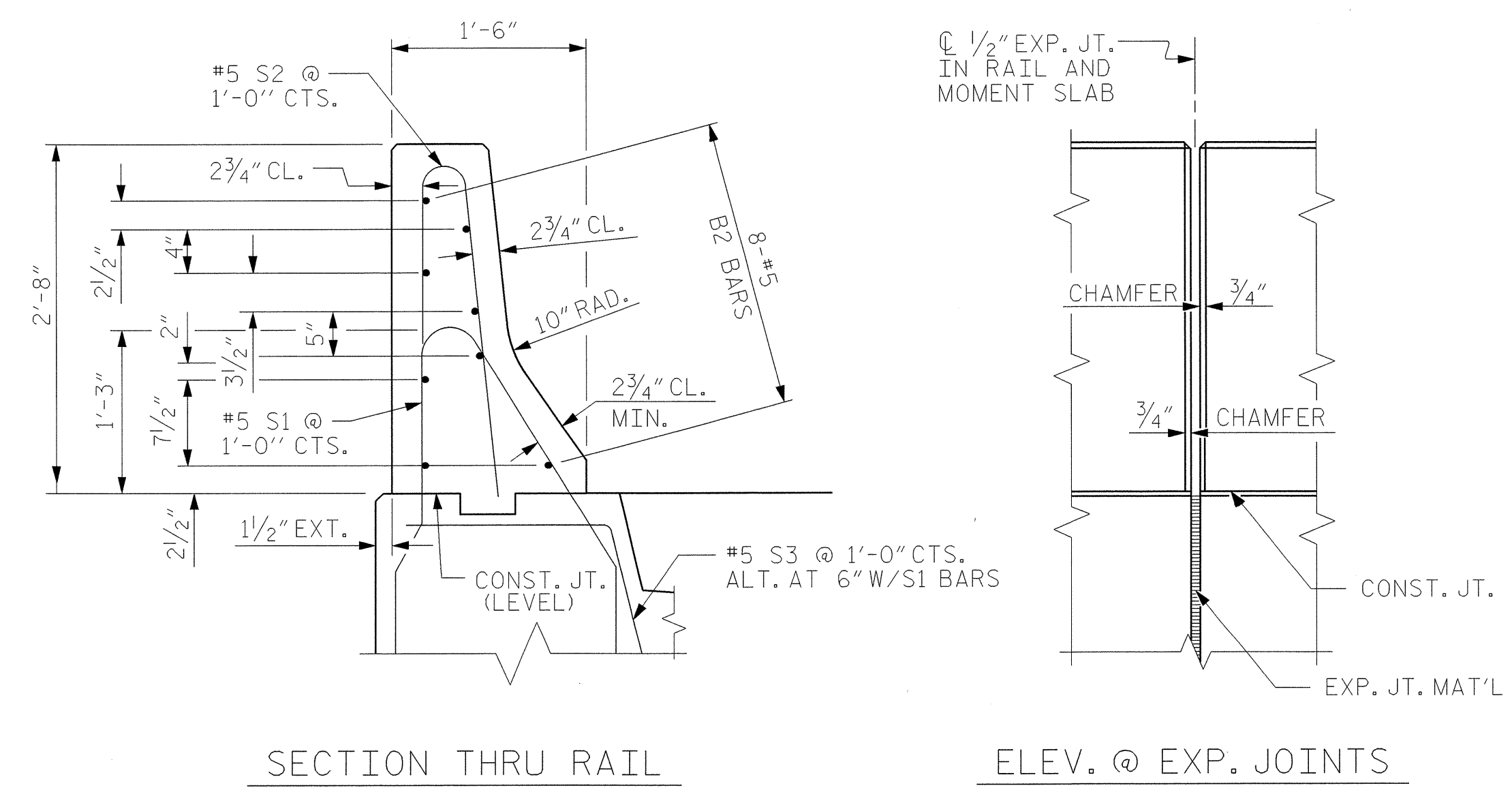
THE BARRIER RAIL SHALL NOT BE CAST UNTIL THE MOMENT SLAB HAS ATTAINED AN AGE OF THREE CURING DAYS OR A MINIMUM COMPRESSIVE STRENGTH OF 2,000 PSI. IN ADDITION, NO FILL MATERIAL, ASPHALT, OR CONSTRUCTION EQUIPMENT IS ALLOWED ON THE MOMENT SLAB PRIOR TO SATISFYING THE MINIMUM CONCRETE CURING AND STRENGTH REQUIREMENTS.

ALL REINFORCING STEEL IN THE BARRIER RAIL SHALL BE EPOXY COATED.

IF STEPS ARE REQUIRED AT TOP OF WALL, DETAILS SHOWING INTERFACE BETWEEN BOTTOM OF MOMENT SLAB AND STEPS SHALL BE SUBMITTED FOR APPROVAL.

IF EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, BARRIERS, PIPES, INLETS OR UTILITIES WILL INTERFERE WITH CONCRETE BARRIER RAIL WITH MOMENT SLAB, CONCRETE BARRIER RAIL WITH MOMENT SLAB DETAILS SHALL BE REVISED AND SUBMITTED FOR APPROVAL.

CONCRETE BARRIER RAIL WITH MOMENT SLAB
PAY LENGTH = 268 LIN FT



BARRIER RAIL DETAILS

GEOTECHNICAL ENGINEER

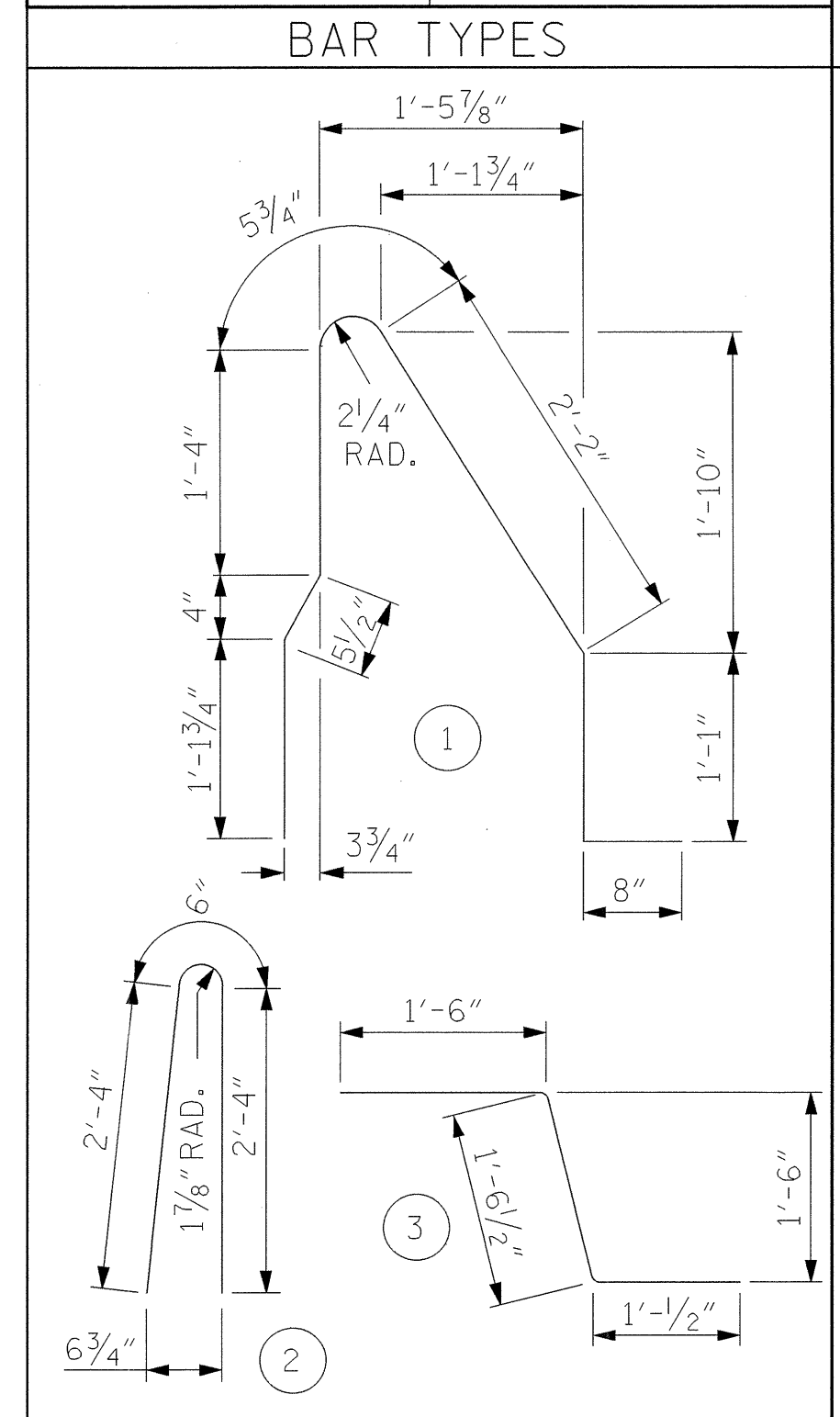
ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL

7/24/12

DATE

SIGNATURE



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR ONE 30'-0" SECTION OF CONCRETE BARRIER RAIL WITH MOMENT SLAB

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	14	#4	STR	29'-7"	277
* B2	8	#5	STR	29'-7"	247
G1	31	#5	STR	5'-6"	178
G2	31	#4	STR	5'-6"	114
* S1	31	#5	1	7'-3"	234
* S2	31	#5	2	5'-2"	167
S3	31	#5	3	4'-1"	128
REINFORCING STEEL					697 LB
* EPOXY COATED REINFORCING STEEL					648 LB
CLASS AA CONCRETE BARRIER RAIL					3.1 CY
CLASS A CONCRETE MOMENT SLAB					9.1 CY
CONCRETE BARRIER RAIL WITH MOMENT SLAB					30 LIN FT

PROJECT NO.: 34923.1.1 (U-3324)

MOORE COUNTY

STATION: 24+60 TO 26+58 -Y6- AND 25+30 TO 26+00 -Y6-

SHEET 1 OF 1

CONCRETE BARRIER RAIL WITH MOMENT SLAB FOR SEGMENTAL RETAINING WALL (SRW) UNITS

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1	-	-	3	-	-	13-9
2	-	-	4	-	-	

TOTAL SHEETS: 9

PREPARED BY: _____ DATE: _____

REVIEWED BY: _____ DATE: _____

GEOTECHNICAL ENGINEERING UNIT

EASTERN REGIONAL OFFICE

WESTERN REGIONAL OFFICE

CONTRACT OFFICE

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

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 2006 "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. FINIS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

SPECIAL NOTES:

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

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