

DRAWN BY : P.S. ADKINS DATE : 10/2/14
 CHECKED BY : K.D. LAYNE DATE : 11/15/14
 DESIGN ENGINEER OF RECORD : D.R. SMITH DATE : 11/22/14

PILES, COLUMNS, AND DRILLED PIERS NOT SHOWN FOR CLARITY

NORTH CAROLINA PROFESSIONAL SEAL 21638 ENGINEER LAURA E. SUTTON

NORTH CAROLINA PROFESSIONAL SEAL 031480 ENGINEER DONALD R. SMITH, JR.

DocuSigned by: Laura E. Sutton 4/1/2016

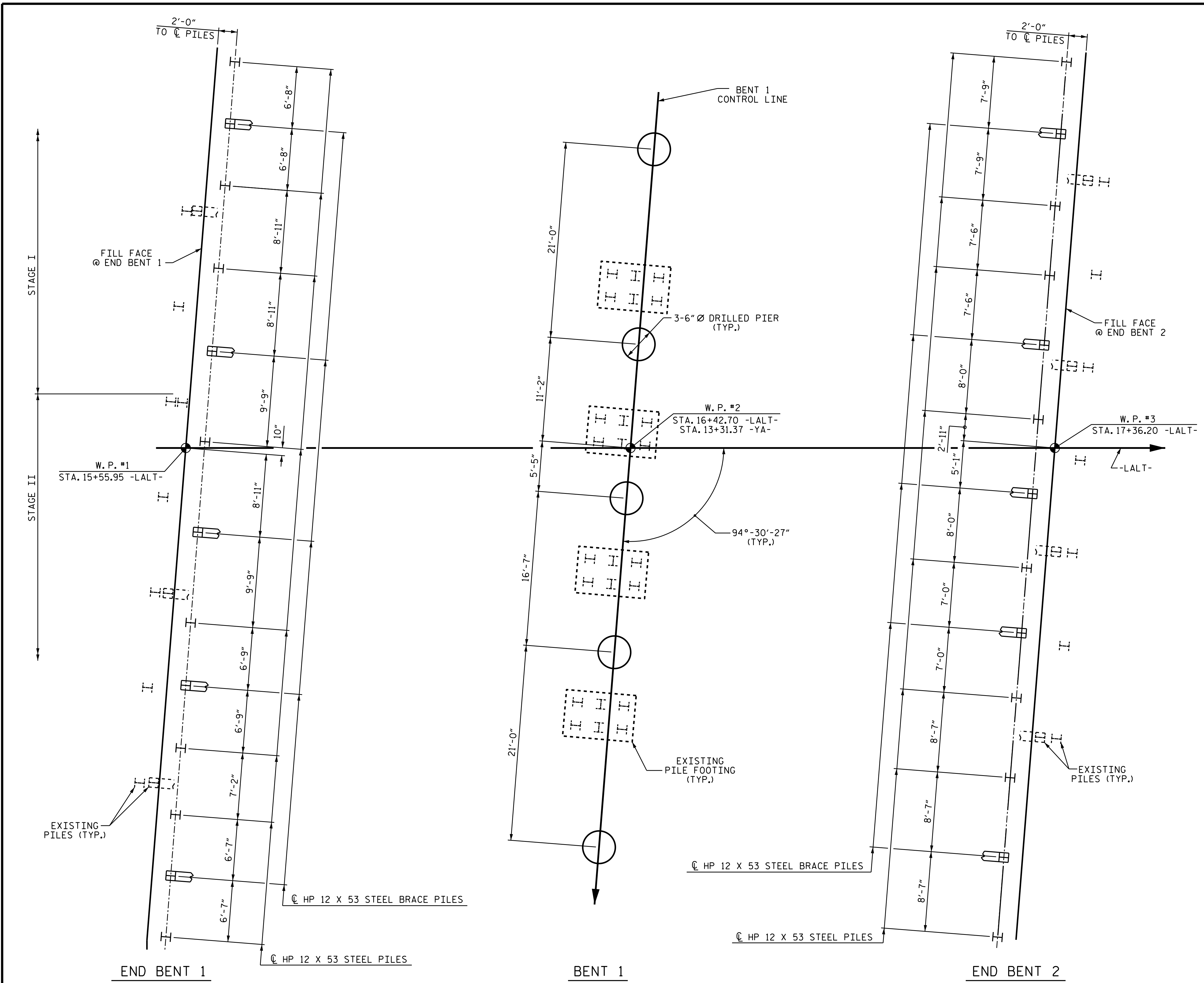
DocuSigned by: Donald R. Smith, Jr. 4/1/2016

PROJECT NO. U-3308
 DURHAM COUNTY
 STATION: 16+42.70-LALT-
 13+31.37-YA-
 SHEET 1 OF 3 REPLACES BRIDGE 12

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE OVER NC 147
 (DURHAM EXPRESSWAY)
 ON NC 55 (ALSTON AVE.)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-1
1			3			TOTAL SHEETS
2			4			47



NOTES

FOR PILES, SEE GEOTECHNICAL SPECIAL PROVISIONS AND SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT 1 AND END BENT 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 95 TONS AND 100 TONS PER PILE, RESPECTIVELY.

DRIVE PILES AT END BENT 1 AND END BENT 2 TO A REQUIRED DRIVING RESISTANCE OF 160 TONS AND 170 TONS PER PILE, RESPECTIVELY.

FOR DRILLED PIERS, SEE GEOTECHNICAL SPECIAL PROVISIONS AND SECTION 411 OF THE STANDARD SPECIFICATIONS.

DRILLED PIERS AT BENT 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 620 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 90 TSF.

INSTALL DRILLED PIERS AT BENT 1 TO A TIP ELEVATION NO HIGHER THAN 367 FT (LT.), 364 FT (CT.) AND 362 FT (RT.) WITH THE REQUIRED TIP RESISTANCE AND PENETRATION OF AT LEAST 7 FT INTO ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.

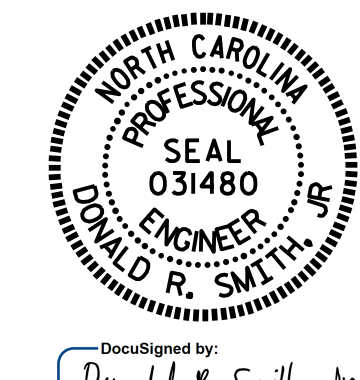
SID INSPECTIONS MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR SID INSPECTIONS. FOR SID INSPECTIONS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

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

EVERY EFFORT HAS BEEN MADE TO MISS THE EXISTING END BENT PILES AND BENT FOOTINGS. IF A CONFLICT IS DISCOVERED, THE CONTRACTOR SHALL ALLOW UP TO THREE DAYS FOR REDESIGN OF THE END BENT OR BENT.

PROJECT NO. U-3308
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SHEET 2 OF 3



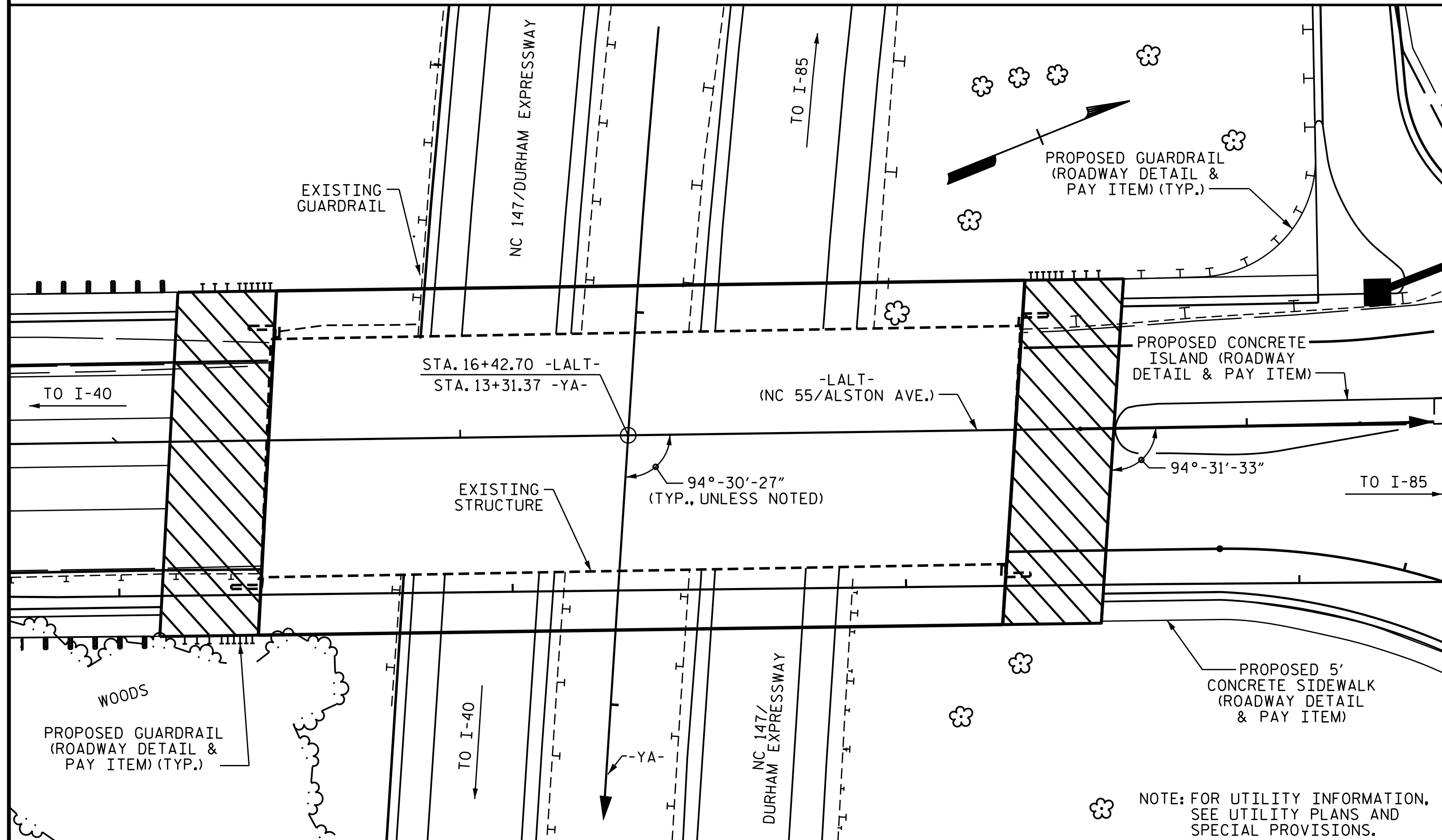
STATE OF NORTH CAROLINA
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FOUNDATION LAYOUT
 DIMENSIONS LOCATING PILES ARE SHOWN TO THE CENTERLINE OF PILES.
 DIMENSIONS FOR DRILLED PIERS ARE SHOWN TO THE CENTERLINE OF DRILLED PIERS.

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2			4			TOTAL SHEETS 47

BM. #502: CUT SQUARE ON SE BENT, 37.66' RT. OF STA. 15+48.92 -LALT-, EL. 408.92



LOCATION SKETCH

NOTES

- ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
- THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
- THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.
- FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- FOR PLACING LOAD ON STRUCTURE MEMBERS, SEE SPECIAL PROVISIONS.
- 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 SPLICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE, PLUS A MINIMUM LAP SPLICE OF THIRTY BAR DIAMETERS. PAYMENT FOR THE SAMPLES OF REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.
- THE ELEVATIONS AND CLEARANCES SHOWN ON THE PLANS AT THE POINTS OF MINIMUM VERTICAL CLEARANCE ARE FROM THE BEST INFORMATION AVAILABLE. PRIOR TO BEGINNING BRIDGE CONSTRUCTION, VERIFY THE ELEVATIONS ON THE EXISTING PAVEMENT AND CHECK THE CLEARANCE. REPORT ANY VARIATIONS TO THE ENGINEER. ANY PLAN REVISIONS NECESSARY TO ACHIEVE THE REQUIRED MINIMUM VERTICAL CLEARANCE WILL BE PROVIDED BY THE DEPARTMENT.
- FOR MAINTENANCE AND PROTECTION OF TRAFFIC BENEATH PROPOSED STRUCTURE, SEE SPECIAL PROVISIONS.
- REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
- NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.
- ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 50W AND PAINTED IN ACCORDANCE WITH SYSTEM 4 OF ARTICLE 442-8 OF THE STANDARD SPECIFICATIONS UNLESS OTHERWISE NOTED ON THE PLANS.
- THE CLASS AA CONCRETE IN THE BRIDGE DECK SHALL CONTAIN FLY ASH OR GROUND GRANULATED BLAST FURNACE SLAG AT THE SUBSTITUTION RATE SPECIFIED IN ARTICLE 1024-1 AND IN ACCORDANCE WITH ARTICLES 1024-5 AND 1024-6 OF THE STANDARD SPECIFICATIONS. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE COST OF THE REINFORCED CONCRETE DECK SLAB.
- FOR LIMITS OF TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE TRANSPORTATION MANAGEMENT PLANS. FOR PAY ITEM FOR TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE ROADWAY PLANS.
- EXISTING STRUCTURE CONSISTING OF 4 SPANS (1 @ 33'-0", 1 @ 66'-0", 1 @ 61'-9", AND 1 @ 29'-3") WITH A CLEAR ROADWAY WIDTH OF 52'-0" AND REINFORCED CONCRETE FLOOR ON I-BEAMS ON END BENTS OF REINFORCED CONCRETE CAP ON STEEL PILES AND BENTS OF REINFORCED CONCRETE POST & BEAM ON PILE FOOTINGS AND LOCATED AT THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT. SEE SPECIAL PROVISIONS FOR "REMOVAL OF EXISTING STRUCTURE".
- 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.
- FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
- THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.
- FOR ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.

THE BRIDGE DECK FOR THIS PROJECT IS INCLUDED IN NCDOT RESEARCH PROJECT RP 2016-06, "INTERNALLY CURED CONCRETE USING LIGHTWEIGHT AGGREGATE" AS THE DEMONSTRATION PROJECT FOR FIELD STUDY. SEE SPECIAL PROVISION FOR INTERNALLY CURED CONCRETE FIELD STUDY.

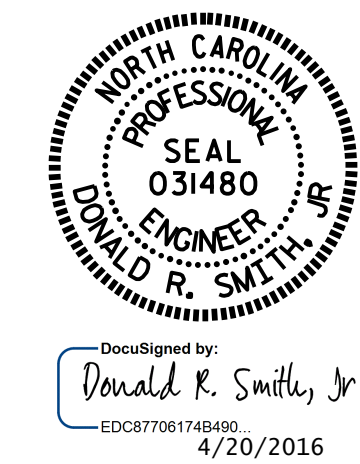
TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	3'-6" DIA. DRILLED PIERS IN SOIL	3'-6" DIA. DRILLED PIERS NOT IN SOIL	SID INSPECTIONS	CSL TESTING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL
	LUMP SUM	LIN. FT.	LIN. FT.	EA.	EA.	SQ.FT.	SQ.FT.	CU.YDS.	LUMP SUM	LBS.
SUPERSTRUCTURE						16,139	17,827		LUMP SUM	
END BENT 1								84.0		11,783
BENT 1		63.90	42.00					91.5		23,931
END BENT 2								82.9		11,750
TOTAL	LUMP SUM	63.90	42.00	1	1	16,139	17,827	258.4	LUMP SUM	47,464

	SPIRAL COLUMN REINFORCING STEEL	STRUCTURAL STEEL	HP 12 X 53 STEEL PILES	1'-2 3/4" X 3'-0" CONCRETE PARAPET	84" CHAIN LINK FENCE	4" SLOPE PROTECTION	DISC BEARINGS	ELASTOMERIC BEARINGS	FOAM JOINT SEALS	ANODIZED 2 BAR METAL RAIL	ASBESTOS ASSESSMENT	
	LBS.	APPROX. LBS.	NO.	LIN. FT.	LIN. FT.	LIN. FT.	SO.YDS.	LUMP SUM	LUMP SUM	LUMP SUM	LIN. FT.	LUMP SUM
SUPERSTRUCTURE		508,000			356.32	335.62		LUMP SUM	LUMP SUM	LUMP SUM	340.46	
END BENT 1			13	455			285					
BENT 1	4,041											
END BENT 2			13	585			330					
TOTAL	4,041	508,000	26	1,040	356.32	335.62	615	LUMP SUM	LUMP SUM	LUMP SUM	340.46	LUMP SUM

PROJECT NO. U-3308
DURHAM COUNTY
 STATION: 16+42.70-LALT-

SHEET 3 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE OVER NC 147
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1			3			47
2			4			

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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 (γ _{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVE-LOAD FACTORS (γ _{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	①	1.04	--	1.75	0.774	1.04	B	I	0.00	0.977	1.53	B	I	0.00	1.30	0.774	1.14	B	I	0.00		
	HL-93 (OPERATING)	N/A		1.35	--	1.35	0.774	1.35	B	I	0.00	0.977	1.98	B	I	0.00	1.00	0.774	1.49	B	I	0.00		
	HS-20 (INVENTORY)	36.00	②	2.10	75.60	1.75	0.774	2.15	B	I	0.00	0.977	2.10	B	I	0.00	1.30	0.756	3.39	B	I	54.89		
	HS-20 (OPERATING)	36.00		2.72	97.92	1.35	0.774	2.79	B	I	0.00	0.977	2.72	B	I	0.00	1.00	0.756	4.41	B	I	54.89		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH		5.94	80.19	1.40	0.774	6.82	B	I	0.00	0.977	5.94	B	I	0.00	1.30	0.756	7.80	B	I	54.89		
		SNGARBS2	20.000		4.33	86.60	1.40	0.774	4.78	B	I	0.00	0.977	4.33	B	I	0.00	1.30	0.756	5.71	B	I	54.89	
		SNAGRIS2	22.000		4.01	88.22	1.40	0.774	4.41	B	I	0.00	0.977	4.01	B	I	0.00	1.30	0.756	5.37	B	I	54.89	
		SNCOTTS3	27.250		3.23	88.02	1.40	0.774	3.32	B	I	0.00	0.977	3.23	B	I	0.00	1.30	0.756	3.91	B	I	54.89	
		SNAGGRS4	34.925		2.61	91.15	1.40	0.774	2.61	B	I	0.00	0.977	2.64	B	I	0.00	1.30	0.756	3.23	B	I	54.89	
		SNS5A	35.550		2.57	91.36	1.40	0.774	2.57	B	I	0.00	0.977	2.63	B	I	0.00	1.30	0.756	3.18	B	I	54.89	
		SNS6A	39.950		2.30	91.89	1.40	0.774	2.30	B	I	0.00	0.977	2.38	B	I	0.00	1.30	0.756	2.90	B	I	54.89	
	SNS7B	42.000		2.19	91.98	1.40	0.774	2.19	B	I	0.00	0.977	2.30	B	I	0.00	1.30	0.756	2.77	B	I	54.89		
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		2.80	92.40	1.40	0.774	2.80	B	I	0.00	0.977	2.82	B	I	0.00	1.30	0.756	3.56	B	I	54.89	
		TNT4A	33.075		2.79	92.28	1.40	0.774	2.79	B	I	0.00	0.977	2.80	B	I	0.00	1.30	0.756	3.52	B	I	54.89	
		TNT6A	41.600		2.24	93.18	1.40	0.774	2.24	B	I	0.00	0.977	2.38	B	I	0.00	1.30	0.756	2.89	B	I	54.89	
		TNT7A	42.000		2.22	93.24	1.40	0.774	2.22	B	I	0.00	0.977	2.35	B	I	0.00	1.30	0.756	2.89	B	I	54.89	
		TNT7B	42.000		2.25	94.50	1.40	0.774	2.25	B	I	0.00	0.977	2.29	B	I	0.00	1.30	0.756	2.93	B	I	54.89	
		TNAGRIT4	43.000		2.16	92.88	1.40	0.774	2.16	B	I	0.00	0.977	2.23	B	I	0.00	1.30	0.756	2.83	B	I	54.89	
TNAGT5A		45.000		2.07	93.15	1.40	0.774	2.07	B	I	0.00	0.977	2.17	B	I	0.00	1.30	0.756	2.70	B	I	54.89		
TNAGT5B	45.000	③	2.05	92.25	1.40	0.774	2.05	B	I	0.00	0.977	2.13	B	I	0.00	1.30	0.756	2.66	B	I	54.89			
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.

CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93) **

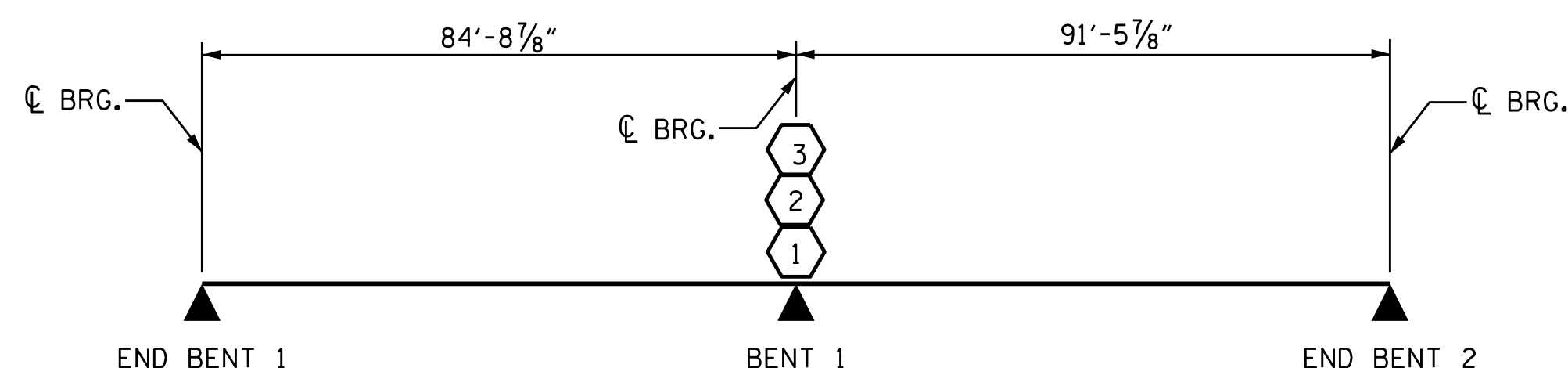
② DESIGN LOAD RATING (HS-20) **

③ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

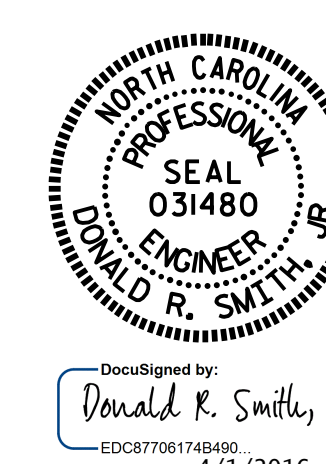
GIRDER LOCATION

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



LRFR SUMMARY

PROJECT NO. U-3308
DURHAM COUNTY
 STATION: 16+42.70-LALT-



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

ASSEMBLED BY : P.S. ADKINS	DATE : 6/2/14
CHECKED BY : J.D. HAWK	DATE : 9/15/14
DRAWN BY : MAA	1/08
CHECKED BY : GM/DI	2/08
REV. 11/12/08RR	MAA/GM
REV. 10/17/11	MAA/GM
DESIGN ENGINEER OF RECORD:	
D.R. SMITH DATE : 11/22/14	

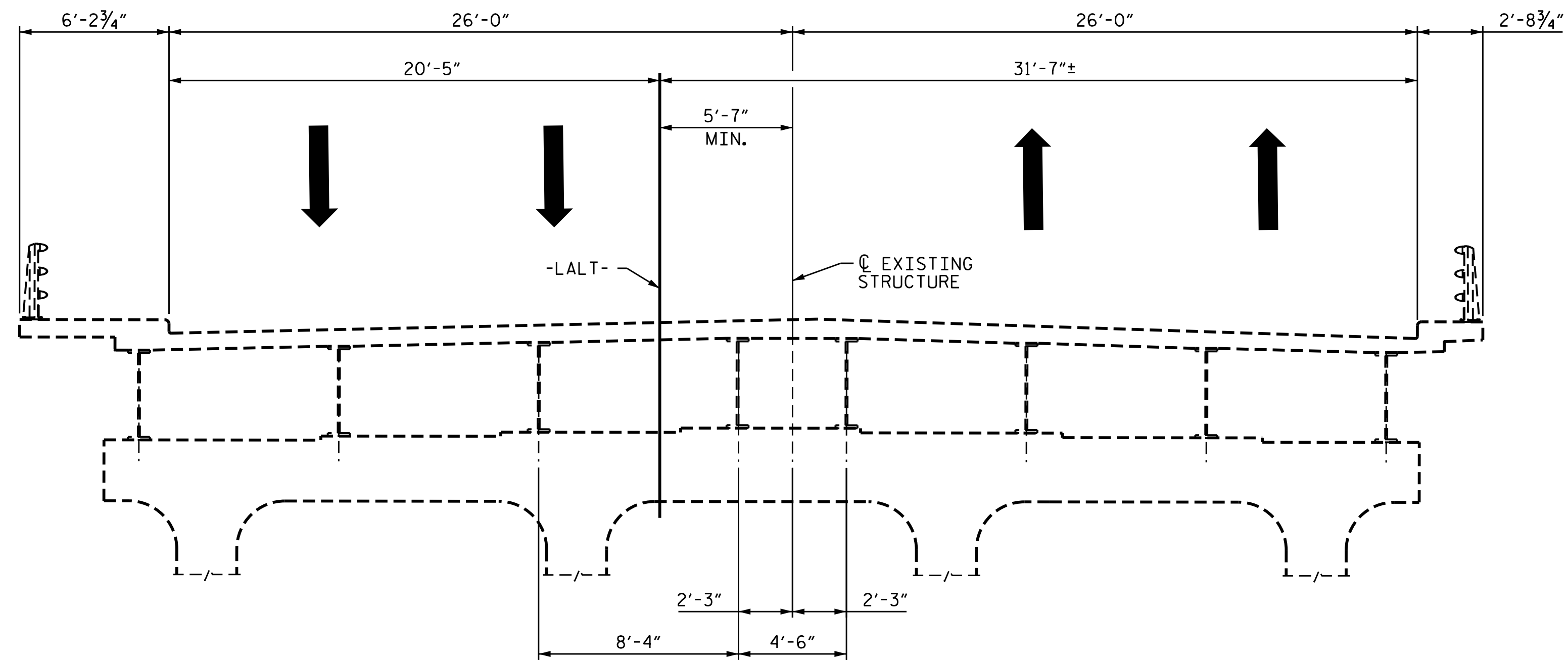
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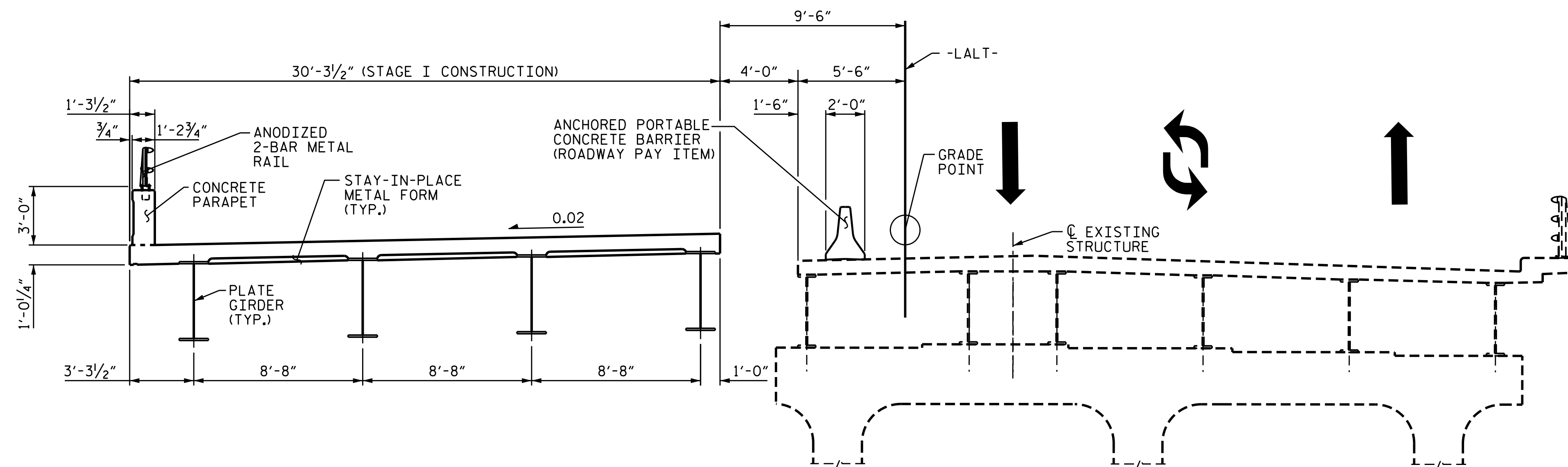
NOTE

SEE TRANSPORTATION MANAGEMENT PLANS FOR LOCATION AND PAY LIMITS OF THE ANCHORED PORTABLE CONCRETE BARRIER.

FOR PHASING AND MAINTENANCE OF TRAFFIC, SEE TRANSPORTATION MANAGEMENT PLANS.



EXISTING STRUCTURE



PROPOSED STAGE I

EXISTING STRUCTURE

STAGE I

MAINTAIN 2-WAY TRAFFIC ON EXISTING STRUCTURE.
REMOVE PART OF EXISTING STRUCTURE AS SHOWN.
CONSTRUCT STAGE I OF PROPOSED STRUCTURE.

PROJECT NO. U-3308
DURHAM COUNTY
STATION: 16+42.70-LALT-

SHEET 1 OF 2



DocuSigned by:
Donald R. Smith, Jr.
EDC87706174B490
4/1/2016

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONSTRUCTION SEQUENCE

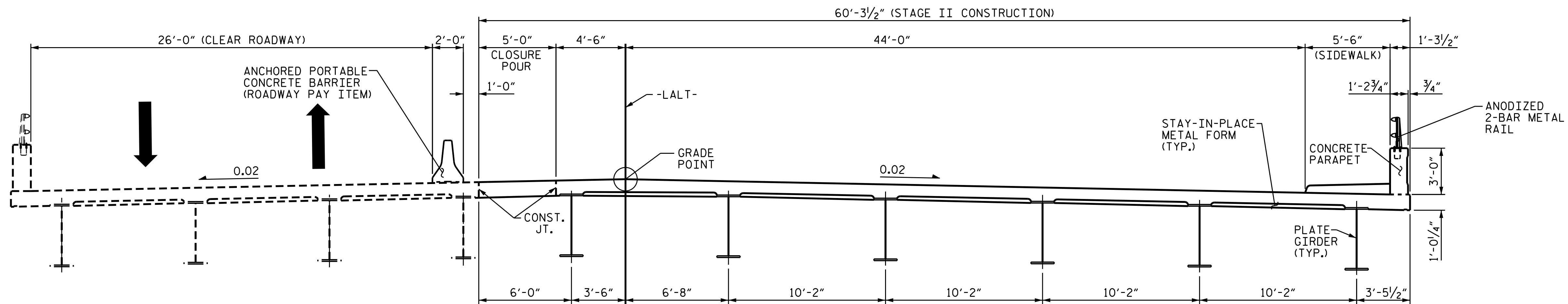
DRAWN BY : P.S. ADKINS DATE : 11-1-14
CHECKED BY : T.H. CARROLL DATE : 11-15-14
DESIGN ENGINEER OF RECORD: D.R. SMITH DATE : 11-22-14

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STR. #1

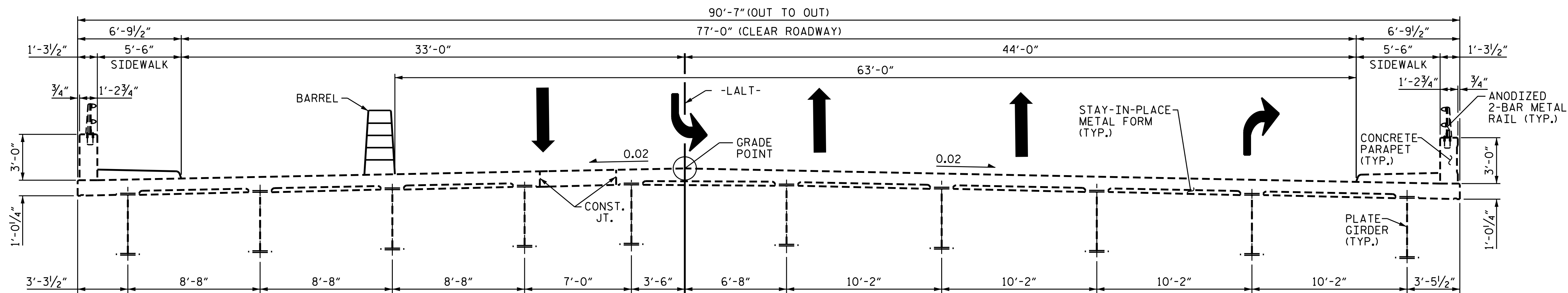


EXISTING STAGE I

PROPOSED STAGE II

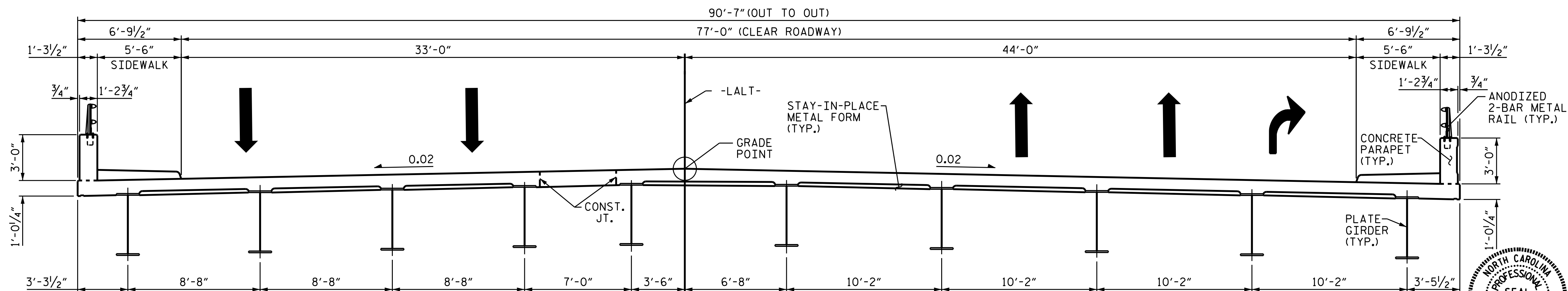
STAGE II

SHIFT 2-WAY TRAFFIC TO NEW STRUCTURE.
COMPLETELY REMOVE THE REST OF THE EXISTING STRUCTURE.
CONSTRUCT STAGE II OF PROPOSED BRIDGE.



STAGE III

AFTER STAGE II CONSTRUCTION IS COMPLETE, REMOVE PORTABLE CONCRETE BARRIER.
SHIFT TRAFFIC TO FINAL PATTERN, EXCLUDING OUTSIDE SOUTHBOUND LANE.
INSTALL STAGE III SIDEWALK.

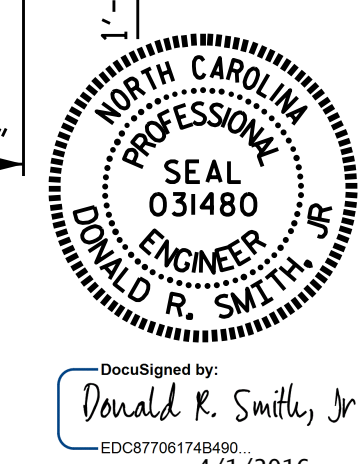


FINAL TYPICAL SECTION

REMOVE BARREL AND SHIFT TRAFFIC TO FINAL 2-WAY TRAFFIC PATTERN.

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SHEET 2 OF 2



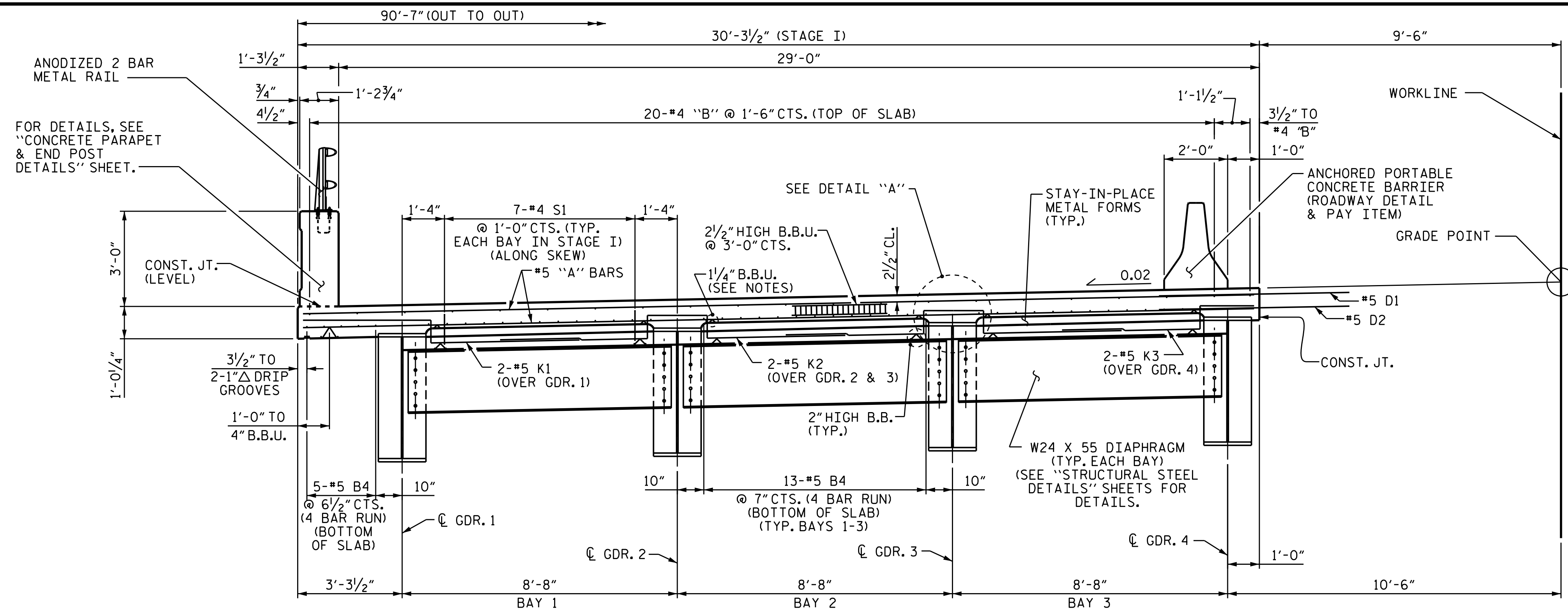
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONSTRUCTION SEQUENCE

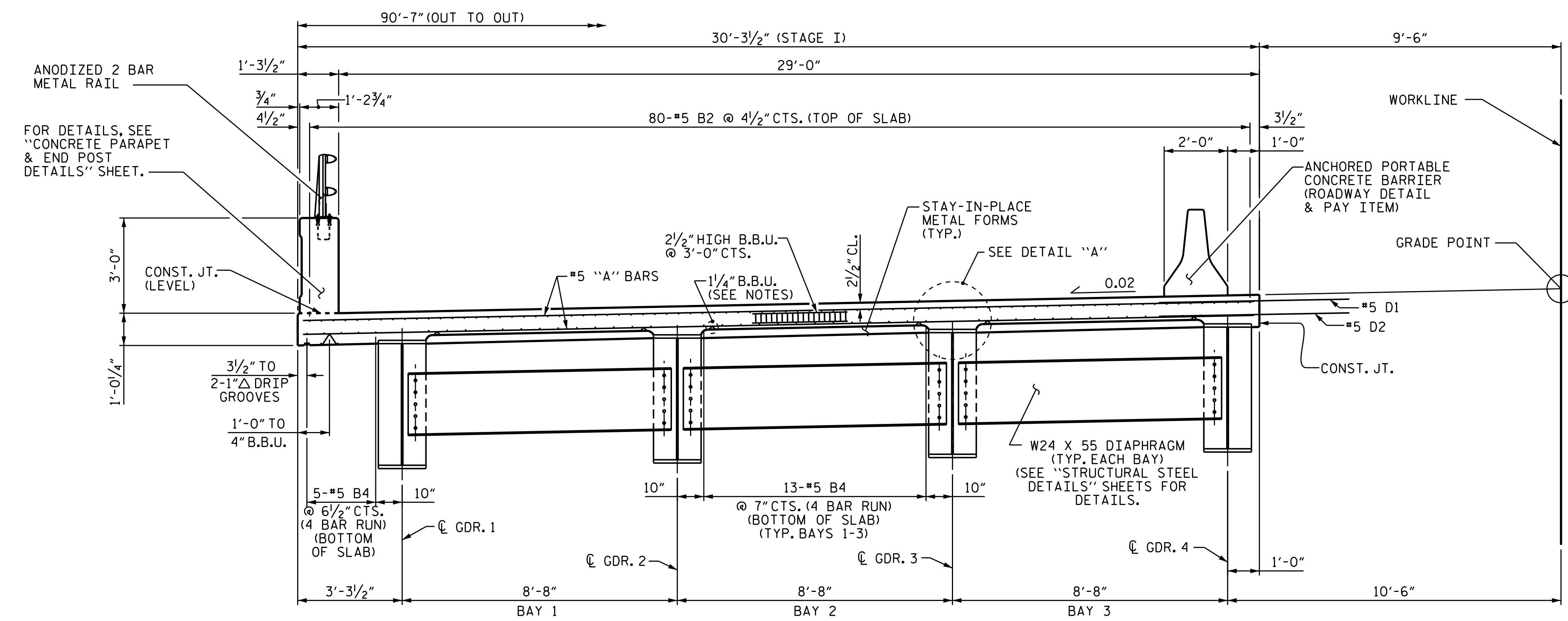
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1			3			S1-6
2			4			TOTAL SHEETS 47



PART TYPICAL SECTION
(SHOWING END BENT DIAPHRAGMS)



PART TYPICAL SECTION

(SHOWING BENT & INTERMEDIATE DIAPHRAGMS)
FOR DETAILS, SEE "STRUCTURAL STEEL DETAILS" SHEET 2 OF 3.
SEE FRAMING PLAN FOR LOCATION.
TYPICAL FOR EACH INTERMEDIATE DIAPHRAGM EXCEPT IN CLOSURE POUR.

NOTES

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

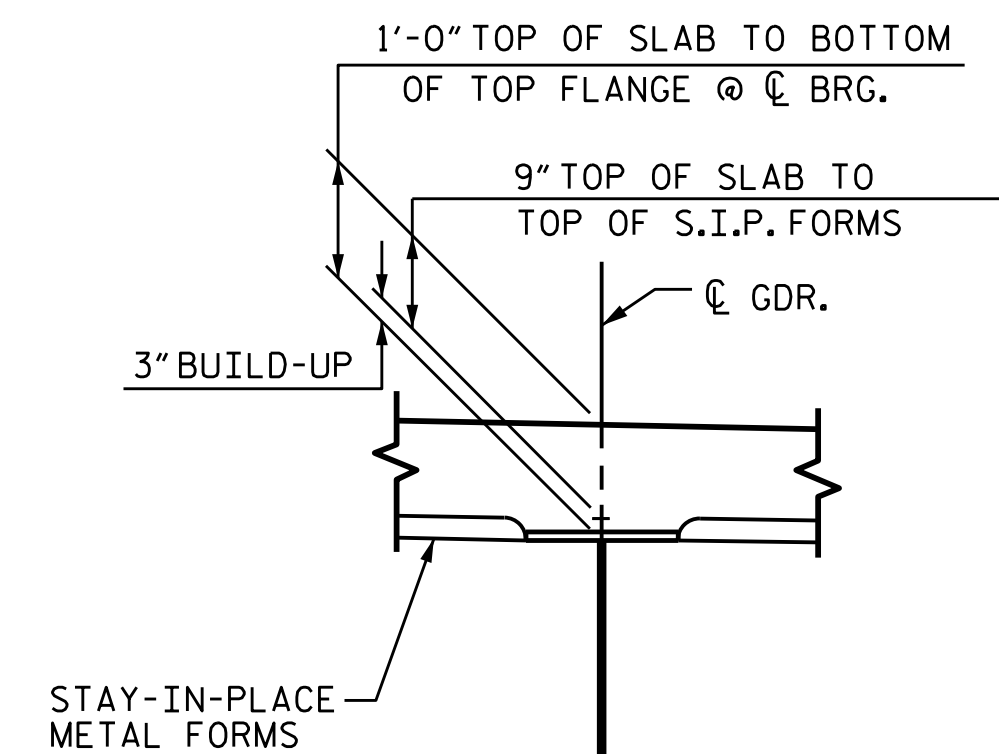
PREVIOUSLY CAST CONCRETE IN A CONTINUOUS UNIT SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE UNIT.

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

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

SEE TRANSPORTATION MANAGEMENT PLANS FOR LOCATION AND PAY LIMITS OF THE ANCHORED PORTABLE CONCRETE BARRIER.

STAGE III SIDEWALK NOT SHOWN, SEE "SIDEWALK DETAILS" SHEET AND "CONSTRUCTION SEQUENCE".



DETAIL "A"
(TYP. EACH GDR.)

PROJECT NO. U-3308
DURHAM COUNTY
STATION: 16+42.70-LALT-

SHEET 1 OF 3



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

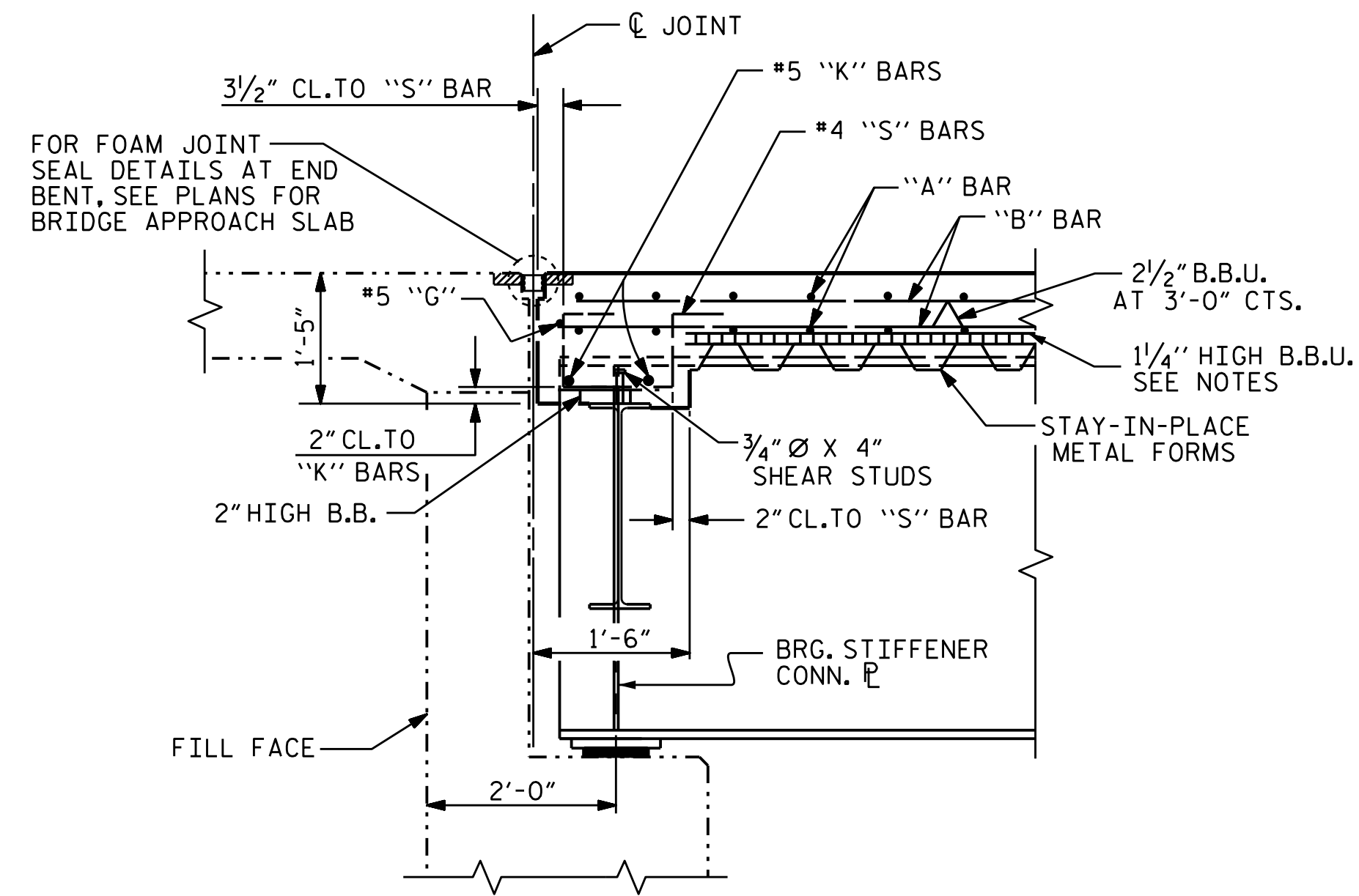
SUPERSTRUCTURE
TYPICAL SECTION

(STAGE I)

DRAWN BY : P.S. ADKINS DATE : 5/28/14
CHECKED BY : J.D. HAWK DATE : 9/5/14
DESIGN ENGINEER OF RECORD : D.R. SMITH DATE : 11/22/14

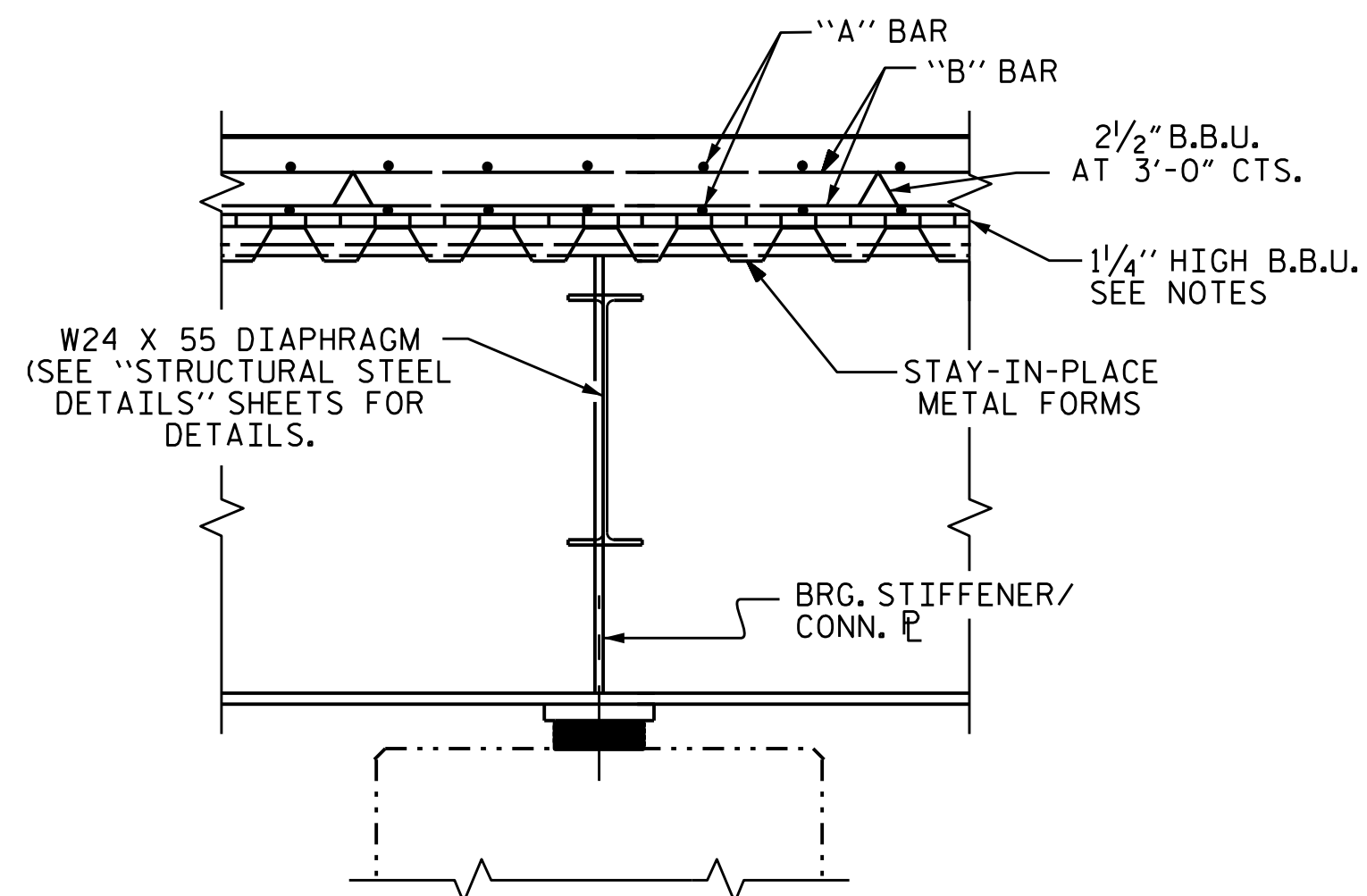
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FINAL UNLESS ALL
SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-7
1			3			TOTAL SHEETS
2			4			47

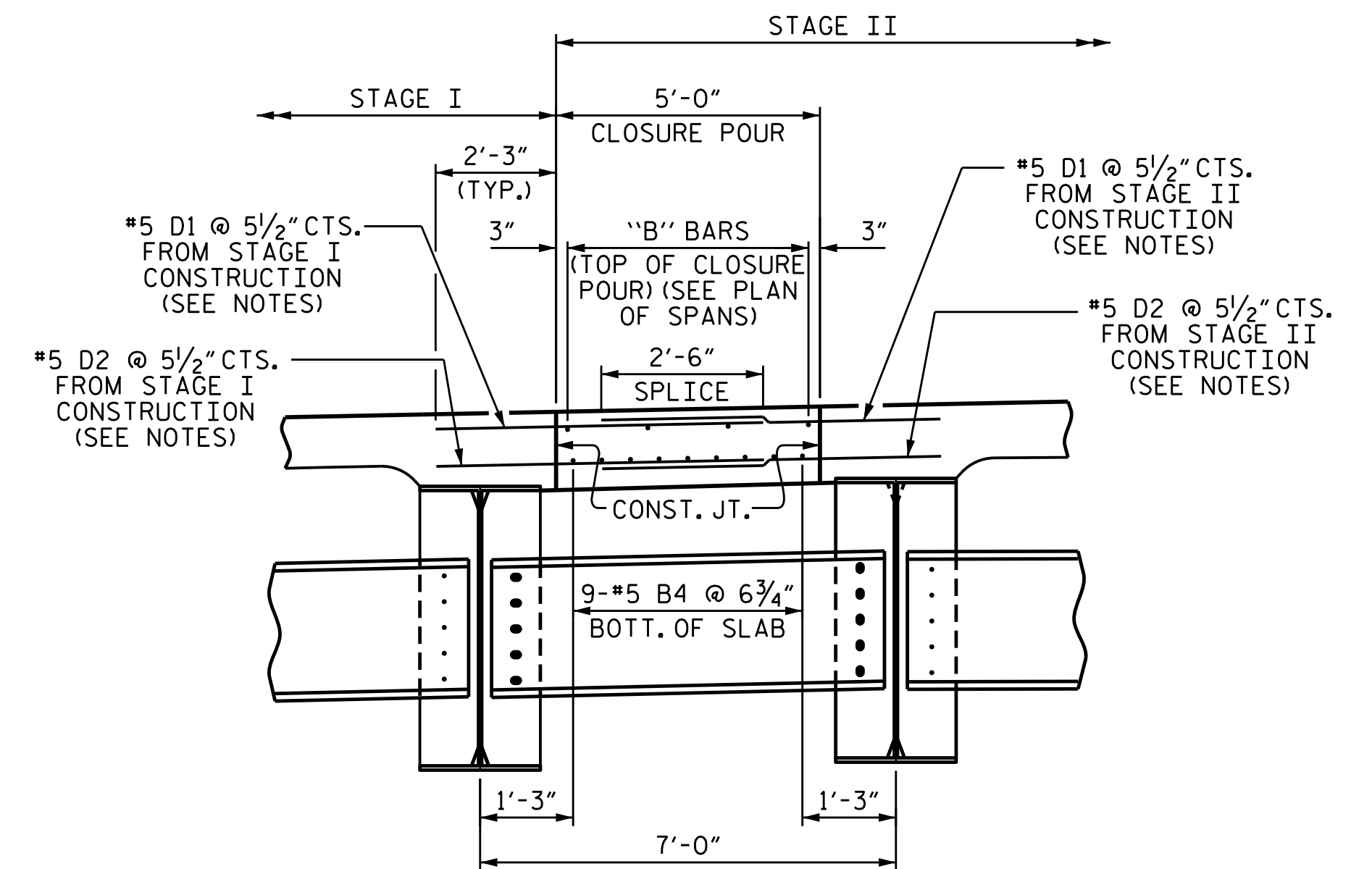


SECTION AT END BENT

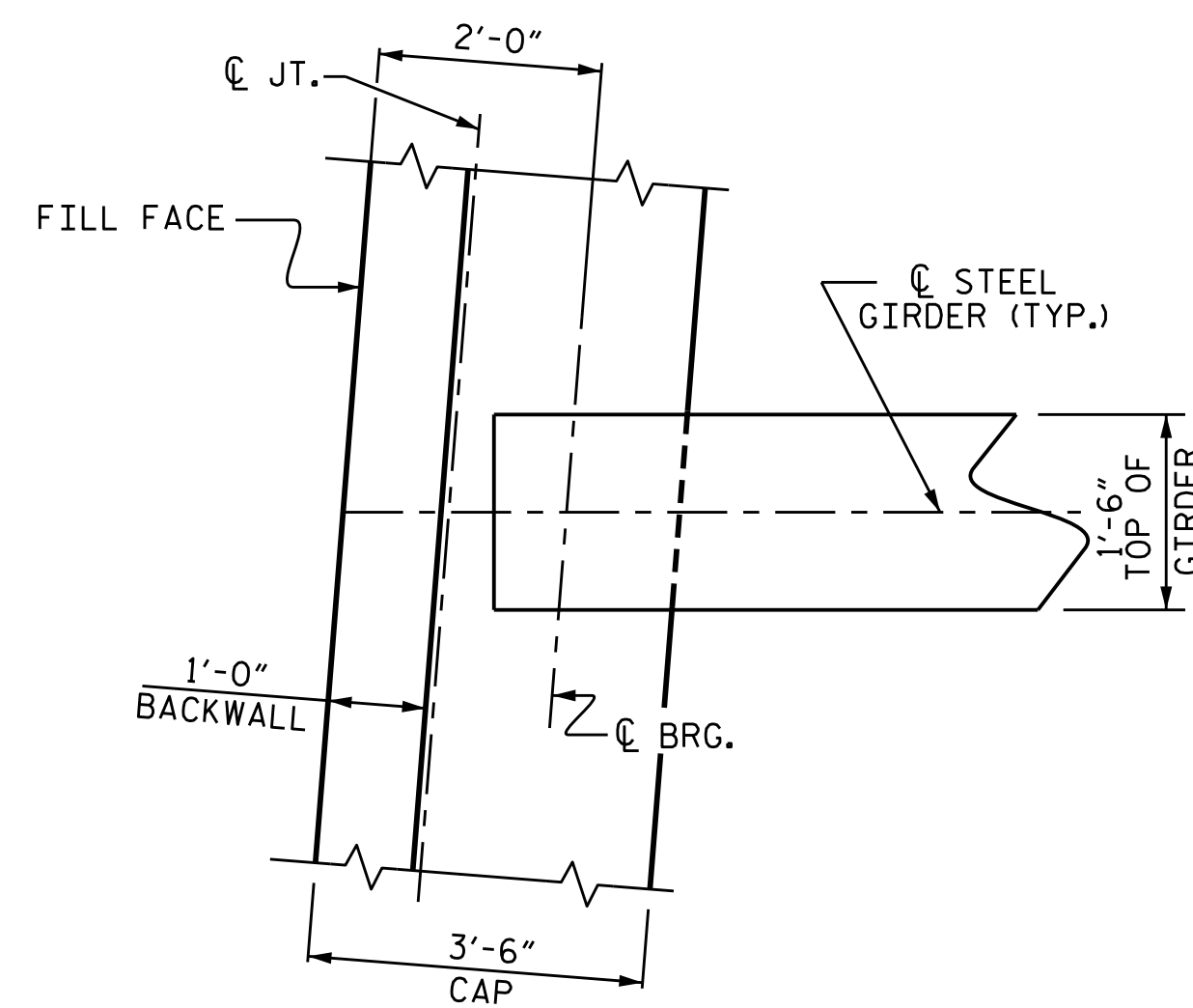
#5 "G" BAR MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO CLEAR DIAPHRAGM AND REINFORCING STEEL.



SECTION AT BENT



CLOSURE POUR DETAILS

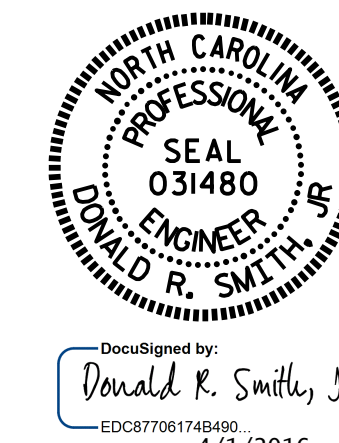


@ END BENT

PLAN OF GIRDER

PROJECT NO. U-3308
DURHAM COUNTY
 STATION: 16+42.70-LALT-

SHEET 3 OF 3

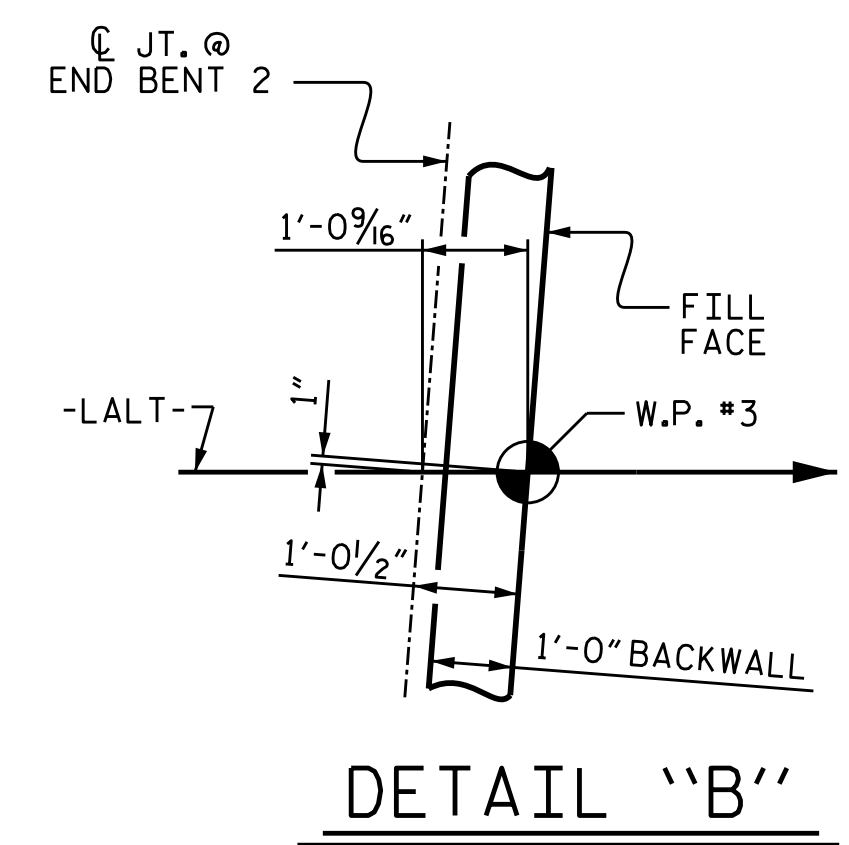
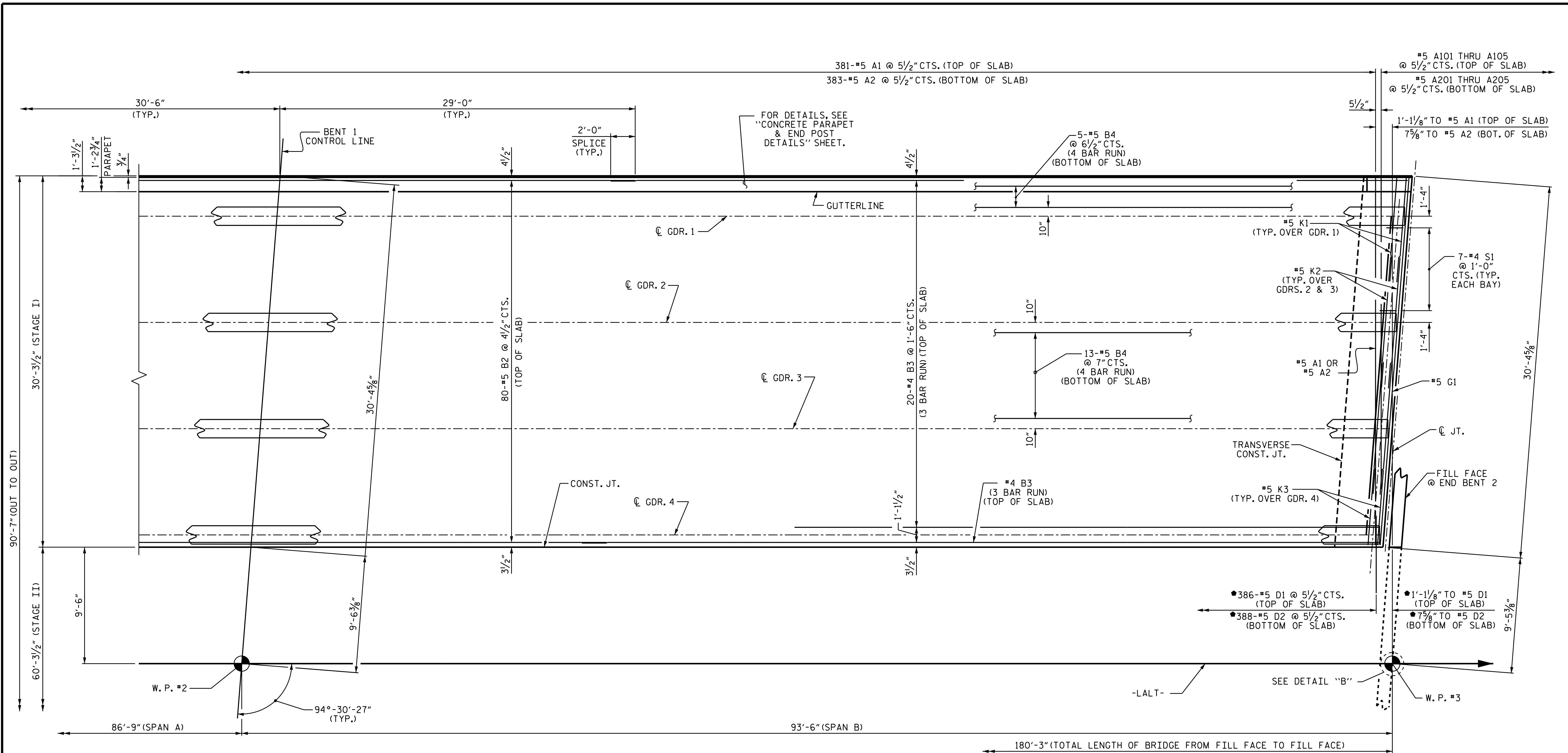


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 TYPICAL SECTION
 DETAILS

DRAWN BY : P.S. ADKINS DATE : 5/28/14
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1			3			TOTAL SHEETS	
2			4			47	



PLAN OF SPAN B
 FOR PLACEMENT OF TRANSVERSE JOINTS, SEE "SUPERSTRUCTURE BILL OF MATERIAL" SHEET.
 STAGE III SIDEWALK NOT SHOWN, SEE "SIDEWALK DETAILS" SHEET.

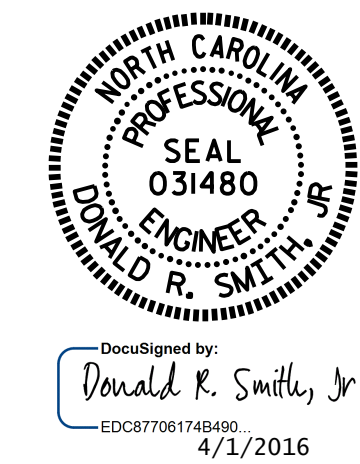
• DOWELS SHALL BE PLACED IN THE SAME HORIZONTAL PLANE AS THE TOP AND BOTTOM SLAB REINFORCING STEEL.

PROJECT NO. U-3308
DURHAM COUNTY
 STATION: 16+42.70-LALT-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

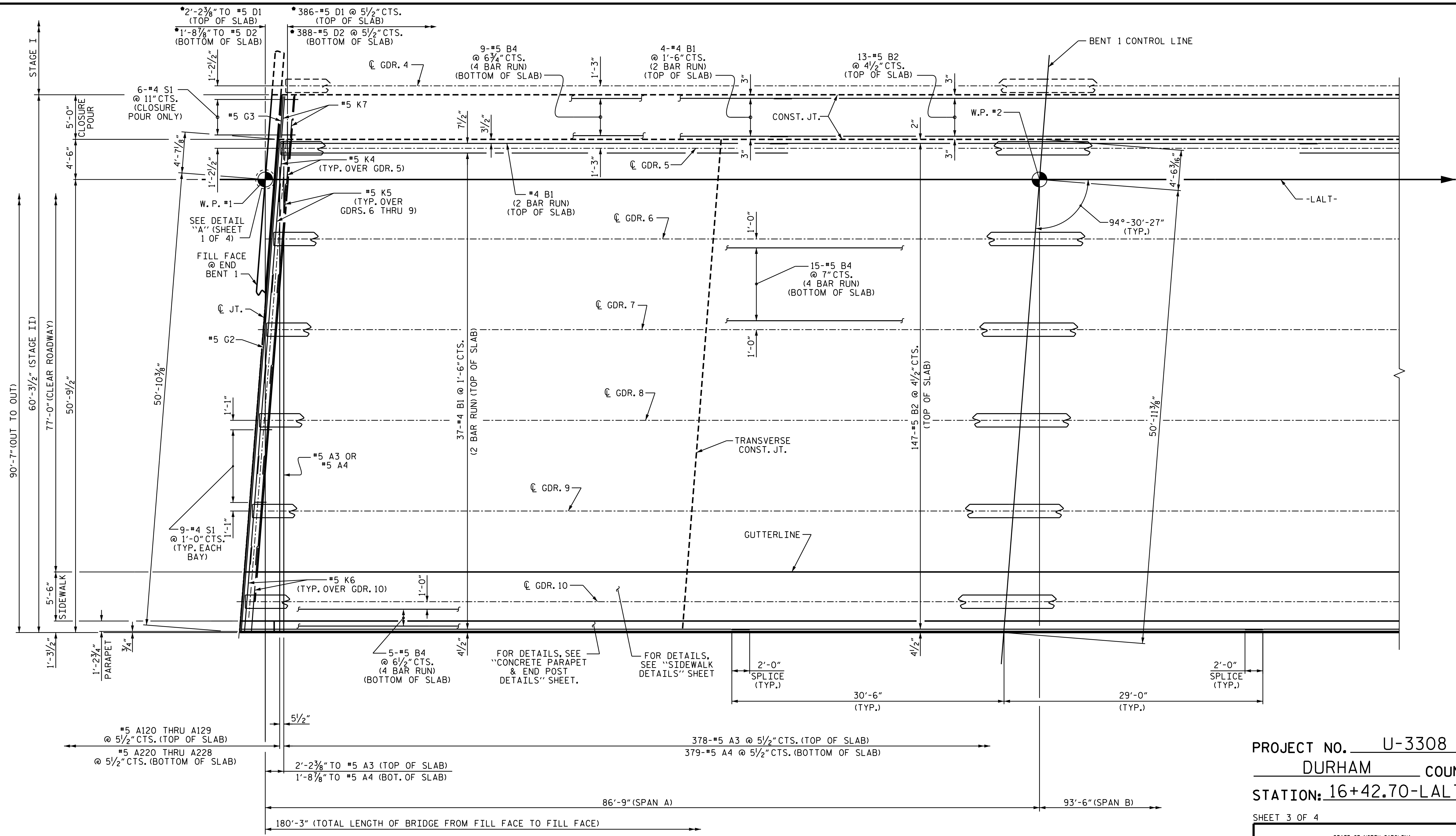
SUPERSTRUCTURE
 PLAN OF SPAN
 STAGE I



DRAWN BY : P.S. ADKINS DATE : 6/10/14
 CHECKED BY : J.D. HAWK DATE : 9/5/14
 DESIGN ENGINEER OF RECORD : D.R. SMITH DATE : 11/22/14

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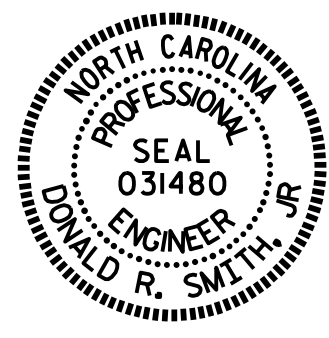


PLAN OF SPAN A

FOR PLACEMENT OF TRANSVERSE CONSTRUCTION JOINTS, SEE "SUPERSTRUCTURE BILL OF MATERIAL" SHEET.

PROJECT NO. U-3308
DURHAM COUNTY
 STATION: 16+42.70-LALT-

SHEET 3 OF 4

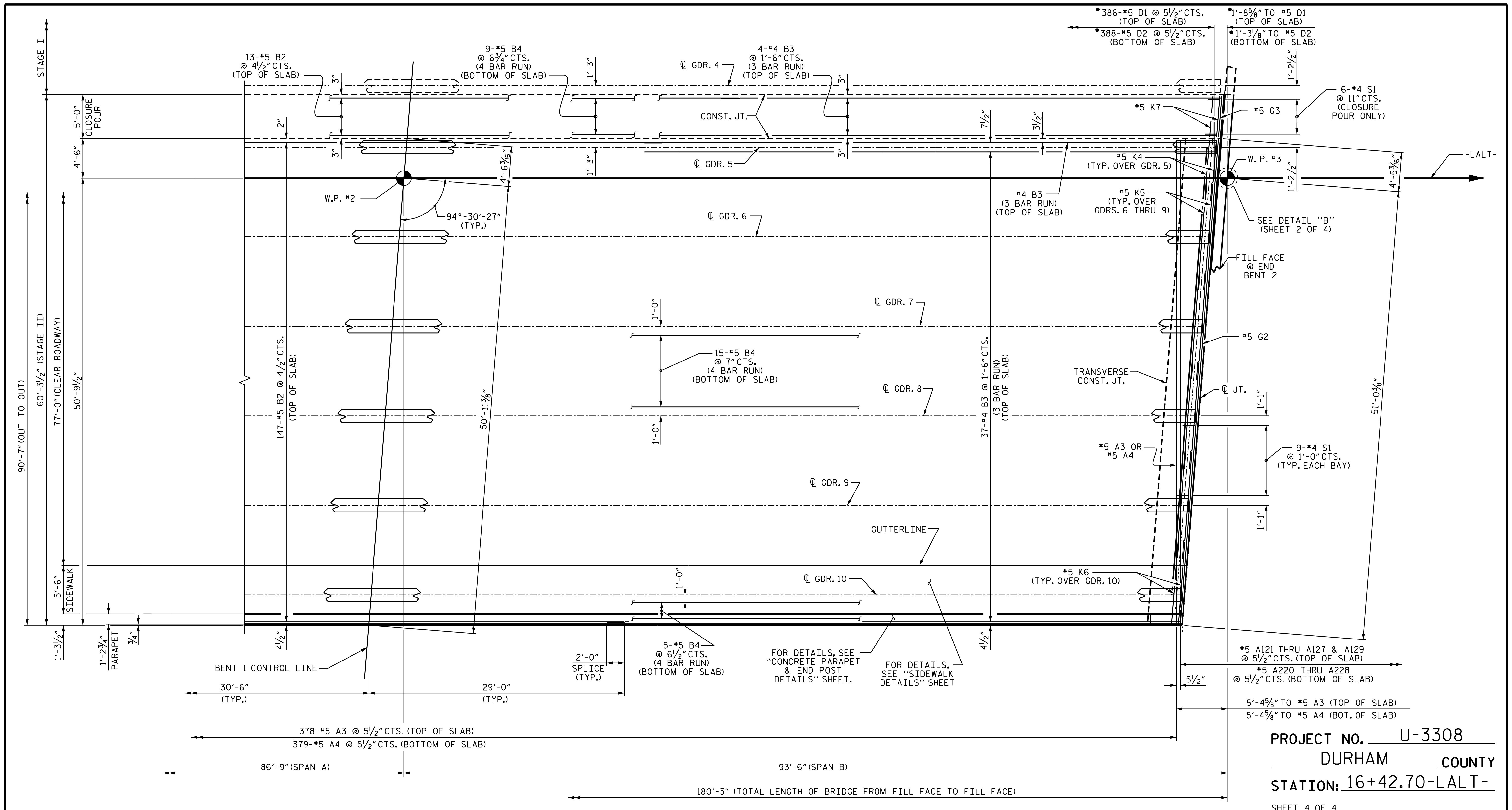


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPAN
 STAGE II

DRAWN BY: P.S. ADKINS DATE: 6/10/14
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			47
2			4			



PLAN OF SPAN B

FOR PLACEMENT OF TRANSVERSE CONSTRUCTION JOINTS, SEE "SUPERSTRUCTURE BILL OF MATERIAL" SHEET.

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

PROJECT NO. U-3308
DURHAM COUNTY
 STATION: 16+42.70-LALT-

SHEET 4 OF 4



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 PLAN OF SPAN

STAGE II

DRAWN BY : P.S. ADKINS DATE : 6/10/14
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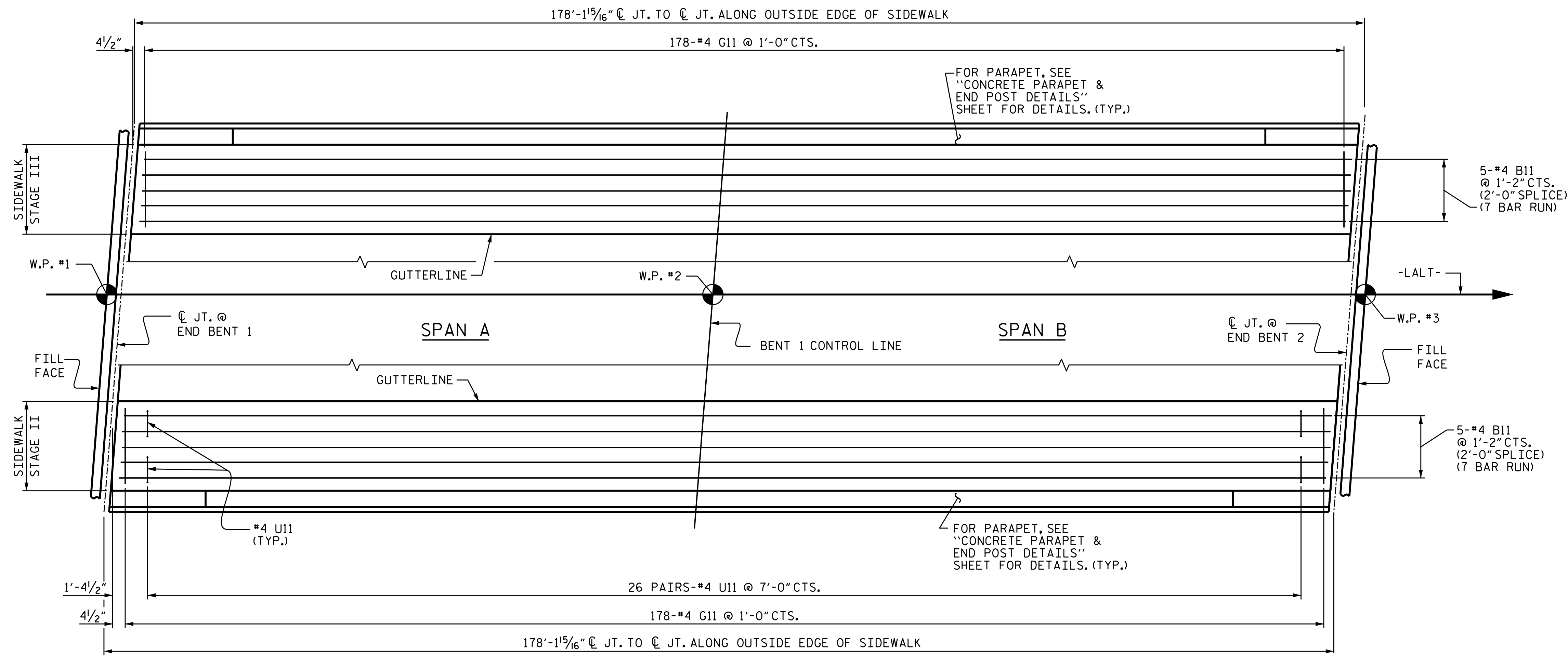
NOTES

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

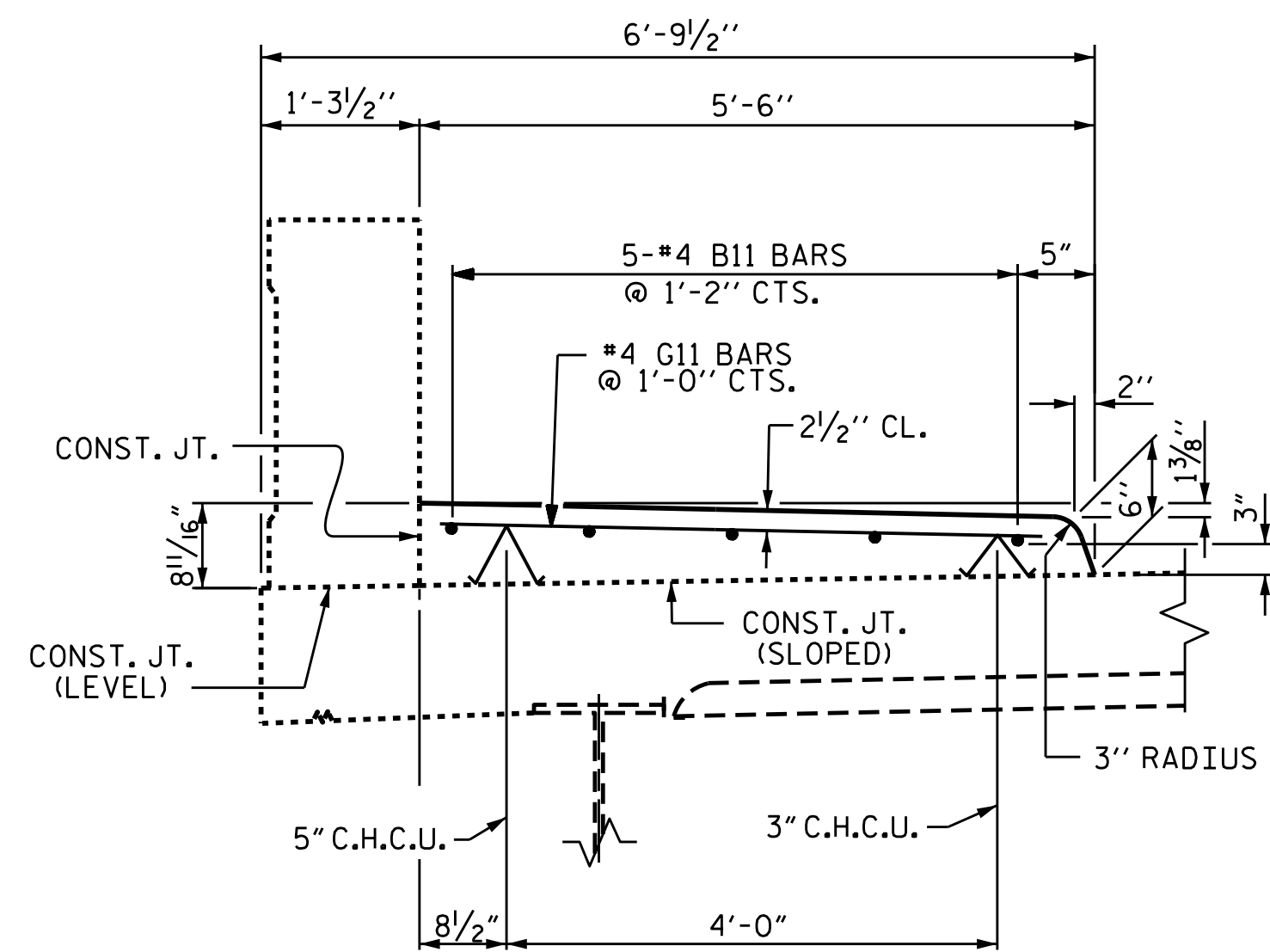
GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE SIDEWALK IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINTS SHALL BE LOCATED AT A SPACING OF 8 TO 10 FEET BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINTS WILL BE REQUIRED FOR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

ALL REINFORCING STEEL IN SIDEWALK SHALL BE EPOXY COATED.

JOINT OPENING IN SIDEWALK FORMED TO MATCH SAWED OPENING IN DECK. SEE "APPROACH SLAB DETAILS" SHEET.

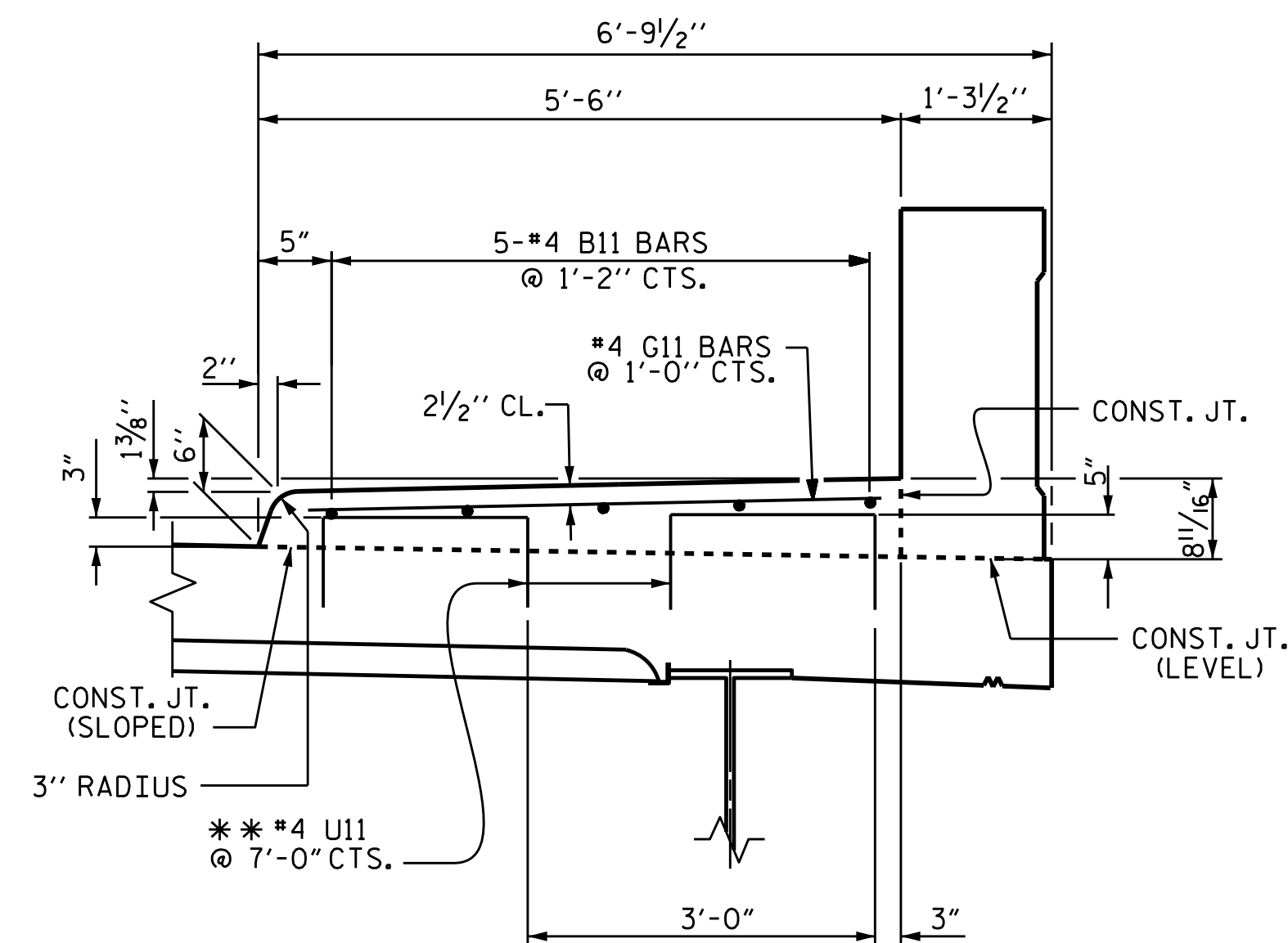


PLAN OF SIDEWALK



SECTION THROUGH SIDEWALK STAGE III

DECK REINFORCING STEEL NOT SHOWN FOR CLARITY.



SECTION THROUGH SIDEWALK STAGE II

DECK REINFORCING STEEL NOT SHOWN FOR CLARITY.
 ** #4 U11 BARS MAY BE PUSHED INTO GREEN CONCRETE AFTER SPAN HAS BEEN SCREEDED OFF.

PROJECT NO. U-3308
DURHAM COUNTY
 STATION: 16+42.70-LALT-



DocuSigned by:
 Donald R. Smith, Jr.
 EDC8706174B490
 4/1/2016

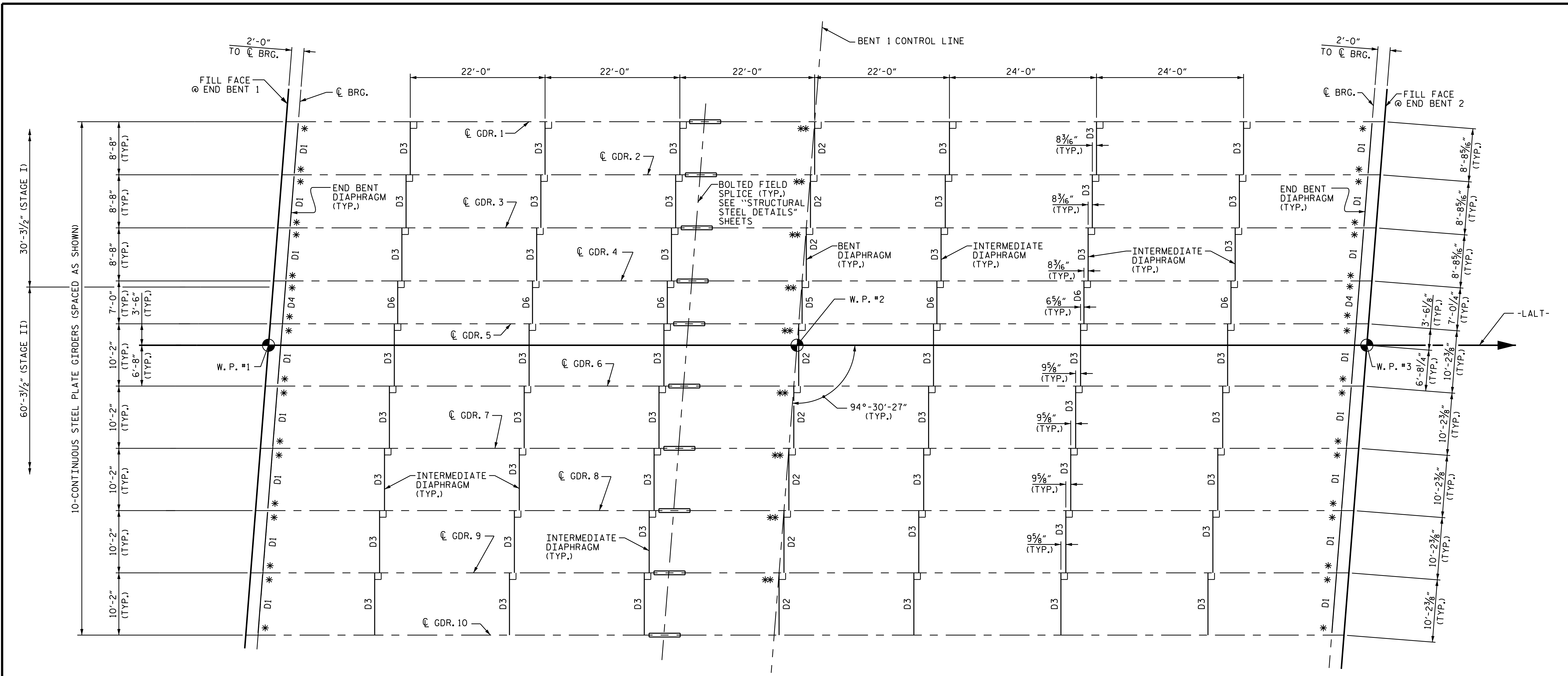
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 SIDEWALK DETAILS
 STAGE II & STAGE III

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS	
1			3			47	
2			4			47	

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STR. #1



EXP.
P1, E1

FIXED
DB1, M1, S1

EXP.
P2, E1

FRAMING PLAN

- * 1/4" X 7" BEARING STIFFENER TO BE USED AS CONNECTOR PLATE.
- ** 1/4" X 8 1/2" BEARING STIFFENER TO BE USED AS CONNECTOR PLATE.

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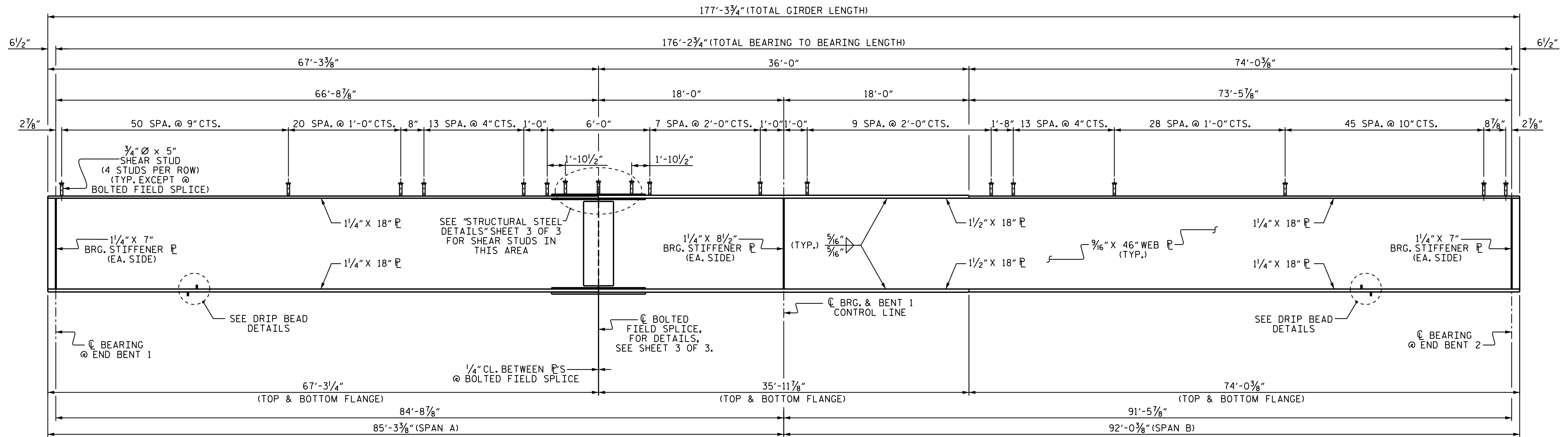
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 FRAMING PLAN

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CHECKED BY :	J.D. HAWK	DATE :	9/5/14
DESIGN ENGINEER OF RECORD:	D.R. SMITH	DATE :	11/22/14

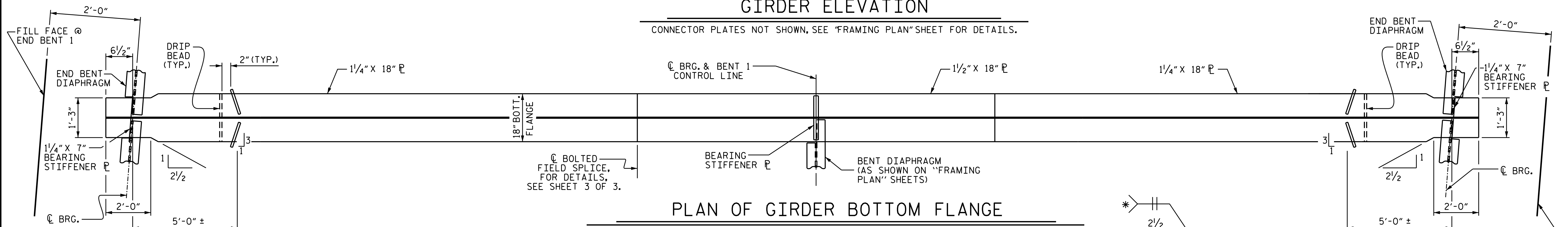
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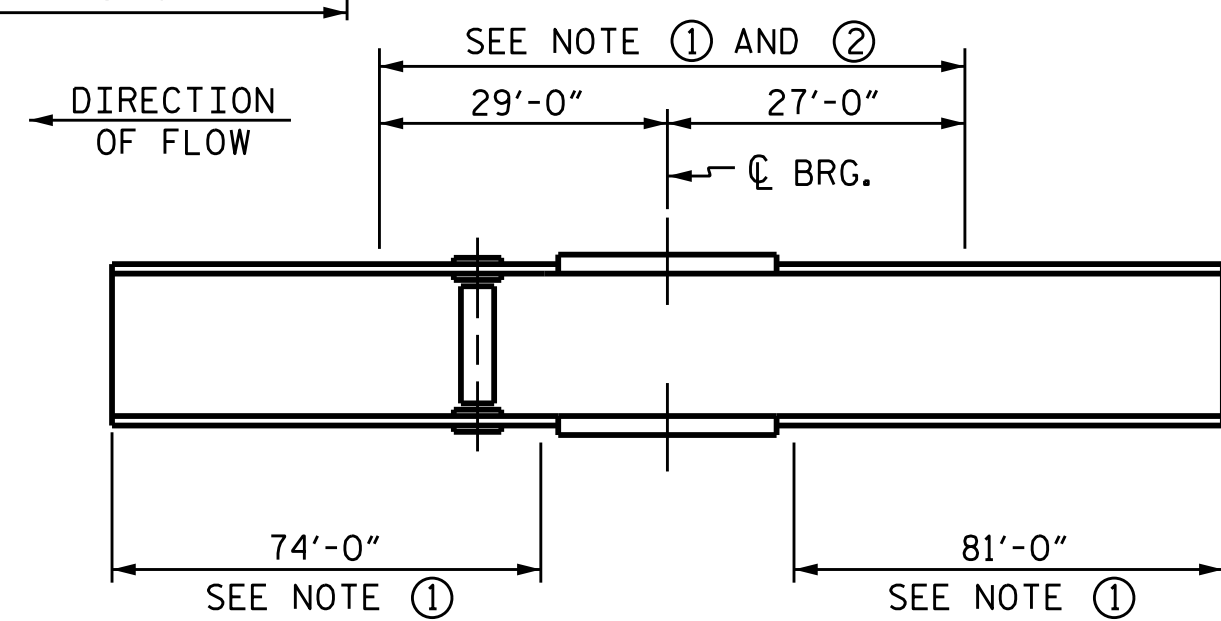
GIRDER ELEVATION

CONNECTOR PLATES NOT SHOWN, SEE "FRAMING PLAN" SHEET FOR DETAILS.



PLAN OF GIRDER BOTTOM FLANGE

SEE FRAMING PLAN FOR DIAPHRAGM LOCATIONS

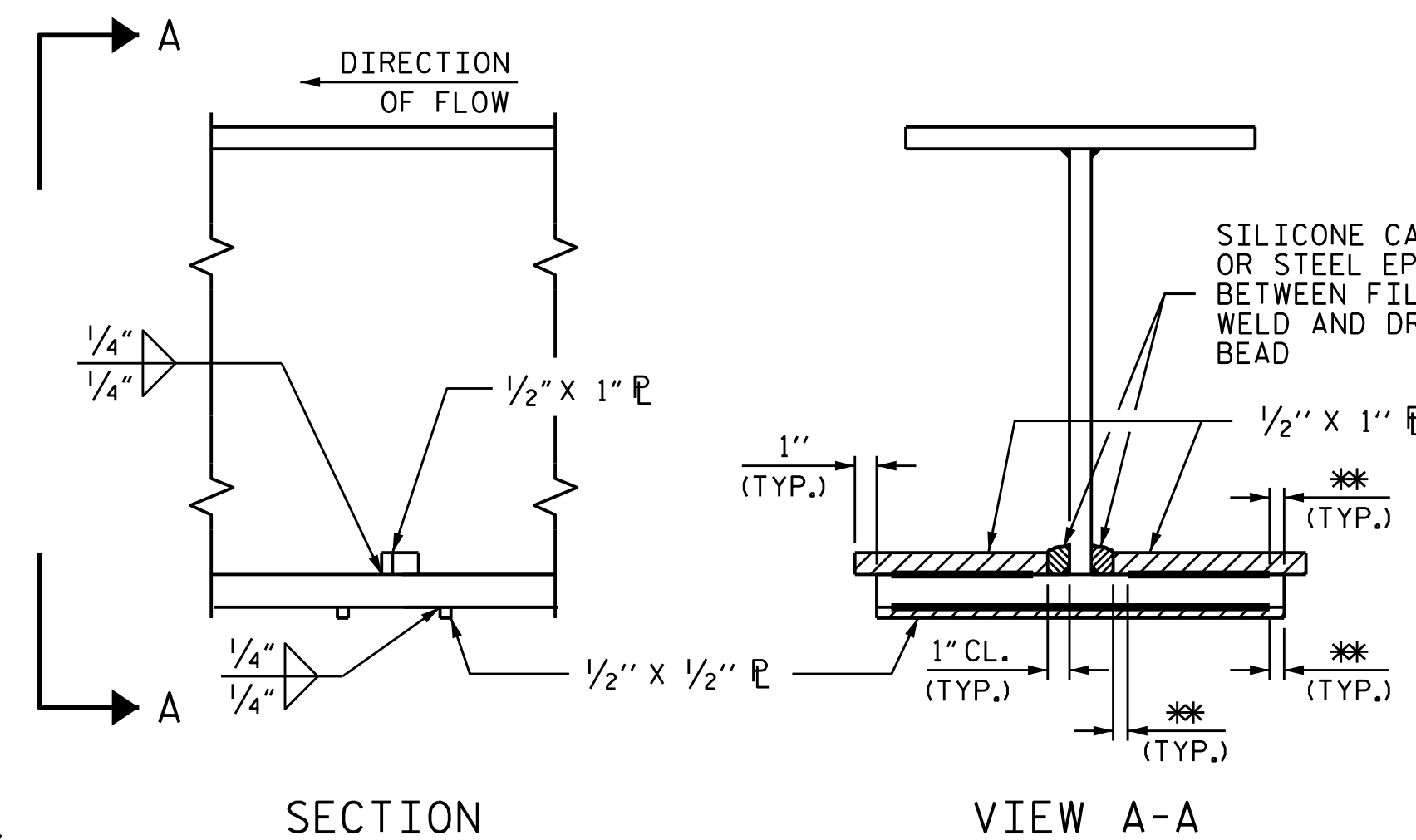


GIRDER MAKE UP

NOTE ①: CHАРY 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, CHАРY V-NOTCH TESTS WILL BE REQUIRED FOR THE ENTIRE FLANGE PLATE. FOR CHАРY V-NOTCH TESTS, SEE ARTICLE 1072-7 OF THE STANDARD SPECIFICATIONS.

NOTE ②: NO WELDING OF FORMS OR FALSEWORK TO THE TOP FLANGE WILL BE PERMITTED IN THIS REGION.

CHАРY V-NOTCH TESTS FOR CONTINUOUS PLATE GIRDERS

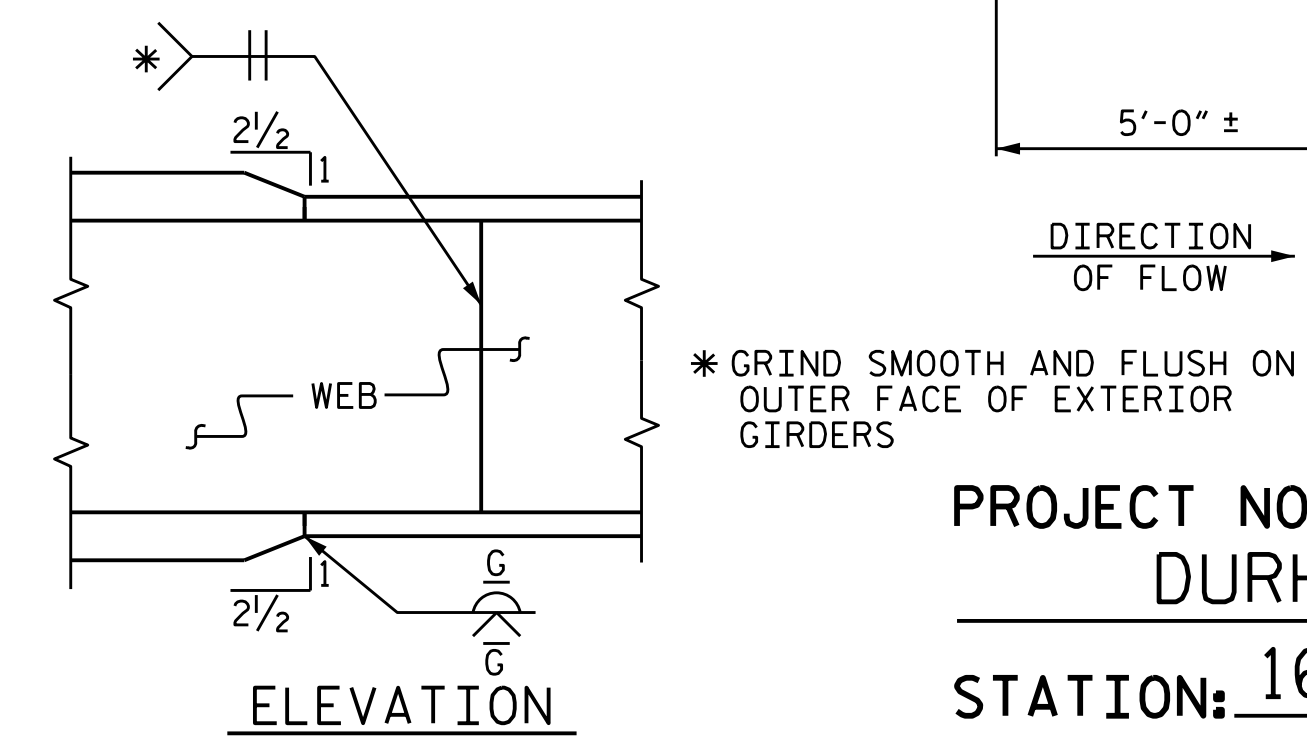


SECTION

VIEW A-A

** SEE "WELD TERMINATION DETAILS"

DRIP BEAD DETAILS



TYPICAL FLANGE AND WEB BUTT JOINT



PROJECT NO. U-3308
DURHAM COUNTY
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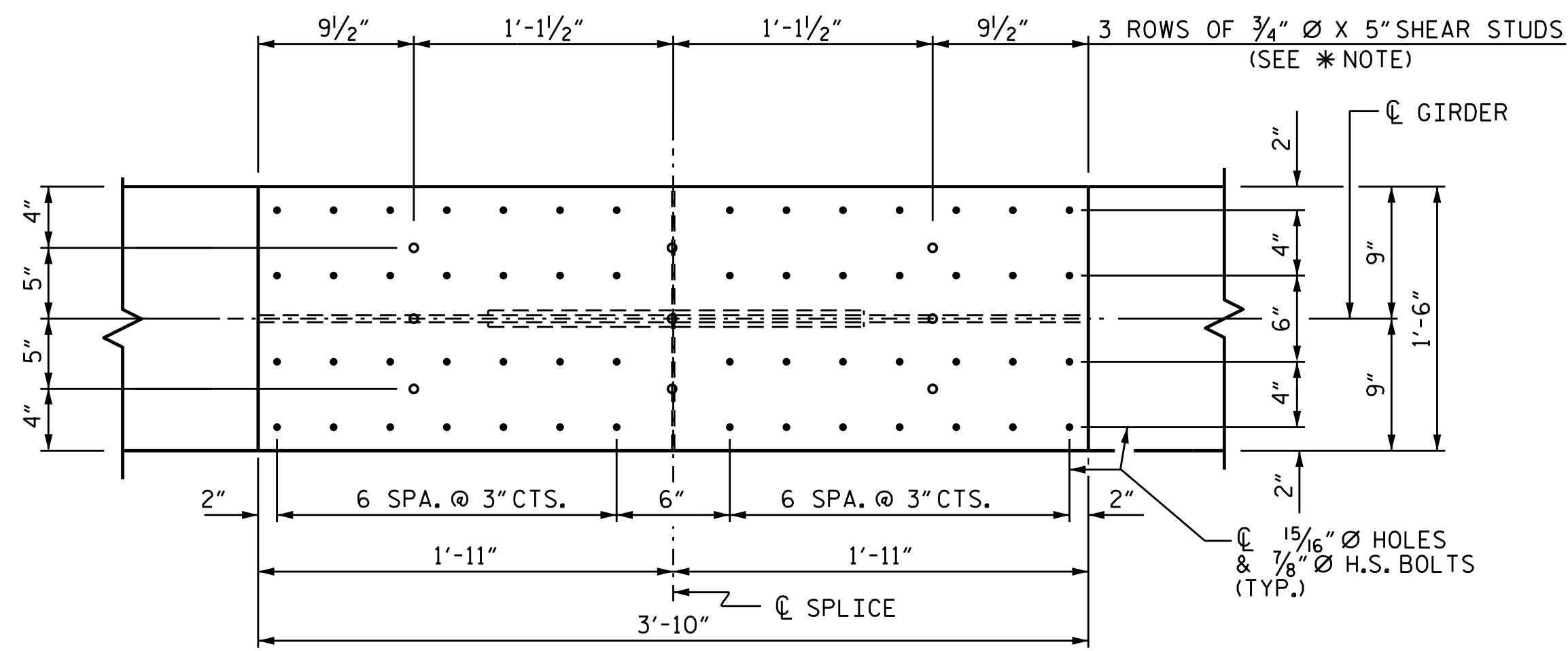
SHEET 1 OF 3

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

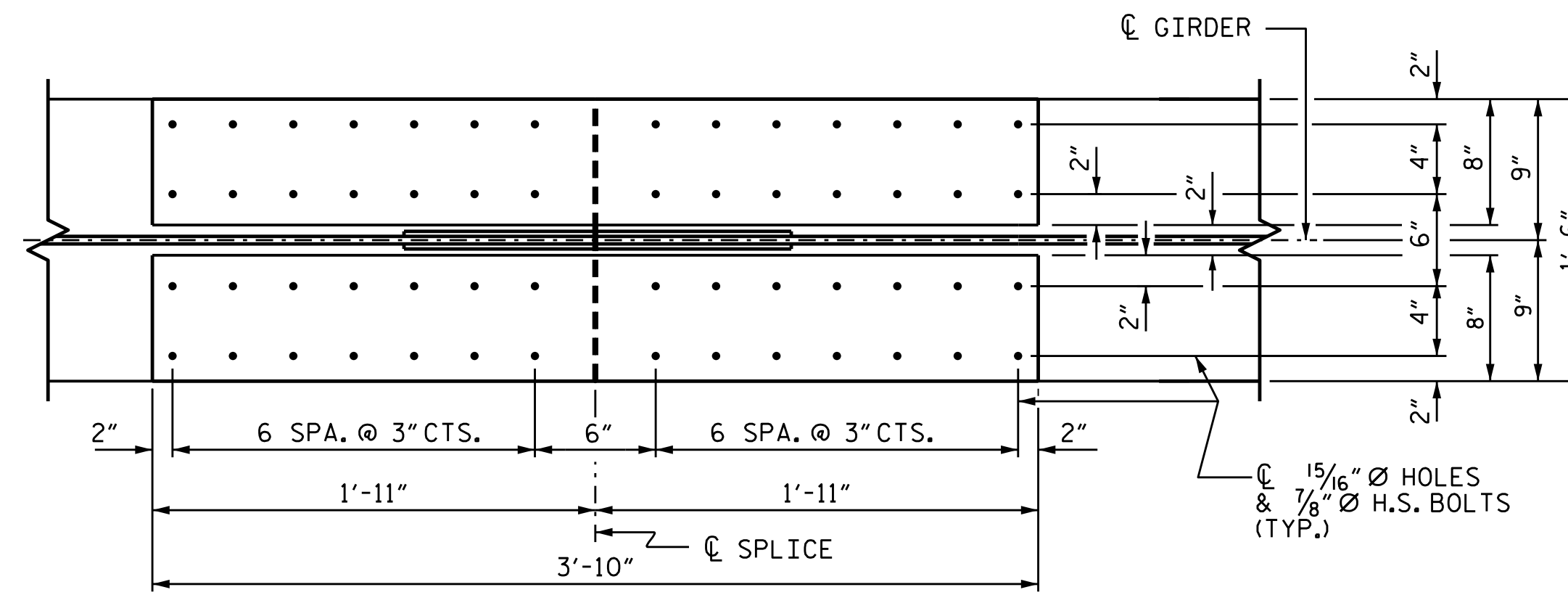
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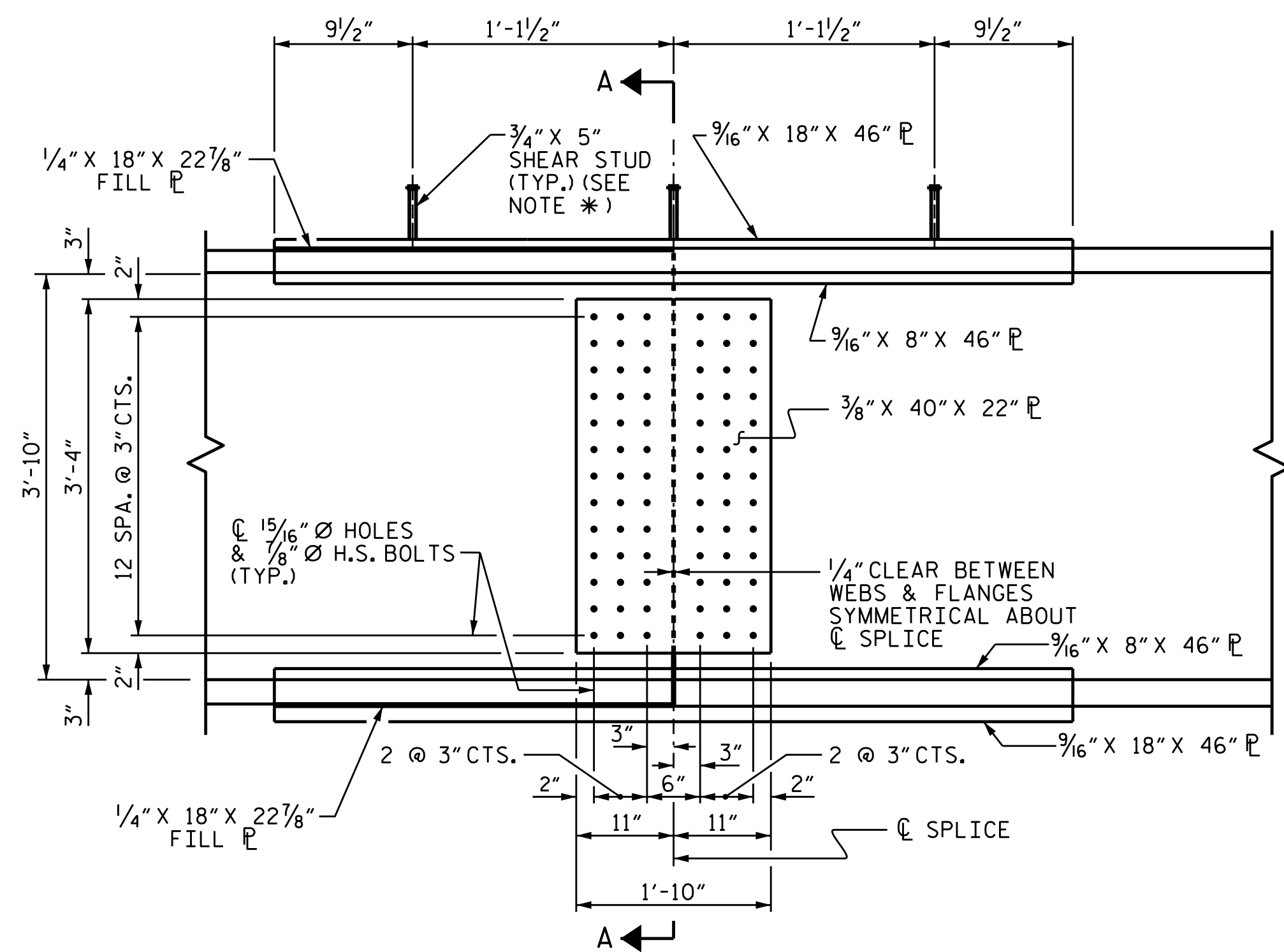
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2			4			TOTAL SHEETS 47



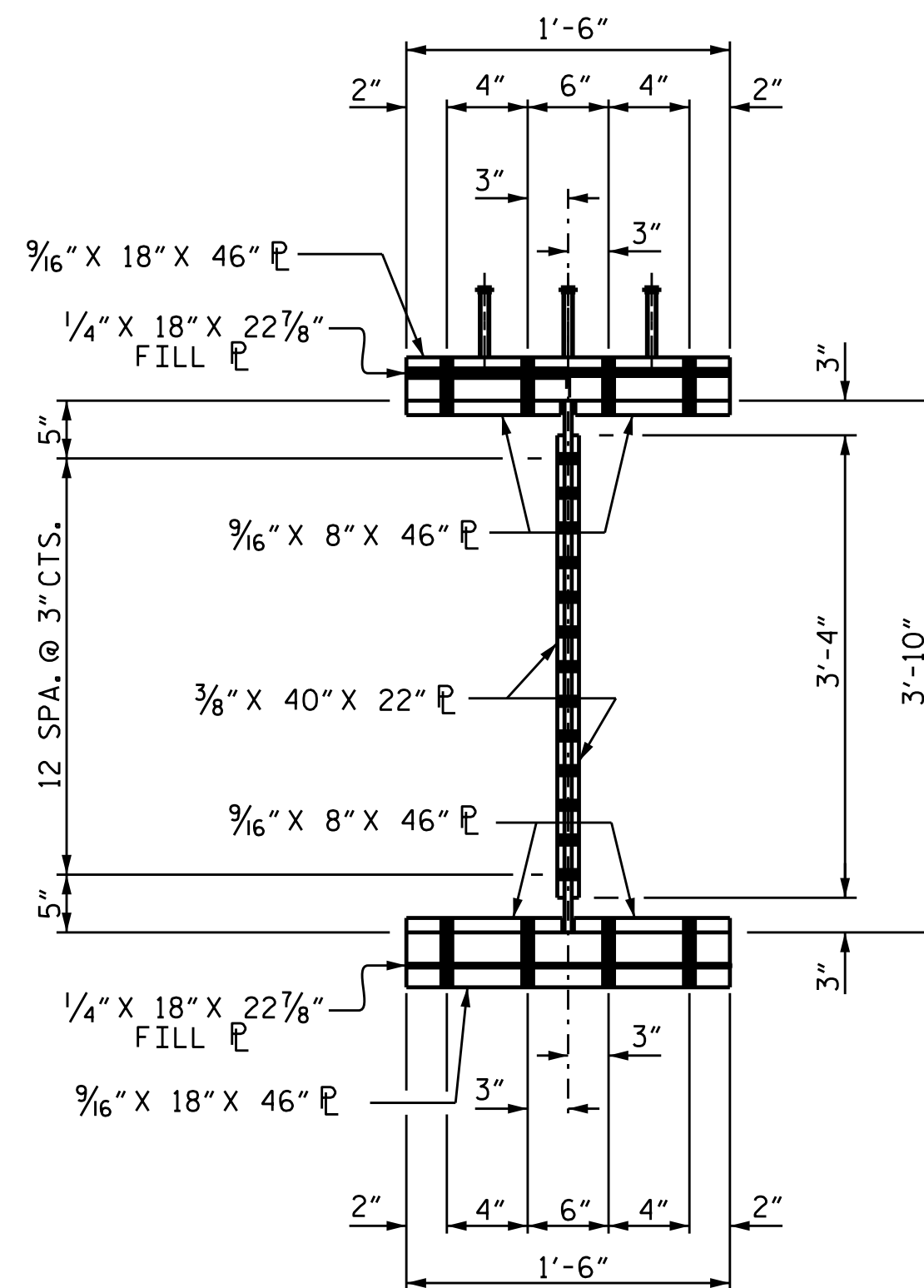
PLAN (TOP OF TOP FLANGE)



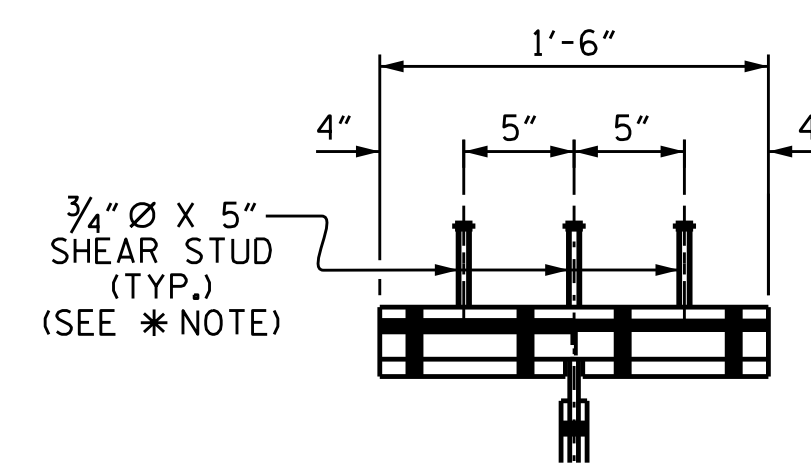
PLAN (TOP OF BOTTOM FLANGE)



ELEVATION



SECTION A-A



SHEAR STUD DETAIL FOR TOP FLANGE SPLICE PLATE

* NOTE: SHEAR STUDS ARE TO BE SHOP WELDED ON TOP OF PLATE BEFORE FIELD ASSEMBLY.

NOTES

ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 50W AND PAINTED IN ACCORDANCE WITH SYSTEM 4 OF ARTICLE 442-8 OF THE STANDARD SPECIFICATIONS UNLESS OTHERWISE NOTED ON THE PLANS.

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, EXCEPT WHERE NOTED ON THE PLANS, 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.

END OF GIRDERS SHALL BE PLUMB.

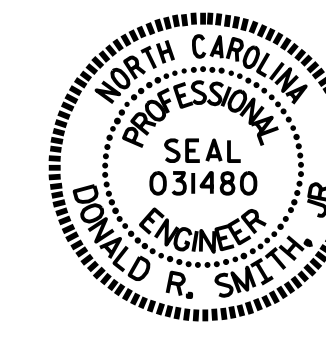
FABRICATORS SHALL DETAIL DIAPHRAGM MEMBERS, AND CONNECTIONS FOR FULL DEAD LOAD FIT UP. GIRDERS SHALL BE PLUMB AFTER THE FULL AMOUNT OF DEAD LOAD IS APPLIED.

BEARING STIFFENER MAY REQUIRE COPING IF WIDER THAN BOTTOM FLANGE. BEARING STIFFENER PLATE WIDTH SHOWN IS A MINIMUM WIDTH. THE BEARING STIFFENER PLATE WIDTH, WHEN USED AS A CONNECTOR PLATE, MAY BE INCREASED AS NECESSARY IN ORDER TO CONNECT THE DIAPHRAGM MEMBERS WHEN REQUIRED.

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

PROJECT NO. U-3308
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SHEET 3 OF 3

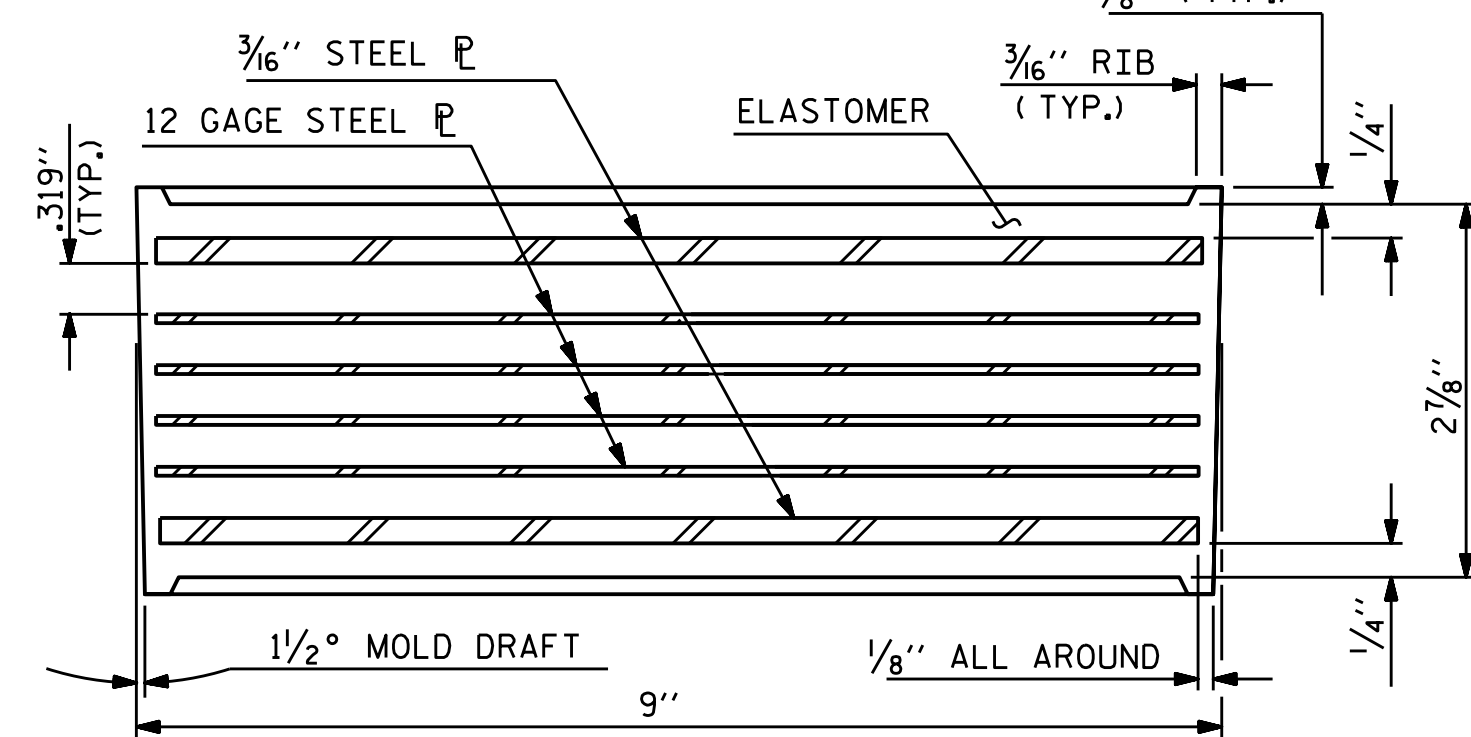
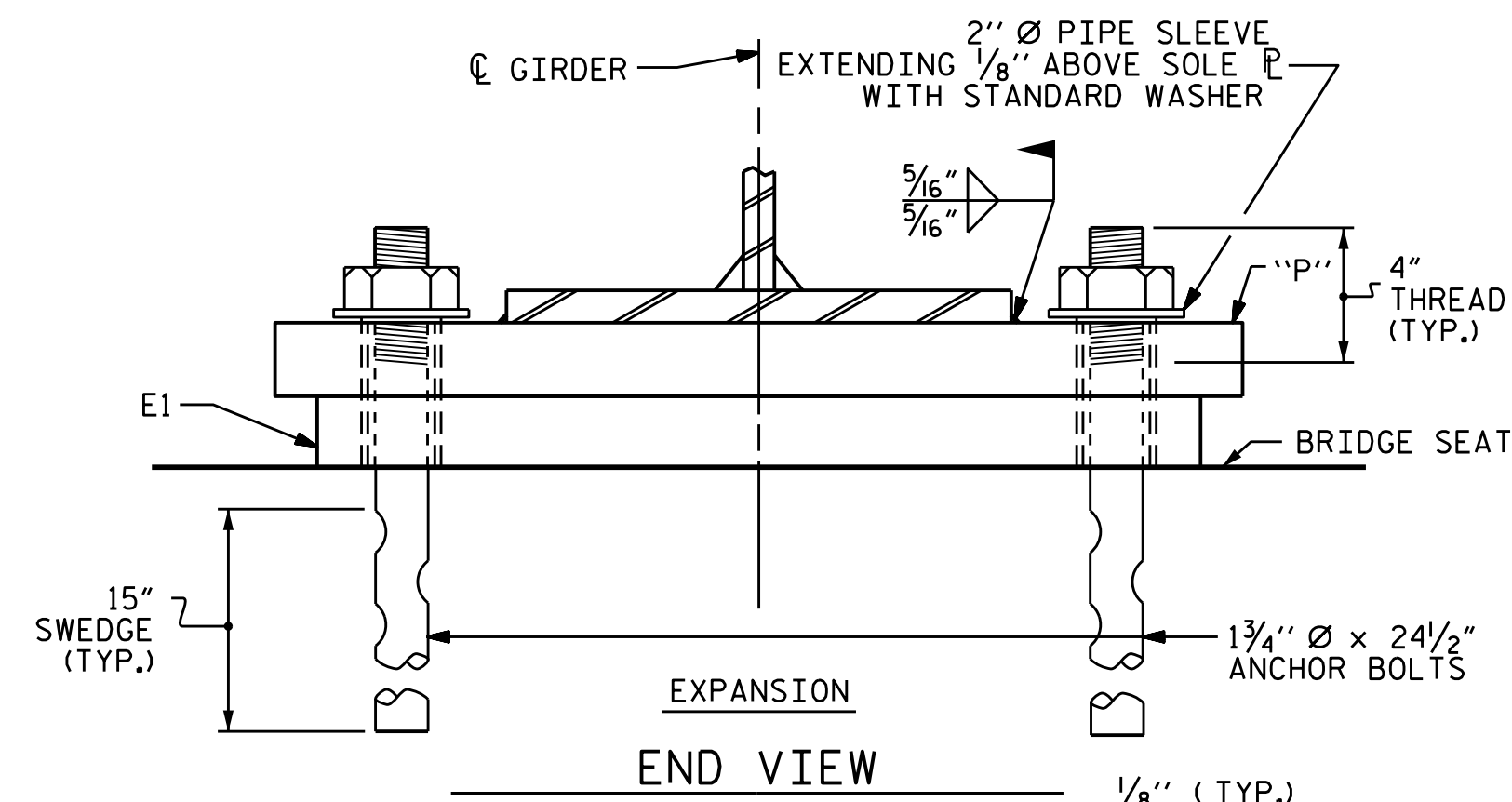


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 STRUCTURAL STEEL
 DETAILS
 BOLTED FIELD SPLICE

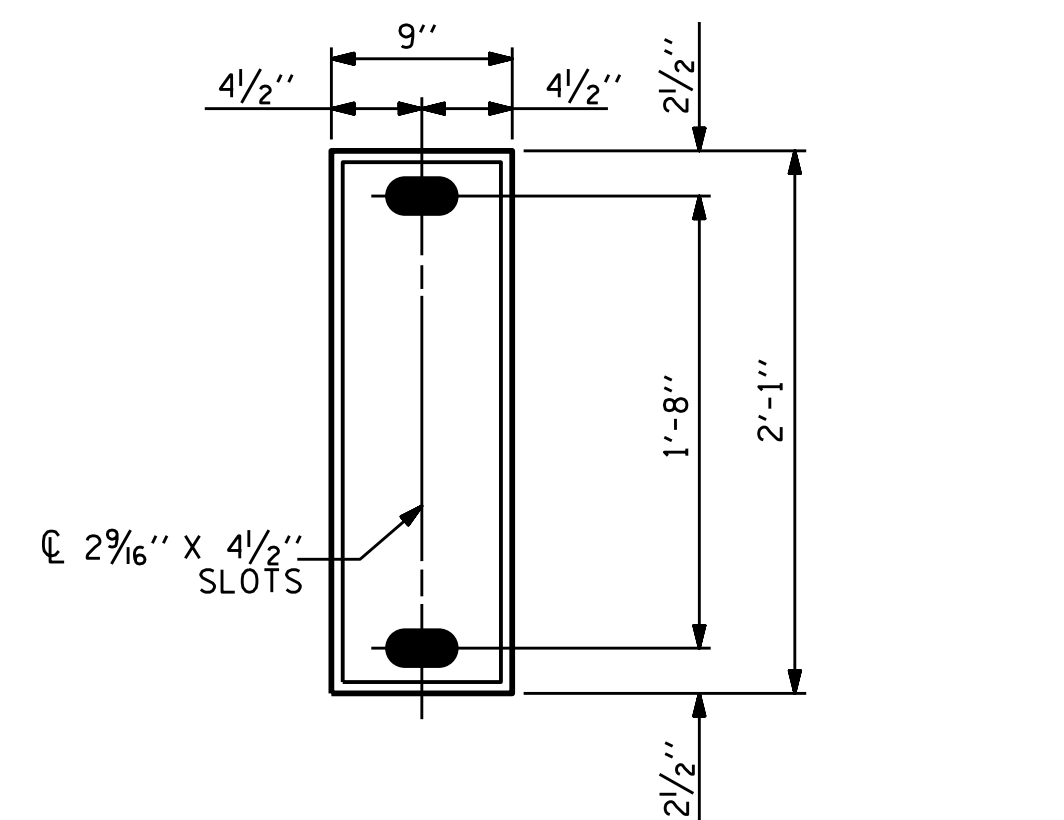
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 CHECKED BY : J.D. HAWK DATE : 9-5-14
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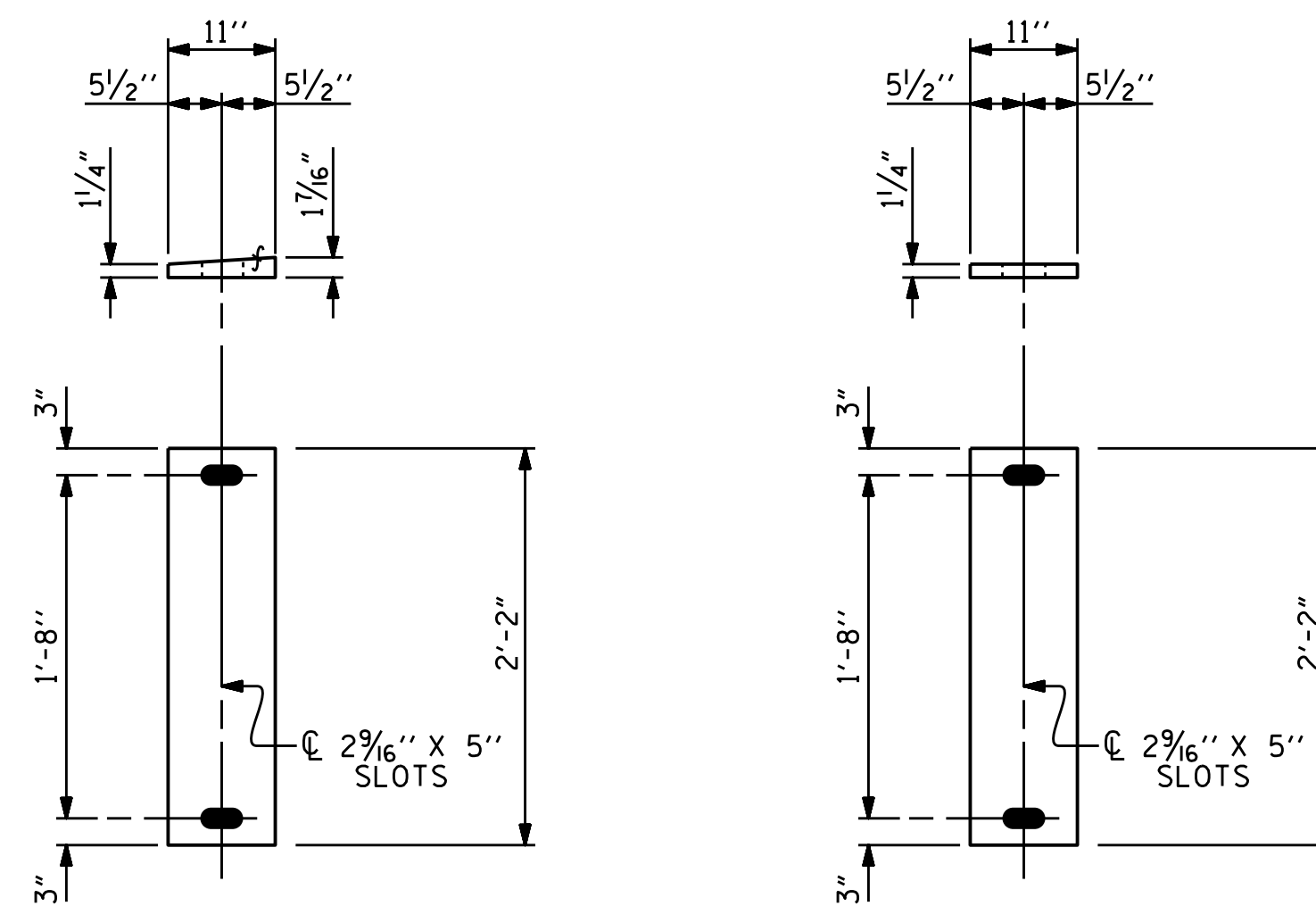
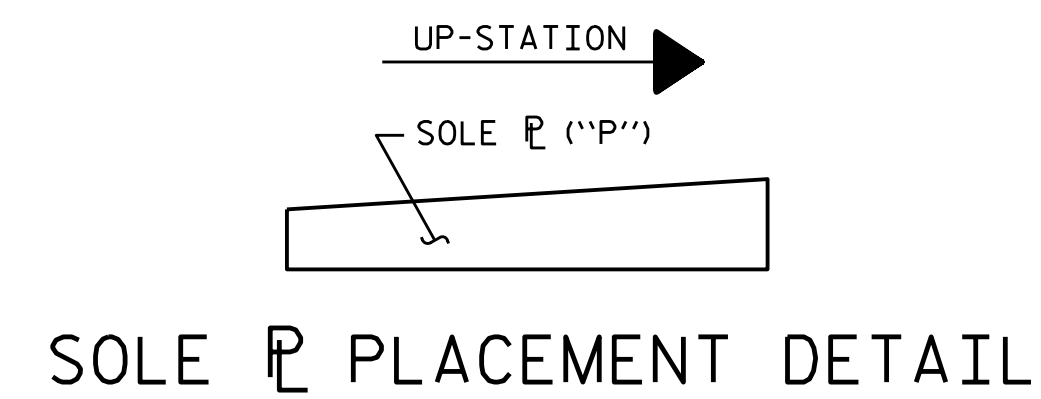
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			47
2			4			



TYPICAL SECTION OF ELASTOMERIC BEARINGS



E1 (20 REQ'D)
PLAN VIEW OF ELASTOMERIC BEARING
TYPE III



P1 (10 REQ'D) (EXPANSION)
P2 (10 REQ'D) (EXPANSION)
P3 (10 REQ'D) (EXPANSION)
SOLE PLATE DETAILS (\"P\")

NOTES

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

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

THE PAYMENT FOR THE PIPE SLEEVES SHALL BE INCLUDED IN THE SEVERAL PAY ITEMS.

FOR AASHTO M270 GRADE 50W STRUCTURAL STEEL, SOLE PLATE SHALL BE AASHTO M270 GRADE 50W AND SHALL NOT BE GALVANIZED. ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. SHOP DRAWINGS ARE NOT REQUIRED FOR ANCHOR BOLTS, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

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

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

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

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FOLLOWING PROCEDURE, WHICH MAY BE REQUIRED BY THE ENGINEER, TO RESET ELASTOMERIC BEARINGS DUE TO GIRDER TRANSLATION AND END ROTATION:

1. ONCE THE DECK HAS CURED, THE GIRDERS SHALL BE JACKED AND THE ELASTOMERIC BEARING SLOTS CENTERED AS NEARLY AS PRACTICAL ABOUT THE BEARING STIFFENER. THIS OPERATION SHALL BE PERFORMED AT APPROXIMATELY 60° F.

THE CONTRACTOR MAY PROPOSE ALTERNATE METHODS, PROVIDED DETAILS ARE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL.

MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE III	255 k

PROJECT NO. U-3308
DURHAM COUNTY
STATION: 16+42.70-LALT-

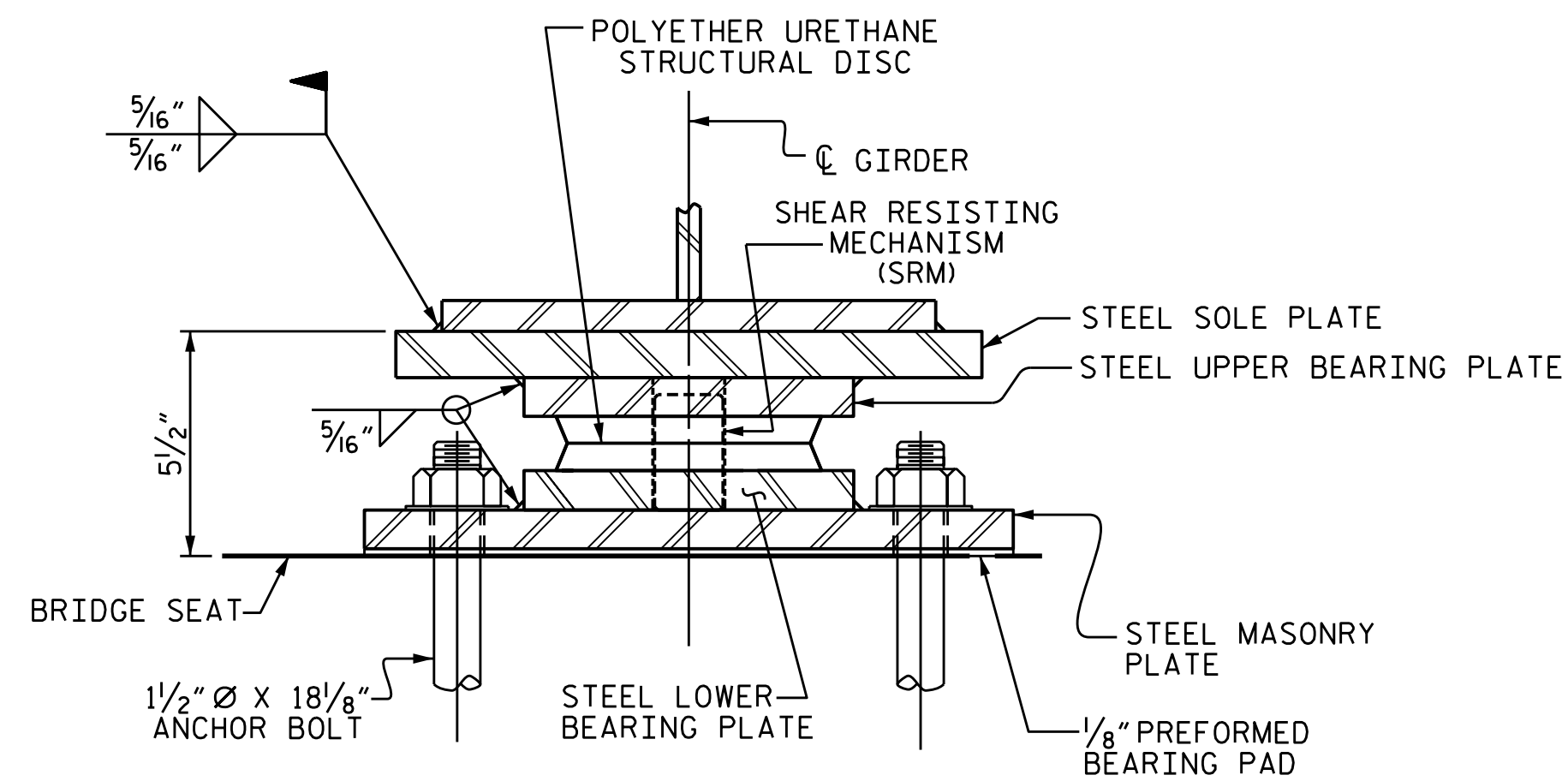
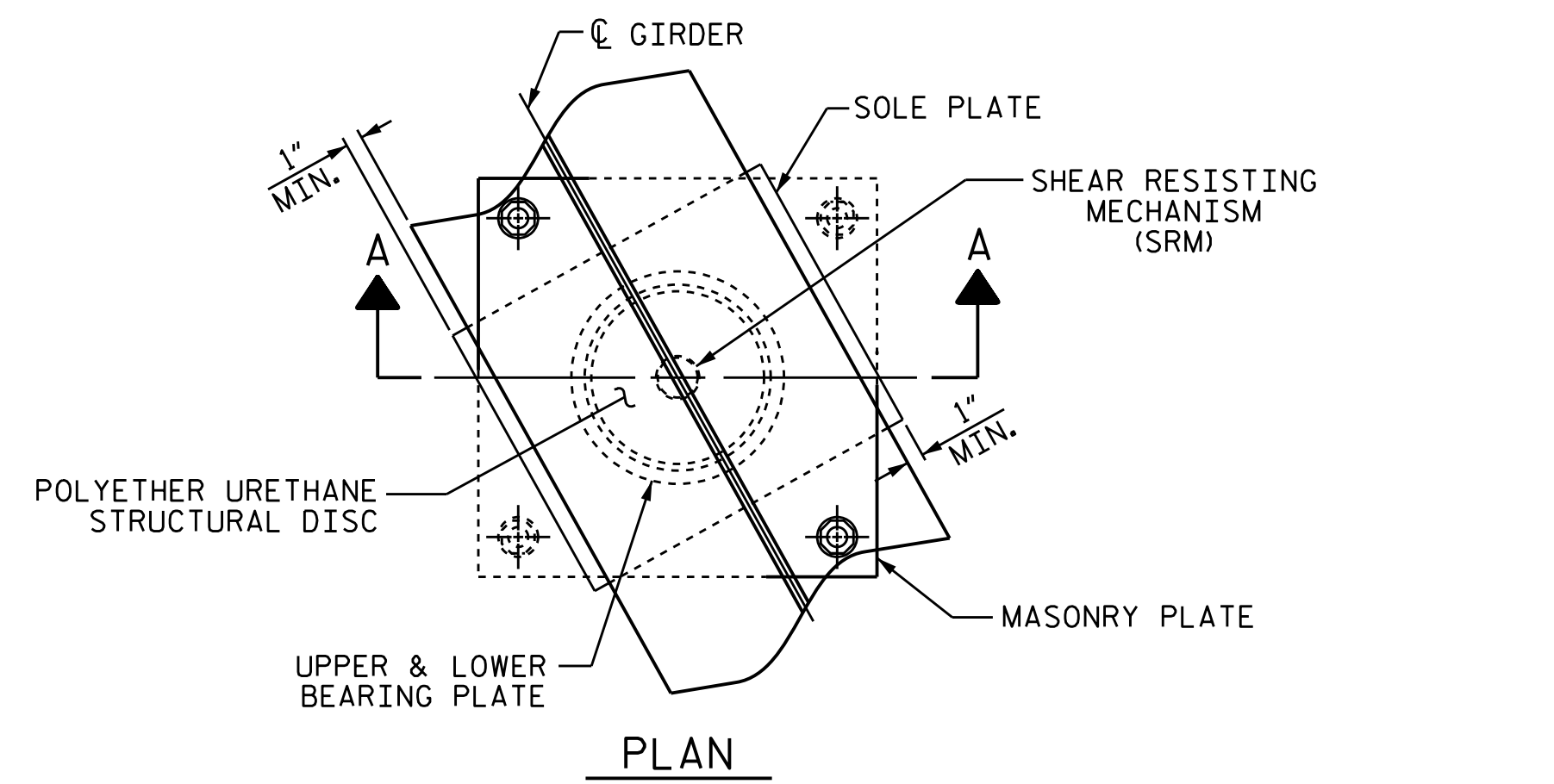


DocuSigned by:
Donald R. Smith, Jr.
EDC87706174B490
4/1/2016

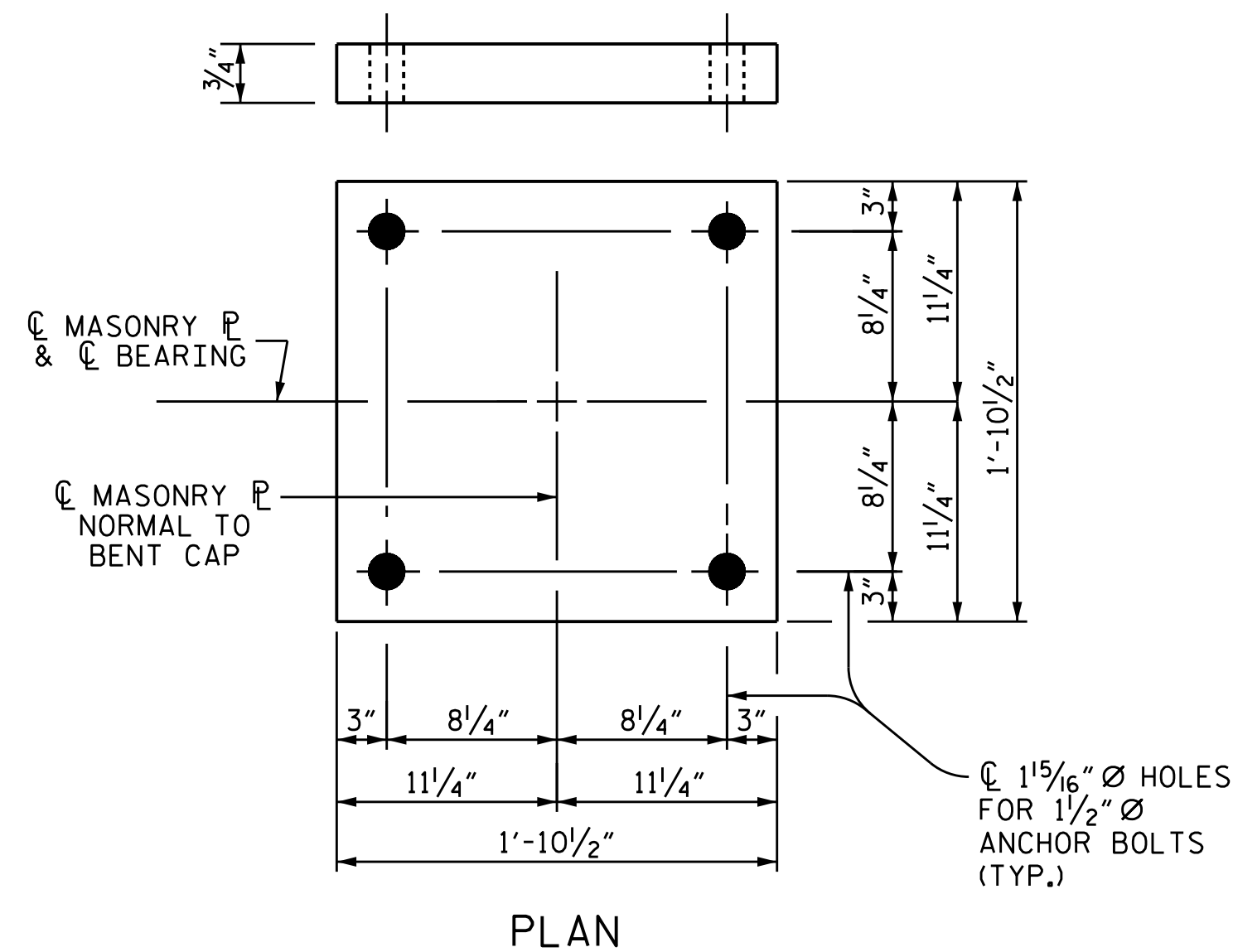
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD ELASTOMERIC BEARING DETAILS (STEEL SUPERSTRUCTURE)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S1-19					TOTAL SHEETS 47

ASSEMBLED BY : P.S. ADKINS	DATE : 5/27/14	DESIGN ENGINEER OF RECORD: D.R. SMITH DATE : 11-22-14
CHECKED BY : J.D. HAWK	DATE : 9/5/14	
DRAWN BY : JMB 11/87	REV. 5/1/06 TLA/GM	
CHECKED BY : ARB 11/87	REV. 10/1/11 MAA/GM	
	REV. 6/13 AAC/MAA	

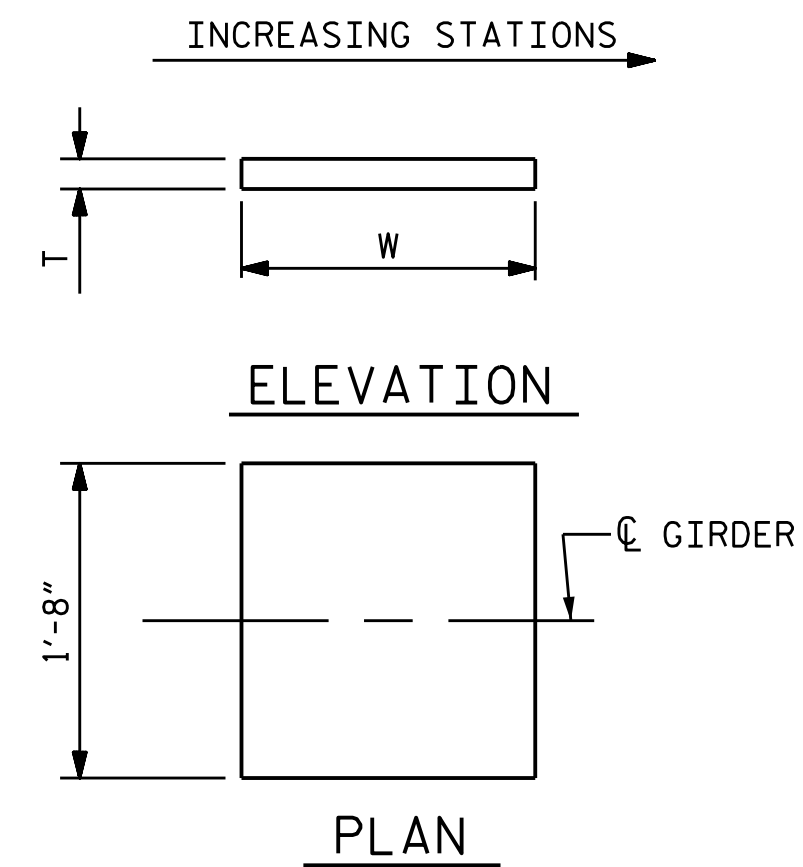
DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED



SECTION A-A
DB1, FIXED
(10 REQ'D.)



PLAN
MASONRY PLATE
DETAILS
M1
(10 REQ'D.)



NOTE:
DIMENSIONS "W" AND "T" SHALL BE DETERMINED
BY THE BEARING MANUFACTURER.

SOLE PLATE DETAILS
S1 (10 REQ'D)

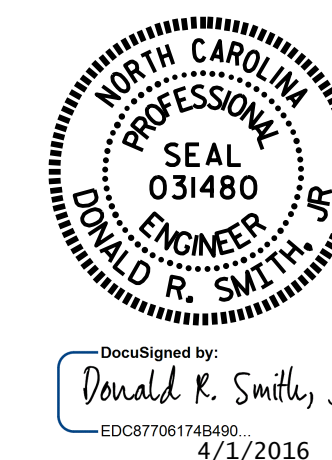
NOTES

- FOR DISC BEARINGS, SEE SPECIAL PROVISIONS.
- ALL BEARING PLATES SHALL BE AASHTO M270 GRADE 50W.
- AT ALL POINTS OF SUPPORT, NUTS FOR ANCHOR BOLTS SHALL BE FINGER-TIGHTENED PLUS 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 URETHANE DISC.
- SOLE PLATES SHOULD BE WELDED TO GIRDER FLANGES BEFORE FALSEWORK IS PLACED.
- ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.
- FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.
- THE MINIMUM ROTATIONAL CAPACITY FOR ALL BEARINGS SHALL BE 0.02 RADIAN.

LOADS AND MOVEMENT

DESIGNATIONS		LOCATION	NUMBER OF BEARINGS	UNFACTORED VERTICAL LOAD (KIPS)			FACTORED HORIZONTAL LOAD (KIPS)	ONE-WAY MOVEMENT (IN.)
BEARINGS	MASONRY			DEAD	LIVE	LL+IM		
DB1 (FIXED)	M1	BENT 1	10	223K	26K	200K	88K	0

PROJECT NO. U-3308
DURHAM COUNTY
STATION: 16+42.70-LALT-



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
DISC BEARING
DETAILS

ASSEMBLED BY : P.S. ADKINS DATE : 8-6-14
CHECKED BY : J.D. HAWK DATE : 9-5-14

DRAWN BY : TMG 08/13 REV.
CHECKED BY : EKP 10/13 REV.

DESIGN ENGINEER OF RECORD:
D.R. SMITH DATE : 11-22-14

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-20
1			3			TOTAL SHEETS
2			4			47

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																						
	SPAN A											SPAN B										
	GIRDER 1											GIRDER 1										
TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
DEFLECTION DUE TO WEIGHT OF GIRDER	0	0.004	0.008	0.010	0.011	0.010	0.008	0.005	0.003	0.000	0	0	0.002	0.006	0.011	0.015	0.017	0.018	0.016	0.012	0.007	0
DEFLECTION DUE TO WEIGHT OF SLAB *	0	0.016	0.030	0.039	0.042	0.039	0.032	0.021	0.010	0.002	0	0	0.009	0.025	0.043	0.059	0.069	0.071	0.064	0.049	0.026	0
DEFLECTION DUE TO WEIGHT OF PARAPET & SIDEWALK	0	0.004	0.008	0.010	0.011	0.011	0.009	0.006	0.003	0.001	0	0	0.002	0.007	0.012	0.016	0.019	0.019	0.017	0.013	0.007	0
TOTAL DEAD LOAD DEFLECTION	0	0.025	0.046	0.059	0.064	0.060	0.048	0.032	0.015	0.003	0	0	0.013	0.038	0.066	0.090	0.105	0.108	0.097	0.074	0.040	0
VERTICAL CURVE ORDINATE	0	0.073	0.130	0.170	0.195	0.203	0.195	0.170	0.130	0.073	0	0	0.085	0.151	0.199	0.227	0.236	0.227	0.199	0.151	0.085	0
REQUIRED CAMBER	0	1 3/16"	2 1/8"	2 3/4"	3 1/8"	3 1/8"	2 5/16"	2 7/16"	1 3/4"	1 5/16"	0	0	1 3/16"	2 1/4"	3 3/16"	3 3/16"	4 1/16"	4"	3 3/16"	2 11/16"	1 1/2"	0

* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "REQUIRED CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																						
	SPAN A											SPAN B										
	GIRDER 2											GIRDER 2										
TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
DEFLECTION DUE TO WEIGHT OF GIRDER	0	0.004	0.008	0.010	0.011	0.010	0.008	0.005	0.003	0.000	0	0	0.002	0.006	0.011	0.015	0.017	0.018	0.016	0.012	0.007	0
DEFLECTION DUE TO WEIGHT OF SLAB *	0	0.017	0.030	0.039	0.042	0.040	0.032	0.021	0.010	0.002	0	0	0.009	0.025	0.044	0.060	0.070	0.072	0.065	0.049	0.027	0
DEFLECTION DUE TO WEIGHT OF PARAPET & SIDEWALK	0	0.003	0.006	0.008	0.008	0.008	0.006	0.004	0.002	0.000	0	0	0.002	0.005	0.009	0.012	0.013	0.014	0.012	0.009	0.005	0
TOTAL DEAD LOAD DEFLECTION	0	0.024	0.044	0.057	0.061	0.057	0.046	0.031	0.015	0.002	0	0	0.013	0.036	0.064	0.087	0.100	0.104	0.093	0.070	0.039	0
VERTICAL CURVE ORDINATE	0	0.073	0.130	0.170	0.195	0.203	0.195	0.170	0.130	0.073	0	0	0.085	0.151	0.199	0.227	0.236	0.227	0.199	0.151	0.085	0
REQUIRED CAMBER	0	1 3/16"	2 1/16"	2 3/4"	3 1/16"	3 1/8"	2 7/16"	2 7/16"	1 3/4"	7/8"	0	0	1 3/16"	2 1/4"	3 1/8"	3 3/4"	4 1/16"	4"	3 1/2"	2 5/8"	1 1/2"	0

* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "REQUIRED CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																						
	SPAN A											SPAN B										
	GIRDER 3											GIRDER 3										
TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
DEFLECTION DUE TO WEIGHT OF GIRDER	0	0.004	0.008	0.010	0.011	0.010	0.008	0.005	0.003	0.000	0	0	0.002	0.006	0.011	0.015	0.017	0.018	0.016	0.012	0.007	0
DEFLECTION DUE TO WEIGHT OF SLAB *	0	0.017	0.031	0.040	0.043	0.040	0.032	0.021	0.010	0.002	0	0	0.009	0.026	0.044	0.060	0.071	0.073	0.066	0.050	0.027	0
DEFLECTION DUE TO WEIGHT OF PARAPET & SIDEWALK	0	0.002	0.004	0.005	0.006	0.005	0.004	0.003	0.001	0.000	0	0	0.001	0.003	0.006	0.008	0.009	0.010	0.009	0.007	0.004	0
TOTAL DEAD LOAD DEFLECTION	0	0.023	0.043	0.055	0.060	0.055	0.044	0.029	0.014	0.002	0	0	0.012	0.035	0.061	0.083	0.097	0.101	0.091	0.069	0.038	0
VERTICAL CURVE ORDINATE	0	0.073	0.130	0.170	0.195	0.203	0.195	0.170	0.130	0.073	0	0	0.085	0.151	0.199	0.227	0.236	0.227	0.199	0.151	0.085	0
REQUIRED CAMBER	0	1 1/8"	2 1/16"	2 11/16"	3 1/16"	3 1/8"	2 7/8"	2 3/8"	1 3/4"	7/8"	0	0	1 3/16"	2 1/4"	3 1/8"	3 3/4"	4"	3 15/16"	3 1/2"	2 5/8"	1 1/2"	0

* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "REQUIRED CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																						
	SPAN A											SPAN B										
	GIRDER 4											GIRDER 4										
TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
DEFLECTION DUE TO WEIGHT OF GIRDER	0	0.004	0.008	0.010	0.011	0.010	0.008	0.005	0.003	0.000	0	0	0.002	0.006	0.011	0.015	0.017	0.018	0.016	0.012	0.007	0
DEFLECTION DUE TO WEIGHT OF SLAB *	0	0.017	0.031	0.040	0.043	0.041	0.033	0.022	0.010	0.002	0	0	0.009	0.026	0.045	0.061	0.071	0.074	0.067	0.050	0.027	0
DEFLECTION DUE TO WEIGHT OF PARAPET & SIDEWALK	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	0.021	0.039	0.050	0.054	0.051	0.041	0.027	0.013	0.002	0	0	0.011	0.032	0.056	0.076	0.088	0.092	0.083	0.062	0.034	0
VERTICAL CURVE ORDINATE	0	0.073	0.130	0.170	0.195	0.203	0.195	0.170	0.130	0.073	0	0	0.085	0.151	0.199	0.227	0.236	0.227	0.199	0.151	0.085	0
REQUIRED CAMBER	0	1 1/8"	2"	2 5/8"	3"	3 1/16"	2 3/16"	2 3/8"	1 1/16"	7/8"	0	0	1 1/8"	2 3/16"	3 1/16"	3 5/8"	3 7/8"	3 13/16"	3 3/8"	2 9/16"	1 7/16"	0

* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "REQUIRED CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).

PROJECT NO. U-3308
DURHAM COUNTY
STATION: 16+42.70-LALT-

SHEET 1 OF 3



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
DEAD LOAD DEFLECTIONS

DRAWN BY : P.S. ADKINS DATE : 12-5-13
CHECKED BY : J.D. HAWK DATE : 9-5-14
DESIGN ENGINEER OF RECORD: D.R. SMITH DATE : 11-22-14

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			47
2			4			

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																						
	SPAN A											SPAN B										
	GIRDER 5											GIRDER 5										
TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
DEFLECTION DUE TO WEIGHT OF GIRDER	0	0.004	0.008	0.010	0.011	0.010	0.008	0.005	0.003	0.000	0	0	0.002	0.006	0.011	0.015	0.017	0.018	0.016	0.012	0.007	0
DEFLECTION DUE TO WEIGHT OF SLAB *	0	0.017	0.032	0.041	0.044	0.041	0.033	0.022	0.011	0.002	0	0	0.009	0.026	0.045	0.062	0.072	0.075	0.067	0.051	0.028	0
DEFLECTION DUE TO WEIGHT OF PARAPET & SIDEWALK	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	0.021	0.040	0.051	0.055	0.051	0.041	0.027	0.014	0.002	0	0	0.011	0.032	0.056	0.077	0.089	0.093	0.083	0.063	0.045	0
VERTICAL CURVE ORDINATE	0	0.073	0.130	0.170	0.195	0.203	0.195	0.170	0.130	0.073	0	0	0.085	0.151	0.199	0.227	0.236	0.227	0.199	0.151	0.085	0
REQUIRED CAMBER	0	1/8"	2/16"	2 5/8"	3"	3/16"	2 3/16"	2 3/8"	1 3/4"	7/8"	0	0	1/8"	2 3/16"	3/16"	3 5/8"	3 7/8"	3 13/16"	3 3/8"	2 9/16"	1 9/16"	0

* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "REQUIRED CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																						
	SPAN A											SPAN B										
	GIRDER 6											GIRDER 6										
TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
DEFLECTION DUE TO WEIGHT OF GIRDER	0	0.004	0.008	0.010	0.011	0.010	0.008	0.005	0.003	0.000	0	0	0.002	0.006	0.011	0.015	0.017	0.018	0.016	0.012	0.007	0
DEFLECTION DUE TO WEIGHT OF SLAB *	0	0.017	0.032	0.041	0.044	0.042	0.034	0.022	0.011	0.002	0	0	0.009	0.027	0.046	0.063	0.073	0.075	0.068	0.052	0.028	0
DEFLECTION DUE TO WEIGHT OF PARAPET & SIDEWALK	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	0.021	0.040	0.051	0.055	0.052	0.042	0.027	0.014	0.002	0	0	0.011	0.033	0.057	0.078	0.090	0.093	0.084	0.064	0.035	0
VERTICAL CURVE ORDINATE	0	0.073	0.130	0.170	0.195	0.203	0.195	0.170	0.130	0.073	0	0	0.085	0.151	0.199	0.227	0.236	0.227	0.199	0.151	0.085	0
REQUIRED CAMBER	0	1/8"	2/16"	2 5/8"	3"	3/16"	2 7/8"	2 3/8"	1 3/4"	7/8"	0	0	1/8"	2 3/16"	3/16"	3 11/16"	3 5/16"	3 13/16"	3 3/8"	2 9/16"	1 7/16"	0

* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "REQUIRED CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																						
	SPAN A											SPAN B										
	GIRDER 7											GIRDER 7										
TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
DEFLECTION DUE TO WEIGHT OF GIRDER	0	0.004	0.008	0.010	0.011	0.010	0.008	0.005	0.003	0.000	0	0	0.002	0.006	0.011	0.015	0.017	0.018	0.016	0.012	0.007	0
DEFLECTION DUE TO WEIGHT OF SLAB *	0	0.017	0.032	0.042	0.045	0.042	0.034	0.022	0.011	0.002	0	0	0.009	0.027	0.047	0.063	0.074	0.076	0.069	0.052	0.028	0
DEFLECTION DUE TO WEIGHT OF PARAPET & SIDEWALK	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	0.021	0.040	0.052	0.056	0.052	0.042	0.027	0.014	0.002	0	0	0.011	0.033	0.058	0.078	0.091	0.094	0.085	0.064	0.035	0
VERTICAL CURVE ORDINATE	0	0.073	0.130	0.170	0.195	0.203	0.195	0.170	0.130	0.073	0	0	0.085	0.151	0.199	0.227	0.236	0.227	0.199	0.151	0.085	0
REQUIRED CAMBER	0	1/8"	2/16"	2 11/16"	3"	3/16"	2 7/8"	2 3/8"	1 3/4"	7/8"	0	0	1/8"	2 3/16"	3/16"	3 11/16"	3 5/16"	3 7/8"	3 1/16"	2 9/16"	1 7/16"	0

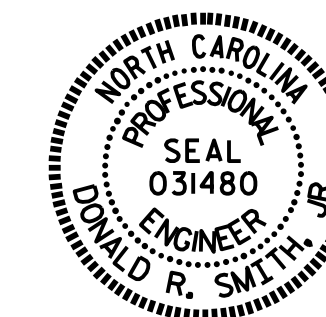
* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "REQUIRED CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																						
	SPAN A											SPAN B										
	GIRDER 8											GIRDER 8										
TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
DEFLECTION DUE TO WEIGHT OF GIRDER	0	0.004	0.008	0.010	0.011	0.010	0.008	0.005	0.003	0.000	0	0	0.002	0.006	0.011	0.015	0.017	0.018	0.016	0.012	0.007	0
DEFLECTION DUE TO WEIGHT OF SLAB *	0	0.018	0.033	0.042	0.045	0.043	0.035	0.023	0.011	0.002	0	0	0.010	0.027	0.047	0.064	0.075	0.077	0.070	0.053	0.029	0
DEFLECTION DUE TO WEIGHT OF PARAPET & SIDEWALK	0	0.002	0.004	0.005	0.006	0.005	0.004	0.003	0.001	0.000	0	0	0.001	0.003	0.006	0.008	0.009	0.009	0.008	0.006	0.003	0
TOTAL DEAD LOAD DEFLECTION	0	0.024	0.045	0.057	0.062	0.058	0.047	0.031	0.015	0.002	0	0	0.013	0.036	0.064	0.087	0.101	0.104	0.094	0.071	0.039	0
VERTICAL CURVE ORDINATE	0	0.073	0.130	0.170	0.195	0.203	0.195	0.170	0.130	0.073	0	0	0.085	0.151	0.199	0.227	0.236	0.227	0.199	0.151	0.085	0
REQUIRED CAMBER	0	1 3/16"	2/8"	2 3/4"	3/16"	3/8"	2 7/8"	2 1/16"	1 3/4"	7/8"	0	0	1 3/16"	2/4"	3 3/16"	3 3/4"	4 1/16"	4"	3 1/2"	2 11/16"	1 1/2"	0

* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "REQUIRED CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).

PROJECT NO. U-3308
DURHAM COUNTY
STATION: 16+42.70-LALT-

SHEET 2 OF 3



DocuSigned by:
Donald R. Smith, Jr.
EDC87706174B490
4/1/2016

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE DEAD LOAD DEFLECTIONS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S1-22
TOTAL SHEETS					47

DRAWN BY : P.S. ADKINS DATE : 12-5-13
CHECKED BY : J.D. HAWK DATE : 9-5-14
DESIGN ENGINEER OF RECORD: D.R. SMITH DATE : 11-22-14

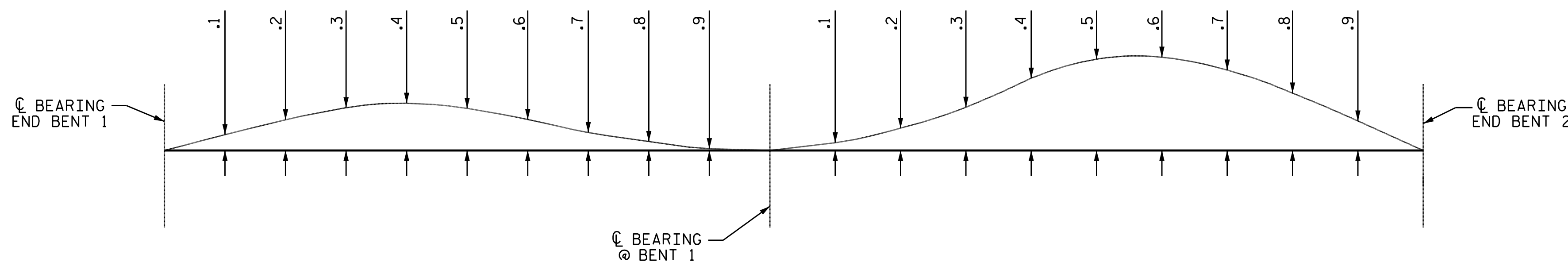
DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																						
TENTH POINTS	SPAN A											SPAN B										
	GIRDER 9											GIRDER 9										
	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
DEFLECTION DUE TO WEIGHT OF GIRDER	0	0.004	0.008	0.010	0.011	0.010	0.008	0.005	0.003	0.000	0	0	0.002	0.006	0.011	0.015	0.017	0.018	0.016	0.012	0.007	0
DEFLECTION DUE TO WEIGHT OF SLAB *	0	0.018	0.033	0.043	0.046	0.043	0.035	0.023	0.011	0.002	0	0	0.010	0.028	0.048	0.065	0.076	0.078	0.071	0.053	0.029	0
DEFLECTION DUE TO WEIGHT OF PARAPET & SIDEWALK	0	0.003	0.006	0.007	0.008	0.007	0.006	0.004	0.002	0.000	0	0	0.002	0.005	0.008	0.011	0.013	0.013	0.012	0.009	0.005	0
TOTAL DEAD LOAD DEFLECTION	0	0.025	0.047	0.060	0.065	0.060	0.049	0.032	0.016	0.002	0	0	0.014	0.039	0.067	0.091	0.106	0.109	0.099	0.074	0.041	0
VERTICAL CURVE ORDINATE	0	0.073	0.130	0.170	0.195	0.203	0.195	0.170	0.130	0.073	0	0	0.085	0.151	0.199	0.227	0.236	0.227	0.199	0.151	0.085	0
REQUIRED CAMBER	0	1 3/16"	2 7/8"	2 3/4"	3 1/8"	3 3/16"	2 15/16"	2 7/16"	1 3/4"	7/8"	0	0	1 3/16"	2 1/4"	3 3/16"	3 13/16"	4 1/8"	4 1/16"	3 9/16"	2 11/16"	1 1/2"	0

* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "REQUIRED CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																						
TENTH POINTS	SPAN A											SPAN B										
	GIRDER 10											GIRDER 10										
	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
DEFLECTION DUE TO WEIGHT OF GIRDER	0	0.004	0.008	0.010	0.011	0.010	0.008	0.005	0.003	0.000	0	0	0.002	0.006	0.011	0.015	0.017	0.018	0.016	0.012	0.007	0
DEFLECTION DUE TO WEIGHT OF SLAB *	0	0.018	0.034	0.043	0.046	0.044	0.035	0.023	0.011	0.002	0	0	0.010	0.028	0.048	0.066	0.076	0.079	0.072	0.054	0.029	0
DEFLECTION DUE TO WEIGHT OF PARAPET & SIDEWALK	0	0.004	0.008	0.010	0.011	0.010	0.008	0.006	0.003	0.000	0	0	0.002	0.007	0.011	0.015	0.018	0.019	0.017	0.013	0.007	0
TOTAL DEAD LOAD DEFLECTION	0	0.026	0.050	0.063	0.068	0.064	0.051	0.034	0.017	0.002	0	0	0.014	0.041	0.070	0.096	0.111	0.116	0.105	0.079	0.043	0
VERTICAL CURVE ORDINATE	0	0.073	0.130	0.170	0.195	0.203	0.195	0.170	0.130	0.073	0	0	0.085	0.151	0.199	0.227	0.236	0.227	0.199	0.151	0.085	0
REQUIRED CAMBER	0	1 3/16"	2 3/16"	2 13/16"	3 1/8"	3 3/16"	2 15/16"	2 7/16"	1 3/4"	7/8"	0	0	1 3/16"	2 5/16"	3 1/4"	3 7/8"	4 3/16"	4 1/8"	3 5/8"	2 3/4"	1 9/16"	0

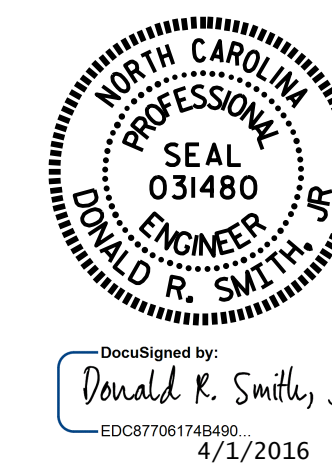
* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "REQUIRED CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).



SCHEMATIC CAMBER ORDINATES
SLOPE FOR THE ZERO CAMBER BASE LINE VARIES.

PROJECT NO. U-3308
DURHAM COUNTY
STATION: 16+42.70-LALT-

SHEET 3 OF 3

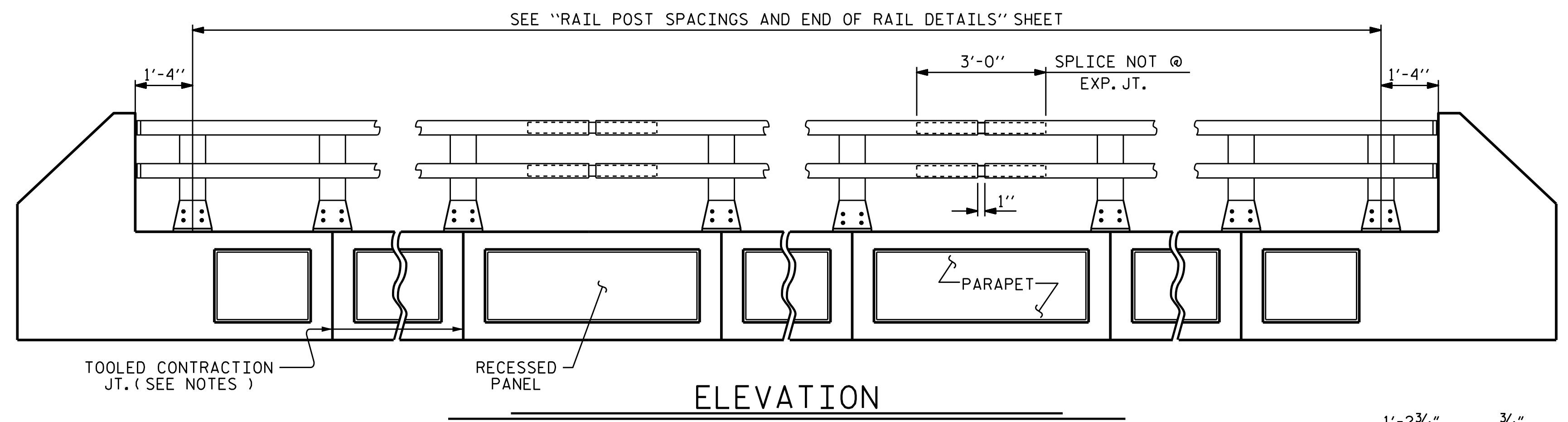


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
DEAD LOAD DEFLECTIONS

DRAWN BY : P.S. ADKINS DATE : 12-5-13
CHECKED BY : J.D. HAWK DATE : 9-5-14
DESIGN ENGINEER OF RECORD: D.R. SMITH DATE : 11-22-14

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			47
2			4			



ELEVATION

NOTE : FOR ATTACHMENT OF METAL RAIL TO END POST, SEE STD. NO. BMR2.

NOTES

METAL RAIL SHALL BE INSTALLED IN ACCORDANCE WITH SECTION 460 OF THE STANDARD SPECIFICATIONS AND METAL RAIL COMPONENTS SHALL MEET THE REQUIREMENTS OF ARTICLE 1074-5 OF THE STANDARD SPECIFICATIONS.

RAILING SHALL BE CONTINUOUS FROM END POST TO END POST OF BRIDGE. EACH JOINT IN RAIL LENGTH SHALL BE SPLICED AS DETAILED. PANEL LENGTHS OF RAIL SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS.

FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE STD. NO. BMR2.

CAP SCREWS SHALL BE ASTM F593 ALLOY 305 STAINLESS STEEL. WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

ALLOY 6351-T5 MAY BE SUBSTITUTED FOR ALLOY 6061-T6 WHERE APPLICABLE.

MINOR VARIATIONS IN DETAILS OF METAL RAIL WILL BE CONSIDERED. DETAILS OF SUCH VARIATIONS, IF DESIRED, SHALL BE SUBMITTED FOR APPROVAL.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. CONTRACTION JOINTS SHALL BE LOCATED 9 FEET ON EACH SIDE OF PARAPET EXPANSION JOINTS WITH NO MORE THAN 12 FEET BETWEEN CONTRACTION JOINTS. CONTRACTION JOINTS SHALL BE ALIGNED WITH RAIL POSTS SO AS TO NOT EXTEND THROUGH THE RECESSED PANELS.

ANODIZING

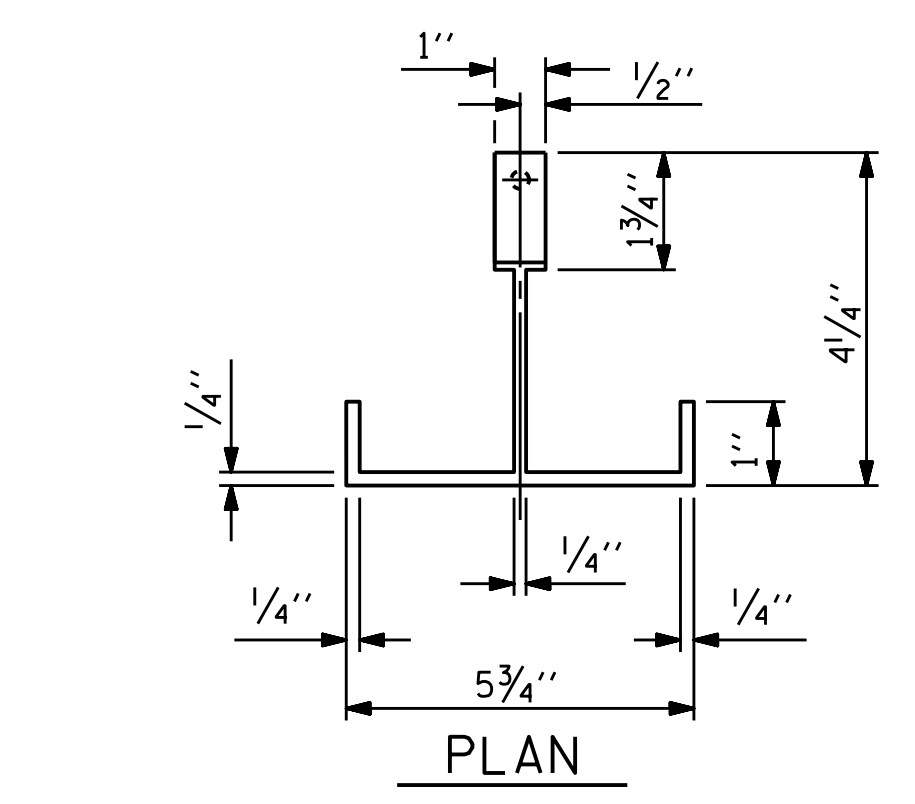
FOR ANODIZED 2 BAR METAL RAIL, SEE SPECIAL PROVISIONS.

ALUMINUM FOR POSTS, BASES, RAILS, EXPANSION BARS, RIVETS, CAPS, AND SHIMS SHALL BE ANODIZED. THE CONTRACTOR SHALL SUBMIT THREE SETS OF ASTM B-21 6061-T6 ALUMINUM SAMPLES ANODIZED MEDIUM BRONZE, DARK BRONZE, AND EXTRA DARK BRONZE TO THE ENGINEER. THE ENGINEER SHALL SELECT THE COLOR FROM THE SAMPLES FURNISHED BY THE CONTRACTOR.

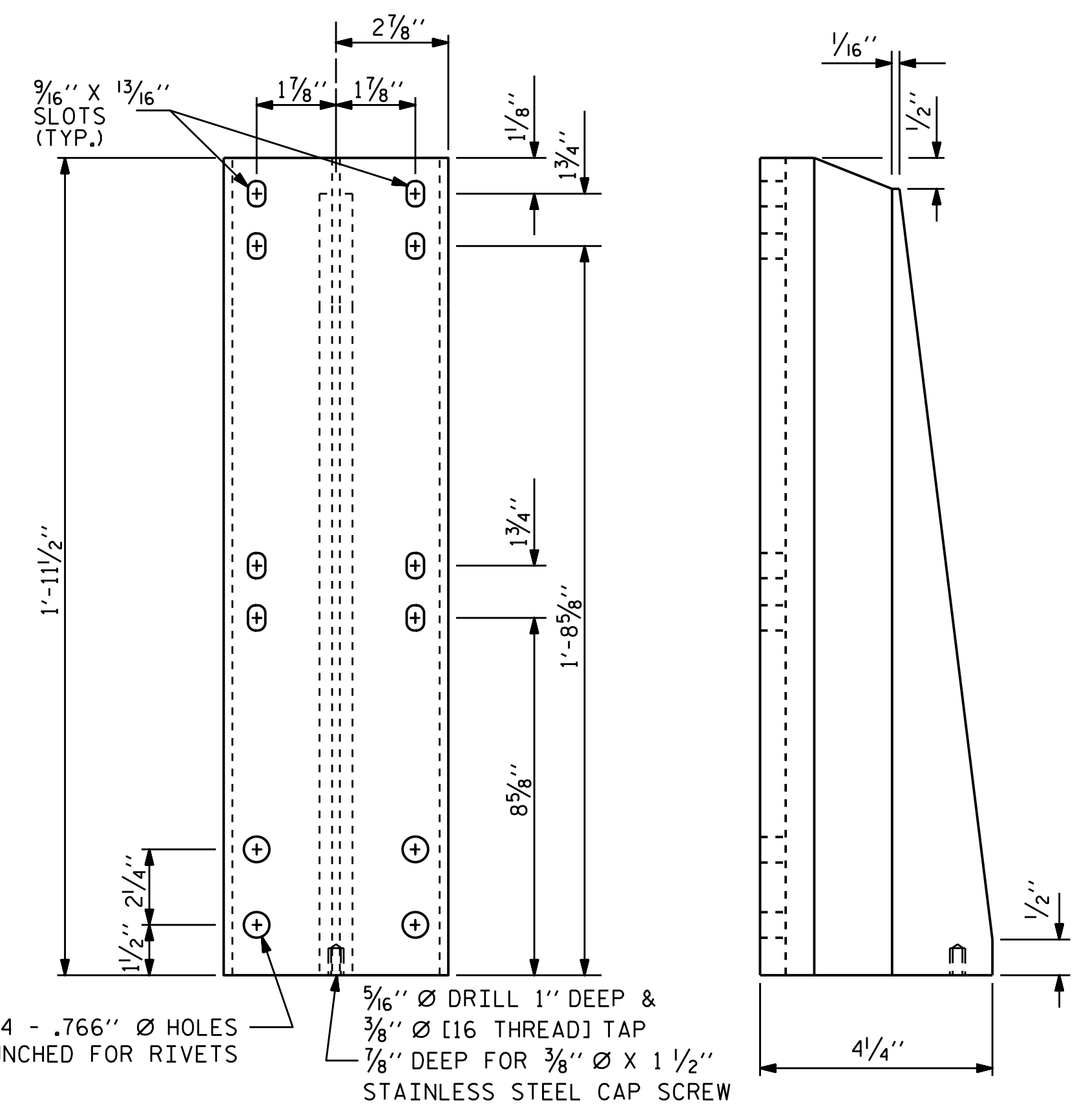
AFTER A SHADE OF BRONZE HAS BEEN SELECTED FOR THE RAILING, THE CONTRACTOR SHALL SUBMIT A SAMPLE OF COMPATIBLE EXTERIOR ACRYLIC HOUSE PAINT TO THE ENGINEER. THIS PAINT SHALL MATCH THE ANODIZED RAIL COLOR AS CLOSELY AS POSSIBLE. AFTER ERECTION OF THE ANODIZED ALUMINUM RAILING, ALL EXPOSED ANCHOR BOLTS, NUTS, WASHERS, MACHINE SCREWS, CAP SCREWS, BOLTS, ATTACHMENT BRACKETS, HOLD-DOWN PLATES, AND BUILT UP ANGLES SHALL BE COATED WITH TWO COATS OF THIS ACTYLIC PAINT.

ANY DAMAGE TO THE ANODIZED SURFACES OF THE RAIL OR COMPONENTS DURING THE CONSTRUCTION SHALL BE REPAIRED ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS AT THE DIRECTION OF THE ENGINEER AND AT THE CONTRACTOR'S EXPENSE.

PAY LENGTH	
STAGE I	170.23 LIN. FT.
STAGE II	170.23 LIN. FT.
TOTAL	340.46 LIN. FT.



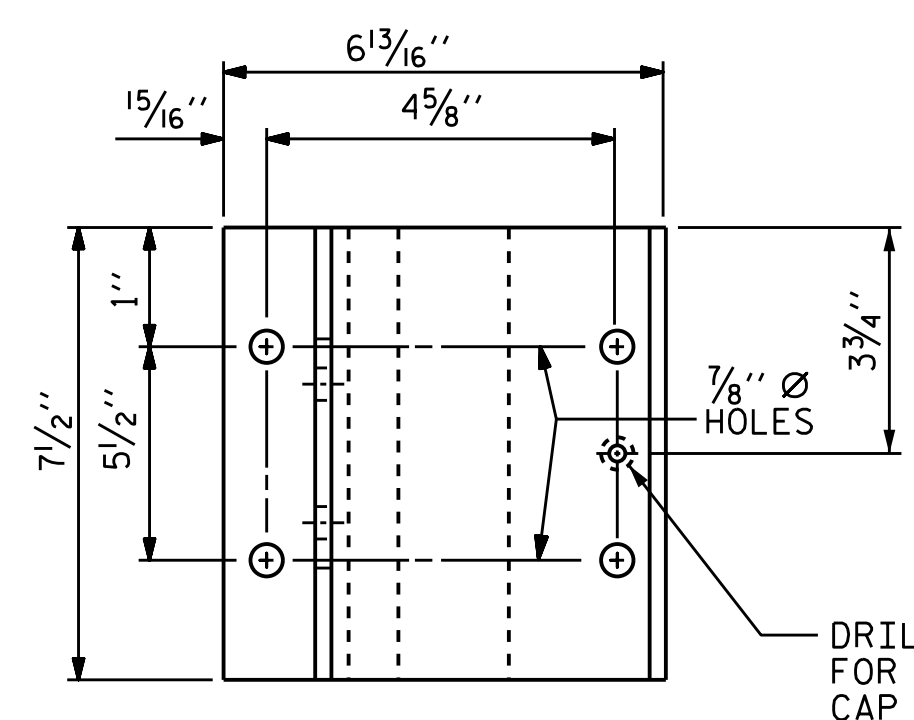
PLAN



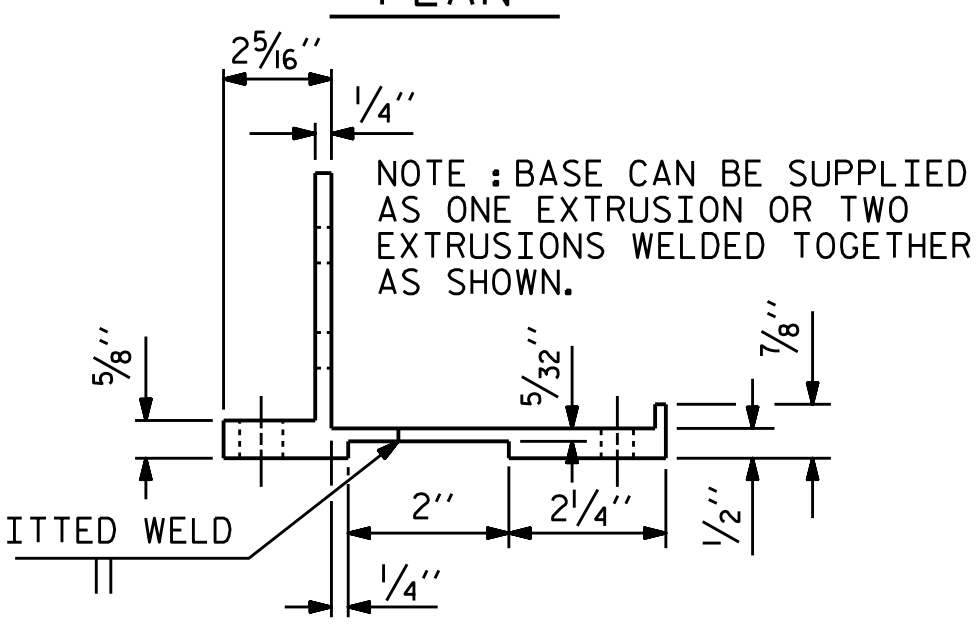
FRONT ELEVATION

SIDE ELEVATION

DETAILS OF POST

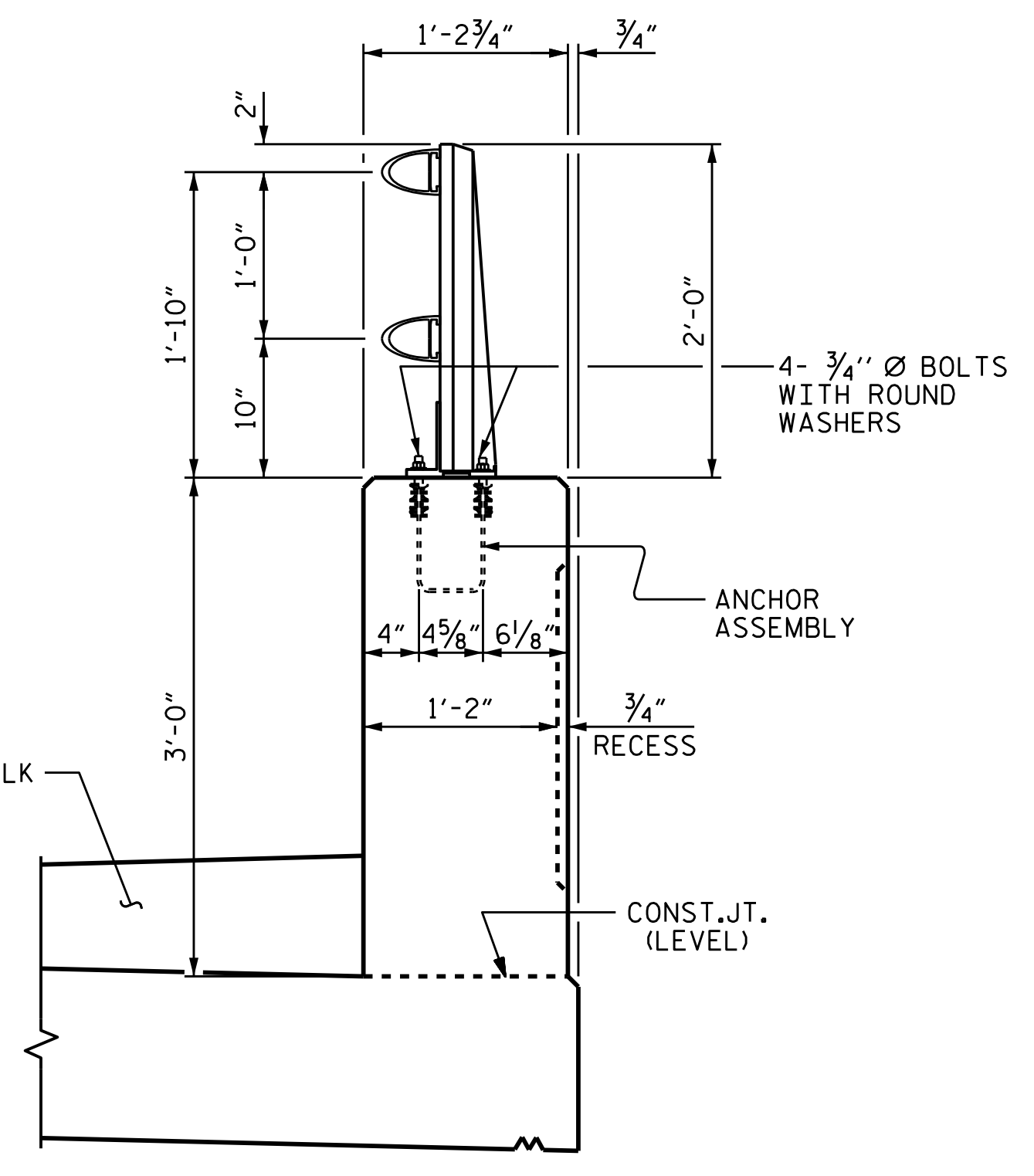


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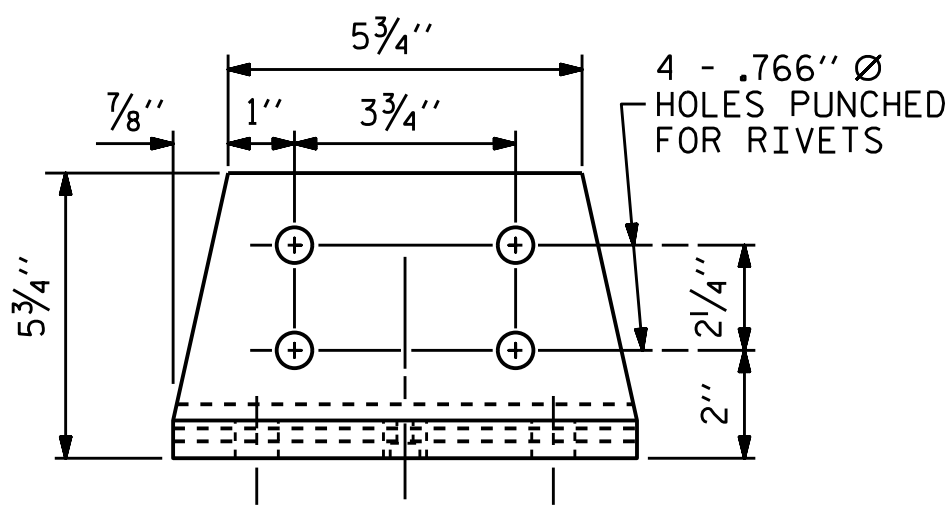
SIDE ELEVATION

POST BASE DETAILS



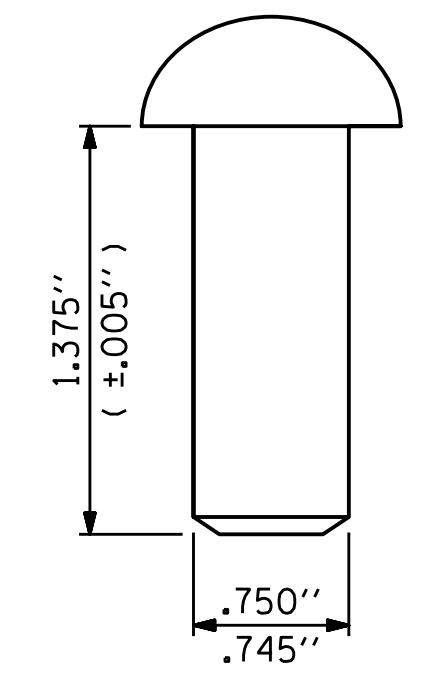
SECTION THROUGH PARAPET AND RAIL

DRILL & COUNTER BORE FOR 3/8" Ø [16 THREAD] CAP SCREW



FRONT ELEVATION

RIVET DETAIL



DRAWN BY : P.S. ADKINS DATE : 11/25/13
 CHECKED BY : L.E. SUTTON DATE : 9/10/14

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

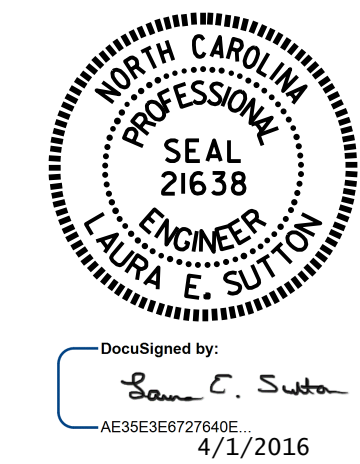
PROJECT NO. U-3308
 DURHAM COUNTY
 STATION: 16+42.70-LALT-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE

**ANODIZED
 2 BAR METAL RAIL**



REVISIONS						SHEET NO. S1-24
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 47
2			4			

STR. #1

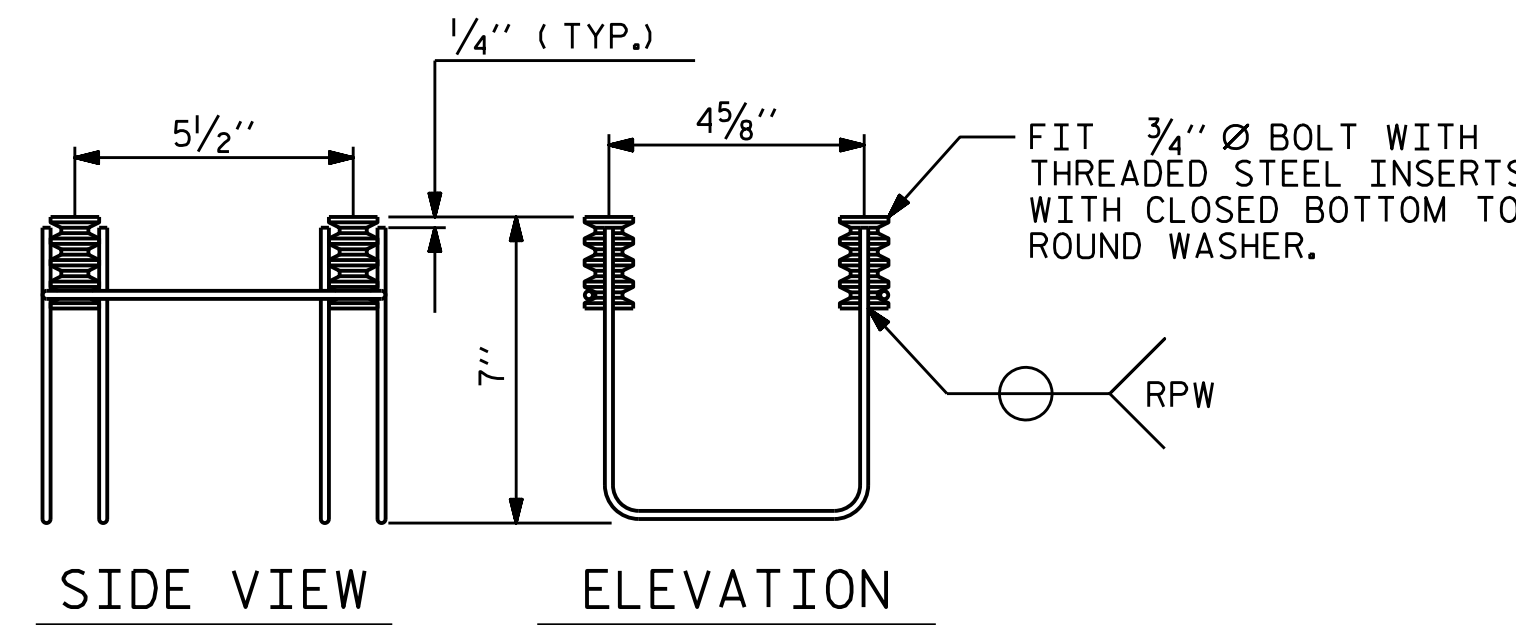
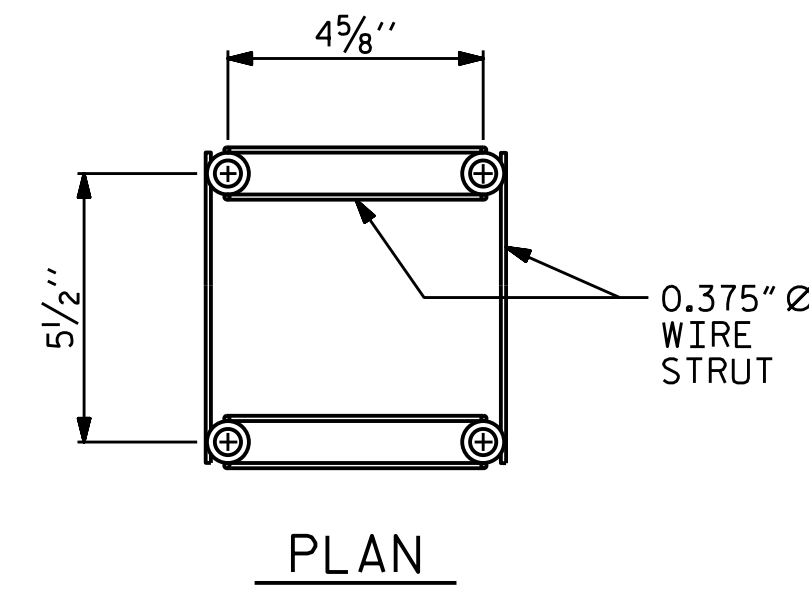
NOTES

THE STRUCTURAL CONCRETE ANCHOR ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS :

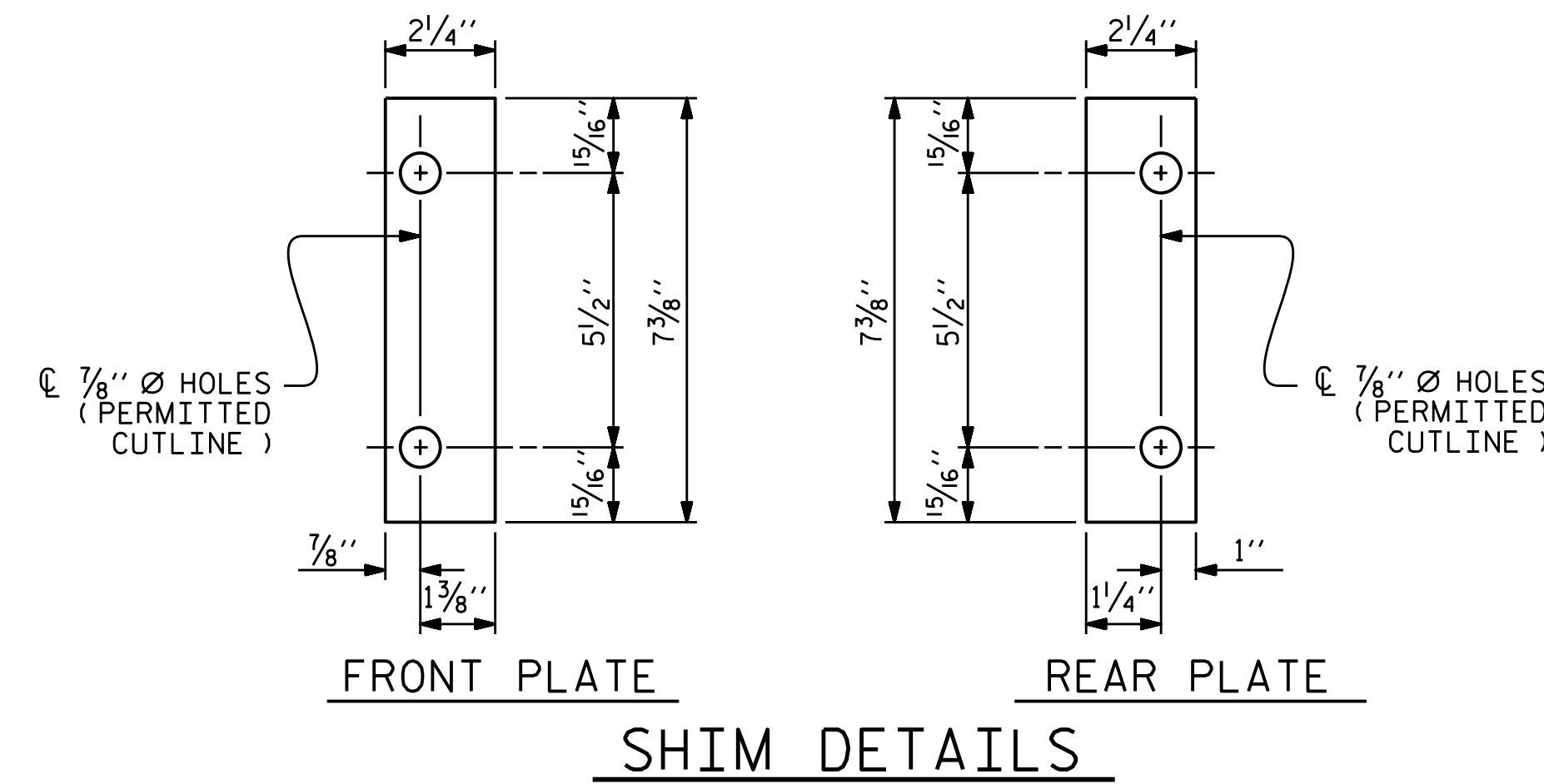
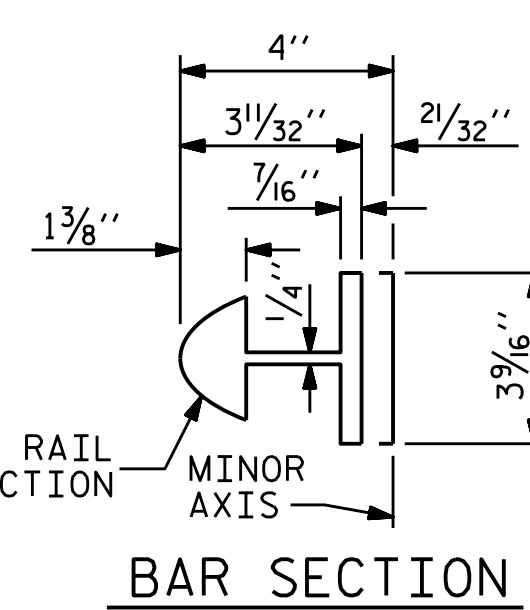
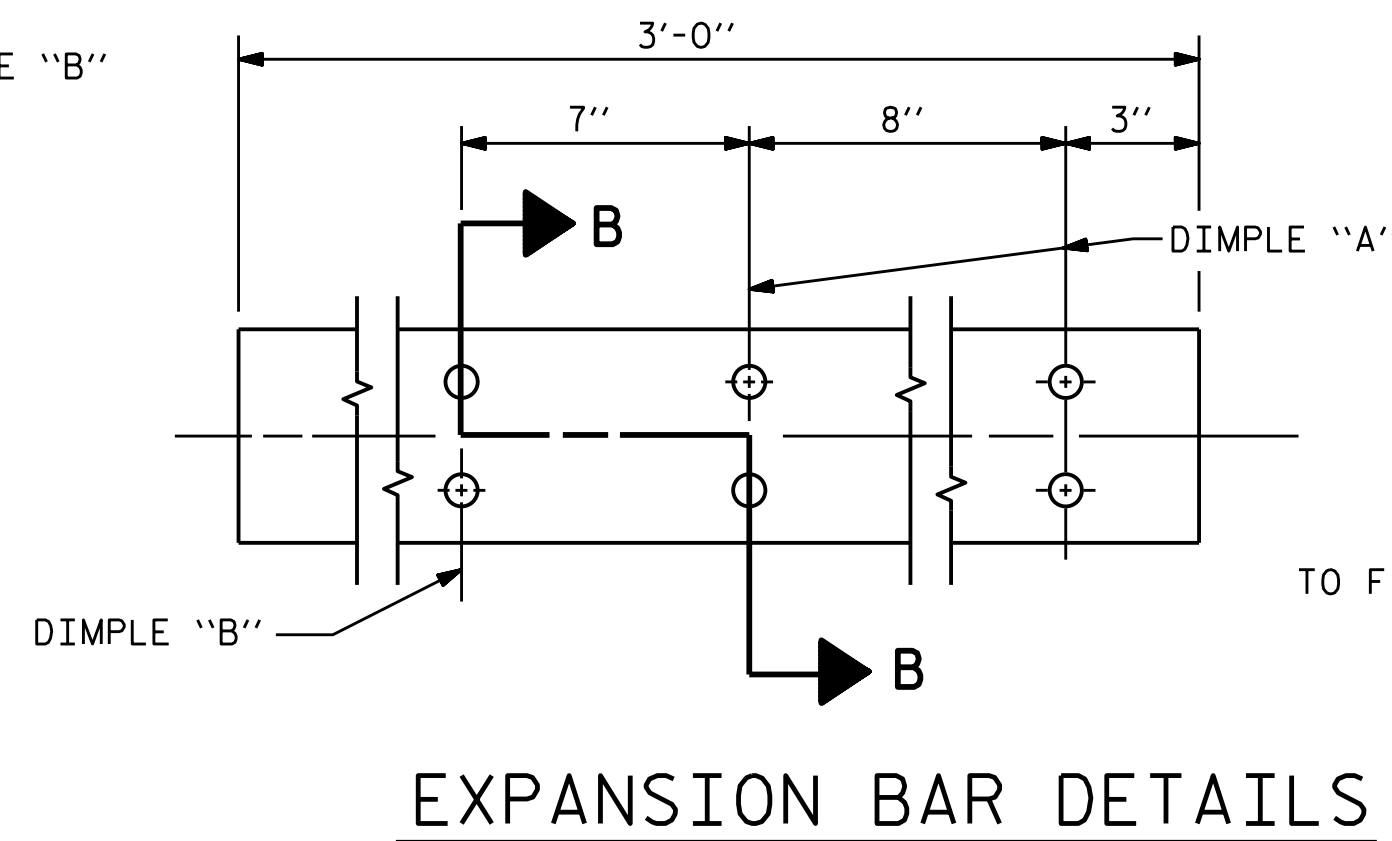
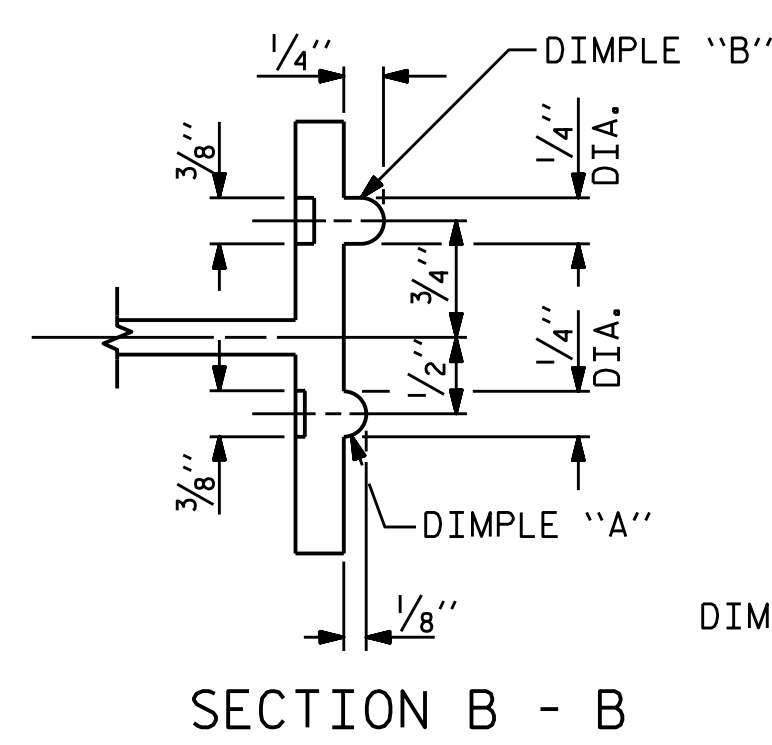
- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2" FOR 3/4" FERRULES.
- B. 4 - 3/4" Ø X 2 1/2" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø X 2 1/2" GALVANIZED BOLTS 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.
- C. WIRE STRUT SHOWN IN THE CONCRETE ANCHOR ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 7/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.
- D. THE METAL RAIL ANCHOR ASSEMBLIES TO BE HOT DIPPED GALVANIZED TO CONFORM TO REQUIREMENTS OF AASHTO M111.
- E. THE COST OF THE METAL RAIL ANCHOR ASSEMBLY WITH BOLTS AND WASHERS COMPLETE IN PLACE SHALL BE INCLUDED IN THE PRICE BID FOR LINEAR FEET OF METAL RAIL.
- F. BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.

THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF THE METAL RAIL ANCHOR ASSEMBLY. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 10 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE THE STANDARD SPECIFICATIONS.

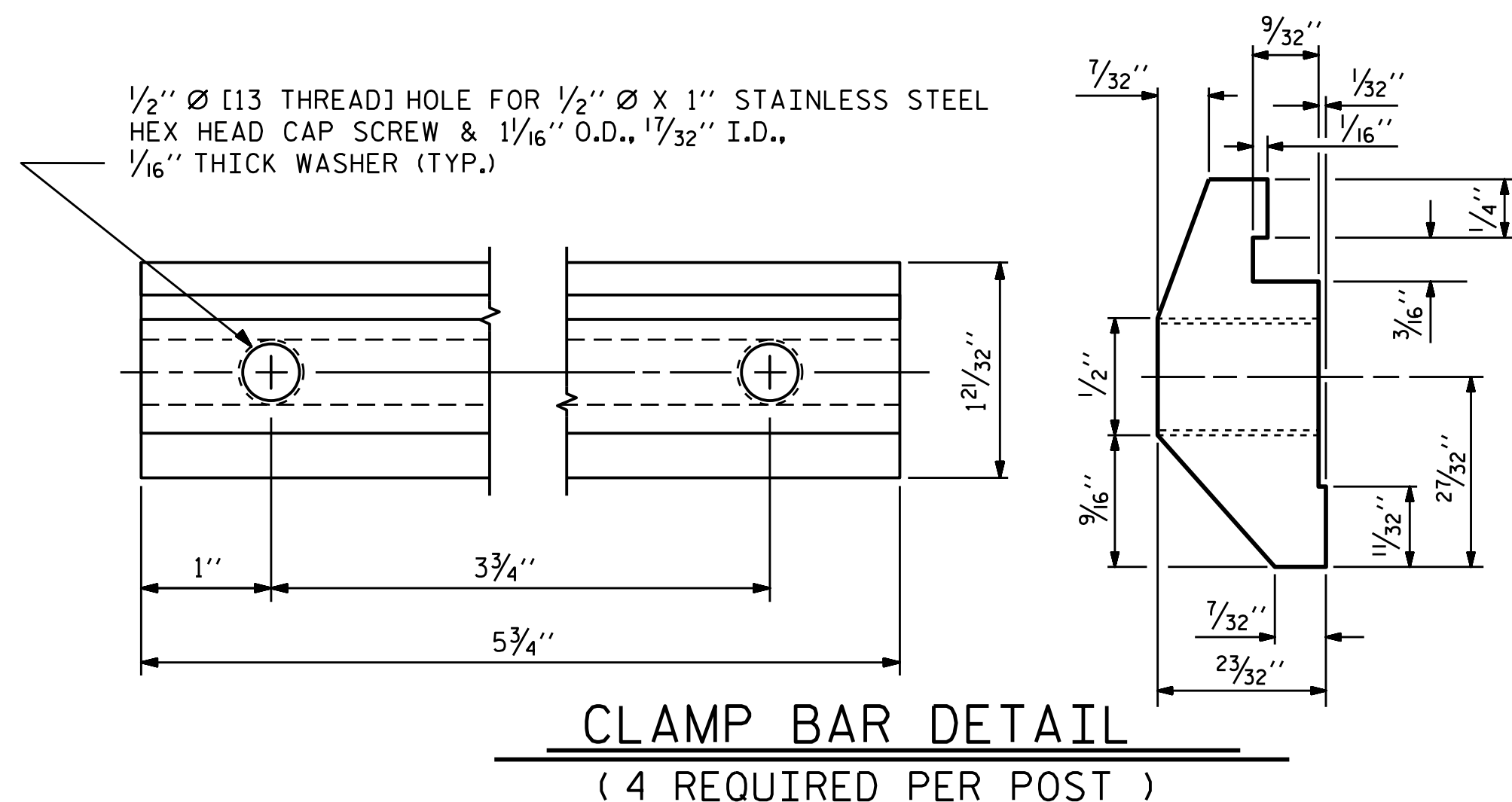
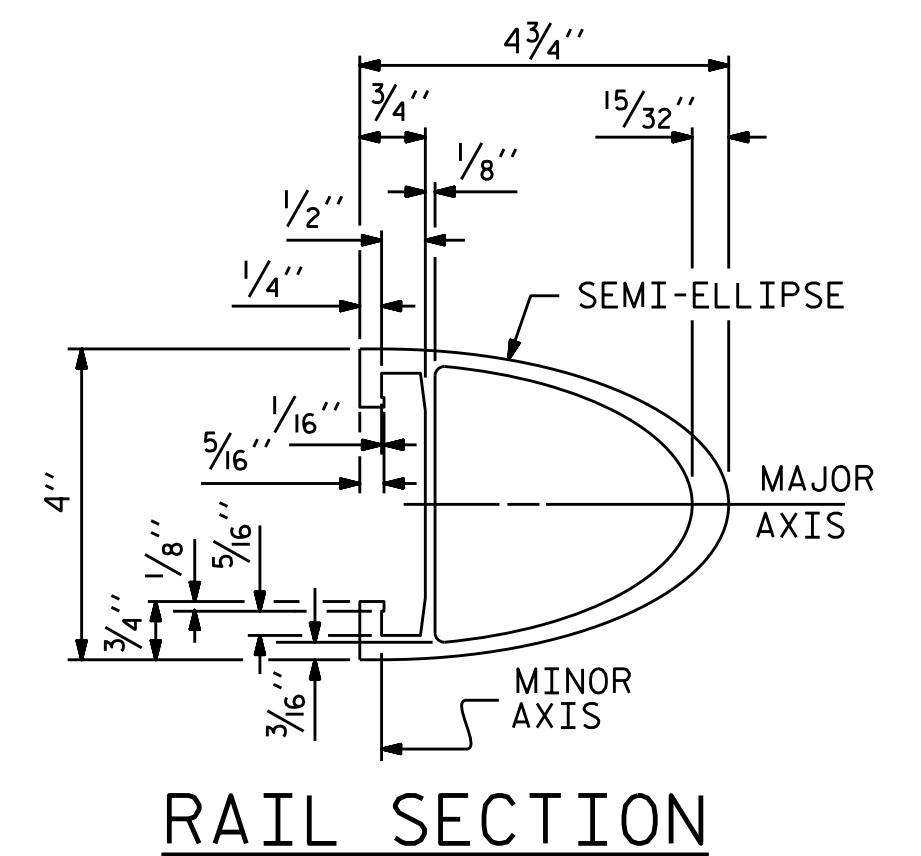
WHEN ADHESIVELY ANCHORED ANCHOR BOLTS ARE USED, BOLTS SHALL MEET THE REQUIREMENTS OF ASTM F593 ALLOY 304 STAINLESS STEEL WITH MINIMUM 75,000 PSI ULTIMATE STRENGTH. NUTS SHALL MEET THE REQUIREMENTS OF ASTM F594 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.



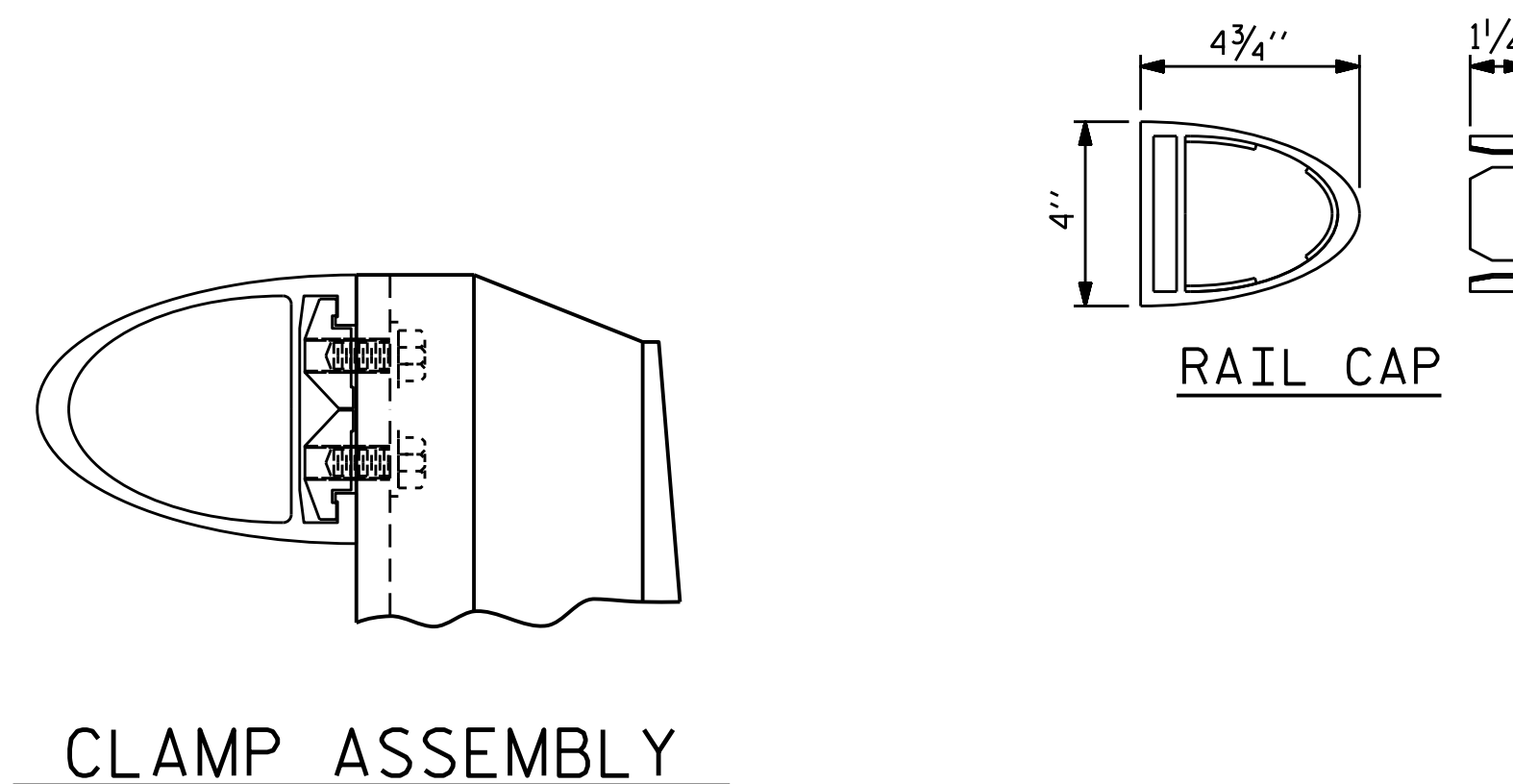
4-BOLT METAL RAIL ANCHOR ASSEMBLY
(62 ASSEMBLIES REQUIRED)



NOTE : SHIMS MAY BE CUT ALONG PERMITTED CUTLINE OR SLOTTED TO EDGE OF PLATE TO FACILITATE PLACEMENT.



CLAMP BAR DETAIL
(4 REQUIRED PER POST)

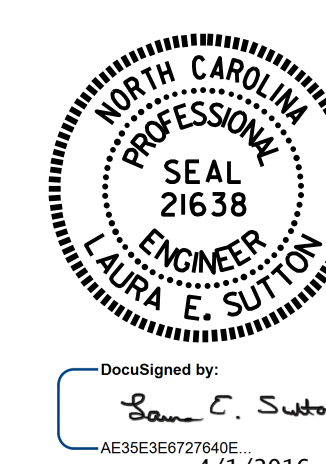


CLAMP ASSEMBLY

DRAWN BY : P.S. ADKINS DATE : 11/25/13
CHECKED BY : L.E. SUTTON DATE : 9/23/14

31-MAR-2016 13:14
R:\Structures\Plans\str\1\U3308.sd.2MR.01.dgn
jdhawk

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED



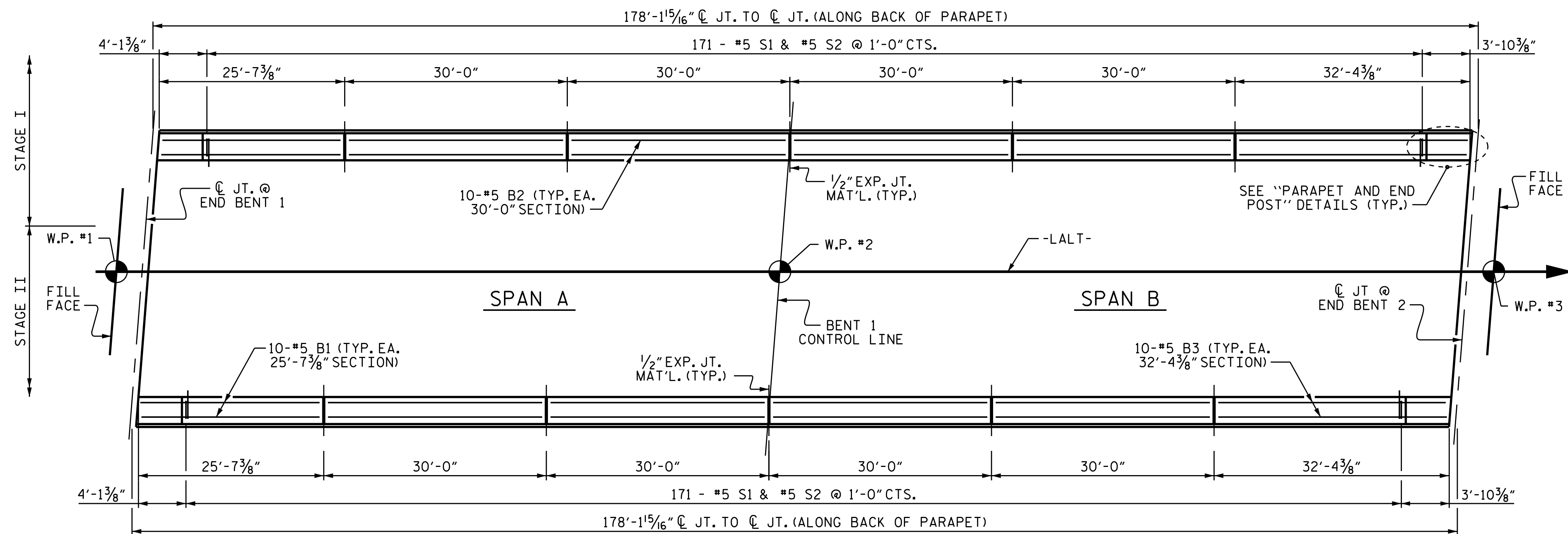
PROJECT NO. U-3308
DURHAM COUNTY
STATION: 16+42.70-LALT-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
ANODIZED
2 BAR METAL RAIL

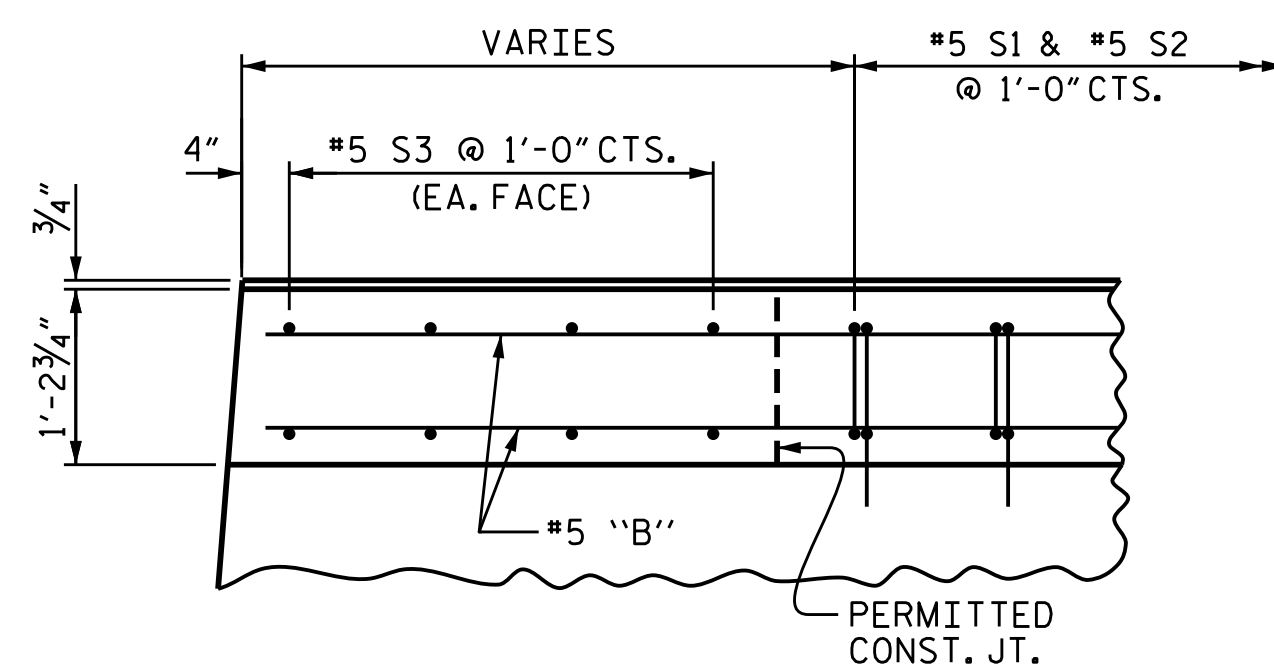
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-25	
1			3			TOTAL SHEETS	
2			4			47	

STR. #1

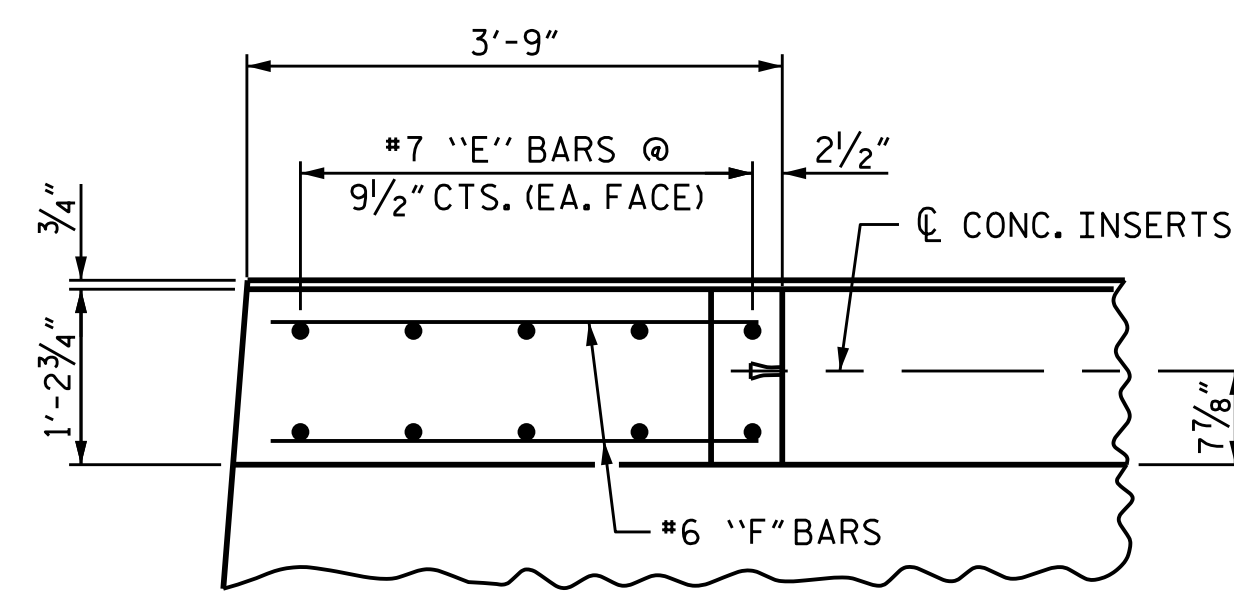


PLAN OF PARAPET

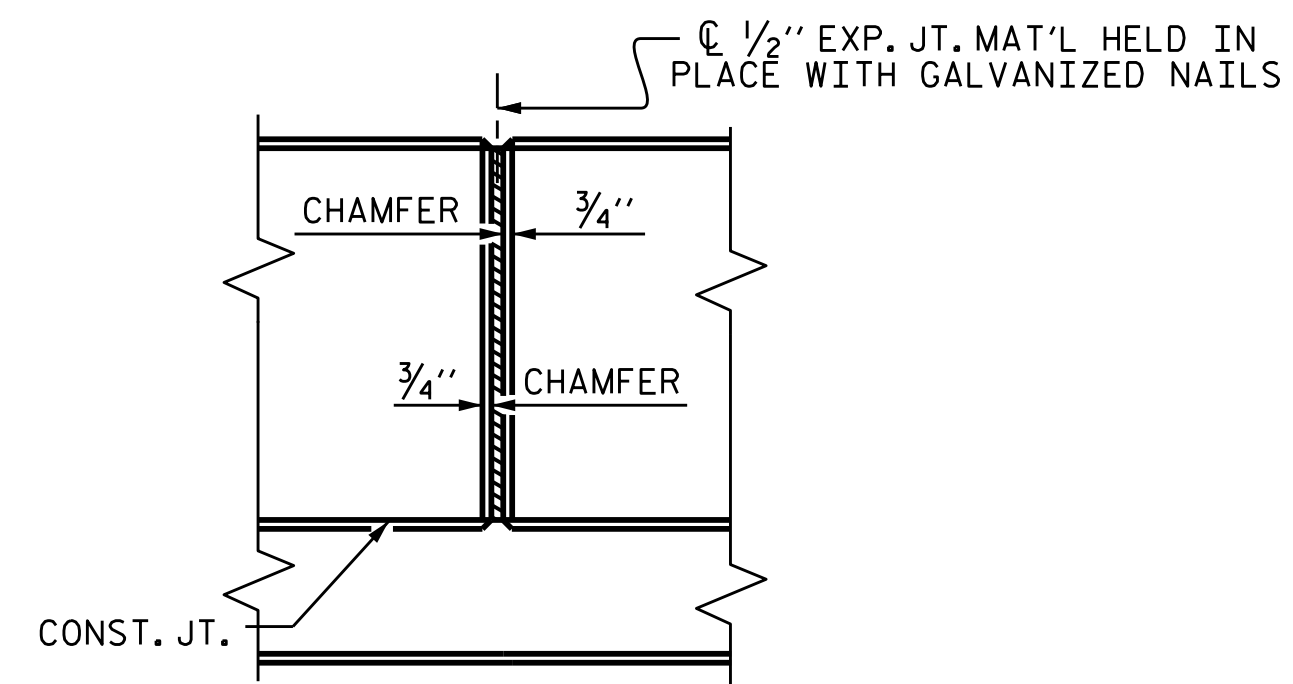
SIDEWALKS NOT SHOWN FOR CLARITY



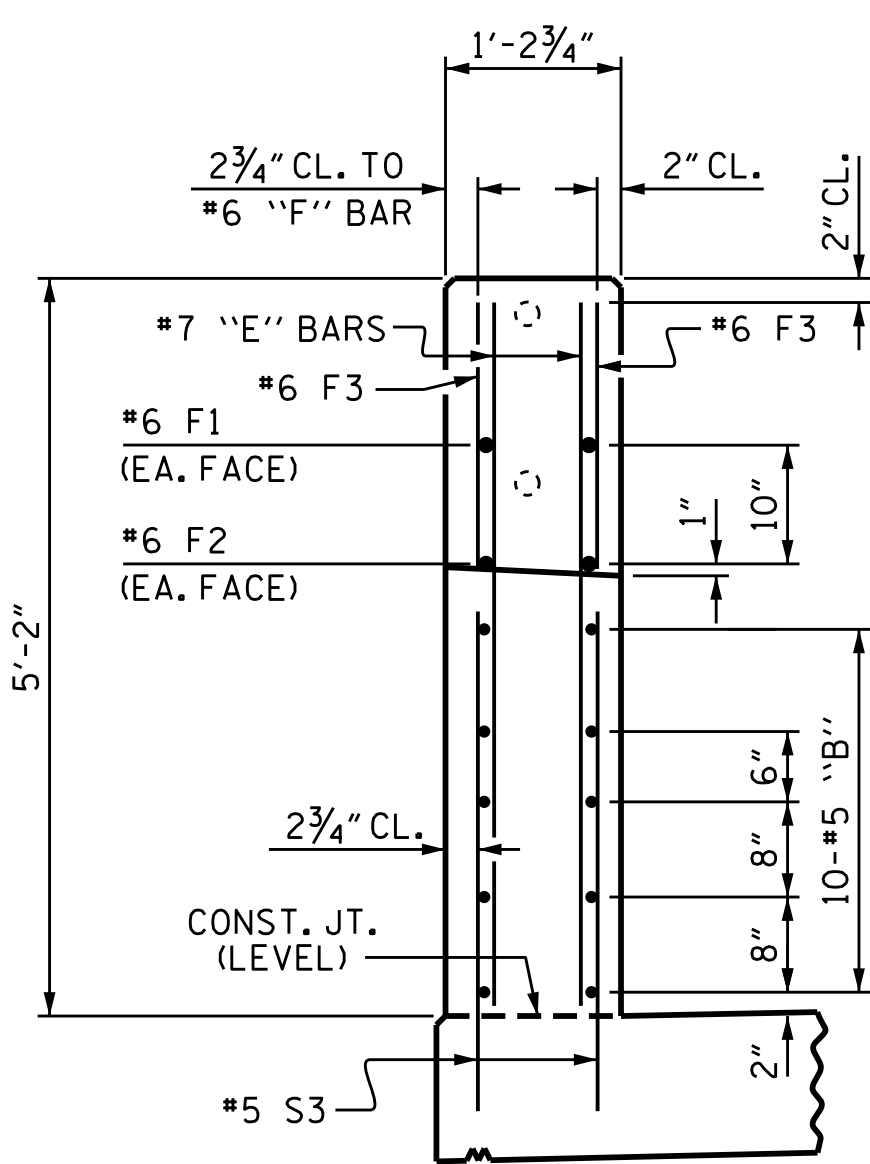
PLAN OF PARAPET



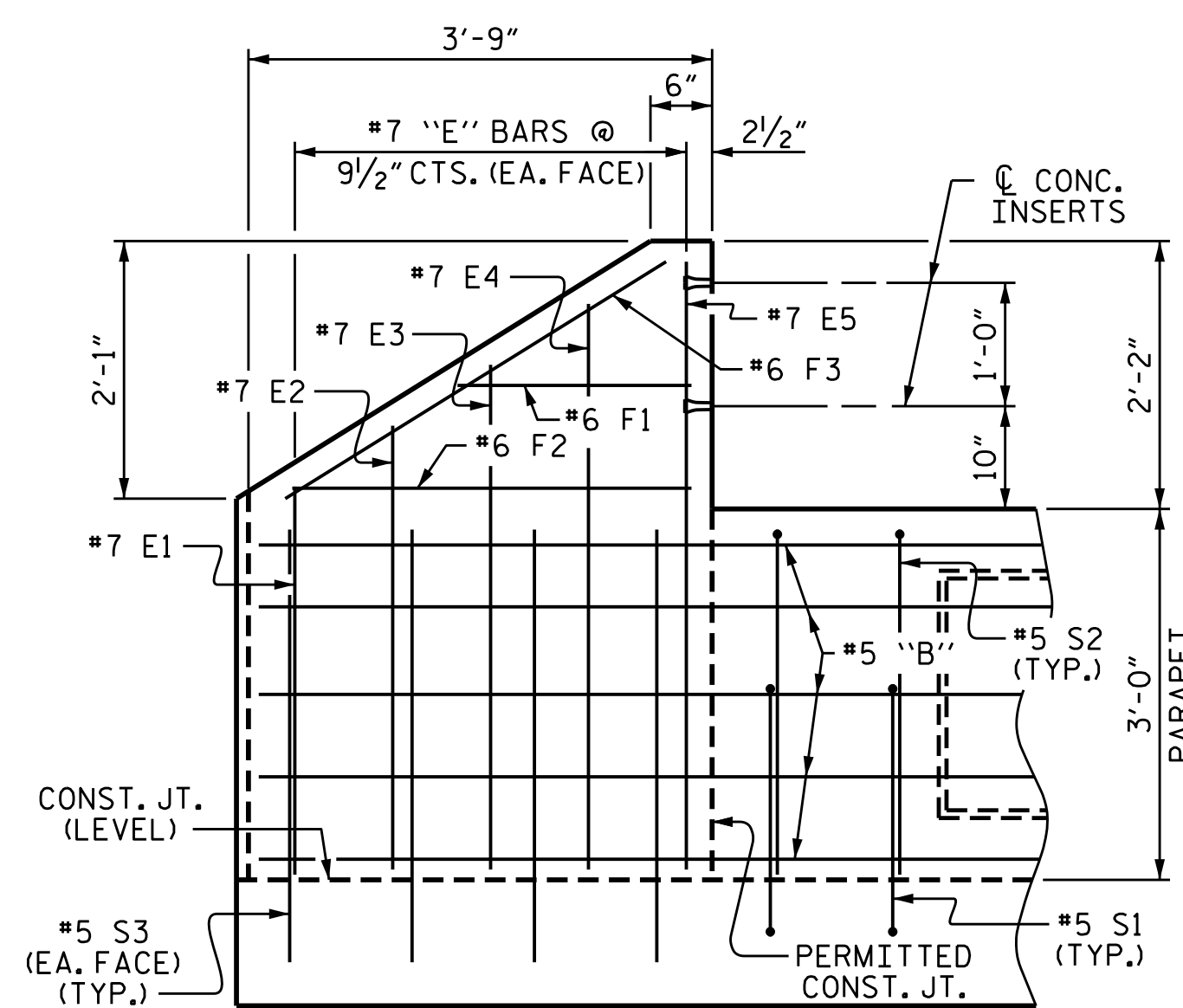
PLAN OF END POST



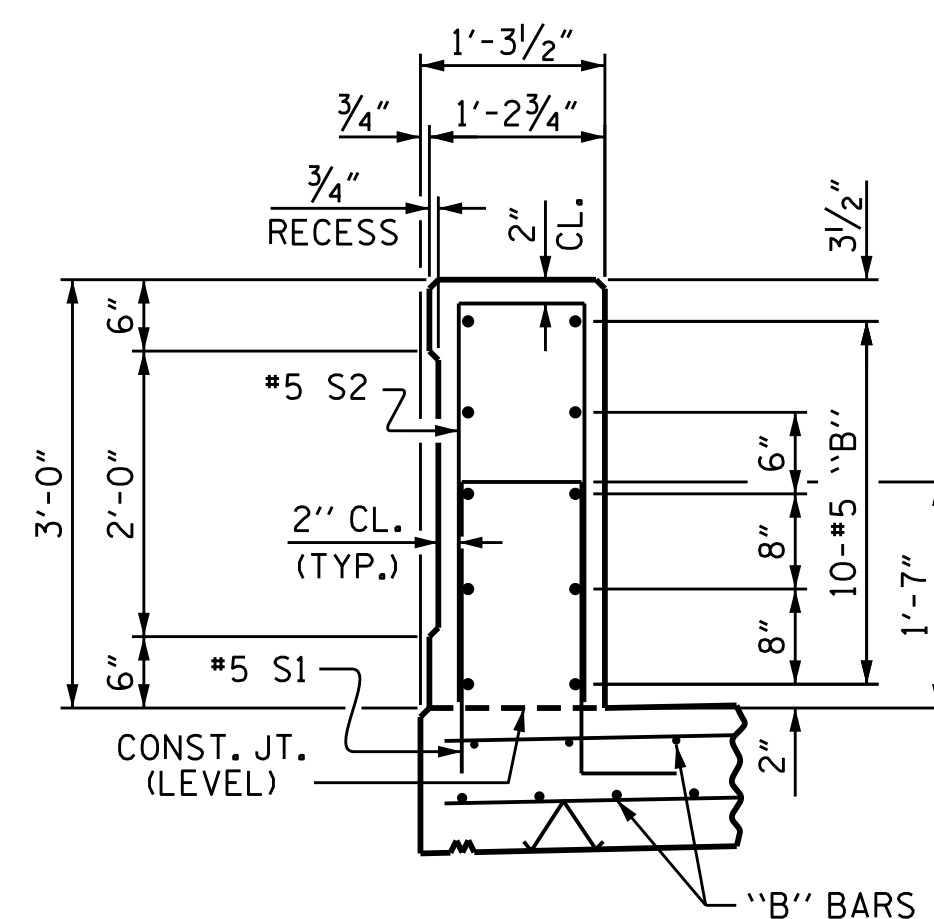
ELEVATION AT EXPANSION JOINTS



END VIEW



ELEVATION



SECTION THROUGH PARAPET
PARAPET DETAILS

NOTES

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

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

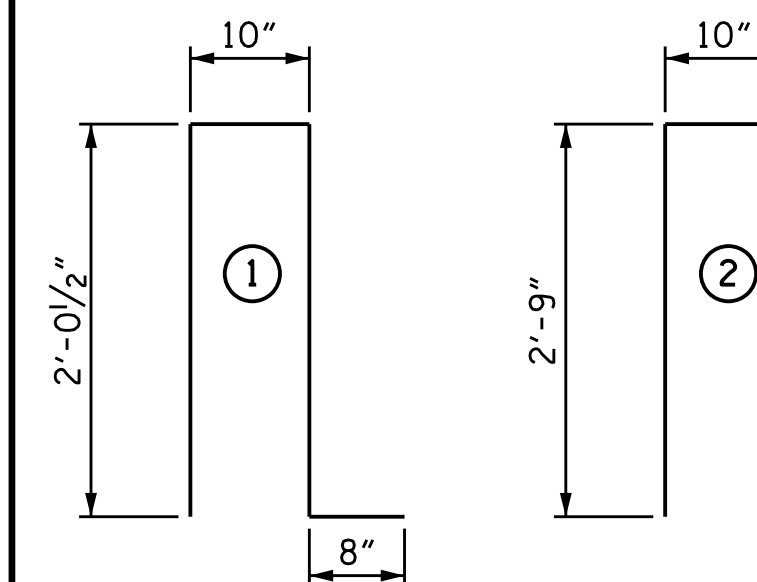
ALL REINFORCING STEEL IN THE PARAPETS AND END POSTS SHALL BE EPOXY COATED.

THE #5 S3 BARS SHALL BE INSTALLED, USING AN ADHESIVE ANCHORING SYSTEM, AFTER SAWING THE JOINT. THE YIELD LOAD FOR THE #5 S3 BARS IS 18.6 KIPS. FIELD TESTING FOR THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED. AT THE CONTRACTOR'S OPTION, EACH PAIR OF #5 S3 BARS IN STAGE II MAY BE REPLACED WITH 1-#5 S1 & 1-#5 S2 PAIR.

FOR LOCATION OF GUARDRAIL ANCHOR ASSEMBLIES, SEE "GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS" SHEET.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. CONTRACTION JOINTS SHALL BE LOCATED 9 FEET ON EACH SIDE OF PARAPET EXPANSION JOINTS WITH NO MORE THAN 12 FEET BETWEEN CONTRACTION JOINTS. CONTRACTION JOINTS SHALL BE ALIGNED WITH RAIL POSTS SO AS TO NOT EXTEND THROUGH THE RECESSED PANELS.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL FOR PARAPET AND 2 END POSTS

STAGE I OR STAGE II

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	10	5	STR	25'-3"	263
* B2	40	5	STR	29'-7"	1234
* B3	10	5	STR	31'-11"	333
* E1	4	7	STR	3'-0"	25
* E2	4	7	STR	3'-6"	29
* E3	4	7	STR	4'-0"	33
* E4	4	7	STR	4'-6"	37
* E5	4	7	STR	4'-10"	40
* F1	4	6	STR	1'-10"	11
* F2	4	6	STR	3'-2"	19
* F3	4	6	STR	3'-7"	22
* S1	171	5	1	5'-7"	996
* S2	171	5	2	6'-4"	1130
* S3	16	5	STR	3'-6"	58

* EPOXY COATED REINFORCING STEEL LBS. 4,230

CLASS AA CONCRETE CU. YDS. 24.1

1'-2 3/4" X 3'-0" CONCRETE PARAPET LIN. FT. 178.16

PROJECT NO. U-3308
DURHAM COUNTY
STATION: 16+42.70-LALT-

SHEET 1 OF 2



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

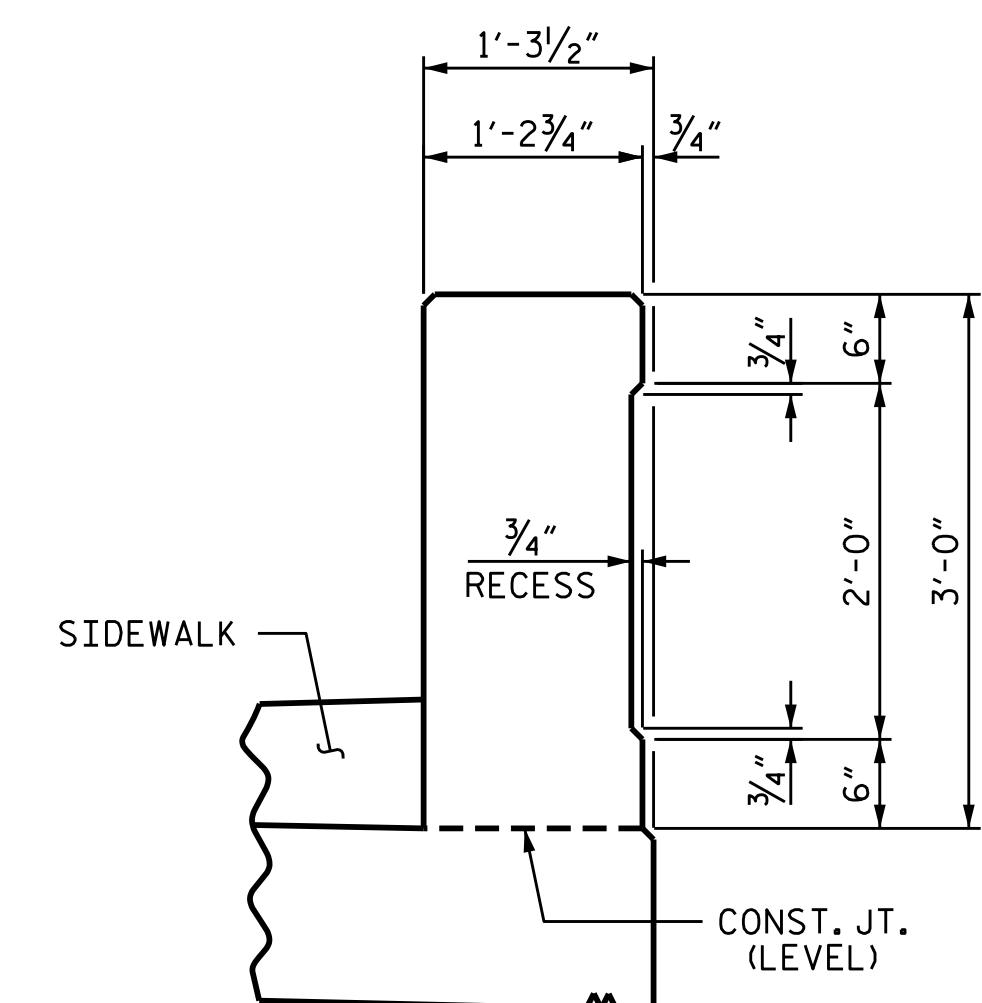
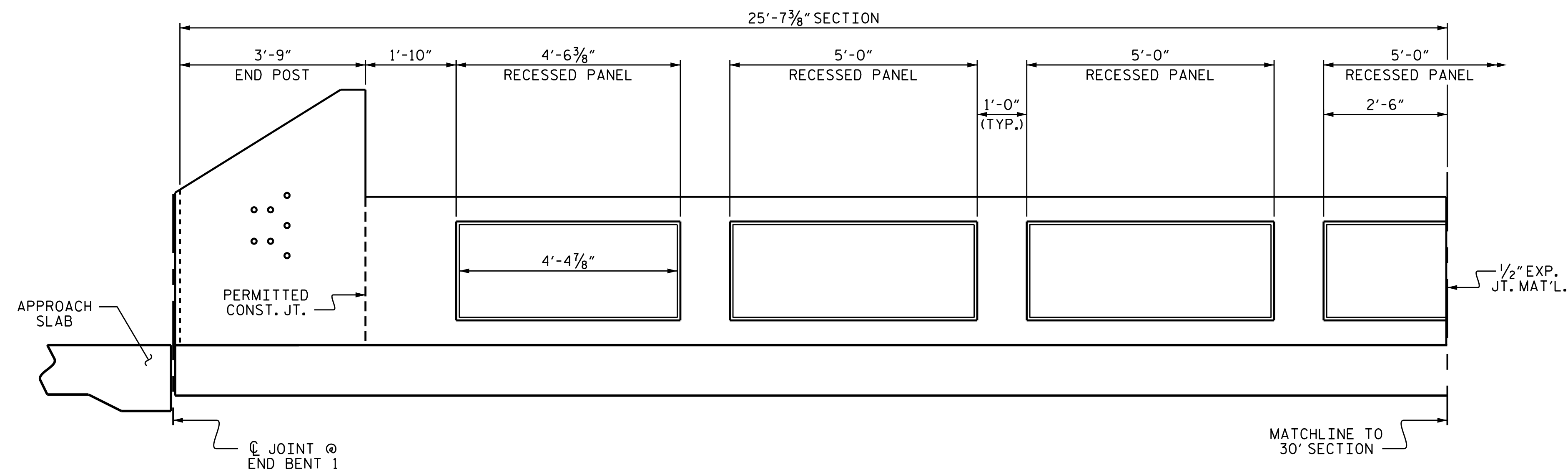
**SUPERSTRUCTURE
CONCRETE PARAPET
& END POST
DETAILS**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-27
1			3			TOTAL SHEETS
2			4			47

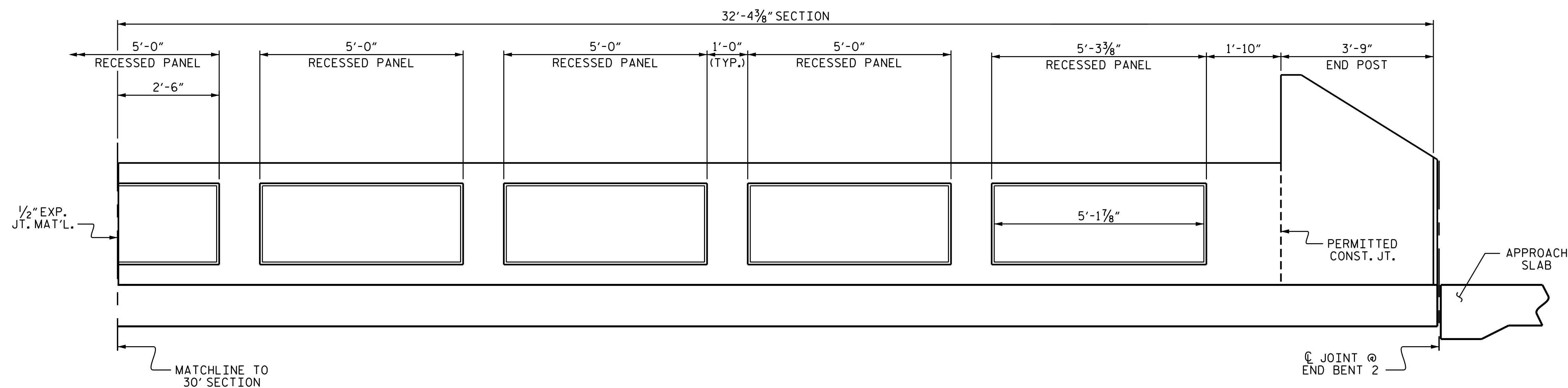
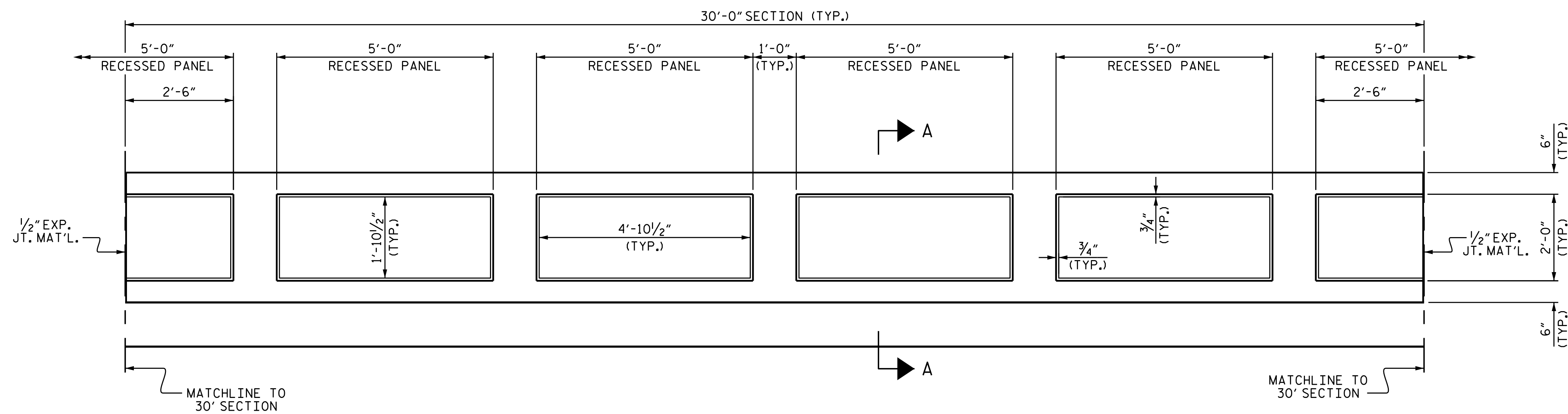
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DRAWN BY: P.S. ADKINS DATE: 8/5/14
CHECKED BY: L.E. SUTTON DATE: 9/24/14

SIDEWALK NOT SHOWN FOR CLARITY



SECTION A-A



PARAPET ELEVATION
RIGHT SIDE SHOWN, LEFT SIDE SIMILAR

PROJECT NO. U-3308
DURHAM COUNTY
 STATION: 16+42.70-LALT-

SHEET 2 OF 2

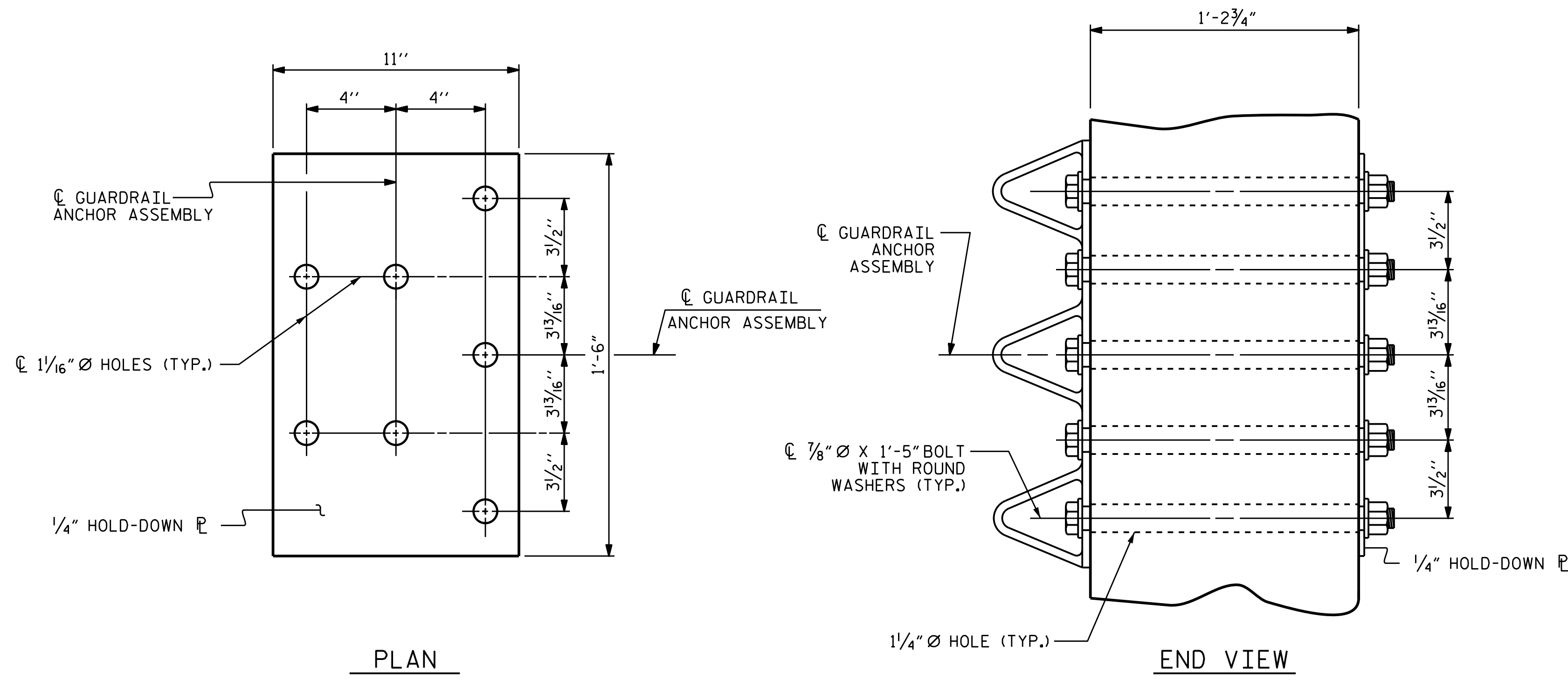


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 CONCRETE PARAPET
 RECESSED PANEL
 DETAILS

DRAWN BY : L.E. SUTTON DATE : 12/12/14
 CHECKED BY : P.S. ADKINS DATE : 12/16/14

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			47
2			4			



GUARDRAIL ANCHOR ASSEMBLY DETAILS

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.

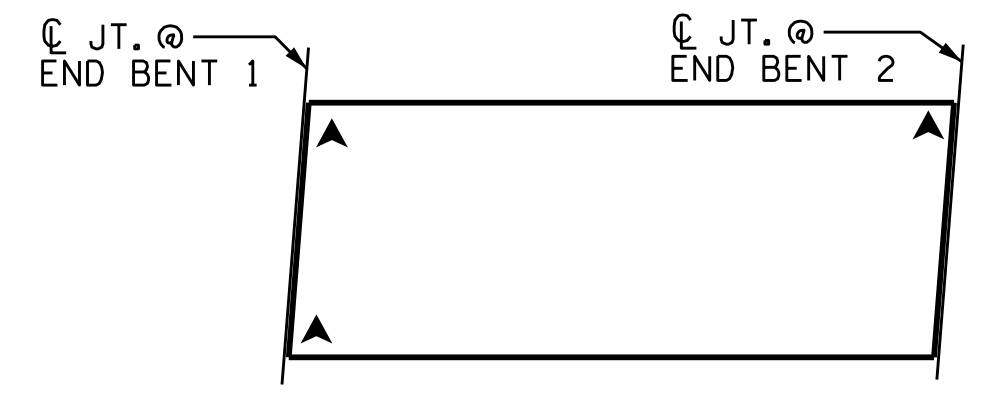
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

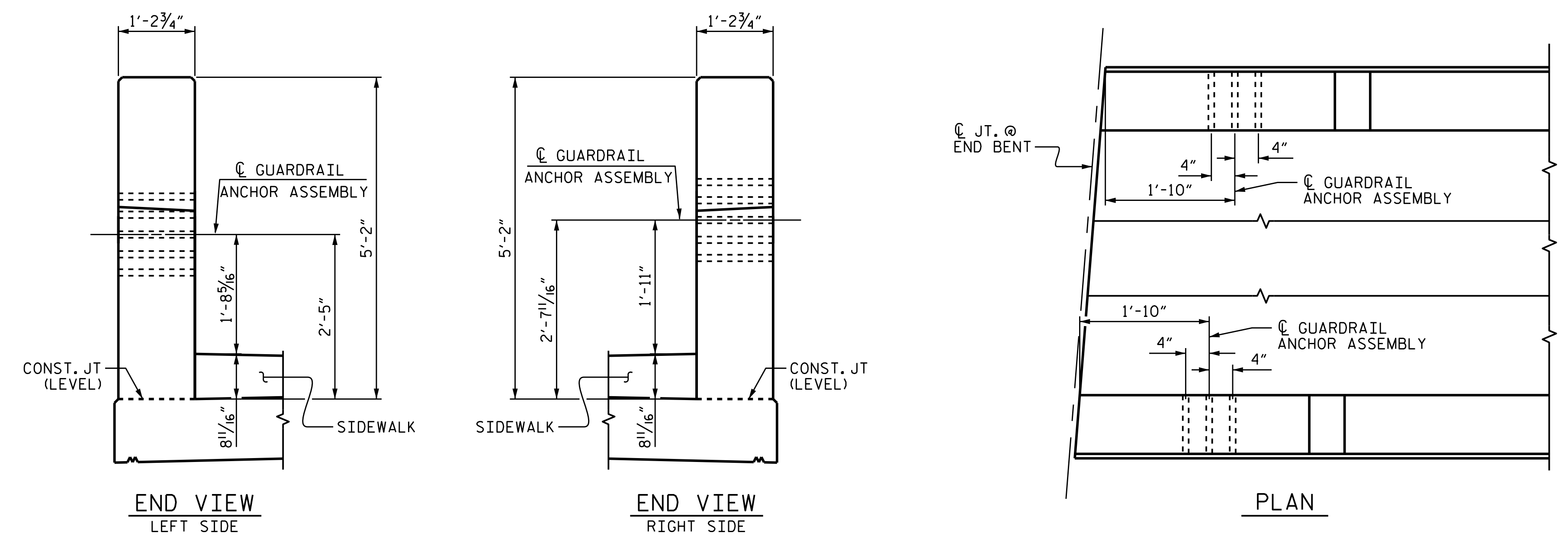
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE END POST TO CLEAR ASSEMBLY BOLTS.

THE 1/4" 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.



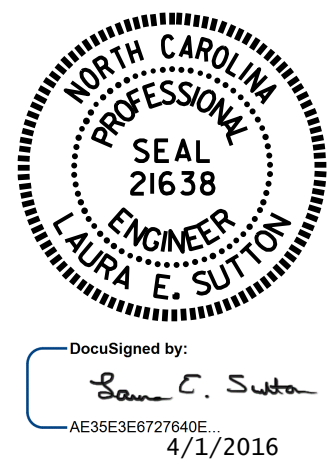
SKETCH SHOWING POINTS OF ATTACHMENT

▲ LOCATION OF GUARDRAIL ATTACHMENT



LOCATION OF GUARDRAIL ANCHOR AT END POST

PROJECT NO. U-3308
DURHAM COUNTY
 STATION: 16+42.70-LALT-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 GUARDRAIL ANCHORAGE
 DETAILS
 FOR METAL RAILS

ASSEMBLED BY : P.S. ADKINS	DATE : 11-20-13
CHECKED BY : L.E. SUTTON	DATE : 9-10-14
DRAWN BY : MAA 5/10	REV. 10/1/11 MAA/GM
CHECKED BY : GM 5/10	REV. 12/5/11 MAA/GM
	REV. 6/13 MAA/GM

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			47
2			4			47

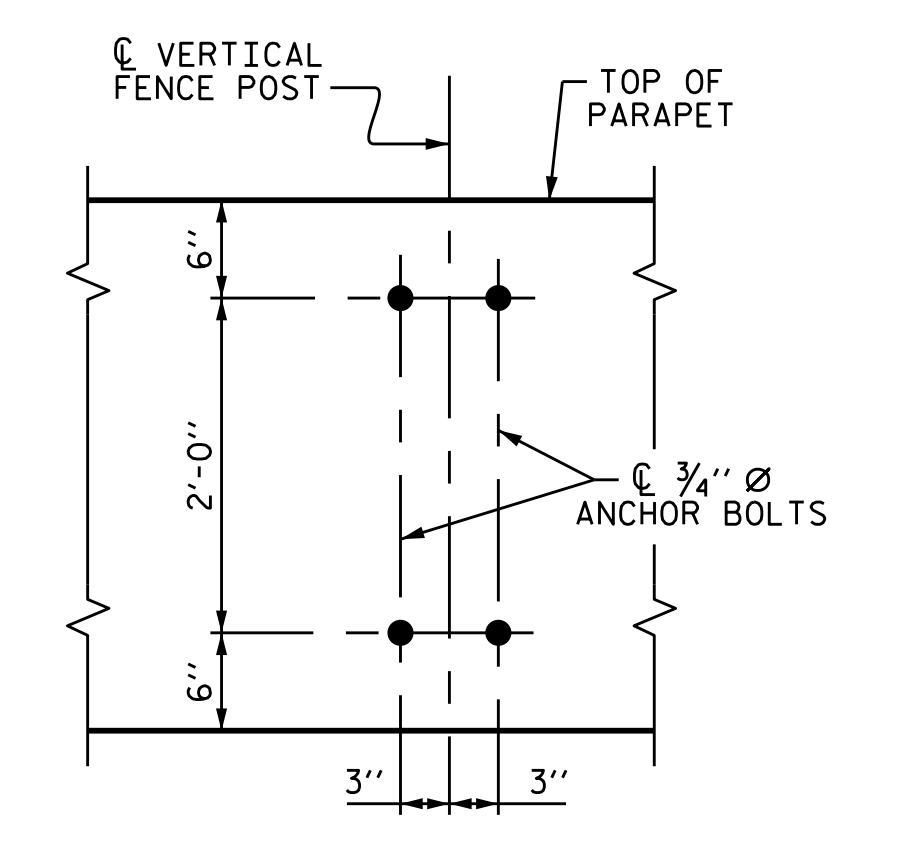
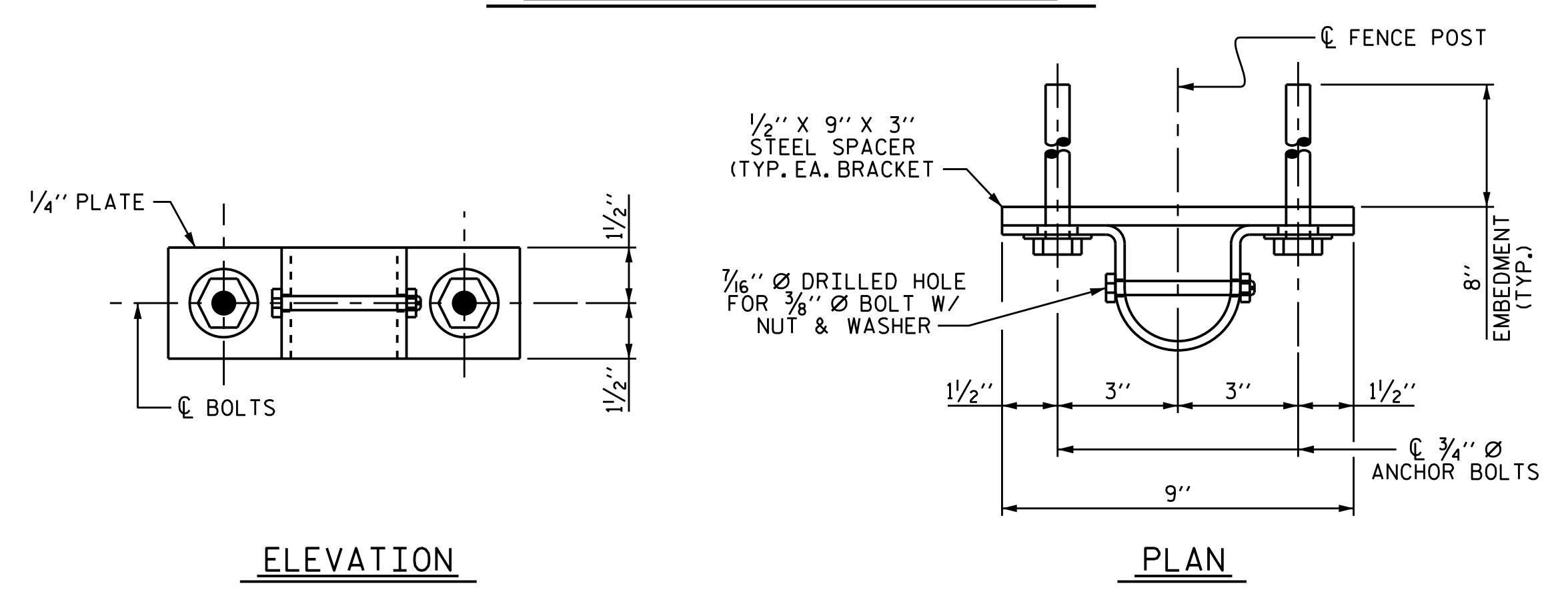
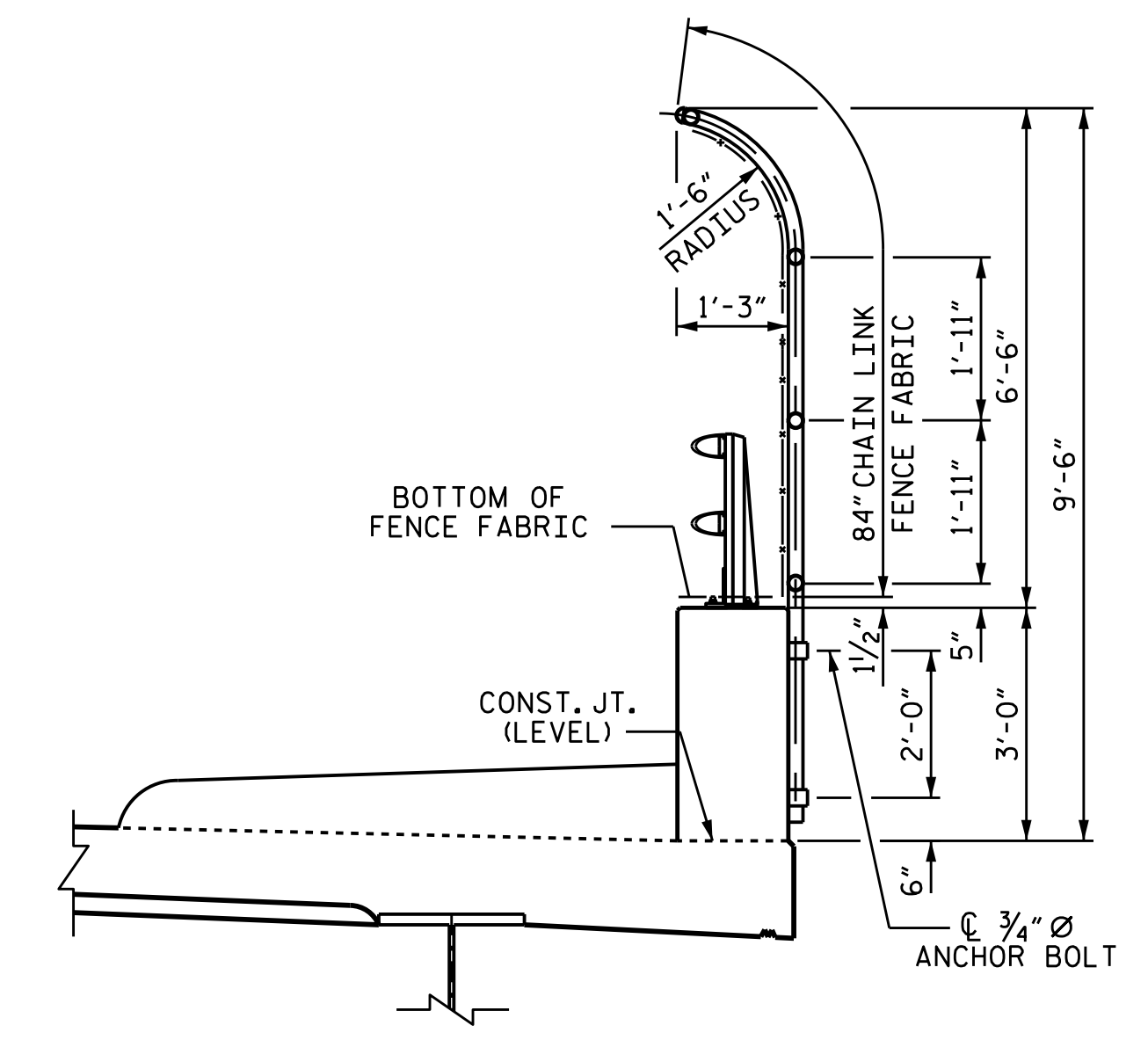
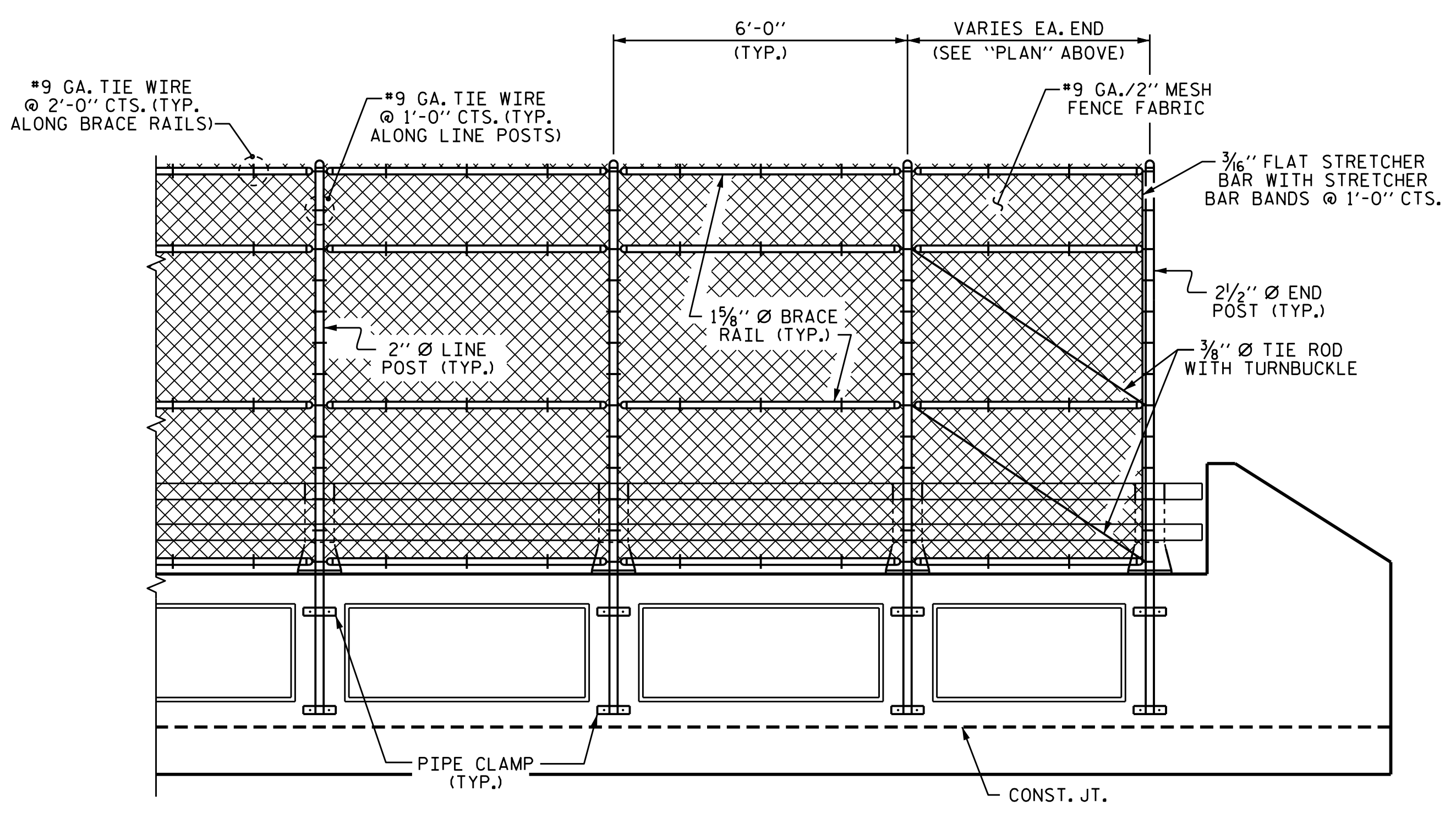
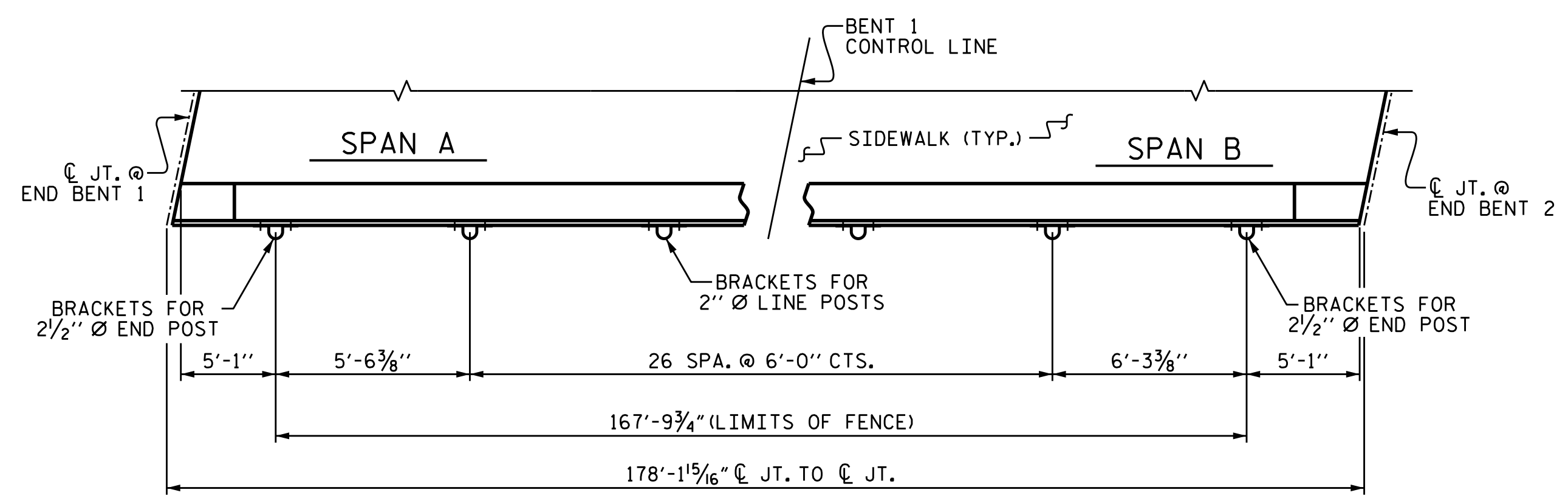
NOTES

FOR BRIDGE MOUNTED CHAIN LINK FENCE, SEE SPECIAL PROVISIONS.
 ALL FENCE MATERIAL SHALL BE BLACK VINYL COATED AND MEET THE REQUIREMENTS OF SECTION 1050 OF THE STANDARD SPECIFICATIONS. GALVANIZE ALL STEEL PARTS AND HARDWARE IN ACCORDANCE WITH ARTICLE 1076 OF THE STANDARD SPECIFICATIONS.

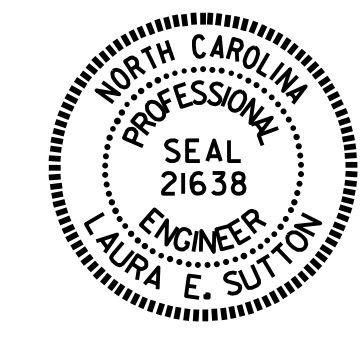
BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.

THE CONTRACTOR MAY USE AN ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF THE METAL RAIL ANCHOR ASSEMBLY. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLTS IS 10 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE THE STANDARD SPECIFICATIONS.

PAY LENGTH	
STAGE II	167.81 LIN. FT.
STAGE III	167.81 LIN. FT.
TOTAL	335.62 LIN. FT.



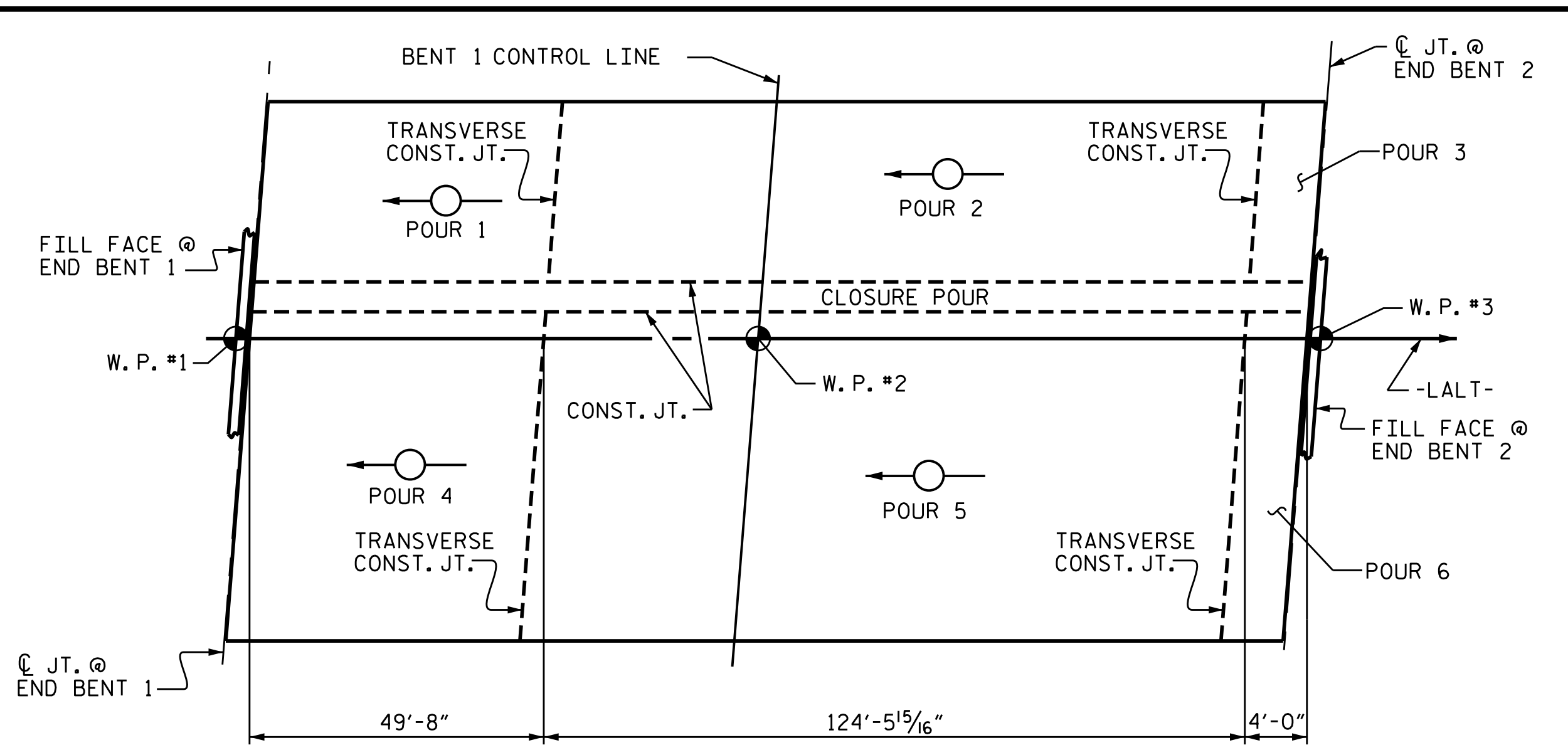
PROJECT NO. U-3308
DURHAM COUNTY
 STATION: 16+42.70-LALT-



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTURTURE BRIDGE MOUNTED CHAIN LINK FENCE					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S1-30					TOTAL SHEETS 47

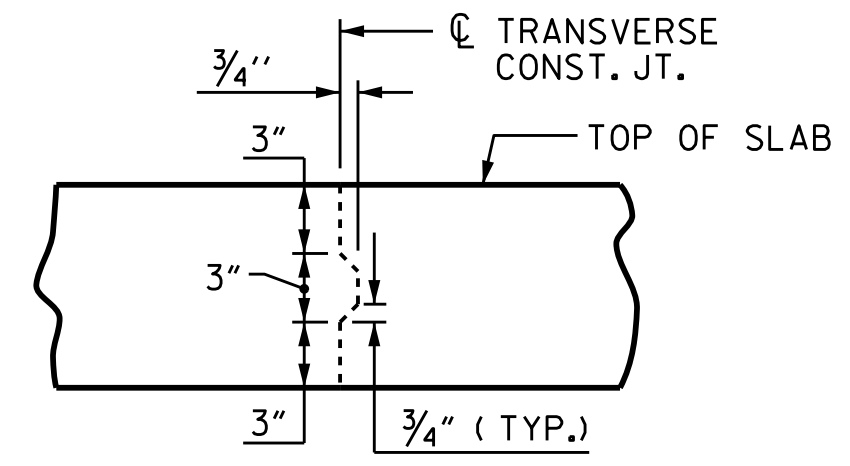
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DRAWN BY: P.S. ADKINS DATE: 8/4/14
 CHECKED BY: L.E. SUTTON DATE: 9/24/14



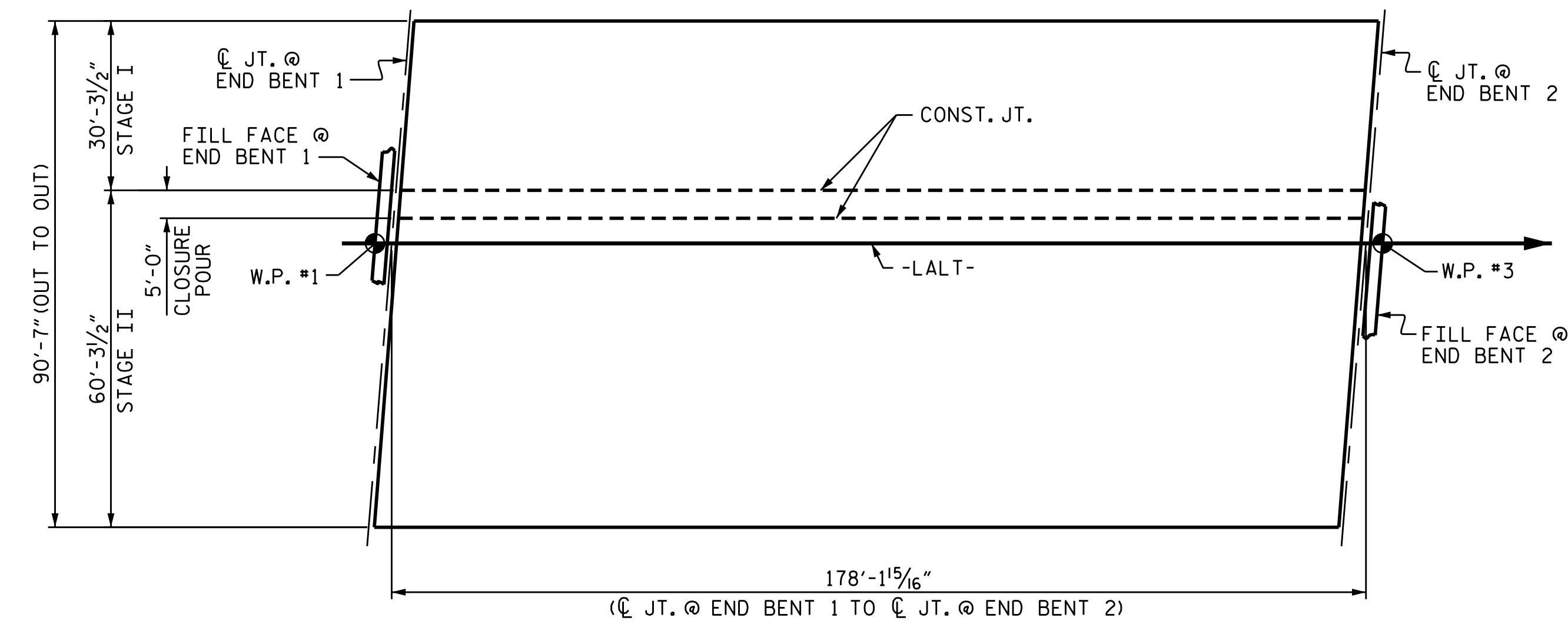
POURING SEQUENCE

NOTE: IF THE CONTRACTOR CHOOSES TO REVERSE THE DIRECTION OF POURS 1 & 4, A CONSTRUCTION JOINT WILL BE REQUIRED 4'-0" FROM THE JOINT SEAL.



TRANSVERSE CONSTRUCTION JOINT DETAIL

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



LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB

STAGE I = 5,397 SQ. FT.
 STAGE II = 10,742 SQ. FT.
 TOTAL = 16,139 SQ. FT.

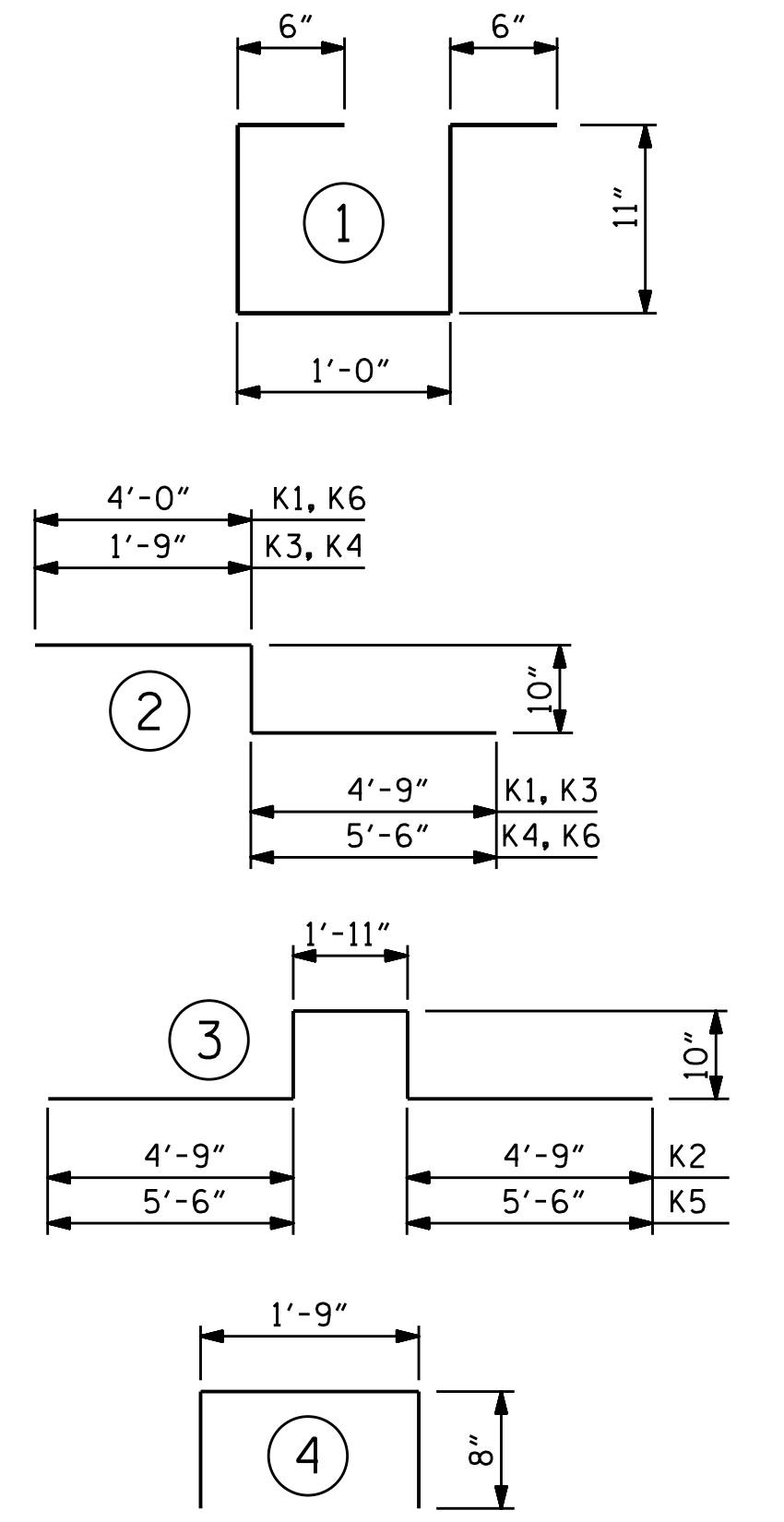
DRAWN BY : P.S. ADKINS DATE : 12-4-13
 CHECKED BY : J.D. HAWK DATE : 9-5-14
 DESIGN ENGINEER OF RECORD: D.R. SMITH DATE : 11-22-14

BILL OF MATERIAL

SPANS A & B

STAGE I					STAGE II						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	381	#5	STR	29'-11"	11,888	*A3	378	#5	STR	54'-11"	21,651
A2	383	#5	STR	29'-11"	11,951	A4	379	#5	STR	54'-11"	21,708
*A101	2	#5	STR	25'-7"	53	*A120	1	#5	STR	50'-7"	53
*A102	2	#5	STR	19'-9"	41	*A121	2	#5	STR	44'-9"	93
*A103	2	#5	STR	13'-11"	29	*A122	2	#5	STR	38'-11"	81
*A104	2	#5	STR	8'-2"	17	*A123	2	#5	STR	33'-2"	69
*A105	2	#5	STR	2'-4"	5	*A124	2	#5	STR	27'-4"	57
A201	2	#5	STR	25'-7"	53	*A125	2	#5	STR	21'-6"	45
A202	2	#5	STR	19'-9"	41	*A126	2	#5	STR	15'-8"	33
A203	2	#5	STR	14'-0"	29	*A127	2	#5	STR	9'-11"	21
A204	2	#5	STR	8'-2"	17	*A128	1	#5	STR	6'-5"	7
A205	2	#5	STR	2'-4"	5	*A129	2	#5	STR	4'-1"	9
*B1	42	#4	STR	29'-4"	823	A220	2	#5	STR	50'-7"	106
*B2	80	#5	STR	59'-6"	4,965	A221	2	#5	STR	44'-9"	93
*B3	63	#4	STR	23'-0"	968	A222	2	#5	STR	39'-0"	81
B4	176	#5	STR	46'-1"	8,459	A223	2	#5	STR	33'-2"	69
						A224	2	#5	STR	27'-4"	57
						A225	2	#5	STR	21'-6"	45
*D1	386	#5	STR	6'-0"	2,416	A226	2	#5	STR	15'-9"	33
D2	388	#5	STR	6'-0"	2,428	A227	2	#5	STR	9'-11"	21
						A228	2	#5	STR	4'-1"	9
*G1	2	#5	STR	30'-0"	63						
*K1	4	#5	2	9'-7"	40	*B1	84	#4	STR	29'-4"	1,646
*K2	8	#5	3	13'-1"	109	*B2	160	#5	STR	59'-6"	9,929
*K3	4	#5	2	7'-4"	31	*B3	126	#4	STR	23'-0"	1,936
						B4	356	#5	STR	46'-1"	17,111
*S1	42	#4	1	3'-10"	108	*B11	35	#4	STR	27'-2"	635
REINFORCING STEEL LBS. 22,983					REINFORCING STEEL LBS. 41,761						
* EPOXY COATED REINFORCING STEEL LBS. 21,556					* EPOXY COATED REINFORCING STEEL LBS. 40,088						
STAGE III											
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*G11	178	#4	STR	4'-10"	575						
REINFORCING STEEL LBS. 2,416					REINFORCING STEEL LBS. 1,210						
* EPOXY COATED REINFORCING STEEL LBS. 21,556					* EPOXY COATED REINFORCING STEEL LBS. 1,210						

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

SUPERSTRUCTURE BILL OF MATERIAL

	CLASS AA CONCRETE (CU. YDS.)	REINFORCING STEEL (LBS.)	EPOXY COATED REINFORCING STEEL (LBS.)
STAGE I			
POUR #1	49.2		
POUR #2	120.2	22,983	21,556
POUR #3	10.1		
STAGE II			
POUR #4	88.9		
POUR #5	223.2	41,761	40,088
POUR #6	14.0		
CLOSURE POUR	25.1		
SIDEWALK	21.8		
STAGE III			
SIDEWALK	21.8		1,210
TOTALS **	574.3	64,744	62,854

** QUANTITIES FOR PARAPET ARE NOT INCLUDED.

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"			

PROJECT NO. U-3308
 DURHAM COUNTY
 STATION: 16+42.70-LALT-

GROOVING BRIDGE FLOORS

	STAGE I SQ.FT.	STAGE II SQ.FT.	TOTAL SQ.FT.
APPROACH SLABS	1,090	2,679	3,769
BRIDGE DECK	4,067	9,991	14,058
TOTAL	5,157	12,670	17,827



DocuSigned by:
 Donald R. Smith, Jr.
 EDC87706174B480
 4/1/2016

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE BILL OF MATERIAL

REVISIONS						SHEET NO. S1-31
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 47
2			4			

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NOTES

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

INSTALL THE 4" DIA. 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.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

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

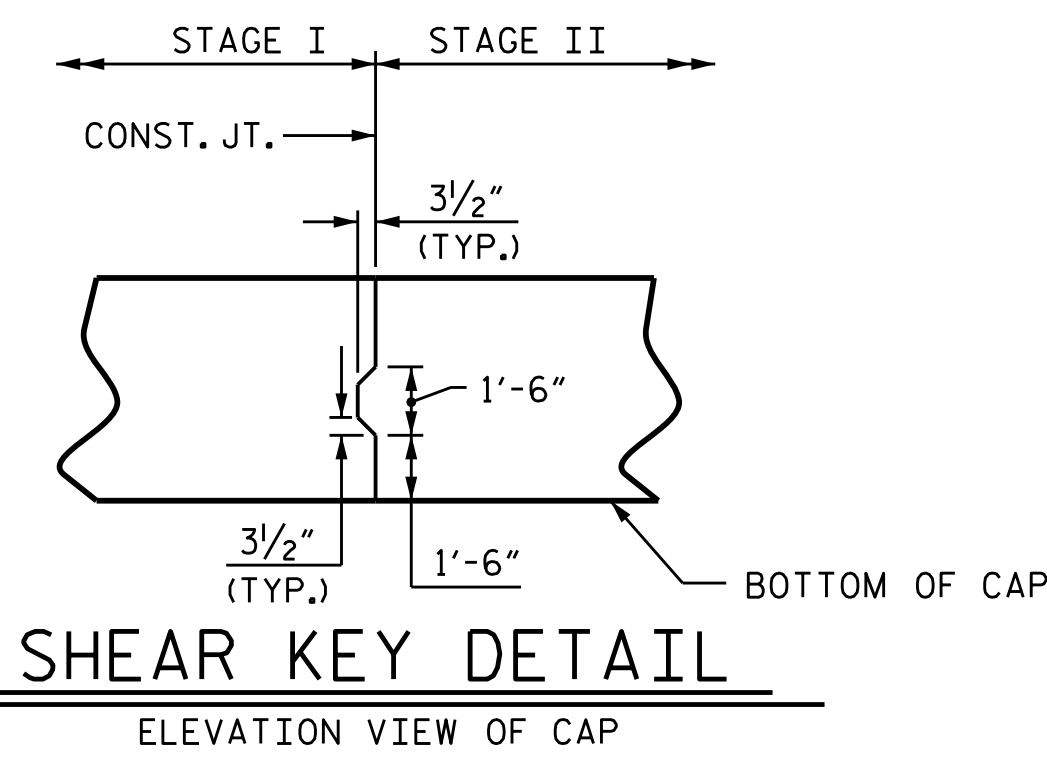
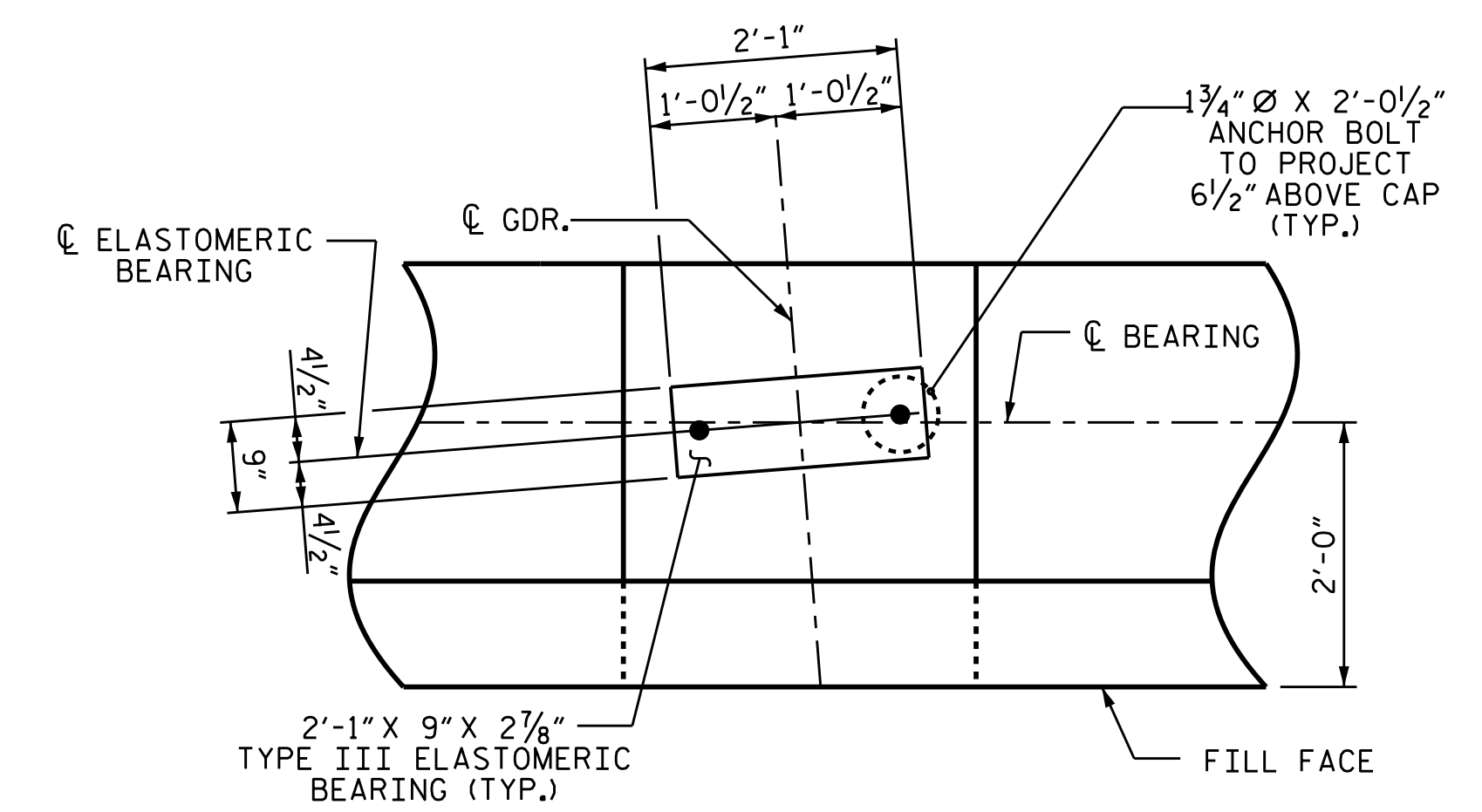
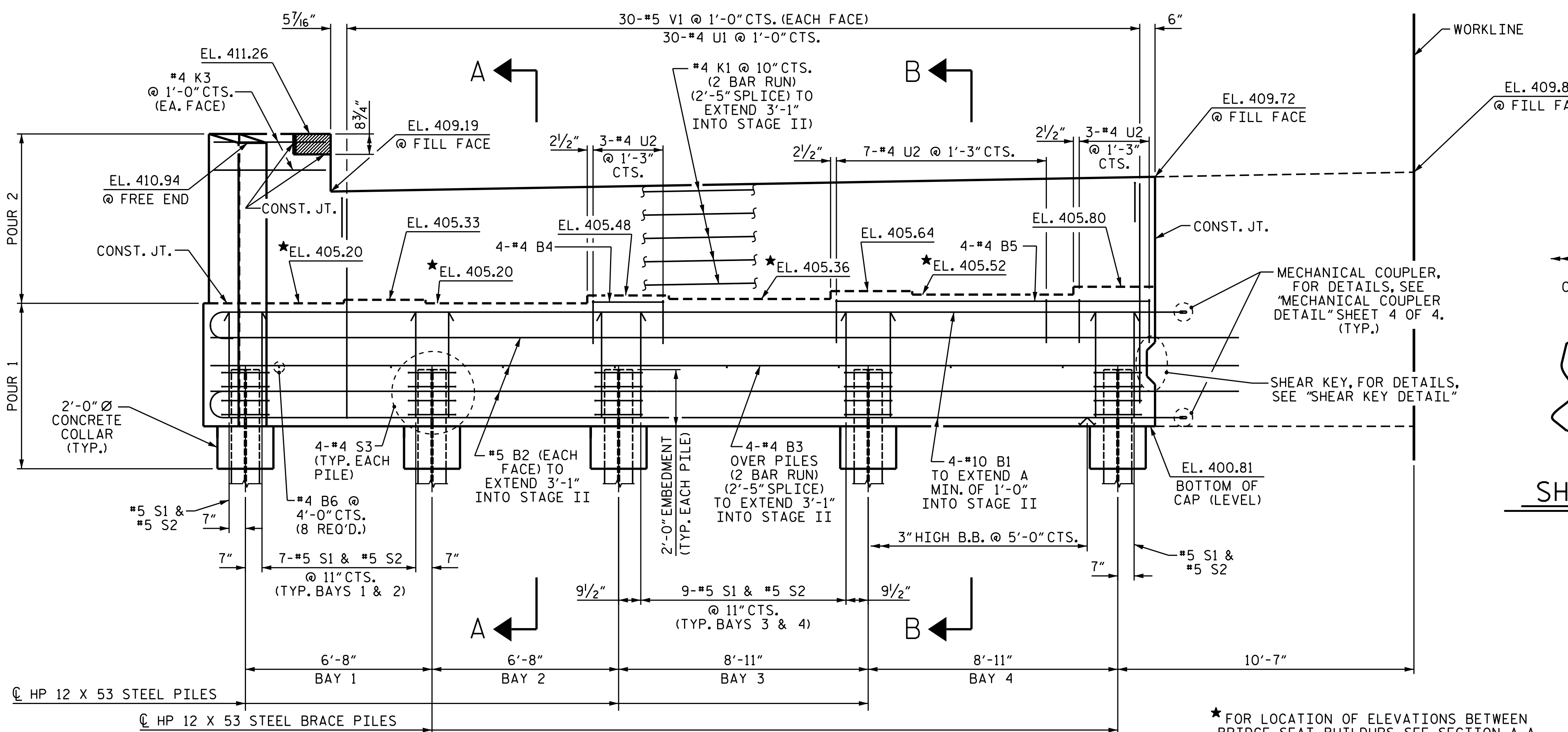
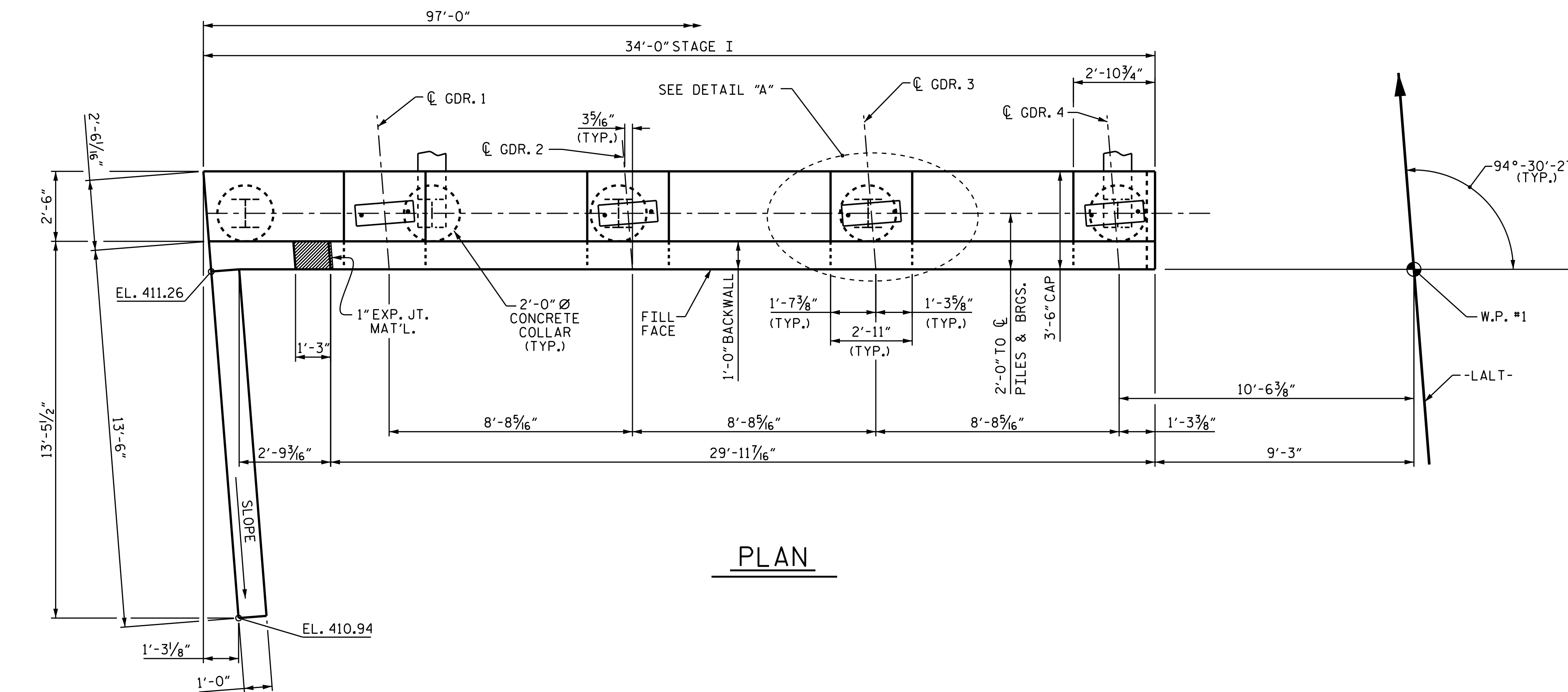
THE TOP SURFACE OF THE END BENT CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE JOINT BETWEEN THE DECK AND THE APPROACH SLAB HAS BEEN SAWED AND THE PARAPET AND END POST ARE CAST IF SLIP FORMING IS USED.

EPOXY COAT THE END BENT CAP AFTER ADJUSTMENTS ARE MADE TO BEARINGS.

THE #5 B2, #4 B3, AND #4 K1 THAT ARE EXTENDED INTO STAGE II MAY BE TEMPORARILY BENT OUT OF THE WAY IF THEY ARE IN CONFLICT AND BENT BACK INTO PLACE PRIOR TO POURING STAGE II.

THE #10 "B" BARS SHALL BE LOCATED TO ENSURE ADEQUATE COVER IS PROVIDED TO THE MECHANICAL COUPLERS IN STAGE II.

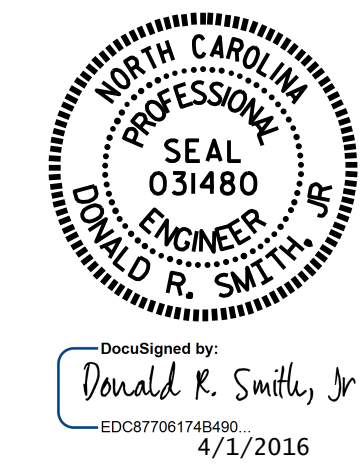


PROJECT NO. U-3308
DURHAM COUNTY
 STATION: 16+42.70-LALT-

SHEET 1 OF 4

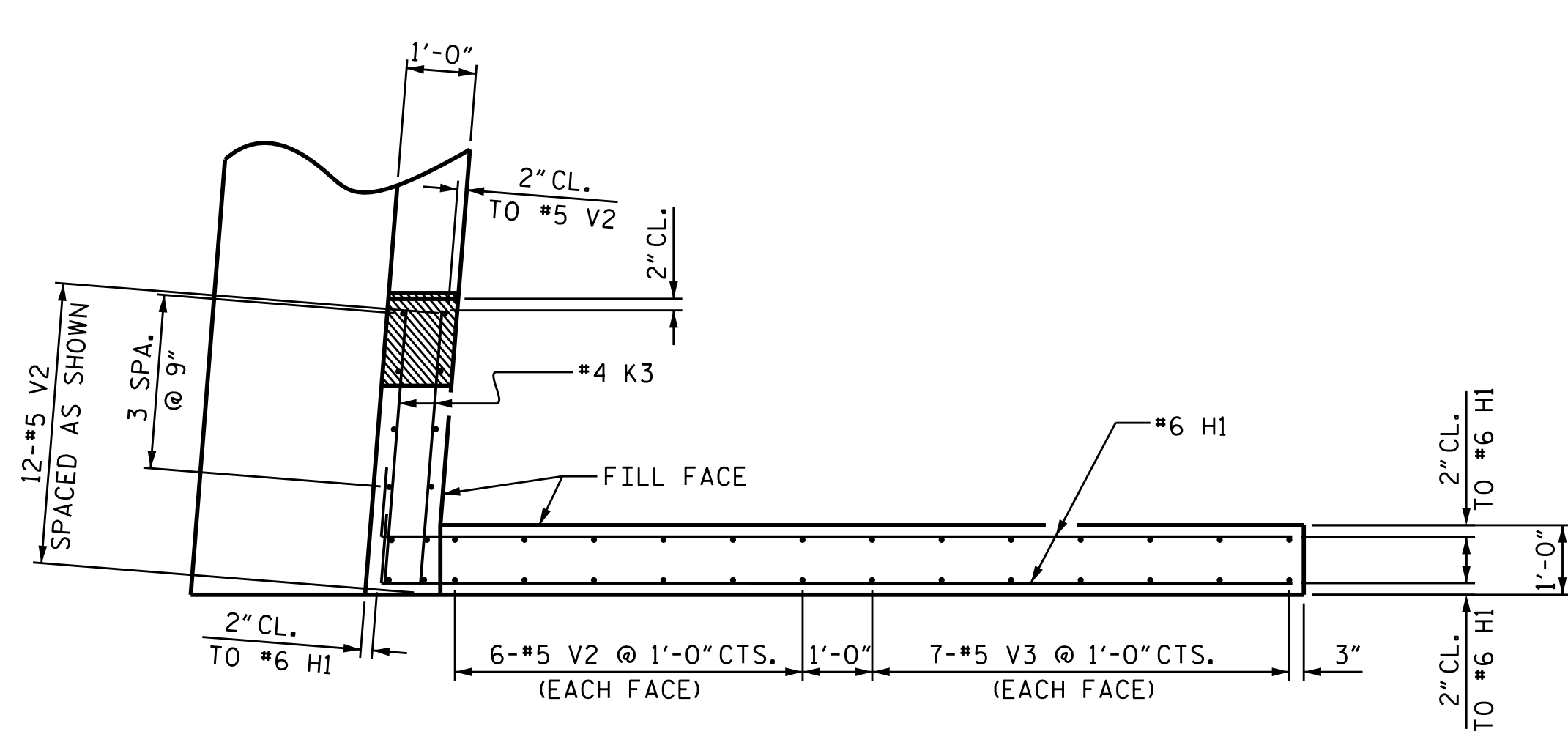
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 1
 STAGE I

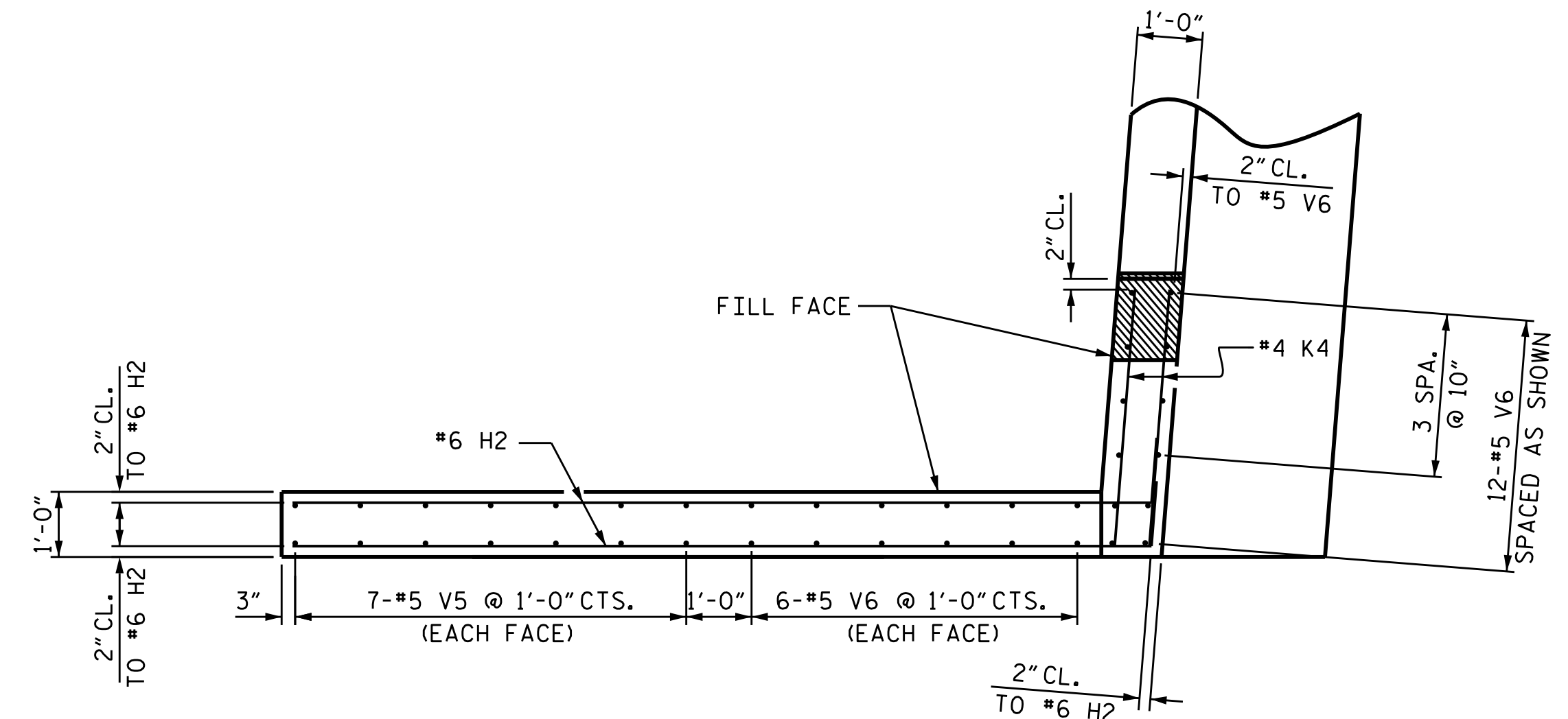


DRAWN BY: P.S. ADKINS DATE: 10-29-14
 CHECKED BY: J.D. HAWK DATE: 11/20/14
 DESIGN ENGINEER OF RECORD: H. LOCKLEAR DATE: 12/17/14

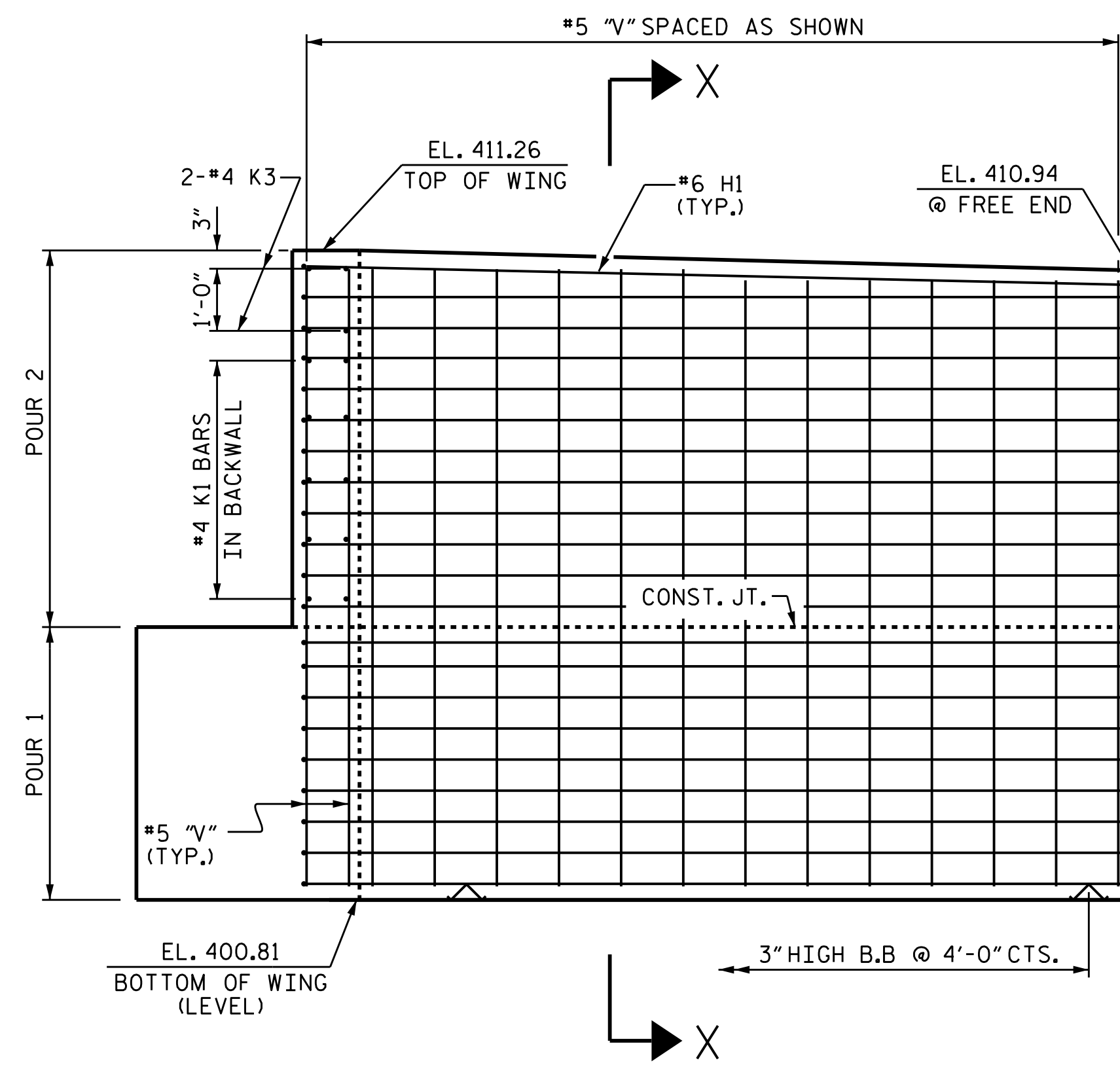
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-32
1			3			TOTAL SHEETS
2			4			47



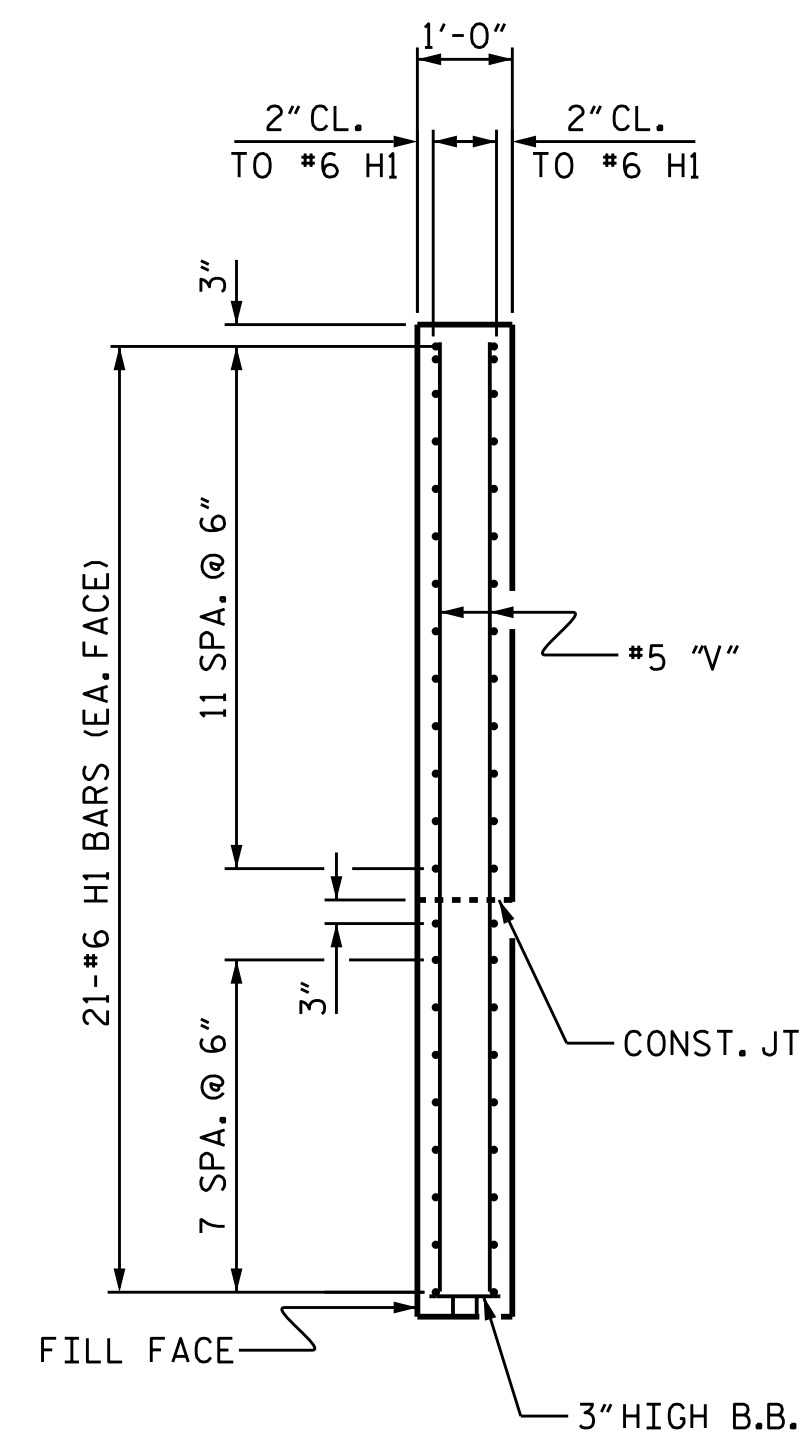
PLAN OF LEFT WING
(STAGE I)



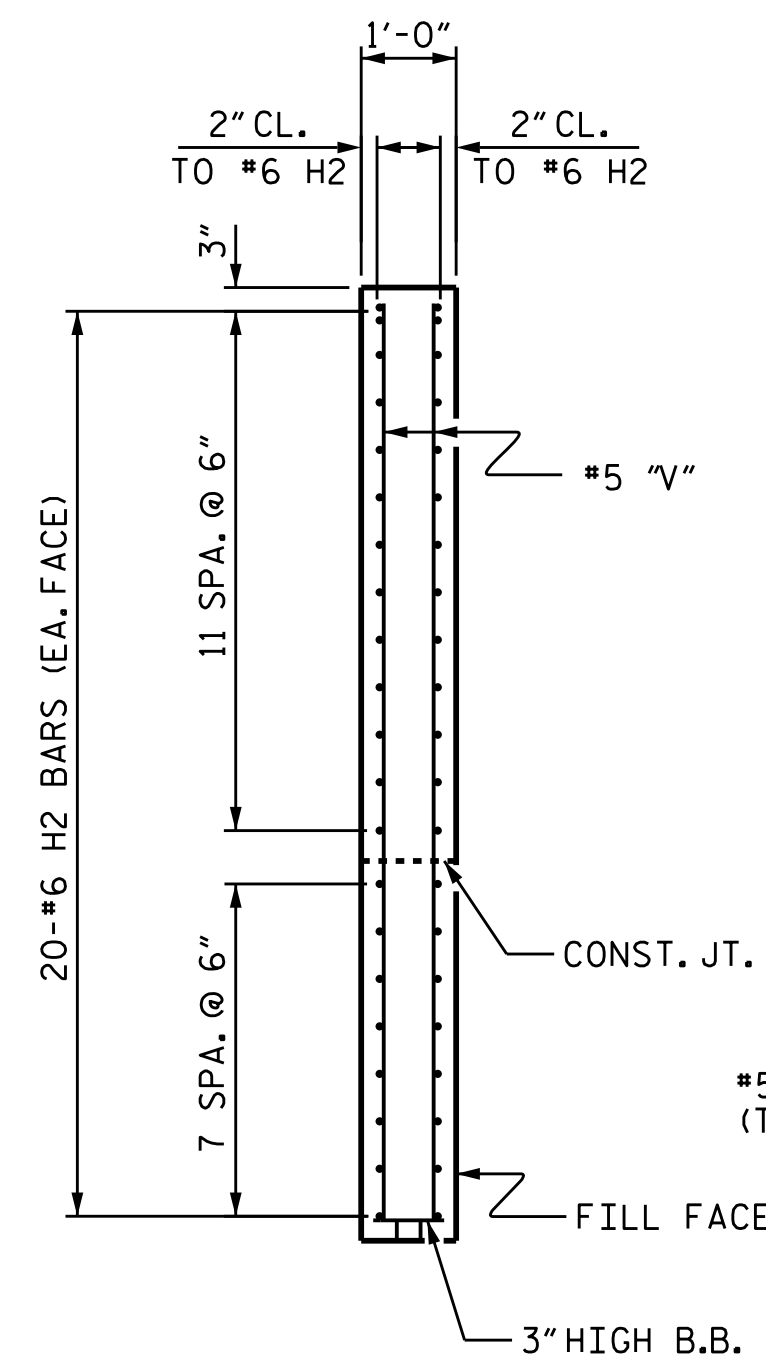
PLAN OF RIGHT WING
(STAGE II)



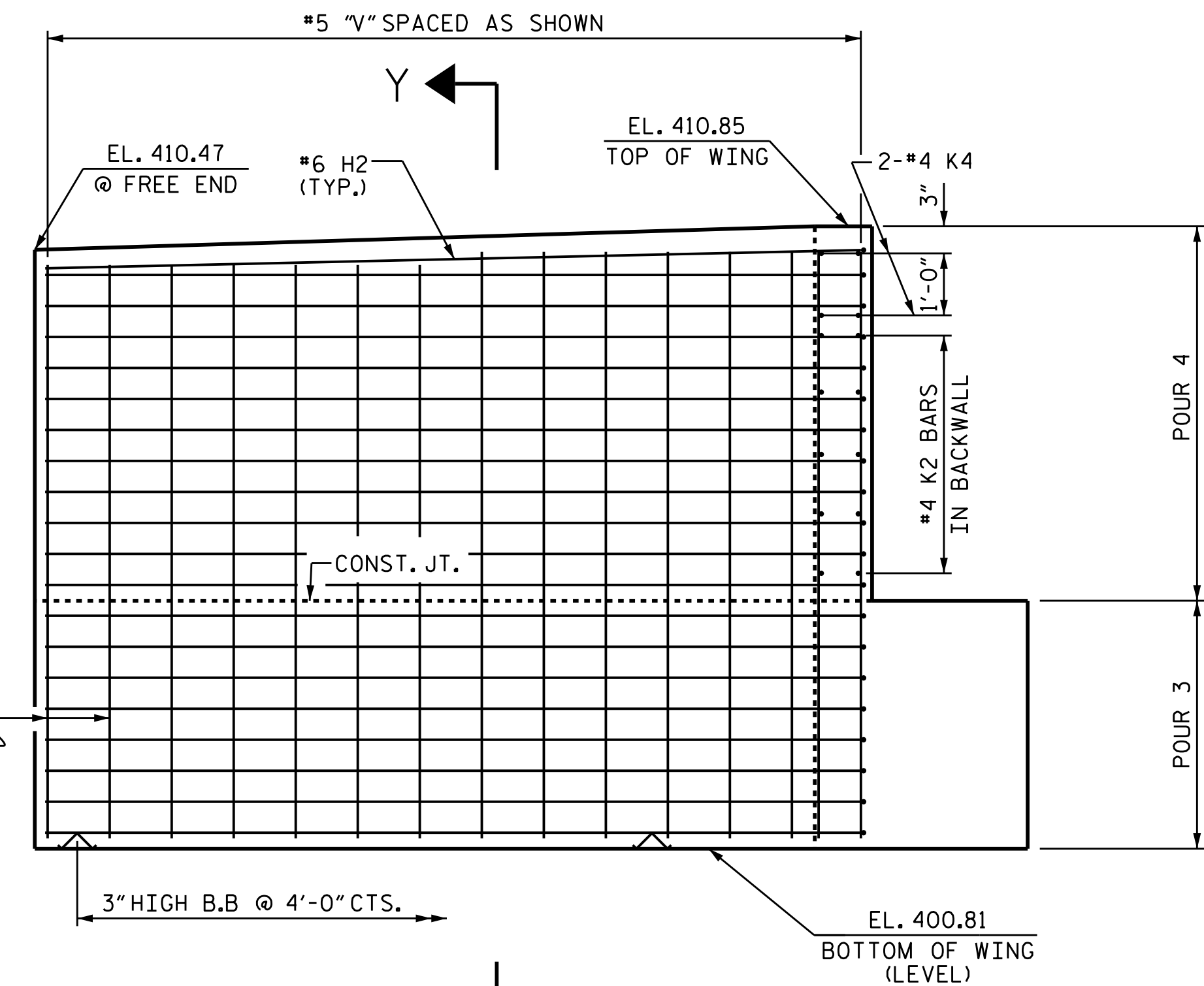
ELEVATION OF LEFT WING
(STAGE I)



SECTION X-X



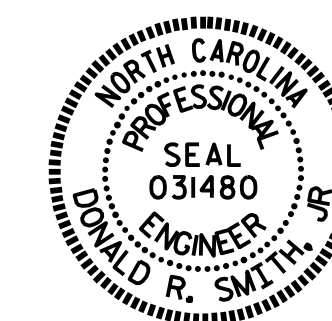
SECTION Y-Y



ELEVATION OF RIGHT WING
(STAGE II)

PROJECT NO. U-3308
DURHAM COUNTY
STATION: 16+42.70-LALT-

SHEET 3 OF 4



DocuSigned by:
Donald R. Smith, Jr.
EDC87706174B490
4/1/2016

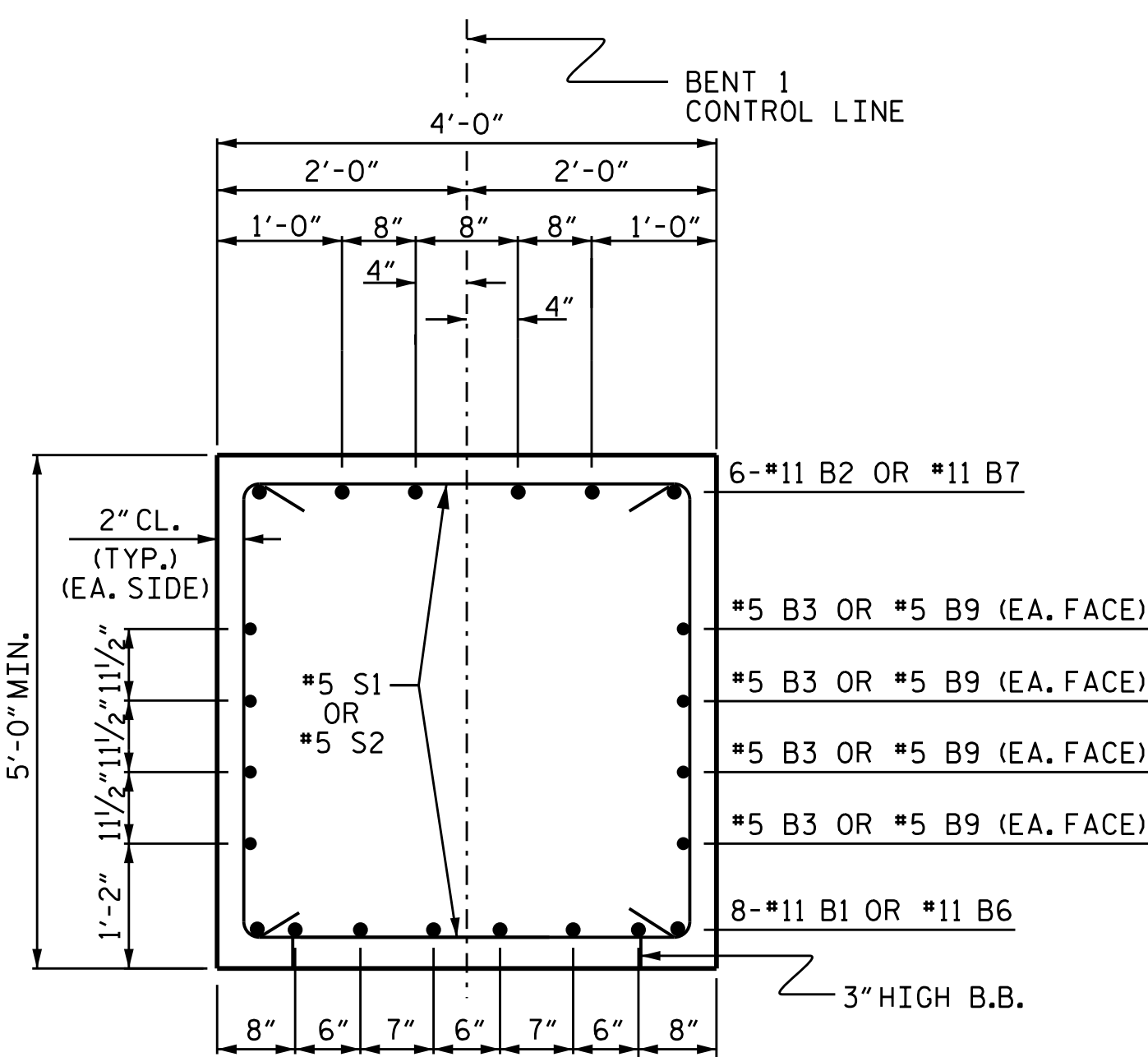
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 1

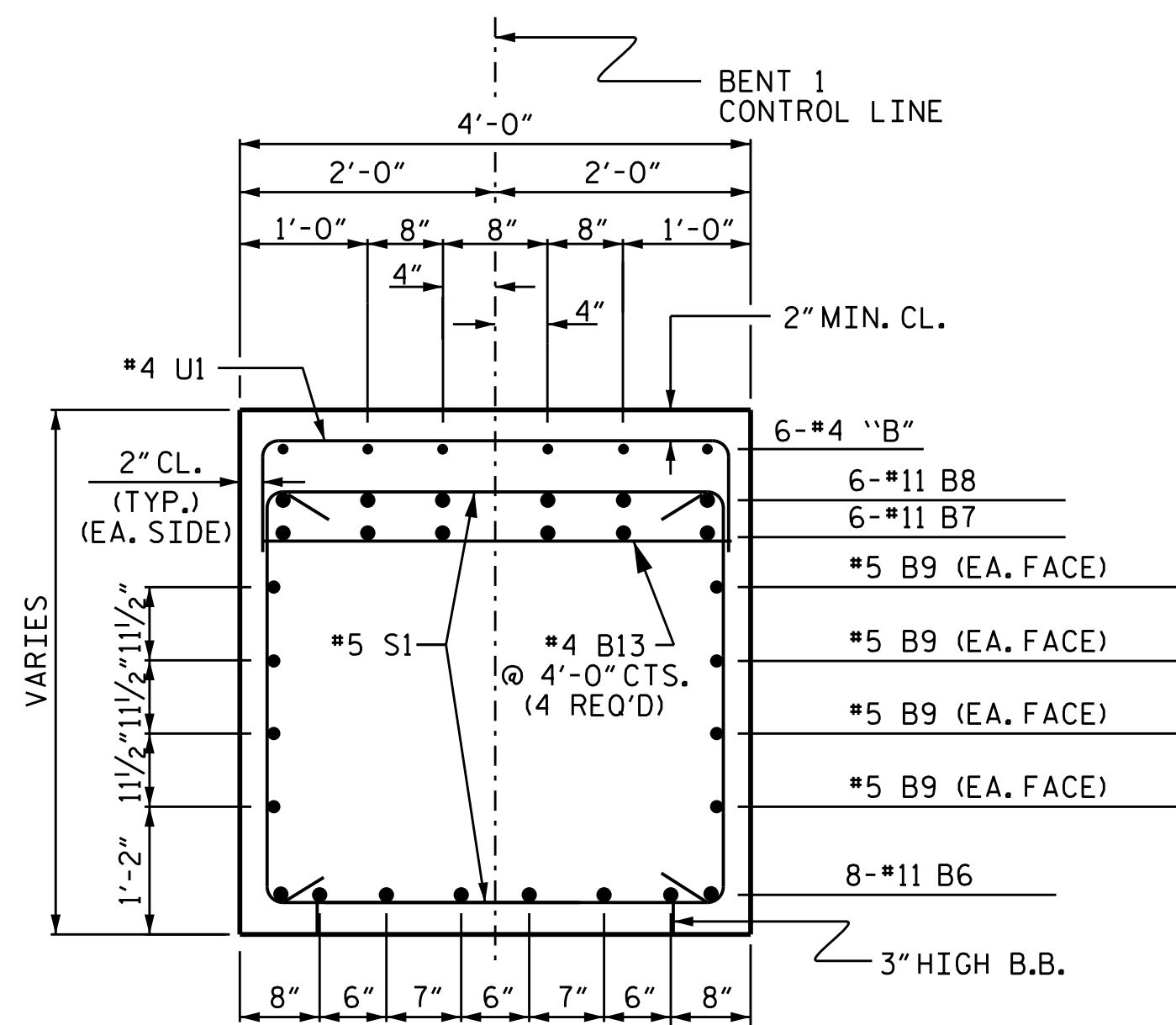
DRAWN BY : P.S. ADKINS DATE : 11/12/14
CHECKED BY : J.D. HAWK DATE : 11/20/14
DESIGN ENGINEER OF RECORD : H. LOCKLEAR DATE : 12/17/14

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

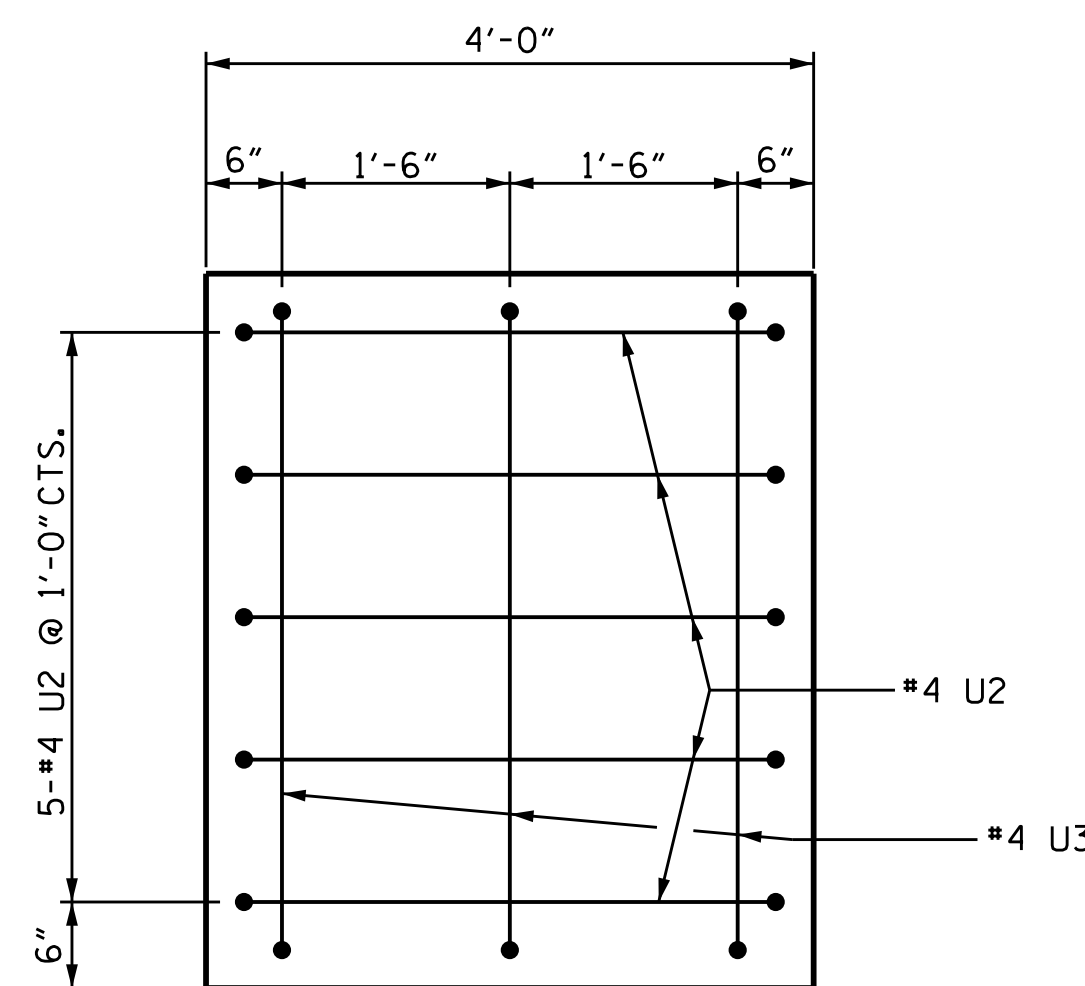
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-34
1			3			TOTAL SHEETS
2			4			47



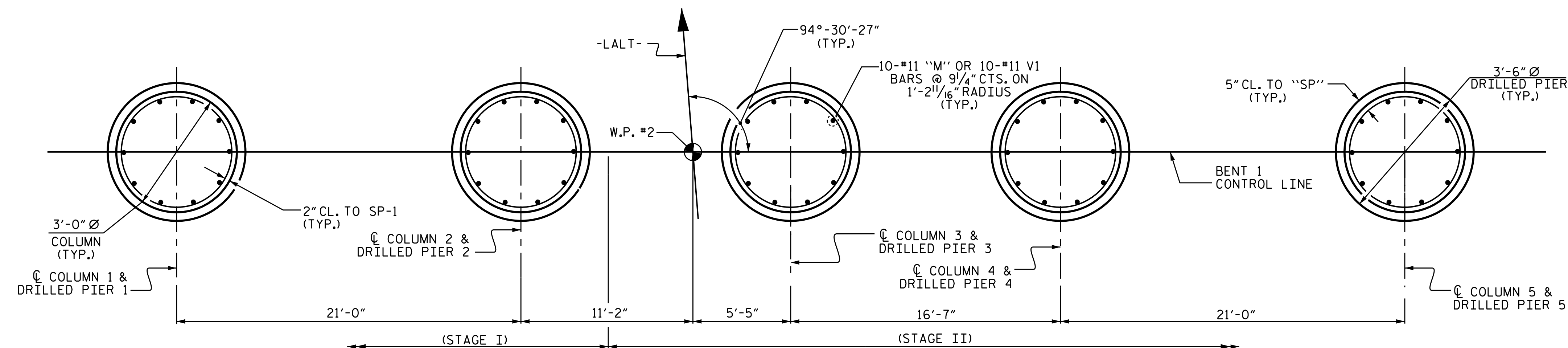
SECTION A-A



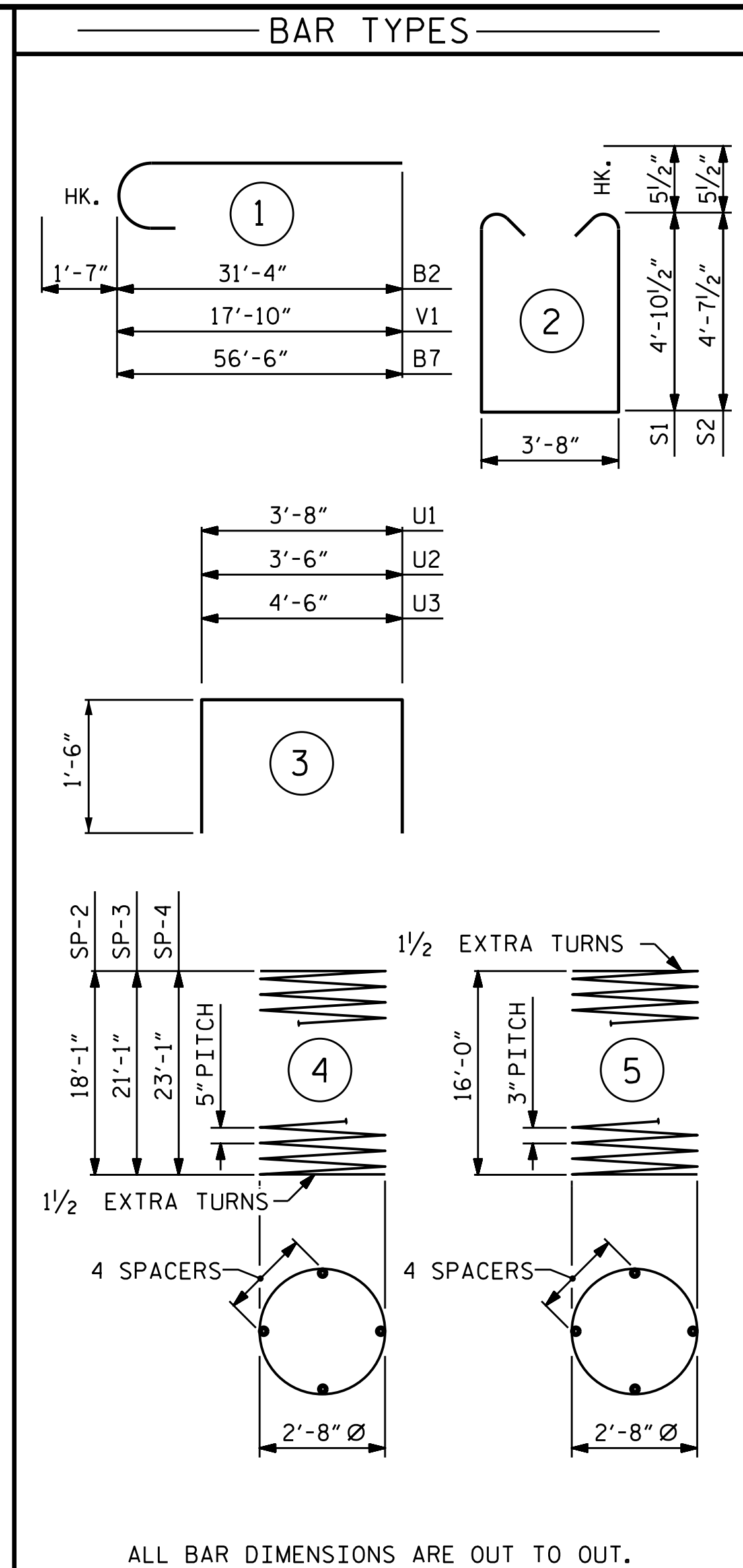
SECTION B-B



END VIEW



PLAN OF COLUMNS AND DRILLED PIERS



ALL BAR DIMENSIONS ARE OUT TO OUT.

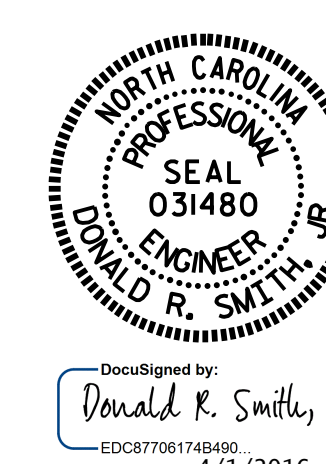
BILL OF MATERIAL-BENT 1

STAGE I						STAGE II					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#11	STR	31'-4"	1332	B6	8	#11	STR	55'-9"	2370
B2	6	#11	1	32'-11"	1049	B7	6	#11	1	58'-1"	1852
B3	8	#5	STR	33'-6"	280	B8	6	#11	STR	14'-6"	462
B4	6	#4	STR	8'-7"	34	B9	8	#5	STR	56'-8"	473
B5	6	#4	STR	3'-8"	15	B10	6	#4	STR	2'-7"	10
						B11	6	#4	STR	2'-1"	8
M1	20	#11	STR	28'-9"	3055	B12	18	#4	STR	9'-10"	118
						B13	4	#4	STR	3'-8"	10
S1	50	#5	2	14'-4"	747						
						M2	10	#11	STR	31'-9"	1687
U1	35	#4	3	6'-8"	156	M3	20	#11	STR	33'-9"	3586
U2	5	#4	3	6'-6"	22						
U3	3	#4	3	7'-6"	15	S1	17	#5	2	14'-4"	254
						S2	65	#5	2	13'-10"	938
V1	20	#11	1	19'-5"	2063						
						U1	59	#4	3	6'-8"	263
						U2	5	#4	3	6'-6"	22
						U3	3	#4	3	7'-6"	15
						V1	30	#11	1	19'-5"	3095
REINFORCING STEEL LBS. 8,768						REINFORCING STEEL LBS. 15,163					
SP-1	2	**	5	544'-7"	728	SP-1	3	**	5	544'-7"	1091
SP-2	2	*	4	370'-2"	772	SP-3	1	*	4	435'-11"	455
						SP-4	2	*	4	477'-1"	995
SPIRAL COLUMN REINFORCING STEEL LBS. 1,500						SPIRAL COLUMN REINFORCING STEEL LBS. 2,541					
CLASS A CONCRETE BREAKDOWN						CLASS A CONCRETE BREAKDOWN					
POUR #2 - COLUMNS				C.Y.	8.3	POUR #2 - COLUMNS				C.Y.	12.4
POUR #3 - CAP				C.Y.	24.8	POUR #3 - CAP				C.Y.	46.0
TOTAL				C.Y.	33.1	TOTAL				C.Y.	58.4
DRILLED PIER QUANTITIES						DRILLED PIER QUANTITIES					
DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)				C.Y.	13.3	DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)				C.Y.	24.5
3'-6" Ø DRILLED PIER IN SOIL				LIN. FT.	20.66	3'-6" Ø DRILLED PIER IN SOIL				LIN. FT.	43.24
3'-6" Ø DRILLED PIER NOT IN SOIL				LIN. FT.	16.50	3'-6" Ø DRILLED PIER NOT IN SOIL				LIN. FT.	25.50
CSL TUBES				LIN. FT.	160.64	CSL TUBES				LIN. FT.	292.96

* THE SP-2 SP-3 & SP-4 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.
 ** THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

PROJECT NO. U-3308
 DURHAM COUNTY
 STATION: 16+42.70-LALT-

SHEET 3 OF 3

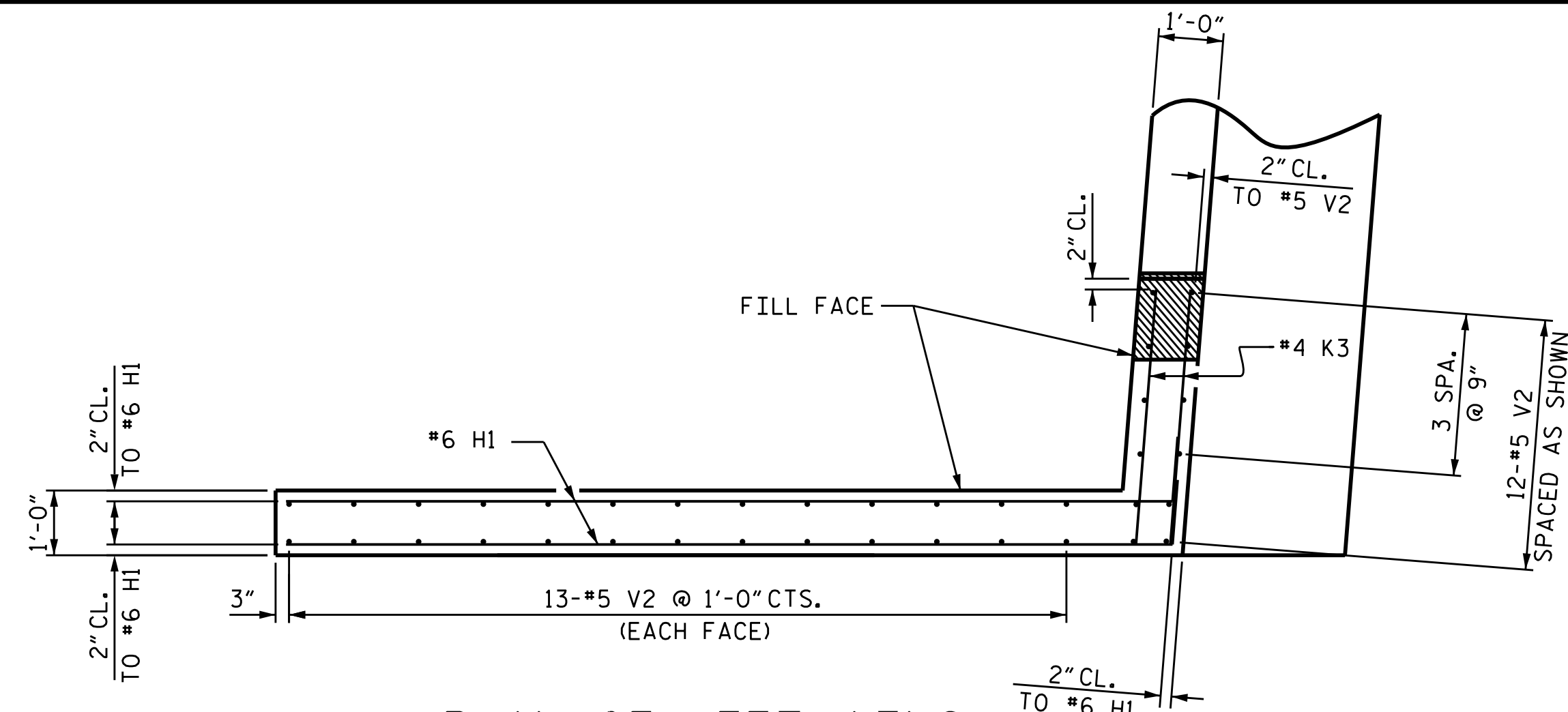


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT 1

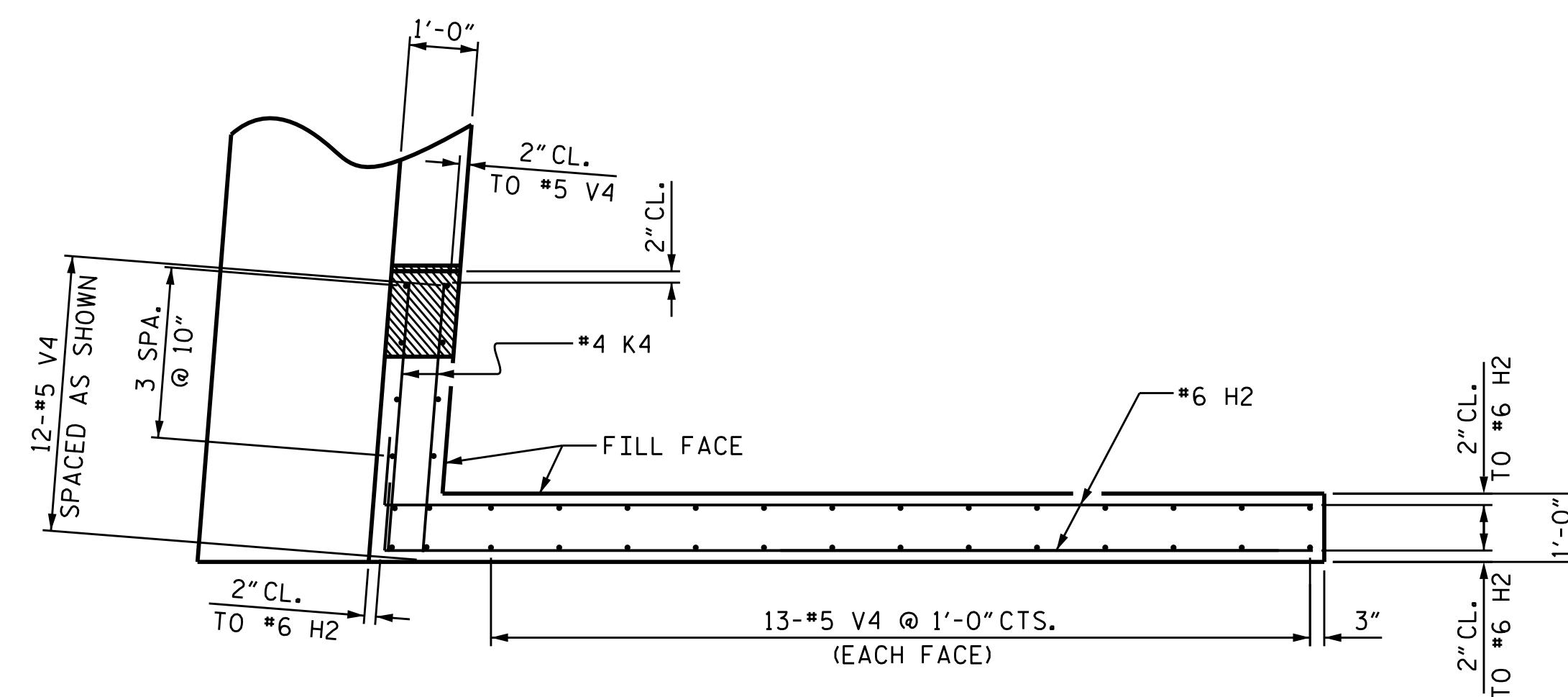
DRAWN BY: J.D. HAWK DATE: 11/10/14
 CHECKED BY: K.D. LAYNE DATE: 11/20/14
 DESIGN ENGINEER OF RECORD: T.R. PETERSON DATE: 12/17/14

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

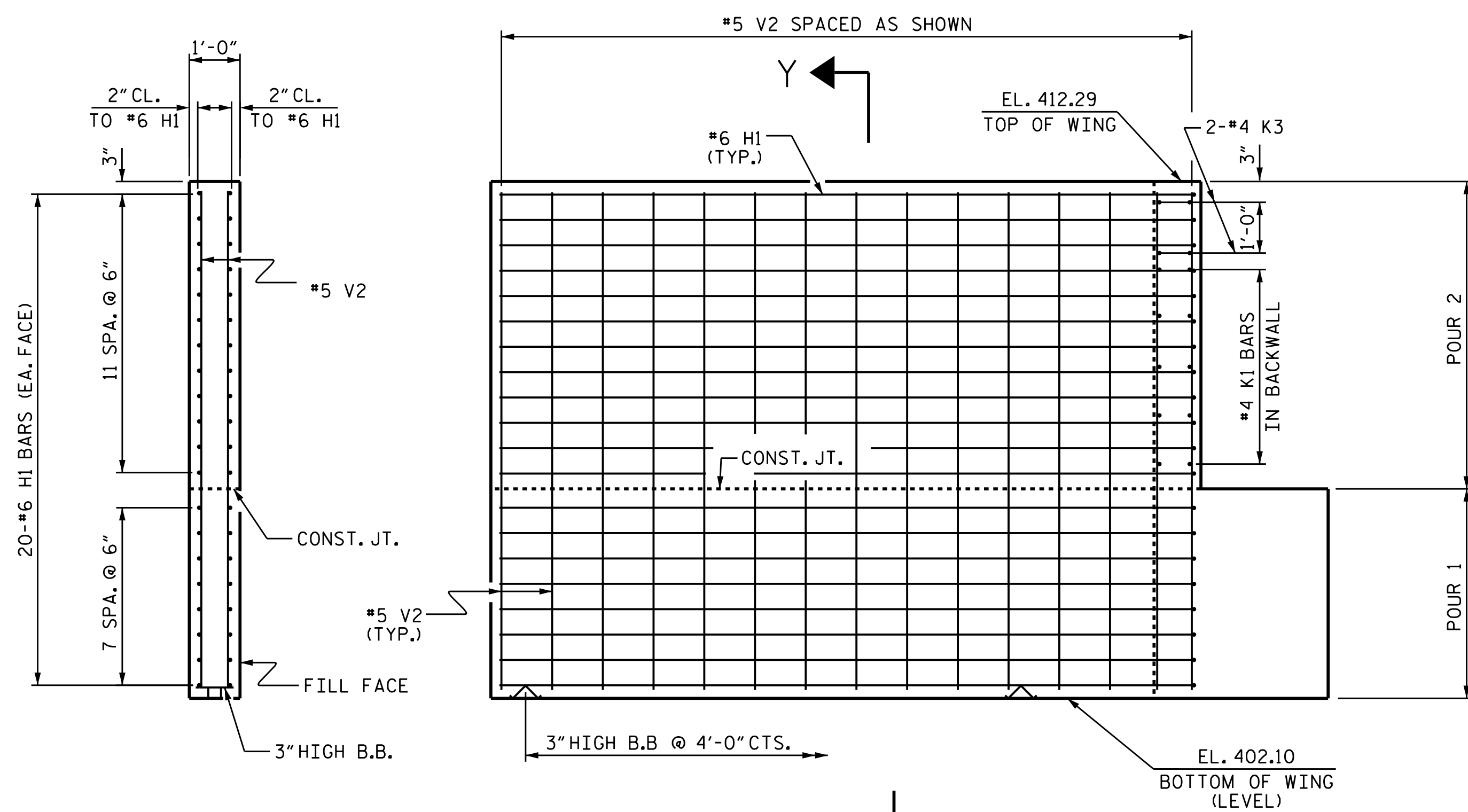
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NO.	BY:	DATE:	NO.	BY:	DATE:	S1-38	
1			3			TOTAL SHEETS 47	
2			4				



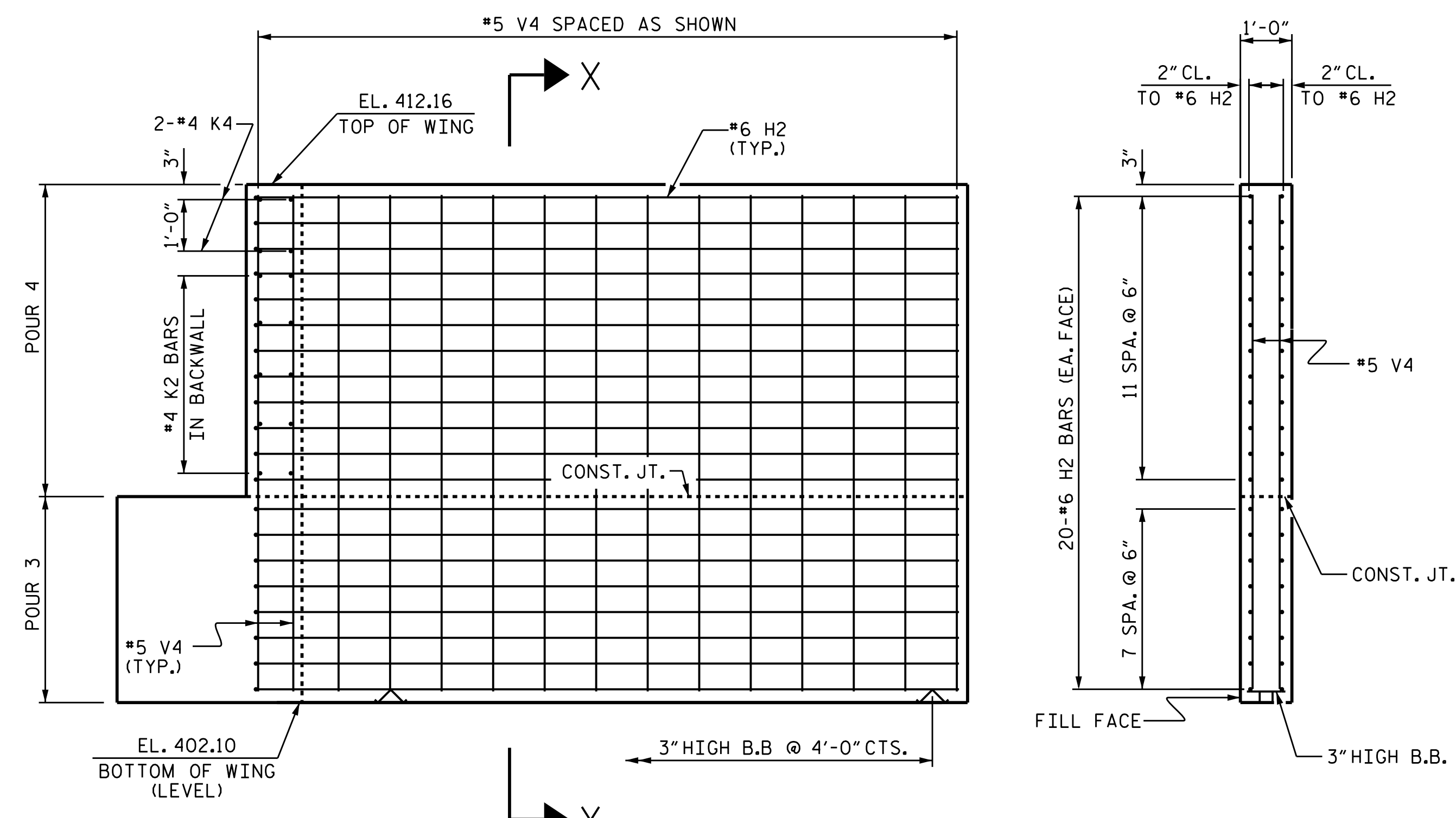
PLAN OF LEFT WING
(STAGE I)



PLAN OF RIGHT WING
(STAGE II)



ELEVATION OF LEFT WING
(STAGE I)



ELEVATION OF RIGHT WING
(STAGE II)

SECTION Y-Y

SECTION X-X

PROJECT NO. U-3308
DURHAM COUNTY
STATION: 16+42.70-LALT-

SHEET 3 OF 4



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

DRAWN BY : P.S. ADKINS DATE : 11/18/14
CHECKED BY : J.D. HAWK DATE : 11/20/14
DESIGN ENGINEER OF RECORD : H. LOCKLEAR DATE : 12/17/14

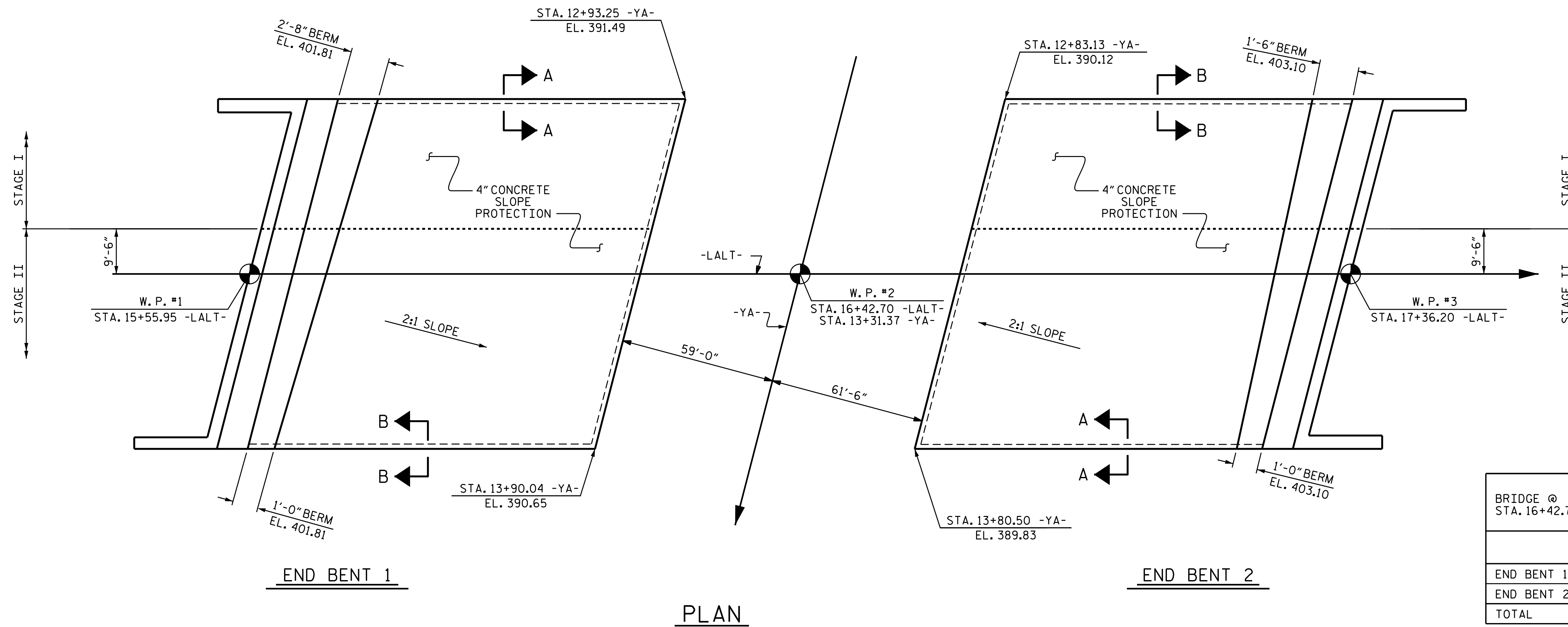
DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-41	
1			3			TOTAL SHEETS	
2			4			47	

NOTES

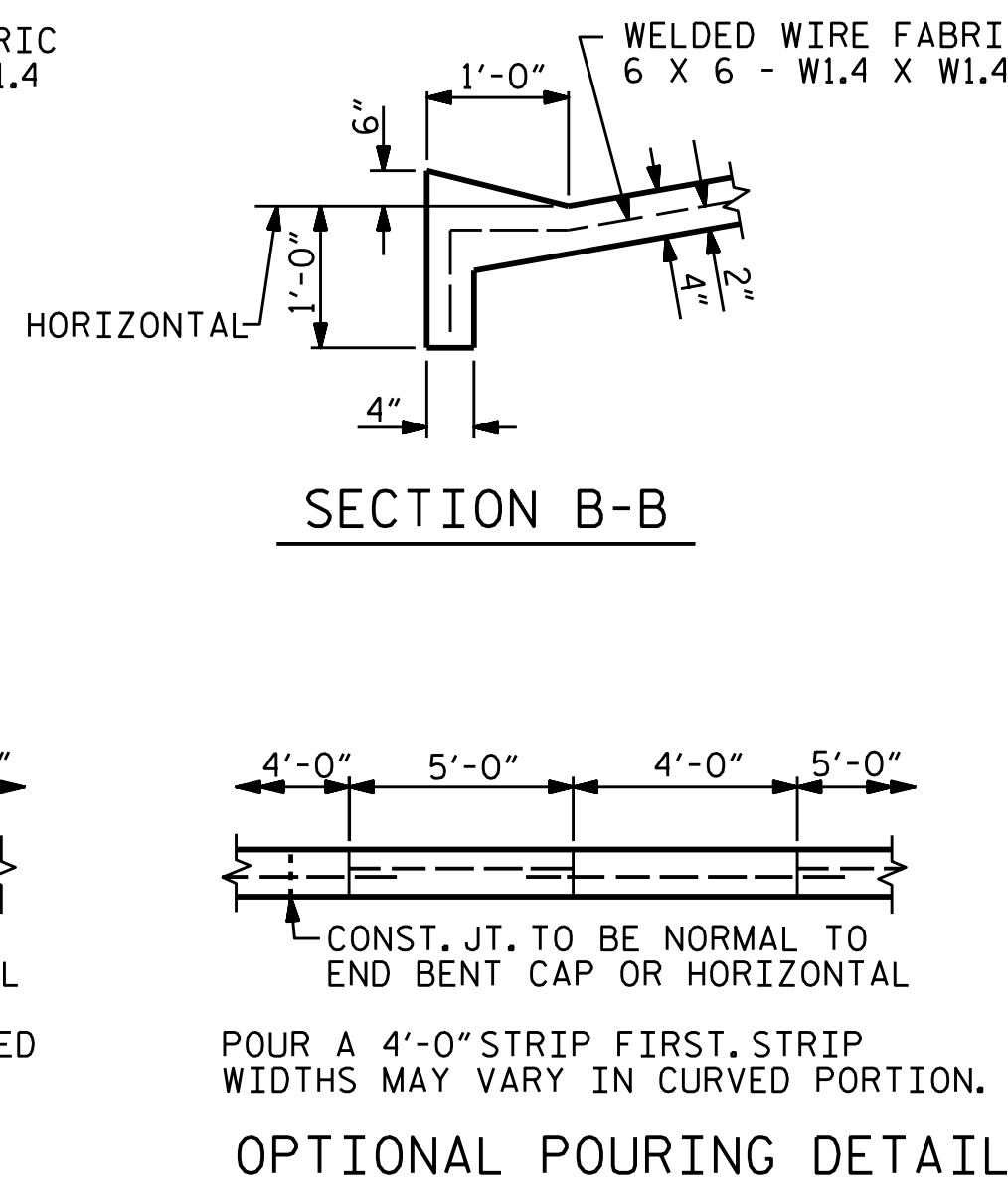
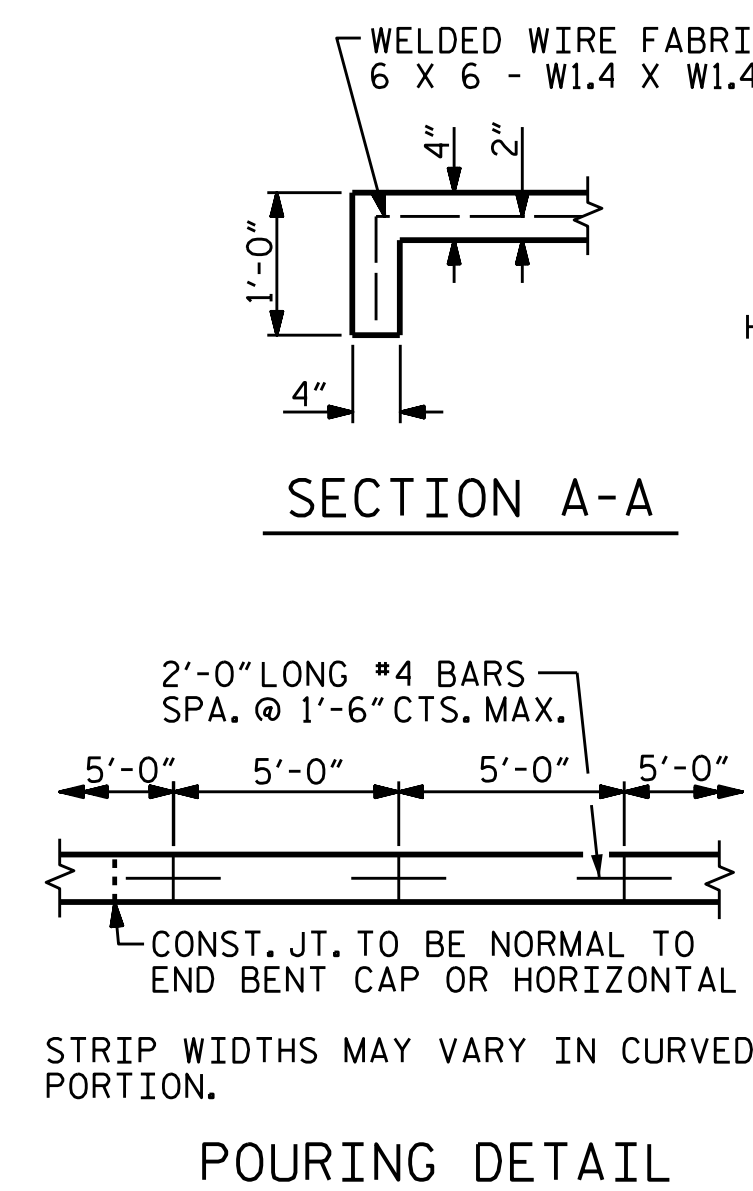
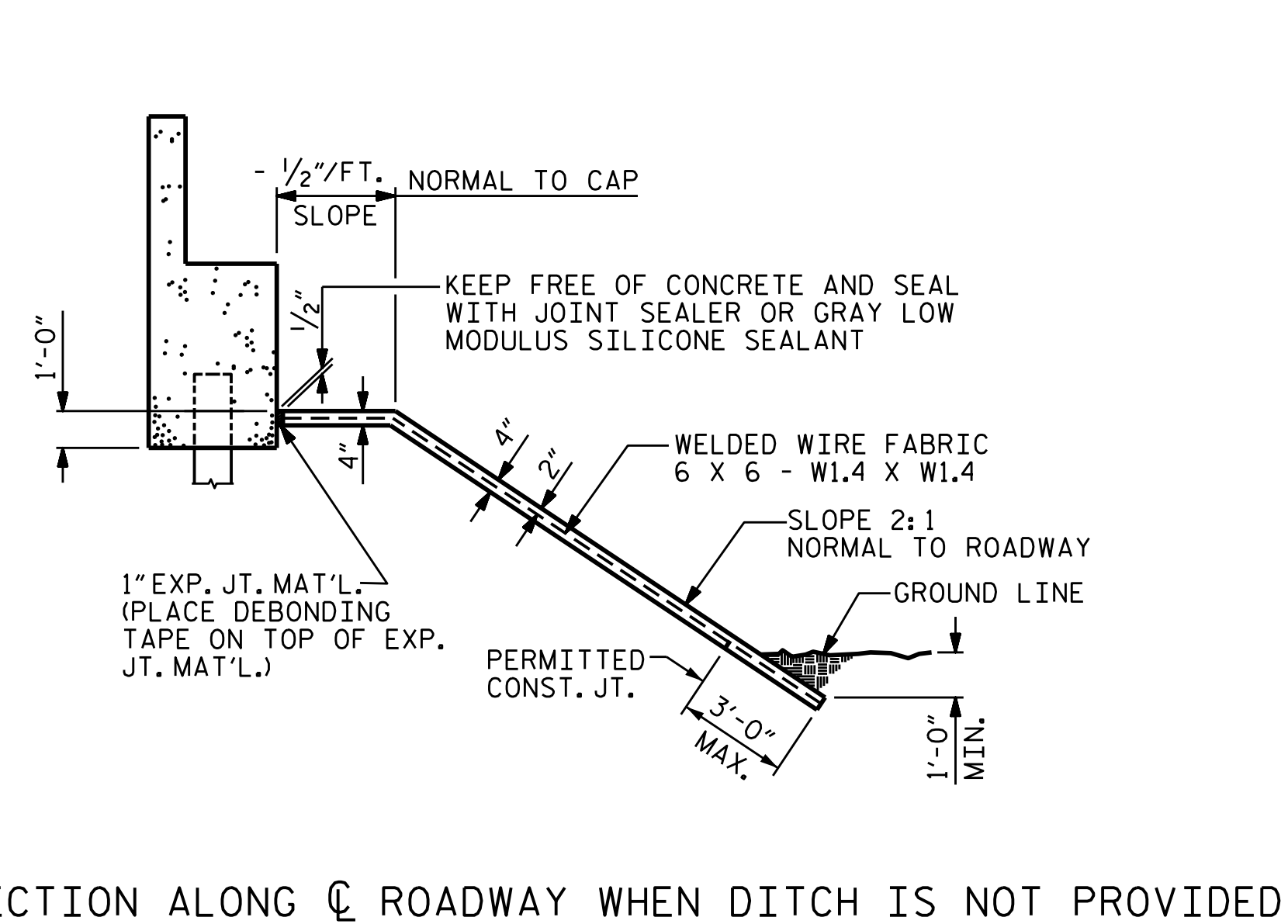
SLOPE PROTECTION SHALL BE PLACED UNDER THE ENDS OF THE BRIDGE AS SHOWN IN THE DETAILS. MEASUREMENT AND PAYMENT SHALL BE AS PRESCRIBED IN SECTION 462 OF THE STANDARD SPECIFICATIONS.

SLOPE PROTECTION SHALL CONSIST OF 4" POURED -IN-PLACE CONCRETE PAVING AS SHOWN IN THE DETAILS ON THIS SHEET. CONCRETE SHALL BE CLASS "B". THE CONCRETE SURFACE SHALL BE FLOATED WITH A WOODEN FLOAT AND FINISHED. WELDED WIRE FABRIC REINFORCING SHALL BE 6 X 6 - W1.4 X W1.4, 60"WIDE. SLOPE PROTECTION SHALL BE POURED IN 5' STRIPS AS SHOWN IN THE "POURING DETAIL" WITH 2'-0" LONG #4 BARS PLACED ALONG THE SLOPE BETWEEN STRIPS AT 1'-6" MAXIMUM SPACING. SLOPE PROTECTION MAY BE POURED IN ALTERNATE 4' AND 5' STRIPS AS SHOWN IN THE "OPTIONAL POURING DETAIL" WITH ADJACENT RUNS OF WELDED WIRE FABRIC LAPPING AT LEAST 6". THE COST OF THE WELDED WIRE FABRIC AND #4 BARS, IF USED, SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID PER SQUARE YARD FOR SLOPE PROTECTION.

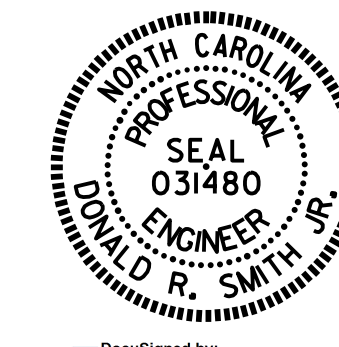


BRIDGE @ STA. 16+42.70 -LALT-	4 INCH SLOPE PROTECTION		* WELDED WIRE FABRIC 60 INCHES WIDE	
	SQUARE YARDS		APPROX. L.F.	
	STAGE I	STAGE II	STAGE I	STAGE II
END BENT 1	100	185	200	370
END BENT 2	115	215	230	430
TOTAL	215	400	430	800

* QUANTITY SHOWN IS BASED ON 5' POURS.



PROJECT NO. U-3308
 DURHAM COUNTY
 STATION: 16+42.70-LALT-

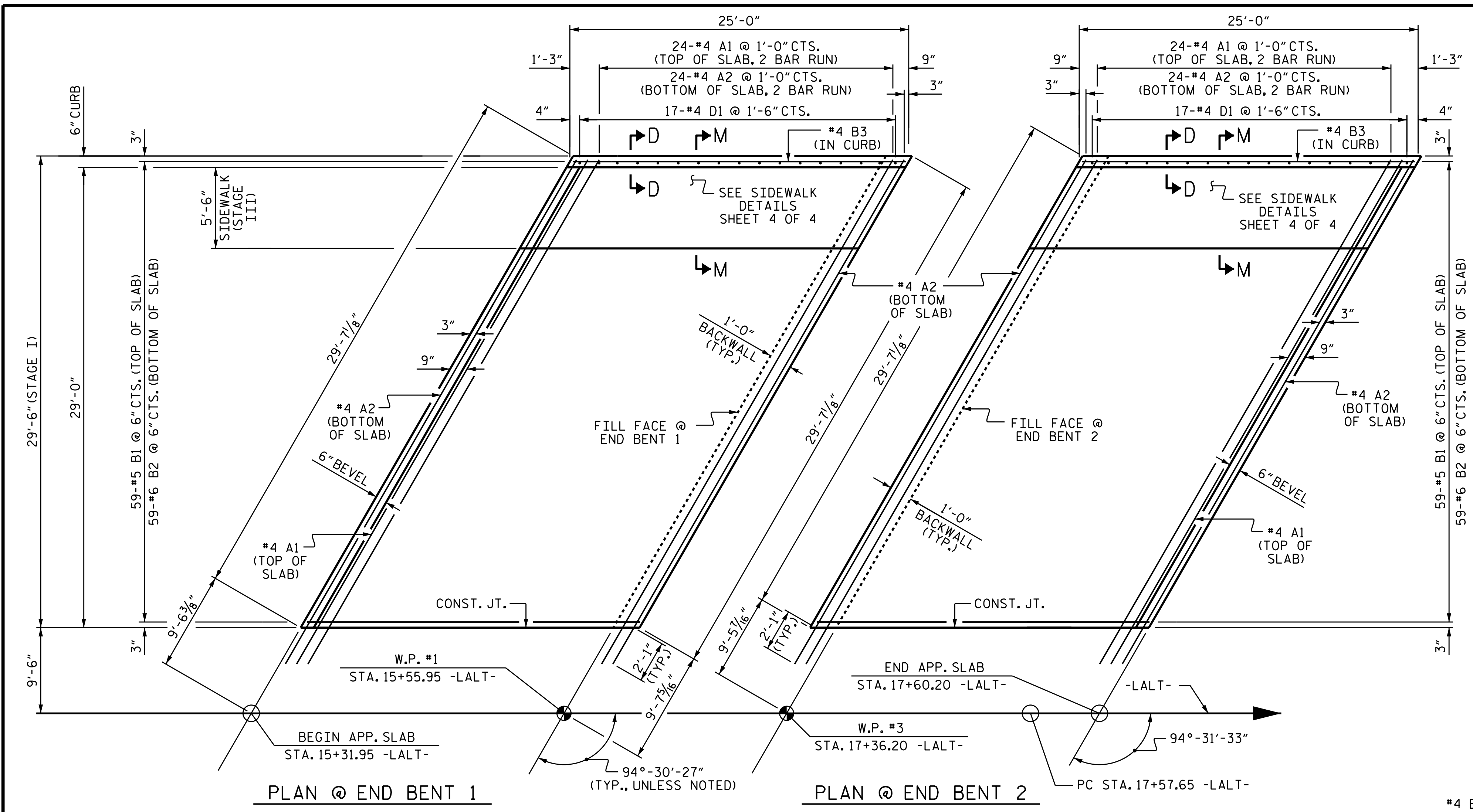


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 SLOPE PROTECTION
 DETAILS

ASSEMBLED BY : T. H. CARROLL	DATE : 12/03/14
CHECKED BY : R. P. PATEL	DATE : 12/08/14
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

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-43
1			3			TOTAL SHEETS 47
2			4			



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.

THE 4" Ø DRAINAGE PIPE SHALL BE SLOPED TO DRAIN TO LEFT SIDE SHOULDER IN STAGE I.

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 SHALL BE SAWS PRIOR TO THE CASTING OF THE PARAPET, END POST, CURB, AND SIDEWALK.

FOR FOAM JOINT SEALS, SEE SPECIAL PROVISIONS.

THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE FOAM JOINT SEAL SHALL BE 2".

FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

FOR TEMPORARY BERM END SLOPE DRAIN DETAILS, SEE SHEET 2 OF 4.

THE #4 "A" BARS EXTENDED BEYOND STAGE I MAY BE BENT OUT OF THE WAY IF THEY CONFLICT WITH TEMPORARY SHORING. STRAIGHTEN THE BARS PRIOR TO CONSTRUCTION OF STAGE II APPROACH SLABS.

ARC OFFSETS ARE NEGLIGIBLE AND NOT SHOWN AT END BENT 2

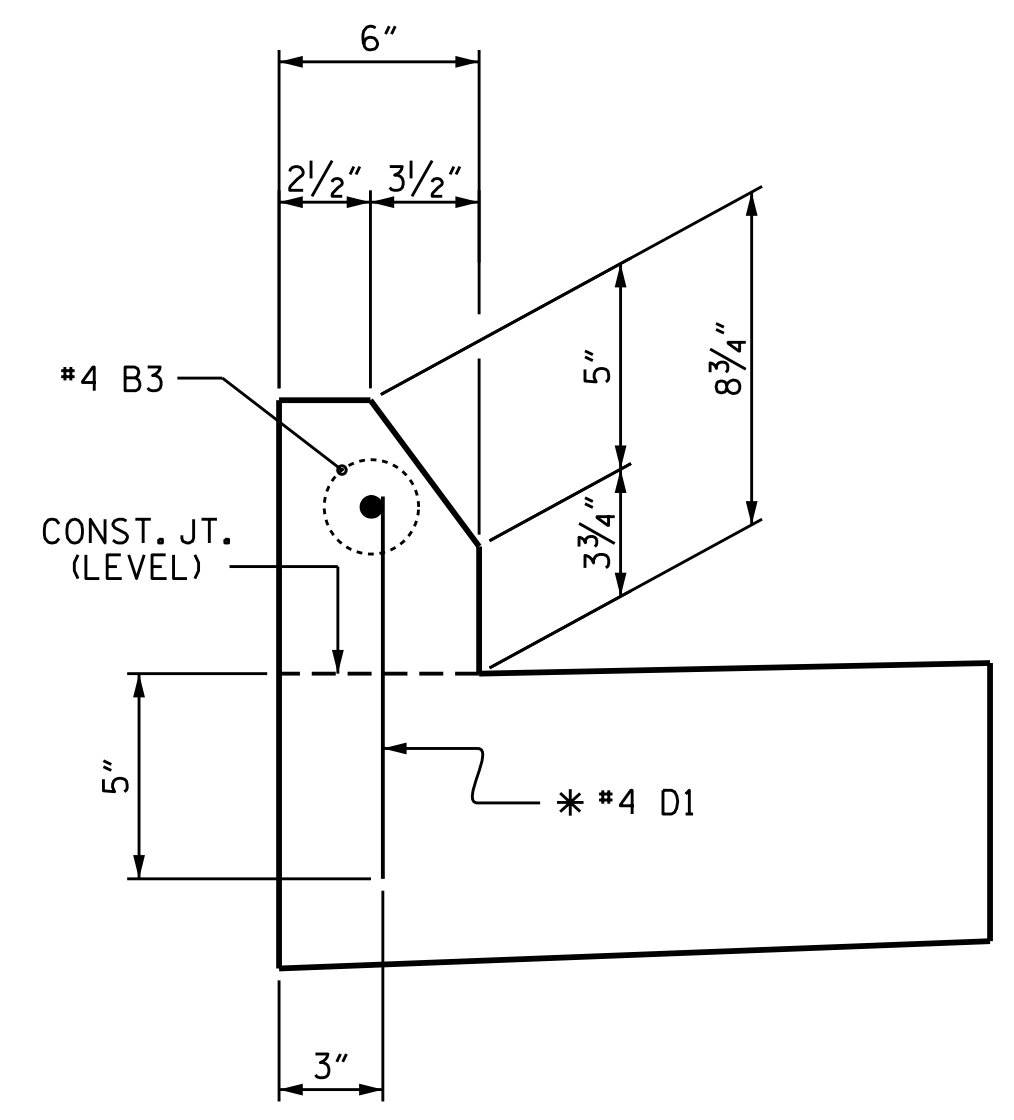
BILL OF MATERIAL

FOR ONE APPROACH SLAB STAGE I (2 REQ'D)					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	50	#4	STR	16'-9"	559
A2	52	#4	STR	16'-8"	579
* B1	59	#5	STR	23'-9"	1462
B2	59	#6	STR	24'-8"	2186
* B3	1	#4	STR	24'-7"	16
* D1	17	#4	STR	0'-9"	9
REINFORCING STEEL					LBS. 2,765
* EPOXY COATED REINFORCING STEEL					LBS. 2,046
CLASS AA CONCRETE					C. Y. 32.2
FOR ONE SIDEWALK ON APPROACH SLAB STAGE III (2 REQ'D)					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B3	5	#4	STR	24'-7"	82
* G2	25	#4	STR	5'-2"	86
* EPOXY COATED REINFORCING STEEL					LBS. 168
CLASS AA CONCRETE					C. Y. 3.2

PLAN @ END BENT 1

PLAN @ END BENT 2

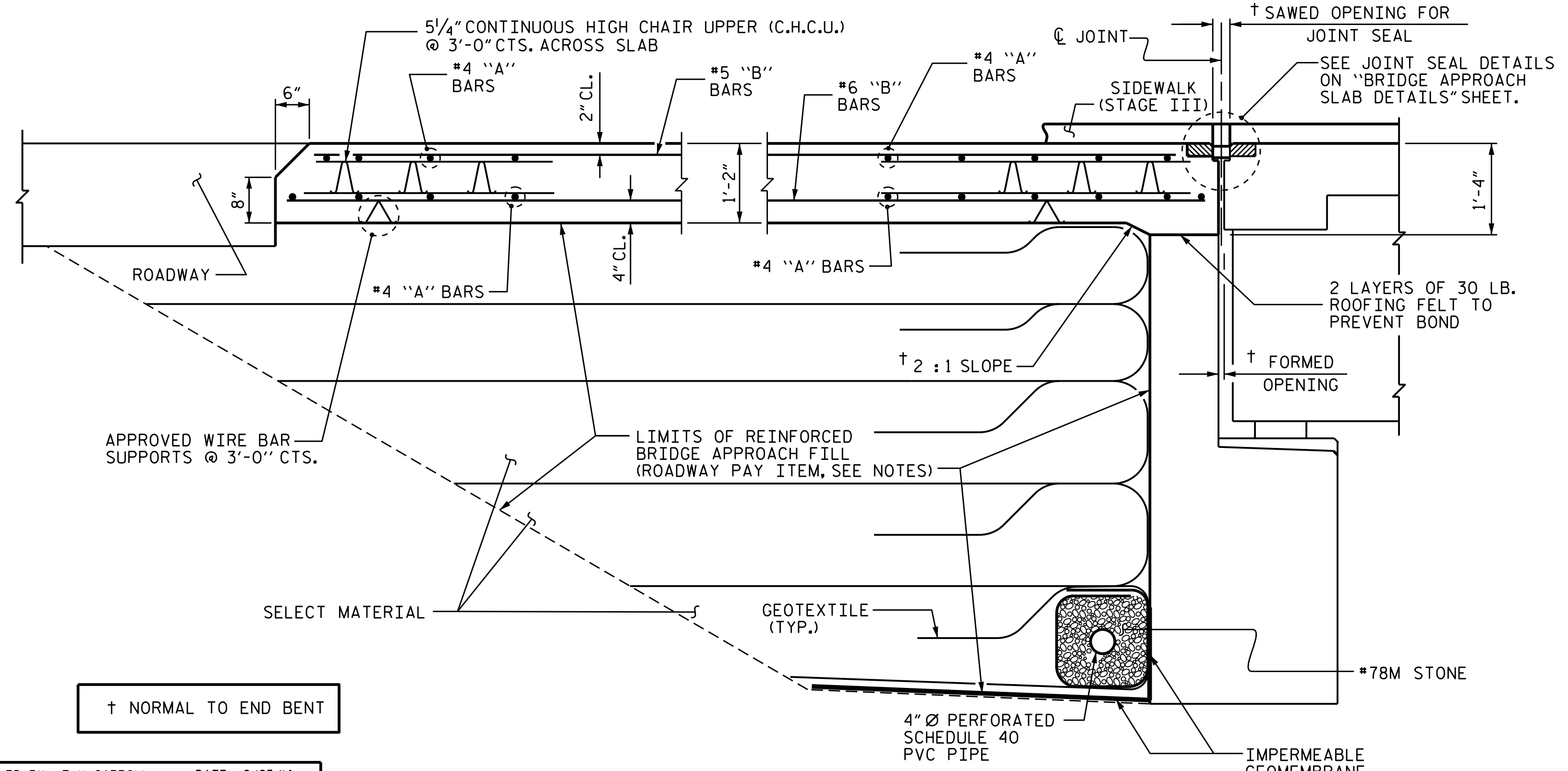
DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



SECTION D-D

* DOWELS MAY BE PUSHED INTO GREEN CONCRETE AFTER THE SLAB HAS BEEN SCREEDED AND FLOAT FINISHED.

CURB DETAILS

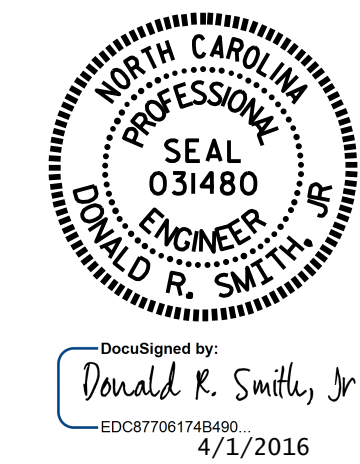


SECTION THRU SLAB

PROJECT NO. U-3308
DURHAM COUNTY
 STATION: 16+42.70-LALT-

SHEET 1 OF 4

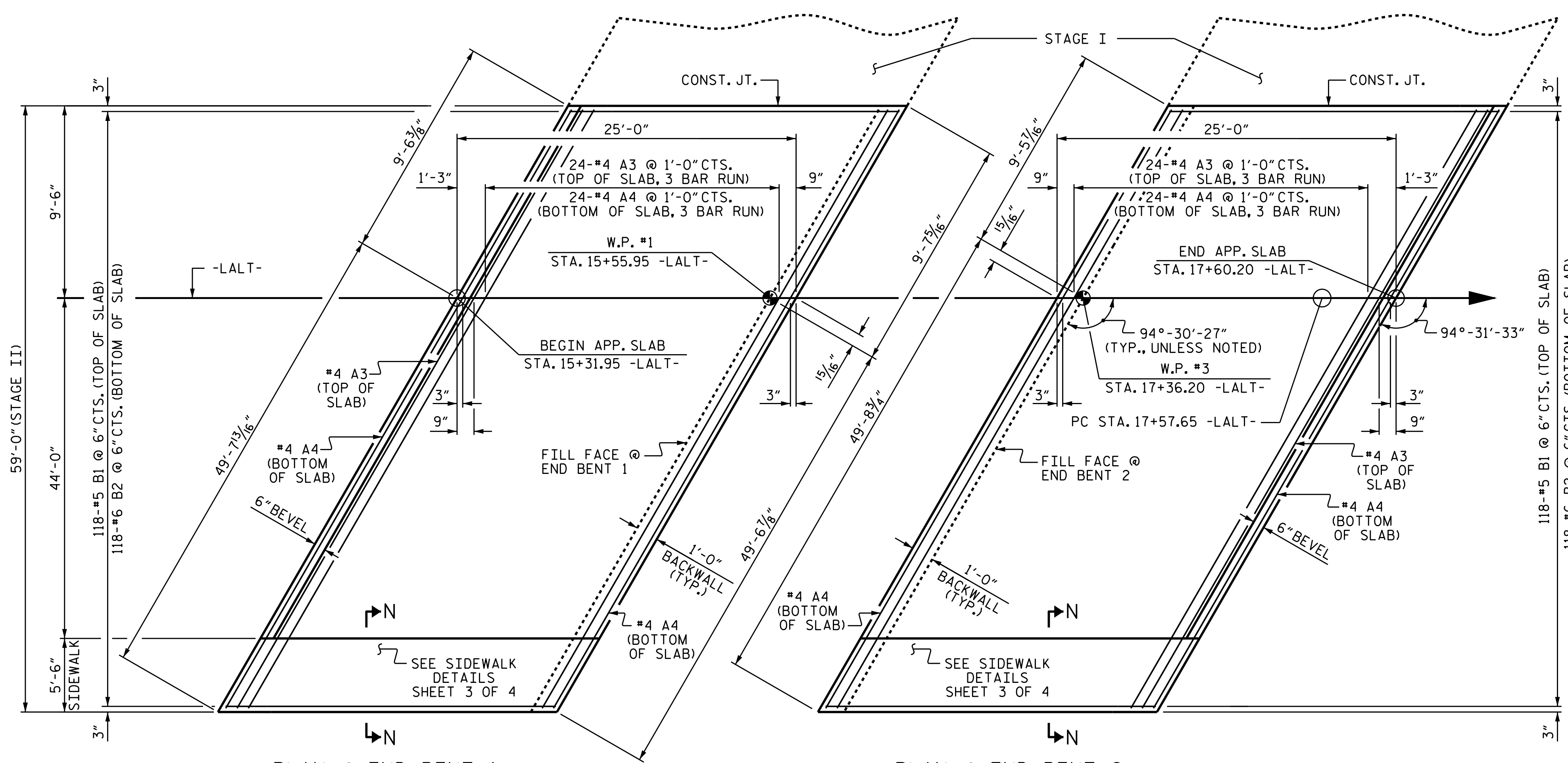
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 BRIDGE APPROACH SLAB
 FOR FLEXIBLE PAVEMENT
 STAGE I & STAGE III



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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ASSEMBLED BY : T. H. CARROLL	DATE : 9/25/14
CHECKED BY : R. P. PATEL	DATE : 10/21/14
DRAWN BY : EEM 3/95	REV. 10/11/11 MAA/GM
CHECKED BY : VAP 3/95	REV. 12/21/11 MAA/GM
	REV. 6/13 MAA/GM



PLAN @ END BENT 1 PLAN @ END BENT 2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

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.

THE 4" Ø DRAINAGE PIPE SHALL BE SLOPED TO DRAIN TO RIGHT SIDE SHOULDER IN STAGE II.

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 SHALL BE SAWED PRIOR TO THE CASTING OF THE PARAPET, END POST AND SIDEWALK.

FOR FOAM JOINT SEALS, SEE SPECIAL PROVISIONS.

THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE FOAM JOINT SEAL SHALL BE 2".

FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

FOR SECTION THRU SLAB, SEE SHEET 1 OF 4.

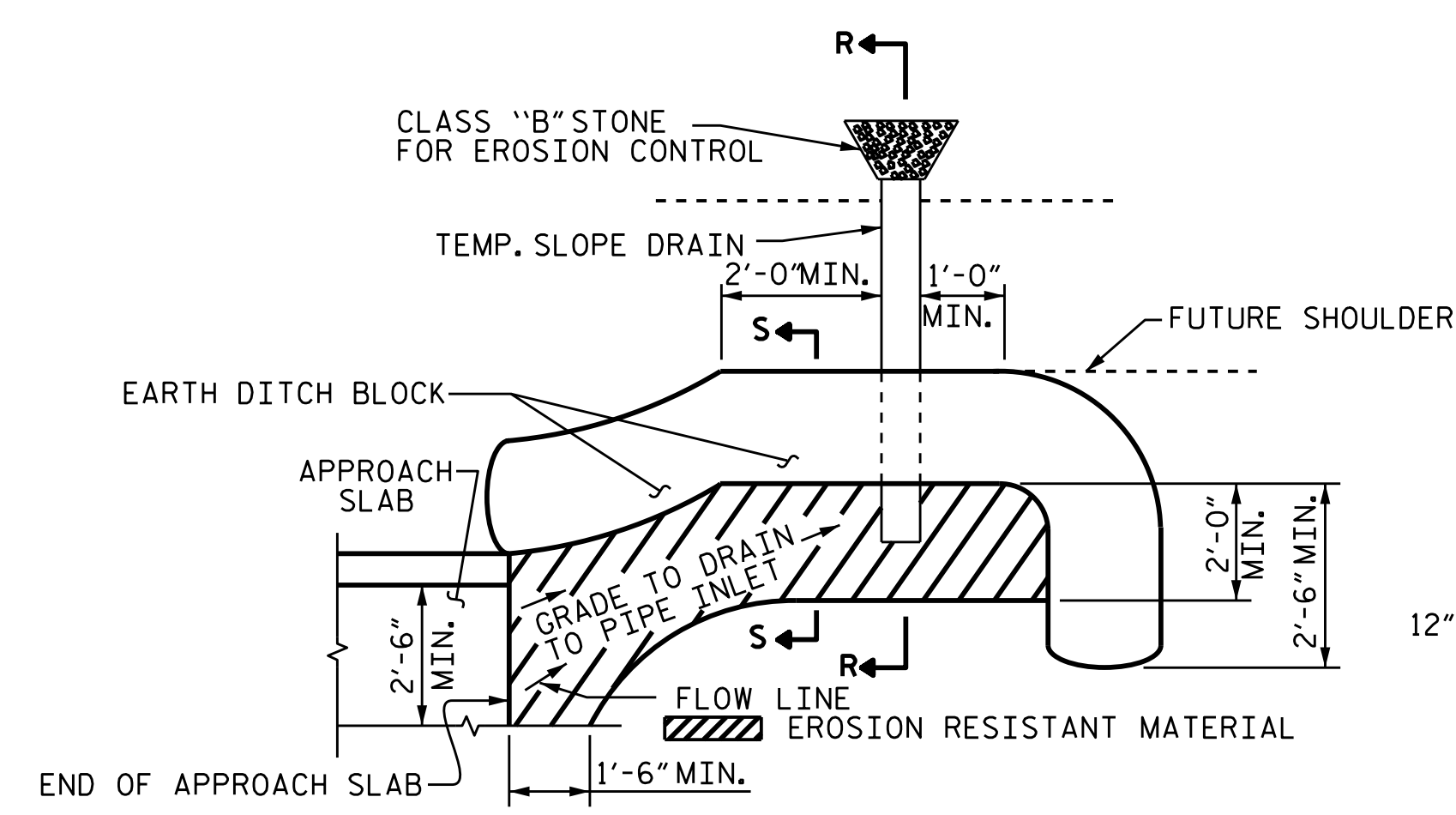
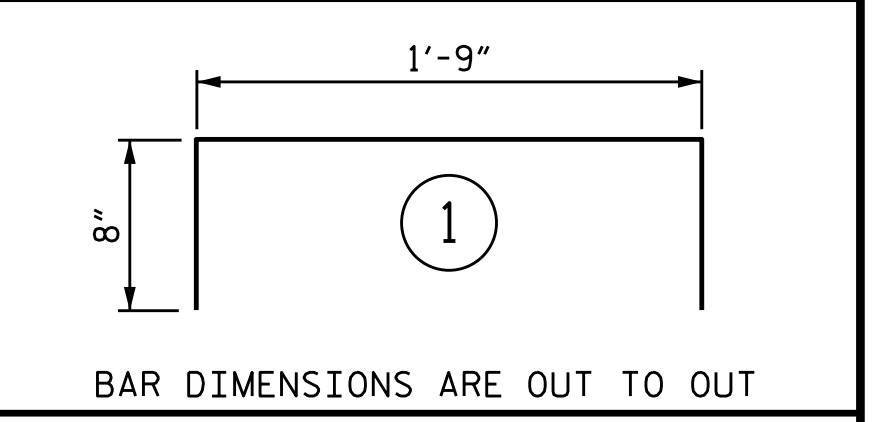
ARC OFFSETS ARE NEGLIGIBLE AND NOT SHOWN AT END BENT 2.

BILL OF MATERIAL

FOR ONE APPROACH SLAB
STAGE II (2 REQ'D)

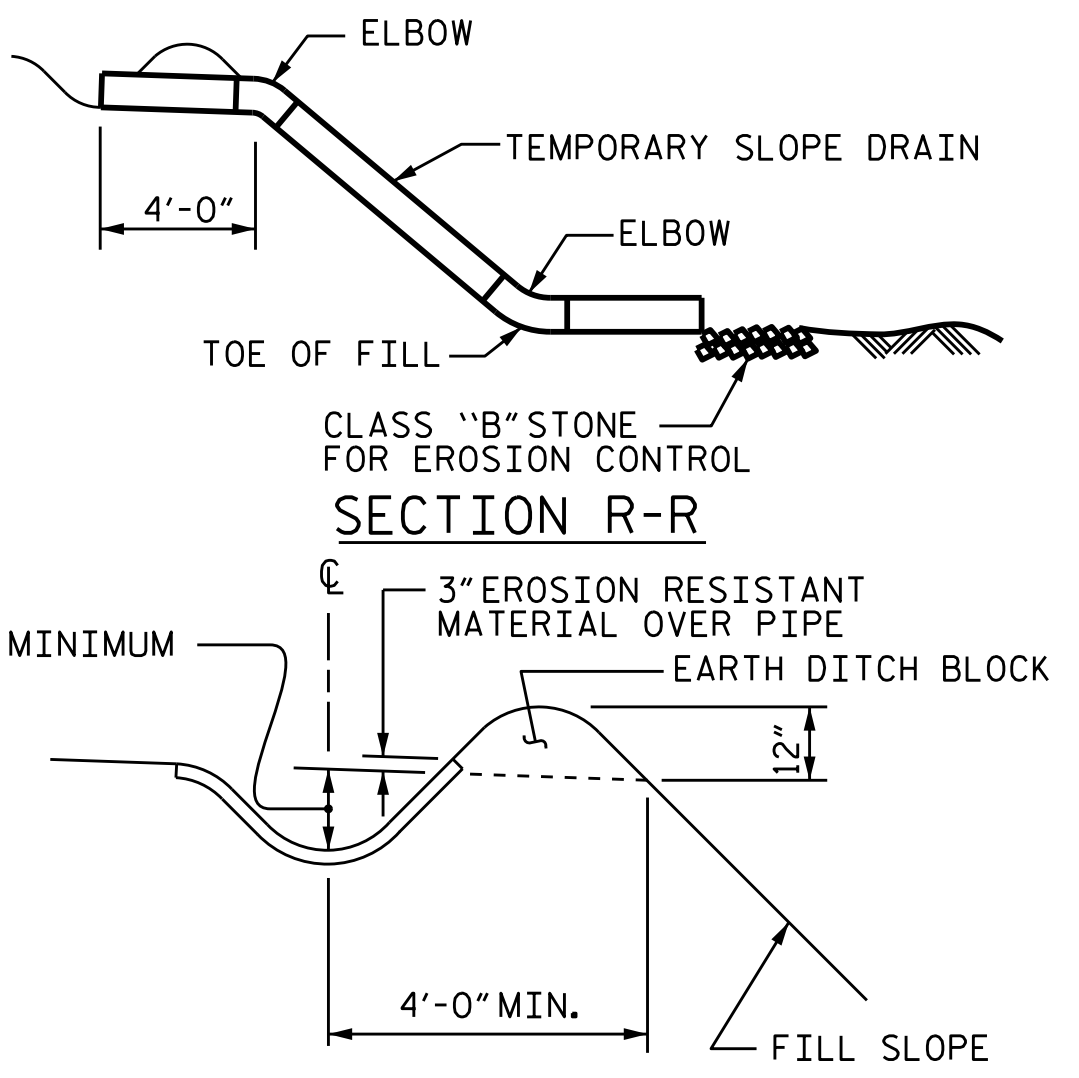
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A3	75	#4	STR	21'-0"	1052
A4	78	#4	STR	20'-10"	1086
* B1	118	#5	STR	23'-9"	2923
B2	118	#6	STR	24'-8"	4372
* B3	5	#4	STR	24'-7"	82
* G1	25	#4	STR	4'-11"	82
* UI	8	#4	1	3'-1"	16
REINFORCING STEEL				LBS.	5,458
* EPOXY COATED REINFORCING STEEL				LBS.	4,155
CLASS AA CONCRETE					
POUR #1 - APPROACH SLAB				C. Y.	63.9
POUR #2 - SIDEWALK				C. Y.	3.1
TOTAL CLASS AA CONCRETE				C. Y.	67.0

BAR TYPE



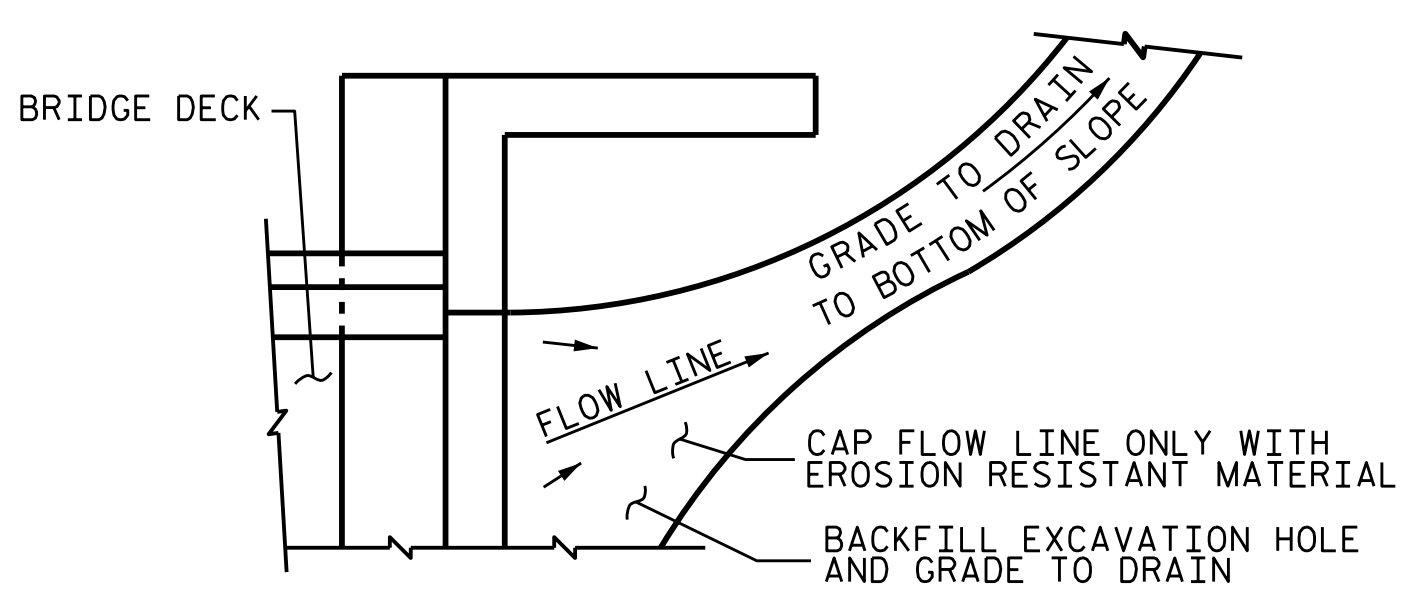
NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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



SECTION R-R

12" MINIMUM



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

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

PROJECT NO. U-3308
DURHAM COUNTY
STATION: 16+42.70-LALT-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
BRIDGE APPROACH SLAB
FOR FLEXIBLE PAVEMENT

STAGE II

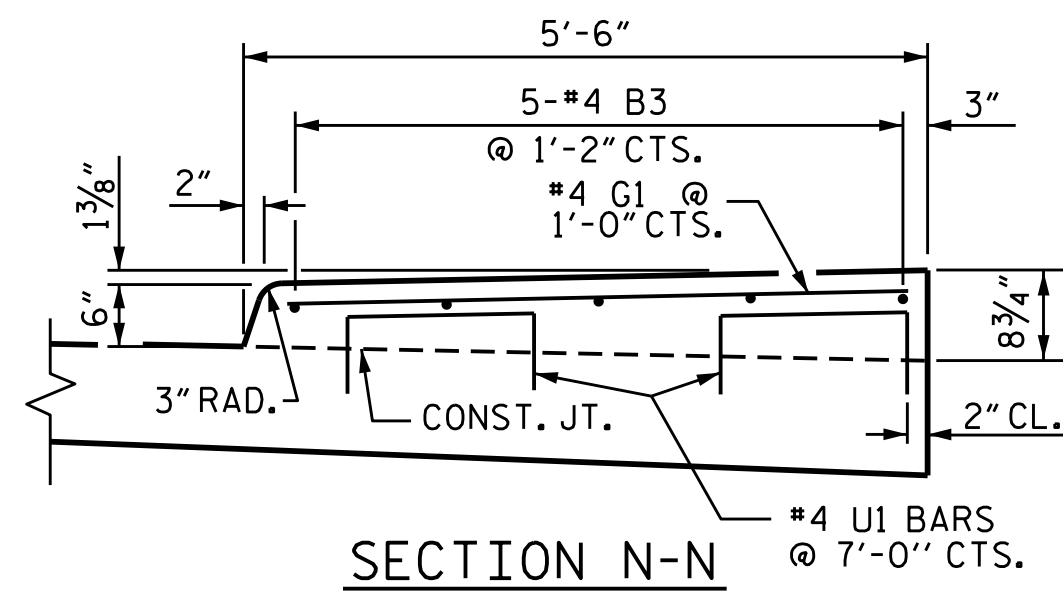
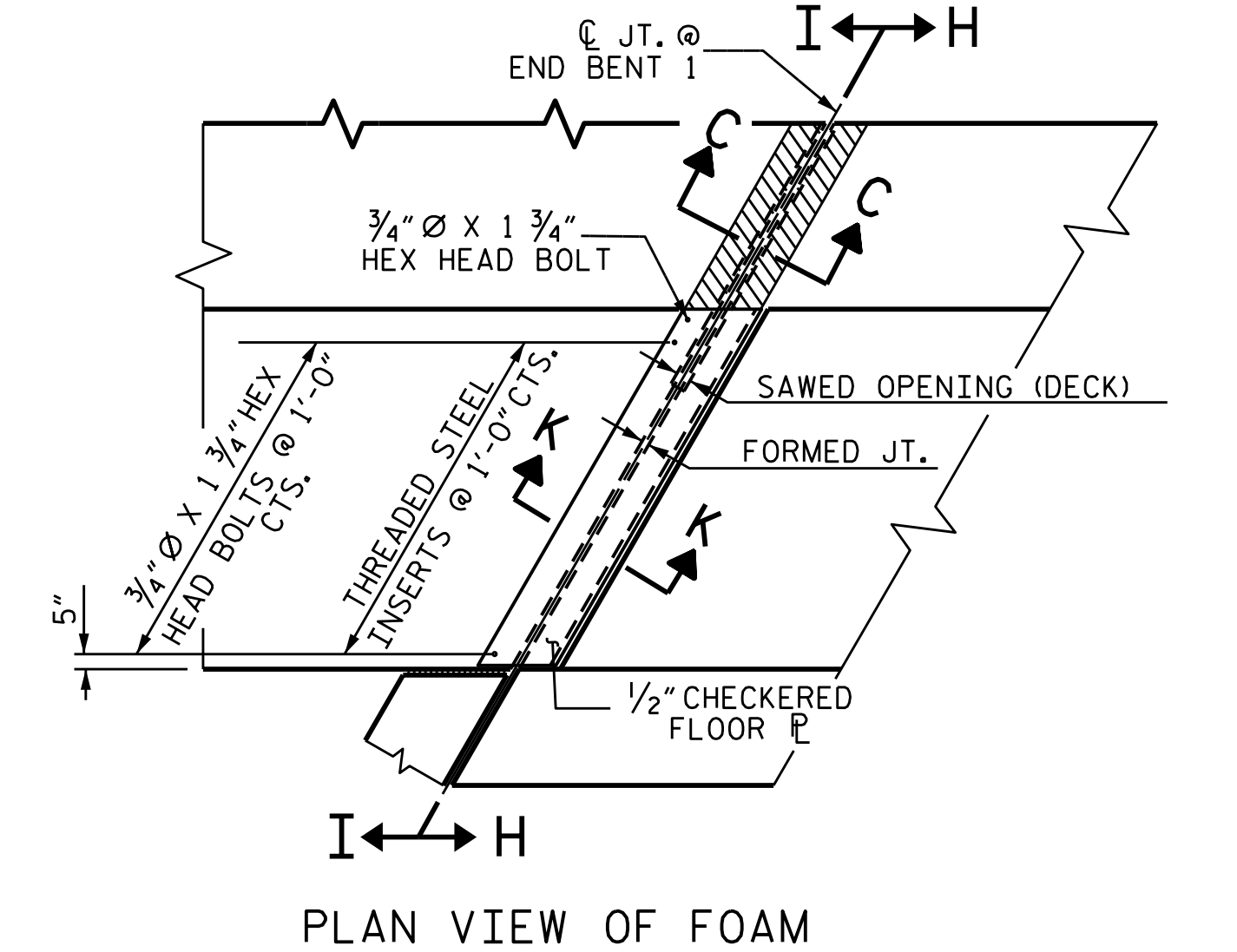
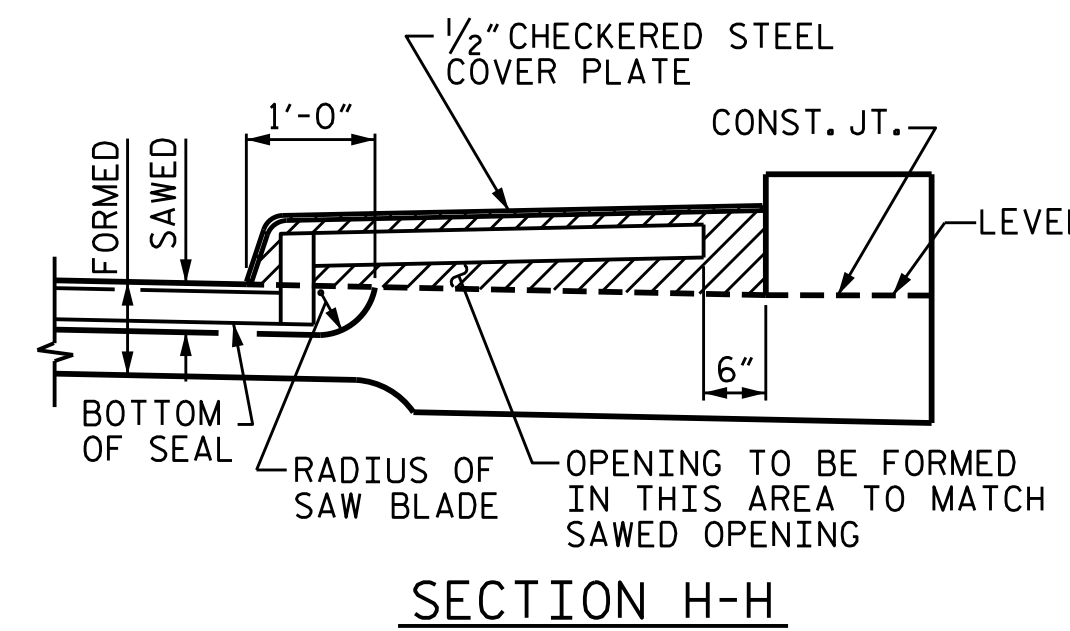
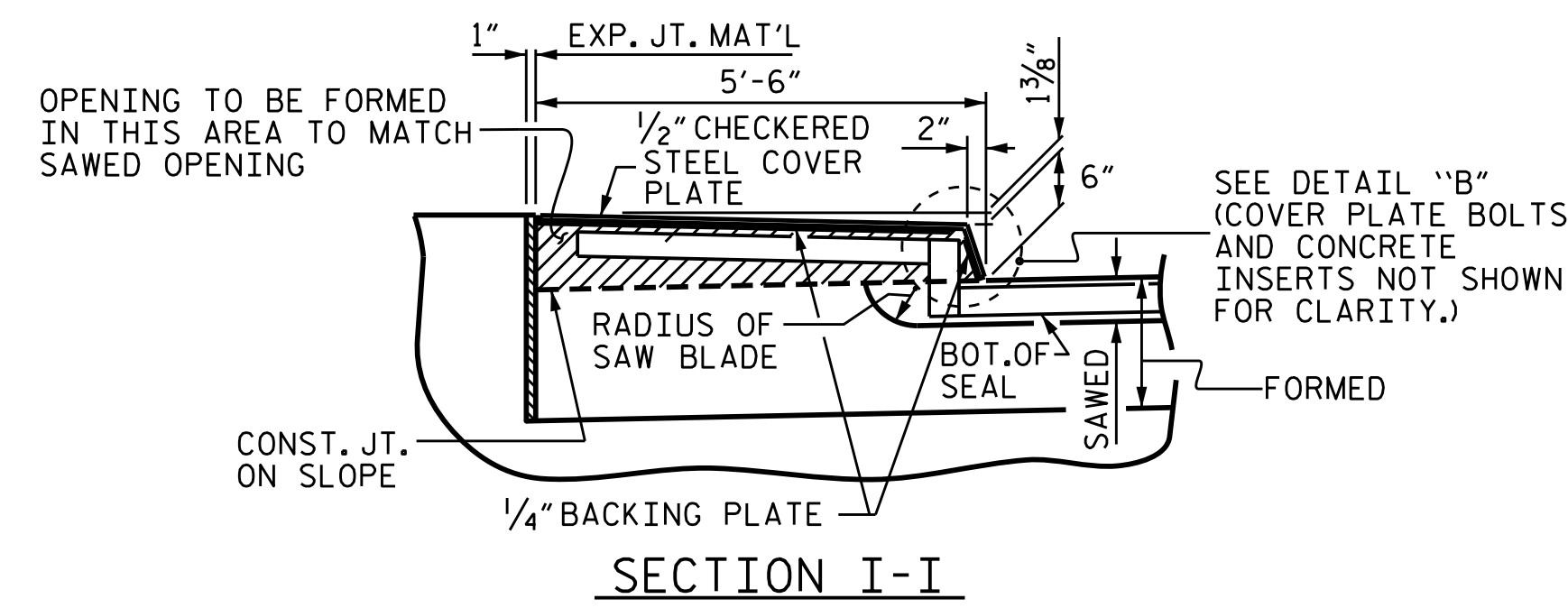
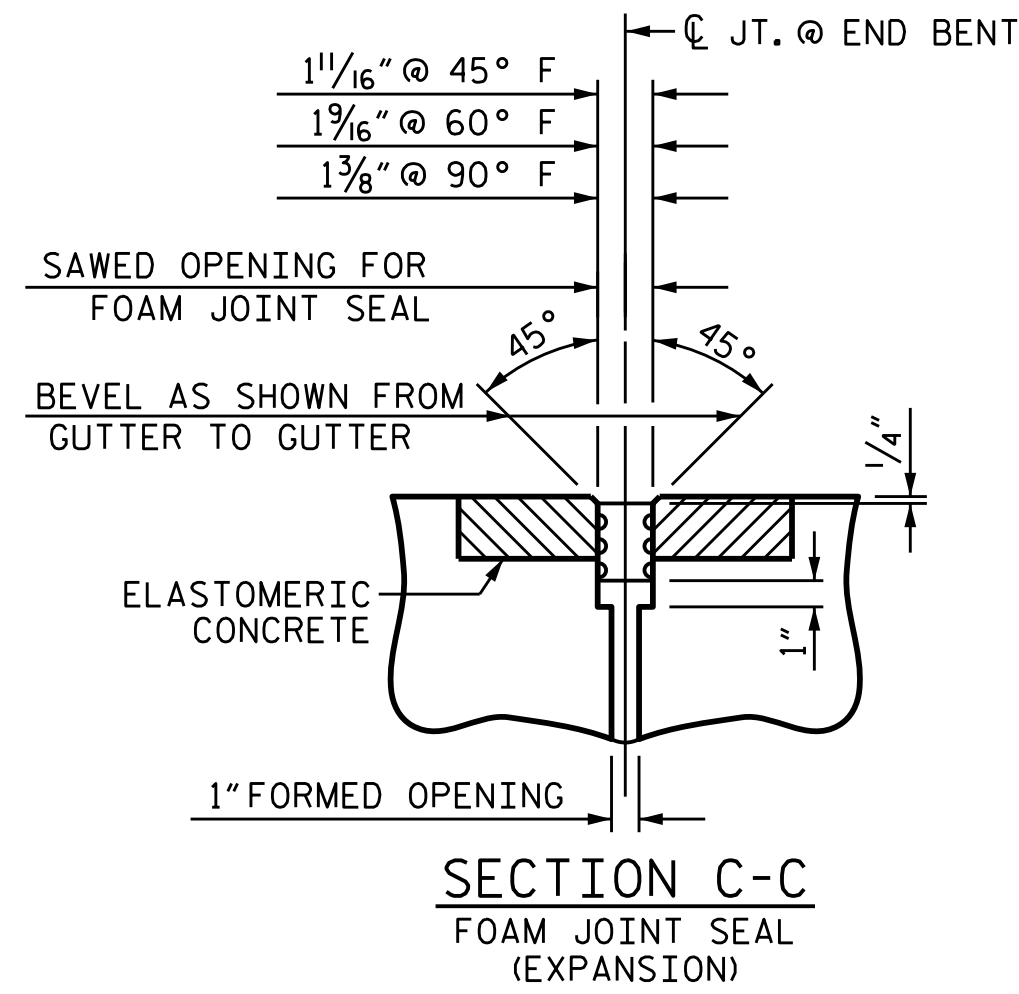
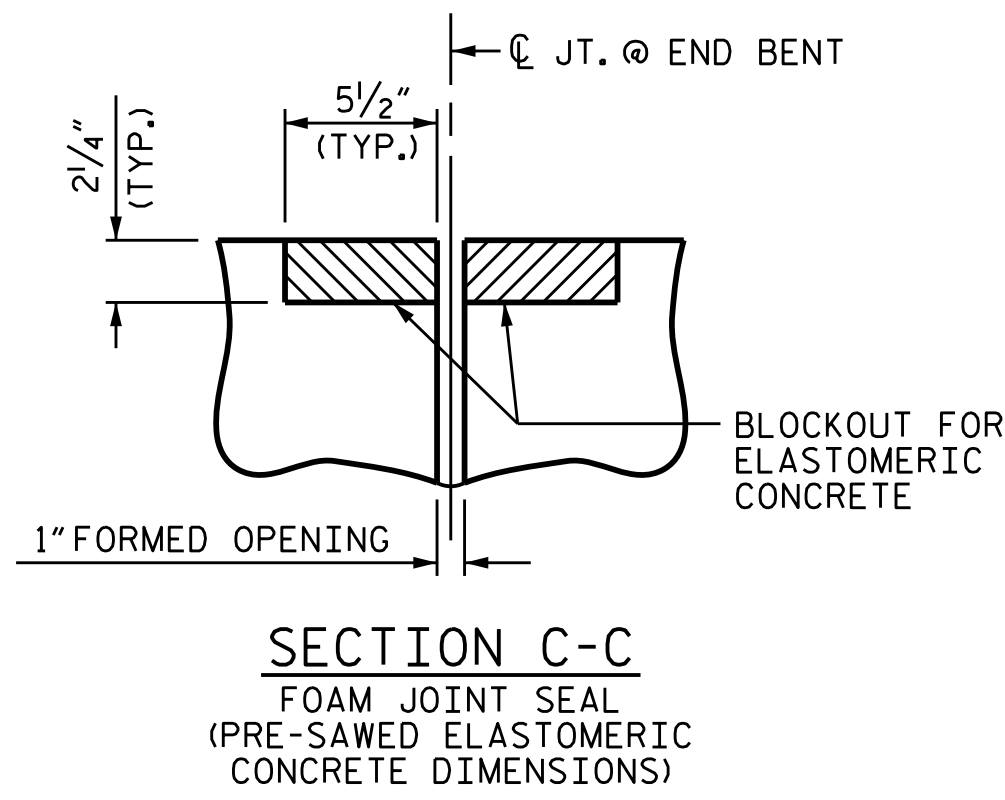


DocuSigned by:
Donald R. Smith, Jr.
EDC87706174B490
4/1/2016

ASSEMBLED BY : T. H. CARROLL	DATE : 9/25/14
CHECKED BY : R. P. PATEL	DATE : 10/21/14
DRAWN BY : EEM 3/95	REV. 10/11/II MAA/GM
CHECKED BY : VAP 3/95	REV. 12/21/II MAA/GM
	REV. 6/13 MAA/GM

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

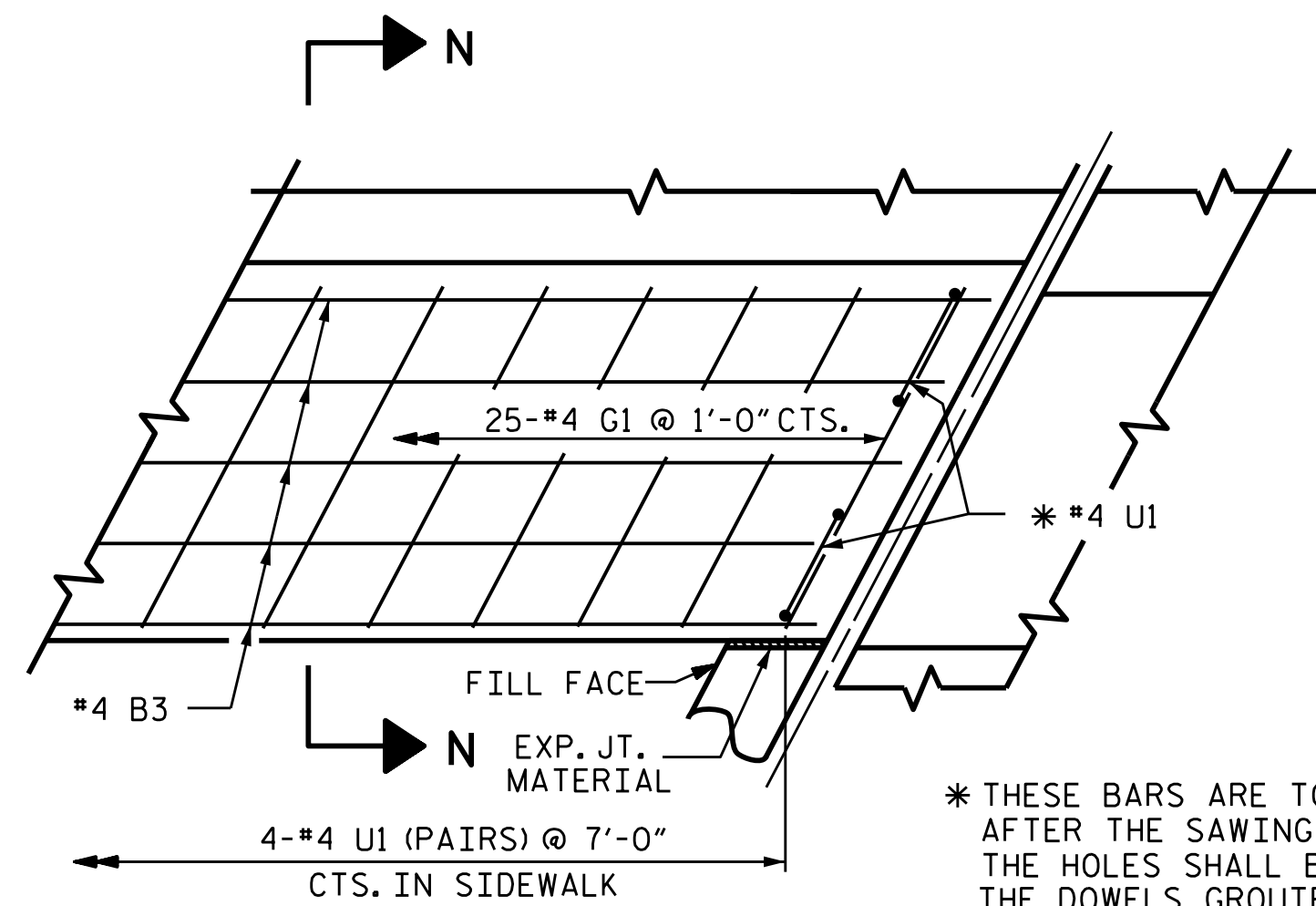
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2			4			47



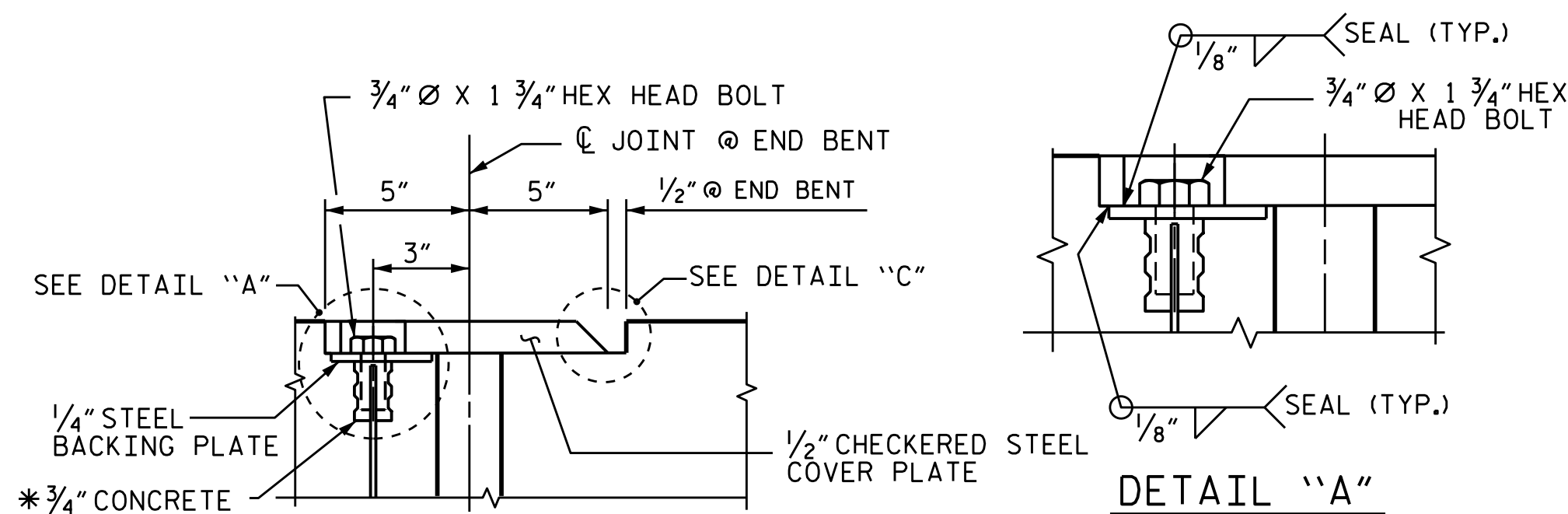
THE STEEL PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 OR APPROVED EQUAL. AFTER FABRICATION, THE PLATES SHALL BE COMMERCIALY BLAST CLEANED AND EITHER COATED WITH A MINIMUM THICKNESS OF 4 MILS (DRY) OF ZINC-RICH PAINT, GALVANIZED OR METALLIZED TO A MINIMUM THICKNESS OF 6 MILS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

THE 3/4" DIAMETER HEX HEAD BOLTS SHALL CONFORM TO ASTM F593 ALLOY 304 STAINLESS STEEL.

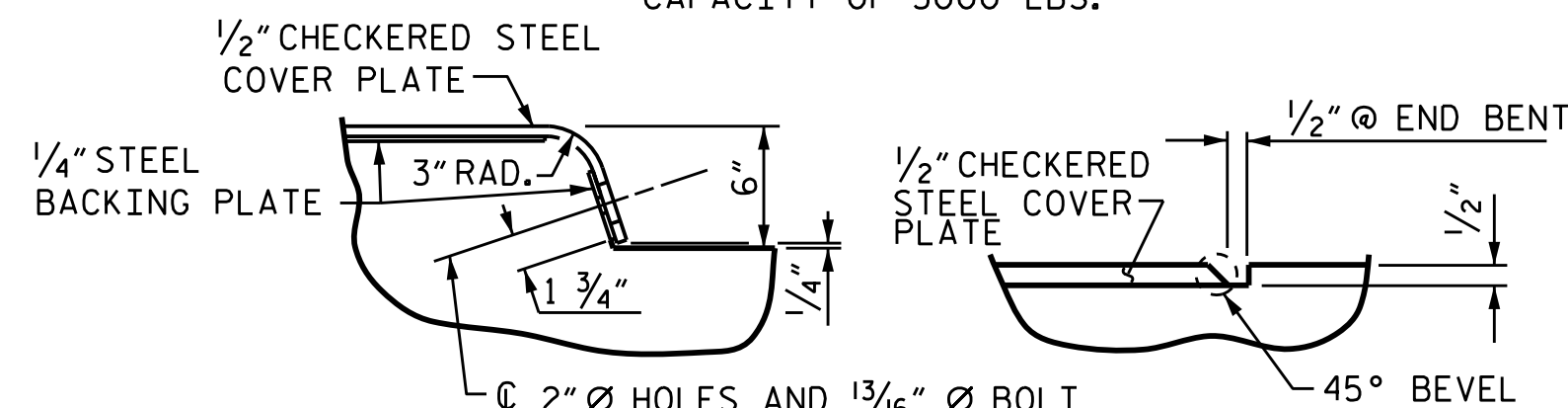
NO SEPARATE PAYMENT WILL BE MADE FOR FURNISHING AND INSTALLING THE COVER PLATE. THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE LUMP SUM PRICE FOR "FOAM JOINT SEALS".



BEGIN APPROACH SLAB SHOWN, END APPROACH SLAB SIMILAR.



* THE 3/4" CONCRETE INSERTS SHALL BE CLOSED-END FERRULES WITH LOOPED WIRE STRUTS ATTACHED TO THEM. THE INSERTS SHALL CONFORM TO AASHTO M169, GRADE 12L14 AND SHALL HAVE A TENSILE WORKING LOAD CAPACITY OF 3000 LBS.



JOINT SEAL DETAILS @ END BENT

ELASTOMERIC CONCRETE		
END BENT NO.	ELASTOMERIC CONCRETE * (CU. FT.)	
	STAGE I	STAGE II
1	5.0	9.2
2	5.0	9.2
TOTAL	10.0	18.4

* BASED ON THE MINIMUM BLOCKOUT SHOWN.

PROJECT NO. U-3308
DURHAM COUNTY
STATION: 16+42.70-LALT-

SHEET 3 OF 4

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

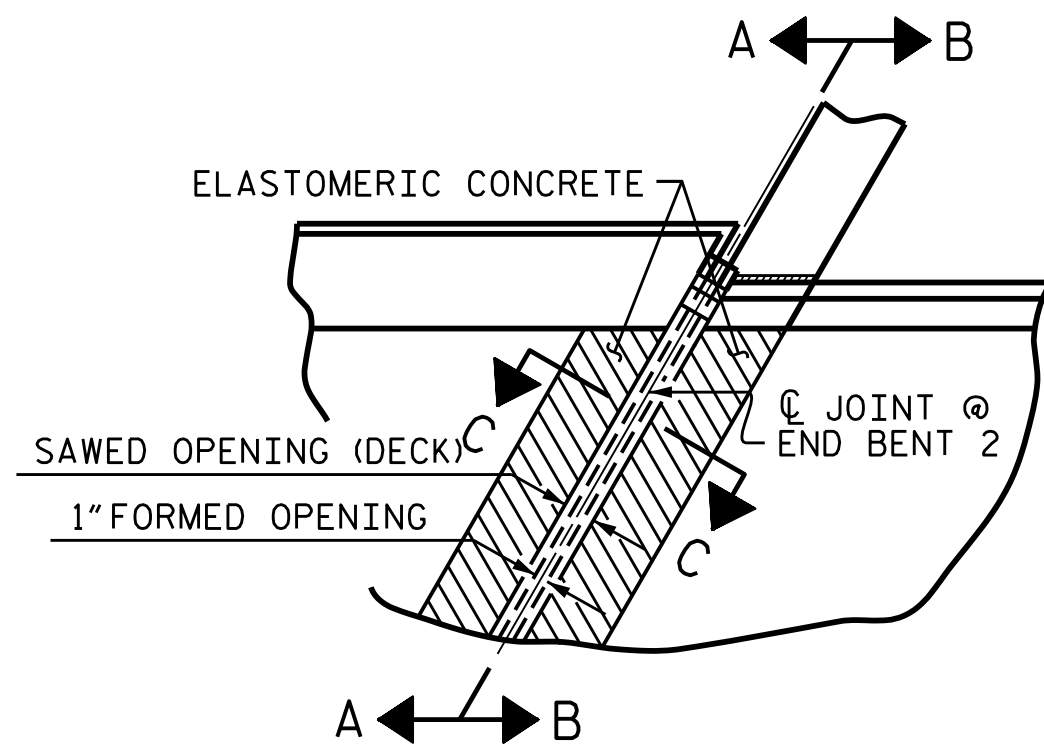


DocuSigned by:
Donald R. Smith, Jr.
EDC87706174B490
4/1/2016

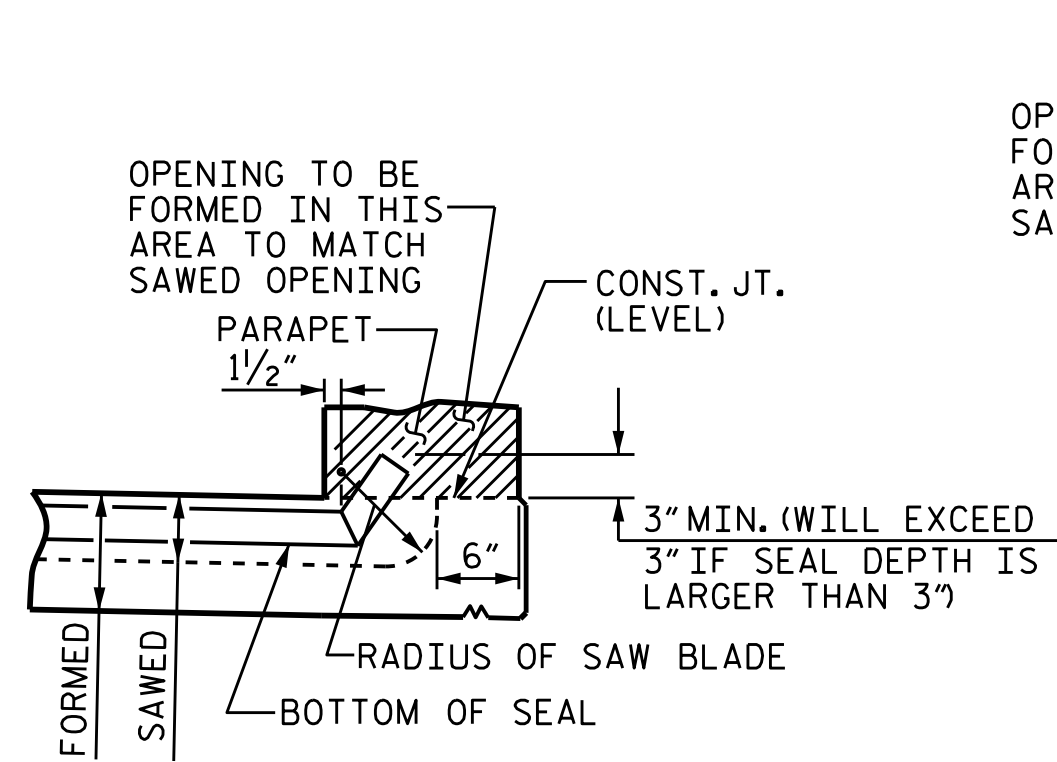
ASSEMBLED BY : T. H. CARROLL	DATE : 9/25/14
CHECKED BY : R. P. PATEL	DATE : 10/21/14
DRAWN BY : FCJ 11/88	REV. 10/1/11 MAA/GM
CHECKED BY : ARB 11/88	REV. 7/12 MAA/GM
	REV. 6/13 MAA/GM

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

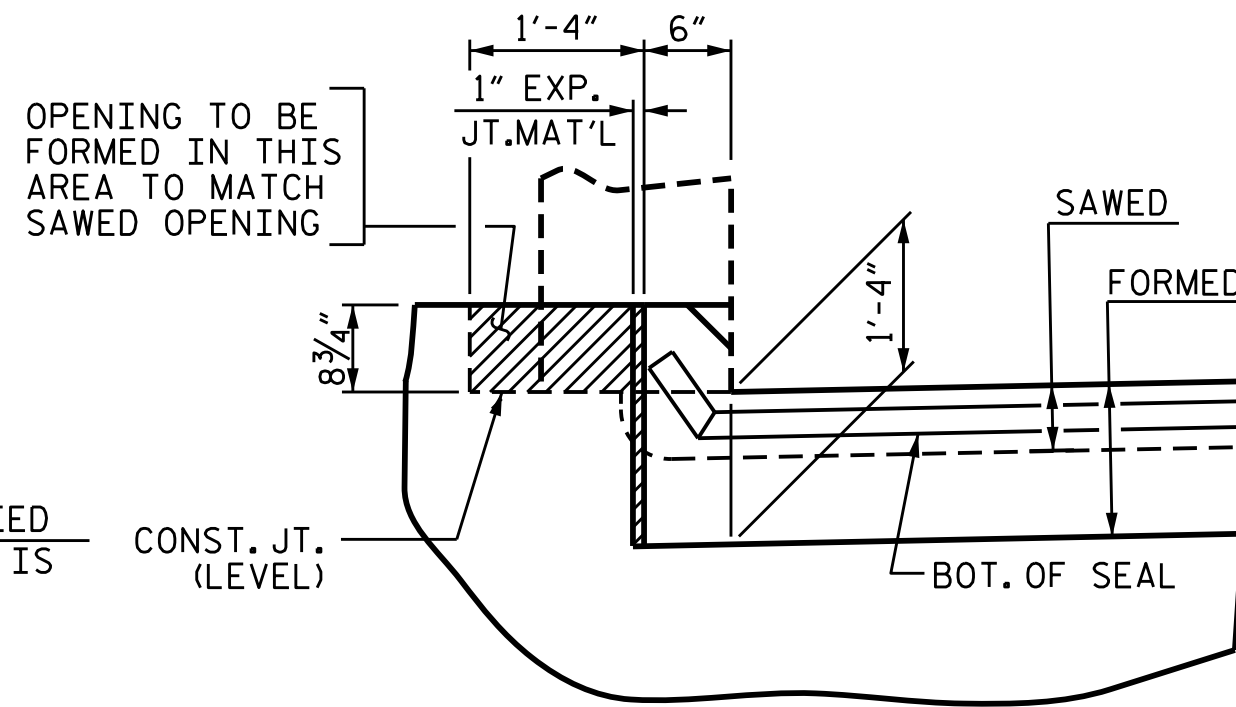
REVISIONS						SHEET NO. S1-46
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 47
2			4			



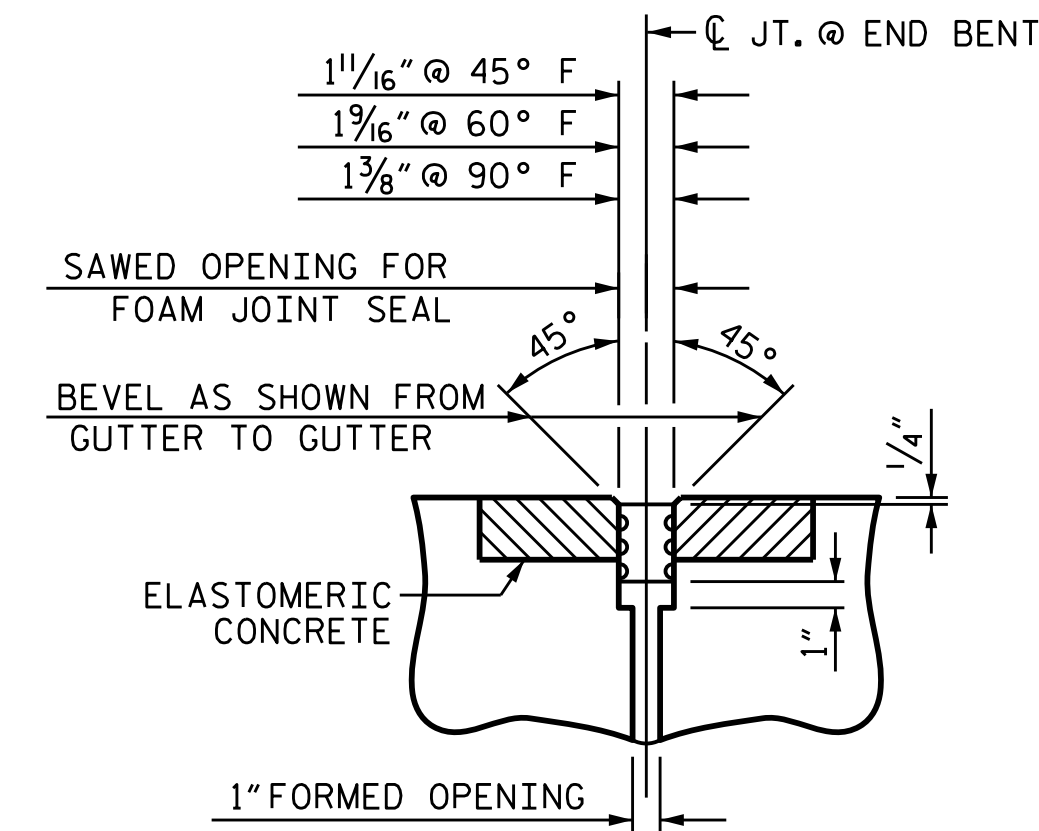
PLAN VIEW OF FOAM JOINT SEAL @ END BENT FOR LEFT SIDE STAGE I



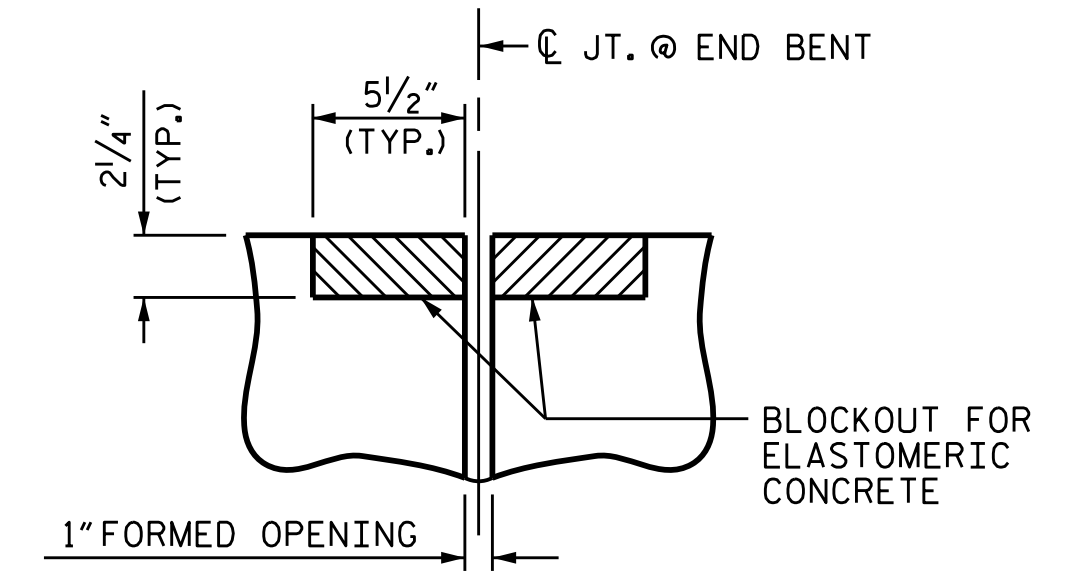
SECTION A-A



SECTION B-B



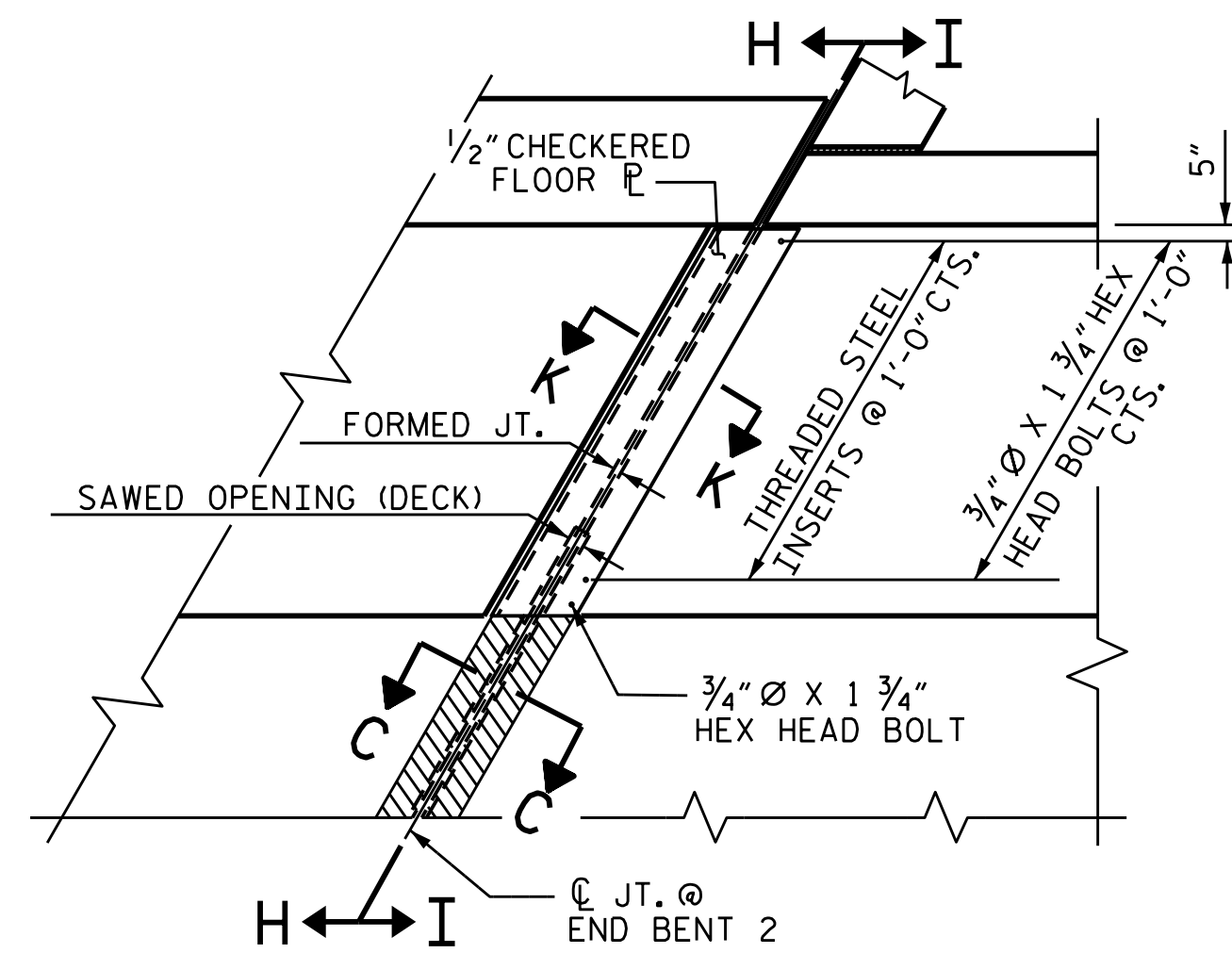
SECTION C-C
FOAM JOINT SEAL (EXPANSION)



SECTION C-C
FOAM JOINT SEAL (PRE-SAWED ELASTOMERIC CONCRETE DIMENSIONS)

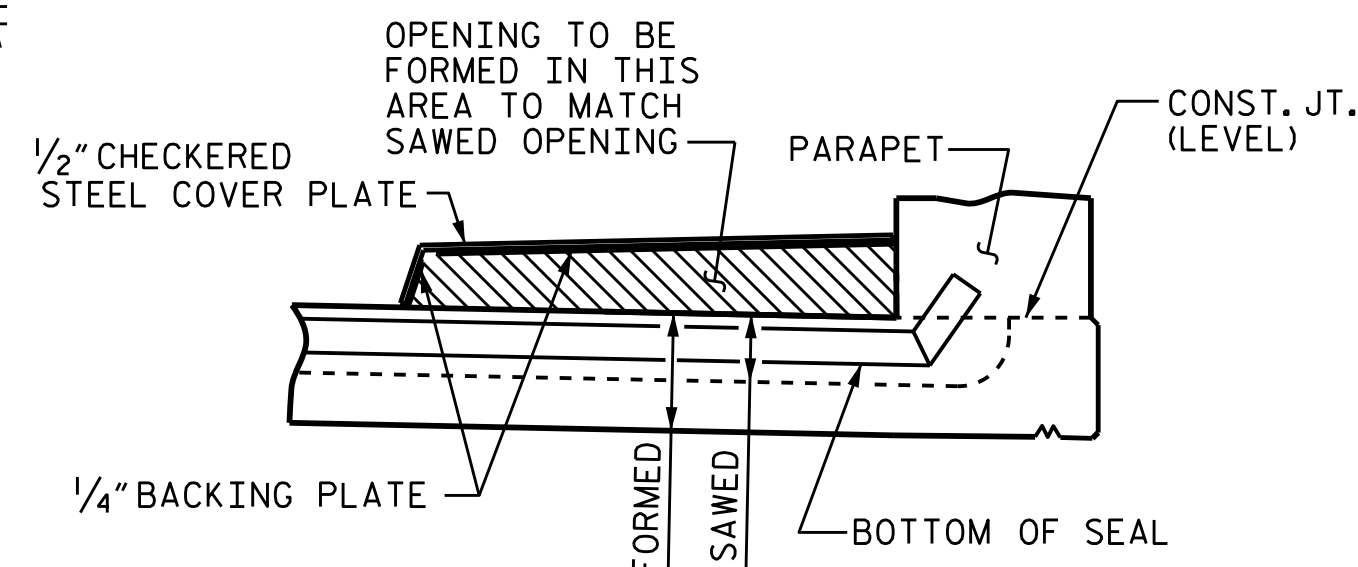
JOINT SEAL DETAILS @ END BENT STAGE I

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

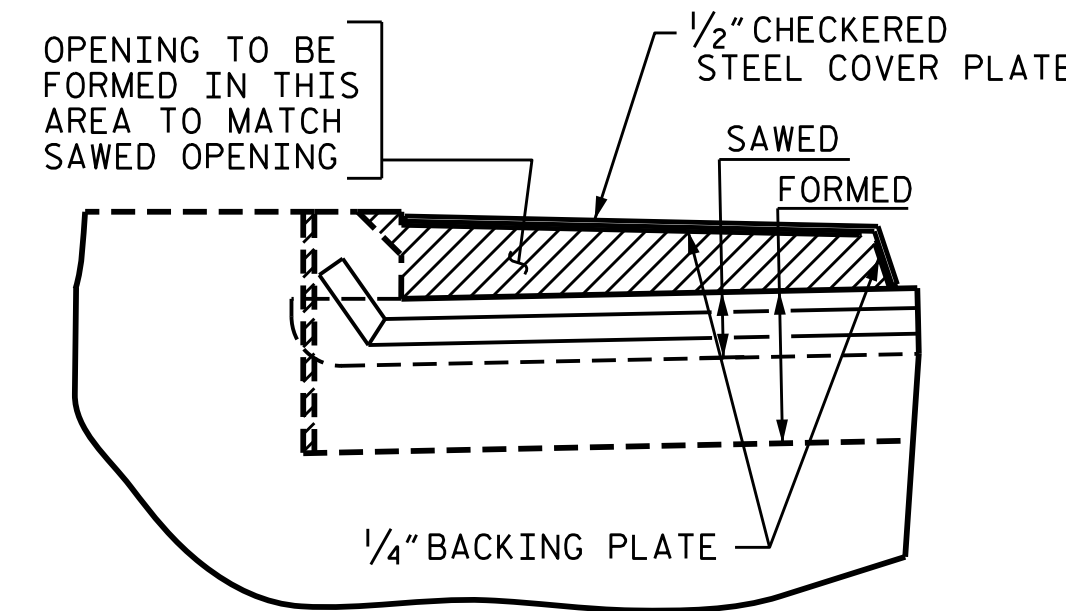


PLAN VIEW OF FOAM

JOINT SEAL @ END BENT FOR SIDEWALK LEFT SIDE STAGE III



SECTION H-H



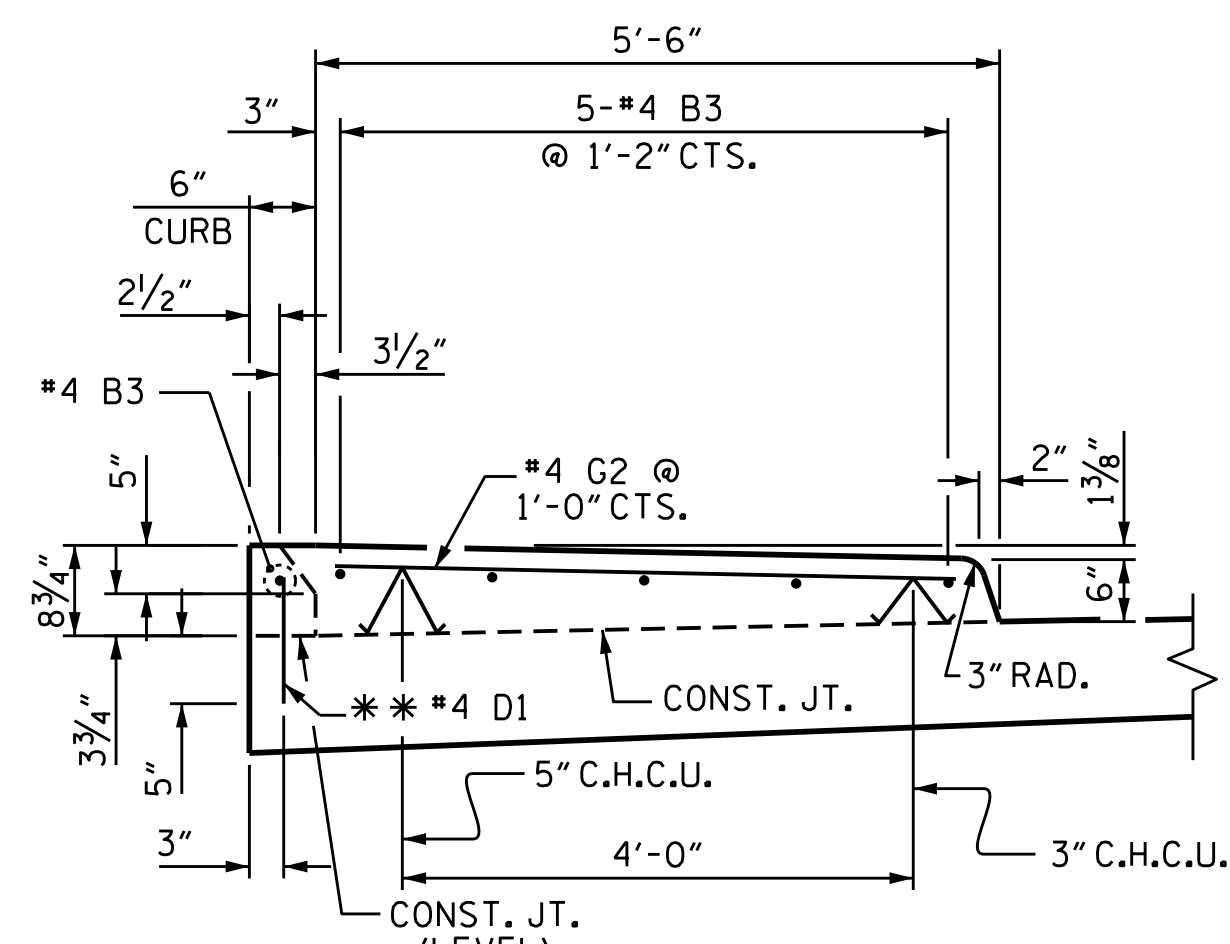
SECTION I-I

JOINT SEAL DETAILS @ END BENT STAGE III

THE STEEL PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 OR APPROVED EQUAL. AFTER FABRICATION, THE PLATES SHALL BE COMMERCIALY BLAST CLEANED AND EITHER COATED WITH A MINIMUM THICKNESS OF 4 MILS (DRY) OF ZINC-RICH PAINT, GALVANIZED OR METALLIZED TO A MINIMUM THICKNESS OF 6 MILS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

THE 3/4" DIAMETER HEX HEAD BOLTS SHALL CONFORM TO ASTM F593 ALLOY 304 STAINLESS STEEL.

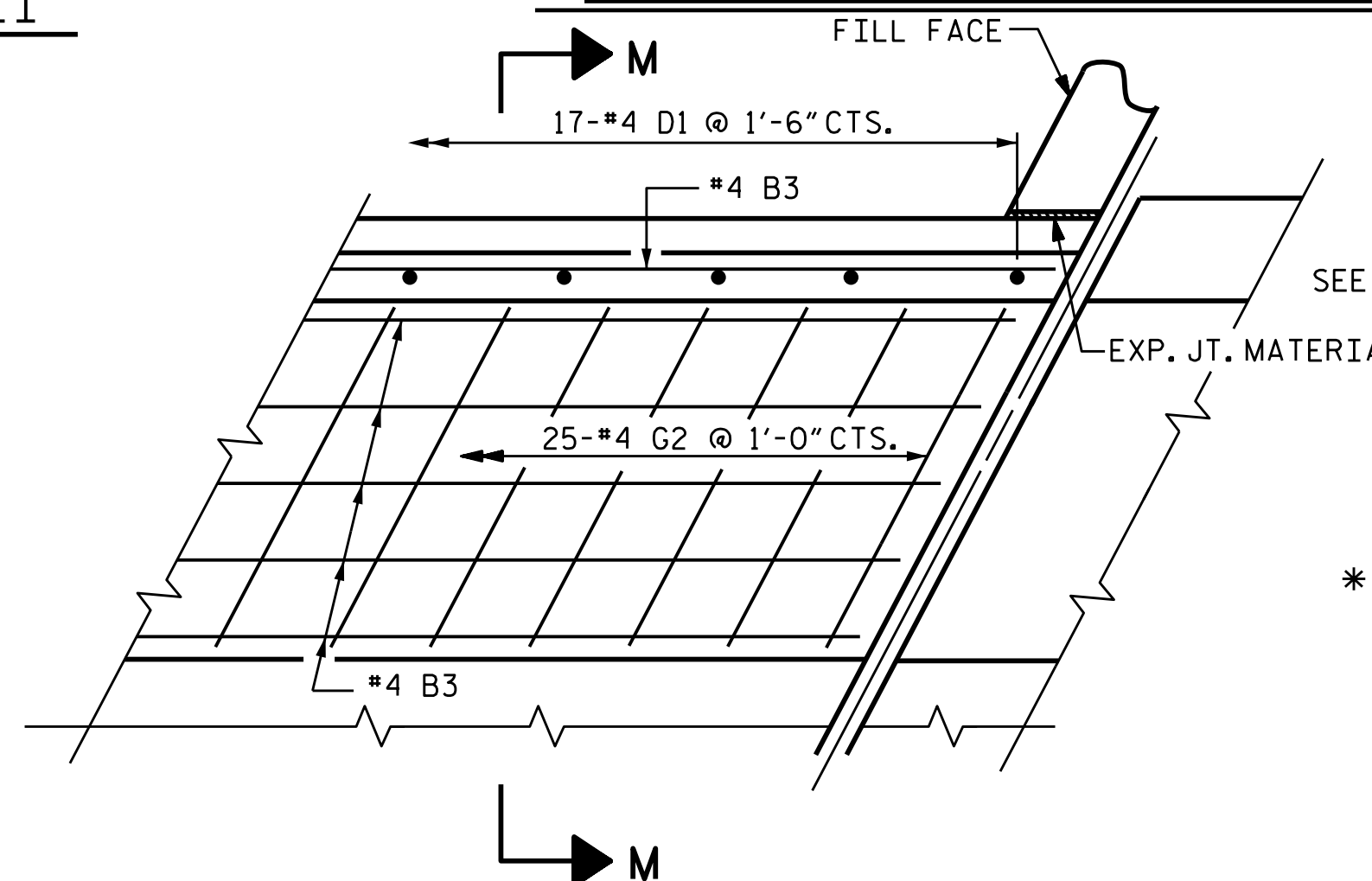
NO SEPARATE PAYMENT WILL BE MADE FOR FURNISHING AND INSTALLING THE COVER PLATE. THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE LUMP SUM PRICE FOR "FOAM JOINT SEALS".



SECTION M-M

SIDEWALK DETAILS

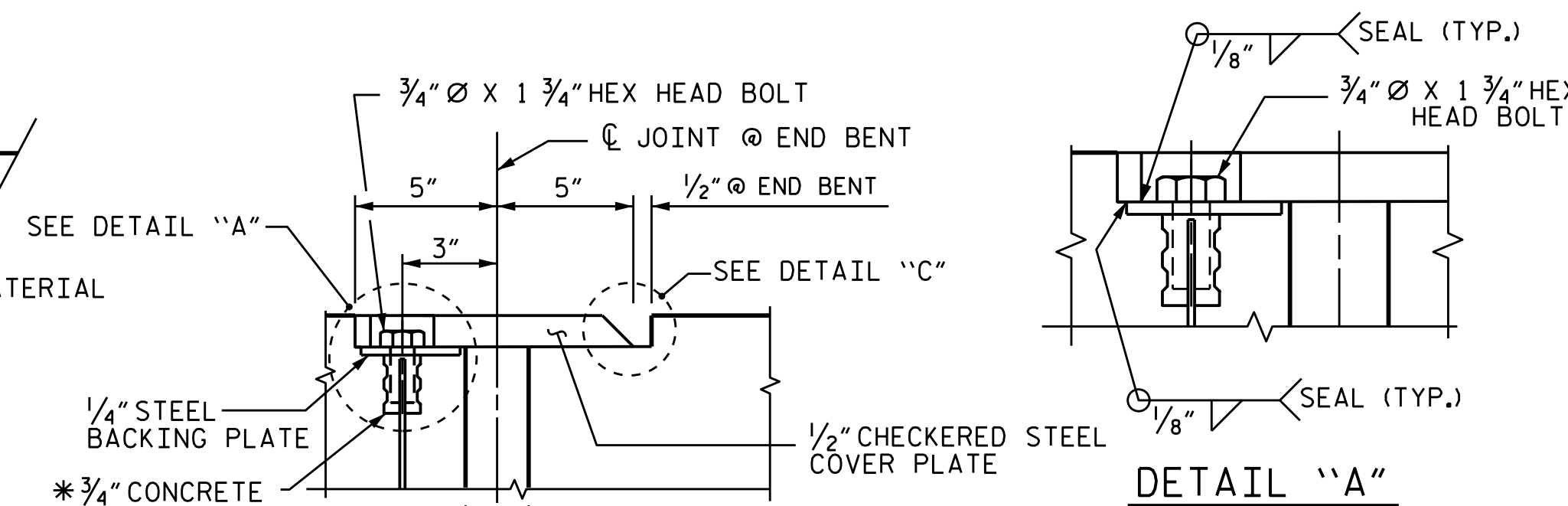
** DOWELS MAY BE PUSHED INTO GREEN CONCRETE AFTER THE SLAB HAS BEEN SCREEDED AND FLOAT FINISHED.



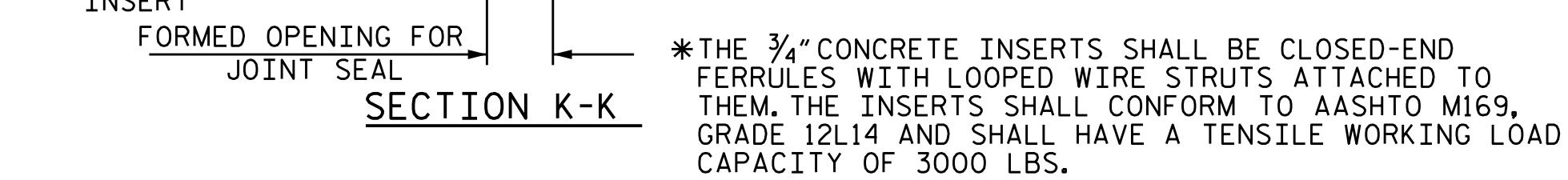
PLAN

DETAILS OF SIDEWALK ON APPROACH SLAB

BEGIN APPROACH SLAB SHOWN, END APPROACH SLAB SIMILAR.

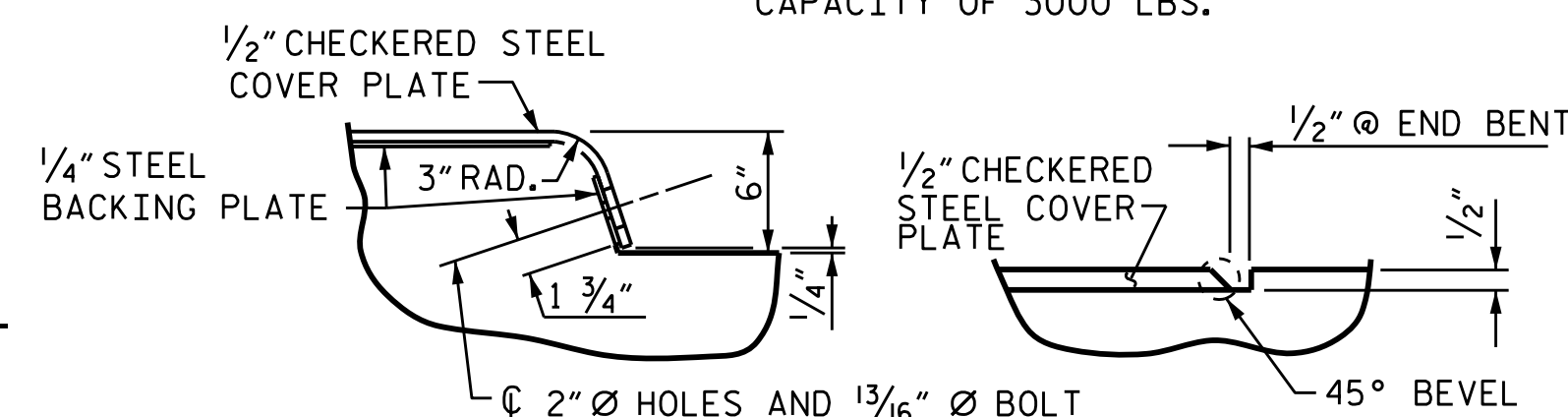


DETAIL "A"



SECTION K-K

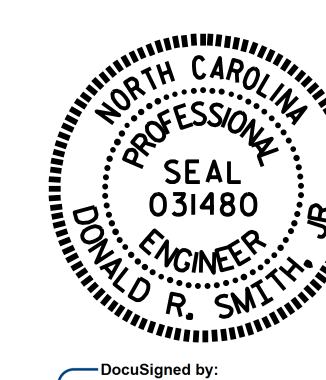
* THE 3/4" CONCRETE INSERTS SHALL BE CLOSED-END FERRULES WITH LOOPED WIRE STRUTS ATTACHED TO THEM. THE INSERTS SHALL CONFORM TO AASHTO M169, GRADE 12L14 AND SHALL HAVE A TENSILE WORKING LOAD CAPACITY OF 3000 LBS.



DETAIL "B"

DETAIL "C"

JOINT SEAL DETAILS @ END BENT



PROJECT NO. U-3308
DURHAM COUNTY
STATION: 16+42.70-LALT-

SHEET 4 OF 4

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

ASSEMBLED BY : T. H. CARROLL	DATE : 9/25/14
CHECKED BY : R. P. PATEL	DATE : 10/21/14
DRAWN BY : FCJ 11/88	REV. 10/1/11 MAA/GM
CHECKED BY : ARB 11/88	REV. 7/12 MAA/GM
	REV. 6/13 MAA/GM

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			47
2			4			47