

CONTRACT: C202586 TIP PROJECT: U-3621B

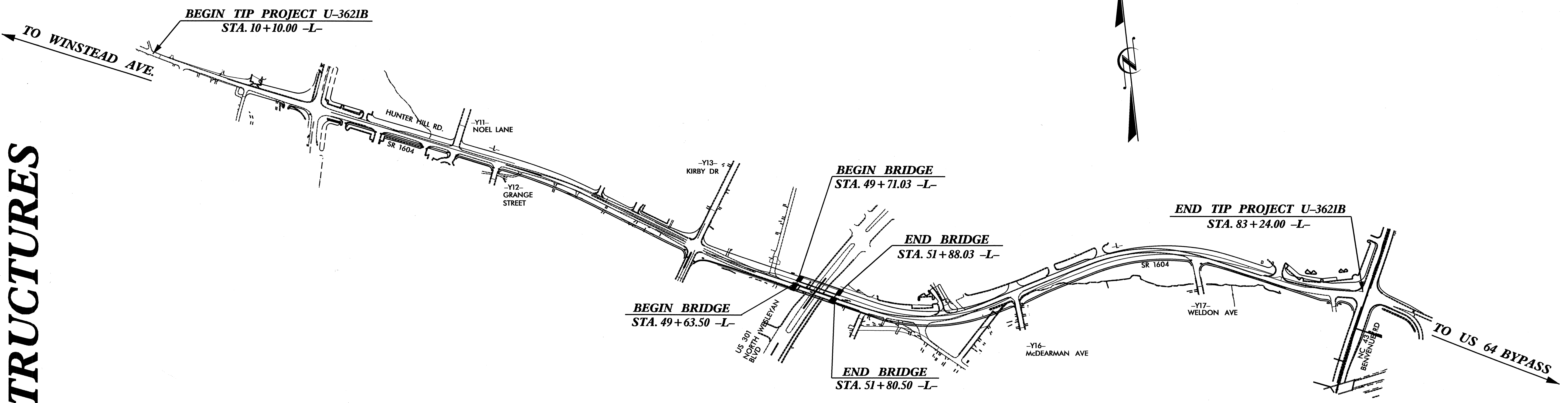
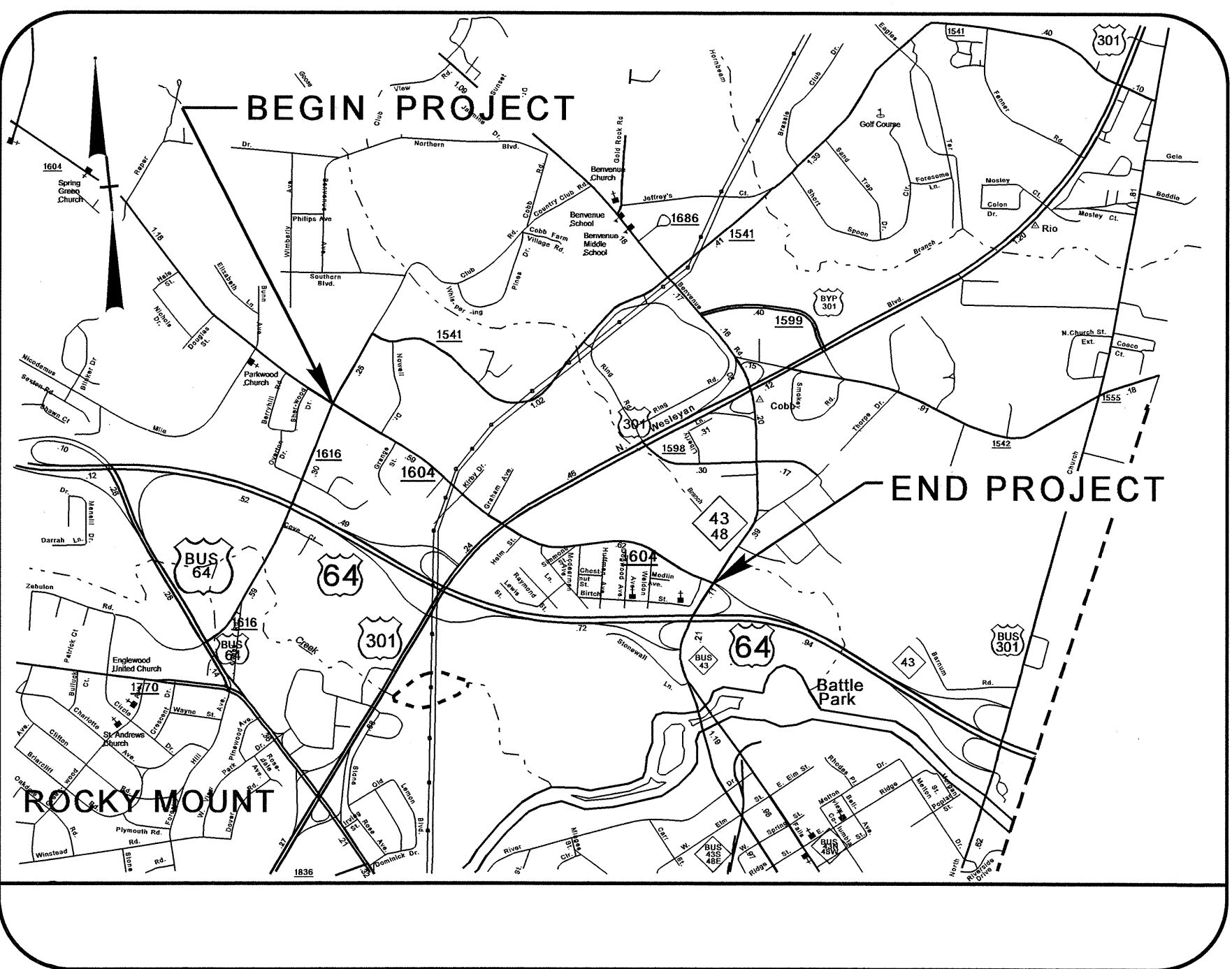
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-3621B		
STATE PROJ. NO.	P. A. PROJ. NO.	DESCRIPTION	
34964.1.1	STP-1604(1)	PE	
34964.3.1	STP-1604(5)	UTIL. & RAW	
34964.2.3	STP-1604(6)	CONST.	

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

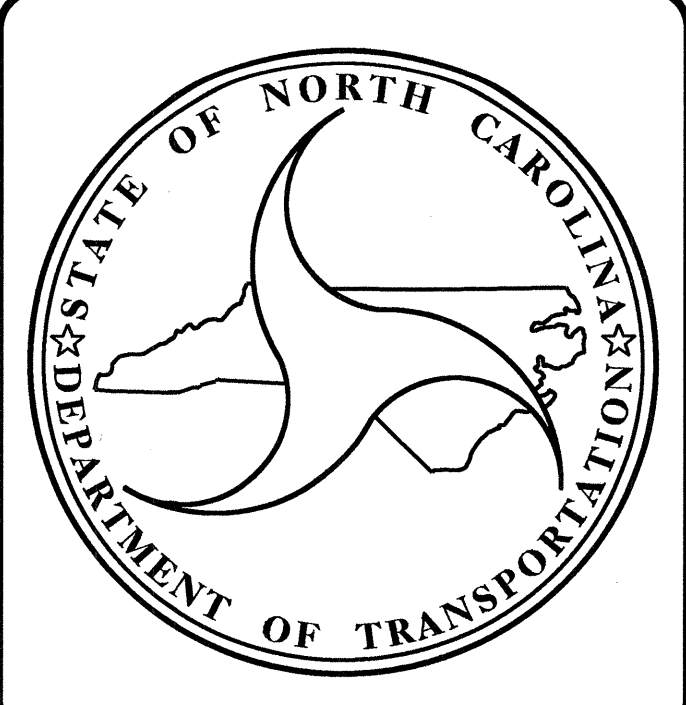
NASH COUNTY

LOCATION: SR 1604 (HUNTER HILL RD) FROM SR 1616 (COUNTRY CLUB RD) TO NC 43/48 (BENVENUE RD)

TYPE OF WORK: GRADING, WIDENING, PAVING, DRAINAGE, SIGNALS, STRUCTURES AND RETAINING WALLS



STRUCTURES



DESIGN DATA

ADT 2009	= 10,090
ADT 2035	= 22,860
DHV	= 11 %
D	= 55 %
T	= 2 % *
V	= 50 MPH
* TTST	1% DUAL 1%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-3621B	= 1.346 MI
LENGTH STRUCTURE TIP PROJECT U-3621B	= 0.041 MI
TOTAL LENGTH TIP PROJECT U-3621B	= 1.387 MI

Prepared In the Office of:
DIVISION OF HIGHWAYS
2006 STANDARD SPECIFICATIONS

LETTING DATE :
MARCH 15, 2011

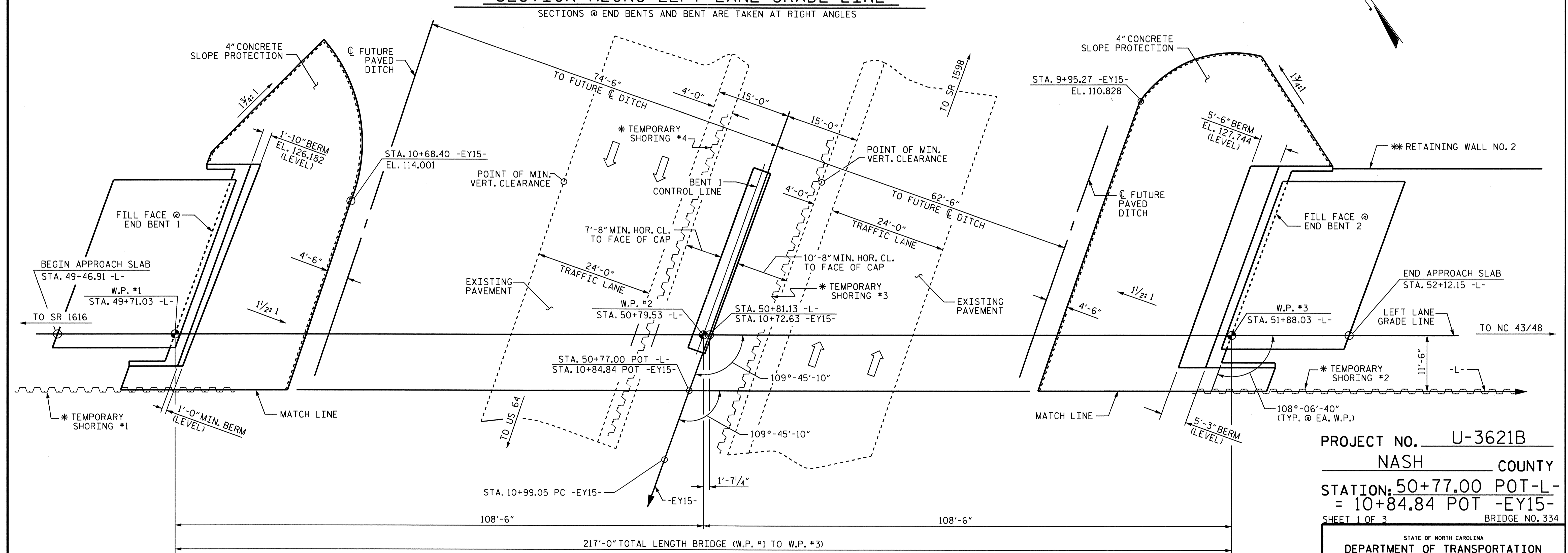
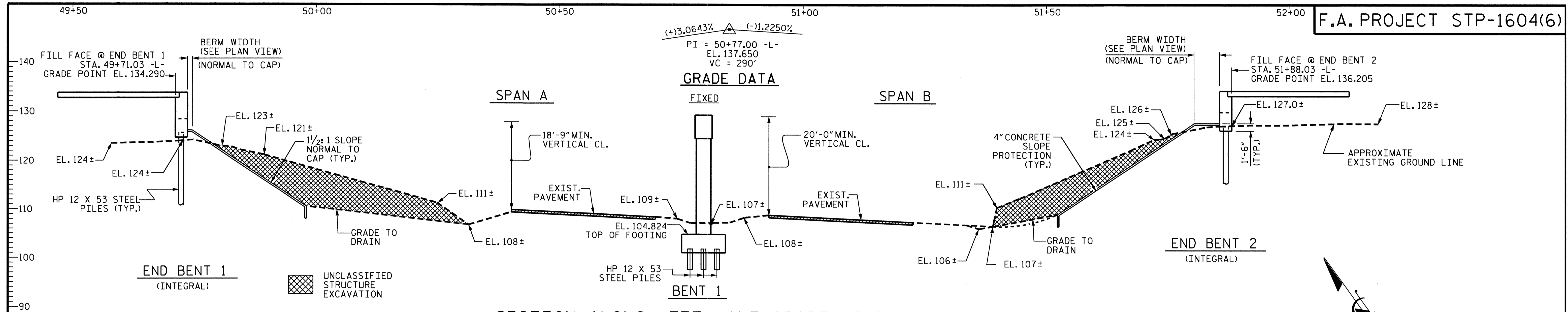
J. C. FRYE, P.E. PROJECT ENGINEER
T. H. FANG, P.E. PROJECT DESIGN ENGINEER

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

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

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

APPROVED _____ DATE _____
DIVISION ADMINISTRATOR



HORIZONTAL CURVE DATA -EY15-

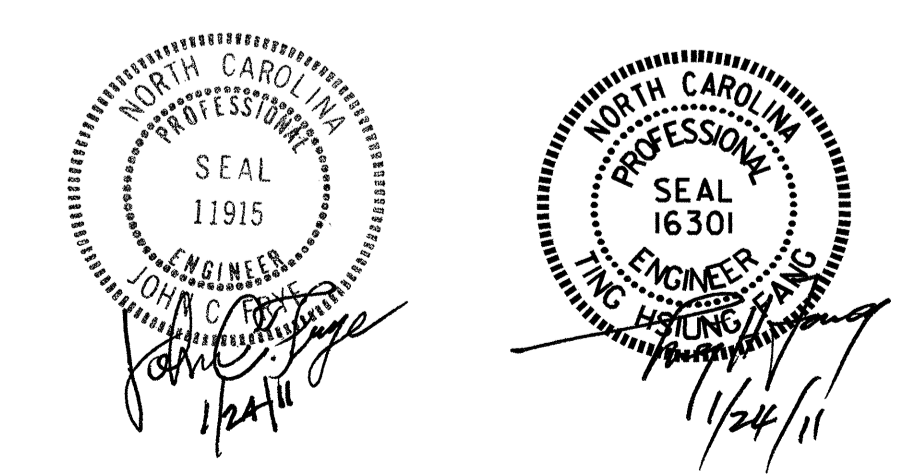
P.I. STA.	= 11+11.88 -EY15-
Δ	= 2°-56'-20.9" (LT)
D	= 11°-27'-33"
L	= 25.65 FT.
T	= 12.83 FT.
R	= 500.00 FT.

PLAN

PILES & COLUMNS NOT SHOWN FOR CLARITY

* TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC (SEE ROADWAY PLANS)

* FOR DETAILS AND QUANTITY OF RETAINING WALL, SEE "MSE RETAINING WALL NO. 2" ON SHEETS NO. W-3 & W-4.



PROJECT NO. U-3621B
 NASH COUNTY
 STATION: 50+77.00 POT-L-
 = 10+84.84 POT -EY15-
 SHEET 1 OF 3 BRIDGE NO. 334

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 BRIDGE ON SR 1604 OVER
 US 301 BETWEEN
 SR 1616 AND NC 43/48
 (LEFT LANE)

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

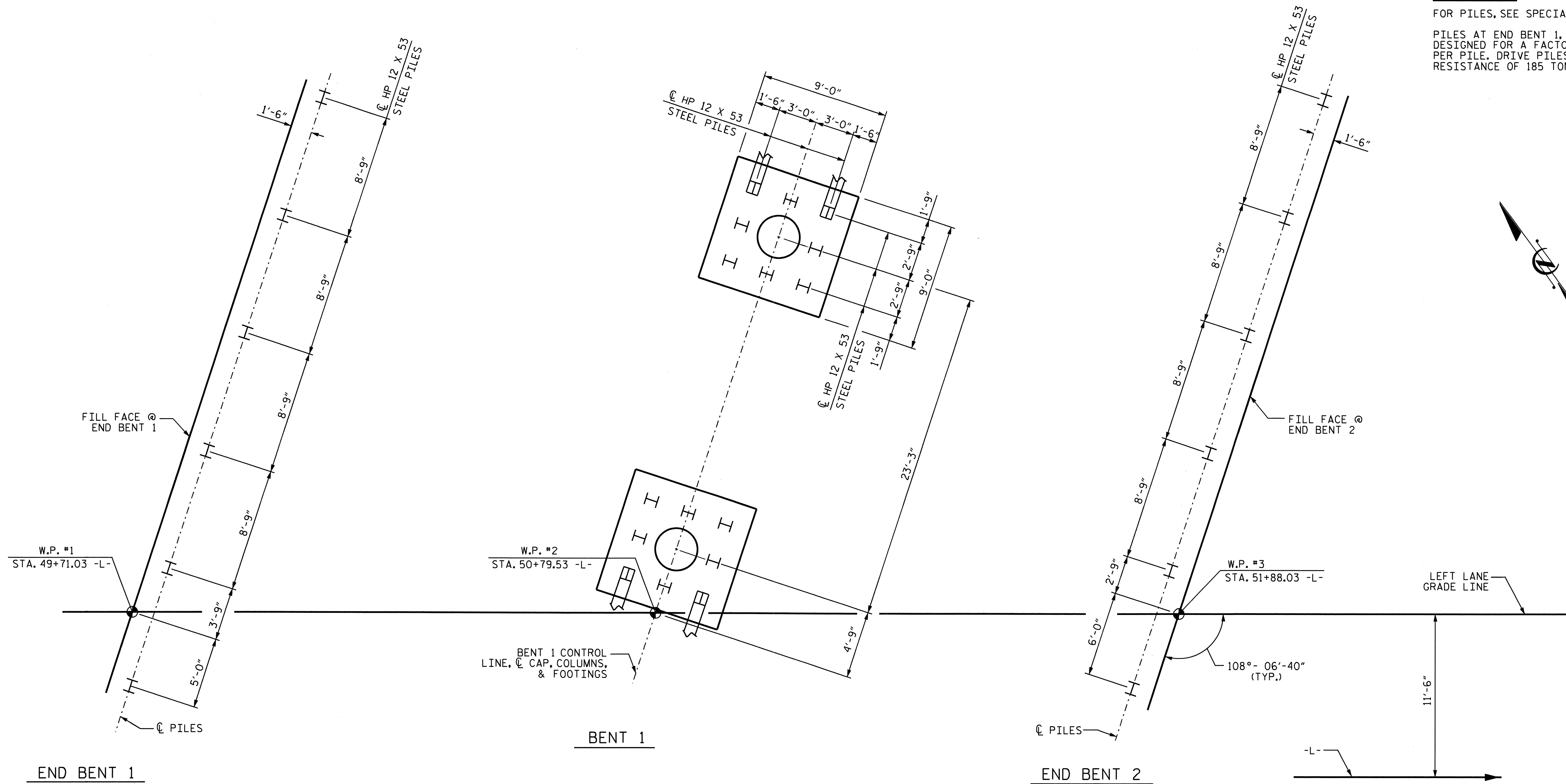
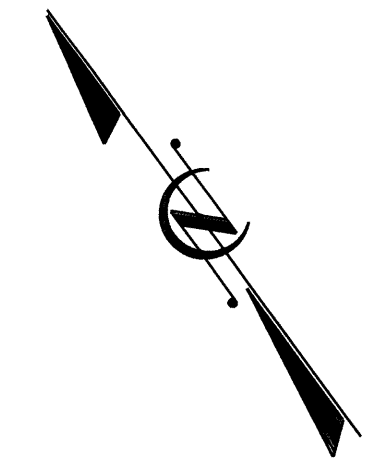
TOTAL SHEETS: 68

DRAWN BY: QT NGUYEN DATE: 01-10
 CHECKED BY: W.D. CRUTCHER DATE: 4-9-10

NOTES

FOR PILES, SEE SPECIAL PROVISIONS.

PILES AT END BENT 1, BENT 1 AND END BENT 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 110 TONS PER PILE. DRIVE PILES TO A REQUIRED DRIVING RESISTANCE OF 185 TONS PER PILE.



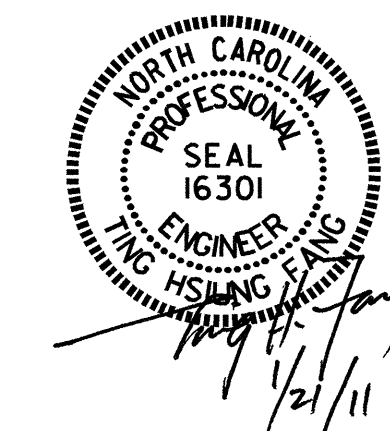
FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO PILE CENTERLINE AND MEASURED AT BOTTOM OF FOOTING. BRACE PILES IN FOOTINGS ARE BATTERED 1/2:12 IN THE DIRECTION SHOWN IN THE PLAN VIEW. ORIENT PILES @ END BENTS AS SHOWN.

FOOTING DIMENSIONS ARE TYPICAL AT BENT 1.

PROJECT NO. U-3621B
NASH COUNTY
 STATION: 50+77.00 -L-

SHEET 2 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 BRIDGE ON SR 1604 OVER
 US 301 BETWEEN
 SR 1616 AND NC 43/48
 (LEFT LANE)

REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
					68

DRAWN BY : QT NGUYEN DATE : 01-10
 CHECKED BY : W.D. CRUTCHER DATE : 4-8-10

TOTAL BILL OF MATERIAL																	
	FOUNDATION EXCAVATION	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	STRUCTURAL STEEL	HP 12 X 53 STEEL PILES	THREE BAR METAL RAIL	CONCRETE BARRIER RAIL	4" SLOPE PROTECTION	POT BEARINGS	ELASTOMERIC BEARINGS	EVAZOTE JOINT SEALS	
	LUMP SUM	LUMP SUM	SO. FT.	SO. FT.	CU. YDS.	LUMP SUM	LBS.	LBS.	APPROX. LBS.	NO.	LIN. FT.	LIN. FT.	LIN. FT.	SO. YDS.	LUMP SUM	LUMP SUM	LUMP SUM
SUPERSTRUCTURE			8336	6952		LUMP SUM			315,000			207.38	215.25		LUMP SUM	LUMP SUM	LUMP SUM
END BENT 1					22.2		2925			6	330			225			
BENT 1	LUMP SUM				59.8		9420	1764		16	480						
END BENT 2					23.0		3006			6	330			350			
TOTAL	LUMP SUM	LUMP SUM	8336	6952	105.0	LUMP SUM	15,351	1764	315,000	28	1140	207.38	215.25	575	LUMP SUM	LUMP SUM	LUMP SUM

NOTES

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 70 FT. LEFT SIDE OF END BENTS 1 AND 2 OF CENTERLINE ROADWAY -L- AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION, SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.

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

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

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.

FOR HIGH STRENGTH BOLTS, SEE SPECIAL PROVISIONS.

STEEL SHEET PILING REQUIRED FOR SHORING SHALL BE HOT ROLLED.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR CURING CONCRETE, SEE SPECIAL PROVISIONS.

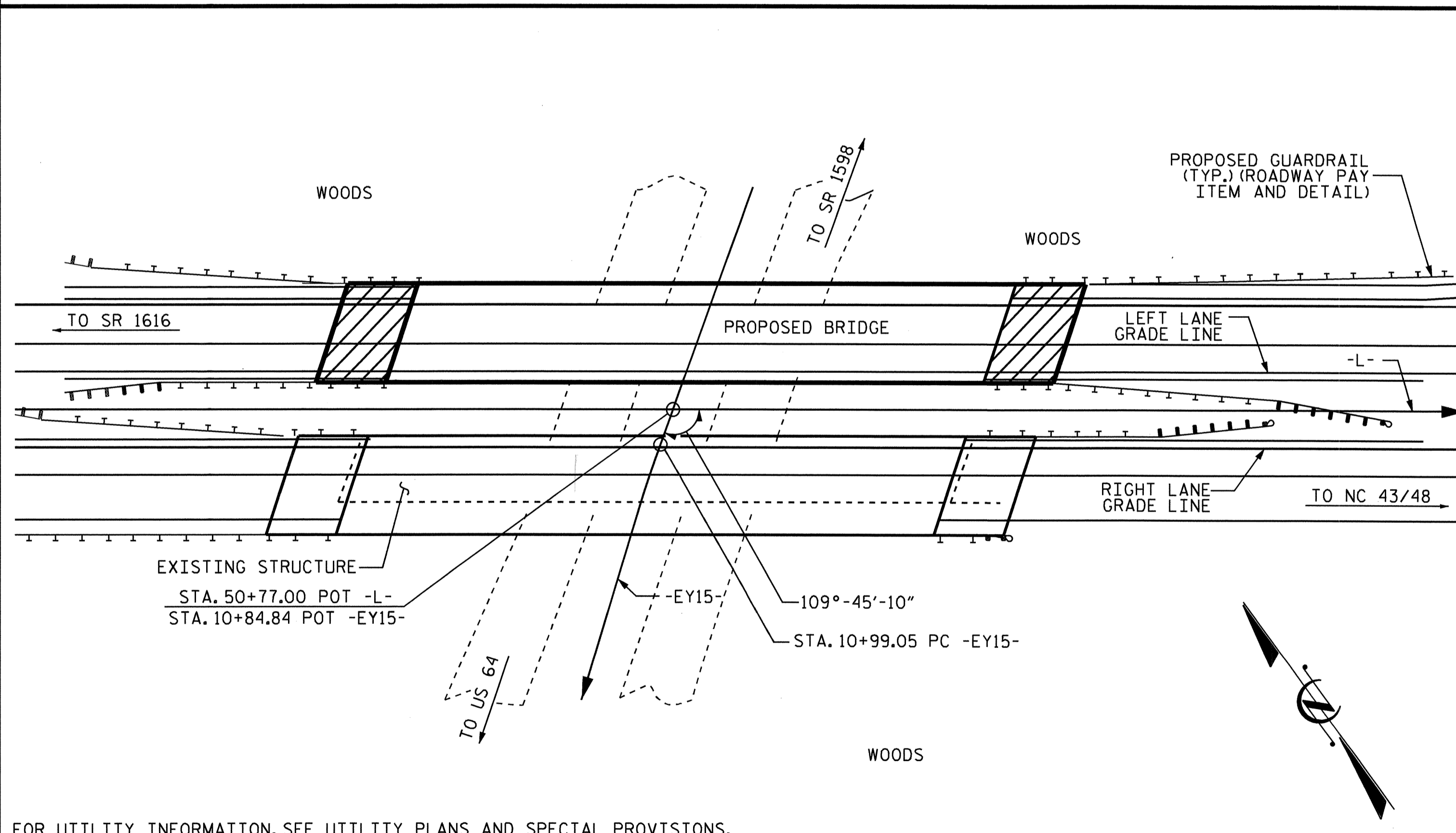
FOR PLACING LOAD ON STRUCTURE MEMBERS, SEE SPECIAL PROVISIONS.

FOR SHIPPING STEEL STRUCTURAL MEMBERS, SEE SPECIAL PROVISIONS.

FOR DIRECT TENSION INDICATORS, SEE SPECIAL PROVISIONS.

FOR FORMS FOR CONCRETE BRIDGE DECKS, SEE SPECIAL PROVISIONS.

BM #3: R/R SPIKE SET IN POWER POLE 22.99' LT. OF -L- STA. 49+82.44 EL. 124.03

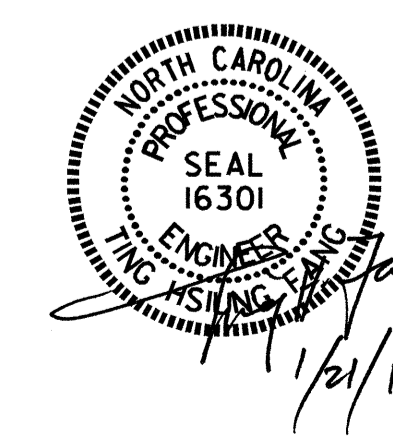


FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

LOCATION SKETCH

DRAWN BY : QT NGUYEN DATE : 01-10
 CHECKED BY : W.D. CRUTCHER DATE : 4-8-10

21-JAN-2011 16:25
 X:\U3621B\Structures\Final Plans\1334\U3621b.sd.gdl.dgn
 ttang



PROJECT NO. U-3621B
NASH COUNTY
 STATION: 50+77.00 -L-
 SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 BRIDGE ON SR 1604 OVER
 US 301 BETWEEN
 SR 1616 AND NC 43/48
 (LEFT LANE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS
2			4			68

STR #1

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	1.01	--	1.75	0.895	1.01	A	EL	106.92	0.946	1.35	A	EL	106.92	1.30	0.895	1.11	A	EL	106.92		
	HL-93 (OPERATING)	N/A		1.31	--	1.35	0.895	1.31	A	EL	106.92	0.946	1.75	A	EL	106.92	1.00	0.895	1.44	A	EL	106.92		
	HS-20 (INVENTORY)	36.00	②	2.12	76.322	1.75	0.895	2.90	A	EL	42.77	0.946	2.12	A	EL	106.92	1.30	0.895	3.72	A	EL	42.77		
	HS-20 (OPERATING)	36.00		2.75	98.936	1.35	0.895	3.76	A	EL	42.77	0.946	2.75	A	EL	106.92	1.00	0.895	4.84	A	EL	42.77		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH		5.01	67.673	1.40	0.895	6.72	A	EL	42.77	0.946	5.01	A	EL	106.92	1.30	0.895	8.76	A	EL	42.77		
		SNGARBS2	20.000	3.98	79.609	1.40	0.895	5.42	A	EL	42.77	0.946	3.98	A	EL	106.92	1.30	0.895	6.34	A	EL	42.77		
		SNAGRIS2	22.000	3.75	82.418	1.40	0.895	5.17	A	EL	42.77	0.946	3.75	A	EL	106.92	1.30	0.895	5.93	A	EL	42.77		
		SNCOTTS3	27.250	3.17	86.425	1.40	0.895	4.13	A	EL	42.77	0.946	3.17	A	EL	106.92	1.30	0.895	4.38	A	EL	42.77		
		SNAGGRS4	34.925	2.67	93.297	1.40	0.895	3.53	A	EL	42.77	0.946	2.67	A	EL	106.92	1.30	0.895	3.59	A	EL	42.77		
		SNS5A	35.550	2.66	94.588	1.40	0.895	3.48	A	EL	42.77	0.946	2.66	A	EL	106.92	1.30	0.895	3.53	A	EL	42.77		
		SNS6A	39.950	2.45	97.792	1.40	0.895	3.22	A	EL	42.77	0.946	2.45	A	EL	106.92	1.30	0.895	3.21	A	EL	42.77		
	SNS7B	42.000	2.37	99.681	1.40	0.895	3.11	A	EL	42.77	0.946	2.37	A	EL	106.92	1.30	0.895	3.07	A	EL	42.77			
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		2.82	93.072	1.40	0.895	3.79	A	EL	42.77	0.946	2.82	A	EL	106.92	1.30	0.895	3.93	A	EL	42.77	
		TNT4A	33.075		2.80	92.579	1.40	0.895	3.77	A	EL	42.77	0.946	2.80	A	EL	106.92	1.30	0.895	3.90	A	EL	42.77	
		TNT6A	41.600		2.43	100.945	1.40	0.895	3.19	A	EL	42.77	0.946	2.43	A	EL	106.92	1.30	0.895	3.18	A	EL	42.77	
		TNT7A	42.000		2.41	101.022	1.40	0.895	3.19	A	EL	42.77	0.946	2.41	A	EL	106.92	1.30	0.895	3.18	A	EL	42.77	
		TNT7B	42.000		2.36	99.234	1.40	0.895	3.22	A	EL	42.77	0.946	2.36	A	EL	106.92	1.30	0.895	3.22	A	EL	42.77	
		TNAGRIT4	43.000		2.31	99.309	1.40	0.895	3.14	A	EL	42.77	0.946	2.31	A	EL	106.92	1.30	0.895	3.11	A	EL	42.77	
TNAGT5A		45.000		2.25	101.054	1.40	0.895	3.02	A	EL	42.77	0.946	2.25	A	EL	106.92	1.30	0.895	2.97	A	EL	42.77		
TNAGT5B	45.000		③	2.22	100.096	1.40	0.895	2.98	A	EL	42.77	0.946	2.22	A	EL	106.92	1.30	0.895	2.92	A	EL	42.77		
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) **

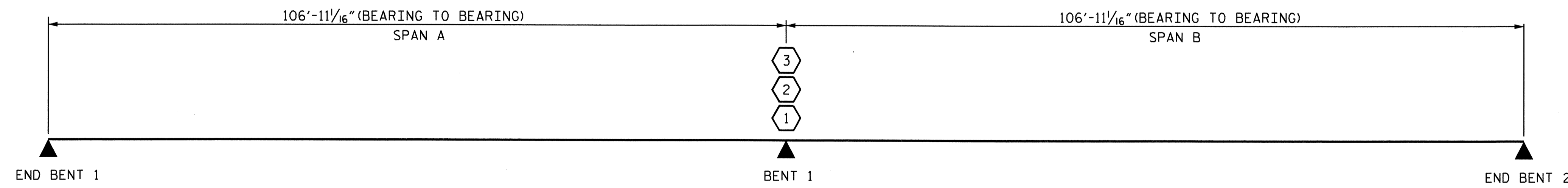
② DESIGN LOAD RATING (HS-20) **

③ LEGAL LOAD RATING **

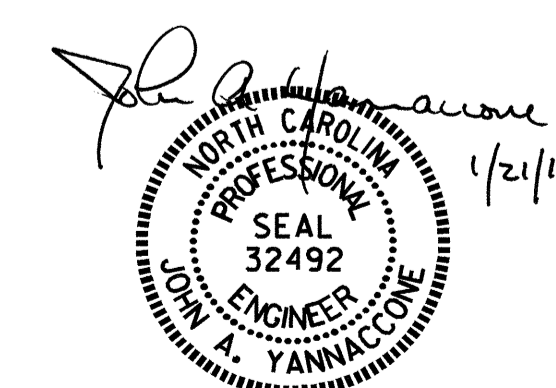
** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



LRFR SUMMARY



PROJECT NO. U-3621B
NASH COUNTY
 STATION: 50+77.00 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

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

ASSEMBLED BY : E. I. OMILE DATE : 9/13/10
 CHECKED BY : JAY DATE : 9/17/10
 DRAWN BY : MAA I/OB REV. 11/2/08RR MAA/GM
 CHECKED BY : GM/DI 2/08

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS
2			4			68

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.

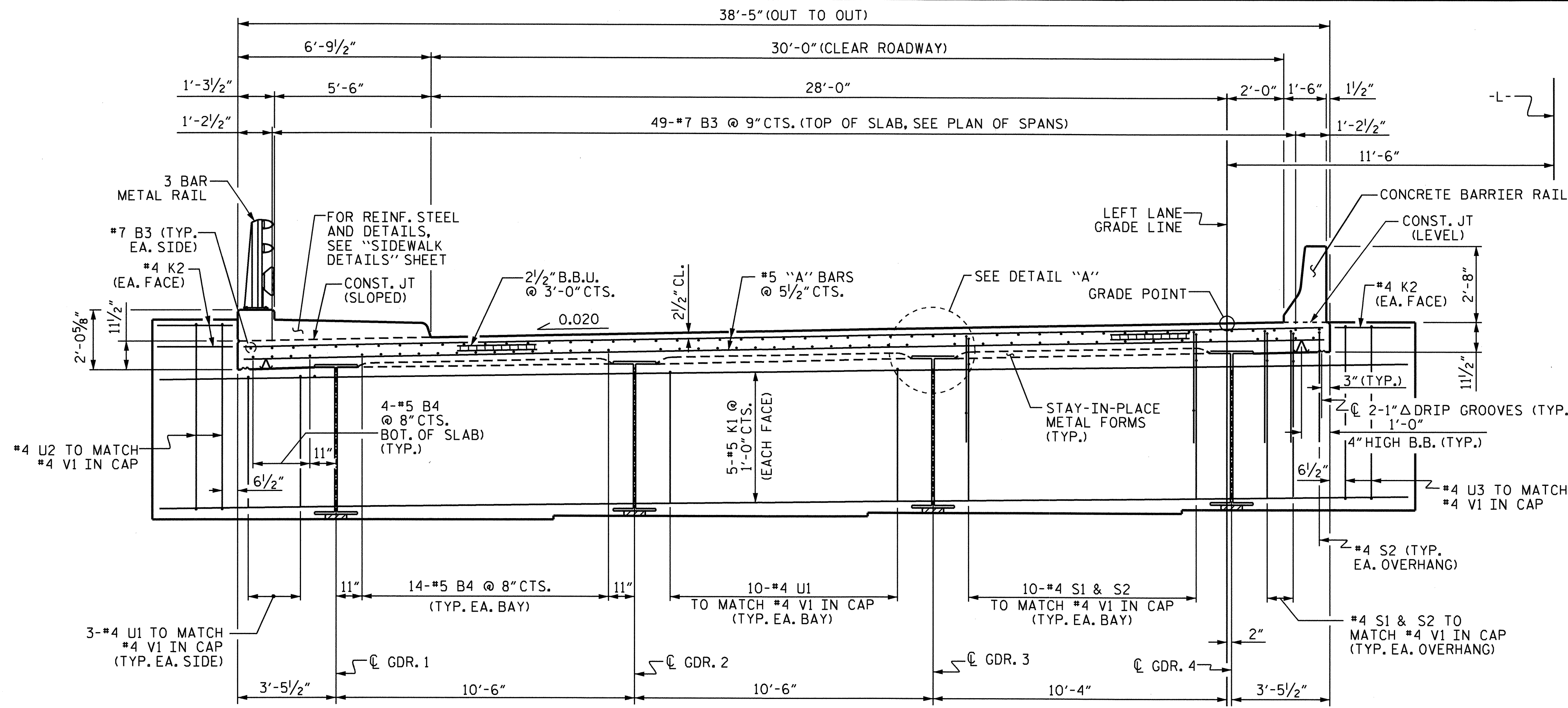
METAL STAY-IN-PLACE FORMS SHALL NOT BE WELDED TO BEAM OR GIRDER FLANGES IN THE ZONES REQUIRING CHARPY V-NOTCH TEST. SEE STRUCTURAL STEEL DETAIL SHEETS.

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

FOR WING ELEVATIONS AND DETAILS, SEE "PLAN OF SPAN DETAILS" SHEETS.

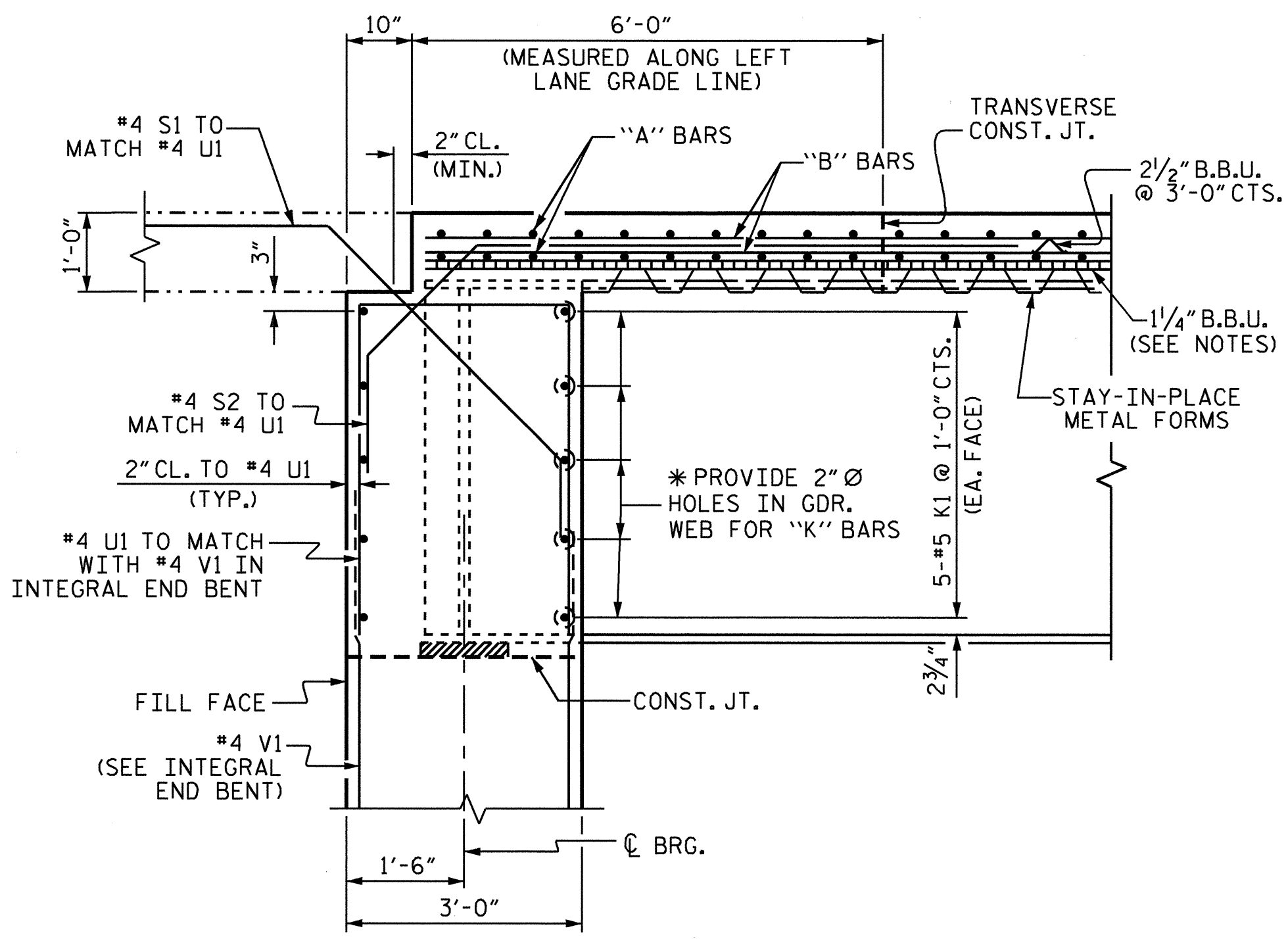
BARRIER RAIL AND SIDEWALK IN EACH SPAN SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT SPAN HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

THE CONTRACTOR SHALL ADJUST THE GIRDER BUILDUPS AS NECESSARY TO INCORPORATE A MAXIMUM PERMISSIBLE VARIATION IN POT BEARING DEPTH OF 1/2", SEE SPECIAL PROVISION FOR POT BEARINGS.



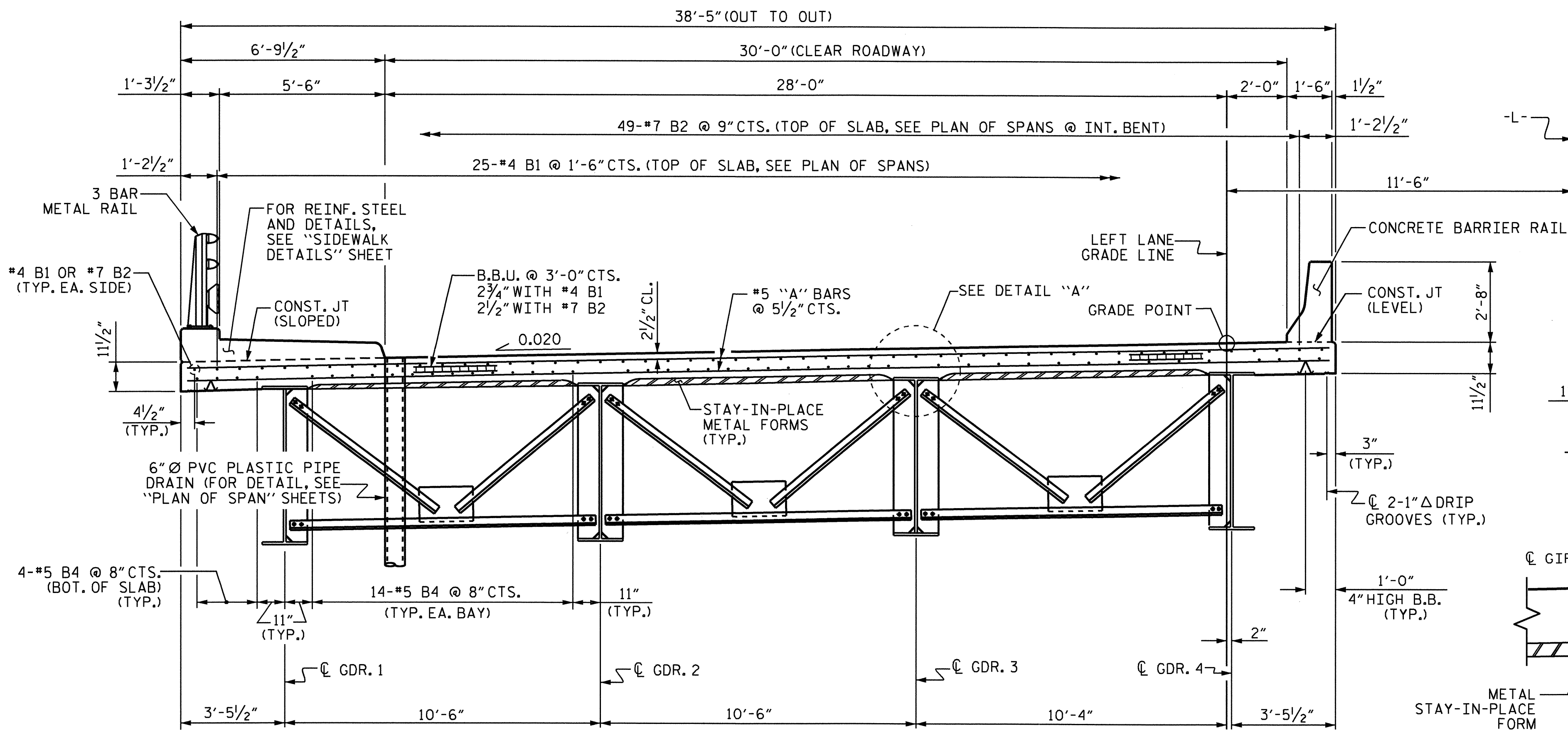
TYPICAL SECTION

APPROACH SLAB BLOCKOUT & WINGS NOT SHOWN FOR CLARITY. SHOWING ABUTMENT WALL AT END BENT.



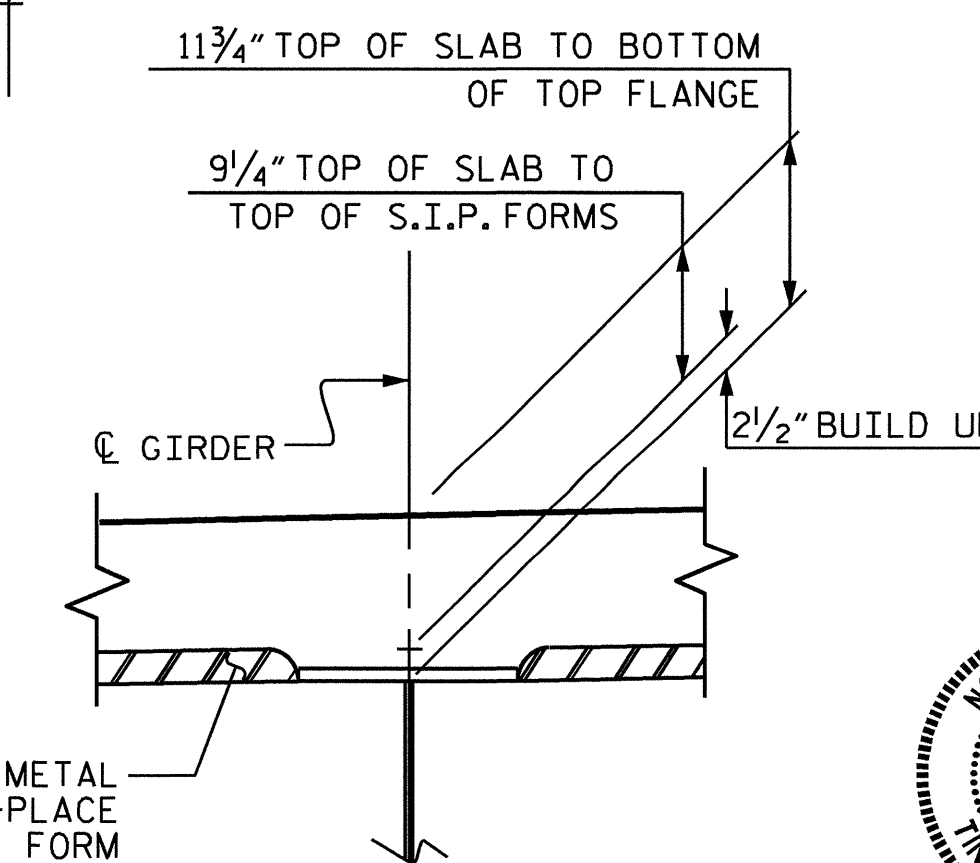
SECTION THRU ABUTMENT END BENT

*DIAMETER OF HOLES MAY BE INCREASED TO ACCOMMODATE SKEW



TYPICAL SECTION

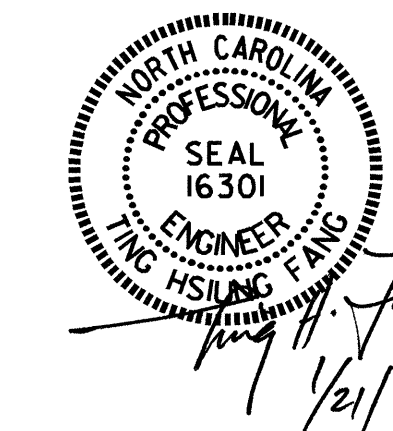
(SHOWING INTERMEDIATE AND BENT DIAPHRAGMS)



DETAIL "A"

PROJECT NO. U-3621B
 NASH COUNTY
 STATION: 50+77.00 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 TYPICAL SECTION
 (LEFT LANE)



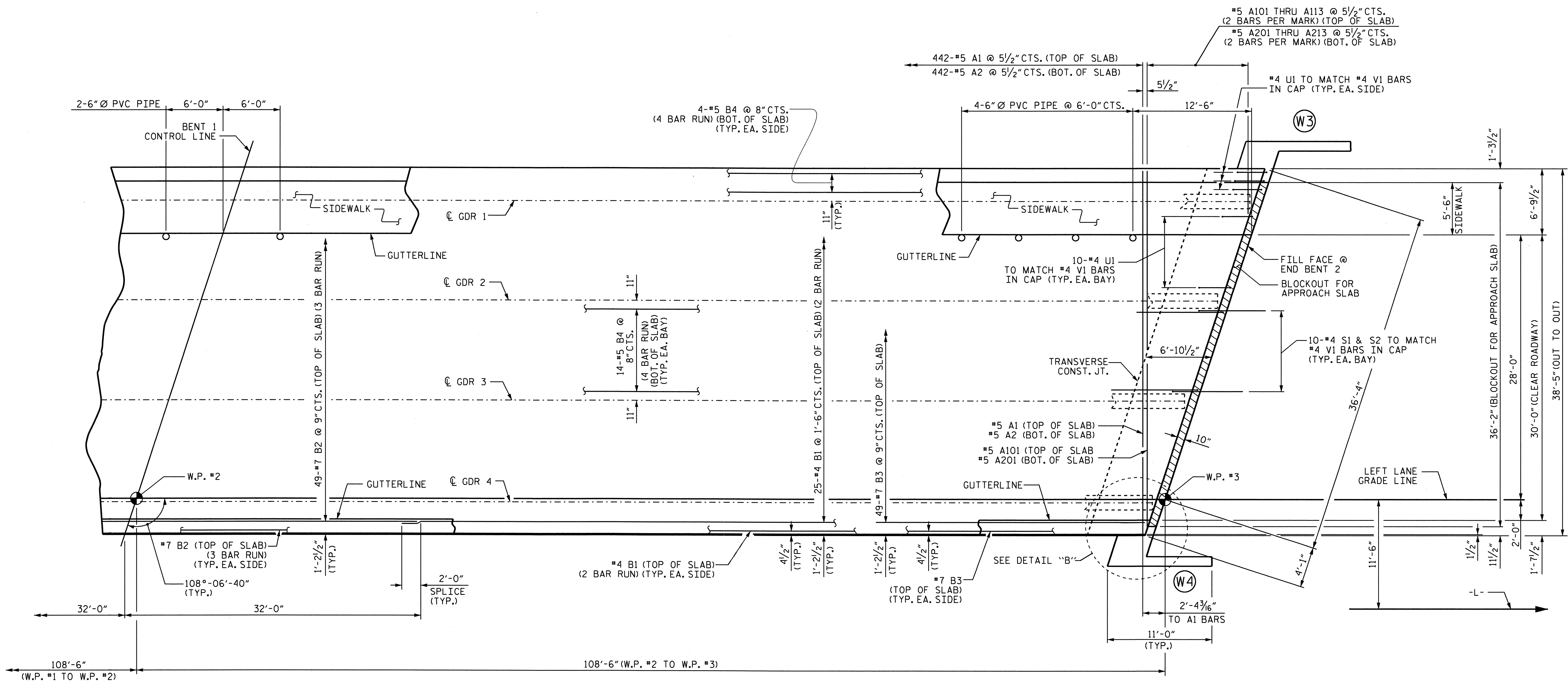
REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	DATE:
1			3	
2			4	

TOTAL SHEETS: 68

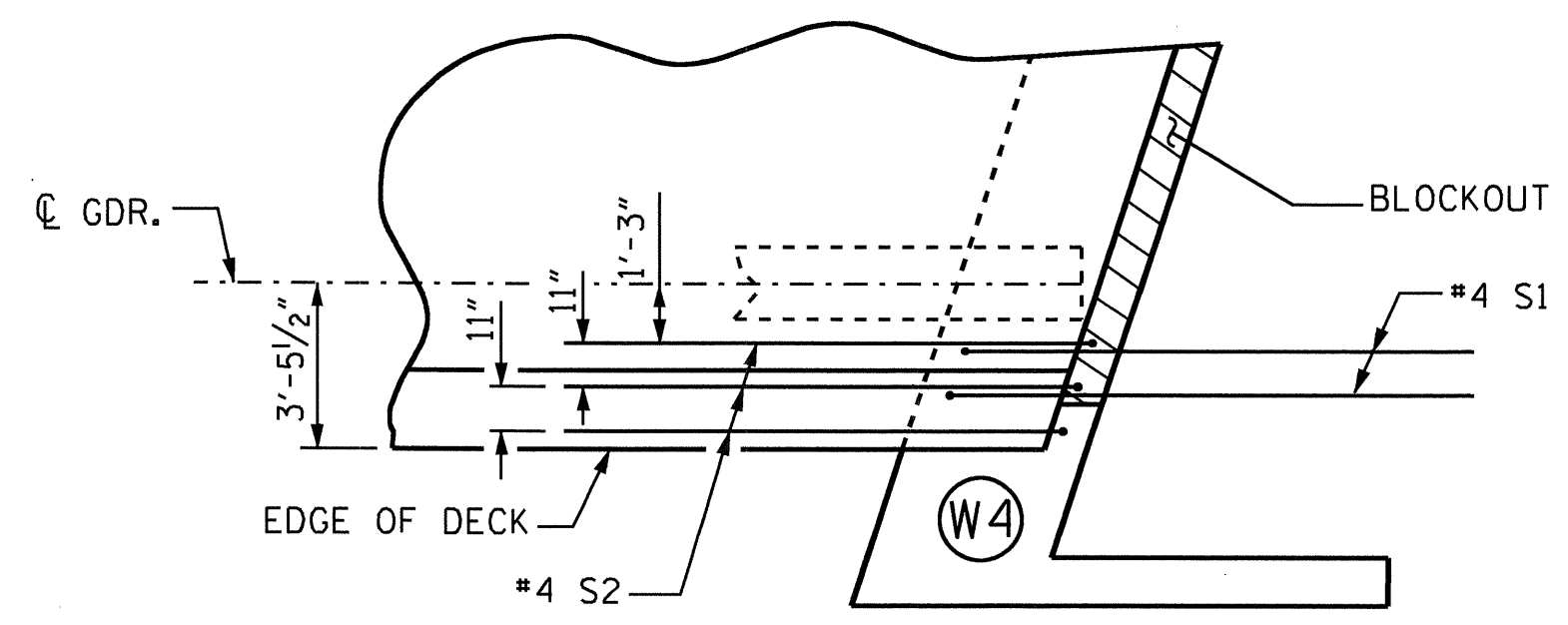
DRAWN BY: OT NGUYEN DATE: 2-09
 CHECKED BY: A.R. CHESSON DATE: 4-09

21-JAN-2011 14:46
 Y:\TIPProjects-U\U3621B\Structures\Final Plans\1334\U3621B.sd.tsl.dgn
 qtnguyen

STR #1

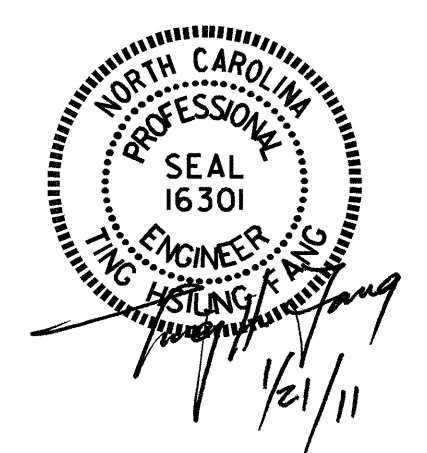


PLAN OF SPAN B



DETAIL "B"

U3 BARS NOT SHOWN FOR CLARITY. WING WALL W4 SHOWN, W2 SIMILAR.



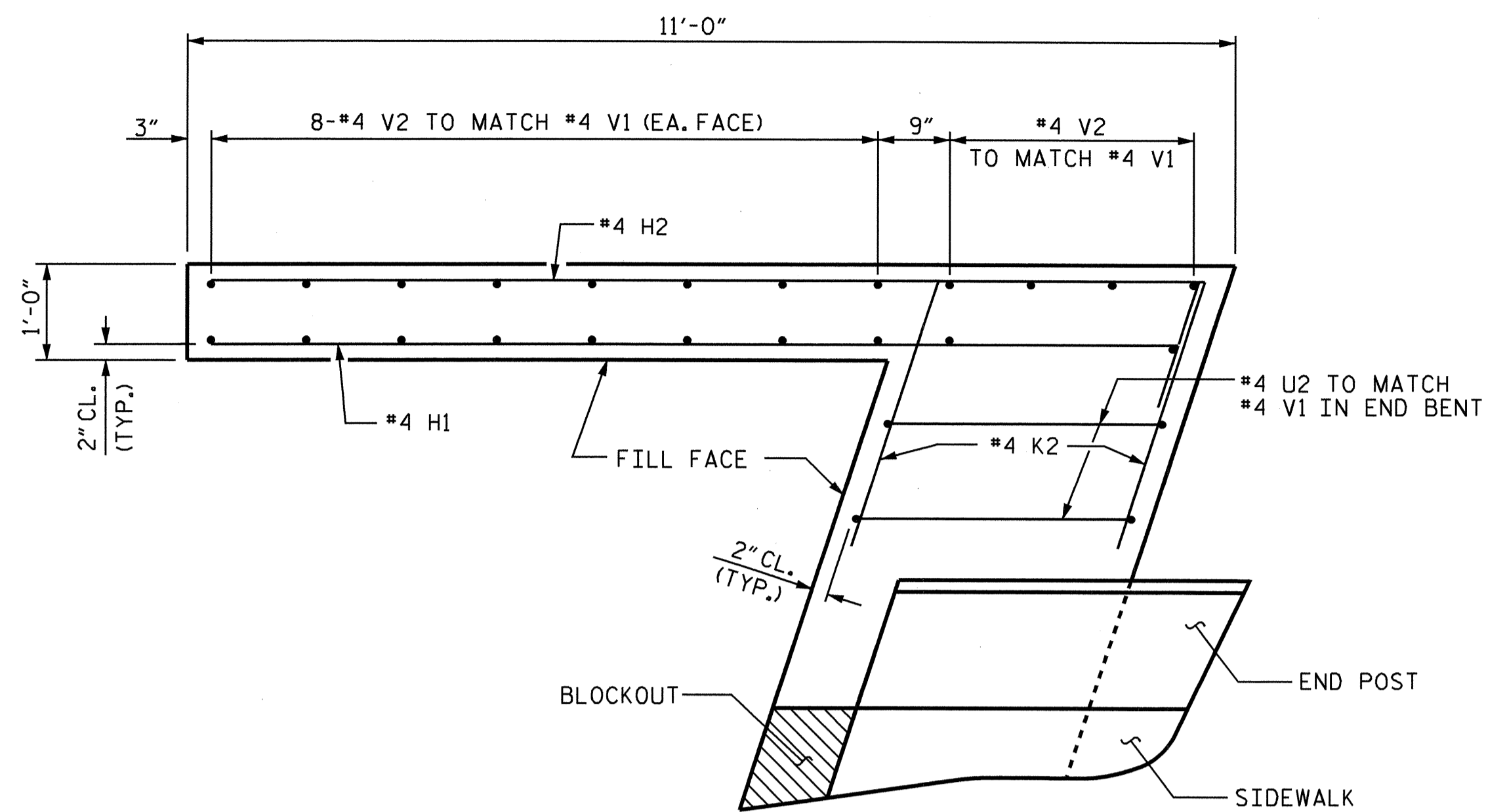
PROJECT NO. U-3621B
 NASH COUNTY
 STATION: 50+77.00 -L-

SHEET 2 OF 4

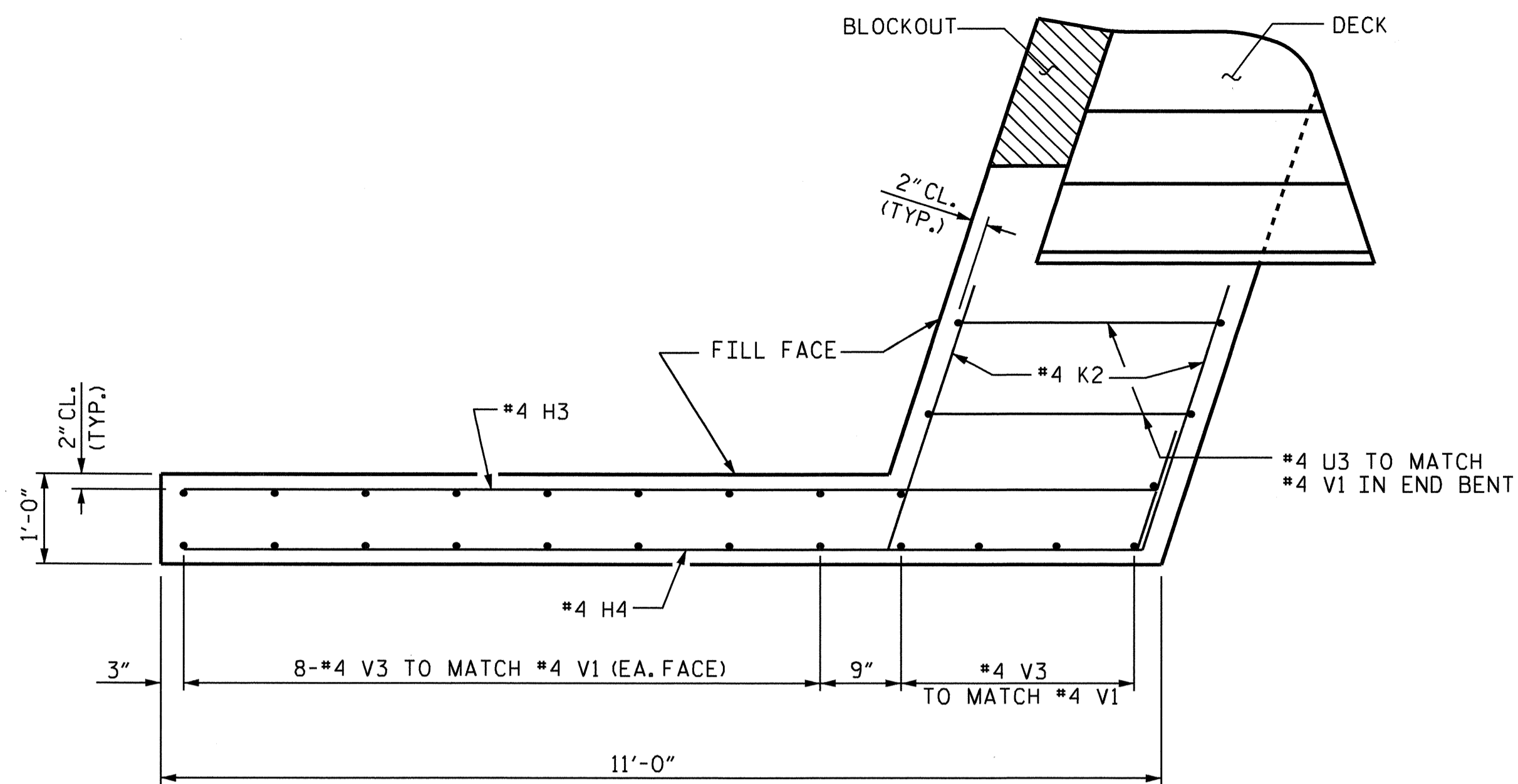
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPAN
 (LEFT LANE)

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7	
1			3			TOTAL SHEETS	
2			4			68	

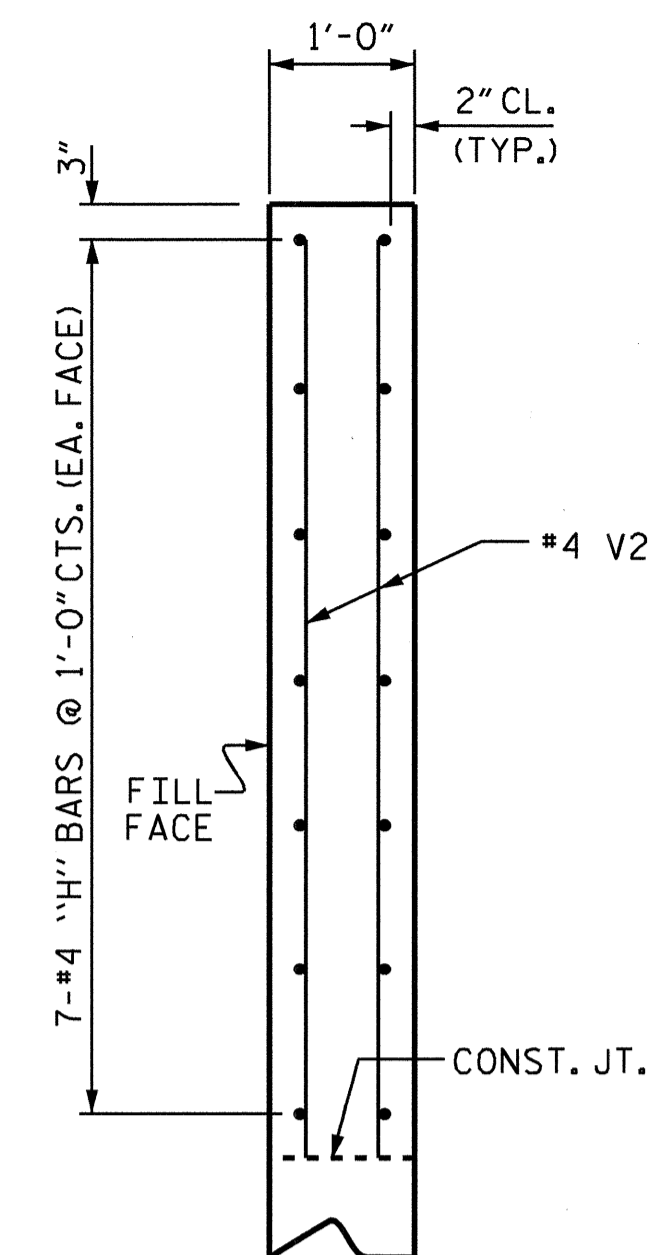
DRAWN BY : QT NGUYEN DATE : 2-09
 CHECKED BY : W.D. CRUTCHER DATE : 4-10



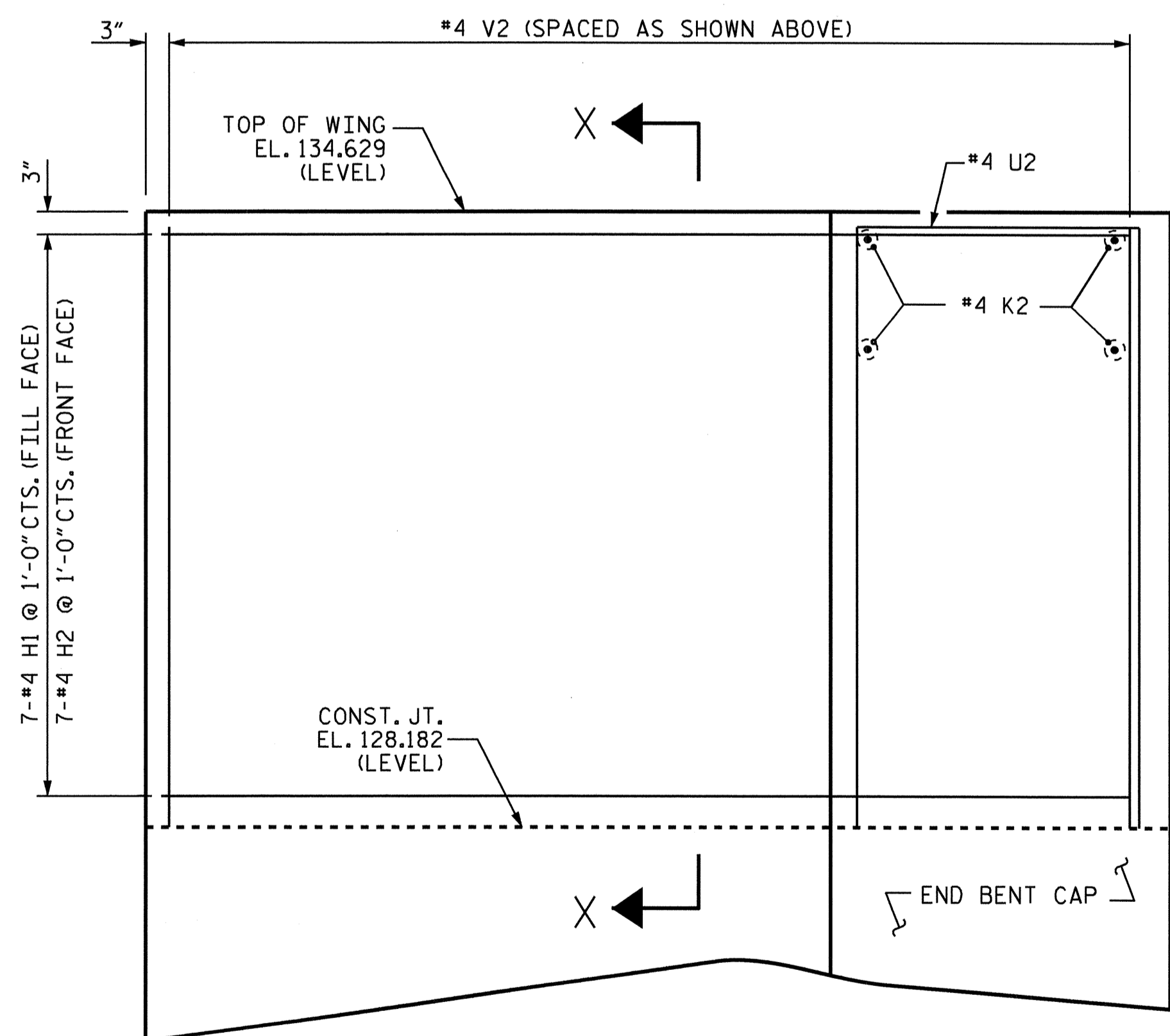
PLAN OF WING (W1)



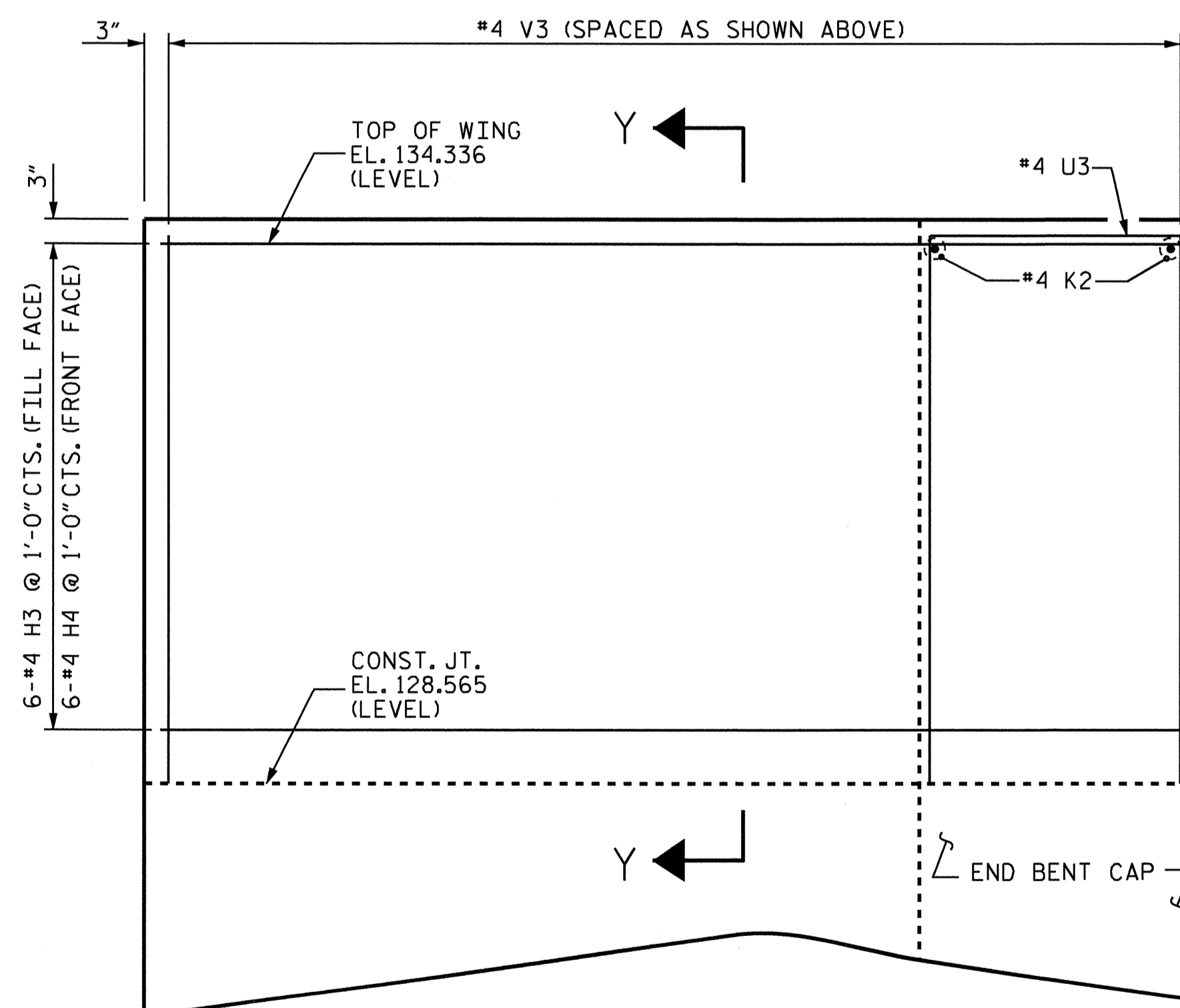
PLAN OF WING (W2)



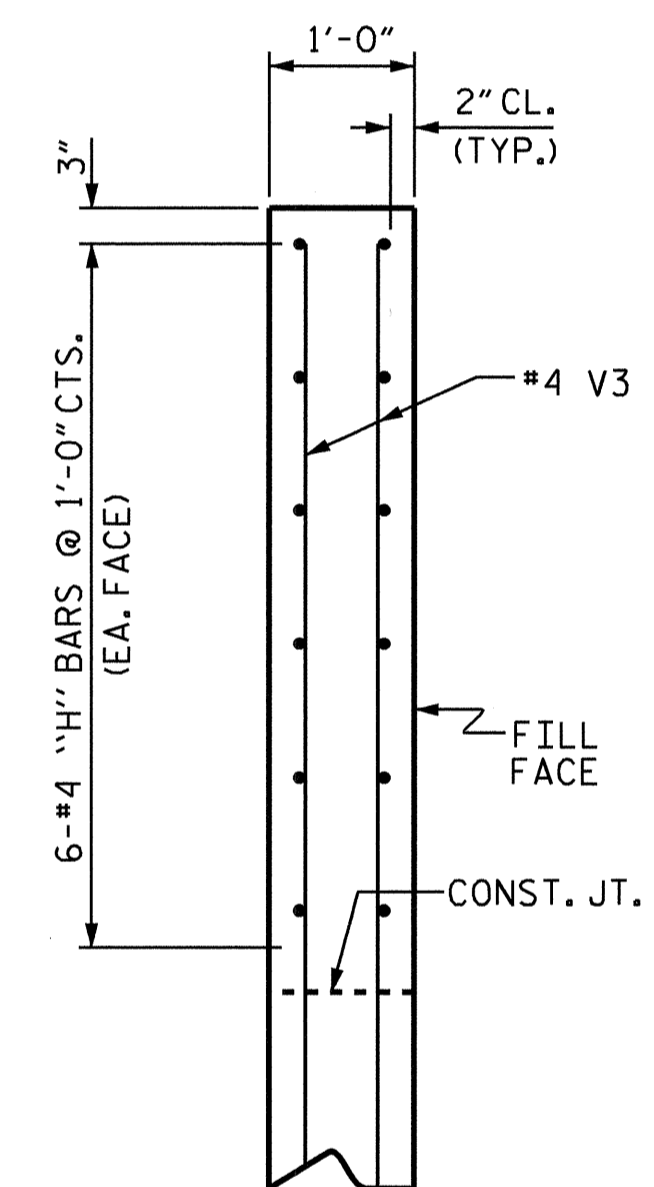
SECTION X-X



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



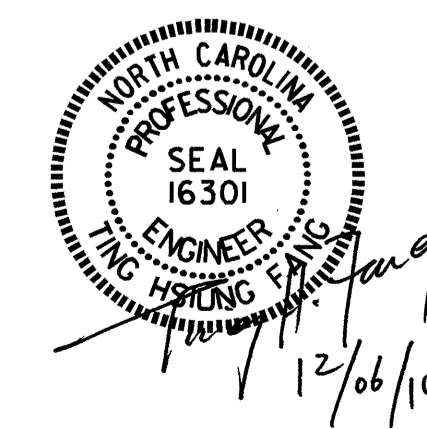
SECTION Y-Y

ABUTMENT WINGS

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

PROJECT NO. U-3621B
 NASH COUNTY
 STATION: 50+77.00 -L-

SHEET 3 OF 4



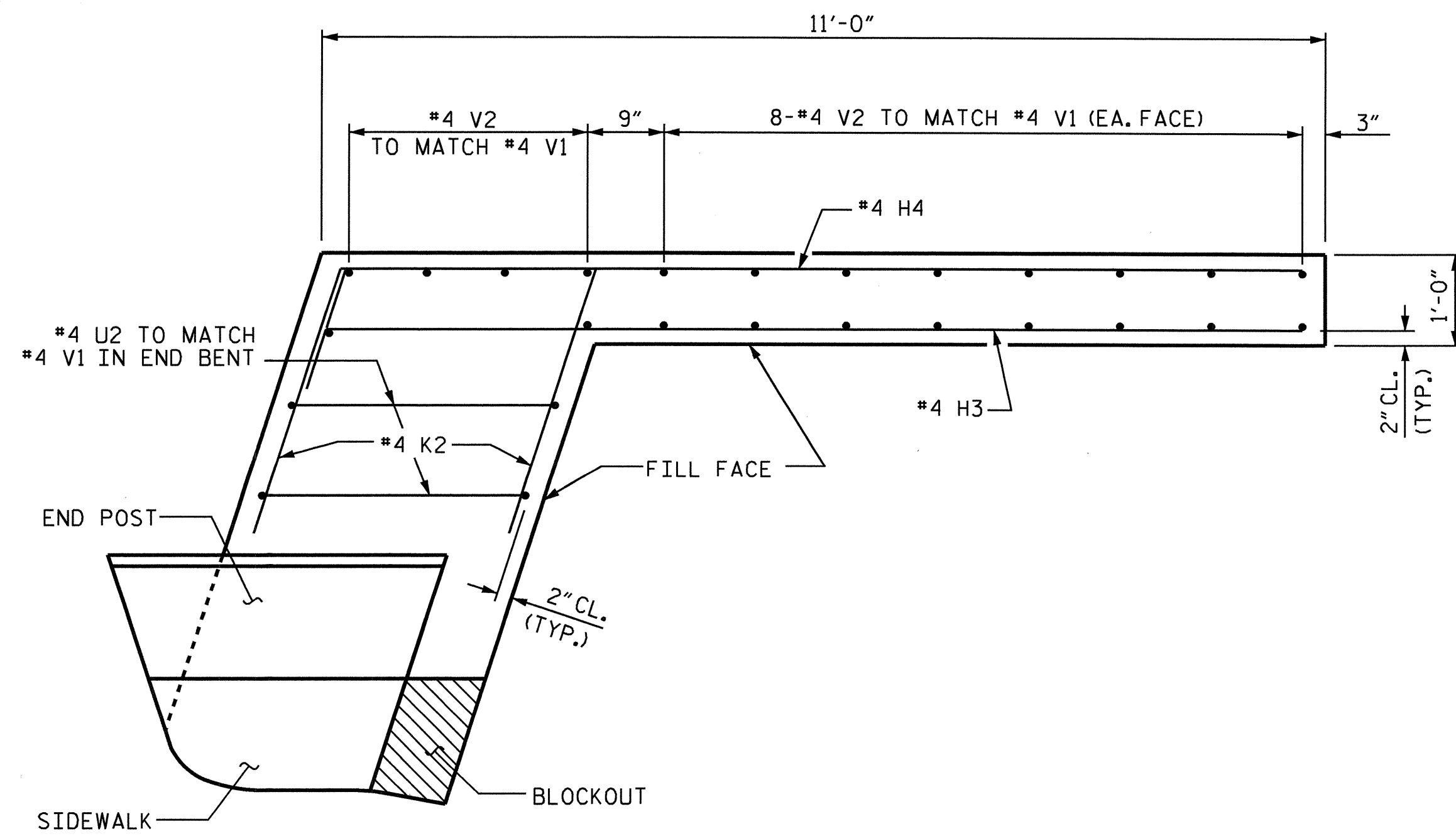
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPAN
 DETAILS
 (LEFT LANE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			68

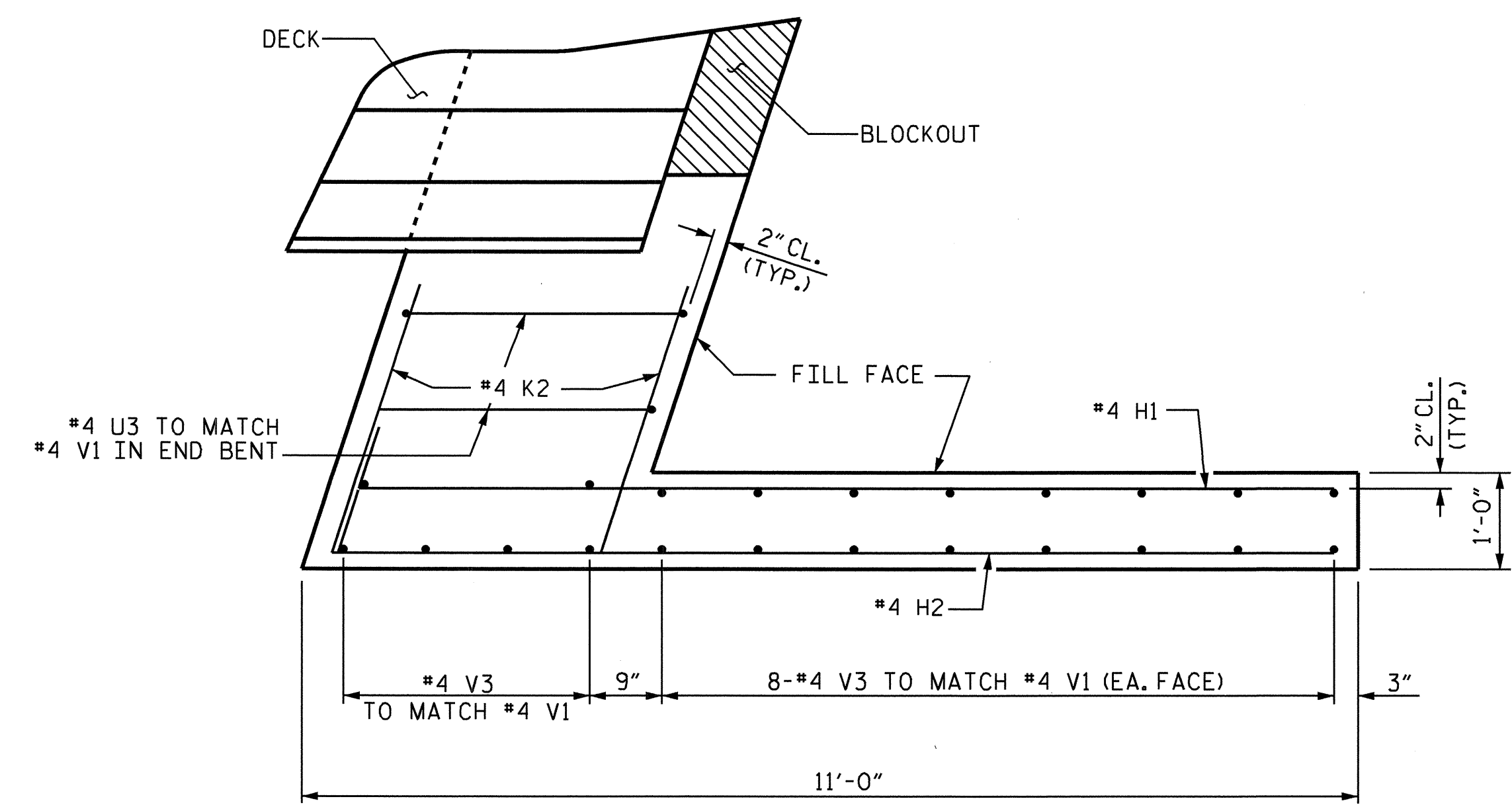
DRAWN BY : QT NGUYEN DATE : 2-09
 CHECKED BY : W.D. CRUTCHER DATE : 4-10

06-DEC-2010 14:35
 Y:\TIPProjects-UU3621B\Structures\Final Plans\1334\U3621b.sd.psl*.dgn
 qtnguyen

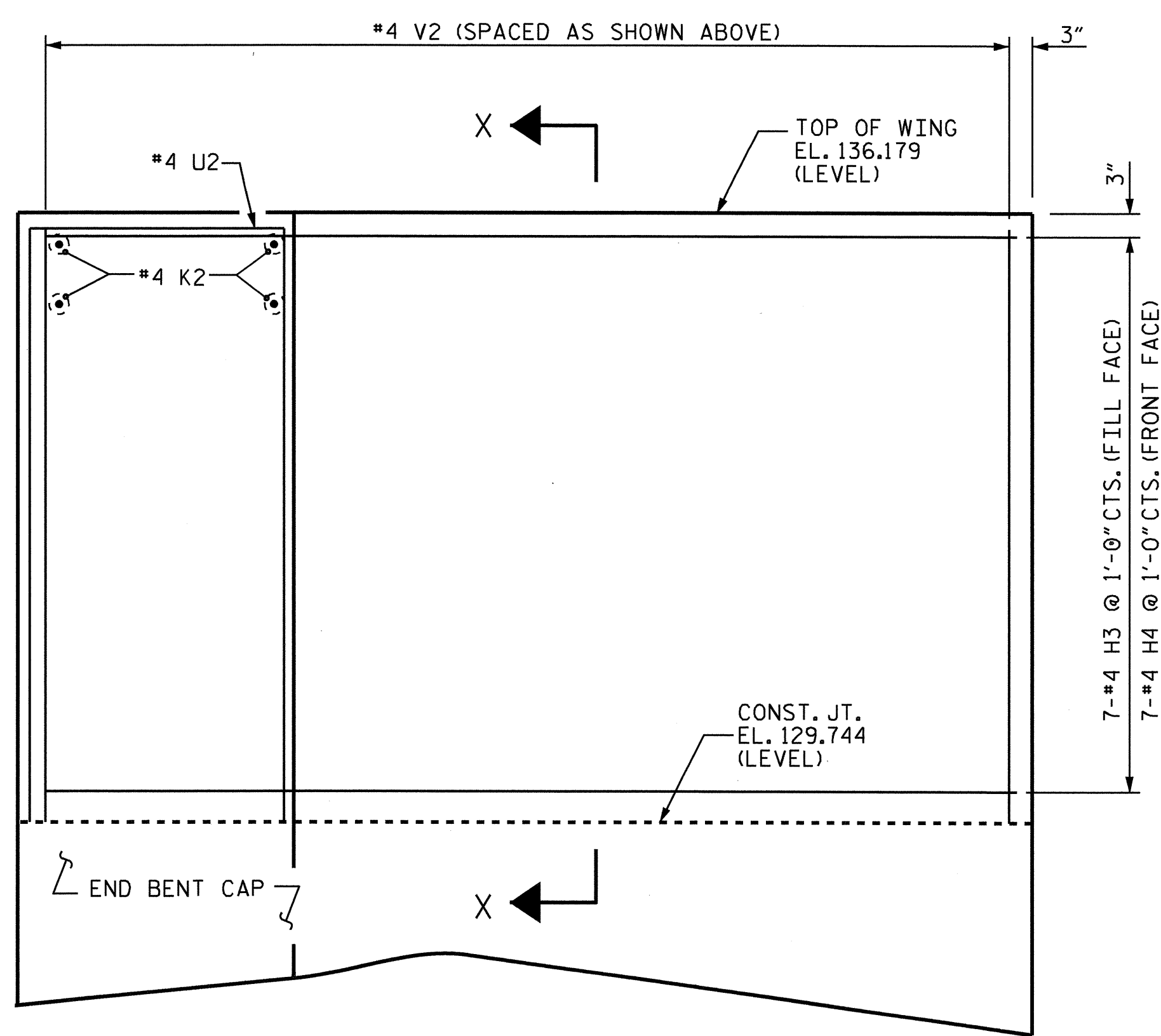
STR #1



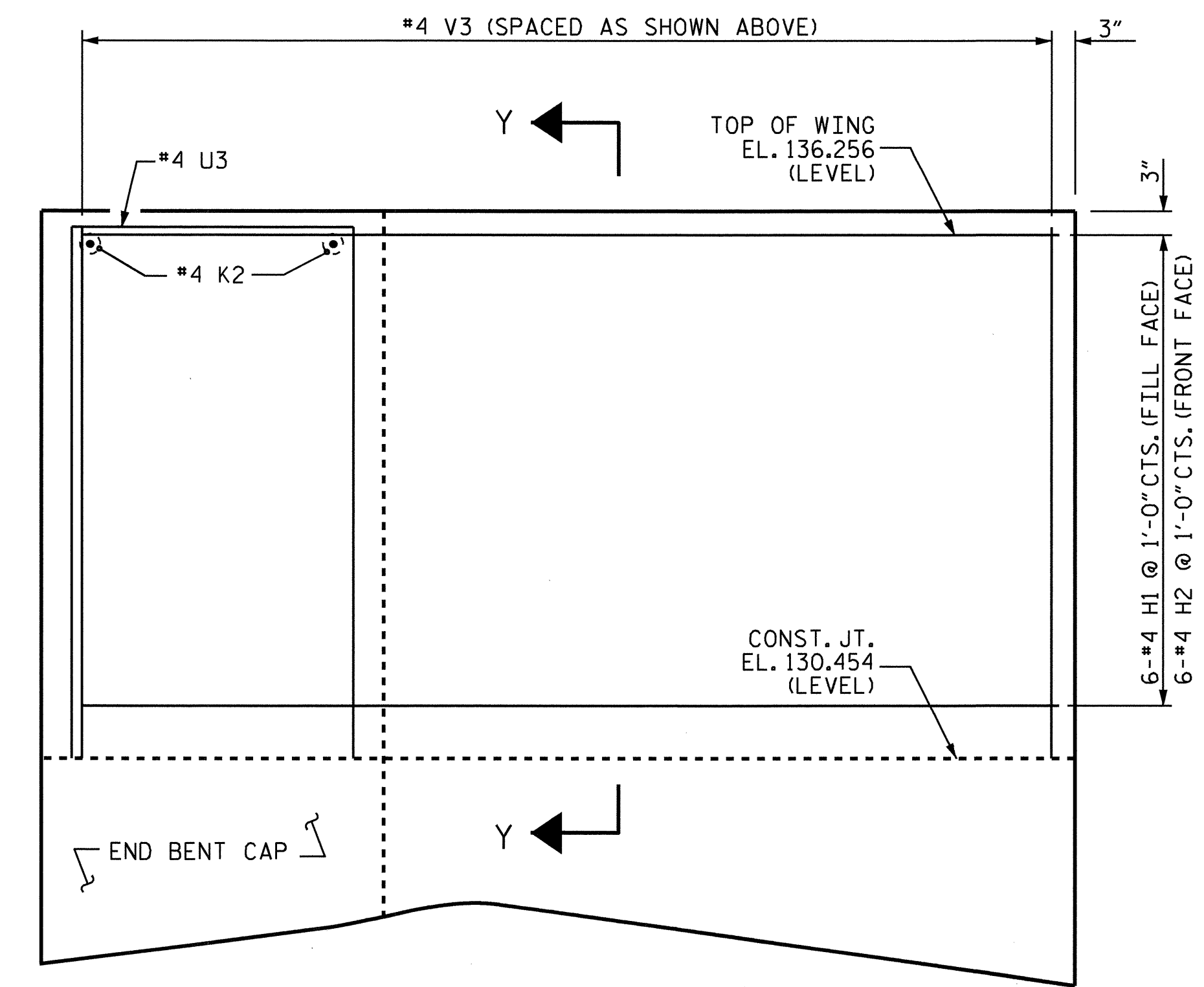
PLAN OF WING (W3)



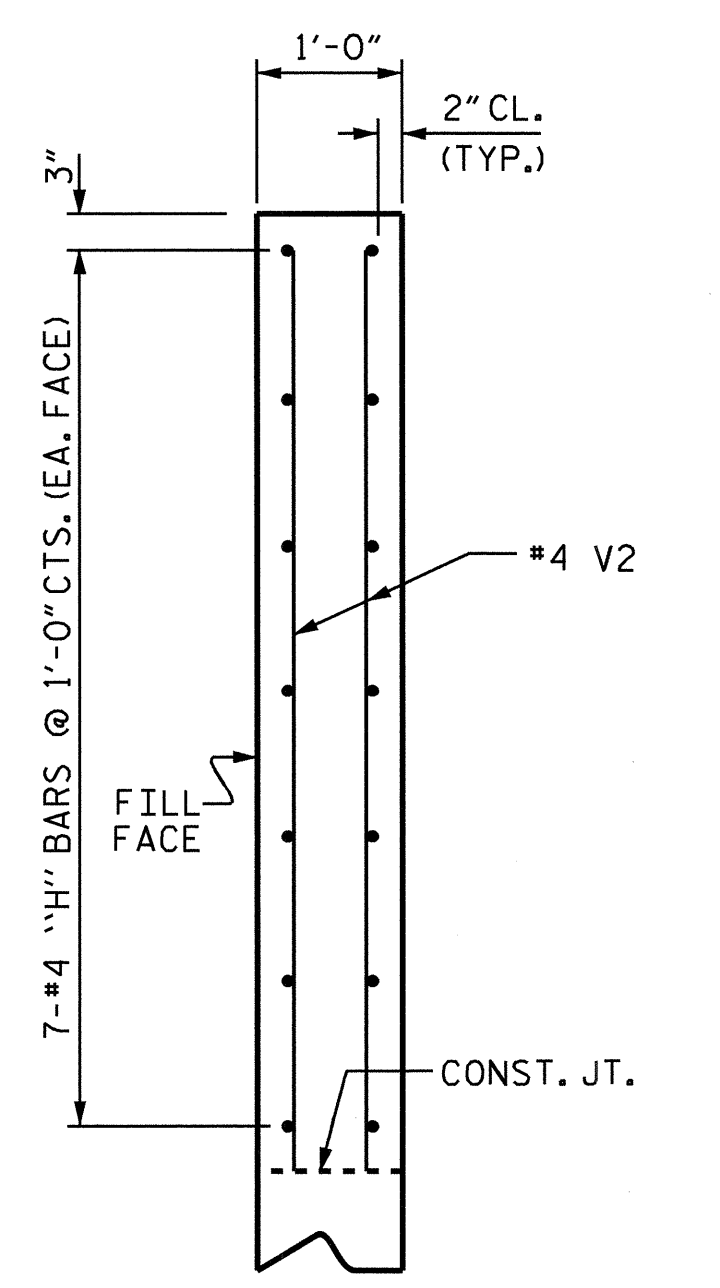
PLAN OF WING (W4)



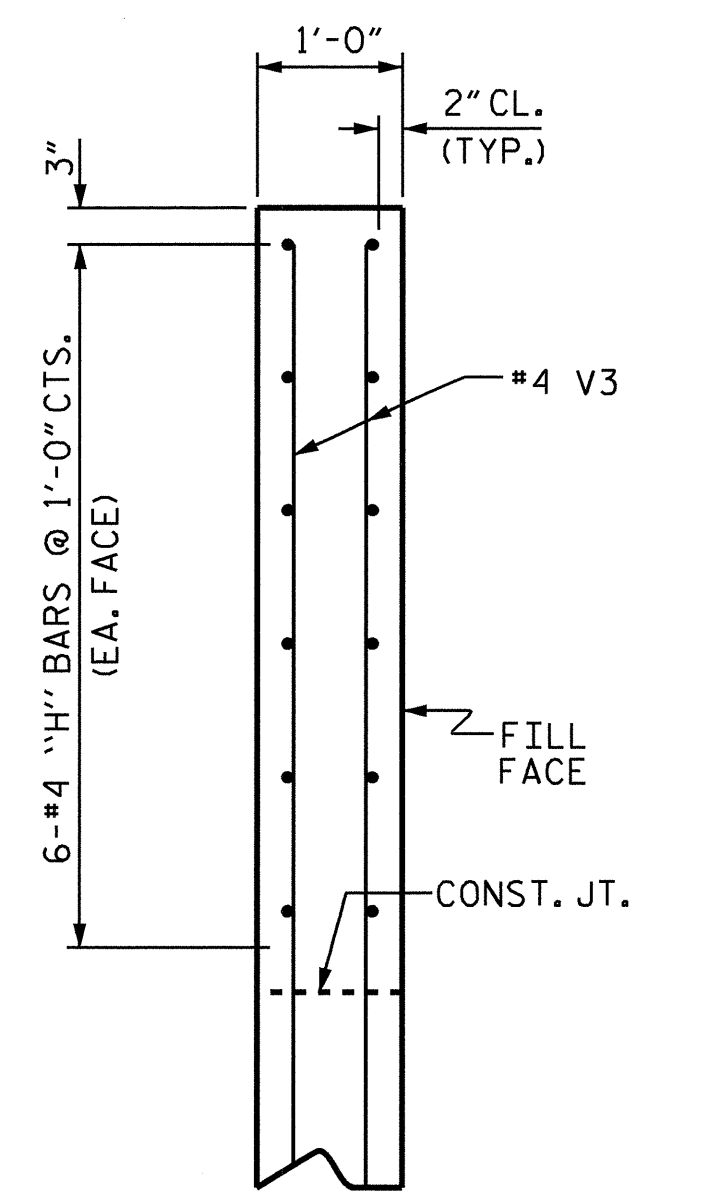
ELEVATION OF WING (W3)



ELEVATION OF WING (W4)



SECTION X-X

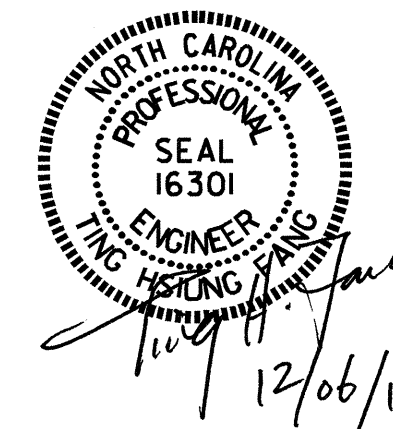


SECTION Y-Y

PROJECT NO. U-3621B
 NASH COUNTY
 STATION: 50+77.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPAN
 DETAILS
 (LEFT LANE)



ABUTMENT WINGS

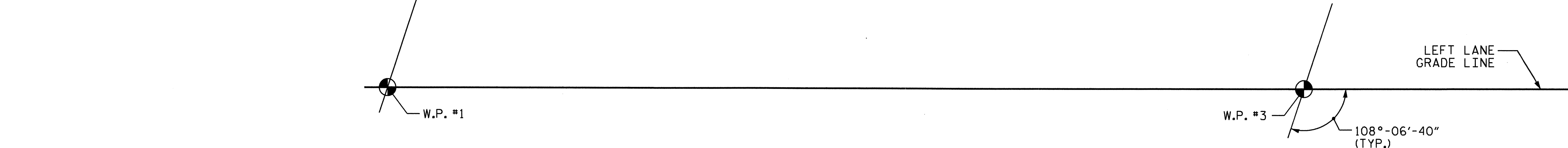
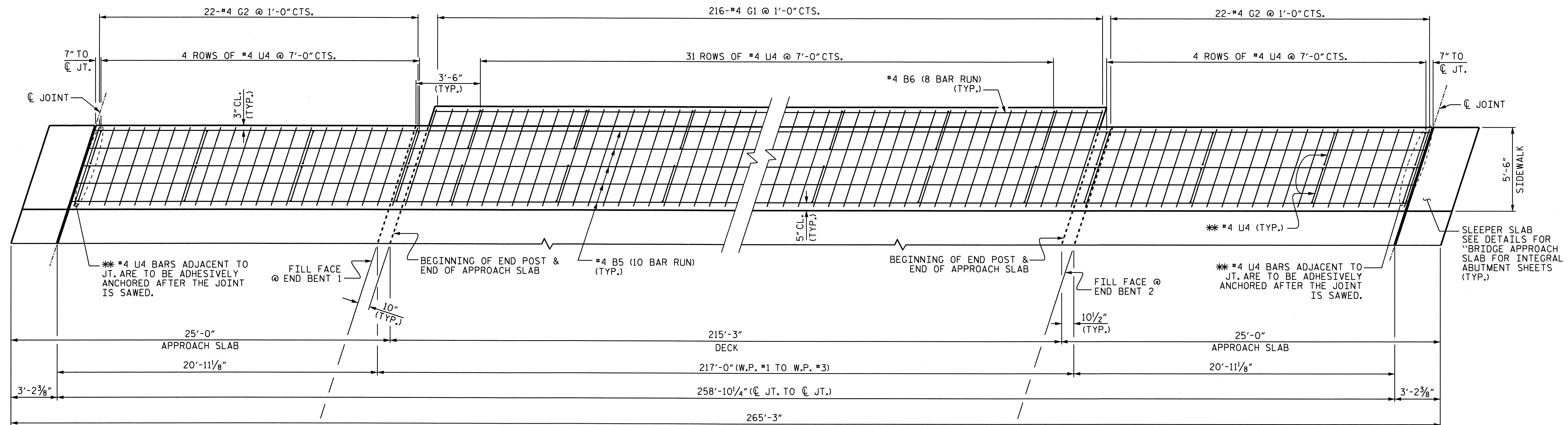
FOR END BENT REINFORCING STEEL AND DETAILS, SEE "END BENTS 1 & 2" SHEETS

DRAWN BY: QT NGUYEN DATE: 2-09
 CHECKED BY: W.D. CRUTCHER DATE: 4-10

06-DEC-2010 14:35
 Y:\TIP\Projects-UU3621B\Structures\Final Plans\11334\U3621b.sd.psl*.dgn
 qtnguyen

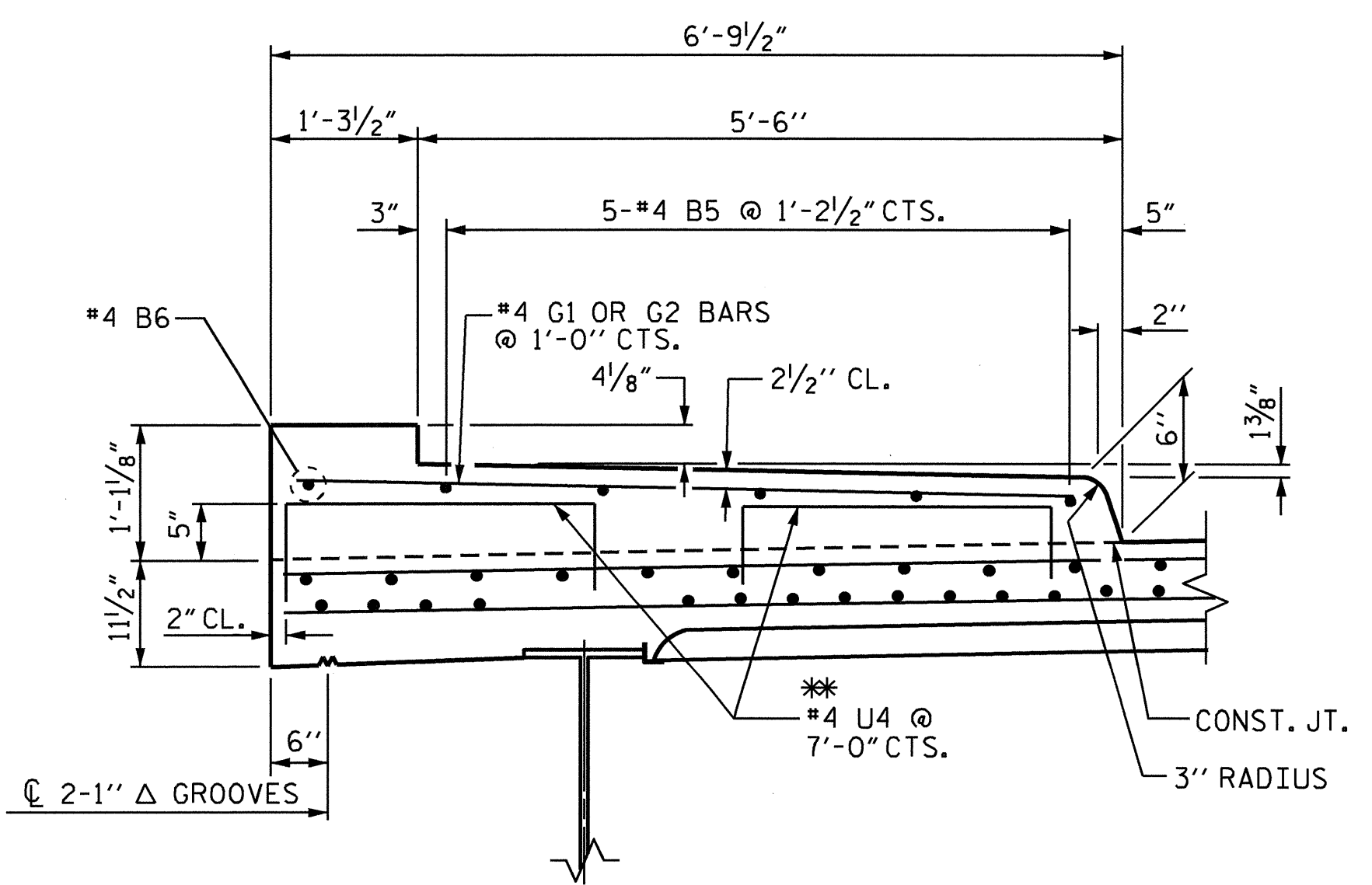
REVISIONS				SHEET NO.
NO.	BY:	DATE:		S-9
1			3	TOTAL SHEETS
2			4	68

STR #1



PLAN OF SIDEWALK

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

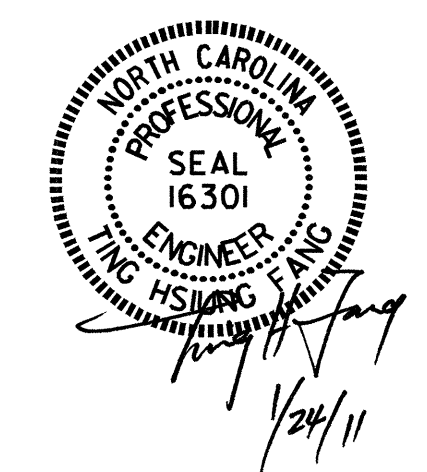


SECTION THRU SIDEWALK

FOR SECTION AND DETAILS ON APPROACH SLAB & SLEEPER SLAB SEE "BRIDGE APPROACH SLAB FOR INTEGRAL ABUTMENT" SHEET.

NOTES:

- THE JOINTS IN THE APPROACH SLABS SHALL BE SAWED PRIOR TO THE CASTING OF THE SIDEWALK.
- THE SIDEWALK ON A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL CONCRETE IN THE UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.
- ALL REINFORCING STEEL IN THE SIDEWALK AND END POSTS SHALL BE EPOXY COATED.
- GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE SIDEWALK IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINTS SHALL BE LOCATED AT A SPACING OF 8 FEET TO 10 FEET BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINT WILL BE REQUIRED FOR SEGMENTS LESS THAN 10 FEET IN LENGTH.
- FOR SIDEWALK DETAILS ON APPROACH SLAB AND SLEEPER SLABS, SEE "BRIDGE APPROACH SLAB FOR INTEGRAL ABUTMENT" SHEETS.
- THE #4 U4 BARS MAY BE PUSHED INTO GREEN CONCRETE AFTER DECK OR APPROACH SLAB HAS BEEN SCREEDED OFF, EXCEPT AS NOTED. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.
- SIDEWALK ON THE BRIDGE EXTENDING TO THE EVAZOTE JOINT ON THE APPROACH SLABS IS INCLUDED IN THE SUPERSTRUCTURE BILL OF MATERIAL AND PAID FOR AS PART OF THE REINFORCED CONCRETE DECK PAY ITEM. SIDEWALK ON THE SLEEPER SLABS ONLY ARE INCLUDED IN THE APPROACH SLAB BILL OF MATERIAL AND PAID FOR AS PART OF THE BRIDGE APPROACH SLABS PAY ITEM.

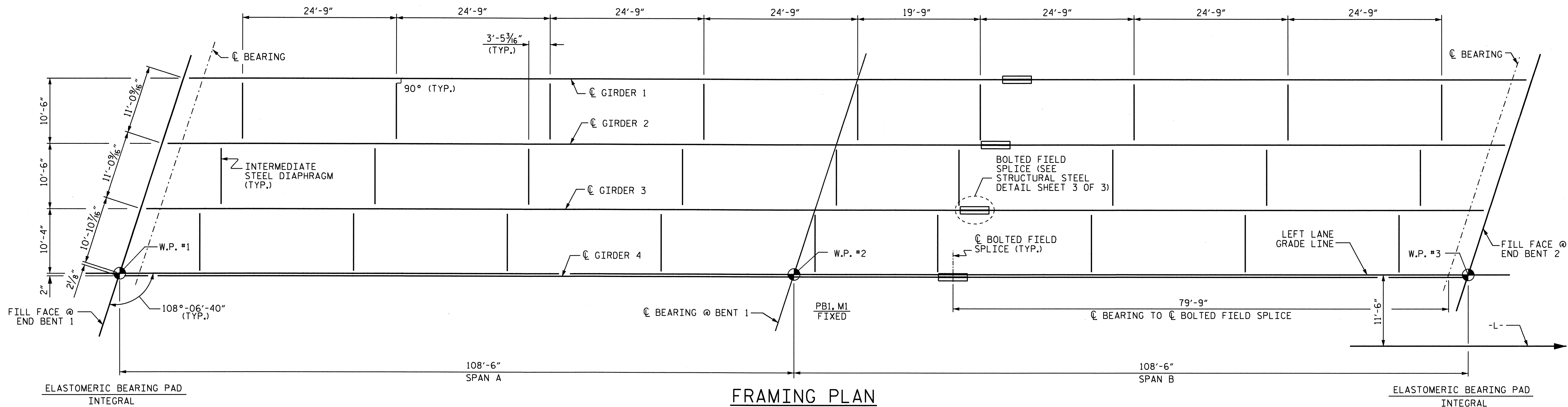


PROJECT NO. U-3621B
NASH COUNTY
 STATION: 50+77.00 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 SIDEWALK DETAILS
 (LEFT LANE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			68

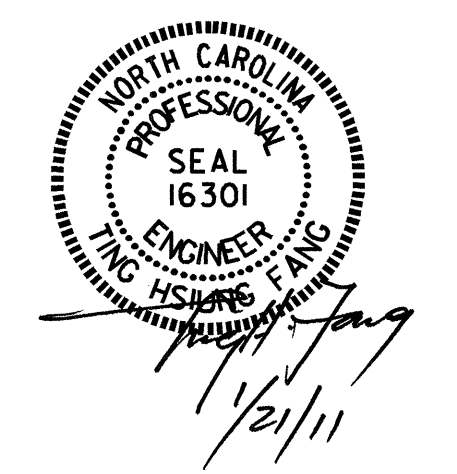
DRAWN BY : HARISH SHAH DATE : 3-17-10
 CHECKED BY : W.D. CRUTCHER DATE : 4-27-10



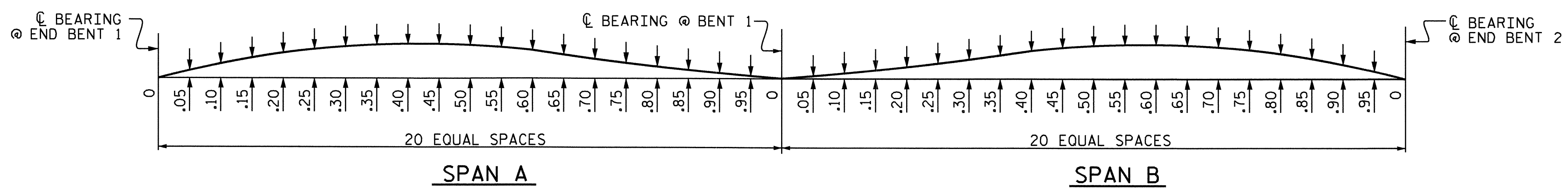
DEAD LOAD DEFLECTION TABLE FOR GIRDER																					
SPAN A																					
GIRDERS 1, 2, 3, & 4																					
TWENTIETH POINTS	0	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	0
DEFLECTION DUE TO WEIGHT OF GIRDER	0	0.005	0.009	0.013	0.017	0.020	0.022	0.023	0.024	0.024	0.023	0.021	0.019	0.016	0.013	0.010	0.007	0.004	0.002	0.001	0
DEFLECTION DUE TO WEIGHT OF SLAB *	0	0.014	0.028	0.041	0.052	0.061	0.067	0.072	0.074	0.073	0.070	0.065	0.058	0.050	0.041	0.031	0.022	0.014	0.007	0.002	0
DEFLECTION DUE TO WT. OF BARRIER RAIL OR SIDEWALK	0	0.002	0.004	0.006	0.008	0.009	0.010	0.011	0.011	0.011	0.011	0.010	0.009	0.008	0.006	0.005	0.003	0.002	0.001	0.000	0
TOTAL DEAD LOAD DEFLECTION	0	0.021	0.041	0.060	0.077	0.090	0.099	0.106	0.109	0.108	0.104	0.096	0.086	0.074	0.060	0.046	0.032	0.020	0.010	0.003	0
VERTICAL CURVE ORDINATE	0	0.040	0.076	0.108	0.135	0.159	0.178	0.192	0.203	0.209	0.211	0.209	0.203	0.192	0.178	0.159	0.135	0.108	0.076	0.040	0
REQUIRED CAMBER	0	3/4"	1 3/8"	2"	2 9/16"	3"	3 5/16"	3 3/8"	3 3/4"	3 3/16"	3 3/16"	3 1/16"	3 1/2"	3 3/16"	2 7/8"	2 7/16"	2"	1 1/2"	1"	1/2"	0

SPAN B																					
GIRDERS 1, 2, 3, & 4																					
TWENTIETH POINTS	0	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	0
DEFLECTION DUE TO WEIGHT OF GIRDER	0	0.001	0.002	0.004	0.007	0.010	0.013	0.016	0.019	0.021	0.023	0.024	0.024	0.023	0.022	0.020	0.017	0.013	0.009	0.005	0
DEFLECTION DUE TO WEIGHT OF SLAB *	0	0.002	0.007	0.014	0.022	0.031	0.041	0.050	0.058	0.065	0.070	0.073	0.074	0.072	0.067	0.061	0.052	0.041	0.028	0.014	0
DEFLECTION DUE TO WT. OF BARRIER RAIL OR SIDEWALK	0	0.000	0.001	0.002	0.003	0.005	0.006	0.008	0.009	0.010	0.011	0.011	0.011	0.011	0.010	0.009	0.008	0.006	0.004	0.002	0
TOTAL DEAD LOAD DEFLECTION	0	0.003	0.010	0.020	0.032	0.046	0.060	0.074	0.086	0.096	0.104	0.108	0.109	0.106	0.099	0.090	0.077	0.060	0.041	0.021	0
VERTICAL CURVE ORDINATE	0	0.040	0.076	0.108	0.135	0.159	0.178	0.192	0.203	0.209	0.211	0.209	0.203	0.192	0.178	0.159	0.135	0.108	0.076	0.040	0
REQUIRED CAMBER	0	1/2"	1"	1 1/2"	2"	2 7/16"	2 7/8"	3 3/16"	3 1/2"	3 1/16"	3 3/16"	3 3/16"	3 3/4"	3 3/16"	3 5/16"	3"	2 9/16"	2"	1 3/8"	3/4"	0

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



PROJECT NO. U-3621B
NASH COUNTY
 STATION: 50+77.00-L-



DRAWN BY: QT NGUYEN DATE: 2-09
 CHECKED BY: W.D. CRUTCHER DATE: 4-10

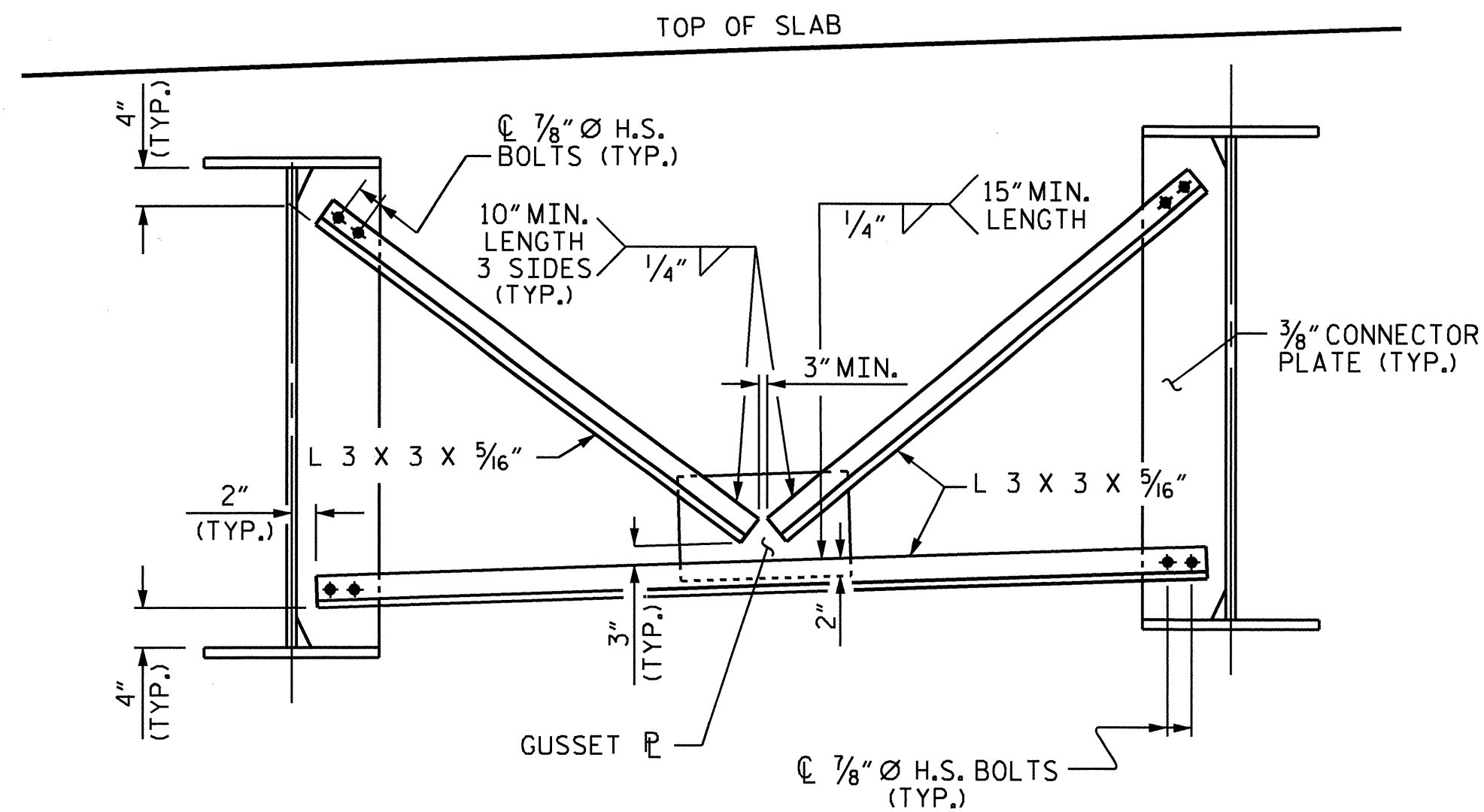
19-JAN-2011 09:11
 Y:\TIP\Projects-U\U3621B\Structures\Final Plans\1334\U3621b.ed.fpl.dgn
 Q1nguyen

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 FRAMING PLAN & DEAD
 LOAD DEFLECTIONS
 (LEFT LANE)

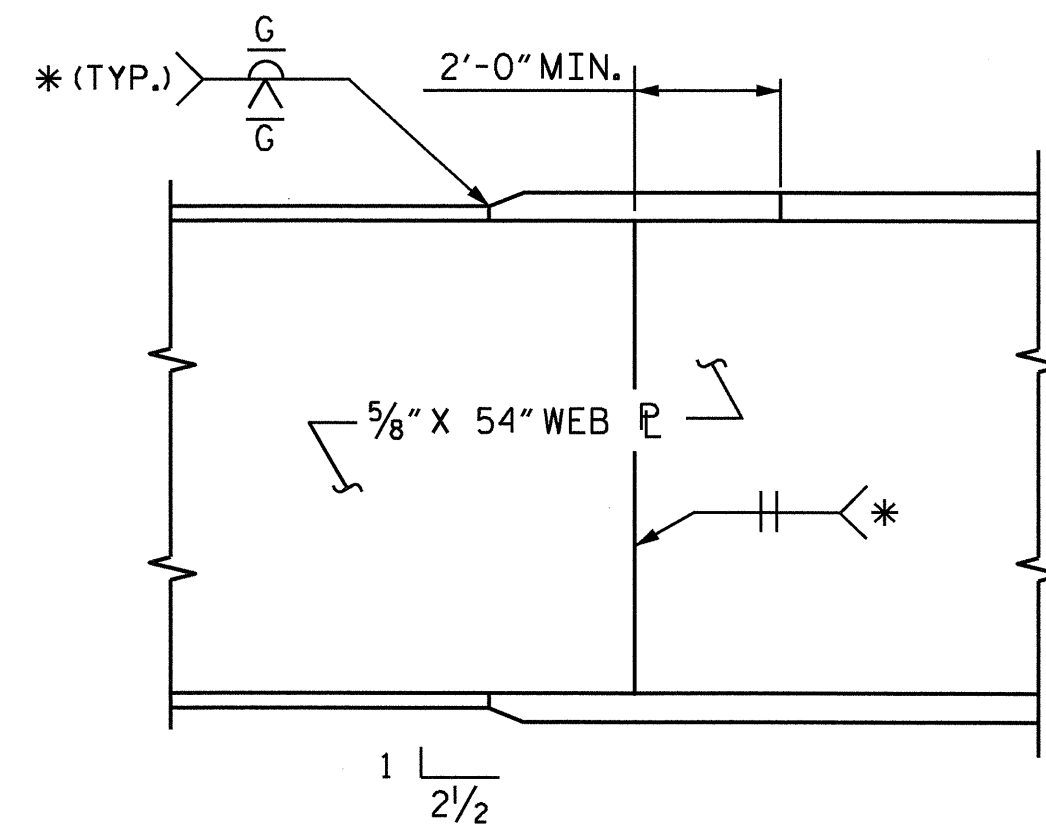
REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

TOTAL SHEETS: 68

STR #1

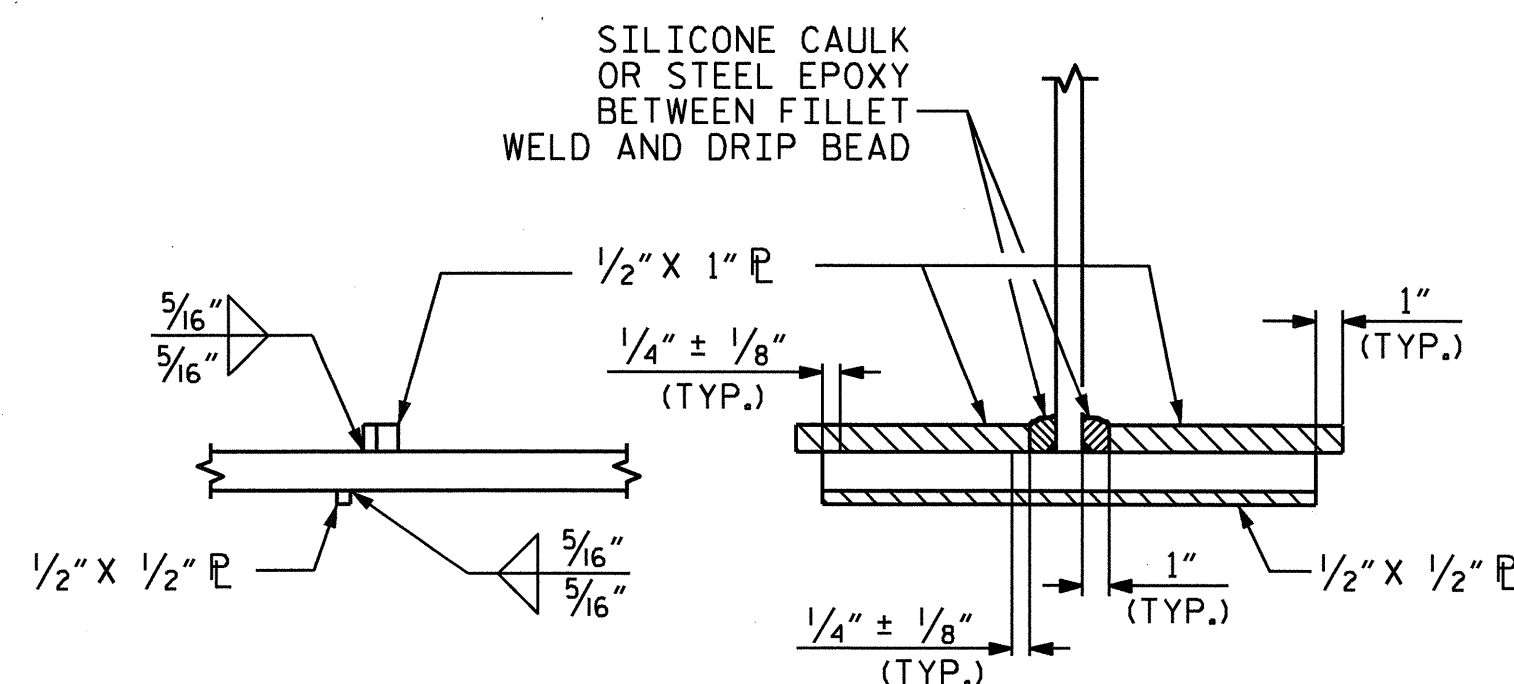


TYPICAL INTERMEDIATE DIAPHRAGM



TYPICAL FLANGE AND WEB BUTT JOINT

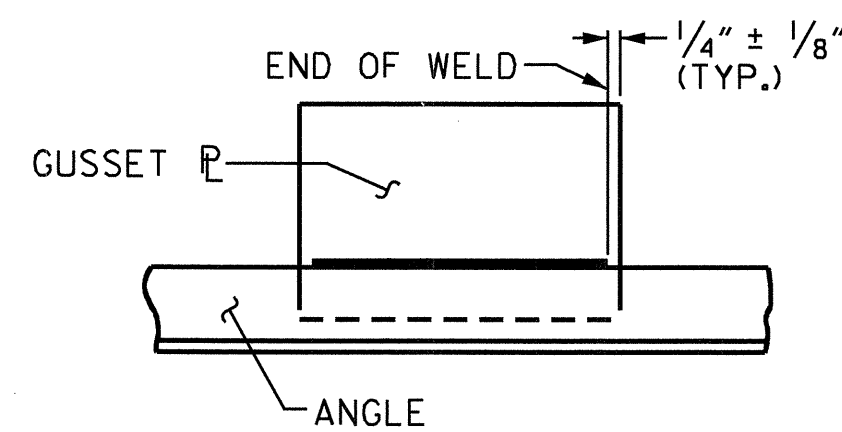
* GRIND SMOOTH AND FLUSH ON OUTER FACE OF EXTERIOR GIRDERS



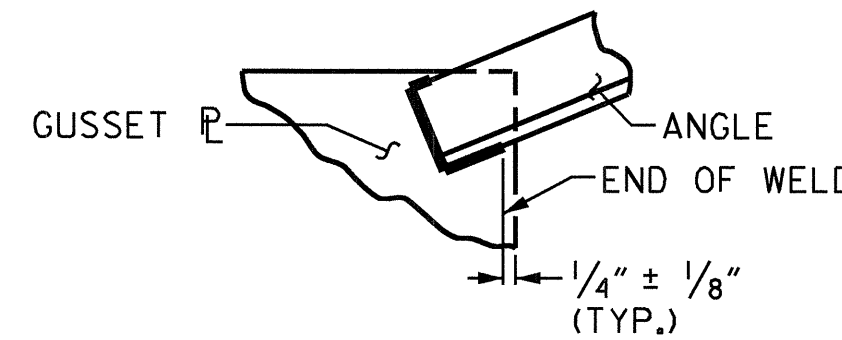
SIDE VIEW

SECTION

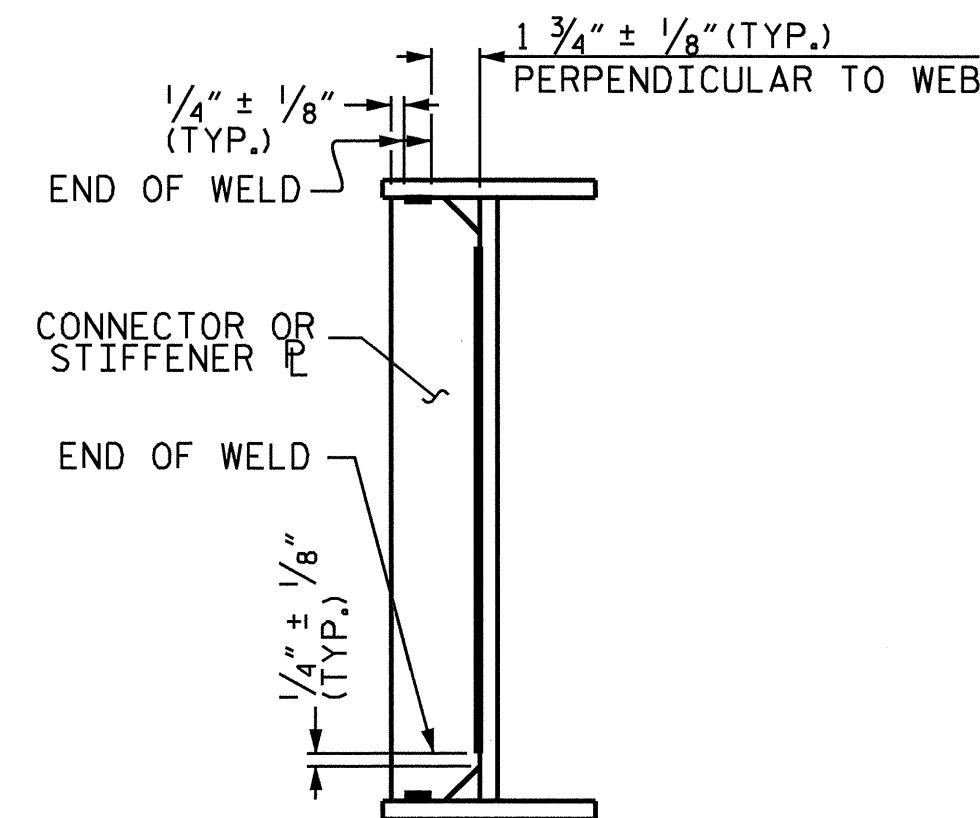
DRIP BEAD DETAILS



TYPICAL GUSSET PLATE CONNECTION

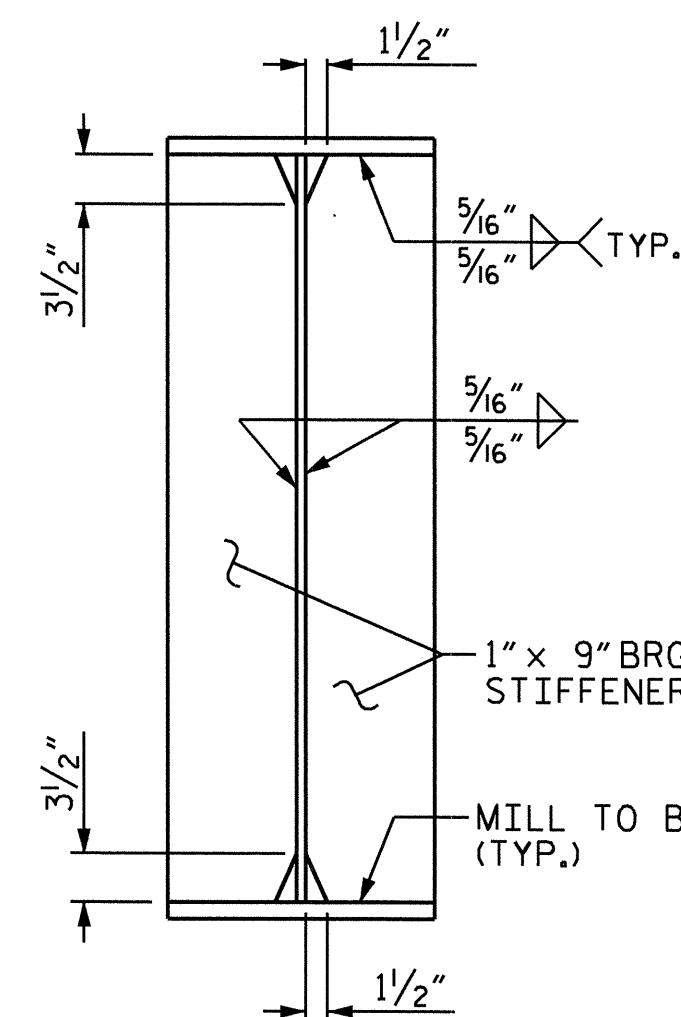


TYPICAL ANGLE TO GUSSET PLATE CONNECTION

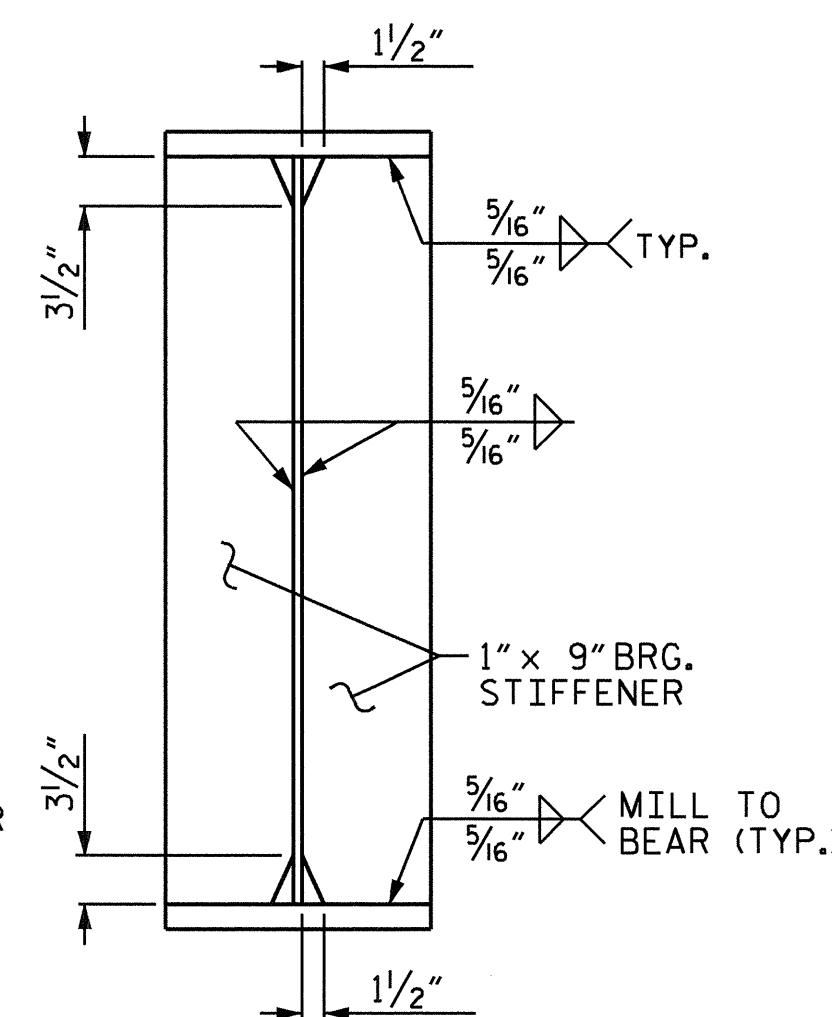


TYPICAL STIFFENER OR CONNECTOR PLATE CONNECTION

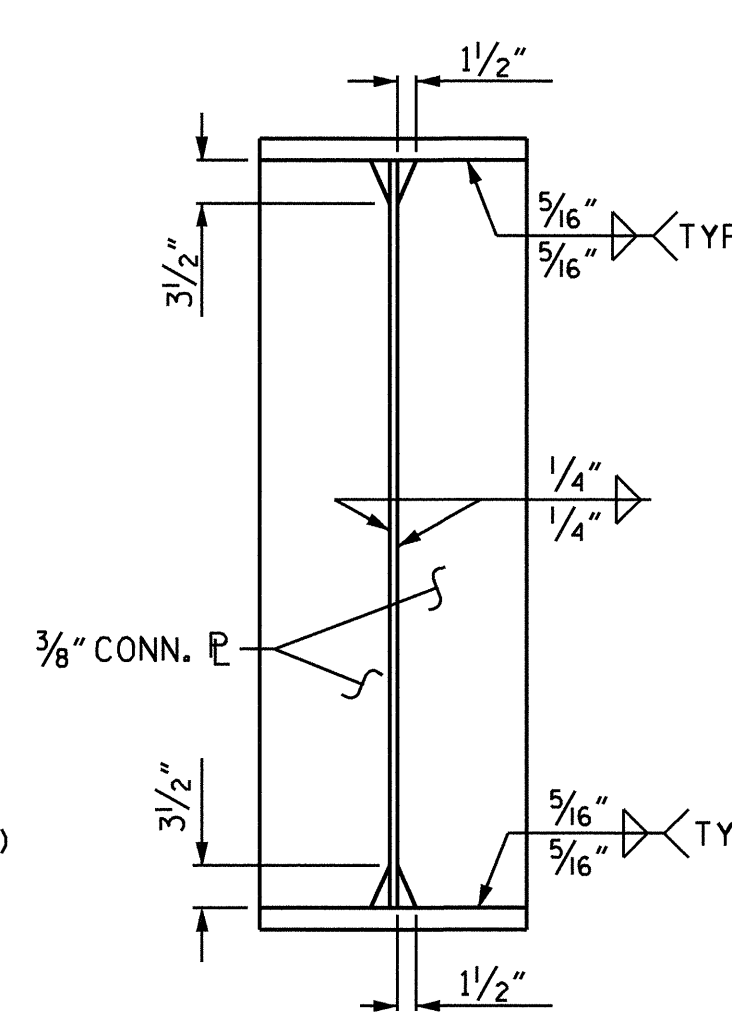
WELD TERMINATION DETAILS



BEARING STIFFENER PLATE DETAIL AT END BENTS



BEARING STIFFENER PLATE DETAIL AT BENT 1



CONNECTOR PLATE DETAIL

NOTE: DO NOT CLIP PLATE AT TOP OUTSIDE CORNER OF STIFFENER PLATE.

NOTES:

ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 50W.

ALL DIMENSIONS SHOWN ARE HORIZONTAL OR VERTICAL, UNLESS OTHERWISE NOTED.

ALL FIELD CONNECTIONS TO BE 7/8" DIA. HIGH STRENGTH BOLTS UNLESS OTHERWISE NOTED.

BEARING STIFFENERS ARE TO BE PLACED NORMAL TO THE WEB OF THE GIRDER AND SHALL BE PLUMB.

SHOP SPLICES ARE PERMITTED TO LIMIT THE MAXIMUM REQUIRED FLANGE PIECE LENGTHS TO 60 FEET AND WEB PIECE LENGTHS TO 45 FEET. PERMITTED FLANGE AND WEB SHOP SPLICES SHALL NOT BE LOCATED WITHIN 15 FEET OF MAXIMUM DEAD LOAD DEFLECTION (NOR 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.

FOR HIGH STRENGTH BOLTS, SEE SPECIAL PROVISIONS.

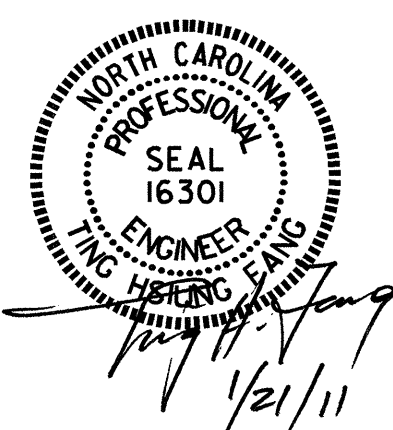
BEARING STIFFENER MAY REQUIRE COPING IF WIDER THAN BOTTOM FLANGE TO AVOID INTERFERENCE WITH THE ANCHOR BOLT.

FOR DIRECT TENSION INDICATORS, SEE SPECIAL PROVISIONS.

FOR SHIPPING STEEL STRUCTURAL MEMBERS, SEE SPECIAL PROVISIONS.

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.

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



PROJECT NO. U-3621B
 NASH COUNTY
 STATION: 50+77.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE

STRUCTURAL STEEL
 DETAILS
 (LEFT LANE)

REVISIONS

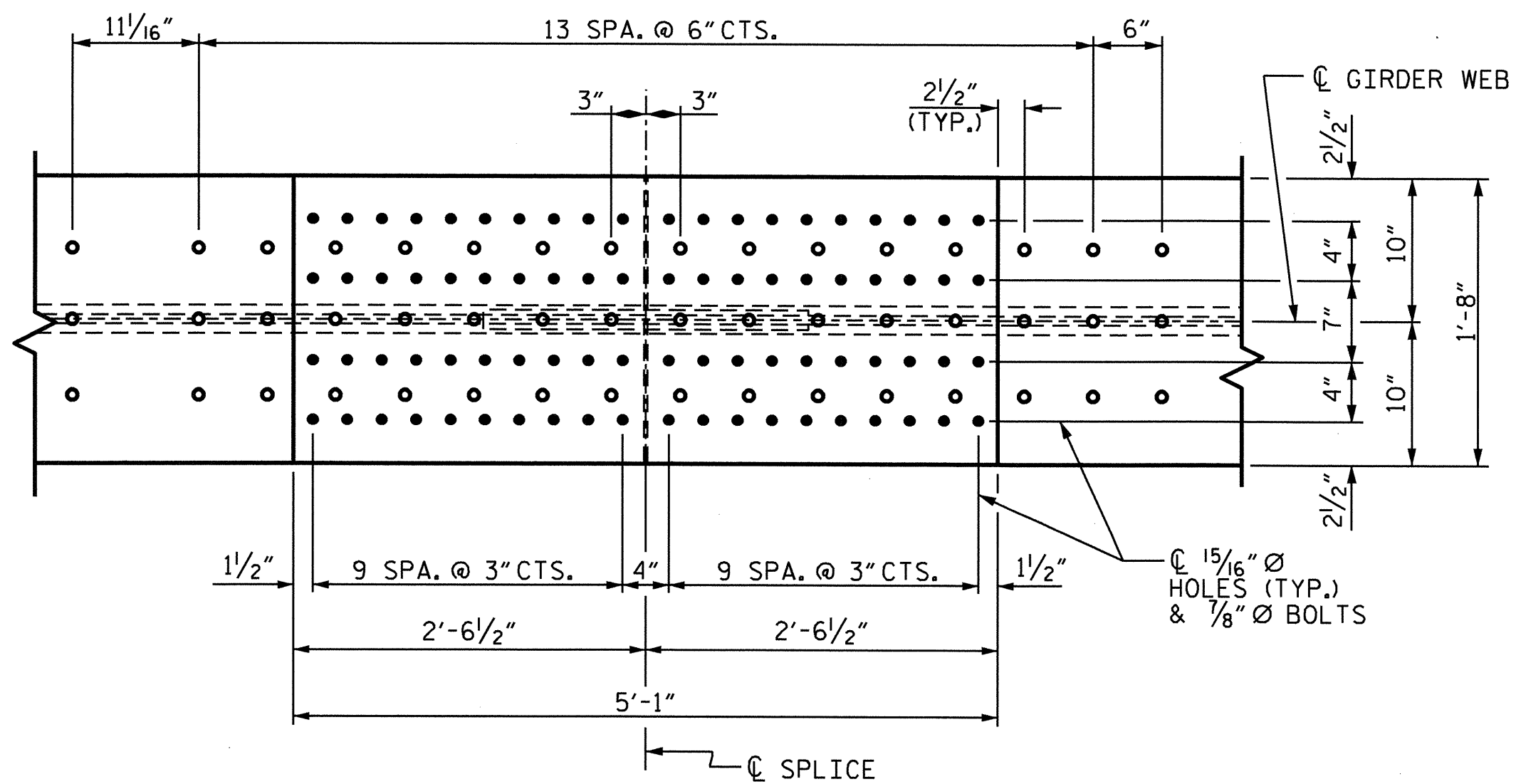
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.
S-13
TOTAL SHEETS
68

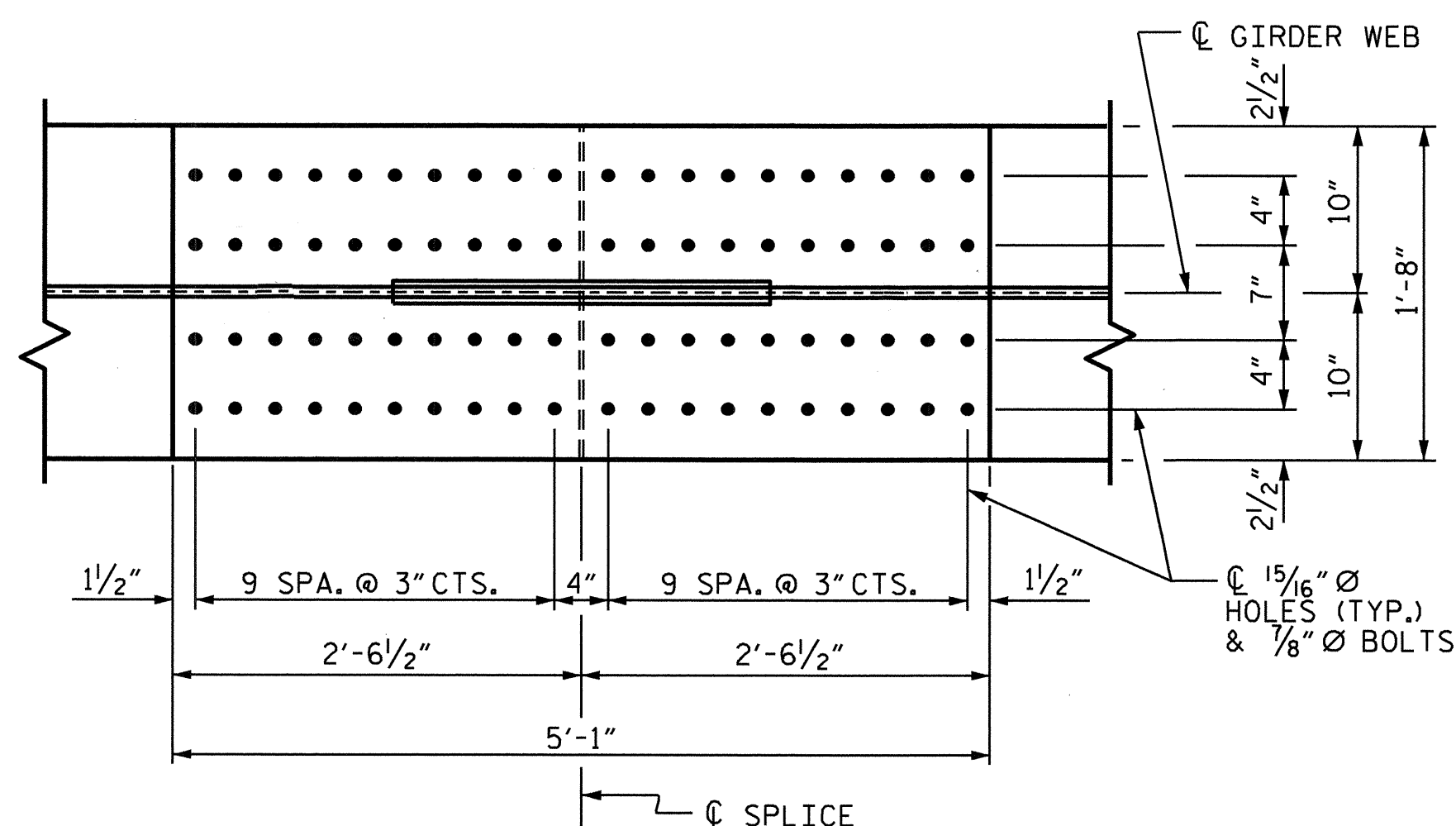
DRAWN BY: QT NGUYEN DATE: 2-09
 CHECKED BY: W.D. CRUTCHER DATE: 4-10

21-JAN-2011 15:11
 X:\U3621B\Structures\Final Plans\1334\U3621b.sd.ssl.dgn
 +Tang

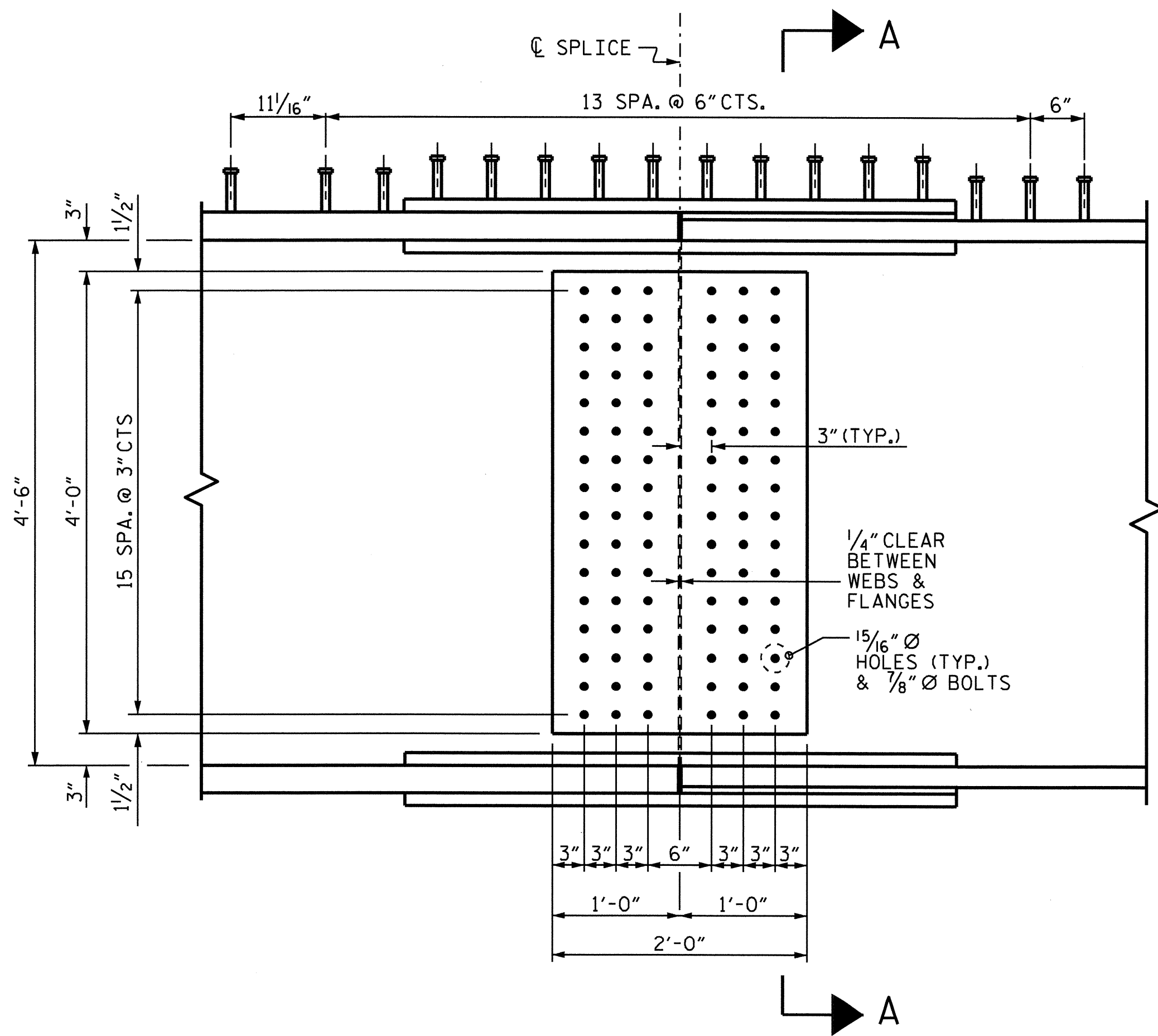
STR #1



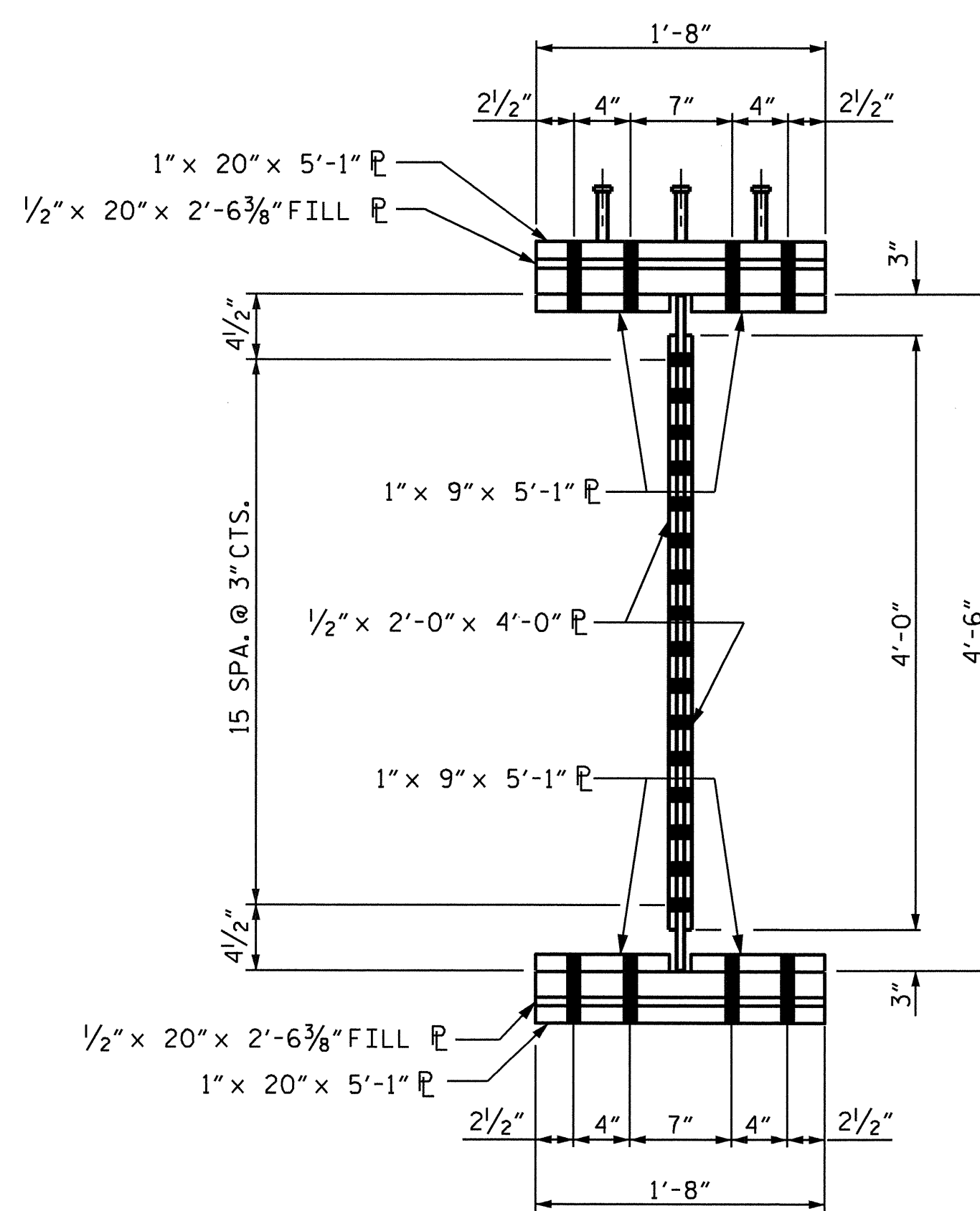
PLAN (TOP OF TOP FLANGE)



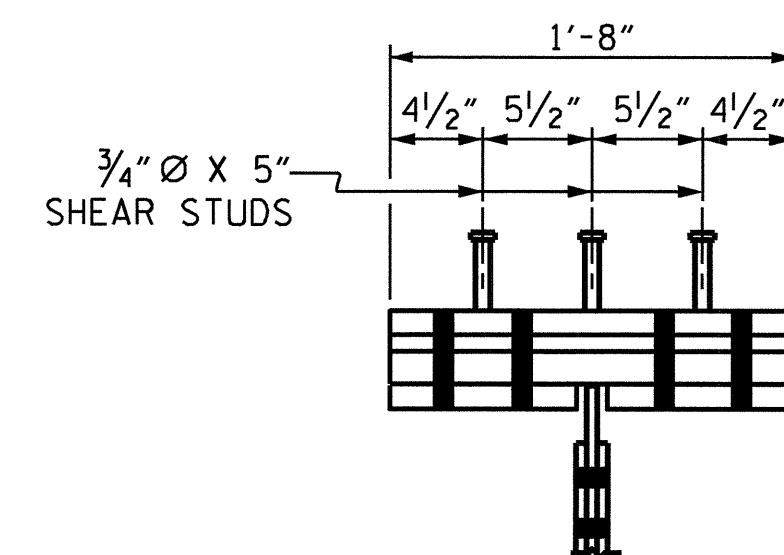
PLAN (TOP OF BOTTOM FLANGE)



ELEVATION



SECTION A-A

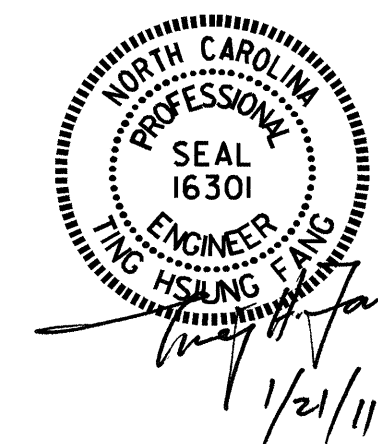


SHEAR STUD DETAIL FOR TOP FLANGE SPLICE PLATE

BOLTED FIELD SPLICE DETAILS

PROJECT NO. U-3621B
NASH COUNTY
 STATION: 50+77.00 -L-

SHEET 3 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 STRUCTURAL
 STEEL DETAILS
 BOLTED FIELD SPLICE
 (LEFT LANE)

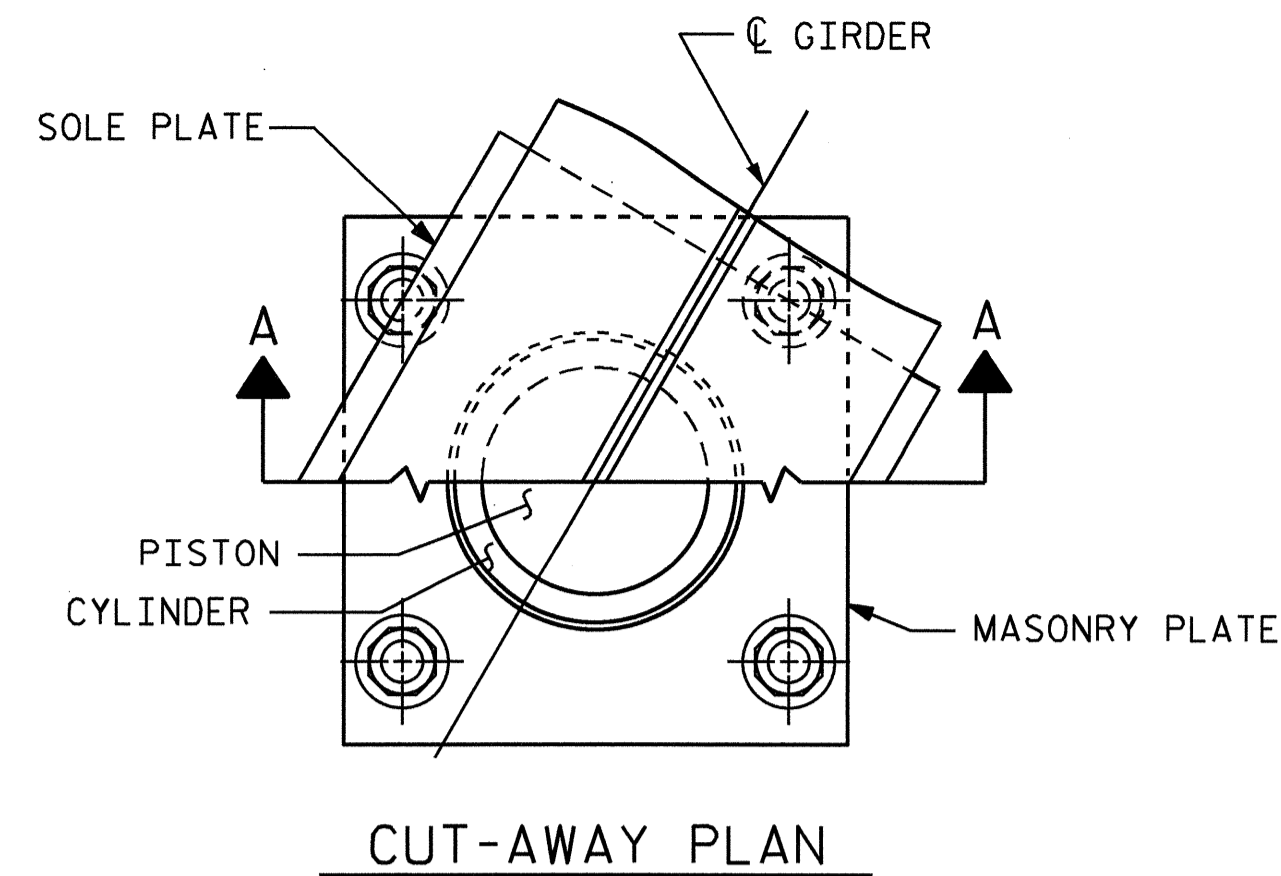
REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	DATE:
1			3	
2			4	

S-14
TOTAL SHEETS
68

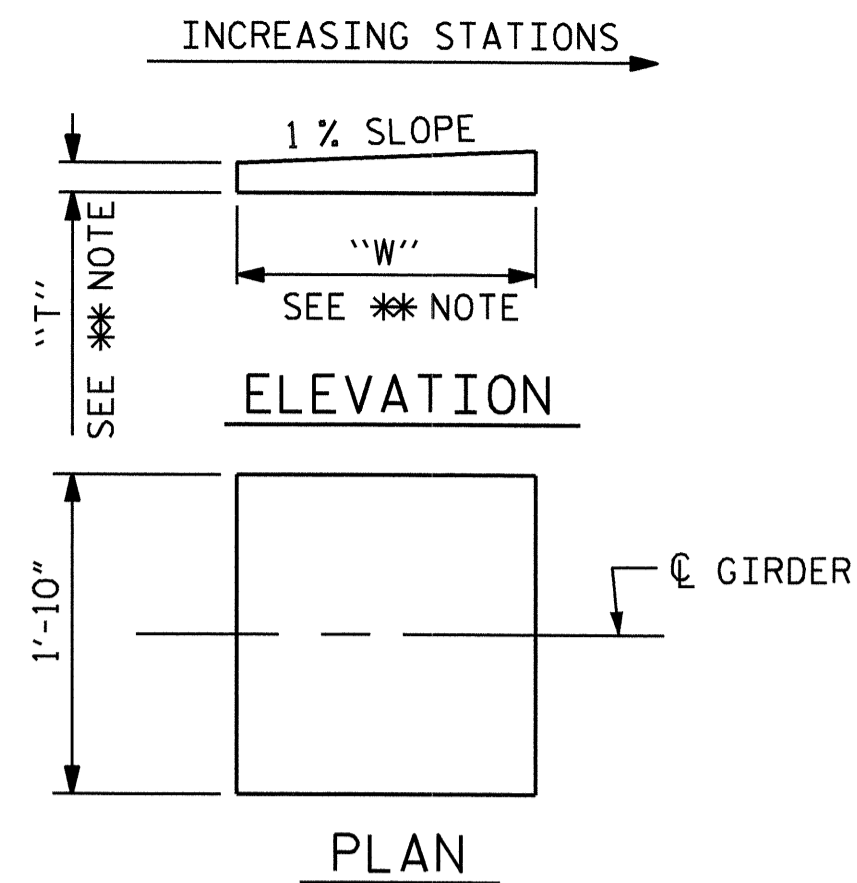
DRAWN BY : QT NGUYEN DATE : 2-09
 CHECKED BY : W.D. CRUTCHER DATE : 4-10

21-JAN-2011 12:21
 Y:\TIP\Projects-U\U3621B\Structures\Final Plans\11334\U3621b.sd.ssl.dgn
 qtnguyen

STR #1



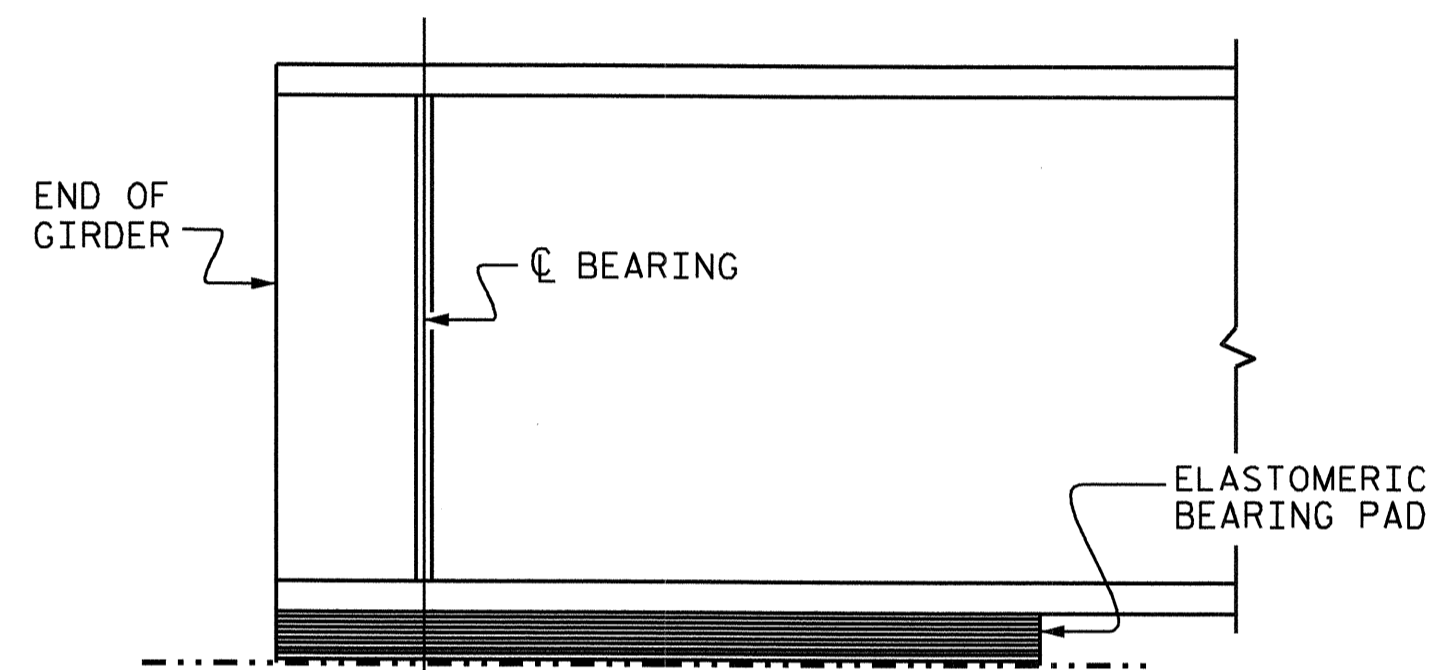
CUT-AWAY PLAN



PLAN

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

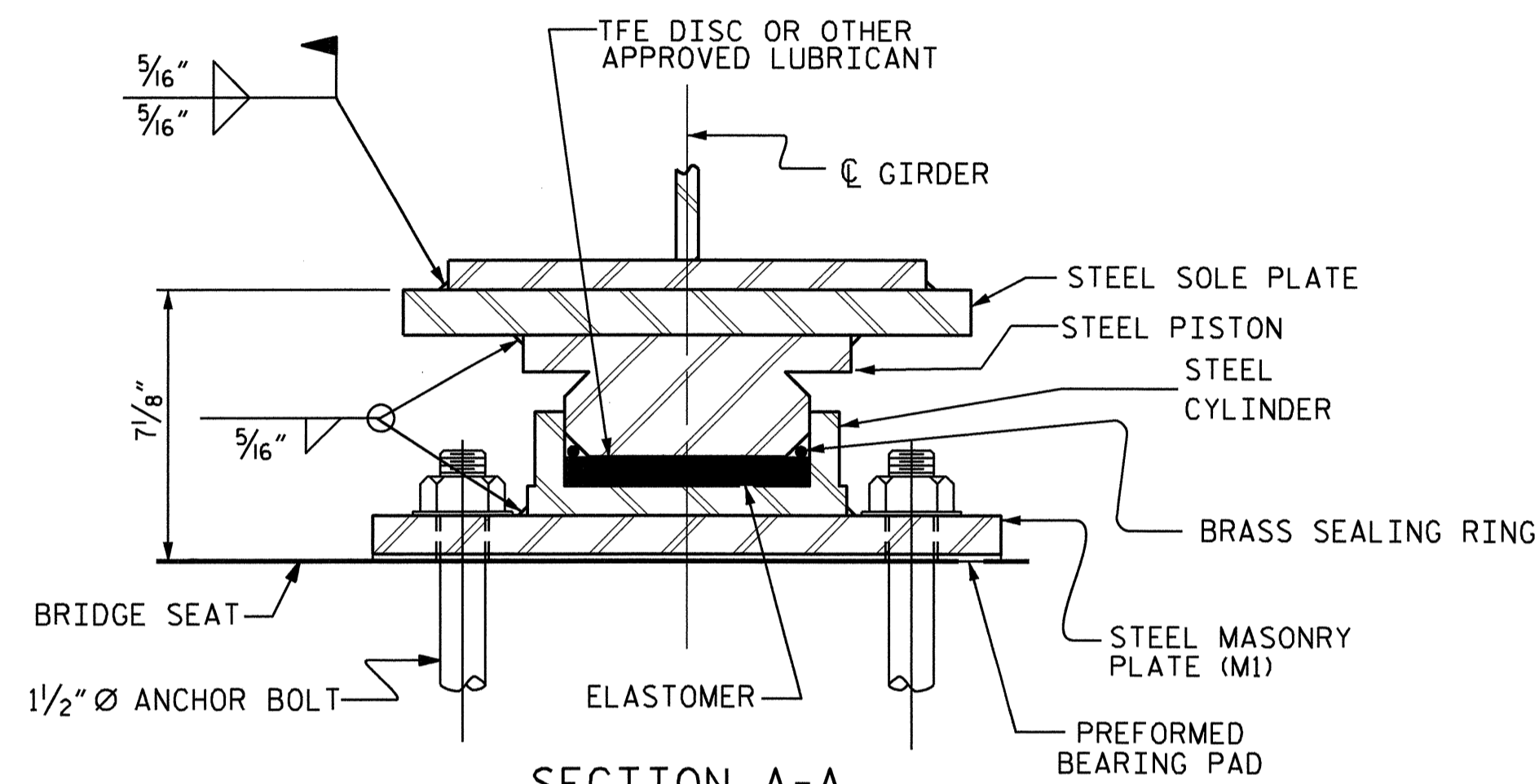
SOLE PLATE DETAILS



E4, FIXED @ END BENT

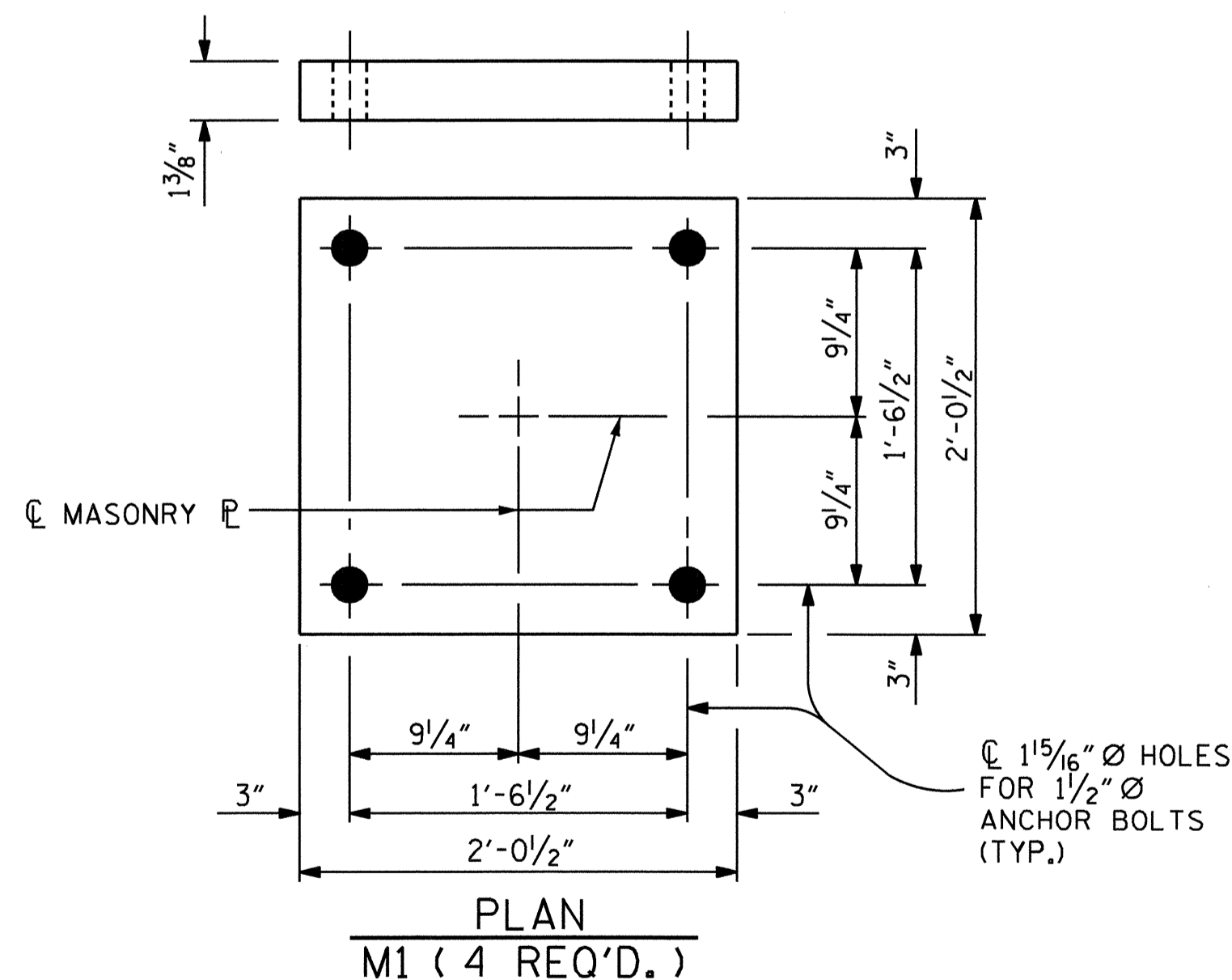
ELEVATION

POT BEARING	LOCATION	VERTICAL LOAD (KIPS)			LATERAL LOAD (KIPS)	TOTAL MOVEMENT (INCHES)	
		DEAD		LIVE			
		DC	DW				
PB1 (FIXED)	BENT 1	288	30	211	529	108	0

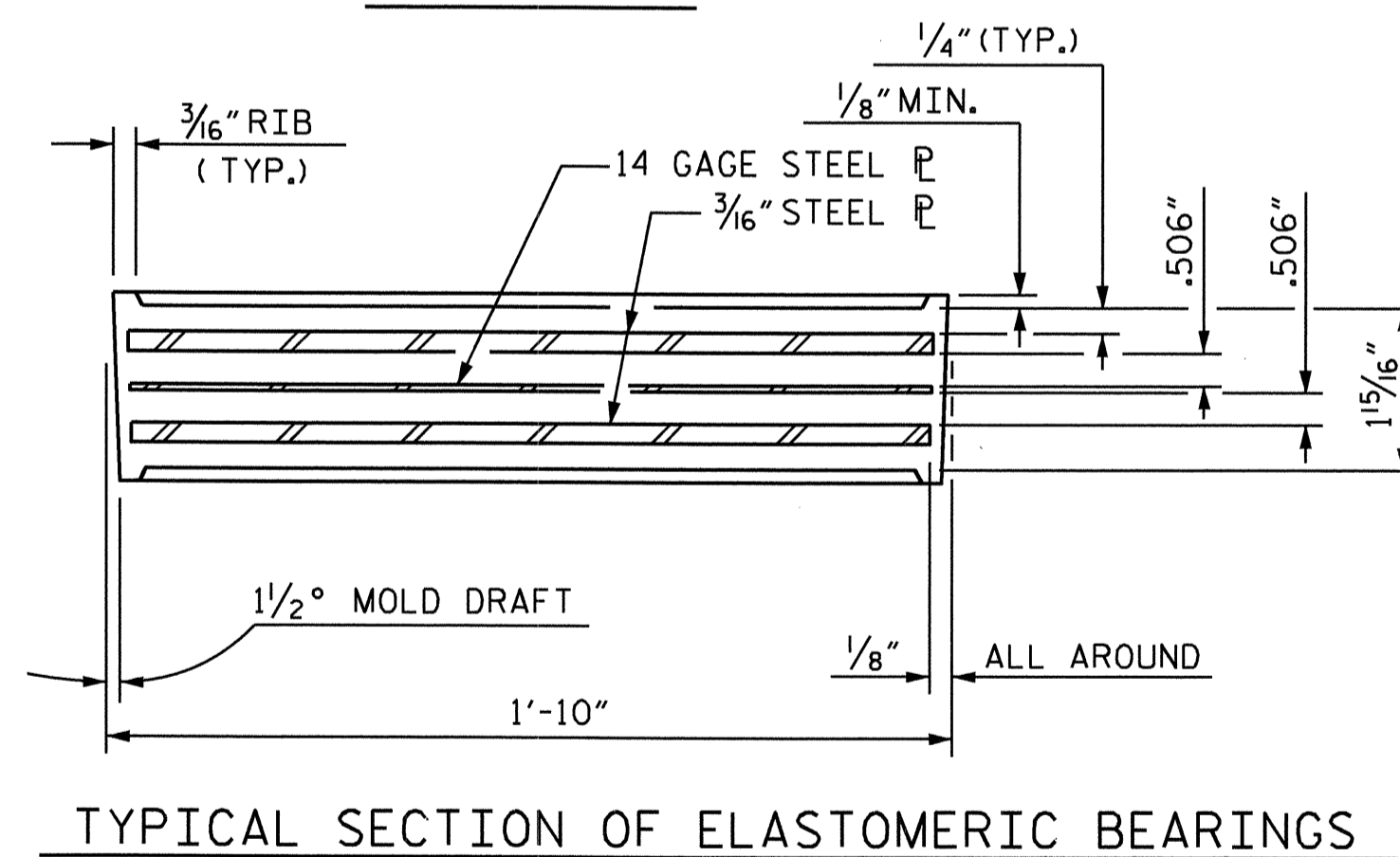


SECTION A-A
PB1, FIXED @ BENT 1
(4 REQ'D.)

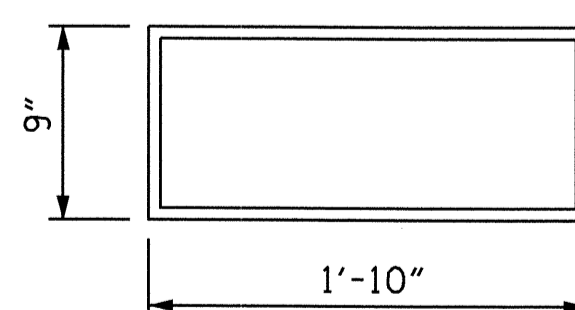
POT BEARING DETAILS



M1 (4 REQ'D.)
MASONRY PLATE DETAILS



TYPICAL SECTION OF ELASTOMERIC BEARINGS



PLAN VIEW
(8 REQ'D)

ELASTOMERIC BEARING PAD

NOTES

FOR POT BEARINGS, SEE SPECIAL PROVISIONS.

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

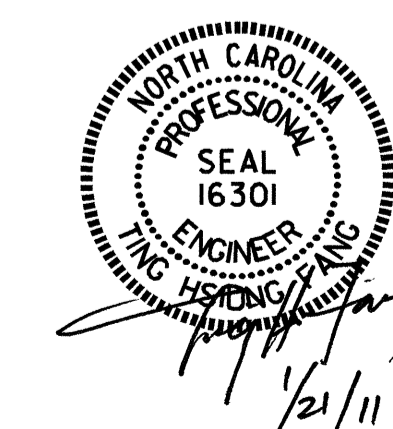
WHEN WELDING THE SOLE PLATE TO THE GIRDER, USE TEMPERATURE INDICATING WAX PENS, OR OTHER SUITABLE MEANS, TO ENSURE THAT THE TEMPERATURE OF THE BEARING DOES NOT EXCEED 250°F. TEMPERATURES ABOVE THIS MAY DAMAGE THE TFE OR ELASTOMER.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

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

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

PROJECT NO. U-3621B
NASH COUNTY
STATION: 50+77.00 -L-



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
POT BEARING &
ELASTOMERIC PAD
DETAILS
(LEFT LANE)

ASSEMBLED BY : OT NGUYEN	DATE : 2-09
CHECKED BY : W.D. CRUTCHER	DATE : 4-10
DRAWN BY : RWW 8/99	REV. 7/10/01 LES/RDR
CHECKED BY : LES 8/99	REV. 5/7/03 RWW/JTE
	REV. 5/1/06 TLA/GM

REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
					68

NOTES

AT THE CONTRACTOR'S OPTION, METAL RAIL MAY BE EITHER ALUMINUM OR GALVANIZED STEEL IN ACCORDANCE WITH THE REQUIREMENTS OF THE GENERAL NOTES AND THE FOLLOWING SPECIFICATIONS FOR THE ALTERNATE MATERIALS; HOWEVER, THE CONTRACTOR WILL BE REQUIRED TO USE THE SAME RAIL MATERIAL ON ALL STRUCTURES ON THE PROJECT FOR WHICH METAL RAIL IS DESIGNATED.

ALUMINUM RAILS

MATERIAL FOR POSTS, BASES AND RAILS, EXPANSION BARS AND CLAMP BARS SHALL BE ASTM B221 ALLOY 6061-T6. MATERIAL FOR RIVETS SHALL BE ASTM B316 ALLOY 6061-T6. RIVETS SHALL BE STANDARD BUTTON HEAD AND CONE POINT COLD DRIVEN AS PER DRAWING.

THE BASE OF RAIL POSTS, OR ANY OTHER ALUMINUM SURFACE IN CONTACT WITH CONCRETE SHALL BE THOROUGHLY COATED WITH AN ALUMINUM IMPREGNATED CAULKING COMPOUND OF APPROVED QUALITY.

MATERIAL FOR SHIMS TO BE ASTM B209 ALLOY 6061-T6.

GALVANIZED STEEL RAILS

MATERIAL AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:

POST, POST BASES, RAILS, EXPANSION BARS AND CLAMP BARS : AASHTO M270 GRADE 36 STRUCTURAL STEEL - GALVANIZED TO AASHTO M111.

RIVETS: RIVETS SHALL MEET THE REQUIREMENTS OF ASTM A502 FOR GRADE 1 RIVETS.

THE CUT ENDS OF GALVANIZED STEEL RAILING, AFTER GRINDING SMOOTH SHALL BE GIVEN TWO COATS OF ZINC RICH PAINT MEETING THE REQUIREMENTS OF FEDERAL SPECIFICATION MIL-P-26915 USAF TYPE 1, OR OF FEDERAL SPECIFICATIONS TT-P-641.

SHIMS: SHIMS SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.

RAIL CAPS: RAIL CAPS SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.

GENERAL NOTES

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. PLACE ONE JOINT SPLICE JUST BEYOND THE 3RD RAIL POST FROM EACH END, TYPICALLY 14' FROM THE END. PLACE OTHER JOINTS AS NEEDED.

FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE STANDARD NO. BMR7.

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

CERTIFIED MILL REPORTS ARE REQUIRED FOR RAILS AND POSTS. SHOP INSPECTION IS NOT REQUIRED.

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

METHOD OF MEASUREMENT FOR METAL RAILS: FOR LENGTH OF METAL RAILS TO BE PAID FOR, SEE THE STANDARD SPECIFICATIONS.

CURVED RAIL USAGE: WHERE RAILS ARE TO BE USED ON BRIDGES ON HORIZONTAL AND/OR VERTICAL CURVATURE THE CONTRACTOR MAY, AT HIS OPTION, HAVE THE REQUIRED CURVATURE IN THE RAIL FORMED IN THE SHOP OR IN THE FIELD. IN EITHER EVENT, THE RAIL SHALL CONFORM WITHOUT BUCKLING OR KINKING TO THE REQUIRED CURVATURE IN A UNIFORM MANNER ACCEPTABLE TO THE ENGINEER.

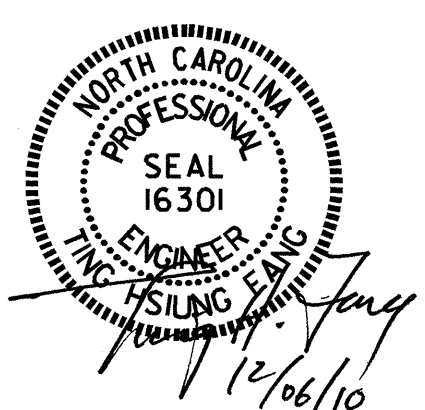
TO INSURE FUTURE IDENTIFICATION OF THE FABRICATOR, A PERMANENT IDENTIFYING MARK SHALL BE PLACED ON EACH POST. THE METHOD OF MARKING AND LOCATION SHALL BE SUCH THAT IT DOES NOT DETRACT FROM THE APPEARANCE OF THE POST, BUT REMAIN VISIBLE AFTER RAIL PLACEMENT.

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

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.

PAY LENGTH = 207.38 LIN.FT.



PROJECT NO. U-3621B
 NASH COUNTY
 STATION: 50+77.00 -L-

SHEET 1 OF 3

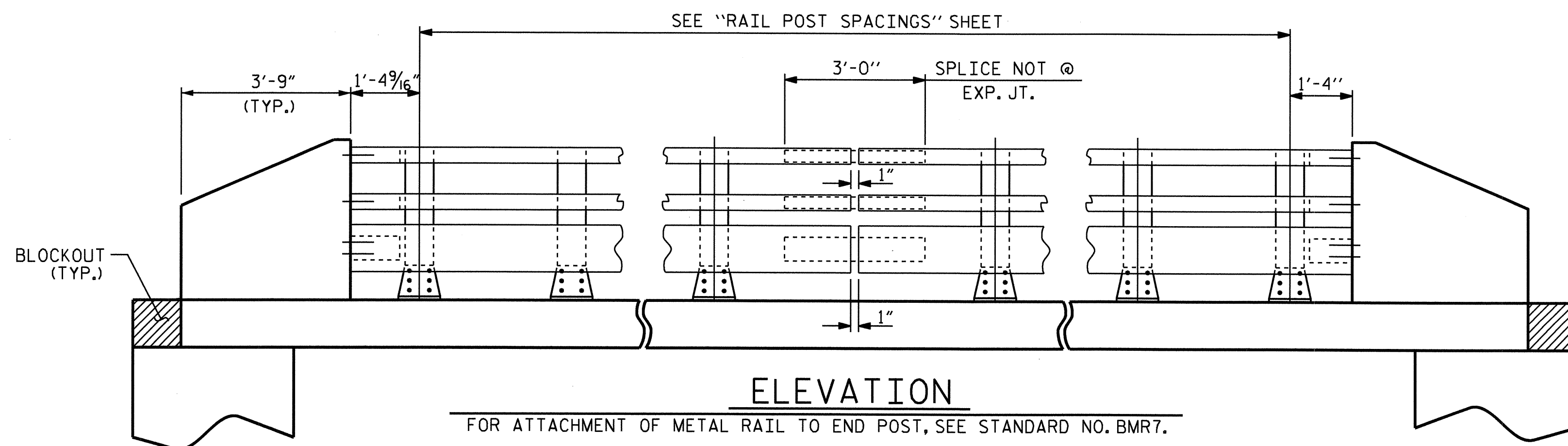
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD

**3 BAR METAL RAIL
 (LEFT LANE)**

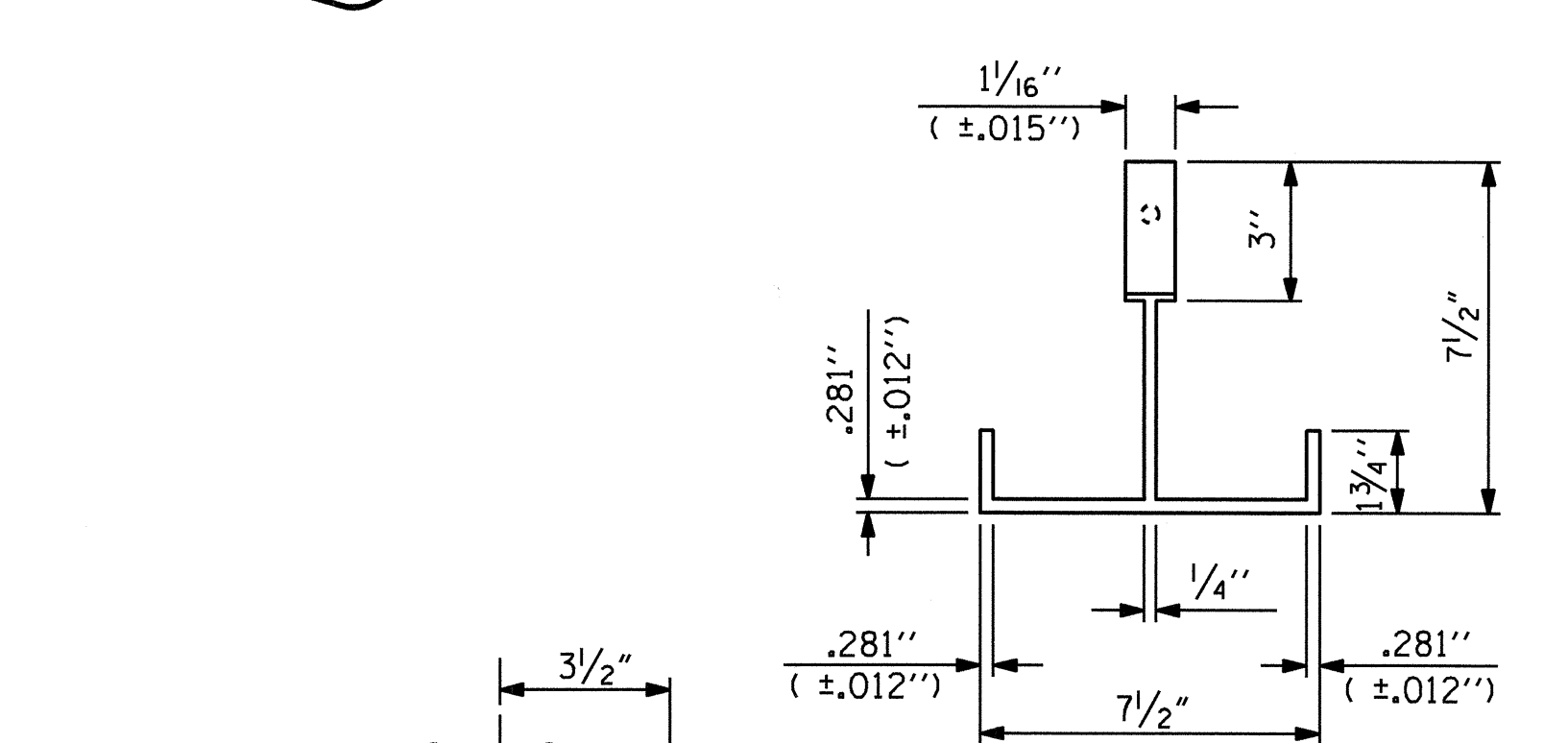
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			68

STR #1

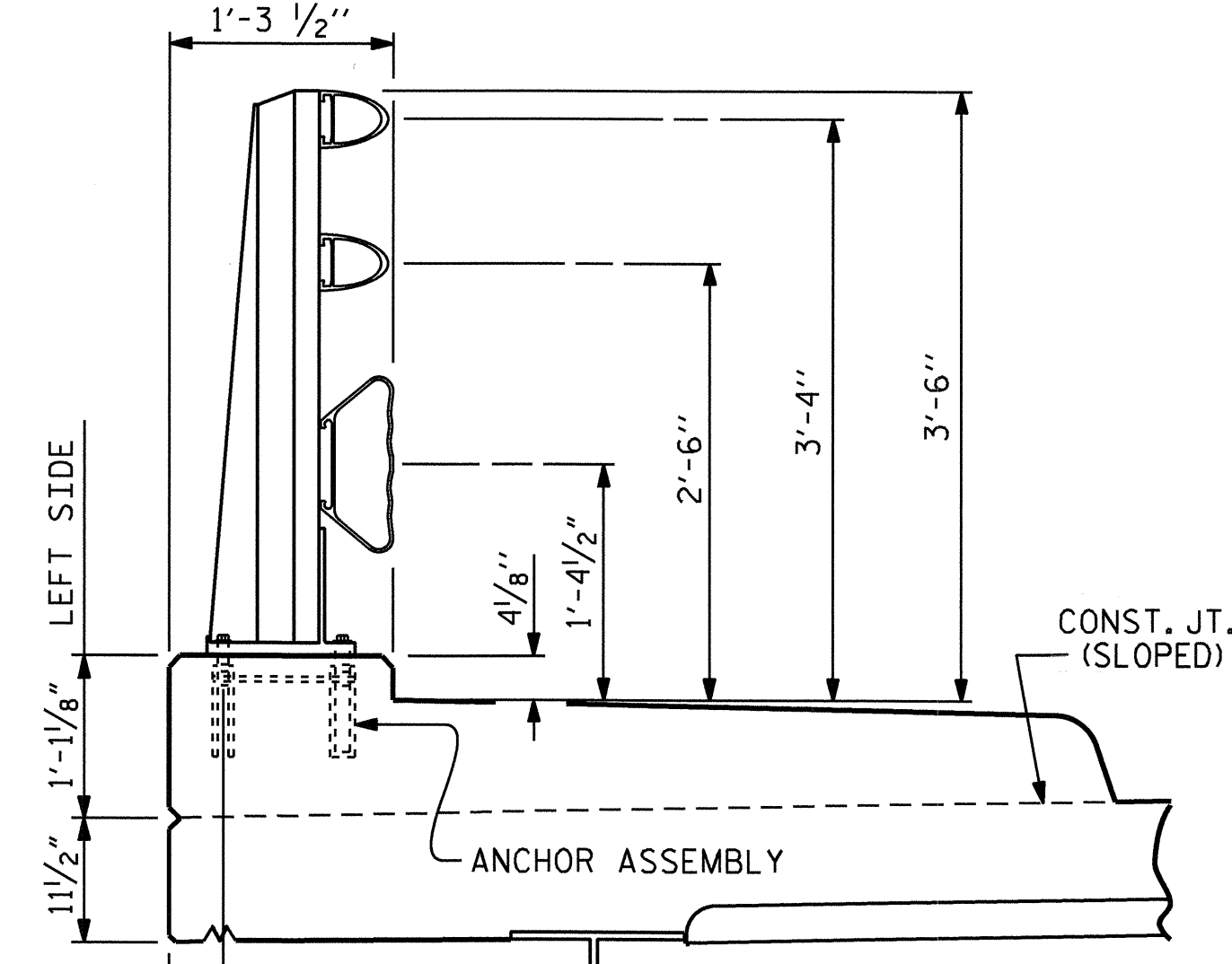
STD. NO. BMR5



ELEVATION
 FOR ATTACHMENT OF METAL RAIL TO END POST, SEE STANDARD NO. BMR7.

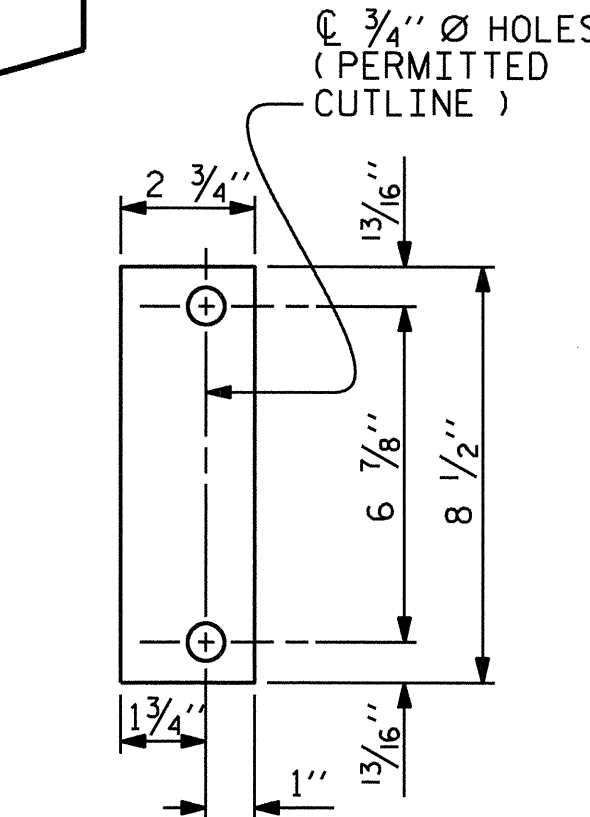


PLAN

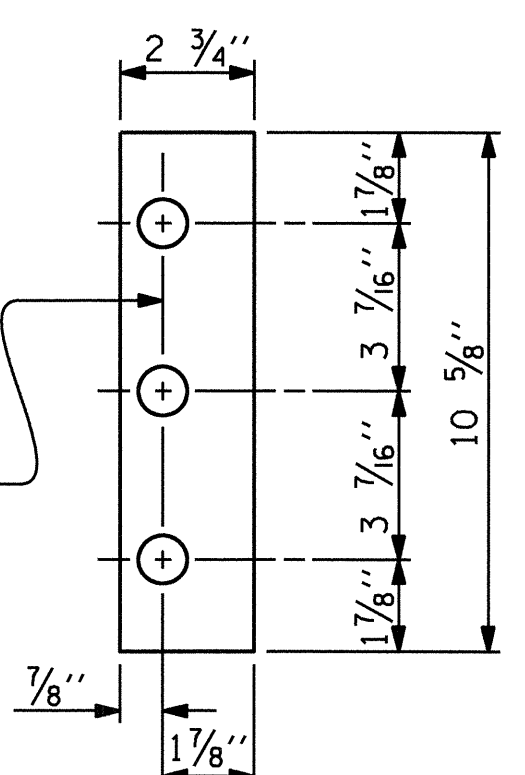


SECTION THRU RAIL

FOR ANCHOR ASSEMBLY, SEE "3 BAR METAL RAIL" STD.No.BMR6

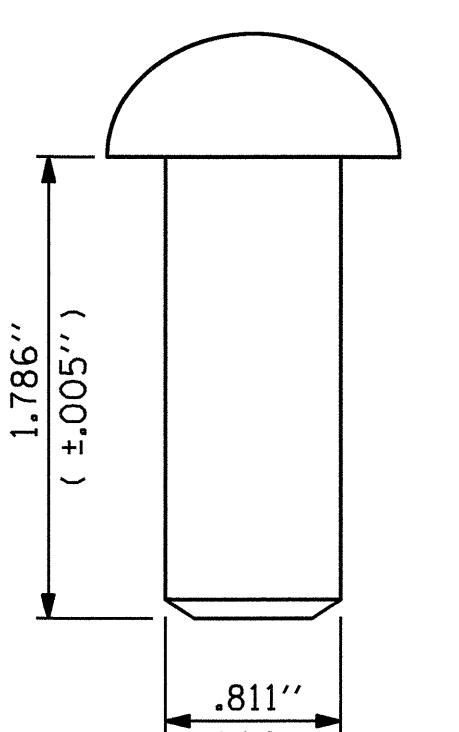


REAR PLATE

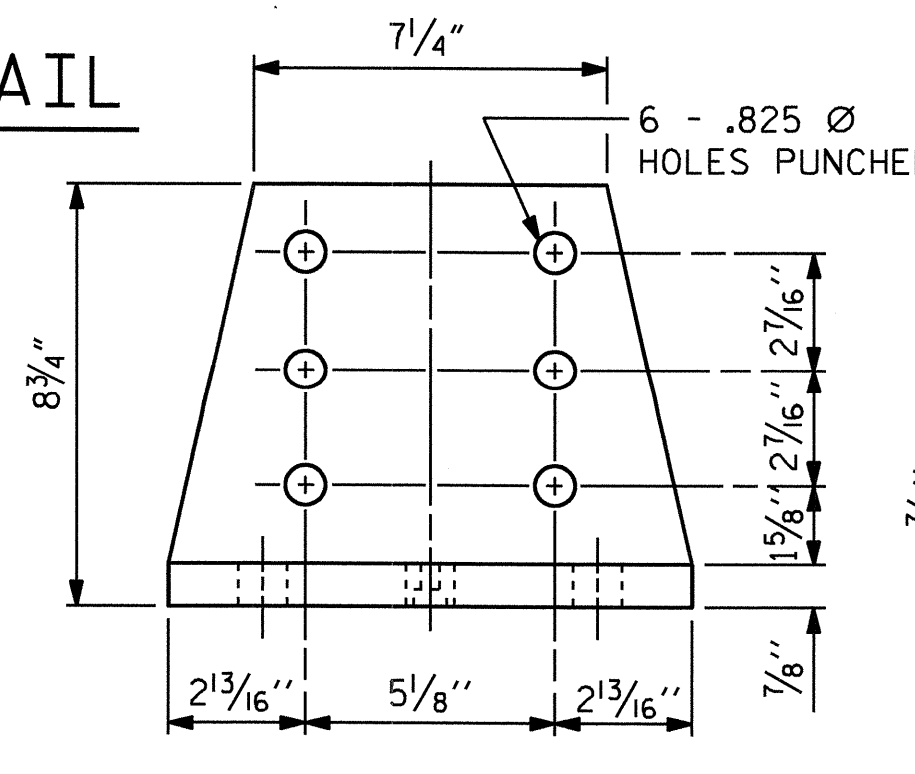


FRONT PLATE SHIM DETAILS

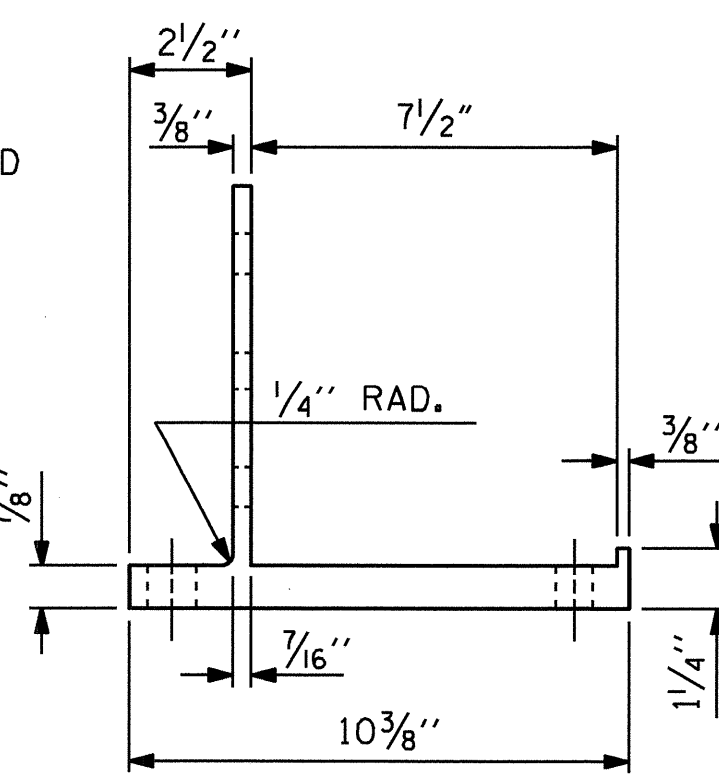
NOTE: SHIMS MAY BE CUT ALONG PERMITTED CUTLINE OR SLOTTED TO EDGE OF PLATE TO FACILITATE PLACEMENT.



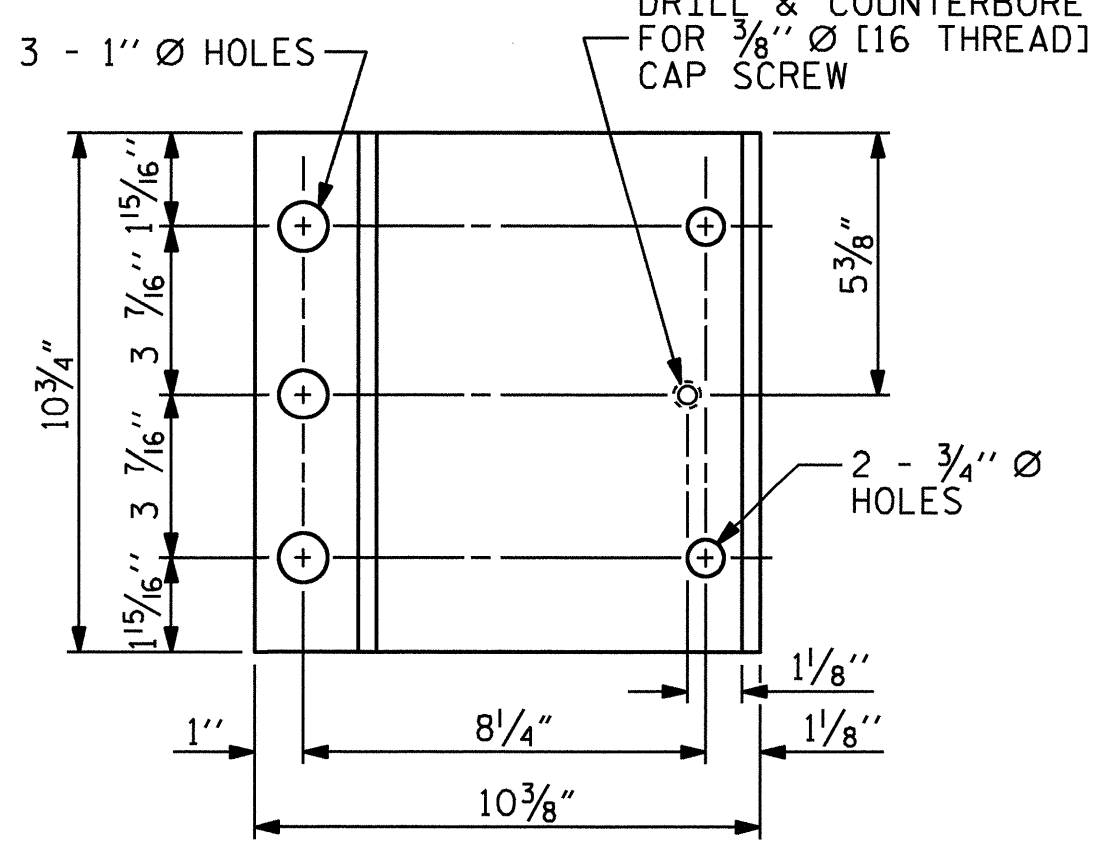
RIVET DETAIL



FRONT ELEVATION



SIDE ELEVATION



PLAN

POST BASE DETAILS

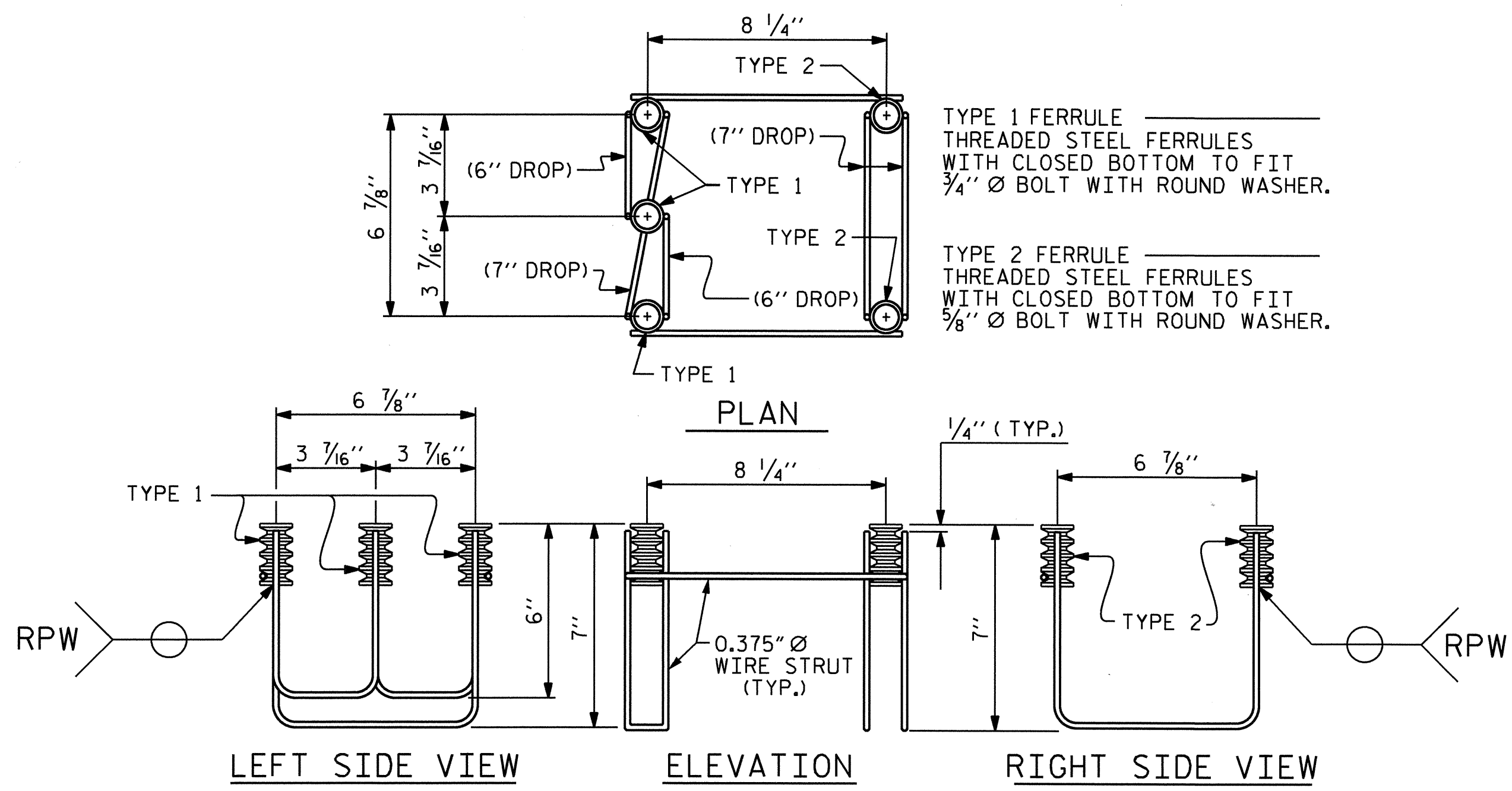
6 - .825" Ø HOLES PUNCHED FOR RIVETS
 5/16" Ø DRILL 1" DEEP & 3/8" Ø [16 THREAD] TAP 7/8" DEEP FOR 3/8" Ø X 1 1/2" STAINLESS STEEL CAP SCREW

FRONT ELEVATION

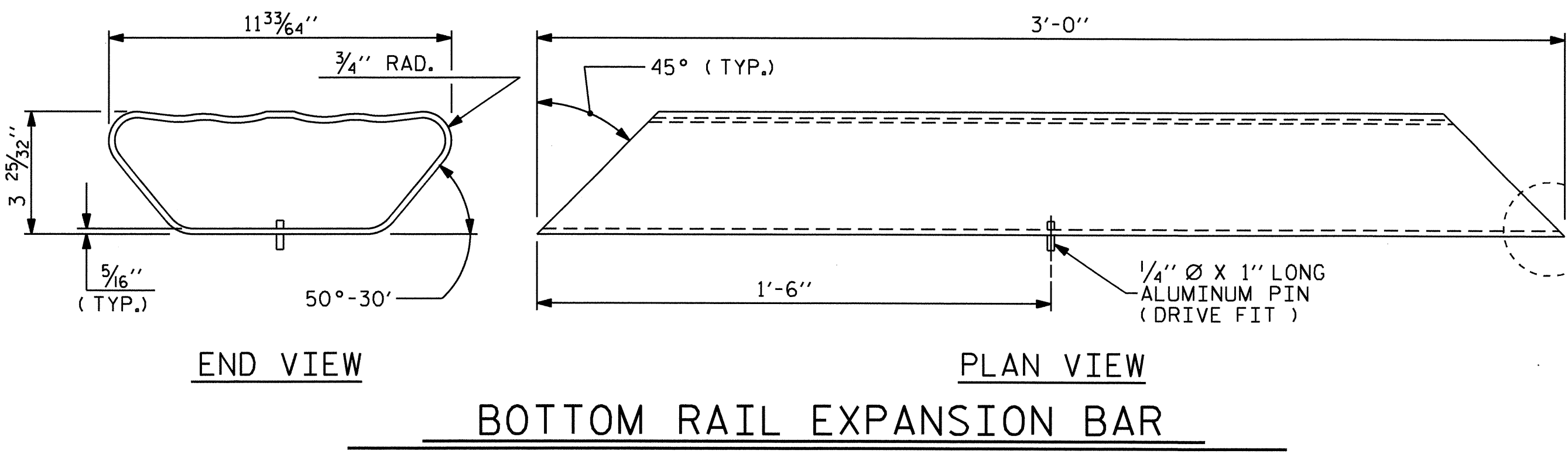
SIDE ELEVATION

DETAILS OF POST

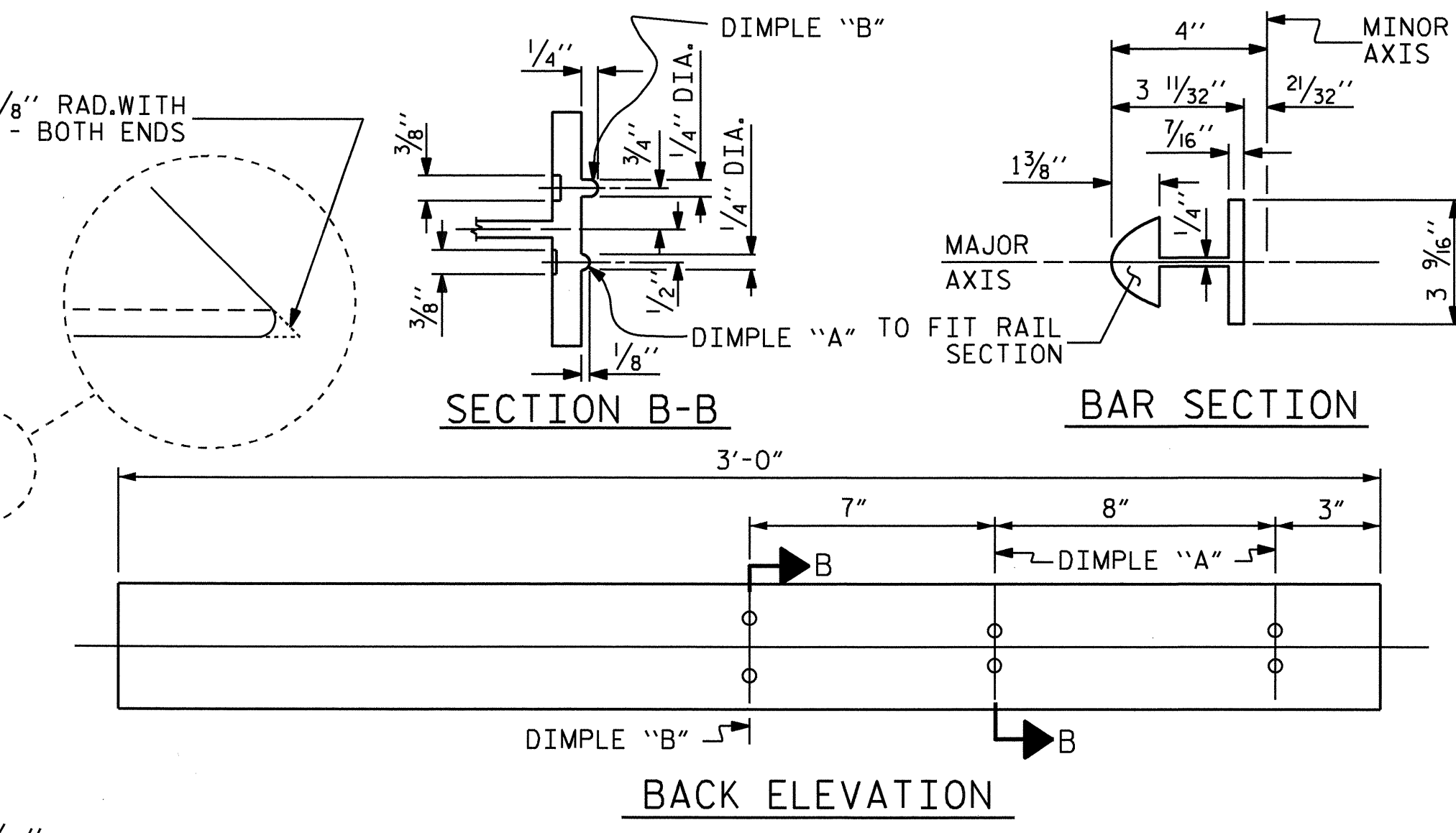
ASSEMBLED BY: OT NGUYEN	DATE: 2-09
CHECKED BY: W.D. CRUTCHER	DATE: 4-10
DRAWN BY: JMB 1/88	REV. 10/17/00 RWW/LJS
CHECKED BY: GCH 1/88	REV. 5/7/03 RWW/JTE
	REV. 5/1/06 TLA/GM



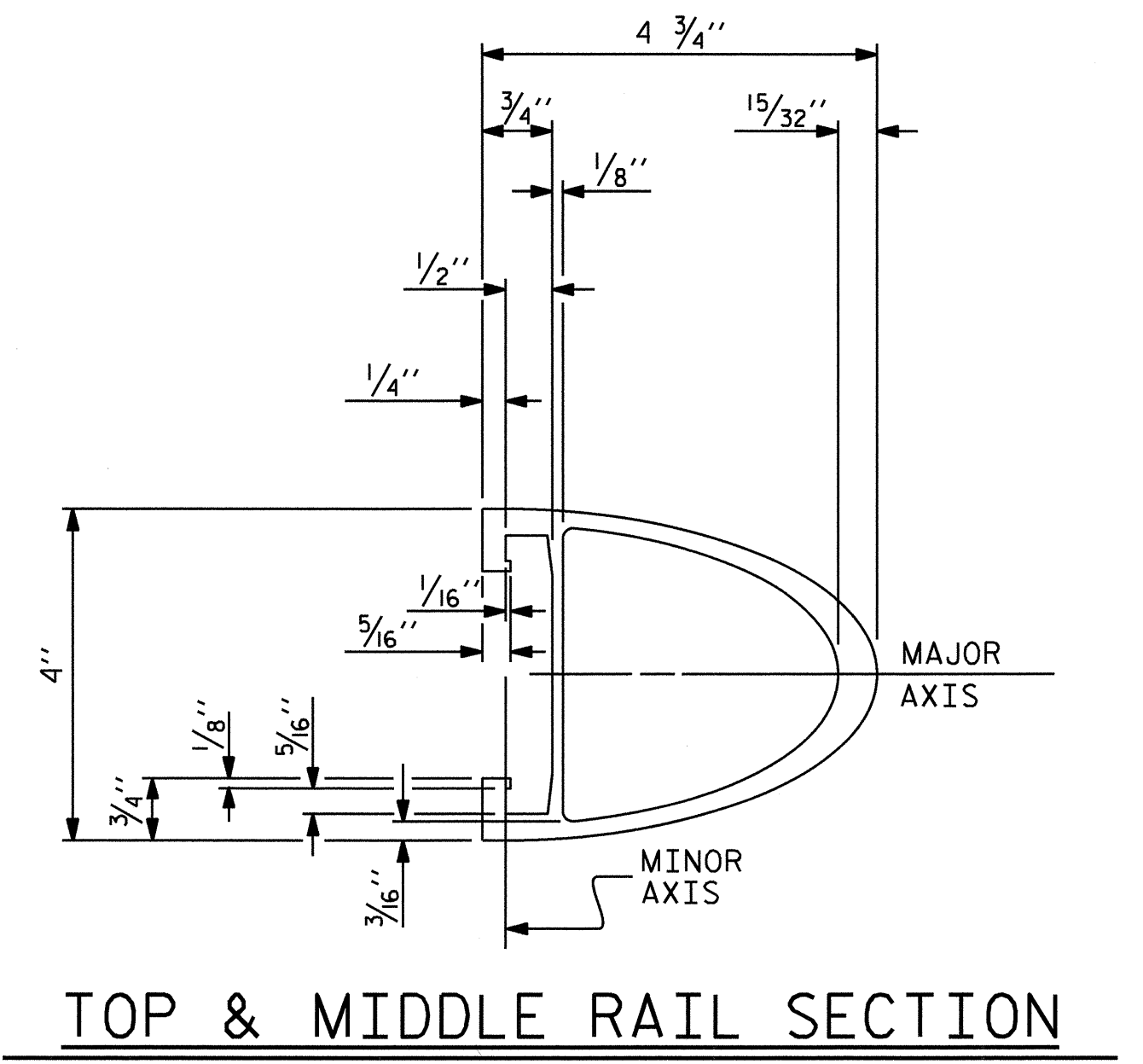
5-BOLT METAL RAIL ANCHOR ASSEMBLY
(35 ASSEMBLIES REQUIRED)



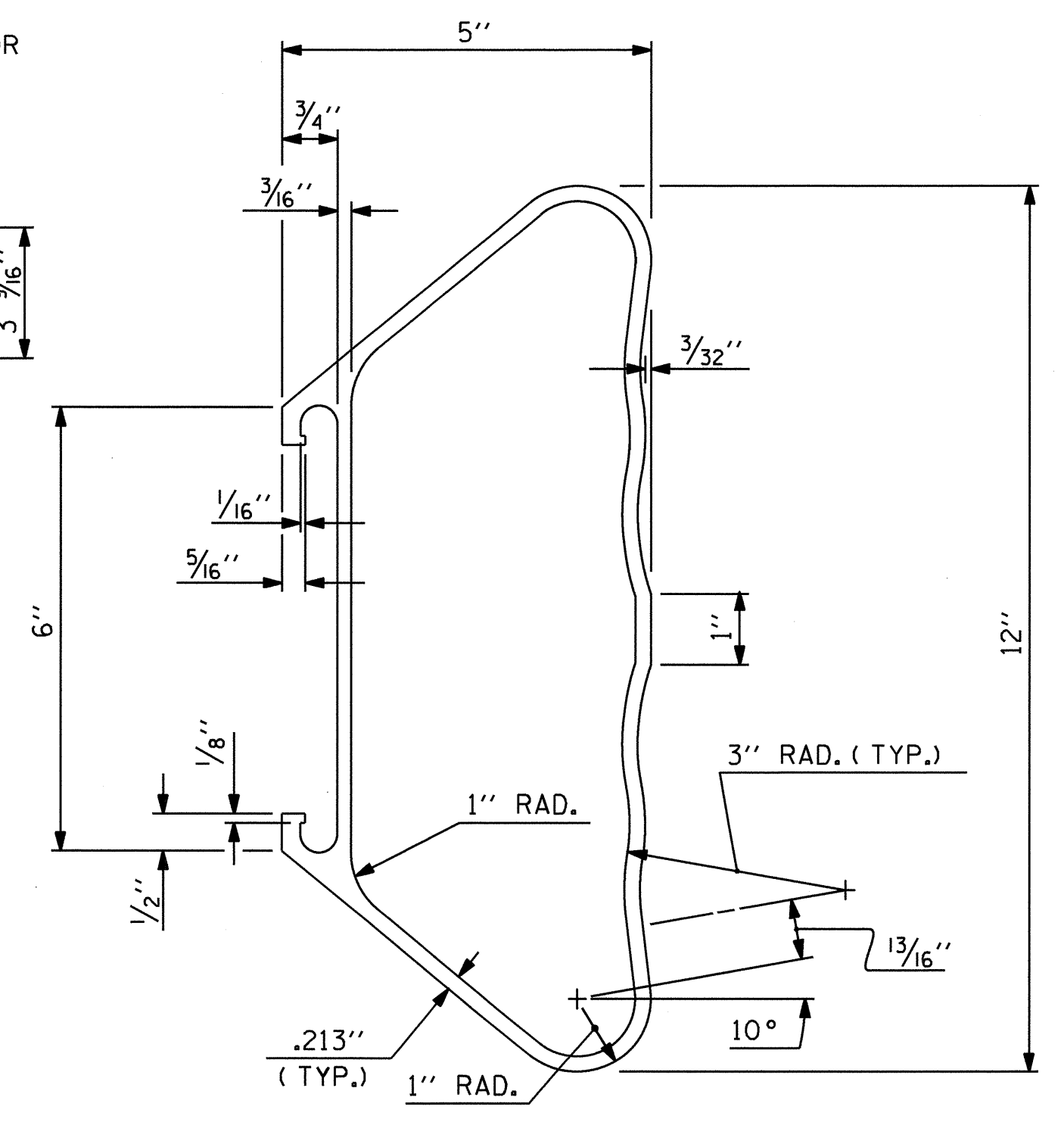
BOTTOM RAIL EXPANSION BAR



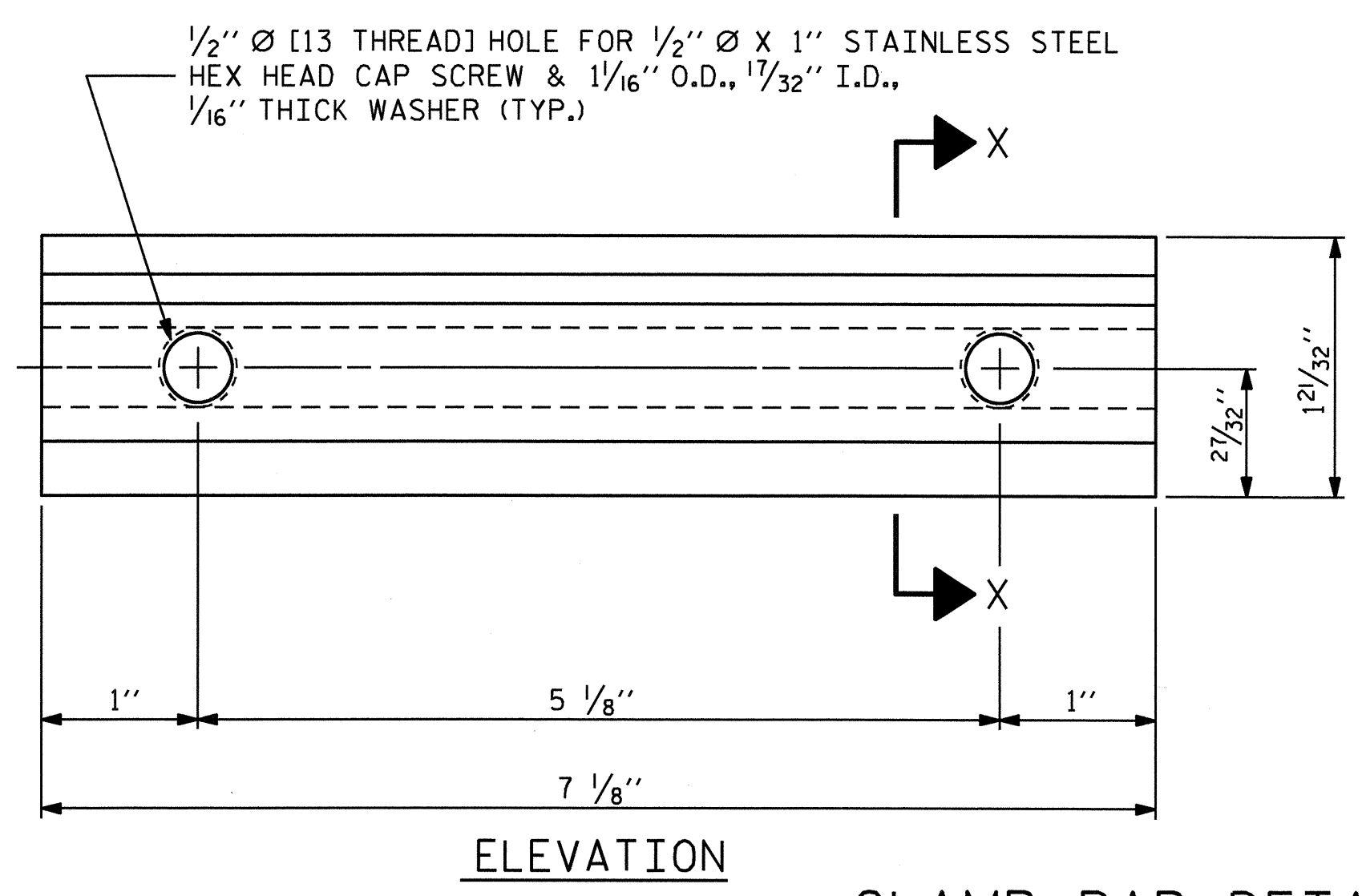
TOP & MIDDLE RAIL EXPANSION BAR



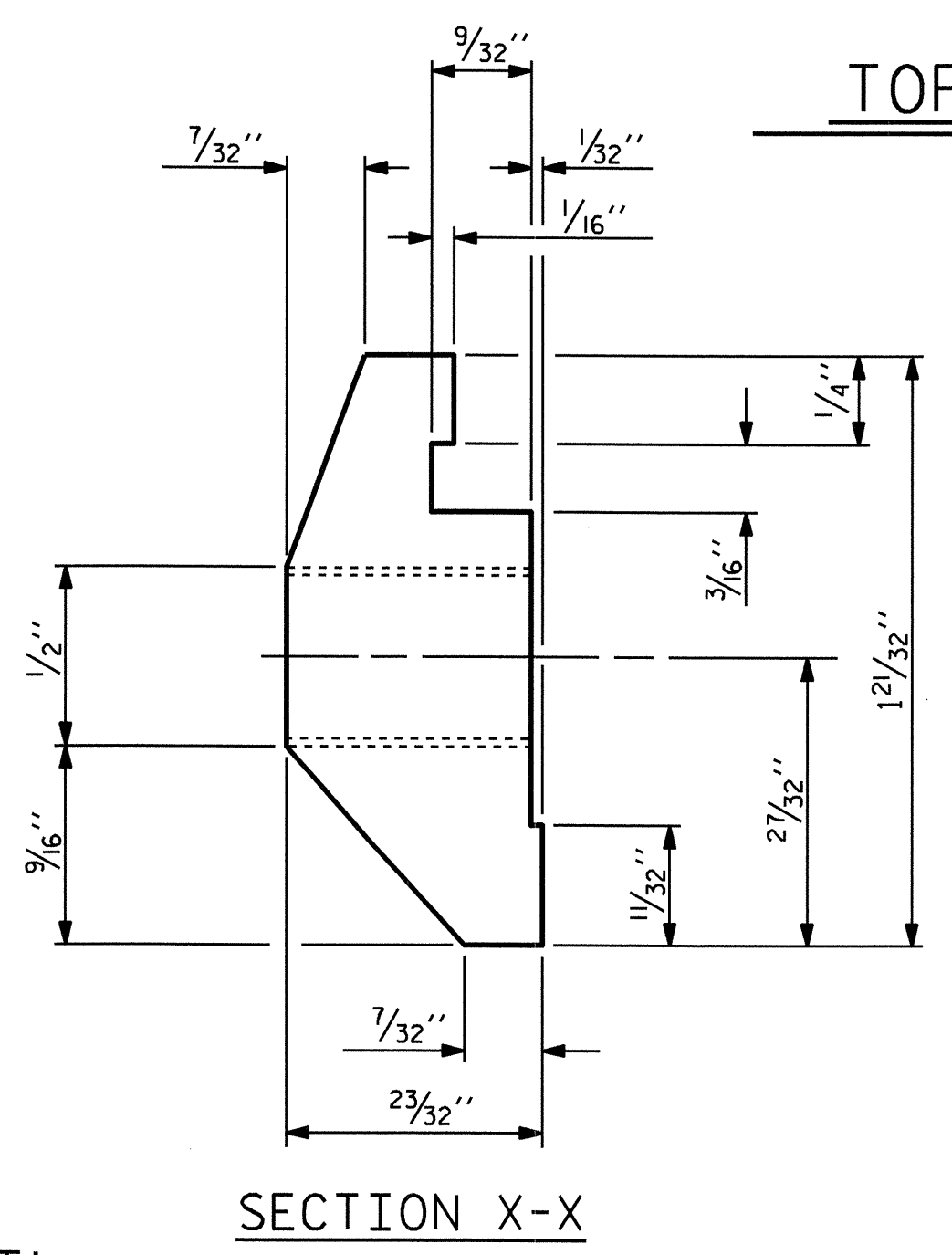
TOP & MIDDLE RAIL SECTION



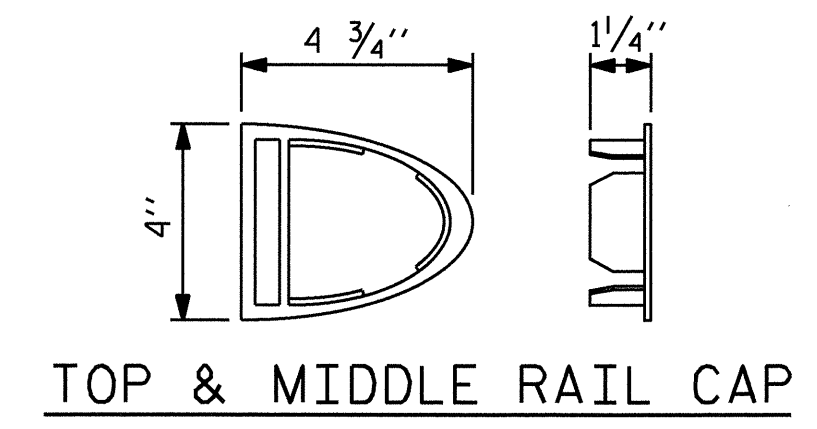
BOTTOM RAIL SECTION



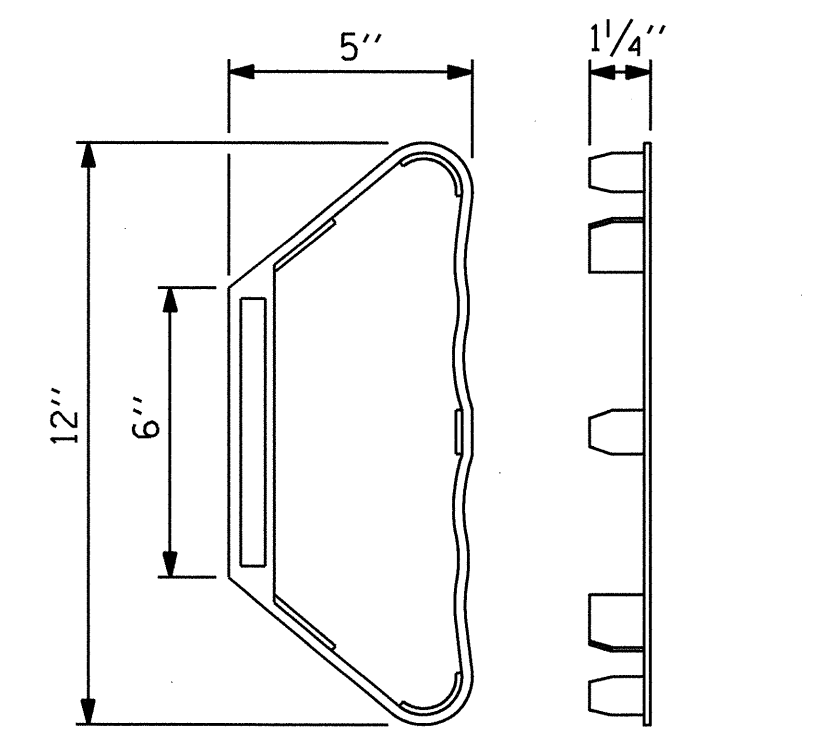
CLAMP BAR DETAIL
(6 REQUIRED PER POST)



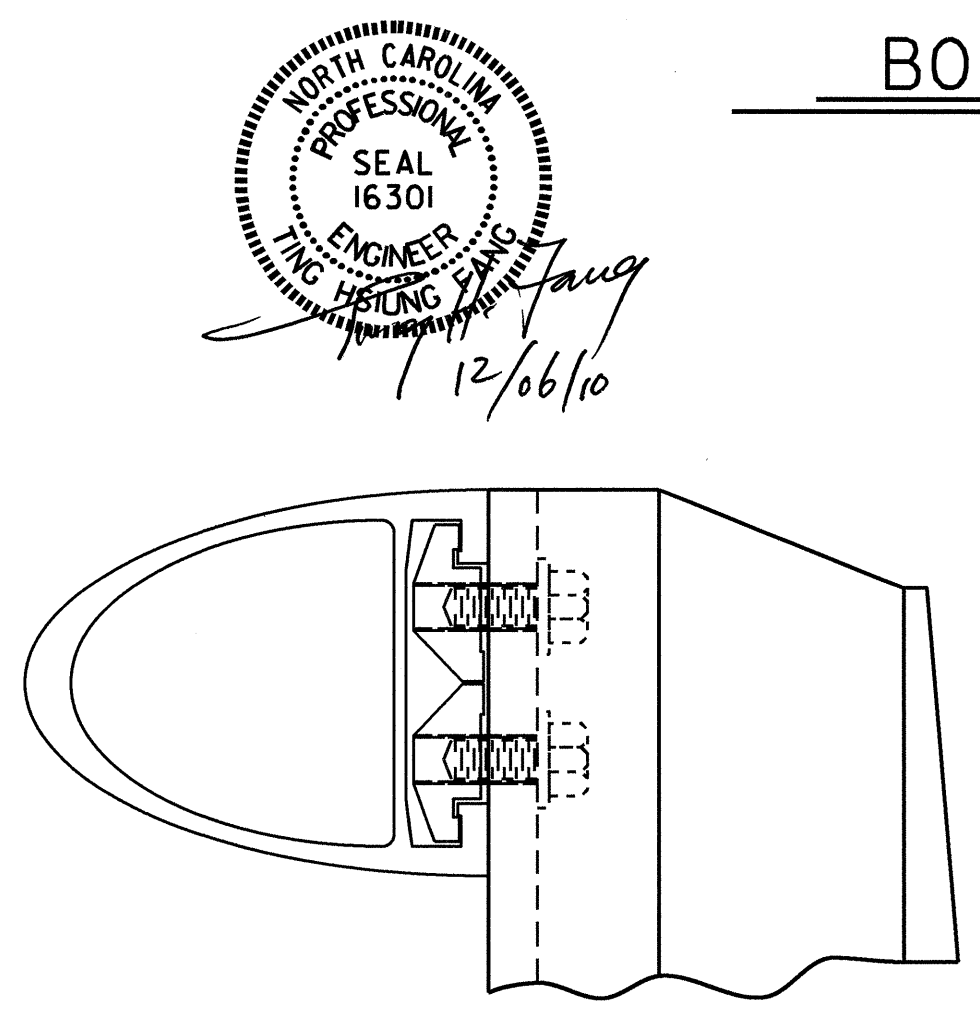
SECTION X-X



TOP & MIDDLE RAIL CAP



BOTTOM RAIL CAP

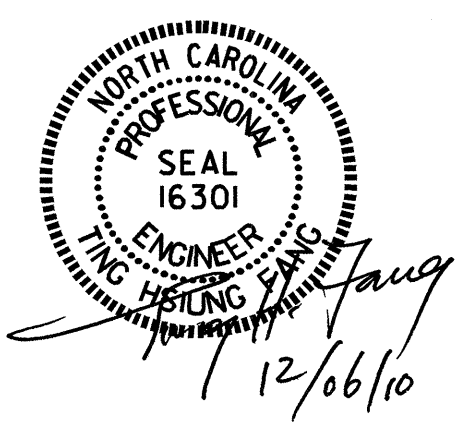


CLAMP ASSEMBLY
TOP RAIL SHOWN
(MIDDLE & BOTTOM RAIL ARE SIMILAR)

NOTES
STRUCTURAL CONCRETE ANCHOR ASSEMBLY

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

- 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 AND 1 3/4" FOR 5/8" FERRULES.
- 3 - 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.
- 2 - 5/8" Ø X 2 1/4" 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 5/8" Ø X 2 1/4" 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.
- 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.
- THE METAL RAIL ANCHOR ASSEMBLIES TO BE HOT DIPPED GALVANIZED TO CONFORM TO REQUIREMENTS OF AASHTO M111.
- 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.
- BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.



ASSEMBLED BY : OT NGUYEN	DATE : 2-09
CHECKED BY : W.D. CRUTCHER	DATE : 4-10
DRAWN BY : JMB 1/88	REV. 7/10/01 RWW/LES
CHECKED BY : GGH 1/88	REV. 5/7/03 RWW/JTE
	REV. 5/1/06 TLA/GM

PROJECT NO. U-3621B
NASH COUNTY
STATION: 50+77.00 -L-
SHEET 2 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD					
3 BAR METAL RAIL (LEFT LANE)					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
					68

NOTES

METAL RAIL TO END POST CONNECTION

THE METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:

- A. 1/2" PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
- B. 3/4" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS, THE FERRULES SHALL ENGAGE A 3/4" Ø X 1 1/8" BOLT WITH 2" O.D. WASHER IN PLACE. THE 3/4" Ø X 1 1/8" BOLT SHALL HAVE N.C. THREADS.
- C. CAP SCREWS FOR RAIL ATTACHMENT TO ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F593 ALLOY 305 STAINLESS STEEL. CAP SCREWS TO BE CENTERED IN SLOTS AT 60°F. WASHERS FOR RAIL ATTACHMENT SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.
- D. STANDARD CLAMP BARS (STD. No. BMR6).

THE COST OF THE STANDARD CLAMP BARS AND CAP SCREWS USED IN THE METAL RAIL TO END POST CONNECTION SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF 3 BAR METAL RAIL.

THE 3/4" STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.

THE COST OF THE 3/4" STRUCTURAL CONCRETE INSERT ASSEMBLY, AND THE 1/2" PLATES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

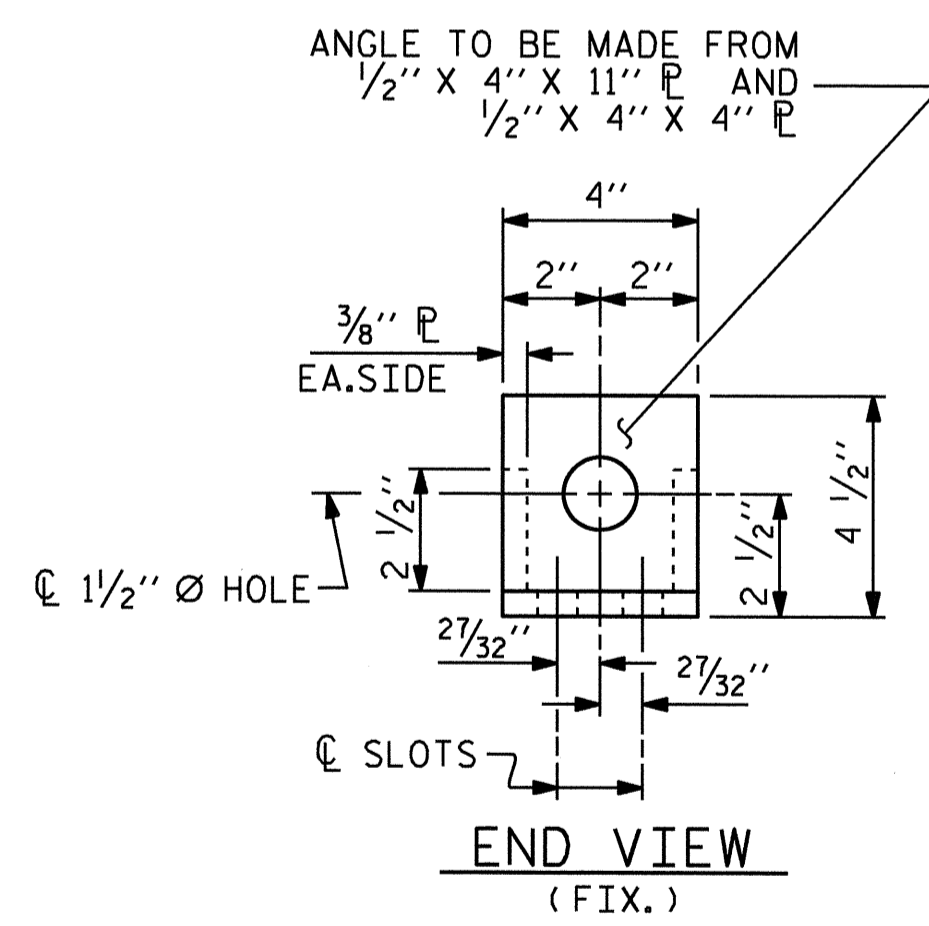
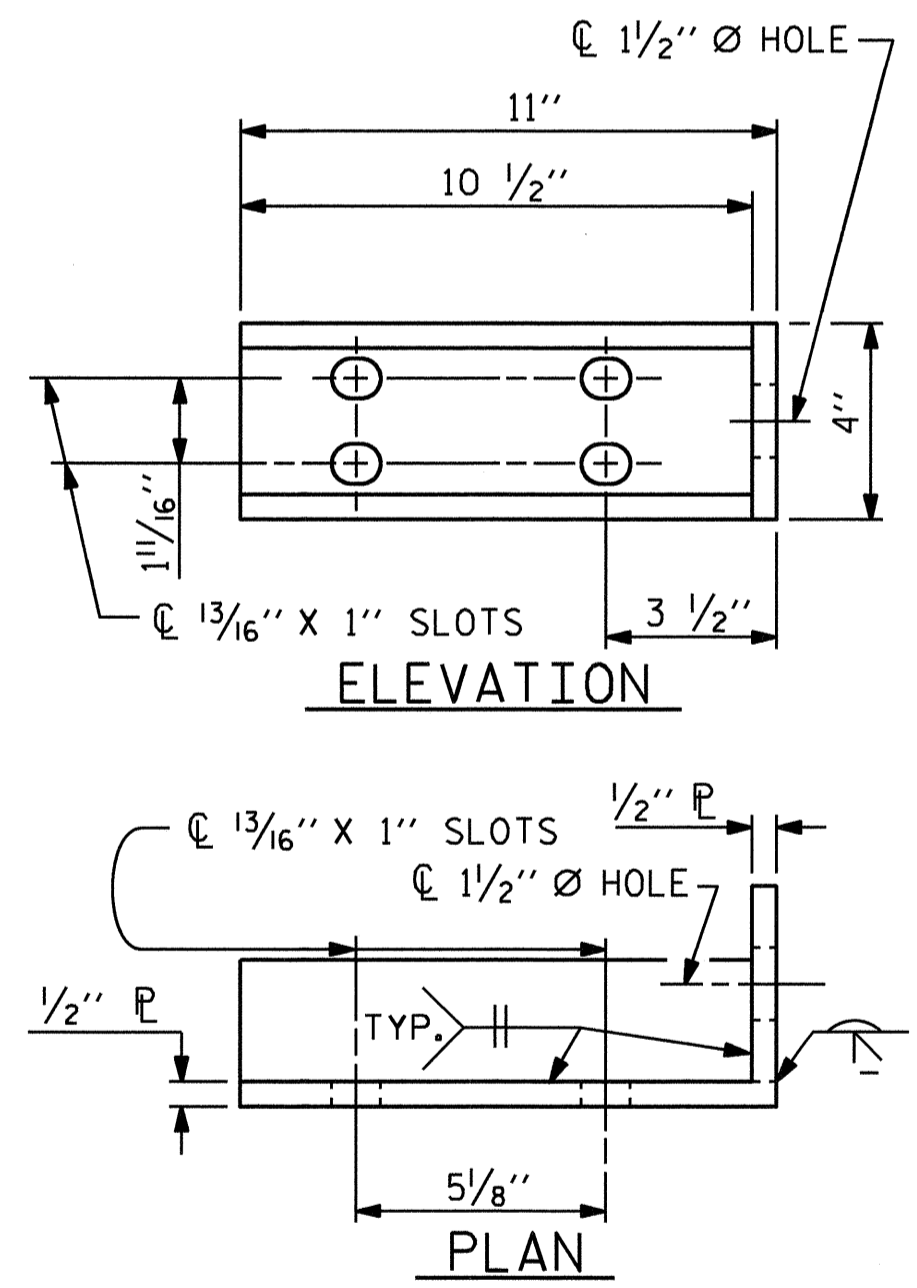
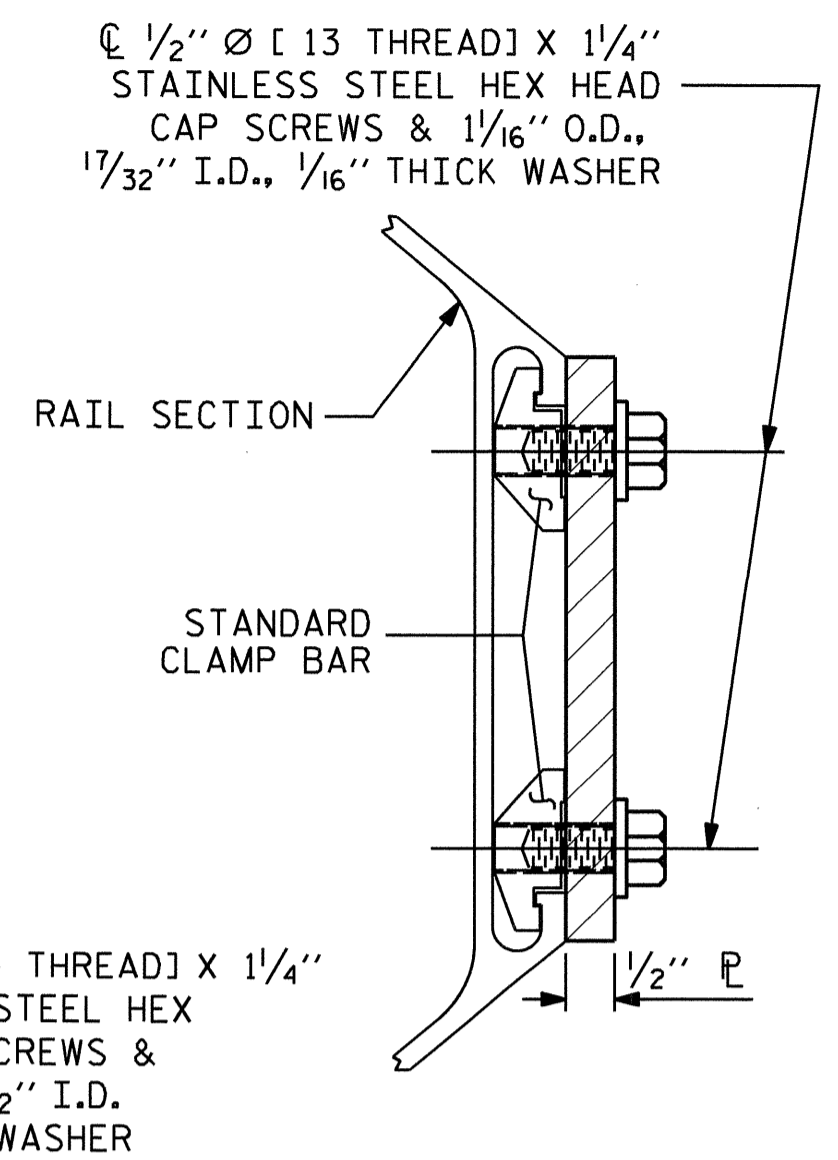
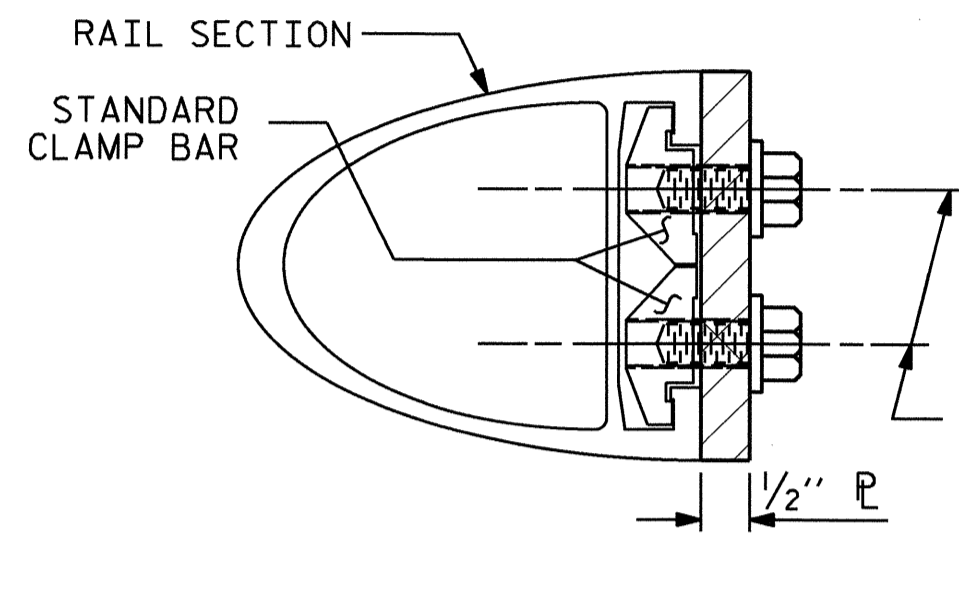
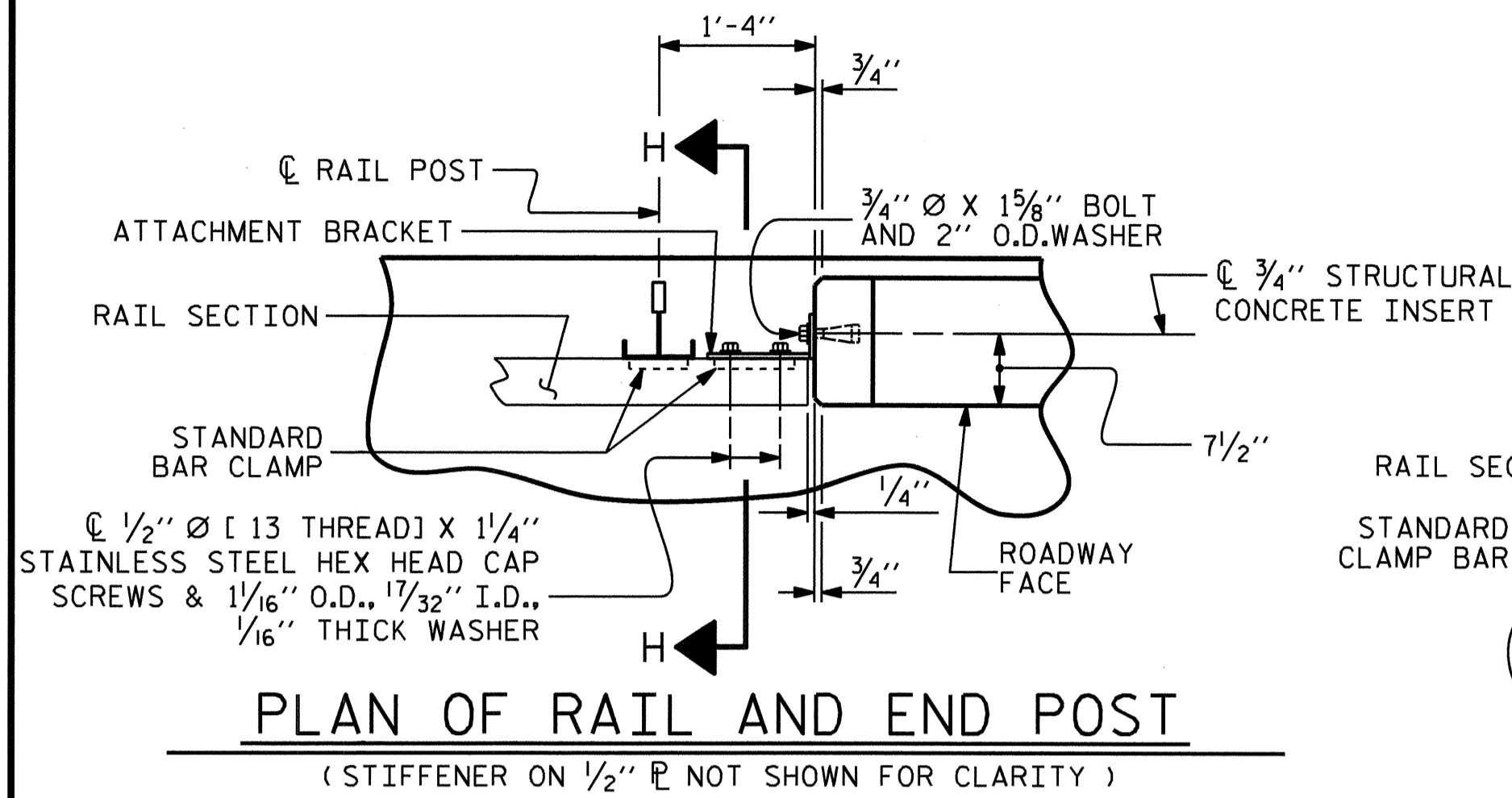
THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE 3/4" Ø X 1 1/8" BOLT WITH WASHER SHALL BE REPLACED WITH A 3/4" Ø X 6 1/2" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE 3/4" Ø X 1 1/8" BOLT SHALL APPLY TO THE 3/4" Ø X 6 1/2" BOLT. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

NOTES

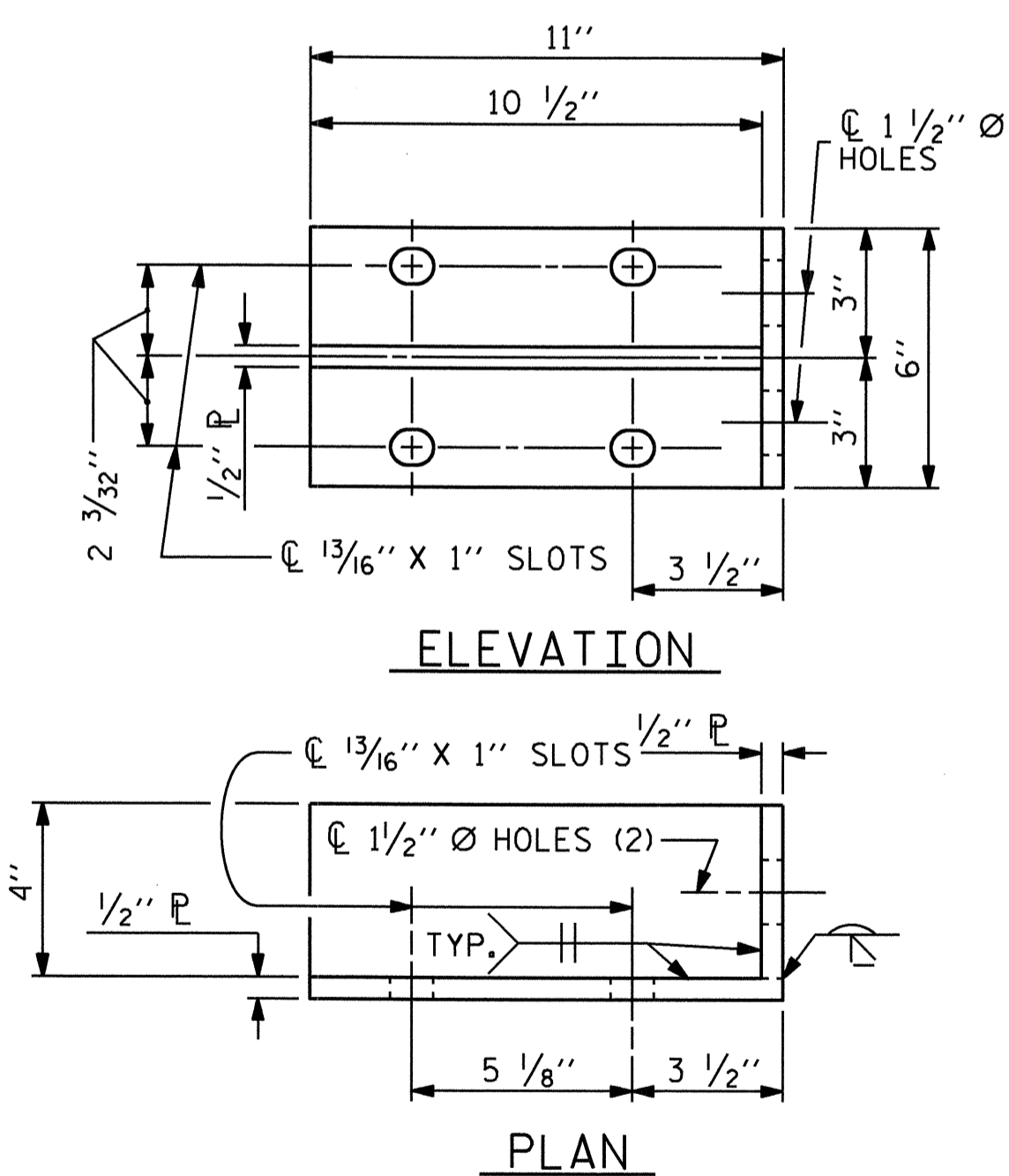
STRUCTURAL CONCRETE INSERT

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

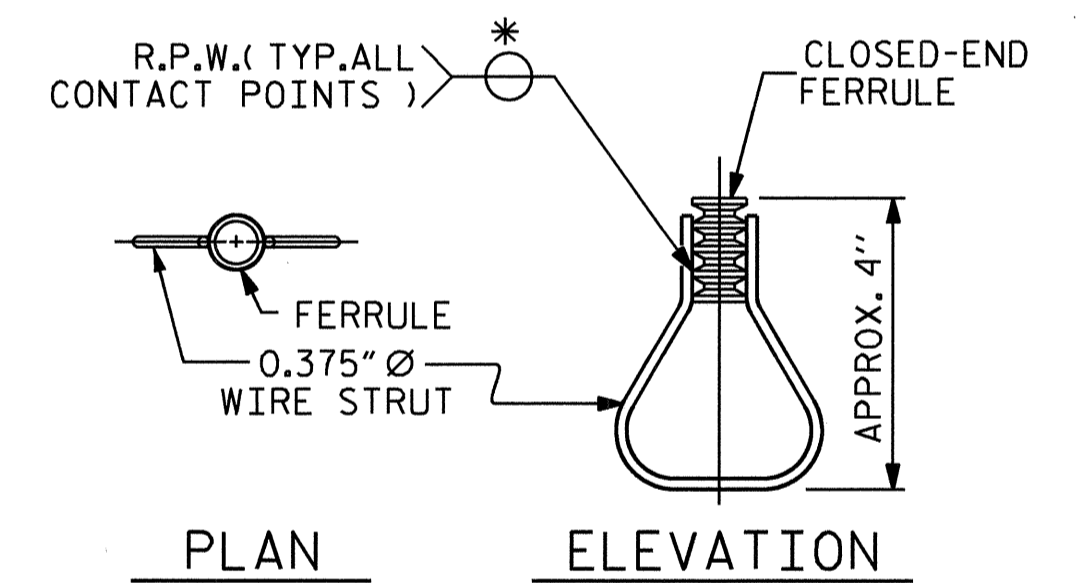
- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1 1/2".
- B. 1 - 3/4" Ø X 1 1/8" BOLT WITH WASHER. BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. AT THE CONTRACTORS OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø X 1 1/8" GALVANIZED BOLT AND WASHER. 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 INSERT ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 1/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.



DETAILS FOR ATTACHMENT BRACKET
(TOP & MIDDLE RAIL ONLY)



DETAILS FOR ATTACHMENT BRACKET
(BOTTOM RAIL ONLY)

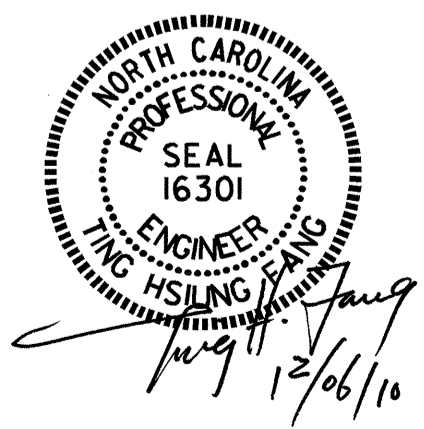


STRUCTURAL CONCRETE INSERT

* EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.

PROJECT NO. U-3621B
NASH COUNTY
STATION: 50+77.00 -L-

SHEET 3 OF 3

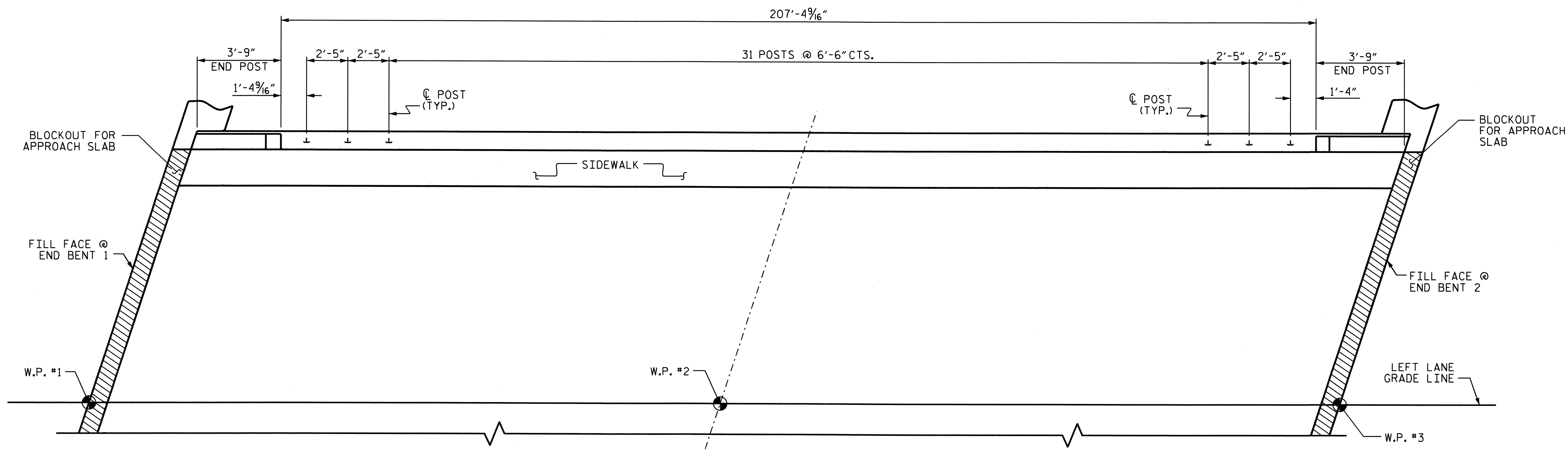


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
3 BAR METAL RAIL
(LEFT LANE)

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

TOTAL SHEETS: 68

ASSEMBLED BY :	OT NGUYEN	DATE :	2-09
CHECKED BY :	W.D. CRUTCHER	DATE :	4-10
DRAWN BY :	JMB 1/88	REV. 7/10/01	RWW/LES
CHECKED BY :	GGH 1/88	REV. 5/7/03	RWW/JTE
		REV. 5/1/06	TLA/GM



PLAN OF RAIL POST SPACINGS

BILL OF MATERIAL					
ONE END POST (2 REQ'D)					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*E1	2	#7	1	3'-5"	14
*E2	2	#7	1	4'-0"	16
*E3	2	#7	1	4'-7"	19
*E4	2	#7	1	4'-0"	16
*E5	1	#7	1	3'-3"	7
*F1	1	#6	STR	4'-0"	6
*F2	2	#6	STR	3'-5"	10
*F3	1	#6	STR	2'-5"	4
*F4	1	#6	STR	4'-3"	6
*F5	2	#6	STR	3'-8"	11
*F6	1	#6	STR	2'-8"	4
*EPOXY COATED REINFORCING STEEL					= 113 LBS.
CLASS AA CONCRETE					= 0.4 C.Y.
BAR TYPES					
E1	E2	E3	E4	E5	
2'-5"	3'-1"	3'-7"	4'-0"	2'-3"	
					1'-0"
ALL BAR DIMENSIONS ARE OUT TO OUT					

NOTES :

FOR DETAIL OF GUARDRAIL ANCHOR ASSEMBLY, SEE "GUARDRAIL ANCHORAGE DETAILS FOR METALS RAILS" SHEET.

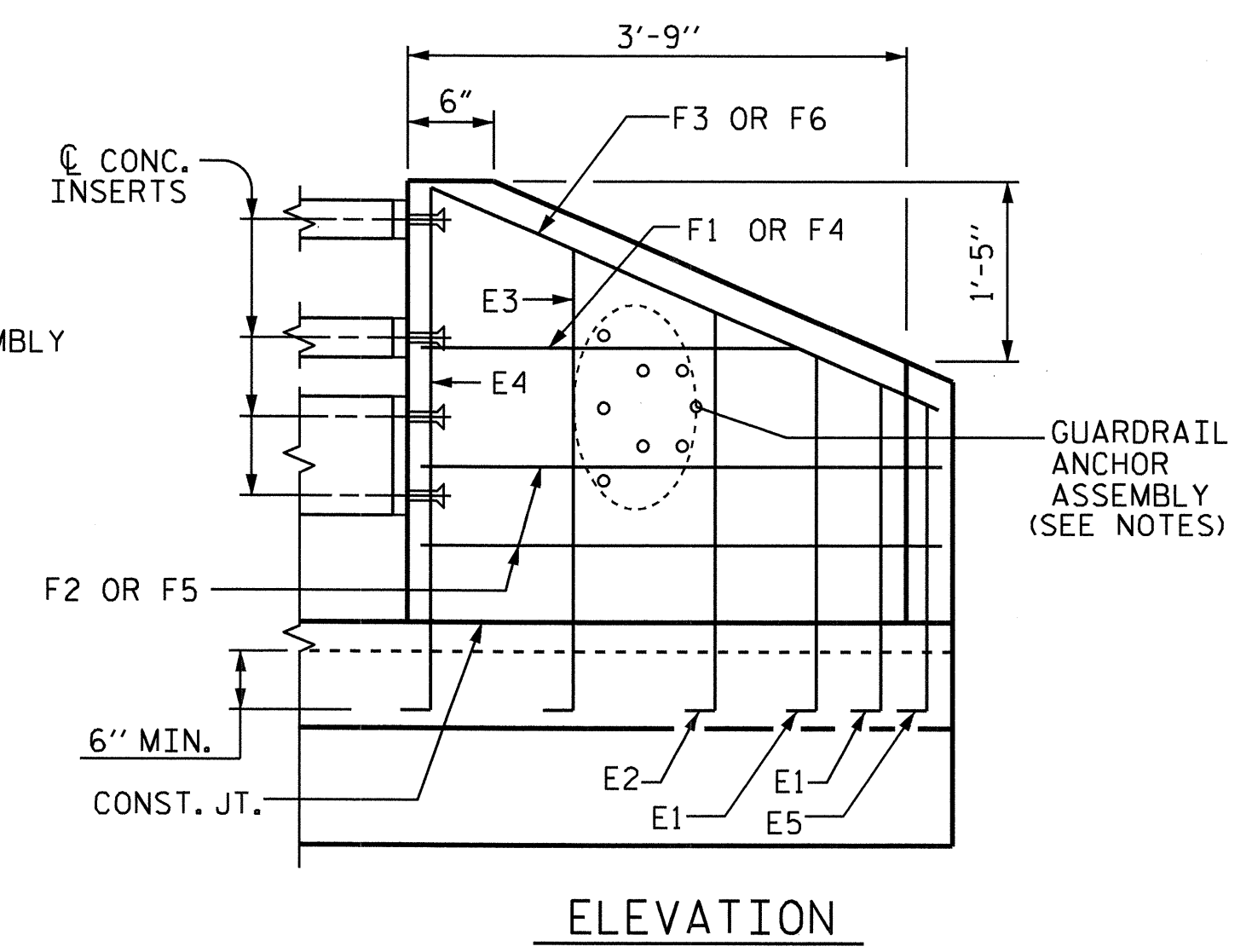
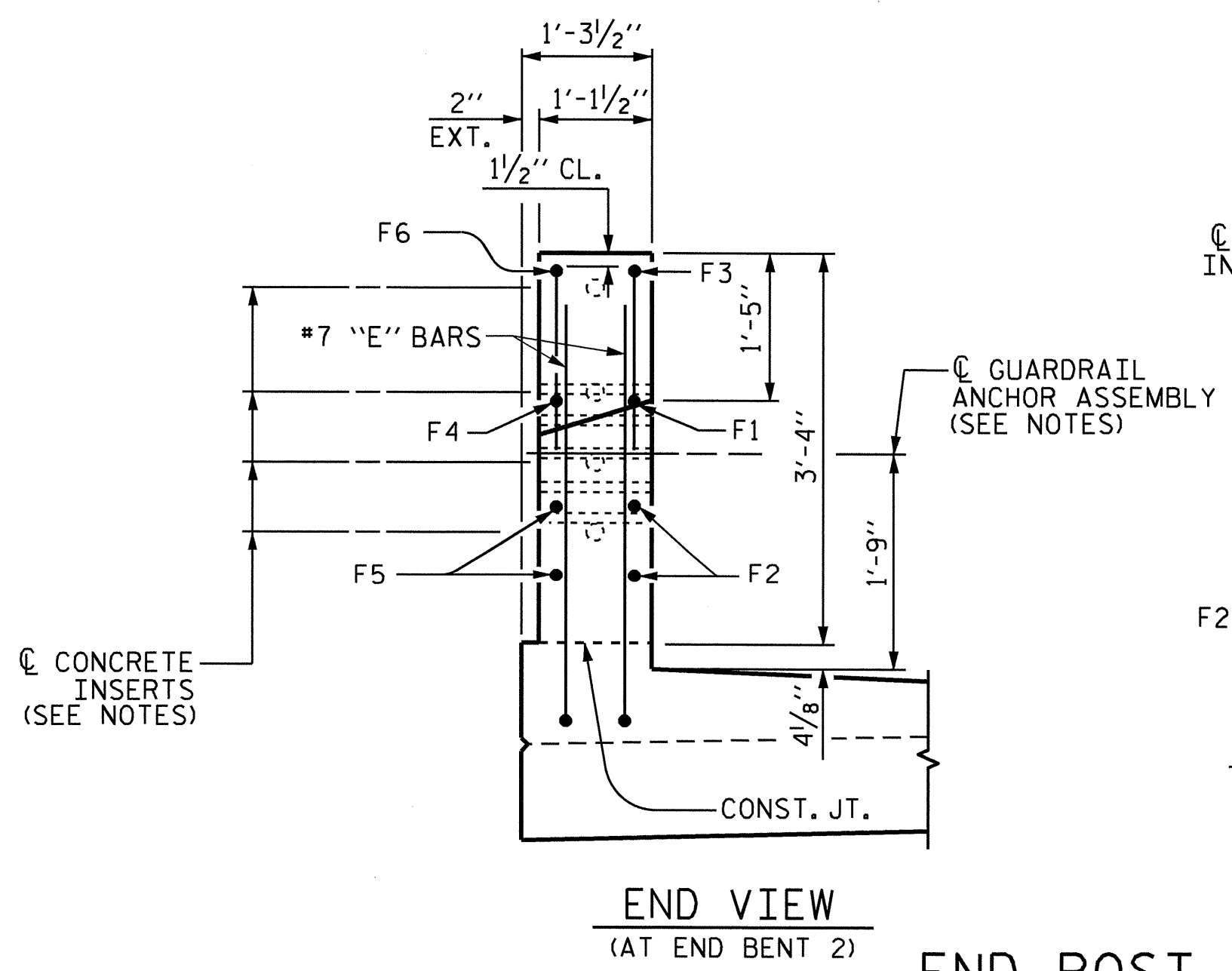
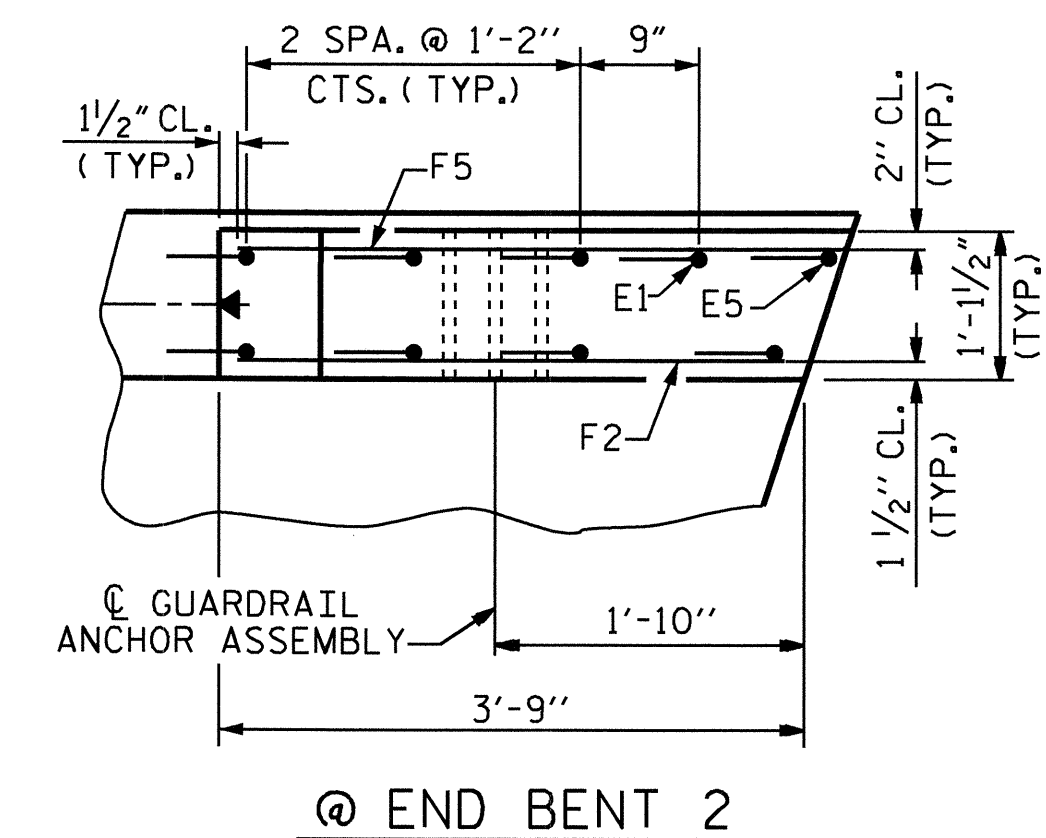
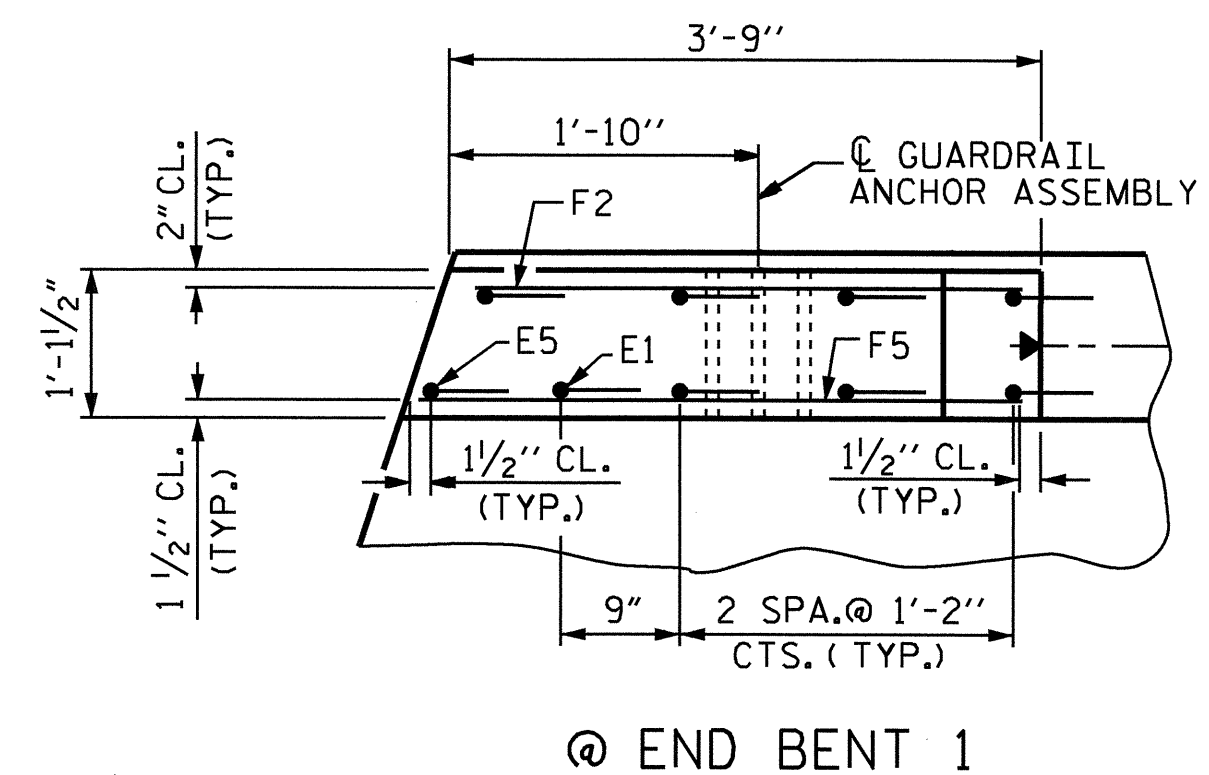
FOR DETAILS OF CONCRETE INSERT, SEE "3 BAR METAL RAIL" SHEET 3 OF 3.

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

SIDEWALK IN A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE UNIT IS CAST AND 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 FT. TO 10 FT. BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINT WILL BE REQUIRED FOR SEGMENTS LESS THAN 10 FEET IN LENGTH.

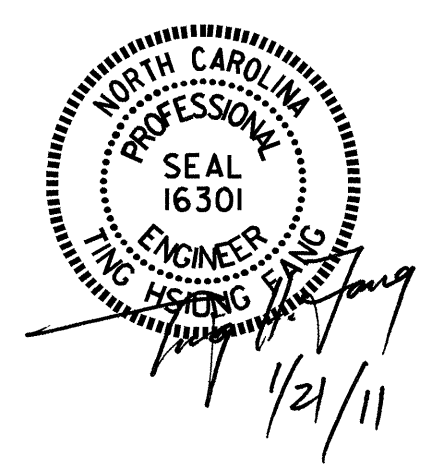
NO ADDITIONAL PAYMENT SHALL BE MADE FOR THE CONCRETE END POSTS AS THIS IS CONSIDERED INCIDENTAL TO THE CONSTRUCTION OF THE 3 BAR METAL RAIL.



END POST DETAILS

DRAWN BY : QT NGUYEN DATE : 2-09
 CHECKED BY : W.D. CRUTCHER DATE : 4-10

19-JAN-2011 09:11
 Y:\TIP\Projects-UU3621B\Structures\Final Plans\1334\U3621B.ed_3m1.dgn
 01nguyen



PROJECT NO. U-3621B
 NASH COUNTY
 STATION: 50+77.00 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 RAIL POSTS SPACINGS
 & END POST DETAILS
 (LEFT LANE)

REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
					68

STR #1

NOTES

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

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

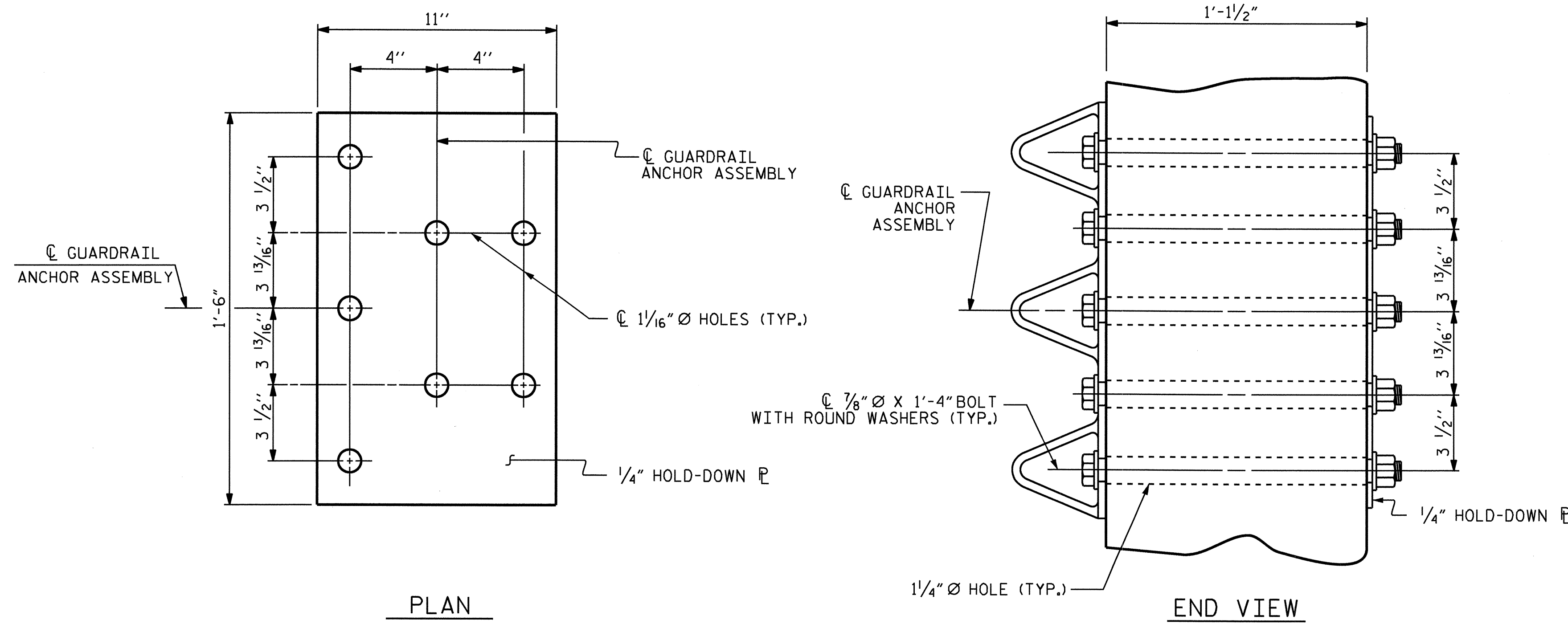
BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS.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

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

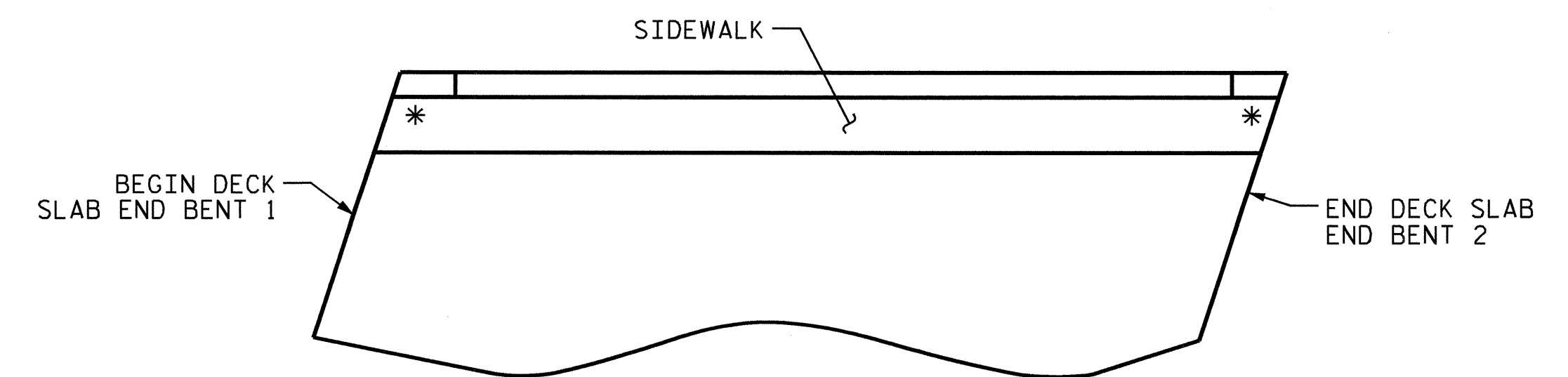
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

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

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

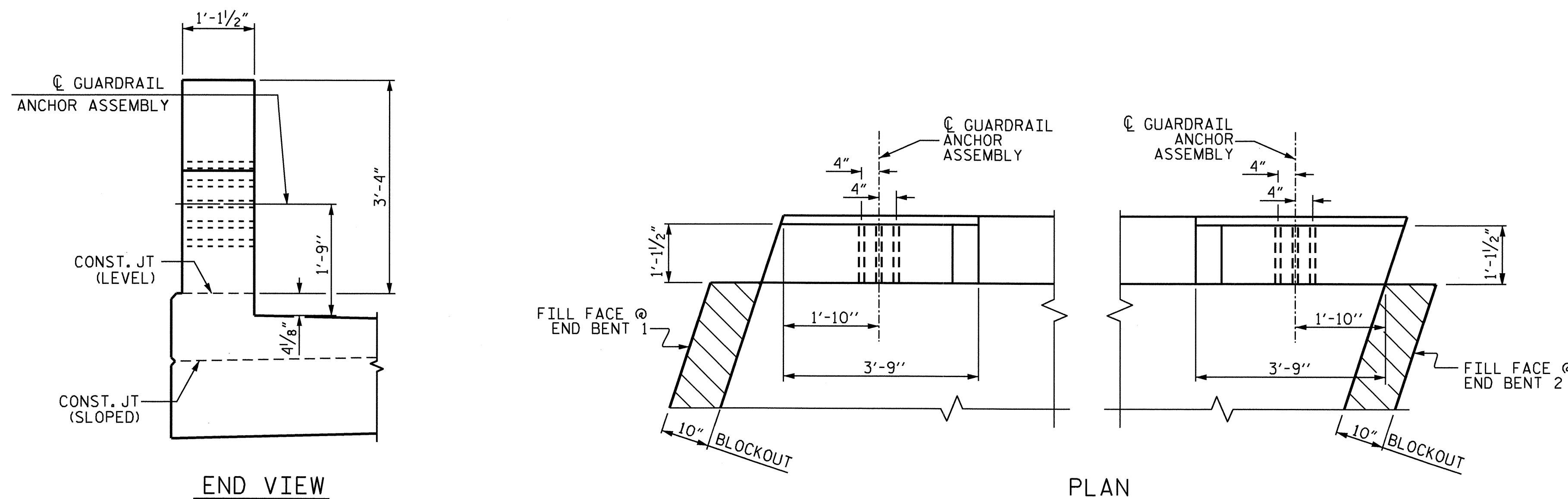


GUARDRAIL ANCHOR ASSEMBLY DETAILS

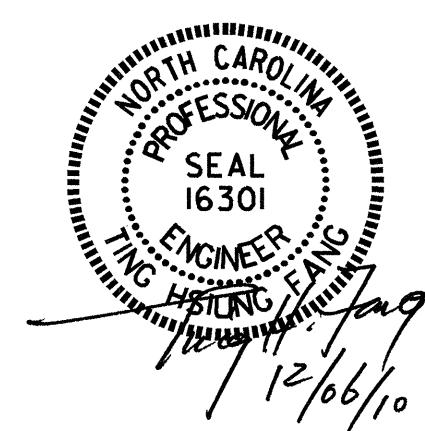


SKETCH SHOWING POINTS OF ATTACHMENT

* LOCATION OF TYPE III GUARDRAIL ATTACHMENT



LOCATION OF GUARDRAIL ANCHOR AT END POST



PROJECT NO. U-3621B
NASH COUNTY
 STATION: 50+77.00 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 GUARDRAIL ANCHORAGE
 DETAILS
 FOR METAL RAILS
 (LEFT LANE)

ASSEMBLED BY : OT NGUYEN	DATE : 2-09
CHECKED BY : W.D. CRUTCHER	DATE : 4-10
DRAWN BY : EEM 6/94	REV. 10/17/00 RWW/LES
CHECKED BY : RCW 6/94	REV. 5/7/03 RWW/JTE
	REV. 5/1/06 TLA/GM

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

TOTAL SHEETS: 68

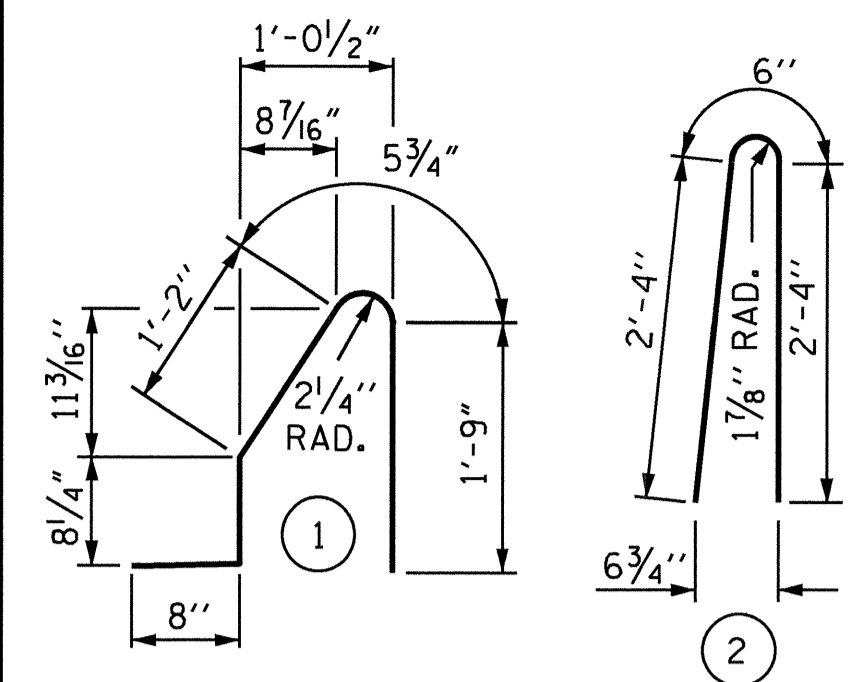
NOTES

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

ALL REINFORCING STEEL IN BARRIER RAIL SHALL BE EPOXY COATED.

VERTICAL GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS, THE CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

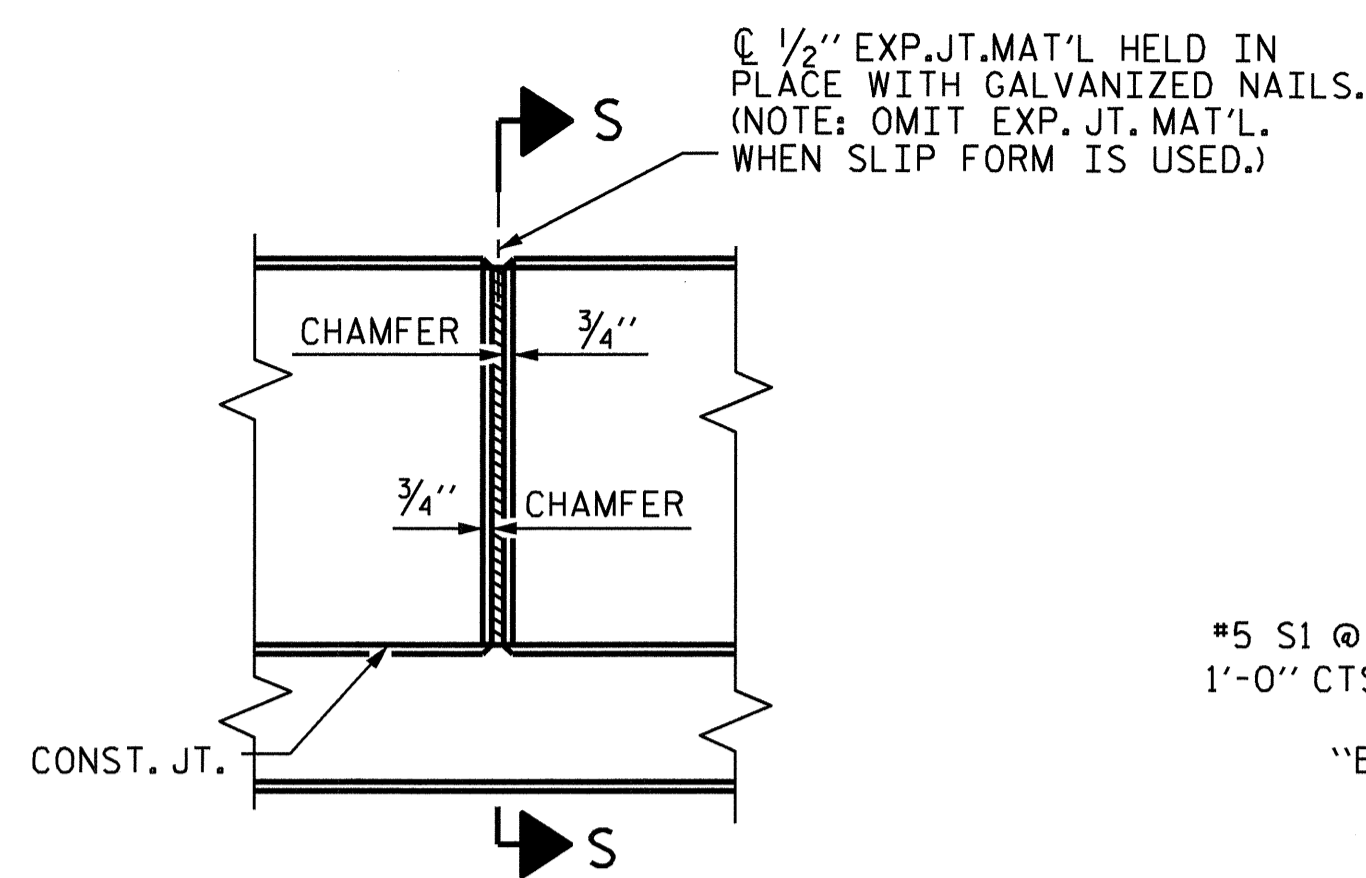
FOR CONCRETE BARRIER RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	32	#5	STR	14'-11"	498
* B2	48	#5	STR	26'-8"	1335
* S1	216	#5	1	4'-9"	1070
* S2	216	#5	2	5'-2"	1164

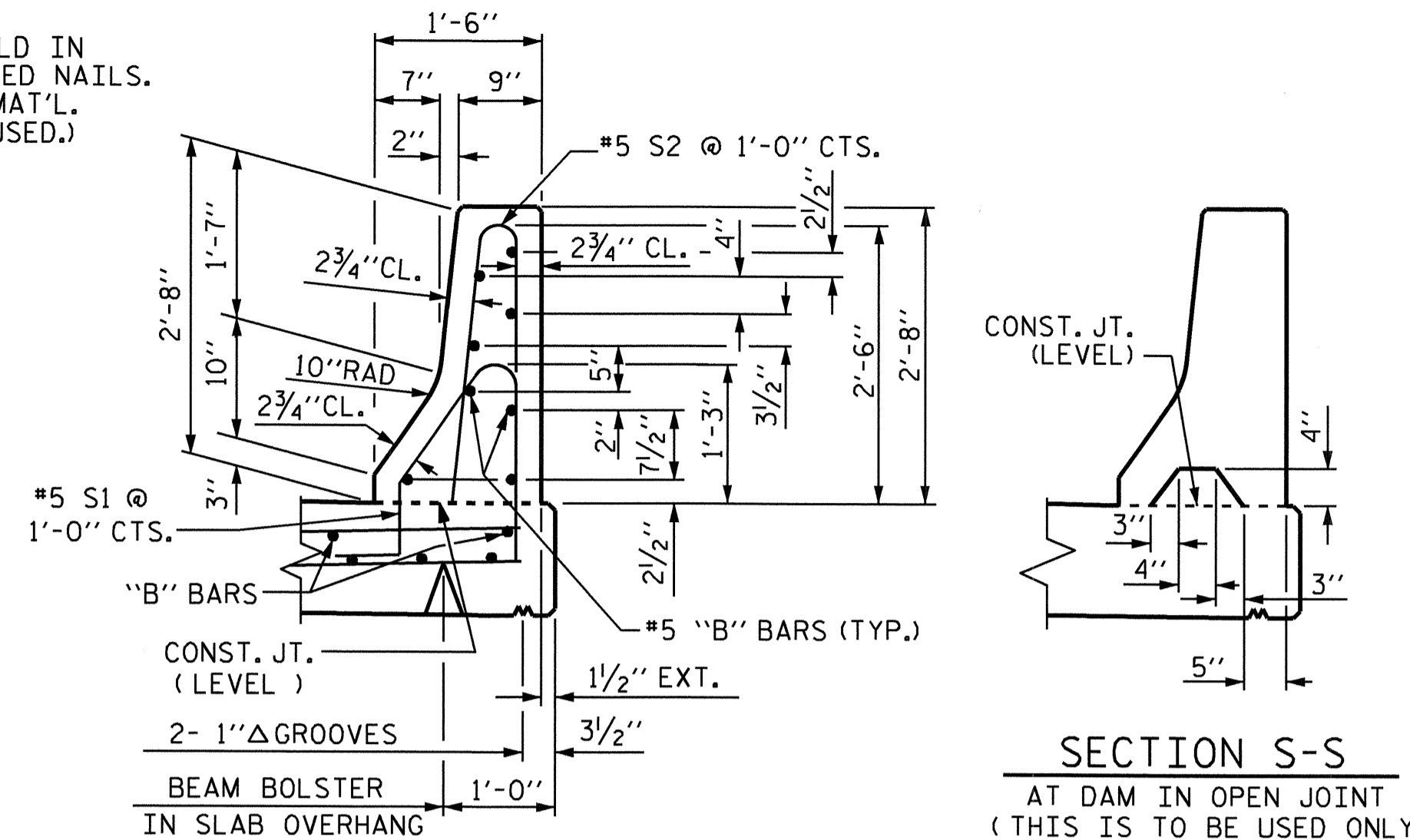
* EPOXY COATED REINFORCING STEEL 4,067 LBS.

CLASS AA CONCRETE 21.6 CU. YDS.

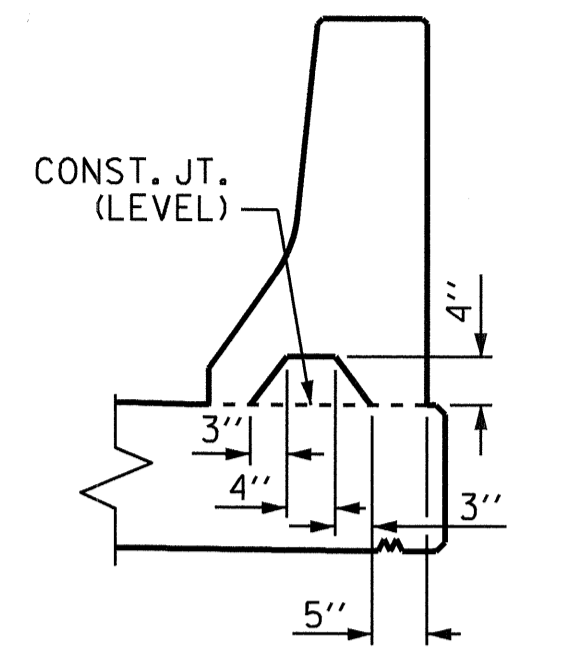
CONCRETE BARRIER RAIL 215.25 LIN. FT.



ELEVATION AT EXPANSION JOINTS

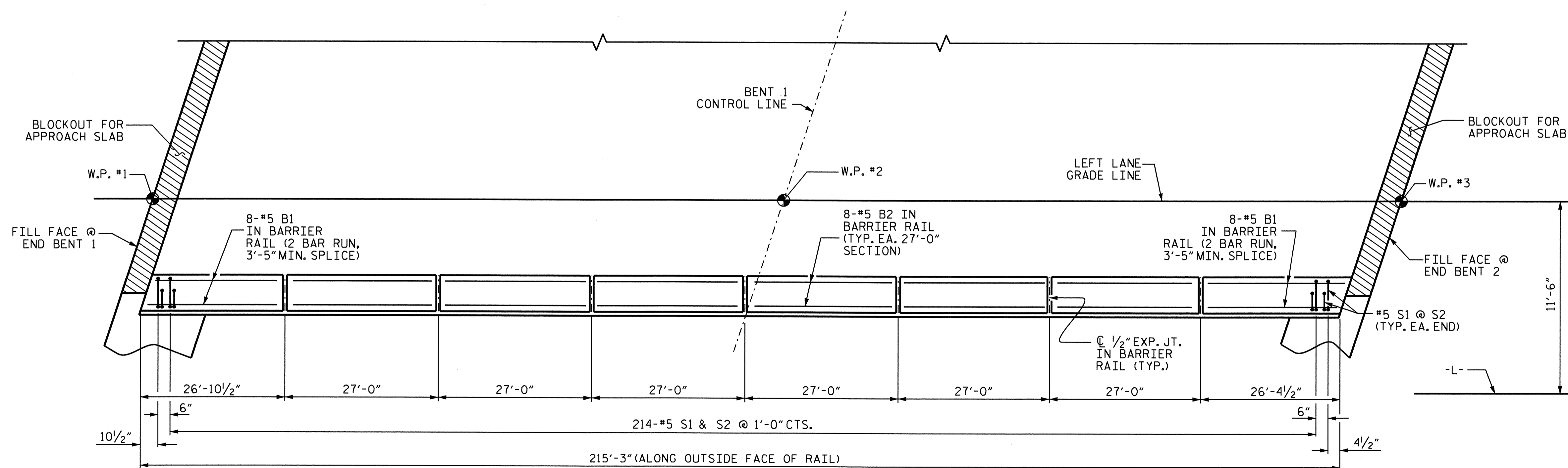


SECTION THRU RAIL



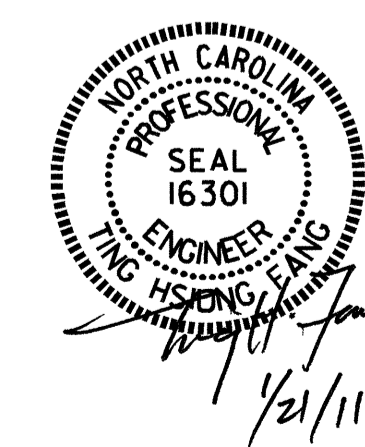
SECTION S-S
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY
WHEN SLIP FORM IS USED)

BARRIER RAIL DETAILS



PLAN OF BARRIER RAIL

PROJECT NO. U-3621B
NASH COUNTY
STATION: 50+77.00 -L-



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
CONCRETE
BARRIER RAIL
(LEFT LANE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS
2			4			68

ASSEMBLED BY : OT NGUYEN	DATE : 2-09
CHECKED BY : W.D. CRUTCHER	DATE : 4-10
DRAWN BY : ARB 5/87	REV. 10/17/00 RWW/LES
CHECKED BY : SJD 9/87	REV. 5/7/03R RWW/JTE
	REV. 5/1/06 TLA/GM

NOTES

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

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

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 1/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

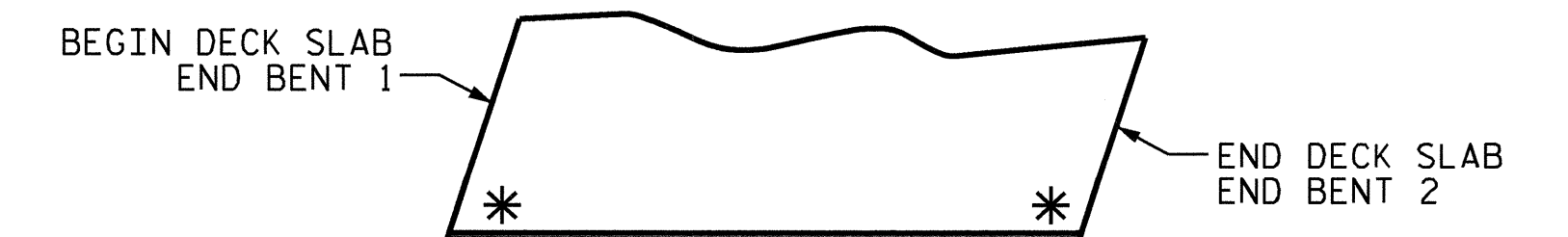
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

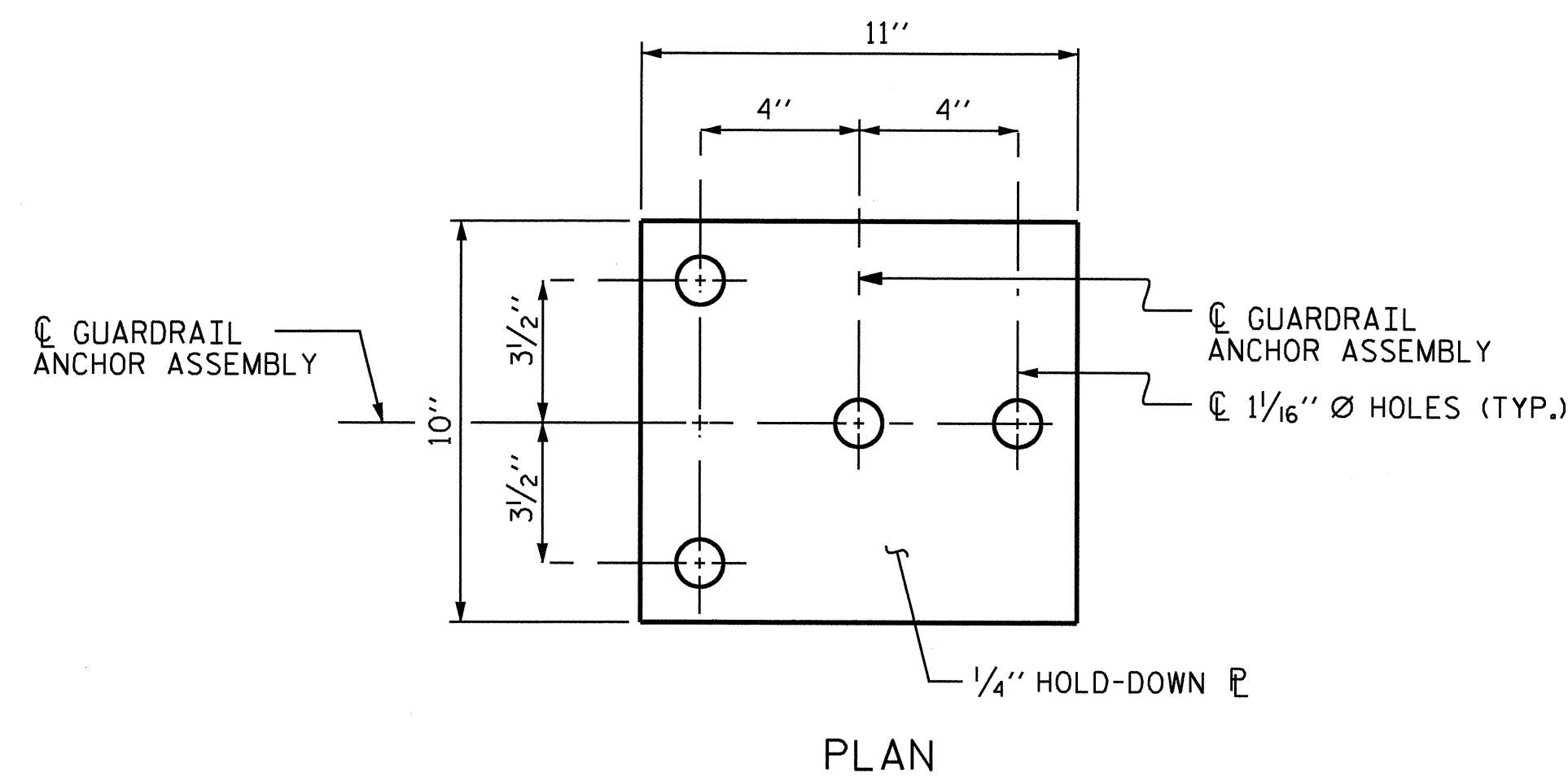
THE 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

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

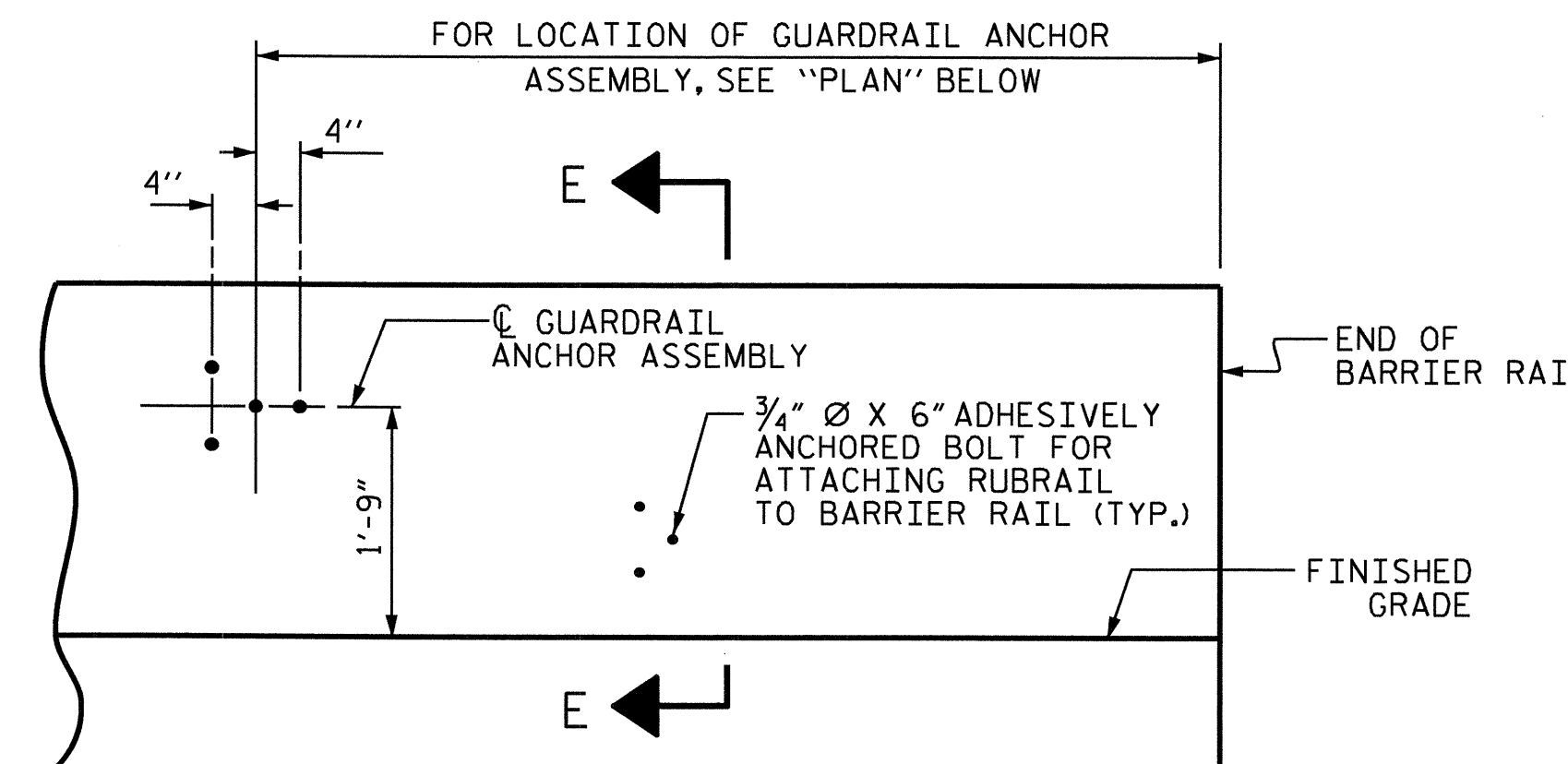


SKETCH SHOWING POINTS OF ATTACHMENTS

* DENOTES GUARDRAIL ANCHOR ASSEMBLY FOR B-77

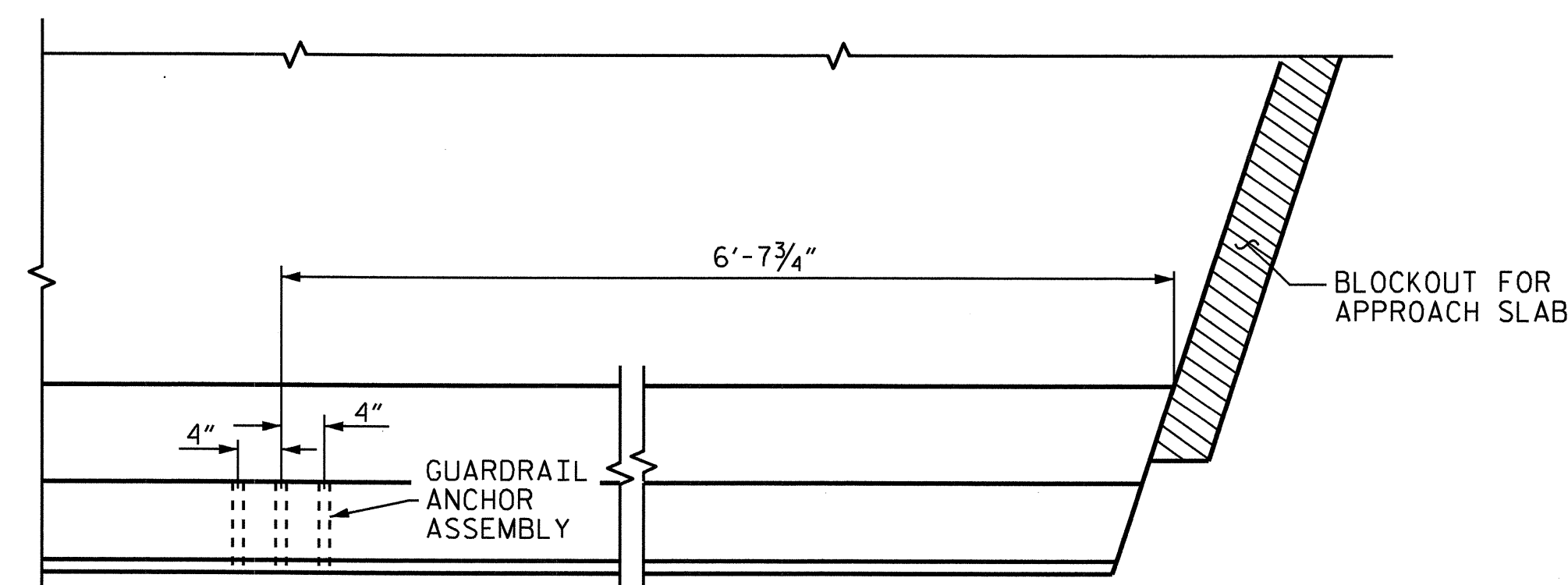


PLAN



ELEVATION

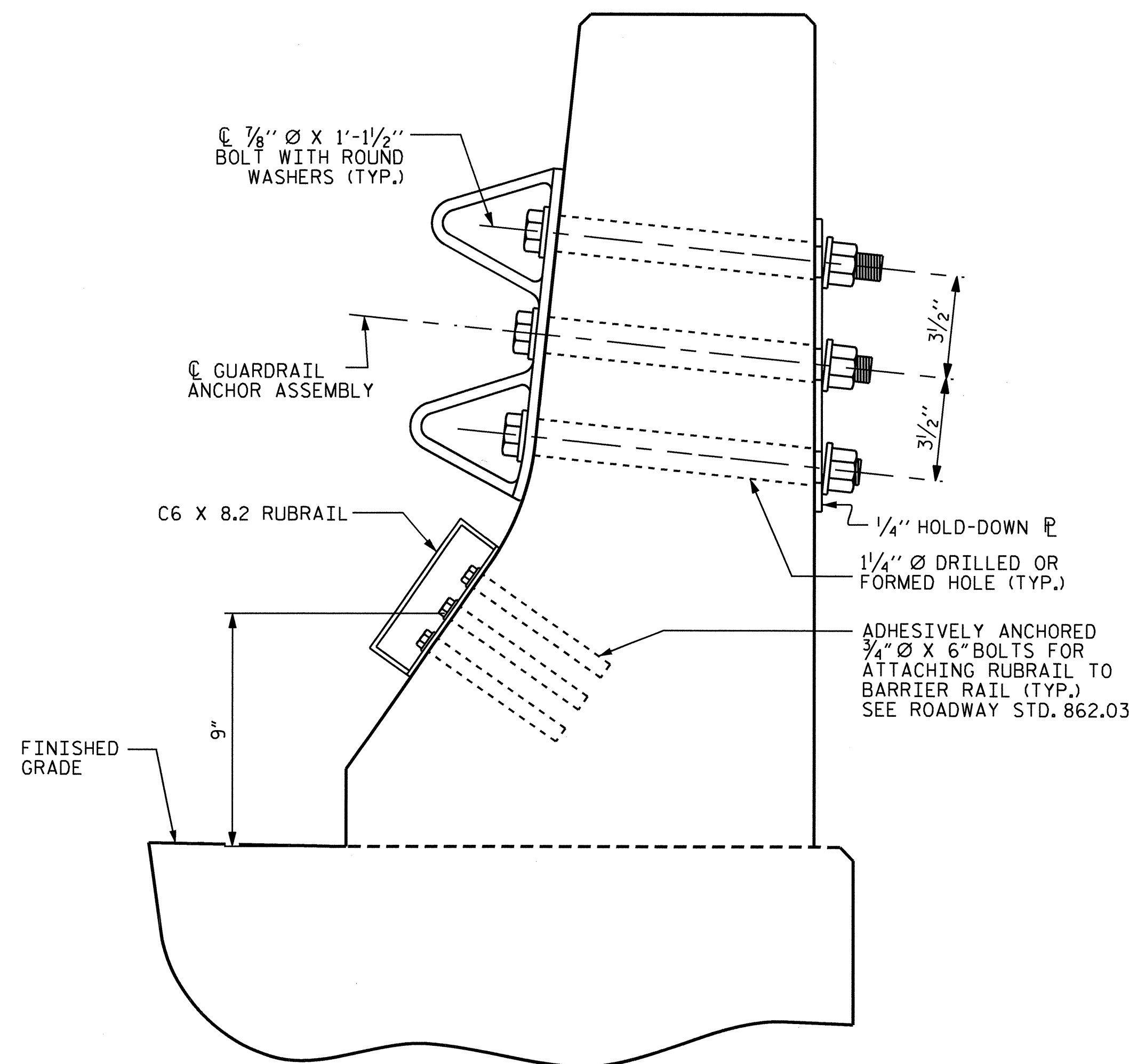
FOR LOCATION OF RUBRAIL, SEE ROADWAY STD. 862.03



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

END BENT 2 SHOWN, END BENT 1 SIMILAR.

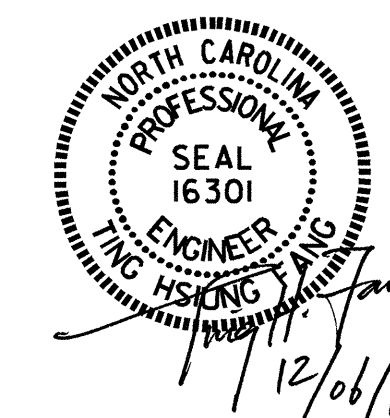


SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS

ASSEMBLED BY : QT NGUYEN	DATE : 2-09
CHECKED BY : W.D. CRUTCHER	DATE : 4-10
DRAWN BY : TLA 5/06	ADDED 5/1/06R KMM/GM
CHECKED BY : GM 5/06	

06-DEC-2010 14:34
Y:\TIP\Projects-U\U3621B\Structures\Final Plans\1334\U3621b.sd.br1.dgn
qtnguyen



PROJECT NO. U-3621B
NASH COUNTY
STATION: 50+77.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
GUARDRAIL ANCHORAGE
FOR BARRIER RAIL
(LEFT LANE)

REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
					68

STR #1

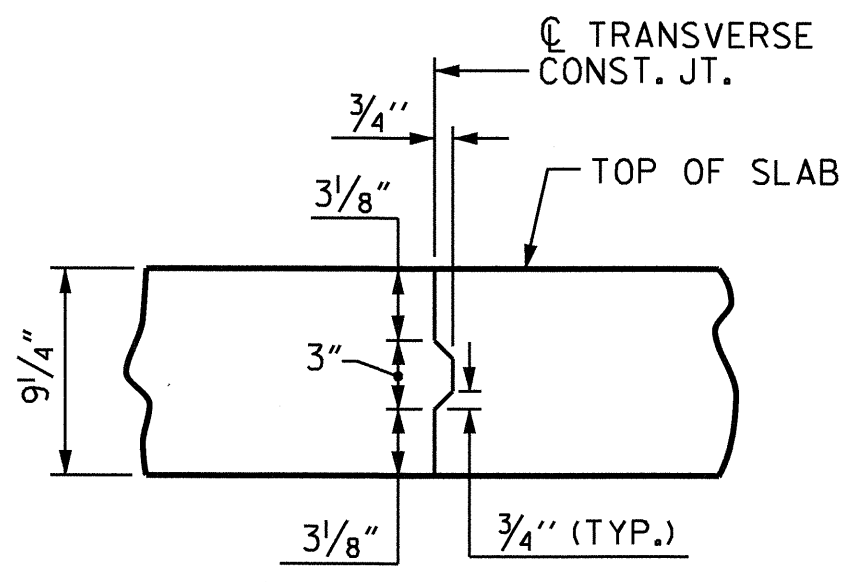
STD. NO. GRA2

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

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

GROOVING BRIDGE FLOORS

APPROACH SLABS	1140 SQ.FT.
BRIDGE DECK	5812 SQ.FT.
TOTAL	6952 SQ.FT.



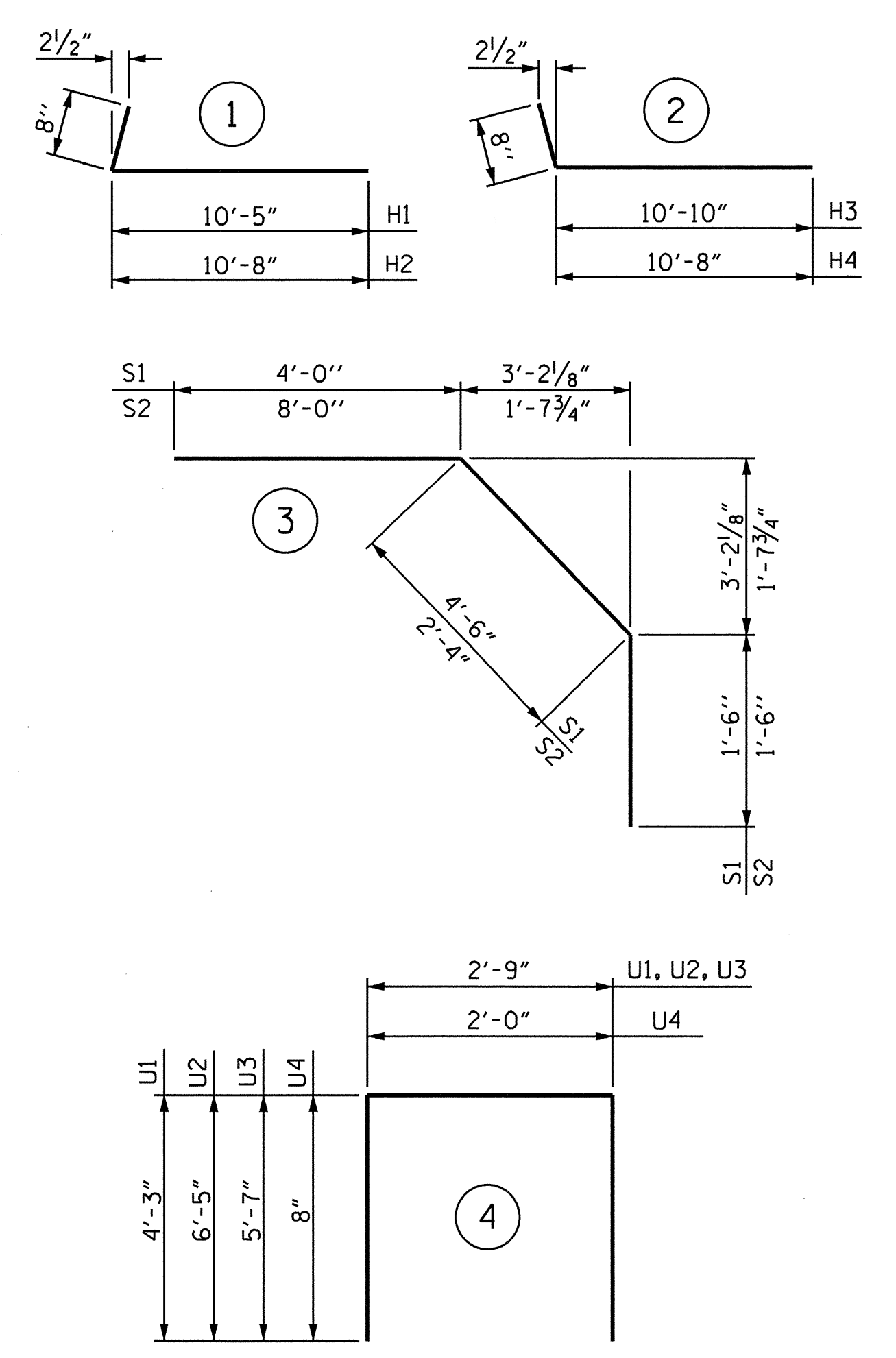
TRANSVERSE CONSTRUCTION JOINT DETAIL

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

BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	442	#5	STR	38'-1"	17557	*B1	108	#4	STR	24'-9"	1786
A2	442	#5	STR	38'-1"	17557	*B2	153	#7	STR	24'-10"	7766
*A101	4	#5	STR	35'-7"	148	*B3	102	#7	STR	32'-0"	6672
*A102	4	#5	STR	32'-10"	137	B4	200	#5	STR	55'-1"	11490
*A103	4	#5	STR	30'-0"	125	*B5	50	#4	STR	27'-9"	927
*A104	4	#5	STR	27'-3"	114	*B6	8	#4	STR	28'-8"	153
*A105	4	#5	STR	24'-5"	102	*G1	216	#4	STR	6'-3"	902
*A106	4	#5	STR	21'-7"	90	*G2	44	#4	STR	5'-3"	154
*A107	4	#5	STR	18'-9"	78	H1	13	#4	1	11'-1"	96
*A108	4	#5	STR	16'-0"	67	H2	13	#4	1	11'-4"	98
*A109	4	#5	STR	13'-2"	55	H3	13	#4	2	11'-6"	100
*A110	4	#5	STR	10'-5"	43	H4	13	#4	2	11'-4"	98
*A111	4	#5	STR	7'-7"	32						
*A112	4	#5	STR	4'-9"	20						
*A113	4	#5	STR	2'-0"	8	K1	20	#5	STR	46'-4"	967
						K2	12	#4	STR	2'-10"	23
A201	4	#5	STR	35'-7"	148						
A202	4	#5	STR	32'-10"	137	*S1	68	#4	3	10'-0"	454
A203	4	#5	STR	30'-0"	125	*S2	72	#4	3	11'-10"	569
A204	4	#5	STR	27'-3"	114						
A205	4	#5	STR	24'-5"	102	U1	72	#4	4	11'-3"	541
A206	4	#5	STR	21'-7"	90	U2	4	#4	4	15'-7"	42
A207	4	#5	STR	18'-9"	78	U3	4	#4	4	13'-11"	37
A208	4	#5	STR	16'-0"	67	*U4	78	#4	4	3'-4"	174
A209	4	#5	STR	13'-2"	55						
A210	4	#5	STR	10'-5"	43	V2	44	#4	STR	6'-5"	189
A211	4	#5	STR	7'-7"	32	V3	44	#4	STR	5'-7"	164
A212	4	#5	STR	4'-9"	20						
A213	4	#5	STR	2'-0"	8						
						REINFORCING STEEL = 32,421 LBS					
						*EPOXY COATED REINF. STEEL = 38,133 LBS					

BAR TYPES

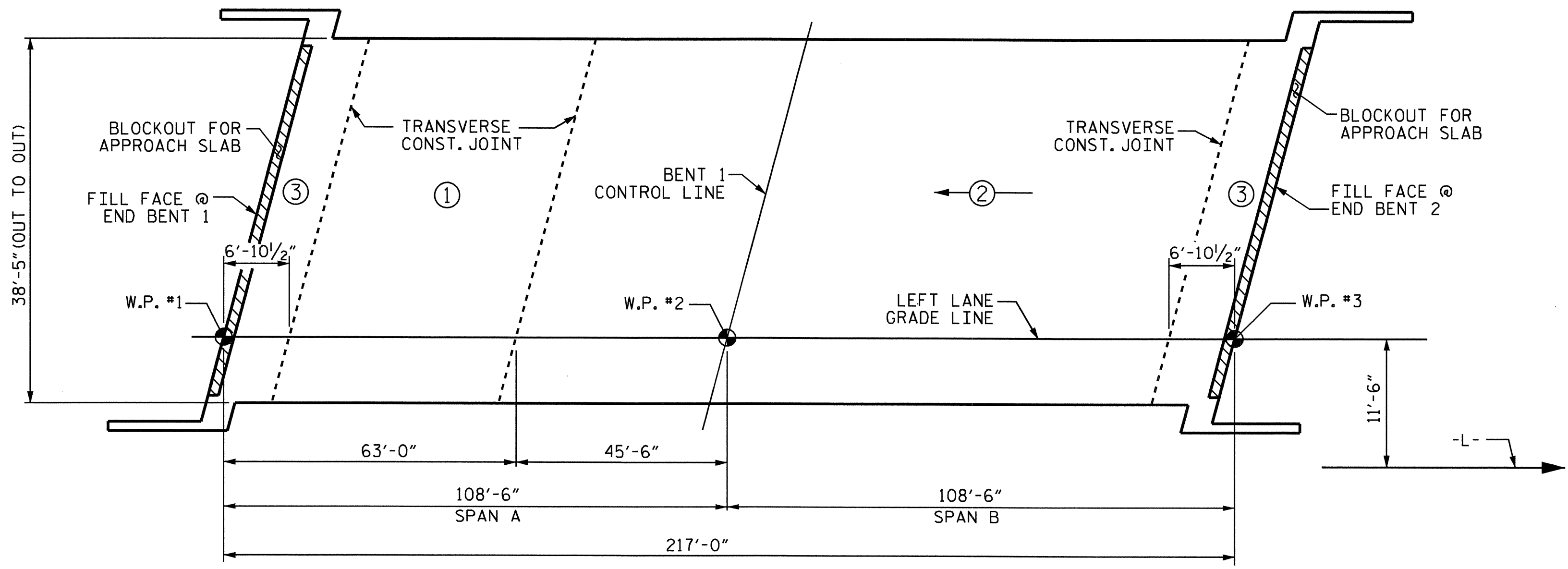


ALL BAR DIMENSIONS ARE OUT TO OUT

SUPERSTRUCTURE BILL OF MATERIAL

	CLASS AA CONCRETE (CU. YDS.)	REINFORCING STEEL (LBS.)	*EPOXY COATED REINFORCING STEEL (LBS.)
POUR #1	72.7		
POUR #2	190.7		
POUR #3	91.3		
SIDEWALK	40.2		
TOTALS **	394.9	32,421	38,133

** INCLUDES QUANTITIES FOR SIDEWALK. QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED.

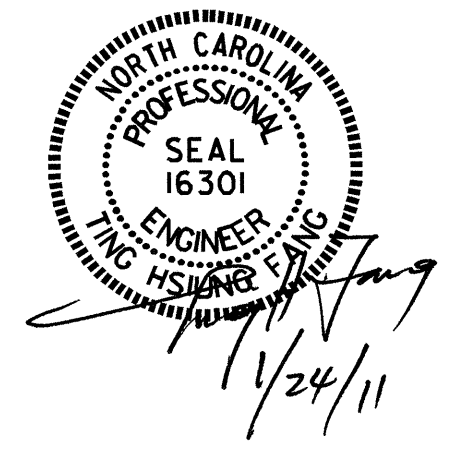


POURING SEQUENCE AND LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB

(SQ. FT. = 8,336)

← ⊕ → INDICATES POUR NUMBER & DIRECTION

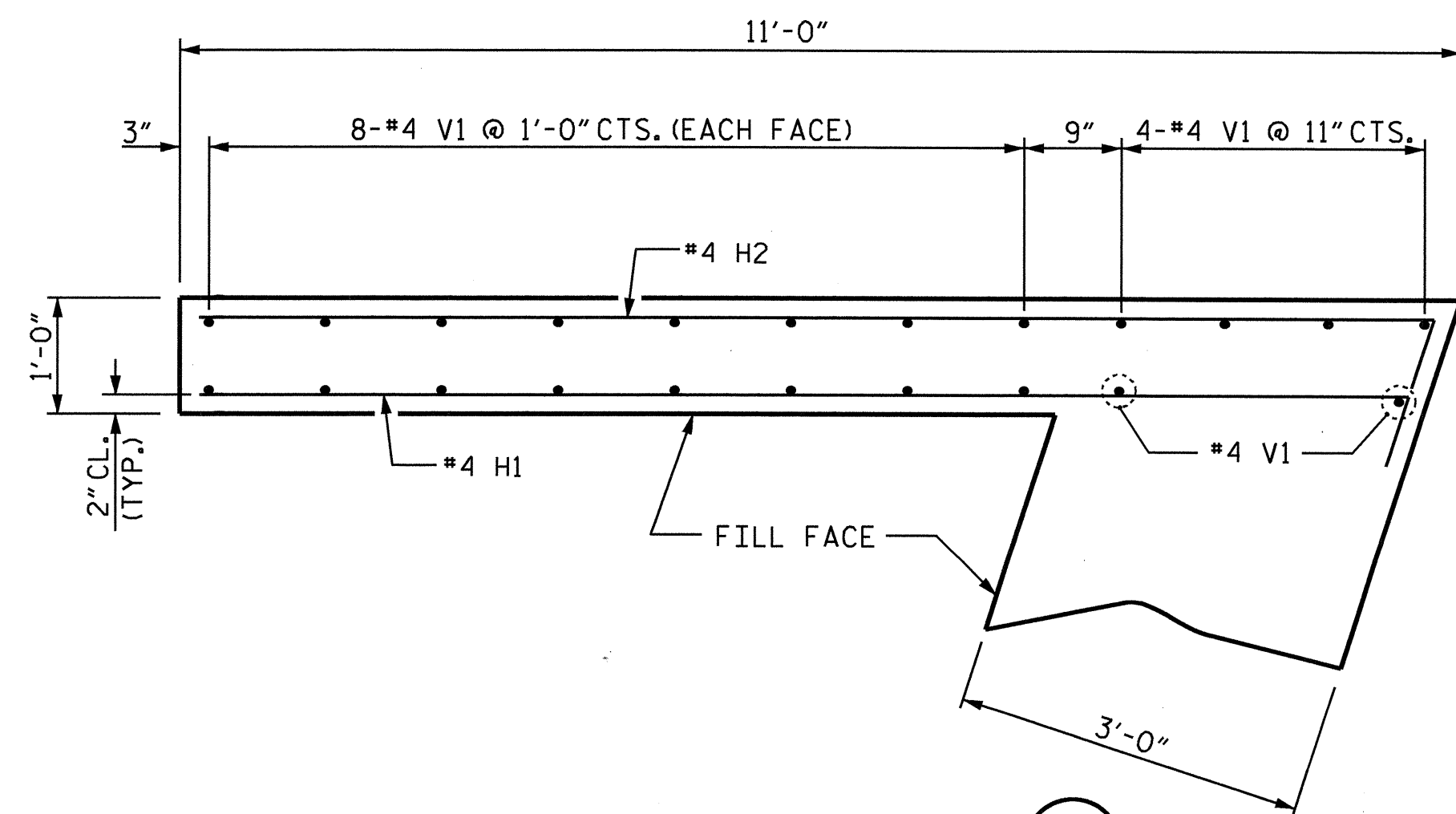
PROJECT NO. U-3621B
NASH COUNTY
STATION: 50+77.00 -L-



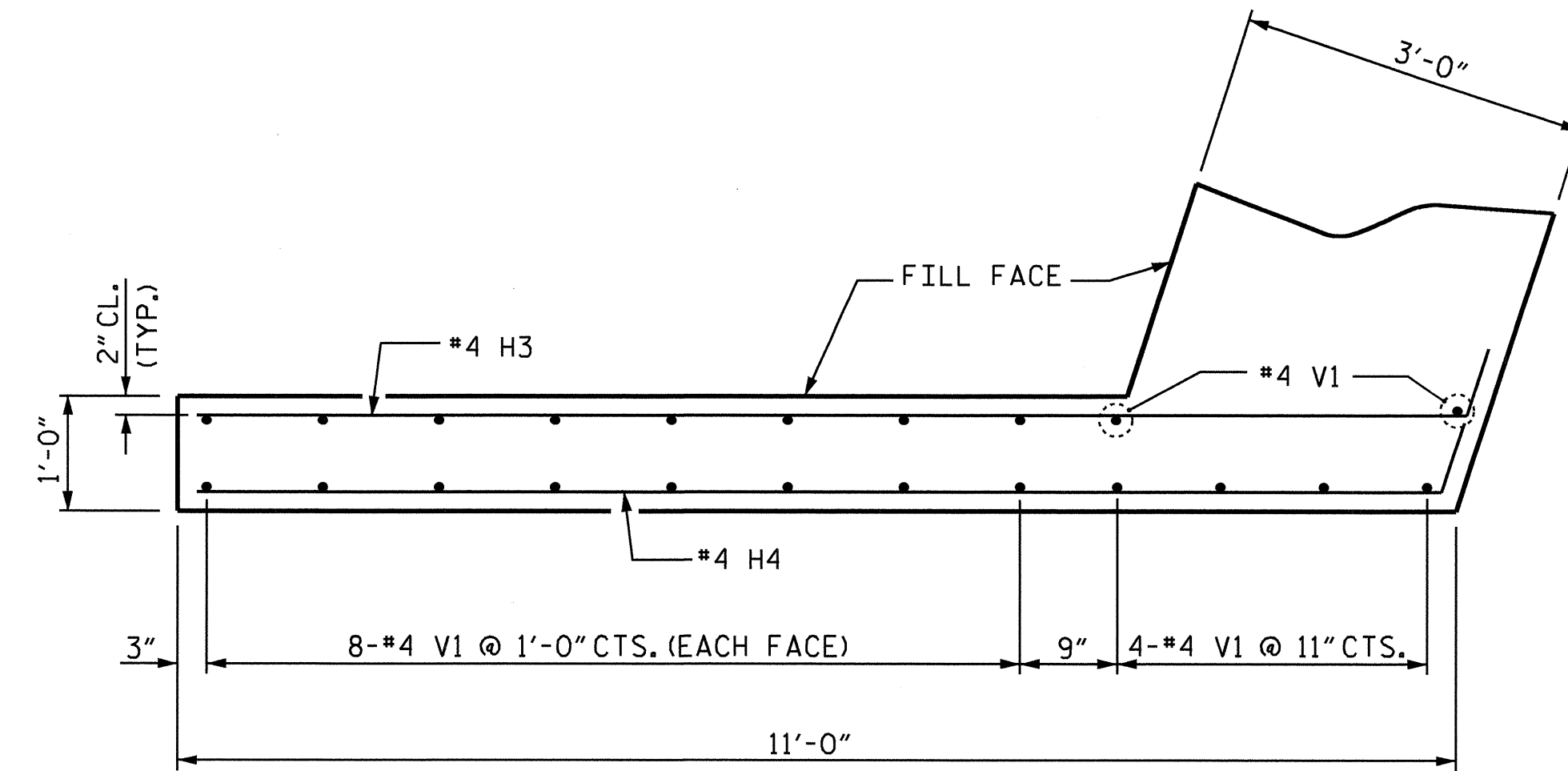
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
SUPERSTRUCTURE
BILL OF MATERIAL
(LEFT LANE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-23
1			3			TOTAL SHEETS
2			4			68

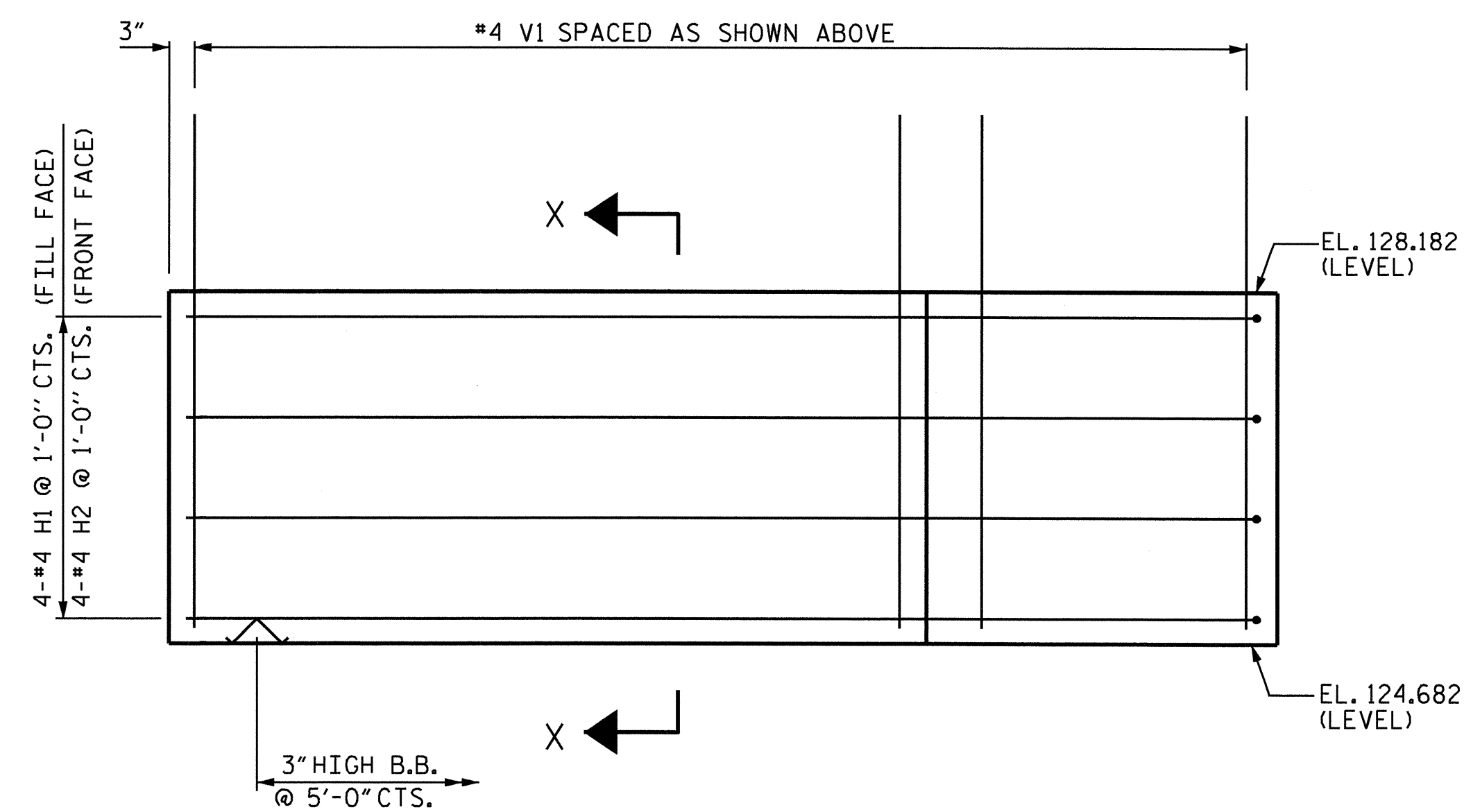
ASSEMBLED BY : OT NGUYEN	DATE : 3-09
CHECKED BY : W.D. CRUTCHER	DATE : 4-10
DRAWN BY : JMB 5/87	REV. 6/1/94 EEM/GRP
CHECKED BY : SJD 9/87	REV. 8/16/99 RWW/LES
	REV. 5/1/06 TLA/GM



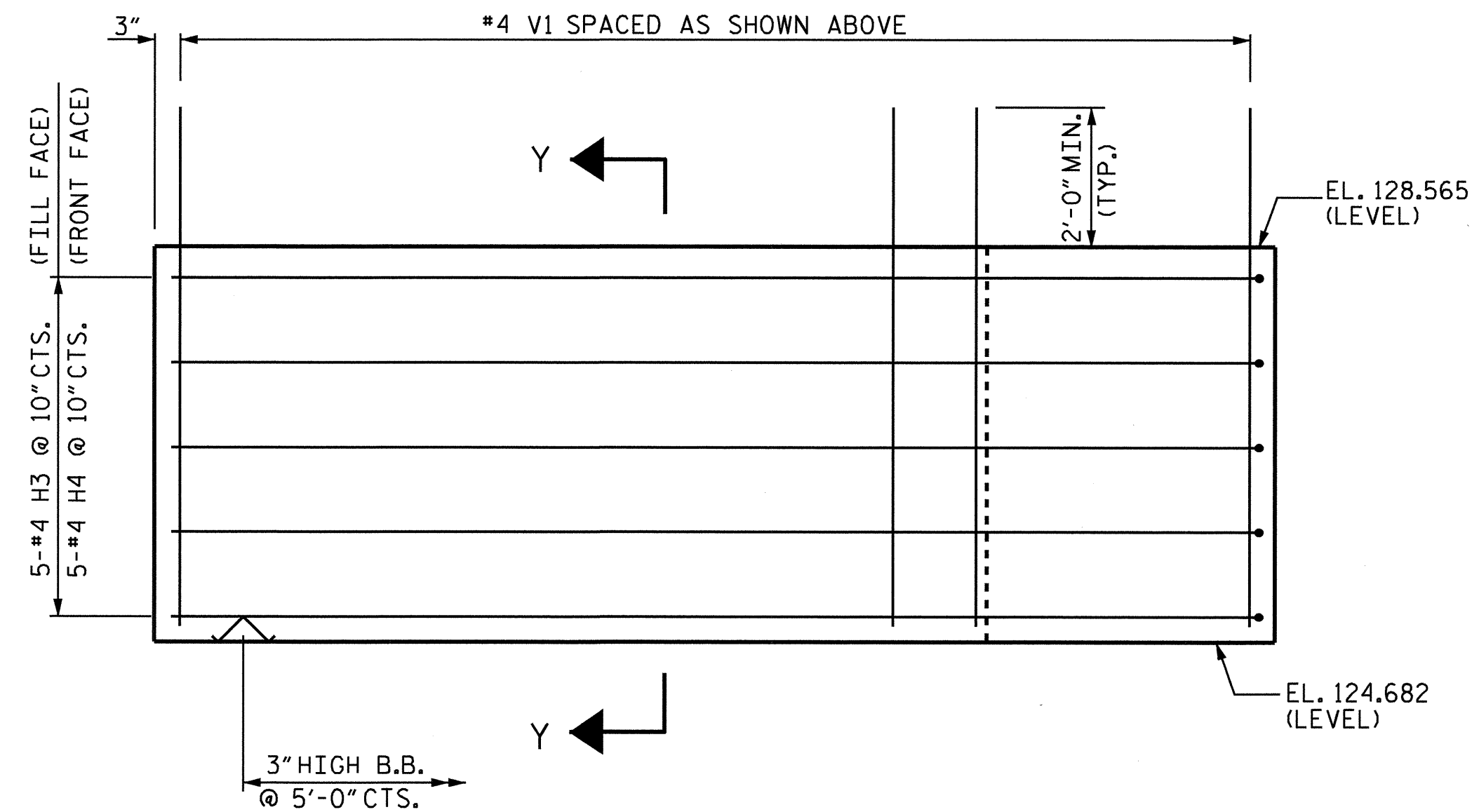
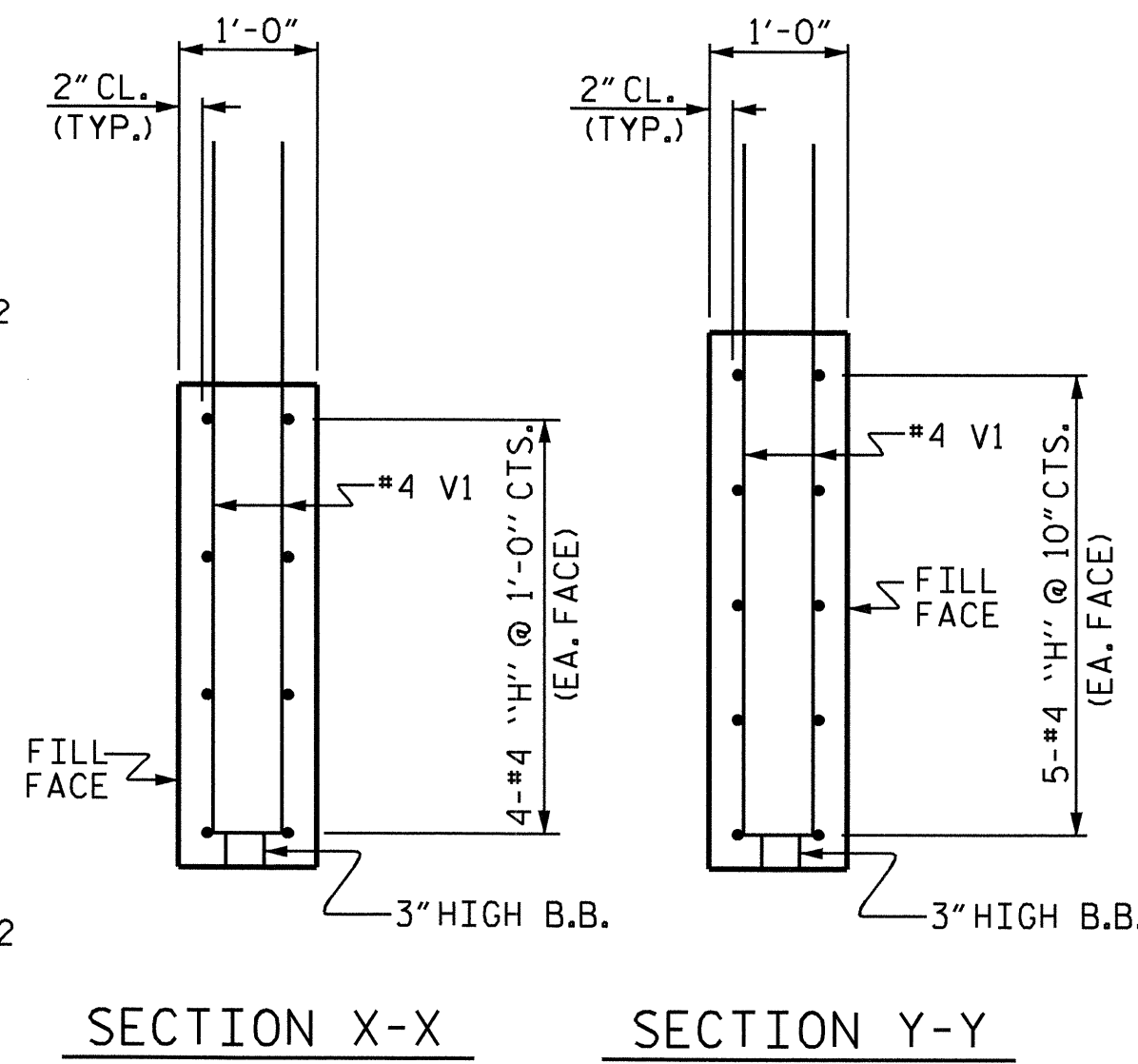
PLAN OF WING (W1)



PLAN OF WING (W2)



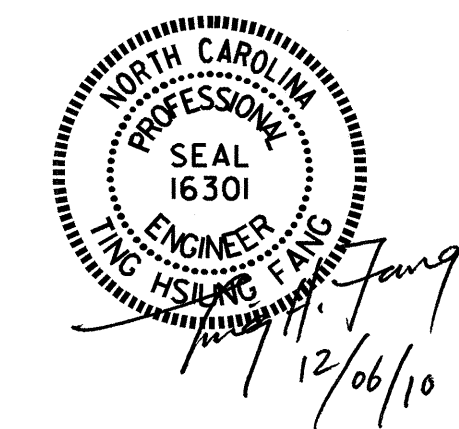
ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

PROJECT NO. U-3621B
 NASH COUNTY
 STATION: 50+77.00 -L-

SHEET 2 OF 3

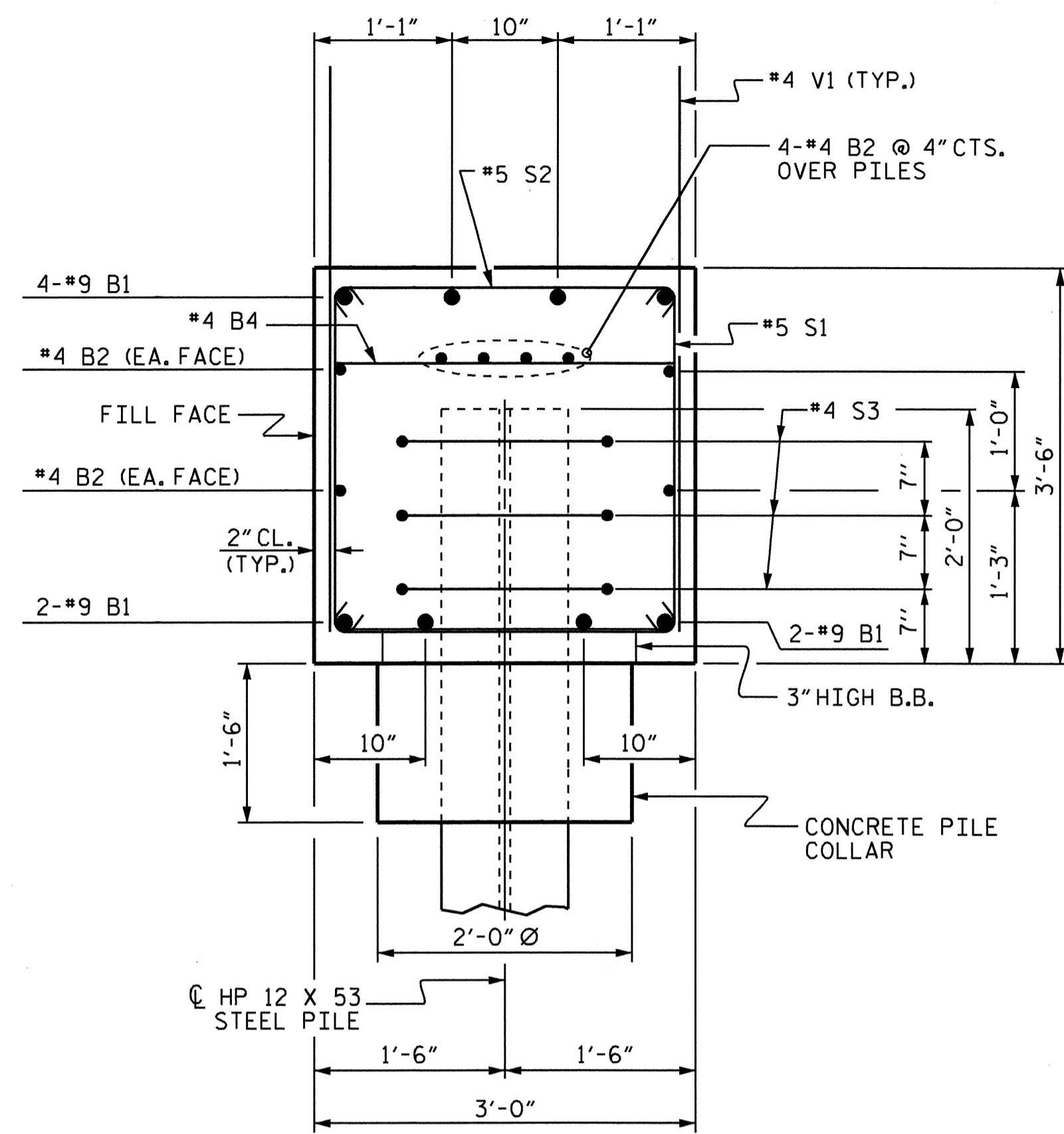


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH				SHEET NO.
SUBSTRUCTURE				S-25
END BENT 1				TOTAL SHEETS
(LEFT LANE)				68
REVISIONS				
NO.	BY:	DATE:	NO.	DATE:
1			3	
2			4	

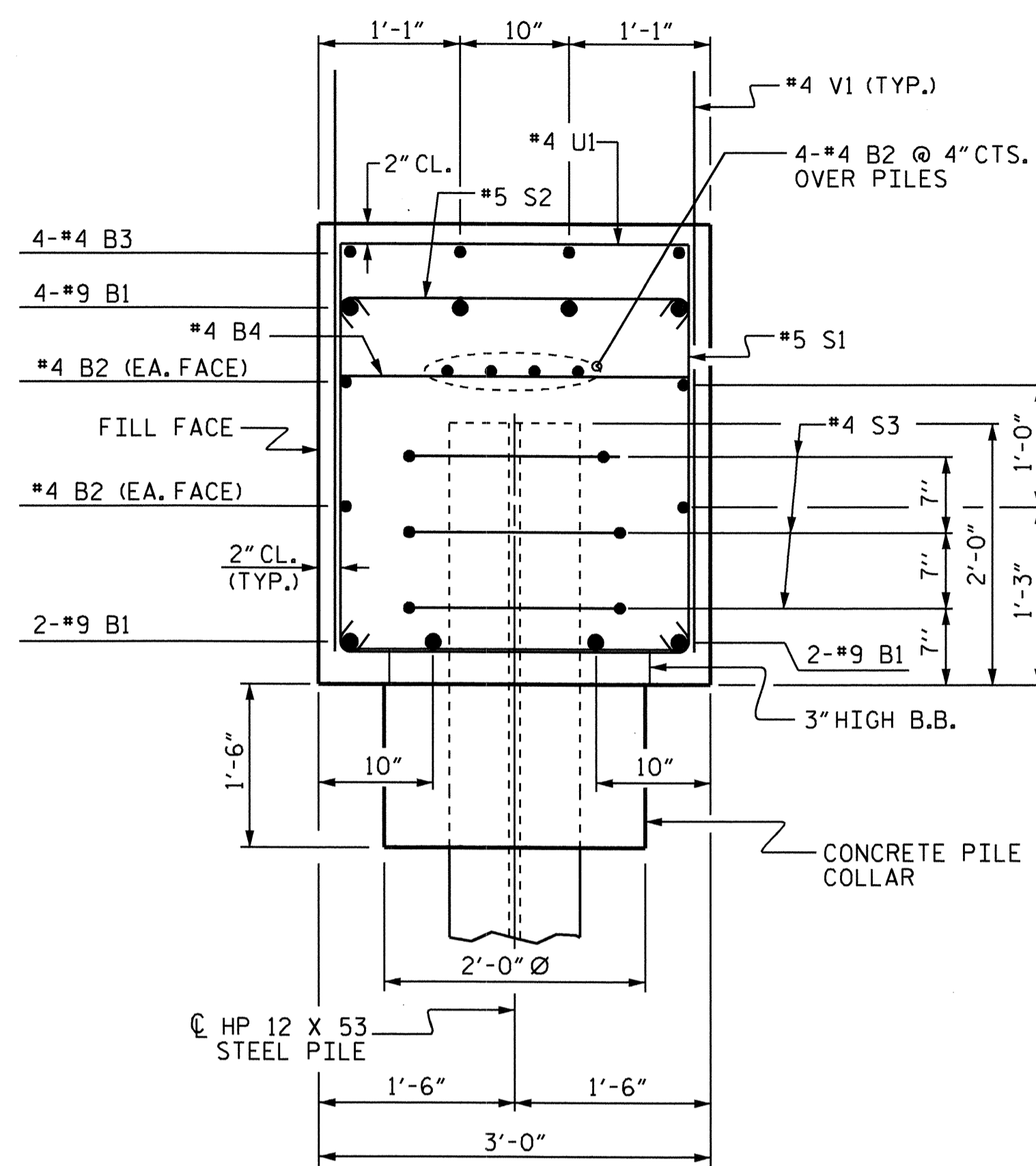
DRAWN BY: QT NGUYEN DATE: 6-09
 CHECKED BY: W.D. CRUTCHER DATE: 4-1-10

06-DEC-2010 14:34
 Y:\TIPProjects-U\U3621B\Structures\Final Plans\1334\U3621b.sd_e1*.dgn
 qtnguyen

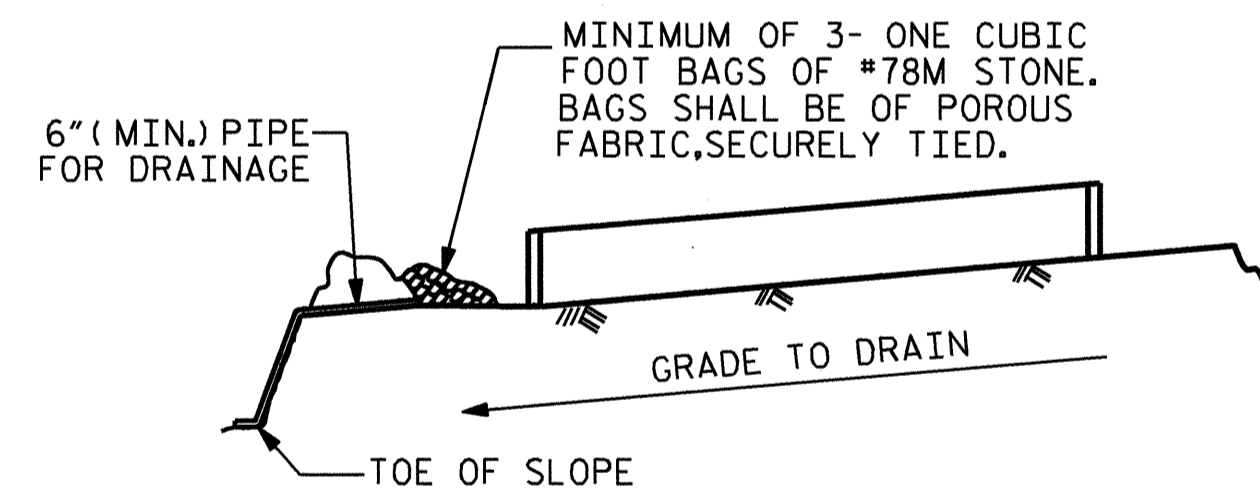
STR #1



SECTION A-A



SECTION B-B

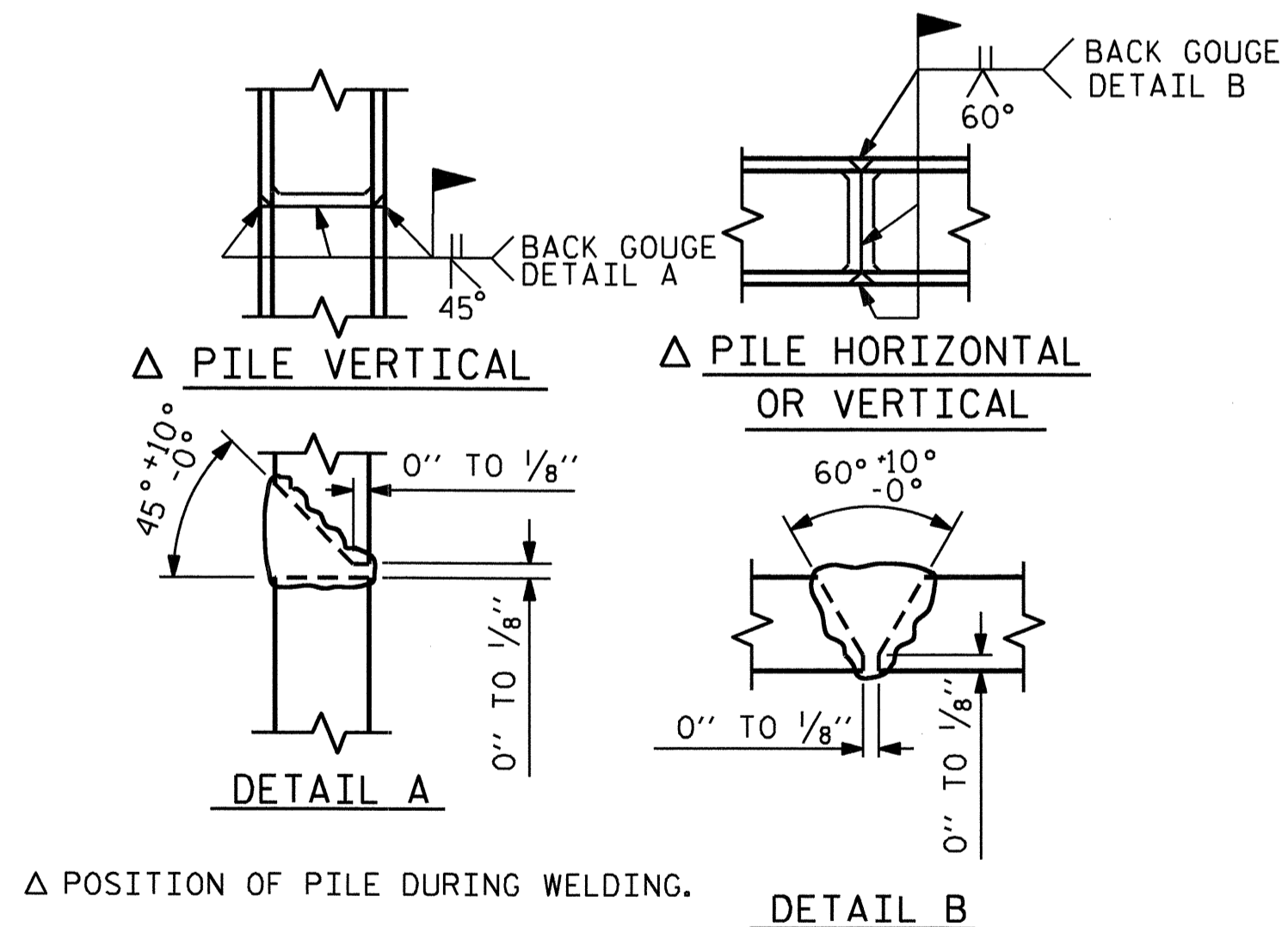


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

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

TEMPORARY DRAINAGE AT END BENT



PILE SPLICE DETAILS

BILL OF MATERIAL

END BENT 1

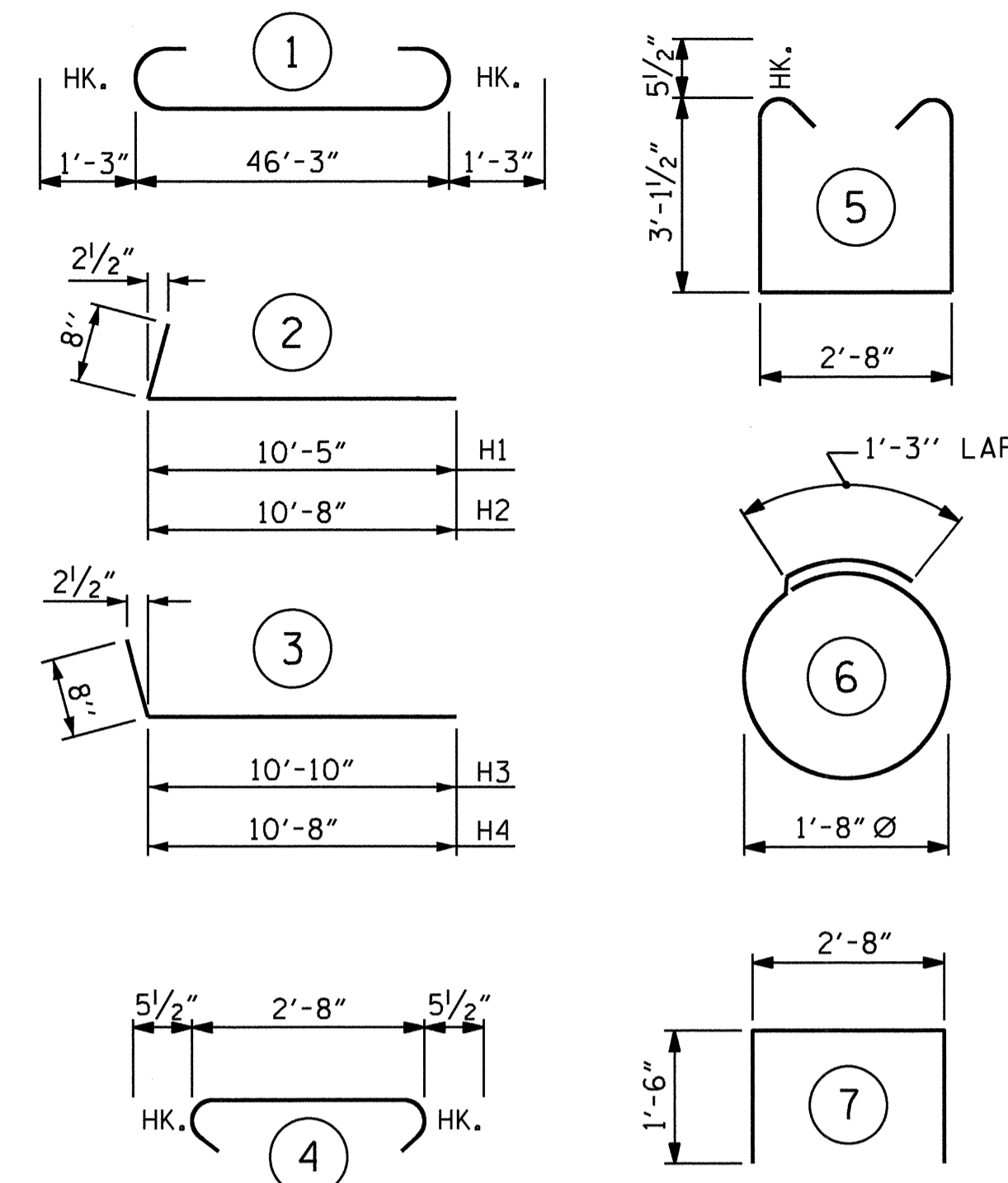
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	48'-9"	1326
B2	16	#4	STR	24'-5"	261
B3	4	#4	STR	7'-6"	20
B4	12	#4	STR	2'-8"	21
H1	4	#4	2	11'-1"	30
H2	4	#4	2	11'-4"	30
H3	5	#4	3	11'-6"	38
H4	5	#4	3	11'-4"	38
S1	42	#5	5	9'-10"	431
S2	42	#5	4	3'-7"	157
S3	18	#4	6	6'-6"	78
U1	5	#4	7	5'-8"	19
V1	124	#4	STR	5'-9"	476

REINFORCING STEEL = 2925 LBS

CLASS A CONCRETE BREAKDOWN :
CAP, LOWER WINGS, & COLLARS = 22.2 C.Y.

HP 12 X 53 STEEL PILES :
No. 6 LIN. FT. 330

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

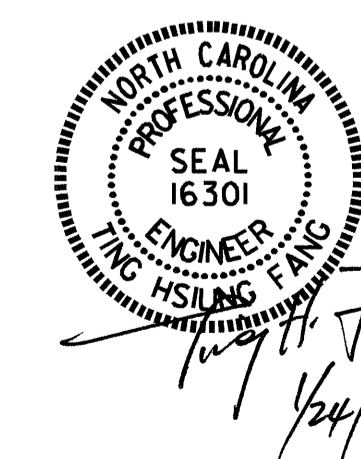
PROJECT NO. U-3621B
NASH COUNTY
STATION: 50+77.00 -L-

SHEET 3 OF 3

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

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

TOTAL SHEETS 68



DRAWN BY : QT NGUYEN DATE : 6-09
CHECKED BY : RAMAN PATEL DATE : 2-02-10

NOTES:

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

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

FOR PILE SPLICE DETAILS, SEE SHEET 2 OF 2.

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



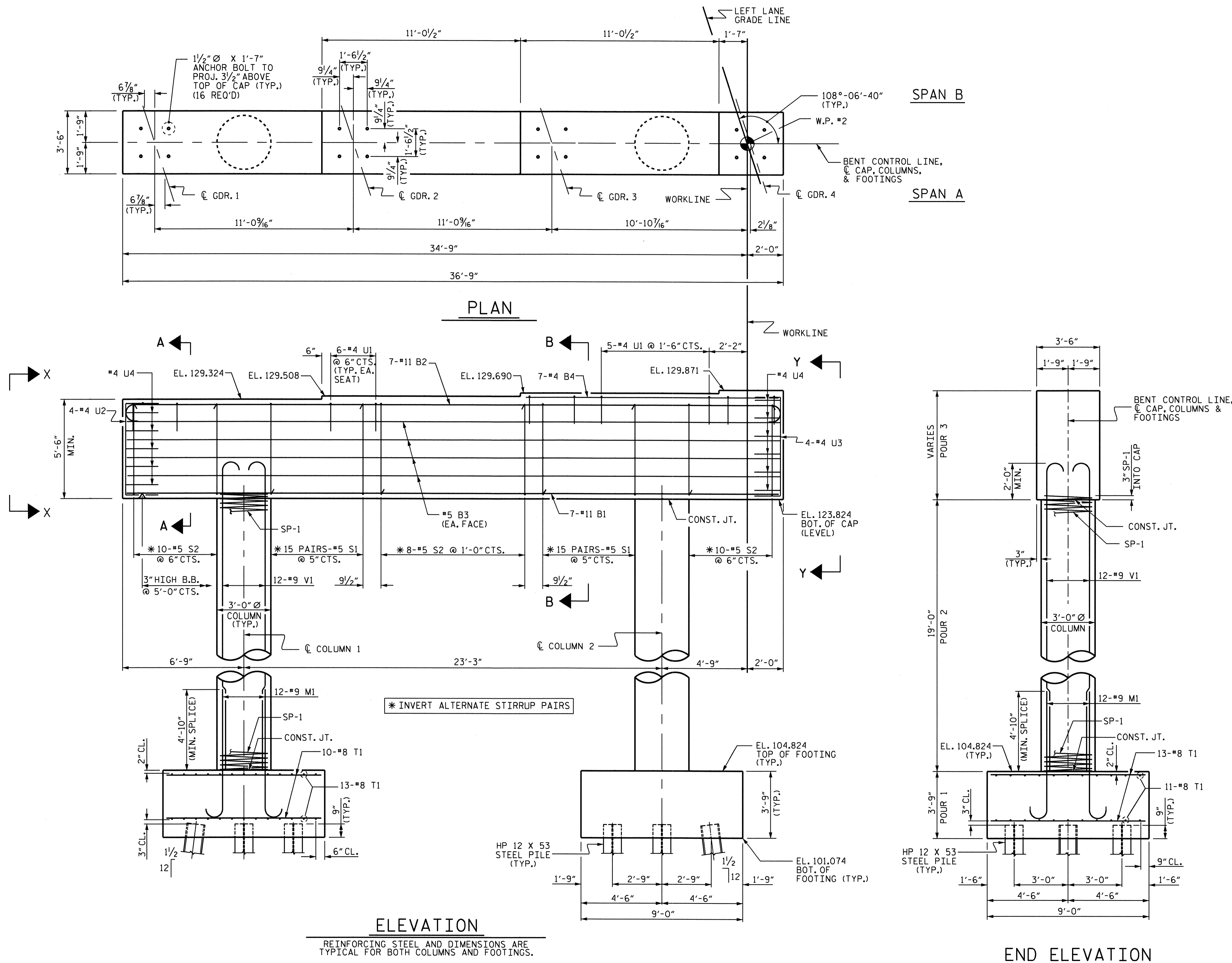
PROJECT NO. U-3621B
NASH COUNTY
 STATION: 50+77.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT 1
 (LEFT LANE)

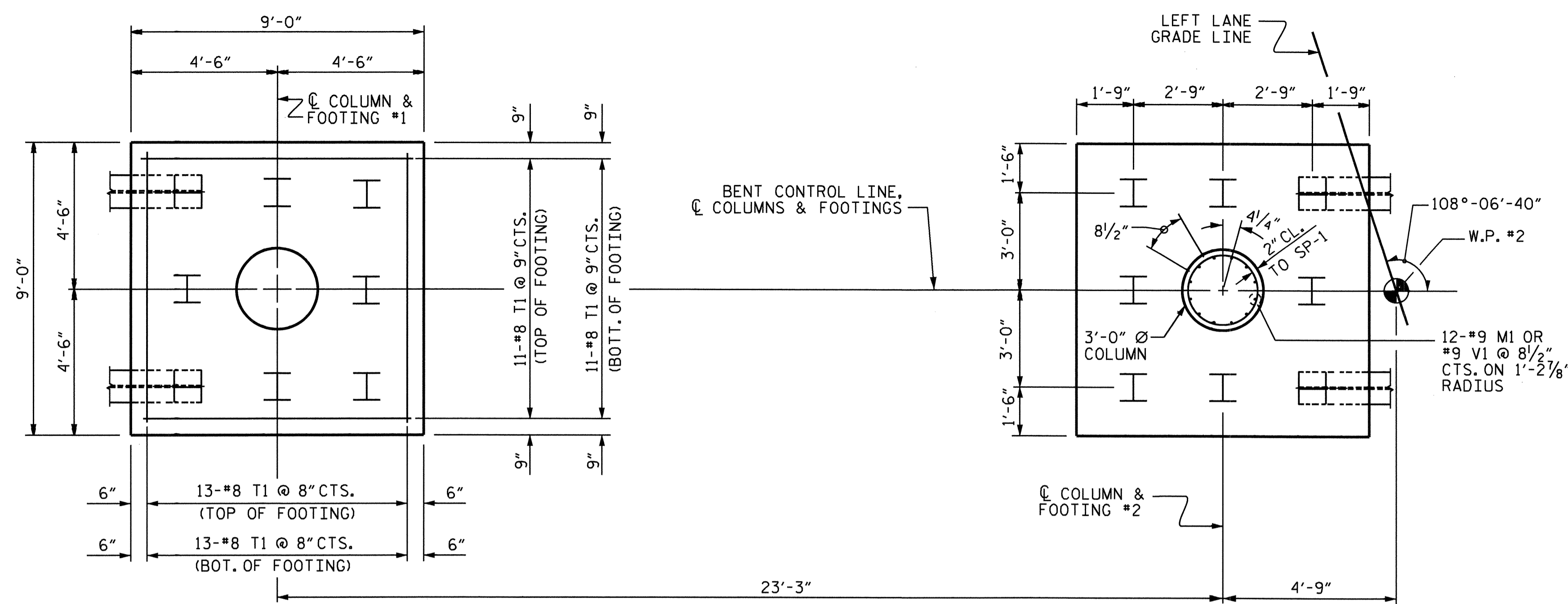
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-27
1			3			TOTAL SHEETS
2			4			68

STR #1

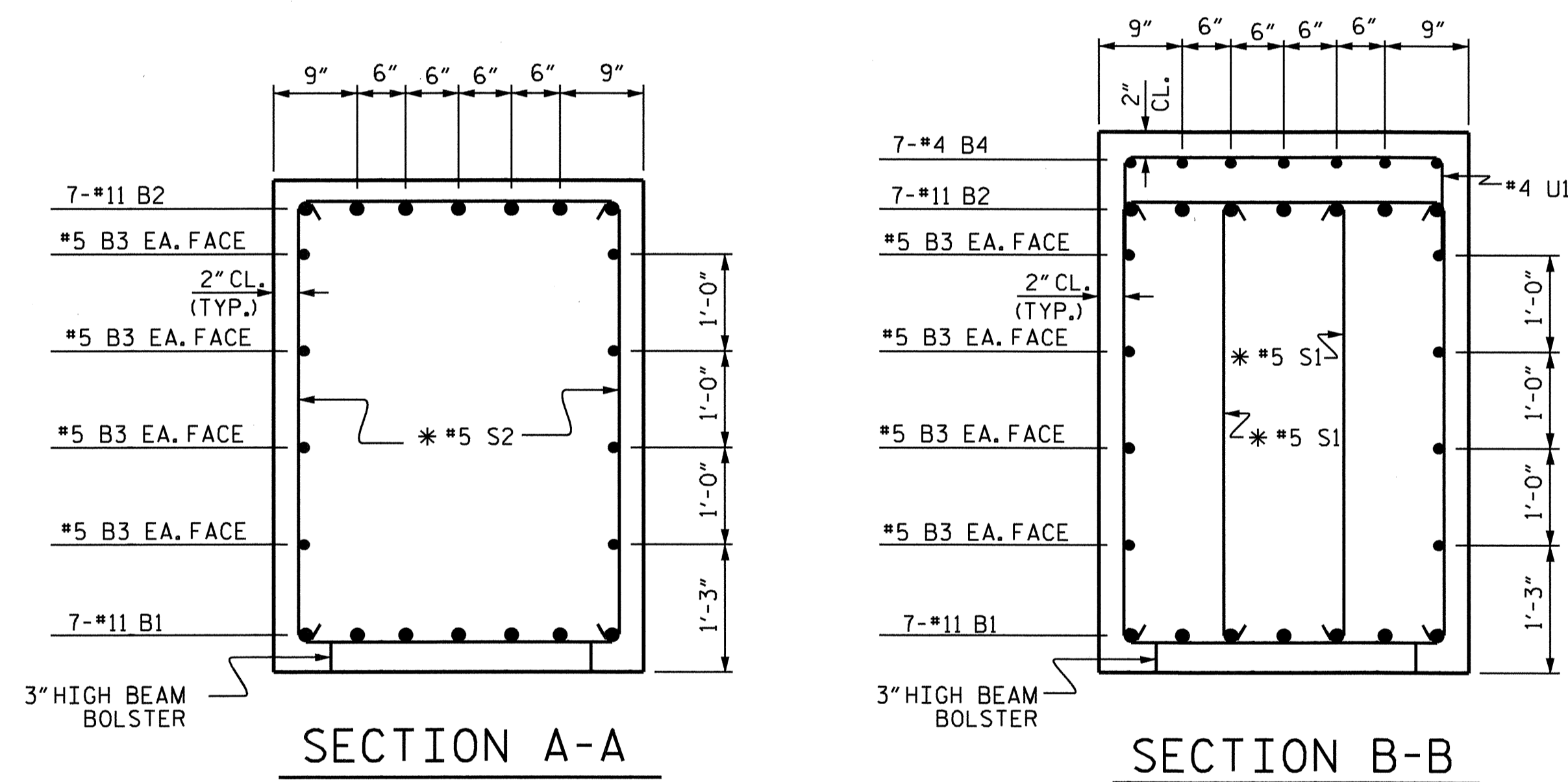


DRAWN BY : HARISH SHAH DATE : 6/29/09
 CHECKED BY : W.D. CRUTCHER DATE : 4-8-10

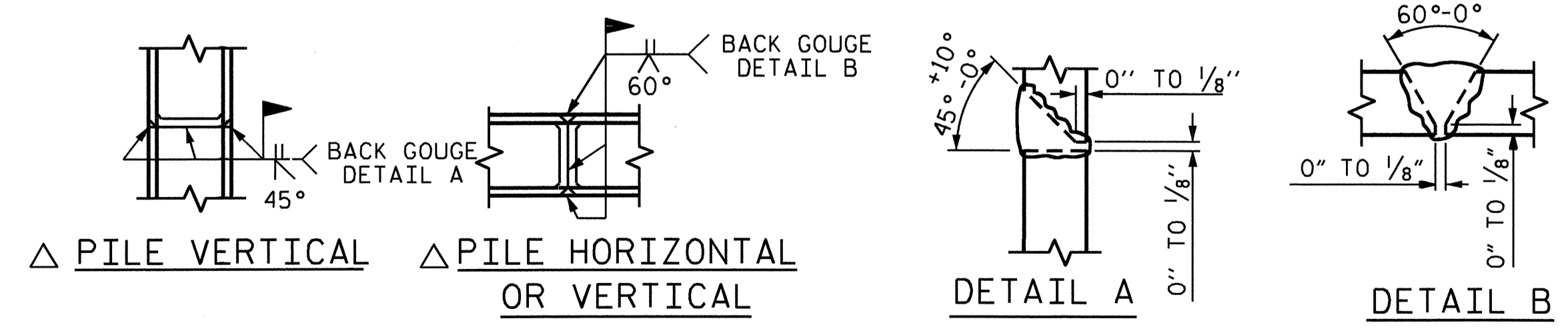
24-JAN-2011 08:13
 X:\U3621B\Structures\Final Plans\1334\U-3621B.sd.b1.dgn
 11ang



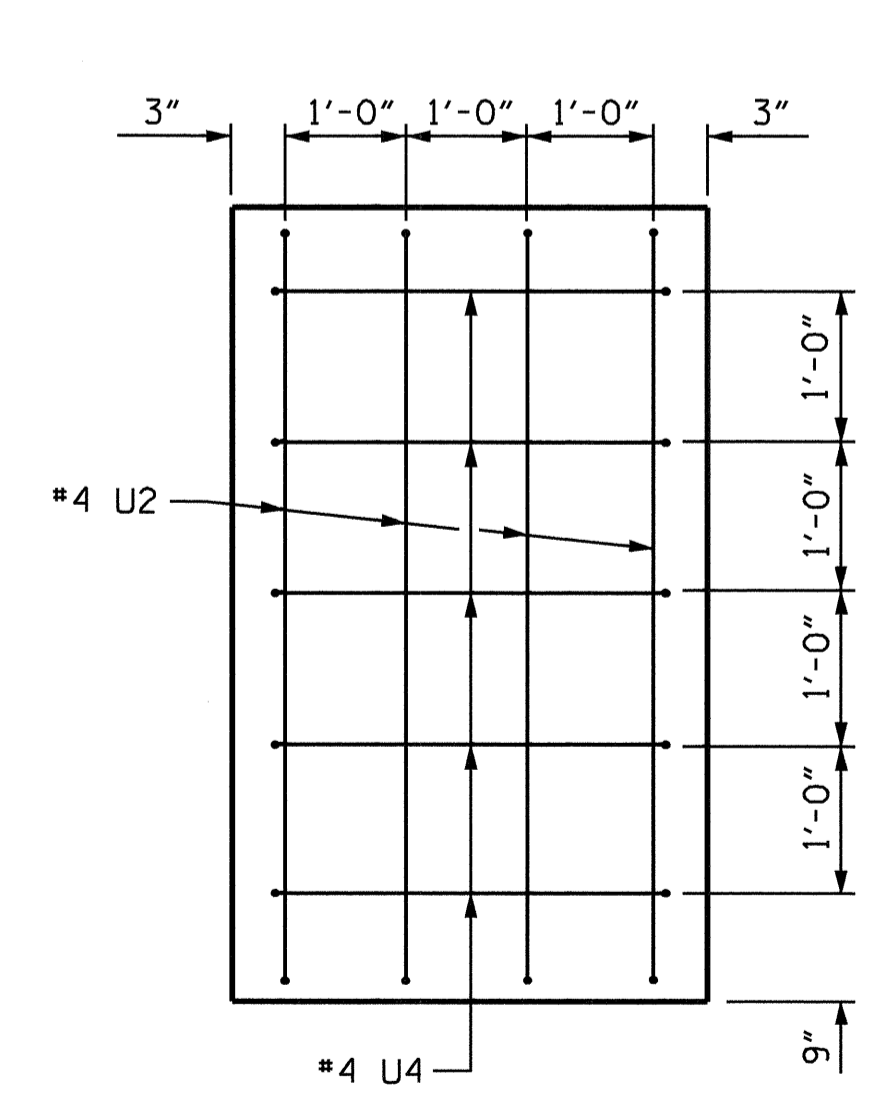
PLAN OF FOOTINGS & COLUMNS
 REINFORCING STEEL, DIMENSIONS ARE TYPICAL FOR EACH COLUMN & FOOTING.



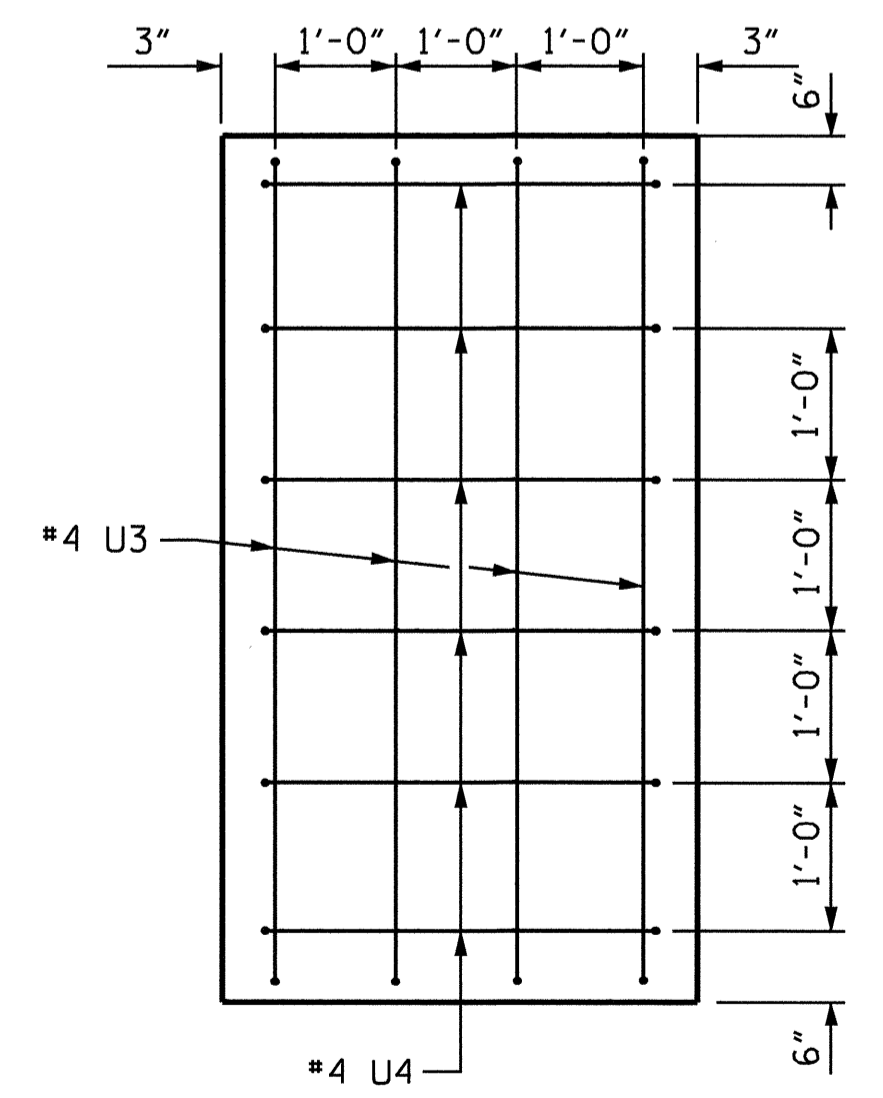
* INVERT ALTERNATE STIRRUP PAIRS



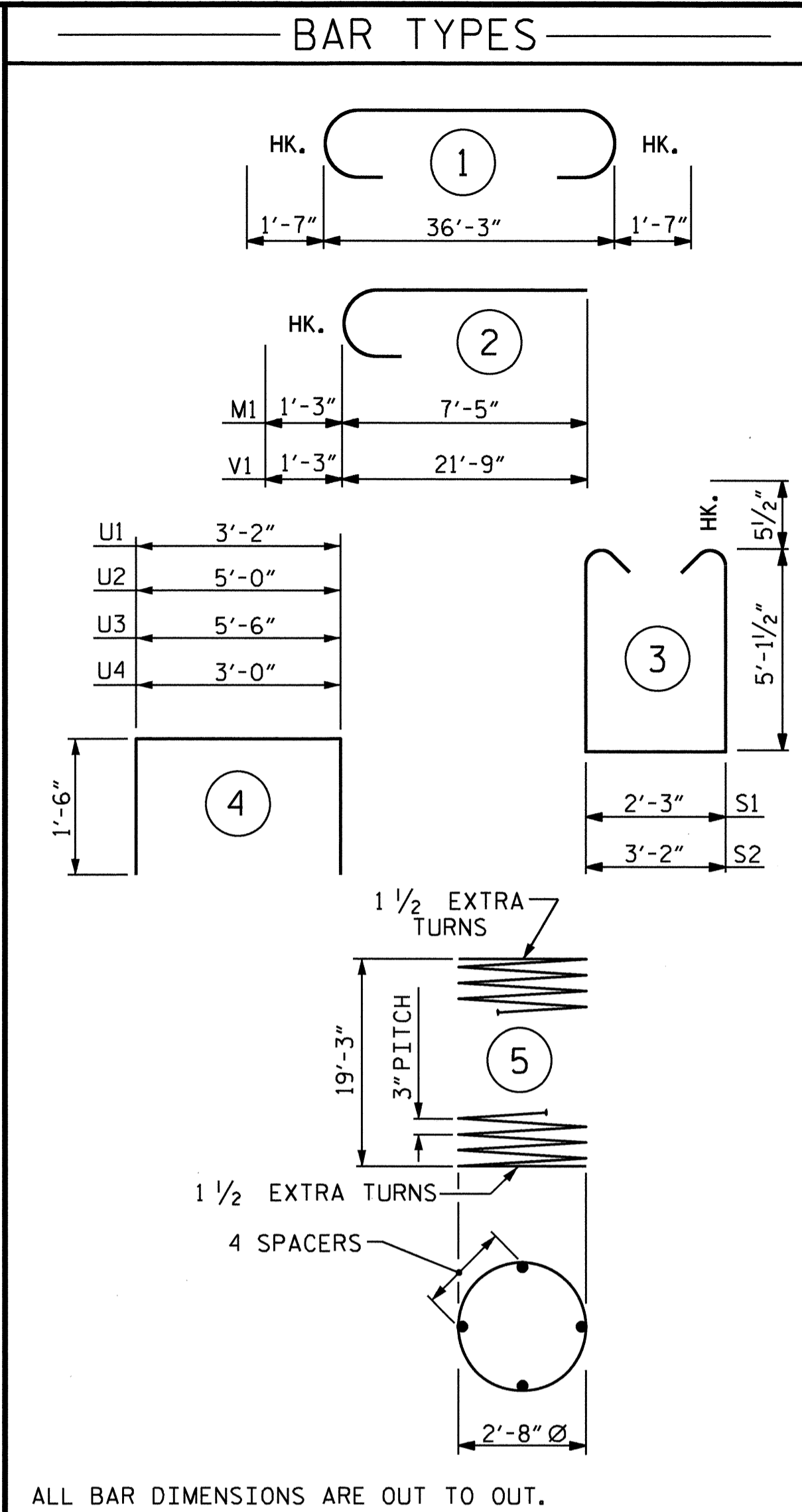
PILE SPLICE DETAILS



VIEW X-X



VIEW Y-Y

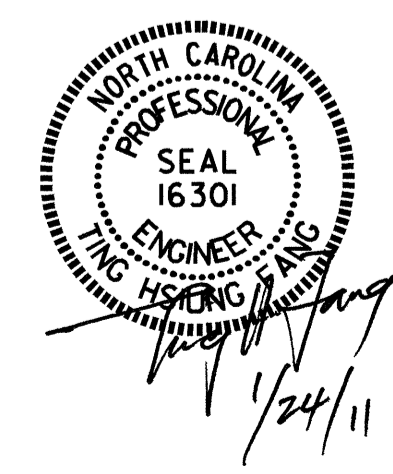


ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	7	#11	STR	36'-5"	1354
B2	7	#11	1	39'-5"	1466
B3	8	#5	STR	36'-5"	304
B4	7	#4	STR	14'-3"	67
M1	24	#9	2	8'-8"	707
S1	60	#5	3	13'-5"	840
S2	28	#5	3	14'-4"	419
T1	96	#8	STR	8'-6"	2179
U1	29	#4	4	6'-2"	119
U2	4	#4	4	8'-0"	21
U3	4	#4	4	8'-6"	23
U4	11	#4	4	6'-0"	44
V1	24	#9	2	23'-0"	1877
REINFORCING STEEL					9420 LBS.
SP-1	2	**	5	1320'-1"	1764
SPIRAL COLUMN REINFORCING STEEL					= 1764 LBS
CLASS A CONCRETE BREAKDOWN:					
POUR #1 (FOOTINGS)				22.5	C.Y.
POUR #2 (COLUMNS)				10.0	C.Y.
POUR #3 (CAP)				27.3	C.Y.
TOTAL CLASS A CONCRETE				59.8	C.Y.
HP 12 X 53 STEEL PILES					LIN. FT. 480
No. 16					LIN. FT. 480
FOUNDATION EXCAVATION					LUMP SUM
** THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W-20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.					

PROJECT NO. U-3621B
NASH COUNTY
 STATION: 50+77.00 -L-
 SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
BENT 1
 (LEFT LANE)



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-28
1			3			TOTAL SHEETS
2			4			68

DRAWN BY : HARISH SHAH DATE : 7/01/09
 CHECKED BY : W.D. CRUTCHER DATE : 4-8-10

24-JAN-2011 08:13
 X:\U3621B\Structures\Final Plans\1334\U-3621b.sd.b1.dgn
 11.fmg

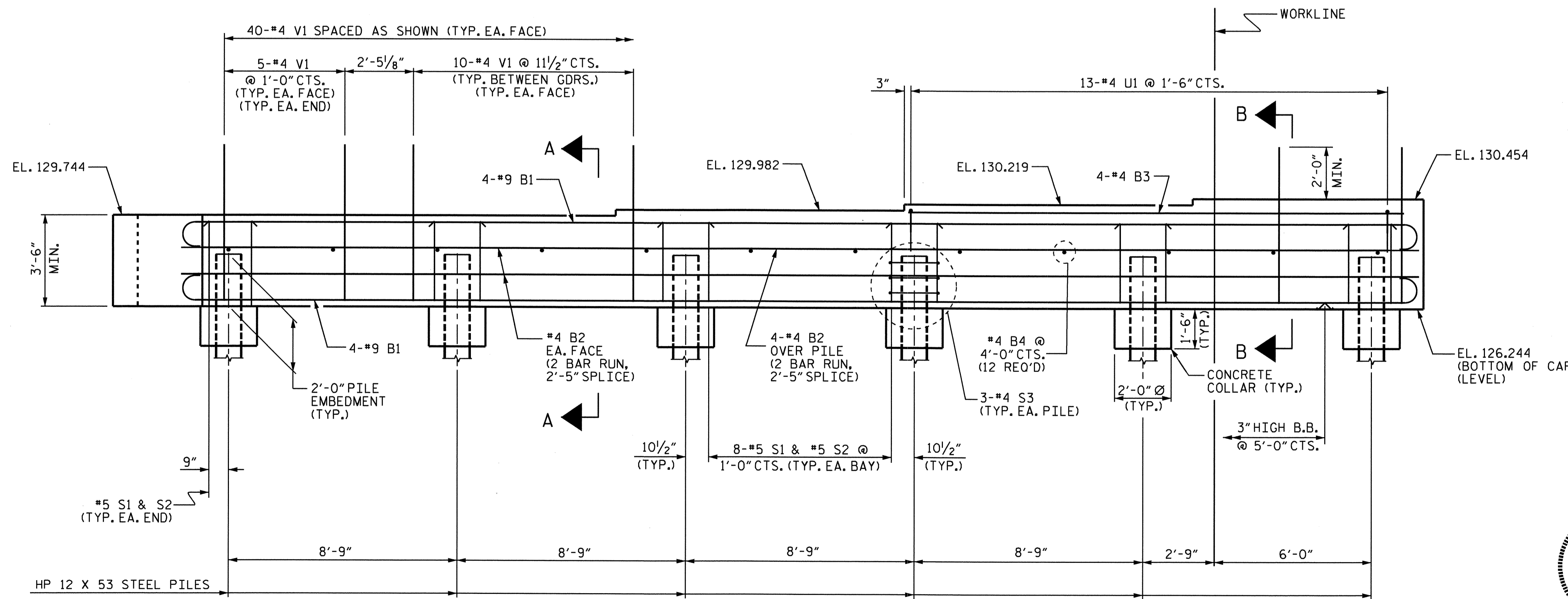
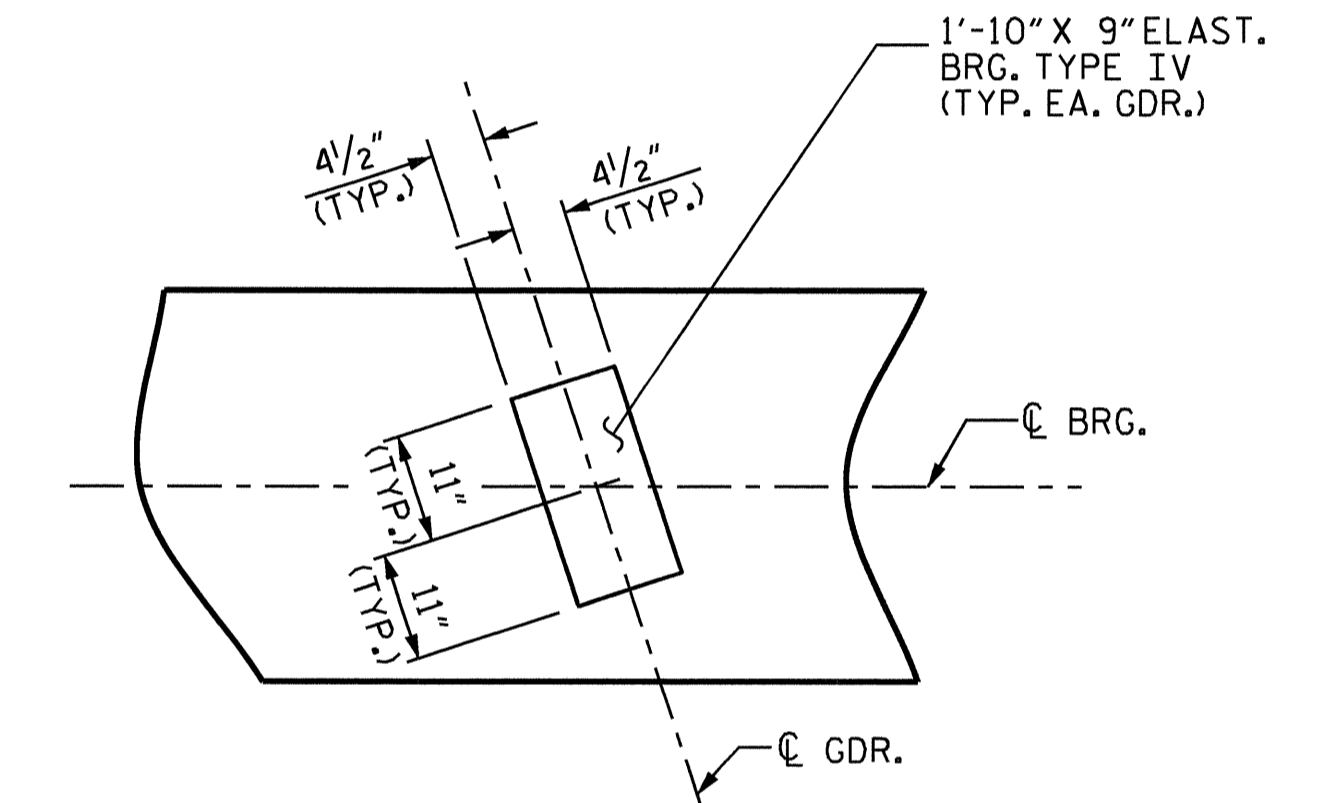
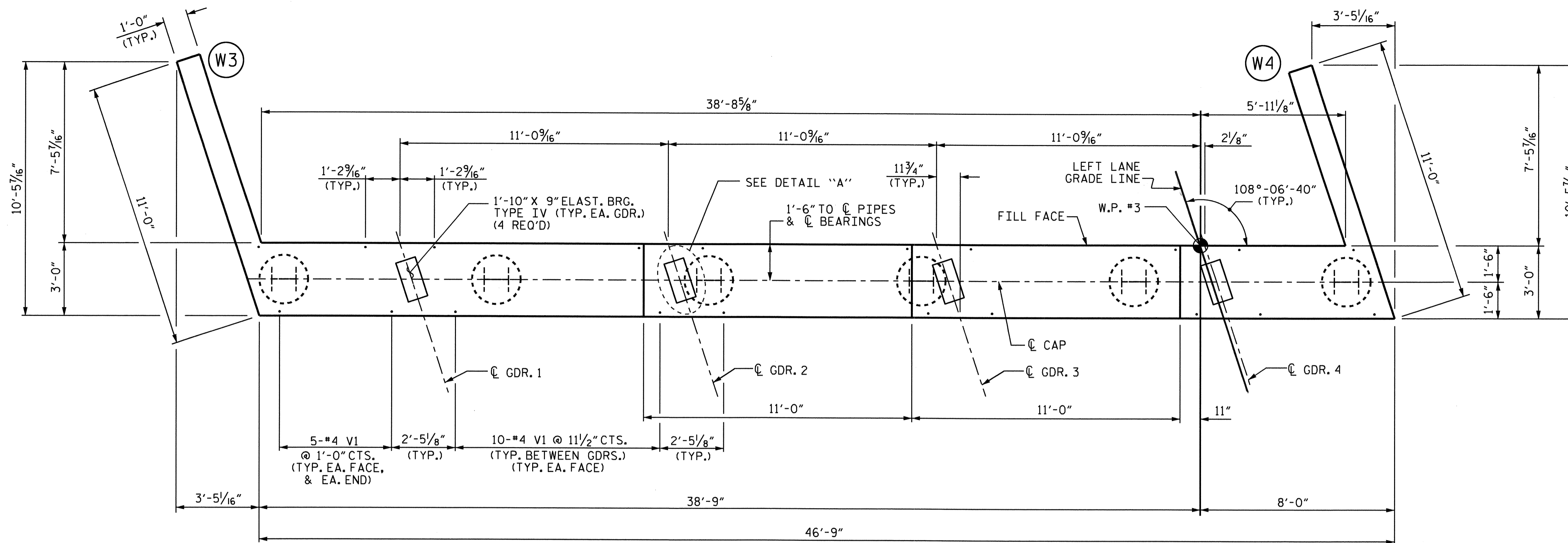
STR #1

NOTES

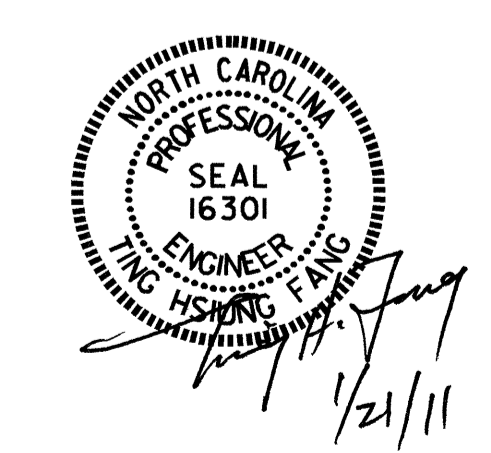
THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS. SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

SEE SUPERSTRUCTURE SHEETS FOR THE ABUTMENT DETAILS.

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



PROJECT NO. U-3621B
 NASH COUNTY
 STATION: 50+77.00 -L-
 SHEET 1 OF 3

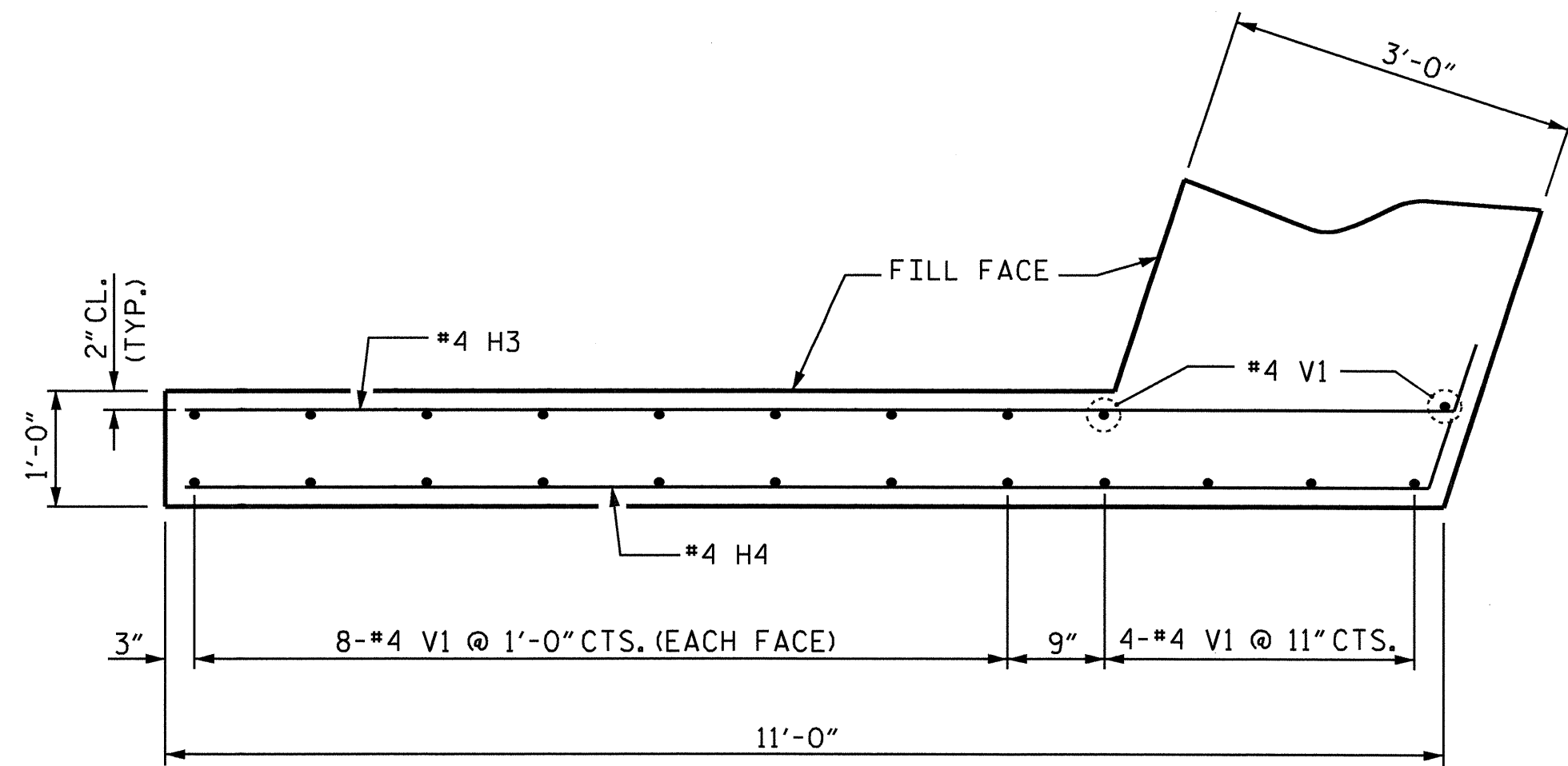


DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT 2
 INTEGRAL
 (LEFT LANE)

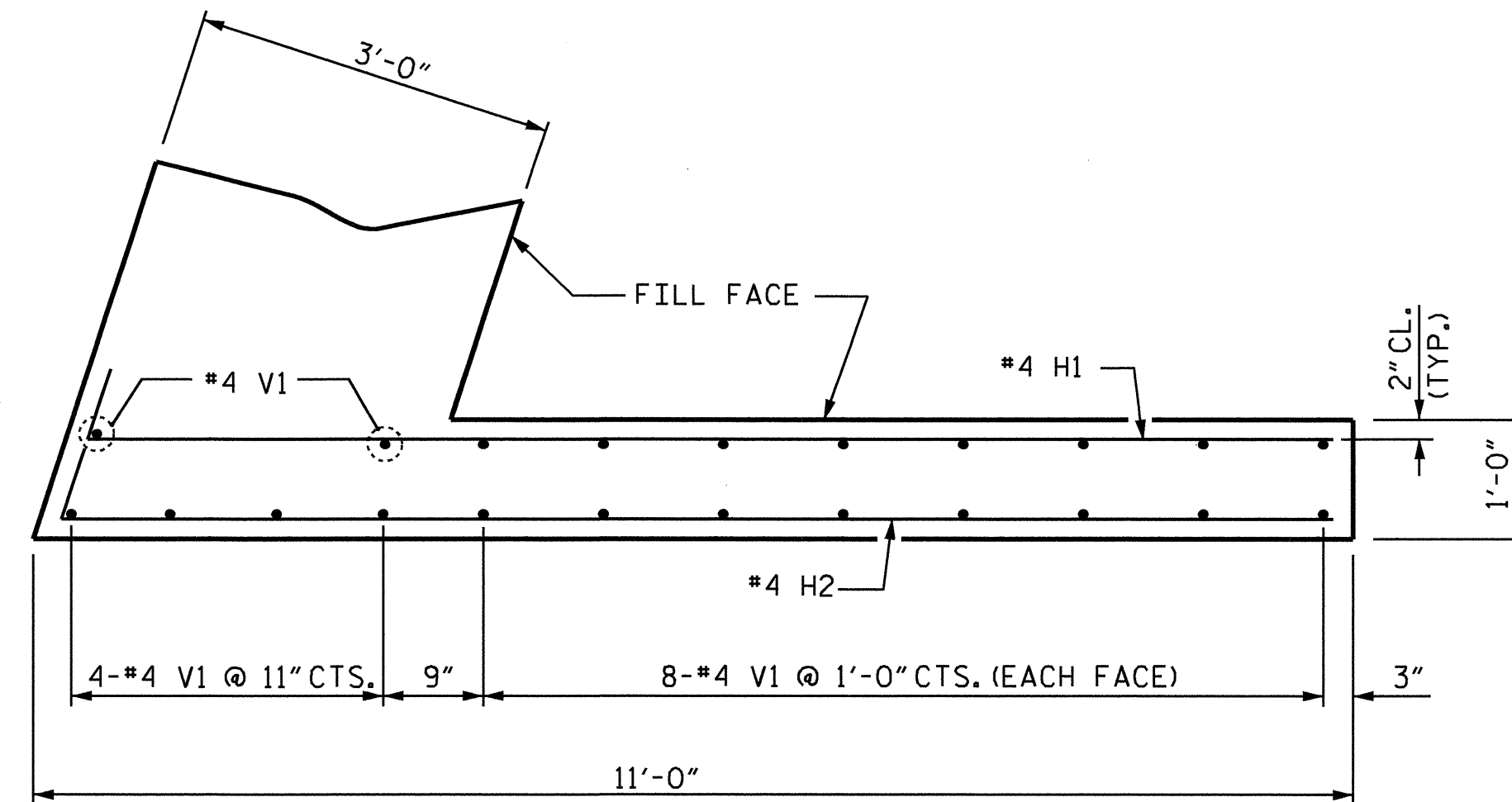
REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

TOTAL SHEETS: 68

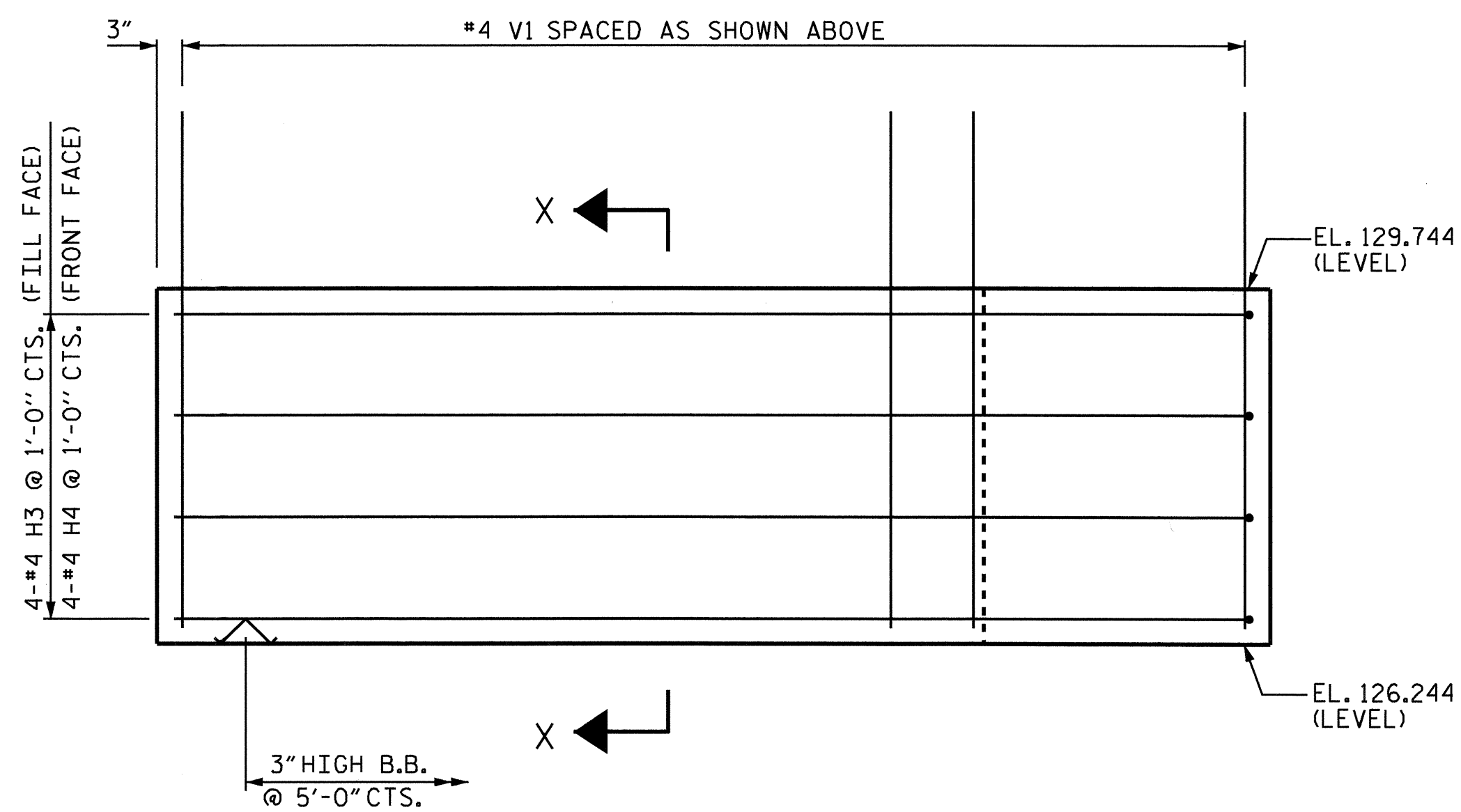
DRAWN BY: OT NGUYEN DATE: 6-09
 CHECKED BY: W.D. CRUTCHER DATE: 4-8-10



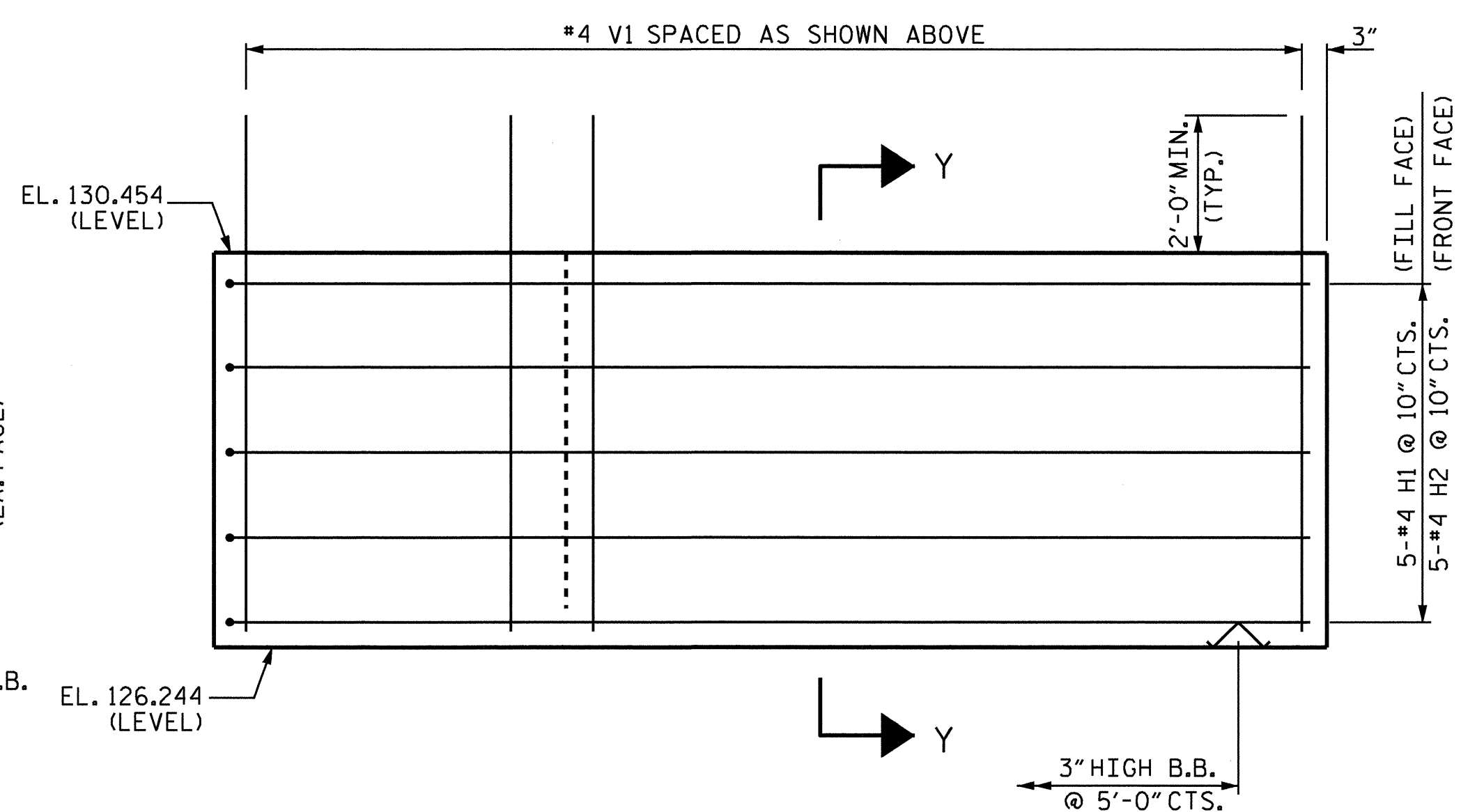
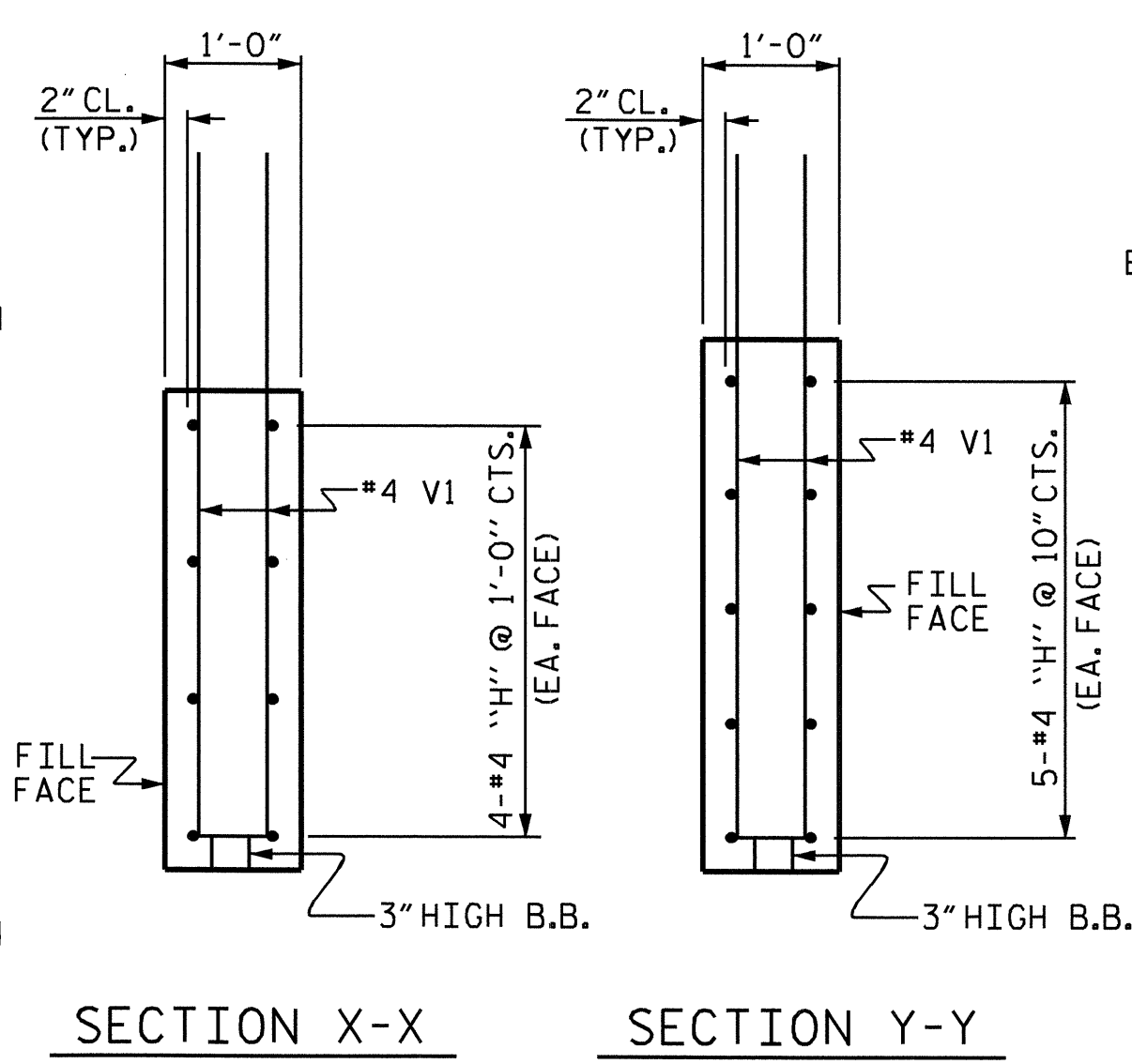
PLAN OF WING (W3)



PLAN OF WING (W4)



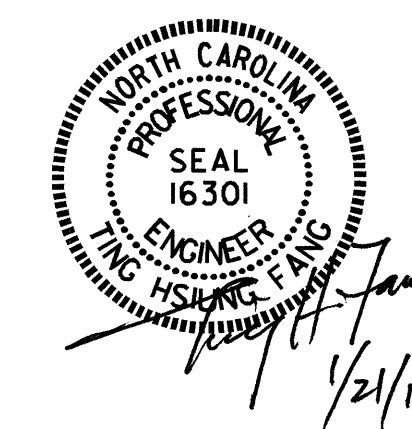
ELEVATION OF WING (W3)



ELEVATION OF WING (W4)

PROJECT NO. U-3621B
 NASH COUNTY
 STATION: 50+77.00 -L-

SHEET 2 OF 3



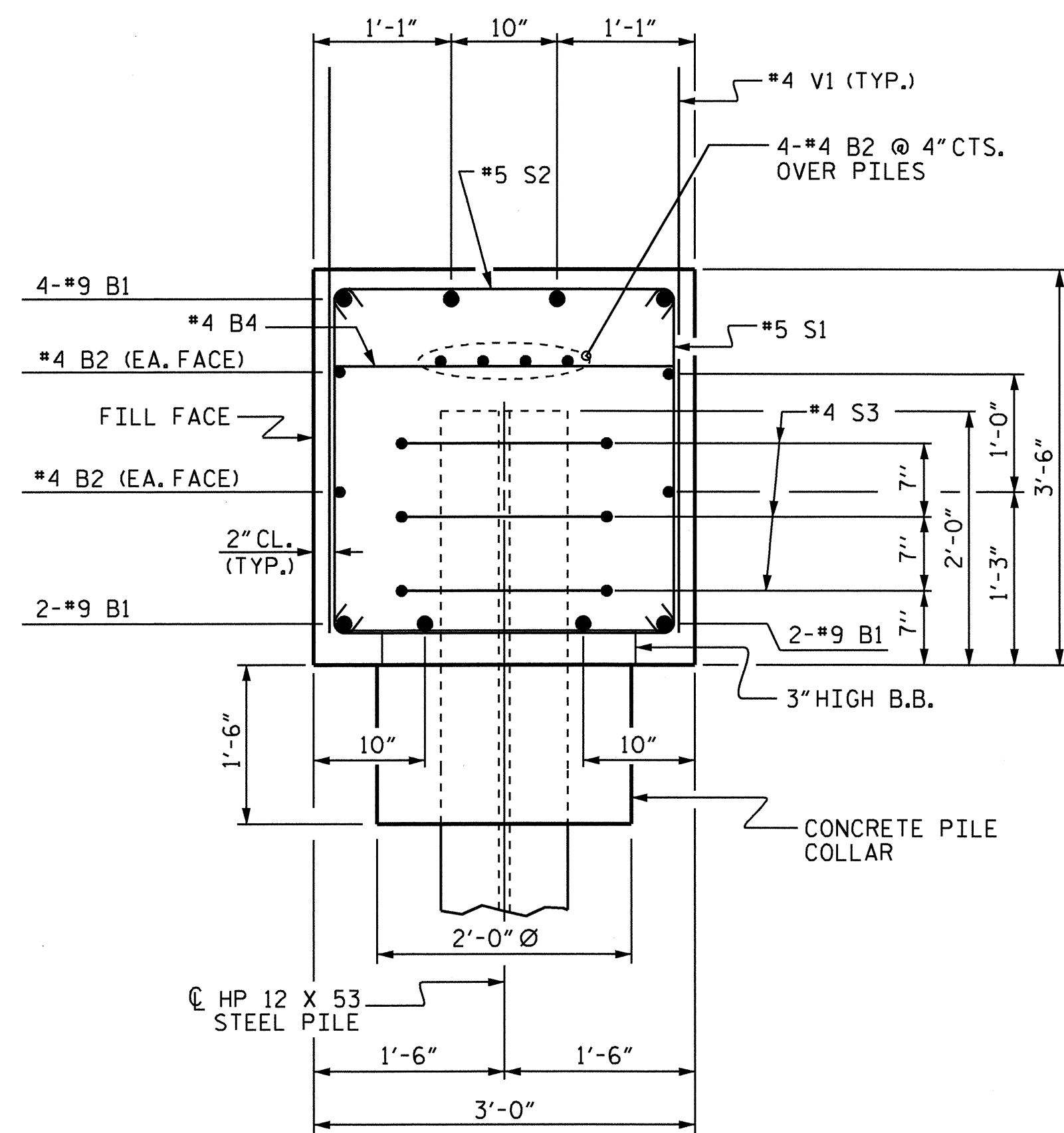
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT 2
 INTEGRAL
 (LEFT LANE)

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-30	
1			3			TOTAL SHEETS	
2			4			68	

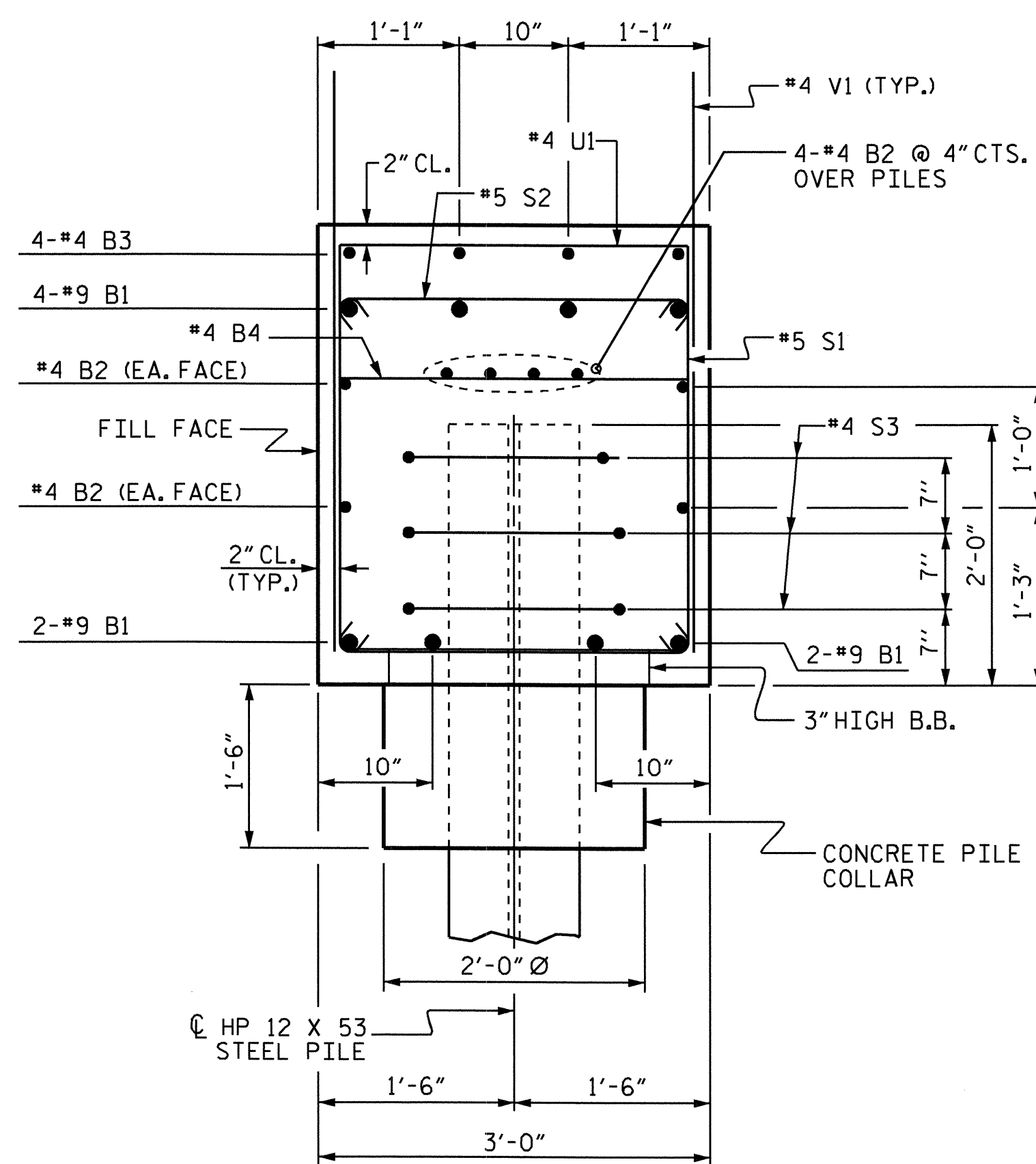
DRAWN BY : QT NGUYEN DATE : 6-09
 CHECKED BY : W.D. CRUTCHER DATE : 4-8-10

19-JAN-2011 10:57
 Y:\TIP\Projects-U\U3621B\Structures\Final Plans\1334\U3621b.sd.e!*.dgn
 Q1nguyen

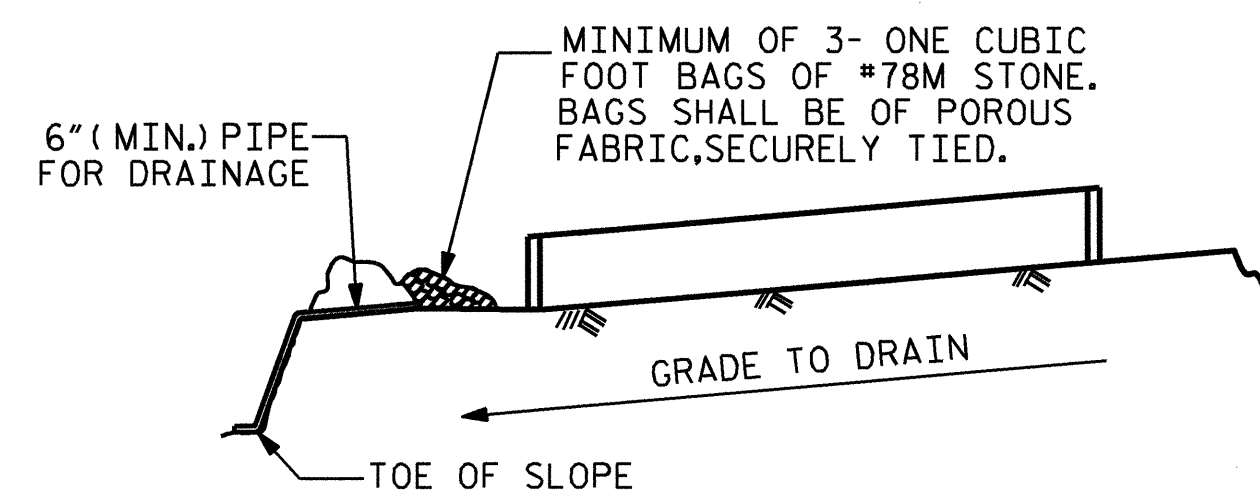
STR #1



SECTION A-A



SECTION B-B

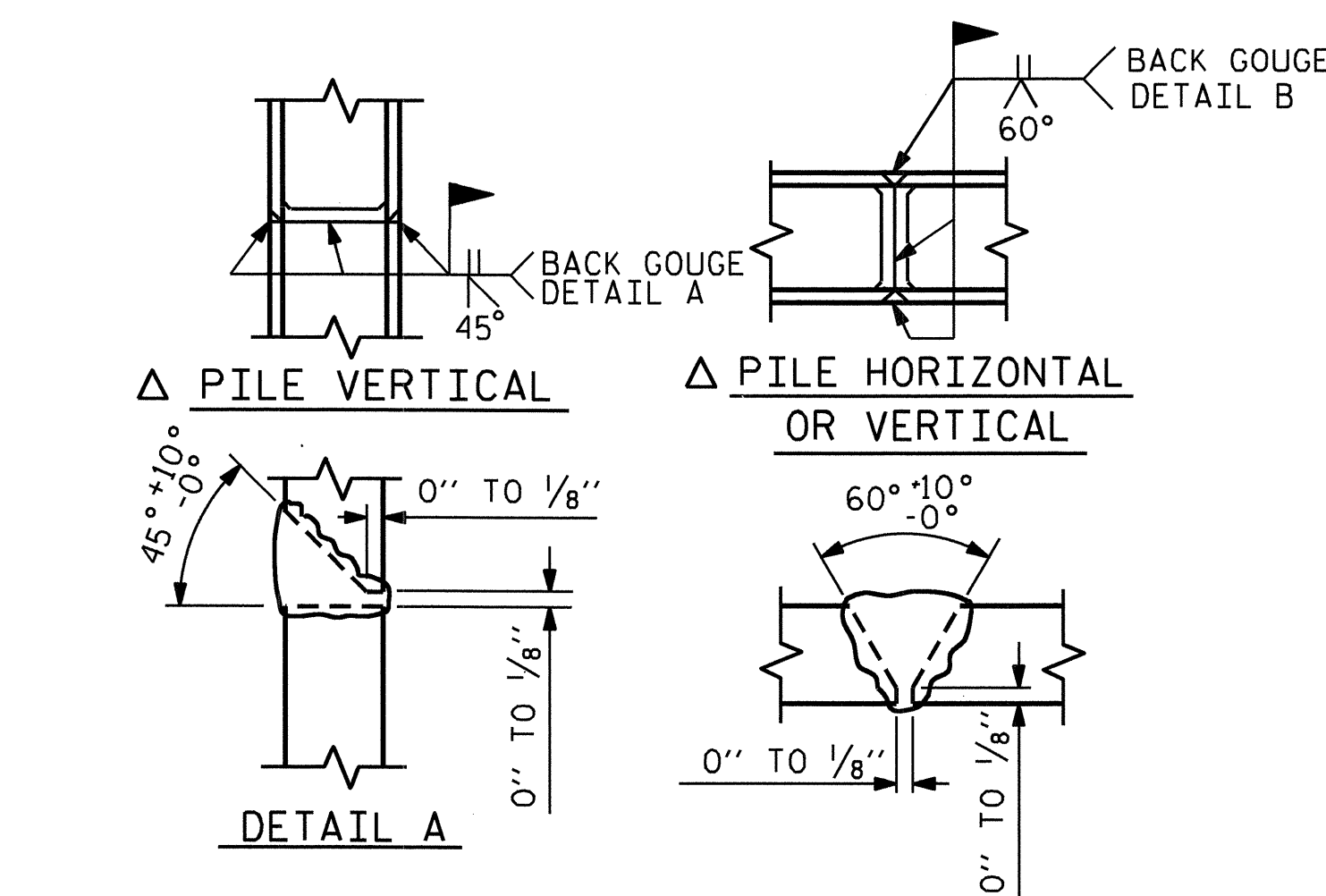


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

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

TEMPORARY DRAINAGE AT END BENT



△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

BILL OF MATERIAL

END BENT 2

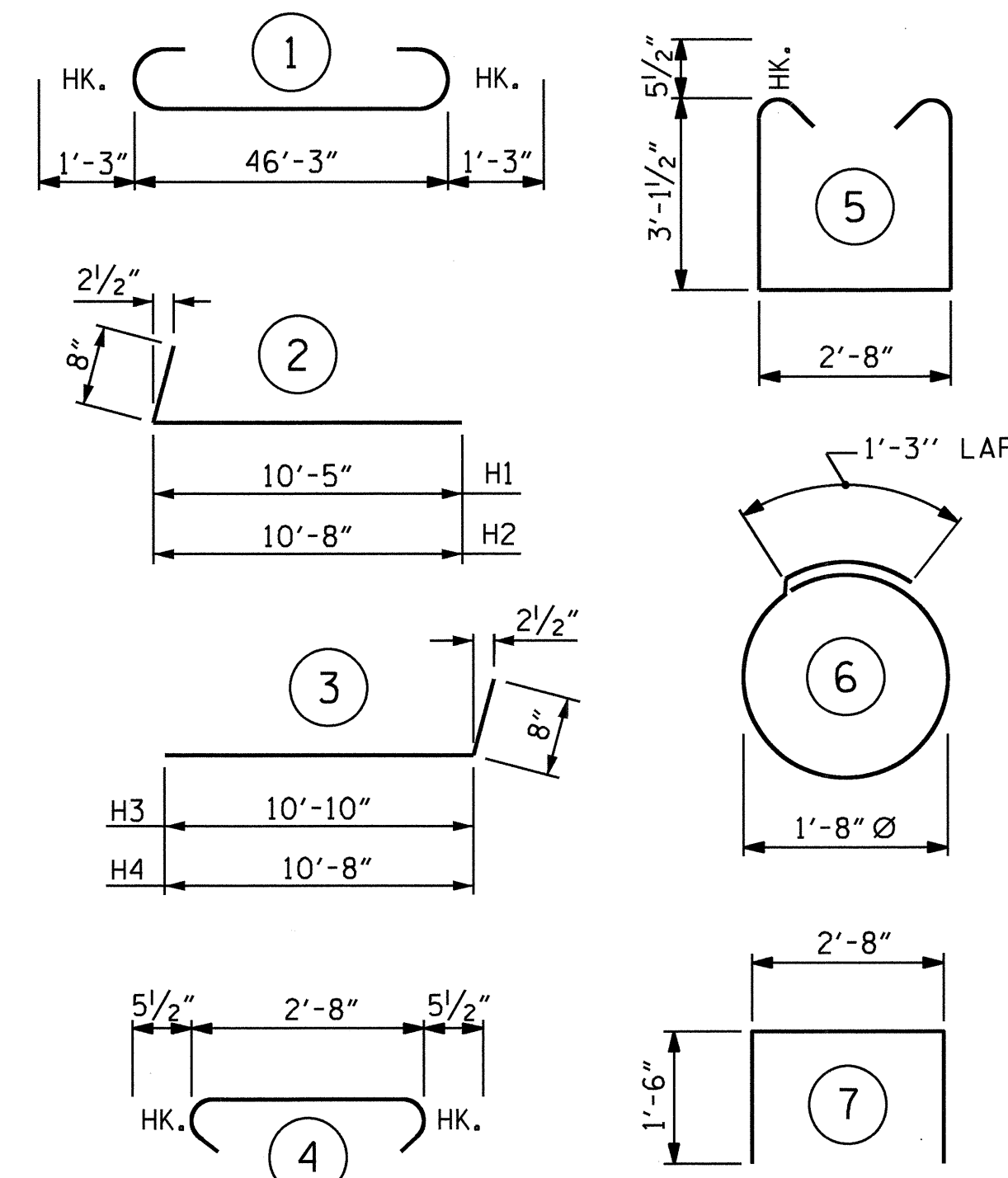
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	48'-9"	1326
B2	16	#4	STR	24'-5"	261
B3	4	#4	STR	18'-7"	50
B4	12	#4	STR	2'-8"	21
H1	5	#4	3	11'-1"	37
H2	5	#4	3	11'-4"	38
H3	4	#4	2	11'-6"	31
H4	4	#4	2	11'-4"	30
S1	42	#5	5	9'-10"	431
S2	42	#5	4	3'-7"	157
S3	18	#4	6	6'-6"	78
U1	13	#4	7	5'-8"	49
V1	124	#4	STR	6'-0"	497

REINFORCING STEEL = 3006 LBS

CLASS A CONCRETE BREAKDOWN :
CAP, LOWER WINGS, & COLLARS = 23.0 C.Y.

HP 12 X 53 STEEL PILES :
No. 6 LIN. FT. 330

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

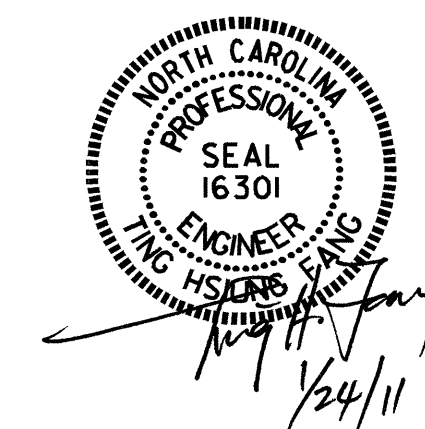
PROJECT NO. U-3621B
NASH COUNTY
STATION: 50+77.00 -L-

SHEET 3 OF 3

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

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

TOTAL SHEETS: 68



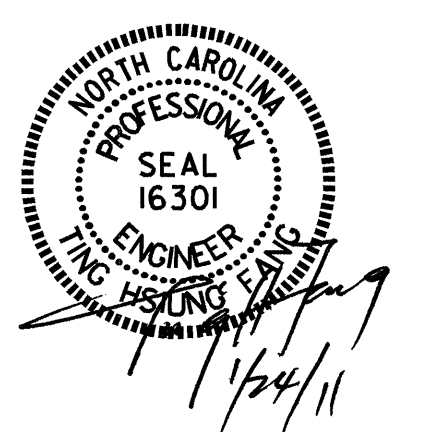
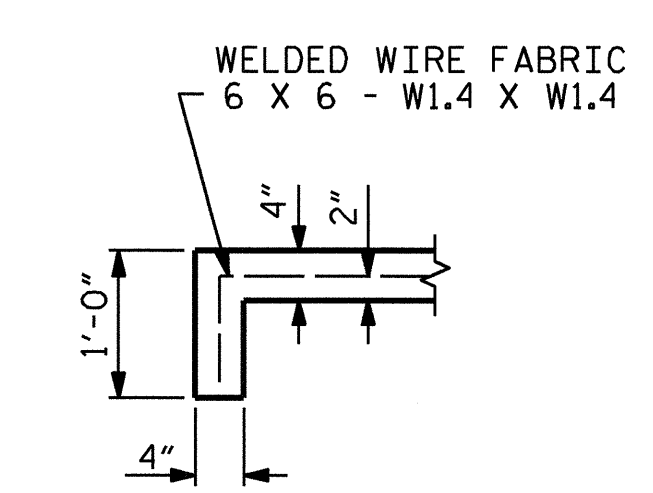
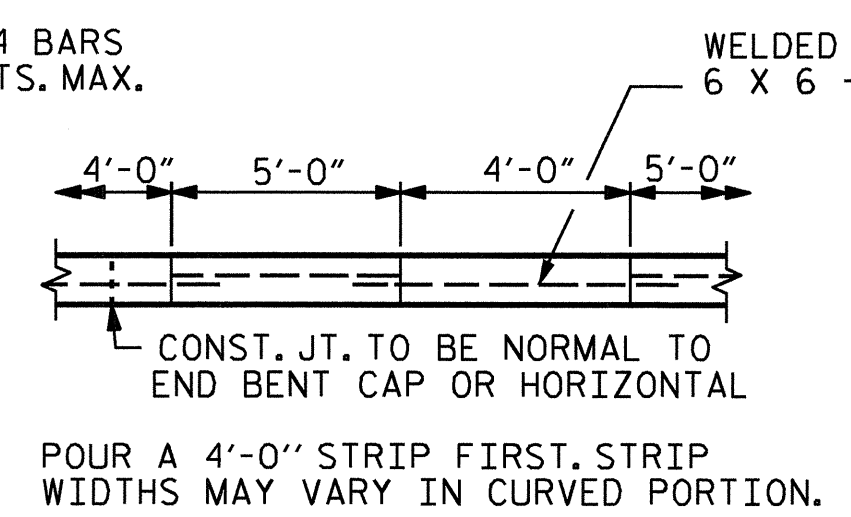
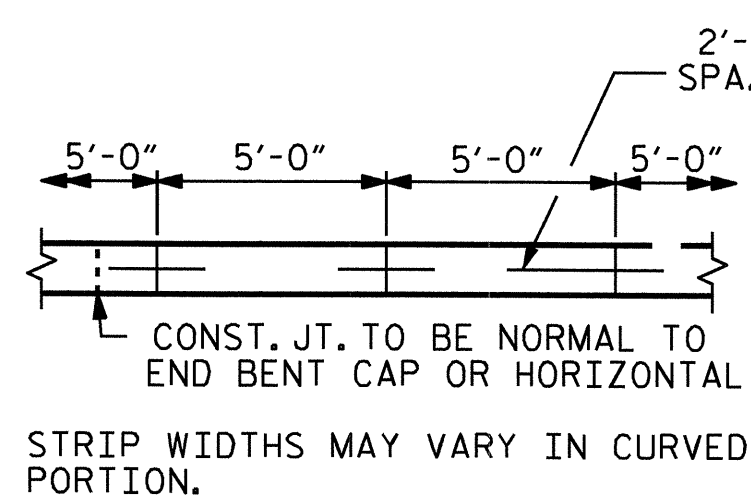
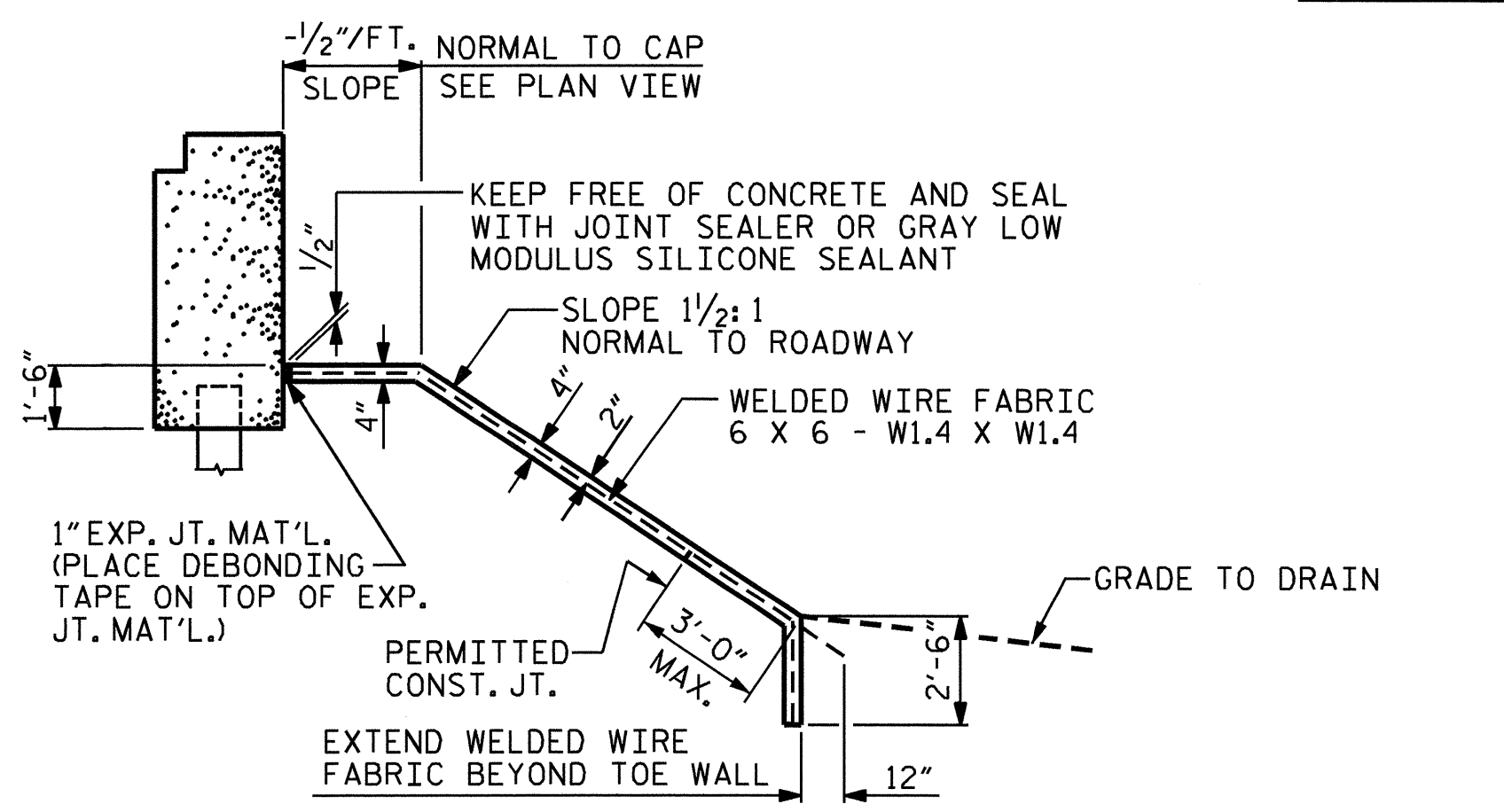
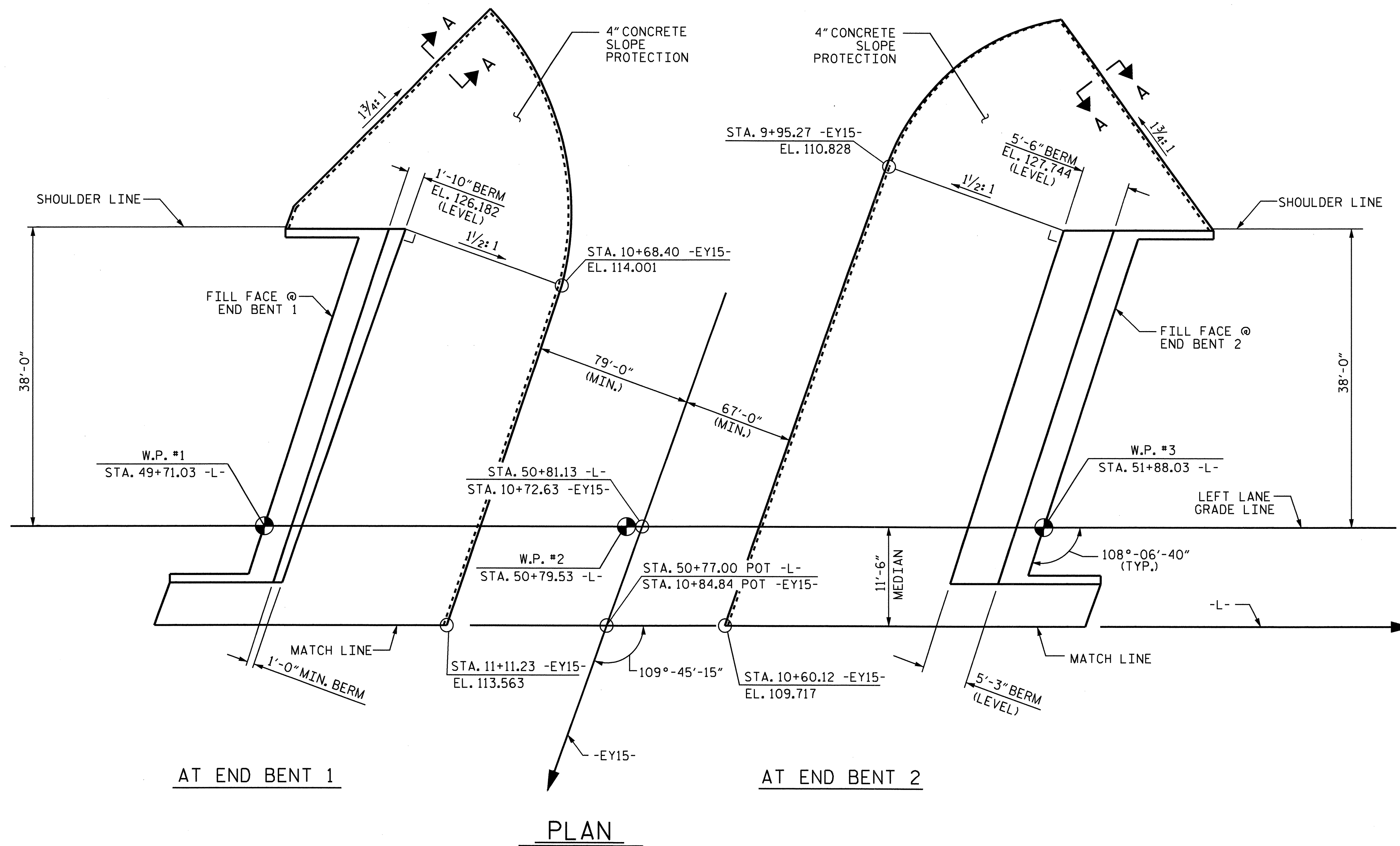
DRAWN BY : QT NGUYEN DATE : 6-09
CHECKED BY : RAMAN PATEL DATE : 4-08-10

NOTES

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. 50+77.00 (LEFT LANE)	4" INCH SLOPE PROTECTION * WELDED WIRE FABRIC 60 INCHES WIDE	
	SQUARE YARDS	APPROX. L.F.
END BENT 1	225	450
END BENT 2	350	700

* QUANTITY SHOWN IS BASED ON 5' POURS.

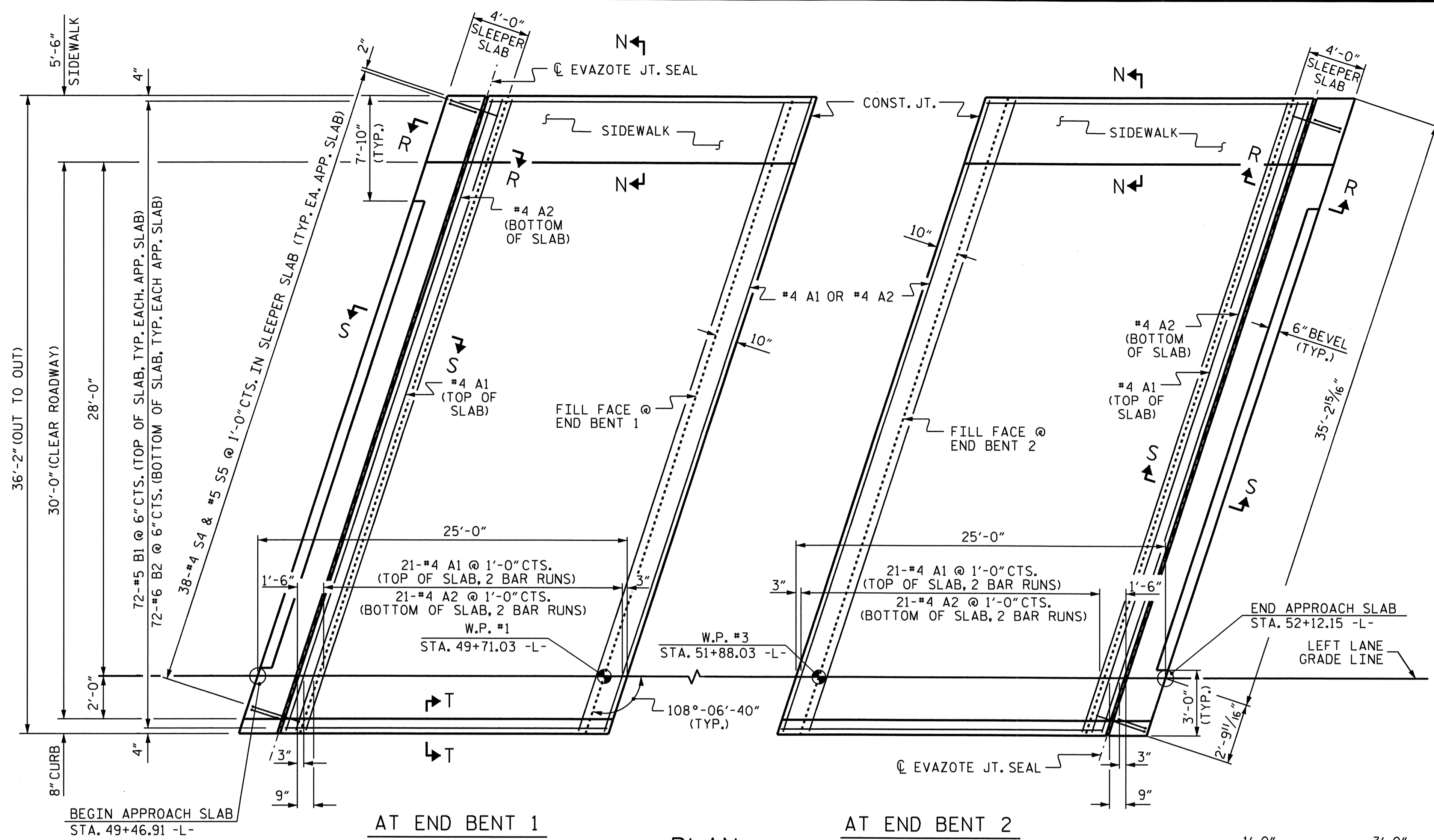


PROJECT NO. U-3621B
NASH COUNTY
 STATION: 50+77.00 -L-

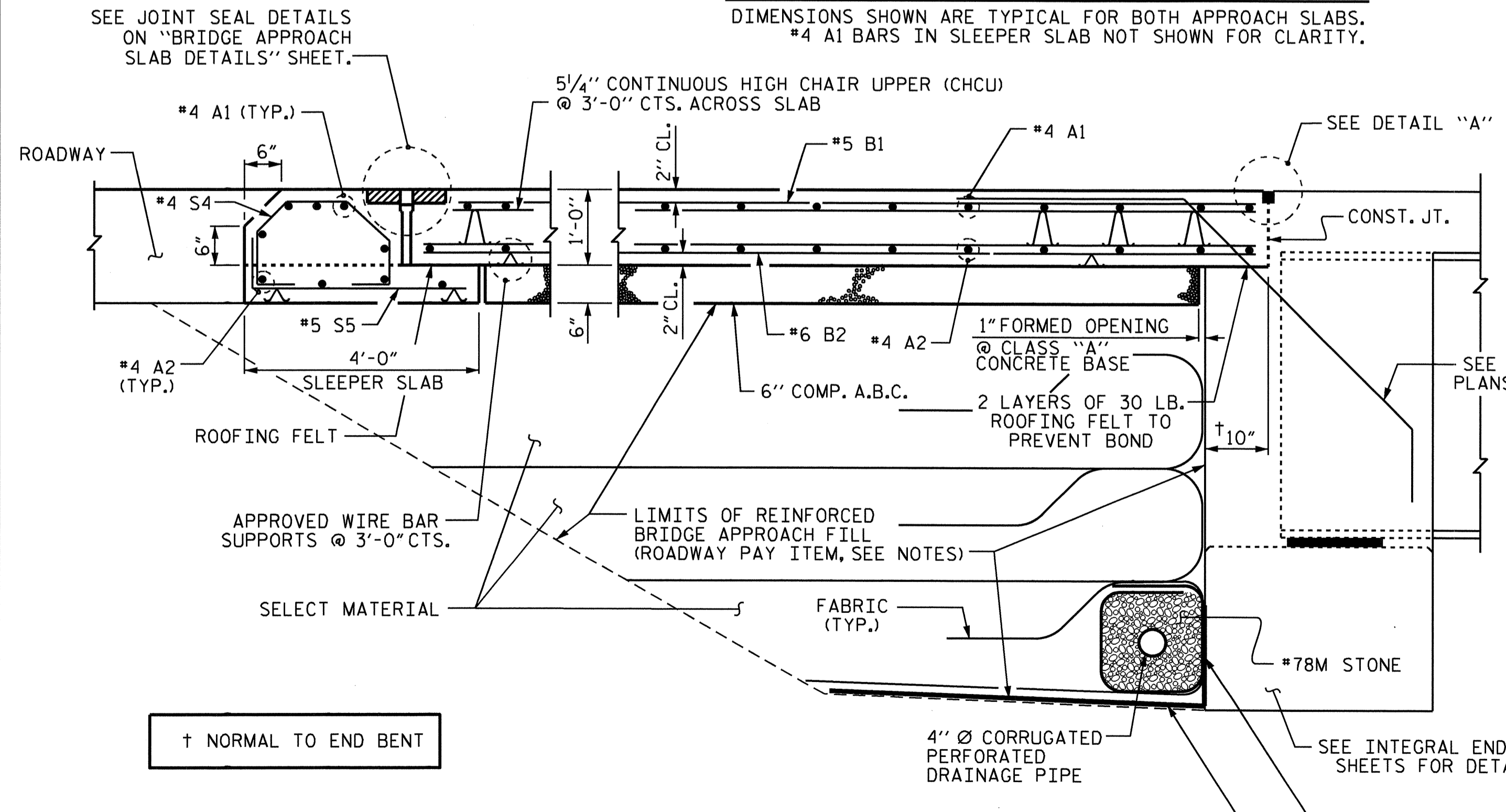
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
**SLOPE PROTECTION
 DETAILS**
 (LEFT LANE)

ASSEMBLED BY : HARISH SHAH	DATE : 06/16/09
CHECKED BY : A.R. CHESSON	DATE : 07/09
DRAWN BY : ELR 5/92	REV. 7/10/01 LES/RDR
CHECKED BY : GRP 6/92	REV. 5/1/03 RWW/JTE
	REV. 5/1/06 TLA/GM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-32
1			3			TOTAL SHEETS
2			4			68



PLAN
DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS.
#4 A1 BARS IN SLEEPER SLAB NOT SHOWN FOR CLARITY.



SECTION THRU SLAB

ASSEMBLED BY : HARISH SHAH DATE : 6/24/09
CHECKED BY : W.D. CRUTCHER DATE : 4-27-10
DRAWN BY : TLA 10/05
CHECKED BY : GM 5/06

24-JAN-2011 14:26
Y:\TIP\Projects-U\U3621B\Structures\Final Plans\1334-U-3621B.sd.asl.dgn
qtnguyen

NOTES

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

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

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

THE 6" COMP. A.B.C. SHALL BE FLUSH WITH THE SLEEPER SLAB AND SHALL EXTEND 1'-0" OUTSIDE OF EACH EDGE OF THE APPROACH SLAB.

THE CONTRACTOR MAY USE 4" TYPE B-25.0B ASPHALT CONCRETE BASE COURSE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE BASE COURSE SHALL BE FLUSH WITH THE SLEEPER SLAB, AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB.

THE CONTRACTOR MAY USE 5" CLASS "A" CONCRETE BASE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE CONCRETE BASE SHALL BE FLUSH WITH THE SLEEPER SLAB, AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB. THE CONCRETE SHALL BE FINISHED TO A SMOOTH SURFACE AND A LAYER OF 30 LB ROOFING FELT SHALL BE PLACED BETWEEN THE CONCRETE BASE AND THE APPROACH SLAB TO PREVENT BOND. THE APPROACH SLAB SHALL NOT BE CAST UNTIL THE CONCRETE BASE HAS REACHED AN AGE OF THREE CURING DAYS.

THE VERTICAL JOINT ON THE RIGHT AND LEFT SIDE OF THE APPROACH SLAB AT THE ENDS OF THE EVAZOTE JOINT SHALL BE FILLED WITH SILICONE OR OTHER APPROVED MATERIAL IN ORDER TO PREVENT BACKFILL FROM ENTERING THE JOINT OPENING.

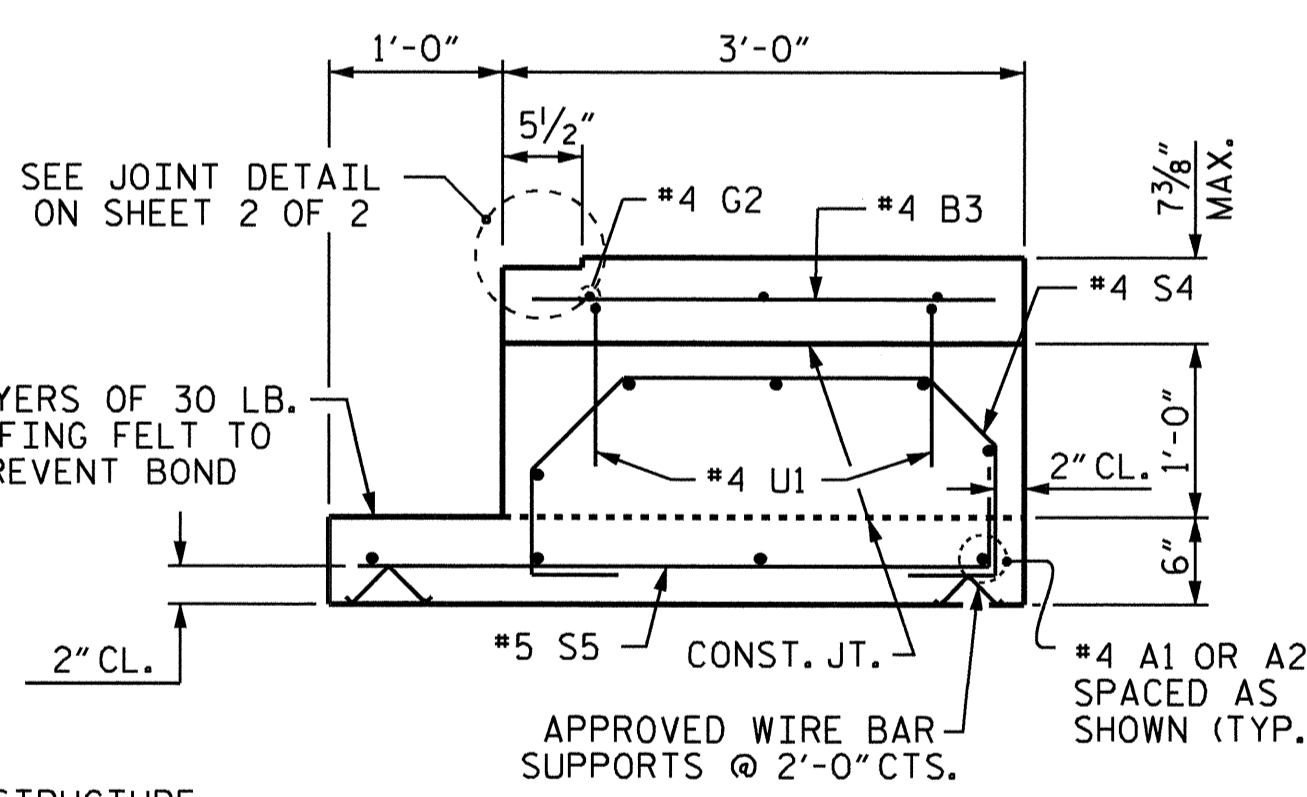
THE JOINT OPENING AT THE APPROACH SLAB/DECK INTERFACE SHALL BE SAWS NOT MORE THAN 12 HOURS AFTER THE APPROACH SLAB IS CAST. THE JOINT SHALL BE CLEANED OF ALL DEBRIS BEFORE THE SEALANT IS APPLIED. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF TYPE SL LOW MODULUS SILICONE SEALANT.

WITH EVAZOTE JOINT SEAL

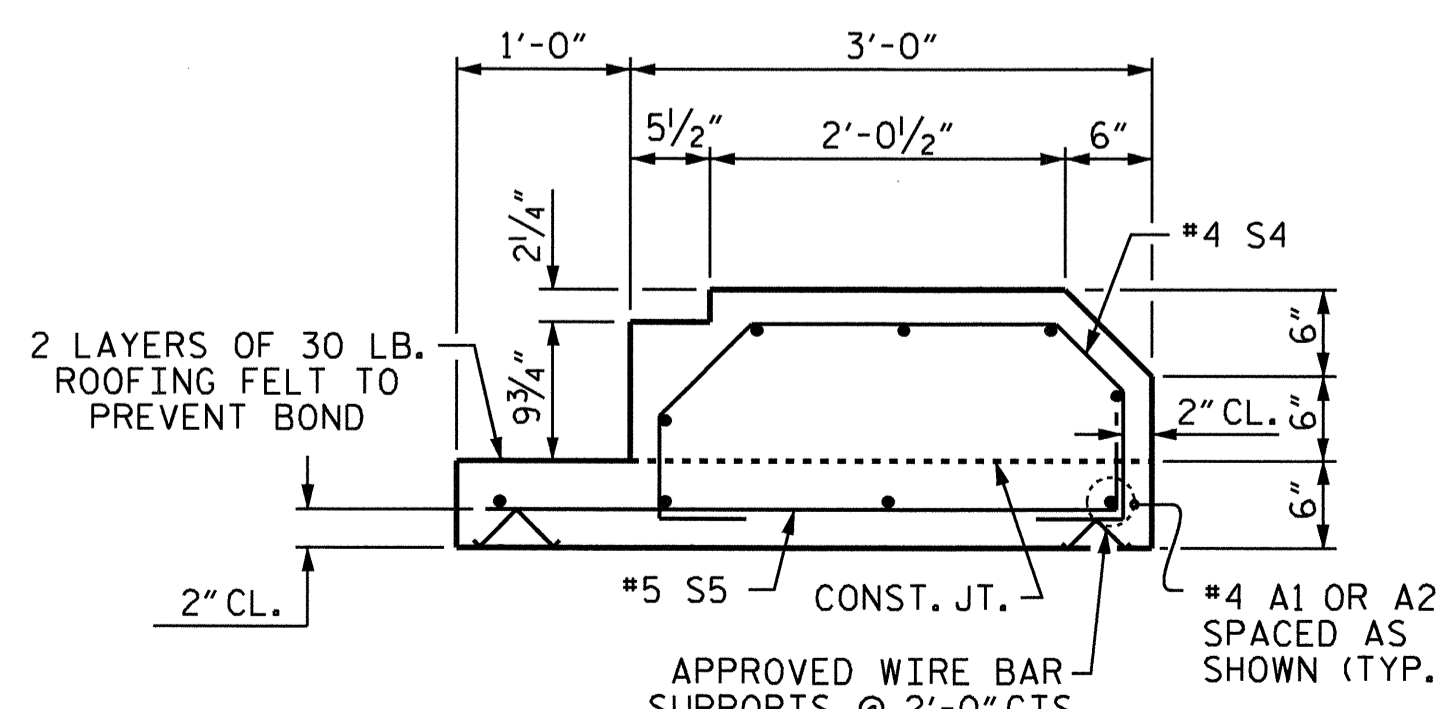
FOR EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS.

THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE EVAZOTE JOINT SEAL SHALL BE 2 1/2".

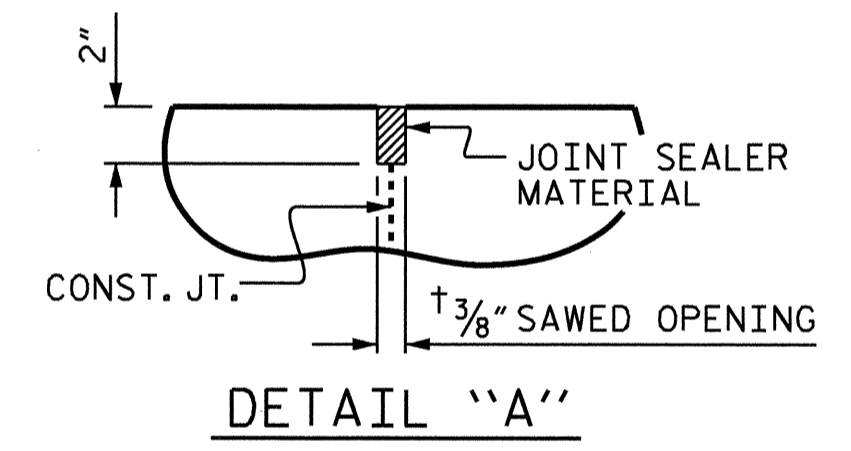
FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.



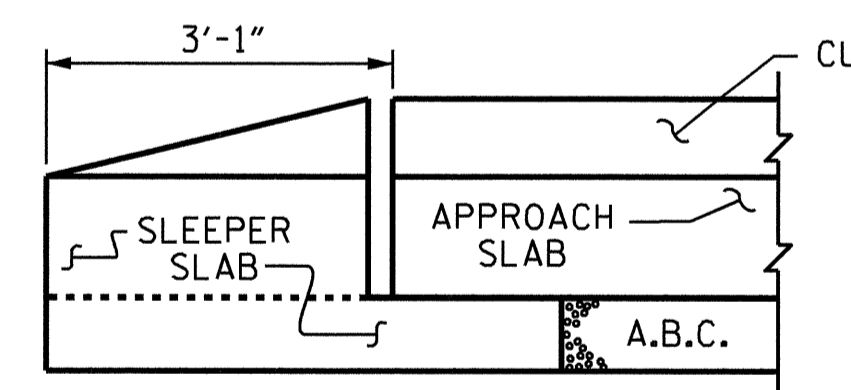
SECTION R-R
SHOWING SIDEWALK ON SLEEPER SLAB



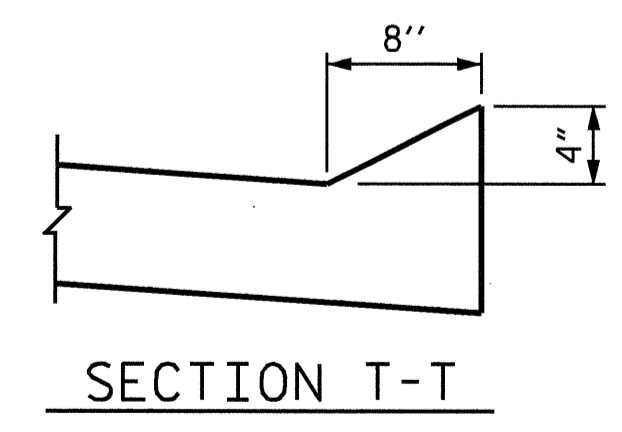
SECTION S-S
SHOWING SLEEPER SLAB



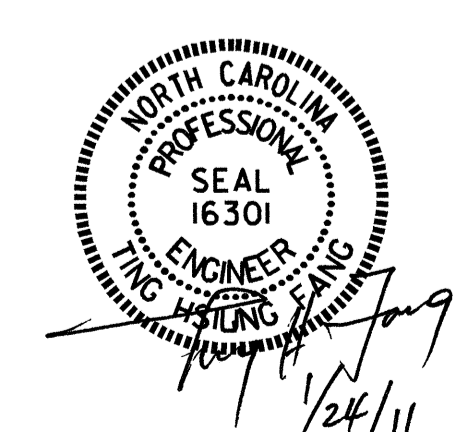
DETAIL "A"



END OF CURB WITHOUT SHOULDER BERM GUTTER



SECTION T-T



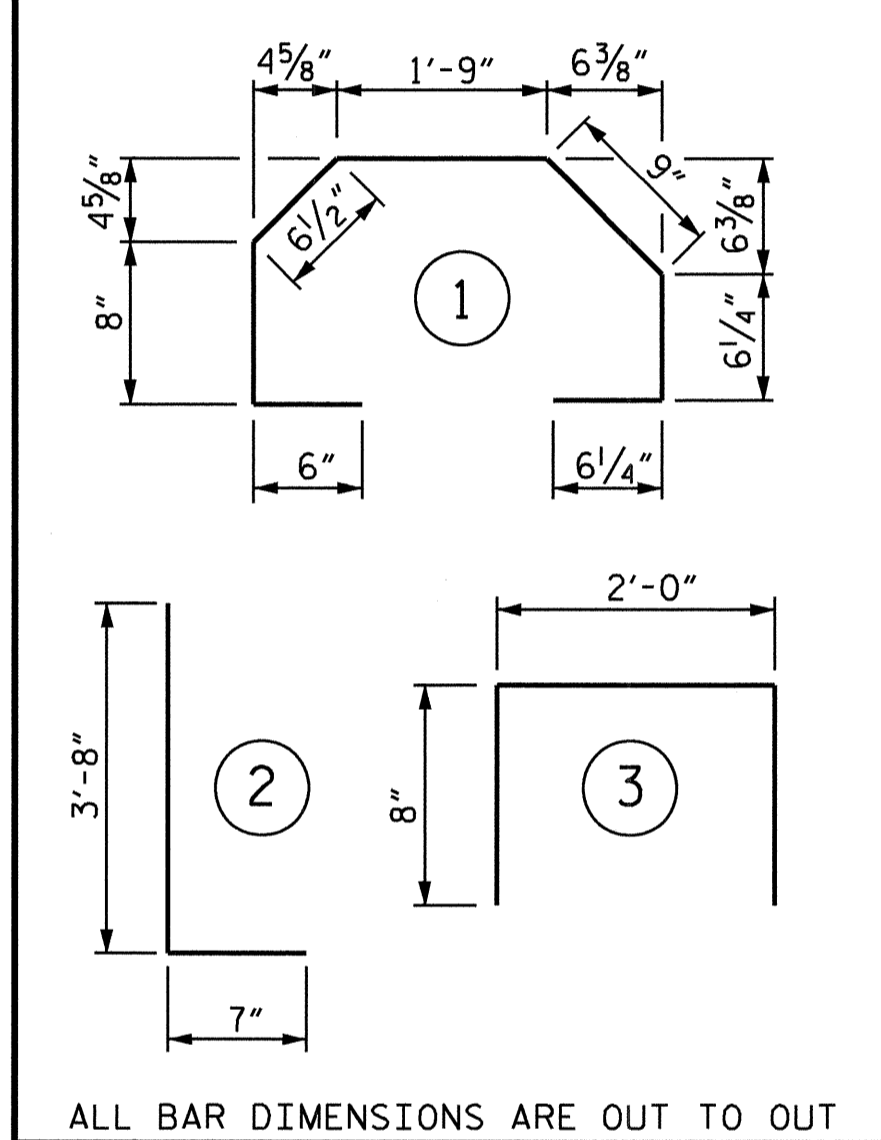
BILL OF MATERIAL

FOR ONE APPROACH SLAB (2 REQ'D)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	56	#4	STR	19'-10"	742
A2	54	#4	STR	19'-9"	712
* B1	72	#5	STR	20'-11"	1571
B2	72	#6	STR	21'-5"	2317
* B3	5	#4	STR	2'-6"	9
* G2	3	#4	STR	5'-0"	10
* S4	38	#4	1	5'-3"	133
S5	38	#5	2	4'-3"	168
* U1	4	#4	3	3'-4"	9

REINFORCING STEEL	LBS.	3197
* EPOXY COATED REINFORCING STEEL	LBS.	2474
CLASS AA CONCRETE		
POUR #1 - SLEEPER SLAB	C. Y.	3.3
POUR #2 - SLAB & CURB	C. Y.	29.5
TOTAL	C. Y.	32.8

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

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

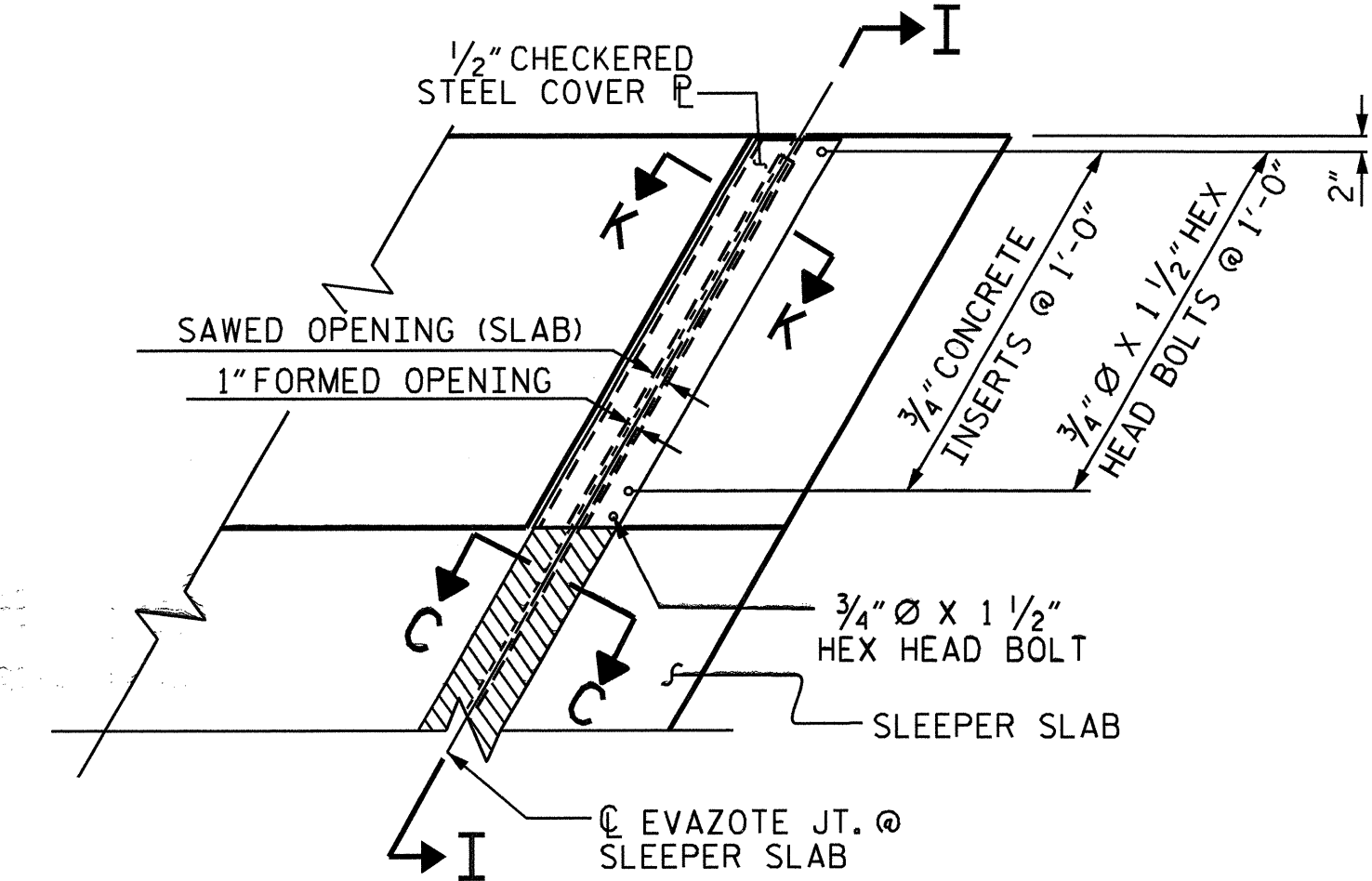
PROJECT NO. U-3621B
NASH COUNTY
STATION: 50+77.00 -L-

SHEET 1 OF 2

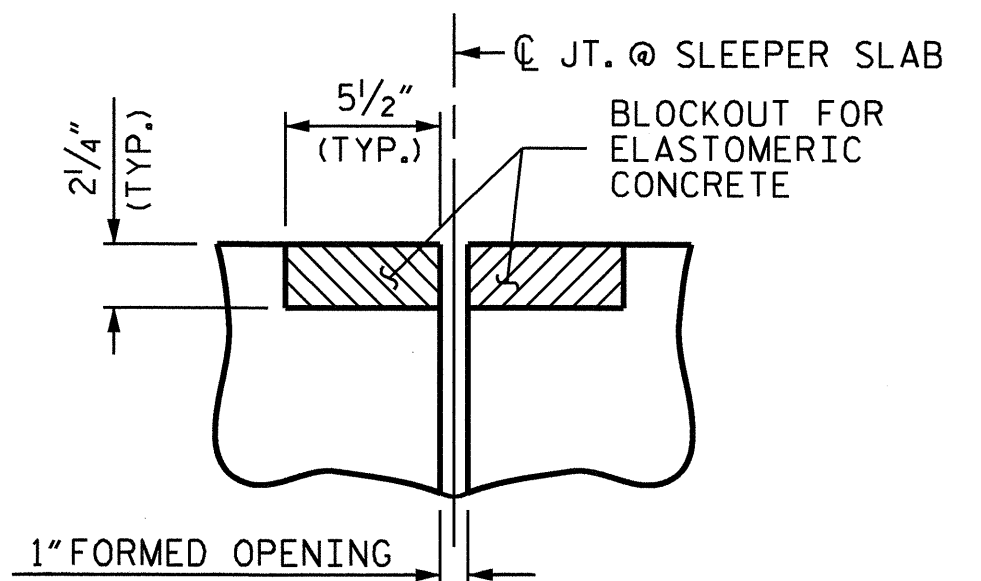
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
BRIDGE APPROACH SLAB
FOR INTEGRAL ABUTMENT
(LEFT LANE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-33
1			3			TOTAL SHEETS 68
2			4			

STR. #1 STD. NO. BAS11 (SHT 11)



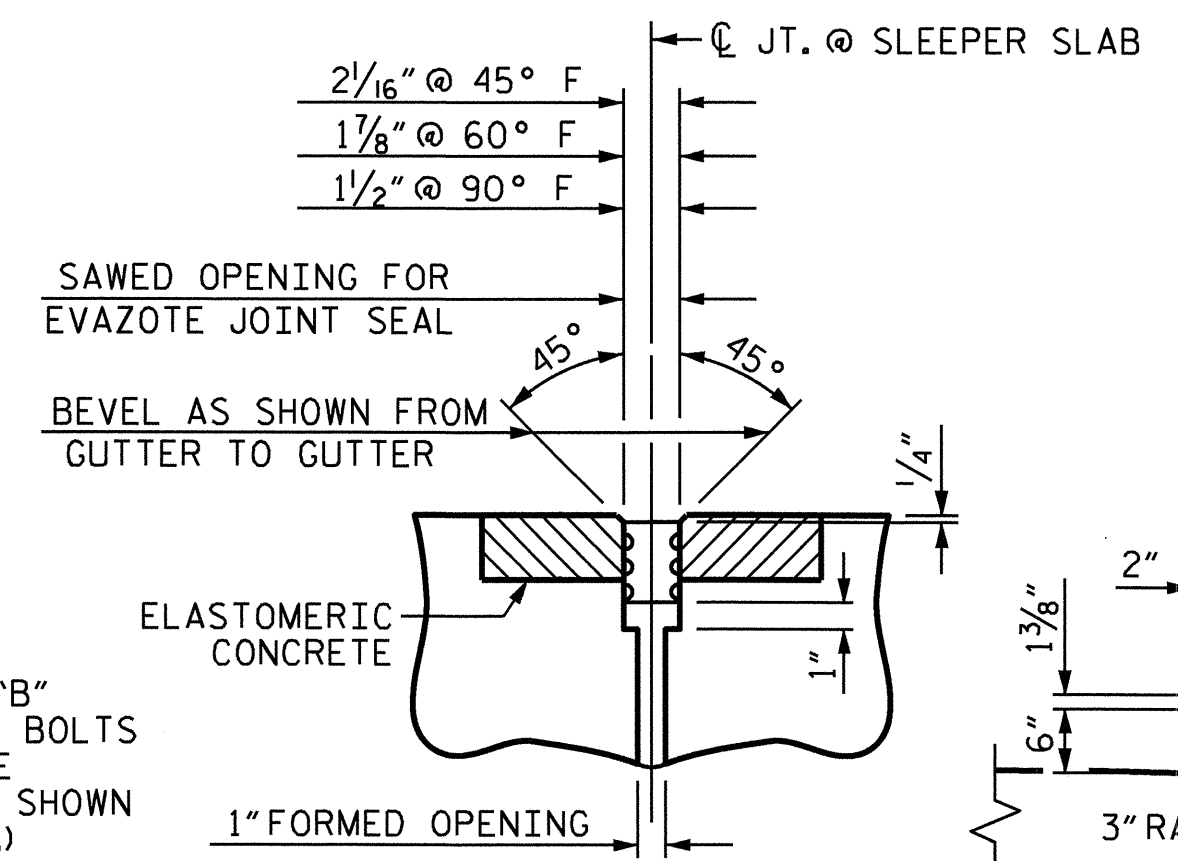
PLAN VIEW OF EVAZOTE JOINT SEAL @ SLEEPER SLAB FOR SIDEWALK



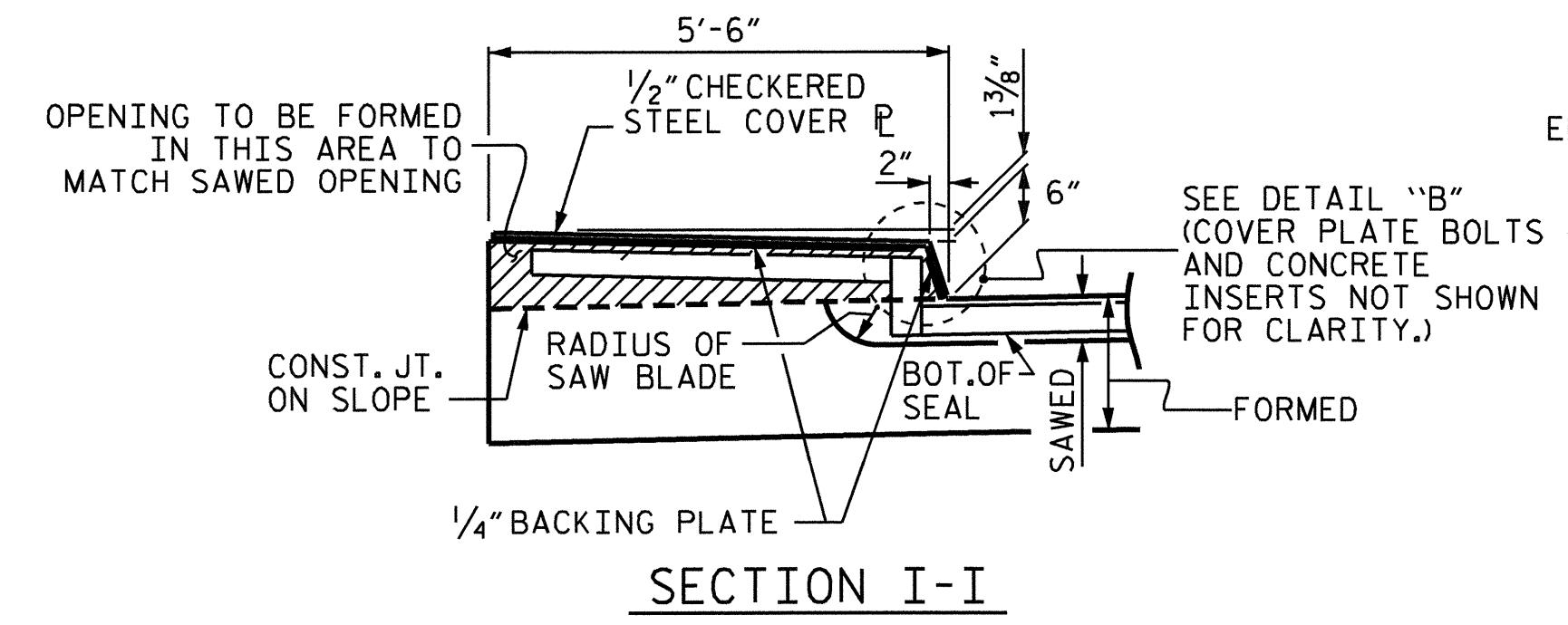
SECTION C-C EVAZOTE JOINT SEAL (PRE-SAWED ELASTOMERIC CONCRETE DIMENSIONS)

ELASTOMERIC CONCRETE	
END BENT	ELASTOMERIC CONCRETE * (CU. FT.)
1	5.4
2	5.4
TOTAL	10.8

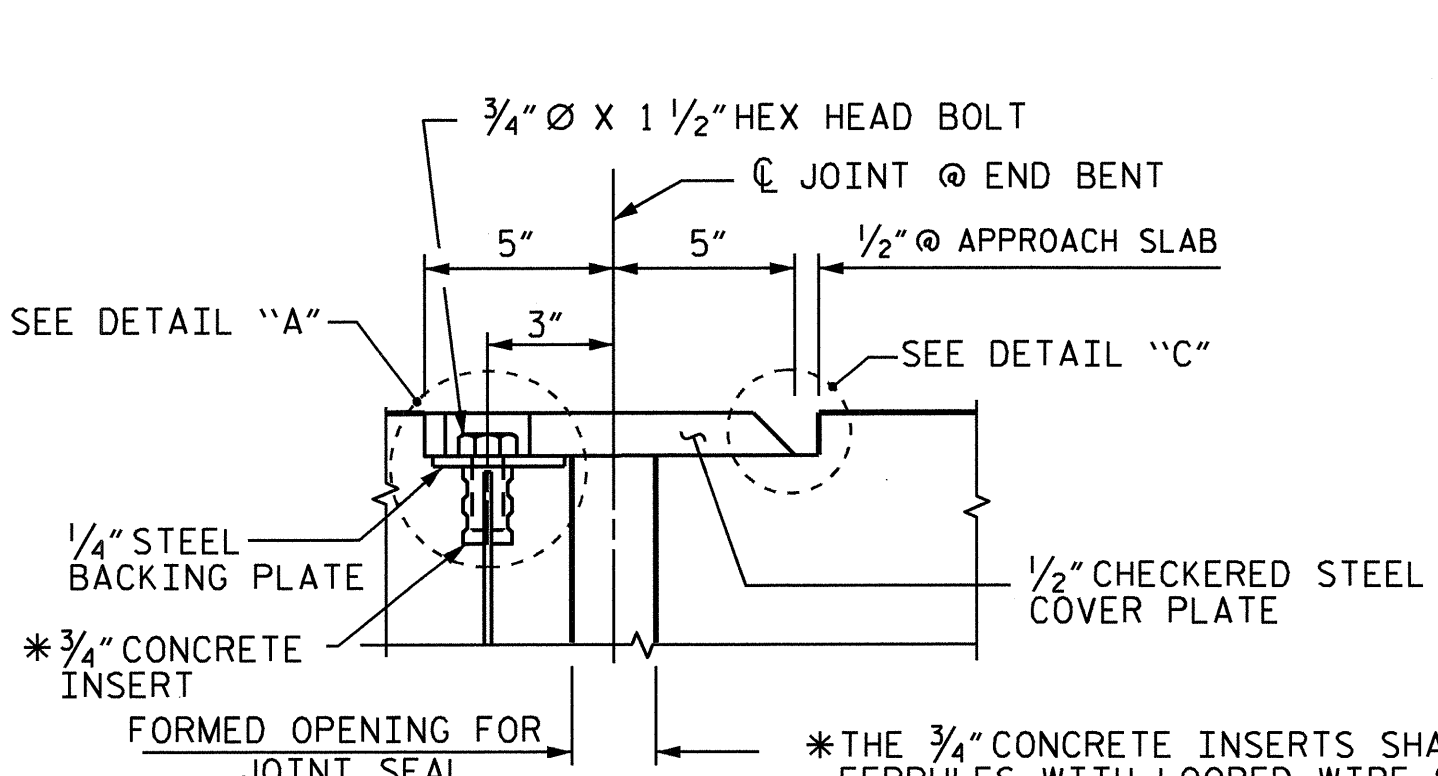
* BASED ON THE MINIMUM BLOCKOUT SHOWN.



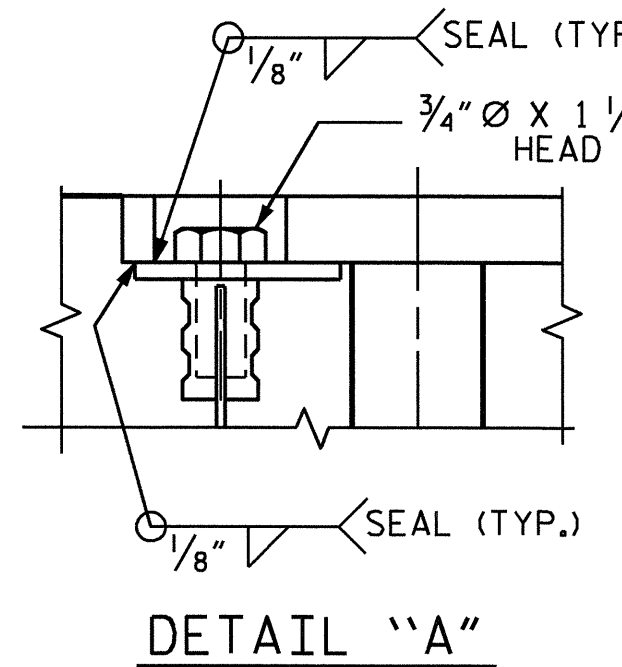
SECTION C-C EVAZOTE JOINT SEAL (EXPANSION)



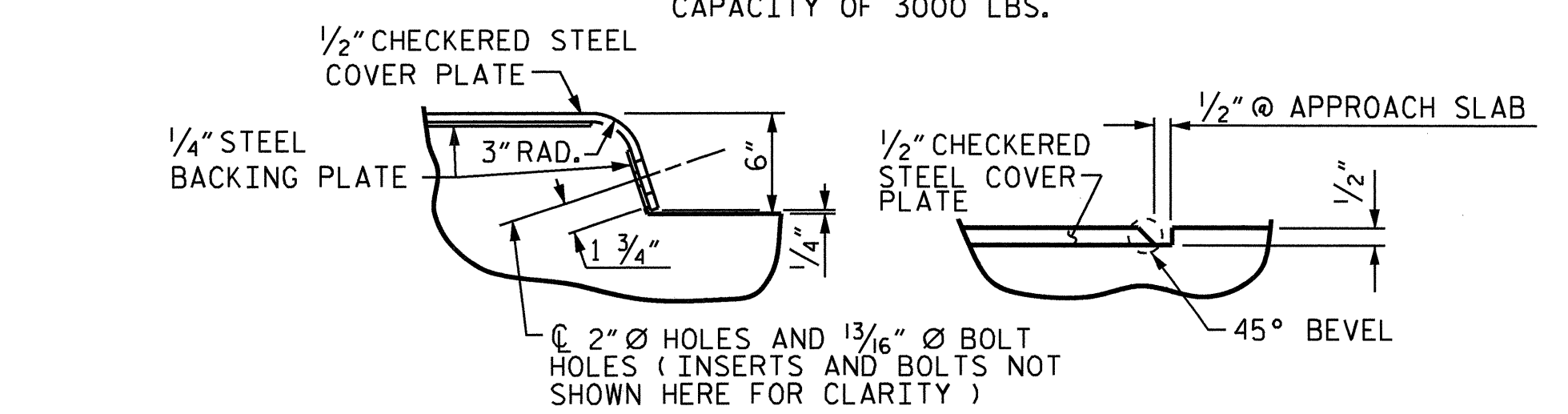
SECTION I-I



SECTION K-K



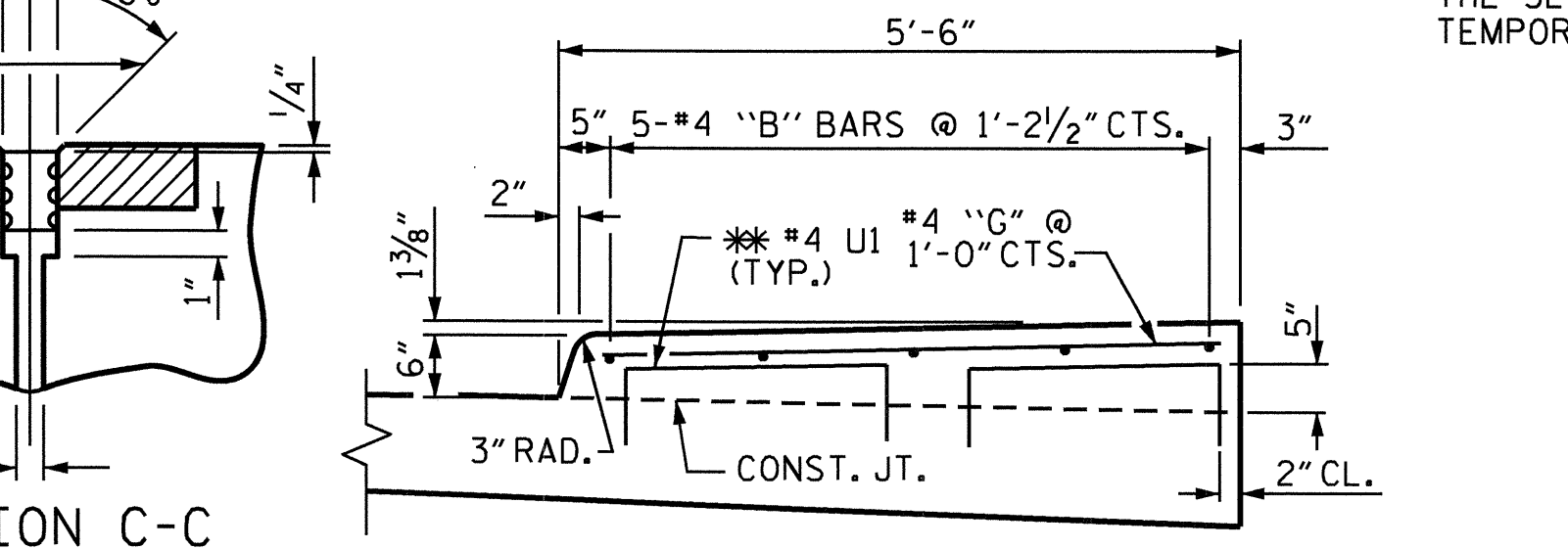
DETAIL "A"



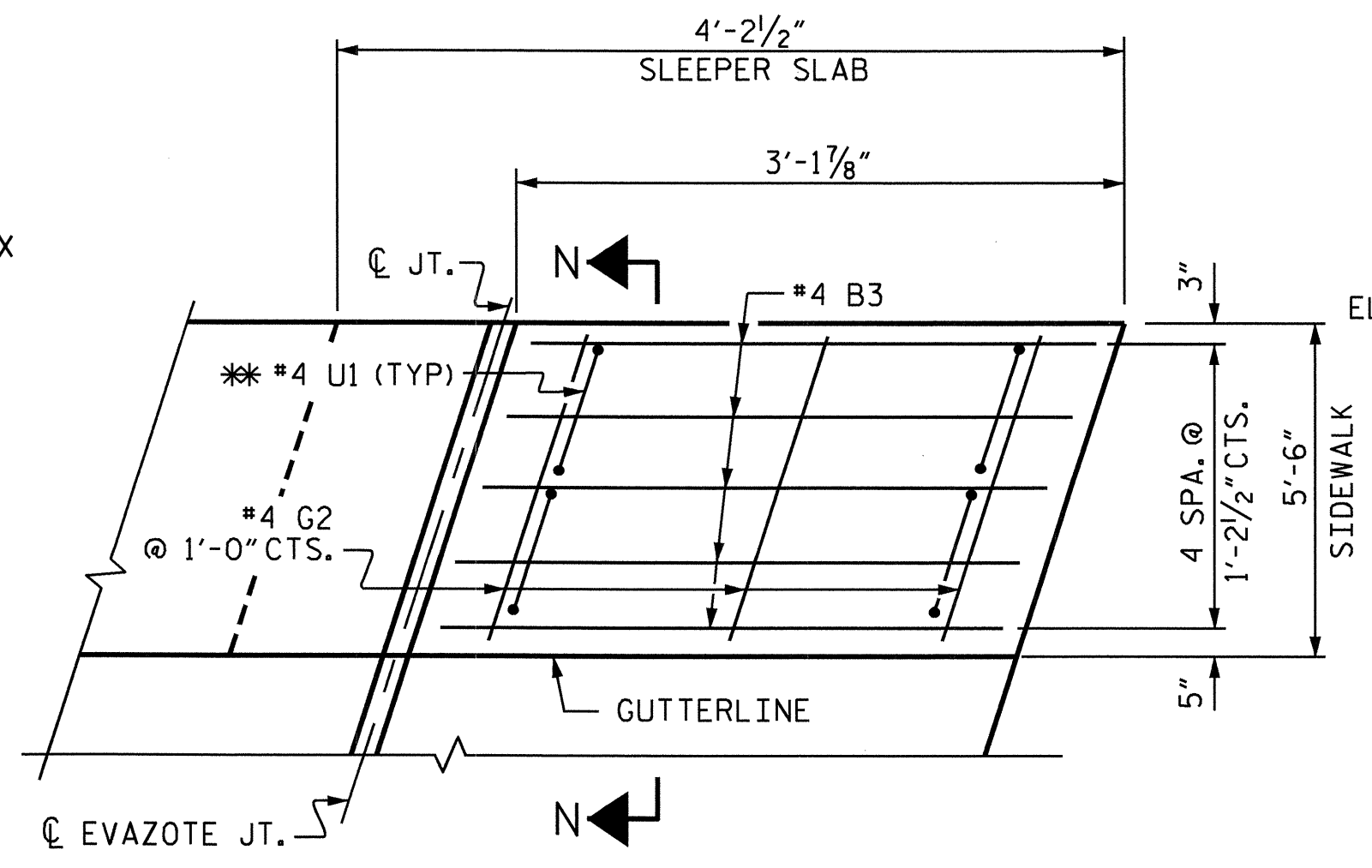
DETAIL "B"

DETAIL "C"

JOINT SEAL DETAILS @ SLEEPER SLAB (FOR SIDEWALK)



SECTION N-N



PLAN

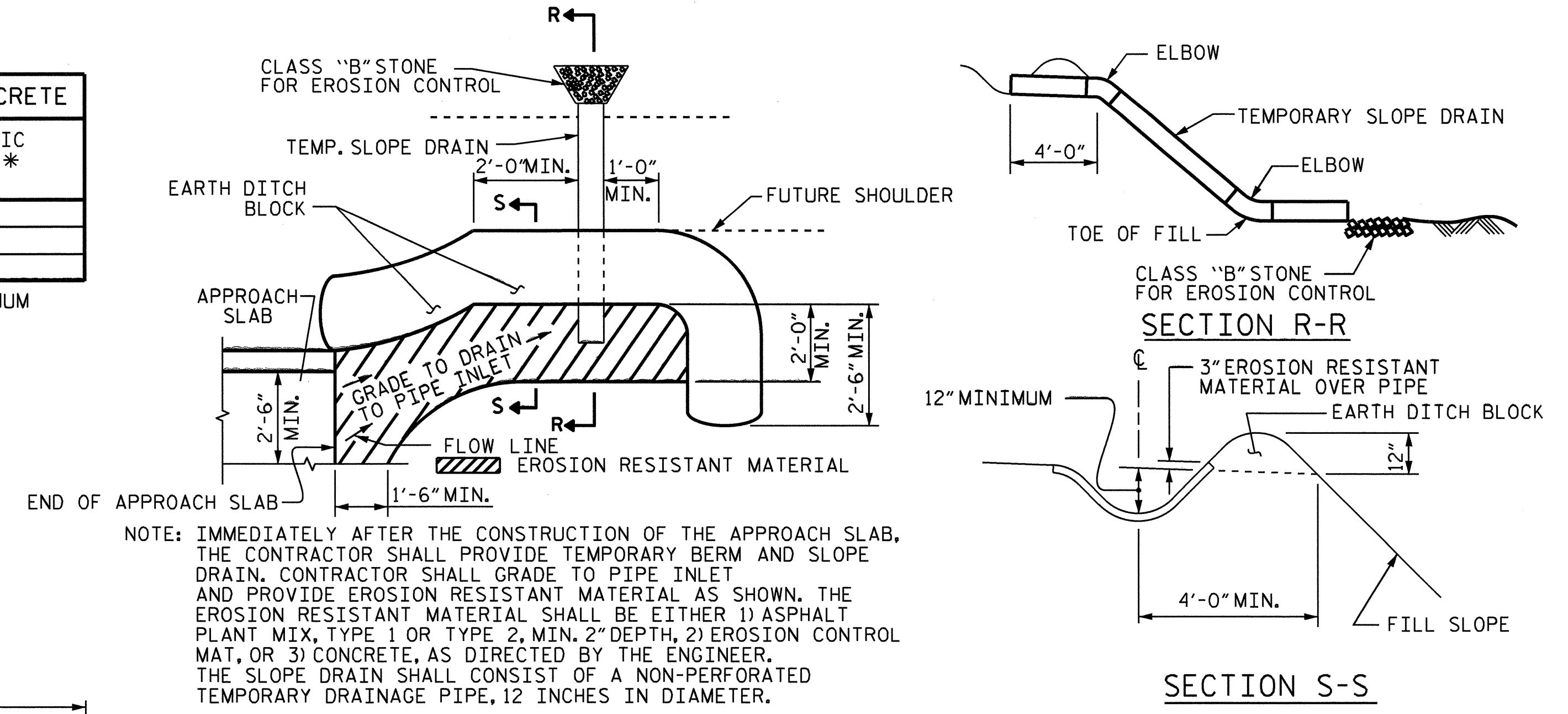
SIDEWALK DETAILS ON SLEEPER SLAB

COVER PLATE NOTES

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

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

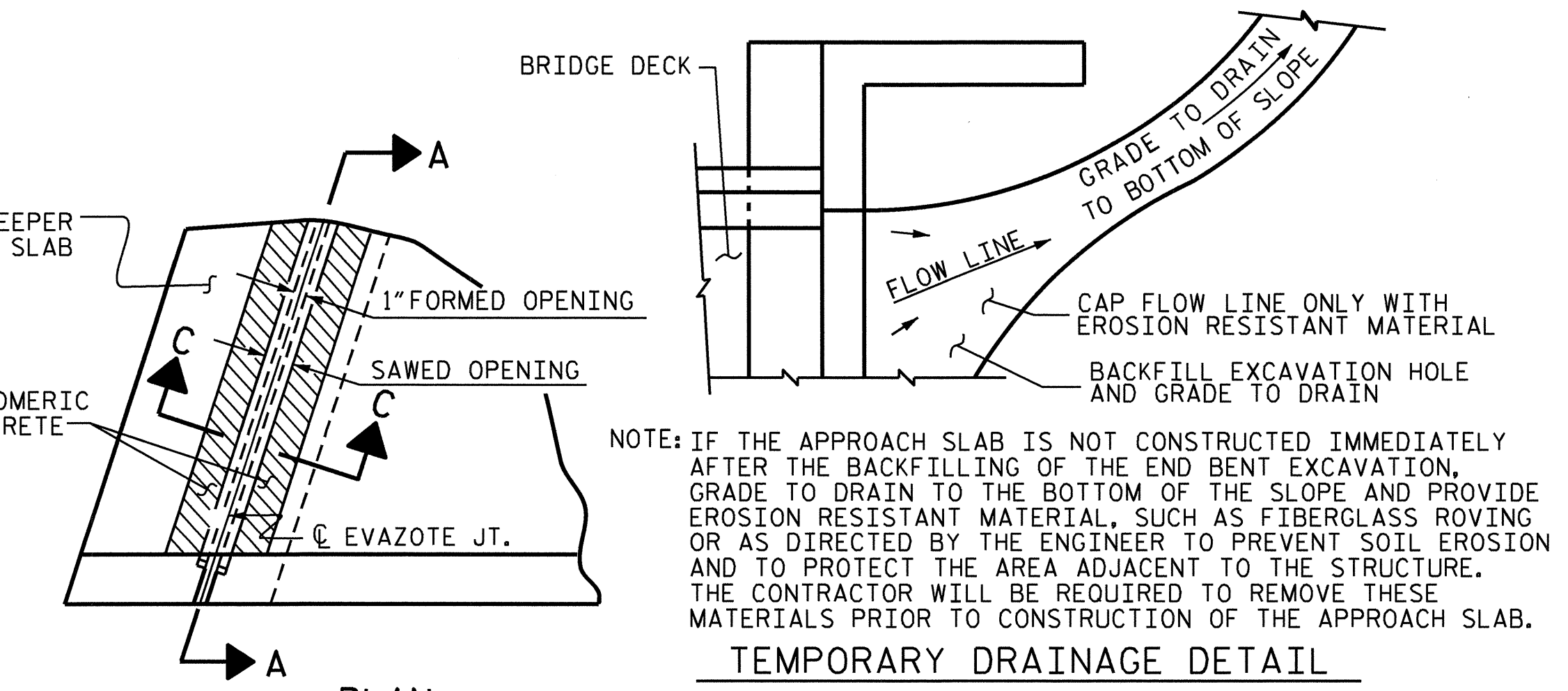
NO SEPARATE PAYMENT WILL BE MADE FOR FURNISHING AND INSTALLING THE COVER PLATE. THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE LUMP SUM PRICE FOR "EVAZOTE JOINT SEALS".



PLAN VIEW

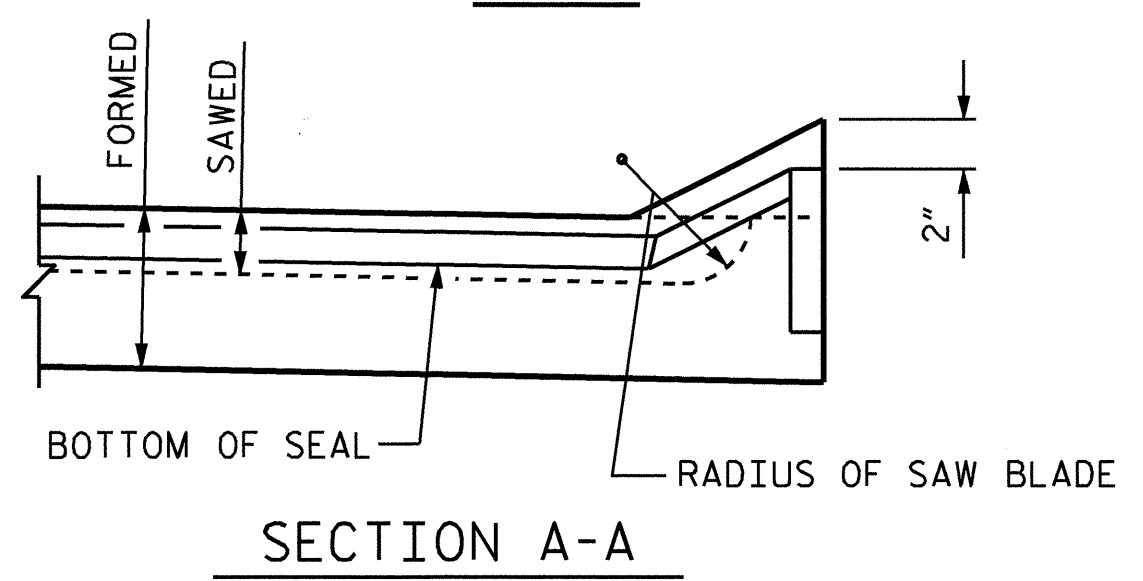
TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



PLAN

TEMPORARY DRAINAGE DETAIL



SECTION A-A

CURB DETAILS

ASSEMBLED BY :	HARISH SHAH	DATE :	6/24/09
CHECKED BY :	W.D. CRUTCHER	DATE :	4-27-10
DRAWN BY :	FCJ	11/88	REV. 10/17/00
CHECKED BY :	ARB	11/88	REV. 5/7/03
			REV. 5/1/06R
			RWW/LES
			RWW/JTE
			MAA/KMM

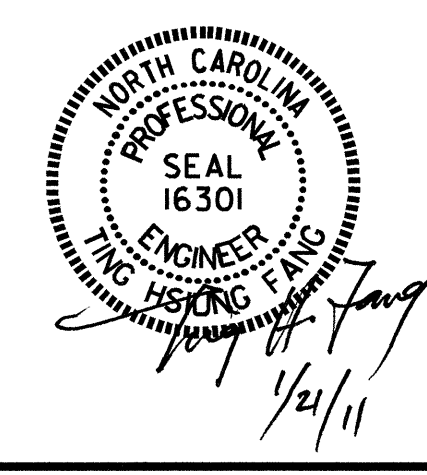
PROJECT NO. U-3621B
 NASH COUNTY
 STATION: 50+77.00 -L-

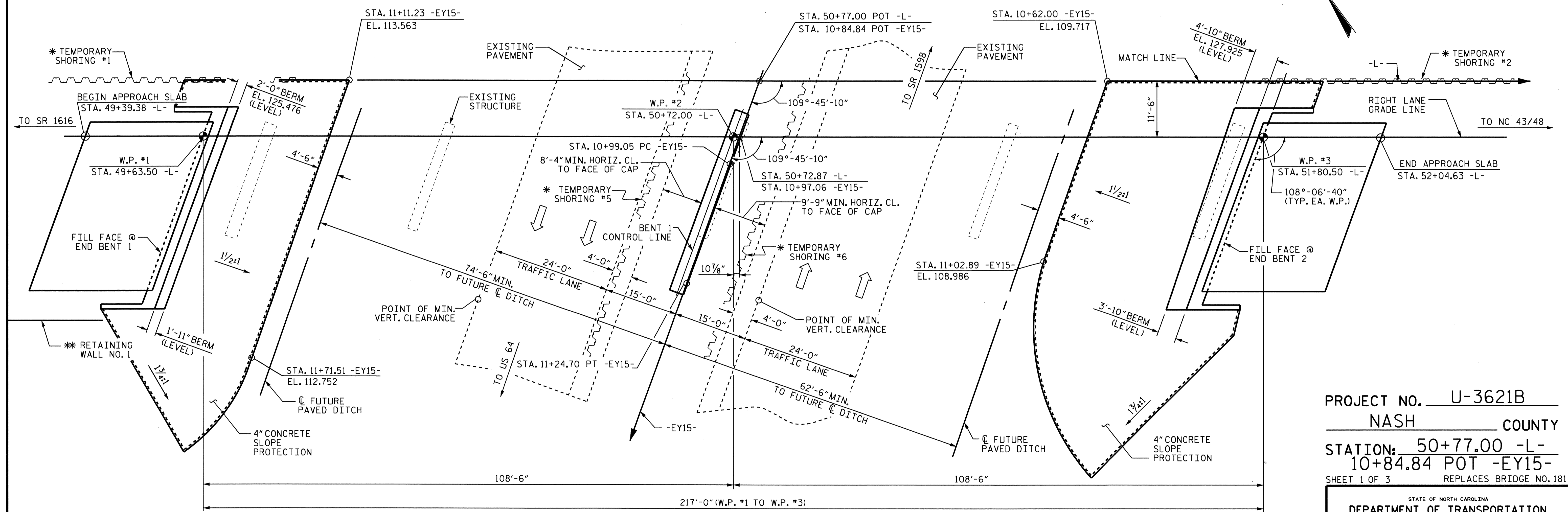
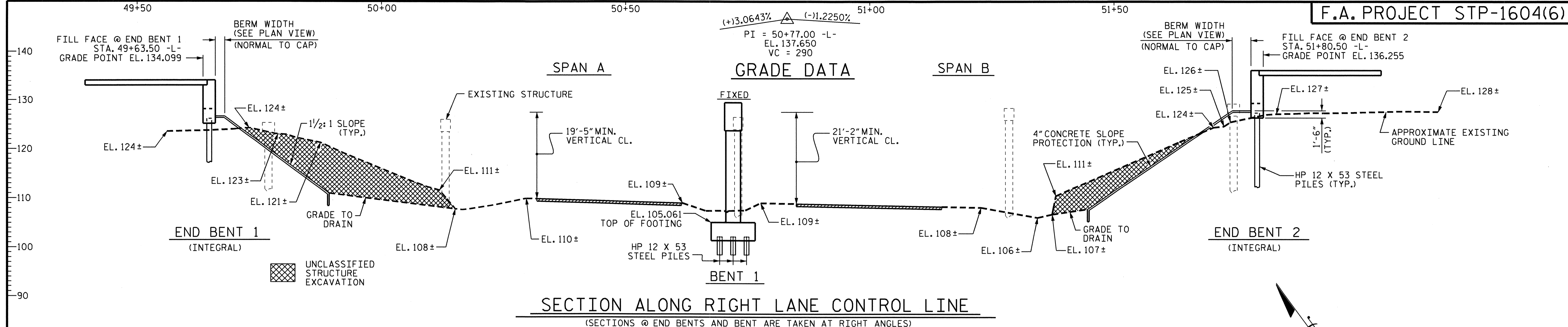
SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 BRIDGE APPROACH
 SLAB DETAILS
 (LEFT LANE)

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

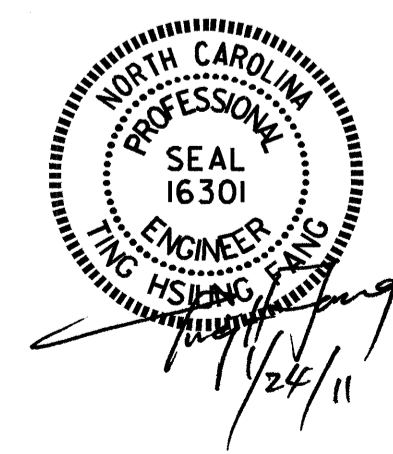
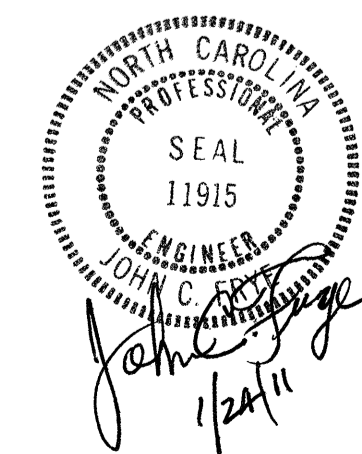
TOTAL SHEETS: 68





PROJECT NO. U-3621B
 NASH COUNTY
 STATION: 50+77.00 -L-
 10+84.84 POT -EY15-
 SHEET 1 OF 3 REPLACES BRIDGE NO. 181

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 BRIDGE ON SR 1604 OVER
 US 301 BETWEEN
 SR 1616 AND NC 43/48
 (RIGHT LANE)

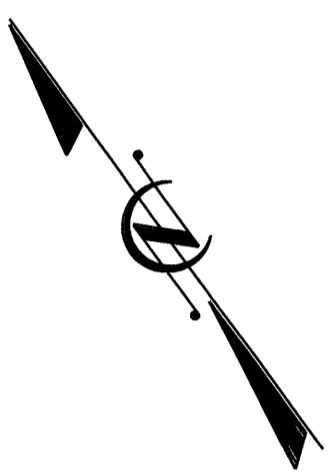
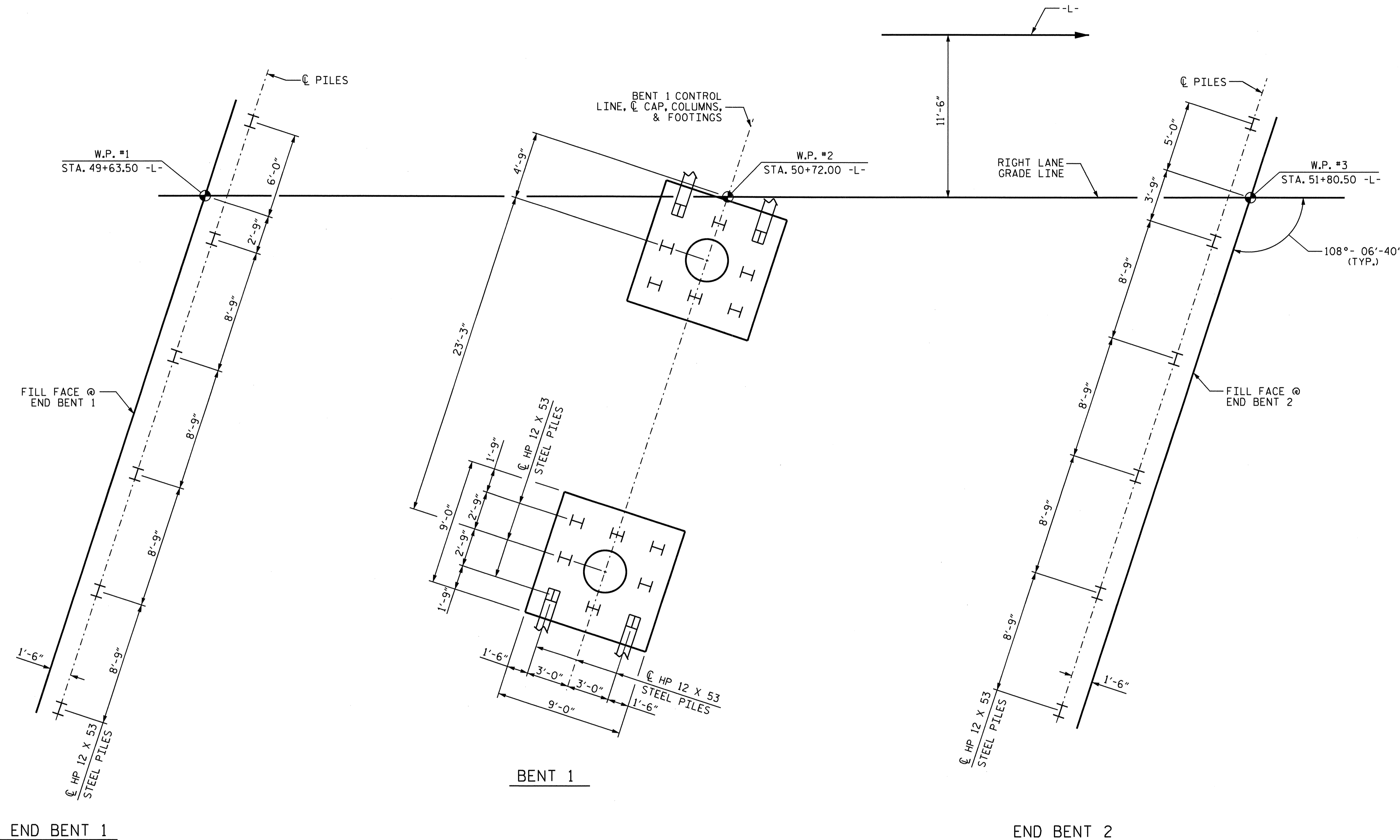


DRAWN BY: OT NGUYEN DATE: 01-10
 CHECKED BY: T.H. FANG DATE: 11/9/10

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-35	
1			3			TOTAL SHEETS 68	
2			4				

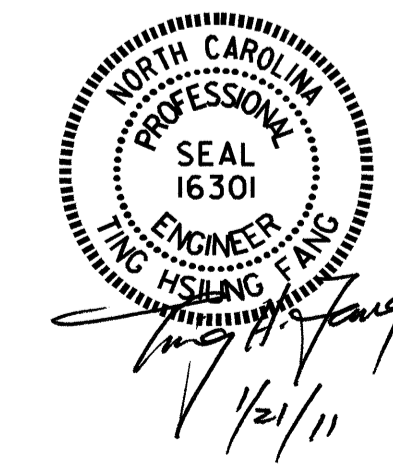
NOTES

FOR PILES, SEE SPECIAL PROVISIONS.
 PILES AT END BENT 1, BENT 1 AND END BENT 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 110 TONS PER PILE. DRIVE PILES TO A REQUIRED DRIVING RESISTANCE OF 185 TONS PER PILE.



FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO PILE CENTERLINE AND MEASURED AT BOTTOM OF FOOTING. BRACE PILES IN FOOTINGS ARE BATTERED 1/2:12 IN THE DIRECTION SHOWN IN THE PLAN VIEW. ORIENT PILES @ END BENTS AS SHOWN.
 FOOTING DIMENSIONS ARE TYPICAL AT BENT 1.



PROJECT NO. U-3621B
NASH COUNTY
 STATION: 50+77.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 BRIDGE ON SR 1604 OVER
 US 301 BETWEEN
 SR 1616 AND NC 43/48
 (RIGHT LANE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-36
1			3			TOTAL SHEETS
2			4			68

DRAWN BY : Q.T. NGUYEN DATE : 01-10
 CHECKED BY : T. H. FANG DATE : 11-10

20-JAN-2011 14:55
 X:\U3621B\Structures\Final Plans\RTlane\U3621b.sd.gd2.dgn
 ttfang

STR #2

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	FOUNDATION EXCAVATION	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	STRUCTURAL STEEL	HP 12 X 53 STEEL PILES	THREE BAR METAL RAIL	CONCRETE BARRIER RAIL	4" SLOPE PROTECTION	POT BEARINGS	ELASTOMERIC BEARINGS	EVAZOTE JOINT SEALS	
	LUMP SUM	LUMP SUM	LUMP SUM	SO. FT.	SO. FT.	CU. YDS.	LUMP SUM	LBS.	LBS.	APPROX. LBS.	NO.	LIN. FT.	LIN. FT.	SO. YDS.	LUMP SUM	LUMP SUM	LUMP SUM	
SUPERSTRUCTURE				8336	6952		LUMP SUM			315,000		207.38	215.25		LUMP SUM	LUMP SUM	LUMP SUM	
END BENT 1						23.5		3027			6	330		230				
BENT 1		LUMP SUM				59.8		9318	1720		16	480						
END BENT 2						22.7		2932			6	330		375				
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	8336	6952	106.0	LUMP SUM	15,277	1720	315,000	28	1140	207.38	215.25	605	LUMP SUM	LUMP SUM	LUMP SUM

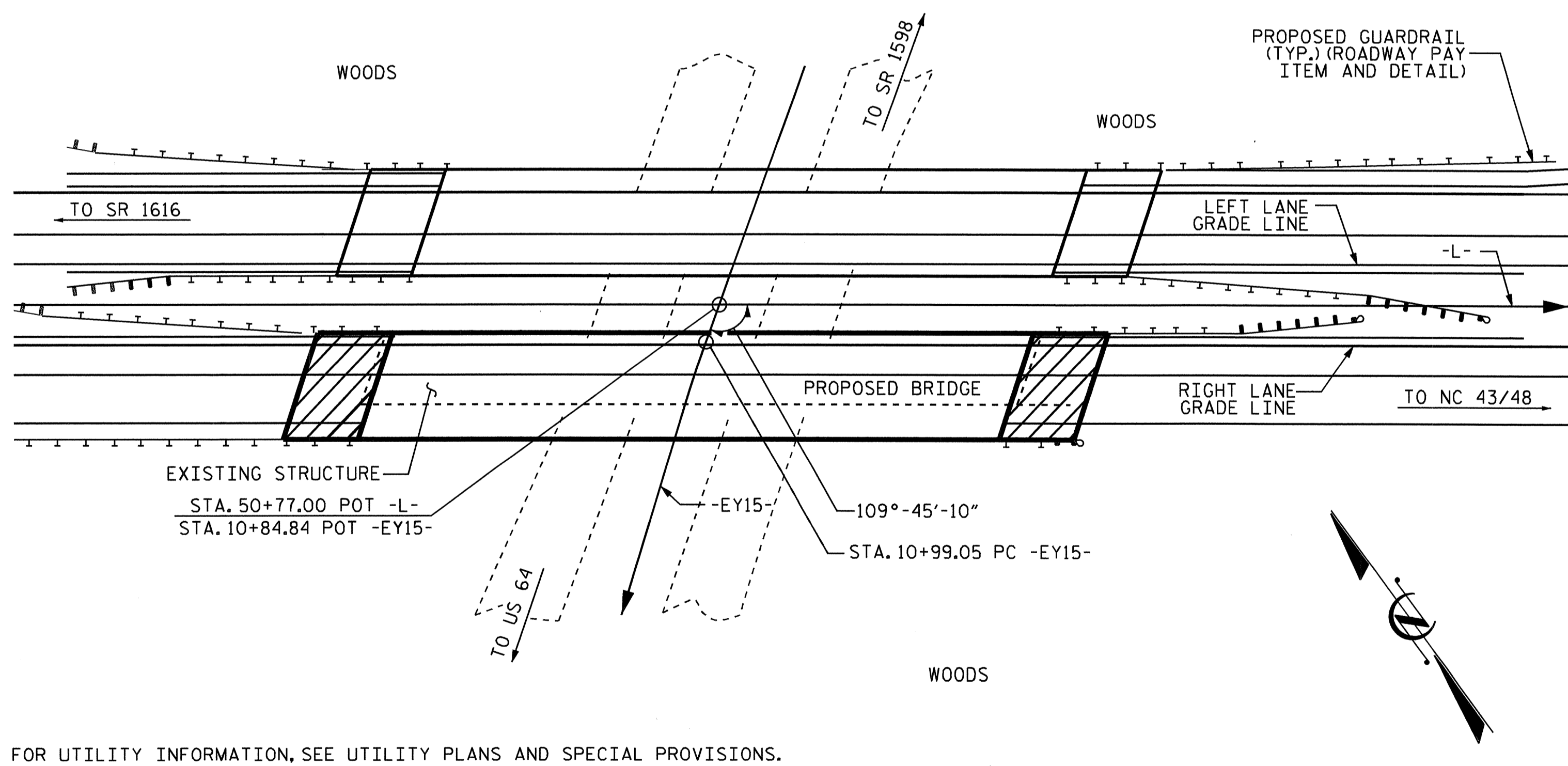
NOTES

- ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
- THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
- FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
- FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
- 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.
- THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 60 FT. RIGHT SIDE OF END BENTS 1 AND 2 OF CENTERLINE ROADWAY -L- AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.
- REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
- FOR LIMITS OF TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS, FOR TEMPORARY SHORING PAY ITEM, SEE ROADWAY PLANS.
- FOR MAINTENANCE AND PROTECTION OF TRAFFIC BENEATH PROPOSED STRUCTURE, SEE SPECIAL PROVISIONS.
- 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.
- FOR HIGH STRENGTH BOLTS, SEE SPECIAL PROVISIONS.
- STEEL SHEET PILING REQUIRED FOR SHORING SHALL BE HOT ROLLED.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR CURING CONCRETE, SEE SPECIAL PROVISIONS.
- FOR PLACING LOAD ON STRUCTURE MEMBERS, SEE SPECIAL PROVISIONS.
- FOR SHIPPING STEEL STRUCTURAL MEMBERS, SEE SPECIAL PROVISIONS.
- FOR DIRECT TENSION INDICATORS, SEE SPECIAL PROVISIONS.
- FOR FORMS FOR CONCRETE BRIDGE DECKS, SEE SPECIAL PROVISIONS.

AFTER SERVING AS TEMPORARY STRUCTURE, THE EXISTING STRUCTURE CONSISTS OF RC FLOOR ON I-BEAMS @ 7'-0" CENTERS IN 4 SPANS: 1 @ 40'-0", 2 @ 55'-0", 1 @ 45'-0", WITH A CLEAR ROADWAY WIDTH OF 24'-0". THE SUBSTRUCTURE, END BENTS, RC CAP ON TIMBER PILES, INTERIOR BENTS, RCP&B WITH PILE FOOTINGS AND LOCATED AT THE SITE OF PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 50+77.00 -L-."

BM #3: R/R SPIKE SET IN POWER POLE 22.99' LT. OF -L- STA. 49+82.44 EL. 124.03

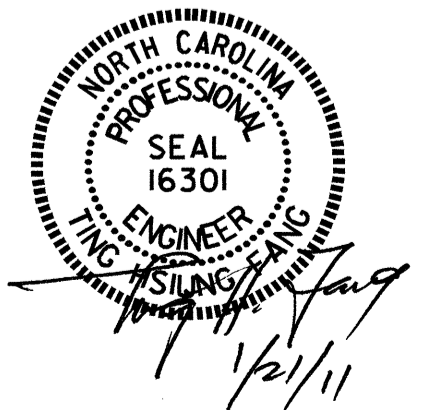


FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

LOCATION SKETCH

PROJECT NO. U-3621B
NASH COUNTY
 STATION: 50+77.00 -L-
 SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 BRIDGE ON SR 1604 OVER
 US 301 BETWEEN
 SR 1616 AND NC 43/48
 (RIGHT LANE)



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-37
1			3			TOTAL SHEETS
2			4			68

DRAWN BY : Q.T. NGUYEN DATE : 01-10
 CHECKED BY : T. H. FANG DATE : 11-10

21-JAN-2011 16:16
 X:\U3621B\Structures\Final Plans\Rt1lane\U3621b.sd_gd2.dgn
 T.Fang

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	1.01	--	1.75	0.895	1.01	A	EL	106.92	0.946	1.35	A	EL	106.92	1.30	0.895	1.11	A	EL	106.92		
	HL-93 (OPERATING)	N/A		1.31	--	1.35	0.895	1.31	A	EL	106.92	0.946	1.75	A	EL	106.92	1.00	0.895	1.44	A	EL	106.92		
	HS-20 (INVENTORY)	36.00	②	2.12	76.322	1.75	0.895	2.90	A	EL	42.77	0.946	2.12	A	EL	106.92	1.30	0.895	3.72	A	EL	42.77		
	HS-20 (OPERATING)	36.00		2.75	98.936	1.35	0.895	3.76	A	EL	42.77	0.946	2.75	A	EL	106.92	1.00	0.895	4.84	A	EL	42.77		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		5.01	67.673	1.40	0.895	6.72	A	EL	42.77	0.946	5.01	A	EL	106.92	1.30	0.895	8.76	A	EL	42.77	
		SNGARBS2	20.000		3.98	79.609	1.40	0.895	5.42	A	EL	42.77	0.946	3.98	A	EL	106.92	1.30	0.895	6.34	A	EL	42.77	
		SNAGRIS2	22.000		3.75	82.418	1.40	0.895	5.17	A	EL	42.77	0.946	3.75	A	EL	106.92	1.30	0.895	5.93	A	EL	42.77	
		SNCOTTS3	27.250		3.17	86.425	1.40	0.895	4.13	A	EL	42.77	0.946	3.17	A	EL	106.92	1.30	0.895	4.38	A	EL	42.77	
		SNAGGRS4	34.925		2.67	93.297	1.40	0.895	3.53	A	EL	42.77	0.946	2.67	A	EL	106.92	1.30	0.895	3.59	A	EL	42.77	
		SNS5A	35.550		2.66	94.588	1.40	0.895	3.48	A	EL	42.77	0.946	2.66	A	EL	106.92	1.30	0.895	3.53	A	EL	42.77	
		SNS6A	39.950		2.45	97.792	1.40	0.895	3.22	A	EL	42.77	0.946	2.45	A	EL	106.92	1.30	0.895	3.21	A	EL	42.77	
		SNS7B	42.000		2.37	99.681	1.40	0.895	3.11	A	EL	42.77	0.946	2.37	A	EL	106.92	1.30	0.895	3.07	A	EL	42.77	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		2.82	93.072	1.40	0.895	3.79	A	EL	42.77	0.946	2.82	A	EL	106.92	1.30	0.895	3.93	A	EL	42.77	
		TNT4A	33.075		2.80	92.579	1.40	0.895	3.77	A	EL	42.77	0.946	2.80	A	EL	106.92	1.30	0.895	3.90	A	EL	42.77	
		TNT6A	41.600		2.43	100.945	1.40	0.895	3.19	A	EL	42.77	0.946	2.43	A	EL	106.92	1.30	0.895	3.18	A	EL	42.77	
		TNT7A	42.000		2.41	101.022	1.40	0.895	3.19	A	EL	42.77	0.946	2.41	A	EL	106.92	1.30	0.895	3.18	A	EL	42.77	
		TNT7B	42.000		2.36	99.234	1.40	0.895	3.22	A	EL	42.77	0.946	2.36	A	EL	106.92	1.30	0.895	3.22	A	EL	42.77	
		TNAGRIT4	43.000		2.31	99.309	1.40	0.895	3.14	A	EL	42.77	0.946	2.31	A	EL	106.92	1.30	0.895	3.11	A	EL	42.77	
FATIGUE	TNACT5A	45.000		2.25	101.054	1.40	0.895	3.02	A	EL	42.77	0.946	2.25	A	EL	106.92	1.30	0.895	2.97	A	EL	42.77		
	TNAGT5B	45.000	③	2.22	100.096	1.40	0.895	2.98	A	EL	42.77	0.946	2.22	A	EL	106.92	1.30	0.895	2.92	A	EL	42.77		
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) **

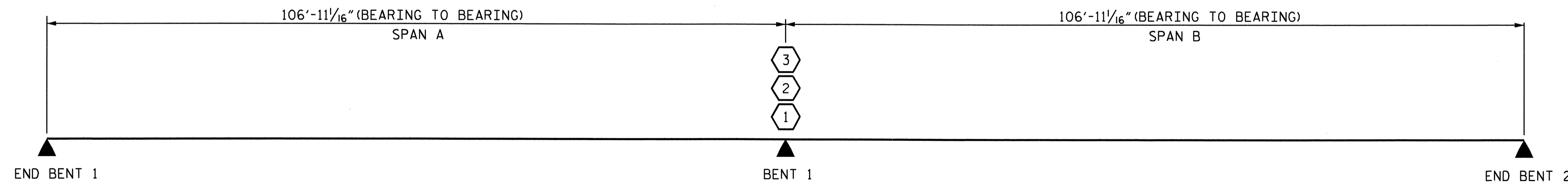
② DESIGN LOAD RATING (HS-20) **

③ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

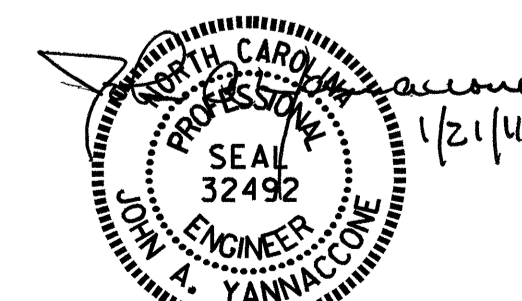
GIRDER LOCATION

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



LRFR SUMMARY

PROJECT NO. U-3621B
NASH COUNTY
 STATION: 50+77.00 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-38
1			3			TOTAL SHEETS 68
2			4			

ASSEMBLED BY : E. I. OMILE DATE : 9/13/10
 CHECKED BY : JAY DATE : 9/17/10
 DRAWN BY : MAA 1/08 REV. 11/12/08RR MAA/GM
 CHECKED BY : GM/DI 2/08

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.

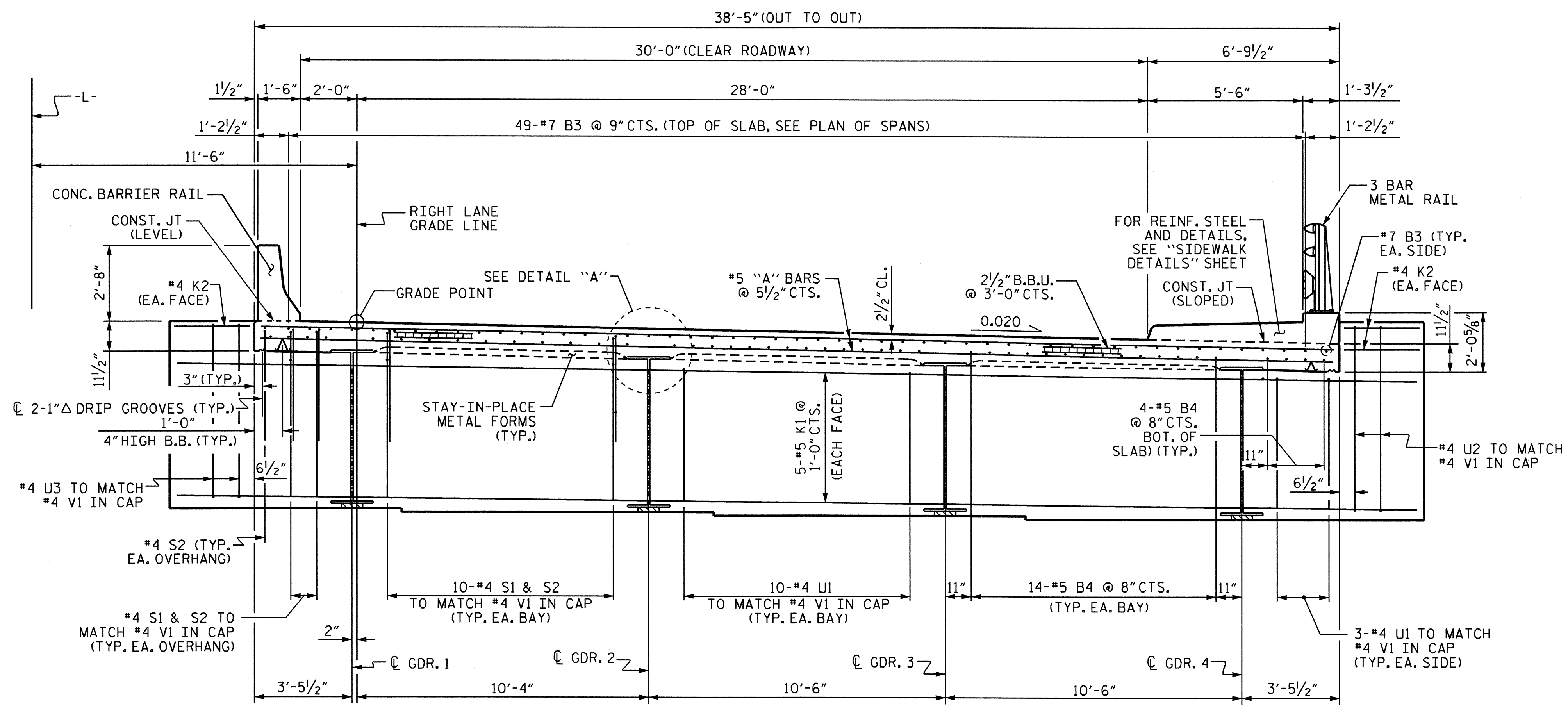
METAL STAY-IN-PLACE FORMS SHALL NOT BE WELDED TO BEAM OR GIRDER FLANGES IN THE ZONES REQUIRING CHARPY V-NOTCH TEST. SEE STRUCTURAL STEEL DETAIL SHEETS.

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

FOR WING ELEVATIONS AND DETAILS, SEE "PLAN OF SPAN DETAILS" SHEETS.

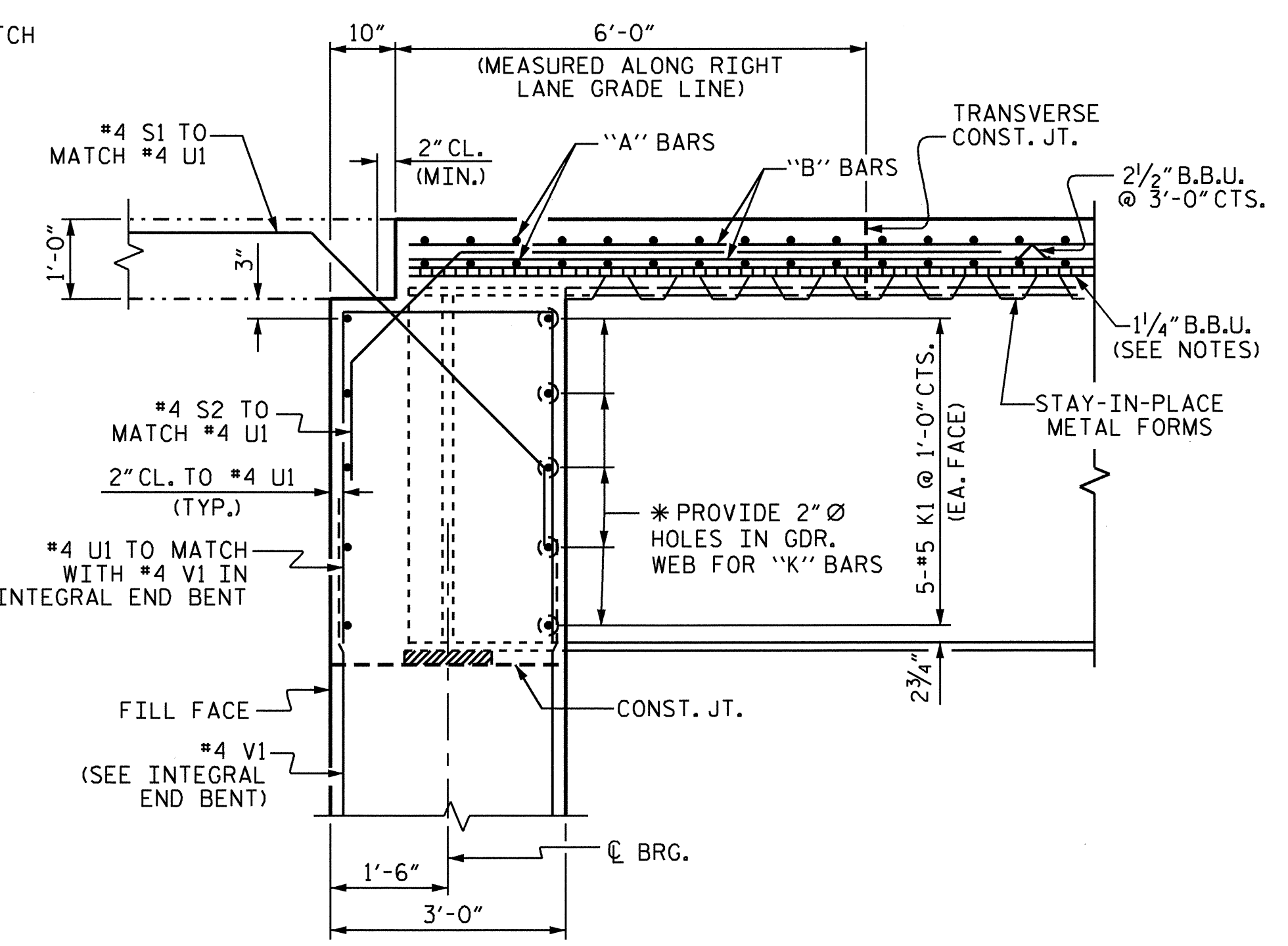
BARRIER RAIL AND SIDEWALK IN EACH SPAN SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT SPAN HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

THE CONTRACTOR SHALL ADJUST THE GIRDER BUILDUPS AS NECESSARY TO INCORPORATE A MAXIMUM PERMISSIBLE VARIATION IN POT BEARING DEPTH OF 1/2"; SEE SPECIAL PROVISION FOR POT BEARINGS.



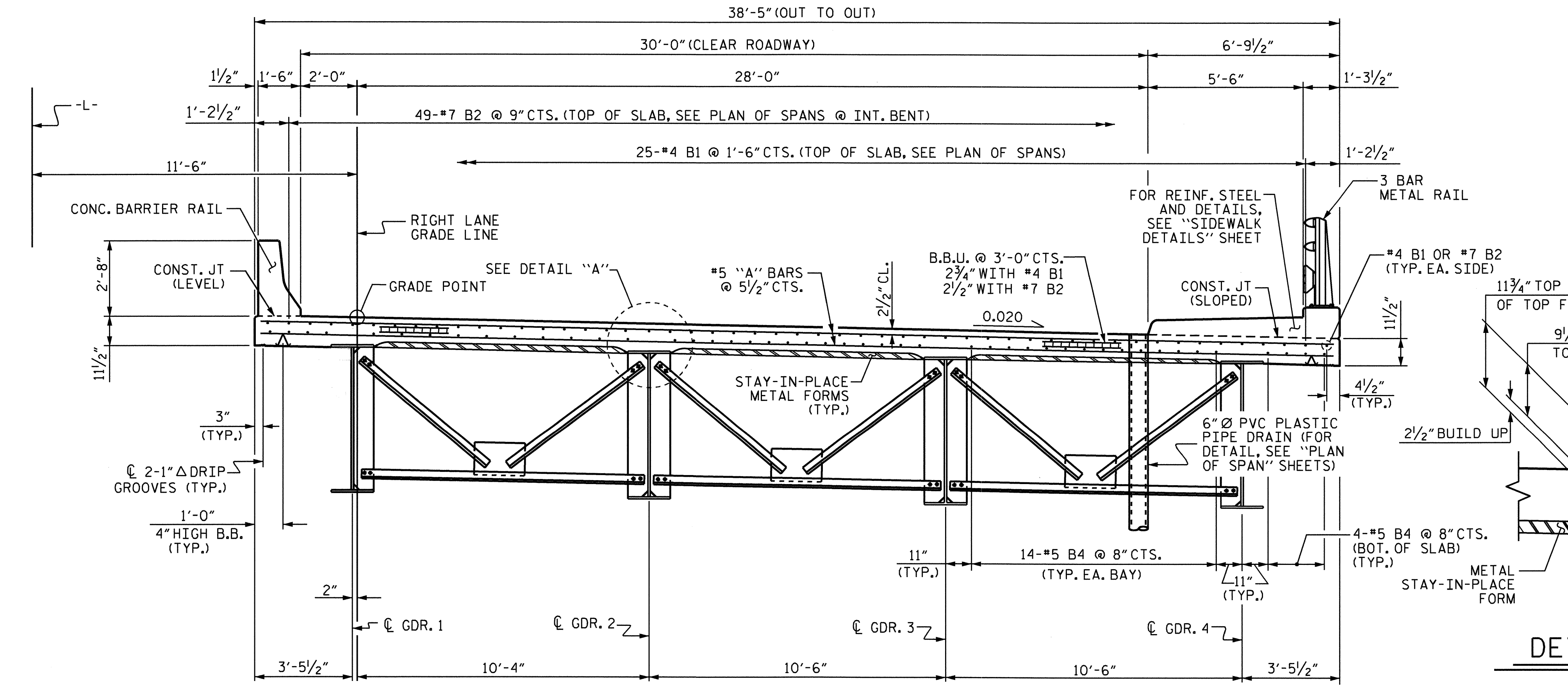
TYPICAL SECTION

APPROACH SLAB BLOCKOUT & WINGS NOT SHOWN FOR CLARITY. SHOWING ABUTMENT WALL AT END BENT.



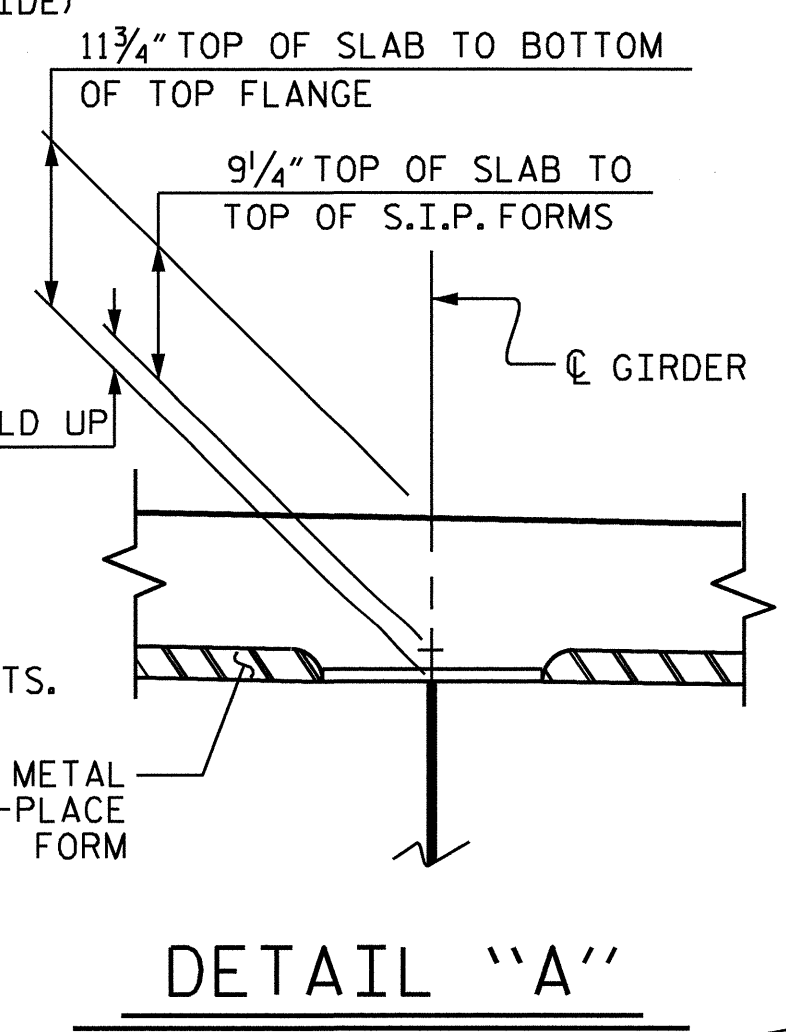
SECTION THRU ABUTMENT END BENT

* DIAMETER OF HOLES MAY BE INCREASED TO ACCOMMODATE SKEW

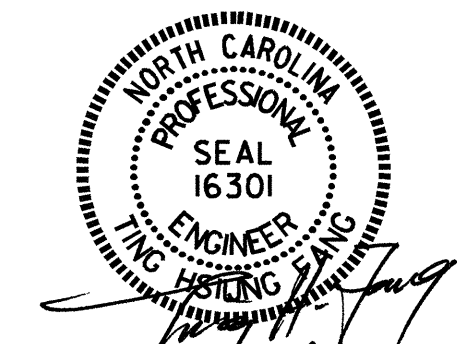


TYPICAL SECTION

(SHOWING INTERMEDIATE DIAPHRAGMS)



DETAIL "A"

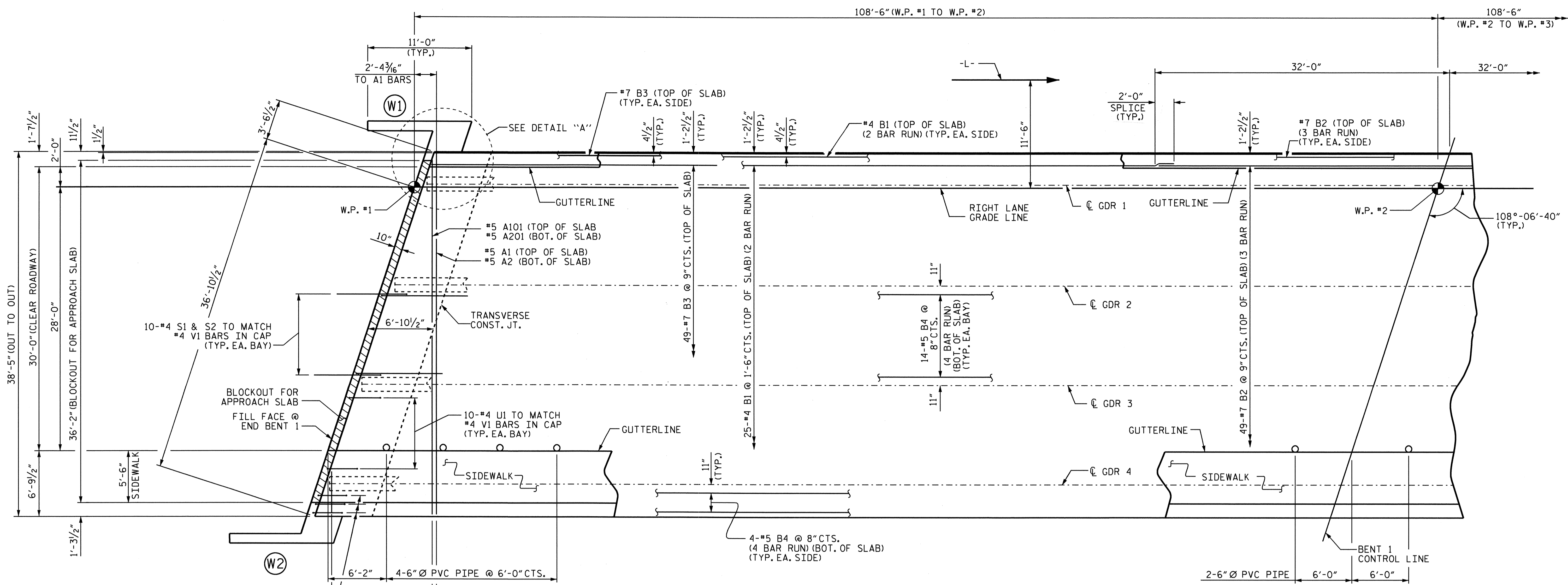


PROJECT NO. U-3621B
 NASH COUNTY
 STATION: 50+77.00 -L-

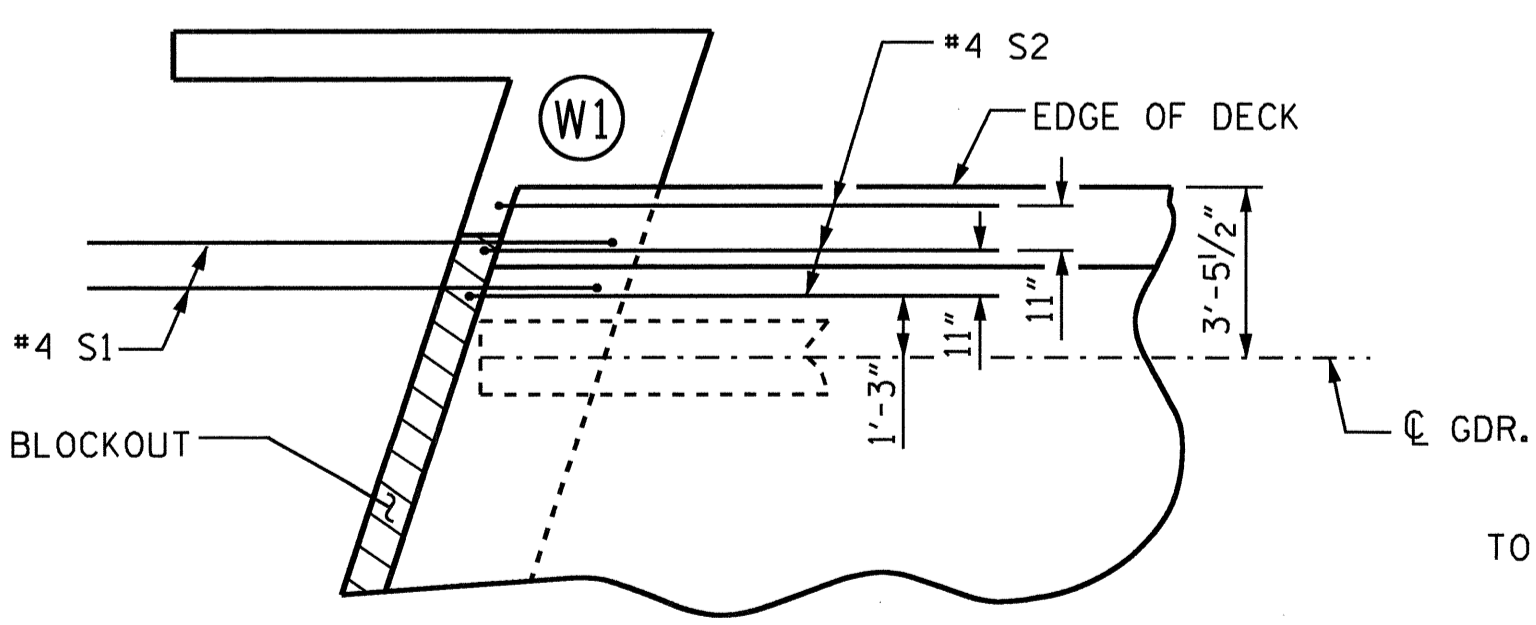
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 TYPICAL SECTION
 (RIGHT LANE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-39
1			3			TOTAL SHEETS
2			4			68

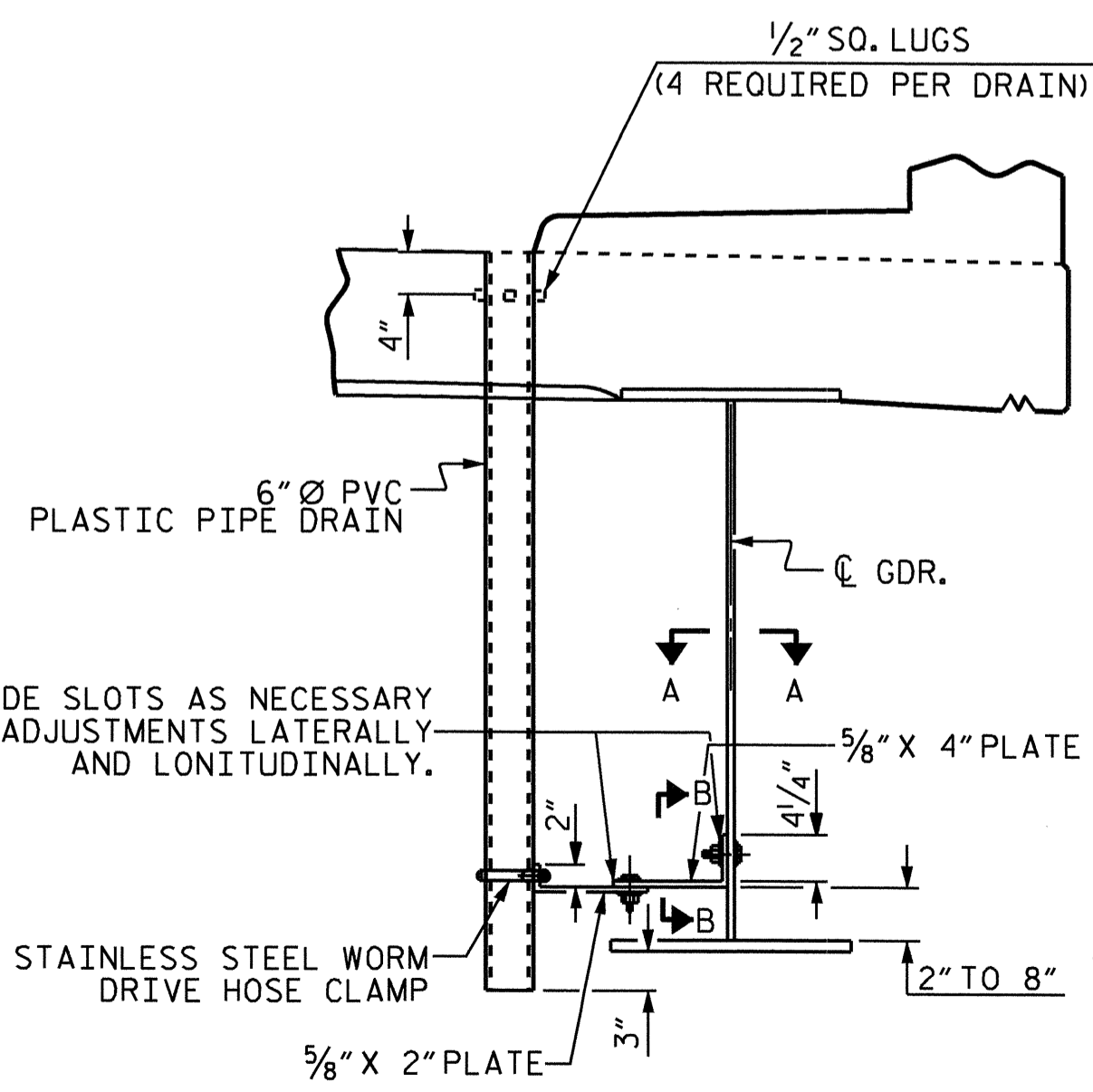
DRAWN BY: QT NGUYEN DATE: 2-09
 CHECKED BY: T. H. FANG DATE: 12-10



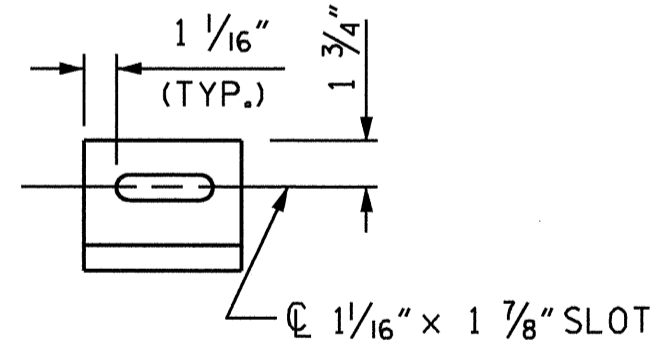
PLAN OF SPAN A



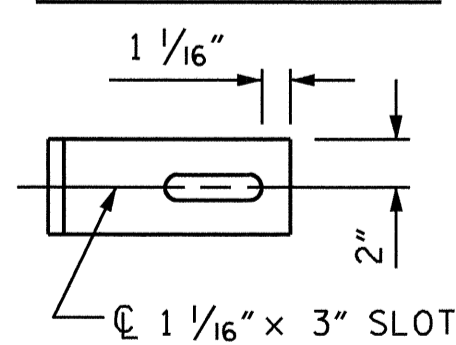
DETAIL "A"
U2 BARS NOT SHOWN FOR CLARITY.
WING WALL W1 SHOWN, W3 SIMILAR.



DRAIN CONNECTOR DETAIL

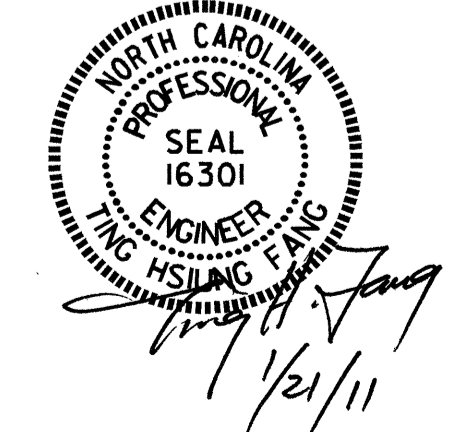


SECTION B-B



SECTION A-A

COUPLING IN DRAIN PIPE WILL BE PERMITTED AS APPROVED BY THE ENGINEER.
TOP OF FLOOR DRAIN TO BE SET 3/8" BELOW SURFACE OF SLAB.
4 - 1/2" SQUARE LUGS TO BE GLUED TO THE PVC PLASTIC PIPE AT EQUAL SOACES AROUND THE PIPE DRAIN APPROXIMATELY 4" FROM THE TOP OF THE PIPE.
BOLT SIZE TO BE SAME AS DIAPHRAGM AND CROSSFRAME CONNECTIONS. STAINLESS STEEL WORM DRIVE HOSE CLAMP SHALL BE COMMERCIAL QUALITY.



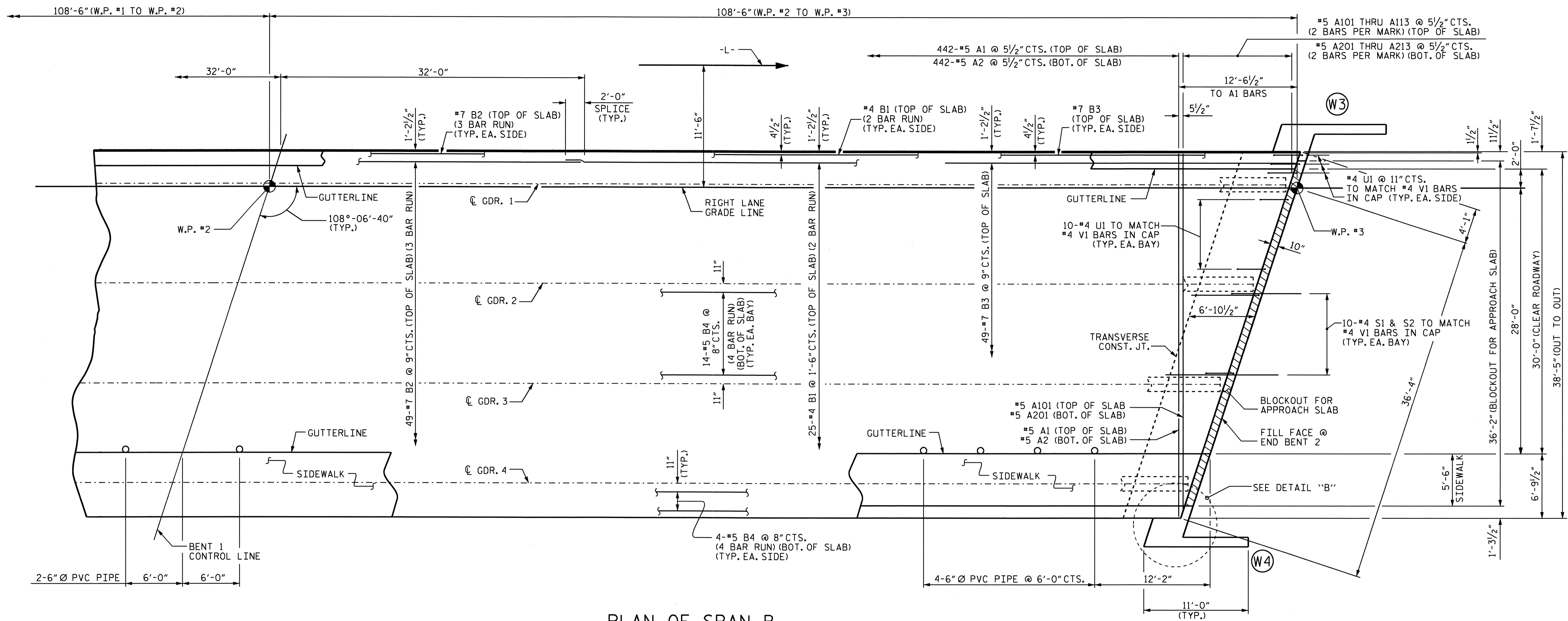
PROJECT NO. U-3621B
NASH COUNTY
STATION: 50+77.00 -L-
SHEET 1 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE PLAN OF SPAN (RIGHT LANE)					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 68

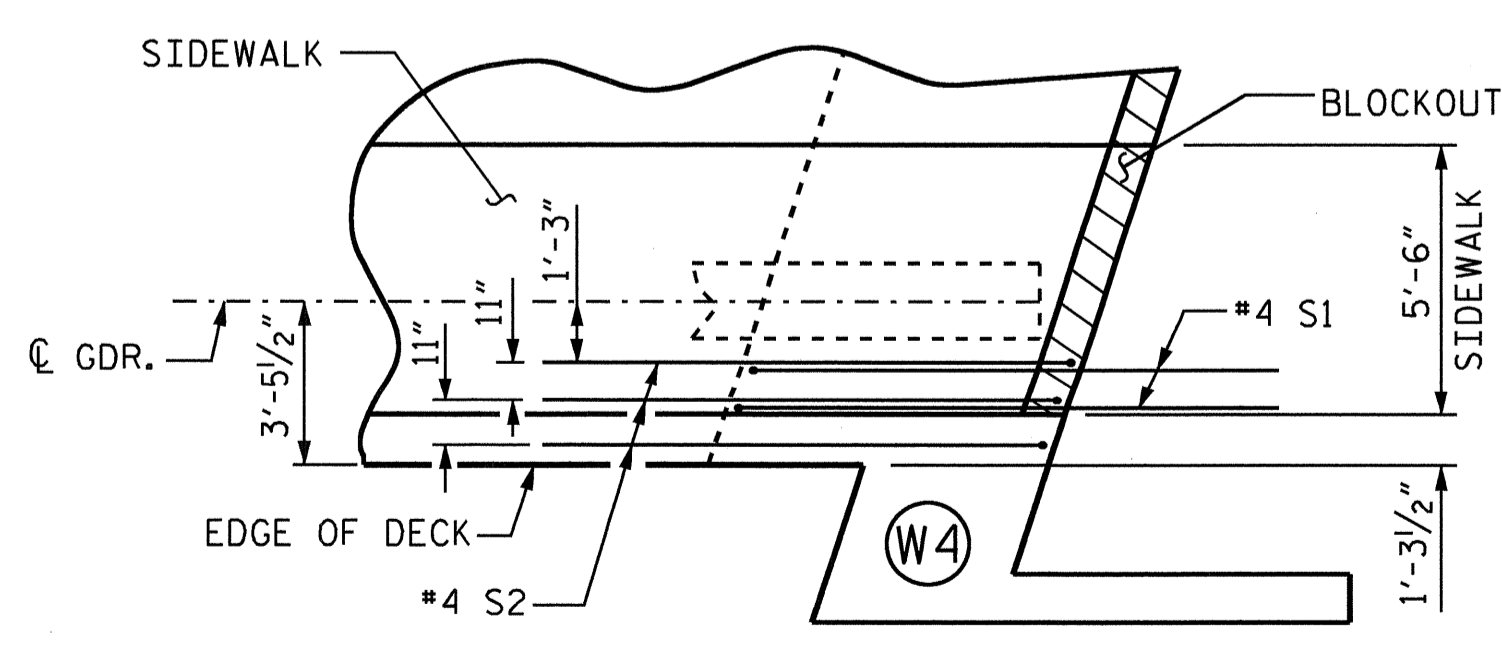
DRAWN BY: OT NGUYEN DATE: 01-10
CHECKED BY: T.H. FANG DATE: 1/12/10

21-JAN-2011 14:53
Y:\TIP\Projects-U\U3621B\Structures\Final Plans\RTlane\U3621b.sd.s2*.dgn
otnguyen

STR #2



PLAN OF SPAN B



DETAIL "B"
 U3 BARS NOT SHOWN FOR CLARITY.
 WING WALL W4 SHOWN, W2 SIMILAR.

PROJECT NO. U-3621B
NASH COUNTY
 STATION: 50+77.00 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPAN
 (RIGHT LANE)

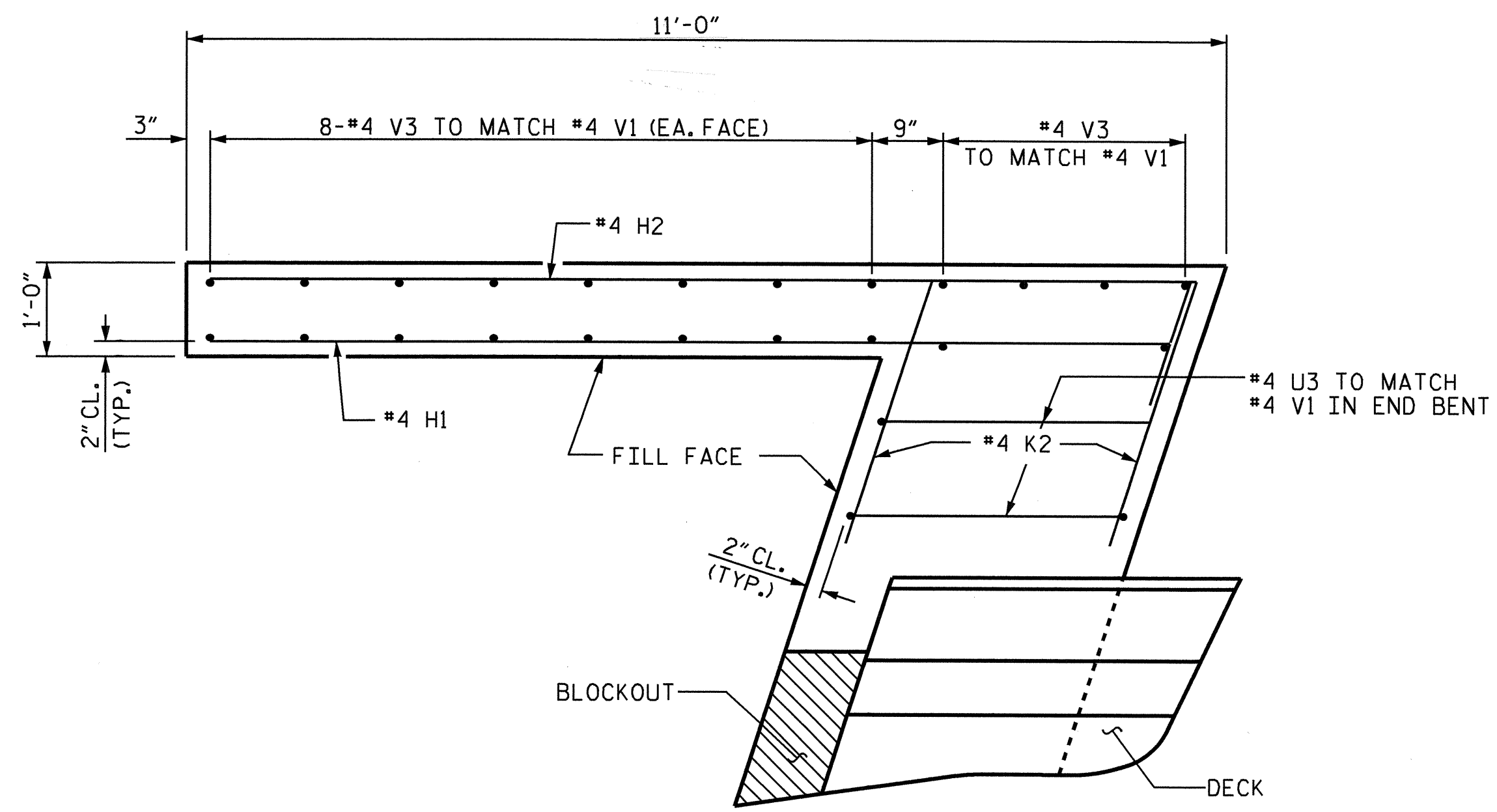


REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-41	
1			3			TOTAL SHEETS	
2			4			68	

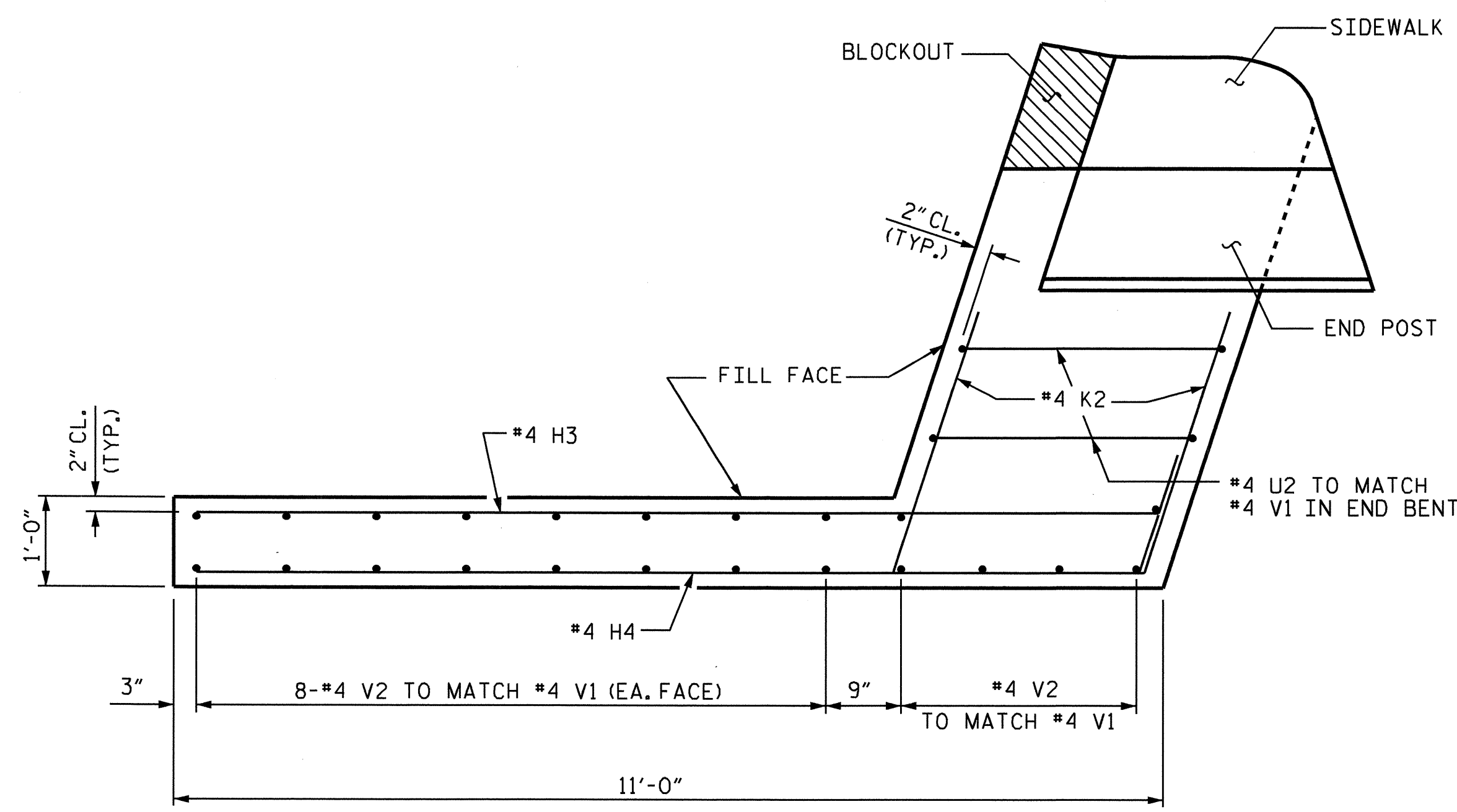
DRAWN BY: QT NGUYEN DATE: 01-10
 CHECKED BY: T.H. FANG DATE: 1/12/10

24-JAN-2011 14:26
 Y:\TIP\Projects-U\U3621B\Structures\Final Plans\RTlane\U3621b.sd.s2*.dgn
 qtnguyen

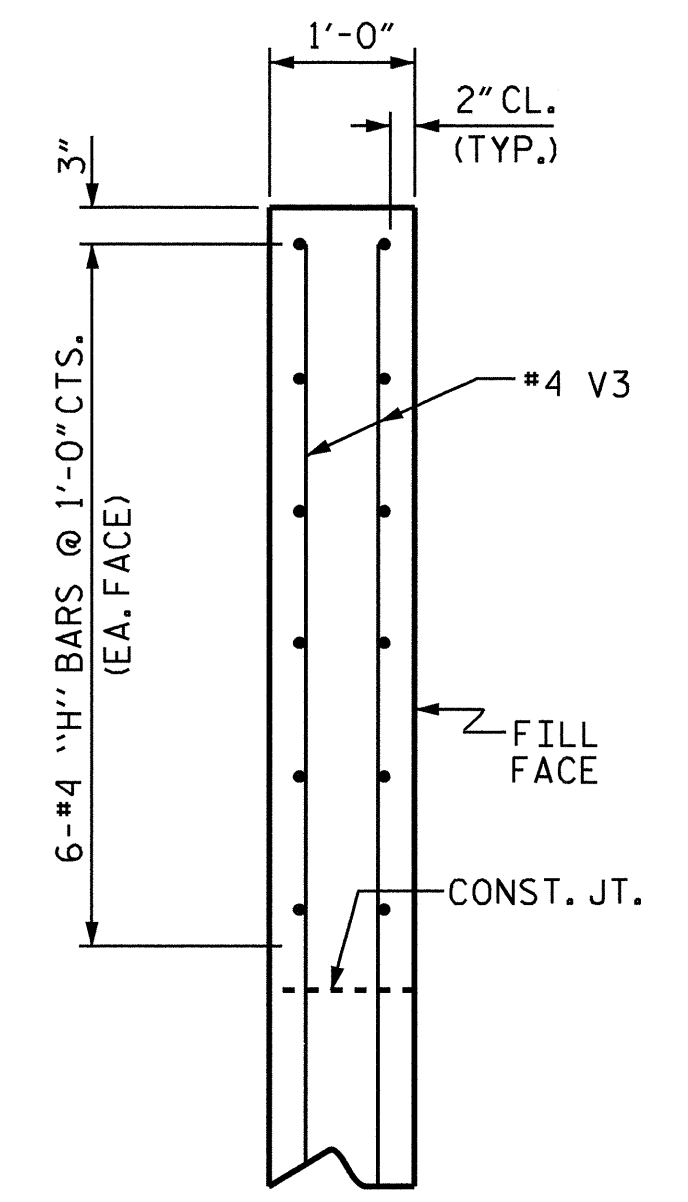
STR #2



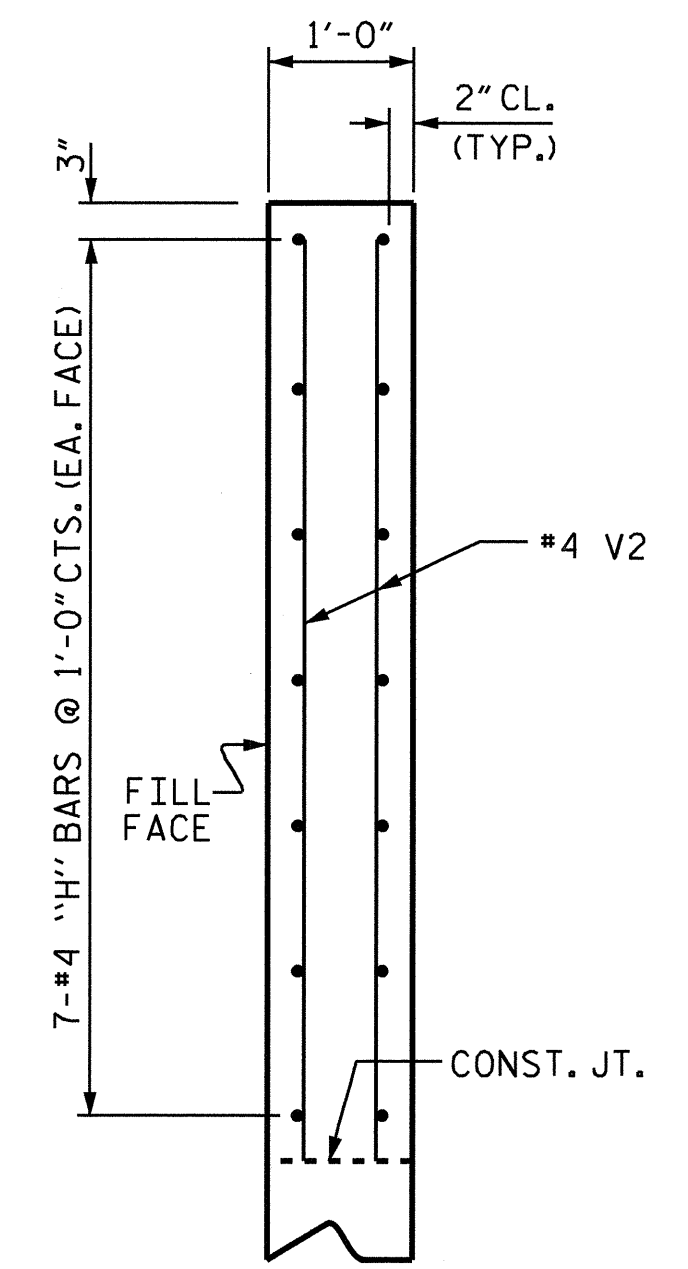
PLAN OF WING (W1)



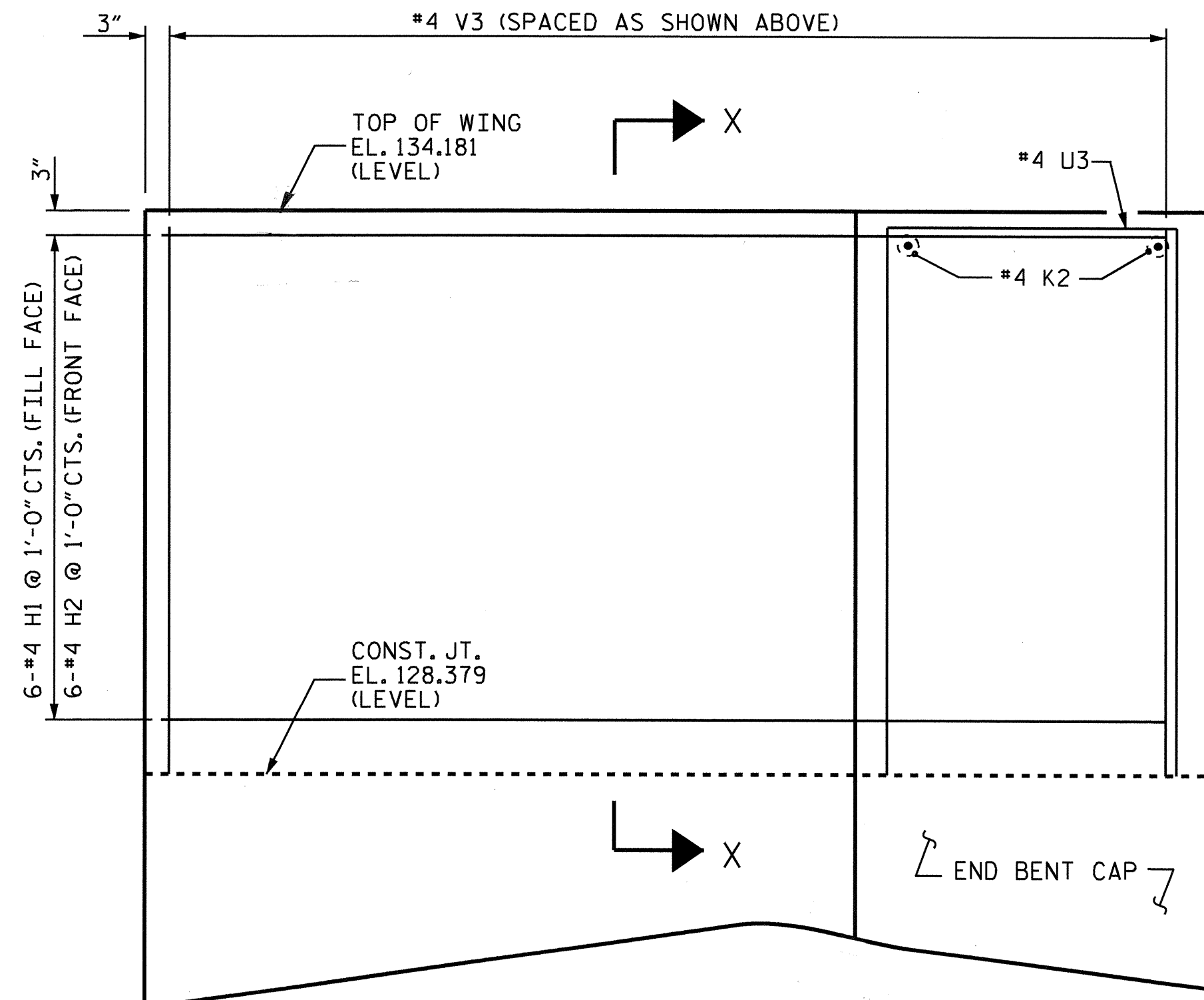
PLAN OF WING (W2)



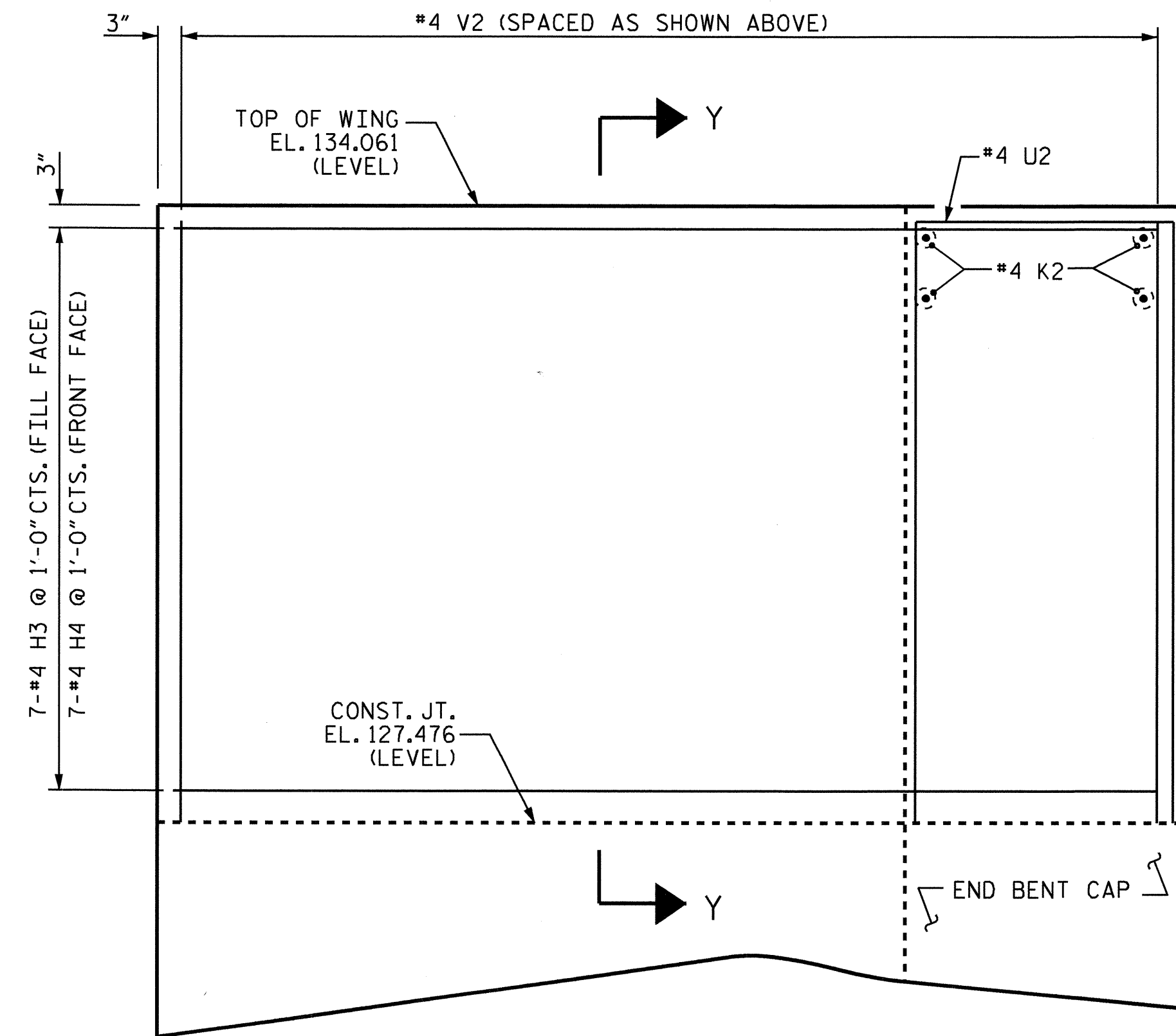
SECTION X-X



SECTION Y-Y



ELEVATION OF WING (W1)



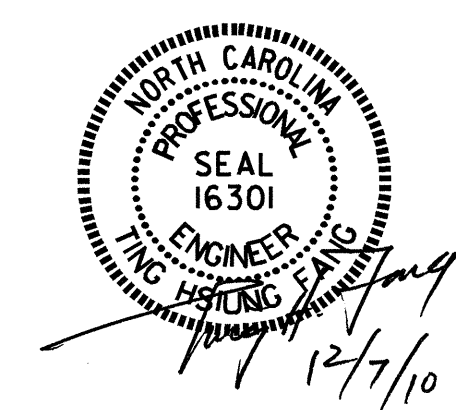
ELEVATION OF WING (W2)

ABUTMENT WINGS

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

DRAWN BY : QT NGUYEN DATE : 2-09
 CHECKED BY : W.D. CRUTCHER DATE : 4-10

07-DEC-2010 09:50
 Y:\TIP\Projects-U\U3621B\Structures\Final Plans\RTlane\U3621b.sd.s2*.dgn
 qtnguyen

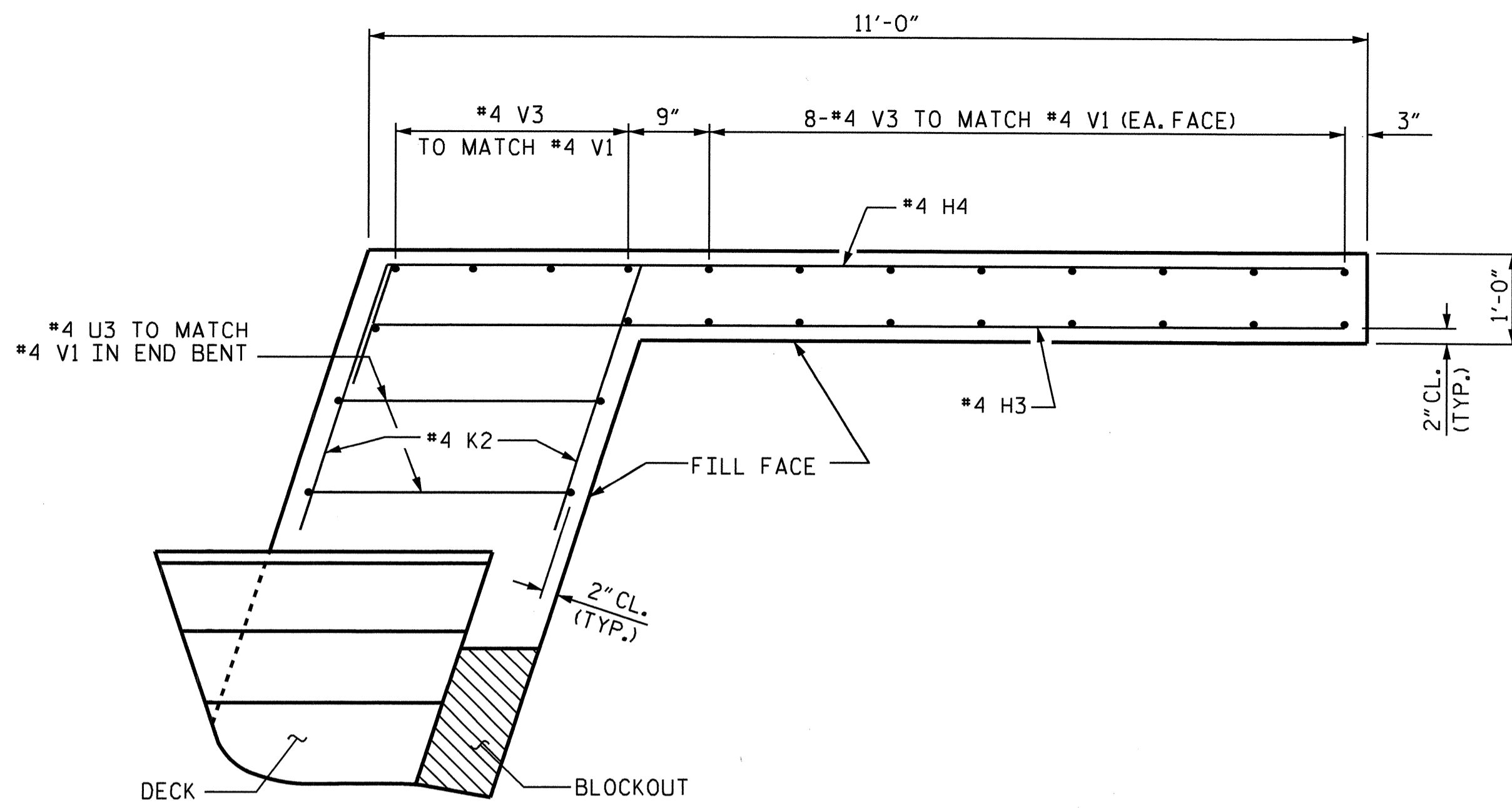


PROJECT NO. U-3621B
 NASH COUNTY
 STATION: 50+77.00 -L-

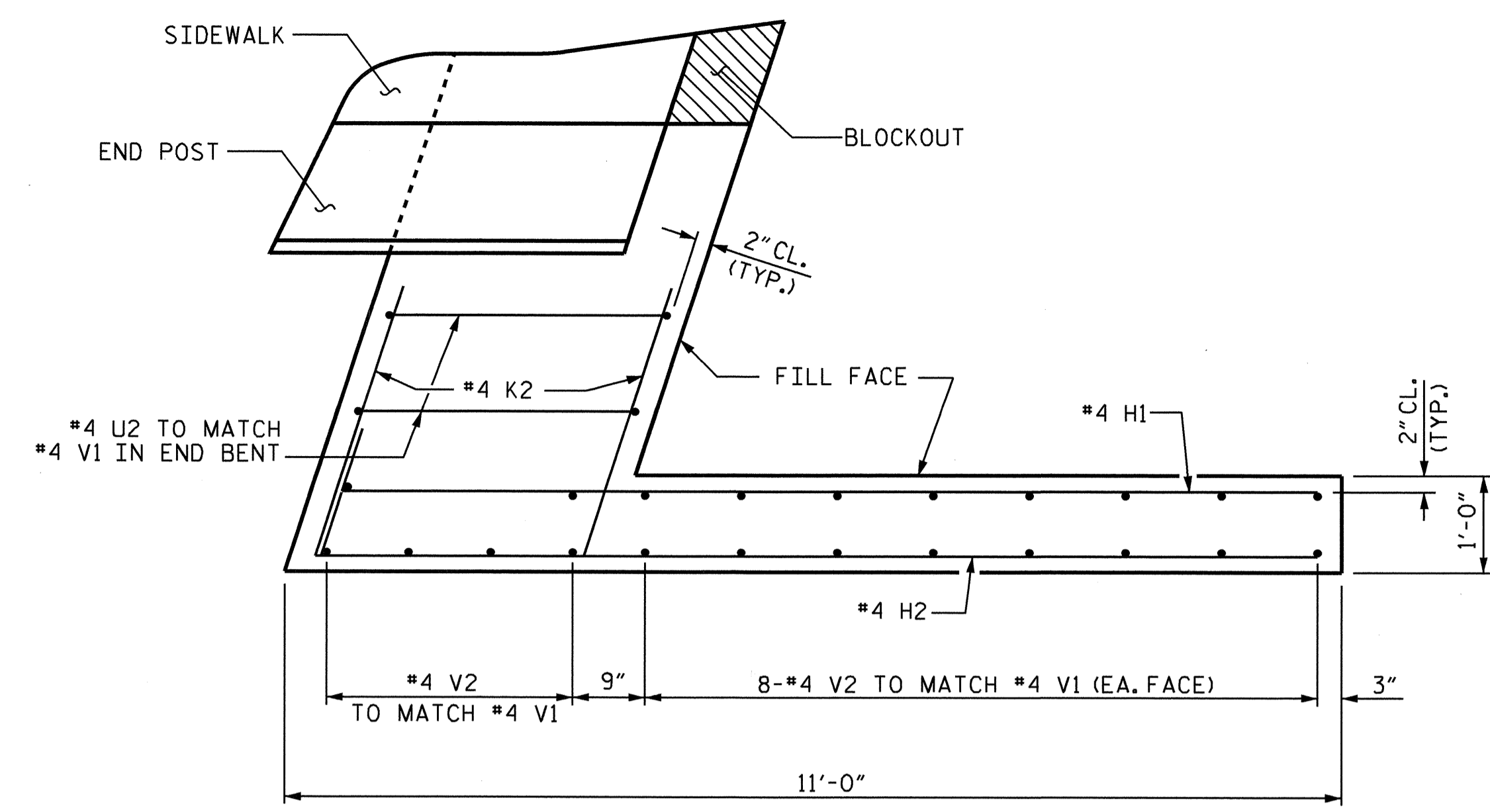
SHEET 3 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE					
PLAN OF SPAN DETAILS (RIGHT LANE)					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
TOTAL SHEETS					68

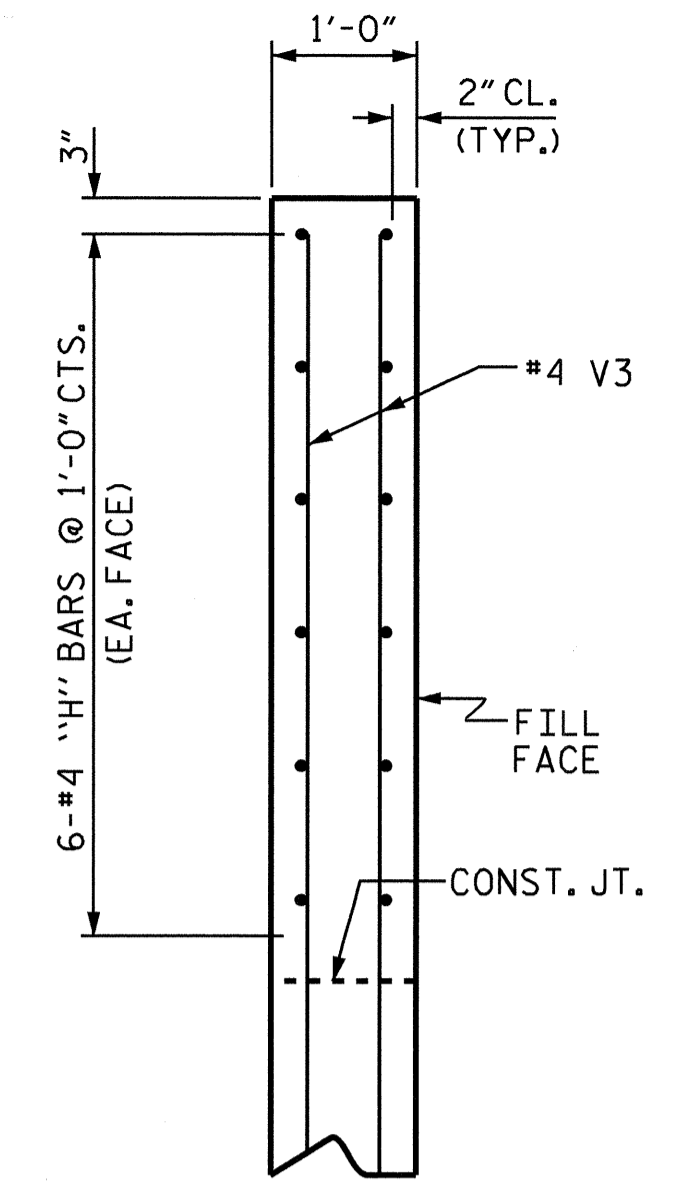
STR #2



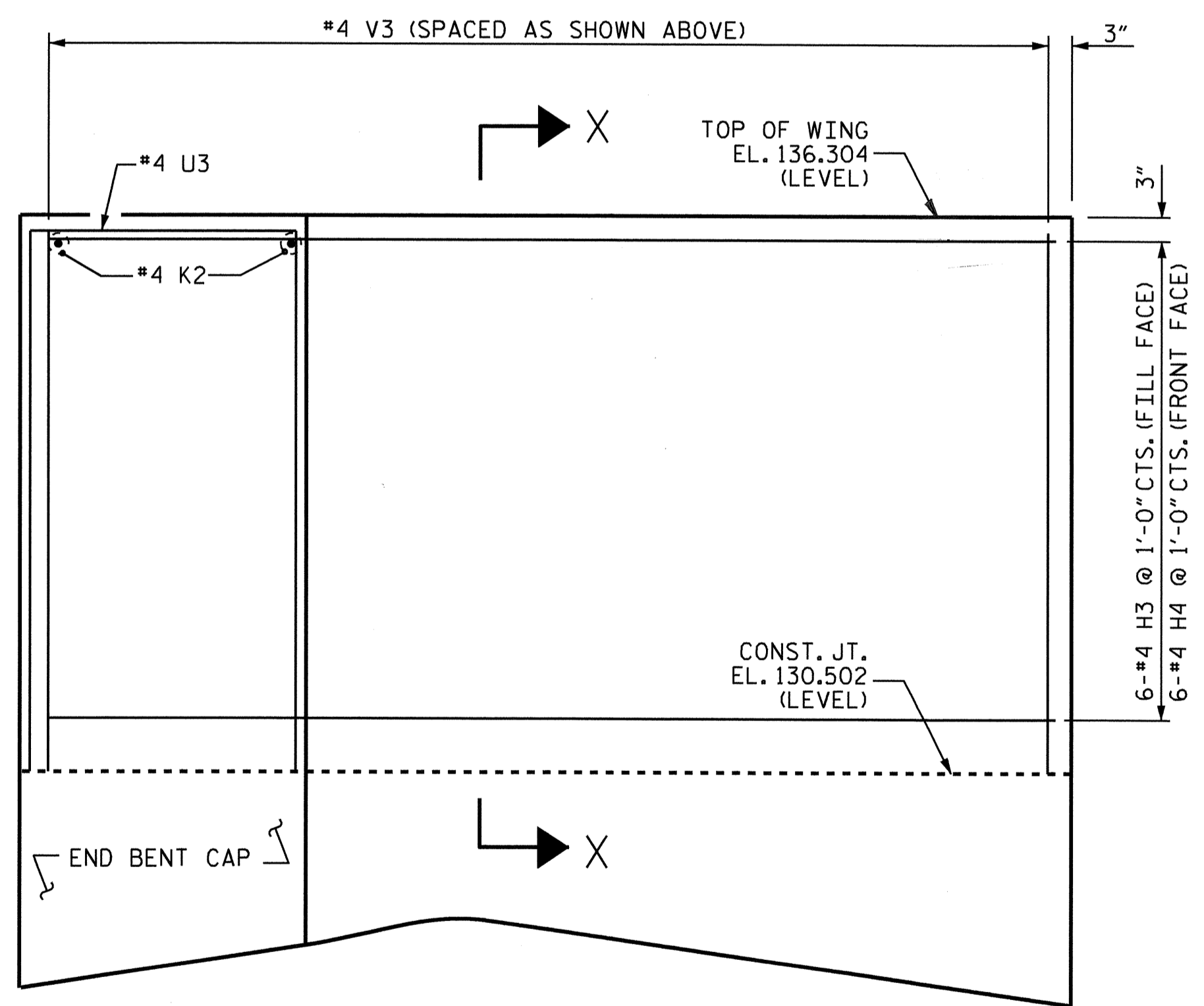
PLAN OF WING (W3)



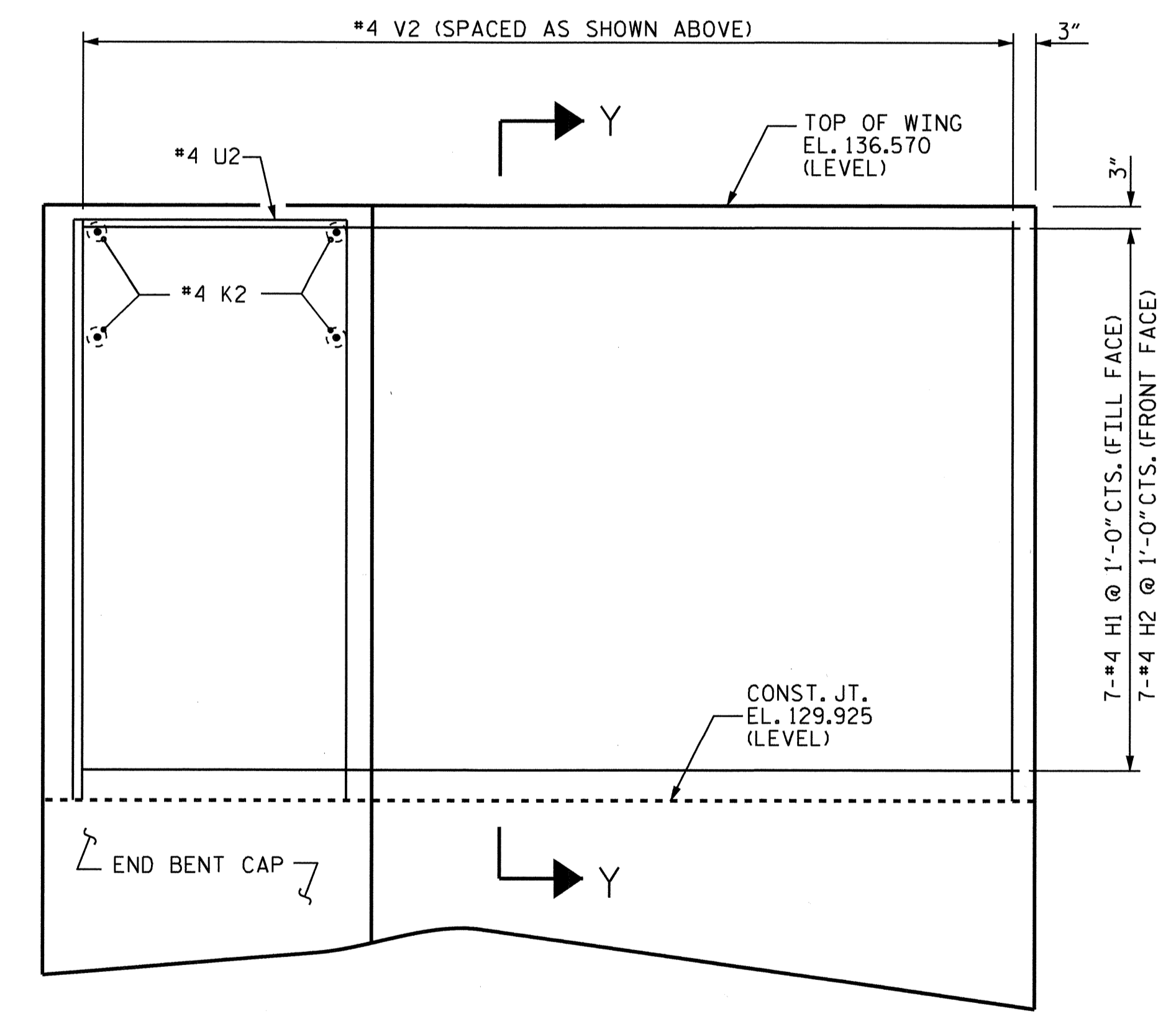
PLAN OF WING (W4)



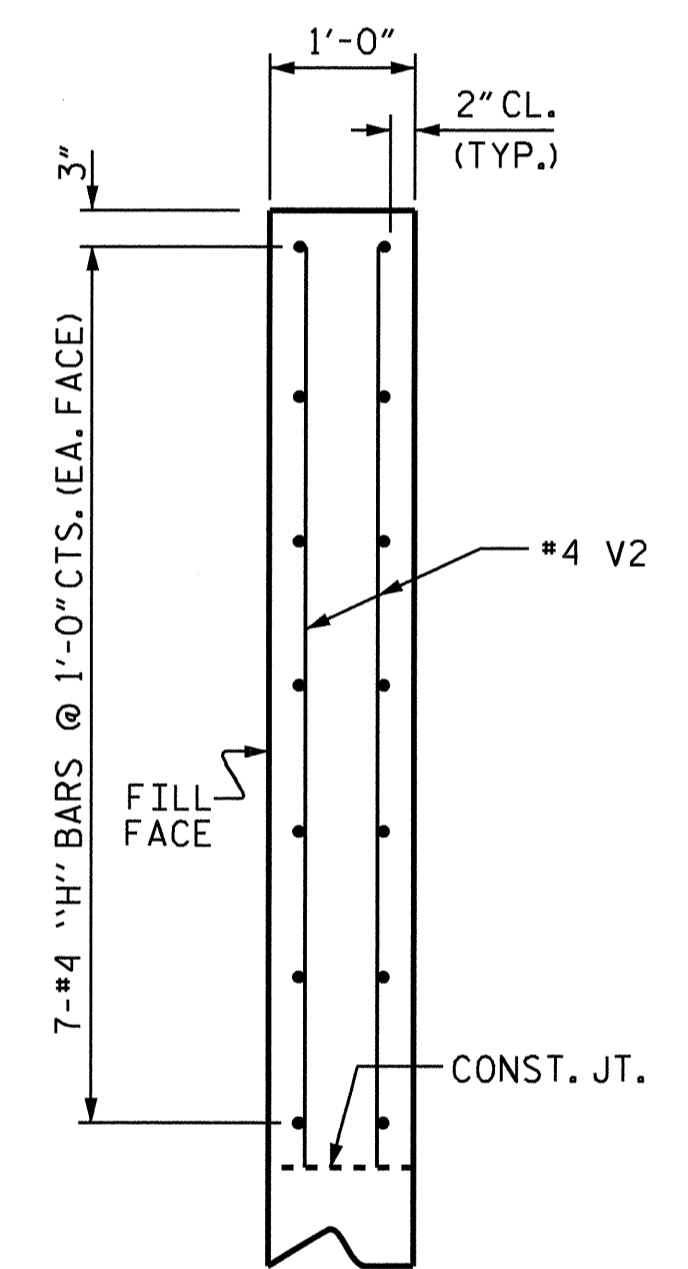
SECTION X-X



ELEVATION OF WING (W3)



ELEVATION OF WING (W4)



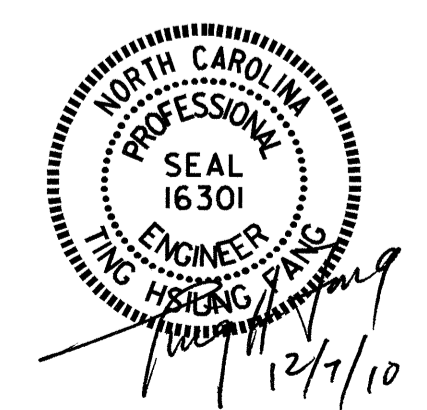
SECTION Y-Y

ABUTMENT WINGS

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

PROJECT NO. U-3621B
 NASH COUNTY
 STATION: 50+77.00 -L-

SHEET 4 OF 4



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPAN
 DETAILS
 (RIGHT LANE)

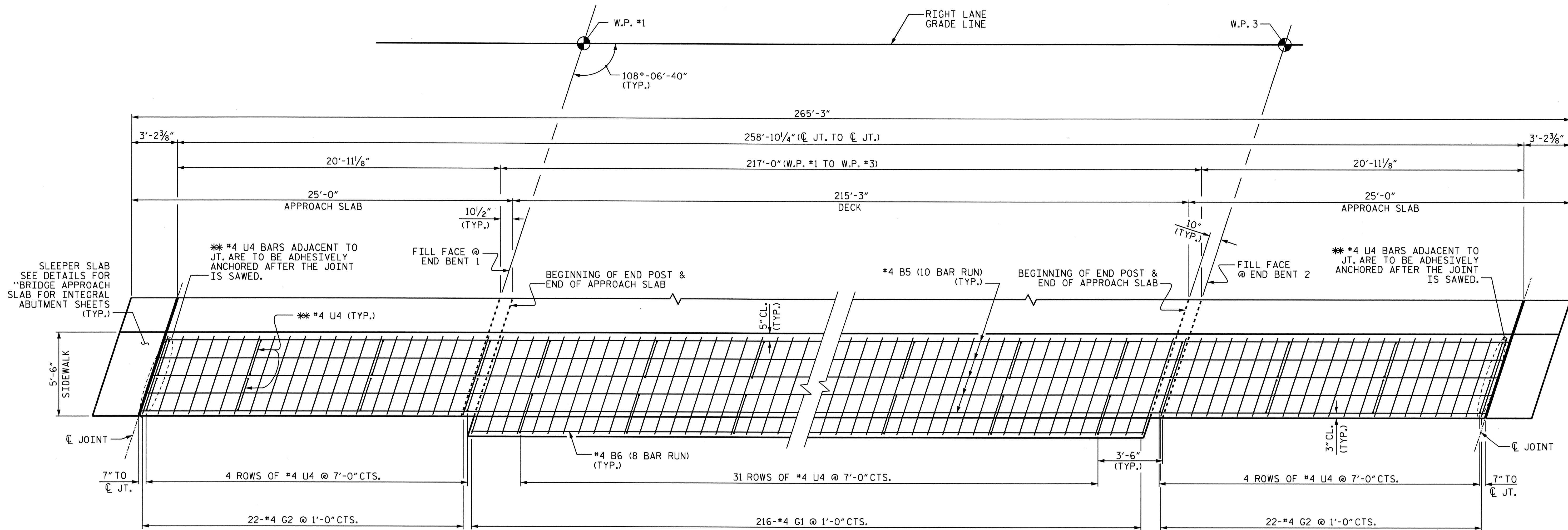
REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	DATE:
1			3	
2			4	

TOTAL SHEETS: 68

DRAWN BY: QT NGUYEN DATE: 2-09
 CHECKED BY: W.D. CRUTCHER DATE: 4-10

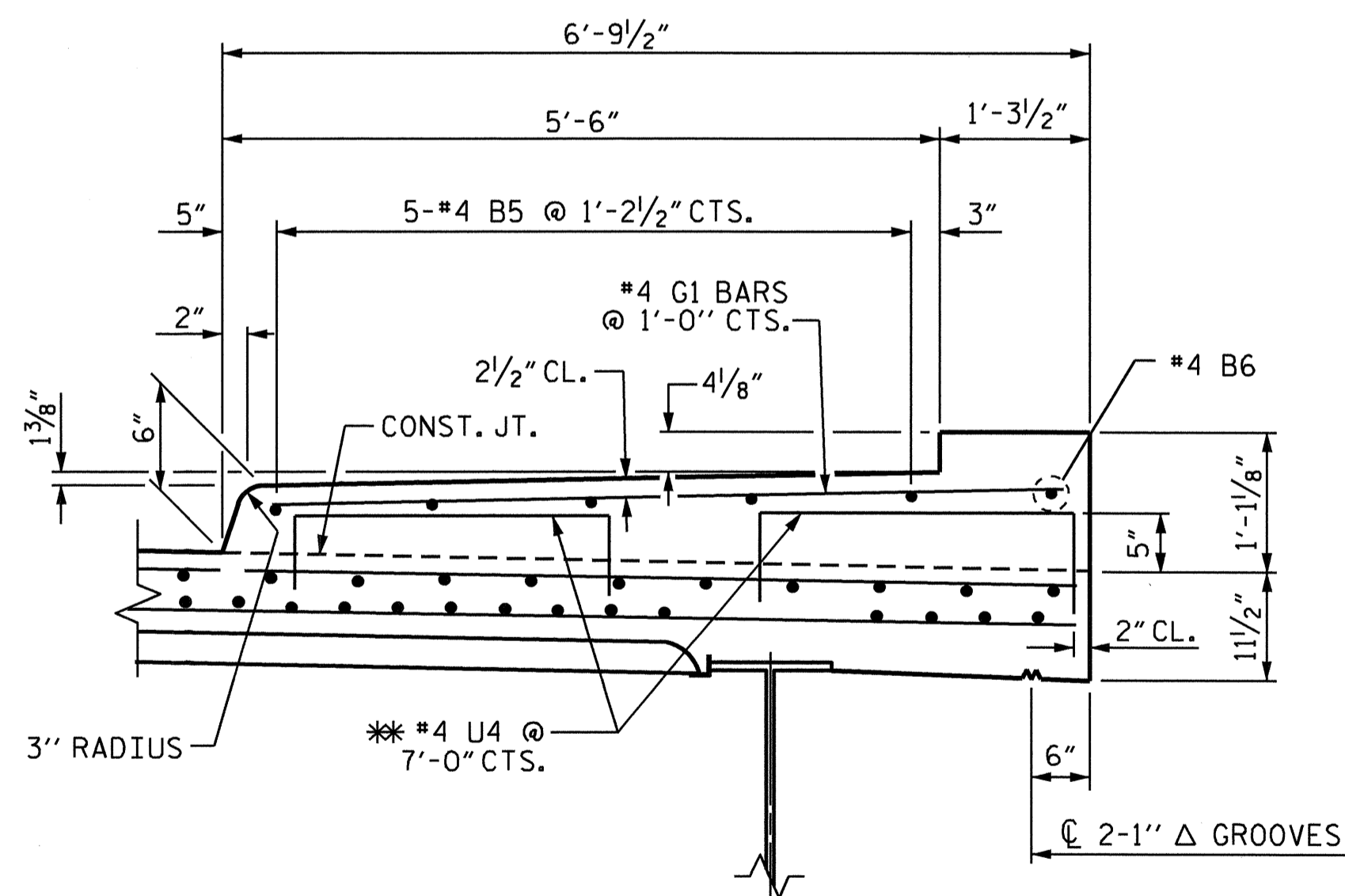
07-DEC-2010 09:50
 Y:\TIP\Projects-U\U3621B\Structures\Final Plans\R\lane\U3621b.sd.s2*.dgn
 qtnguyen

STR #2



PLAN OF SIDEWALK

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

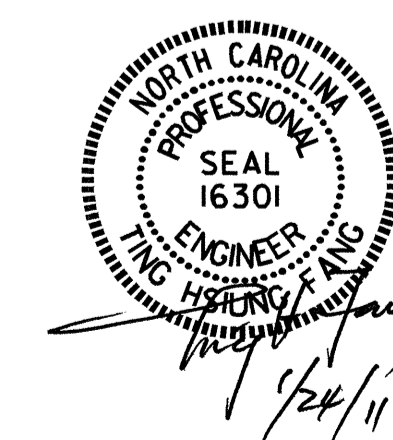


SECTION THRU SIDEWALK

FOR SECTION AND DETAILS ON APPROACH SLAB & SLEEPER SLAB SEE "BRIDGE APPROACH SLAB FOR INTEGRAL ABUTMENT" SHEET.

NOTES:

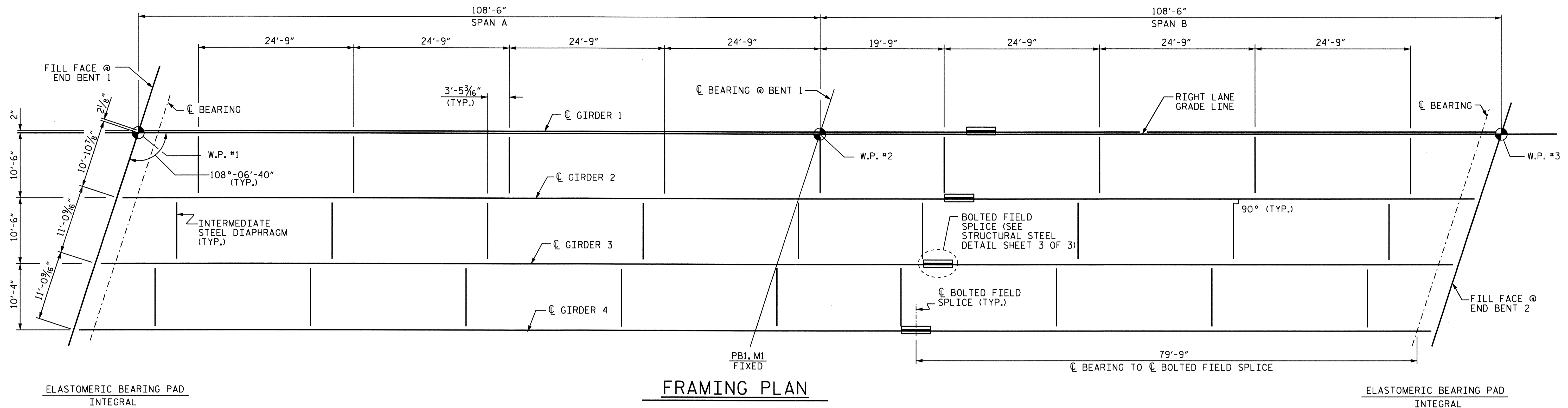
- THE JOINTS IN THE APPROACH SLABS SHALL BE SAWED PRIOR TO THE CASTING OF THE SIDEWALK.
- THE SIDEWALK ON A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL CONCRETE IN THE UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.
- ALL REINFORCING STEEL IN THE SIDEWALK AND END POSTS SHALL BE EPOXY COATED.
- GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE SIDEWALK IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINTS SHALL BE LOCATED AT A SPACING OF 8 FEET TO 10 FEET BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINT WILL BE REQUIRED FOR SEGMENTS LESS THAN 10 FEET IN LENGTH.
- FOR SIDEWALK DETAILS ON APPROACH SLAB AND SLEEPER SLABS, SEE "BRIDGE APPROACH SLAB FOR INTEGRAL ABUTMENT" SHEETS.
- ** THE #4 U4 BARS MAY BE PUSHED INTO GREEN CONCRETE AFTER DECK OR APPROACH SLAB HAS BEEN SCREEDED OFF, EXCEPT AS NOTED. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.
- SIDEWALK ON THE BRIDGE EXTENDING TO THE EVAZOTE JOINT ON THE APPROACH SLABS IS INCLUDED IN THE SUPERSTRUCTURE BILL OF MATERIAL AND PAID FOR AS PART OF THE REINFORCED CONCRETE DECK PAY ITEM. SIDEWALK ON THE SLEEPER SLABS ONLY ARE INCLUDED IN THE APPROACH SLAB BILL OF MATERIAL AND PAID FOR AS PART OF THE BRIDGE APPROACH SLABS PAY ITEM.



PROJECT NO. U-3621B
NASH COUNTY
STATION: 50+77.00 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S-44
SUPERSTRUCTURE						TOTAL SHEETS 68
SIDEWALK DETAILS (RIGHT LANE)						
REVISIONS						
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

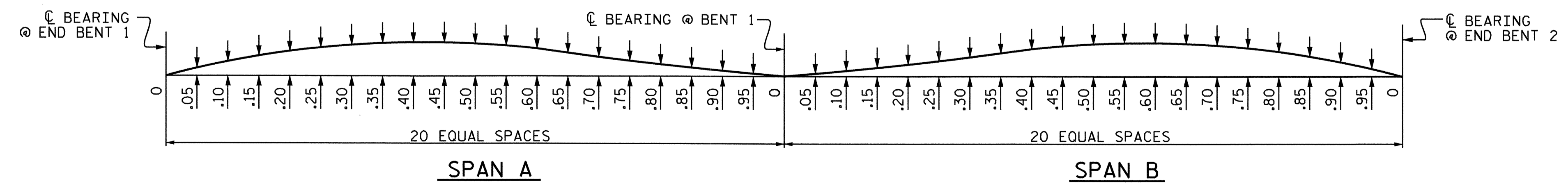
DRAWN BY : HARISH SHAH DATE : 3-17-10
CHECKED BY : W.D. CRUTCHER DATE : 4-27-10



FRAMING PLAN

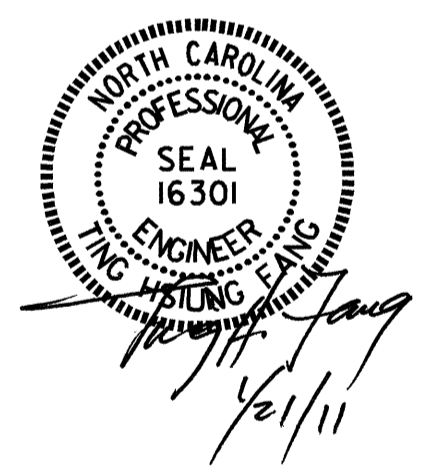
DEAD LOAD DEFLECTION TABLE FOR GIRDER																					
	SPAN A																				
	GIRDERS 1, 2, 3, & 4																				
TWENTIETH POINTS	0	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	0
DEFLECTION DUE TO WEIGHT OF GIRDER	0	0.005	0.009	0.013	0.017	0.020	0.022	0.023	0.024	0.024	0.023	0.021	0.019	0.016	0.013	0.010	0.007	0.004	0.002	0.001	0
DEFLECTION DUE TO WEIGHT OF SLAB *	0	0.014	0.028	0.041	0.052	0.061	0.067	0.072	0.074	0.073	0.070	0.065	0.058	0.050	0.041	0.031	0.022	0.014	0.007	0.002	0
DEFLECTION DUE TO WT. OF BARRIER RAIL OR SIDEWALK	0	0.002	0.004	0.006	0.008	0.009	0.010	0.011	0.011	0.011	0.011	0.010	0.009	0.008	0.006	0.005	0.003	0.002	0.001	0.000	0
TOTAL DEAD LOAD DEFLECTION	0	0.021	0.041	0.060	0.077	0.090	0.099	0.106	0.109	0.108	0.104	0.096	0.086	0.074	0.060	0.046	0.032	0.020	0.010	0.003	0
VERTICAL CURVE ORDINATE	0	0.040	0.076	0.108	0.135	0.159	0.178	0.192	0.203	0.209	0.211	0.209	0.203	0.192	0.178	0.159	0.135	0.108	0.076	0.040	0
REQUIRED CAMBER	0	3/4"	1 3/8"	2"	2 9/16"	3"	3 5/16"	3 9/16"	3 3/4"	3 13/16"	3 13/16"	3 13/16"	3 1/2"	3 3/16"	2 7/8"	2 1/16"	2"	1 1/2"	1"	1/2"	0
	SPAN B																				
	GIRDERS 1, 2, 3, & 4																				
TWENTIETH POINTS	0	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	0
DEFLECTION DUE TO WEIGHT OF GIRDER	0	0.001	0.002	0.004	0.007	0.010	0.013	0.016	0.019	0.021	0.023	0.024	0.024	0.023	0.022	0.020	0.017	0.013	0.009	0.005	0
DEFLECTION DUE TO WEIGHT OF SLAB *	0	0.002	0.007	0.014	0.022	0.031	0.041	0.050	0.058	0.065	0.070	0.073	0.074	0.072	0.067	0.061	0.052	0.041	0.028	0.014	0
DEFLECTION DUE TO WT. OF BARRIER RAIL OR SIDEWALK	0	0.000	0.001	0.002	0.003	0.005	0.006	0.008	0.009	0.010	0.011	0.011	0.011	0.011	0.010	0.009	0.008	0.006	0.004	0.002	0
TOTAL DEAD LOAD DEFLECTION	0	0.003	0.010	0.020	0.032	0.046	0.060	0.074	0.086	0.096	0.104	0.108	0.109	0.106	0.099	0.090	0.077	0.060	0.041	0.021	0
VERTICAL CURVE ORDINATE	0	0.040	0.076	0.108	0.135	0.159	0.178	0.192	0.203	0.209	0.211	0.209	0.203	0.192	0.178	0.159	0.135	0.108	0.076	0.040	0
REQUIRED CAMBER	0	1/2"	1"	1 1/2"	2"	2 7/16"	2 7/8"	3 3/16"	3 3/2"	3 11/16"	3 3/16"	3 13/16"	3 3/4"	3 3/16"	3 5/16"	3"	2 9/16"	2"	1 3/8"	3/4"	0

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



SCHEMATIC OF CAMBER ORDINATES

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

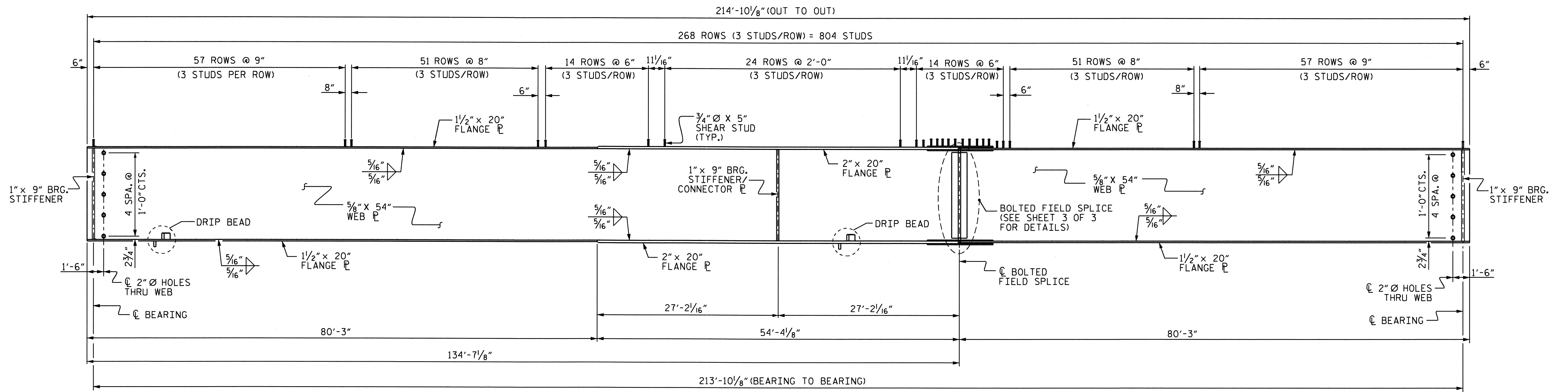


PROJECT NO. U-3621B
NASH COUNTY
 STATION: 50+77.00-L-

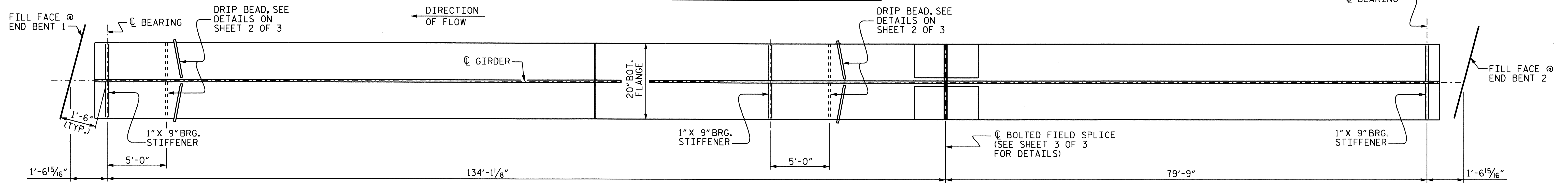
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 FRAMING PLAN & DEAD
 LOAD DEFLECTIONS
 (RIGHT LANE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-45
1			3			TOTAL SHEETS
2			4			68

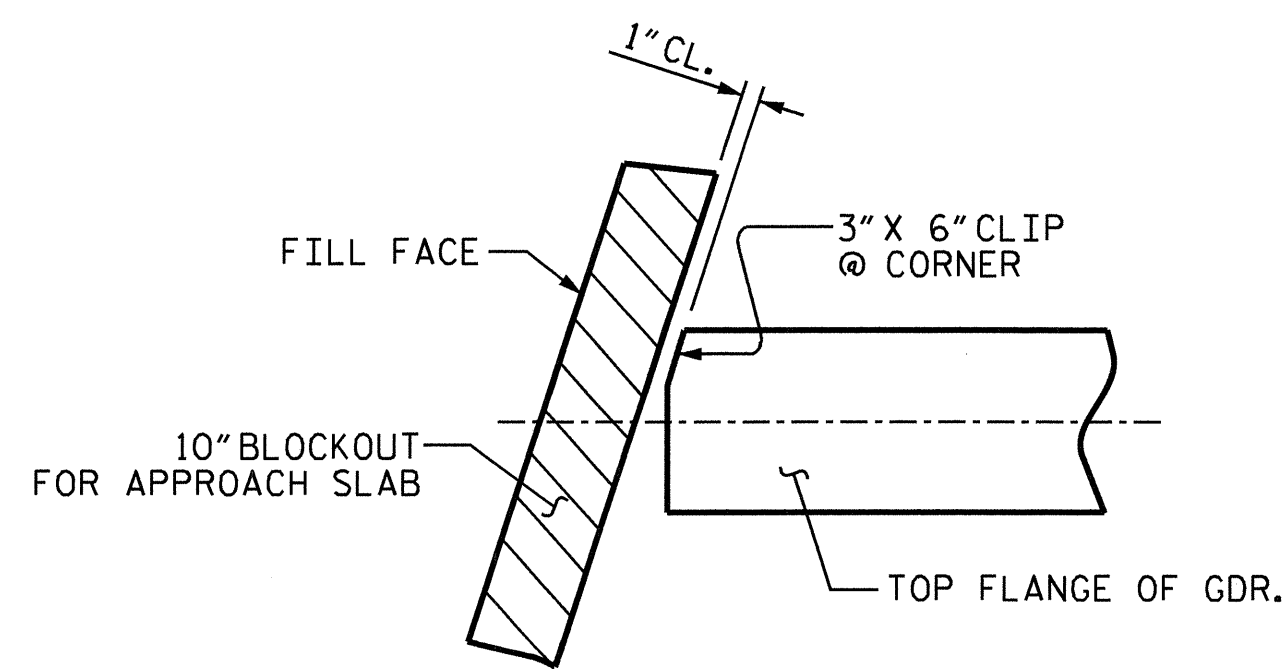
DRAWN BY: QT NGUYEN DATE: 1-10
 CHECKED BY: T.H. FANG DATE: 1-10



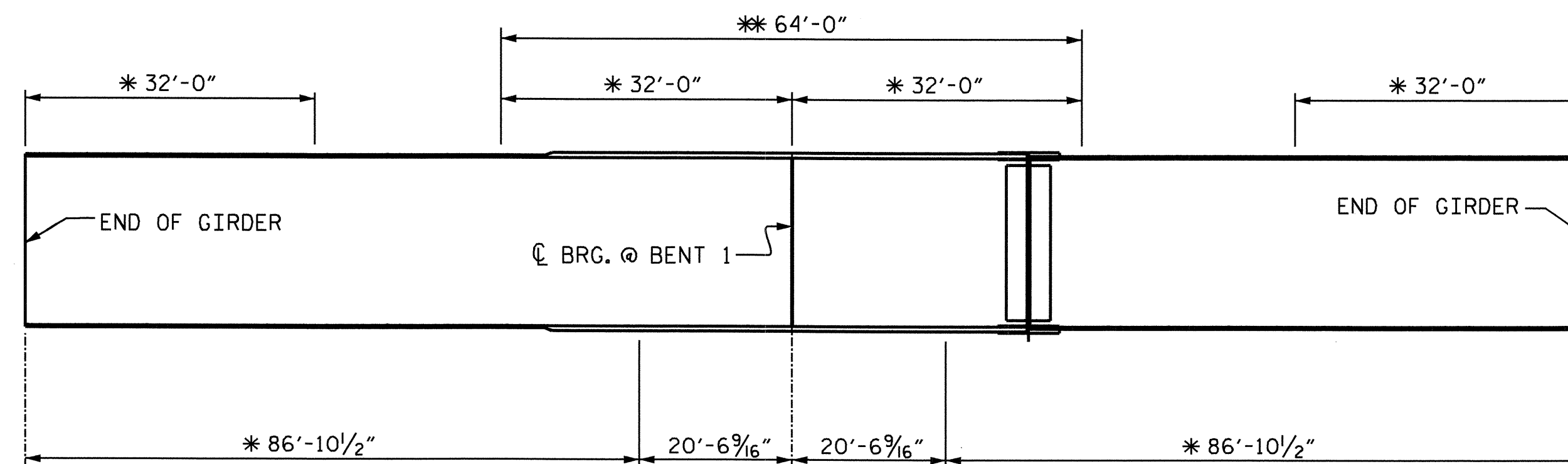
GIRDER ELEVATION



BOTTOM FLANGE DETAIL



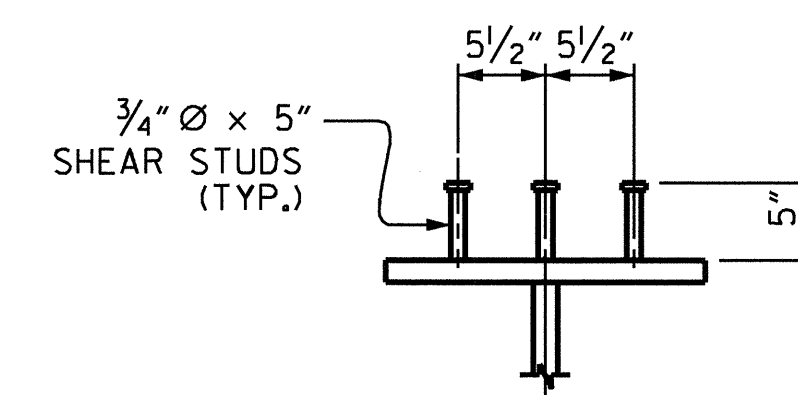
TOP FLANGE COPE DETAIL
(TYP. EA. GIRDER)



CHARPY V-NOTCH TEST FOR PLATE GIRDERS

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

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

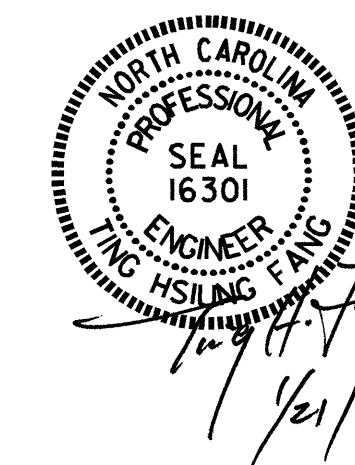


SHEAR STUD DETAIL

PROJECT NO. U-3621B
NASH COUNTY
 STATION: 50+77.00 -L-

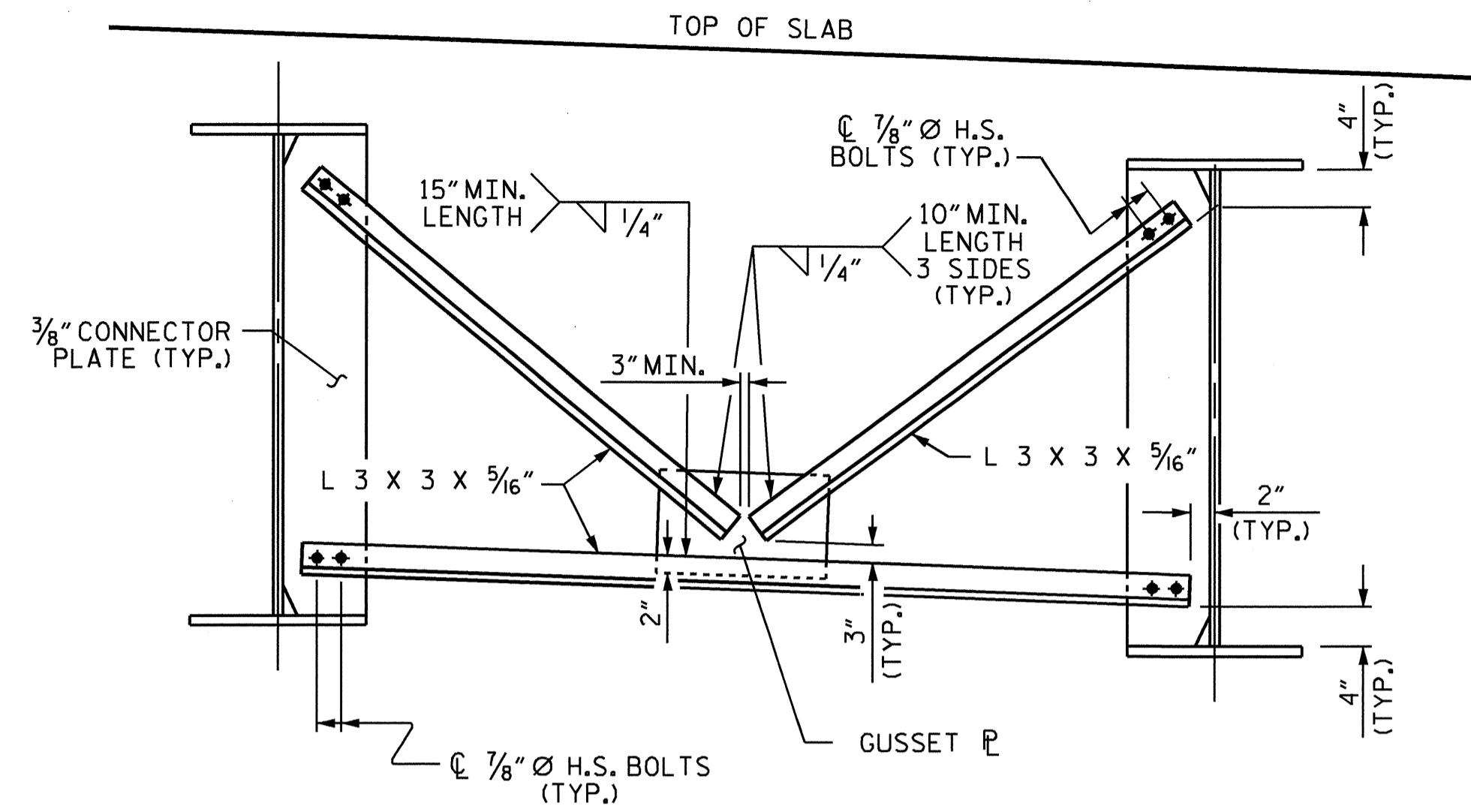
SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 STRUCTURAL STEEL
 DETAILS
 (RIGHT LANE)

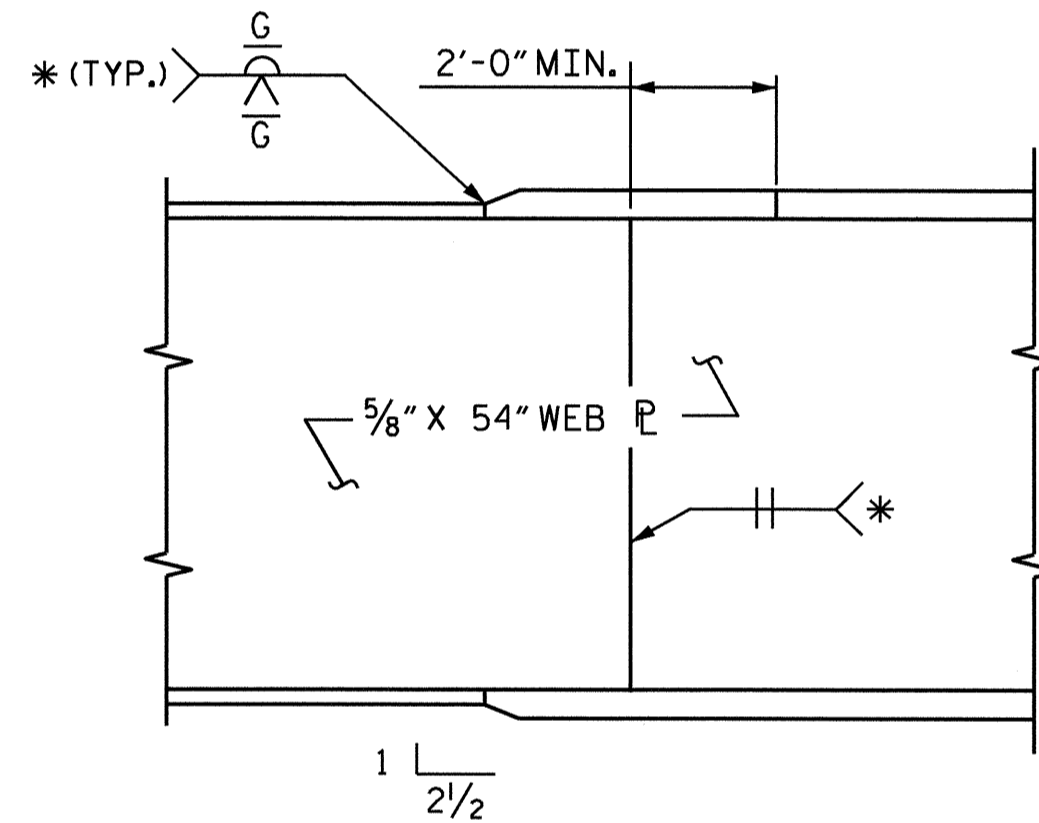


REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	DATE:	S-46
1			3		TOTAL SHEETS
2			4		68

DRAWN BY: QT NGUYEN DATE: 1-10
 CHECKED BY: T.H. FANG DATE: 1-10

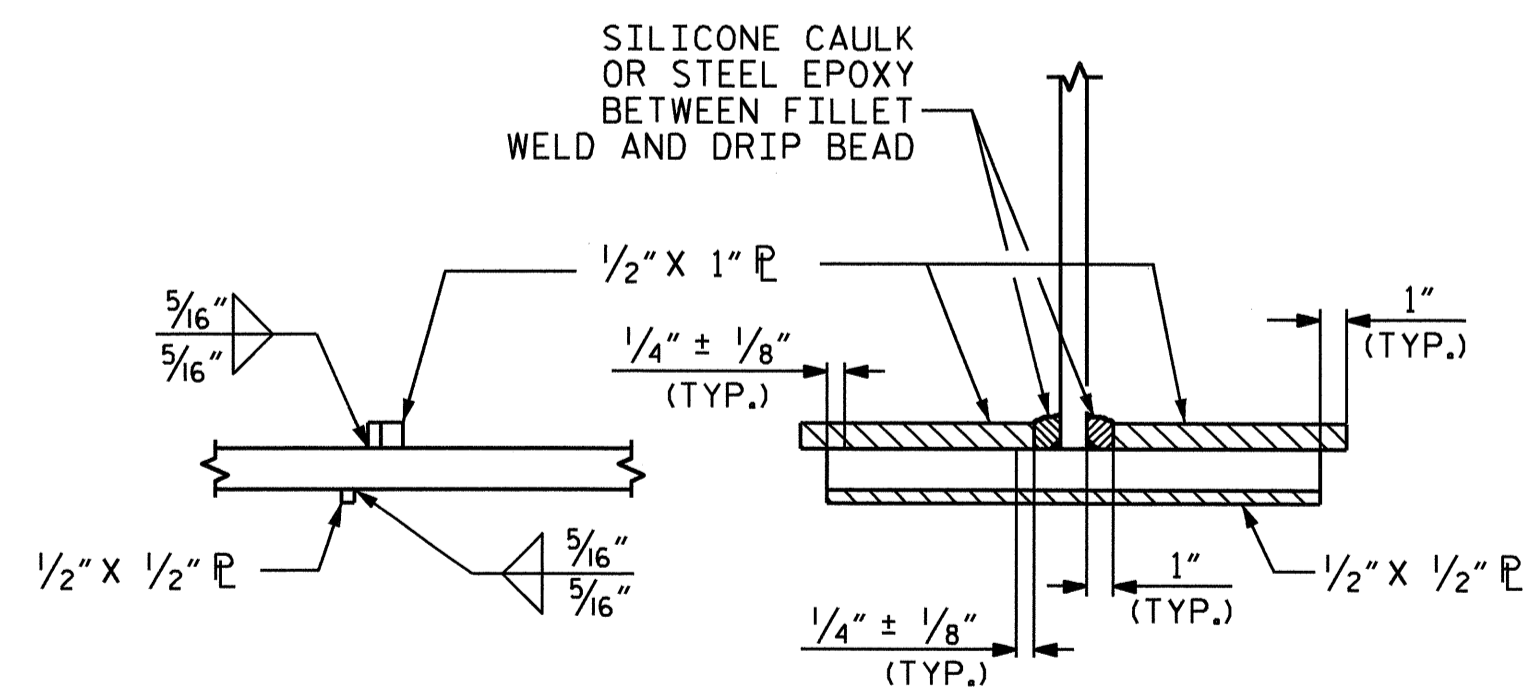


TYPICAL INTERMEDIATE DIAPHRAGM



TYPICAL FLANGE AND WEB BUTT JOINT

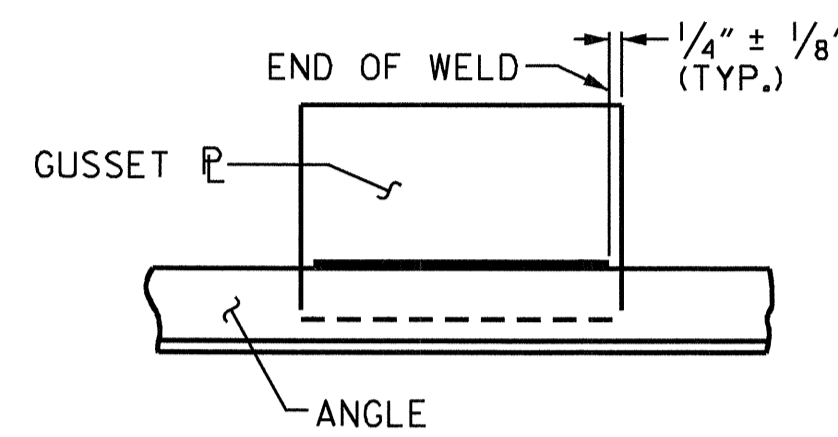
* GRIND SMOOTH AND FLUSH ON OUTER FACE OF EXTERIOR GIRDERS



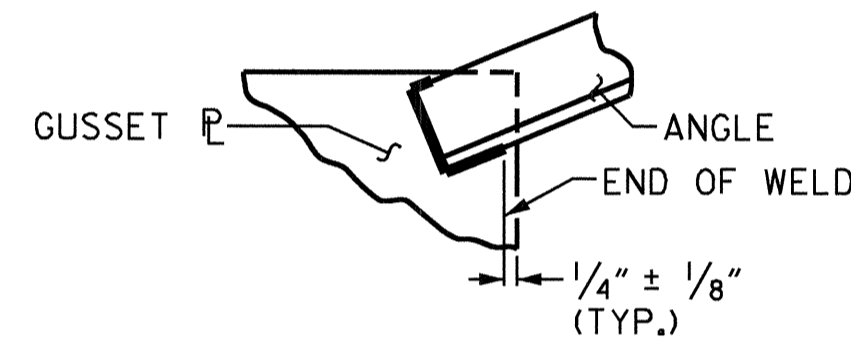
SIDE VIEW

SECTION

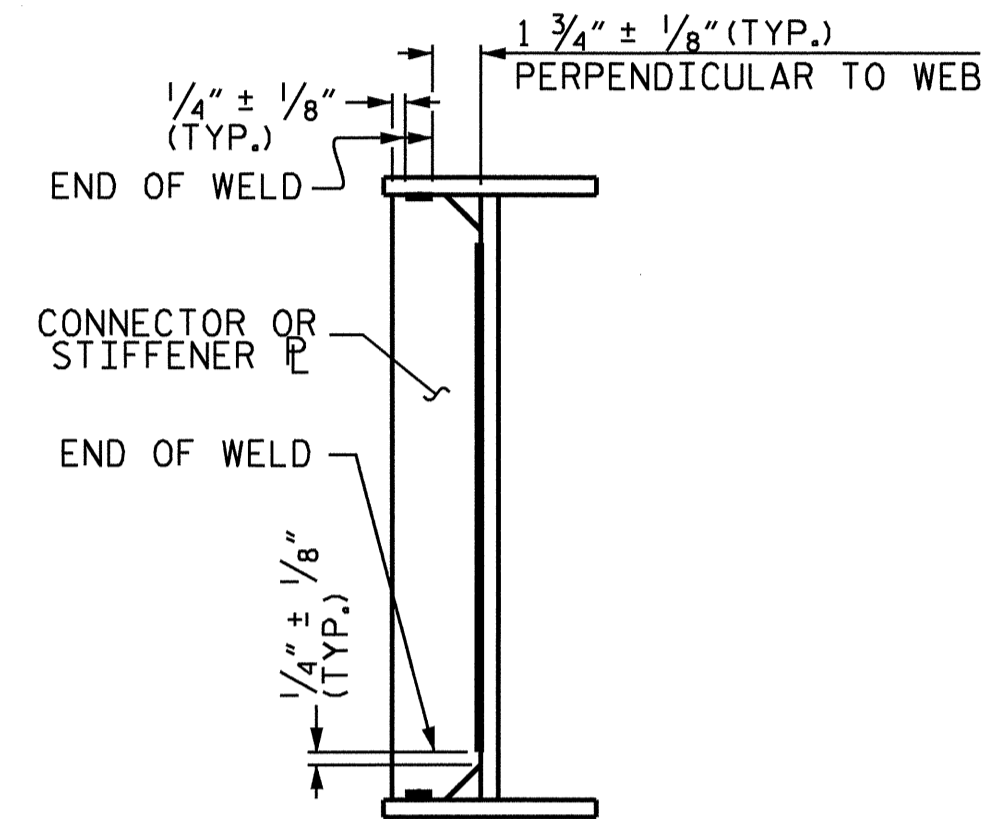
DRIP BEAD DETAILS



TYPICAL GUSSET PLATE CONNECTION

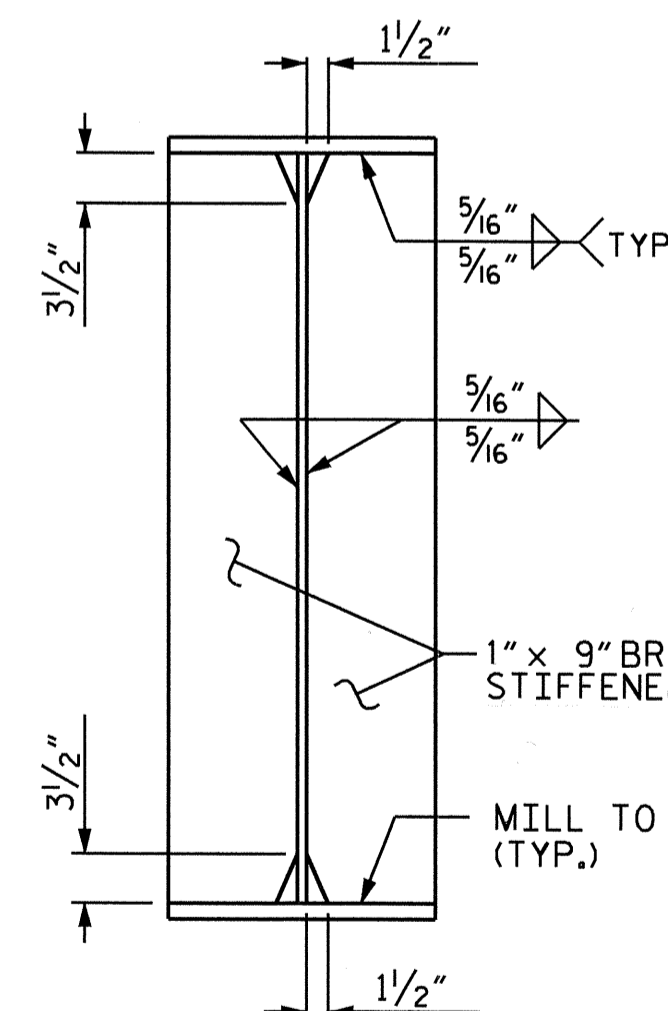


TYPICAL ANGLE TO GUSSET PLATE CONNECTION

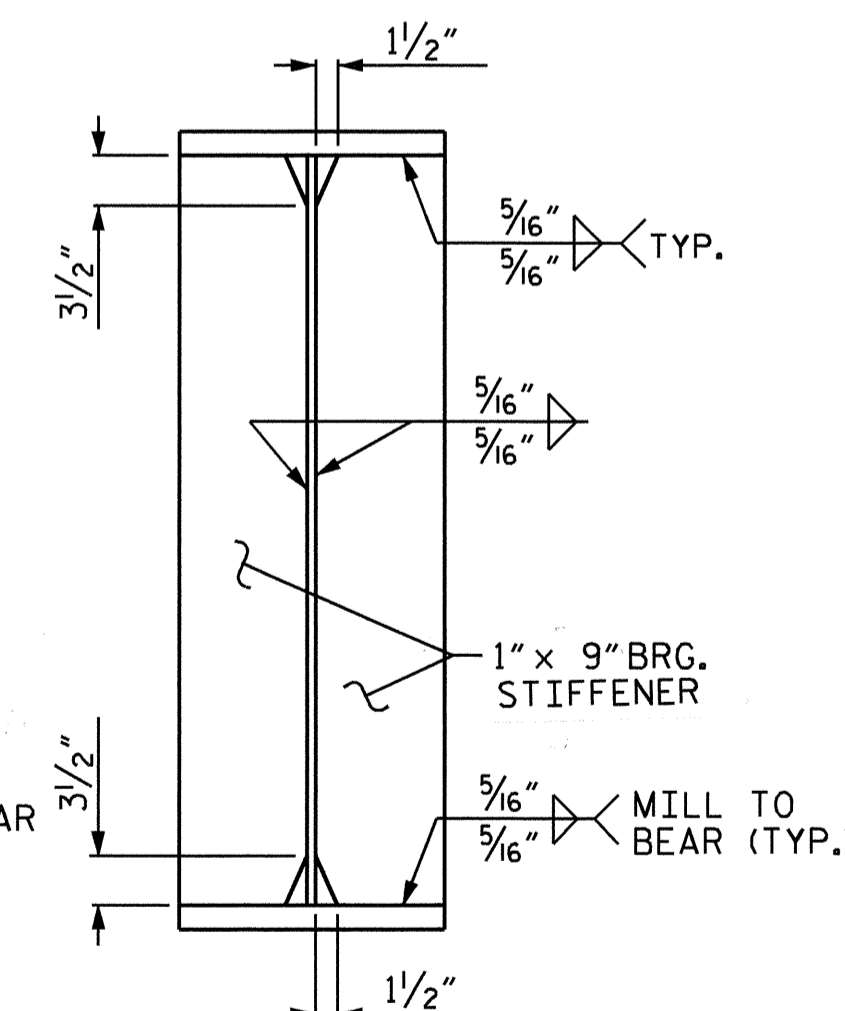


TYPICAL STIFFENER OR CONNECTOR PLATE CONNECTION

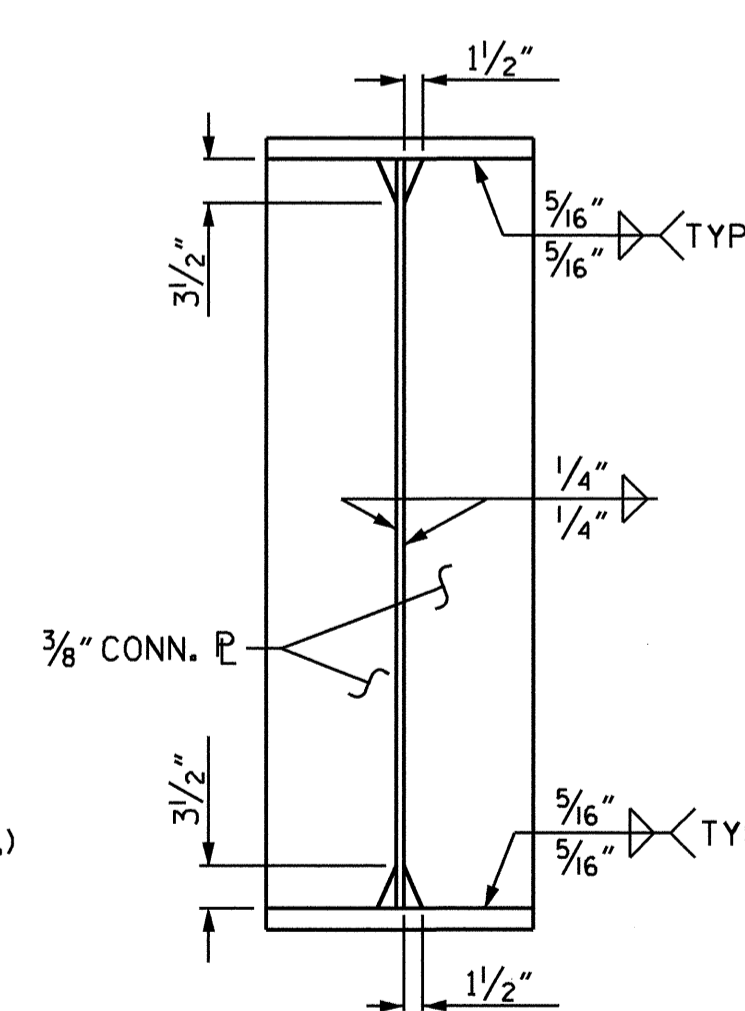
WELD TERMINATION DETAILS



BEARING STIFFENER PLATE DETAIL AT END BENTS



BEARING STIFFENER PLATE DETAIL AT BENT 1



CONNECTOR PLATE DETAIL

NOTE: DO NOT CLIP PLATE AT TOP OUTSIDE CORNER OF STIFFENER PLATE.

NOTES:

ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 50W.

ALL DIMENSIONS SHOWN ARE HORIZONTAL OR VERTICAL, UNLESS OTHERWISE NOTED.

ALL FIELD CONNECTIONS TO BE 7/8" DIA. HIGH STRENGTH BOLTS UNLESS OTHERWISE NOTED.

BEARING STIFFENERS ARE TO BE PLACED NORMAL TO THE WEB OF THE GIRDER AND SHALL BE PLUMB.

SHOP SPLICES ARE PERMITTED TO LIMIT THE MAXIMUM REQUIRED FLANGE PIECE LENGTHS TO 60 FEET AND WEB PIECE LENGTHS TO 45 FEET. PERMITTED FLANGE AND WEB SHOP SPLICES SHALL NOT BE LOCATED WITHIN 15 FEET OF MAXIMUM DEAD LOAD DEFLECTION (NOR 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.

FOR HIGH STRENGTH BOLTS, SEE SPECIAL PROVISIONS.

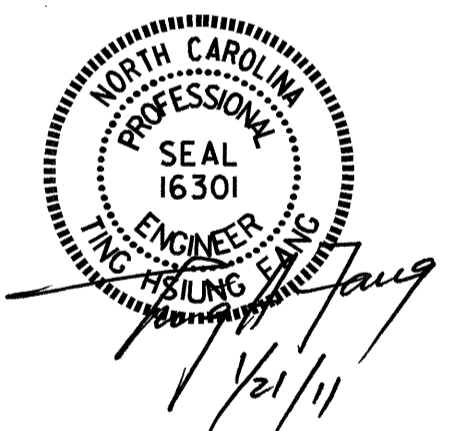
BEARING STIFFENER MAY REQUIRE COPING IF WIDER THAN BOTTOM FLANGE TO AVOID INTERFERENCE WITH THE ANCHOR BOLT.

FOR DIRECT TENSION INDICATORS, SEE SPECIAL PROVISIONS.

FOR SHIPPING STEEL STRUCTURAL MEMBERS, SEE SPECIAL PROVISIONS.

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.

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



PROJECT NO. U-3621B
 NASH COUNTY
 STATION: 50+77.00 -L-

SHEET 2 OF 3

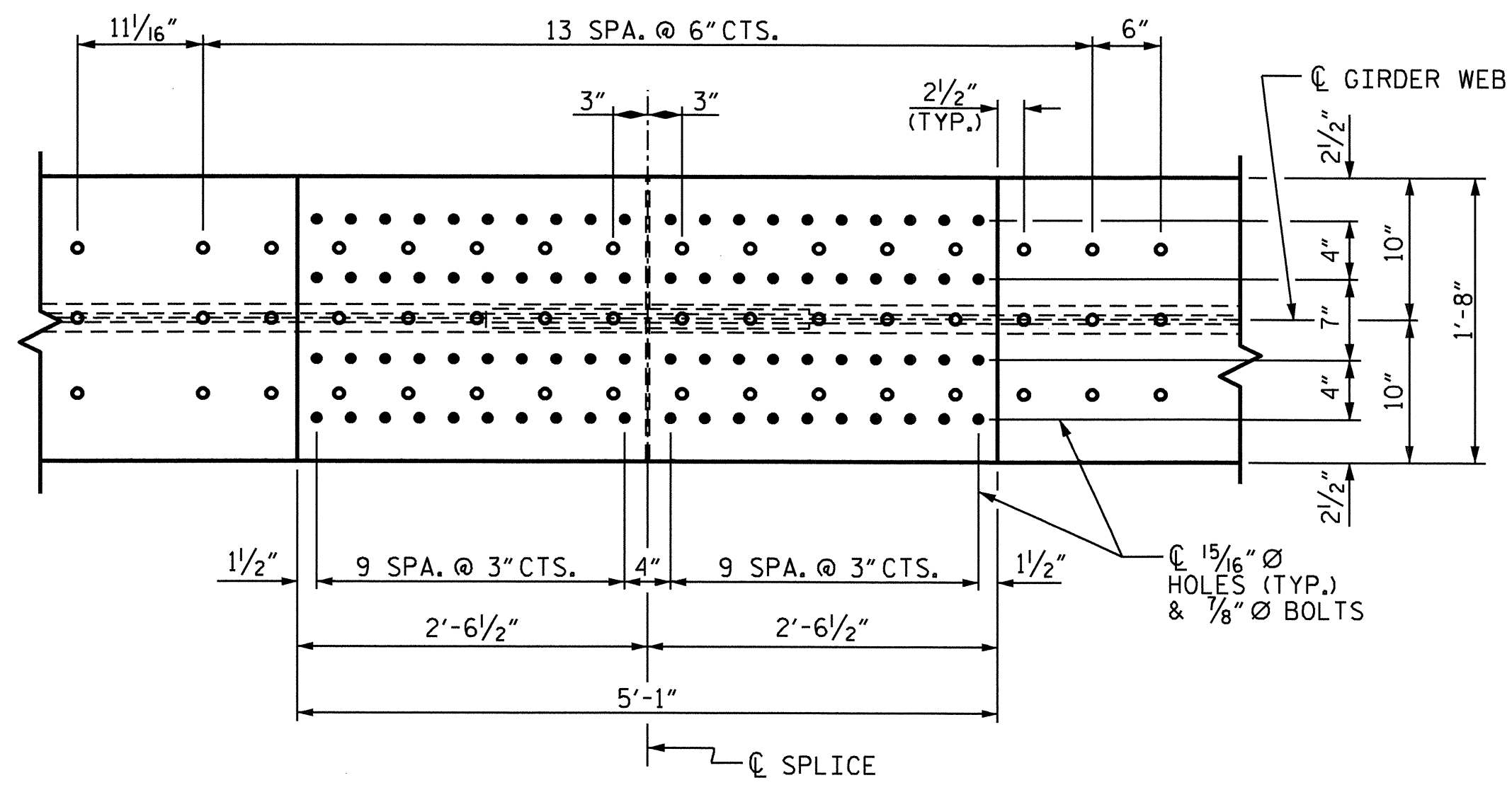
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 STRUCTURAL STEEL
 DETAILS
 (RIGHT LANE)

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-47	
1			3			TOTAL SHEETS	
2			4			68	

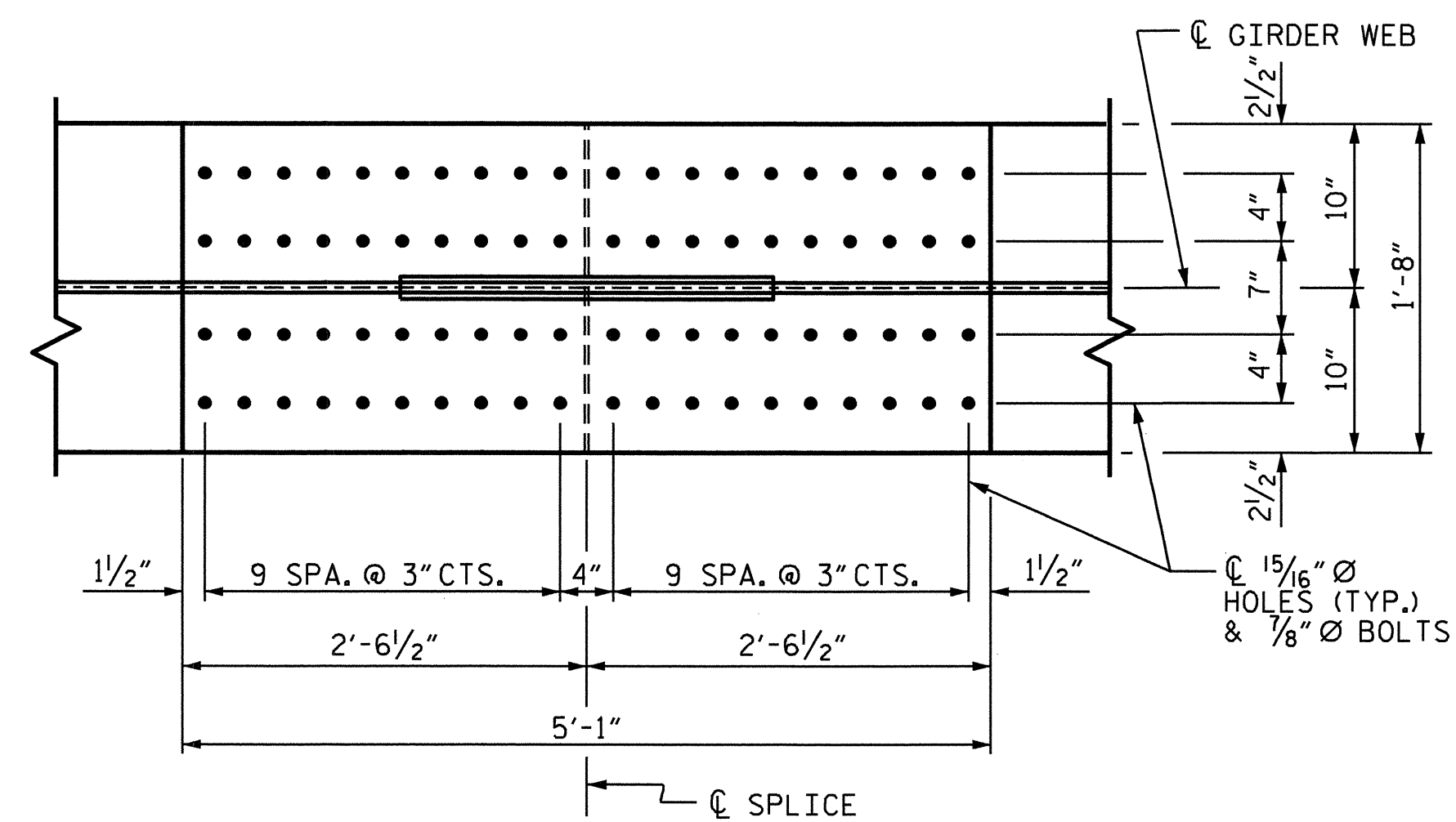
STR #2

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

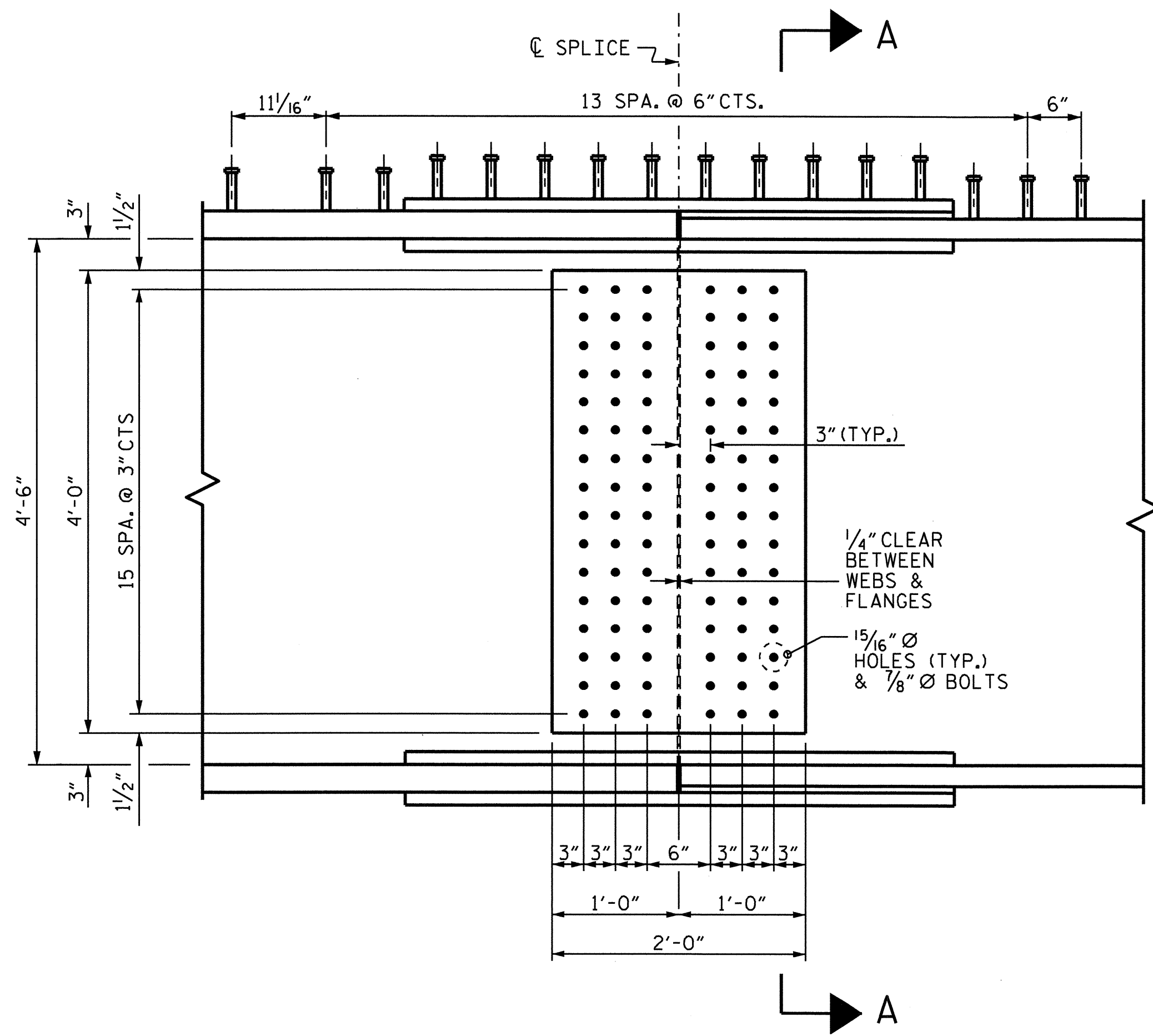
20-JAN-2011 11:31
 Y:\TIP\Projects\UNU3621B\Structures\Final Plans\Right Lane\U3621b.sd.ss2.dgn
 qtnguyen



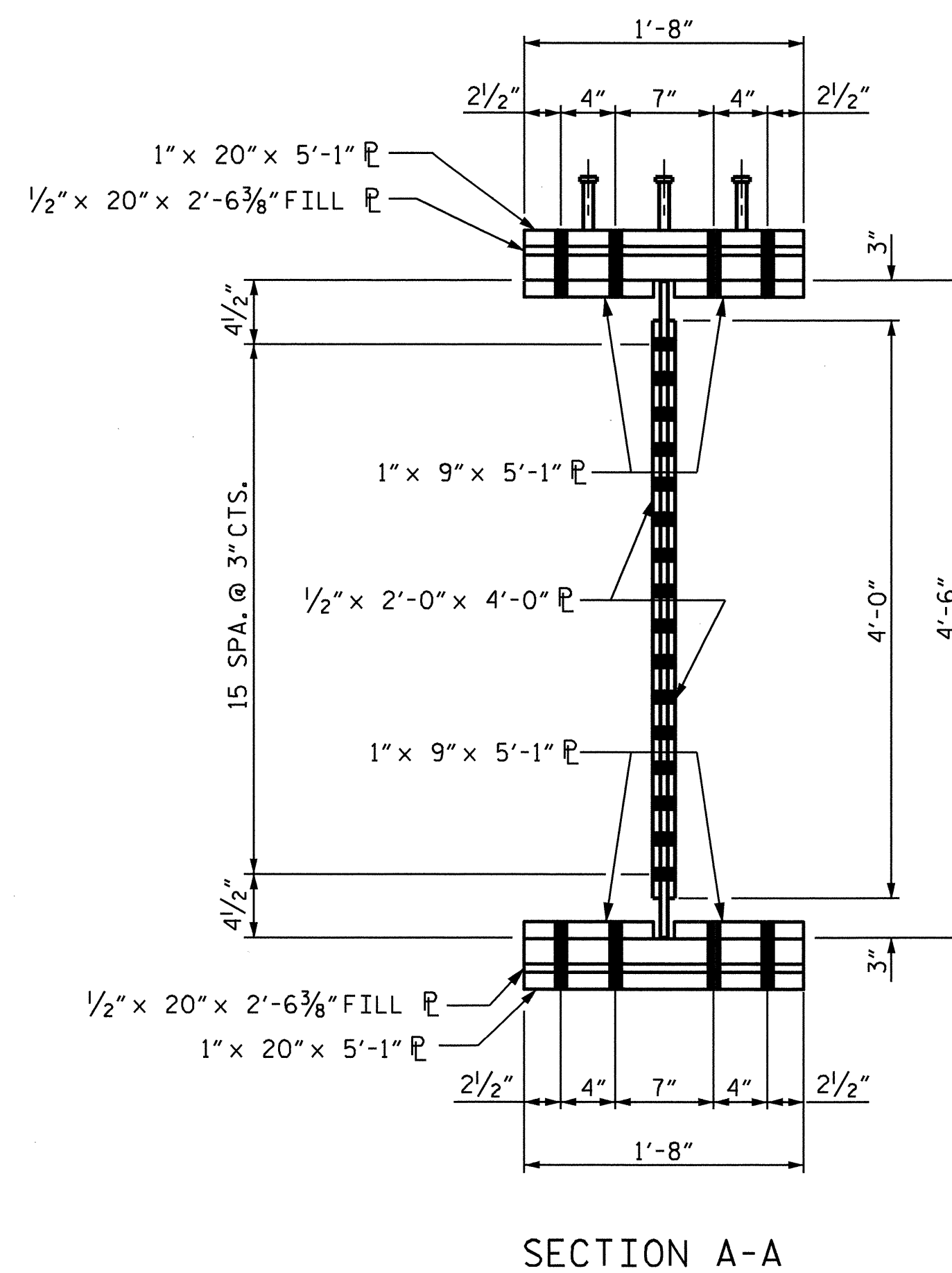
PLAN (TOP OF TOP FLANGE)



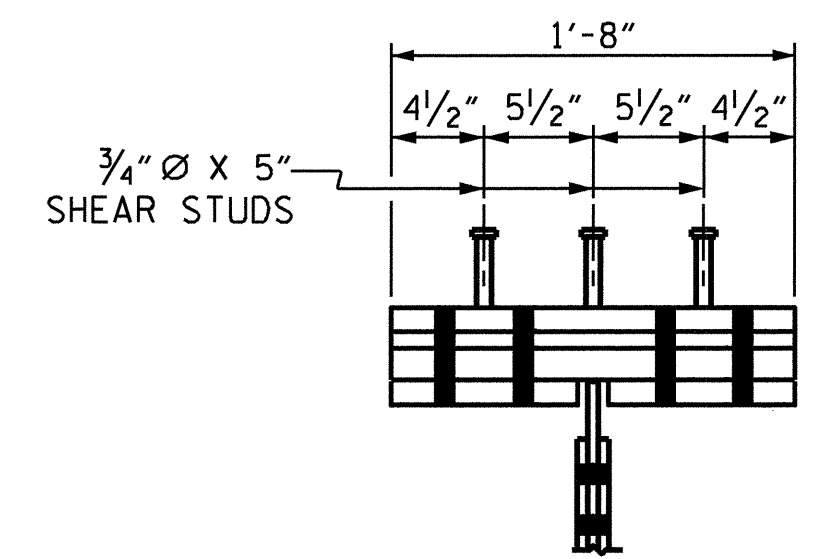
PLAN (TOP OF BOTTOM FLANGE)



ELEVATION



SECTION A-A



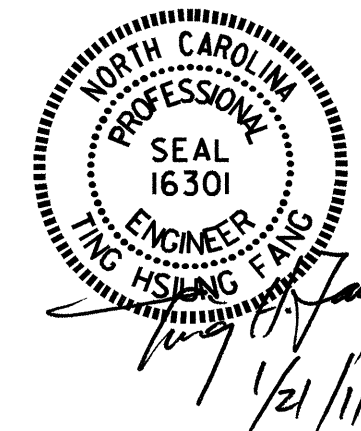
SHEAR STUD DETAIL FOR TOP FLANGE SPLICE PLATE

BOLTED FIELD SPLICE DETAILS

PROJECT NO. U-3621B
NASH COUNTY
 STATION: 50+77.00 -L-

SHEET 3 OF 3

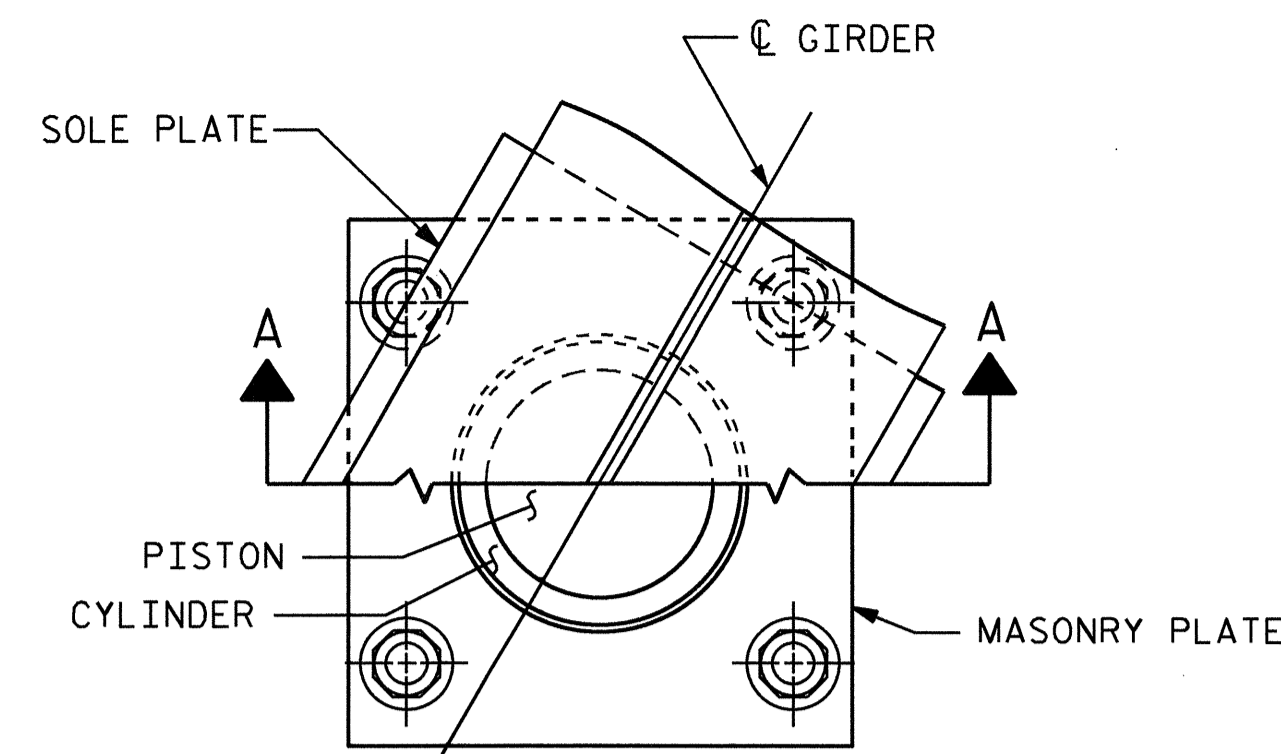
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 STRUCTURAL
 STEEL DETAILS
 BOLTED FIELD SPLICE
 (RIGHT LANE)



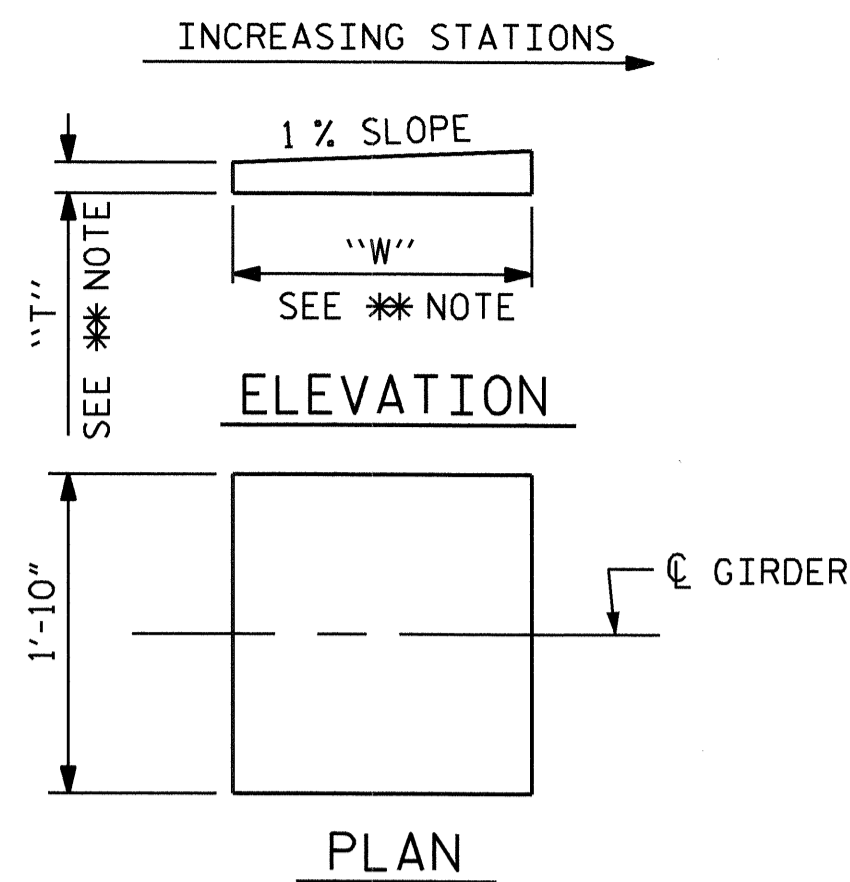
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-48
1			3			TOTAL SHEETS
2			4			68

DRAWN BY : QT NGUYEN DATE : 1-10
 CHECKED BY : T.H. FANG DATE : 1-10

20-JAN-2011 11:30
 Y:\TIP\Projects-U\U3621B\Structures\Final Plans\RTlane\U3621b.sd, ss2.dgn
 qtnguyen



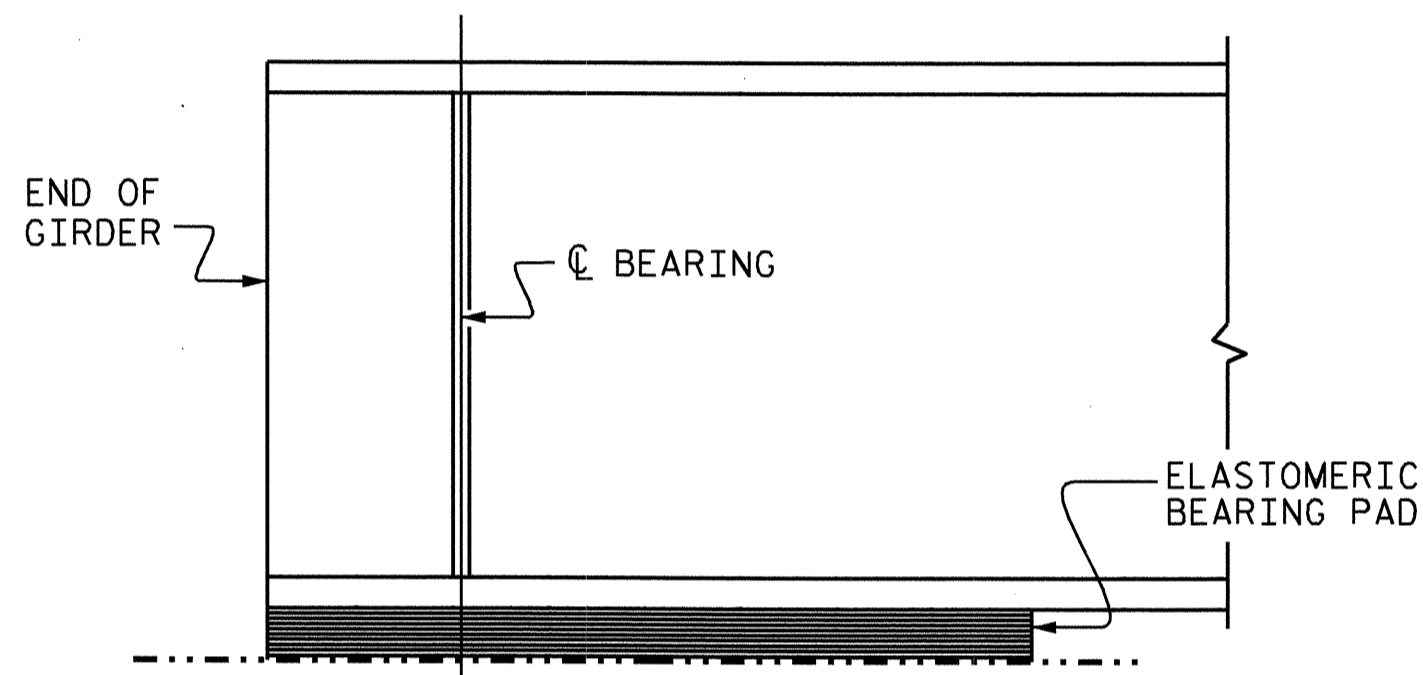
CUT-AWAY PLAN



PLAN

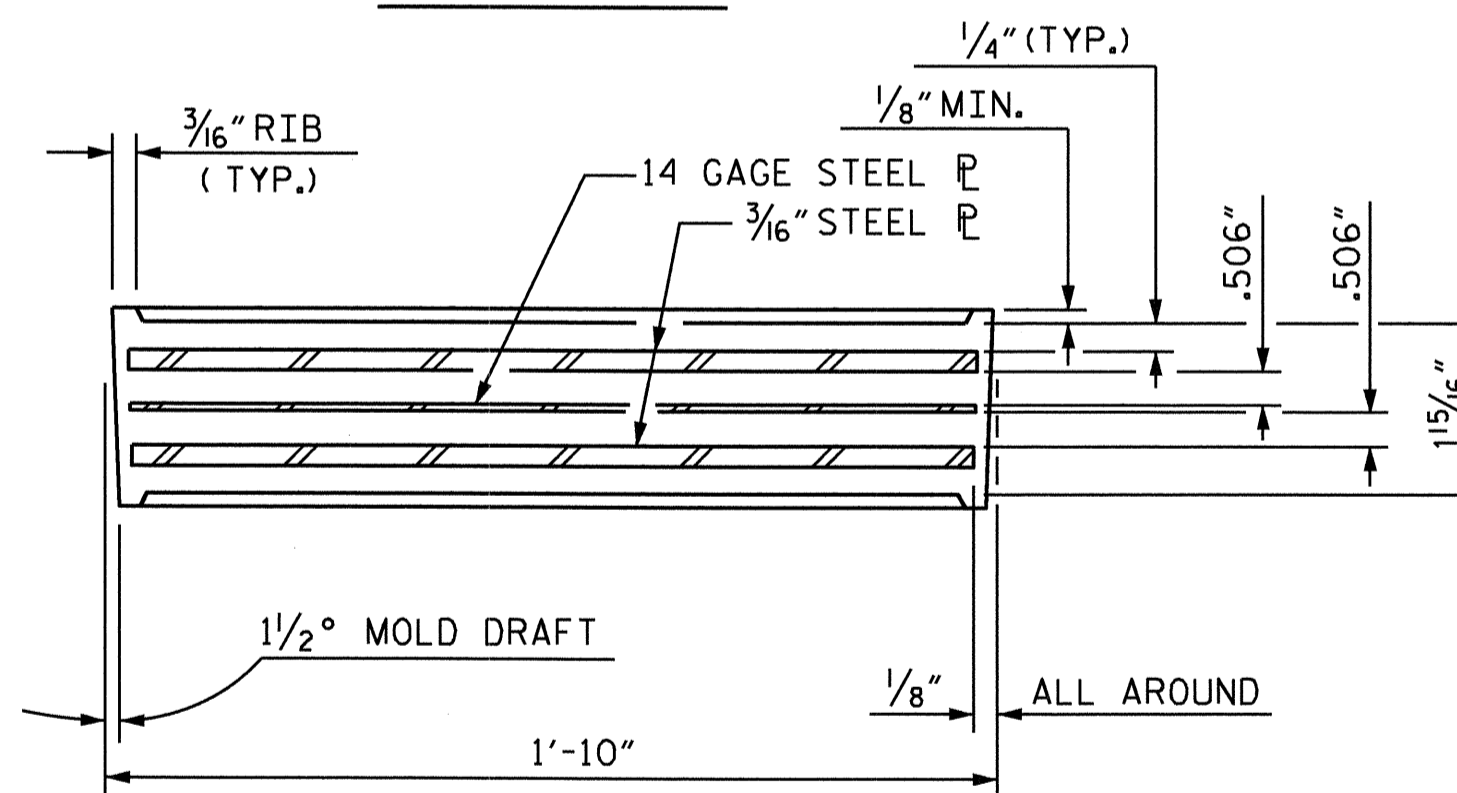
** NOTE: DIMENSIONS "W" AND "T" ARE TO BE DETERMINED BY THE MANUFACTURER.

SOLE PLATE DETAILS

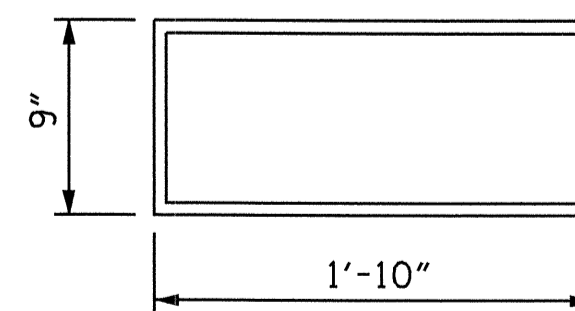


E4, FIXED @ END BENT

ELEVATION



TYPICAL SECTION OF ELASTOMERIC BEARINGS



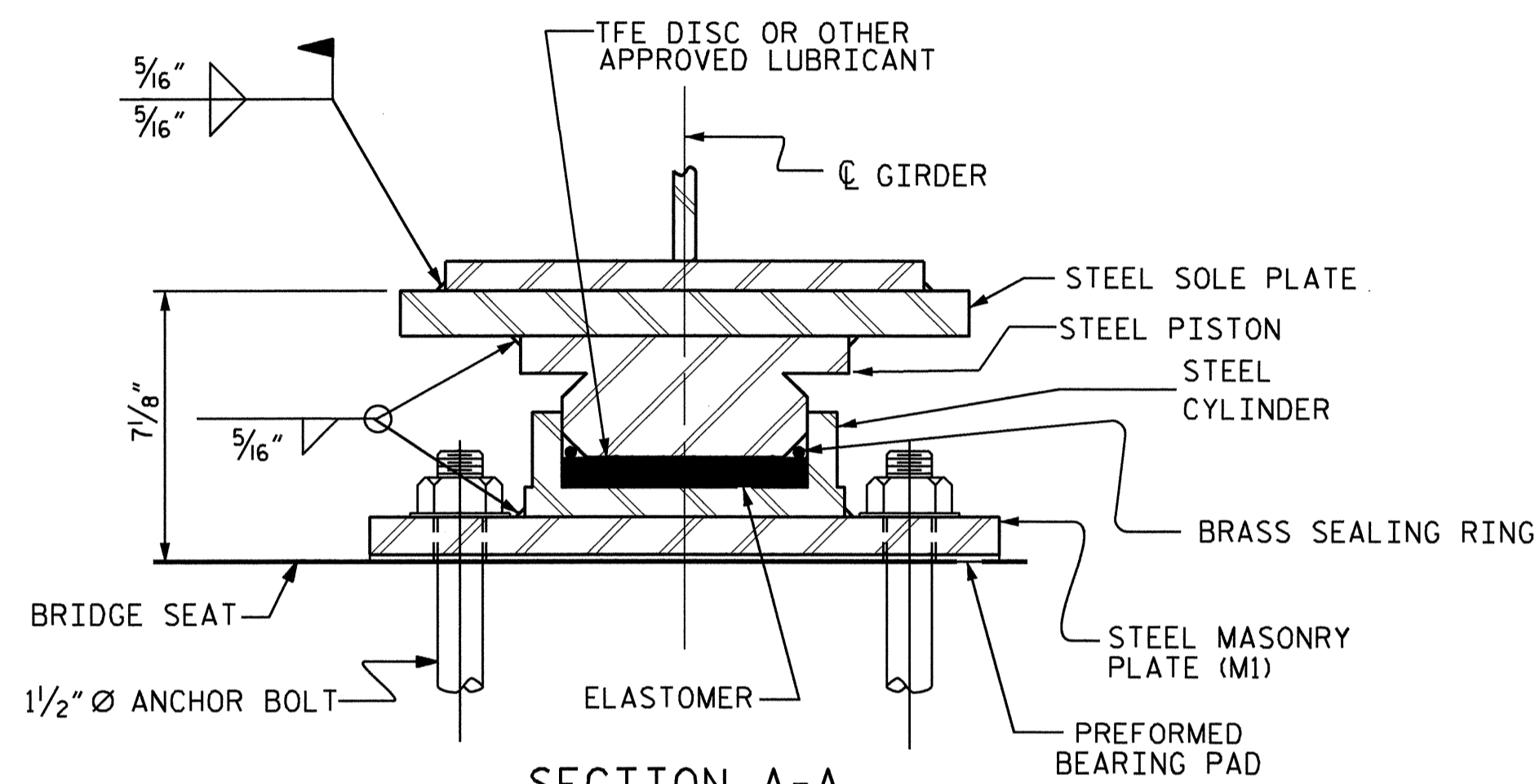
PLAN VIEW (8 REQ'D)

ELASTOMERIC BEARING PAD

NOTES

FOR POT BEARINGS, SEE SPECIAL PROVISIONS.
 AT ALL POINTS OF SUPPORT IN SPANS A & B, NUTS FOR ANCHOR BOLTS SHALL BE TIGHTENED FINGER TIGHT AND GIVEN AN ADDITIONAL 1/4 TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.
 WHEN WELDING THE SOLE PLATE TO THE GIRDER, USE TEMPERATURE INDICATING WAX PENS, OR OTHER SUITABLE MEANS, TO ENSURE THAT THE TEMPERATURE OF THE BEARING DOES NOT EXCEED 250°F. TEMPERATURES ABOVE THIS MAY DAMAGE THE TFE OR ELASTOMER.
 ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.
 FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.
 THE CONTRACTOR MAY SUBSTITUTE DISC BEARINGS FOR THE POT BEARINGS SHOWN. FOR OPTIONAL DISC BEARINGS, SEE SPECIAL PROVISIONS.

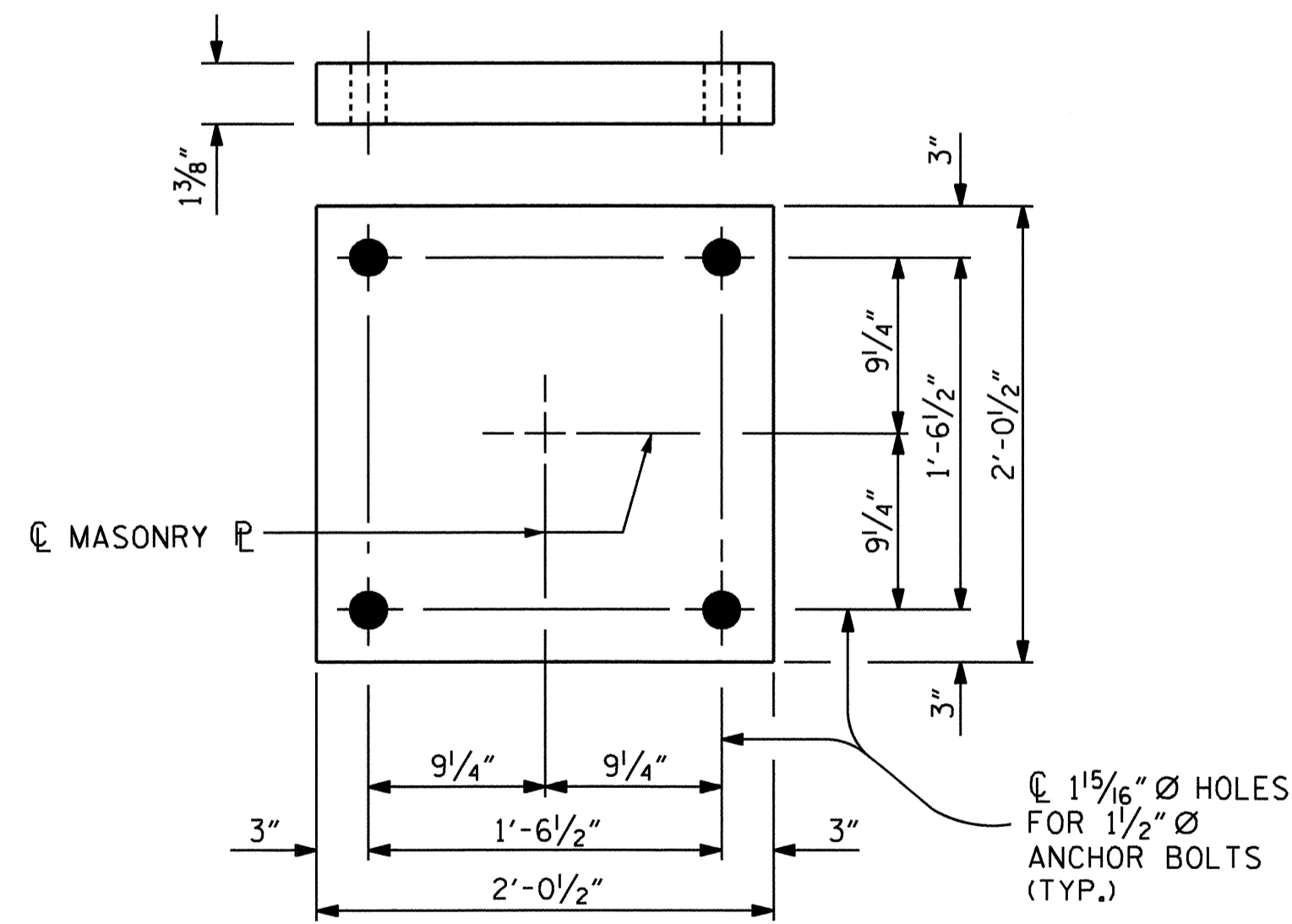
POT BEARING	LOCATION	VERTICAL LOAD (KIPS)				LATERAL LOAD (KIPS)	TOTAL MOVEMENT (INCHES)
		DEAD		LIVE	TOTAL		
		DC	DW				
PB1 (FIXED)	BENT 1	288	30	211	529	108	0



SECTION A-A

PB1, FIXED @ BENT 1 (4 REQ'D.)

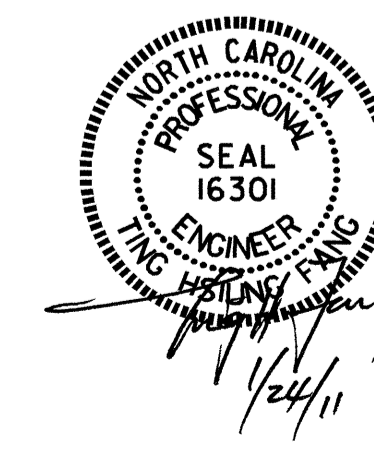
POT BEARING DETAILS



PLAN M1 (4 REQ'D.)

MASONRY PLATE DETAILS

PROJECT NO. U-3621B
 NASH COUNTY
 STATION: 50+77.00 -L-



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD					
POT BEARING & ELASTOMERIC PAD DETAILS (RIGHT LANE)					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 68
					S-49

ASSEMBLED BY : OT NGUYEN	DATE : 1-10
CHECKED BY : T.H. FANG	DATE : 1-10
DRAWN BY : RWW 8/99	REV. 7/10/01 LES/RDR
CHECKED BY : LES 8/99	REV. 5/7/03 RWW/JTE
	REV. 5/1/06 TLA/GM

NOTES

AT THE CONTRACTOR'S OPTION, METAL RAIL MAY BE EITHER ALUMINUM OR GALVANIZED STEEL IN ACCORDANCE WITH THE REQUIREMENTS OF THE GENERAL NOTES AND THE FOLLOWING SPECIFICATIONS FOR THE ALTERNATE MATERIALS; HOWEVER, THE CONTRACTOR WILL BE REQUIRED TO USE THE SAME RAIL MATERIAL ON ALL STRUCTURES ON THE PROJECT FOR WHICH METAL RAIL IS DESIGNATED.

ALUMINUM RAILS

MATERIAL FOR POSTS, BASES AND RAILS, EXPANSION BARS AND CLAMP BARS SHALL BE ASTM B221 ALLOY 6061-T6. MATERIAL FOR RIVETS SHALL BE ASTM B316 ALLOY 6061-T6. RIVETS SHALL BE STANDARD BUTTON HEAD AND CONE POINT COLD DRIVEN AS PER DRAWING. THE BASE OF RAIL POSTS, OR ANY OTHER ALUMINUM SURFACE IN CONTACT WITH CONCRETE SHALL BE THOROUGHLY COATED WITH AN ALUMINUM IMPREGNATED CAULKING COMPOUND OF APPROVED QUALITY. MATERIAL FOR SHIMS TO BE ASTM B209 ALLOY 6061-T6.

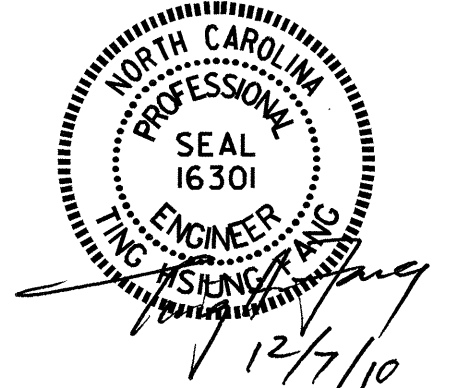
GALVANIZED STEEL RAILS

MATERIAL AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:
 POST, POST BASES, RAILS, EXPANSION BARS AND CLAMP BARS : AASHTO M270 GRADE 36 STRUCTURAL STEEL - GALVANIZED TO AASHTO M111.
 RIVETS: RIVETS SHALL MEET THE REQUIREMENTS OF ASTM A502 FOR GRADE 1 RIVETS.
 THE CUT ENDS OF GALVANIZED STEEL RAILING, AFTER GRINDING SMOOTH SHALL BE GIVEN TWO COATS OF ZINC RICH PAINT MEETING THE REQUIREMENTS OF FEDERAL SPECIFICATION MIL-P-26915 USAF TYPE 1, OR OF FEDERAL SPECIFICATIONS TT-P-641.
 SHIMS: SHIMS SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.
 RAIL CAPS: RAIL CAPS SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.

GENERAL NOTES

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. PLACE ONE JOINT SPLICE JUST BEYOND THE 3RD RAIL POST FROM EACH END, TYPICALLY 14' FROM THE END. PLACE OTHER JOINTS AS NEEDED.
 FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE STANDARD NO. BMR7.
 CAP SCREWS SHALL BE ASTM F593 ALLOY 305 STAINLESS STEEL. WASHERS FOR RAIL ATTACHMENT SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.
 CERTIFIED MILL REPORTS ARE REQUIRED FOR RAILS AND POSTS. SHOP INSPECTION IS NOT REQUIRED.
 METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.
 METHOD OF MEASUREMENT FOR METAL RAILS: FOR LENGTH OF METAL RAILS TO BE PAID FOR, SEE THE STANDARD SPECIFICATIONS.
 CURVED RAIL USAGE: WHERE RAILS ARE TO BE USED ON BRIDGES ON HORIZONTAL AND/OR VERTICAL CURVATURE THE CONTRACTOR MAY, AT HIS OPTION, HAVE THE REQUIRED CURVATURE IN THE RAIL FORMED IN THE SHOP OR IN THE FIELD. IN EITHER EVENT, THE RAIL SHALL CONFORM WITHOUT BUCKLING OR KINKING TO THE REQUIRED CURVATURE IN A UNIFORM MANNER ACCEPTABLE TO THE ENGINEER.
 TO INSURE FUTURE IDENTIFICATION OF THE FABRICATOR, A PERMANENT IDENTIFYING MARK SHALL BE PLACED ON EACH POST, THE METHOD OF MARKING AND LOCATION SHALL BE SUCH THAT IT DOES NOT DETRACT FROM THE APPEARANCE OF THE POST, BUT REMAIN VISIBLE AFTER RAIL PLACEMENT.
 SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.
 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.

PAY LENGTH = 207.38 LIN.FT.



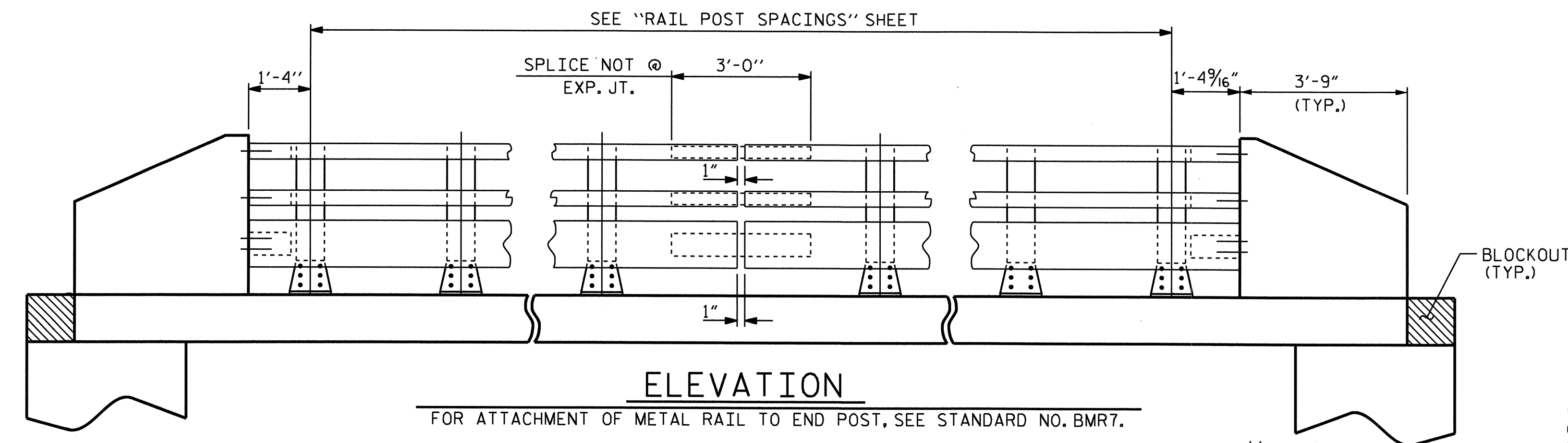
PROJECT NO. U-3621B
 NASH COUNTY
 STATION: 50+77.00 -L-

SHEET 1 OF 3
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
3 BAR METAL RAIL
 (RIGHT LANE)

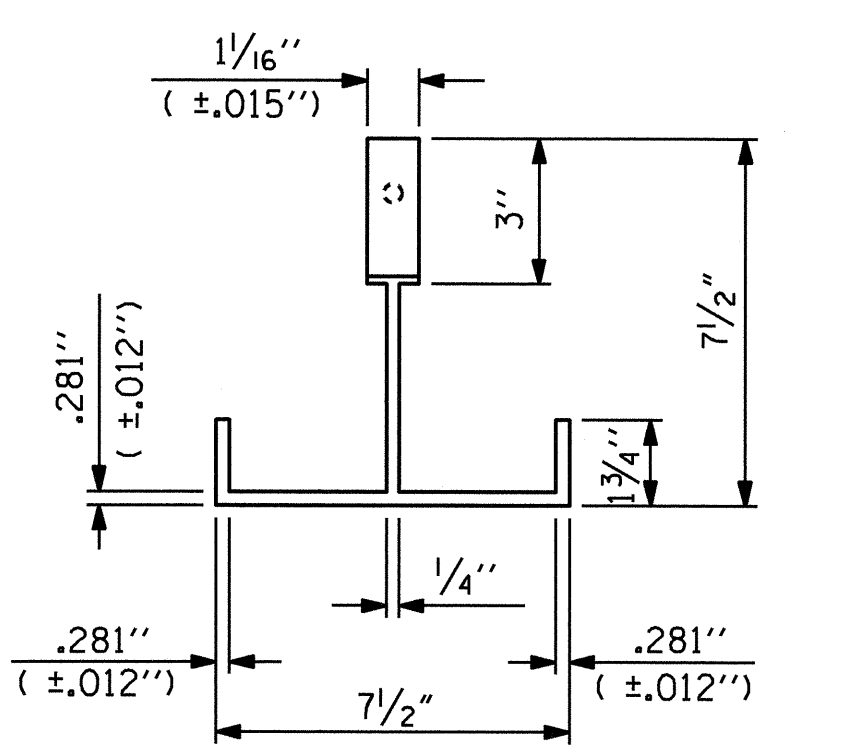
REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	DATE:
1			3	
2			4	

TOTAL SHEETS: 68

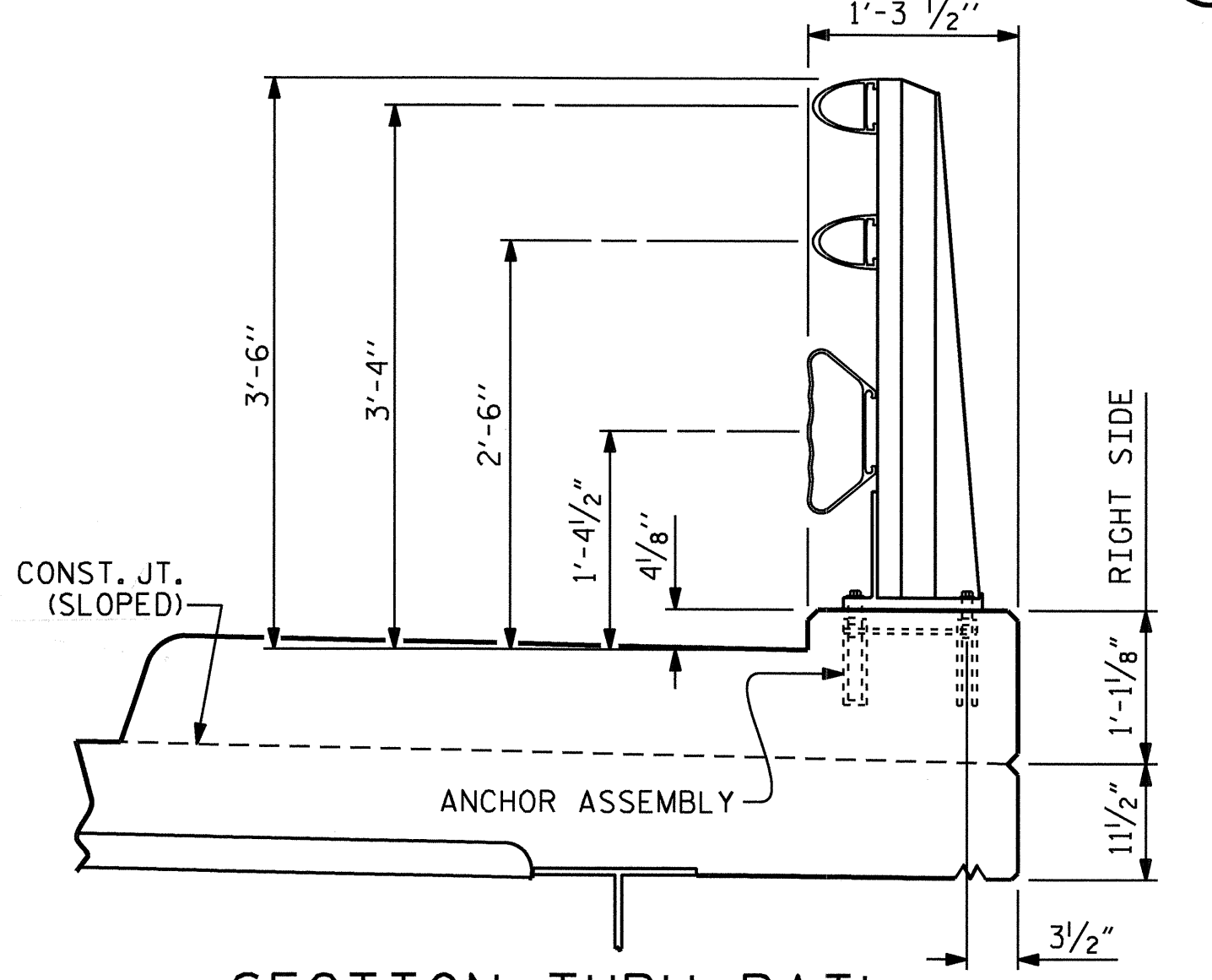
STR #2 STD. NO. BMR5



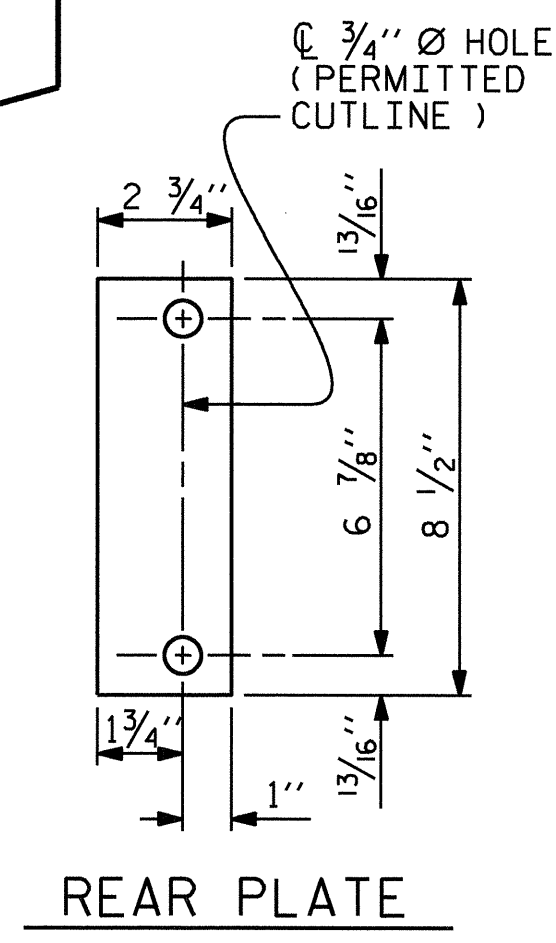
ELEVATION
 FOR ATTACHMENT OF METAL RAIL TO END POST, SEE STANDARD NO. BMR7.



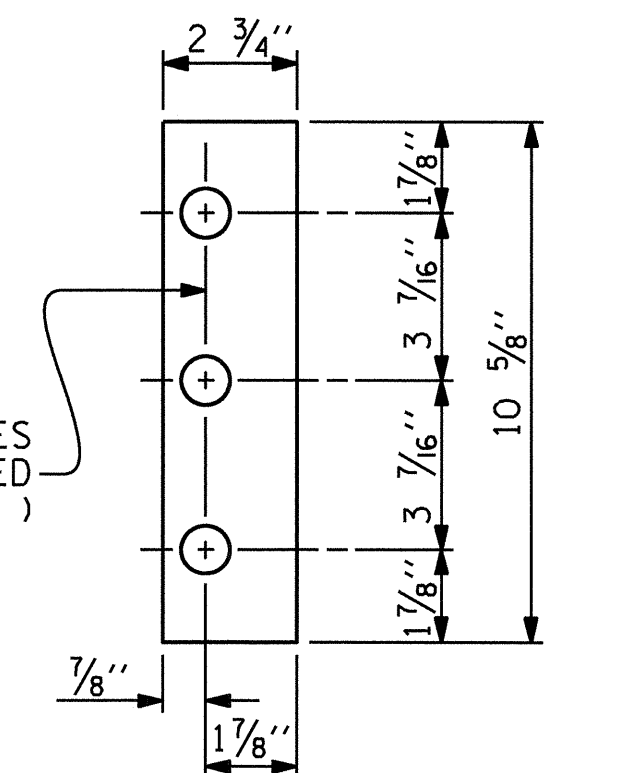
PLAN



SECTION THRU RAIL
 FOR ANCHOR ASSEMBLY, SEE "3 BAR METAL RAIL" STD.No.BMR6

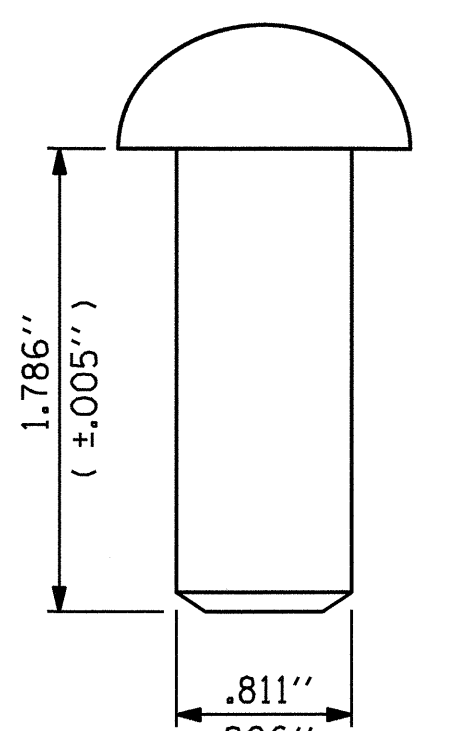


REAR PLATE

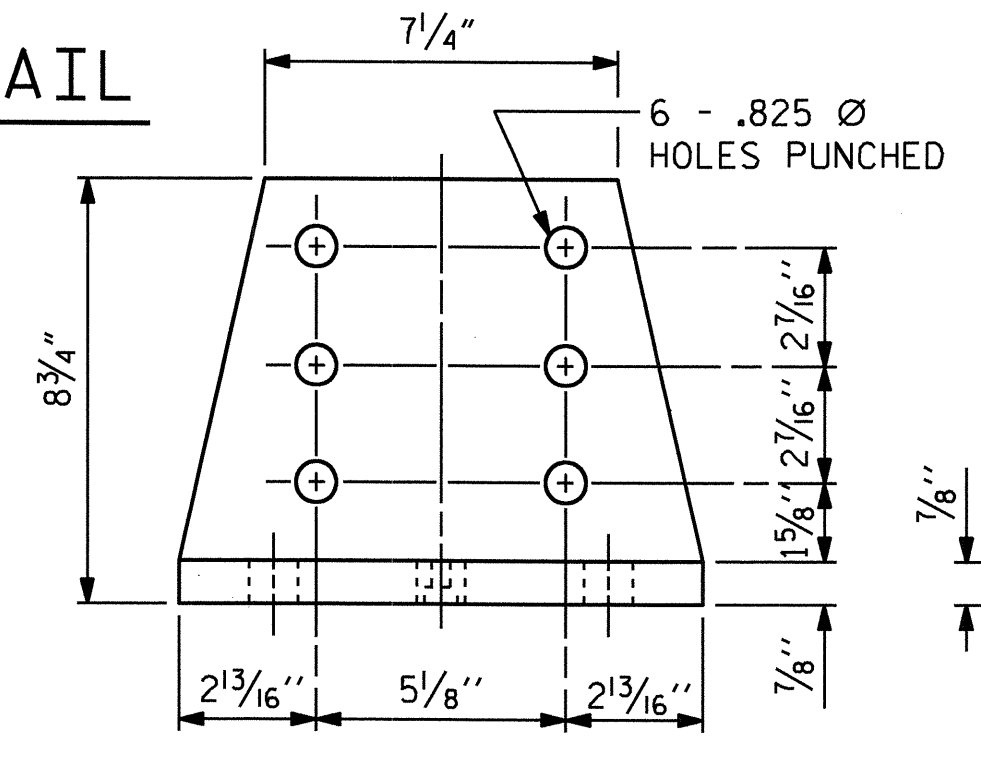


FRONT PLATE SHIM DETAILS

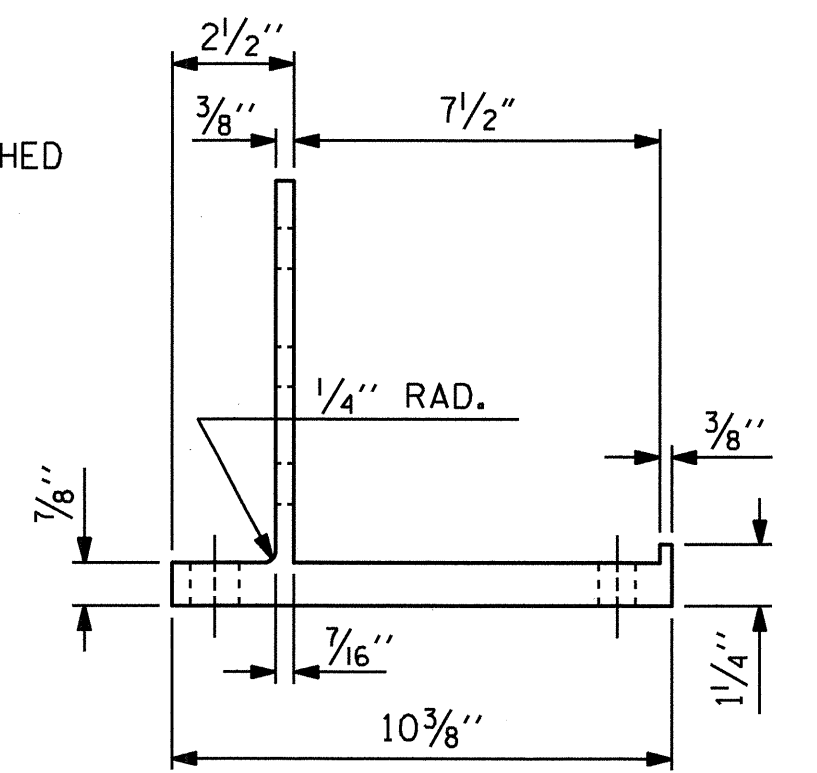
NOTE : SHIMS MAY BE CUT ALONG PERMITTED CUTLINE OR SLOTTED TO EDGE OF PLATE TO FACILITATE PLACEMENT.



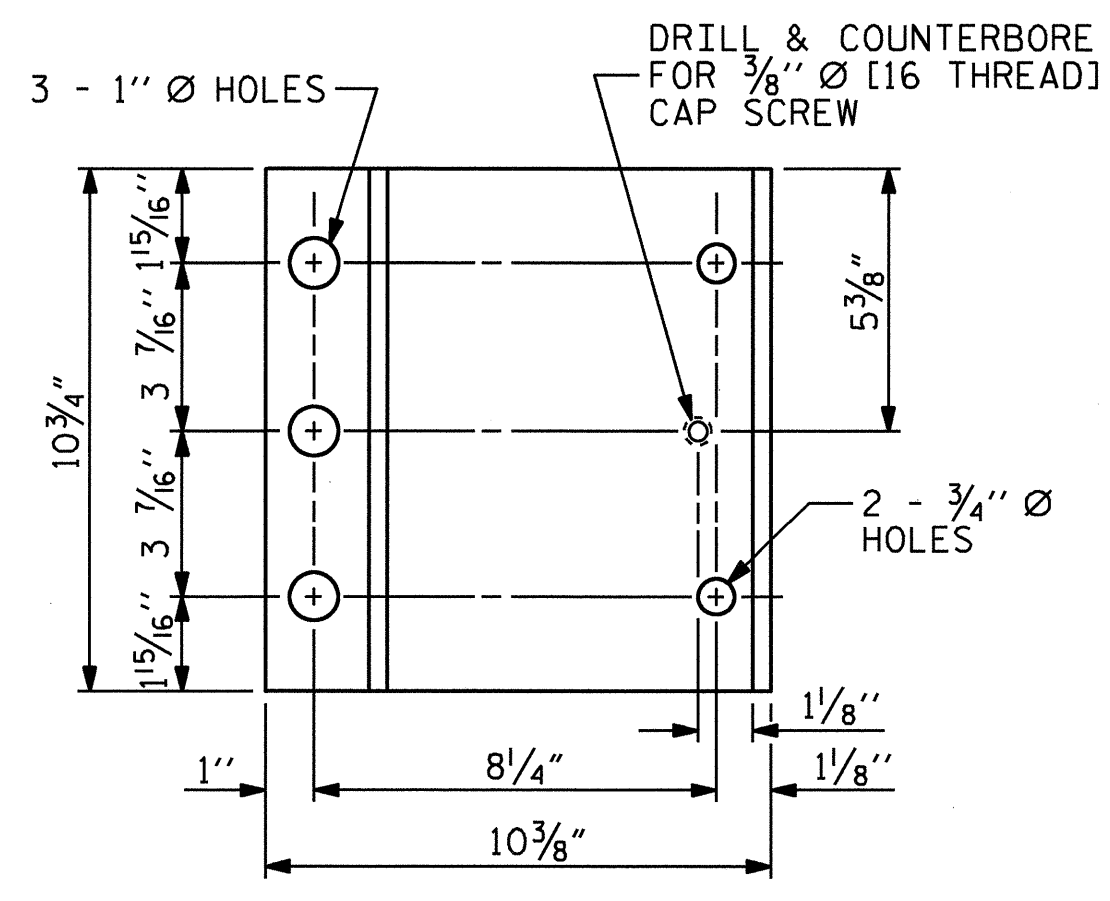
RIVET DETAIL



FRONT ELEVATION

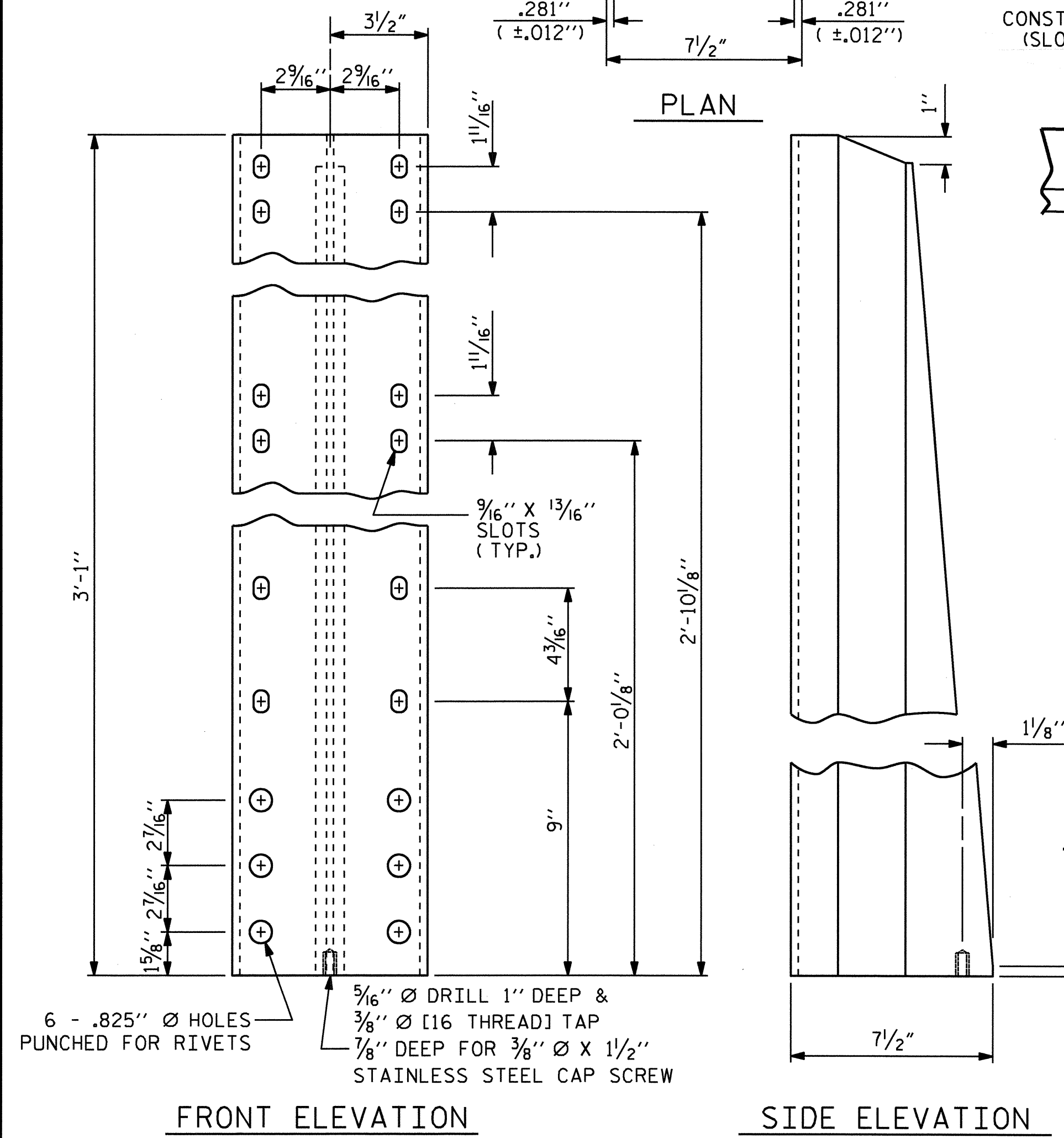


SIDE ELEVATION



PLAN

POST BASE DETAILS



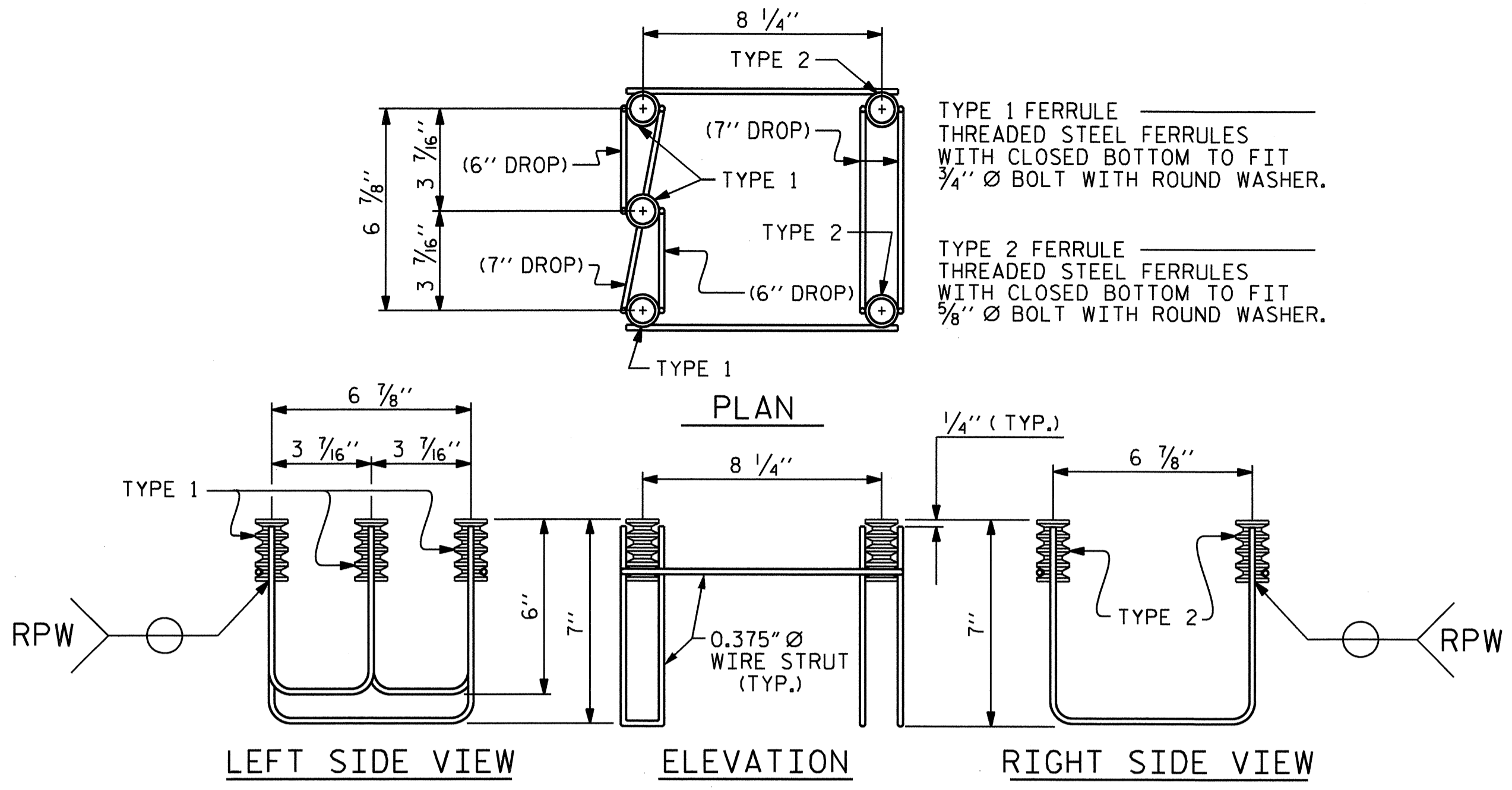
FRONT ELEVATION

SIDE ELEVATION

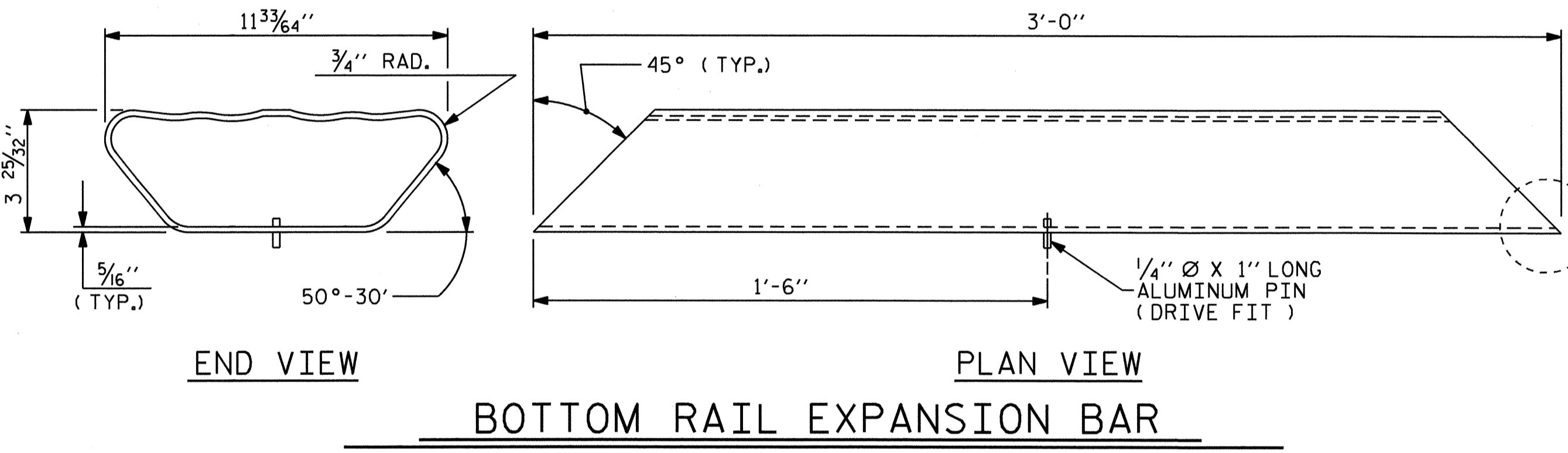
DETAILS OF POST

6 - .825" Ø HOLES PUNCHED FOR RIVETS
 5/16" Ø DRILL 1" DEEP & 3/8" Ø [16 THREAD] TAP 7/8" DEEP FOR 3/8" Ø X 1 1/2" STAINLESS STEEL CAP SCREW

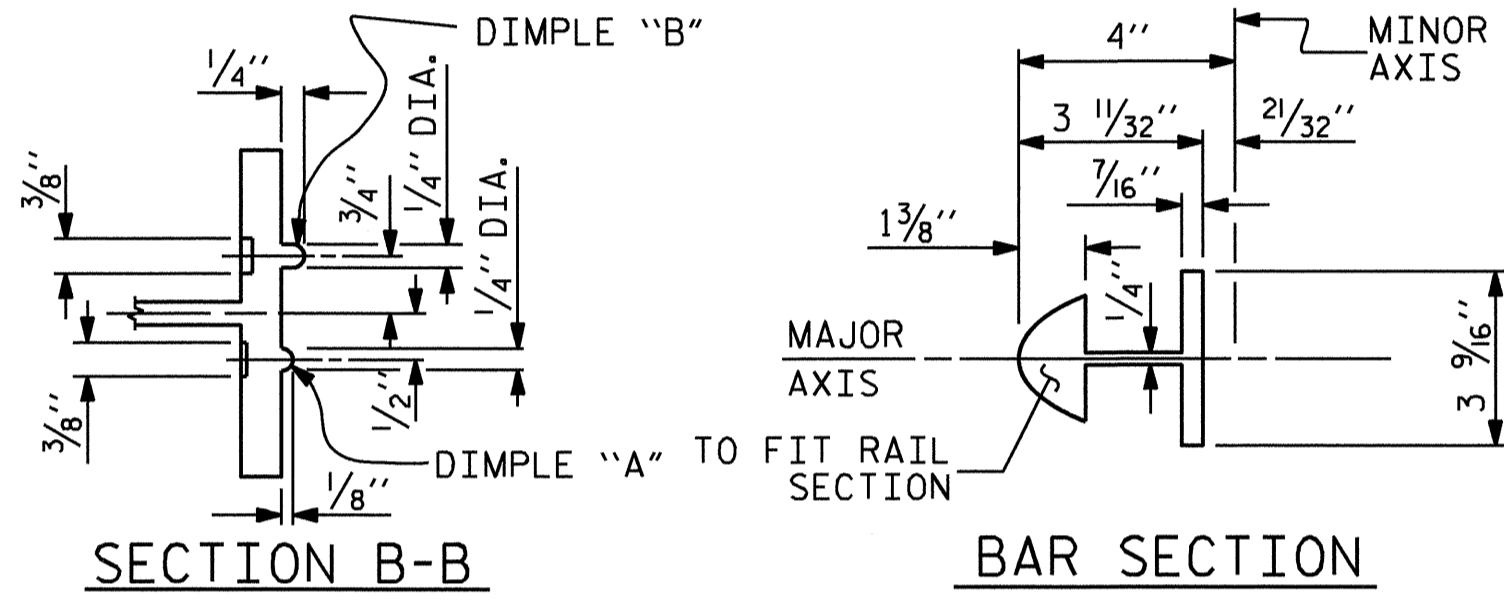
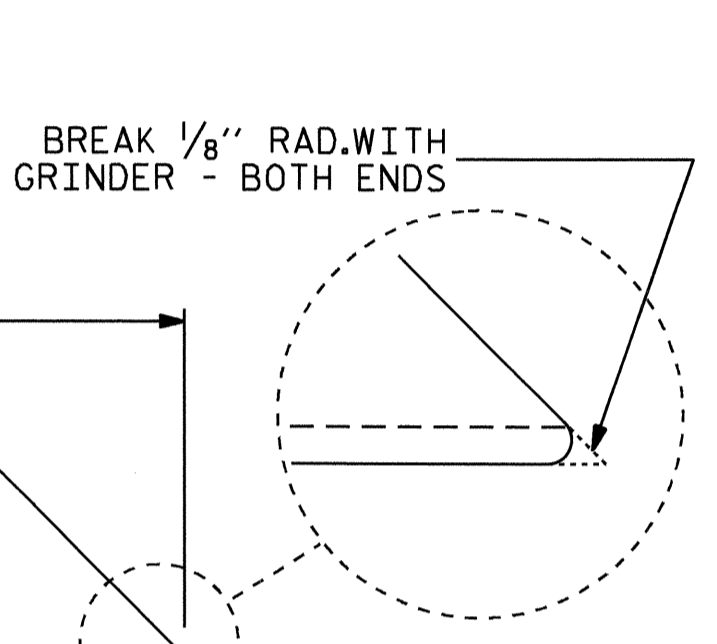
ASSEMBLED BY : OT NGUYEN	DATE : 12-10
CHECKED BY : W.D. CRUTCHER	DATE : 12-10
DRAWN BY : JMB 1/88	REV. 10/17/00 RWW/LES
CHECKED BY : GGH 1/88	REV. 5/7/03 RWW/JTE
	REV. 5/1/06 TLA/GM



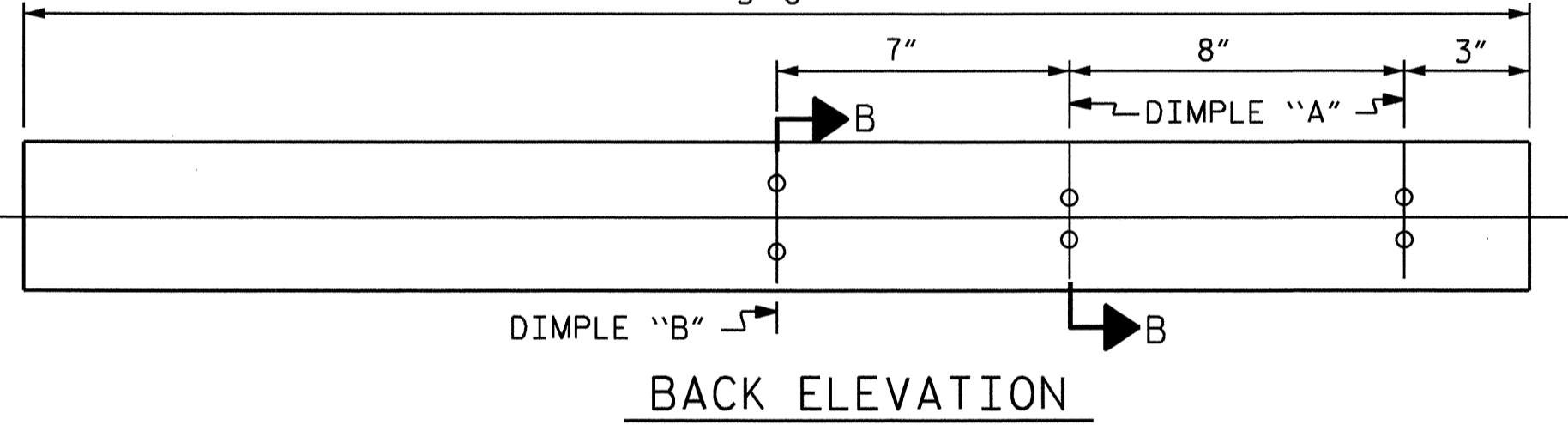
5-BOLT METAL RAIL ANCHOR ASSEMBLY
(35 ASSEMBLIES REQUIRED)



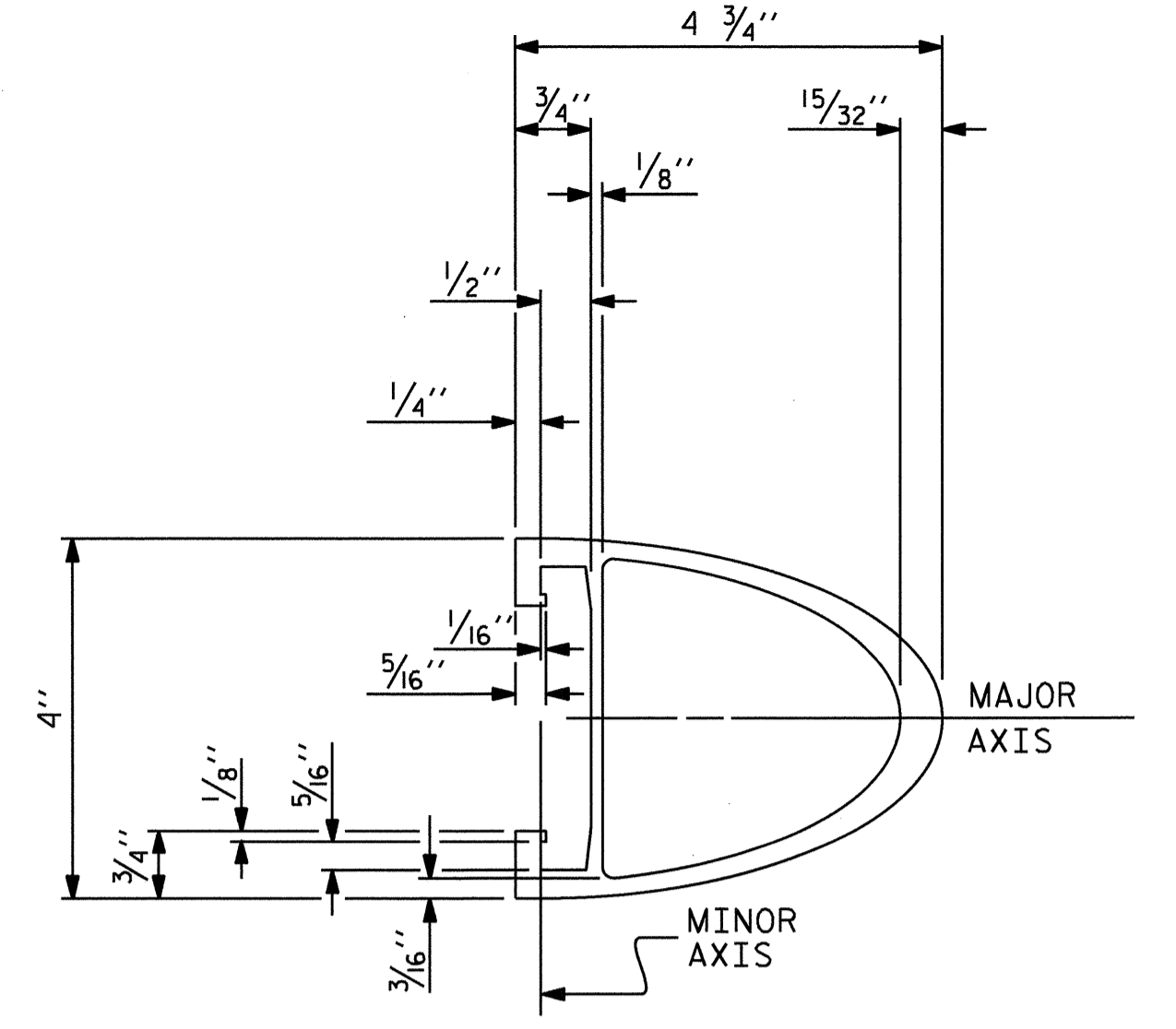
BOTTOM RAIL EXPANSION BAR



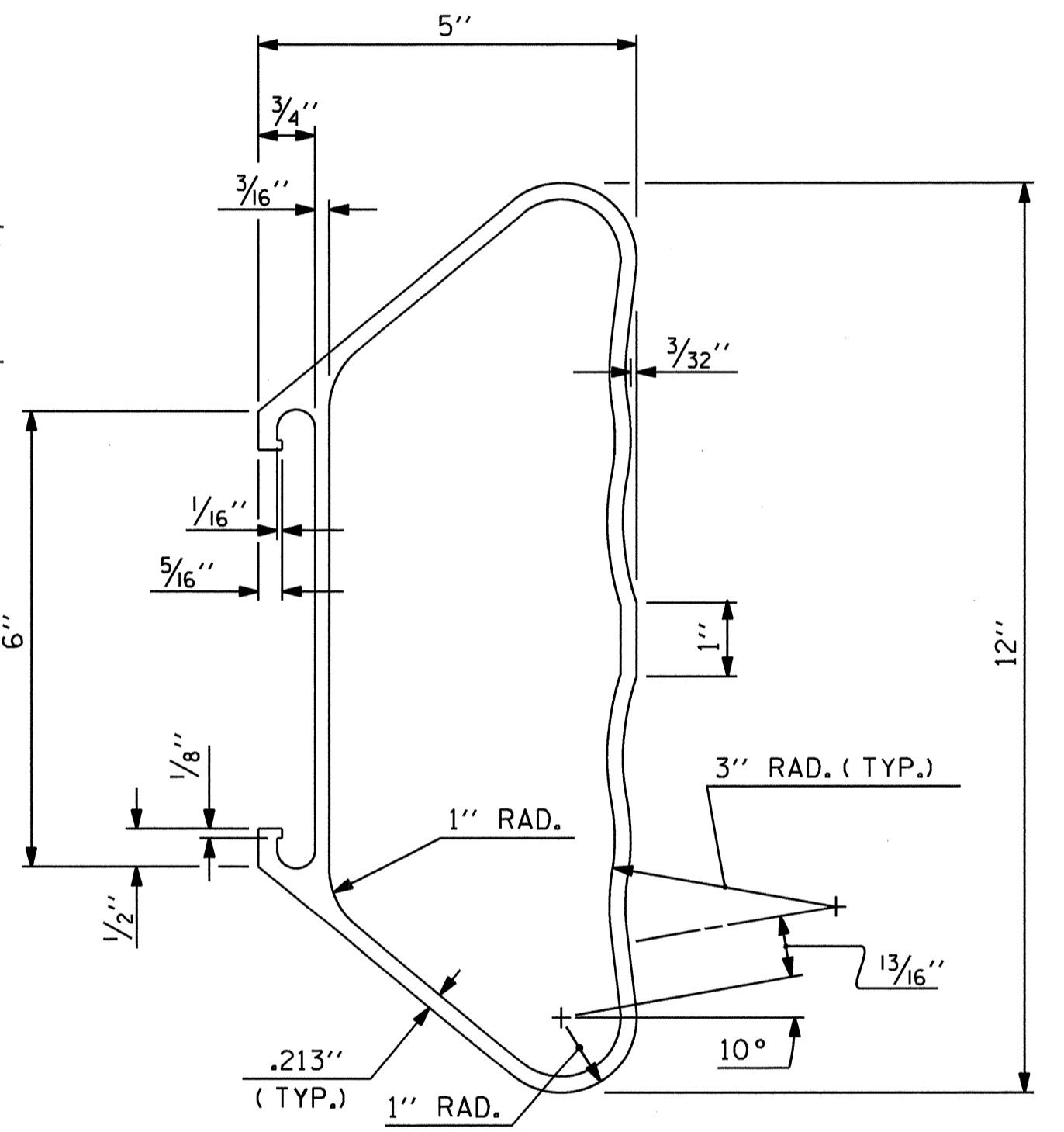
SECTION B-B **BAR SECTION**



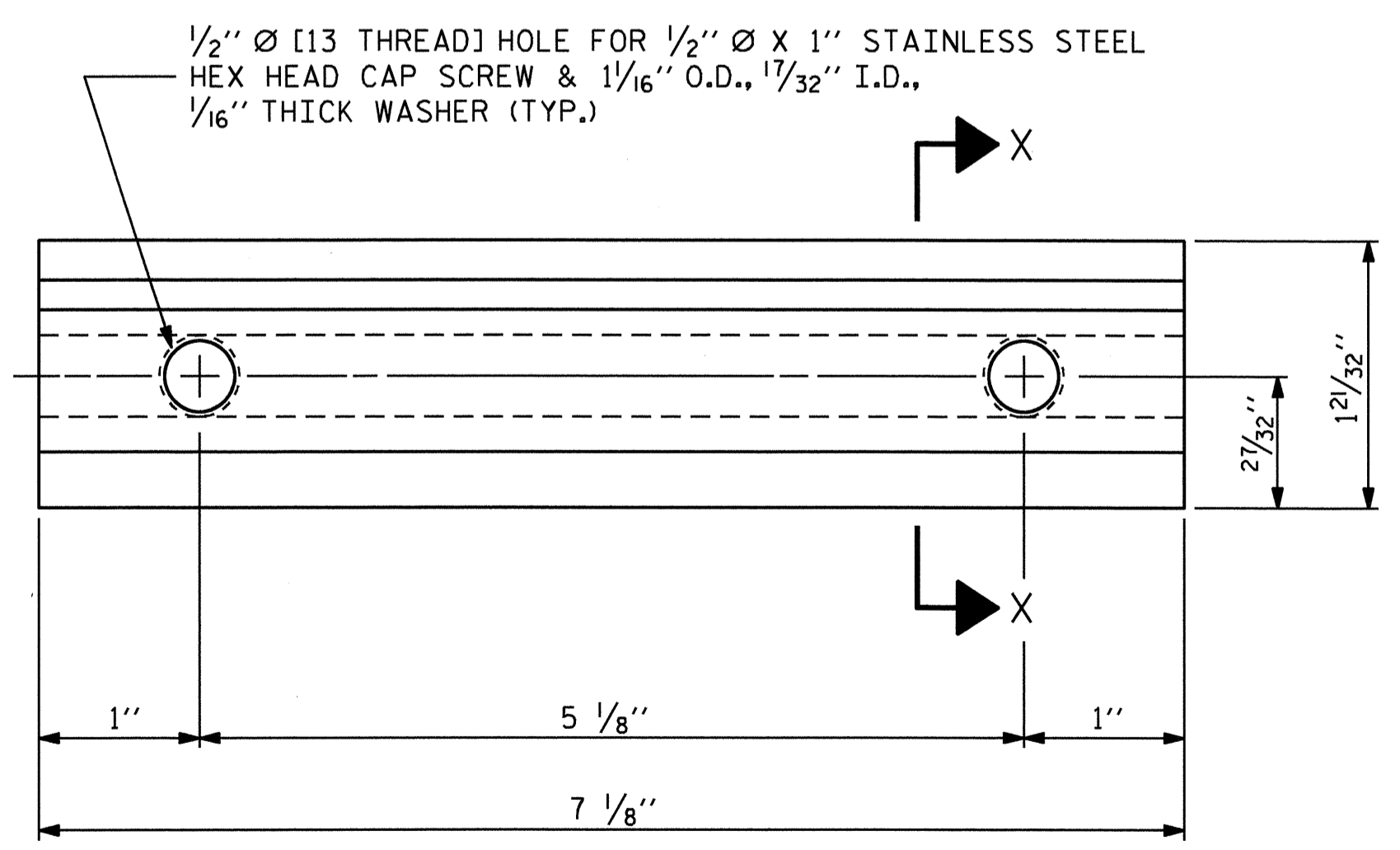
TOP & MIDDLE RAIL EXPANSION BAR



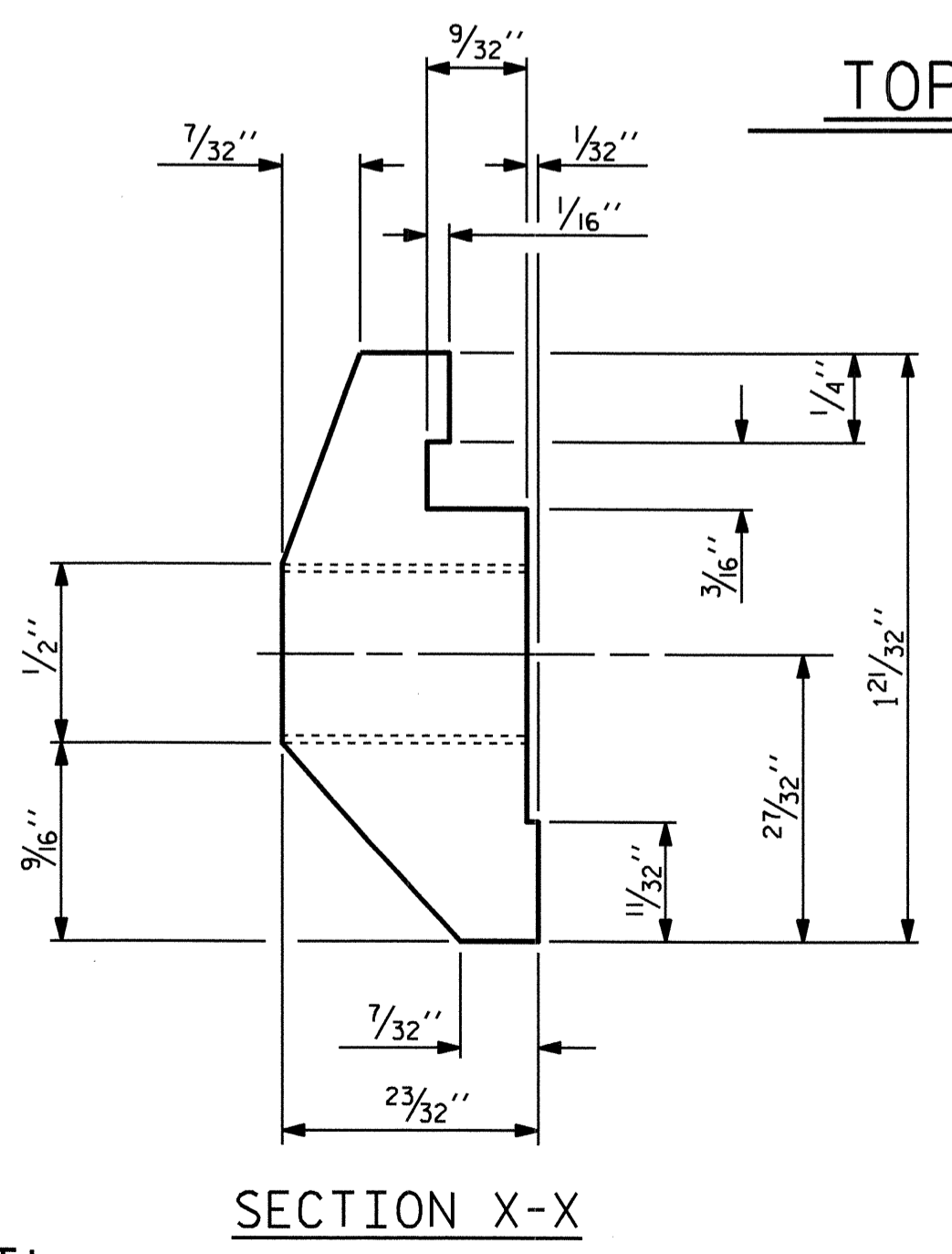
TOP & MIDDLE RAIL SECTION



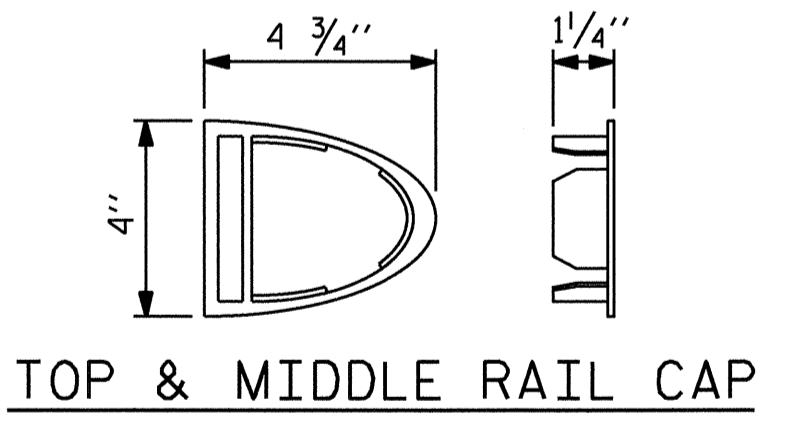
BOTTOM RAIL SECTION



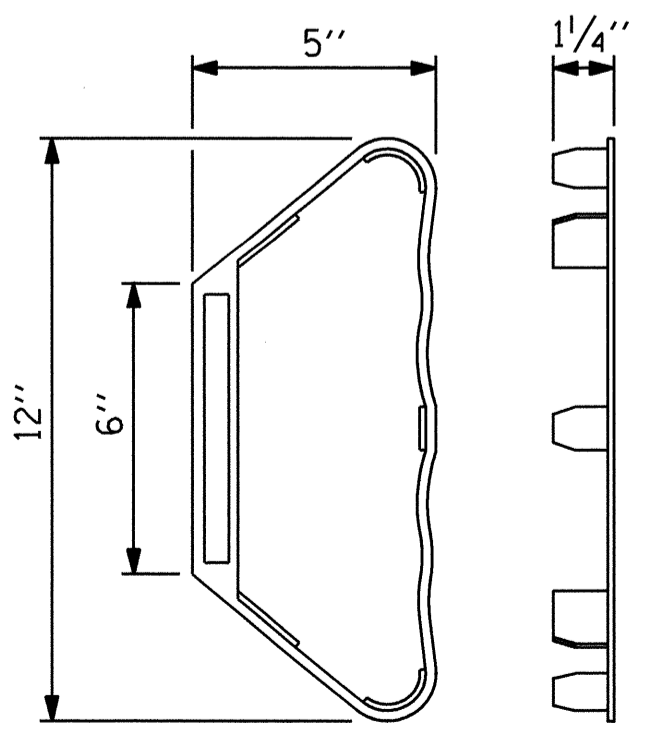
CLAMP BAR DETAIL
(6 REQUIRED PER POST)



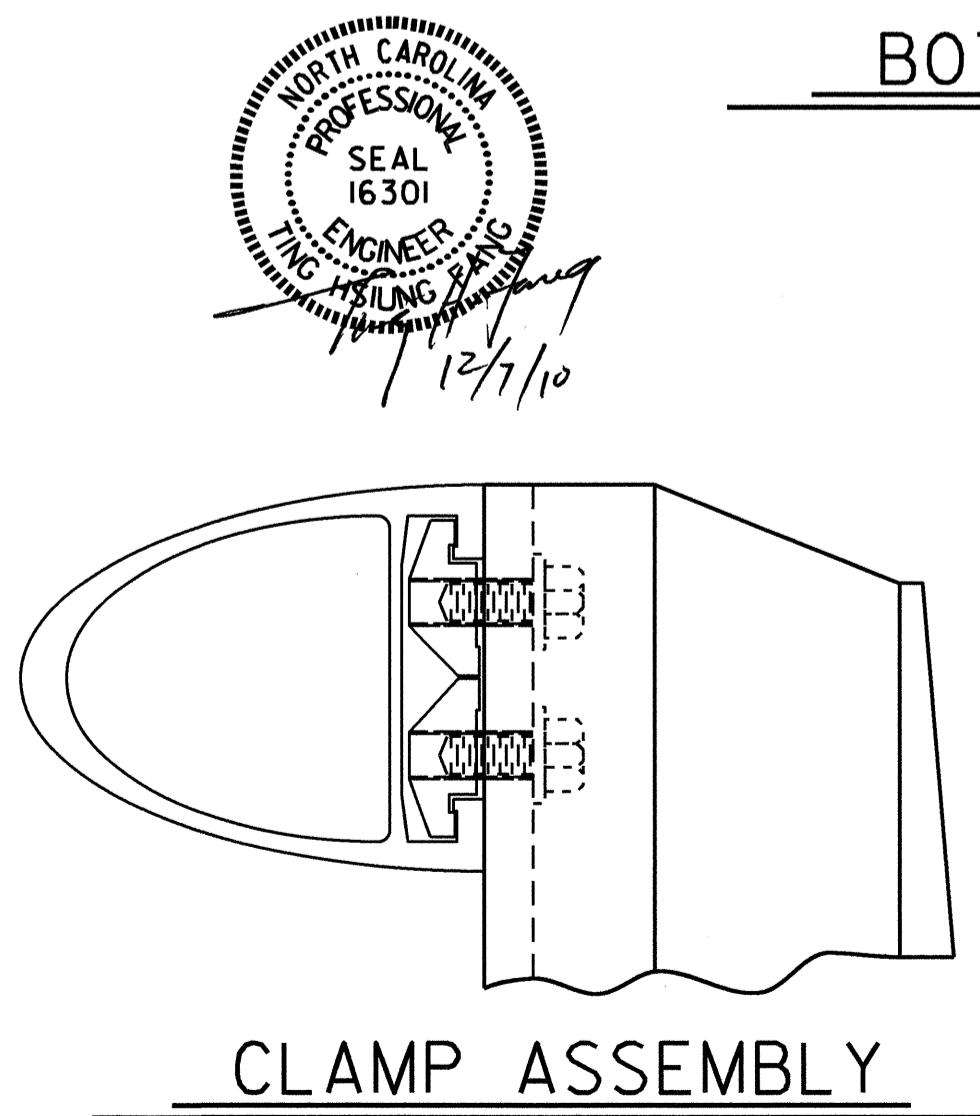
SECTION X-X



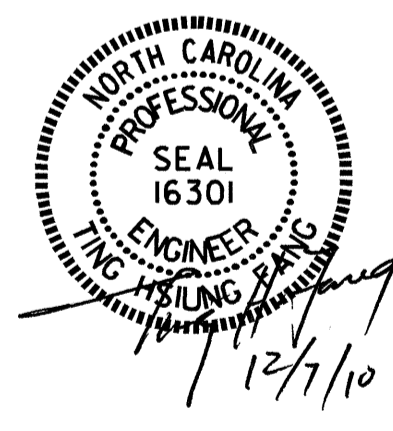
TOP & MIDDLE RAIL CAP



BOTTOM RAIL CAP



CLAMP ASSEMBLY
(TOP RAIL SHOWN
(MIDDLE & BOTTOM RAIL ARE SIMILAR))



ASSEMBLED BY :	OT NGUYEN	DATE :	12-10
CHECKED BY :	T.H. FANG	DATE :	12-10
DRAWN BY :	JMB 1/88	REV. 7/10/01	RWW/LES
CHECKED BY :	GGH 1/88	REV. 5/7/03	RWW/JTE
		REV. 5/1/06	TLA/GM

- NOTES**
STRUCTURAL CONCRETE ANCHOR ASSEMBLY
- THE STRUCTURAL CONCRETE ANCHOR ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:
- 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 AND 1 1/4" FOR 5/8" FERRULES.
 - 3 - 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.
 - 2 - 5/8" Ø X 2 1/4" 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 5/8" Ø X 2 1/4" 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.
 - 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 1/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.
 - THE METAL RAIL ANCHOR ASSEMBLIES TO BE HOT DIPPED GALVANIZED TO CONFORM TO REQUIREMENTS OF AASHTO M111.
 - 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.
 - BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.

PROJECT NO. U-3621B
NASH COUNTY
STATION: 50+77.00 -L-
SHEET 2 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD			
3 BAR METAL RAIL (RIGHT LANE)			
REVISIONS			
NO.	BY:	DATE:	NO.
1			3
2			4
SHEET NO. S-51			TOTAL SHEETS 68

NOTES

METAL RAIL TO END POST CONNECTION

- THE METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:
- A. 1/2" PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
 - B. 3/4" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A 3/4" Ø X 1 1/8" BOLT WITH 2" O.D. WASHER IN PLACE. THE 3/4" Ø X 1 1/8" BOLT SHALL HAVE N. C. THREADS.
 - C. CAP SCREWS FOR RAIL ATTACHMENT TO ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F593 ALLOY 305 STAINLESS STEEL. CAP SCREWS TO BE CENTERED IN SLOTS AT 60°F. WASHERS FOR RAIL ATTACHMENT SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.

D. STANDARD CLAMP BARS (STD. No. BMR6).

THE COST OF THE STANDARD CLAMP BARS AND CAP SCREWS USED IN THE METAL RAIL TO END POST CONNECTION SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF 3 BAR METAL RAIL.

THE 3/4" STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.

THE COST OF THE 3/4" STRUCTURAL CONCRETE INSERT ASSEMBLY, AND THE 1/2" PLATES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

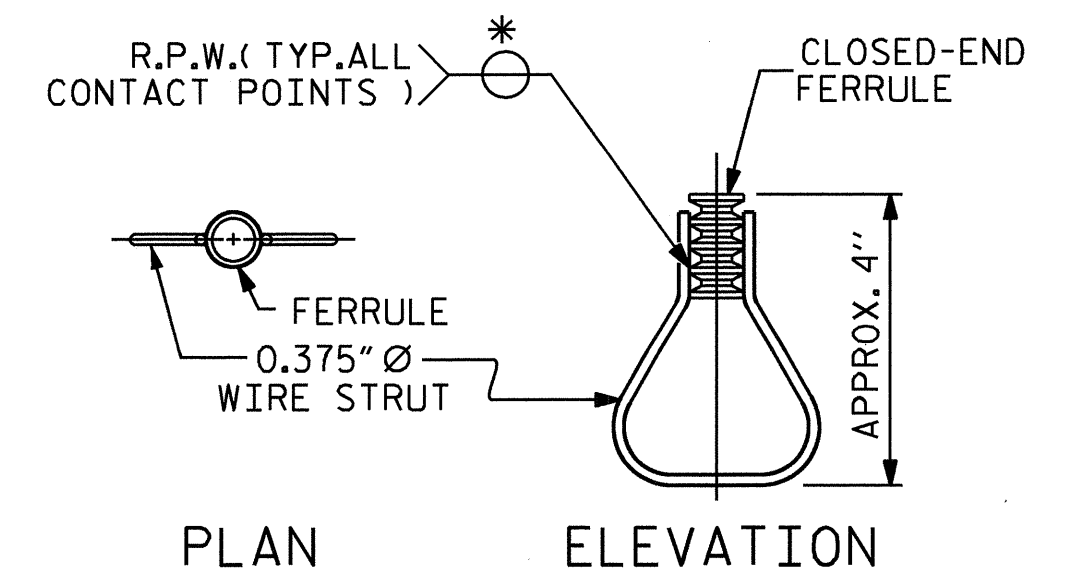
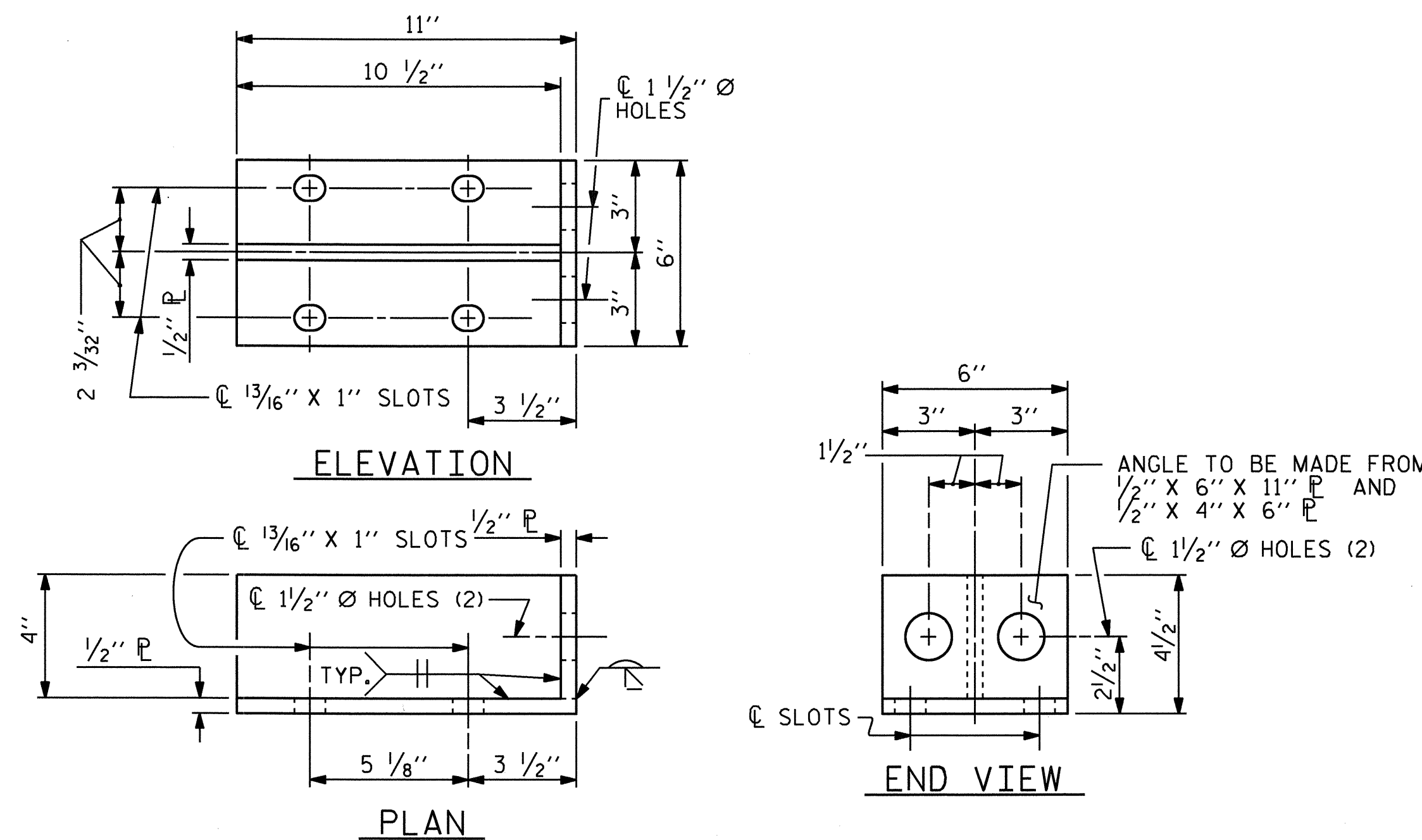
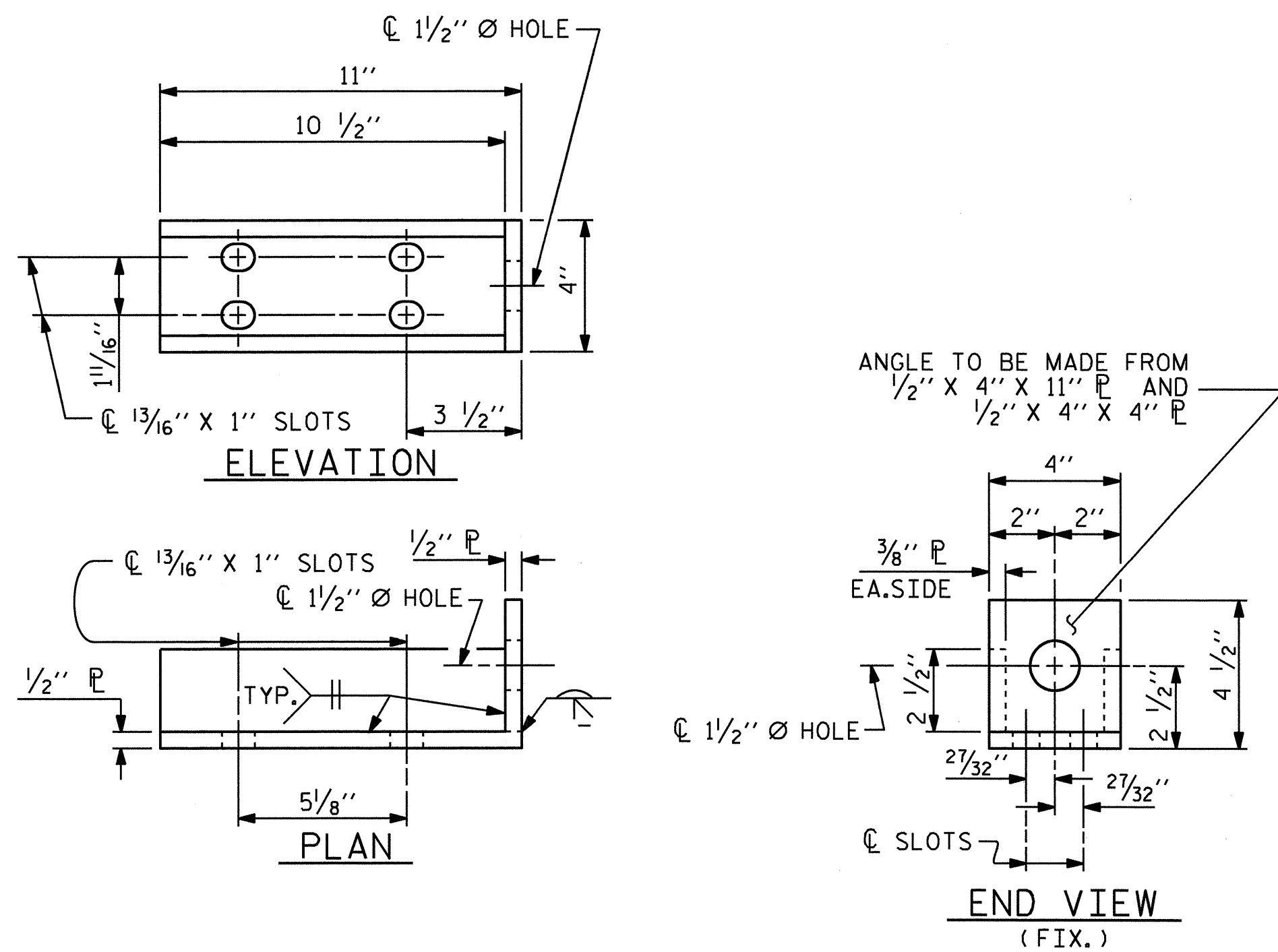
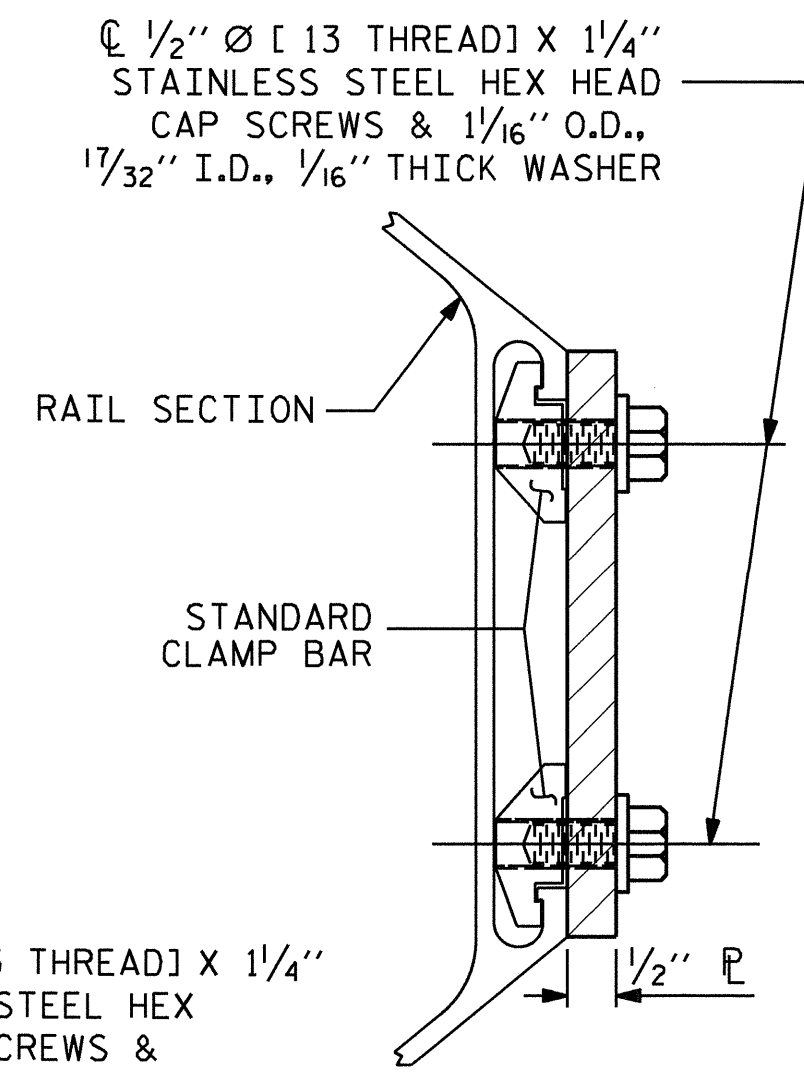
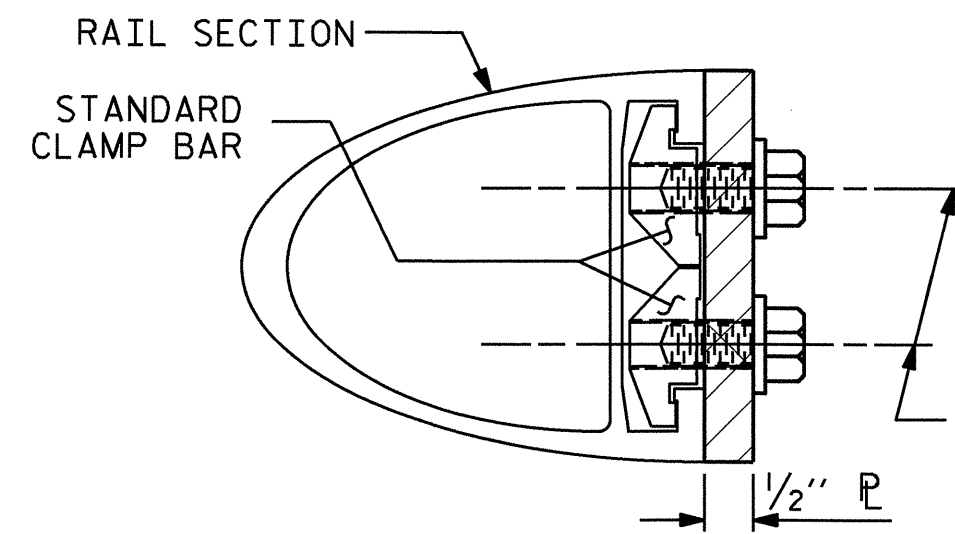
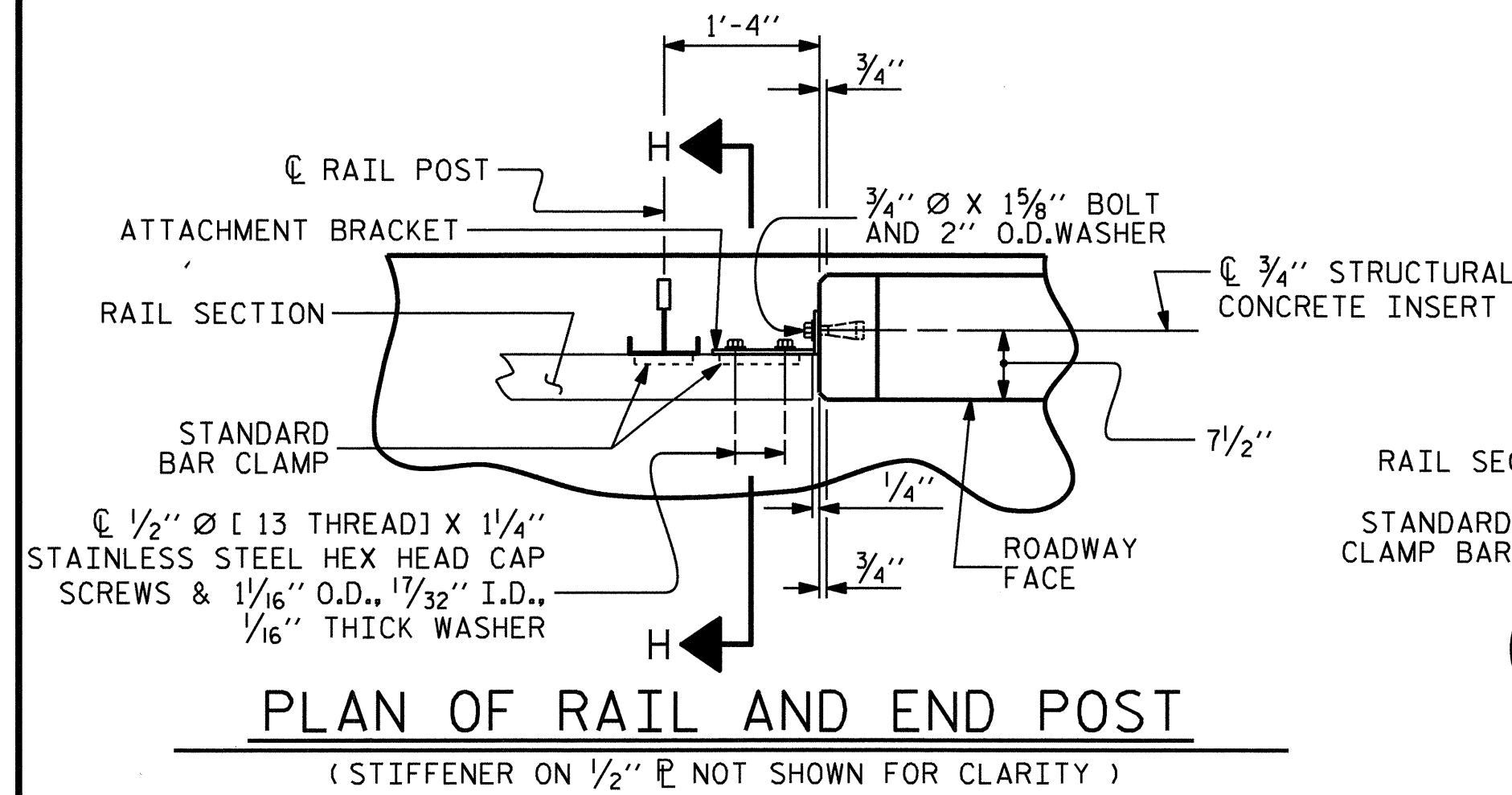
THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE 3/4" Ø X 1 1/8" BOLT WITH WASHER SHALL BE REPLACED WITH A 3/4" Ø X 6 1/2" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE 3/4" Ø X 1 1/8" BOLT SHALL APPLY TO THE 3/4" Ø X 6 1/2" BOLT. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

NOTES

STRUCTURAL CONCRETE INSERT

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

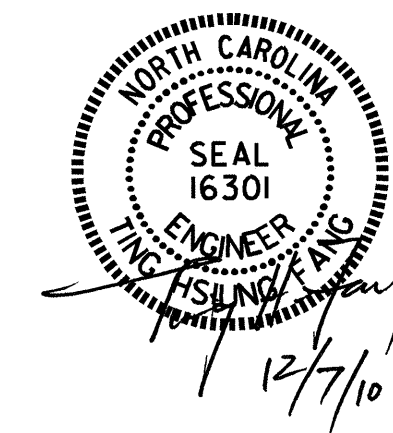
- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1 1/2".
- B. 1 - 3/4" Ø X 1 1/8" BOLT WITH WASHER, BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø X 1 1/8" GALVANIZED BOLT AND WASHER. 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 INSERT ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 1/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.



* EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.

PROJECT NO. U-3621B
NASH COUNTY
STATION: 50+77.00 -L-

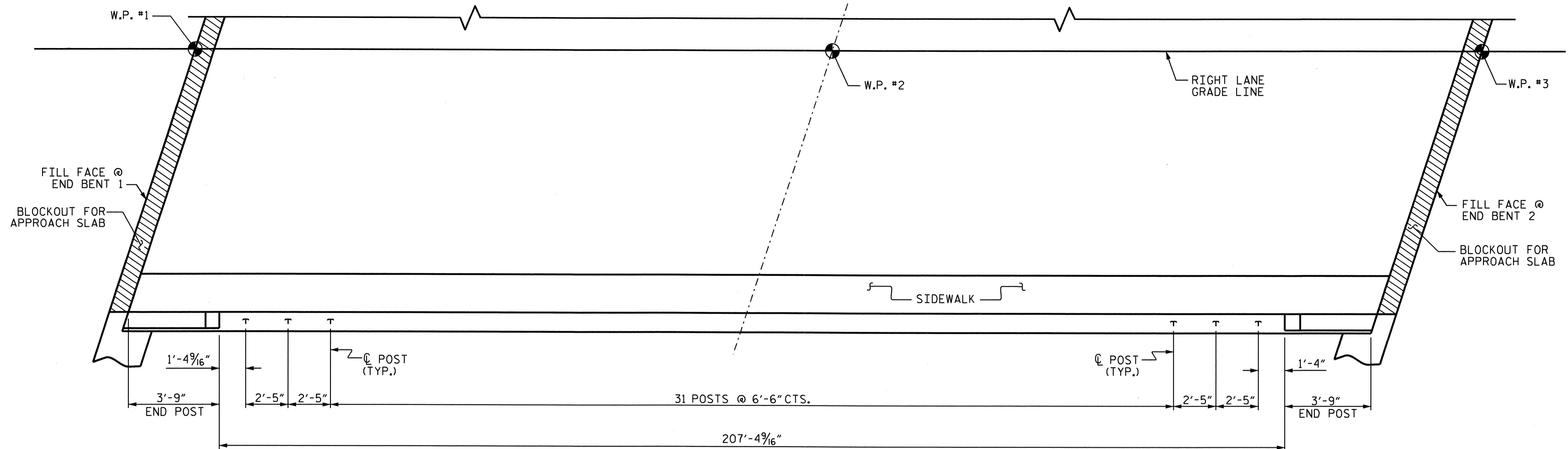
SHEET 3 OF 3



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
3 BAR METAL RAIL
(RIGHT LANE)

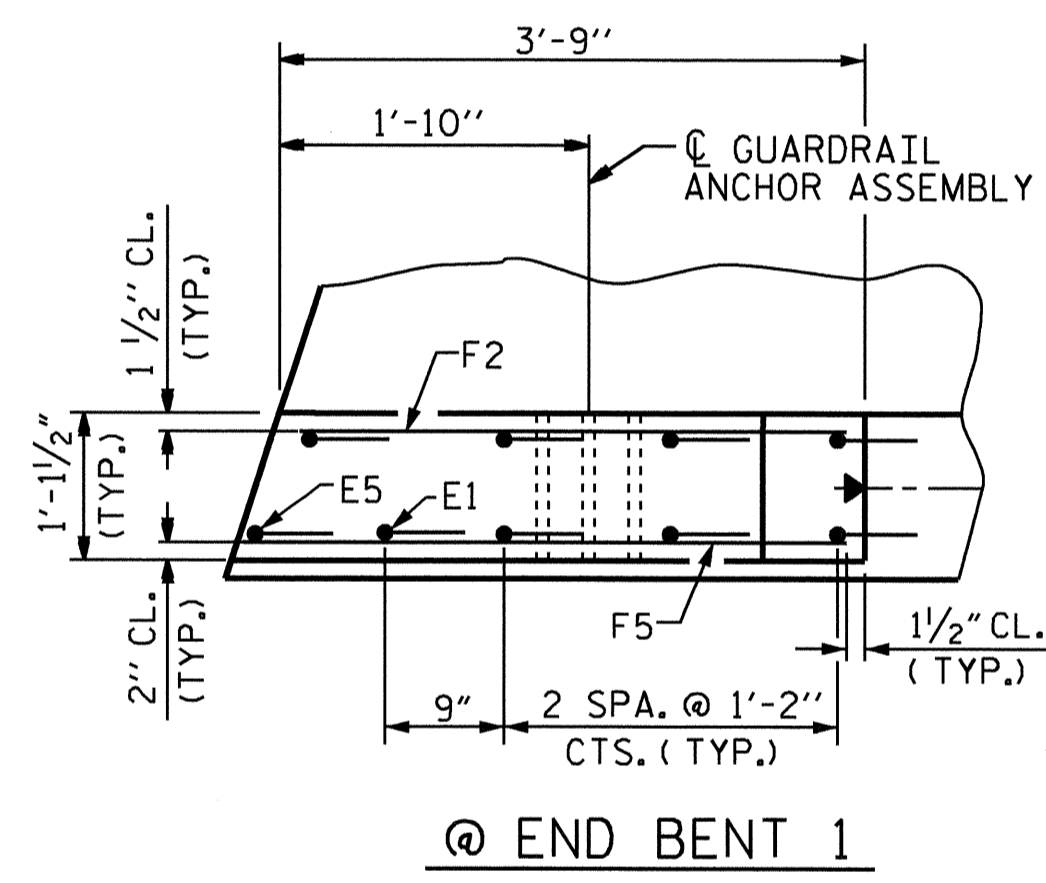
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-52
1			3			TOTAL SHEETS 68
2			4			

ASSEMBLED BY :	QT NGUYEN	DATE :	12-10
CHECKED BY :	T.H. FANG	DATE :	12-10
DRAWN BY :	JMB 1/88	REV. 7/10/01	RWW/LES
CHECKED BY :	GCH 1/88	REV. 5/7/03	RWW/JTE
		REV. 5/1/06	TLA/GM

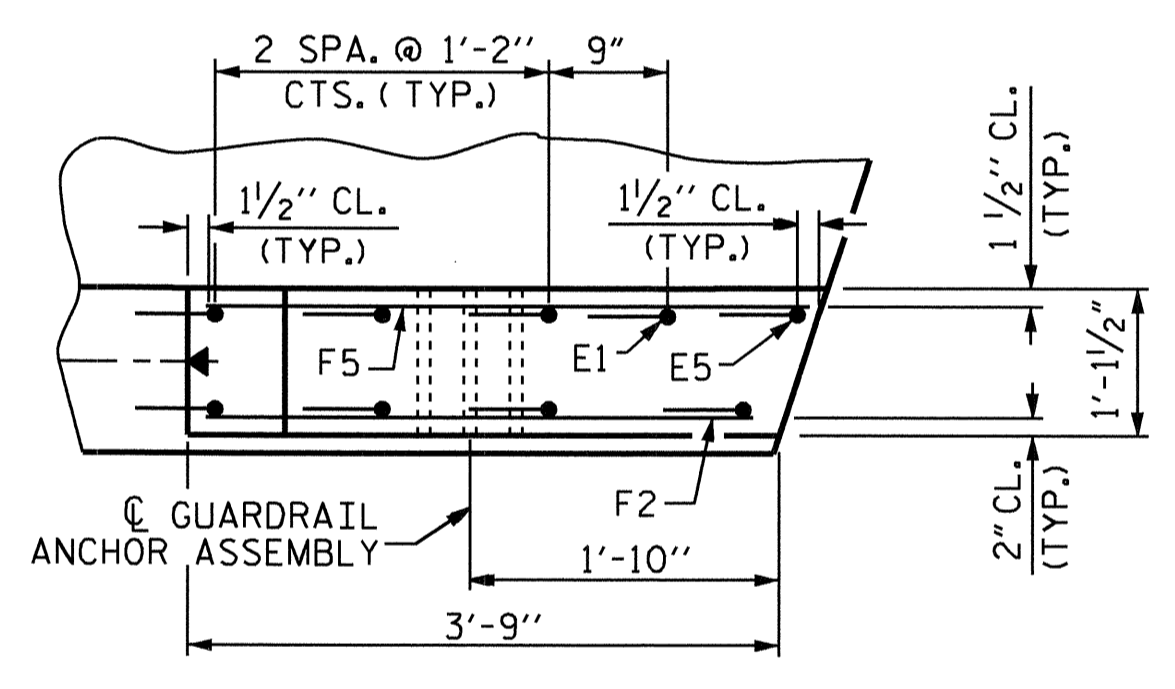


PLAN OF RAIL POST SPACINGS

BILL OF MATERIAL					
ONE END POST (2 REQ'D)					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*E1	2	#7	1	3'-5"	14
*E2	2	#7	1	4'-0"	16
*E3	2	#7	1	4'-7"	19
*E4	2	#7	1	4'-0"	16
*E5	1	#7	1	3'-3"	7
*F1	1	#6	STR	4'-0"	6
*F2	2	#6	STR	3'-5"	10
*F3	1	#6	STR	2'-5"	4
*F4	1	#6	STR	4'-3"	6
*F5	2	#6	STR	3'-8"	11
*F6	1	#6	STR	2'-8"	4
*EPOXY COATED REINFORCING STEEL					= 113 LBS.
CLASS AA CONCRETE					= 0.4 C.Y.
BAR TYPES					
ALL BAR DIMENSIONS ARE OUT TO OUT					

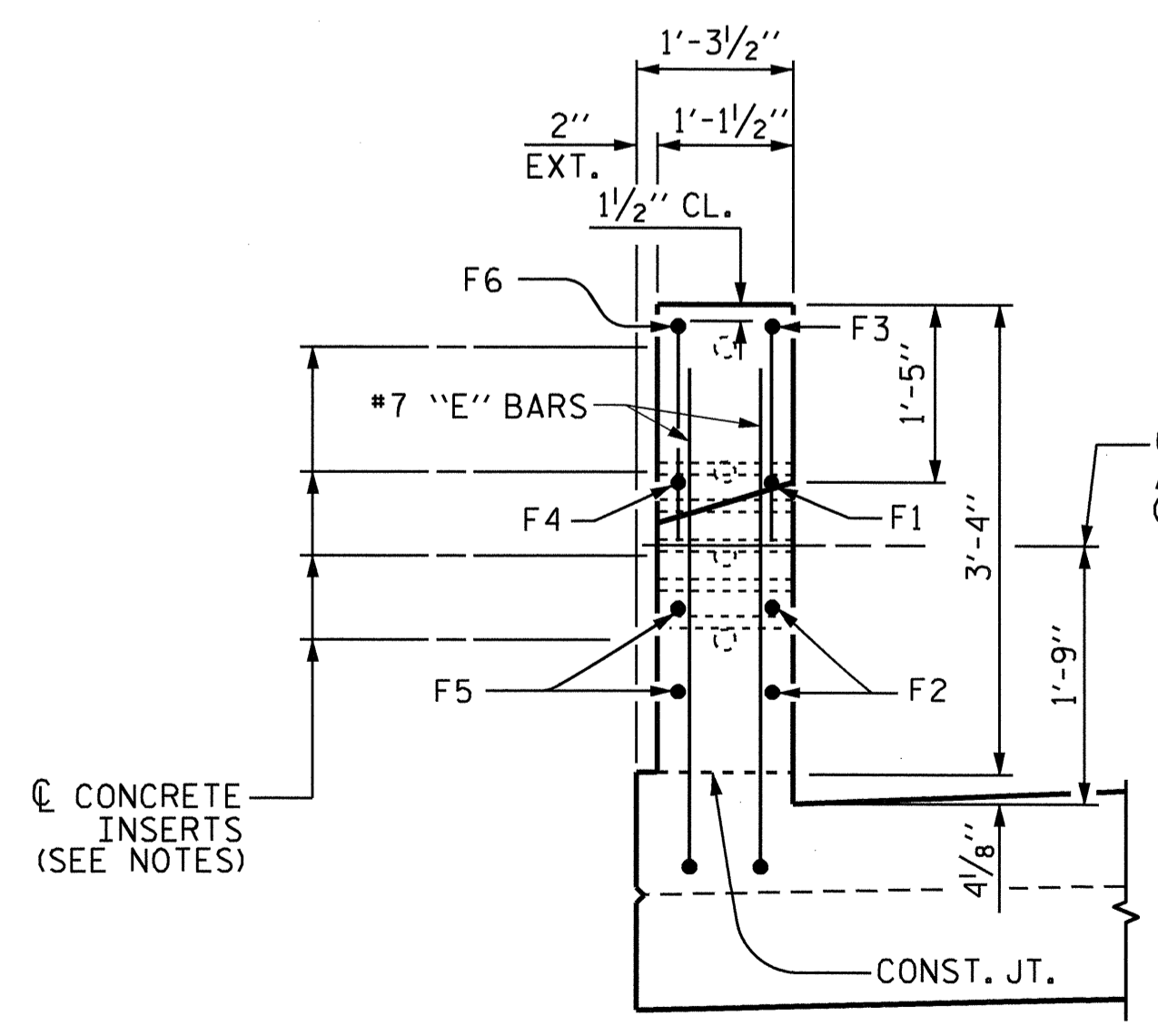


@ END BENT 1

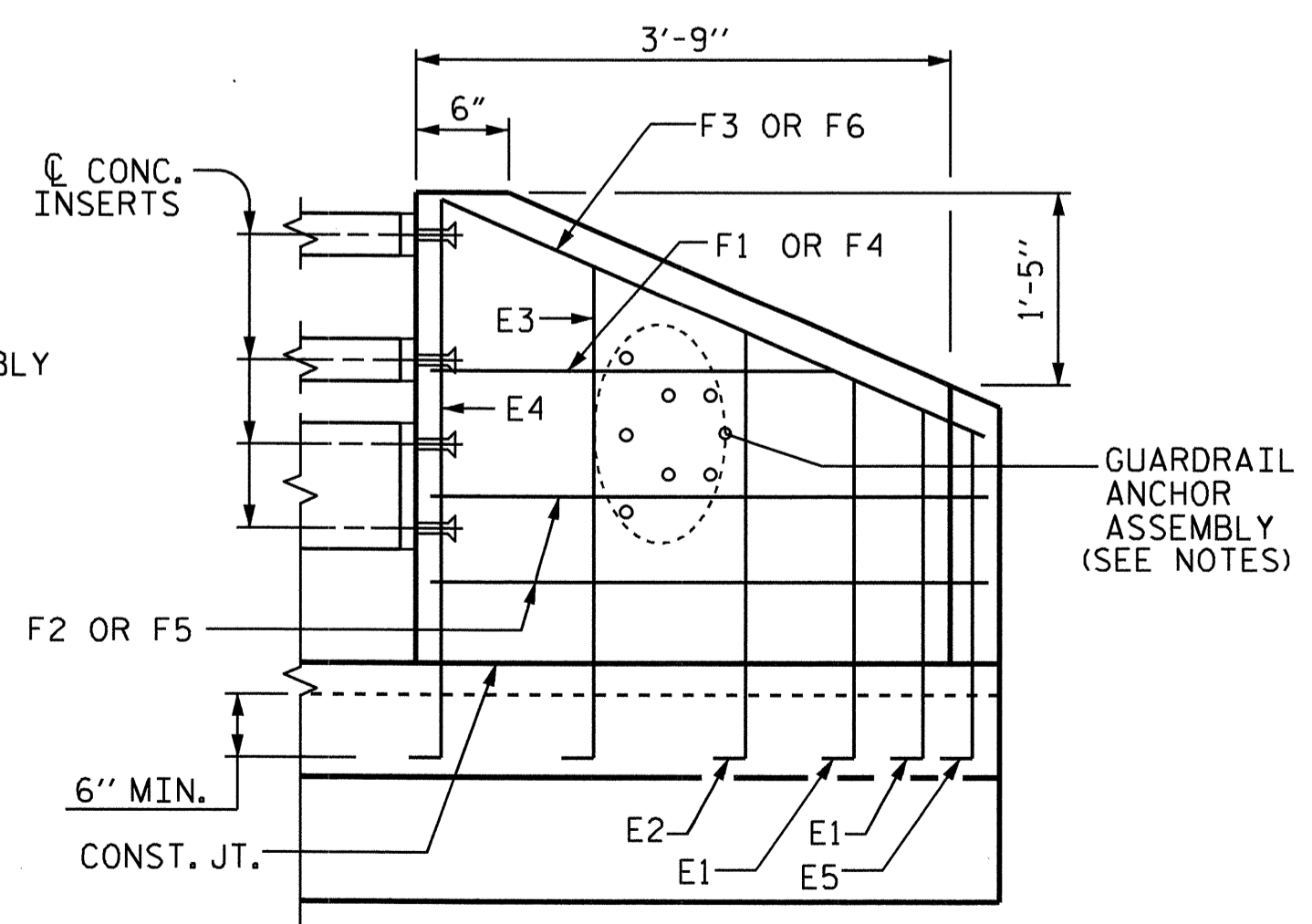


@ END BENT 2

PLAN



END VIEW (AT END BENT 2)



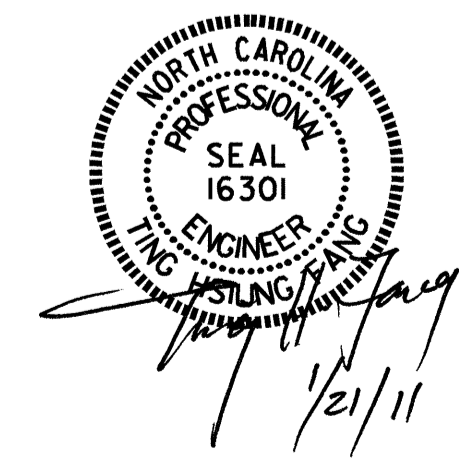
ELEVATION

END POST DETAILS

NOTES :

- FOR DETAIL OF GUARDRAIL ANCHOR ASSEMBLY, SEE "GUARDRAIL ANCHORAGE DETAILS FOR METALS RAILS" SHEET.
- FOR DETAILS OF CONCRETE INSERT, SEE "3 BAR METAL RAIL" SHEET 3 OF 3.
- ALL REINFORCING STEEL IN SIDEWALK AND END POSTS SHALL BE EPOXY COATED.
- SIDEWALK IN A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE UNIT IS CAST AND 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 FT. TO 10 FT. BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINT WILL BE REQUIRED FOR SEGMENTS LESS THAN 10 FEET IN LENGTH.
- NO ADDITIONAL PAYMENT SHALL BE MADE FOR THE CONCRETE END POSTS AS THIS IS CONSIDERED INCIDENTAL TO THE CONSTRUCTION OF THE 3 BAR METAL RAIL.

PROJECT NO. U-3621B
NASH COUNTY
 STATION: 50+77.00 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
RAIL POSTS SPACINGS & END POST DETAILS (RIGHT LANE)

REVISIONS						SHEET NO. S-53
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 68
2			4			

DRAWN BY : QT NGUYEN DATE : 12-10
 CHECKED BY : T.H. FANG DATE : 12-10

STR #2

NOTES

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

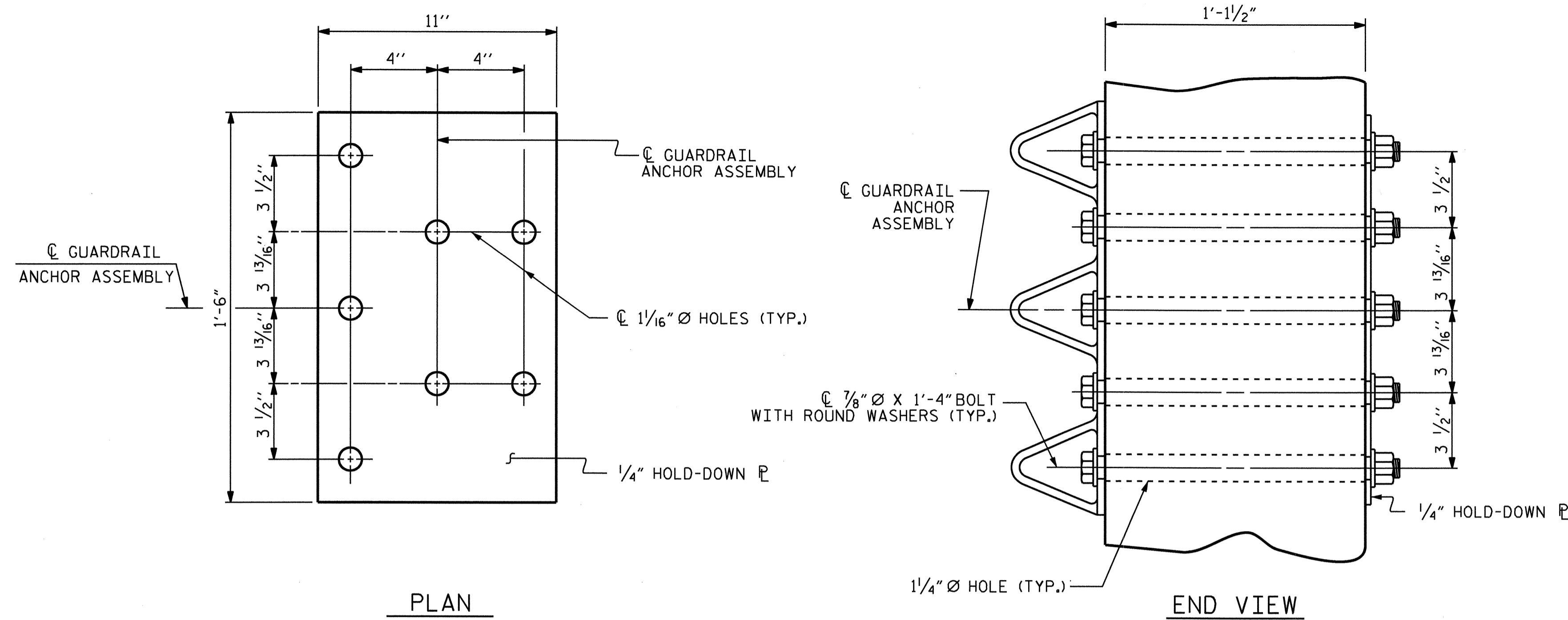
BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 1/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.

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

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

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

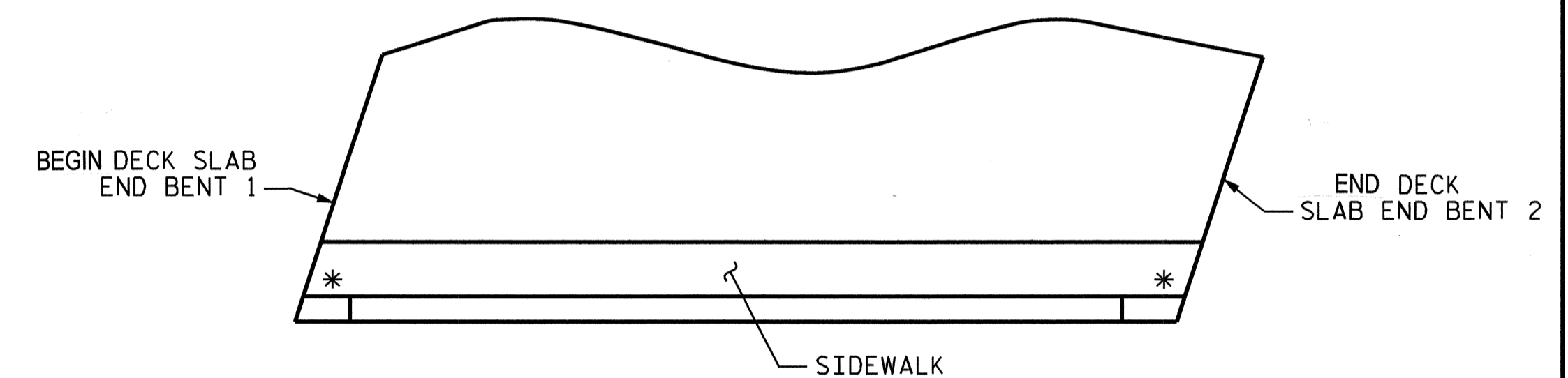
THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



PLAN

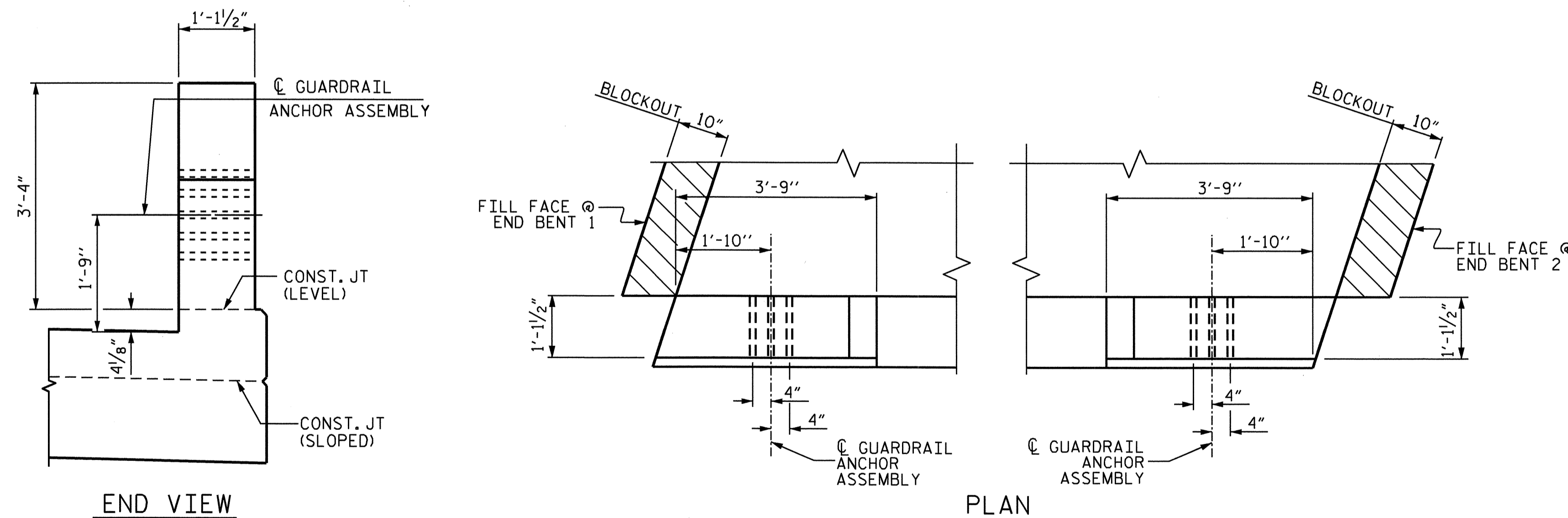
END VIEW

GUARDRAIL ANCHOR ASSEMBLY DETAILS



SKETCH SHOWING POINTS OF ATTACHMENT

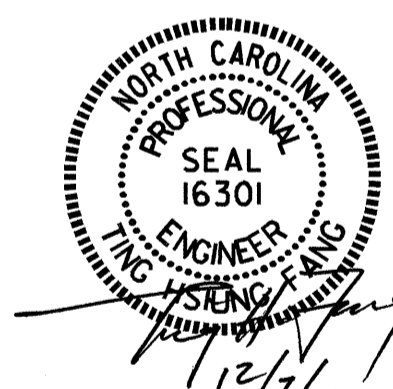
* LOCATION OF TYPE III GUARDRAIL ATTACHMENT



END VIEW

PLAN

LOCATION OF GUARDRAIL ANCHOR AT END POST



PROJECT NO. U-3621B
NASH COUNTY
 STATION: 50+77.00 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 GUARDRAIL ANCHORAGE
 DETAILS
 FOR METAL RAILS
 (RIGHT LANE)

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-54
1			3			TOTAL SHEETS
2			4			68

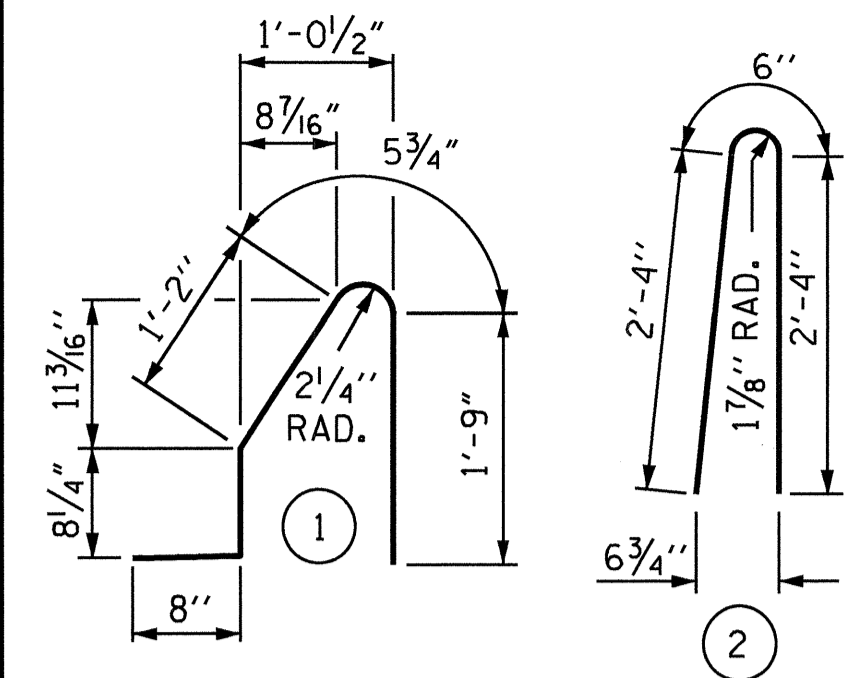
NOTES

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

ALL REINFORCING STEEL IN BARRIER RAIL SHALL BE EPOXY COATED.

VERTICAL GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

BAR TYPES

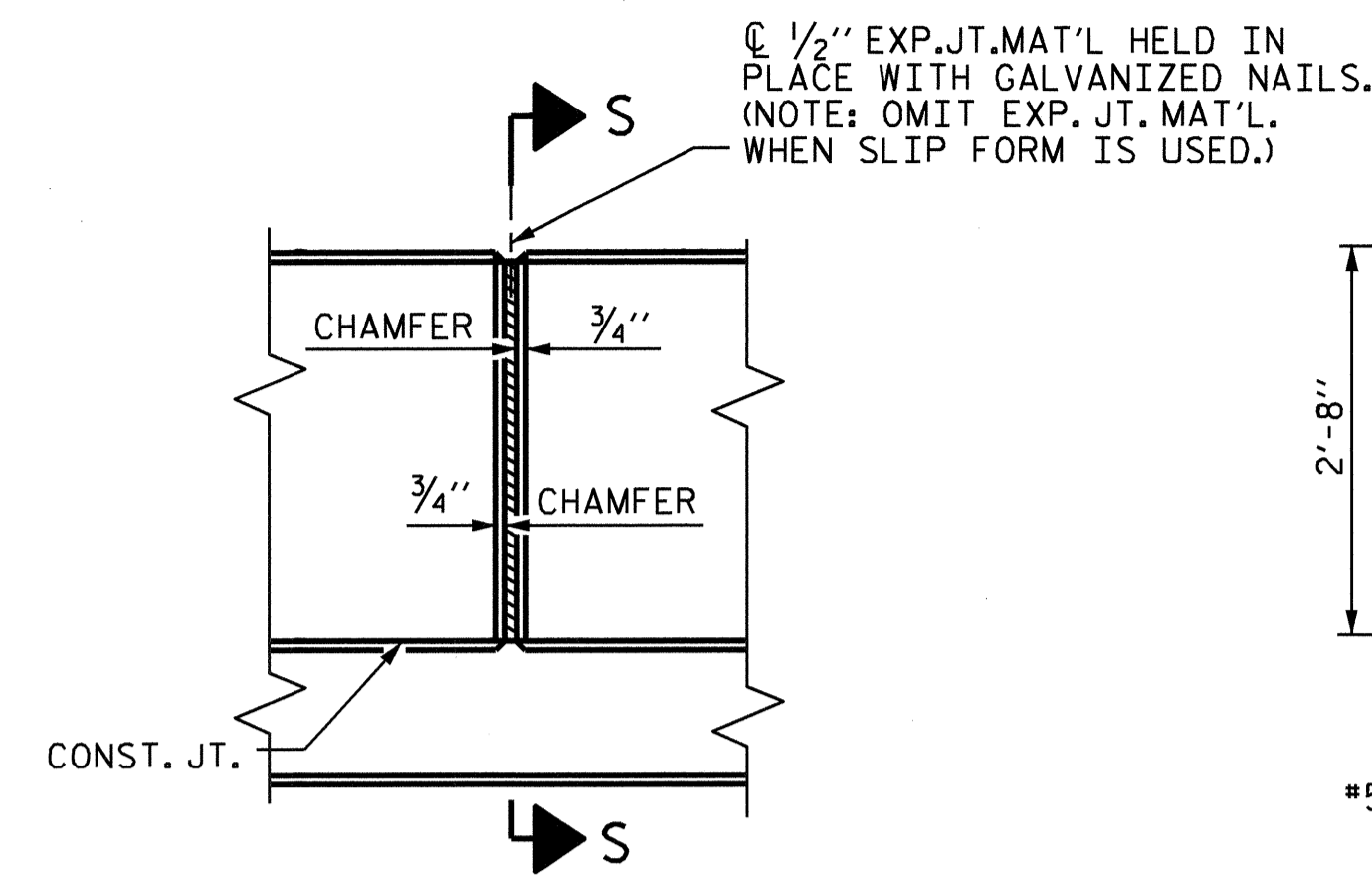


ALL BAR DIMENSIONS ARE OUT TO OUT

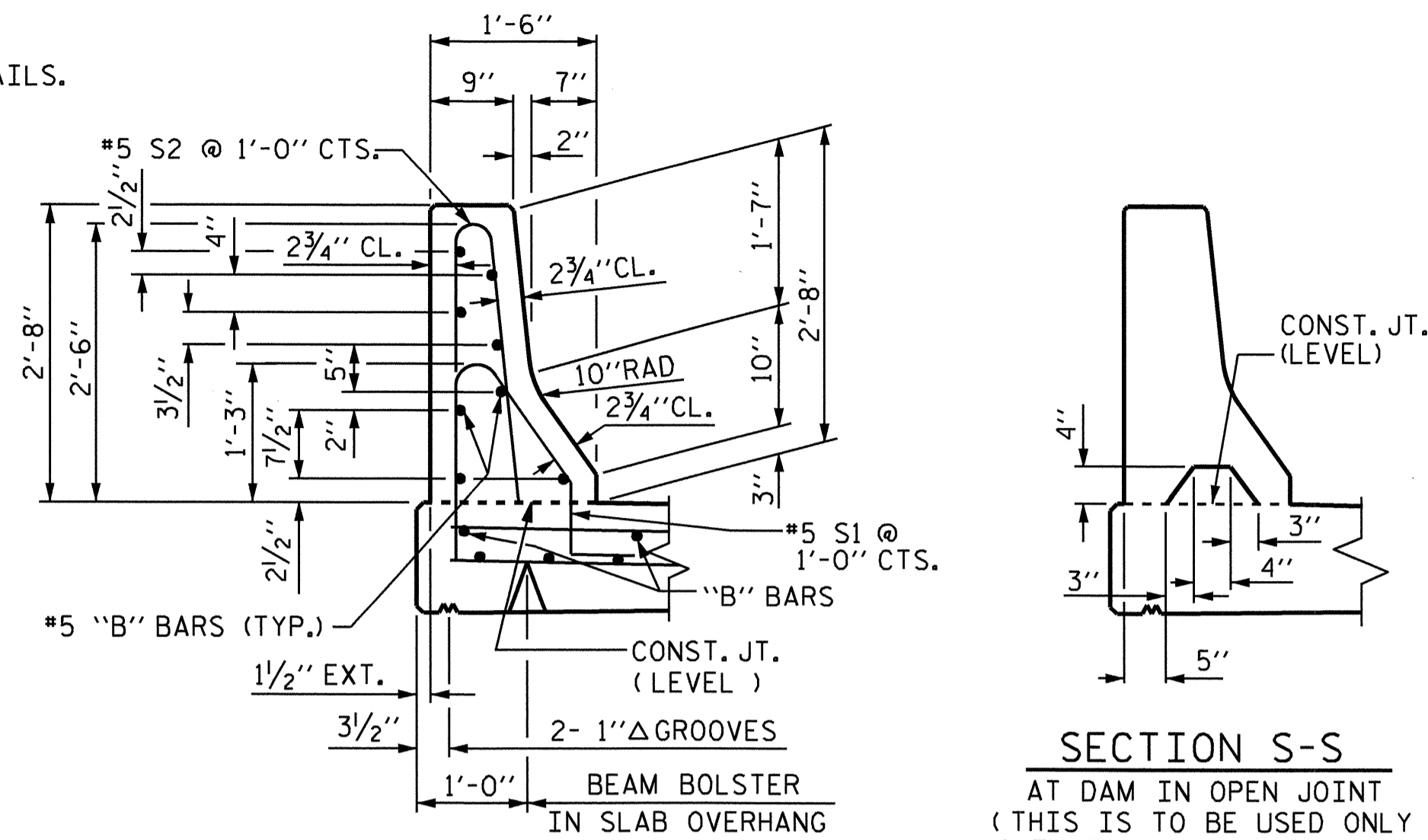
BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	32	#5	STR	14'-11"	498
* B2	48	#5	STR	26'-8"	1335
* S1	216	#5	1	4'-9"	1070
* S2	216	#5	2	5'-2"	1164
* EPOXY COATED REINFORCING STEEL					4,067 LBS.
CLASS AA CONCRETE					21.6 CU. YDS.
CONCRETE BARRIER RAIL					215.25 LIN. FT.

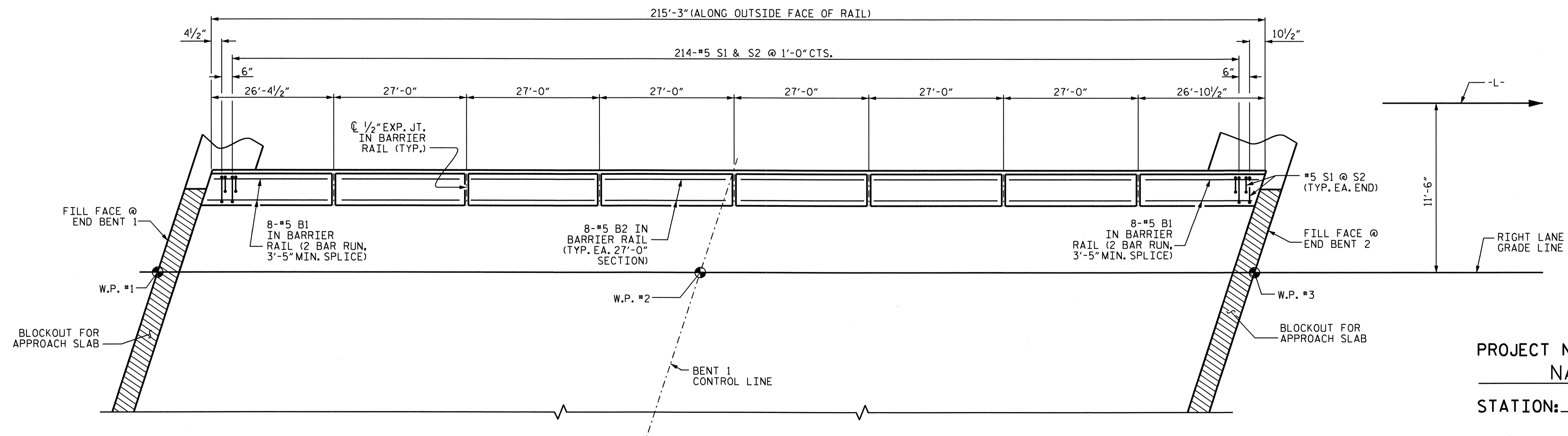


ELEVATION AT EXPANSION JOINTS



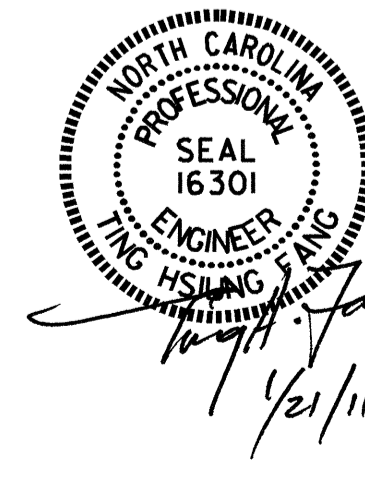
SECTION THRU RAIL

BARRIER RAIL DETAILS



PLAN OF BARRIER RAIL

PROJECT NO. U-3621B
NASH COUNTY
 STATION: 50+77.00 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
CONCRETE BARRIER RAIL
 (RIGHT LANE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-55
1			3			TOTAL SHEETS
2			4			68

ASSEMBLED BY :	QT NGUYEN	DATE :	12-10
CHECKED BY :	T.H. FANG	DATE :	12-10
DRAWN BY :	ARB 5/87	REV. 10/17/00	RWW/LES
CHECKED BY :	SJD 9/87	REV. 5/7/03R	RWW/JTE
		REV. 5/1/06	TLA/GM

NOTES

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

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

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 1/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

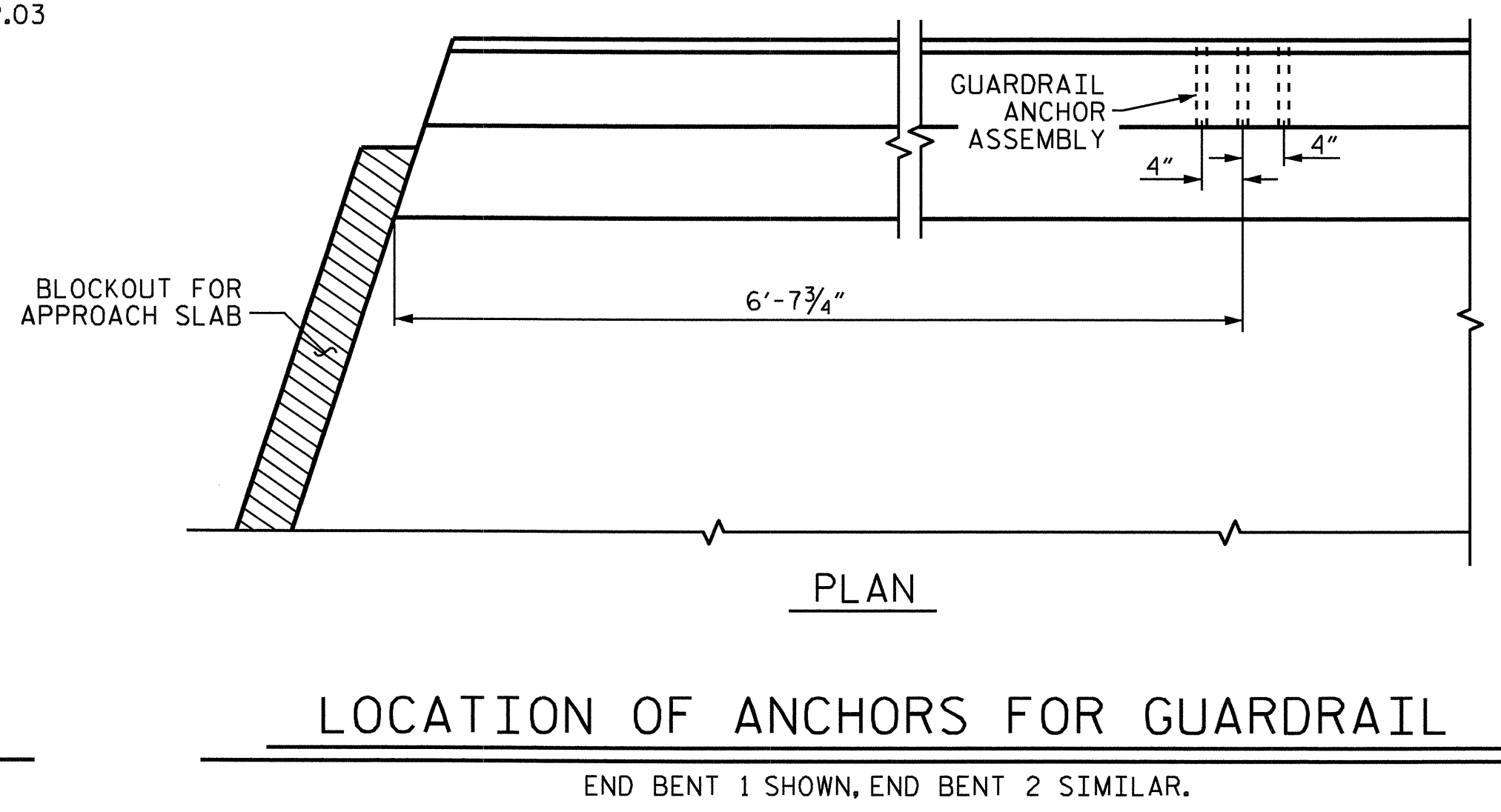
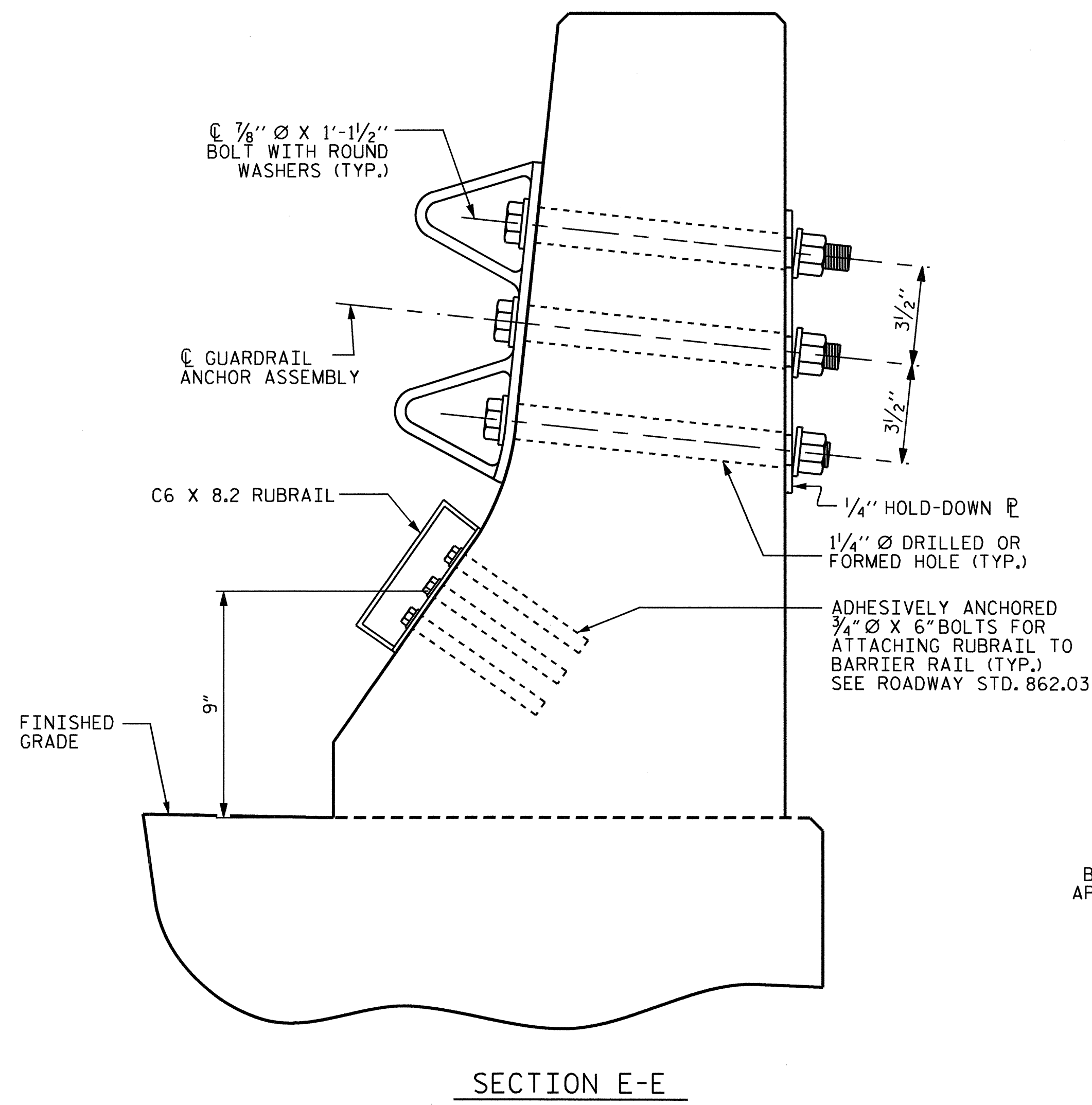
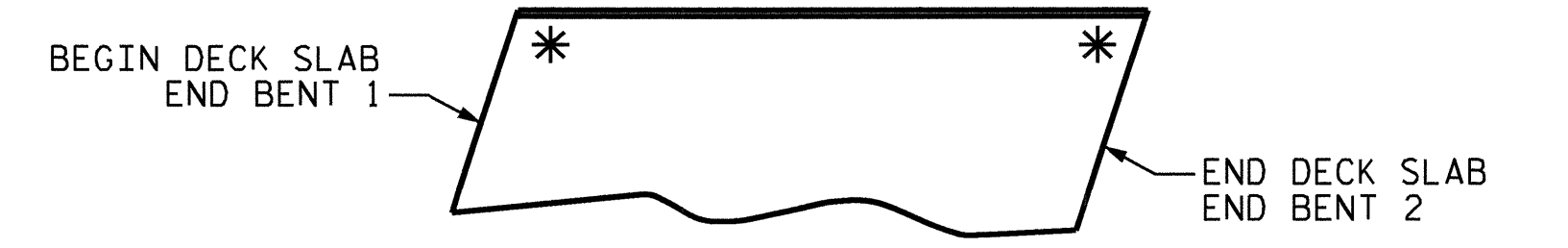
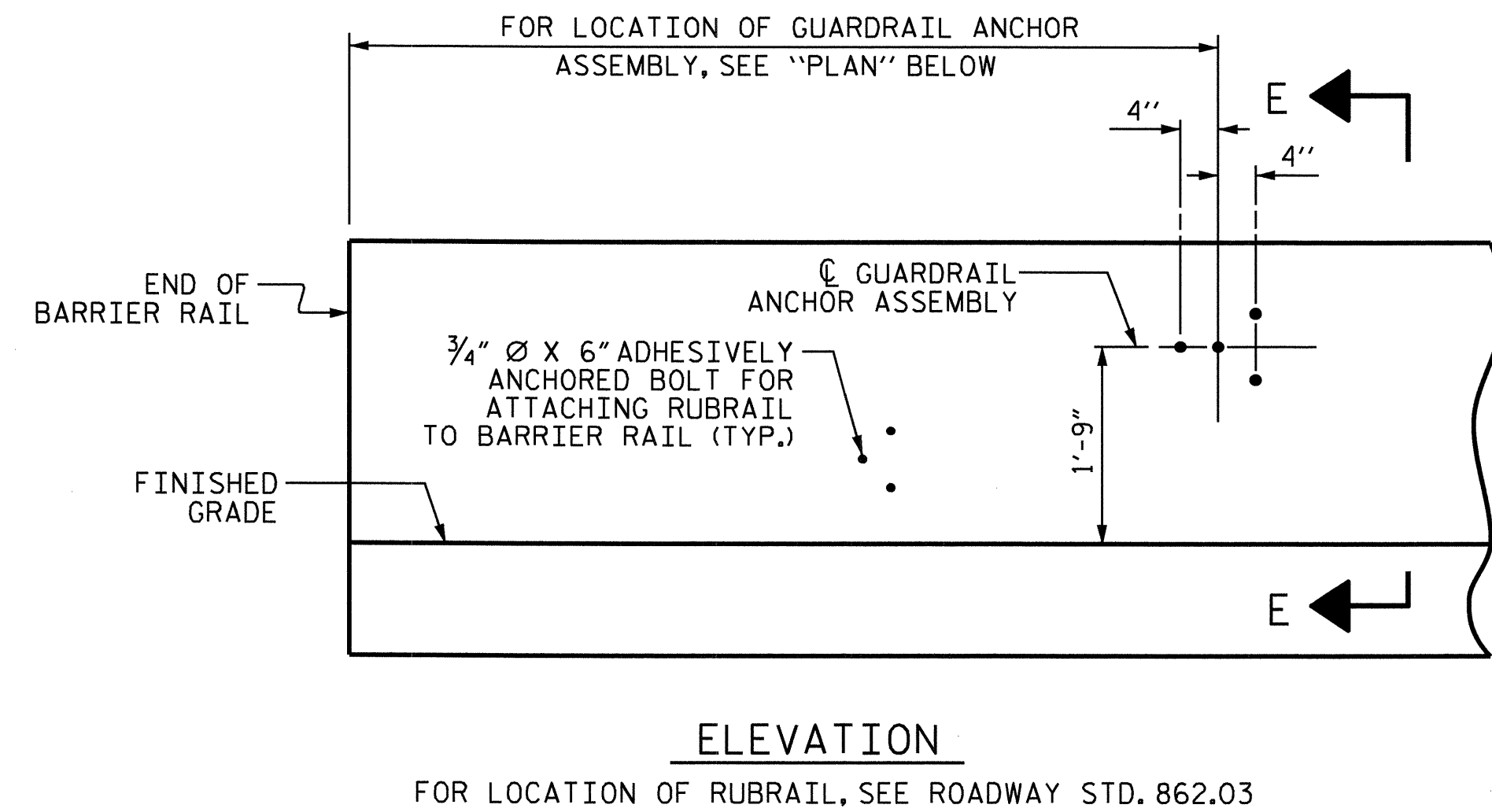
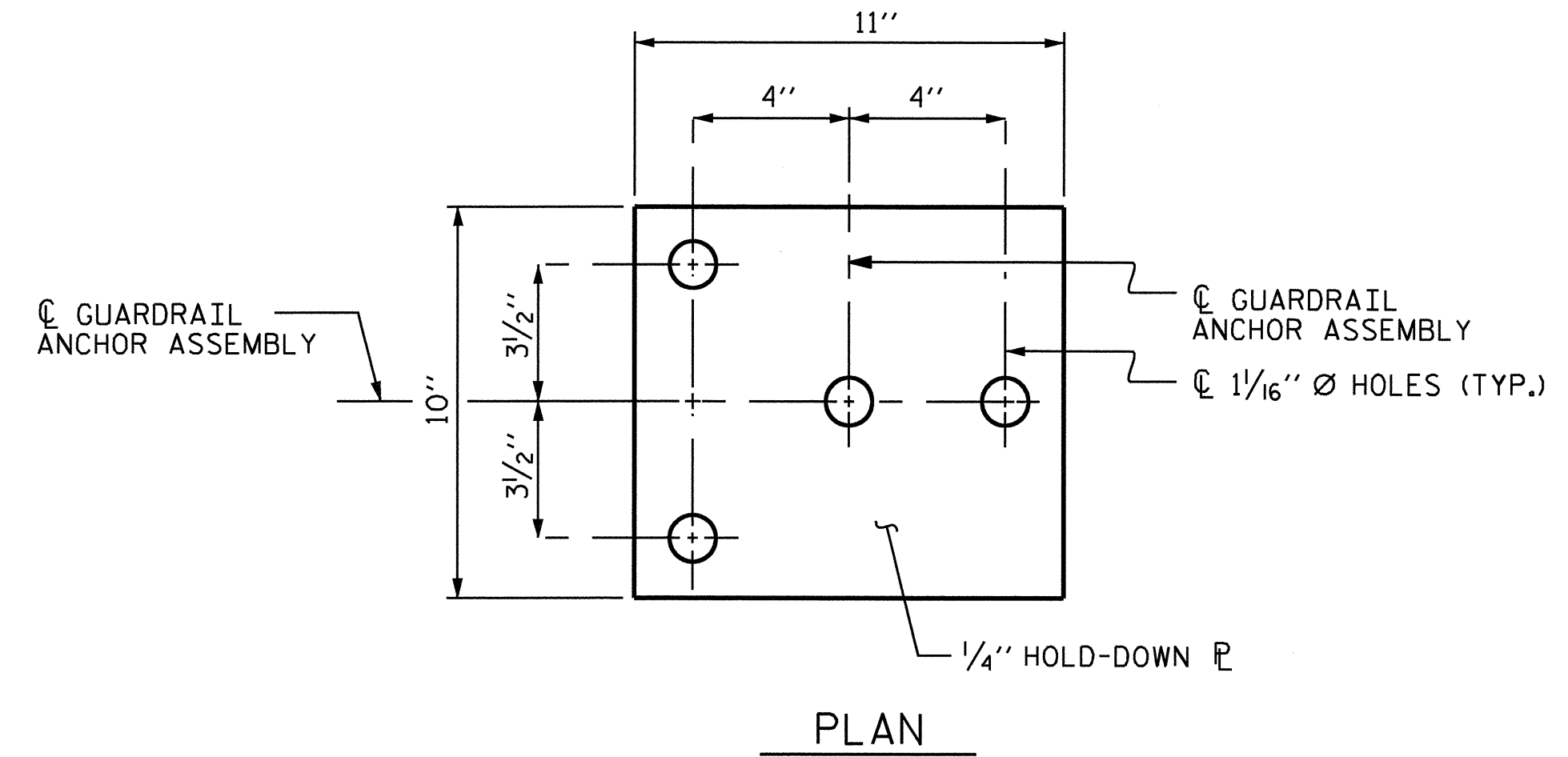
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

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

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

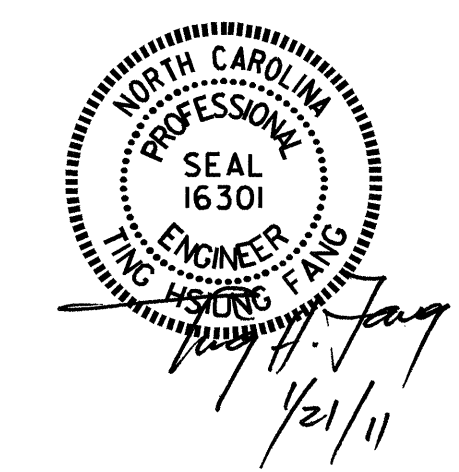


GUARDRAIL ANCHOR ASSEMBLY DETAILS

LOCATION OF ANCHORS FOR GUARDRAIL

END BENT 1 SHOWN, END BENT 2 SIMILAR.

PROJECT NO. U-3621B
NASH COUNTY
STATION: 50+77.00 -L-



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
GUARDRAIL ANCHORAGE
FOR BARRIER RAIL
(RIGHT LANE)

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

TOTAL SHEETS 68

ASSEMBLED BY : QT NGUYEN	DATE : 12-10
CHECKED BY : T.H. FANG	DATE : 12-10
DRAWN BY : TLA 5/06	ADDED 5/1/06R KMM/GM
CHECKED BY : GM 5/06	

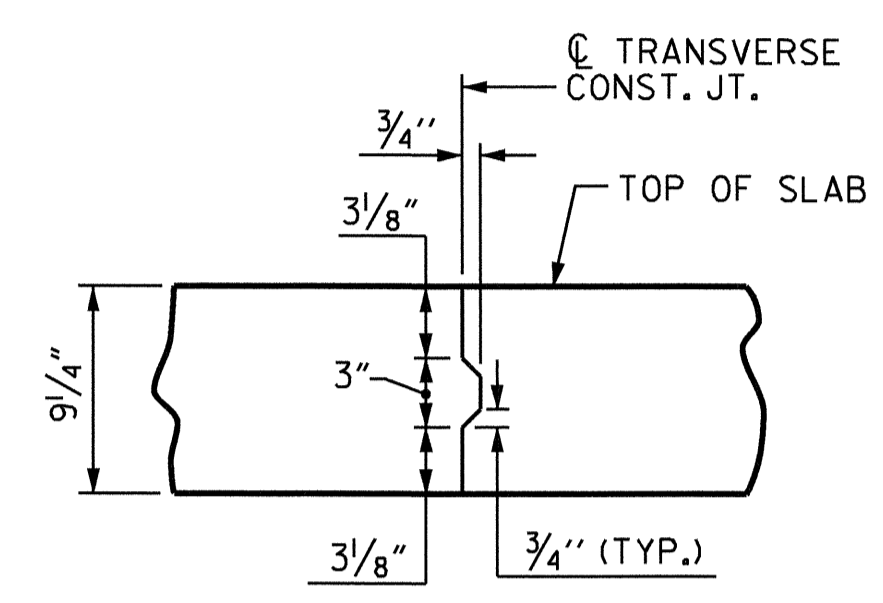
20-JAN-2011 12:24
Y:\TIPProjects-UU3621B\Structures\Final Plans\RTlane\U3621b..sd.br 2.dgn
qtnguyen

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

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

GROOVING BRIDGE FLOORS

APPROACH SLABS	1140 SQ.FT.
BRIDGE DECK	5812 SQ.FT.
TOTAL	6952 SQ.FT.



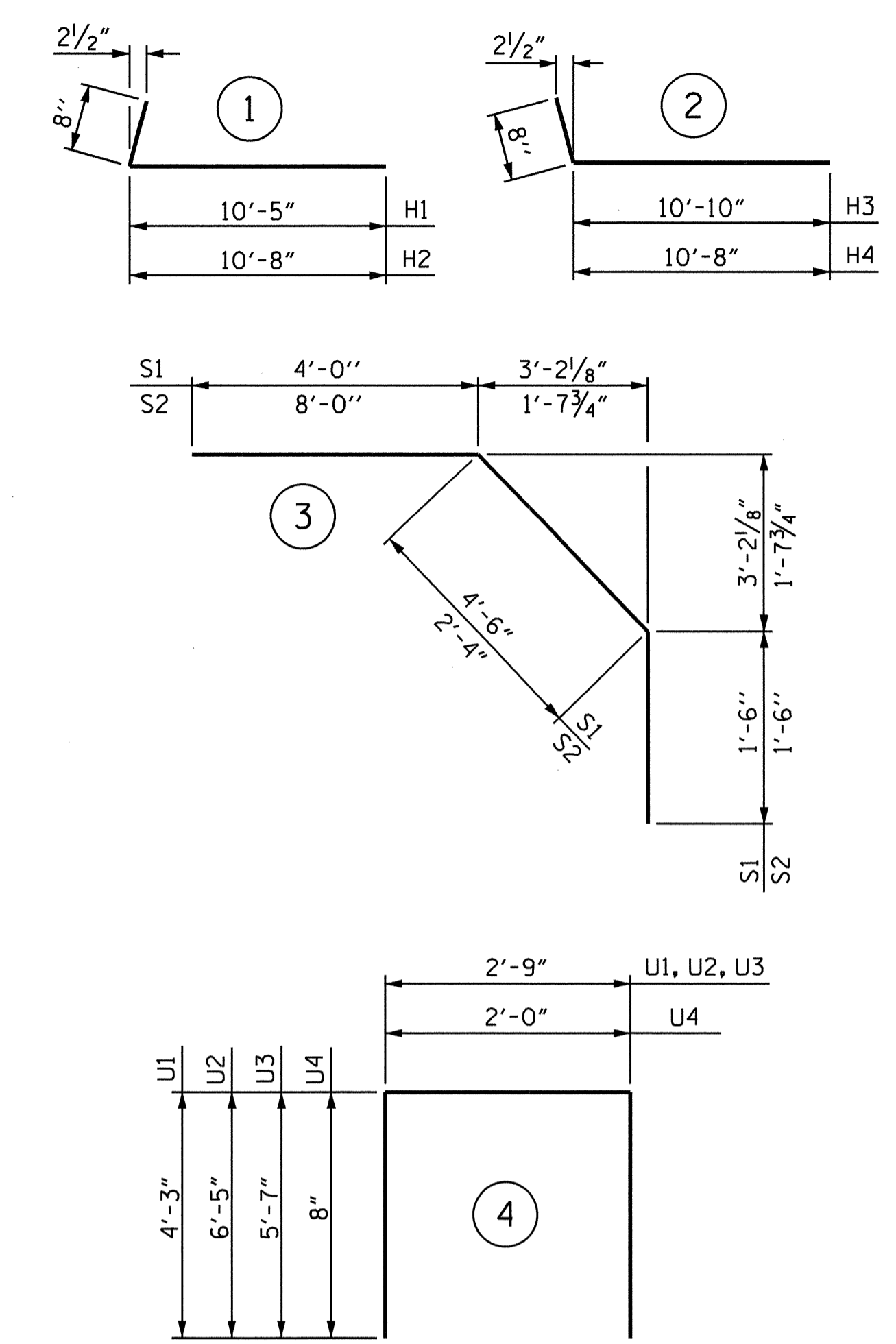
TRANSVERSE CONSTRUCTION JOINT DETAIL

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

BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	442	#5	STR	38'-1"	17557	*B1	108	#4	STR	24'-9"	1786
A2	442	#5	STR	38'-1"	17557	*B2	153	#7	STR	24'-10"	7766
*A101	4	#5	STR	35'-7"	148	*B3	102	#7	STR	32'-0"	6672
*A102	4	#5	STR	32'-10"	137	B4	200	#5	STR	55'-1"	11490
*A103	4	#5	STR	30'-0"	125	*B5	50	#4	STR	27'-9"	927
*A104	4	#5	STR	27'-3"	114	*B6	8	#4	STR	28'-8"	153
*A105	4	#5	STR	24'-5"	102	*G1	216	#4	STR	6'-3"	902
*A106	4	#5	STR	21'-7"	90	*G2	44	#4	STR	5'-3"	154
*A107	4	#5	STR	18'-9"	78						
*A108	4	#5	STR	16'-0"	67	H1	13	#4	1	11'-1"	96
*A109	4	#5	STR	13'-2"	55	H2	13	#4	1	11'-4"	98
*A110	4	#5	STR	10'-5"	43	H3	13	#4	2	11'-6"	100
*A111	4	#5	STR	7'-7"	32	H4	13	#4	2	11'-4"	98
*A112	4	#5	STR	4'-9"	20						
*A113	4	#5	STR	2'-0"	8	K1	20	#5	STR	46'-4"	967
						K2	12	#4	STR	2'-10"	23
A201	4	#5	STR	35'-7"	148						
A202	4	#5	STR	32'-10"	137	*S1	68	#4	3	10'-0"	454
A203	4	#5	STR	30'-0"	125	*S2	72	#4	3	11'-10"	569
A204	4	#5	STR	27'-3"	114						
A205	4	#5	STR	24'-5"	102	U1	72	#4	4	11'-3"	541
A206	4	#5	STR	21'-7"	90	U2	4	#4	4	15'-7"	42
A207	4	#5	STR	18'-9"	78	U3	4	#4	4	13'-11"	37
A208	4	#5	STR	16'-0"	67	*U4	78	#4	4	3'-4"	174
A209	4	#5	STR	13'-2"	55						
A210	4	#5	STR	10'-5"	43	V2	44	#4	STR	6'-5"	189
A211	4	#5	STR	7'-7"	32	V3	44	#4	STR	5'-7"	164
A212	4	#5	STR	4'-9"	20						
A213	4	#5	STR	2'-0"	8						
REINFORCING STEEL = 32,421 LBS											
*EPOXY COATED REINF. STEEL = 38,133 LBS											

BAR TYPES

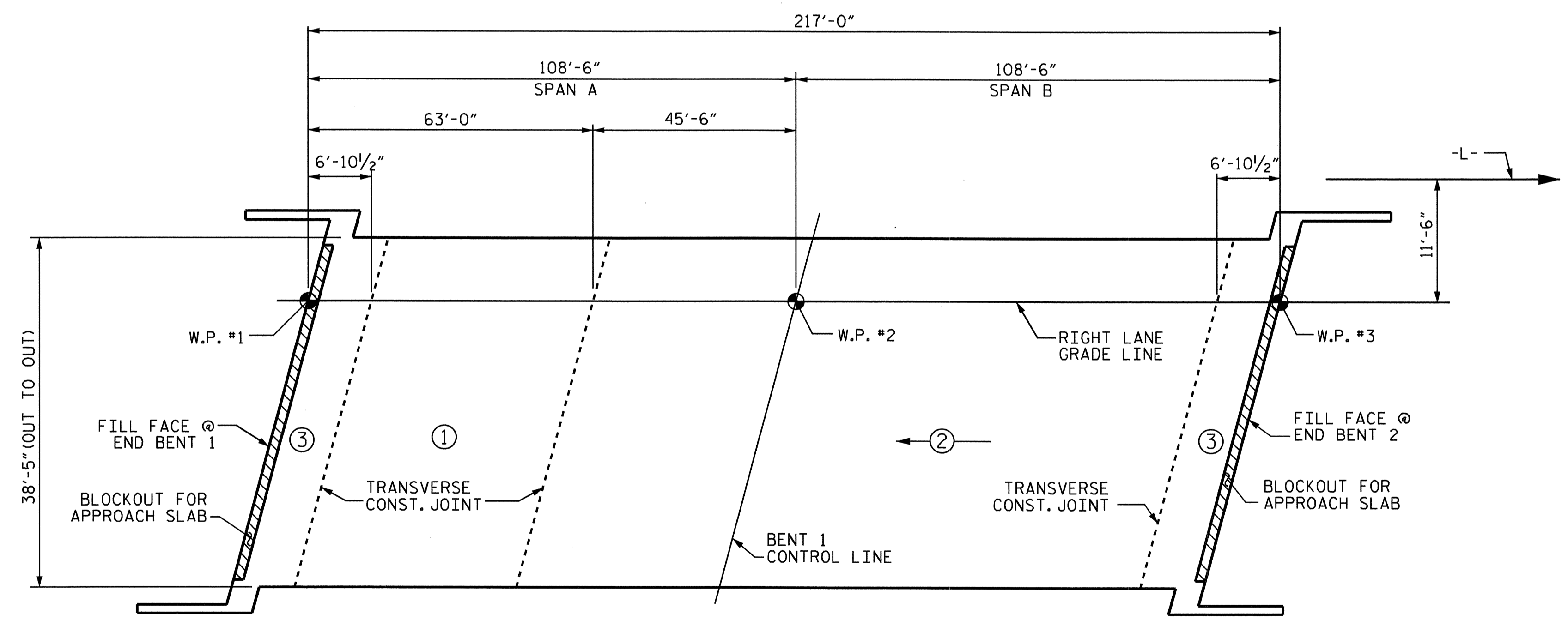


ALL BAR DIMENSIONS ARE OUT TO OUT

SUPERSTRUCTURE BILL OF MATERIAL

	CLASS AA CONCRETE (CU. YDS.)	REINFORCING STEEL (LBS.)	*EPOXY COATED REINFORCING STEEL (LBS.)
POUR #1	72.7		
POUR #2	190.7		
POUR #3	91.3		
SIDEWALK	40.2		
TOTALS **	394.9	32,421	38,133

** INCLUDES QUANTITIES FOR SIDEWALK. QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED.

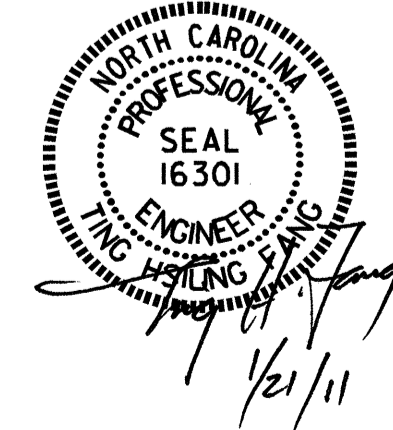


POURING SEQUENCE AND LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB

(SQ. FT. = 8,336)

⊙ INDICATES POUR NUMBER & DIRECTION

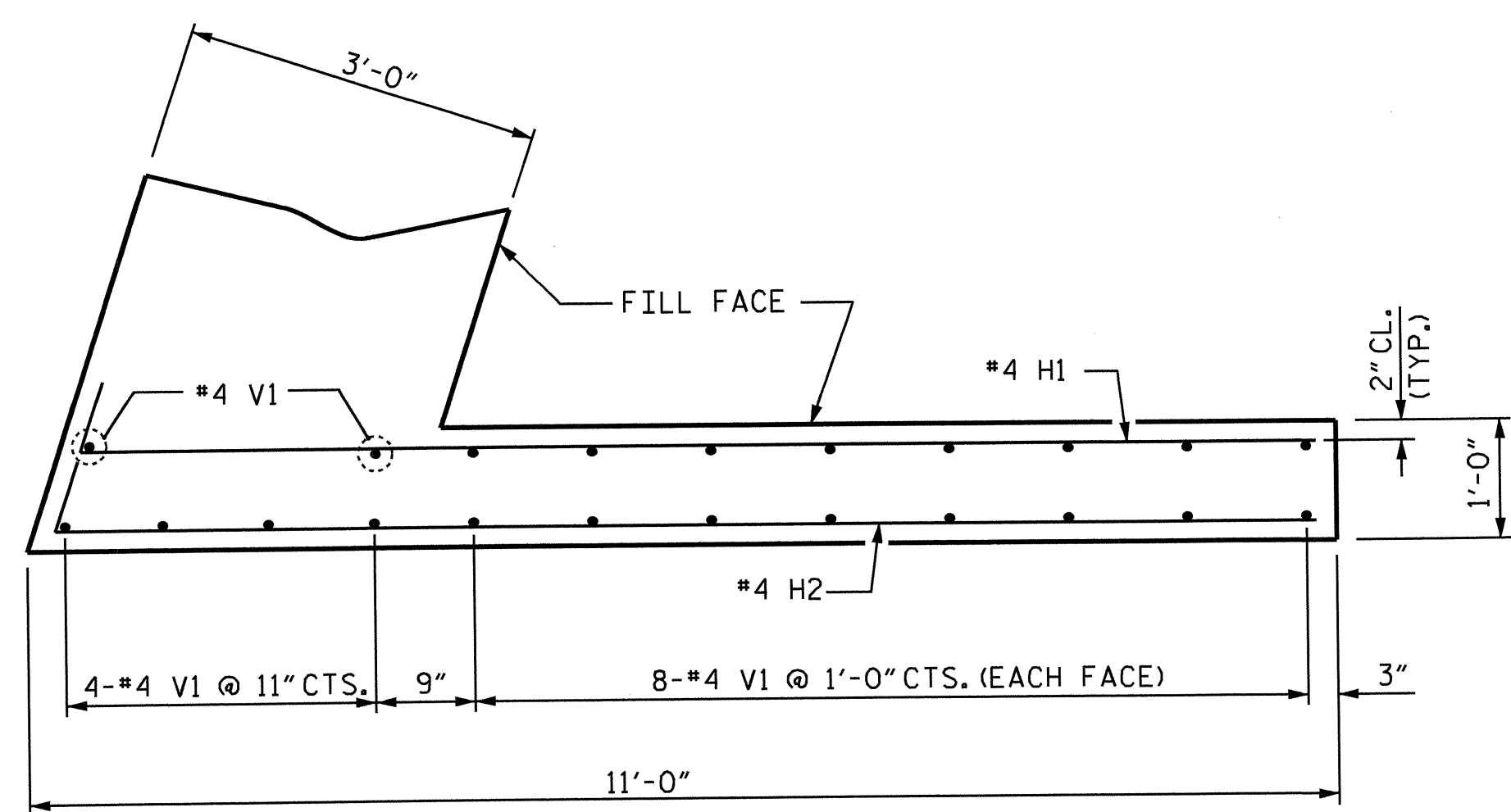
PROJECT NO. U-3621B
NASH COUNTY
STATION: 50+77.00 -L-



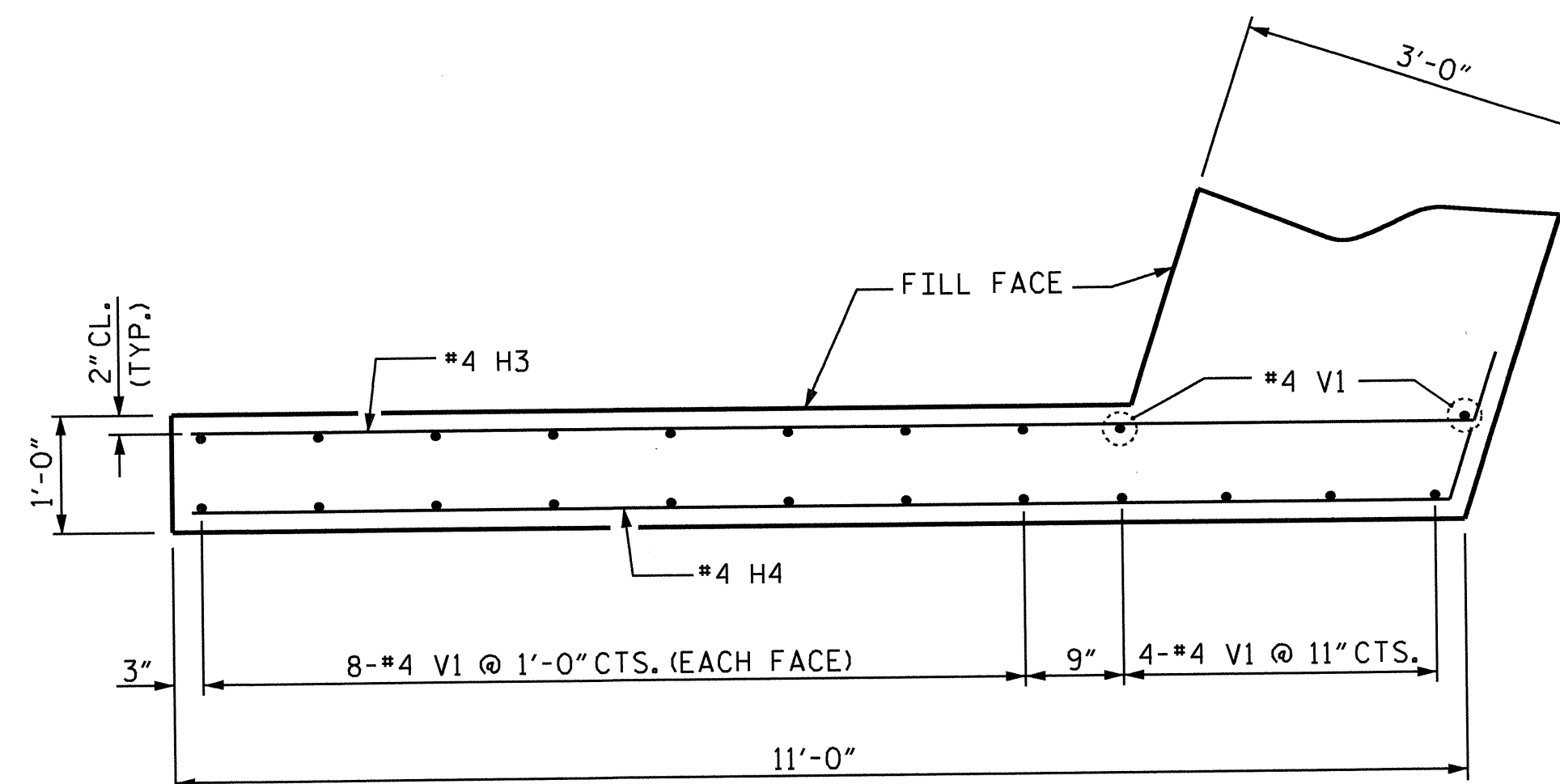
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
SUPERSTRUCTURE
BILL OF MATERIAL
(RIGHT LANE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-57
1			3			TOTAL SHEETS
2			4			68

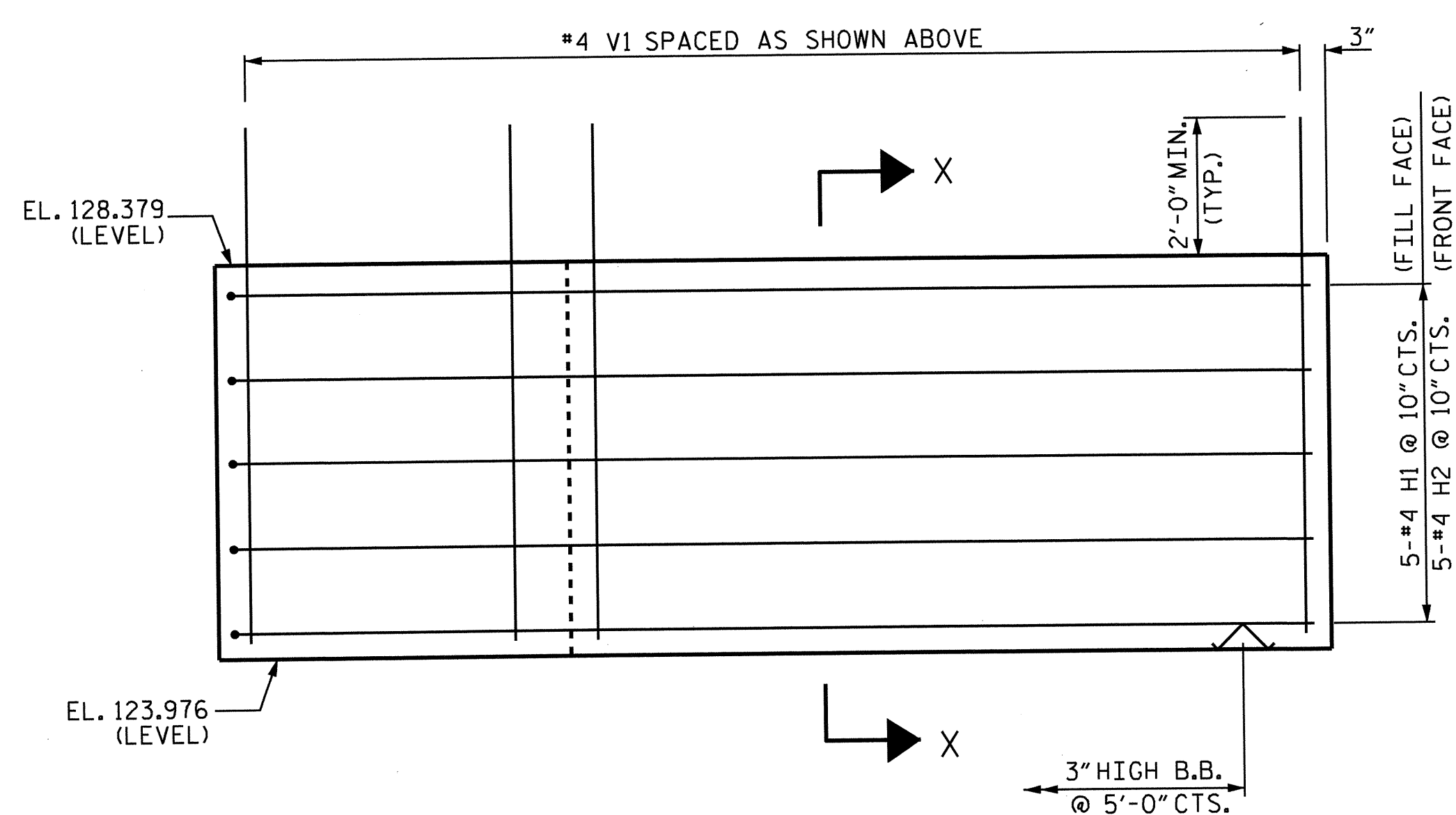
ASSEMBLED BY : QT NGUYEN	DATE : 12-10
CHECKED BY : T.H. FANG	DATE : 12-10
DRAWN BY : JMB 5/87	REV. 6/1/94 EEM/GRP
CHECKED BY : SJD 9/87	REV. 8/16/99 RWW/LES
	REV. 5/1/06 TLA/GM



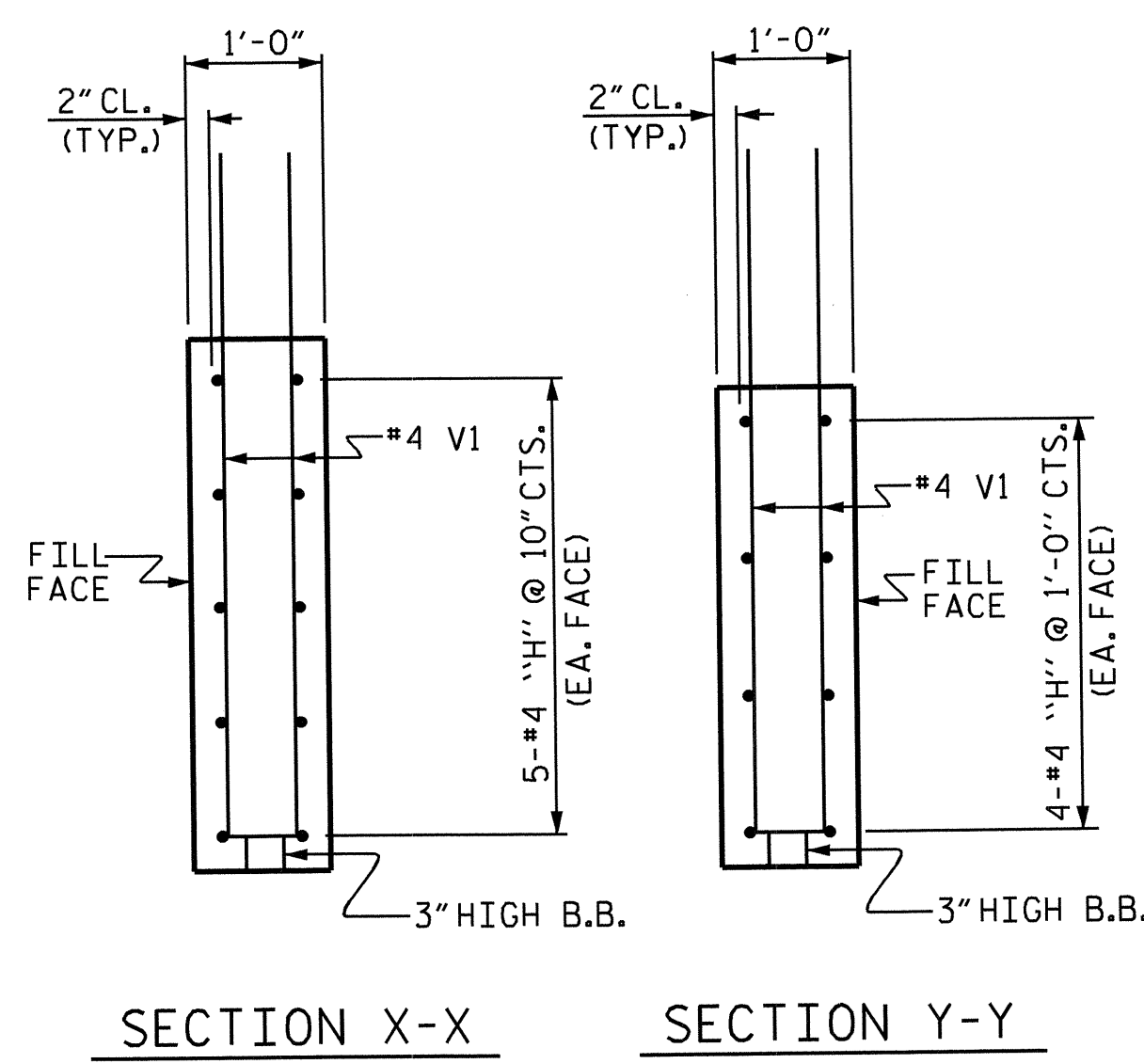
PLAN OF WING (W1)



PLAN OF WING (W2)

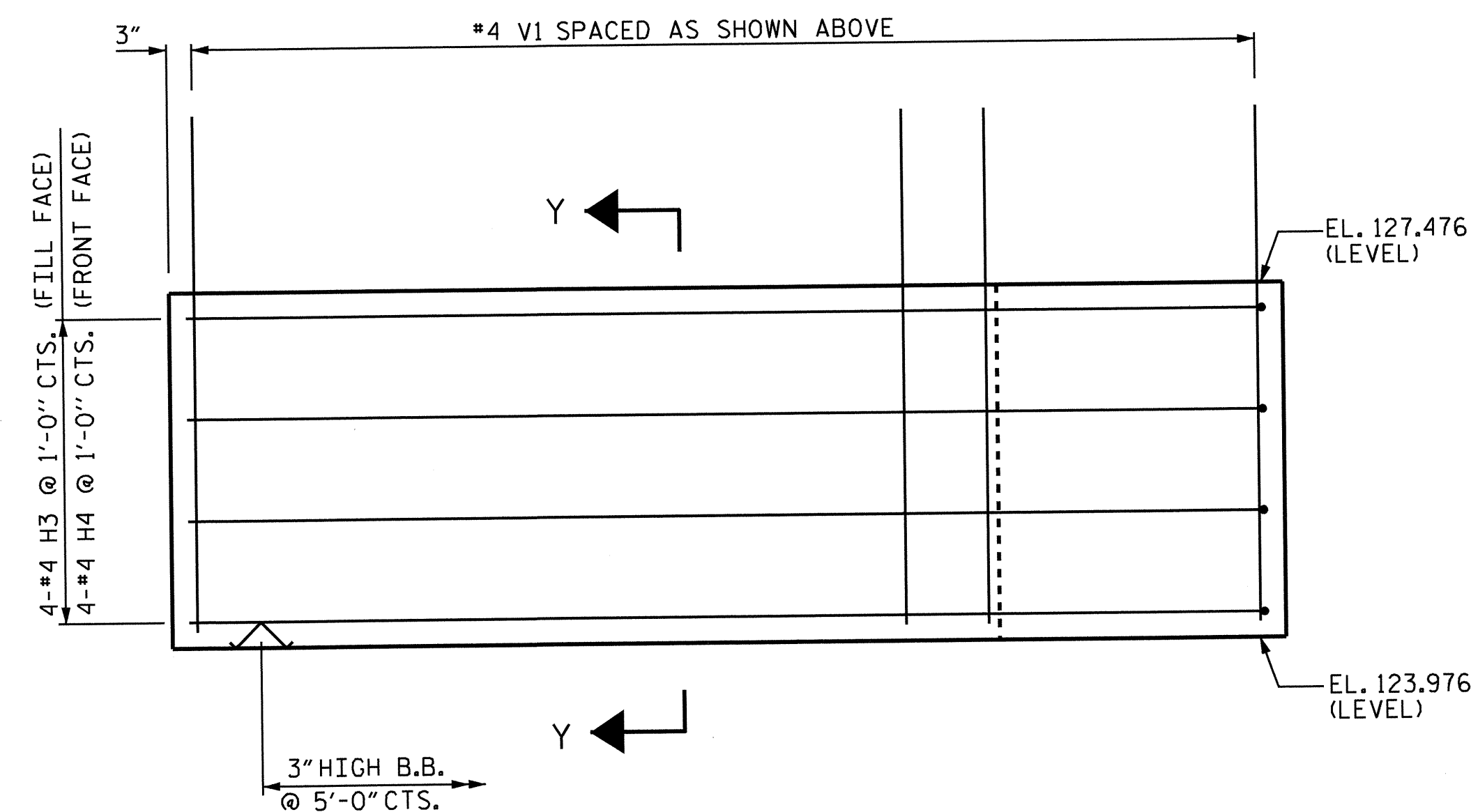


ELEVATION OF WING (W1)



SECTION X-X

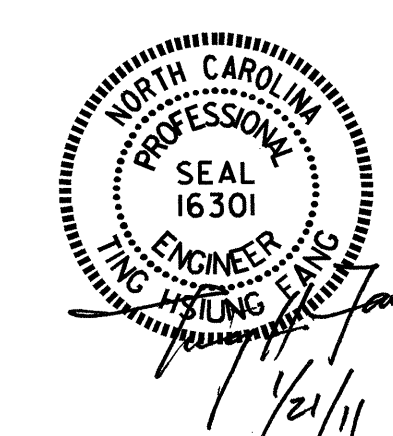
SECTION Y-Y



ELEVATION OF WING (W2)

PROJECT NO. U-3621B
NASH COUNTY
 STATION: 50+77.00 -L-

SHEET 2 OF 3



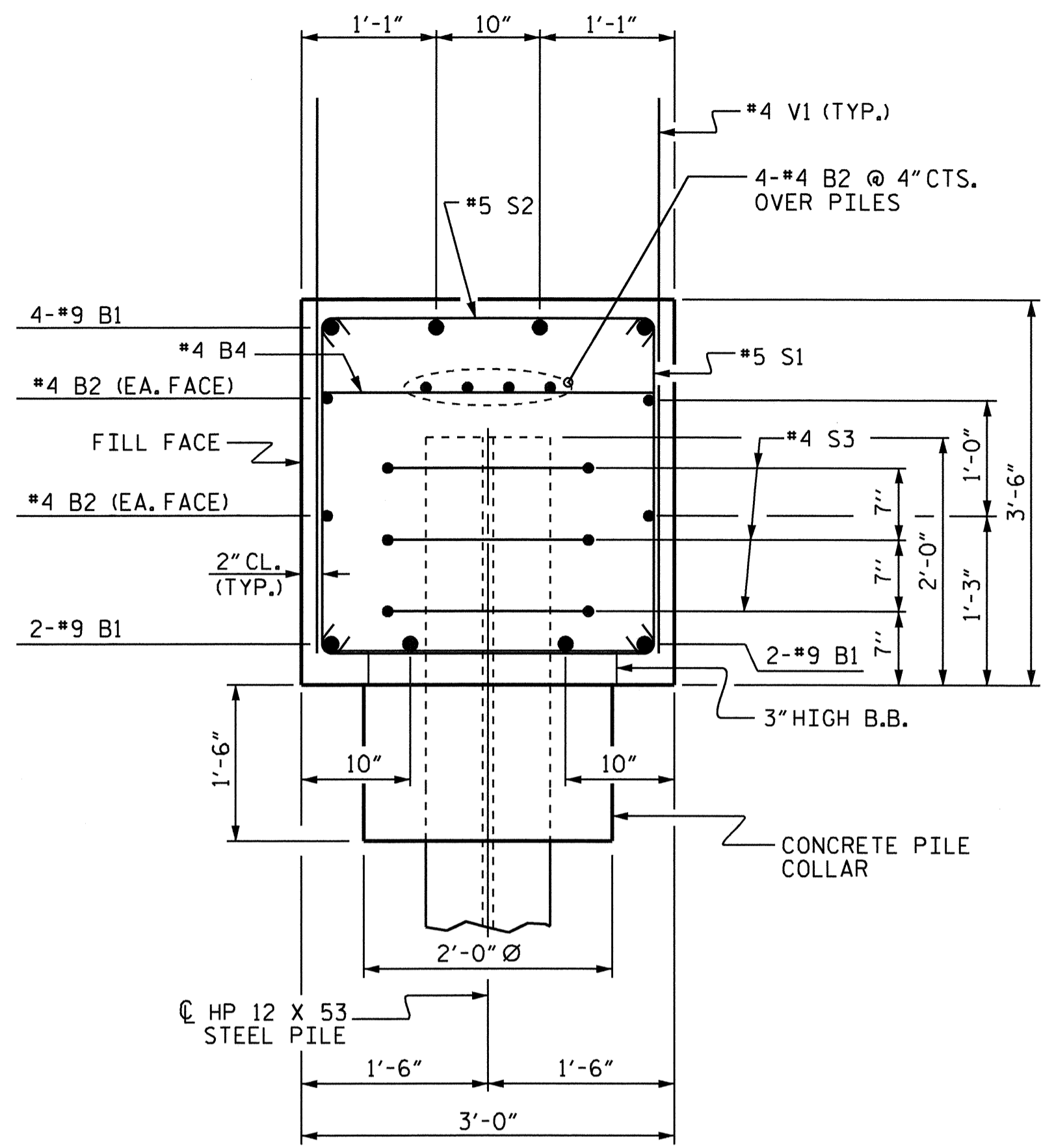
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT 1
 INTEGRAL
 (RIGHT LANE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-59
1			3			TOTAL SHEETS
2			4			68

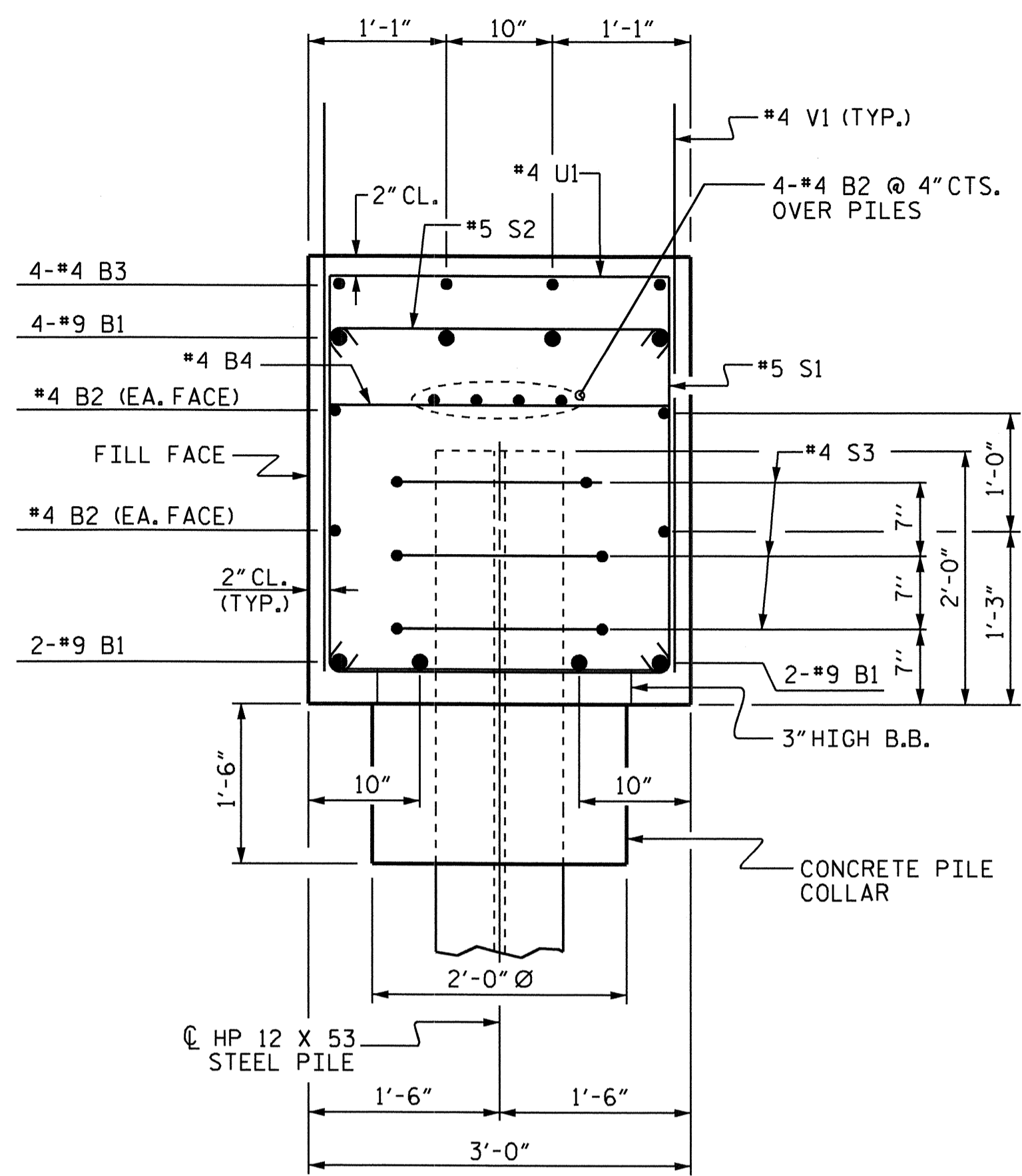
DRAWN BY: QT NGUYEN DATE: 6-09
 CHECKED BY: W.D. CRUTCHER DATE: 4-8-10

21-JAN-2011 07:57
 Y:\TIP\Projects-U\U3621B\Structures\Final Plans\Rtline\U3621b.sd.e2*.dgn
 qtnguyen

STR #2

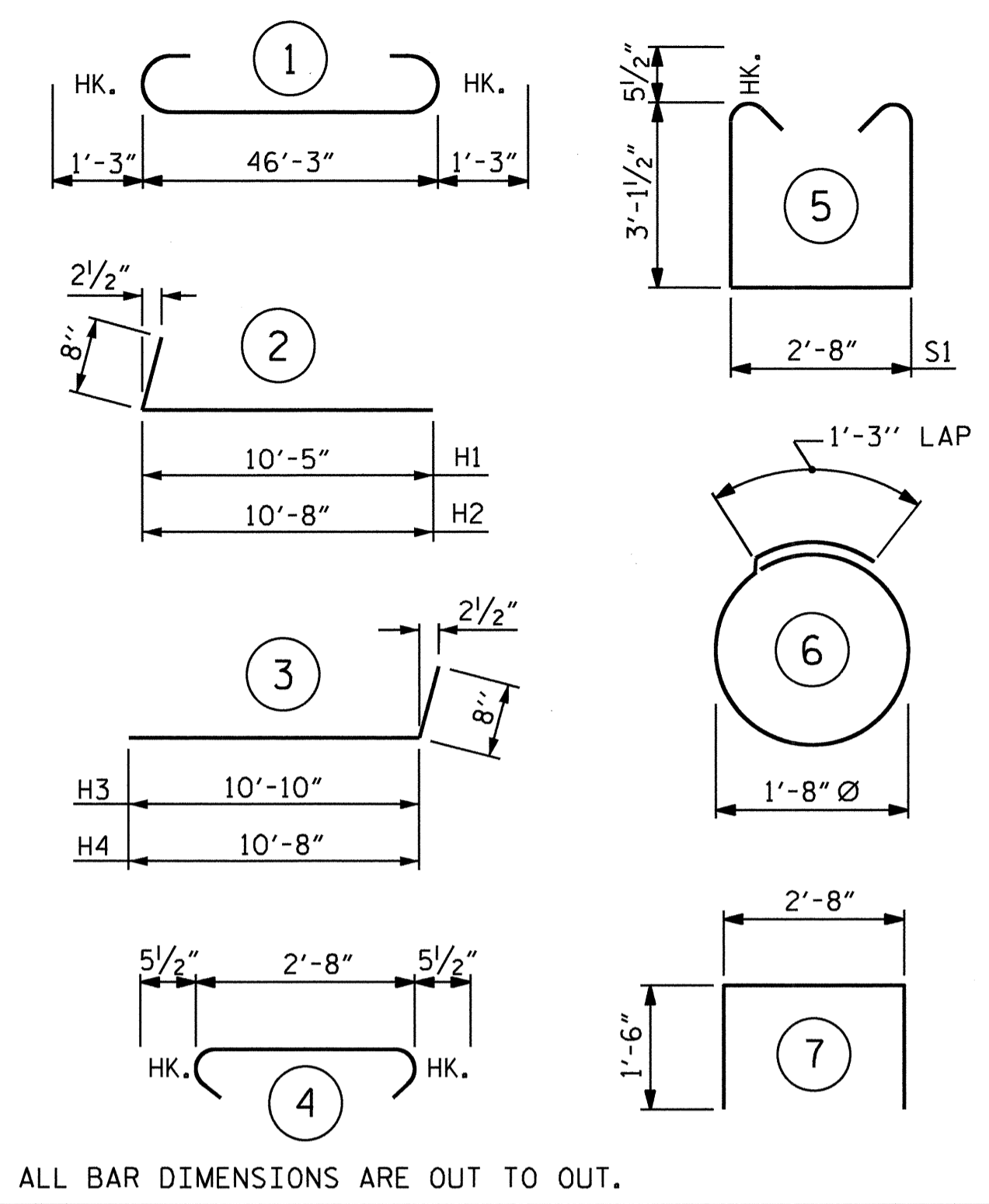


SECTION A-A

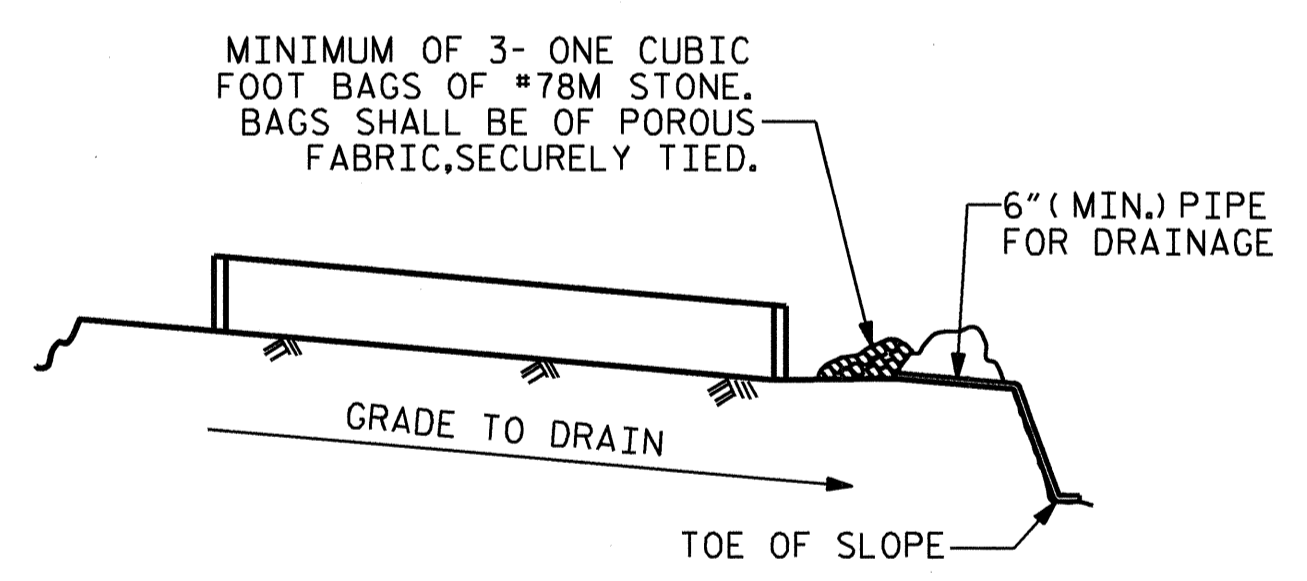


SECTION B-B

BILL OF MATERIAL					
END BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	48'-9"	1326
B2	16	#4	STR	24'-5"	261
B3	4	#4	STR	18'-7"	50
B4	12	#4	STR	2'-8"	21
H1	5	#4	3	11'-1"	37
H2	5	#4	3	11'-4"	38
H3	4	#4	2	11'-6"	31
H4	4	#4	2	11'-4"	30
S1	42	#5	5	9'-10"	431
S2	42	#5	4	3'-7"	157
S3	18	#4	6	6'-6"	78
U1	13	#4	7	5'-8"	49
V1	124	#4	STR	6'-3"	518
REINFORCING STEEL				=	3027 LBS
CLASS A CONCRETE BREAKDOWN :					
CAP, LOWER WINGS, & COLLARS = 23.5 C.Y.					
HP 12 X 53 STEEL PILES :					
No. 6 LIN. FT. 330					



ALL BAR DIMENSIONS ARE OUT TO OUT.



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

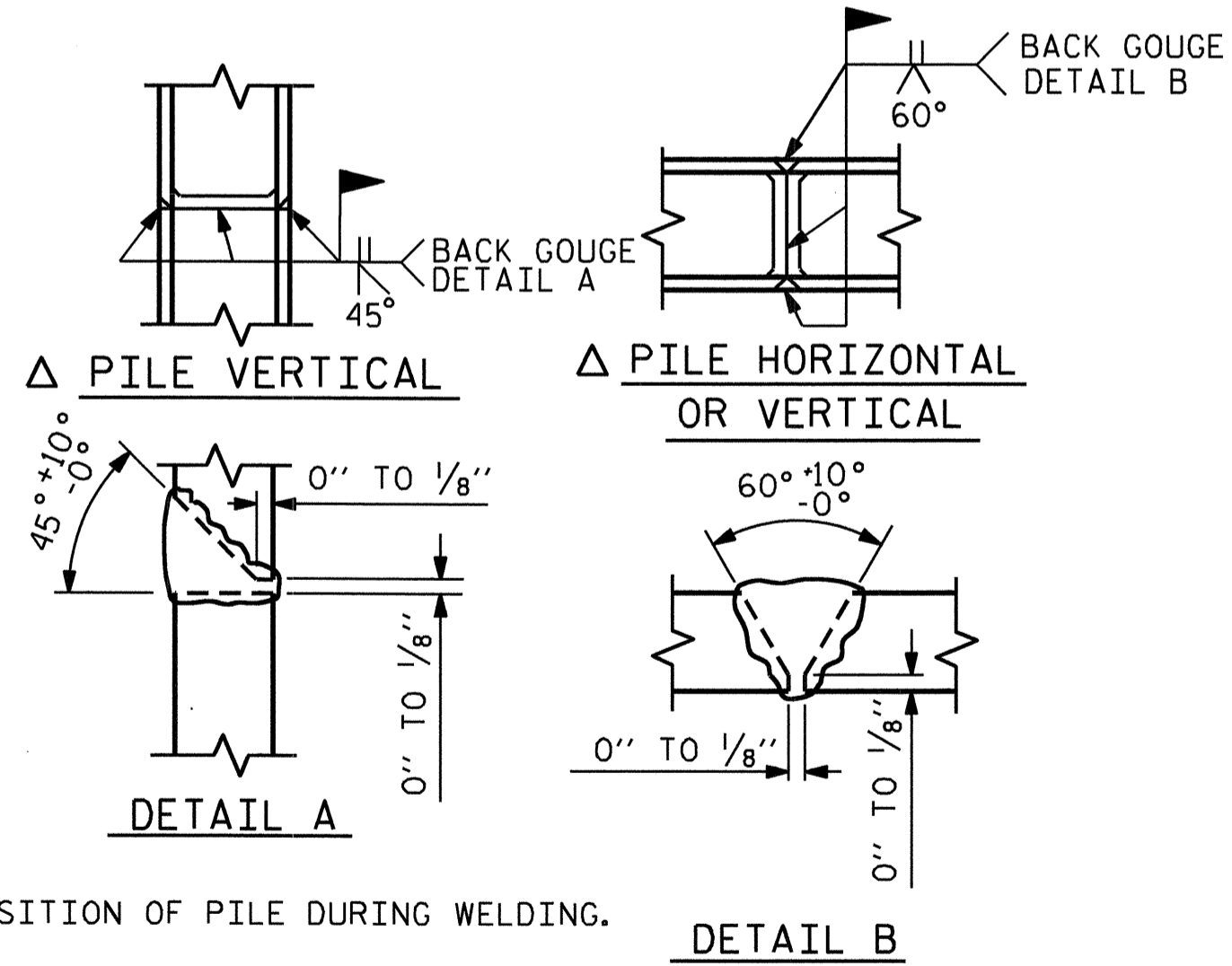
BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

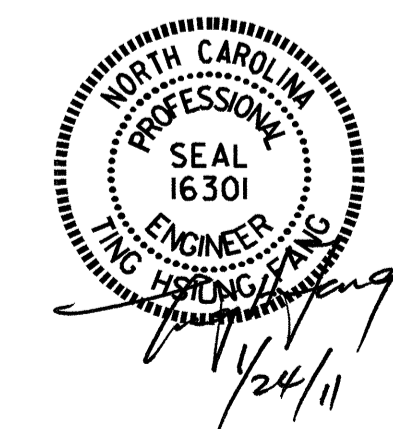
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

DRAWN BY : OT NGUYEN DATE : 6-09
 CHECKED BY : RAMAN PATEL DATE : 2-02-10



PILE SPLICE DETAILS



PROJECT NO. U-3621B
 NASH COUNTY
 STATION: 50+77.00 -L-
 SHEET 3 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE					
END BENT 1 INTEGRAL (RIGHT LANE)					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-60
					TOTAL SHEETS
					68

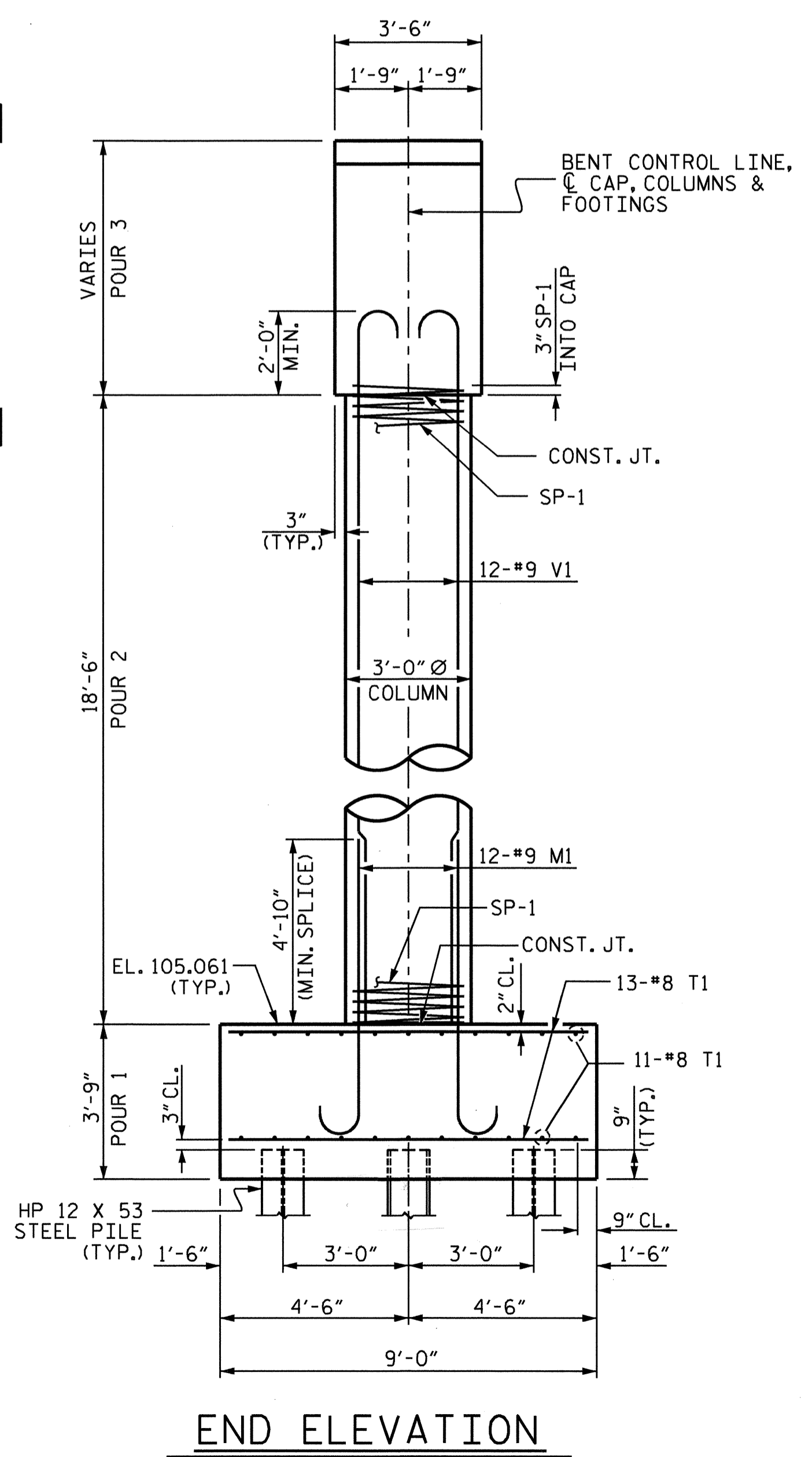
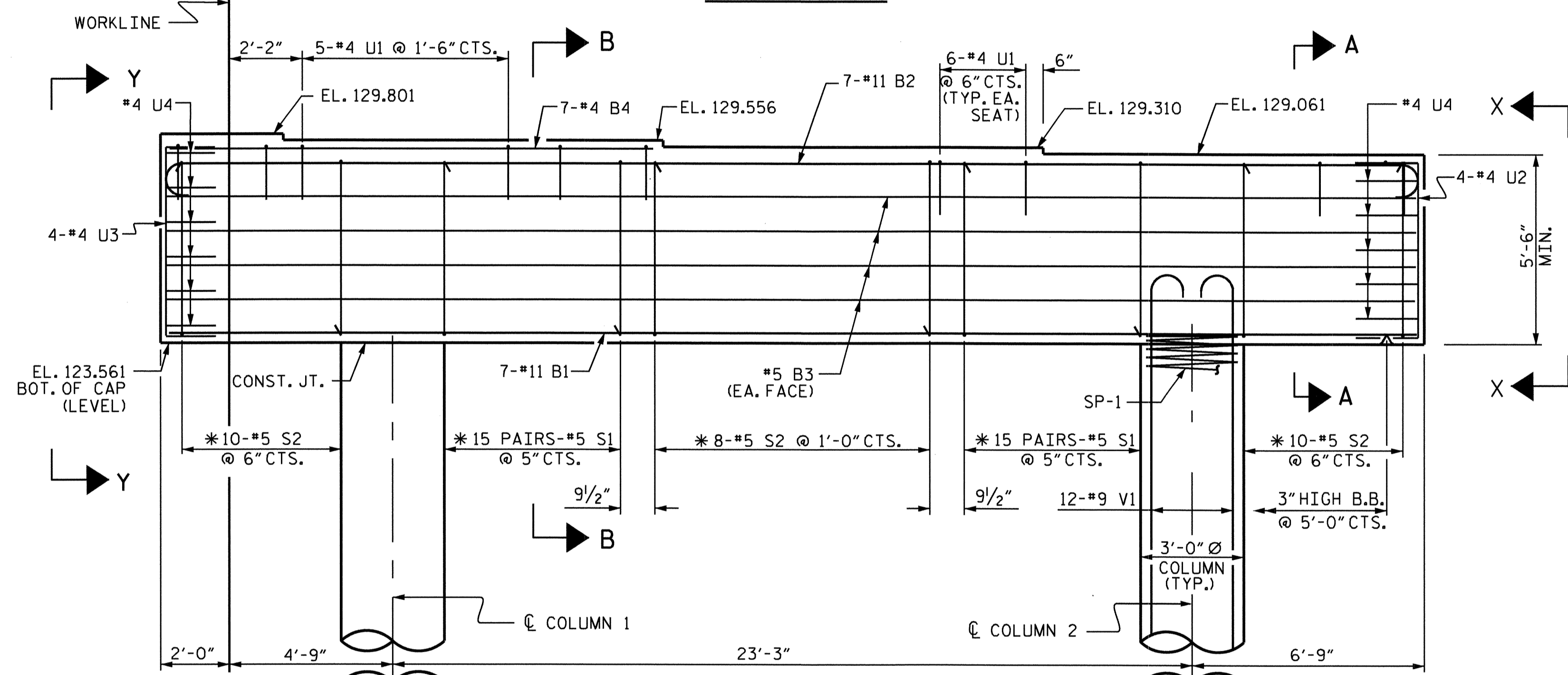
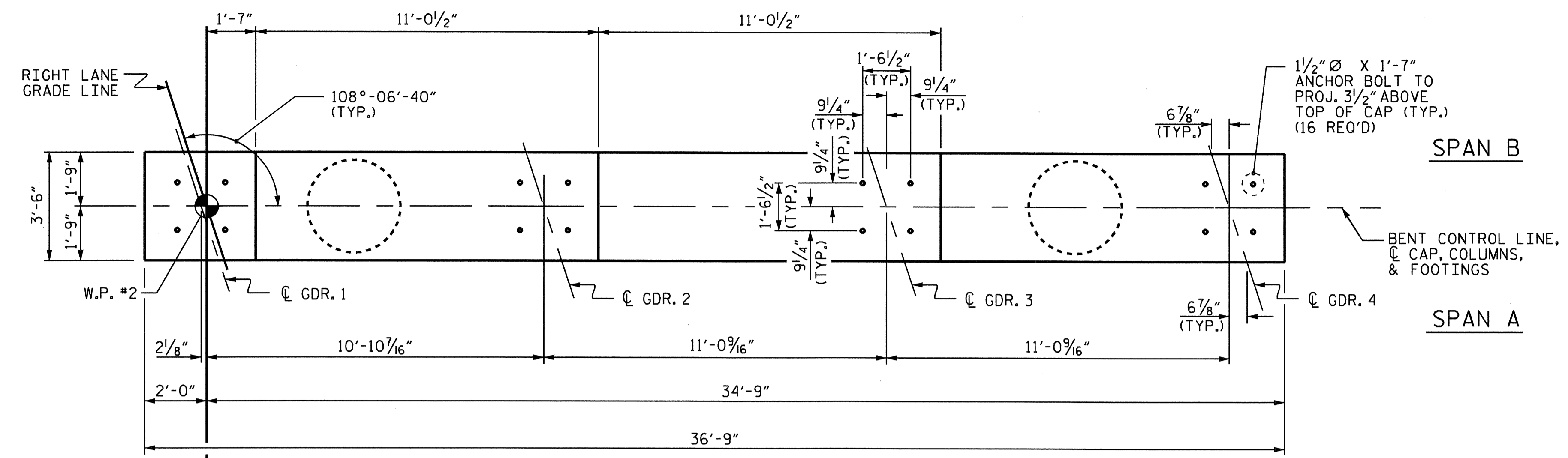
NOTES:

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

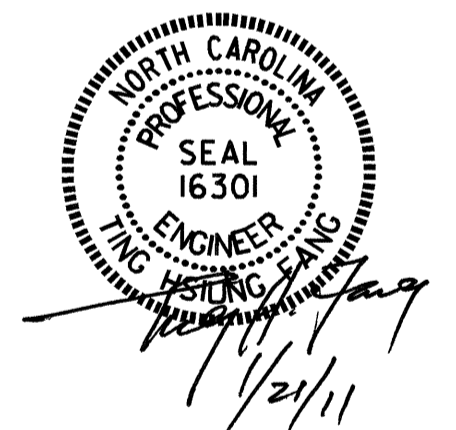
HOOKS ON M1 & V1 BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

FOR PILE SPLICE DETAILS, SEE SHEET 2 OF 2.

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



REINFORCING STEEL AND DIMENSIONS ARE TYPICAL FOR BOTH COLUMNS AND FOOTINGS.



PROJECT NO. U-3621B
NASH COUNTY
 STATION: 50+77.00 -L-

SHEET 1 OF 2

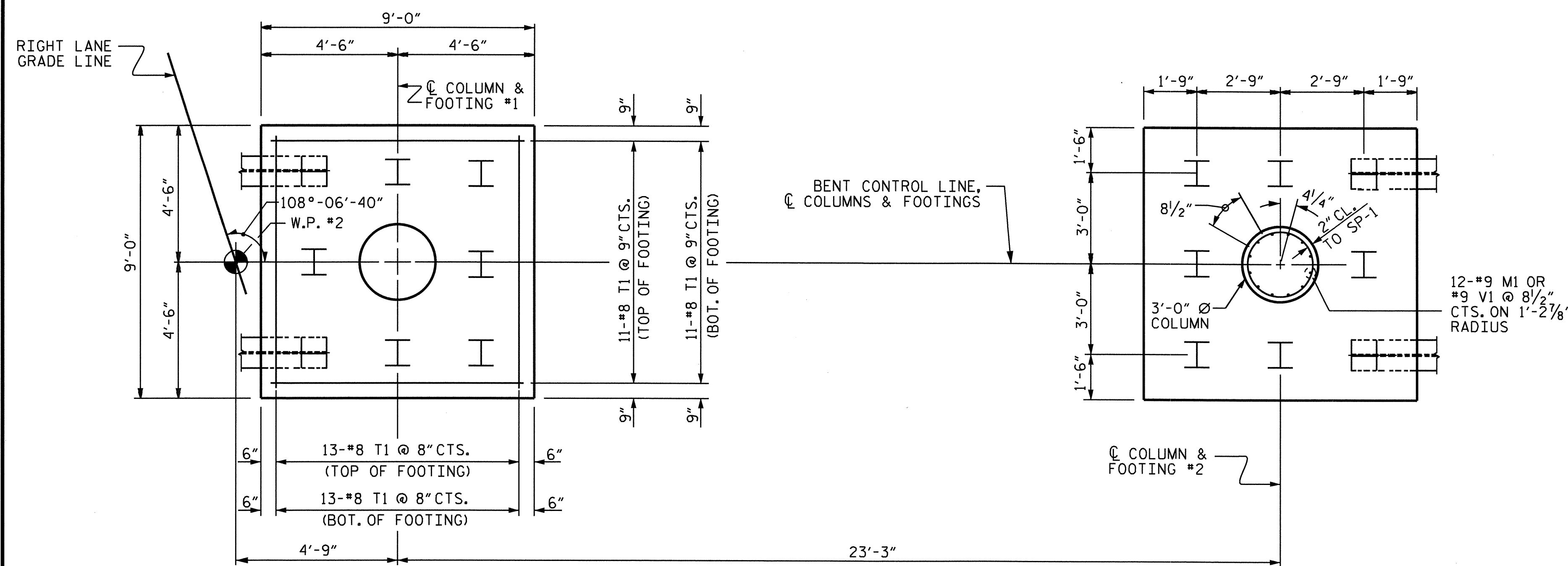
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT 1
 (RIGHT LANE)

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-61	
1			3			TOTAL SHEETS 68	
2			4				

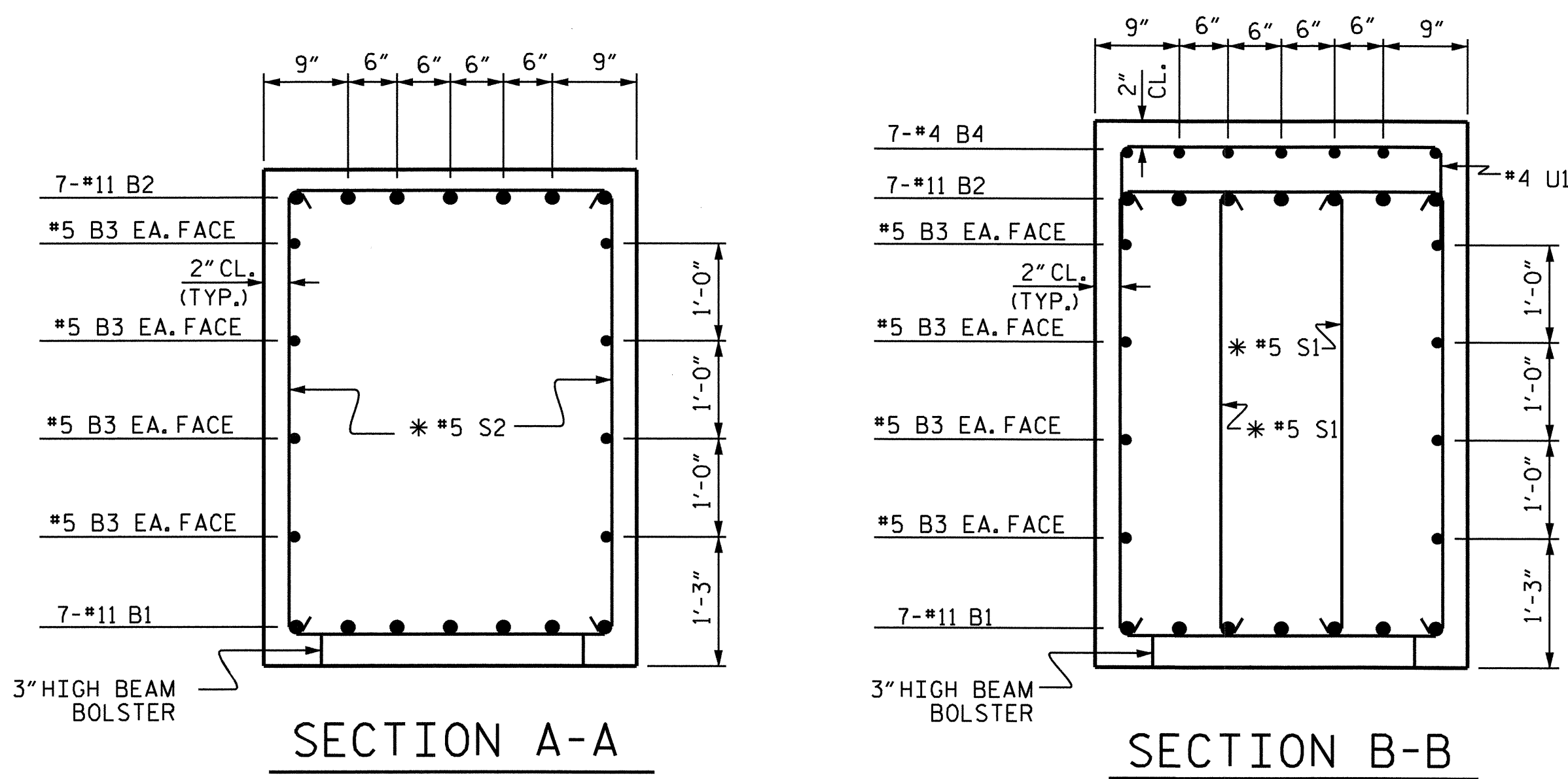
DRAWN BY: HARISH SHAH DATE: 6/29/09
 CHECKED BY: W.D. CRUTCHER DATE: 4-8-10

21-JAN-2011 16:09
 X:\U3621B\Structures\Final Plans\Rtline\U-3621b.sd_b12.dgn
 ttfang

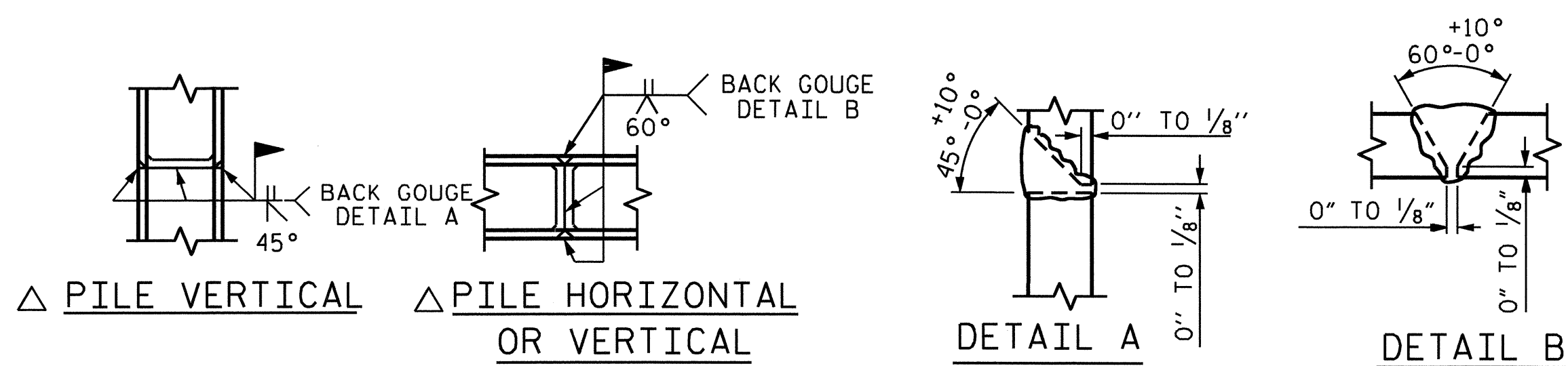


PLAN OF FOOTINGS & COLUMNS

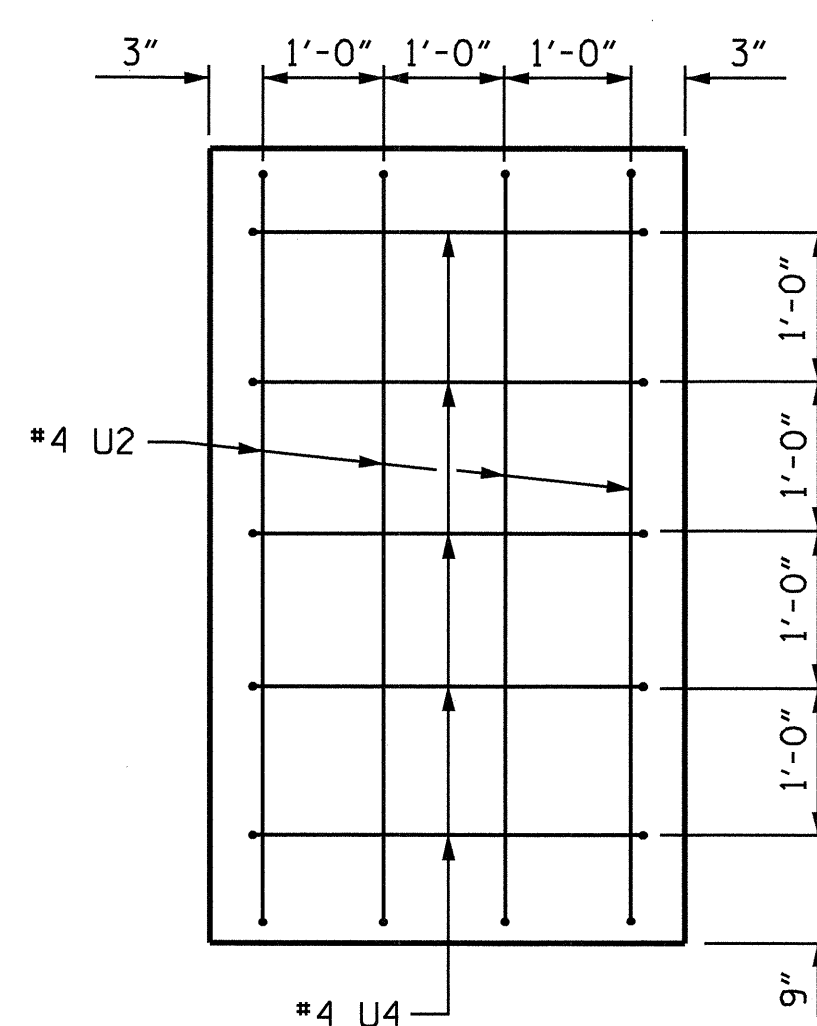
REINFORCING STEEL, DIMENSIONS ARE TYPICAL FOR EACH COLUMN & FOOTING.



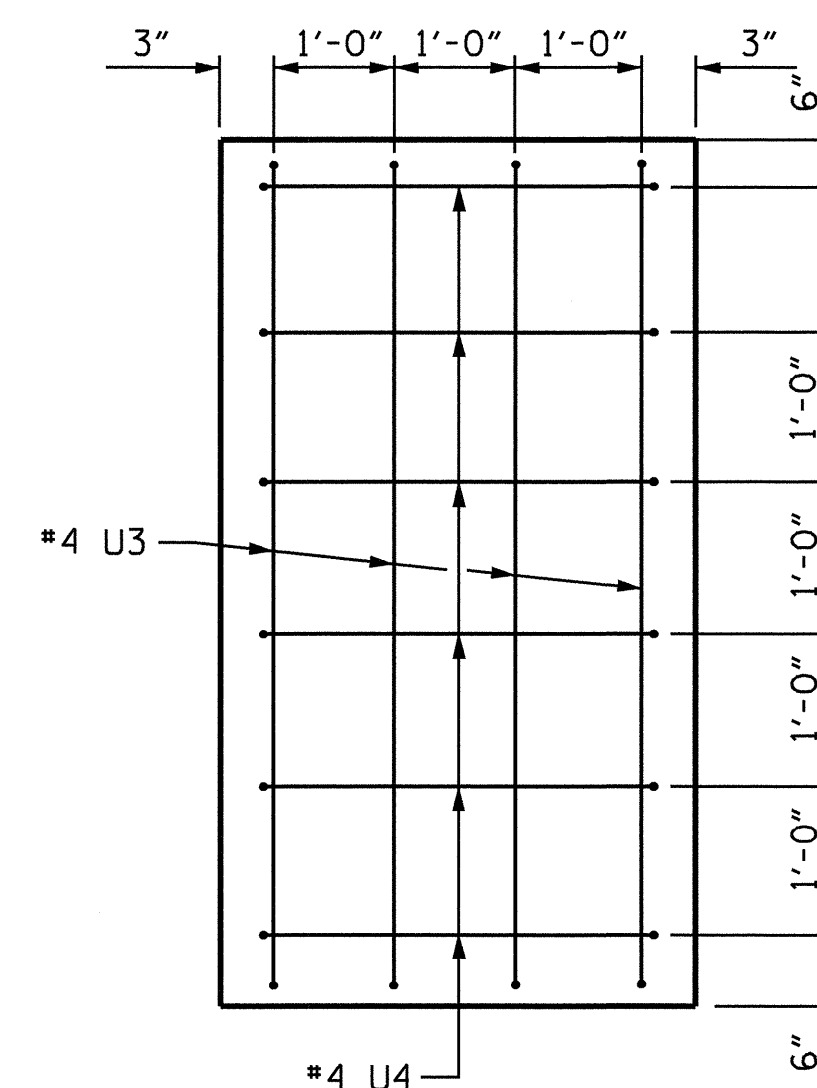
* INVERT ALTERNATE STIRRUP PAIRS



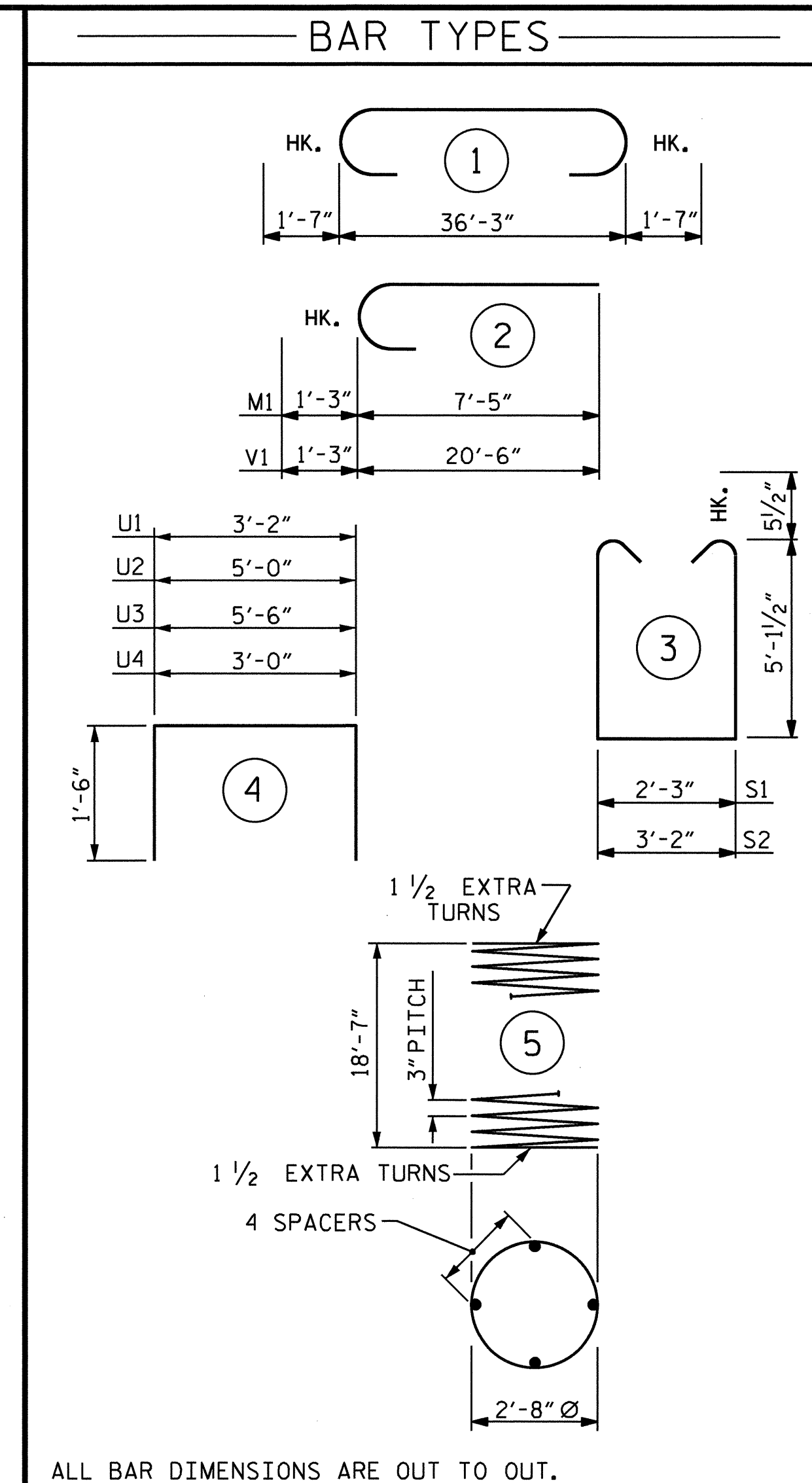
PILE SPLICE DETAILS



VIEW X-X



VIEW Y-Y



BILL OF MATERIAL					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	7	#11	STR	36'-5"	1354
B2	7	#11	1	39'-5"	1466
B3	8	#5	STR	36'-5"	304
B4	7	#4	STR	14'-3"	67
M1	24	#9	2	8'-8"	707
S1	60	#5	3	13'-5"	840
S2	28	#5	3	14'-4"	419
T1	96	#8	STR	8'-6"	2179
U1	29	#4	4	6'-2"	119
U2	4	#4	4	8'-0"	21
U3	4	#4	4	8'-6"	23
U4	11	#4	4	6'-0"	44
V1	24	#9	2	21'-9"	1775
REINFORCING STEEL				9318 LBS.	
SP-1	2	**	5	1287'-1"	1720
SPIRAL COLUMN REINFORCING STEEL				= 1720 LBS	
CLASS A CONCRETE BREAKDOWN:					
POUR #1 (FOOTINGS)				22.5 C.Y.	
POUR #2 (COLUMNS)				9.7 C.Y.	
POUR #3 (CAP)				27.6 C.Y.	
TOTAL CLASS A CONCRETE				59.8 C.Y.	
HP 12 X 53 STEEL PILES				LIN. FT. 480	
No. 16					
FOUNDATION EXCAVATION				LUMP SUM	
** THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W-20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.					

PROJECT NO. U-3621B
 NASH COUNTY
 STATION: 50+77.00 -L-

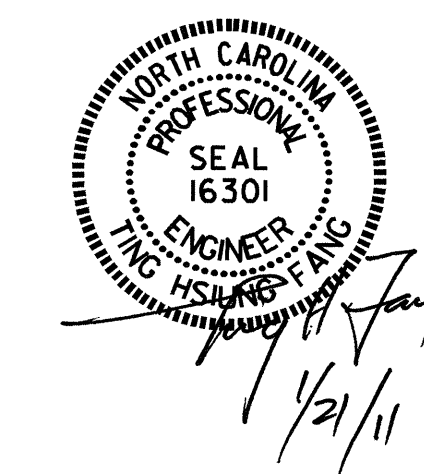
SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE

BENT 1

(RIGHT LANE)

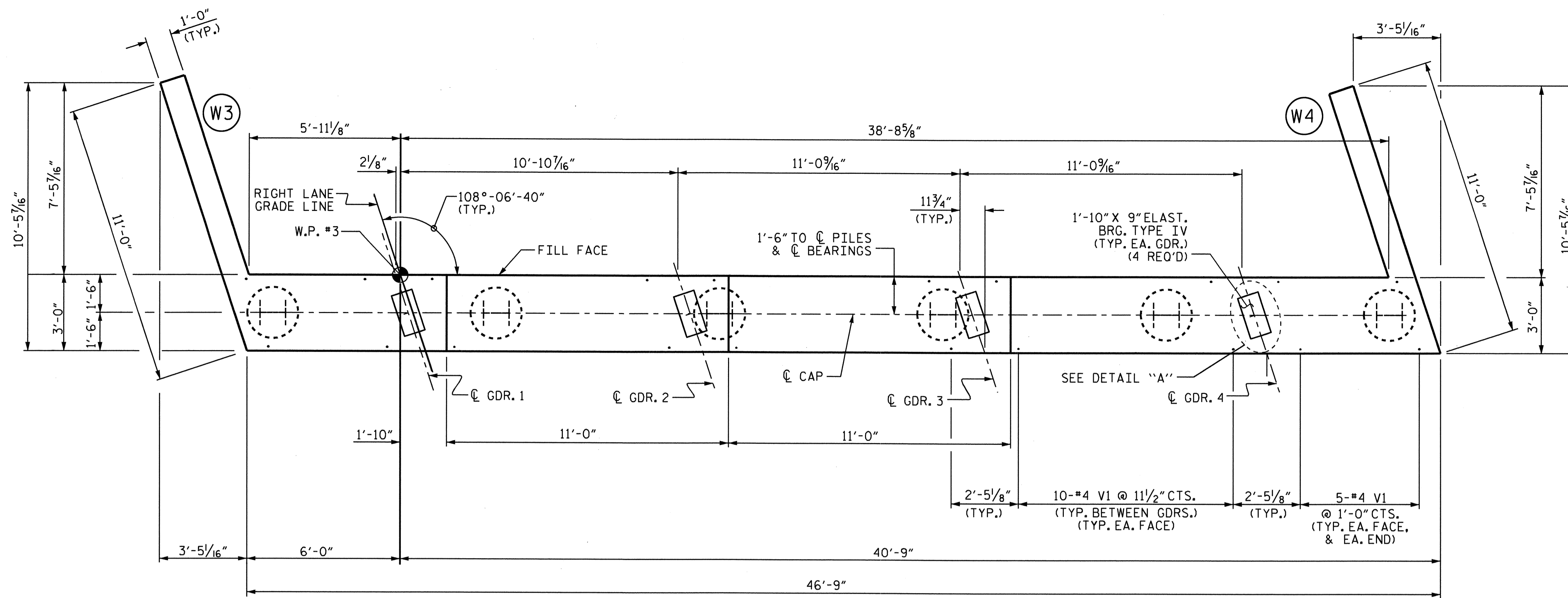


REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S-62
2			4			TOTAL SHEETS 68

DRAWN BY: HARISH SHAH DATE: 7/01/09
 CHECKED BY: W.D. CRUTCHER DATE: 4-8-10

21-JAN-2011 16:09
 X:\U3621B\Structures\Final Plans\Right Lane\U-3621b.sd.bt2.dgn
 11ang

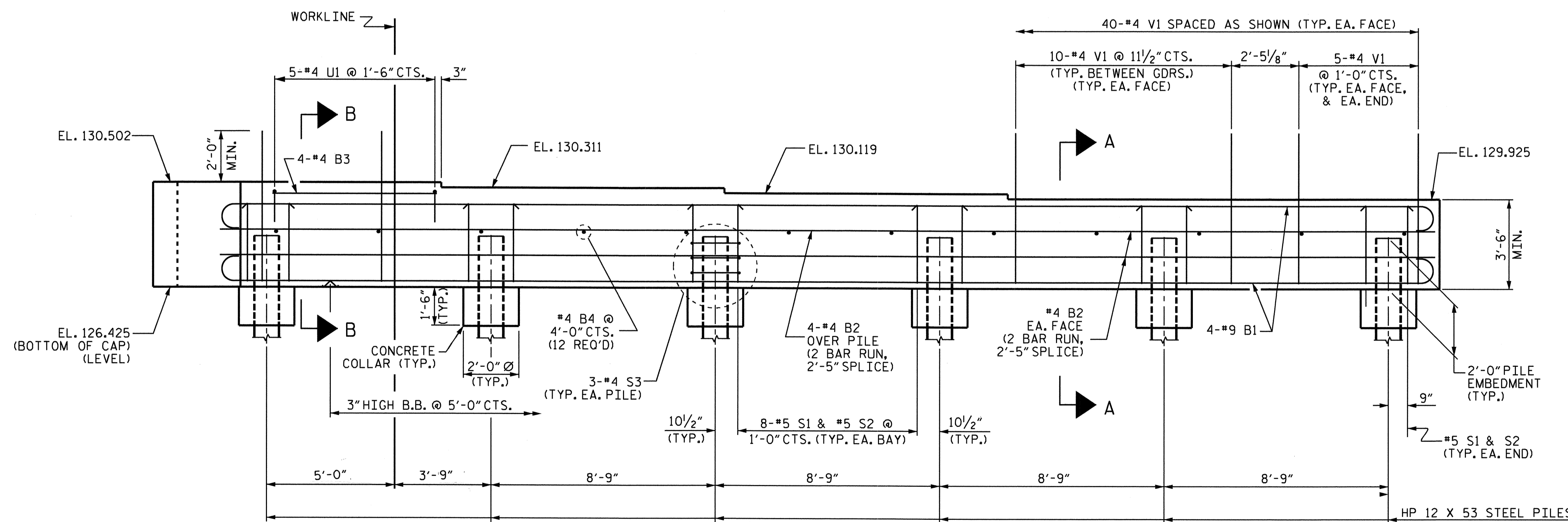
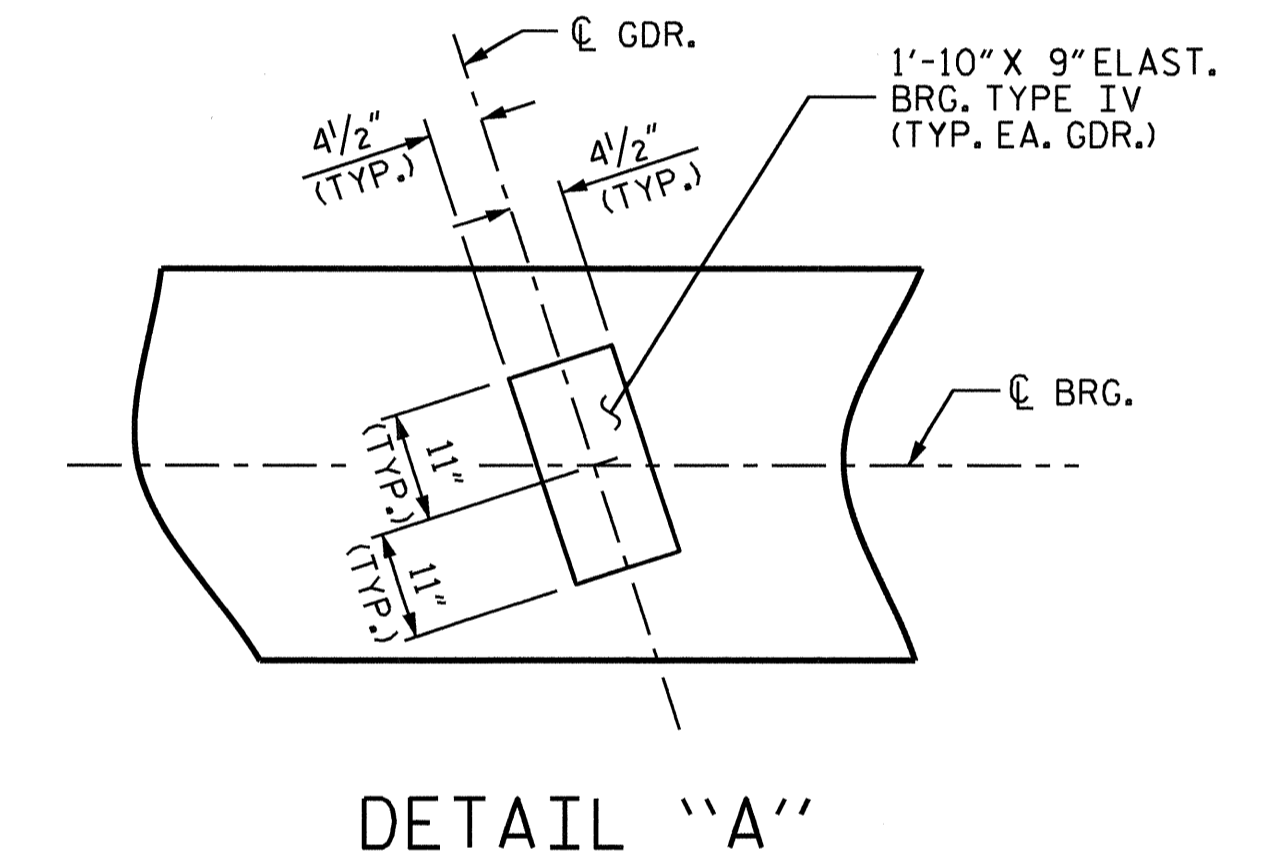


NOTES

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

SEE SUPERSTRUCTURE SHEETS FOR THE ABUTMENT DETAILS.

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

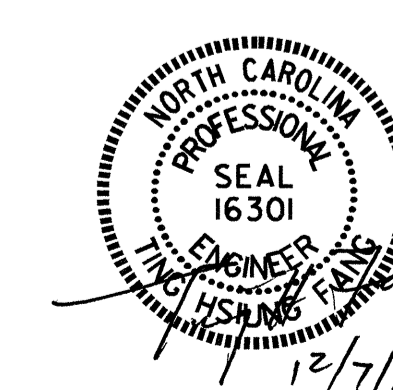


PROJECT NO. U-3621B
 NASH COUNTY
 STATION: 50+77.00 -L-

SHEET 1 OF 3

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

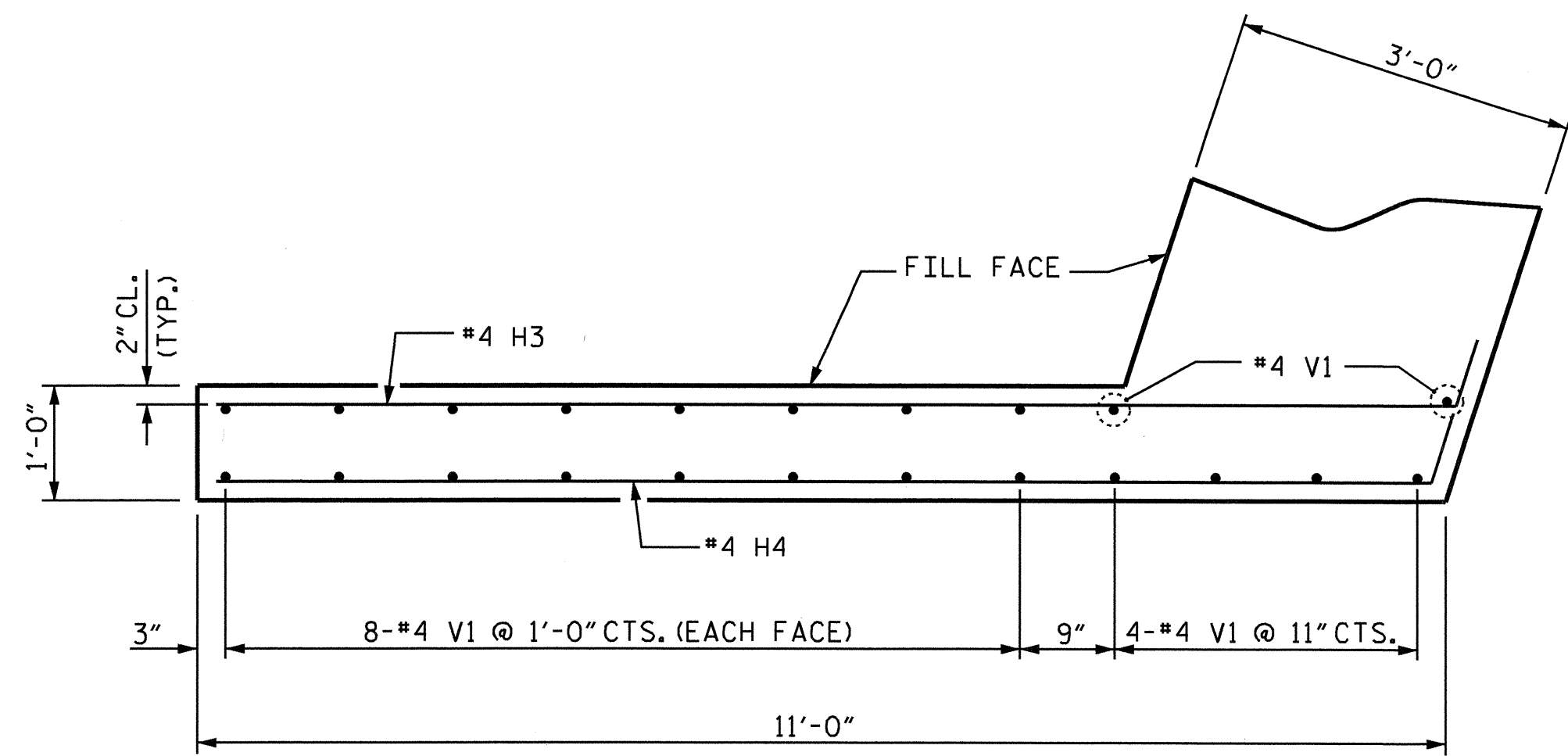
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-63	
1			3			TOTAL SHEETS	
2			4			68	



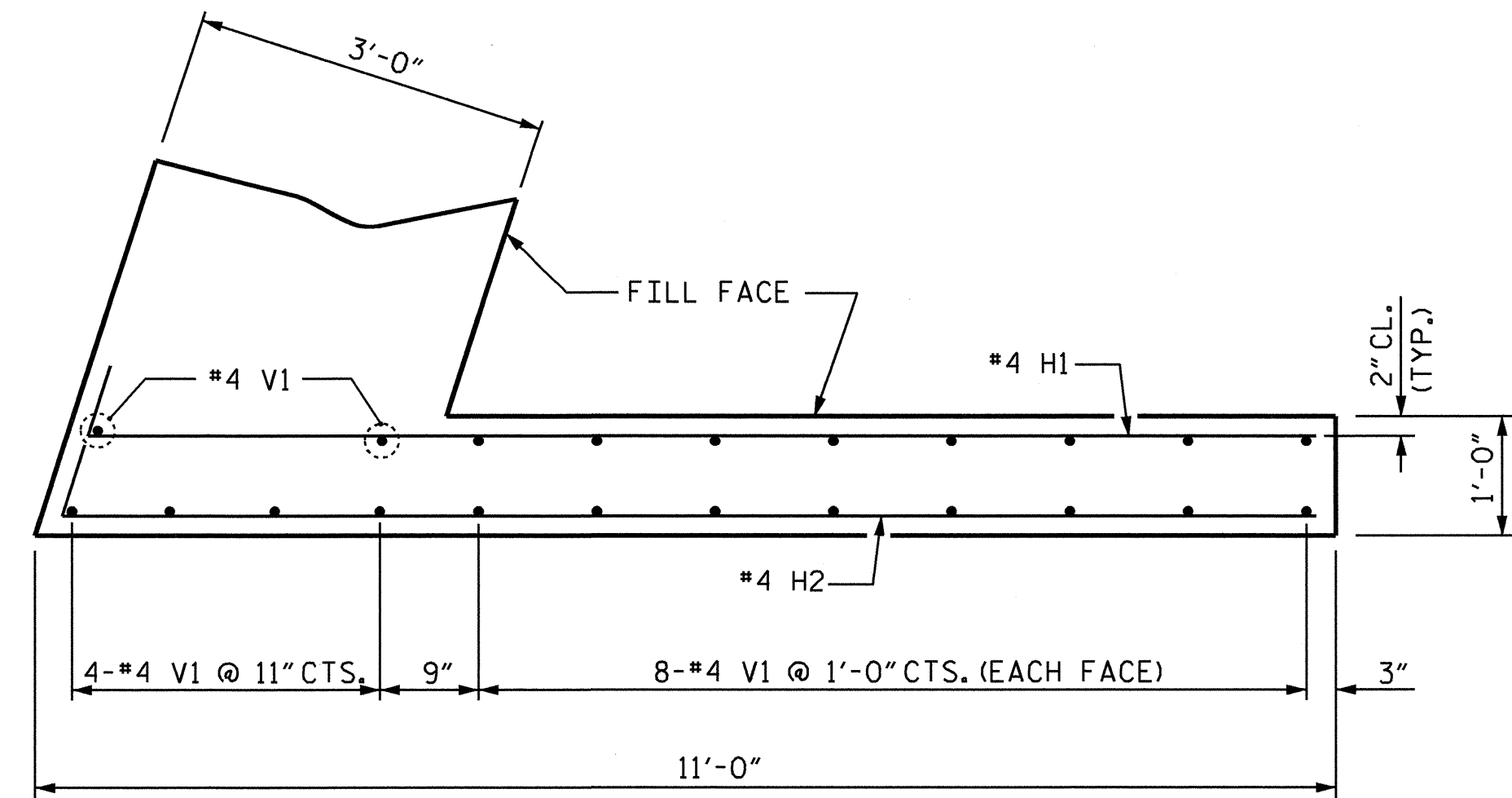
DRAWN BY: QT NGUYEN DATE: 6-09
 CHECKED BY: W.D. CRUTCHER DATE: 4-1-10

07-DEC-2010 09:50
 Y:\TIP\Projects-U\U3621B\Structures\Final Plans\Rightline\U3621b.sd_e2*.dgn
 qtnguyen

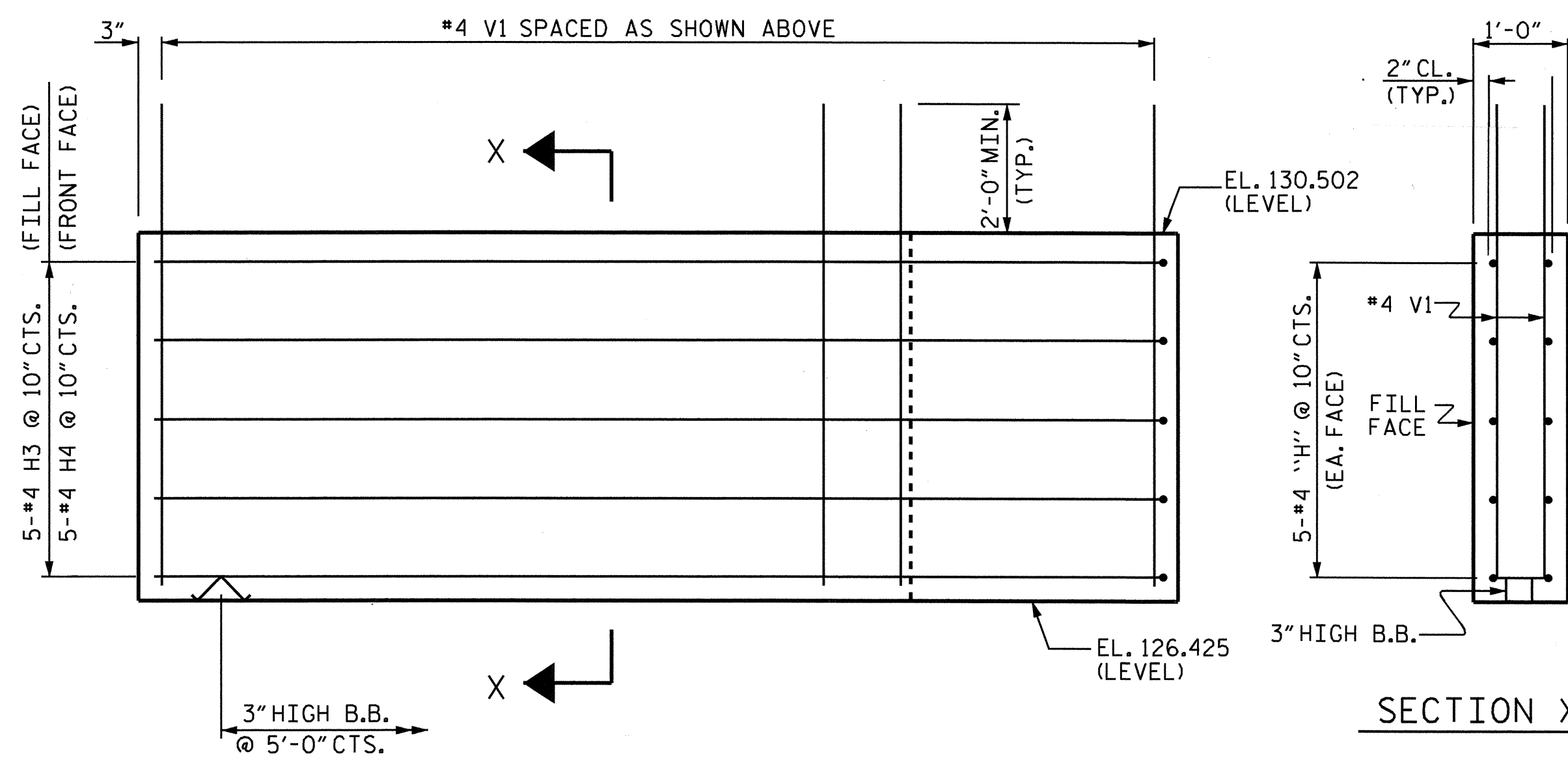
STR #2



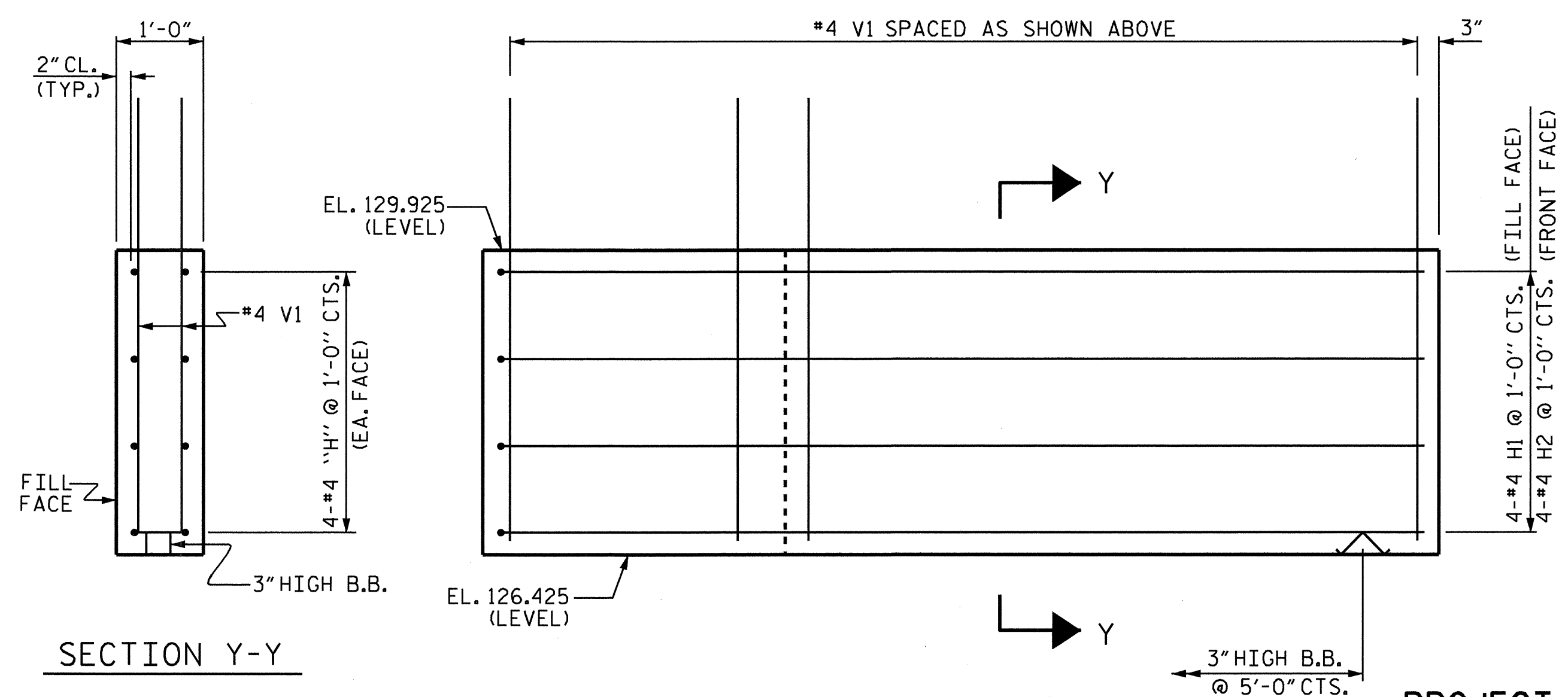
PLAN OF WING (W3)



PLAN OF WING (W4)



ELEVATION OF WING (W3)



ELEVATION OF WING (W4)

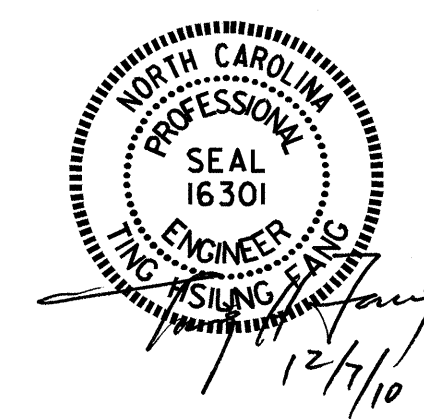
DRAWN BY : QT NGUYEN DATE : 6-09
 CHECKED BY : W.D. CRUTCHER DATE : 4-1-10

07-DEC-2010 09:50
 Y:\TIP\Projects-U\U3621B\Structures\Final Plans\Rightlane\U3621b.sd.e2*.dgn
 qtnguyen

PROJECT NO. U-3621B
 NASH COUNTY
 STATION: 50+77.00 -L-

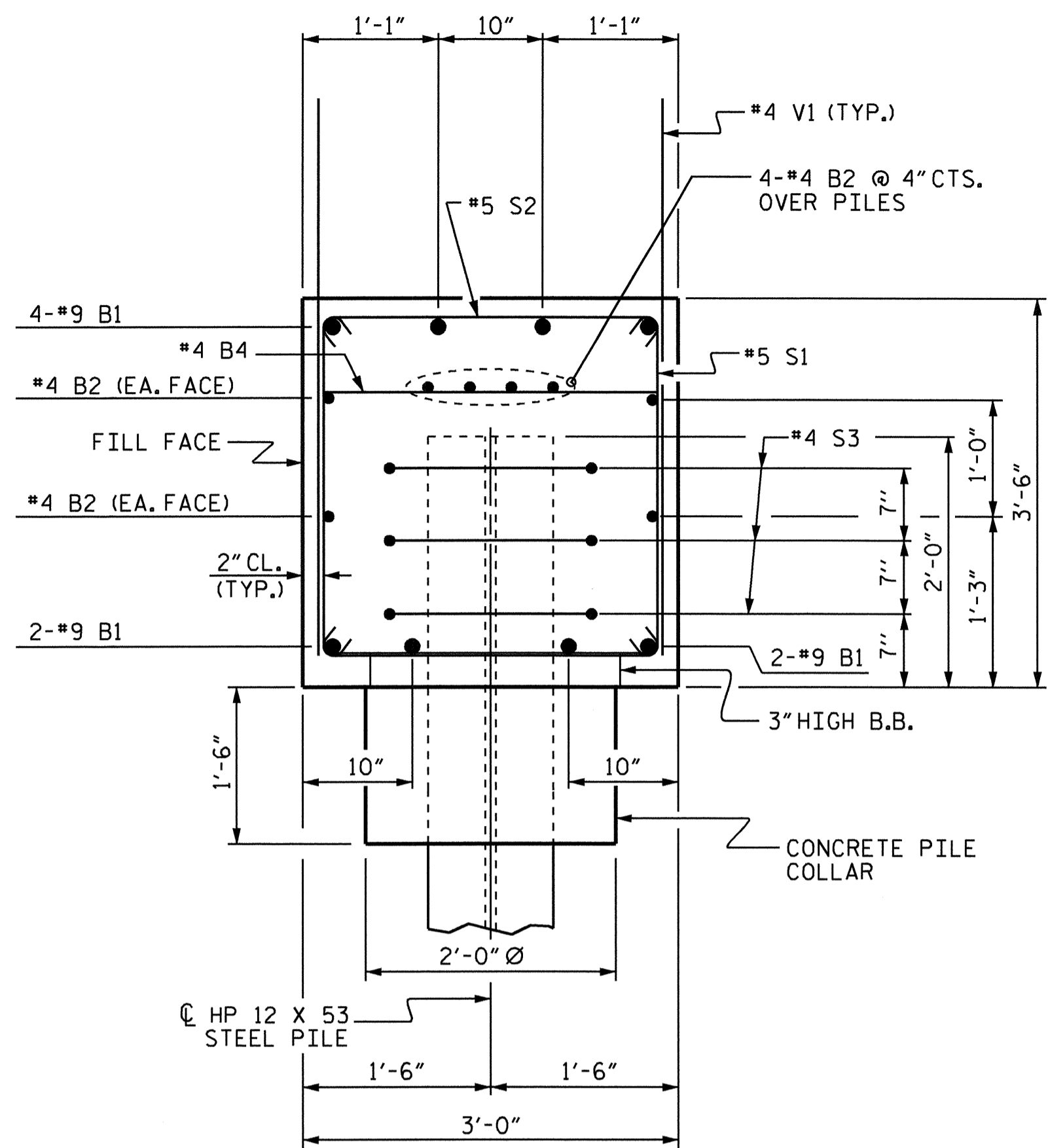
SHEET 2 OF 3

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

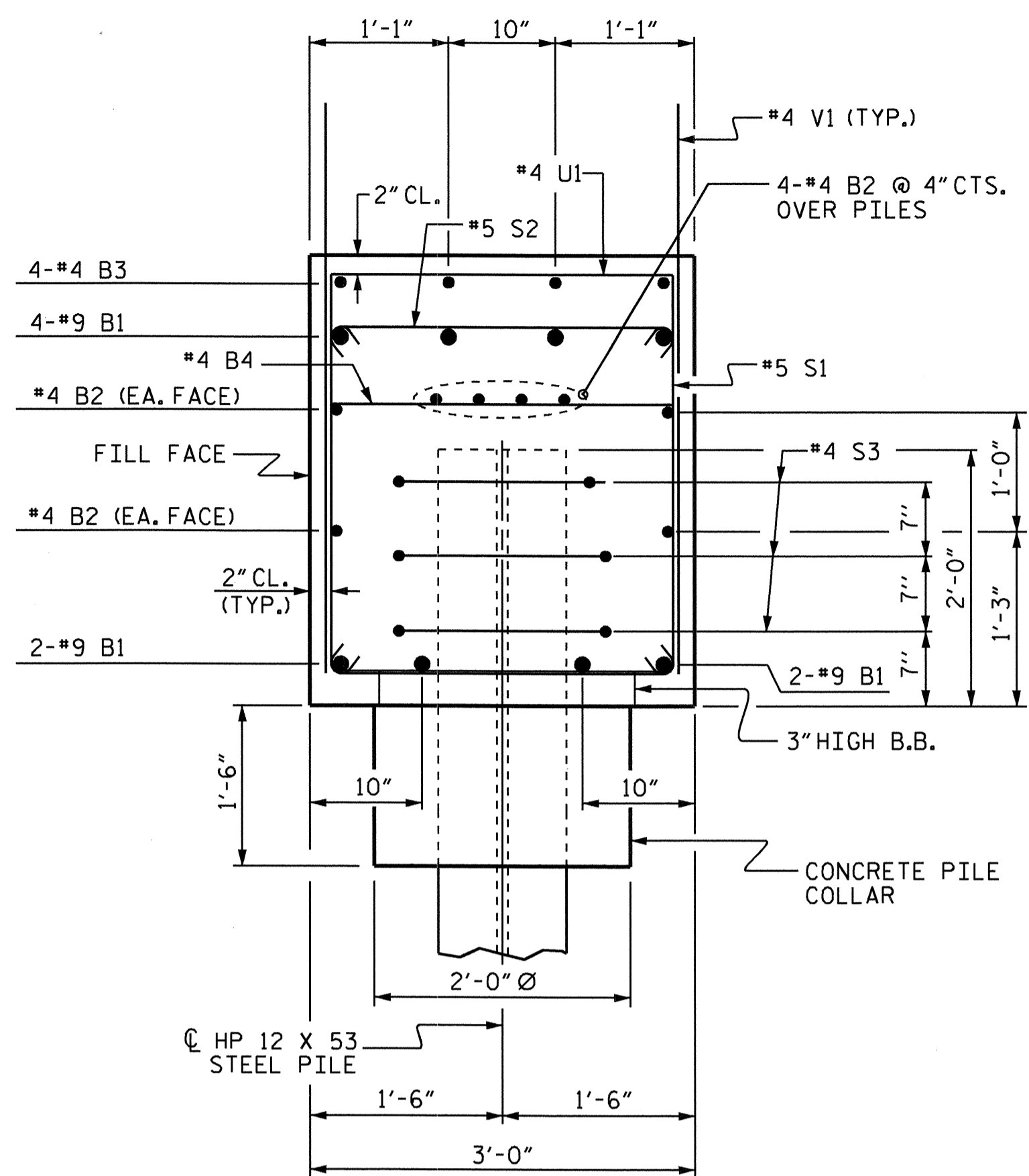


REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-64	
1			3			TOTAL SHEETS	
2			4			68	

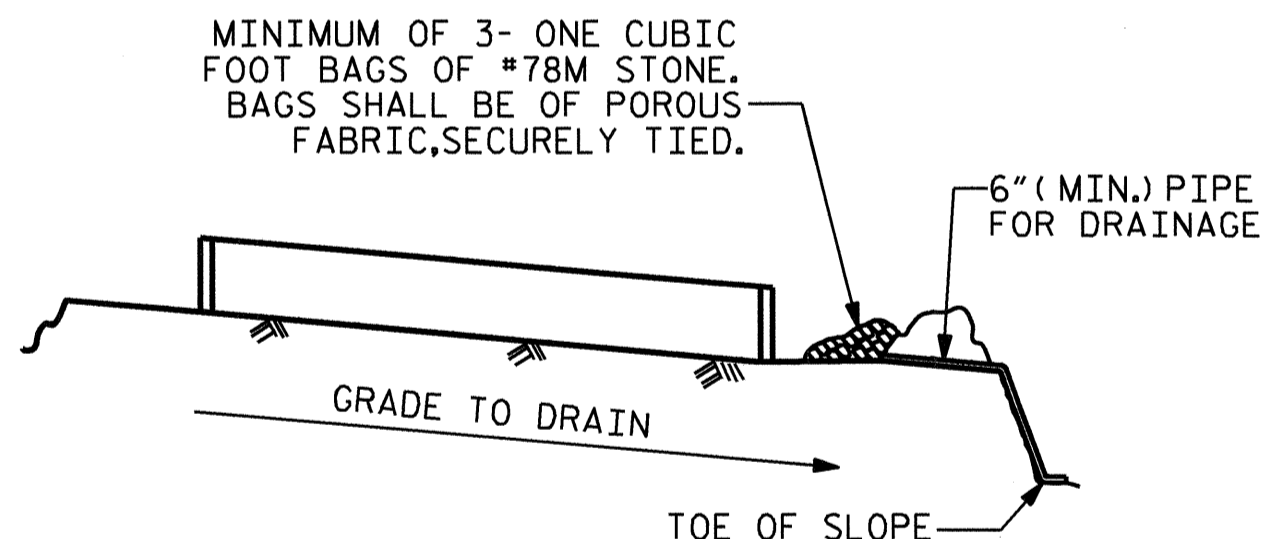
STR #2



SECTION A-A



SECTION B-B



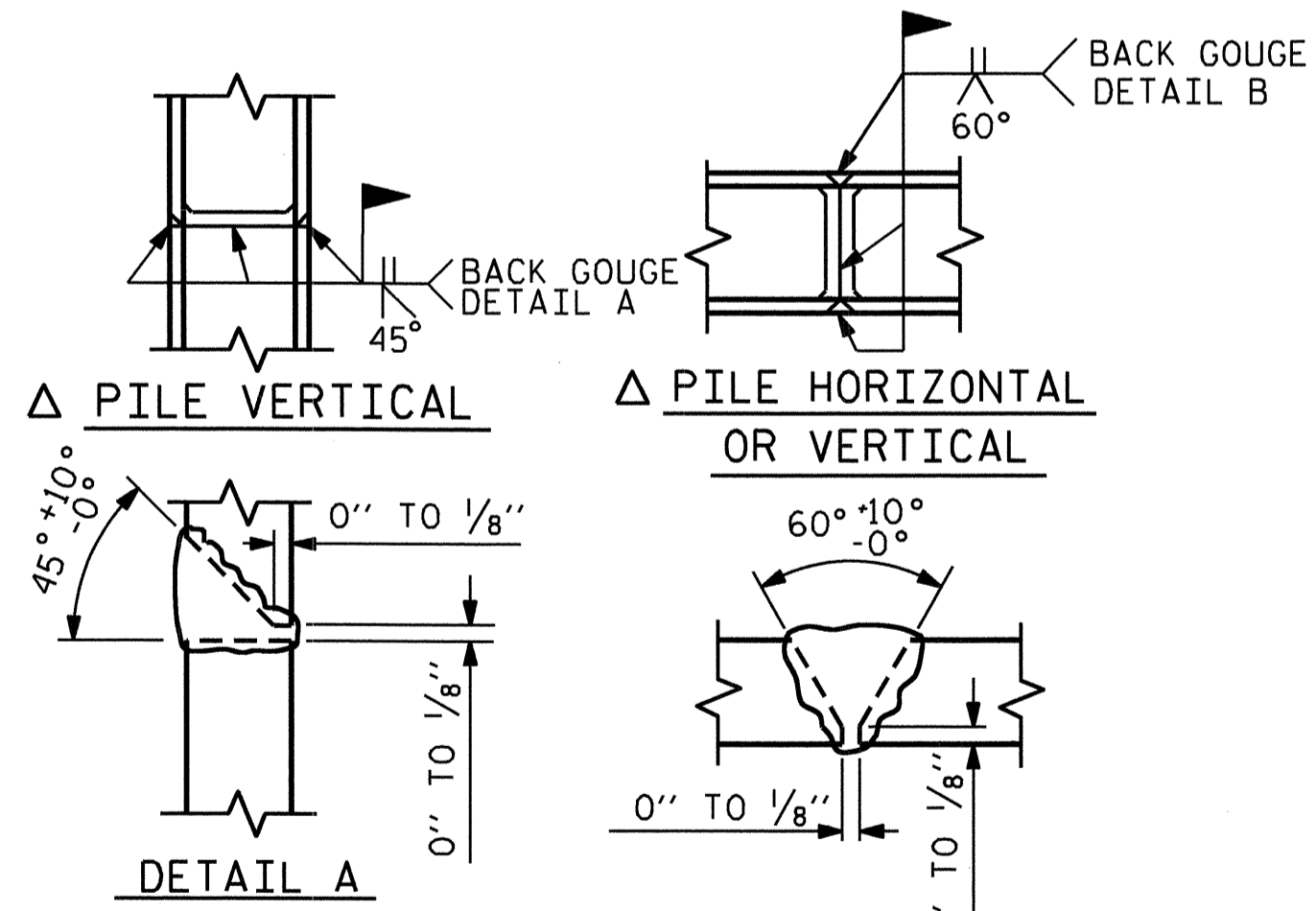
MINIMUM OF 3- ONE CUBIC FOOT BAGS OF #78M STONE. BAGS SHALL BE OF POROUS FABRIC, SECURELY TIED.

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

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

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

TEMPORARY DRAINAGE AT END BENT



PILE SPLICE DETAILS

BILL OF MATERIAL

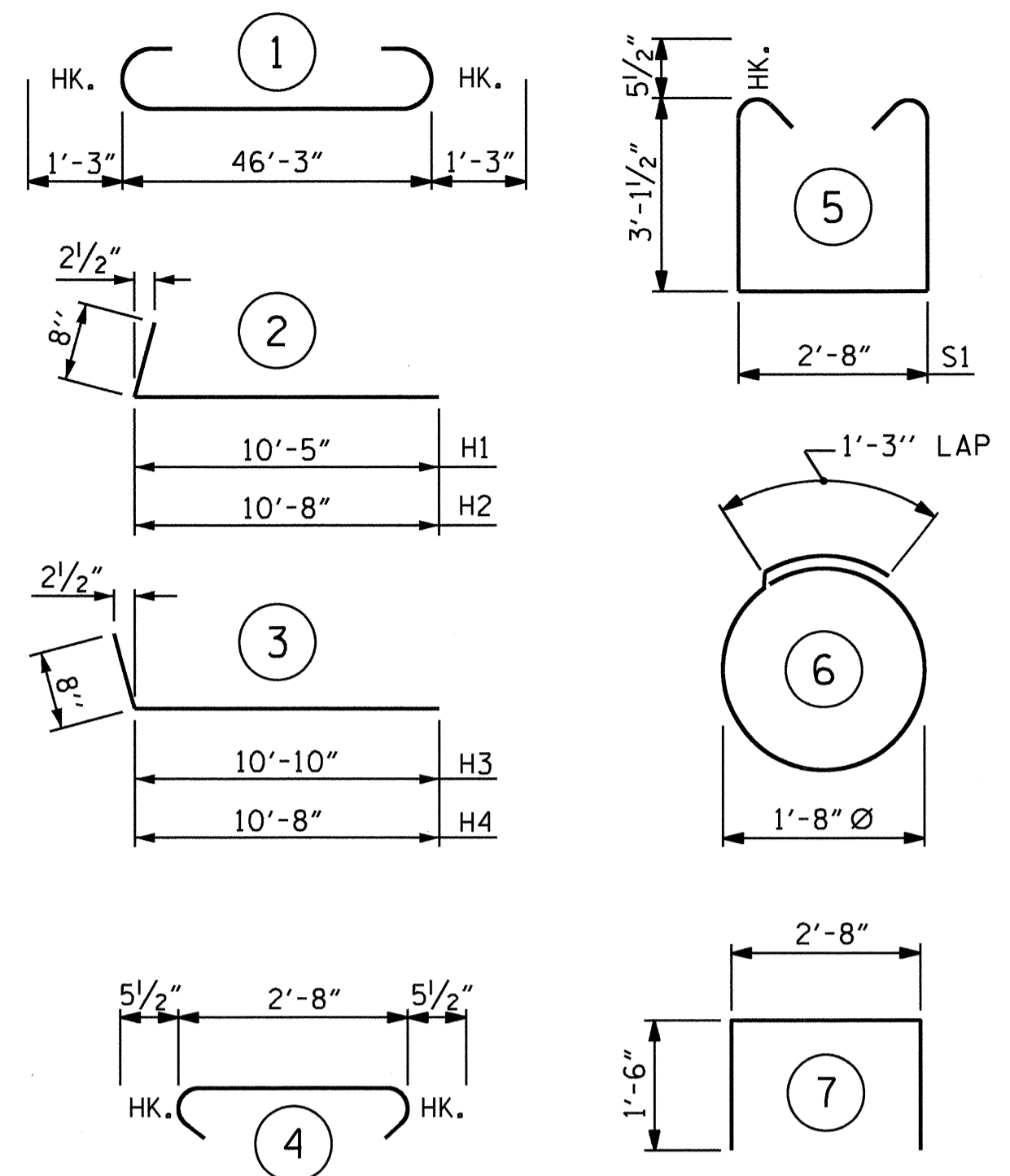
END BENT 2						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	8	#9	1	48'-9"	1326	
B2	16	#4	STR	24'-5"	261	
B3	4	#4	STR	7'-6"	20	
B4	12	#4	STR	2'-8"	21	
H1	4	#4	2	11'-1"	30	
H2	4	#4	2	11'-4"	30	
H3	5	#4	3	11'-6"	38	
H4	5	#4	3	11'-4"	38	
S1	42	#5	5	9'-10"	431	
S2	42	#5	4	3'-7"	157	
S3	18	#4	6	6'-6"	78	
U1	5	#4	7	5'-8"	19	
V1	124	#4	STR	5'-10"	483	

REINFORCING STEEL = 2932 LBS

CLASS A CONCRETE BREAKDOWN :
CAP, LOWER WINGS, & COLLARS = 22.7 C.Y.

HP 12 X 53 STEEL PILES :
No. 6 LIN. FT. 330

BAR TYPES

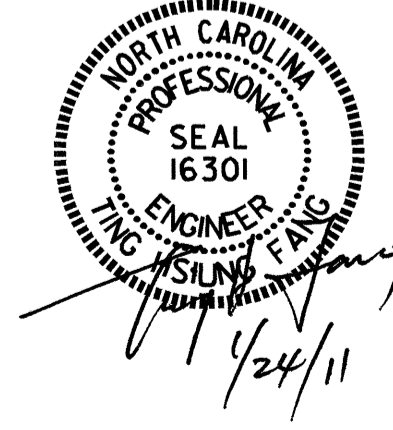


ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. U-3621B
NASH COUNTY
STATION: 50+77.00 -L-
SHEET 3 OF 3

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

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-65	
1			3			TOTAL SHEETS 68	
2			4				



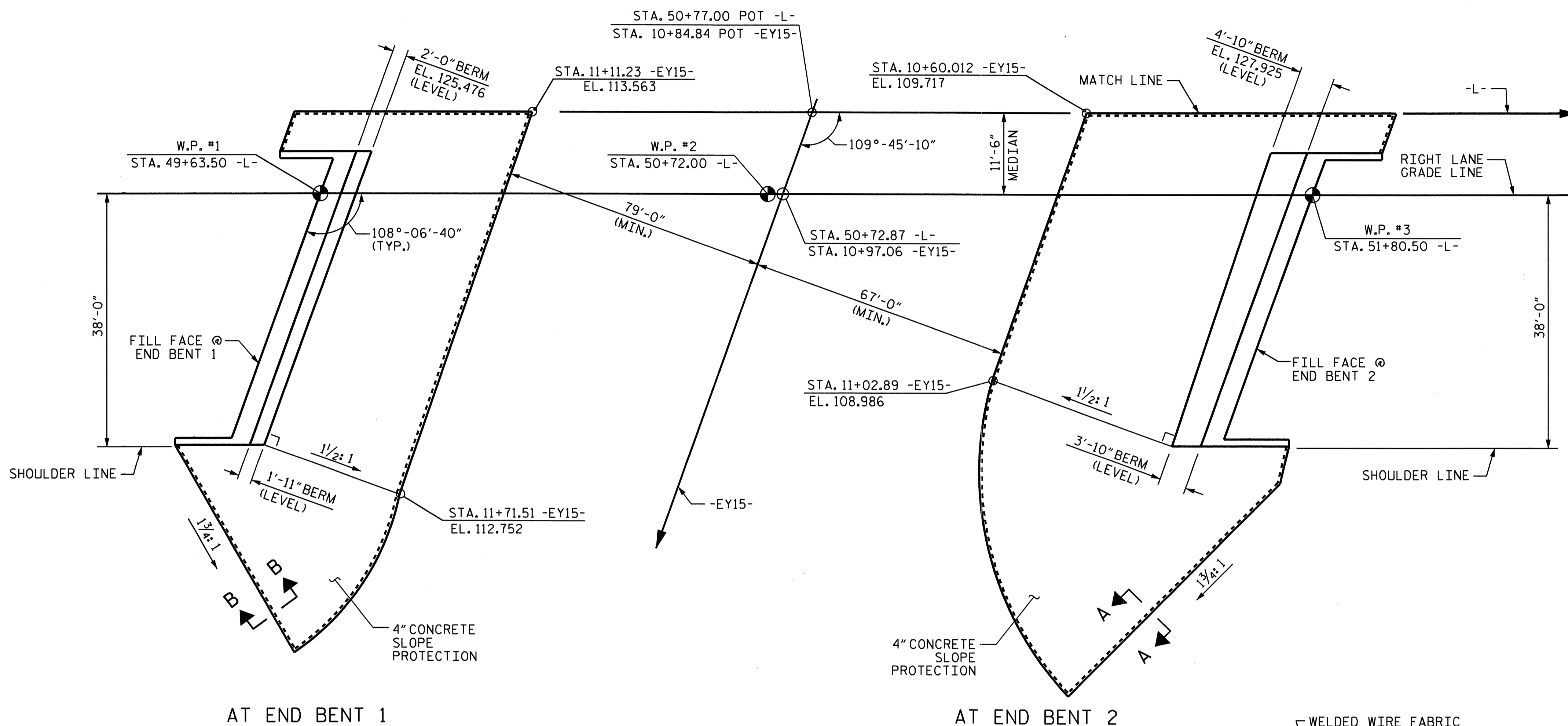
DRAWN BY : QT NGUYEN DATE : 6-09
CHECKED BY : RAMAN PATEL DATE : 4-08-10

NOTES

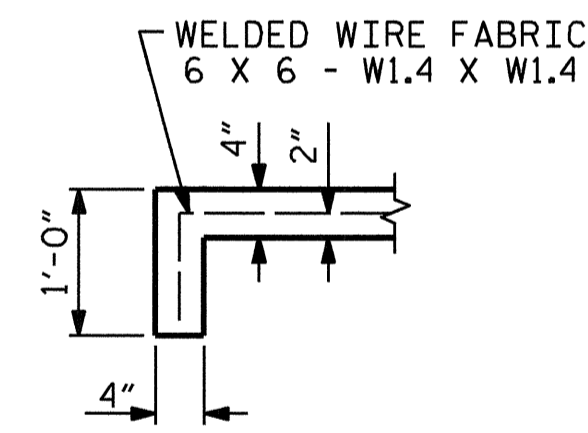
SLOPE PROTECTION SHALL CONSIST OF 4" POURED-IN-PLACE CONCRETE PAVING AS SHOWN IN THE DETAILS ON THIS SHEET. CONCRETE SHALL BE CLASS "B". THE CONCRETE SURFACE SHALL BE FLOATED WITH A WOODEN FLOAT AND FINISHED. WELDED WIRE FABRIC REINFORCING SHALL BE 6 X 6 - W1.4 X W1.4, 60" WIDE. SLOPE PROTECTION SHALL 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. 50+77.00 (RIGHT LANE)	4" INCH SLOPE PROTECTION	* WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	230	465
END BENT 2	375	750

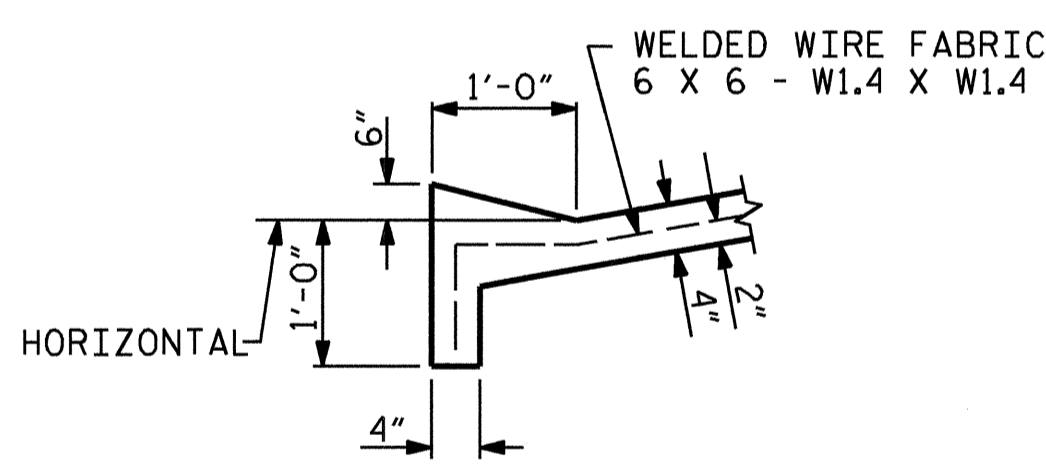
* QUANTITY SHOWN IS BASED ON 5' POURS.



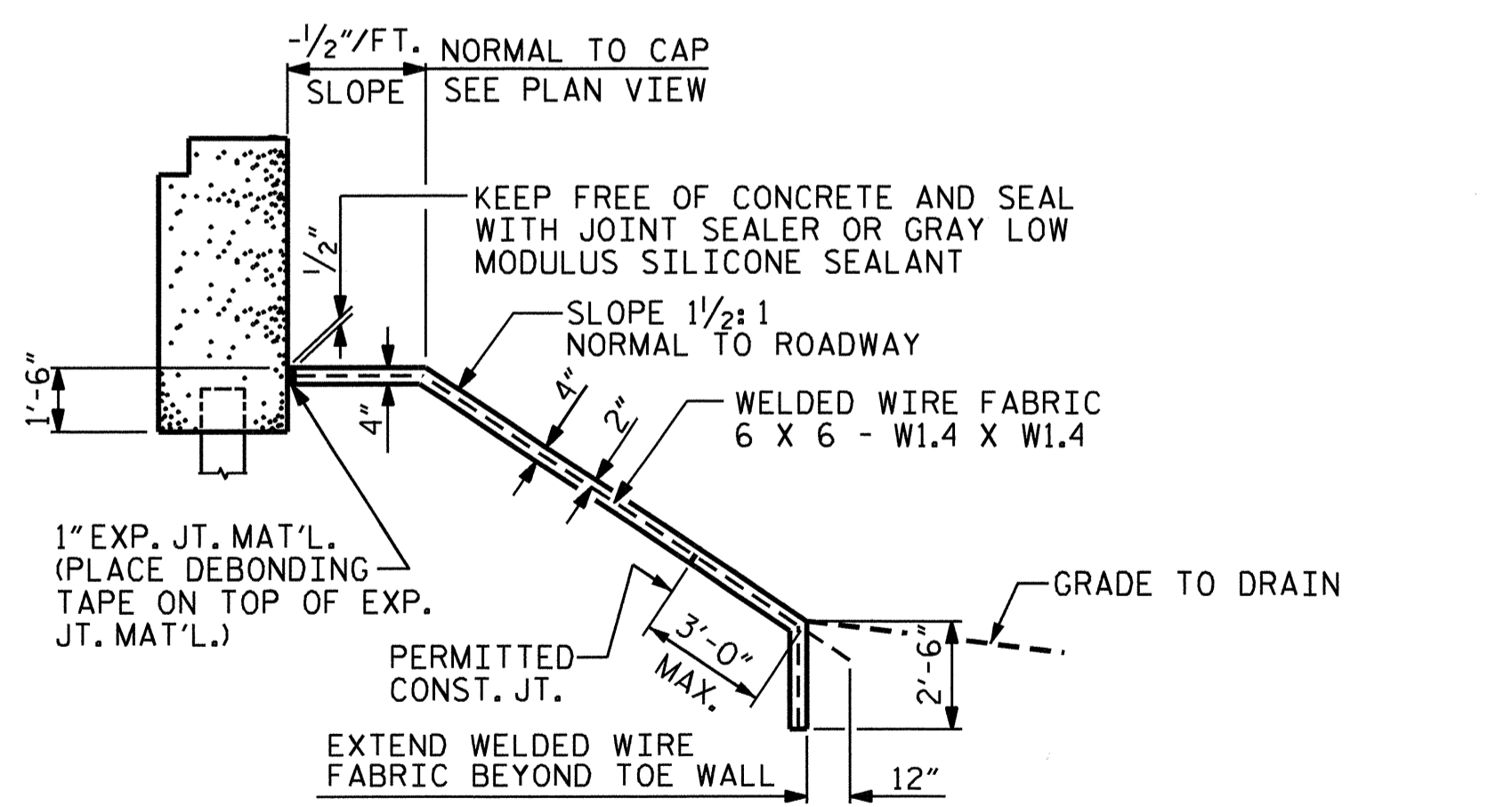
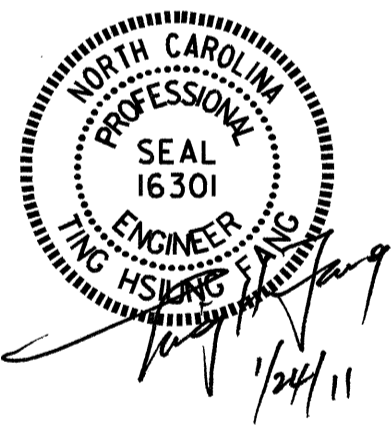
PLAN



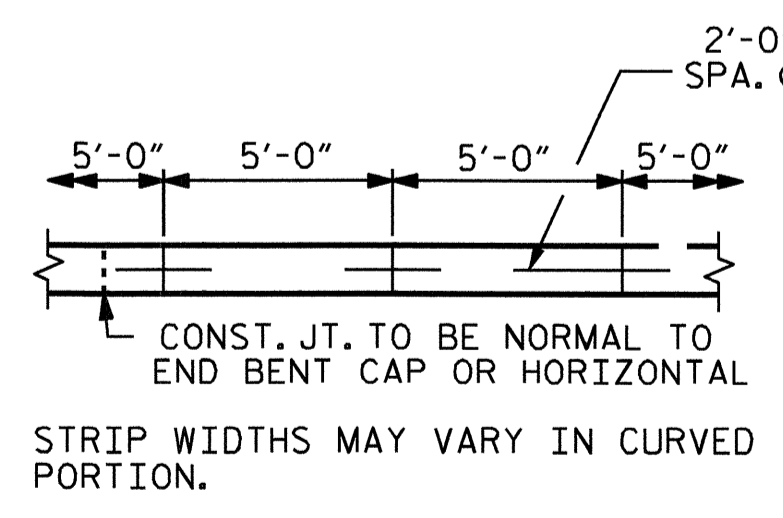
SECTION A-A



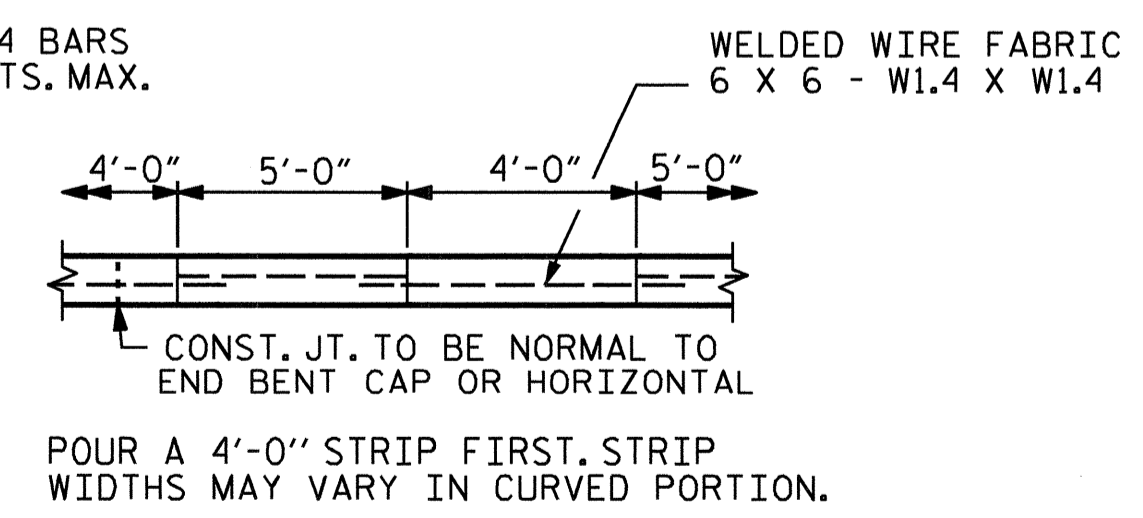
SECTION B-B



SECTION ALONG C ROADWAY WHEN FILL CATCHES IN DITCH



POURING DETAIL



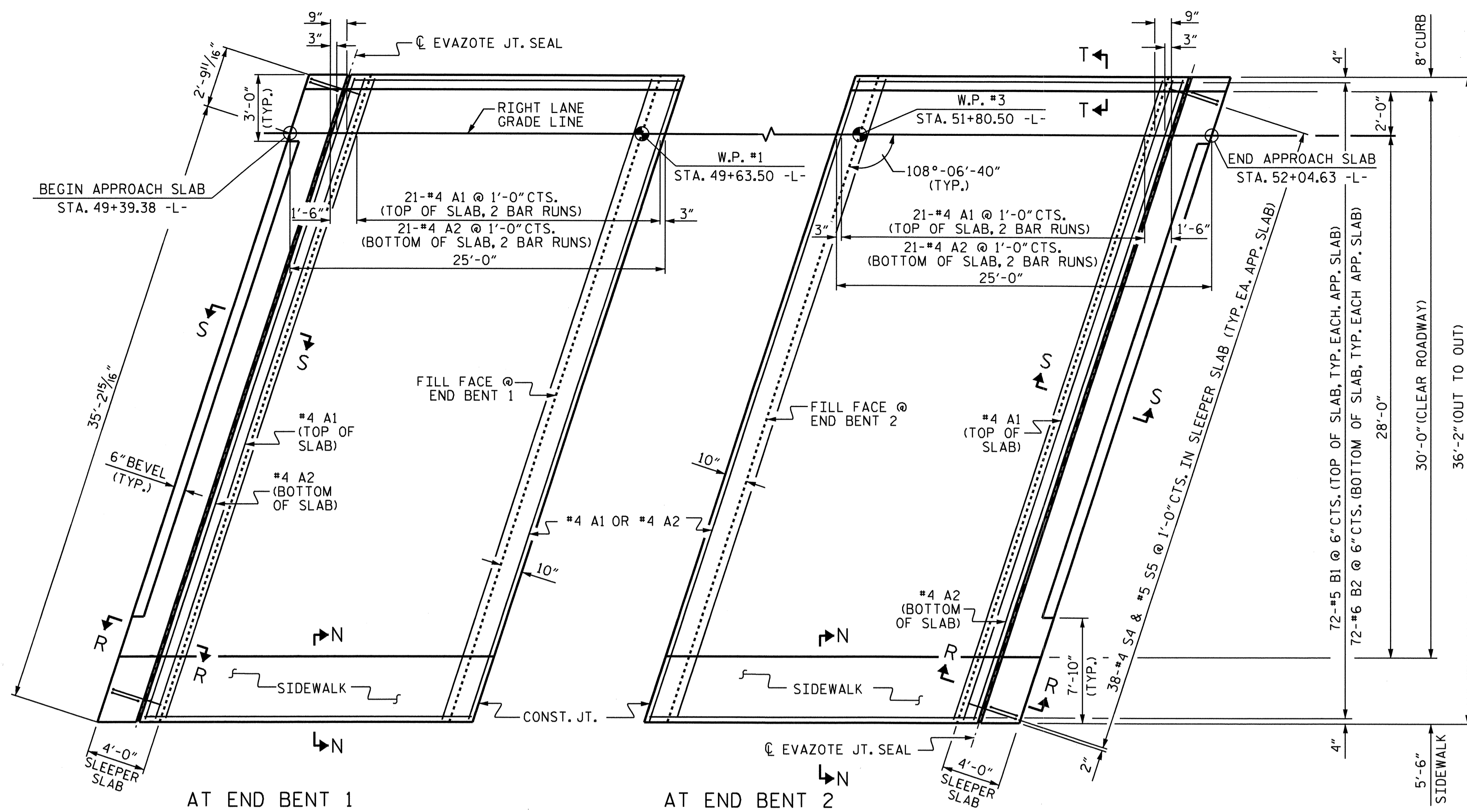
OPTIONAL POURING DETAIL

PROJECT NO. U-3621B
NASH COUNTY
 STATION: 50+77.00 -L-

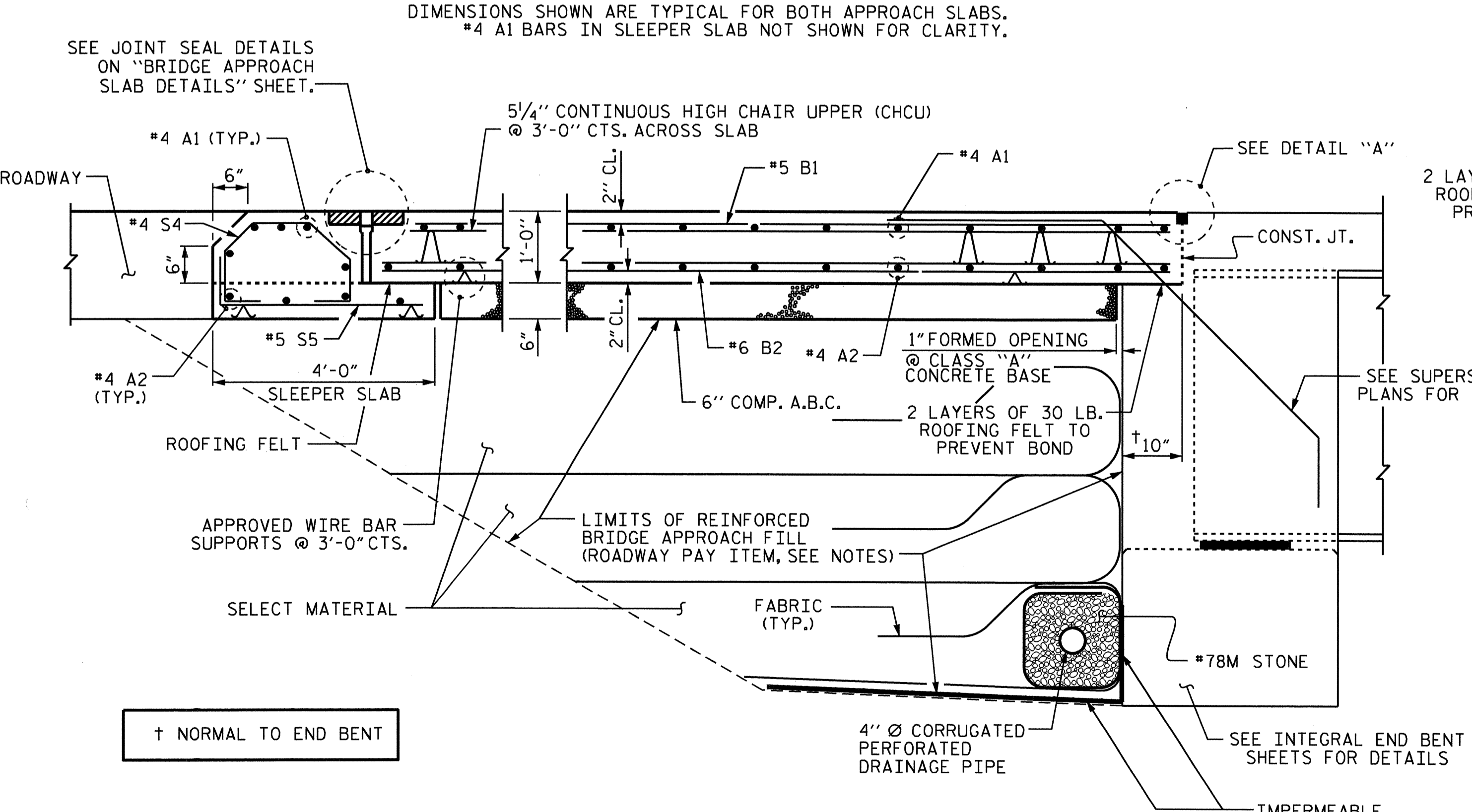
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 SLOPE PROTECTION
 DETAILS
 (RIGHT LANE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-66
1			3			TOTAL SHEETS 68
2			4			

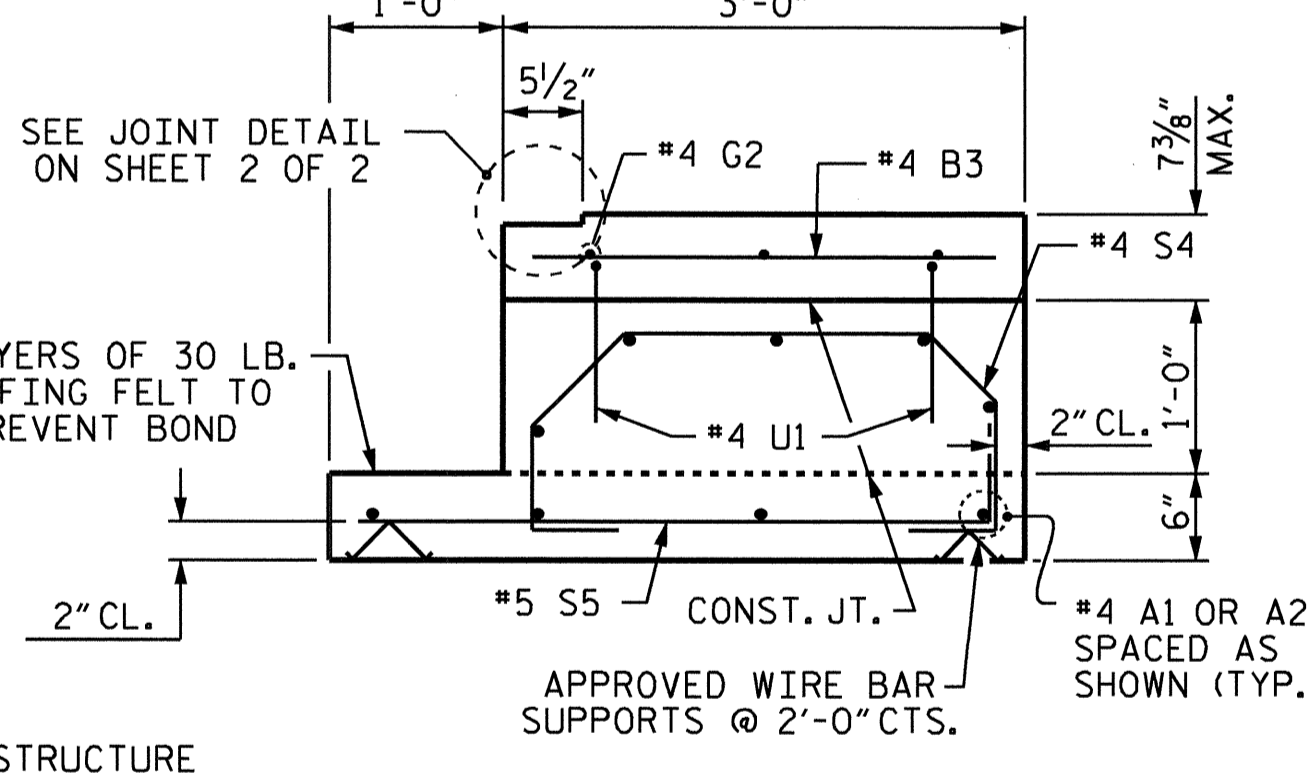
ASSEMBLED BY : HARISH SHAH DATE : 06/16/09
 CHECKED BY : A.R. CHESSON DATE : 07/09
 DRAWN BY : ELR 5/92 REV. 7/10/01 LES/RDR
 CHECKED BY : GRP 6/92 REV. 5/7/03 RWW/JTE
 REV. 5/1/06 TLA/GM



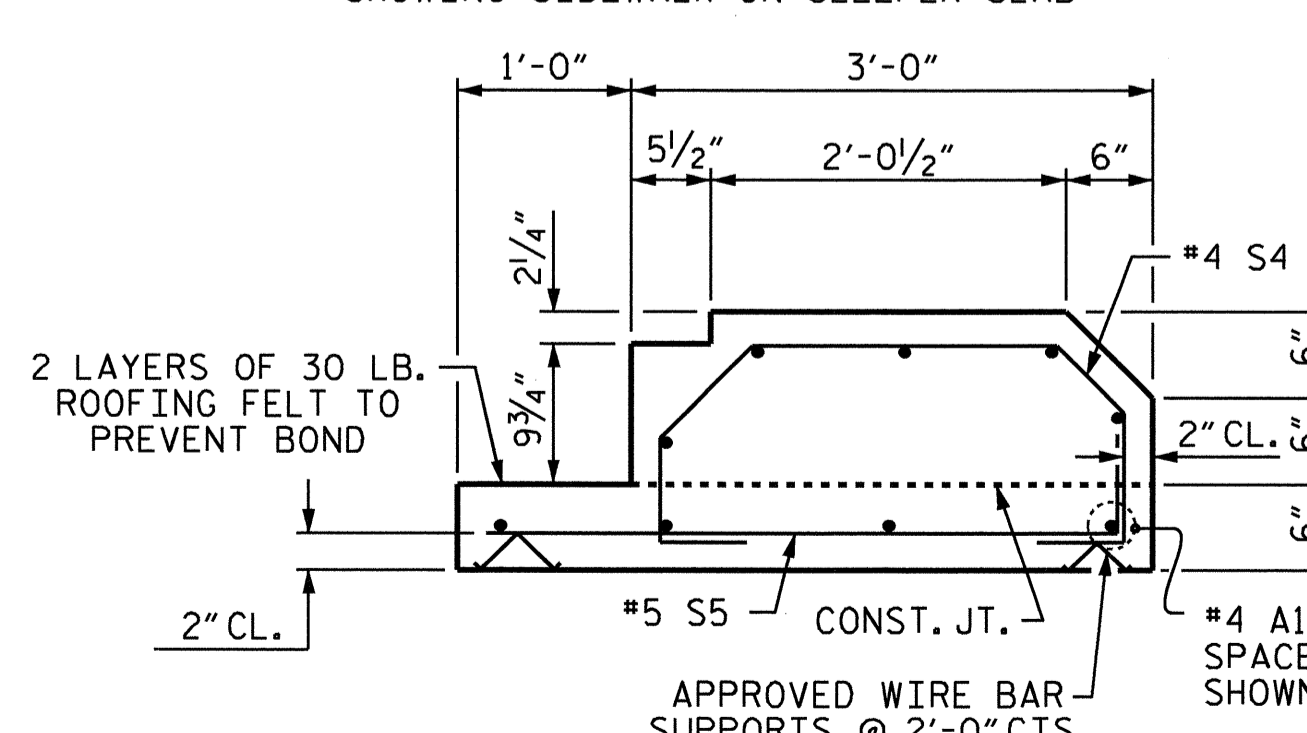
PLAN
DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS.
#4 A1 BARS IN SLEEPER SLAB NOT SHOWN FOR CLARITY.



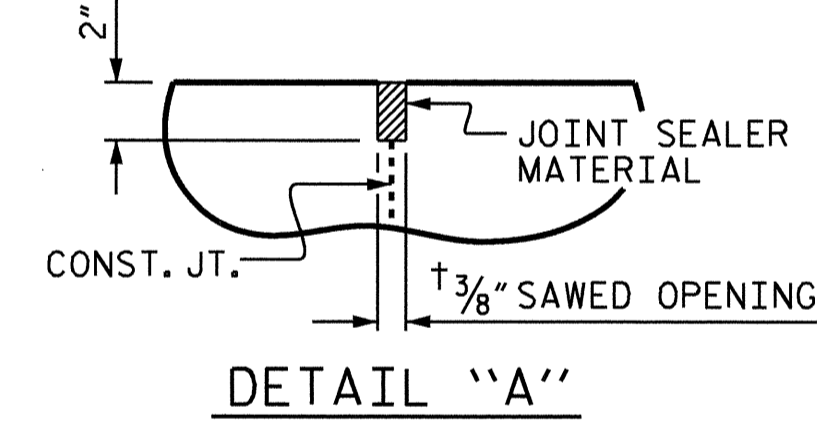
SECTION THRU SLAB



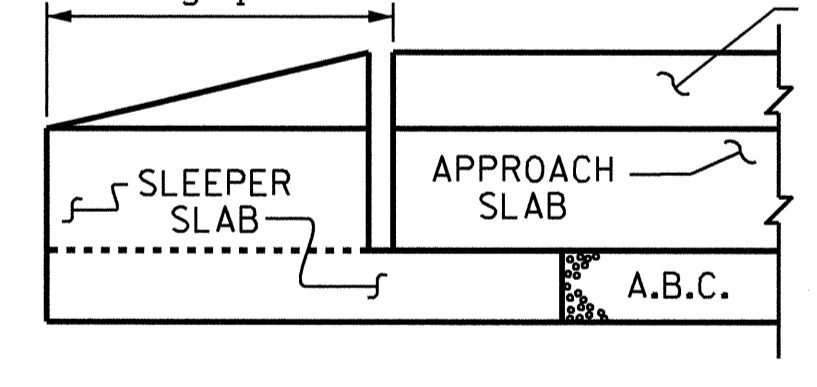
SECTION R-R
SHOWING SIDEWALK ON SLEEPER SLAB



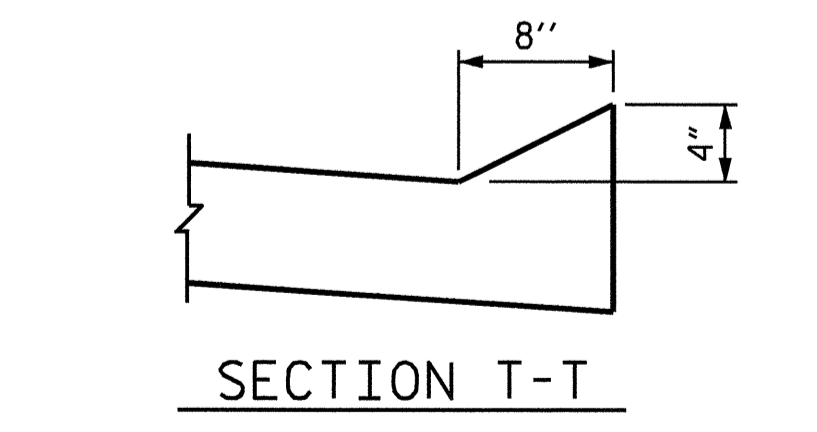
SECTION S-S
SHOWING SLEEPER SLAB



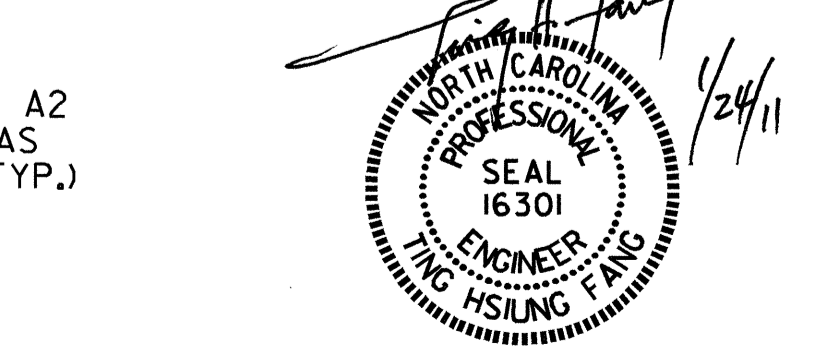
DETAIL "A"



END OF CURB WITHOUT SHOULDER BERM GUTTER



SECTION T-T



NOTES

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

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

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

THE 6" COMP. A.B.C. SHALL BE FLUSH WITH THE SLEEPER SLAB AND SHALL EXTEND 1'-0" OUTSIDE OF EACH EDGE OF THE APPROACH SLAB.

THE CONTRACTOR MAY USE 4" TYPE B-25.0B ASPHALT CONCRETE BASE COURSE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE BASE COURSE SHALL BE FLUSH WITH THE SLEEPER SLAB, AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB.

THE CONTRACTOR MAY USE 5" CLASS "A" CONCRETE BASE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE CONCRETE BASE SHALL BE FLUSH WITH THE SLEEPER SLAB, AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB. THE CONCRETE SHALL BE FINISHED TO A SMOOTH SURFACE AND A LAYER OF 30 LB ROOFING FELT SHALL BE PLACED BETWEEN THE CONCRETE BASE AND THE APPROACH SLAB TO PREVENT BOND. THE APPROACH SLAB SHALL NOT BE CAST UNTIL THE CONCRETE BASE HAS REACHED AN AGE OF THREE CURING DAYS.

THE VERTICAL JOINT ON THE RIGHT AND LEFT SIDE OF THE APPROACH SLAB AT THE ENDS OF THE EVAZOTE JOINT SHALL BE FILLED WITH SILICONE OR OTHER APPROVED MATERIAL IN ORDER TO PREVENT BACKFILL FROM ENTERING THE JOINT OPENING.

THE JOINT OPENING AT THE APPROACH SLAB/DECK INTERFACE SHALL BE SAWS NO MORE THAN 12 HOURS AFTER THE APPROACH SLAB IS CAST. THE JOINT SHALL BE CLEANED OF ALL DEBRIS BEFORE THE SEALANT IS APPLIED. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF TYPE SL LOW MODULUS SILICONE SEALANT.

WITH EVAZOTE JOINT SEAL

FOR EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS.

THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE EVAZOTE JOINT SEAL SHALL BE 2 1/2".

FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

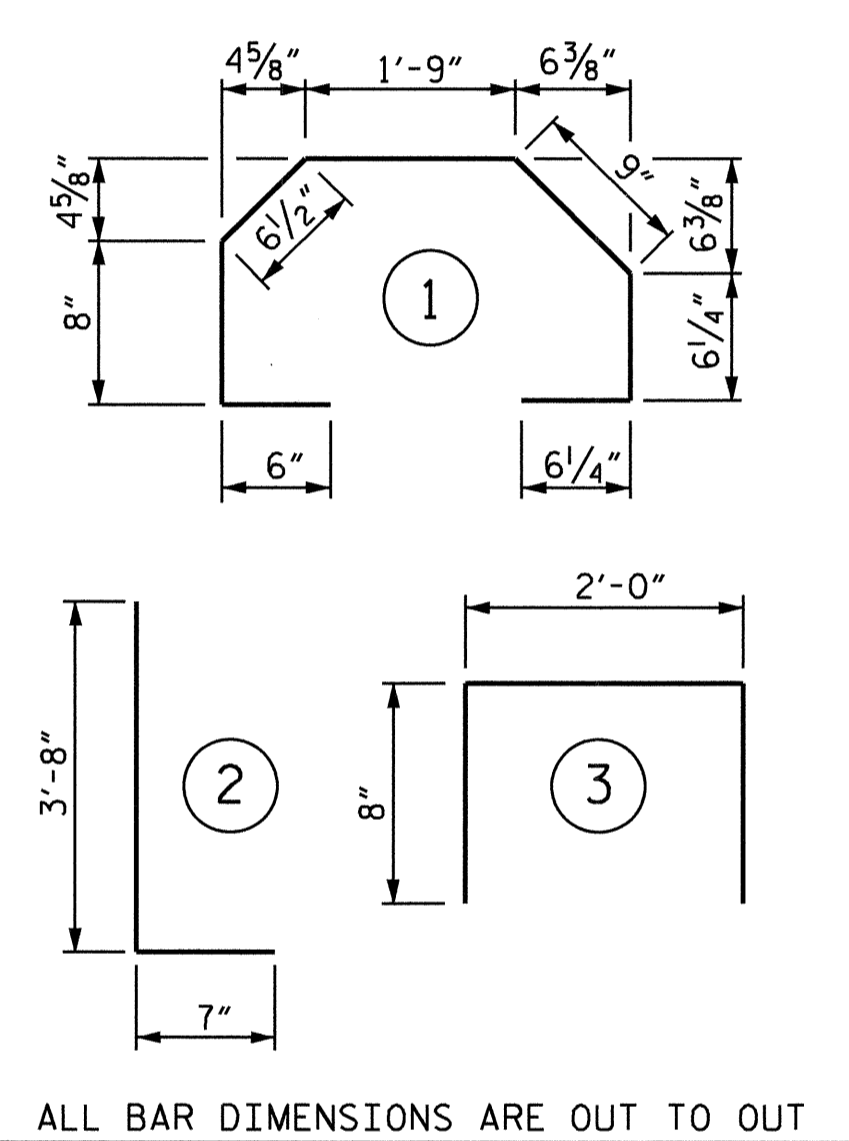
BILL OF MATERIAL

FOR ONE APPROACH SLAB (2 REQ'D)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	56	#4	STR	19'-10"	742
A2	54	#4	STR	19'-9"	712
* B1	72	#5	STR	20'-11"	1571
B2	72	#6	STR	21'-5"	2317
* B3	5	#4	STR	2'-6"	9
* G2	3	#4	STR	5'-0"	10
* S4	38	#4	1	5'-3"	133
S5	38	#5	2	4'-3"	168
* U1	4	#4	3	3'-4"	9

REINFORCING STEEL	LBS.	3197
* EPOXY COATED REINFORCING STEEL	LBS.	2474
CLASS AA CONCRETE		
POUR #1 - SLEEPER SLAB	C. Y.	3.3
POUR #2 - SLAB & CURB	C. Y.	29.5
TOTAL	C. Y.	32.8

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

SPLICE CHART

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

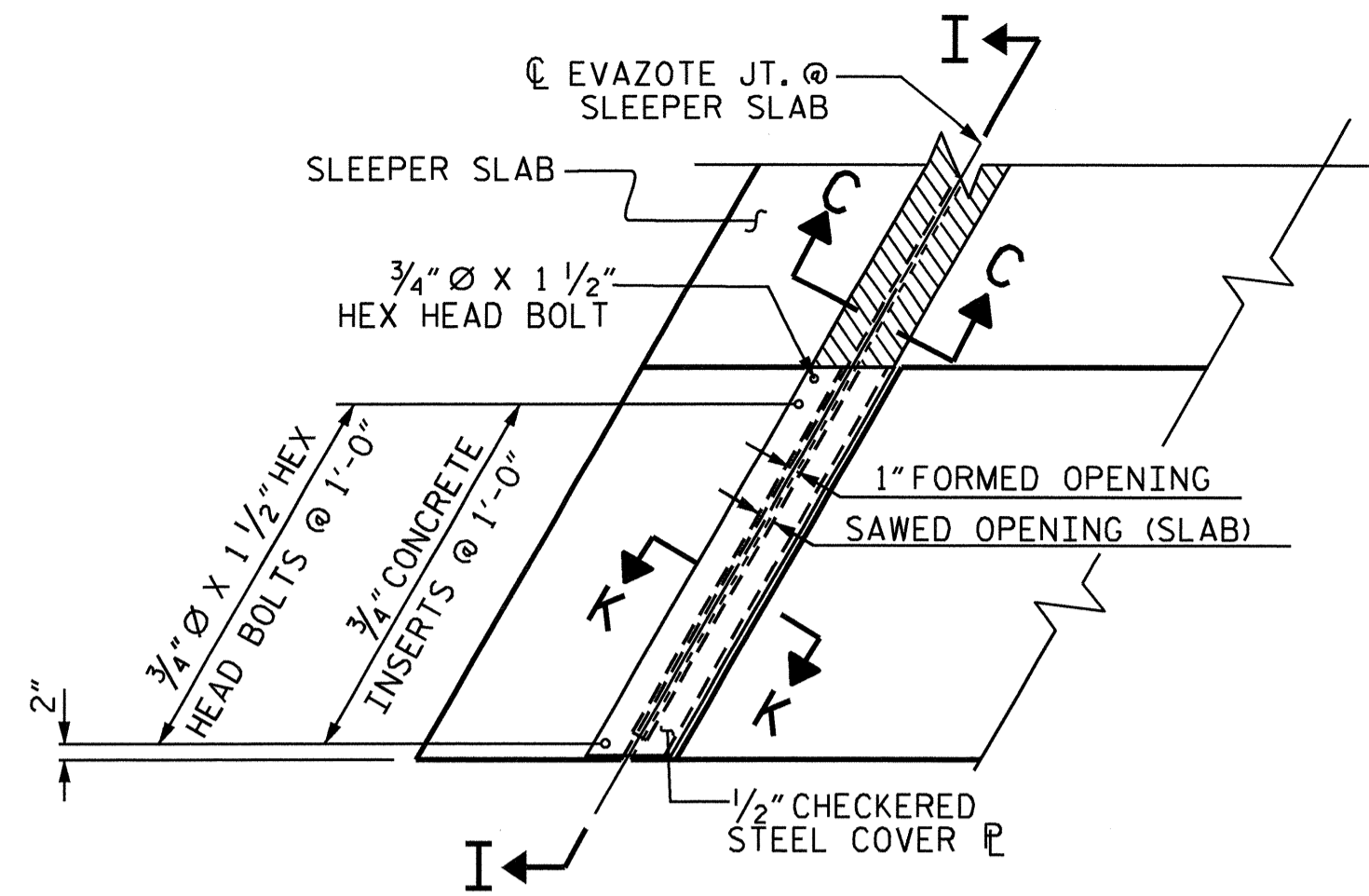
PROJECT NO. U-3621B
NASH COUNTY
STATION: 50+77.00 -L-

SHEET 1 OF 2

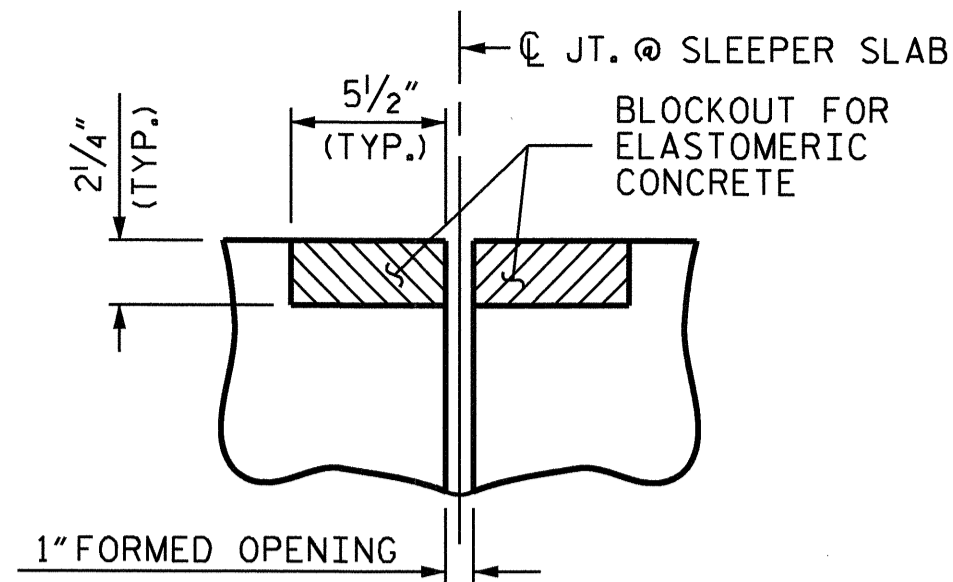
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
BRIDGE APPROACH SLAB
FOR INTEGRAL ABUTMENT
(RIGHT LANE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-67
1			3			TOTAL SHEETS 68
2			4			

ASSEMBLED BY: HARISH SHAH DATE: 6/24/09
CHECKED BY: W.D. CRUTCHER DATE: 4-27-10
DRAWN BY: TLA 10/05
CHECKED BY: GM 5/06



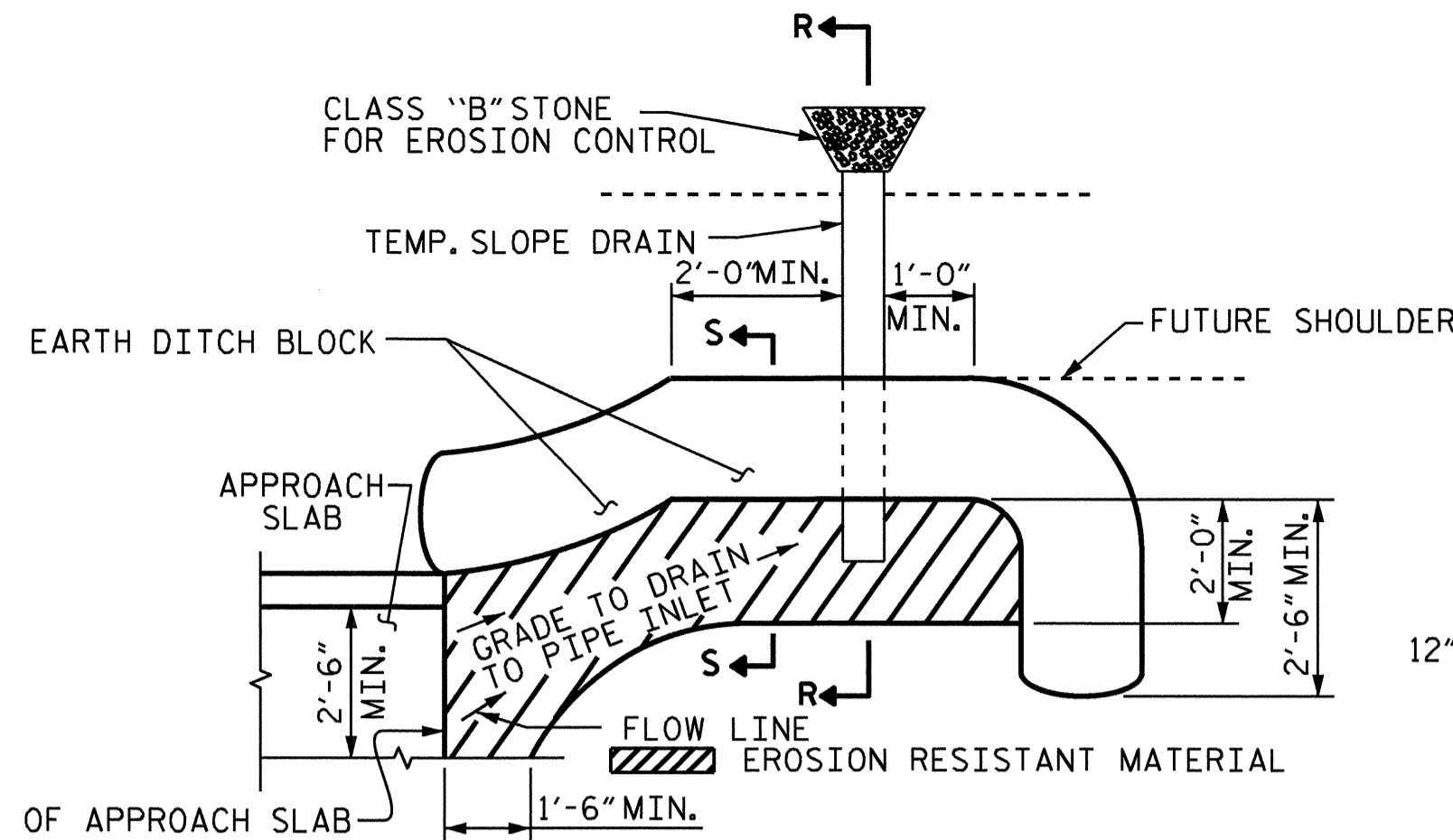
PLAN VIEW OF EVAZOTE JOINT SEAL @ SLEEPER SLAB FOR SIDEWALK



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

ELASTOMERIC CONCRETE	
END BENT	ELASTOMERIC CONCRETE * (CU. FT.)
1	5.4
2	5.4
TOTAL	10.8

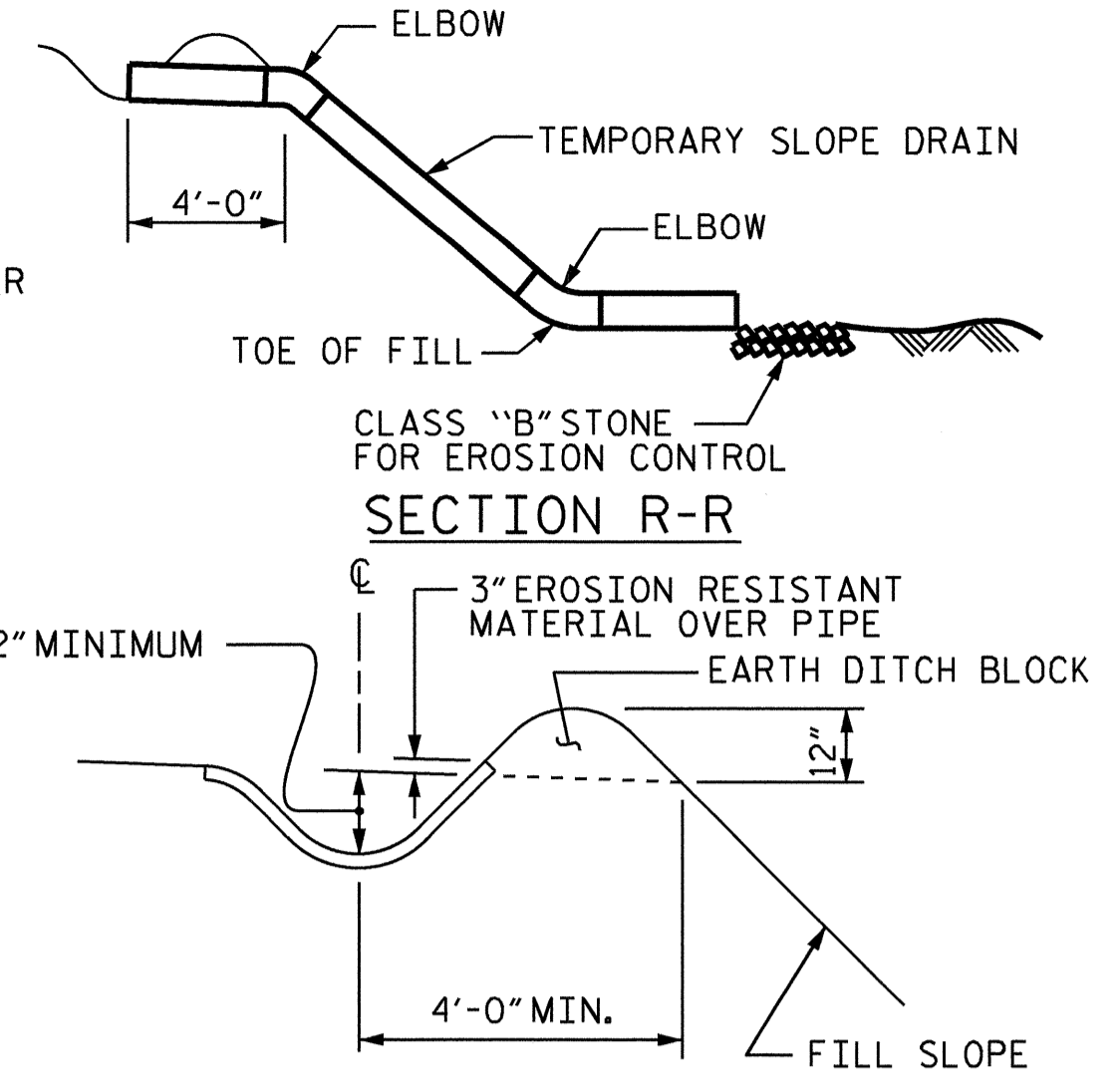
* BASED ON THE MINIMUM BLOCKOUT SHOWN.



PLAN VIEW

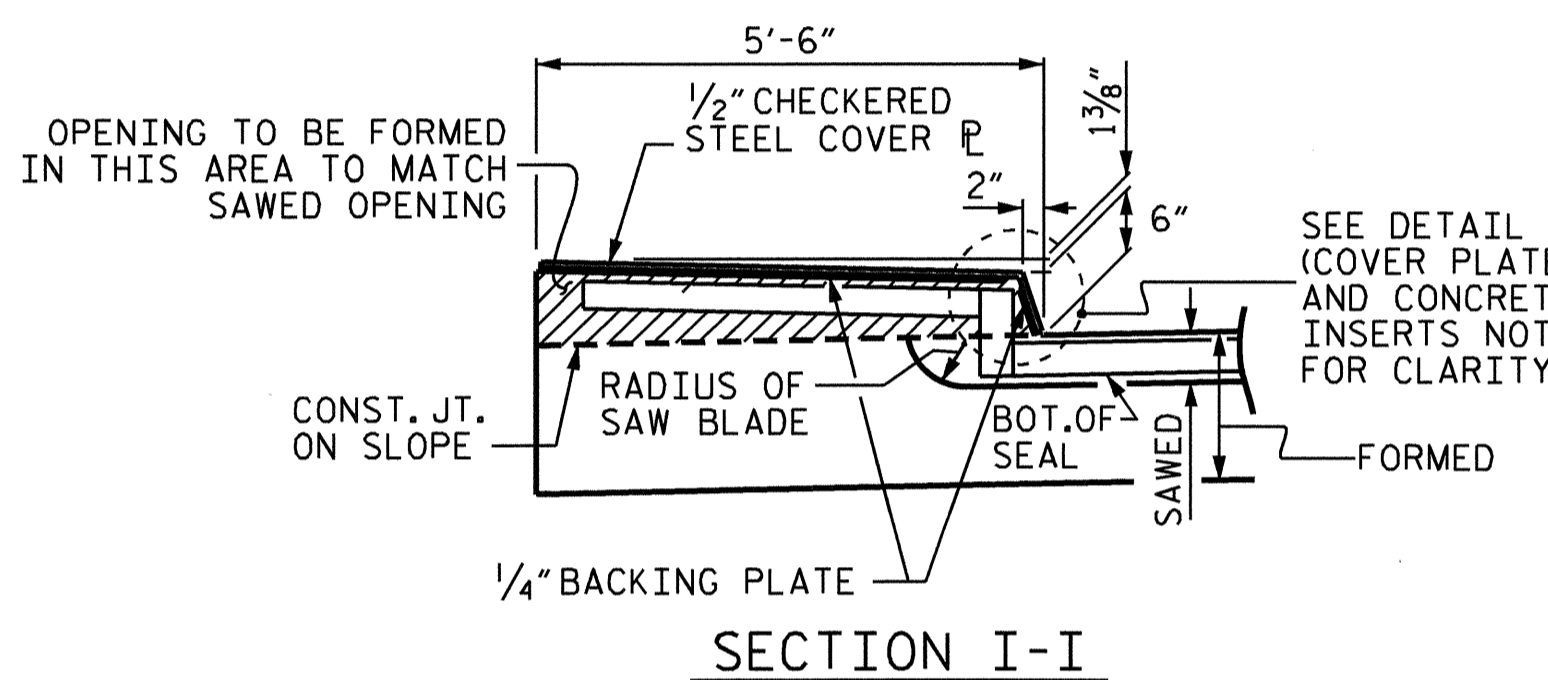
TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

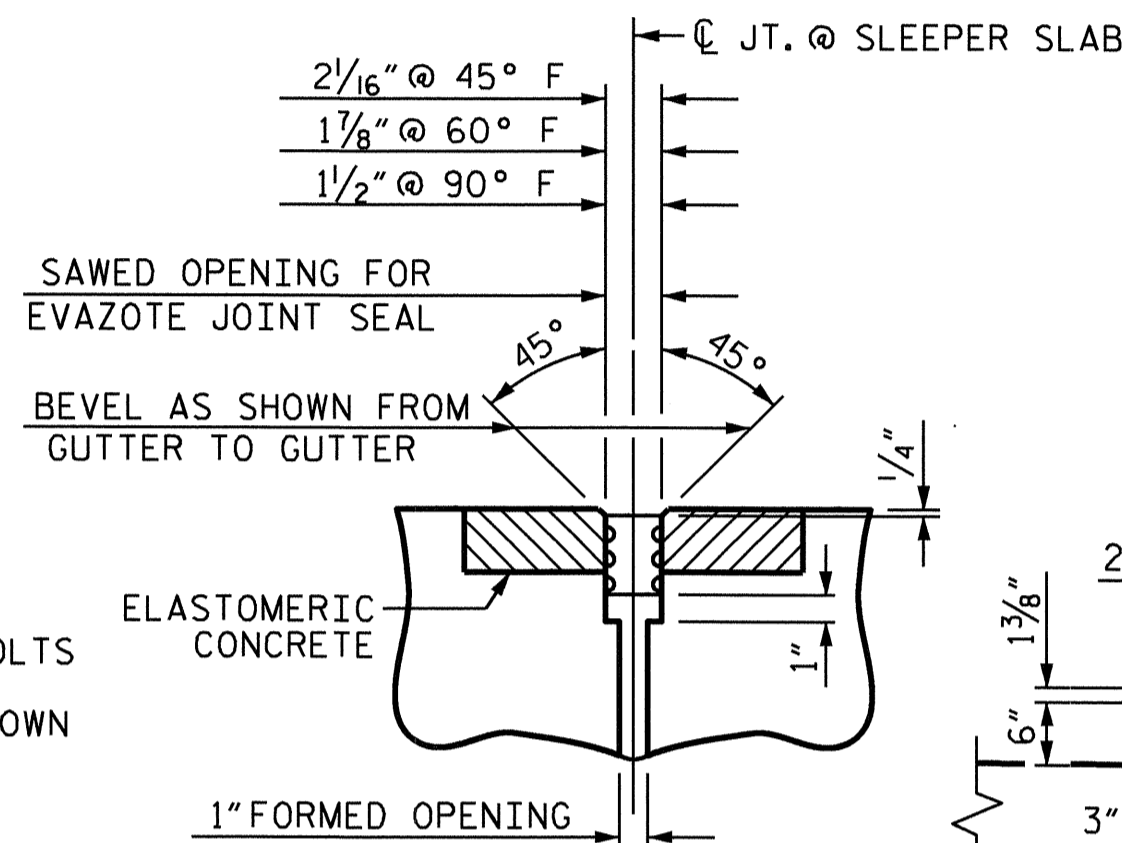


SECTION S-S

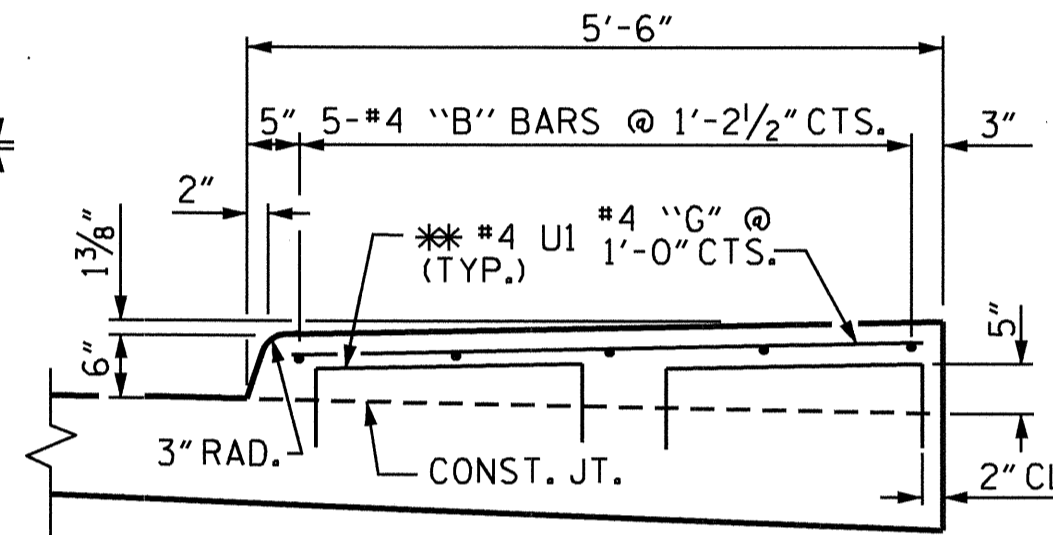
NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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



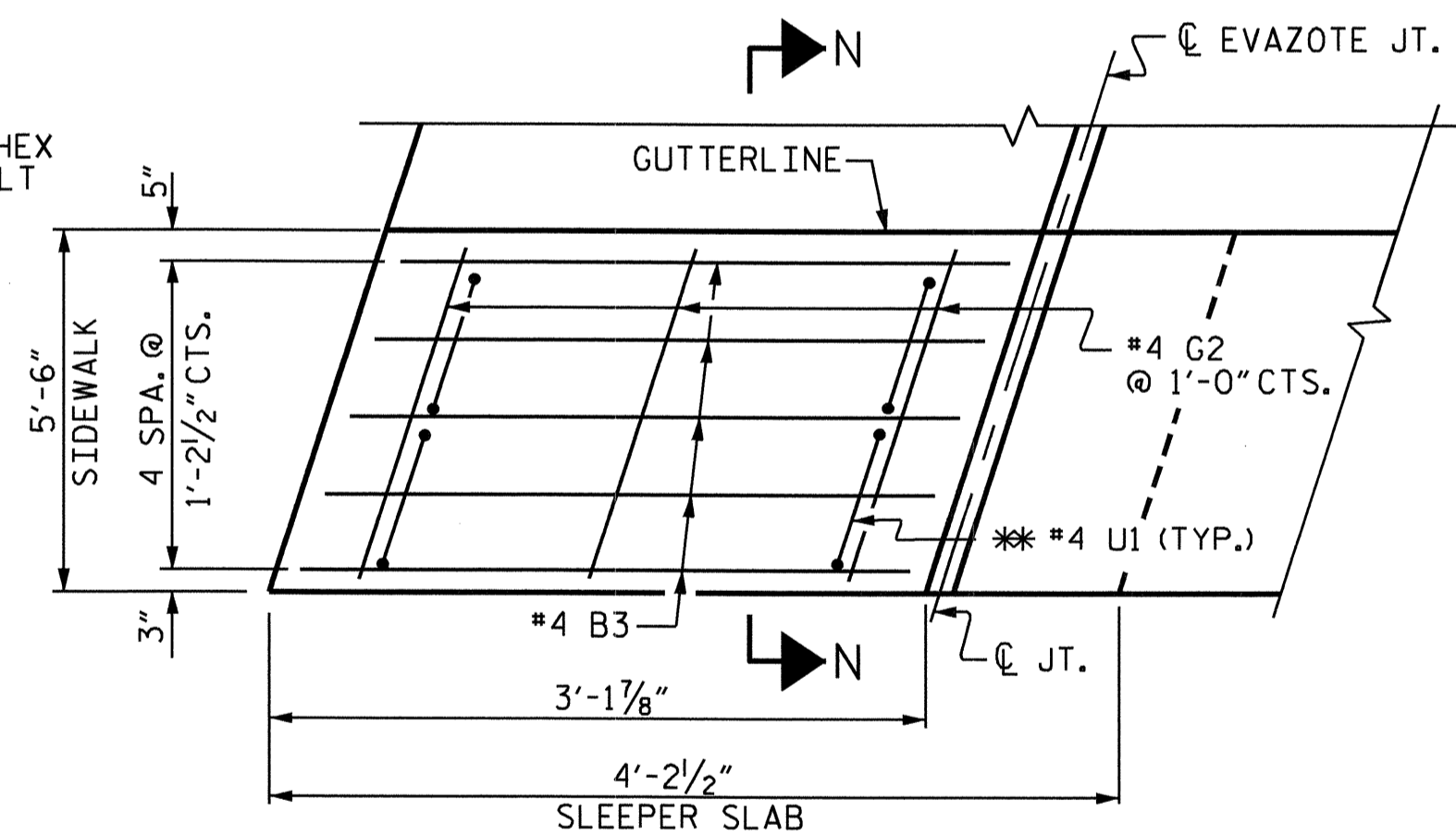
SECTION I-I



SECTION C-C EVAZOTE JOINT SEAL (EXPANSION)



SECTION N-N



PLAN

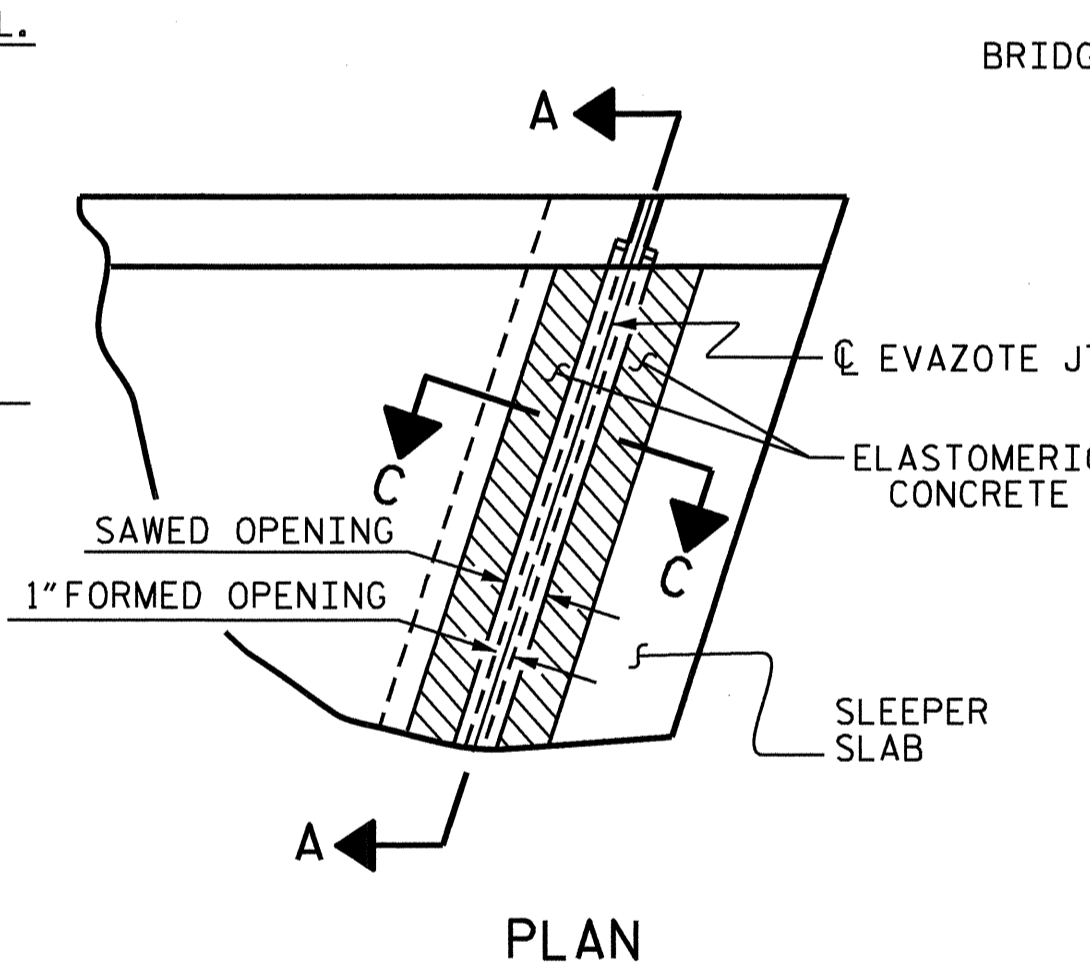
SIDEWALK DETAILS ON SLEEPER SLAB

COVER PLATE NOTES

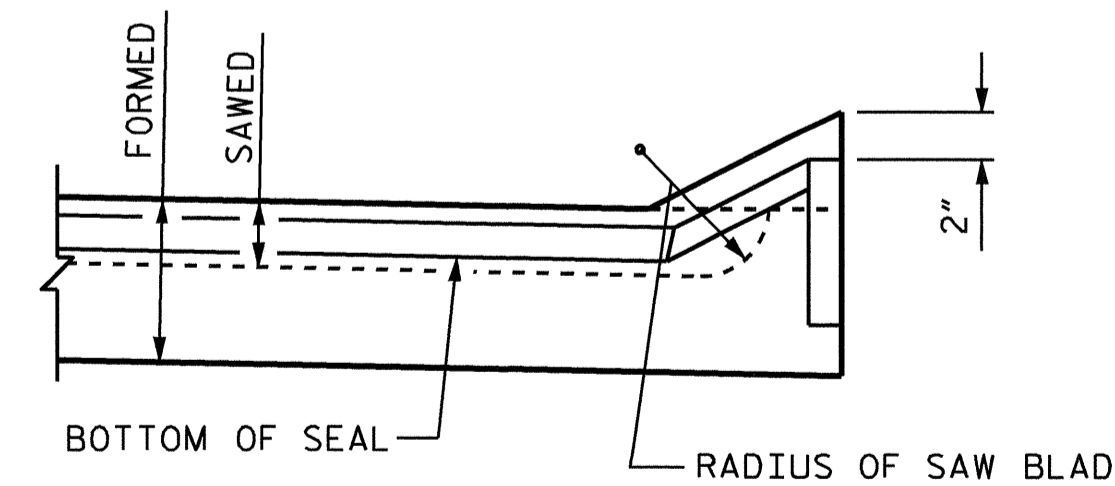
THE STEEL PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 OR APPROVED EQUAL. AFTER FABRICATION, THE PLATES SHALL BE COMMERCIALY BLAST CLEANED AND COATED WITH A MINIMUM THICKNESS OF 4 MILS (DRY) OF ZINC RICH PAINT IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. AT THE CONTRACTOR'S OPTION, THESE SURFACES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

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 "BRIDGE APPROACH SLABS".

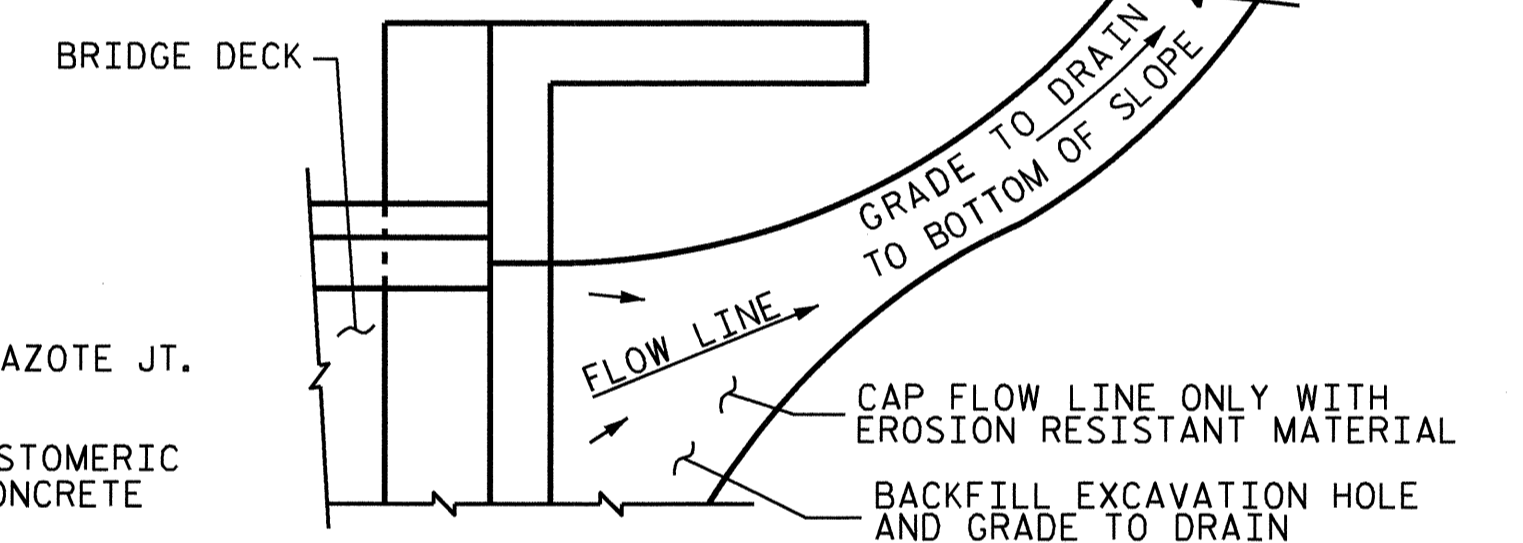


PLAN



SECTION A-A

CURB DETAILS



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

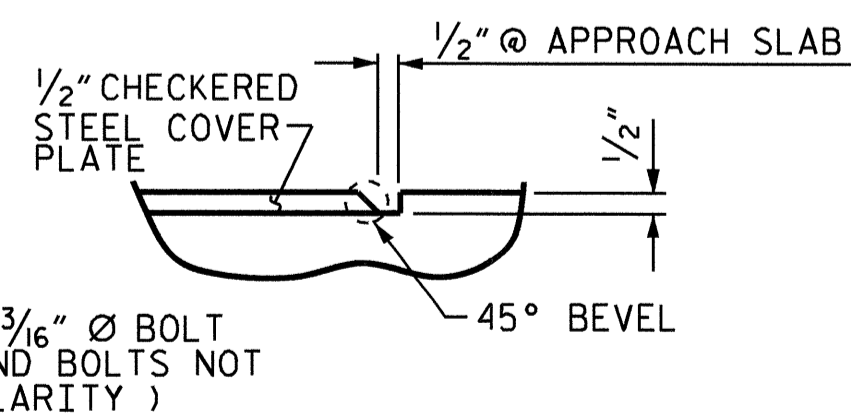
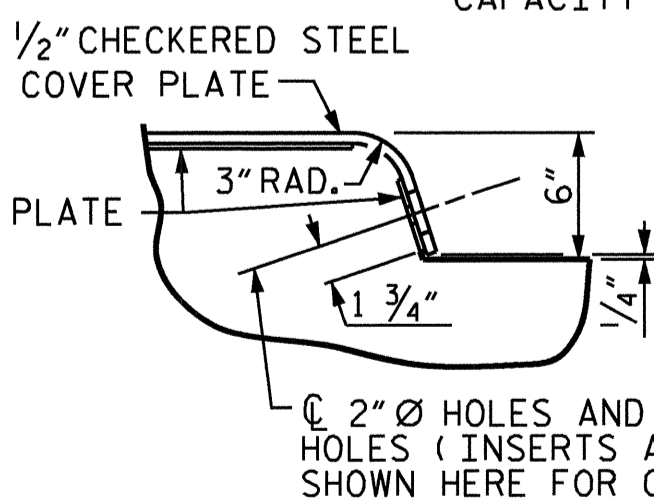
ASSEMBLED BY : HARISH SHAH DATE : 6/24/09
 CHECKED BY : W.D. CRUTCHER DATE : 4-27-10
 DRAWN BY : FCJ 11/88
 CHECKED BY : ARB 11/88

REV. 10/17/00 RWW/LES
 REV. 5/7/03 RWW/JTE
 REV. 5/1/06R MAA/KMM

JOINT SEAL DETAILS @ SLEEPER SLAB (FOR SIDEWALK)

DETAIL "B"

DETAIL "C"



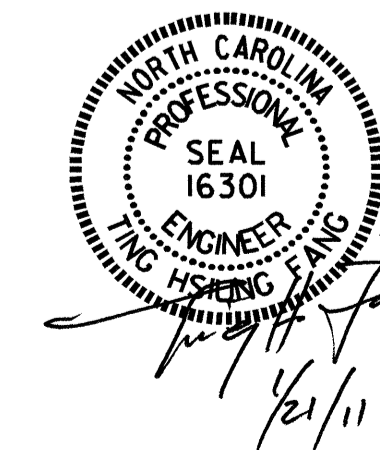
PROJECT NO. U-3621B
 NASH COUNTY
 STATION: 50+77.00 -L-

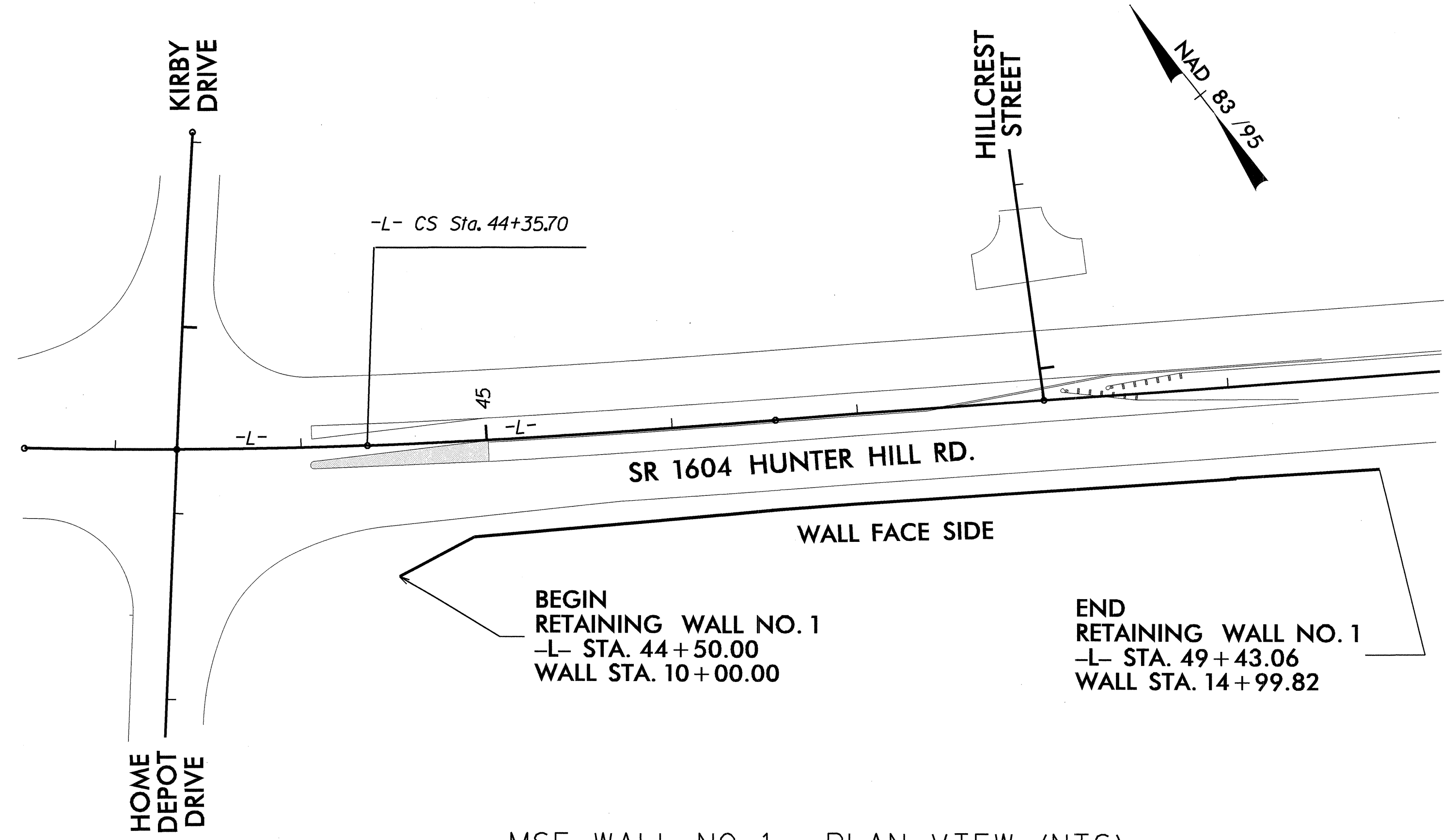
SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD

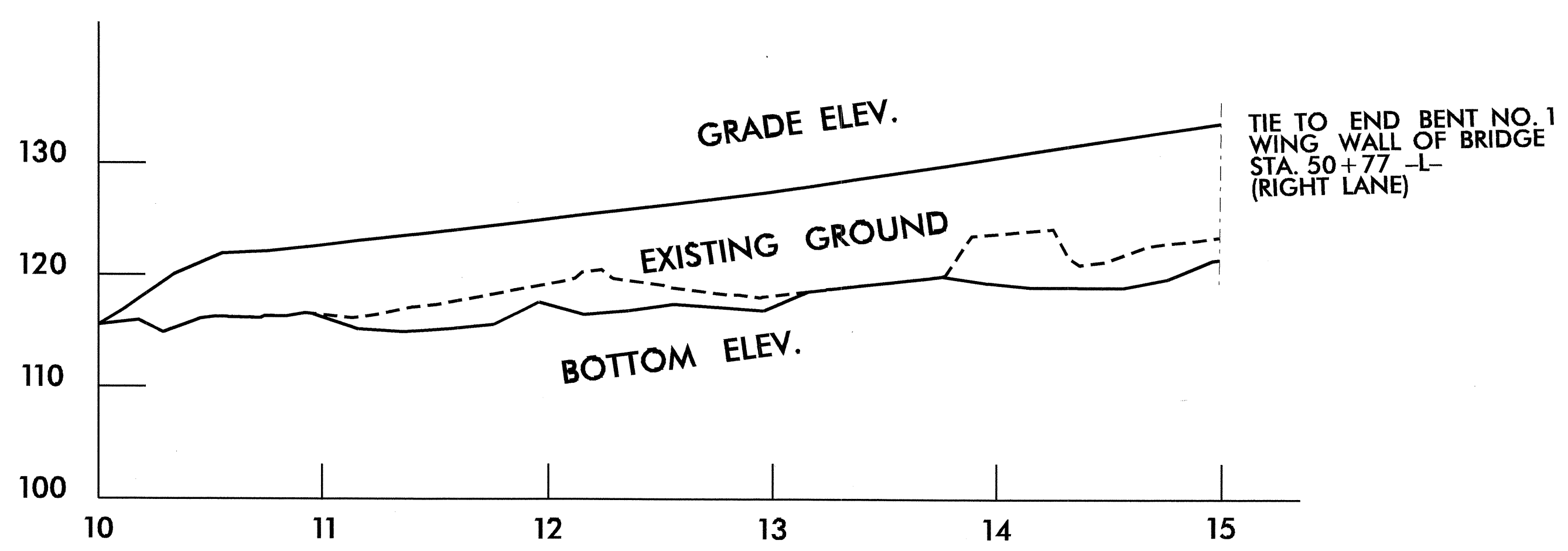
BRIDGE APPROACH SLAB DETAILS (RIGHT LANE)

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





MSE WALL NO.1 - PLAN VIEW (NTS)



MSE WALL NO.1 - ENVELOPE (NTS)
- EXPOSED WALL FACE -

(-L-) STA.	WALL 1 STA.	WALL OFFSET	GRADE ELEV.	BOTTOM ELEV.	DESIGN HEIGHT
44+50.00	10+00.00	72.34 RT	115.59	115.59	0.00
44+60.00	10+11.31	67.49 RT	116.99	115.86	1.13
44+80.00	10+33.79	57.93 RT	120.11	115.30	4.81
45+00.00	10+55.16	52.68 RT	121.95	116.31	5.64
45+20.00	10+75.40	52.07 RT	122.14	116.39	5.75
45+40.00	10+95.60	51.54 RT	122.60	116.58	6.02
45+60.00	11+15.77	51.08 RT	123.11	115.21	7.90
45+80.00	11+35.91	50.69 RT	123.57	114.97	8.60
46+00.00	11+56.01	50.33 RT	124.02	115.23	8.79
46+20.00	11+76.08	50.02 RT	124.50	115.63	8.87
46+40.00	11+96.13	49.72 RT	124.98	117.65	7.33
46+60.00	12+16.14	49.50 RT	125.46	116.53	8.93
46+80.00	12+36.14	49.48 RT	125.95	116.88	9.07
47+00.00	12+56.14	49.46 RT	126.43	117.46	8.97
47+20.00	12+76.14	49.45 RT	126.92	117.19	9.73
47+40.00	12+96.14	49.43 RT	127.41	116.88	10.53
47+60.00	13+16.14	49.41 RT	127.99	118.59	9.40
47+80.00	13+36.14	49.40 RT	128.61	119.05	9.56
48+00.00	13+56.14	49.38 RT	129.22	119.52	9.70
48+20.00	13+76.14	49.36 RT	129.83	119.98	9.85
48+40.00	13+96.14	49.35 RT	130.44	119.39	11.05
48+60.00	14+16.14	49.33 RT	131.06	119.00	12.06
48+80.00	14+36.14	49.31 RT	131.67	118.98	12.69
49+00.00	14+56.14	49.30 RT	132.28	118.97	13.31
49+20.00	14+76.14	49.28 RT	132.89	119.74	13.15
49+40.00	14+96.14	49.26 RT	133.50	121.37	12.13
49+43.06	14+99.82	49.26 RT	133.59	121.45	12.14

TOTAL BILL OF MATERIAL	
MECHANICALLY STABILIZED EARTH RETAINING WALLS	4750 SQUARE FOOT

PROJECT NO.: 34964.1.1 (U-3621B)

NASH COUNTY

STATION: VARIES

SHEET 1 OF 4

PREPARED BY: SHIHAI ZHANG DATE: 1/2011

REVIEWED BY: JINYOUNG PARK DATE: 1/2011

GEOTECHNICAL ENGINEERING UNIT

EASTERN REGIONAL OFFICE

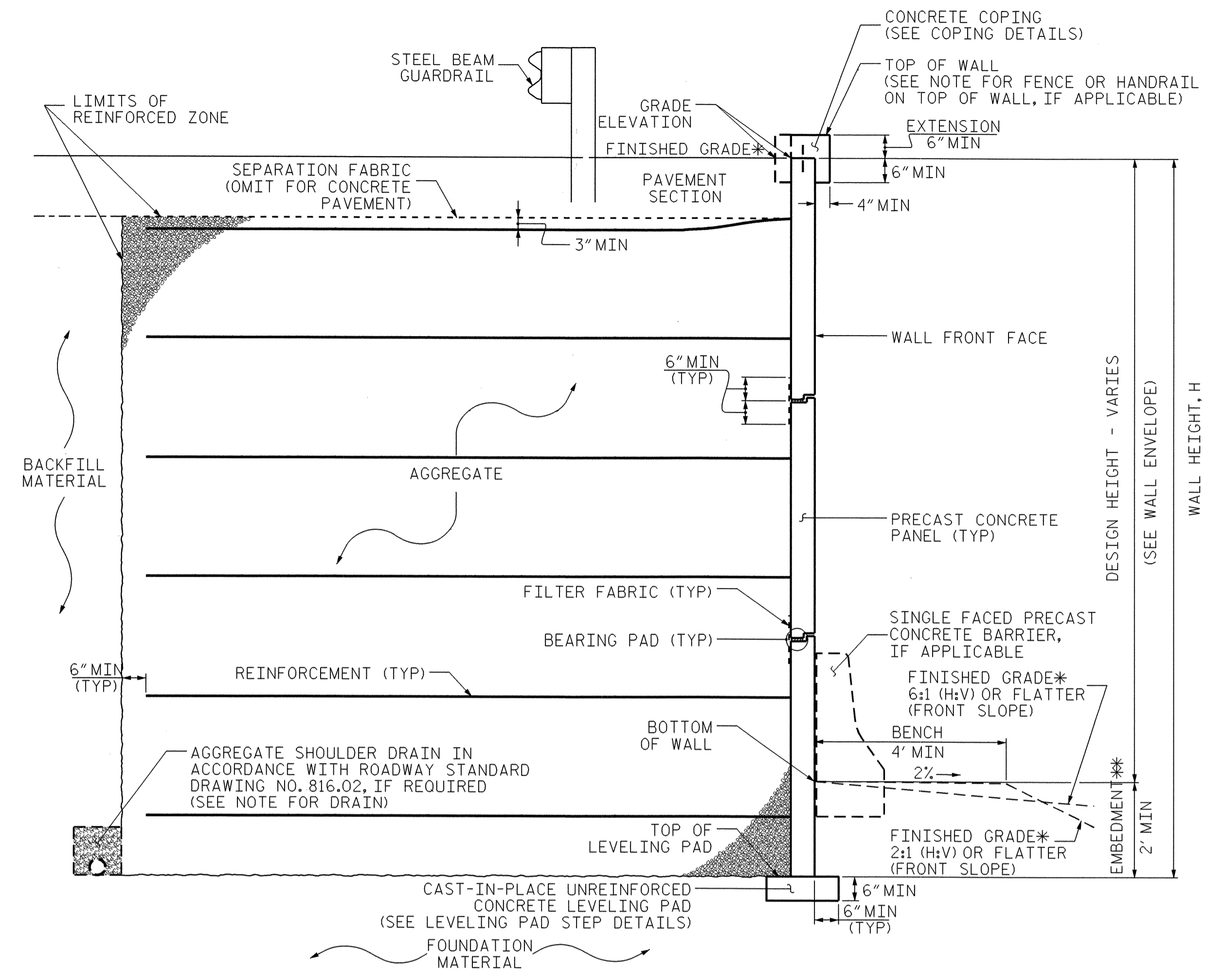
WESTERN REGIONAL OFFICE

CONTRACT OFFICE

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

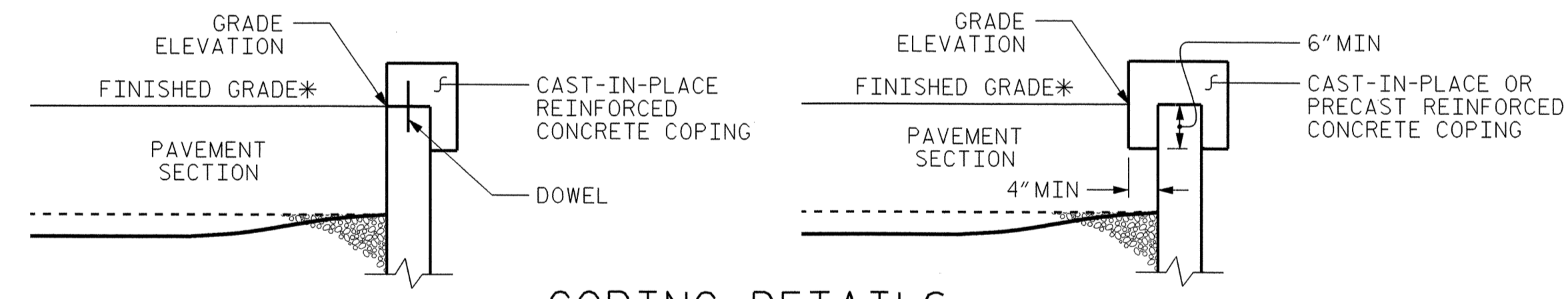
**MSE RETAINING WALL NO. 1
PLAN AND ELEVATION**

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



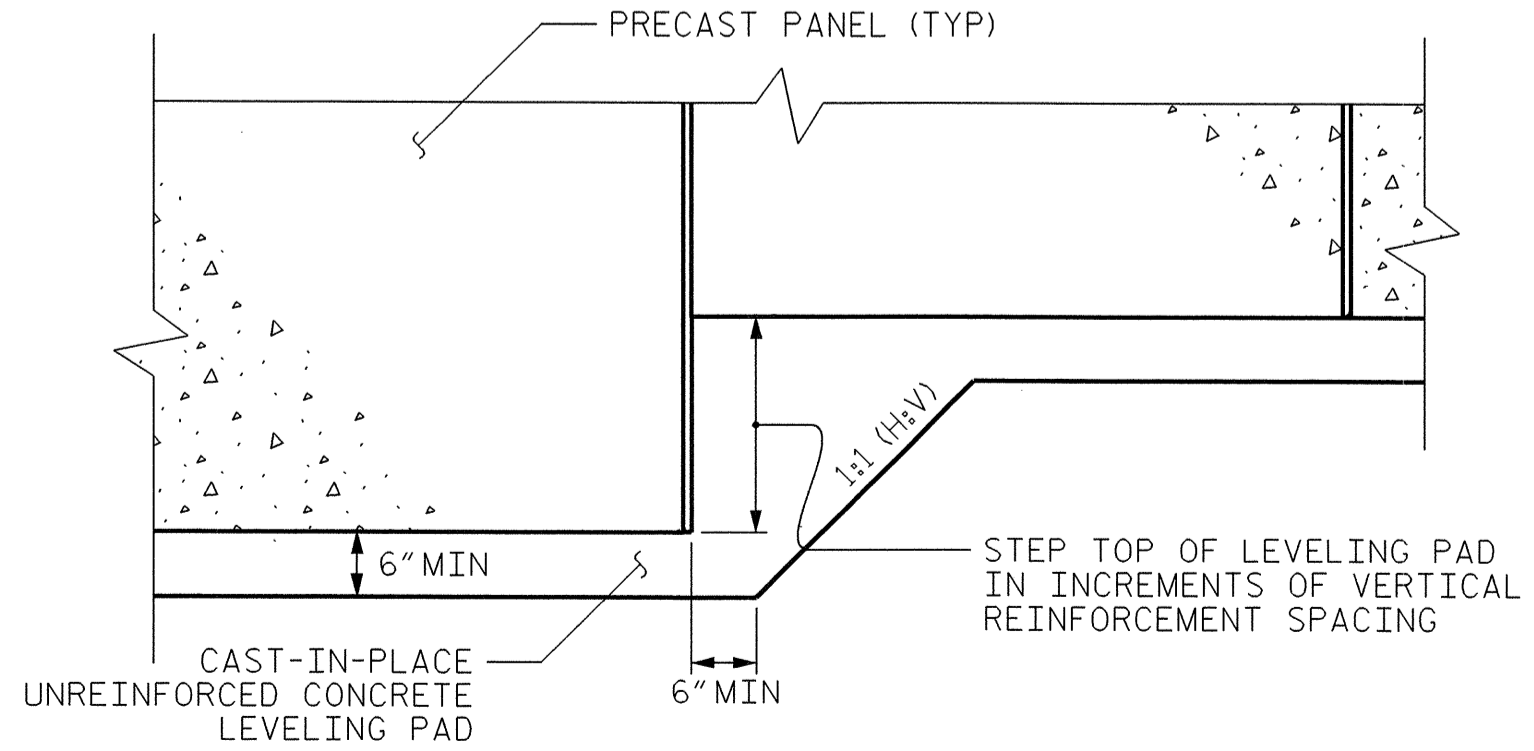
MSE WALL NO.1 - TYPICAL SECTION (NTS)

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



COPING DETAILS

AT THE CONTRACTOR'S OPTION, CONNECT COPING TO PANELS WITH DOWELS OR EXTEND COPING DOWN BACK OF PANELS.
 *SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.



LEVELING PAD STEP DETAILS

NOTES:

- FOR MECHANICALLY STABILIZED EARTH (MSE) RETAINING WALL NO.1, SEE MECHANICALLY STABILIZED EARTH RETAINING WALLS PROVISION.
- FOR STEEL BEAM GUARDRAIL, SEE ROADWAY PLANS AND SECTION 862 OF THE STANDARD SPECIFICATIONS.
- USE AN MSE WALL SYSTEM WITH PRECAST CONCRETE PANELS FOR RETAINING WALL NO.1. A DRAIN IS REQUIRED FOR RETAINING WALL NO.1.
- BEFORE BEGINNING MSE WALL DESIGN FOR RETAINING WALL NO.1, SURVEY WALL LOCATION AND SUBMIT A REVISED WALL PROFILE VIEW (WALL ENVELOPE) FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THE REVISED WALL ENVELOPE IS ACCEPTED.
- DESIGN RETAINING WALL NO.1 FOR WALL HEIGHTS EQUAL TO THE DESIGN HEIGHT (DIFFERENCE BETWEEN GRADE ELEVATION AND BOTTOM OF WALL ELEVATION) PLUS EMBEDMENT (DIFFERENCE BETWEEN BOTTOM OF WALL ELEVATION AND TOP OF LEVELING PAD ELEVATION).
- DESIGN RETAINING WALL NO.1 FOR THE FOLLOWING:
 - 1) MINIMUM DESIGN LIFE = 75 YEARS
 - 2) MINIMUM REINFORCEMENT LENGTH TO HEIGHT (H) RATIO = 1.0
 - 3) AGGREGATE PARAMETERS:

STANDARD SIZE NO. (IN ACCORDANCE WITH SECTION 1005 OF THE STANDARD SPECIFICATIONS)	UNIT WEIGHT (γ) PCF	FRICTION ANGLE (φ) DEGREES	COHESION (c) PSF
1S, 2S, 2MS AND 4S (FINE AGGREGATE)	125	34	0
5, 5F, 5FM, 6M, 6F AND 78M (COARSE AGGREGATE)	110	38	0

4) IN-SITU ASSUMED MATERIAL PARAMETERS:

MATERIAL TYPE	UNIT WEIGHT (γ) PCF	FRICTION ANGLE (φ) DEGREES	COHESION (c) PSF
BACKFILL	120	30	0
FOUNDATION	120	27	0

- DESIGN RETAINING WALL NO.1 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.
- A MINIMUM WALL EMBEDMENT OF 2 FEET BELOW THE BOTTOM OF WALL IS REQUIRED.
- CONSTRUCT WALL FACING WITH VERTICAL SLIP JOINTS (INCLUDING AT WING WALL LOCATION).
- CAST-IN-PLACE CONCRETE COPING IS REQUIRED FOR RETAINING WALL NO.1. THE COPING JOINTS SHOULD ALIGN WITH THE WALL SLIP JOINTS.
- EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, GUARDRAIL, FENCE OR HANDRAIL POSTS, PAVEMENTS, PIPES, INLETS OR UTILITIES MAY INTERFERE WITH REINFORCEMENT FOR RETAINING WALL NO.1.
- DO NOT PLACE LEVELING PAD CONCRETE, AGGREGATE OR REINFORCEMENT FOR RETAINING WALL NO.1 UNTIL OBTAINING APPROVAL OF THE EXCAVATION DEPTH AND FOUNDATION MATERIAL.

PROJECT NO.: 34964.1.1 (U-3621B)
NASH COUNTY
STATION: VARIES
 SHEET 2 OF 4

PREPARED BY: SHIHAI ZHANG DATE: 1/2011
 REVIEWED BY: JINYOUNG PARK DATE: 1/2011

GEOTECHNICAL ENGINEERING UNIT

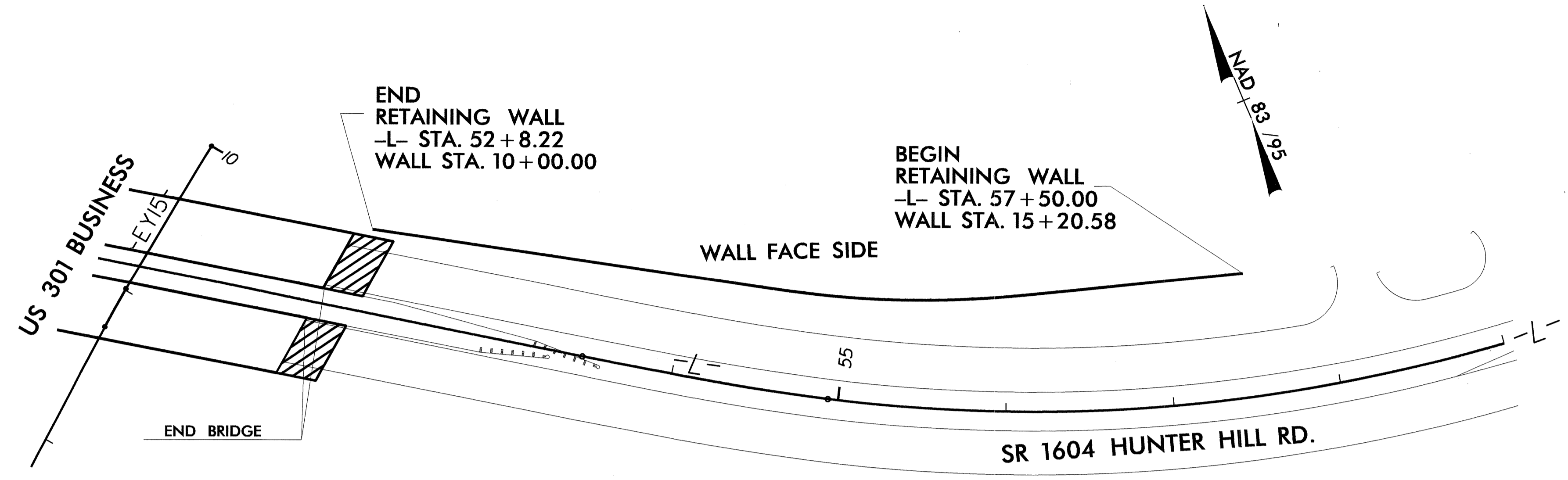
EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE
 CONTRACT OFFICE

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

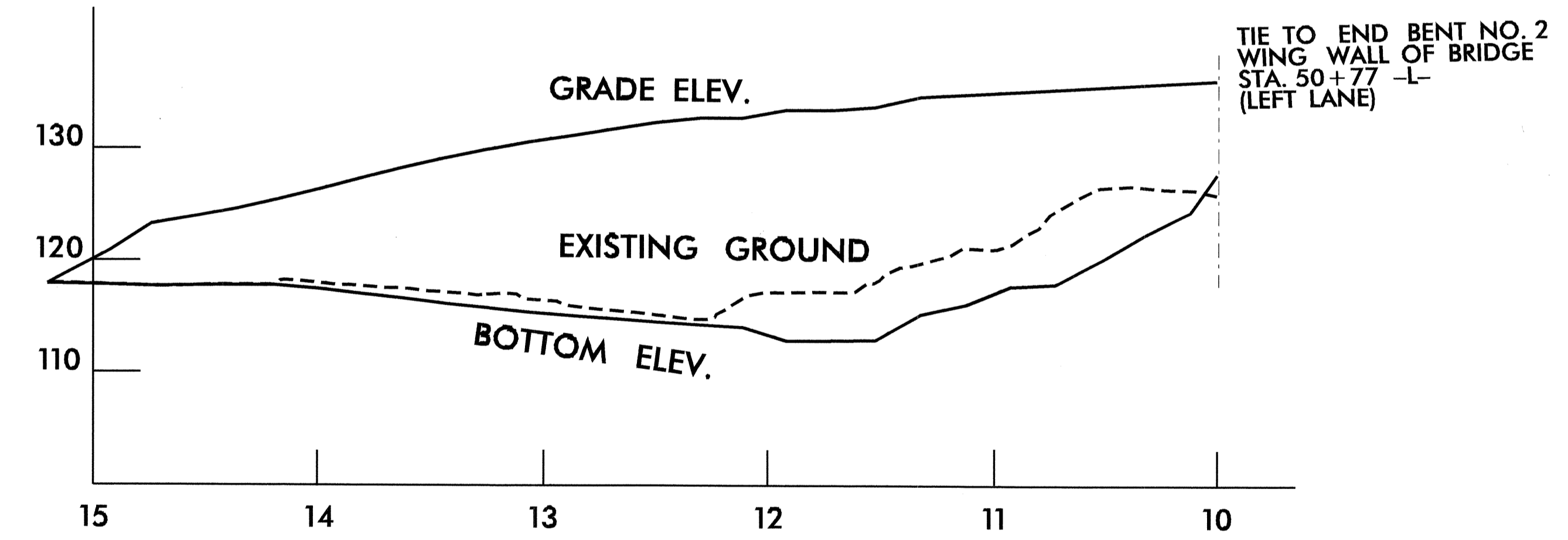
MSE RETAINING WALL NO. 1 NOTES AND DETAILS

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

TOTAL SHEETS: 4



MSE WALL NO. 2 - PLAN VIEW (NTS)



MSE WALL NO. 2 - ENVELOPE (NTS)
- EXPOSED WALL FACE -

(-L-) STA.	WALL 2 STA.	WALL OFFSET	GRADE ELEV.	BOTTOM ELEV.	DESIGN HEIGHT
52+08.22	10+00.00	49.26 LT	135.98	127.74	8.24
52+20.00	10+11.79	49.82 LT	135.80	124.30	11.50
52+40.00	10+31.82	50.77 LT	135.39	123.15	12.24
52+60.00	10+51.84	51.73 LT	135.08	120.79	14.29
52+80.00	10+71.86	52.68 LT	134.87	118.58	16.29
53+00.00	10+91.88	53.63 LT	134.68	116.98	17.70
53+20.00	11+11.91	54.59 LT	134.84	116.60	18.24
53+40.00	11+31.93	55.54 LT	134.58	115.66	18.92
53+60.00	11+51.91	56.49 LT	133.69	113.24	20.45
53+80.00	11+71.75	57.39 LT	133.41	112.85	20.56
54+00.00	11+91.42	58.19 LT	133.43	112.82	20.61
54+20.00	12+10.92	58.85 LT	132.72	114.06	18.66
54+40.00	12+30.26	59.30 LT	132.71	114.28	18.43
54+60.00	12+49.42	59.57 LT	132.30	114.52	17.78
54+80.00	12+68.42	60.05 LT	131.74	114.83	16.91
55+00.00	12+87.27	60.78 LT	131.14	115.11	16.03
55+20.00	13+06.07	61.73 LT	130.57	115.41	15.16
55+40.00	13+24.86	62.88 LT	129.89	115.80	14.09
55+60.00	13+43.64	64.25 LT	129.13	116.17	12.96
55+80.00	13+62.40	65.83 LT	128.28	116.64	11.64
56+00.00	13+81.16	67.61 LT	127.33	117.04	10.29
56+20.00	13+99.88	69.51 LT	126.32	117.47	8.85
56+40.00	14+18.54	71.09 LT	125.39	117.78	7.61
56+60.00	14+37.15	72.29 LT	124.56	117.80	6.76
56+77.54	14+53.43	73.04 LT	123.92	117.74	6.18
57+00.00	14+74.25	73.58 LT	123.20	117.71	5.49
57+20.00	14+92.78	73.66 LT	120.48	117.82	2.66
57+50.00	15+20.58	73.10 LT	117.93	117.93	0.00

TOTAL BILL OF MATERIAL	
TWO STAGE MECHANICALLY STABILIZED EARTH RETAINING WALLS	7350 SQUARE FOOT

PROJECT NO.: 34964.1.1 (U-3621B)
NASH COUNTY
STATION: VARIES
SHEET 3 OF 4

PREPARED BY: SHIHAI ZHANG DATE: 1/2011
REVIEWED BY: JINYOUNG PARK DATE: 1/2011

GEOTECHNICAL ENGINEERING UNIT

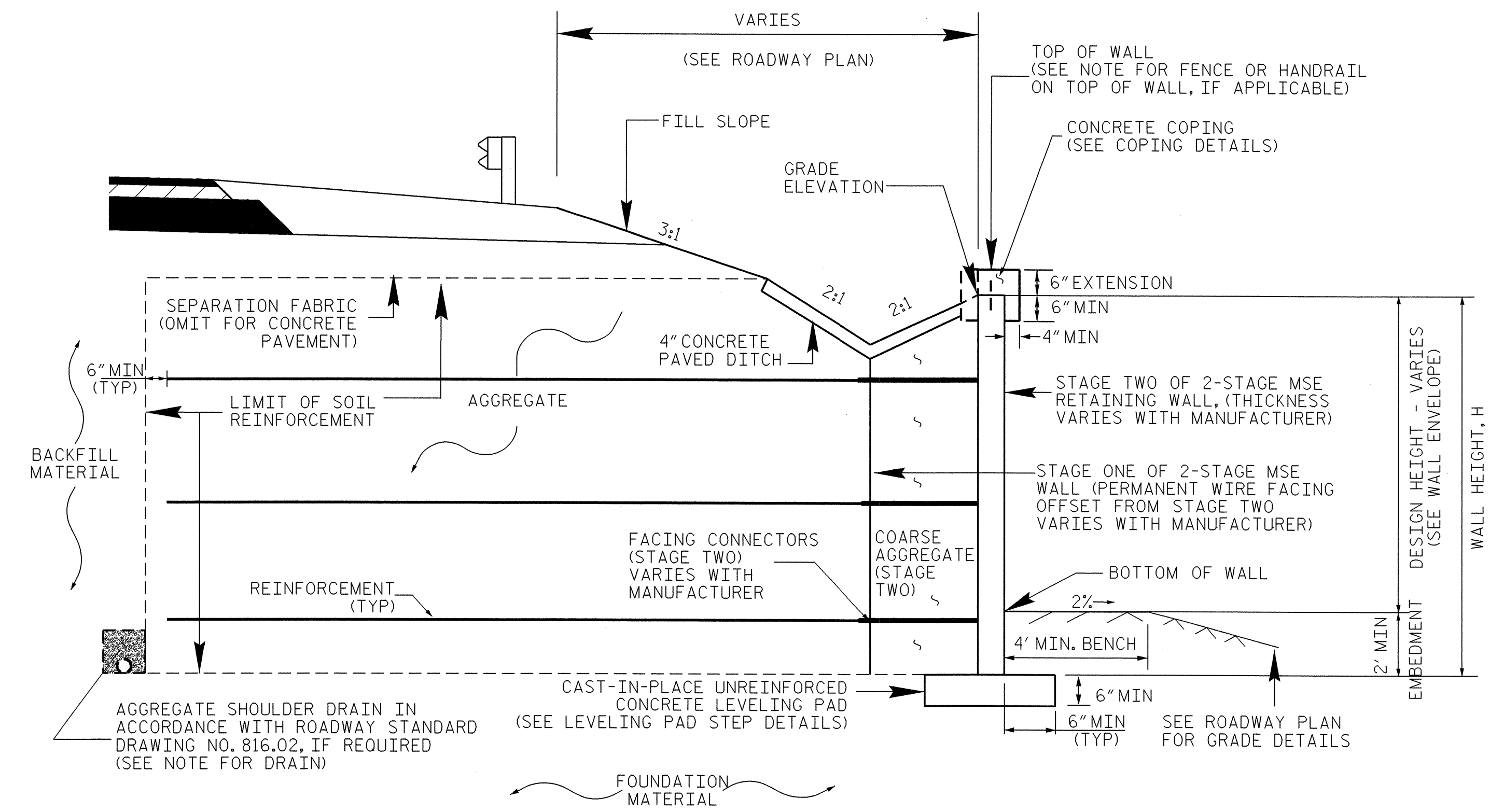
EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE
 CONTRACT OFFICE

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

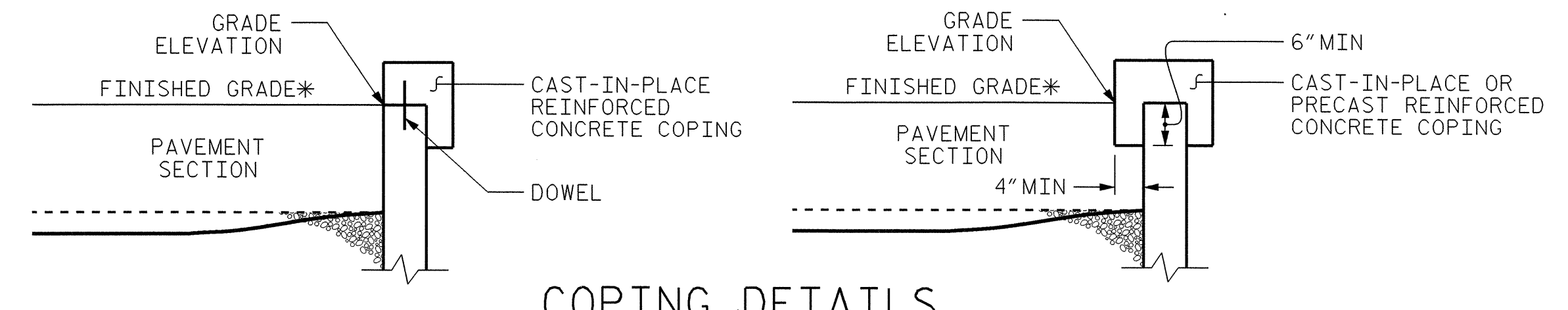
**MSE RETAINING WALL NO. 2
(TWO STAGE)
PLAN AND ELEVATION**

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

SHEET NO. N-3
TOTAL SHEETS 4

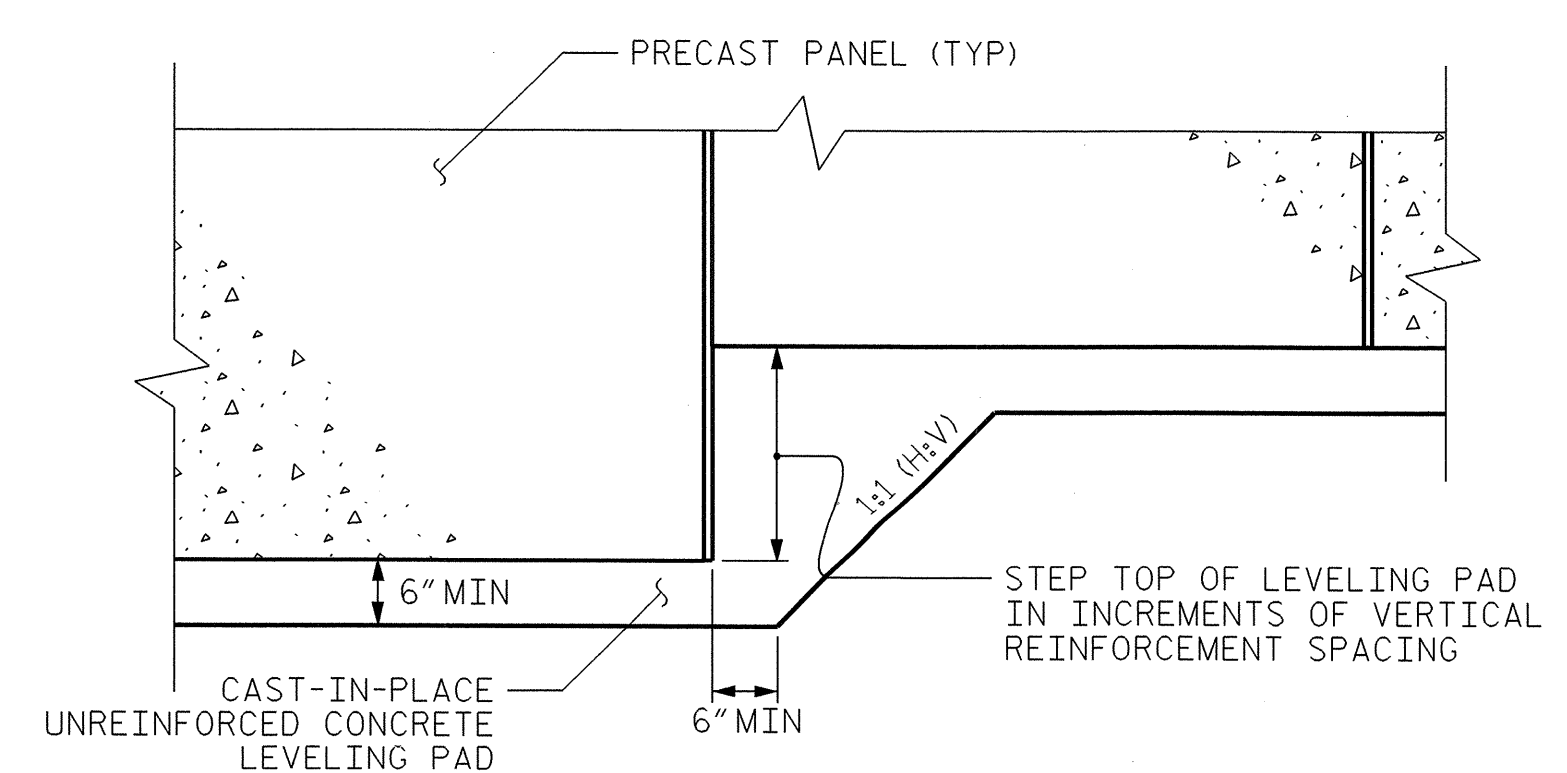


MSE WALL NO. 2 - TYPICAL SECTION (NTS)



COPING DETAILS

AT THE CONTRACTOR'S OPTION, CONNECT COPING TO PANELS WITH DOWELS OR EXTEND COPING DOWN BACK OF PANELS. *SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.



LEVELING PAD STEP DETAILS

NOTES:

- FOR MECHANICALLY STABILIZED EARTH (MSE) RETAINING WALL NO. 2, SEE TWO STAGE MSE RETAINING WALLS SPECIAL PROVISION.
- CONSTRUCT ALL PORTIONS OF WALL NO. 2 AS A TWO STAGE MSE WALL. SEE TWO STAGE MSE WALL CONSTRUCTION SEQUENCE.
- STAGE ONE OF TWO STAGE MSE WALL CONSISTS OF CONSTRUCTING A PERMANENT FLEXIBLE WIRE FACED MSE WALL TO 6 IN. HIGHER THAN THE GRADE ELEVATIONS SHOWN ON THE PLANS TO ACCOMMODATE SETTLEMENT.
- STAGE TWO OF TWO STAGE MSE WALL CONSISTS OF ADJUSTING THE WALL ELEVATIONS TO THE FINAL GRADE ELEVATIONS SHOWN ON THE PLANS AND PLACING A PRECAST CONCRETE FACE TO THE STAGE ONE WALL AFTER THE WAITING PERIOD HAS BEEN OBSERVED.
- PRECAST PANELS FOR STAGE TWO MUST BE RECTANGULAR WITH MAXIMUM DIMENSIONS OF 5 FEET VERTICAL BY 10 FEET HORIZONTAL WITH A MINIMUM THICKNESS OF 5.5 IN. FILL ANY GAP BETWEEN STAGE ONE WIRE FACING AND STAGE TWO PRECAST PANELS WITH NO. 57, 67, OR 78M WASHED STONE.
- DESIGN AND CONSTRUCT STAGE ONE AS A FLEXIBLE WIRE FACED MSE WALL WITH A MINIMUM DESIGN LIFE OF 75 YEARS.
- ADJUSTING WALL ELEVATIONS TO THE FINAL GRADE ELEVATIONS SHOWN ON THE PLANS FOLLOWING THE WAITING PERIOD IS INCIDENTAL TO THE COST OF WALL NO. 2.
- OBSERVE THE FOLLOWING WAITING PERIOD: AFTER CONSTRUCTION OF STAGE ONE OF WALL NO. 2 AND ROADWAY EMBANKMENT, OBSERVE A 2 MONTH WAITING PERIOD, OR AS DIRECTED BY THE ENGINEER.
- A DRAIN IS REQUIRED FOR RETAINING WALL NO. 2.
- BEFORE BEGINNING MSE WALL DESIGN FOR RETAINING WALL NO. 2, SURVEY ALL EXISTING GROUND ELEVATIONS SHOWN ON THE PLANS AND SUBMIT A REVISED WALL ENVELOPE FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THIS ENVELOPE IS ACCEPTED.
- CONSTRUCT WALL FACING WITH VERTICAL SLIP JOINTS (INCLUDING AT WING WALL LOCATION).
- CAST-IN-PLACE CONCRETE COPING IS REQUIRED FOR RETAINING WALL NO. 2. THE COPING JOINTS SHOULD ALIGN WITH THE WALL SLIP JOINTS.
- DESIGN RETAINING WALL NO. 2 FOR A WALL HEIGHT EQUAL TO THE DESIGN HEIGHT (DIFFERENCE BETWEEN GRADE ELEVATION AND BOTTOM OF WALL ELEVATION) PLUS EMBEDMENT (DIFFERENCE BETWEEN BOTTOM OF WALL ELEVATION AND TOP OF LEVELING PAD ELEVATION).
- DESIGN RETAINING WALL NO. 2 FOR THE FOLLOWING:
 - 1) MINIMUM DESIGN LIFE = 75 YEARS
 - 2) MINIMUM REINFORCEMENT LENGTH TO HEIGHT (H) RATIO = 1.0
 - 3) AGGREGATE PARAMETERS:

STANDARD SIZE NO. (IN ACCORDANCE WITH SECTION 1005 OF THE STANDARD SPECIFICATIONS)	UNIT WEIGHT (γ) PCF	FRICTION ANGLE (φ) DEGREES	COHESION (c) PSF
1S, 2S, 2MS AND 4S (FINE AGGREGATE)	125	34	0
5, 57, 57M, 6M, 67 AND 78M (COARSE AGGREGATE)	110	38	0

4) IN-SITU ASSUMED MATERIAL PARAMETERS:

MATERIAL TYPE	UNIT WEIGHT (γ) PCF	FRICTION ANGLE (φ) DEGREES	COHESION (c) PSF
BACKFILL	120	30	0
FOUNDATION	120	27	0

- DESIGN ALL METALLIC COMPONENTS OF THE TWO STAGE MSE WALL TO HAVE A MINIMUM DESIGN LIFE OF 75 YEARS.
- DESIGN RETAINING WALL NO. 2 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.
- EXISTING OR FUTURE STRUCTURES SUCH AS FOUNDATIONS, GUARDRAIL POSTS, PAVEMENTS, PIPES, INLETS OR UTILITIES MAY INTERFERE WITH REINFORCEMENT FOR RETAINING WALL NO. 2.
- FOR GUARDRAIL, SEE ROADWAY PLANS AND SECTION 862 OF THE STANDARD SPECIFICATIONS.
- FOR GROUND IMPROVEMENT DETAIL, SEE GROUND IMPROVEMENT FOR WALL NO. 2 AND ROADWAY PLAN SHEET.
- FOR SETTLEMENT GAUGES, SEE EMBANKMENT MONITORING FOR WALL NO. 2 AND ROADWAY PLAN SHEET.
- DO NOT PLACE LEVELING PAD CONCRETE, WALL BACKFILL OR FIRST REINFORCEMENT LAYER FOR RETAINING WALL NO. 2 UNTIL OBTAINING APPROVAL OF THE EXCAVATION DEPTH AND FOUNDATION MATERIAL.
- WALL EXCAVATION IS INCIDENTAL TO THE TWO STAGE MSE RETAINING WALL NO. 2 PAYMENT. UNDERCUT BEYOND THE LIMITS OF WALL EXCAVATION ARE REQUIRED BETWEEN STA. 54+40± AND 55+40±. THE UNDERCUT WILL BE MEASURED BY THE ENGINEER AND BE PAID AS ROADWAY UNDERCUT EXCAVATION. BACKFILL WILL BE PAID AS SELECT GRANULAR MATERIAL, CLASS III.
- A MINIMUM WALL EMBEDMENT OF 2 FEET BELOW THE BOTTOM OF WALL IS REQUIRED.
- DO NOT DRIVE THE END BENT NO. 2 PILES AT THE BRIDGE (LEFT LANE) UNTIL AFTER THE WAITING PERIOD HAS BEEN OBSERVED.

CONSTRUCTION SEQUENCE FOR WALL NO. 2

- PERFORM WALL EXCAVATION. THE ENGINEER WILL DETERMINE THE UNDERCUT LIMITS.
- INSTALL SEPARATION FABRIC, DRAINAGE LAYER, AND WICK DRAINS UNDER THE FOOTPRINT OF MSE WALL NO. 2 AND NEW EMBANKMENT. FOR GROUND IMPROVEMENT DETAIL, SEE GROUND IMPROVEMENT FOR WALL NO. 2 AND ROADWAY PLAN SHEET.
- INSTALL SETTLEMENT GAUGES. FOR LOCATIONS, SEE EMBANKMENT MONITORING FOR WALL NO. 2 AND ROADWAY PLAN SHEET.
- CONSTRUCT STAGE ONE OF MSE WALL NO. 2. INSTALL HIGH STRENGTH FABRIC PRIOR TO COMPLETION OF STAGE ONE. FOR DETAILS, SEE GROUND IMPROVEMENT FOR WALL NO. 2 AND ROADWAY PLAN SHEET.
- COMPLETE STAGE ONE OF MSE WALL NO. 2 AND ROADWAY EMBANKMENT.
- OBSERVE A 2 MONTH WAITING PERIOD OR AS DETERMINED BY THE ENGINEER.
- COMPLETE STAGE TWO OF MSE WALL NO. 2 BY ADJUSTING WALL ELEVATIONS TO FINAL GRADES SHOWN ON THE PLANS AND PLACING PRECAST CONCRETE PANELS AND COARSE AGGREGATE FILL.

PROJECT NO.: 34964.1.1 (U-3621B)
NASH COUNTY
STATION: VARIES
 SHEET 4 OF 4

PREPARED BY: SHIHAI ZHANG DATE: 1/2011
 REVIEWED BY: JINYOUNG PARK DATE: 1/2011

GEOTECHNICAL ENGINEERING UNIT
 EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE
 CONTRACT OFFICE
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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

MSE RETAINING WALL NO. 2 (TWO STAGE) NOTES AND DETAILS

