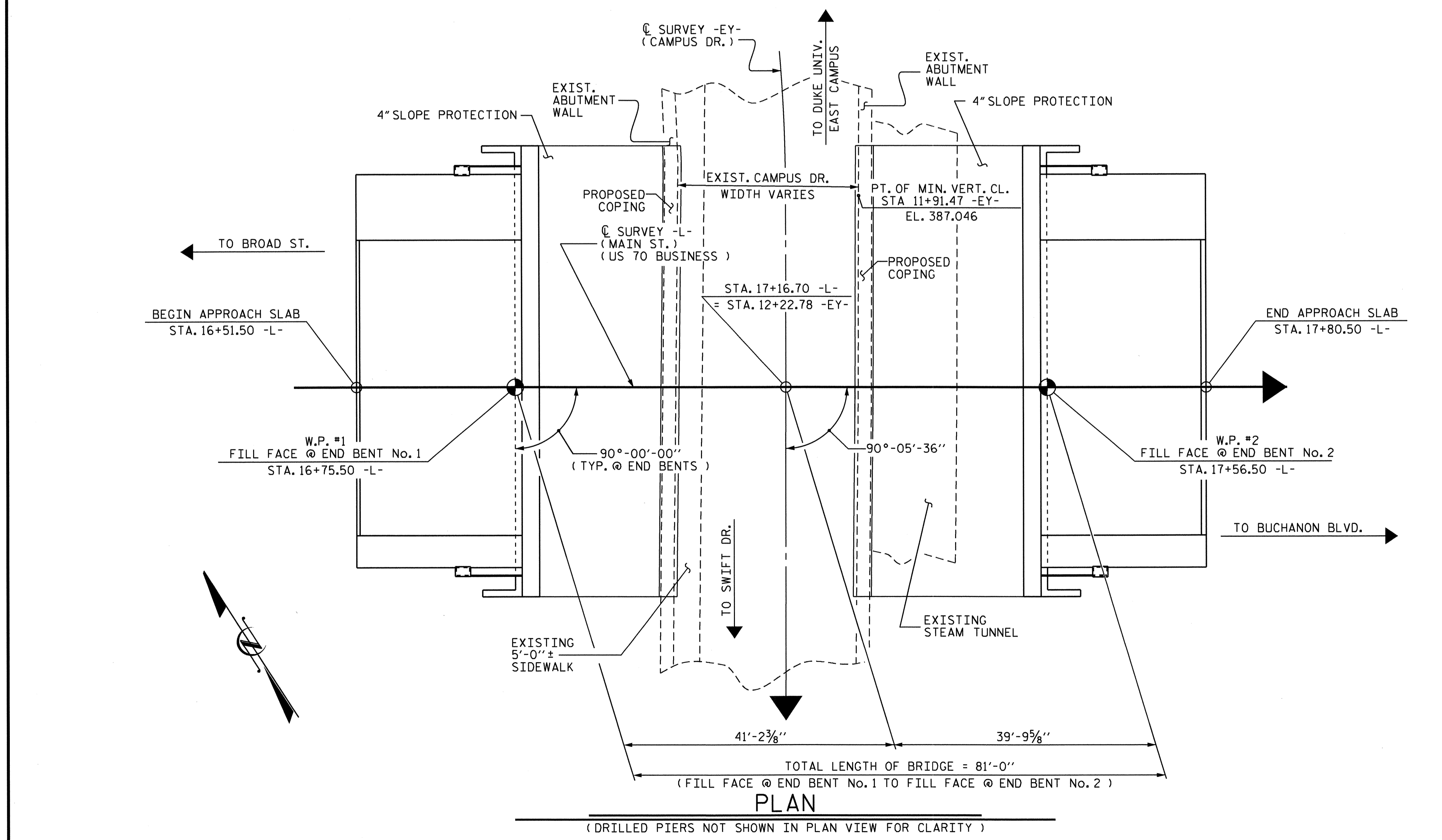


SECTION ALONG C SURVEY -L-



NOTES :

- ASSUMED LIVE LOAD = HL 93 OR ALTERNATE LOADING.
- THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
- THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.
- FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
- ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 50W AND PAINTED IN ACCORDANCE WITH SYSTEM 4 OF ARTICLE 442-8 OF THE STANDARD SPECIFICATIONS UNLESS OTHERWISE NOTED ON THE PLANS.
- REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
- THE EXISTING STRUCTURE CONSISTS OF :
 - ONE SPAN @ 30'-7" OF REINFORCED CONCRETE DECK GIRDERS
 - CLEAR ROADWAY WIDTH OF 40'-2"
 - 4" ASPHALT WEARING SURFACE
 - ON CONCRETE BREAST WALL ABUTMENTS
- THE EXISTING STRUCTURE IS LOCATED AT THE SITE OF THE PROPOSED STRUCTURE. THE SUPERSTRUCTURE OF THE EXISTING BRIDGE 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.
- THE PORTION OF THE EXISTING ABUTMENT WALLS ABOVE THE CONSTRUCTION JOINT LOCATED IMMEDIATELY BELOW THE GIRDERS SHALL BE REMOVED. A CONCRETE COPING SHALL BE PLACED ABOVE THE CUT LINE. PLANS FOR THE COPING SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
- FOR MAINTENANCE AND PROTECTION OF TRAFFIC BENEATH PROPOSED STRUCTURE, SEE SPECIAL PROVISIONS.
- THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 37 FT. LEFT OF CENTERLINE ROADWAY AND 32 FT. RIGHT OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.
- THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.
- THE CLASS AA CONCRETE IN THE BRIDGE DECK SHALL CONTAIN FLY ASH OR GROUND GRANULATED BLAST FURNACE SLAG AT THE SUBSTITUTION RATE SPECIFIED IN ARTICLE 1024-1 AND IN ACCORDANCE WITH ARTICLES 1024-5 AND 1024-6 OF THE STANDARD SPECIFICATIONS. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE COST OF THE REINFORCED CONCRETE DECK SLAB.
- THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE BARS FROM WHICH THE SAMPLES ARE TAKEN MUST THEN BE SPICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE, PLUS A MINIMUM LAP SPLICE OF THIRTY BAR DIAMETERS. PAYMENT FOR THE SAMPLES OF REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.
- NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- FOR VIBRATION MONITORING, SEE SPECIAL PROVISIONS UNDER SEPERATE COVER.
- CONSTRUCTION JOINTS IN DRILLED PIERS ARE NOT ALLOWED.
- FOR ADDITIONAL NOTES, SEE SHEET 2 OF 2.

PROJECT NO. B-3638
 DURHAM COUNTY
 STATION: 17+16.70 -L-
 SHEET 1 OF 2 REPLACES BRIDGE #316



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 BRIDGE ON
 US 70 BUSINESS (MAIN ST.)
 OVER CAMPUS DRIVE BETWEEN
 BROAD ST. AND BUCHANAN BLVD.

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

DRAWN BY : MIKE BRITT DATE : 4-27-11
 CHECKED BY : D.G. ELY DATE : 4-28-11

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	3'-0" Ø DRILLED PIERS IN SOIL	3'-0" Ø DRILLED PIERS NOT IN SOIL	SID INSPECTION	SPT TESTING	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	STRUCTURAL STEEL	TWO BAR METAL RAIL	1'-2" x 3'-4 3/4" CONCRETE PARAPET	1'-2" x 3'-2 1/2" CONCRETE PARAPET	4" SLOPE PROTECTION	ELASTOMERIC BEARINGS	FOAM JOINT SEALS
	LUMP SUM	LIN. FT.	LIN. FT.	EACH	EACH	EACH	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	LBS.	APPROX. LBS.	LIN. FT.	LIN. FT.	LIN. FT.	SQ. YD.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE								4,934	5,250					143,734	190.0	100.8	100.8			
END BENT No. 1		70.9	14.0							45.2		11,990	1,546					145		
END BENT No. 2		74.8	15.0							45.2		12,231	1,628					175		
TOTAL	LUMP SUM	145.7	29.0	1	4	1	LUMP SUM	4,934	5,250	90.4	LUMP SUM	24,221	3,174	143,734	190.0	100.8	100.8	320	LUMP SUM	LUMP SUM

NOTES : (CONTINUED FROM SHEET 1 OF 2)

FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

DRILLED PIERS AT END BENT No. 1 AND END BENT No. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 320 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 80 TSF AT END BENT No. 1 AND END BENT No. 2.

INSTALL DRILLED PIERS AT END BENT No. 1 THAT EXTEND TO AN ELEVATION NO HIGHER THAN 373.0 FT. (LT.) AND 377.0 FT. (RT.) AND SATISFY THE REQUIRED TIP RESISTANCE.

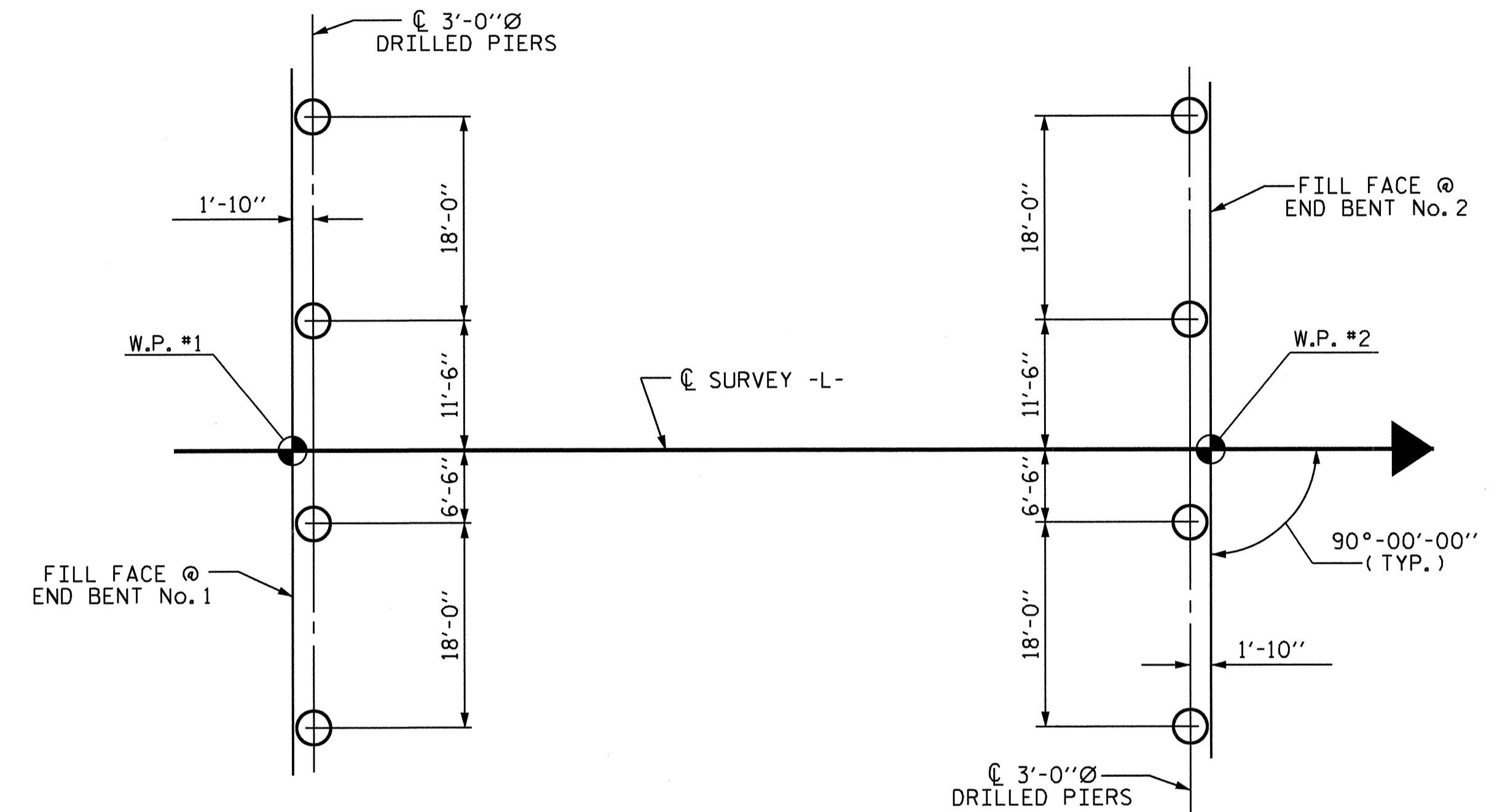
INSTALL DRILLED PIERS AT END BENT No. 2 THAT EXTEND TO AN ELEVATION NO HIGHER THAN 377.0 FT. (LT.) AND 371.0 FT. (RT.) AND SATISFY THE REQUIRED TIP RESISTANCE.

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

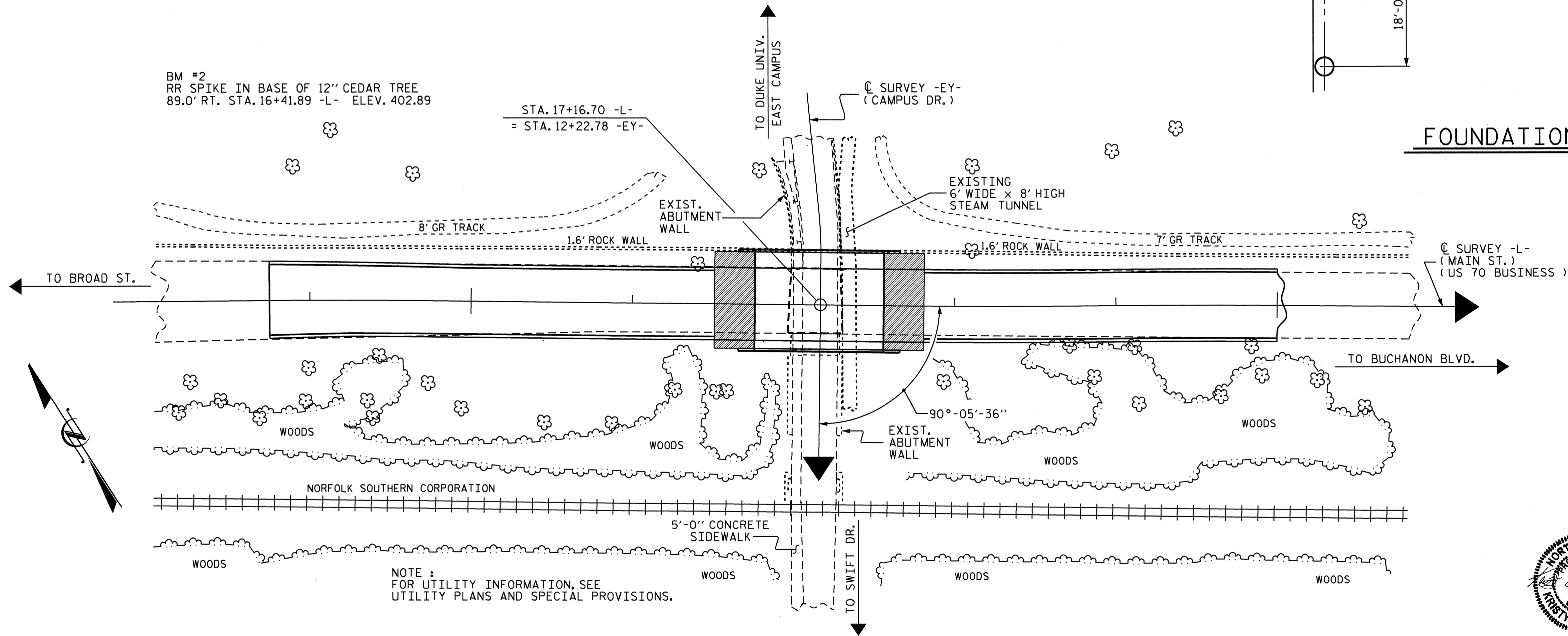
SID INSPECTIONS MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR SID INSPECTIONS. FOR SID INSPECTIONS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

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

CRANES SHALL NOT BE ALLOWED WITHIN THE RAILROAD RIGHT OF WAY.



FOUNDATION LAYOUT



LOCATION SKETCH

PROJECT NO. B-3638
DURHAM COUNTY
 STATION: 17+16.70 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING

BRIDGE ON
 US 70 BUSINESS (MAIN ST.)
 OVER CAMPUS DRIVE BETWEEN
 BROAD ST. AND BUCHANON BLVD.



DRAWN BY : MIKE BRITT DATE : 4-26-11
 CHECKED BY : D.G. ELY DATE : 4-28-11

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

LOAD FACTORS:

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

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	1.59	--	1.75	0.654	1.59	A	EL	38.500	0.832	2.10	A	I	0.000	1.30	0.654	1.76	A	EL	38.500		
	HL-93 (OPERATING)	N/A	--	2.06	--	1.35	0.654	2.06	A	EL	38.500	0.832	2.72	A	I	0.000	1.00	0.654	2.29	A	EL	38.500		
	HS-20 (INVENTORY)	36.00	②	2.10	75.60	1.75	0.654	2.10	A	EL	38.500	0.832	2.72	A	I	0.000	1.30	0.654	2.33	A	EL	38.500		
	HS-20 (OPERATING)	36.00	--	2.73	98.28	1.35	0.654	2.73	A	EL	38.500	0.832	3.52	A	I	0.000	1.00	0.654	3.03	A	EL	38.500		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500	--	5.31	71.69	1.40	0.654	5.99	A	EL	38.500	0.832	8.24	A	I	0.000	1.30	0.654	5.31	A	EL	38.500	
		SNGARBS2	20.000	--	3.93	78.60	1.40	0.654	4.45	A	EL	38.500	0.832	5.81	A	I	0.000	1.30	0.654	3.93	A	EL	38.500	
		SNAGRIS2	22.000	--	3.72	81.84	1.40	0.654	4.20	A	EL	38.500	0.832	5.37	A	I	0.000	1.30	0.654	3.72	A	EL	38.500	
		SNCOTTS3	27.250	--	2.64	71.94	1.40	0.654	2.98	A	EL	38.500	0.832	4.11	A	I	0.000	1.30	0.654	2.64	A	EL	38.500	
		SNAGGRS4	34.925	--	2.20	76.84	1.40	0.654	2.48	A	EL	38.500	0.832	3.37	A	I	0.000	1.30	0.654	2.20	A	EL	38.500	
		SNS5A	35.550	--	2.15	76.43	1.40	0.654	2.43	A	EL	38.500	0.832	3.40	A	I	0.000	1.30	0.654	2.15	A	EL	38.500	
		SNS6A	39.950	--	1.97	78.70	1.40	0.654	2.22	A	EL	38.500	0.832	3.09	A	I	0.000	1.30	0.654	1.97	A	EL	38.500	
		SNS7B	42.000	--	1.88	78.96	1.40	0.654	2.12	A	EL	38.500	0.832	3.02	A	I	0.000	1.30	0.654	1.88	A	EL	38.500	
	TRUCK TRACTOR SEMI-TRAILER (TTS)	TNAGRIT3	33.000	--	2.40	79.20	1.40	0.654	2.71	A	EL	38.500	0.832	3.69	A	I	0.000	1.30	0.654	2.40	A	EL	38.500	
		TNT4A	33.075	--	2.41	79.71	1.40	0.654	2.72	A	EL	38.500	0.832	3.61	A	I	0.000	1.30	0.654	2.41	A	EL	38.500	
		TNT6A	41.600	--	1.97	81.95	1.40	0.654	2.22	A	EL	38.500	0.832	3.18	A	I	0.000	1.30	0.654	1.97	A	EL	38.500	
		TNT7A	42.000	--	1.97	82.74	1.40	0.654	2.23	A	EL	38.500	0.832	3.13	A	I	0.000	1.30	0.654	1.97	A	EL	38.500	
		TNT7B	42.000	--	2.04	85.68	1.40	0.654	2.30	A	EL	38.500	0.832	2.96	A	I	0.000	1.30	0.654	2.04	A	EL	38.500	
		TNAGRIT4	43.000	--	1.94	83.42	1.40	0.654	2.19	A	EL	38.500	0.832	2.87	A	I	0.000	1.30	0.654	1.94	A	EL	38.500	
TNACT5A	45.000	--	1.83	82.35	1.40	0.654	2.07	A	EL	38.500	0.832	2.83	A	I	0.000	1.30	0.654	1.83	A	EL	38.500			
TNACT5B	45.000	③	1.81	81.45	1.40	0.654	2.04	A	EL	38.500	0.832	2.73	A	I	0.000	1.30	0.654	1.81	A	EL	38.500			
FATIGUE	HL-93 (INVENTORY)	$\gamma_{LL}=0.75$	--	--																				

NOTES:

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

CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93) **

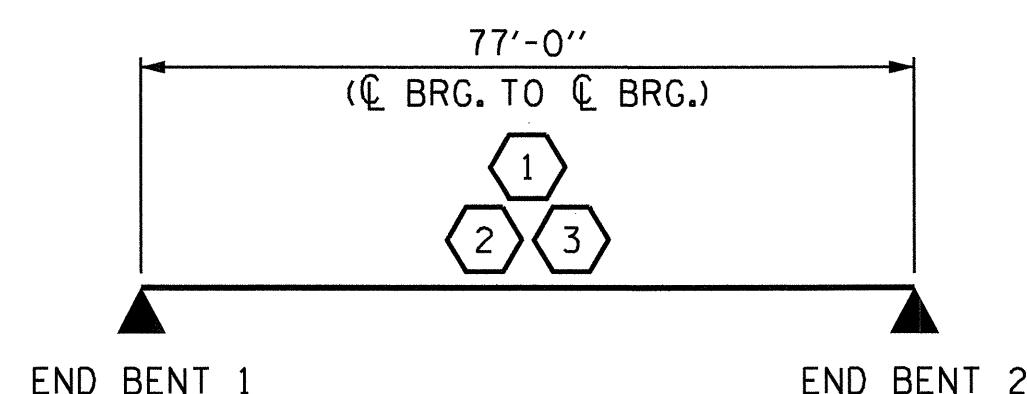
② DESIGN LOAD RATING (HS-20) **

③ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



LRFR SUMMARY

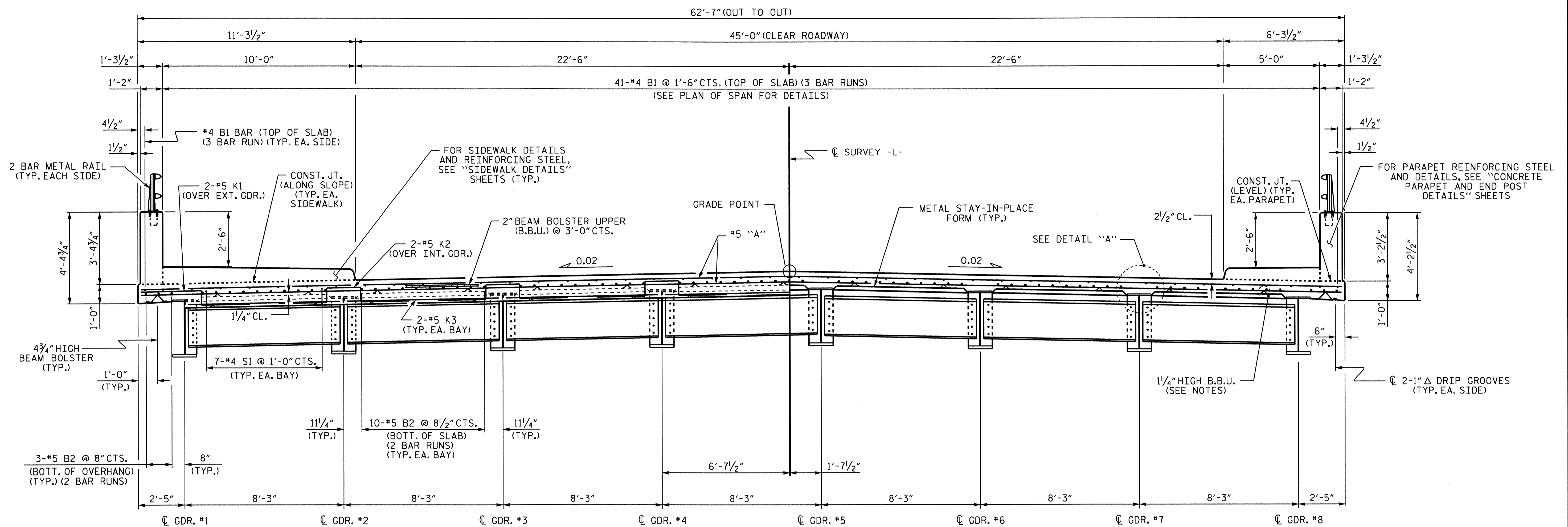
PROJECT NO. B-3638
DURHAM COUNTY
STATION: 17+16.70 -L-



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

ASSEMBLED BY : T. M. GARRISON DATE : 6/18/10
CHECKED BY : A. C. OUTLAW DATE : 11/29/11
DRAWN BY : MAA I/OB REV. 11/12/08RR MAA/GM
CHECKED BY : GM/DI 2/08

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



PART TYPICAL SECTION
(SHOWING END BENT DIAPHRAGMS)

PART TYPICAL SECTION
(SHOWING INTERMEDIATE DIAPHRAGMS)

NOTES

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

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

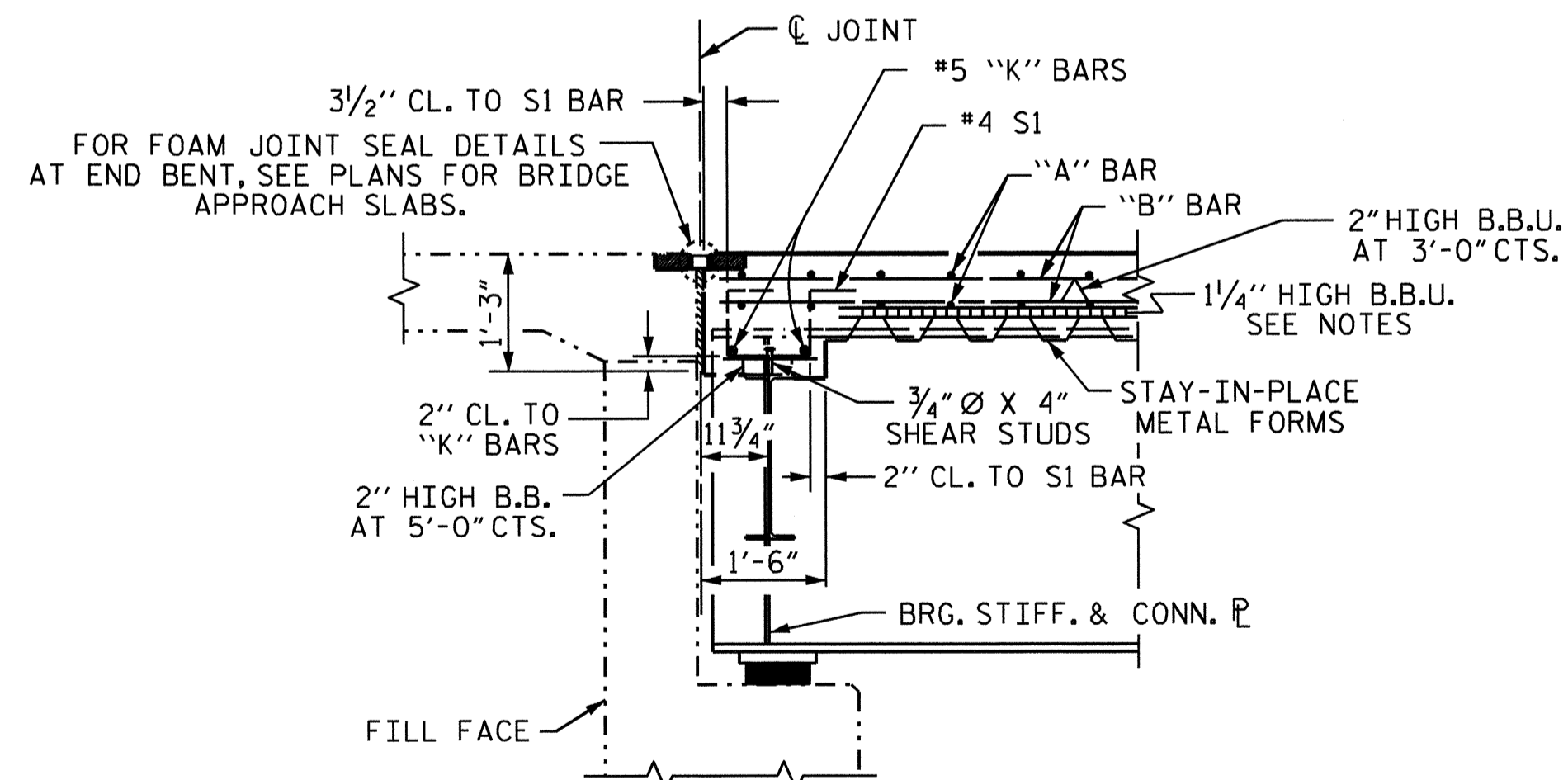
THE CONTRACTOR MAY, WHEN NECESSARY, PROPOSE A SCHEME FOR AVOIDING INTERFERENCE BETWEEN METAL STAY-IN-PLACE FORM SUPPORTS OR FORMS AND GIRDER STIFFENERS OR CONNECTOR PLATES. THE PROPOSAL SHALL BE INDICATED, AS APPROPRIATE, ON EITHER THE STEEL WORKING DRAWINGS OR THE METAL STAY-IN-PLACE FORM WORKING DRAWINGS.

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

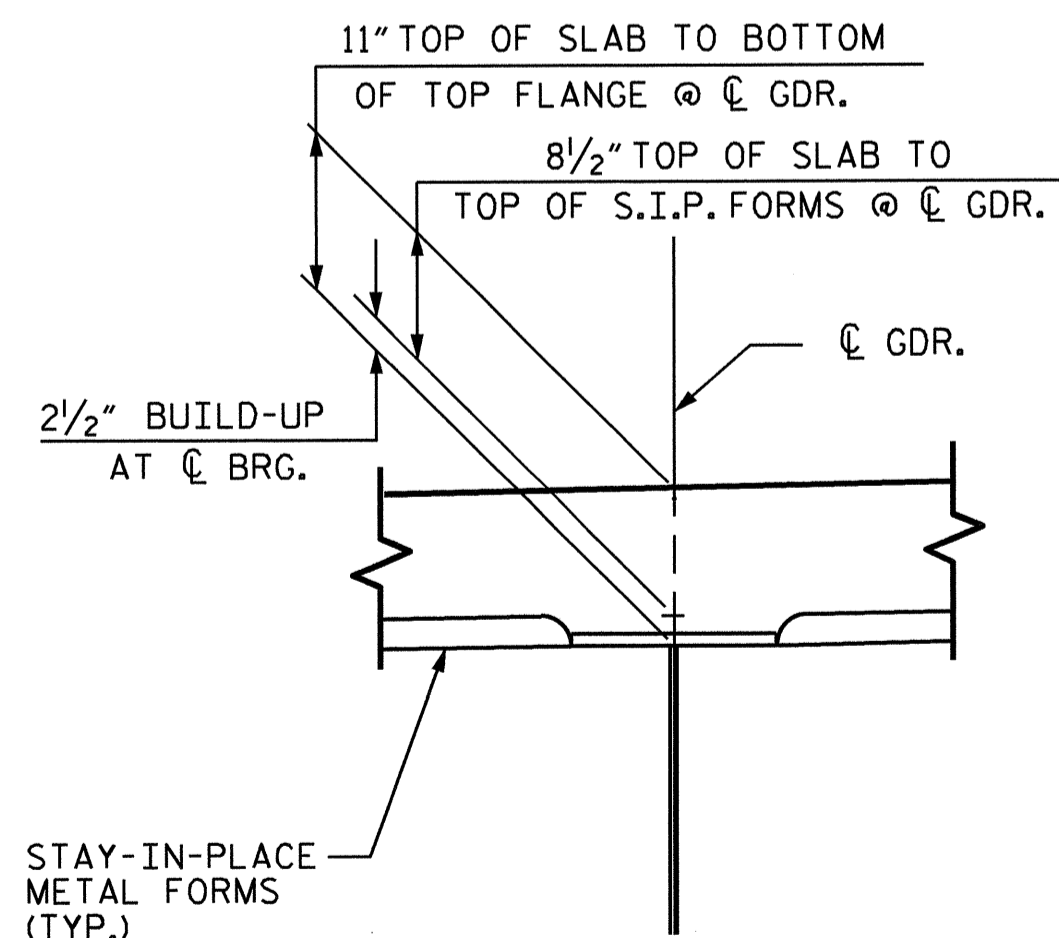
ALL REINFORCING STEEL IN PARAPETS AND SIDEWALKS SHALL BE EPOXY COATED.

THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE FOAM JOINT SEAL SHALL BE 2 1/2" AT THE END BENTS. FOR FOAM JOINT SEALS, SEE SPECIAL PROVISIONS.

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



SECTION THRU END BENT DIAPHRAGM



DETAIL "A"

PROJECT NO. B-3638
DURHAM COUNTY
 STATION: 17+16.70 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

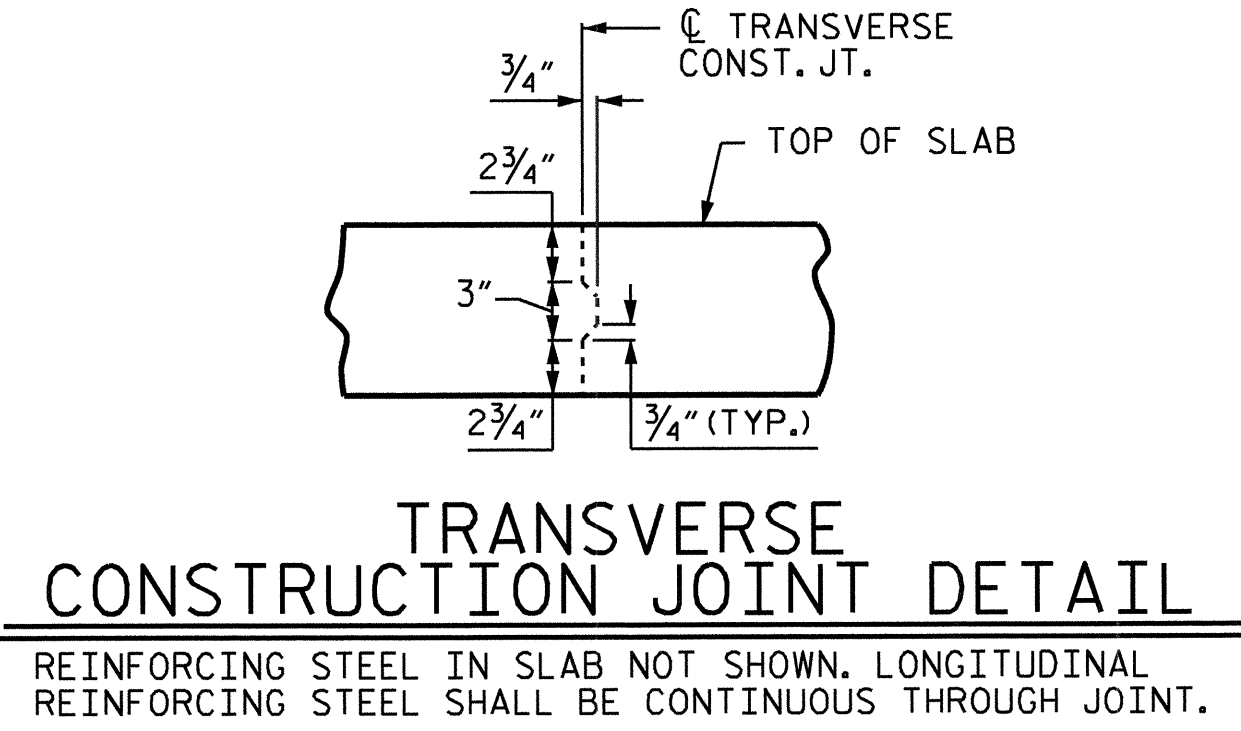
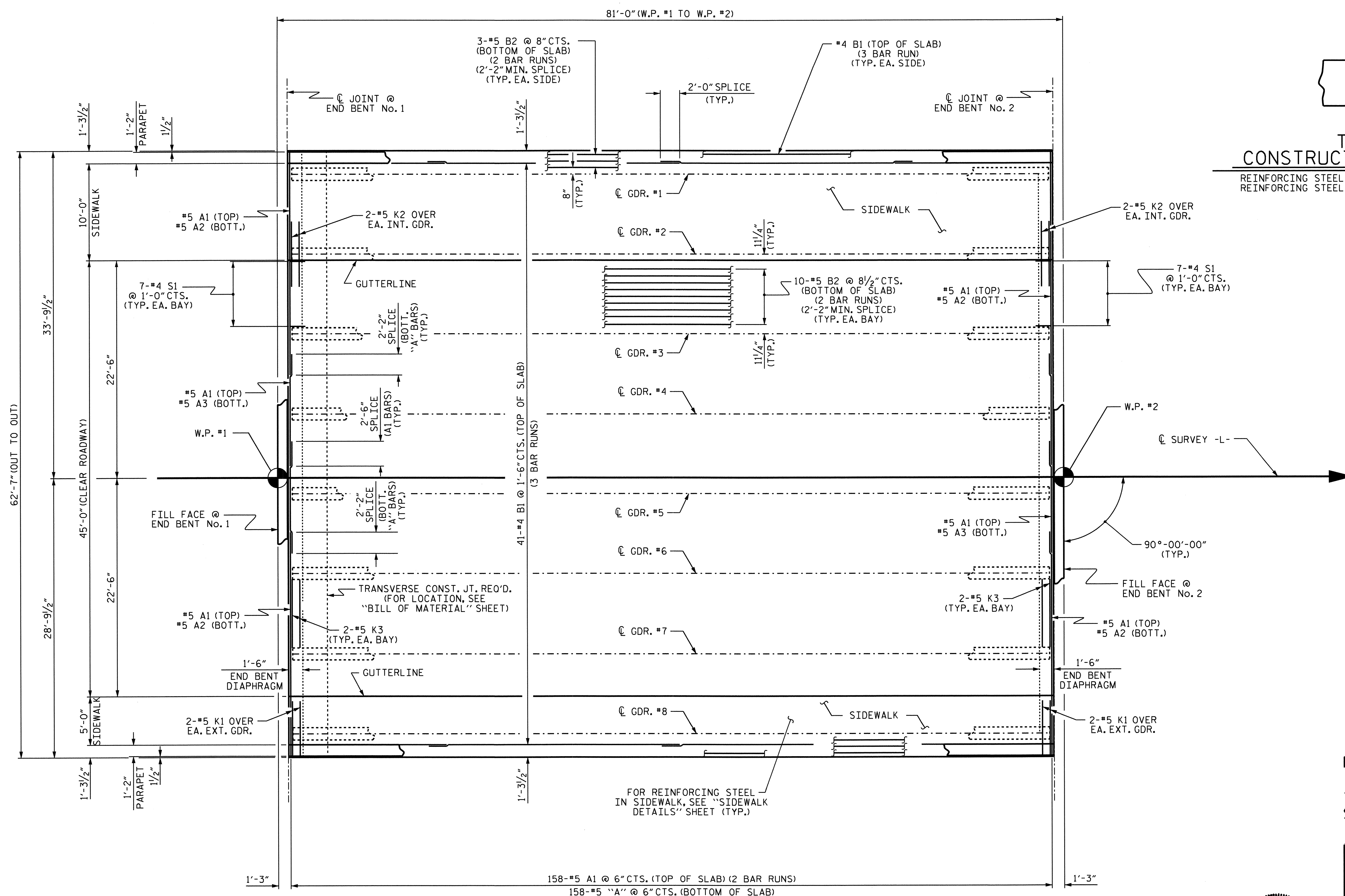
SUPERSTRUCTURE
 TYPICAL SECTION



DRAWN BY: D. G. ELY DATE: 12/2010
 CHECKED BY: M. K. TOM DATE: 01/2011

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 kaiford

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



PLAN OF SPAN

PROJECT NO. B-3638
DURHAM COUNTY
 STATION: 17+16.70 -L-



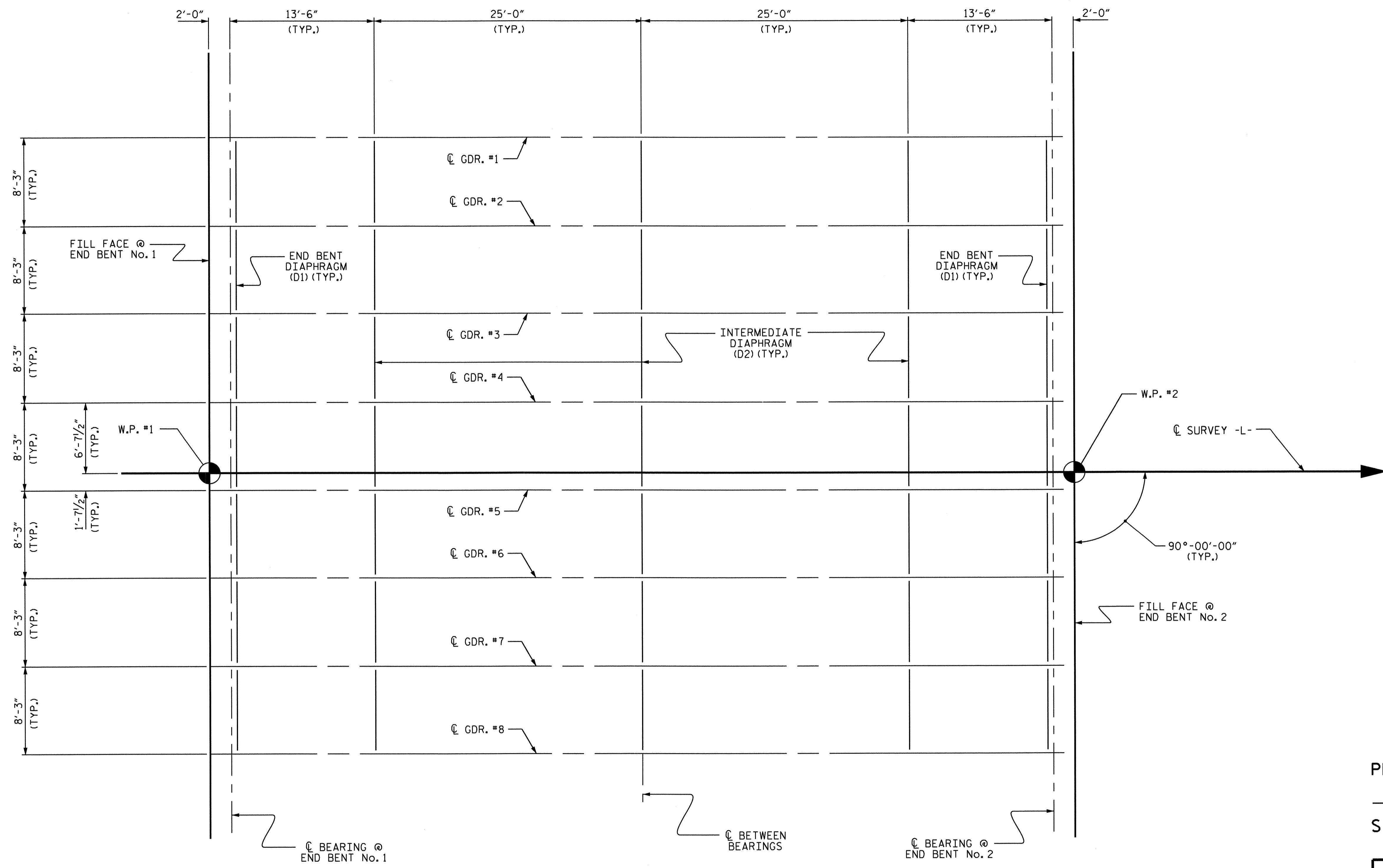
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 PLAN OF SPAN

DRAWN BY: D. G. ELY DATE: 12/2010
 CHECKED BY: M. K. TOM DATE: 01/2011

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REVISIONS						SHEET NO. S-5
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 29
2			4			



FIXED
P1, E1

EXP.
P2, E2

FRAMING PLAN

PROJECT NO. B-3638
DURHAM COUNTY
 STATION: 17+16.70 -L-

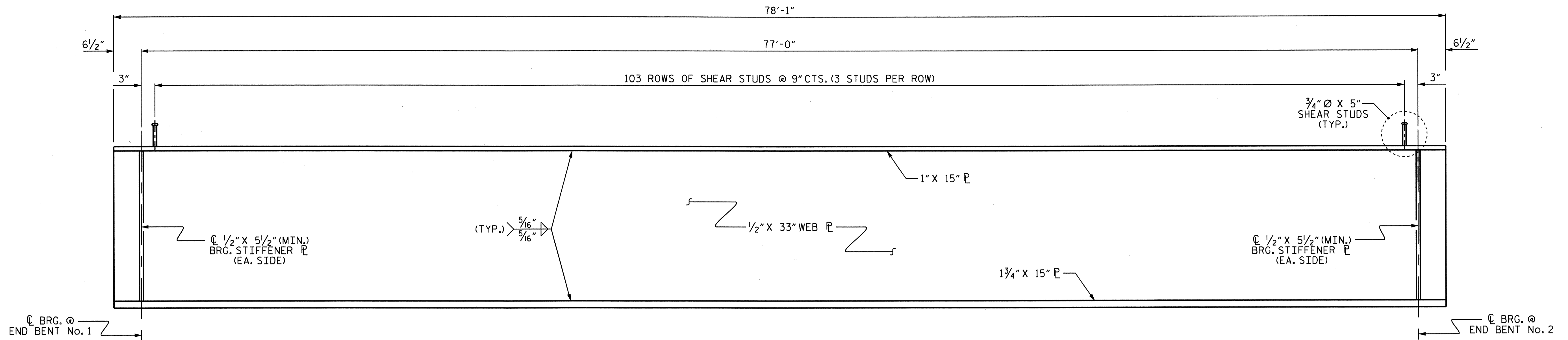


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 FRAMING PLAN

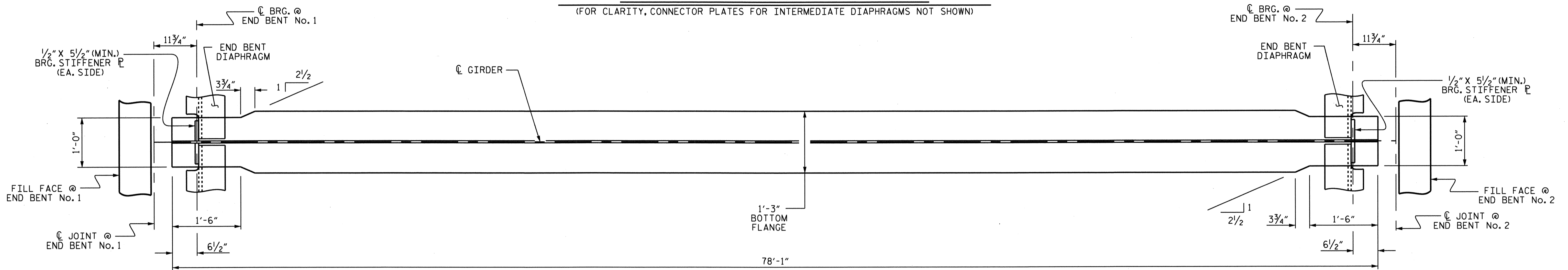
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			29

DRAWN BY : D. G. ELY DATE : 12/2010
 CHECKED BY : M. K. TOM DATE : 02/2011



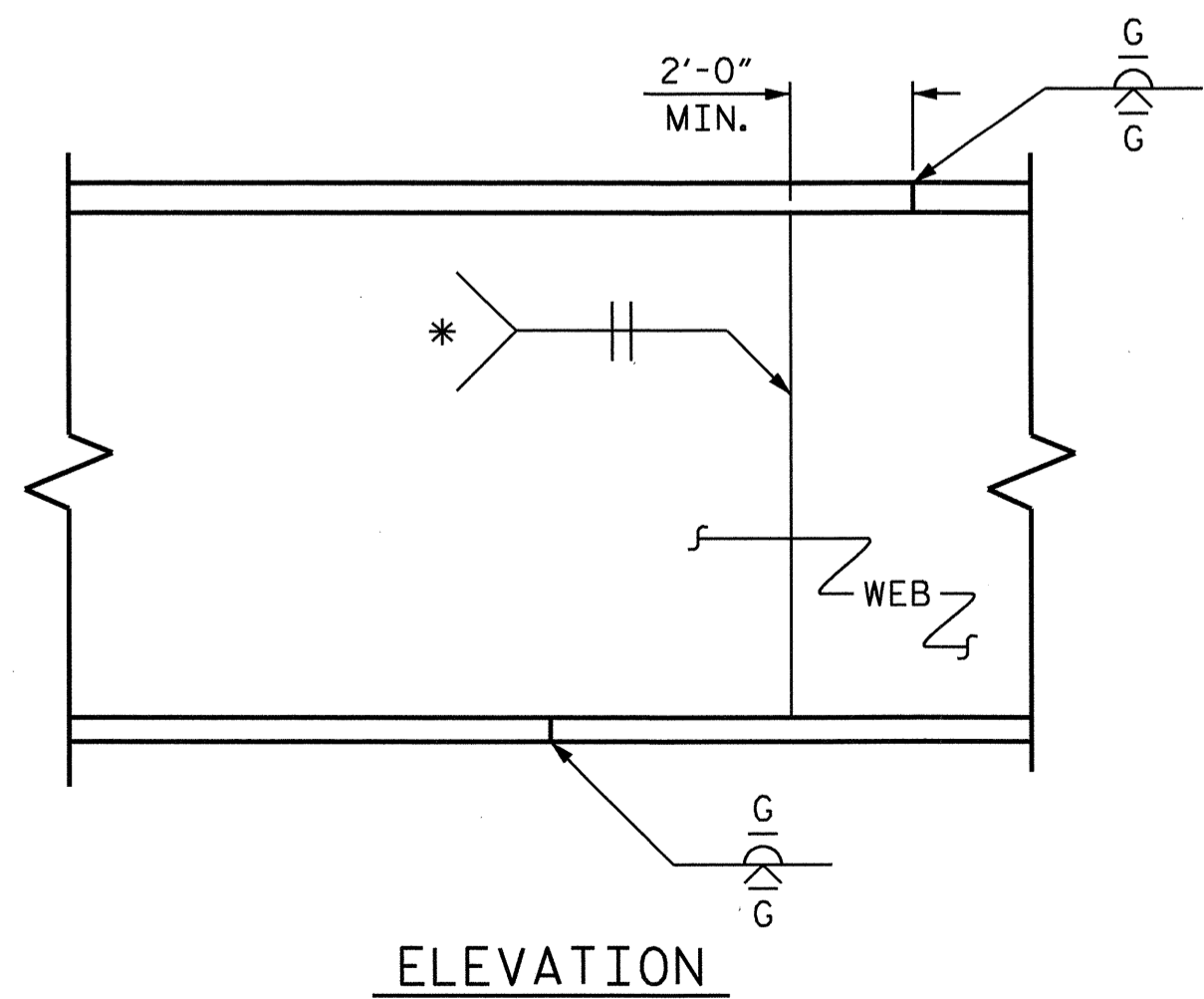
ELEVATION OF GIRDER

(FOR CLARITY, CONNECTOR PLATES FOR INTERMEDIATE DIAPHRAGMS NOT SHOWN)



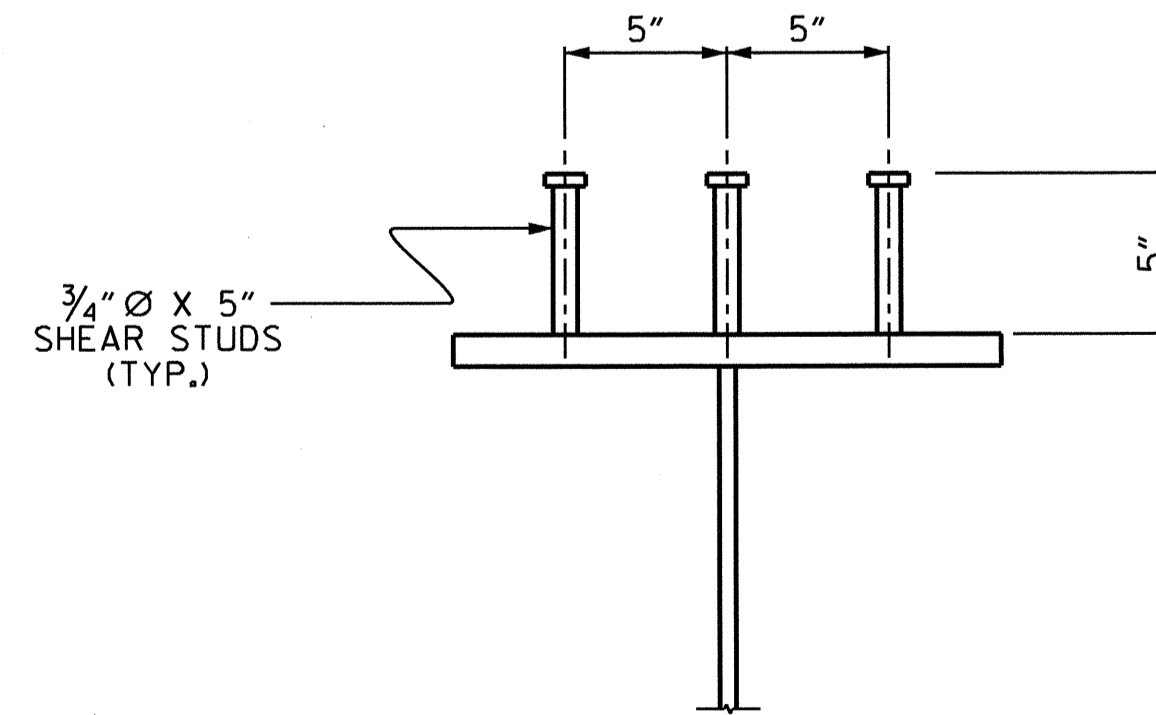
BOTTOM FLANGE DETAIL

(FOR CLARITY, CONNECTOR PLATES FOR INTERMEDIATE DIAPHRAGMS AND DRIP BEADS NOT SHOWN)



TYPICAL FLANGE AND WEB BUTT JOINT

* GRIND SMOOTH AND FLUSH ON OUTSIDE OF EXTERIOR GIRDERS



SHEAR STUD DETAILS

(TYPICAL EACH GIRDER)

PROJECT NO. B-3638
DURHAM COUNTY
 STATION: 17+16.70 -L-

SHEET 1 OF 2

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



DRAWN BY: D. G. ELY DATE: 12/2010
 CHECKED BY: M. K. TOM DATE: 01/2011

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			29

STRUCTURAL STEEL NOTES

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

ALL DIMENSIONS SHOWN ARE HORIZONTAL OR VERTICAL, UNLESS OTHERWISE NOTED. ALL FIELD CONNECTIONS TO BE 7/8" Ø HIGH STRENGTH BOLTS UNLESS OTHERWISE NOTED.

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

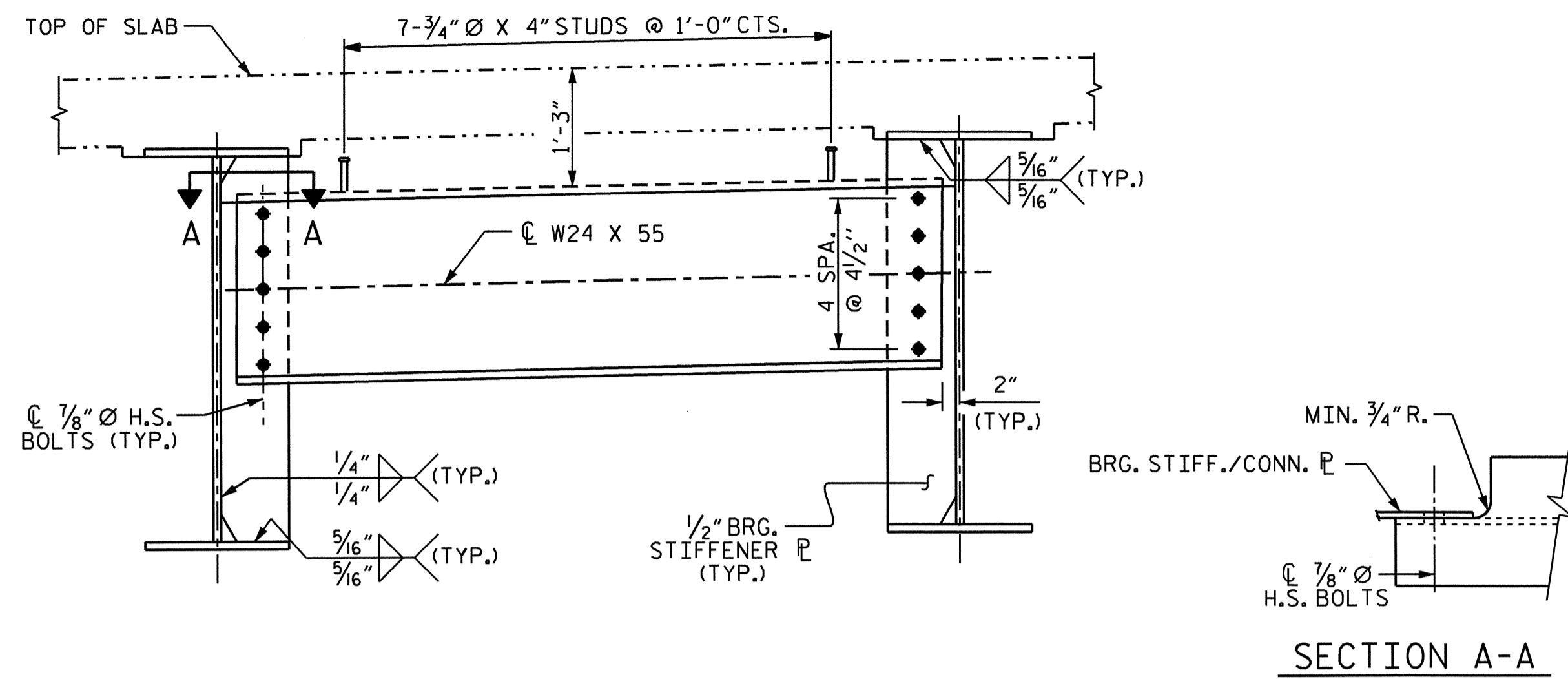
A CHARPY V-NOTCH TEST IS REQUIRED FOR WEB PLATES AND BOTTOM FLANGE PLATES FOR ALL GIRDERS AND IN ACCORDANCE WITH ARTICLE 1072-7 OF THE STANDARD SPECIFICATIONS.

PERMITTED FLANGE AND WEB SHOP SPLICES SHALL NOT BE LOCATED WITHIN 15 FEET OF MAXIMUM DEAD LOAD DEFLECTION. 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.

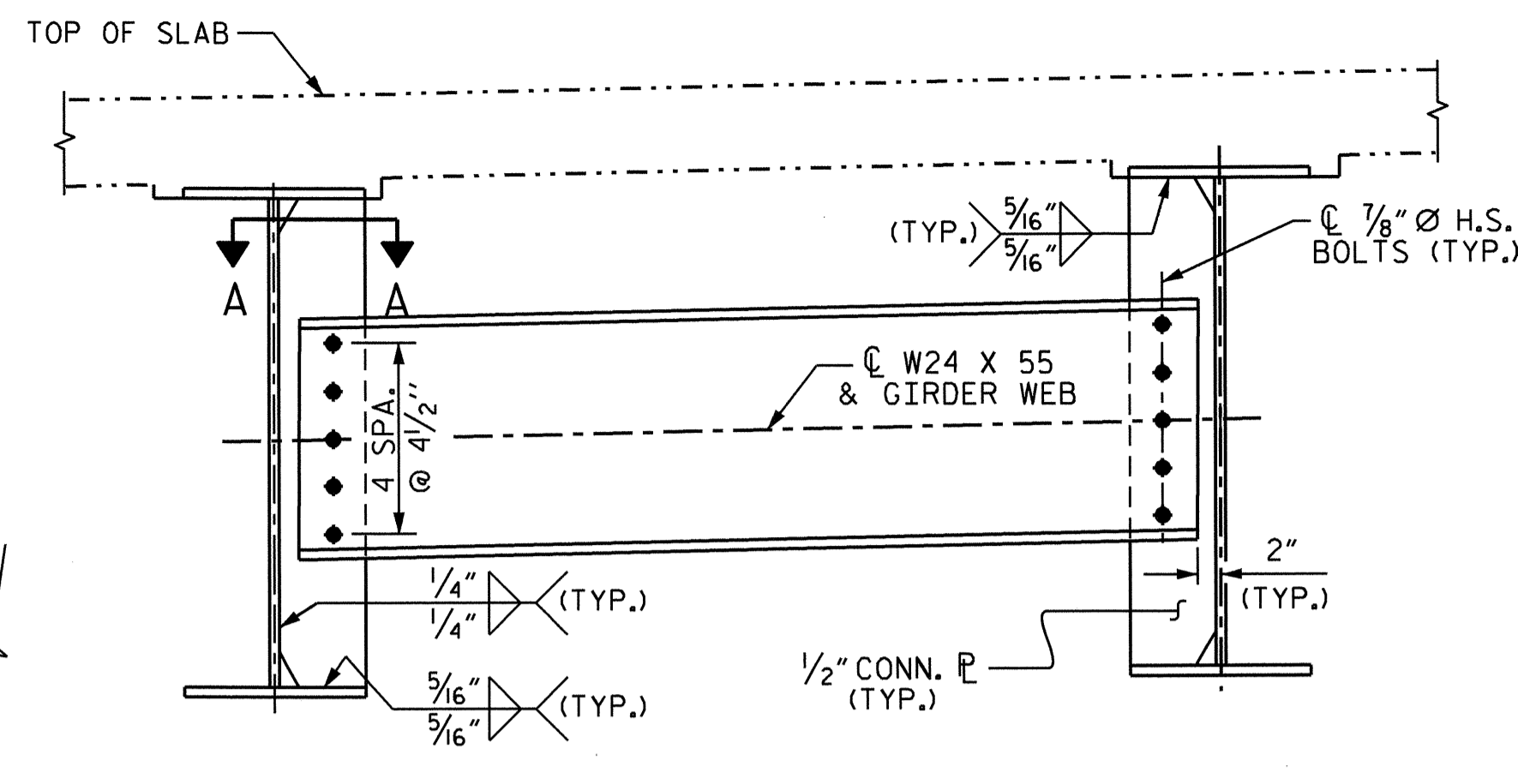
STUDS ON GIRDERS MAY BE SHIFTED UP TO 1" IF NECESSARY TO CLEAR FLANGE SPLICE WELD.

TENSION ON THE AASHTO M164 BOLTS SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH ARTICLE 440-8 OF THE STANDARD SPECIFICATIONS.

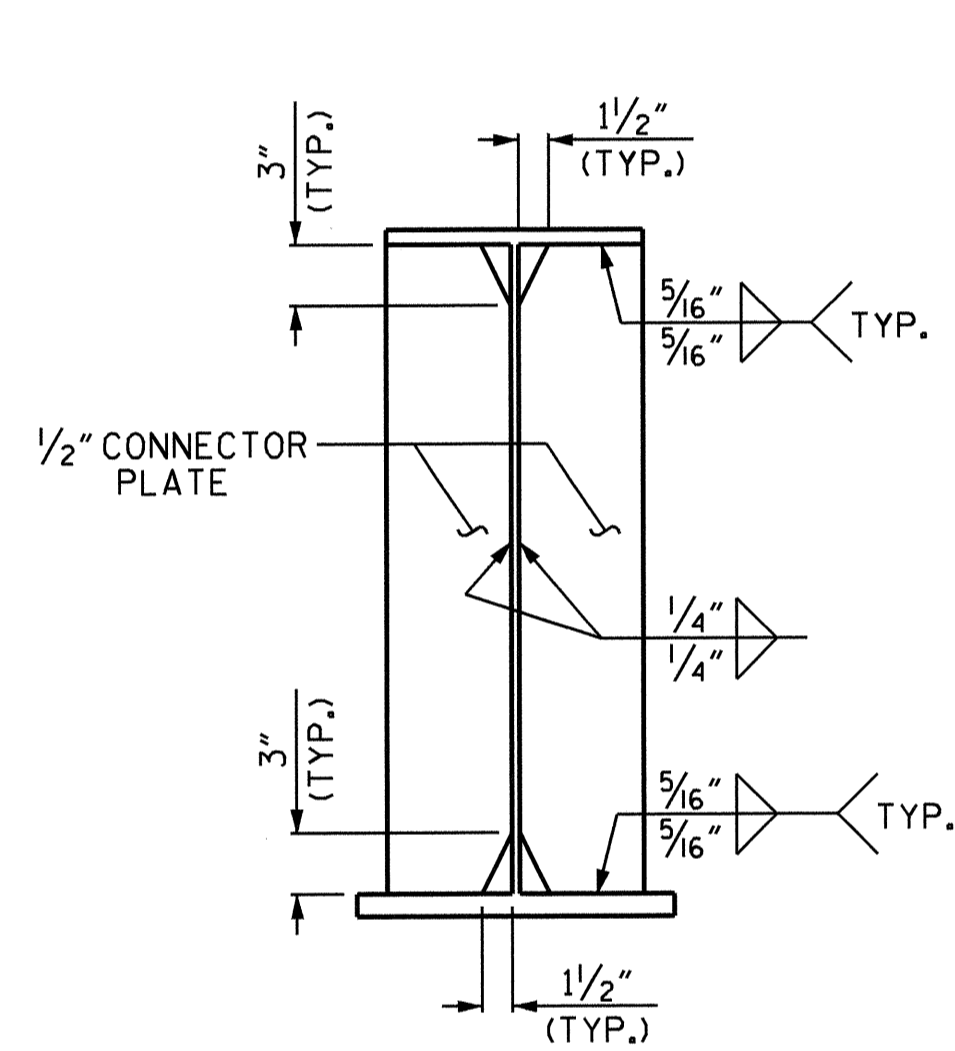
END OF GIRDERS SHALL BE PLUMB.



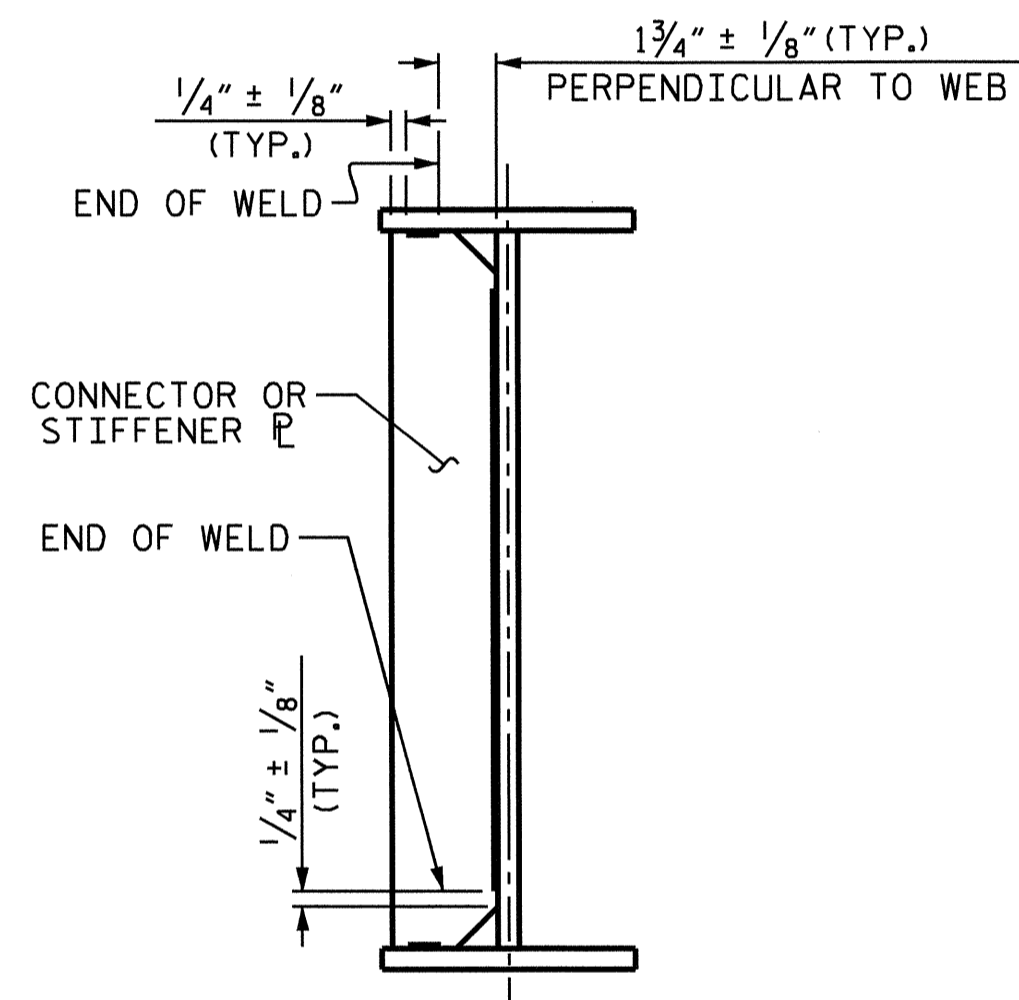
TYPICAL END BENT DIAPHRAGM (D1)



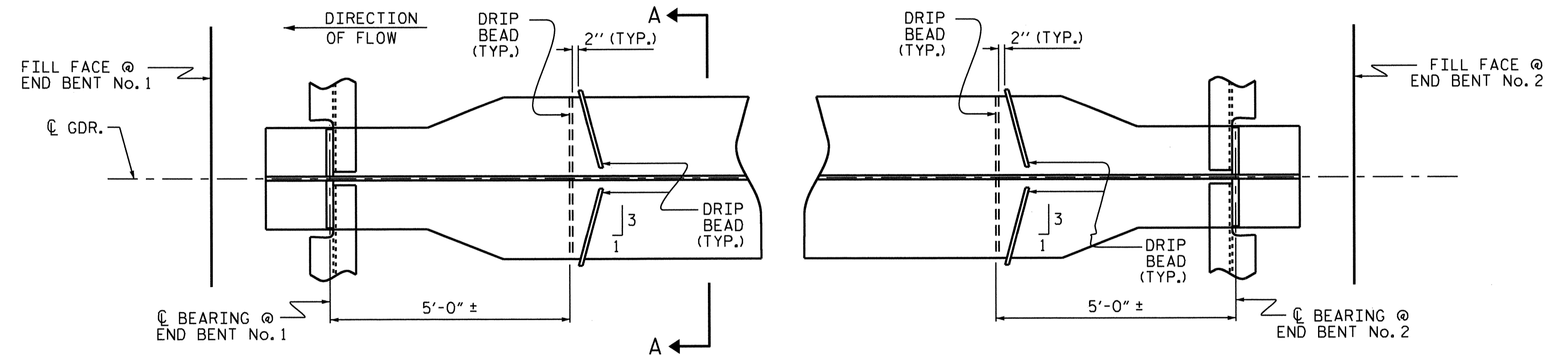
INTERMEDIATE DIAPHRAGM (D2)



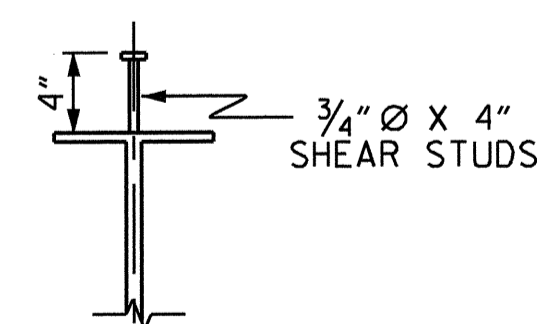
CONNECTOR PLATE



WELD TERMINATION DETAIL

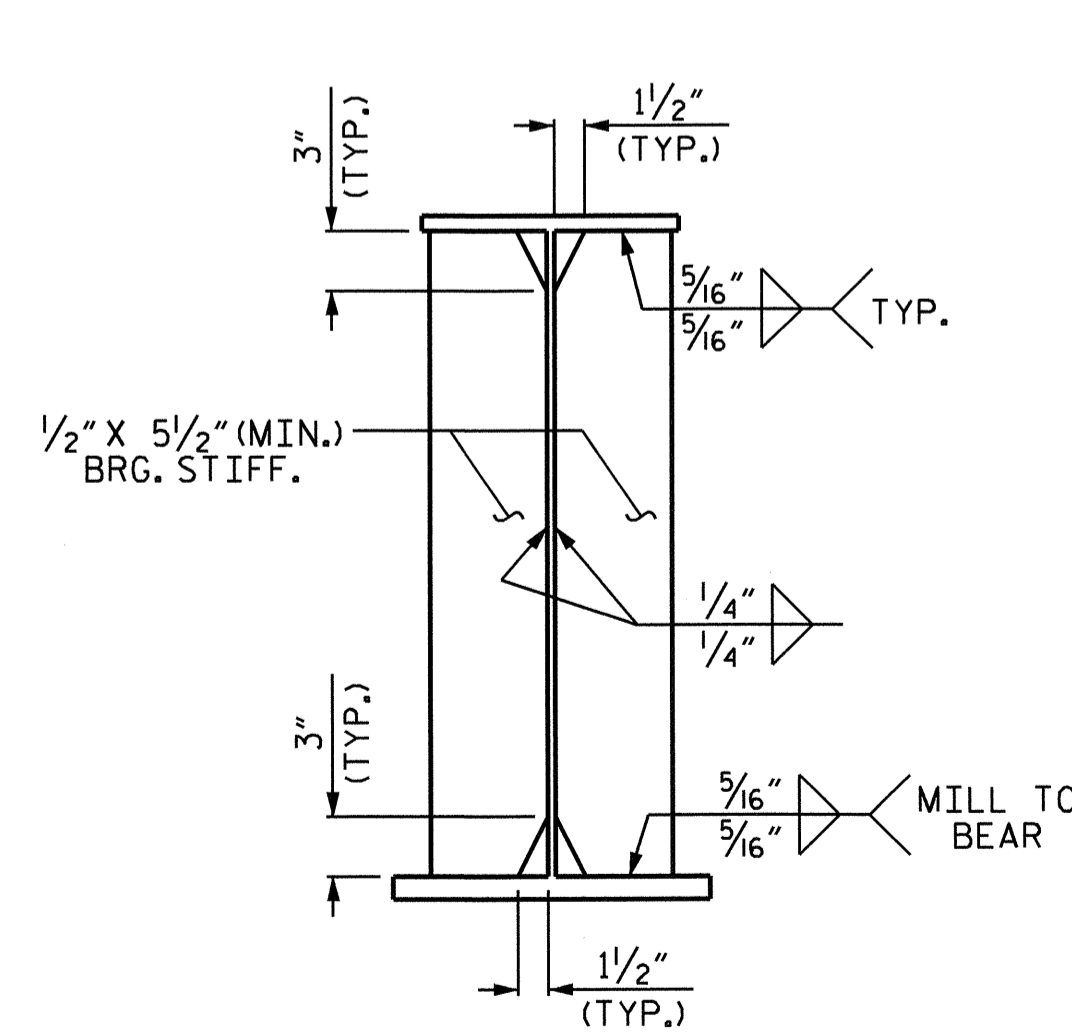


PART PLAN - BOTTOM FLANGE

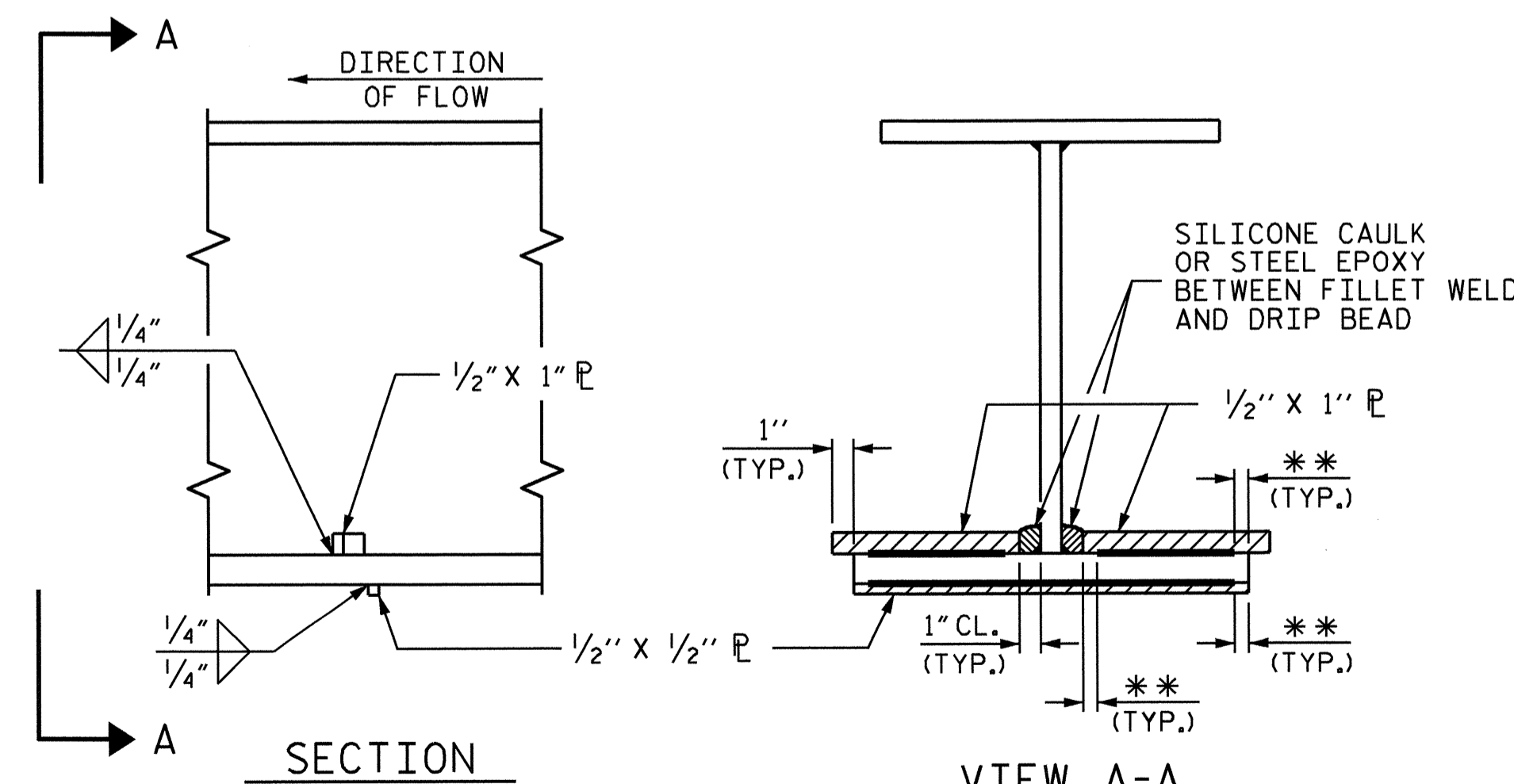


SHEAR STUD DETAILS

(TYP. EA. END BENT DIAPHRAGM)



BEARING STIFFENER



DRIP BEAD DETAILS

PROJECT NO. B-3638

DURHAM COUNTY

STATION: 17+16.70 -L-

SHEET 2 OF 2

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



DRAWN BY: D. G. ELY DATE: 12/2010
CHECKED BY: M. K. TOM DATE: 02/2011

22-FEB-2012 10:00
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kalford

REVISIONS						SHEET NO. S-8
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 29
2			4			

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

SPAN A												
GIRDER #1												
TENTH POINTS	BRG.	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	BRG.	
DEFLECTION DUE TO WEIGHT OF GIRDER	↓	0	0.012	0.022	0.031	0.036	0.038	0.036	0.031	0.022	0.012	0
DEFLECTION DUE TO WEIGHT OF SLAB *	↓	0	0.014	0.064	0.104	0.129	0.138	0.129	0.104	0.064	0.014	0
DEFLECTION DUE TO WEIGHT OF PARAPET & SIDEWALK	↓	0	0.024	0.046	0.062	0.073	0.077	0.073	0.062	0.046	0.024	0
TOTAL DEAD LOAD DEFLECTION	↓	0	0.050	0.132	0.197	0.238	0.253	0.238	0.197	0.132	0.050	0
REQUIRED CAMBER	↑	0	5/8"	1 1/16"	2 3/8"	2 7/8"	3 1/16"	2 7/8"	2 3/8"	1 1/16"	5/8"	0
GIRDER #2												
TENTH POINTS	BRG.	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	BRG.	
DEFLECTION DUE TO WEIGHT OF GIRDER	↓	0	0.012	0.022	0.031	0.036	0.038	0.036	0.031	0.022	0.012	0
DEFLECTION DUE TO WEIGHT OF SLAB *	↓	0	0.017	0.071	0.113	0.140	0.149	0.140	0.113	0.071	0.017	0
DEFLECTION DUE TO WEIGHT OF PARAPET & SIDEWALK	↓	0	0.018	0.034	0.046	0.054	0.057	0.054	0.046	0.034	0.018	0
TOTAL DEAD LOAD DEFLECTION	↓	0	0.047	0.127	0.190	0.230	0.244	0.230	0.190	0.127	0.047	0
REQUIRED CAMBER	↑	0	9/16"	1 1/2"	2 1/4"	2 3/4"	2 15/16"	2 3/4"	2 1/4"	1 1/2"	9/16"	0
GIRDER #3												
TENTH POINTS	BRG.	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	BRG.	
DEFLECTION DUE TO WEIGHT OF GIRDER	↓	0	0.012	0.022	0.031	0.036	0.038	0.036	0.031	0.022	0.012	0
DEFLECTION DUE TO WEIGHT OF SLAB *	↓	0	0.021	0.078	0.123	0.151	0.161	0.151	0.123	0.078	0.021	0
DEFLECTION DUE TO WEIGHT OF PARAPET & SIDEWALK	↓	0	0.015	0.028	0.038	0.045	0.047	0.045	0.038	0.028	0.015	0
TOTAL DEAD LOAD DEFLECTION	↓	0	0.048	0.128	0.192	0.232	0.246	0.232	0.192	0.128	0.048	0
REQUIRED CAMBER	↑	0	9/16"	1 1/16"	2 5/16"	2 13/16"	2 15/16"	2 13/16"	2 5/16"	1 1/16"	9/16"	0
GIRDERS #4 & #5												
TENTH POINTS	BRG.	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	BRG.	
DEFLECTION DUE TO WEIGHT OF GIRDER	↓	0	0.012	0.022	0.031	0.036	0.038	0.036	0.031	0.022	0.012	0
DEFLECTION DUE TO WEIGHT OF SLAB *	↓	0	0.021	0.078	0.123	0.151	0.161	0.151	0.123	0.078	0.021	0
DEFLECTION DUE TO WEIGHT OF PARAPET & SIDEWALK	↓	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0
TOTAL DEAD LOAD DEFLECTION	↓	0	0.033	0.100	0.154	0.187	0.199	0.187	0.154	0.100	0.033	0
REQUIRED CAMBER	↑	0	3/8"	1 3/16"	1 7/8"	2 1/4"	2 3/8"	2 1/4"	1 7/8"	1 3/16"	3/8"	0
GIRDER #6												
TENTH POINTS	BRG.	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	BRG.	
DEFLECTION DUE TO WEIGHT OF GIRDER	↓	0	0.012	0.022	0.031	0.036	0.038	0.036	0.031	0.022	0.012	0
DEFLECTION DUE TO WEIGHT OF SLAB *	↓	0	0.021	0.078	0.123	0.151	0.161	0.151	0.123	0.078	0.021	0
DEFLECTION DUE TO WEIGHT OF PARAPET & SIDEWALK	↓	0	0.010	0.018	0.025	0.029	0.030	0.029	0.025	0.018	0.010	0
TOTAL DEAD LOAD DEFLECTION	↓	0	0.043	0.118	0.179	0.216	0.229	0.216	0.179	0.118	0.043	0
REQUIRED CAMBER	↑	0	1/2"	1 1/16"	2 1/8"	2 9/16"	2 3/4"	2 9/16"	2 1/8"	1 1/16"	1/2"	0
GIRDER #7												
TENTH POINTS	BRG.	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	BRG.	
DEFLECTION DUE TO WEIGHT OF GIRDER	↓	0	0.012	0.022	0.031	0.036	0.038	0.036	0.031	0.022	0.012	0
DEFLECTION DUE TO WEIGHT OF SLAB *	↓	0	0.017	0.071	0.113	0.140	0.149	0.140	0.113	0.071	0.017	0
DEFLECTION DUE TO WEIGHT OF PARAPET & SIDEWALK	↓	0	0.010	0.018	0.025	0.029	0.030	0.029	0.025	0.018	0.010	0
TOTAL DEAD LOAD DEFLECTION	↓	0	0.039	0.111	0.169	0.205	0.217	0.205	0.169	0.111	0.039	0
REQUIRED CAMBER	↑	0	7/16"	1 5/16"	2"	2 7/16"	2 5/8"	2 7/16"	2"	1 5/16"	7/16"	0
GIRDER #8												
TENTH POINTS	BRG.	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	BRG.	
DEFLECTION DUE TO WEIGHT OF GIRDER	↓	0	0.012	0.022	0.031	0.036	0.038	0.036	0.031	0.022	0.012	0
DEFLECTION DUE TO WEIGHT OF SLAB *	↓	0	0.014	0.064	0.104	0.129	0.138	0.129	0.104	0.064	0.014	0
DEFLECTION DUE TO WEIGHT OF PARAPET & SIDEWALK	↓	0	0.016	0.030	0.041	0.048	0.050	0.048	0.041	0.030	0.016	0
TOTAL DEAD LOAD DEFLECTION	↓	0	0.042	0.116	0.176	0.213	0.226	0.213	0.176	0.116	0.042	0
REQUIRED CAMBER	↑	0	1/2"	1 3/8"	2 1/8"	2 9/16"	2 11/16"	2 9/16"	2 1/8"	1 3/8"	1/2"	0

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

PROJECT NO. B-3638
DURHAM COUNTY
 STATION: 17+16.70 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 DEAD LOAD DEFLECTIONS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			29

DRAWN BY : D. G. ELY DATE : 12/2010
 CHECKED BY : M. K. TOM DATE : 01/2011

NOTES

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

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

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

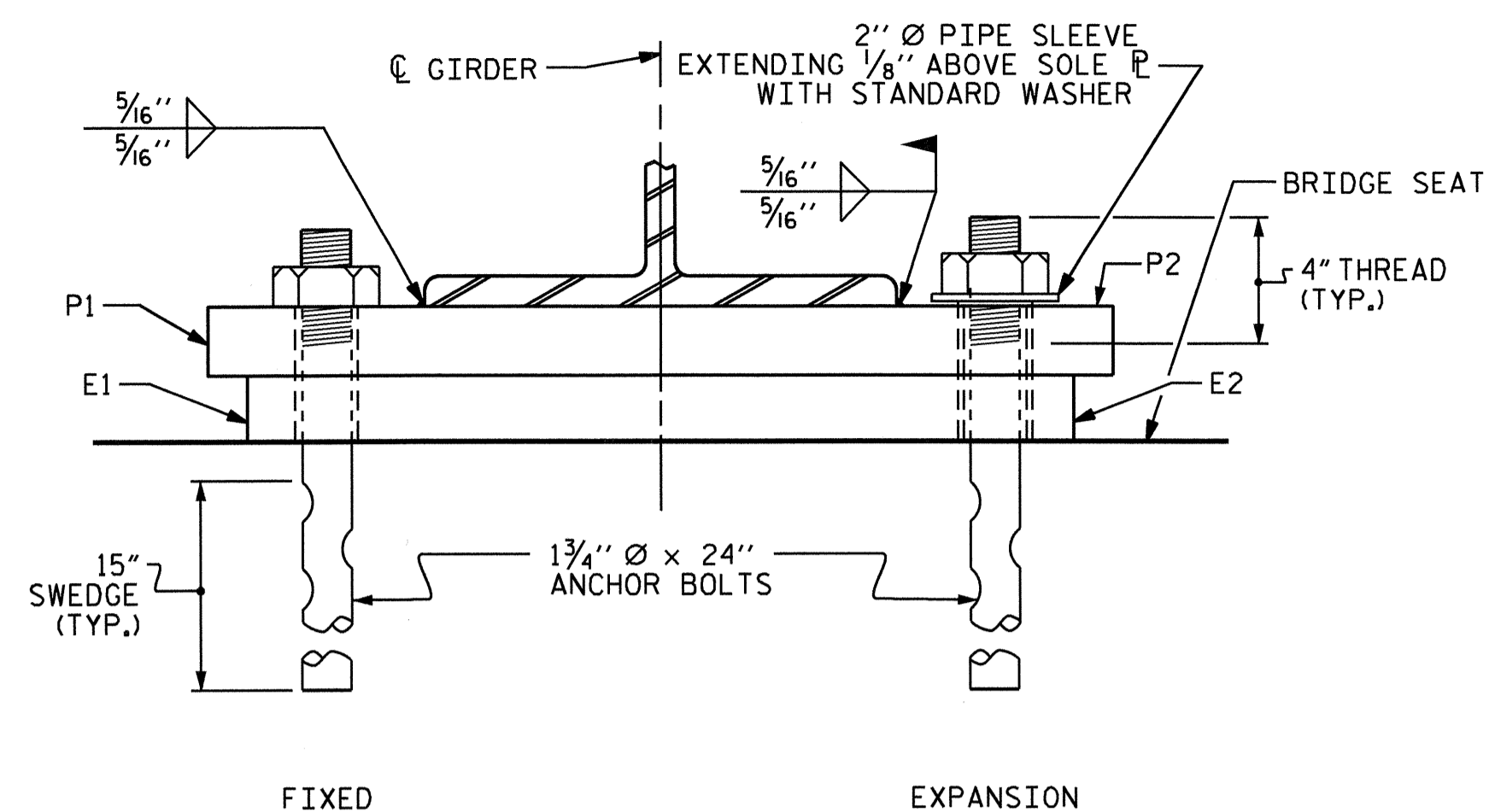
FOR AASHTO M270 GRADE 50W STRUCTURAL STEEL, SOLE PLATE SHALL BE AASHTO M270 GRADE 50W AND SHALL NOT BE GALVANIZED. ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

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

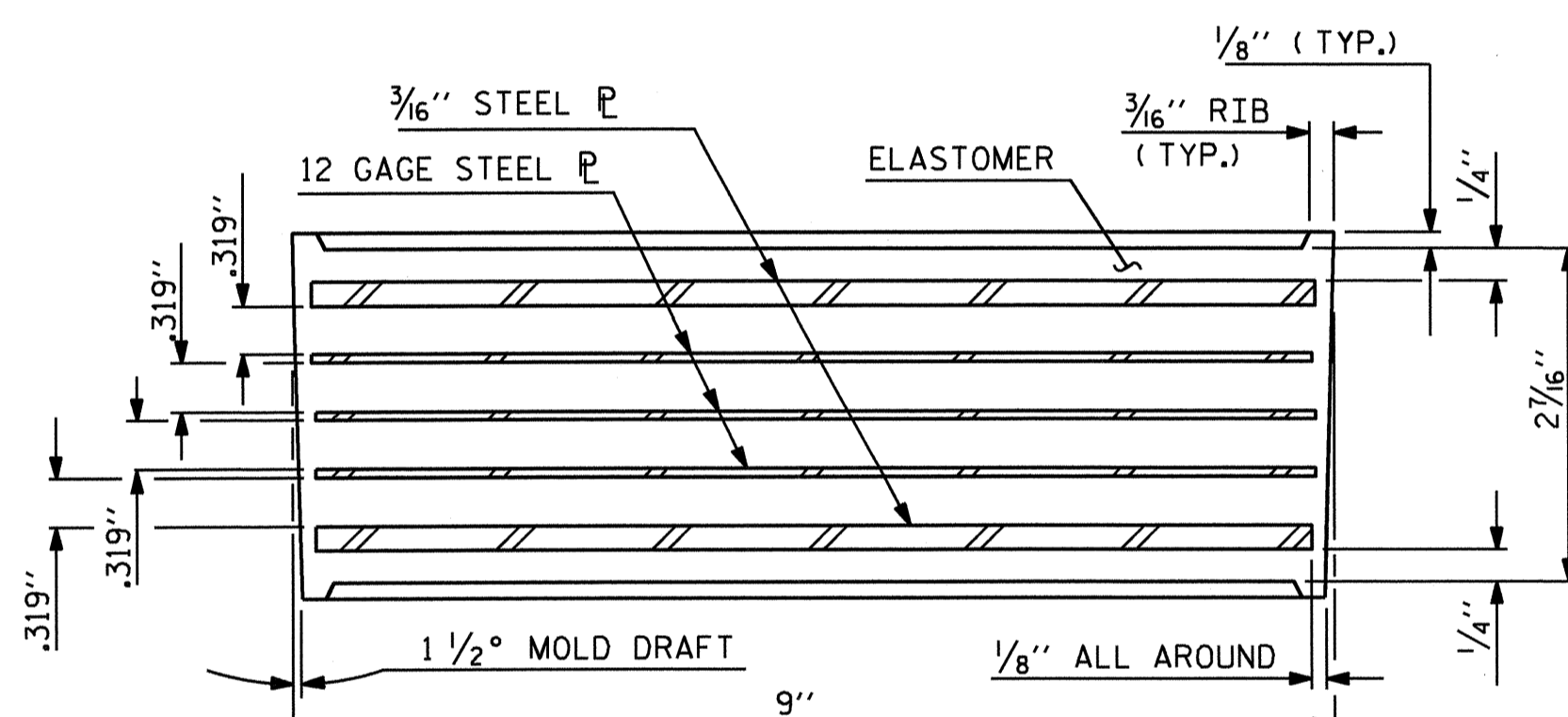
WHEN FIELD WELDING THE SOLE PLATE TO THE GIRDER FLANGE, USE TEMPERATURE INDICATING WAX PENS, OR OTHER SUITABLE MEANS, TO ENSURE THAT THE TEMPERATURE OF THE SOLE PLATE DOES NOT EXCEED 300°F. TEMPERATURES ABOVE THIS MAY DAMAGE THE ELASTOMER.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

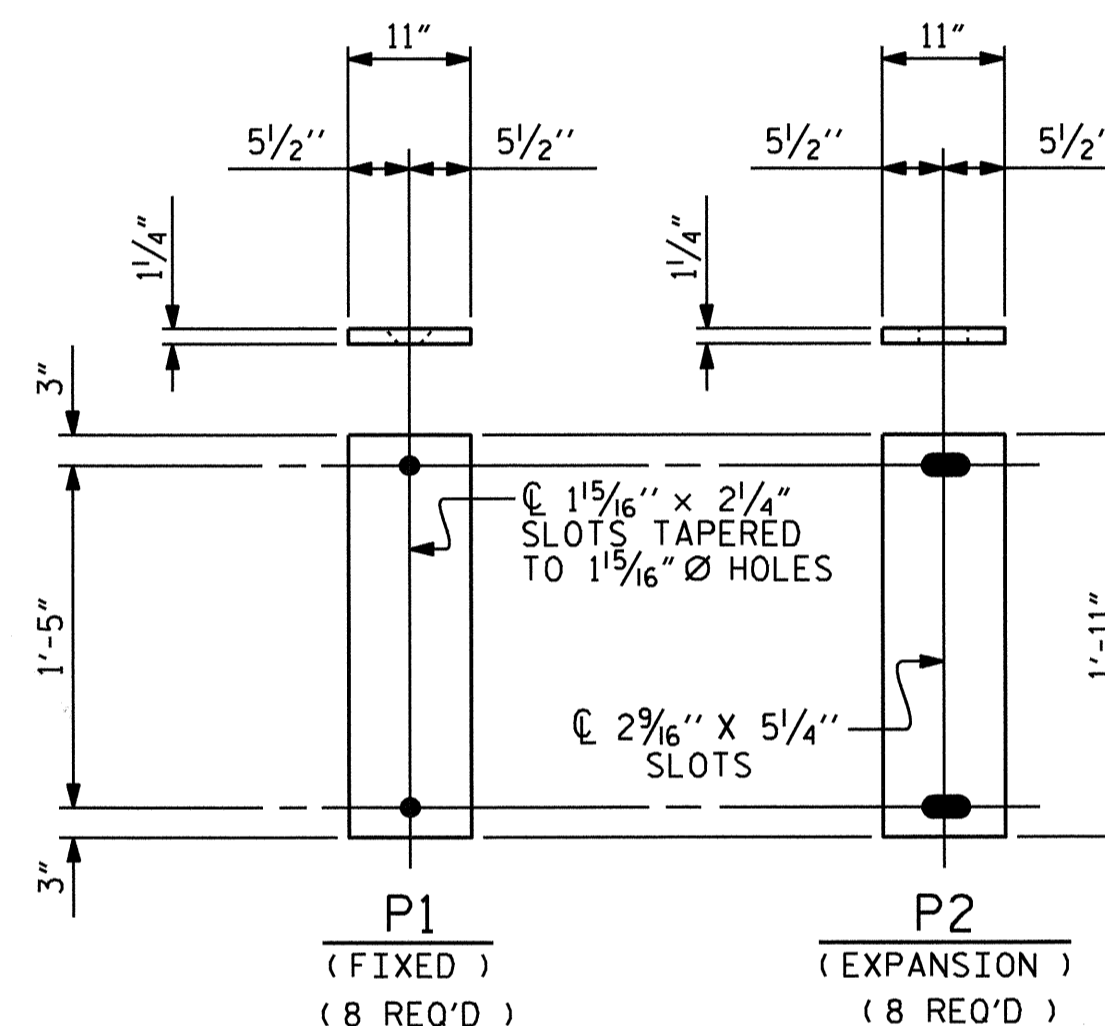
ELASTOMER IN ALL BEARING PADS SHALL BE 60 DUROMETER HARDNESS.



END VIEW

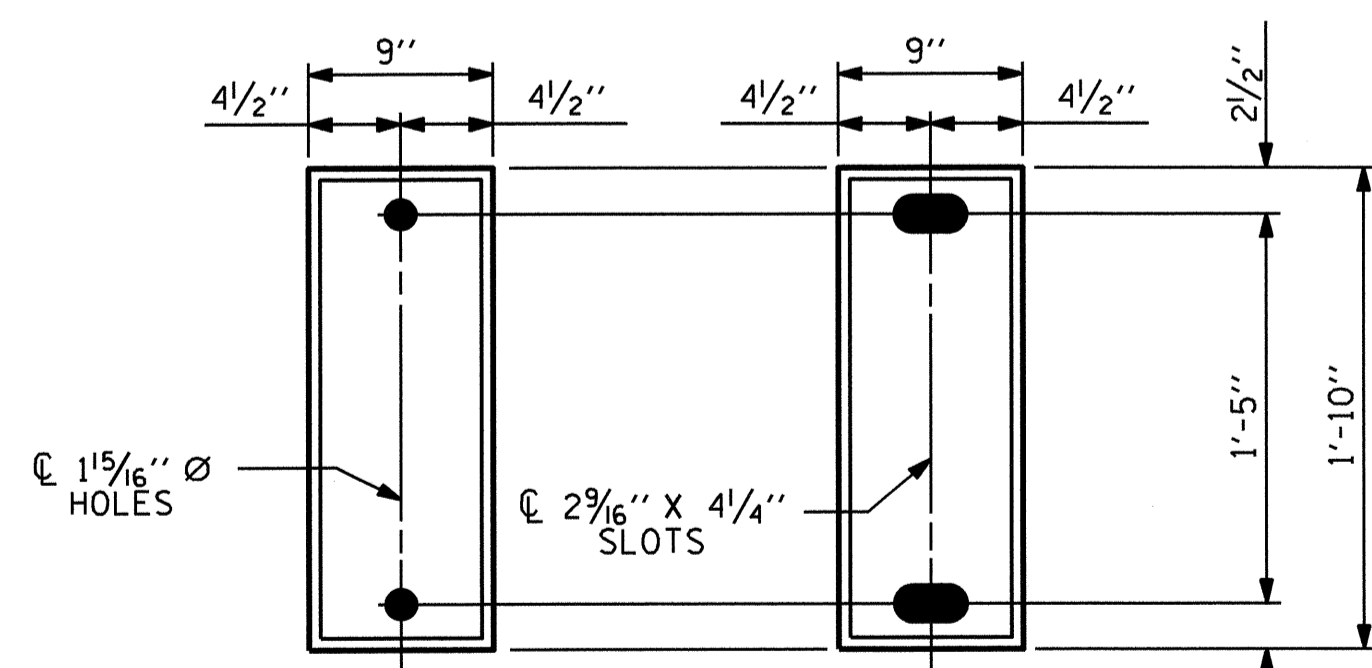


TYPICAL SECTION OF ELASTOMERIC BEARINGS



SOLE PLATE DETAILS ("P")

-LOAD RATINGS-	
	MAX.D.L.+L.L.
TYPE II	192 K



E1 (8 REQ'D) E2 (8 REQ'D)
PLAN VIEW OF ELASTOMERIC BEARING

TYPE II

(60 DUROMETER HARDNESS)

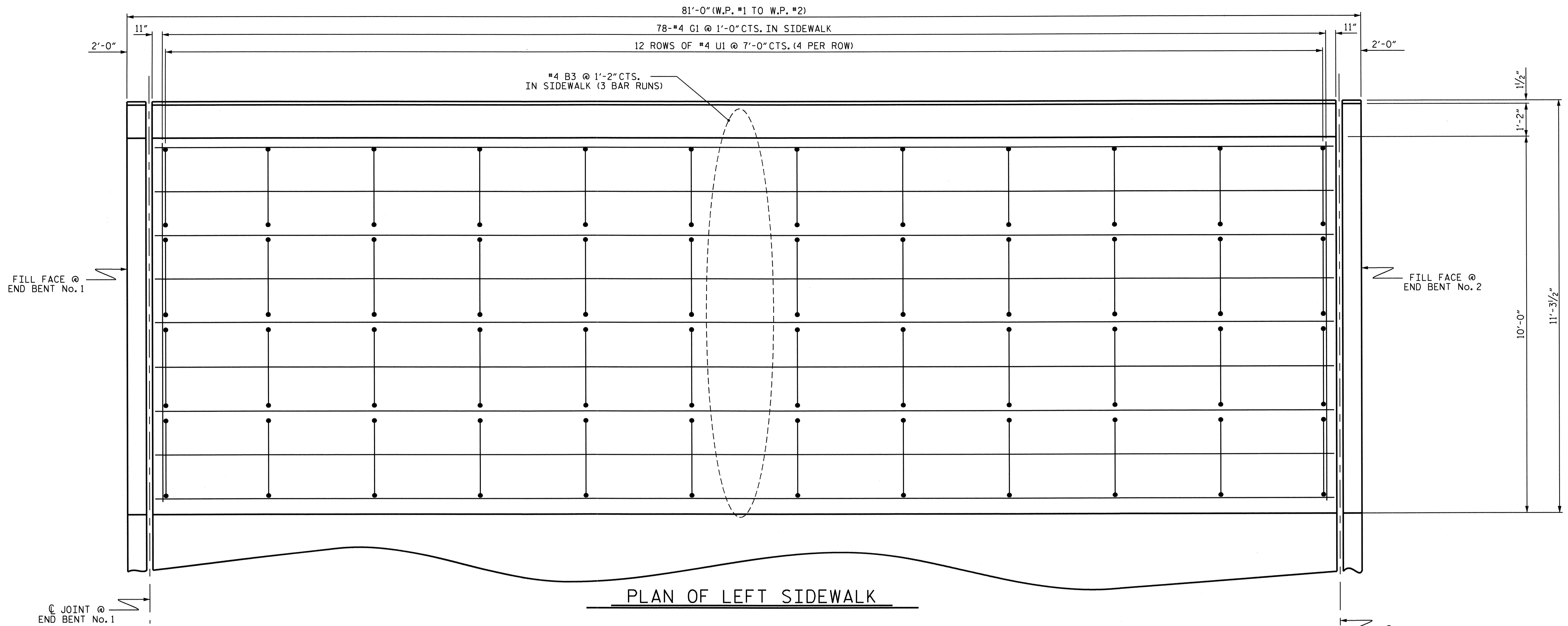
PROJECT NO. B-3638
DURHAM COUNTY
 STATION: 17+16.70 -L-



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

ASSEMBLED BY : D. G. ELY	DATE : 12/2010
CHECKED BY : M. K. TOM	DATE : 01/2011
DRAWN BY : JMB 11/87	REV. 8/16/99 MAB/LES
CHECKED BY : ARB 11/87	REV. 10/17/00 RWW/LES
	REV. 5/1/06 TLA/GM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			29



PLAN OF LEFT SIDEWALK

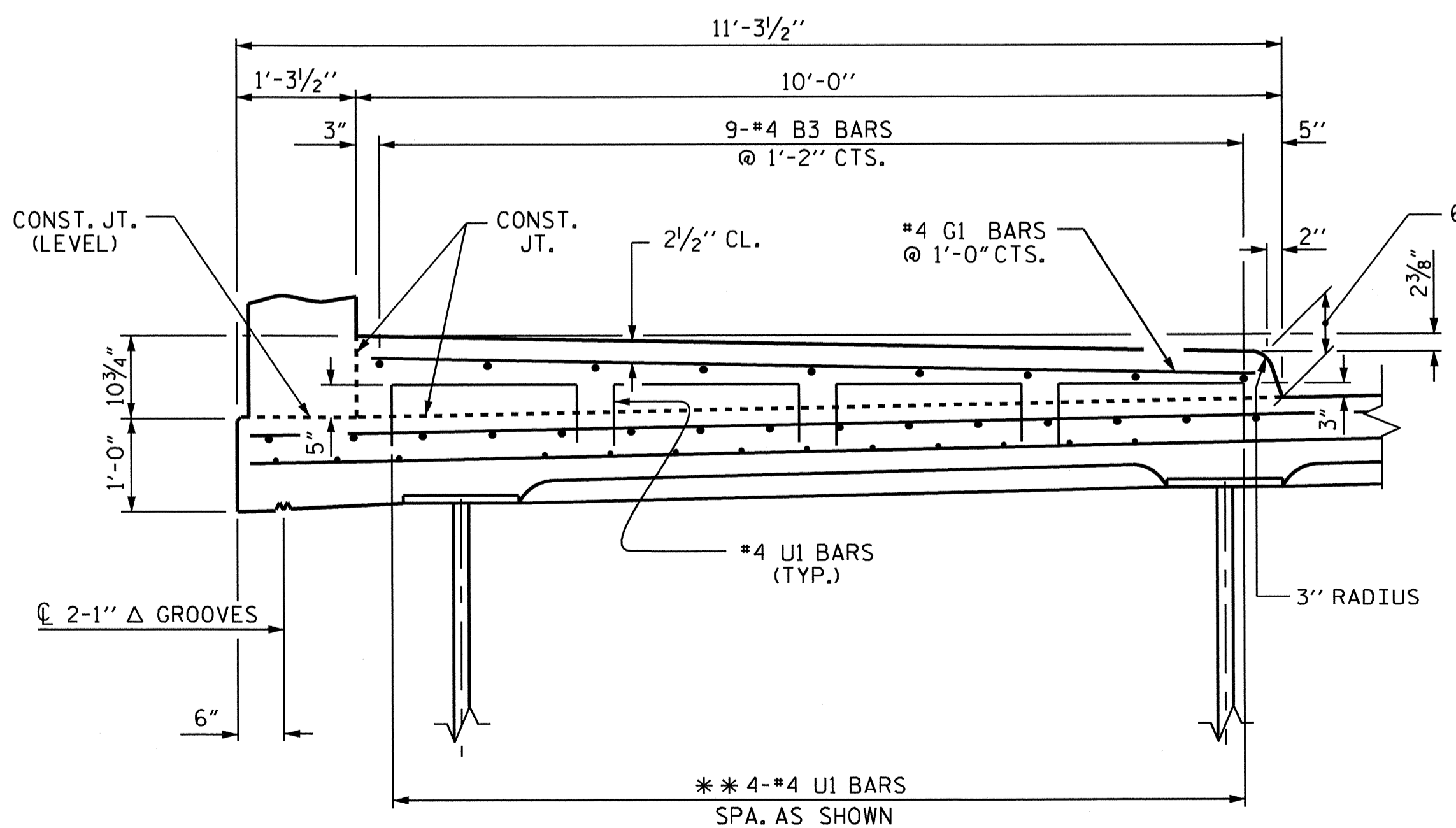
NOTES

SIDEWALK 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 SIDEWALKS SHALL BE EPOXY COATED.

GROOVED CONTRACTION JOINTS 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE SIDEWALKS 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 JOINTS WILL BE REQUIRED FOR SEGMENTS LESS THAN 10 FEET IN LENGTH.

FOR SIDEWALK REINFORCEMENT AND CONCRETE QUANTITIES SEE SUPERSTRUCTURE "BILL OF MATERIAL" SHEET.



SECTION THRU LEFT SIDEWALK

** U1 BARS MAY BE PUSHED INTO GREEN CONCRETE AFTER SPAN HAS BEEN SCREED OFF.

PROJECT NO. B-3638
 DURHAM COUNTY
 STATION: 17+16.70 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

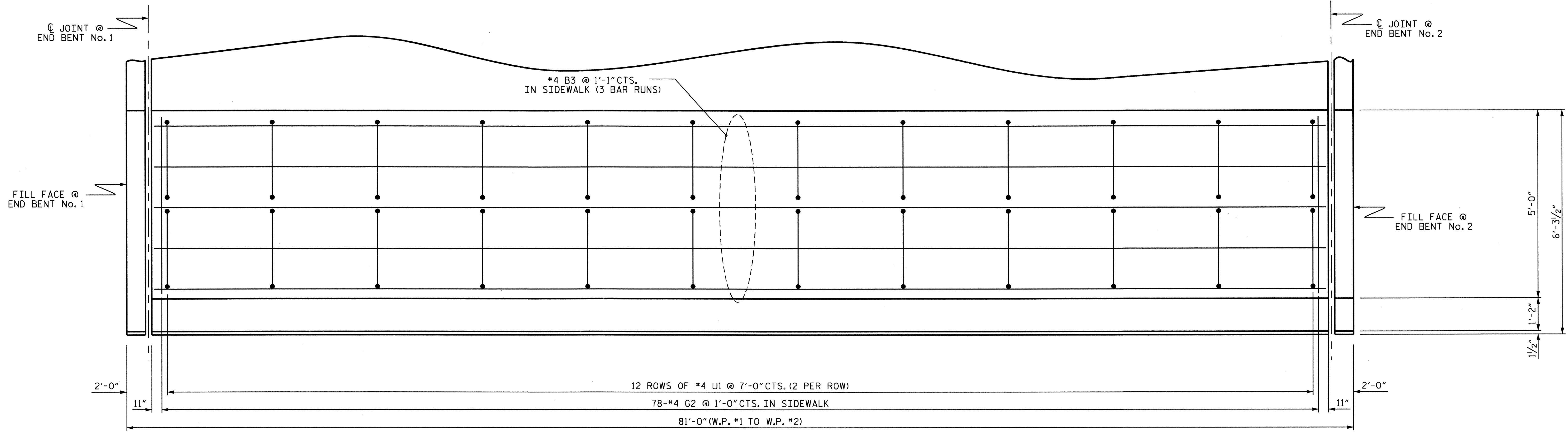
SUPERSTRUCTURE
 SIDEWALK DETAILS



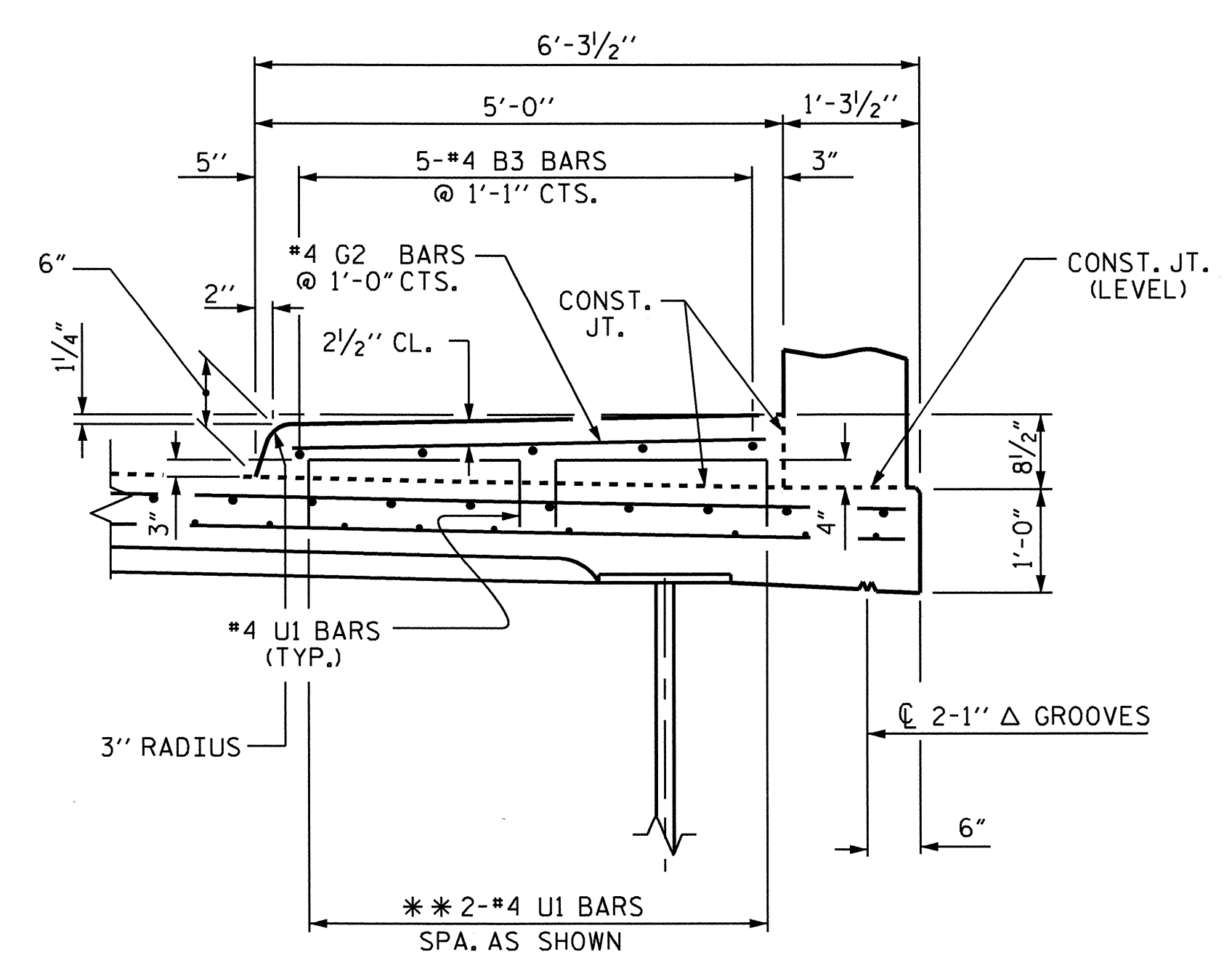
DRAWN BY : D. G. ELY DATE : 01/2011
 CHECKED BY : M. K. TOM DATE : 01/2011

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			29



PLAN OF RIGHT SIDEWALK



SECTION THRU RIGHT SIDEWALK

** U1 BARS MAY BE PUSHED INTO GREEN CONCRETE AFTER SPAN HAS BEEN SCREEDED OFF.

PROJECT NO. B-3638
 DURHAM COUNTY
 STATION: 17+16.70 -L-
 SHEET 2 OF 2

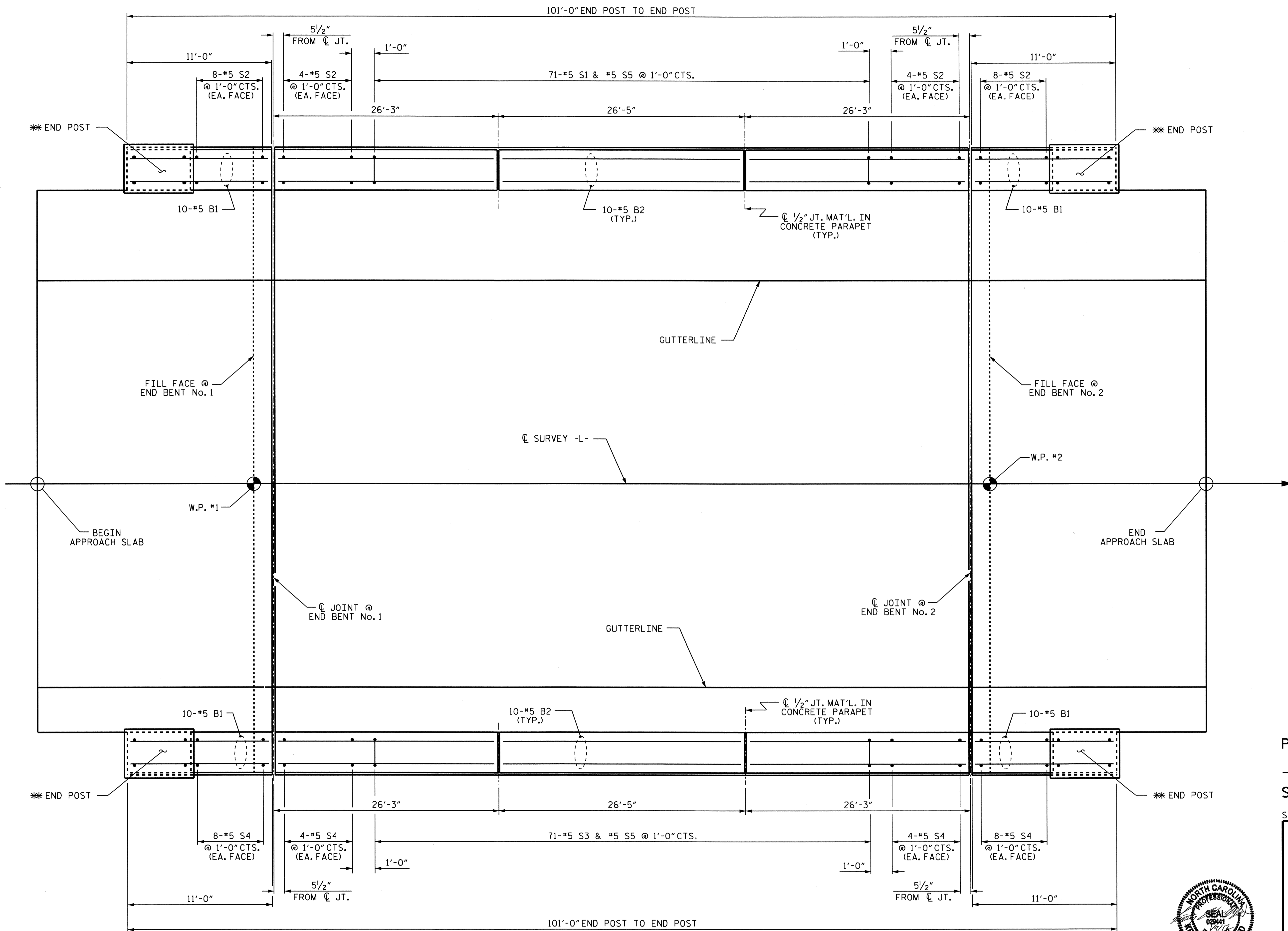
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 SIDEWALK DETAILS



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			29

DRAWN BY : D. G. ELY DATE : 01/2011
 CHECKED BY : M. K. TOM DATE : 01/2011



PARAPET AND END POST FOR TWO BAR RAIL

* FOR REINFORCING STEEL AND DETAILS IN END POST SEE SHEET 2 OF 2.

PROJECT NO. B-3638
DURHAM COUNTY
 STATION: 17+16.70 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

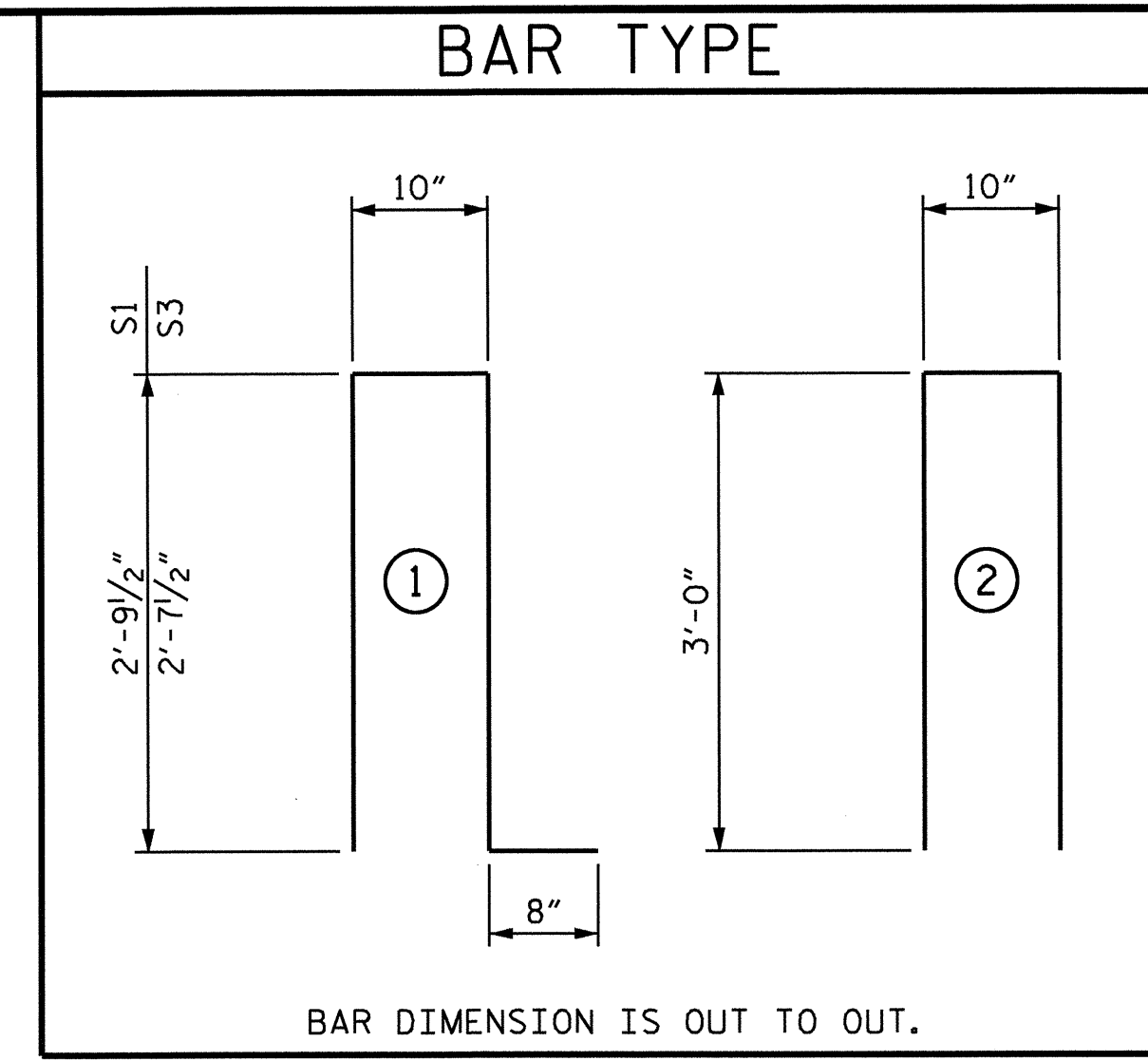
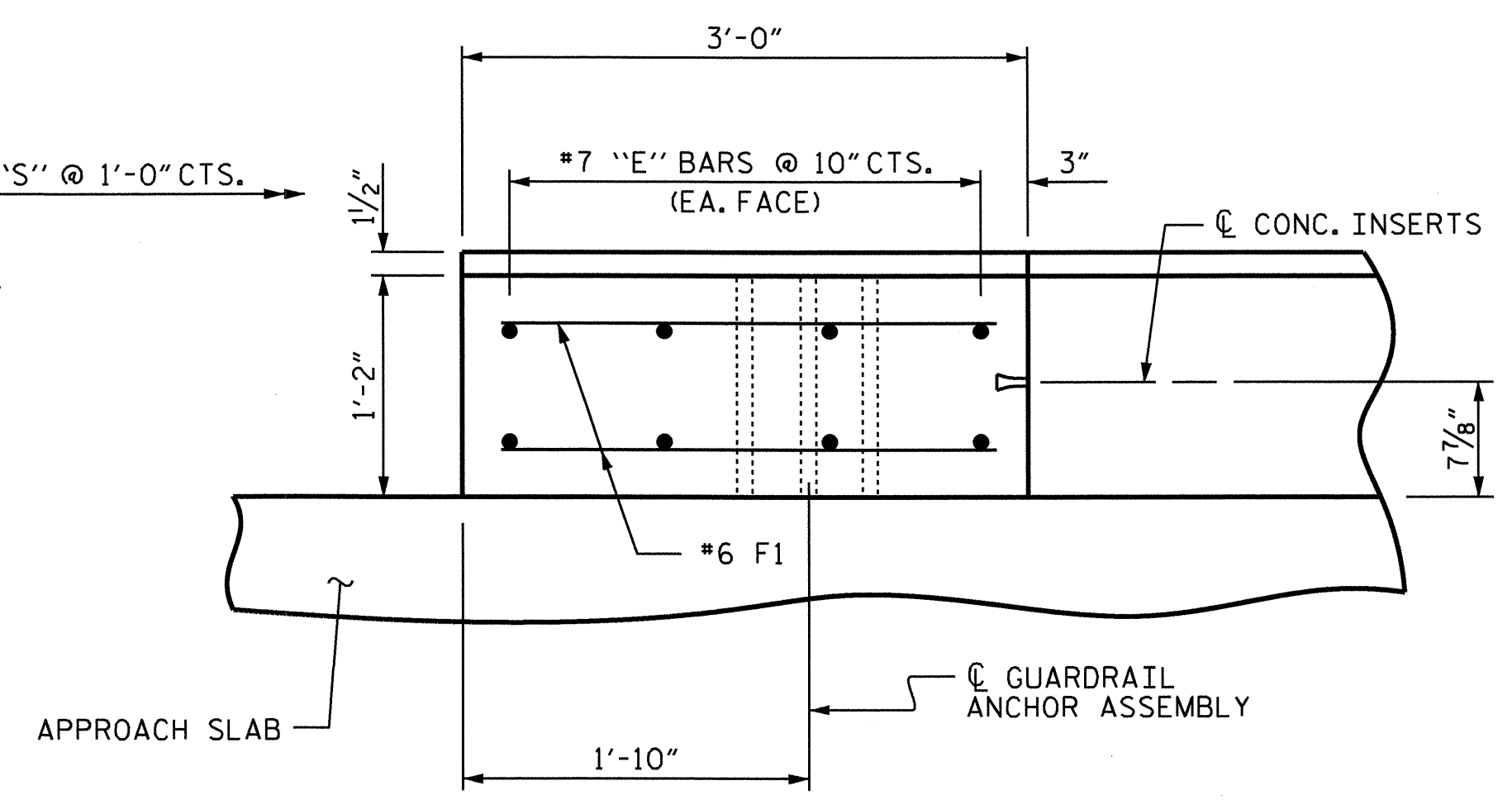
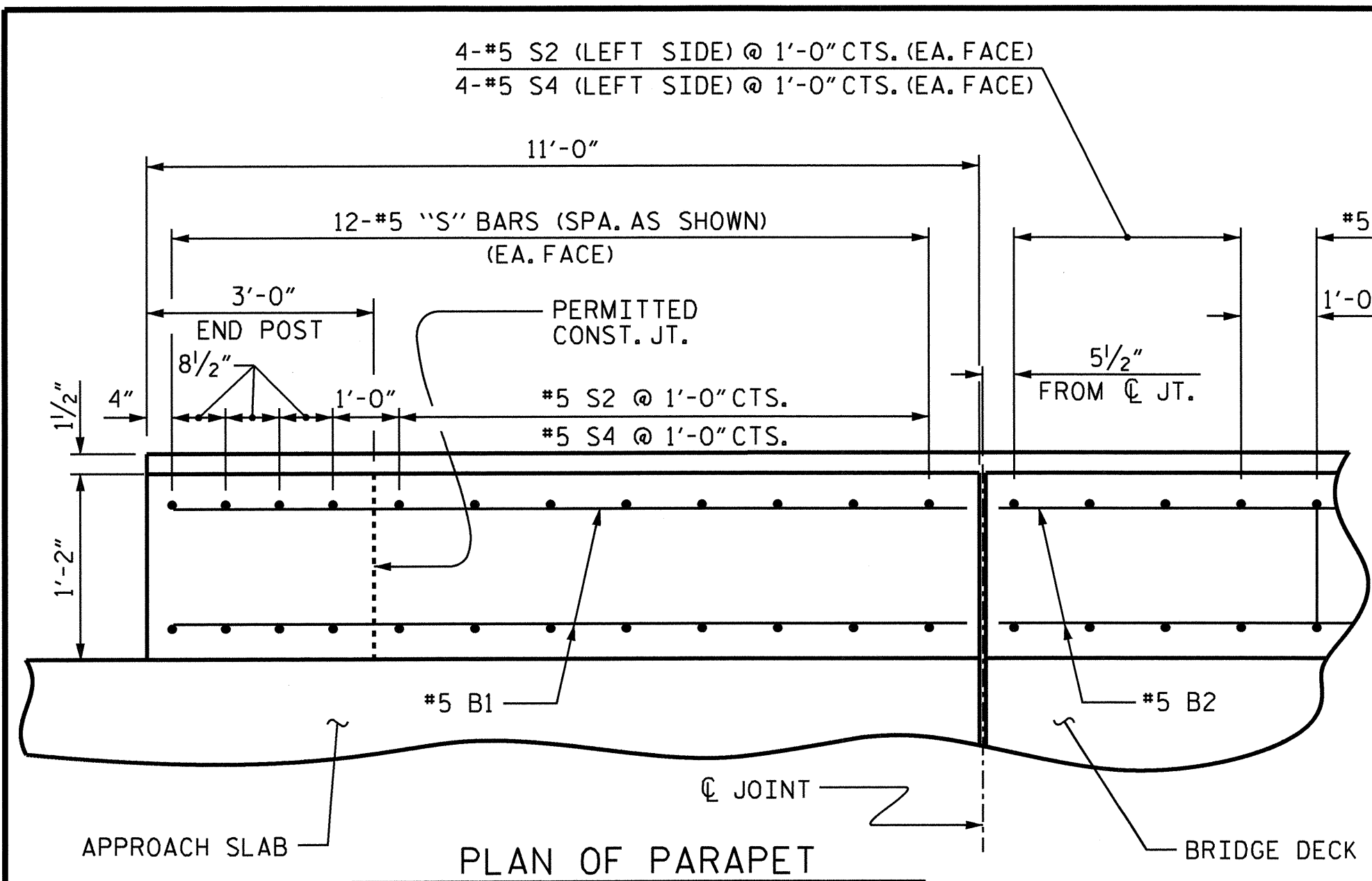
**CONCRETE PARAPET
 AND
 END POST**



DRAWN BY: D. G. ELY DATE: 01/2011
 CHECKED BY: M. K. TOM DATE: 02/2011

09-JAN-2012 11:09
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			29



TWO BAR METAL RAIL					
BILL OF MATERIAL FOR LEFT PARAPET AND END POSTS					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	20	#5	STR	10'-8"	223
* B2	30	#5	STR	25'-10"	808
* E1	16	#7	STR	5'-2"	169
* F1	12	#6	STR	2'-8"	48
* S1	71	#5	1	7'-1"	525
* S2	64	#5	STR	3'-10"	256
* S5	71	#5	2	6'-10"	506
* EPOXY COATED REINFORCING STEEL				LBS.	2535
CLASS "AA" CONCRETE				C.Y.	15.4
1'-2" X 3'-4 3/4" CONCRETE PARAPET L.F.					100.8

PLAN OF END POST
END POST CAP NOT SHOWN FOR CLARITY

NOTES

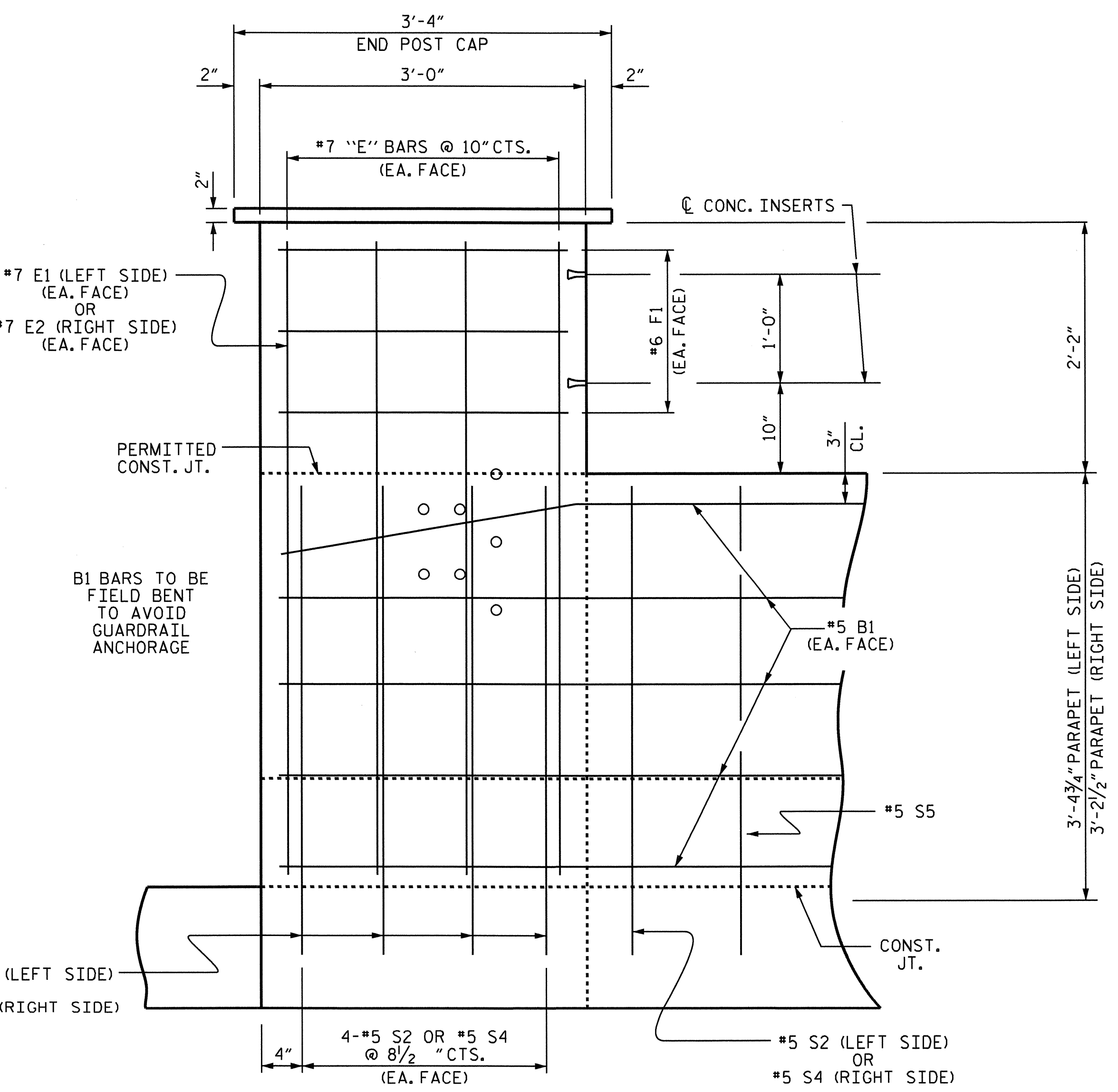
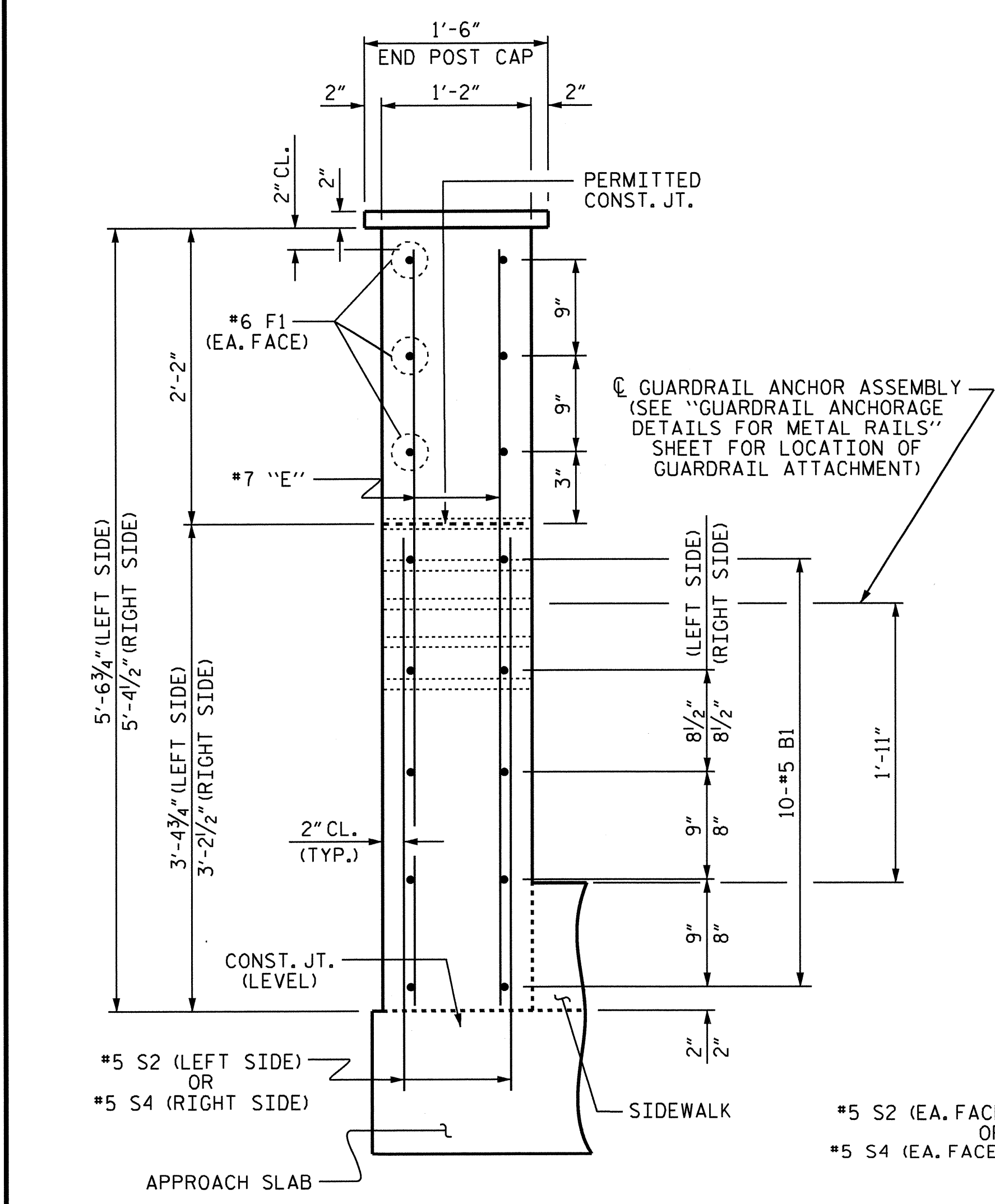
THE #5 S2 & S4 BARS SHALL BE INSTALLED USING AN ADHESIVE ANCHORING SYSTEM AFTER SAWING THE JOINT. THE YIELD LOAD OF THE #5 S2 & S4 BARS IS 18.6 KIPS. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

FOR DETAIL OF CONCRETE INSERT AND GUARDRAIL ANCHOR ASSEMBLY, SEE "RAIL POST SPACINGS AND END OF RAIL DETAIL" SHEETS.

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

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

TWO BAR METAL RAIL					
BILL OF MATERIAL FOR RIGHT PARAPET AND END POSTS					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	20	#5	STR	10'-8"	223
* B2	30	#5	STR	25'-10"	808
* E2	16	#7	STR	5'-0"	164
* F1	12	#6	STR	2'-8"	48
* S3	71	#5	1	6'-9"	500
* S4	64	#5	STR	3'-8"	245
* S5	71	#5	2	6'-10"	506
* EPOXY COATED REINFORCING STEEL				LBS.	2494
CLASS "AA" CONCRETE				C.Y.	14.6
1'-2" X 3'-2 1/2" CONCRETE PARAPET L.F.					100.8



END VIEW

ELEVATION

PARAPET AND END POST FOR TWO BAR RAIL

DRAWN BY: D. G. ELY DATE: 01/2011
CHECKED BY: M. K. TOM DATE: 01/2011

22-FEB-2012 09:59
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kalford

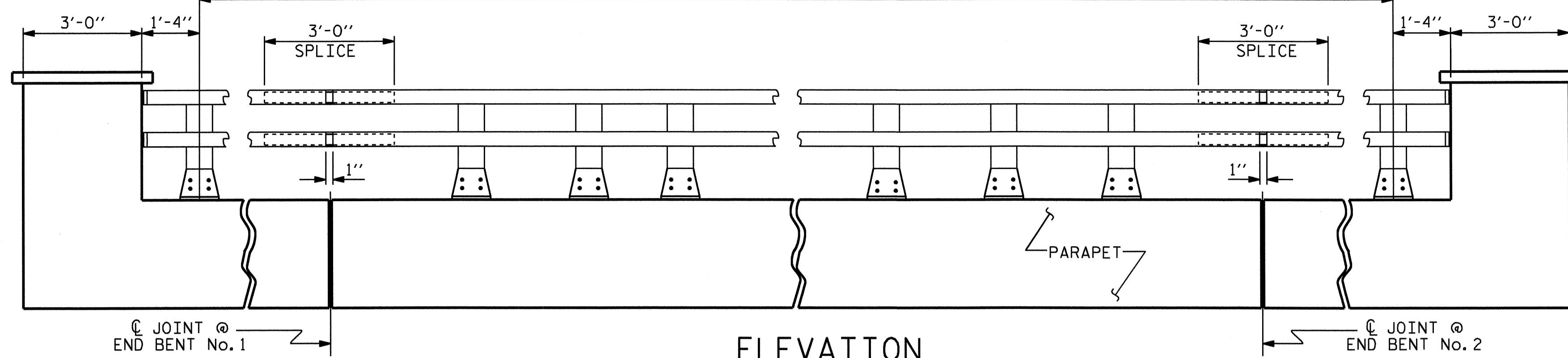


PROJECT NO. B-3638
DURHAM COUNTY
STATION: 17+16.70 -L-
SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
CONCRETE PARAPET
AND
END POST DETAILS

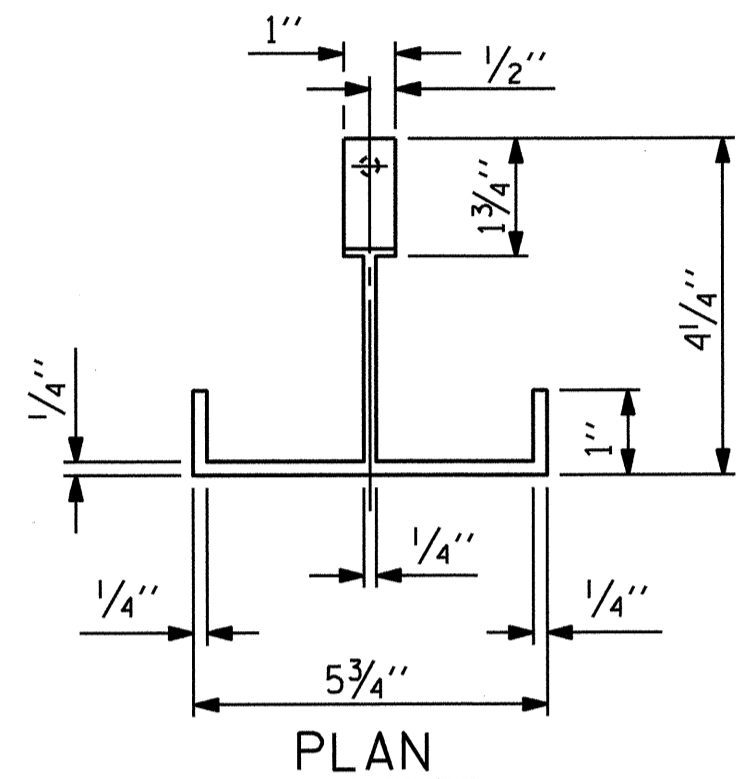
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14	
1			3			TOTAL SHEETS	29
2			4				

SEE "RAIL POST SPACINGS AND END OF RAIL DETAILS" SHEET

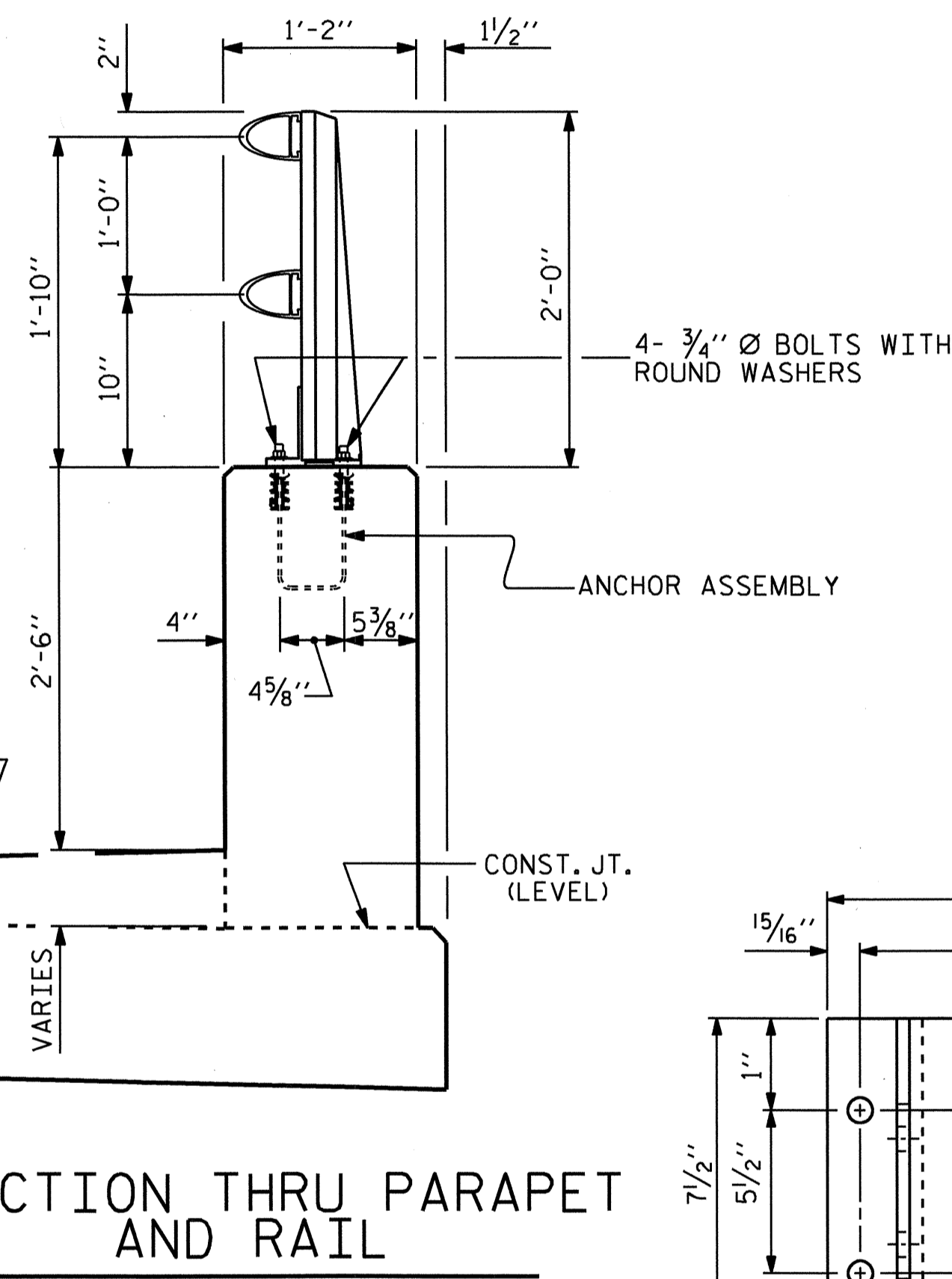


ELEVATION

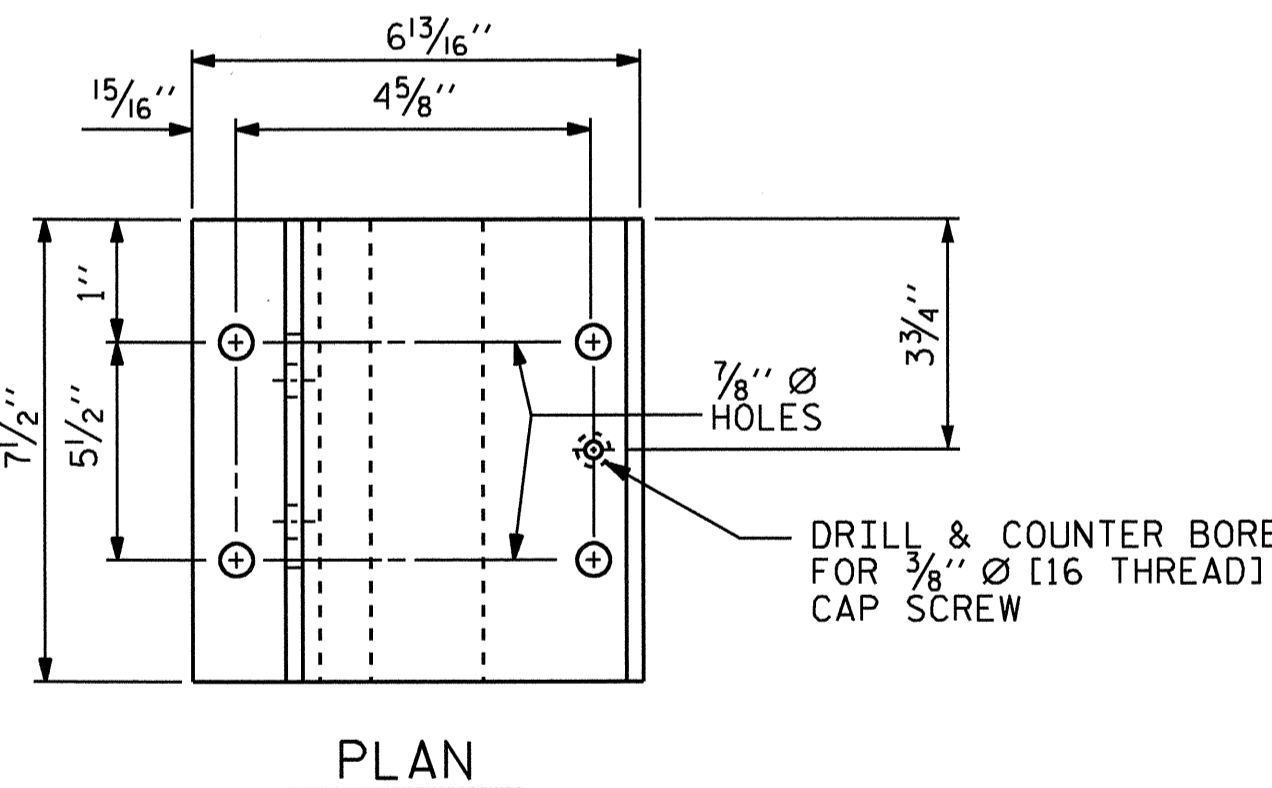
NOTE : FOR ATTACHMENT OF METAL RAIL TO END POST, SEE STANDARD NO. BMR2.



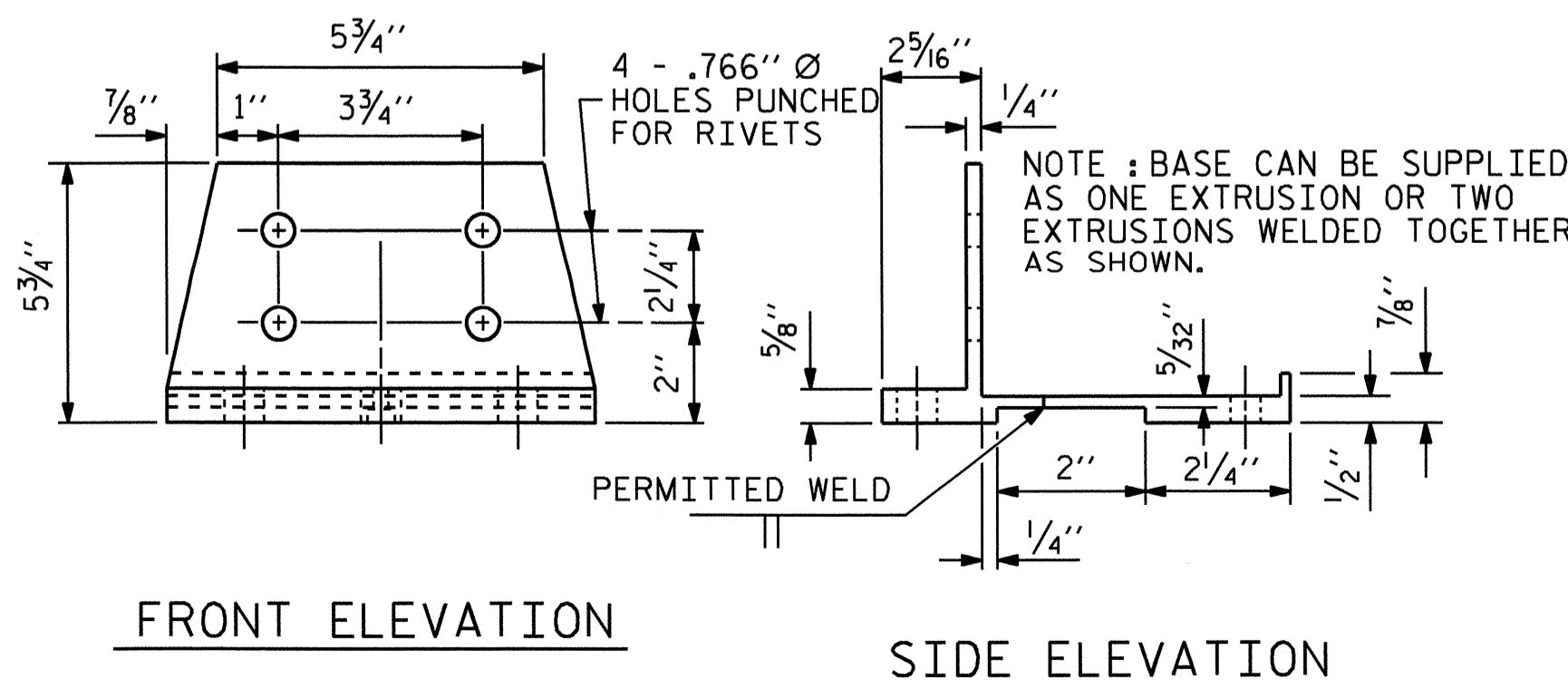
PLAN



SECTION THRU PARAPET AND RAIL



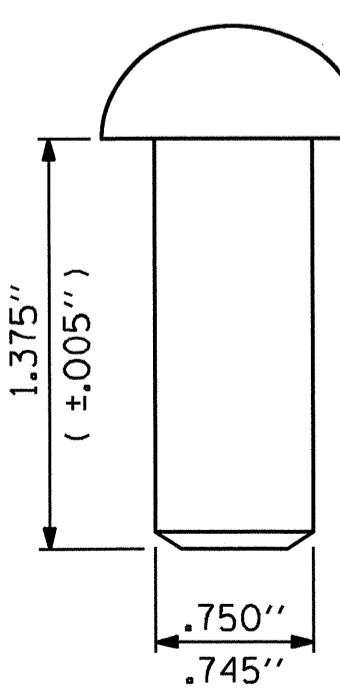
PLAN



FRONT ELEVATION

SIDE ELEVATION

POST BASE DETAILS



RIVET DETAIL

PAY LENGTH = 190.0 LIN. FT.



NOTES

ALUMINUM RAILS

MATERIAL FOR POSTS, BASES AND RAILS, EXPANSION BARS AND CLAMP BARS SHALL BE ASTM B-221 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.

ANODIZING

ALUMINUM FOR POSTS, BASES, RAILS, EXPANSION BARS, CLAMP BARS, RIVETS, CAPS, SHIMS, ATTACHMENT BRACKETS AND HOLD-DOWN PLATES SHALL BE ANODIZED. THE CONTRACTOR SHALL SUBMIT THREE (3) SETS OF ASTM B-221 6061-T6 ALUMINUM SAMPLES ANODIZED MEDIUM BRONZE, DARK BRONZE, AND EXTRA DARK BRONZE TO THE ENGINEER. THE ENGINEER SHALL SELECT FROM THE SAMPLES FURNISHED BY THE CONTRACTOR THE COLOR WHICH MOST CLOSELY MATCHES THE WEATHERED COLOR OF THE ATTACHED GUARDRAIL.

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

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

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.

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

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

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 REMAINS 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.

PROJECT NO. B-3638
 DURHAM COUNTY
 STATION: 17+16.70 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

2 BAR METAL RAIL

REVISIONS

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

SHEET NO.	
S-15	TOTAL SHEETS 29

ASSEMBLED BY : D. G. ELY	DATE : 01/2011
CHECKED BY : M. K. TOM	DATE : 01/2011
DRAWN BY : EEM 6/94	REV. 8/16/99 RWW/LES
CHECKED BY : RGW 6/94	REV. 10/17/00 LES/RDR
	REV. 5/7/03R RWW/JTE

NOTES

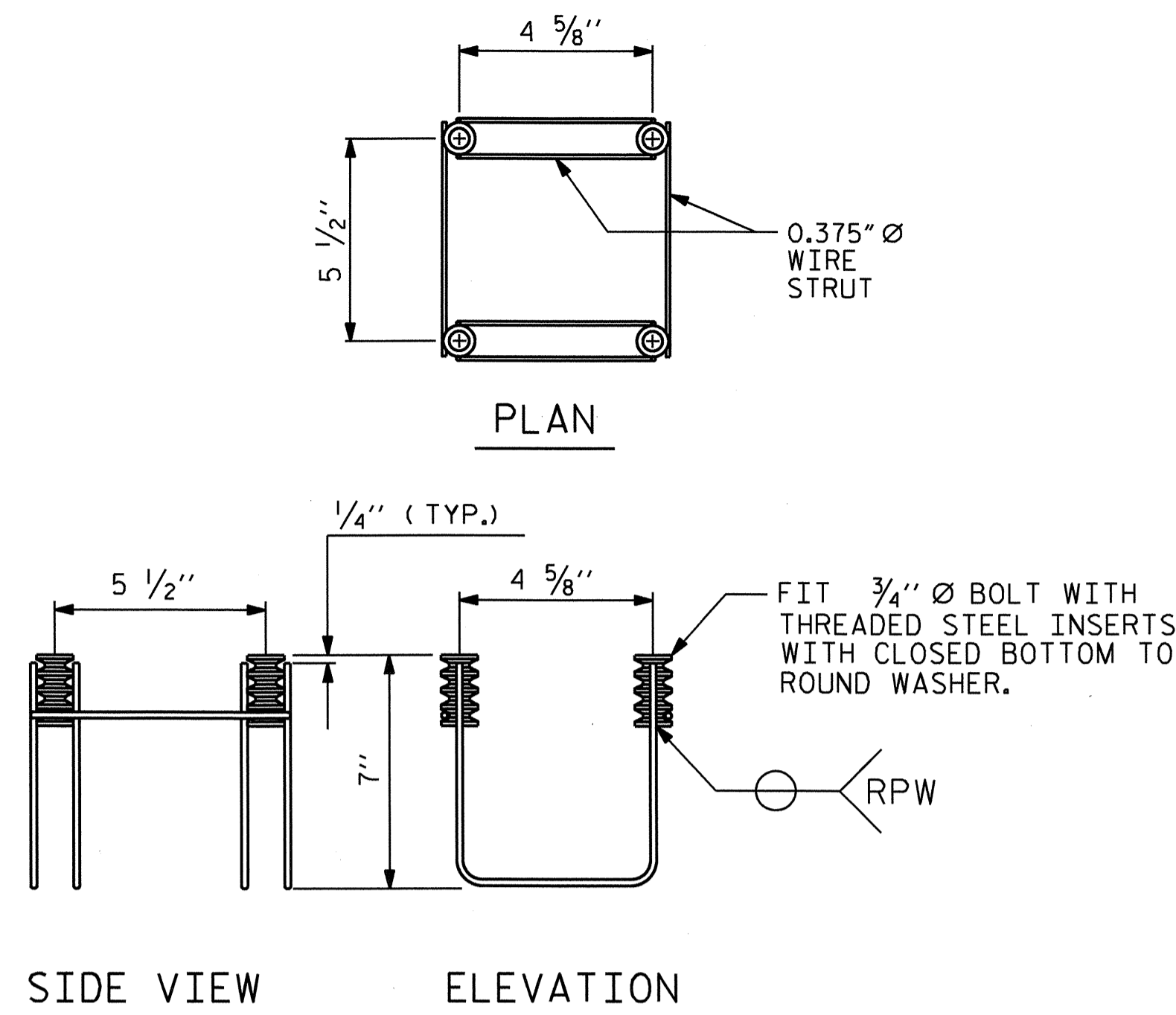
STRUCTURAL CONCRETE ANCHOR ASSEMBLY

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

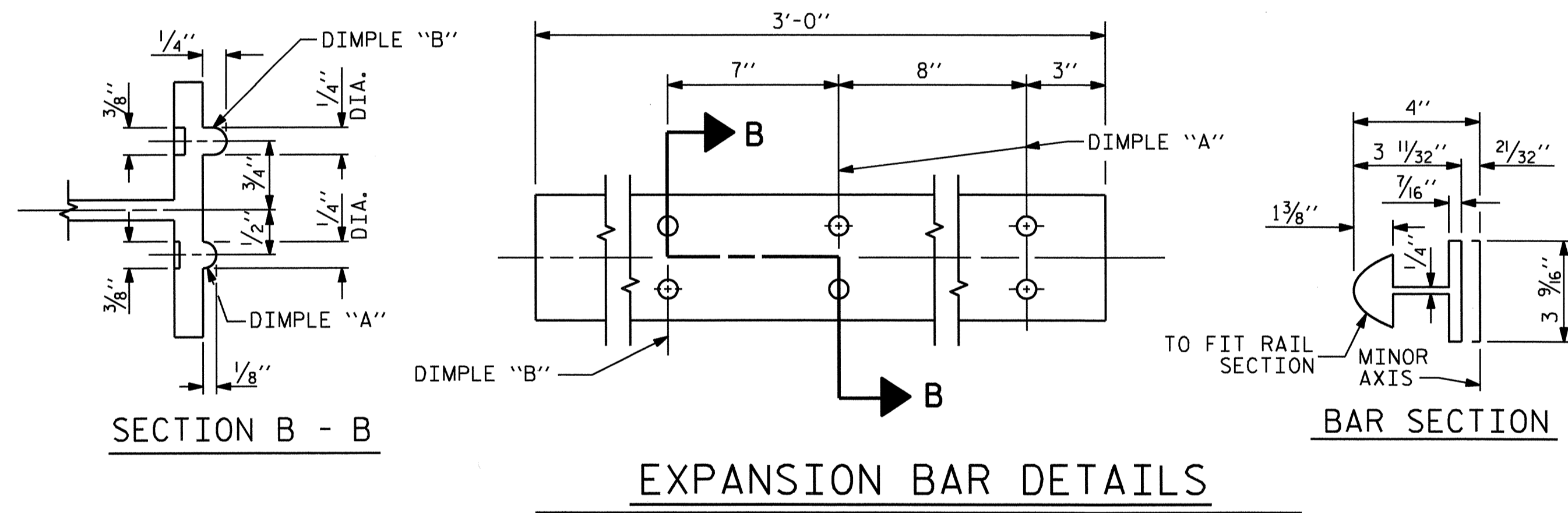
- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2" FOR 3/4" FERRULES.
- B. 4 - 3/4" Ø X 2 1/2" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT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

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

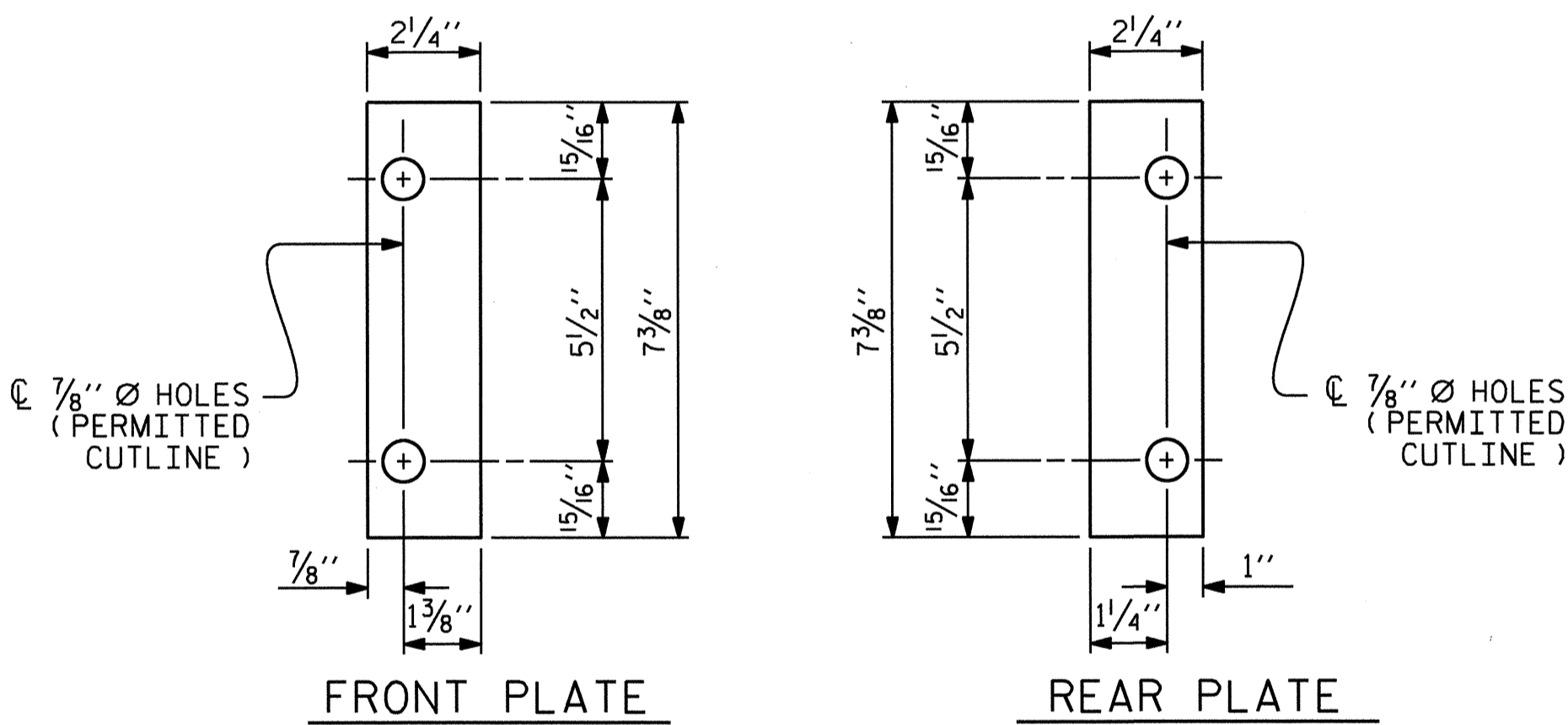
WHEN ADHESIVELY ANCHORED ANCHOR BOLTS ARE USED, BOLTS SHALL MEET THE REQUIREMENTS OF ASTM F593 ALLOY 304 STAINLESS STEEL WITH MINIMUM 75,000 PSI ULTIMATE STRENGTH. NUTS SHALL MEET THE REQUIREMENTS OF ASTM F594 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY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



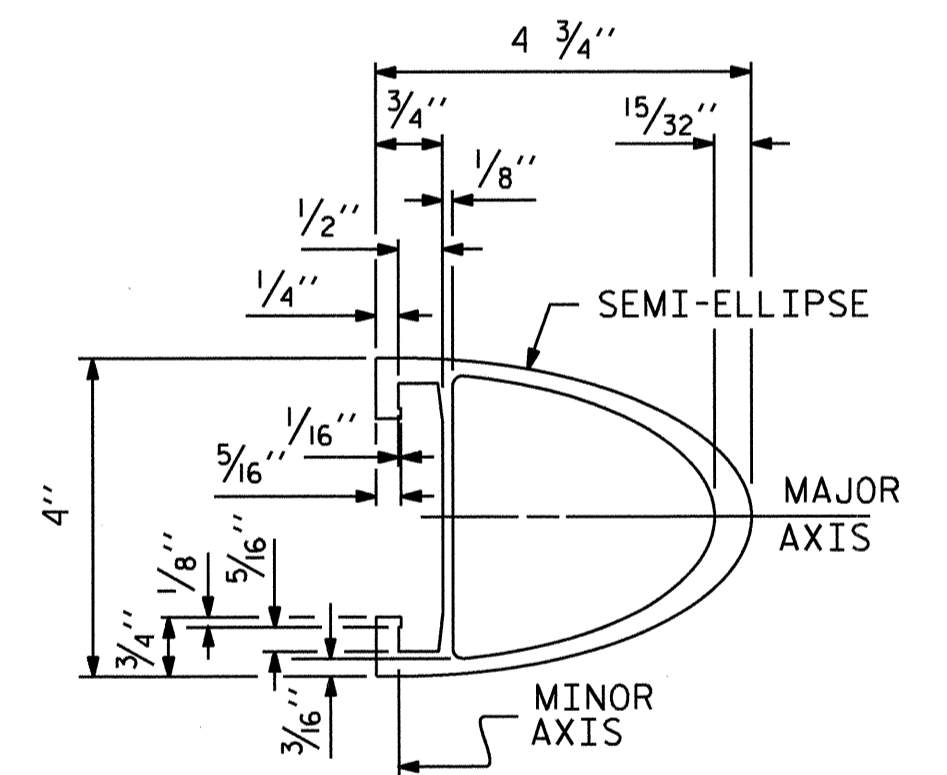
4-BOLT METAL RAIL ANCHOR ASSEMBLY
(38 ASSEMBLIES REQUIRED)



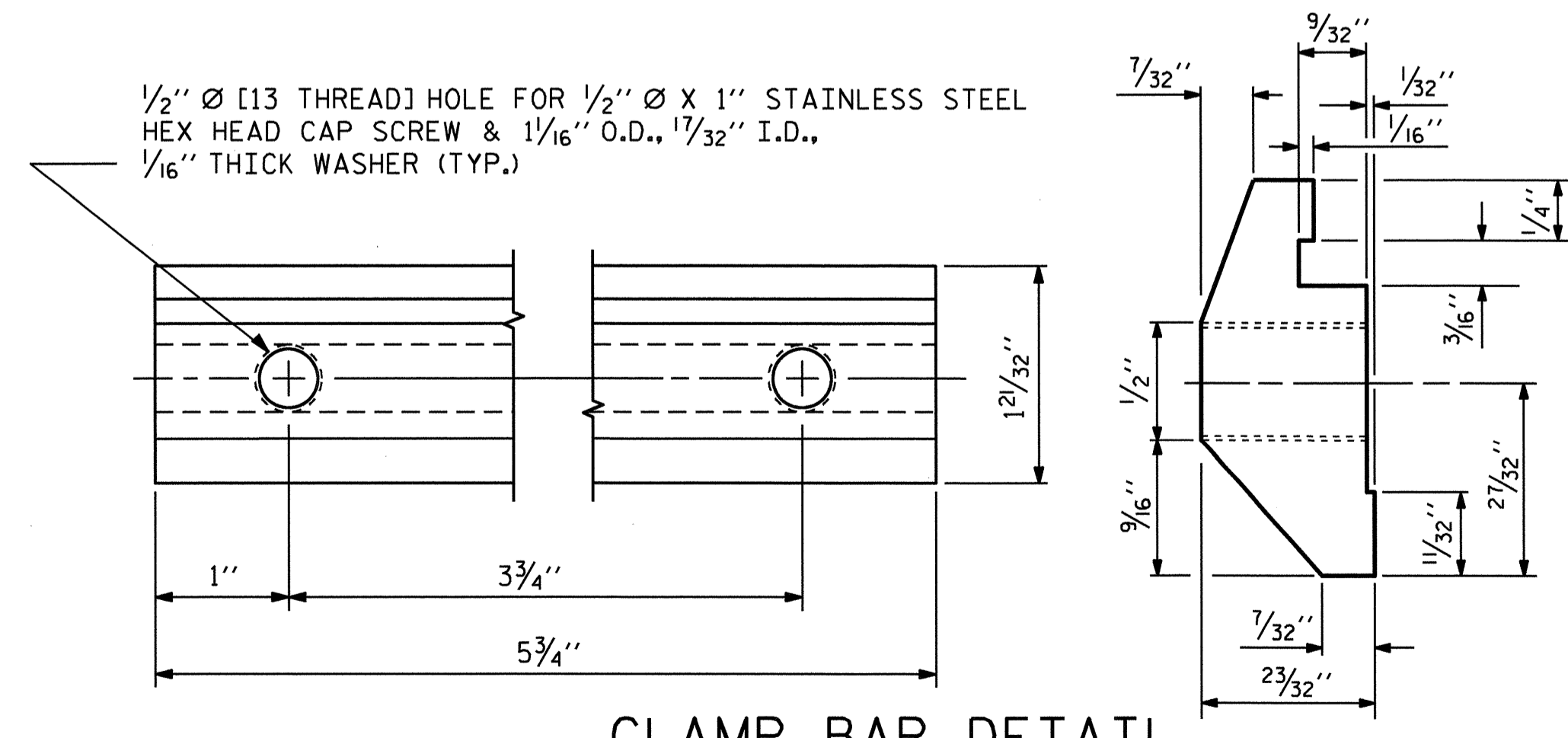
EXPANSION BAR DETAILS



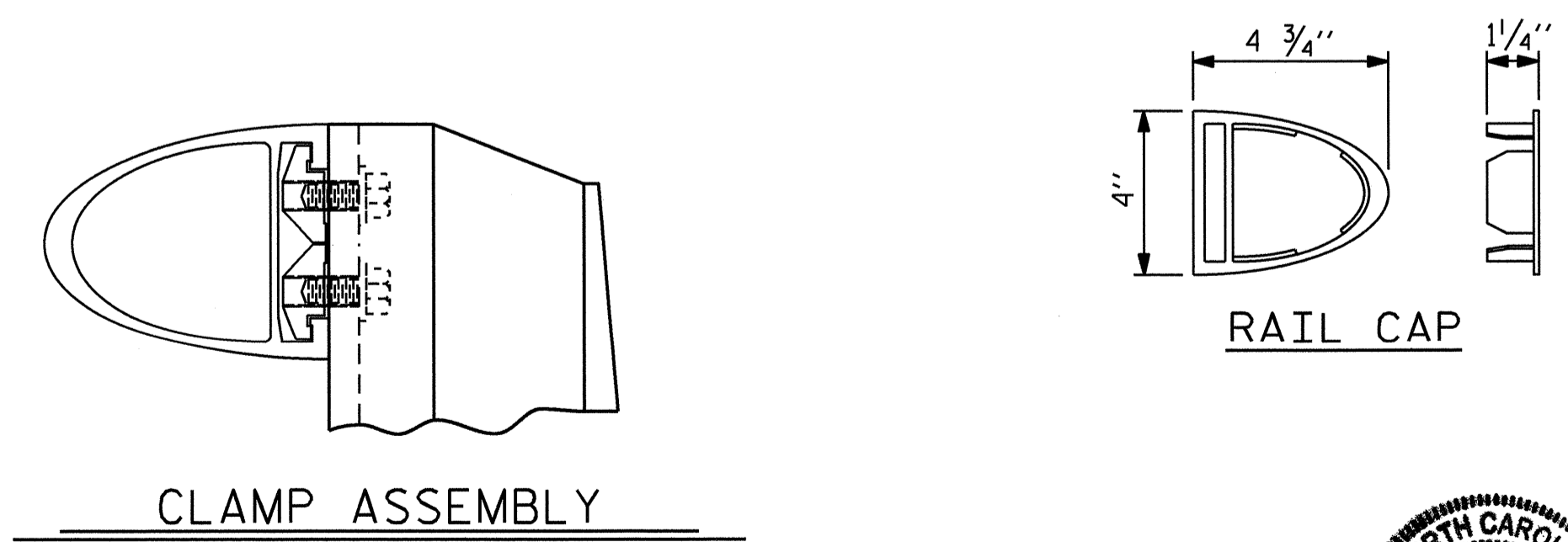
SHIM DETAILS



RAIL SECTION



CLAMP BAR DETAIL
(4 REQUIRED PER POST)



CLAMP ASSEMBLY

RAIL CAP

PROJECT NO. B-3638
DURHAM COUNTY
 STATION: 17+16.70 -L-
 SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
2 BAR METAL RAIL					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-16					TOTAL SHEETS 29



ASSEMBLED BY : D. G. ELY	DATE : 01/2011
CHECKED BY : M. K. TOM	DATE : 01/2011
DRAWN BY : EEM 6/94	REV. 2/6/97 EEM/RGW
CHECKED BY : RGW 6/94	REV. 8/16/99 MAB/LES
	REV. 5/7/03 RWW/JTE

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 5/8" 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 5/8" 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 1/6" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

NOTES

METAL RAIL TO END POST CONNECTION

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

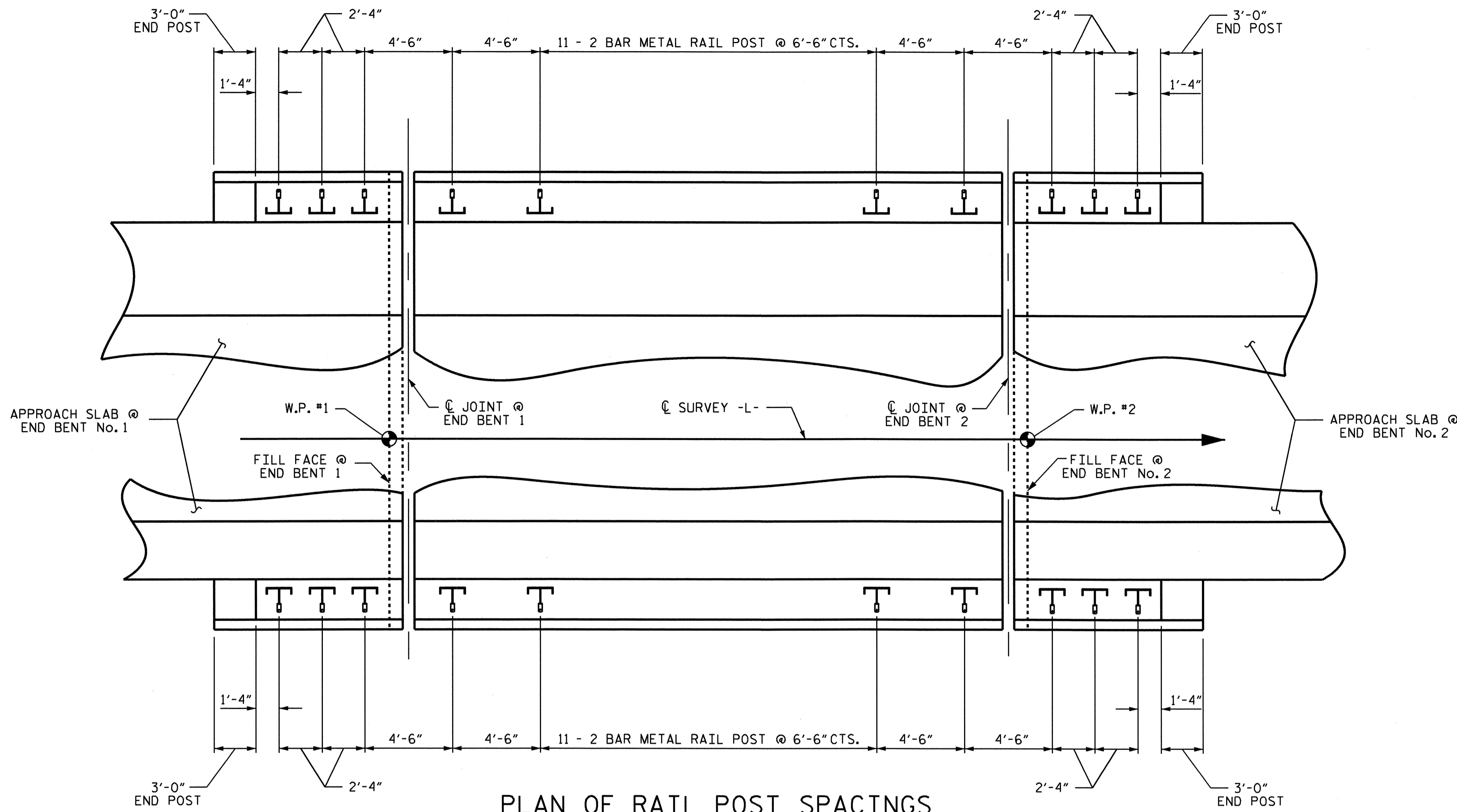
- A. 1/2" PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
- B. 3/4" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A 3/4" Ø X 1 5/8" BOLT WITH 2" O.D. WASHER IN PLACE. THE 3/4" Ø X 1 5/8" BOLT SHALL HAVE 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.
- D. STANDARD CLAMP BARS (SEE METAL RAIL SHEET).
- E. 1/2" Ø PIPE SLEEVES (IF REQUIRED) TO BE GALVANIZED.

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 1 OR 2 BAR METAL RAILS.

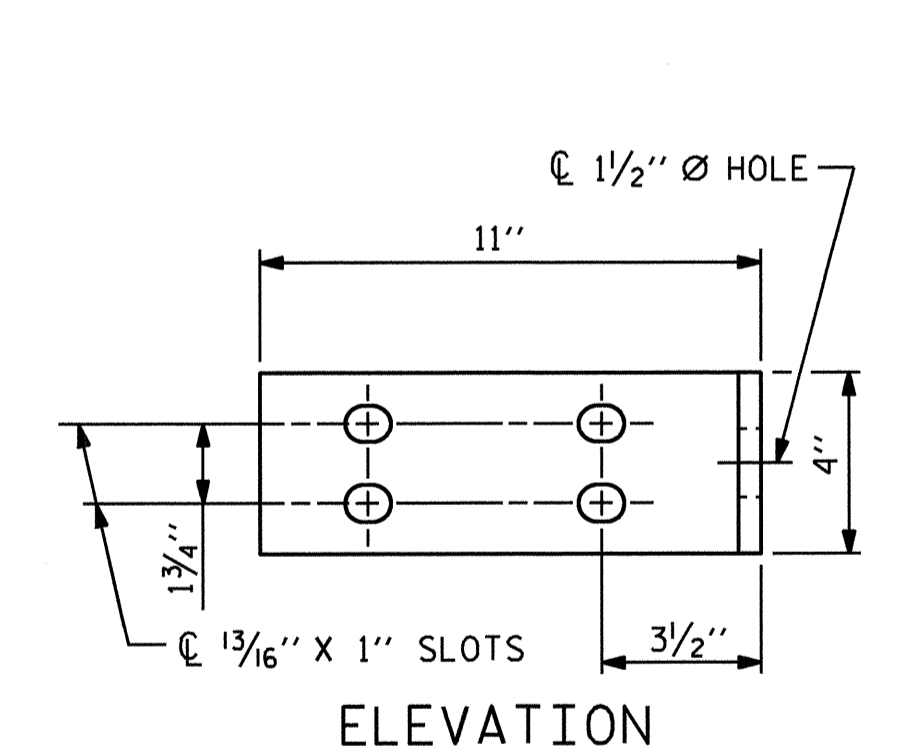
THE 3/4" STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.

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.

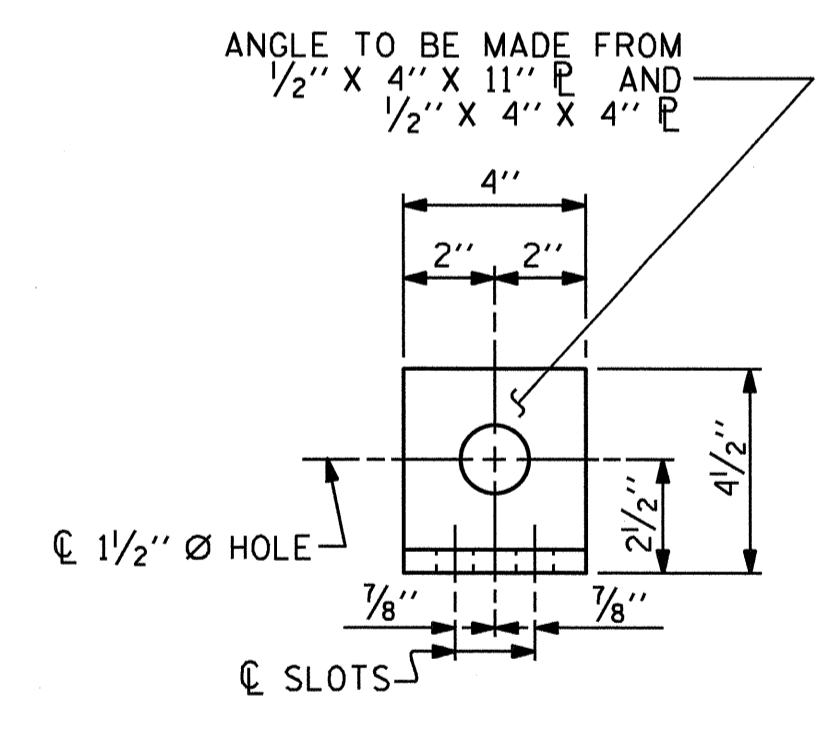
THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE 3/4" Ø X 1 5/8" BOLT WITH WASHER SHALL BE REPLACED WITH A 3/4" Ø X 6 1/2" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE 3/4" Ø X 1 5/8" BOLT SHALL APPLY TO THE 3/4" Ø X 6 1/2" BOLT. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.



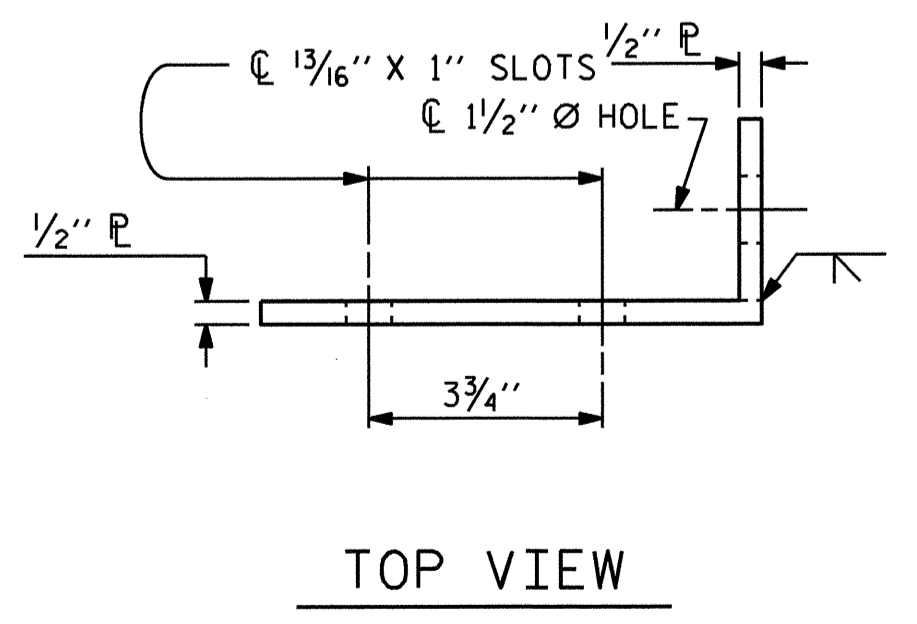
PLAN OF RAIL POST SPACINGS



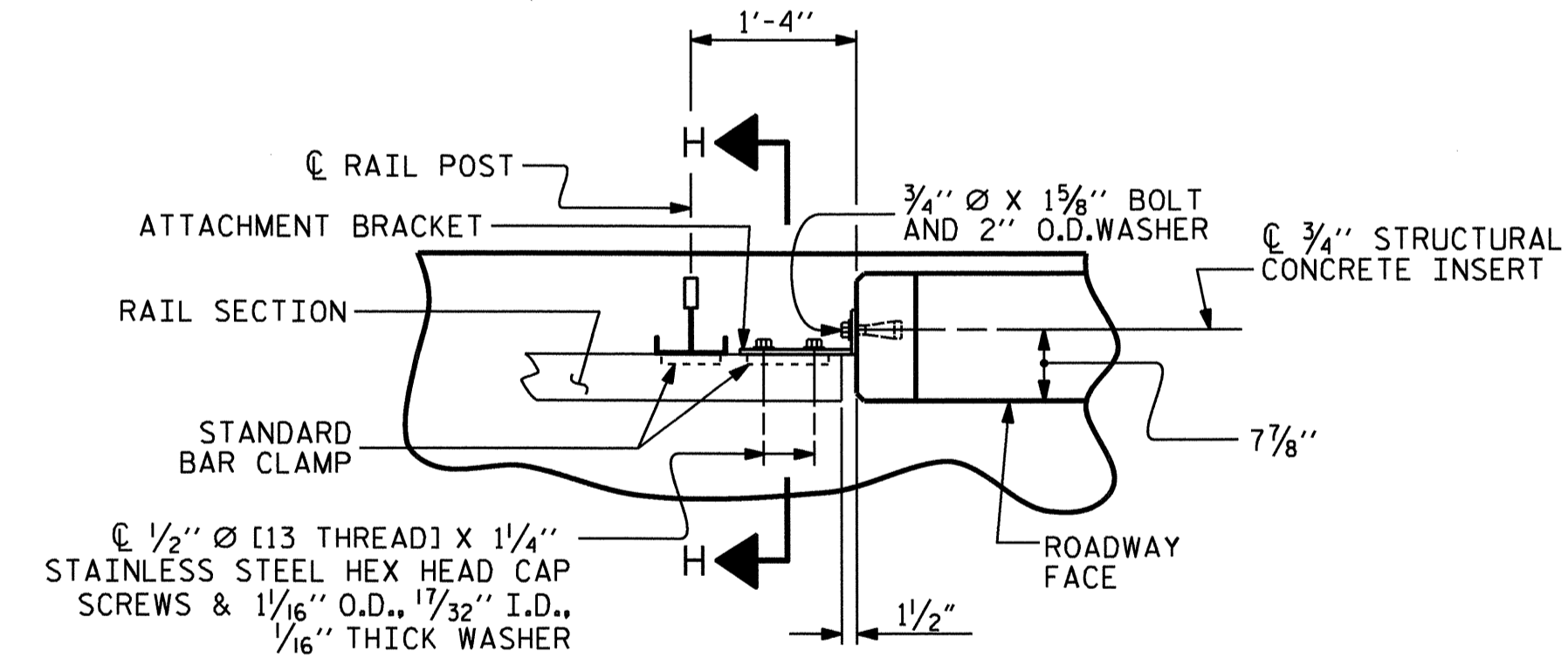
ELEVATION



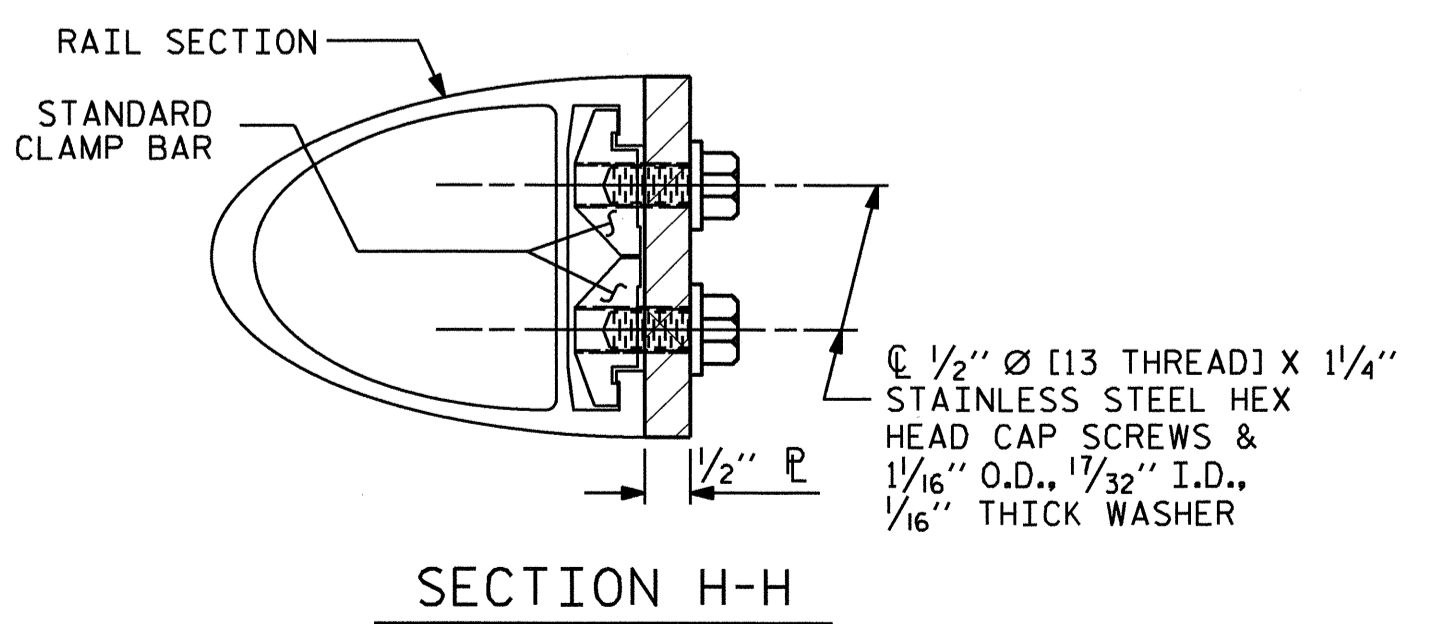
END VIEW



TOP VIEW

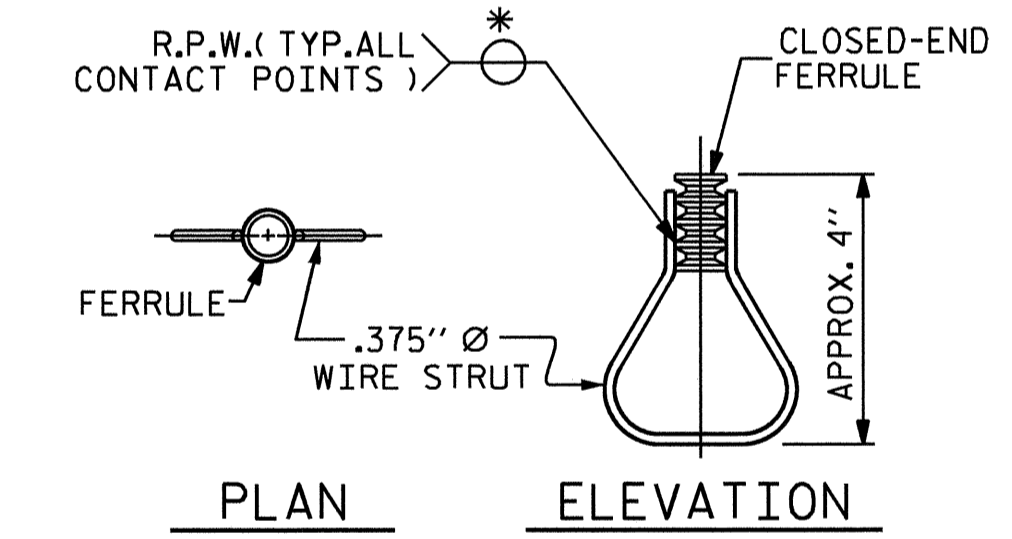


PLAN - RAIL AND END POST



SECTION H-H

DETAILS FOR ATTACHING METAL RAIL TO END POST



STRUCTURAL CONCRETE INSERT

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

PROJECT NO. B-3638
 DURHAM COUNTY
 STATION: 17+16.70 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

RAIL POST SPACINGS AND END OF RAIL DETAILS



ASSEMBLED BY : D. G. ELY DATE : 01/20/11
 CHECKED BY : M. K. TOM DATE : 01/20/11

09-JAN-2012 11:08
 J:\Structures\Super_Draw\B3638_SD_2MR.dgn
 kaiford

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17	
1			3			TOTAL SHEETS 29	
2			4				

STD. NO. BMR2

NOTES

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

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

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

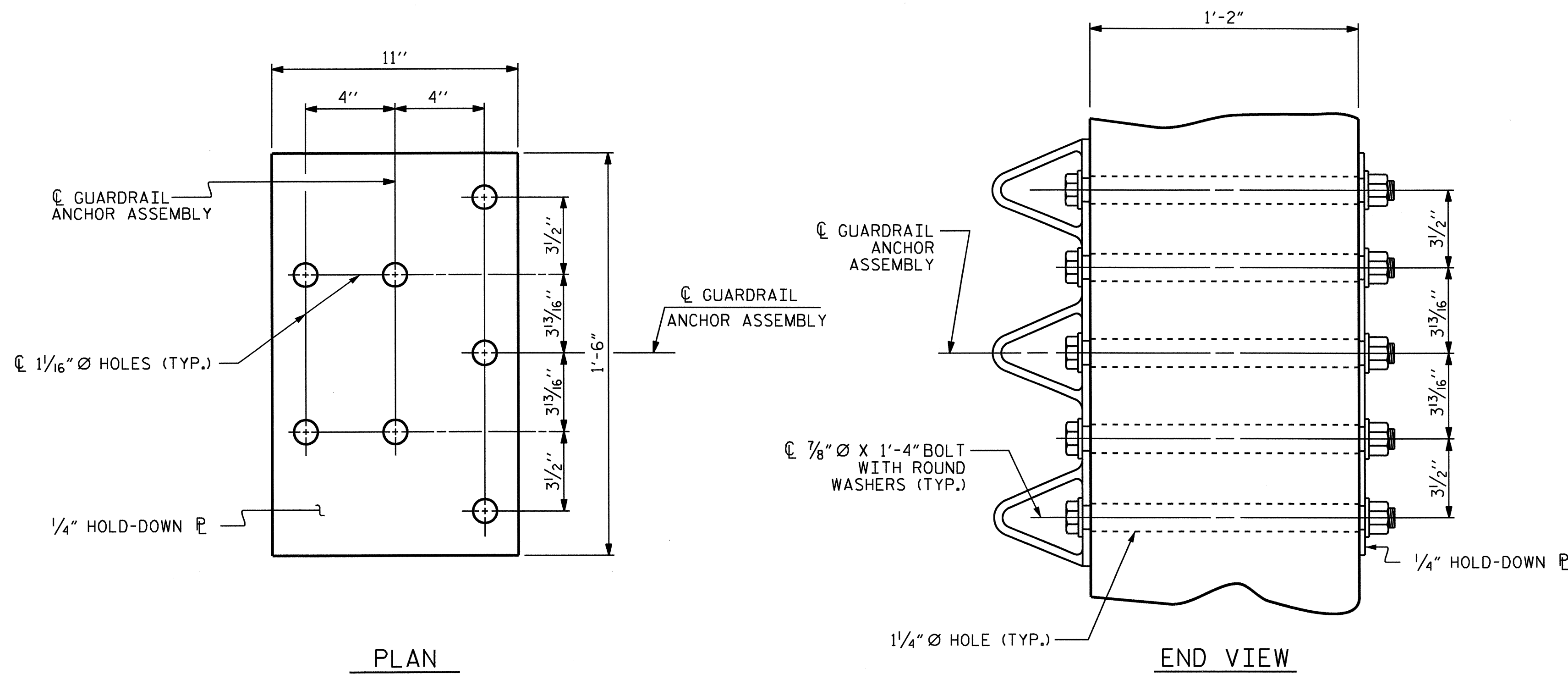
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

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

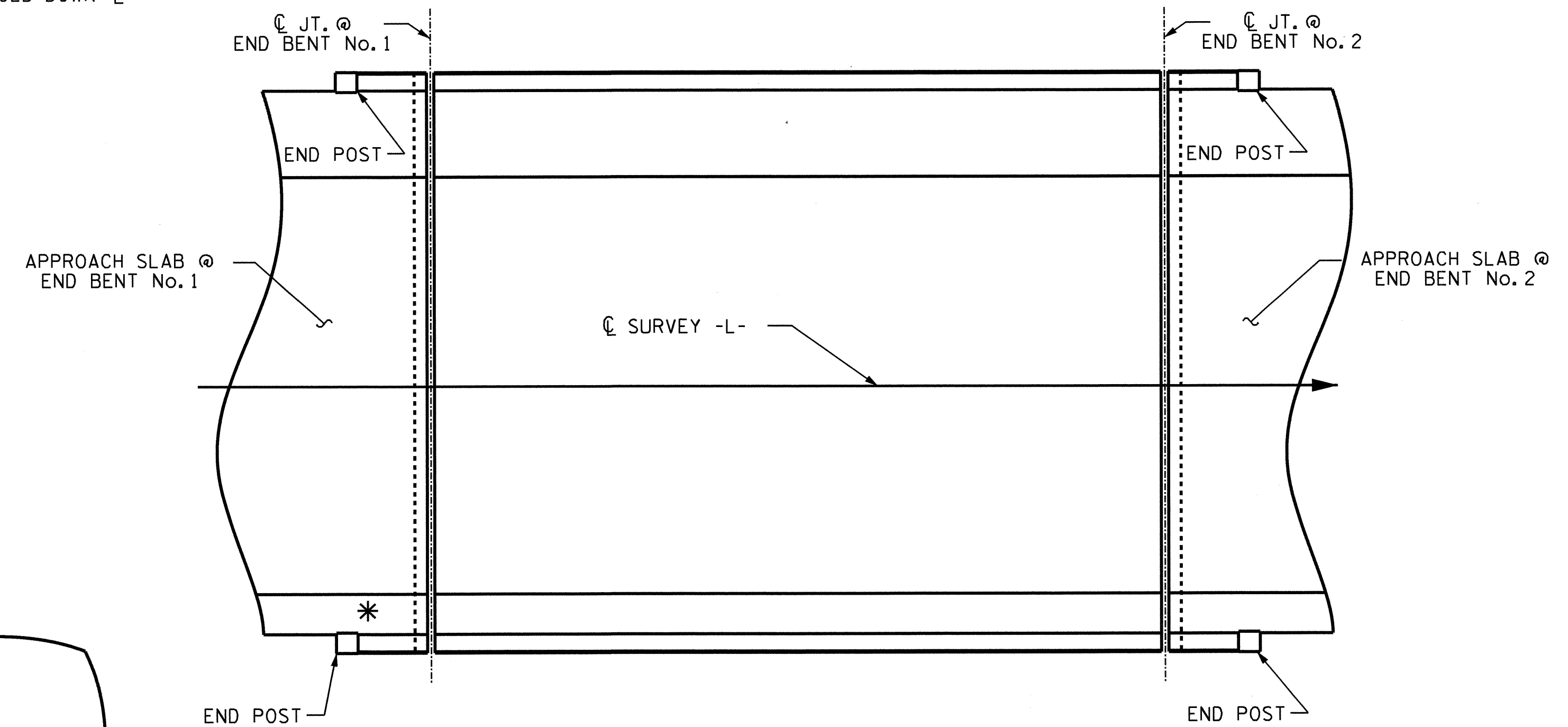
THE 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



PLAN

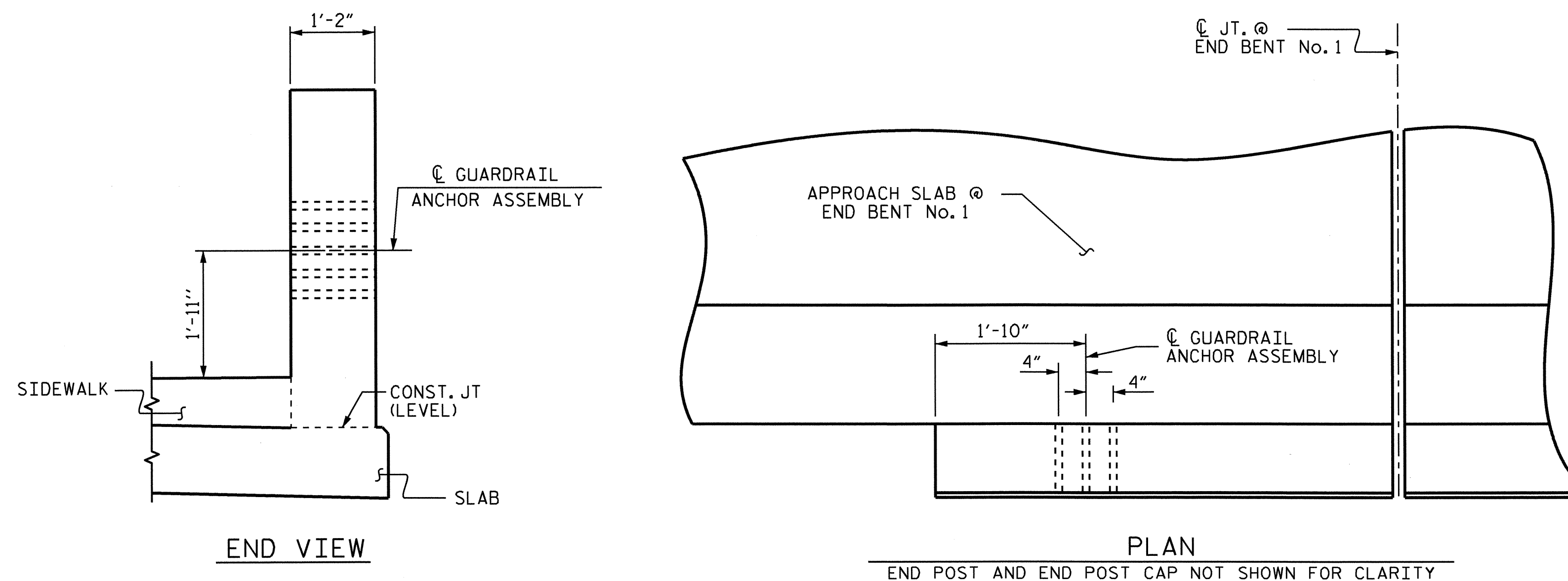
END VIEW

GUARDRAIL ANCHOR ASSEMBLY DETAILS



SKETCH SHOWING POINTS OF ATTACHMENT

* LOCATION OF GUARDRAIL ATTACHMENT



END VIEW

PLAN

END POST AND END POST CAP NOT SHOWN FOR CLARITY

LOCATION OF GUARDRAIL ANCHOR AT END POST

PROJECT NO. B-3638
 DURHAM COUNTY
 STATION: 17+16.70 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

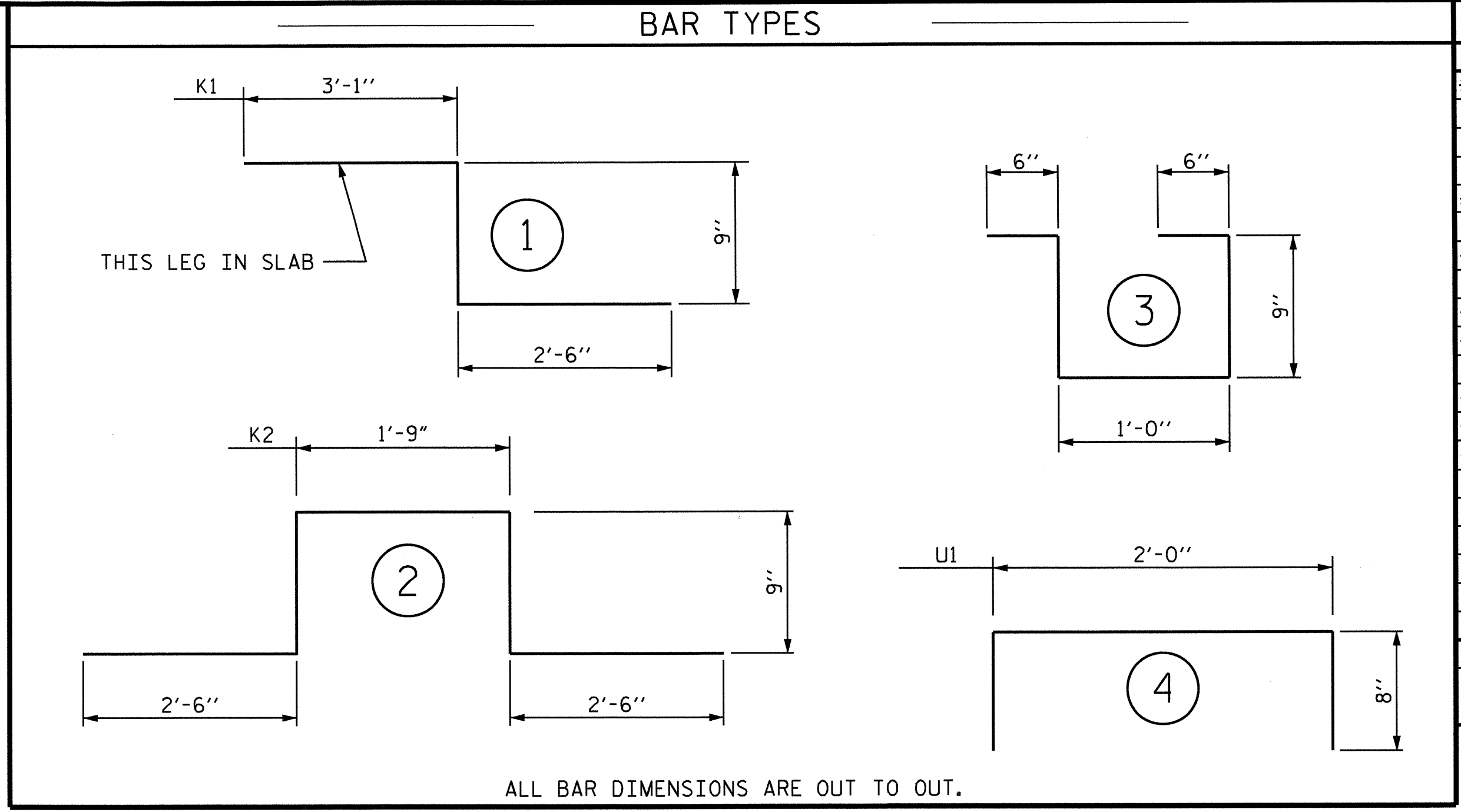
GUARDRAIL ANCHORAGE
 DETAILS
 FOR METAL RAILS

ASSEMBLED BY : D. G. ELY	DATE : 01/2011
CHECKED BY : M. K. TOM	DATE : 01/2011
DRAWN BY : MAA 5/10	ADDED 5/6/10
CHECKED BY : GM 5/10	

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			29

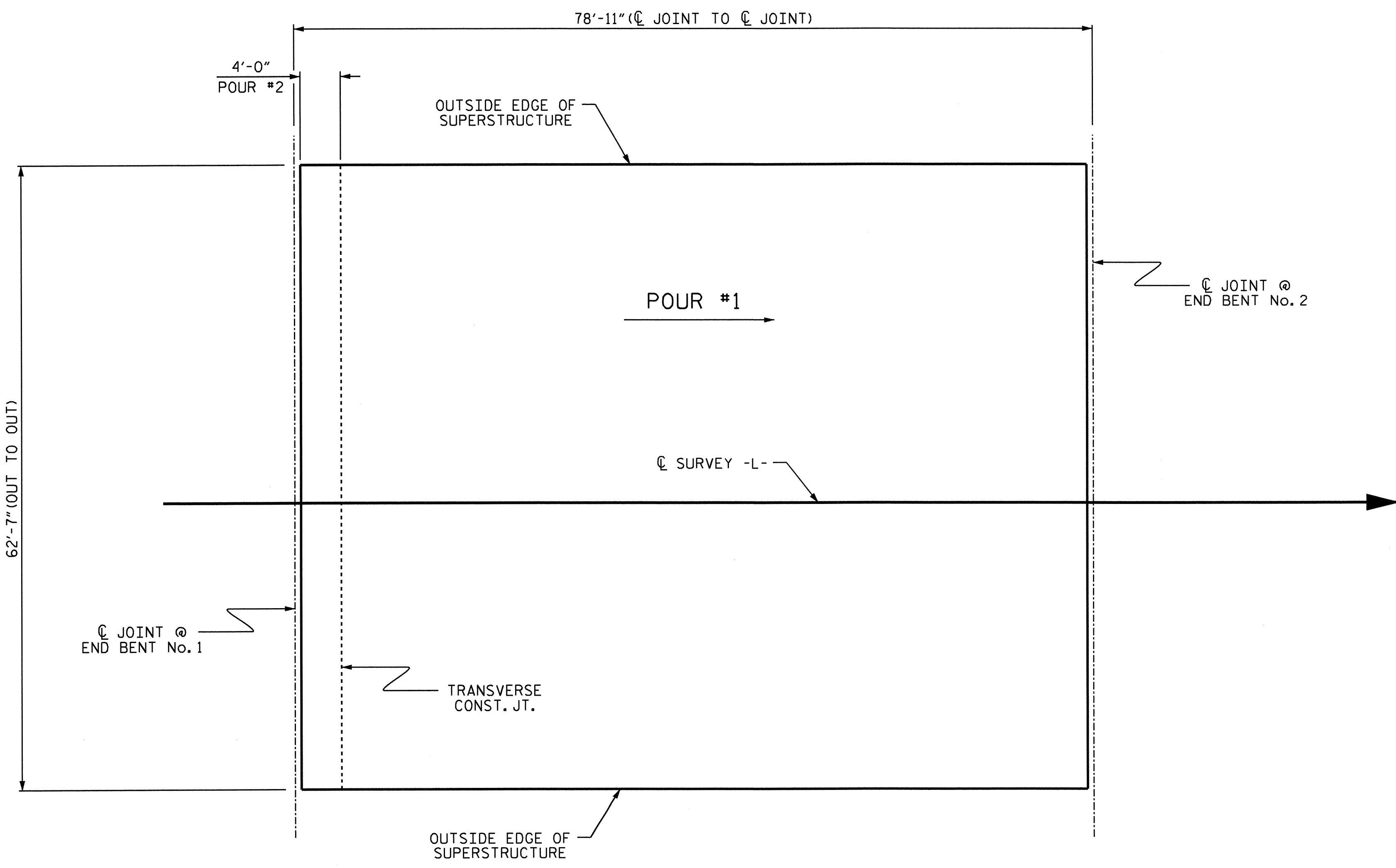
SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS

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"			



BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	316	#5	STR	32'-5"	10684
A2	316	#5	STR	23'-0"	7581
A3	158	#5	STR	20'-7"	3392
* B1	129	#4	STR	27'-6"	2370
B2	152	#5	STR	40'-4"	6394
* B3	42	#4	STR	28'-0"	786
* G1	78	#4	STR	9'-6"	495
* G2	78	#4	STR	4'-6"	234
* K1	8	#5	1	6'-4"	53
* K2	24	#5	2	8'-3"	207
* K3	28	#5	STR	7'-9"	226
* S1	98	#4	3	3'-6"	229
* U1	72	#4	4	3'-4"	160
				REINFORCING STEEL	17,367 LBS.
				*EPOXY COATED REINFORCING STEEL	15,444 LBS.



SUPERSTRUCTURE BILL OF MATERIAL

	CLASS AA CONCRETE (CU. YDS.)	REINFORCING STEEL (LBS.)	EPOXY COATED REINFORCING STEEL (LBS.)
POUR #1	142.9		
POUR #2	9.1		
SIDEWALK	29.2		
TOTAL **	181.2	17,367	15,444

** QUANTITIES FOR PARAPET ARE NOT INCLUDED

GROOVING BRIDGE FLOOR

APPROACH SLABS	1991 SQ. FT.
BRIDGE DECK	3259 SQ. FT.
TOTAL	5250 SQ. FT.

LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB & POUR SEQUENCE (SQ. FT. = 4934)

PROJECT NO. B-3638
DURHAM COUNTY
 STATION: 17+16.70 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 BILL OF MATERIAL**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			29

DRAWN BY : D. G. ELY DATE : 01/2011
 CHECKED BY : M. K. TOM DATE : 01/2011

NOTES

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

HOOKS ON "M" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

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

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.

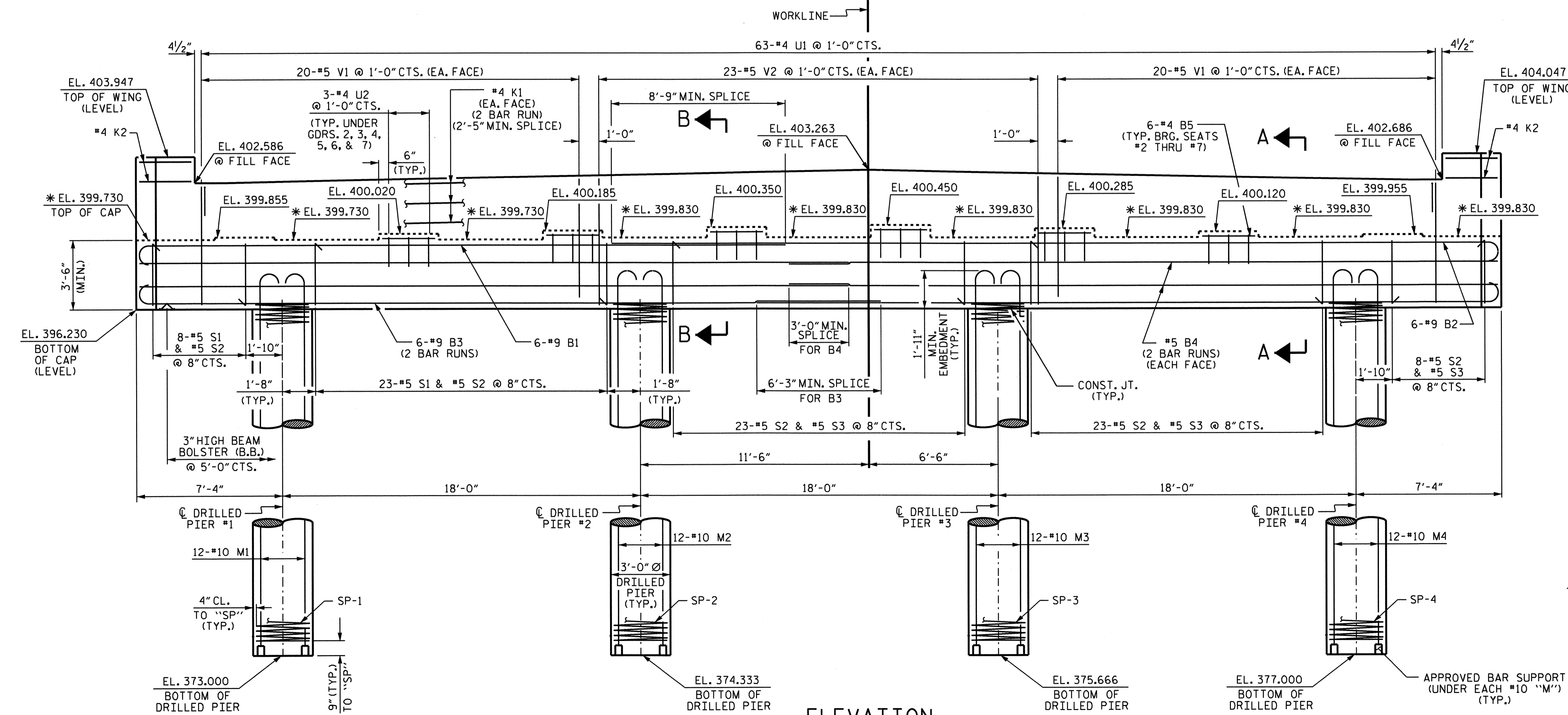
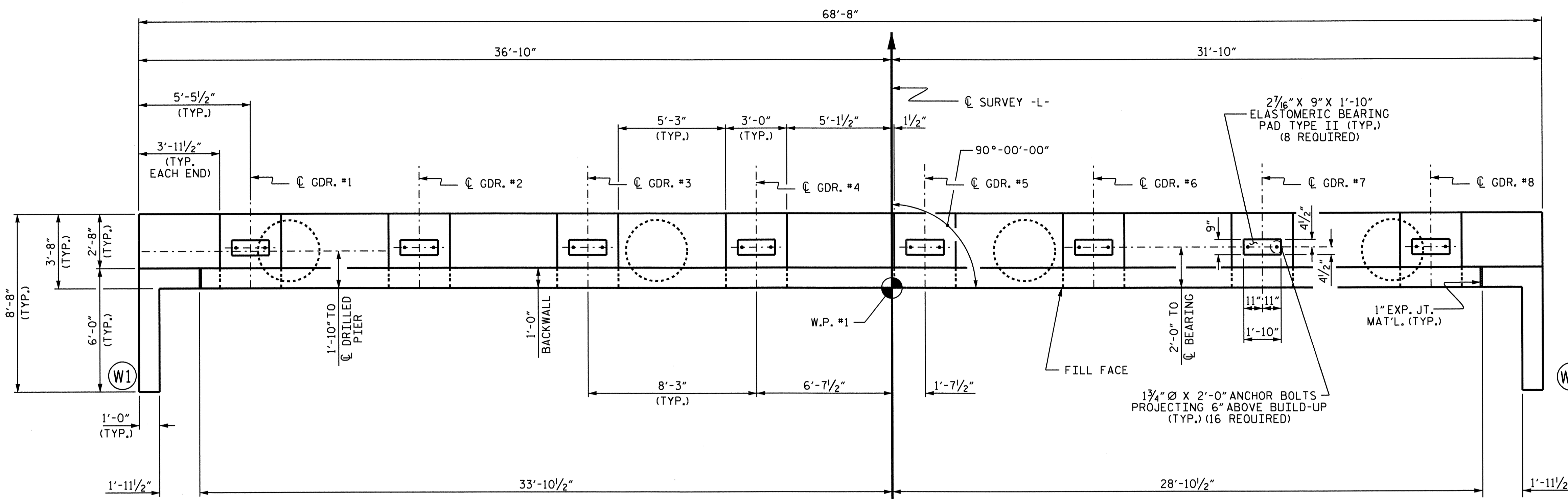
SPLICING OF THE LONGITUDINAL BARS IN THE DRILLED PIER WILL NOT BE PERMITTED.

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.

ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".

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

THE #5 "V" BARS IN BACKWALL SHALL BE LOCATED 2" CLEAR FROM TOP OF BACKWALL.



* FOR LOCATION OF ELEVATIONS BETWEEN BRIDGE SEAT BUILDUPS, SEE SECTION A-A ON SHEET 3 OF 3.

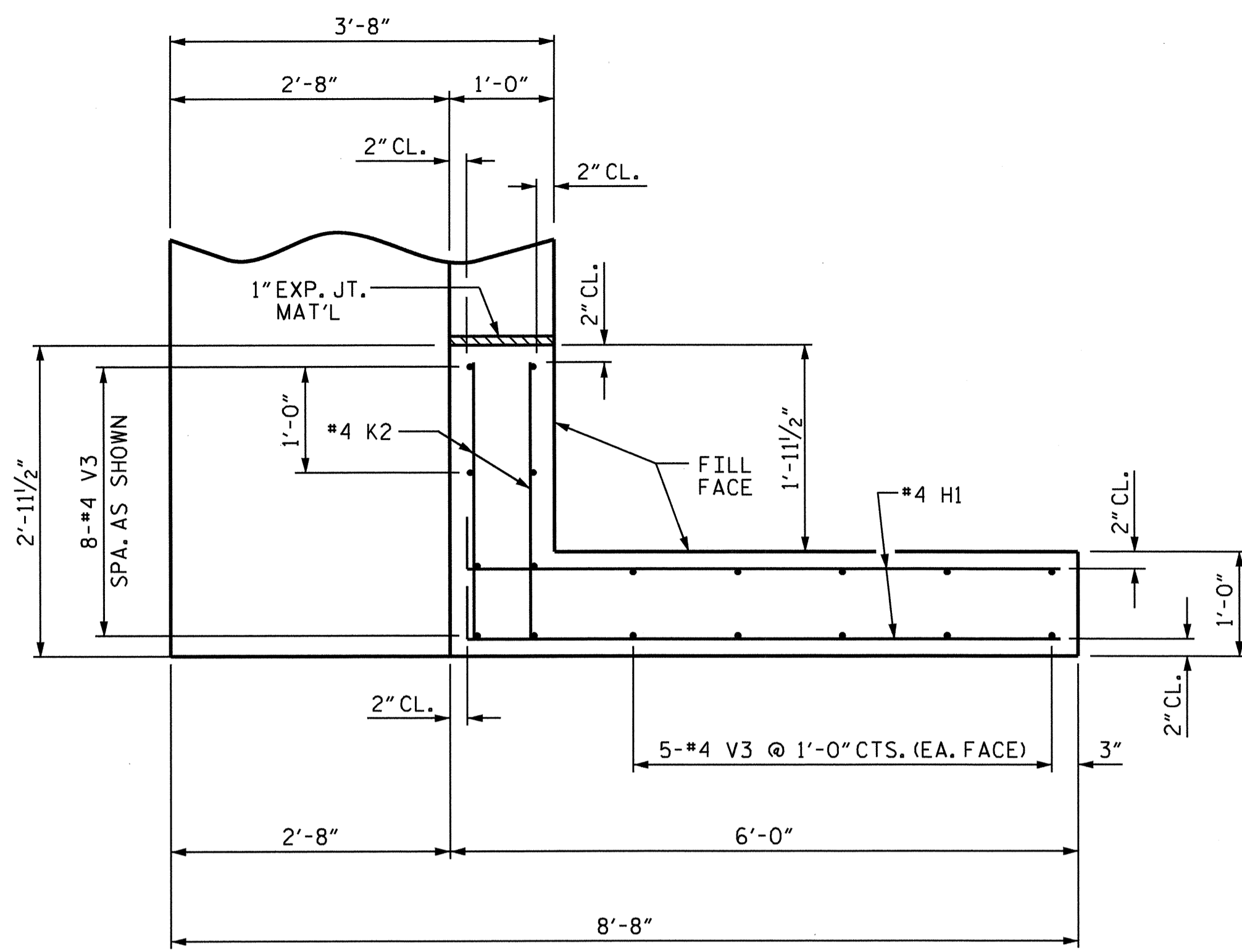
PROJECT NO. B-3638
 DURHAM COUNTY
 STATION: 17+16.70 -L-
 SHEET 1 OF 3



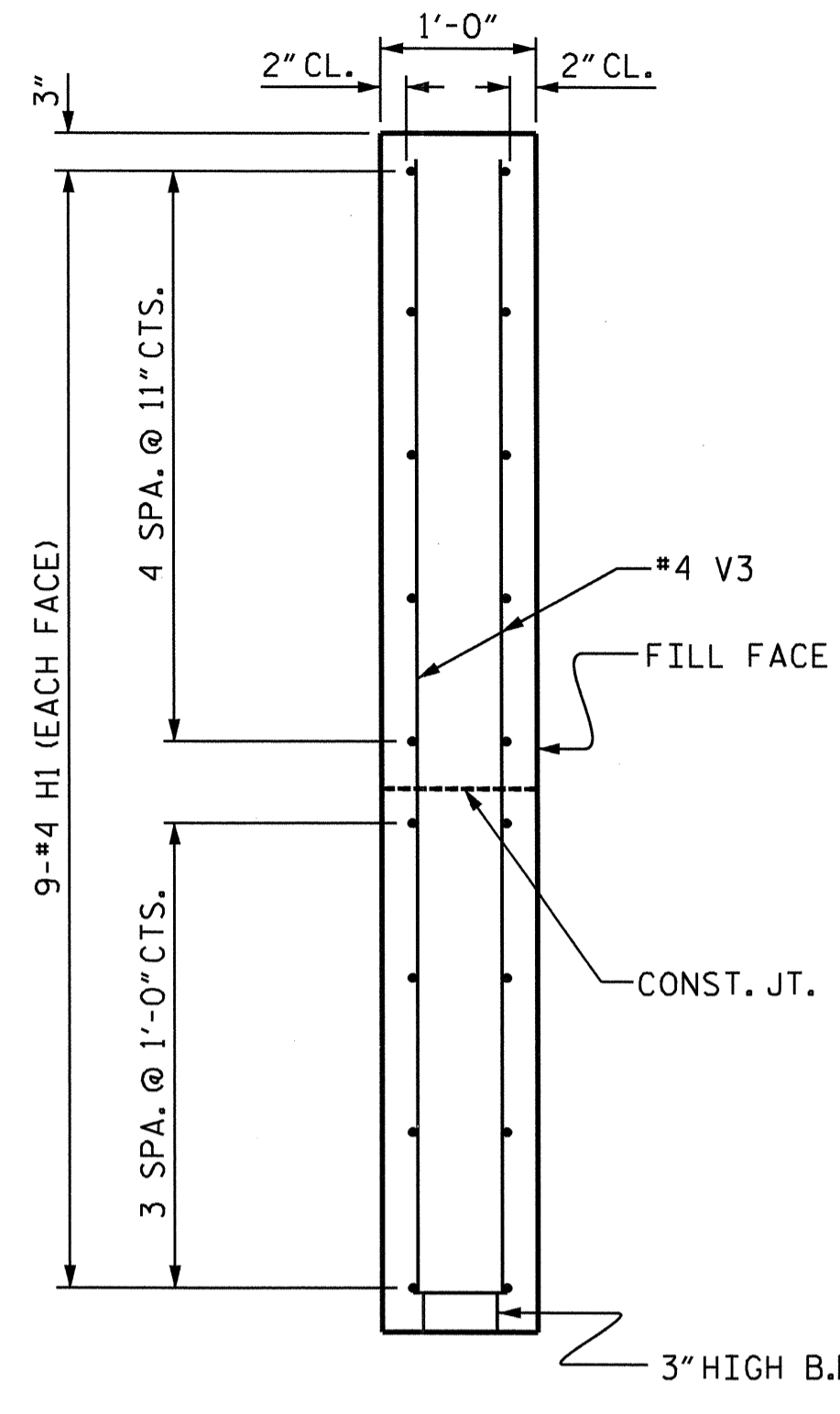
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT No. 1

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20	
1			3			TOTAL SHEETS	29
2			4				

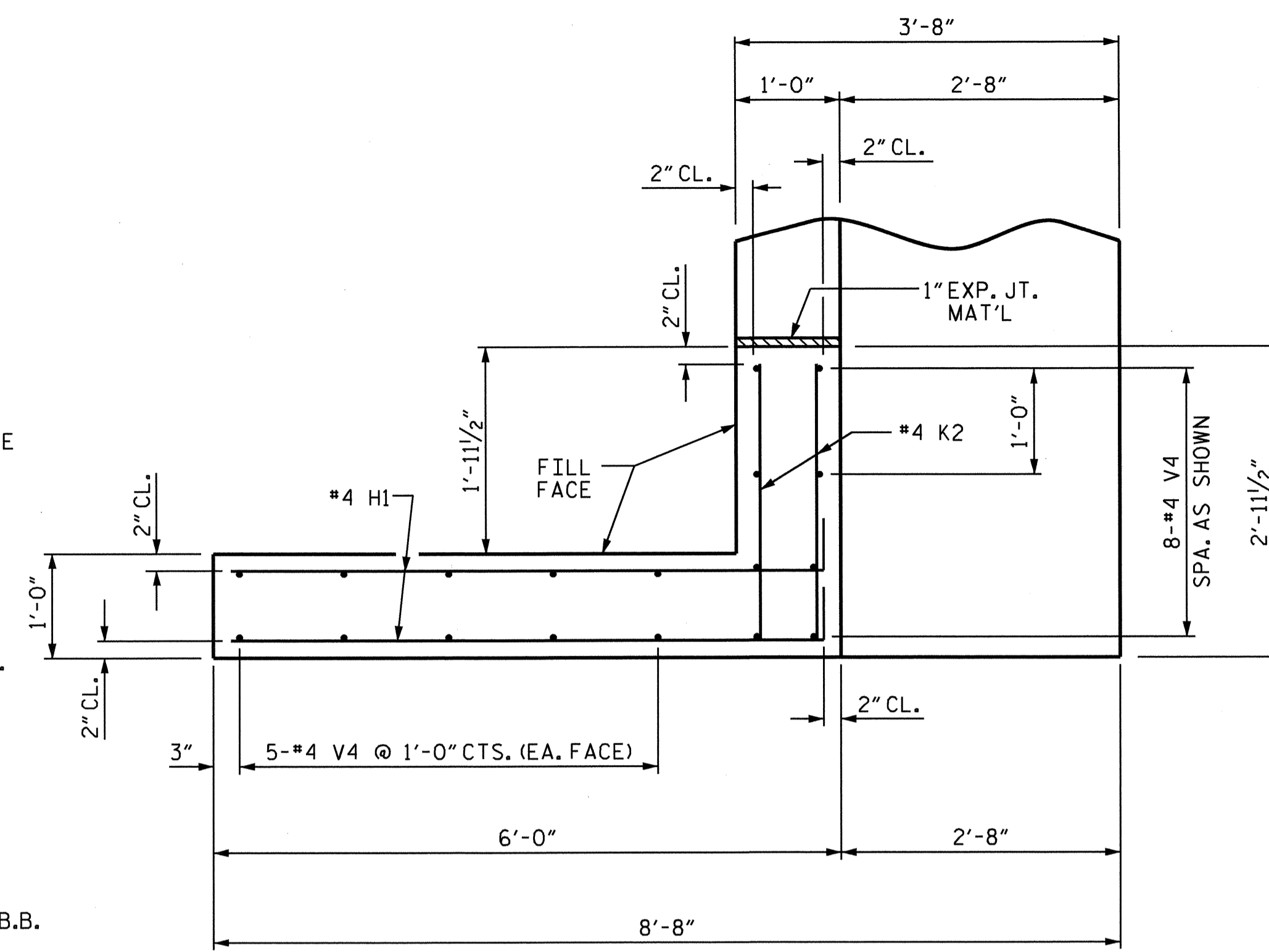
DRAWN BY: D. G. ELY DATE: 03/11
 CHECKED BY: M. L. BROWN DATE: 07/11



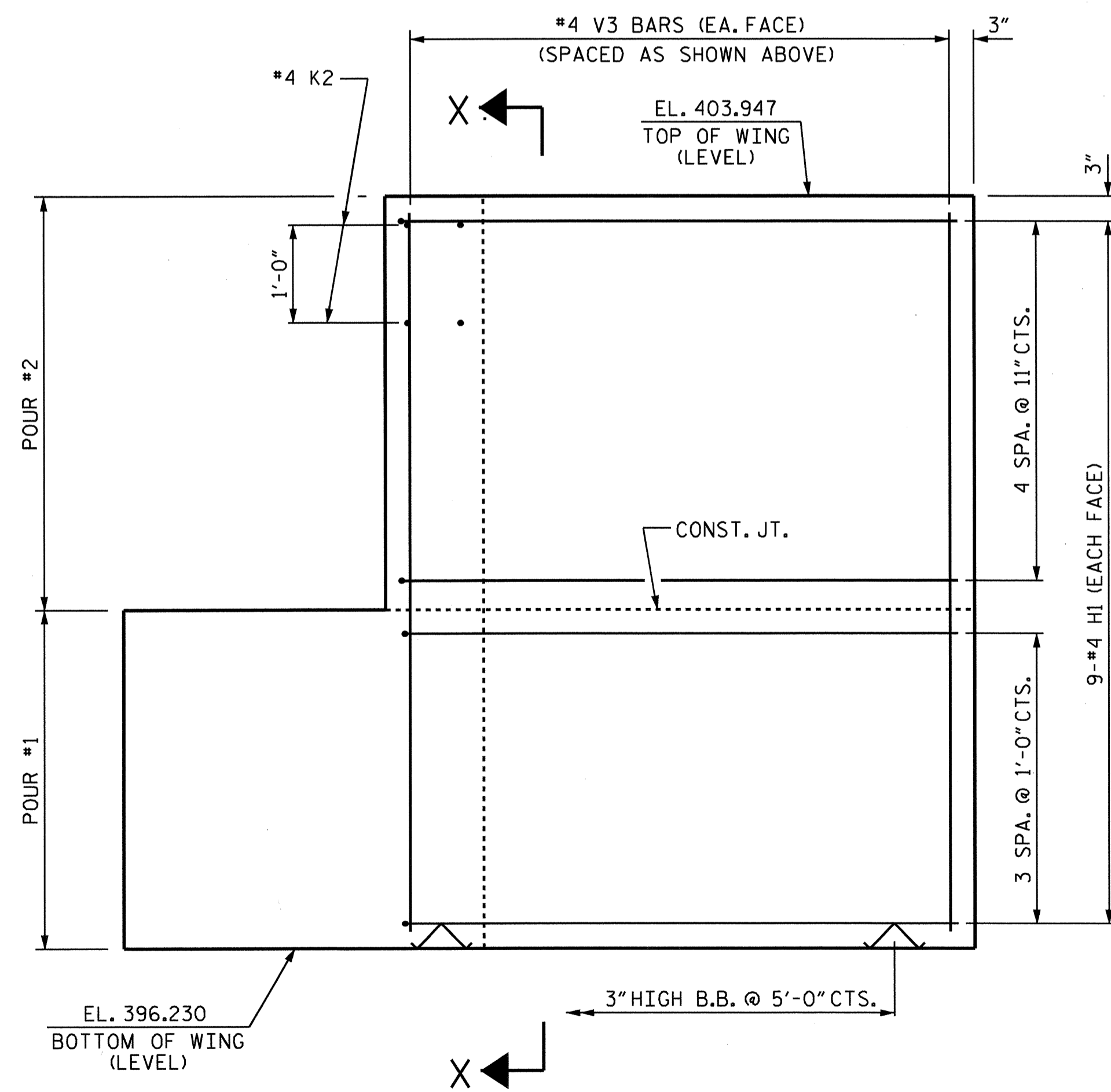
PLAN OF WING (W1)



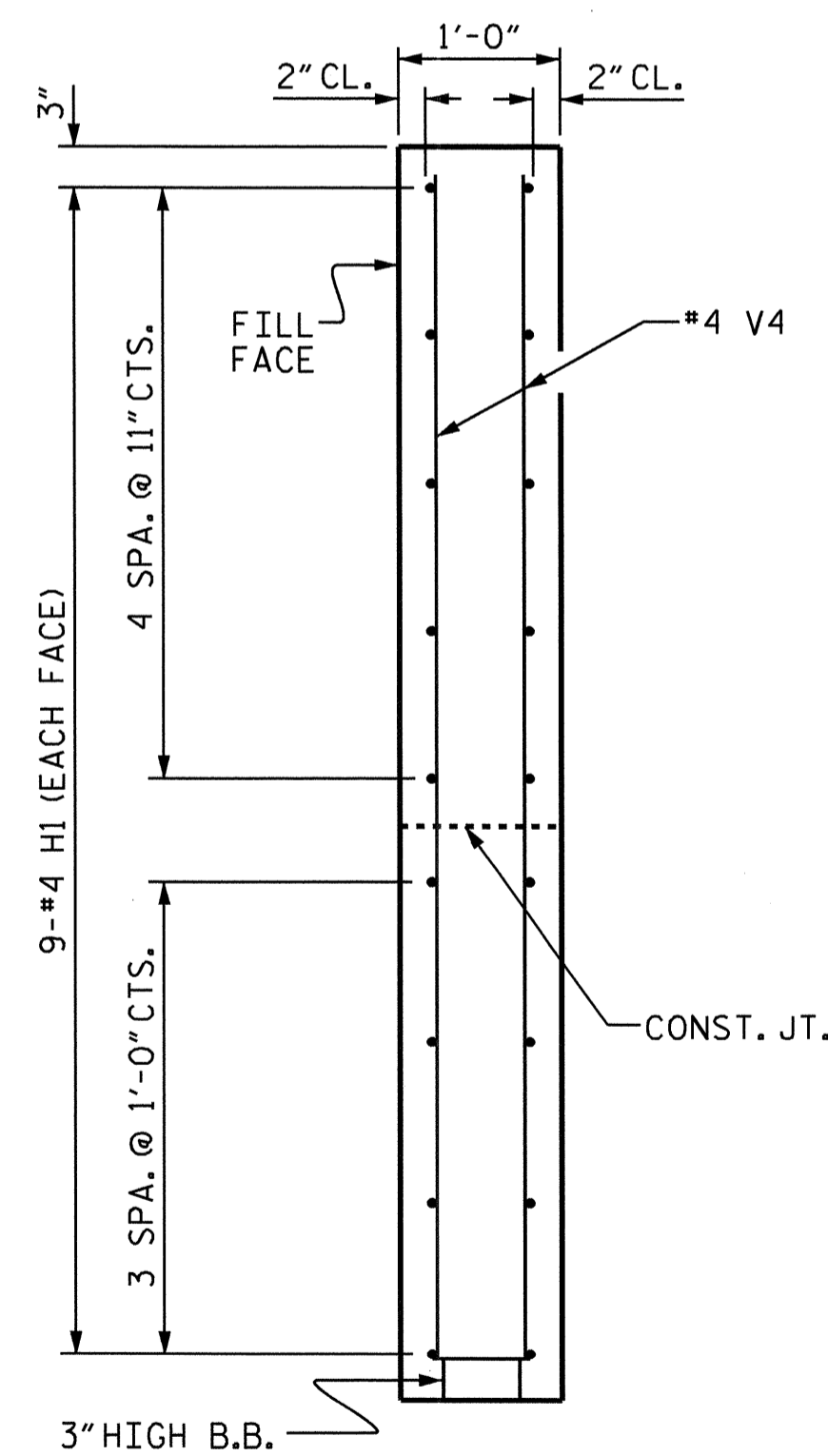
SECTION X-X



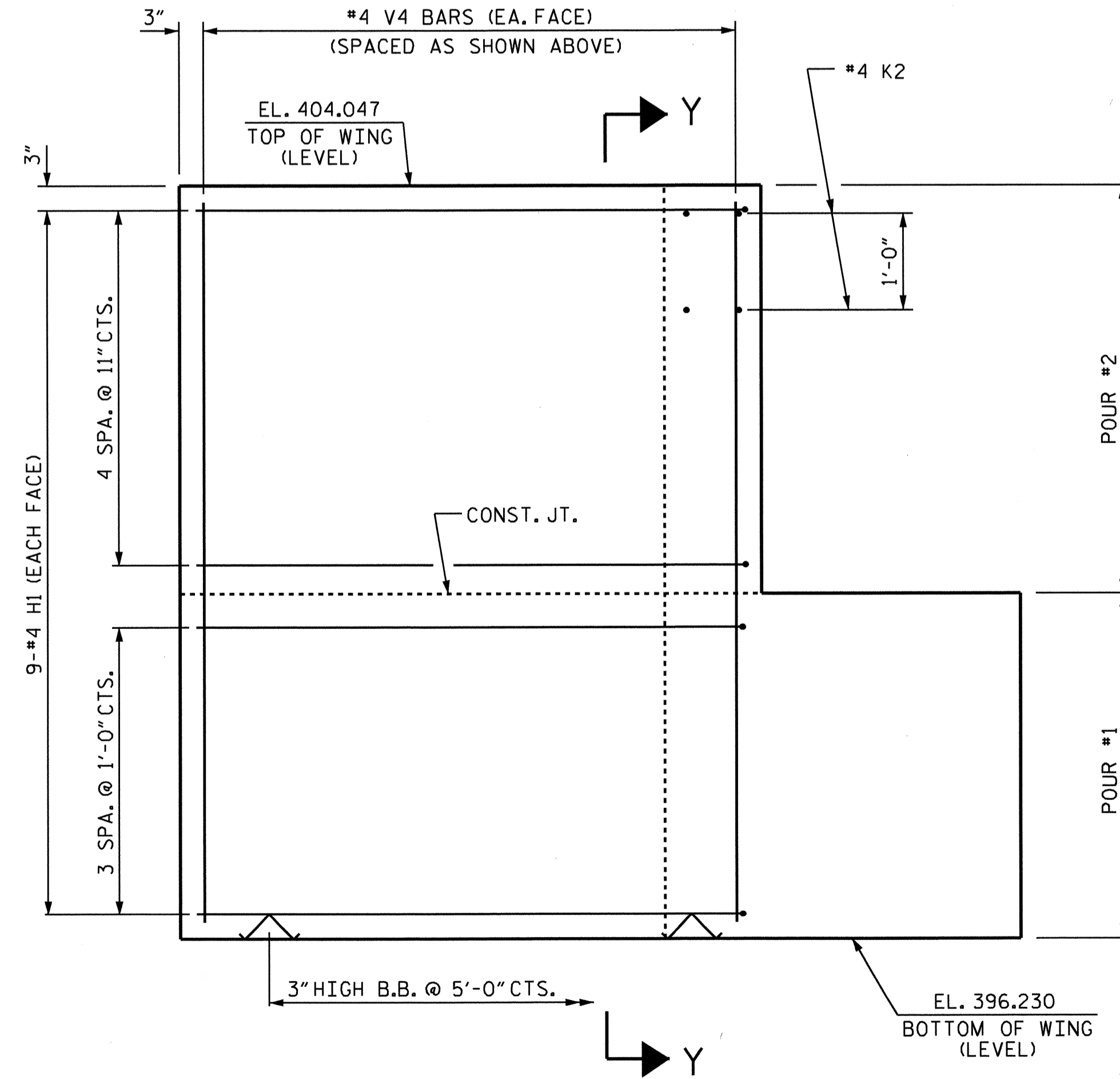
PLAN OF WING (W2)



ELEVATION OF WING (W1)



SECTION Y-Y



ELEVATION OF WING (W2)



PROJECT NO. B-3638
 DURHAM COUNTY
 STATION: 17+16.70 -L-
 SHEET 2 OF 3

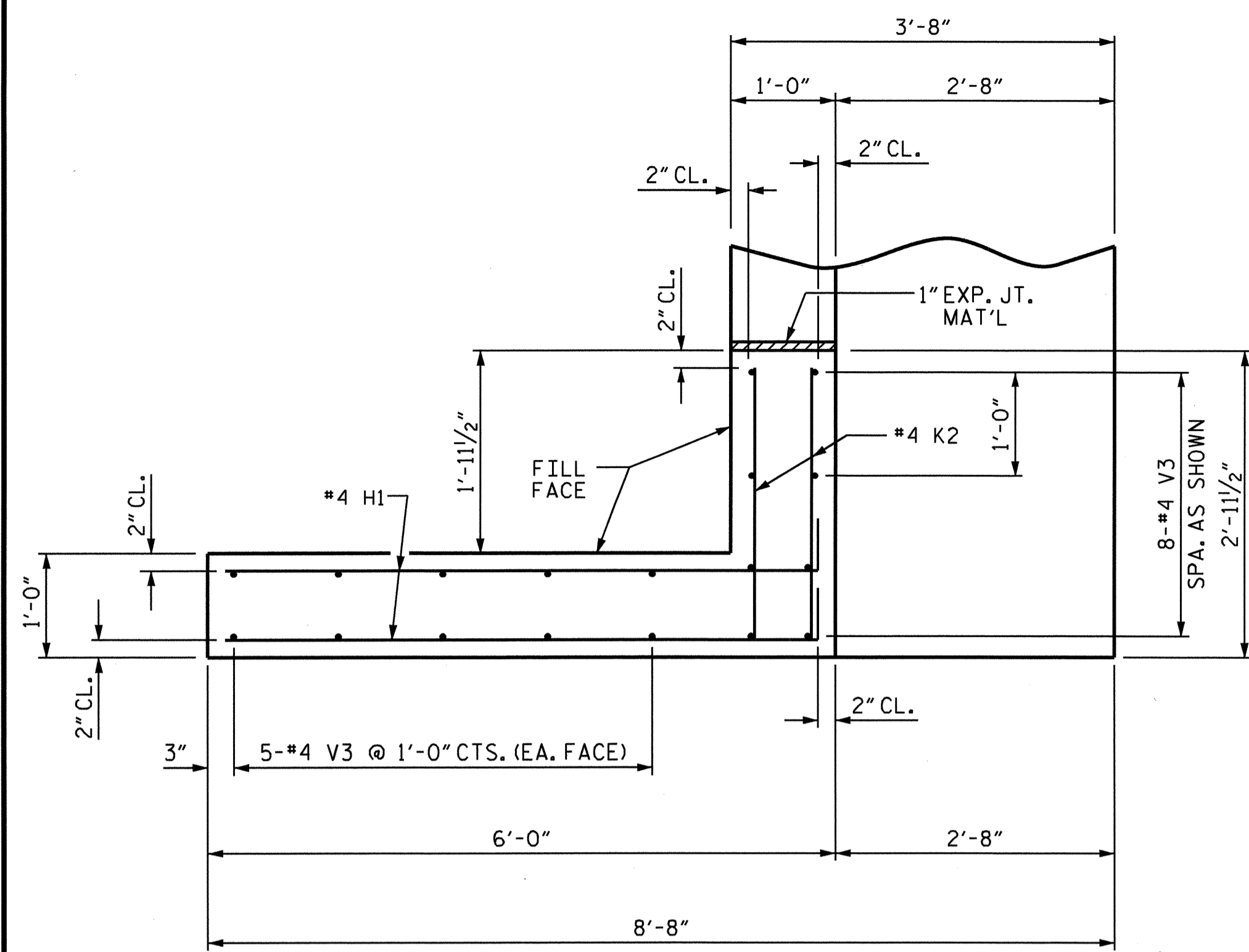
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT No. 1

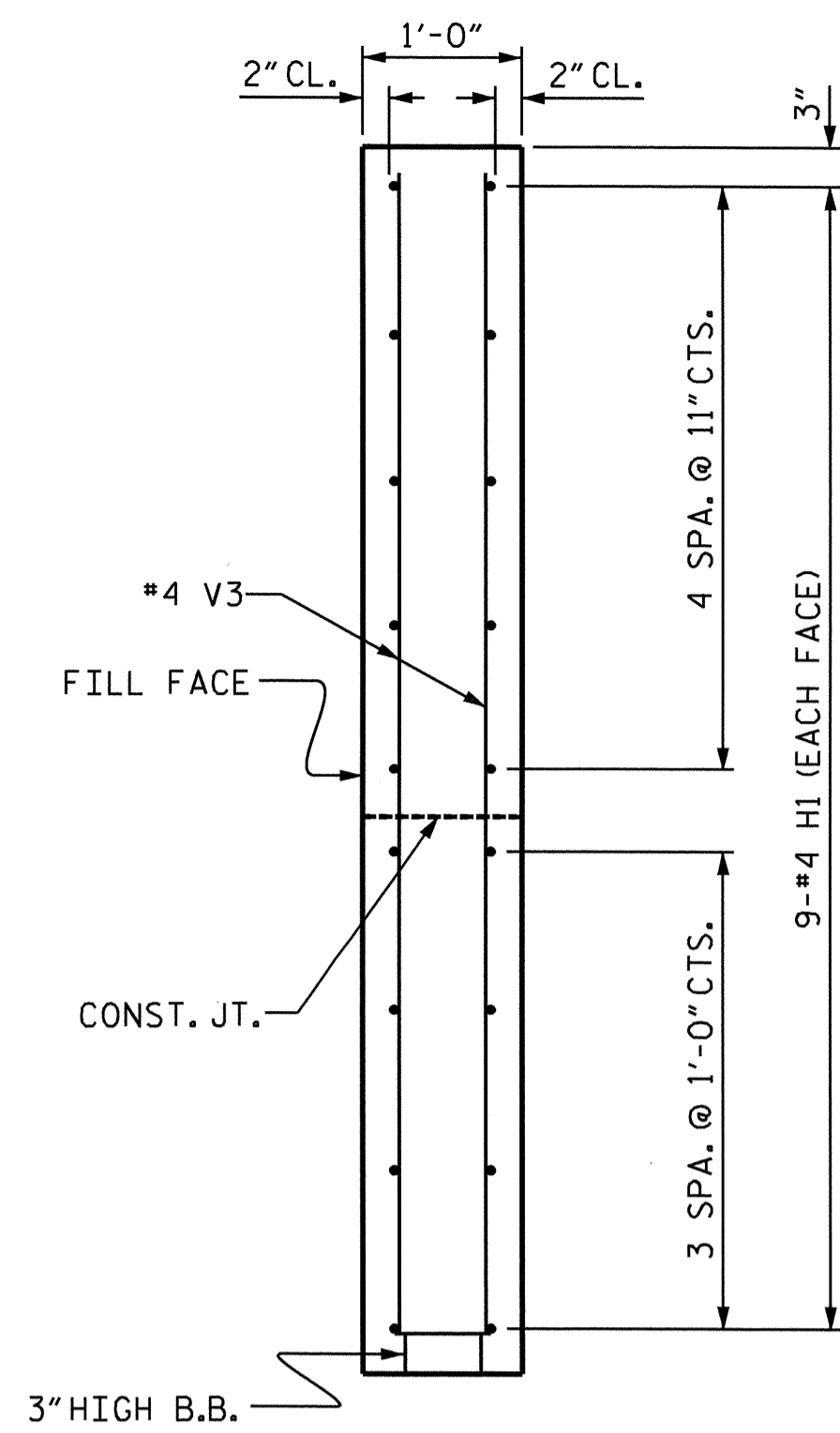
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 CHECKED BY: M. L. BROWN DATE: 07/11

09-JAN-2012 11:05
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 Kalford

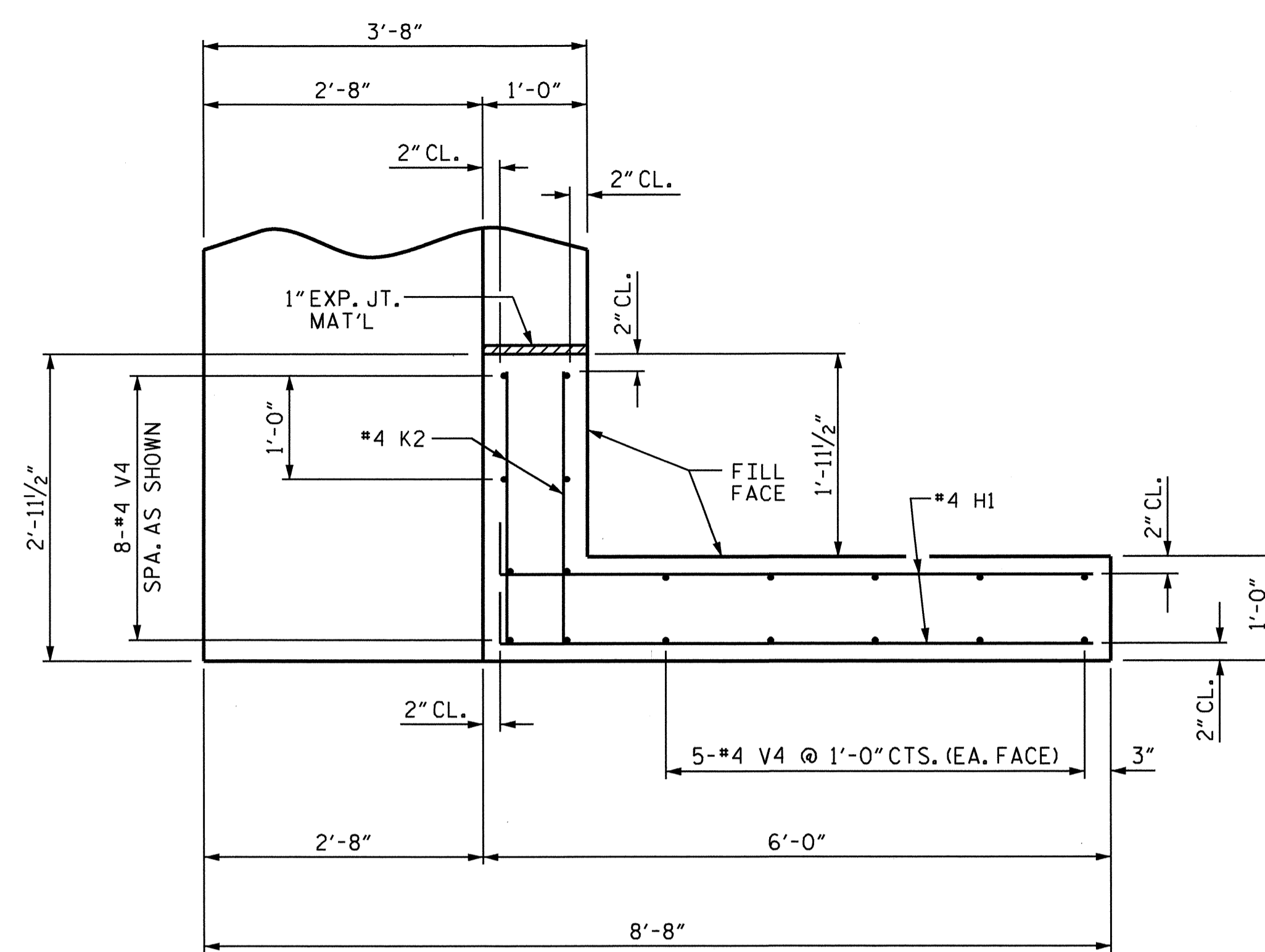
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS
2			4			29



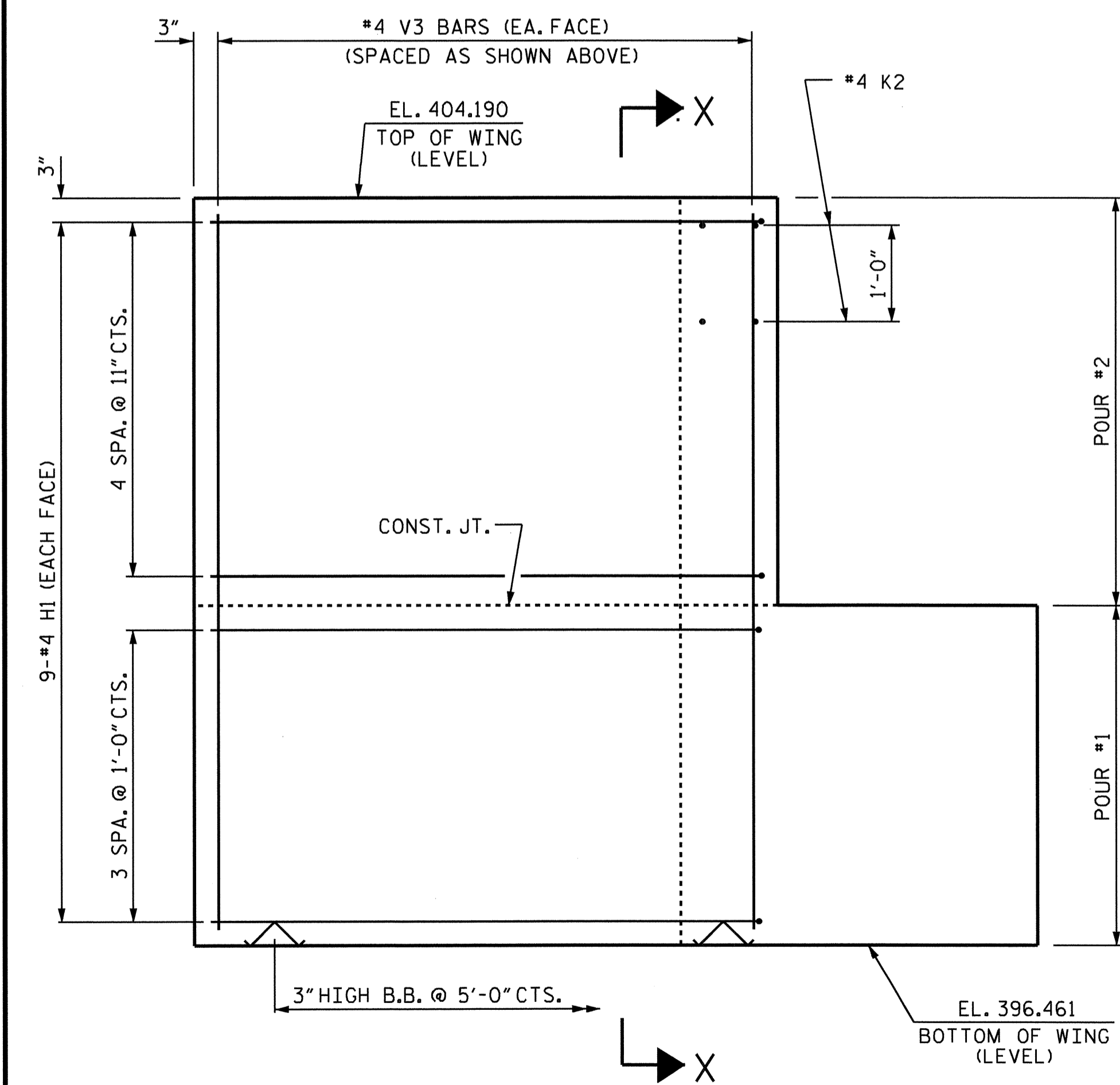
PLAN OF WING (W1)



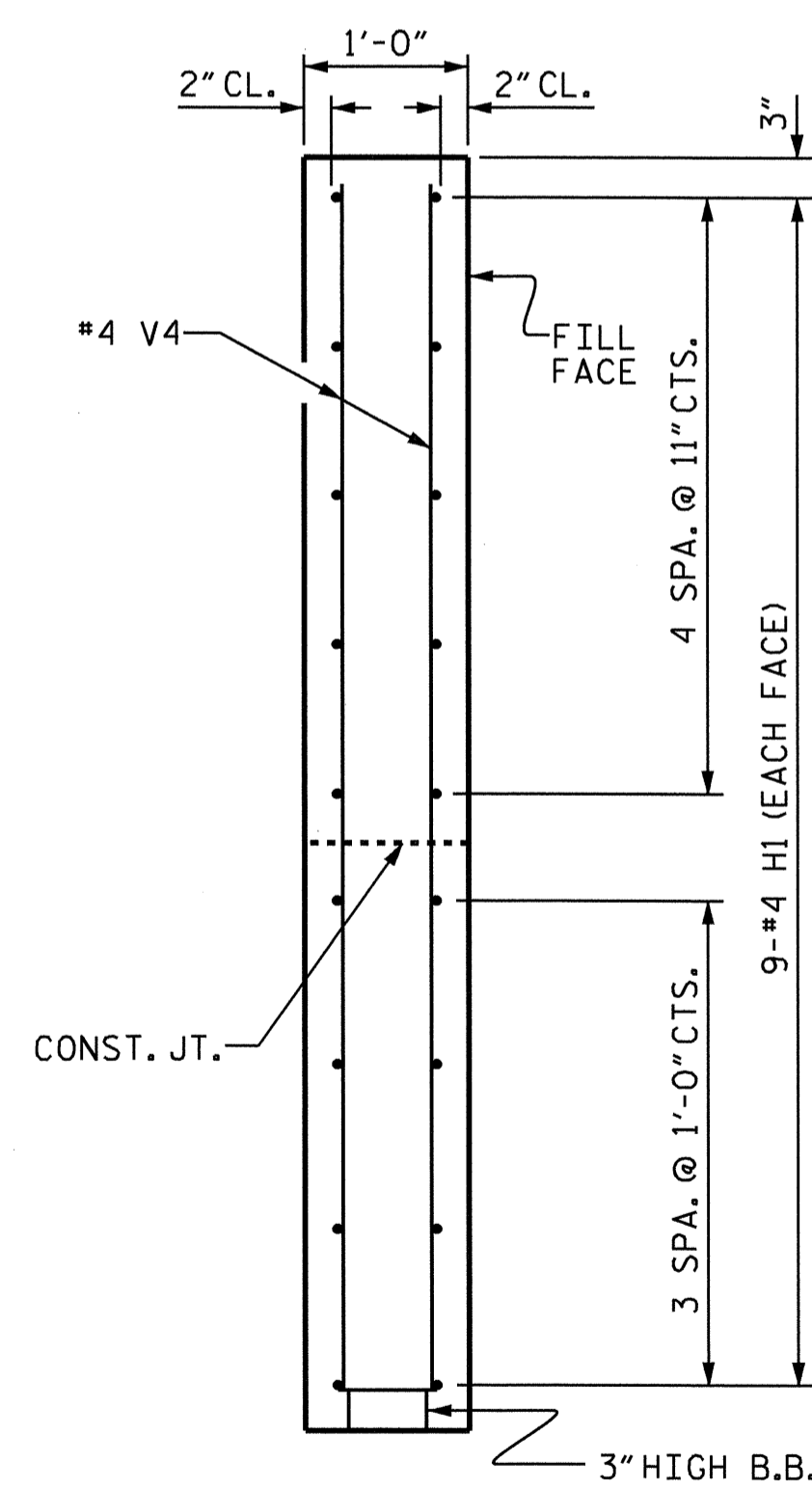
SECTION X-X



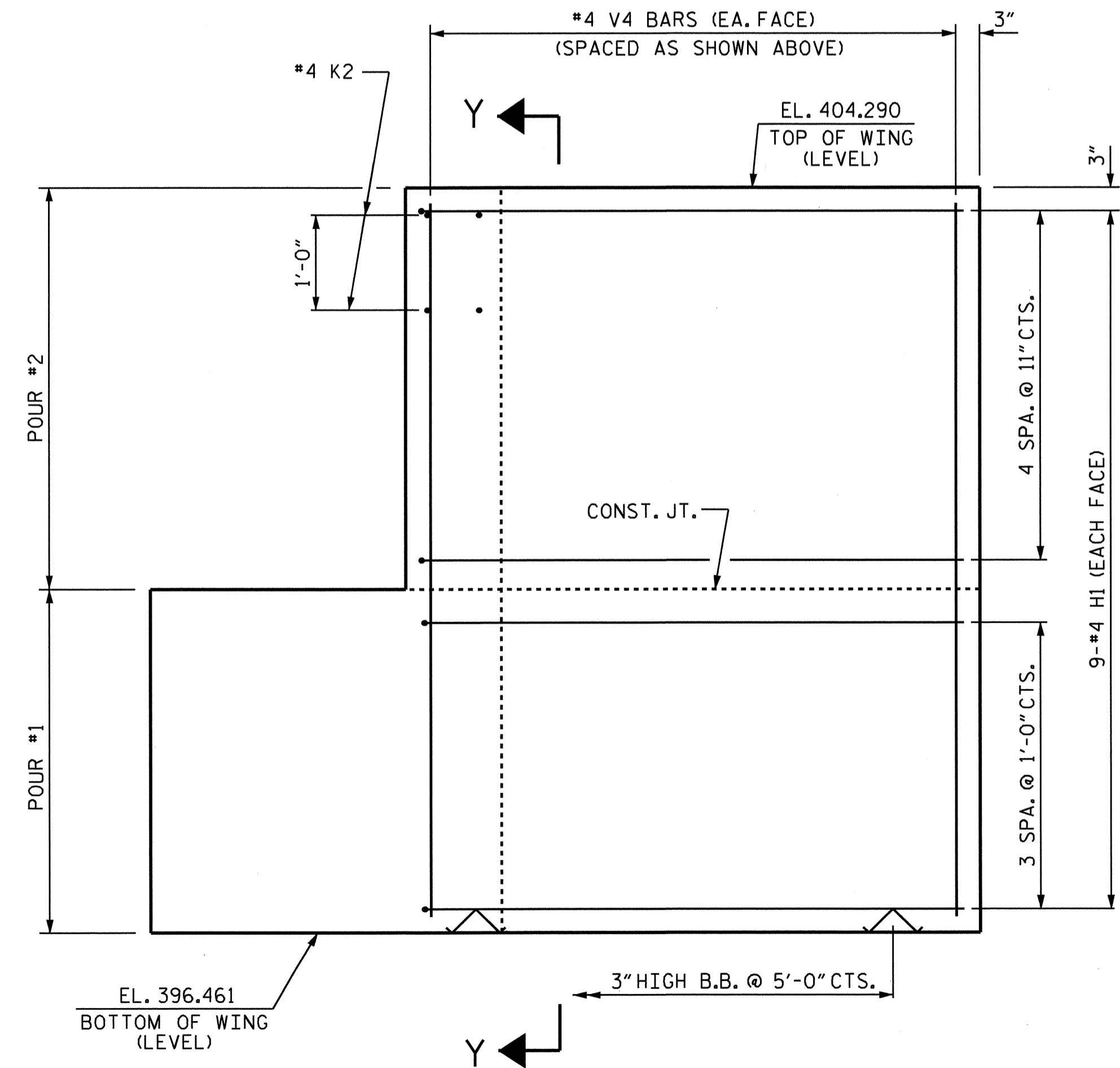
PLAN OF WING (W2)



ELEVATION OF WING (W1)



SECTION Y-Y



ELEVATION OF WING (W2)



PROJECT NO. B-3638
 DURHAM COUNTY
 STATION: 17+16.70 -L-

SHEET 2 OF 3

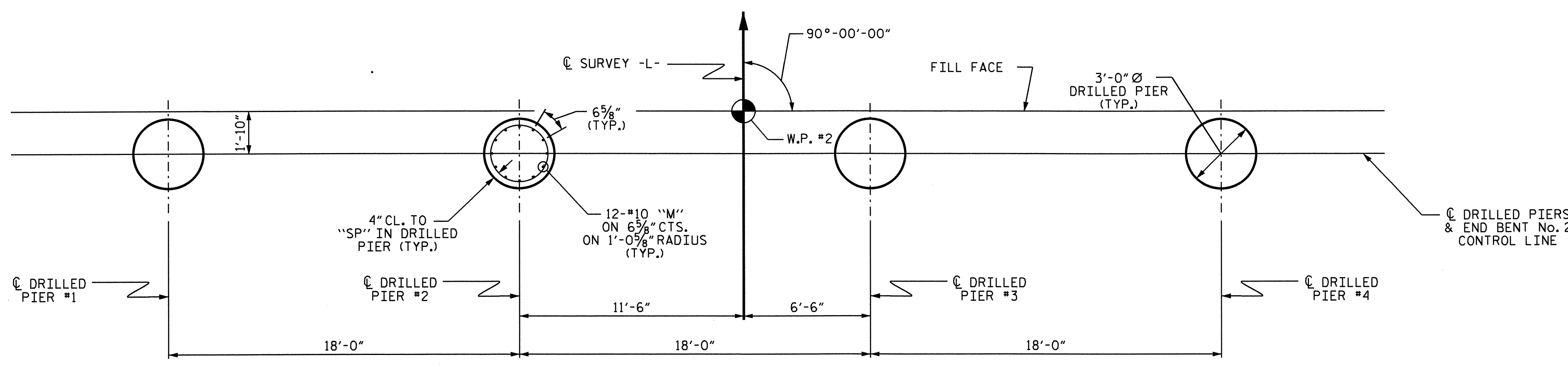
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT No. 2

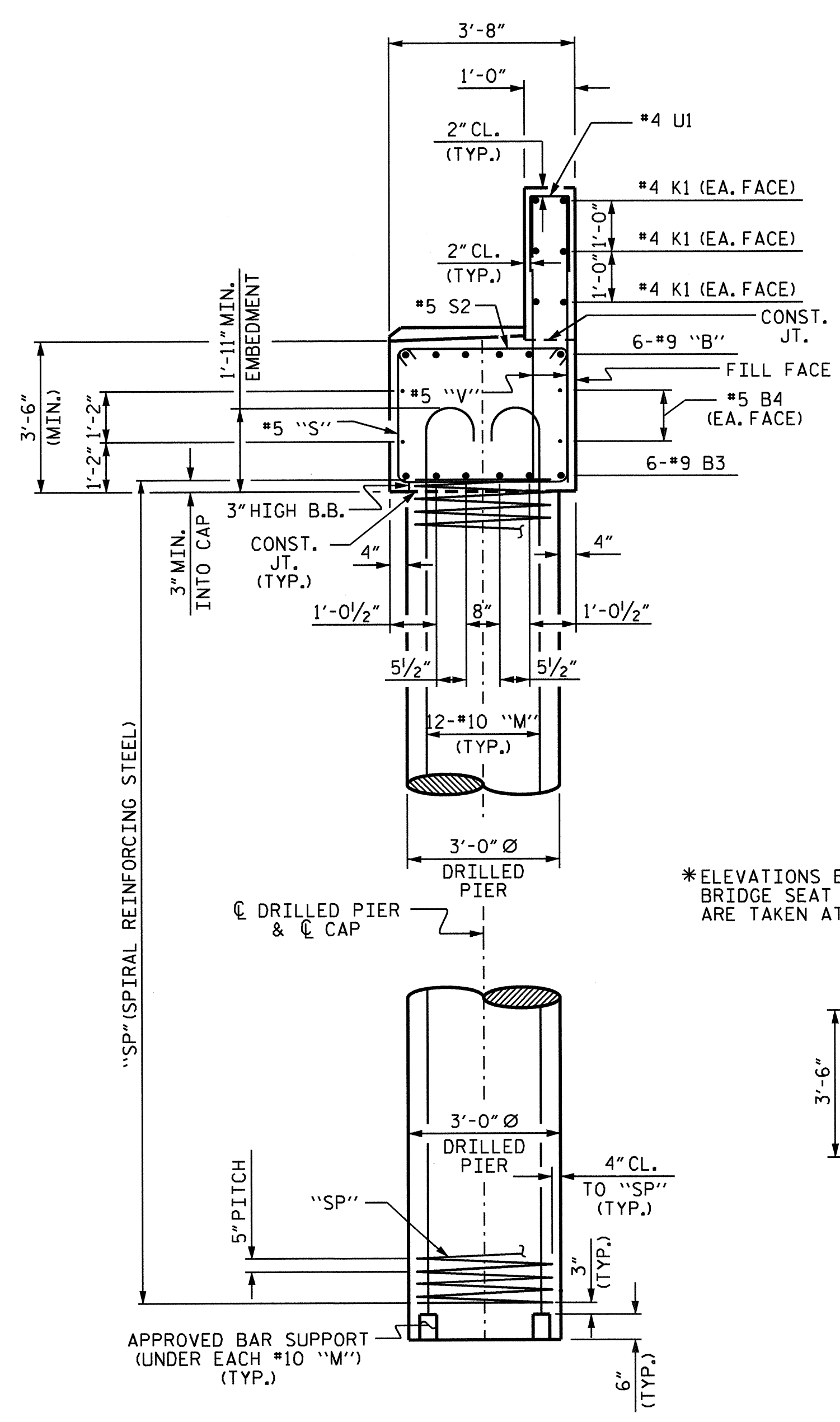
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 CHECKED BY: M. L. BROWN DATE: 07/11

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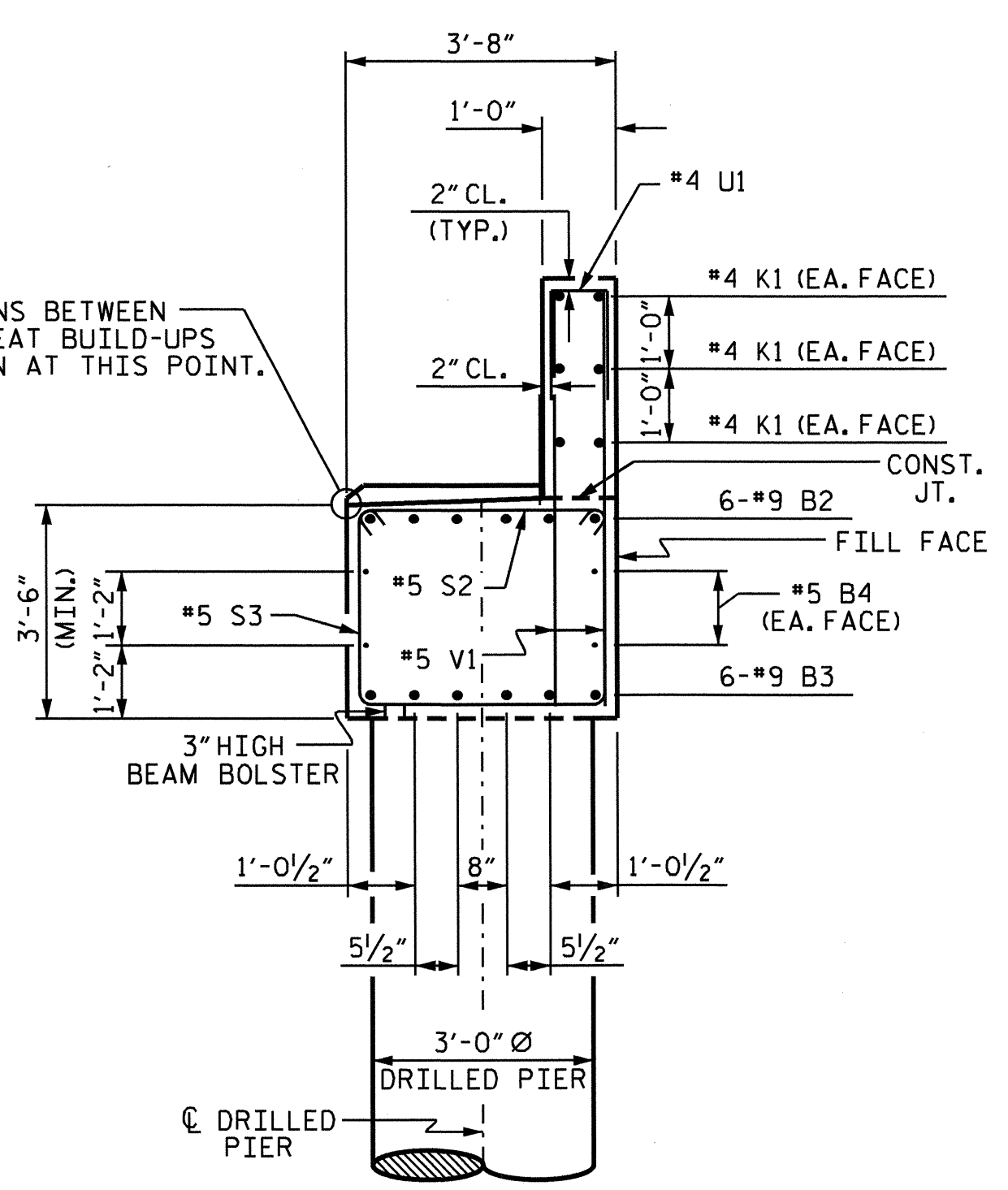
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-24	
1			3			TOTAL SHEETS	
2			4			29	



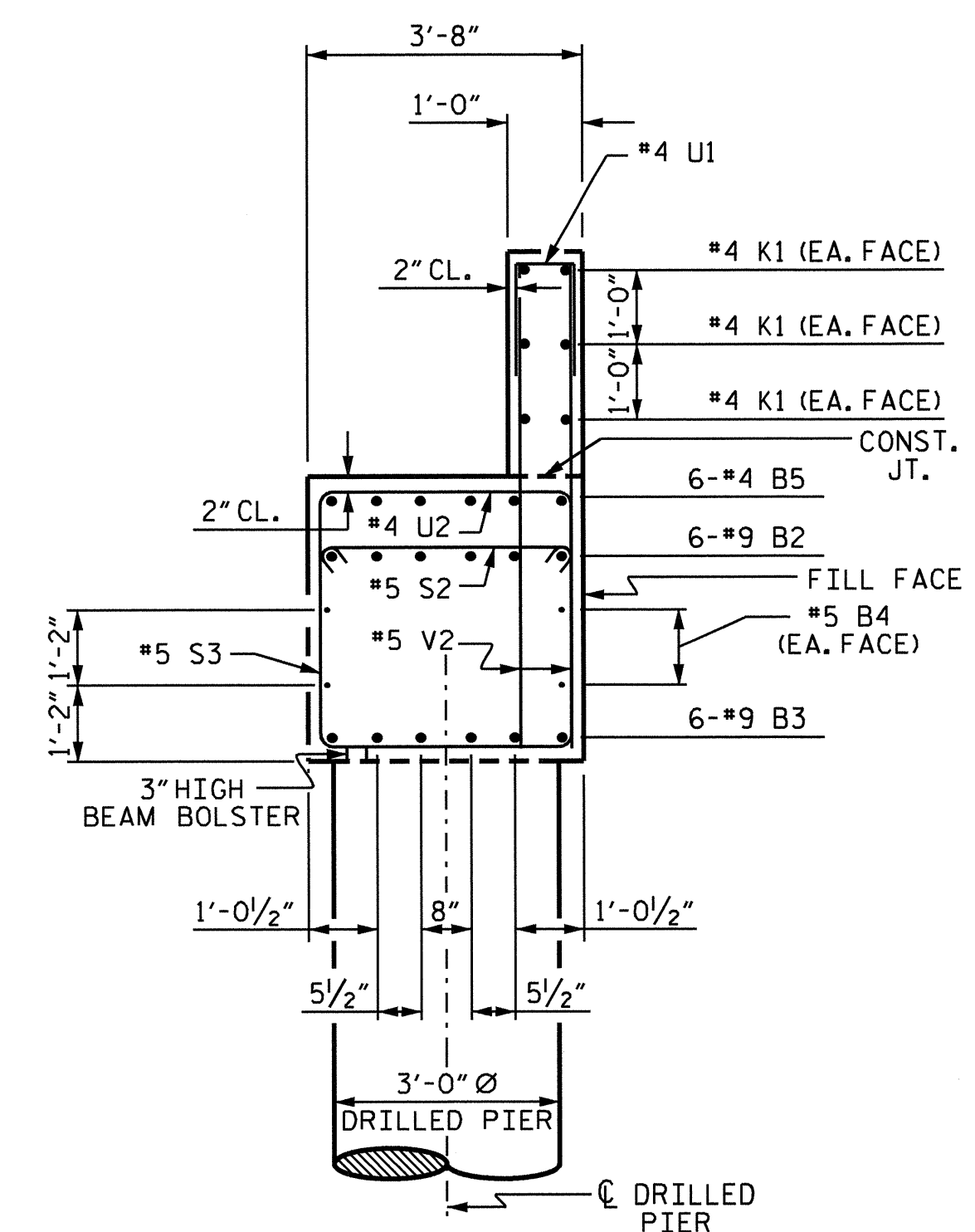
PLAN OF DRILLED PIERS



SECTION THRU CAP
INFORMATION GIVEN IS TYPICAL FOR EACH DRILLED PIER UNDER THE CAP UNLESS OTHERWISE NOTED.



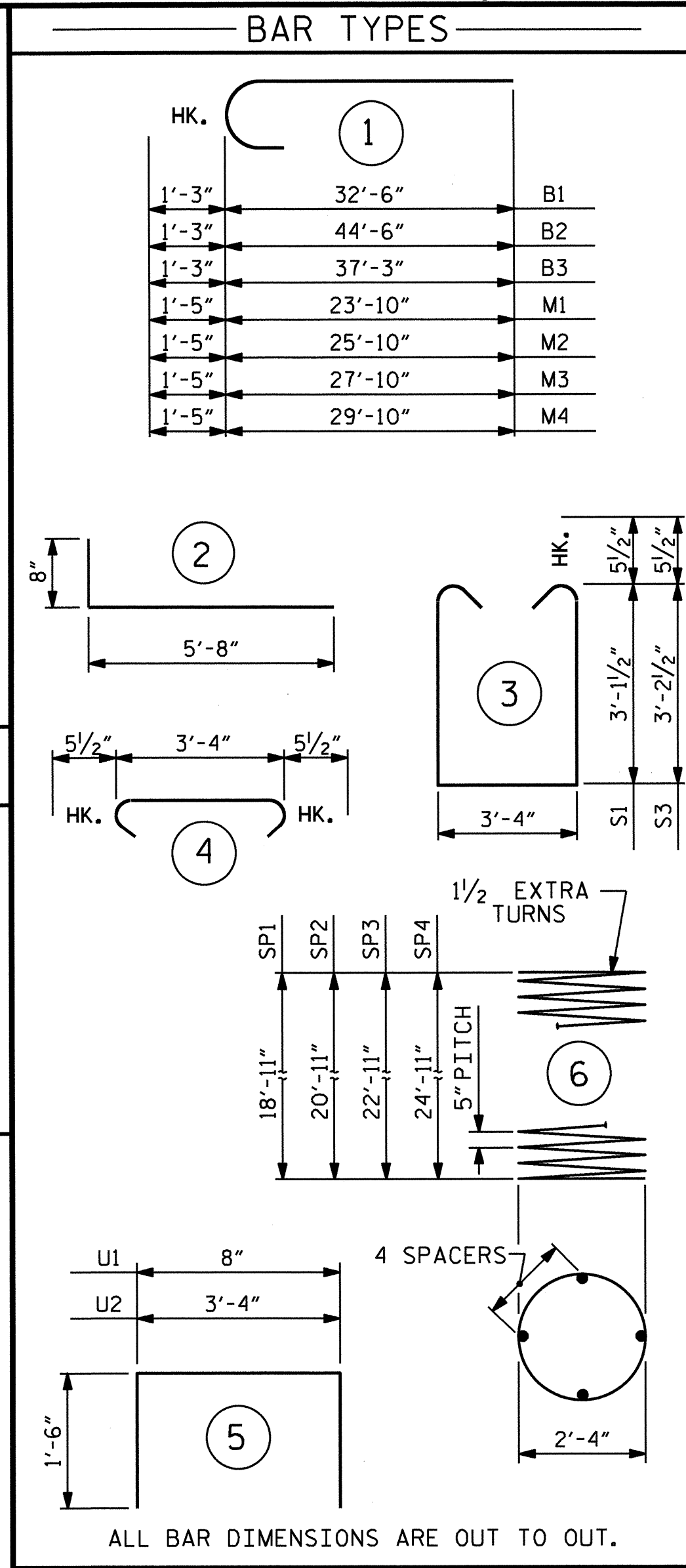
SECTION A-A



SECTION B-B

CONCRETE QUANTITIES		
CLASS 'A' CONCRETE BREAKDOWN		
POUR #2: CAP, & LOWER PART OF WINGS	CY	35.8
POUR #3: BACKWALL & UPPER PART OF WINGS	CY	9.4
TOTAL	CY	45.2

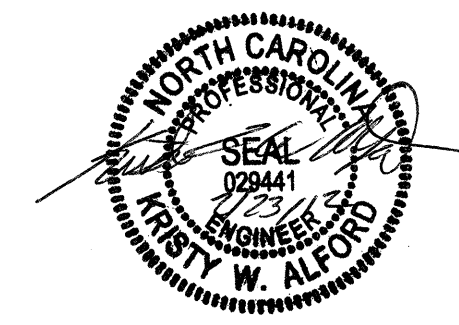
DRILLED PIER QUANTITIES		
DRILLED PIER CONCRETE		
POUR #1 (DRILLED PIERS)	CY	23.5
3'-0" Ø DRILLED PIER NOT IN SOIL	LIN FT.	15.0
3'-0" Ø DRILLED PIER IN SOIL	LIN FT.	74.8
CSL TUBES	LIN FT.	399



ALL BAR DIMENSIONS ARE OUT TO OUT.
** THE "SP" SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.

BILL OF MATERIAL					
END BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#9	1	33'-9"	689
B2	6	#9	1	45'-9"	933
B3	12	#9	1	38'-6"	1571
B4	8	#5	STR	35'-8"	298
B5	36	#4	STR	2'-8"	64
H1	36	#4	2	6'-4"	152
K1	6	#4	STR	35'-5"	142
K2	8	#4	STR	2'-7"	14
M1	12	#10	1	25'-3"	1304
M2	12	#10	1	27'-3"	1407
M3	12	#10	1	29'-3"	1510
M4	12	#10	1	31'-3"	1614
S1	31	#5	3	10'-6"	339
S2	85	#5	4	4'-3"	377
S3	54	#5	3	10'-8"	601
U1	63	#4	5	3'-8"	154
U2	18	#4	5	6'-4"	76
V1	80	#5	STR	6'-0"	501
V2	46	#5	STR	6'-5"	308
V3	18	#4	STR	7'-4"	88
V4	18	#4	STR	7'-5"	89
REINFORCING STEEL				LBS.	12,231
SP-1	1	**	6	336'-7"	351
SP-2	1	**	6	372'-5"	388
SP-3	1	**	6	408'-3"	426
SP-4	1	**	6	444'-0"	463
SPIRAL COLUMN REINFORCING STEEL				LBS.	1628

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 SHEET 3 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT No. 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-25
1			3			TOTAL SHEETS
2			4			29

DRAWN BY : D. G. ELY DATE : 03/11
 CHECKED BY : M. L. BROWN DATE : 07/11

GENERAL NOTES

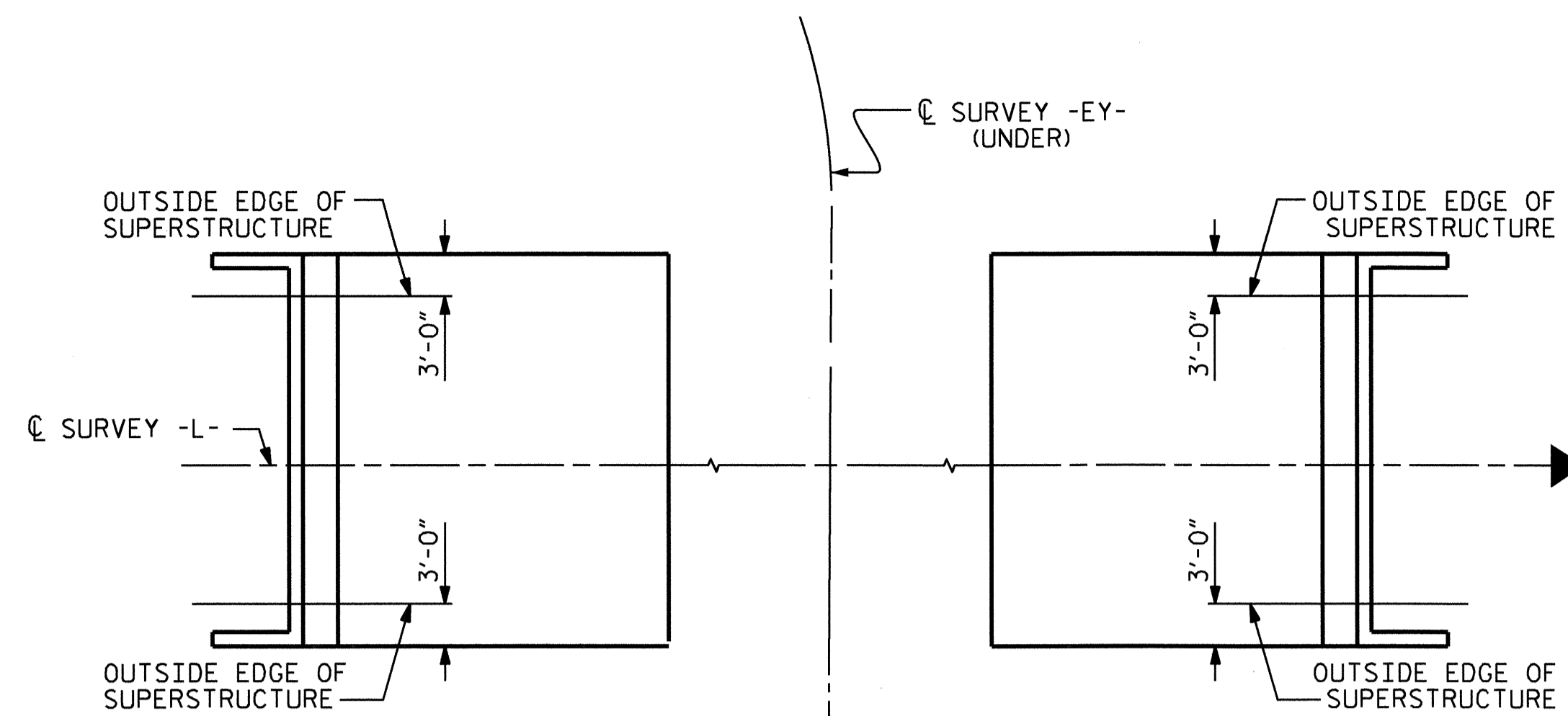
SLOPE PROTECTION SHALL BE PLACED UNDER THE ENDS OF THE BRIDGE AS SHOWN IN THE DETAILS. STRAIGHT EDGING WILL NOT BE REQUIRED UNLESS, IN THE OPINION OF THE ENGINEER, VISUAL INSPECTION INDICATES A NEED FOR IT. MEASUREMENT AND PAYMENT SHALL BE AS PRESCRIBED IN SECTION 462 OF THE STANDARD SPECIFICATIONS.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

ALTERNATE "A"

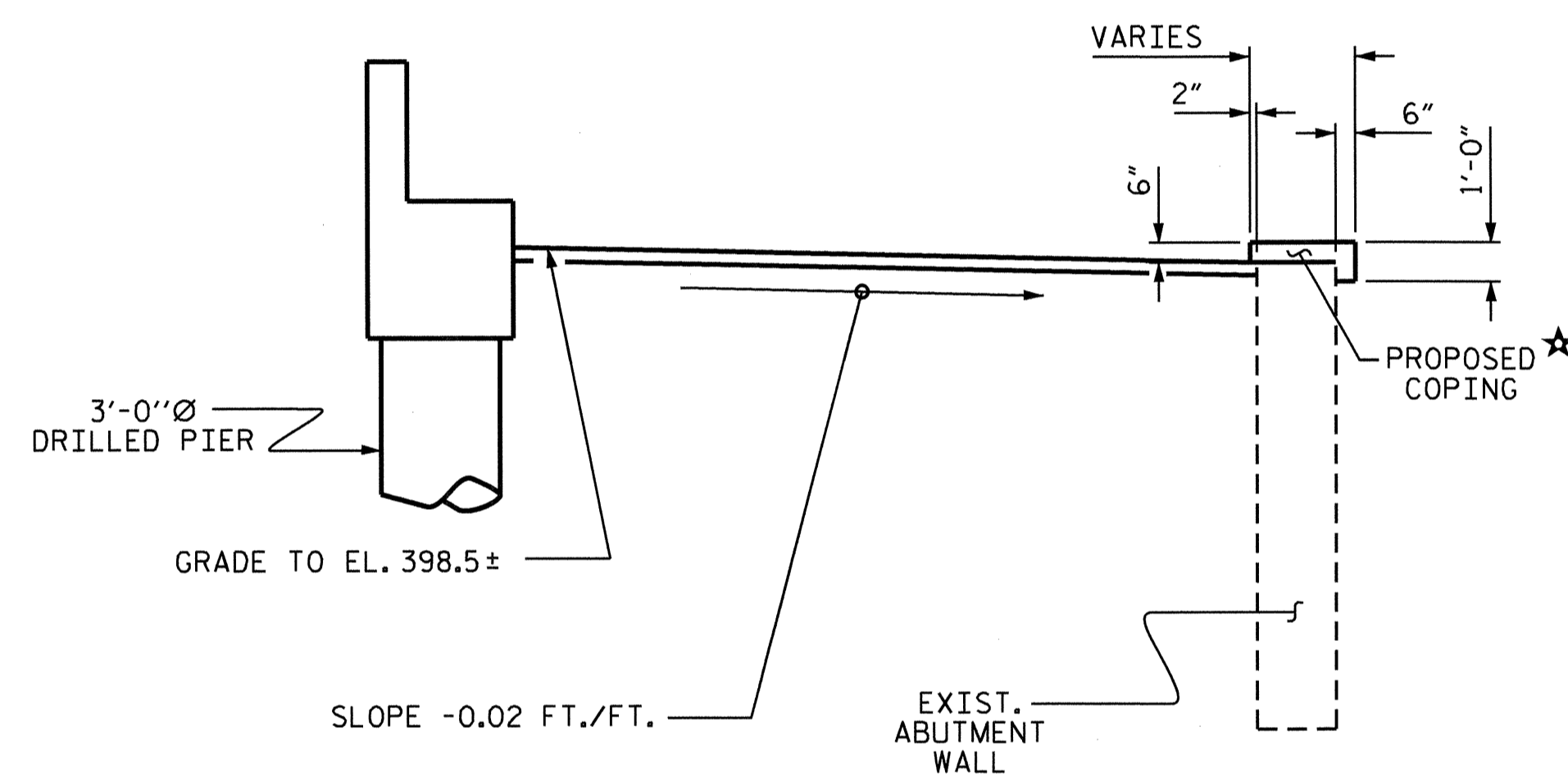
ALTERNATE "A" SHALL CONSIST OF 4" POURED-IN-PLACE CONCRETE PAVING AS SHOWN IN THE DETAILS ON THIS SHEET. CONCRETE SHALL BE CLASS "B". THE CONCRETE SURFACE SHALL BE FLOATED WITH A WOODEN FLOAT AND FINISHED. WELDED WIRE FABRIC REINFORCING SHALL BE 6 X 6 - W1.4 X W1.4, 60" WIDE. SLOPE PROTECTION SHALL BE 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. 17+16.70 -L-	4" INCH SLOPE PROTECTION	* WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT No. 1	145	260
END BENT No. 2	175	315

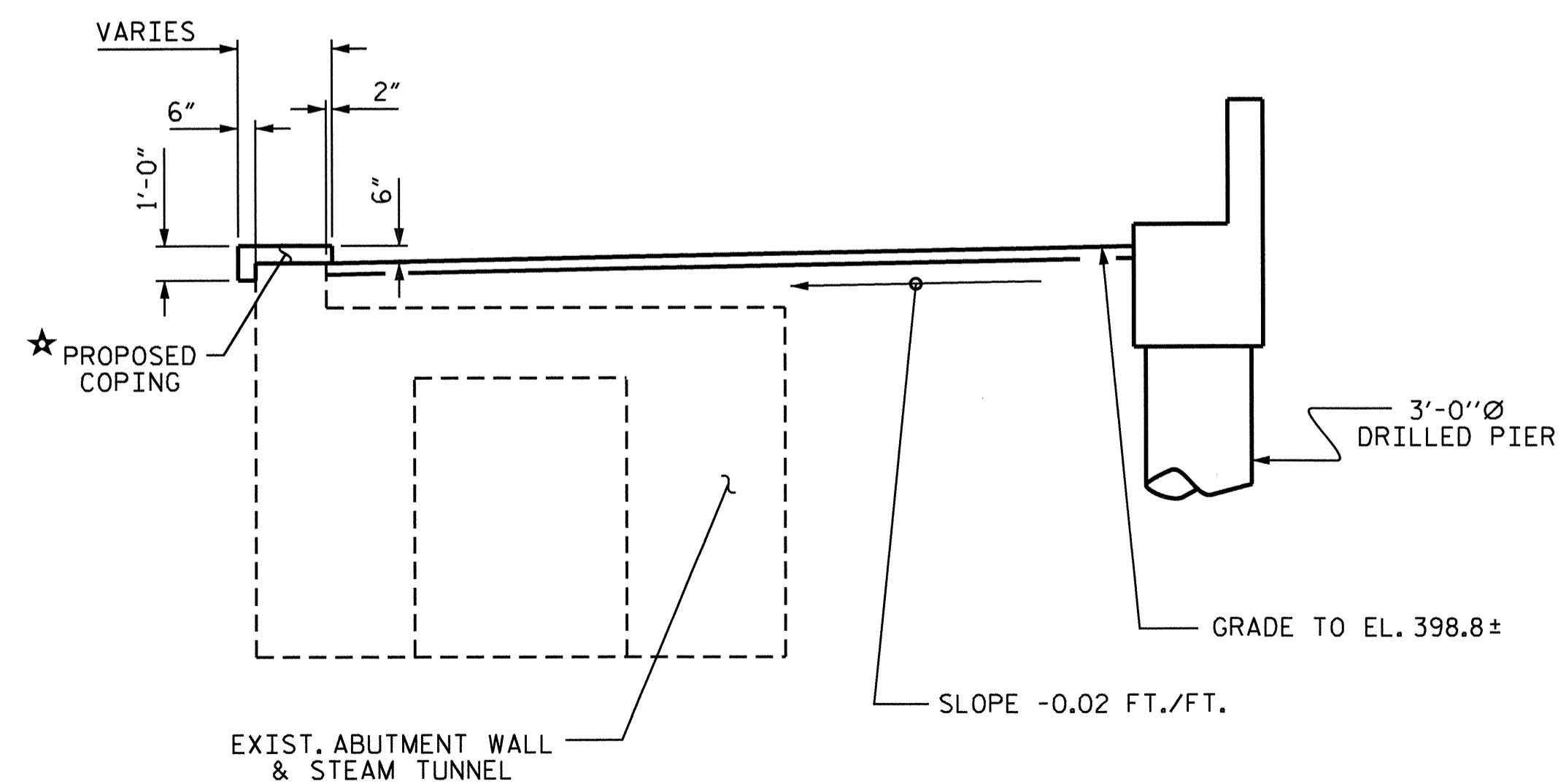
* QUANTITY SHOWN IS BASED ON 5' POURS.



PLAN

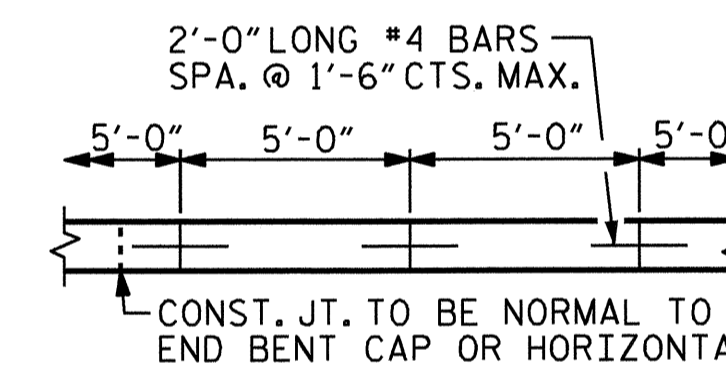


SECTION ALONG CL ROADWAY @ END BENT No. 1

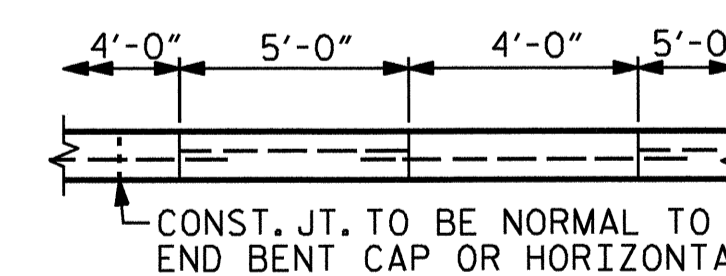


SECTION ALONG CL ROADWAY @ END BENT No. 2

★ NO SEPARATE PAY ITEM SHALL BE INCLUDED FOR THE COST OF THE COPING AS SHOWN. THE COPING SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THE SLOPE PROTECTION.



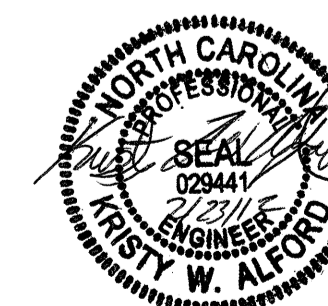
POURING DETAIL



OPTIONAL POURING DETAIL

POUR A 4'-0" STRIP FIRST.

PROJECT NO. B-3638
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 STATION: 17+16.70 -L-



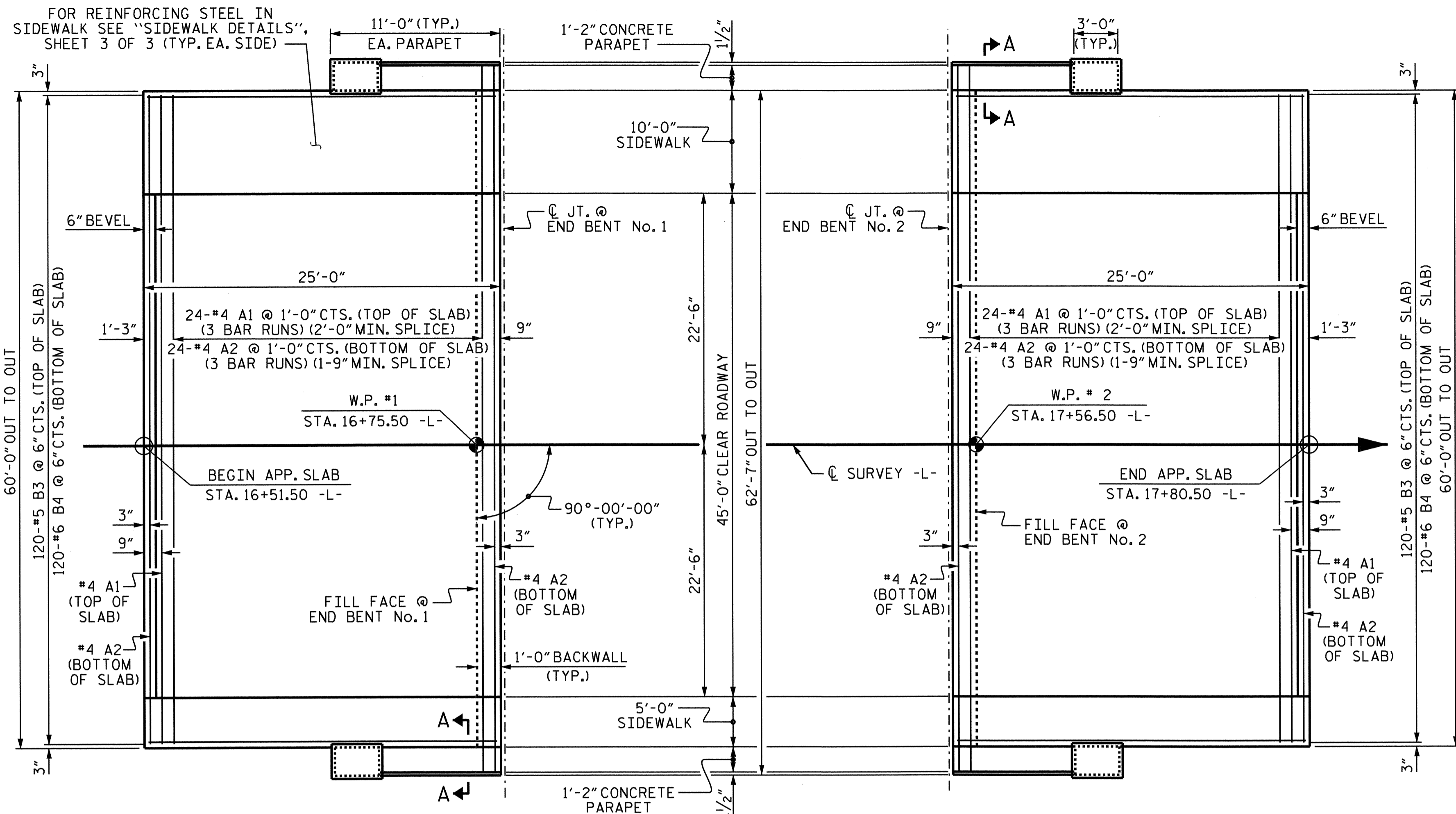
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SLOPE PROTECTION
 DETAILS

ASSEMBLED BY : D. G. ELY DATE : 06/11
 CHECKED BY : A. V. ROYAL DATE : 06/11

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-26
1			3			TOTAL SHEETS
2			4			29

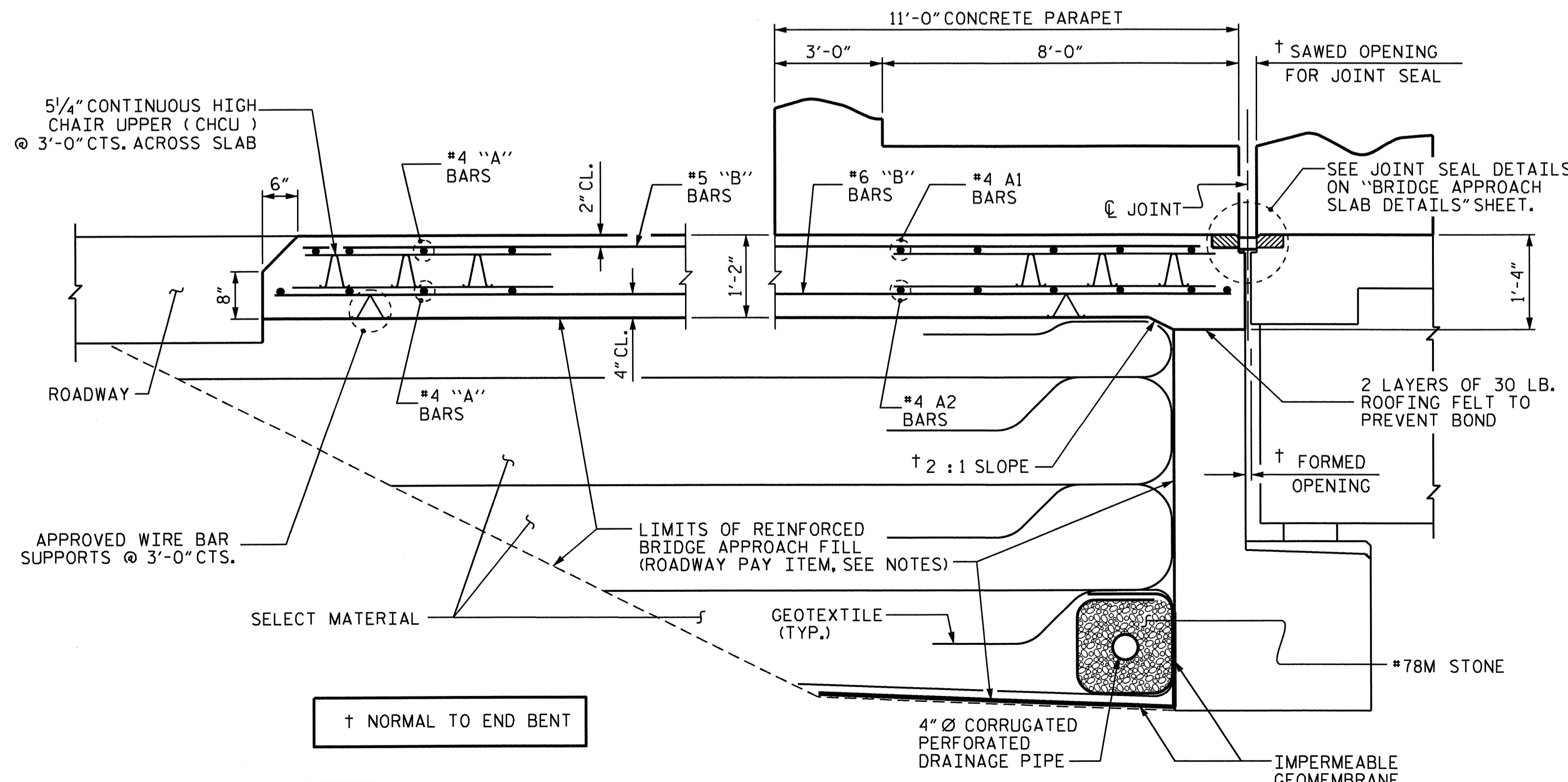


PLAN @ END BENT No. 1

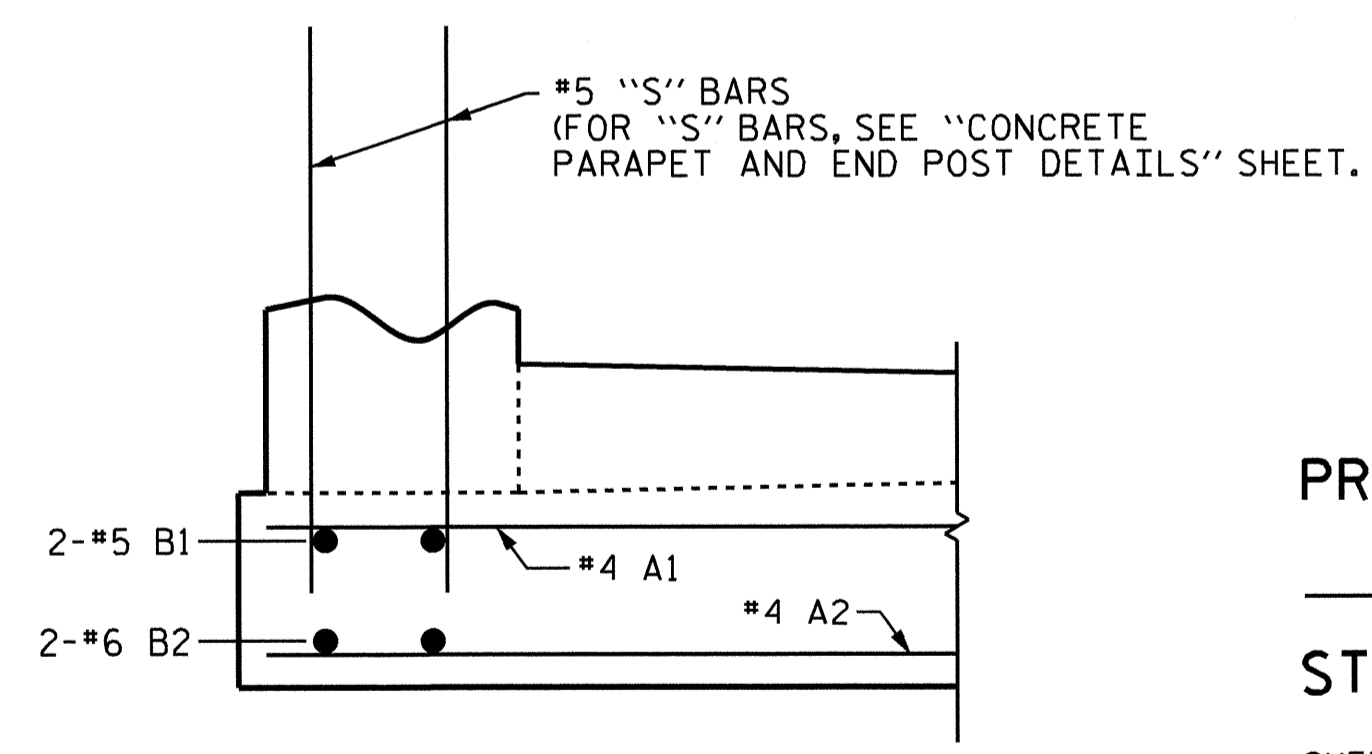
PLAN @ END BENT No. 2

PLAN OF APPROACH SLABS

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



SECTION THRU SLAB



SECTION A-A

NOTES

- APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.
- FOR REINFORCED BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 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 JOINT SHALL BE SAWED PRIOR TO THE CASTING OF THE PARAPET, END POST AND SIDEWALK.
- FOR FOAM JOINT SEALS, SEE SPECIAL PROVISIONS.
- THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE FOAM JOINT SEAL SHALL BE 2 1/2".
- FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.
- THE COST OF THE CONCRETE PARAPET ON THE APPROACH SLAB SHALL BE INCLUDED IN THE LINEAR FOOT PRICE SHOWN ON THE "CONCRETE PARAPET AND END POST DETAILS" SHEET.
- FOR TWO BAR METAL RAIL QUANTITIES AND DETAILS SEE "2 BAR METAL RAIL" SHEET.
- FOR ATTACHMENT OF METAL RAIL TO END POST, SEE "GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS" SHEET.
- FOR PARAPET AND END POST DETAILS SEE "CONCRETE PARAPET AND END POST" SHEET.

BILL OF MATERIAL

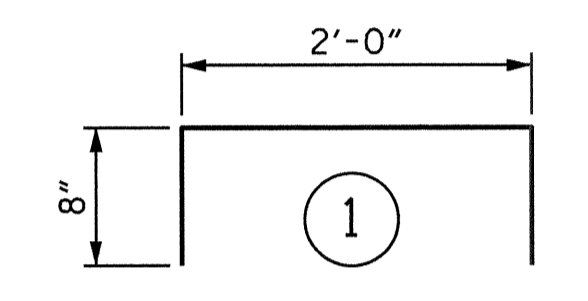
FOR ONE APPROACH SLAB (2 REQ'D)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	75	#4	STR	22'-1"	1106
A2	78	#4	STR	21'-11"	1142
* B1	4	#5	STR	10'-8"	45
B2	4	#6	STR	10'-8"	64
* B3	120	#5	STR	23'-8"	2962
B4	120	#6	STR	24'-8"	4446
* B5	14	#4	STR	24'-8"	231
* G1	25	#4	STR	9'-8"	161
* G2	25	#4	STR	4'-8"	78
* U1	24	#4	1	3'-4"	53

REINFORCING STEEL	=	5652 LBS
* EPOXY COATED REINFORCING STEEL	=	4636 LBS

CLASS AA CONCRETE BREAKDOWN		
POUR #1 (SLAB)	=	66.2 C. Y.
POUR #2 (SIDEWALKS)	=	9.2 C. Y.
TOTAL	=	75.4 C. Y.

BAR TYPES



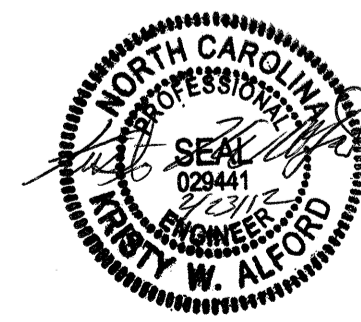
ALL BAR DIMENSIONS ARE OUT TO OUT

PROJECT NO. B-3638
DURHAM COUNTY
 STATION: 17+16.70 -L-

SHEET 1 OF 3

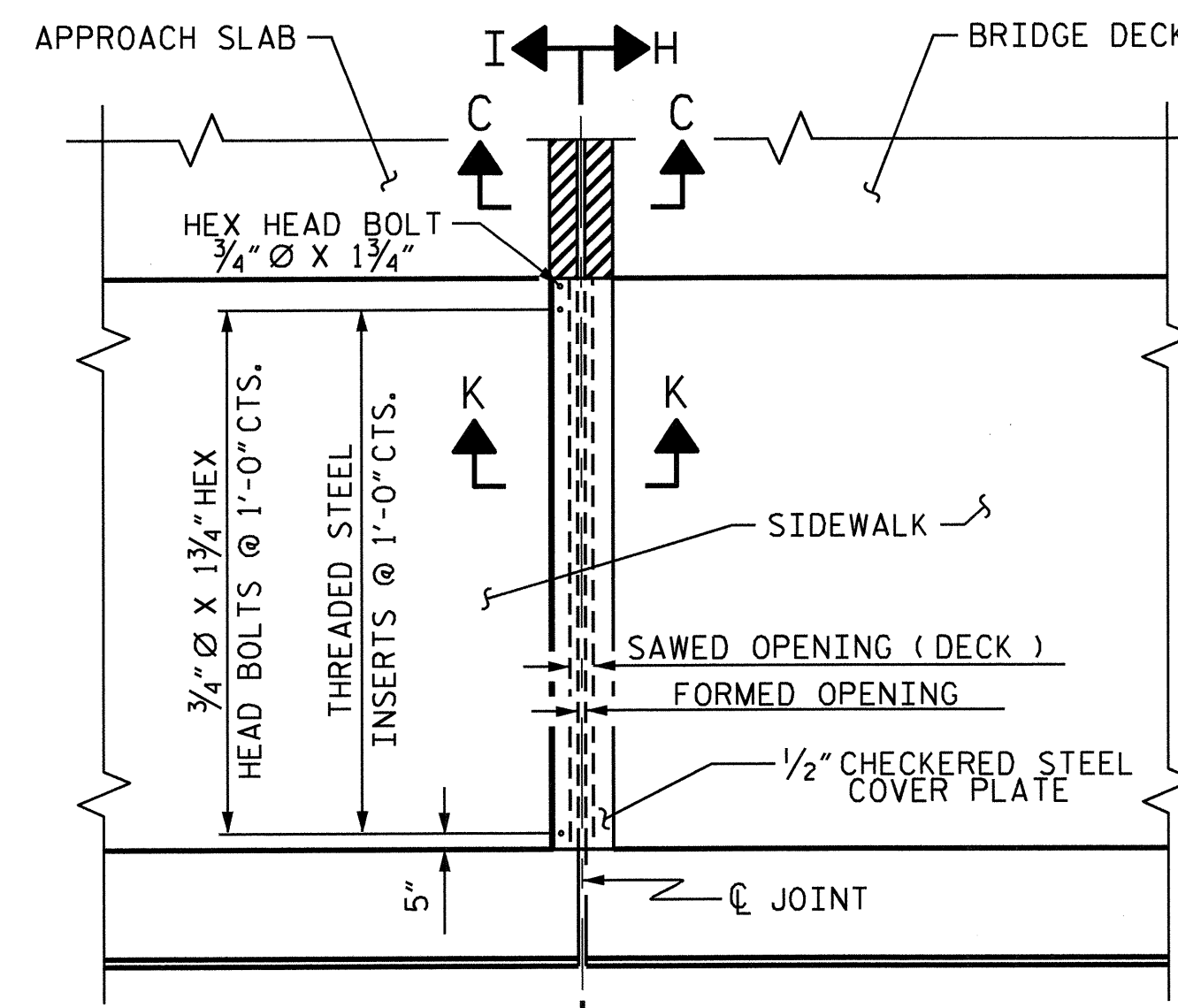
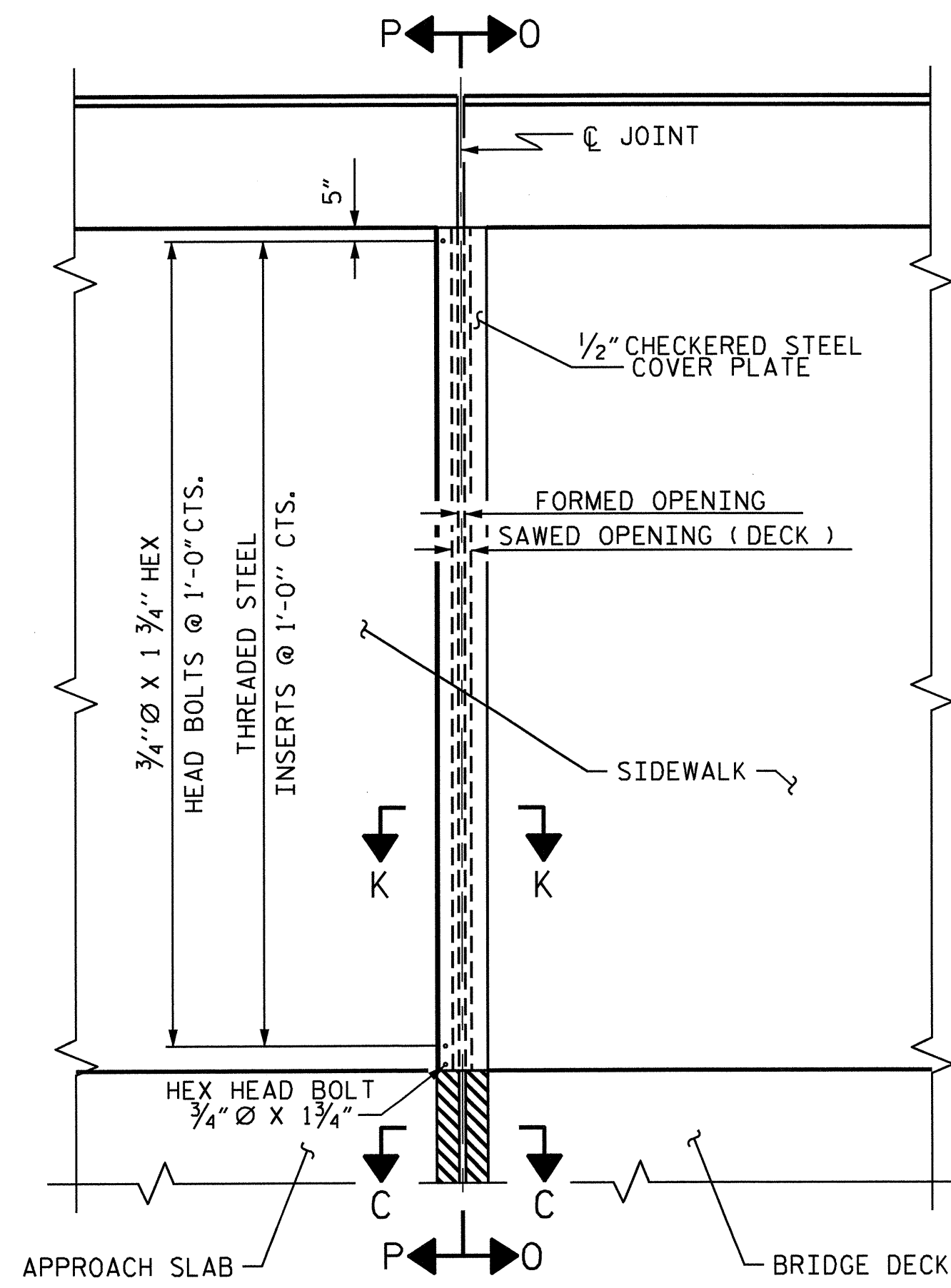
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
 BRIDGE APPROACH SLAB
 FOR FLEXIBLE PAVEMENT
 WITH CONCRETE PARAPET

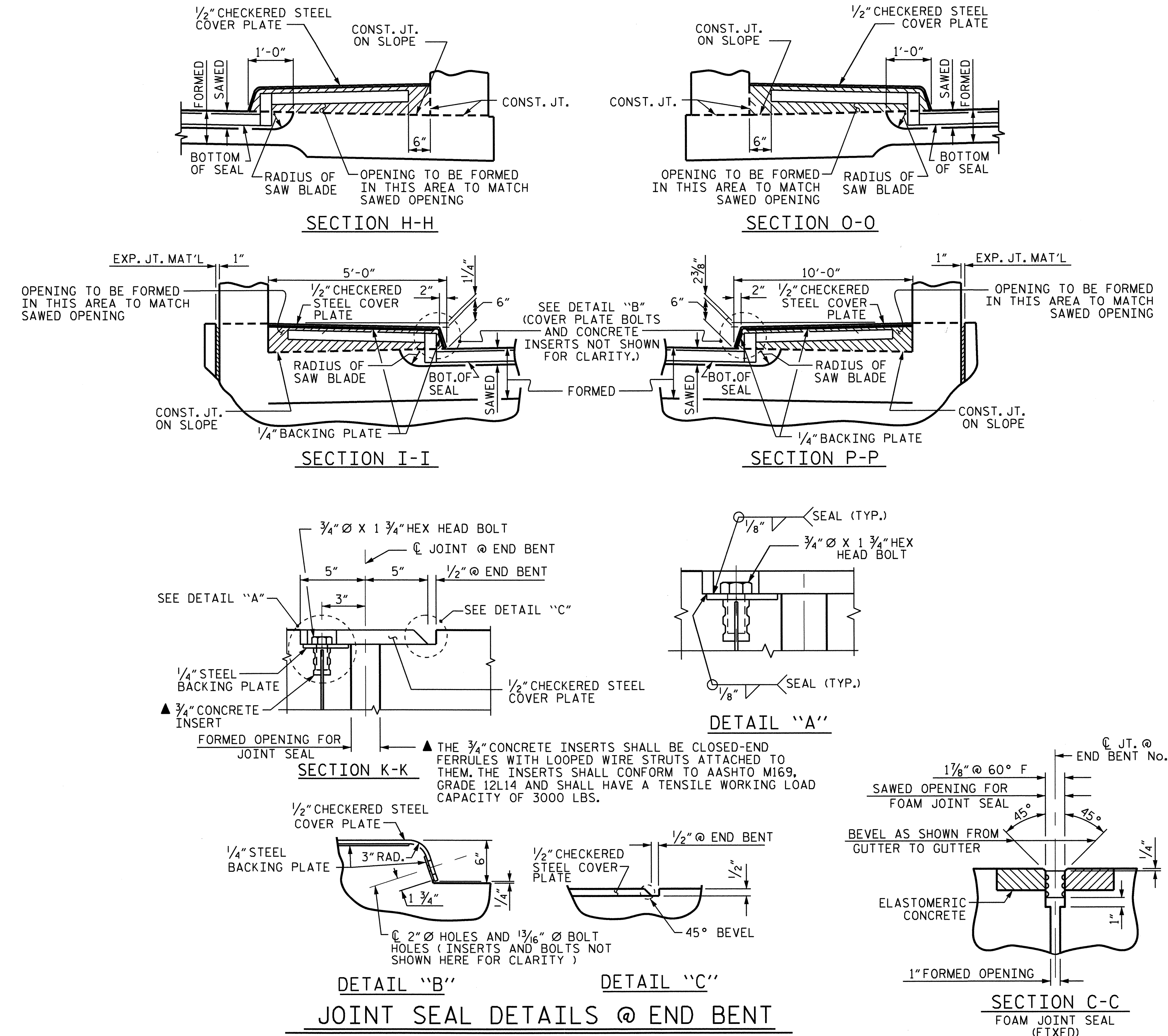


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-27
1			3			TOTAL SHEETS
2			4			29

ASSEMBLED BY : M. K. TOM	DATE : 1/13/11
CHECKED BY : T. M. GARRISON	DATE : 1/24/11
DRAWN BY : LES 8/01	REV. 5/7/03R RWW/JTE
CHECKED BY : RDR 8/01	REV. 5/1/06R KMM/GM



PLAN OF FOAM JOINT SEAL @ END BENT

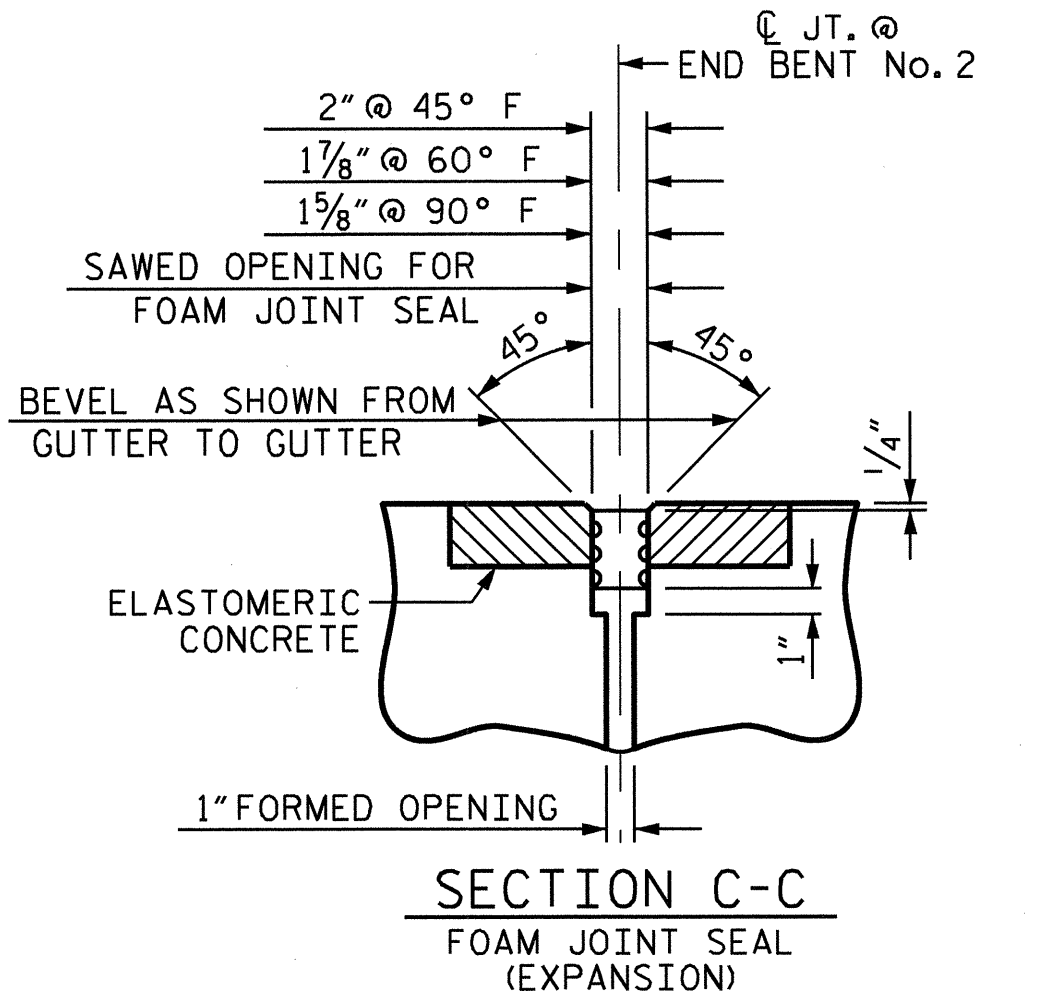


NOTES FOR SIDEWALK COVER PLATE

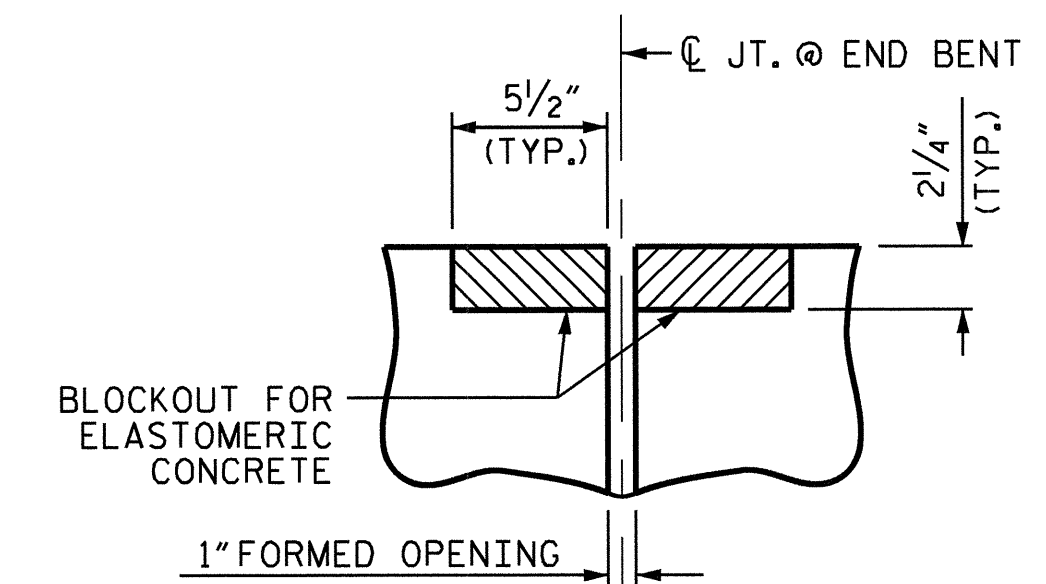
THE STEEL PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 OR APPROVED EQUAL. AFTER FABRICATION, THE PLATES SHALL BE COMMERCIALY BLAST CLEANED AND EITHER COATED WITH A MINIMUM THICKNESS OF 4 MILS (DRY) OF ZINC-RICH PAINT, GALVANIZED OR METALLIZED TO A MINIMUM THICKNESS OF 6 MILS IN ACCORDANCE WITH THE STANDARD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

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

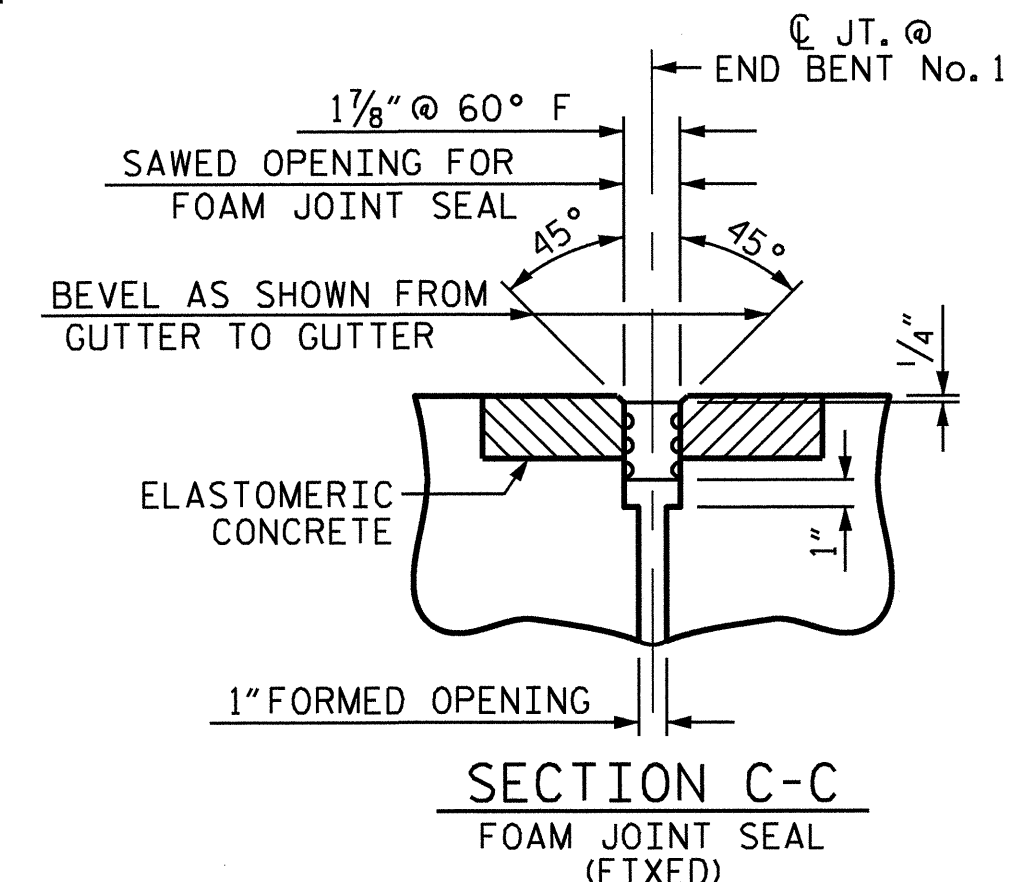
NO SEPARATE PAYMENT WILL BE MADE FOR FURNISHING AND INSTALLING THE COVER PLATE. THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE LUMP SUM PRICE FOR "FOAM JOINT SEALS".



SECTION C-C
FOAM JOINT SEAL (EXPANSION)



SECTION C-C
FOAM JOINT SEAL (PRE-SAWED ELASTOMERIC CONCRETE DIMENSIONS) (TYP. EA. END BENT)



SECTION C-C
FOAM JOINT SEAL (FIXED)

ELASTOMERIC CONCRETE	
END BENT No.	ELASTOMERIC CONCRETE * (CU. FT.)
1	7.7
2	7.7
TOTAL	15.4

* BASED ON THE MINIMUM BLOCKOUT SHOWN.

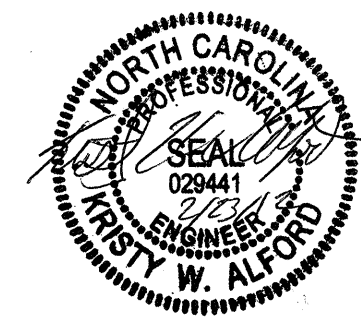
PROJECT NO. B-3638
 DURHAM COUNTY
 STATION: 17+16.70 -L-

SHEET 2 OF 3

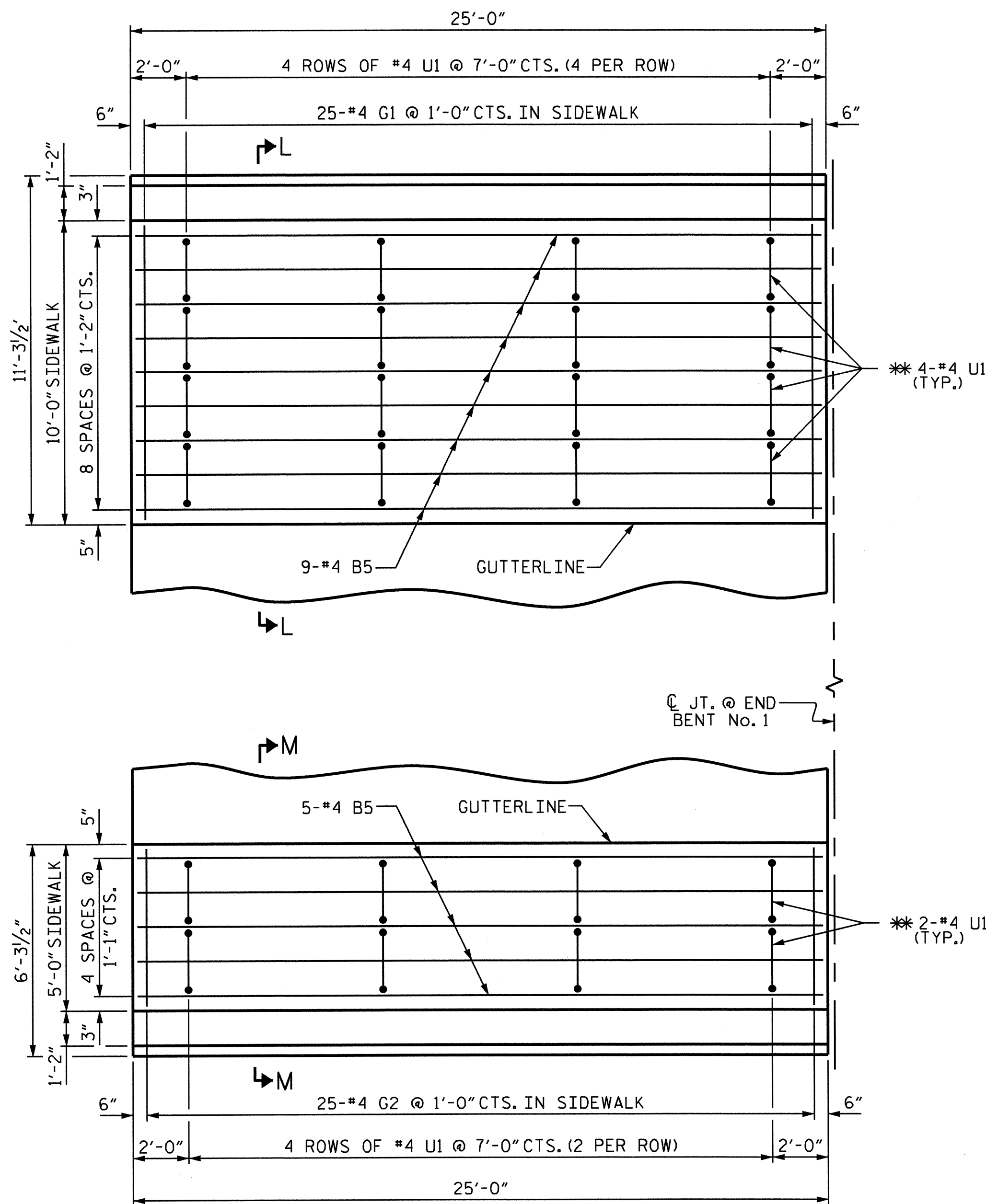
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
 BRIDGE APPROACH
 SLAB DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-28
1			3			TOTAL SHEETS 29
2			4			



ASSEMBLED BY : M. K. TOM	DATE : 1/13/2011
CHECKED BY : T. M. GARRISON	DATE : 1/24/2011
DRAWN BY : FCJ 11/88	REV. 10/17/00 RWW/LES
CHECKED BY : ARB 11/88	REV. 5/7/03 RWW/JTE
	REV. 5/1/06RR MAA/KMM



PLAN

DETAILS OF SIDEWALK ON APPROACH SLAB

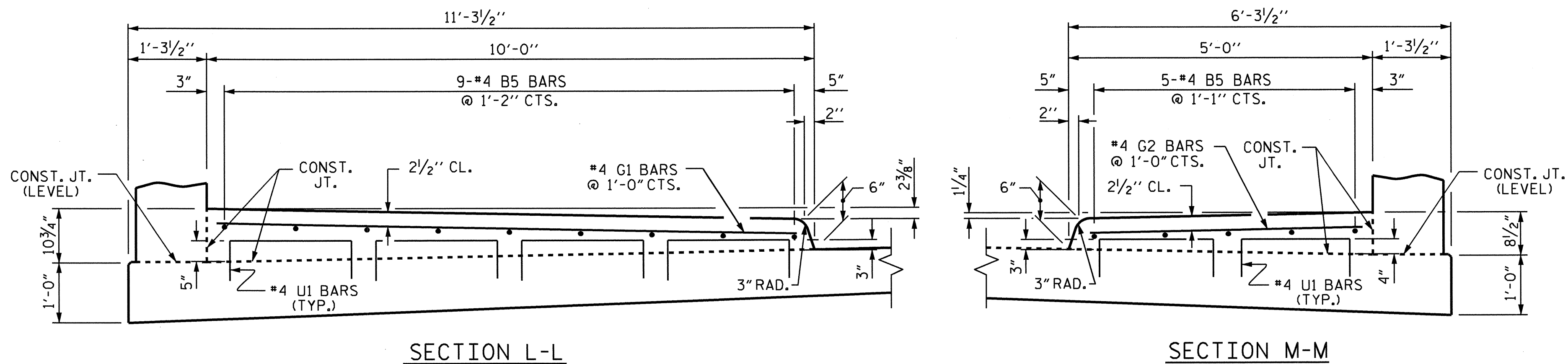
END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR

SIDEWALK NOTES:

- THE JOINT IN THE DECK AT THE END BENTS SHALL BE SAWS PRIOR TO THE CASTING OF THE SIDEWALK.
- THE "U" BARS MAY BE PUSHED INTO GREEN CONCRETE AFTER THE SPAN HAS BEEN SCREED OFF.
- ALL REINFORCING STEEL IN THE SIDEWALK 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 FT. TO 10 FT. BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINT WILL BE REQUIRED FOR SEGMENTS LESS THAN 10 FT. IN LENGTH.

DRAWN BY : M. K. TOM DATE : 1/13/11
 CHECKED BY : I. M. GARRISON DATE : 1/24/11

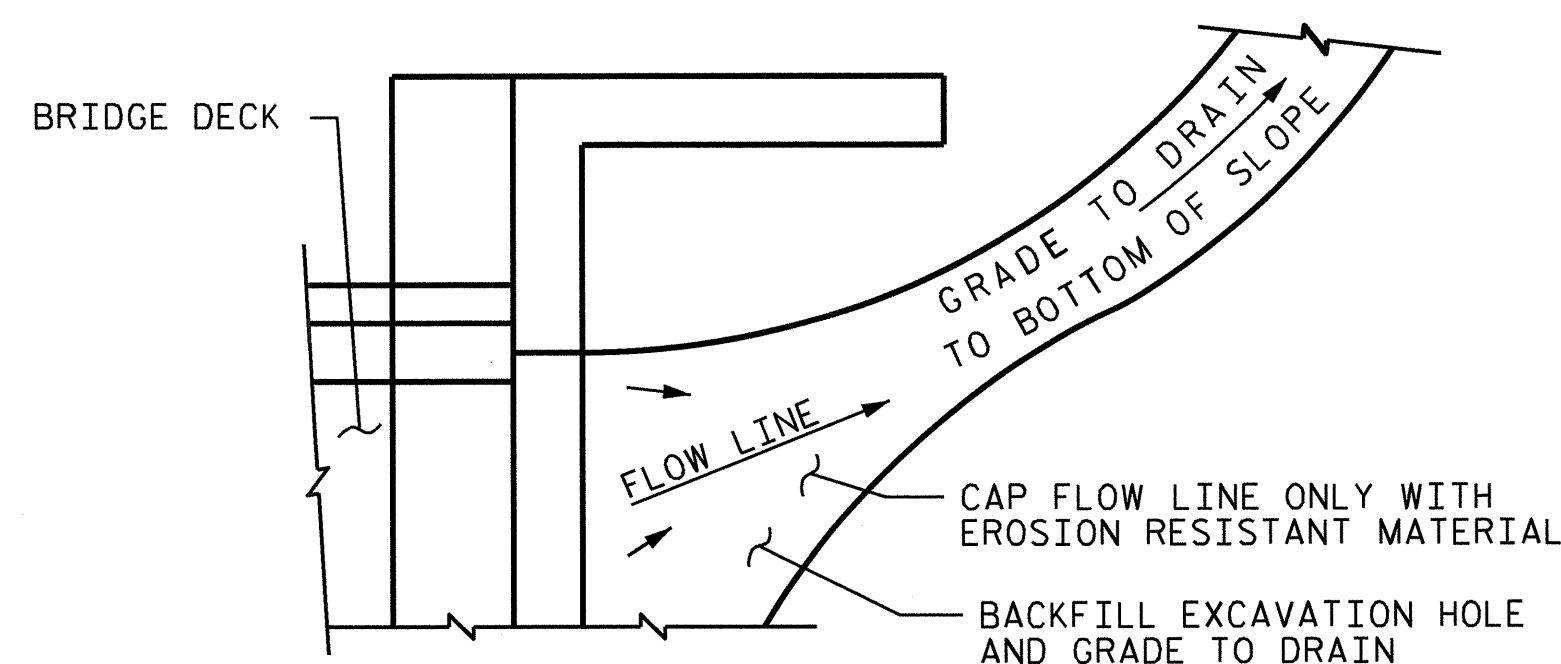
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SECTION L-L

SECTION M-M

SECTION THRU SIDEWALK



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

TEMPORARY DRAINAGE DETAIL

PROJECT NO. B-3638

DURHAM COUNTY

STATION: 17+16.70 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
 BRIDGE APPROACH
 SLAB DETAILS



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

NC006

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2006 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

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

CONCRETE:

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

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED 3/4" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1-1/2" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 1/4" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A 1/4" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

DOWELS WHEN INDICATED ON PLANS AS FOR CULVERT EXTENSIONS, SHALL BE EMBEDDED AT LEAST 12" INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT, ETC. IN CASTING SUPERSTRUCTURES:

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.
ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8" Ø SHEAR STUDS FOR THE 3/4" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED, THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 5/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16" INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

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

SPECIAL NOTES:

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

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