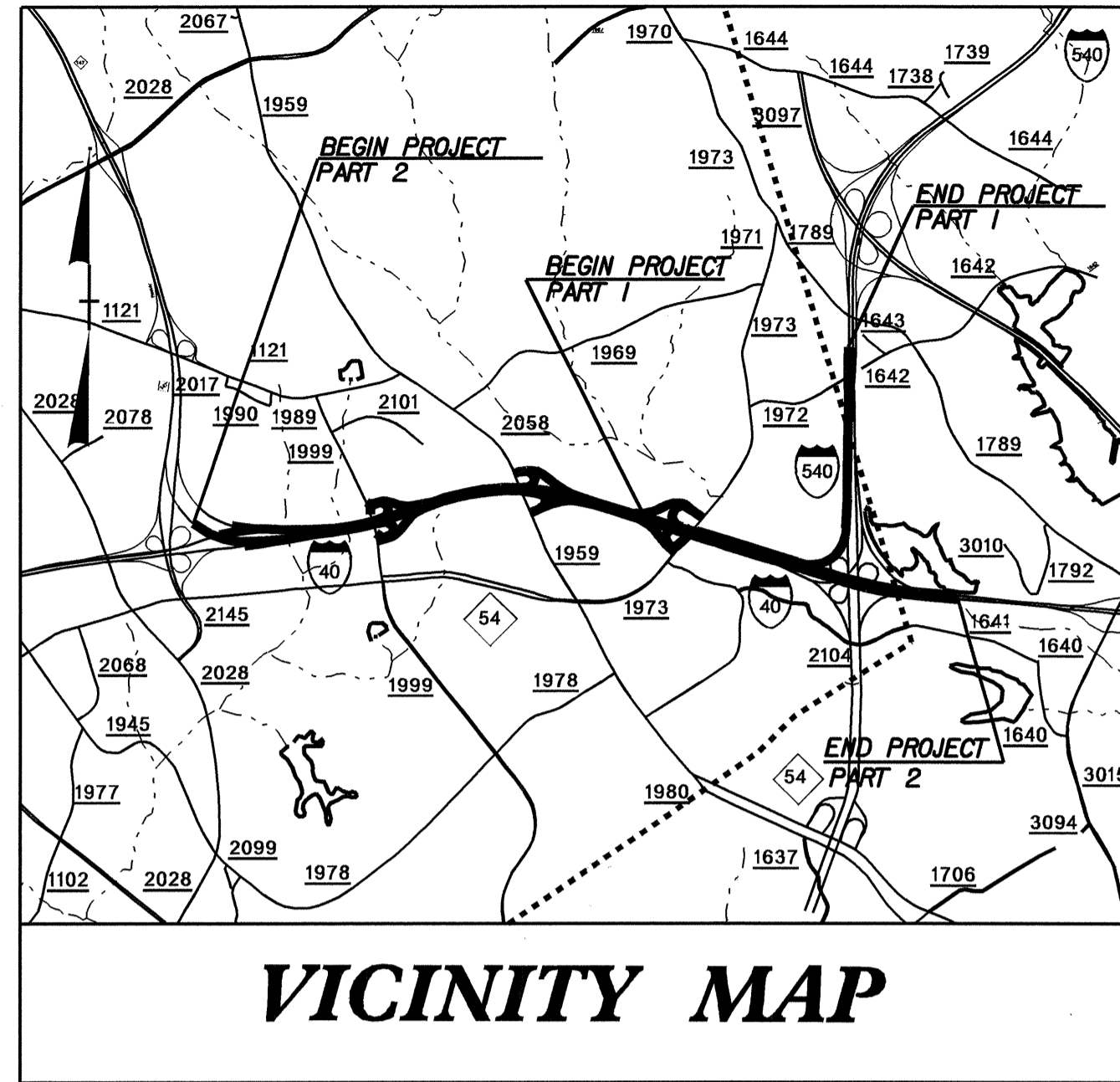


CONTRACT: C202277 TIP PROJECT: R-2000AF/R-5164B

STRUCTURE



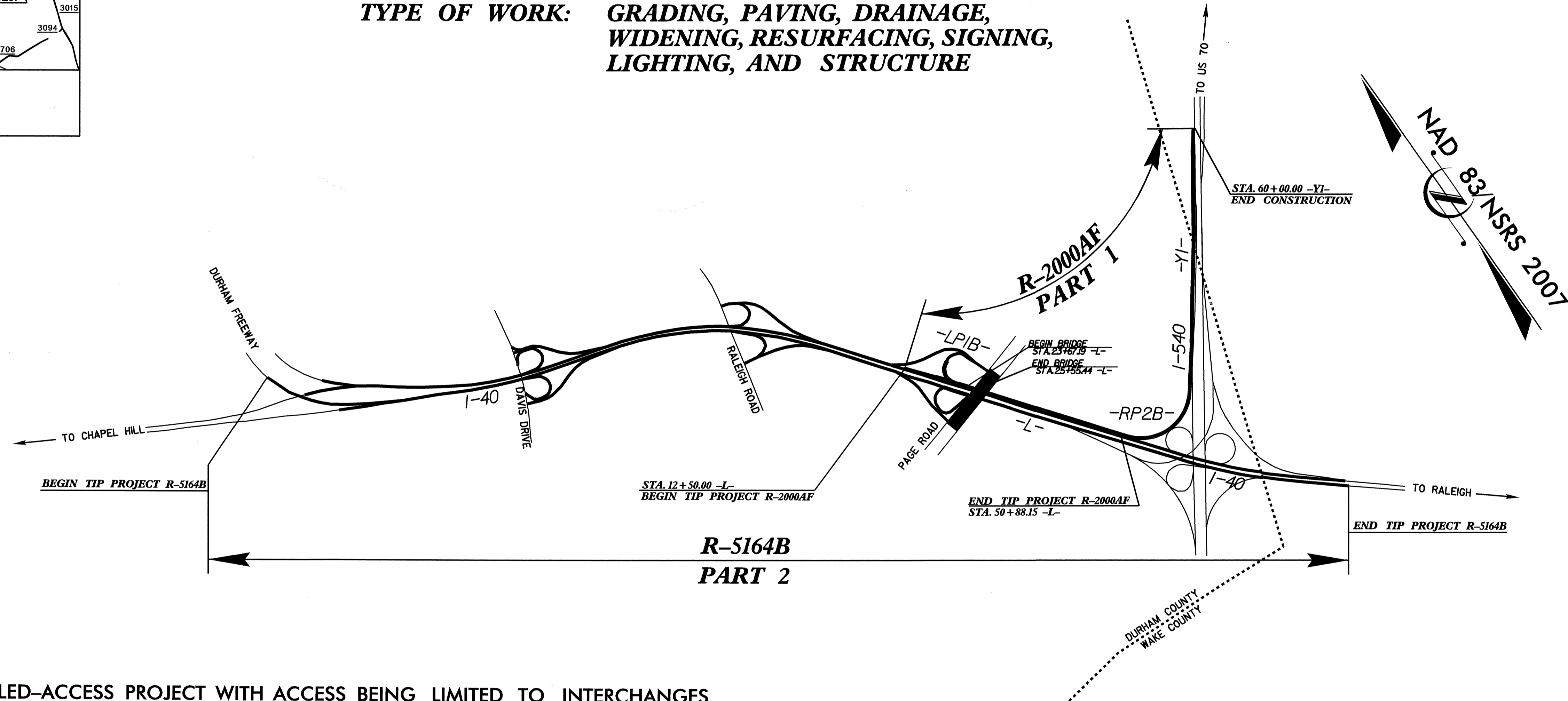
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**WAKE & DURHAM COUNTIES**

**LOCATION:** NORTHERN WAKE FREEWAY INTERCHANGE  
IMPROVEMENTS AT I-540 AND I-40  
FROM N 147 TO I-540

**TYPE OF WORK:** GRADING, PAVING, DRAINAGE,  
WIDENING, RESURFACING, SIGNING,  
LIGHTING, AND STRUCTURE

STATE PROJECT REFERENCE NO.		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
34365.2.31	NHF-0540(13)	R-2000AF (RW/UTL)
34365.3.ST1	STM-0540(15)	R-2000AF (CONST)
45158.3.ST2	STM-040-4(144)280	R-5164B (CONST)



THIS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.



PROJECT LENGTH	
LENGTH ROADWAY TIP PROJECT R-2000AF /R-5164B	= 5.417 MI
LENGTH STRUCTURE TIP PROJECT R-2000AF /R-5164B	= 0.036 MI
TOTAL LENGTH TIP PROJECT R-2000AF /R-5164B	= 5.453 MI

2006 STANDARDS SPECIFICATION

LETTING DATE:  
JANUARY 19, 2010

Prepared In the Office of:  
**DEPARTMENT OF TRANSPORTATION**  
**DIVISION OF HIGHWAYS**  
1000 Birch Ridge Drive Raleigh, N.C. 27610

**B.S. COX, P.E.**  
PROJECT ENGINEER

**T.J. BEACH, P.E.**  
PROJECT DESIGN ENGINEER

DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

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

APPROVED FOR  
DIVISION ADMINISTRATOR  
DATE

23+00

24+00

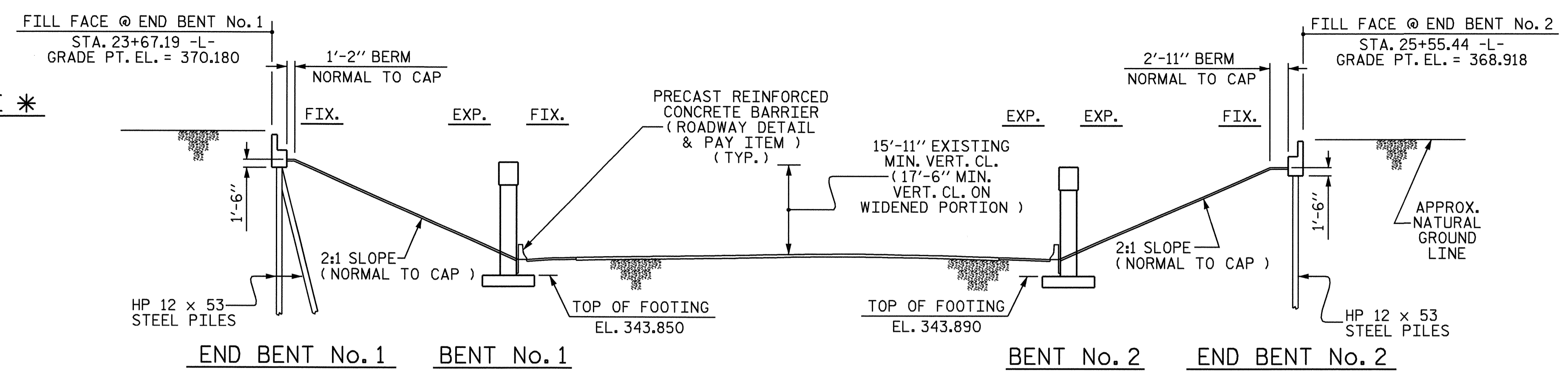
25+00

26+00

390  
380  
370  
360  
350  
340  
330

**GRADE DATA ALONG WORKLINE \***

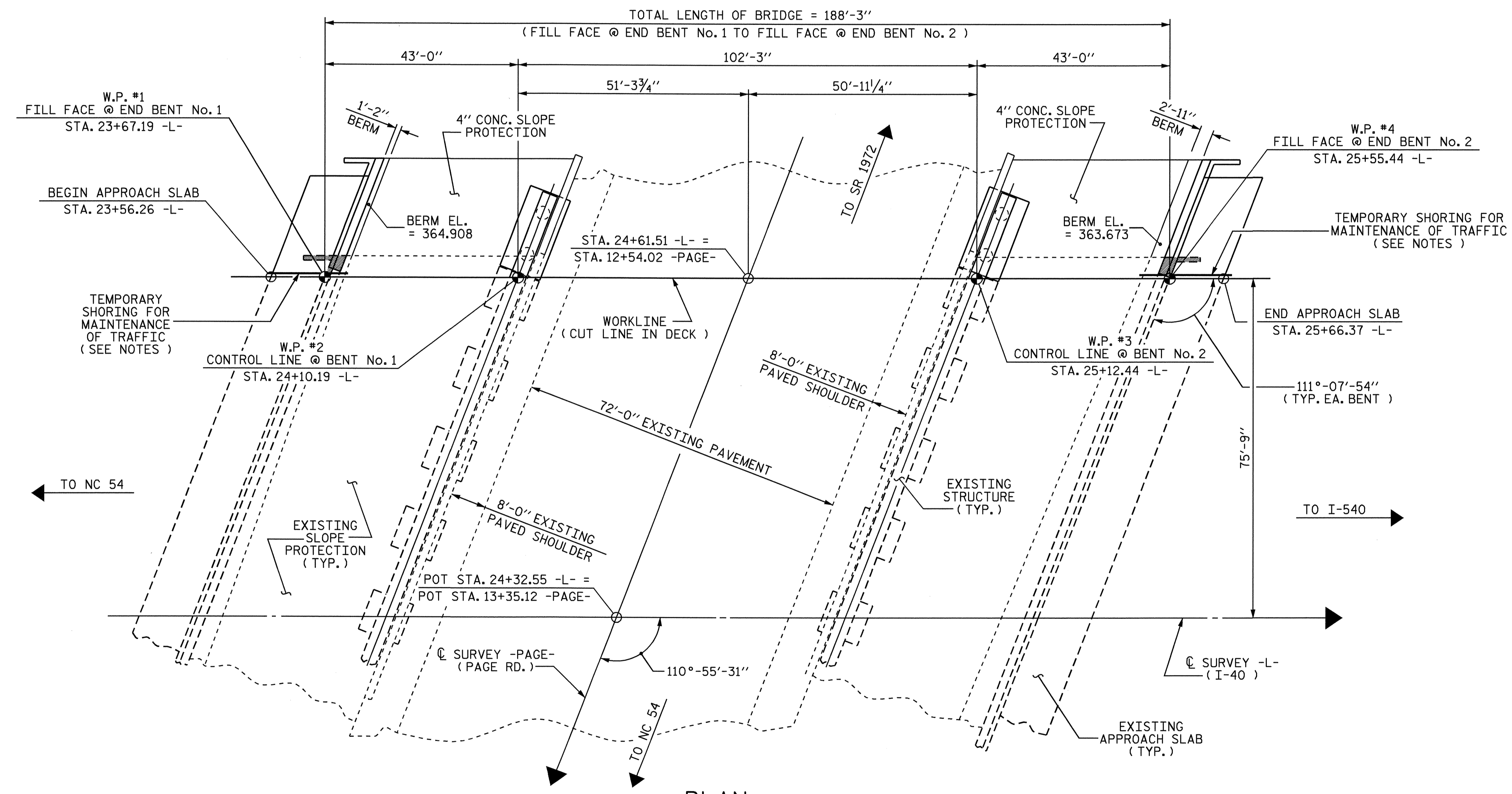
$\triangle -0.67\%$   
PI = 23+00.00 -L-  
EL. = 370.630



\* NOTE :  
GRADE DATA SHOWN IS A "BEST FIT"  
FROM FIELD SHOTS TAKEN ALONG  
EXISTING GUTTERLINE.

**SECTION ALONG WORKLINE**

(SECTIONS AT BENTS & END BENTS ARE AT RIGHT ANGLES)



**PLAN**

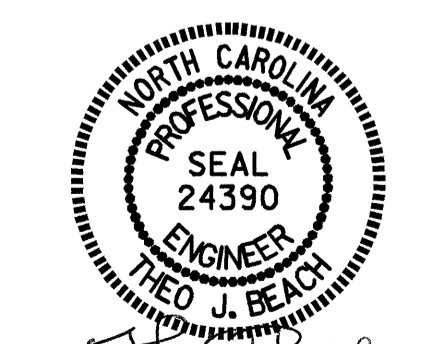
(PILES NOT SHOWN IN PLAN VIEW)  
(NOTE : ONLY HALF OF EXISTING BRIDGE IS SHOWN)

PROJECT NO. R-2000 AF  
WAKE/DURHAM COUNTY  
STATION: 24+32.55 -L-

SHEET 1 OF 3      WIDENING OF BR. No. 340

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

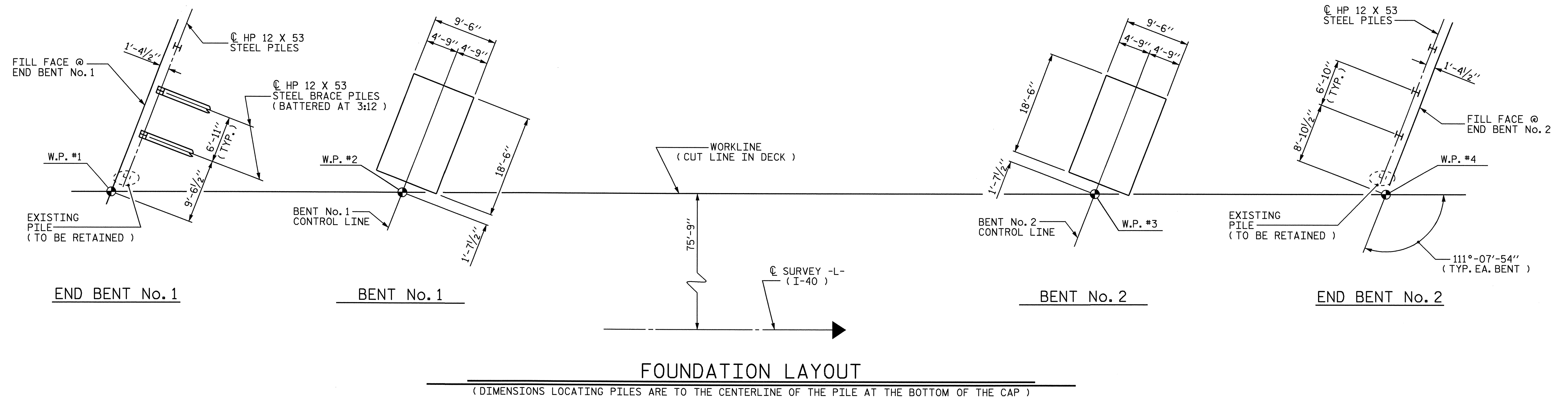
**GENERAL DRAWING**  
BRIDGE WIDENING ON  
I-40 OVER PAGE ROAD  
BETWEEN NC 54 AND I-540



DRAWN BY : MIKE BRITT      DATE : 9-9-09  
CHECKED BY : T.J. BEACH      DATE : 9-29-09

12-NOV-2009 12:52  
r:\structures\gen\_draw\2000af\_sd.gdgn  
tjbankovitch

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



**FOUNDATION LAYOUT**

(DIMENSIONS LOCATING PILES ARE TO THE CENTERLINE OF THE PILE AT THE BOTTOM OF THE CAP)

**NOTES :**

ASSUMED LIVE LOAD = HS 20 OR ALTERNATE LOADING, EXCEPT THAT THE GIRDERS HAVE BEEN DESIGNED FOR HS 25.

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 442-7 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.

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

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.

TEMPORARY SHORING WILL BE REQUIRED FOR MAINTENANCE OF TRAFFIC FOR CONSTRUCTION OF END BENTS. FOR LIMITS OF TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS. FOR PAY ITEM FOR TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE ROADWAY PLANS.

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.

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

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR PILES, SEE SPECIAL PROVISIONS.

FOR SHIPPING STEEL STRUCTURAL MEMBERS, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR HIGH STRENGTH BOLTS, SEE SPECIAL PROVISIONS.

FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS.

FOR DIRECT TENSION INDICATORS, SEE SPECIAL PROVISIONS.

FOR CURING CONCRETE, SEE SPECIAL PROVISIONS.

FOR PLACING LOAD ON STRUCTURE MEMBERS, SEE SPECIAL PROVISIONS.

THIS BRIDGE HAS BEEN DESIGNED BY THE STRENGTH DESIGN METHOD AS SPECIFIED IN AASHTO STANDARD SPECIFICATIONS.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AASHTO STANDARD SPECIFICATIONS FOR SEISMIC DESIGN OF HIGHWAY BRIDGES FOR SEISMIC PERFORMANCE CATEGORY A.

FOR LIMITS OF PARTIAL REMOVAL OF EXISTING STRUCTURE, SEE APPLICABLE SUPERSTRUCTURE AND SUBSTRUCTURE PLAN SHEETS.

DIMENSIONS AND ELEVATIONS GIVEN FOR THE EXISTING STRUCTURE ARE FROM THE BEST INFORMATION AVAILABLE. IF FIELD CONDITIONS VARY FROM THE PLANS, MODIFICATIONS WILL BE MADE AS NECESSARY AS DIRECTED BY THE ENGINEER.

BERM AND SLOPE PROTECTION MAY BE ADJUSTED SLIGHTLY AS NECESSARY IN ORDER TO MATCH THE EXISTING SITE CONDITIONS. THE CONTRACTOR SHALL PROVIDE AS SMOOTH A TRANSITION AS POSSIBLE BETWEEN EXISTING AND PROPOSED SLOPE AS DIRECTED BY THE ENGINEER.

DRIVE PILES AT END BENT No. 1 AND END BENT No. 2 TO A REQUIRED BEARING CAPACITY OF 120 TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO.

ALLOWABLE BEARING CAPACITY FOR PILES AT END BENT No. 1 AND END BENT No. 2 IS 60 TONS PER PILE.

PILE EXCAVATION IS REQUIRED TO INSTALL PILES AT END BENT No. 2. EXCAVATE HOLES TO ELEVATION 353 FT. SEE PILE EXCAVATION SPECIAL PROVISION.

THE REQUIRED BEARING CAPACITY FOR SPREAD FOOTINGS AT BENT No. 1 AND BENT No. 2 IS 12 TSF. CHECK FIELD CONDITIONS FOR THE REQUIRED BEARING CAPACITY JUST BEFORE PLACING CONCRETE.

THE ALLOWABLE BEARING CAPACITY FOR SPREAD FOOTINGS AT BENT No. 1 AND BENT No. 2 IS 4 TSF.

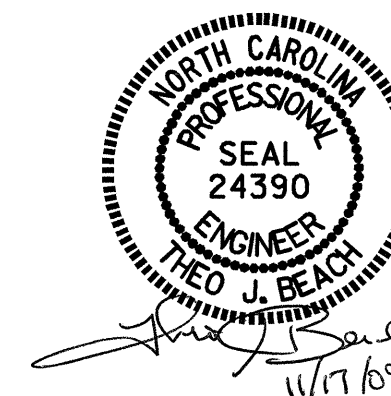
CARRY IN SPREAD FOOTINGS AT BENT No. 1 AND BENT No. 2 AT LEAST 12" INTO ROCK WITH MINIMUM THICKNESS AS SHOWN IN THE PLANS.

FOR BLASTING ADJACENT TO HIGHWAY STRUCTURES, SEE ARTICLE 410-11 OF THE STANDARD SPECIFICATIONS.

FOOTING EXCAVATIONS AT BENT No. 1 AND BENT No. 2 WILL EXTEND INTO MATERIAL THAT DETERIORATES WHEN EXPOSED TO THE ELEMENTS. CHECK FIELD CONDITIONS FOR THE REQUIRED BEARING CAPACITY AND PLACE CONCRETE IMMEDIATELY AFTER THE EXCAVATION IS COMPLETED.

FOR TIME RESTRICTIONS FOR CONSTRUCTION OF THE INTERIOR BENT FOOTINGS INCLUDING BACKFILLING OF EXCAVATION, SEE TRAFFIC CONTROL PLANS. THE CONTRACTOR SHALL OBTAIN CONCRETE STRENGTH OF 1500 PSI FOR THE FOOTING PRIOR TO PLACING THE BACKFILL AND SHALL USE LIGHTWEIGHT OR HAND OPERATED COMPACTION EQUIPMENT UNTIL FULL CONCRETE STRENGTH IS OBTAINED. AT THE CONTRACTOR'S OPTION, HIGH EARLY STRENGTH CONCRETE CAN BE USED IN THE FOOTING CONSTRUCTION AT NO ADDITIONAL COST TO THE DEPARTMENT.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE EXISTING EXTERIOR FOOTINGS SHALL BE LOCATED BEFORE BEGINNING CONSTRUCTION OF THE PROPOSED SPREAD FOOTINGS TO VERIFY THERE ARE NO POTENTIAL CONFLICTS BETWEEN THE EXISTING AND PROPOSED FOOTINGS.



PROJECT NO. R-2000 AF  
WAKE/DURHAM COUNTY  
 STATION: 24+32.55 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

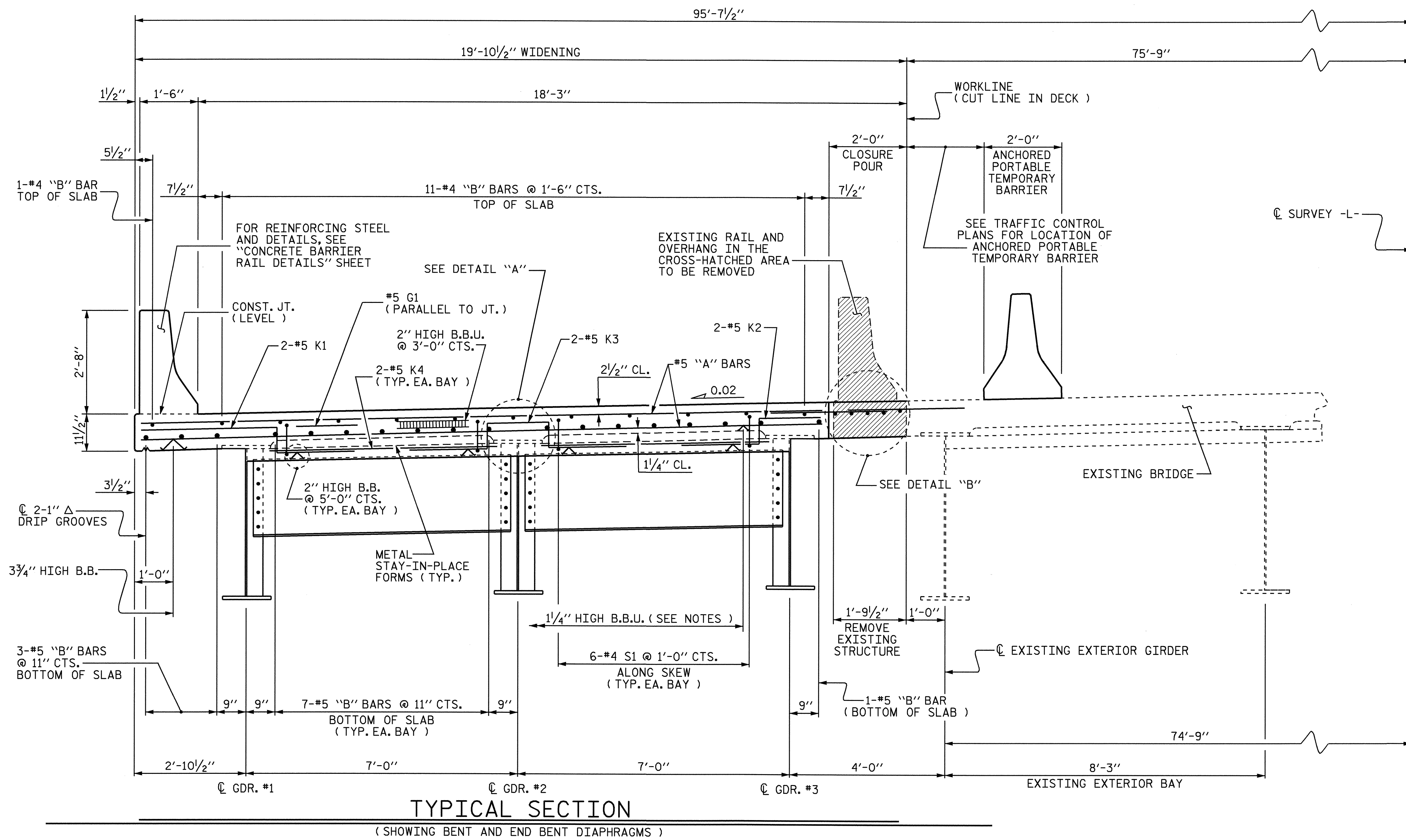
**GENERAL DRAWING**

BRIDGE WIDENING ON  
 I-40 OVER PAGE ROAD  
 BETWEEN NC 54 AND I-540

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

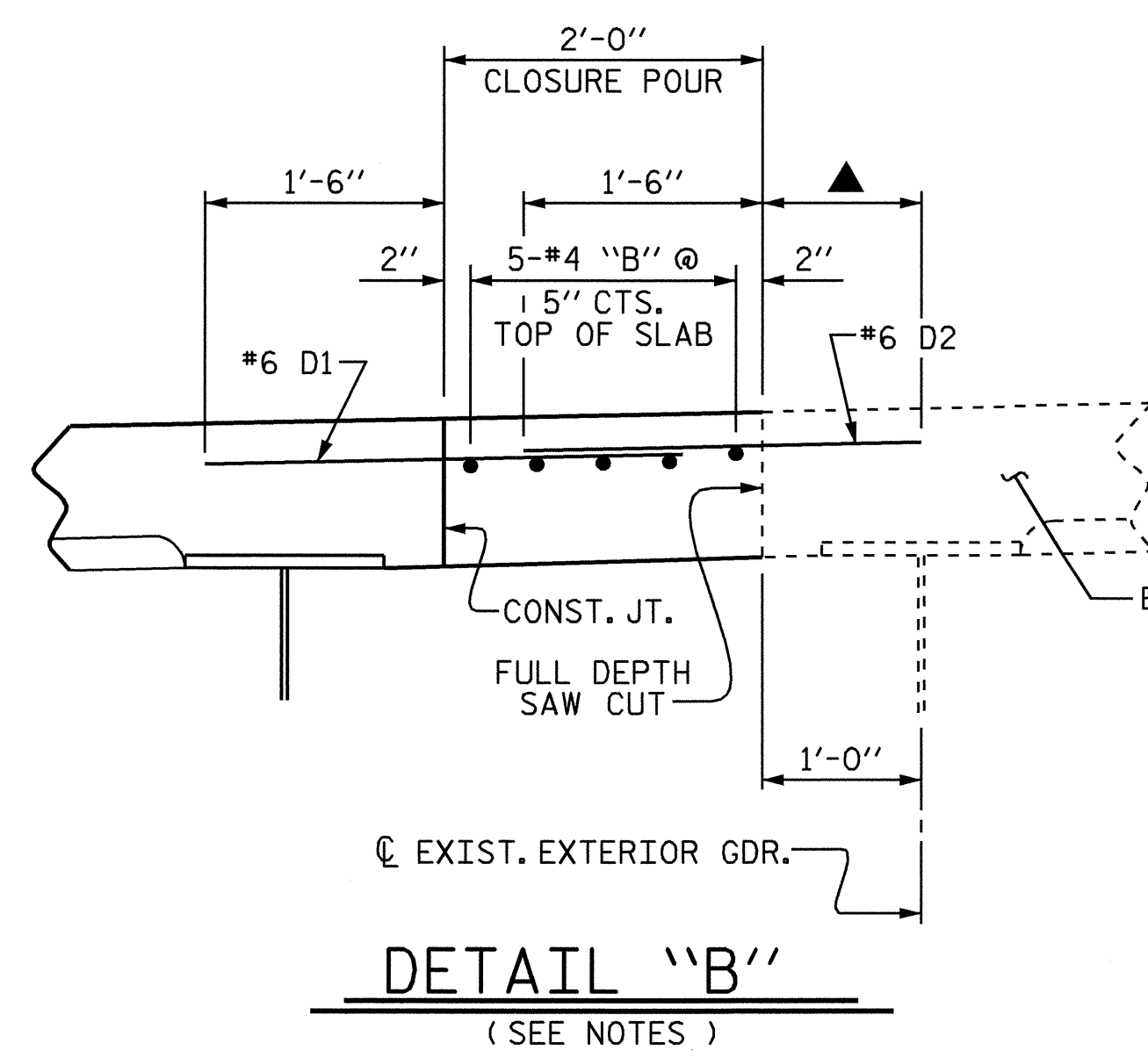
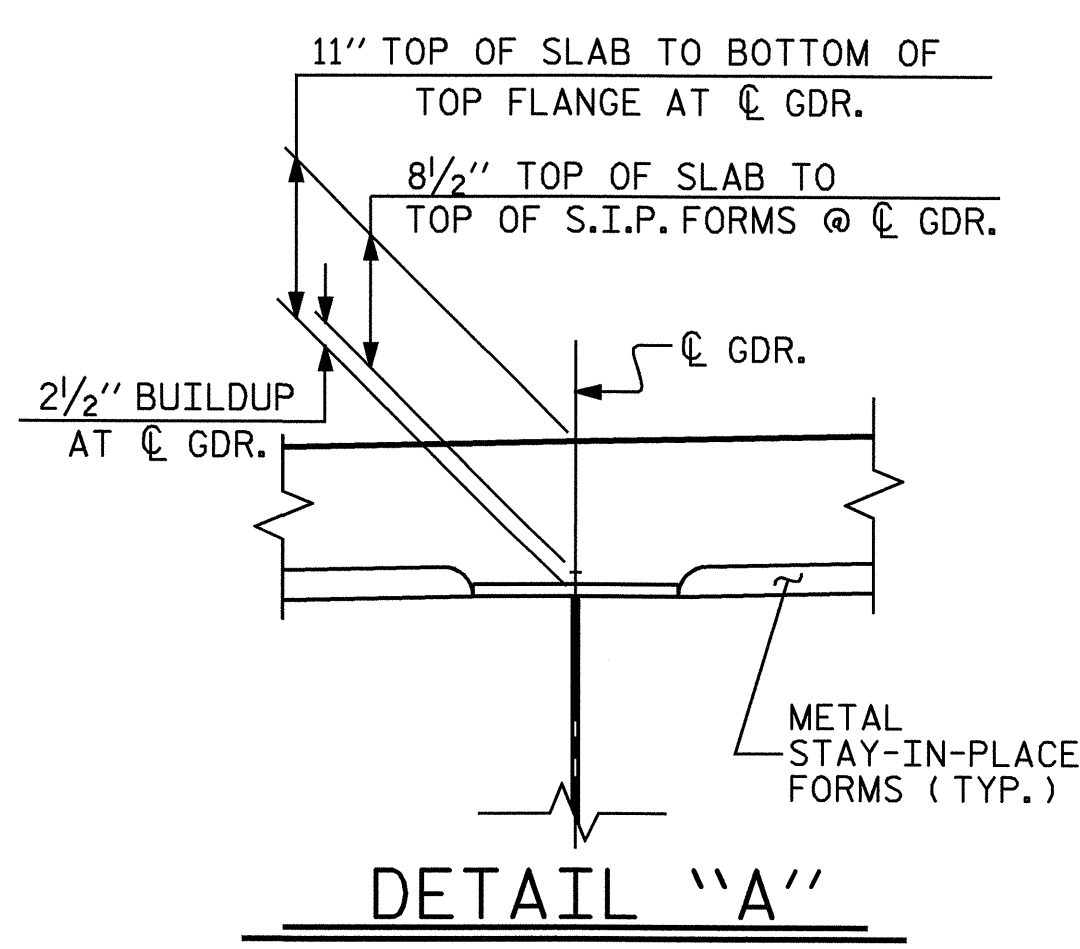
DRAWN BY : MIKE BRITT DATE : 9-15-09  
 CHECKED BY : I.J. BEACH DATE : 9-29-09





**TYPICAL SECTION**

(SHOWING BENT AND END BENT DIAPHRAGMS)



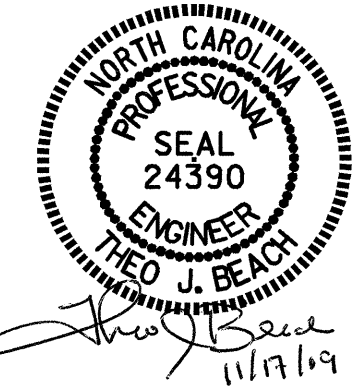
**NOTES**

- PROVIDE 1 1/4" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF "A" BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF "A" BARS A CLEAR DISTANCE OF 2 1/2" ABOVE THE TOP OF THE REMOVABLE FORM.
- \*6 D1 DOWELS AND \*6 D2 DOWELS SHALL BE PLACED IN THE SAME HORIZONTAL PLANE AS THE TOP SLAB REINFORCING STEEL.
- ▲ \*6 D2 DOWELS PLACED IN THE EXISTING DECK SHALL BE INSTALLED USING AN ADHESIVE ANCHORING SYSTEM. LEVEL ONE FIELD TESTING IS REQUIRED AND THE YIELD LOAD OF THE DOWEL IS 13.2 KIPS. OVERALL DOWEL LENGTH SHALL PROVIDE 1'-6" MIN. EXTENSION INTO CLOSURE POUR. EMBEDMENT LENGTH TO BE DETERMINED BY THE MANUFACTURER OF THE ADHESIVELY ANCHORED ANCHOR SYSTEM. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS.
- A FULL DEPTH SAW CUT SHALL BE MADE AND EXISTING CONCRETE REMOVED IN ACCORDANCE WITH PLAN DETAILS.
- 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.
- \*5 G1 BARS MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO CLEAR REINFORCING STEEL AND STIRRUPS.
- SEE TRAFFIC CONTROL PLANS FOR LOCATION AND PAY LIMITS OF THE ANCHORED PORTABLE CONCRETE BARRIER.
- 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.
- ALL REINFORCING STEEL IN BARRIER RAIL SHALL BE EPOXY COATED.
- THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE EVAZOTE JOINT SEAL SHALL BE 2 1/2" AT BENT No. 1 AND END BENTS AND 2 3/16" AT BENT No. 2. FOR EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS.

PROJECT NO. R-2000 AF  
WAKE/DURHAM COUNTY  
 STATION: 24+32.55 -L-

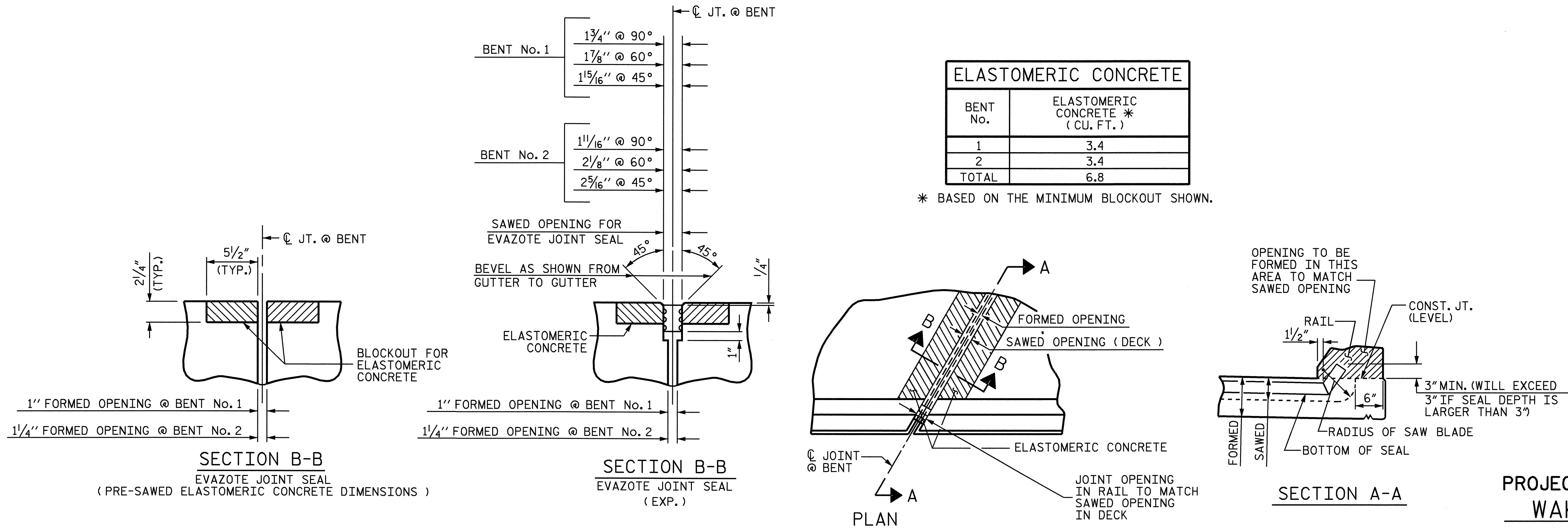
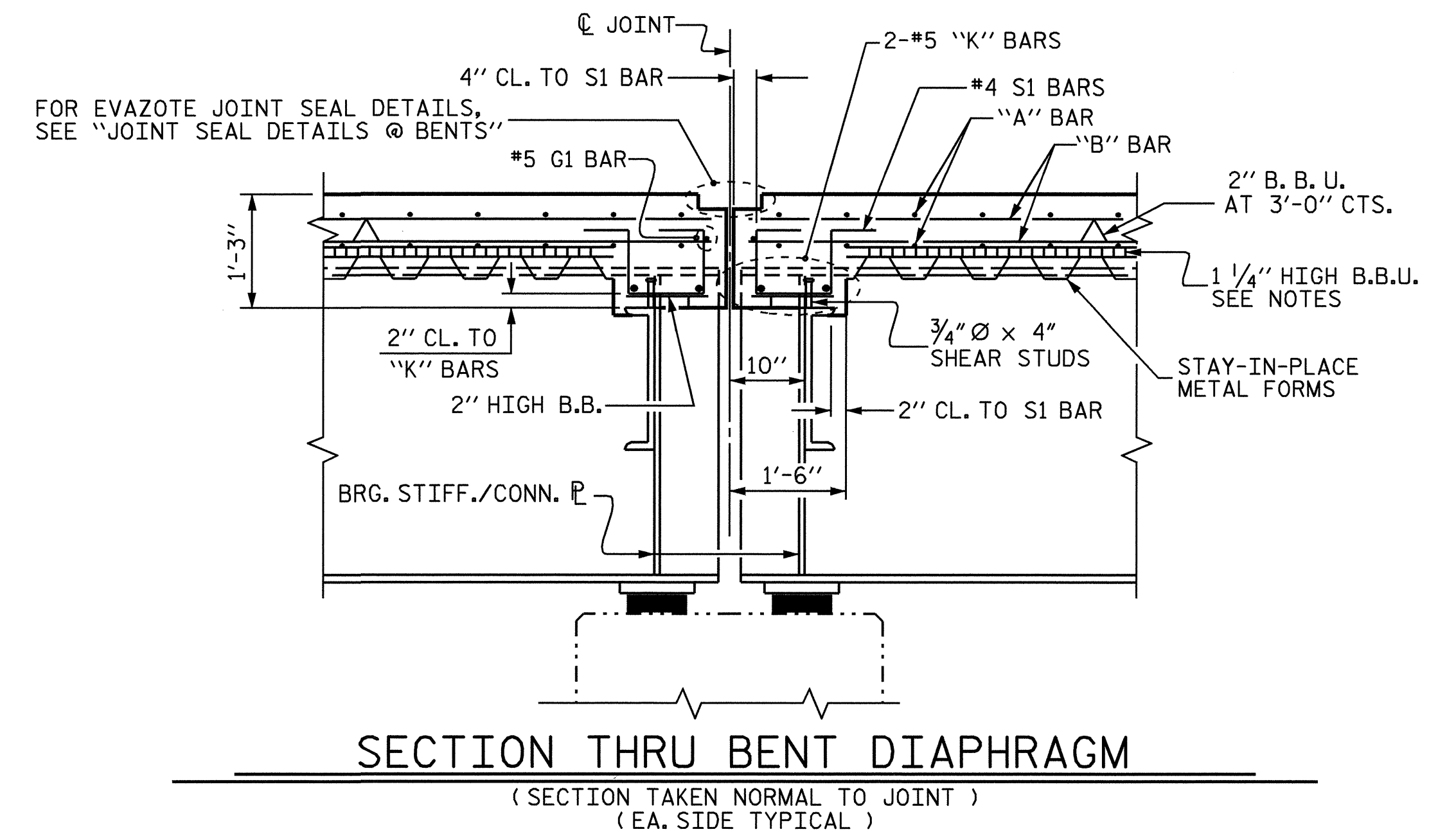
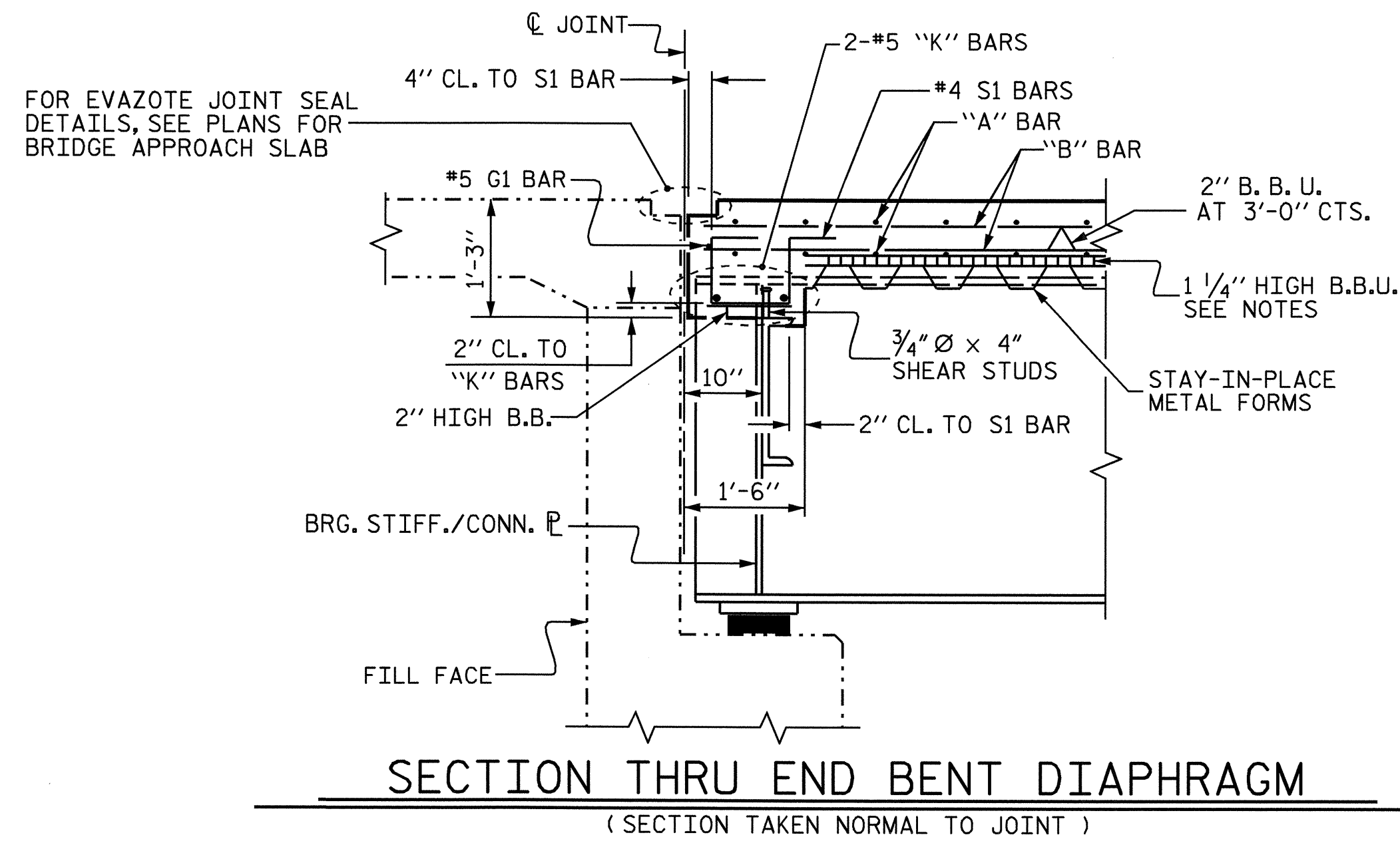
SHEET 1 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE TYPICAL SECTION					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-4 TOTAL SHEETS 32



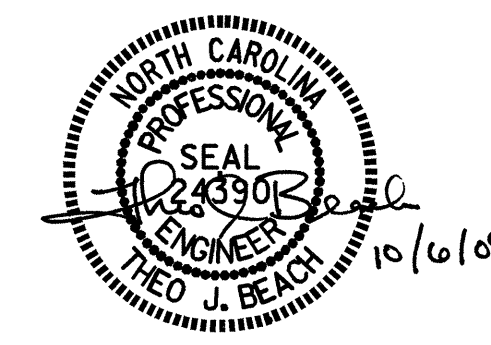
DRAWN BY: MIKE BRITT DATE: 5-14-09  
 CHECKED BY: S.B. WILLIAMS DATE: 7-09

12-NOV-2009 12:52  
 r:\structures\super\_draw\r2000af\_sd.ts.dgn  
 tjbankovich



**JOINT SEAL DETAILS @ BENTS**

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



PROJECT NO. R-2000 AF  
WAKE/DURHAM COUNTY  
 STATION: 24+32.55 -L-  
 SHEET 2 OF 2

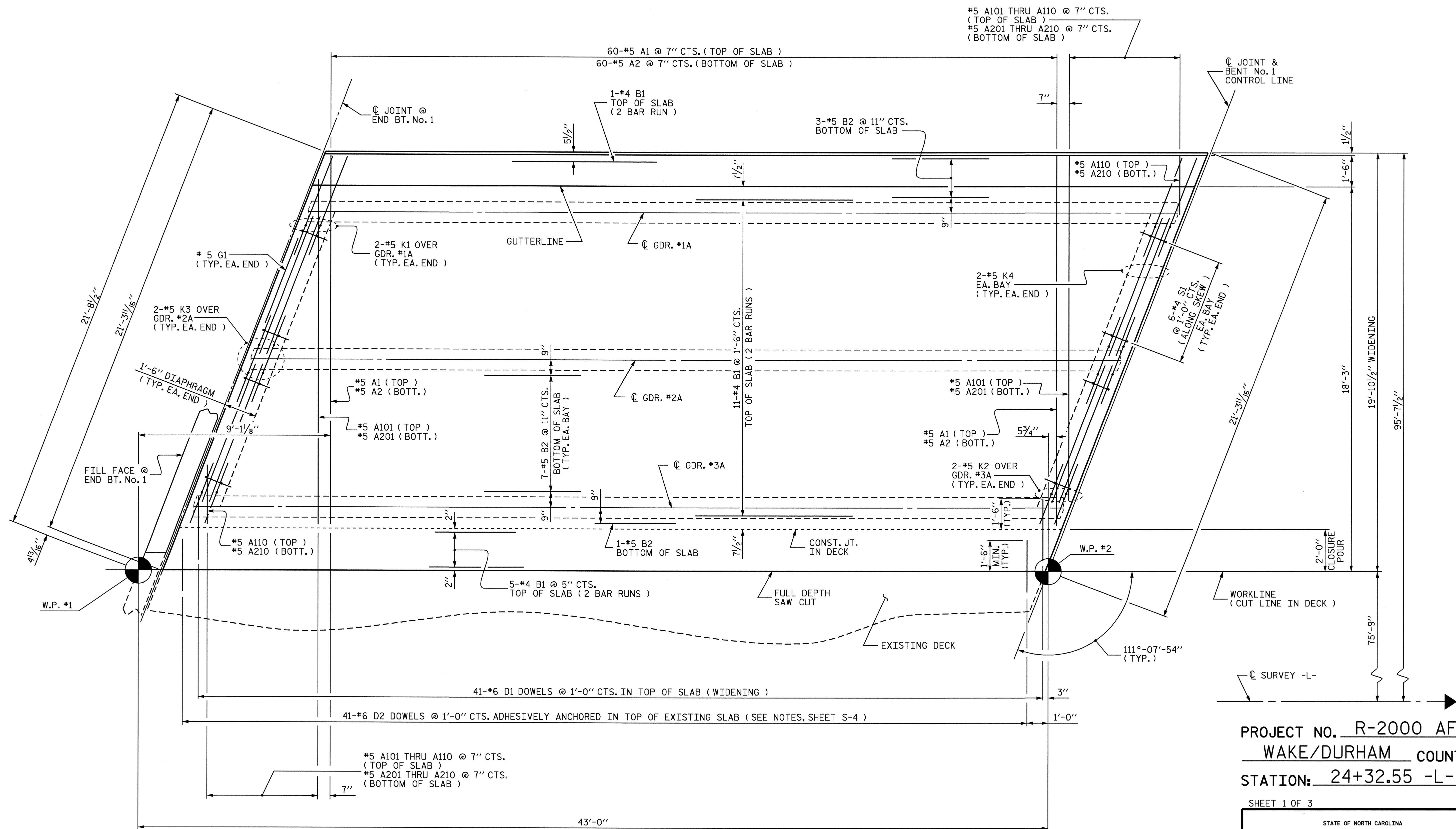
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUPERSTRUCTURE  
 TYPICAL SECTIONS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS 32
2			4			

DRAWN BY: MIKE BRITT DATE: 5-14-09  
 CHECKED BY: S.B. WILLIAMS DATE: 7-09

06-OCT-2009 09:06  
 r:\structures\Super\_Draw\2000af.sd.ts.dgn  
 sbwilliams

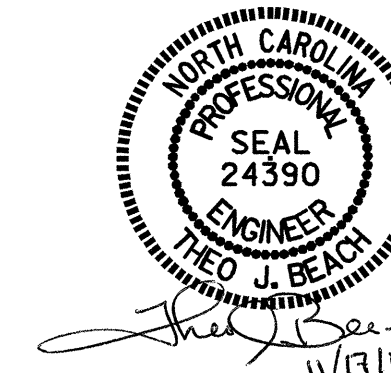


PLAN OF SPAN "A"

NOTES :

FOR PLACEMENT OF #6 DOWELS, SEE "DETAIL B" ON TYPICAL SECTION SHEET, SHEET 1 OF 2.

FOR REINFORCING STEEL AND DETAILS OF BARRIER RAIL, SEE "CONCRETE BARRIER RAIL DETAILS" SHEET.



PROJECT NO. R-2000 AF  
WAKE/DURHAM COUNTY  
 STATION: 24+32.55 -L-

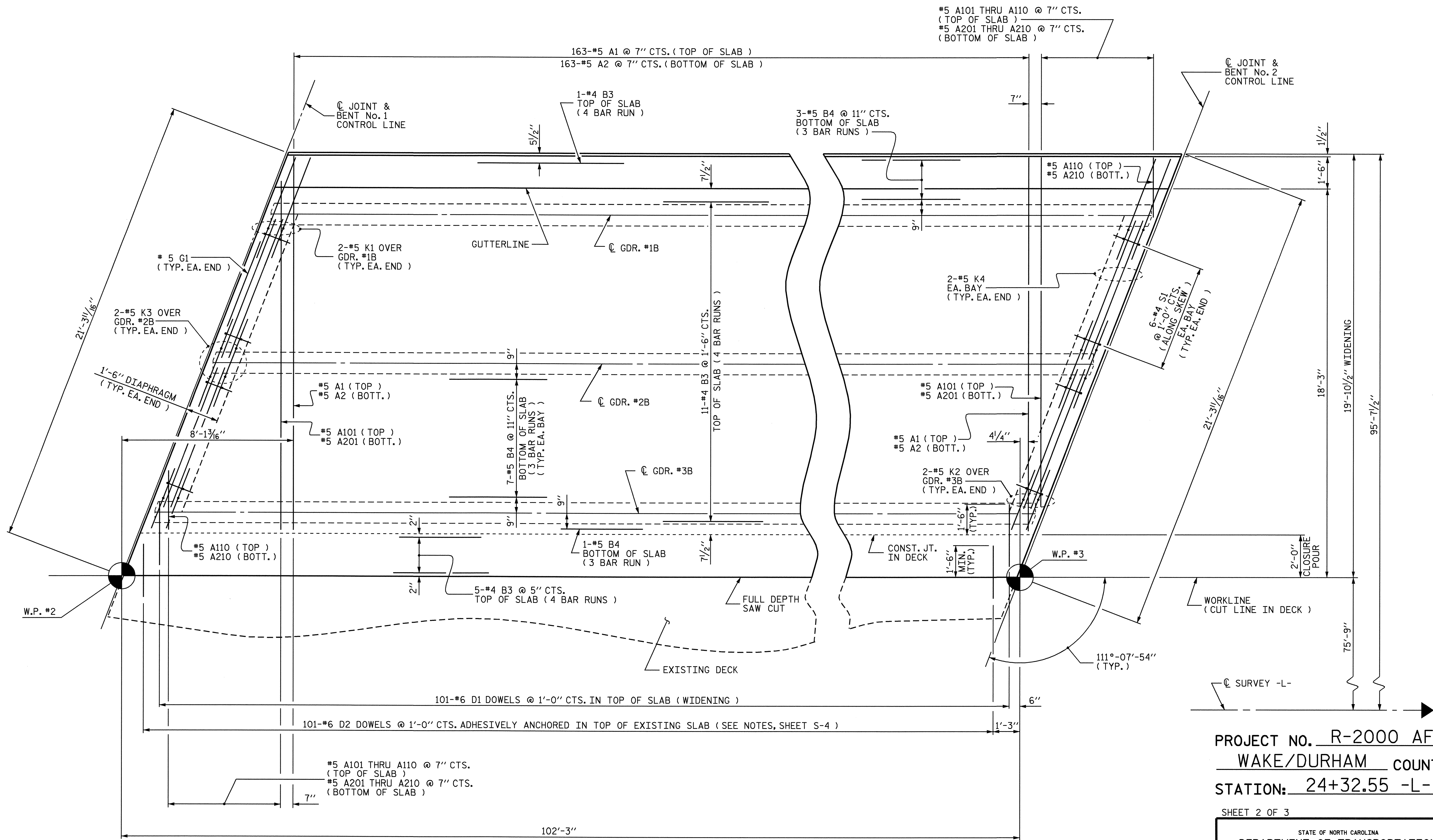
SHEET 1 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUPERSTRUCTURE  
 PLAN OF SPAN "A"

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6	
1			3			TOTAL SHEETS	
2			4			32	

DRAWN BY : MIKE BRITT DATE : 5-19-09  
 CHECKED BY : S.B. WILLIAMS DATE : 7-09

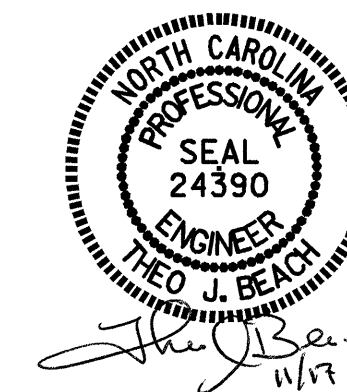


PLAN OF SPAN "B"

NOTES :

FOR PLACEMENT OF #6 DOWELS, SEE "DETAIL B" ON TYPICAL SECTION SHEET, SHEET 1 OF 2.

FOR REINFORCING STEEL AND DETAILS OF BARRIER RAIL, SEE "CONCRETE BARRIER RAIL DETAILS" SHEET.



PROJECT NO. R-2000 AF  
WAKE/DURHAM COUNTY  
 STATION: 24+32.55 -L-

SHEET 2 OF 3

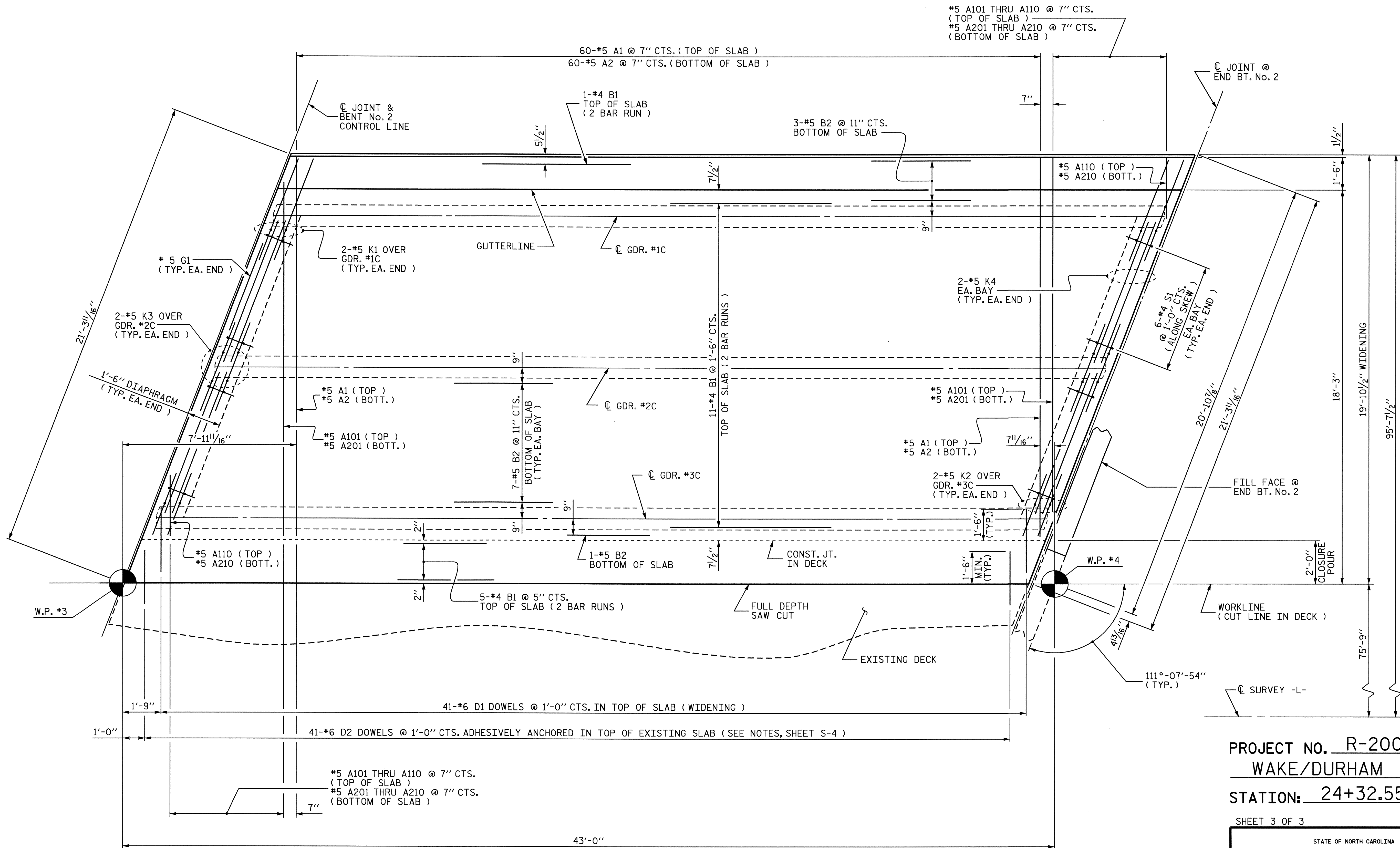
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 PLAN OF SPAN "B"

DRAWN BY : MIKE BRITT DATE : 5-20-09  
 CHECKED BY : S.B. WILLIAMS DATE : 7-09

12-NOV-2009 12:57  
 F:\structure\super.draw\vr2000af.sd.ps.dgn  
 tjbankovich

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			32





PLAN OF SPAN "C"

NOTES :

FOR PLACEMENT OF #6 DOWELS, SEE "DETAIL B" ON TYPICAL SECTION SHEET, SHEET 1 OF 2.

FOR REINFORCING STEEL AND DETAILS OF BARRIER RAIL, SEE "CONCRETE BARRIER RAIL DETAILS" SHEET.



PROJECT NO. R-2000 AF  
WAKE/DURHAM COUNTY  
 STATION: 24+32.55 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

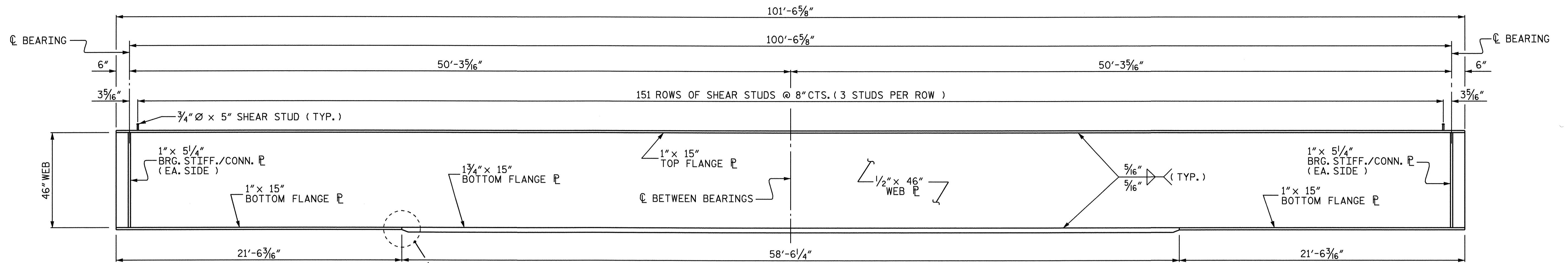
SUPERSTRUCTURE  
 PLAN OF SPAN "C"

DRAWN BY : MIKE BRITT DATE : 5-20-09  
 CHECKED BY : S.B. WILLIAMS DATE : 7-09

12-NOV-2009 12:56  
 r:\structures\super\_draw\2000af\_sd.ps.dgn  
 tjbankovich

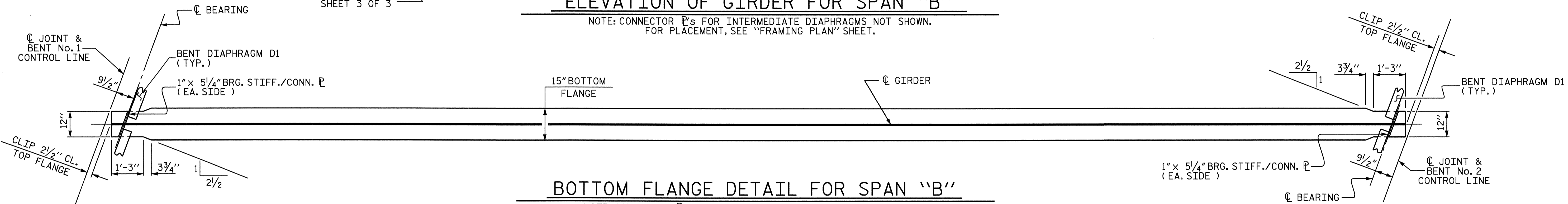
REVISIONS						SHEET NO. S-8
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 32
2			4			





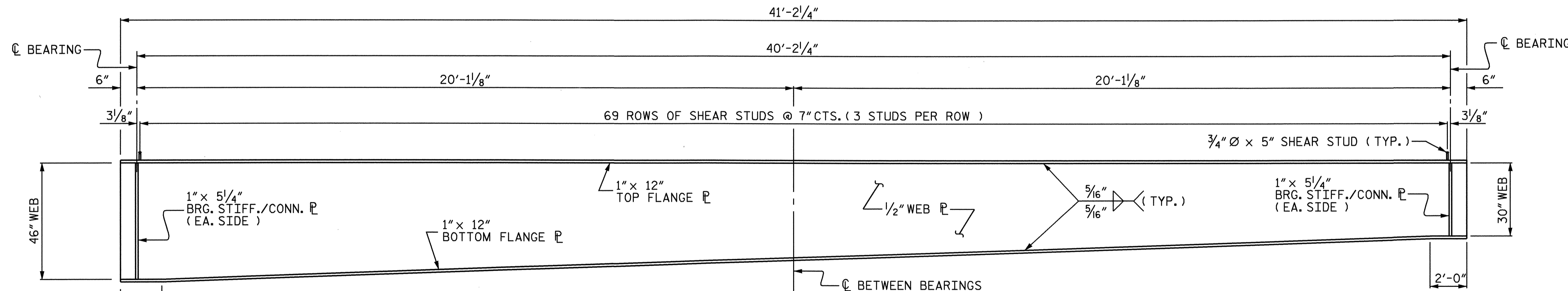
**ELEVATION OF GIRDER FOR SPAN "B"**

NOTE: CONNECTOR P's FOR INTERMEDIATE DIAPHRAGMS NOT SHOWN. FOR PLACEMENT, SEE "FRAMING PLAN" SHEET.



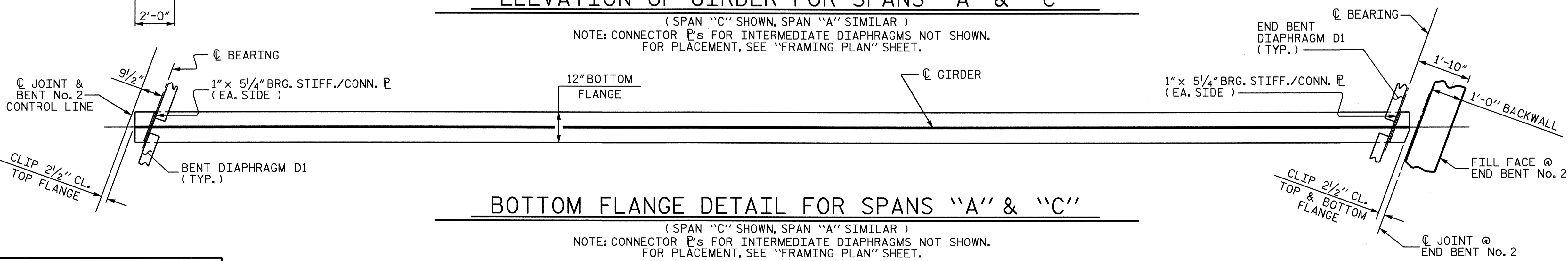
**BOTTOM FLANGE DETAIL FOR SPAN "B"**

NOTE: CONNECTOR P's FOR INTERMEDIATE DIAPHRAGMS NOT SHOWN. FOR PLACEMENT, SEE "FRAMING PLAN" SHEET.



**ELEVATION OF GIRDER FOR SPANS "A" & "C"**

(SPAN "C" SHOWN, SPAN "A" SIMILAR)  
 NOTE: CONNECTOR P's FOR INTERMEDIATE DIAPHRAGMS NOT SHOWN. FOR PLACEMENT, SEE "FRAMING PLAN" SHEET.



**BOTTOM FLANGE DETAIL FOR SPANS "A" & "C"**

(SPAN "C" SHOWN, SPAN "A" SIMILAR)  
 NOTE: CONNECTOR P's FOR INTERMEDIATE DIAPHRAGMS NOT SHOWN. FOR PLACEMENT, SEE "FRAMING PLAN" SHEET.



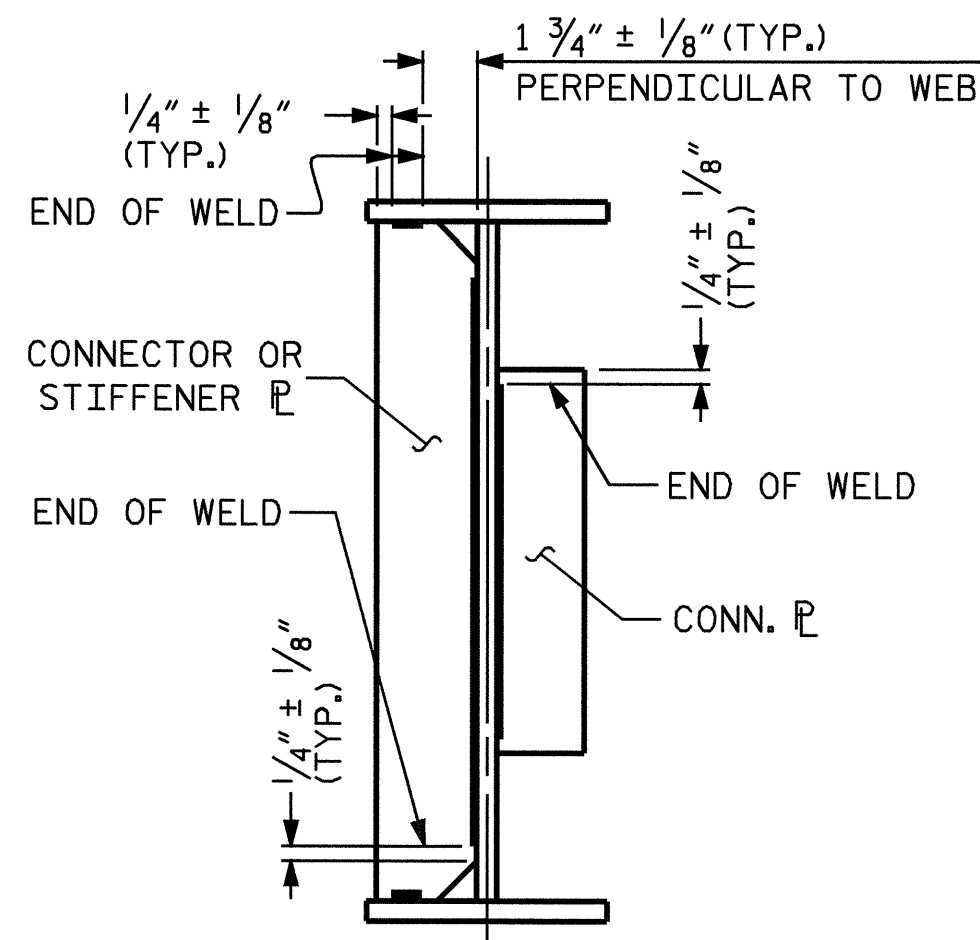
PROJECT NO. R-2000 AF  
WAKE/DURHAM COUNTY  
 STATION: 24+32.55 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S-10
SUPERSTRUCTURE STRUCTURAL STEEL DETAILS						TOTAL SHEETS 32
REVISIONS						
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

DRAWN BY : MIKE BRITT DATE : 5-27-09  
 CHECKED BY : S.B. WILLIAMS DATE : 7-09





TYPICAL STIFFENER OR  
CONNECTOR PLATE CONNECTIONS

**WELD TERMINATION DETAIL**

**NOTES :**

ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 50W AND PAINTED IN ACCORDANCE WITH SYSTEM 4 OF ARTICLE 442-7 OF THE STANDARD SPECIFICATIONS UNLESS OTHERWISE NOTED ON THE PLANS.

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

ALL FIELD CONNECTIONS TO BE 7/8" Ø HIGH STRENGTH BOLTS, UNLESS OTHERWISE NOTED ON THE PLANS. FOR HIGH STRENGTH BOLTS, SEE SPECIAL PROVISIONS.

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. KEEP 2 FEET MINIMUM BETWEEN WEB AND FLANGE SHOP SPLICES. KEEP 6" MINIMUM BETWEEN CONNECTOR PLATE AND WEB OR FLANGE SHOP SPLICE.

A CHARPY V-NOTCH TEST IS REQUIRED FOR WEB PLATES AND BOTTOM FLANGE PLATES FOR ALL GIRDERS AND SHALL BE IN ACCORDANCE WITH ARTICLE 1072-9 OF THE STANDARD SPECIFICATIONS.

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

ENDS OF GIRDERS SHALL BE PLUMB.

BEARING STIFFENERS ARE TO BE PLACED ALONG THE SKEW AND SHALL BE PLUMB.

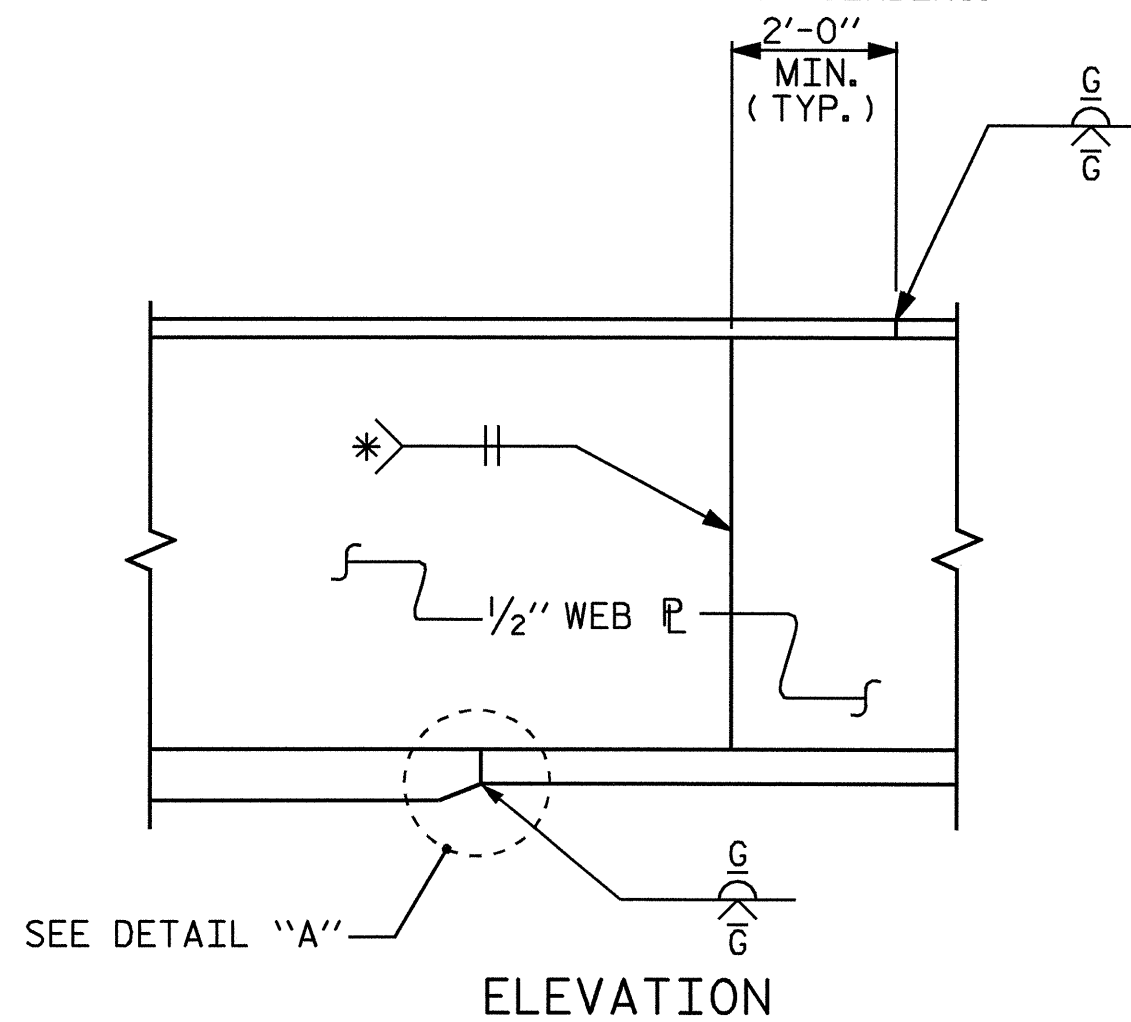
TENSION ON THE AASHTO M164 BOLTS SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH ARTICLE 440-8 OF THE STANDARD SPECIFICATIONS. FOR DIRECT TENSION INDICATORS, SEE SPECIAL PROVISIONS.

IN CLOSURE POUR BAY, CONNECTION BOLTS ARE TO BE LOCATED AT THE BOTTOM OF THE CONNECTION SLOTS AND TIGHTENED TO SNUG FIT PRIOR TO FIELD WELDING OPPOSITE END OF DIAPHRAGM D3. AFTER WELDING DIAPHRAGM D3 TO CONNECTOR PLATE AND PRIOR TO POURING OF THE SLAB, BACK OFF BOLTS 1/2" TURN TO ALLOW FOR VERTICAL DEFLECTION OF NEW GIRDER. PRIOR TO POURING CLOSURE POUR AND BARRIER RAIL, TIGHTEN BOLTS AS REQUIRED BY THE STANDARD SPECIFICATIONS.

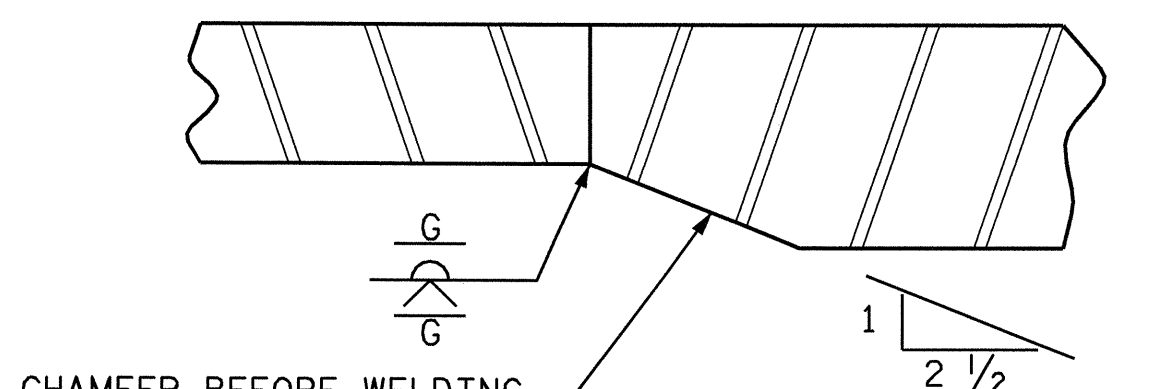
BEARING STIFFENER PLATE WIDTHS SHOWN ARE MINIMUM DIMENSIONS. WHEN REQUIRED, THE PLATE WIDTHS MAY BE INCREASED AS NECESSARY TO CONNECT DIAPHRAGM MEMBERS.

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

\* GRIND SMOOTH AND FLUSH ON  
OUTER FACE OF EXTERIOR GIRDERS.

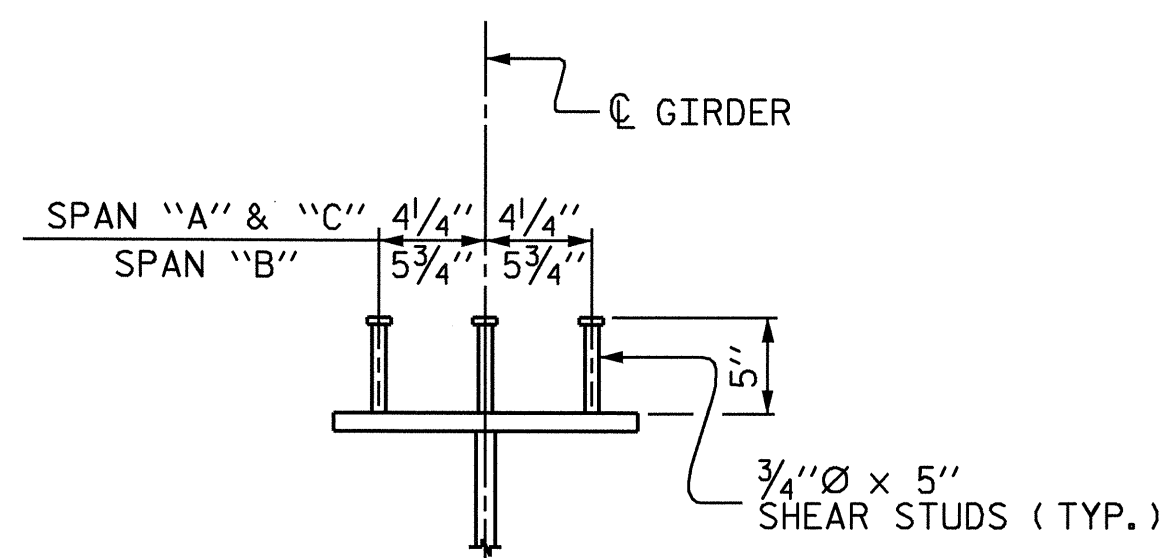


**PERMISSIBLE SHOP  
FLANGE & WEB SPLICE**



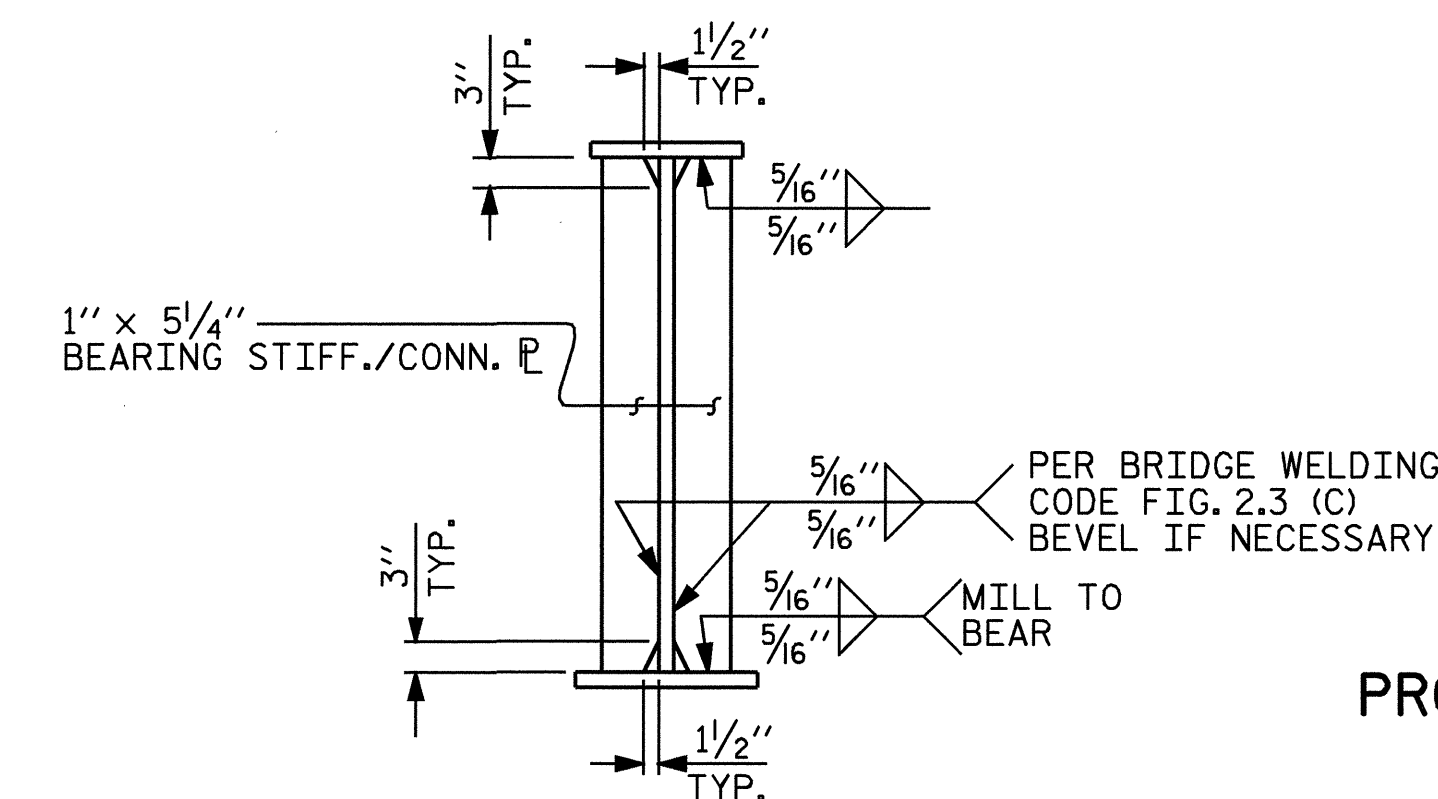
**DETAIL "A"**

(SEE SHEET 1 OF 3)



**GIRDER SHEAR STUD DETAIL**

(TYP. EA. GIRDER)



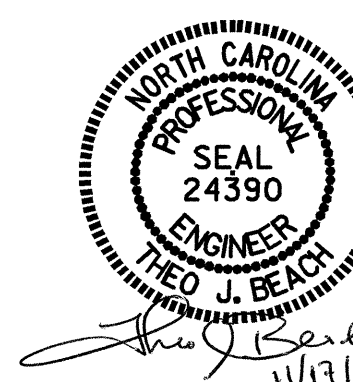
**BEARING STIFFENER**

PROJECT NO. R-2000 AF  
WAKE/DURHAM COUNTY  
STATION: 24+32.55 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUPERSTRUCTURE  
STRUCTURAL STEEL  
DETAILS



DRAWN BY : MIKE BRITT DATE : 6-2-09  
CHECKED BY : S.B. WILLIAMS DATE : 7-09

12-NOV-2009 12:58  
r:\structures\super\_draw\r2000af\_sd.ss.dgn  
tjbankovich

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			32

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																							
TENTH POINTS	SPANS "A" & "C"																						
	GIRDER #1											GIRDER #2 & #3											
	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	0.001	0.002	0.003	0.003	0.004	0.003	0.003	0.002	0.001	0.000	0.000	0.001	0.002	0.003	0.003	0.004	0.003	0.003	0.002	0.001	0.000	
DEFLECTION DUE TO WEIGHT OF SLAB	0.000	0.007	0.012	0.017	0.020	0.021	0.020	0.017	0.012	0.007	0.000	0.000	0.007	0.013	0.018	0.021	0.022	0.021	0.018	0.013	0.007	0.000	
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0.000	0.000	0.002	0.002	0.003	0.003	0.003	0.002	0.002	0.000	0.000	0.000	0.001	0.001	0.001	0.002	0.002	0.002	0.001	0.001	0.001	0.000	
TOTAL DEAD LOAD DEFLECTION	0.000	0.008	0.016	0.022	0.026	0.028	0.026	0.022	0.016	0.008	0.000	0.000	0.009	0.016	0.022	0.026	0.028	0.026	0.022	0.016	0.009	0.000	
REQUIRED CAMBER	0	1/8"	1/4"	5/16"	5/16"	3/8"	5/16"	5/16"	1/4"	1/8"	0	0	1/8"	1/4"	5/16"	5/16"	3/8"	5/16"	5/16"	1/4"	1/8"	0	

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

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																					
TWENTIETH POINTS	SPAN "B"-GIRDER #1																				
	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	0.000	0.010	0.019	0.027	0.035	0.042	0.047	0.052	0.055	0.057	0.058	0.057	0.055	0.052	0.047	0.042	0.035	0.027	0.019	0.010	0.000
DEFLECTION DUE TO WEIGHT OF SLAB *	0.000	0.036	0.071	0.104	0.133	0.159	0.180	0.198	0.210	0.218	0.221	0.218	0.210	0.198	0.180	0.159	0.133	0.104	0.071	0.036	0.000
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0.000	0.005	0.010	0.014	0.018	0.021	0.025	0.026	0.029	0.030	0.030	0.029	0.026	0.025	0.021	0.018	0.014	0.010	0.005	0.000	
TOTAL DEAD LOAD DEFLECTION	0.000	0.051	0.100	0.145	0.186	0.222	0.252	0.276	0.294	0.305	0.309	0.305	0.294	0.276	0.252	0.222	0.186	0.145	0.100	0.051	0.000
REQUIRED CAMBER	0	5/8"	1 1/4"	1 3/4"	2 1/4"	2 11/16"	3 1/16"	3 3/8"	3 9/16"	3 11/16"	3 3/4"	3 11/16"	3 9/16"	3 3/8"	3 1/16"	2 11/16"	2 1/4"	1 3/4"	1 1/4"	5/8"	0

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																					
TWENTIETH POINTS	SPAN "B"-GIRDER #2																				
	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	0.000	0.010	0.019	0.027	0.035	0.042	0.047	0.052	0.055	0.057	0.058	0.057	0.055	0.052	0.047	0.042	0.035	0.027	0.019	0.010	0.000
DEFLECTION DUE TO WEIGHT OF SLAB *	0.000	0.038	0.075	0.110	0.141	0.168	0.191	0.209	0.223	0.231	0.234	0.231	0.223	0.209	0.191	0.168	0.141	0.110	0.075	0.038	0.000
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0.000	0.003	0.006	0.009	0.012	0.014	0.016	0.017	0.018	0.019	0.019	0.019	0.018	0.017	0.016	0.014	0.012	0.009	0.006	0.003	0.000
TOTAL DEAD LOAD DEFLECTION	0.000	0.051	0.100	0.146	0.188	0.224	0.254	0.278	0.296	0.307	0.311	0.307	0.296	0.278	0.254	0.224	0.188	0.146	0.100	0.051	0.000
REQUIRED CAMBER	0	5/8"	1 1/4"	1 13/16"	2 5/16"	2 11/16"	3 1/16"	3 3/8"	3 9/16"	3 11/16"	3 3/4"	3 11/16"	3 9/16"	3 3/8"	3 1/16"	2 11/16"	2 5/16"	1 13/16"	1 1/4"	5/8"	0

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																					
TWENTIETH POINTS	SPAN "B"-GIRDER #3																				
	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	0.000	0.010	0.019	0.027	0.035	0.042	0.047	0.052	0.055	0.057	0.058	0.057	0.055	0.052	0.047	0.042	0.035	0.027	0.019	0.010	0.000
DEFLECTION DUE TO WEIGHT OF SLAB *	0.000	0.030	0.059	0.086	0.110	0.131	0.149	0.163	0.173	0.180	0.182	0.180	0.173	0.163	0.149	0.131	0.110	0.086	0.059	0.030	0.000
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0.000	0.003	0.006	0.009	0.011	0.013	0.016	0.017	0.019	0.019	0.019	0.019	0.019	0.017	0.016	0.013	0.011	0.009	0.006	0.003	0.000
TOTAL DEAD LOAD DEFLECTION	0.000	0.043	0.084	0.122	0.156	0.186	0.212	0.232	0.247	0.256	0.259	0.256	0.247	0.232	0.212	0.186	0.156	0.122	0.084	0.043	0.000
REQUIRED CAMBER	0	3/16"	1/16"	1/2"	1 5/16"	2 1/4"	2 9/16"	2 13/16"	3"	3 1/8"	3 1/8"	3 1/8"	3"	2 13/16"	2 9/16"	2 1/4"	1 5/16"	1 1/2"	1 1/16"	3/16"	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. R-2000 AF  
WAKE/DURHAM COUNTY  
STATION: 24+32.55 -L-

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUPERSTRUCTURE  
DEAD LOAD DEFLECTIONS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			32

DRAWN BY : MIKE BRITT DATE : 6-8-09  
CHECKED BY : S.B. WILLIAMS DATE : 7-09

**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.

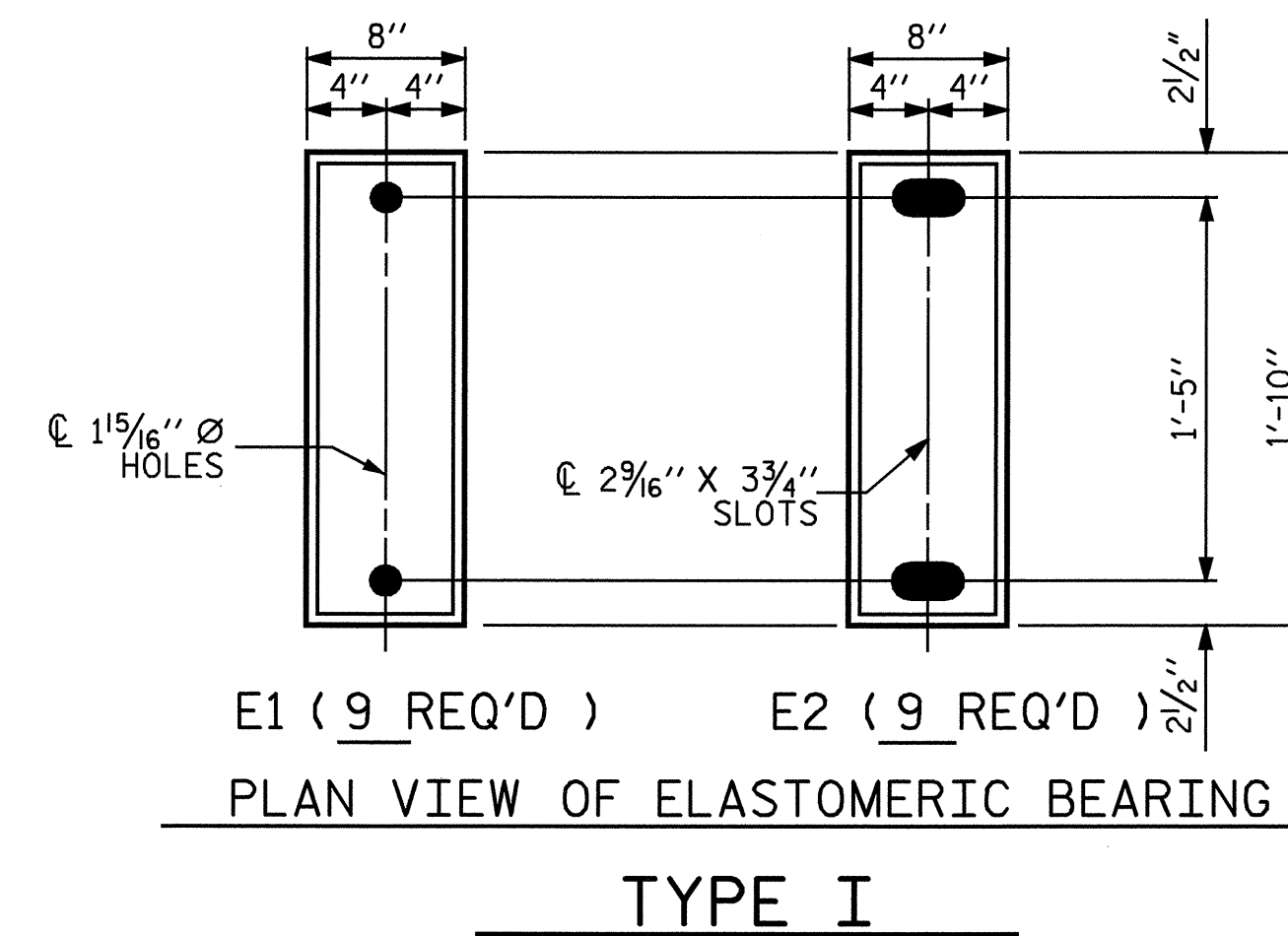
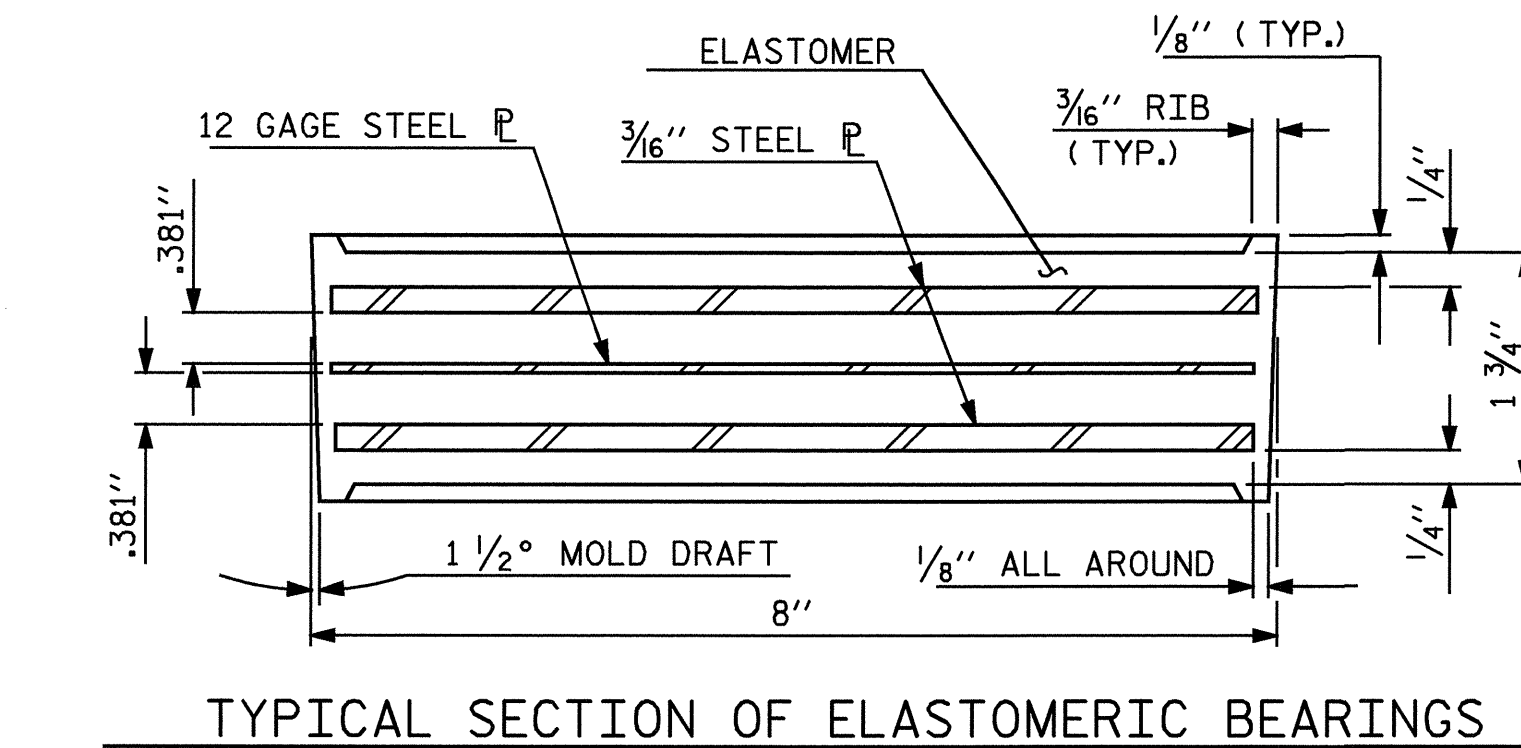
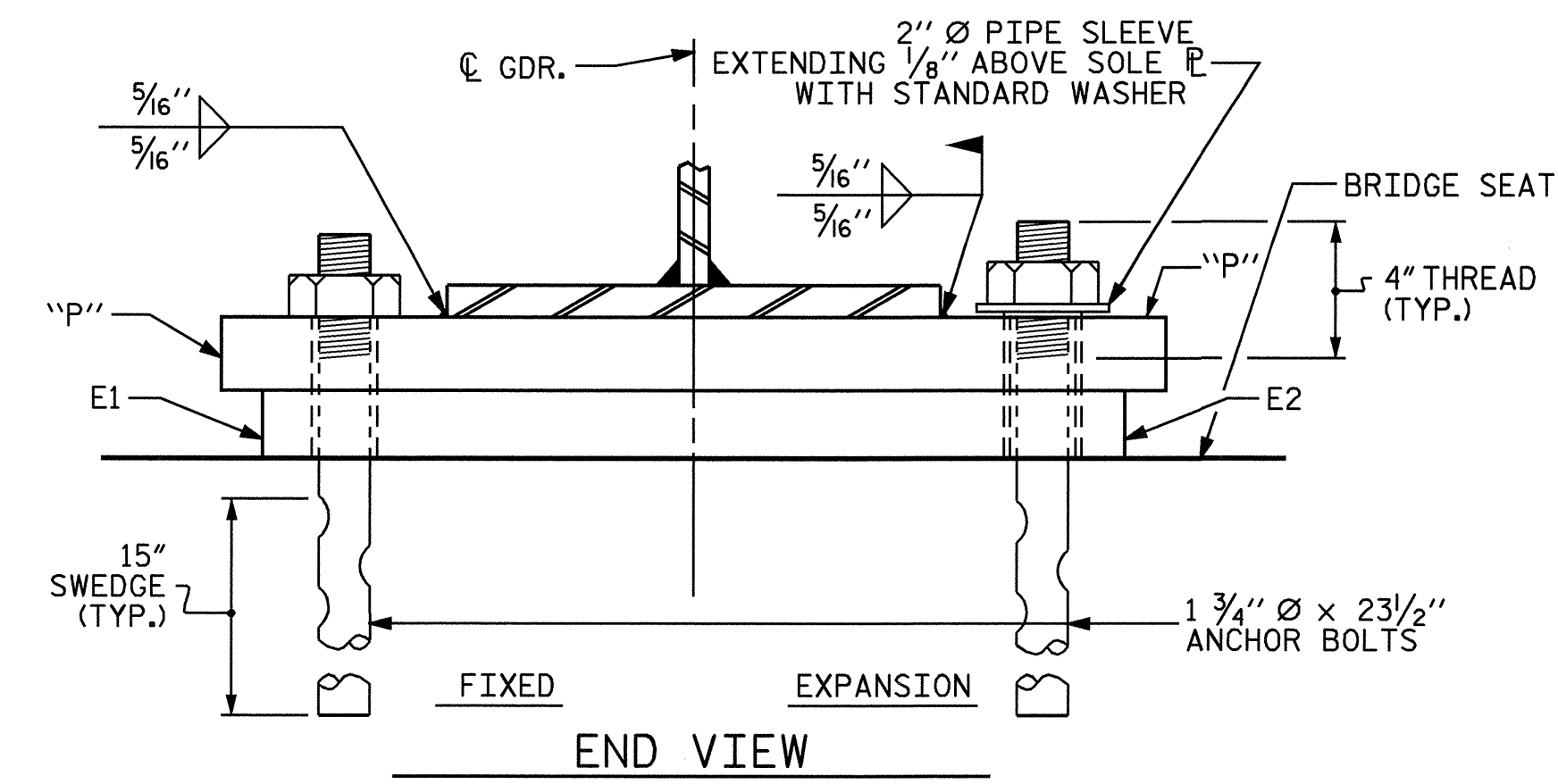
FOR AASHTO M270 GRADE 50W STRUCTURAL STEEL, SOLE PLATE SHALL BE AASHTO M270 GRADE 50W AND SHALL NOT BE GALVANIZED. ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

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.

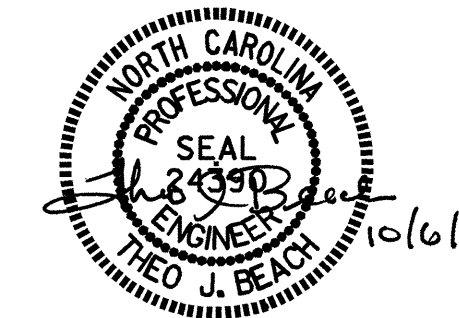
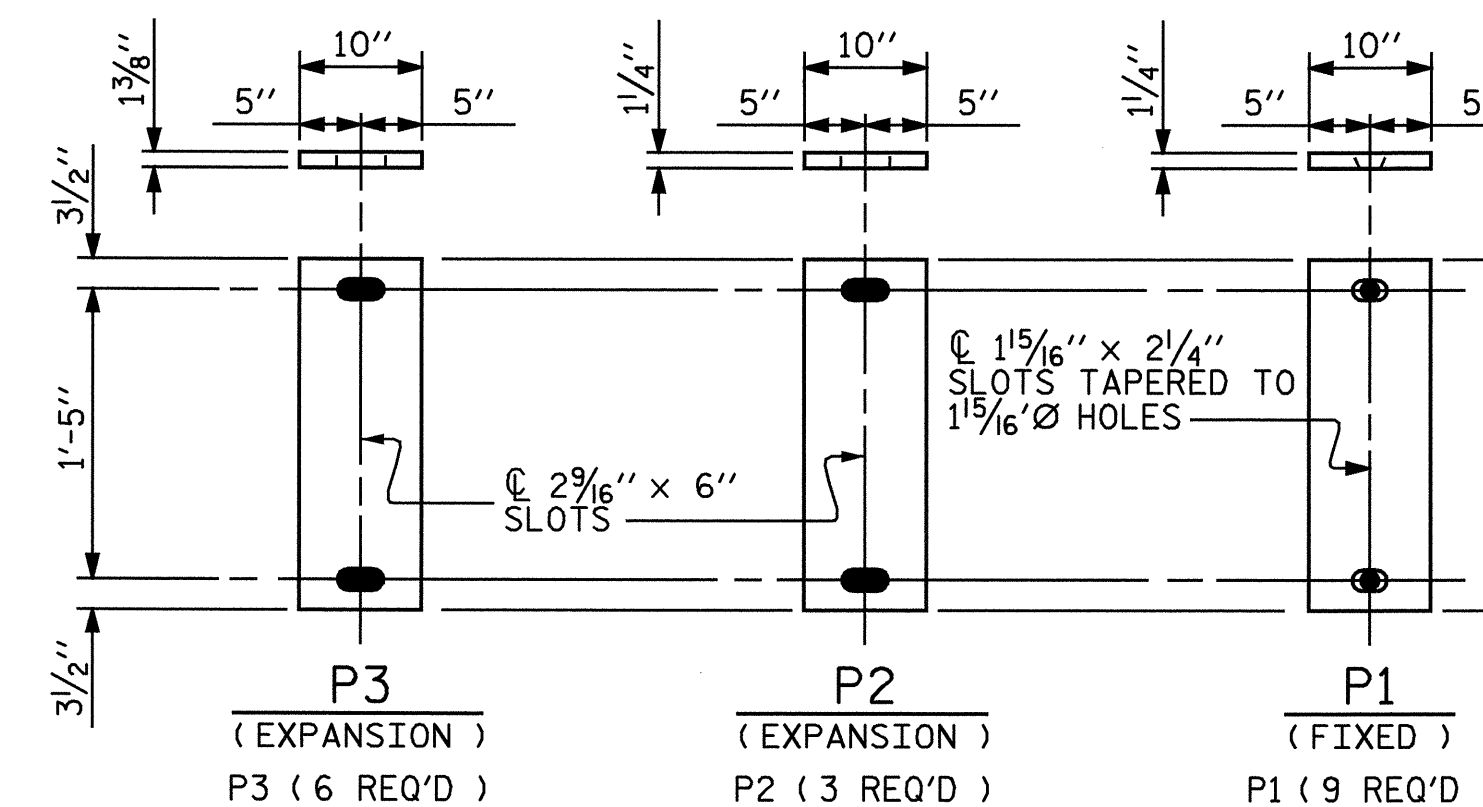
WHEN FIELD WELDING THE SOLE PLATE TO THE GIRDER FLANGE, USE TEMPERATURE INDICATING WAX PENS, OR OTHER SUITABLE MEANS, TO ENSURE THAT THE TEMPERATURE OF THE SOLE PLATE DOES NOT EXCEED 300°F. TEMPERATURES ABOVE THIS MAY DAMAGE THE ELASTOMER.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

ALL ELASTOMERIC BEARING PADS SHALL BE 60 DUROMETER HARDNESS.



-LOAD RATINGS-	
TYPE I	MAX. D.L. + L.L.
	132 K

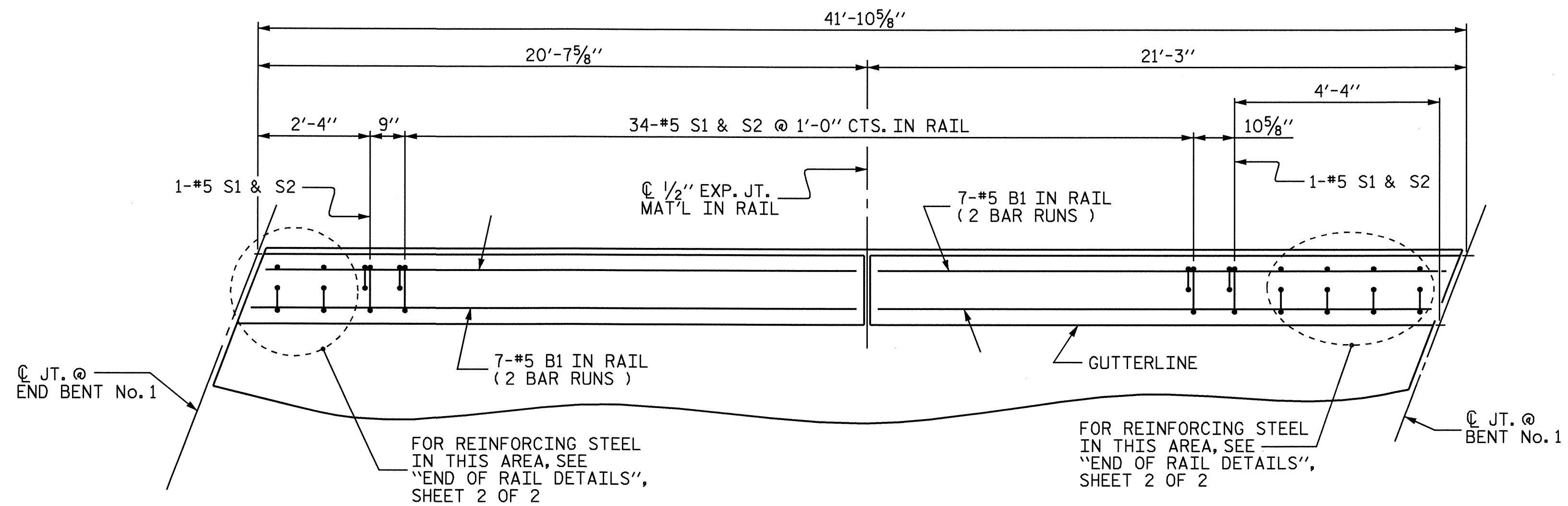


PROJECT NO. R-2000 AF  
WAKE/DURHAM COUNTY  
 STATION: 24+32.55 -L-

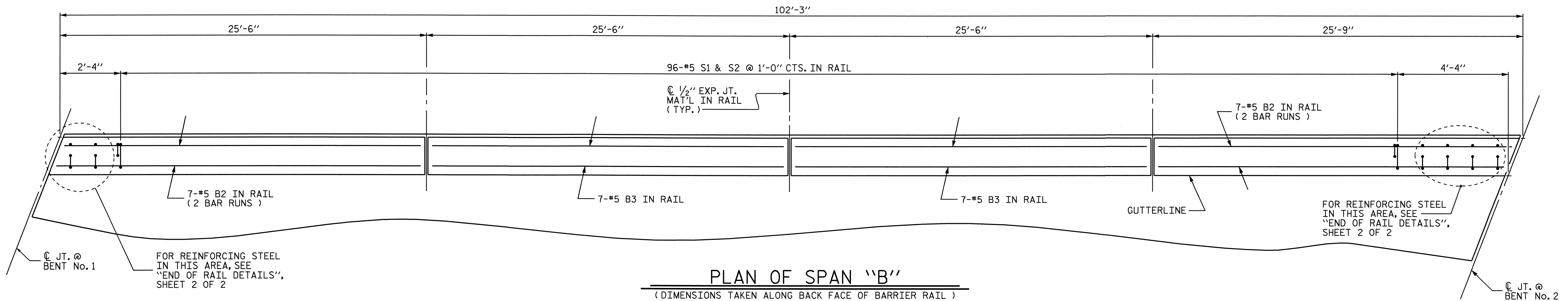
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 ELASTOMERIC BEARING  
 DETAILS

ASSEMBLED BY : MIKE BRITT	DATE : 6-2-09
CHECKED BY : S.B. WILLIAMS	DATE : 7-09
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

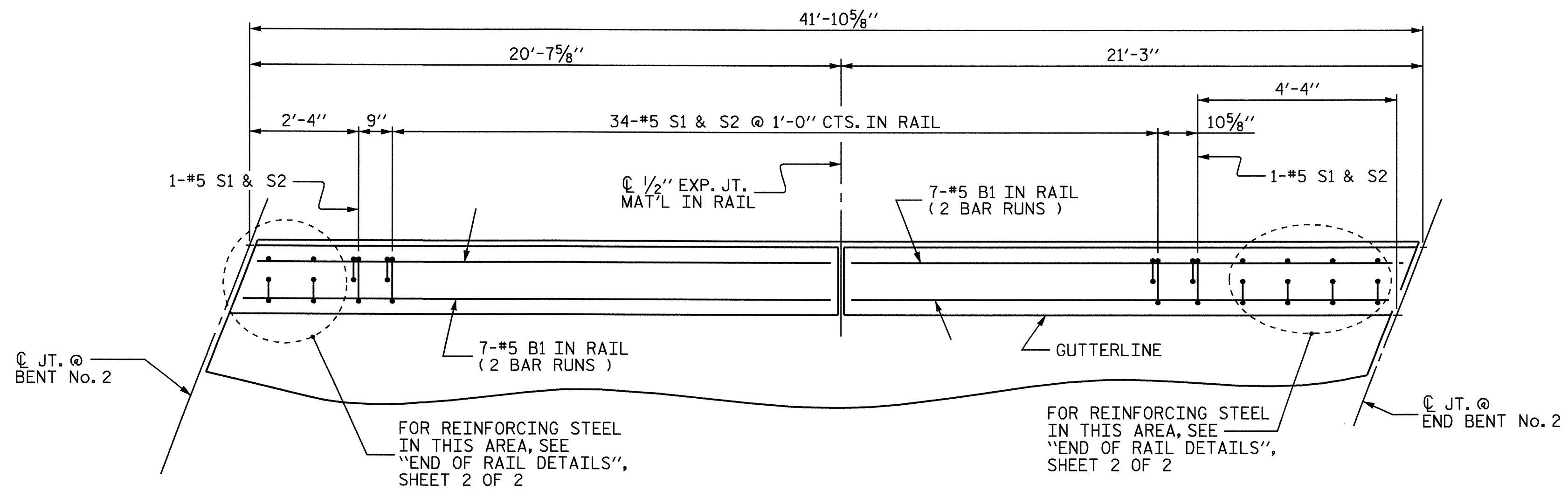
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			32



**PLAN OF SPAN "A"**  
(DIMENSIONS TAKEN ALONG BACK FACE OF BARRIER RAIL)



**PLAN OF SPAN "B"**  
(DIMENSIONS TAKEN ALONG BACK FACE OF BARRIER RAIL)



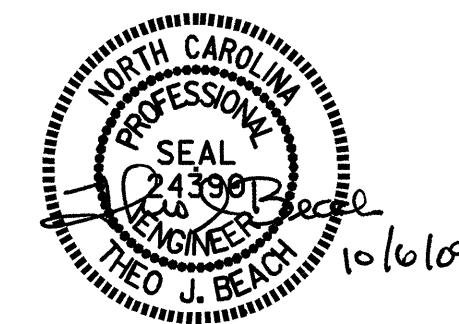
**PLAN OF SPAN "C"**  
(DIMENSIONS TAKEN ALONG BACK FACE OF BARRIER RAIL)

PROJECT NO. R-2000 AF  
WAKE/DURHAM COUNTY  
STATION: 24+32.55 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUPERSTRUCTURE  
CONCRETE  
BARRIER RAIL



DRAWN BY: MIKE BRITT DATE: 6-3-09  
CHECKED BY: S.B. WILLIAMS DATE: 7-09

06-OCT-2009 09:02  
F:\structure\Super\_Draw\2000af.sd.br.dgn  
sbwilliams

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			32





NOTES

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

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

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

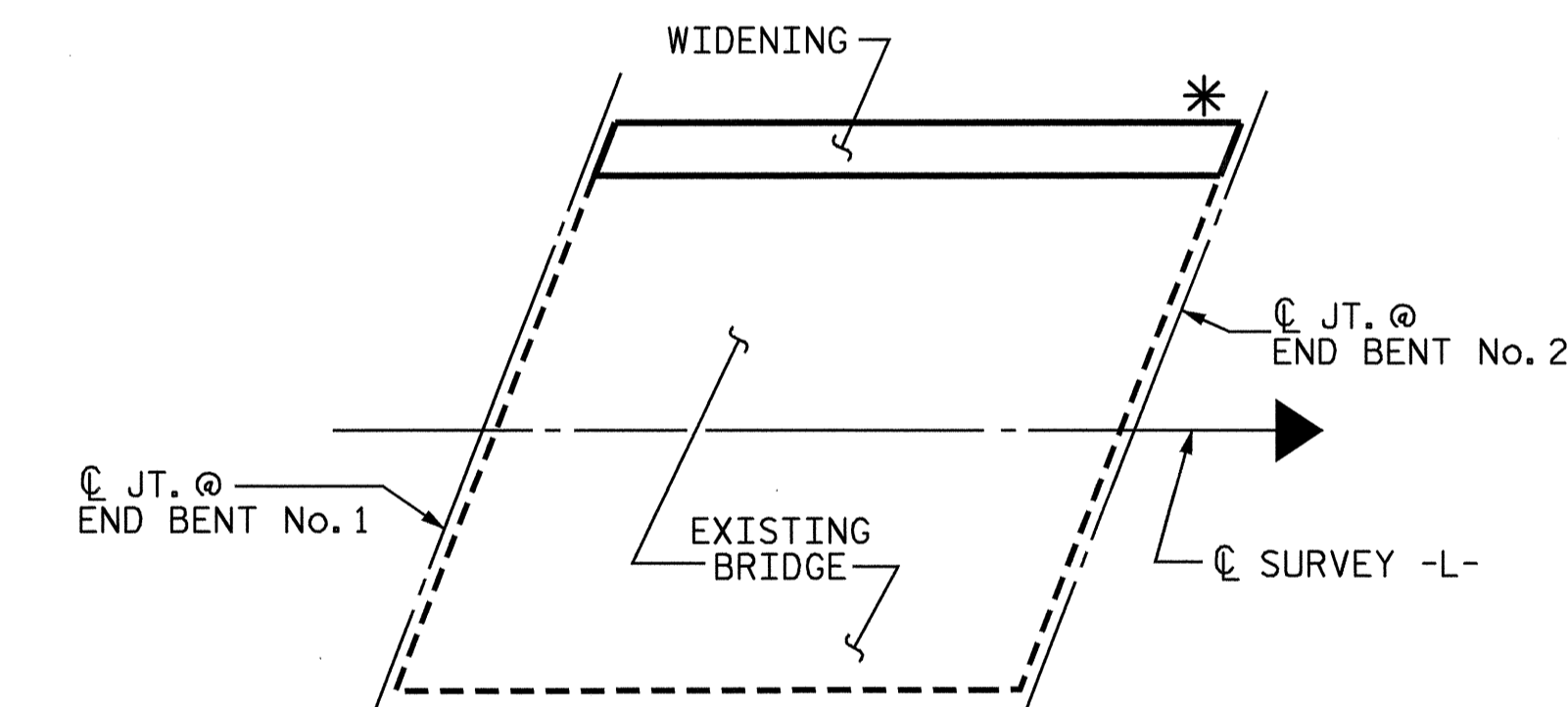
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

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

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

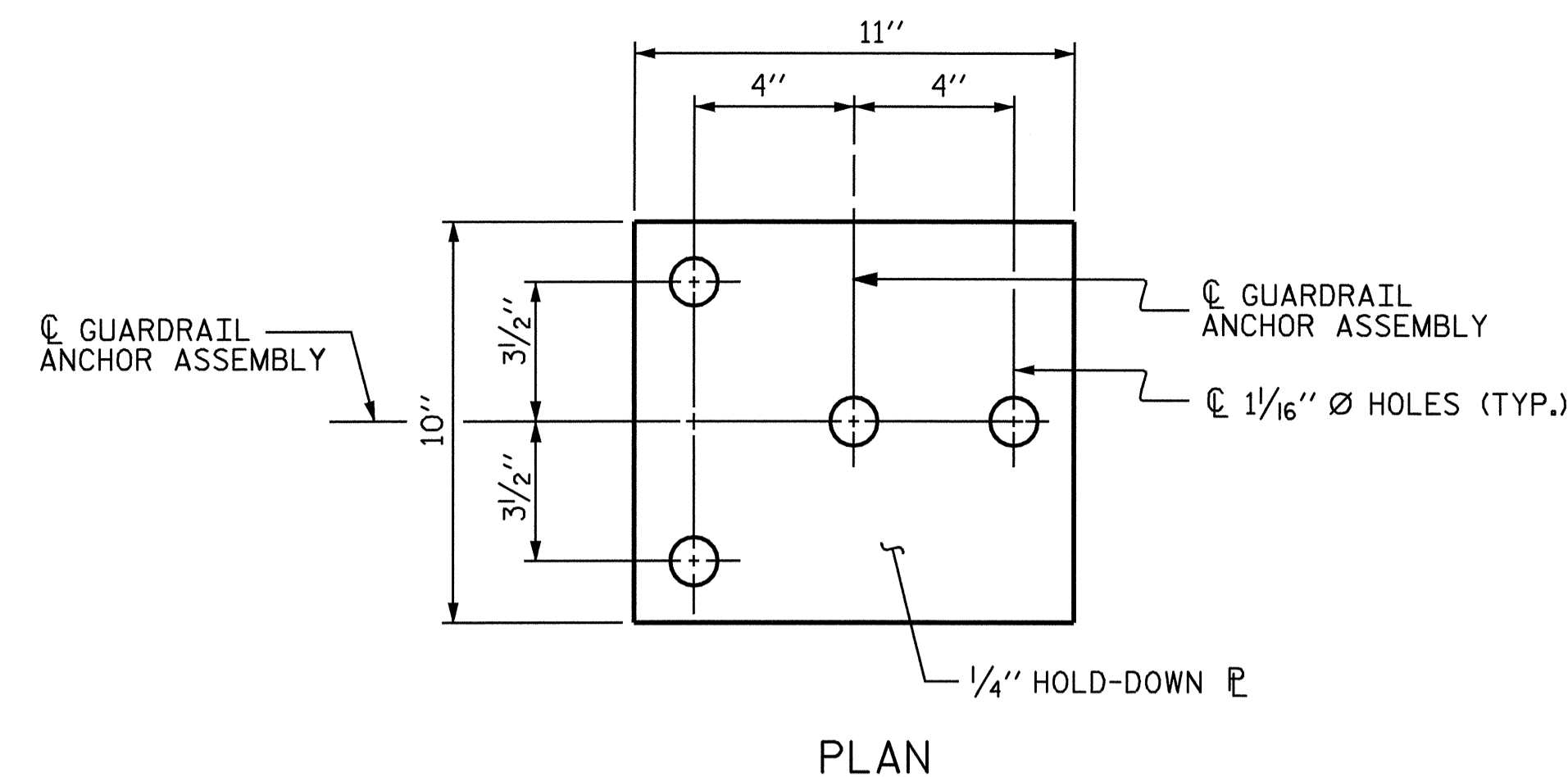


SKETCH SHOWING POINTS OF ATTACHMENTS

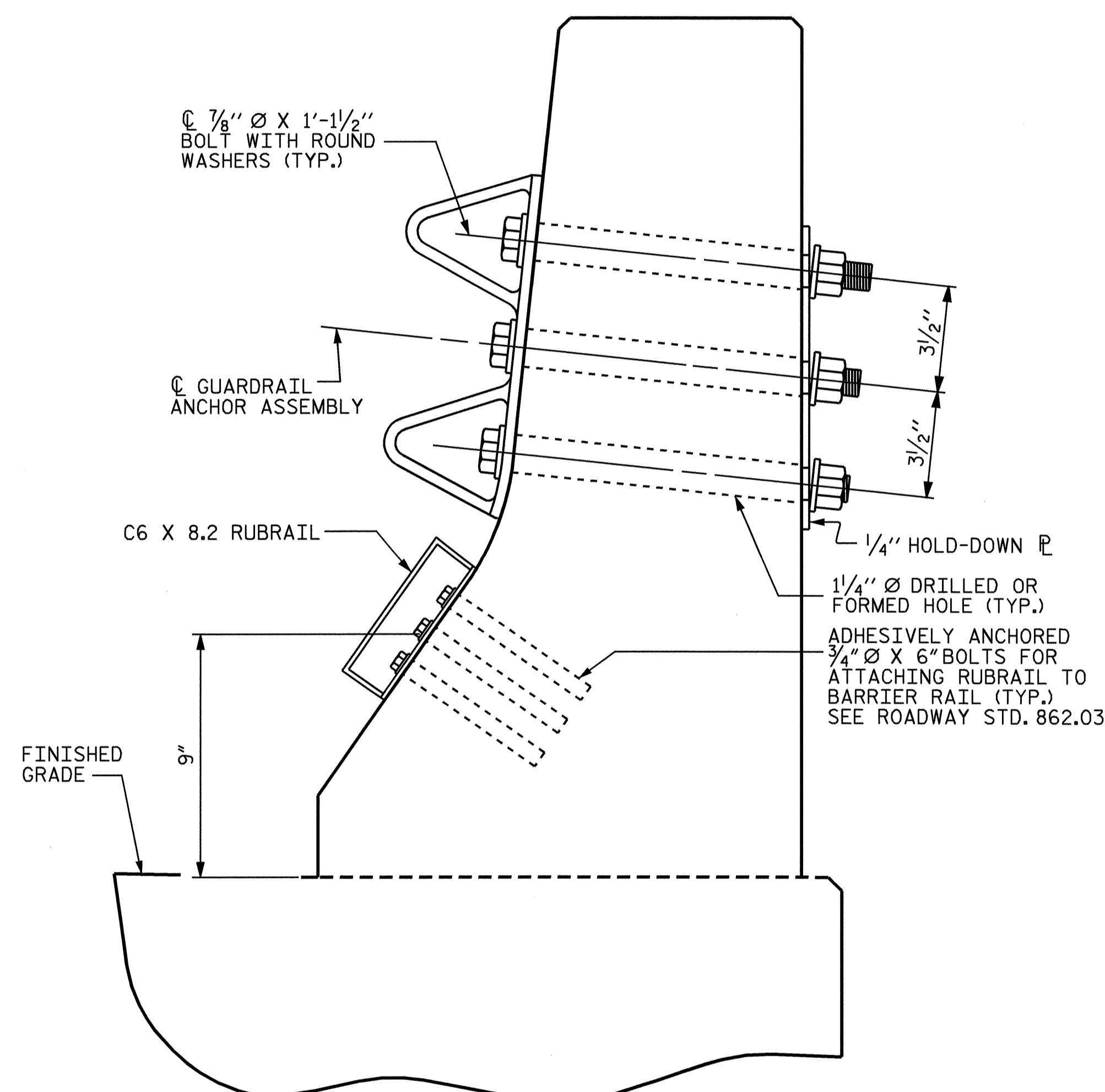
\* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. R-2000 AF  
WAKE/DURHAM COUNTY  
 STATION: 24+32.55 -L-

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

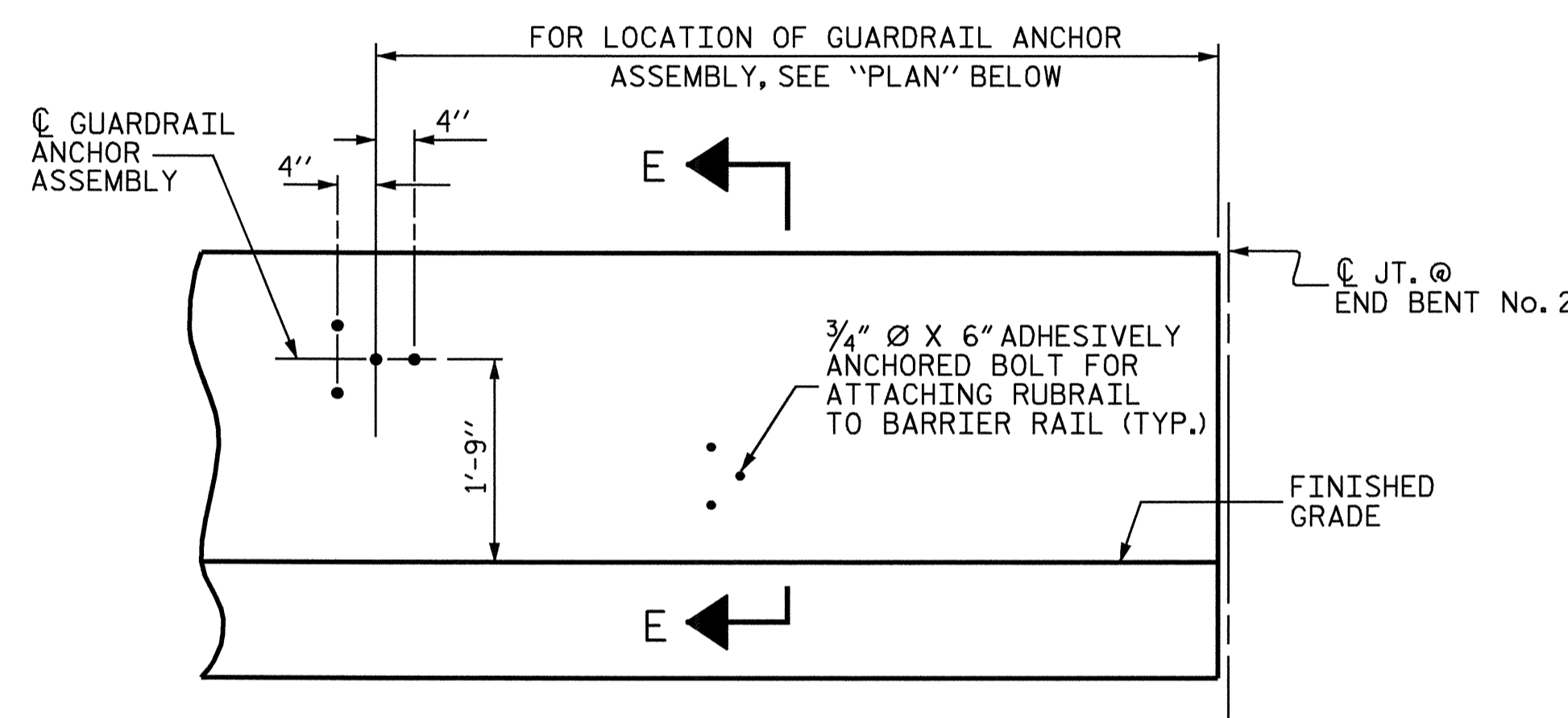


PLAN



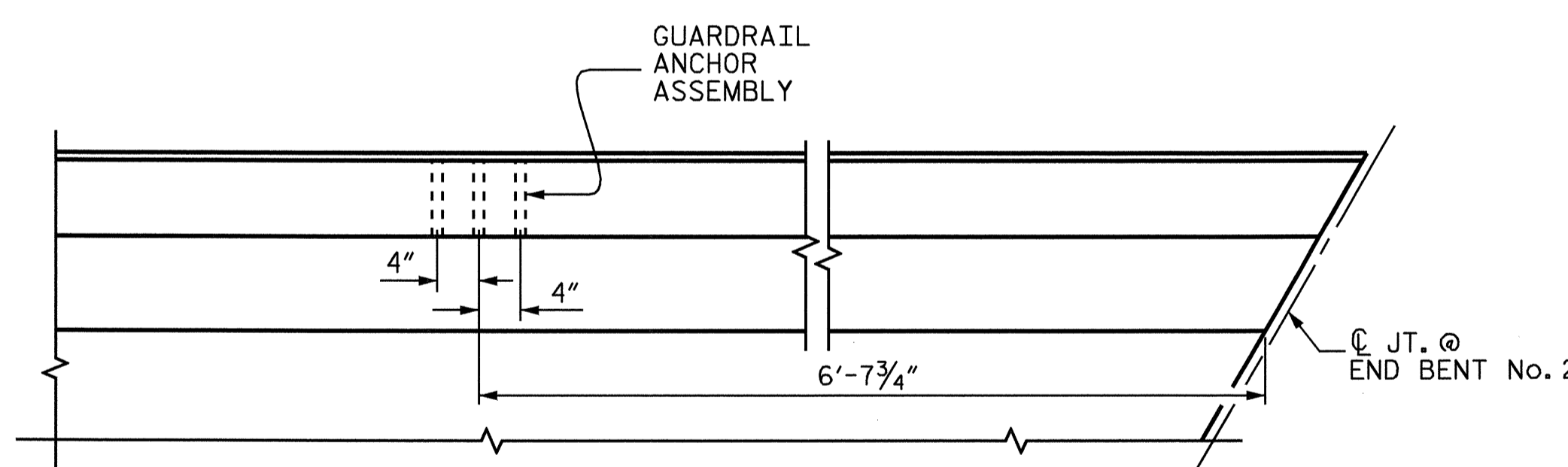
SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS



ELEVATION

FOR LOCATION OF RUBRAIL, SEE ROADWAY STD. 862.03



PLAN

LOCATION OF ANCHOR FOR GUARDRAIL

ASSEMBLED BY : MIKE BRITT DATE : 6-4-09  
 CHECKED BY : S.B. WILLIAMS DATE : 7-09  
 DRAWN BY : TLA 5/06 ADDED 5/1/06R KMM/GM  
 CHECKED BY : GM 5/06

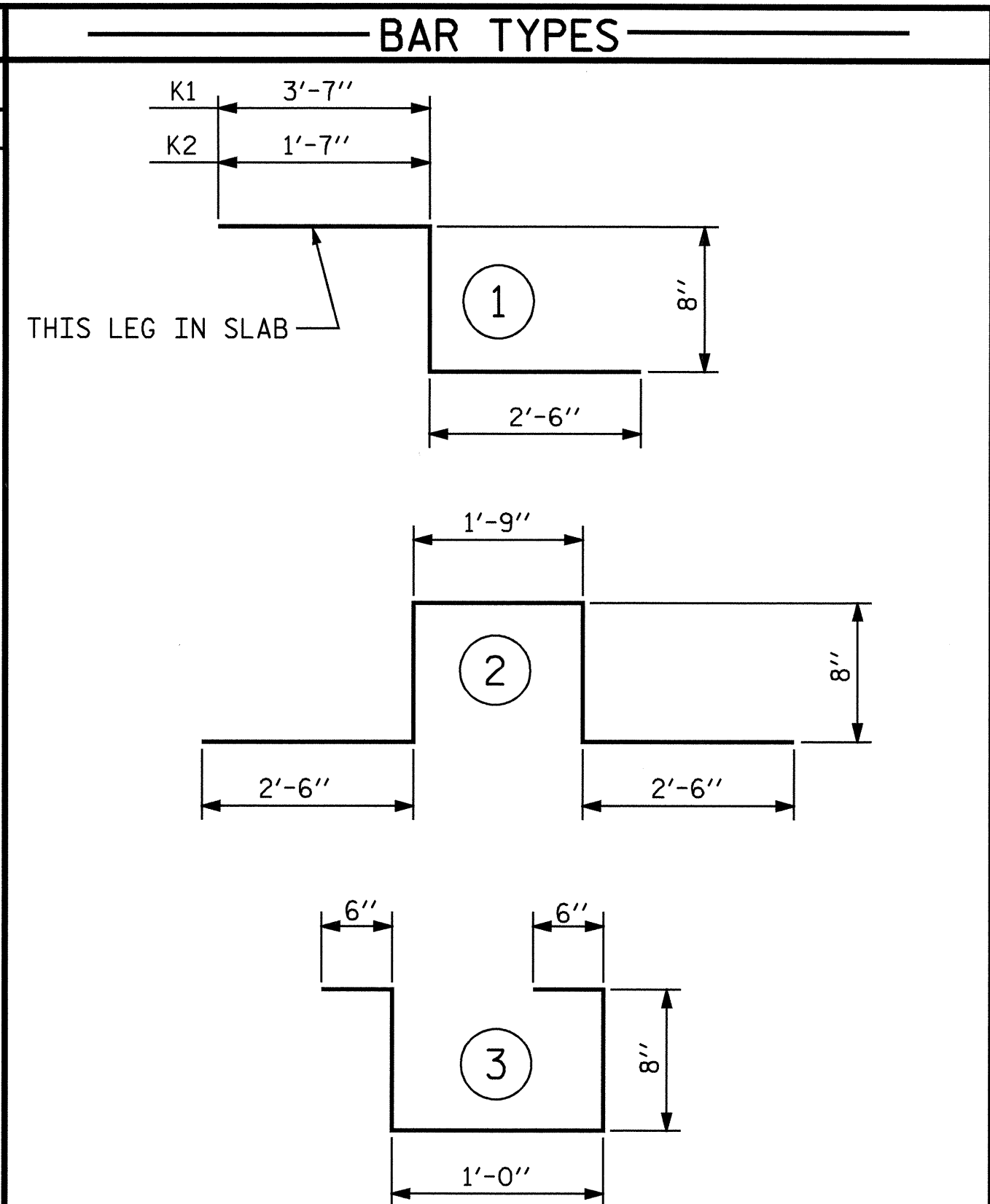
06-OCT-2009 09:04  
 F:\structure\Super\_Draw\2000af\_sd.gr.dgn  
 sbwilliams

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			32

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"			

BILL OF MATERIAL																	
SPAN "A"					SPAN "B"					SPAN "C"							
BAR	No.	SIZE	TYPE	LENGTH	WEIGHT	BAR	No.	SIZE	TYPE	LENGTH	WEIGHT	BAR	No.	SIZE	TYPE	LENGTH	WEIGHT
* A1	60	#5	STR.	17'-6"	1095	* A1	163	#5	STR.	17'-6"	2975	* A1	60	#5	STR.	17'-6"	1095
A2	60	#5	STR.	17'-6"	1095	A2	163	#5	STR.	17'-6"	2975	A2	60	#5	STR.	17'-6"	1095
* A101	2	#5	STR.	16'-4"	34	* A101	2	#5	STR.	16'-4"	34	* A101	2	#5	STR.	16'-4"	34
* A102	2	#5	STR.	14'-10"	31	* A102	2	#5	STR.	14'-10"	31	* A102	2	#5	STR.	14'-10"	31
* A103	2	#5	STR.	13'-4"	28	* A103	2	#5	STR.	13'-4"	28	* A103	2	#5	STR.	13'-4"	28
* A104	2	#5	STR.	11'-10"	25	* A104	2	#5	STR.	11'-10"	25	* A104	2	#5	STR.	11'-10"	25
* A105	2	#5	STR.	10'-4"	22	* A105	2	#5	STR.	10'-4"	22	* A105	2	#5	STR.	10'-4"	22
* A106	2	#5	STR.	8'-10"	18	* A106	2	#5	STR.	8'-10"	18	* A106	2	#5	STR.	8'-10"	18
* A107	2	#5	STR.	7'-3"	15	* A107	2	#5	STR.	7'-3"	15	* A107	2	#5	STR.	7'-3"	15
* A108	2	#5	STR.	5'-9"	12	* A108	2	#5	STR.	5'-9"	12	* A108	2	#5	STR.	5'-9"	12
* A109	2	#5	STR.	4'-3"	9	* A109	2	#5	STR.	4'-3"	9	* A109	2	#5	STR.	4'-3"	9
* A110	2	#5	STR.	2'-9"	6	* A110	2	#5	STR.	2'-9"	6	* A110	2	#5	STR.	2'-9"	6
A201	2	#5	STR.	16'-4"	34	A201	2	#5	STR.	16'-4"	34	A201	2	#5	STR.	16'-4"	34
A202	2	#5	STR.	14'-10"	31	A202	2	#5	STR.	14'-10"	31	A202	2	#5	STR.	14'-10"	31
A203	2	#5	STR.	13'-4"	28	A203	2	#5	STR.	13'-4"	28	A203	2	#5	STR.	13'-4"	28
A204	2	#5	STR.	11'-10"	25	A204	2	#5	STR.	11'-10"	25	A204	2	#5	STR.	11'-10"	25
A205	2	#5	STR.	10'-4"	22	A205	2	#5	STR.	10'-4"	22	A205	2	#5	STR.	10'-4"	22
A206	2	#5	STR.	8'-10"	18	A206	2	#5	STR.	8'-10"	18	A206	2	#5	STR.	8'-10"	18
A207	2	#5	STR.	7'-3"	15	A207	2	#5	STR.	7'-3"	15	A207	2	#5	STR.	7'-3"	15
A208	2	#5	STR.	5'-9"	12	A208	2	#5	STR.	5'-9"	12	A208	2	#5	STR.	5'-9"	12
A209	2	#5	STR.	4'-3"	9	A209	2	#5	STR.	4'-3"	9	A209	2	#5	STR.	4'-3"	9
A210	2	#5	STR.	2'-9"	6	A210	2	#5	STR.	2'-9"	6	A210	2	#5	STR.	2'-9"	6
* B1	34	#4	STR.	21'-9"	494	* B3	68	#4	STR.	27'-0"	1226	* B1	34	#4	STR.	21'-9"	494
B2	18	#5	STR.	41'-5"	778	B4	54	#5	STR.	35'-5"	1995	B2	18	#5	STR.	41'-5"	778
* D1	41	#6	STR.	3'-0"	185	* D1	101	#6	STR.	3'-0"	455	* D1	41	#6	STR.	3'-0"	185
* D2	41	#6	STR.	2'-4"	144	* D2	101	#6	STR.	2'-4"	354	* D2	41	#6	STR.	2'-4"	144
* G1	2	#5	STR.	18'-9"	39	* G1	2	#5	STR.	18'-9"	39	* G1	2	#5	STR.	18'-9"	39
* K1	4	#5	1	6'-9"	28	* K1	4	#5	1	6'-9"	28	* K1	4	#5	1	6'-9"	28
* K2	4	#5	1	4'-9"	20	* K2	4	#5	1	4'-9"	20	* K2	4	#5	1	4'-9"	20
* K3	4	#5	2	8'-1"	34	* K3	4	#5	2	8'-1"	34	* K3	4	#5	2	8'-1"	34
* K4	8	#5	STR.	7'-0"	58	* K4	8	#5	STR.	7'-0"	58	* K4	8	#5	STR.	7'-0"	58
* S1	24	#4	3	3'-4"	53	* S1	24	#4	3	3'-4"	53	* S1	24	#4	3	3'-4"	53
REINFORCING STEEL					2,073 LBS.	REINFORCING STEEL					5,170 LBS.	REINFORCING STEEL					2,073 LBS.
* EPOXY COATED REINFORCING STEEL					2,350 LBS.	* EPOXY COATED REINFORCING STEEL					5,442 LBS.	* EPOXY COATED REINFORCING STEEL					2,350 LBS.

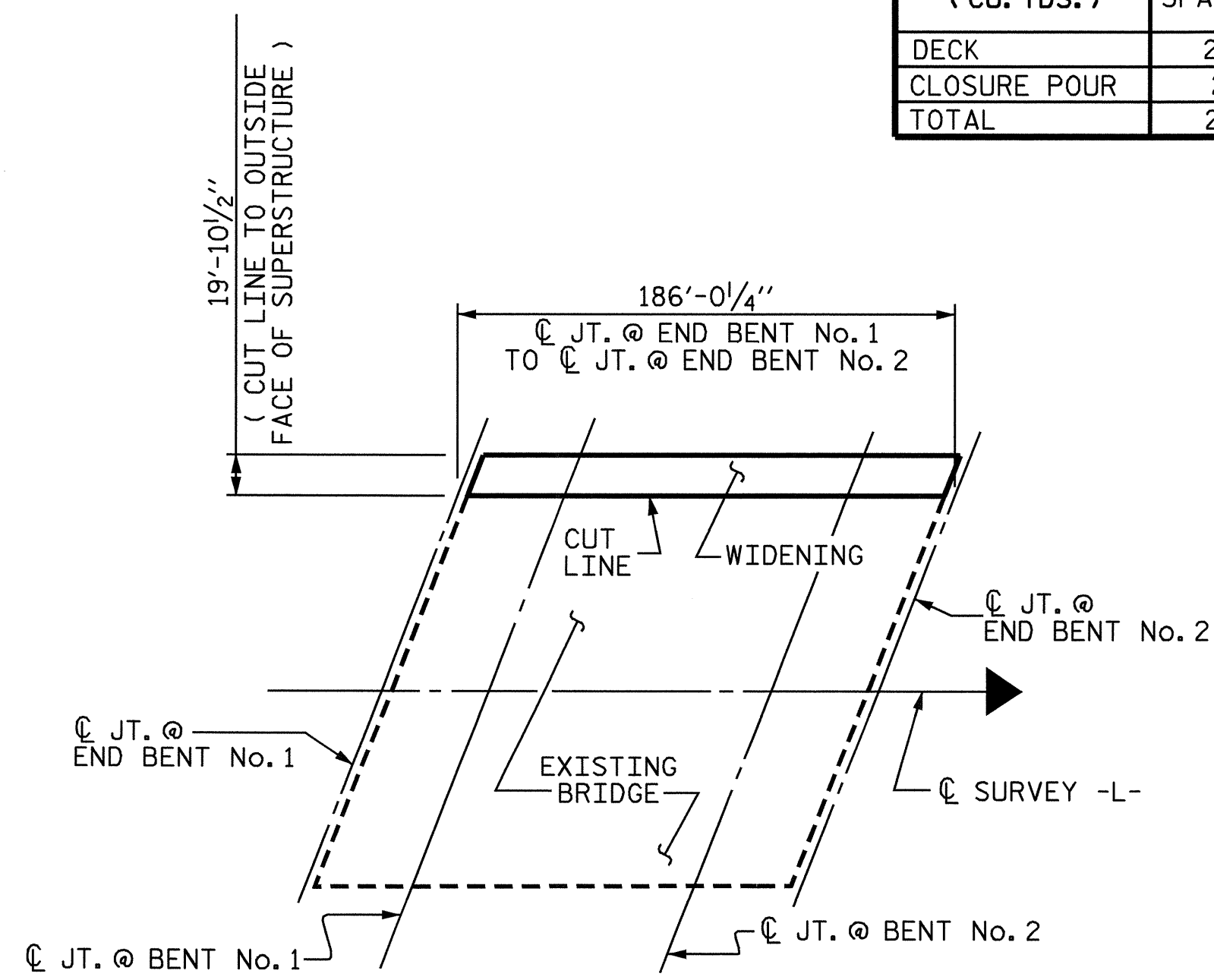


\* THESE BARS ARE EPOXY COATED

CLASS AA CONCRETE BREAKDOWN			
( CU. YDS. )	SPAN "A"	SPAN "B"	SPAN "C"
DECK	23.3	56.2	23.3
CLOSURE POUR	2.8	6.9	2.8
TOTAL	26.1	63.1	26.1

— SUPERSTRUCTURE BILL OF MATERIAL —			
	CLASS AA CONCRETE ( CU. YDS. )	REINFORCING STEEL ( LBS. )	EPOXY COATED REINFORCING STEEL ( LBS. )
SPAN "A"	26.1	2,073	2,350
SPAN "B"	63.1	5,170	5,442
SPAN "C"	26.1	2,073	2,350
TOTALS**	115.3	9,316	10,142

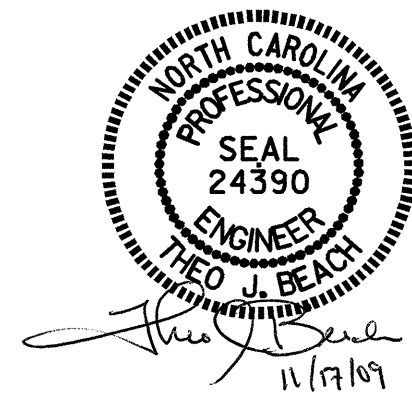
\*\* QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED



LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB ( SQ. FT. = 3,697 )

GROOVING BRIDGE FLOORS	
APPROACH SLABS	360 SQ.FT.
BRIDGE DECK	3,044 SQ.FT.
TOTAL	3,404 SQ.FT.

PROJECT NO. R-2000 AF  
WAKE/DURHAM COUNTY  
STATION: 24+32.55 -L-



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD SUPERSTRUCTURE BILL OF MATERIAL					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S-18
TOTAL SHEETS 32

ASSEMBLED BY : MIKE BRITT	DATE : 6-5-09
CHECKED BY : S.B. WILLIAMS	DATE : 7-09
DRAWN BY : JMB 5/87	REV. 6/1/94 EEM/GRP
CHECKED BY : SJD 9/87	REV. 8/16/99 RWW/LES
	REV. 5/1/06 TLA/GM

**NOTES:**

\* FOR LOCATION OF ELEVATIONS BETWEEN BRIDGE SEATS, SEE "SECTION A-A", SHEET 3 OF 3.

\* THIS ELEVATION TAKEN ON FILL FACE OF BACKWALL.

STIRRUPS AND U2 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

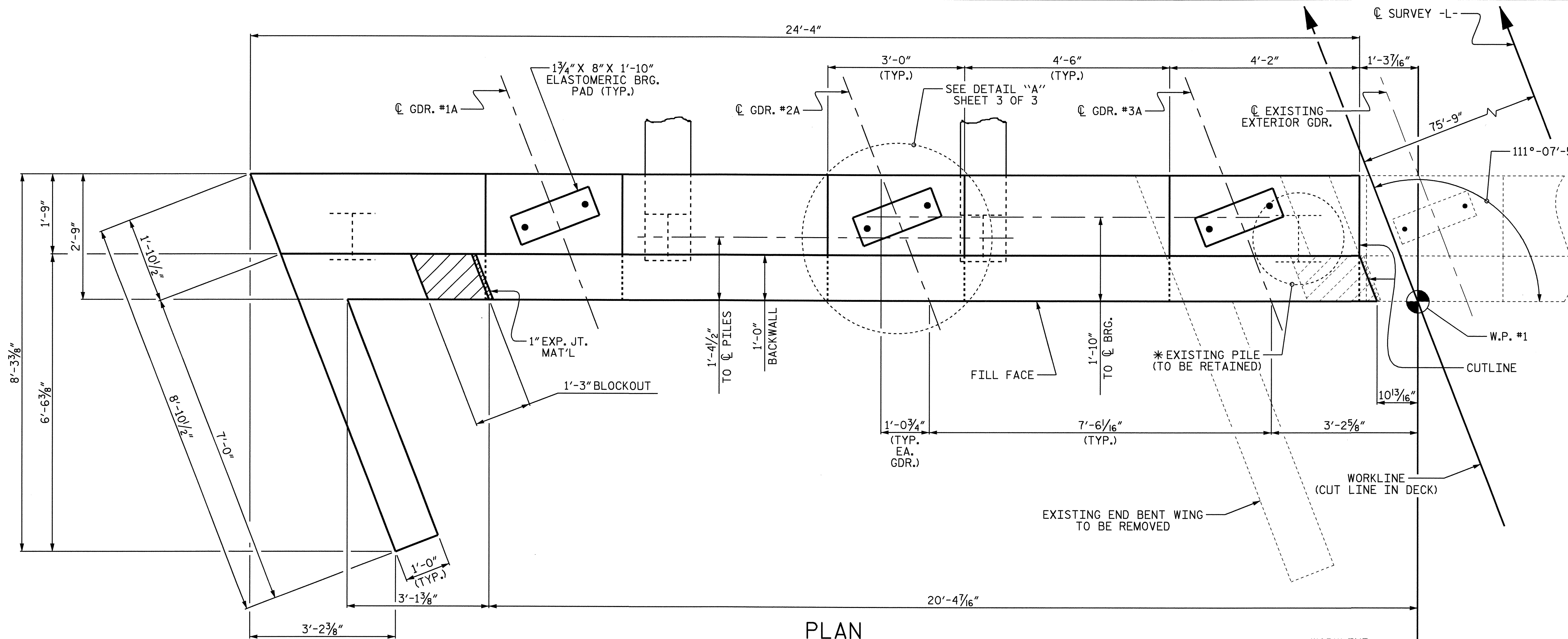
THE #5 "V" BARS IN THE BACKWALL SHALL BE PLACED 2" CLEAR FROM THE TOP OF THE BACKWALL.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

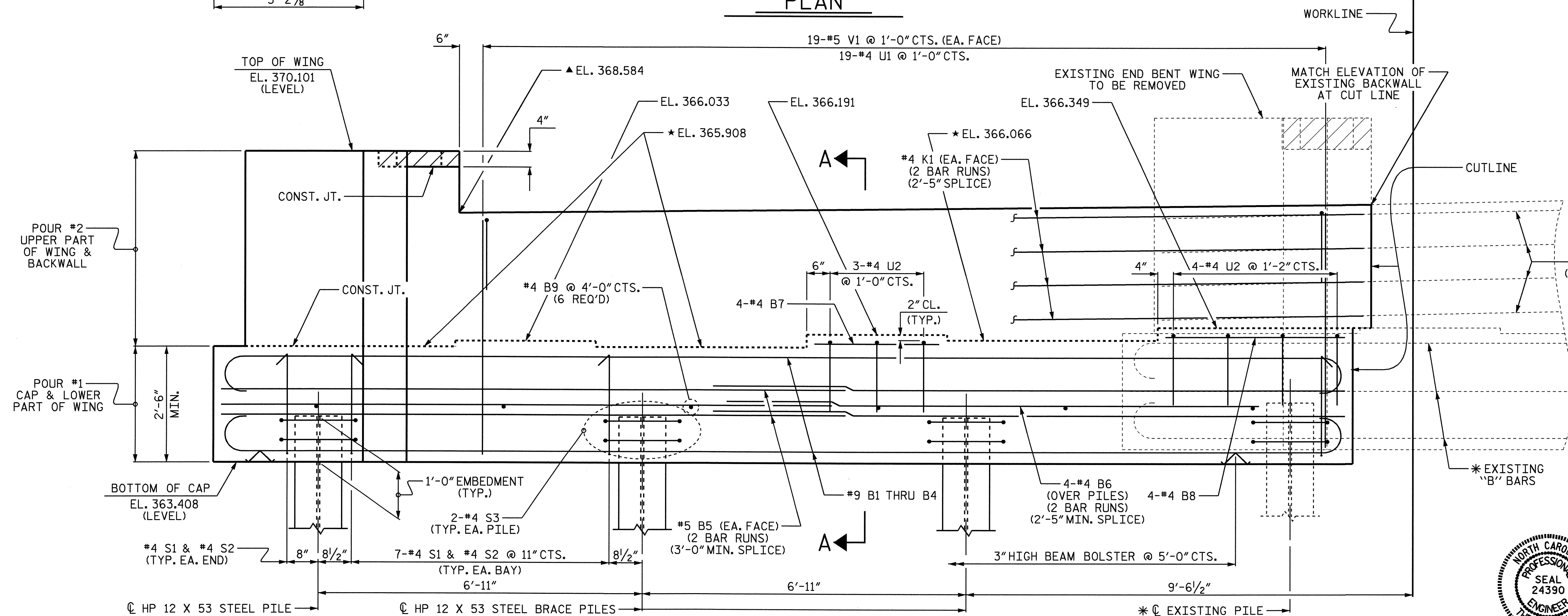
THE TOP SURFACE OF THE END BENT CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

\* THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE EXISTING EXTERIOR PILE AND THE EXISTING "B" & "K" BARS REINFORCING STEEL SHALL BE RETAINED PAST THE PROPOSED CUTLINE AND WILL BECOME PART OF THE WIDENED END BENT. THE EXISTING REINFORCING STEEL MAY BE BENT AS REQUIRED FOR FITTING AND TYING TO THE NEW REINFORCING STEEL.



**PLAN**



**ELEVATION**

PROJECT NO. R-2000AF

WAKE/DURHAM COUNTY

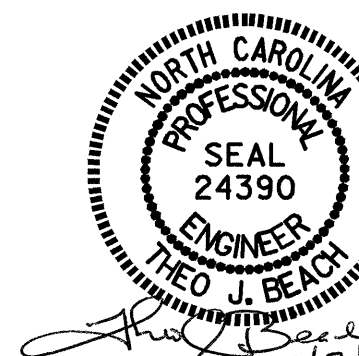
STATION: 24+32.55 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

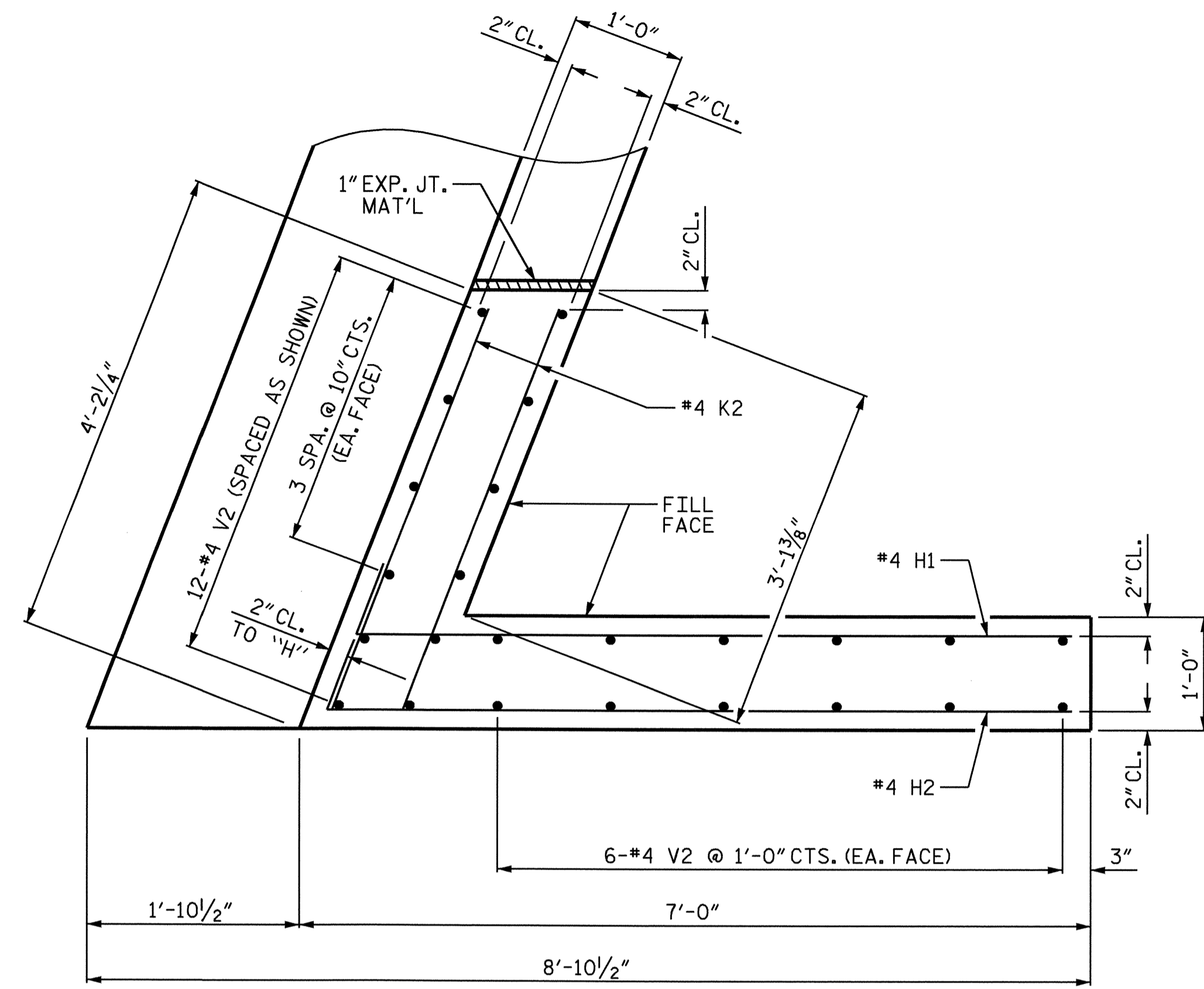
SUBSTRUCTURE

END BENT No. 1

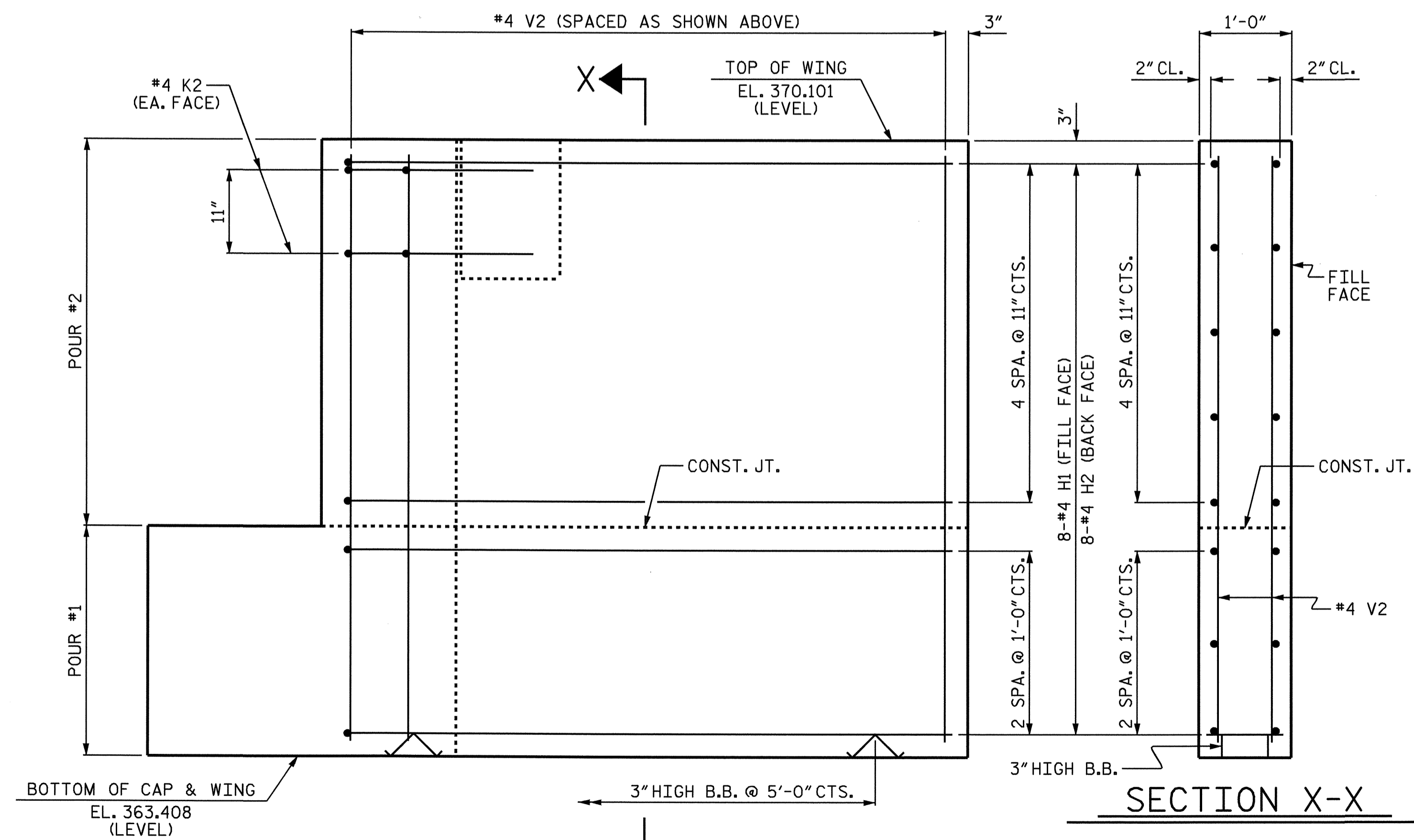


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			32

DRAWN BY: T. BANKOVICH DATE: 8-2009  
CHECKED BY: S.B. WILLIAMS DATE: 8-2009



PLAN OF WING



ELEVATION OF WING

PROJECT NO. R-2000AF  
WAKE/DURHAM COUNTY  
 STATION: 24+32.55 -L-

SHEET 2 OF 3

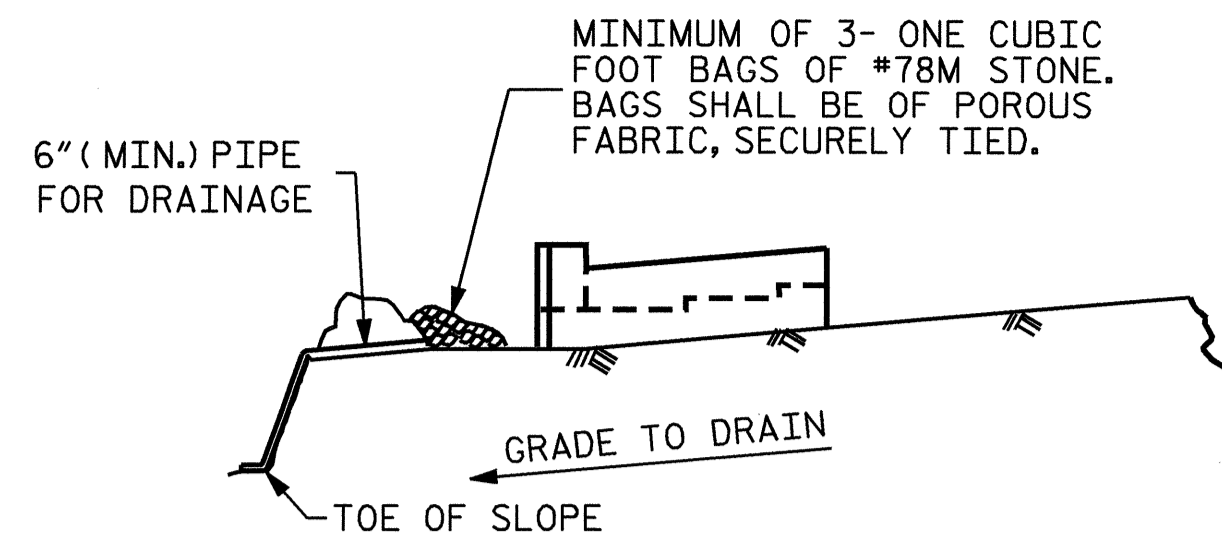
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 END BENT No. 1



DRAWN BY : T. BANKOVICH DATE : 8-2009  
 CHECKED BY : S.B. WILLIAMS DATE : 8-2009

06-OCT-2009 09:01  
 r:\structures\Sub\_Draw\R-2000AF\_SD.E\*.1.dgn  
 sbwilliams

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS
2			4			32

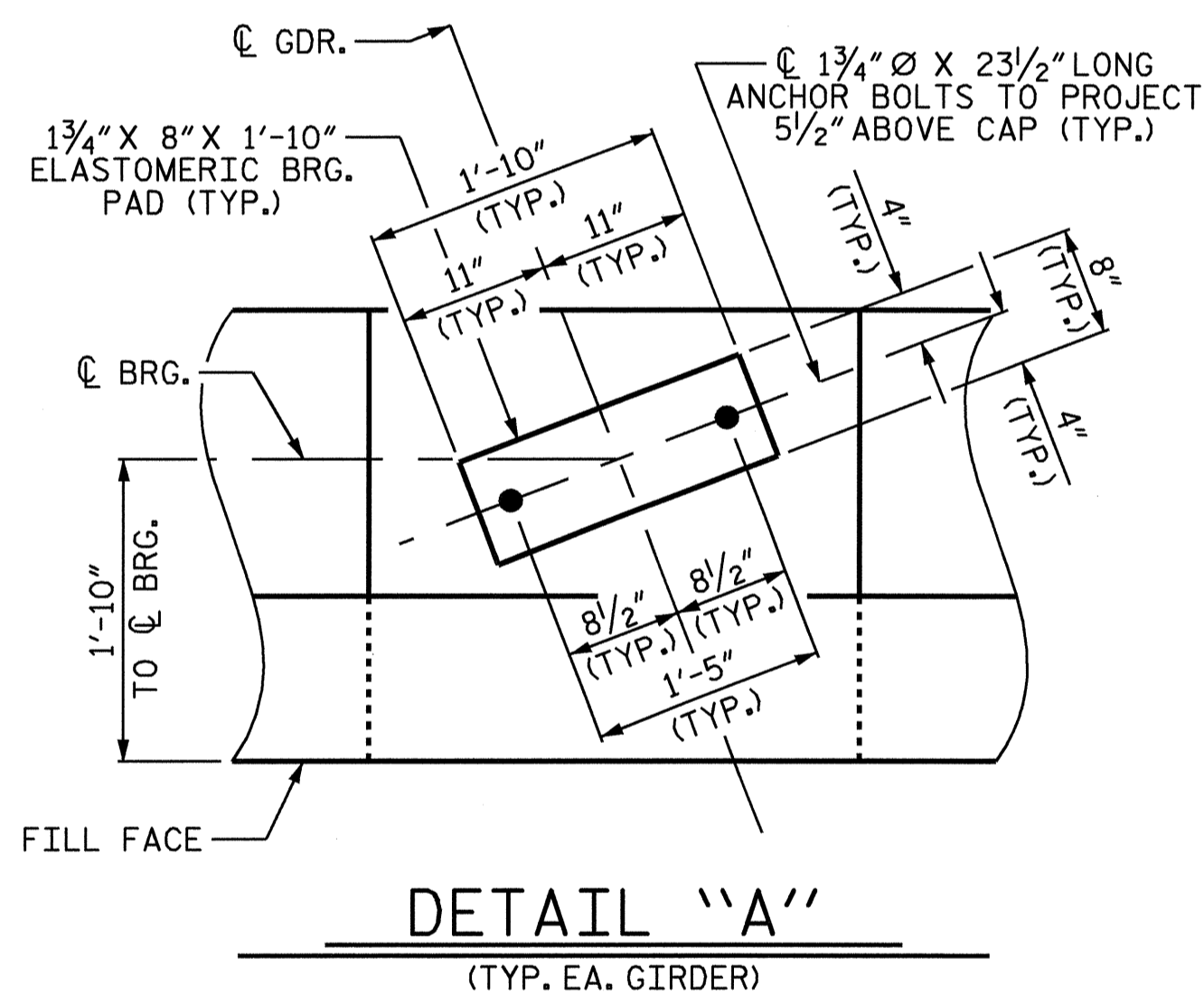


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

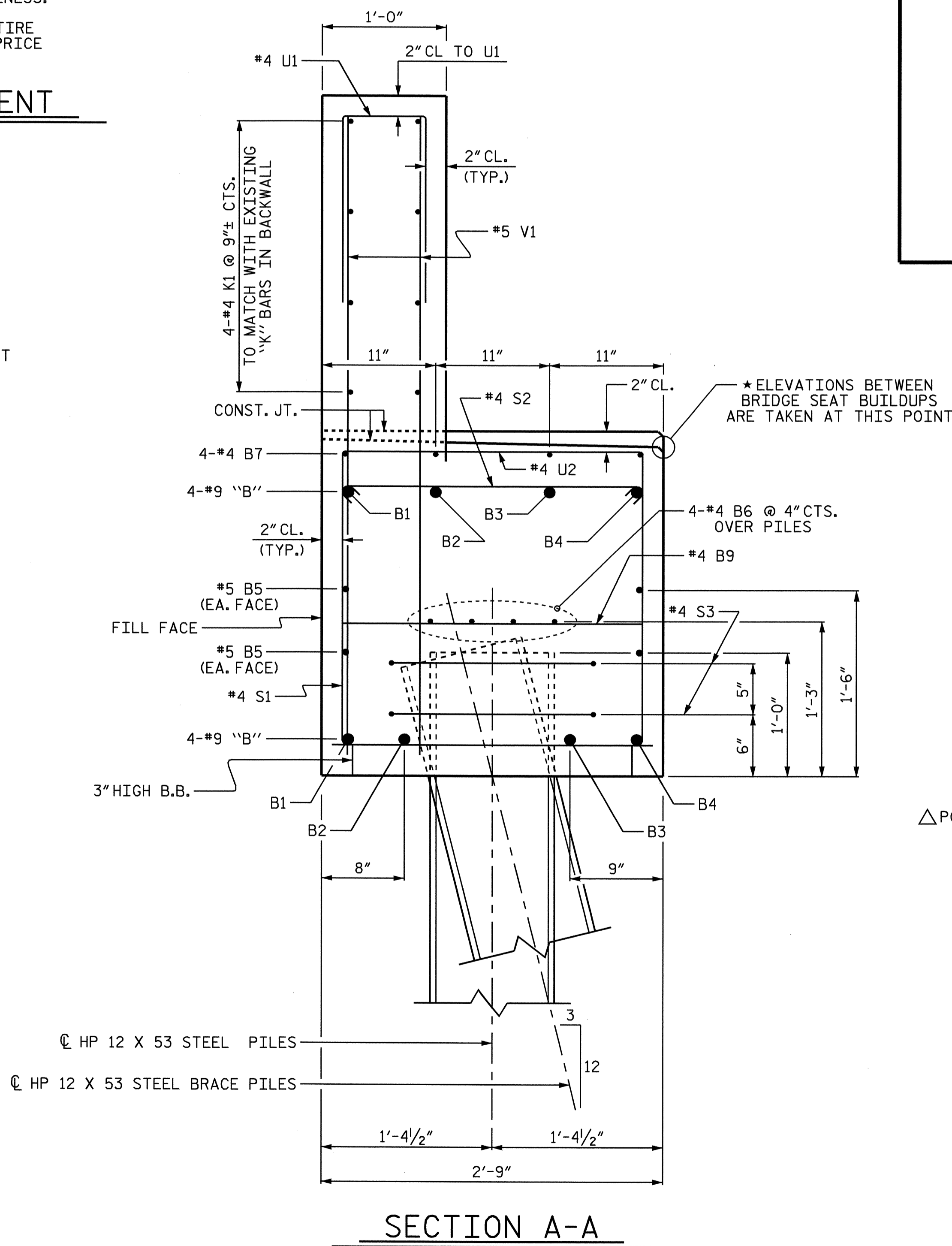
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

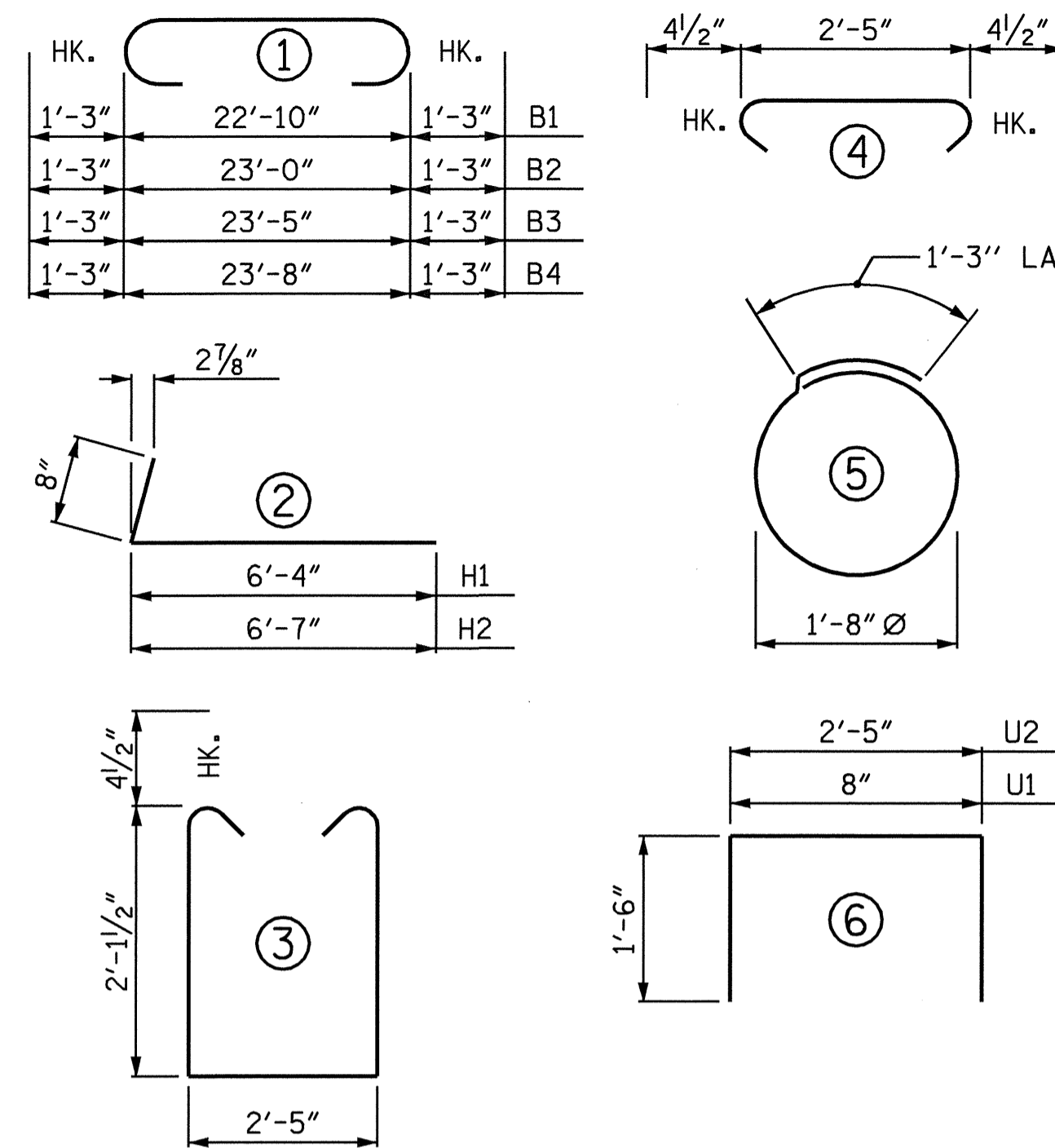


DETAIL "A"  
(TYP. EA. GIRDER)



SECTION A-A

### BAR TYPES

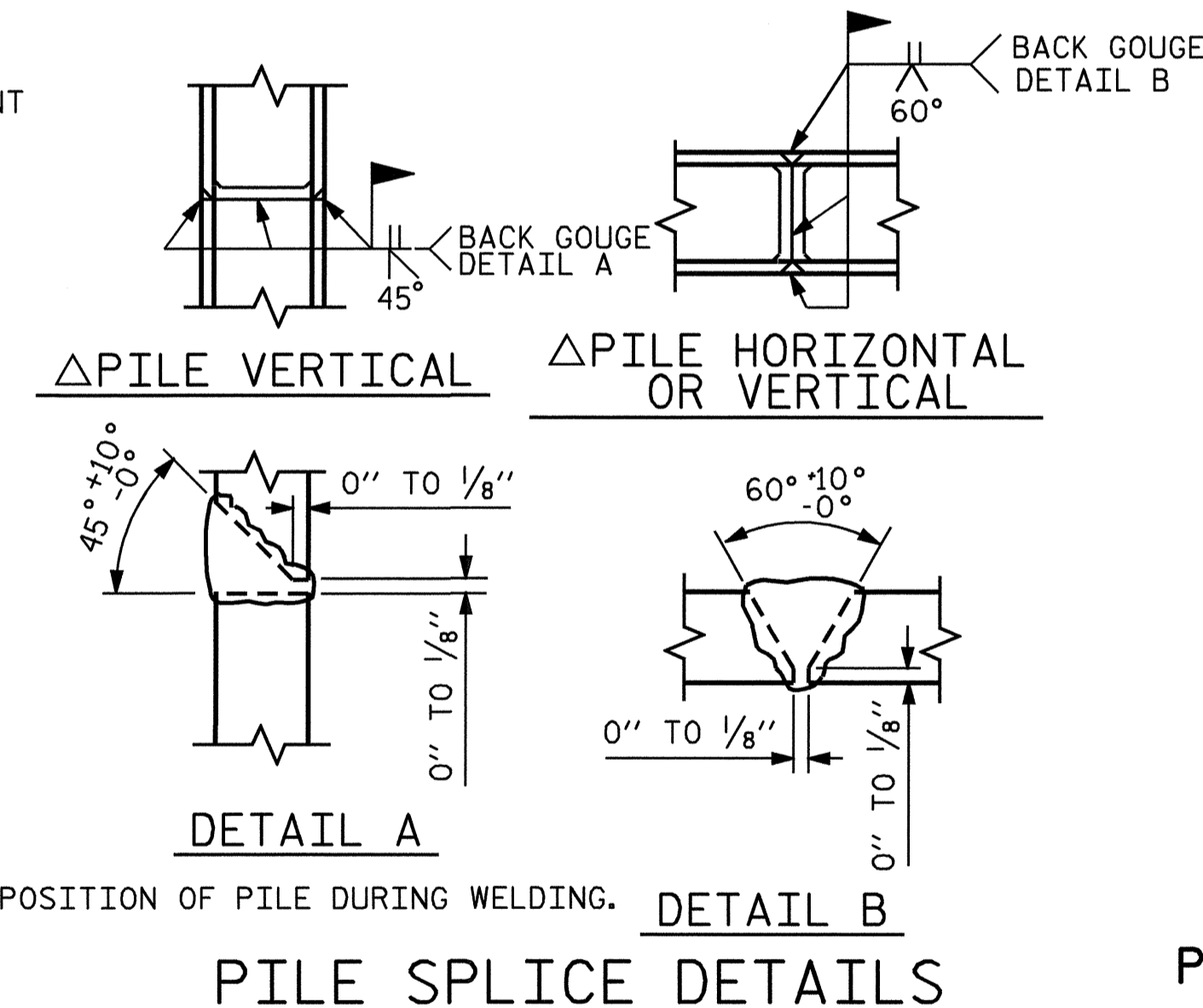


ALL BAR DIMENSIONS ARE OUT TO OUT

### BILL OF MATERIAL

#### END BENT No. 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	2	#9	1	25'-4"	172
B2	2	#9	1	25'-6"	173
B3	2	#9	1	25'-11"	176
B4	2	#9	1	26'-2"	178
B5	8	#5	STR	13'-6"	113
B6	8	#4	STR	12'-1"	65
B7	4	#4	STR	2'-8"	7
B8	4	#4	STR	3'-10"	10
B9	6	#4	STR	2'-5"	10
H1	8	#4	2	7'-0"	37
H2	8	#4	2	7'-3"	39
K1	16	#4	STR	12'-11"	138
K2	4	#4	STR	3'-9"	10
S1	23	#4	3	7'-5"	114
S2	23	#4	4	3'-2"	49
S3	8	#4	5	6'-6"	35
U1	19	#4	6	3'-8"	47
U2	7	#4	6	5'-5"	25
V1	38	#5	STR	4'-10"	192
V2	24	#4	STR	6'-4"	102
REINFORCING STEEL				1692	LBS.
CLASS A CONCRETE BREAKDOWN					
POUR #1 (CAP & LOWER WING)				7.0	C.Y.
POUR #2 (BACKWALL & UPPER WING)				3.7	C.Y.
TOTAL =				10.7	C.Y.
HP 12 X 53 STEEL PILES					
NO. = 3				120	LIN. FT.



DETAIL A

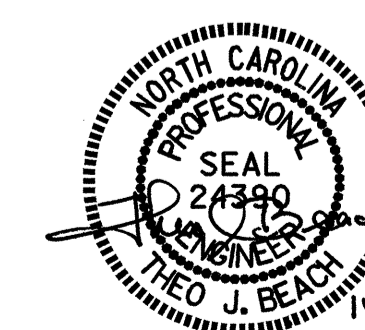
DETAIL B

PILE SPLICE DETAILS

PROJECT NO. R-2000AF  
WAKE/DURHAM COUNTY  
STATION: 24+32.55 -L-

SHEET 3 OF 3

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

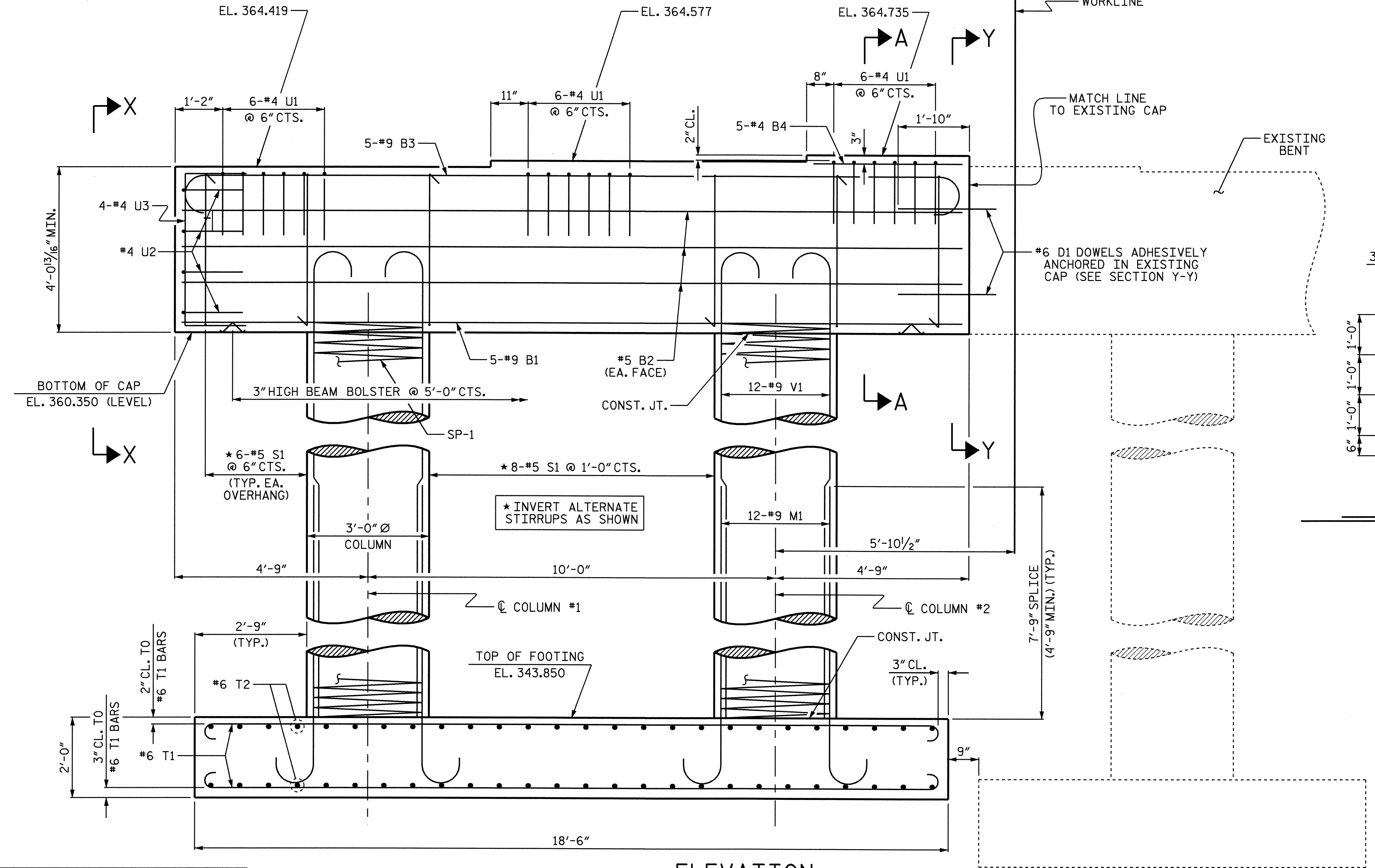
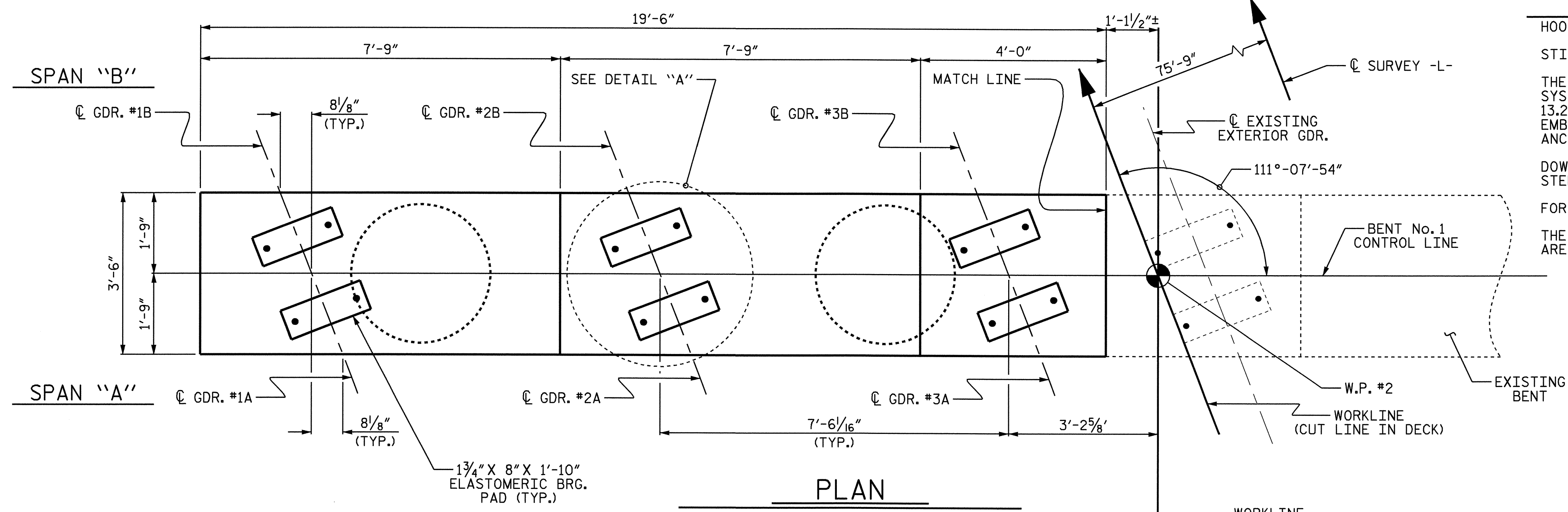


DRAWN BY: T. BANKOVICH DATE: 8-2009  
CHECKED BY: S.B. WILLIAMS DATE: 8-2009

06-OCT-2009 09:01  
r:\structures\Sub\_Draw\R-2000AF\_SD.E\*1.dgn  
sbwilliams

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

SHEET NO.  
S-21  
TOTAL SHEETS  
32



**NOTES:**

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

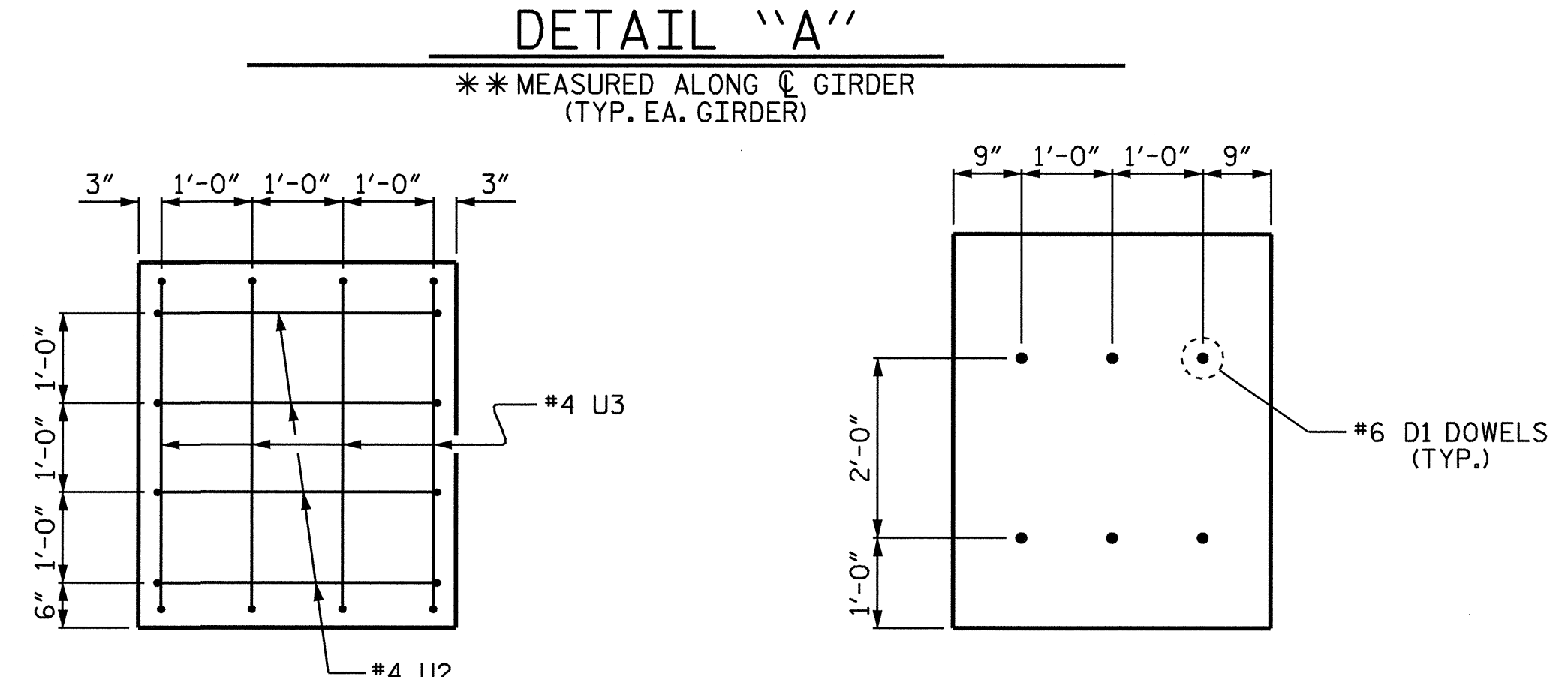
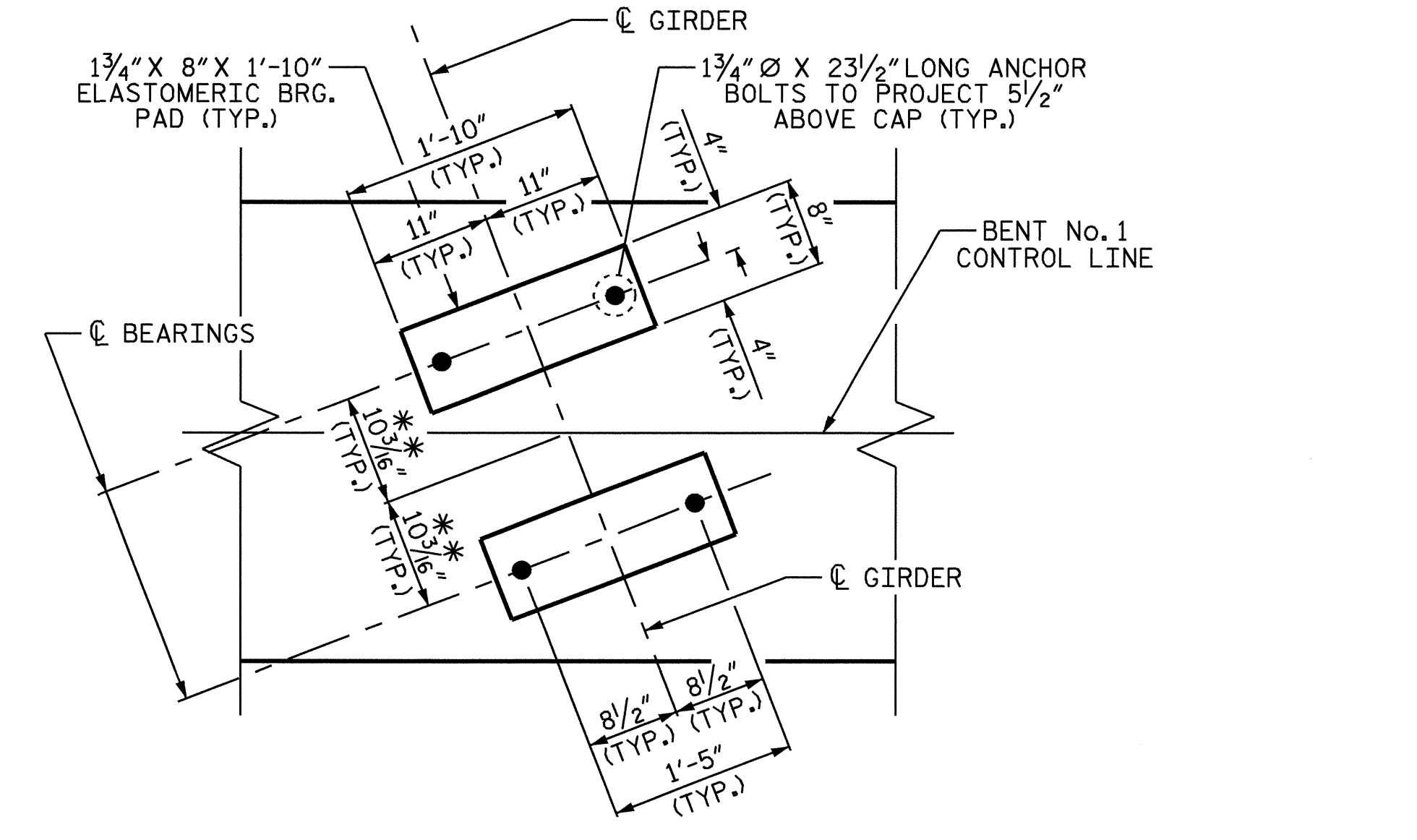
STIRRUPS AND "U" BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

THE #6 D1 DOWELS IN EXISTING CAP SHALL BE INSTALLED USING AN ADHESIVE ANCHORING SYSTEM. LEVEL ONE FIELD TESTING IS REQUIRED AND THE YIELD LOAD OF THE DOWEL IS 13.2 KIPS. OVERALL DOWEL LENGTH SHALL PROVIDE FOR 1'-10" MIN. EXTENSION INTO NEW CAP. EMBEDMENT LENGTH TO BE DETERMINED BY THE MANUFACTURER OF THE ADHESIVELY ANCHORED ANCHOR SYSTEM. SEE SPECIAL PROVISION FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS.

DOWELS MAY BE SHIFTED SLIGHTLY AS NECESSARY TO AVOID INTERFERENCE WITH REINFORCING STEEL IN EXISTING CAP.

FOR EPOXY PROTECTIVE COATING, SEE STANDARD SPECIFICATIONS.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE "M" BARS IN THE FOOTING ARE DETAILED WITH 3 FEET OF EXTRA LENGTH.



DRAWN BY : T. BANKOVICH DATE : 8-2009  
 CHECKED BY : S.B. WILLIAMS DATE : 8-2009

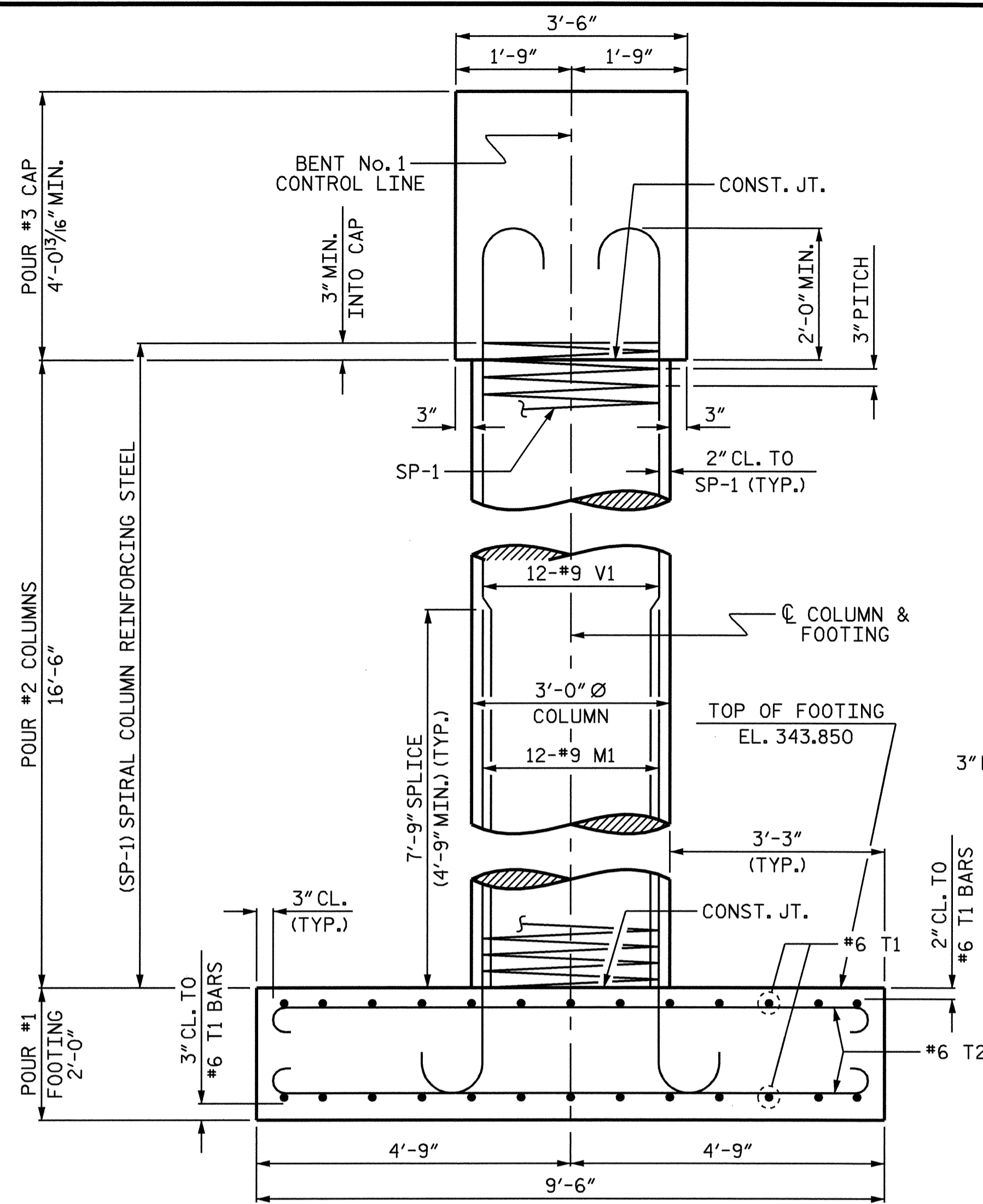
12-NOV-2009 13:02  
 r:\structures\sub.draw\vr-2000af.sd.b\*.1.dgn  
 tjbankovich

**ELEVATION**  
 DIMENSIONS & REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN



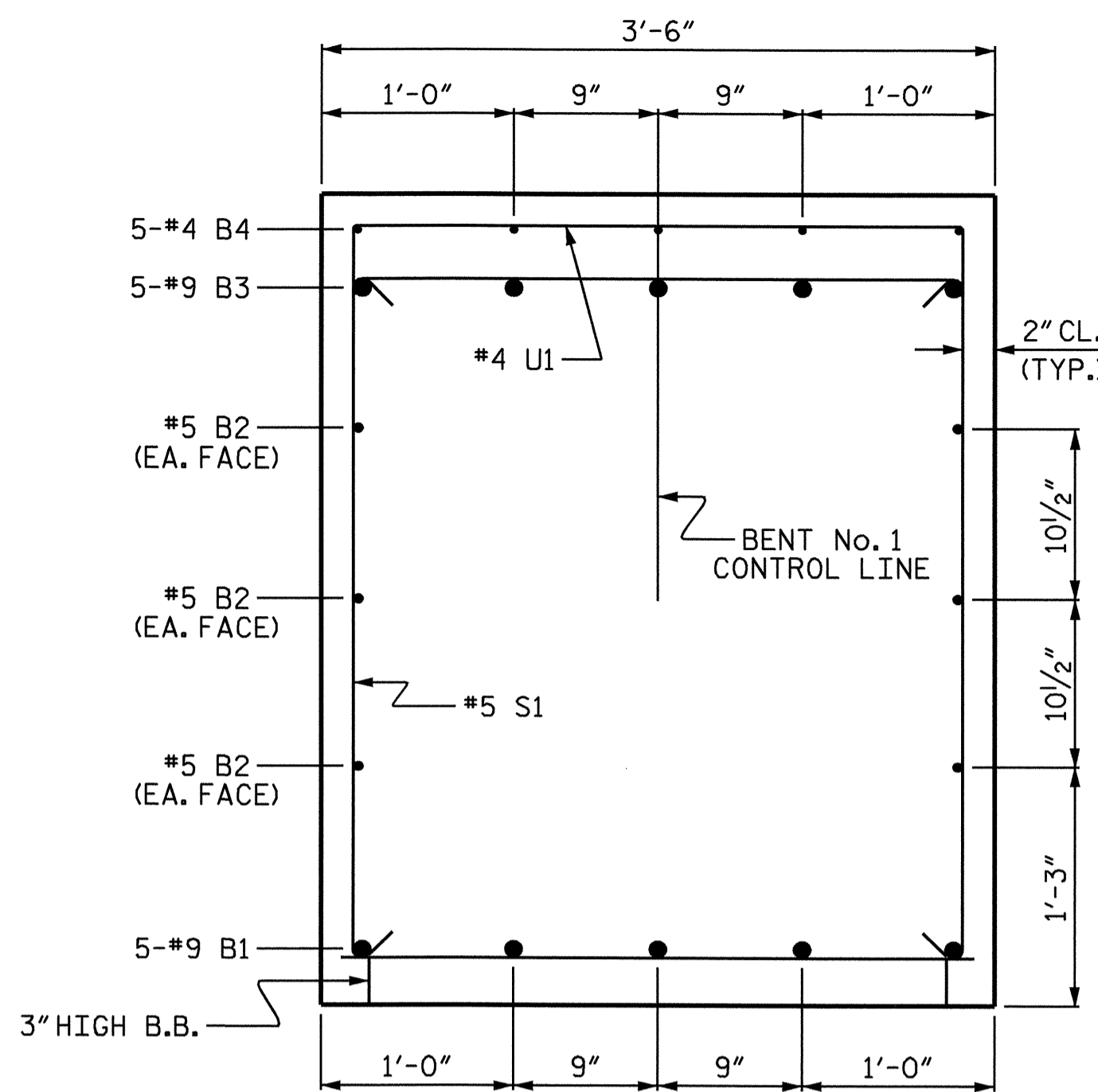
PROJECT NO. R-2000AF  
WAKE/DURHAM COUNTY  
 STATION: 24+32.55 -L-  
 SHEET 1 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE					
BENT No. 1					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-22
					TOTAL SHEETS 32

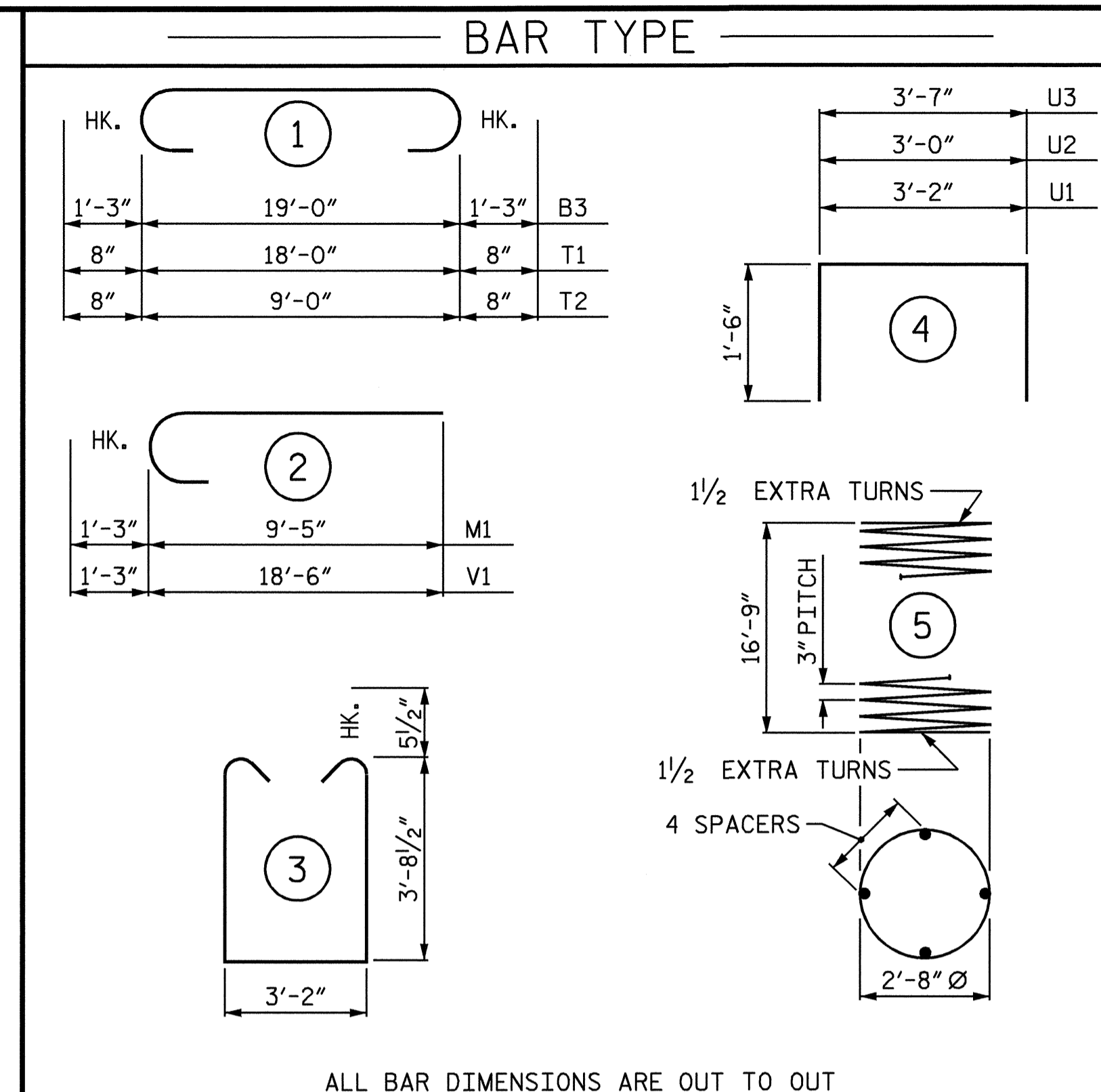


END ELEVATION

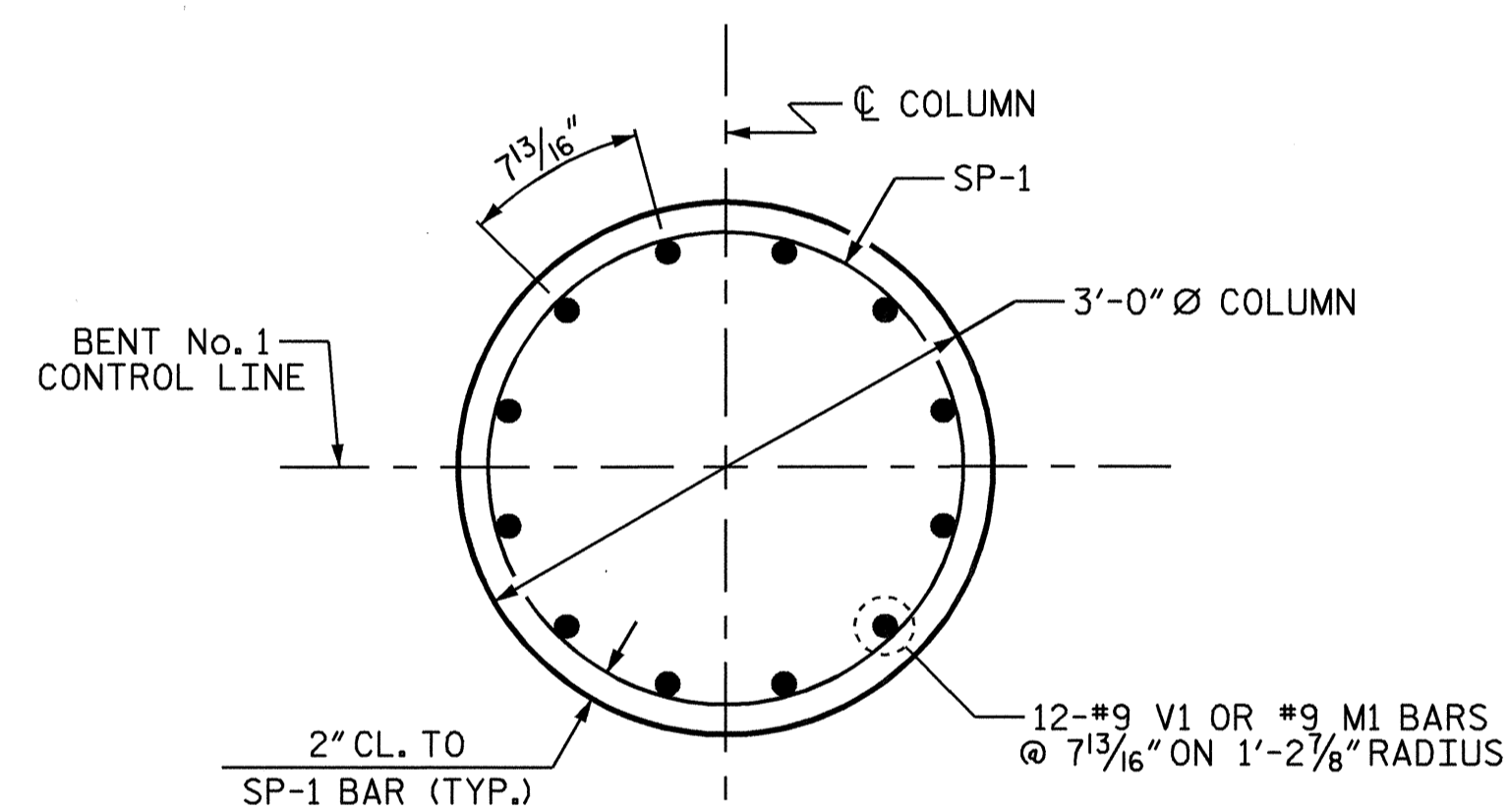
REINFORCING STEEL, DIMENSIONS AND DETAILS ARE TYPICAL FOR EACH COLUMN



SECTION A-A

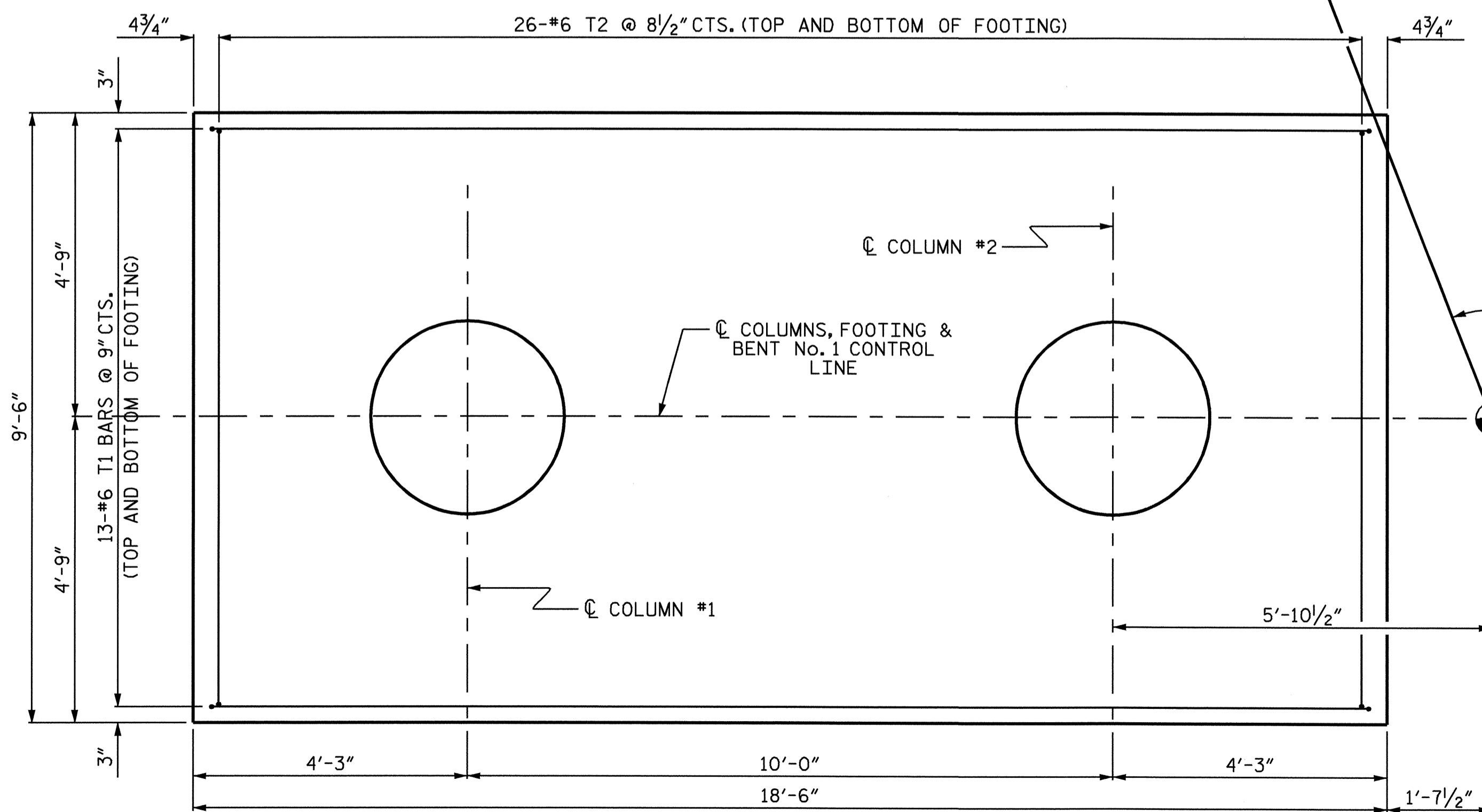


ALL BAR DIMENSIONS ARE OUT TO OUT



PLAN OF COLUMN

REINFORCING STEEL AND DIMENSIONS ARE TYPICAL FOR EACH COLUMN



PLAN OF FOOTING

BILL OF MATERIAL					
BENT No. 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	5	#9	STR	19'-2"	326
B2	6	#5	STR	19'-2"	120
B3	5	#9	1	21'-6"	366
B4	5	#4	STR	3'-8"	12
D1	6	#6	STR	2'-10"	26
M1	24	#9	2	10'-8"	870
S1	20	#5	3	11'-6"	240
T1	26	#6	1	19'-4"	755
T2	52	#6	1	10'-4"	807
U1	18	#4	4	6'-2"	74
U2	4	#4	4	6'-0"	16
U3	4	#4	4	6'-7"	18
V1	24	#9	2	19'-9"	1612
REINFORCING STEEL					5242 LBS.
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
SP-1	2	*	5	577'-7"	772
SPIRAL COLUMN REINFORCING STEEL					772 LBS.
* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR					
CLASS A CONCRETE BREAKDOWN					
POUR #1 (FOOTING)					13.0 C.Y.
POUR #2 (COLUMNS)					8.6 C.Y.
POUR #3 (CAP)					10.6 C.Y.
TOTAL CLASS A CONCRETE					32.2 C.Y.

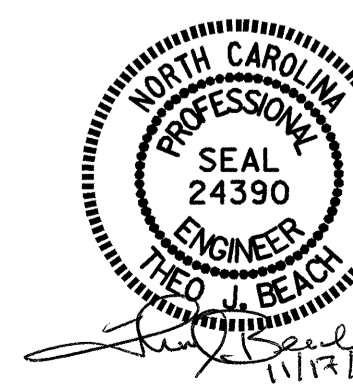
PROJECT NO. R-2000AF  
 WAKE/DURHAM COUNTY  
 STATION: 24+32.55 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE

BENT No. 1



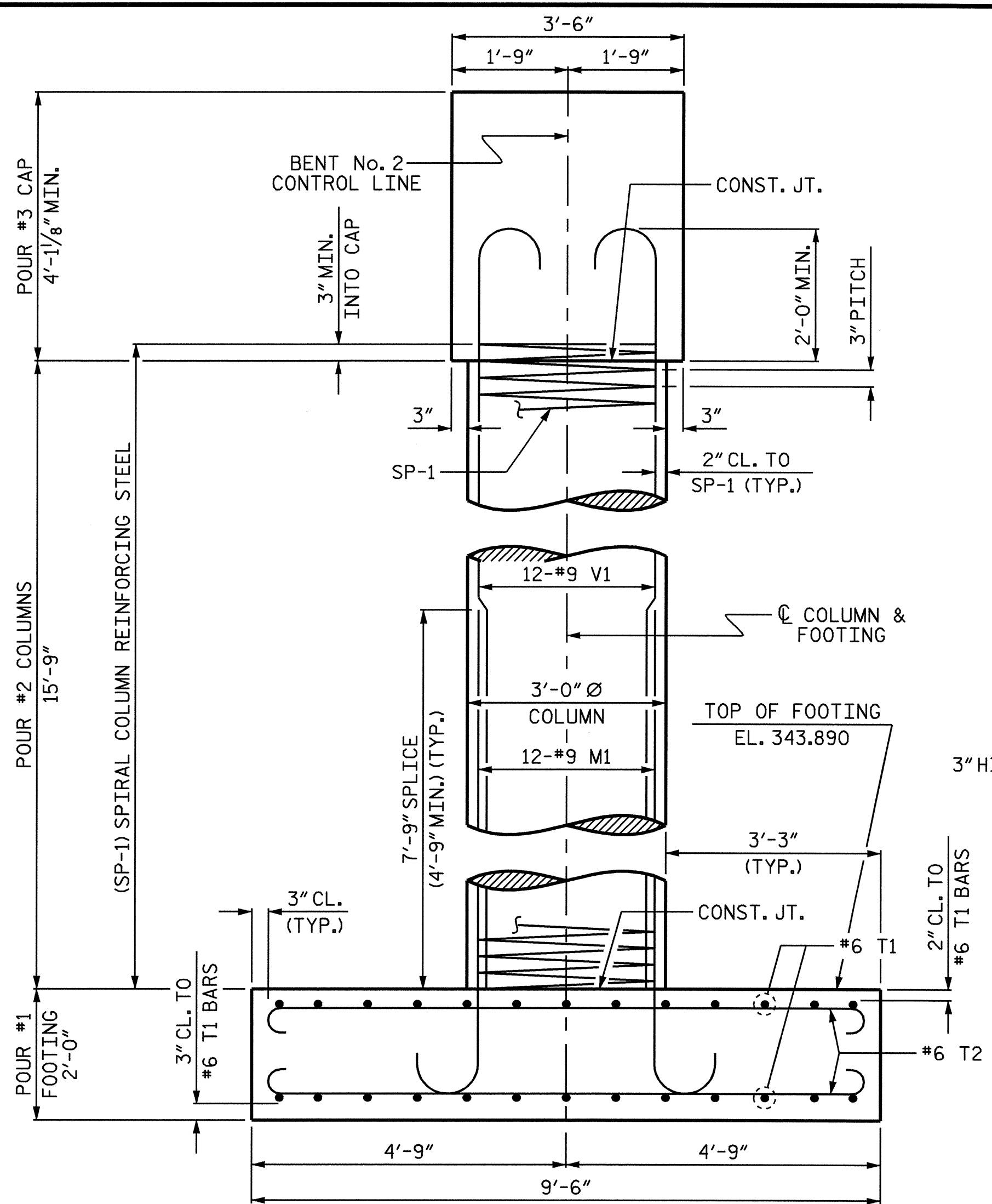
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-23	
1			3			TOTAL SHEETS	
2			4			32	

DRAWN BY: T. BANKOVICH DATE: 8-2009  
 CHECKED BY: S.B. WILLIAMS DATE: 8-2009

12-NOV-2009 13:02  
 r:\structures\sub.draw\2000af.sd.b\*.1.dgn  
 tjbankovich

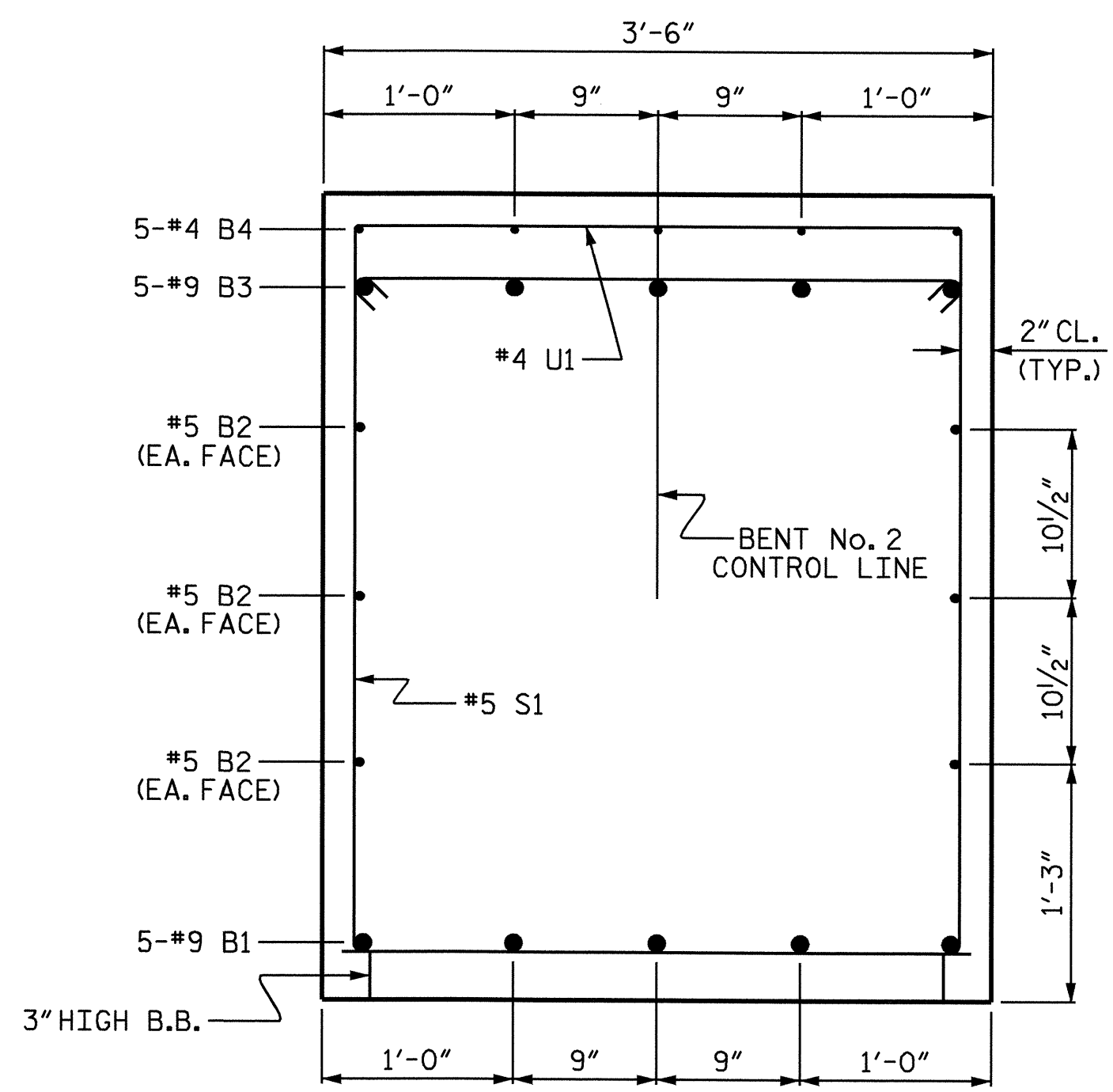




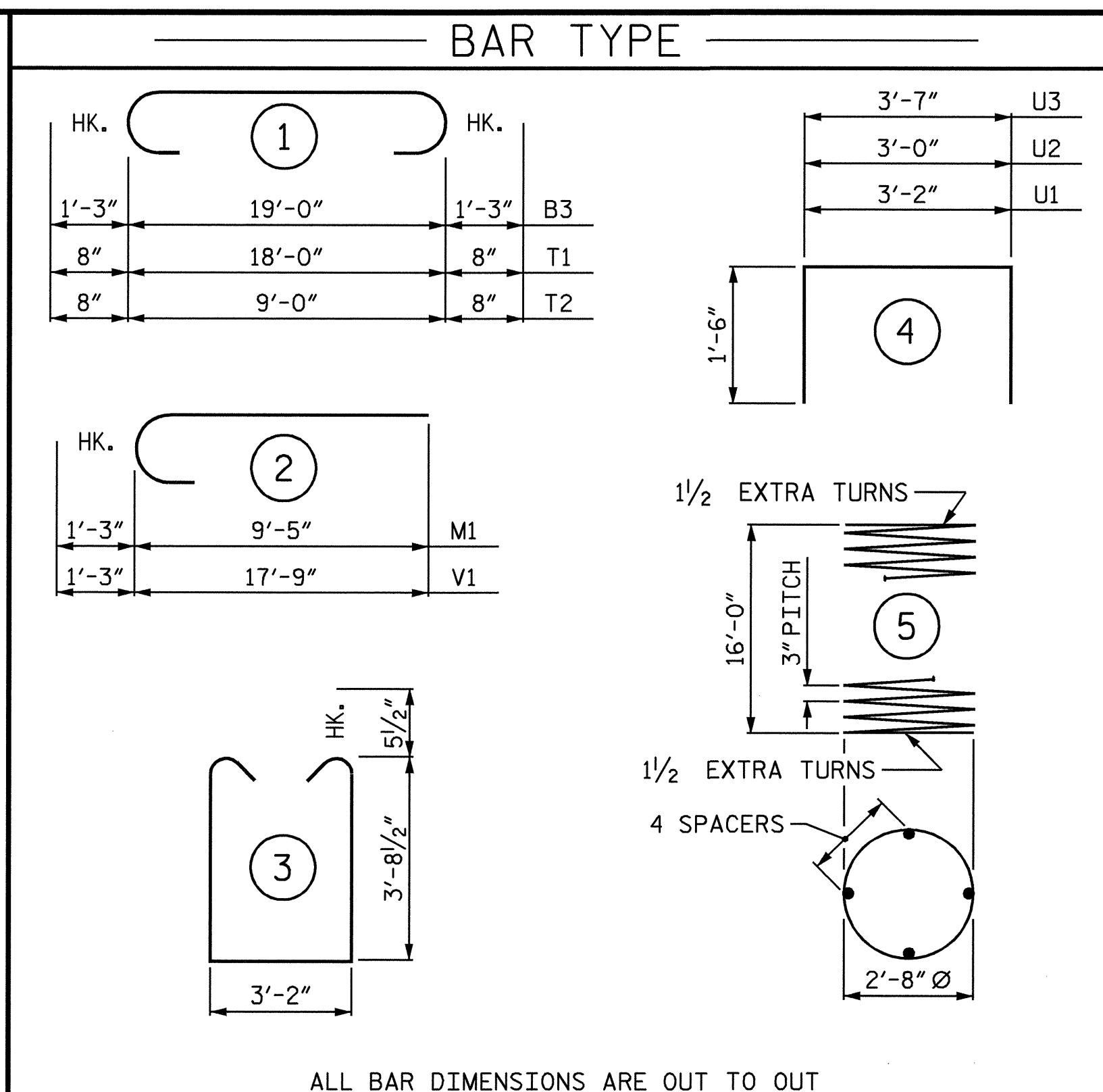


END ELEVATION

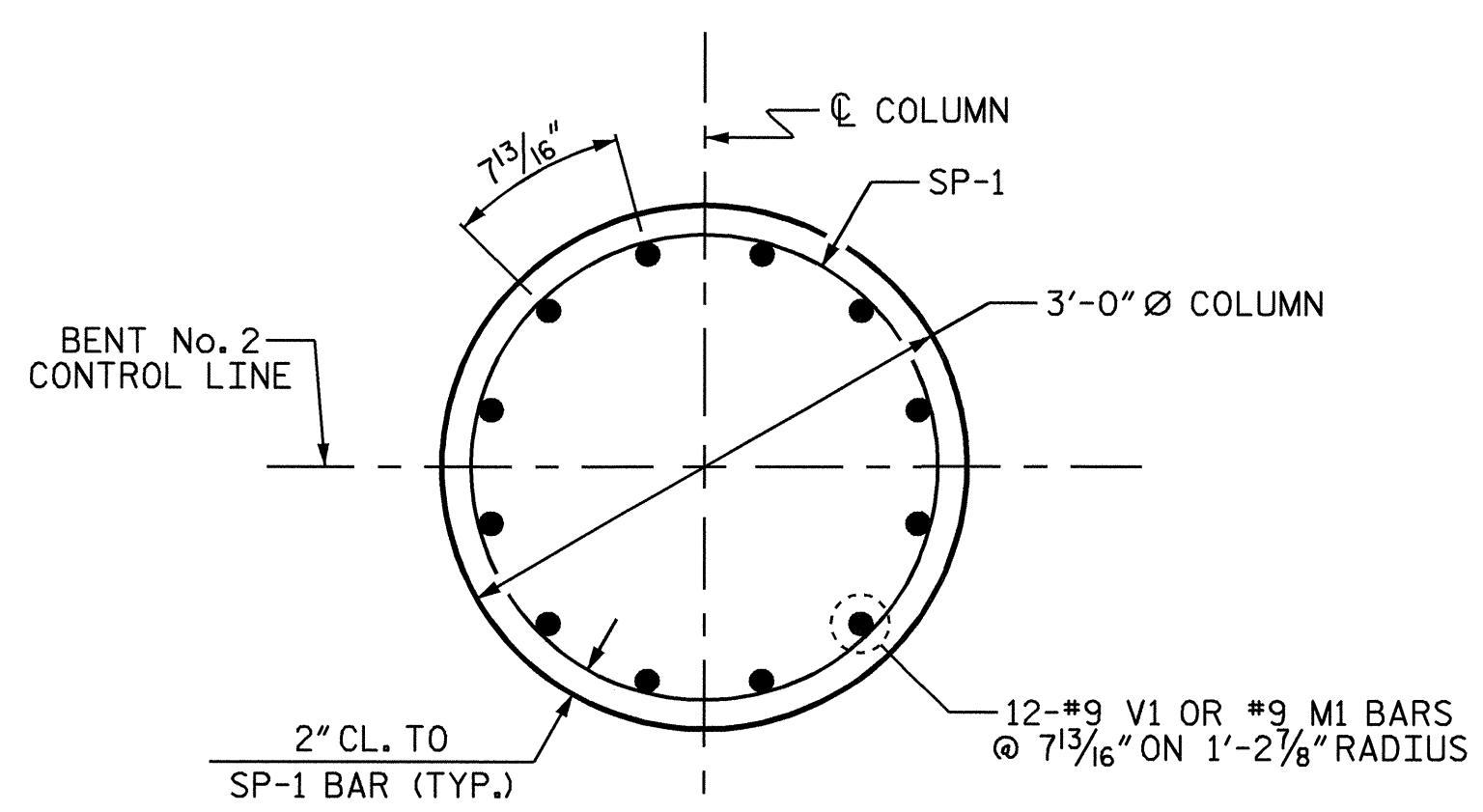
REINFORCING STEEL, DIMENSIONS AND DETAILS ARE TYPICAL FOR EACH COLUMN



SECTION A-A

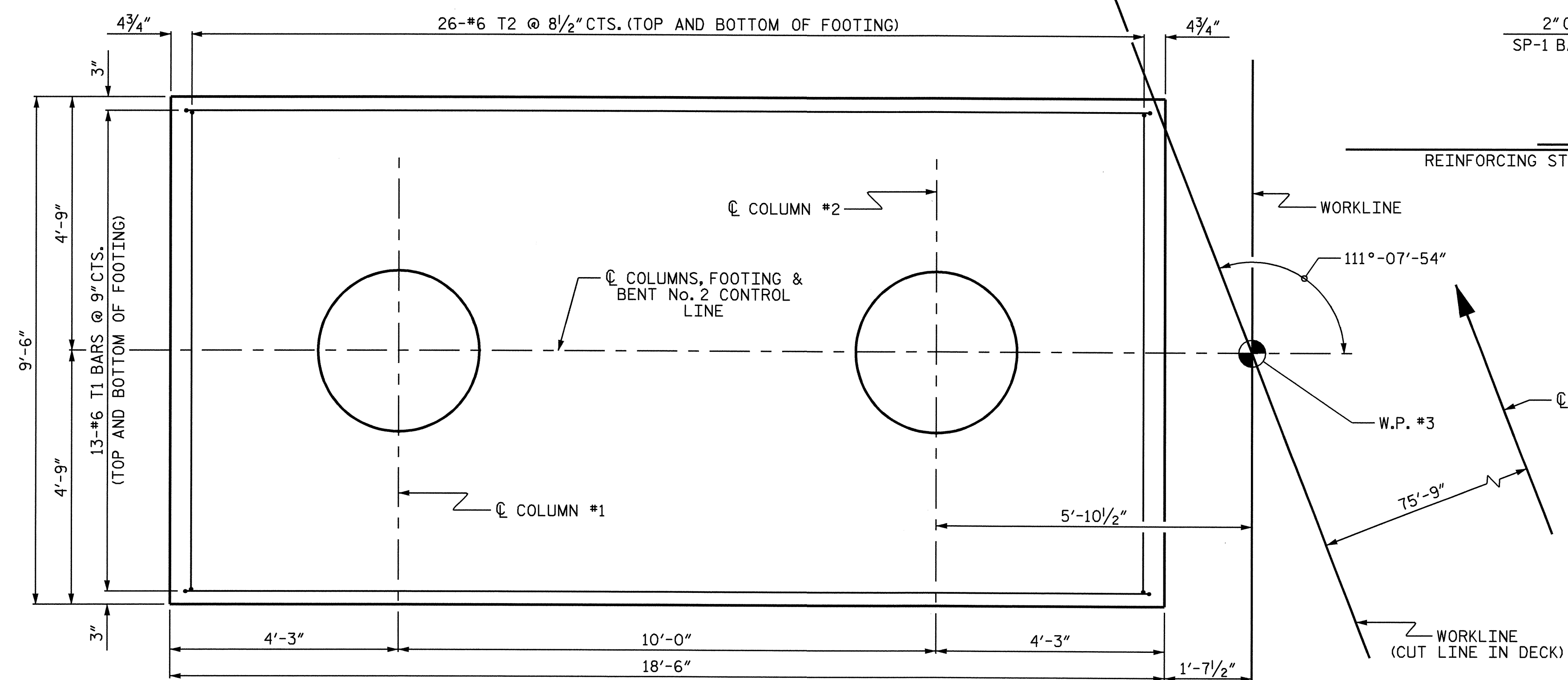


ALL BAR DIMENSIONS ARE OUT TO OUT



PLAN OF COLUMN

REINFORCING STEEL AND DIMENSIONS ARE TYPICAL FOR EACH COLUMN



PLAN OF FOOTING

DRAWN BY : T. BANKOVICH DATE : 8-2009  
 CHECKED BY : S.B. WILLIAMS DATE : 8-2009

12-NOV-2009 13:02  
 F:\structures\sub.draw\N-2000af.sd.b\*.2.dgn  
 tjbankovich

BILL OF MATERIAL

BENT No. 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	5	#9	STR	19'-2"	326
B2	6	#5	STR	19'-2"	120
B3	5	#9	1	21'-6"	366
B4	5	#4	STR	3'-8"	12
D1	6	#6	STR	2'-10"	26
M1	24	#9	2	10'-8"	870
S1	20	#5	3	11'-6"	240
T1	26	#6	1	19'-4"	755
T2	52	#6	1	10'-4"	807
U1	18	#4	4	6'-2"	74
U2	4	#4	4	6'-0"	16
U3	4	#4	4	6'-7"	18
V1	24	#9	2	19'-0"	1550

REINFORCING STEEL 5180 LBS.

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
SP-1	2	*	5	552'-10"	739

SPIRAL COLUMN REINFORCING STEEL 739 LBS.

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

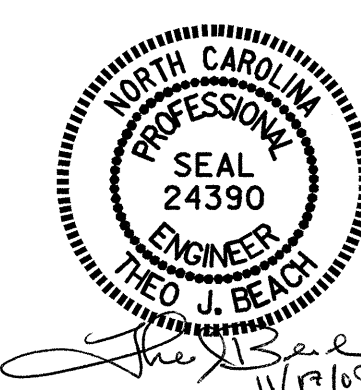
CLASS A CONCRETE BREAKDOWN

POUR #1 (FOOTING)	13.0 C.Y.
POUR #2 (COLUMNS)	8.2 C.Y.
POUR #3 (CAP)	10.7 C.Y.
TOTAL CLASS A CONCRETE	31.9 C.Y.

PROJECT NO. R-2000AF  
 WAKE/DURHAM COUNTY  
 STATION: 24+32.55 -L-

SHEET 2 OF 2

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



REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-25	
1			3			TOTAL SHEETS 32	
2			4				

**NOTES:**

\*FOR LOCATION OF ELEVATIONS BETWEEN BRIDGE SEATS, SEE "SECTION A-A", SHEET 3 OF 3.

\*THIS ELEVATION TAKEN ON FILL FACE OF BACKWALL.

STIRRUPS AND U2 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

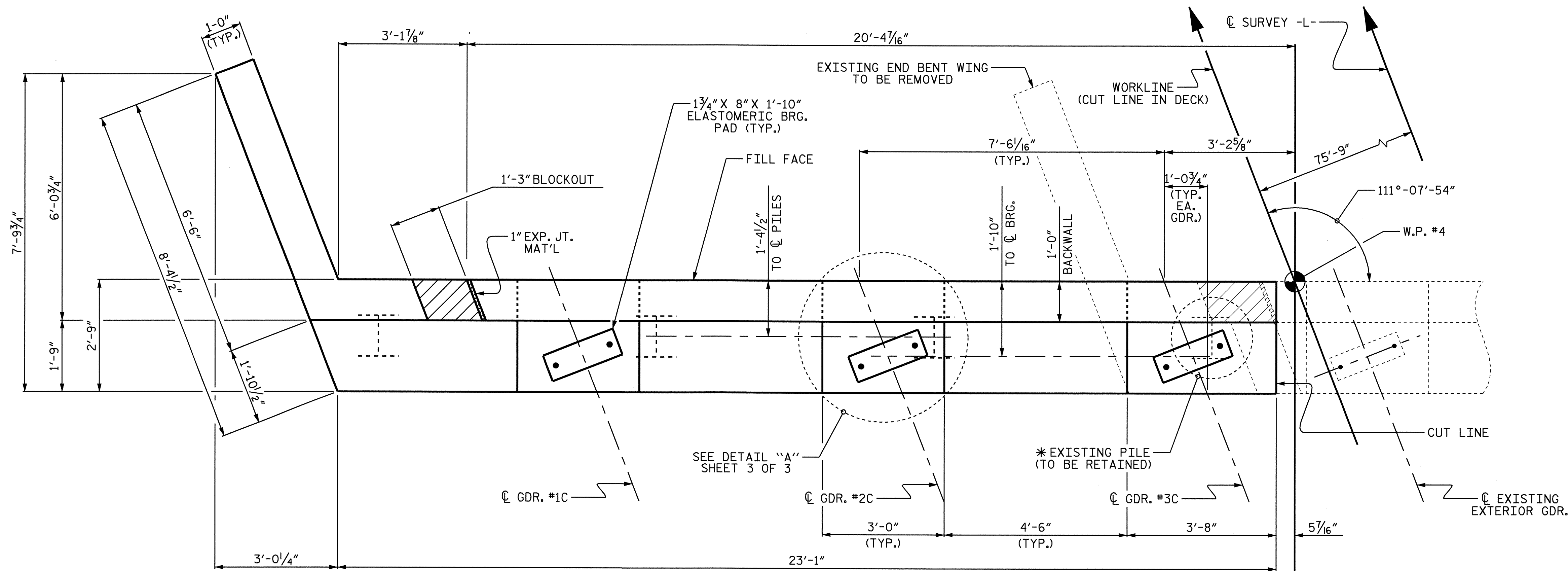
THE #5 "V" BARS IN THE BACKWALL SHALL BE PLACED 2" CLEAR FROM THE TOP OF THE BACKWALL.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

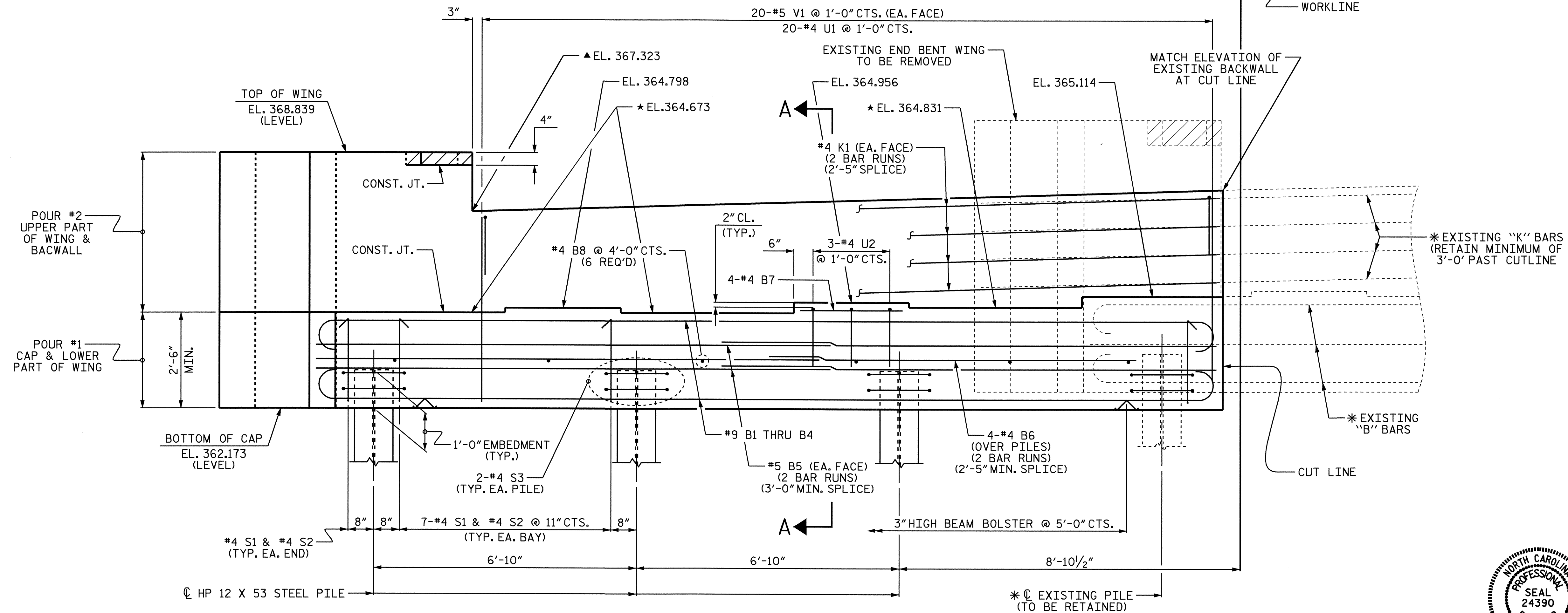
THE TOP SURFACE OF THE END BENT CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

\*THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE EXISTING EXTERIOR PILE AND THE EXISTING "B" & "K" BARS REINFORCING STEEL SHALL BE RETAINED PAST THE PROPOSED CUTLINE AND WILL BECOME PART OF THE WIDENED END BENT. THE EXISTING REINFORCING STEEL MAY BE BENT AS REQUIRED FOR FITTING AND TYING TO THE NEW REINFORCING STEEL.



**PLAN**



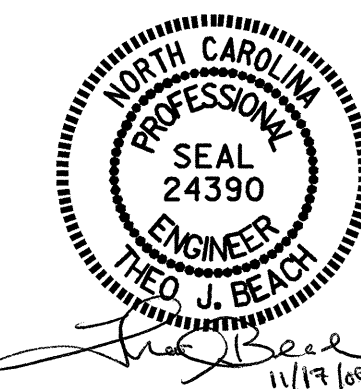
**ELEVATION**

PROJECT NO. R-2000AF  
WAKE/DURHAM COUNTY  
 STATION: 24+32.55 -L-

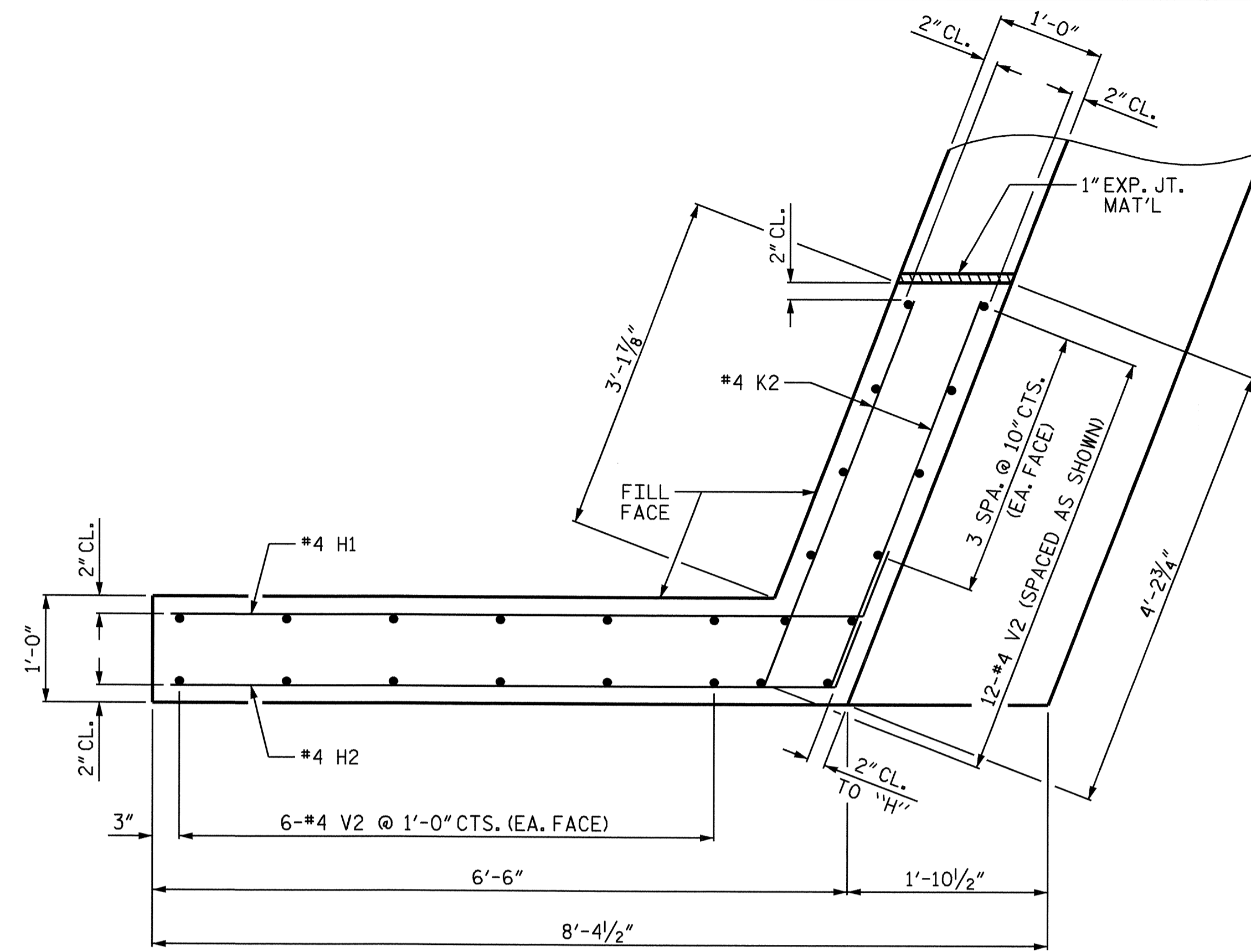
SHEET 1 OF 3

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

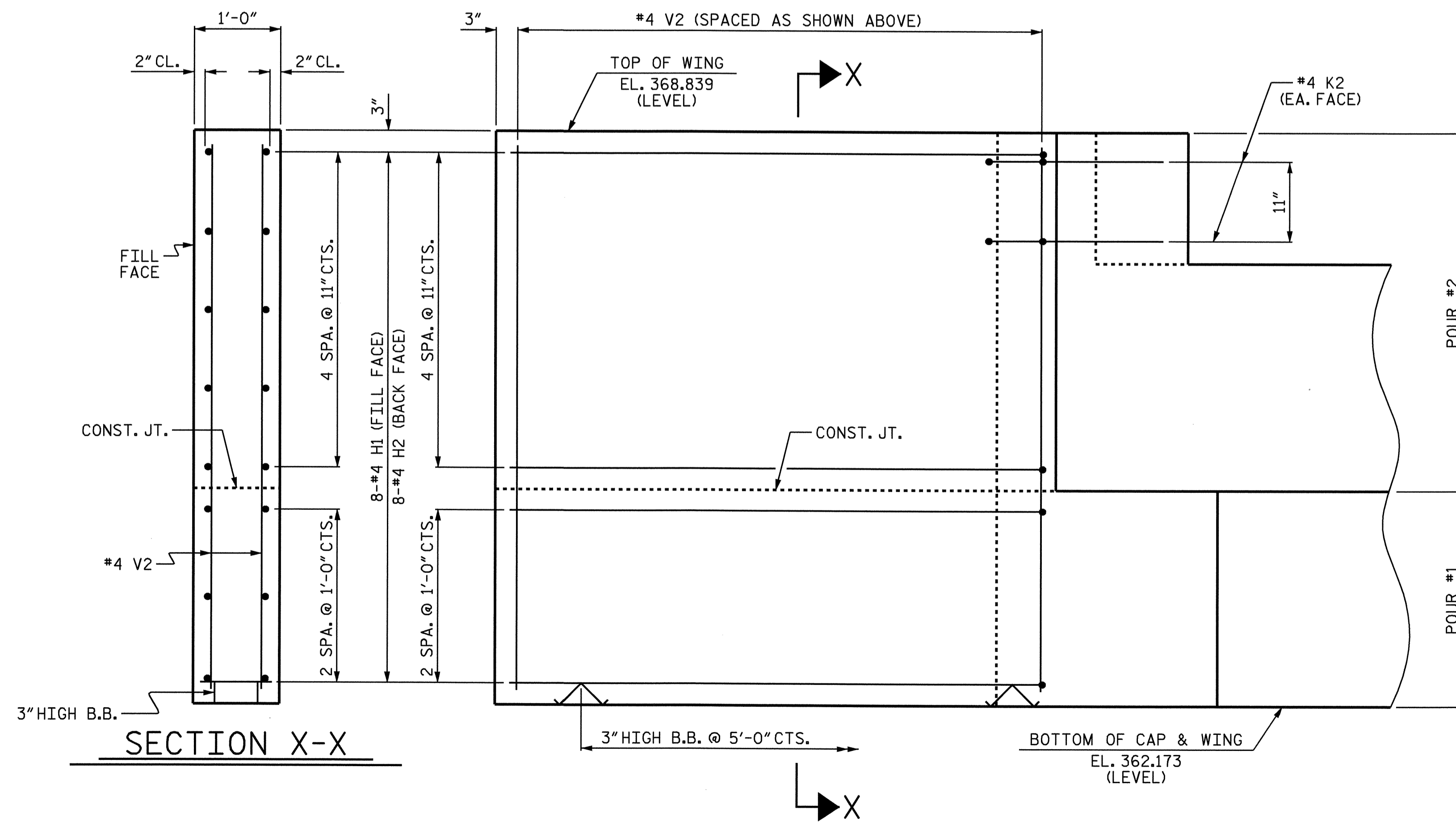
REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
					32



DRAWN BY: I. BANKOVICH DATE: 8-2009  
 CHECKED BY: S.B. WILLIAMS DATE: 8-2009



PLAN OF WING



ELEVATION OF WING

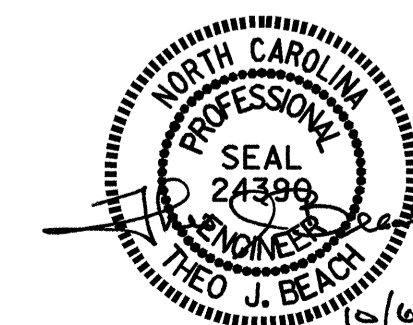
DRAWN BY : T. BANKOVICH DATE : 8-2009  
 CHECKED BY : S.B WILLIAMS DATE : 8-2009

06-OCT-2009 08:59  
 P:\structures\Sub\_Draw\R-2000AF\_SD\_E\*.2.dgn  
 sbwilliams

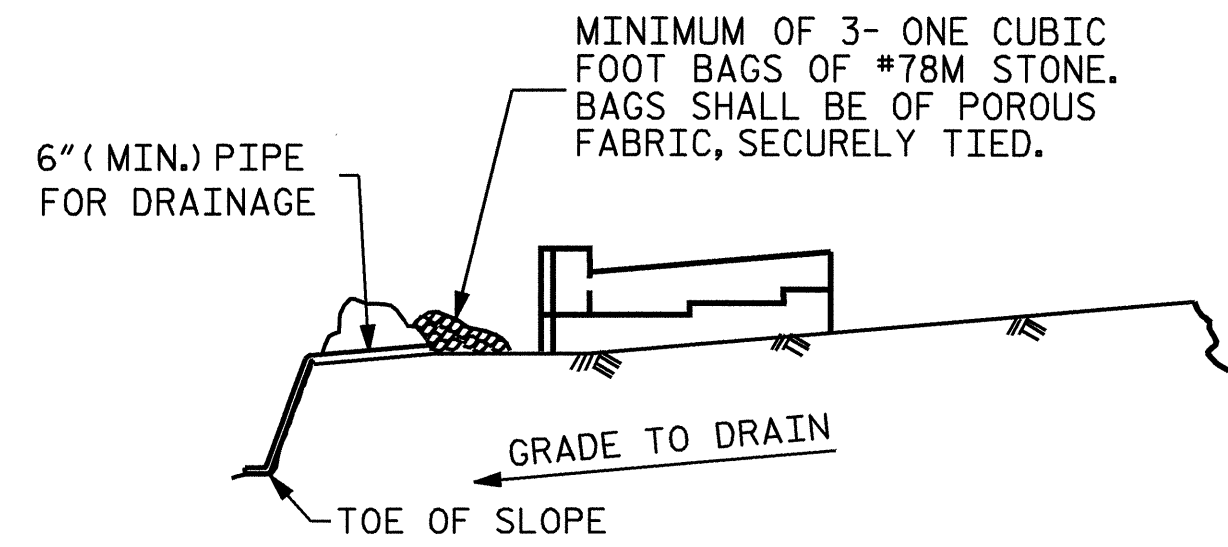
PROJECT NO. R-2000AF  
 WAKE/DURHAM COUNTY  
 STATION: 24+32.55 -L-

SHEET 2 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-27
1			3			TOTAL SHEETS
2			4			32

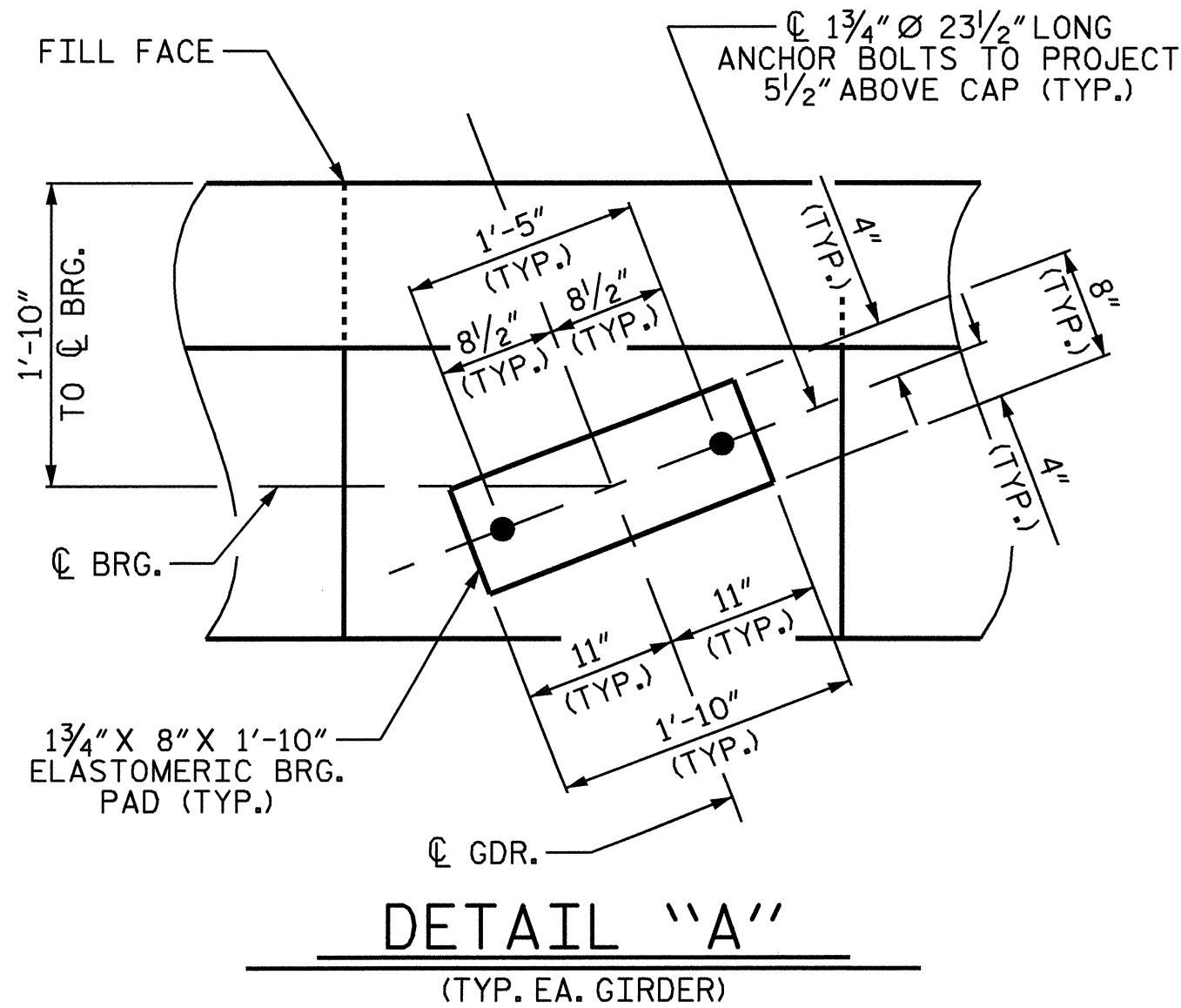


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

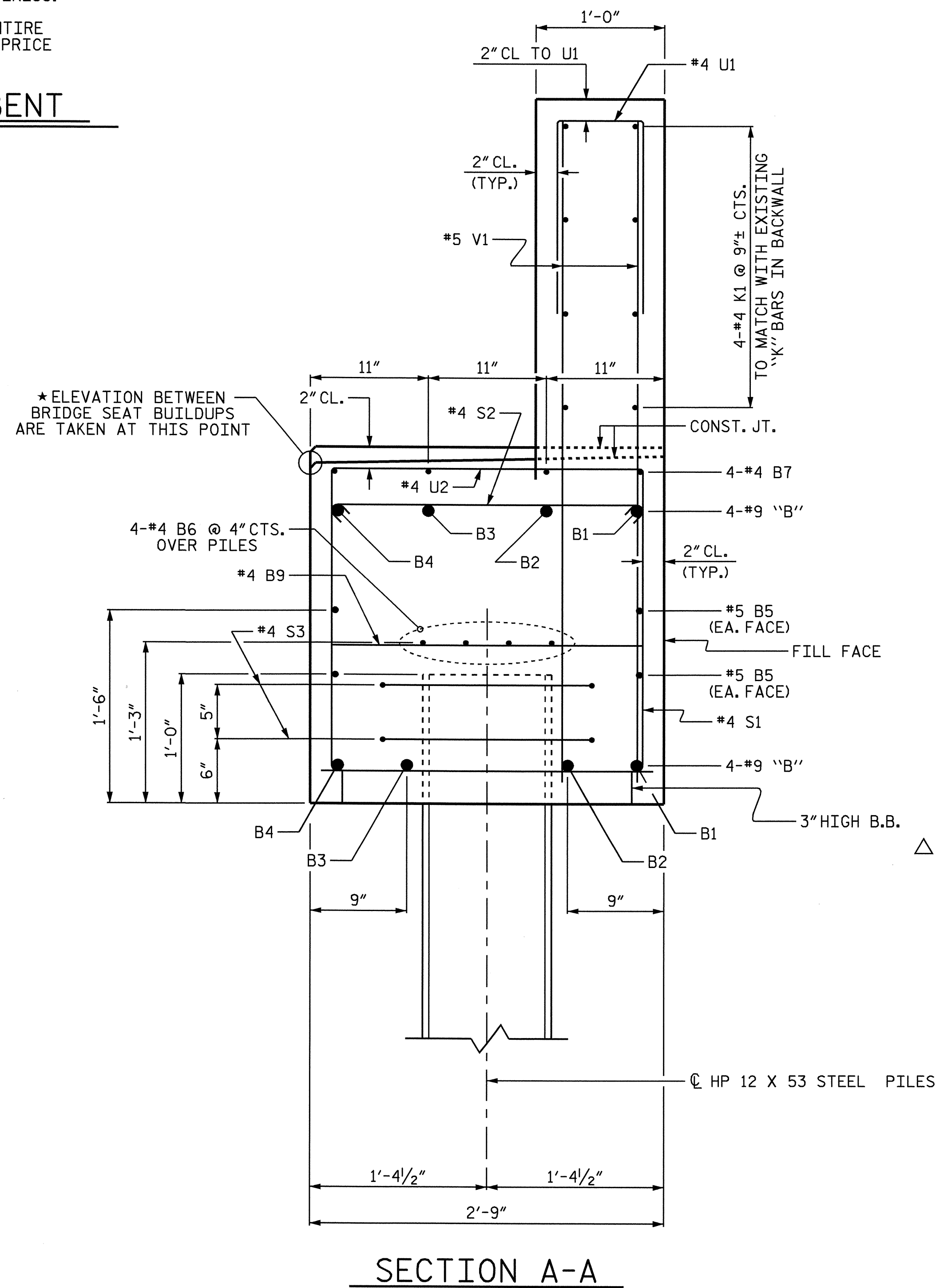
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

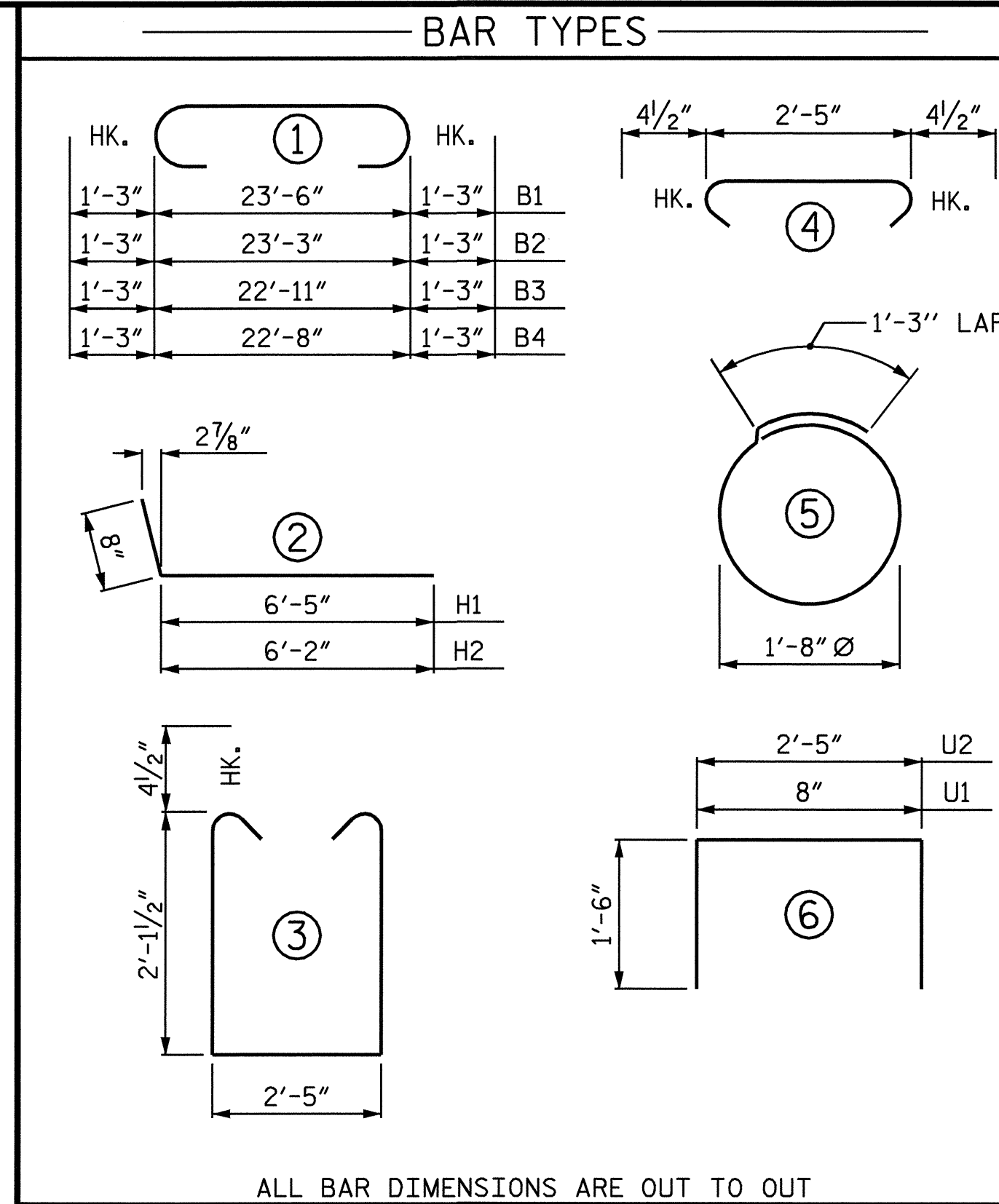
### TEMPORARY DRAINAGE AT END BENT



DETAIL "A"  
(TYP. EA. GIRDER)

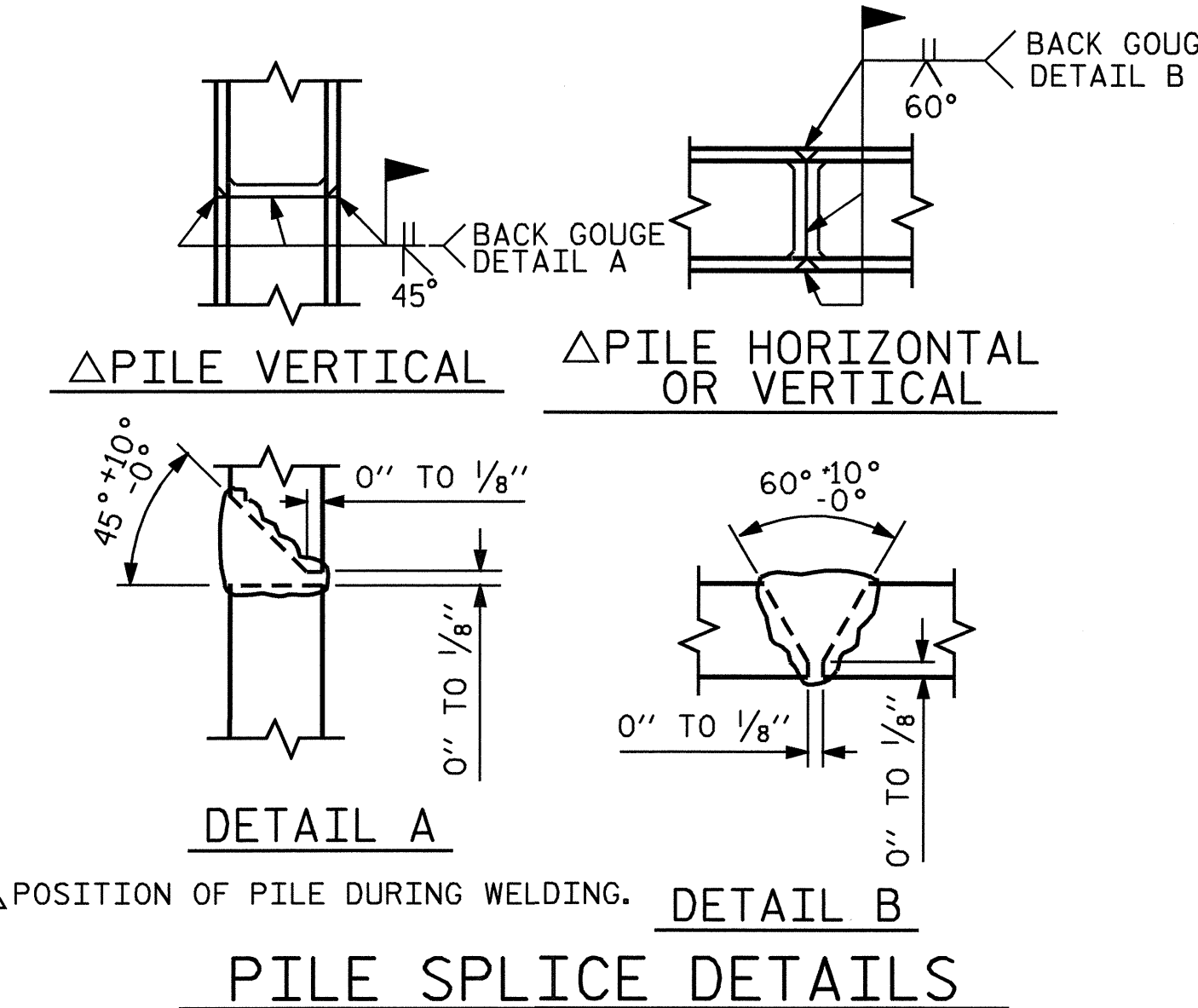


SECTION A-A



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL					
END BENT No. 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	2	#9	1	26'-0"	177
B2	2	#9	1	25'-9"	175
B3	2	#9	1	25'-5"	173
B4	2	#9	1	25'-2"	171
B5	8	#5	STR	13'-5"	112
B6	8	#4	STR	11'-11"	64
B7	4	#4	STR	2'-8"	7
B8	6	#4	STR	2'-5"	10
H1	8	#4	2	7'-1"	38
H2	8	#4	2	6'-10"	37
K1	16	#4	STR	13'-2"	141
K2	4	#4	STR	3'-10"	10
S1	23	#4	3	7'-5"	114
S2	23	#4	4	3'-2"	49
S3	8	#4	5	6'-6"	35
U1	20	#4	6	3'-8"	49
U2	3	#4	6	5'-5"	11
V1	40	#5	STR	4'-9"	198
V2	24	#4	STR	6'-4"	102
REINFORCING STEEL					1673 LBS.
CLASS A CONCRETE BREAKDOWN					
POUR #1 (CAP & LOWER WING)					6.9 C.Y.
POUR #2 (BACKWALL & UPPER WING)					3.6 C.Y.
TOTAL =					10.5 C.Y.
HP 12 X 53 STEEL PILES					
NO. = 3					30 LIN. FT.
PILE EXCAVATION					
PILE EXCAVATION IN SOIL					12 LIN. FT.
PILE EXCAVATION NOT IN SOIL					20 LIN. FT.



PILE SPLICE DETAILS

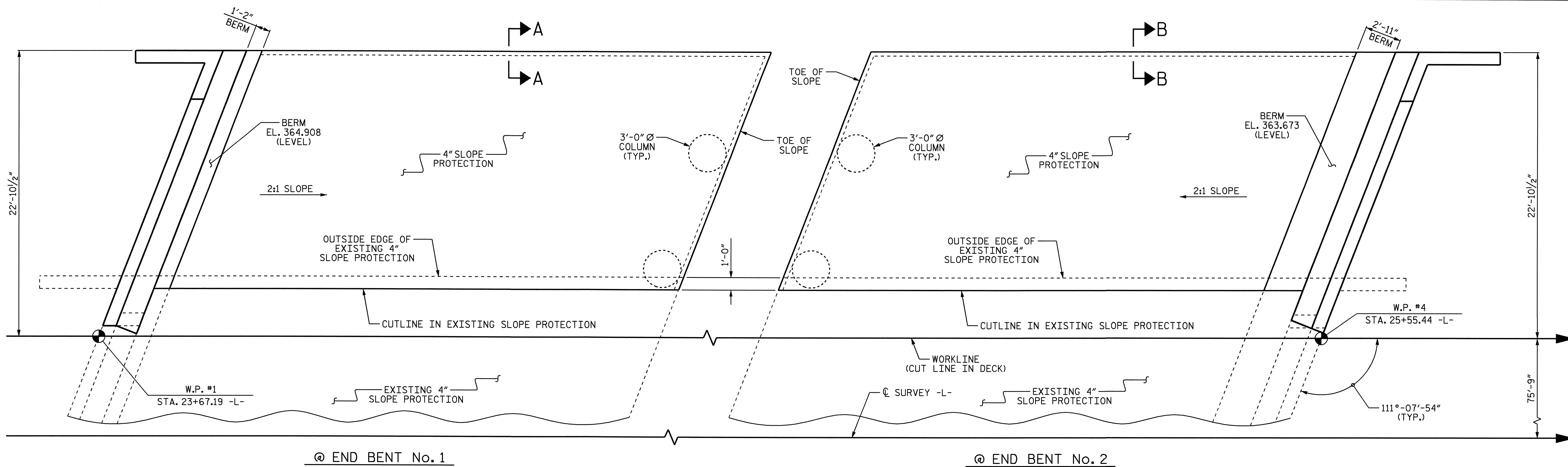
PROJECT NO. R-2000AF  
WAKE/DURHAM COUNTY  
 STATION: 24+32.55 -L-

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:
1			3		
2			4		
					TOTAL SHEETS 32

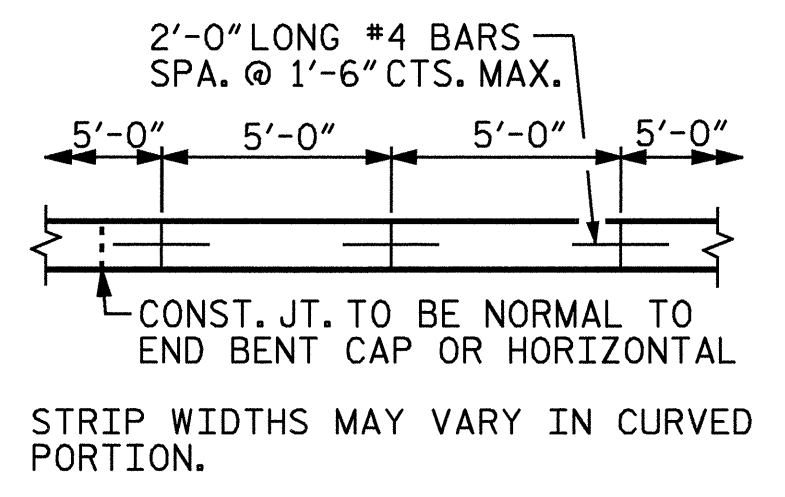


DRAWN BY: T. BANKOVICH DATE: 8-2009  
 CHECKED BY: S.B. WILLIAMS DATE: 8-2009

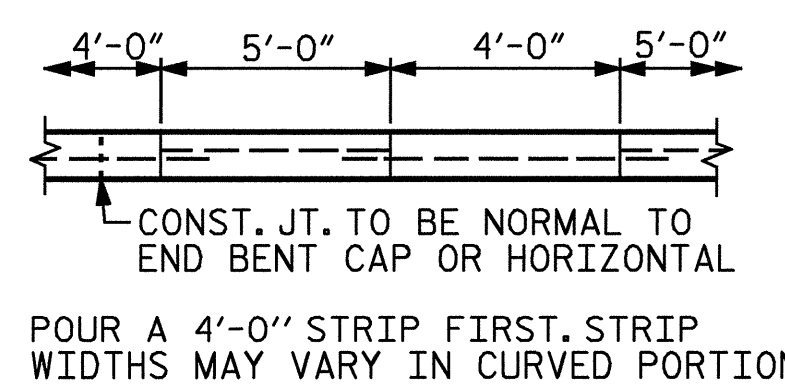


@ END BENT No. 1 @ END BENT No. 2

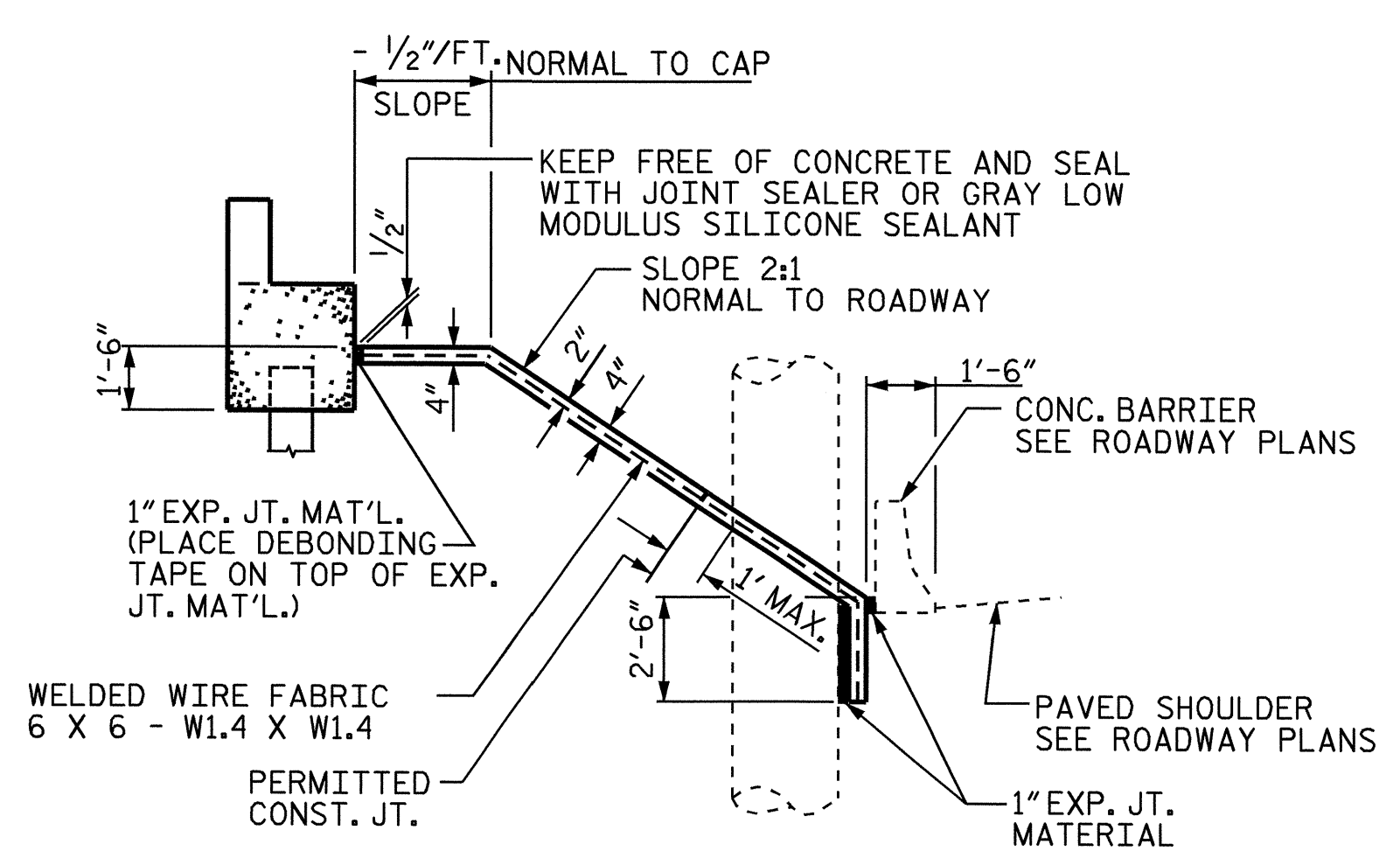
**PLAN OF SLOPE PROTECTION**



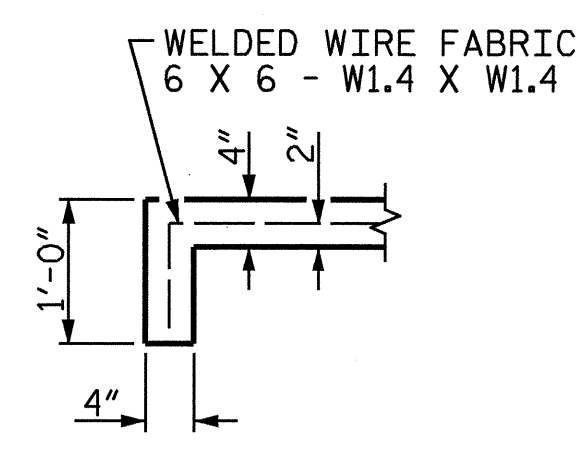
**POURING DETAIL**



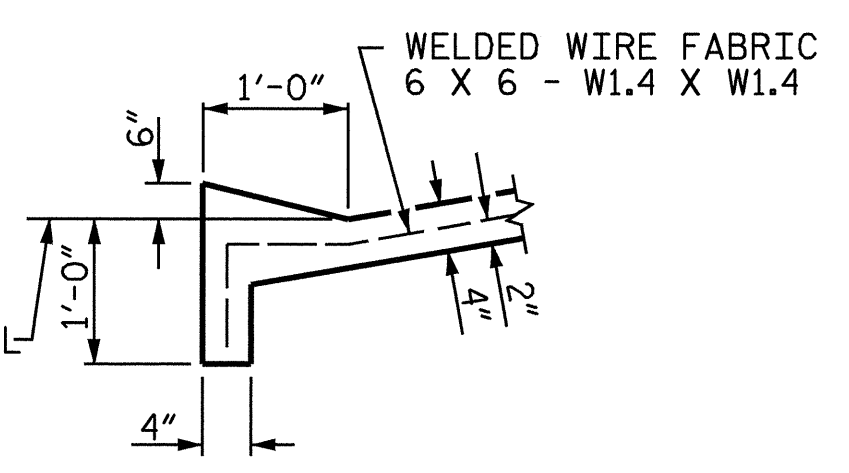
**OPTIONAL POURING DETAIL**



**SECTION ALONG C ROADWAY WITH SHOULDER PIER**

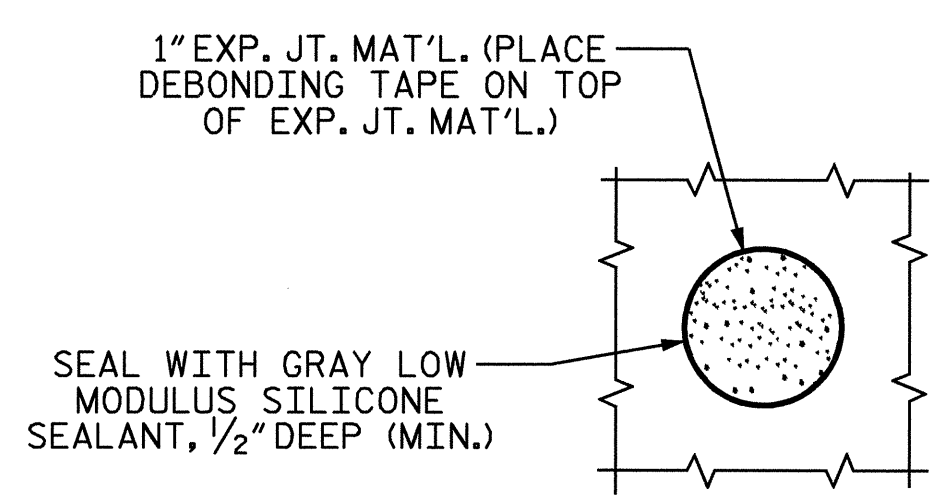


**SECTION A-A**



**SECTION B-B**

**DETAILS FOR SLOPE PROTECTION**



**PLAN WHERE CONCRETE SLOPE PROTECTION MUST BE PLACED AROUND A BENT COLUMN**

BRIDGE @ STA. 24+32.55 -L-	4 INCH SLOPE PROTECTION	WELDED WIRE FABRIC 60 INCH WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT No. 1	100	180
END BENT No. 2	100	180

\* QUANTITY SHOWN IS BASED ON 5' POURS.

**GENERAL NOTES**

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

EXISTING SLOPE PROTECTION DAMAGED BY CONSTRUCTION OF NEW END BENTS AND BENT FOOTINGS SHALL BE REPAIRED OR REPLACED AS DIRECTED BY THE ENGINEER. ANY COSTS ASSOCIATED WITH REPAIR OR REPLACEMENT OF EXISTING SLOPE PROTECTION SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID PER SQUARE YARD FOR SLOPE PROTECTION.

**SLOPE PROTECTION**

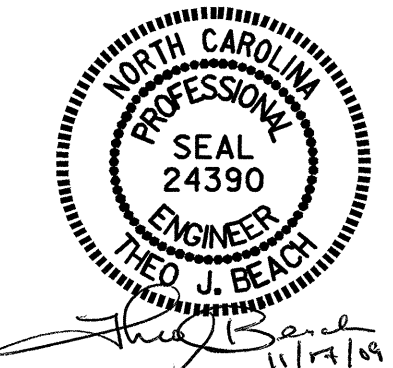
THE SLOPE PROTECTION SHALL CONSIST OF 4" POURED-IN-PLACE CONCRETE PAVING AS SHOWN IN THE DETAILS ON THIS SHEET. CONCRETE SHALL BE CLASS "B". THE CONCRETE SURFACE SHALL BE FLOATED WITH A WOODEN FLOAT AND FINISHED. WELDED WIRE FABRIC REINFORCING SHALL BE 6 X 6 - W1.4 X W1.4, 60" WIDE. SLOPE PROTECTION 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.

PROJECT NO. R-2000AF  
WAKE/DURHAM COUNTY  
 STATION: 24+32.55 -L-

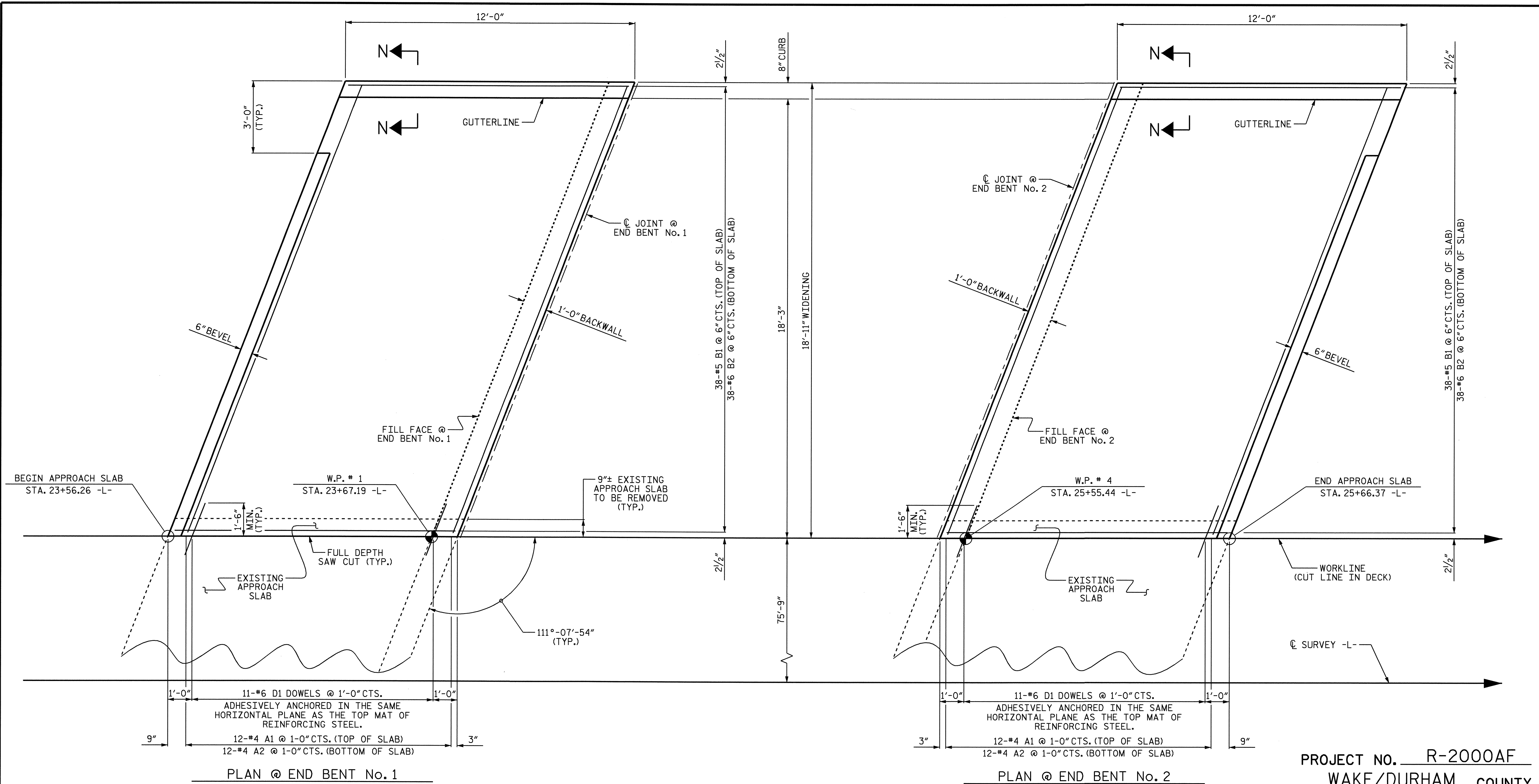
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

STANDARD  
 SLOPE PROTECTION  
 DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-29
1			3			TOTAL SHEETS
2			4			32



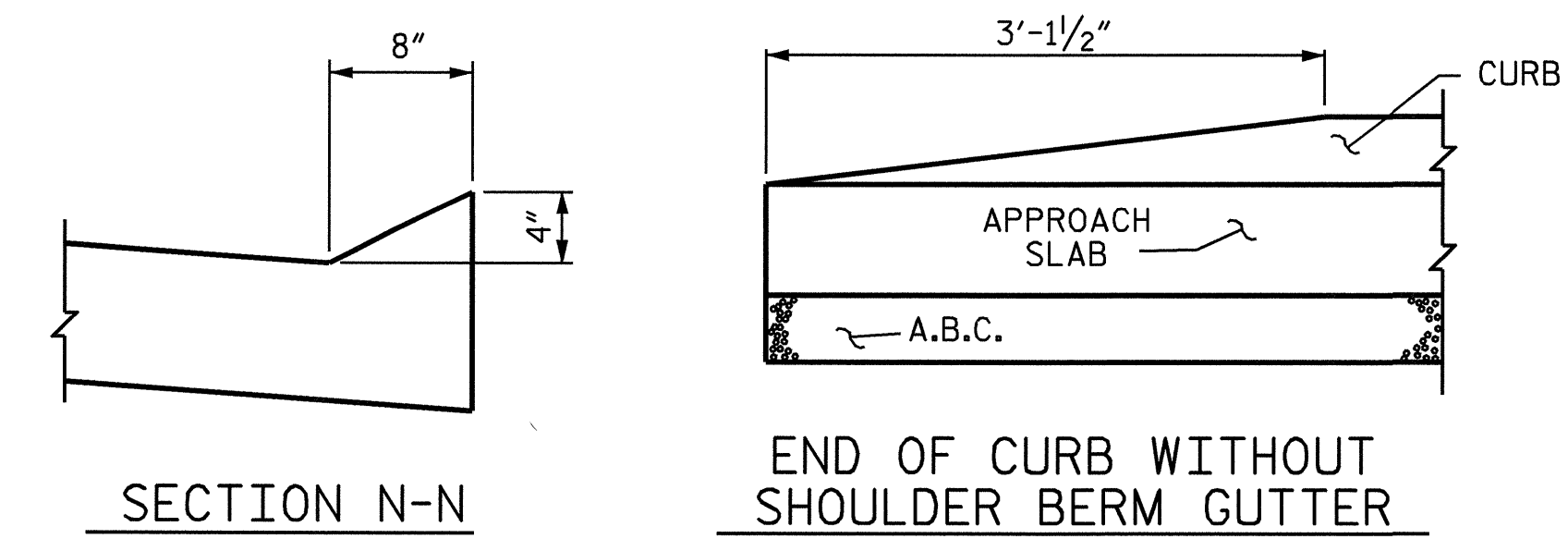
ASSEMBLED BY : T. BANKOVICH DATE : 8-2009  
 CHECKED BY : D.G. ELY DATE : 9-2009  
 DRAWN BY : ELR 5/92 REV. 7/10/01 LES/RDR  
 CHECKED BY : GRP 6/92 REV. 5/7/03 RWW/JTE  
 REV. 5/1/06 TLA/GM



PLAN @ END BENT No. 1

PLAN @ END BENT No. 2

PLAN OF APPROACH SLABS

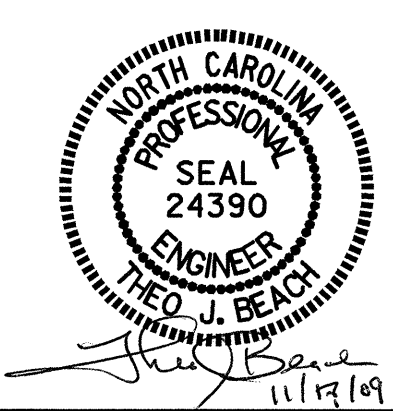


CURB DETAILS

PROJECT NO. R-2000AF  
WAKE/DURHAM COUNTY  
 STATION: 24+32.55 -L-

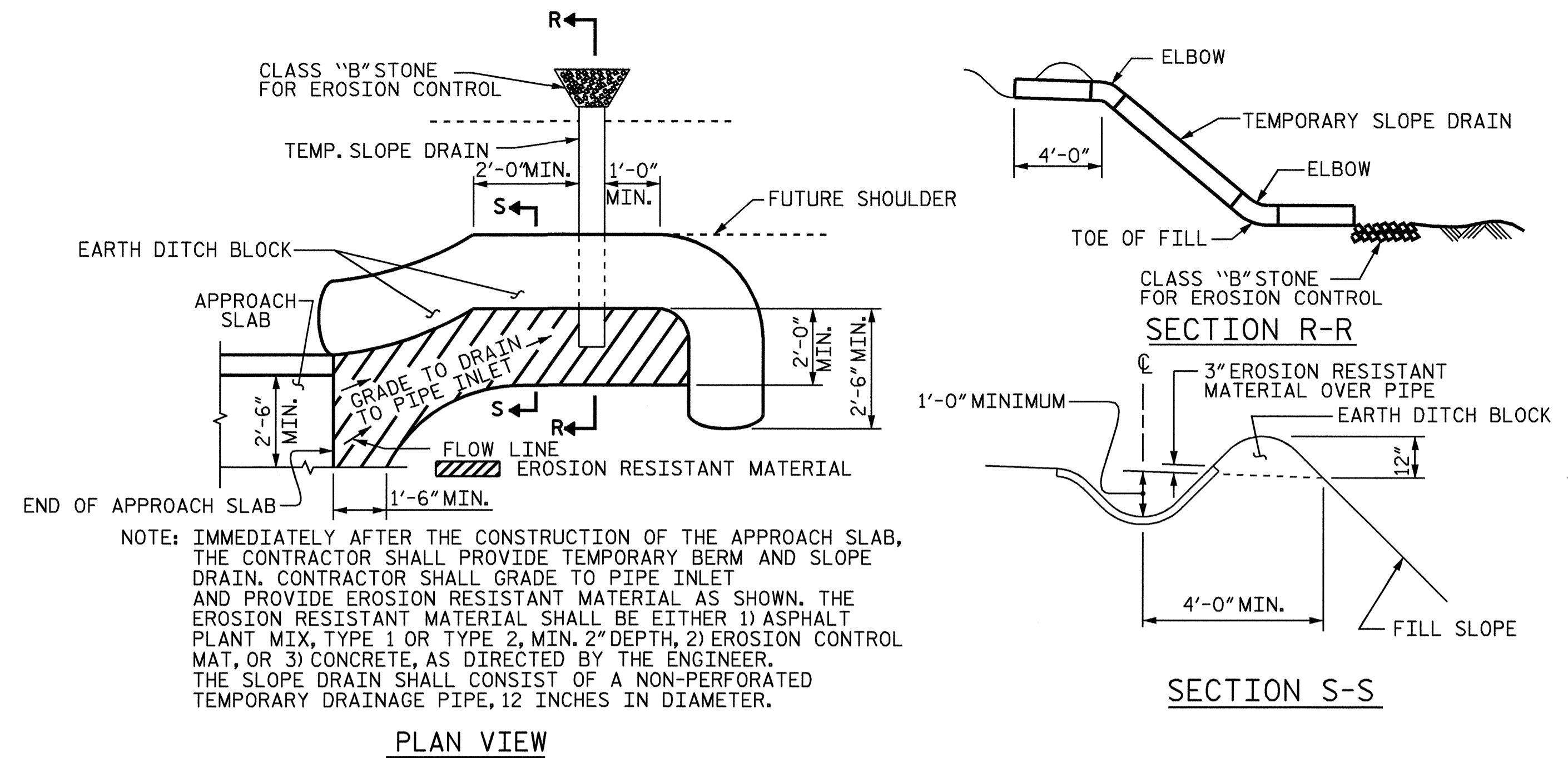
SHEET 1 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
BRIDGE APPROACH SLAB					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-30
					TOTAL SHEETS 32



DRAWN BY : T. BANKOVICH DATE : 8-2009  
 CHECKED BY : D.G. ELY DATE : 9-2009

12-NOV-2009 13:03  
 P:\Structures\misc.draw\r-2000af.sd.as.dgn  
 tbankovich

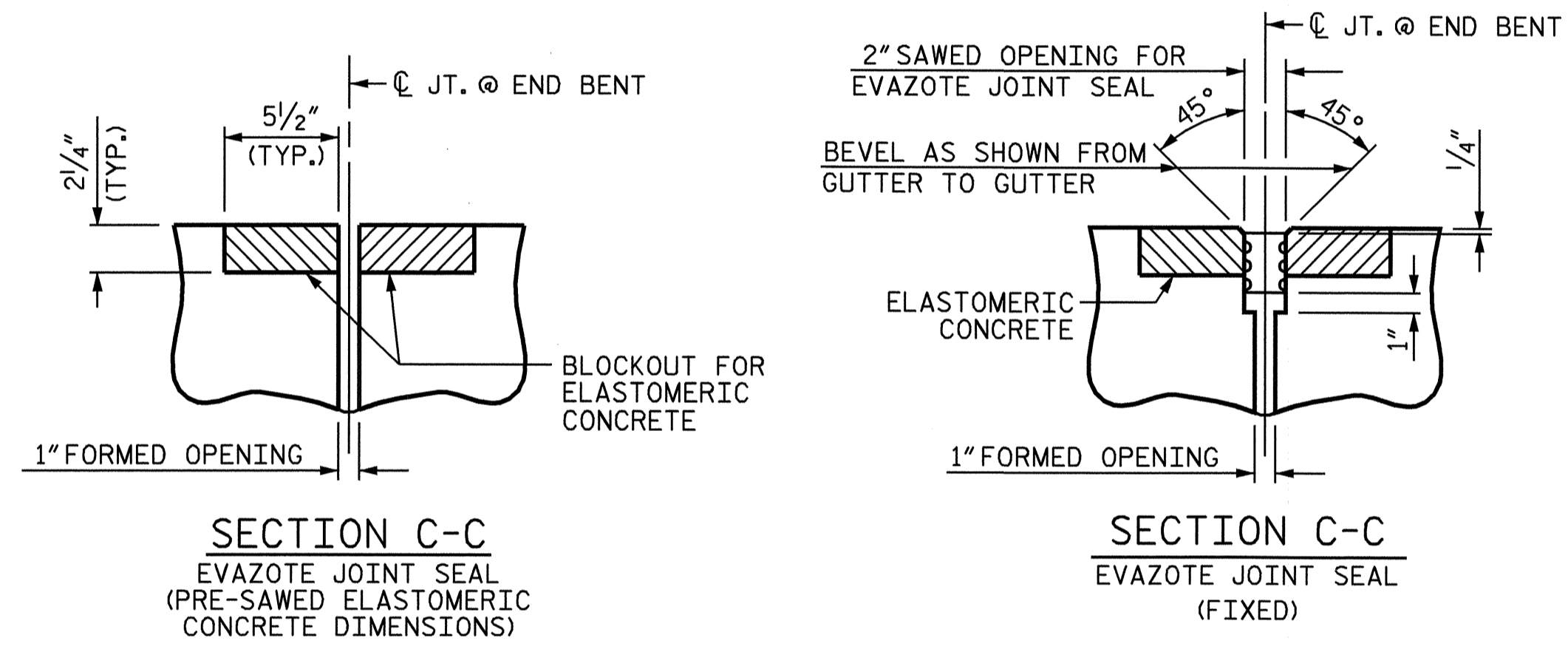


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

PLAN VIEW

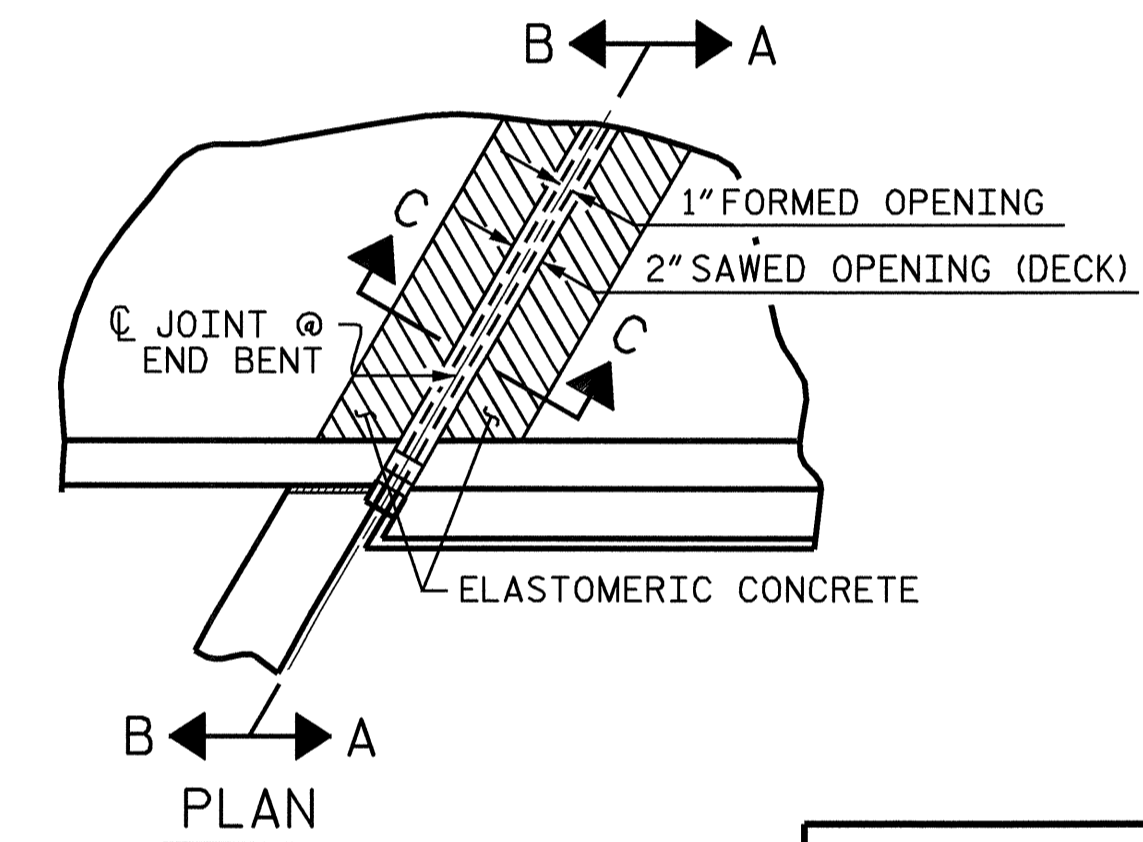
TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



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

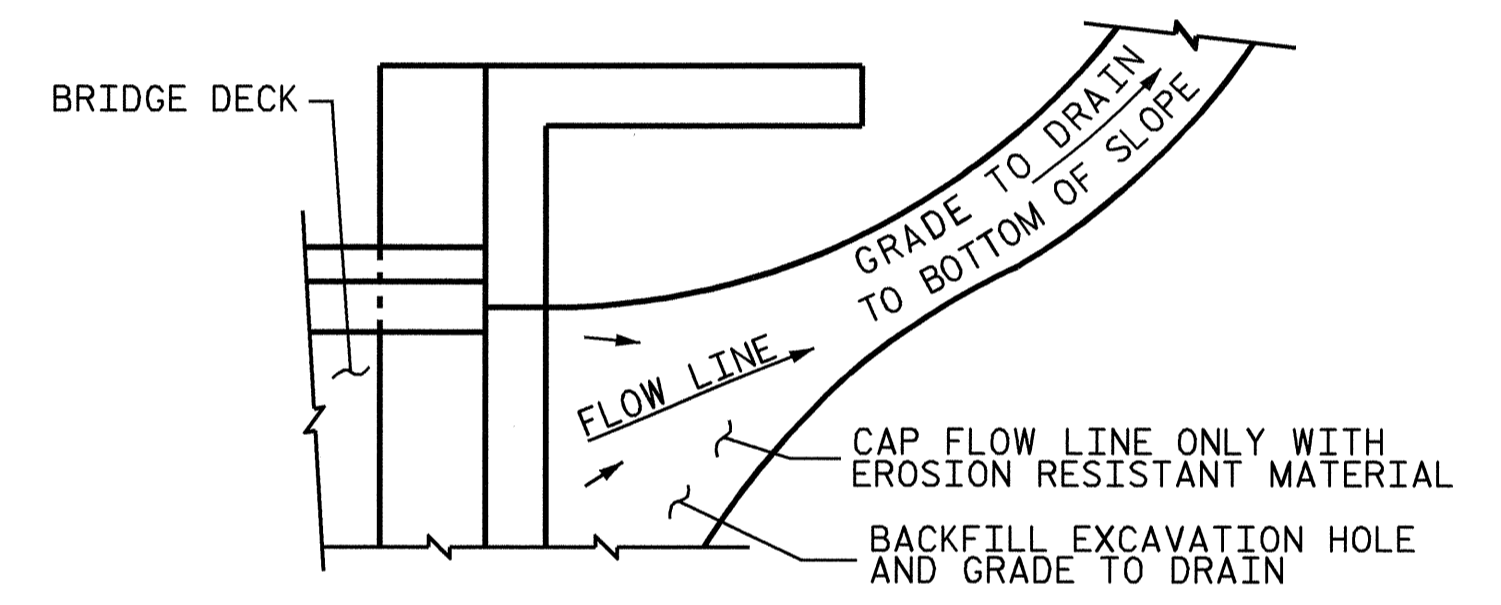
SECTION C-C  
EVAZOTE JOINT SEAL  
(FIXED)



PLAN

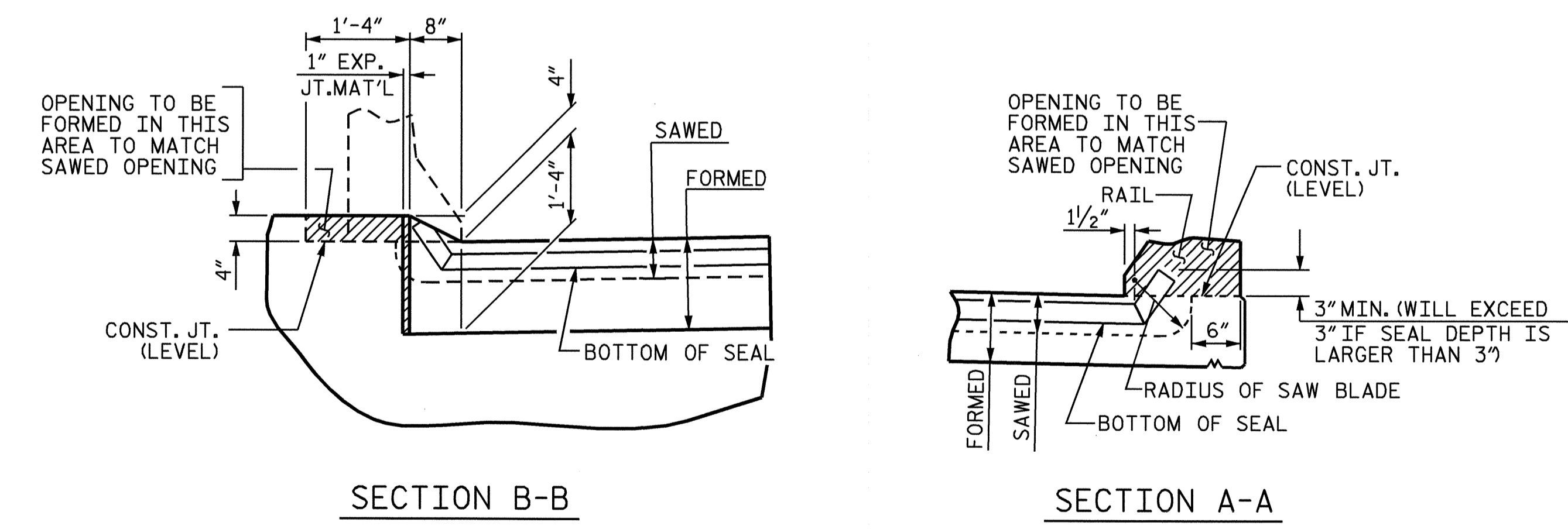
ELASTOMERIC CONCRETE	
END BENT NO.	ELASTOMERIC CONCRETE * (CU. FT.)
1	3.4
2	3.4
TOTAL	6.8

\* BASED ON THE MINIMUM BLOCKOUT SHOWN.



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



SECTION B-B

SECTION A-A

JOINT SEAL DETAILS @ END BENT

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

PROJECT NO. R-2000AF  
WAKE/DURHAM COUNTY  
STATION: 24+32.55 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S-31
STANDARD BRIDGE APPROACH SLAB DETAILS						
REVISIONS						TOTAL SHEETS 32
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			



ASSEMBLED BY : T. BANKOVICH	DATE : 8-2009
CHECKED BY : D.G. ELY	DATE : 9-2009
DRAWN BY : FCJ 11/88	REV. 10/17/00 RWW/LES
CHECKED BY : ARB 11/88	REV. 5/7/03 RWW/JTE
	REV. 5/1/06R MAA/KMM



**NOTES:**

FOR BRIDGE APPROACH FILL INCLUDING FABRIC, 4" Ø DRAINAGE PIPE, AND #78M STONE BACKFILL, SEE ROADWAY PLANS.

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

FABRIC SHALL BE TYPE 1 ENGINEERING FABRIC IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

#78M STONE BACKFILL (CLASS V SELECT MATERIAL) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

#78M STONE BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB WIDENING.

FOR THE 4" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

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

THE 6" COMP. A.B.C. SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB AND SHALL EXTEND 1'-0" OUTSIDE OF EXTERIOR 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 ROADWAY END OF THE APPROACH SLAB, AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB.

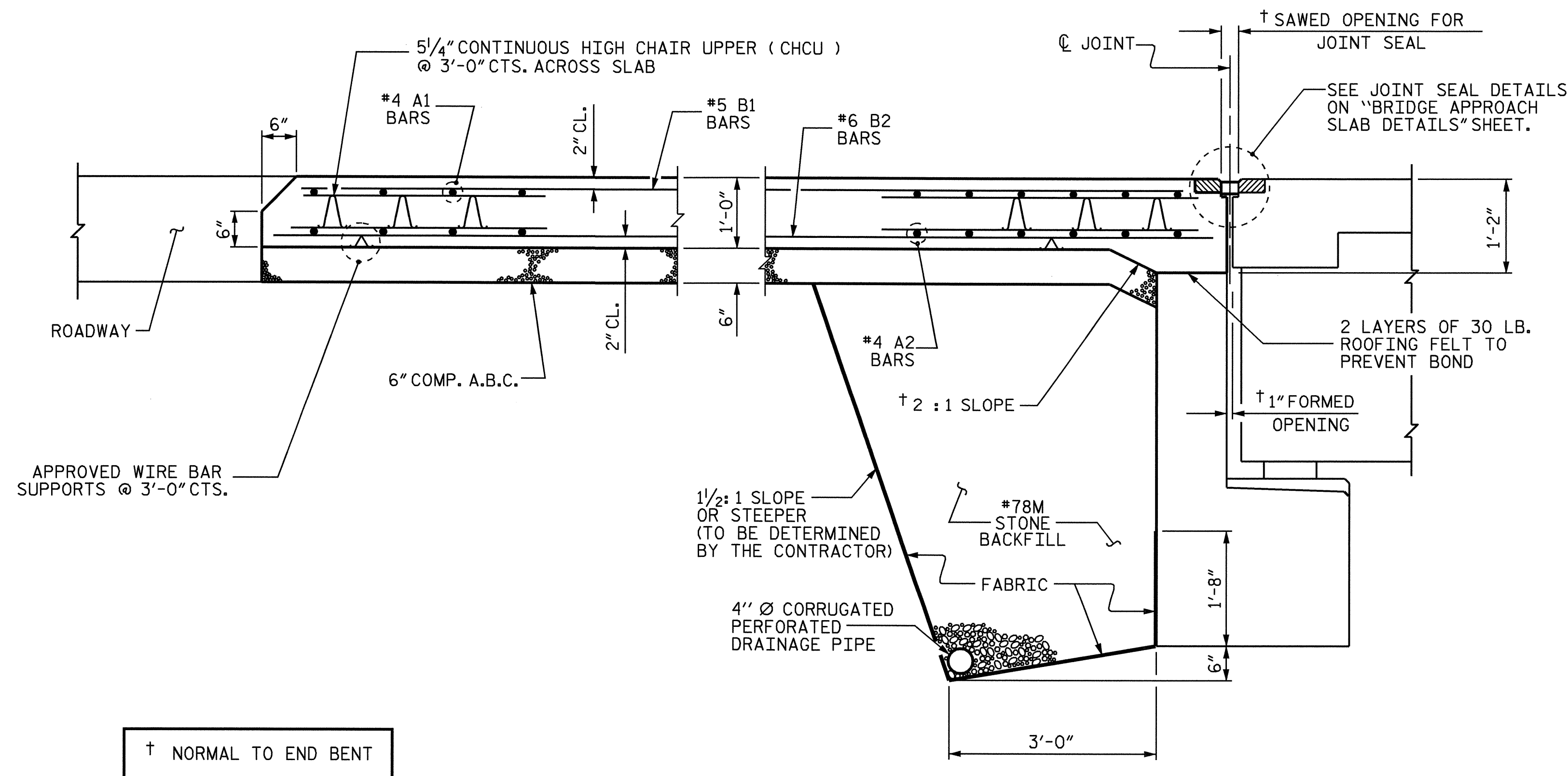
THE CONTRACTOR MAY USE 5" CLASS "A" CONCRETE BASE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE CONCRETE BASE SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB, AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB. THE CONCRETE SHALL BE FINISHED TO A SMOOTH SURFACE AND A LAYER 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.

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.

#6 D1 DOWELS TO BE ADHESIVELY ANCHORED IN EXISTING APPROACH SLAB. LEVEL ONE FIELD TESTING IS REQUIRED AND THE YIELD LOAD OF THE DOWELS IS 13.2 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS. OVERALL DOWEL LENGTH SHALL PROVIDE FOR 1'-6" MIN. EXTENSION INTO NEW APPROACH SLAB. EMBEDMENT LENGTH TO BE DETERMINED BY THE MANUFACTURER OF THE ADHESIVELY ANCHORED ANCHOR SYSTEM.



† NORMAL TO END BENT

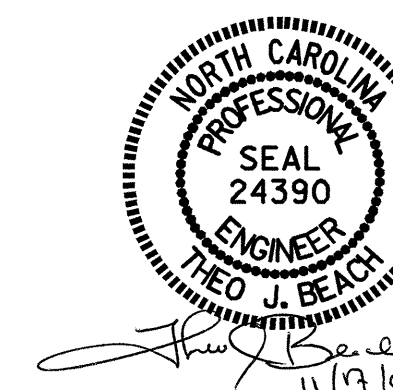
**SECTION THRU SLAB**

**BILL OF MATERIAL**

APPROACH SLAB @ END BENT No. 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	12	#4	STR	19'-11"	160
A2	12	#4	STR	19'-11"	160
* B1	38	#5	STR	11'-0"	436
B2	38	#6	STR	11'-7"	661
* D1	11	#6	STR	2'-4"	39
REINFORCING STEEL					821 LBS.
* EPOXY COATED REINFORCING STEEL					635 LBS.
CLASS AA CONCRETE					8.6 C.Y.
APPROACH SLAB @ END BENT No. 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	12	#4	STR	19'-11"	160
A2	12	#4	STR	19'-11"	160
* B1	38	#5	STR	11'-0"	436
B2	38	#6	STR	11'-7"	661
* D1	11	#6	STR	2'-4"	39
REINFORCING STEEL					821 LBS.
* EPOXY COATED REINFORCING STEEL					635 LBS.
CLASS AA CONCRETE					8.6 C.Y.

ASSEMBLED BY : T. BANKOVICH	DATE : 8-2009
CHECKED BY : D.G. ELY	DATE : 9-2009
DRAWN BY : EEM 3/95	REV. 7/10/01 LES/RDR
CHECKED BY : VAP 3/95	REV. 5/1/03R RWW/JTE
	REV. 5/1/06R KMM/GM

12-NOV-2009 13:03  
r:\structures\misc.draw\2000af\_sd.as.dgn  
tjbankovich



PROJECT NO. R-2000AF  
WAKE/DURHAM COUNTY  
STATION: 24+32.55 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
TOTAL SHEETS					32

STD. NO. BAS4 (SHT 6)

## 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.

# ENGLISH

JANUARY, 1990

STD. NO. SN