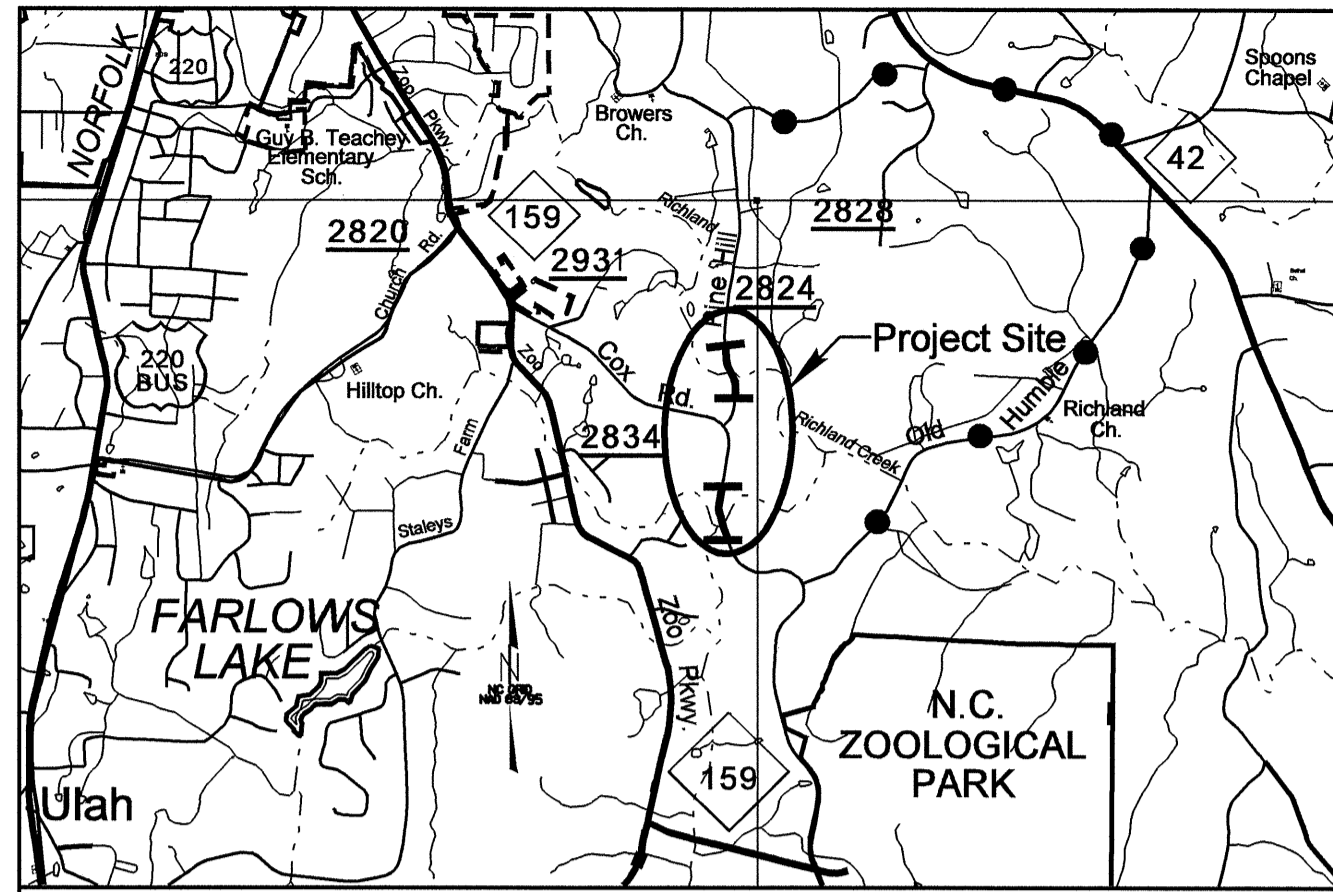


TIP PROJECT: B-4245 / B-4246
CONTRACT: C201772

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

RANDOLPH COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4245 / B-4246		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33588.1.1	BRZ-2824(4)	B-4245 (P.E.)	
33589.1.1	BRZ-2834(1)	B-4246 (P.E.)	
33588.2.1	BRZ-2824(4)	B-4245 (RW & UTL.)	
33589.2.1	BRZ-2834(1)	B-4246 (RW & UTL.)	
33588.3.1	BRZ-2824(4)	B-4245&B-4246 (CONST.)	

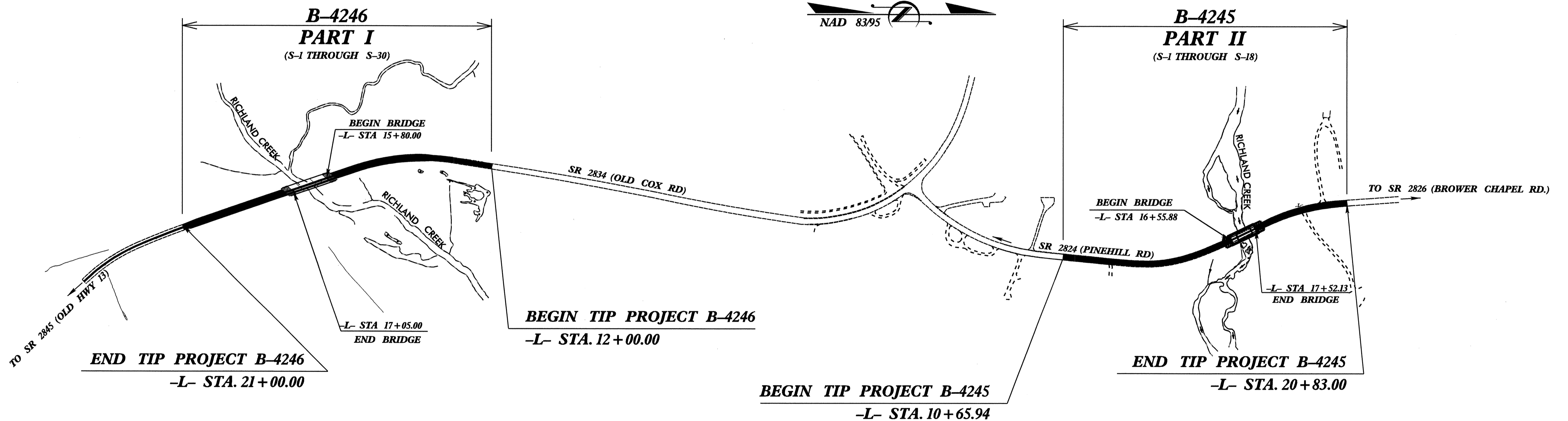


VICINITY MAP

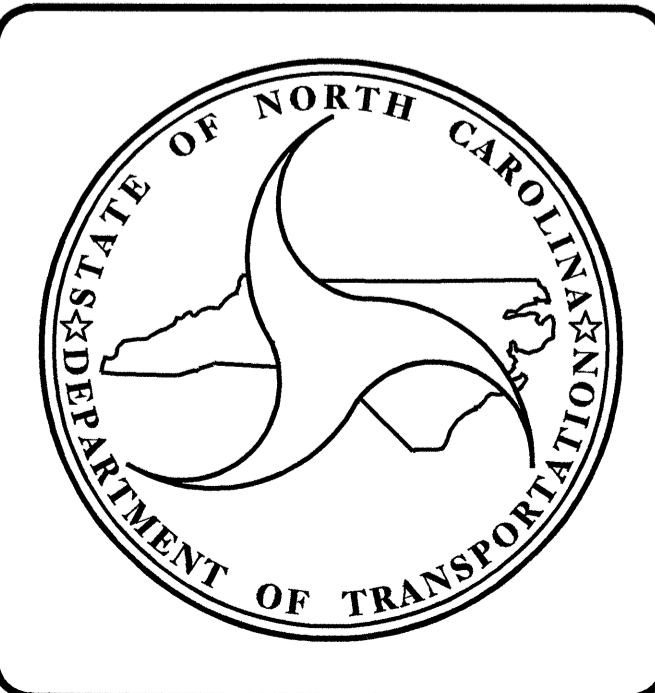
--- OFF-SITE DETOUR

**LOCATION: BRIDGE NO. 228 OVER RICHLAND CREEK
 ON SR 2834; BRIDGE NO. 257 OVER RICHLAND CREEK
 ON SR 2824**

TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURES



STRUCTURES



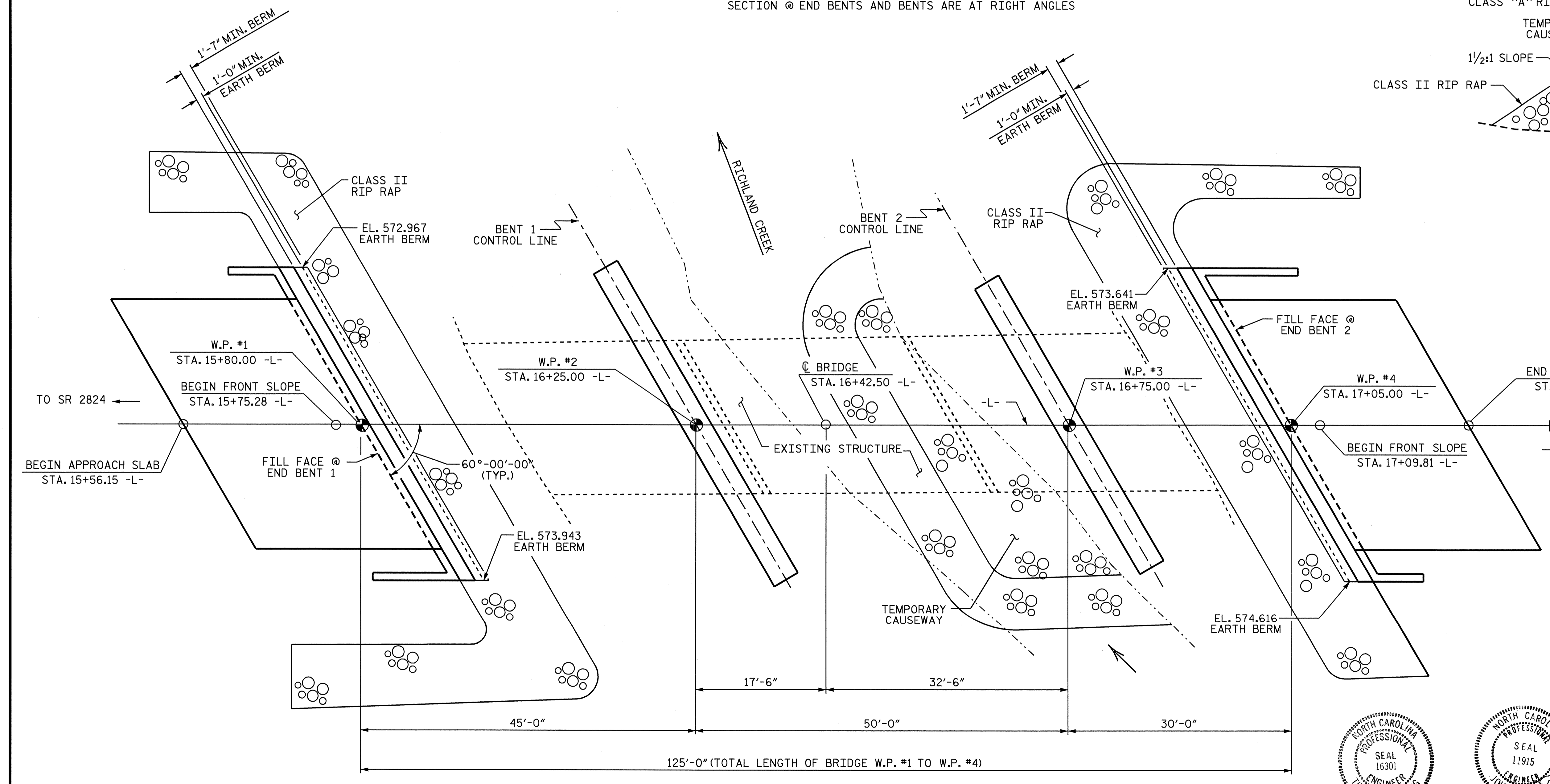
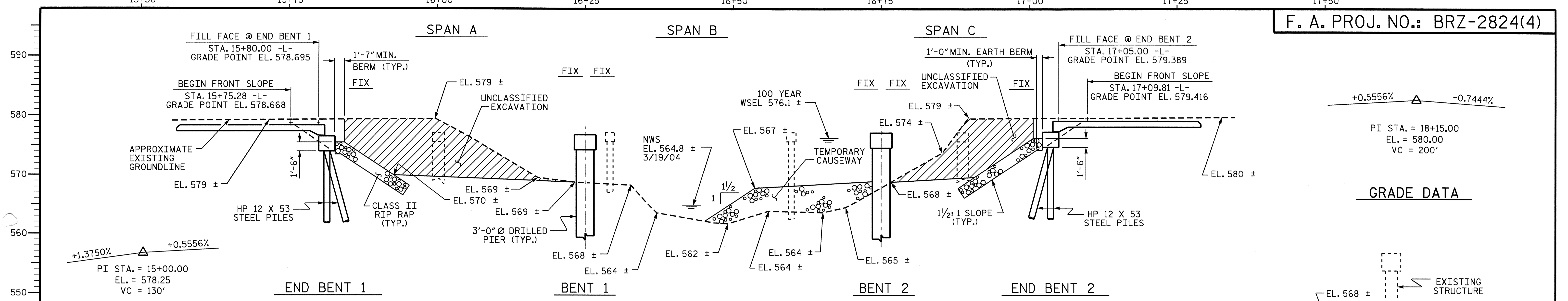
DESIGN DATA	
B-4245	B-4246
ADT 2006 = 800	ADT 2008 = 3535
ADT 2026 = 1700	ADT 2028 = 6435
DHV = 13 %	DHV = 13 %
D = 2 %	D = 60 %
T = 3 % *	T = 3 % *
V = 40 MPH	V = 60 MPH
* TTST = 1% + DUAL = 2%	
FUNC. CLASS = RURAL LOCAL	

PROJECT LENGTH
LENGTH ROADWAY TIP PROJECT B-4245/4246 = 0.321 MILES
LENGTH STRUCTURE TIP PROJECT B-4245/4246 = 0.042 MILES
TOTAL LENGTH OF TIP PROJECT B-4245/4246 = 0.363 MILES

Prepared in the Office of: DIVISION OF HIGHWAYS	
2006 STANDARD SPECIFICATIONS	R. M. GIROLAMI, PE J. C. FRYE, PE PROJECT ENGINEER
LETTING DATE: FEBRUARY 19, 2008	L. E. SUTTON, PE T. H. FANG, PE PROJECT DESIGN ENGINEER

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

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA
P.E. STATE DESIGN ENGINEER



PROJECT NO. B-4246
RANDOLPH COUNTY
 STATION: 16+42.50 -L-
 SHEET 1 OF 3 REPLACES BRIDGE NO. 228

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

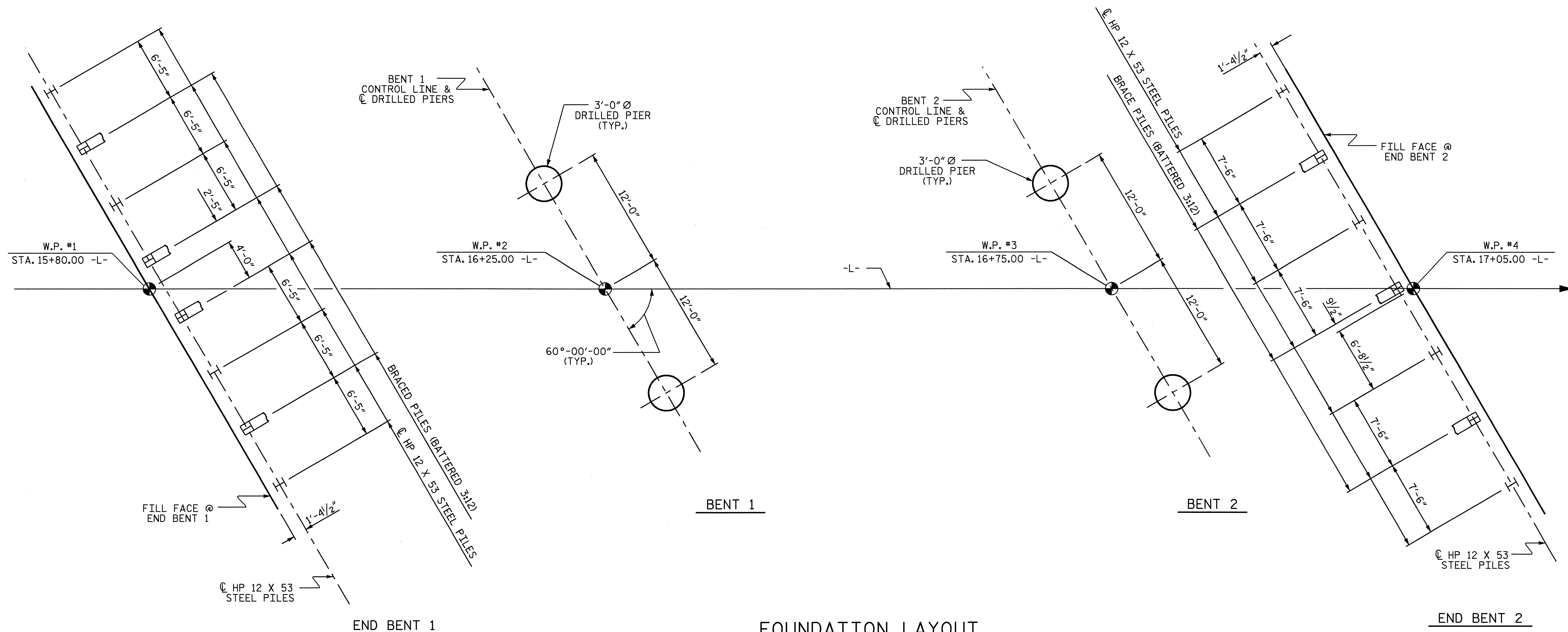
**GENERAL DRAWING
 FOR BRIDGE OVER
 RICHLAND CREEK
 ON SR 2834 BETWEEN
 SR 2824 AND SR 2830**

DRAWN BY : D. G. ELY DATE : 1/07
 CHECKED BY : A. A. COLE DATE : 4/07

PROFESSIONAL SEAL
 NORTH CAROLINA
 SEAL 16301
 ENGINEER
 TING HSUNG FANG
 11/13/07

PROFESSIONAL SEAL
 NORTH CAROLINA
 SEAL 11915
 ENGINEER
 JAMES G. FREDRICKS
 11/13/07

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



FOUNDATION LAYOUT

DIMENSIONS LOCATING END BENT PILES AND BENT DRILLED PIERS ARE SHOWN TO CENTERLINE OF PILES AND DRILLED PIERS.

NOTES

DRIVE PILES AT END BENTS NO.1 AND 2 TO A REQUIRED BEARING CAPACITY OF 100 TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO.

THE ALLOWABLE BEARING CAPACITY FOR PILES AT END BENTS NO.1 AND 2 IS 50 TONS PER PILE.

STEEL PILE POINTS ARE REQUIRED FOR STEEL PILES AT END BENT NO.2. SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

DRILLED PIERS AT BENTS NO.1 AND 2 ARE DESIGNED FOR BOTH SKIN FRICTION AND END BEARING. CHECK FIELD CONDITIONS FOR THE REQUIRED END BEARING CAPACITY OF 80 TSF.

DRILLED PIERS AT BENTS NO.1 AND 2 ARE DESIGNED FOR AN APPLIED LOAD OF 210 TONS EACH AT THE TOP OF THE COLUMN.

PERMANENT STEEL CASING MAY BE REQUIRED FOR DRILLED PIERS AT BENT NO.1. IF REQUIRED, DO NOT EXTEND THE CASING BELOW ELEVATION 559 FEET WITHOUT PRIOR APPROVAL FROM THE ENGINEER. SEE DRILLED PIERS SPECIAL PROVISION.

PERMANENT STEEL CASING MAY BE REQUIRED FOR DRILLED PIERS AT BENT NO.2. IF REQUIRED, DO NOT EXTEND THE CASING BELOW ELEVATION 558 FEET WITHOUT PRIOR APPROVAL FROM THE ENGINEER. SEE DRILLED PIERS SPECIAL PROVISION.

DRILLED PIERS AT BENT NO.1 SHALL EXTEND TO AN ELEVATION NO HIGHER THAN 540 FEET (LEFT) AND 527 FEET (RIGHT) AND SATISFY THE REQUIRED END BEARING CAPACITY.

DRILLED PIERS AT BENT NO.2 SHALL EXTEND TO AN ELEVATION NO HIGHER THAN 540 FEET (LEFT) AND 539 FEET (RIGHT) AND SATISFY THE REQUIRED END BEARING CAPACITY.

THE SCOUR CRITICAL ELEVATIONS FOR BENT NO.1 ARE ELEVATION 542 FEET (LEFT) AND 544 FEET (RIGHT). SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

THE SCOUR CRITICAL ELEVATIONS FOR BENT NO.2 ARE ELEVATION 543 FEET (LEFT) AND 542 FEET (RIGHT). SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

FOR DRILLED PIERS, SEE DRILLED PIERS SPECIAL PROVISIONS.

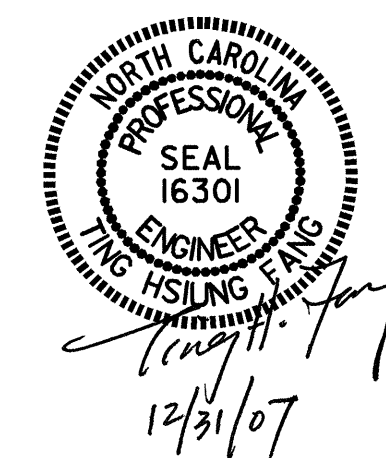
SPT TESTING IS REQUIRED TO DETERMINE THE END BEARING CAPACITY OF THE DRILLED PIERS AT BENTS NO.1 AND 2. SEE DRILLED PIERS SPECIAL PROVISIONS.

SID INSPECTIONS MAY BE REQUIRED TO INSPECT THE BOTTOM CLEANLINESS OF THE DRILLED PIERS AT BENTS NO.1 AND 2. THE ENGINEER WILL DETERMINE THE NEED FOR SID INSPECTIONS. SEE DRILLED PIERS SPECIAL PROVISIONS.

CSL TUBES ARE REQUIRED AND CSL TESTING MAY BE REQUIRED FOR THE DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR CSL TESTING. SEE CROSSHOLE SONIC LOGGING SPECIAL PROVISION.

PROJECT NO. B-4246
RANDOLPH COUNTY
 STATION: 16+42.50 -L-

SHEET 2 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE OVER
 RICHLAND CREEK
 ON SR 2834 BETWEEN
 SR 2824 AND SR 2830

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

DRAWN BY : D. G. ELY DATE : 1/07
 CHECKED BY : A. A. COLE DATE : 4/07

TOTAL BILL OF MATERIAL

	CONST., MAINT. & REMOVAL OF TEMP. ACCESS	REMOVAL OF EXISTING STRUCTURE	3'-0" DIA. DRILLED PIERS IN SOIL	3'-0" DIA. DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 3'-0" DIA. DRILLED PIER	SID INSPECTION	SPT TESTING	CROSSHOLE SONIC LOGGING	UNCLASSIFIED STRUCTURE EXCAVATION	CONCRETE WEARING SURFACE	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	HP 12 X 53 STEEL PILES	STEEL PILE POINTS	TWO BAR METAL RAIL	1'-2" X 2'-11" CONCRETE PARAPET	RIP RAP CLASS II (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE	ELASTOMERIC BEARINGS	EVAZOTE JOINT SEALS	3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS		
	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	EACH	EACH	EACH	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	LBS.	NO.	LIN. FT.	NO.	LIN. FT.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	LUMP SUM	NO.	LIN. FT.
SUPERSTRUCTURE										4,100	5,123		LUMP SUM					228.46	244.80			LUMP SUM	LUMP SUM	36	1465.38	
END BENT 1												15.9		2,384		8	280				120	130				
BENT 1			74.7	8.3	28.1		2							9,553	1,736											
BENT 2			60.0	7.5	30.6		2							8,597	1,418											
END BENT 2												15.9		2,377		7	210	7			100	110				
TOTAL	LUMP SUM	LUMP SUM	134.7	15.8	58.7	2	4	1	LUMP SUM	4,100	5,123	78.6	LUMP SUM	22,911	3,154	15	490	7	228.46	244.80	220	240	LUMP SUM	LUMP SUM	36	1465.38

HYDRAULIC DATA

DESIGN DISCHARGE	=	2200 CFS
FREQUENCY OF DESIGN FLOOD	=	25 YRS.
DESIGN HIGH WATER ELEVATION	=	574.3
DRAINAGE AREA	=	10.6 SQ. MI.
BASIC DISCHARGE (Q100)	=	3300 CFS
BASIC HIGH WATER ELEVATION	=	576.1

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	=	5135 CFS
FREQUENCY OF OVERTOPPING FLOOD	=	500 YRS.+
OVERTOPPING FLOOD ELEVATION	=	576.9

NOTES

ASSUMED LIVE LOAD = HS 20 OR ALTERNATE LOADING. EXCEPT CORED SLAB UNITS HAVE BEEN DESIGNED FOR HS25.

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

FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.

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

THE EXISTING STRUCTURE CONSISTING OF 3 SPANS @ 31'-0" WITH REINFORCED CONCRETE DECK ON I-BEAMS WITH A CLEAR ROADWAY OF 19.5 FEET ON RC CAPS ON TIMBER PILES LOCATED AT THE SITE OF THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE FURTHER DETERIORATE, THIS LOAD LIMITATION MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL REMOVE THE BRIDGE AND SUBMIT PLANS FOR DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF THE 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.

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.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 16+42.50 -L-".

AT THE CONTRACTOR'S OPTION, AND UPON REMOVAL OF THE CAUSEWAY, THE CLASS II RIP RAP USED IN THE CAUSEWAY MAY BE PLACED AS RIP RAP SLOPE PROTECTION. SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS AT STATION 16+42.50 -L-.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON S-1 SHALL BE EXCAVATED FOR A DISTANCE OF 25 FT. EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION.

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.

THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH HEC 18, "EVALUATING SCOUR AT BRIDGES", MAY, 2001.

FOR CONCRETE WEARING SURFACE, SEE SPECIAL PROVISIONS.

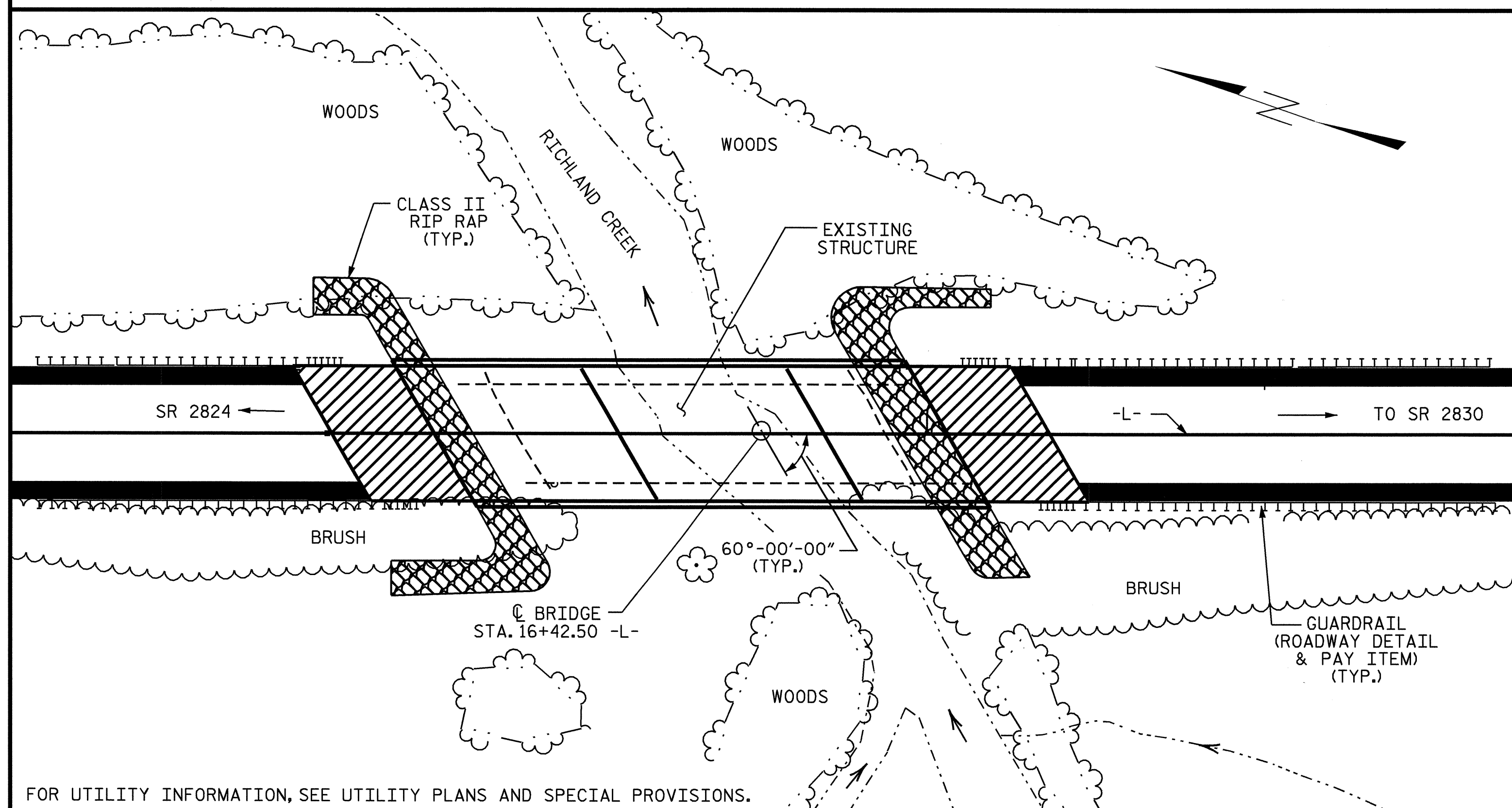
FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

BENCHMARK #2: RAILROAD SPIKE IN BASE OF HIGH TENSION POWER POLE, 92.70' LEFT OF STA. 18+18.33 -L-, EL. 576.59'.



LOCATION SKETCH

DRAWN BY: D. G. ELY DATE: 1/07
 CHECKED BY: A. A. COLE DATE: 4/07

PROJECT NO. B-4246
 RANDOLPH COUNTY
 STATION: 16+42.50 -L-

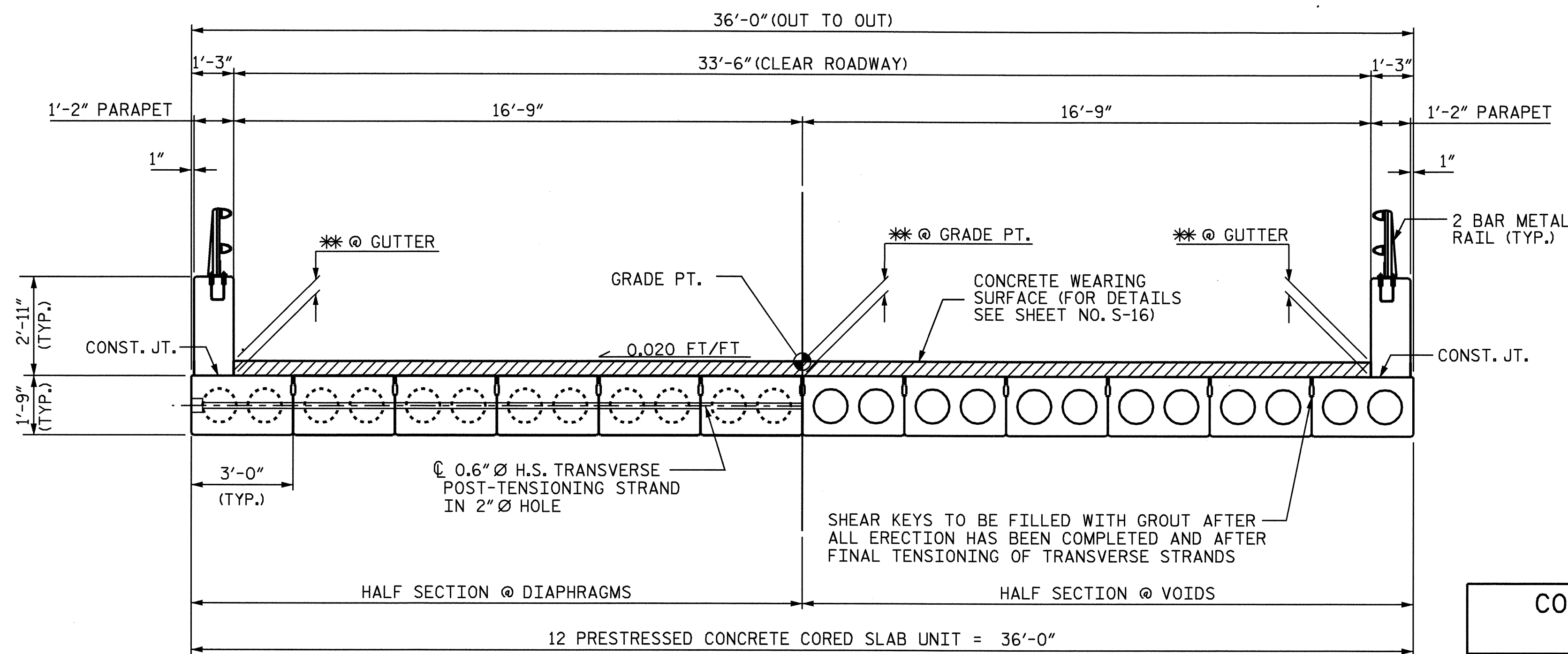
SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**GENERAL DRAWING
 FOR BRIDGE OVER
 RICHLAND CREEK
 ON SR 2834 BETWEEN
 SR 2824 AND SR 2830**

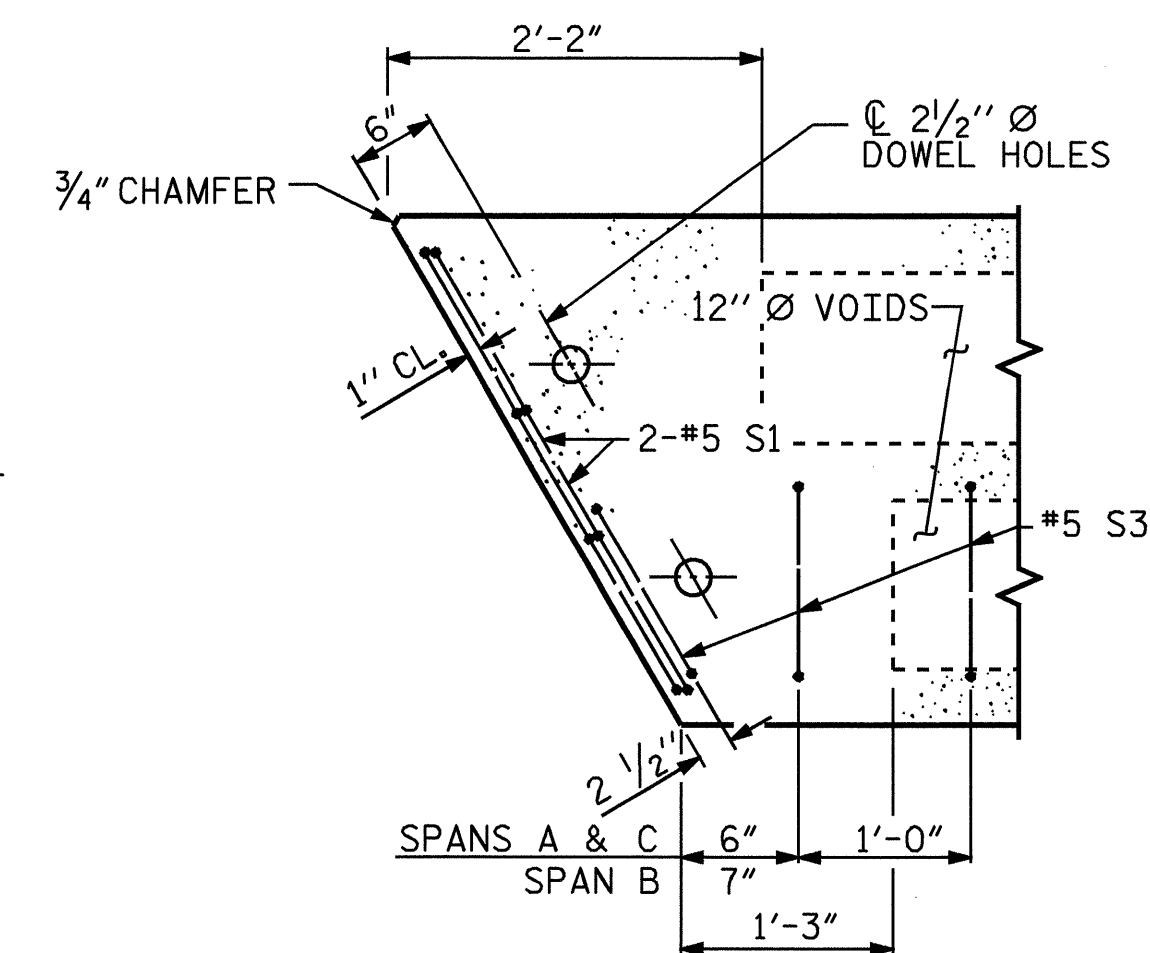


REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3	
1			3			TOTAL SHEETS	
2			4			30	



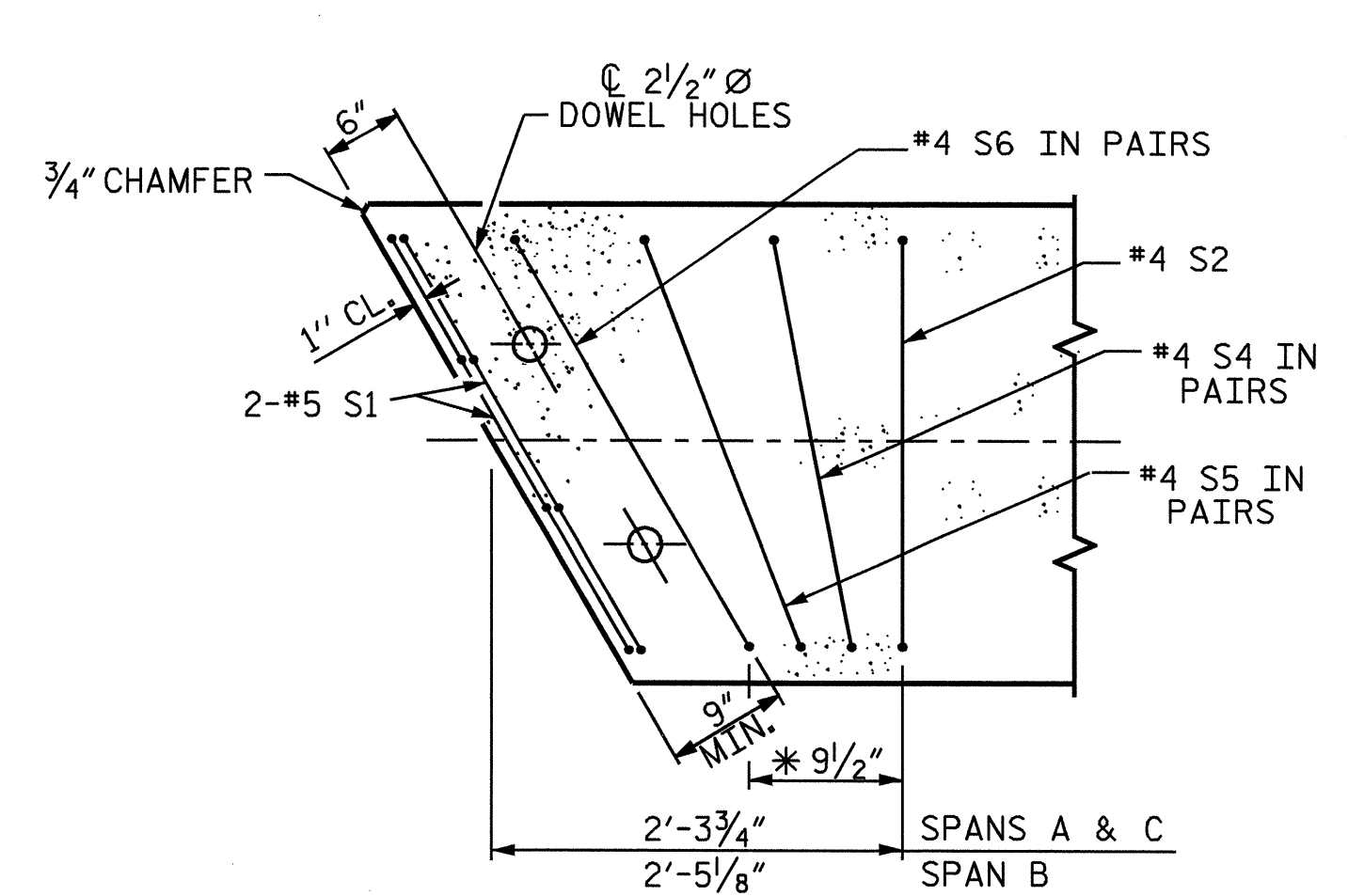
TYPICAL SECTION

** BASED ON PREDICTED FINAL CAMBER AND THEORETICAL GRADE LINE ELEVATIONS



PART PLAN-EXTERIOR SECTION

NOTE: EXTERIOR SECTION SHOWN-INTERIOR SECTION SIMILAR EXCEPT OMIT S3 BARS.



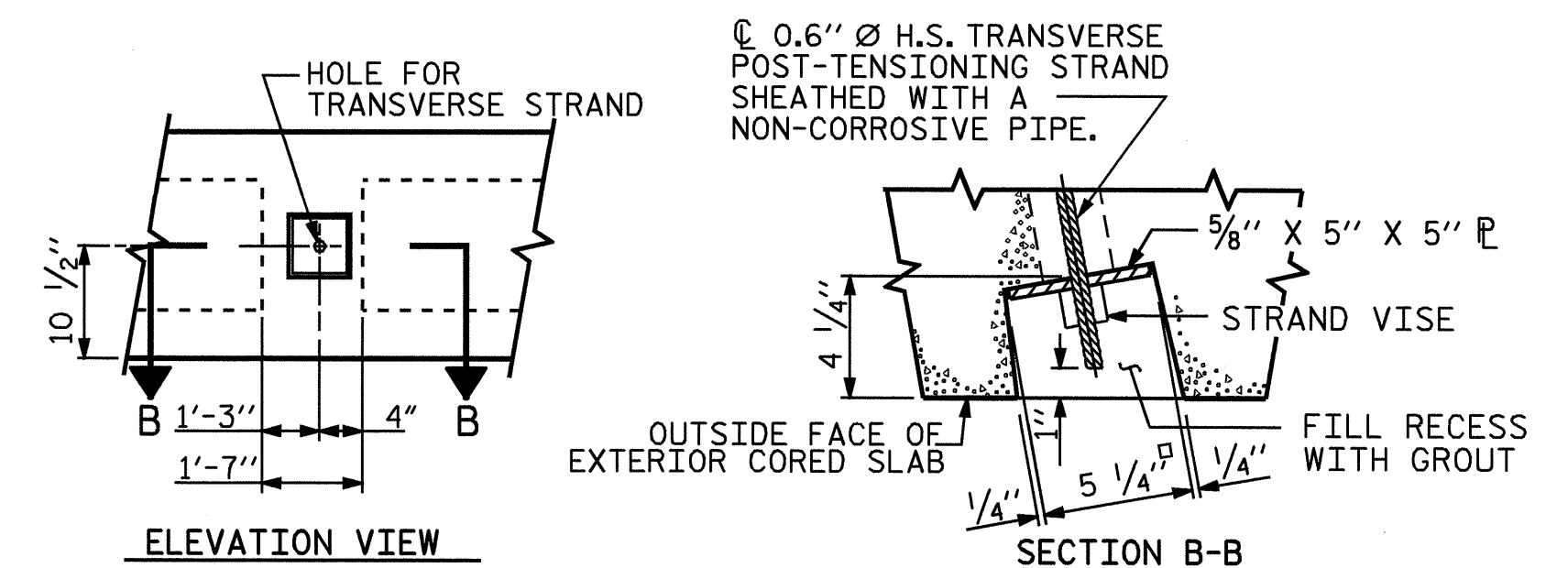
PART PLAN-END OF CORED SLAB UNIT

** #4 'S' BARS @ APPROX. EQ. SPA.

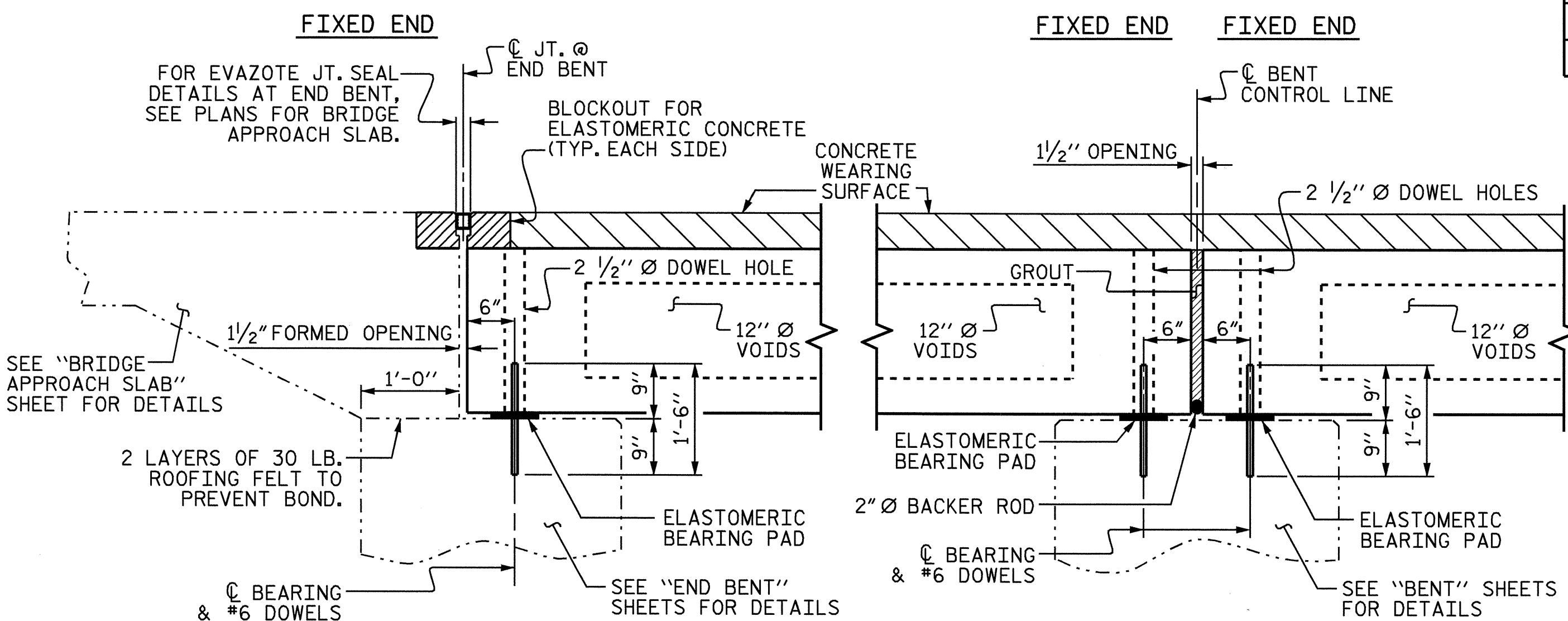
CONCRETE WEARING SURFACE THICKNESS TABLE

SPAN	** AT \bar{C} BEARINGS		** AT MID-SPAN	
	GUTTERS	GRADE PT.	GUTTERS	GRADE PT.
A	5"	5"	3 7/8"	3 7/8"
B	5"	5"	3 5/8"	3 5/8"
C	5"	5"	4 5/8"	4 5/8"

NOTE: THICKNESS VARIES BETWEEN \bar{C} BEARING AND MID-SPAN FOR ALL SPANS.

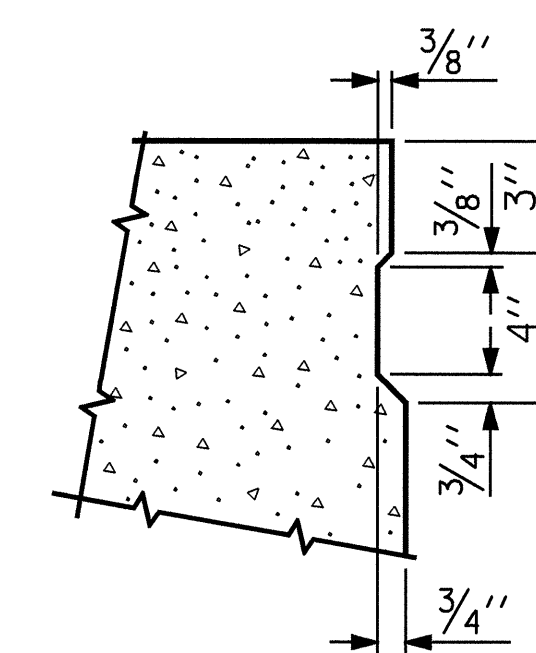


GROUTED RECESS @ END OF POST-TENSIONED STRAND



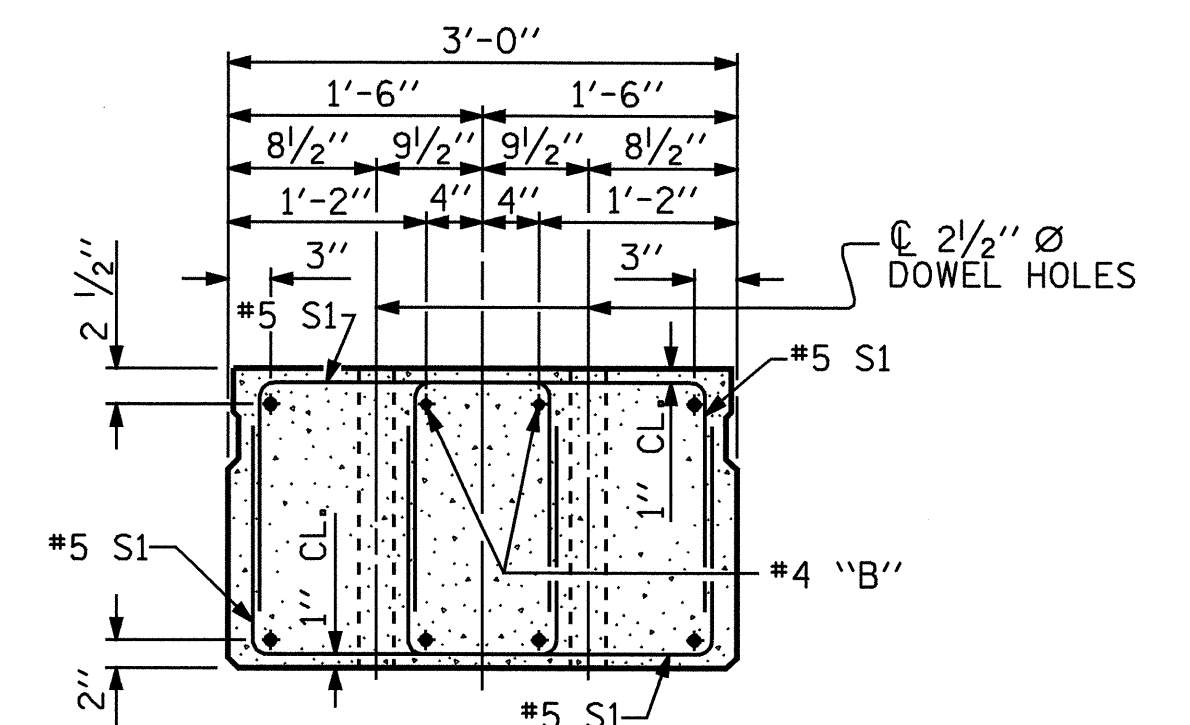
SECTION AT END BENTS

SECTION AT BENTS 1 & 2



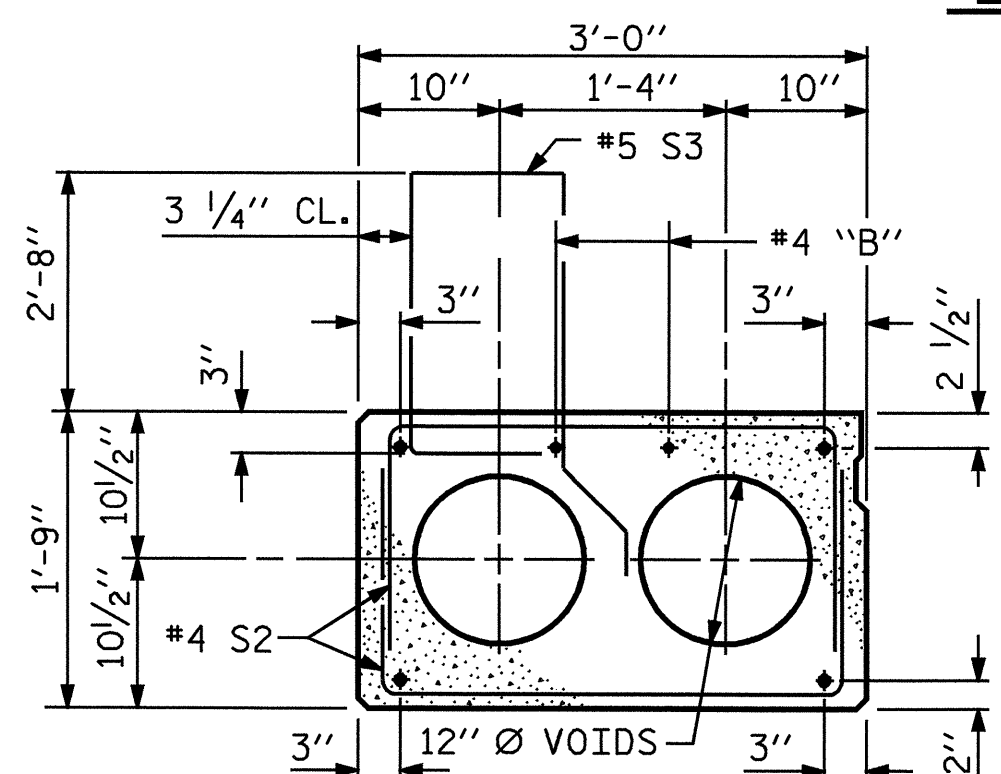
SHEAR KEY DETAIL

NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.



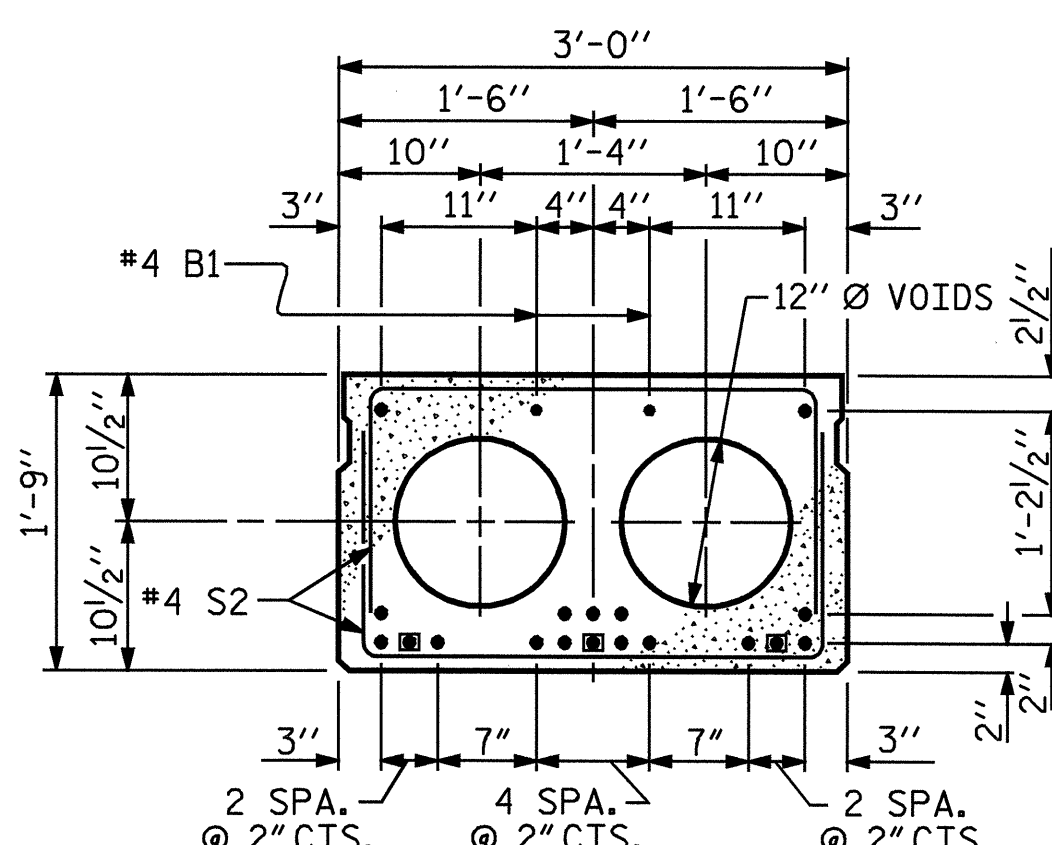
END ELEVATION

SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN). INTERIOR SLAB SECTION SHOWN-EXTERIOR SLAB SECTION SIMILAR EXCEPT SHEAR KEY.

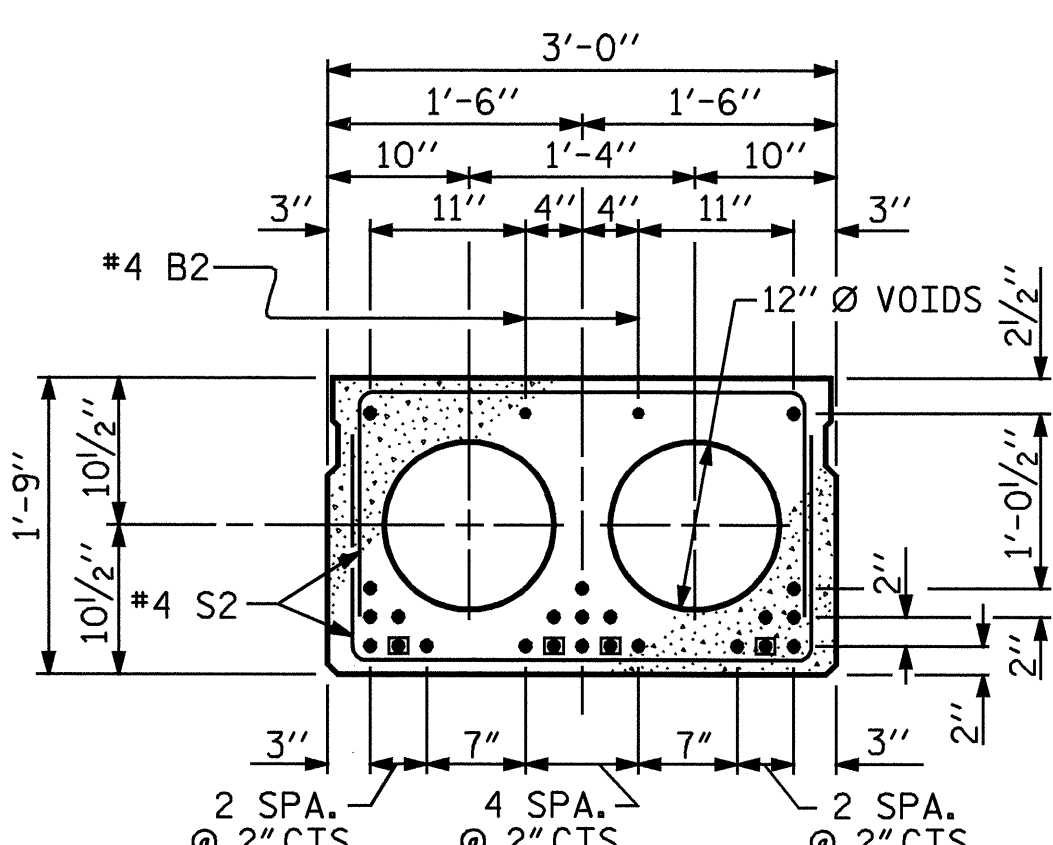


EXTERIOR SLAB SECTION

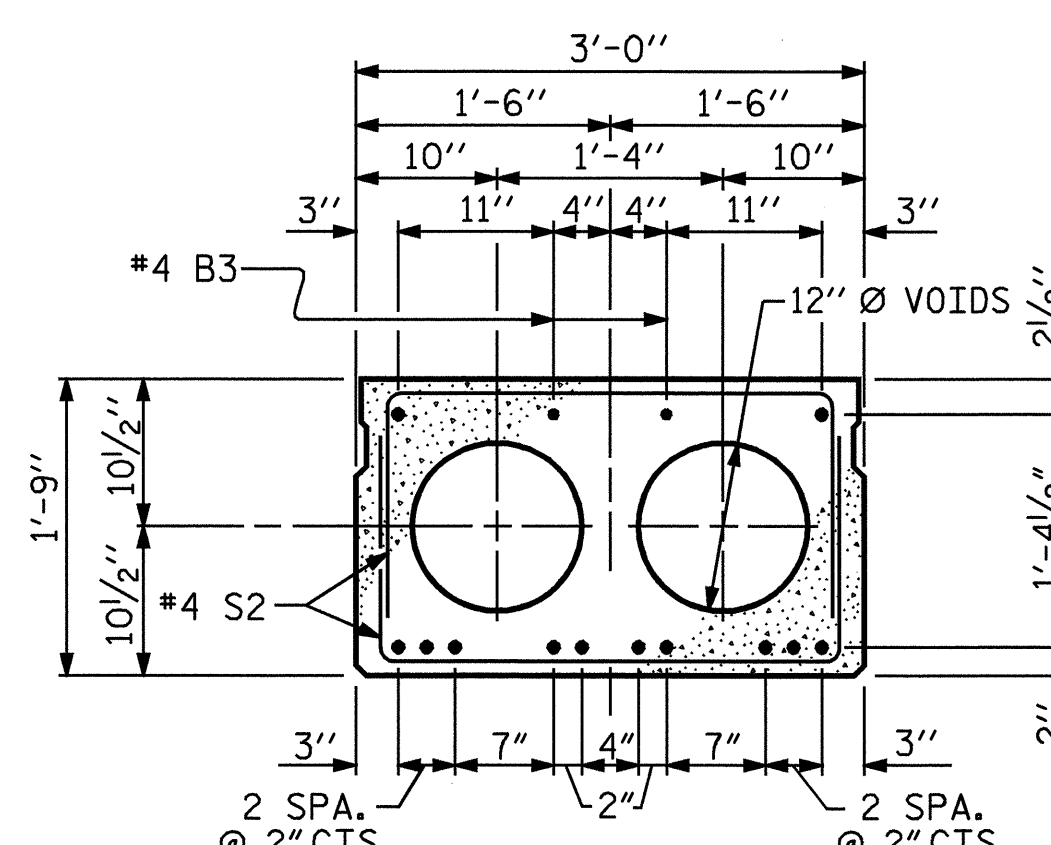
(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)



INTERIOR SLAB SECTION SPAN A
(18 STRANDS 3 SHEATHED)



INTERIOR SLAB SECTION SPAN B
(23 STRANDS, 4 SHEATHED)



INTERIOR SLAB SECTION SPAN C
(12 STRANDS)

■ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 4'-0" FROM END OF CORED SLAB UNIT, SEE STANDARD SPECIFICATIONS ARTICLE 1078-7.

1/2" \bar{O} LOW RELAXATION STRAND LAYOUT

PROJECT NO. B-4246
RANDOLPH COUNTY
 STATION: 16+42.50 -L-

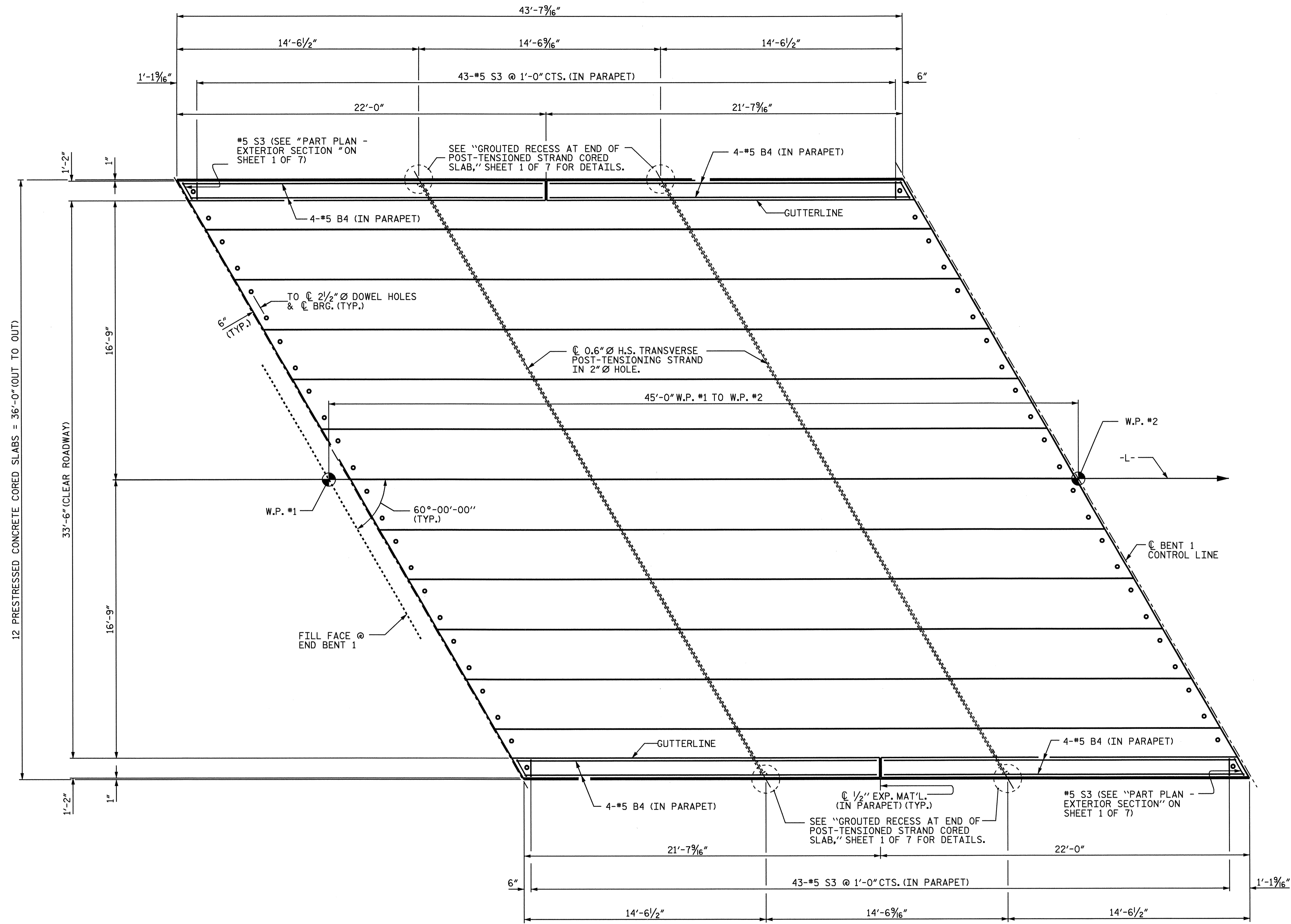
SHEET 1 OF 7

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 STANDARD
 3'-0" X 1'-9"
 PRESTRESSED CONCRETE
 CORED SLAB UNIT



ASSEMBLED BY : T.L. CLELLAND DATE : 12/20/06
 CHECKED BY : A.A. COLE DATE : 04/12/07
 DRAWN BY : WJH 4/89 REV. 10/17/00 RWW/LES
 CHECKED BY : FCJ 5/89 REV. 7/10/01RR RWW/LES
 REV. 5/1/06 TLA/GM

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



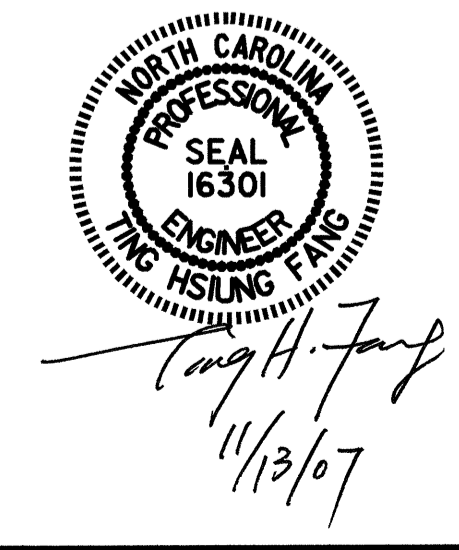
SPAN A

FOR ADDITIONAL CORED SLAB UNIT DETAILS, SEE SHEET 5 OF 7

PROJECT NO. B-4246
RANDOLPH COUNTY
 STATION: 16+42.50 -L-

SHEET 2 OF 7

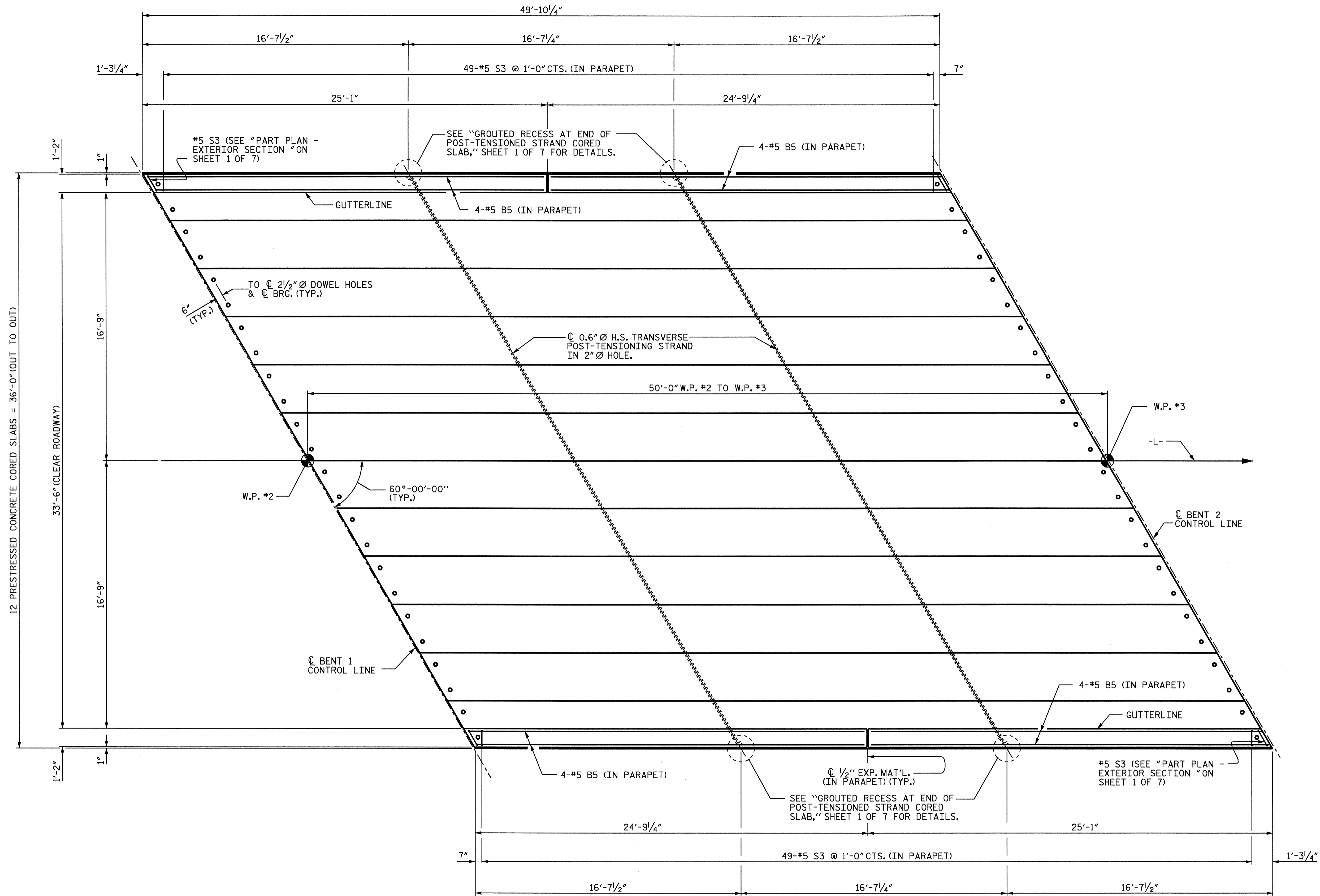
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPAN
 SPAN A



DRAWN BY : T.L. CLELLAND DATE : 12/20/06
 CHECKED BY : A.A. COLE DATE : 04/12/07

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			30

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 qtnguyen



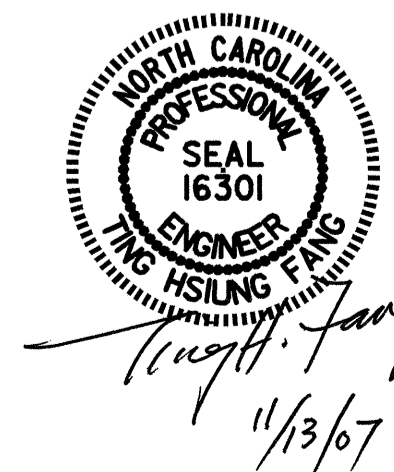
SPAN B

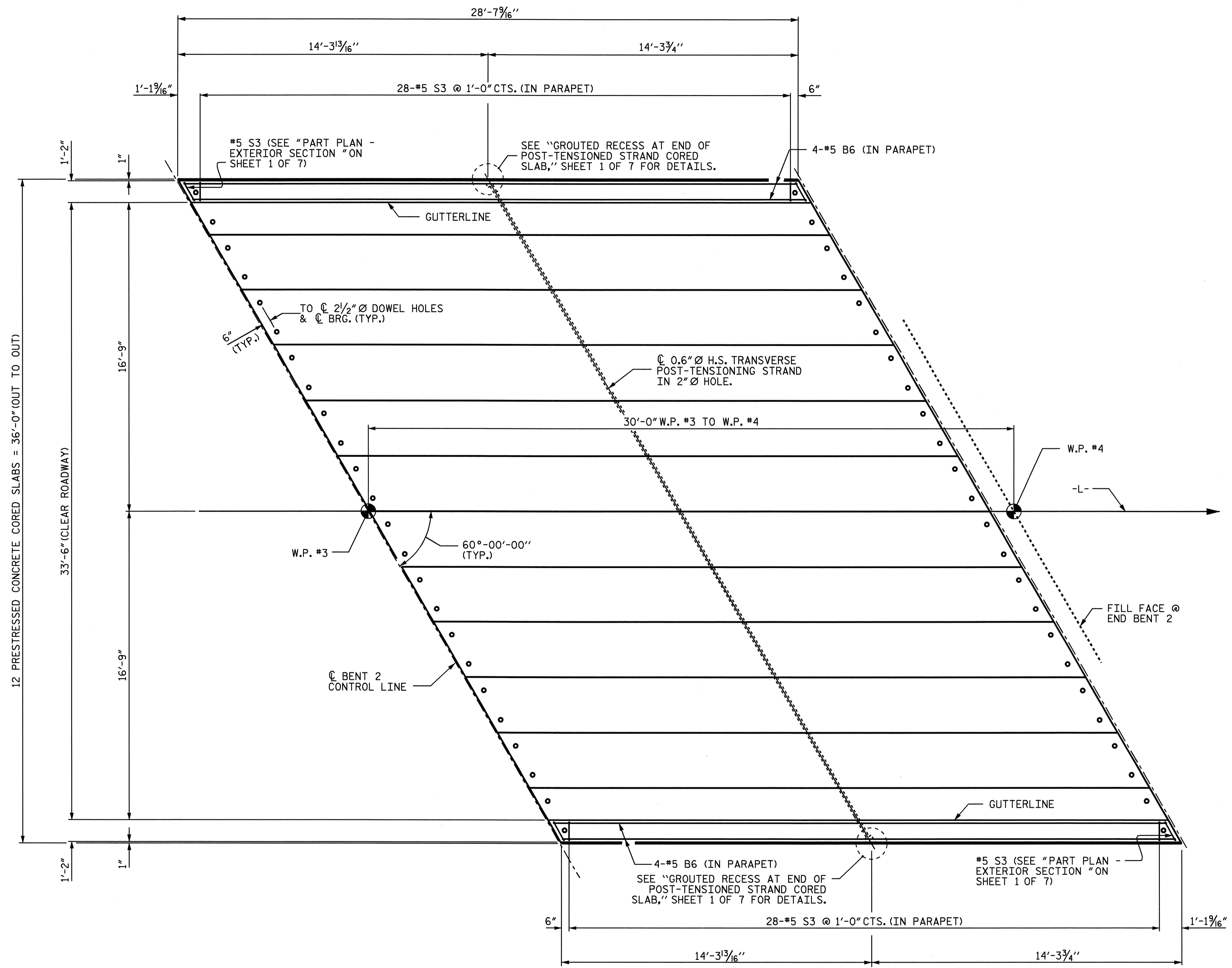
FOR ADDITIONAL CORED SLAB UNIT DETAILS, SEE SHEET 6 OF 7

PROJECT NO. B-4246
RANDOLPH COUNTY
 STATION: 16+42.50 -L-
 SHEET 3 OF 7

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO.
SUPERSTRUCTURE						S-6
PLAN OF SPAN						TOTAL SHEETS
SPAN B						30
REVISIONS						
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

DRAWN BY : T.L. CLELLAND DATE : 12/20/06
 CHECKED BY : A.A. COLE DATE : 04/12/07



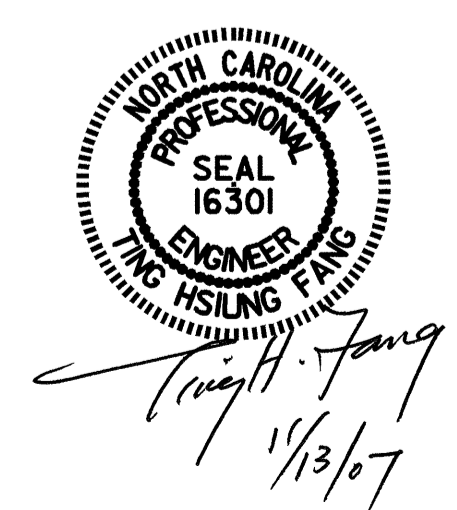


SPAN C

FOR ADDITIONAL CORED SLAB UNIT DETAILS, SEE SHEET 7 OF 7

PROJECT NO. B-4246
RANDOLPH COUNTY
 STATION: 16+42.50 -L-
 SHEET 4 OF 7

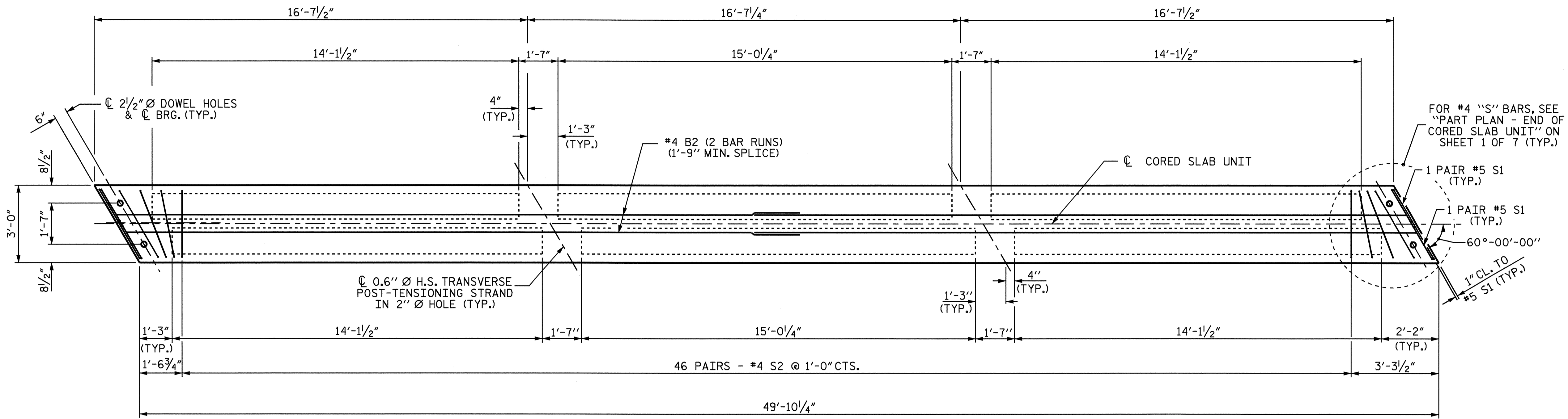
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPAN
 SPAN C



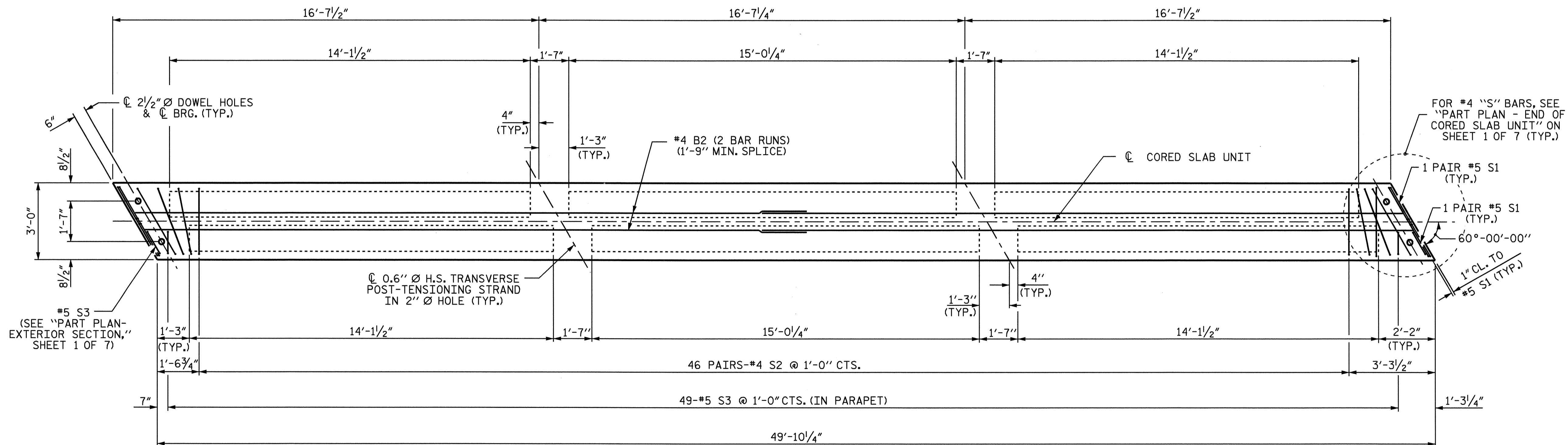
DRAWN BY : T.L. CLELLAND DATE : 12/20/06
 CHECKED BY : A.A. COLE DATE : 04/12/07

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			30

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 qtnguyen



PLAN OF INTERIOR CORED SLAB UNIT

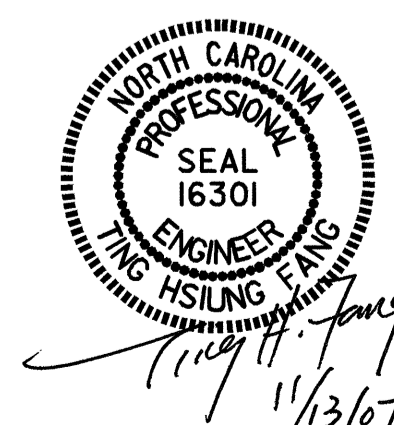


PLAN OF EXTERIOR CORED SLAB UNIT

PROJECT NO. B-4246
RANDOLPH COUNTY
 STATION: 16+42.50 -L-

SHEET 6 OF 7

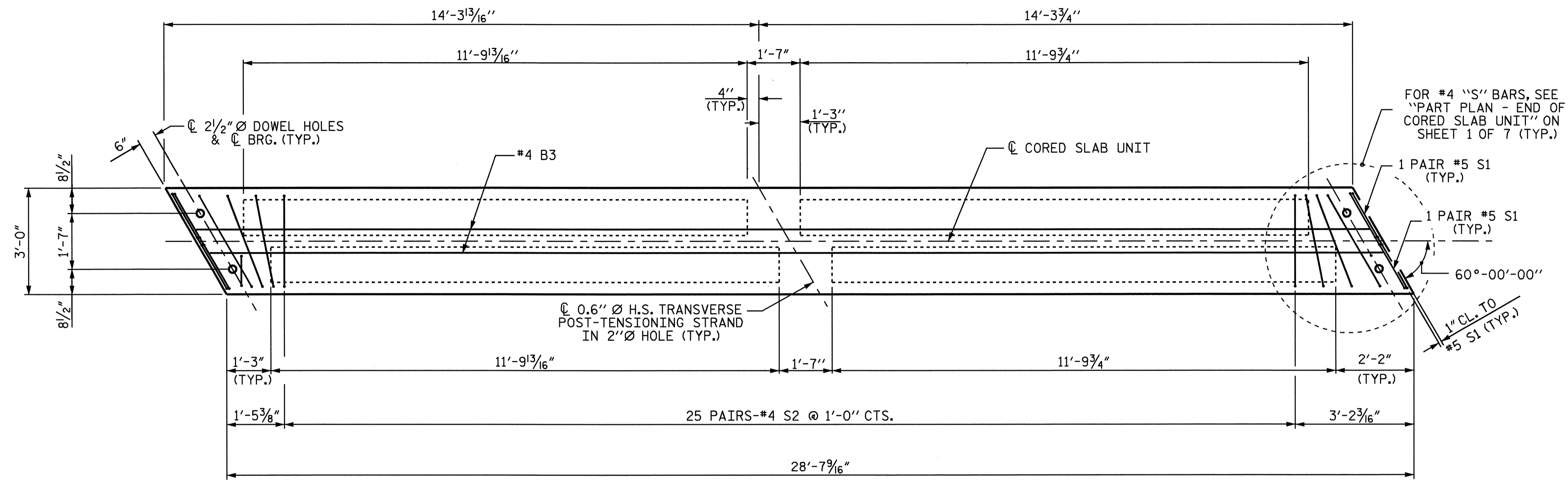
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPAN
 CORED SLAB UNIT
 DETAILS
 SPAN B



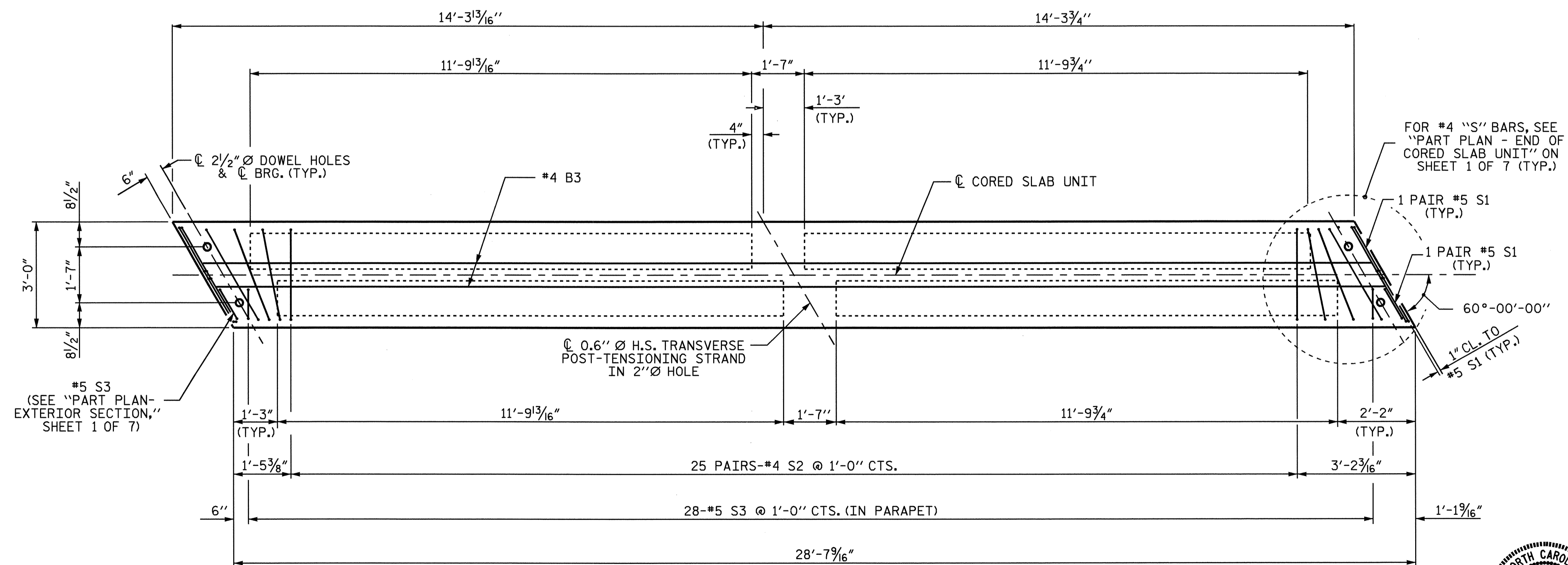
DRAWN BY: T.L. CLELLAND DATE: 12/20/06
 CHECKED BY: A.A. COLE DATE: 04/12/07

13-NOV-2007 14:16
 g:\STRUCTURE\Final.dwg b-4246.dwg
 qtnguyen

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			30



PLAN OF INTERIOR CORED SLAB UNIT



PLAN OF EXTERIOR CORED SLAB UNIT

FOR #4 "S" BARS, SEE "PART PLAN - END OF CORED SLAB UNIT" ON SHEET 1 OF 7 (TYP.)

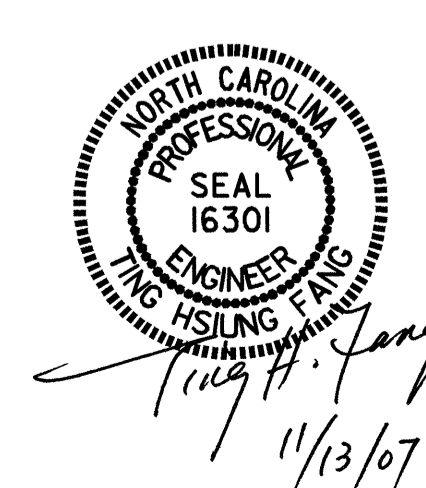
FOR #4 "S" BARS, SEE "PART PLAN - END OF CORED SLAB UNIT" ON SHEET 1 OF 7 (TYP.)

#5 S3 (SEE "PART PLAN - EXTERIOR SECTION," SHEET 1 OF 7)

PROJECT NO. B-4246
 RANDOLPH COUNTY
 STATION: 16+42.50 -L-

SHEET 7 OF 7

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPAN
 CORED SLAB UNIT
 DETAILS
 SPAN C



DRAWN BY : T.L. CLELLAND DATE : 12/20/06
 CHECKED BY : A.A. COLE DATE : 04/12/07

13-NOV-2007 14:16
 g:\structure\final\21\16-4246\21.dgn
 q1nguyen

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			30

NCBDS

NOTES

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

ALUMINUM RAILS

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

GALVANIZED STEEL RAILS

MATERIAL AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:

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

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

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

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

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

GENERAL NOTES

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

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.

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 A SPACING OF 8FT. TO 10FT. BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINTS WILL BE REQUIRED FOR SEGMENTS LESS THAN 10 FEET IN LENGTH.

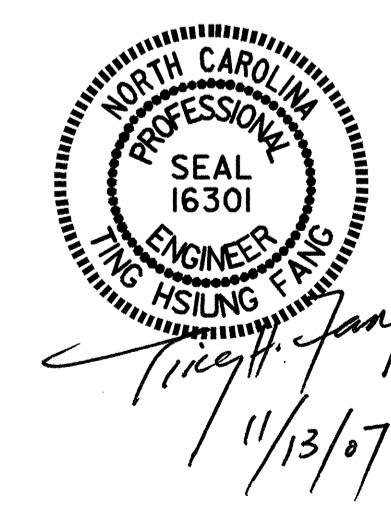
PAY LENGTH = 228.46 LIN. FT.

PROJECT NO. B-4246
RANDOLPH COUNTY
 STATION: 16+85.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

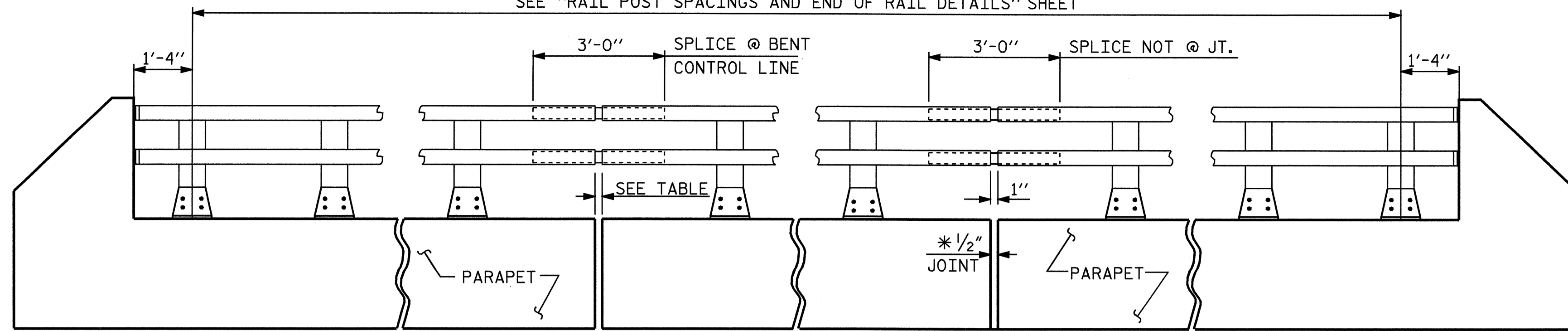
STANDARD
 2 BAR METAL RAIL
 DETAILS



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			30

STD. NO. BMR3

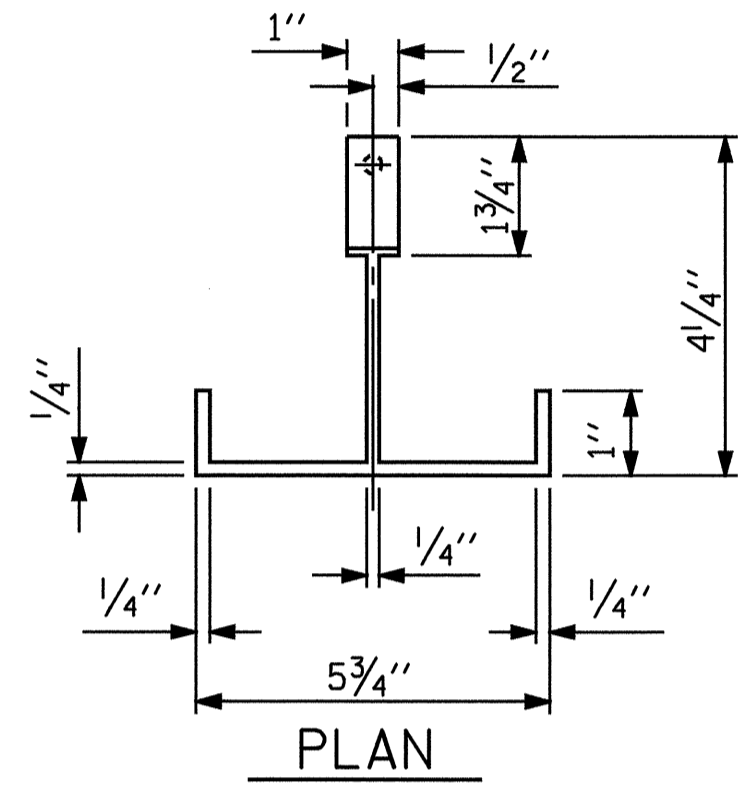
SEE "RAIL POST SPACINGS AND END OF RAIL DETAILS" SHEET



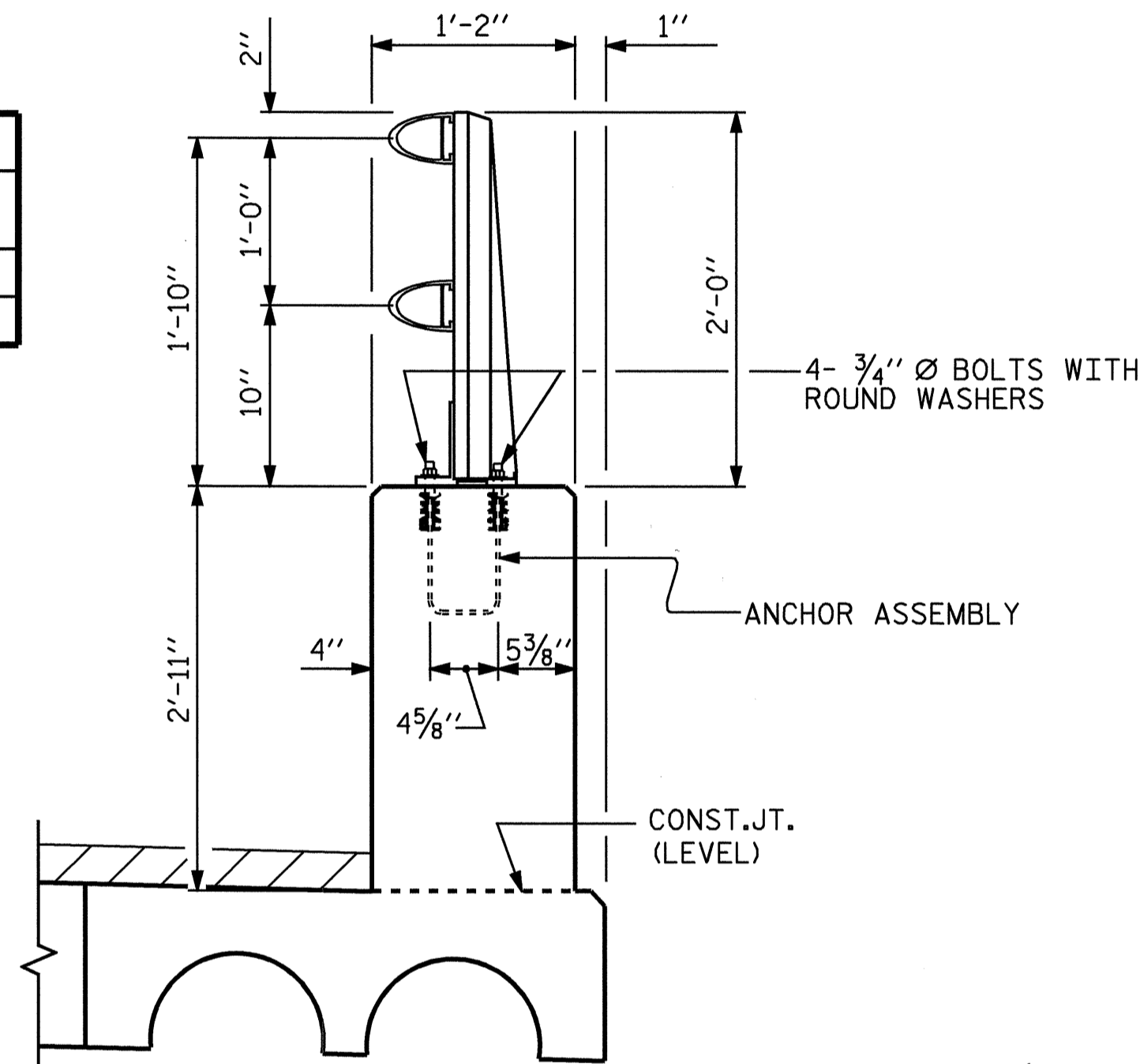
ELEVATION

NOTE: FOR ATTACHMENT OF METAL RAIL TO END POST, SEE SHEET NO. S-13; "RAIL POST SPACINGS AND END OF RAIL DETAILS".
 * FOR LOCATION OF PARAPET JOINTS, SEE SHEETS "PLAN OF SPAN" SPANS A & B. FOR DETAIL OF JOINT, SEE SHEET NO. S-15.

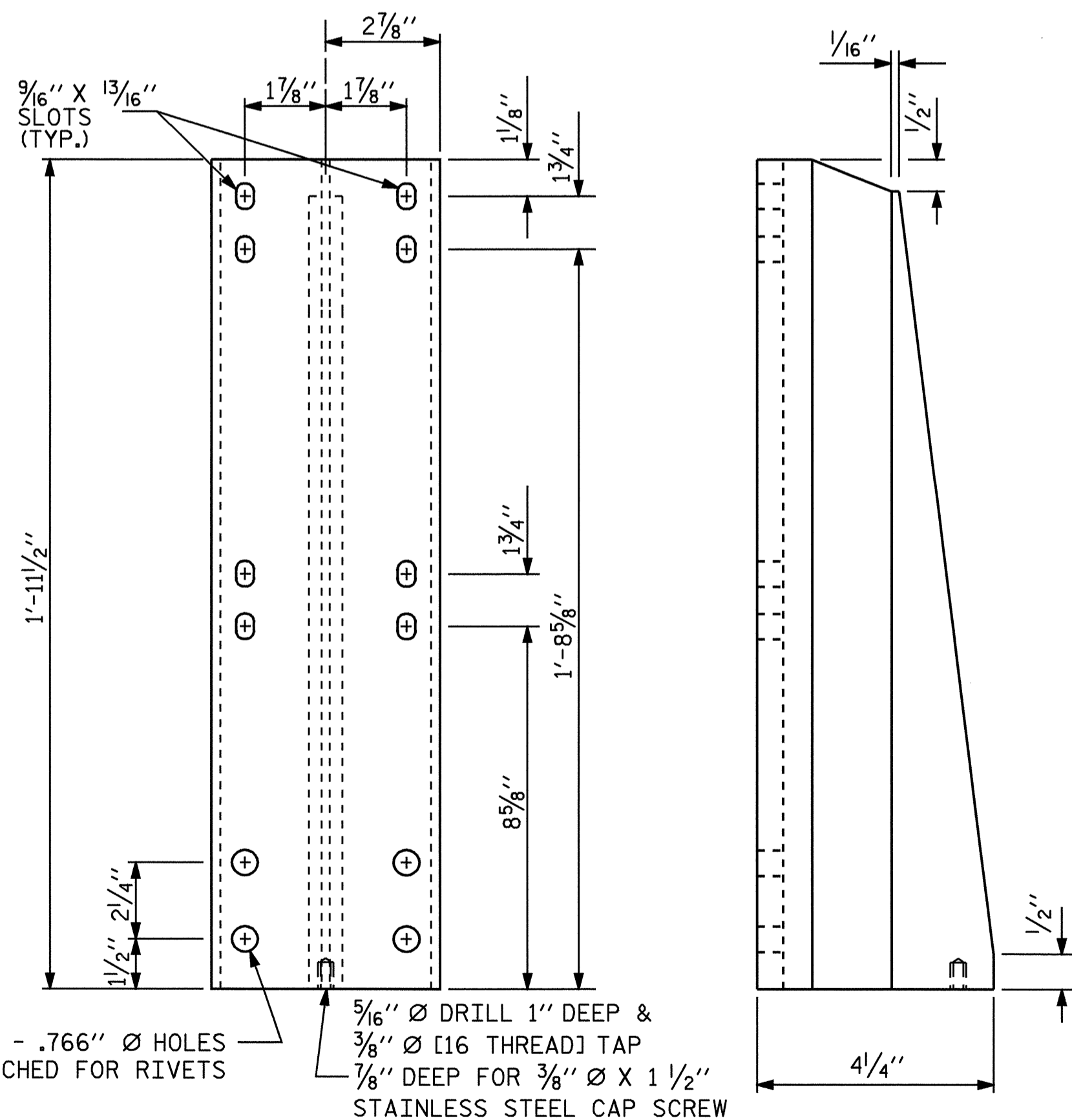
© JOINT @ BENT	RAIL OPENING
BENT 1	1 1/2"
BENT 2	1 1/2"



PLAN



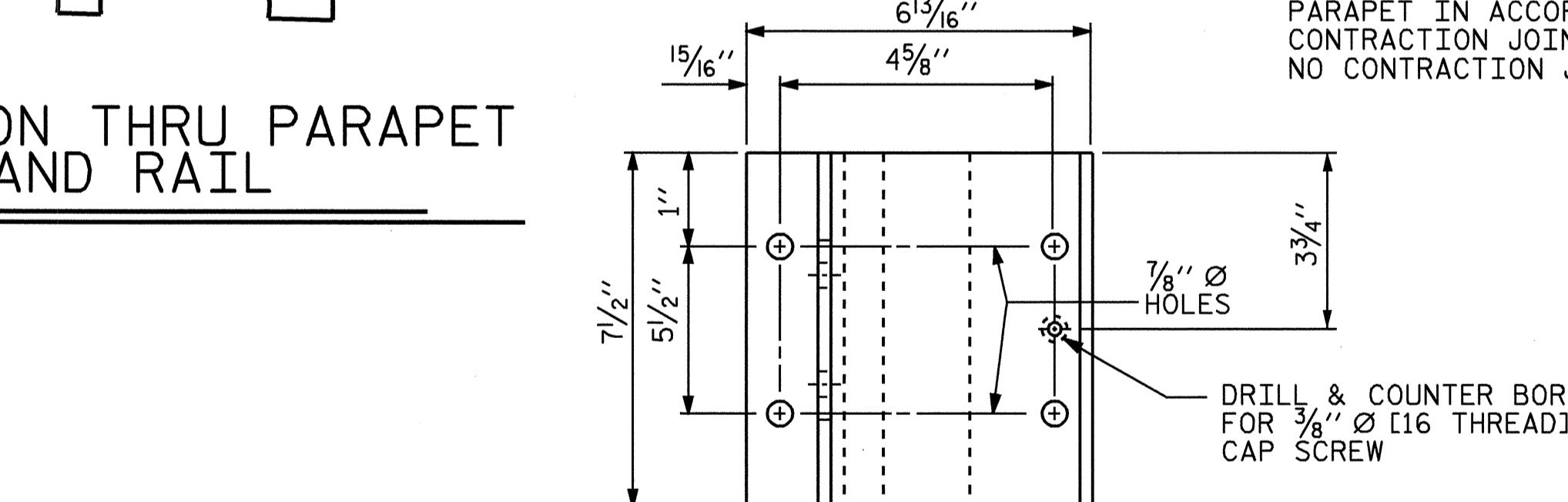
SECTION THRU PARAPET AND RAIL



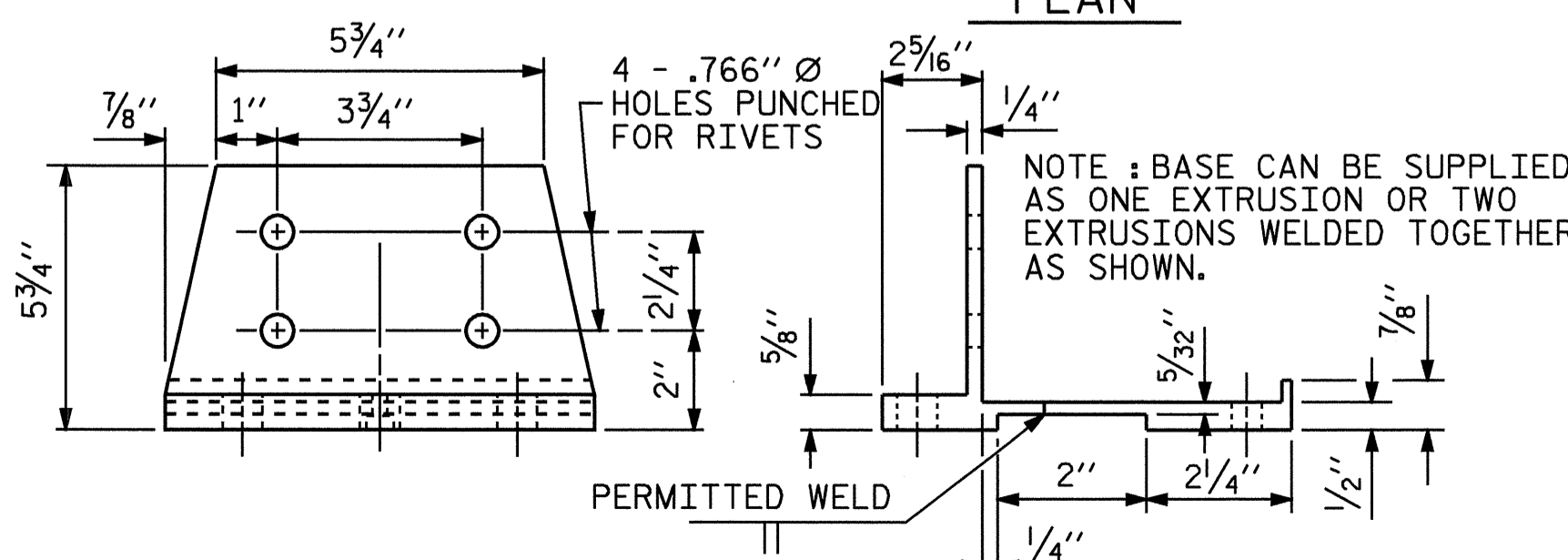
FRONT ELEVATION

SIDE ELEVATION

DETAILS OF POST



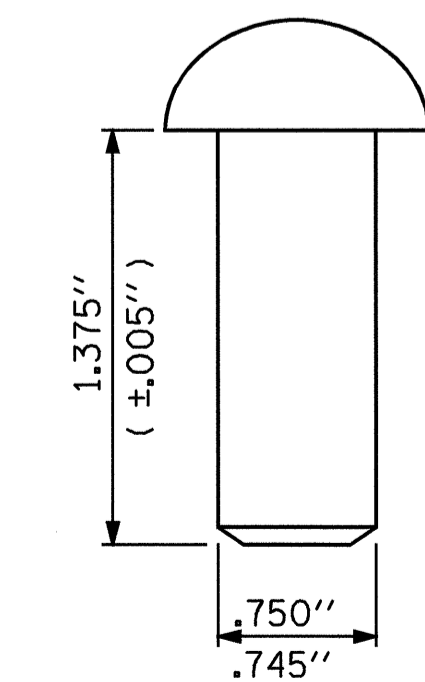
PLAN



FRONT ELEVATION

SIDE ELEVATION

POST BASE DETAILS



RIVET DETAIL

ASSEMBLED BY: T.L.CLELLAND	DATE: 10/06
CHECKED BY: A.A.COLE	DATE: 04/07
DRAWN BY: EEM 6/94	REV. 10/17/00 LES/RDR
CHECKED BY: RGW 6/94	REV. 5/1/03R RW/JTE
	REV. 5/1/06 TLA/GM

NOTES

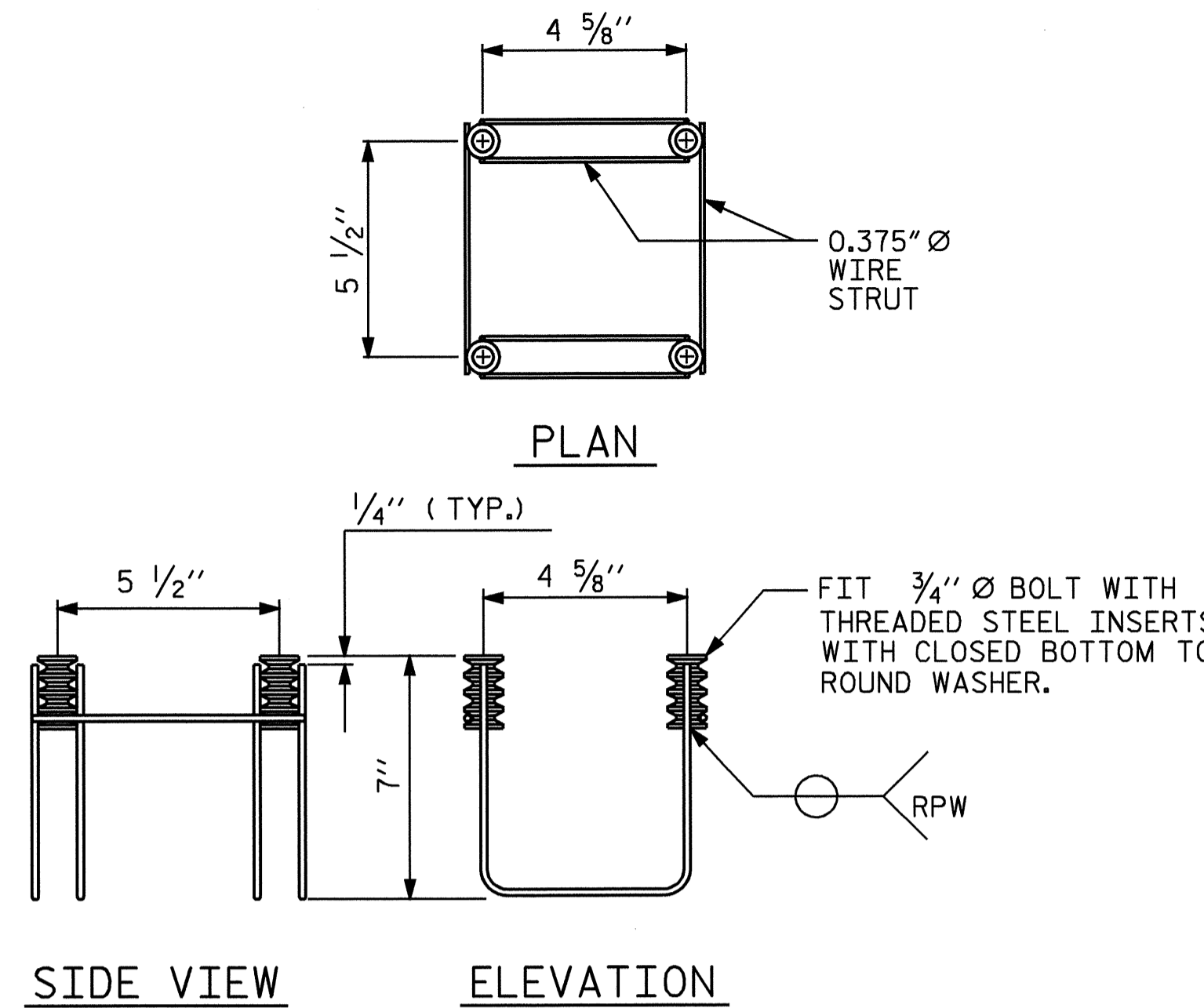
STRUCTURAL CONCRETE ANCHOR ASSEMBLY

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 SPECIAL PROVISIONS.

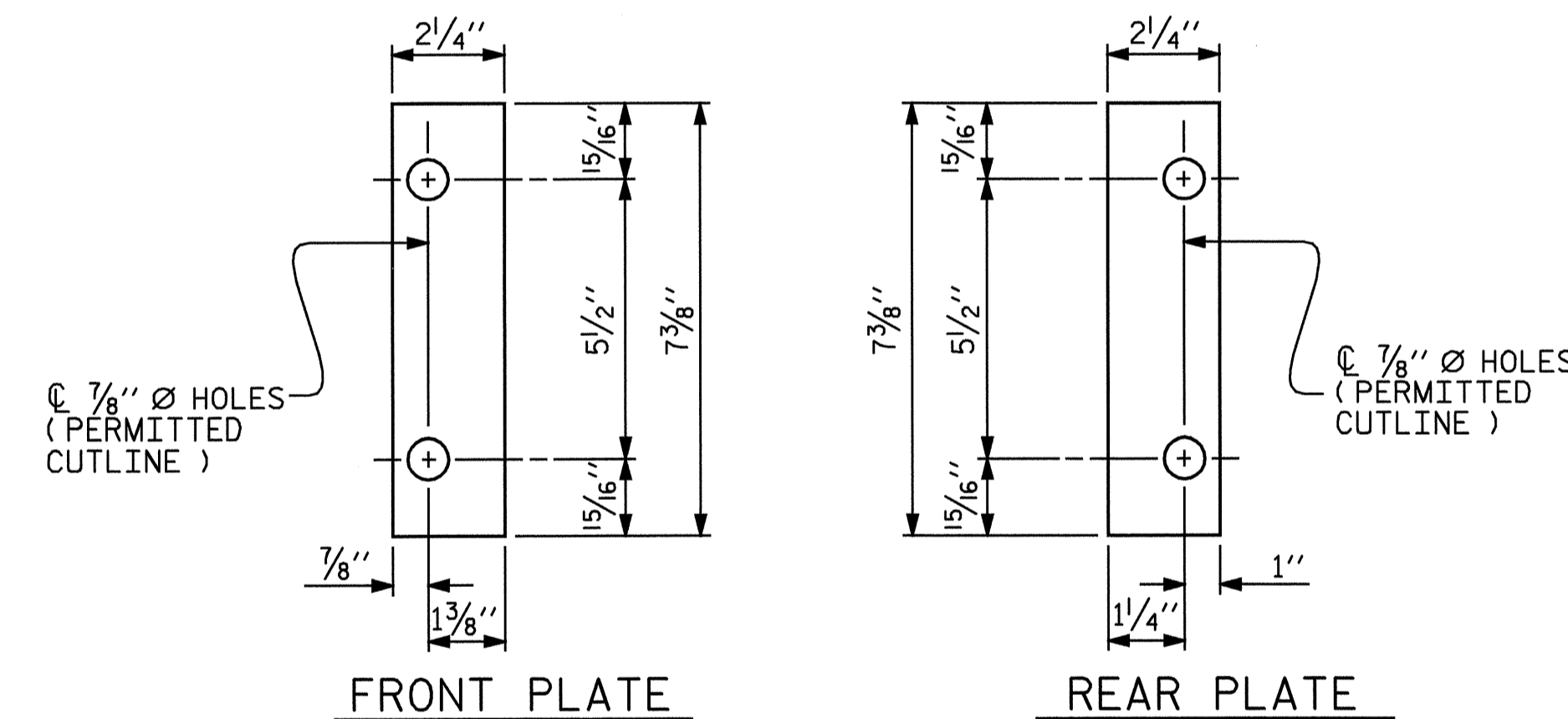
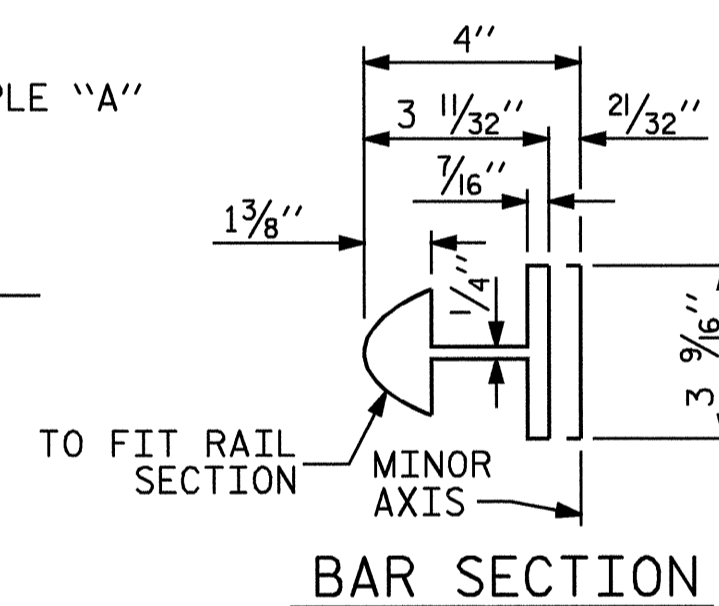
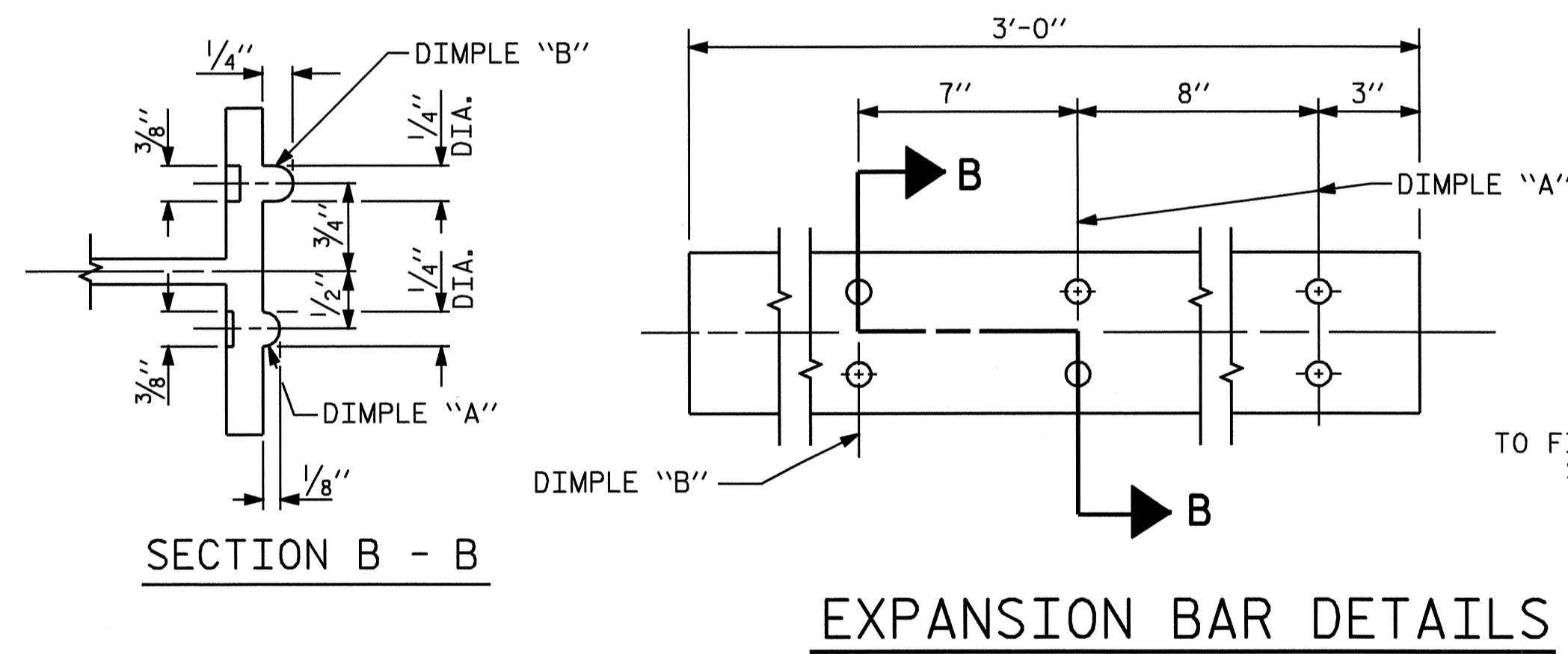
WHEN ADHESIVELY ANCHORED ANCHOR BOLTS ARE USED, BOLTS SHALL MEET THE REQUIREMENTS OF ASTM F593 ALLOY 304 STAINLESS STEEL WITH MINIMUM 75,000 PSI ULTIMATE STRENGTH. NUTS SHALL MEET THE REQUIREMENTS OF ASTM F594 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY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



MINIMUM LENGTH OF THREADS IN INSERT (FERRULE) : 1 3/4"

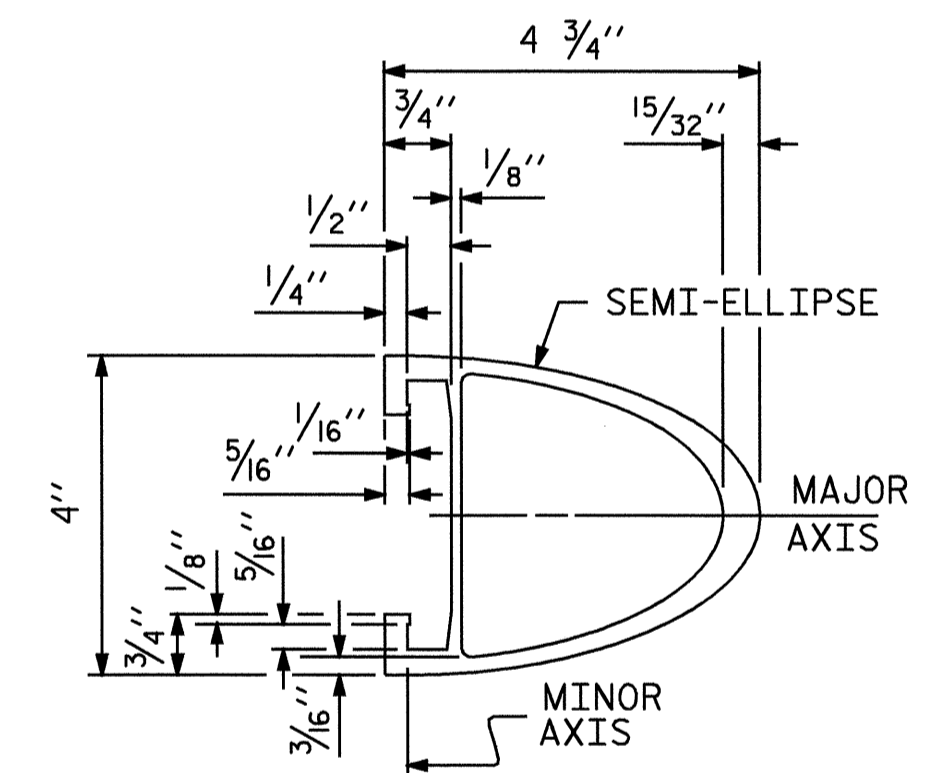
4-BOLT METAL RAIL ANCHOR ASSEMBLY

(38 ASSEMBLIES REQUIRED)

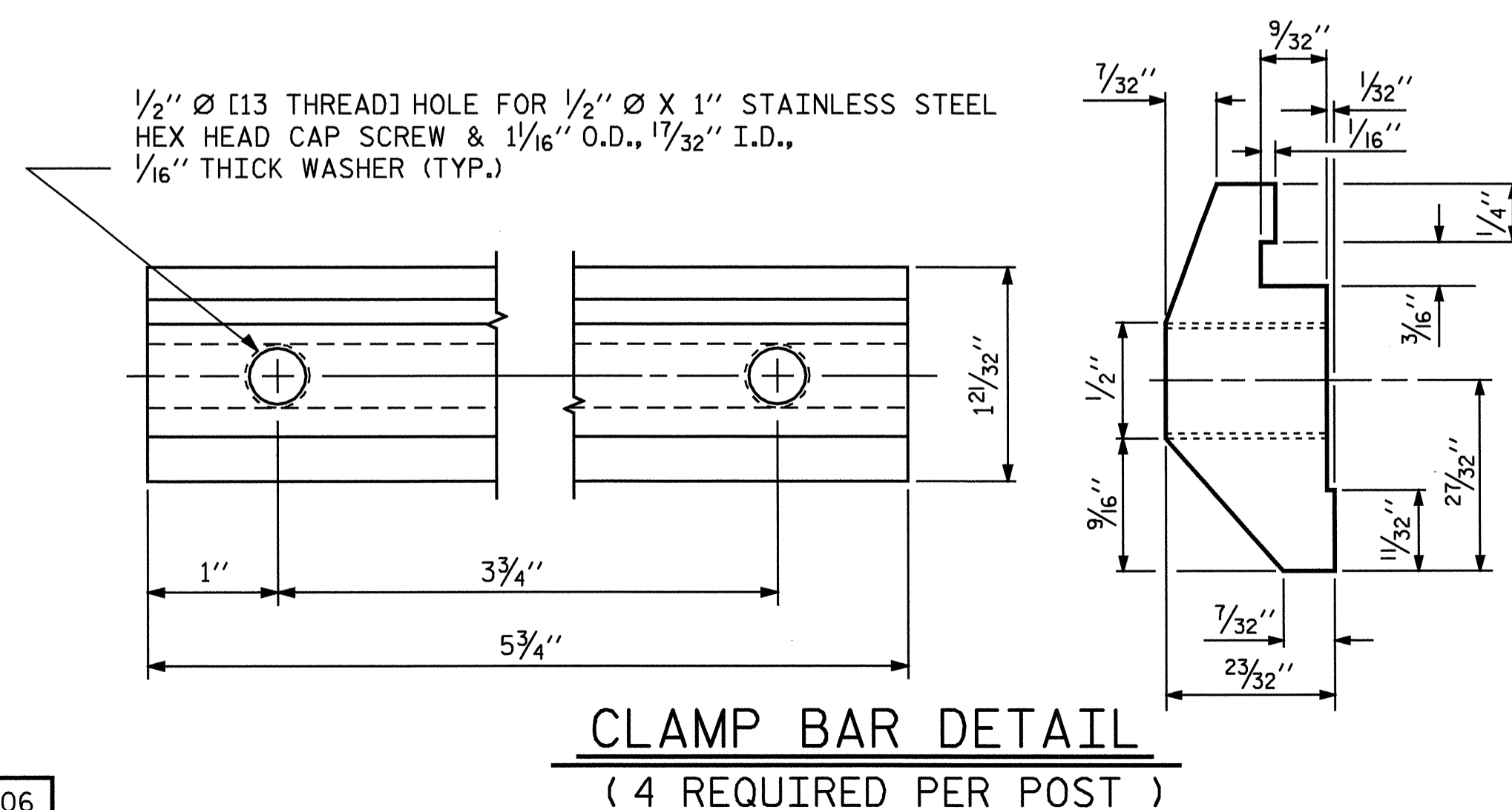


SHIM DETAILS

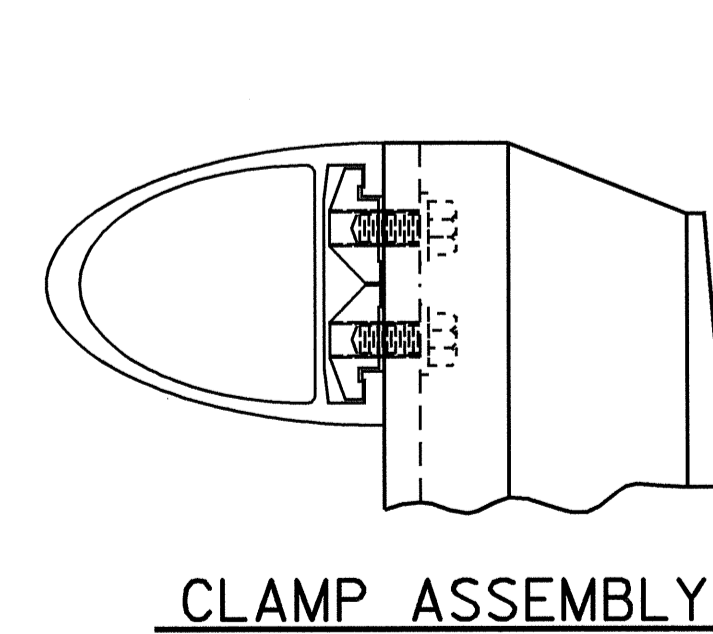
NOTE : SHIMS MAY BE CUT ALONG PERMITTED CUTLINE OR SLOTTED TO EDGE OF PLATE TO FACILITATE PLACEMENT.



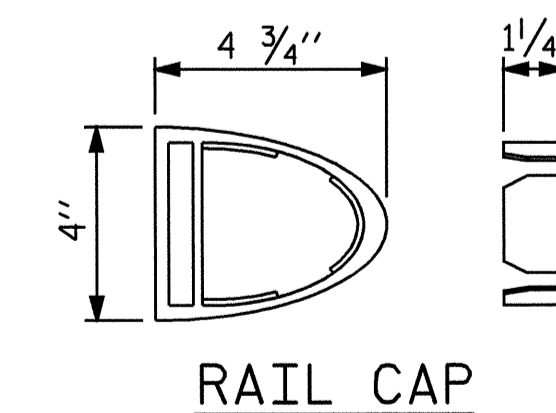
RAIL SECTION



CLAMP BAR DETAIL
(4 REQUIRED PER POST)



CLAMP ASSEMBLY

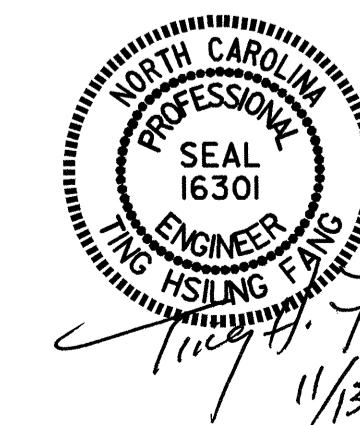


RAIL CAP

PROJECT NO. B-4246
RANDOLPH COUNTY
 STATION: 16+42.50 -L-

SHEET 2 OF 2

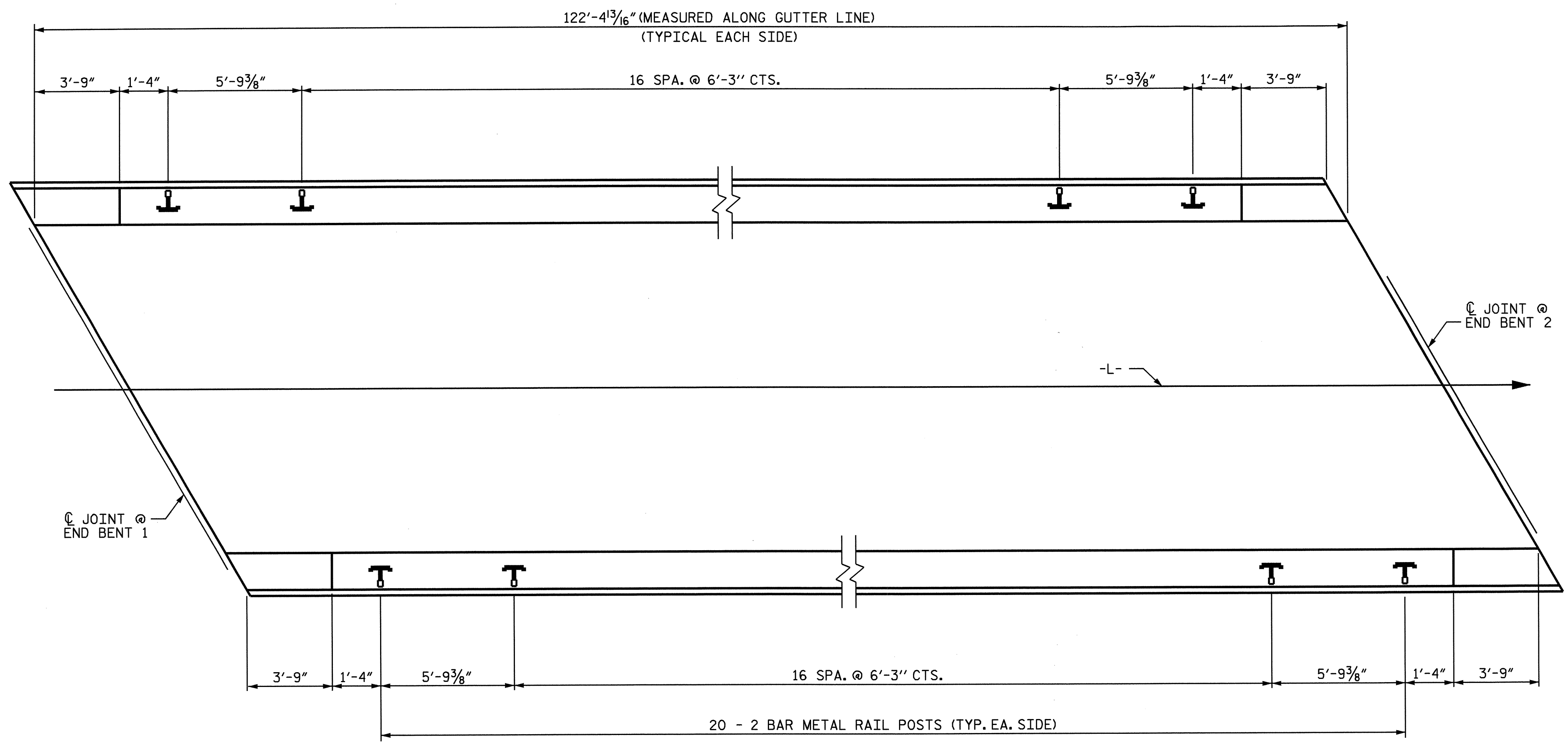
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 2 BAR METAL RAIL



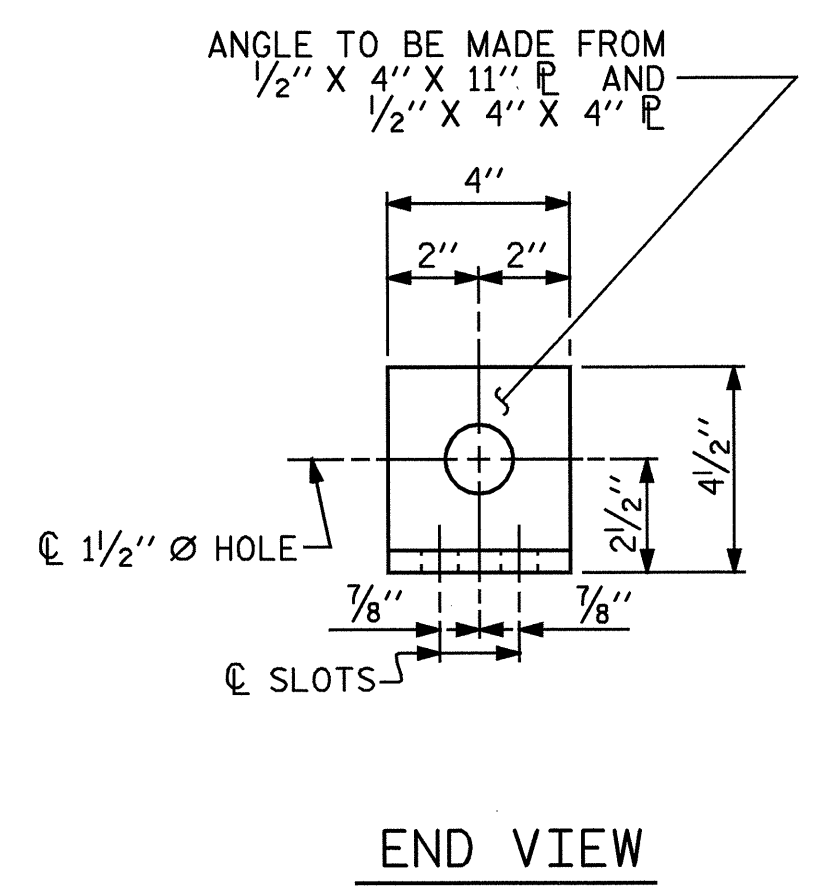
ASSEMBLED BY : T.L. CLELLAND	DATE : 10/06
CHECKED BY : A.A. COLE	DATE : 04/07
DRAWN BY : EEM 6/94	REV. 2/6/97 EEM/RGW
CHECKED BY : RGW 6/94	REV. 8/16/99 MAB/LES
	REV. 5/7/03 RWW/JTE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			30

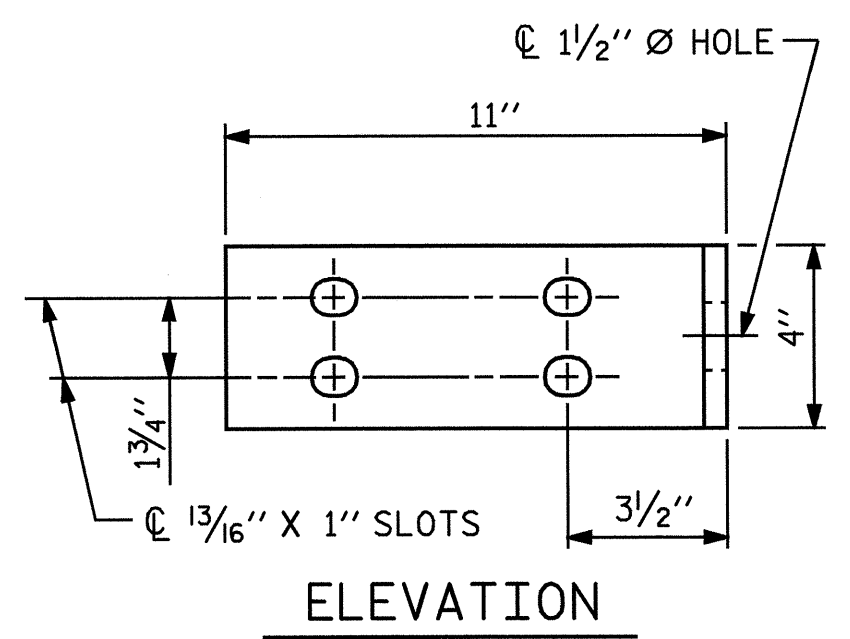
STD. NO. BMR4



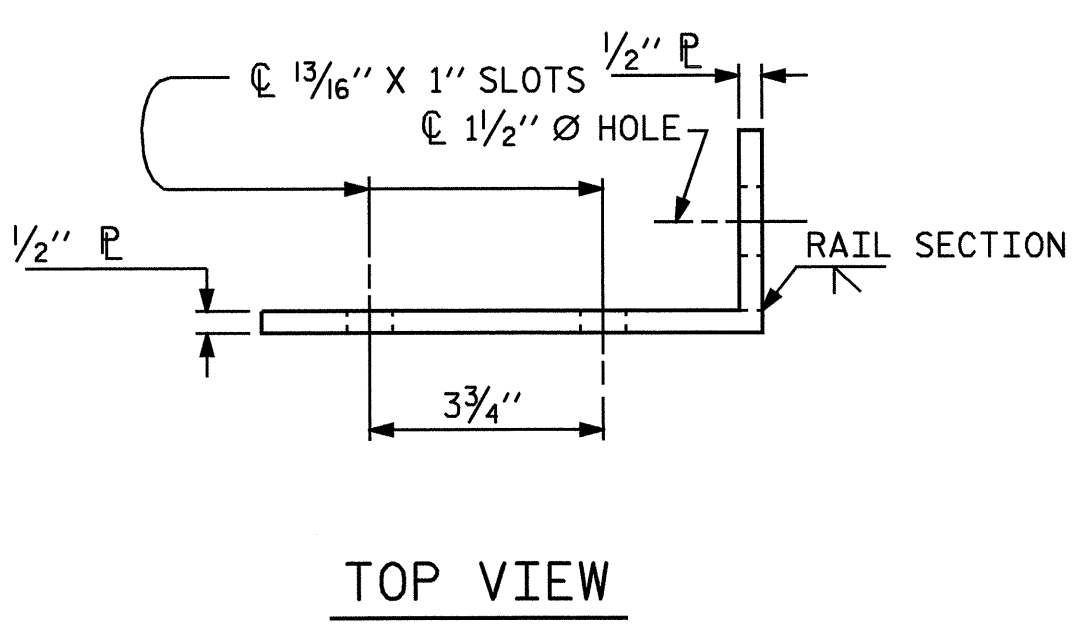
PLAN OF RAIL POST SPACINGS



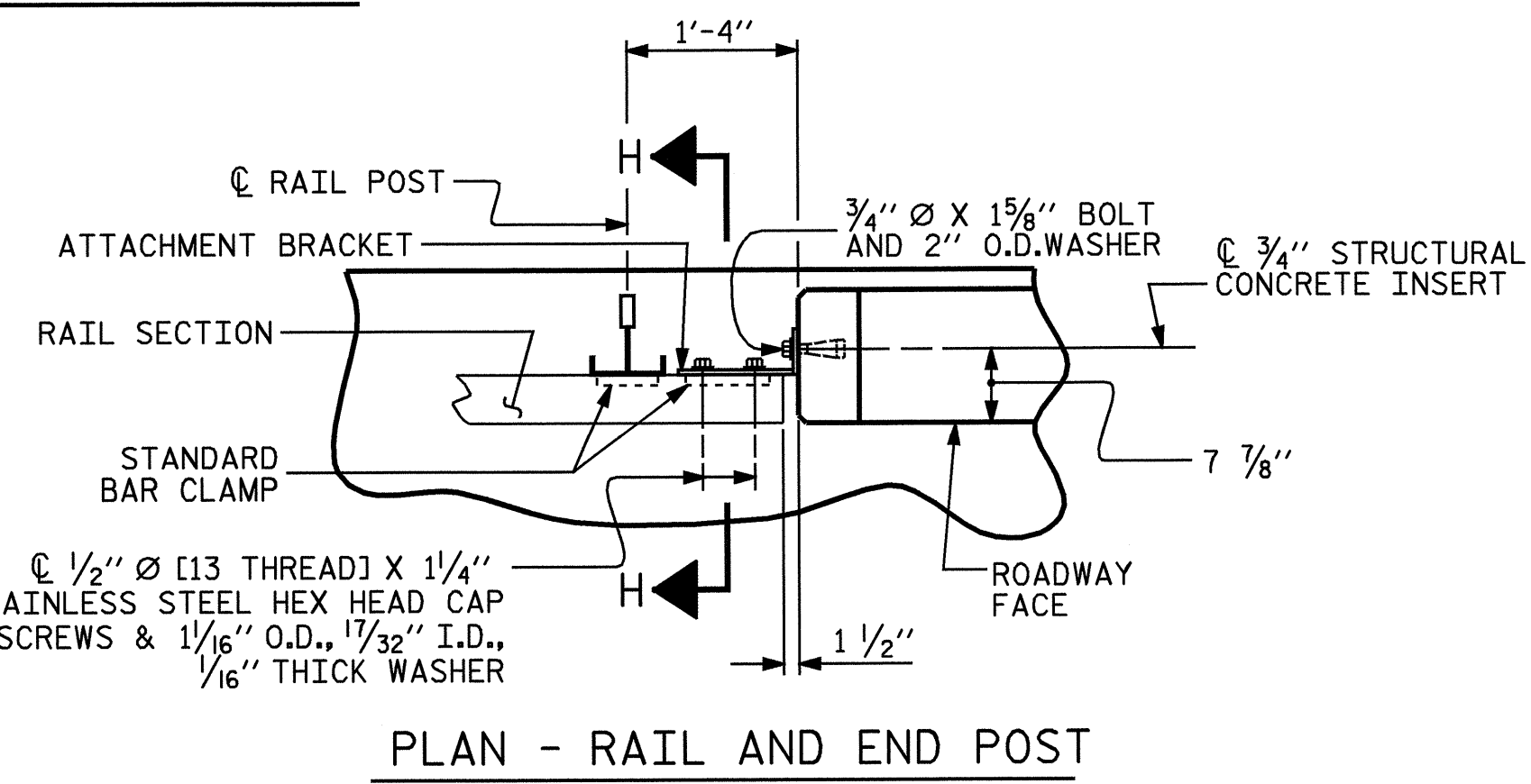
END VIEW



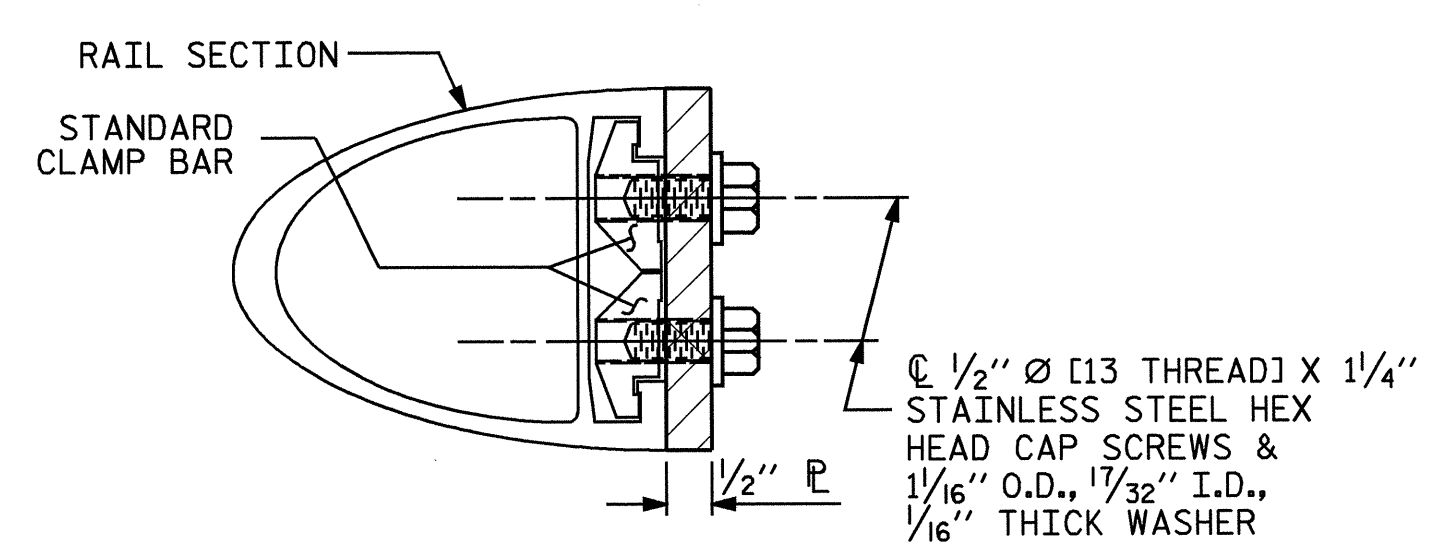
ELEVATION



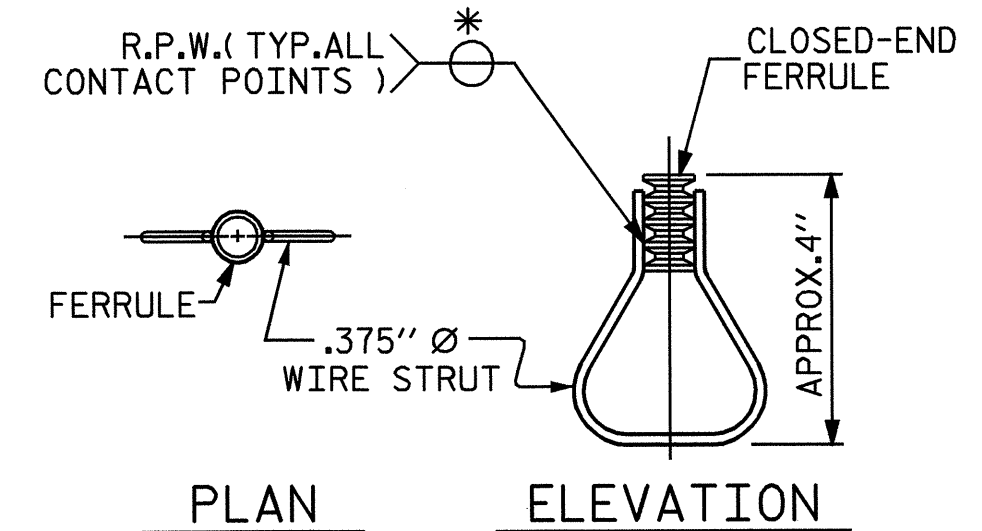
TOP VIEW



PLAN - RAIL AND END POST

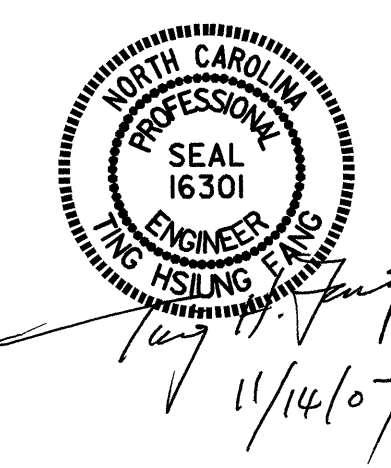


SECTION H-H



STRUCTURAL CONCRETE INSERT

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



NOTES

STRUCTURAL CONCRETE INSERT

- THE STRUCTURAL CONCRETE INSERT ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:
- FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1 1/2".
 - 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.)
 - WIRE STRUT SHOWN IN THE CONCRETE INSERT ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 1/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

NOTES

METAL RAIL TO END POST CONNECTION

- THE METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:
- 1/2" PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
 - 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.
 - 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.
 - STANDARD CLAMP BARS (SEE METAL RAIL SHEET).
 - 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.

ASSEMBLED BY : T.L. CLELLAND	DATE : 10/06
CHECKED BY : A.A. COLE	DATE : 04/07
DRAWN BY : FCJ 1/88	REV. 10/17/00 LES/RDR
CHECKED BY : CRK 3/89	REV. 5/7/03 RWW/JTE
	REV. 5/1/06 TLA/GM

PROJECT NO. B-4246
 RANDOLPH COUNTY
 STATION: 16+42.50 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 RAIL POST SPACINGS
 AND
 END OF RAIL DETAILS
 FOR TWO BAR METAL RAILS

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13	
1			3			TOTAL SHEETS	30
2			4				

NOTES

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

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

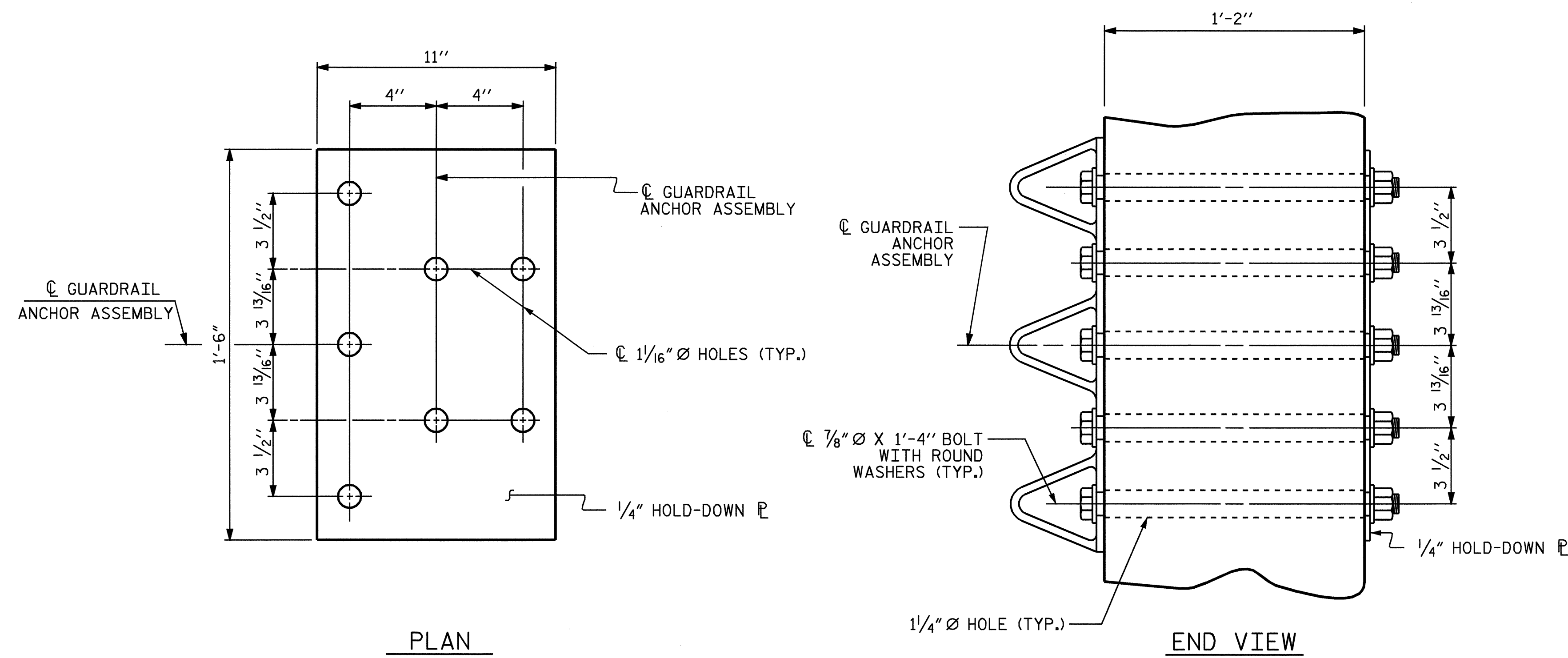
BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS.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

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

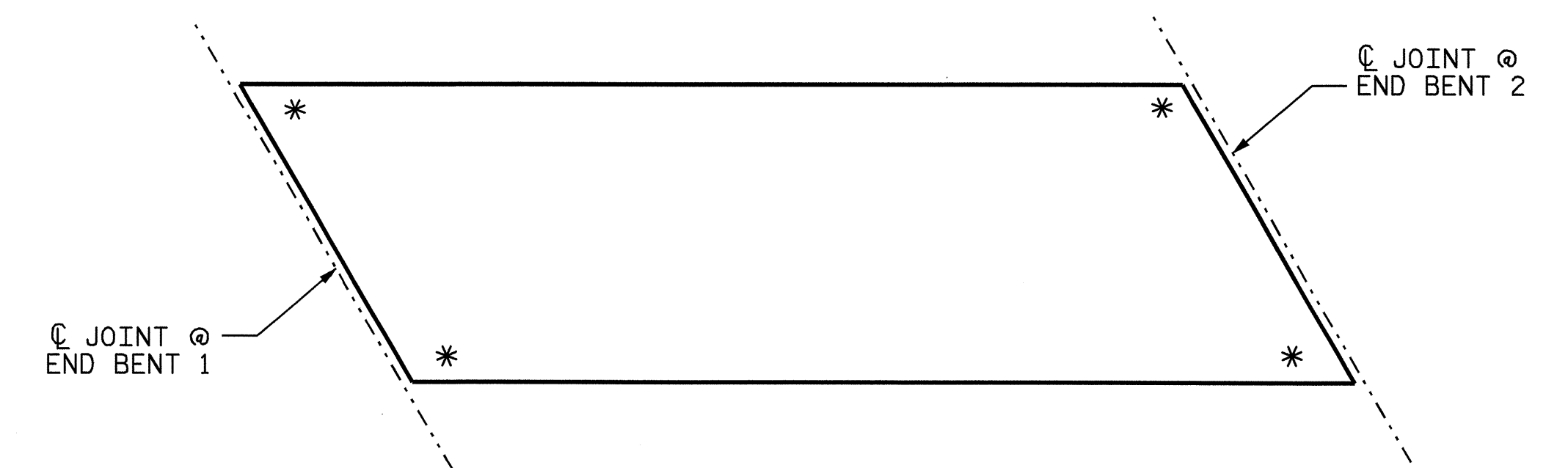
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

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

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

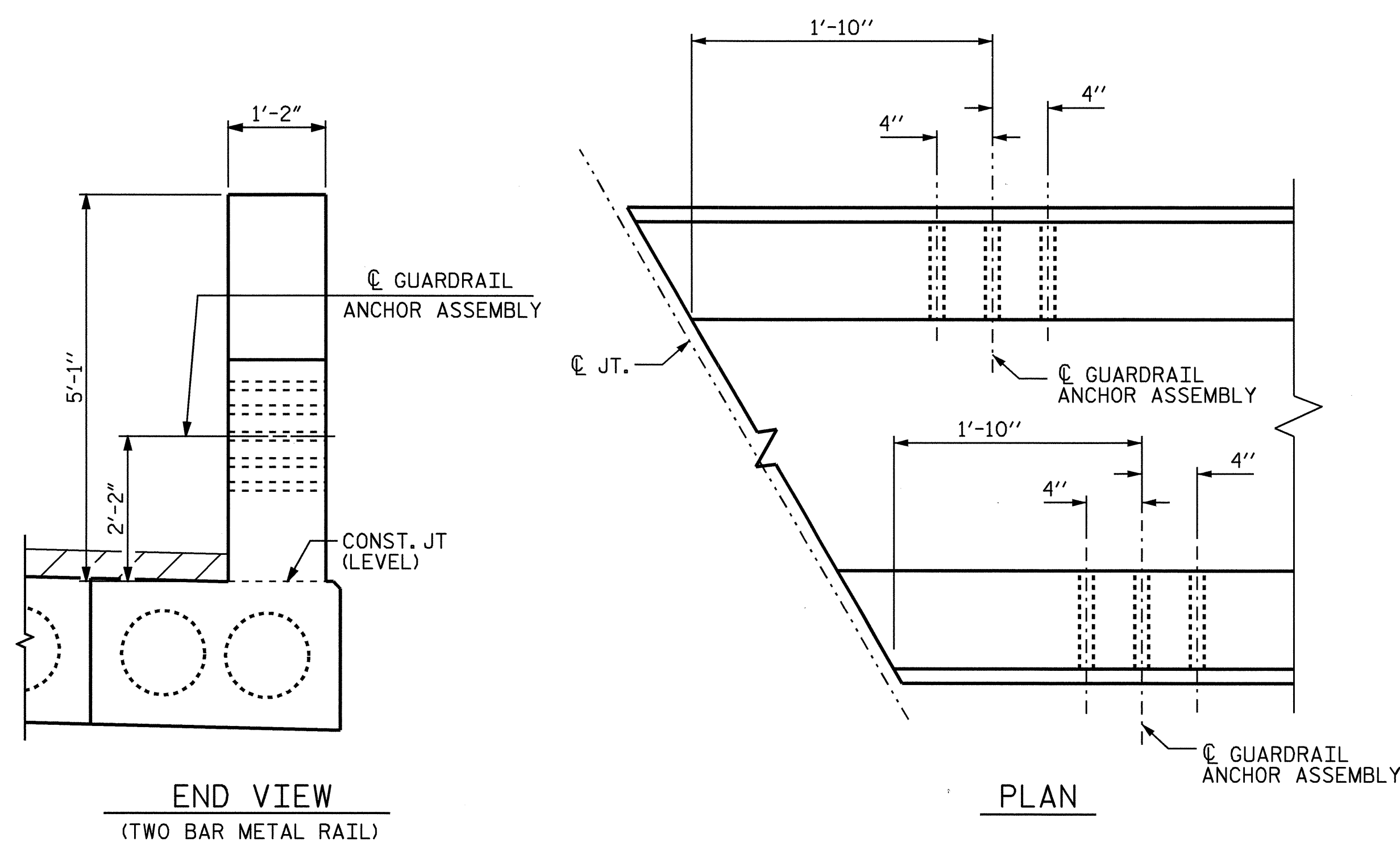


GUARDRAIL ANCHOR ASSEMBLY DETAILS



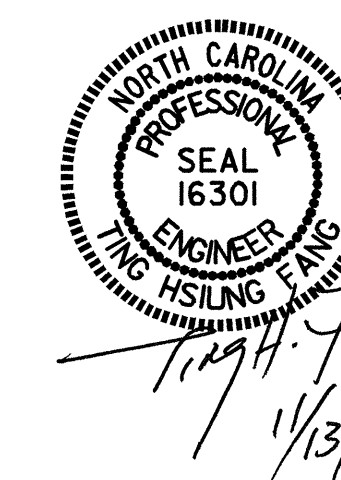
SKETCH SHOWING POINTS OF ATTACHMENT

* LOCATION OF GUARDRAIL ATTACHMENT



LOCATION OF GUARDRAIL ANCHOR AT END POST

PROJECT NO. B-4246
RANDOLPH COUNTY
 STATION: 16+42.50 -L-



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

ASSEMBLED BY : T.L. CLELLAND	DATE : 10/06
CHECKED BY : A.A. COLE	DATE : 04/07
DRAWN BY : EEM	6/94
CHECKED BY : RGW	6/94
REV. 10/17/00	RWW/LES
REV. 5/1/03	RWW/JTE
REV. 5/1/06	TLA/GM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			30

BILL OF MATERIAL

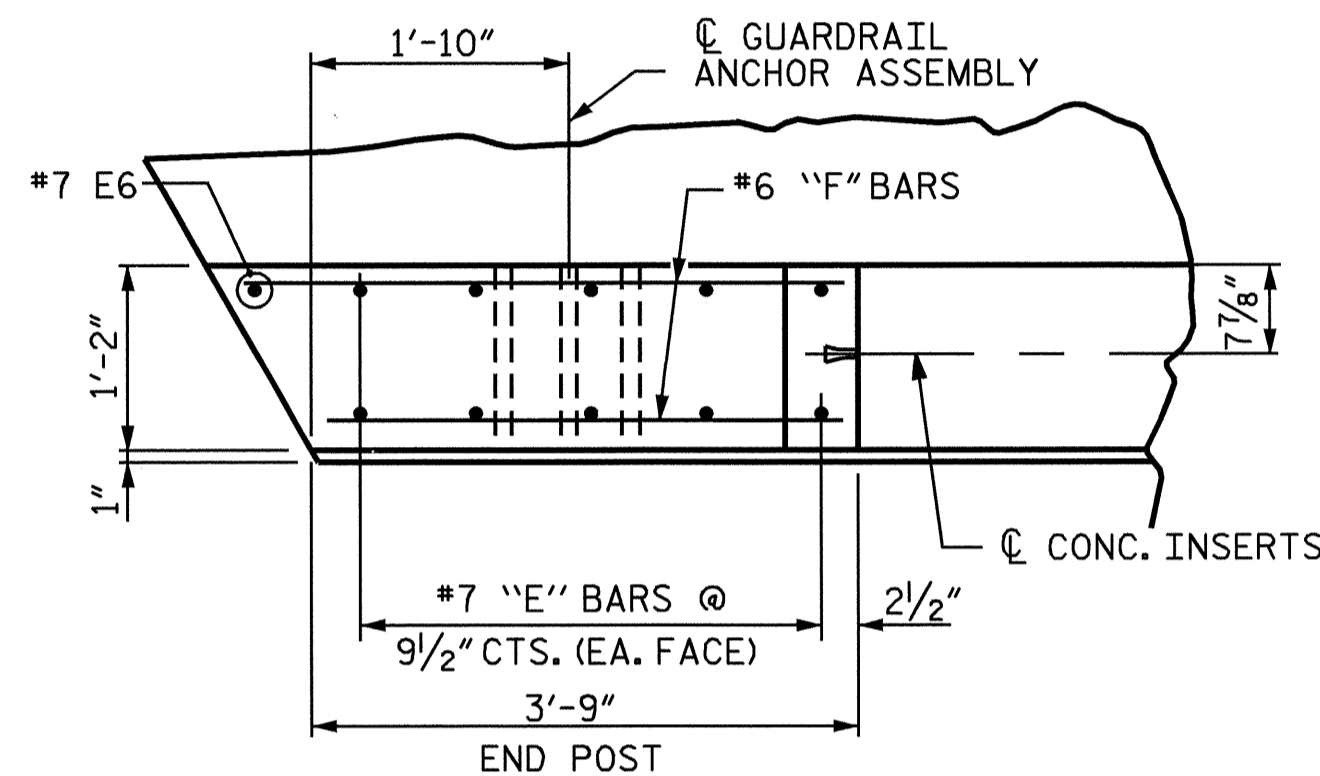
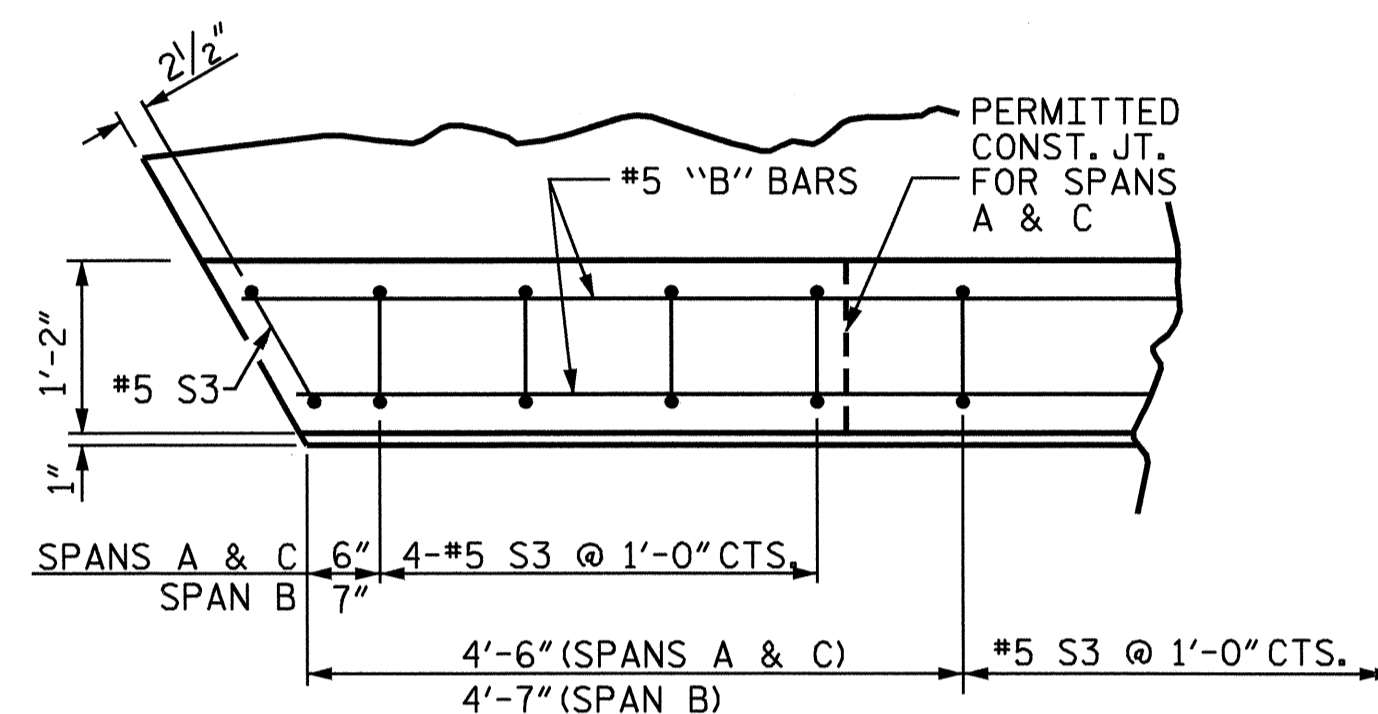
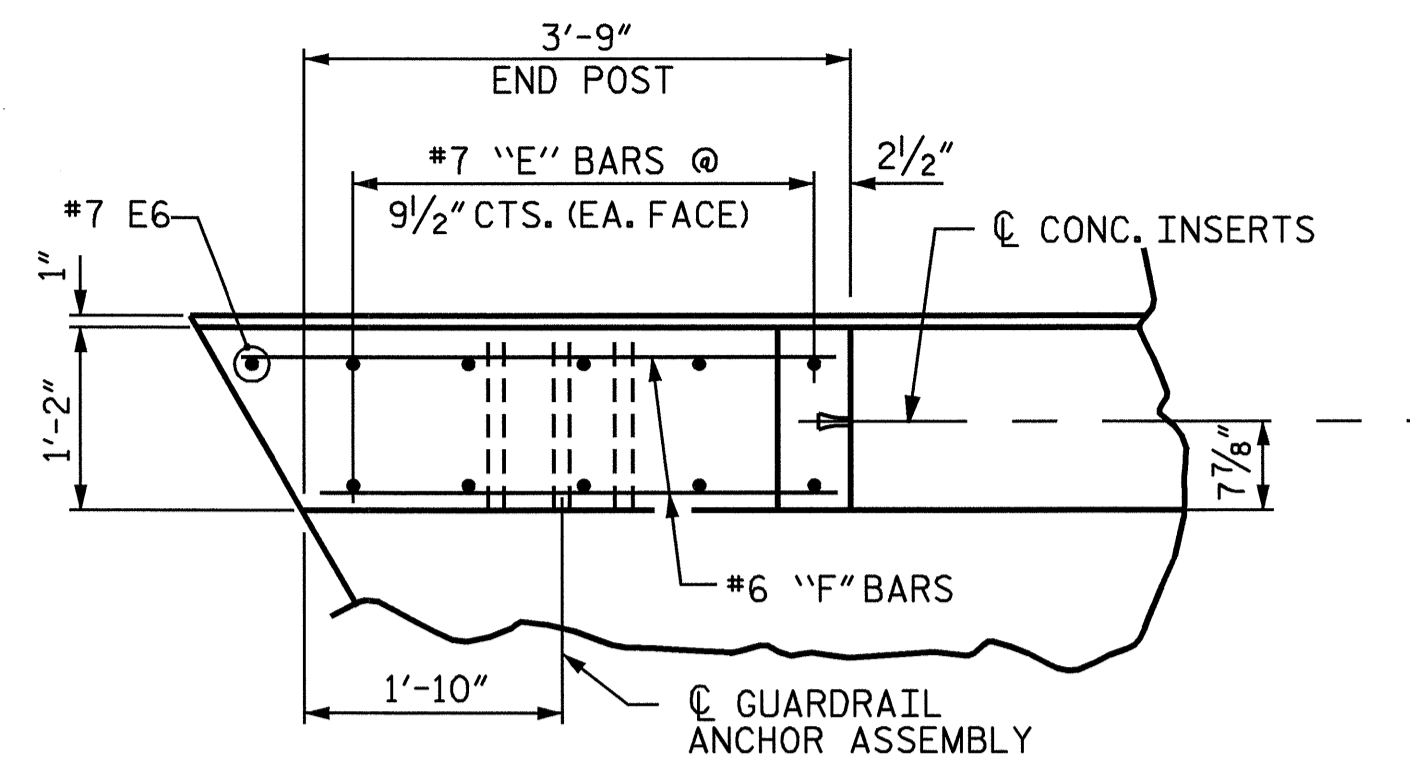
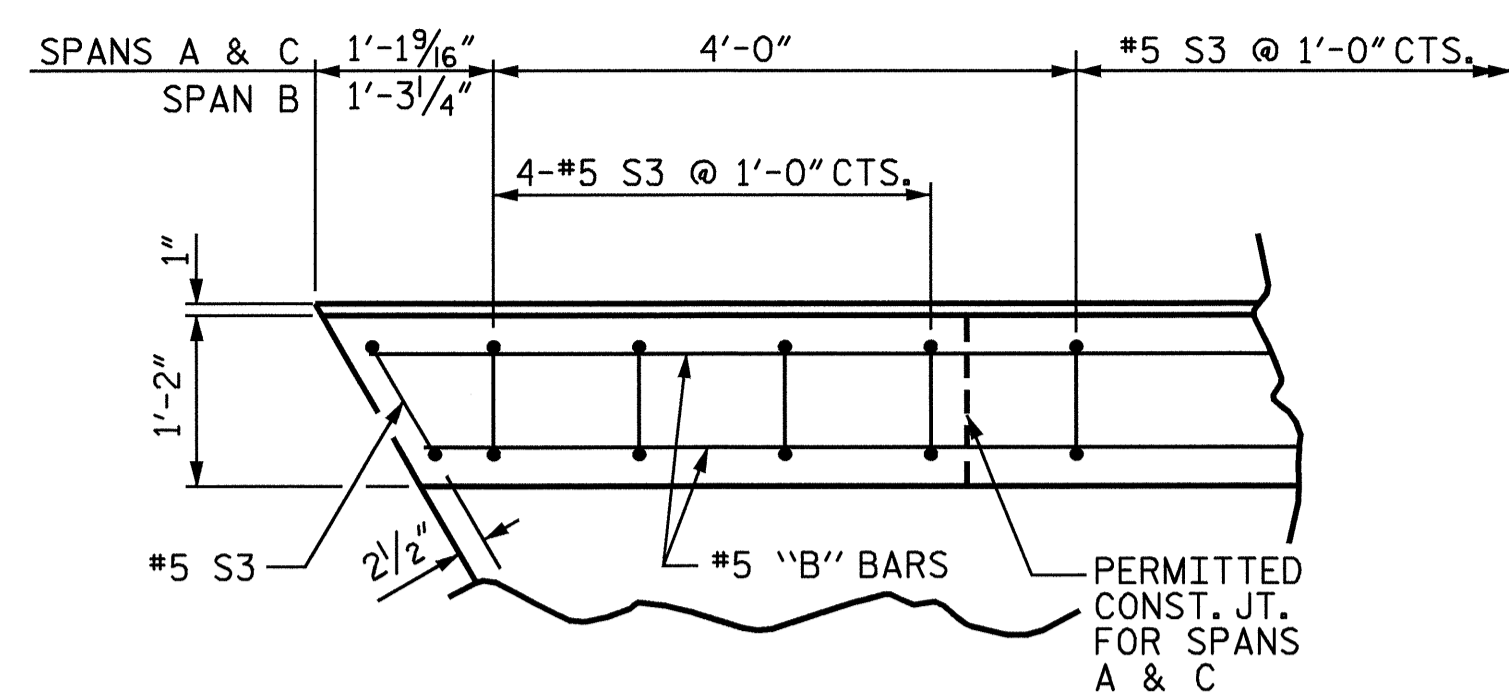
2 PARAPETS AND 4 END POSTS

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*B4	32	#5	STR	21'-3"	709
*B5	32	#5	STR	24'-5"	815
*B6	16	#5	STR	28'-4"	473
*E1	8	#7	STR	3'-0"	49
*E2	8	#7	STR	3'-5"	56
*E3	8	#7	STR	3'-11"	64
*E4	8	#7	STR	4'-5"	72
*E5	8	#7	STR	4'-8"	76
*E6	4	#7	STR	2'-6"	20
*F1	4	#6	STR	1'-10"	11
*F2	4	#6	STR	2'-11"	18
*F3	4	#6	STR	3'-6"	21
*F4	4	#6	STR	2'-3"	14
*F5	4	#6	STR	3'-4"	20
*F6	4	#6	STR	3'-11"	24

EPOXY COATED REINF. STEEL 2,442 LBS

CLASS AA CONCRETE 31.70 C.Y.

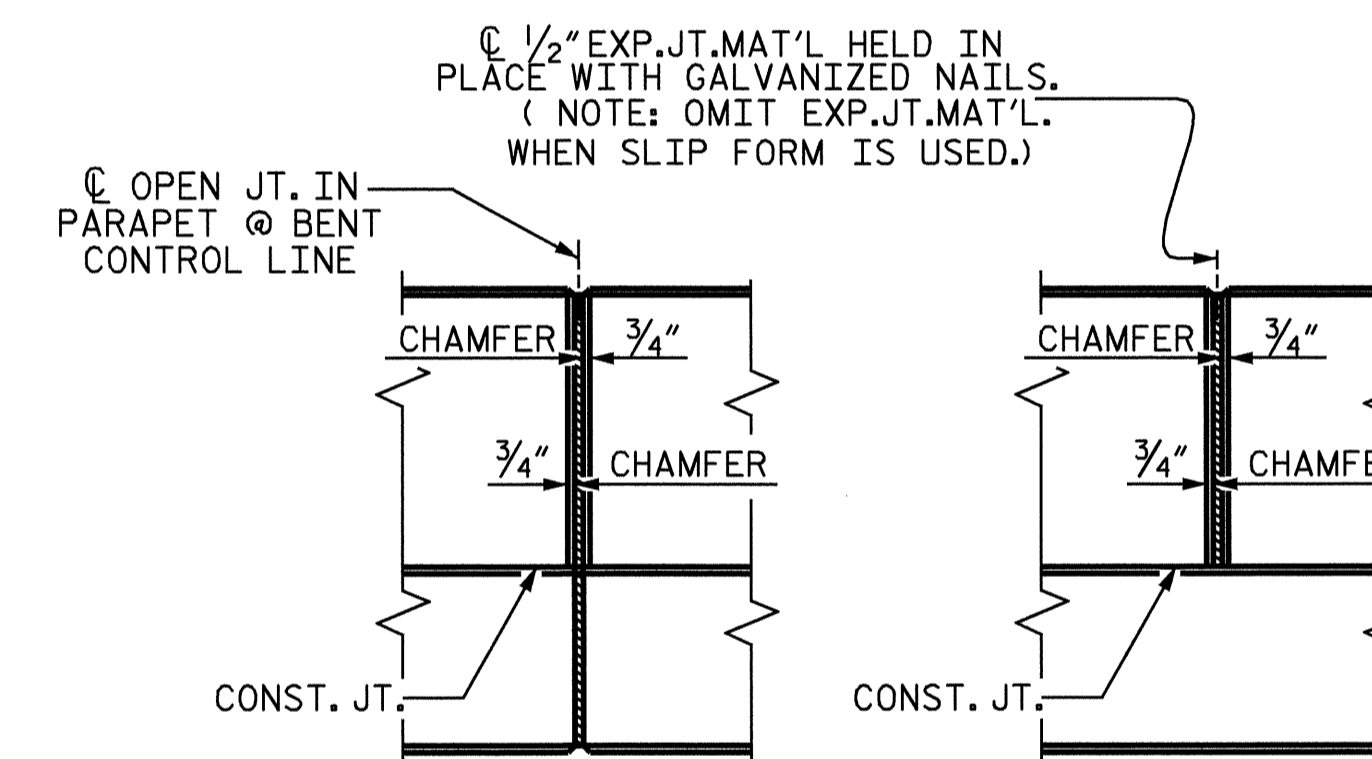
1'-2" X 2'-11" CONCRETE PARAPET 244.80 LIN. FT.



PLAN OF END PARAPET

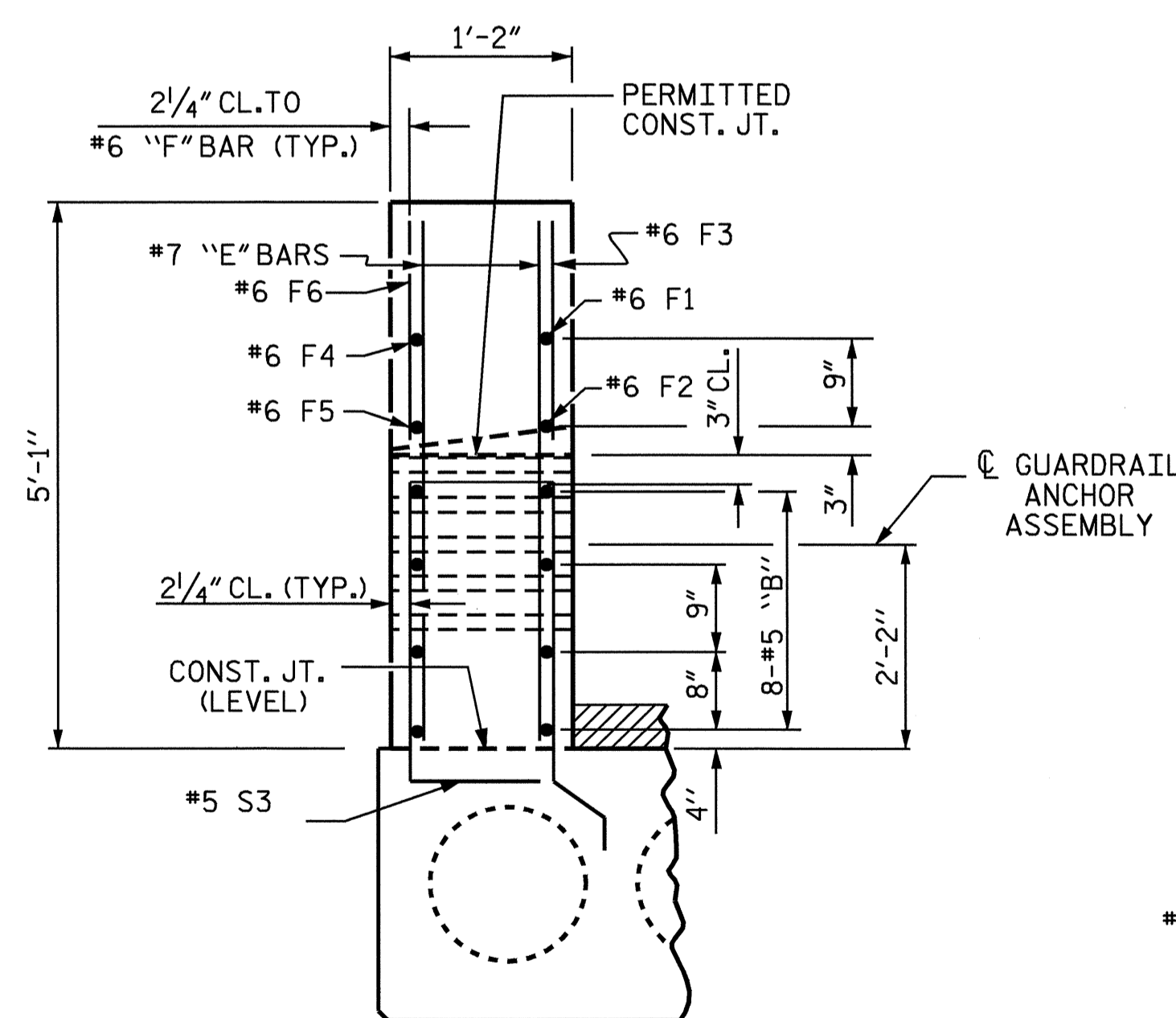
FOR #5 S3 LAYOUT, SEE SHEETS "SUPERSTRUCTURE PLAN OF SPANS "A", "B" & "C".

PLAN OF END POST

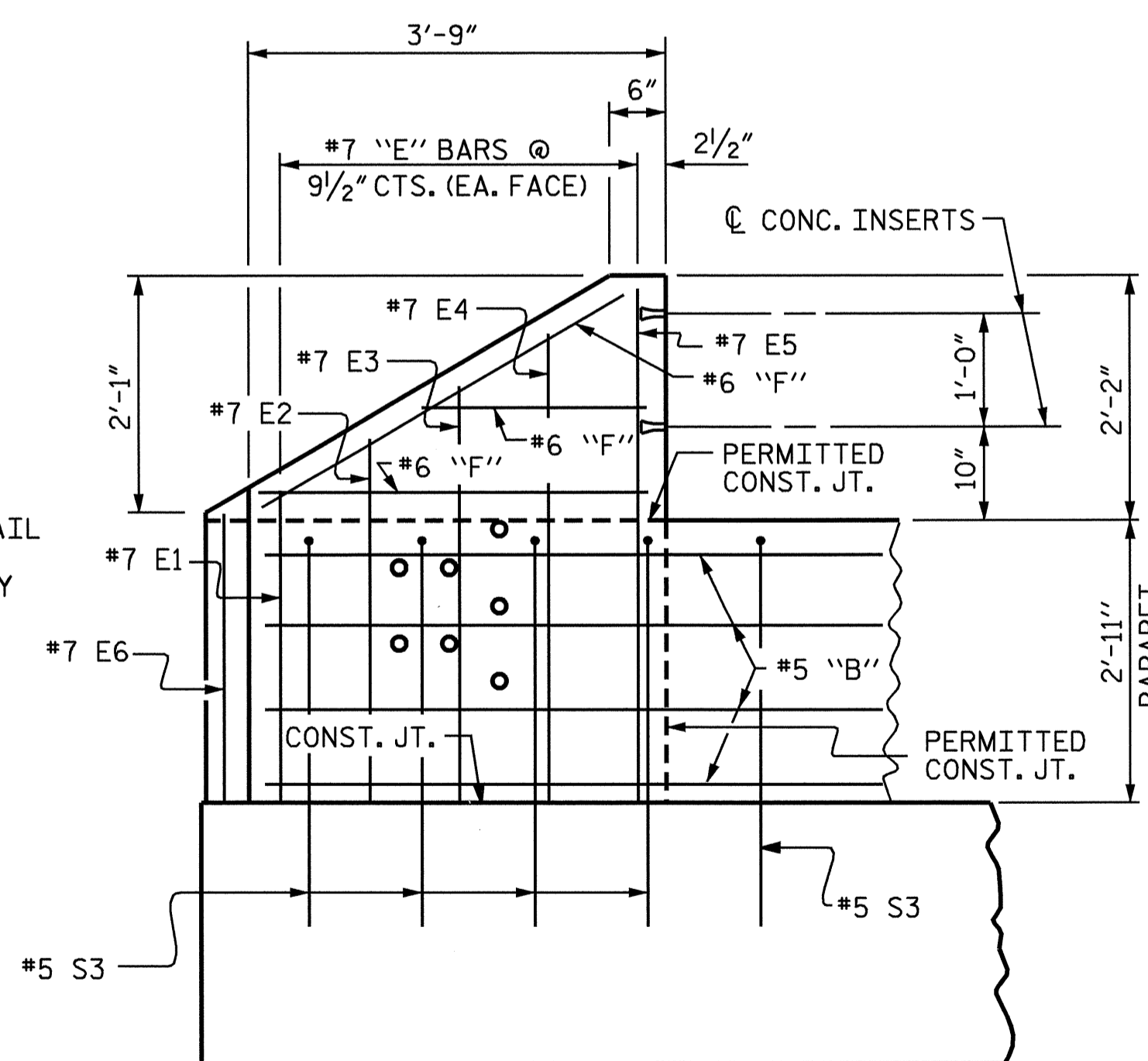


ELEVATION AT EXPANSION JOINTS

PARAPET DETAILS



END VIEW



ELEVATION

PARAPET AND END POST FOR TWO BAR METAL RAIL

PROJECT NO. B-4246
RANDOLPH COUNTY
STATION: 16+45.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

1'-2" X 2'-11"
CONCRETE PARAPET
AND END POST



Ting H. Yang
11/13/07

ASSEMBLED BY : T.L. CLELLAND	DATE : 12/20/06
CHECKED BY : A.A. COLE	DATE : 04/12/07
DRAWN BY : WJH 4/89	REV. 7/10/01 RWW/LES
CHECKED BY : FCJ 5/89	REV. 5/7/03RRR RWW/JTE
	REV. 5/1/06 TLA/GM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			15
2			4			30

NOTES:

PLACEMENT OF THE CONCRETE WEARING SURFACE SHALL OCCUR AFTER CASTING THE PARAPET. THE COST OF THE STEEL BARS CAST WITH THE CONCRETE WEARING SURFACE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONCRETE WEARING SURFACE. FOR CONCRETE WEARING SURFACE, SEE SPECIAL PROVISIONS.

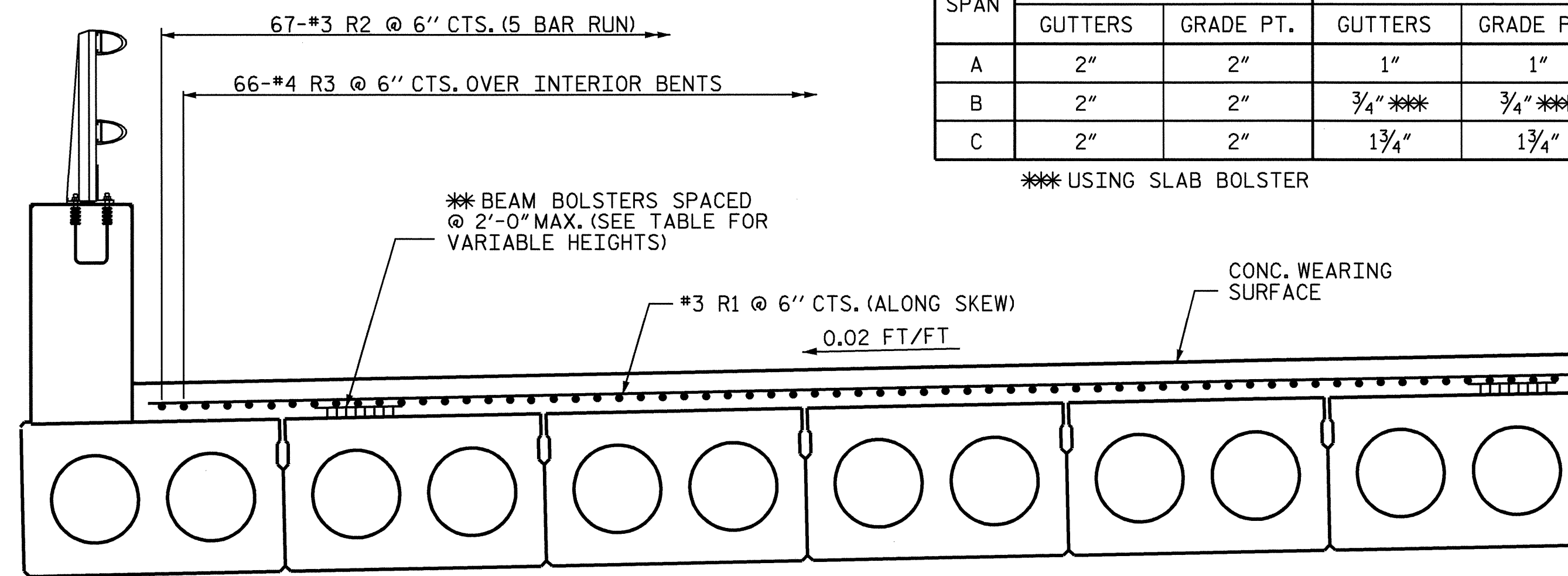
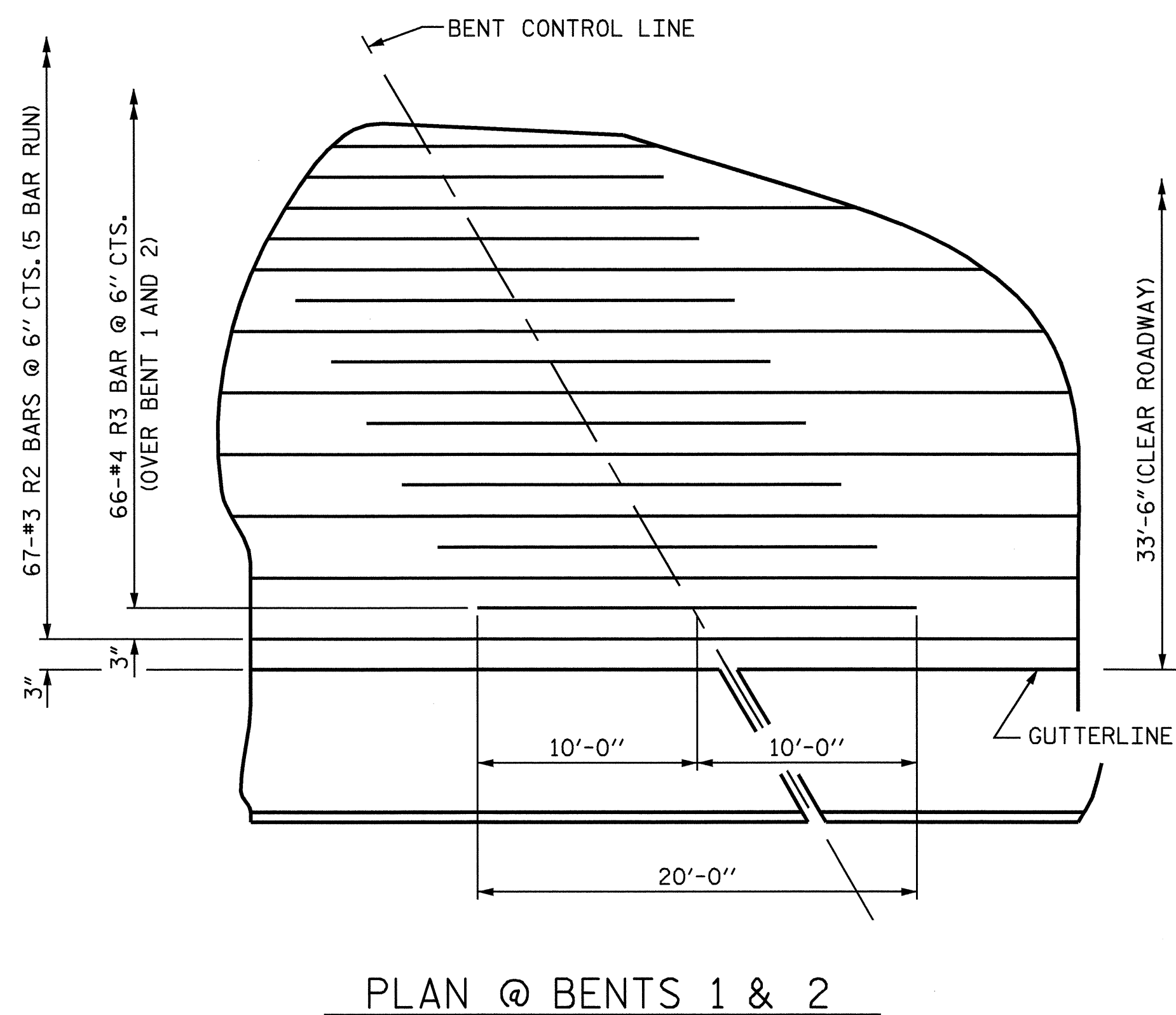
ALL REINFORCING FOR THE CONCRETE WEARING SURFACE SHALL BE EPOXY COATED. FOR ELASTOMERIC CONCRETE, SEE APPROACH SLAB DETAILS SHEET.

BILL OF MATERIAL					
CONCRETE WEARING SURFACE					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* R1	486	#3	STR	17'-3"	3152
* R2	335	#3	STR	25'-3"	3180
* R3	132	#4	STR	20'-0"	1764
* EPOXY COATED REINF. STEEL = 8,096 LBS					
CONCRETE WEARING SURFACE = 4,100 SQ. FT.					

SPLICE LENGTH CHART	
BAR SIZE	EPOXY COATED
#3	1'-3"

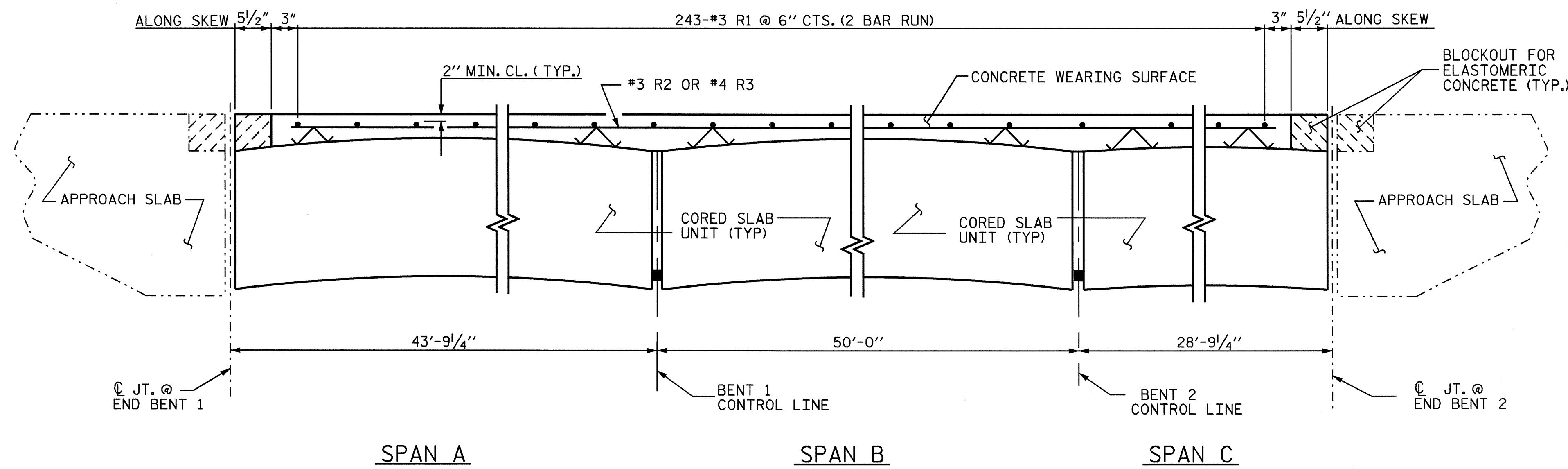
BEAM BOLSTER HEIGHT				
SPAN	** AT ϕ BEARINGS		** AT MID-SPAN	
	GUTTERS	GRADE PT.	GUTTERS	GRADE PT.
A	2"	2"	1"	1"
B	2"	2"	3/4"***	3/4"***
C	2"	2"	1 3/4"	1 3/4"

*** USING SLAB BOLSTER



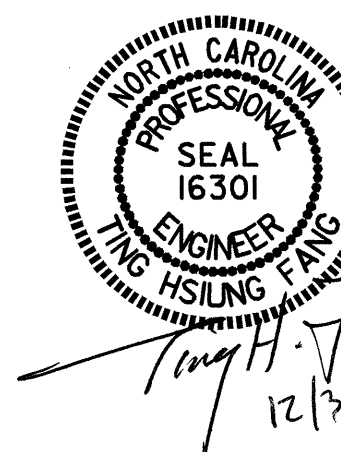
REINFORCING STEEL AND BEAM BOLSTER HEIGHTS

NOTE: BEAM AND SLAB BOLSTER HEIGHTS BASED ON PREDICTED FINAL CAMBER AND THEORETICAL GRADE LINE ELEVATION AND VARY BETWEEN ϕ BEARING AND MID-SPAN FOR ALL SPANS.



ELEVATION OF THE CONCRETE WEARING SURFACE
FOR VARIABLE THICKNESS OF CONCRETE WEARING SURFACE, SEE TABLE ON SHEET NO. S-4

PROJECT NO. B-4246
RANDOLPH COUNTY
STATION: 16+42.50 -L-



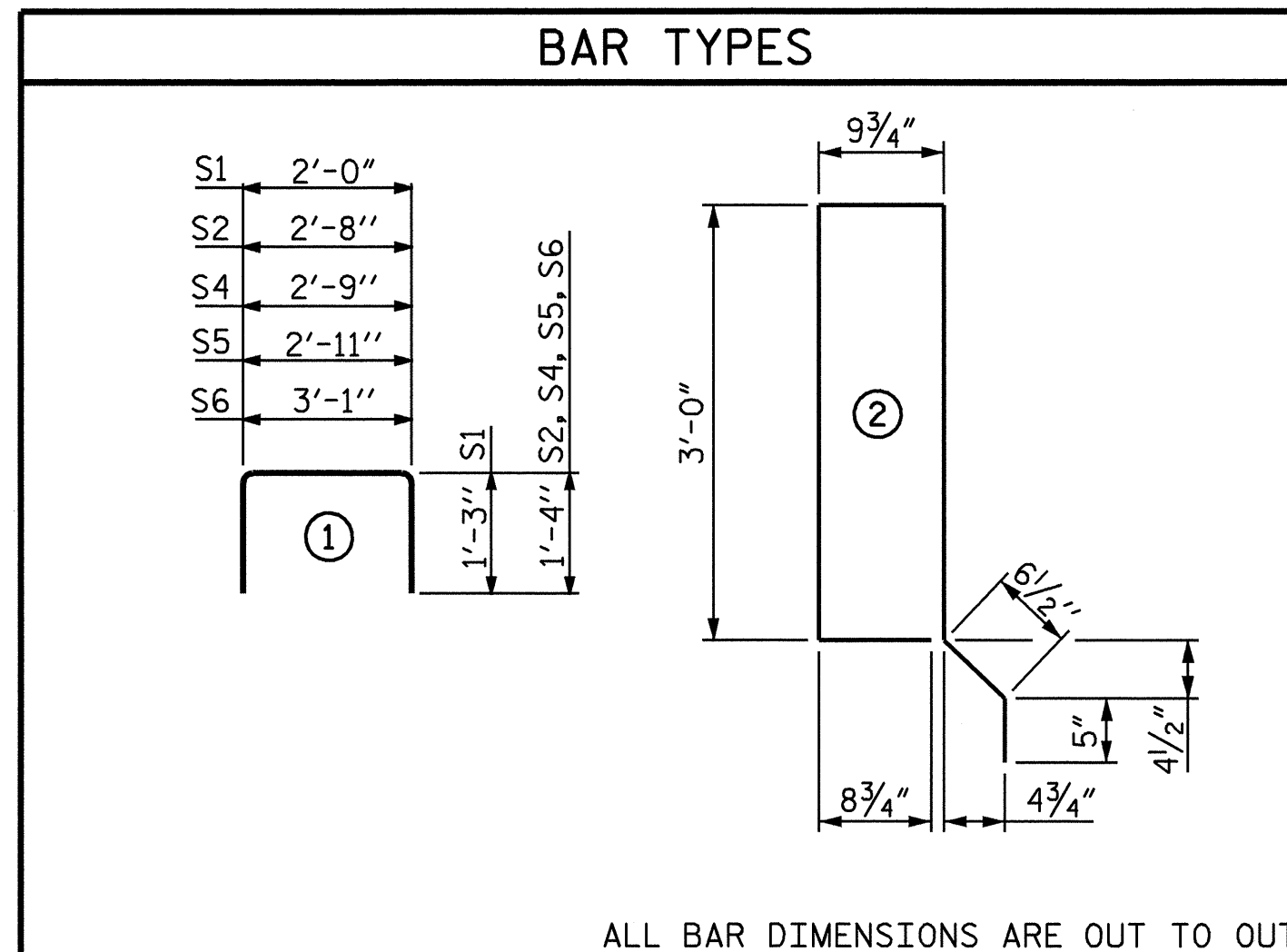
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
CONCRETE WEARING SURFACE DETAILS					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-16
					TOTAL SHEETS 30

DRAWN BY : H.B. SHAH DATE : 05/03/07
CHECKED BY : T.H. FANG DATE : 06/13/07

CORED SLABS REQUIRED				
SPAN A				
UNIT TYPE	NUMBER	LENGTH	TOTAL LENGTH	
EXTERIOR	2	43'-7 ⁹ / ₁₆ "	87'-3 ¹ / ₈ "	
INTERIOR	10	43'-7 ⁹ / ₁₆ "	436'-3 ⁵ / ₈ "	
TOTAL	12	43'-7 ⁹ / ₁₆ "	523'-6 ³ / ₄ "	
SPAN B				
UNIT TYPE	NUMBER	LENGTH	TOTAL LENGTH	
EXTERIOR	2	49'-10 ¹ / ₄ "	99'-8 ¹ / ₂ "	
INTERIOR	10	49'-10 ¹ / ₄ "	498'-6 ¹ / ₂ "	
TOTAL	12	49'-10 ¹ / ₄ "	598'-3"	
SPAN C				
UNIT TYPE	NUMBER	LENGTH	TOTAL LENGTH	
EXTERIOR	2	28'-7 ⁹ / ₁₆ "	57'-3 ¹ / ₈ "	
INTERIOR	10	28'-7 ⁹ / ₁₆ "	286'-3 ⁵ / ₈ "	
TOTAL	12	28'-7 ⁹ / ₁₆ "	343'-6 ³ / ₄ "	
TOTAL CORED SLAB UNITS		No. 36	1465'-4 ¹ / ₂ " LIN. FT.	

GRADE 270 STRANDS	
	1/2" Ø L.R.
AREA (SQUARE INCHES)	0.153
ULTIMATE STRENGTH (LBS. PER STRAND)	41,300
APPLIED PRESTRESS (LBS. PER STRAND)	30,980

GROOVING BRIDGE FLOOR QUANTITY	
	AREA (SQ. FT.)
BRIDGE DECK	3689
APPROACH SLABS	1434
TOTAL	5123



BILL OF MATERIAL FOR ONE CORED SLAB UNIT

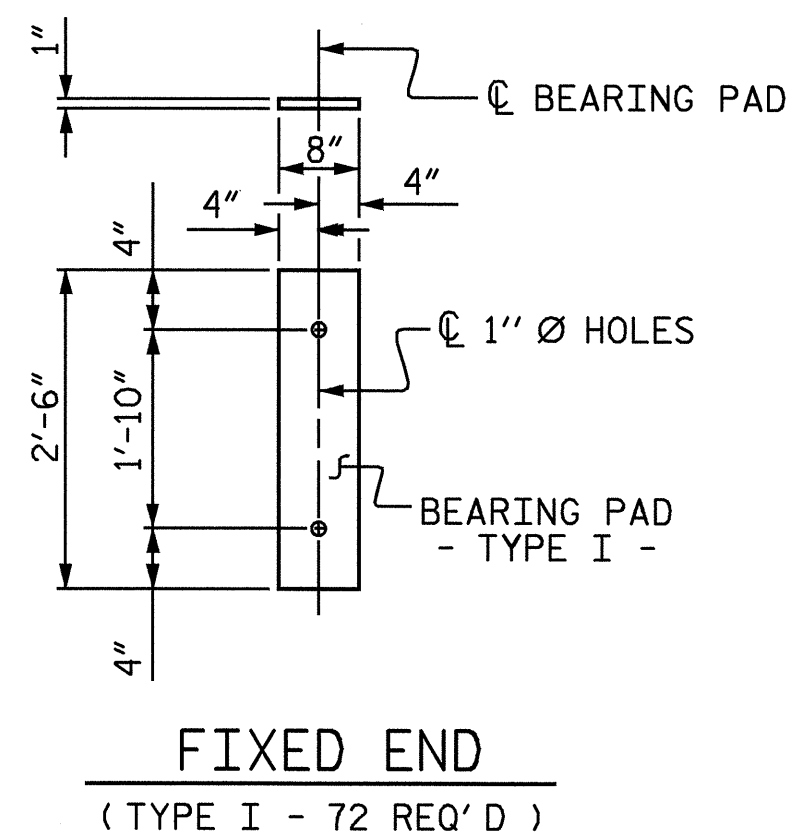
SPAN A							
				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B1	4	#4	STR	22'-7"	60	22'-7"	60
S1	8	#5	1	4'-6"	38	4'-6"	38
S2	80	#4	1	5'-4"	285	5'-4"	285
* S3	45	#5	2	8'-6"	399		
S4	4	#4	1	5'-5"	15	5'-5"	15
S5	4	#4	1	5'-7"	15	5'-7"	15
S6	4	#4	1	5'-9"	15	5'-9"	15
REINFORCING STEEL				428 LBS.		428 LBS.	
* EPOXY COATED REINFORCING STEEL				399 LBS.			
5000 P.S.I. CONCRETE				6.3 CU. YDS.		6.3 CU. YDS.	
1/2" Ø L.R. STRANDS				No. 18			

SPAN B							
				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B2	4	#4	STR	25'-8"	69	25'-8"	69
S1	8	#5	1	4'-6"	38	4'-6"	38
S2	92	#4	1	5'-4"	328	5'-4"	328
* S3	51	#5	2	8'-6"	452		
S4	4	#4	1	5'-5"	15	5'-5"	15
S5	4	#4	1	5'-7"	15	5'-7"	15
S6	4	#4	1	5'-9"	15	5'-9"	15
REINFORCING STEEL				480 LBS.		480 LBS.	
* EPOXY COATED REINFORCING STEEL				452 LBS.			
5000 P.S.I. CONCRETE				7.1 CU. YDS.		7.1 CU. YDS.	
1/2" Ø L.R. STRANDS				No. 23			

SPAN C							
				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B3	2	#4	STR	28'-3"	38	28'-3"	38
S1	8	#5	1	4'-6"	38	4'-6"	38
S2	50	#4	1	5'-4"	178	5'-4"	178
* S3	30	#5	2	8'-6"	266		
S4	4	#4	1	5'-5"	15	5'-5"	15
S5	4	#4	1	5'-7"	15	5'-7"	15
S6	4	#4	1	5'-9"	15	5'-9"	15
REINFORCING STEEL				299 LBS.		299 LBS.	
* EPOXY COATED REINFORCING STEEL				266 LBS.			
5000 P.S.I. CONCRETE				4.8 CU. YDS.		4.8 CU. YDS.	
1/2" Ø L.R. STRANDS				No. 12			

DEAD LOAD DEFLECTION AND CAMBER			
	SPAN A	SPAN B	SPAN C
CAMBER (SLAB ALONE IN PLACE)	1 ⁵ / ₁₆ " ↑	2 ¹ / ₁₆ " ↑	7 ¹ / ₁₆ " ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	3 ³ / ₁₆ " ↓	3 ³ / ₈ " ↓	1 ¹ / ₁₆ " ↓
FINAL CAMBER	1 ¹ / ₈ " ↑	1 ¹¹ / ₁₆ " ↑	3 ³ / ₈ " ↑

** INCLUDES FUTURE WEARING SURFACE



ELASTOMERIC BEARING DETAILS

NOTES

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL CAST WITH THE CORED SLAB SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE CORED SLABS.

RECESSES FOR TRANSVERSE STRANDS SHALL BE GROUTED AFTER THE TENSIONING OF THE STRANDS.

THE 2 1/2" Ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH GROUT.

THE 2" Ø BACKER ROD SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER, SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

WHEN CORED SLABS ARE CAST, A POSITIVE HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDEWAYS. THIS SYSTEM SHALL BE DESIGNED TO BE LEFT IN PLACE UNTIL THE CONCRETE HAS REACHED RELEASE STRENGTH. AT LEAST THREE WEEKS PRIOR TO CASTING CORED SLABS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL DETAILS, LOCATION AND SPACING OF THE HOLD-DOWNS SHALL BE INDICATED.

WHEN A CONCRETE WEARING SURFACE IS DETAILED ON THE CORED SLAB BRIDGE TYPICAL SECTION, THE TOP SURFACE OF THE CORED SLAB UNITS SHALL HAVE A 3/8" RAKED FINISH.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 4000 PSI.

TRANSVERSE POST TENSIONING OF THE CORED SLAB SECTIONS SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS, EXCEPT THAT THE 0.6" Ø STRANDS SHALL BE TENSIONED TO 43,950 POUNDS.

ALL REINFORCING STEEL IN PARAPETS SHALL BE EPOXY COATED.

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE CORED SLAB UNIT ENDS.

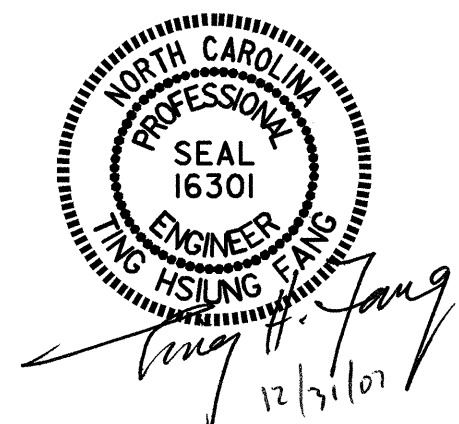
APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS. FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

SPLICE CHART		
BAR	SIZE	LENGTH
B1	#4	1'-9"
B2	#4	1'-9"

PROJECT NO. B-4246
RANDOLPH COUNTY
 STATION: 16+45.50 -L-

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			30



ASSEMBLED BY : T.L. CLELLAND DATE :12/20/06
 CHECKED BY : A.A. COLE DATE :04/12/07
 DRAWN BY : WJH 4/89 REV. 7/10/01 RWW/LES
 CHECKED BY : FCJ 5/89 REV. 5/7/03RRR RWW/JTE
 REV. 5/1/06 TLA/GM

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

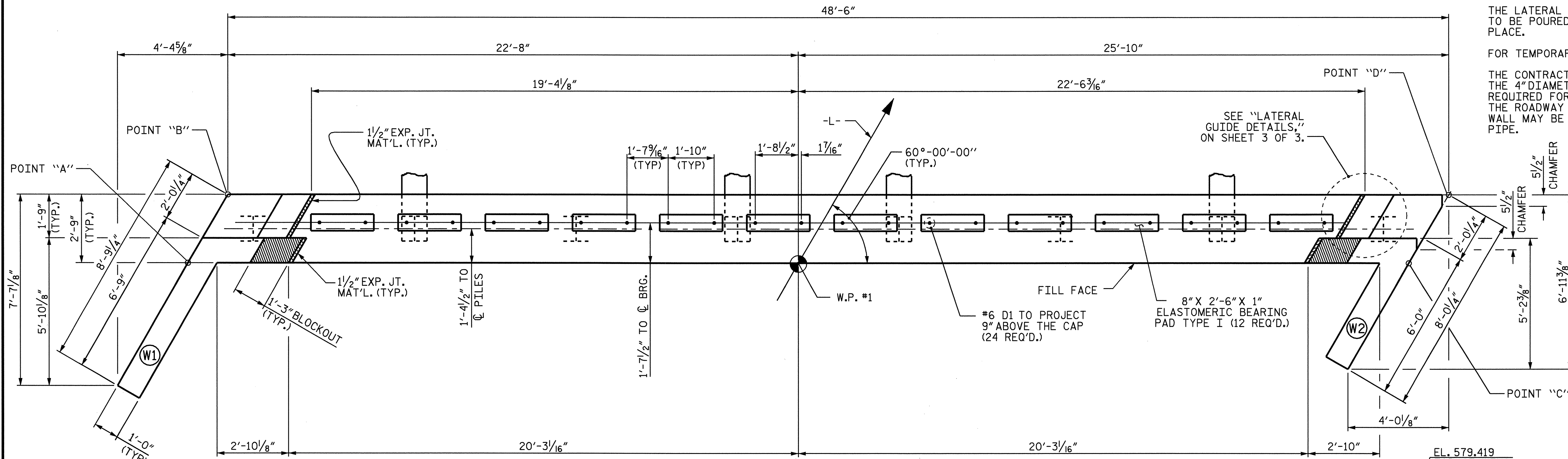
FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE PARAPET AND END POST ARE CAST IF SLIP FORMING IS USED.

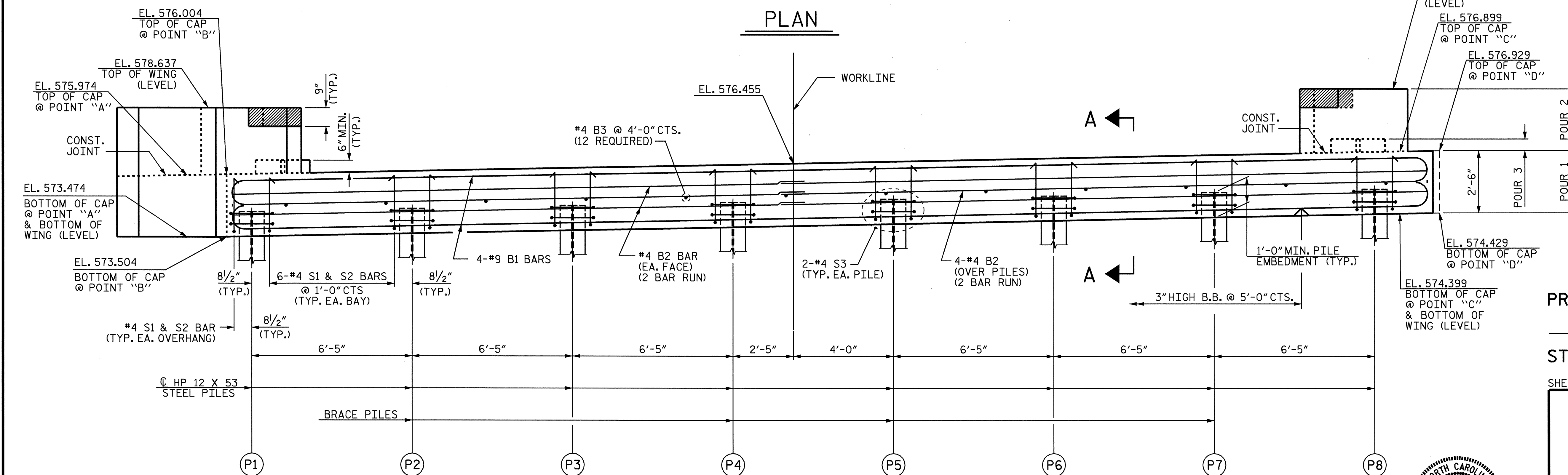
THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER CORED SLAB UNITS ARE IN PLACE.

FOR TEMPORARY DRAINAGE DETAILS, SEE SHEET 3 OF 3.

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



PLAN



ELEVATION

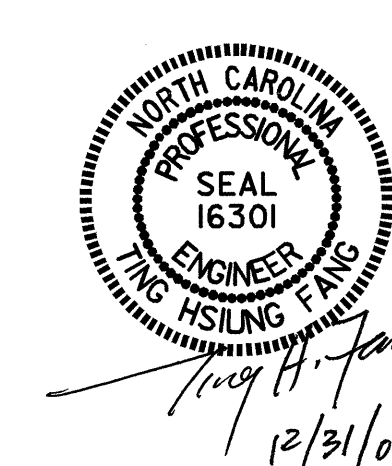
RIGHT WING NOT SHOWN FOR CLARITY

TOP OF PILE ELEVATIONS	
PILE	ELEVATION
P1	574.519
P2	574.648
P3	574.777
P4	574.906
P5	575.035
P6	575.165
P7	575.293
P8	575.423

PROJECT NO. B-4246
RANDOLPH COUNTY
 STATION: 16+42.50 -L-

SHEET 1 OF 3

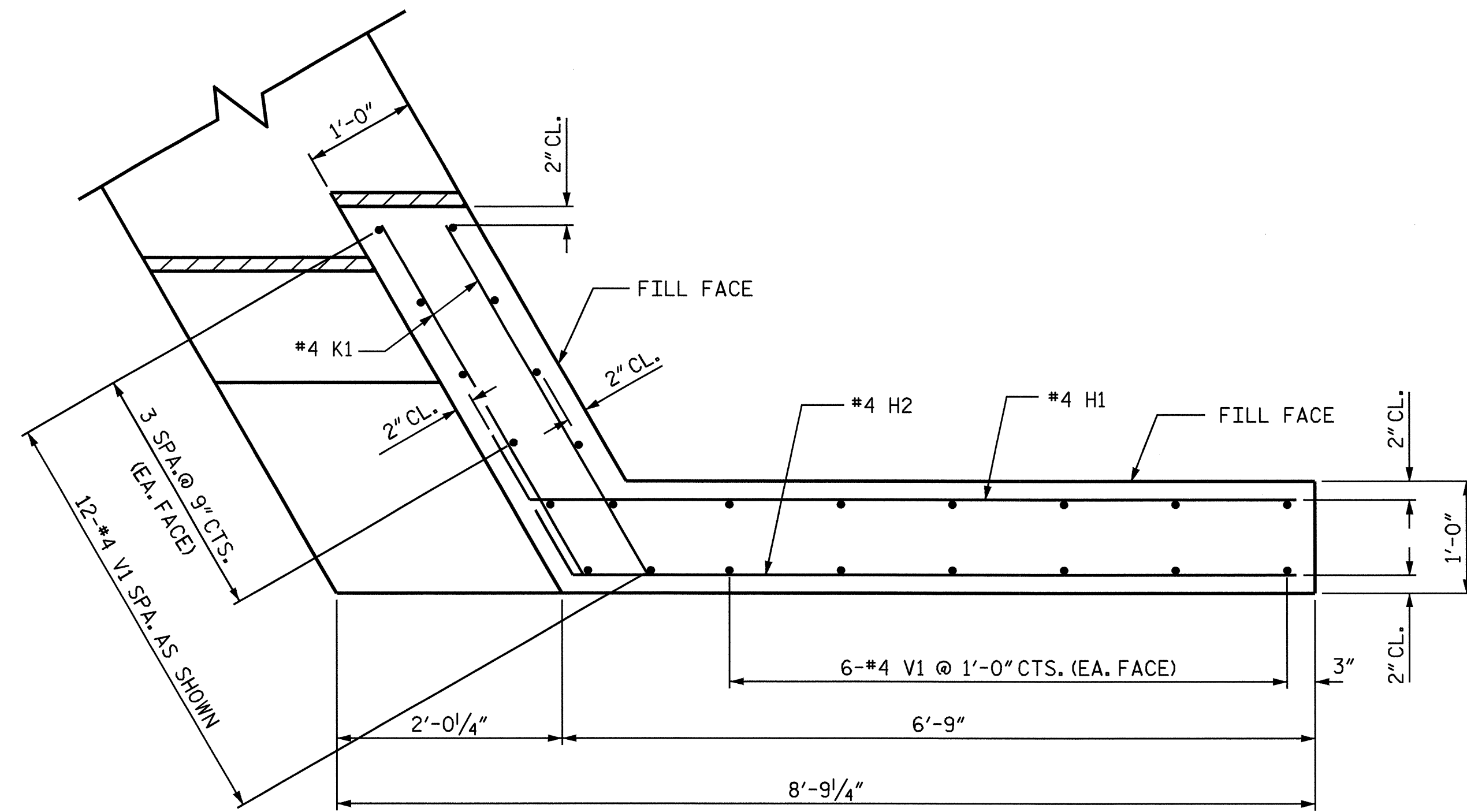
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT 1



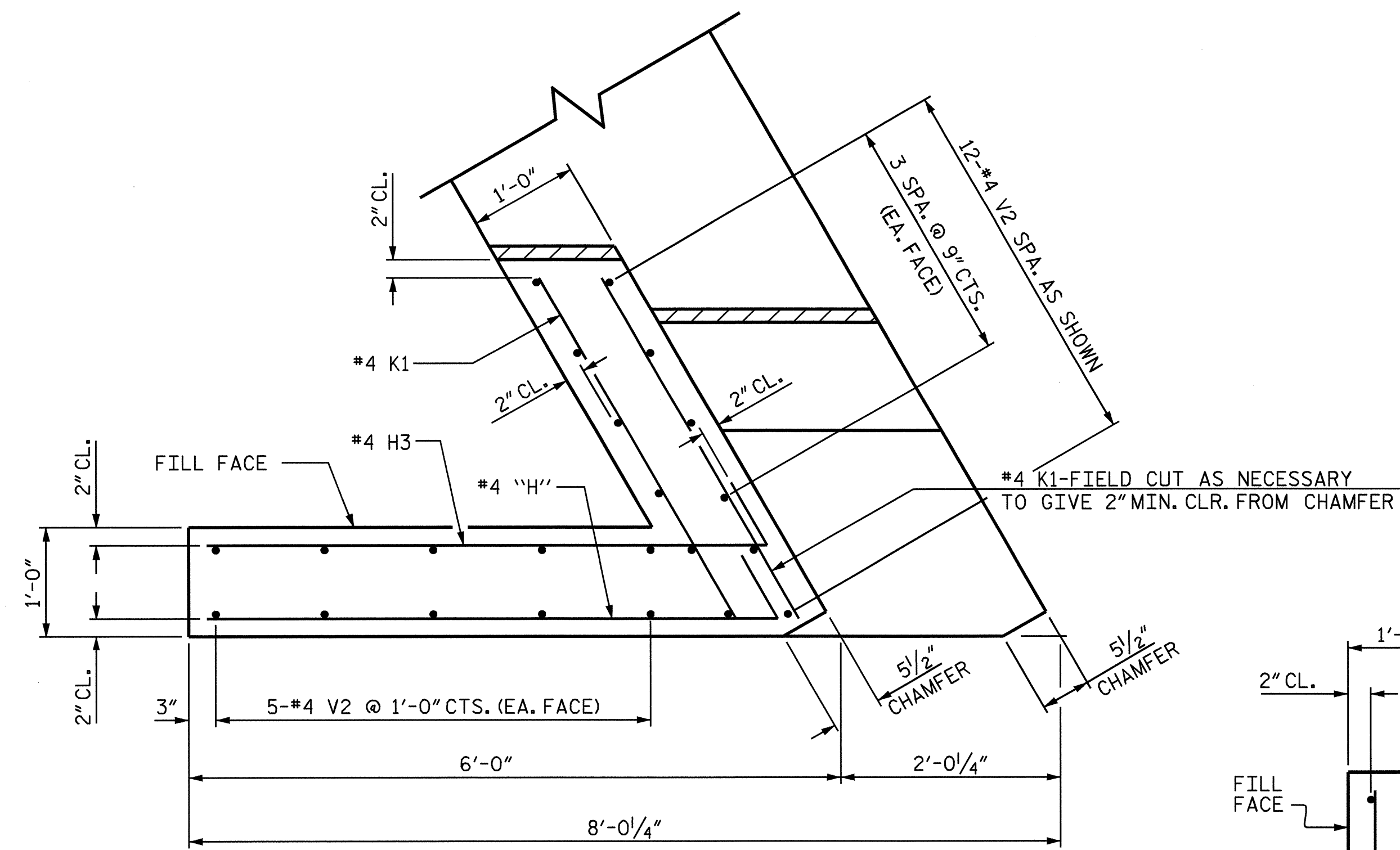
DRAWN BY: T.L. CLELLAND DATE: 21/19/06
 CHECKED BY: A.A. COLE DATE: 5/9/07

31-DEC-2007 11:53
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 kpnwton

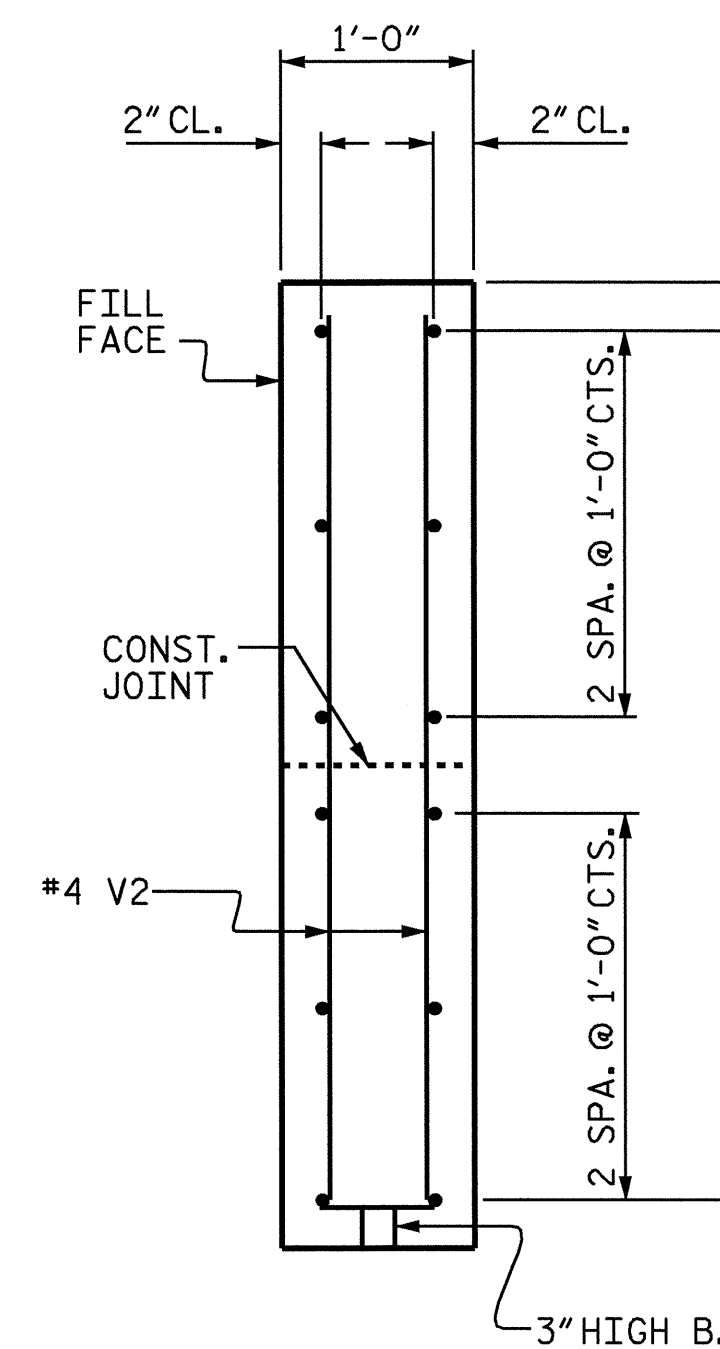
REVISIONS						SHEET NO. S-18
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 30
2			4			



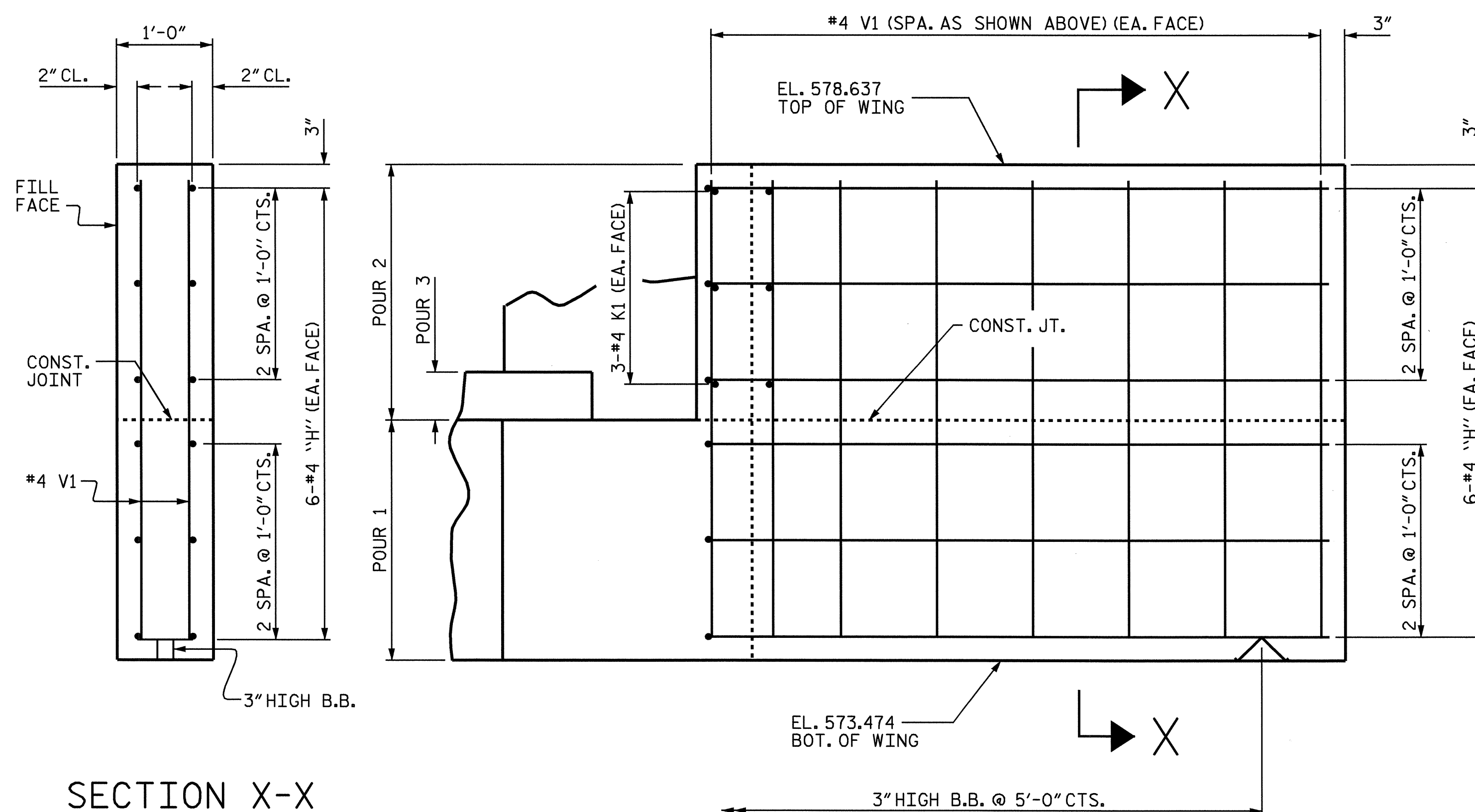
PLAN OF WING W1



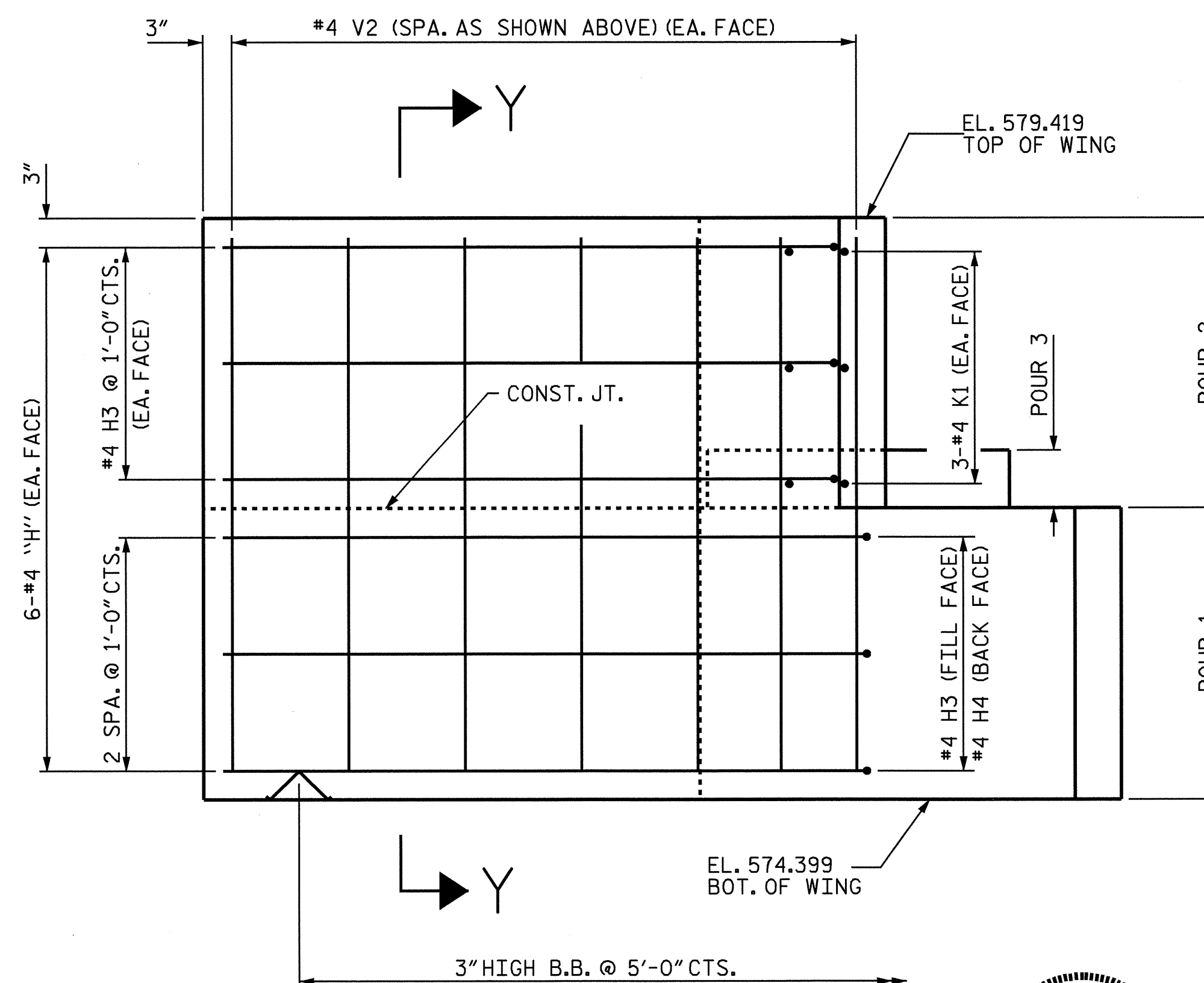
PLAN OF WING W2



SECTION Y-Y



ELEVATION OF WING W1



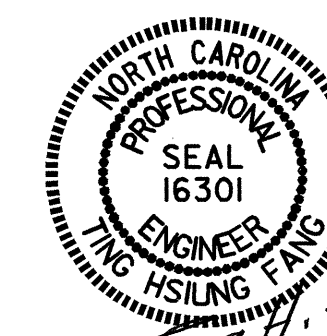
ELEVATION OF WING W2

SECTION X-X

PROJECT NO. B-4246
RANDOLPH COUNTY
 STATION: 16+42.50 -L-

SHEET 2 OF 3

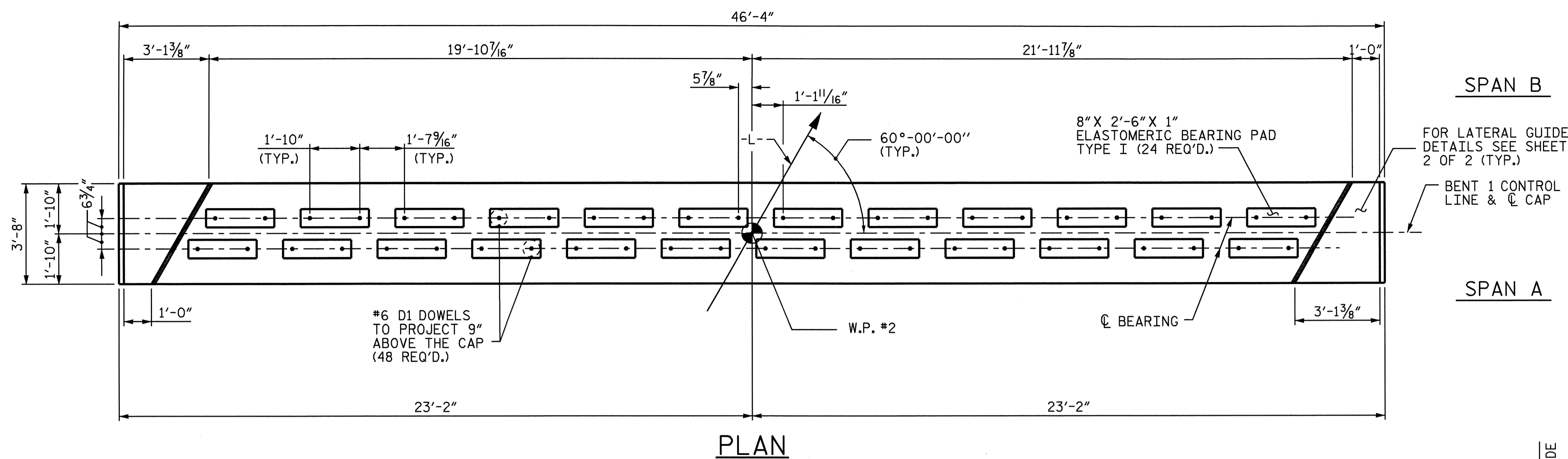
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT 1



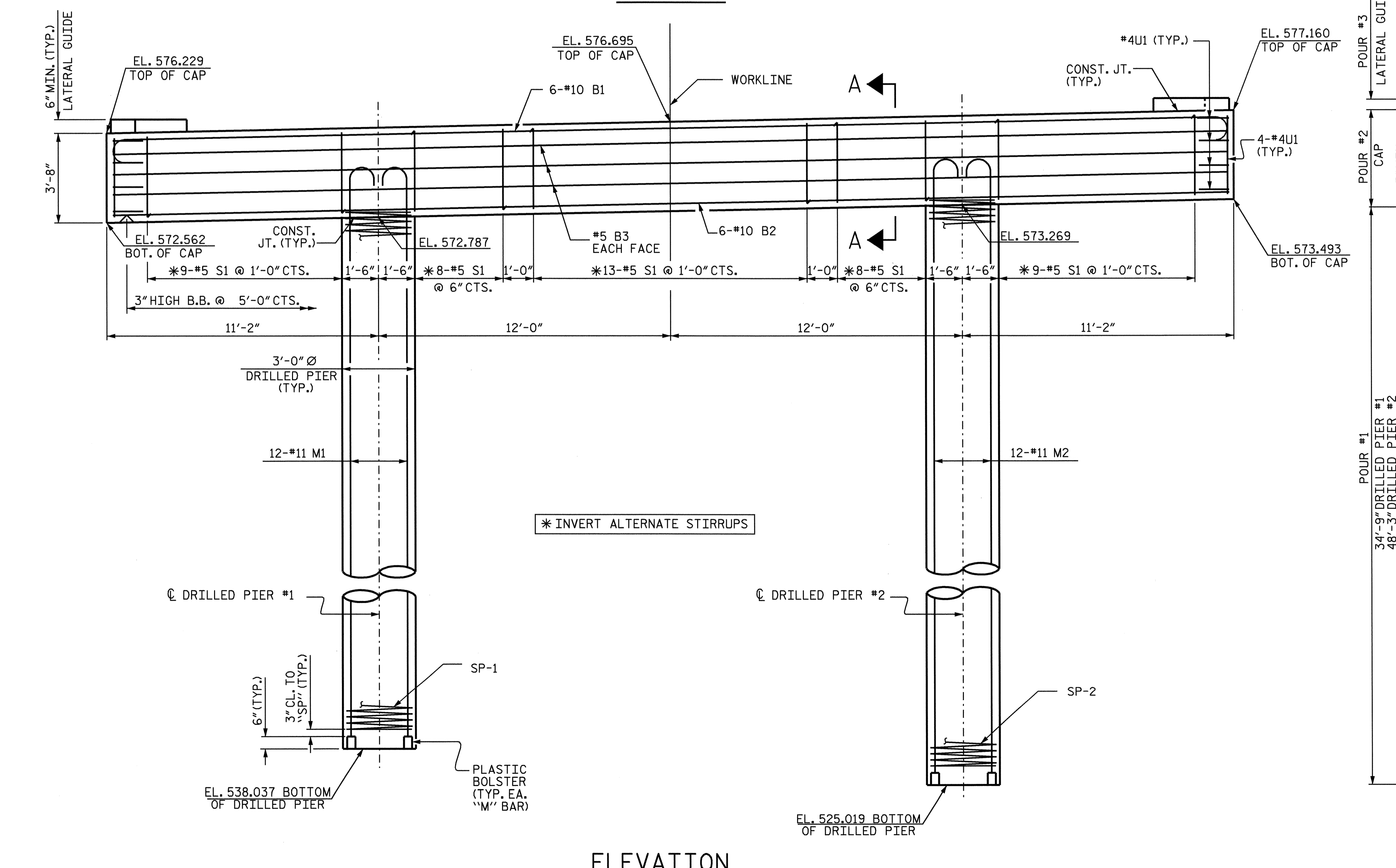
Hsing Fang
 12/31/07

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			30

DRAWN BY: T.L. CLELLAND DATE: 12/21/06
 CHECKED BY: A.A. COLE DATE: 5/10/07



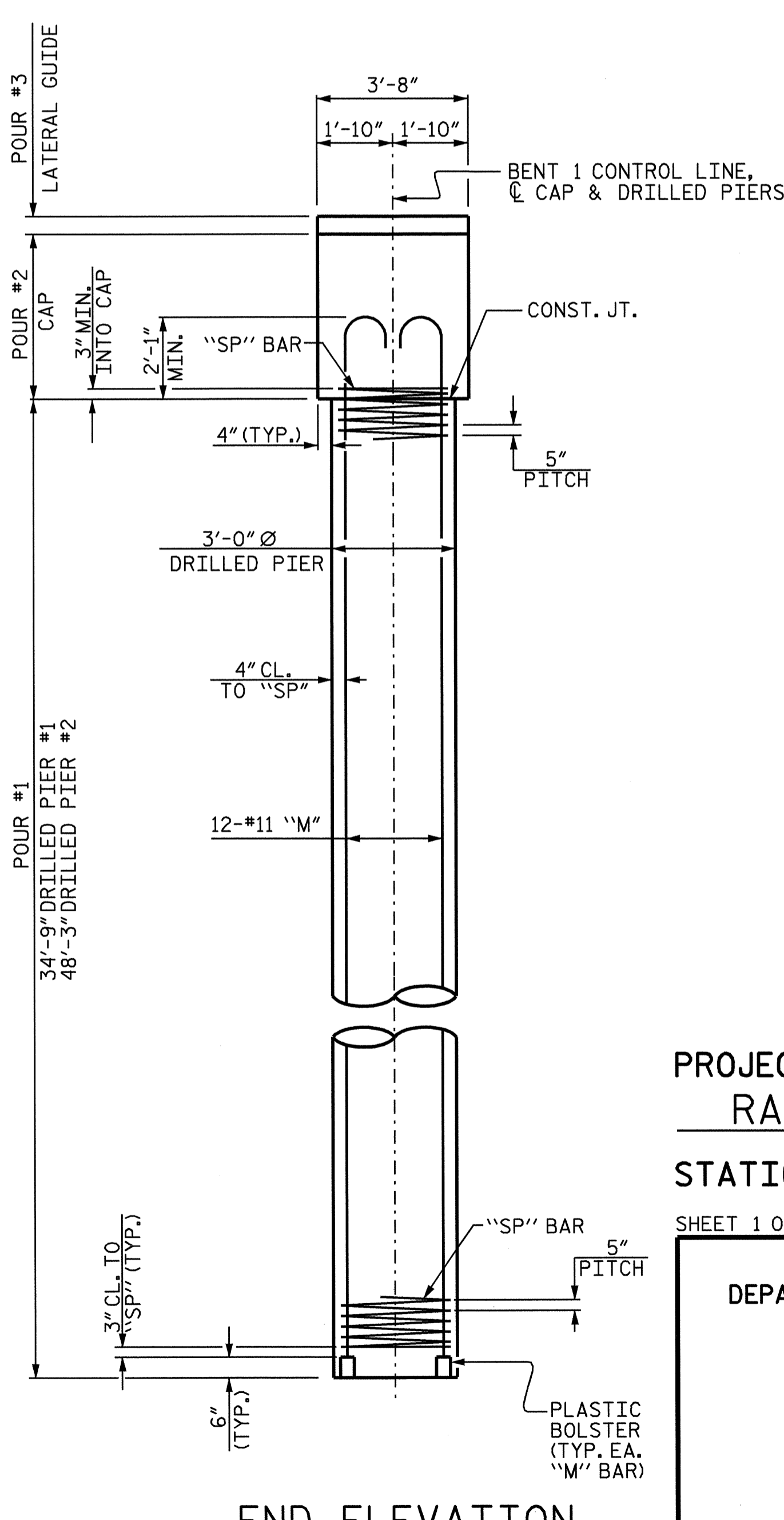
PLAN



ELEVATION

SPAN B

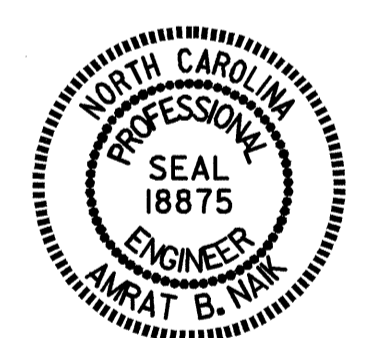
SPAN A



END ELEVATION

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #6 D1 DOWELS.
 HOOKS ON "M" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.
 ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".
 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.
 LATERAL GUIDES AT THE END OF EACH CAP ARE NOT TO BE POURED UNTIL AFTER CORED SLAB UNITS ARE IN PLACE.



Amrat B. Naik
 01-02-2008

PROJECT NO. B-4246
RANDOLPH COUNTY
 STATION: 16+42.50 -L-

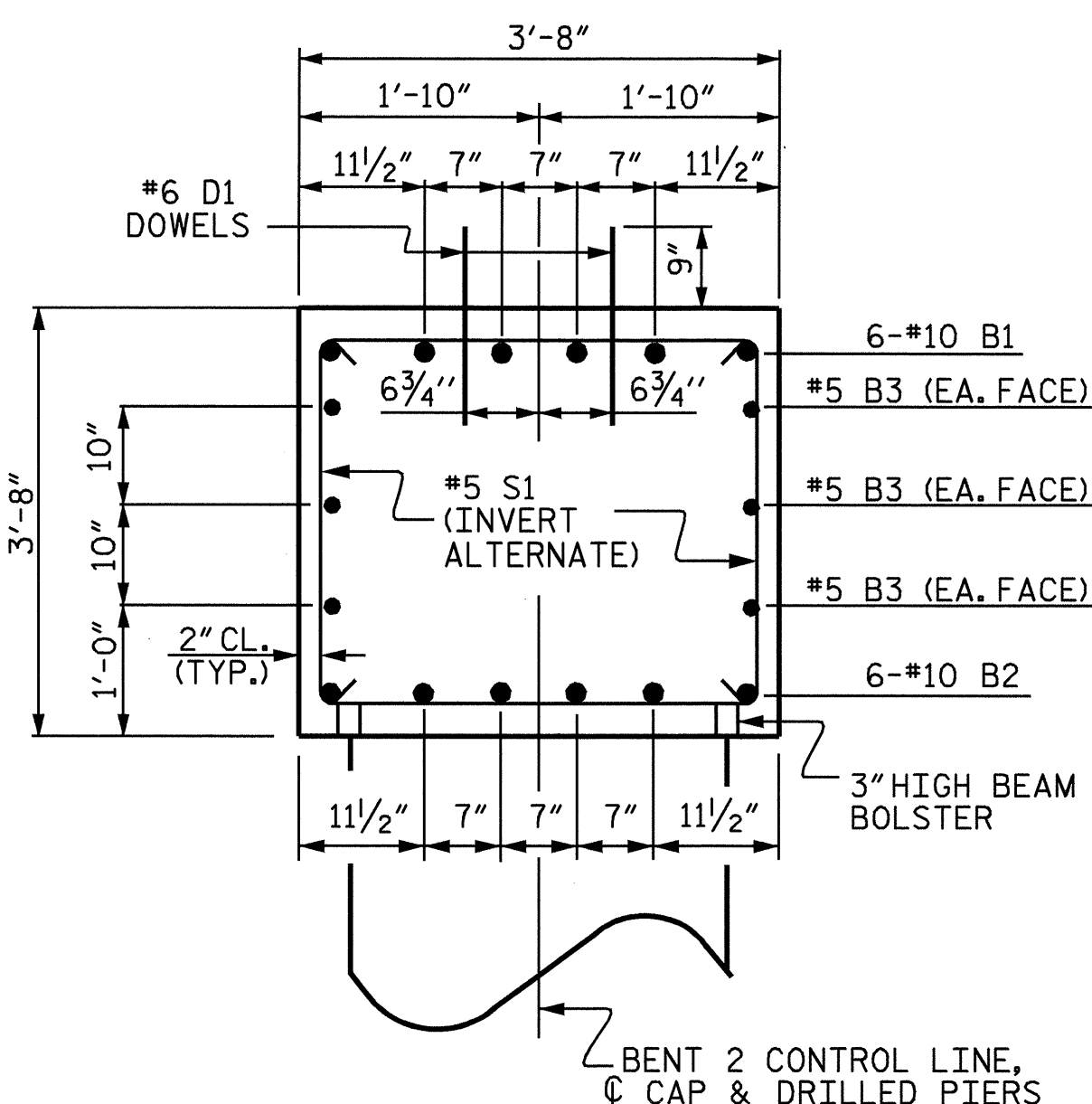
SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

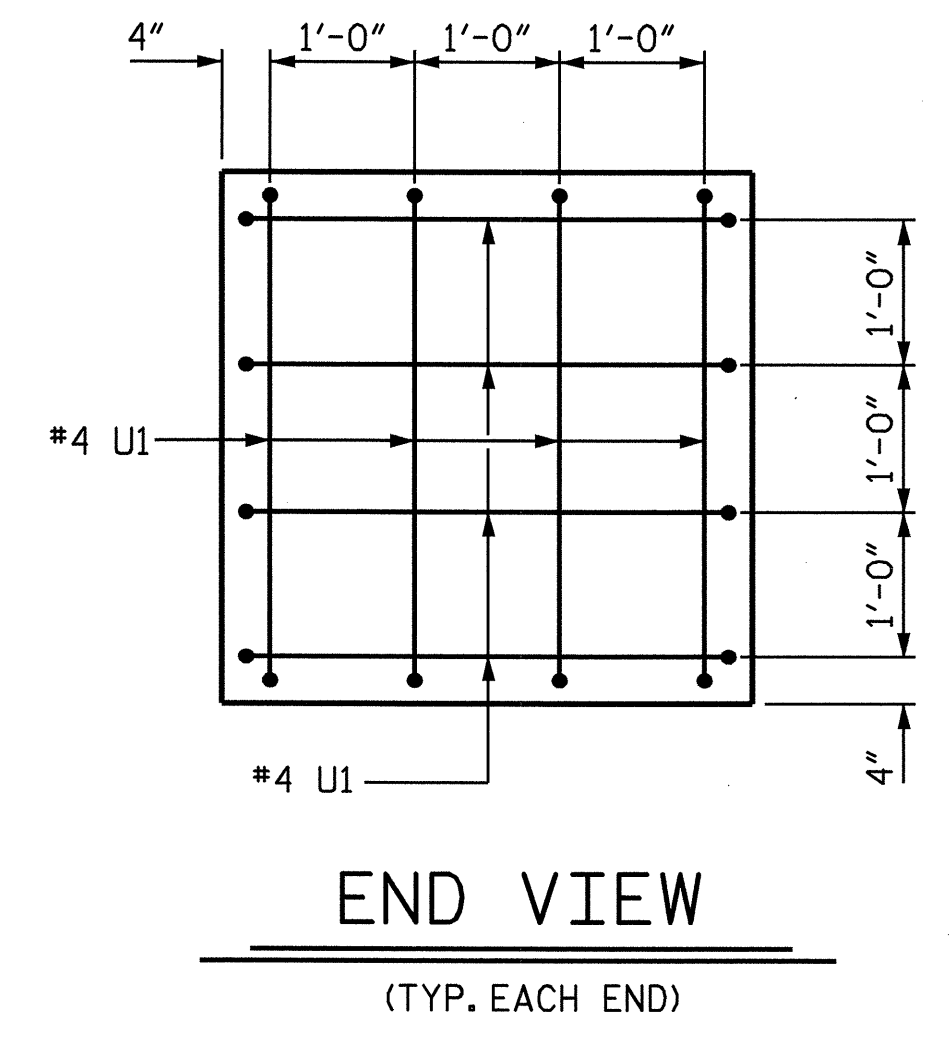
SUBSTRUCTURE
 BENT 1

DRAWN BY: T.L. CLELLAND DATE: 1/3/07
 CHECKED BY: A.B. NAIK DATE: 11/06/07

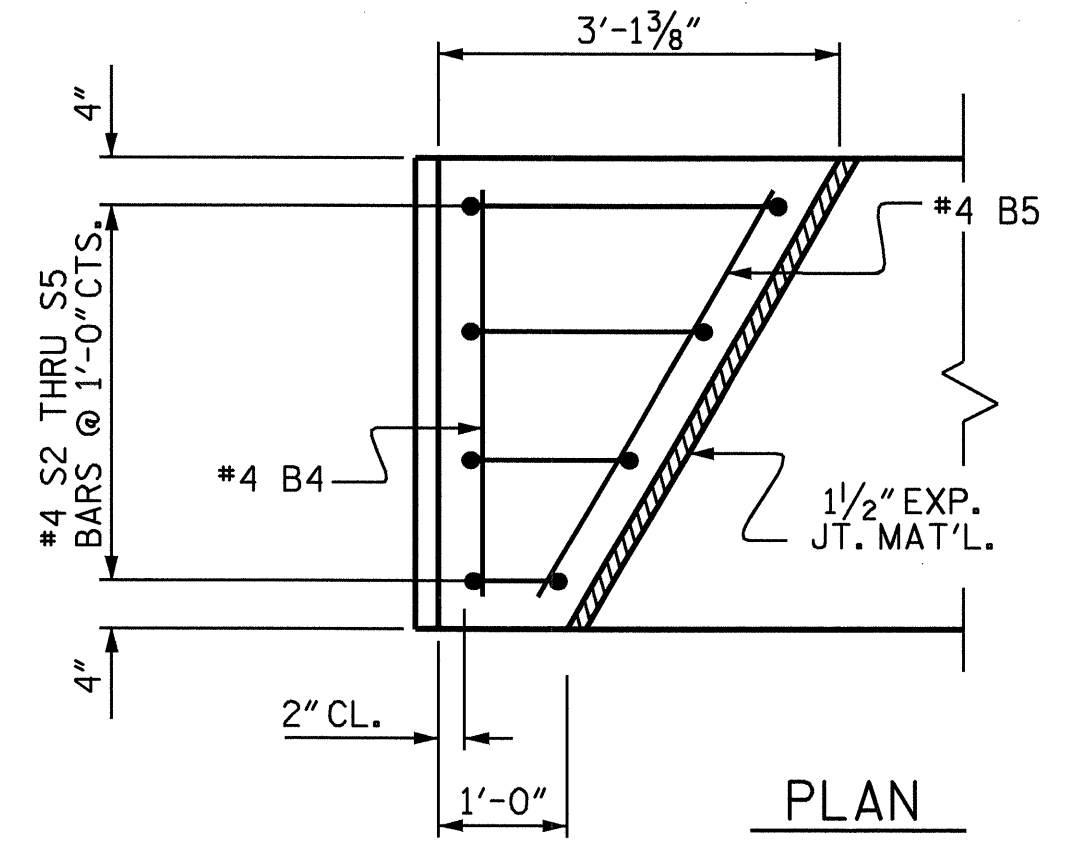
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21	
1			3			TOTAL	30
2			4			SHEETS	



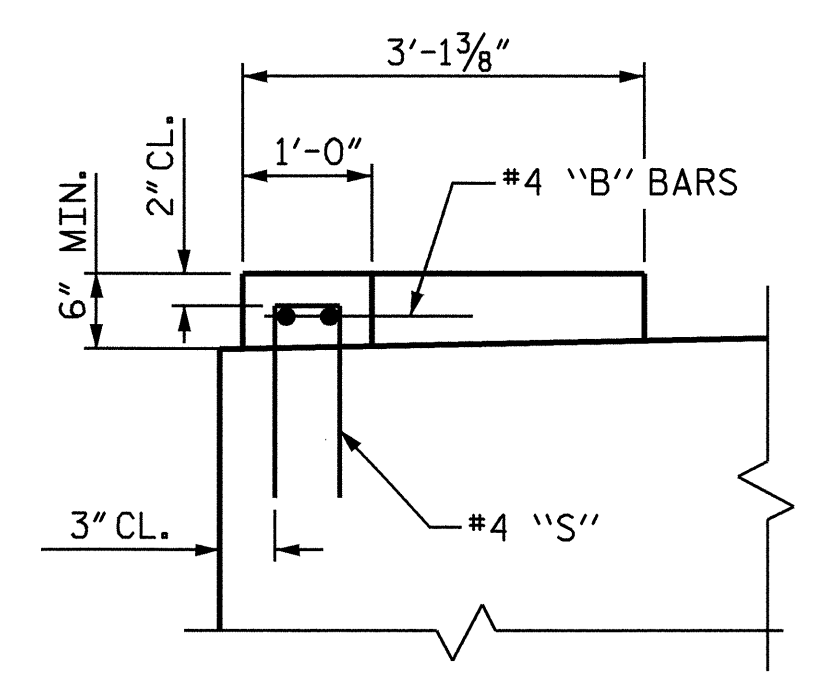
SECTION A-A



END VIEW
(TYP. EACH END)



PLAN

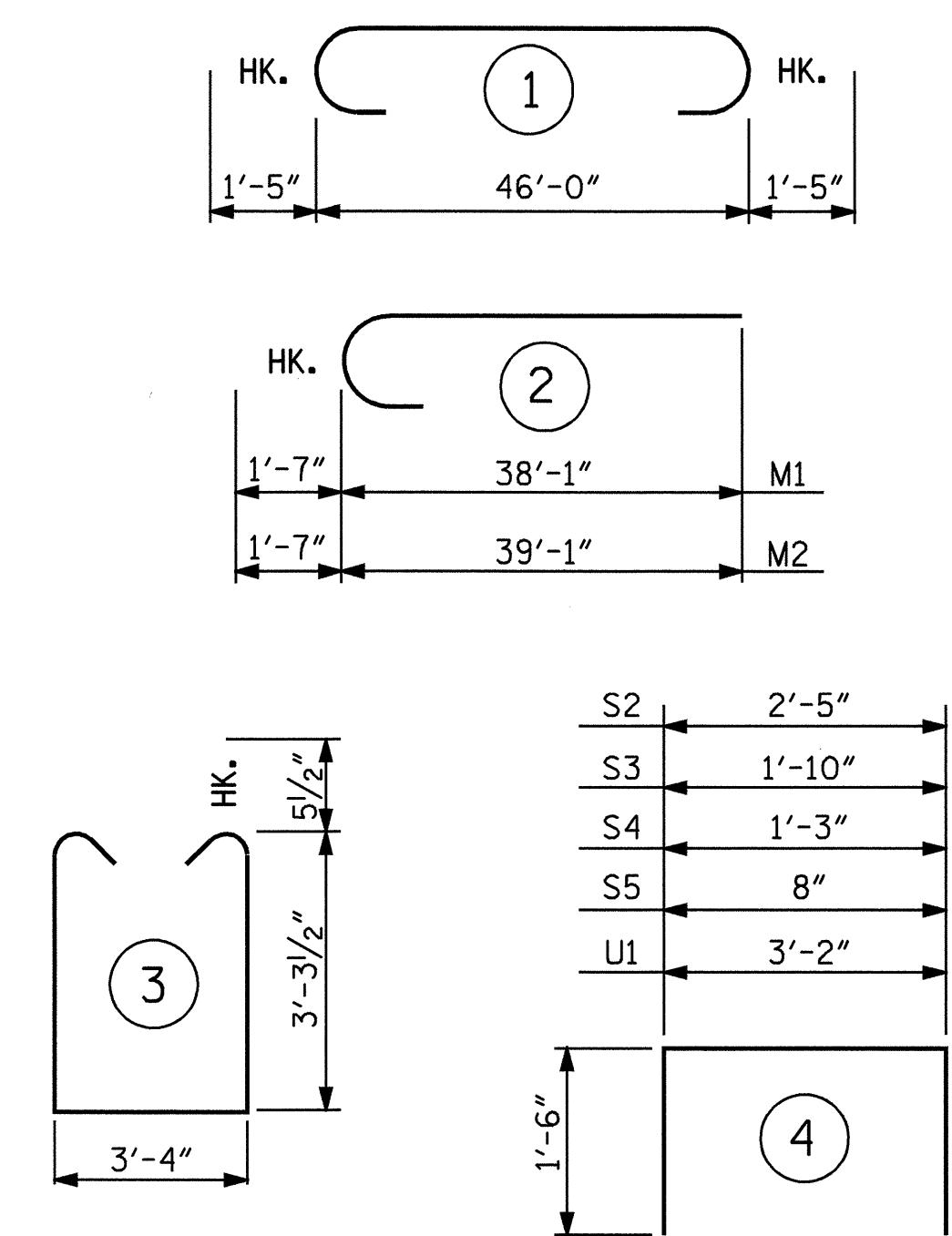


ELEVATION

LATERAL GUIDE DETAILS

LEFT END OF CAP SHOWN, RIGHT END SIMILAR BY ROTATION

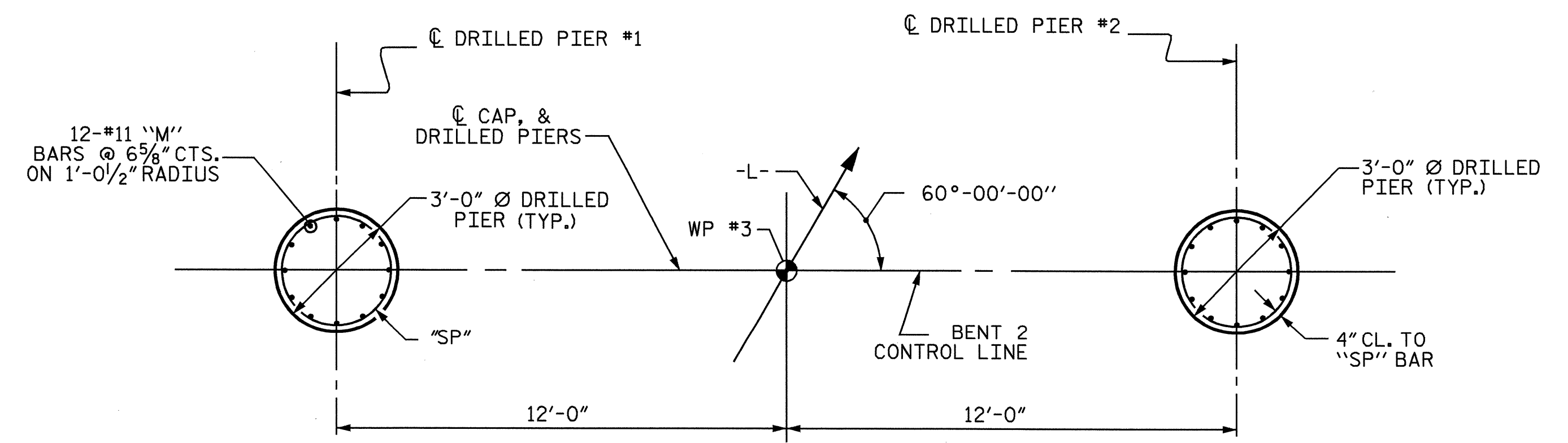
BAR TYPES



BILL OF MATERIAL

BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#10		48'-10"	1261
B2	6	#10	STR	46'-0"	1188
B3	6	#5	STR	46'-0"	288
B4	2	#4	STR	3'-4"	4
B5	2	#4	STR	3'-10"	5
D1	48	#6	STR	1'-6"	108
M1	12	#11		39'-8"	2529
M2	12	#11		40'-8"	2593
S1	47	#5		10'-10"	531
S2	2	#4		5'-5"	7
S3	2	#4		4'-10"	6
S4	2	#4		4'-3"	6
S5	2	#4		3'-8"	5
U1	16	#4		6'-2"	66
REINFORCING STEEL					= 8597 LBS
SPIRAL REINFORCING STEEL					
SP-1	1	*	5	664'-10"	693
SP-2	1	*	5	694'-4"	724
TOTAL SPIRAL COLUMN REINFORCING STEEL					1418 LBS.
CLASS A CONCRETE BREAKDOWN					
POUR #2 CAP					23.1 CY
POUR #3 LATERAL GUIDES					0.3 CY
TOTAL					23.4 CY
3'-0" Ø DRILLED PIER QUANTITIES					
DRILLED PIER CONCRETE					
POUR #1 DRILLED PIER					17.7 CY
PERMANENT STEEL CASING					30.6 FT.
DRILLED PIERS IN SOIL					60.0 FT.
DRILLED PIERS NOT IN SOIL					7.5 FT.
SPT TESTING					2 EA.
CSL TUBES					290 LIN. FT.
* THE SP-1 AND SP-2 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BARS.					

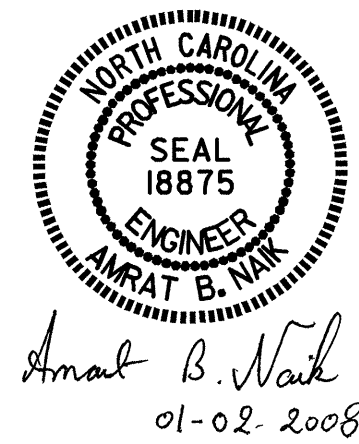
ALL BAR DIMENSIONS ARE OUT TO OUT.



PLAN OF DRILLED PIERS

(REINFORCING STEEL IS TYPICAL FOR EACH DRILLED PIER)

PROJECT NO. B-4246
RANDOLPH COUNTY
 STATION: 16+42.50 -L-
 SHEET 2 OF 2

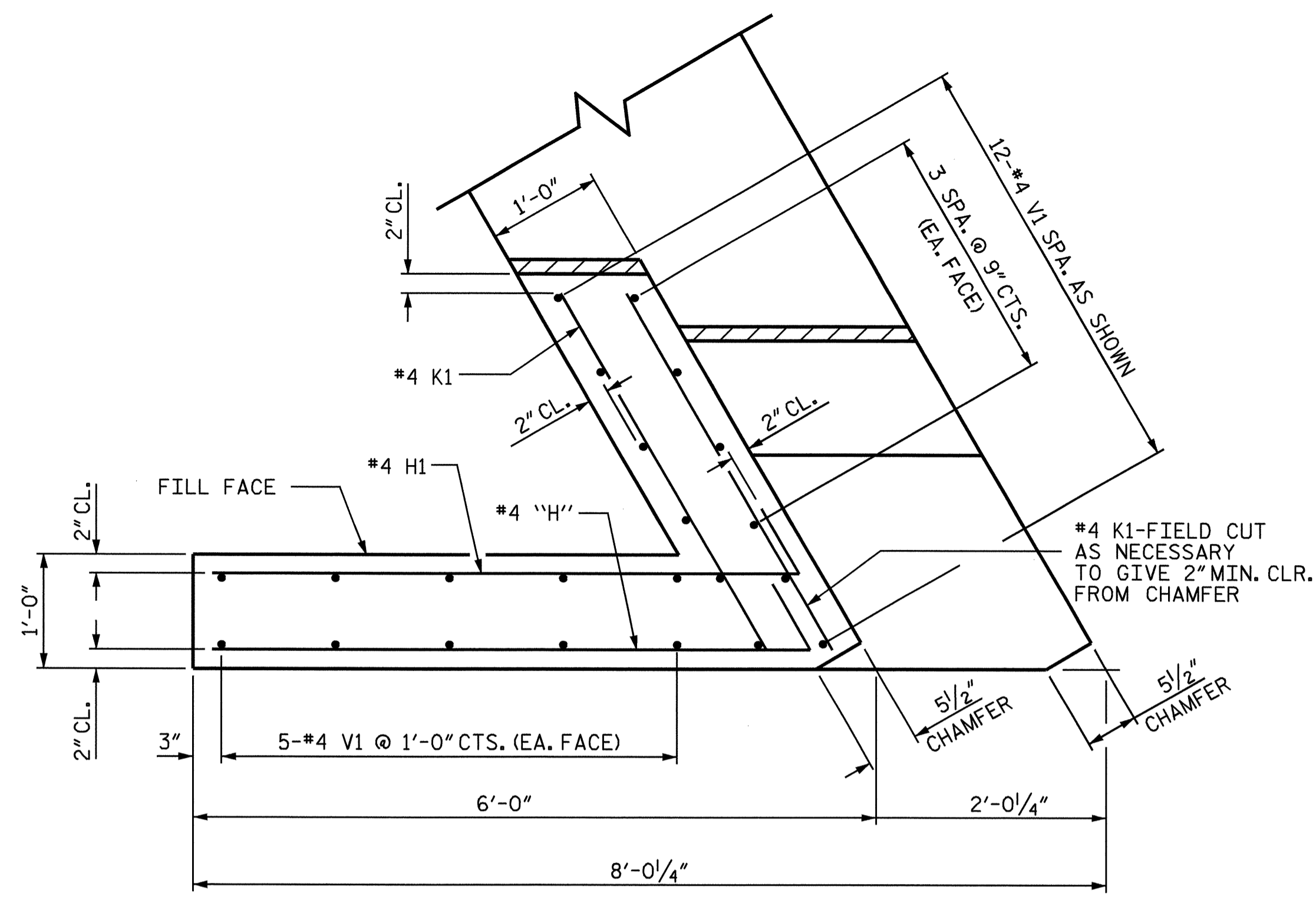


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT 2

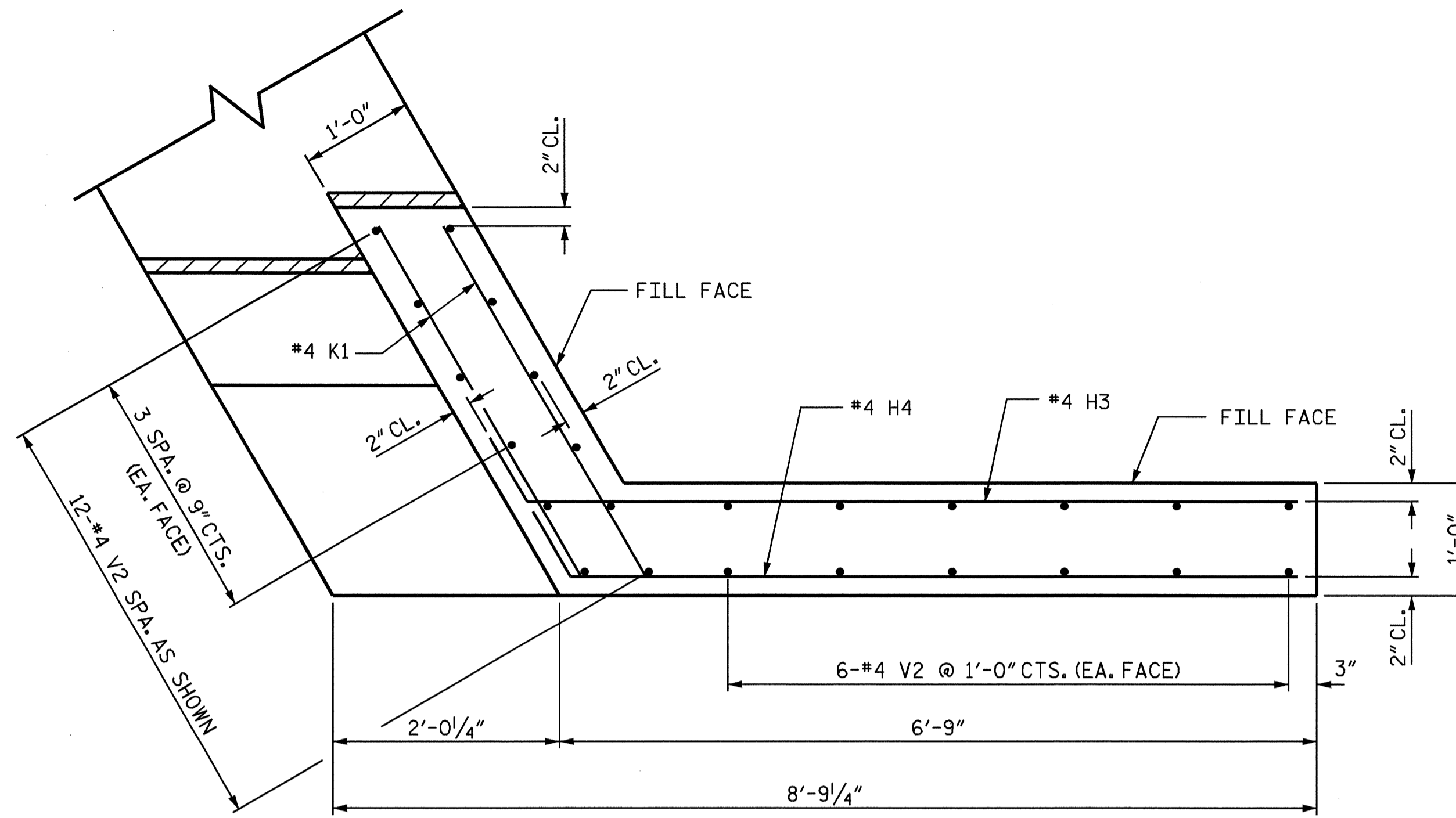
REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

DRAWN BY: I.L. CLELLAND DATE: 1/3/07
 CHECKED BY: A.B. NAIK DATE: 11/06/07

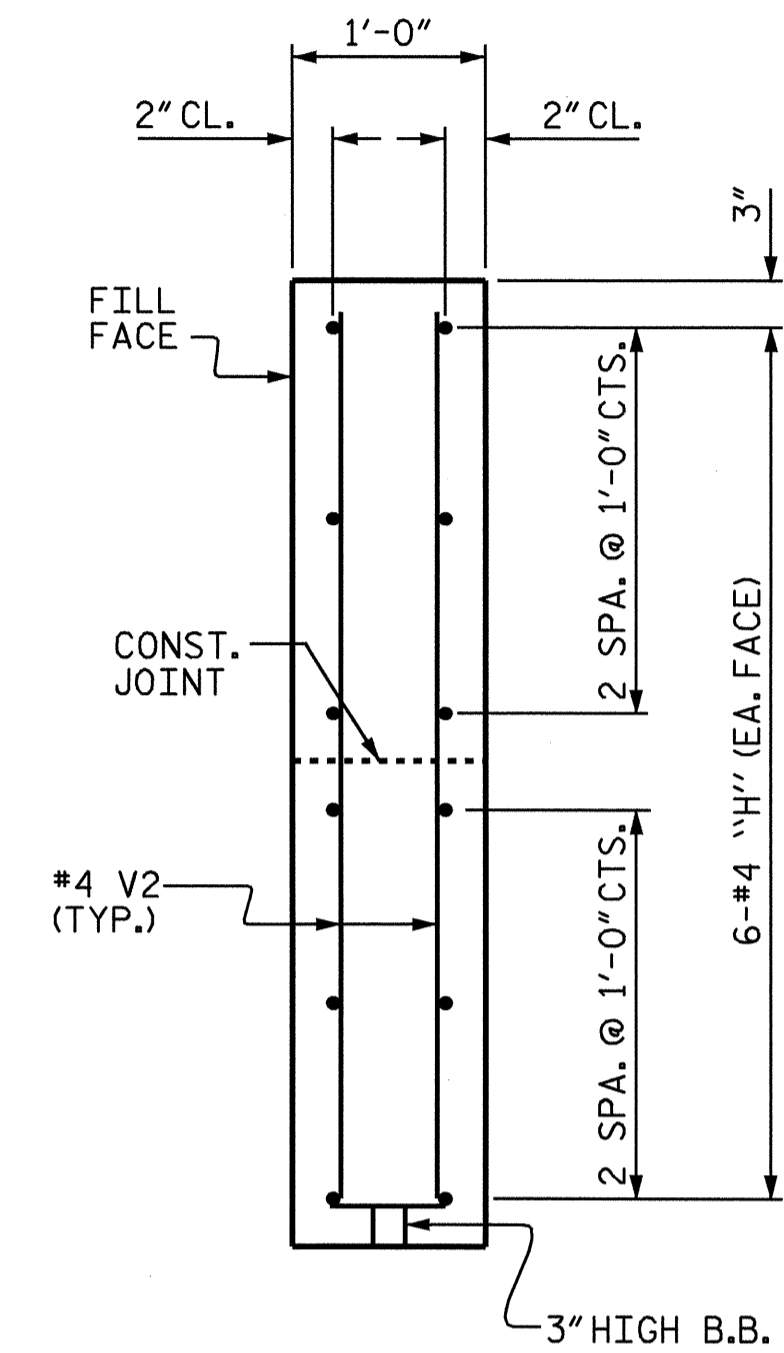
TOTAL SHEETS
 30



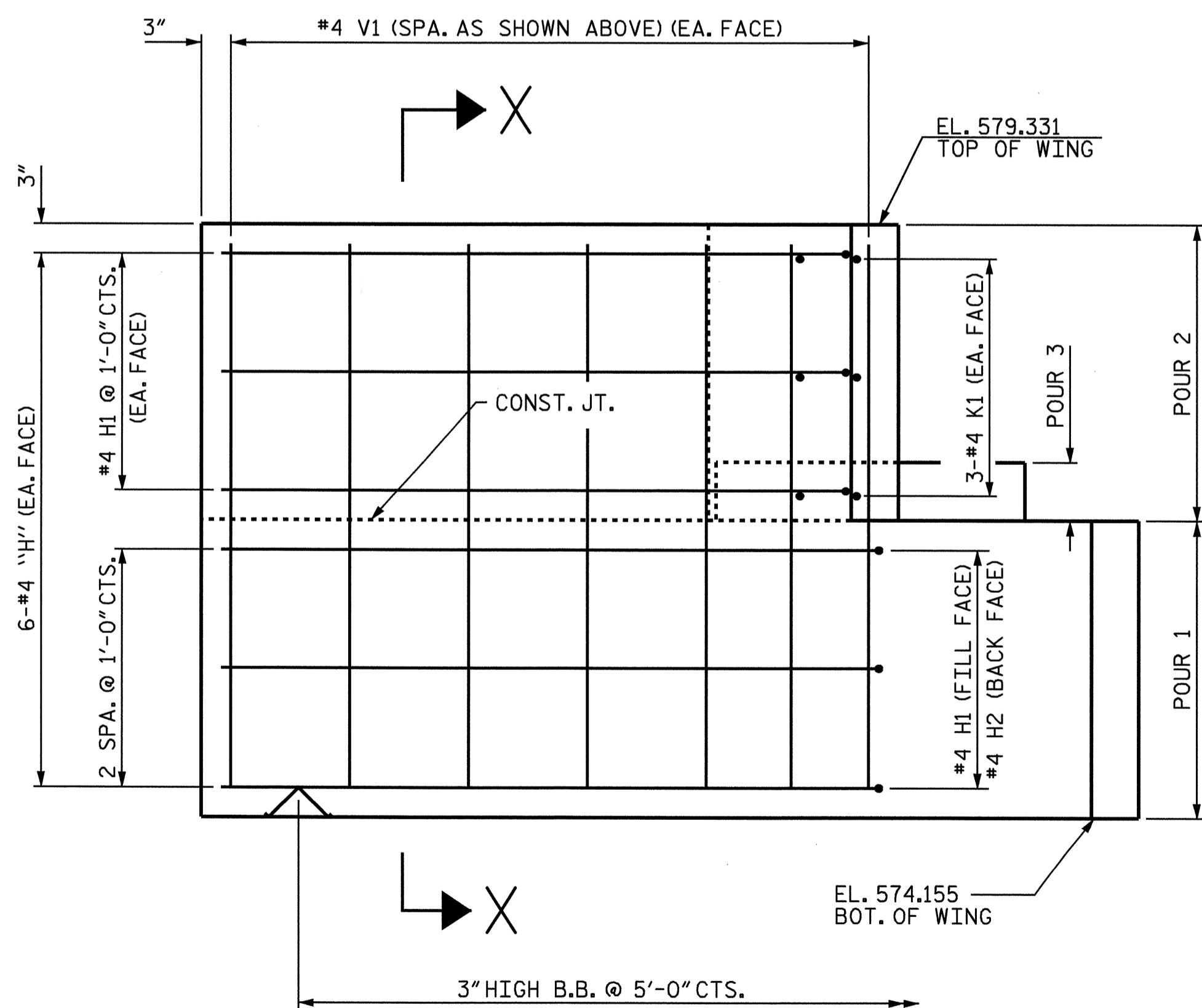
PLAN OF WING W1



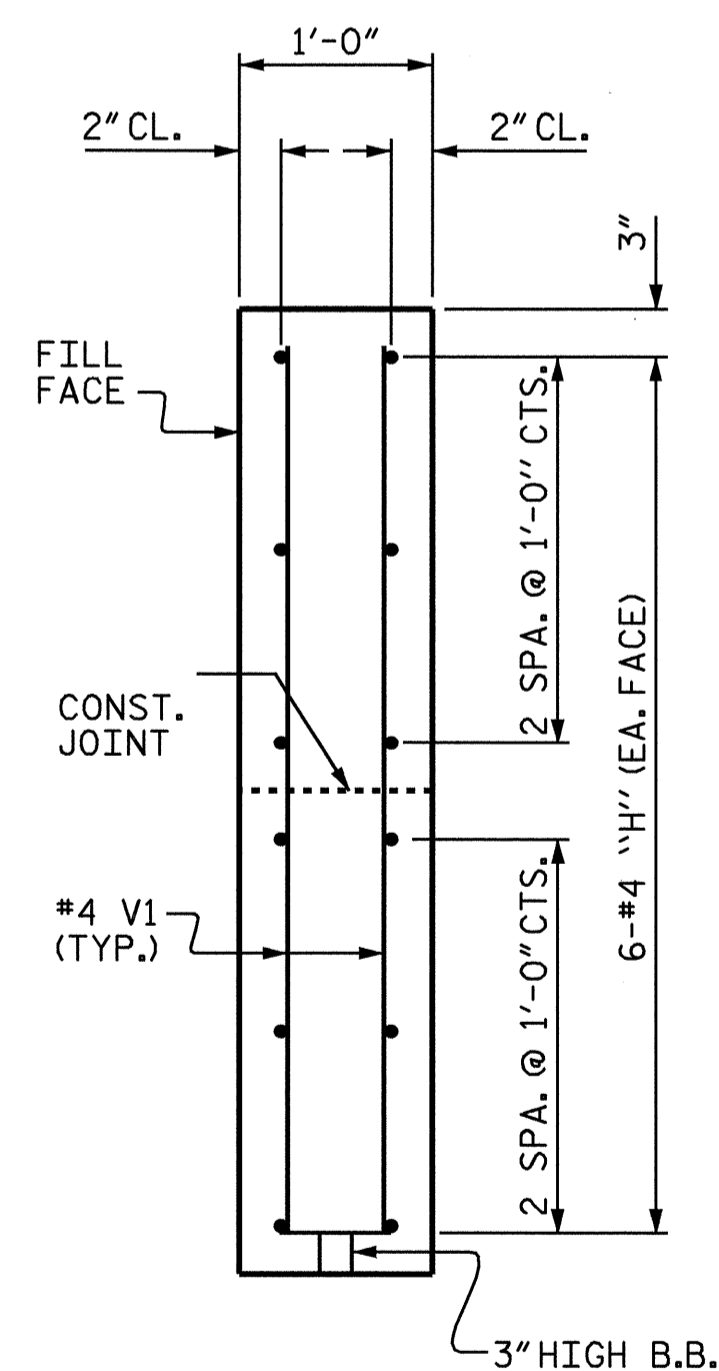
PLAN OF WING W2



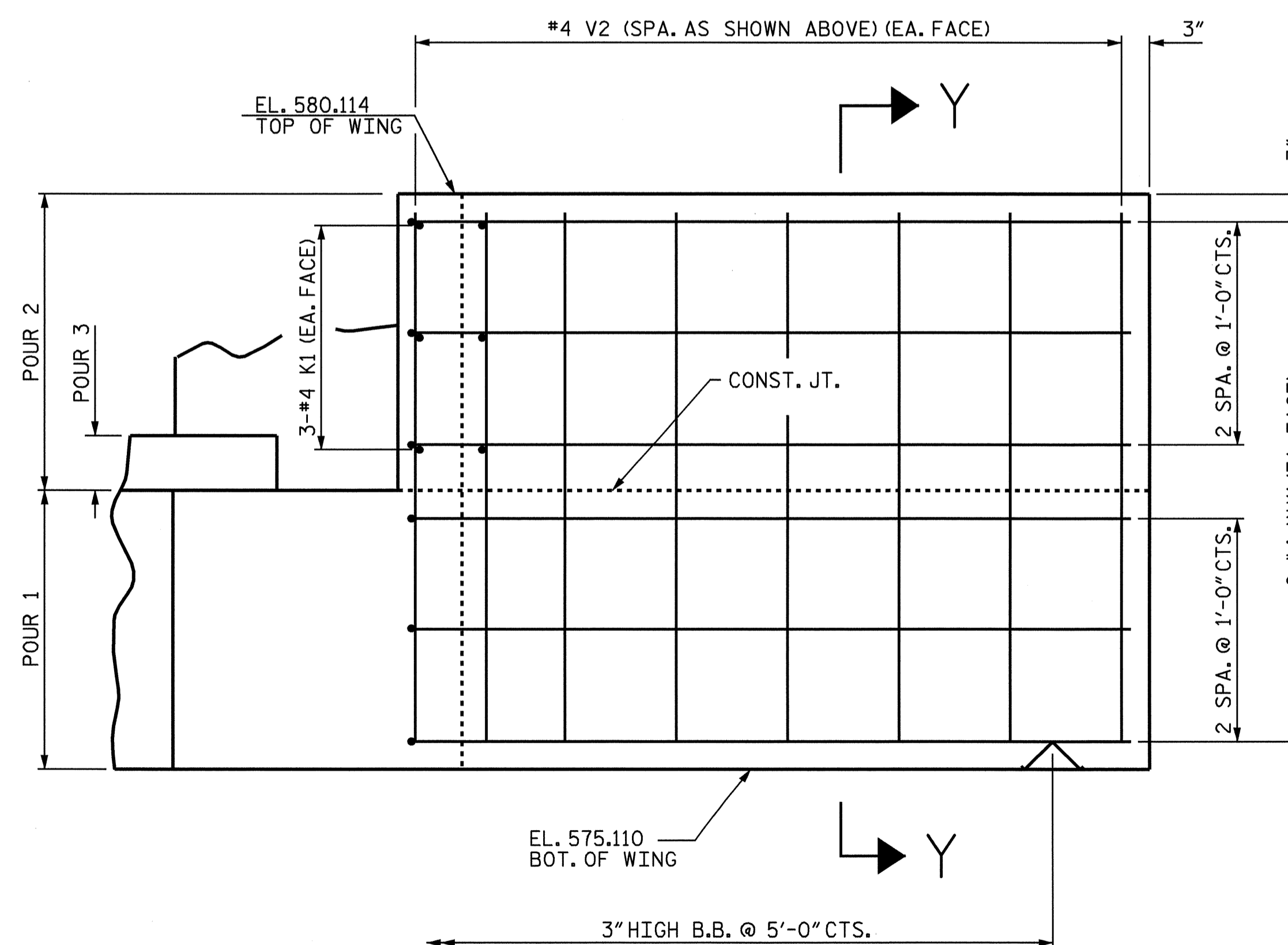
SECTION Y-Y



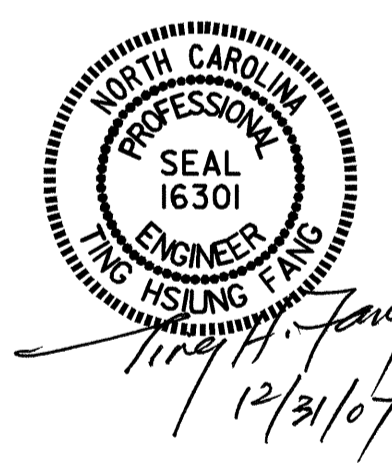
ELEVATION OF WING W1



SECTION X-X



ELEVATION OF WING W2



PROJECT NO. B-4246
 RANDOLPH COUNTY
 STATION: 16+42.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE

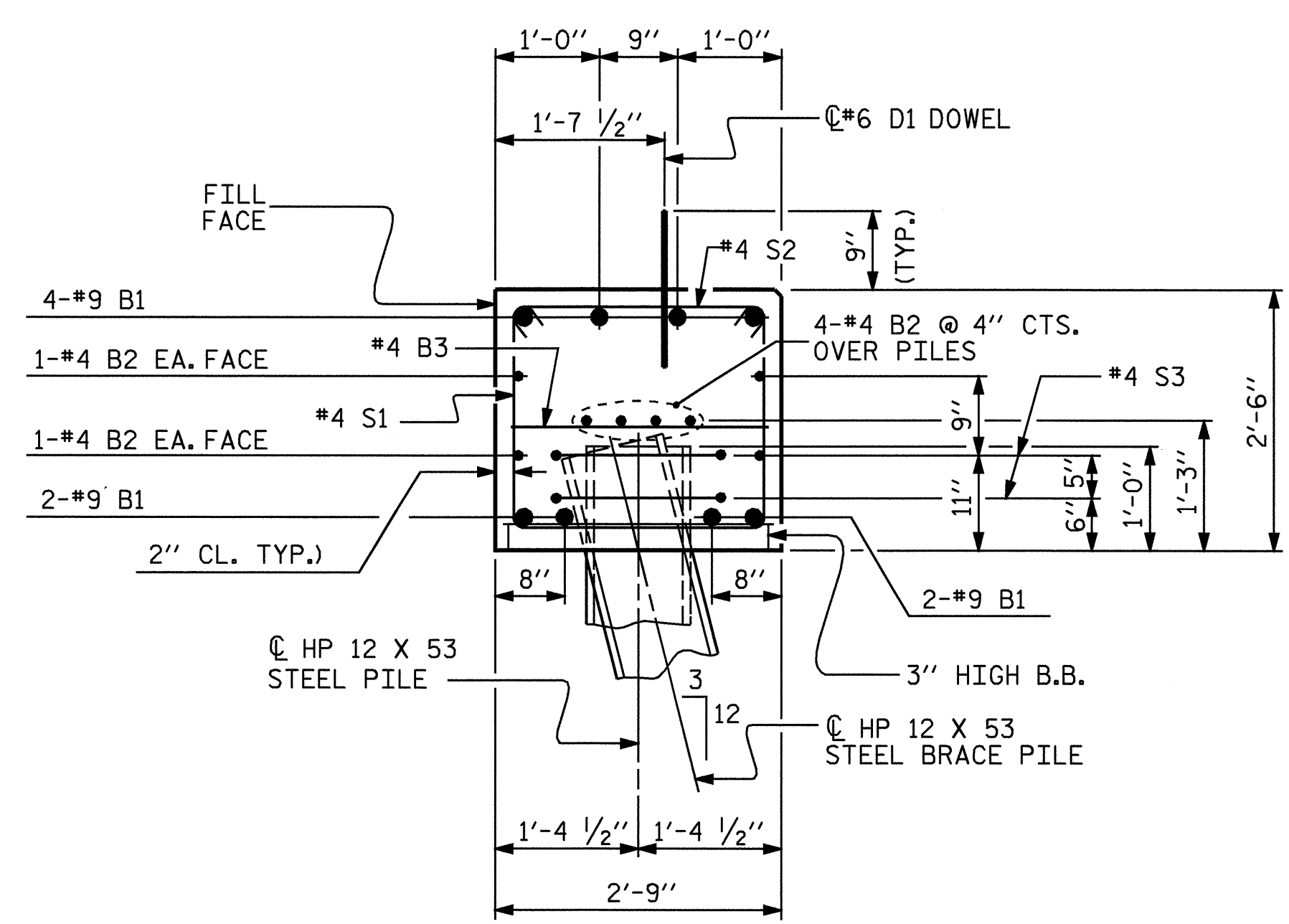
END BENT 2

DRAWN BY: T.L. CLELLAND DATE: 12/21/06
 CHECKED BY: A.A. COLE DATE: 5/10/07

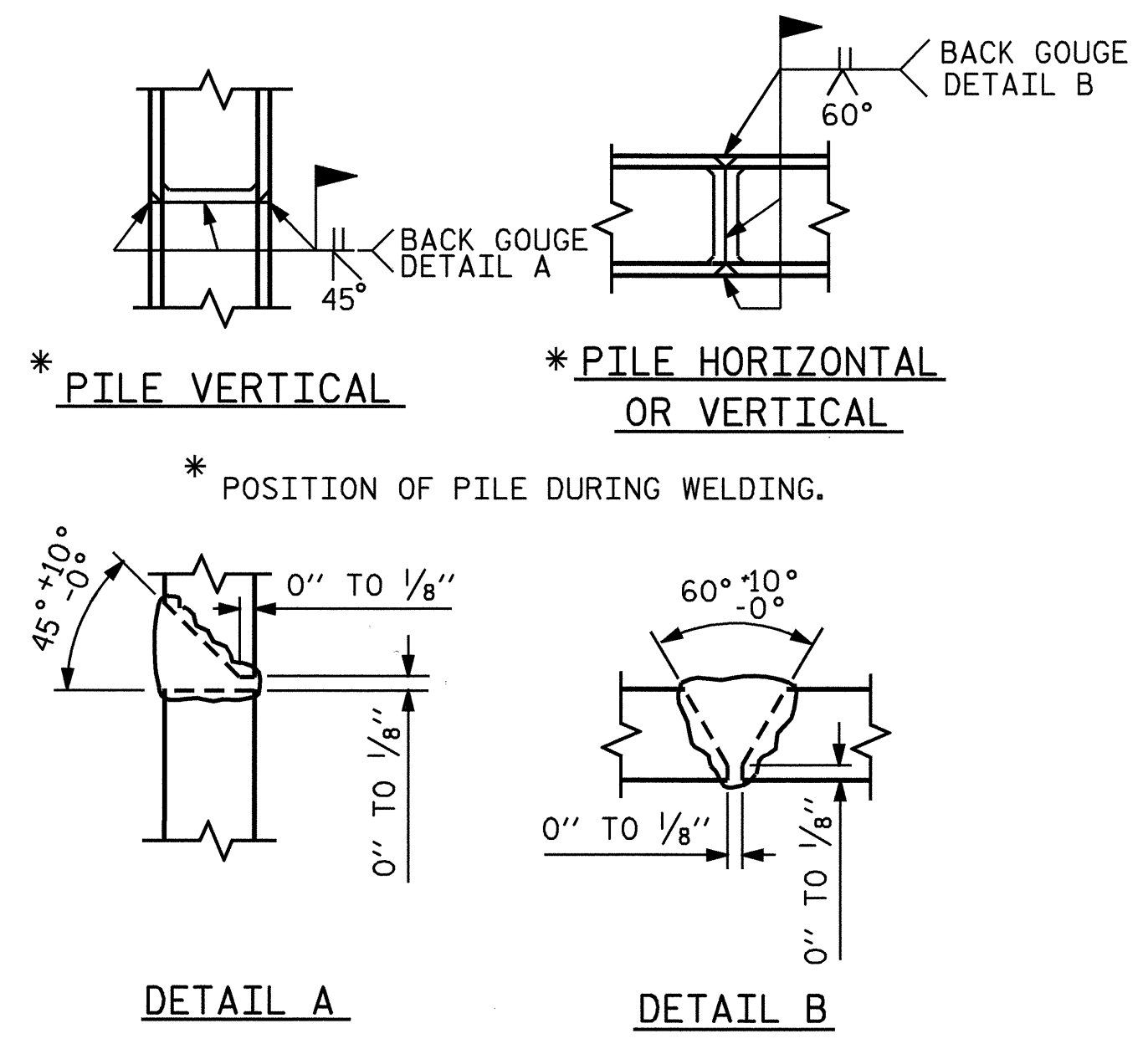
31-DEC-2007 11:53
 K:\TIP\Projects-B4246\Structures\FINAL_PLANS\B-4246.sd.e*.dgn
 kpnewton

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

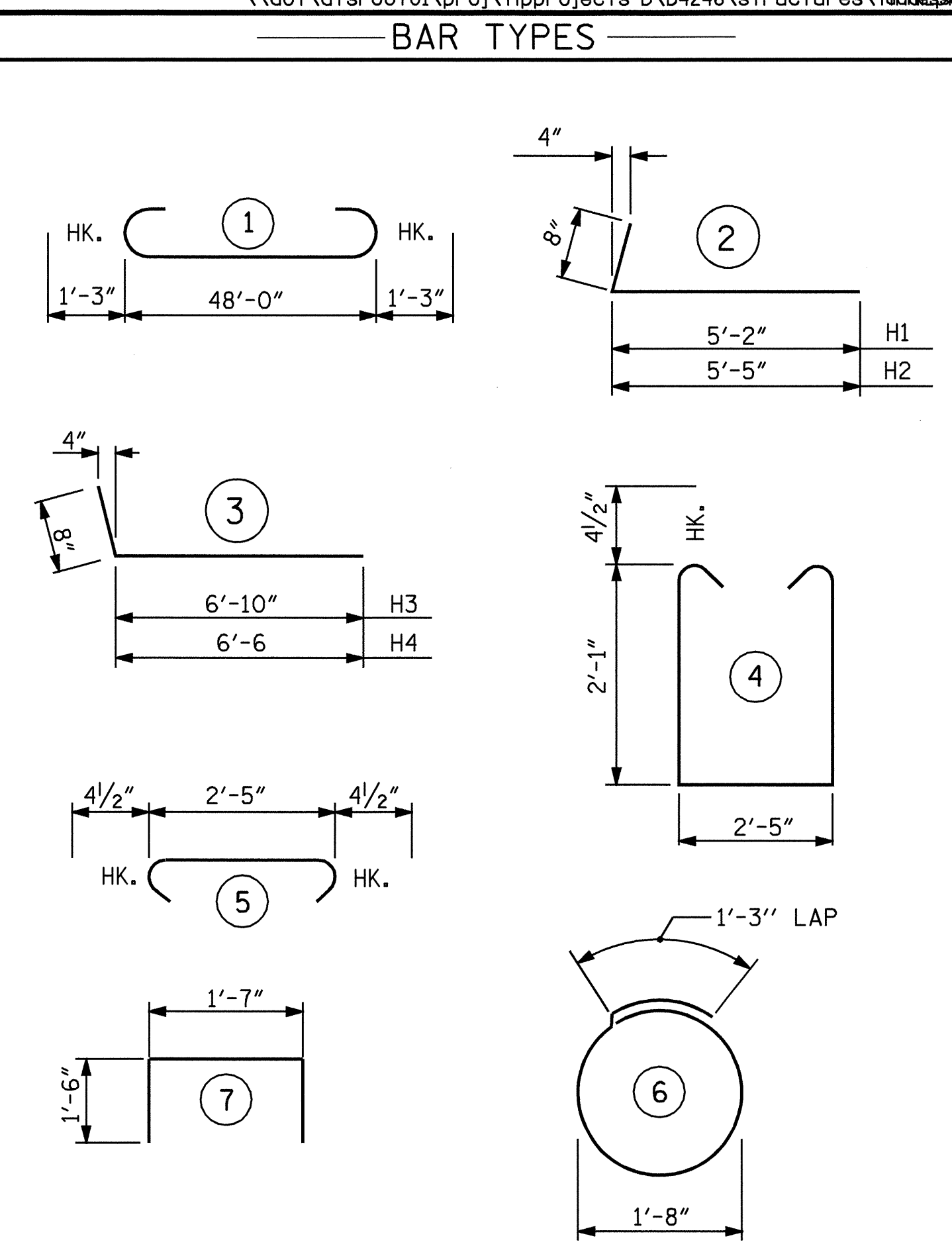
TOTAL SHEETS: 30



SECTION A-A

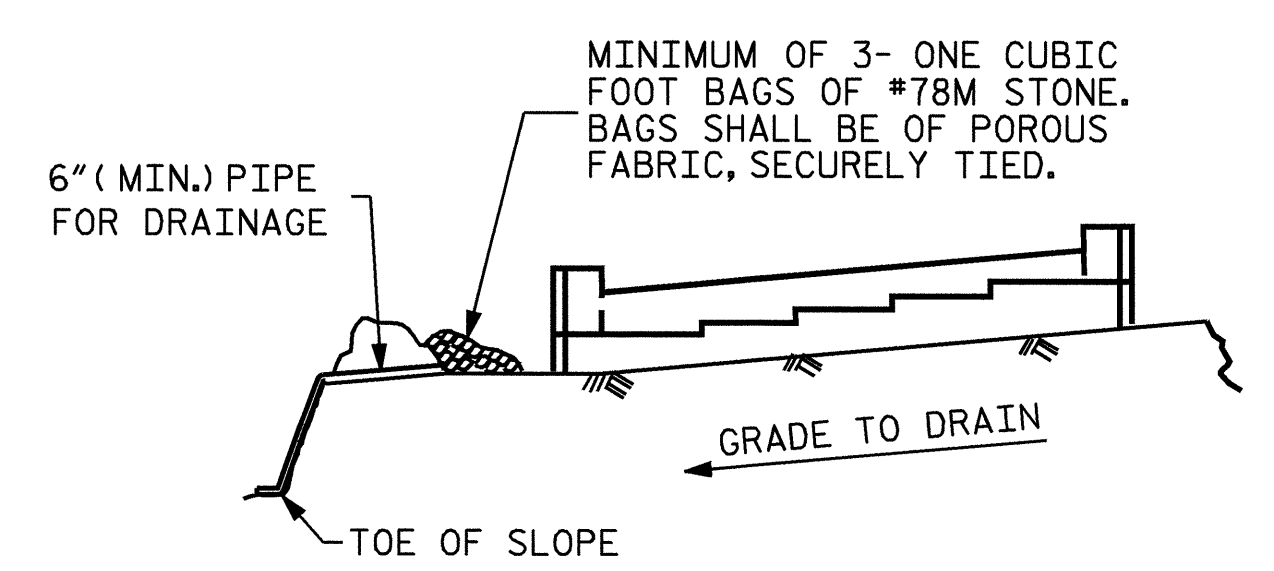


PILE SPLICE DETAILS



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
END BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9		50'-6"	1374
B2	16	#4	STR	25'-4"	270
B3	12	#4	STR	2'-5"	19
D1	24	#6	STR	1'-6"	54
H1	9	#4	2	5'-10"	35
H2	3	#4	2	6'-1"	12
H3	6	#4	3	7'-6"	30
H4	6	#4	3	7'-2"	29
K1	12	#4	STR	3'-8"	29
S1	44	#4	4	7'-4"	216
S2	44	#4	5	3'-2"	93
S3	14	#4	6	6'-6"	61
U1	4	#4	7	4'-7"	12
V1	22	#4	STR	4'-9"	70
V2	24	#4	STR	4'-7"	73
REINFORCING STEEL =					2377 LBS
CLASS A CONC. BREAKDOWN					
POUR 1 (CAP & LOWER WINGS)				14.0 C.Y.	
POUR 2 (UPPER WINGS)				1.8 C.Y.	
POUR 3 (LATERAL GUIDE)				0.1 C.Y.	
TOTAL					15.9 C.Y.
HP 12 X 53 STEEL PILES					
NUMBER = 7		LIN. FT. = 210			
STEEL PILE POINTS					
NUMBER = 7					

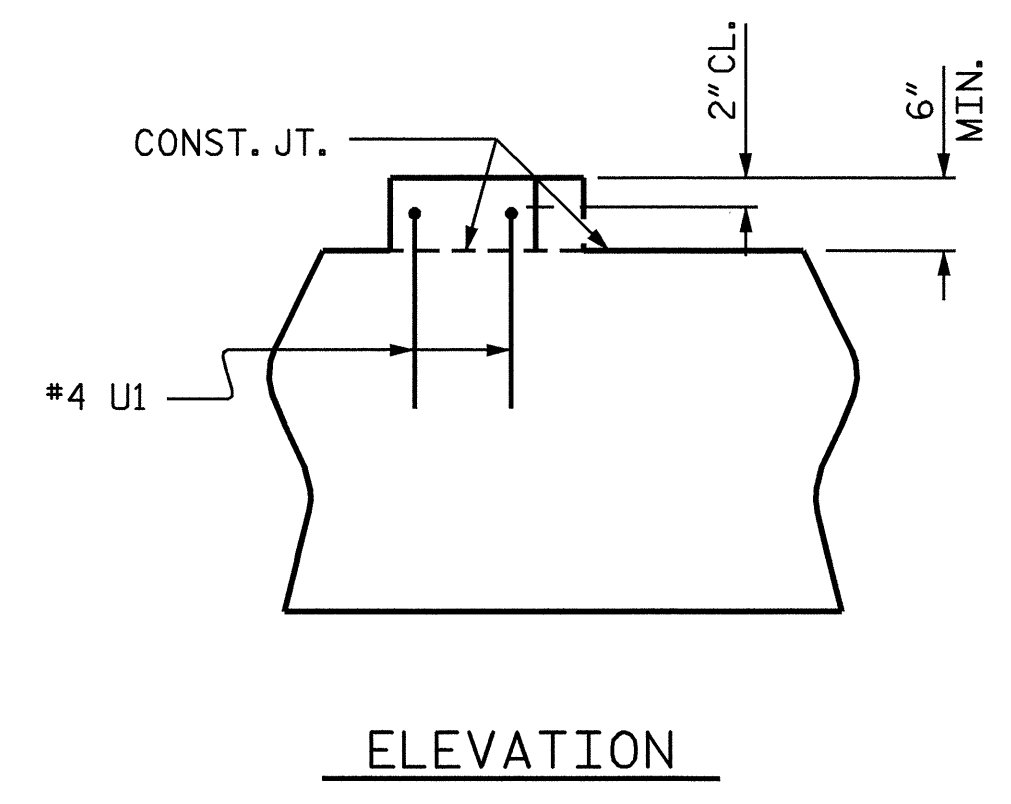
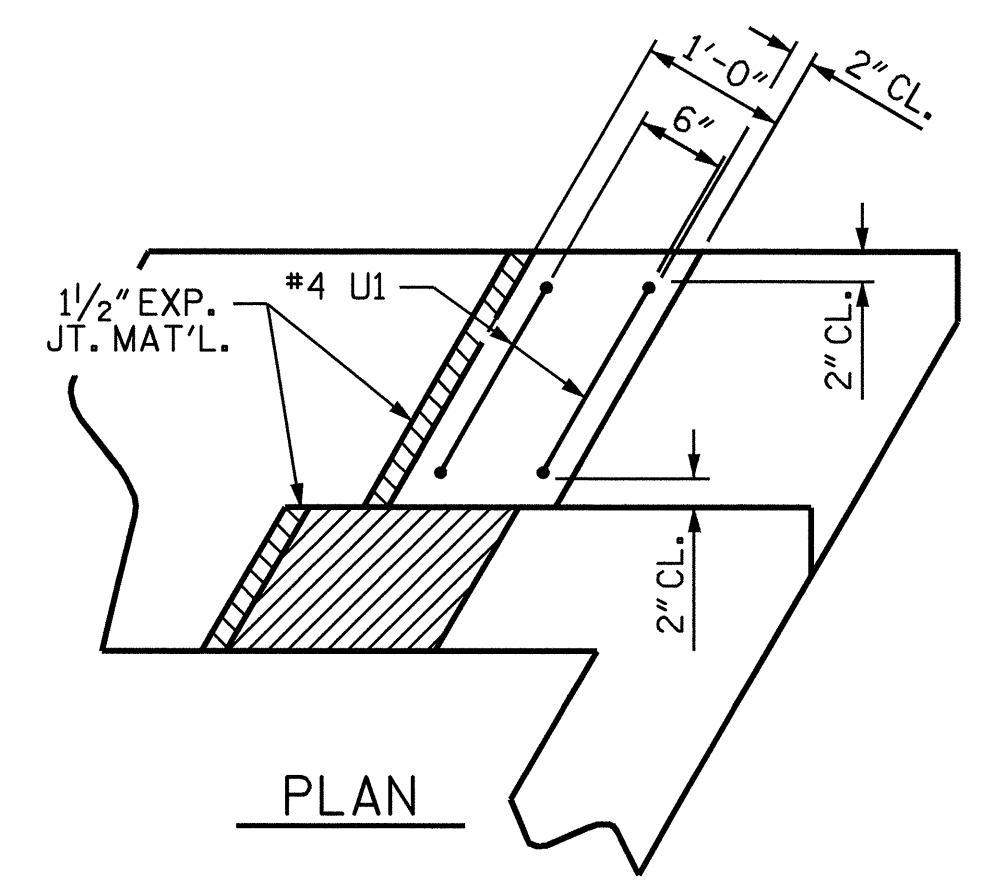


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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



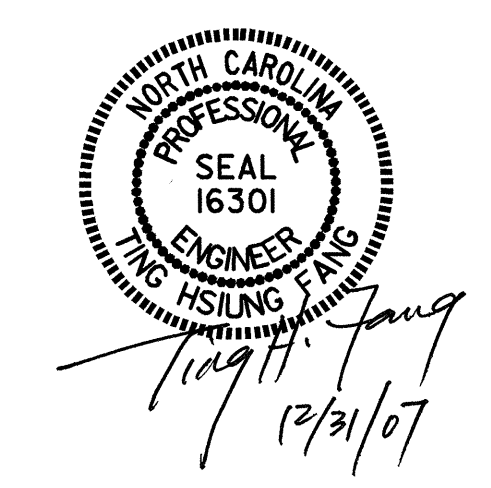
LATERAL GUIDE DETAILS
EACH END SIMILAR

SPLICE CHART	
#4 B2	2'-5"

PROJECT NO. B-4246
RANDOLPH COUNTY
 STATION: 16+42.50 -L-

SHEET 3 OF 3

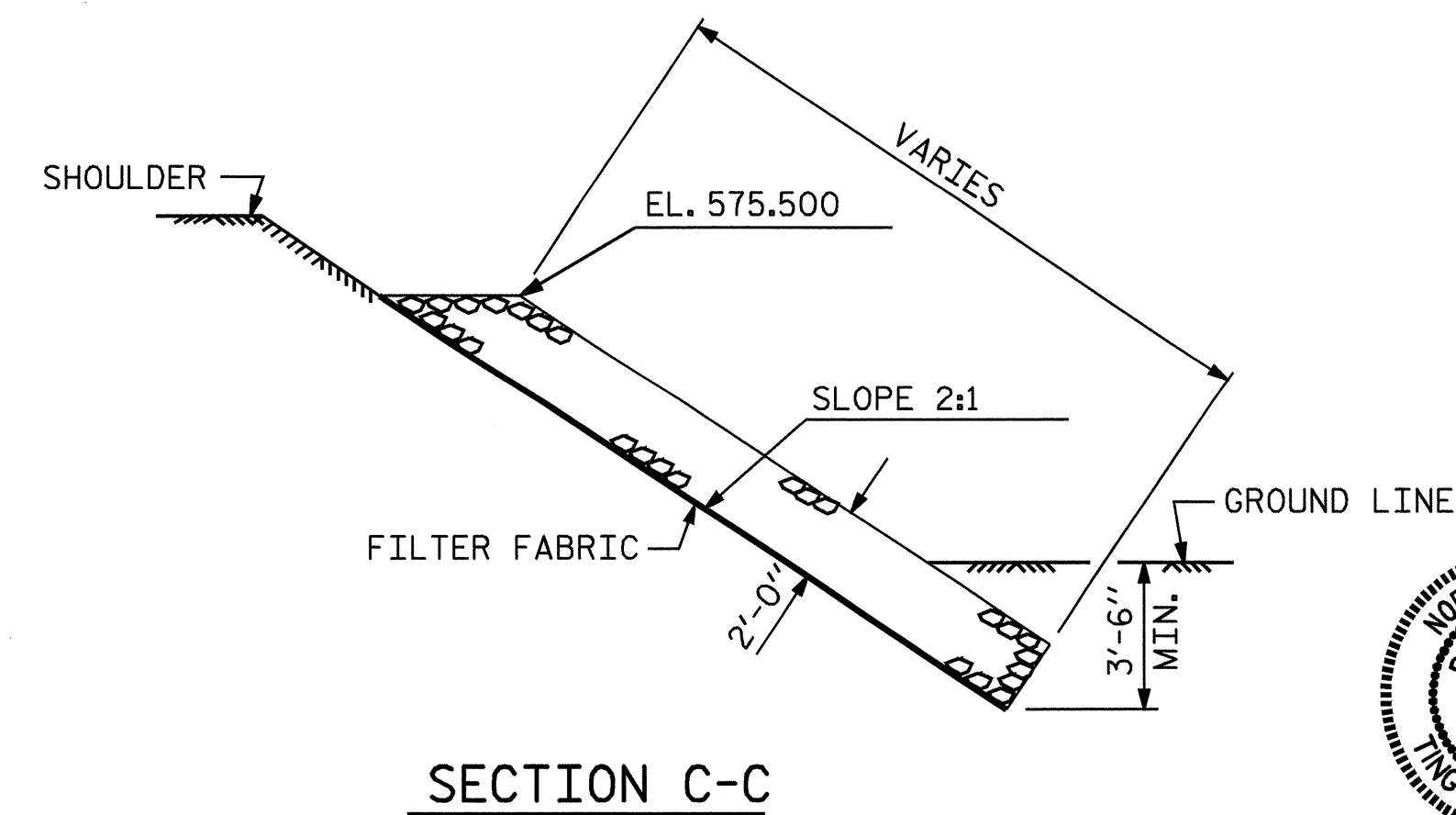
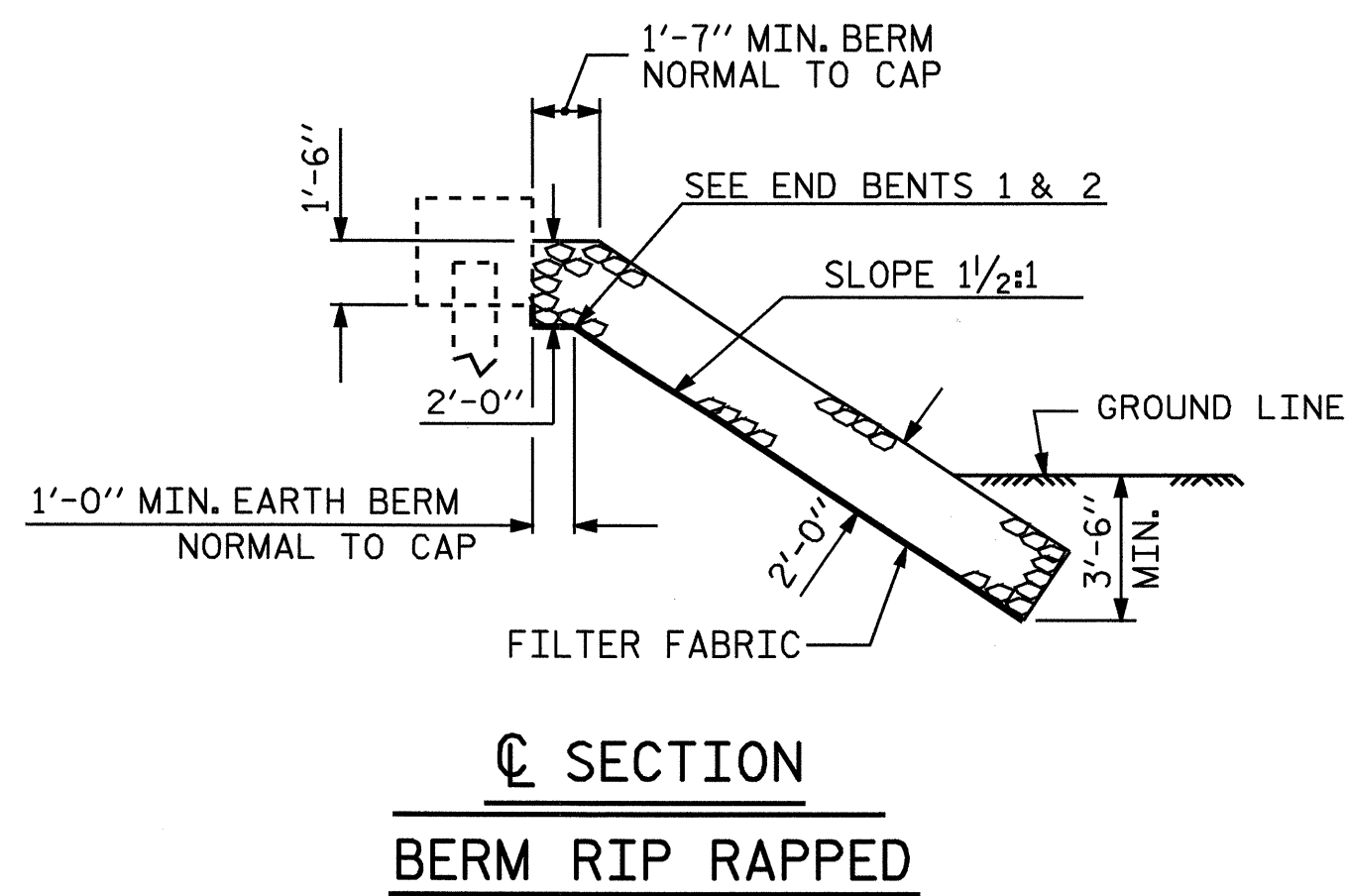
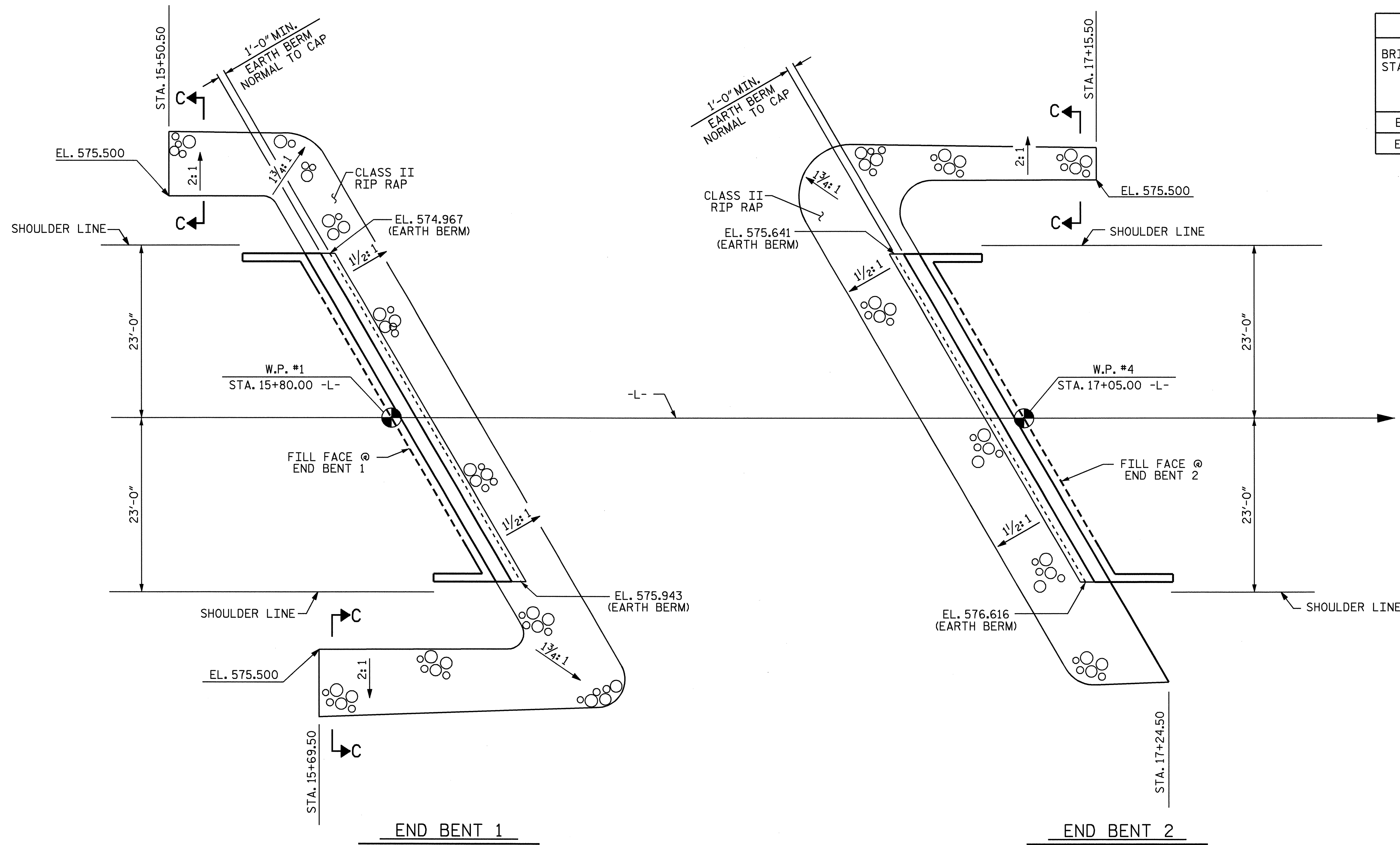
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT 2



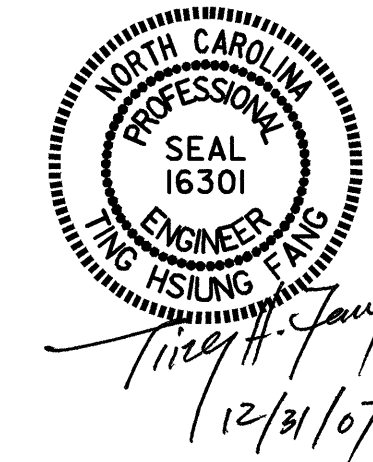
DRAWN BY: T.L. CLELLAND DATE: 12/19/06
 CHECKED BY: A.A. COLE DATE: 5/11/07

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

ESTIMATED QUANTITIES		
BRIDGE @ STA. 16+42.50 -L-	RIP RAP CLASS II	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	120	130
END BENT 2	100	110

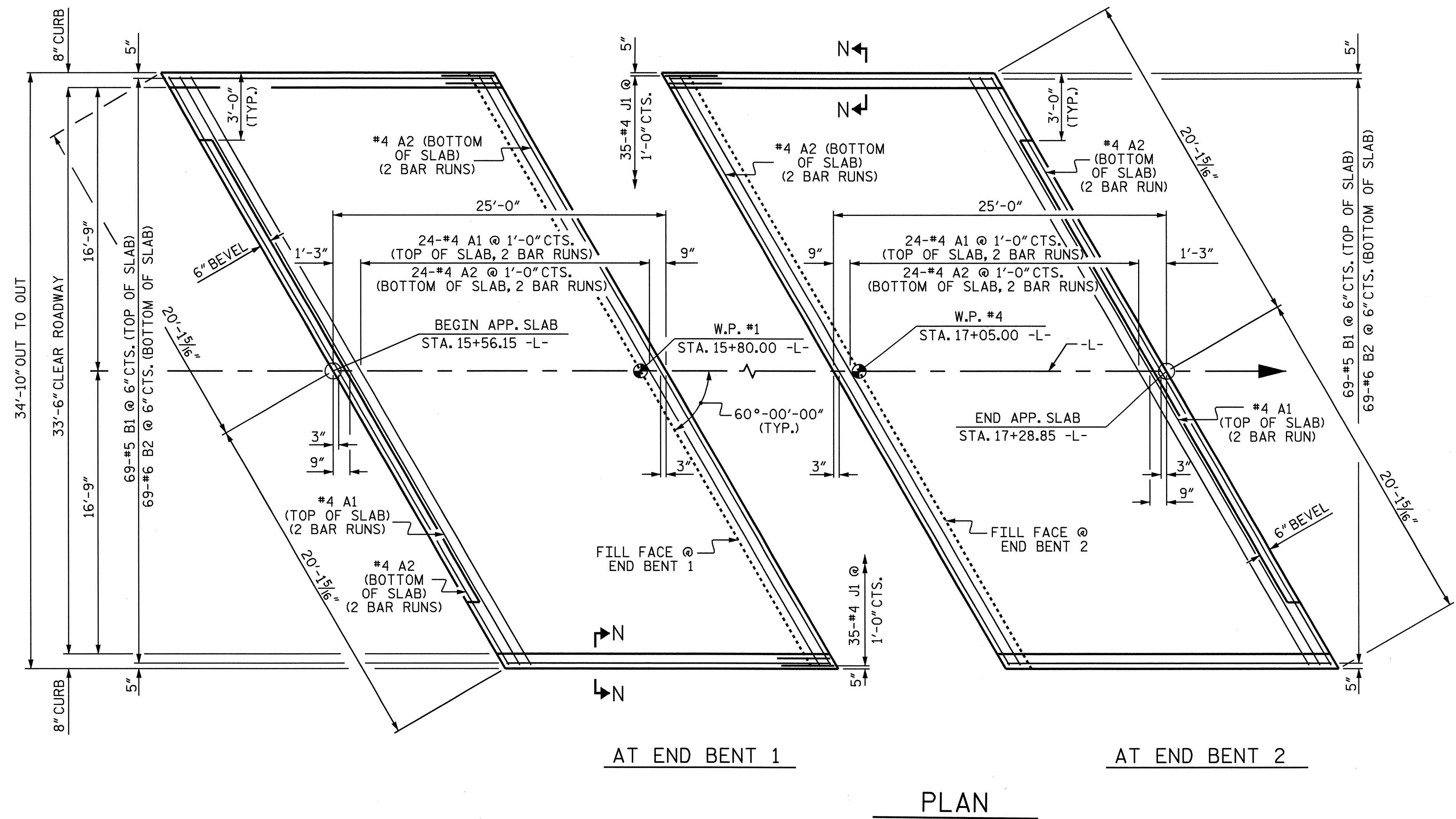


PROJECT NO. B-4246
RANDOLPH COUNTY
 STATION: 16+42.50 -L-

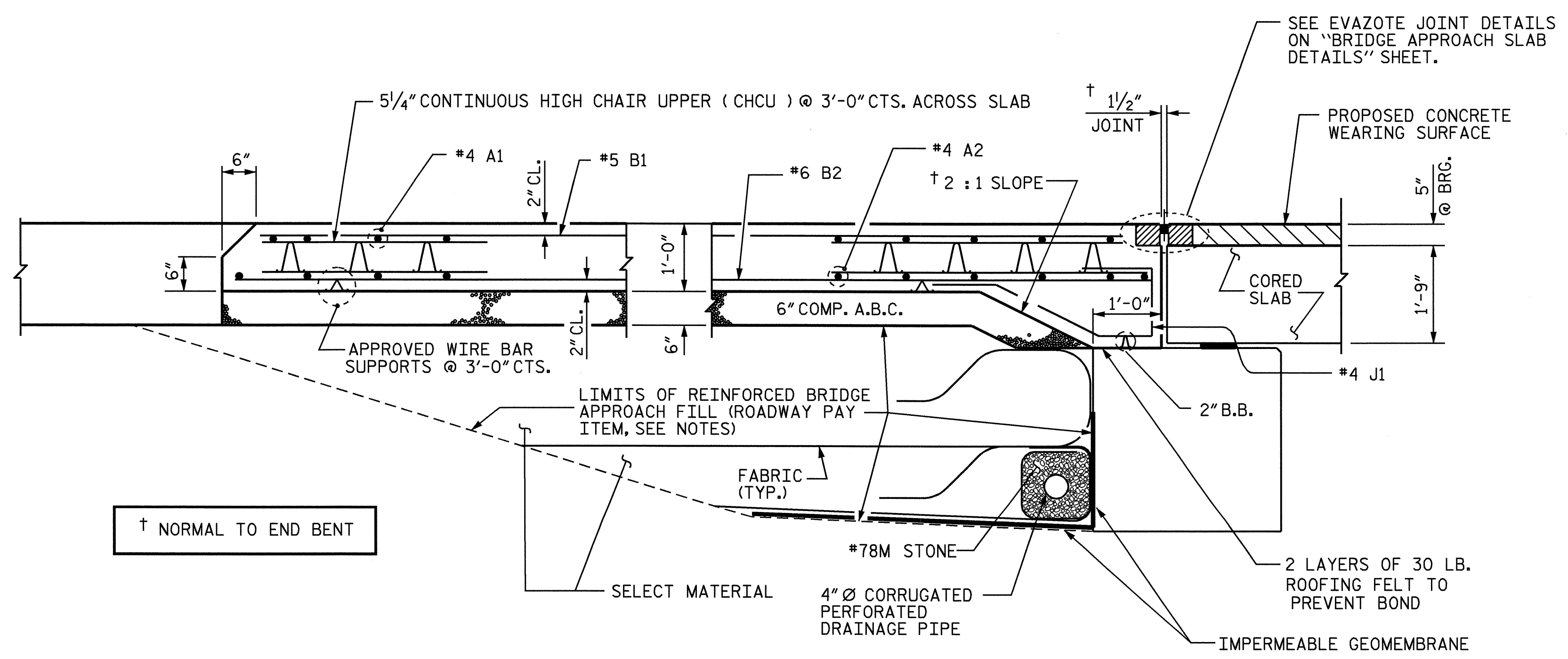


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
= RIP RAP DETAILS =					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-28
					TOTAL SHEETS 30

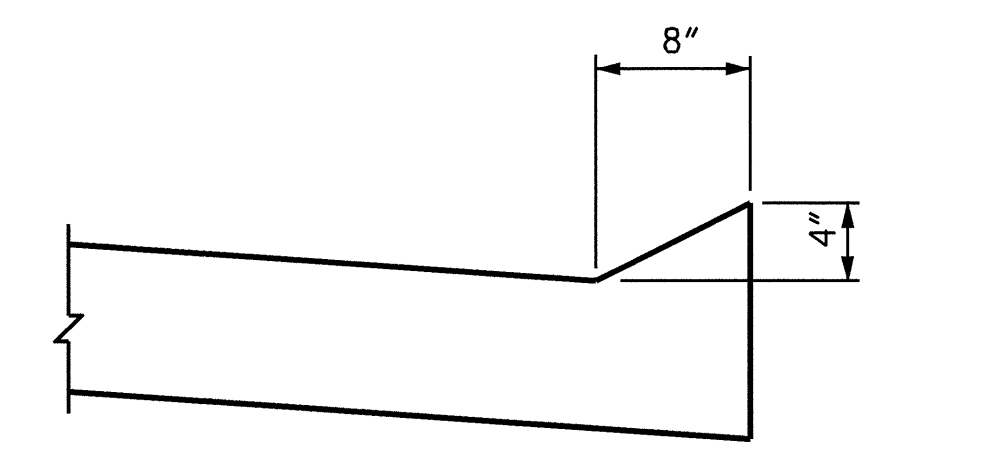
ASSEMBLED BY : D.G. ELY	DATE : 1/07
CHECKED BY : T.H. FANG	DATE : 7/07
DRAWN BY : REK 1/84	REV. 8/16/99 RWW/LES
CHECKED BY : RDU 1/84	REV. 10/17/00 RWW/LES
	REV. 5/1/06 TLA/GM



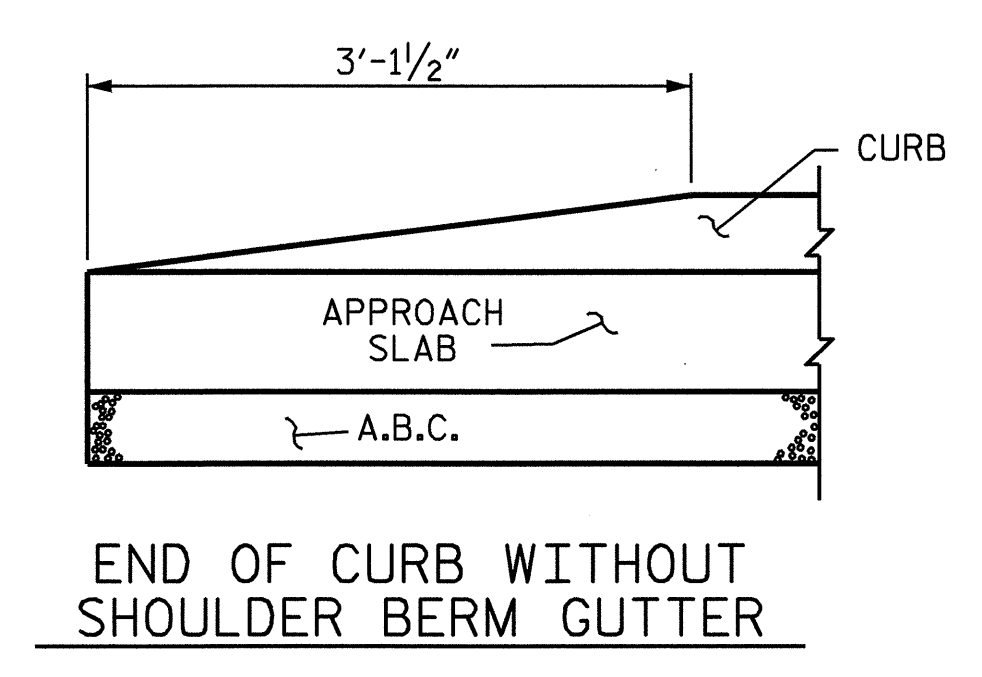
AT END BENT 1
AT END BENT 2
PLAN



SECTION THRU SLAB



SECTION N-N



END OF CURB WITHOUT SHOULDER BERM GUTTER
CURB DETAILS

BILL OF MATERIAL					
FOR ONE APPROACH SLAB (2 REQUIRED)					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	50	#4	STR	21'-0"	701
A2	52	#4	STR	20'-10"	724
*B1	69	#5	STR	23'-8"	1703
B2	69	#6	STR	24'-8"	2556
J1	35	#4	1	7'-2"	168
REINFORCING STEEL				LBS.	3448
*EPOXY COATED REINFORCING STEEL				LBS.	2404
CLASS AA CONCRETE				C. Y.	34.1

BAR DIMENSIONS ARE OUT TO OUT.

SPLICE CHART	
#4 A1	2'-0"
#4 A2	1'-9"

ASSEMBLED BY: T.L. CLELLAND DATE: 1/5/07
 CHECKED BY: T.H. FANG DATE: 7/5/07
 DRAWN BY: FCJ 6/87 REV. 7/10/01 LES/RDR
 CHECKED BY: EGA 6/87 REV. 5/7/03R RWW/JTE
 REV. 5/1/06 TLA/GM



PROJECT NO. B-4246
 RANDOLPH COUNTY
 STATION: 16+42.50 -L-

SHEET 1 OF 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-29
1			3			TOTAL SHEETS
2			4			30

NOTES

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

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

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

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

WITH EVAZOTE JOINT SEAL

FOR EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS.

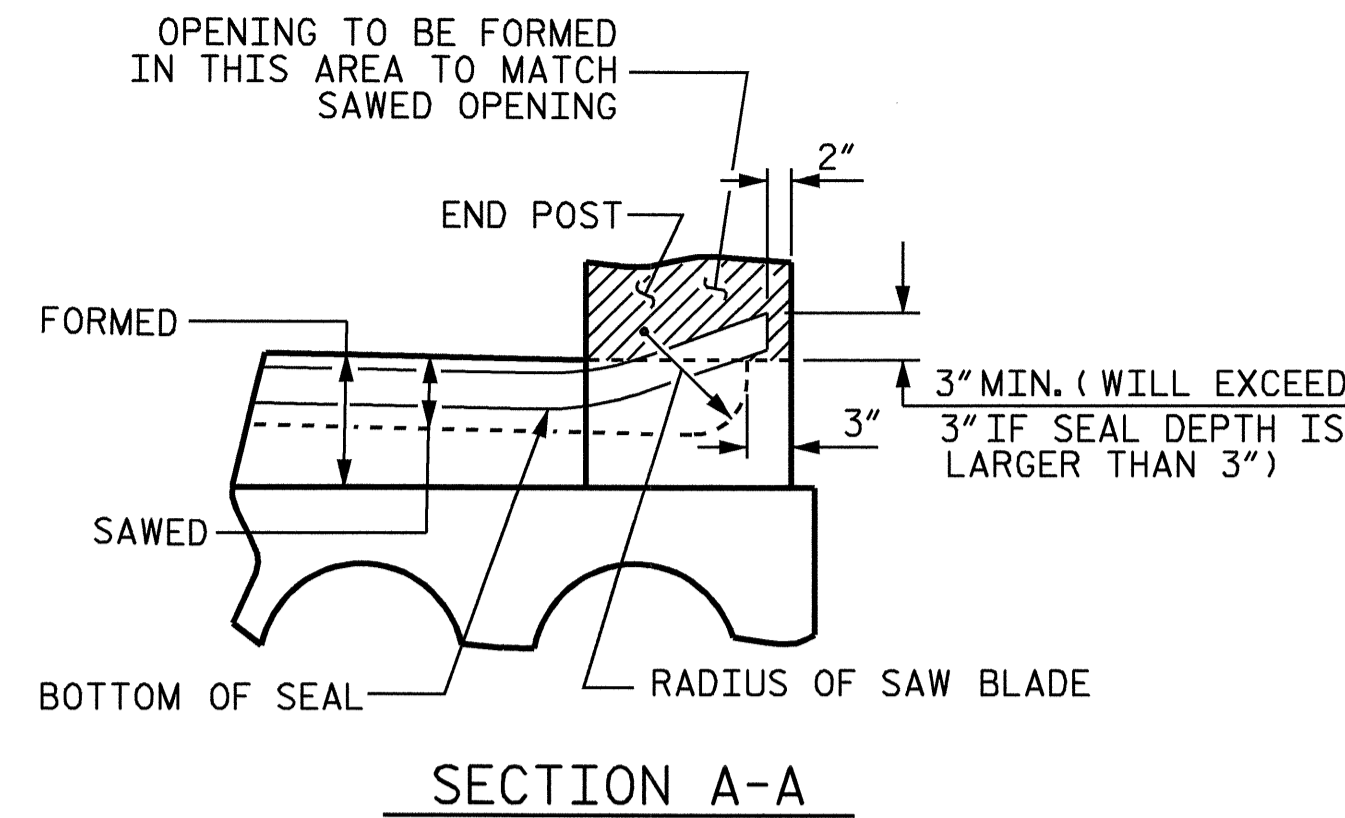
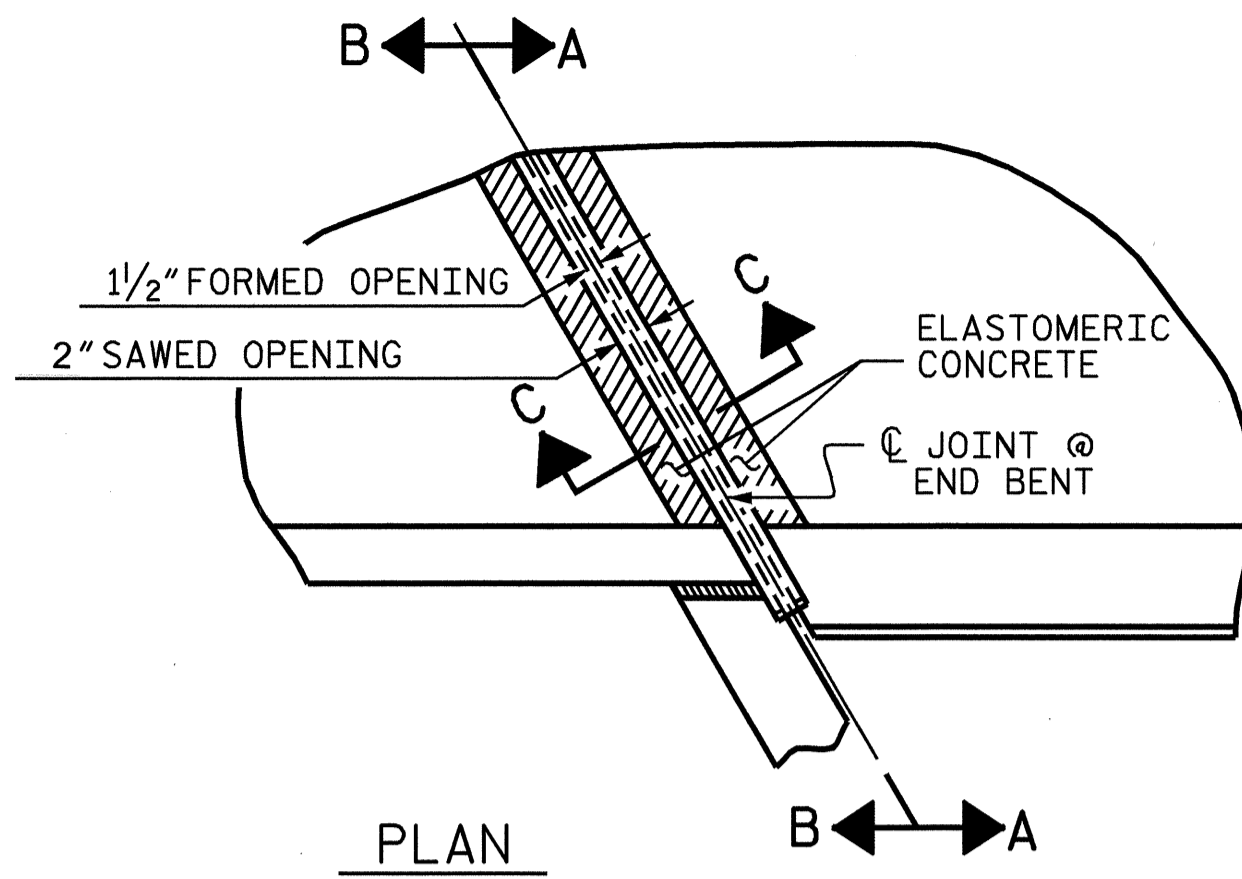
THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE EVAZOTE JOINT SEAL SHALL BE 2 1/2".

FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

WITH CONCRETE WEARING SURFACE

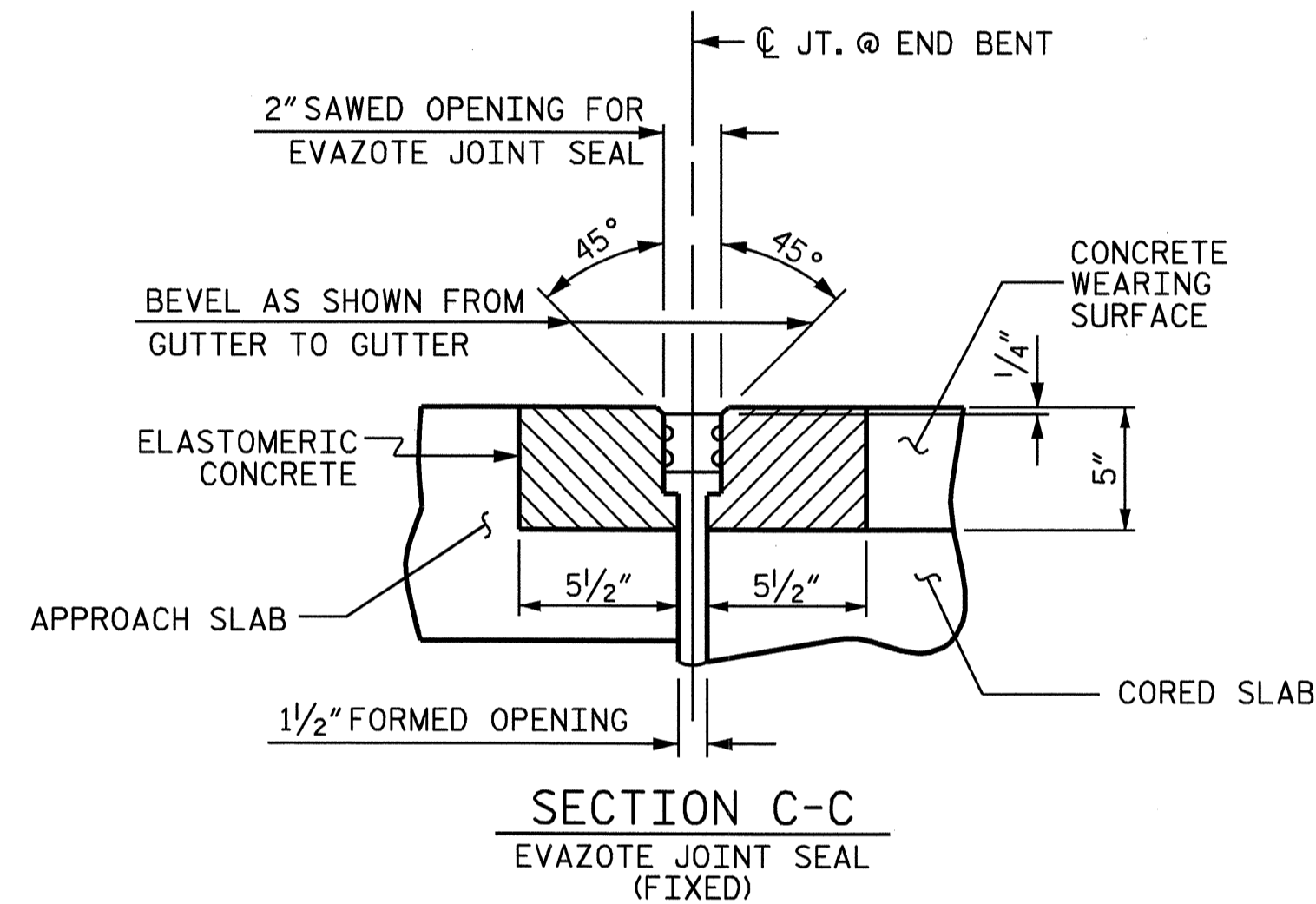
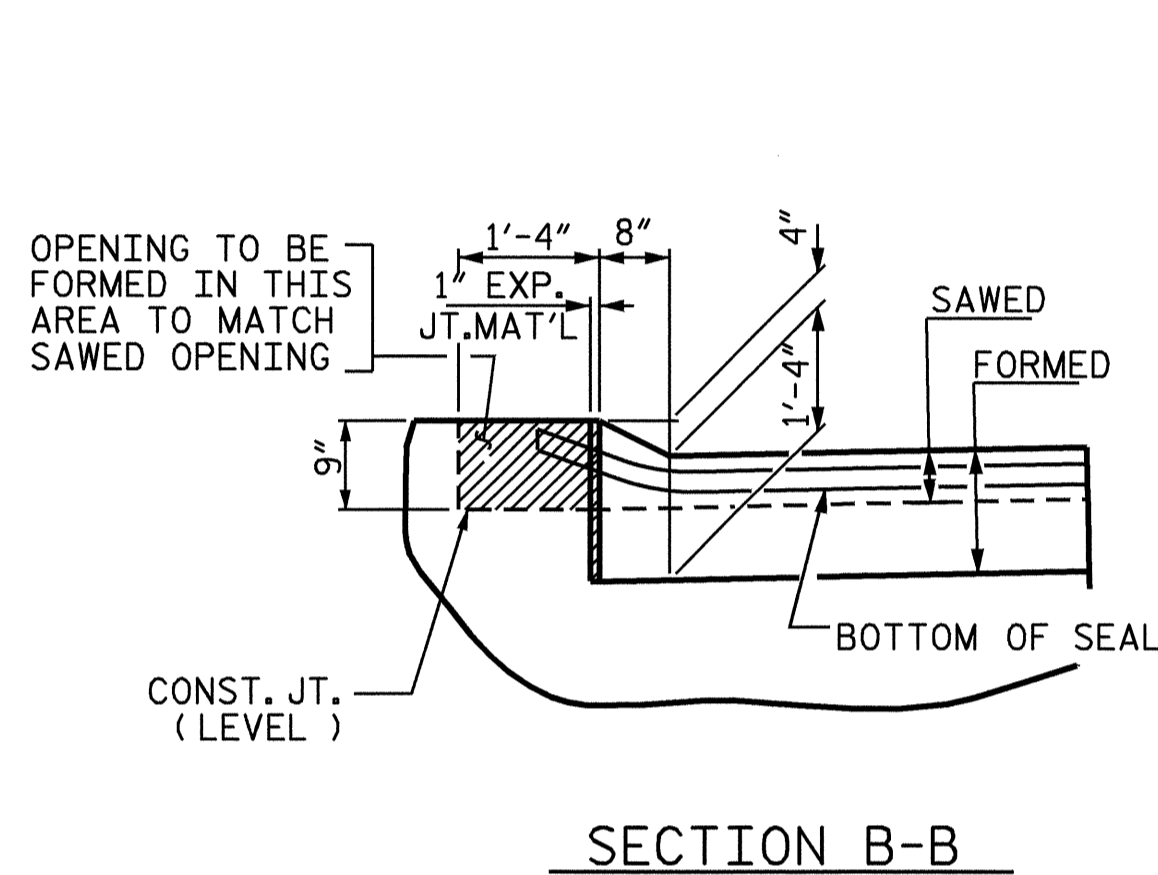
APPROACH SLABS SHALL BE POURED AFTER CONCRETE OVERLAY IS POURED.

THE JOINT SHALL BE SAWED AFTER THE CASTING OF THE PARAPET AND END POST.



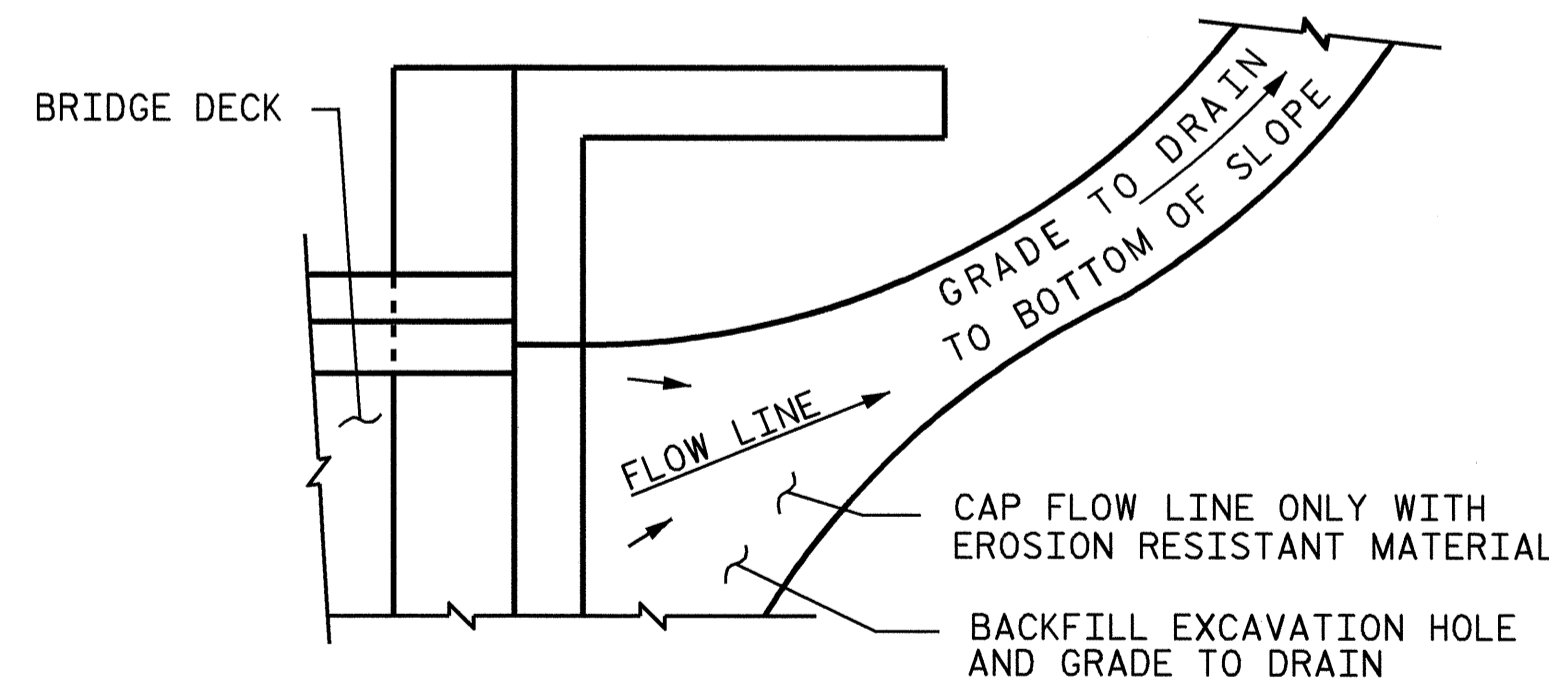
ELASTOMERIC CONCRETE	
END BENT NO.	CU. FT. *
1	14.8
2	14.8
TOTAL	29.6

* BASED ON THE MINIMUM BLOCKOUT SHOWN.



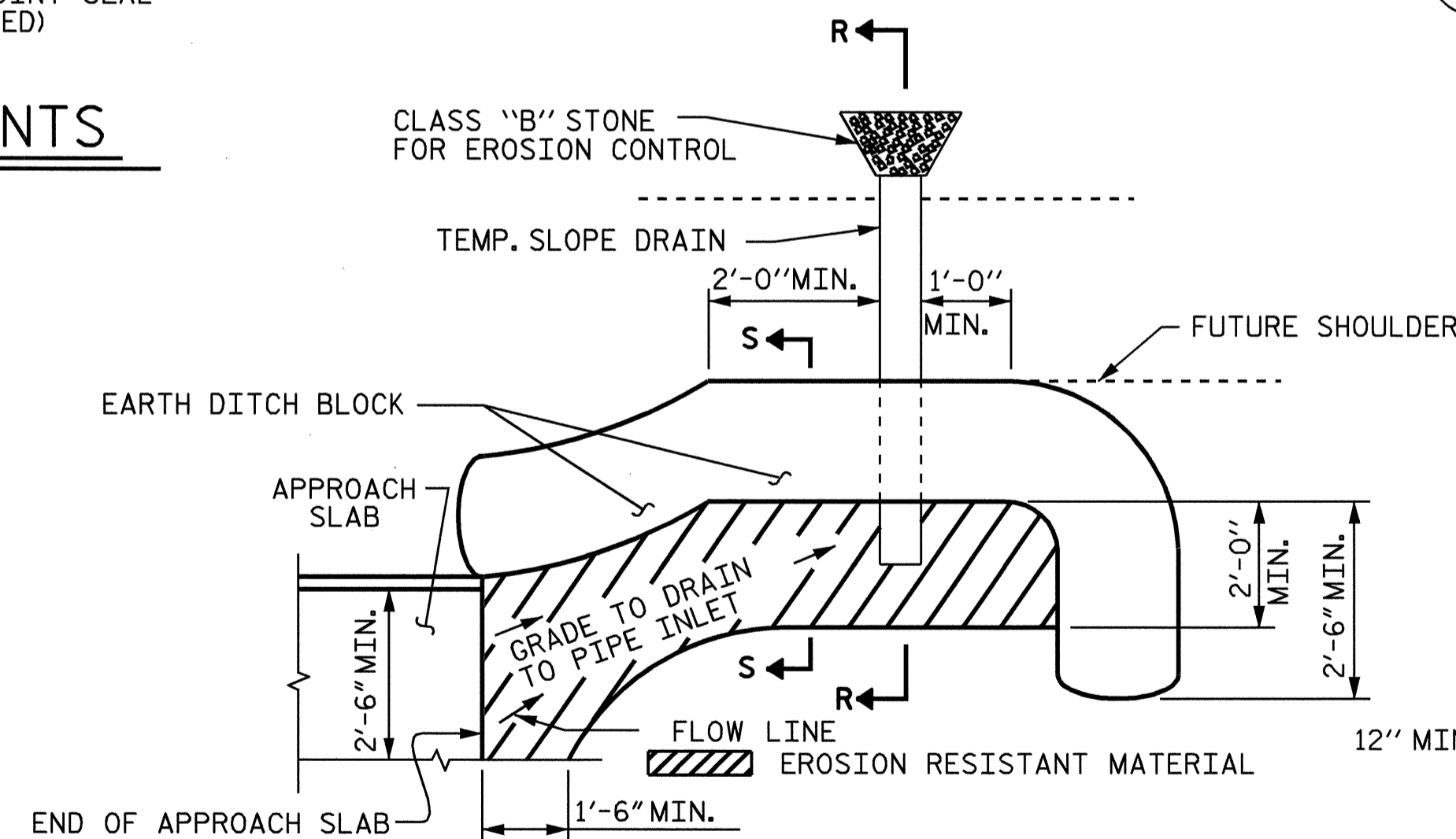
JOINT SEAL DETAILS AT END BENTS

(SHOWING PARTIAL DEPTH BLOCKOUT)



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

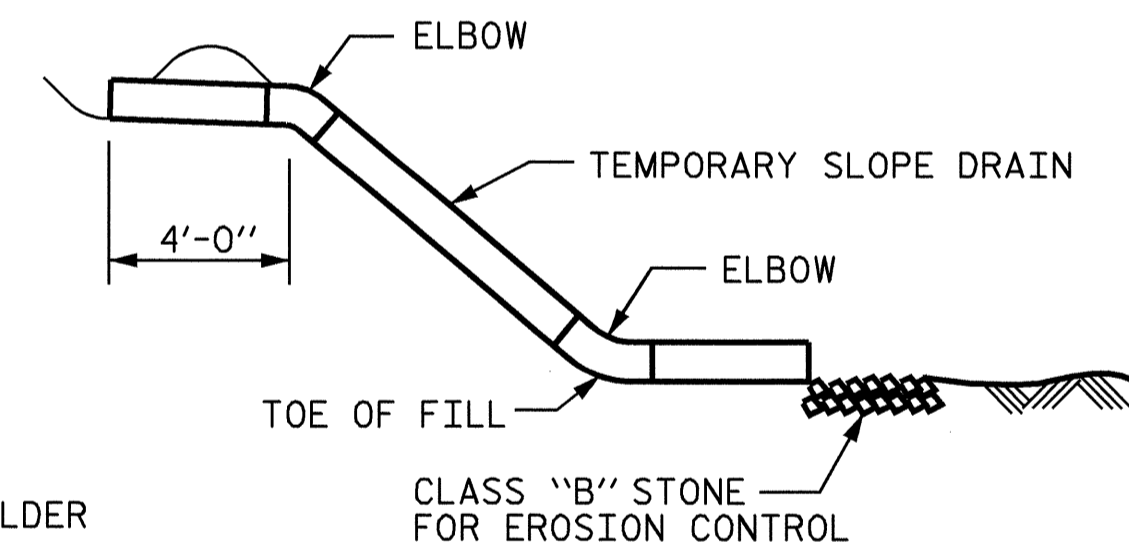


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

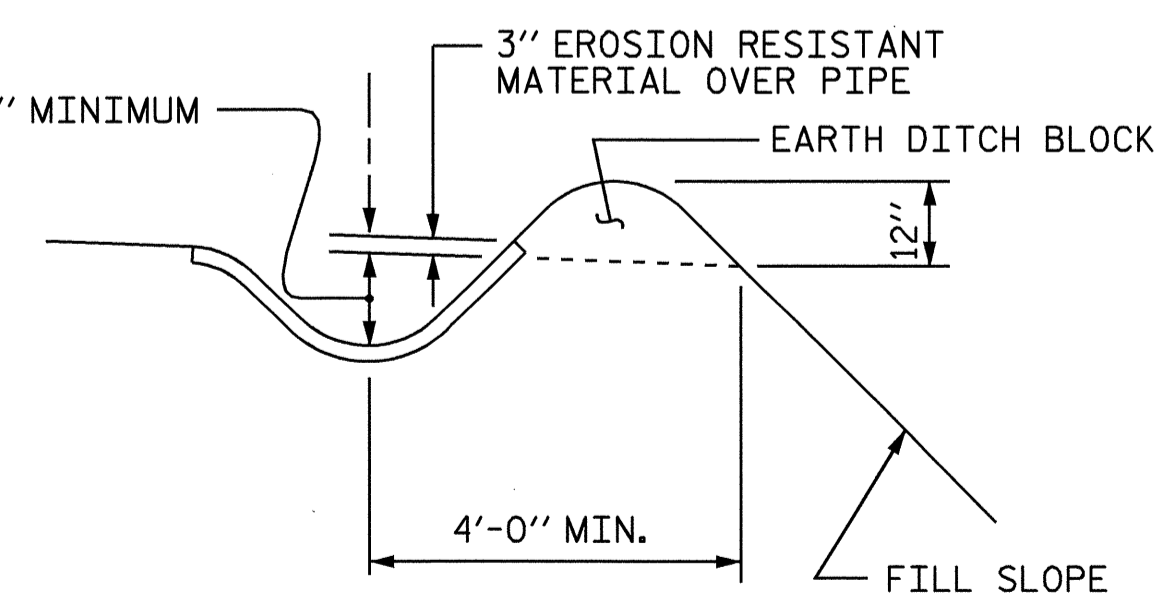
PLAN VIEW

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED.)



SECTION R-R



SECTION S-S



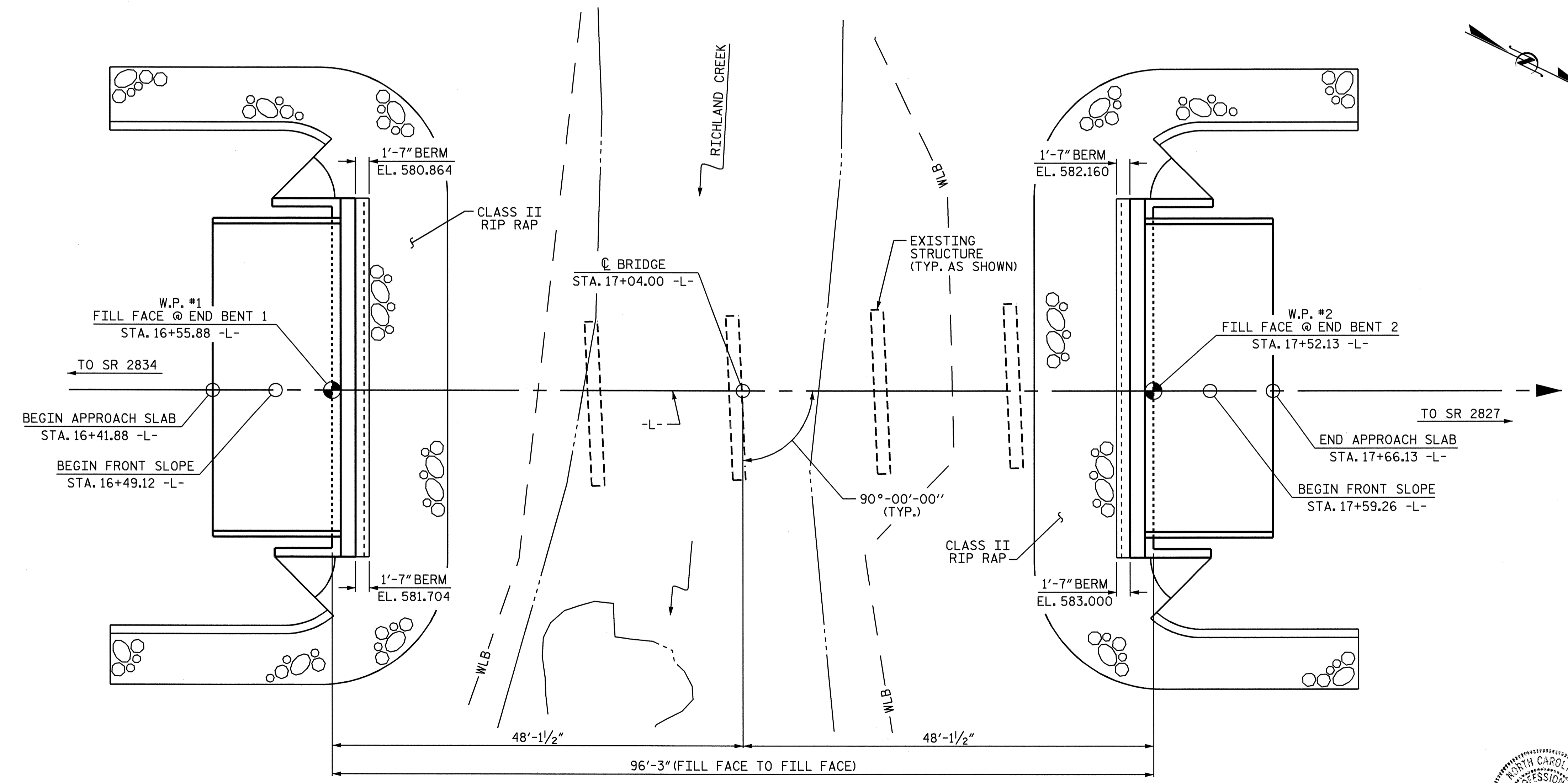
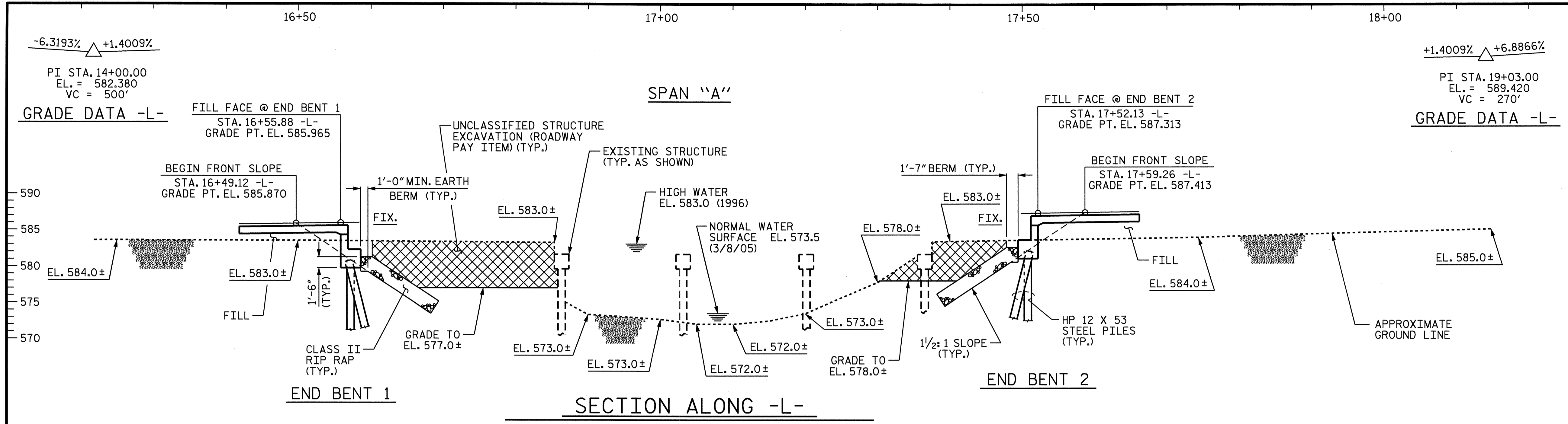
PROJECT NO. B-4246
 RANDOLPH COUNTY
 STATION: 16+42.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

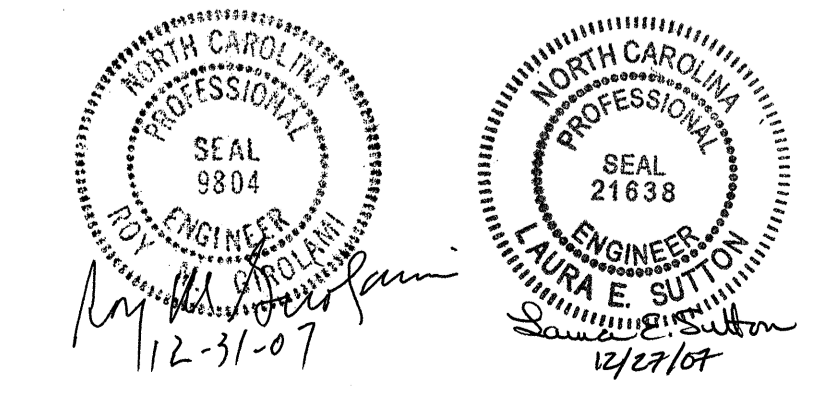
BRIDGE APPROACH
 SLAB DETAILS

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



DRAWN BY: A.S. CALLAWAY DATE: 5/9/06
 CHECKED BY: P.C. BREWER DATE: 5/23/06

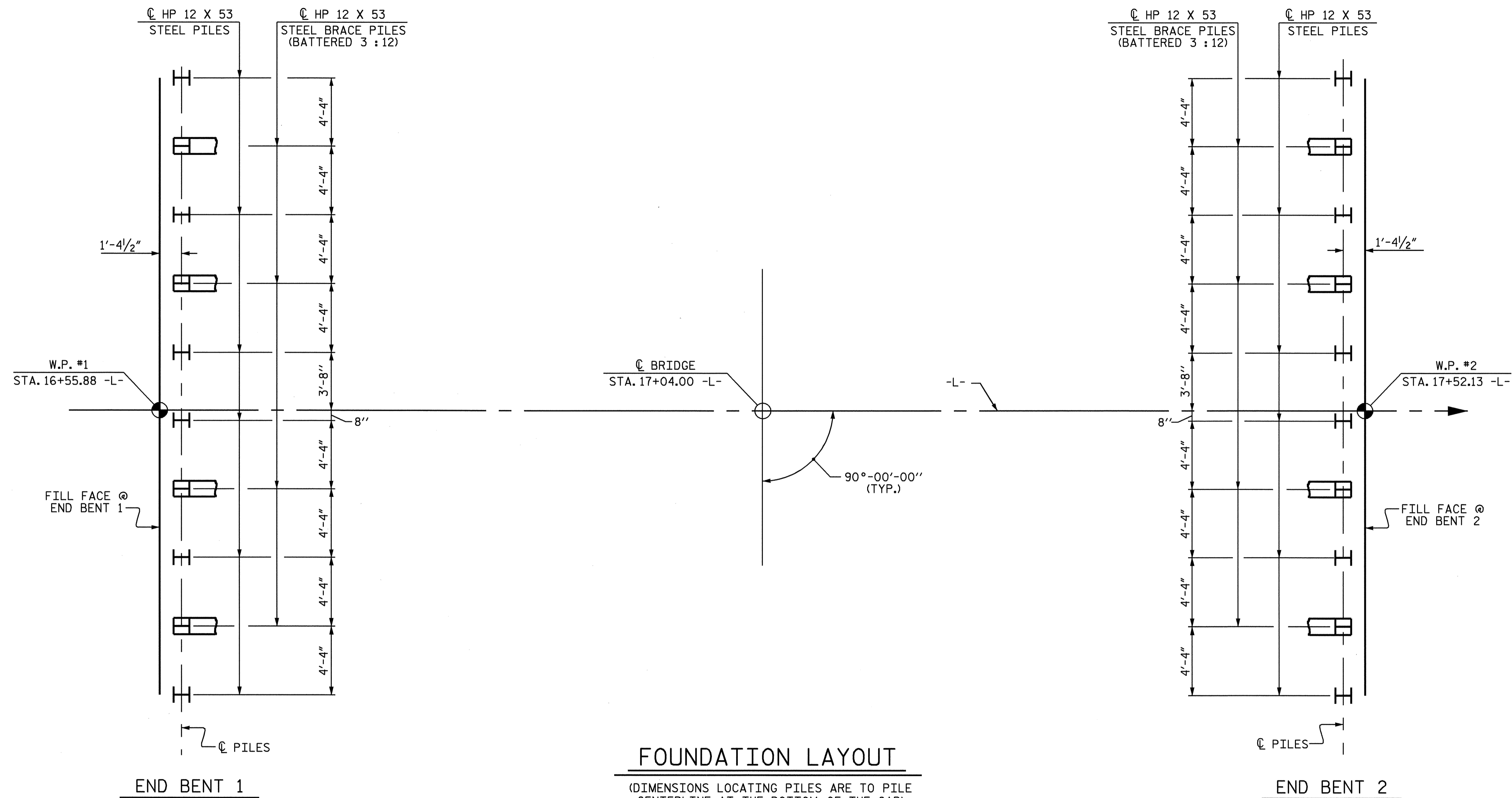
19-DEC-2007 09:29
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 isutton



PROJECT NO. B-4245
 RANDOLPH COUNTY
 STATION: 17+04.00 -L-
 SHEET 1 OF 3 REPLACES BRIDGE NO. 257

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE OVER RICHLAND CREEK ON SR 2824 BETWEEN SR 2834 AND SR 2827

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



FOUNDATION LAYOUT

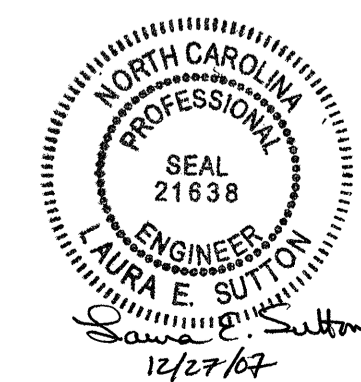
(DIMENSIONS LOCATING PILES ARE TO PILE CENTERLINE AT THE BOTTOM OF THE CAP)

PROJECT NO. B-4245
RANDOLPH COUNTY
 STATION: 17+04.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

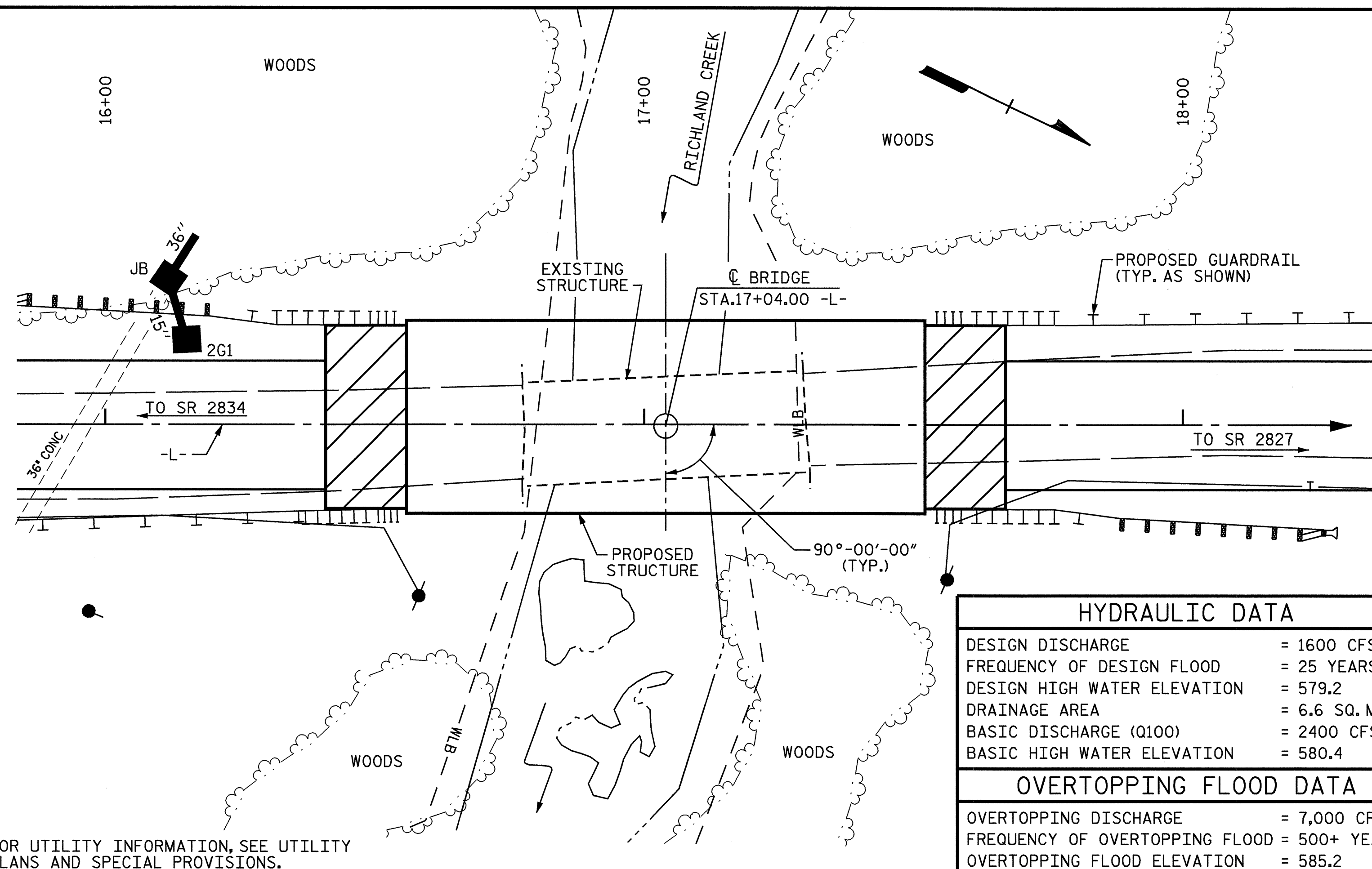
GENERAL DRAWING
 FOR BRIDGE OVER RICHLAND
 CREEK ON SR 2824 BETWEEN
 SR 2834 AND SR 2827



DRAWN BY : A.S. CALLAWAY DATE : 5/9/06
 CHECKED BY : P.C. BREWER DATE : 5/23/06

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

B.M. #1: R.R. SPIKE IN BASE OF TELEPHONE POLE #A288, S 1°-53'-19"E 136.05' FROM STA. 10+00.00 -L-, EL. 618.48'.



FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

LOCATION SKETCH

HYDRAULIC DATA	
DESIGN DISCHARGE	= 1600 CFS
FREQUENCY OF DESIGN FLOOD	= 25 YEARS
DESIGN HIGH WATER ELEVATION	= 579.2
DRAINAGE AREA	= 6.6 SQ. MI.
BASIC DISCHARGE (Q100)	= 2400 CFS
BASIC HIGH WATER ELEVATION	= 580.4
OVERTOPPING FLOOD DATA	
OVERTOPPING DISCHARGE	= 7,000 CFS
FREQUENCY OF OVERTOPPING FLOOD	= 500+ YEARS
OVERTOPPING FLOOD ELEVATION	= 585.2

NOTES:

ASSUMED LIVE LOAD = HS20 OR ALTERNATE LOADING, EXCEPT THAT BOX BEAM UNITS HAVE BEEN DESIGNED FOR HS25.
 FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
 FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
 THIS BRIDGE HAS BEEN DESIGNED BY THE STRENGTH DESIGN METHOD AS SPECIFIED IN AASHTO STANDARD SPECIFICATIONS.

THE EXISTING STRUCTURE CONSISTING OF 3 SPANS (1 @ 17'-9", 1 @ 17'-0", AND 1 @ 17'-9") WITH A CLEAR ROADWAY WIDTH OF 19.2' AND HAVING A TIMBER DECK ON TIMBER JOISTS WITH TIMBER CAPS SUPPORTED ON CONCRETE ENCASED TIMBER PILES AND LOCATED 2' DOWNSTREAM FROM PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE FURTHER DETERIORATE, THIS LOAD LIMITATION MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL REMOVE THE BRIDGE AND SUBMIT PLANS FOR DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 35 FT. EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. SEE ROADWAY PLANS FOR PAY ITEM.

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.

ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.
 THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH HEC 18, "EVALUATING SCOUR AT BRIDGES", MAY, 2001.
 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.

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.

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 PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

DRIVE PILES AT END BENT 1 AND END BENT 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.
 WHEN DRIVING PILES, DO NOT EXCEED THE MAXIMUM BLOW COUNT.

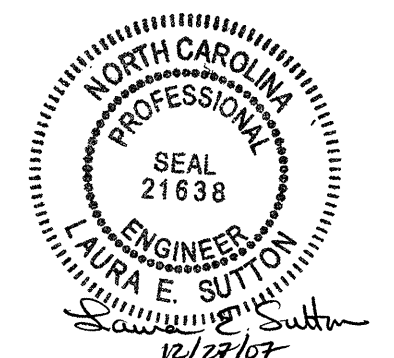
TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	HP 12 X 53 STEEL PILES	CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 3'-3" PRESTRESSED CONCRETE BOX BEAMS		
	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	NO.	LIN. FT.	TON	SQ. YDS.	LUMP SUM	NO.	LIN. FT.	
SUPERSTRUCTURE						188.25	163	180		12	1128.00	
END BENT 1		17.7		2,858	10	100						
END BENT 2		17.8		2,861	10	100						
TOTAL	LUMP SUM	35.5	LUMP SUM	5,719	20	200	188.25	320	354	LUMP SUM	12	1128.00

PROJECT NO. B-4245
RANDOLPH COUNTY
 STATION: 17+04.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 FOR BRIDGE OVER RICHLAND CREEK ON SR 2824 BETWEEN SR 2834 AND SR 2827



DRAWN BY: A.S. CALLAWAY DATE: 5/9/06
 CHECKED BY: P.C. BREWER DATE: 5/23/06

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

NOTES

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL CAST WITH THE BOX BEAM SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE BOX BEAMS.

RECESSES FOR TRANSVERSE STRANDS SHALL BE GROUTED AFTER THE TENSIONING OF THE STRANDS.

THE 2 1/2" Ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH GROUT.

THE 2" Ø BACKER ROD SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE BOX BEAM UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 5200 PSI.

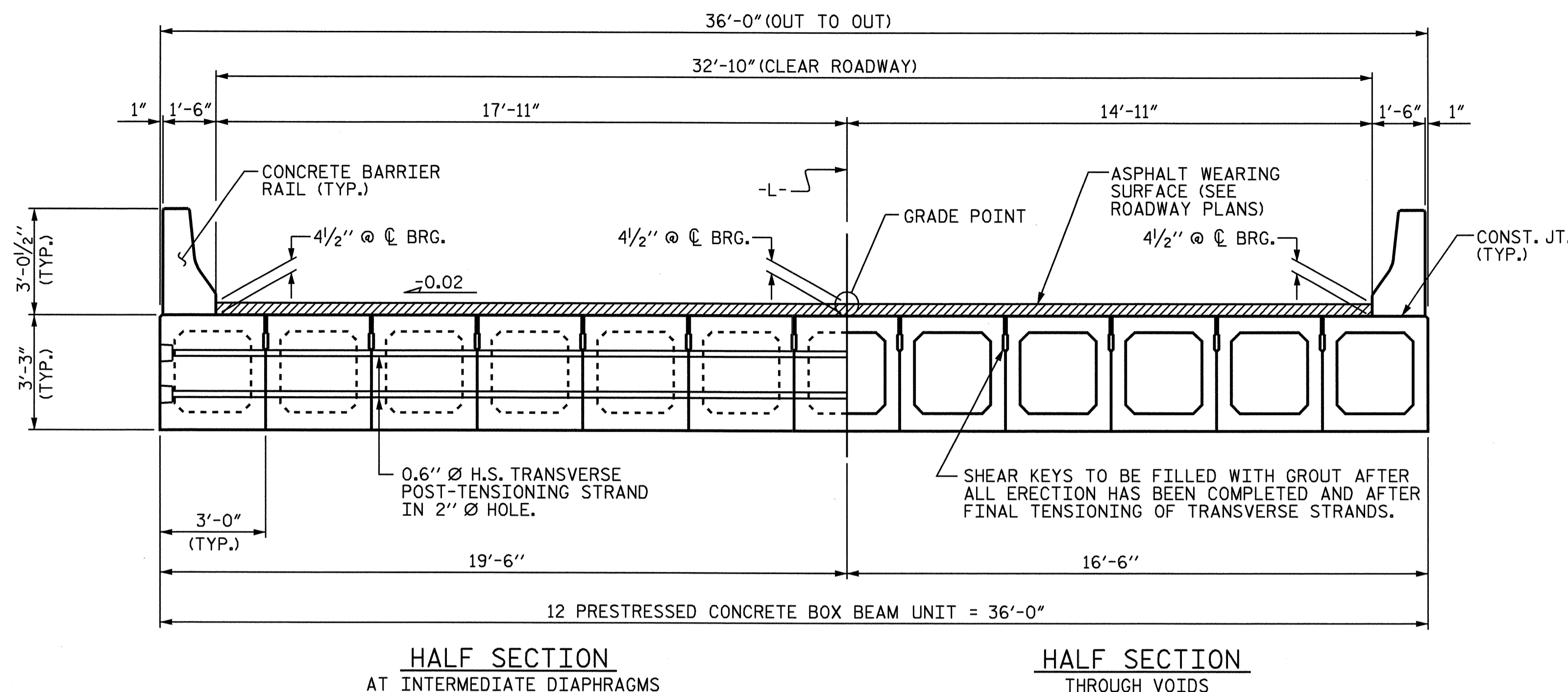
ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE BOX BEAM UNIT ENDS.

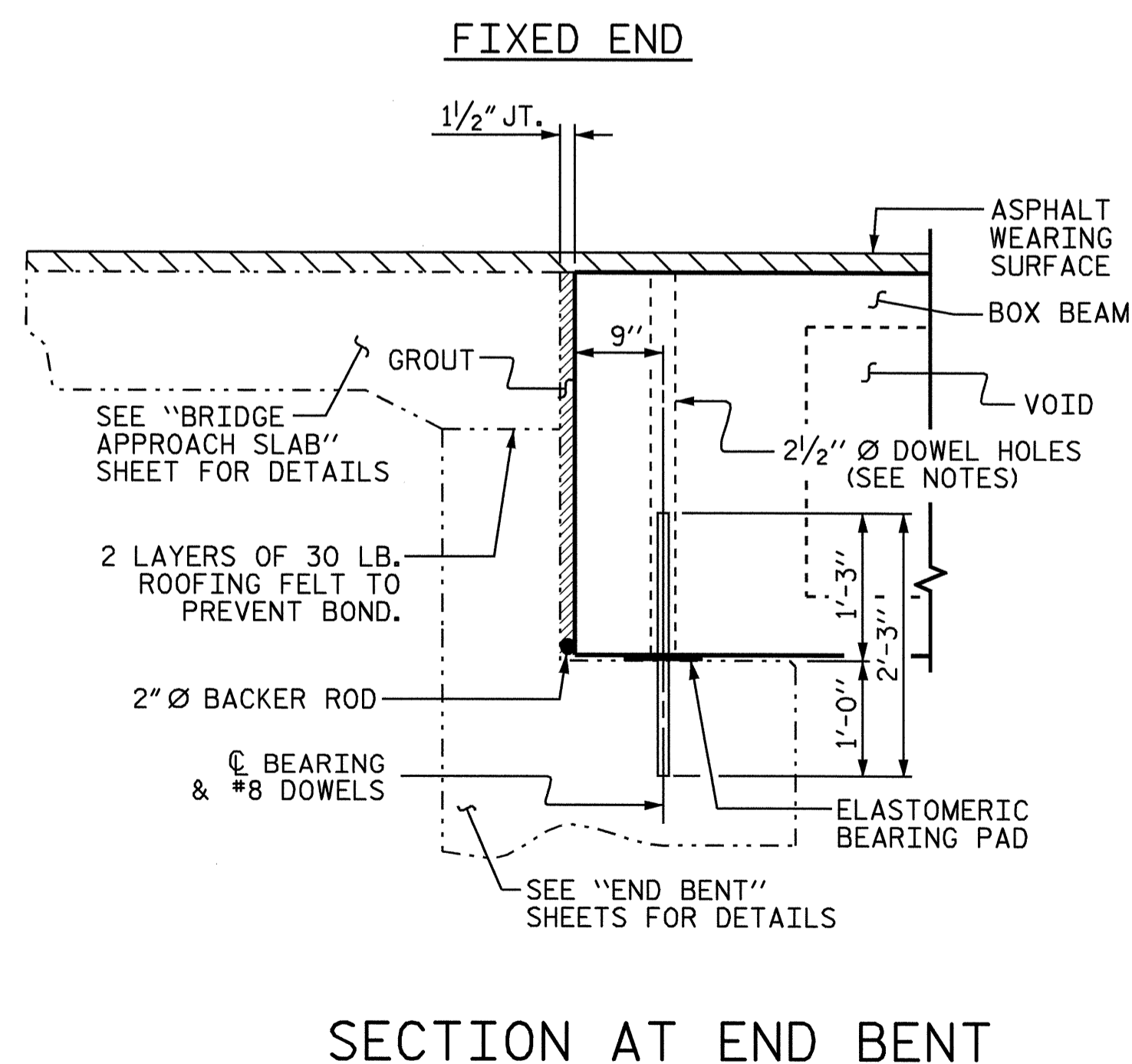
APPLY EPOXY PROTECTIVE COATING TO BOX BEAM UNIT ENDS.

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

THE LOCATION OF THE VOID DRAINS MAY BE SHIFTED SLIGHTLY WHERE NECESSARY TO CLEAR PRESTRESSING STRANDS OR TRANSVERSE REINFORCING STEEL.



TYPICAL SECTION

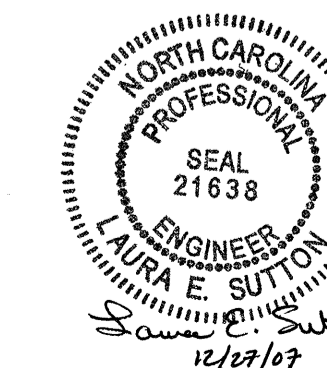


SECTION AT END BENT

PROJECT NO. B-4245
RANDOLPH COUNTY
 STATION: 17+04.00 -L-

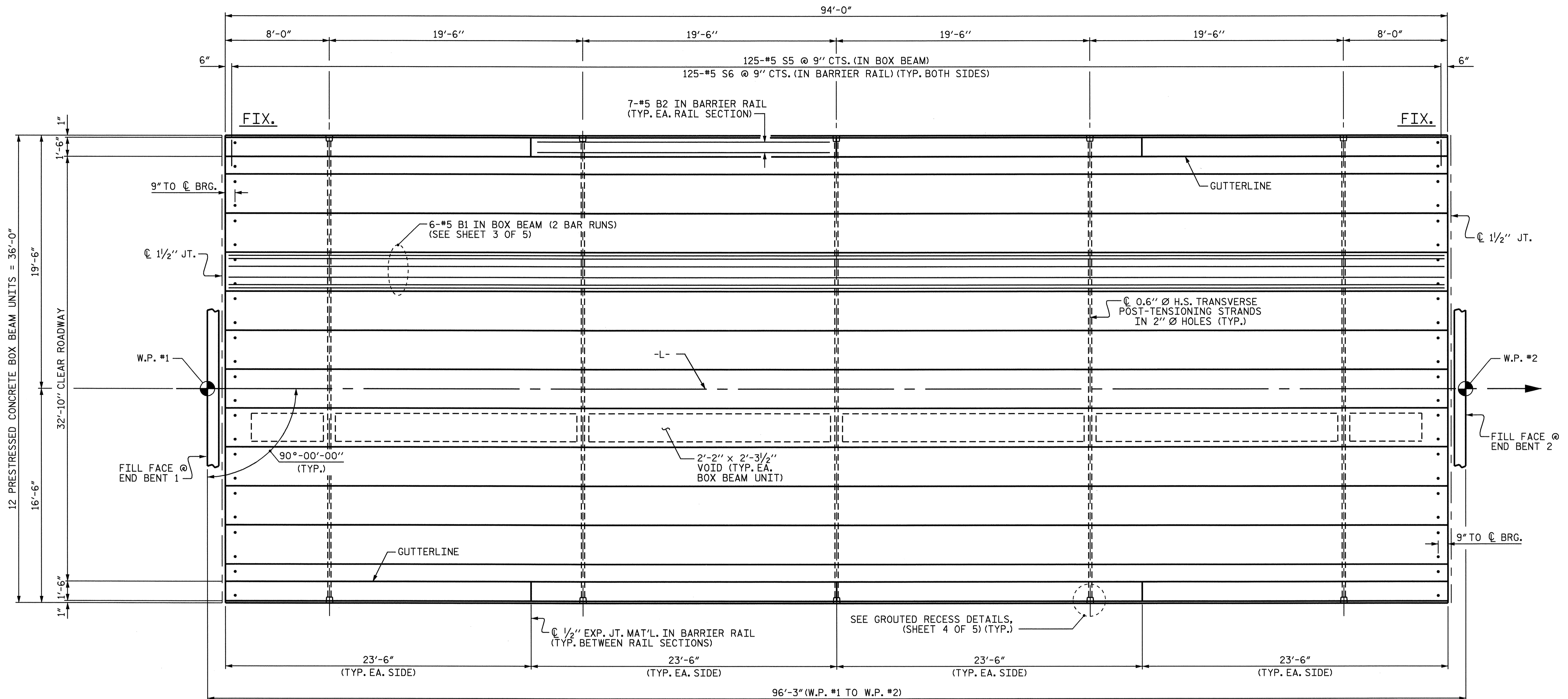
SHEET 1 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 3'-0" X 3'-3"
 PRESTRESSED CONCRETE
 BOX BEAM UNIT



ASSEMBLED BY : A.S. CALLAWAY	DATE : 8/5/05
CHECKED BY : P.C. BREWER	DATE : 8/9/05
DRAWN BY : TLA 5/05	ADDED 7/11/05R
CHECKED BY : GM 6/05	REV. 5/1/06R KMM/GM

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



PLAN OF SPAN "A"

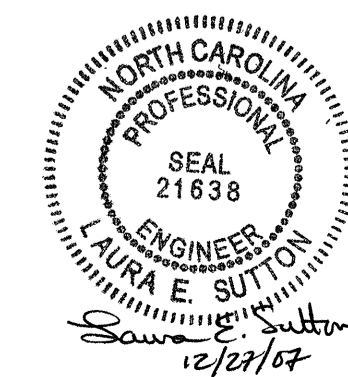
SPLICE LENGTH CHART		
BAR	SIZE	SPLICE LENGTH
B1	#5	2'-2"

PROJECT NO. B-4245
 RANDOLPH COUNTY
 STATION: 17+04.00 -L-

SHEET 2 OF 5

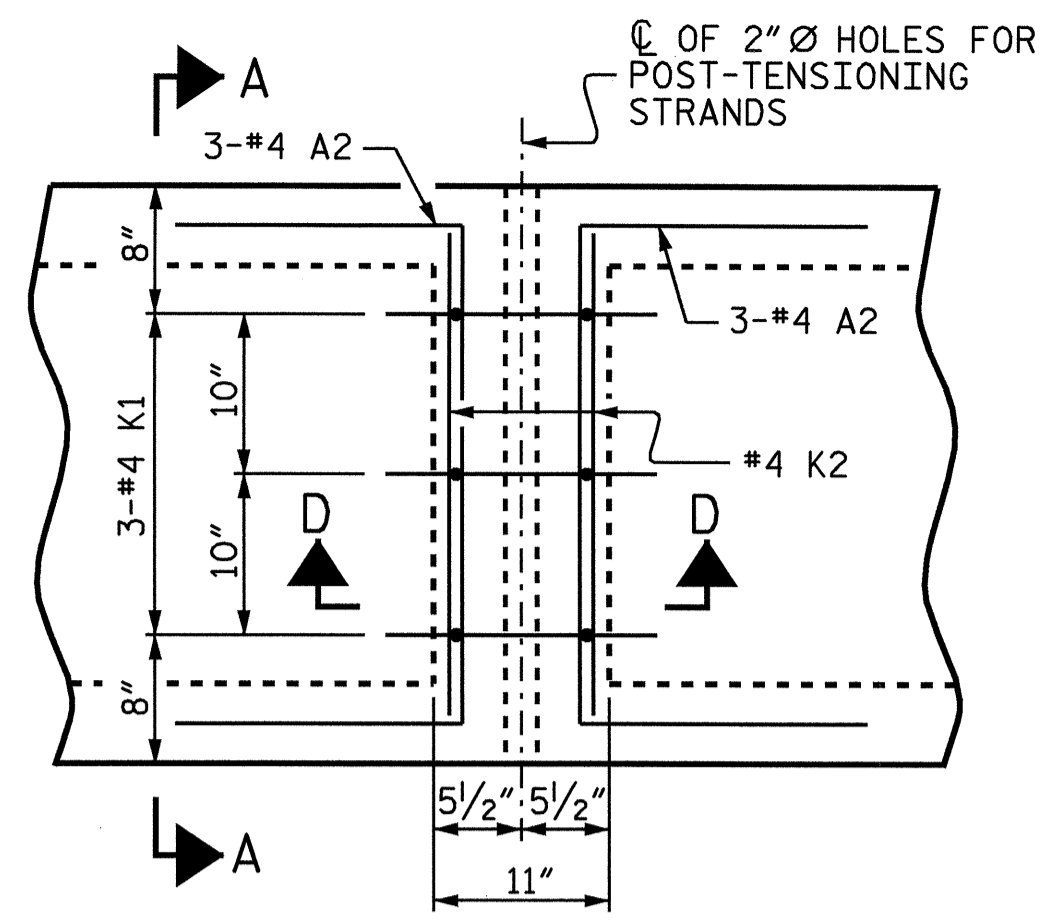
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

3'-0" X 3'-3"
 PRESTRESSED CONCRETE
 BOX BEAM UNIT
 SPAN "A"

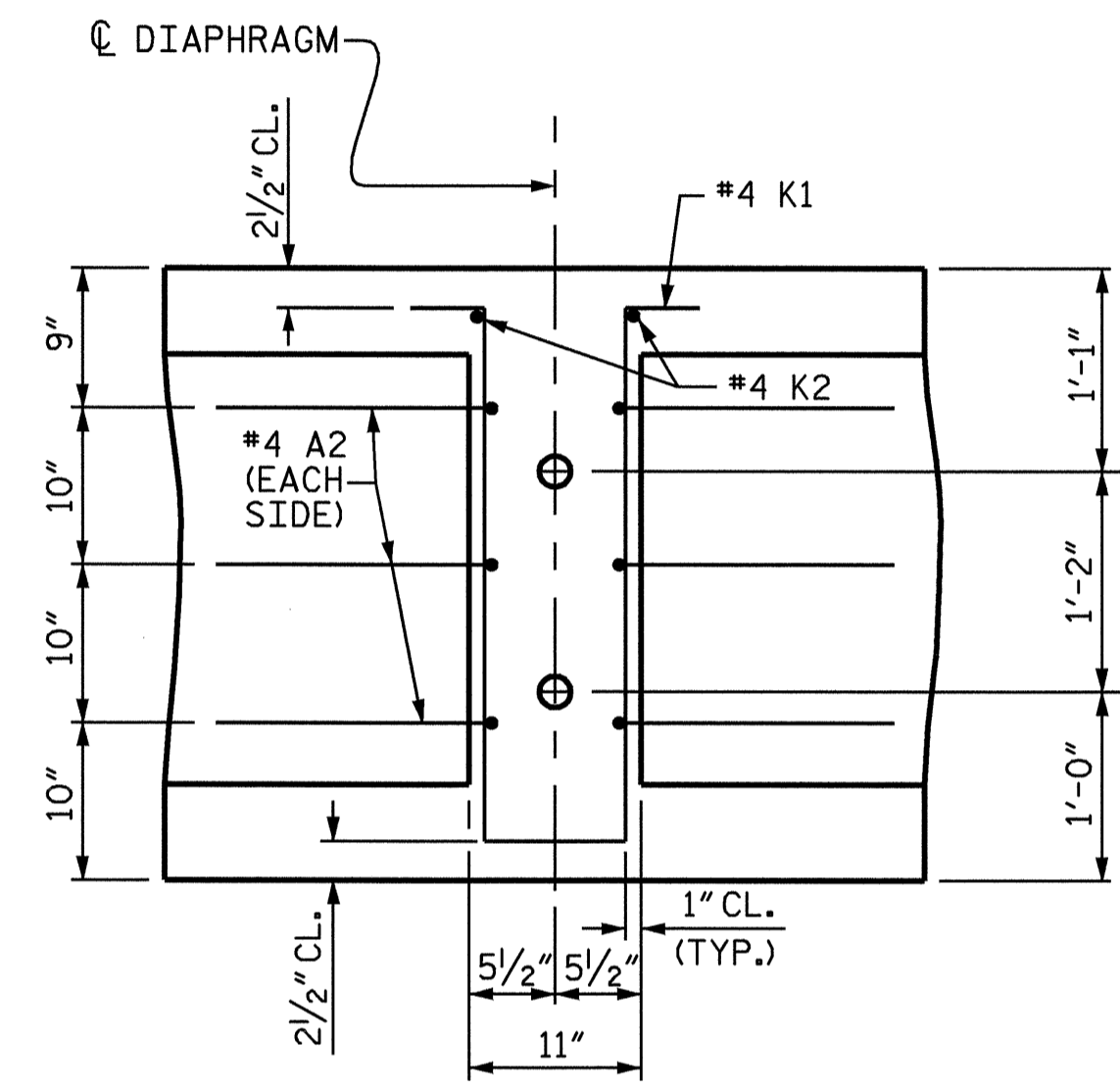


DRAWN BY: A.S. CALLAWAY DATE: 8/5/05
 CHECKED BY: P.C. BREWER DATE: 8/9/05

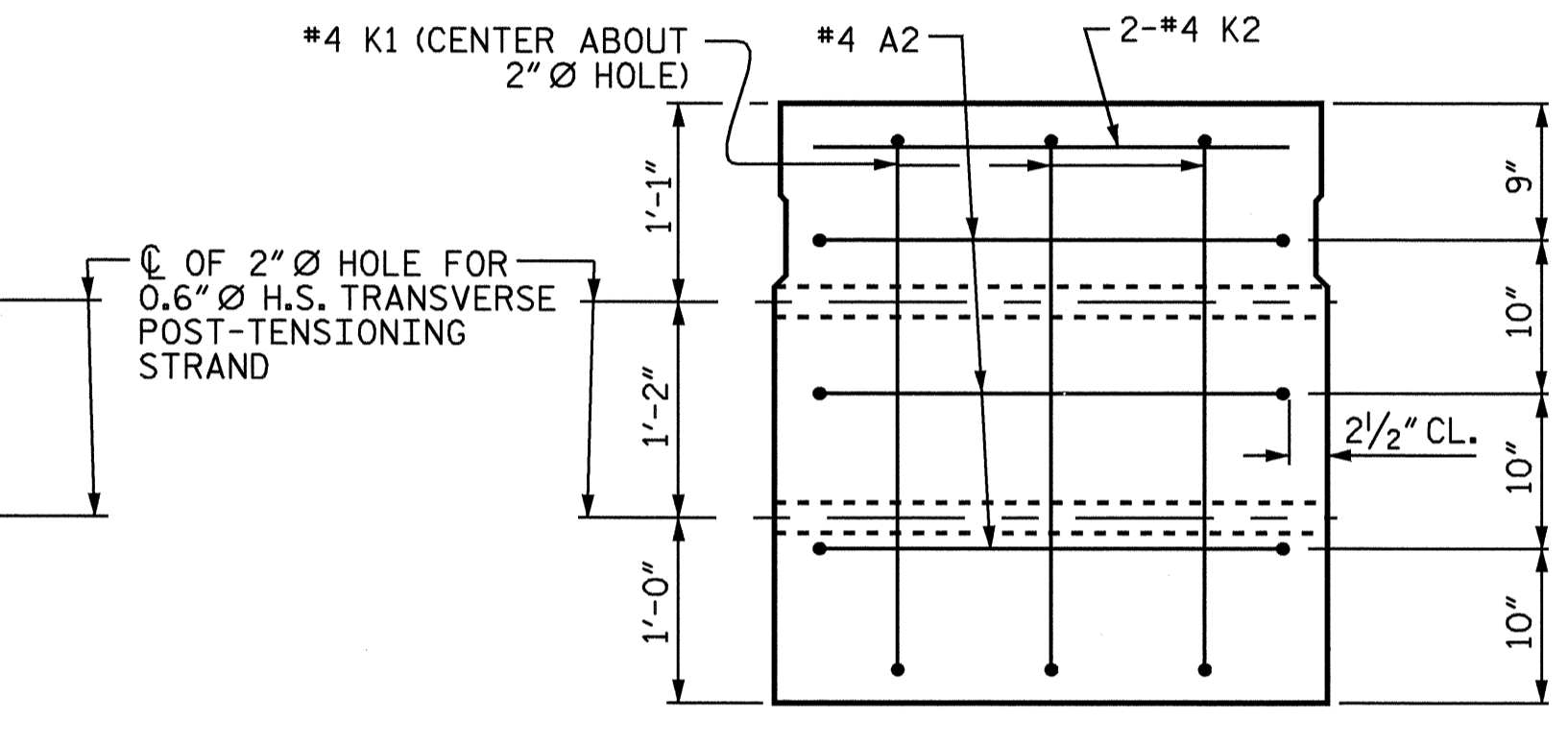
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			18



PLAN



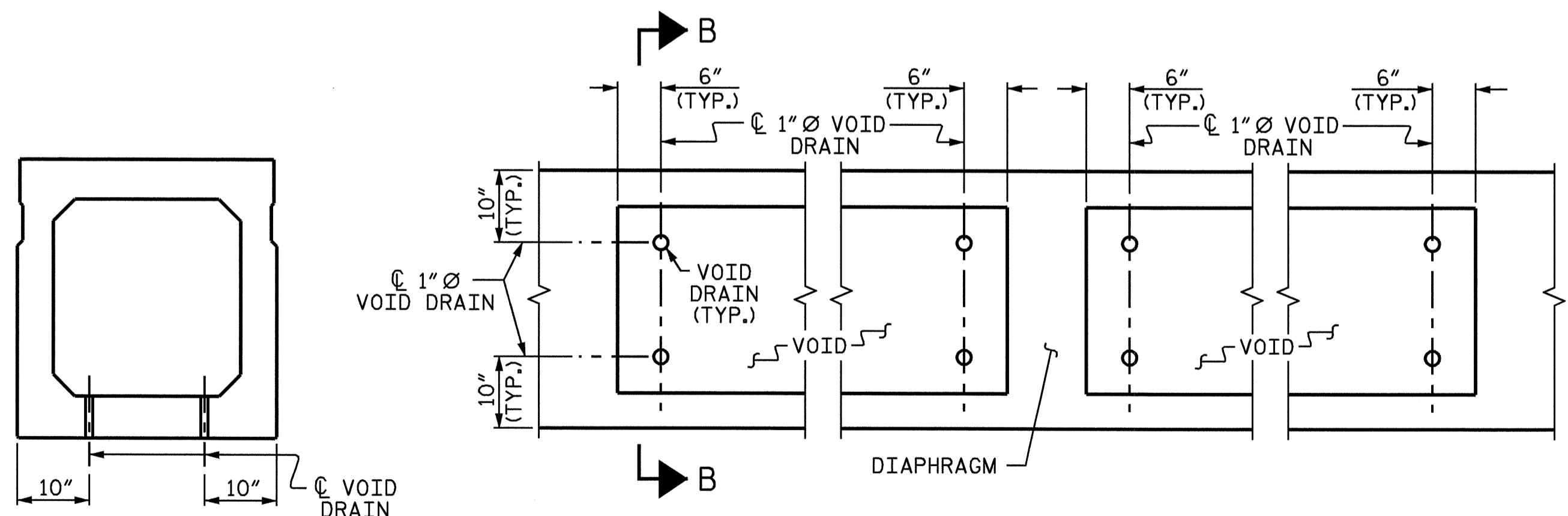
SECTION D-D



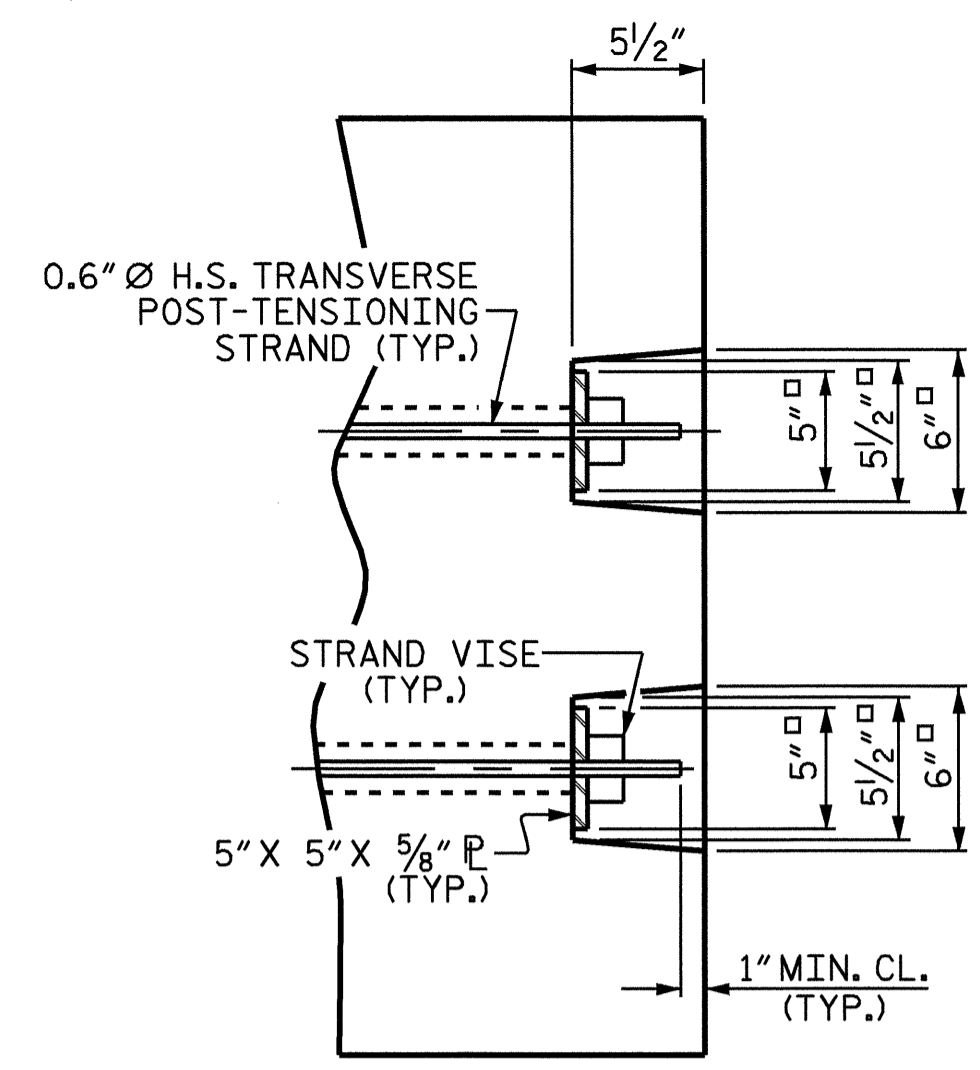
SECTION A-A
VOIDS NOT SHOWN

DIAPHRAGM DETAILS

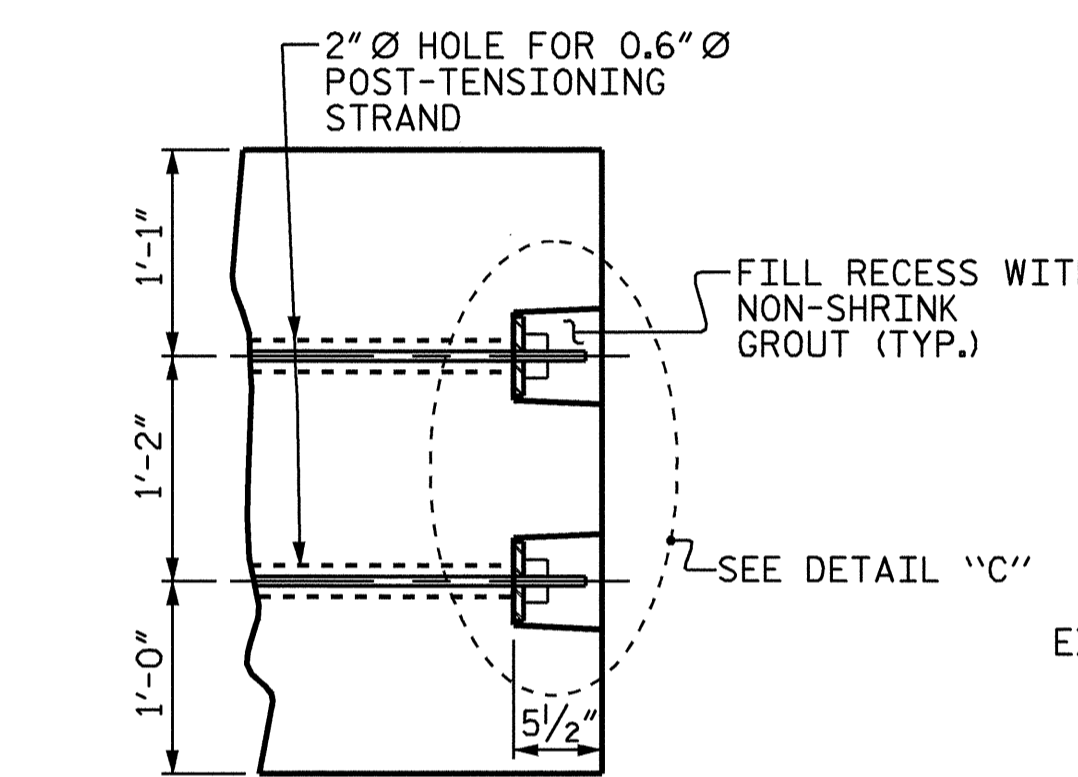
*4 "S" BARS NOT SHOWN. *4 "S" BARS MAY BE SHIFTED SLIGHTLY TO CLEAR 2" Ø HOLE.



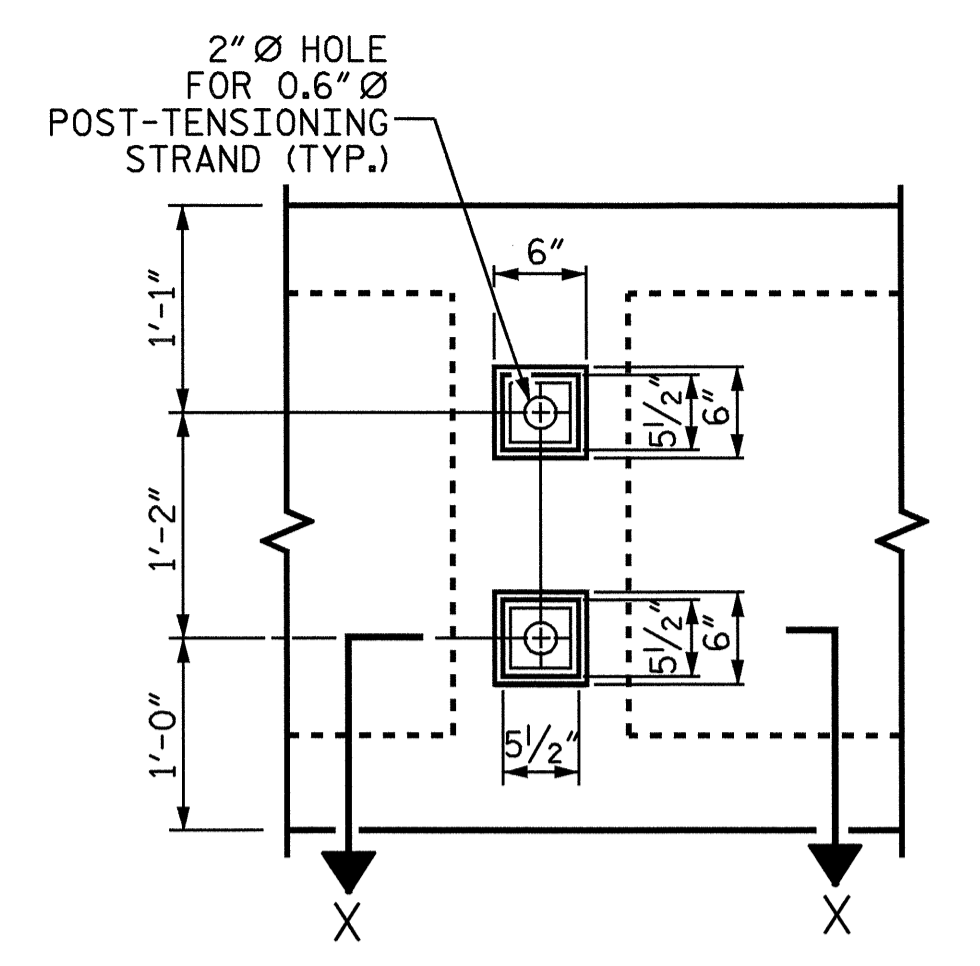
SECTION B-B
PART PLAN
VOID DRAIN DETAILS
(DIMENSIONS SHOWN ARE TYPICAL FOR EACH VOID)



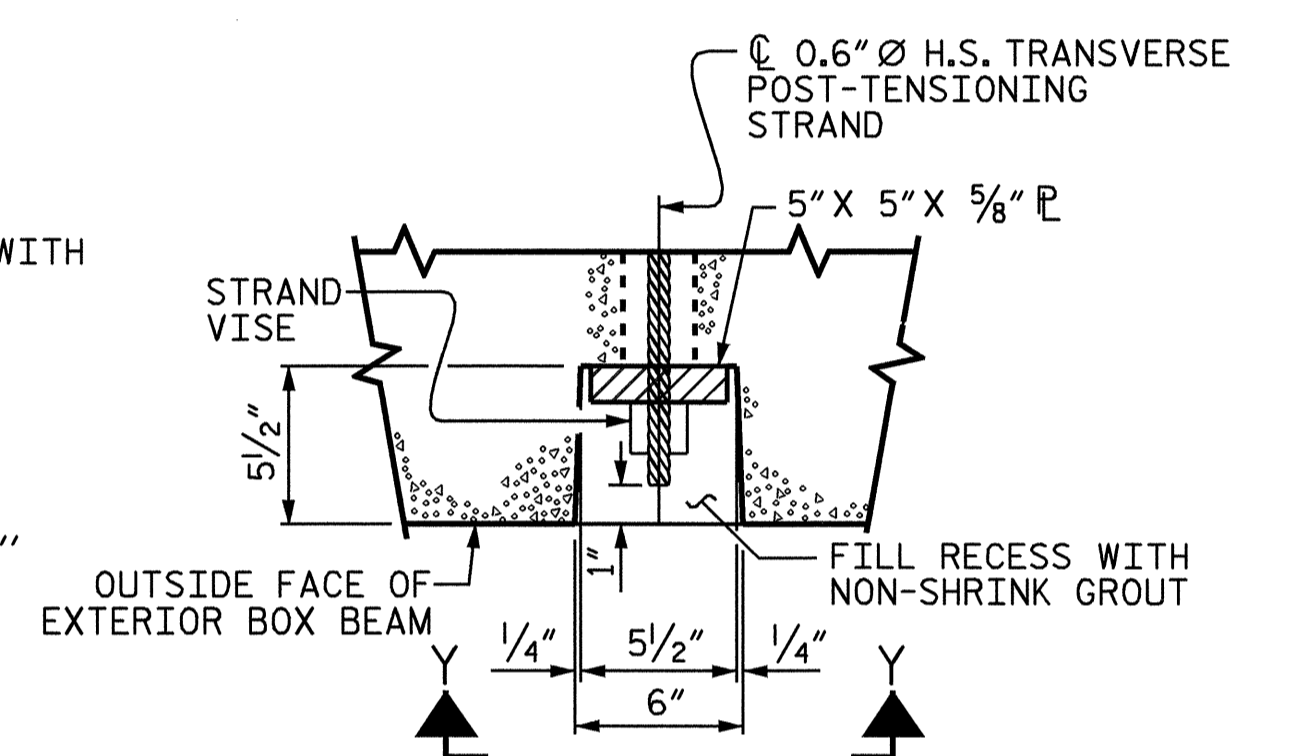
DETAIL "C"



PART SECTION AT RECESS



VIEW Y-Y
SHOWING ELEVATION VIEW OF GROUTED RECESS



SECTION X-X
SHOWING PLAN VIEW OF GROUTED RECESS

GROUTED RECESS DETAIL AT
END OF POST-TENSIONED STRANDS
OF EXTERIOR BOX BEAM

PROJECT NO. B-4245
RANDOLPH COUNTY
STATION: 17+04.00 -L-

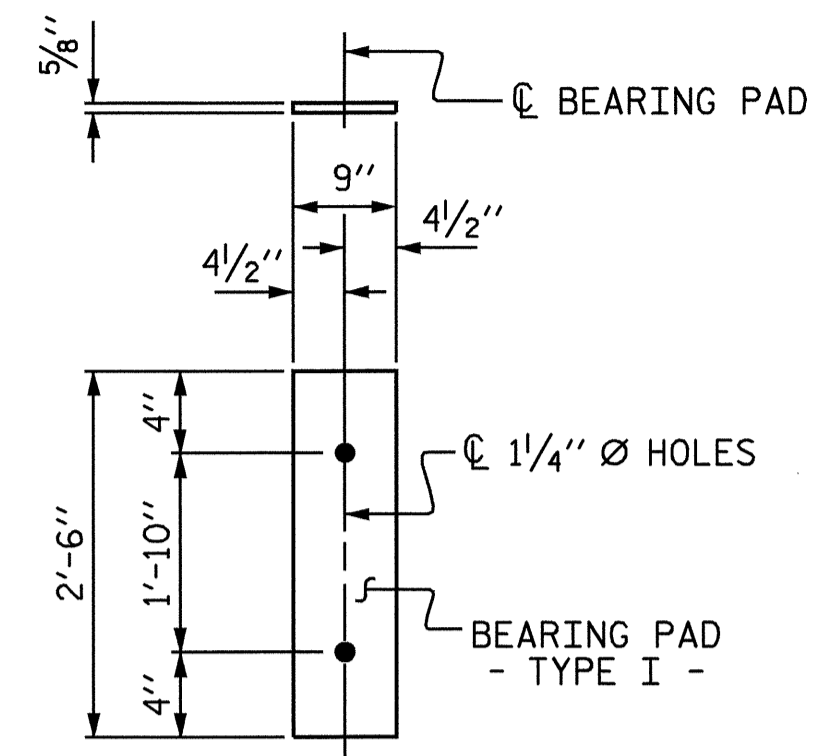
SHEET 4 OF 5



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
3'-0" X 3'-3"
PRESTRESSED CONCRETE
BOX BEAM UNIT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			18

ASSEMBLED BY : A.S. CALLAWAY	DATE : 8/5/05
CHECKED BY : P.C. BREWER	DATE : 8/9/05
DRAWN BY : TLA 5/05	ADDED 7/11/05
CHECKED BY : GM 6/05	REV. 5/1/06 TLA/GM

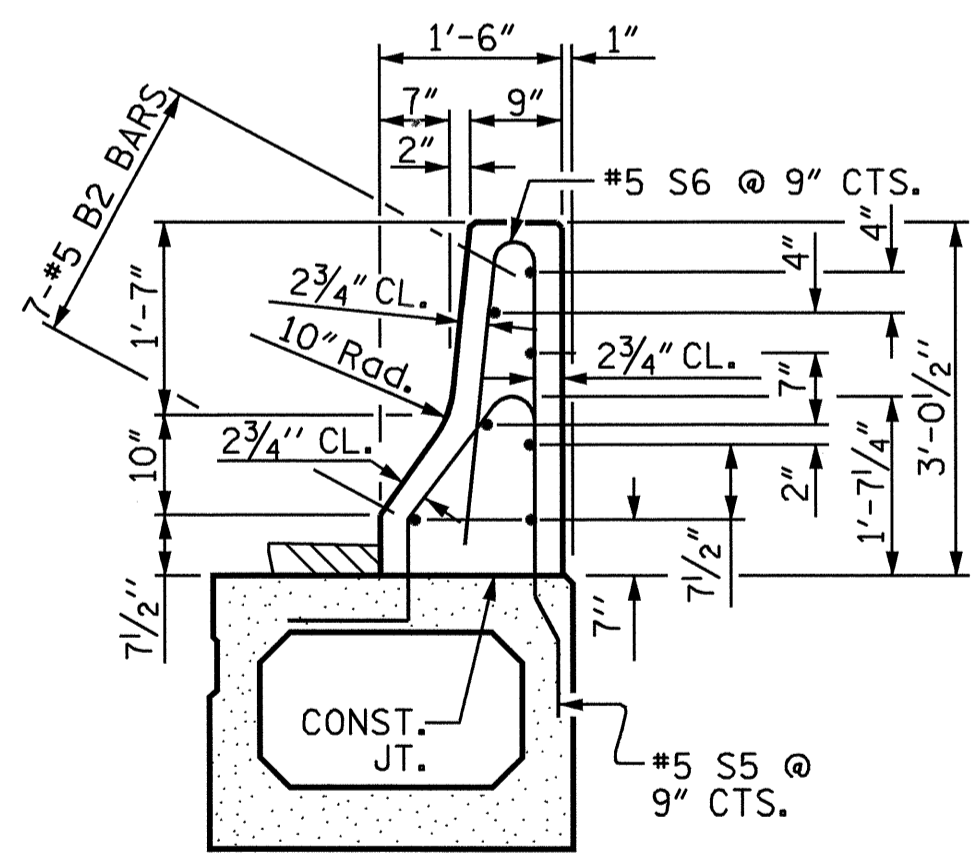


ELASTOMERIC BEARING DETAILS

BOX BEAM UNITS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
SPAN A			
EXTERIOR B.B.	2	94'-0"	188'-0"
INTERIOR B.B.	10	94'-0"	940'-0"
TOTAL	12		1128'-0"

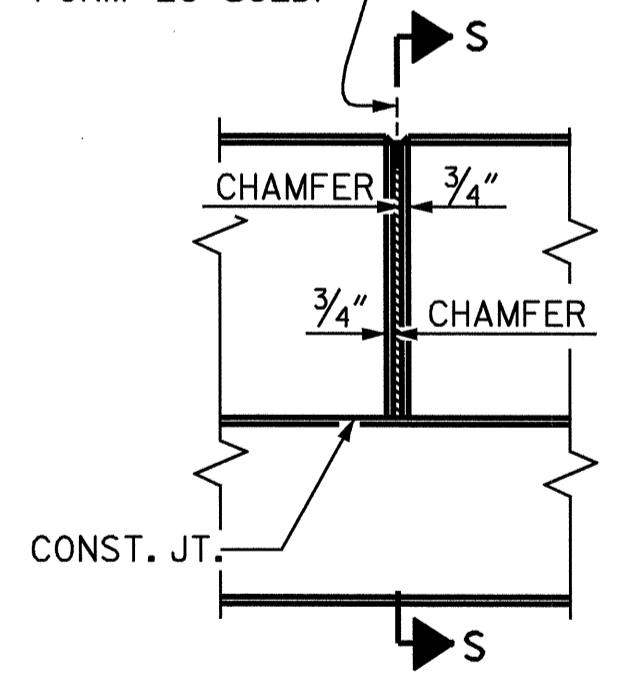
DEAD LOAD DEFLECTION AND CAMBER	
	3'-0" x 3'-3"
	0.6" Ø L.R. STRAND
	SPAN "A"
CAMBER (BEAM ALONE IN PLACE)	↑ 3 3/16"
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD **	↓ 3/4"
FINAL CAMBER	↑ 2 7/16"

** INCLUDES FUTURE WEARING SURFACE.

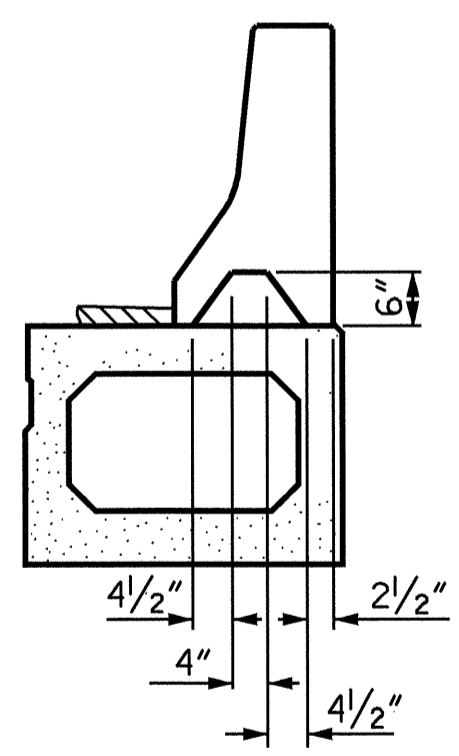


SECTION THRU RAIL

1/2" EXP. JT. MAT'L HELD IN PLACE WITH GALVANIZED NAILS. (NOTE: OMIT EXP. JT. MAT'L. WHEN SLIP FORM IS USED)



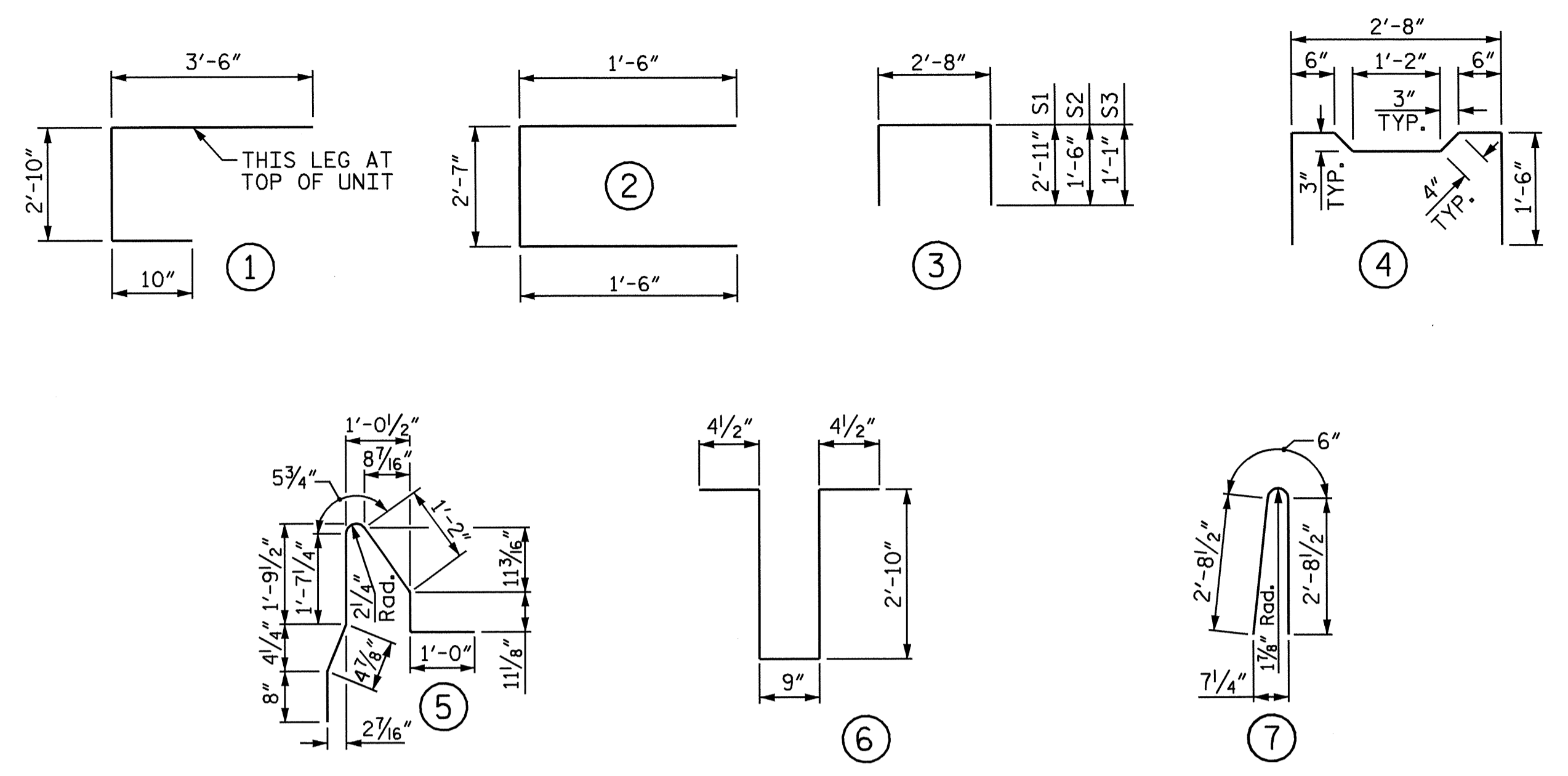
ELEVATION AT EXPANSION JOINTS



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

BARRIER RAIL DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

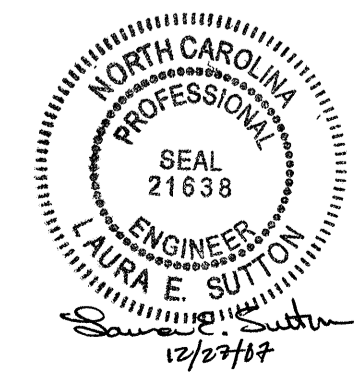
BILL OF MATERIAL FOR CONCRETE BARRIER RAIL						
BAR	SPAN A	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
*B2	56	56	#5	STR	23'-1"	1348
*S6	250	250	#5	7	5'-11"	1543
					LBS.	2,891
					CU.YDS.	22.8
TOTAL CONCRETE BARRIER RAIL					LIN. FT.	188.25

BILL OF MATERIAL FOR ONE BOX BEAM SECTION									
		EXTERIOR UNIT				INTERIOR UNIT			
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT
A1	10	#5	1	7'-2"	75	7'-2"	75		
A2	44	#4	2	5'-7"	164	5'-7"	164		
B1	12	#5	STR	47'-11"	600	47'-11"	600		
K1	15	#4	6	7'-2"	72	7'-2"	72		
K2	10	#4	STR	2'-7"	17	2'-7"	17		
S1	74	#4	3	8'-6"	420	8'-6"	420		
S2	74	#4	3	5'-8"	280	5'-8"	280		
S3	131	#4	3	4'-10"	423	4'-10"	423		
S4	57	#4	4	5'-10"	222	5'-10"	222		
*S5	125	#5	5	6'-3"	815				
REINFORCING STEEL					LBS.	2,273	LBS.	2,273	
*EPOXY COATED REINFORCING STEEL					LBS.	815			
6500 P.S.I. CONCRETE					CU. YDS.	18.5	CU. YDS.	18.3	
0.6" Ø L.R. STRANDS					NO.	28	NO.	28	

PROJECT NO. B-4245
RANDOLPH COUNTY
 STATION: 17+04.00 -L-

SHEET 5 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 3'-0" X 3'-3"
 PRESTRESSED CONCRETE
 BOX BEAM UNIT
 DETAILS



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			18

DRAWN BY: A.S. CALLAWAY DATE: 8/5/05
 CHECKED BY: P.C. BREWER DATE: 8/9/05

NOTES

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

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

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

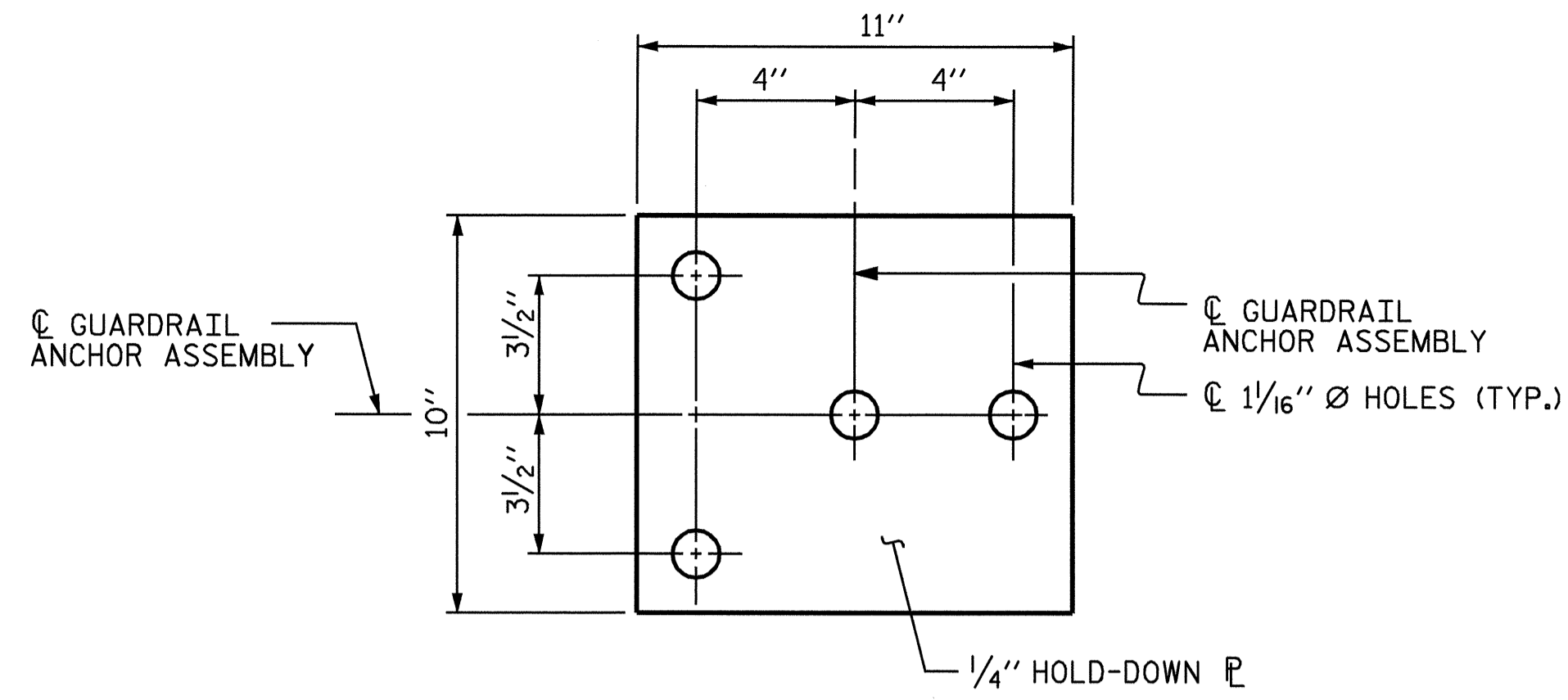
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

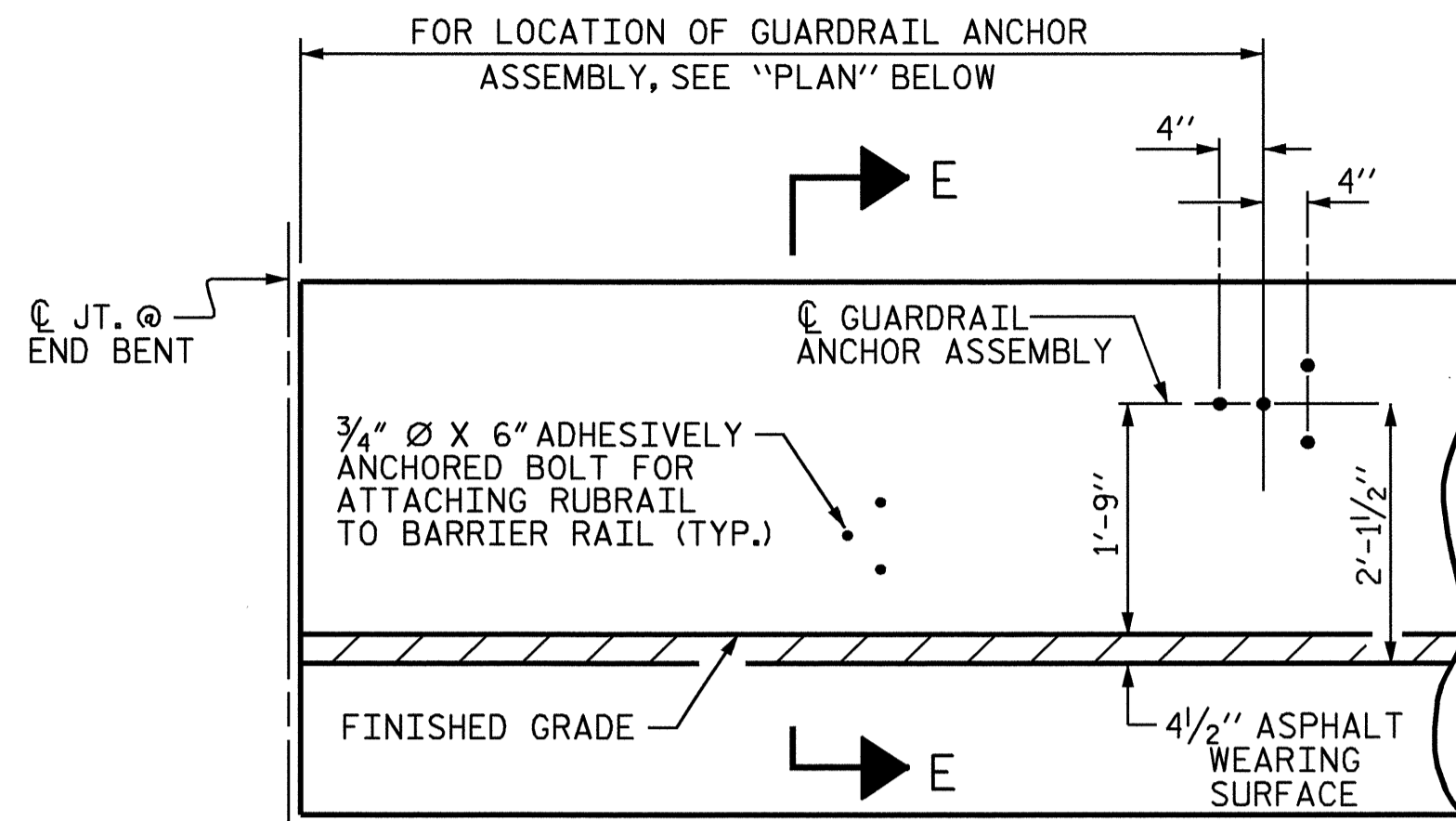
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.

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

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

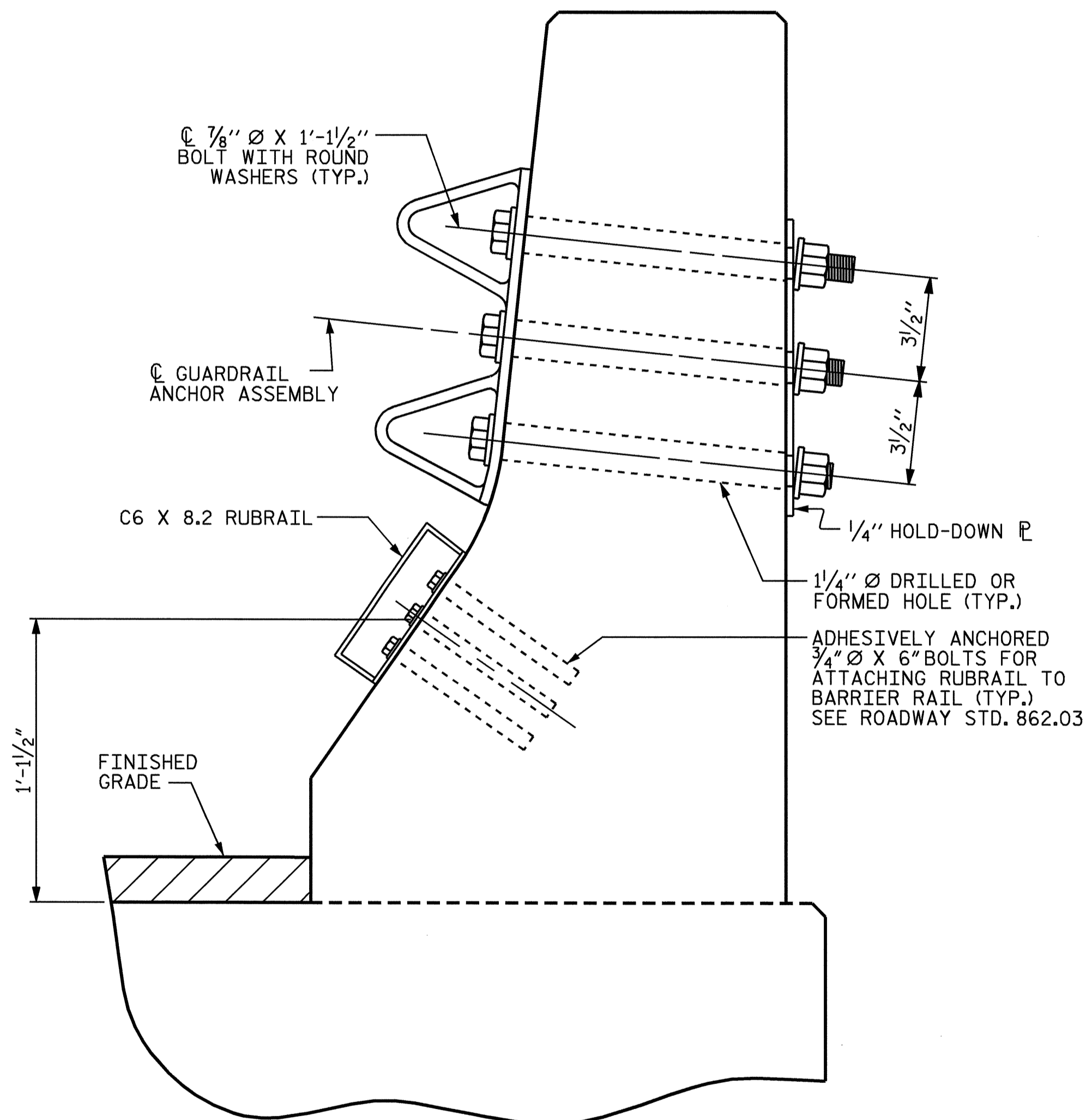


PLAN



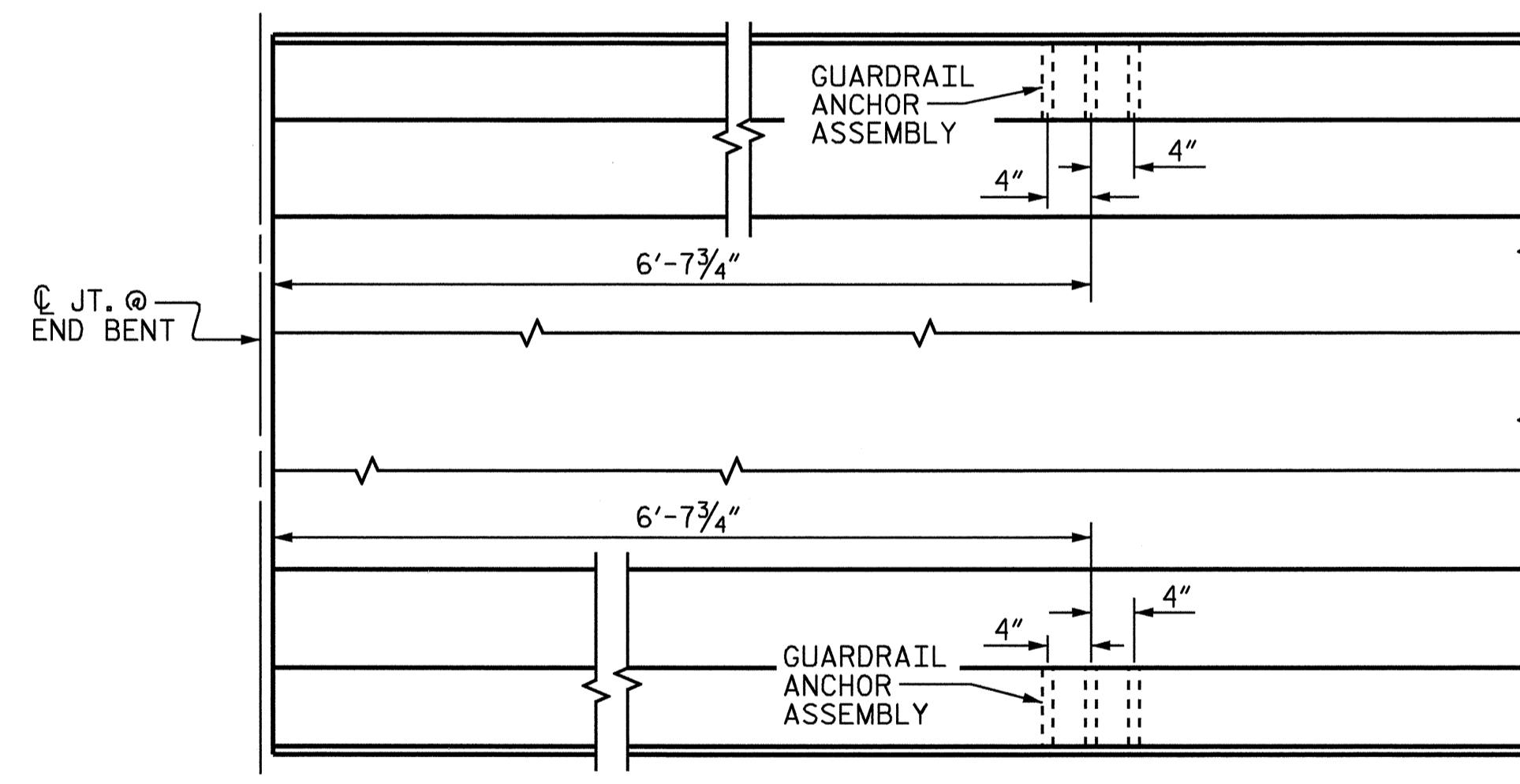
ELEVATION

FOR LOCATION OF RUBRAIL, SEE ROADWAY STD. 862.03



SECTION E-E

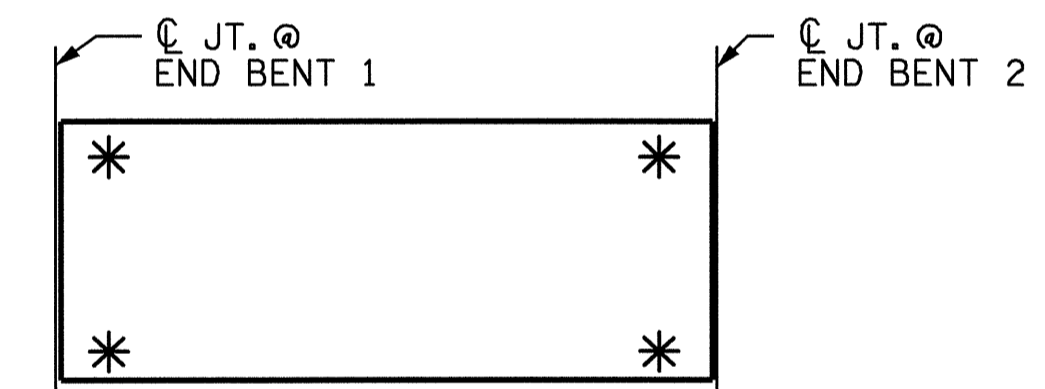
GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

END BENT 1 SHOWN, END BENT 2 SIMILAR.

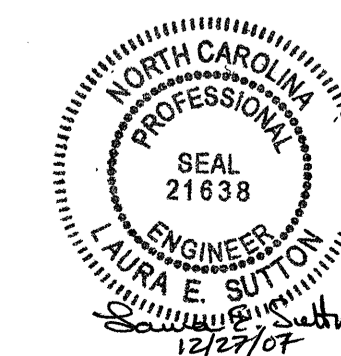


SKETCH SHOWING POINTS OF ATTACHMENTS

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. B-4245
 RANDOLPH COUNTY
 STATION: 17+04.00 -L-

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



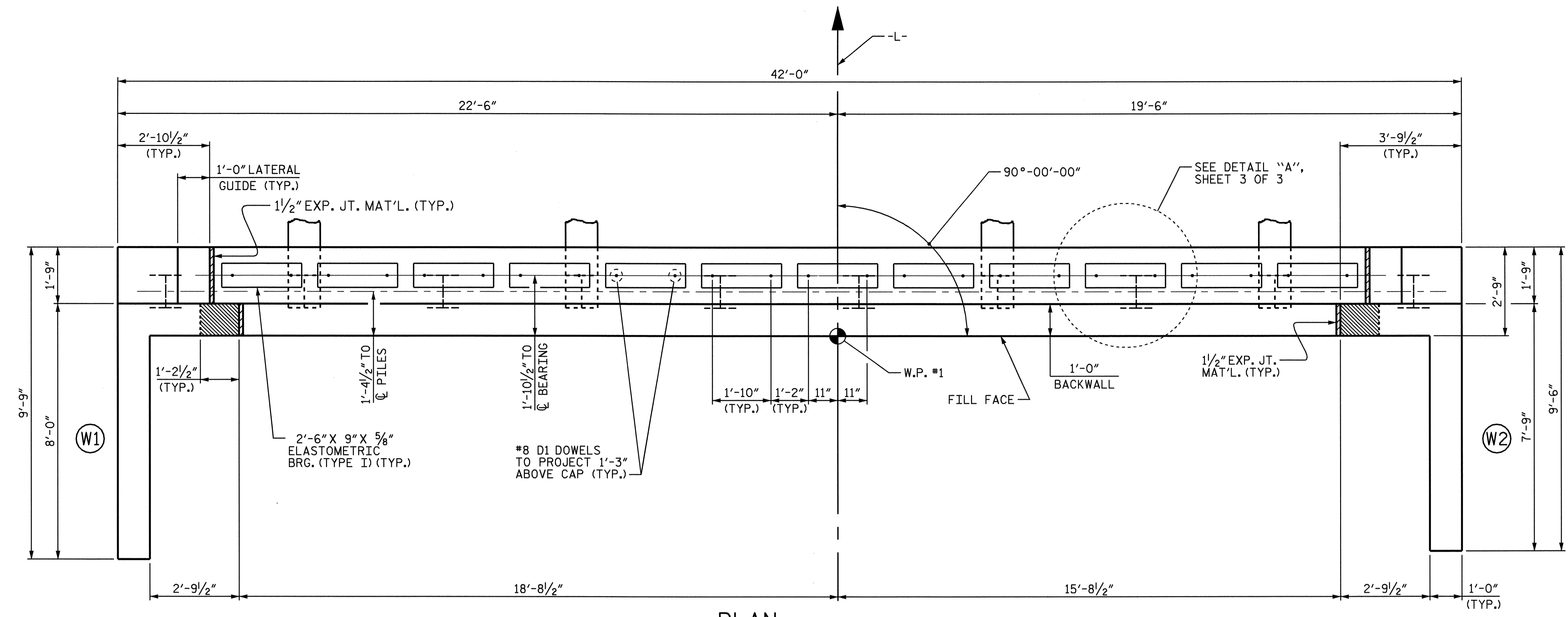
ASSEMBLED BY : A.S. CALLAWAY DATE : 9/24/07
 CHECKED BY : P.C. BREWER DATE : 10/8/07
 DRAWN BY : TLA 5/06
 CHECKED BY : GM 5/06

ADDED 5/1/06R KMM/GM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			18

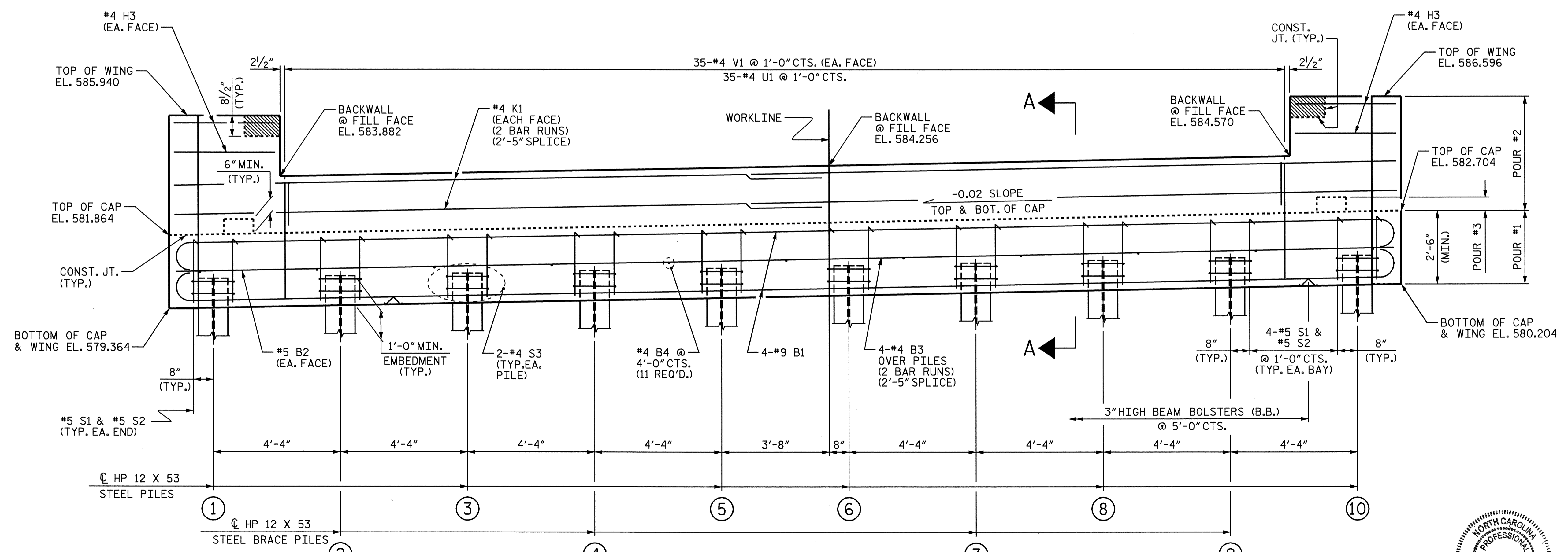
NOTES:

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.
- THE LATERAL GUIDES AT EACH END OF THE CAP ARE NOT TO BE POURED UNTIL AFTER THE BOX BEAM UNITS ARE IN PLACE.
- 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.
- THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.
- THE #4 V1 BARS IN THE BACKWALL SHALL BE PLACED 2" CLEAR FROM THE TOP OF THE BACKWALL.



PLAN

TOP OF PILE ELEVATIONS	
①	580.404
②	580.491
③	580.577
④	580.664
⑤	580.751
⑥	580.837
⑦	580.924
⑧	581.011
⑨	581.097
⑩	581.184



ELEVATION

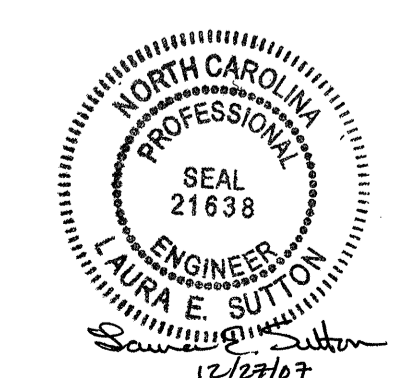
PROJECT NO. B-4245
RANDOLPH COUNTY
 STATION: 17+04.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

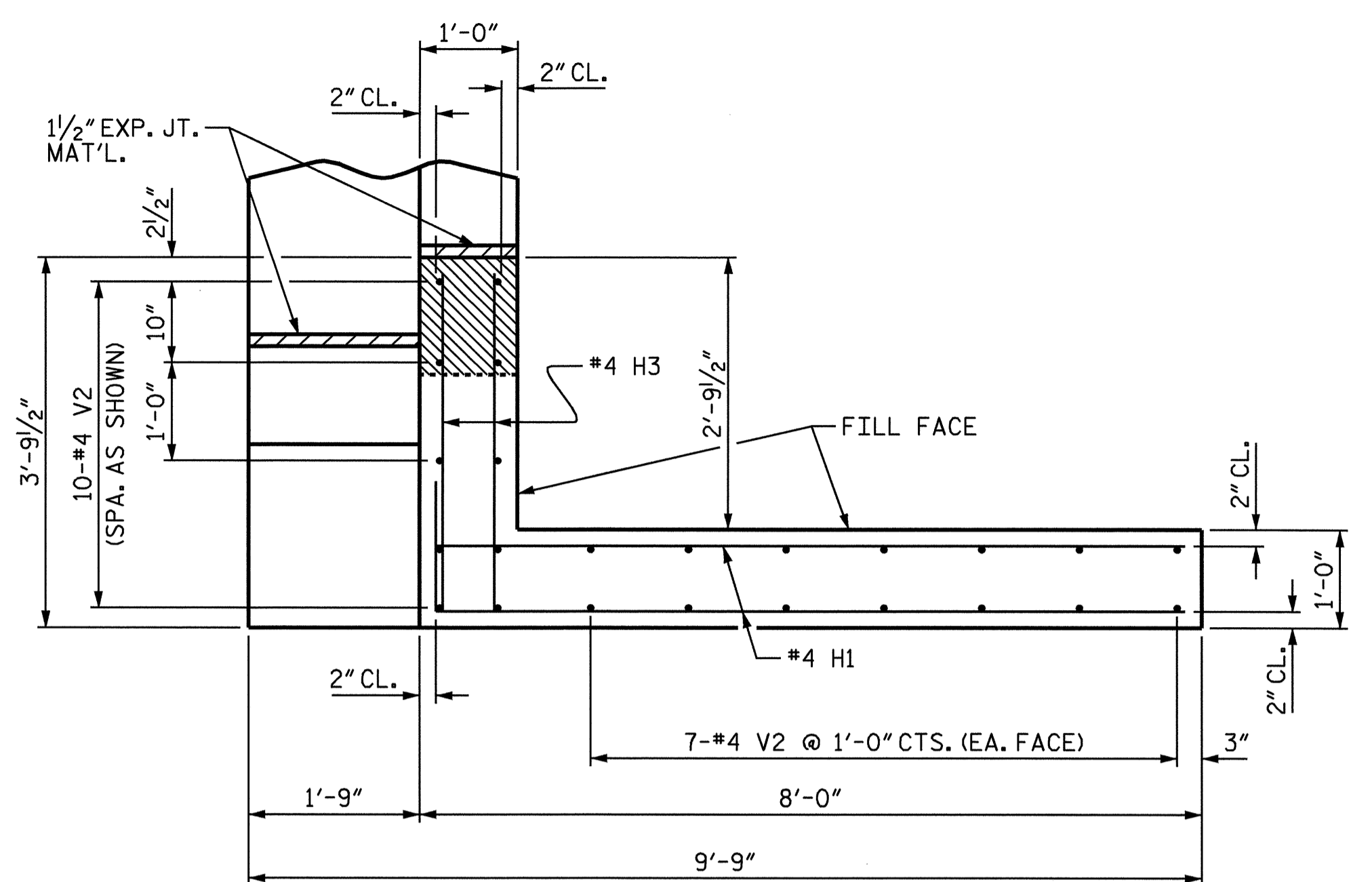
**SUBSTRUCTURE
 END BENT 1**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			18

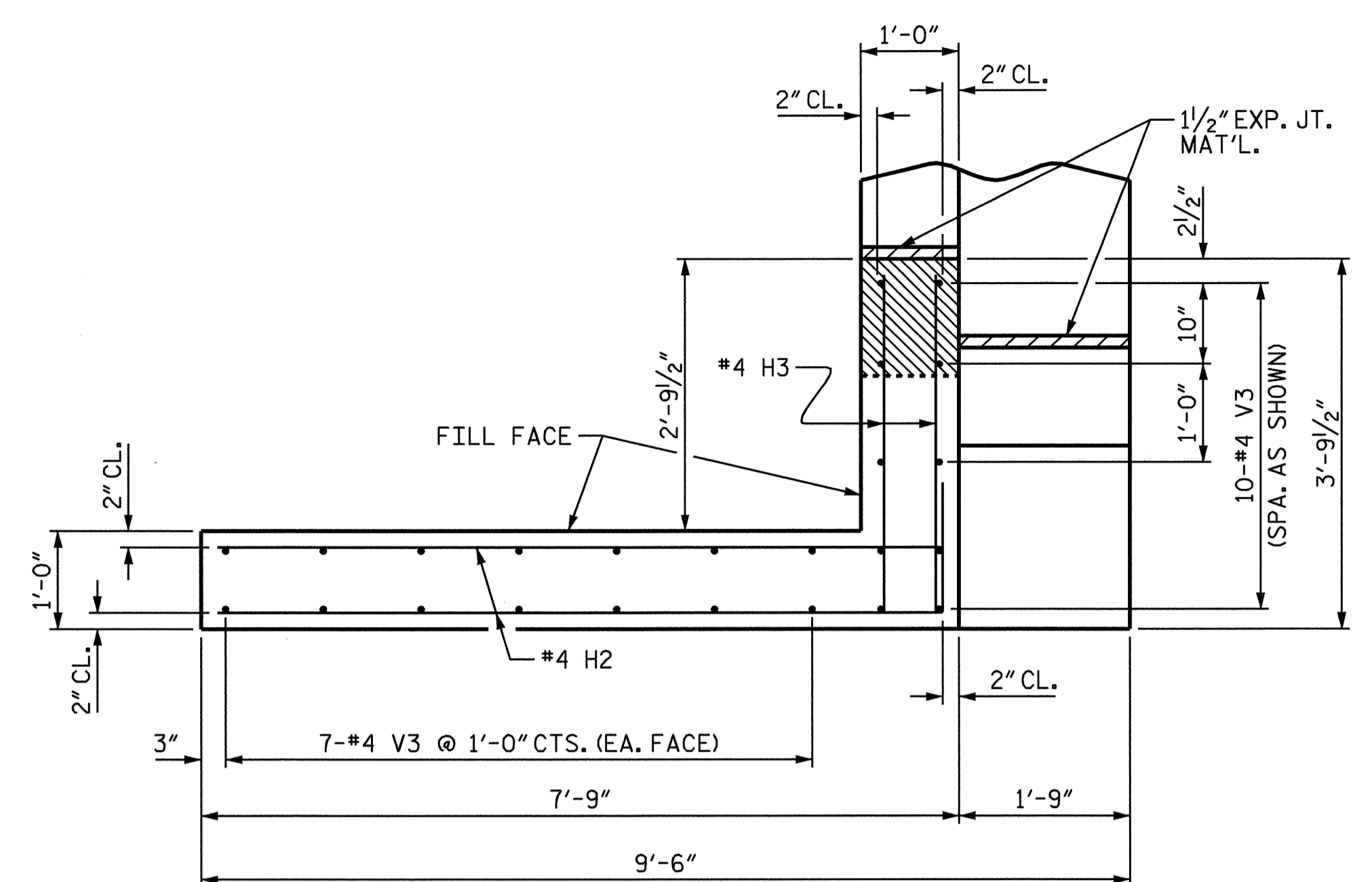


DRAWN BY: E.C. LOCKLEAR DATE: 8-21-06
 CHECKED BY: P.C. BREWER DATE: 8-28-06

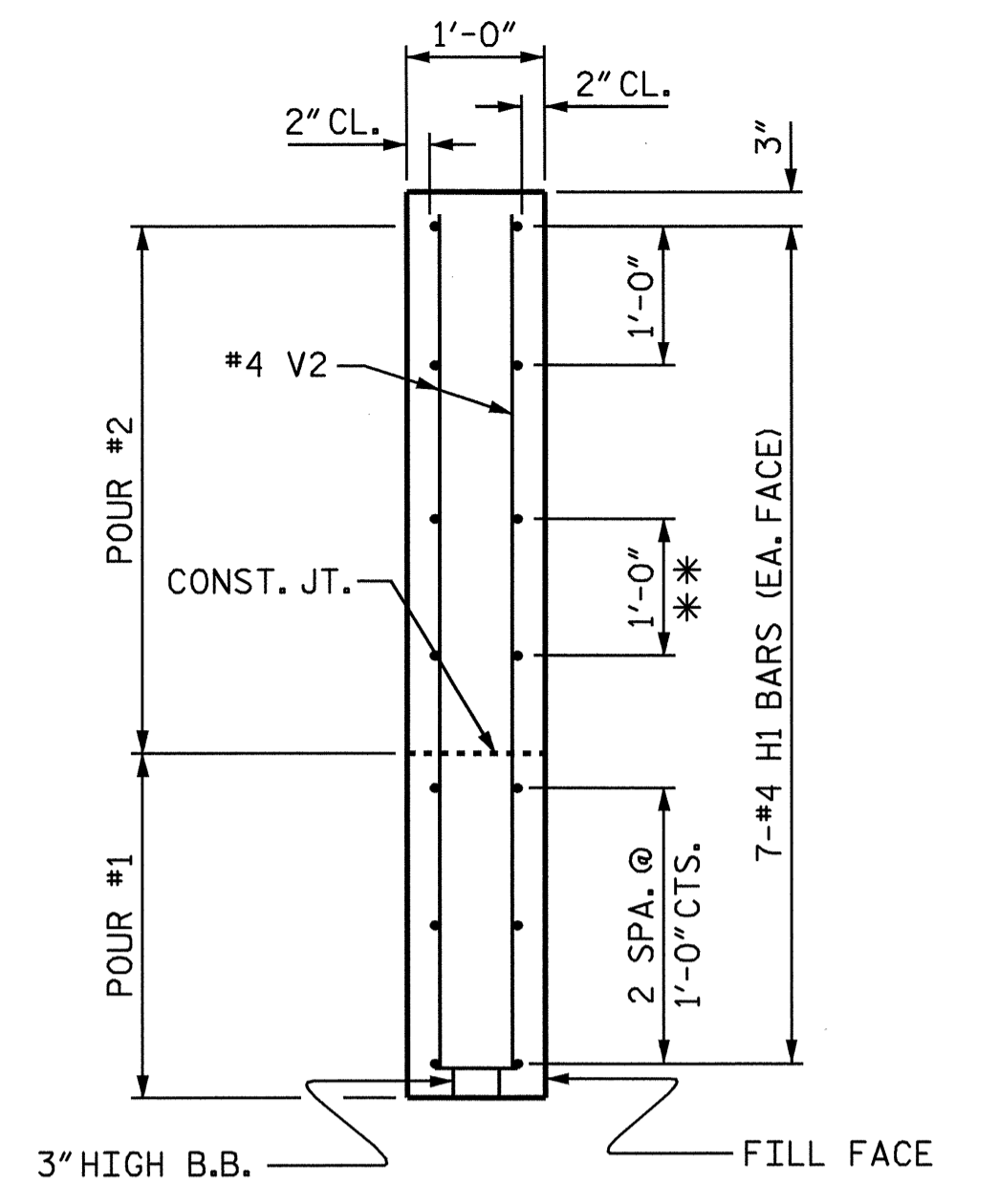
28-NOV-2007 12:48
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 L.SUTTON



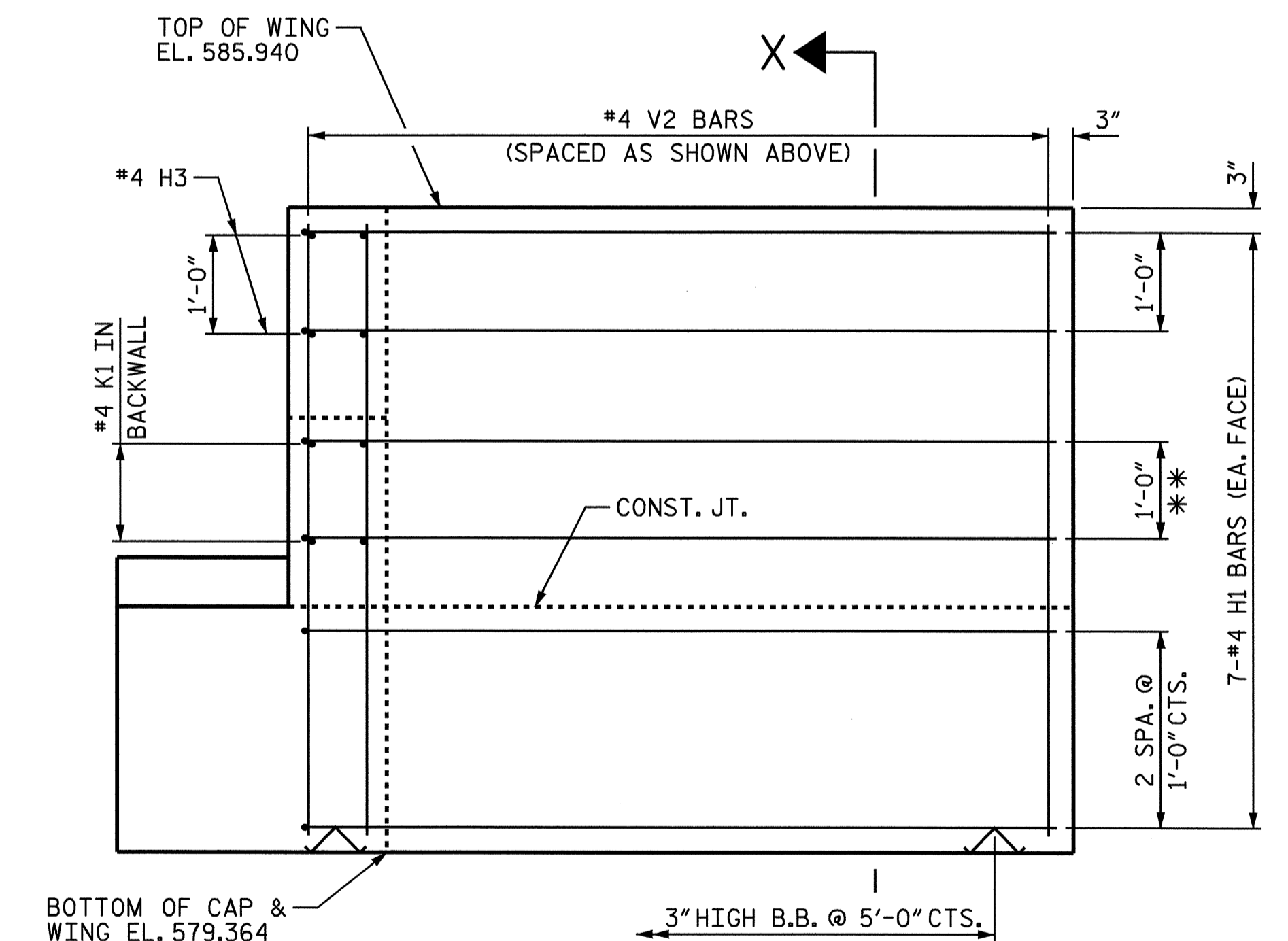
PLAN OF WING (W1)



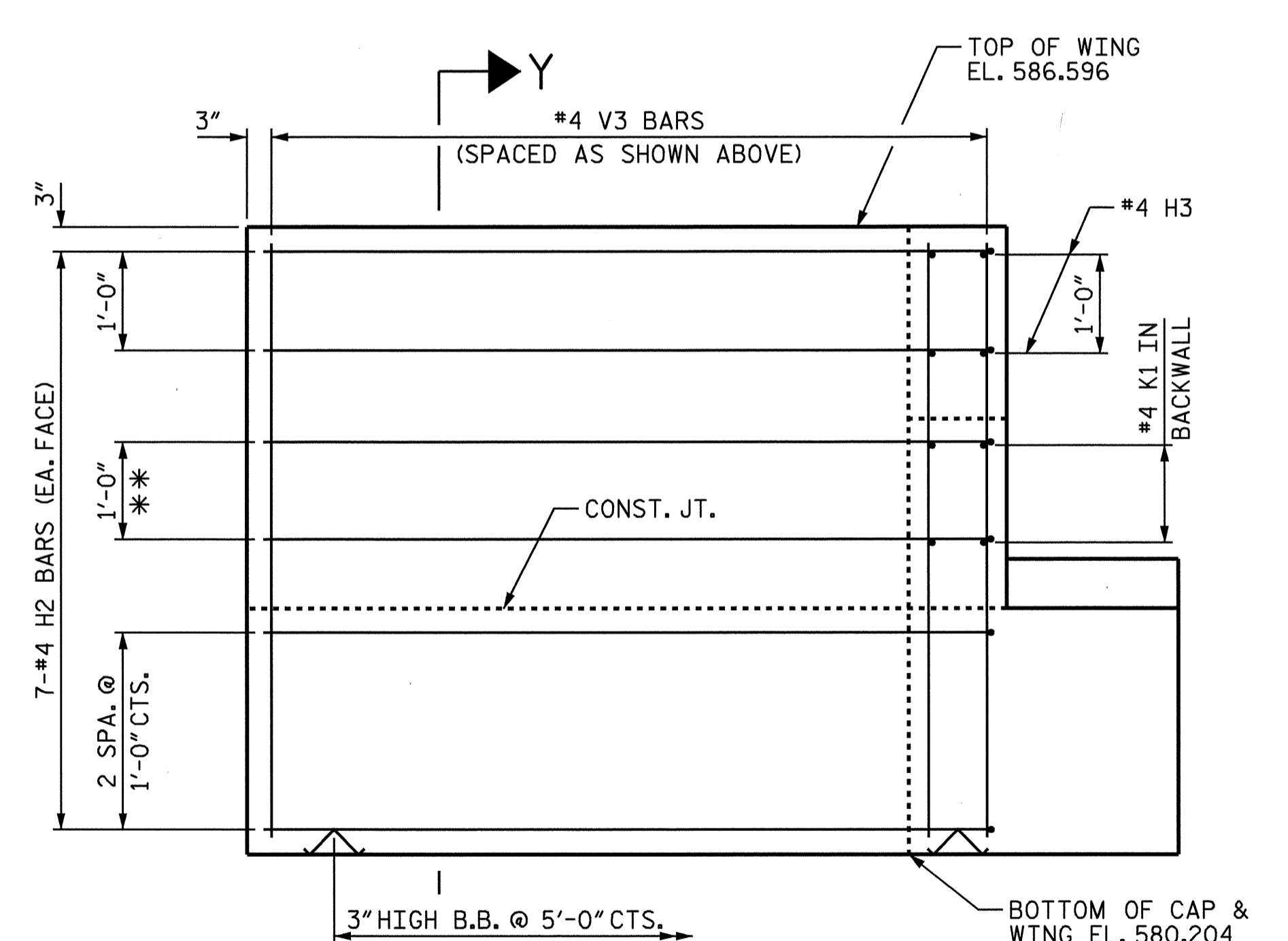
PLAN OF WING (W2)



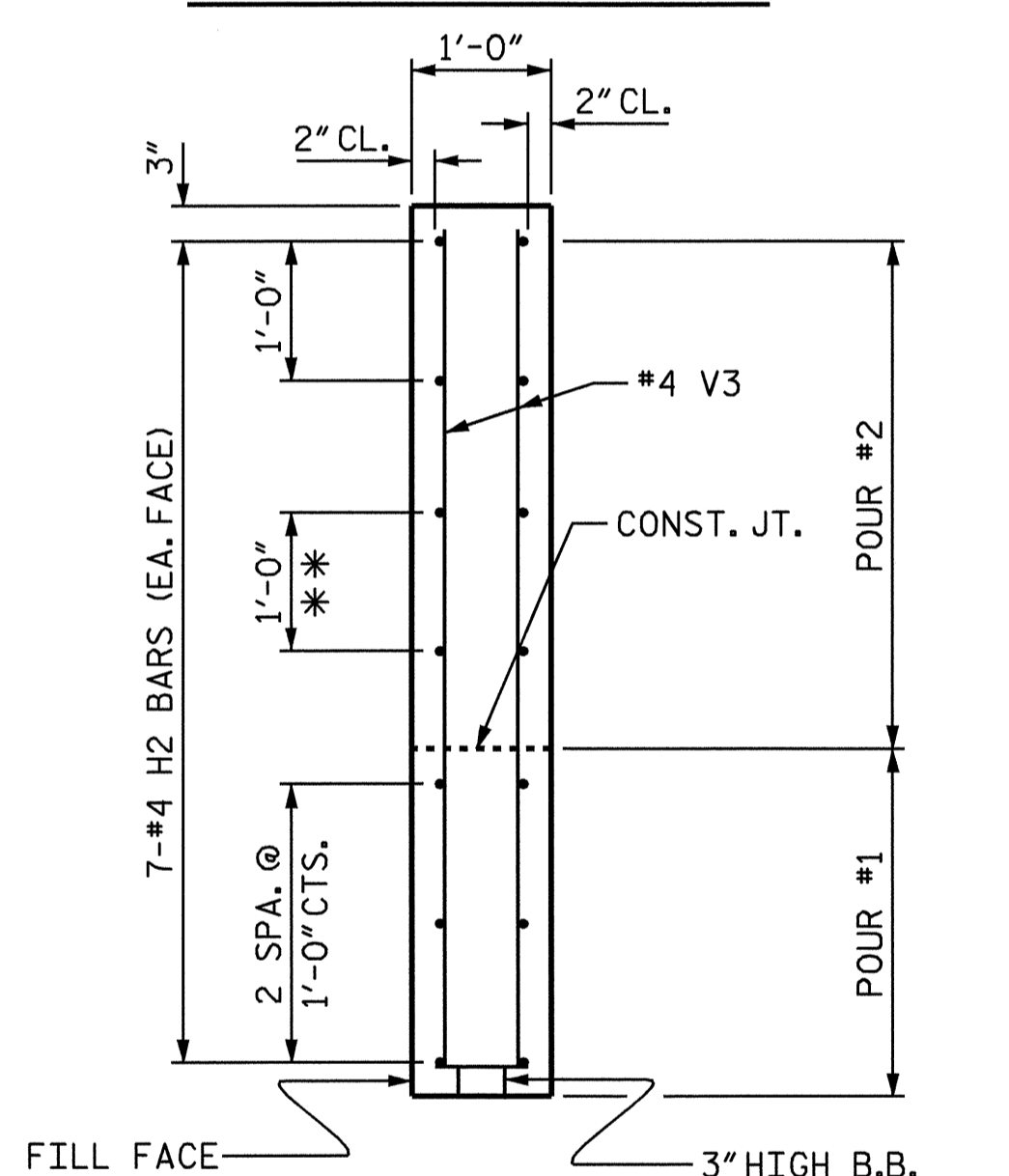
SECTION X-X



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



SECTION Y-Y

** TO MATCH K1 BARS IN BACKWALL

PROJECT NO. B-4245
 RANDOLPH COUNTY
 STATION: 17+04.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

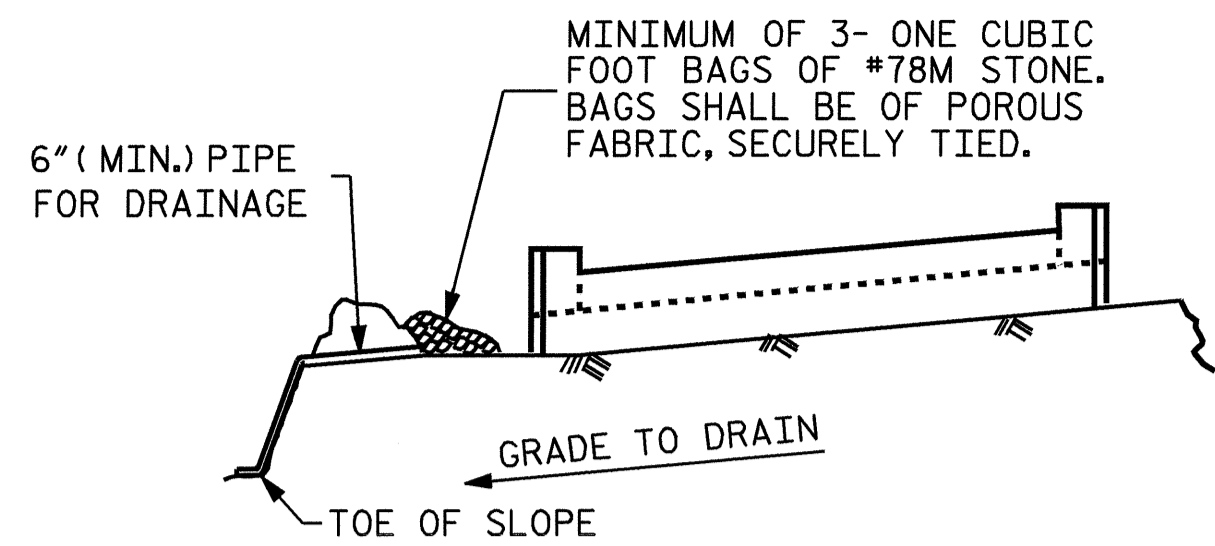
SUBSTRUCTURE
 END BENT 1

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

SHEET NO. S-11
 TOTAL SHEETS 18



DRAWN BY: E.C. LOCKLEAR DATE: 8-21-06
 CHECKED BY: P.C. BREWER DATE: 8-28-06

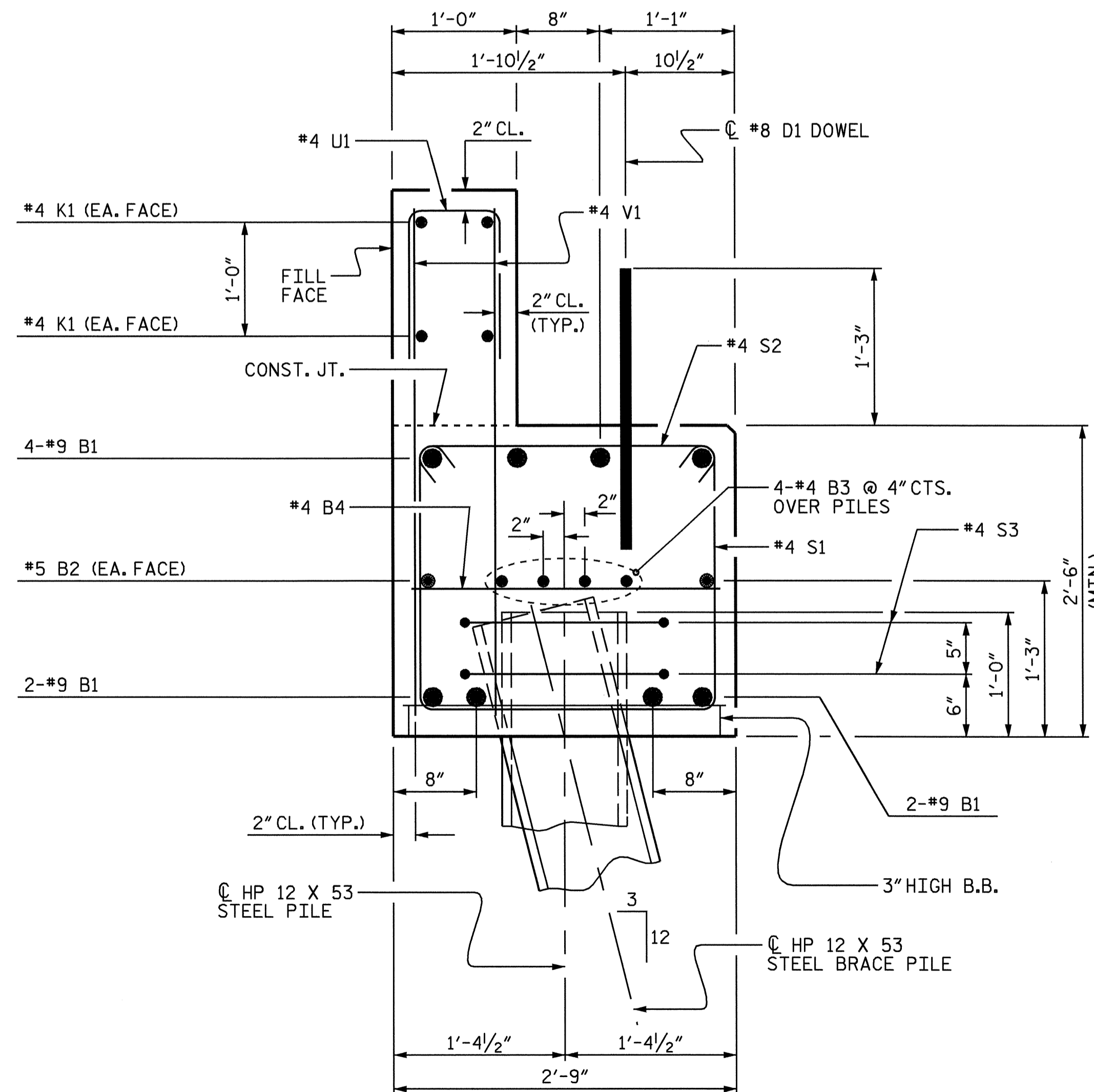


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

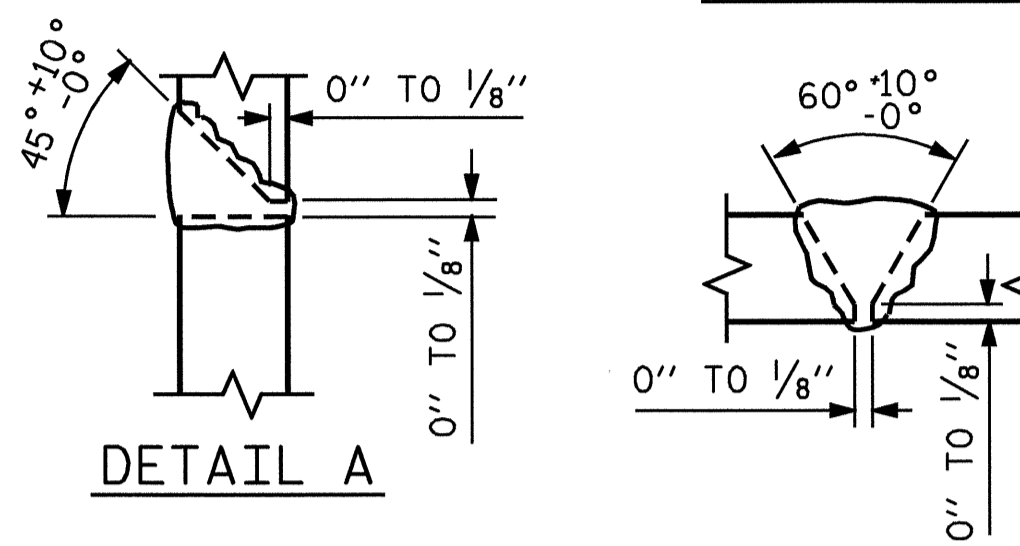
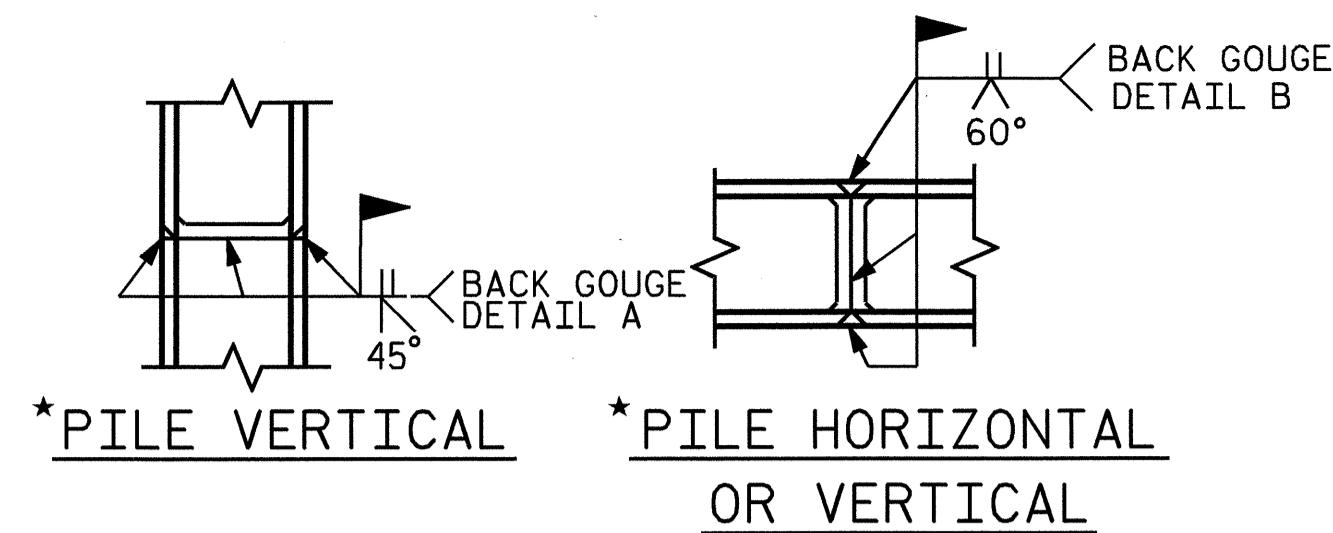
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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



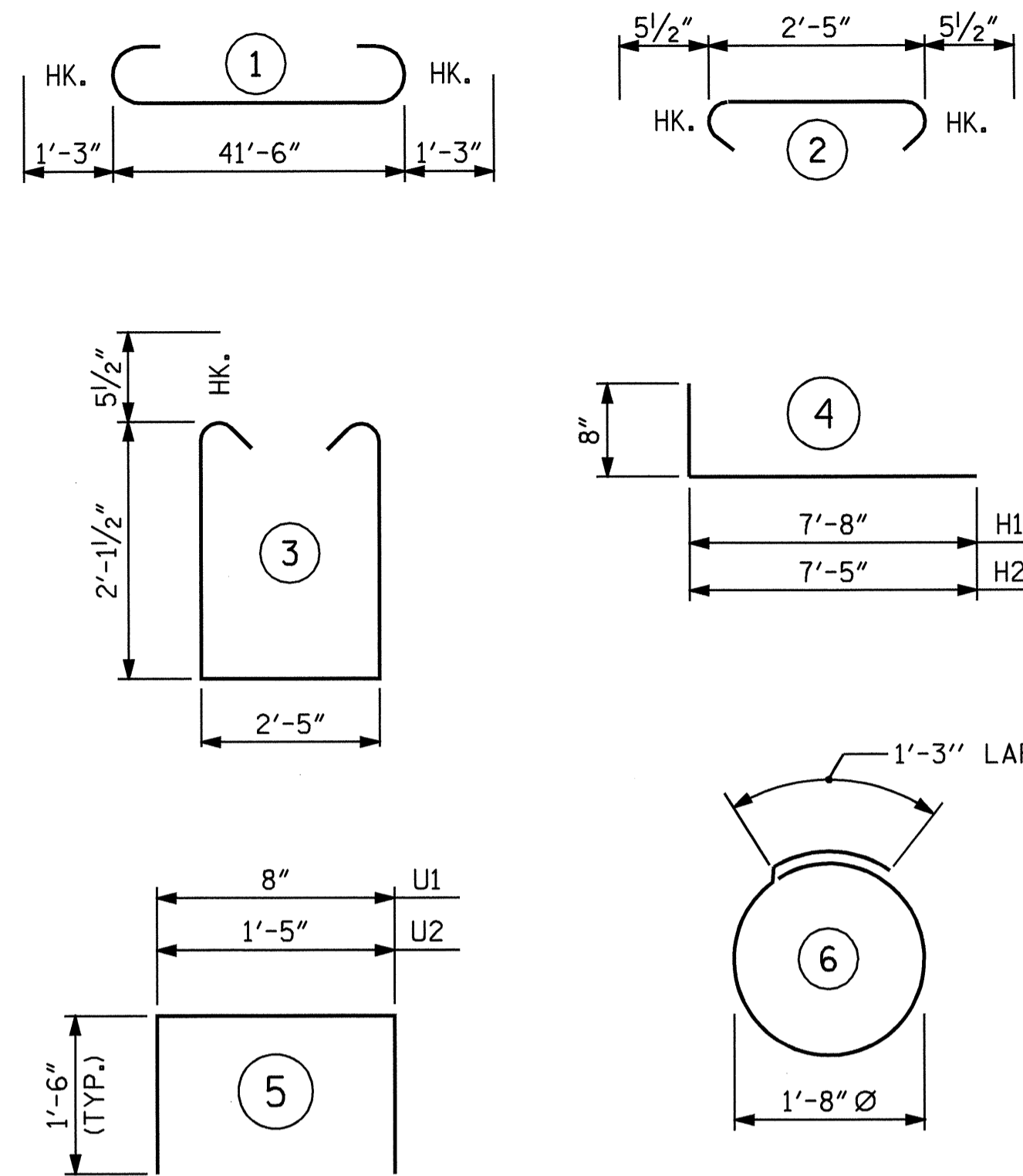
SECTION A-A



* POSITION OF PILE DURING WELDING. DETAIL B

PILE SPlice DETAILS

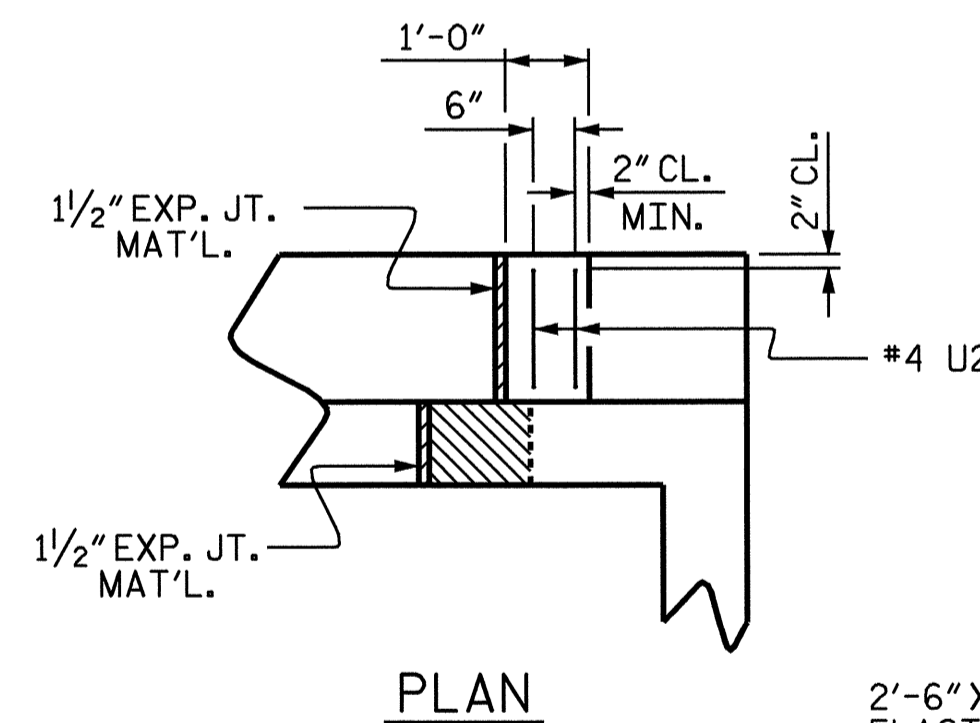
BAR TYPES



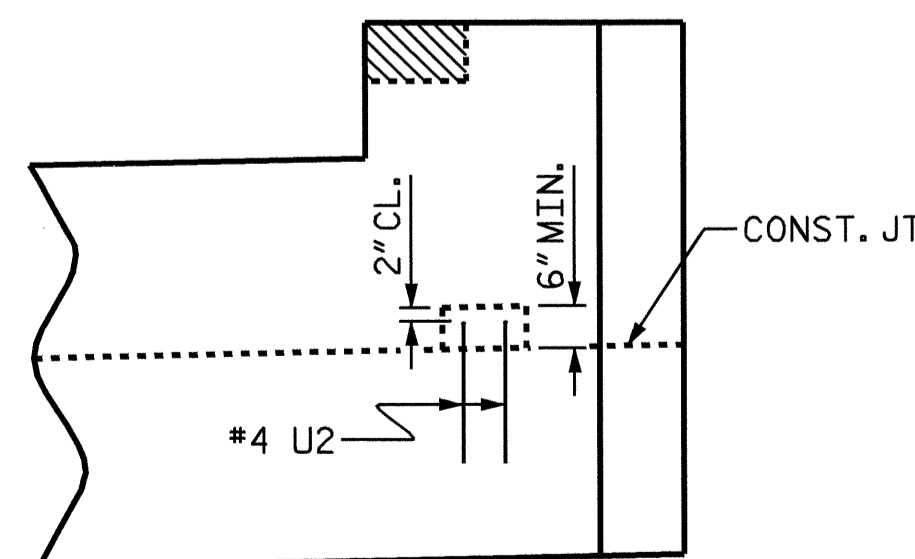
ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9		44'-0"	1197
B2	2	#5	STR	41'-8"	87
B3	8	#4	STR	22'-1"	118
B4	11	#4	STR	2'-5"	18
D1	24	#8	STR	2'-3"	144
H1	14	#4		8'-4"	78
H2	14	#4		8'-1"	76
H3	8	#4	STR	3'-5"	18
K1	8	#4	STR	22'-1"	118
S1	38	#5		7'-7"	301
S2	38	#5		3'-4"	132
S3	20	#4		6'-6"	87
U1	35	#4		3'-8"	89
U2	4	#4		4'-5"	12
V1	70	#4	STR	4'-1"	191
V2	24	#4	STR	6'-2"	99
V3	24	#4	STR	6'-0"	96
REINFORCING STEEL				LBS.	2,858
CLASS A CONCRETE BREAKDOWN :					
POUR #1 - CAP & LOWER WINGS				CU. YDS.	12.0
POUR #2 - BACKWALL & UPPER WINGS				CU. YDS.	5.6
POUR #3 - LATERAL GUIDES				CU. YDS.	0.1
TOTAL				CU. YDS.	17.7
HP 12 x 53 STEEL PILES				LIN. FT.	100
NO. = 10					



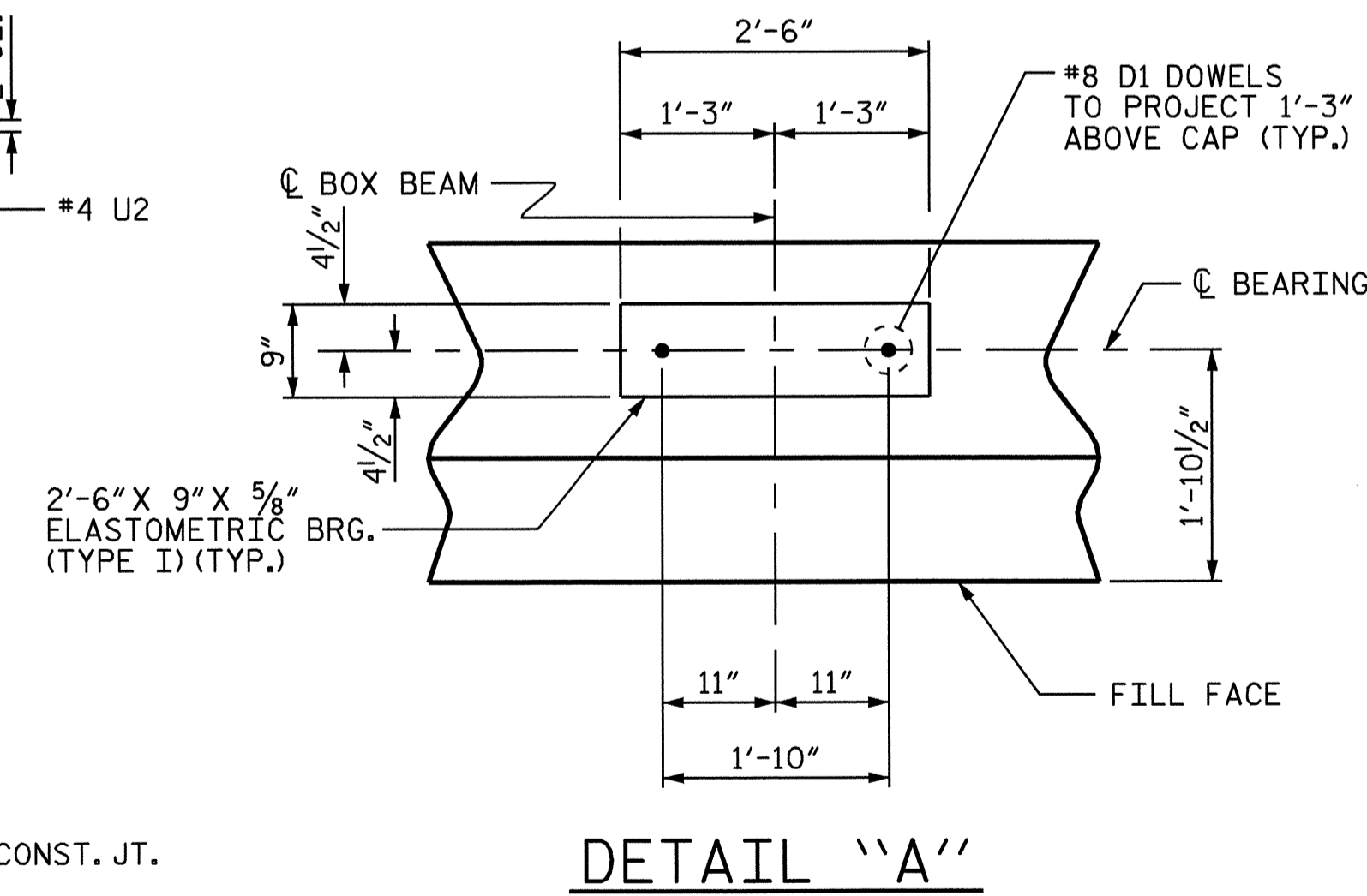
PLAN



ELEVATION

LATERAL GUIDE DETAILS

(RIGHT SIDE SHOWN, LEFT LATERAL GUIDE SIMILAR)



DETAIL "A"

PROJECT NO. B-4245
 RANDOLPH COUNTY
 STATION: 17+04.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

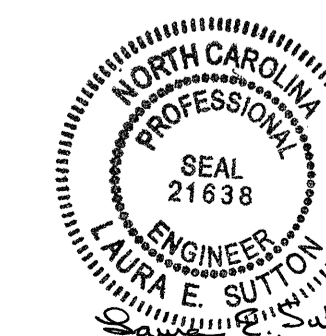
SUBSTRUCTURE END BENT 1

REVISIONS

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

SHEET NO.

S-12
 TOTAL SHEETS 18



DRAWN BY: E.C. LOCKLEAR DATE: 8-21-06
 CHECKED BY: P.C. BREWER DATE: 8-28-06

NOTES:

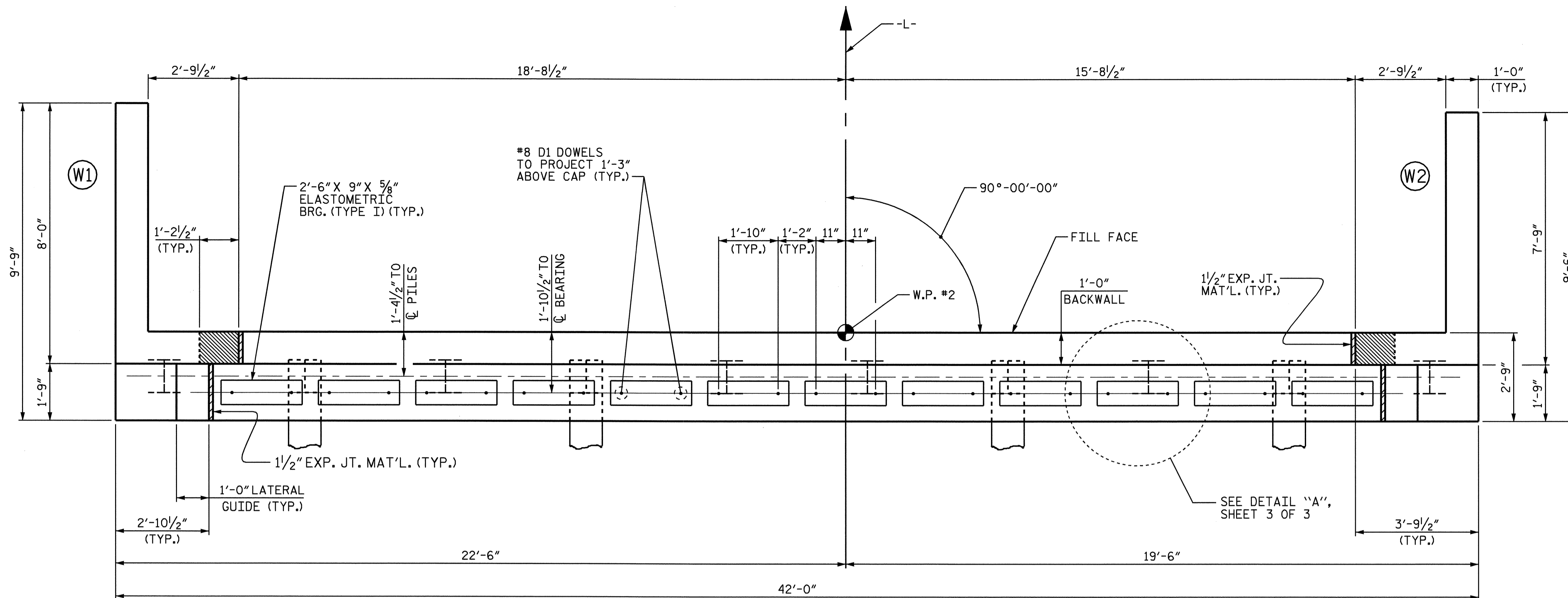
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

THE LATERAL GUIDES AT EACH END OF THE CAP ARE NOT TO BE POURED UNTIL AFTER THE BOX BEAM UNITS ARE IN PLACE.

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.

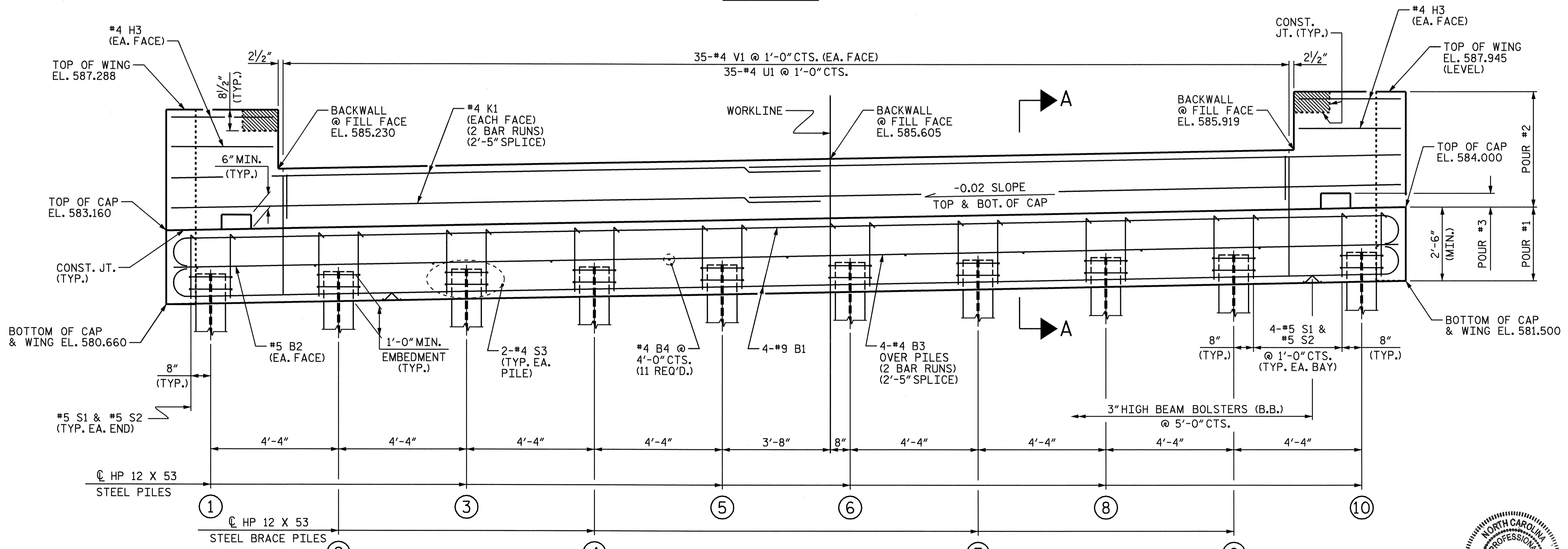
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

THE #4 V1 BARS IN THE BACKWALL SHALL BE PLACED 2" CLEAR FROM THE TOP OF THE BACKWALL.



PLAN

TOP OF PILE ELEVATIONS	
①	581.700
②	581.787
③	581.873
④	581.960
⑤	582.047
⑥	582.133
⑦	582.220
⑧	582.307
⑨	582.393
⑩	582.480



ELEVATION

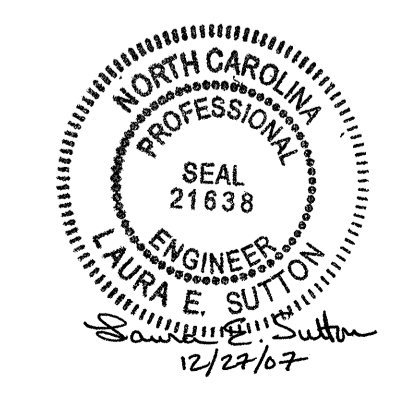
PROJECT NO. B-4245
RANDOLPH COUNTY
 STATION: 17+04.00 -L-

SHEET 1 OF 3

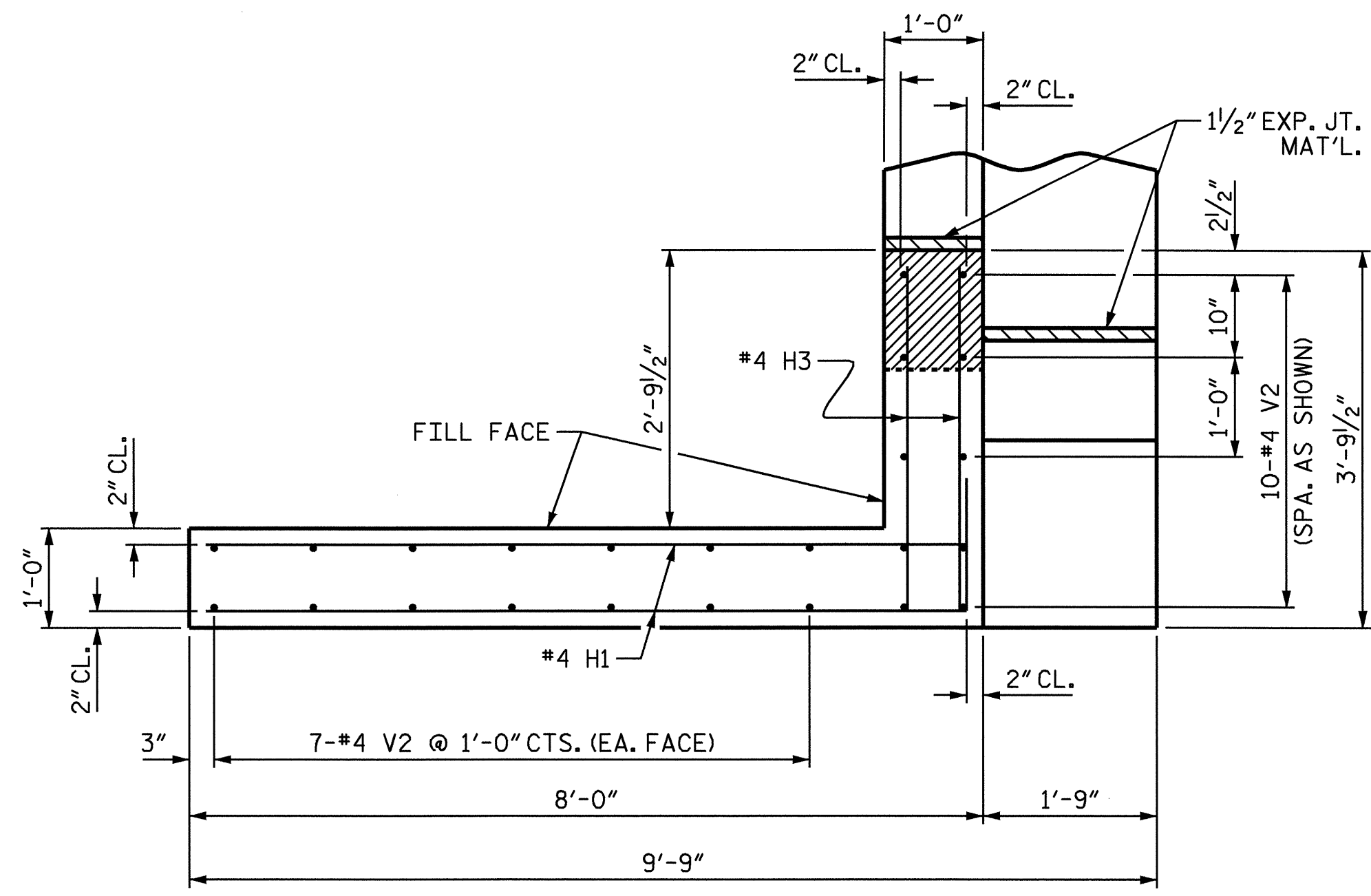
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 END BENT 2**

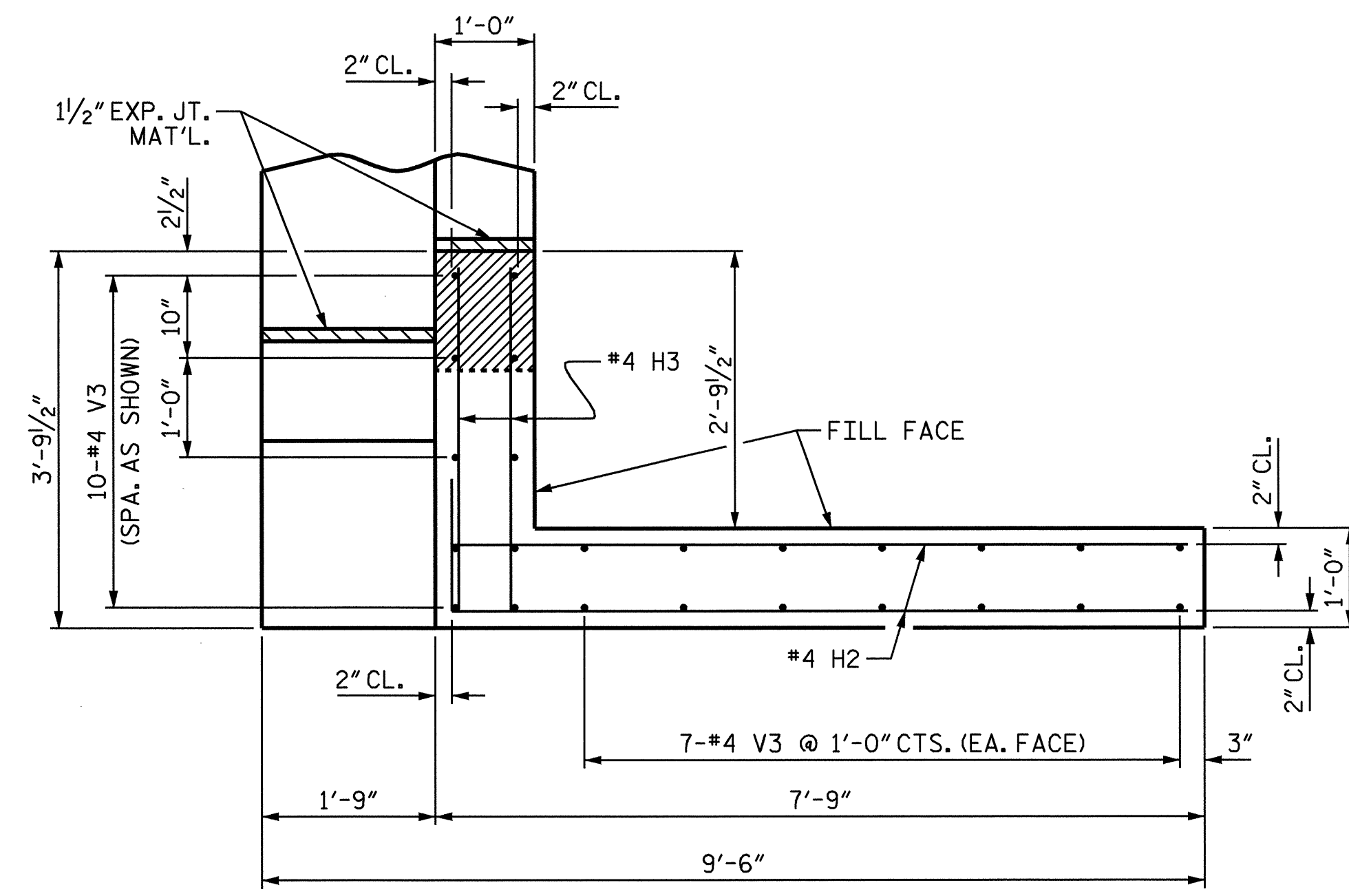
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS 18
2			4			



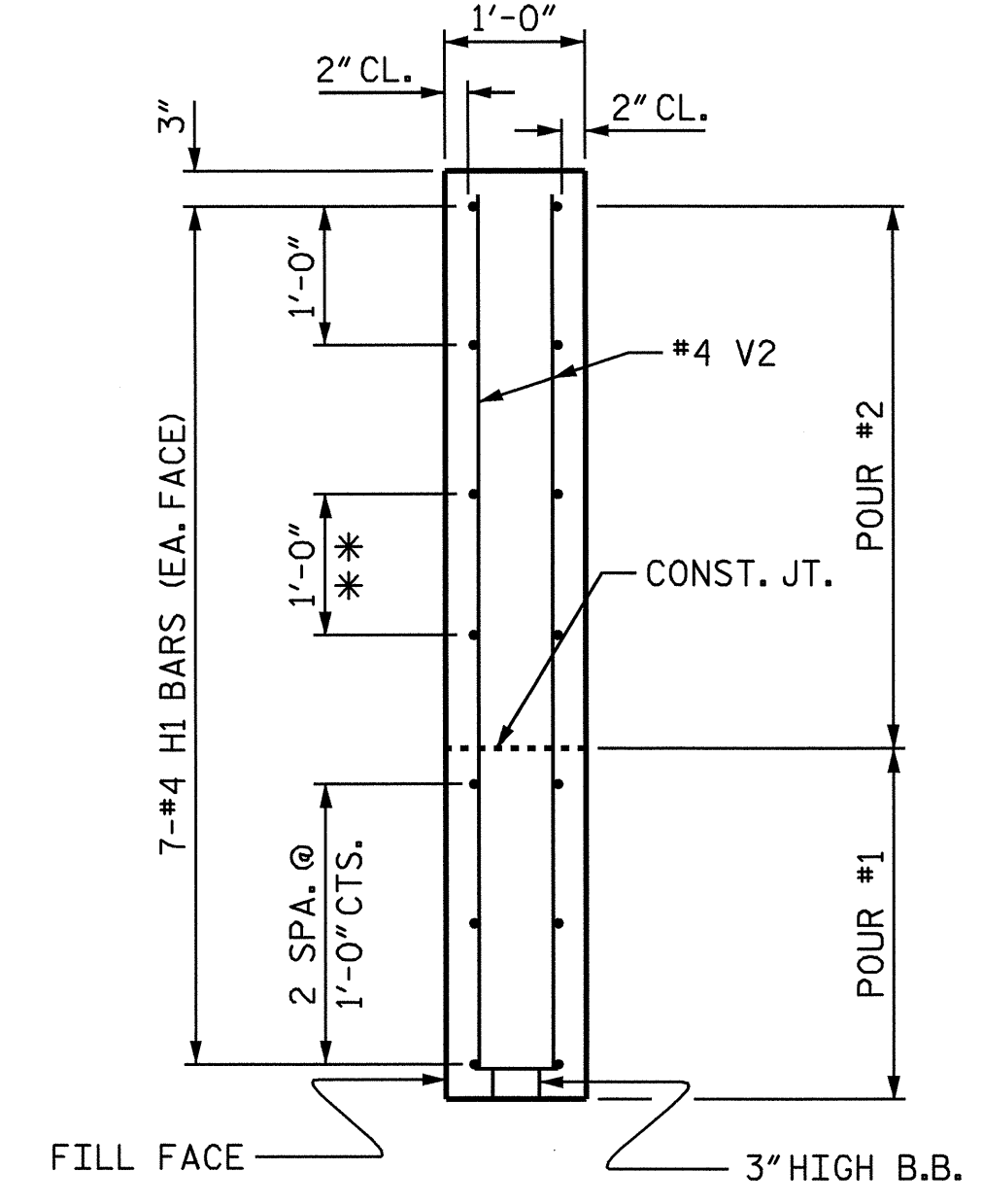
DRAWN BY: E.C. LOCKLEAR DATE: 8-21-06
 CHECKED BY: P.C. BREWER DATE: 8-28-06



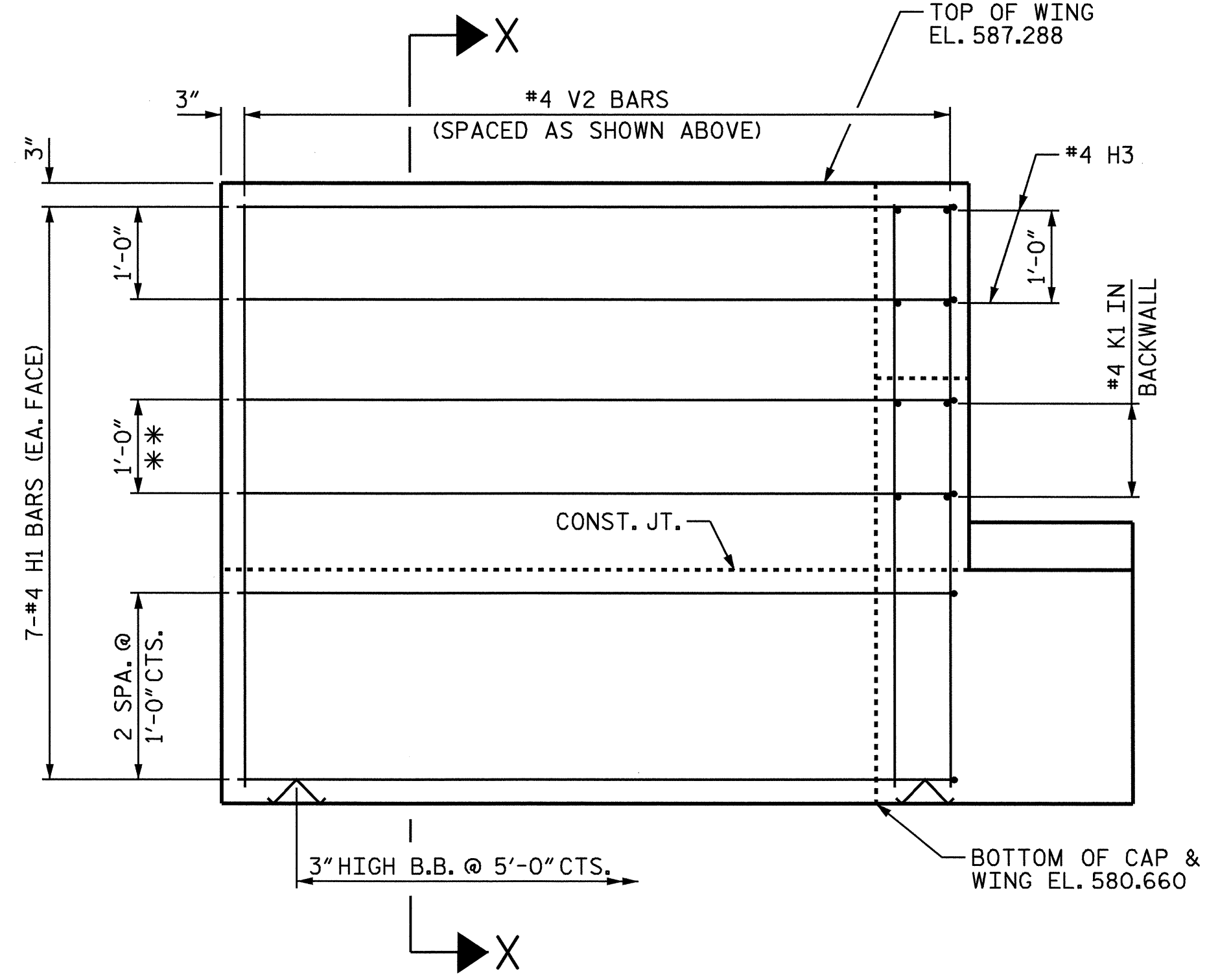
PLAN OF WING (W1)



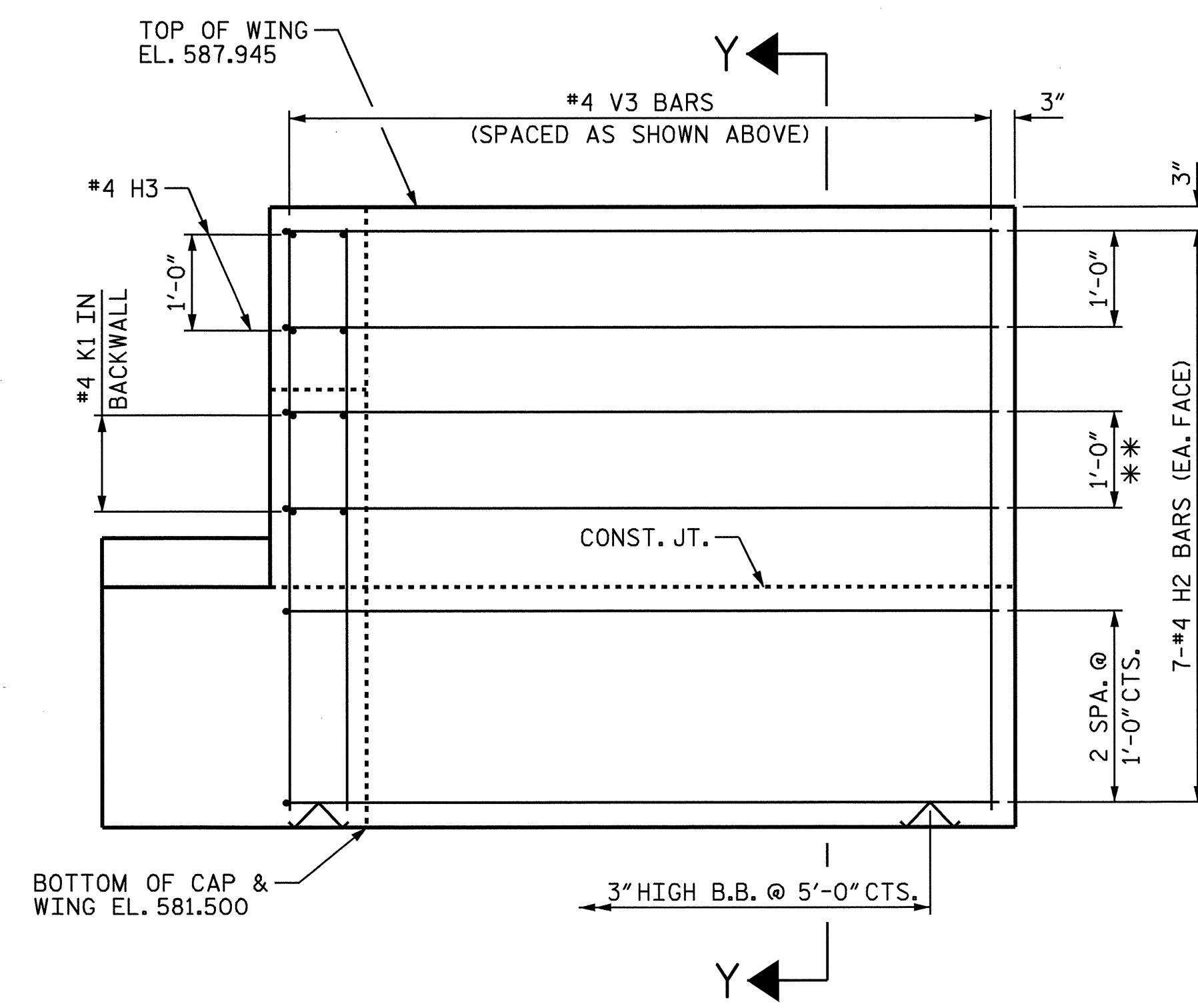
PLAN OF WING (W2)



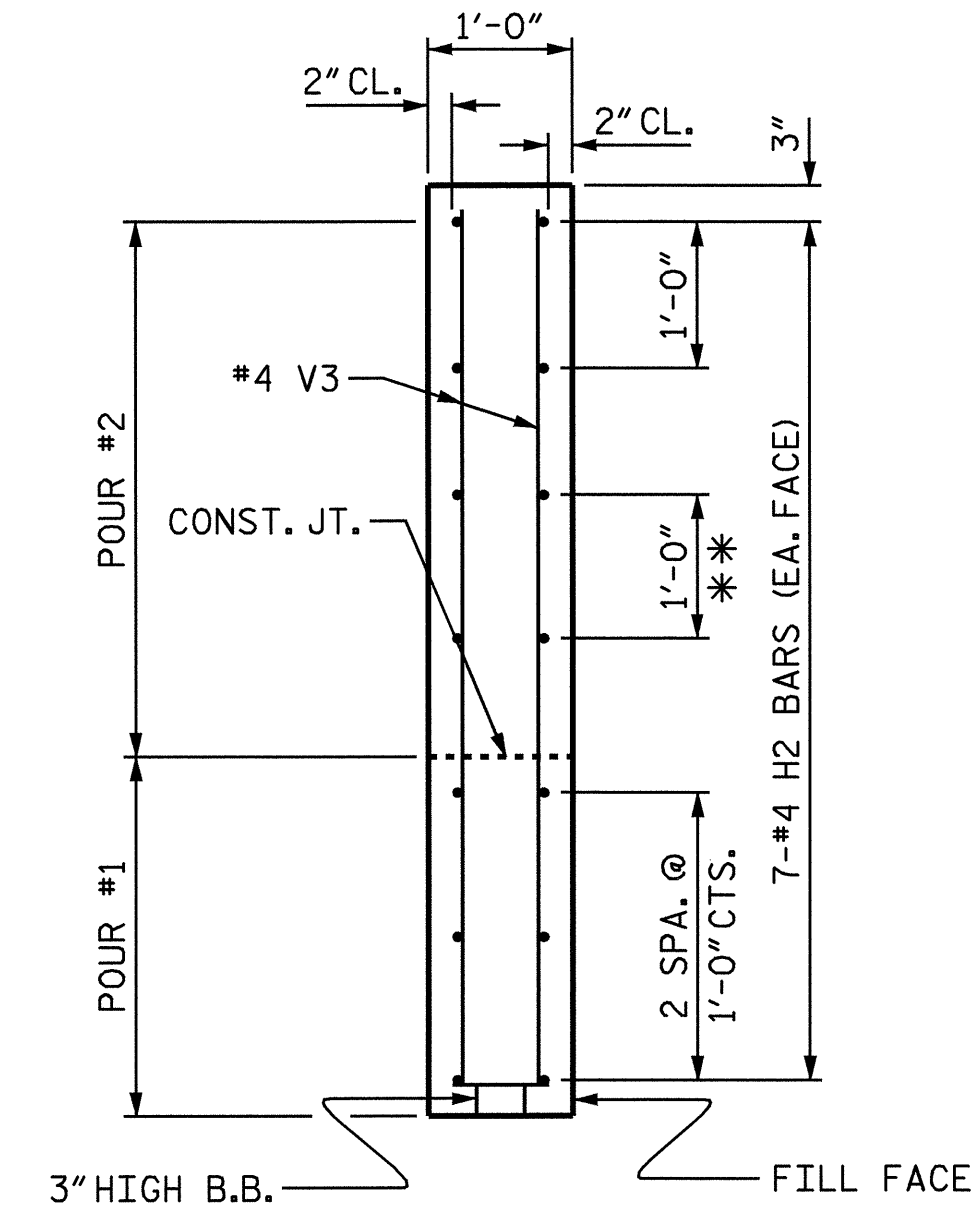
SECTION X-X



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



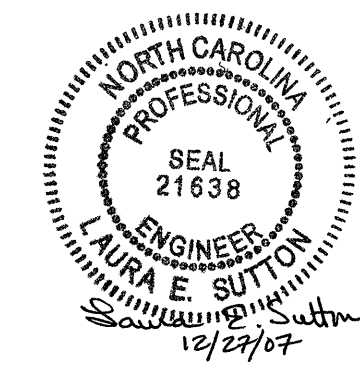
SECTION Y-Y

** TO MATCH K1 BARS IN BACKWALL

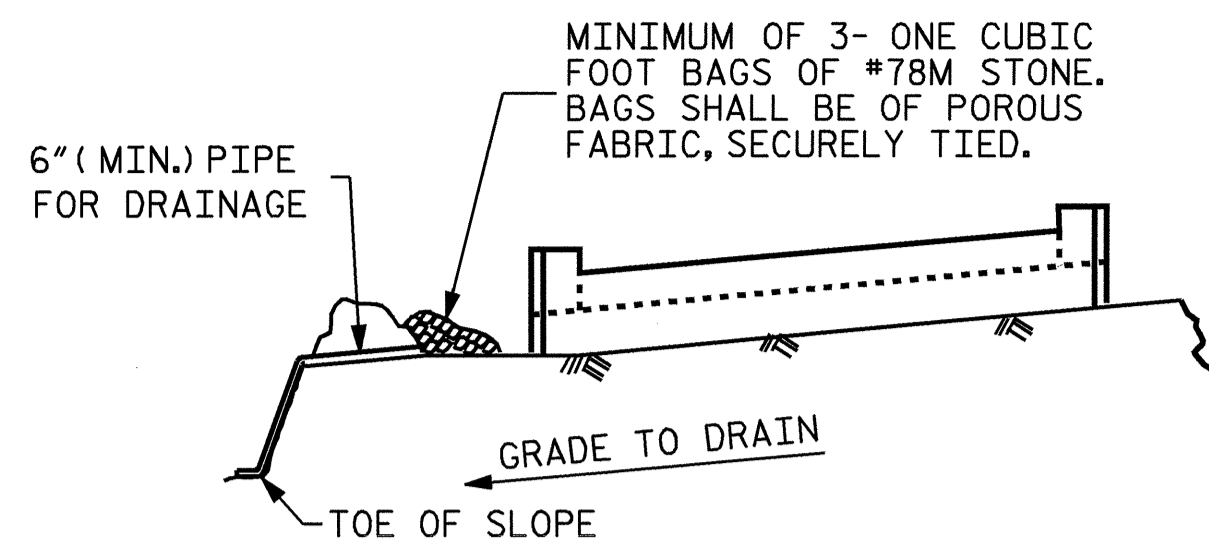
PROJECT NO. B-4245
RANDOLPH COUNTY
 STATION: 17+04.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT 2					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			2		
2			4		
SHEET NO.					S-14
TOTAL SHEETS					18



DRAWN BY: E.C. LOCKLEAR DATE: 8-21-06
 CHECKED BY: P.C. BREWER DATE: 8-28-06

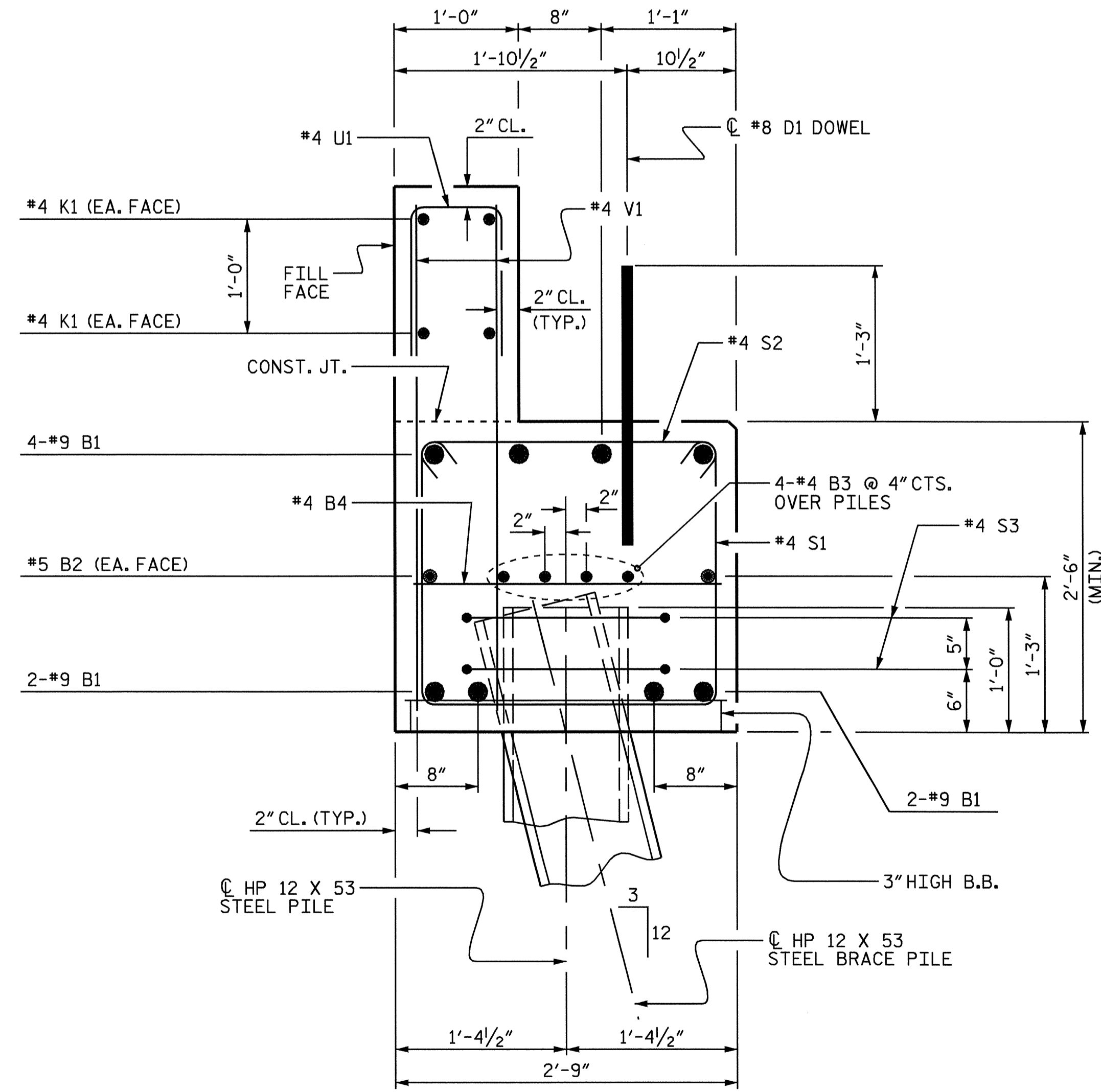


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

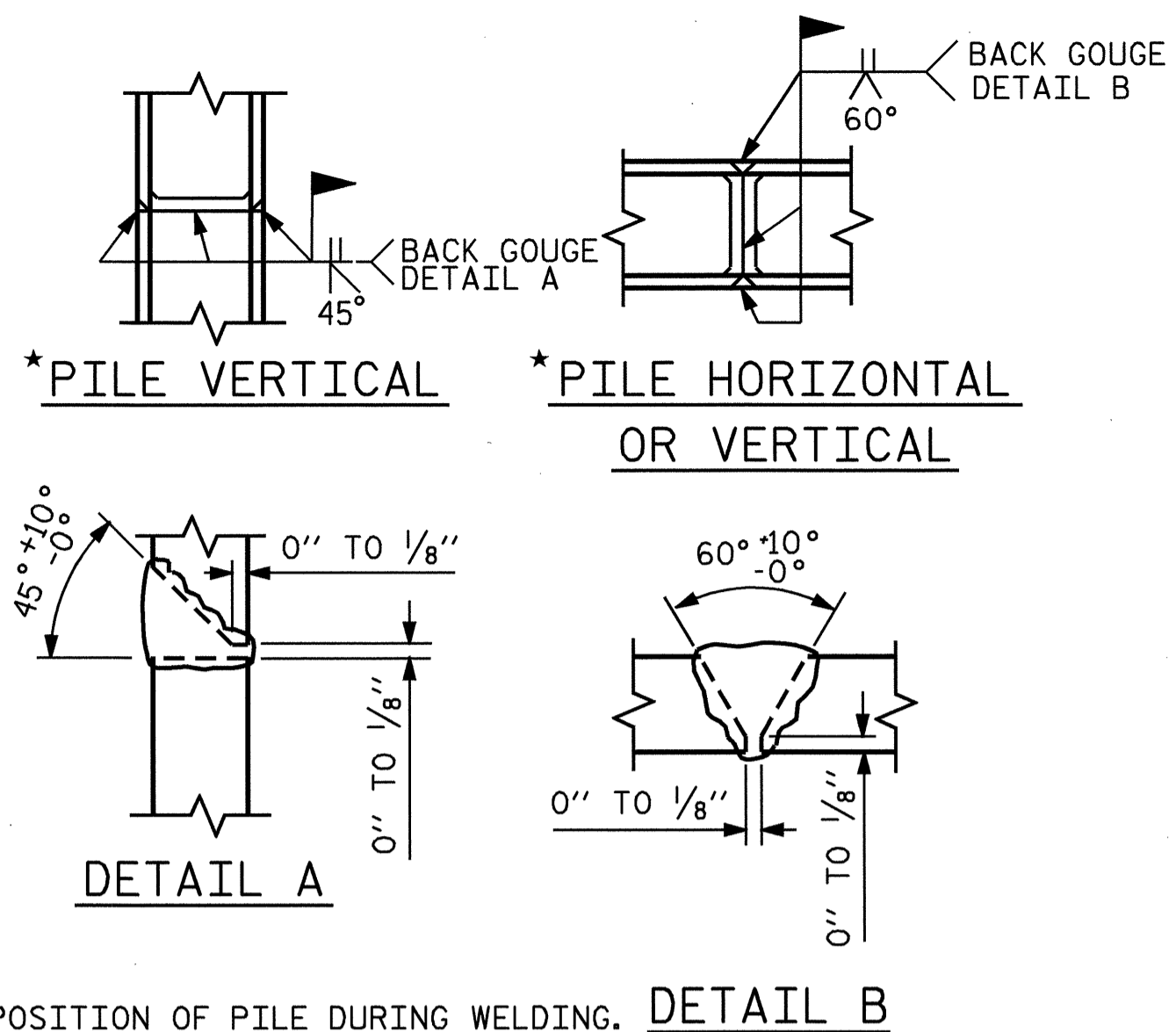
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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



SECTION A-A



PILE SPLICE DETAILS

BILL OF MATERIAL					
END BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	44'-0"	1197
B2	2	#5	STR	41'-8"	87
B3	8	#4	STR	22'-1"	118
B4	11	#4	STR	2'-5"	18
D1	24	#8	STR	2'-3"	144
H1	14	#4	4	8'-4"	78
H2	14	#4	4	8'-1"	76
H3	8	#4	STR	3'-5"	18
K1	8	#4	STR	22'-1"	118
S1	38	#5	3	7'-7"	301
S2	38	#5	2	3'-4"	132
S3	20	#4	6	6'-6"	87
U1	35	#4	5	3'-8"	89
U2	4	#4	5	4'-5"	12
V1	70	#4	STR	4'-1"	191
V2	24	#4	STR	6'-3"	100
V3	24	#4	STR	6'-1"	98
REINFORCING STEEL				LBS.	2,861
CLASS A CONCRETE BREAKDOWN :					
POUR #1 - CAP & LOWER WINGS				CU. YDS.	12.0
POUR #2 - BACKWALL & UPPER WINGS				CU. YDS.	5.7
POUR #3 - LATERAL GUIDES				CU. YDS.	0.1
TOTAL				CU. YDS.	17.8
HP 12 x 53 STEEL PILES				LIN. FT.	100
NO. = 10					

1

2

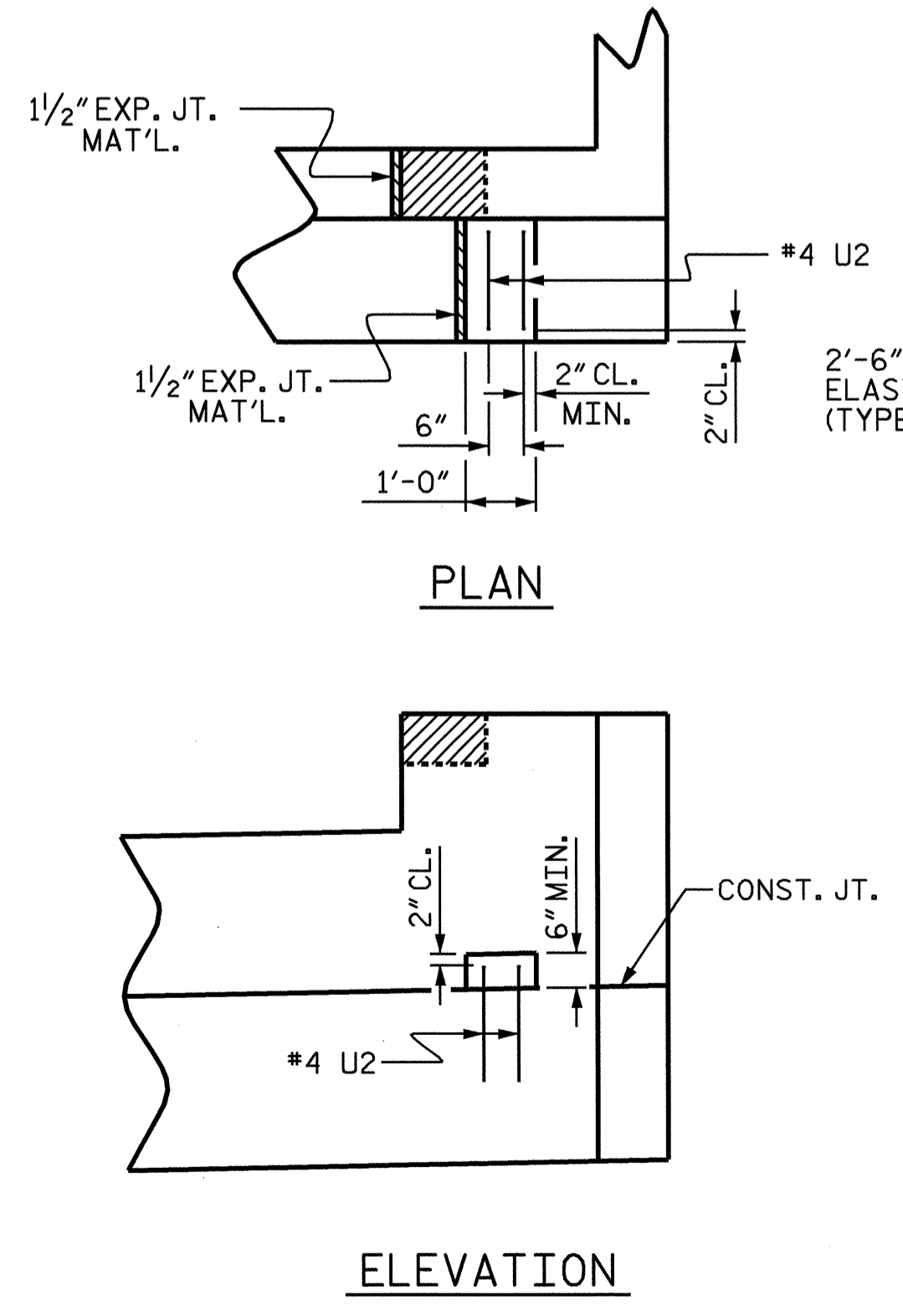
3

4

5

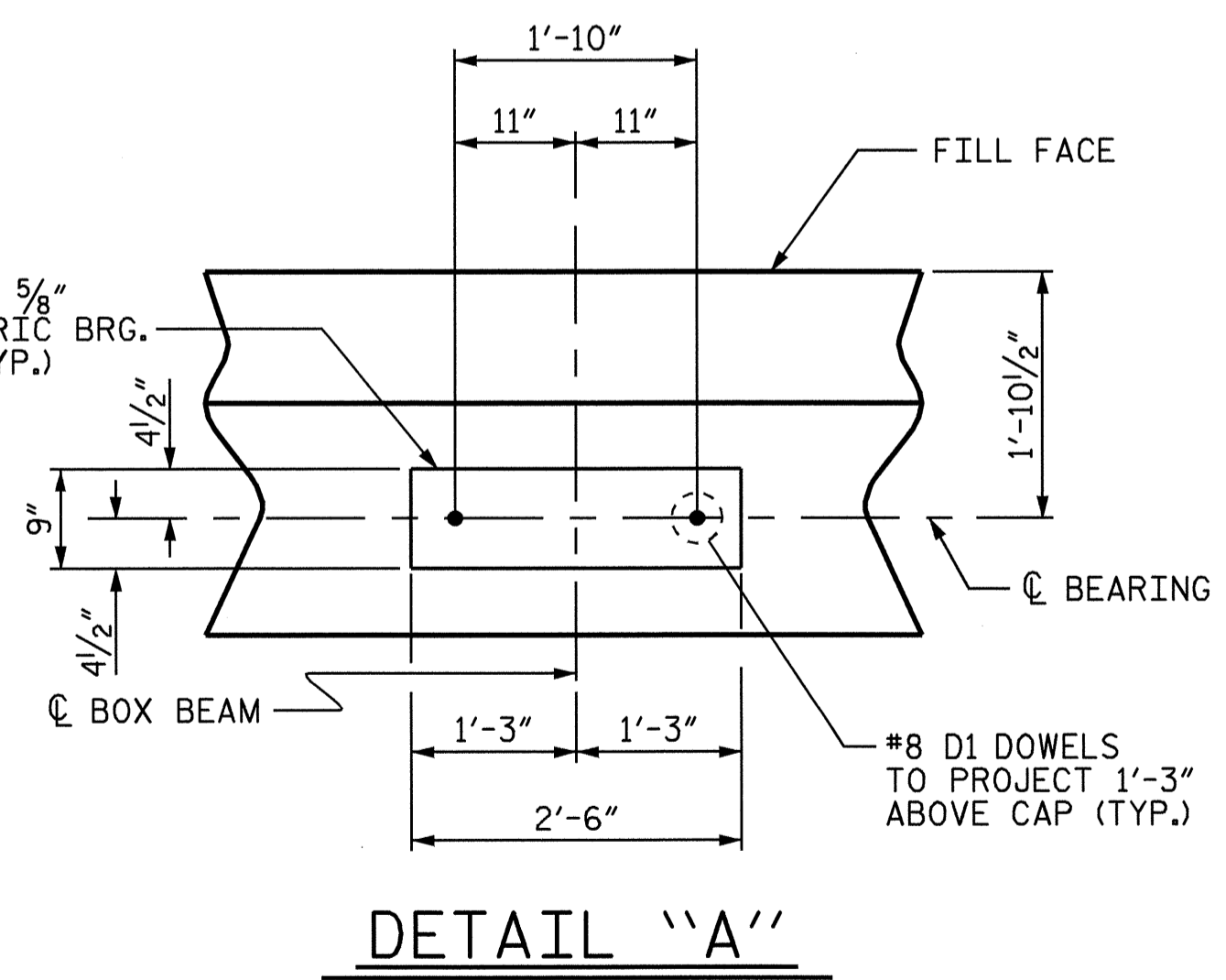
6

ALL BAR DIMENSIONS ARE OUT TO OUT.



LATERAL GUIDE DETAILS

(RIGHT SIDE SHOWN, LEFT LATERAL GUIDE SIMILAR)



PROJECT NO. B-4245

RANDOLPH COUNTY

STATION: 17+04.00 -L-

SHEET 3 OF 3

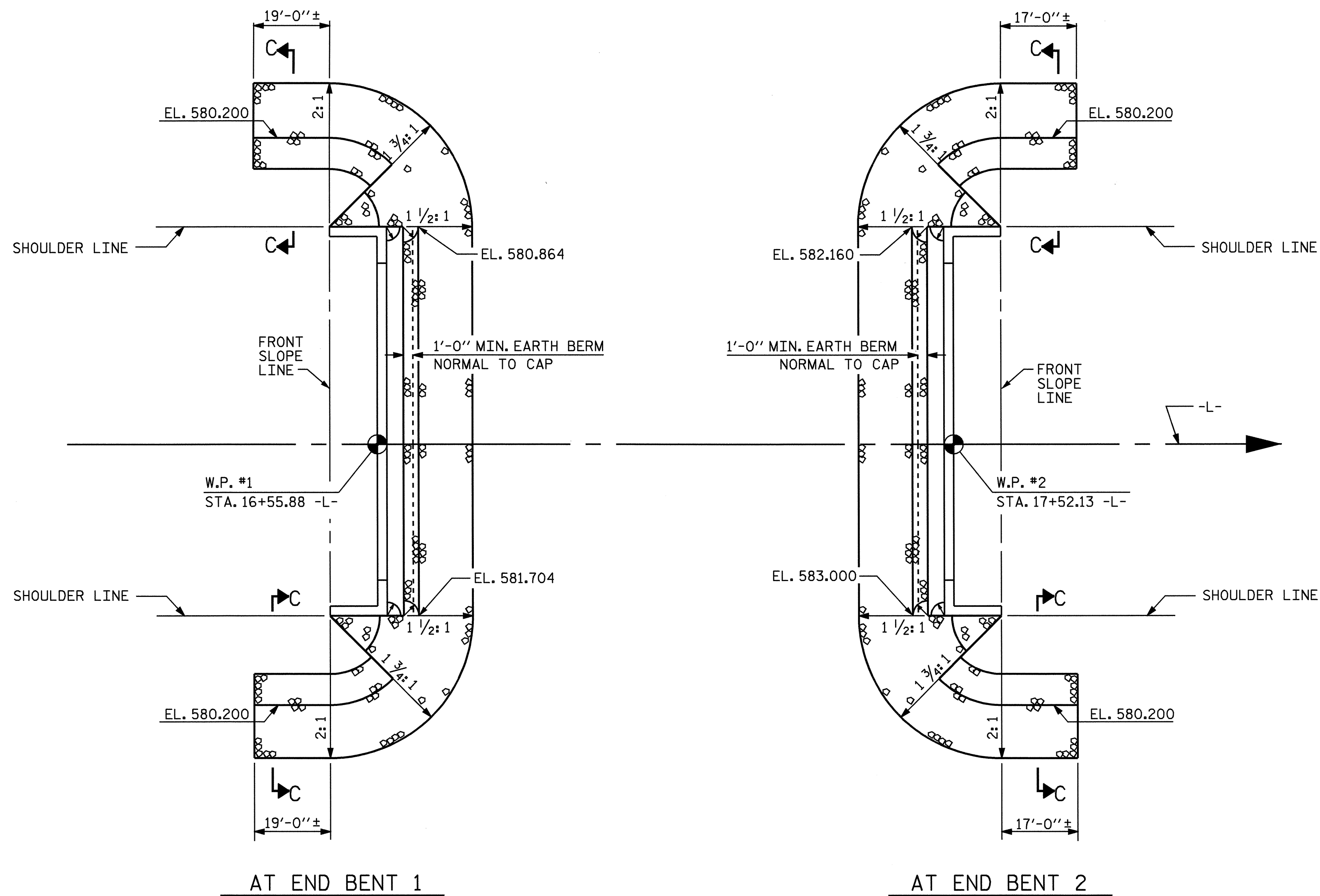
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 2

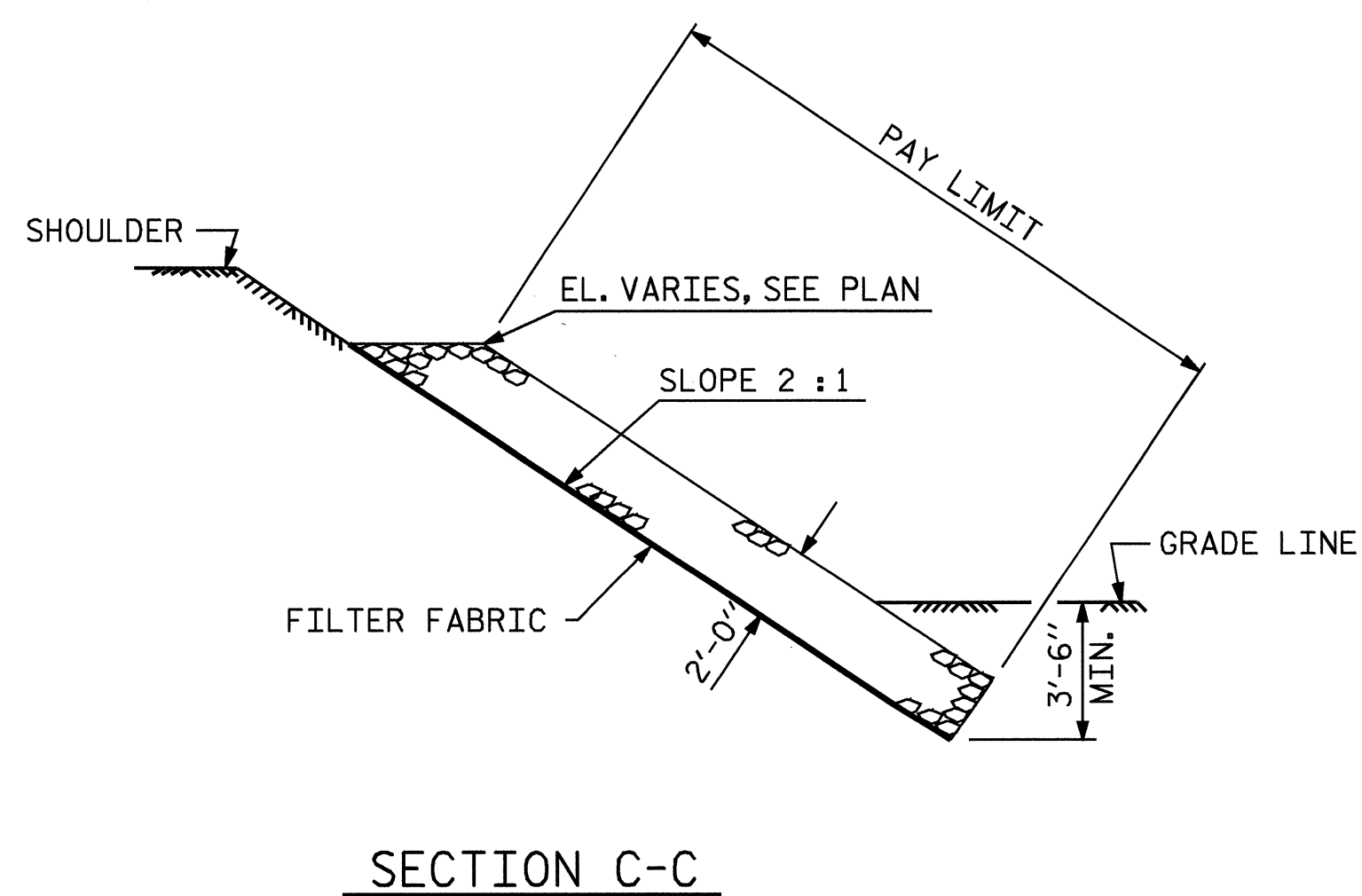
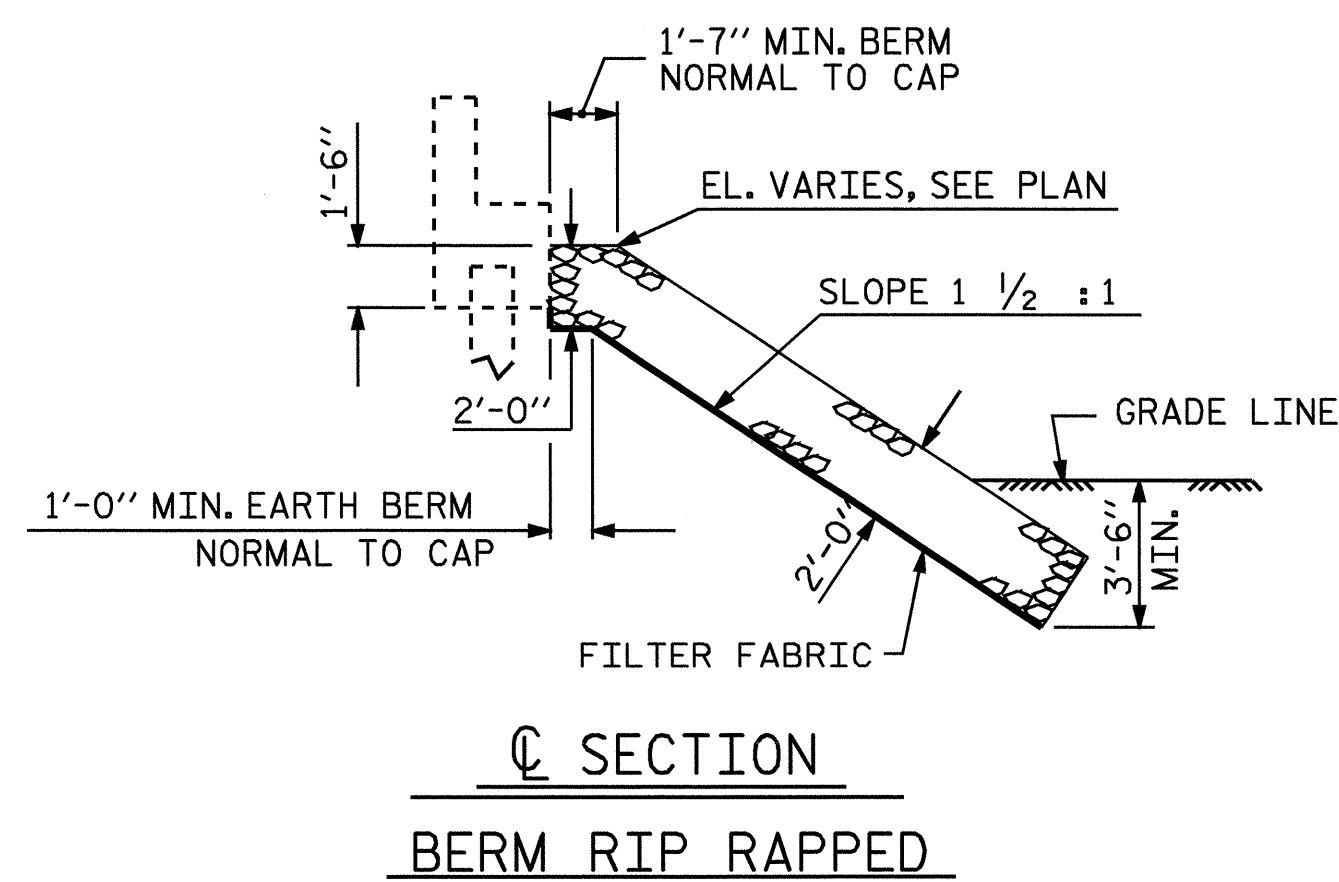
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS 18
2			4			

DRAWN BY: E.C. LOCKLEAR DATE: 8-21-06

CHECKED BY: P.C. BREWER DATE: 8-28-06



ESTIMATED QUANTITIES		
BRIDGE @ STA. 17+04.00 -L-	RIP RAP CLASS II	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	163	180
END BENT 2	157	174

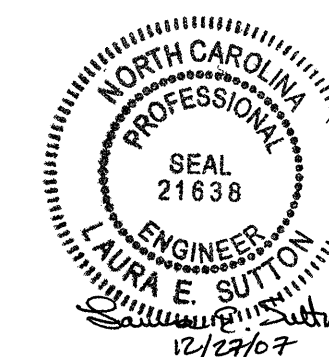


PROJECT NO. B-4245
RANDOLPH COUNTY
 STATION: 17+04.00 -L-

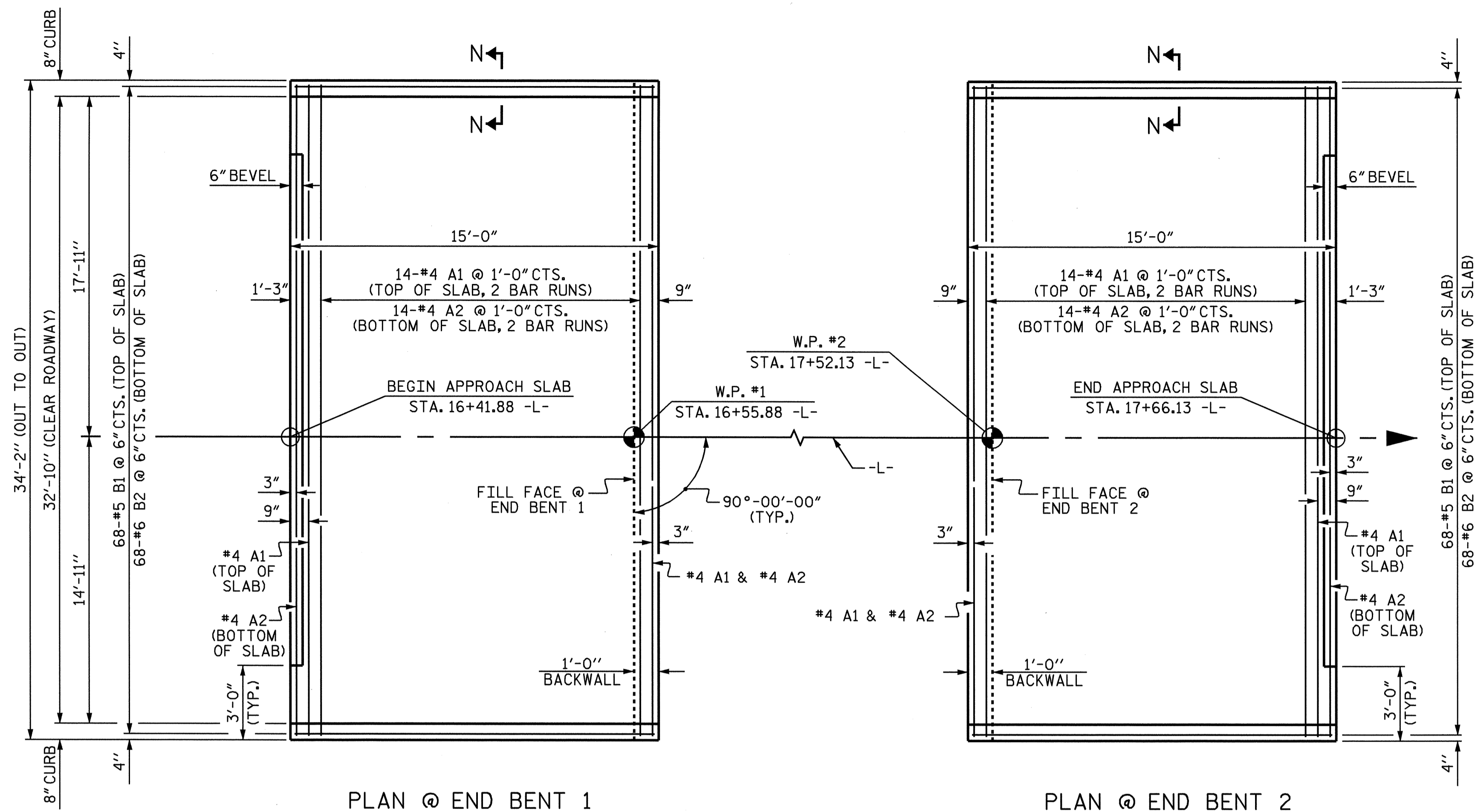
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
 RIP RAP DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS 18
2			4			



ASSEMBLED BY : A.S. CALLAWAY DATE : 8/9/05
 CHECKED BY : P.C. BREWER DATE : 10/17/05
 DRAWN BY : FCJ 2/88 REV. 8/16/99 RWW/LES
 CHECKED BY : ARB 8/88 REV. 10/17/00 RWW/LES
 REV. 5/1/06 TLA/GM



PLAN @ END BENT 1

PLAN @ END BENT 2

NOTE: DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS.

NOTES

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

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

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

THE CONTRACTOR MAY USE 4" TYPE B-25.0B ASPHALT CONCRETE BASE COURSE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE BASE COURSE SHALL BE FLUSH WITH THE 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 JOINT DETAILS, SEE "PRESTRESSED CONCRETE BOX BEAM UNIT" SHEETS.

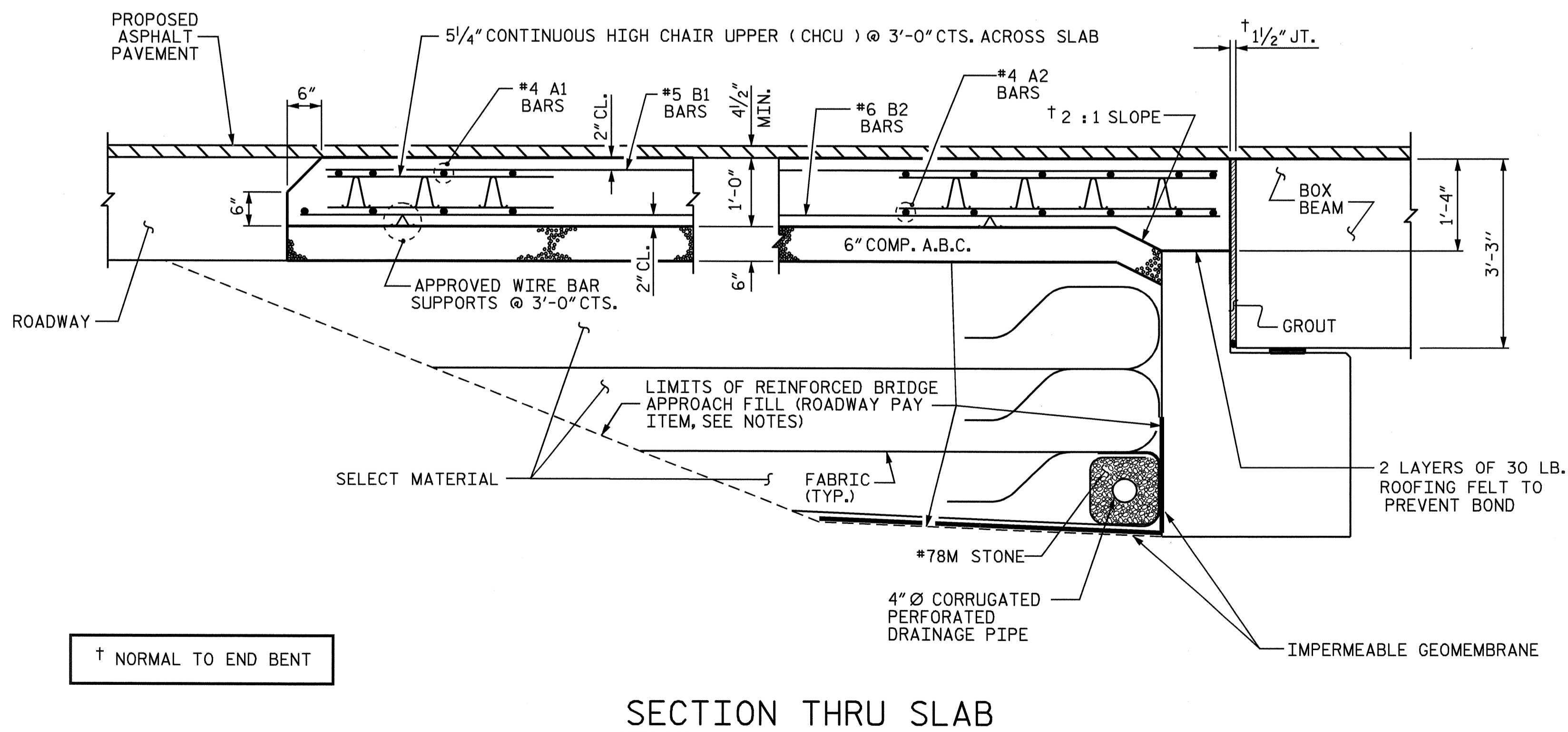
THE JOINT AT THE END BENT SHALL BE GROUTED AS SOON AS PRACTICAL AFTER THE CONSTRUCTION OF THE APPROACH SLABS.

APPROACH SLAB GROOVING IS NOT REQUIRED.

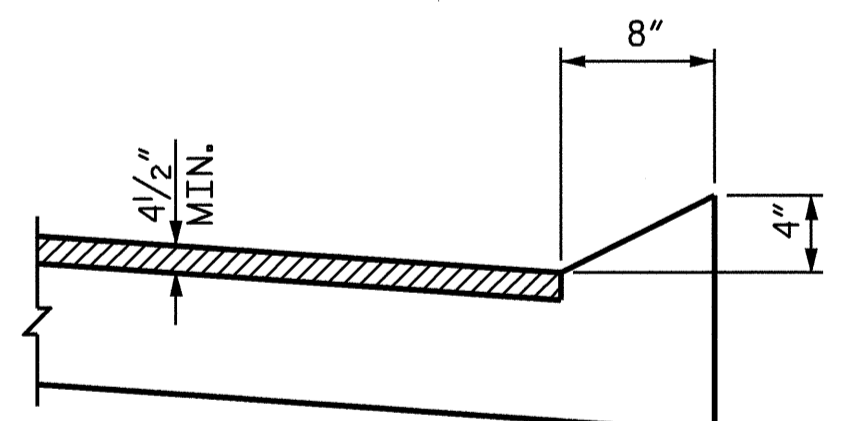
SPLICE CHART

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

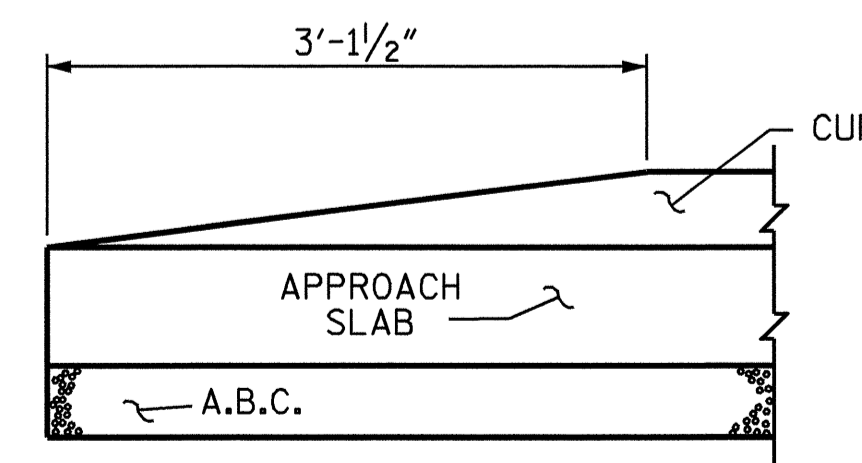
BILL OF MATERIAL					
APPROACH SLAB AT END BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	32	#4	STR	17'-11"	383
A2	32	#4	STR	17'-10"	381
*B1	68	#5	STR	14'-3"	1011
B2	68	#6	STR	14'-8"	1498
REINFORCING STEEL					LBS. 1,879
*EPOXY COATED REINFORCING STEEL					LBS. 1,394
CLASS AA CONCRETE					CU. YDS. 19.5
APPROACH SLAB AT END BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	32	#4	STR	17'-11"	383
A2	32	#4	STR	17'-10"	381
*B1	68	#5	STR	14'-3"	1011
B2	68	#6	STR	14'-8"	1498
REINFORCING STEEL					LBS. 1,879
*EPOXY COATED REINFORCING STEEL					LBS. 1,394
CLASS AA CONCRETE					CU. YDS. 19.5



SECTION THRU SLAB



SECTION N-N



END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS

PROJECT NO. B-4245
 RANDOLPH COUNTY
 STATION: 17+04.00 -L-

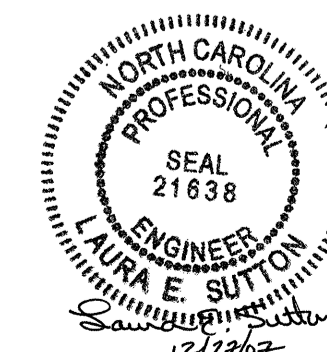
SHEET 1 OF 2

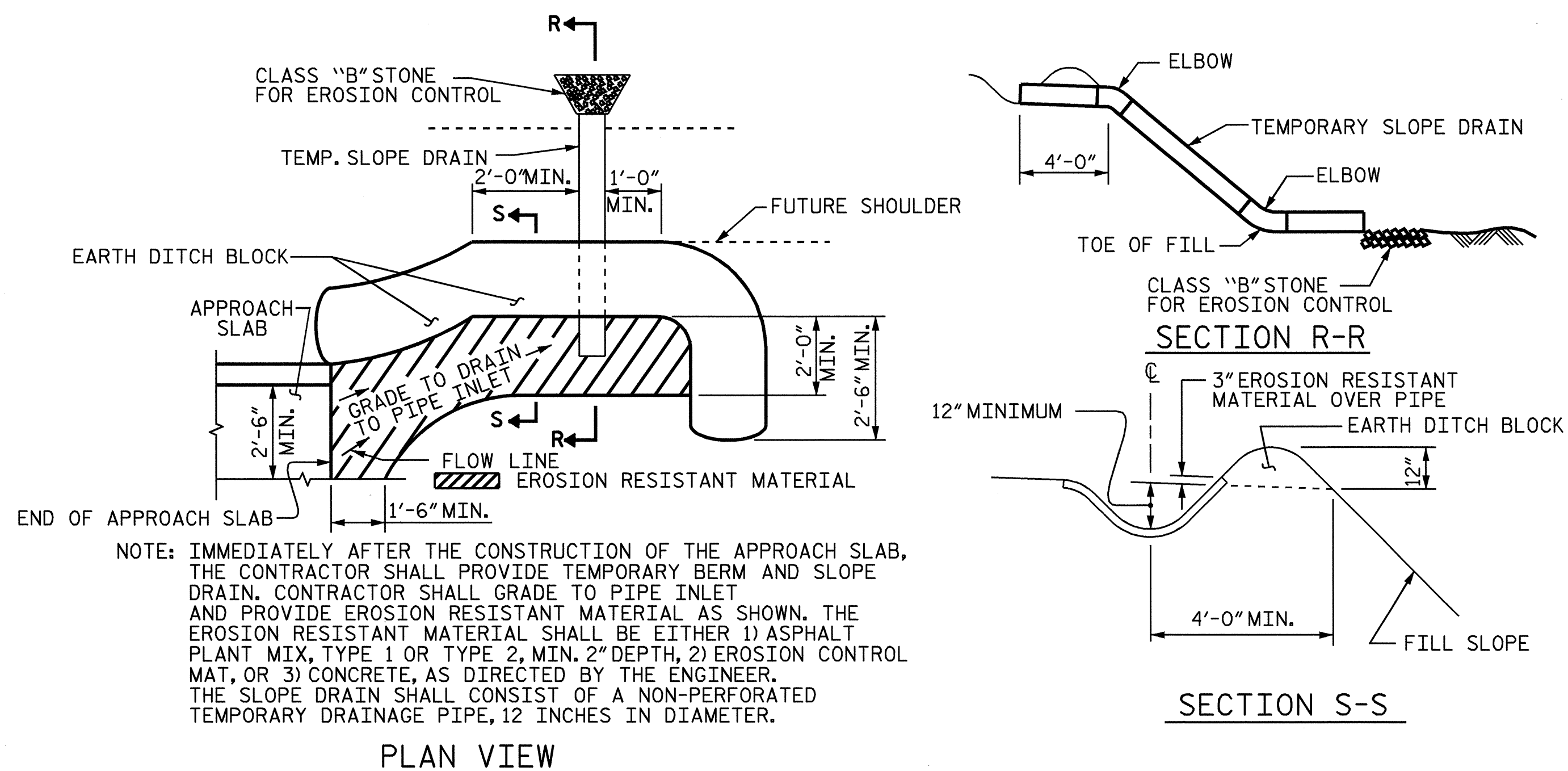
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

BRIDGE APPROACH SLAB FOR
 PRESTRESSED CONCRETE
 BOX BEAM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			18

DRAWN BY: A.S. CALLAWAY DATE: 9/24/07
 CHECKED BY: P.C. BREWER DATE: 10/8/07



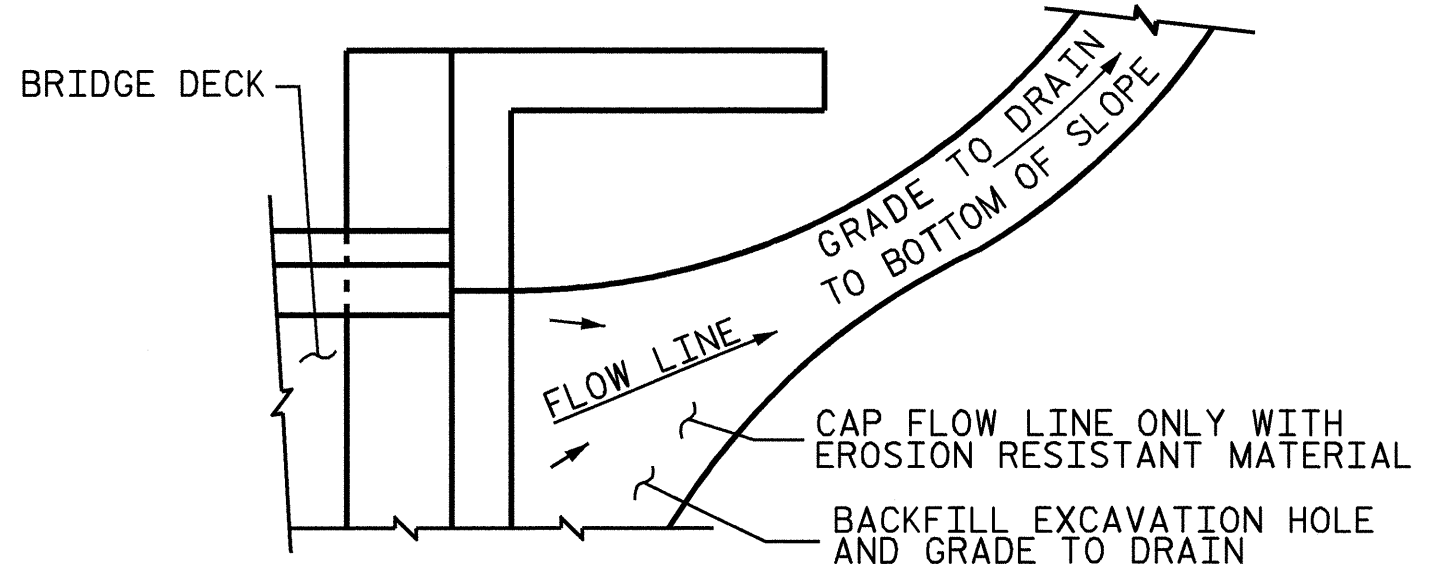


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

PLAN VIEW

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



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

TEMPORARY DRAINAGE DETAIL

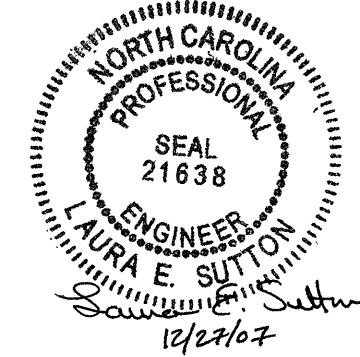
PROJECT NO. B-4245
RANDOLPH COUNTY
 STATION: 17+04.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
 BRIDGE APPROACH
 SLAB DETAILS

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



ASSEMBLED BY : A.S. CALLAWAY	DATE : 9/24/07
CHECKED BY : P.C. BREWER	DATE : 10/8/07
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

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 2002 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; CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP; AND CLASS S SHALL BE USED FOR UNDERWATER FOOTING SEALS.

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 WITH THE EXCEPTION OF #2 BARS WHICH MAY BE FABRICATED FROM COLD DRAWN STEEL WIRE. 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.

PLACEMENT OF BEAM OR GIRDER MEMBERS ON TRUCKS FOR HAULING SHALL BE DONE IN COMPLIANCE WITH LIMITS SHOWN ON SKETCHES PROVIDED TO THE MATERIALS AND TEST UNIT APPROVED BY THE STRUCTURE DESIGN UNIT DATED MAY 8, 1991. THESE SKETCHES PRIMARILY LIMIT THE UNSUPPORTED CANTILEVER LENGTH OF MEMBERS. WHEN THE CONTRACTOR WISHES TO PLACE MEMBERS ON TRUCKS NOT IN ACCORDANCE WITH THESE LIMITS, TO SHIP BY RAIL, TO ATTACH SHIPPING RESTRAINTS TO THE MEMBERS OR TO INVERT MEMBERS, HE SHALL SUBMIT A SKETCH FOR APPROVAL PRIOR TO SHIPPING. SEE ALSO ARTICLE 1072-11.

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