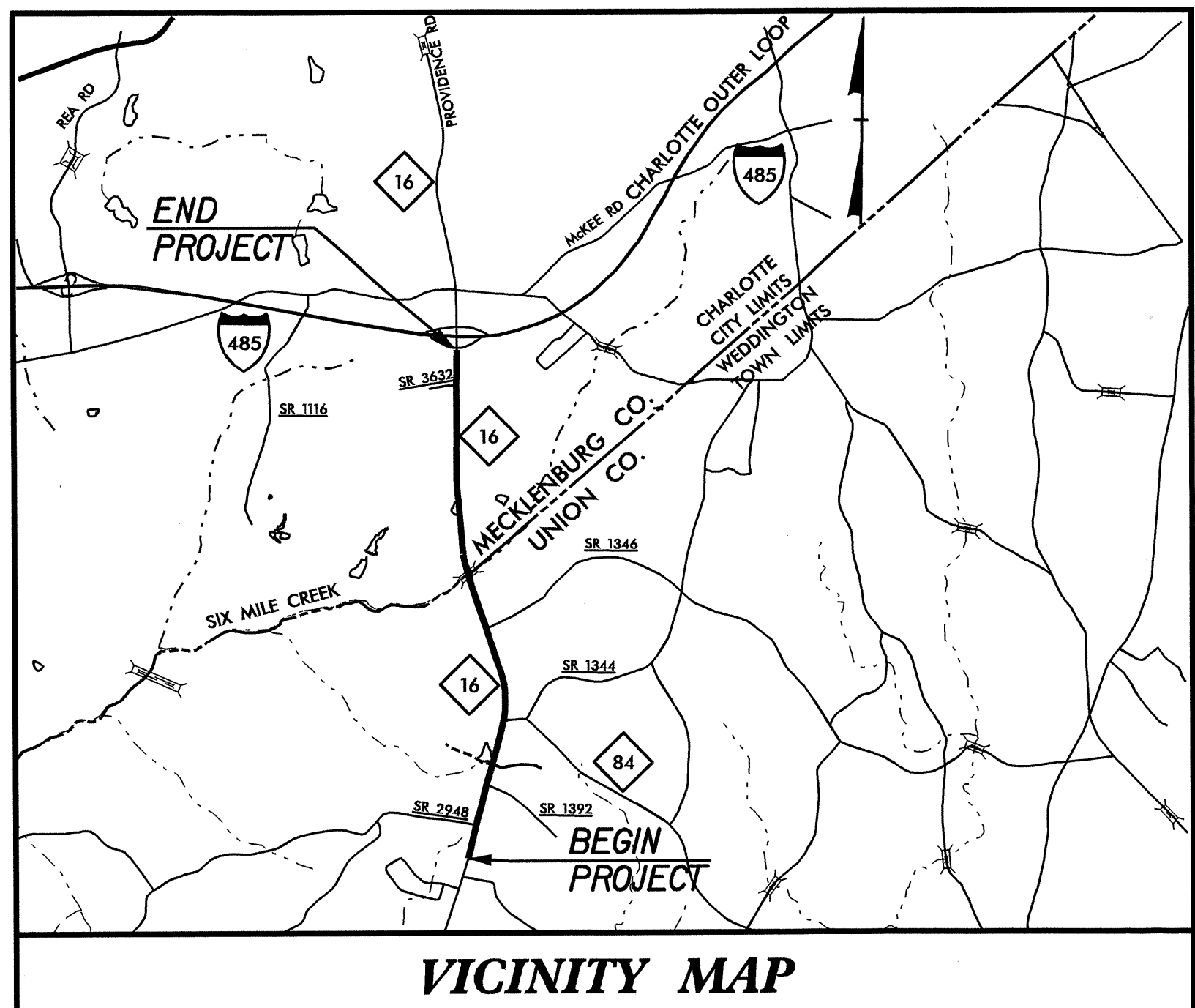


CONTRACT: C201622 TIP PROJECT: U-2510A

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-2510A		
WB NO.	P.A. PROJ. NO.	DESCRIPTION	
34813.1.1	STP - 16(20)	P.E.	
34813.2.3	STP - 16(20)	R/W, UTILITIES	
34813.3.3	STP - 16(36)	CONSTRUCTION	

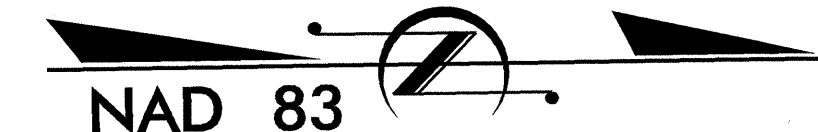


# STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

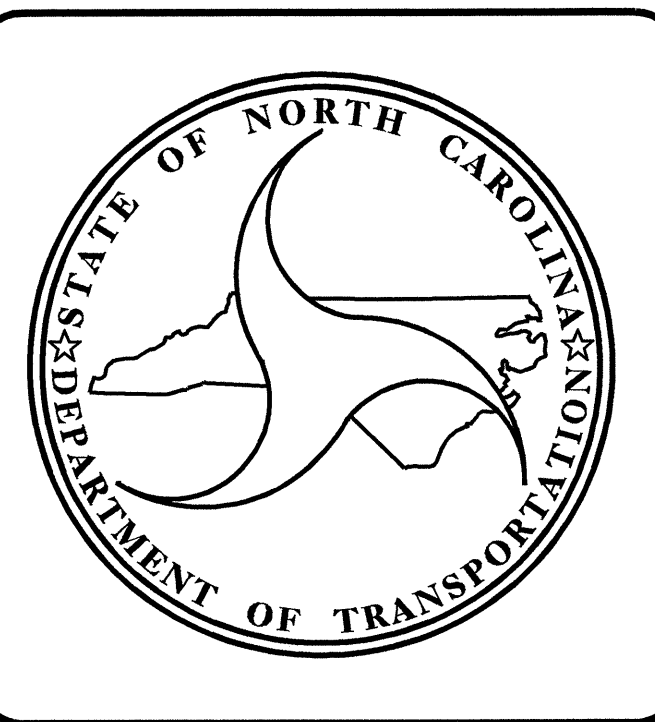
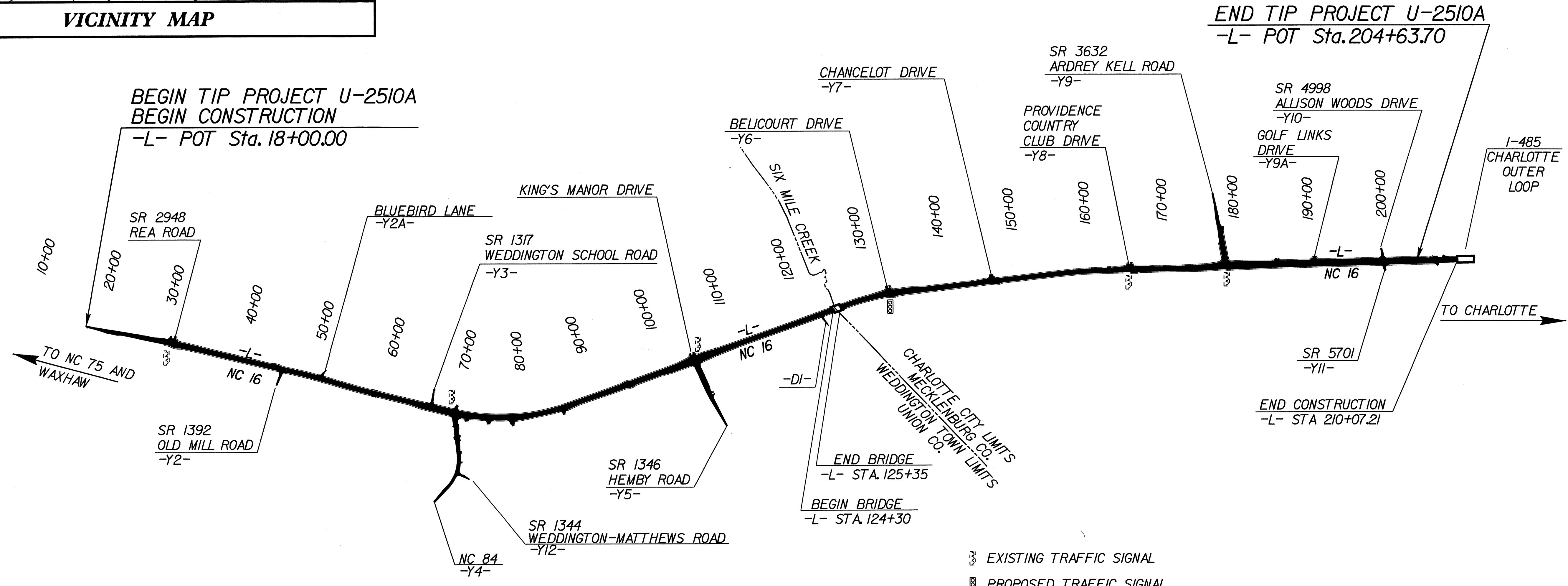
## MECKLENBURG AND UNION COUNTIES

**LOCATION:** CHARLOTTE - NC 16 (OLD PROVIDENCE ROAD) FROM SOUTH OF SR 2948 (REA ROAD EXT.) IN UNION COUNTY TO SOUTH OF I-485 (CHARLOTTE OUTER LOOP) IN MECKLENBURG COUNTY.

**TYPE OF WORK:** GRADING, DRAINAGE, PAVING, WIDENING, RESURFACING, STRUCTURE, RETAINING WALLS, CURB & GUTTER, SIDEWALK AND SIGNALS



STRUCTURES



DESIGN DATA	
ADT 2006 =	32,780
ADT 2030 =	43,000
DHV =	10 %
D =	60 %
*T =	5 %
V =	50 MPH
* (TTST 2% + DUAL 3%)	
FUNC CLASS =	URBAN ARTERIAL

PROJECT LENGTH	
LENGTH ROADWAY TIP PROJECT U-2510A	= 3.515 MILES
LENGTH STRUCTURE TIP PROJECT U-2510A	= 0.020 MILES
TOTAL LENGTH OF TIP PROJECT U-2510A	= 3.535 MILES

Prepared In the Office of:  
**DIVISION OF HIGHWAYS**  
1000 Birch Ridge Dr., Raleigh, NC 27610

2006 STANDARD SPECIFICATIONS

LETTING DATE:  
January 15, 2008

ROY GIROLAMI, PE  
PROJECT ENGINEER

DAVID ANDERSON  
PROJECT DESIGN ENGINEER

STRUCTURE DESIGN UNIT

DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

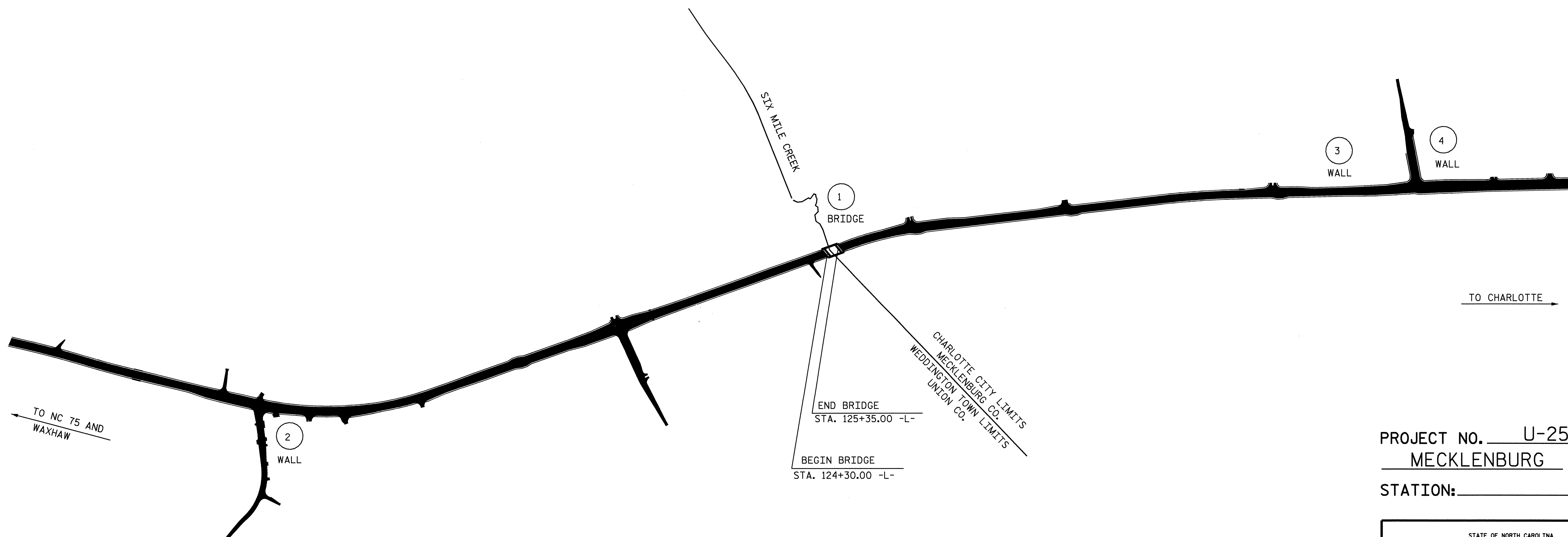
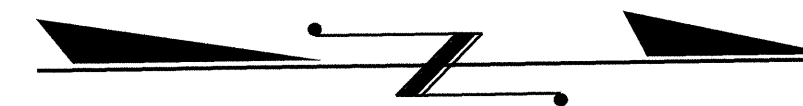
P.E.

STATE DESIGN ENGINEER  
DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION

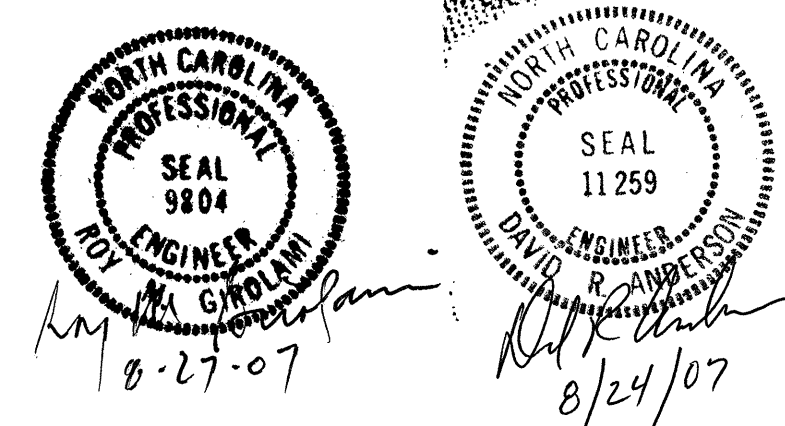
APPROVED \_\_\_\_\_  
DIVISION ADMINISTRATOR

DATE \_\_\_\_\_

INDEX NO.	STATION	DESCRIPTION	SHEET NO.
①	124+82.50 -L-	PROPOSED BRIDGE ON NC 16 OVER SIX MILE CREEK BETWEEN SR 3628 AND SR 1346	S-1 THRU S-36
②	73+50.00 -L-	PROPOSED GRAVITY RETAINING WALL	W-1, W-4
③	170+20.00 -L-	PROPOSED GRAVITY RETAINING WALL	W-2, W-4
④	181+00.00 -L-	PROPOSED GRAVITY RETAINING WALL	W-3, W-4



PROJECT NO. U-2510A  
MECKLENBURG COUNTY  
STATION: \_\_\_\_\_



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
INDEX FOR BRIDGE & WALLS					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS

DRAWN BY : S. M. RASHIDI DATE : 8/22/07  
CHECKED BY : D. R. ANDERSON DATE : 8/22/07

124+00 124+50 125+00 125+50

**GRADE DATA**

-5.4999% / +3.2184%

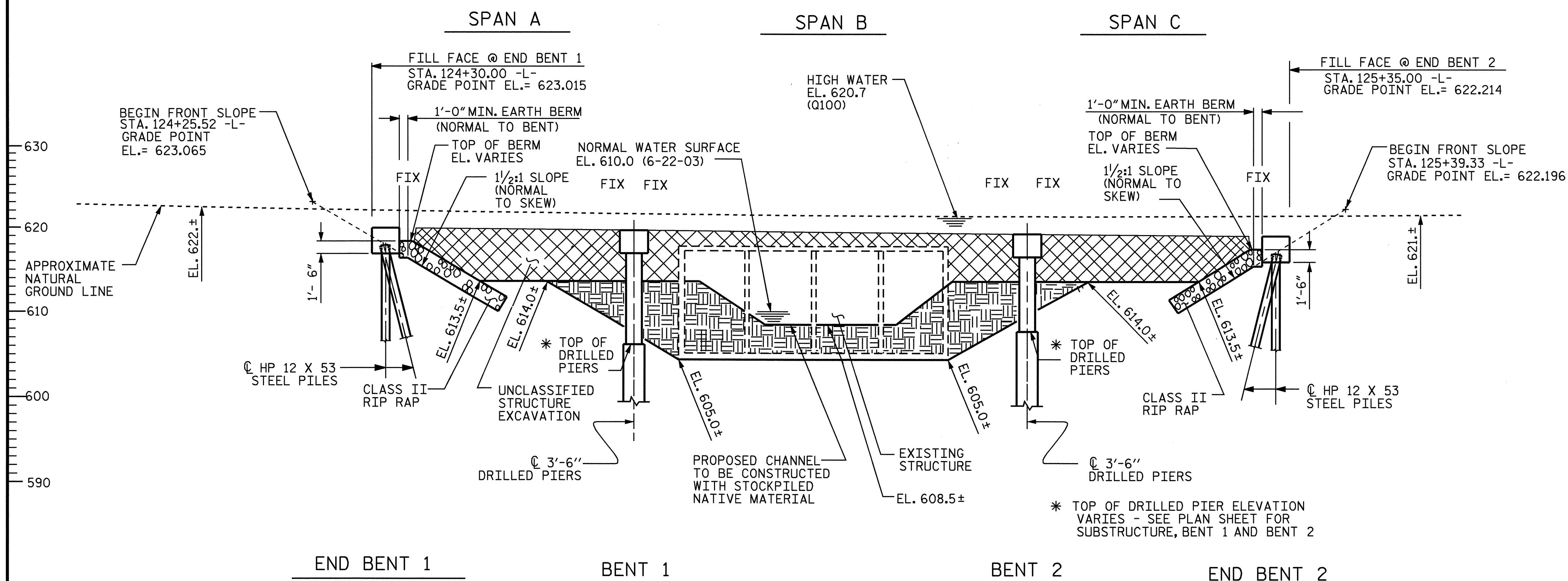
PI STA. 124+24.00 -L-  
EL. 608.370  
VC 1350'

**HYDRAULIC DATA**

DESIGN DISCHARGE \_\_\_\_\_ 2838 CFS  
FREQUENCY OF DESIGN FLOOD \_\_\_\_\_ 50 YEARS  
DESIGN HIGH WATER ELEVATION \_\_\_\_\_ 620.400  
DRAINAGE AREA \_\_\_\_\_ 5.39 SQ. MI.  
BASIC DISCHARGE (Q100) \_\_\_\_\_ 3242 CFS  
BASIC HIGH WATER ELEVATION \_\_\_\_\_ 620.700

**OVERTOPPING FLOOD DATA**

OVERTOPPING DISCHARGE \_\_\_\_\_ 5009 + CFS  
FREQUENCY OF OVERTOPPING FLOOD \_\_\_\_\_ 500 YRS.+  
OVERTOPPING FLOOD ELEVATION \_\_\_\_\_ 621.440



PROJECT NO. U-2510A

MECKLENBURG COUNTY

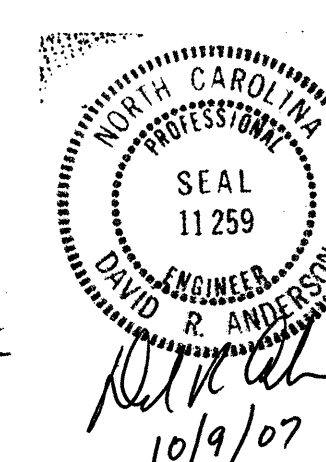
STATION: 124+82.50 -L-

SHEET 1 OF 4      REPLACES RCBC 518

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

**GENERAL DRAWING**

FOR BRIDGE ON NC 16  
OVER SIX MILE CREEK BETWEEN  
SR 3628 AND SR 1346



DRAWN BY : N. Q. TRAN      DATE : 11-15-04  
CHECKED BY : S. M. RASHIDI/TAH      DATE : 2-12-06

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

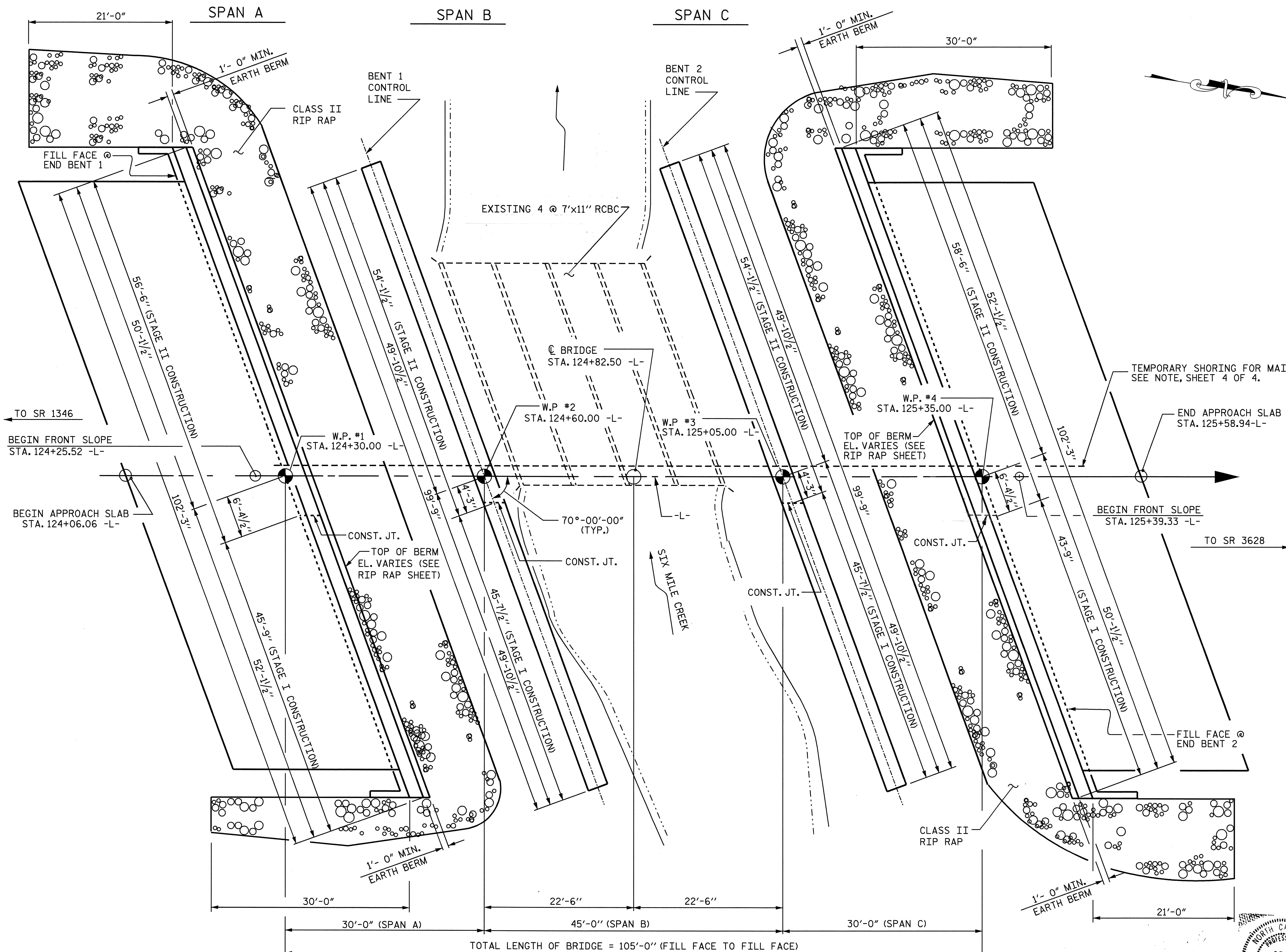


124+00

124+50

125+00

125+50



PLAN

(PILES & DRILLED PIERS NOT SHOWN FOR CLARITY)

DRAWN BY : N. Q. TRAN DATE : 11-15-04  
CHECKED BY : S. M. RASHIDI/TAH DATE : 2-12-06

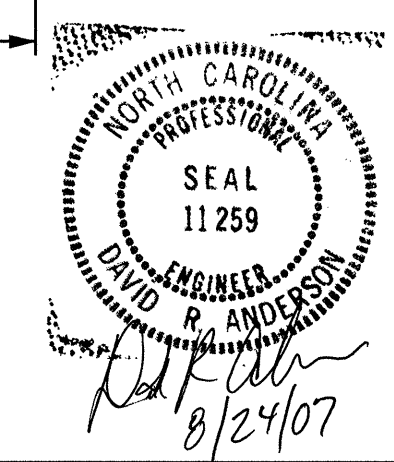
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PROJECT NO. U-2510A  
MECKLENBURG COUNTY  
STATION: 124+82.50 -L-

SHEET 2 OF 4

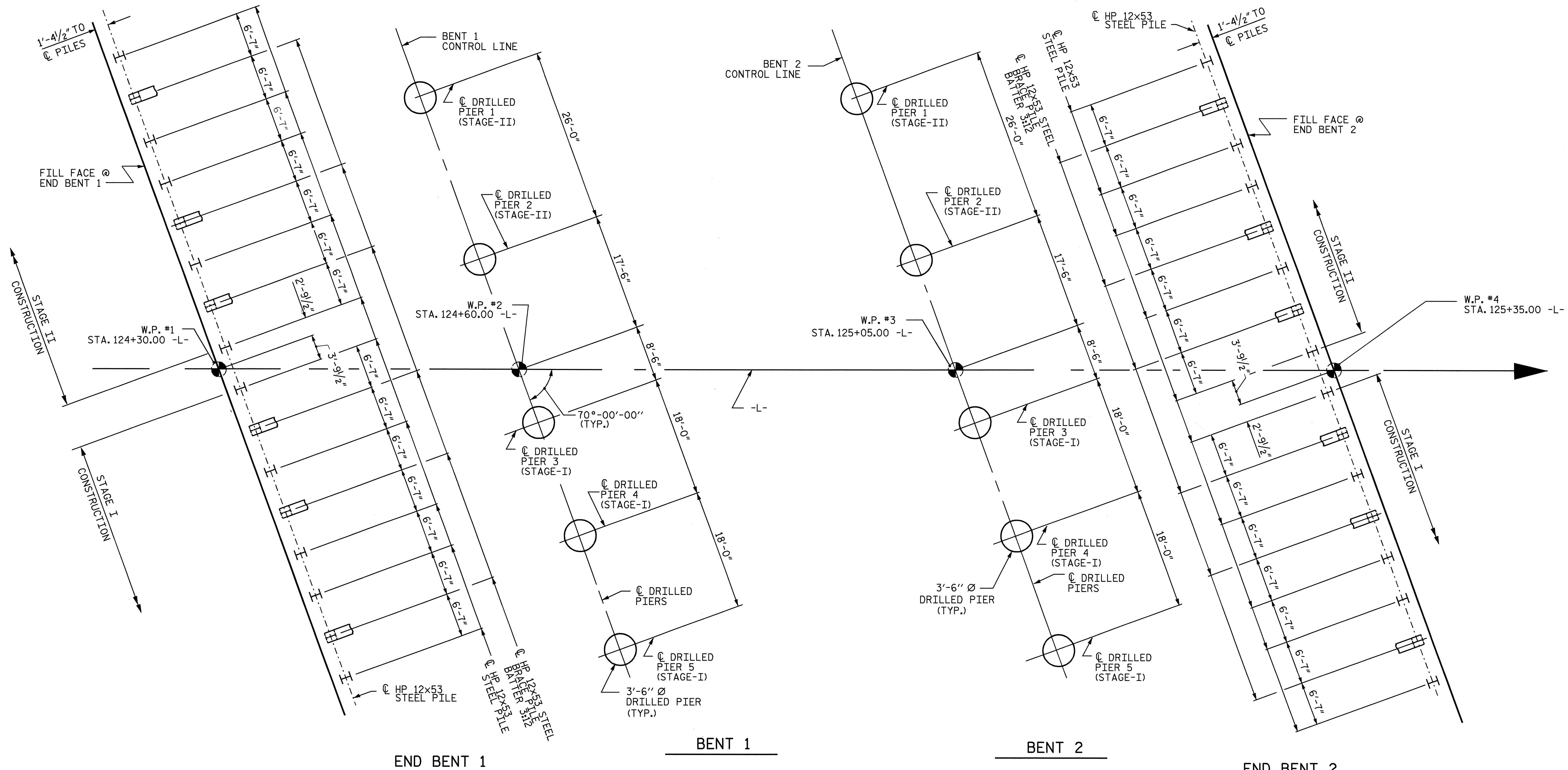
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

GENERAL DRAWING  
FOR BRIDGE ON NC 16 OVER  
SIX MILE CREEK BETWEEN  
SR 3628 AND SR 1346



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





### FOUNDATION LAYOUT

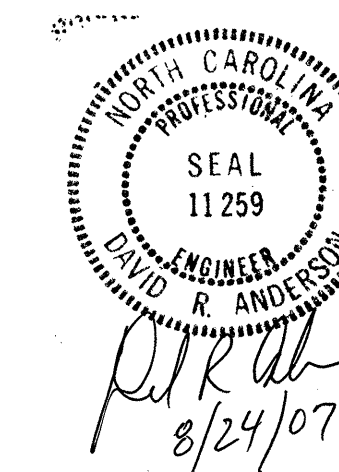
DIMENSIONS LOCATING END BENT PILES, AND DRILLED PIERS, ARE SHOWN TO CENTERLINE OF PILES, AND DRILLED PIERS.

PROJECT NO. U-2510A  
 MECKLENBURG COUNTY  
 STATION: 124+82.50 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

GENERAL DRAWING  
 FOUNDATION LAYOUT



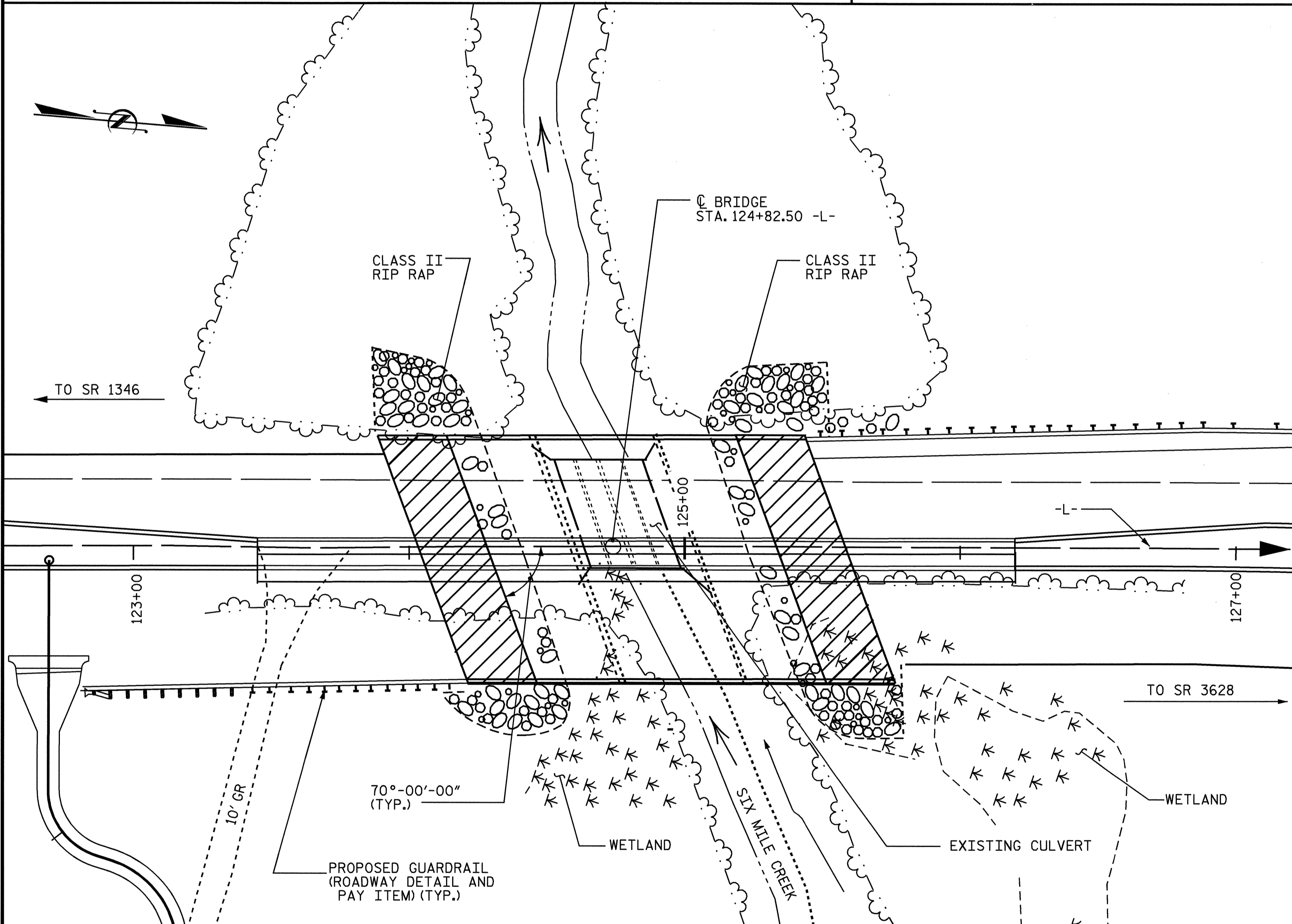
DRAWN BY : N. Q. TRAN DATE : 9-12-06  
 CHECKED BY : S. M. RASHIDI/TAH DATE : 9-18-06

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

**TOTAL BILL OF MATERIAL**

	REMOVAL OF EXISTING STRUCTURE	3'-6" DIA. DRILLED PIERS IN SOIL	3'-6" DIA. DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 3'-6" Ø DRILLED PIER	SID INSPEC-TION	SPT TESTING	CROSSHOLE SONIC LOGGING	UNCLASSIFIED STRUCTURE EXCAVATION	CONCRETE WEARING SURFACE	GROOVING BRIDGE FLOORS	CLASS AA CONCRETE	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	HP 12 X 53 STEEL PILES	THREE BAR METAL RAIL	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	LIN. FT.	LIN. FT.	LIN. FT.	EACH	EACH	EACH	CU.YDS.	SQ. FT.	SQ. FT.	CU.YDS.	CU.YDS.	LUMP SUM	LBS.	LBS.	LBS.	NO.	LIN. FT.	LIN. FT.	TONS	SQ. YARDS	LUMP SUM	LUMP SUM	LIN. FT.
SUPERSTRUCTURE									7495	10,686	83.1		LUMP SUM		2487			189.39				LUMP SUM	LUMP SUM	3070.00
END BENT 1								320				29.5		4,633			16	400		433	480			
BENT 1		50.2	31.0	52.1	1	1	1					67.1		17,887		2941								
BENT 2		65.2	25.0	52.0	1	1	1					64.7		17,868		2923								
END BENT 2								325				29.5		4,623			16	440		343	380			
TOTAL	LUMP SUM	115.4	56.0	104.1	2	2	2	645	7495	10,686	83.1	190.8	LUMP SUM	45,011	2487	5864	32	840	189.39	776	860	LUMP SUM	LUMP SUM	3070.00

BENCH MARK #52: EGB USGS MONUMENT IN WINGWALL OF BOX CULVERT, 35' LEFT OF 124+85.73 -L-, EL. 618.400



**LOCATION SKETCH**

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

DRAWN BY : S. M. RASHIDI DATE : 1-5-07  
 CHECKED BY : N. Q. TRAN DATE : 2-5-07

08-001-2007 16415  
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 danderson

**NOTES**

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

ASSUMED LIVE LOAD = HS 20 OR ALTERNATE LOADING, EXCEPT THAT THE 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 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 STANDARD SPECIFICATIONS FOR SEISMIC DESIGN OF HIGHWAY BRIDGES FOR SEISMIC PERFORMANCE CATEGORY A.

PERMANENT STEEL CASING MAY BE REQUIRED FOR DRILLED PIERS AT BENT NO.1 AND 2. IF REQUIRED, DO NOT EXTEND CASING BELOW ELEVATION 599.0 FT. (LT.) AND 594.0 FT. (RT.) AT BENT NO.1 AND 594.5 FT. (LT.) AND 600.0 FT. (RT.) AT BENT NO.2 WITHOUT PRIOR APPROVAL FROM THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR PERMANENT STEEL CASING. 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 PROVISIONS.

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.

THE SCOUR CRITICAL ELEVATIONS FOR BENT NO.1 ARE ELEVATION 596.0 FT. (LT) AND 591.0 FT. (RT). 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 591.5 FT. (LT) AND 597.0 FT. (RT). SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

DRILLED PIERS AT BENT NO.1 AND NO.2 ARE DESIGNED FOR BOTH SKIN FRICTION AND END BEARING. CHECK FIELD CONDITIONS FOR THE REQUIRED END BEARING CAPACITY OF 75 TSF.

DRILLED PIERS AT BENT NO.1 AND 2 ARE DESIGNED FOR AN APPLIED LOAD OF 243 TONS EACH AT THE TOP OF THE COLUMN.

DRILLED PIERS AT BENT NO.1 SHALL EXTEND TO AN ELEVATION NO HIGHER THAN 593.2 FT. (LT) AND 587.0 FT. (RT) AND SATISFY THE REQUIRED END BEARING CAPACITY.

DRILLED PIERS AT BENT NO.2 SHALL EXTEND TO AN ELEVATION NO HIGHER THAN 589.7 FT. (LT) AND 592.2 FT. (RT) AND SATISFY THE REQUIRED END BEARING CAPACITY.

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 PROVISION.

OBSERVE A ONE MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT, END BENT, AND REINFORCED BRIDGE APPROACH FILL, WHEN APPLICABLE, BEFORE BEGINNING APPROACH SLAB CONSTRUCTION AT END BENTS NO.1 AND 2.

SPT TESTING MAY BE REQUIRED TO DETERMINE THE END BEARING CAPACITY OF THE DRILLED PIERS AT BENTS NO. 1 AND 2. THE ENGINEER WILL DETERMINE THE NEED FOR SPT TESTING. SEE DRILLED PIERS SPECIAL PROVISION.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON SHEET S-1 SHALL BE EXCAVATED FOR A DISTANCE OF APPROX. 50 FT. EA. SIDE OF ROADWAY CENTERLINE AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE MEASURED AND PAID FOR AS UNCLASSIFIED STRUCTURE EXCAVATION.

THE SECONDARY CROSS-HATCHED AREA UNDER THE UNCLASSIFIED STRUCTURE EXCAVATION (AS SHOWN ON SHEET 1 OF 4) IS TO BE TEMPORARILY REMOVED IN ORDER TO FACILITATE THE CULVERT REMOVAL. IT IS ACCEPTABLE TO USE THE SAME MATERIAL EXCAVATED TO PLACE BACK IN AS NATIVE MATERIAL. THE COST OF REMOVING THE NATIVE MATERIAL AND THEN PUTTING IT BACK IN PLACE SHALL BE INCLUDED IN THE LUMP SUM PRICE FOR "REMOVAL OF EXISTING STRUCTURE".

THE EXISTING CULVERT (4 BARRELS AT 7' X 11') IS TO BE REMOVED (ROOF SLAB AND WALLS) DOWN TO THE TOP OF THE FLOOR SLAB. FOR BARREL REMOVAL SEQUENCE, DIVERSION OF WATER, ETC., SEE EROSION CONTROL PLANS.

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE BARS FROM WHICH THE SAMPLES ARE TAKEN MUST THEN BE SPLICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE, PLUS A MINIMUM LAP SPLICE OF THIRTY BAR DIAMETERS.

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

FOR GROUT, SEE SPECIAL PROVISION "GROUT FOR STRUCTURES".

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

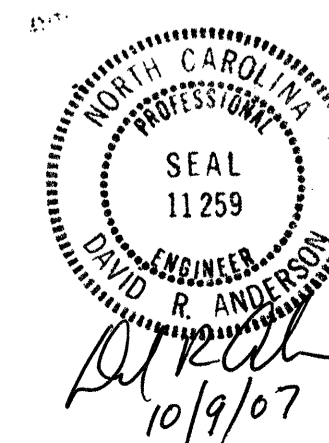
PROJECT NO. U-2510A  
 MECKLENBURG COUNTY  
 STATION: 124+82.50 -L-

SHEET 4 OF 4

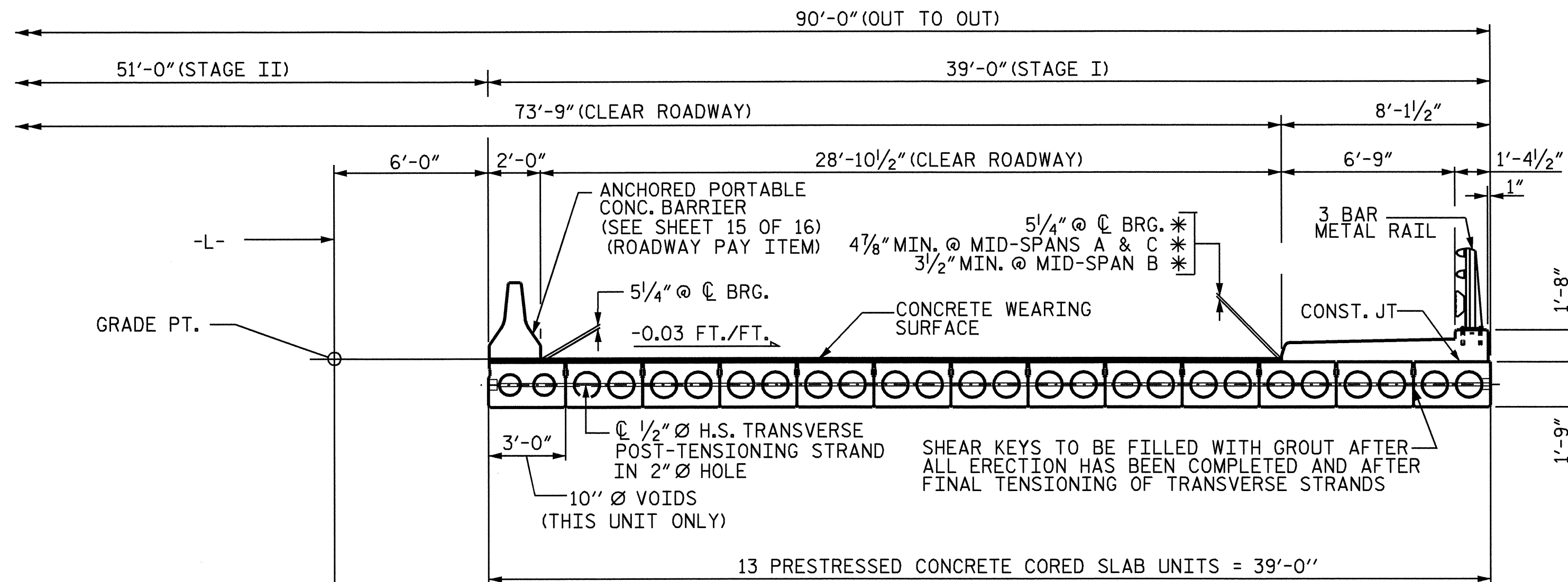
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**GENERAL DRAWING**  
 FOR BRIDGE ON NC 16 OVER  
 SIX MILE CREEK BETWEEN  
 SR 3628 AND SR 1346

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

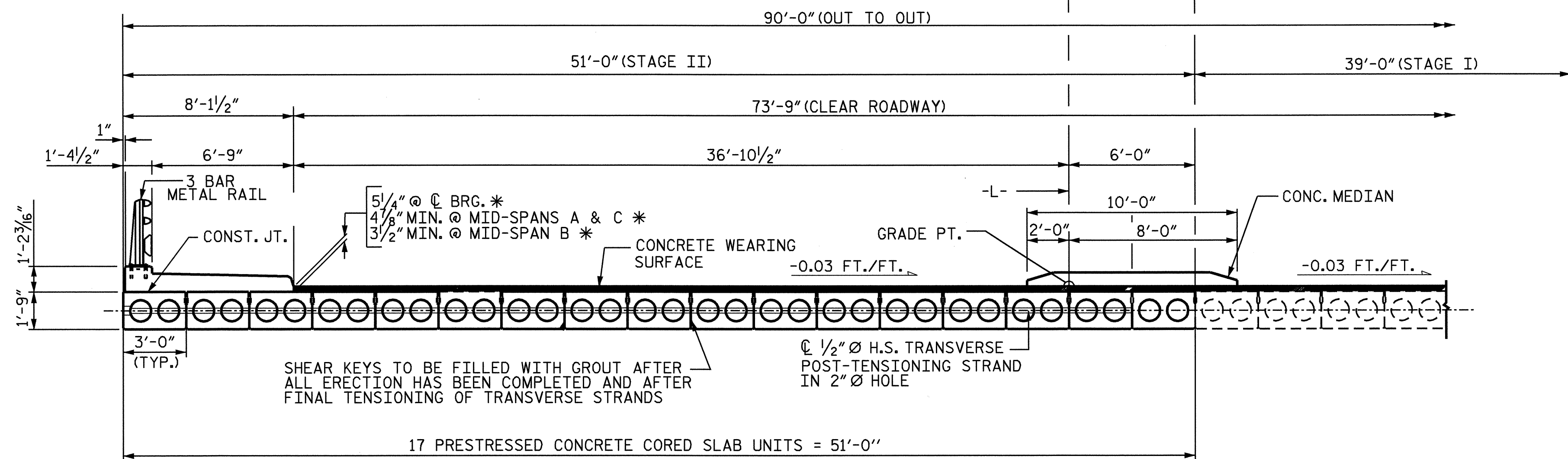






TYPICAL SECTION - STAGE I

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



TYPICAL SECTION - STAGE II

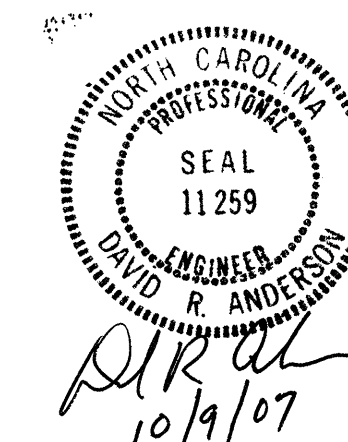
NOTE : ALL UNITS HAVE 12" Ø VOIDS EXCEPT FOR THE LEFT-MOST UNIT OF STAGE I (UNDER THE ANCHORED PORTABLE CONCRETE BARRIER), WHICH HAS 10" Ø VOIDS . ONLY ONE TRANSVERSE STRAND LINE IS SHOWN FOR CLARITY, FOR LOCATION OF ACTUAL TRANSVERSE STRANDS, SEE S-6 .

PROJECT NO. U-2510A  
MECKLENBURG COUNTY  
 STATION: 124+82.50 -L-

SHEET 1 OF 16

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUPERSTRUCTURE  
 TYPICAL SECTION

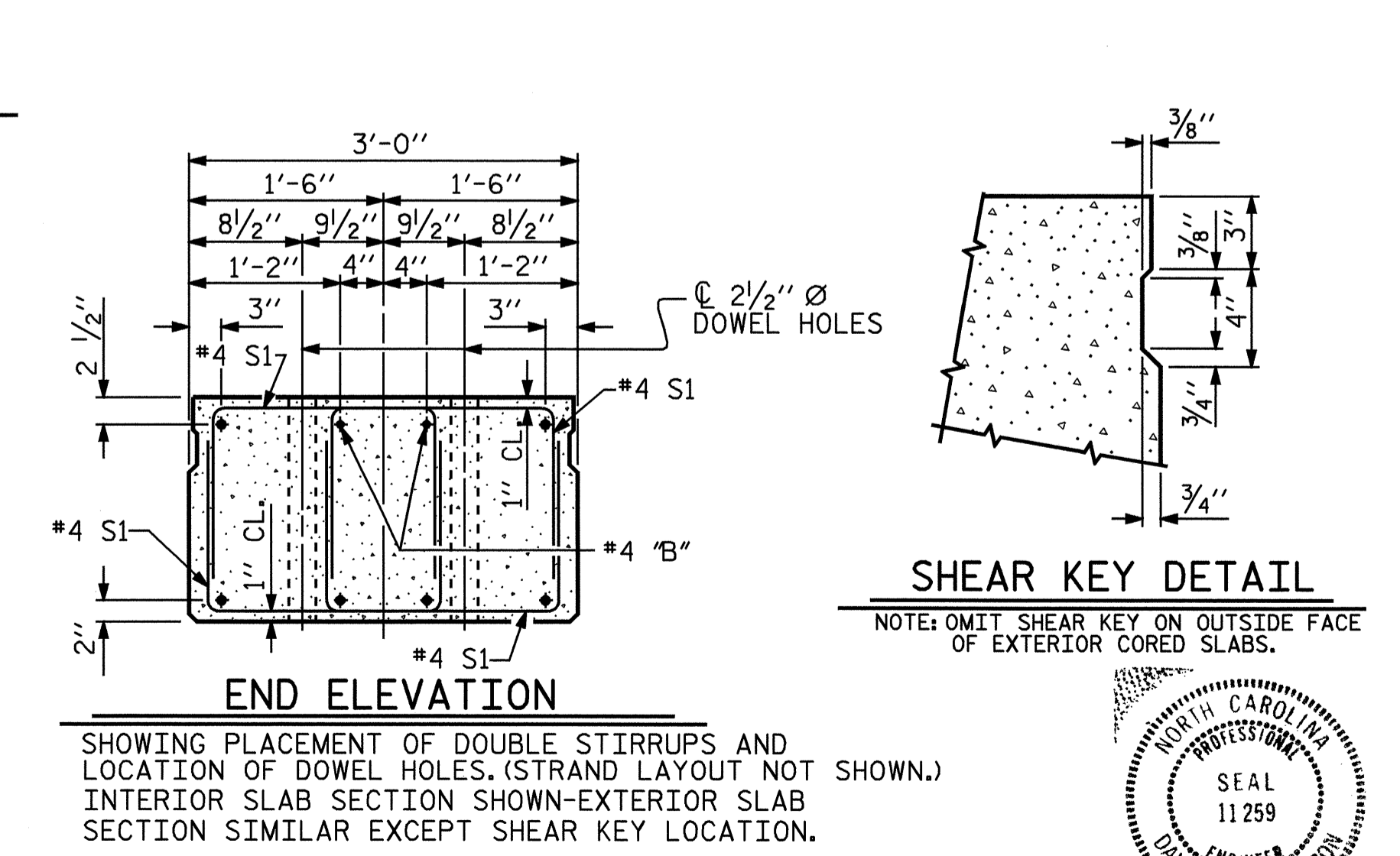
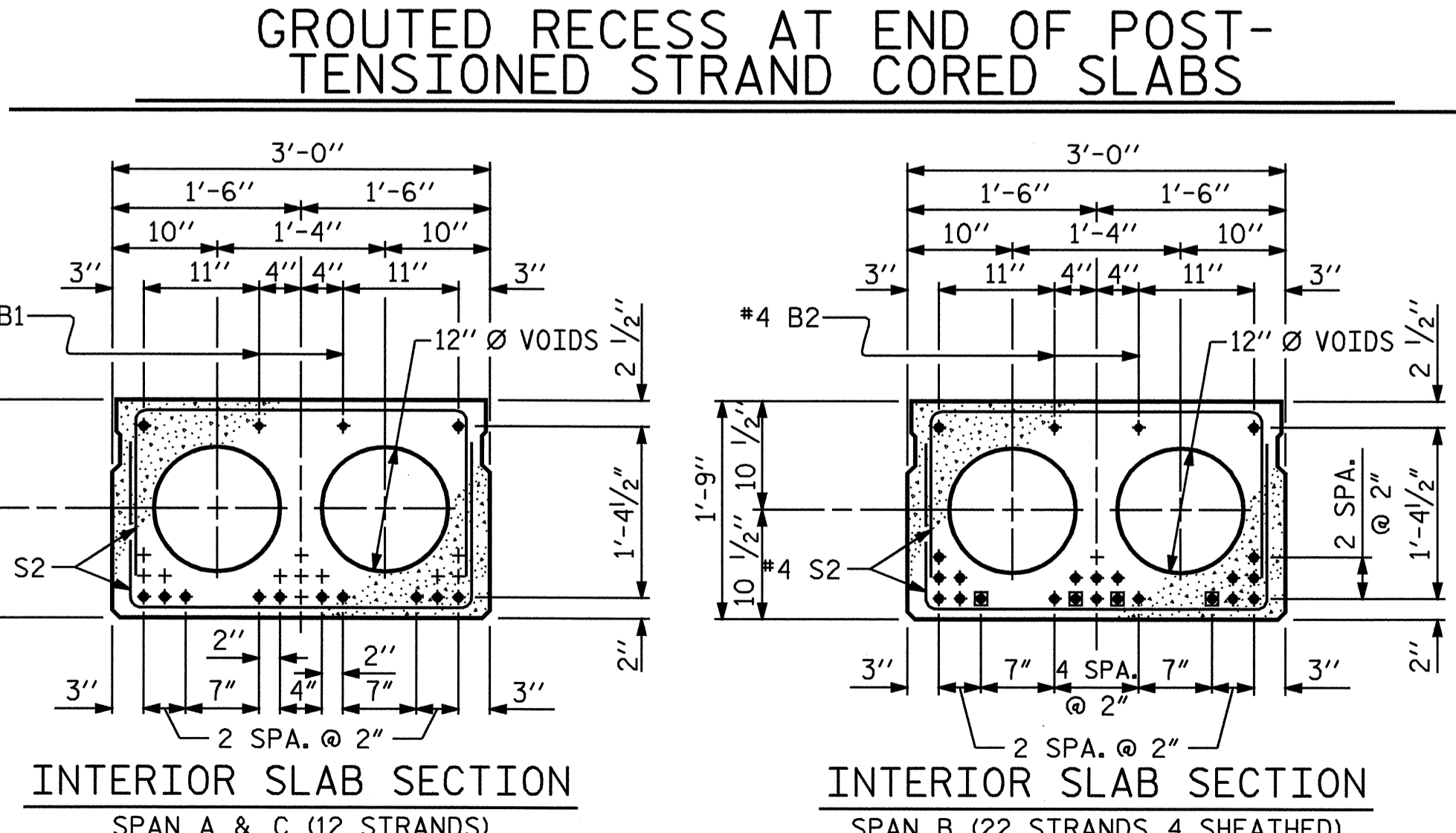
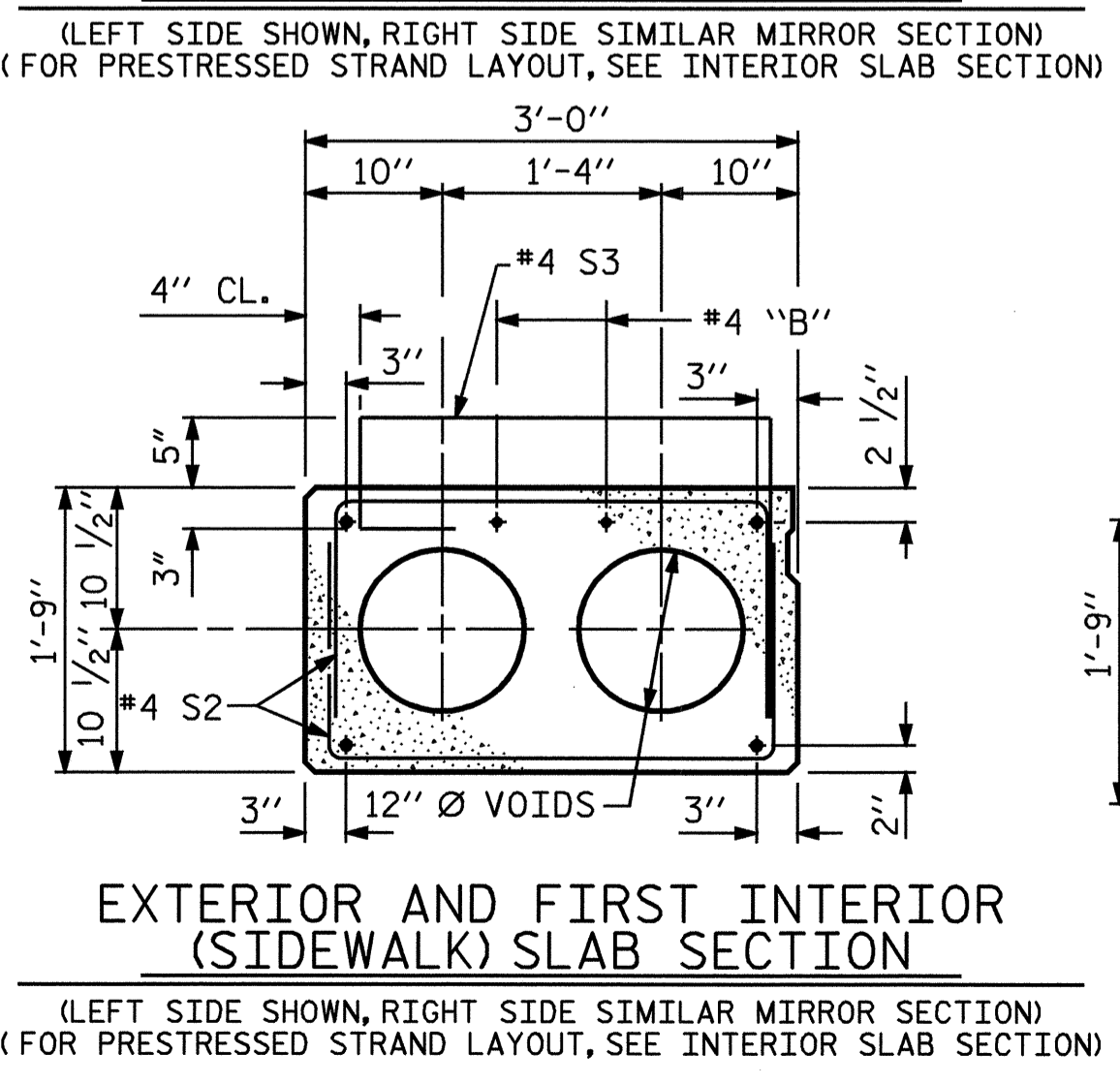
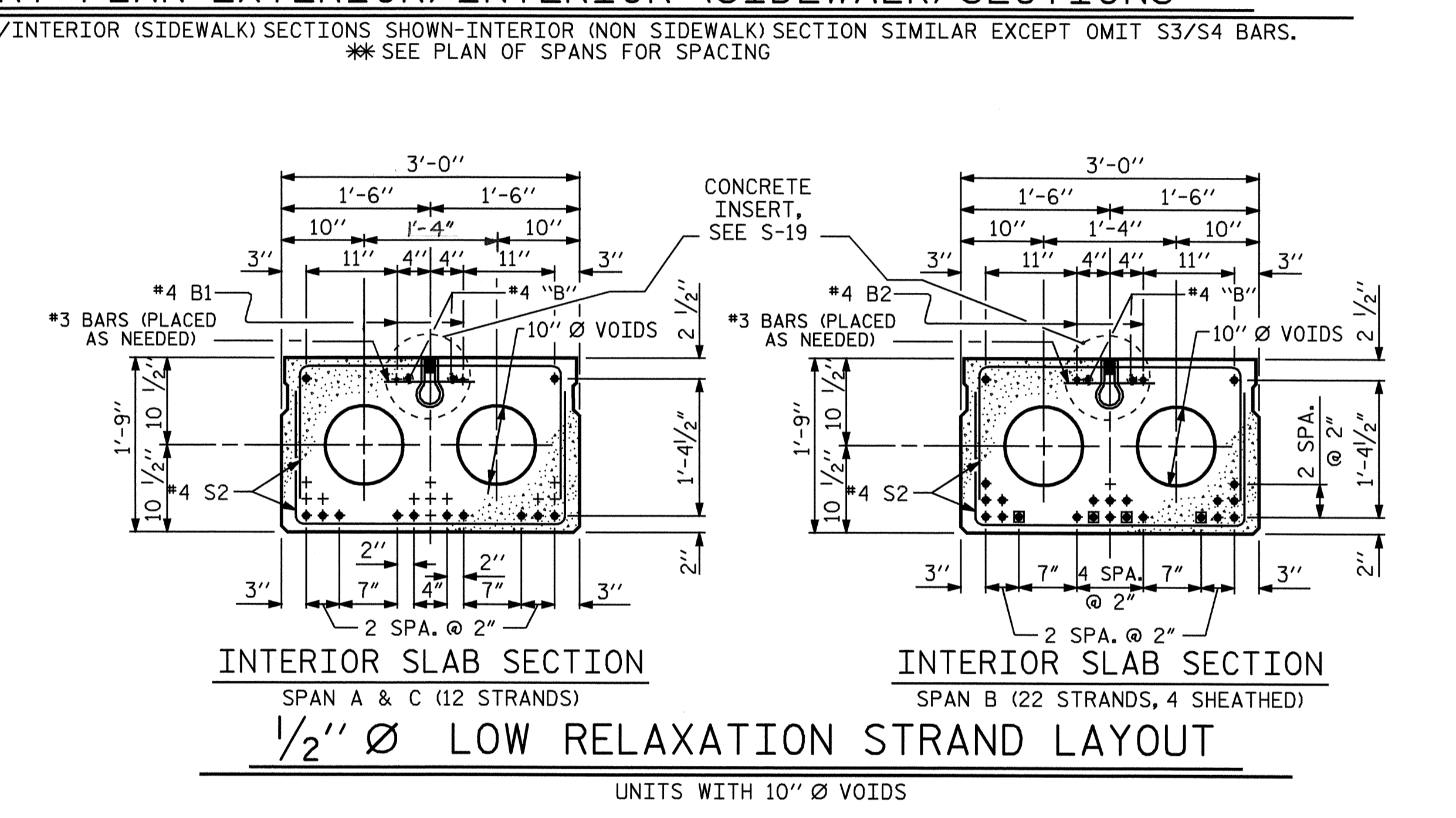
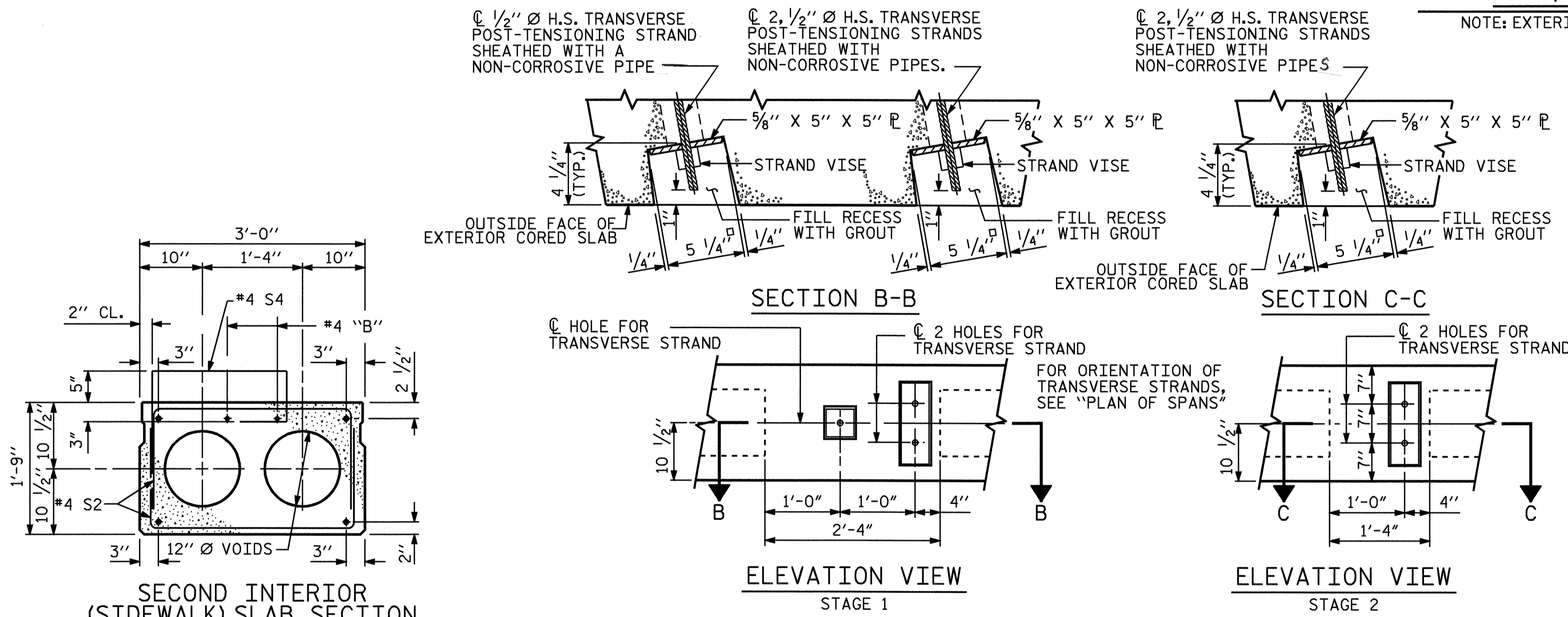
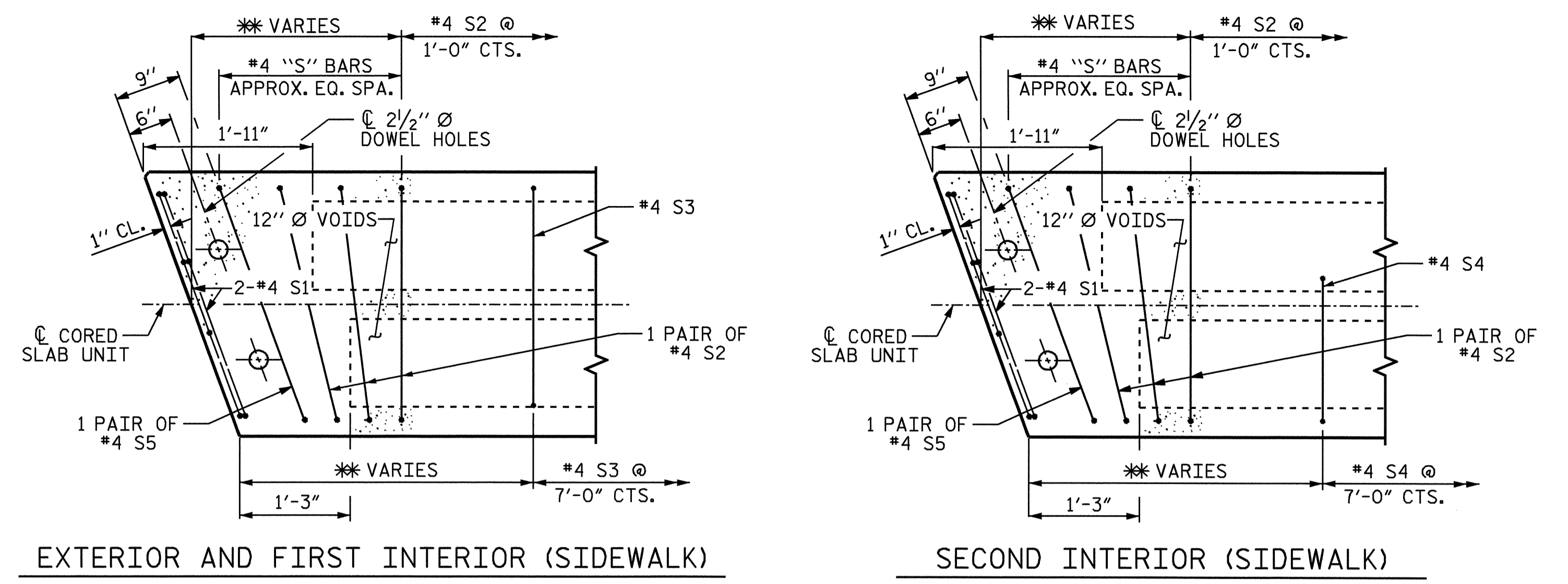
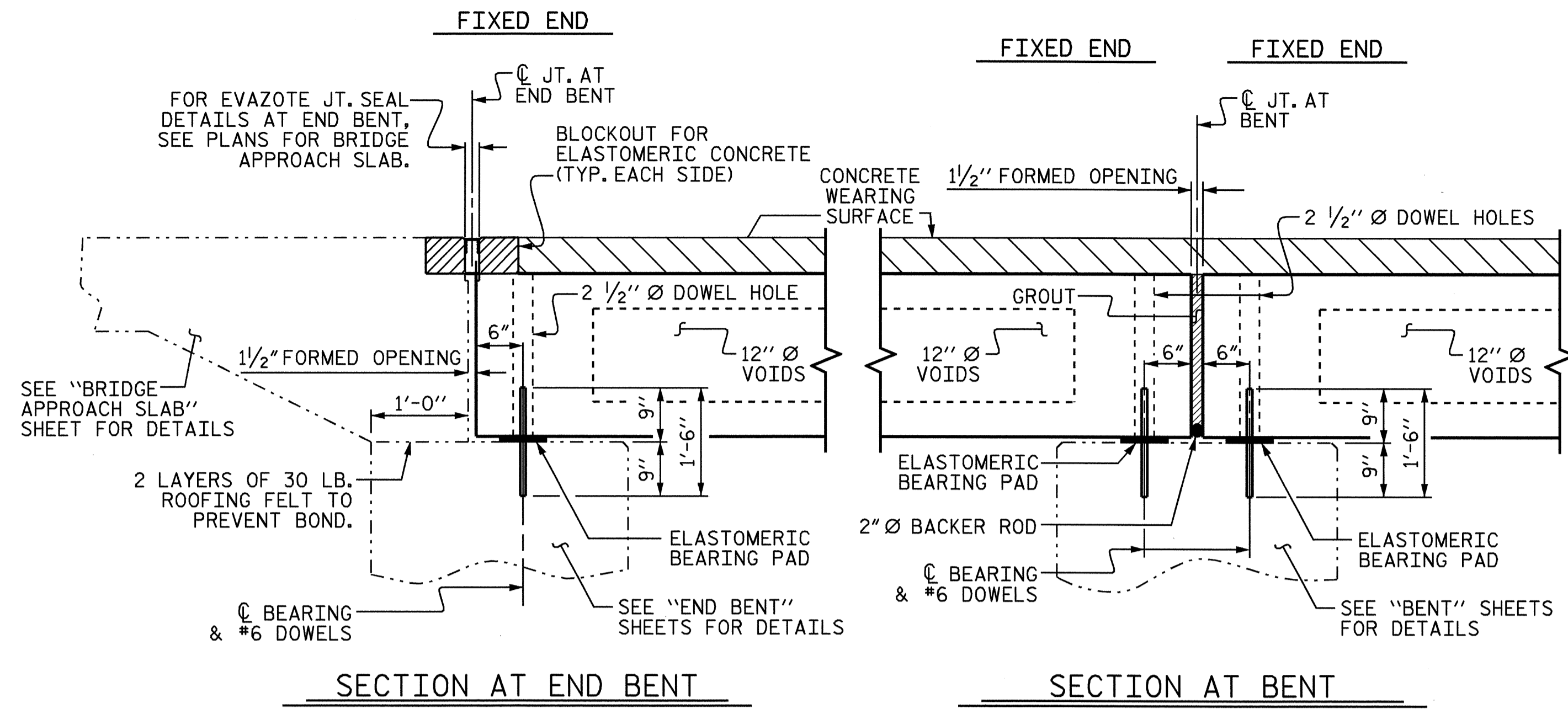


ASSEMBLED BY : N. Q. TRAN DATE : 1-11-05  
 CHECKED BY : T. A. HARRIS DATE : 11-13-06

09-OCT-2007 08:19  
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 ntran

REVISIONS						1988
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S-5
2			4			TOTAL SHEETS 36



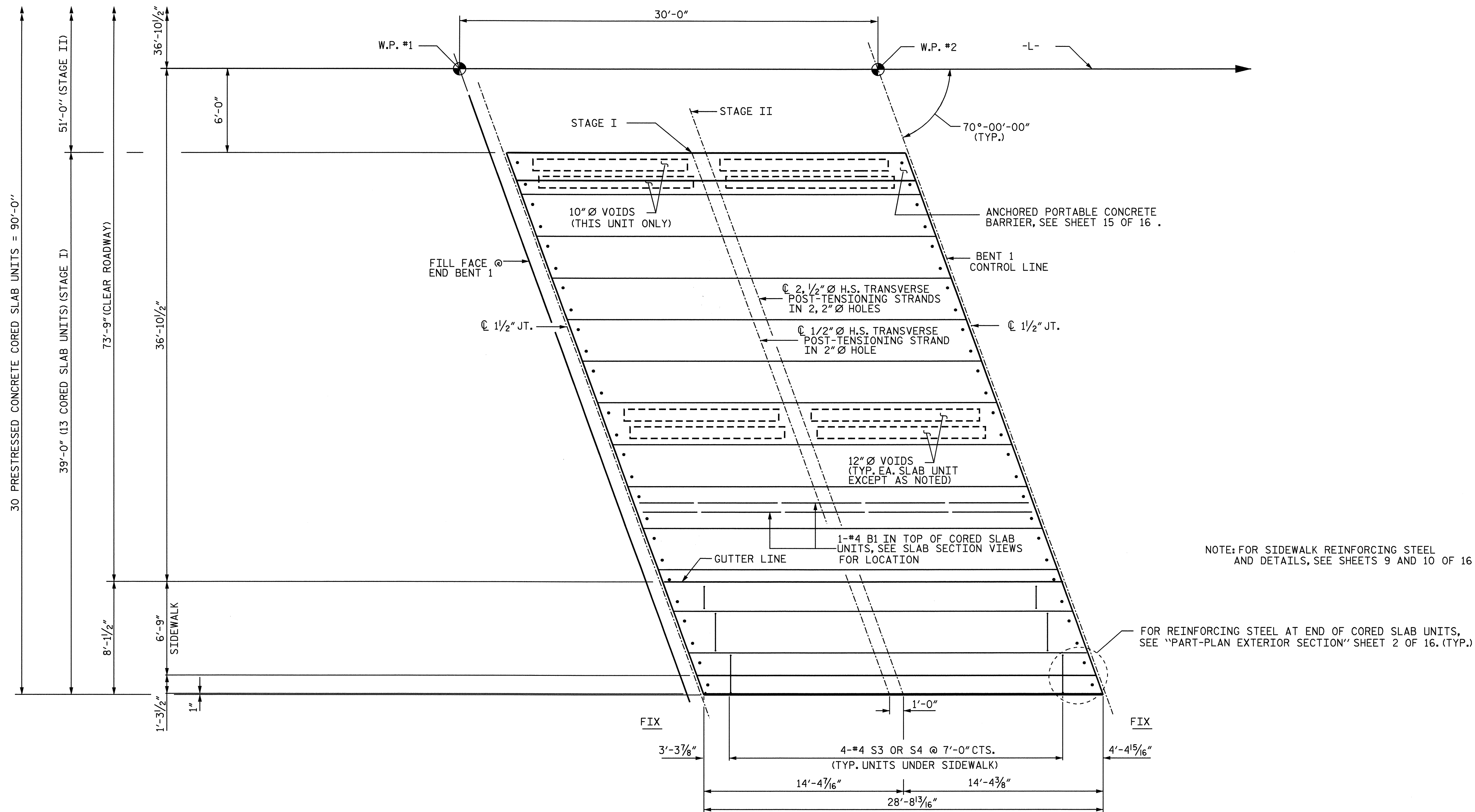


PROJECT NO. U-2510A  
 MECKLENBURG COUNTY  
 STATION: 124+82.50 -L-  
 SHEET 2 OF 16

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

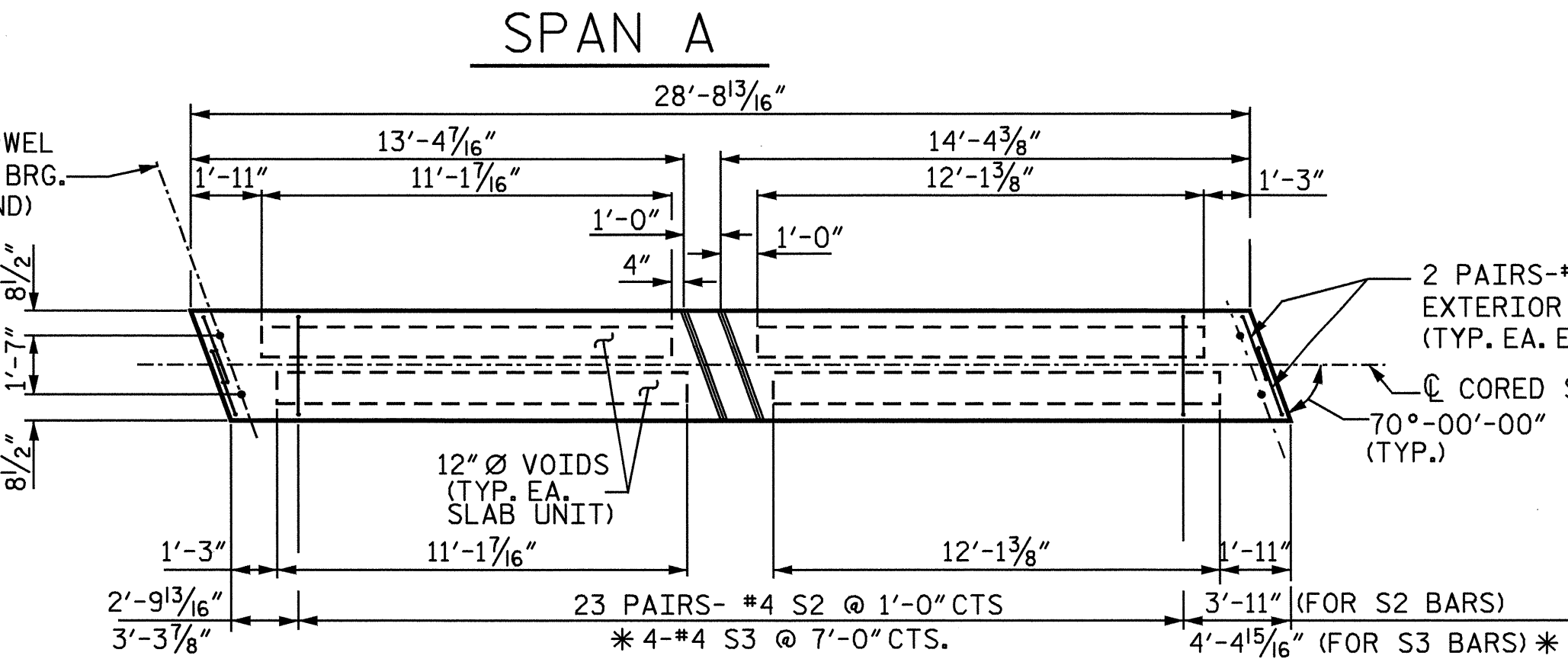
ASSEMBLED BY : N. Q. TRAN DATE : 1-11-05  
 CHECKED BY : T. A. HARRIS DATE : 1-11-05  
 DRAWN BY : WJH 4/89 REV. 10/17/00 RWW/LES  
 CHECKED BY : FCJ 5/89 REV. 7/10/01RR RWW/LES  
 REV. 5/1/06 TLA/GM

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



NOTE: FOR SIDEWALK REINFORCING STEEL AND DETAILS, SEE SHEETS 9 AND 10 OF 16

FOR REINFORCING STEEL AT END OF CORED SLAB UNITS, SEE "PART-PLAN EXTERIOR SECTION" SHEET 2 OF 16. (TYP.)



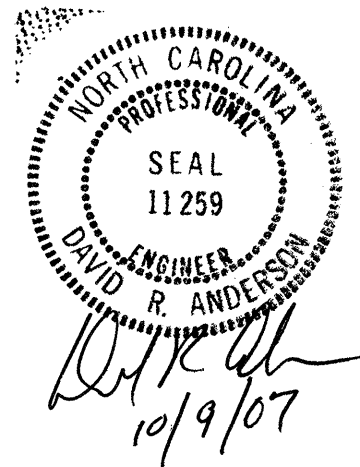
PLAN OF EXTERIOR & FIRST INTERIOR SLAB  
 \* IN THE SECOND INTERIOR SLAB, USE S4 BARS (INSTEAD OF S3 BARS)

NOTE: PLAN FOR INTERIOR UNITS (NOT UNDER SIDEWALK) IDENTICAL EXCEPT OMIT S3 BARS

PROJECT NO. U-2510A  
MECKLENBURG COUNTY  
 STATION: 124+82.50 -L-

SHEET 3 OF 16

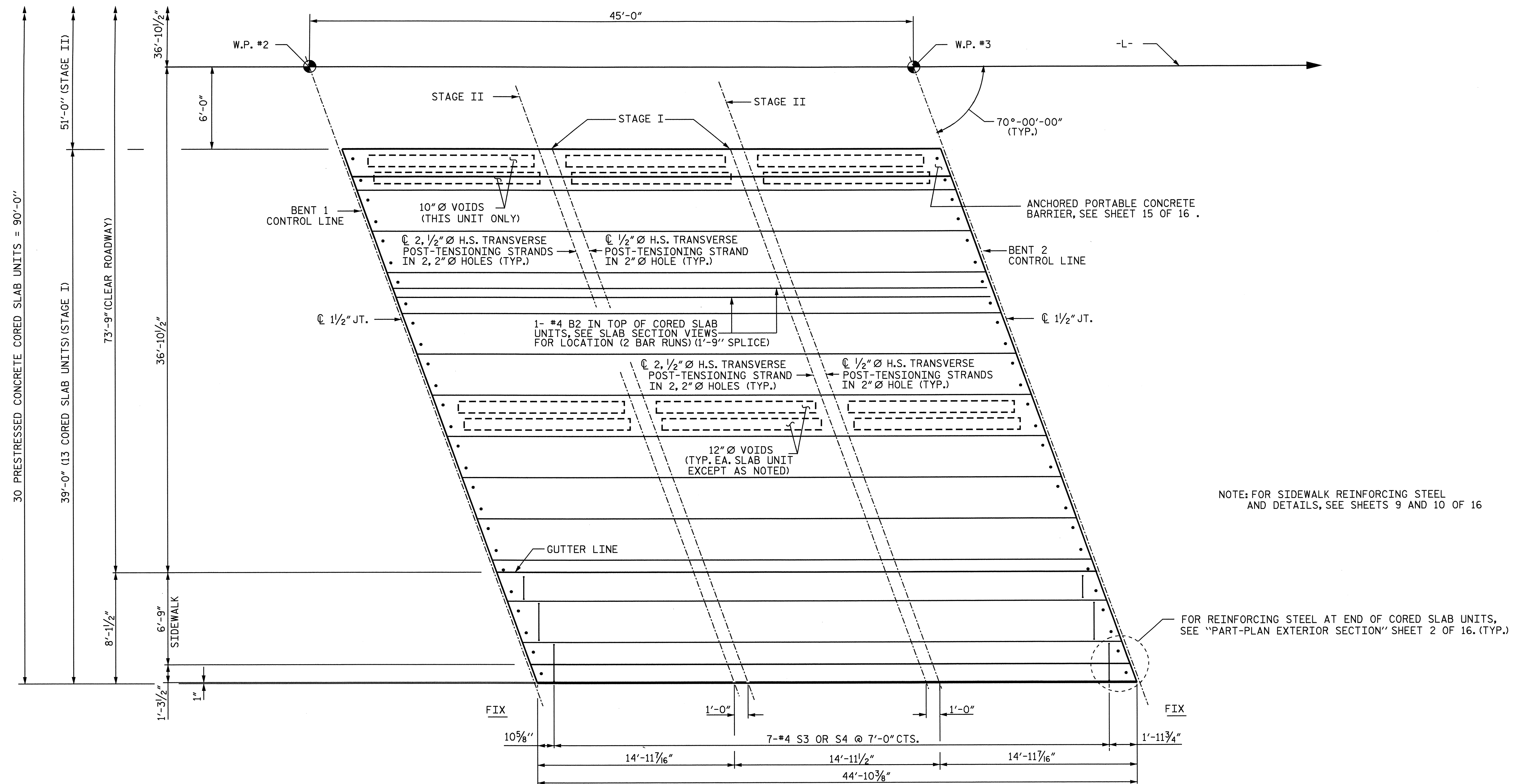
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 PLAN OF SPAN A  
 (STAGE-I)



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			36

ASSEMBLED BY : N. Q. TRAN DATE : 1-11-05  
 CHECKED BY : T. A. HARRIS DATE : 11-14-06



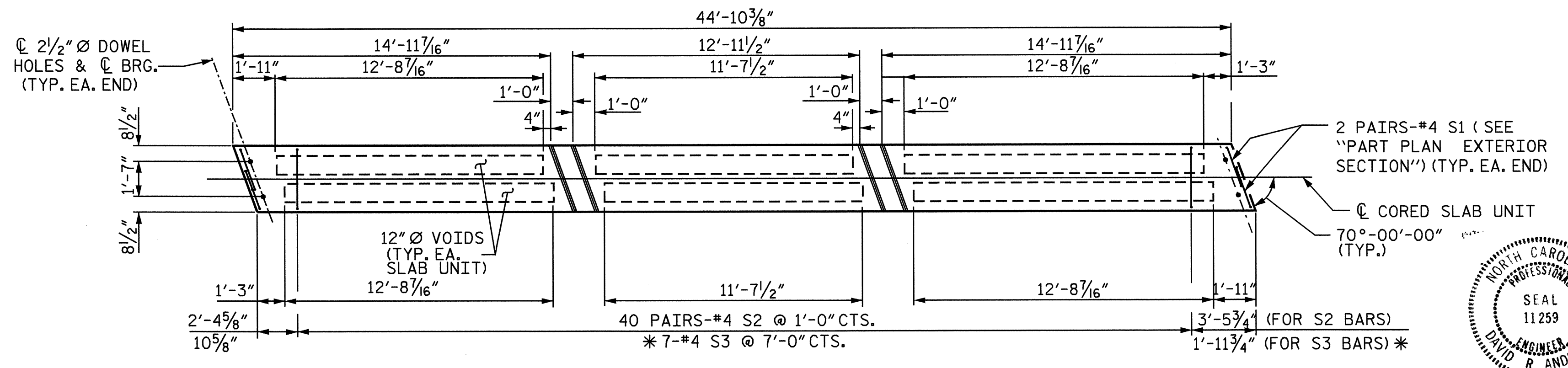


NOTE: FOR SIDEWALK REINFORCING STEEL AND DETAILS, SEE SHEETS 9 AND 10 OF 16

FOR REINFORCING STEEL AT END OF CORED SLAB UNITS, SEE "PART-PLAN EXTERIOR SECTION" SHEET 2 OF 16. (TYP.)

SPAN B

NOTE: PLAN FOR INTERIOR UNITS (NOT UNDER SIDEWALK) IDENTICAL EXCEPT OMIT S3 BARS



PLAN OF EXTERIOR & FIRST INTERIOR SLAB

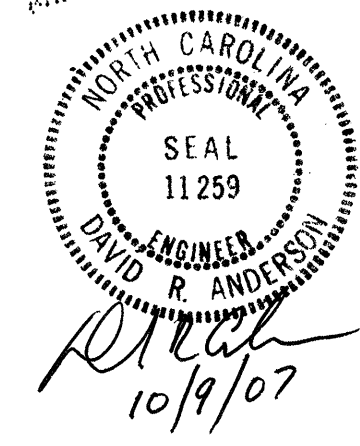
\* IN THE SECOND INTERIOR SLAB, USE S4 BARS (INSTEAD OF S3 BARS)

PROJECT NO. U-2510A  
 MECKLENBURG COUNTY  
 STATION: 124+82.50 -L-

SHEET 4 OF 16

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

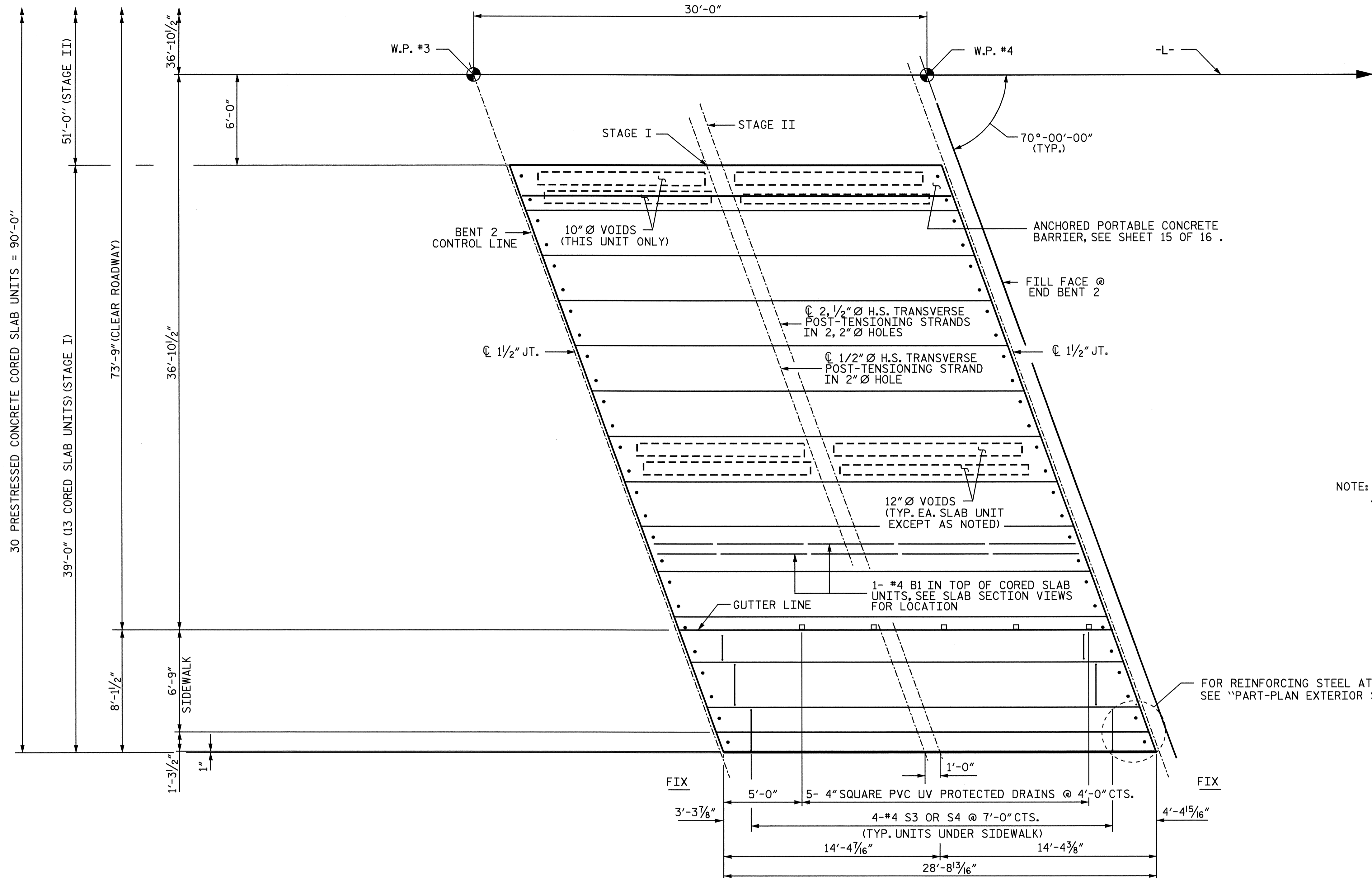
SUPERSTRUCTURE  
 PLAN OF SPAN B  
 (STAGE-I)



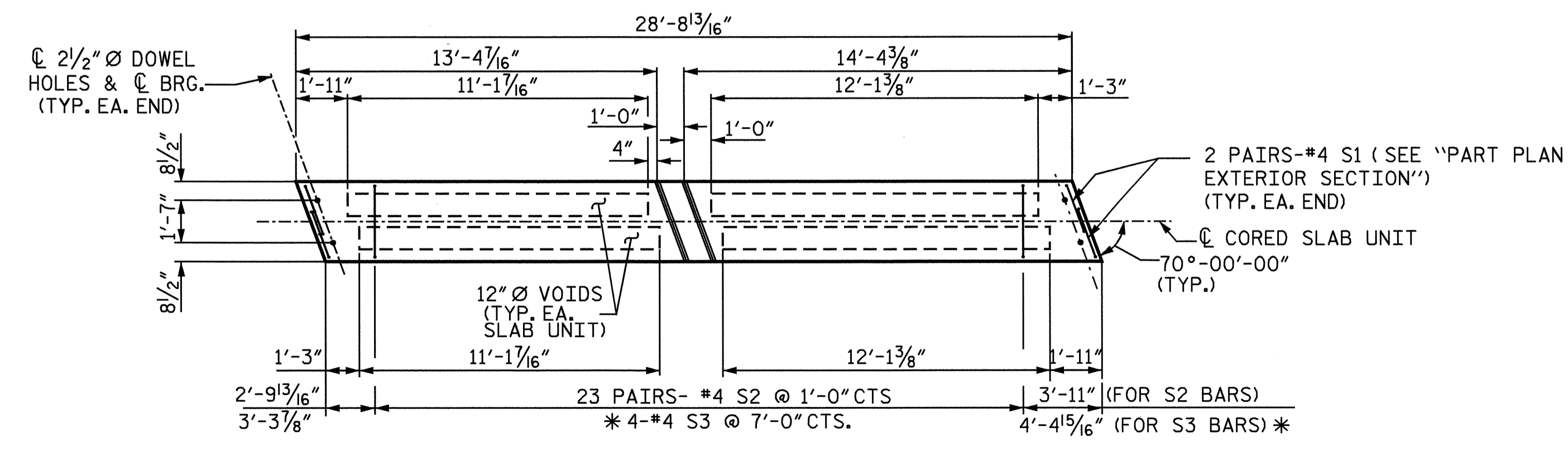
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			36

ASSEMBLED BY : N. Q. TRAN DATE : 1-11-05  
 CHECKED BY : T. A. HARRIS DATE : 11-14-06





SPAN C



PLAN OF EXTERIOR & FIRST INTERIOR SLAB

\* IN THE SECOND INTERIOR SLAB, USE S4 BARS (INSTEAD OF S3 BARS)

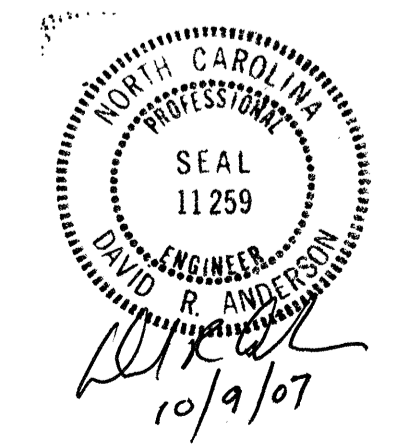
NOTE: PLAN FOR INTERIOR UNITS (NOT UNDER SIDEWALK) IDENTICAL EXCEPT OMIT S3 BARS

PROJECT NO. U-2510A  
 MECKLENBURG COUNTY  
 STATION: 124+82.50 -L-

SHEET 5 OF 16

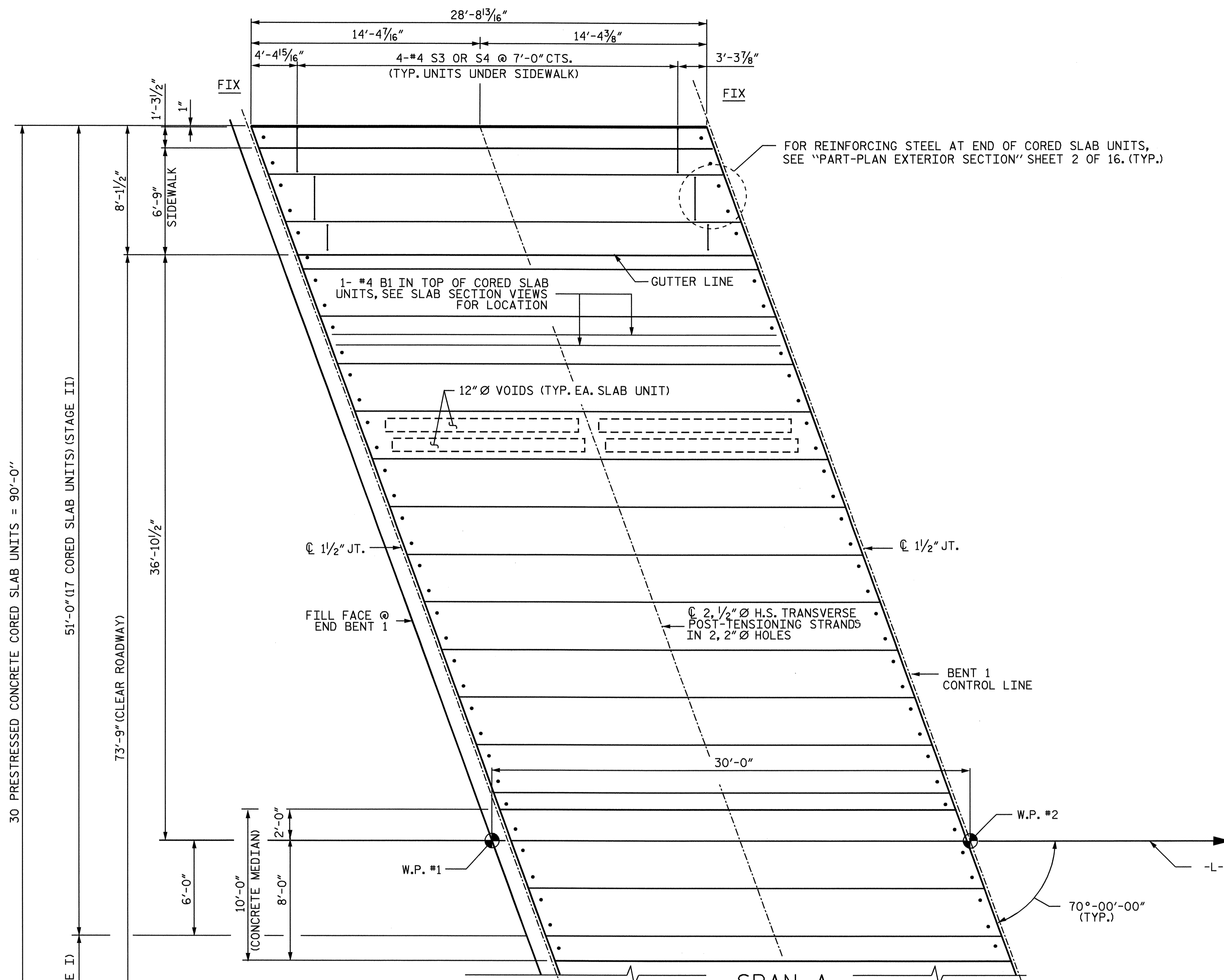
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUPERSTRUCTURE  
 PLAN OF SPAN C  
 (STAGE-I)

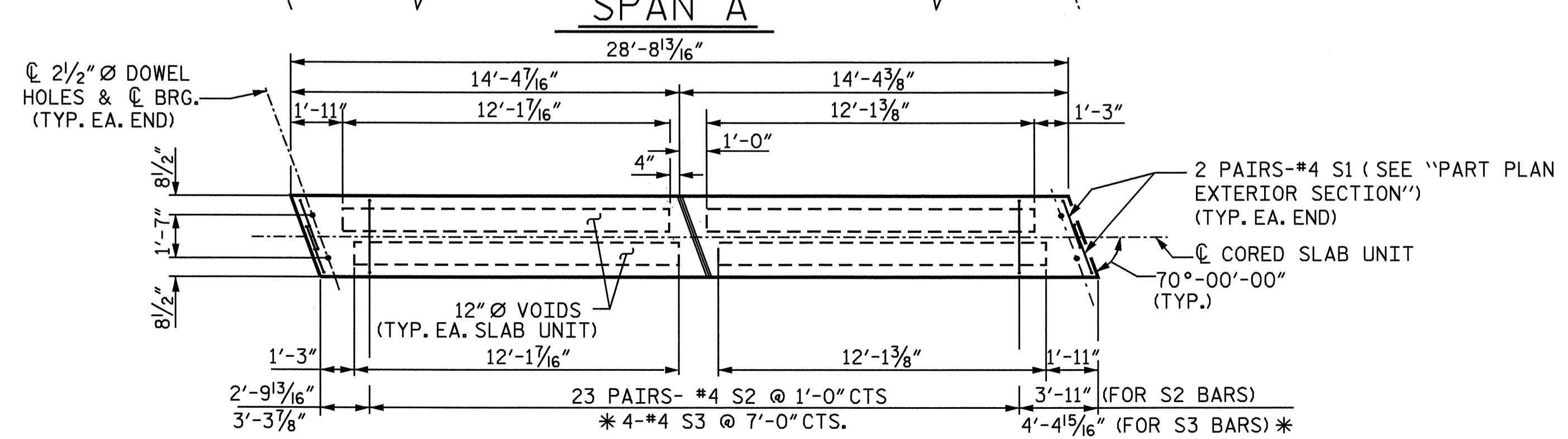


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			36

ASSEMBLED BY : N. Q. TRAN DATE : 1-11-05  
 CHECKED BY : T. A. HARRIS DATE : 11-14-06



NOTE: FOR SIDEWALK AND CONCRETE MEDIAN REINFORCING STEEL AND DETAILS, SEE SHEETS 9 AND 10 OF 16



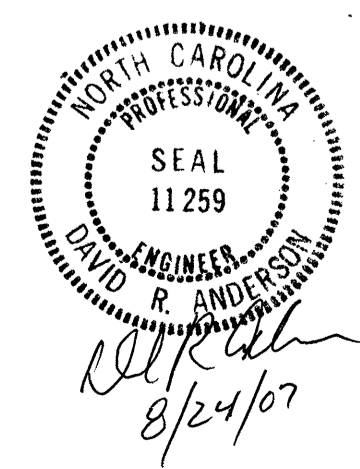
NOTE: PLAN FOR INTERIOR UNITS (NOT UNDER SIDEWALK) IDENTICAL EXCEPT OMIT S3 BARS

PLAN OF EXTERIOR & FIRST INTERIOR SLAB

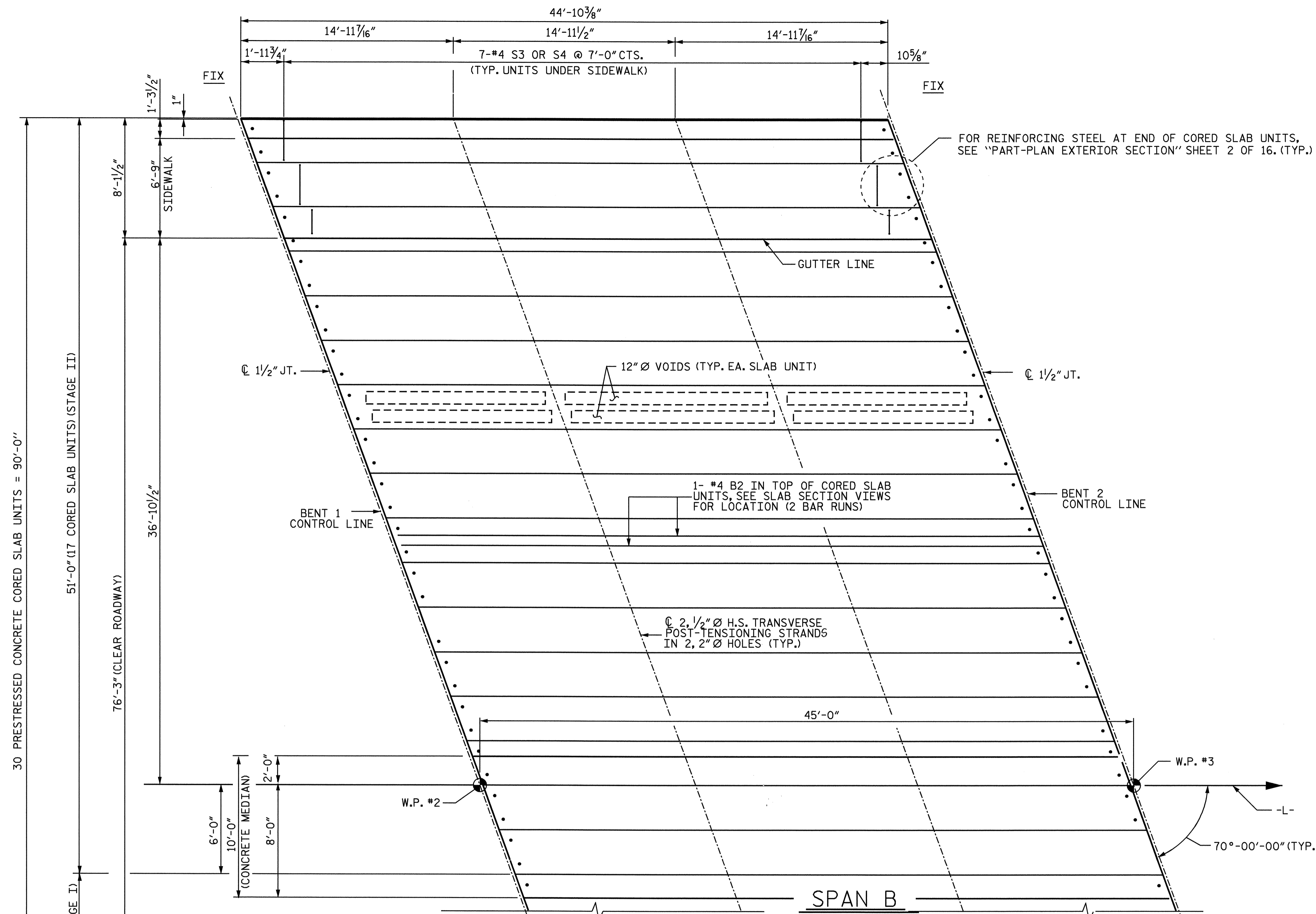
\* IN THE SECOND INTERIOR SLAB, USE S4 BARS (INSTEAD OF S3 BARS)

PROJECT NO. U-2510A  
 MECKLENBURG COUNTY  
 STATION: 124+82.50 -L-  
 SHEET 6 OF 16

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S-10
SUPERSTRUCTURE PLAN OF SPAN A (STAGE-II)						TOTAL SHEETS 36
REVISIONS						
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			



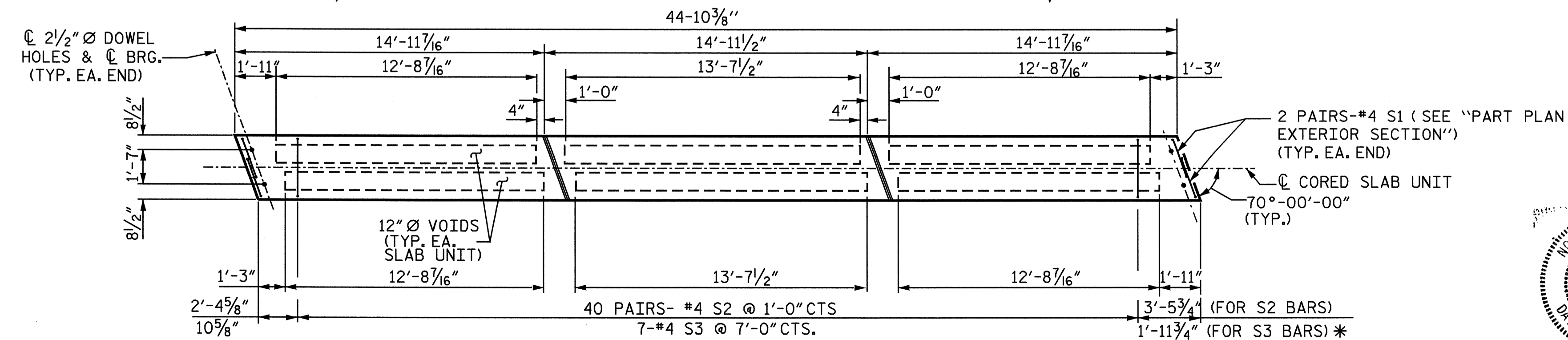
ASSEMBLED BY : N. Q. TRAN DATE : 1-11-05  
 CHECKED BY : T. A. HARRIS DATE : 11-14-06



FOR REINFORCING STEEL AT END OF CORED SLAB UNITS, SEE "PART-PLAN EXTERIOR SECTION" SHEET 2 OF 16. (TYP.)

NOTE: FOR SIDEWALK AND CONCRETE MEDIAN REINFORCING STEEL AND DETAILS, SEE SHEETS 9 AND 10 OF 16

NOTE: PLAN FOR INTERIOR UNITS (NOT UNDER SIDEWALK) IDENTICAL EXCEPT OMIT S3 BARS



**PLAN OF EXTERIOR & FIRST INTERIOR SLAB**

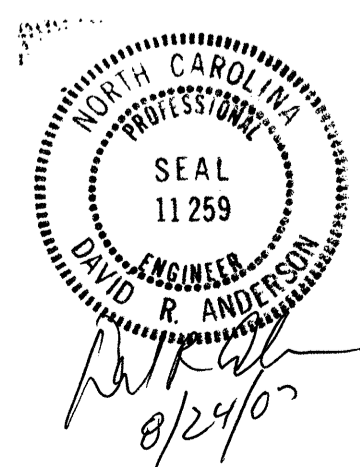
\* IN THE SECOND INTERIOR SLAB, USE S4 BARS (INSTEAD OF S3 BARS)

PROJECT NO. U-2510A  
MECKLENBURG COUNTY  
 STATION: 124+82.50 -L-

SHEET 7 OF 16

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

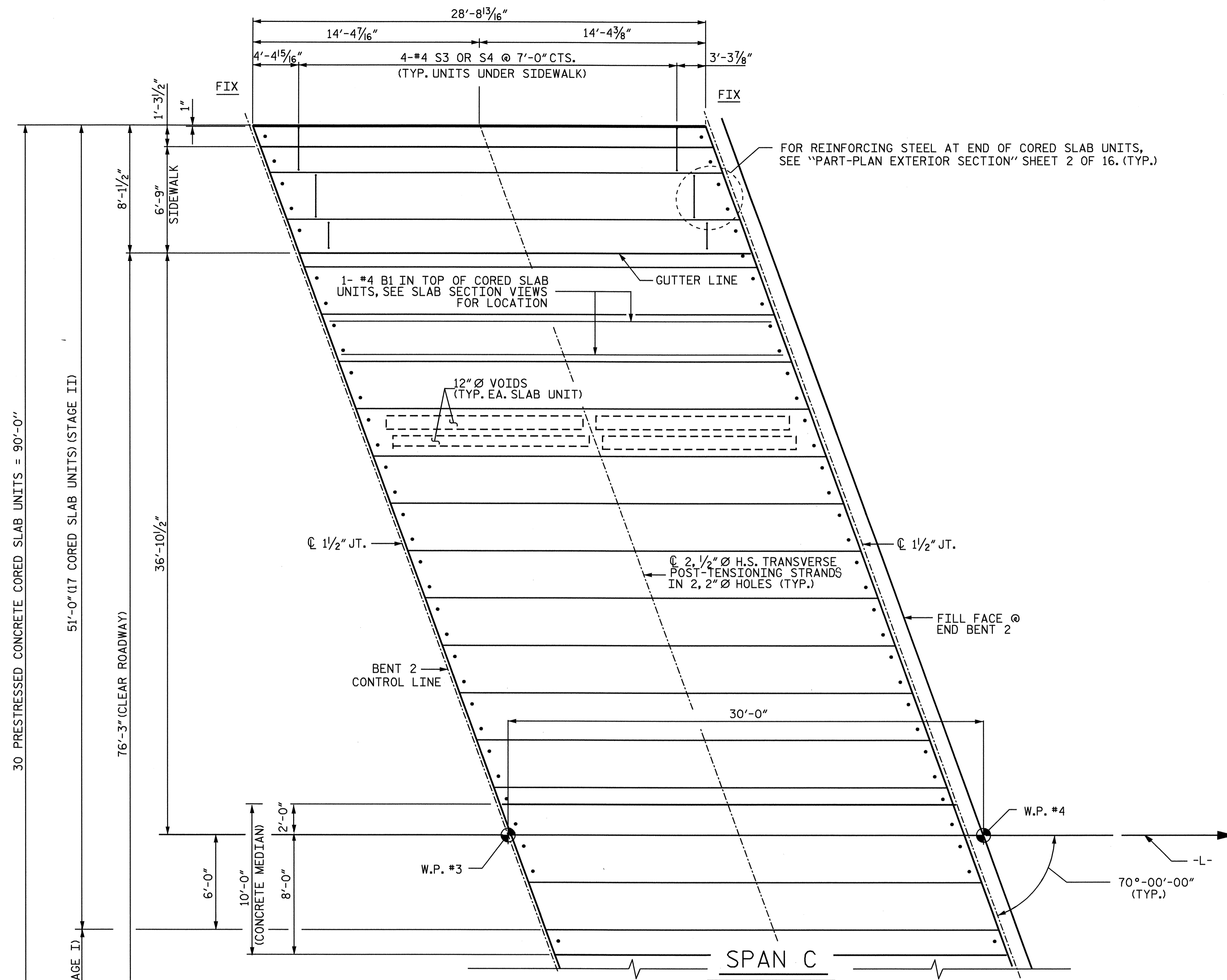
SUPERSTRUCTURE  
 PLAN OF SPAN B  
 (STAGE-II)



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			36

ASSEMBLED BY : N. Q. TRAN DATE : 1-11-05  
 CHECKED BY : T. A. HARRIS DATE : 11-14-06

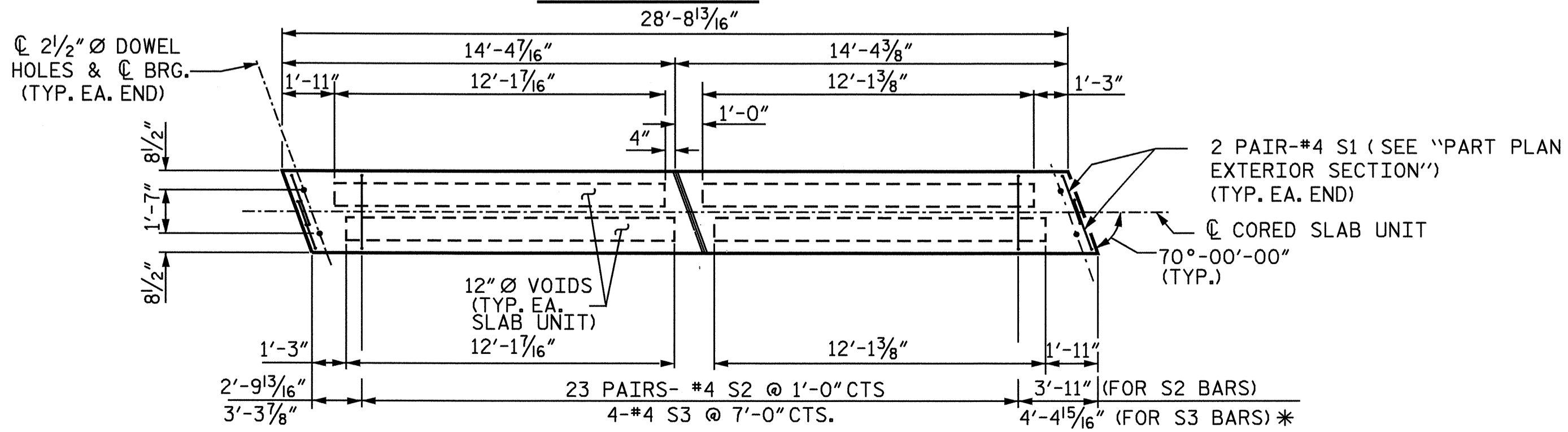




FOR REINFORCING STEEL AT END OF CORED SLAB UNITS, SEE "PART-PLAN EXTERIOR SECTION" SHEET 2 OF 16. (TYP.)

NOTE: FOR SIDEWALK AND CONCRETE MEDIAN REINFORCING STEEL AND DETAILS, SEE SHEETS 9 AND 10 OF 16

NOTE: PLAN FOR INTERIOR UNITS (NOT UNDER SIDEWALK) IDENTICAL EXCEPT OMIT S3 BARS



**PLAN OF EXTERIOR & FIRST INTERIOR SLAB**

\* IN THE SECOND INTERIOR SLAB, USE S4 BARS (INSTEAD OF S3 BARS)

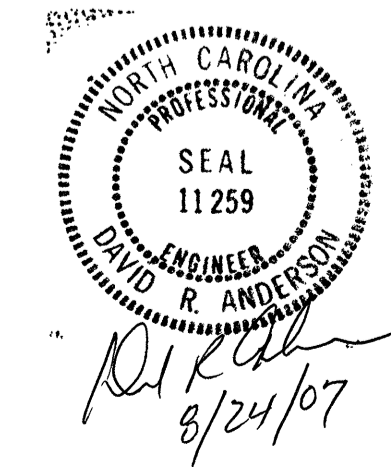
ASSEMBLED BY : N. Q. TRAN DATE : 1-11-05  
 CHECKED BY : T. A. HARRIS DATE : 11-14-06

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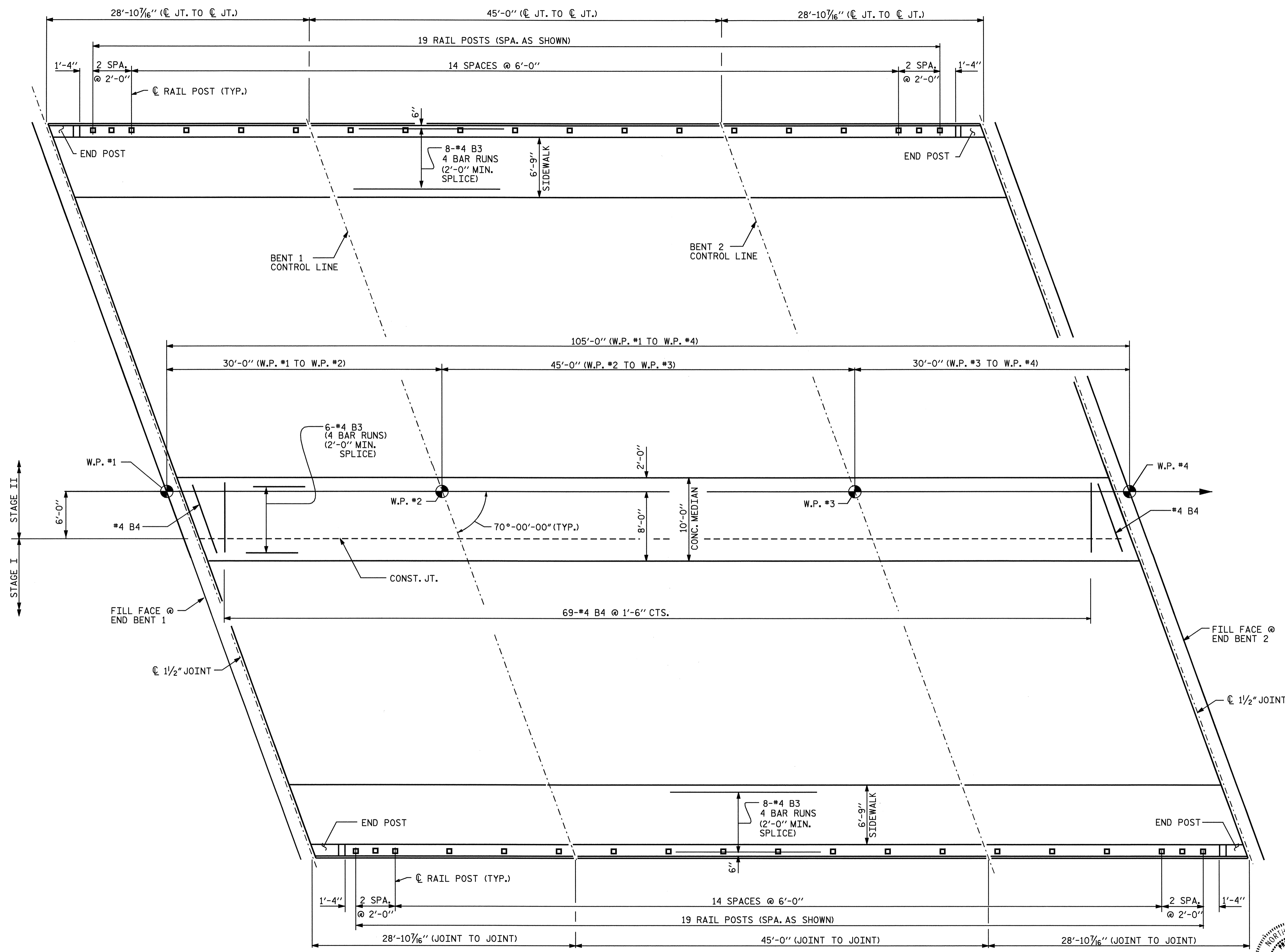
PROJECT No. U-2510A  
 MECKLENBURG COUNTY  
 STATION: 124+82.50 -L-

SHEET 8 OF 16

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 PLAN OF SPAN C  
 (STAGE-II)



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			36



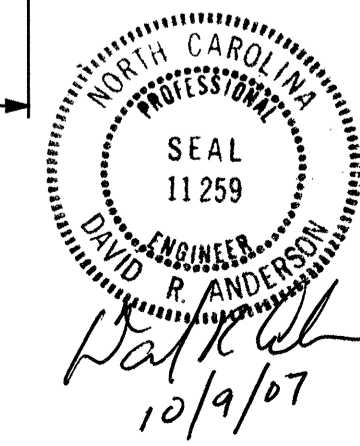
PLAN OF RAIL POST SPACINGS AND CONCRETE MEDIAN

PROJECT NO. U-2510A  
MECKLENBURG COUNTY  
 STATION: 124+82.50 -L-  
 SHEET 9 OF 16

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

RAIL POST SPACINGS  
 AND  
 CONCRETE MEDIAN

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			36



ASSEMBLED BY : N. Q. TRAN DATE : 2-14-05  
 CHECKED BY : T. A. HARRIS DATE : 11-14-06

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**NOTES**

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

**ALUMINUM RAILS**

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

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

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

**GALVANIZED STEEL RAILS**

MATERIAL AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:

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

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

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

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

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

**GENERAL NOTES**

RAILING SHALL BE CONTINUOUS FROM END POST TO END POST OF BRIDGE. EACH JOINT IN RAIL LENGTH SHALL BE SPLICED AS DETAILED. PANEL LENGTHS OF RAIL SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS. PLACE ONE JOINT SPLICE JUST BEYOND THE 3RD RAIL POST FROM EACH END, TYPICALLY 14' FROM THE END. PLACE OTHER JOINTS AS NEEDED.

FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE SHEET 13 OF 16 .

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

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

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

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

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

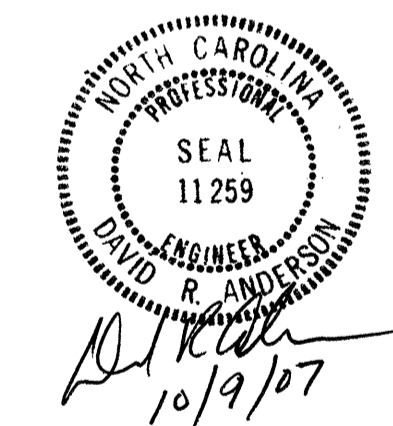
TO INSURE FUTURE IDENTIFICATION OF THE FABRICATOR, A PERMANENT IDENTIFYING MARK SHALL BE PLACED ON EACH POST. THE METHOD OF MARKING AND LOCATION SHALL BE SUCH THAT IT DOES NOT DETRACT FROM THE APPEARANCE OF THE POST, BUT REMAIN VISIBLE AFTER RAIL PLACEMENT.

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

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

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

PAY LENGTH = 189.39 LIN.FT.

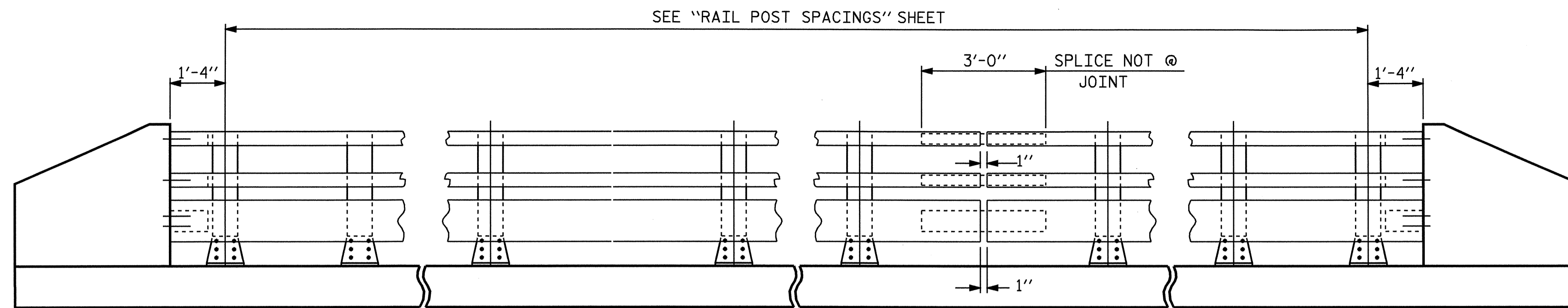


PROJECT NO. U-2510A  
MECKLENBURG COUNTY  
 STATION: 124+82.50 -L-

SHEET 11 OF 16

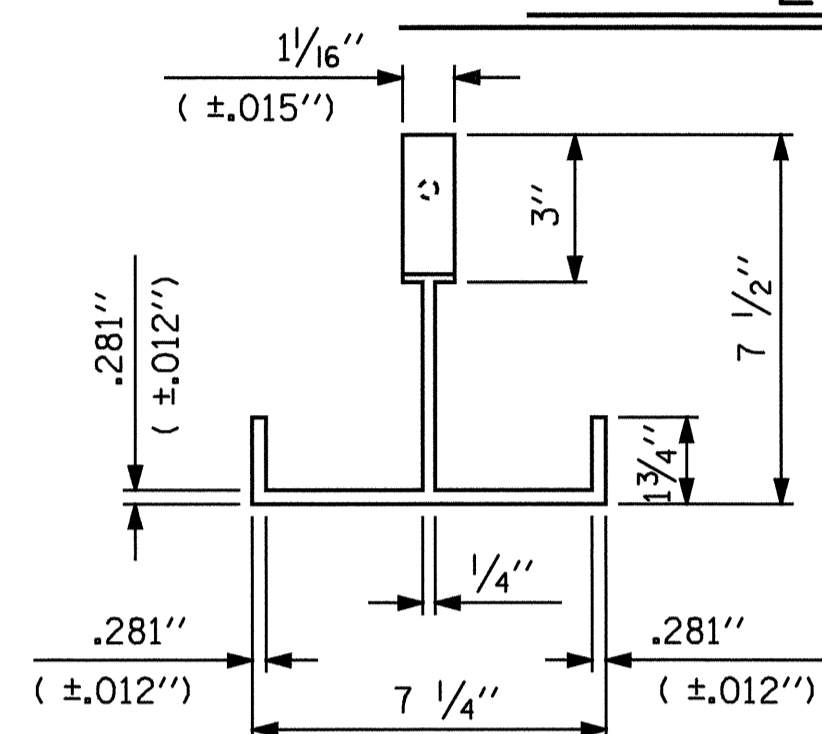
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
**3 BAR METAL RAIL**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			36

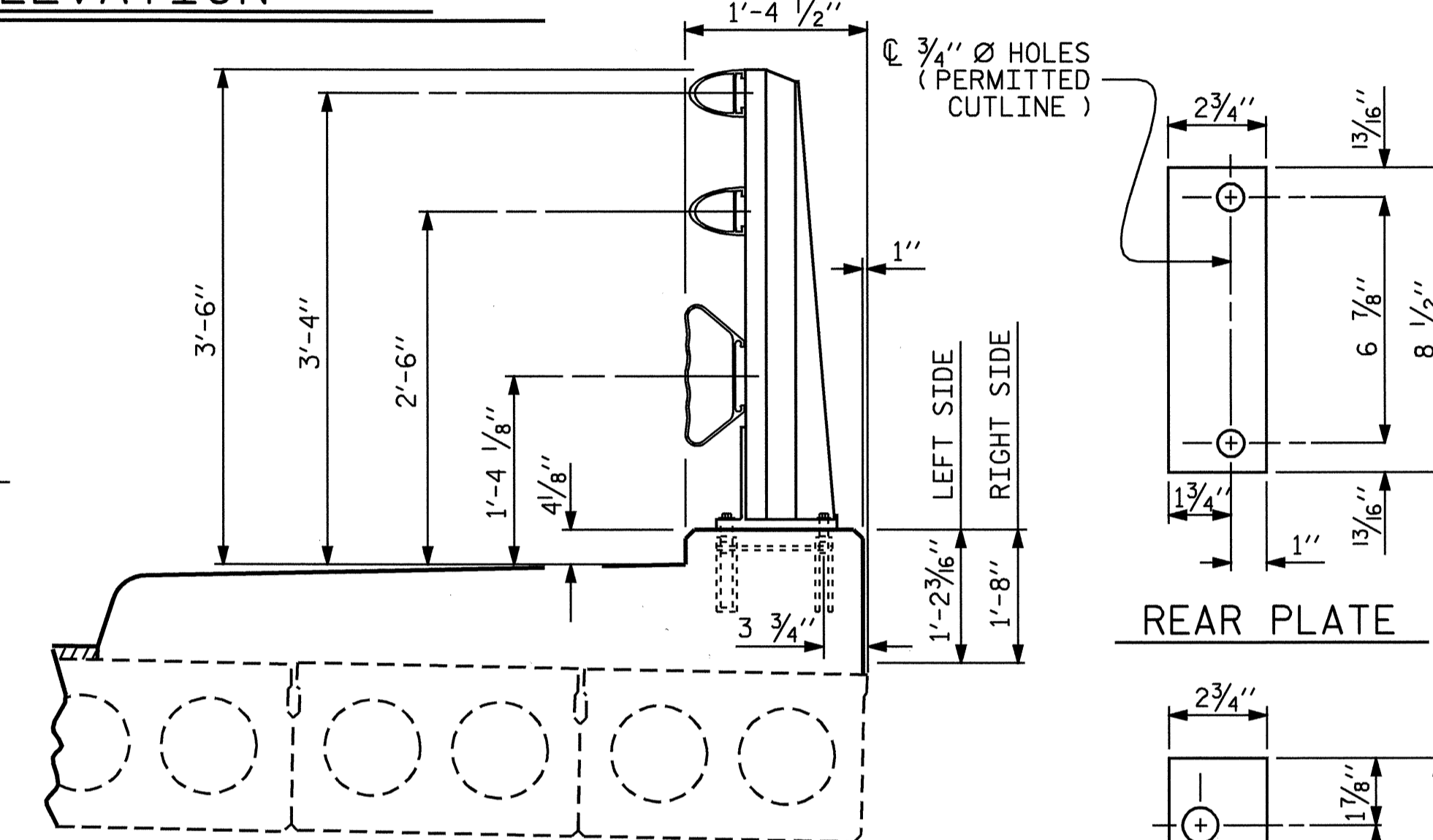


**ELEVATION**

NOTE:  
 FOR ATTACHMENT OF METAL RAIL TO END POST, SEE SHEET 13 OF 16 .



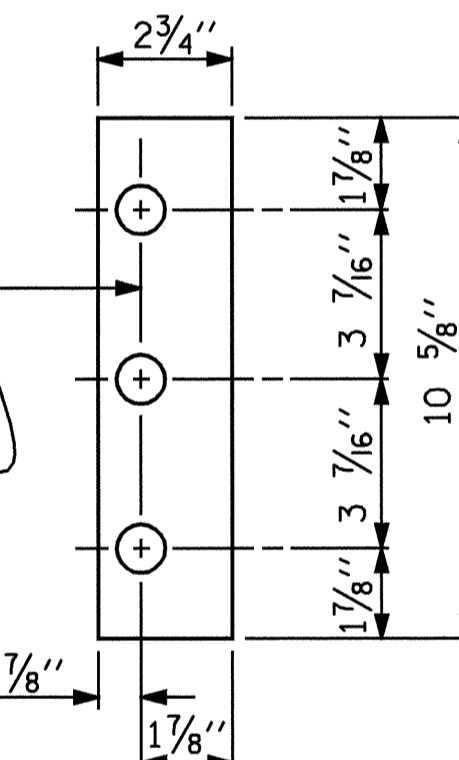
**PLAN**



**SECTION THRU RAIL**

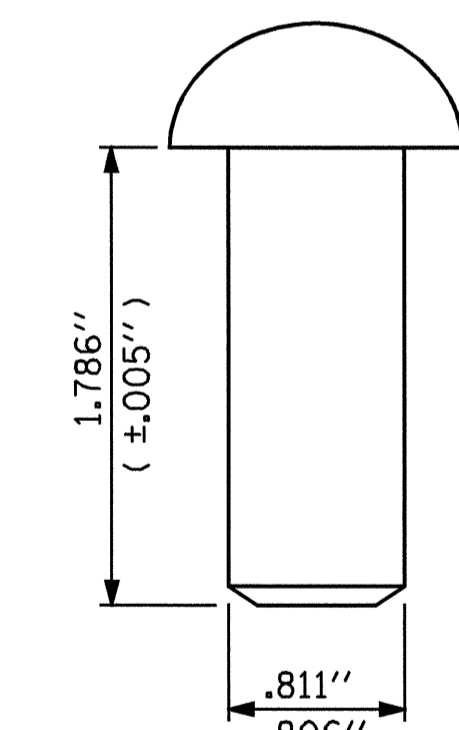
FOR ANCHOR ASSEMBLY, SEE SHEET 12 OF 16 .

**REAR PLATE**

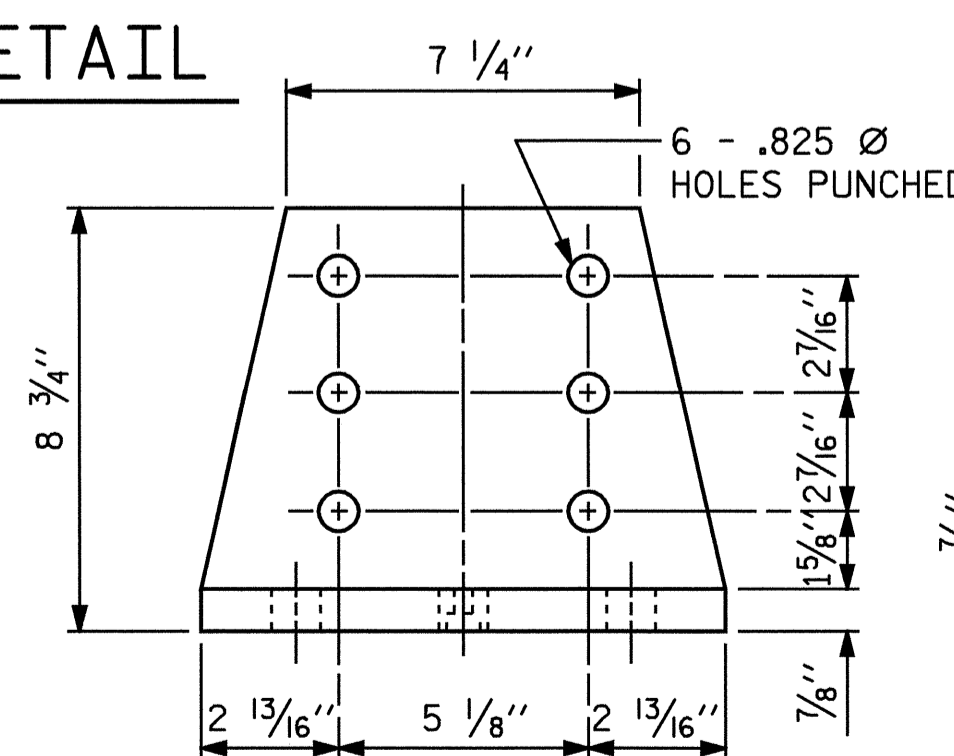


**FRONT PLATE SHIM DETAILS**

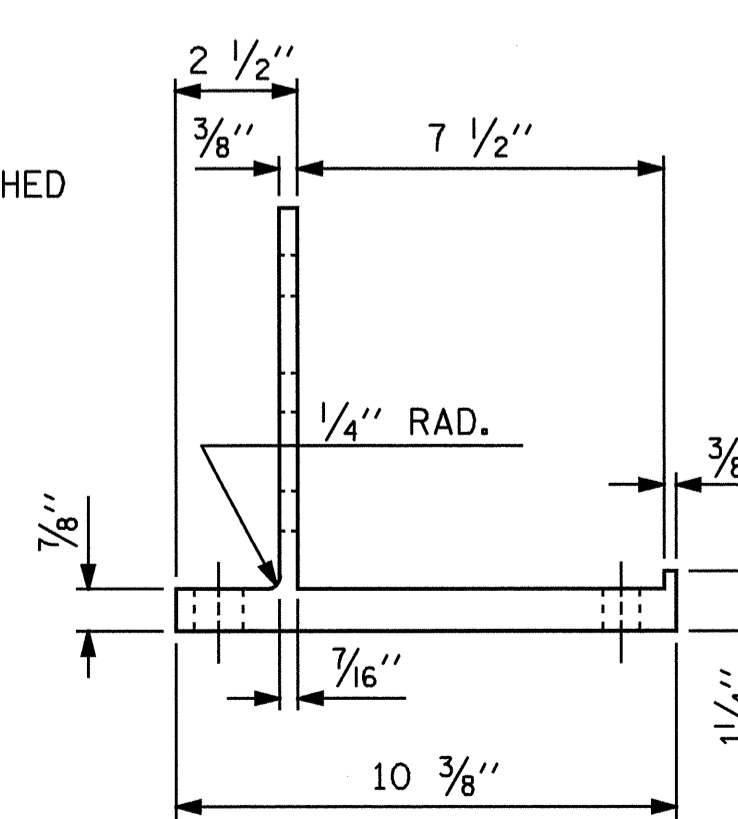
NOTE :  
 SHIMS MAY BE CUT ALONG PERMITTED CUTLINE OR SLOTTED TO EDGE OF PLATE TO FACILITATE PLACEMENT.



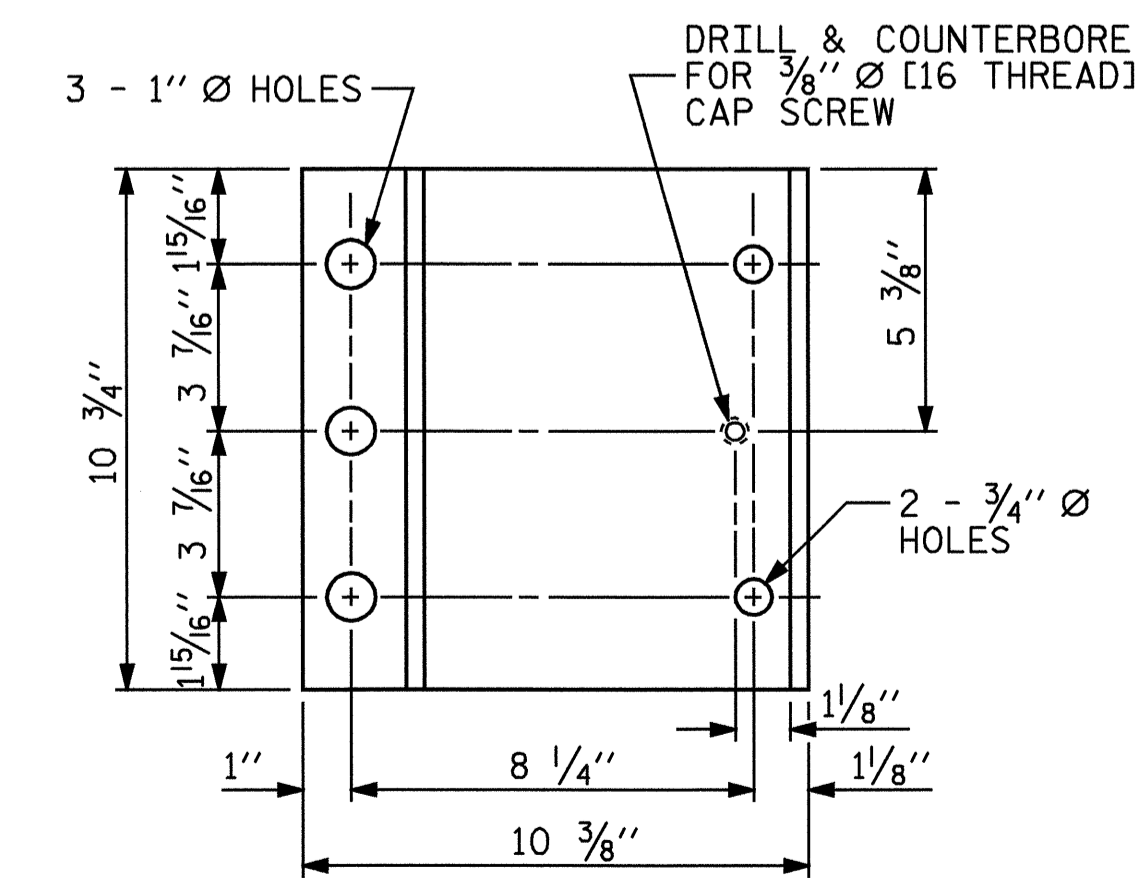
**RIVET DETAIL**



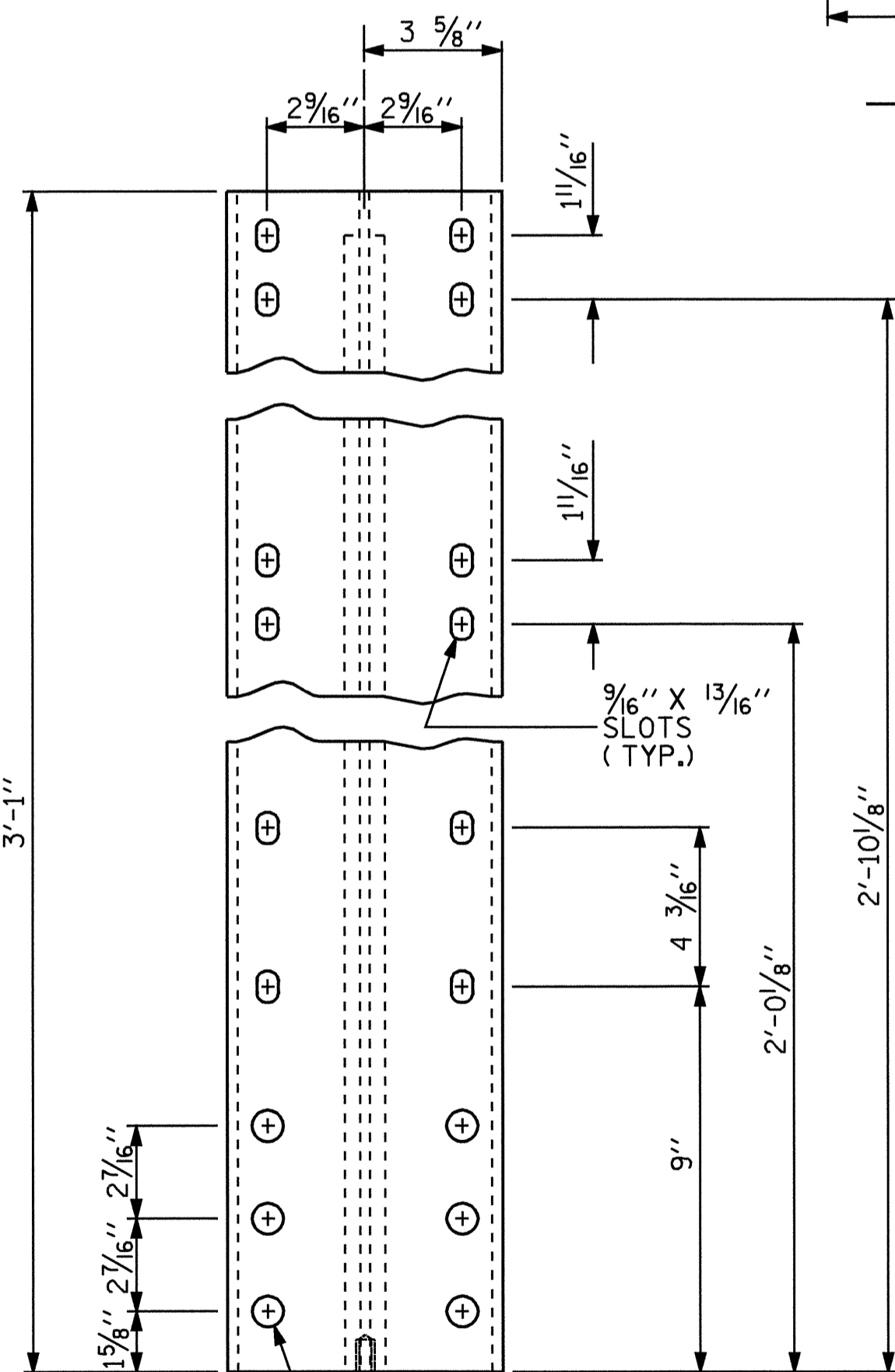
**FRONT ELEVATION**



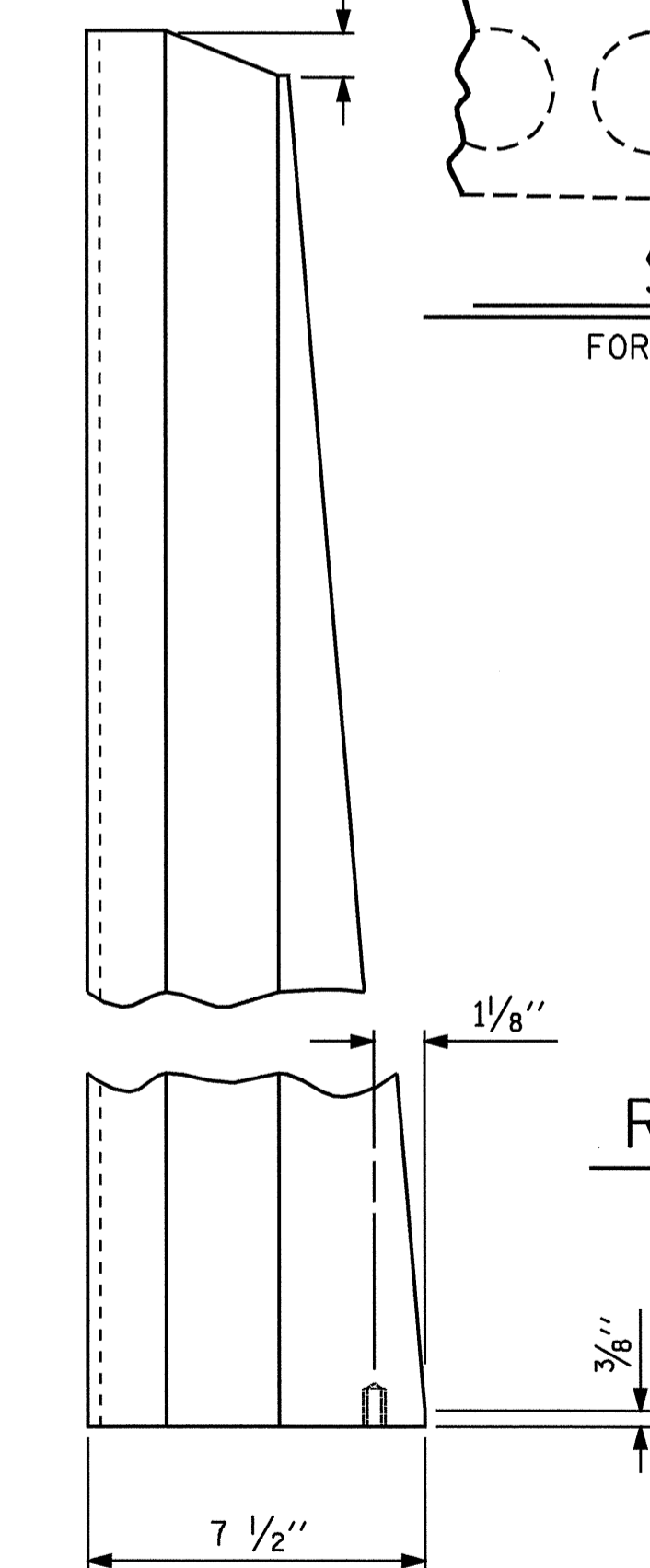
**SIDE ELEVATION**



**PLAN**



**FRONT ELEVATION**

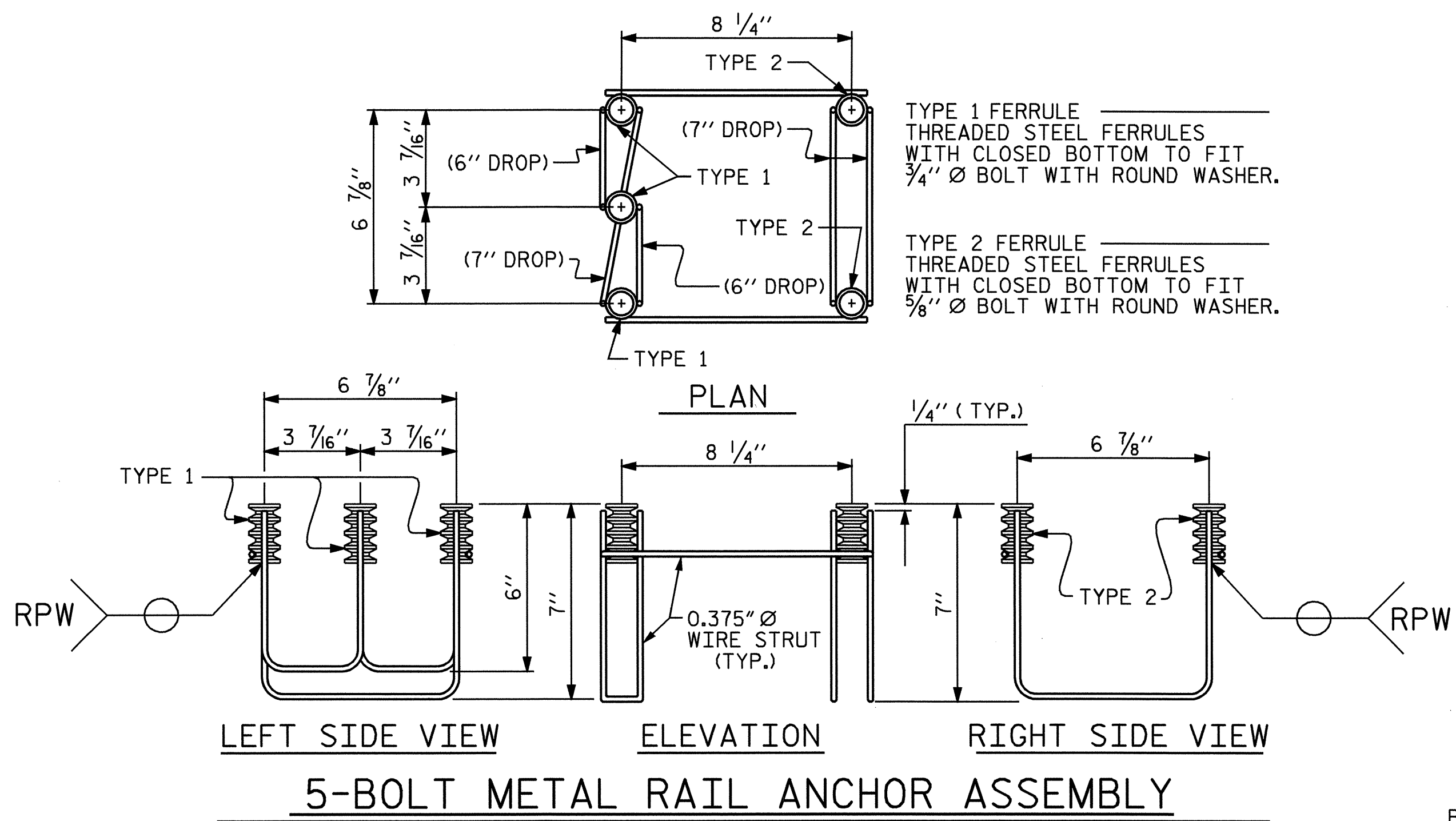


**SIDE ELEVATION**

**DETAILS OF POST**

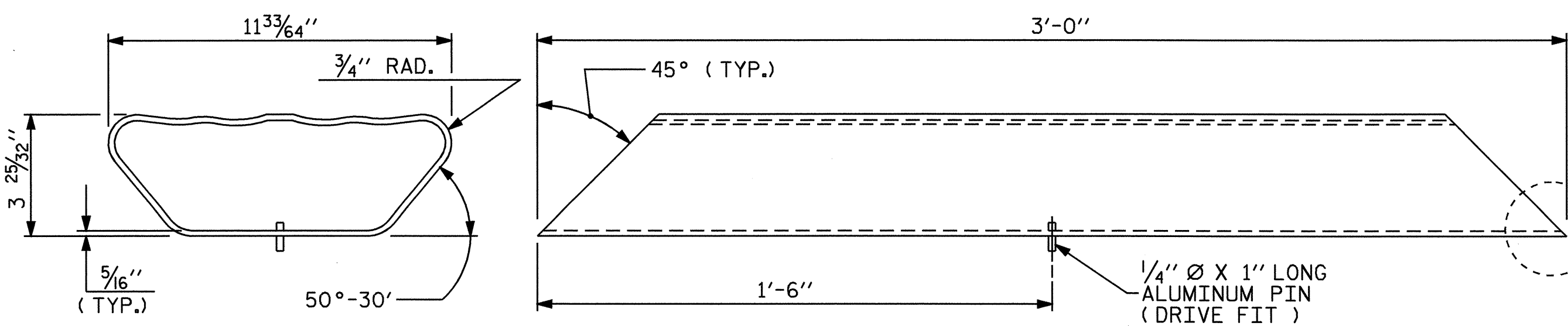
6 - .825" Ø HOLES PUNCHED FOR RIVETS  
 5/16" Ø DRILL 1" DEEP & 3/8" Ø [16 THREAD] TAP 7/8" DEEP FOR 3/8" X 1 1/2" STAINLESS STEEL CAP SCREW

ASSEMBLED BY : N. Q. TRAN	DATE : 2-14-05
CHECKED BY : T. A. HARRIS	DATE : 11-14-06
DRAWN BY : JMB 1/88	REV. 10/17/00 RWW/LJS
CHECKED BY : GGH 1/88	REV. 5/7/03 RWW/JTE
	REV. 5/1/06 TLA/GM

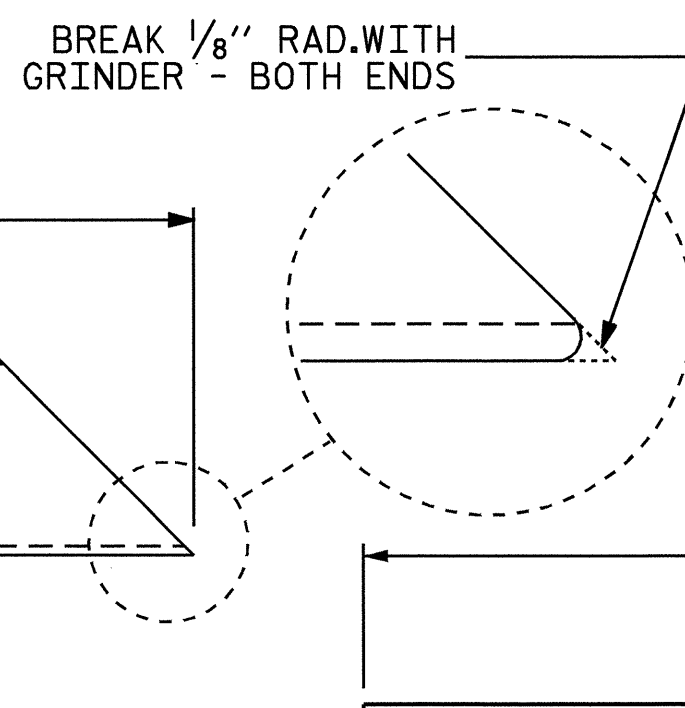


**5-BOLT METAL RAIL ANCHOR ASSEMBLY**

( 38 ASSEMBLIES REQUIRED )

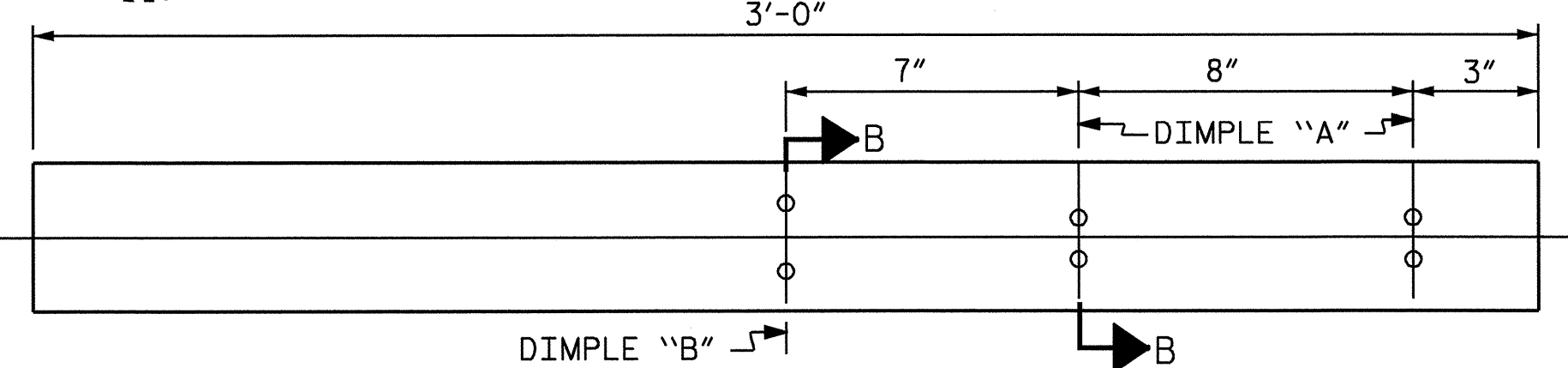


**BOTTOM RAIL EXPANSION BAR**



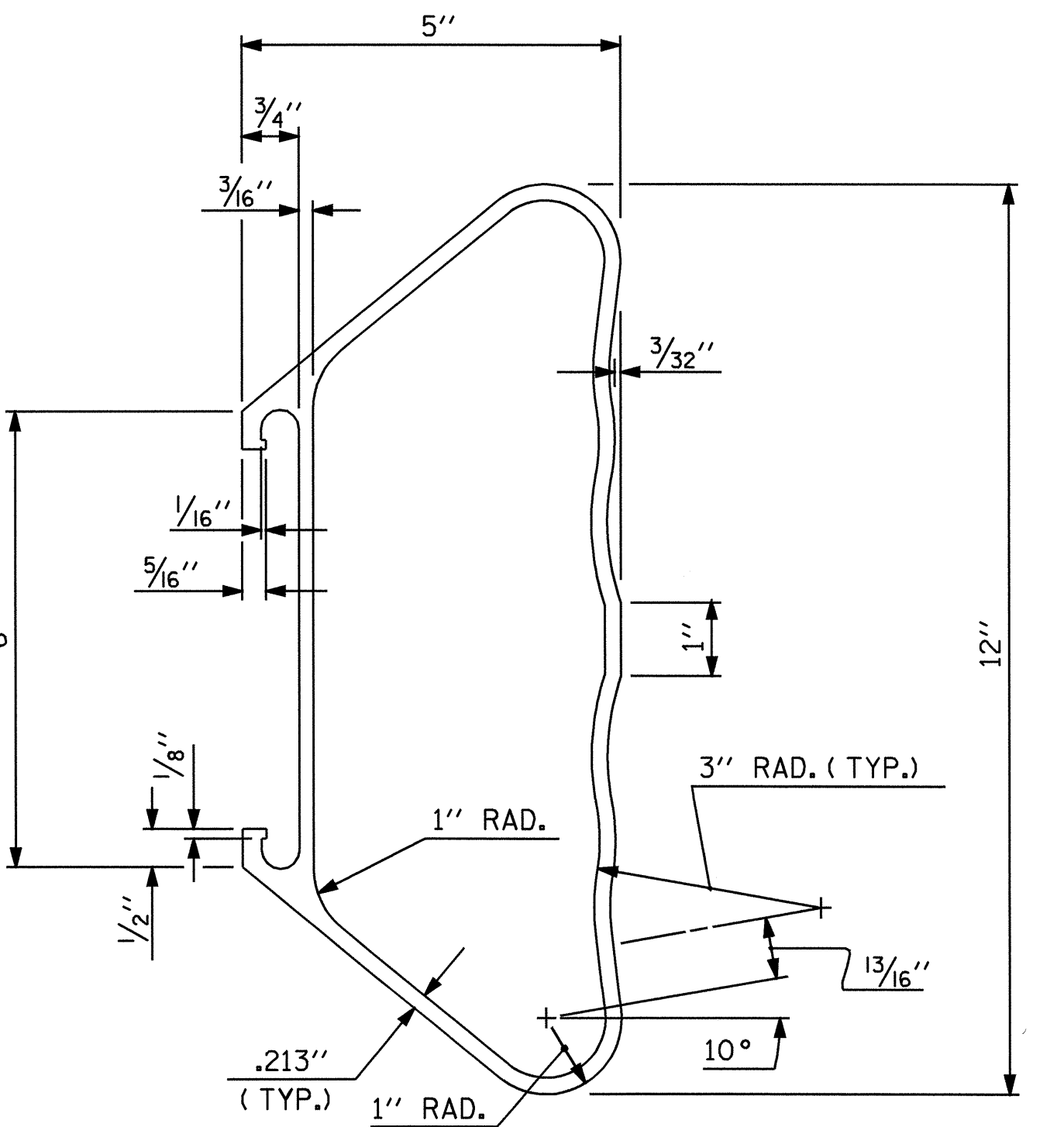
**SECTION B-B**

**BAR SECTION**



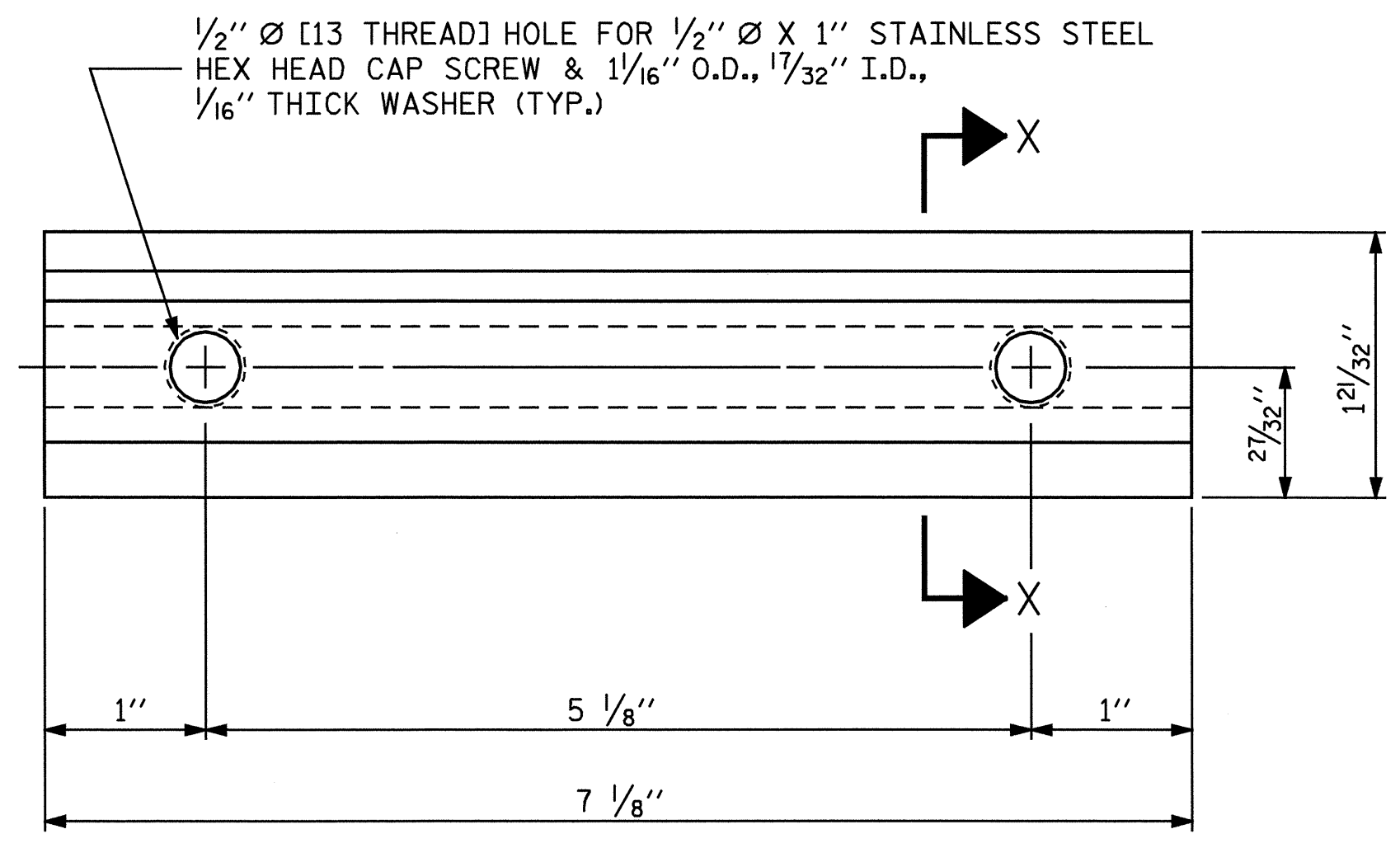
**BACK ELEVATION**

**TOP & MIDDLE RAIL EXPANSION BAR**

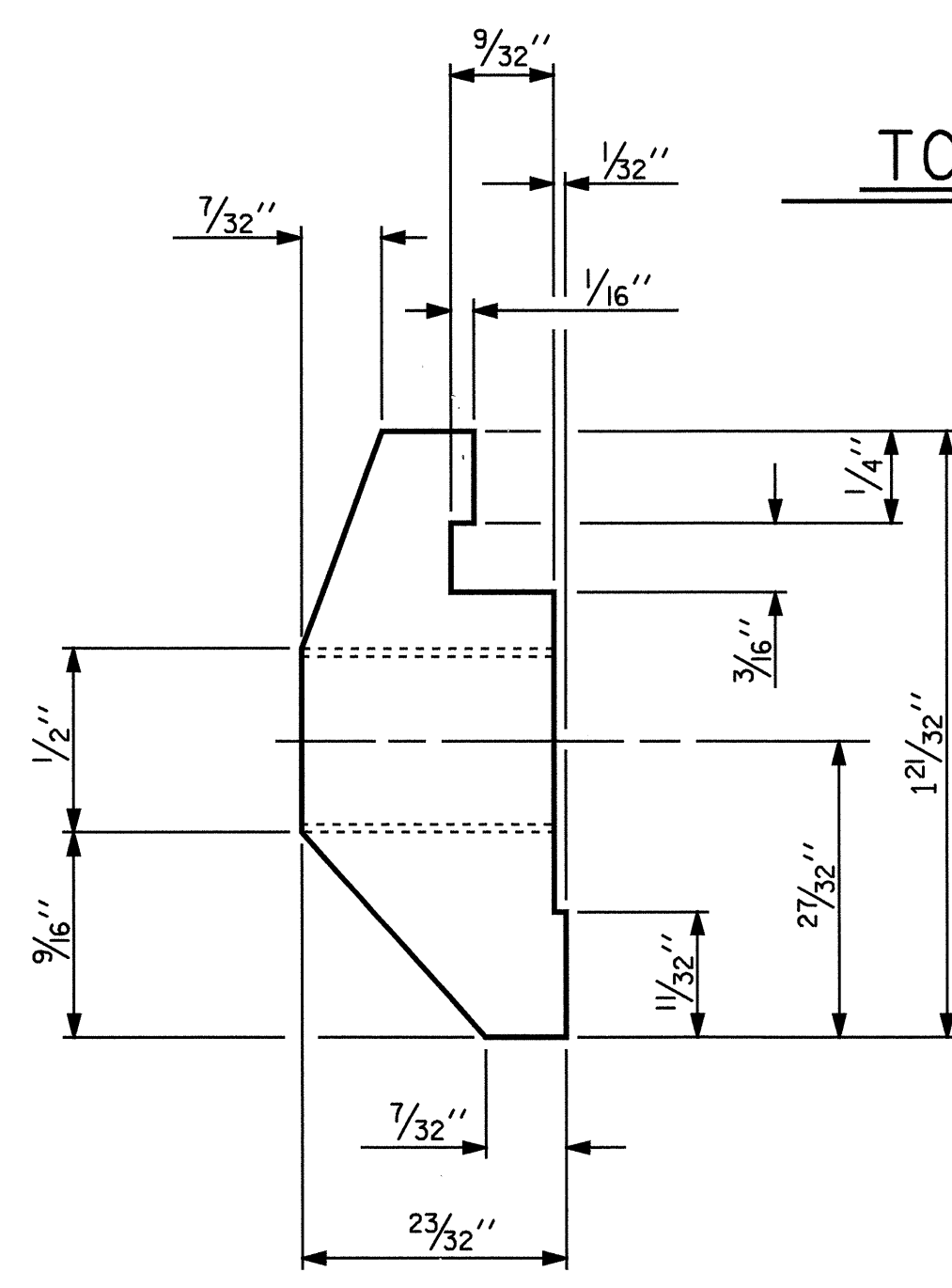


**TOP & MIDDLE RAIL SECTION**

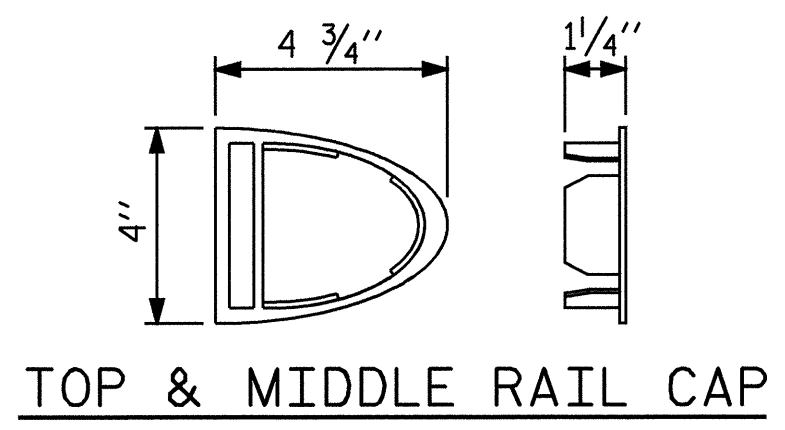
**BOTTOM RAIL SECTION**



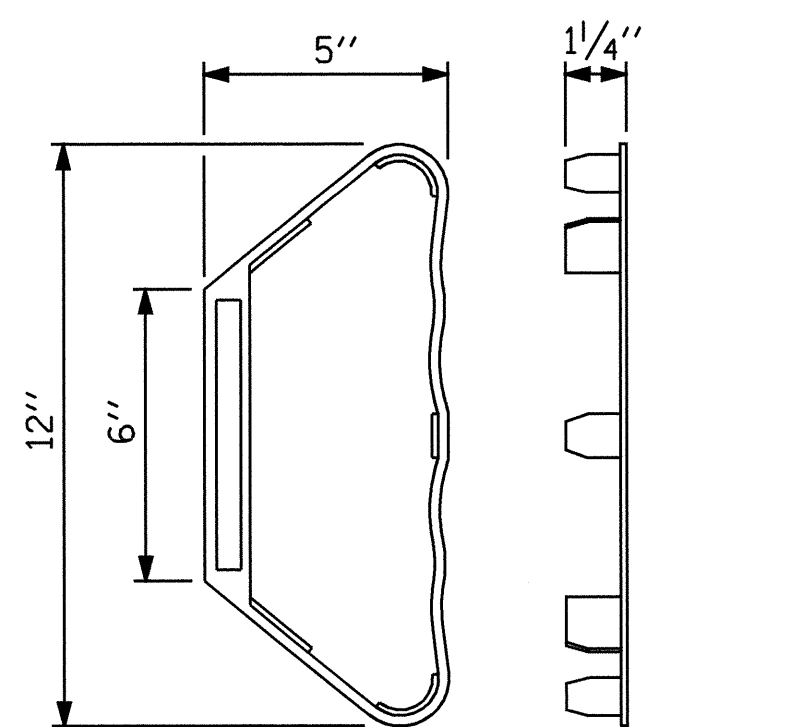
**CLAMP BAR DETAIL**  
( 6 REQUIRED PER POST )



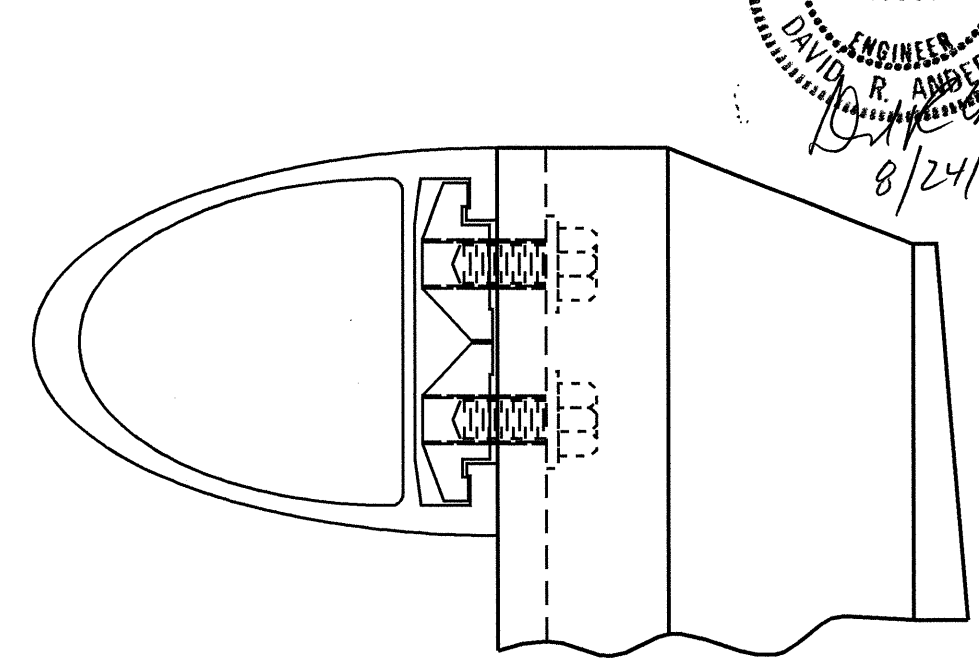
**SECTION X-X**



**TOP & MIDDLE RAIL CAP**



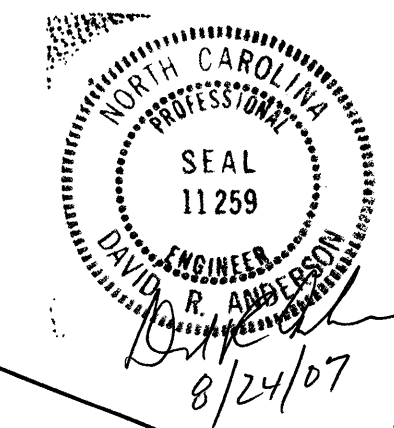
**BOTTOM RAIL CAP**



**CLAMP ASSEMBLY**

- NOTES**  
STRUCTURAL CONCRETE ANCHOR ASSEMBLY
- THE STRUCTURAL CONCRETE ANCHOR ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:
- FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2" FOR 3/4" FERRULES AND 1 1/4" FOR 5/8" FERRULES.
  - 3 - 3/4" Ø X 2 1/2" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø X 2 1/2" GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.
  - 2 - 5/8" Ø X 2 1/4" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 5/8" Ø X 2 1/4" GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.
  - WIRE STRUT SHOWN IN THE CONCRETE ANCHOR ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 7/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.
  - THE METAL RAIL ANCHOR ASSEMBLIES TO BE HOT DIPPED GALVANIZED TO CONFORM TO REQUIREMENTS OF AASHTO M111.
  - THE COST OF THE METAL RAIL ANCHOR ASSEMBLY WITH BOLTS AND WASHERS COMPLETE IN PLACE SHALL BE INCLUDED IN THE PRICE BID FOR LINEAR FEET OF METAL RAIL.
  - BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.

ASSEMBLED BY : N. Q. TRAN	DATE : 2-14-05
CHECKED BY : T. A. HARRIS	DATE : 11-14-06
DRAWN BY : JMB 1/88	REV. 7/10/01 RWW/LES
CHECKED BY : GGH 1/88	REV. 5/7/03 RWW/JTE
	REV. 5/1/06 TLA/GM



PROJECT NO. U-2510A  
 MECKLENBURG COUNTY  
 STATION: 124+82.50 -L-  
 SHEET 12 OF 16

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			36

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



NOTES

METAL RAIL TO END POST CONNECTION

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

- A. 1/2" PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
- B. 3/4" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A 3/4" Ø X 1 5/8" BOLT WITH 2" O.D. WASHER IN PLACE. THE 3/4" Ø X 1 5/8" BOLT SHALL HAVE N.C. THREADS.
- C. CAP SCREWS FOR RAIL ATTACHMENT TO ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F593 ALLOY 305 STAINLESS STEEL. CAP SCREWS TO BE CENTERED IN SLOTS AT 60°F. WASHERS FOR RAIL ATTACHMENT SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.
- D. STANDARD CLAMP BARS (SEE SHEET 12 OF 16).

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

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

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

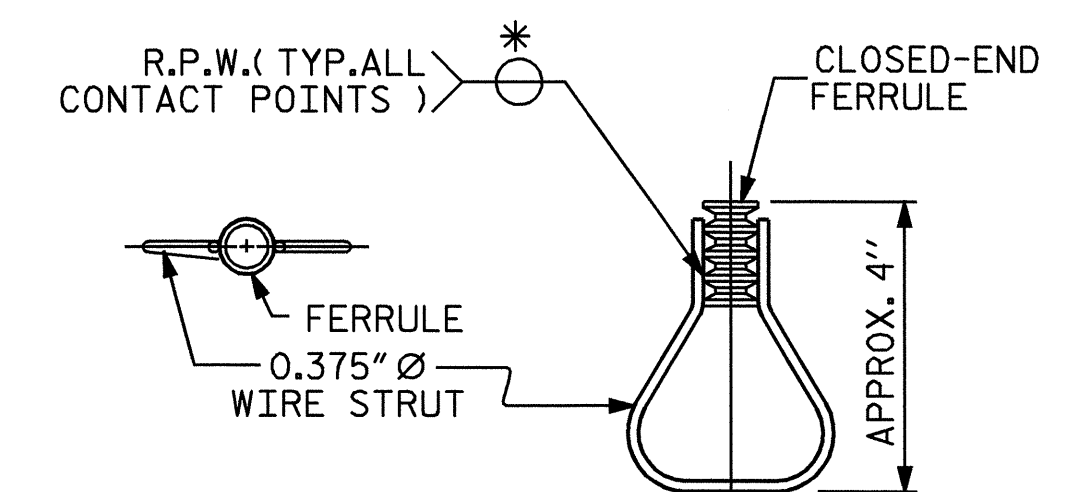
THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE 3/4" Ø X 1 5/8" BOLT WITH WASHER SHALL BE REPLACED WITH A 3/4" Ø X 6 1/2" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT 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.

NOTES

STRUCTURAL CONCRETE INSERT

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

- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1/2".
- B. 1 - 3/4" Ø X 1 5/8" BOLT WITH WASHER. BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø X 1 5/8" GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.
- C. WIRE STRUT SHOWN IN THE CONCRETE INSERT ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 1/6" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.



PLAN ELEVATION

STRUCTURAL CONCRETE INSERT

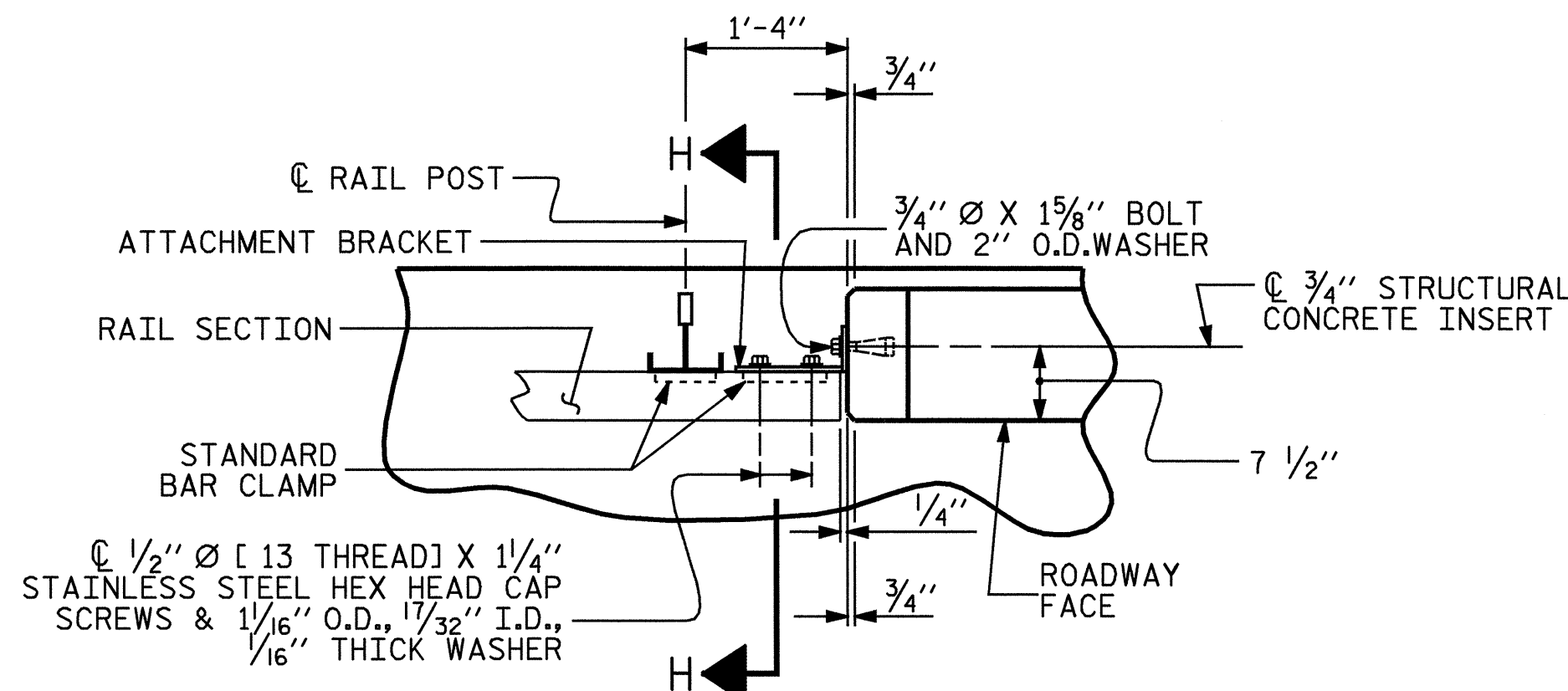
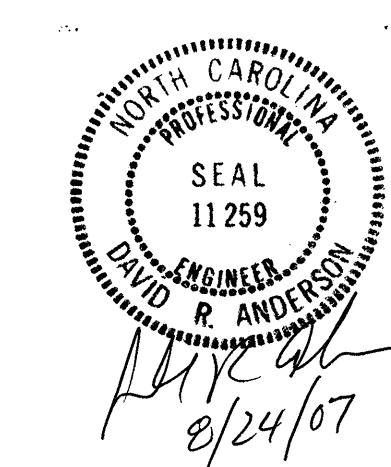
\* EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.

PROJECT NO. U-2510A  
MECKLENBURG COUNTY  
STATION: 124+82.50 -L-

SHEET 13 OF 16

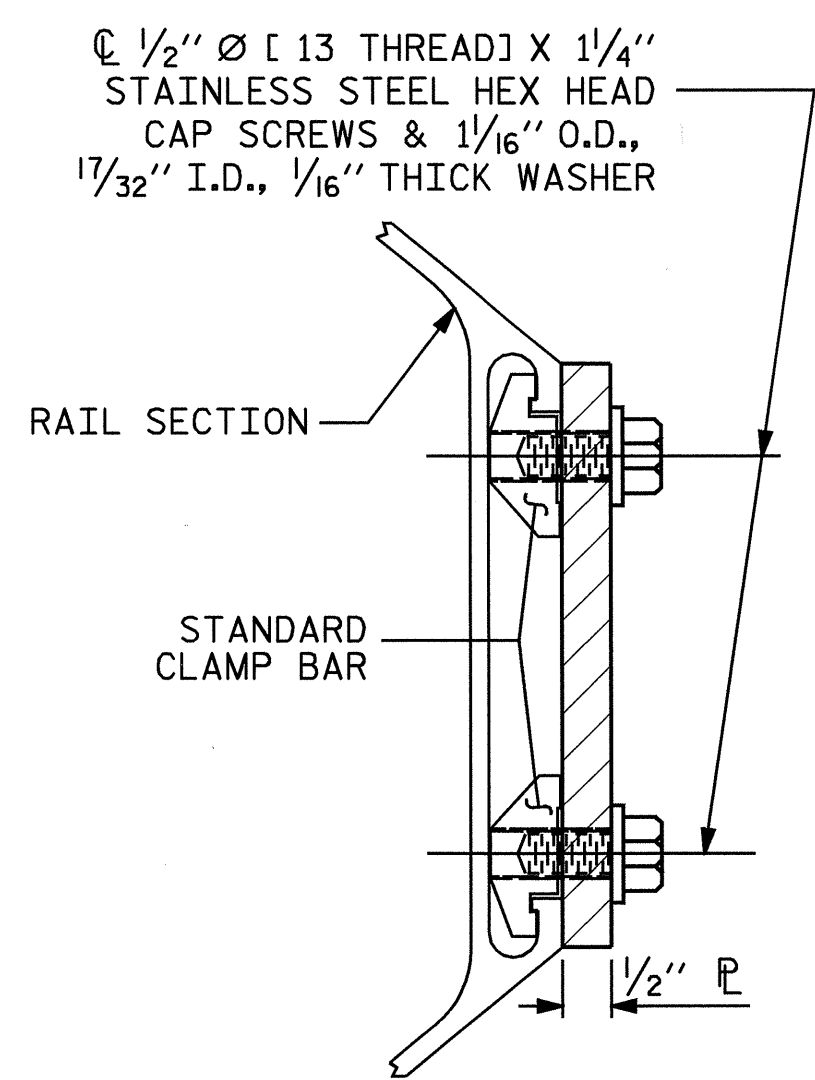
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
3 BAR METAL RAIL

REVISIONS						SHEET NO. S-17
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 36
2			4			



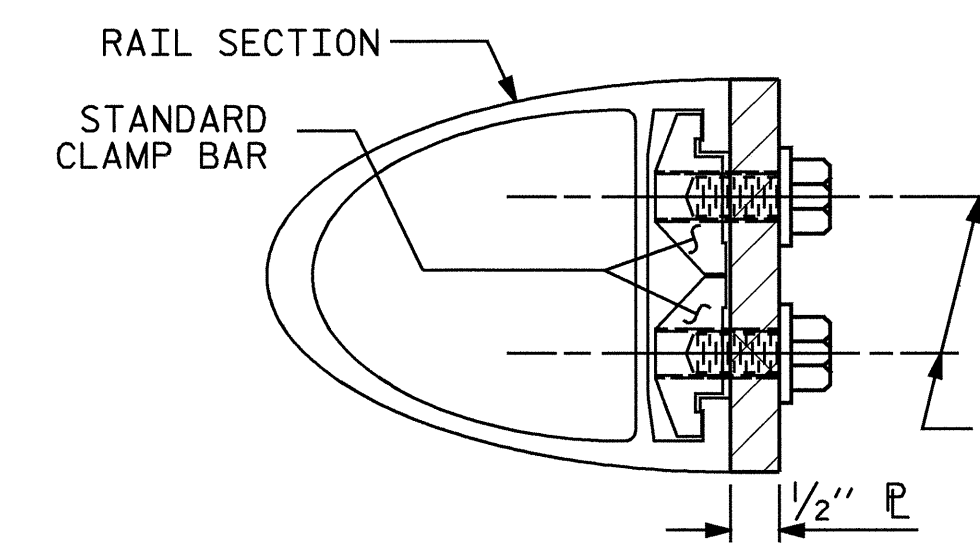
PLAN OF RAIL AND END POST

(STIFFENER ON 1/2" P NOT SHOWN FOR CLARITY)



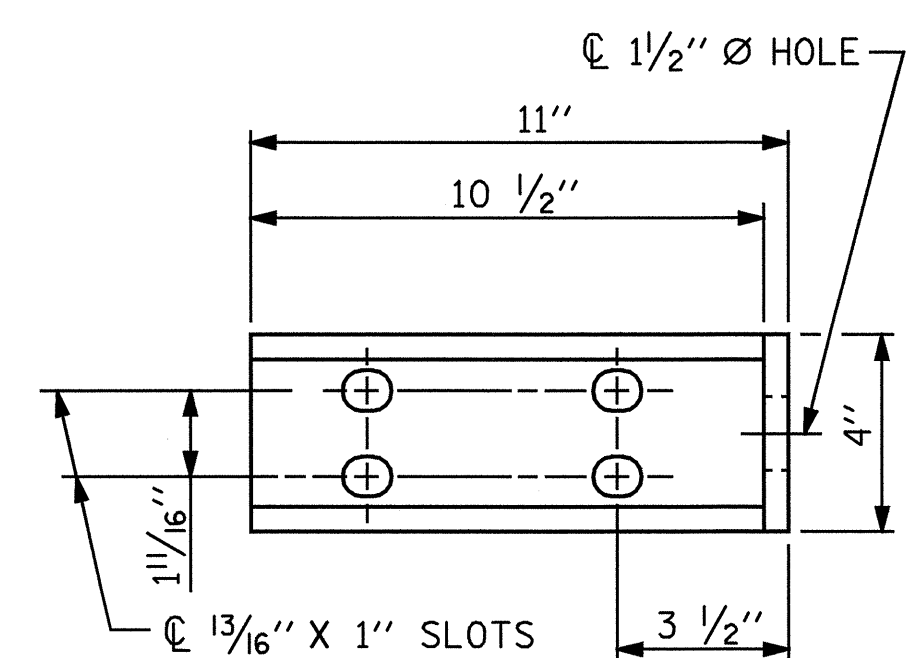
SECTION H-H

(FOR BOTTOM RAIL)

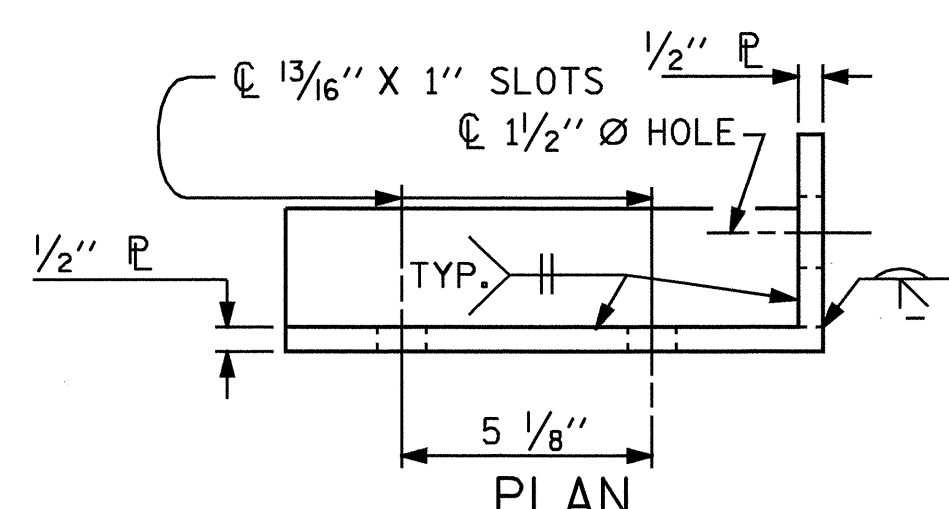


SECTION H-H

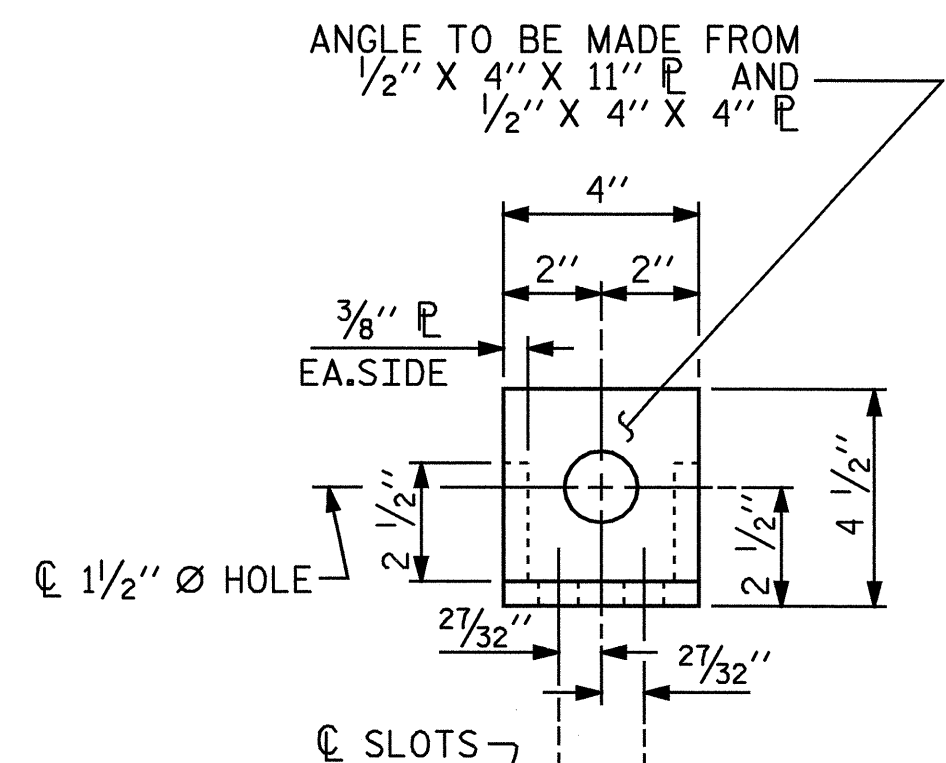
(FOR TOP & MIDDLE RAIL)



ELEVATION



PLAN

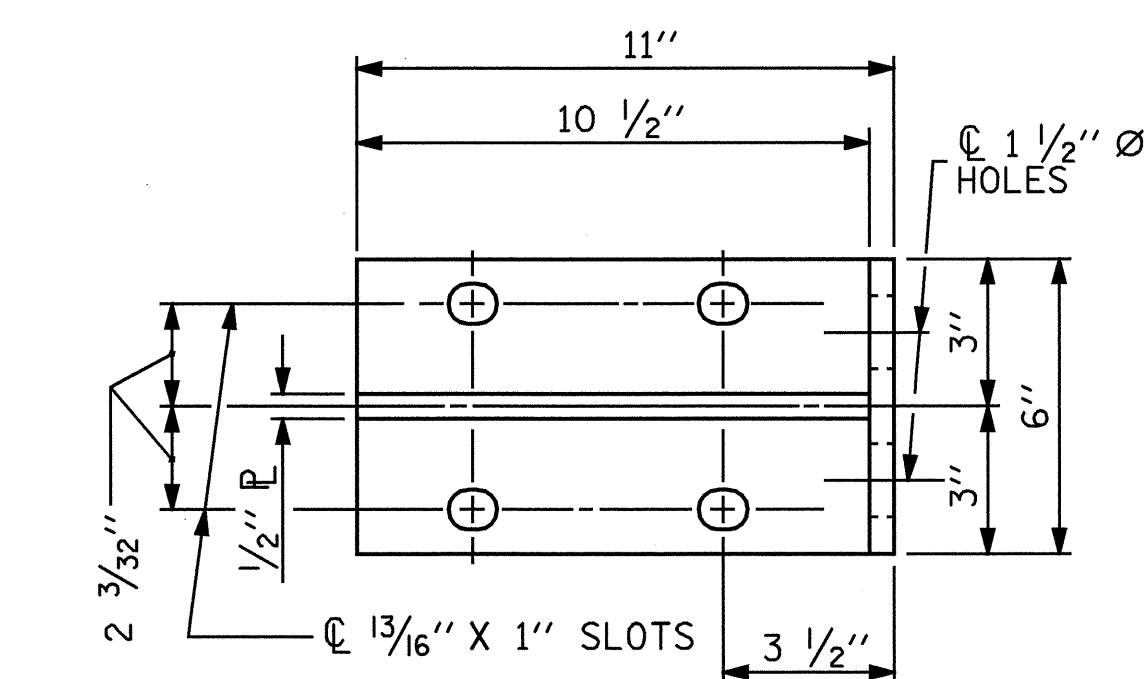


END VIEW

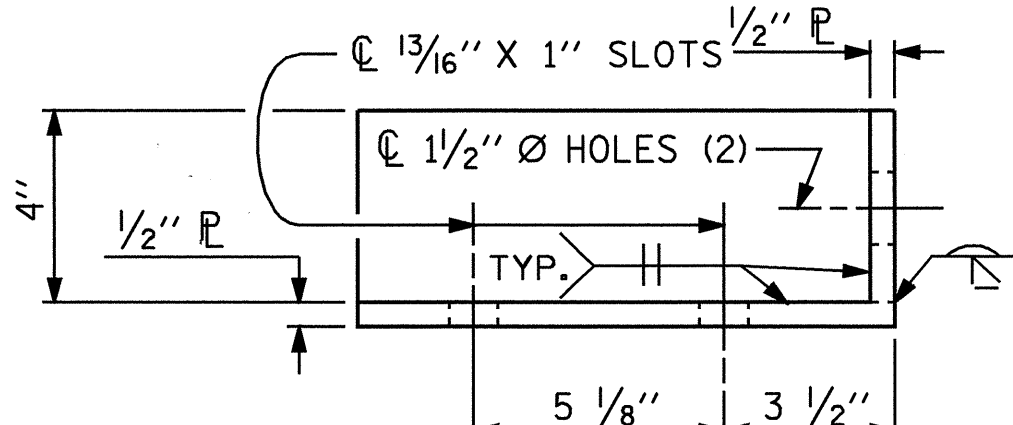
(FIX. AND EXP.)

DETAILS FOR ATTACHMENT BRACKET

(TOP & MIDDLE RAIL ONLY)



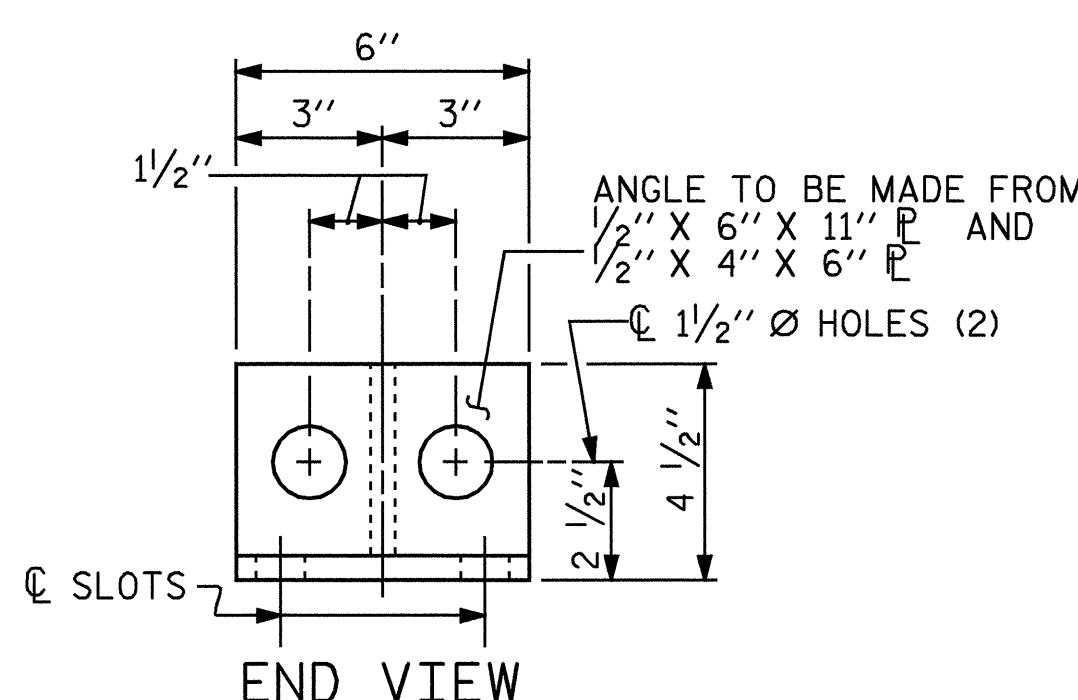
ELEVATION



PLAN

DETAILS FOR ATTACHMENT BRACKET

(BOTTOM RAIL ONLY)



END VIEW

ASSEMBLED BY : N. Q. TRAN	DATE : 2-14-05
CHECKED BY : T. A. HARRIS	DATE : 11-14-06
DRAWN BY : JMB 1/88	REV. 7/10/01 RWW/LES
CHECKED BY : GGH 1/88	REV. 5/7/03 RWW/JTE
	REV. 5/1/06 TLA/GM



NOTES

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

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

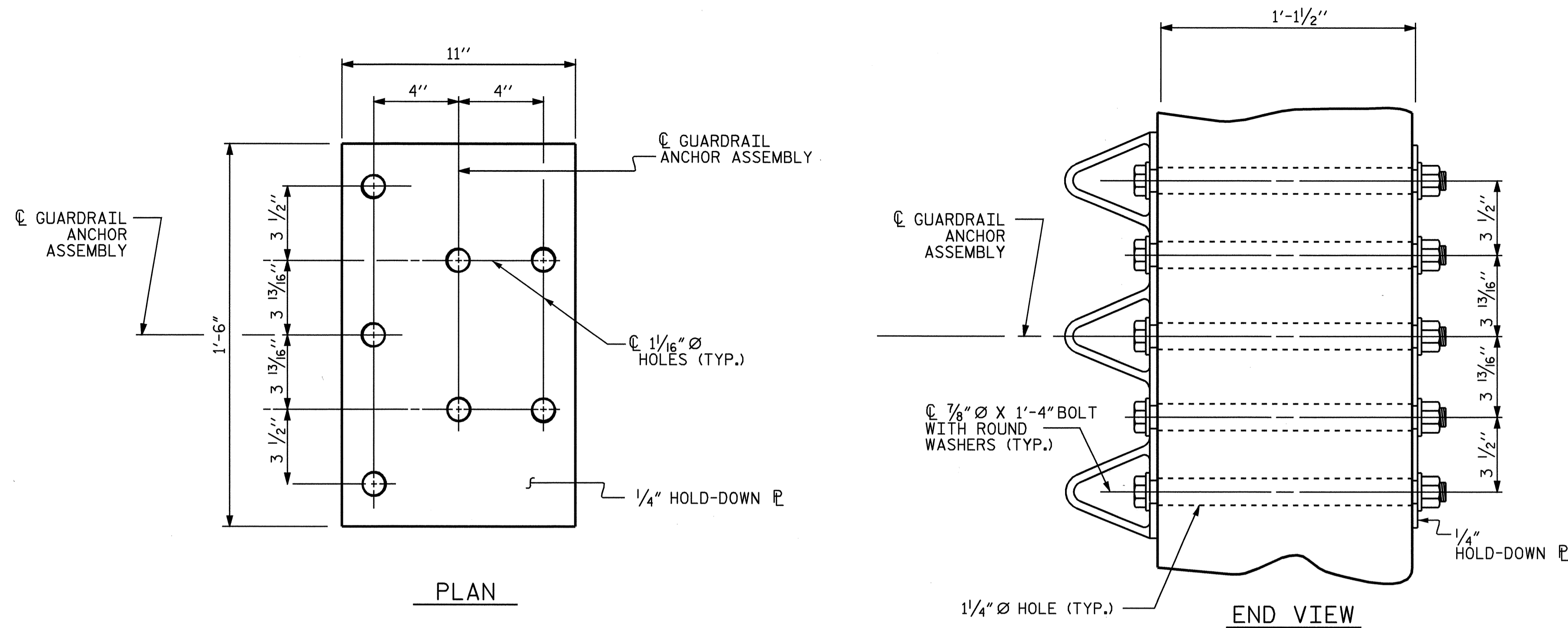
BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS.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

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

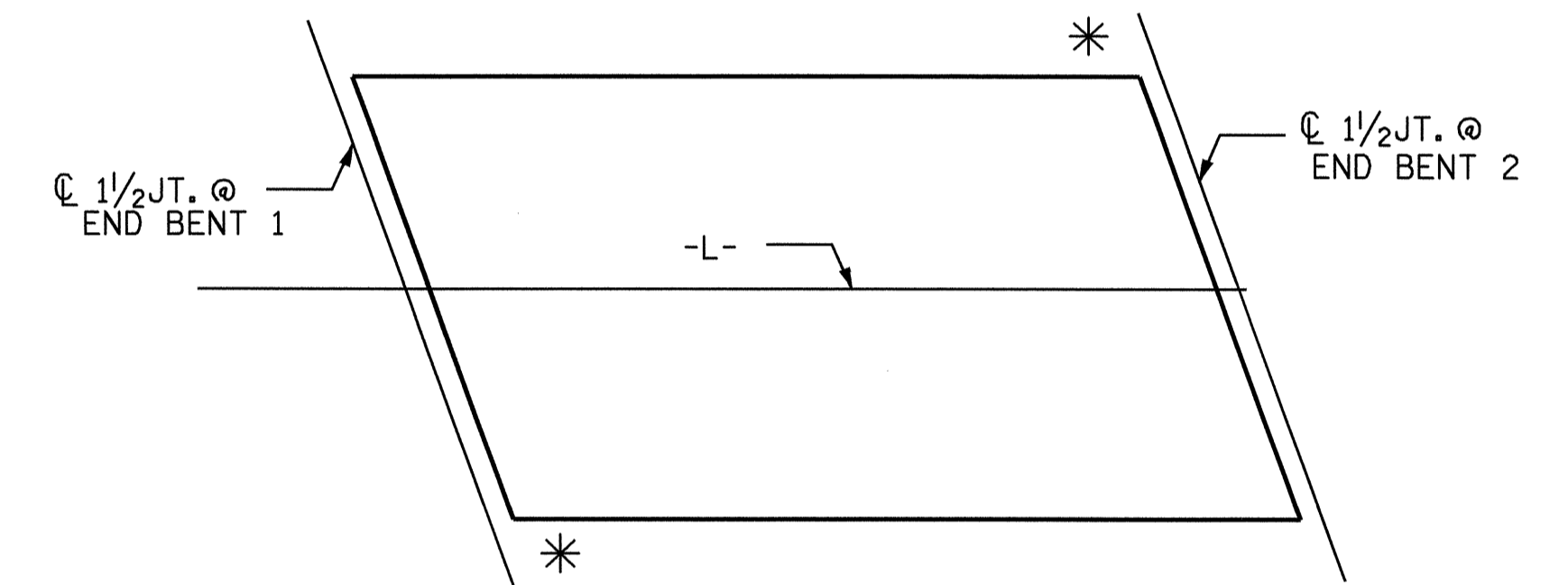
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

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

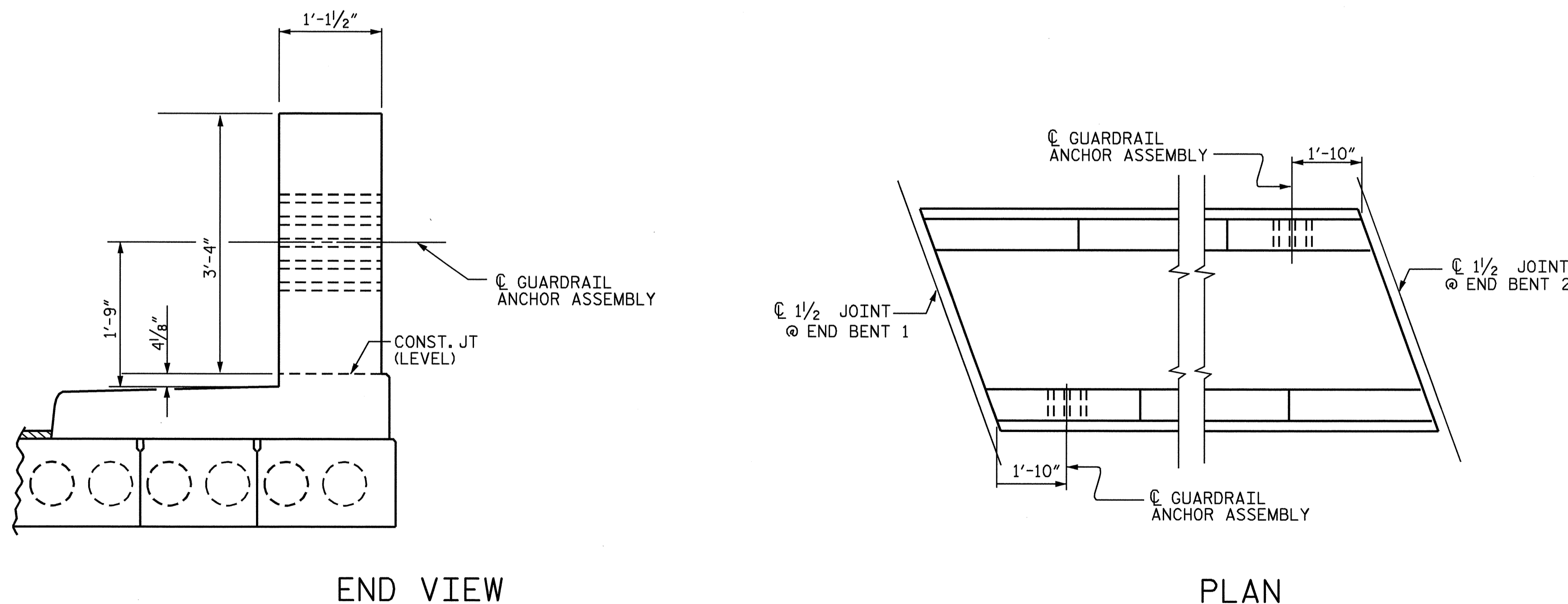
THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



PLAN  
GUARDRAIL ANCHOR ASSEMBLY DETAILS



SKETCH SHOWING POINTS OF ATTACHMENT  
\* LOCATION OF GUARDRAIL ATTACHMENT

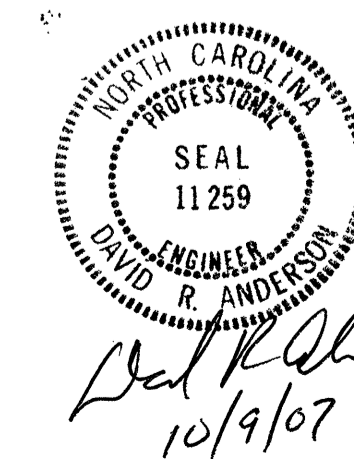


END VIEW  
PLAN  
LOCATION OF GUARDRAIL ANCHOR AT END POST

PROJECT NO. U-2510A  
MECKLENBURG COUNTY  
STATION: 124+82.50 -L-

SHEET 14 OF 16

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

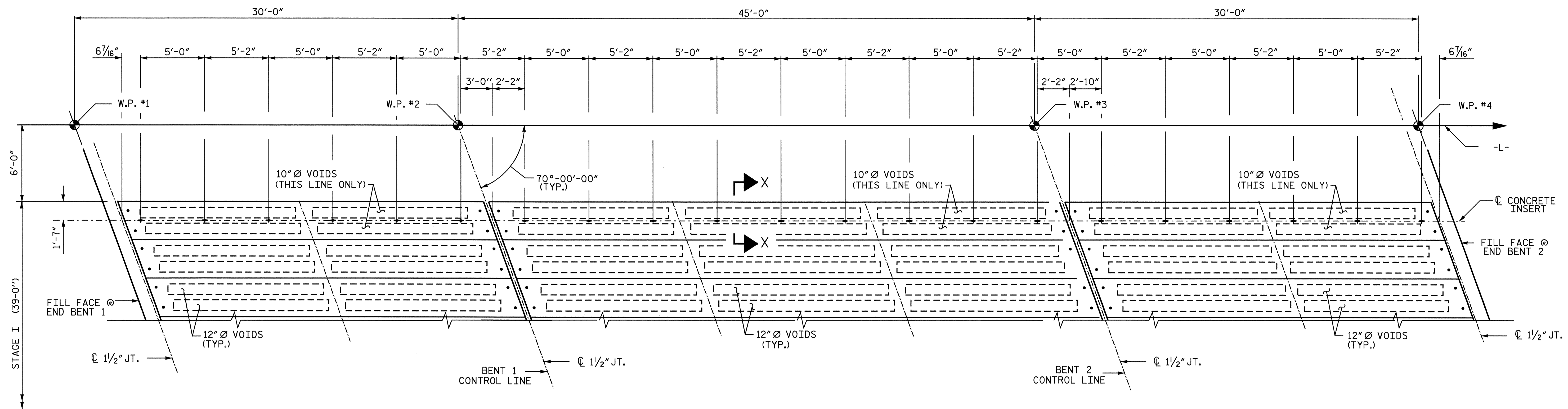


ASSEMBLED BY : N. Q. TRAN	DATE : 12-14-06
CHECKED BY : T. A. HARRIS	DATE : 12-14-06
DRAWN BY : WJH 4/89	REV. 10/17/00 RWW/LES
CHECKED BY : FCJ 5/89	REV. 5/7/03 RWW/JTE
	REV. 5/1/06 TLA/GM

09-OCT-2007 09:09  
T:\Structures\Final plans\U2510a\_sd\_01\_cs.dgn  
ntran

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			36

STD. NO. BMR8



### CONCRETE INSERT SPACING FOR TEMPORARY BARRIER RAIL - STAGE-I

#### NOTES

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

- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1 5/8".
- B. 1- 7/8" Ø X 8 1/2" 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 7/8" Ø X 8 1/2" GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.
- C. WIRE STRUT SHOWN IN THE CONCRETE INSERT ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI.
- D. STRUCTURAL CONCRETE INSERT ASSEMBLIES SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.

THE COST OF THE STRUCTURAL CONCRETE INSERT ASSEMBLY COMPLETE IN PLACE, SHALL BE INCLUDED IN THE CONTRACT PRICE BID FOR 3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS.

TO FACILITATE PLACEMENT OF STRUCTURAL CONCRETE INSERT ASSEMBLY, #3 BARS MAY BE TIED TO THE #4 "B" BARS IN THE CORED SLAB UNITS. THE COST OF THE #3 BARS SHALL BE INCLUDED IN UNIT CONTRACT PRICE BID FOR 3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS.

STIRRUPS IN CORED SLAB UNITS MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR STRUCTURAL CONCRETE INSERT ASSEMBLIES.

FERRULES TO BE PLUGGED DURING CASTING OF THE CORED SLAB UNITS AS RECOMMENDED BY THE MANUFACTURER.

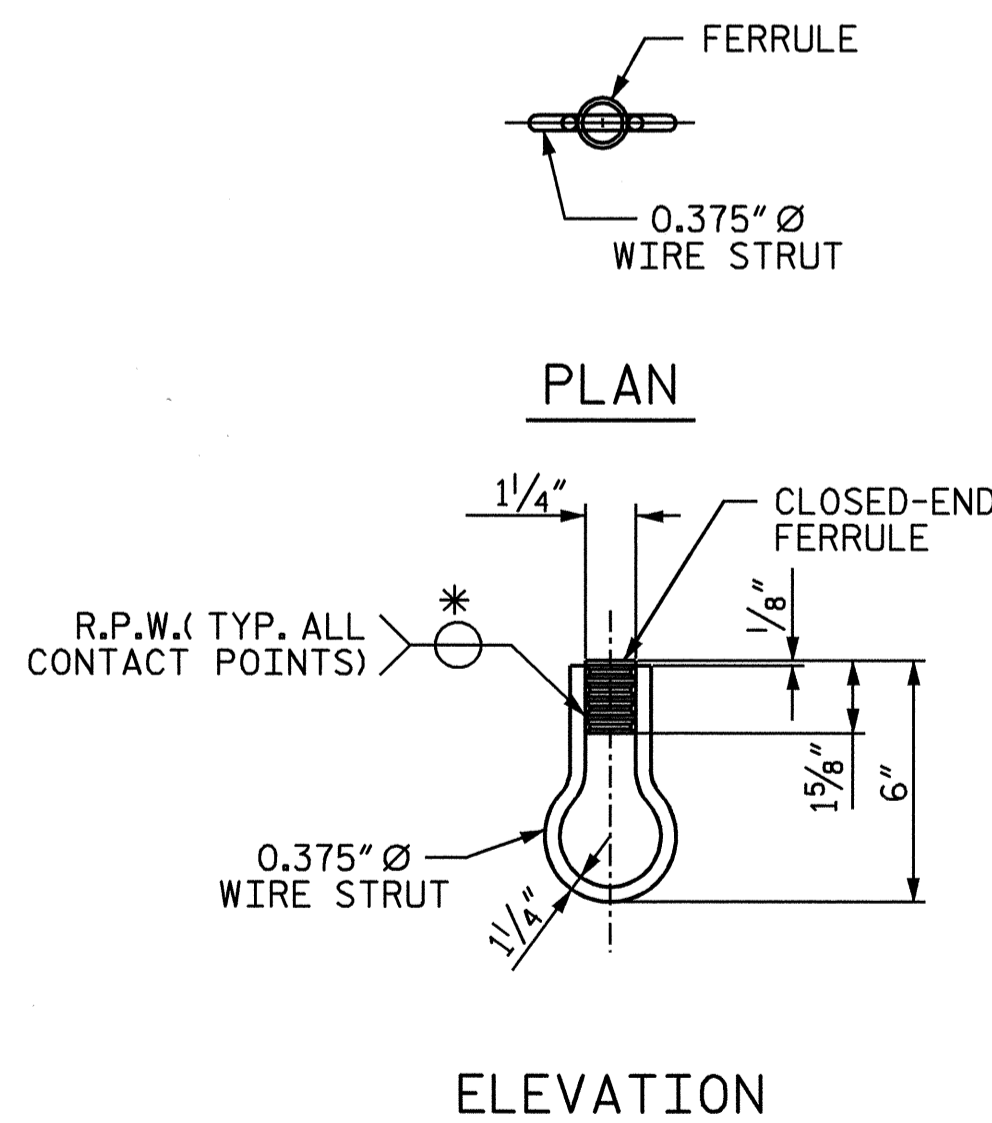
SEE TRAFFIC CONTROL PLANS FOR TEMPORARY BARRIER RAIL.

AFTER REMOVAL OF TEMPORARY BARRIER RAIL, THE STRUCTURAL CONCRETE INSERTS SHALL BE FILLED WITH GROUT.

\* 10" Ø VOIDS ARE USED ONLY IN THE ONE (1) LINE OF CORED SLAB UNITS UNDER THE TEMPORARY BARRIER RAIL. 12" Ø VOIDS ARE USED IN ALL OTHER CORED SLAB UNITS.

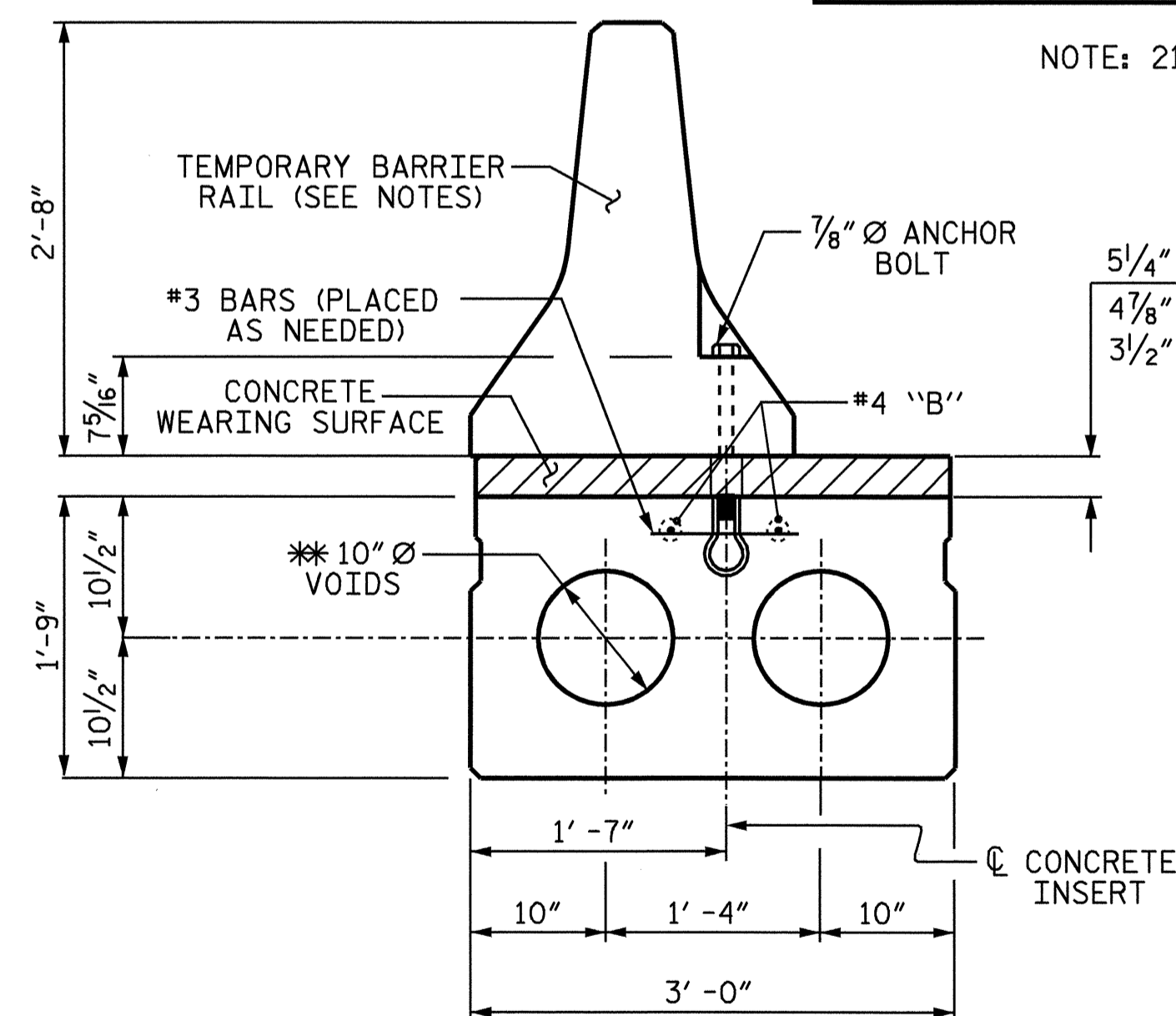
NOTE: THE CONTRACTOR SHALL LOCATE AND SECURE THE POSITION OF THE INSERTS FOR THE CONCRETE MEDIAN BARRIER PRIOR TO PLACEMENT OF THE CONCRETE WEARING SURFACE.

NOTE: 21 CONCRETE INSERTS ARE REQUIRED.



STRUCTURAL CONCRETE INSERT

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



SECTION X-X CONCRETE INSERT LOCATION

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

PROJECT NO. U-2510A  
MECKLENBURG COUNTY  
 STATION: 124+82.50 -L-

SHEET 15 OF 16

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

TEMPORARY BARRIER RAIL ANCHORAGE DETAILS FOR CORED SLAB UNIT

REVISIONS						SHEET NO. S-19
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 36
2			4			

ASSEMBLED BY : N. Q. TRAN DATE : 4-10-07  
 CHECKED BY : A. S. CALAWAY DATE : 4-12-07

PROFESSIONAL ENGINEER  
 NORTH CAROLINA  
 SEAL  
 11259  
 DAVID R. ANDERSON  
 10/19/07

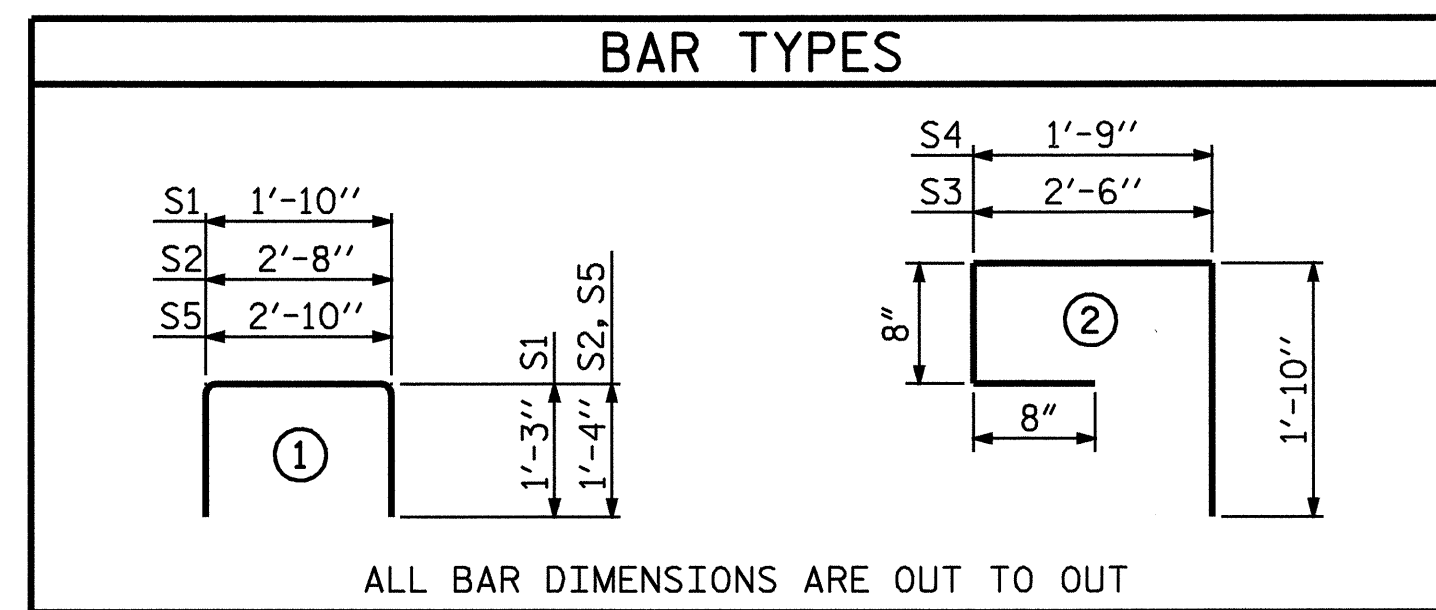


BILL OF MATERIAL FOR ONE CORED SLAB SECTION											
SPAN A OR SPAN C											
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		FIRST INT. UNIT		SECOND INT. UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT
B1	2	#4	STR	28'-4"	38	28'-4"	38	28'-4"	38	28'-4"	38
S1	8	#4	1	4'-4"	23	4'-4"	23	4'-4"	23	4'-4"	23
S2	54	#4	1	5'-4"	192	5'-4"	192	5'-4"	192	5'-4"	192
*S3	4	#4	2	5'-8"	15	5'-8"	15				
*S4	4	#4	2					4'-11"	13		
S5	4	#4	1	5'-6"	15	5'-6"	15	5'-6"	15	5'-6"	15
REINFORCING STEEL				268 LBS.		268 LBS.		268 LBS.		268 LBS.	
*EPOXY COATED REINFORCING STEEL				15 LBS.		15 LBS.		13 LBS.		0 LBS.	
5000 P.S.I. CONCRETE				4.2 CU. YDS.		4.2 CU. YDS.		4.2 CU. YDS.		4.2 CU. YDS.	
$\frac{1}{2}$ " $\varnothing$ L.R. STRANDS				No. 12		12		12		*** 4.6 CU. YDS.	

SPAN B											
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		FIRST INT. UNIT		SECOND INT. UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT
B2	4	#4	STR	23'-2"	62	23'-2"	62	23'-2"	62	23'-2"	62
S1	8	#4	1	4'-4"	23	4'-4"	23	4'-4"	23	4'-4"	23
S2	88	#4	1	5'-4"	314	5'-4"	314	5'-4"	314	5'-4"	314
*S3	7	#4	2	5'-8"	26	5'-8"	26				
*S4	7	#4	2					4'-11"	23		
S5	4	#4	1	5'-6"	15	5'-6"	15	5'-6"	15	5'-6"	15
REINFORCING STEEL				414 LBS.		414 LBS.		414 LBS.		414 LBS.	
*EPOXY COATED REINFORCING STEEL				26 LBS.		26 LBS.		23 LBS.		0 LBS.	
5000 P.S.I. CONCRETE				6.6 CU. YDS.		6.6 CU. YDS.		6.6 CU. YDS.		6.5 CU. YDS.	
$\frac{1}{2}$ " $\varnothing$ L.R. STRANDS				No. 22		22		22		*** 7.2 CU. YDS.	

\*\*\* CONCRETE VOLUME FOR UNIT WITH 10"  $\varnothing$  VOID



CORED SLABS REQUIRED					
STAGE I					
	NUMBER PER SPAN	LENGTH			TOTAL LENGTH
		SPAN A	SPAN B	SPAN C	
EXTERIOR C.S.	1	28'-8 <sup>3</sup> / <sub>16</sub> "	44'-10 <sup>3</sup> / <sub>8</sub> "	28'-8 <sup>3</sup> / <sub>16</sub> "	102'-4"
FIRST INT. C.S. (UNDER SIDEWALK)	1	28'-8 <sup>3</sup> / <sub>16</sub> "	44'-10 <sup>3</sup> / <sub>8</sub> "	28'-8 <sup>3</sup> / <sub>16</sub> "	102'-4"
SECOND INT. C.S. (UNDER SIDEWALK)	1	28'-8 <sup>3</sup> / <sub>16</sub> "	44'-10 <sup>3</sup> / <sub>8</sub> "	28'-8 <sup>3</sup> / <sub>16</sub> "	102'-4"
INTERIOR C.S.	9	28'-8 <sup>3</sup> / <sub>16</sub> "	44'-10 <sup>3</sup> / <sub>8</sub> "	28'-8 <sup>3</sup> / <sub>16</sub> "	921'-0"
10" $\varnothing$ VOID INTERIOR C.S.	1	28'-8 <sup>3</sup> / <sub>16</sub> "	44'-10 <sup>3</sup> / <sub>8</sub> "	28'-8 <sup>3</sup> / <sub>16</sub> "	102'-4"
TOTAL NUMBER	13	39 TOTAL UNITS			1330'-4"

STAGE II					
	NUMBER PER SPAN	LENGTH			TOTAL LENGTH
		SPAN A	SPAN B	SPAN C	
EXTERIOR C.S.	1	28'-8 <sup>3</sup> / <sub>16</sub> "	44'-10 <sup>3</sup> / <sub>8</sub> "	28'-8 <sup>3</sup> / <sub>16</sub> "	102'-4"
FIRST INT. C.S. (UNDER SIDEWALK)	1	28'-8 <sup>3</sup> / <sub>16</sub> "	44'-10 <sup>3</sup> / <sub>8</sub> "	28'-8 <sup>3</sup> / <sub>16</sub> "	102'-4"
SECOND INT. C.S. (UNDER SIDEWALK)	1	28'-8 <sup>3</sup> / <sub>16</sub> "	44'-10 <sup>3</sup> / <sub>8</sub> "	28'-8 <sup>3</sup> / <sub>16</sub> "	102'-4"
INTERIOR C.S.	14	28'-8 <sup>3</sup> / <sub>16</sub> "	44'-10 <sup>3</sup> / <sub>8</sub> "	28'-8 <sup>3</sup> / <sub>16</sub> "	1432'-8"
TOTAL NUMBER	17	51 TOTAL UNITS			1739'-8"

### 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 $\frac{1}{2}$ "  $\varnothing$  DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH GROUT.

THE 2"  $\varnothing$  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.

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.

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

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.

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  $\frac{3}{8}$ " RAKED FINISH.

PLACEMENT OF THE CONCRETE WEARING SURFACE SHALL OCCUR AFTER CASTING THE SIDEWALK. THE COST OF THE REINFORCING STEEL 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.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

DEAD LOAD DEFLECTION AND CAMBER		
	SPAN A OR SPAN C	SPAN B
	3'-0" x 1'-9"	3'-0" x 1'-9"
	$\frac{1}{2}$ " $\varnothing$ L.R. STRAND	$\frac{1}{2}$ " $\varnothing$ L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	$\frac{1}{16}$ "	$\frac{1}{16}$ "
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD $\square$	$\frac{1}{16}$ "	$\frac{1}{4}$ "
FINAL CAMBER	$\frac{3}{8}$ "	$\frac{1}{16}$ "

$\square$  INCLUDES FUTURE WEARING SURFACE

GROOVING BRIDGE FLOORS	
BRIDGE DECK	7331 SQ. FT.
APPROACH SLAB	3355 SQ. FT.
TOTAL	10686 SQ. FT.

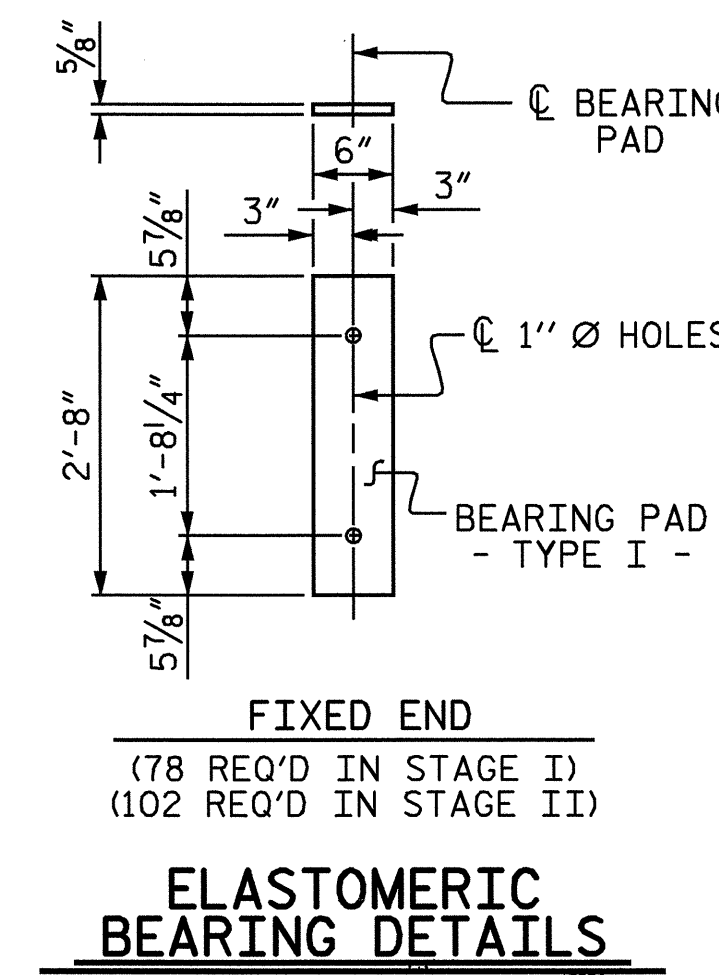
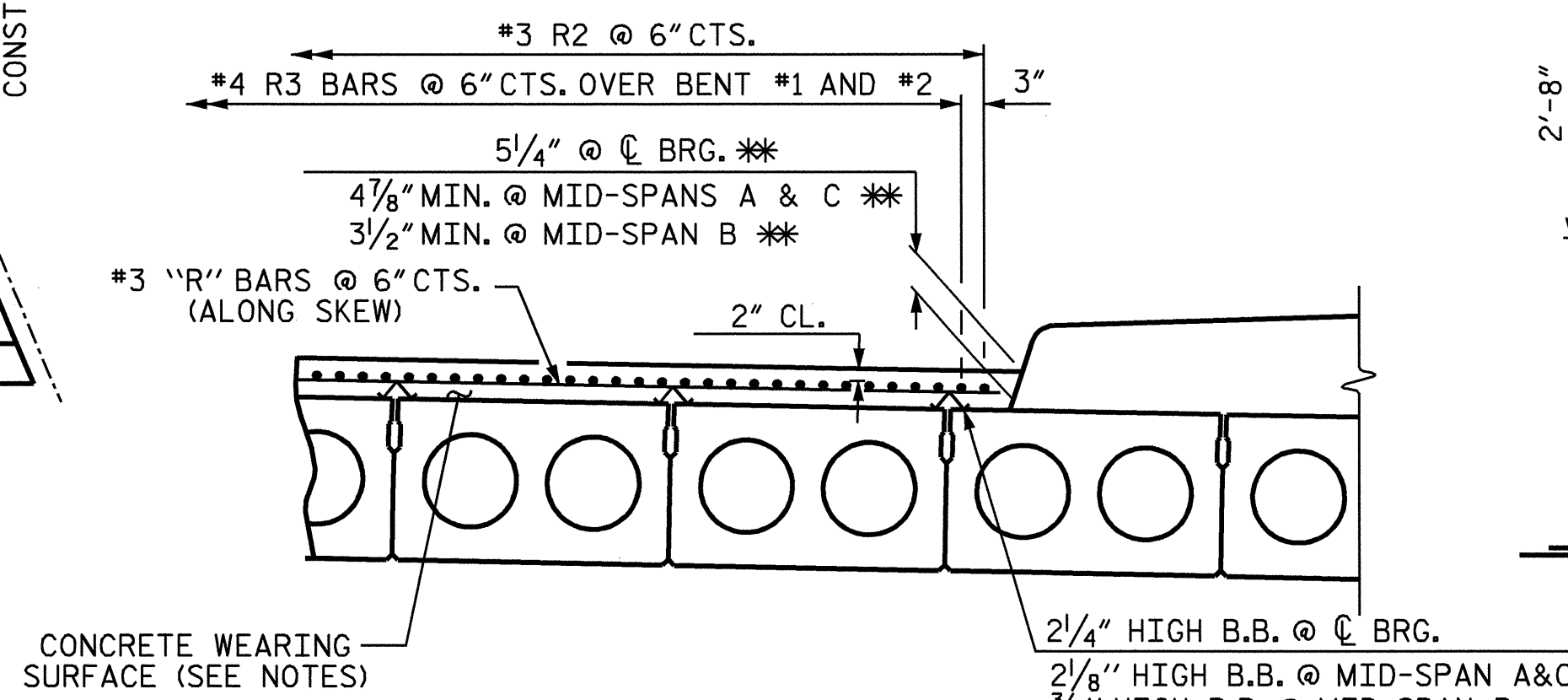
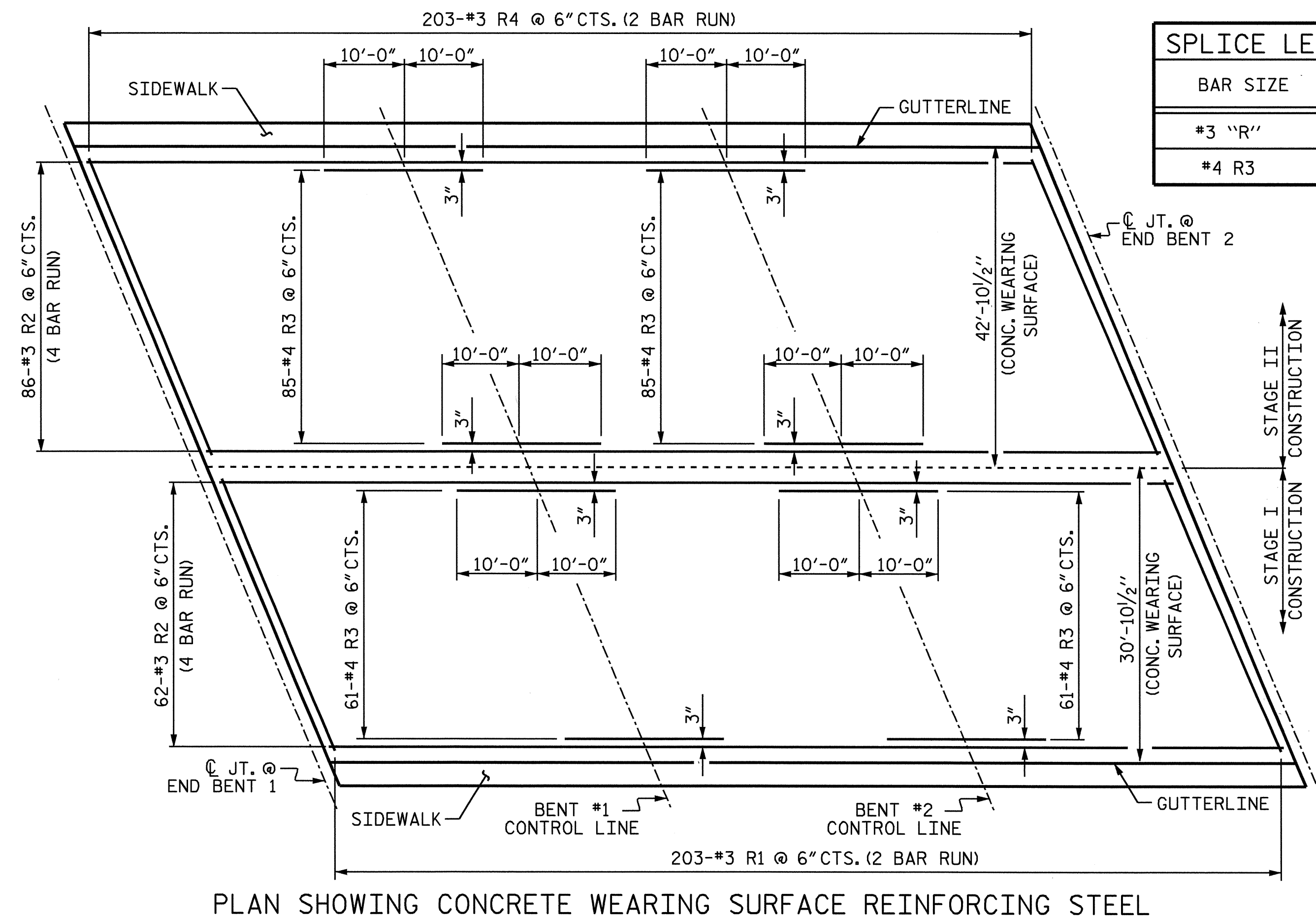
GRADE 270 STRANDS	
AREA (SQUARE INCHES)	$\frac{1}{2}$ " $\varnothing$ L.R.
ULTIMATE STRENGTH (LBS. PER STRAND)	0.153
APPLIED PRESTRESS (LBS. PER STRAND)	41,300
	30,980

SPLICE LENGTH CHART	
BAR SIZE	EPOXY COATED
#3 "R"	1'-3"
#4 R3	1'-8"

BILL OF MATERIAL FOR CONCRETE WEARING SURFACE					
STAGE I					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*R1	406	#3	STR	16'-11"	2582
*R2	248	#3	STR	26'-4"	2456
*R3	122	#4	STR	20'-0"	1630
*EPOXY COATED REINFORCING STEEL					LBS. 6668
CONCRETE WEARING SURFACE					SQ. FT. 3138

STAGE II					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*R2	344	#3	STR	26'-4"	3406
*R3	170	#4	STR	20'-0"	2271
*R4	406	#3	STR	23'-3"	3549
*EPOXY COATED REINFORCING STEEL					LBS. 9226
CONCRETE WEARING SURFACE					SQ. FT. 4357



PROJECT NO. U-2510A  
MECKLENBURG COUNTY  
 STATION: 124+82.50 -L-

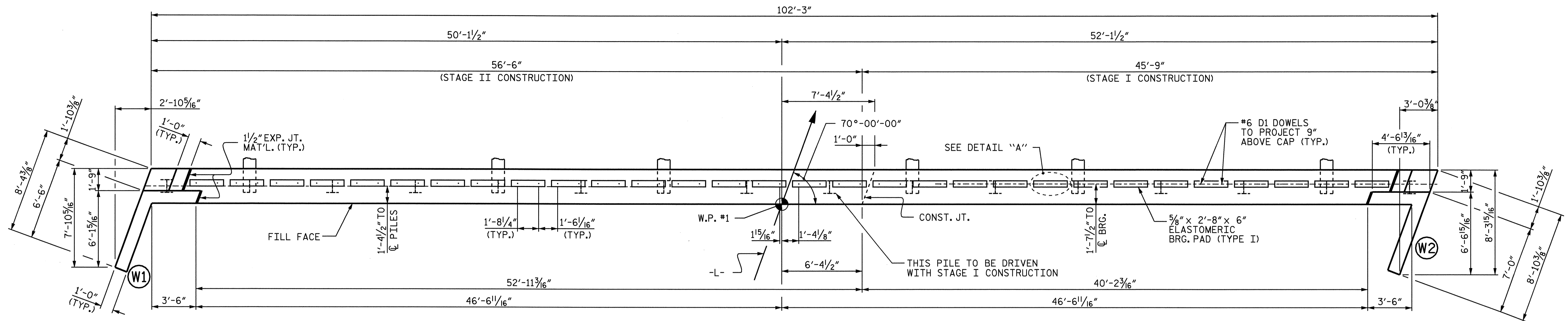
SHEET 16 OF 16

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

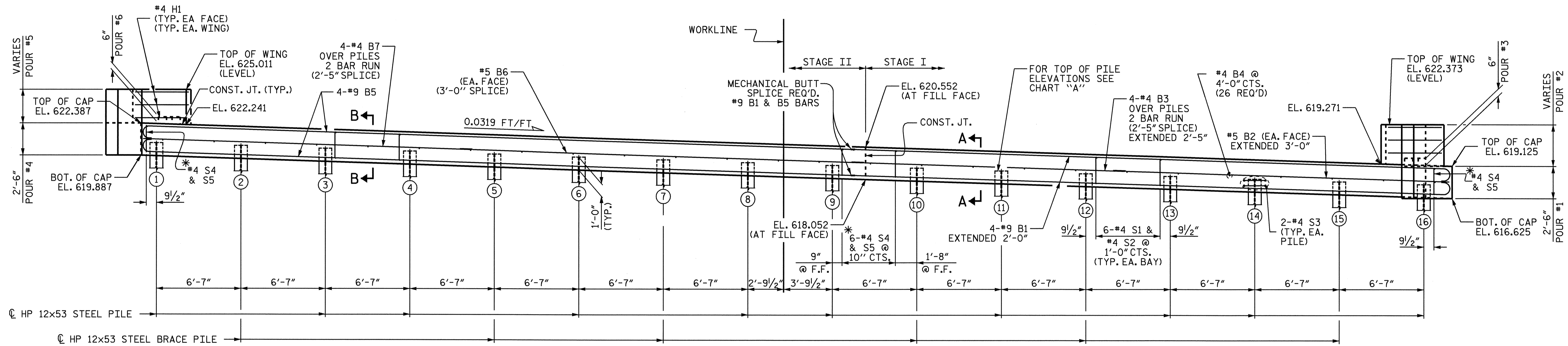
ASSEMBLED BY : N. Q. TRAN DATE : FEB 2005  
 CHECKED BY : T. A. HARRIS DATE : 11-20-06  
 DRAWN BY : WJH 4/89 REV. 7/10/01 RWW/LES  
 CHECKED BY : FCJ 5/89 REV. 5/7/03RRR RWW/JTE  
 REV. 5/1/06 TLA/GM

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



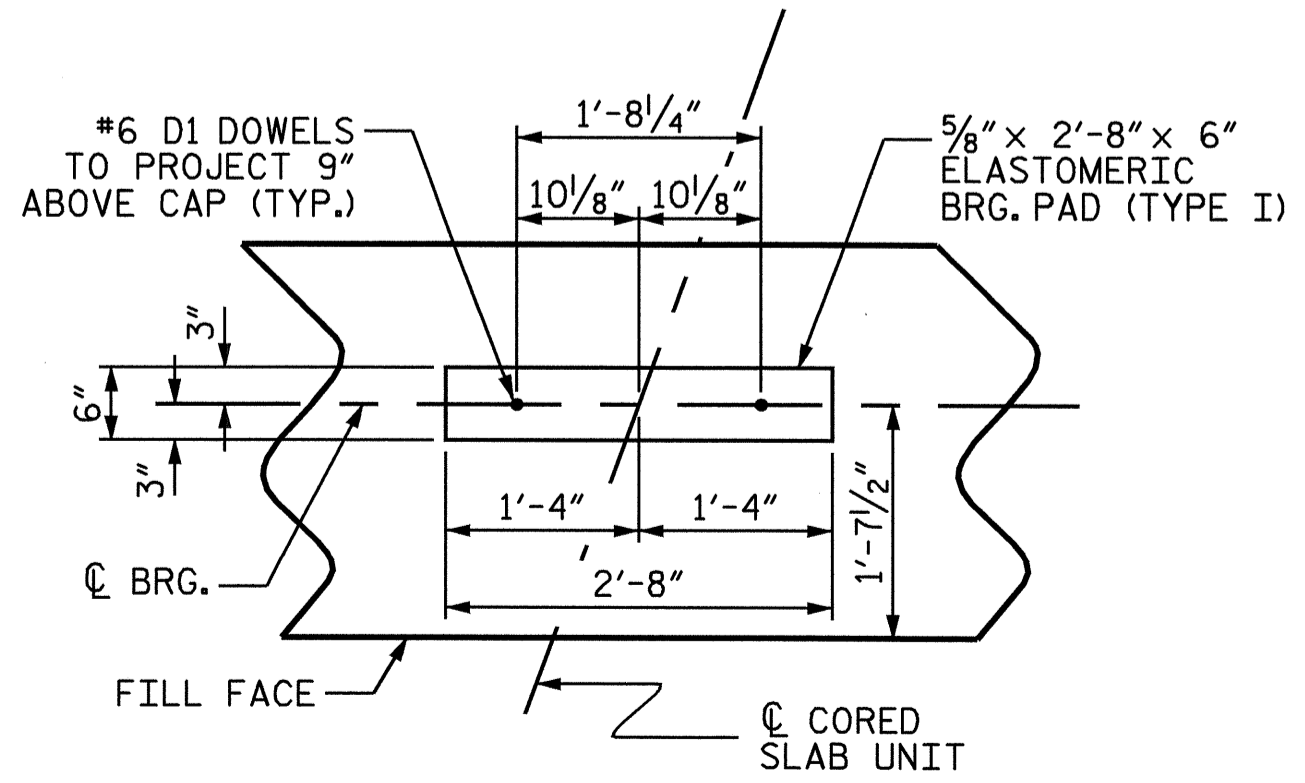


PLAN



ELEVATION

\* #4 S4 & S5 BARS ARE TO BE PLACED PARALLEL TO THE CONSTRUCTION JOINT.



DETAIL "A"

STAGE II PILES		STAGE I PILES	
PILE #	TOP OF PILE ELEVATIONS	PILE #	TOP OF PILE ELEVATIONS
1	620.818	9	619.136
2	620.608	10	618.926
3	620.397	11	618.716
4	620.187	12	618.506
5	619.977	13	618.295
6	619.767	14	618.085
7	619.557	15	617.875
8	619.346	16	617.665

CHART "A"

PROJECT NO. U-2510A  
MECKLENBURG COUNTY  
 STATION: 124+82.50 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

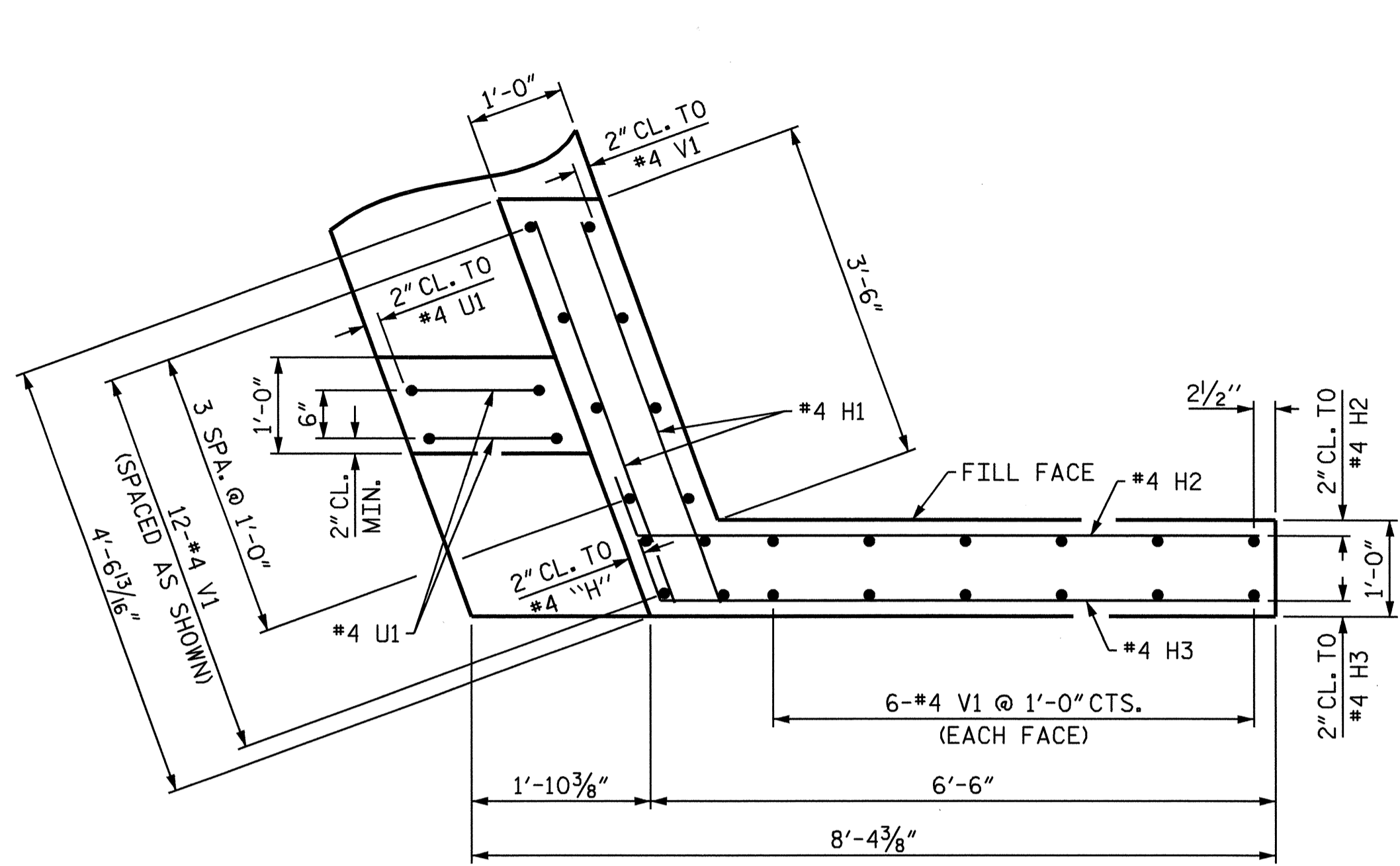
SUBSTRUCTURE  
 END BENT 1

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

TOTAL SHEETS: 36

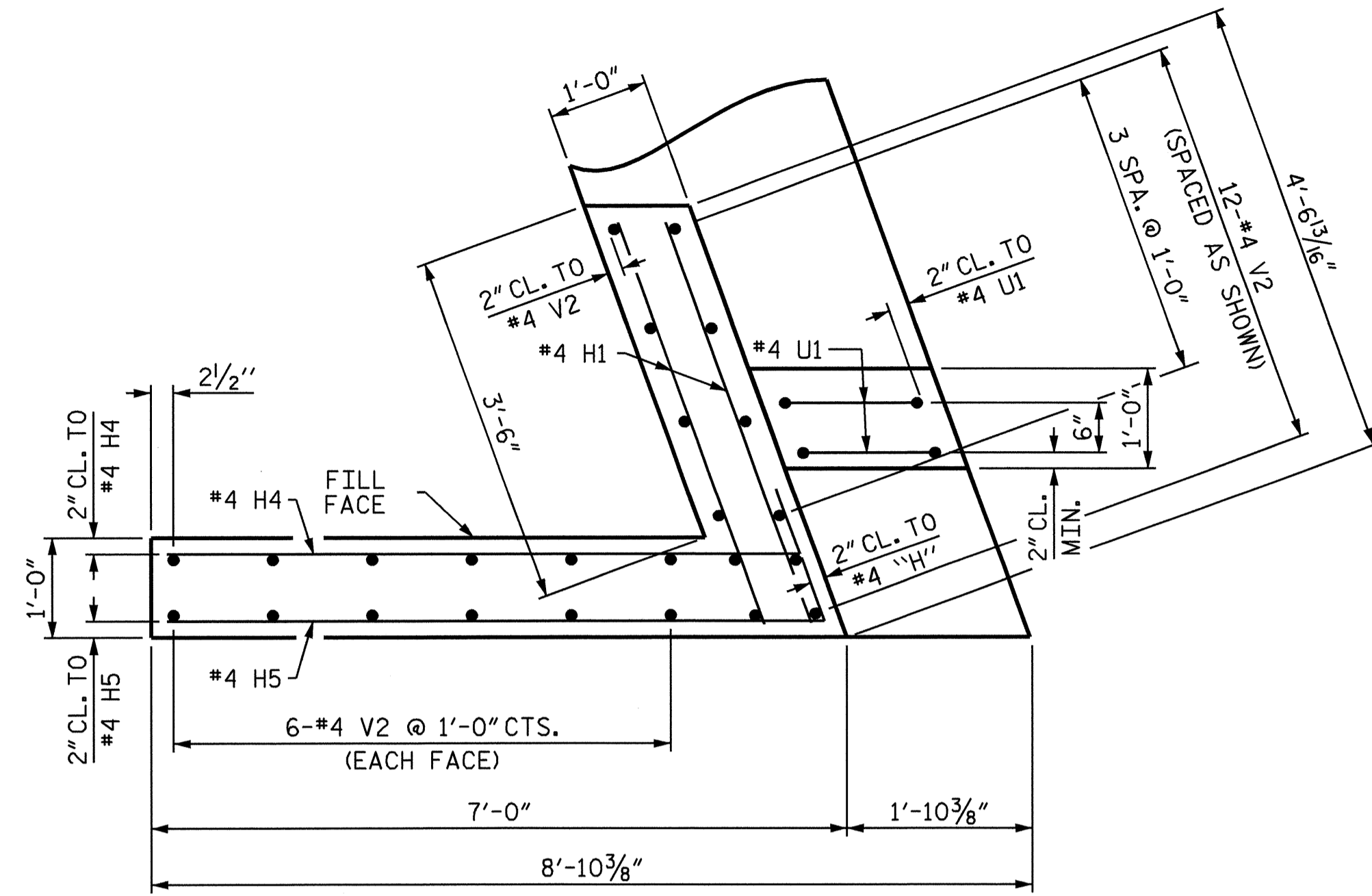
DRAWN BY : W.K. FISCHER/WFP DATE : 5/17/05  
 CHECKED BY : M.A. ALLEN DATE : 8/06





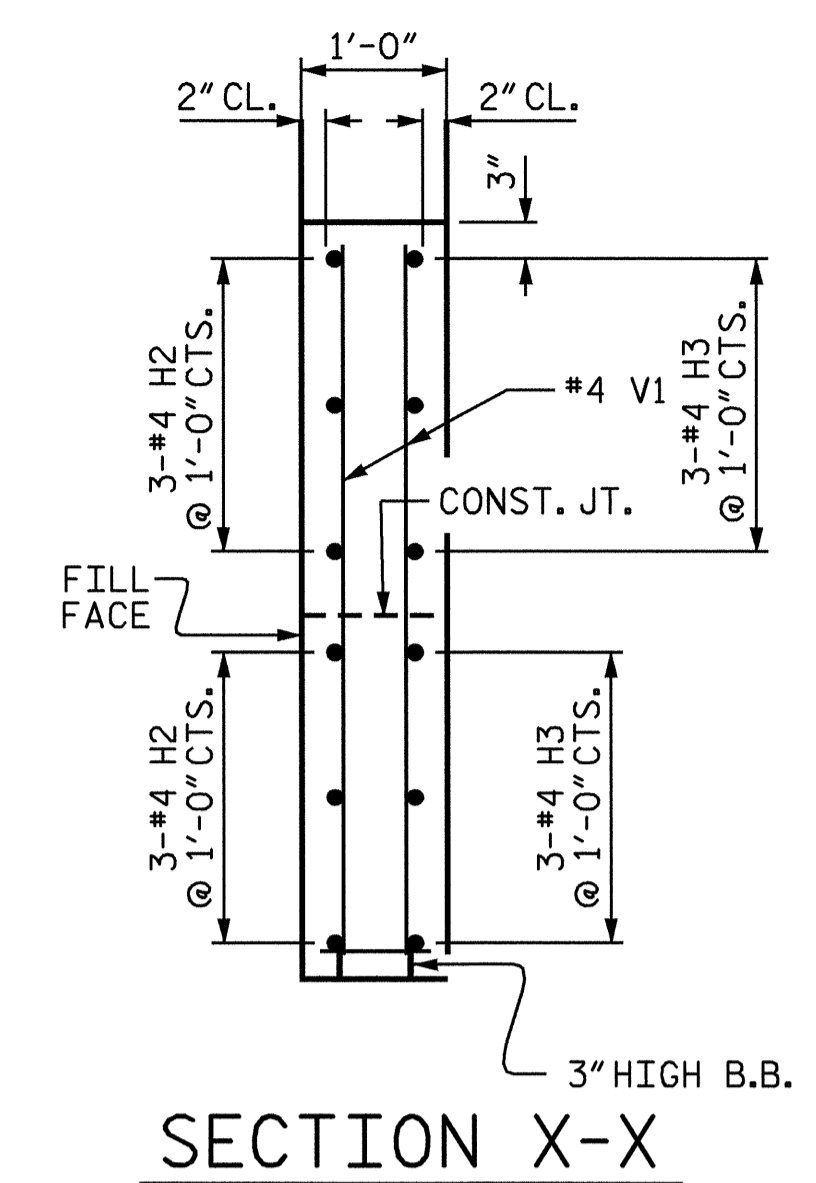
PLAN OF WING - W1

LEFT WING - STAGE II

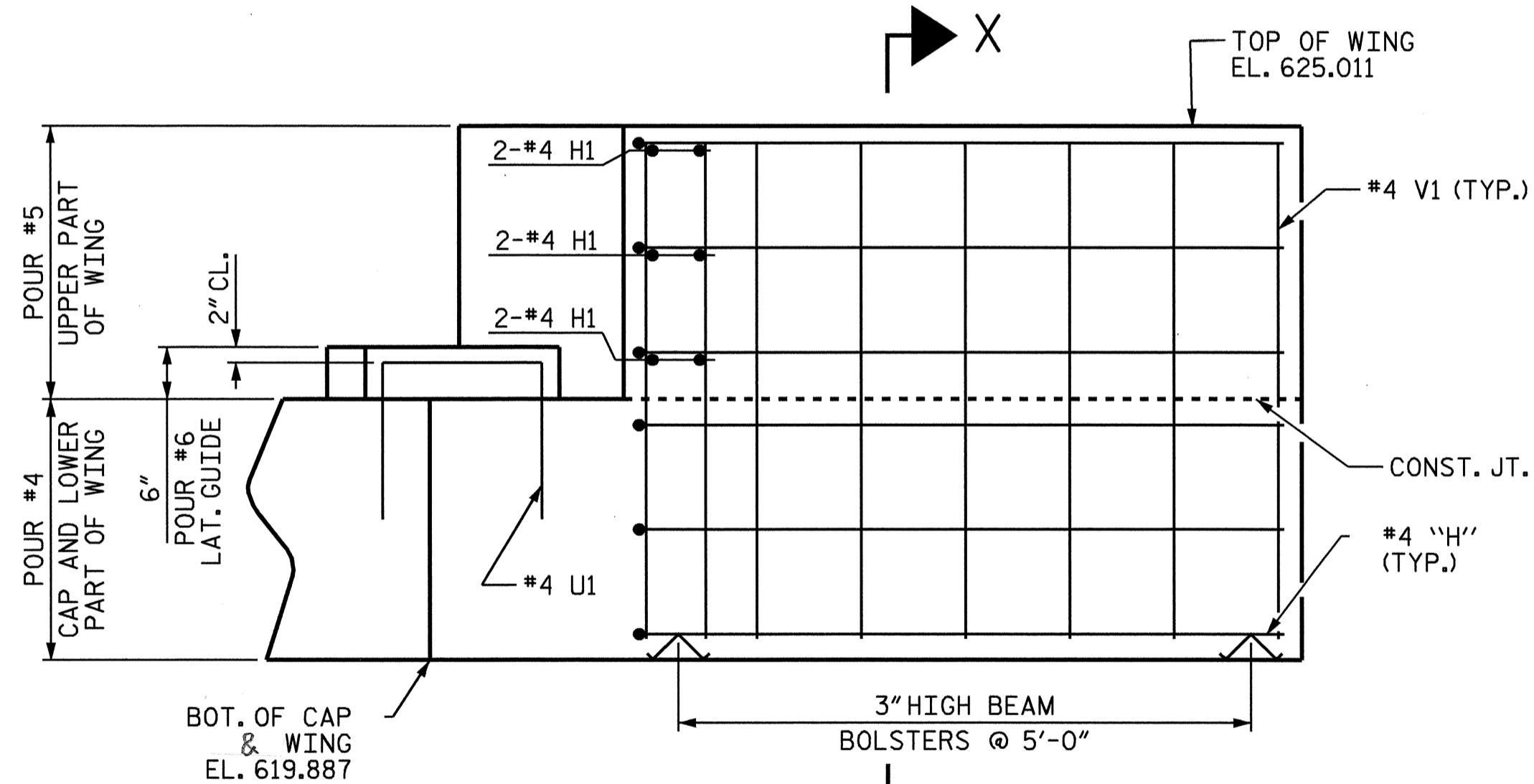


PLAN OF WING - W2

RIGHT WING - STAGE I

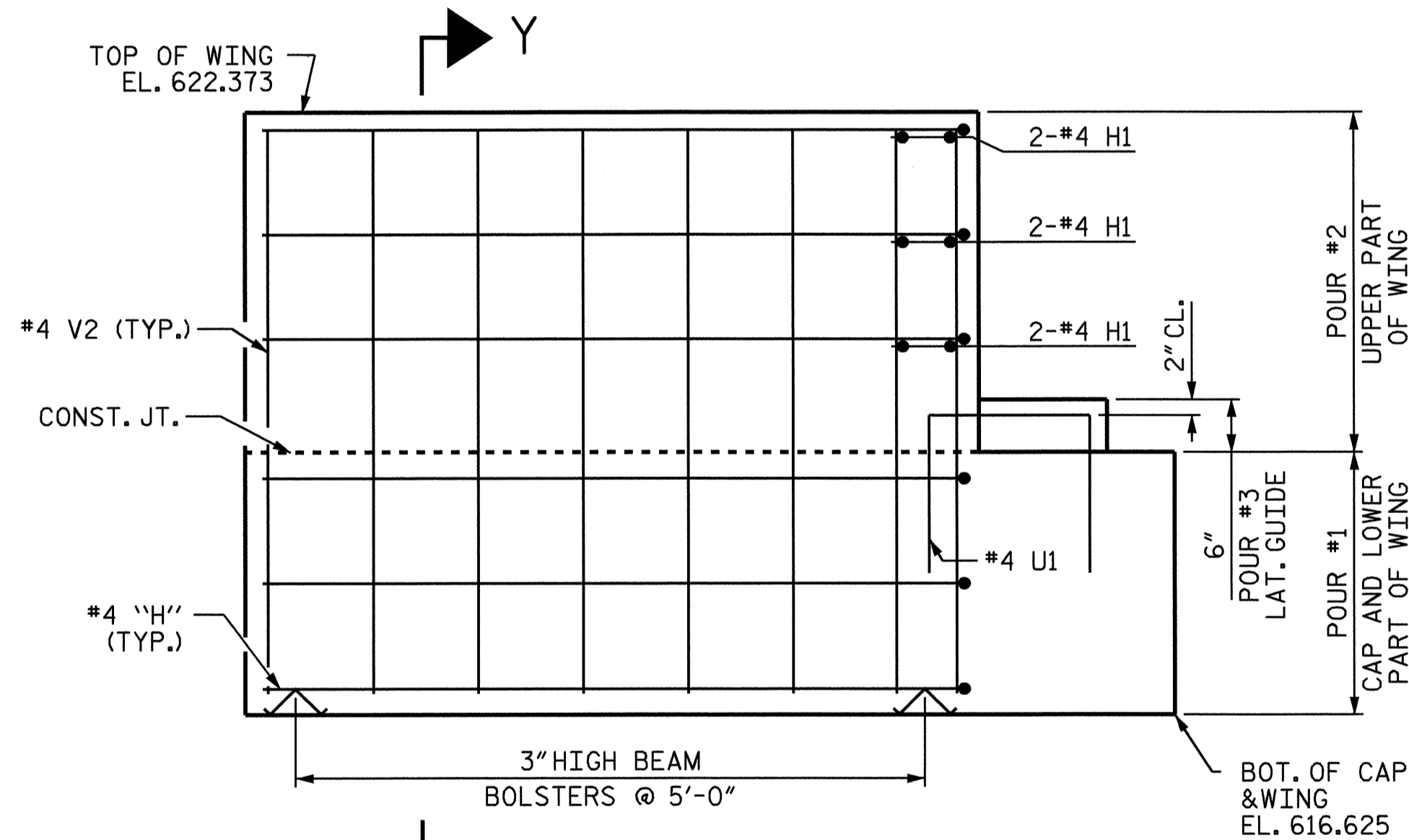


SECTION X-X



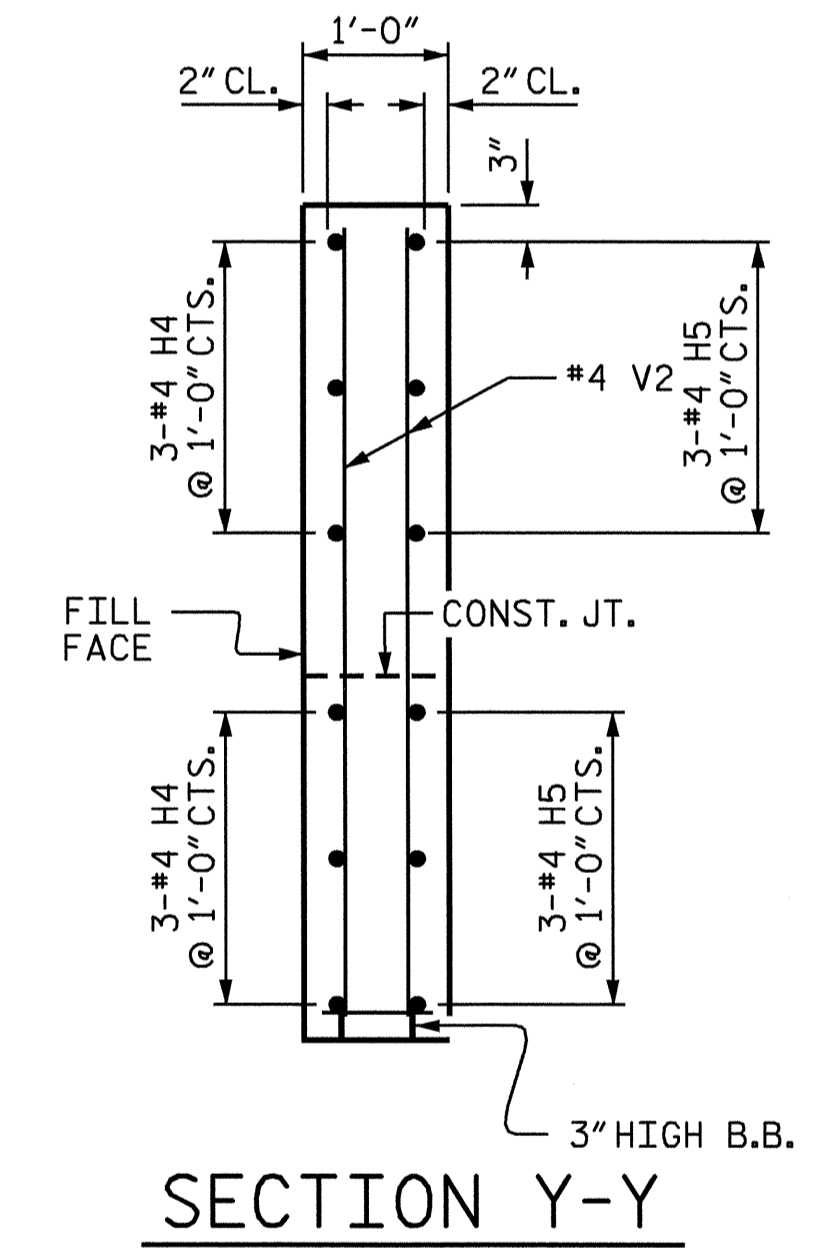
ELEVATION OF WING - W1

LEFT WING - STAGE II



ELEVATION OF WING - W2

RIGHT WING - STAGE I

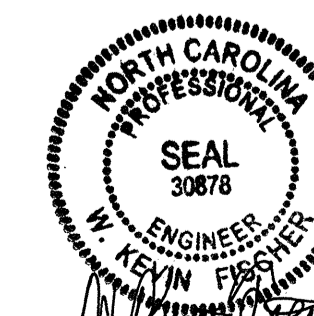


SECTION Y-Y

PROJECT NO. U-2510A  
MECKLENBURG COUNTY  
 STATION: 124+82.50 -L-

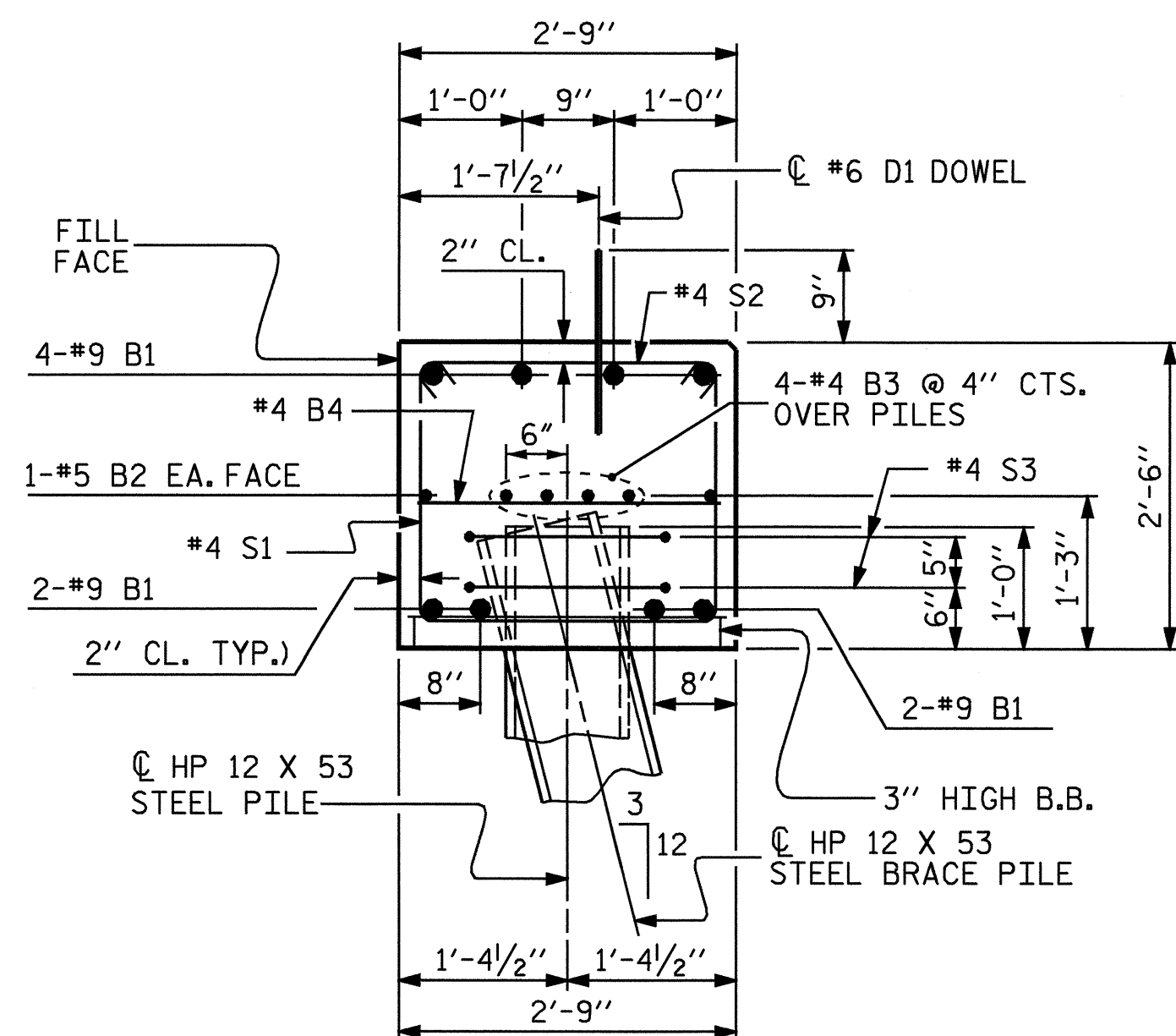
SHEET 2 OF 3

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

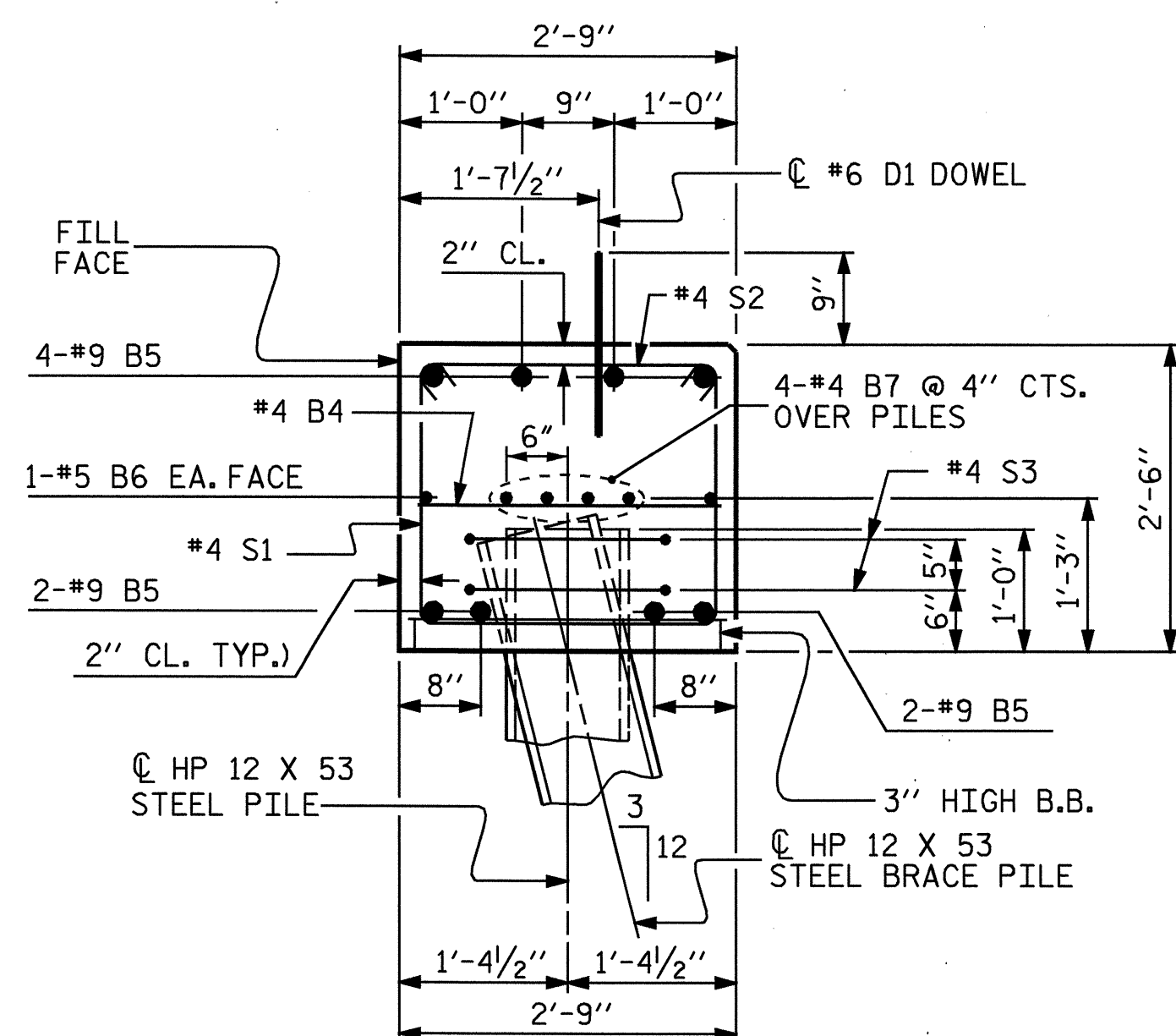


REVISIONS						SHEET NO. S-22
NO.	BY:	DATE:	NO.	BY:	DATE:	
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2			4			

DRAWN BY : W.K. FISCHER/WFP DATE : 5/17/05  
 CHECKED BY : M.A. ALLEN DATE : 8/06



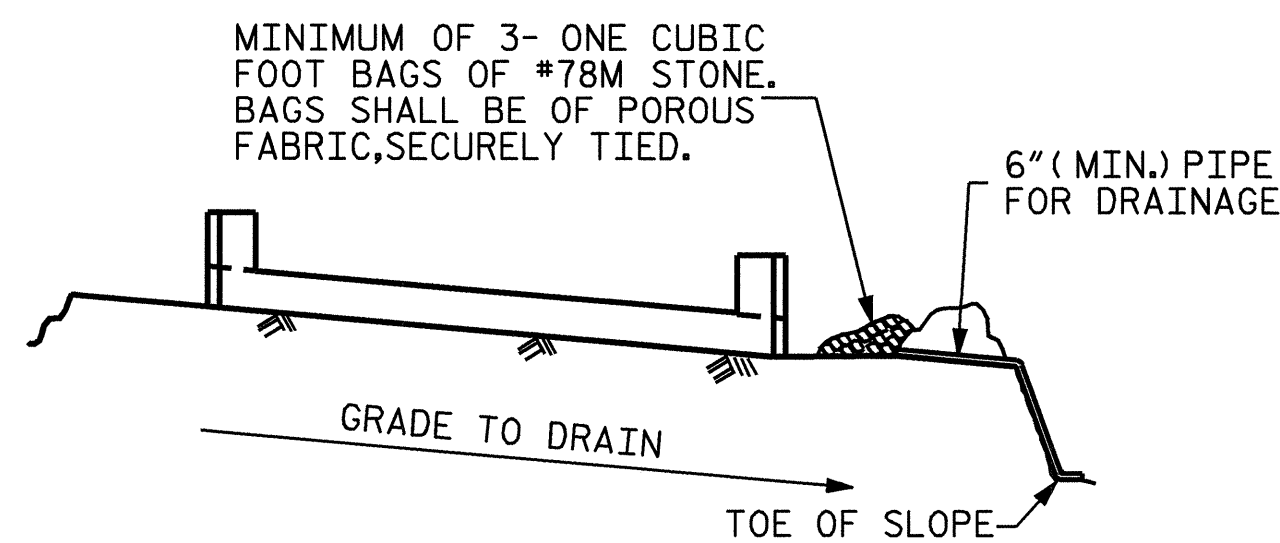
SECTION A-A



SECTION B-B

BAR TYPES					BILL OF MATERIAL						
					STAGE I		STAGE II				
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	9	1	47'-8"	1297	B4	14	4	STR	2'-5"	23
B2	2	5	STR	47'-7"	99	B5	8	9	1	56'-6"	1537
B3	8	4	STR	24'-9"	132	B6	2	5	STR	57'-4"	120
B4	12	4	STR	2'-5"	19	B7	8	4	STR	29'-10"	159
D1	26	6	STR	1'-6"	59	D1	34	6	STR	1'-6"	77
H1	6	4	STR	4'-2"	17	H1	6	4	STR	4'-2"	17
H4	6	4	7	7'-0"	28	H2	6	4	6	7'-1"	28
H5	6	4	7	7'-3"	29	H3	6	4	6	6'-10"	27
S1	36	4	4	7'-5"	178	S1	48	4	4	7'-5"	238
S2	36	4	2	3'-2"	76	S2	48	4	2	3'-2"	102
S3	14	4	3	6'-6"	61	S3	18	4	3	6'-6"	78
S4	4	4	2	3'-4"	9	S4	4	4	2	3'-4"	9
S5	4	4	4	7'-7"	20	S5	4	4	4	7'-7"	20
U1	2	4	5	4'-6"	6	U1	2	4	5	4'-6"	6
V2	24	4	STR	5'-4"	86	V1	24	4	STR	4'-9"	76
REINFORCING STEEL					2116 LBS.	REINFORCING STEEL					2517 LBS.
CLASS A CONCRETE BREAKDOWN						CLASS A CONCRETE BREAKDOWN					
POUR 1 - CAP AND LOWER PORTION OF WINGS					11.9 C.Y.	POUR 4 - CAP AND LOWER PORTION OF WINGS					15.2 C.Y.
POUR 2 - UPPER PORTION OF WINGS					1.2 C.Y.	POUR 5 - UPPER PORTION OF WINGS					1.0 C.Y.
POUR 3 - LATERAL GUIDES					0.1 C.Y.	POUR 6 - LATERAL GUIDES					0.1 C.Y.
CLASS A CONCRETE TOTAL					13.2 C.Y.	CLASS A CONCRETE TOTAL					16.3 C.Y.
HP 12 x 53 STEEL PILES						HP 12 x 53 STEEL PILES					
NO. 8					240 LIN. FEET	NO. 8					160 LIN. FEET

ALL BAR DIMENSIONS ARE OUT TO OUT.

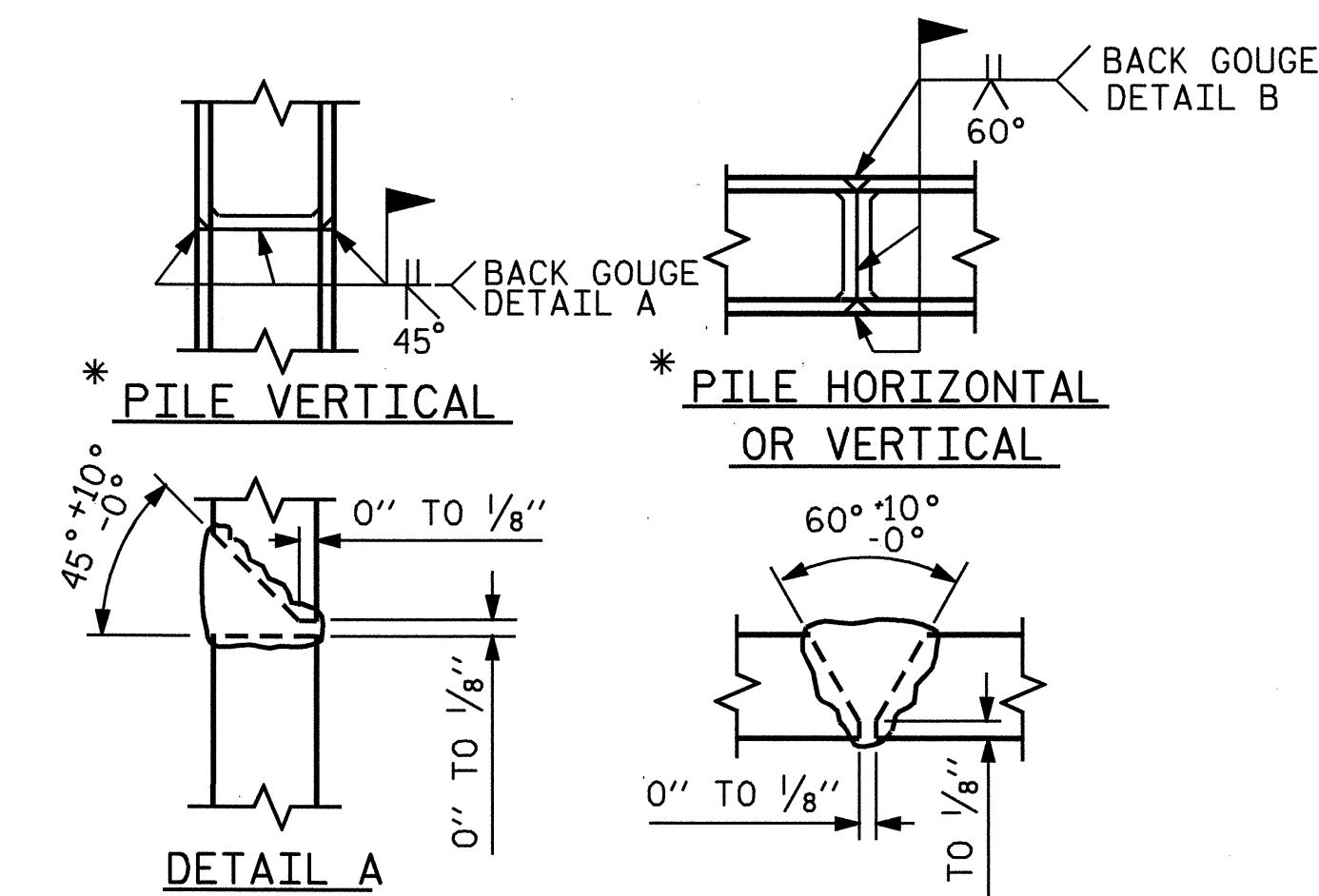


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

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

TEMPORARY DRAINAGE AT END BENT



\* POSITION OF PILE DURING WELDING. DETAIL B

PILE SPLICE DETAILS

NOTES

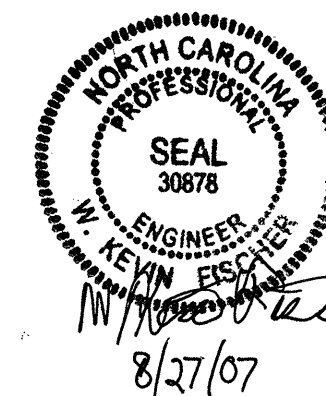
THE LATERAL GUIDE AT THE ENDS OF CAP ARE NOT TO BE POURED UNTIL AFTER CORED SLAB UNITS ARE IN PLACE.

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

THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4\"/>

DRAWN BY: W.K. FISCHER/WFP DATE: 5/18/05  
 CHECKED BY: M.A. ALLEN DATE: 8/06

03-MAY-2007 10:34  
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PROJECT NO. U-2510A  
 MECKLENBURG COUNTY  
 STATION: 124+82.50 -L-

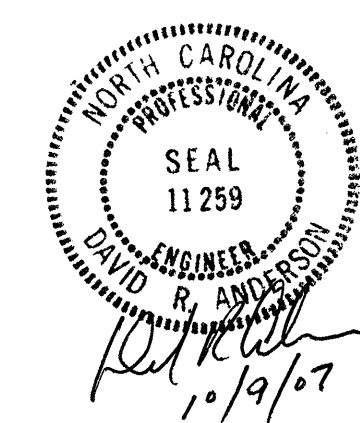
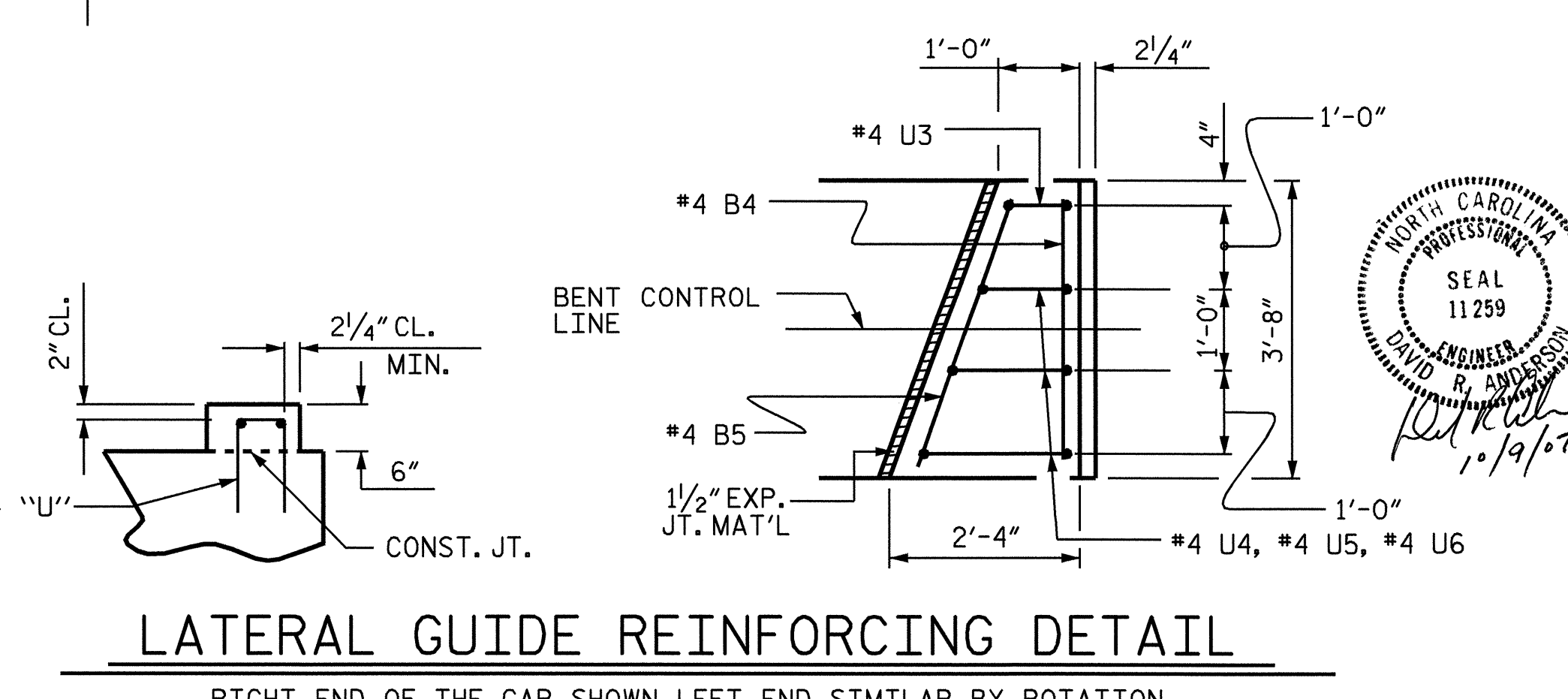
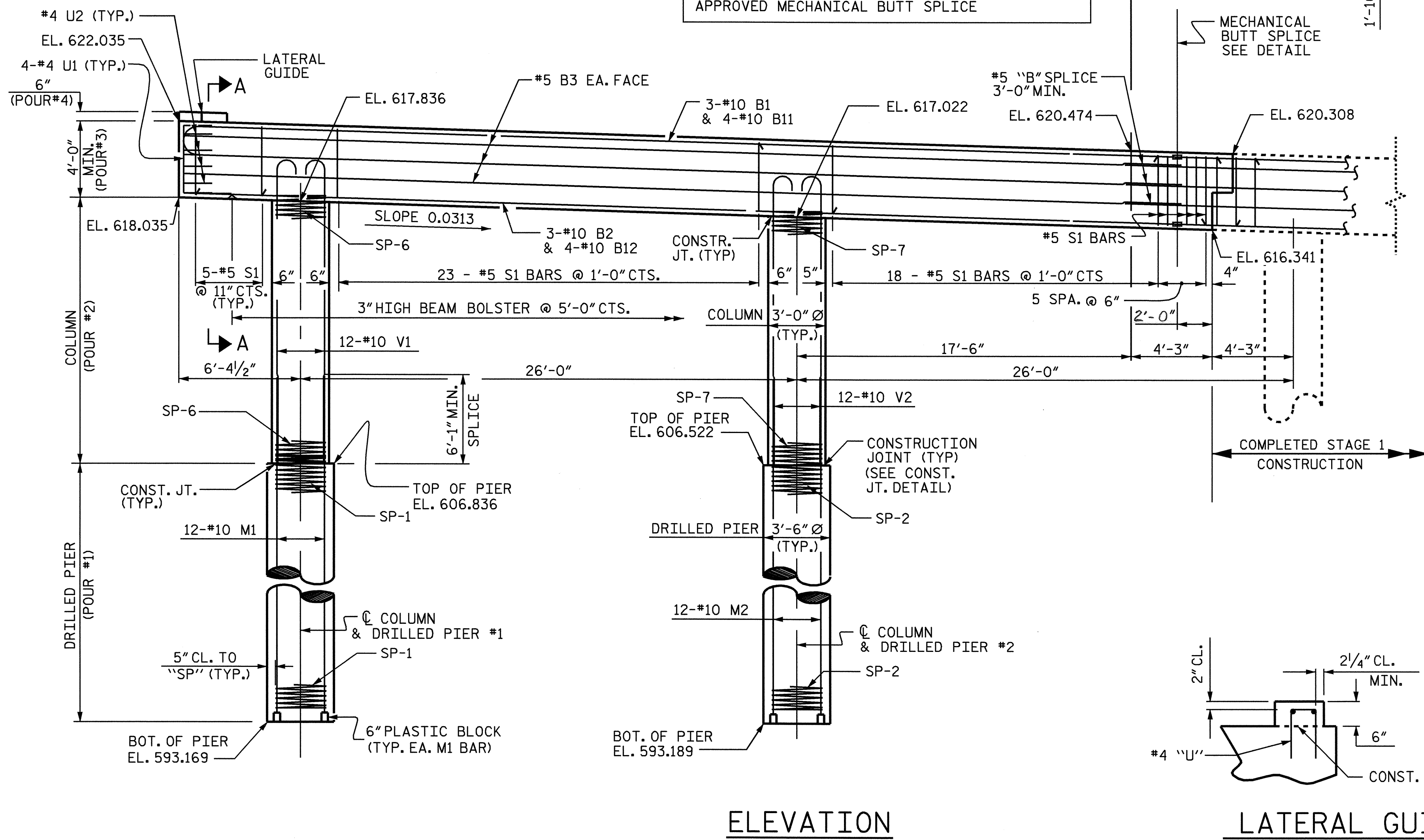
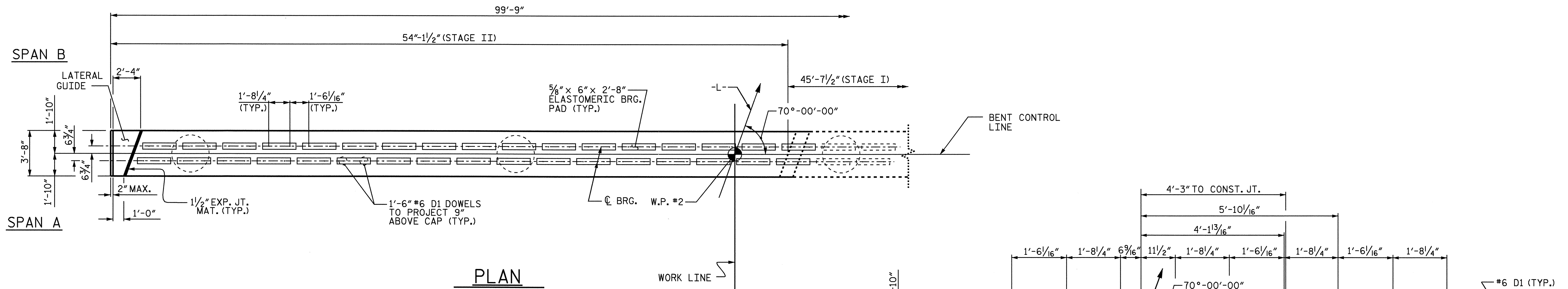
SHEET 3 OF 3

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

REVISIONS						SHEET NO. 5-23
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 36
2			4			







PROJECT NO. U-2510A  
 MECKLENBURG COUNTY  
 STATION: 124+82.50 -L-  
 SHEET 2 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 BENT 1  
 (STAGE II)

DRAWN BY: S. M. RASHIDI DATE: 03/07/06  
 CHECKED BY: W. F. P. DATE: 11/02/06

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-25
1			3			TOTAL SHEETS
2			4			36



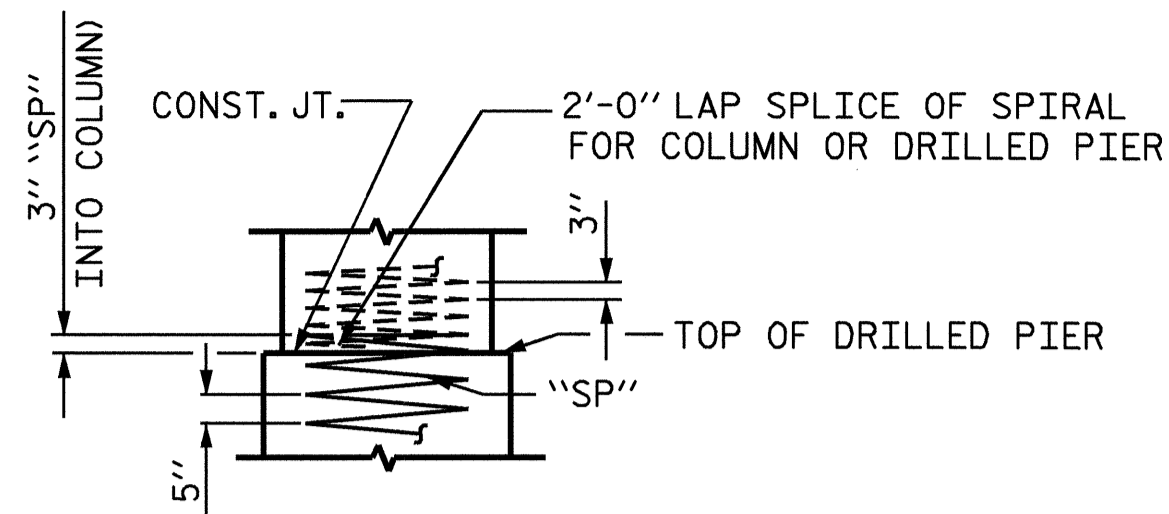




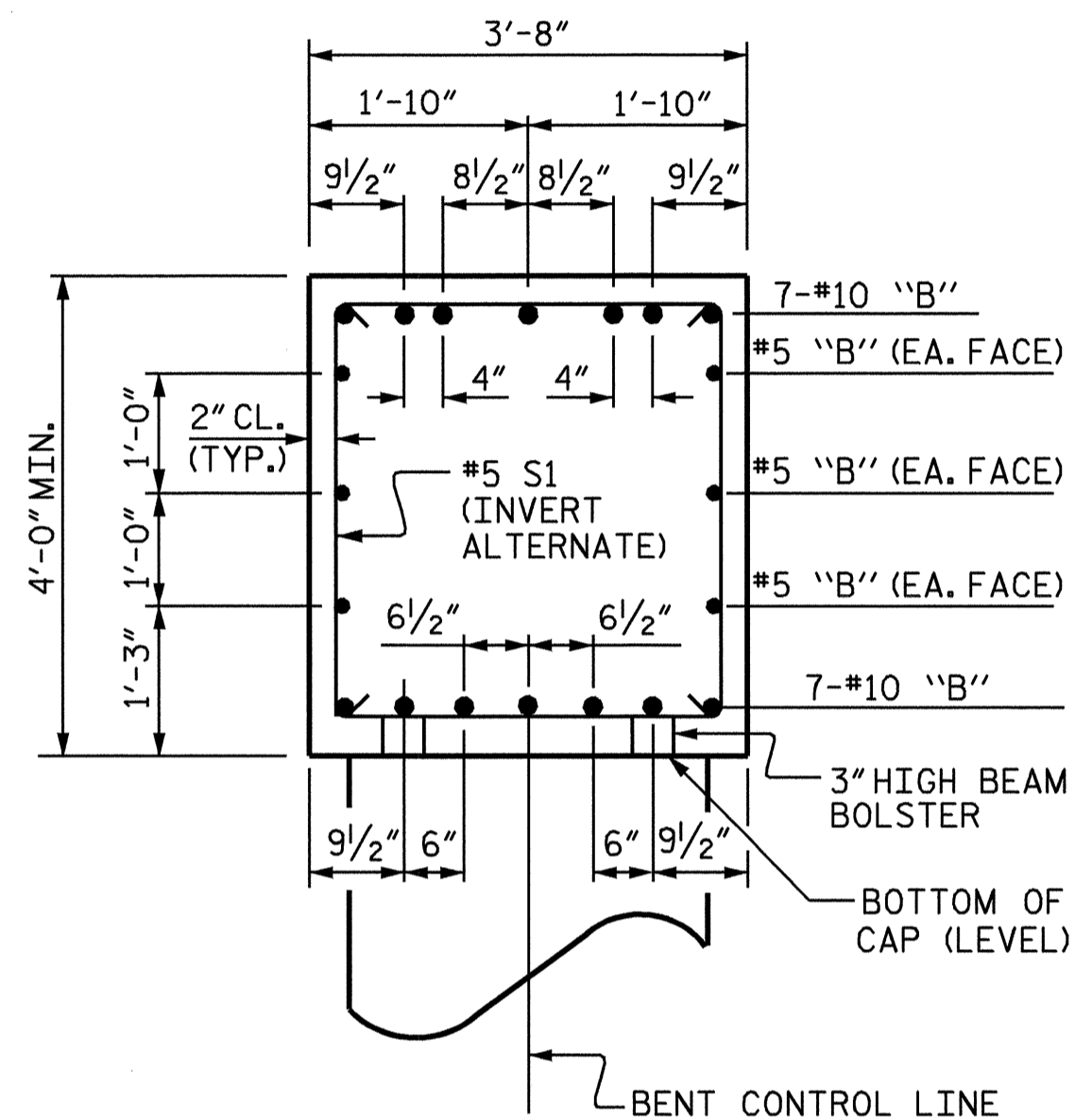




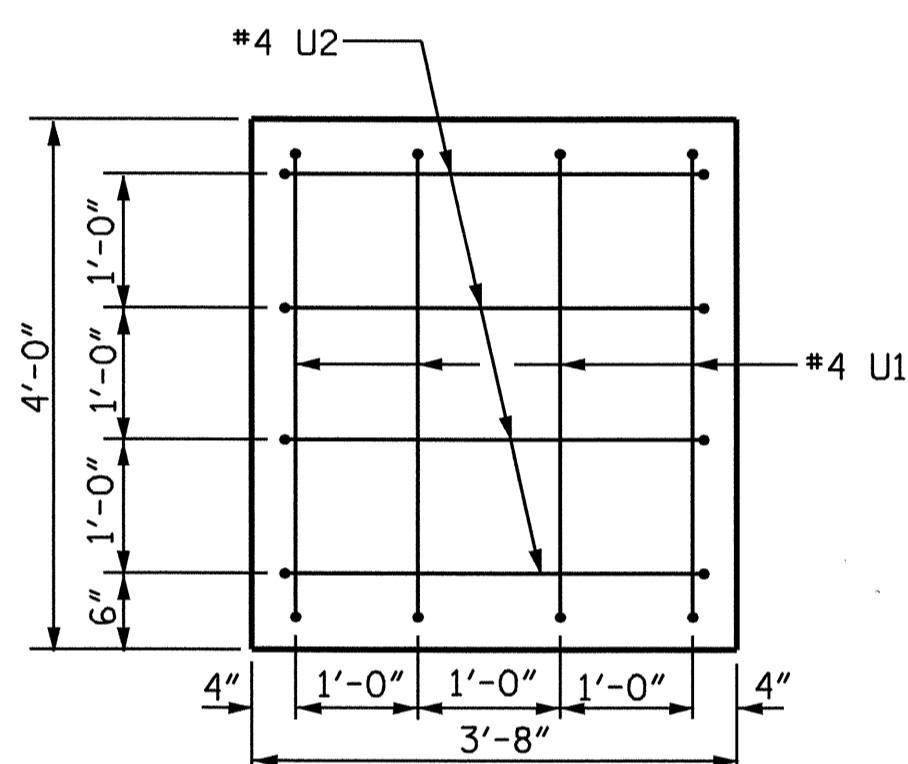




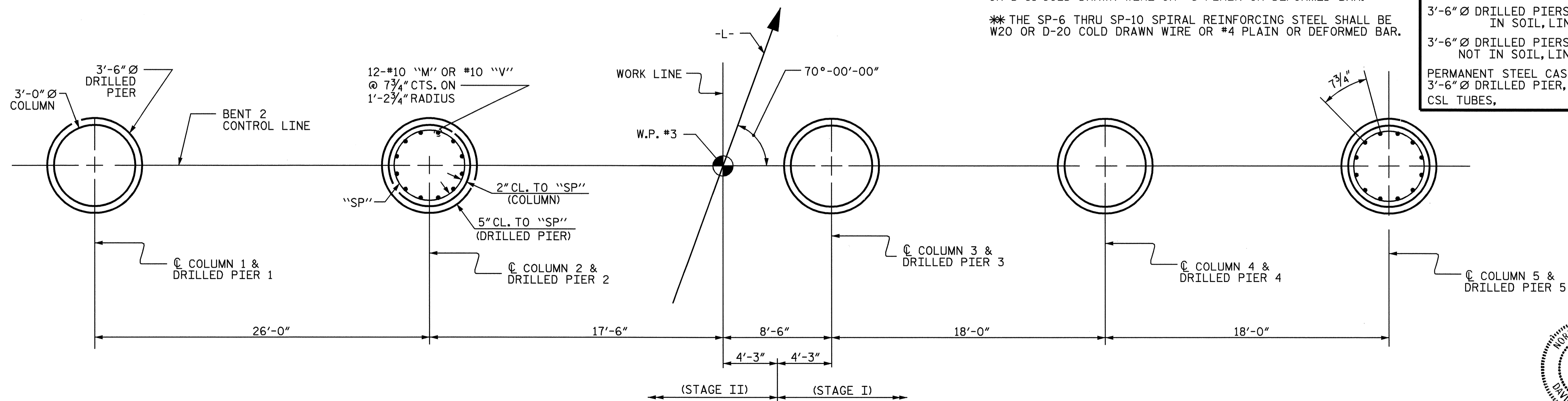
CONSTRUCTION JOINT DETAIL



SECTION A-A



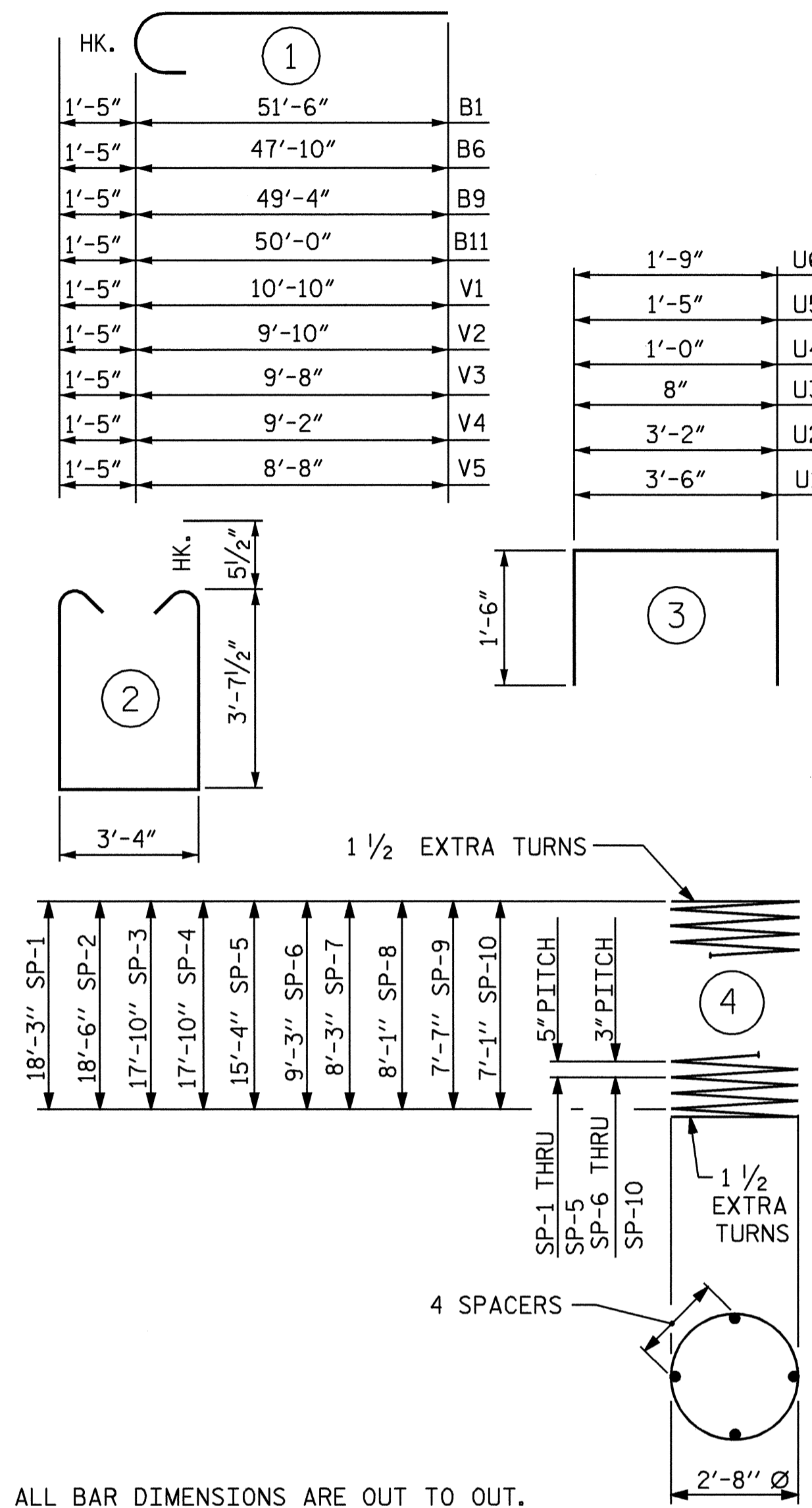
END VIEW



PLAN OF COLUMNS AND DRILLED PIERS

(ALL DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR ALL COLUMNS AND DRILLED PIERS)

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

\* THE SP-1 THRU SP-5 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.

\* THE SP-6 THRU SP-10 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

BILL OF MATERIAL

BENT 2 (STAGE I)					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B4	1	4	STR	3'-4"	2
B5	1	4	STR	3'-6"	2
B6	3	10	1	49'-3"	636
B7	3	10	STR	47'-10"	617
B8	6	5	STR	49'-6"	310
B9	4	10	1	50'-9"	873
B10	4	10	STR	49'-4"	849
D1	54	6	STR	1'-6"	122
M3	12	10	STR	27'-0"	1394
M4	12	10	STR	26'-11"	1390
M5	12	10	STR	24'-5"	1261
S1	37	5	2	11'-6"	444
U1	4	4	3	6'-6"	17
U2	4	4	3	6'-2"	16
U3	1	4	3	3'-8"	2
U4	1	4	3	4'-0"	3
U5	1	4	3	4'-5"	3
U6	1	4	3	4'-9"	3
V3	12	10	1	11'-1"	572
V4	12	10	1	10'-7"	546
V5	12	10	1	10'-1"	521
REINFORCING STEEL			LBS.	9583	
SP-3	1	*	4	379'-0"	395
SP-4	1	*	4	377'-7"	394
SP-5	1	*	4	328'-4"	342
SP-8	1	**	4	296'-6"	198
SP-9	1	**	4	280'-0"	187
SP-10	1	**	4	263'-6"	176
SPIRAL COLUMN REINFORCING STEEL			LBS.	1692	
CLASS 'A' CONCRETE					
POUR #2 (COLUMNS)	CU. YD.	5.8			
POUR #3 (BENT CAP)	CU. YD.	24.5			
POUR #4 (LAT GUIDES)	CU. YD.	0.1			
TOTAL:	CU. YD.	30.4			

BILL OF MATERIAL

BENT 2 (STAGE II)					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	3	10	1	52'-11"	683
B2	3	10	STR	51'-6"	665
B3	6	5	STR	53'-3"	333
B4	1	4	STR	3'-4"	2
B5	1	4	STR	3'-6"	2
B11	4	10	1	51'-5"	885
B12	4	10	STR	50'-0"	861
D1	66	6	STR	1'-6"	149
M1	12	10	STR	27'-4"	1411
M2	12	10	STR	27'-7"	1424
S1	51	5	2	11'-6"	612
U1	4	4	3	6'-6"	17
U2	4	4	3	6'-2"	16
U3	1	4	3	3'-8"	2
U4	1	4	3	4'-0"	3
U5	1	4	3	4'-5"	3
U6	1	4	3	4'-9"	3
V1	12	10	1	12'-3"	633
V2	12	10	1	11'-3"	581
REINFORCING STEEL			LBS.	8285	
SP-1	1	*	4	385'-10"	402
SP-2	1	*	4	394'-0"	411
SP-6	1	**	4	329'-5"	220
SP-7	1	**	4	296'-6"	198
SPIRAL COLUMN REINFORCING STEEL			LBS.	1231	
CLASS 'A' CONCRETE					
POUR #2 (COLUMNS)	CU. YD.	4.5			
POUR #3 (BENT CAP)	CU. YD.	29.7			
POUR #4 (LAT GUIDES)	CU. YD.	0.1			
TOTAL:	CU. YD.	34.3			

DRILLED PIER QUANTITIES

DRILLED PIER CONCRETE		
POUR #1 (DRILLED PIERS)	C.Y.	18.7
3'-6" Ø DRILLED PIERS IN SOIL, LIN. FT.	=	37.5
3'-6" Ø DRILLED PIERS NOT IN SOIL, LIN. FT.	=	15.0
PERMANENT STEEL CASING FOR 3'-6" Ø DRILLED PIER, LIN. FT.	=	27.0
CSL TUBES, LIN. FT.	=	240.0

DRILLED PIER QUANTITIES

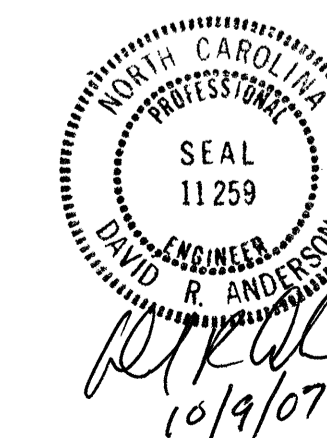
DRILLED PIER CONCRETE		
POUR #1 (DRILLED PIERS)	C.Y.	13.5
3'-6" Ø DRILLED PIERS IN SOIL, LIN. FT.	=	27.7
3'-6" Ø DRILLED PIERS NOT IN SOIL, LIN. FT.	=	10.0
PERMANENT STEEL CASING FOR 3'-6" Ø DRILLED PIER, LIN. FT.	=	25.0
CSL TUBES, LIN. FT.	=	170.8

PROJECT NO. U-2510A  
MECKLENBURG COUNTY  
 STATION: 124+82.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 BENT 2

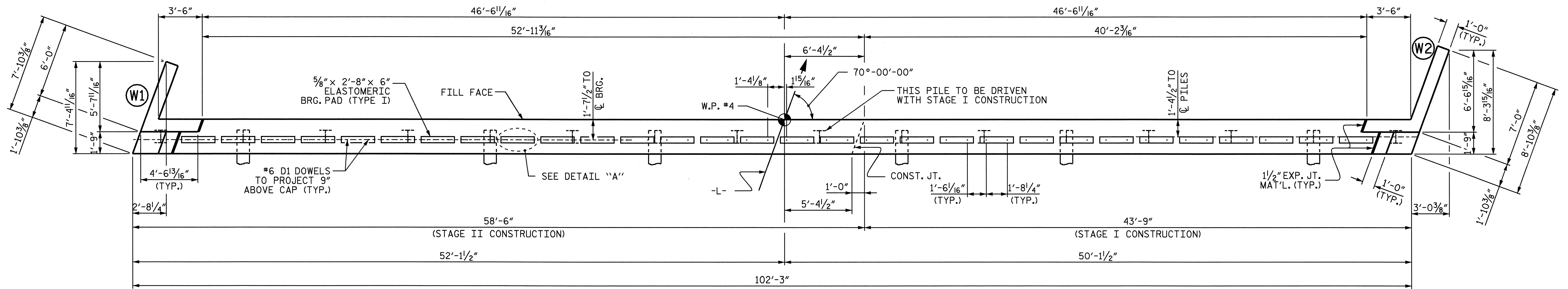


REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
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2			4		

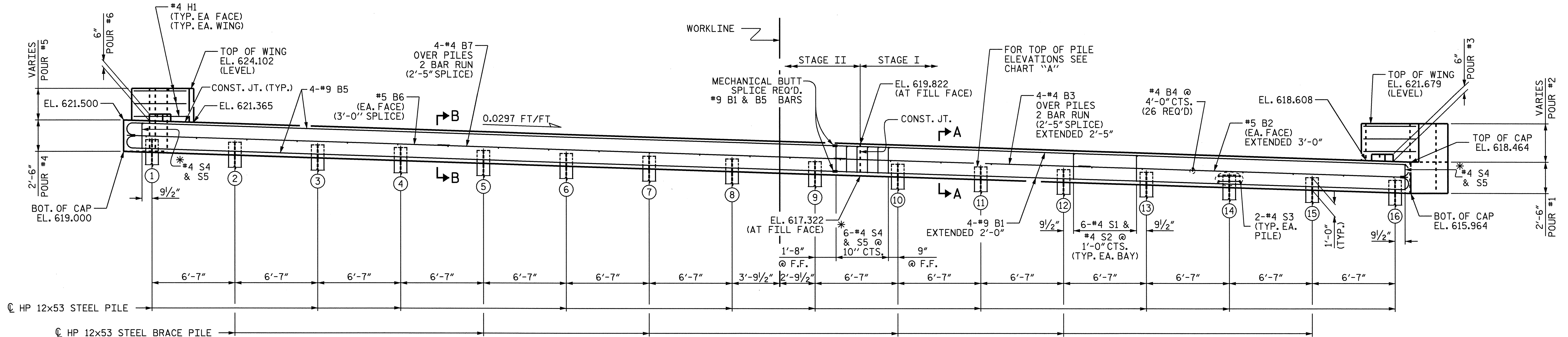
SHEET NO.  
 S-29  
 TOTAL SHEETS  
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DRAWN BY: S. M. RASHIDI DATE: 03/07/06  
 CHECKED BY: W. F. P. DATE: 11/02/06



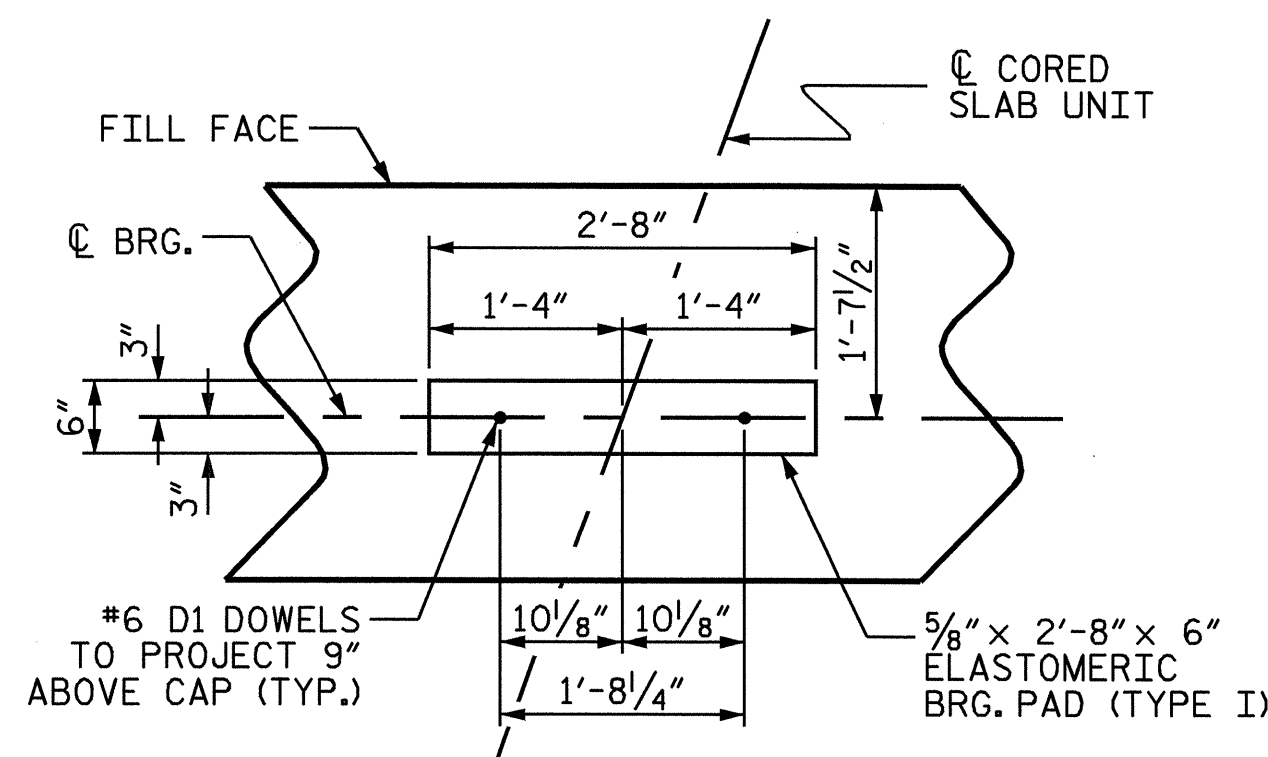


PLAN



ELEVATION

\* #4 S4 & S5 BARS ARE TO BE PLACED PARALLEL TO THE CONSTRUCTION JOINT.



DETAIL "A"

STAGE II PILES		STAGE I PILES	
PILE #	TOP OF PILE ELEVATIONS	PILE #	TOP OF PILE ELEVATIONS
1	619.971	9	618.407
2	619.775	10	618.212
3	619.580	11	618.017
4	619.384	12	617.821
5	619.189	13	617.626
6	618.994	14	617.430
7	618.798	15	617.235
8	618.603	16	617.040

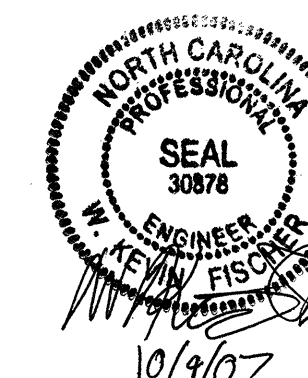
CHART "A"

PROJECT NO. U-2510A  
 MECKLENBURG COUNTY  
 STATION: 124+82.50 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT 2

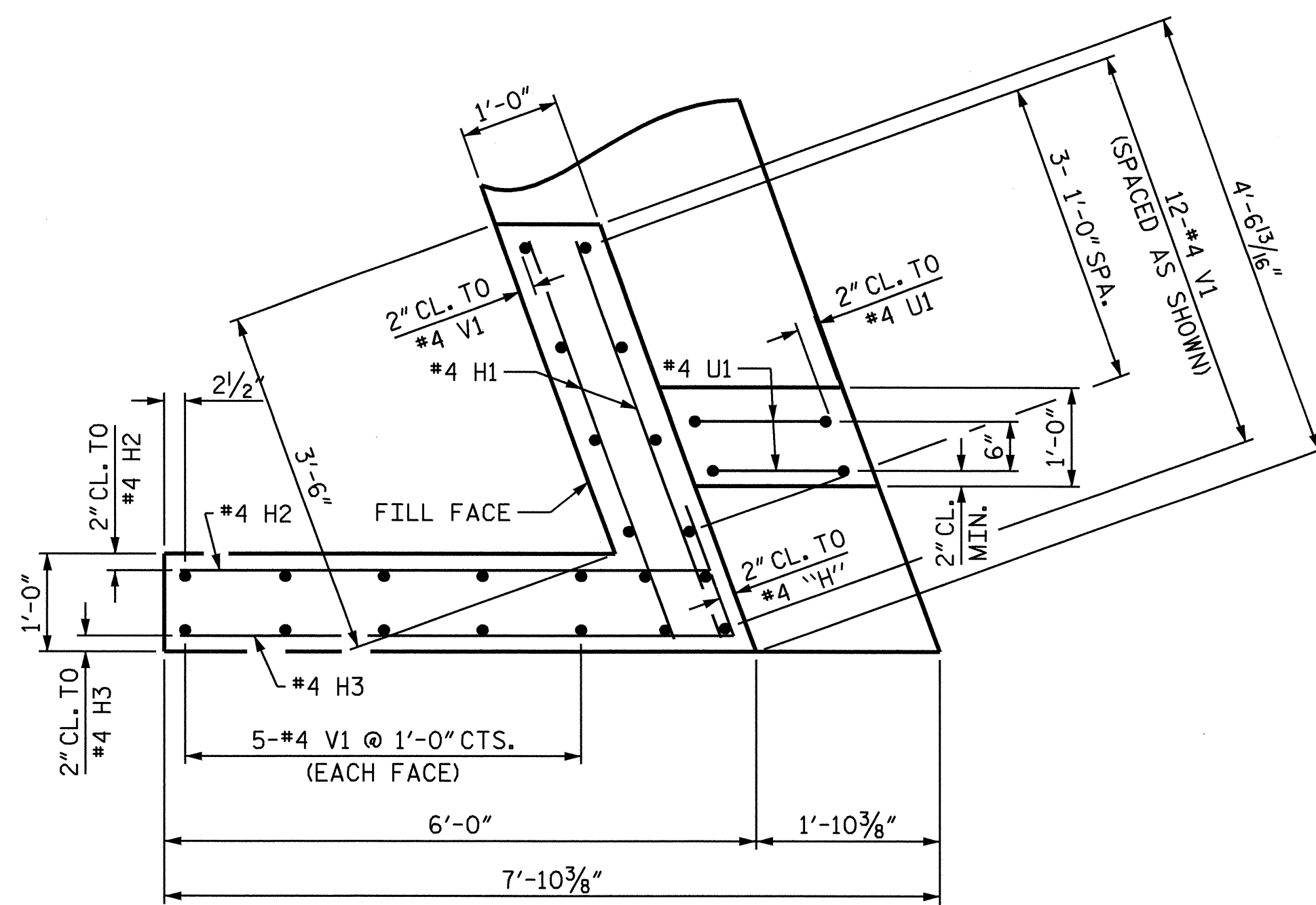


DRAWN BY: W.K. FISCHER/WFP DATE: 5/17/05  
 CHECKED BY: M.A. ALLEN DATE: 8/06

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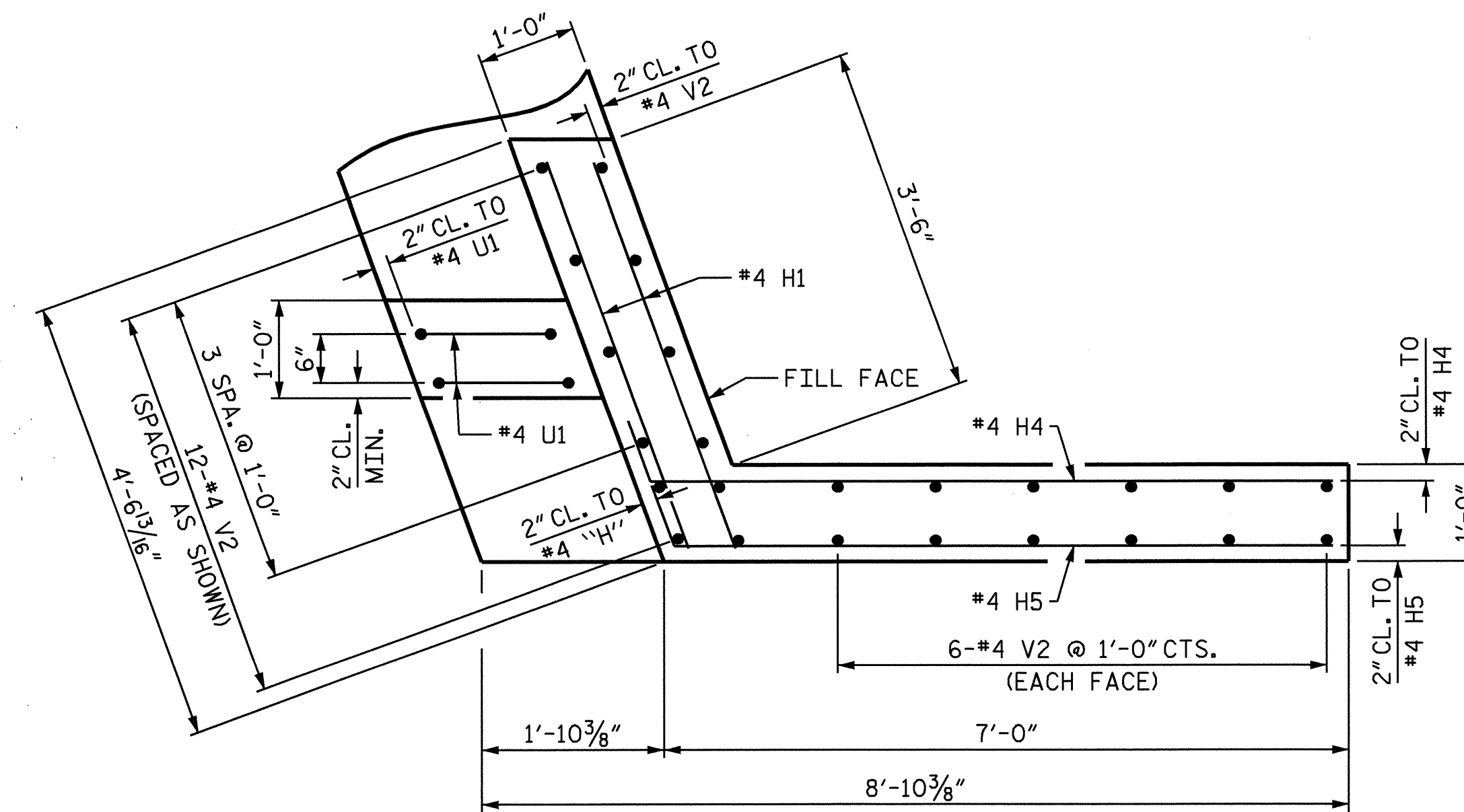
REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	DATE:
1			3	
2			4	

TOTAL SHEETS: 36



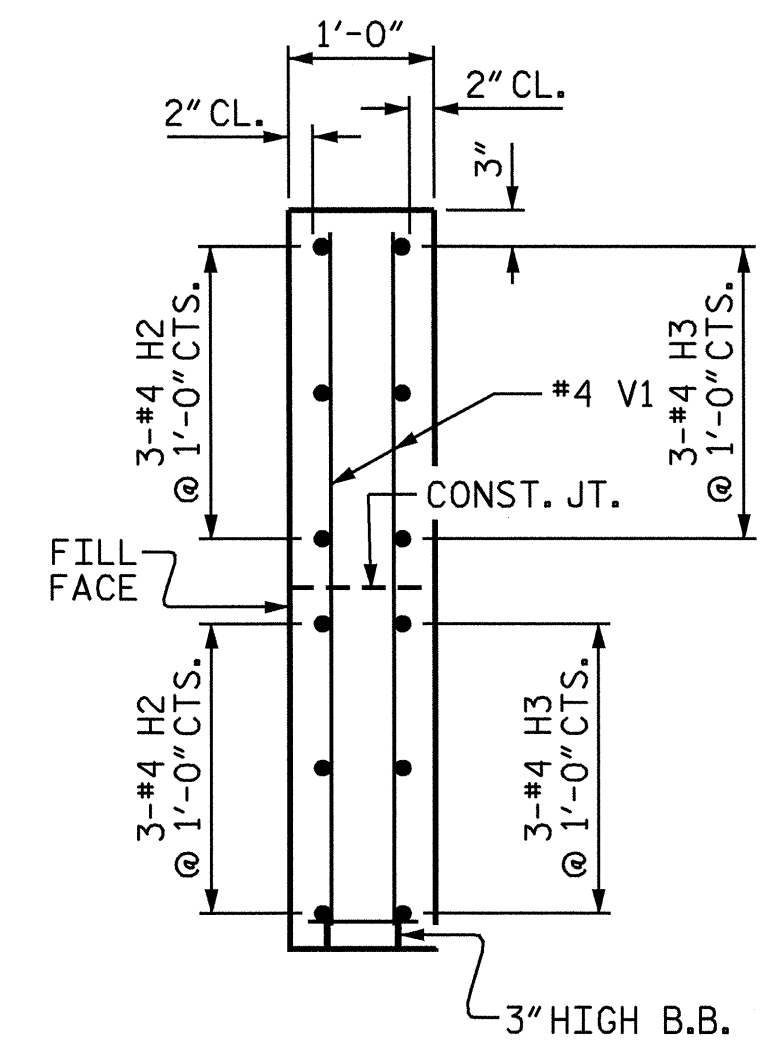
PLAN OF WING - W1

LEFT WING - STAGE II

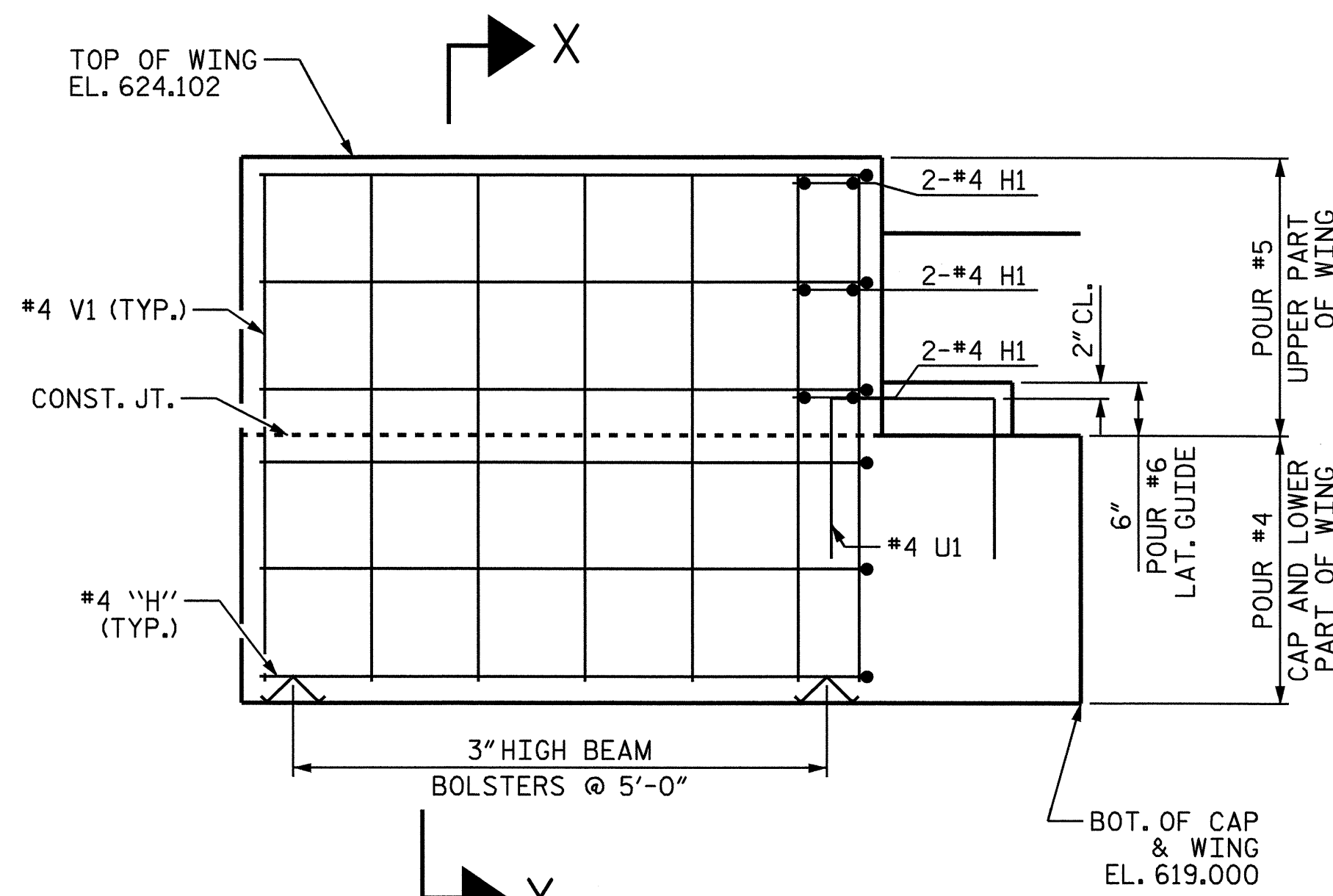


PLAN OF WING - W2

RIGHT WING - STAGE I

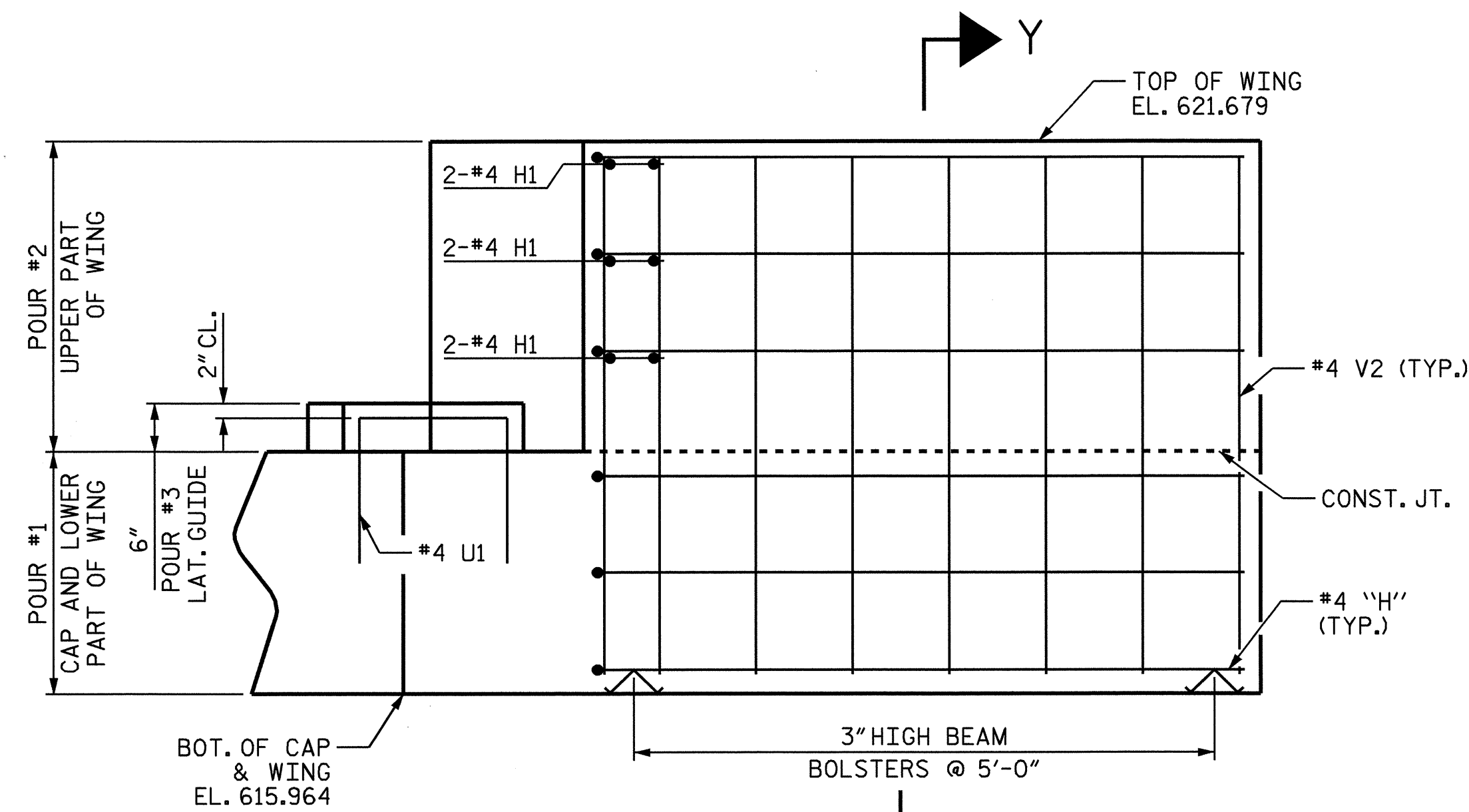


SECTION X-X



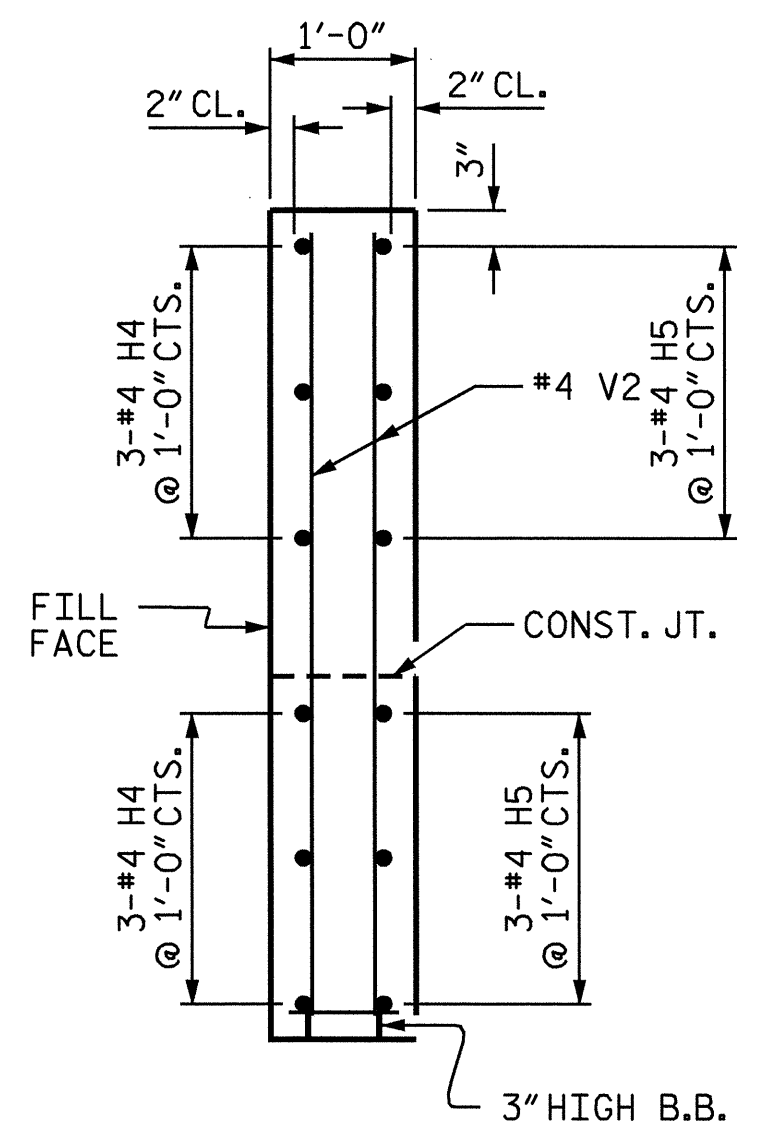
ELEVATION OF WING - W1

LEFT WING - STAGE II



ELEVATION OF WING - W2

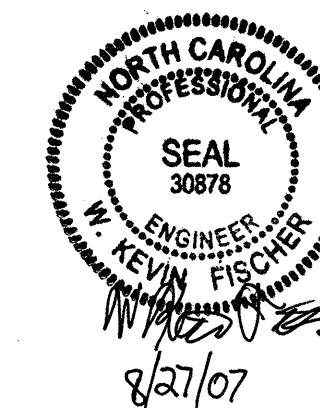
RIGHT WING - STAGE I



SECTION Y-Y

PROJECT NO. U-2510A  
MECKLENBURG COUNTY  
 STATION: 124+82.50 -L-

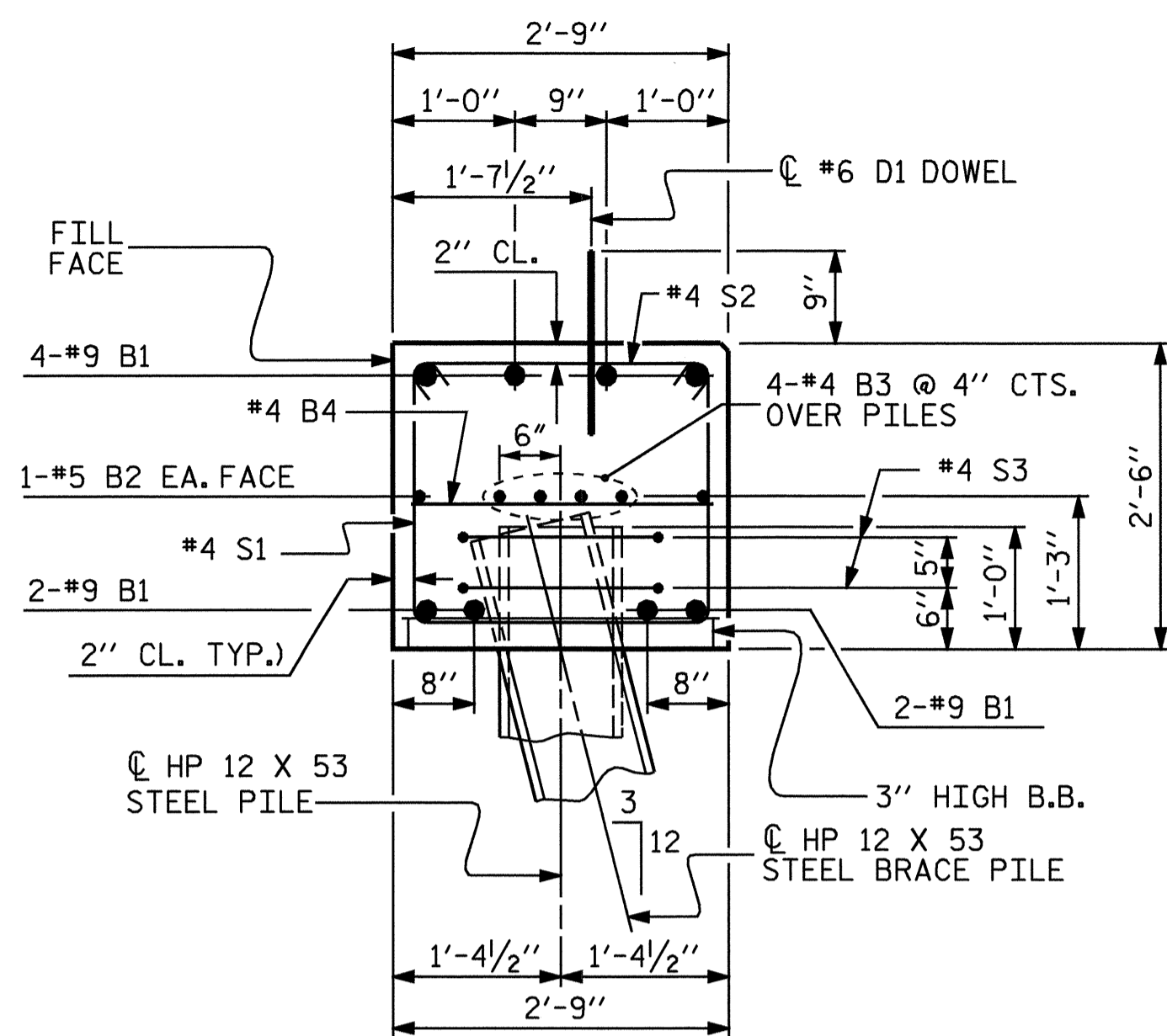
SHEET 2 OF 3



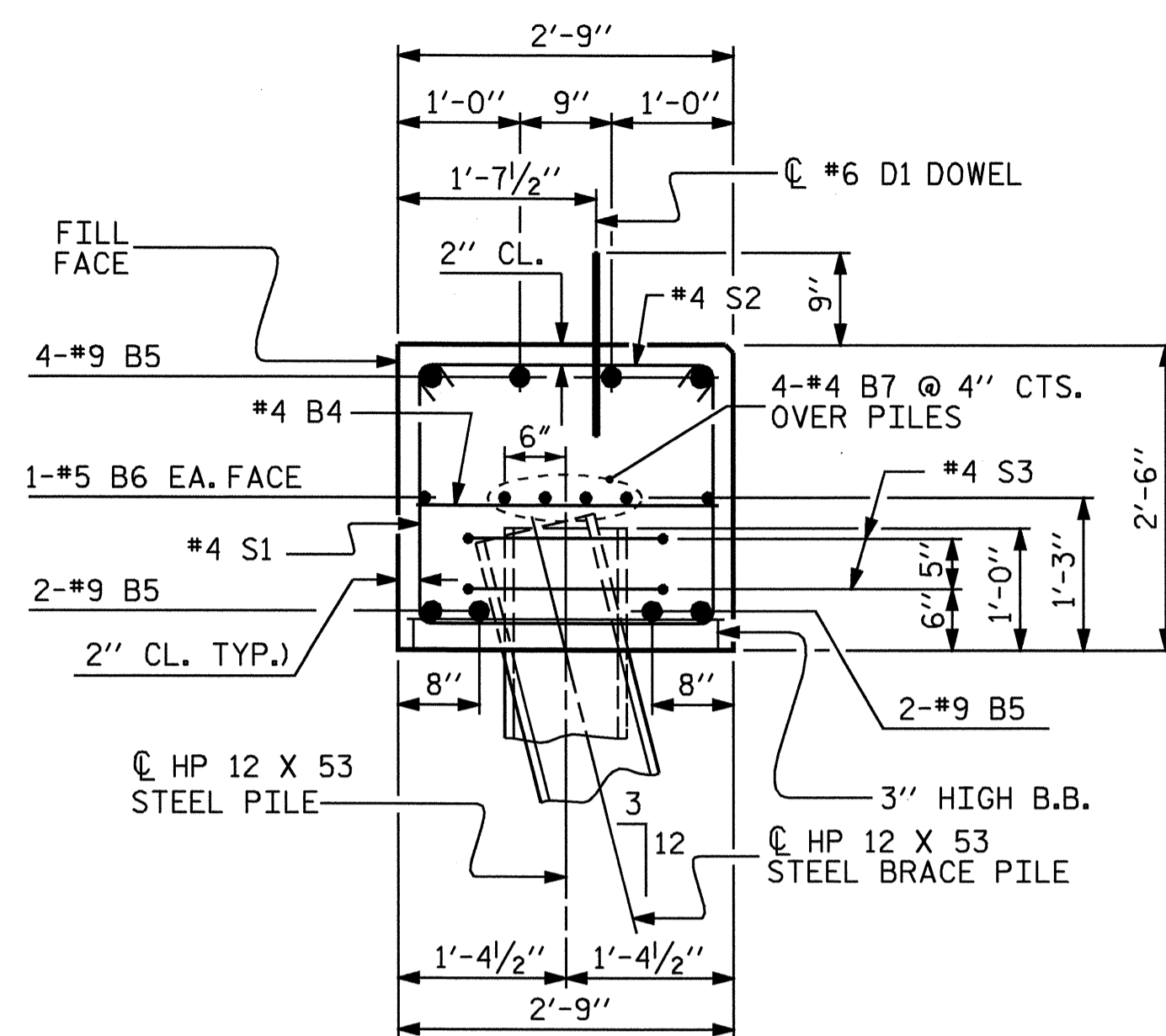
DRAWN BY: W.K. FISCHER/WFP DATE: 5/17/05  
 CHECKED BY: M.A. ALLEN DATE: 8/06

03-MAY-2007 10:34  
 R:\Structures\wparker\U2510a.sd.01.eb.dgn  
 wparker

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			5-31
2			4			TOTAL SHEETS 36

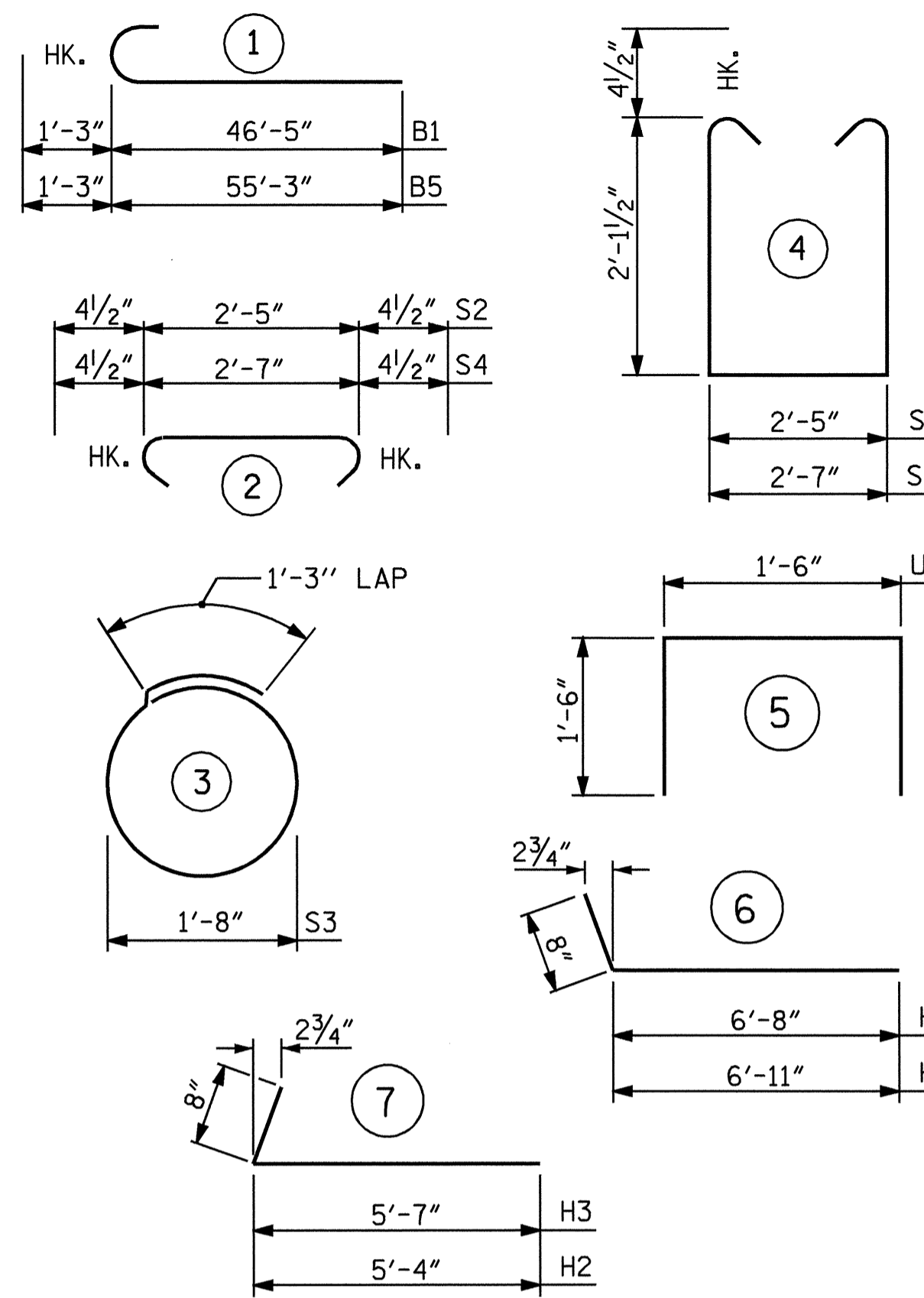


SECTION A-A



SECTION B-B

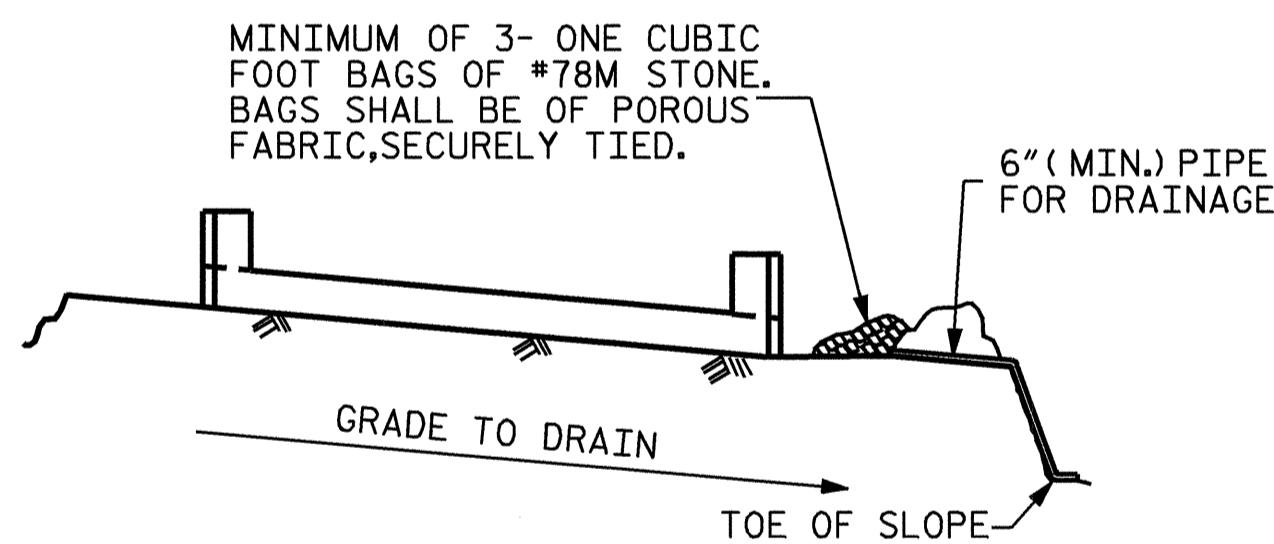
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

STAGE I					STAGE II						
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR NO.	SIZE	TYPE	LENGTH	WEIGHT		
B1	8	9	1	47'-8"	1297	B4	15	4	STR	2'-5"	24
B2	2	5	STR	47'-7"	99	B5	8	9	1	56'-6"	1537
B3	8	4	STR	24'-9"	132	B6	2	5	STR	57'-4"	120
B4	11	4	STR	2'-5"	18	B7	8	4	STR	29'-10"	159
D1	26	6	STR	1'-6"	59	D1	34	6	STR	1'-6"	77
H1	6	4	STR	4'-2"	17	H1	6	4	STR	4'-2"	17
H4	6	4	6	7'-7"	30	H2	6	4	7	6'-0"	24
H5	6	4	6	7'-4"	29	H3	6	4	7	6'-3"	25
S1	36	4	4	7'-5"	178	S1	48	4	4	7'-5"	238
S2	36	4	2	3'-2"	76	S2	48	4	2	3'-2"	102
S3	14	4	3	6'-6"	61	S3	18	4	3	6'-6"	78
S4	4	4	4	3'-4"	9	S4	4	4	4	3'-4"	9
S5	4	4	2	7'-7"	20	S5	4	4	2	7'-7"	20
U1	2	4	5	4'-6"	6	U1	2	4	5	4'-6"	6
V2	24	4	STR	5'-4"	86	V1	22	4	STR	4'-9"	70
REINFORCING STEEL				2117	REINFORCING STEEL				2506		
<u>CLASS A CONCRETE BREAKDOWN</u>					<u>CLASS A CONCRETE BREAKDOWN</u>						
POUR 1 - CAP AND LOWER PORTION OF WINGS				12.0 C.Y.	POUR 4 - CAP AND LOWER PORTION OF WINGS				15.1 C.Y.		
POUR 2 - UPPER PORTION OF WINGS				1.3 C.Y.	POUR 5 - UPPER PORTION OF WINGS				0.9 C.Y.		
POUR 3 - LATERAL GUIDES				0.1 C.Y.	POUR 6 - LATERAL GUIDES				0.1 C.Y.		
CLASS A CONCRETE TOTAL				13.4 C.Y.	CLASS A CONCRETE TOTAL				16.1 C.Y.		
<u>HP 12 x 53 STEEL PILES</u>					<u>HP 12 x 53 STEEL PILES</u>						
NO. 8				200 LIN. FEET	NO. 8				240 LIN. FEET		

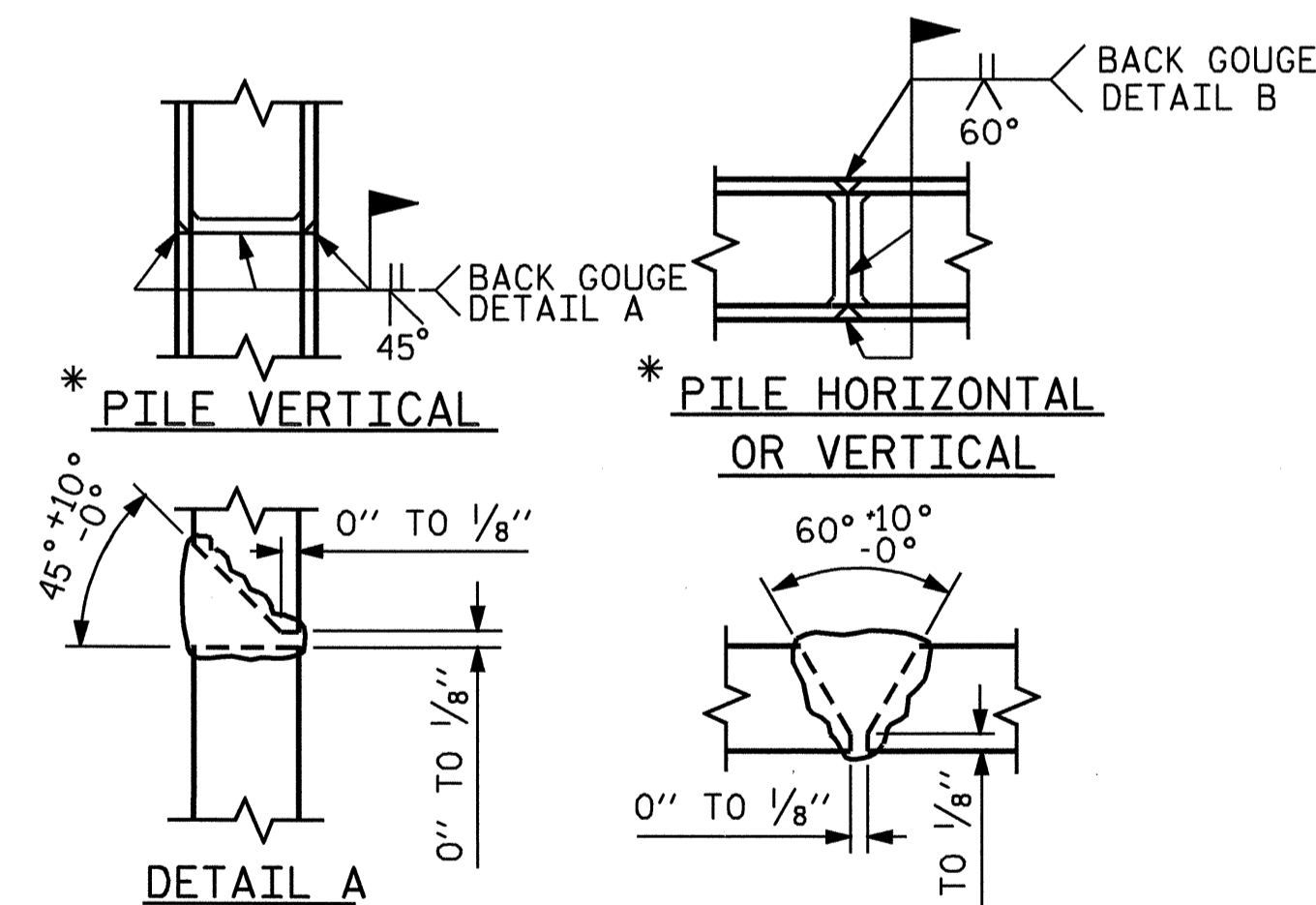


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

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

TEMPORARY DRAINAGE AT END BENT



PILE SPLICE DETAILS

NOTES

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

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

THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" Ø 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.

PROJECT NO. U-2510A  
MECKLENBURG COUNTY  
 STATION: 124+82.50 -L-

SHEET 3 OF 3

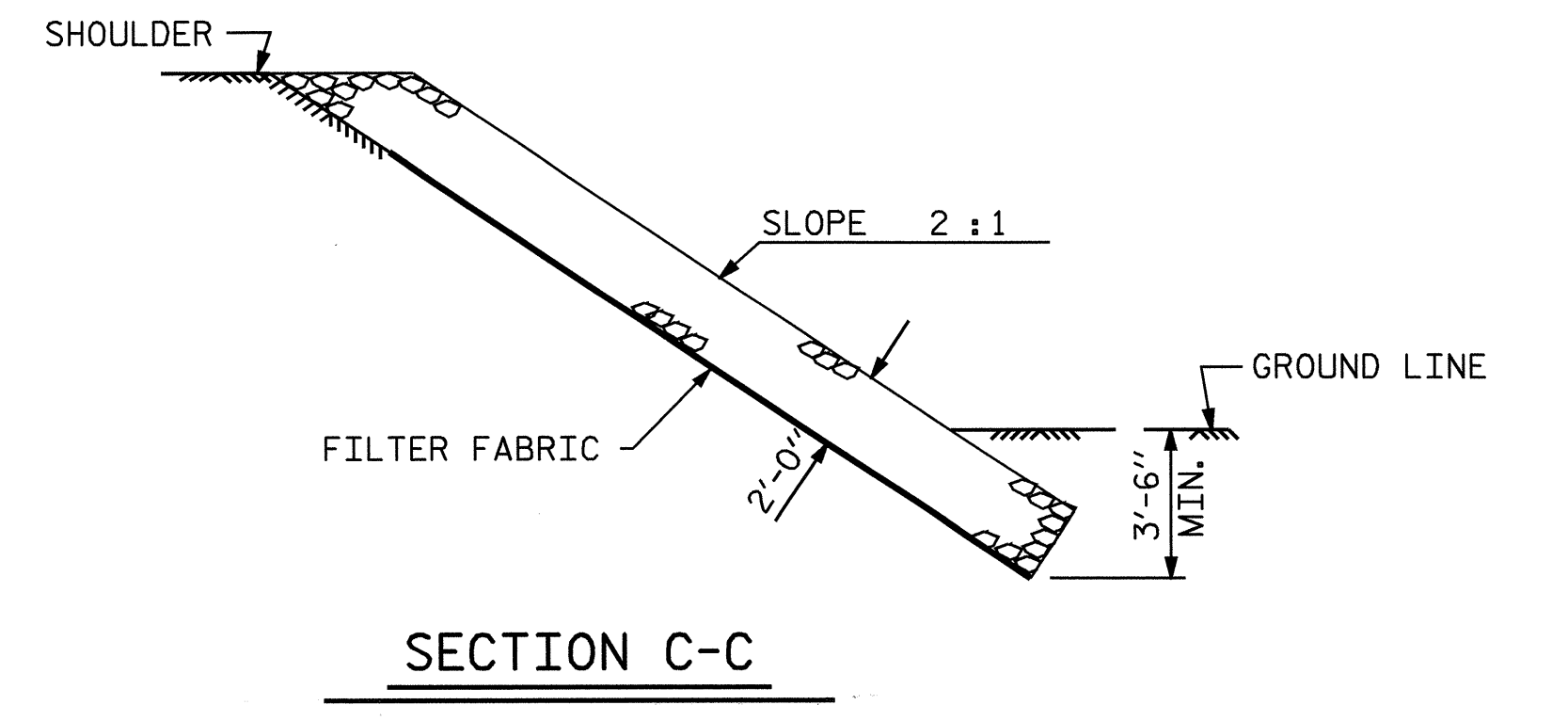
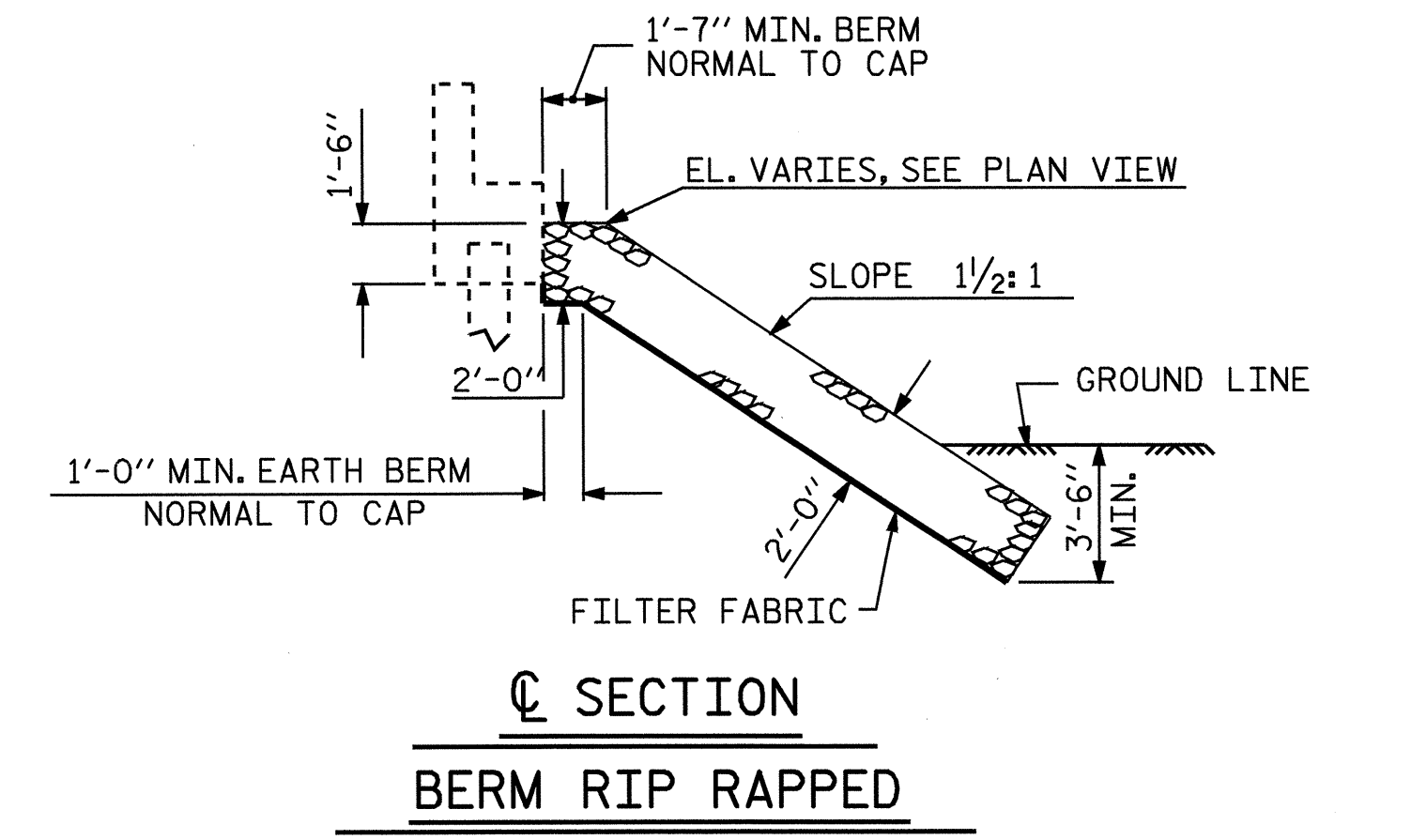
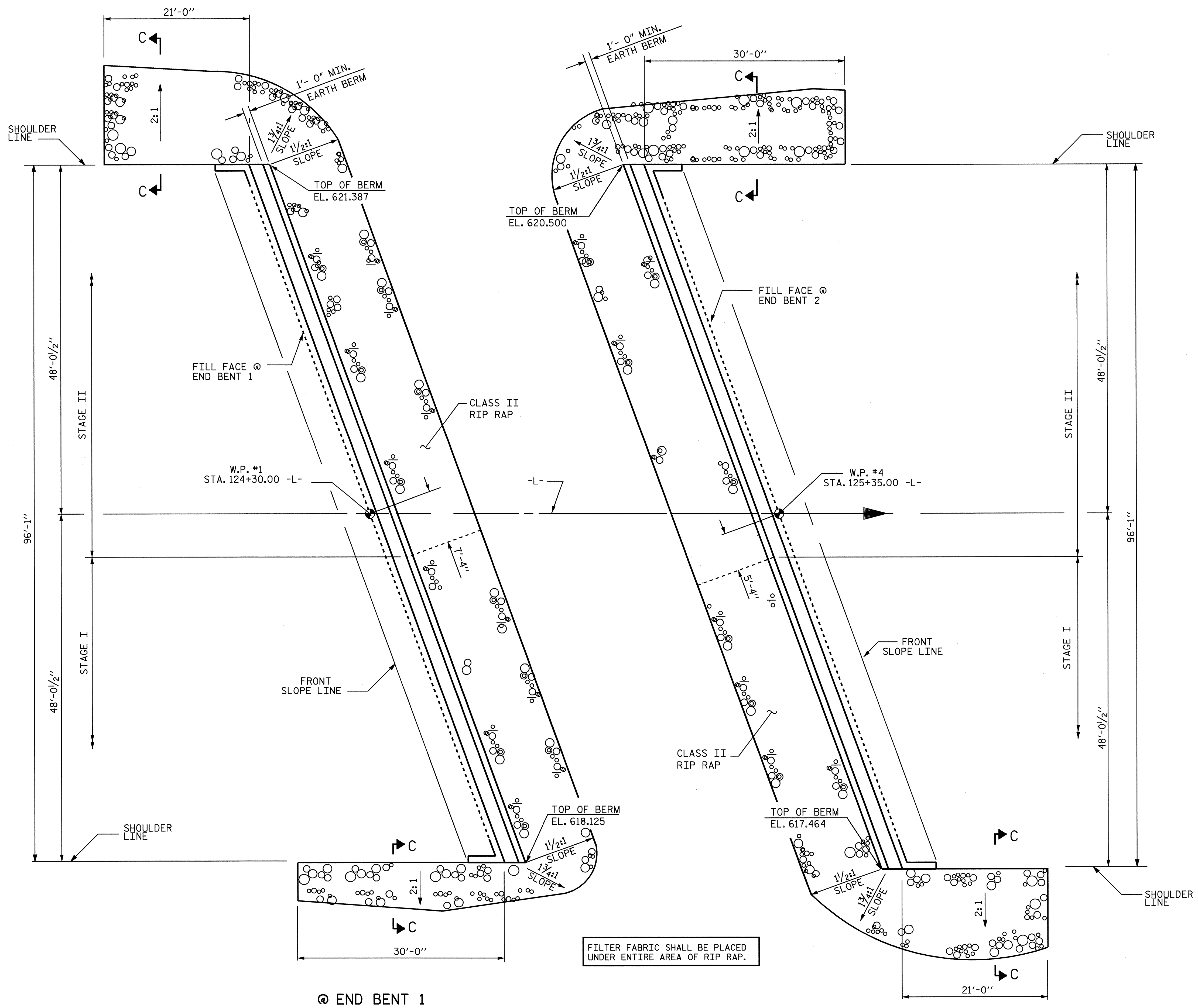


STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 END BENT 2

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

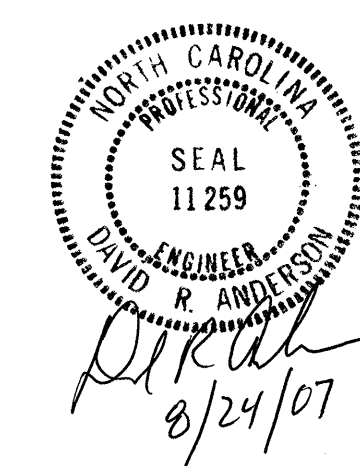
DRAWN BY: W.K. FISCHER/WFP DATE: 5/18/05  
 CHECKED BY: M.A. ALLEN DATE: 8/06





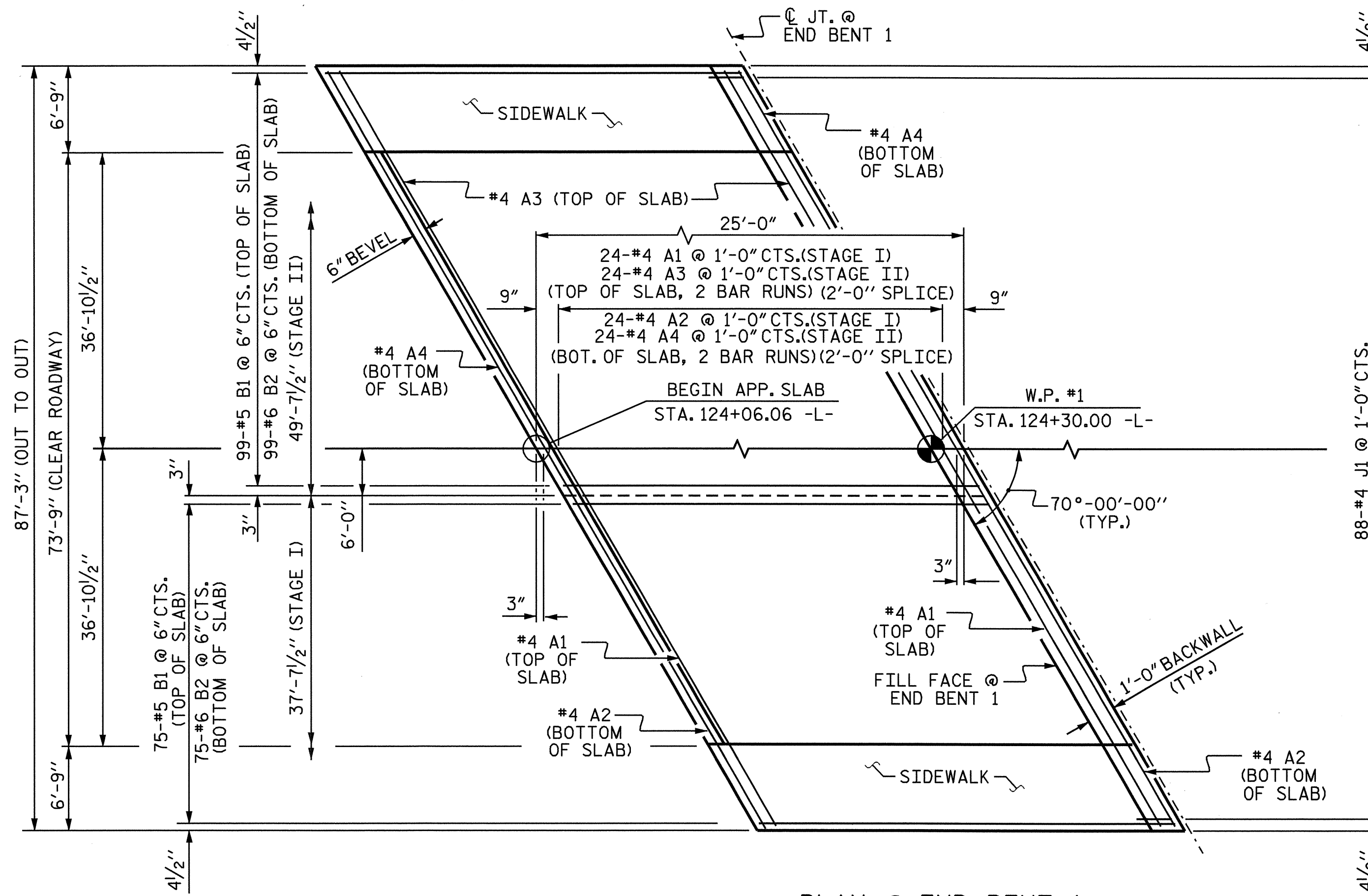
ESTIMATED QUANTITIES				
BRIDGE @ STA. 124+82.50 -L-	RIP RAP CLASS II		FILTER FABRIC FOR DRAINAGE	
	TONS		SQUARE YARDS	
	STAGE I	STAGE II	STAGE I	STAGE II
END BENT 1	239	194	265	215
END BENT 2	122	221	135	245

PROJECT NO. U-2510A  
MECKLENBURG COUNTY  
 STATION: 124+82.50 -L-



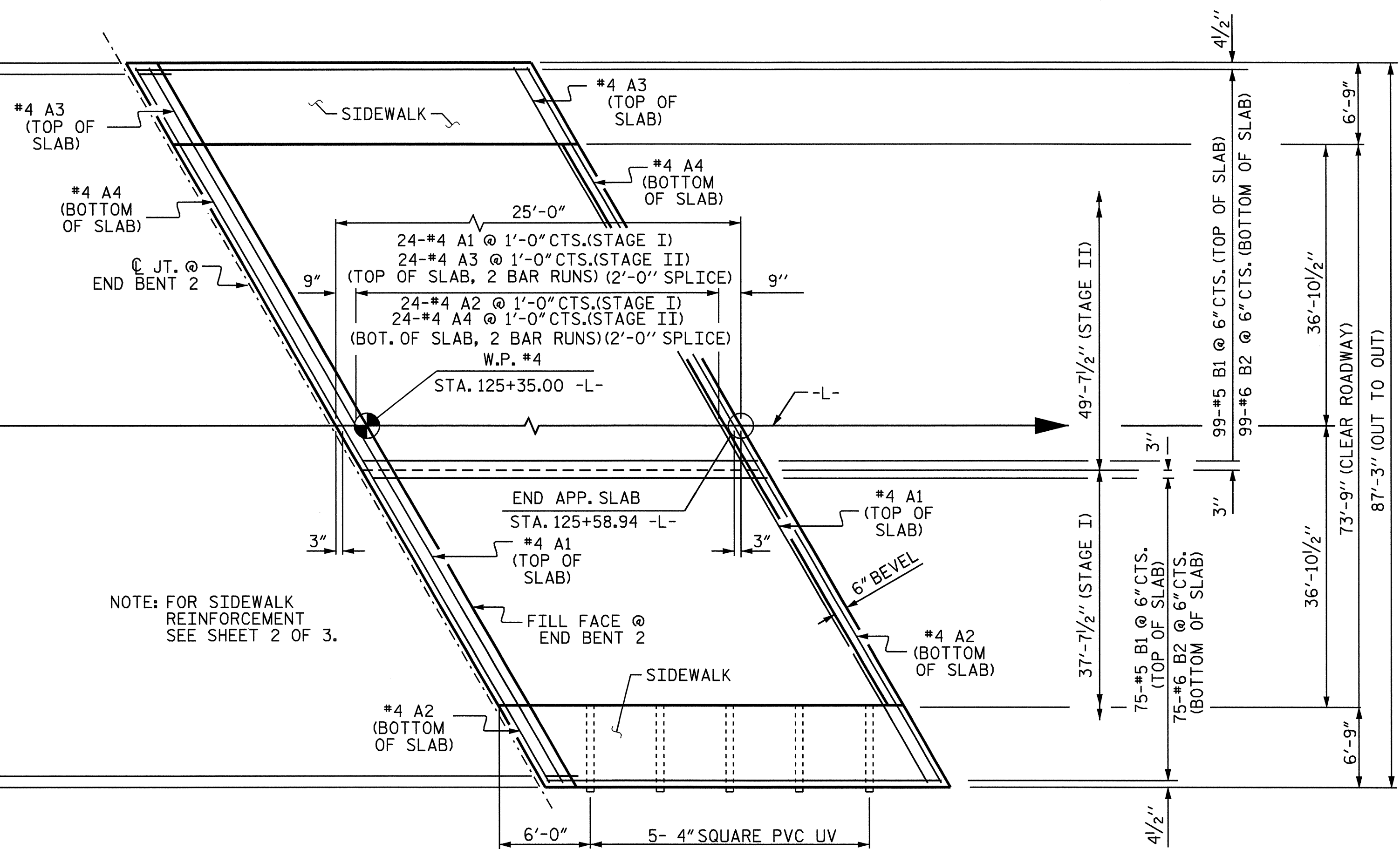
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD = RIP RAP DETAILS =					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-33
					TOTAL SHEETS 36

ASSEMBLED BY : N. Q. TRAN DATE : 8-8-05  
 CHECKED BY : S. M. RASHIDI DATE : 10-9-05  
 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

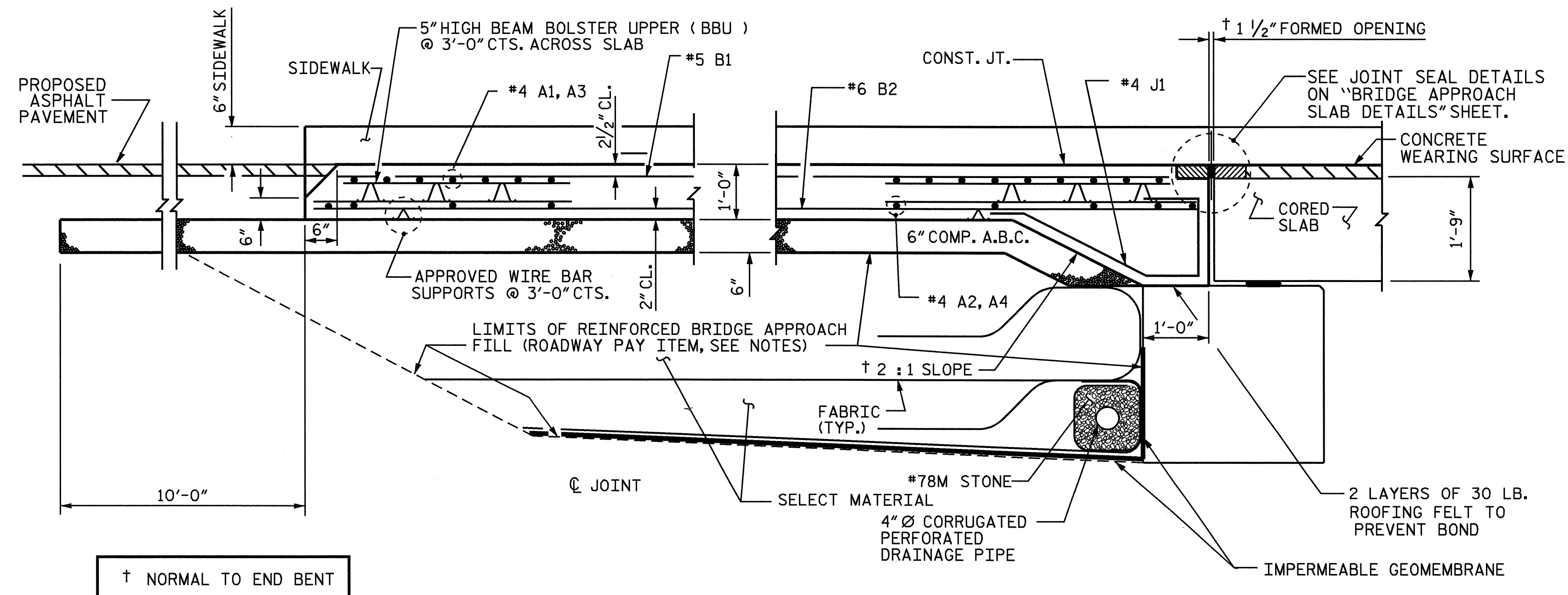


PLAN @ END BENT 1

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



PLAN @ END BENT 2



SECTION THRU SLAB

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 EXTEND 10'-0" BEYOND THE END OF THE APPROACH SLAB AND 1'-0" OUTSIDE OF EACH EDGE OF 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 EXTEND 1'-0" BEYOND THE 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 EXTEND 1'-0" BEYOND 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.

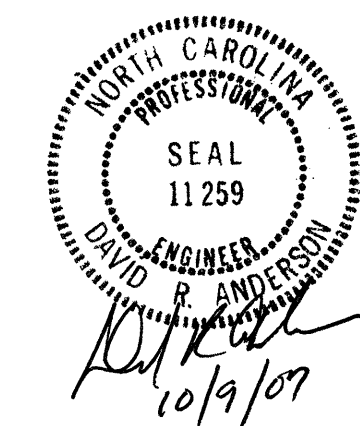
FOR EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS.

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

FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

APPROACH SLABS SHALL BE POURED AFTER CONCRETE OVERLAY IS POURED.

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



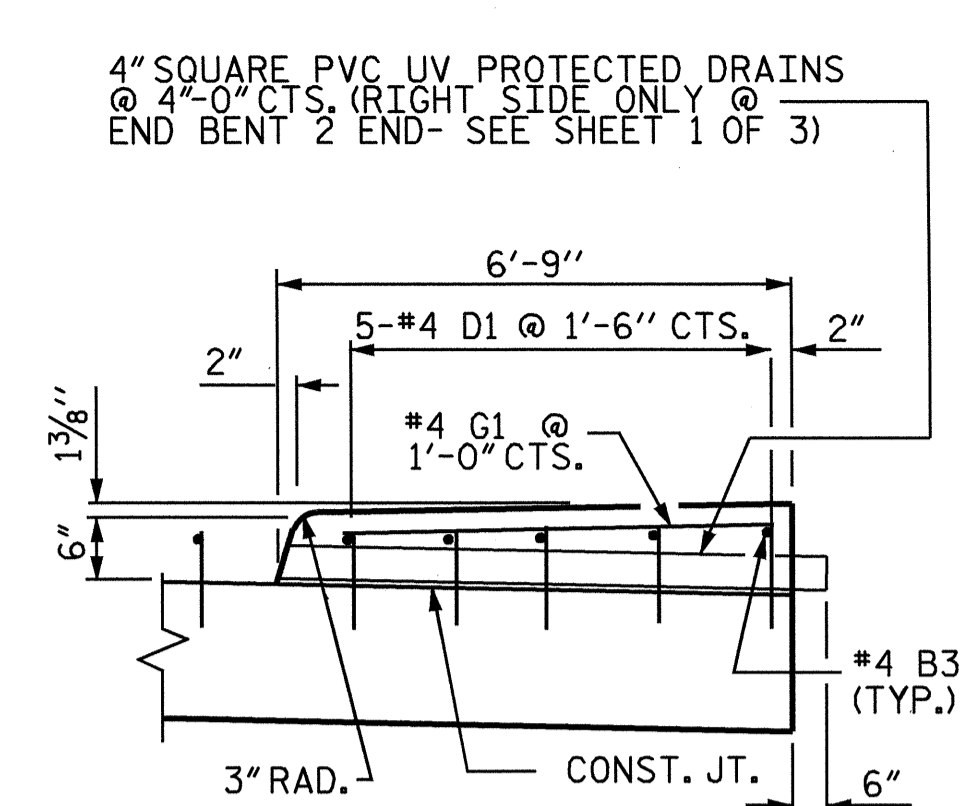
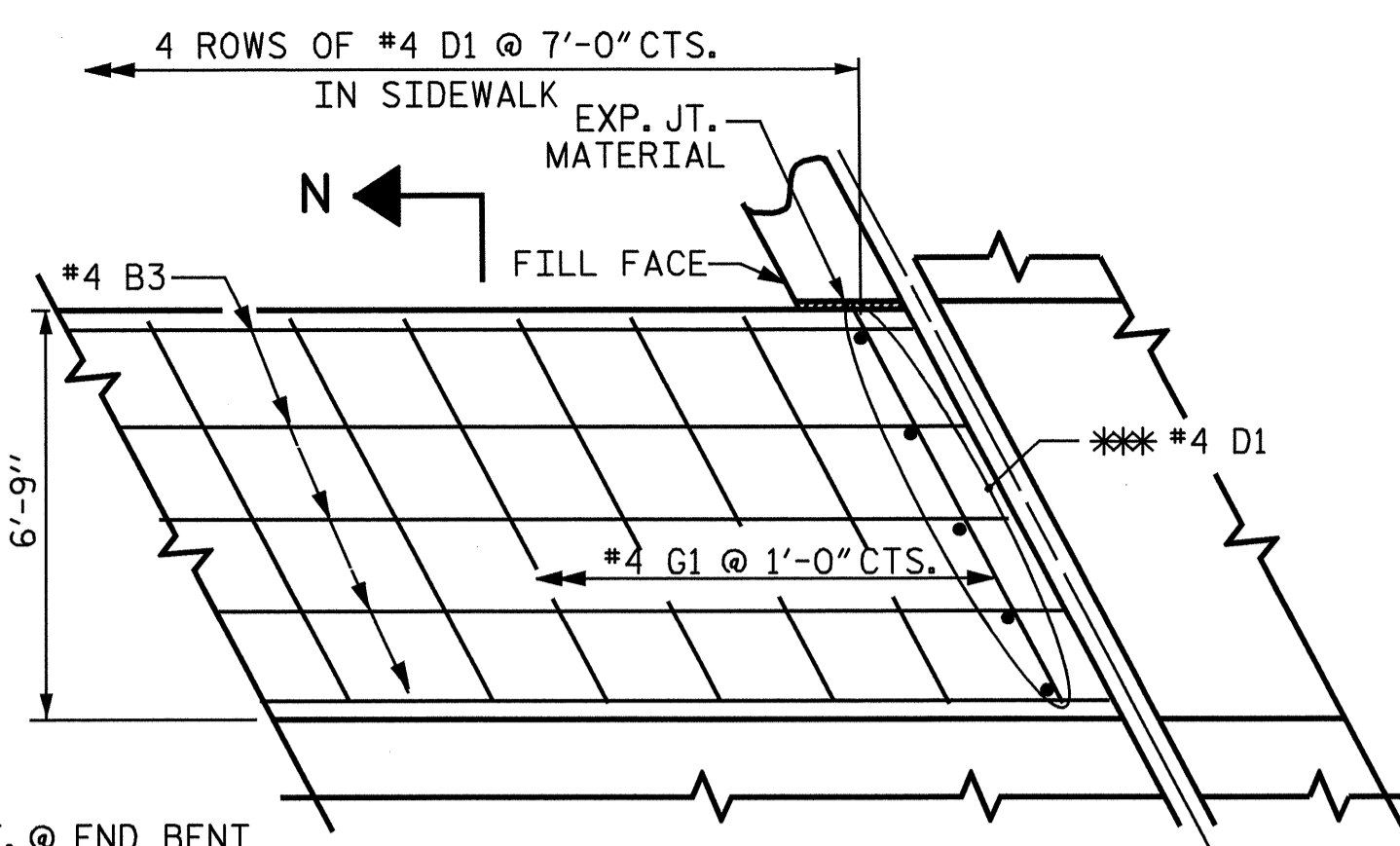
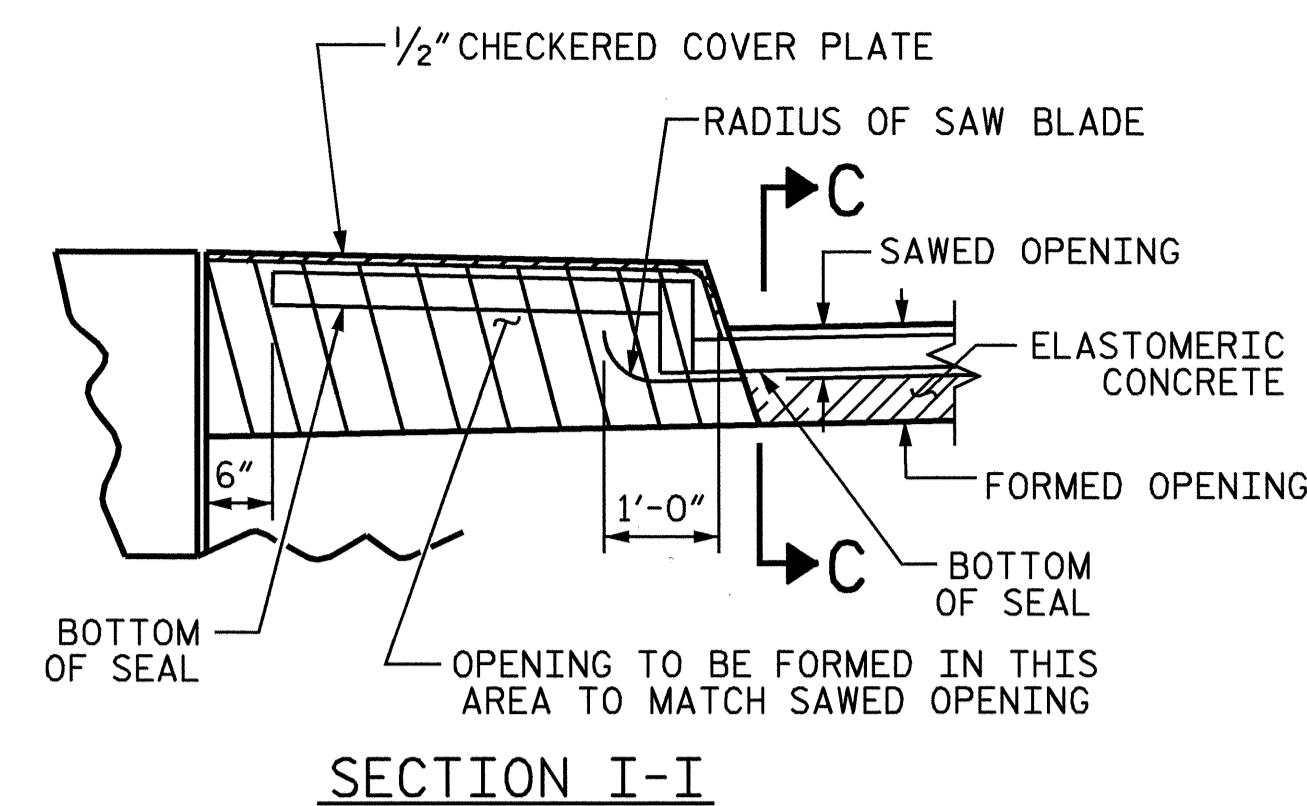
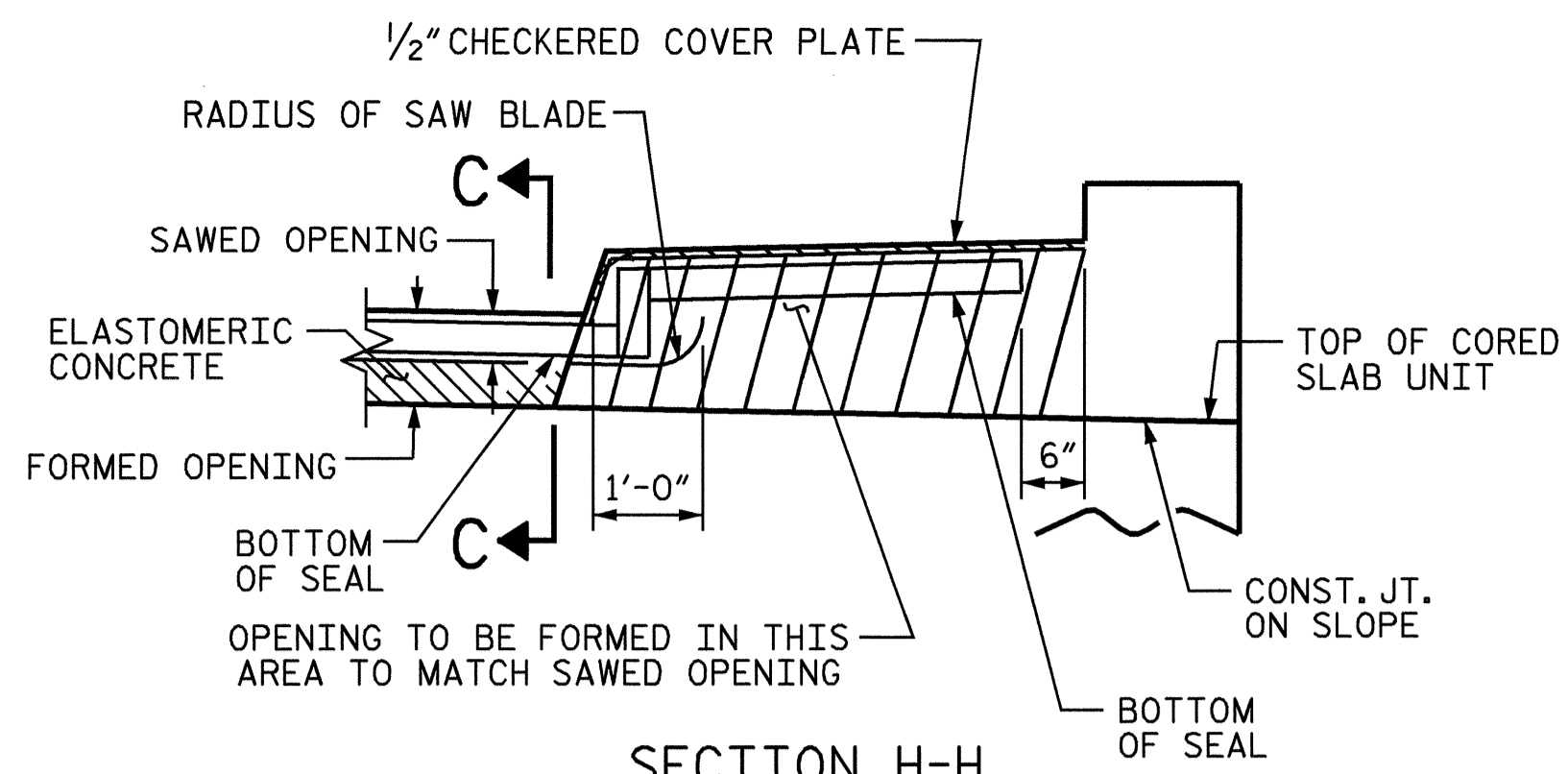
PROJECT NO. U-2510A  
 MECKLENBURG COUNTY  
 STATION: 124+82.50 -L-

SHEET 1 OF 3

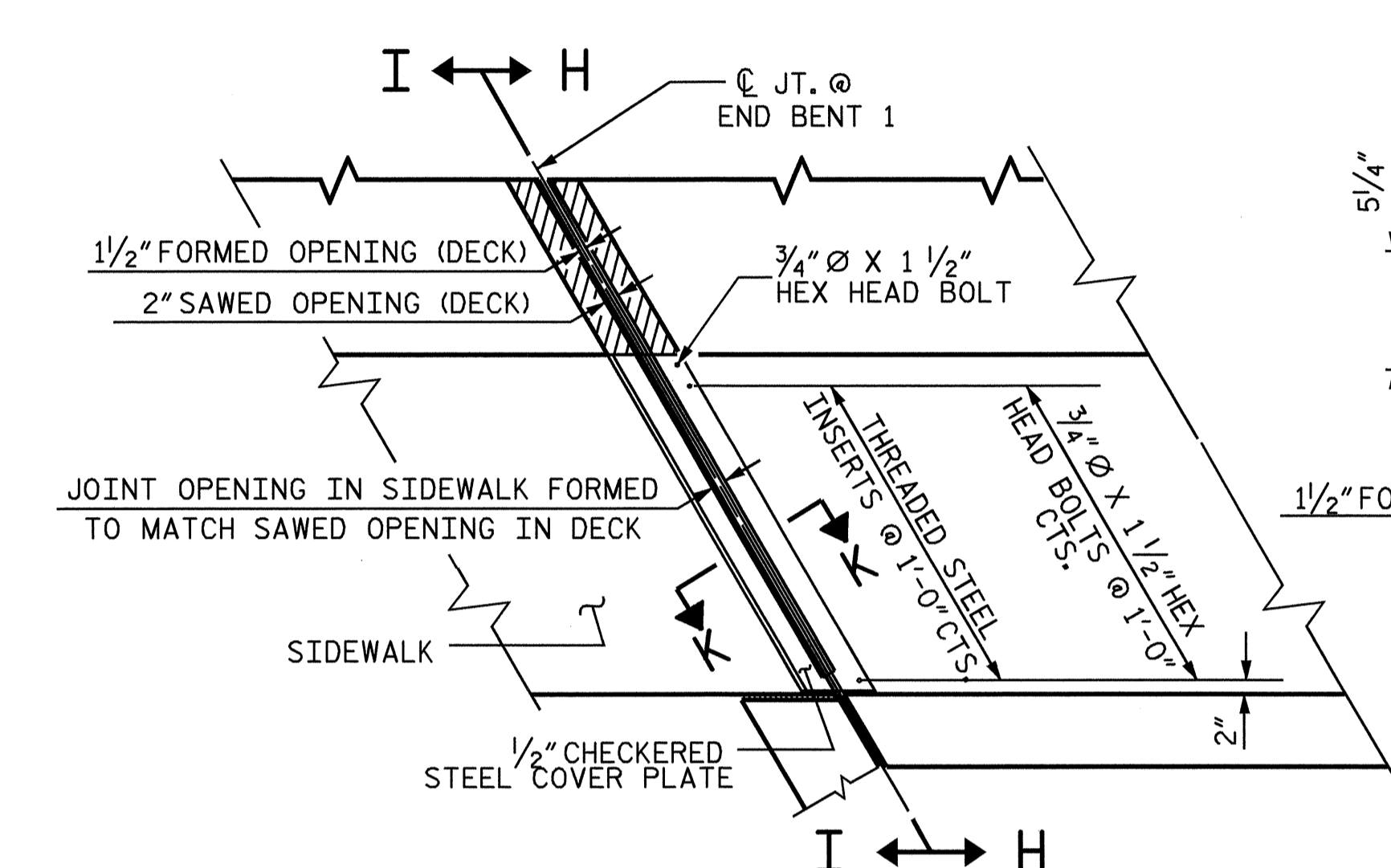
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE CORED SLAB					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-34					TOTAL SHEETS 36

ASSEMBLED BY : N. Q. TRAN	DATE : 12-07
CHECKED BY : T. A. HARRIS	DATE : 12-07
DRAWN BY : EEM 3/95	REV. 7/10/01 LES/RDR
CHECKED BY : VAP 3/95	REV. 5/7/03R RWW/JTE
	REV. 5/1/06 TLA/GM

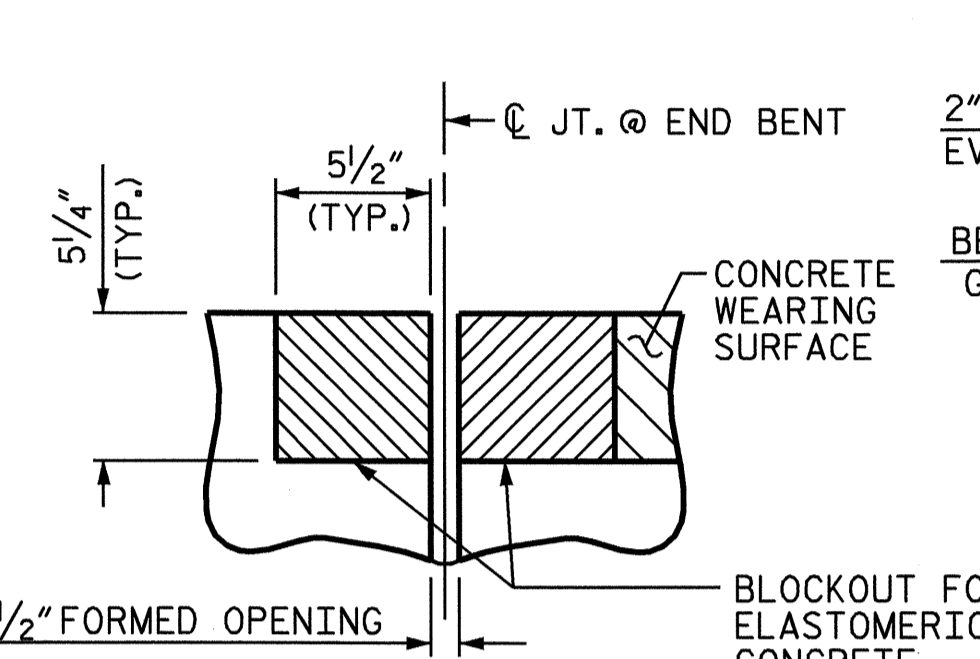




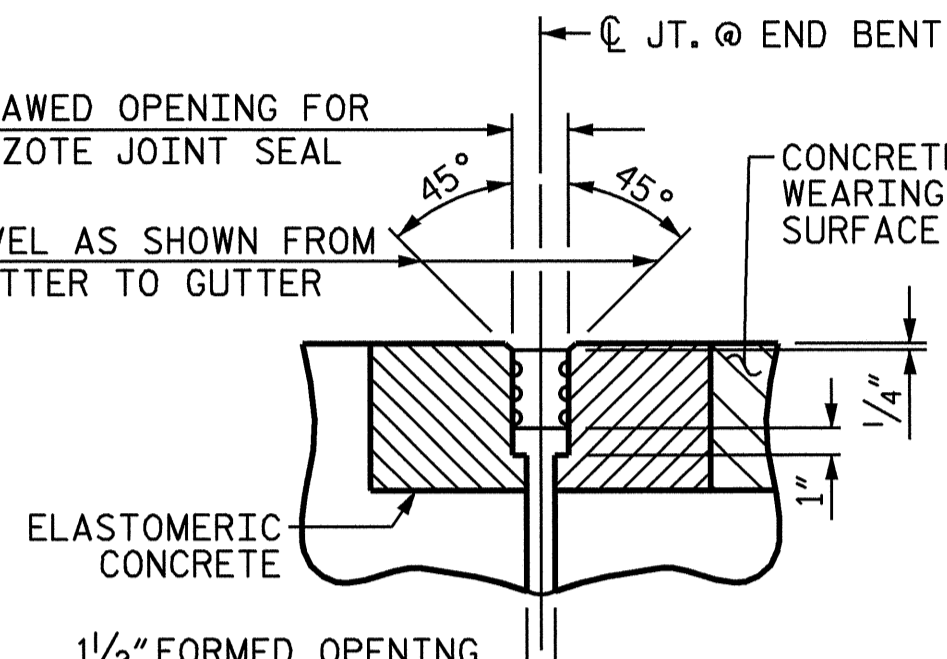
SECTION N-N  
SIDEWALK DETAILS



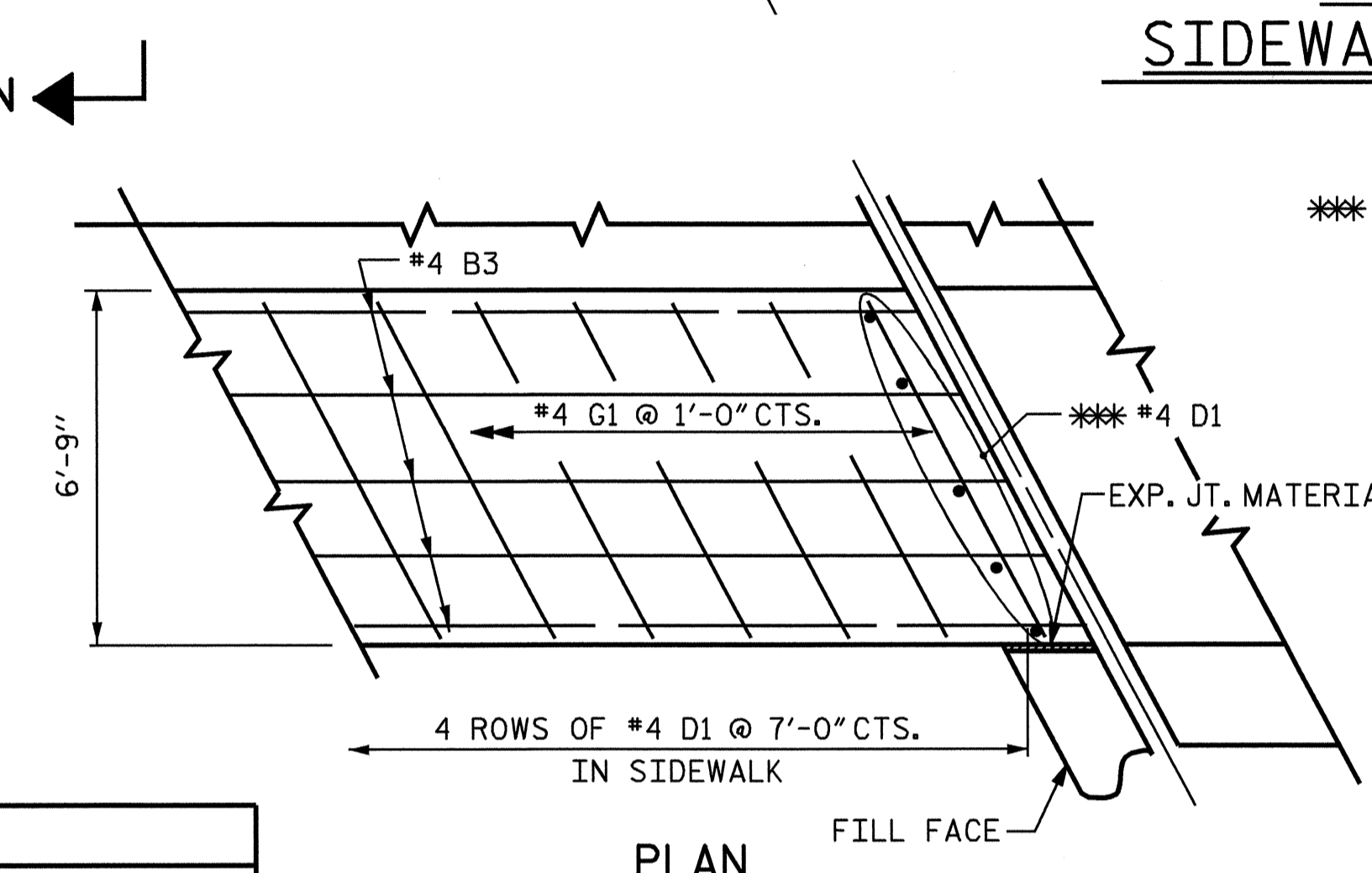
PLAN VIEW OF EVAZOTE  
JOINT SEAL @ END BENT FOR SIDEWALK



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



SECTION C-C  
EVAZOTE JOINT SEAL  
(FIXED)



DETAILS OF SIDEWALK ON APPROACH SLAB

\*\*\* THESE DOWELS ARE TO BE PLACED AFTER THE SAWING OF THE JOINT. THE HOLES SHALL BE DRILLED AND THE DOWELS GROUTED INTO PLACE. FOR ADHESIVELY ANCHORED BOLTS OR DOWELS, SEE SPECIAL PROVISIONS

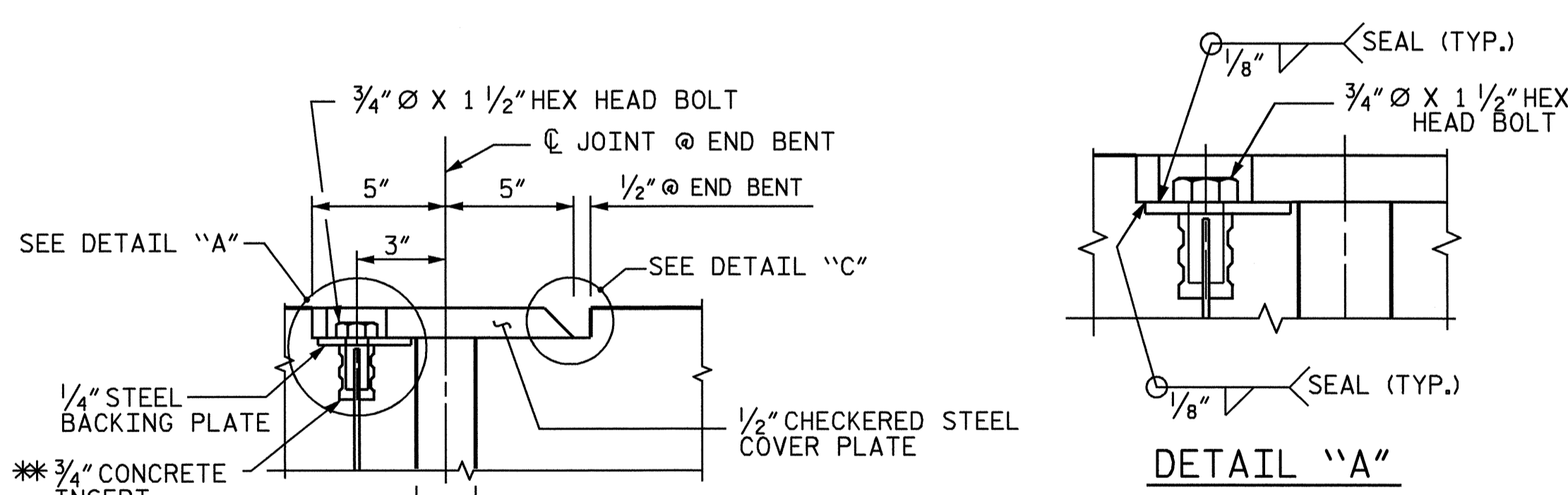
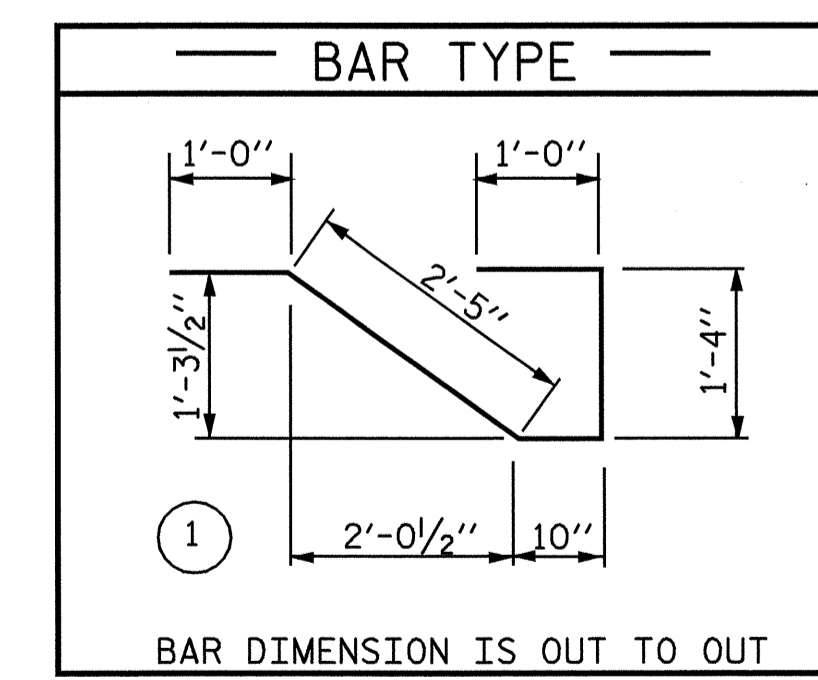
BILL OF MATERIAL - STAGE I													
APPROACH SLAB AT E.B. 1						APPROACH SLAB AT E.B. 2							
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT		
*A1	48	#4	STR	22'-0"	705	*A1	48	#4	STR	22'-0"	705		
A2	52	#4	STR	21'-9"	756	A2	52	#4	STR	21'-9"	756		
*B1	75	#5	STR	23'-10"	1864	*B1	75	#5	STR	23'-10"	1864		
B2	75	#6	STR	24'-7"	2769	B2	75	#6	STR	24'-7"	2769		
*B3	5	#4	STR	24'-7"	82	*B3	5	#4	STR	24'-7"	82		
*D1	20	#4	STR	1'-0"	13	*D1	20	#4	STR	1'-0"	13		
*G1	25	#4	STR	6'-3"	104	*G1	25	#4	STR	6'-3"	104		
J1	38	#4	1	6'-7"	167	J1	38	#4	1	6'-7"	167		
REINFORCING STEEL					LBS.	3692	REINFORCING STEEL					LBS.	3692
*EPOXY COATED REINFORCING STEEL					LBS.	2768	*EPOXY COATED REINFORCING STEEL					LBS.	2768
CLASS AA CONCRETE					C. Y.	38.6	CLASS AA CONCRETE					C. Y.	38.6

BILL OF MATERIAL-STAGE II													
APPROACH SLAB AT E.B. 1						APPROACH SLAB AT E.B. 2							
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT		
*A3	48	#4	STR	27'-3"	874	*A3	48	#4	STR	27'-3"	874		
A4	52	#4	STR	27'-2"	944	A4	52	#4	STR	27'-2"	944		
*B1	99	#5	STR	23'-10"	2461	*B1	99	#5	STR	23'-10"	2461		
B2	99	#6	STR	24'-7"	3655	B2	99	#6	STR	24'-7"	3655		
*B3	5	#4	STR	24'-7"	82	*B3	5	#4	STR	24'-7"	82		
*D1	20	#4	STR	1'-0"	13	*D1	20	#4	STR	1'-0"	13		
*G1	25	#4	STR	6'-3"	104	*G1	25	#4	STR	6'-3"	104		
J1	50	#4	1	6'-7"	220	J1	50	#4	1	6'-7"	220		
REINFORCING STEEL					LBS.	4819	REINFORCING STEEL					LBS.	4819
*EPOXY COATED REINFORCING STEEL					LBS.	3534	*EPOXY COATED REINFORCING STEEL					LBS.	3534
CLASS AA CONCRETE					C. Y.	50.9	CLASS AA CONCRETE					C. Y.	50.9

SPLICE LENGTH CHART		
BAR	SIZE	MIN. SLICE
A1	#4	2'-0"
A2	#4	1'-9"
A3	#4	2'-0"
A4	#4	1'-9"

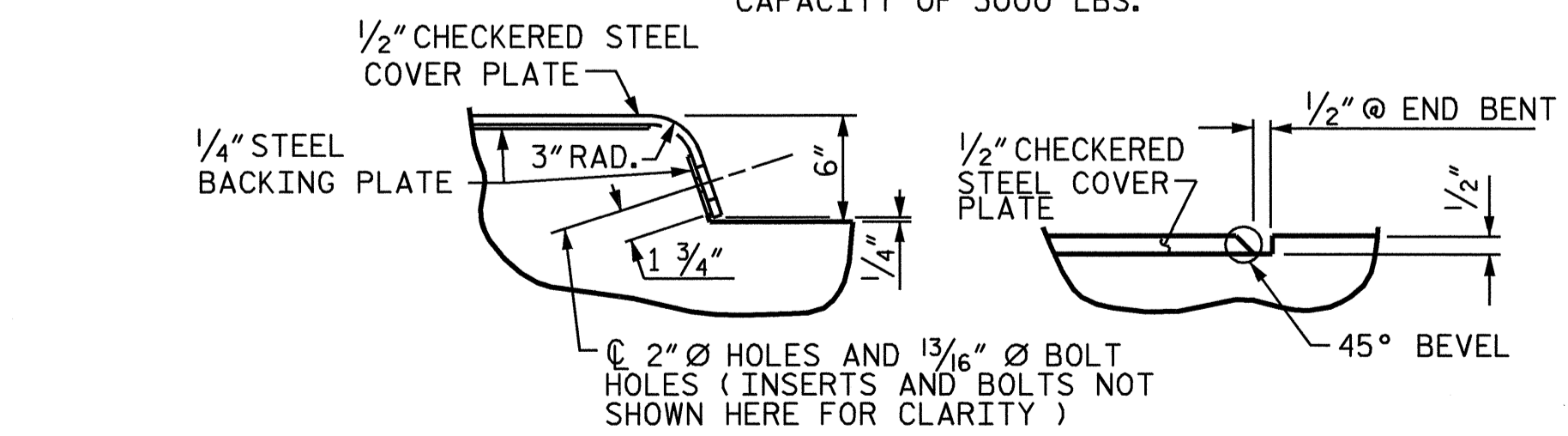
ELASTOMERIC CONCRETE		
END BENT	ELASTOMERIC CONCRETE (CU. FT.)	
	STAGE I	STAGE II
1	13.2	18.2
2	13.2	18.2
TOTAL	26.4	36.4

(BASED ON THE MINIMUM BLOCKOUT SHOWN)



DETAIL "A"

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

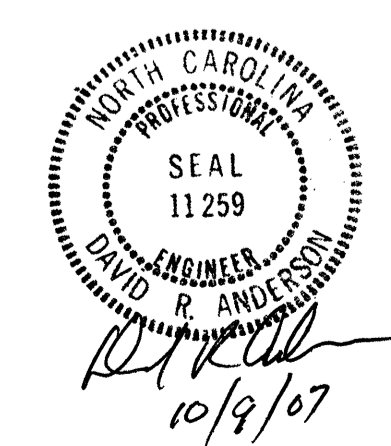


DETAIL "B"

DETAIL "C"

JOINT SEAL DETAILS @ END BENT

ASSEMBLED BY : N. Q. TRAN DATE : 12-07  
 CHECKED BY : T.A. HARRIS DATE : 12-07  
 DRAWN BY : FCJ 11/88 REV. 10/17/00 RWW/LES  
 CHECKED BY : ARB 11/88 REV. 5/7/03 RWW/JTE  
 REV. 5/1/06 TLA/GM



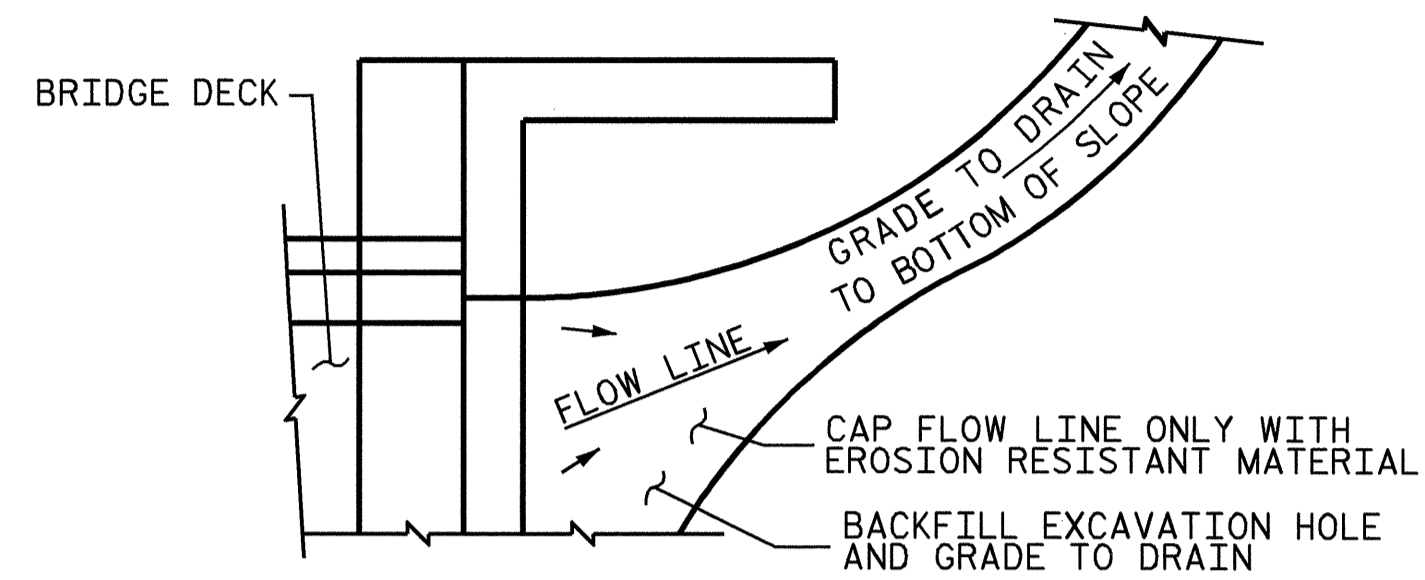
PROJECT NO. U-2510A  
 MECKLENBURG COUNTY  
 STATION: 124+82.50 -L-

SHEET 2 OF 3

REVISIONS						1988
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			TOTAL SHEETS
2			4			36

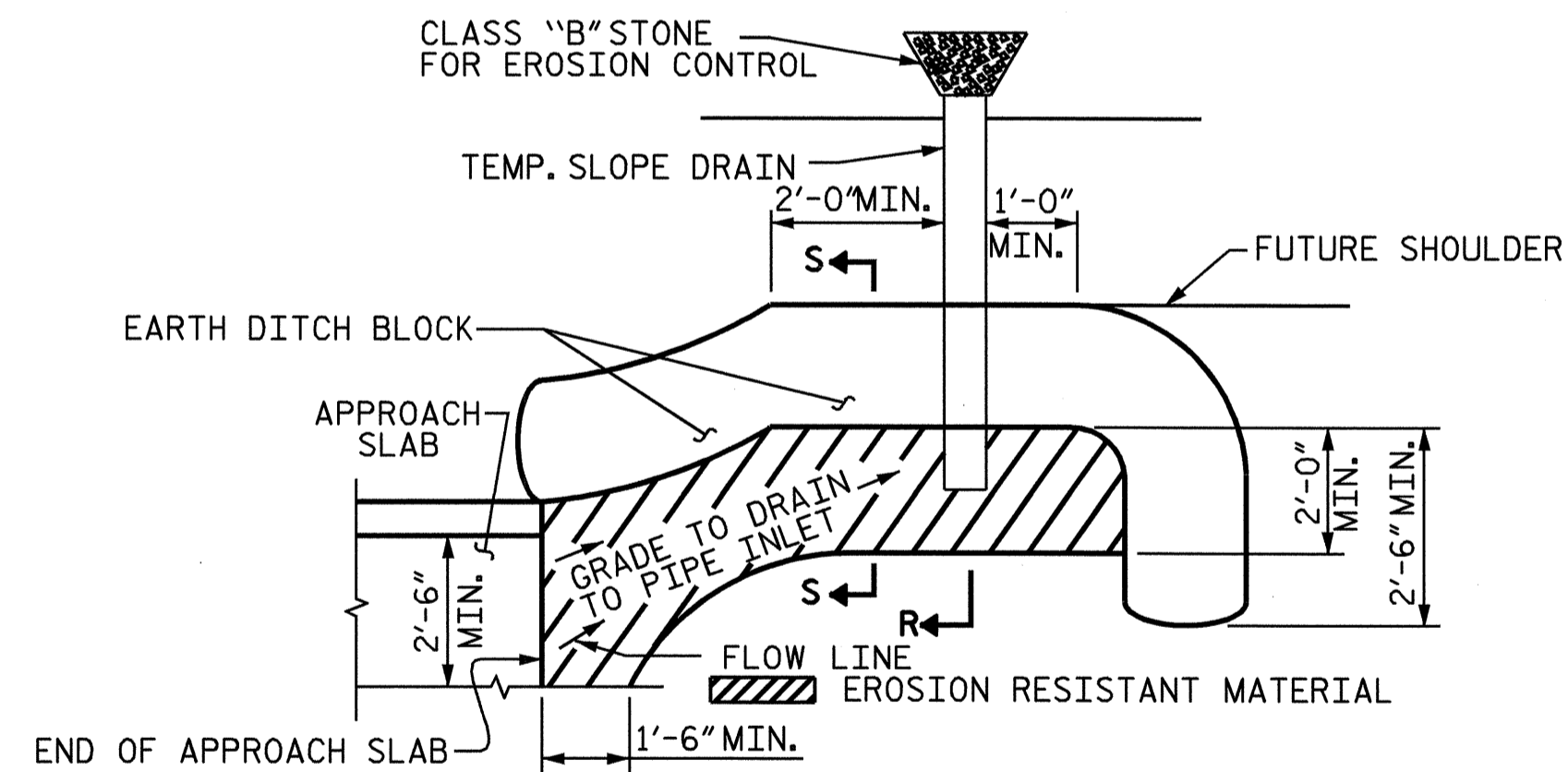
STD. NO. BAS10





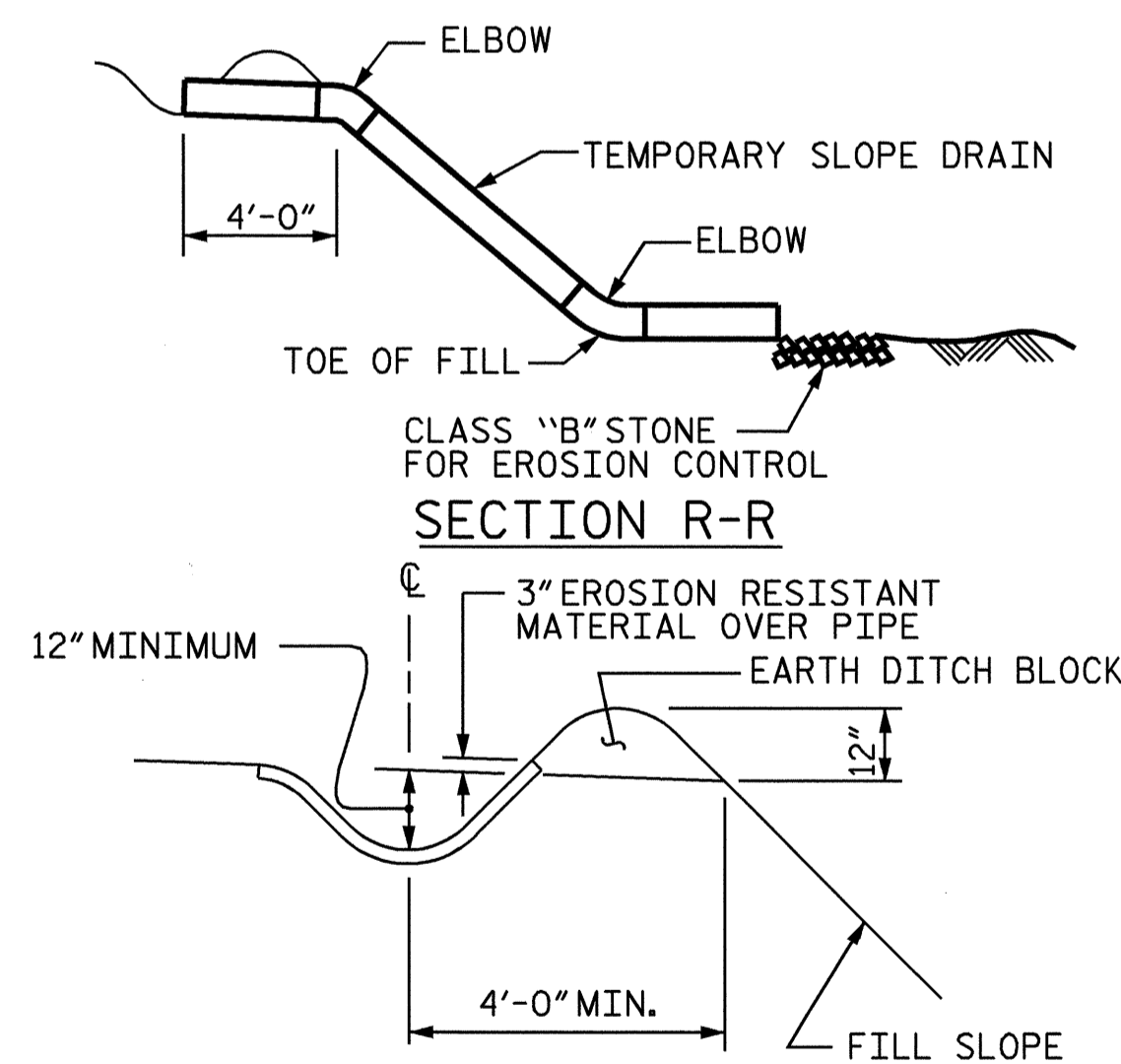
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL



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

PLAN VIEW



SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

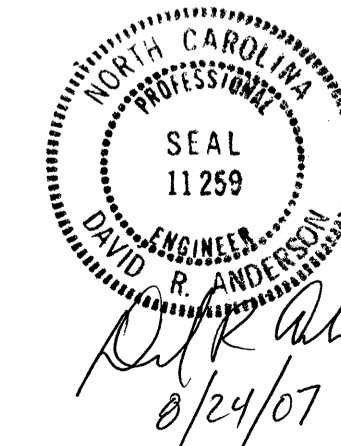
PROJECT NO. U-2510A  
MECKLENBURG COUNTY  
 STATION: 124+82.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

STANDARD

BRIDGE APPROACH  
 SLAB DETAILS



ASSEMBLED BY :	N. Q. TRAN	DATE :	1-11-05
CHECKED BY :	T. A. HARRIS	DATE :	1-11-05
DRAWN BY :	LES 8/01	REV. 10/17/00	RWW/LES
CHECKED BY :	RDR 8/01	REV. 5/17/03	RWW/JTE
		REV. 5/1/06	TLA/JM

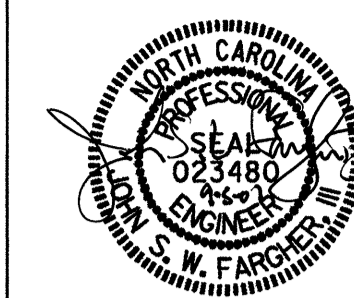
20-AUG-2007 09:12  
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-36
1			3			TOTAL SHEETS
2			4			36

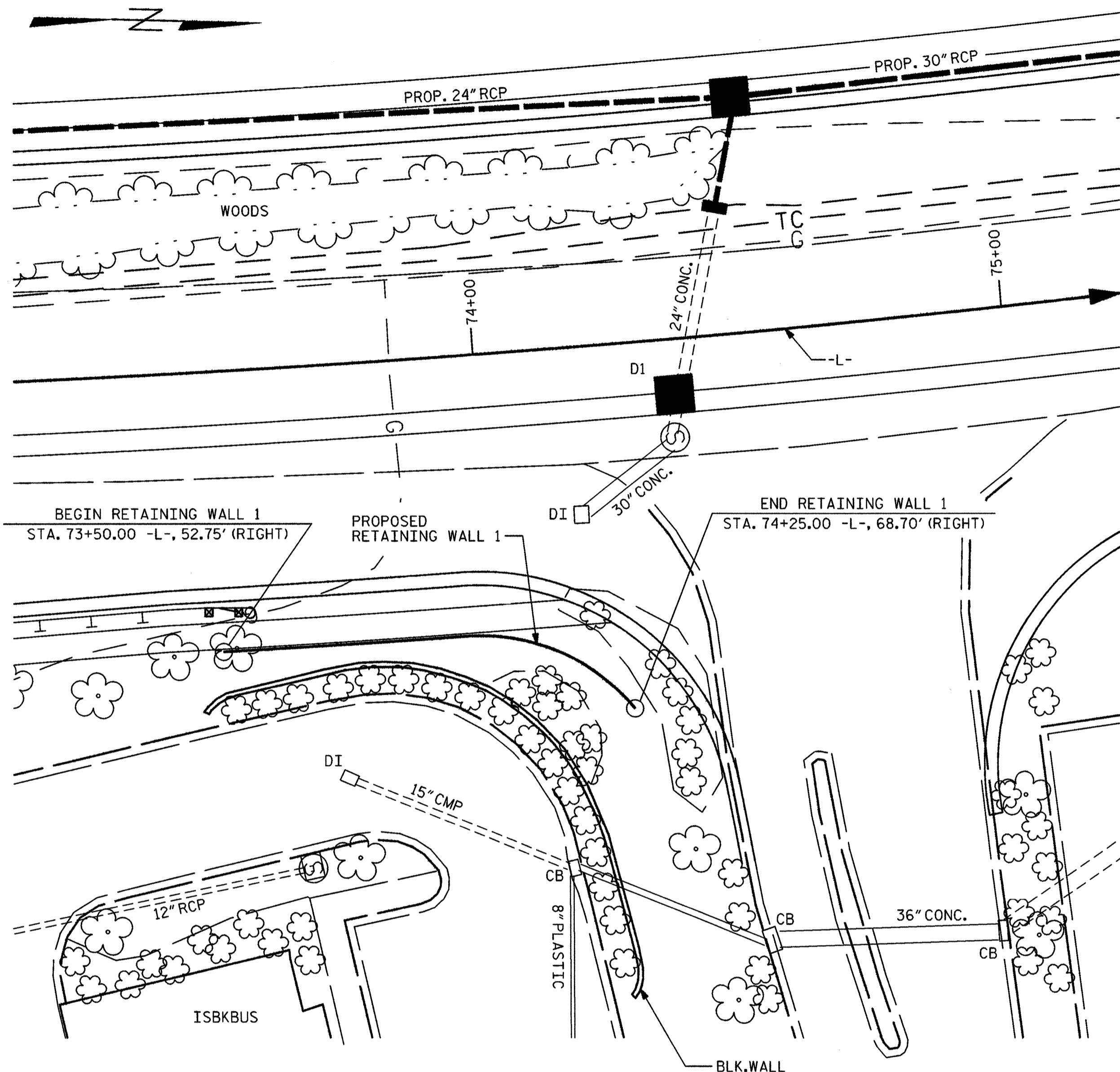
STD. NO. RAS10

BENCHMARK #5: R.R. SPIKE IN 24" PINE 91.69' RIGHT OF STA. 78+59.69 -L-, EL. 705.490

GEOTECHNICAL ENGINEER



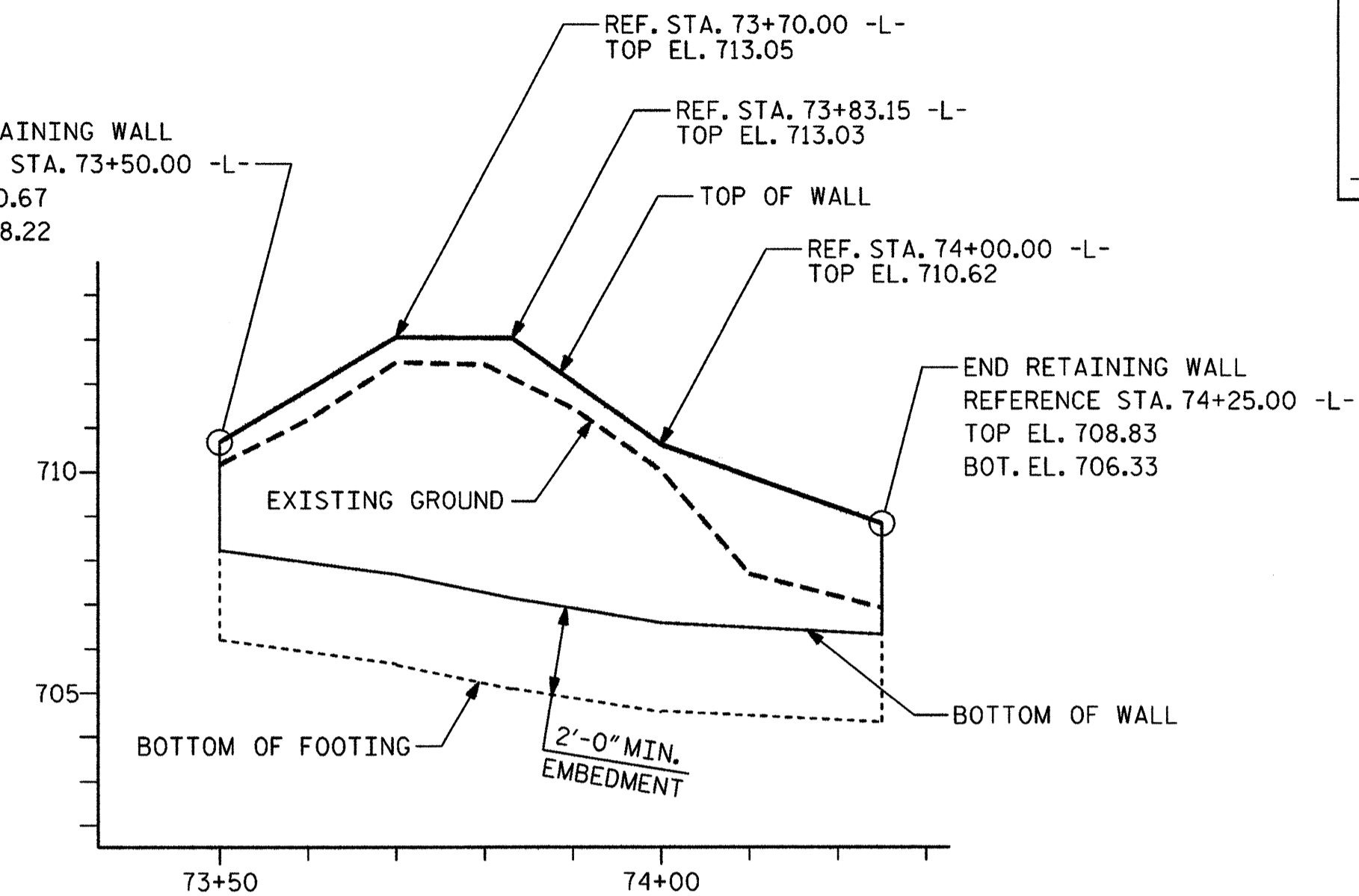
SIGNATURE DATE



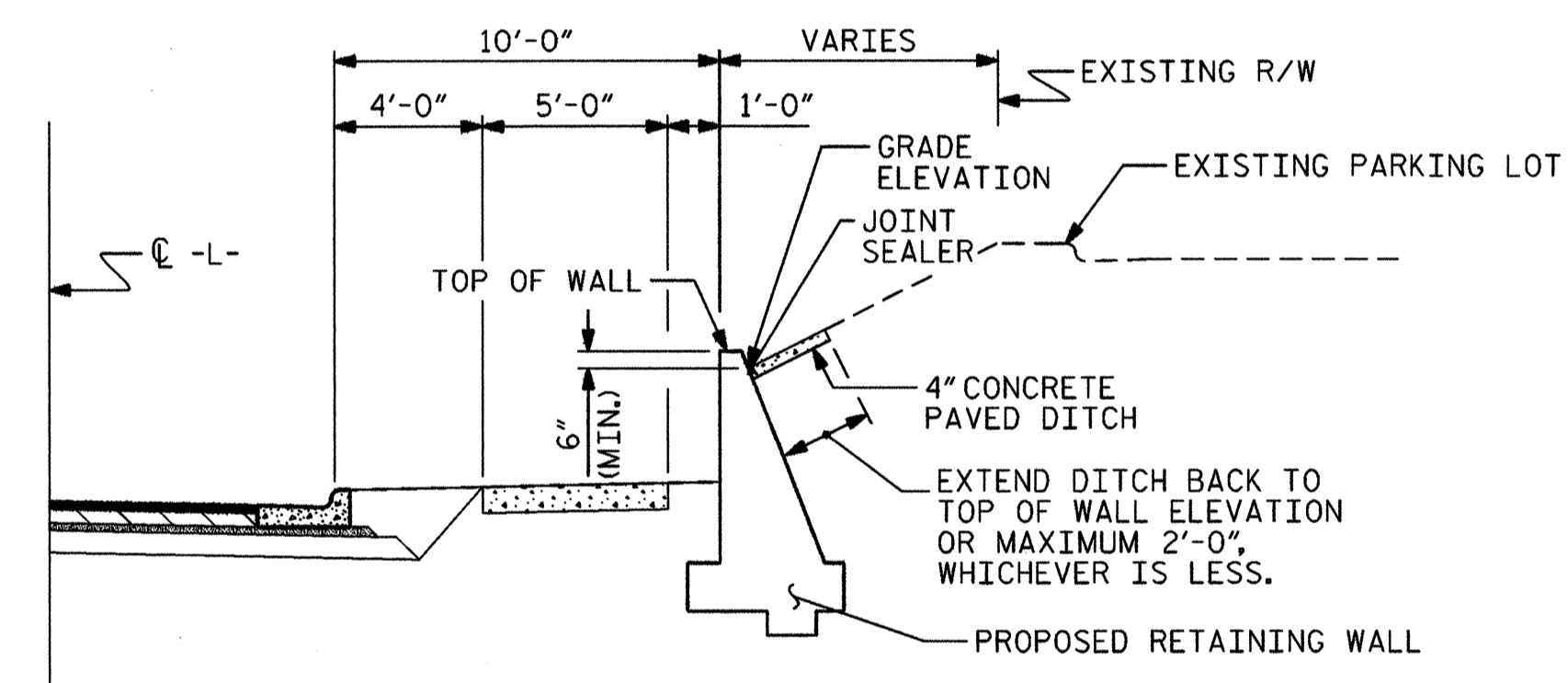
FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

LOCATION SKETCH

BEGIN RETAINING WALL  
REFERENCE STA. 73+50.00 -L-  
TOP EL. 710.67  
BOT. EL. 708.22



ELEVATION



SECTION THROUGH RETAINING WALL

(NOT TO SCALE)

RETAINING WALL ELEVATIONS					
REFERENCE STATION	OFFSET TO FACE OF WALL (FT.)	EXISTING GROUND ELEV.	TOP OF WALL ELEV.	BOTTOM OF WALL ELEV.	DESIGN WALL HEIGHT (FT.)
73+50.00 -L-	52.75	710.17	710.67	708.22	2.45
73+70.00 -L-	52.75	712.55	713.05	707.68	5.37
73+83.15 -L-	52.75	712.53	713.03	707.13	5.90
74+00.00 -L-	52.75	710.12	710.62	706.59	4.03
74+25.00 -L-	68.70	707.00	708.83	706.33	2.50

ALL ELEVATIONS ARE SHOWN IN FEET.  
FOR DESIGN WALL HEIGHT AND WALL DETAILS, SEE SHEET 4 OF 4.

TOTAL BILL OF MATERIAL

GRAVITY RETAINING WALL AT STA. 73+50.00 -L- 320 SQ. FT.

PROJECT NO.: U-2510A  
MECKLENBURG COUNTY

STATION: 73+50.00 -L-

SHEET 1 OF 4

GRAVITY RETAINING WALL WALL 1

REVISIONS

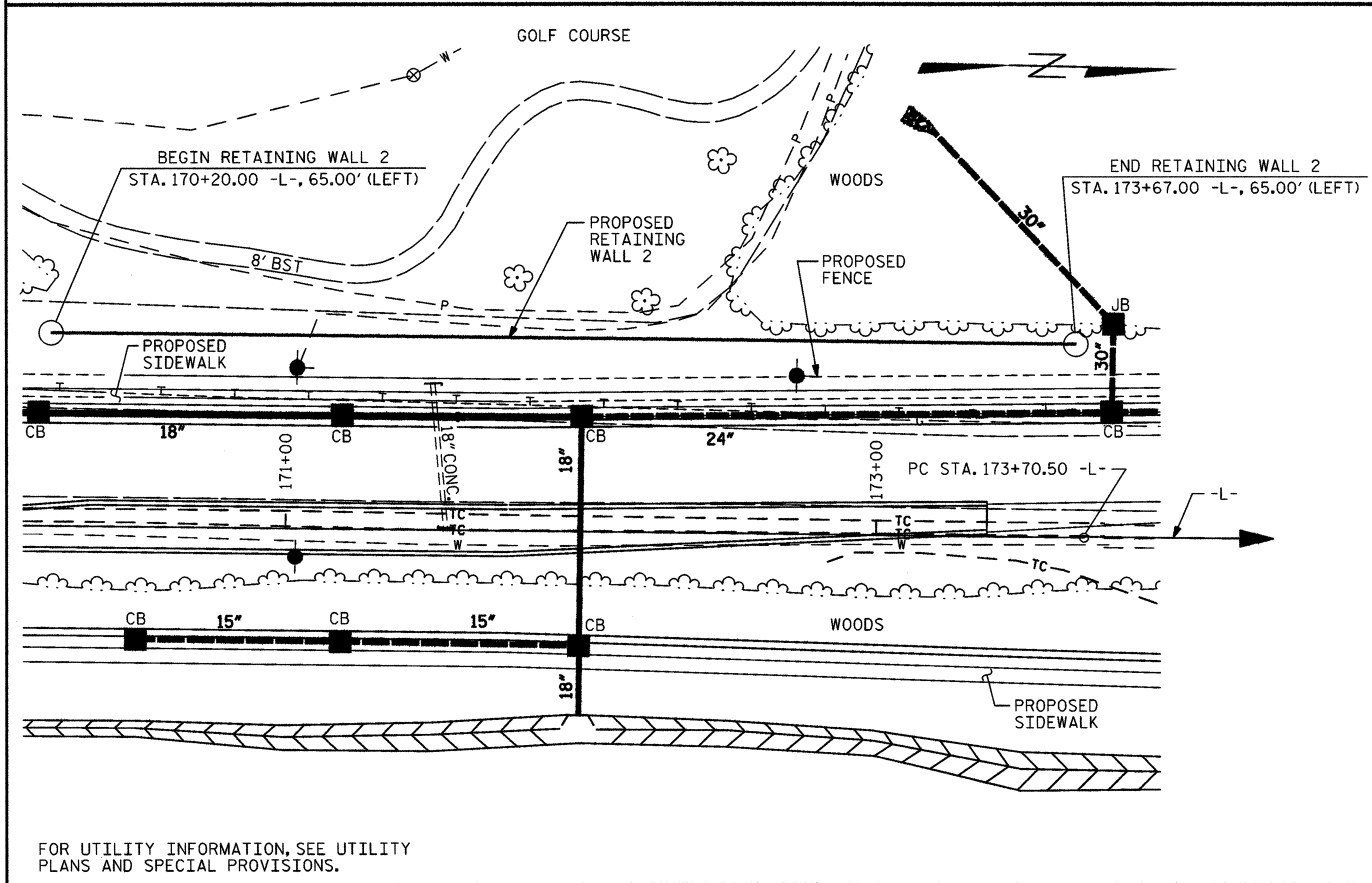
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

SHEET NO. W-1  
TOTAL SHEETS 4

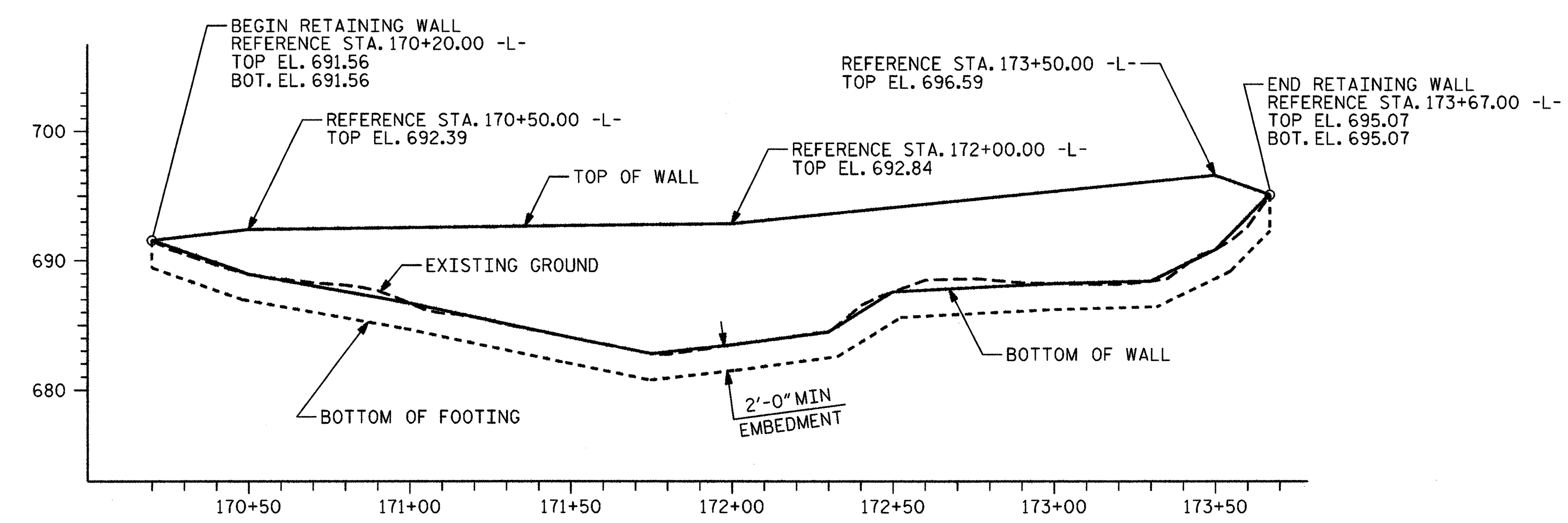
**GEOTECHNICAL ENGINEERING UNIT**  
 EASTERN REGIONAL OFFICE  
 WESTERN REGIONAL OFFICE  
 STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

PREPARED BY: E.C. LOCKLEAR DATE: 2-07  
REVIEWED BY: B.L. GREEN DATE: 3-07

BENCHMARK #11: R.R. SPIKE IN 18" OAK TREE 82.40' LEFT OF STA. 168+66.02 -L-, EL. 699.249



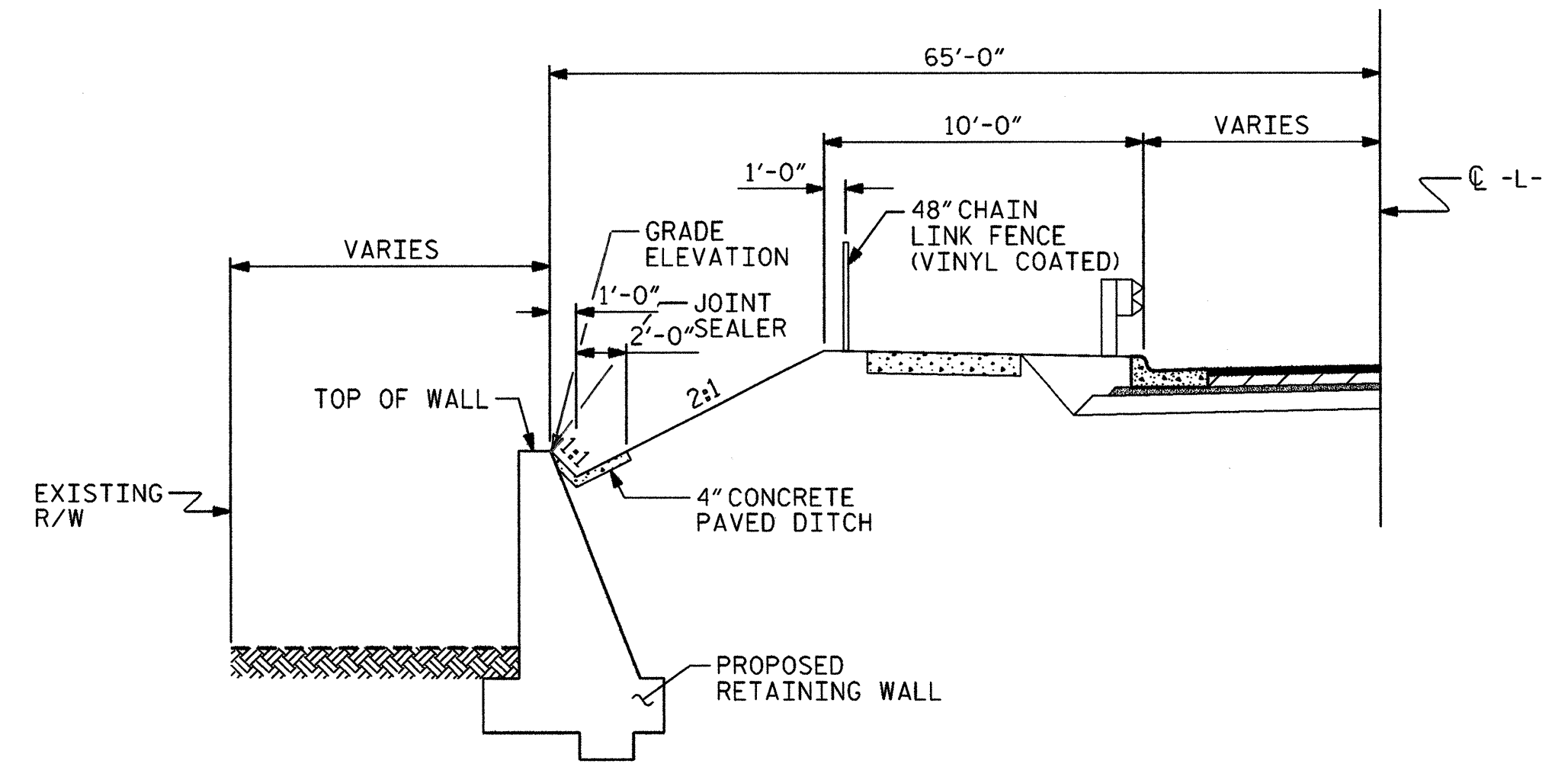
LOCATION SKETCH



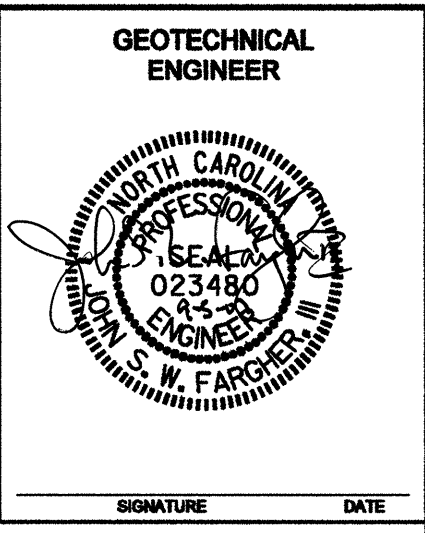
ELEVATION

REFERENCE STATION	OFFSET TO FACE OF WALL (FT.)	EXISTING GROUND ELEV.	TOP OF WALL ELEV.	BOTTOM OF WALL ELEV.	DESIGN WALL HEIGHT (FT.)
170+20.00 -L-	65.00	691.56	691.56	691.56	0.00
170+50.00 -L-	65.00	688.94	692.39	688.94	3.45
171+00.00 -L-	65.00	686.71	692.54	686.71	5.83
171+50.00 -L-	65.00	684.04	692.69	684.04	8.65
171+75.00 -L-	65.00	682.77	692.77	682.77	10.0
172+00.00 -L-	65.00	683.46	692.84	683.46	9.38
172+30.00 -L-	65.00	684.50	693.59	684.50	9.09
172+50.00 -L-	65.00	687.58	694.09	687.58	6.51
173+00.00 -L-	65.00	688.22	695.34	688.22	7.12
173+30.00 -L-	65.00	688.00	696.09	688.00	8.09
173+50.00 -L-	65.00	690.81	696.59	690.81	5.78
173+67.00 -L-	65.00	695.07	695.07	695.07	0.00

ALL ELEVATIONS ARE SHOWN IN FEET. FOR DESIGN WALL HEIGHT AND WALL DETAILS, SEE SHEET 4 OF 4.



SECTION THROUGH RETAINING WALL (NOT TO SCALE)



TOTAL BILL OF MATERIAL	
GRAVITY RETAINING WALL AT STA. 170+20.00 -L-	2300 SQ. FT.

PROJECT NO.: U-2510A  
 MECKLENBURG COUNTY  
 STATION: 170+20.00 -L-  
 SHEET 2 OF 4

**GEOTECHNICAL ENGINEERING UNIT**  
 EASTERN REGIONAL OFFICE  
 WESTERN REGIONAL OFFICE

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

GRAVITY RETAINING WALL WALL 2					
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

SHEET NO. W-2  
 TOTAL SHEETS 4

PREPARED BY: E.C. LOCKLEAR DATE: 2-07  
 REVIEWED BY: B.L. GREEN DATE: 3-07

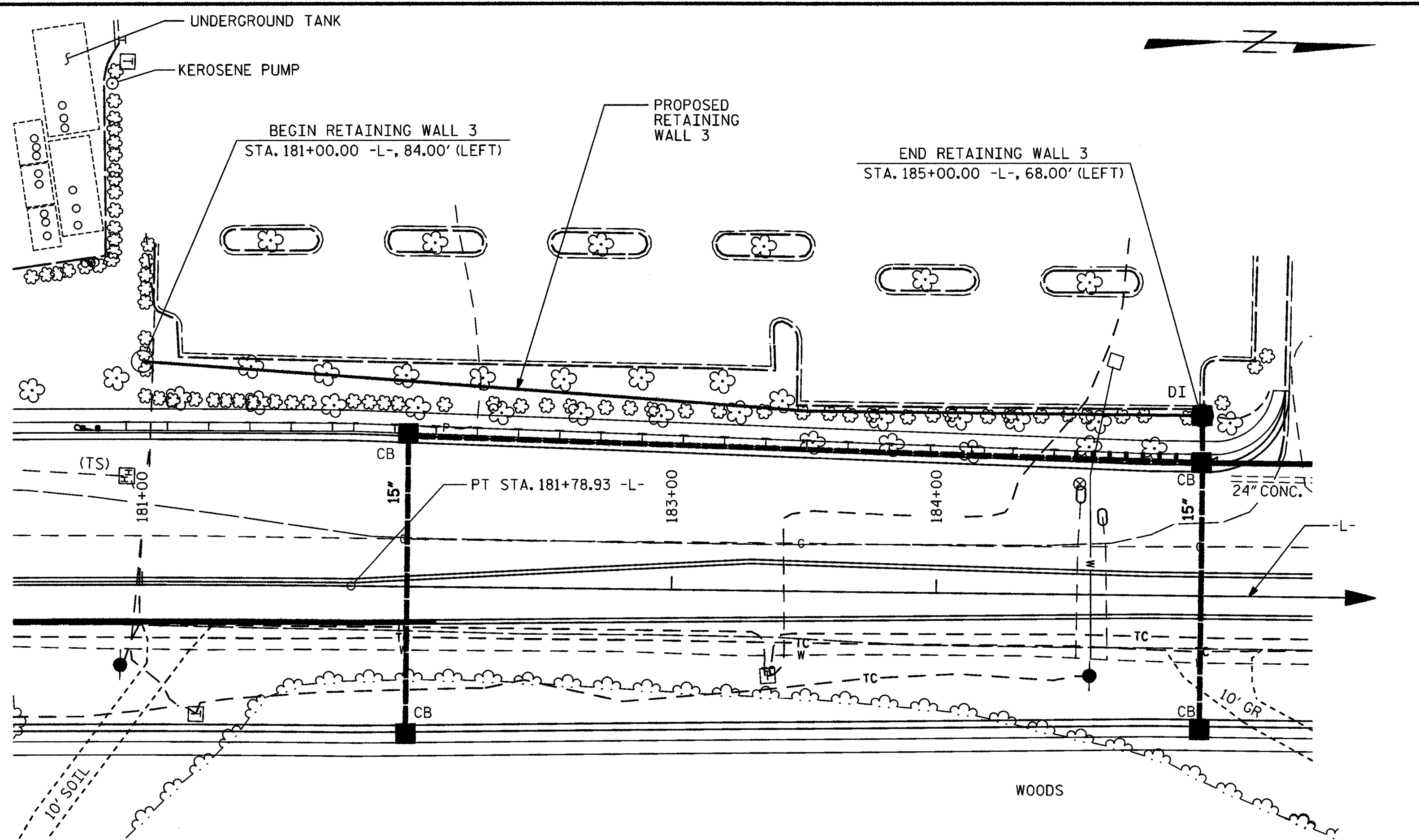


BENCHMARK #12: R.R. SPIKE IN 24" PIN OAK TREE 53.05' LEFT OF STA. 184+12.17 -L-, EL. 702.218

GEOTECHNICAL ENGINEER



SIGNATURE DATE



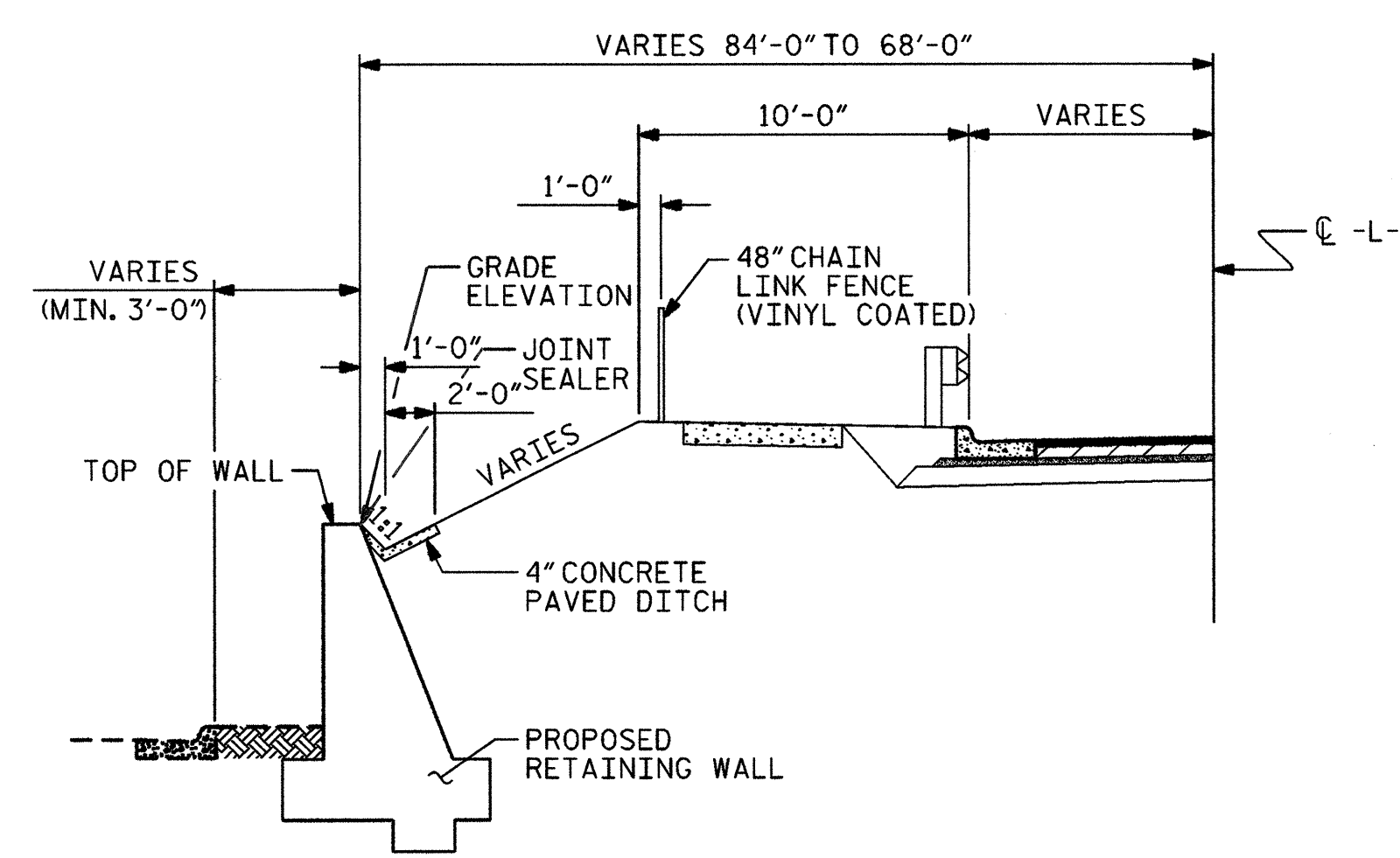
FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

LOCATION SKETCH

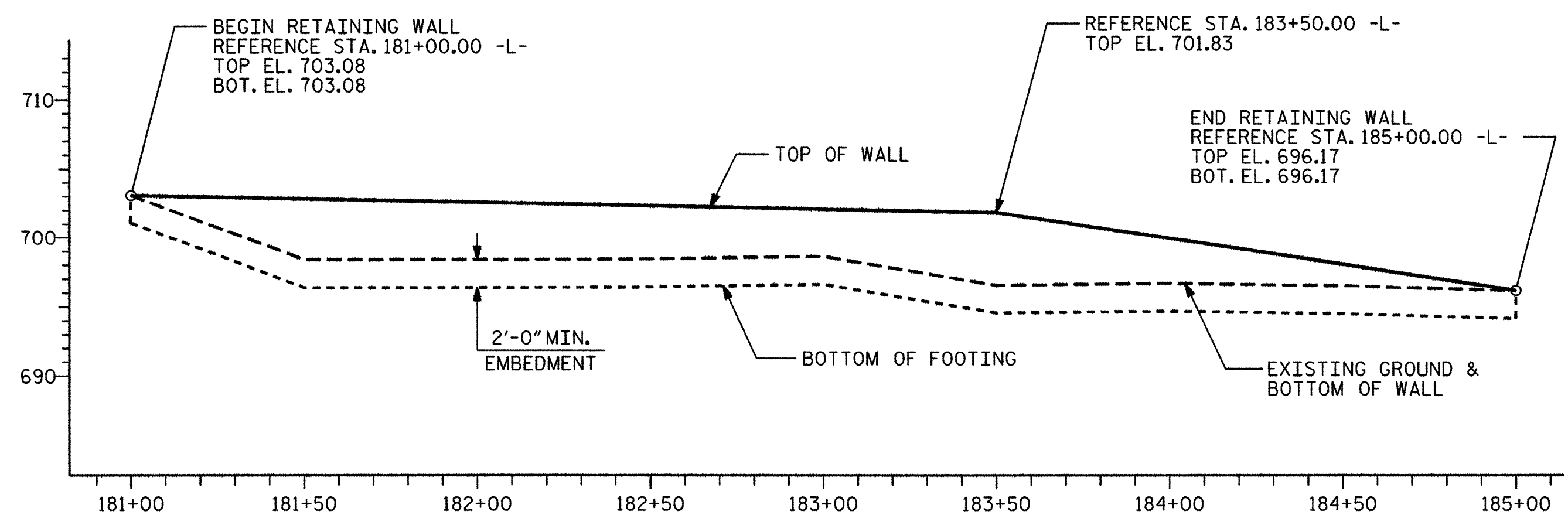
RETAINING WALL ELEVATIONS					
REFERENCE STATION	OFFSET TO FACE OF WALL (FT.)	EXISTING GROUND ELEV.	TOP OF WALL ELEV.	BOTTOM OF WALL ELEV.	DESIGN WALL HEIGHT (FT.)
181+00.00 -L-	84.00	703.08	703.08	703.08	0.00
181+50.00 -L-	80.80	698.39	702.83	698.39	4.44
182+00.00 -L-	77.60	698.39	702.58	698.39	4.19
182+50.00 -L-	74.40	698.44	702.33	698.44	3.89
183+00.00 -L-	71.20	698.64	702.08	698.64	3.44
183+50.00 -L-	68.00	696.57	701.83	696.57	5.26
184+00.00 -L-	68.00	696.70	699.94	696.70	3.24
184+50.00 -L-	68.00	696.51	698.06	696.51	1.55
185+00.00 -L-	68.00	696.17	696.17	696.17	0.00

ALL ELEVATIONS ARE SHOWN IN FEET. FOR DESIGN WALL HEIGHT AND WALL DETAILS, SEE SHEET 4 OF 4.

TOTAL BILL OF MATERIAL	
GRAVITY RETAINING WALL AT STA. 181+00.00 -L-	1300 SQ. FT.



SECTION THROUGH RETAINING WALL (NOT TO SCALE)



ELEVATION

PROJECT NO.: U-2510A  
 MECKLENBURG COUNTY  
 STATION: 181+00.00 -L-  
 SHEET 3 OF 4

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

GRAVITY RETAINING WALL WALL 3					
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

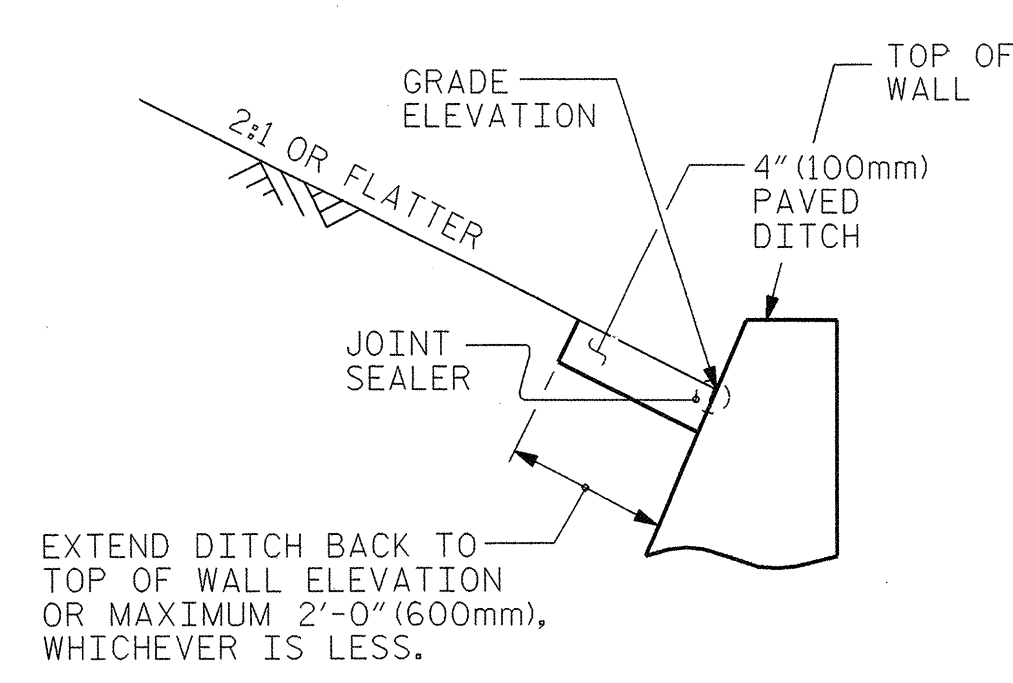
PREPARED BY: E.C. LOCKLEAR DATE: 2-07  
 REVIEWED BY: B.L. GREEN DATE: 3-07

SHEET NO. W-3  
 TOTAL SHEETS 4

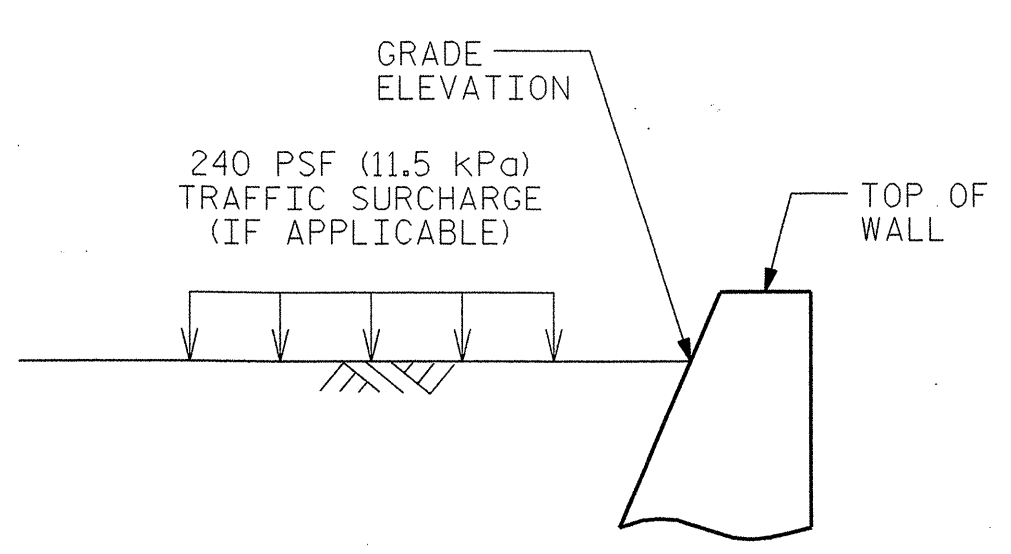
GEOTECHNICAL ENGINEER

ENGINEER

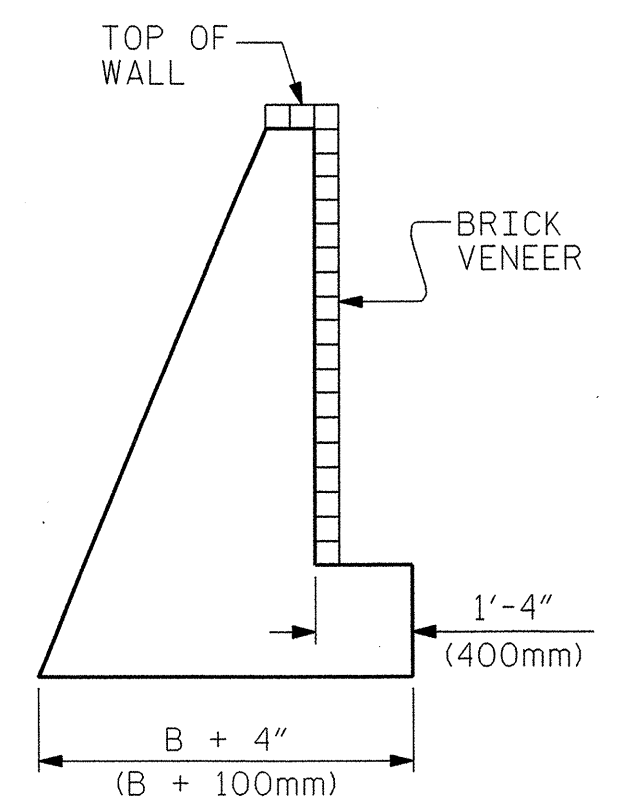
*Scott A. Hadden*  
SIGNATURE DATE



SLOPE CONDITION



NO SLOPE CONDITION



BRICK VENEER DETAIL  
(WHEN APPLICABLE)

NOTES

FOR GRAVITY RETAINING WALLS, SEE SECTION 453 OF THE STANDARD SPECIFICATIONS.

THE STANDARD GRAVITY RETAINING WALL IS BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:  
 TOTAL UNIT WEIGHT = 120 PCF (18.8 kN/m<sup>3</sup>)  
 COHESION = 0 PSF (0 kPa)  
 FRICTION ANGLE = 35 DEGREES  
 (GROUNDWATER WITHIN 5'-0" (1.5m) OF BOTTOM OF FOOTING)  
 FRICTION ANGLE = 30 DEGREES  
 (GROUNDWATER MORE THAN 5'-0" (1.5m) BELOW BOTTOM OF FOOTING)

DO NOT USE A STANDARD GRAVITY RETAINING WALL IF THE ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE OR GROUNDWATER IS ABOVE THE BOTTOM OF FOOTING.

DO NOT USE A STANDARD GRAVITY RETAINING WALL WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS PRESENT BELOW THE WALL.

DO NOT PLACE CONCRETE UNTIL OBTAINING APPROVAL OF THE EXCAVATION DEPTH AND CHECKING FOUNDATION MATERIAL FOR IN-SITU ASSUMED SOIL PARAMETERS.

USE CLASS "A" CONCRETE AND PROVIDE CLASS I SURFACE FINISH FOR ALL EXPOSED SURFACES.

PROVIDE 3" (75mm) DIAMETER WEEP HOLES ON 10'-0" (3m) CENTERS ALONG WALL. SLOPE WEEP HOLES ON A 1" (25mm) PER FOOT (300mm) SLOPE THROUGH THE WALL SO THAT WATER DRAINS OUT OF THE FRONT OF THE WALL.

CONSTRUCT A HORIZONTAL DRAIN IN SUBDRAIN FINE AGGREGATE AT LEAST 1'-0" (300mm) TALL AND 1'-0" (300mm) WIDE TO CONNECT ALL STONE DRAINS.

PROVIDE GROOVED CONTRACTION JOINTS EVERY 10'-0" (3m) AND EXPANSION JOINTS EVERY 30'-0" (9m) ALONG THE WALL.

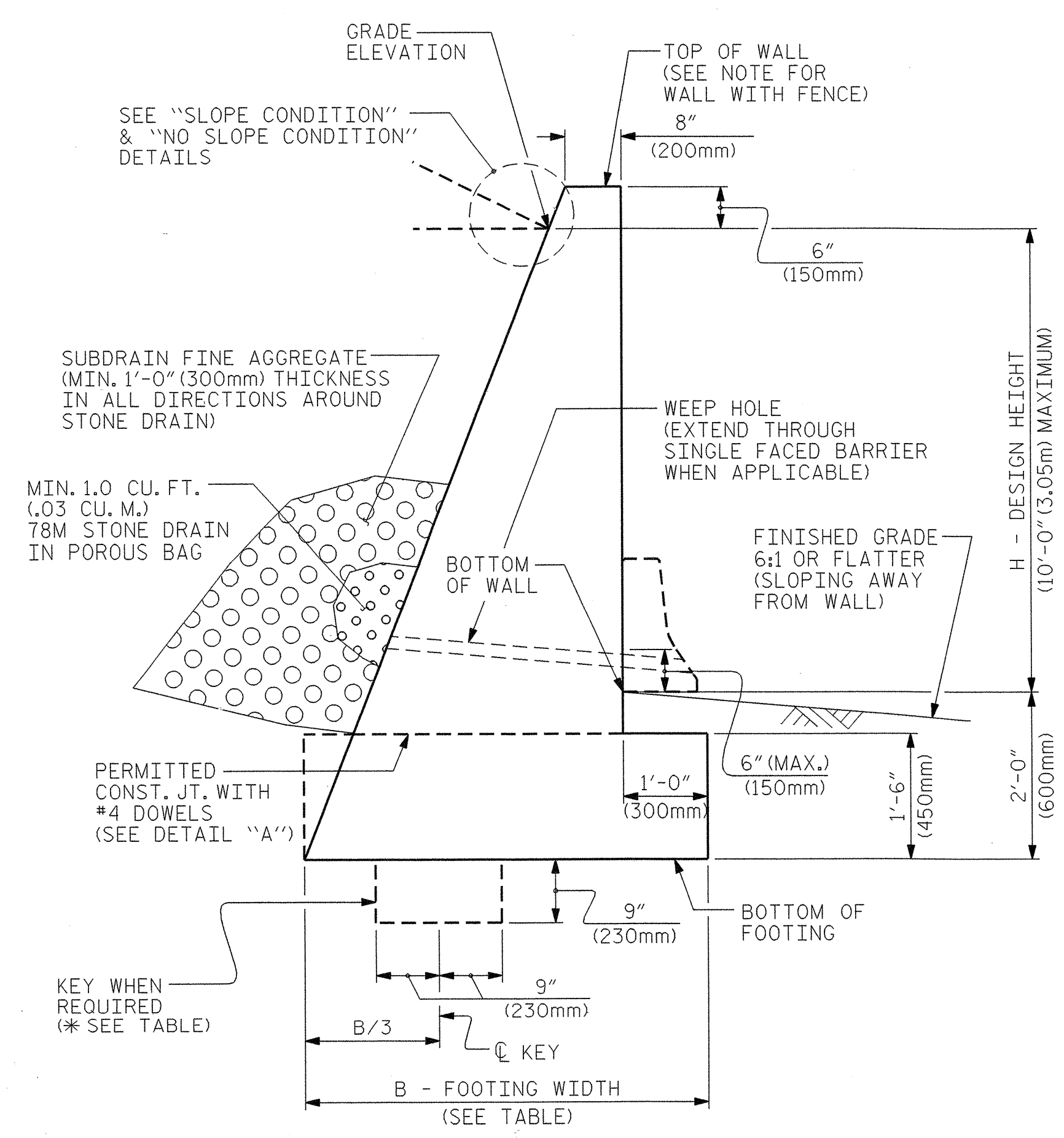
FOR WALL WITH BRICK VENEER, SUBMIT BRICK SAMPLES TO THE ENGINEER FOR APPROVAL BEFORE BEGINNING CONSTRUCTION. ANCHOR BRICK VENEER TO CONCRETE RETAINING WALL WITH BRICK TO CONCRETE TYPE ANCHORS ACCORDING TO MANUFACTURER'S SPECIFICATIONS WITH A MINIMUM VERTICAL SPACING OF 1'-4" (400mm) AND A MINIMUM HORIZONTAL SPACING OF 2'-8" (800mm) WITH EACH ROW STAGGERED 1'-4" (400mm) FROM THE ROW OF ANCHORS ABOVE AND BELOW.

DO NOT BACKFILL BEHIND WALL UNTIL CONCRETE DEVELOPS A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI (20.7 MPa). COMPACT BACKFILL IN ACCORDANCE WITH SUBARTICLE 235-4(C) OF THE STANDARD SPECIFICATIONS. PLACE BACKFILL WITHIN 3'-0" (1m) OF THE BACK OF THE WALL WITH HAND OPERATED EQUIPMENT. DO NOT OPERATE HEAVY EARTH MOVING EQUIPMENT WITHIN 10'-0" (3m) OF THE BACK OF WALL.

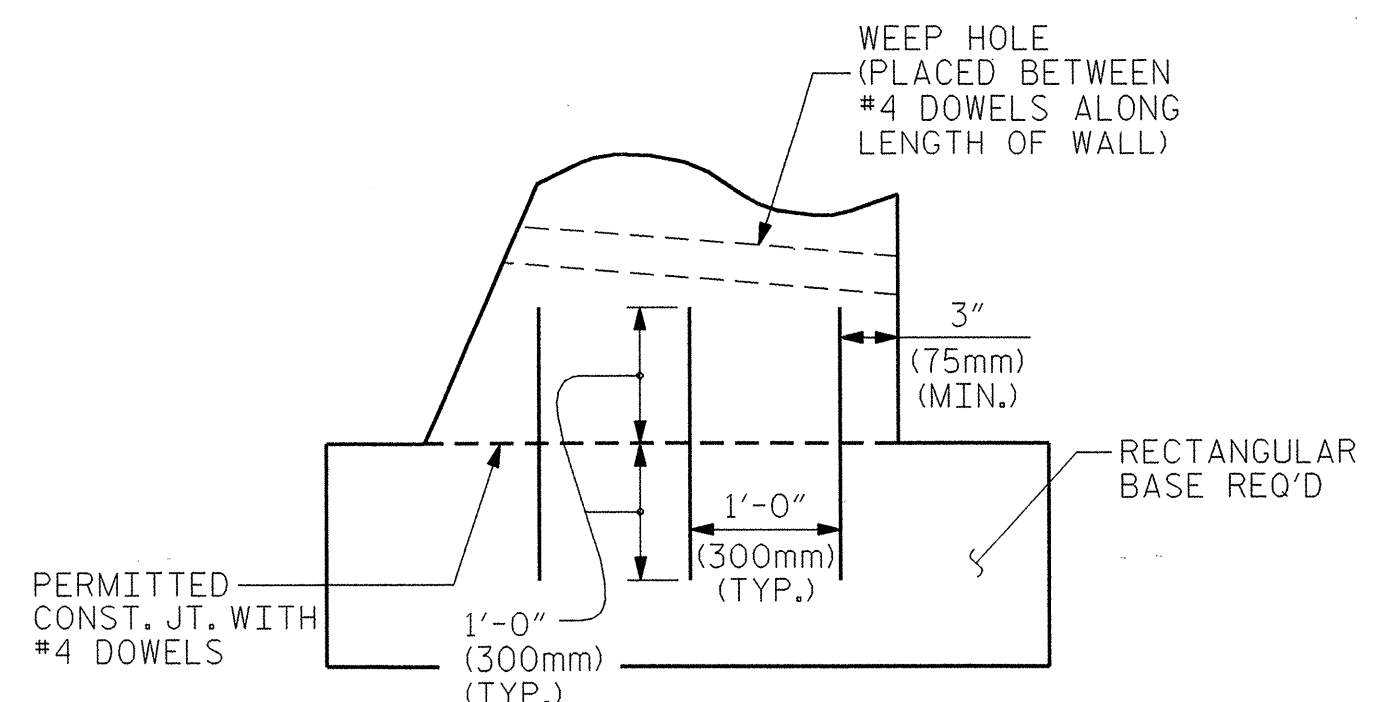
WHEN A CONSTRUCTION JOINT IS LOCATED AT THE BASE OF THE WALL, IN SECTION, PROVIDE A MINIMUM OF 3-#4 DOWELS AT AN EQUAL SPACING. SPACE ALL DOWELS AT 1'-6" (460mm) CENTERS ALONG THE LENGTH OF THE WALL.

SEE PREVIOUS SHEET(S) FOR PLAN AND PROFILE VIEW (WALL ENVELOPE) AND PROPOSED ELEVATIONS FOR GRAVITY RETAINING WALL(S).

FOR WALL WITH FENCE, USE SLEEVES IN ACCORDANCE WITH SECTION 866 OF THE STANDARD SPECIFICATIONS FOR FENCE POSTS, OR SUBMIT FENCE POST ANCHOR PLATE DETAILS.



TYPICAL SECTION



DETAIL "A"

H + 2 (ft)	< 6	6 - 9	> 9 - 12
H + 0.6 (m)	< 1.83	1.83 - 2.74	> 2.74 - 3.65
NO SLOPE CONDITION WITHOUT TRAFFIC SURCHARGE	.60	.60	.60
NO SLOPE CONDITION WITH TRAFFIC SURCHARGE	.80	.75 *	.70 *
SLOPE CONDITION	.66	.70 *	.75 *

B/(H + 2) RATIO

\* KEY IS REQUIRED FOR SLOPE CONDITION OR NO SLOPE CONDITION WITH TRAFFIC SURCHARGE WHEN H + 2ft (H + 0.6m) IS 6'-0" (1.83m) OR GREATER.

**PROJECT NO.:** U-2510A  
**MECKLENBURG COUNTY**  
**STATION:**  
 SHEET 4 OF 4

**GEOTECHNICAL ENGINEERING UNIT**  
 STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**STANDARD DRAWING NO. 453.01**

**STANDARD GRAVITY RETAINING WALL**

DATE: 7-18-06

SHEET NO. W-4  
 TOTAL SHEETS 4



## 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