

TIP PROJECT: B-4055

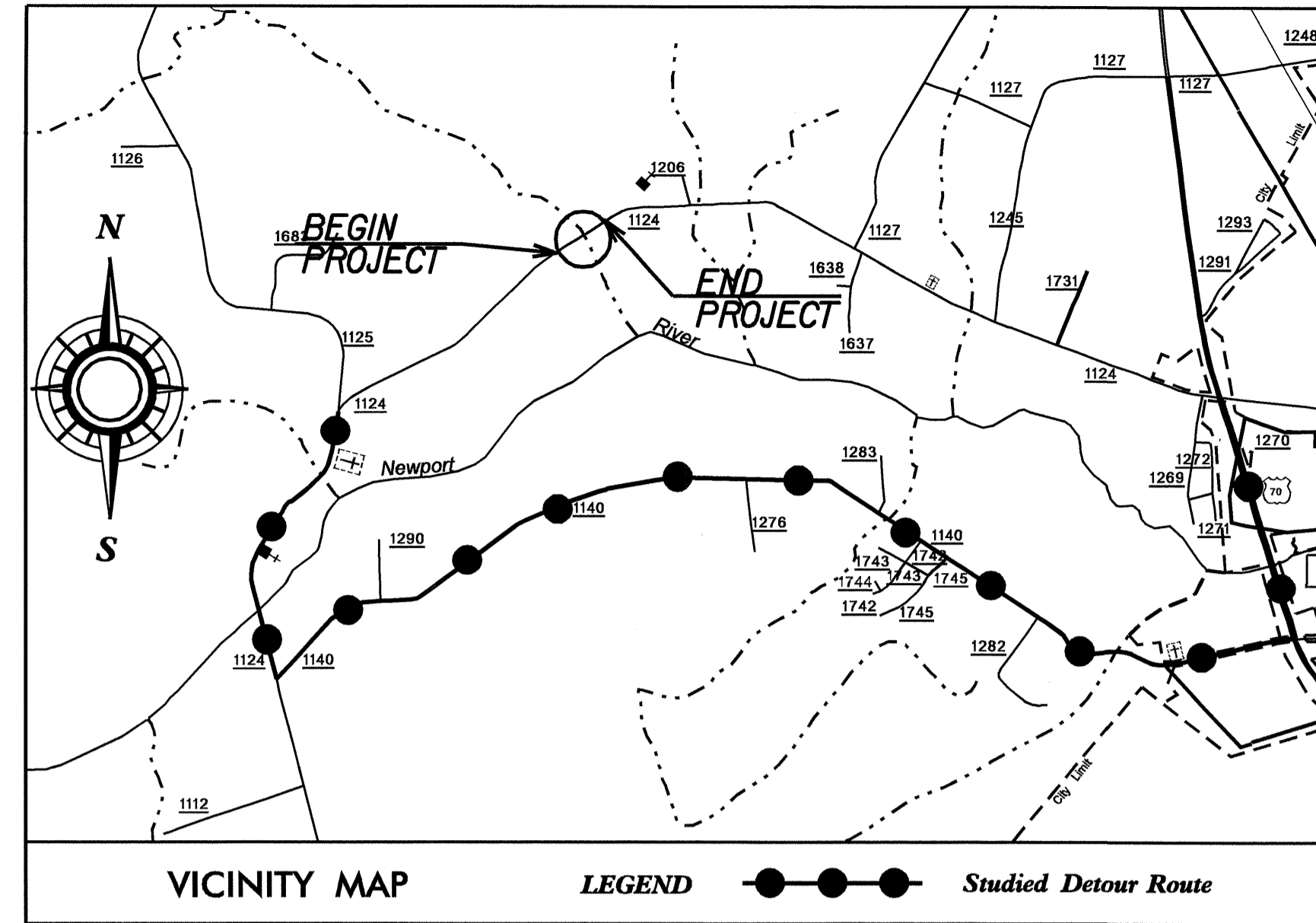
CONTRACT: C201851

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

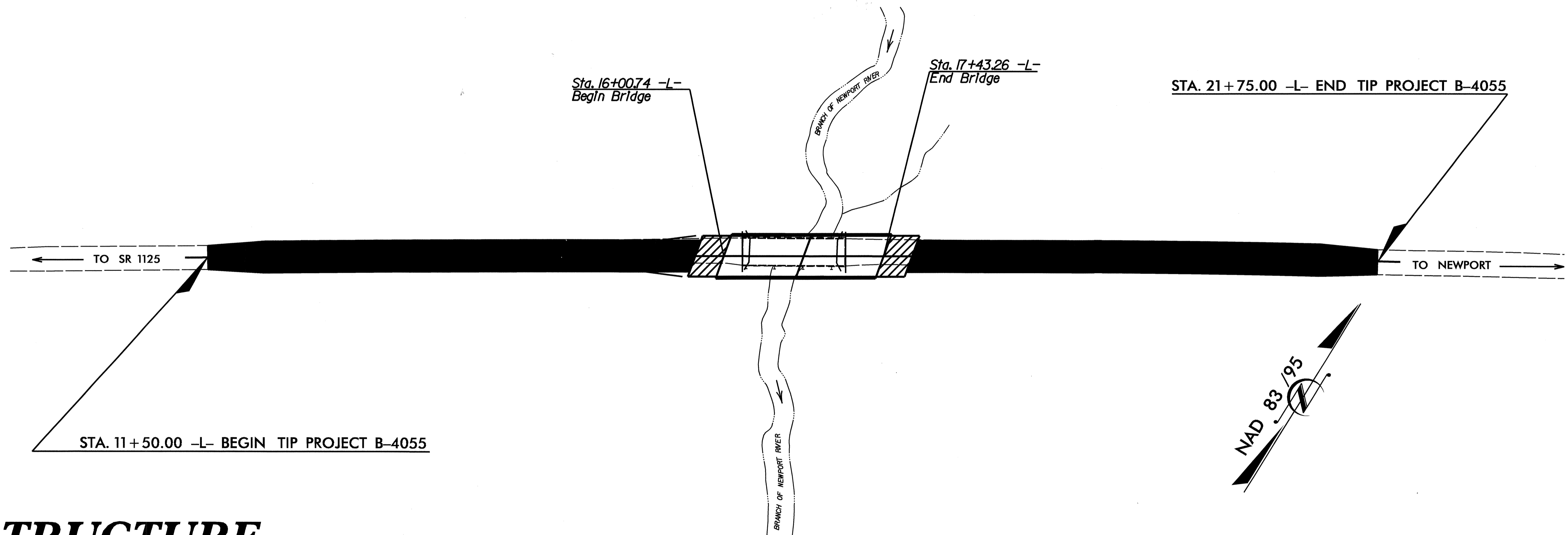
CARTERET COUNTY

LOCATION: BRIDGE NO. 22 OVER BRANCH OF NEWPORT RIVER
ON SR 1124

TYPE OF WORK: GRADING, DRAINAGE, STRUCTURE, AND PAVING

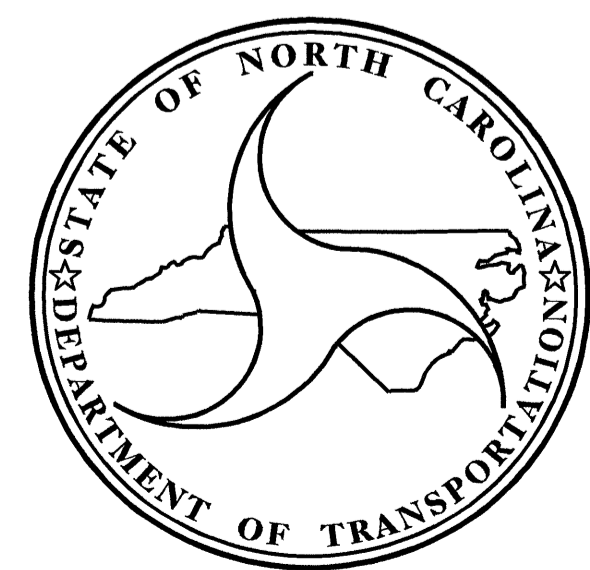


STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4055		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33420.1.1	BRSTP-1124(4)	P.E.	
33420.2.1	BRSTP-1124(4)	R/W, UTL.	
33420.3.1	BRSTP-1124(4)	CONST.	



STRUCTURE

THIS PROJECT IS NOT WITHIN MUNICIPAL BOUNDARIES.



DESIGN DATA

ADT 2008 =	3890
ADT 2030 =	7000
DHV =	10 %
D =	60 %
T =	3 % *
V =	60 MPH
FUNC. CLASS =	RURAL MAJOR COLLECTOR
* TTST 1 %	DUAL 2 %

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4055	=	0.167 mi.
LENGTH STRUCTURE TIP PROJECT B-4055	=	0.027 mi.
TOTAL LENGTH TIP PROJECT B-4055	=	0.194 mi.

Prepared in the Office of:

DIVISION OF HIGHWAYS

2006 STANDARD SPECIFICATIONS

LETTING DATE:
SEPTEMBER 16, 2008

ROY M. GIROLAMI, P.E. PROJECT ENGINEER
LAURA E. SUTTON, P.E. PROJECT DESIGN ENGINEER

STRUCTURE DESIGN UNIT
1000 BIRCH RIDGE DR.
RALEIGH, NC 27610

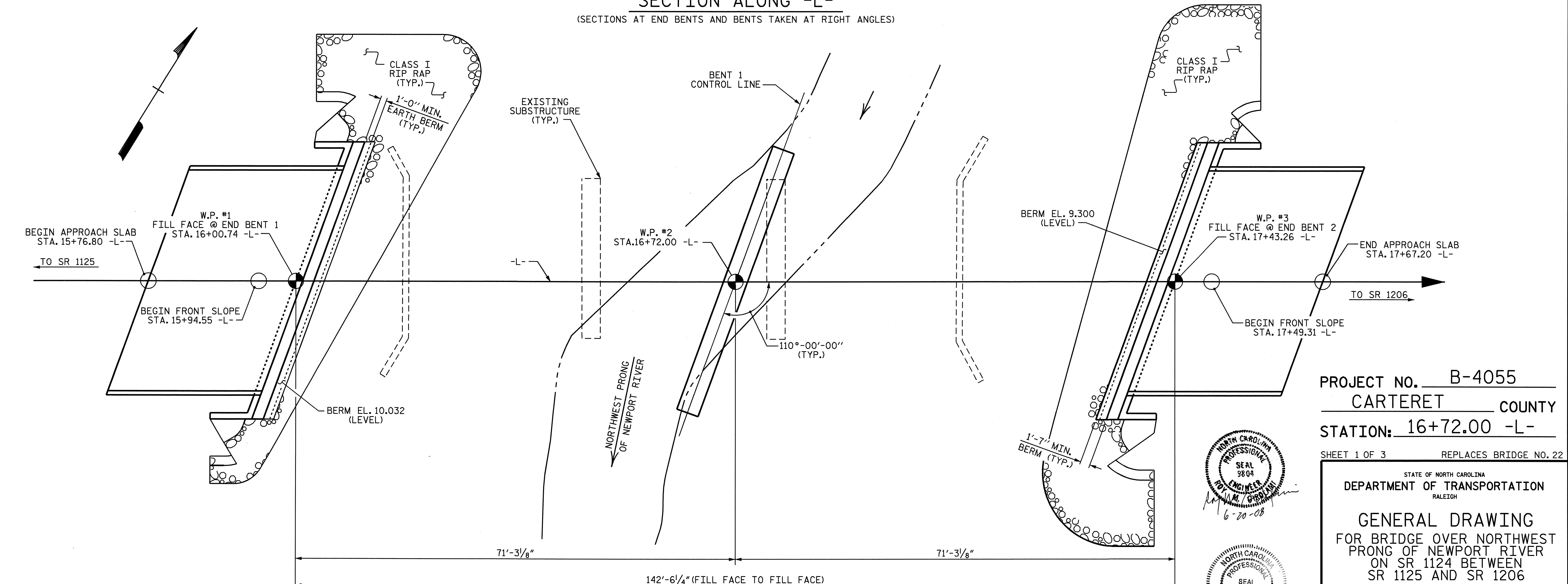
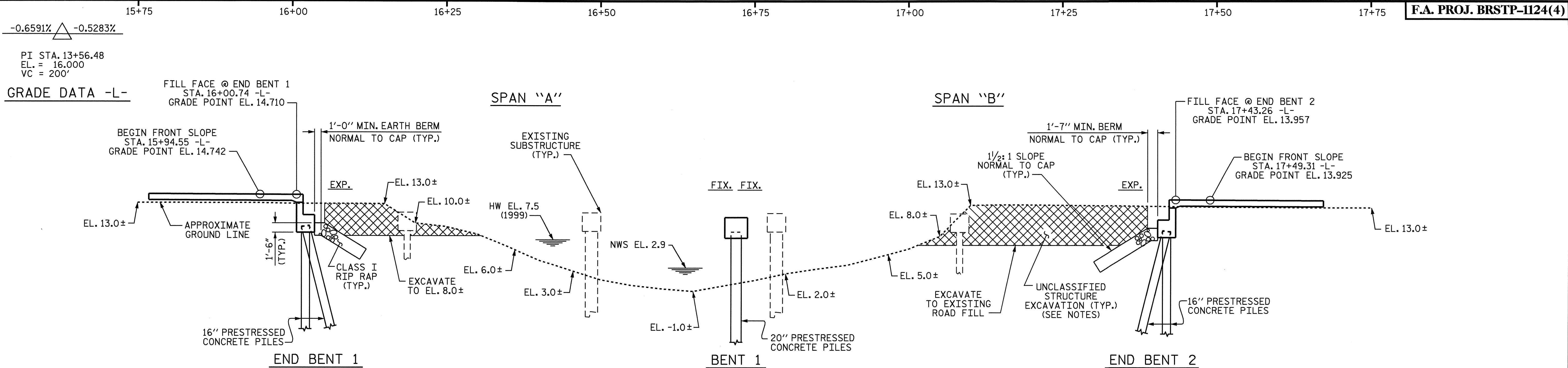
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER _____ P.E.

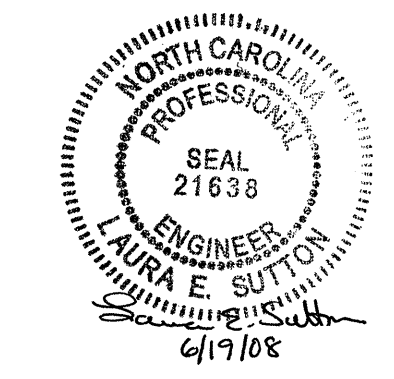
DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED _____ DATE _____

DIVISION ADMINISTRATOR _____



PROJECT NO. B-4055
CARTERET COUNTY
 STATION: 16+72.00 -L-
 SHEET 1 OF 3 REPLACES BRIDGE NO. 22

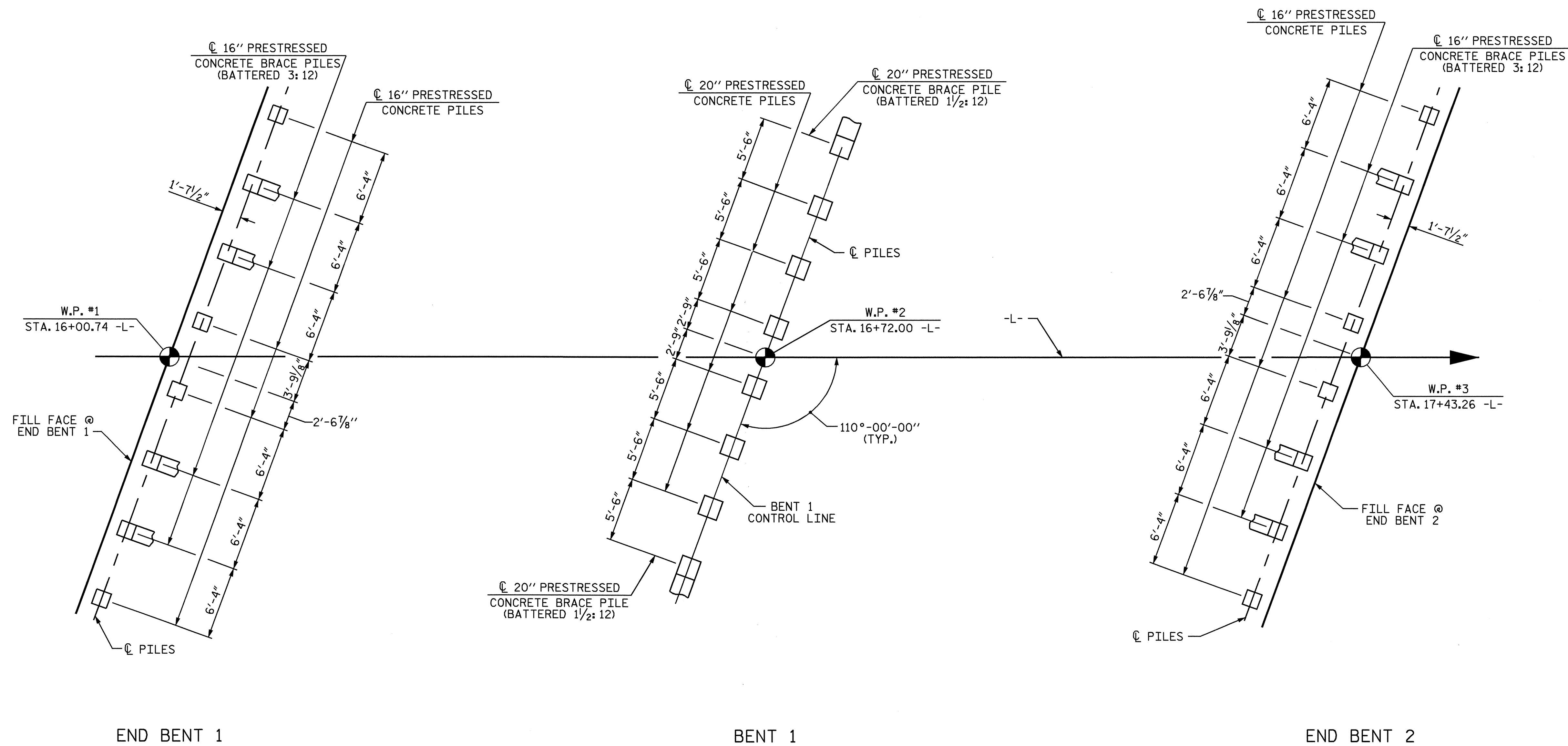


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE OVER NORTHWEST
 PRONG OF NEWPORT RIVER
 ON SR 1124 BETWEEN
 SR 1125 AND SR 1206

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

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



FOUNDATION LAYOUT

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

NOTES:

DRIVE PILES AT BOTH END BENTS TO A REQUIRED BEARING CAPACITY OF 140 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 BOTH END BENTS IS 70 TONS PER PILE.

DRIVE PILES AT BENT 1 TO A REQUIRED BEARING CAPACITY OF 205 TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO PLUS ANY ADDITIONAL CAPACITY TO ACCOUNT FOR DOWN DRAG OR NEGATIVE SKIN FRICTION AND SCOUR.

THE ALLOWABLE BEARING CAPACITY FOR PILES AT BENT 1 IS 100 TONS PER PILE.

DRIVE PILES AT BENT 1 TO A TIP ELEVATION NO HIGHER THAN -30.0 FT.

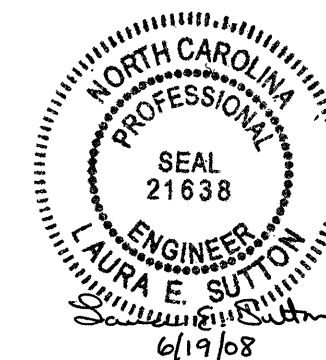
THE SCOUR CRITICAL ELEVATION FOR BENT 1 IS ELEVATION -10.0 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 56,000 TO 88,000 FT.-LBS. PER BLOW WILL BE REQUIRED TO DRIVE PILES AT BENT 1. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM ARTICLE 450-5 OF THE STANDARD SPECIFICATIONS.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 42,000 TO 66,000 FT.-LBS. PER BLOW WILL BE REQUIRED TO DRIVE PILES AT THE END BENTS. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM ARTICLE 450-5 OF THE STANDARD SPECIFICATIONS.

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

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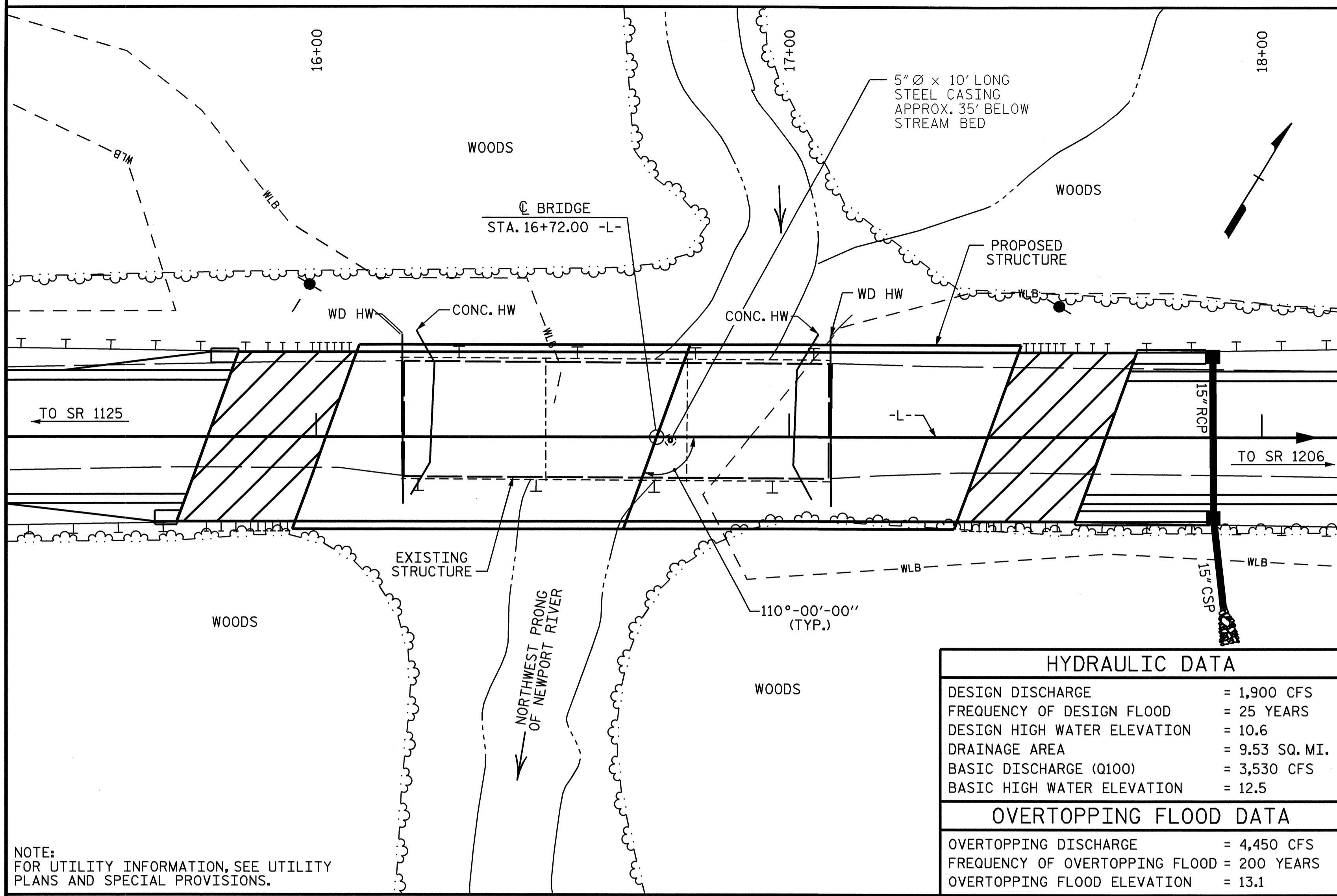
PROJECT NO. B-4055
CARTERET COUNTY
 STATION: 16+72.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE OVER NORTHWEST
 PRONG OF NEWPORT RIVER
 ON SR 1124 BETWEEN
 SR 1125 AND SR 1206

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



NOTE:
FOR UTILITY INFORMATION, SEE UTILITY
PLANS AND SPECIAL PROVISIONS.

LOCATION SKETCH

HYDRAULIC DATA	
DESIGN DISCHARGE	= 1,900 CFS
FREQUENCY OF DESIGN FLOOD	= 25 YEARS
DESIGN HIGH WATER ELEVATION	= 10.6
DRAINAGE AREA	= 9.53 SQ. MI.
BASIC DISCHARGE (Q100)	= 3,530 CFS
BASIC HIGH WATER ELEVATION	= 12.5
OVERTOPPING FLOOD DATA	
OVERTOPPING DISCHARGE	= 4,450 CFS
FREQUENCY OF OVERTOPPING FLOOD	= 200 YEARS
OVERTOPPING FLOOD ELEVATION	= 13.1

NOTES:

ASSUMED LIVE LOAD = HS20 OR ALTERNATE LOADING, EXCEPT THAT BOX BEAM UNITS HAVE BEEN DESIGNED FOR HS25.

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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

THE EXISTING STRUCTURE CONSISTING OF 3 SPANS (1 @ 30'-4", 1 @ 30'-0", 1 @ 30'-7") PRESTRESSED CONCRETE CHANNELS WITH A CLEAR ROADWAY WIDTH OF 24.1' ON PRESTRESSED CONCRETE CAPS ON TIMBER PILES AND LOCATED 4'± UPSTREAM FROM PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE FURTHER DETERIORATE, THIS LOAD LIMITATION MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT. SEE SPECIAL PROVISIONS FOR "REMOVAL OF EXISTING STRUCTURE AT STA. 16+72.00 -L-".

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

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 40' LEFT AND RIGHT OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION.

THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

THIS STRUCTURE CONTAINS THE NECESSARY CORROSION PROTECTION REQUIRED FOR A CORROSIVE SITE.

CLASS AA CONCRETE SHALL BE USED IN ALL CAST-IN-PLACE END BENT AND BENT CAPS AND CONCRETE WEARING SURFACE AND SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR.

ALL BAR SUPPORTS USED IN THE BARRIER RAIL, END BENT AND BENT CAPS, CONCRETE WEARING SURFACE AND ALL INCIDENTAL REINFORCING STEEL SHALL BE EPOXY COATED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

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

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

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	UNCLASSIFIED STRUCTURE EXCAVATION	CONCRETE WEARING SURFACE	GROOVING BRIDGE FLOORS	CLASS AA CONCRETE	BRIDGE APPROACH SLABS	EPOXY COATED REINFORCING STEEL	16" PRESTRESSED CONCRETE PILES		20" PRESTRESSED CONCRETE PILES		CONCRETE BARRIER RAIL	RIP RAP CLASS I (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE	ELASTOMERIC BEARINGS	EVAZOTE JOINT SEALS	3'-0" X 2'-9" PRESTRESSED CONCRETE BOX BEAMS		
	LUMP SUM	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	NO.	LIN. FT.	NO.	LIN. FT.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	LUMP SUM	NO.	LIN. FT.	
SUPERSTRUCTURE			4,986	6,109								280.52						26	1820.00
END BENT 1					21.7		3,570	8	360		8	400	80	89					
BENT 1					19.1		2,955												
END BENT 2					21.7		3,565	8	360				125	138					
TOTAL	LUMP SUM	LUMP SUM	4,986	6,109	62.5	LUMP SUM	10,090	16	720	8	400	280.52	205	227	LUMP SUM	LUMP SUM	26	1820.00	

PROJECT NO. B-4055
CARTERET COUNTY
 STATION: 16+72.00 -L-

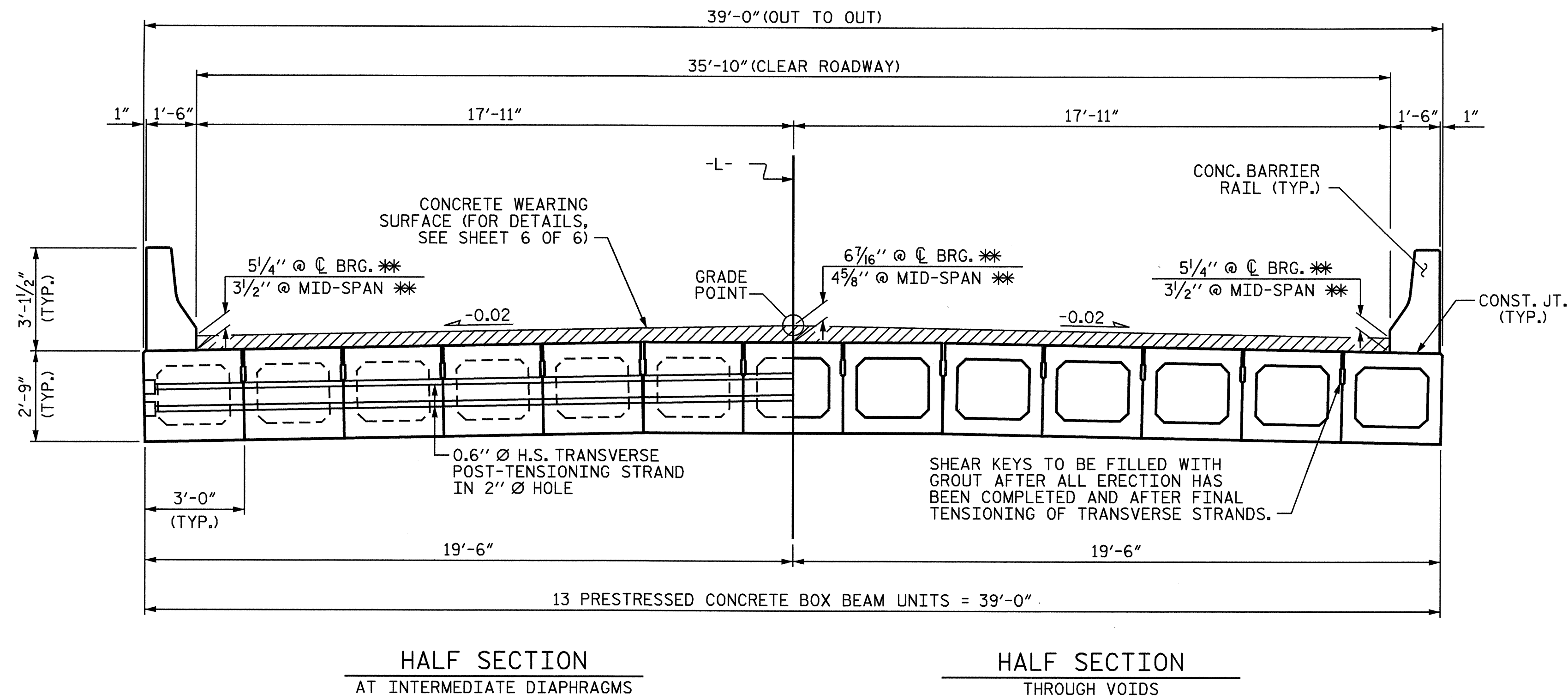
SHEET 3 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE OVER NORTHWEST PRONG OF NEWPORT RIVER ON SR 1124 BETWEEN SR 1125 AND SR 1206

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

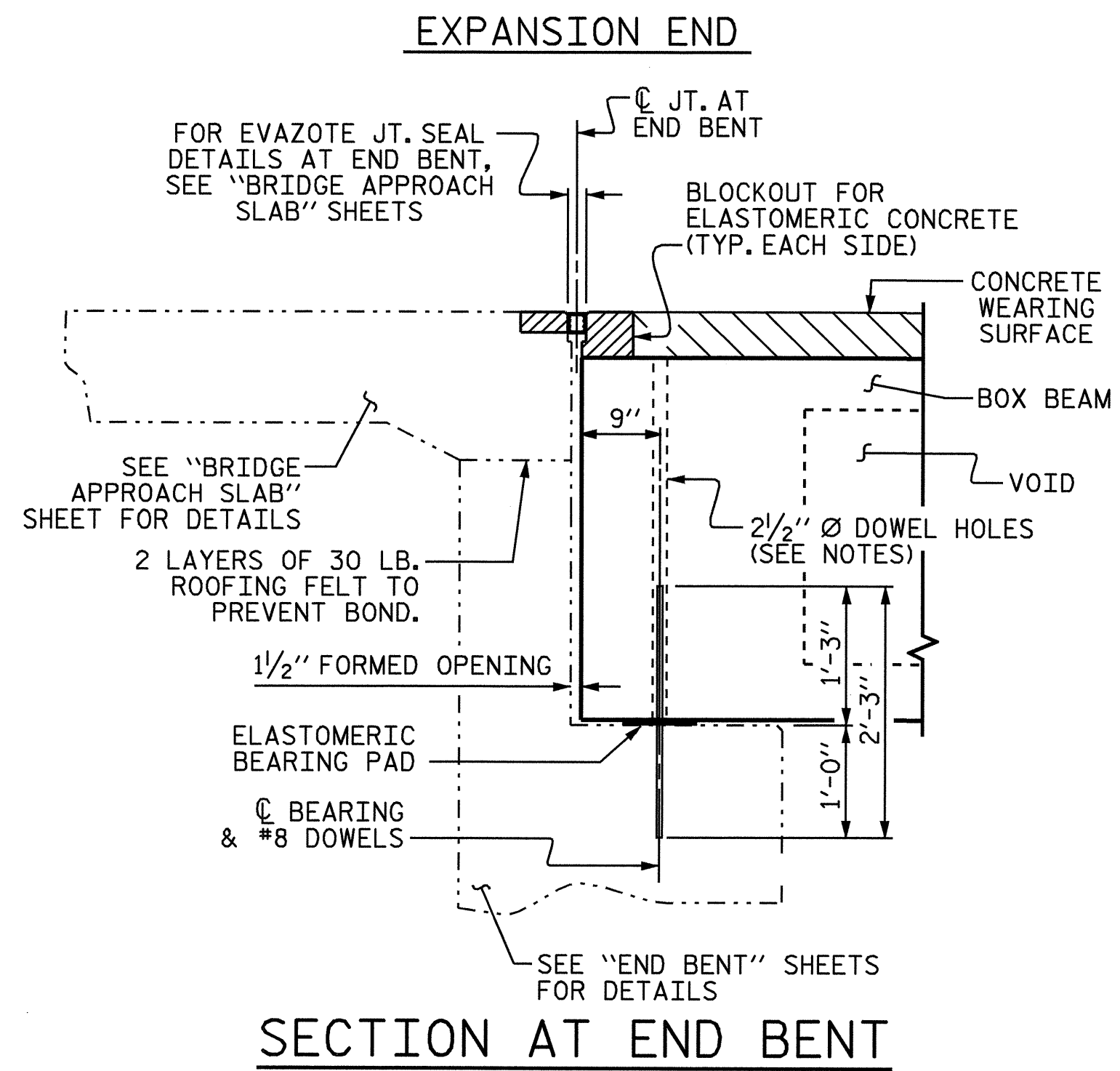
DRAWN BY : A.S. CALLAWAY DATE : 5/9/06
 CHECKED BY : P.C. BREWER DATE : 5/23/06



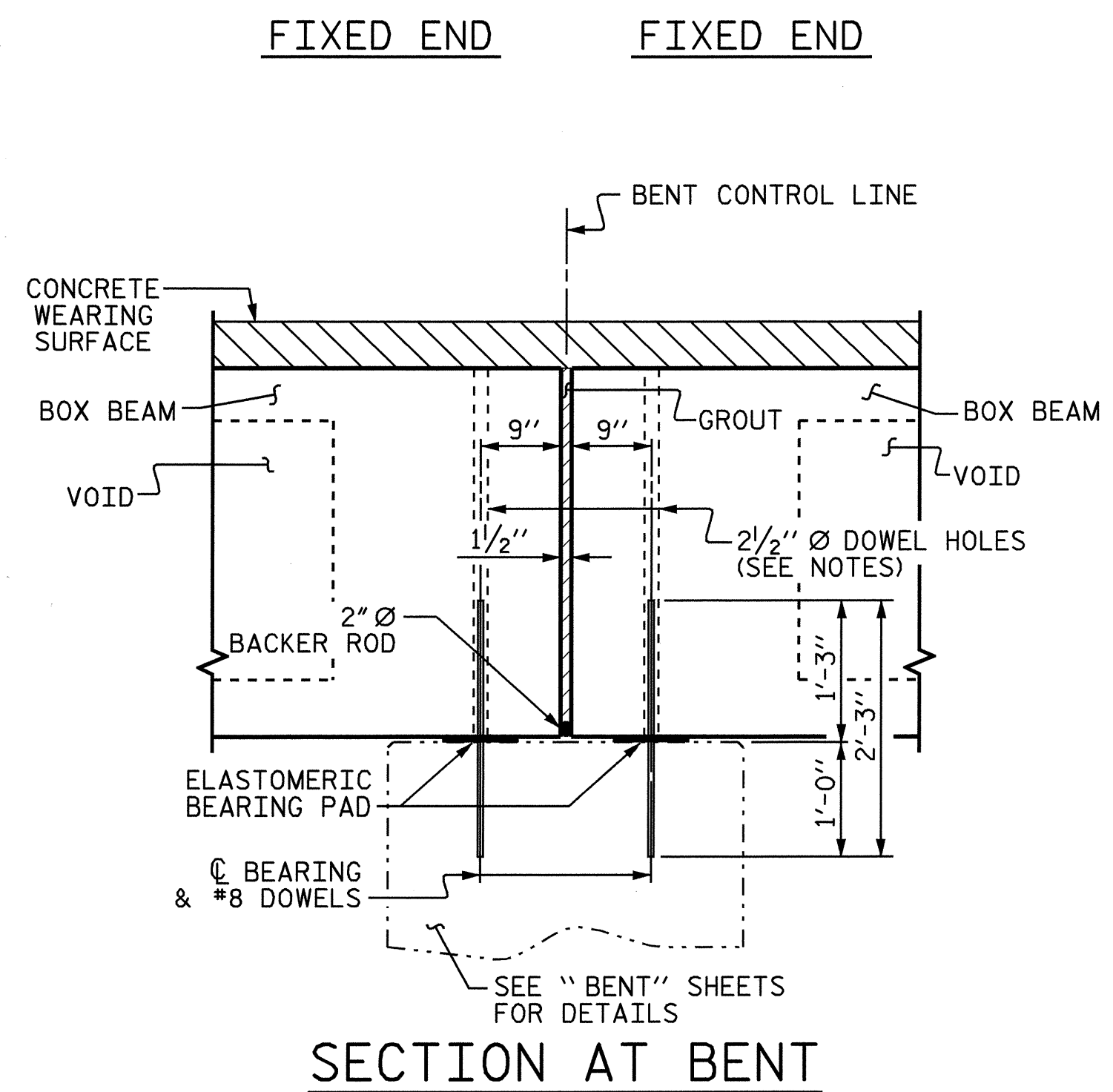
HALF SECTION AT INTERMEDIATE DIAPHRAGMS
HALF SECTION THROUGH VOIDS

TYPICAL SECTION

**BASED ON PREDICTED FINAL CAMBER AND THEORETICAL GRADE LINE ELEVATIONS
BOX BEAM UNITS ARE SLOPED. SEE SUBSTRUCTURE SHEETS FOR DETAILS.



SECTION AT END BENT



SECTION AT BENT

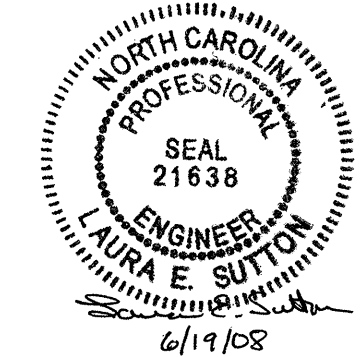
NOTES

- ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
- ALL REINFORCING STEEL CAST WITH THE BOX BEAM SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE BOX BEAMS.
- RECESSES FOR TRANSVERSE STRANDS SHALL BE GROUTED AFTER THE TENSIONING OF THE STRANDS.
- THE 2 1/2" Ø DOWEL HOLES AT FIXED ENDS OF BOX BEAM SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT. THE 2 1/2" Ø DOWEL HOLES AT EXPANSION ENDS OF BOX BEAM SECTIONS SHALL BE FILLED WITH JOINT SEALER MATERIAL TO 1/2" ABOVE THE TOP OF DOWELS AND THEN FILLED WITH GROUT.
- THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF TYPE SL LOW MODULUS SILICONE SEALANT. THE 2" Ø BACKER ROD SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.
- THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE BOX BEAM UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 4100 PSI.
- ALL REINFORCING STEEL IN BARRIER RAILS AND CONCRETE WEARING SURFACE SHALL BE EPOXY COATED.
- PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE BOX BEAM UNIT ENDS.
- APPLY EPOXY PROTECTIVE COATING TO BOX BEAM UNIT ENDS.
- VERTICAL GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A VERTICAL CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.
- FOR EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS.
- THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE EVAZOTE JOINT SEAL SHALL BE 3 1/16" AT END BENTS 1 & 2.
- PLACEMENT OF THE CONCRETE WEARING SURFACE SHALL OCCUR AFTER CASTING THE CONCRETE RAIL. THE COST OF THE EPOXY COATED 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 ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.
- THE LOCATION OF THE VOID DRAINS MAY BE SHIFTED SLIGHTLY WHERE NECESSARY TO CLEAR PRESTRESSING STRANDS OR TRANSVERSE REINFORCING STEEL.
- PRESTRESSED CONCRETE BOX BEAM UNITS SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR.

PROJECT NO. B-4055
CARTERET COUNTY
STATION: 16+72.00 -L-

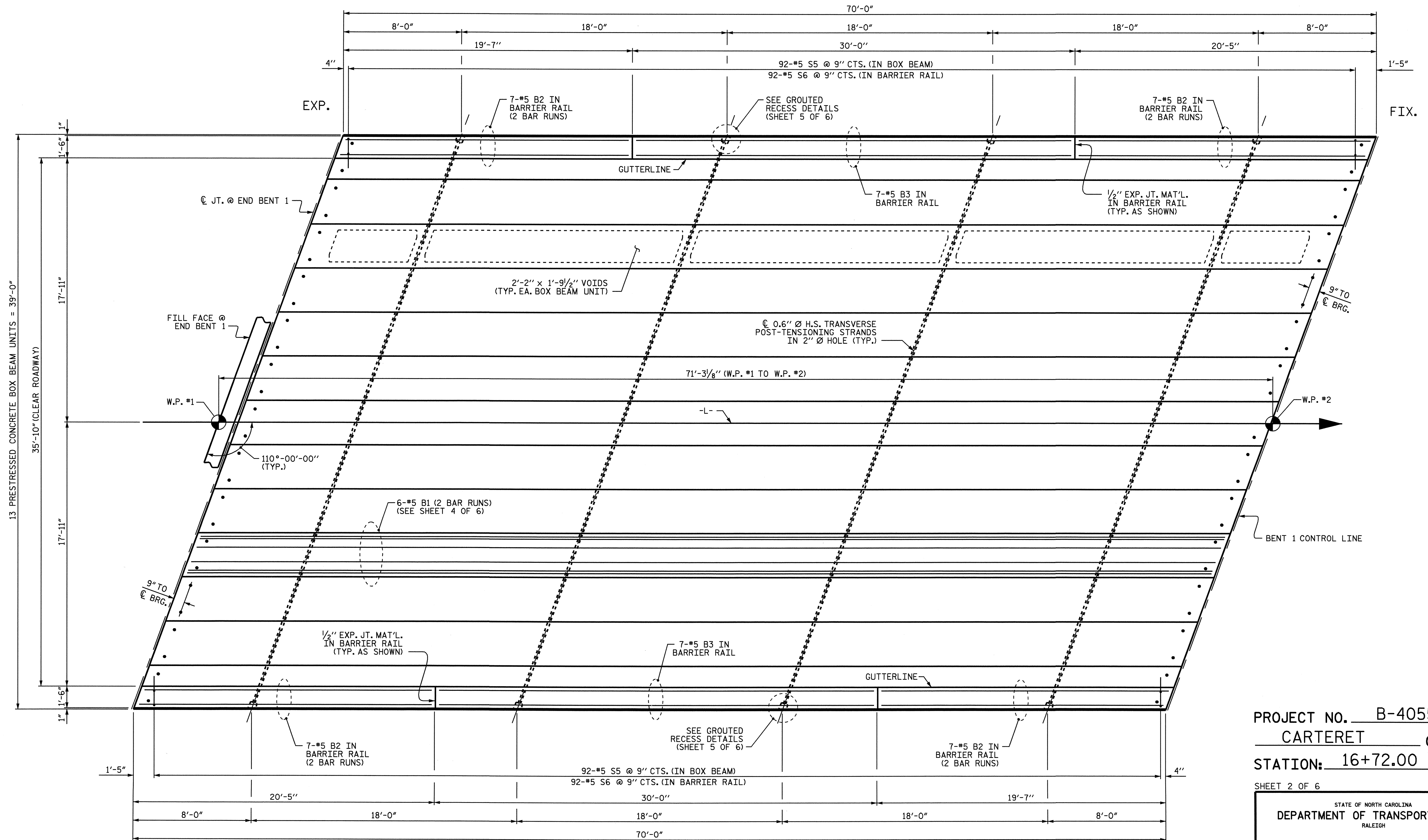
SHEET 1 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
3'-0" X 2'-9"
PRESTRESSED CONCRETE
BOX BEAM UNIT



ASSEMBLED BY: A.S. CALLAWAY	DATE: 4/7/06
CHECKED BY: P.C. BREWER	DATE: 4/25/06
DRAWN BY: TLA 5/05	ADDED 7/1/05R
CHECKED BY: GM 6/05	REV. 5/1/06R KMM/GM

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



PLAN - SPAN A

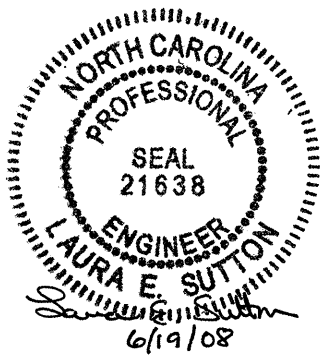
PROJECT NO. B-4055
CARTERET COUNTY
 STATION: 16+72.00 -L-
 SHEET 2 OF 6

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

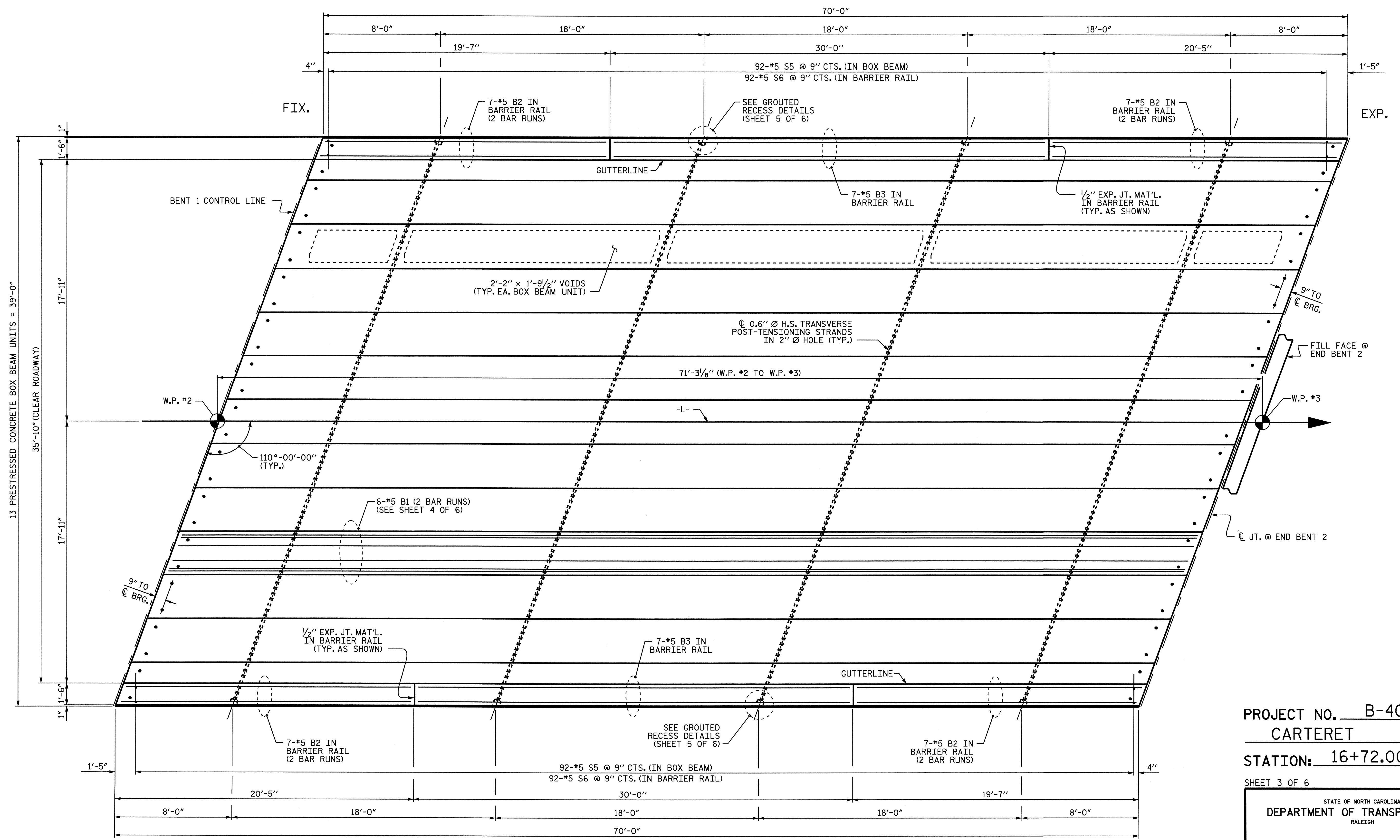
3'-0" X 2'-9"
 PRESTRESSED CONCRETE
 BOX BEAM UNIT
 SPAN "A"

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

DRAWN BY: A.S. CALLAWAY DATE: 4/7/06
 CHECKED BY: P.C. BREWER DATE: 4/25/06



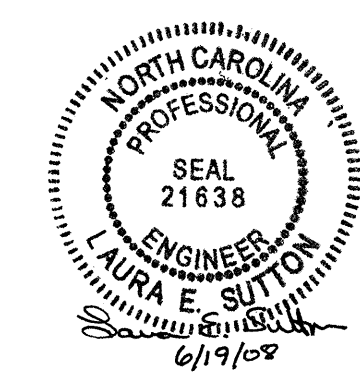
13 PRESTRESSED CONCRETE BOX BEAM UNITS = 39'-0"
35'-10" (CLEAR ROADWAY)



PROJECT NO. B-4055
CARTERET COUNTY
 STATION: 16+72.00 -L-
 SHEET 3 OF 6

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

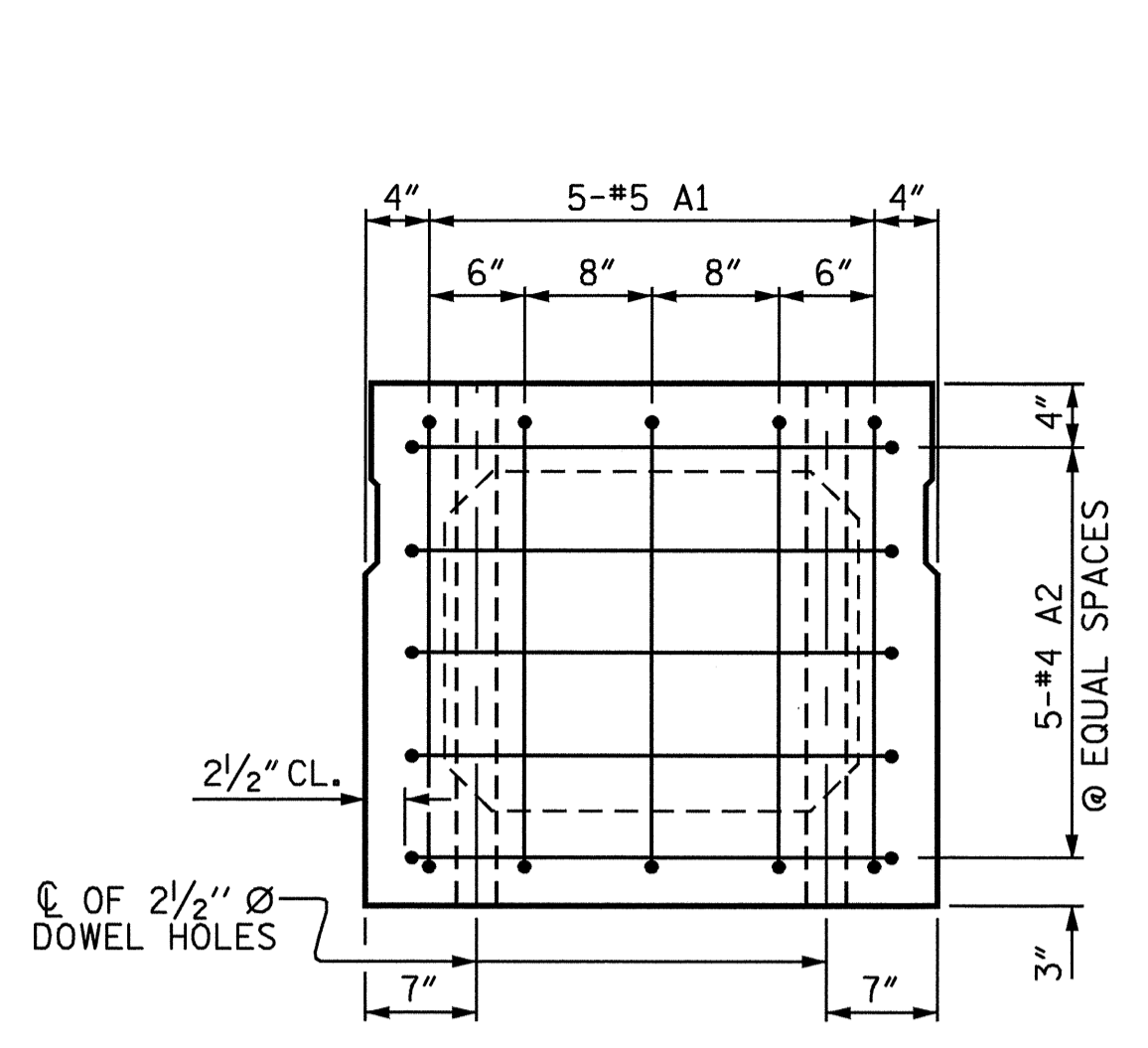
 3'-0" X 2'-9"
 PRESTRESSED CONCRETE
 BOX BEAM UNIT
 SPAN "B"



DRAWN BY : A.S. CALLAWAY DATE : 4/7/06
 CHECKED BY : P.C. BREWER DATE : 4/25/06

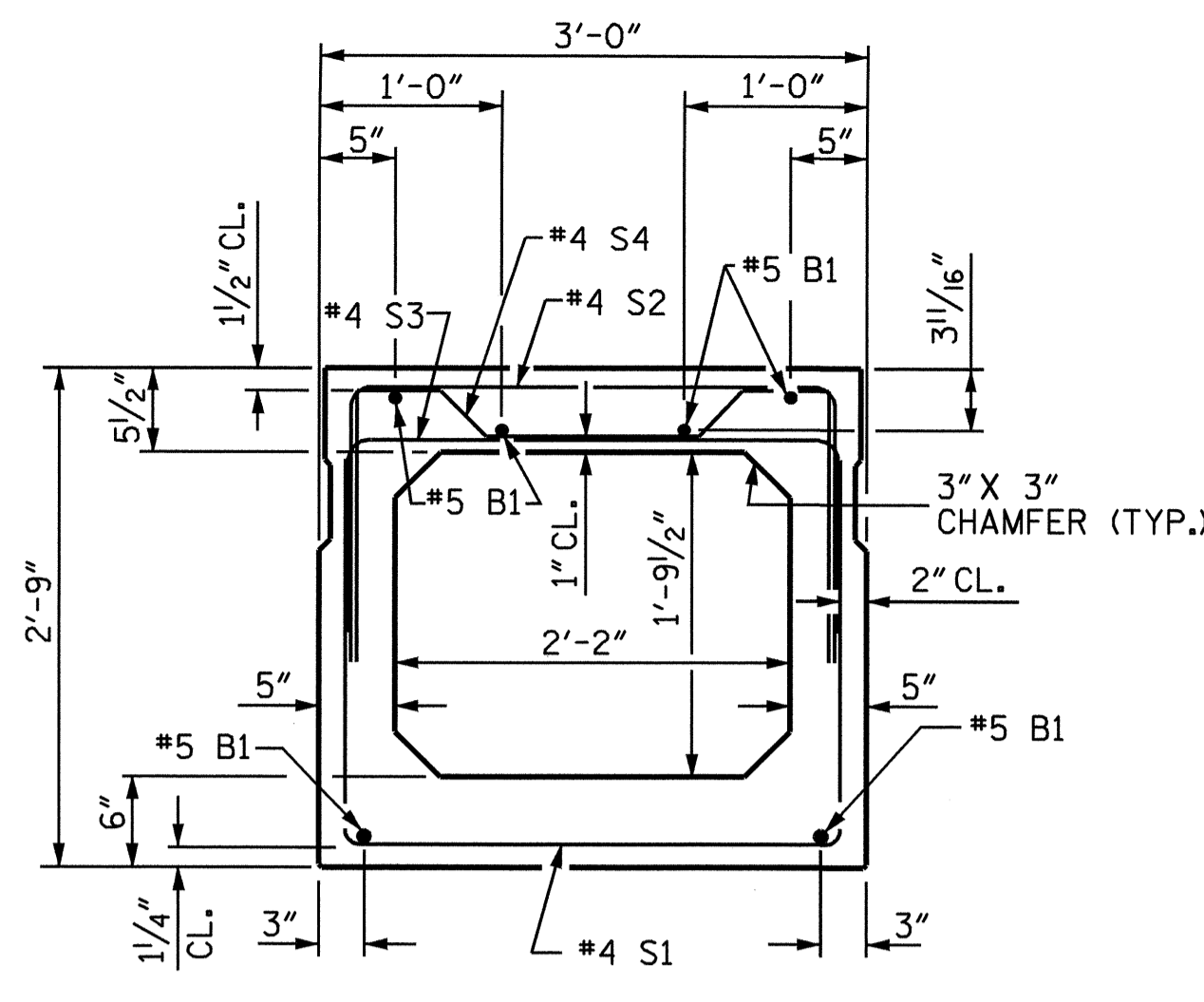
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			23

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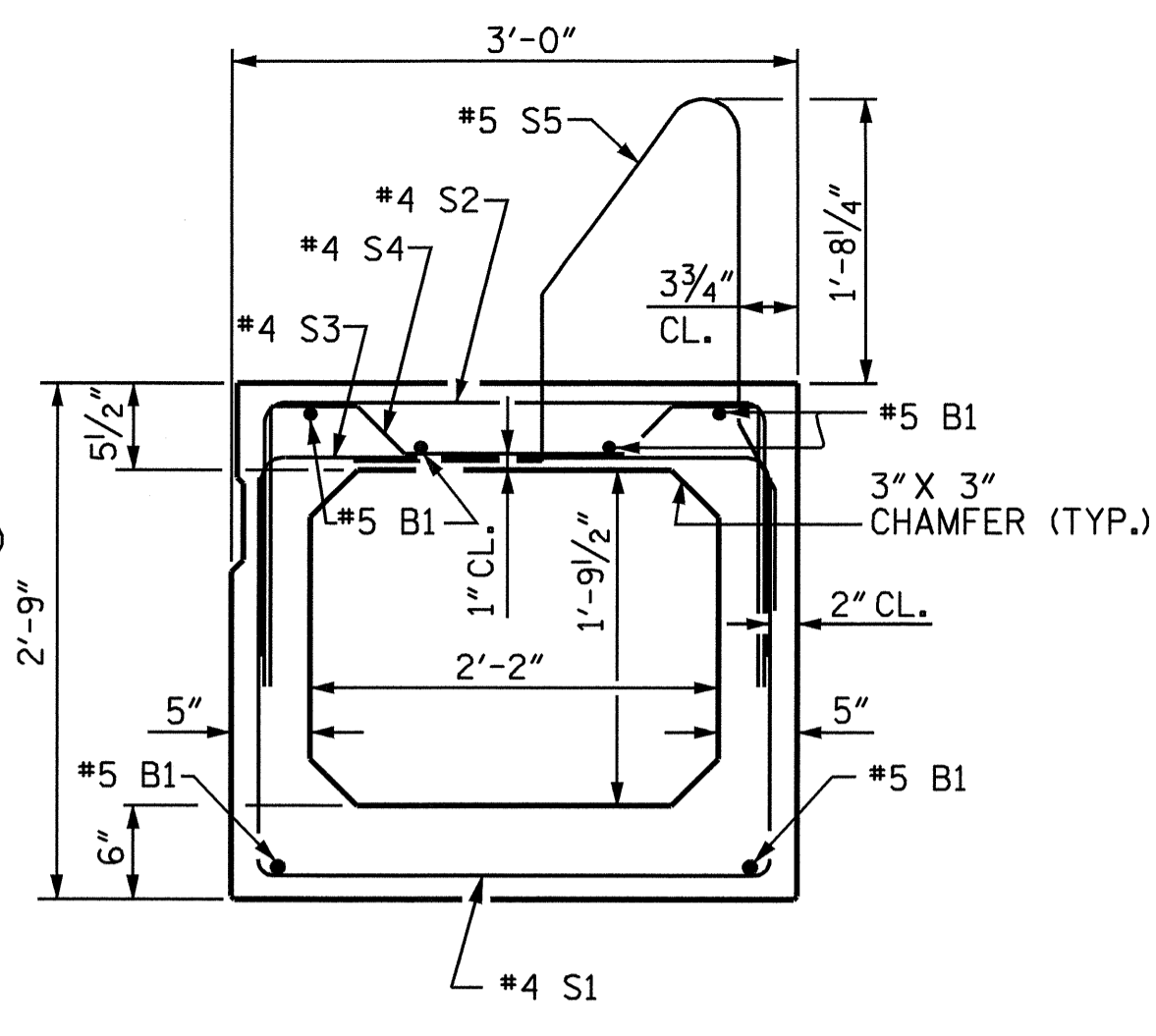


END ELEVATION

SHOWING PLACEMENT OF #5 & #4 "A" BARS AND LOCATION OF DOWEL HOLES. (INTERIOR BOX BEAM SECTION SHOWN-EXTERIOR SECTION SIMILAR EXCEPT SHEAR KEY LOCATION.) (STRAND LAYOUT NOT SHOWN.)

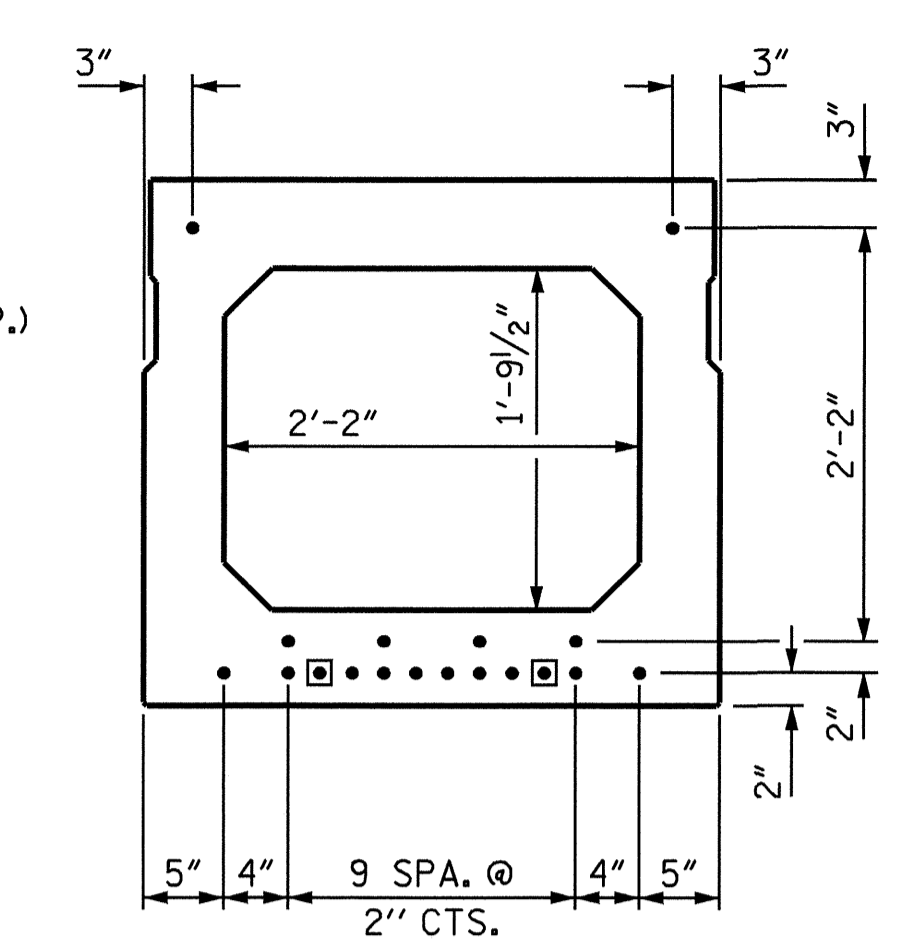


INTERIOR BOX BEAM SECTION
(STRAND LAYOUT NOT SHOWN)



EXTERIOR BOX BEAM SECTION
(STRAND LAYOUT NOT SHOWN)

0.6" Ø LOW RELAXATION STRAND LAYOUT



TYPICAL STRAND LOCATION
(18 STRANDS REQUIRED)

(INTERIOR BOX BEAM SECTION SHOWN-EXTERIOR SECTION SIMILAR EXCEPT SHEAR KEY LOCATION)

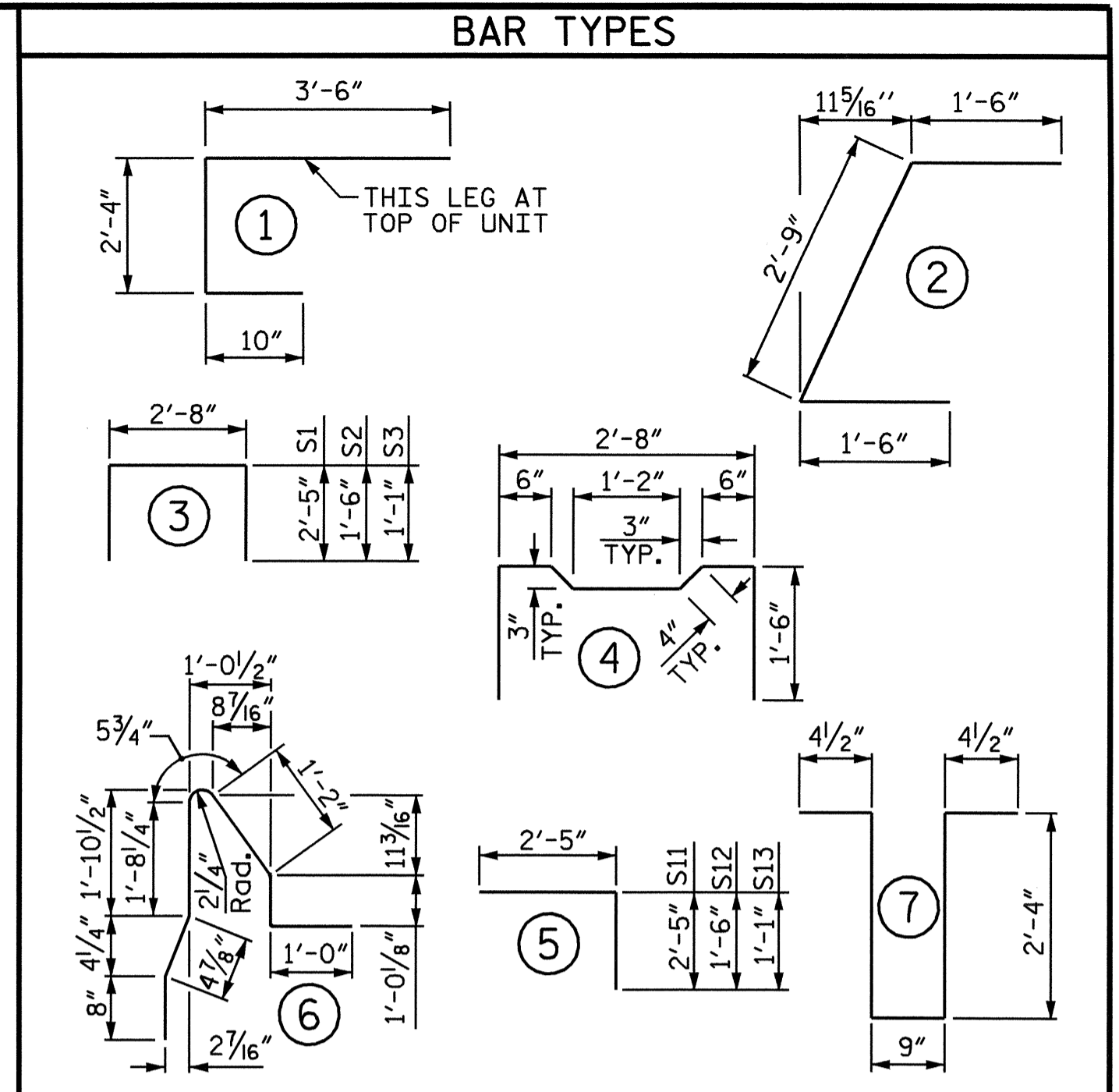
DEBONDING LEGEND

- FULLY BONDED STRANDS
- STRANDS DEBONDED FOR 2'-0" FROM END OF GIRDER

BOND SHALL BE BROKEN ON STRANDS AS SHOWN FOR THE SPECIFIED LENGTH FROM EACH END OF THE BOX BEAM. SEE STANDARD SPECIFICATIONS ARTICLE 1078-7.

GRADE 270 STRANDS

AREA (SQUARE INCHES)	0.217
ULTIMATE STRENGTH (LBS. PER STRAND)	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	43,950



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL FOR ONE BOX BEAM SECTION

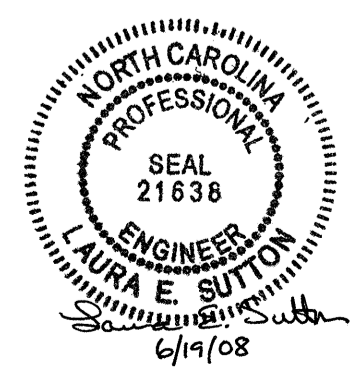
BAR	NO.	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
A1	10	#5	1	6'-8"	70	6'-8"	70
A2	34	#4	2	5'-9"	131	5'-9"	131
B1	12	#5	STR	35'-11"	450	35'-11"	450
K1	12	#4	7	6'-2"	49	6'-2"	49
K2	8	#4	STR	2'-6"	13	2'-6"	13
S1	51	#4	3	7'-6"	256	7'-6"	256
S2	51	#4	3	5'-8"	193	5'-8"	193
S3	91	#4	3	4'-10"	294	4'-10"	294
S4	40	#4	4	5'-10"	156	5'-10"	156
*S5	92	#5	6	6'-5"	616		
S11	20	#4	5	4'-10"	65	4'-10"	65
S12	20	#4	5	3'-11"	52	3'-11"	52
S13	20	#4	5	3'-6"	47	3'-6"	47
REINFORCING STEEL				LBS.	1,776	LBS.	1,776
*EPOXY COATED REINFORCING STEEL				LBS.	616		
5500 P.S.I. CONCRETE				CU. YDS.	12.7	CU. YDS.	12.6
0.6" Ø L.R. STRANDS				NO.	18	NO.	18

PRESTRESSED CONCRETE BOX BEAMS UNITS SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR.

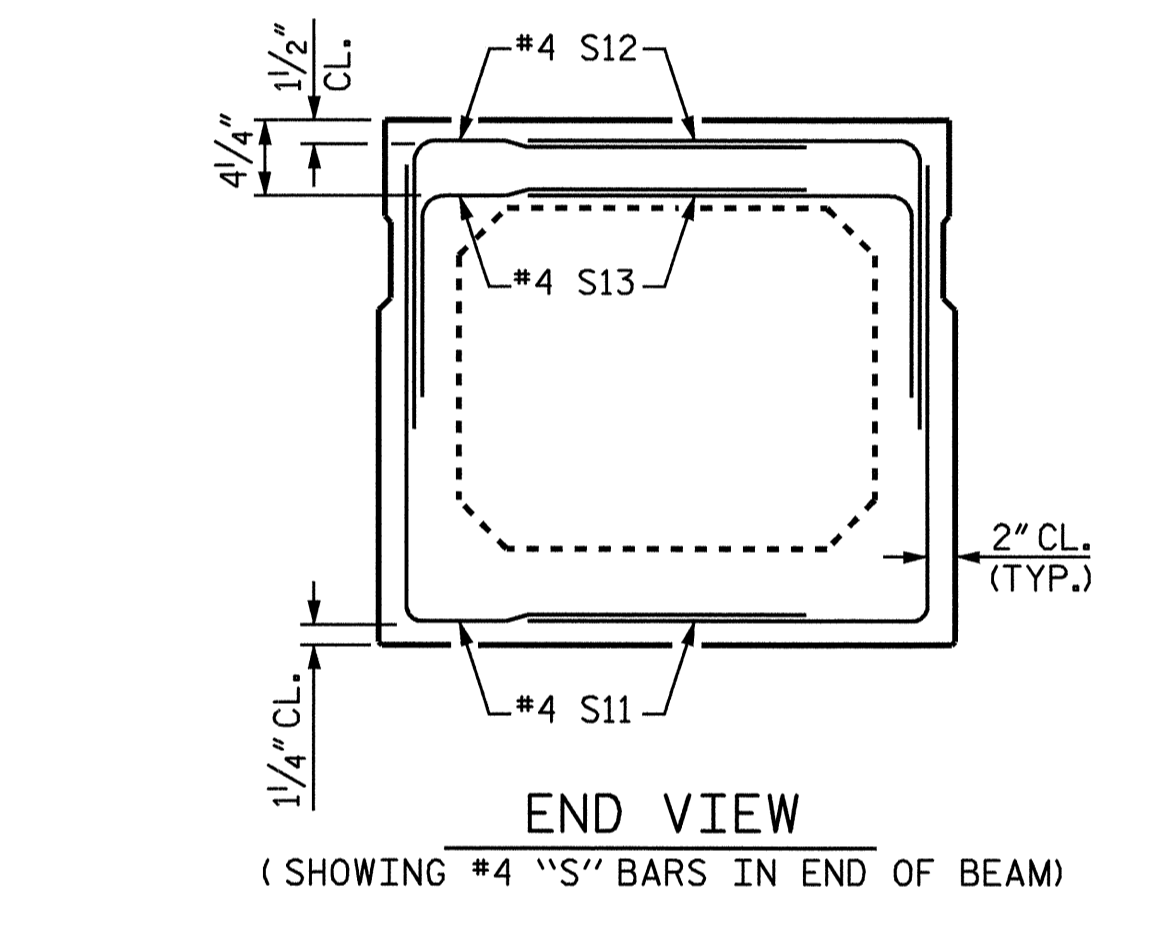
PROJECT NO. B-4055
CARTERET COUNTY
 STATION: 16+72.00 -L-

SHEET 4 OF 6

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 3'-0" X 2'-9"
 PRESTRESSED CONCRETE
 BOX BEAM UNIT
 SPANS "A" & "B"

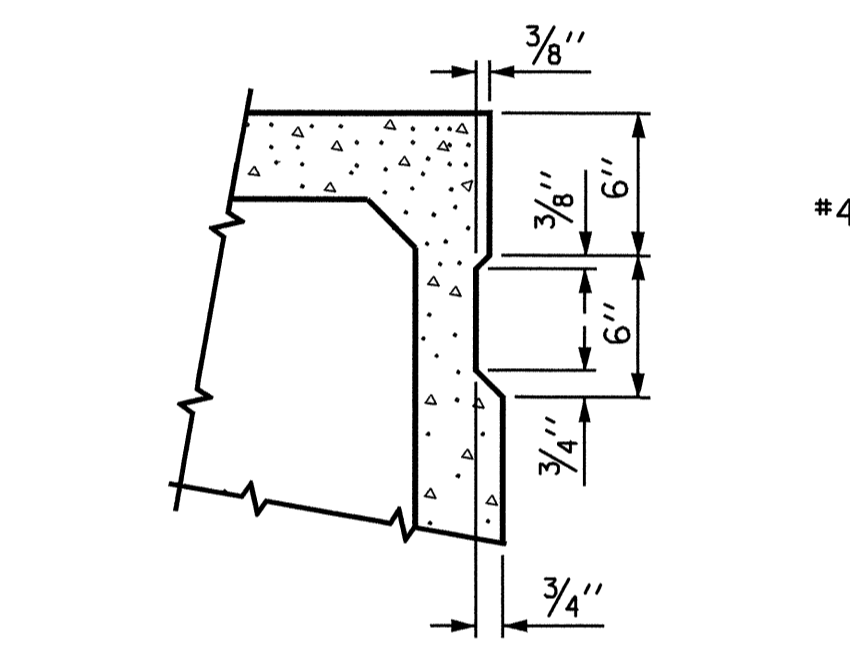


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-7
2			4			TOTAL SHEETS 23



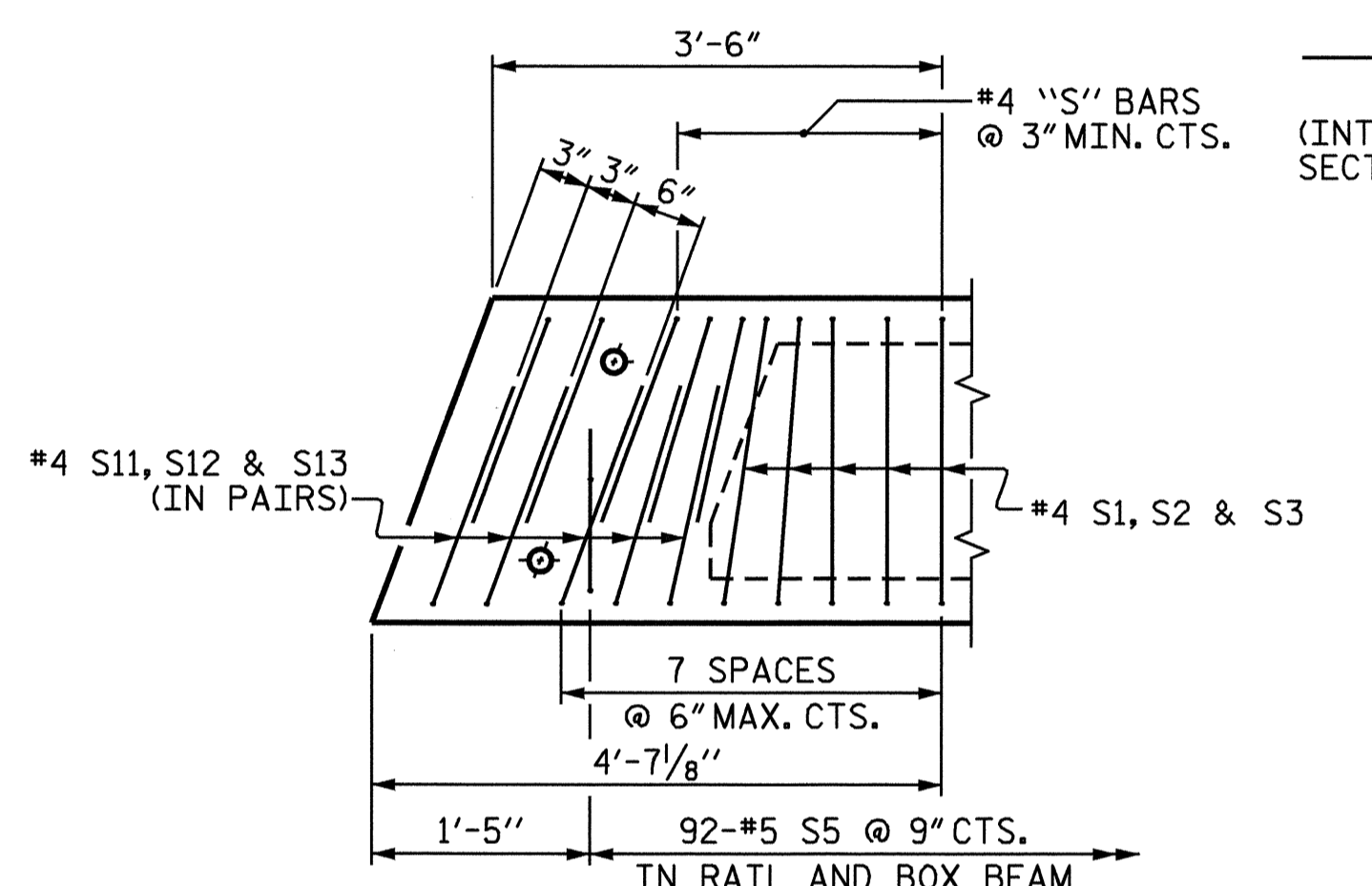
END VIEW

(SHOWING #4 "S" BARS IN END OF BEAM)



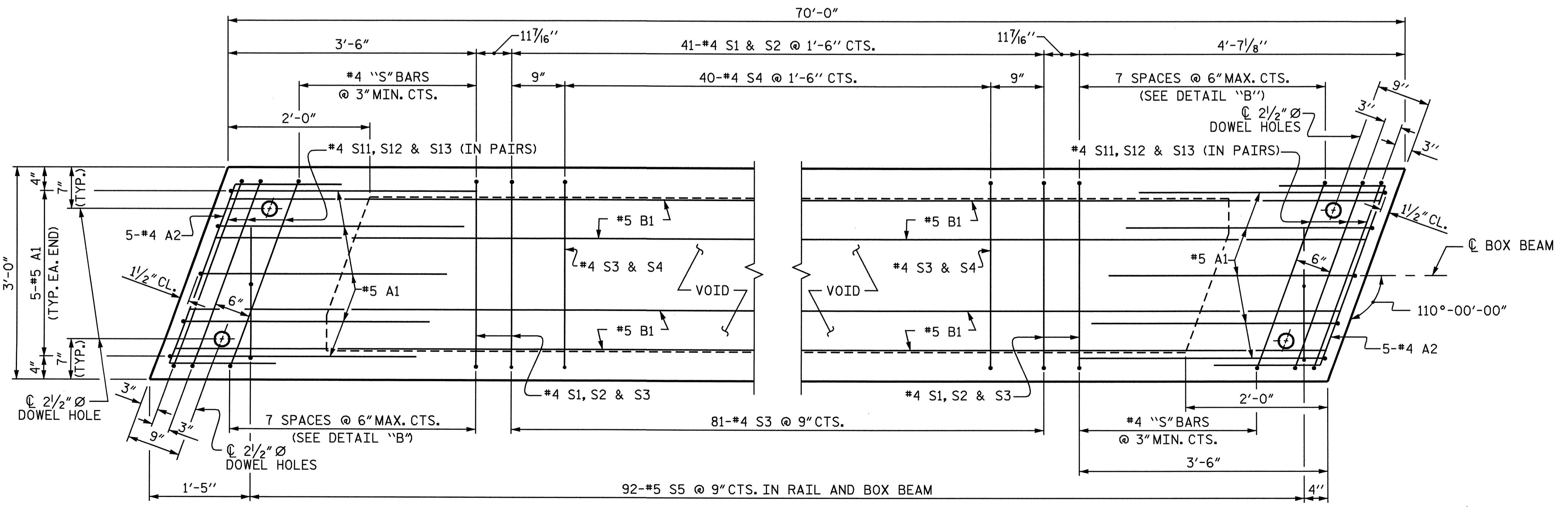
SHEAR KEY DETAIL

NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR BEAMS.



DETAIL "B"

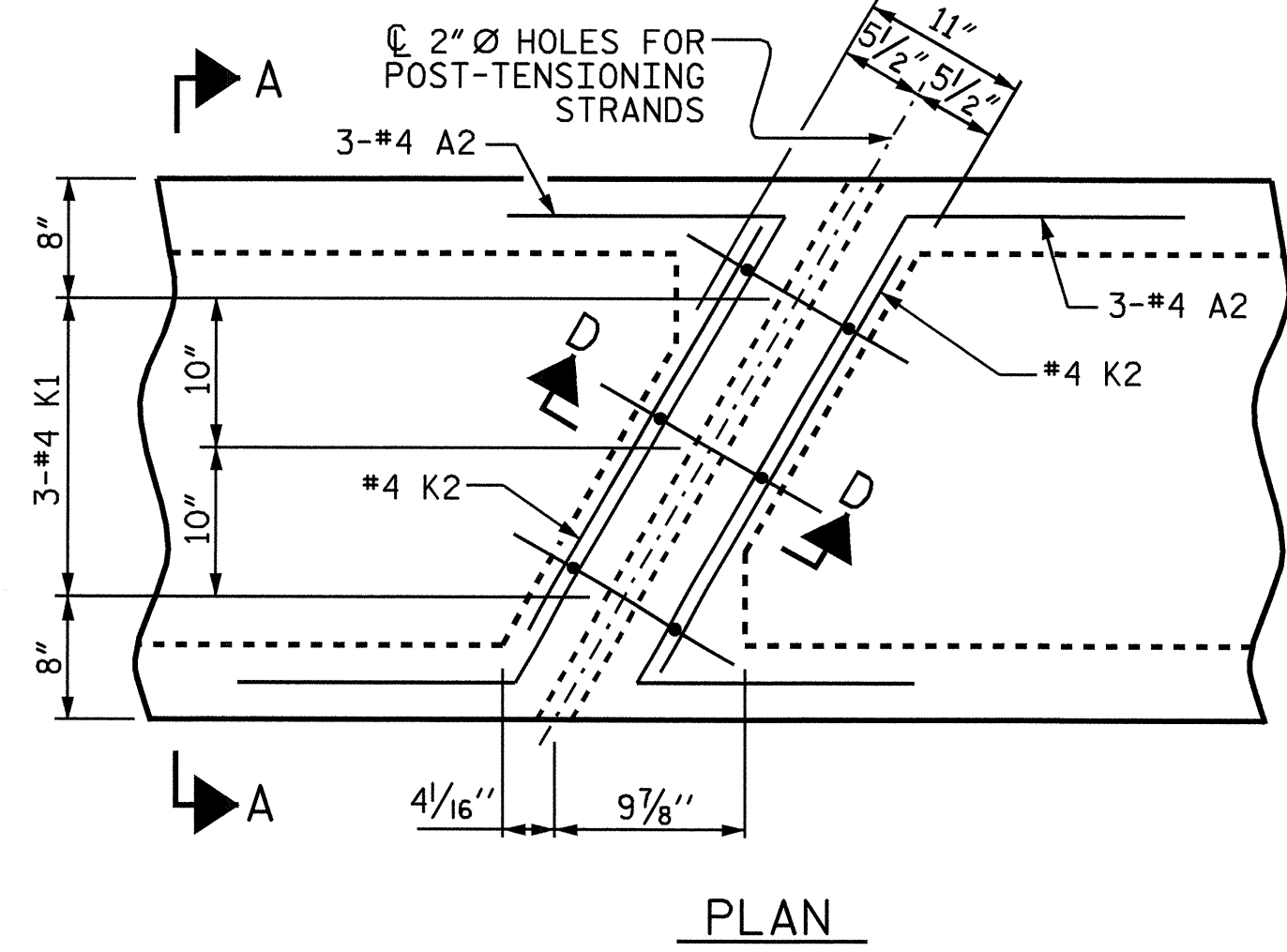
EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S5 BARS, "B" BARS AND "A" BARS NOT SHOWN.



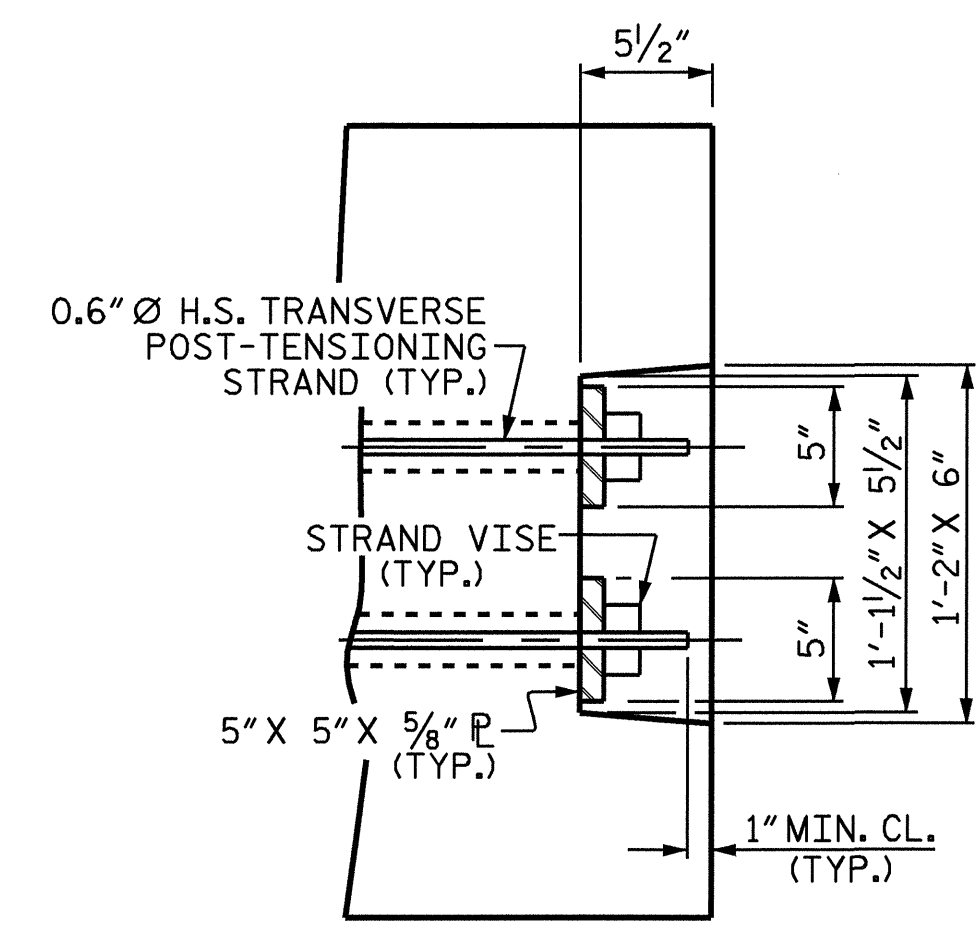
PLAN OF BOX BEAM

EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S5 BARS. FOR LOCATION OF DIAPHRAGMS, SEE PLAN OF SPANS. FOR REINFORCING STEEL IN DIAPHRAGMS, SEE DIAPHRAGM DETAILS.

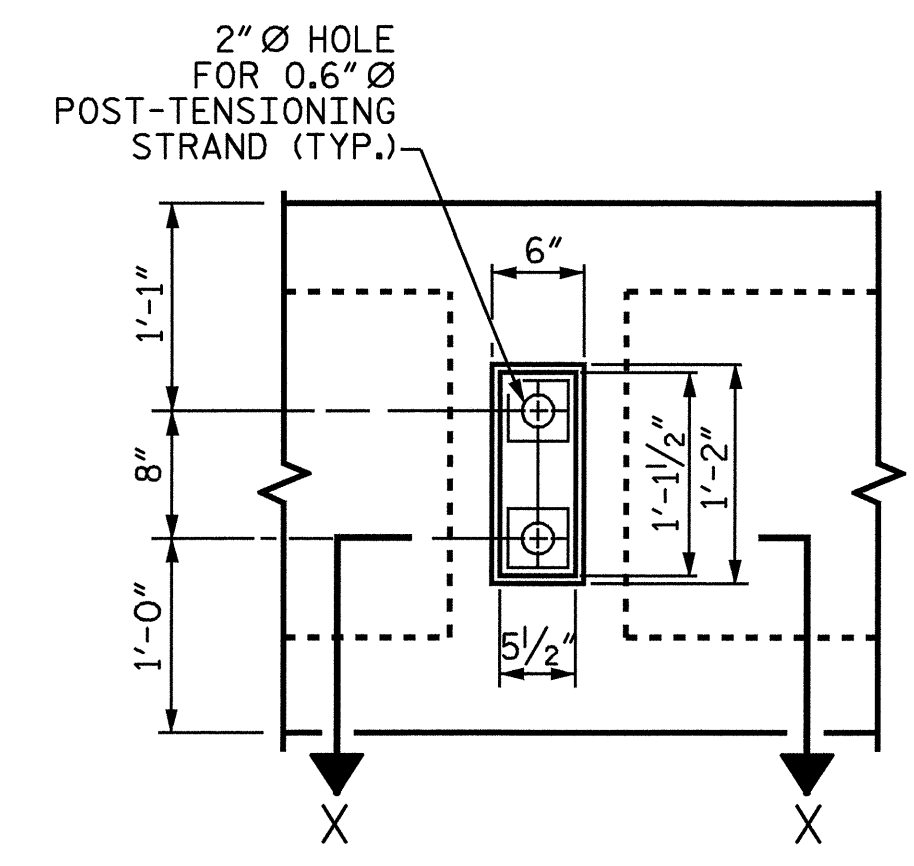
DRAWN BY: A.S. CALLAWAY DATE: 4/7/06
 CHECKED BY: P.C. BREWER DATE: 4/25/06



PLAN

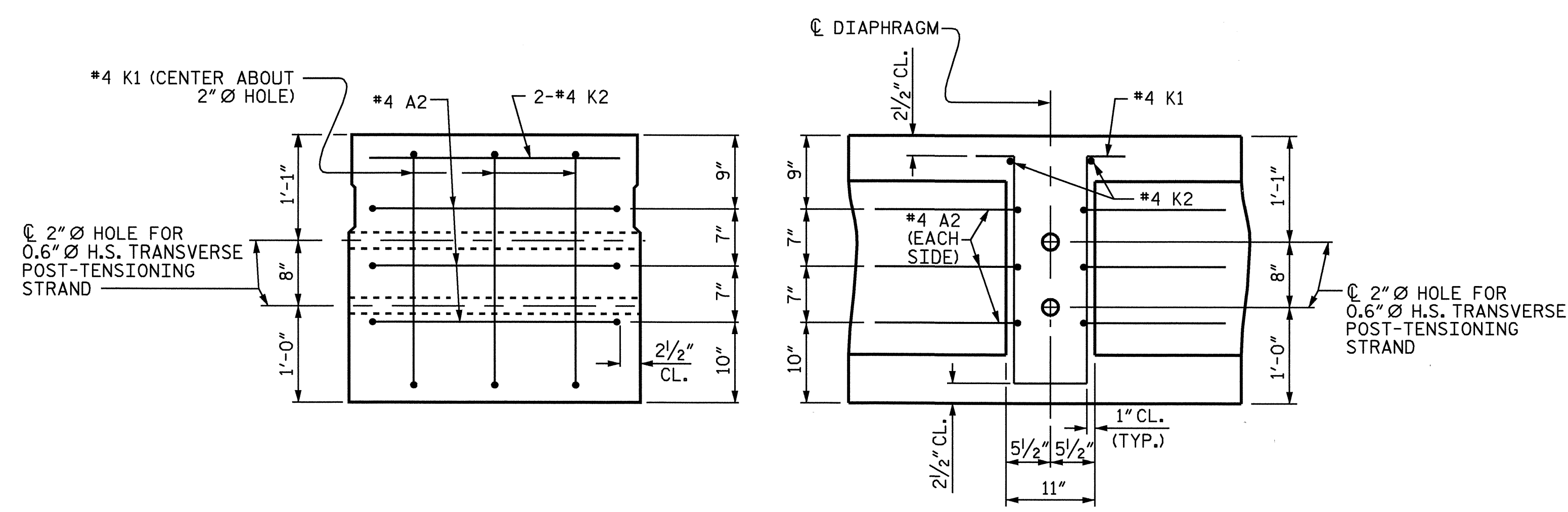


DETAIL "C"



VIEW Y-Y

SHOWING ELEVATION VIEW OF GROUDED RECESS

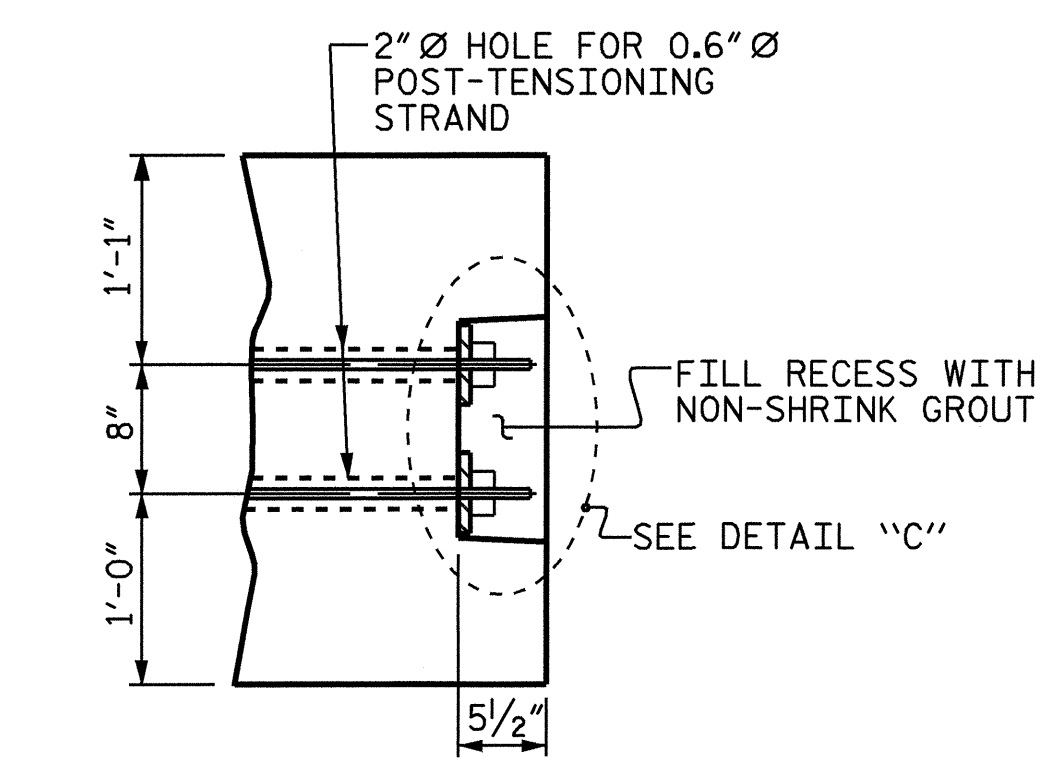


SECTION A-A
VOIDS NOT SHOWN

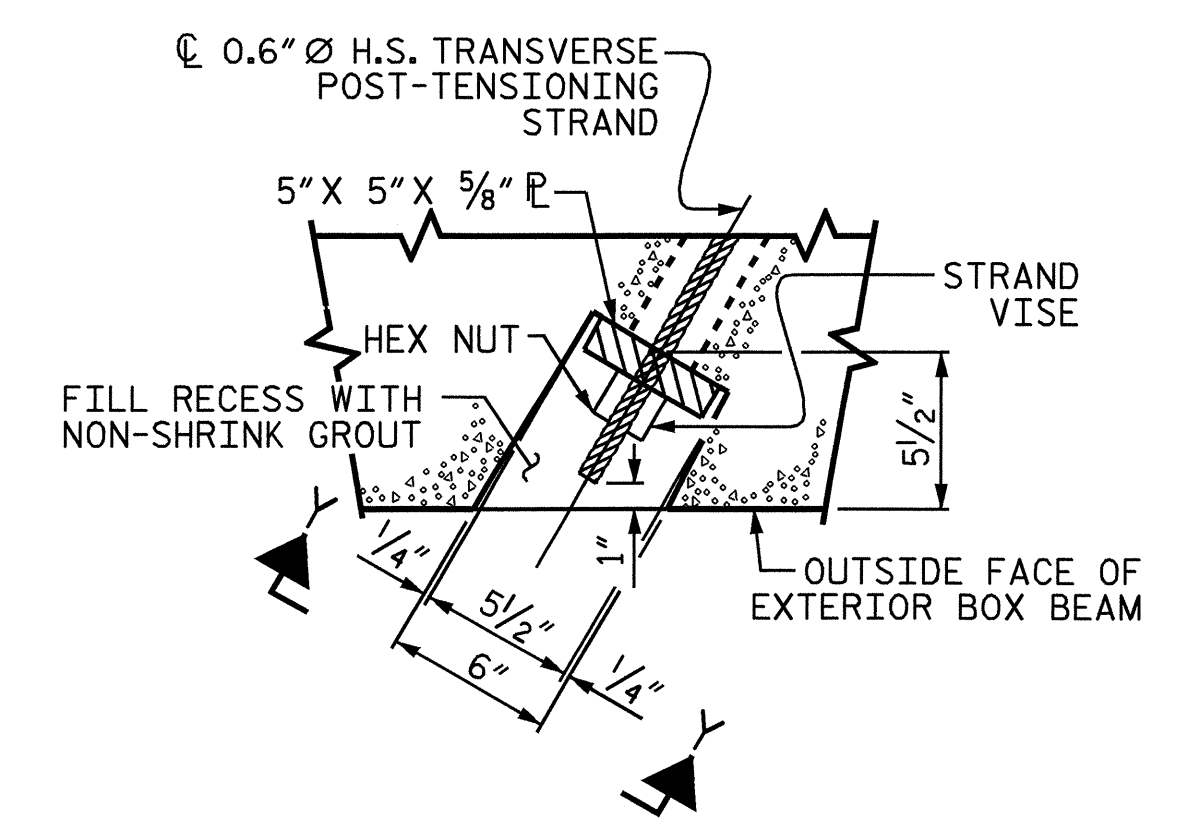
SECTION D-D

DOUBLE DIAPHRAGM DETAILS

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



PART SECTION AT RECESS

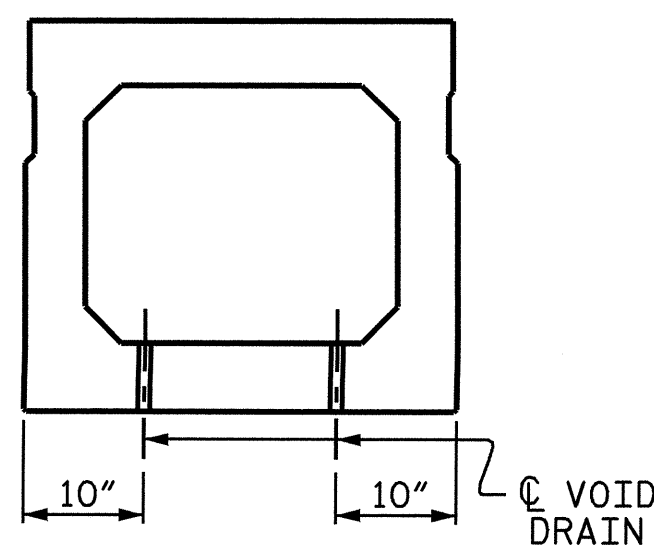


SECTION X-X

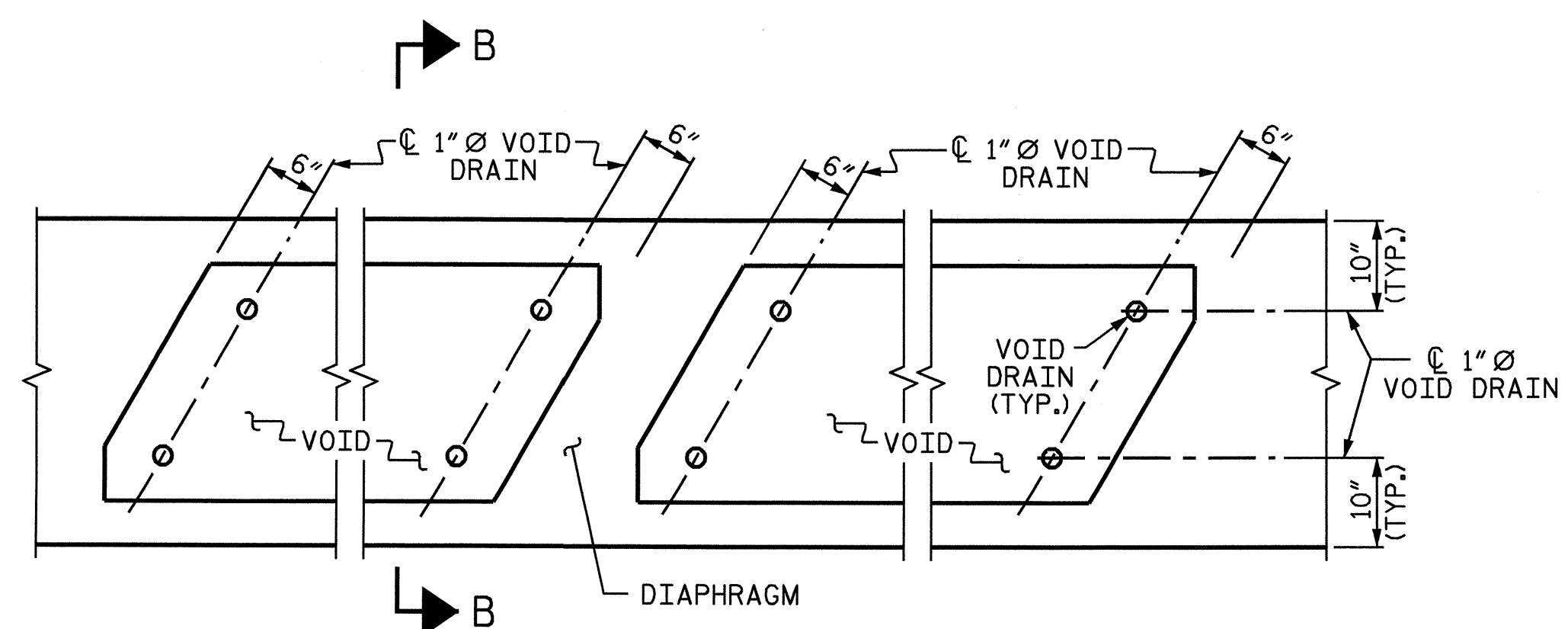
SHOWING PLAN VIEW OF GROUDED RECESS

GROUDED RECESS DETAIL

AT END OF POST-TENSIONED STRANDS OF EXTERIOR BOX BEAM



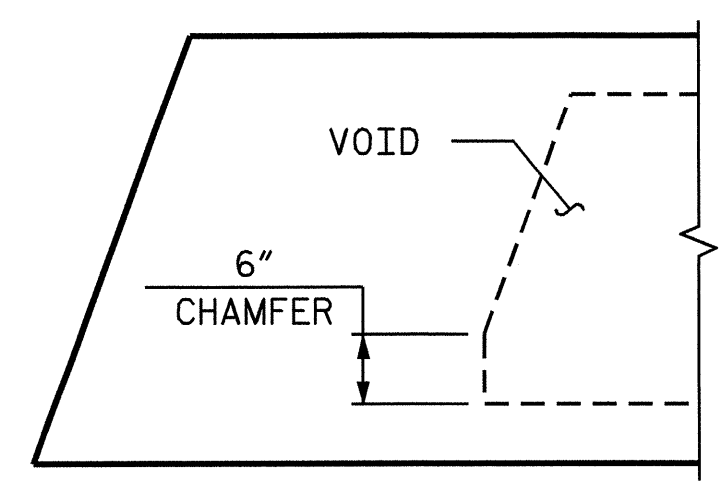
SECTION B-B



PART PLAN

VOID DRAIN DETAILS

(DIMENSIONS SHOWN ARE TYPICAL FOR EACH VOID)



CHAMFER DETAIL
SHOWING 6" VOID CHAMFER

PROJECT NO. B-4055
CARTERET COUNTY
STATION: 16+72.00 -L-

SHEET 5 OF 6

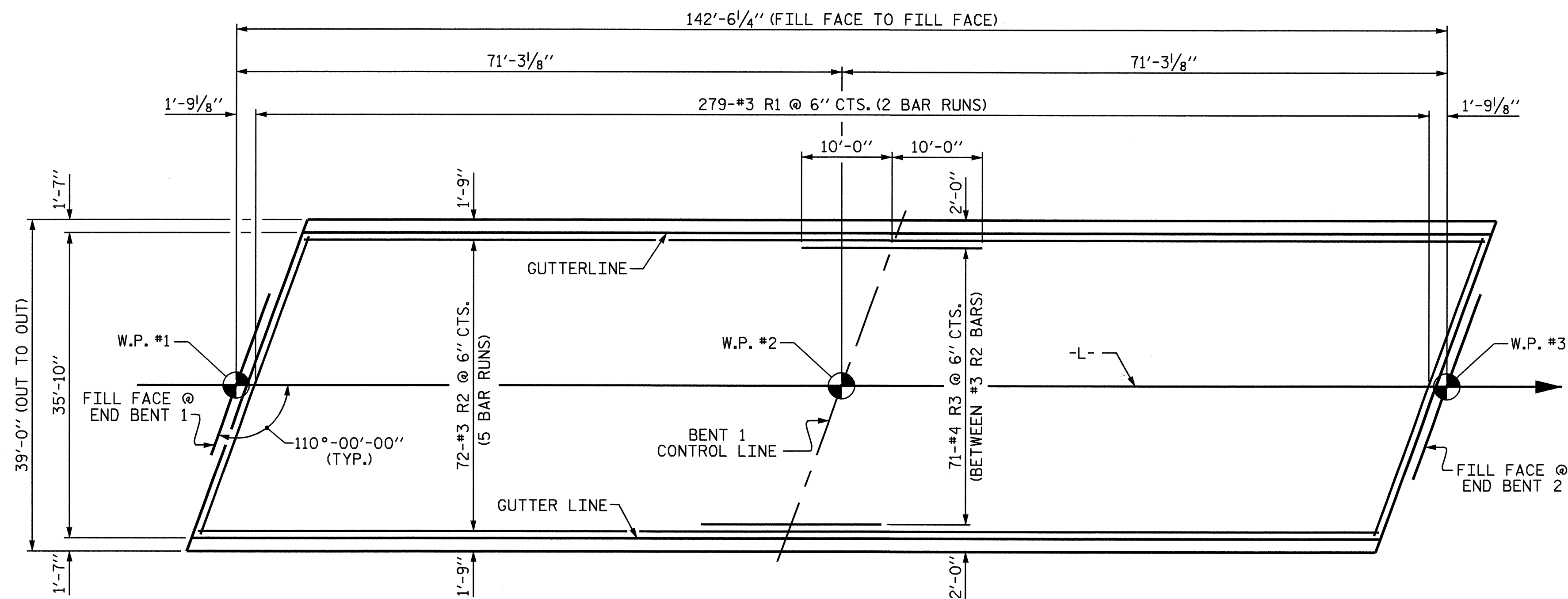
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
3'-0" X 2'-9"
PRESTRESSED CONCRETE
BOX BEAM UNIT



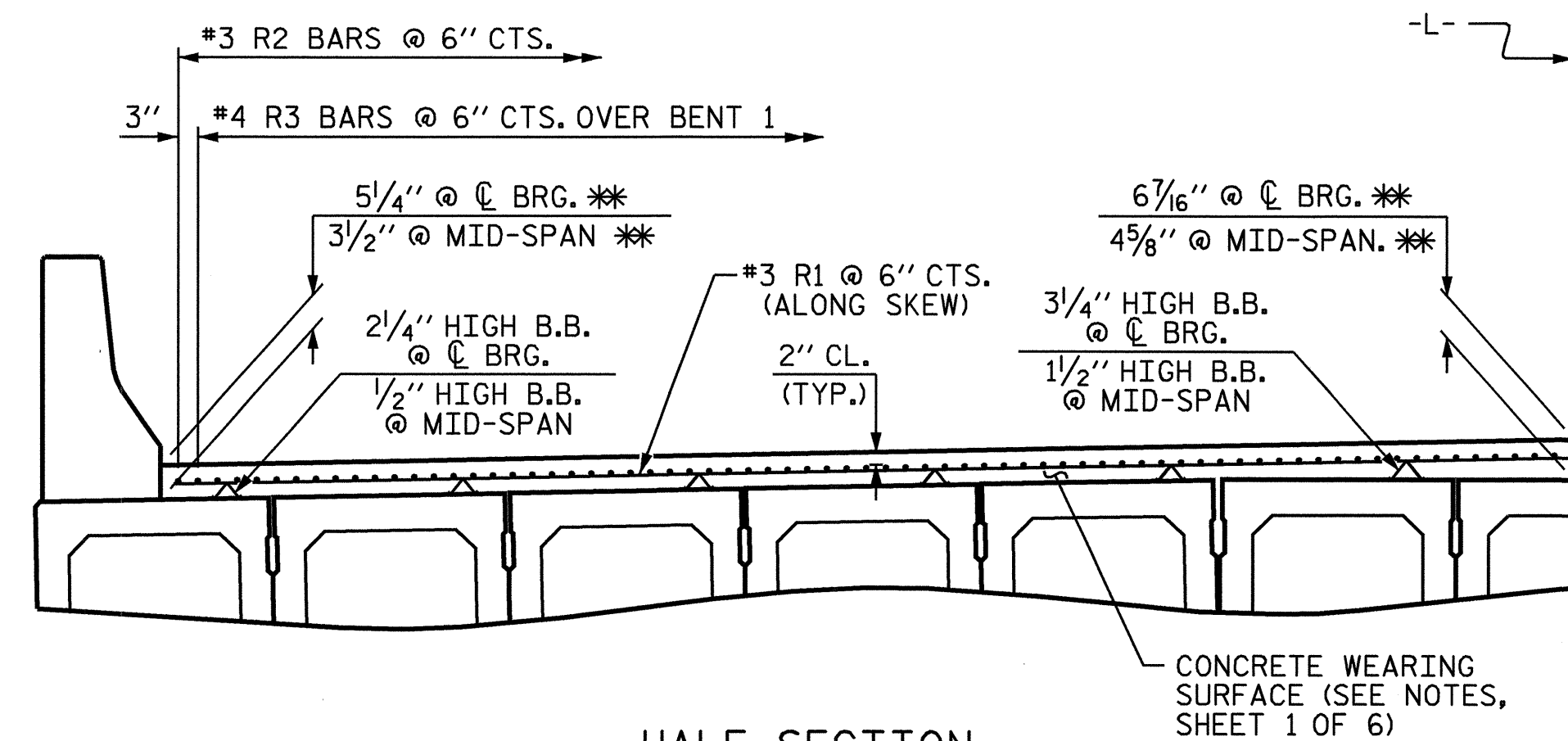
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8	
1			3			TOTAL SHEETS 23	
2			4				

ASSEMBLED BY : A.S. CALLAWAY DATE : 4/7/06
CHECKED BY : P.C. BREWER DATE : 4/25/06
DRAWN BY : TLA 5/05
CHECKED BY : GM 6/05

ADDED 7/11/05
REV. 5/1/06 TLA/GM



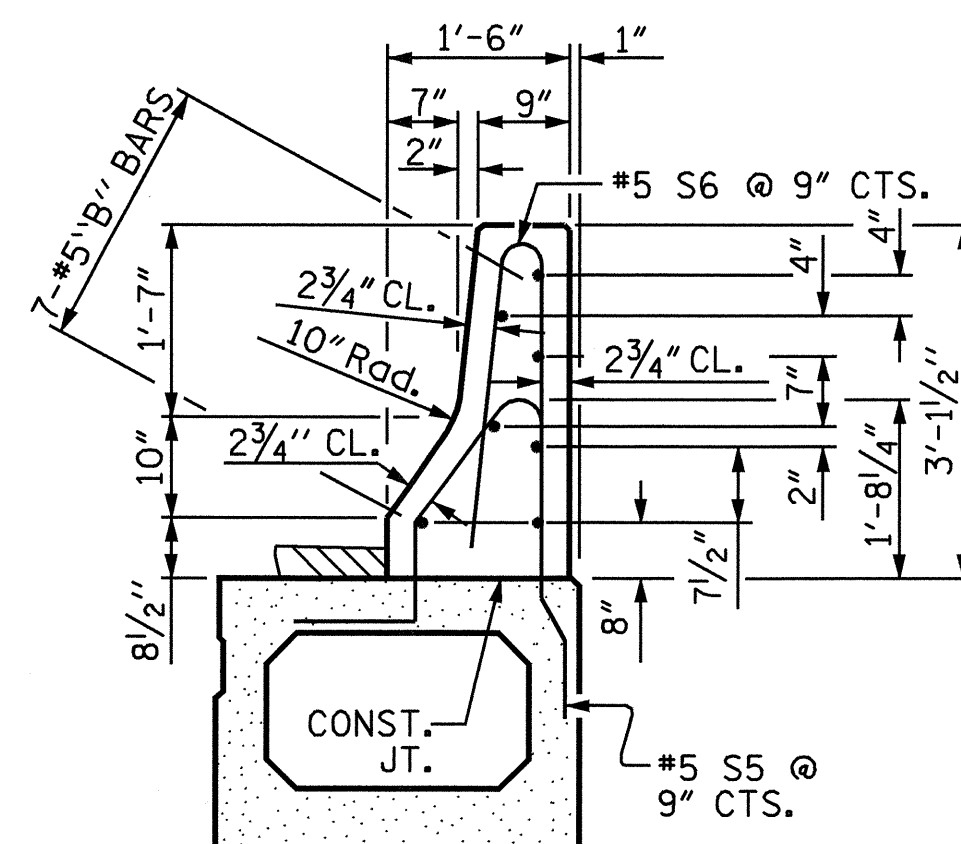
PLAN SHOWING CONCRETE WEARING SURFACE REINFORCING STEEL



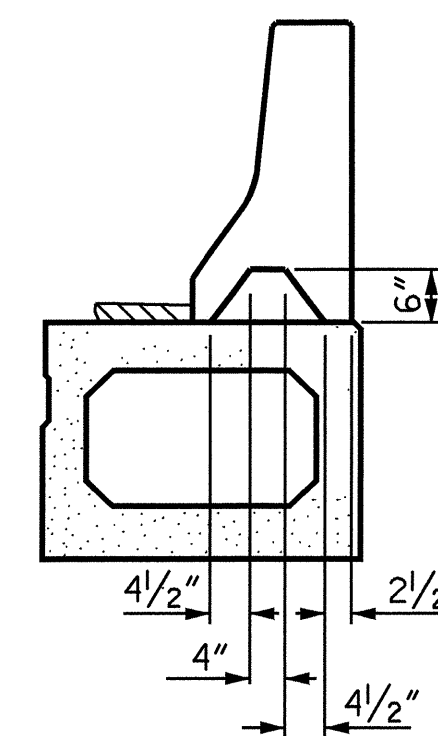
HALF SECTION

REINFORCING FOR CONCRETE WEARING SURFACE

* BASED ON PREDICTED FINAL CAMBER AND THEORETICAL GRADE LINE ELEVATIONS

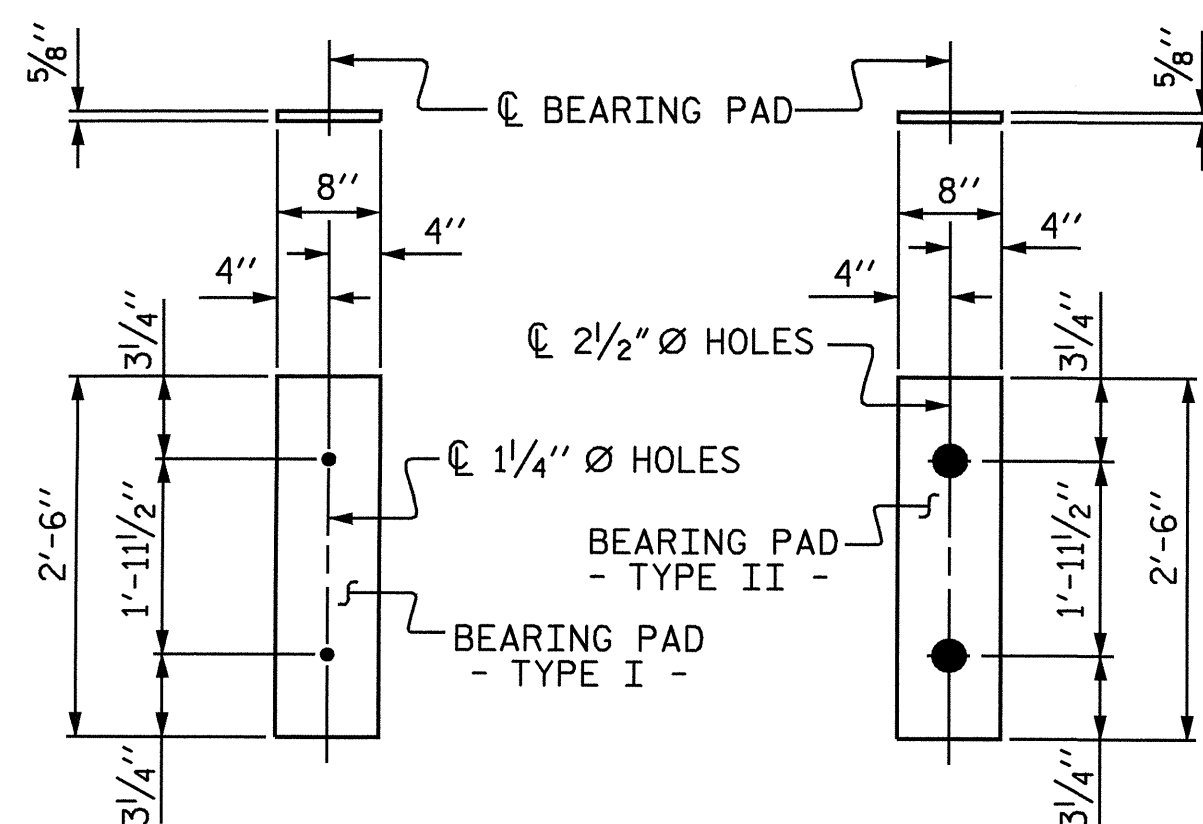


SECTION THRU RAIL



SECTION S-S

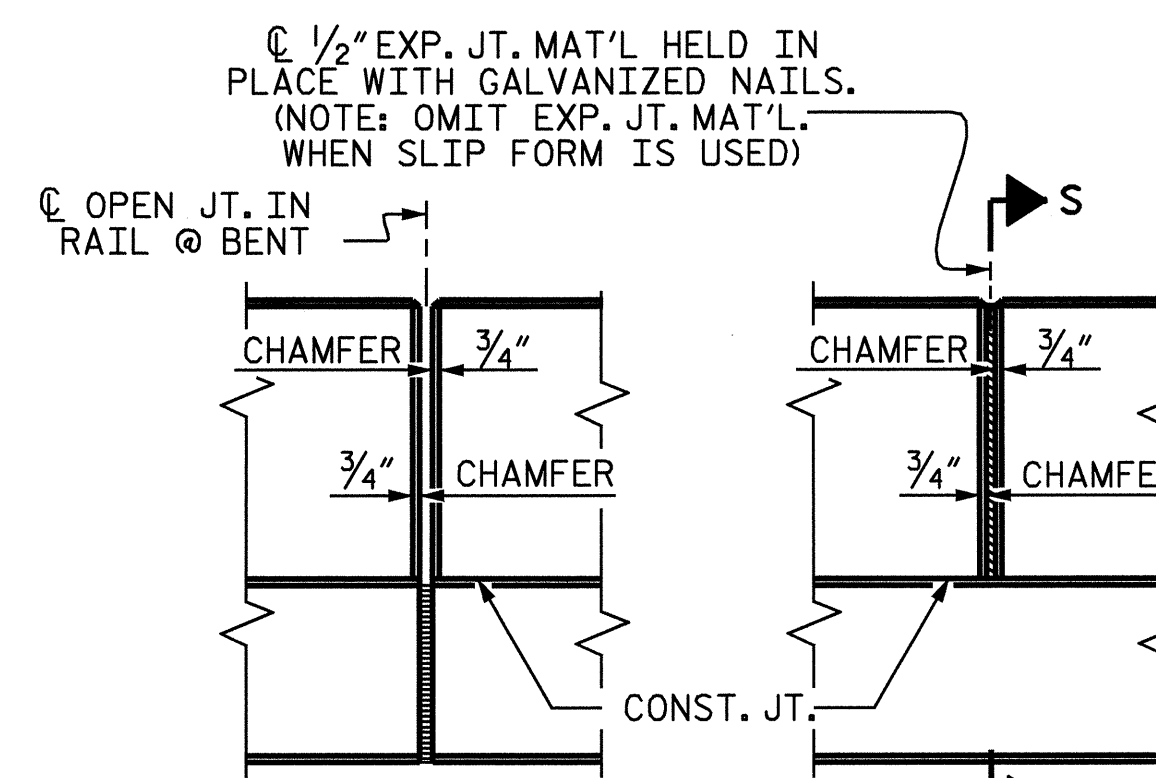
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)



FIXED END
(TYPE I - 26 REQ'D)

EXPANSION END
(TYPE II - 26 REQ'D)

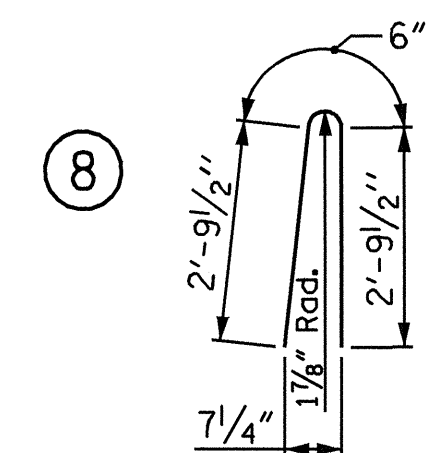
ELASTOMERIC BEARING DETAILS



ELEVATION AT EXPANSION JOINTS

BARRIER RAIL DETAILS

BAR TYPE



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL FOR CONCRETE BARRIER RAIL

BAR	SPAN A	SPAN B	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT	
*B2	56	56	112	#5	STR	11'-8"	1363	
*B3	14	14	28	#5	STR	29'-7"	864	
*S6	184	184	368	#5	8	6'-1"	2335	
*EPOXY COATED REINFORCING STEEL							LBS.	4,562
CLASS AA CONCRETE							CU.YDS.	35.2
TOTAL CONCRETE BARRIER RAIL							LIN. FT.	280.52

DEAD LOAD DEFLECTION AND CAMBER

	3'-0" x 2'-9" 0.6" Ø L.R. STRAND	
	SPAN "A"	SPAN "B"
CAMBER (BEAM ALONE IN PLACE)	↑ 2 1/4"	↑ 2 1/4"
DEFLECTION DUE TO CONCRETE WEARING SURFACE	↓ 1/4"	↓ 1/4"
FINAL CAMBER	↑ 2"	↑ 2"

SPLICE LENGTH CHART

BAR SIZE	EPOXY COATED	UNCOATED
#3	1'-6"	—
#5	3'-5"	2'-2"

BOX BEAM UNITS REQUIRED

	NUMBER	LENGTH	TOTAL LENGTH
SPAN "A"			
EXT. BOX BEAM	2	70'-0"	140'-0"
INT. BOX BEAM	11	70'-0"	770'-0"
SPAN "B"			
EXT. BOX BEAM	2	70'-0"	140'-0"
INT. BOX BEAM	11	70'-0"	770'-0"
TOTAL	26	—	1820'-0"

BILL OF MATERIAL FOR CONCRETE WEARING SURFACE

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*R1	558	#3	STR	19'-8"	4126	
*R2	360	#3	STR	29'-0"	3925	
*R3	71	#4	STR	20'-0"	949	
*EPOXY COATED REINFORCING STEEL					LBS.	9,000
CONCRETE WEARING SURFACE					SQ. FT.	4,986

GROOVING BRIDGE FLOORS

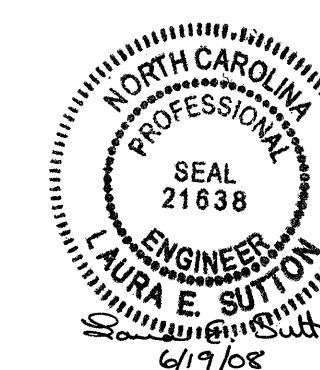
APPROACH SLABS	1,552	SQ. FT.
CONCRETE WEARING SURFACE	4,557	SQ. FT.
TOTAL	6,109	SQ. FT.

PROJECT NO. B-4055
CARTERET COUNTY
STATION: 16+72.00 -L-

SHEET 6 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" x 2'-9"
PRESTRESSED CONCRETE
BOX BEAM UNIT
DETAILS



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

DRAWN BY: A.S. CALLAWAY DATE: 4/7/06
CHECKED BY: P.C. BREWER DATE: 4/25/06

NOTES

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

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

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

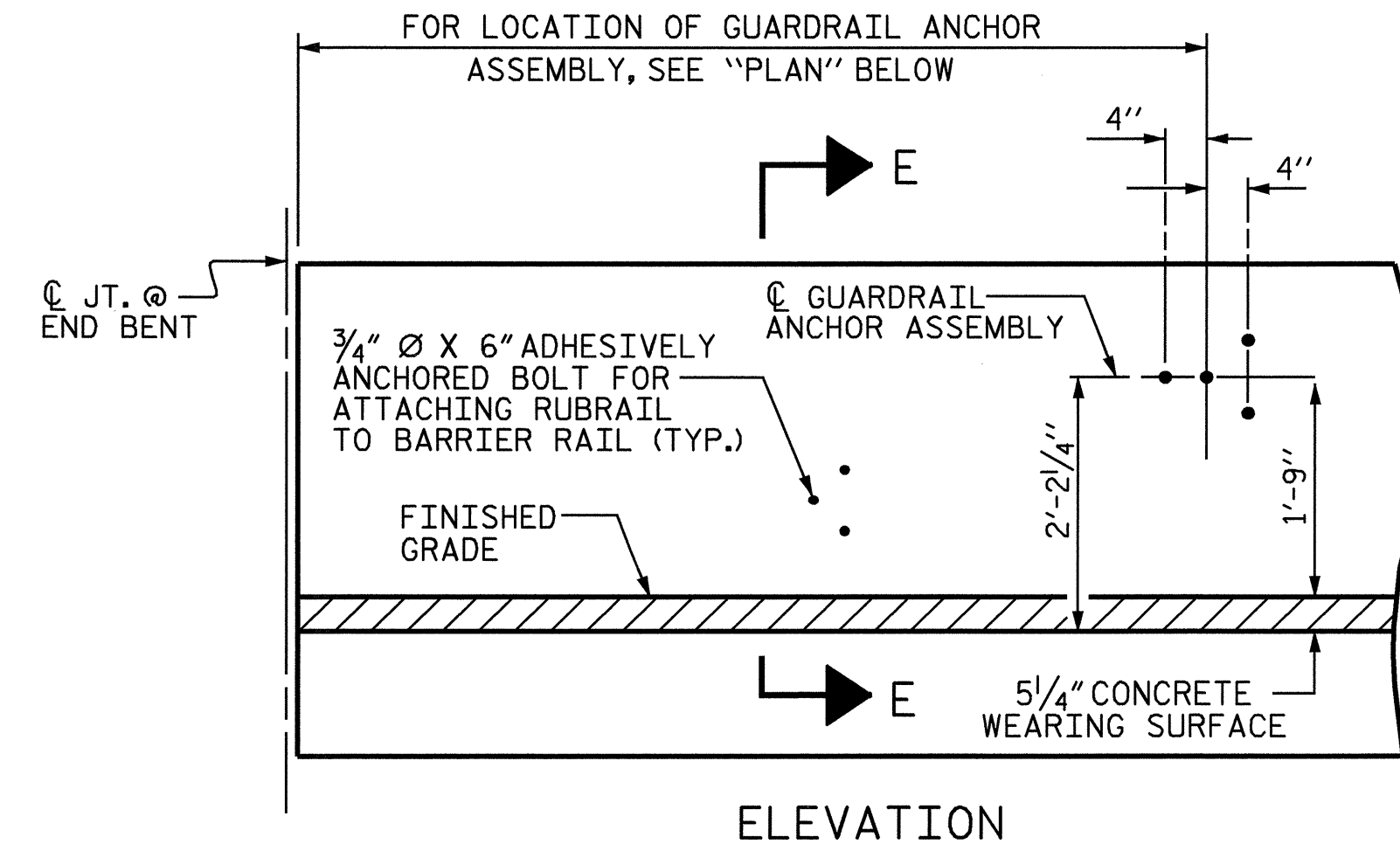
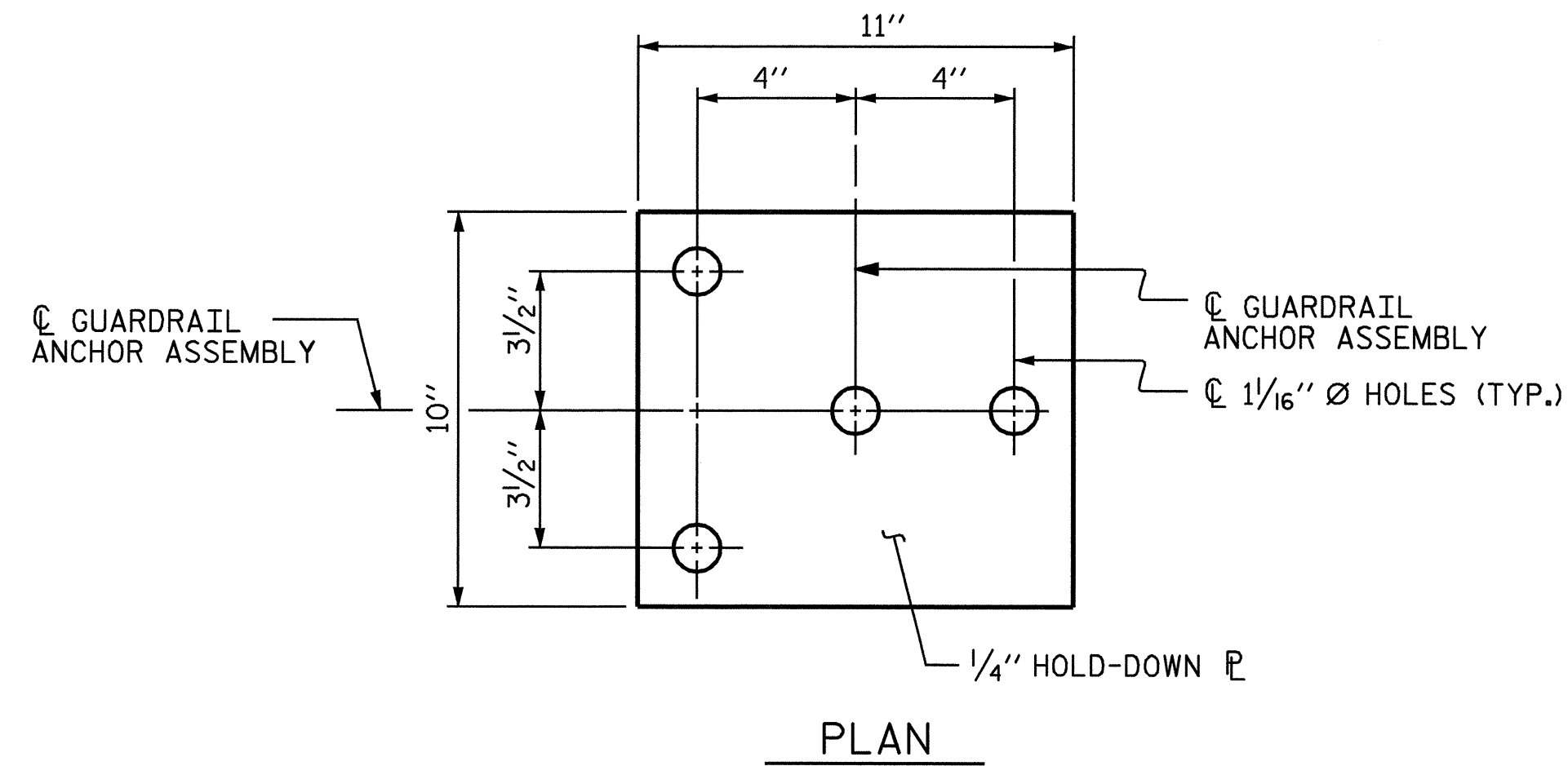
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

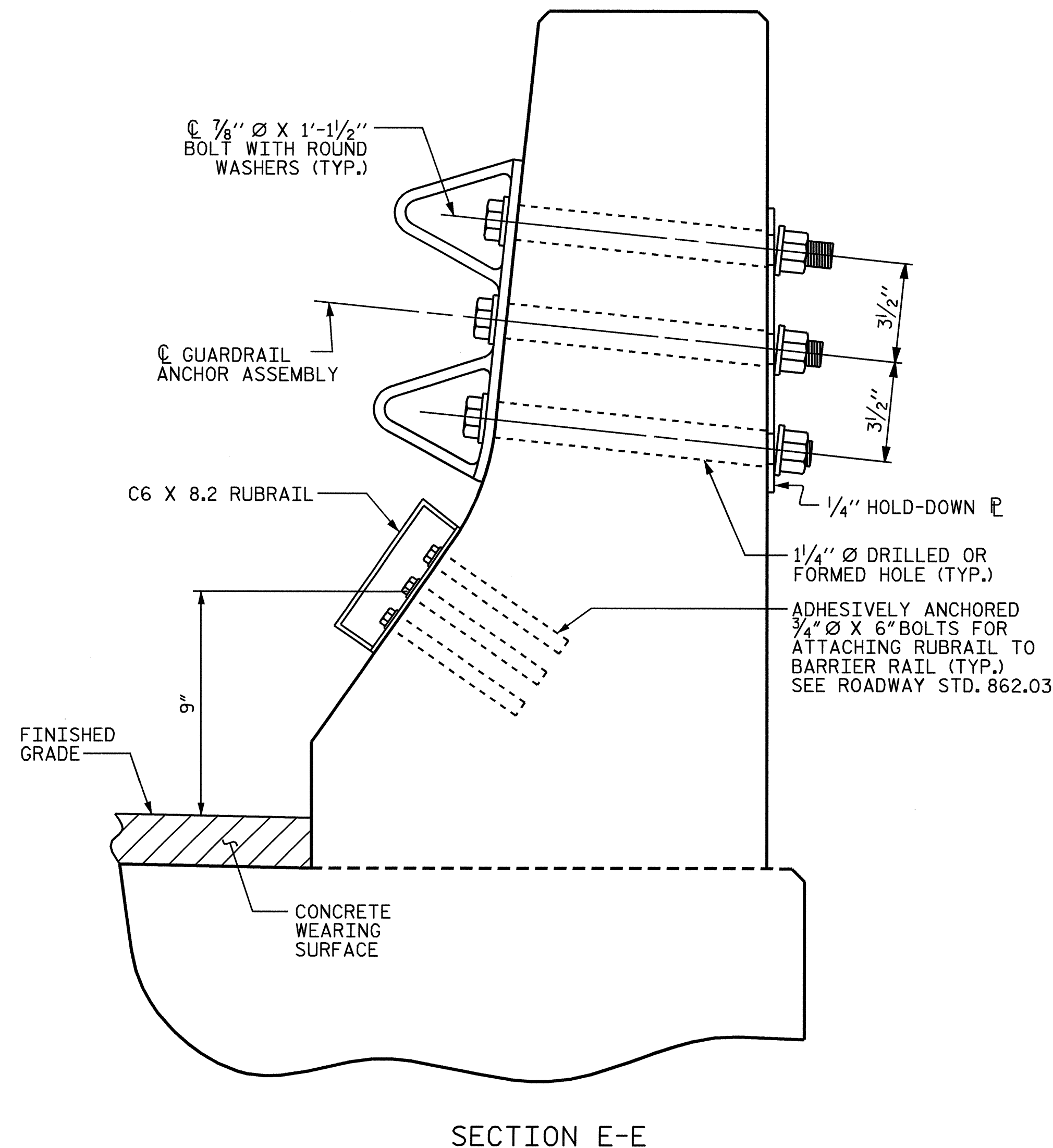
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.

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

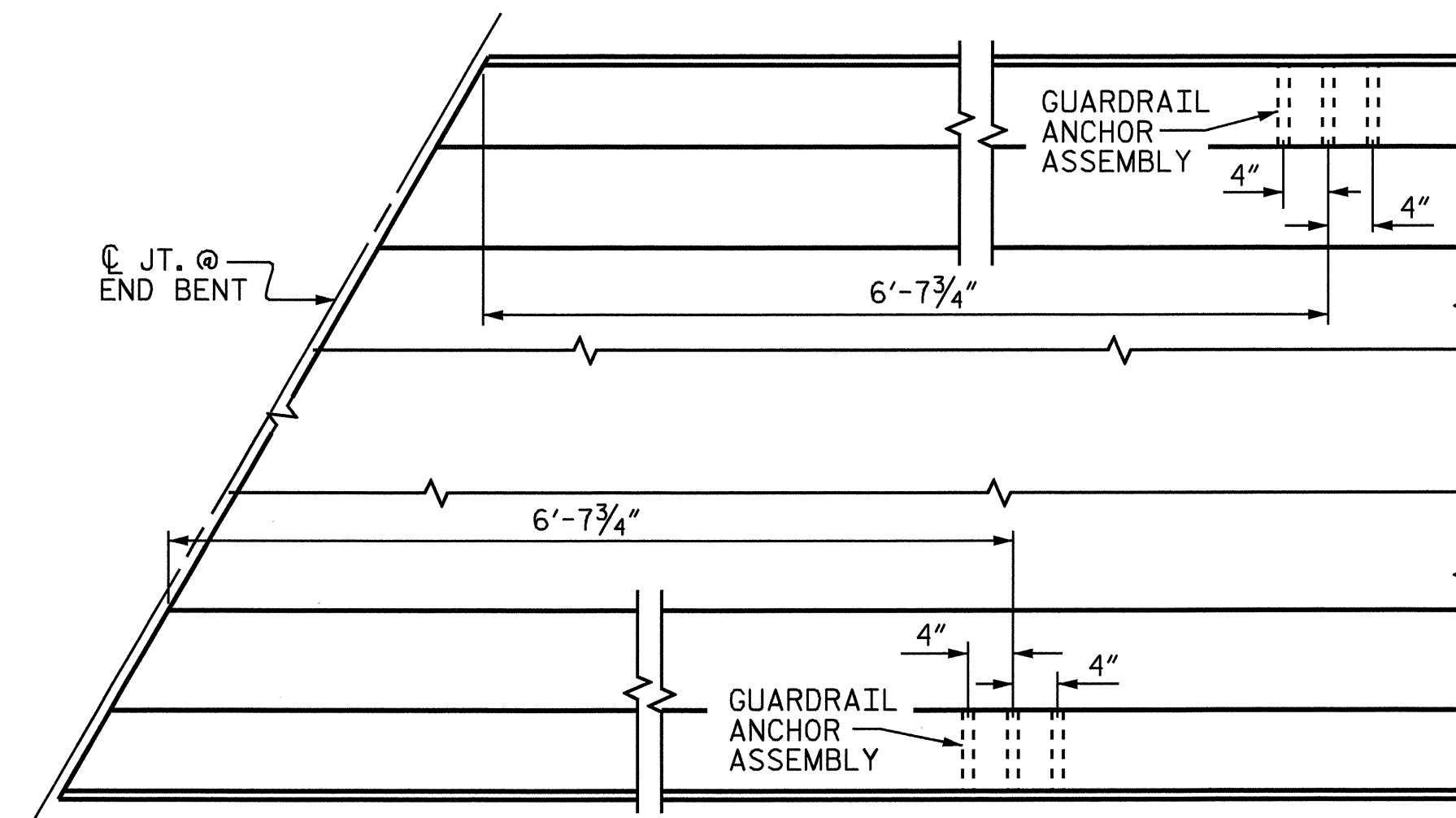
THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 3/4" Ø X 6" BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS. SEE ROADWAY STANDARD 862.03 FOR DETAILS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



FOR LOCATION OF RUBRAIL, SEE ROADWAY STD. 862.03



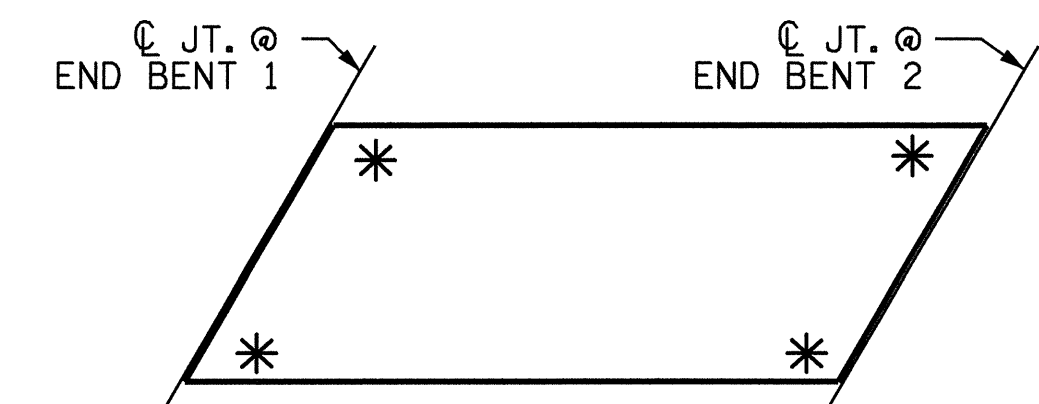
GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

END BENT 1 SHOWN, END BENT 2 SIMILAR.

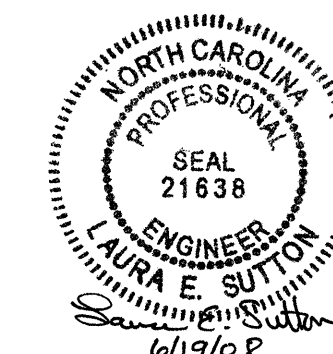


SKETCH SHOWING POINTS OF ATTACHMENTS

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. B-4055
 CARTERET COUNTY
 STATION: 16+72.00 -L-

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



ASSEMBLED BY : A.S. CALLAWAY DATE : 7/7/06
 CHECKED BY : P.C. BREWER DATE : 7/10/06
 DRAWN BY : TLA 5/06
 CHECKED BY : GM 5/06

ADDED 5/1/06R KMM/GM

REVISIONS						SHEET NO. S-10
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 23
2			4			

NOTES

STIRRUPS AND U1 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

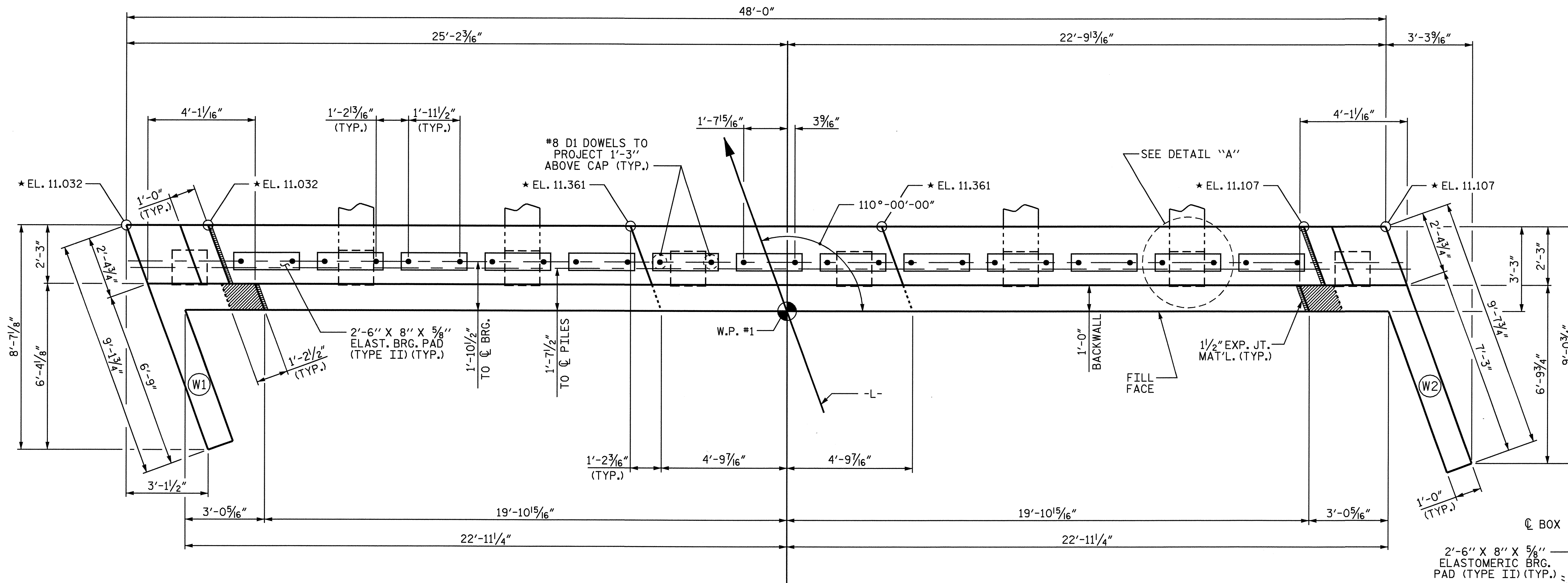
THE LATERAL GUIDES AT EACH END OF THE CAP ARE NOT TO BE POURED UNTIL AFTER THE BOX BEAM UNITS ARE IN PLACE.

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

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

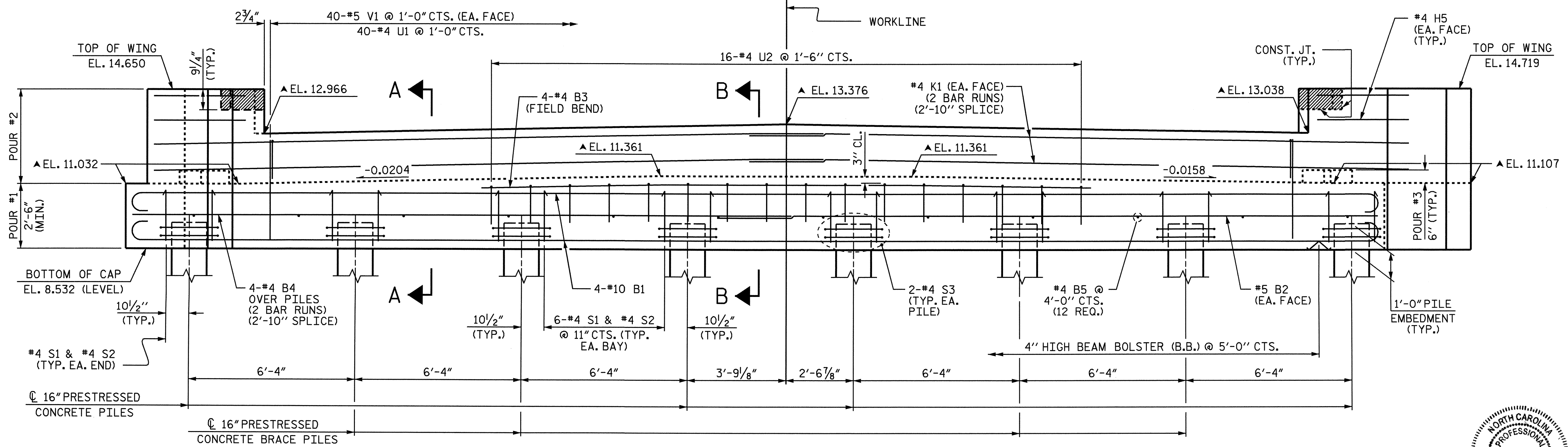
THE #5 V1 BARS IN THE BACKWALL SHALL BE PLACED 3" CLEAR FROM THE TOP OF THE BACKWALL.

CONCRETE DISPLACED BY THE 16" PRESTRESSED CONCRETE PILES HAS BEEN DEDUCTED FROM THE CONCRETE QUANTITY.



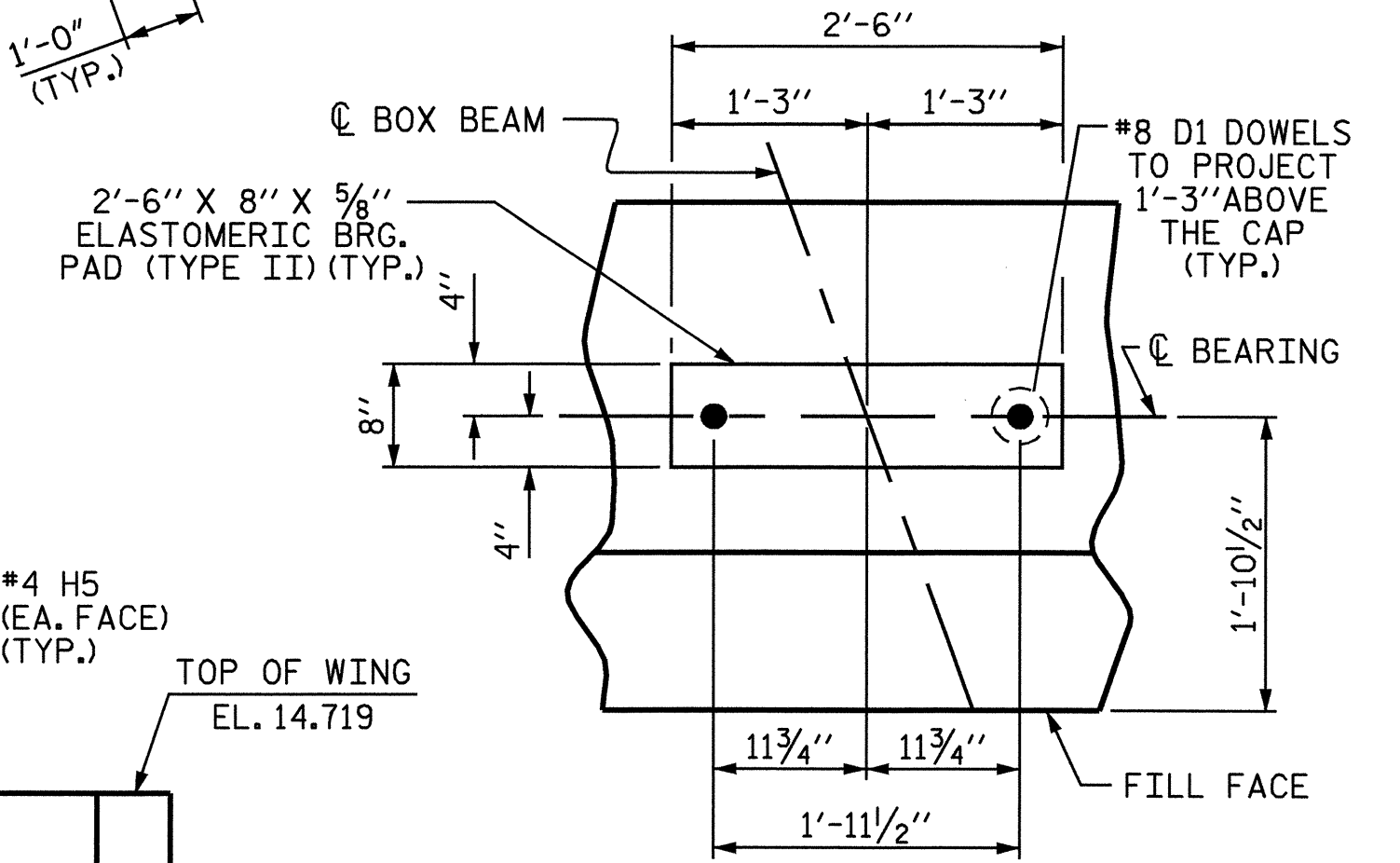
PLAN

*BACK FACE ELEVATIONS AT TOP OF CAP



ELEVATION

▲ FILL FACE ELEVATIONS



DETAIL "A"

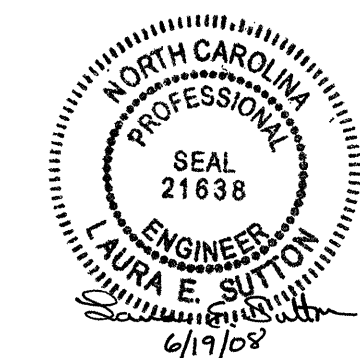
(TYP. EA. BOX BEAM UNIT)

PROJECT NO. B-4055
CARTERET COUNTY
 STATION: 16+72.00 -L-

SHEET 1 OF 3

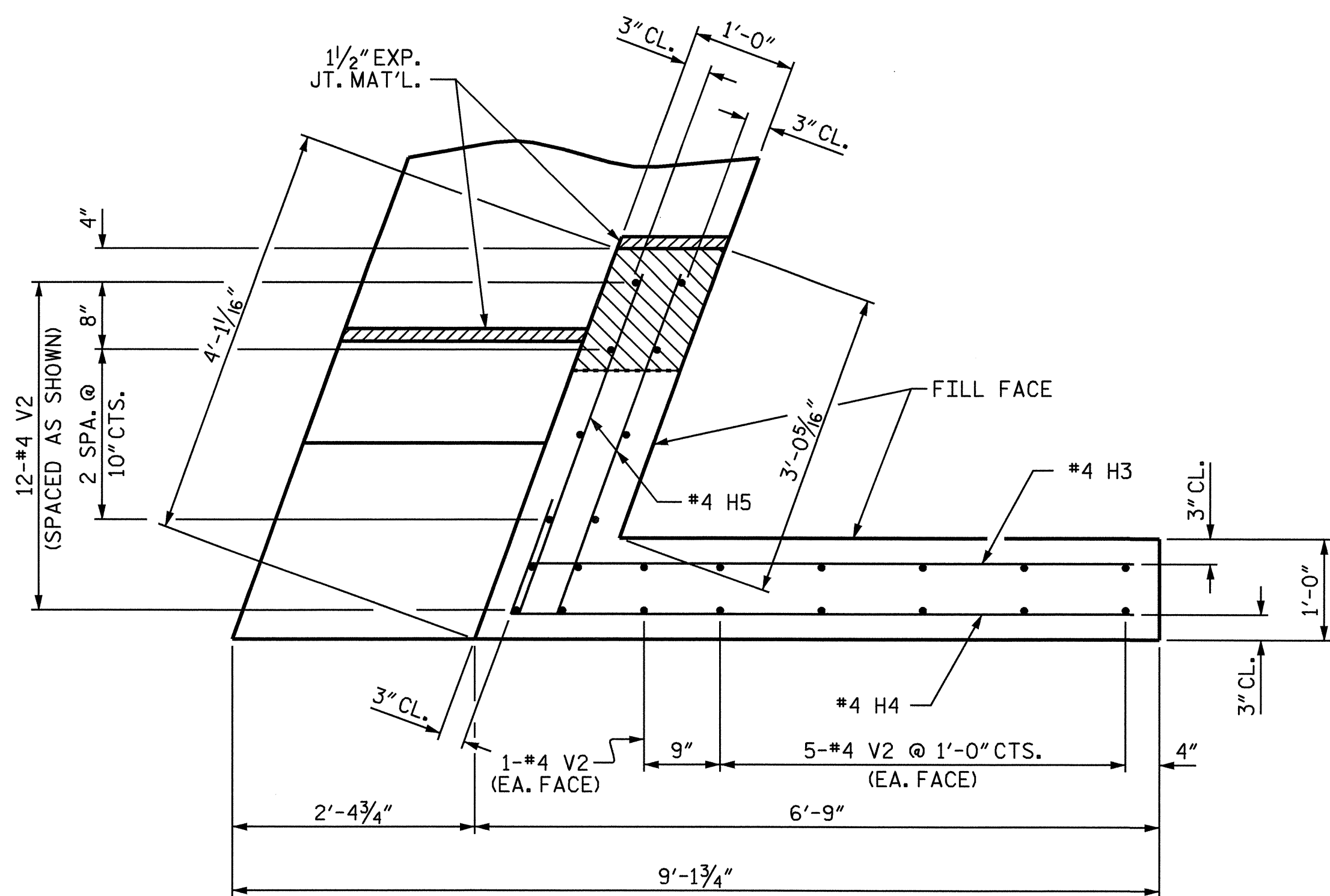
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 END BENT 1**

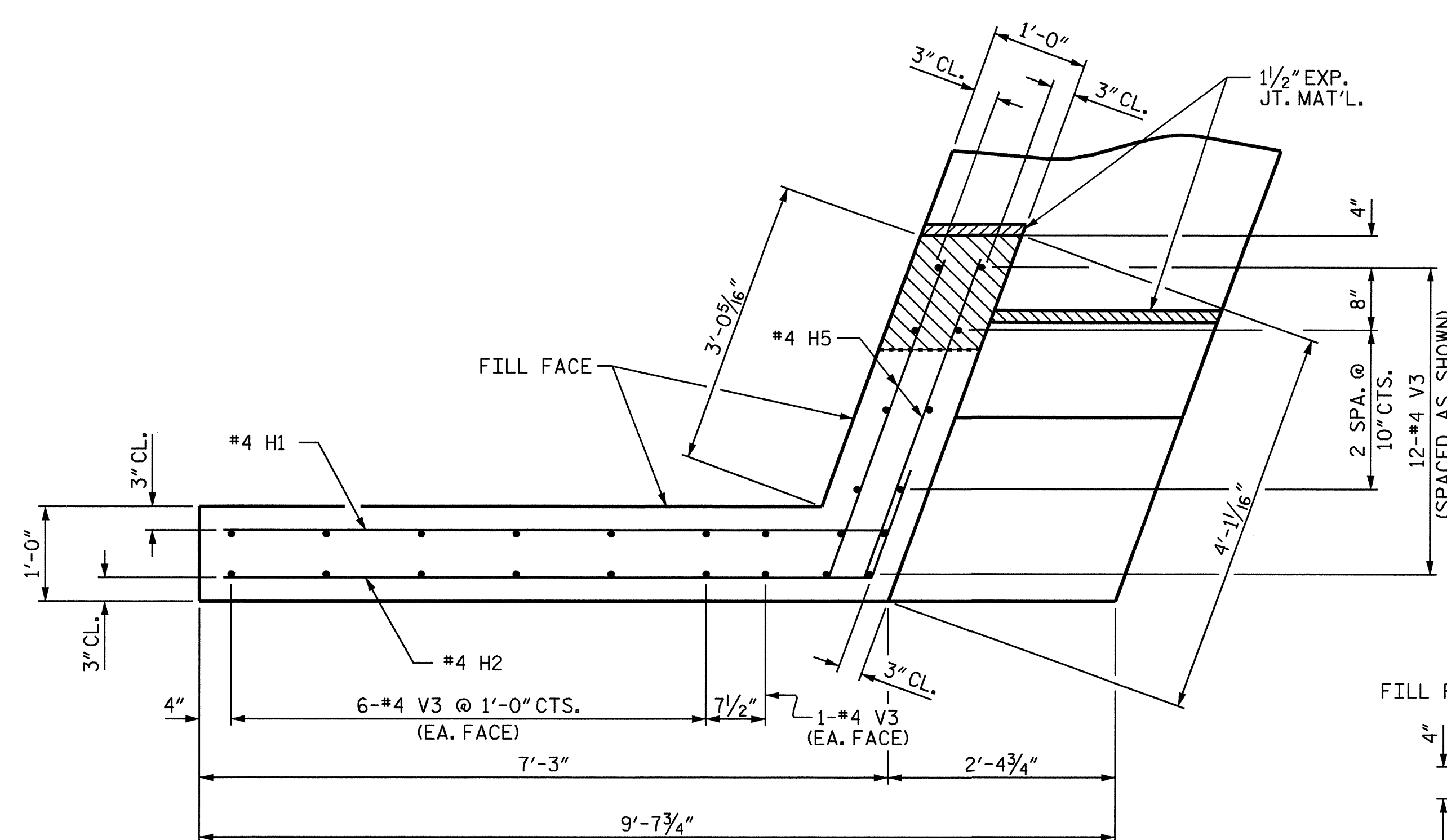


DRAWN BY: B. L. GREEN DATE: 4/06
 CHECKED BY: P. C. BREWER DATE: 4/25/06

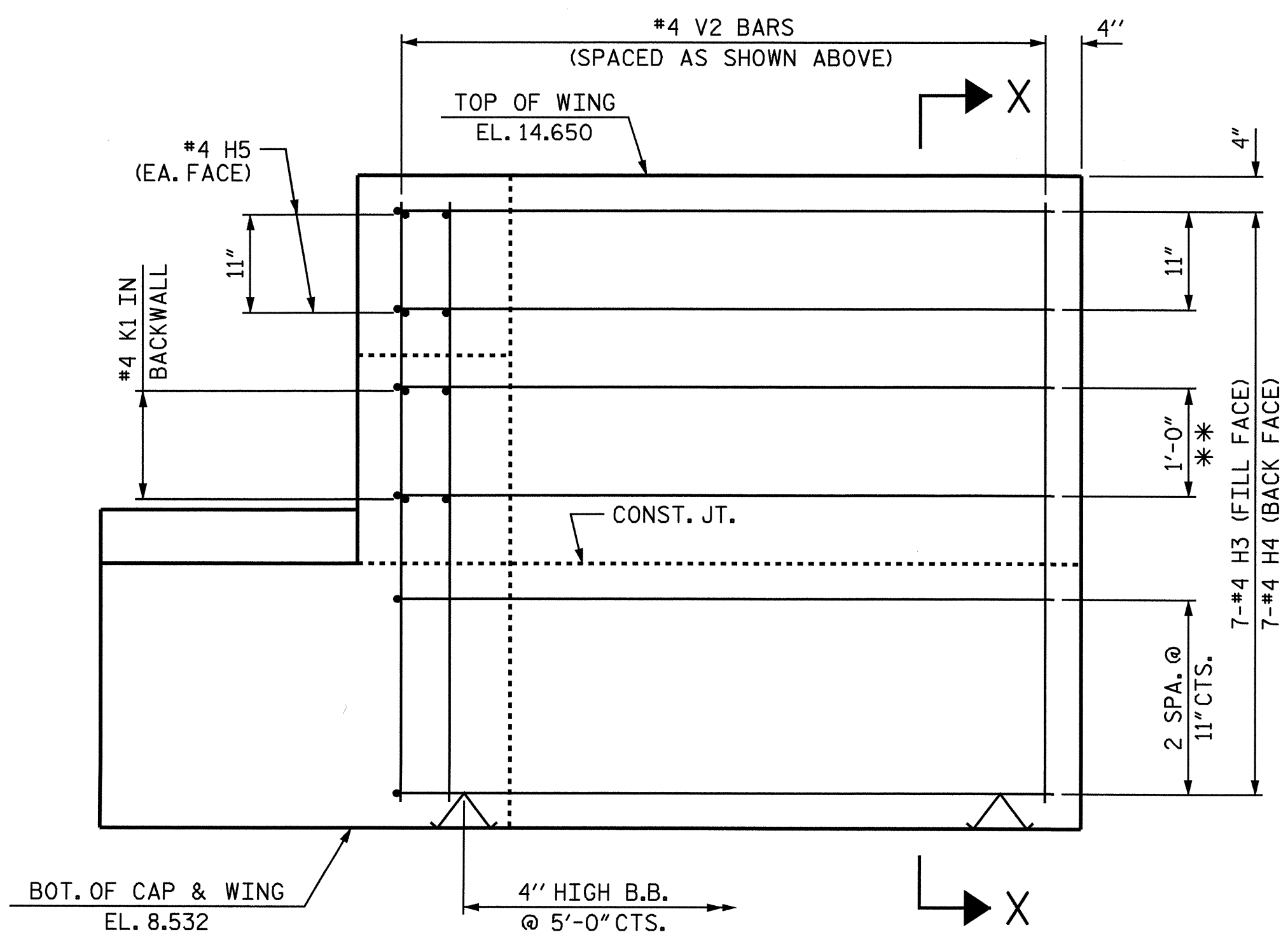
REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
					23



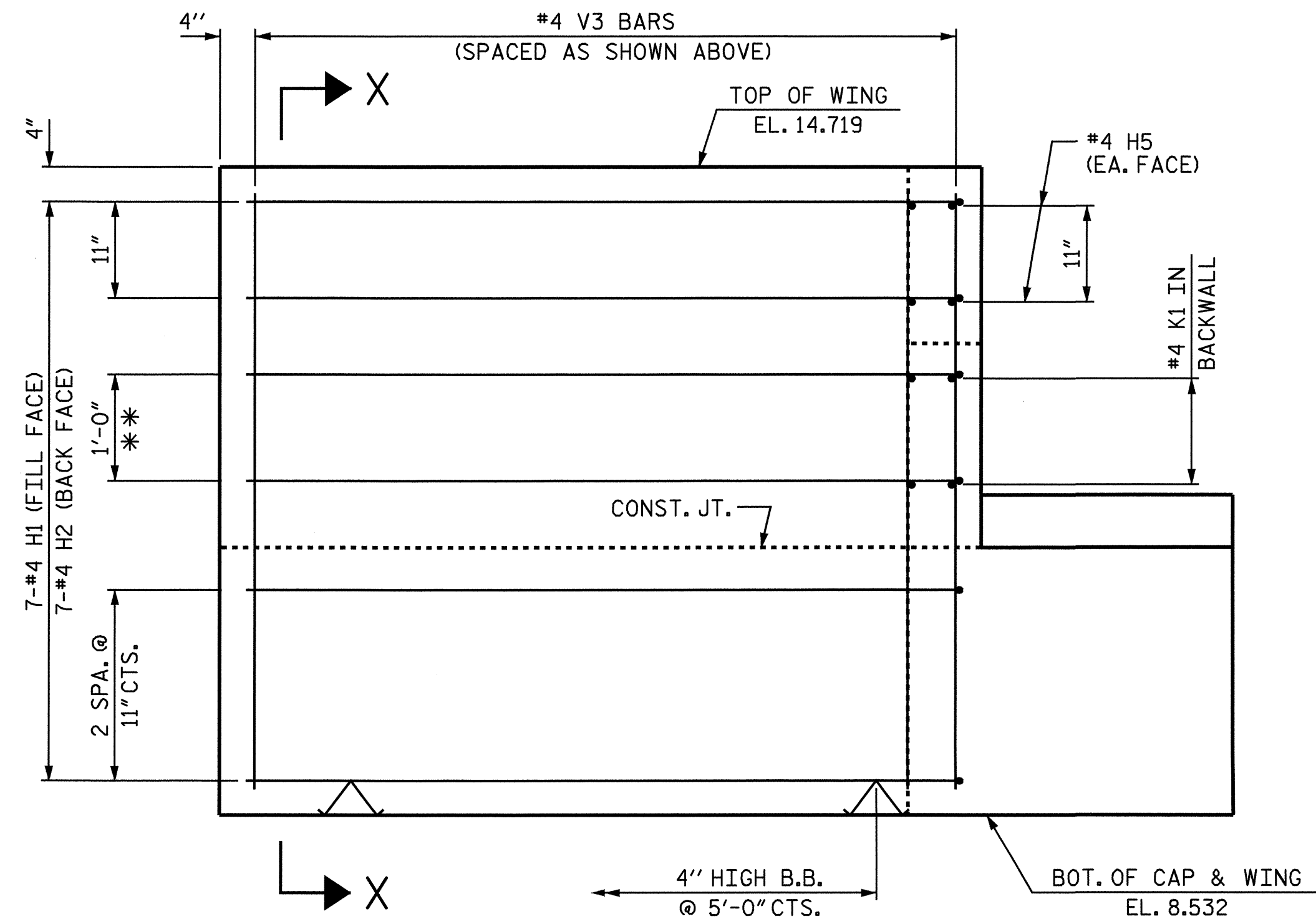
PLAN OF WING W1



PLAN OF WING W2

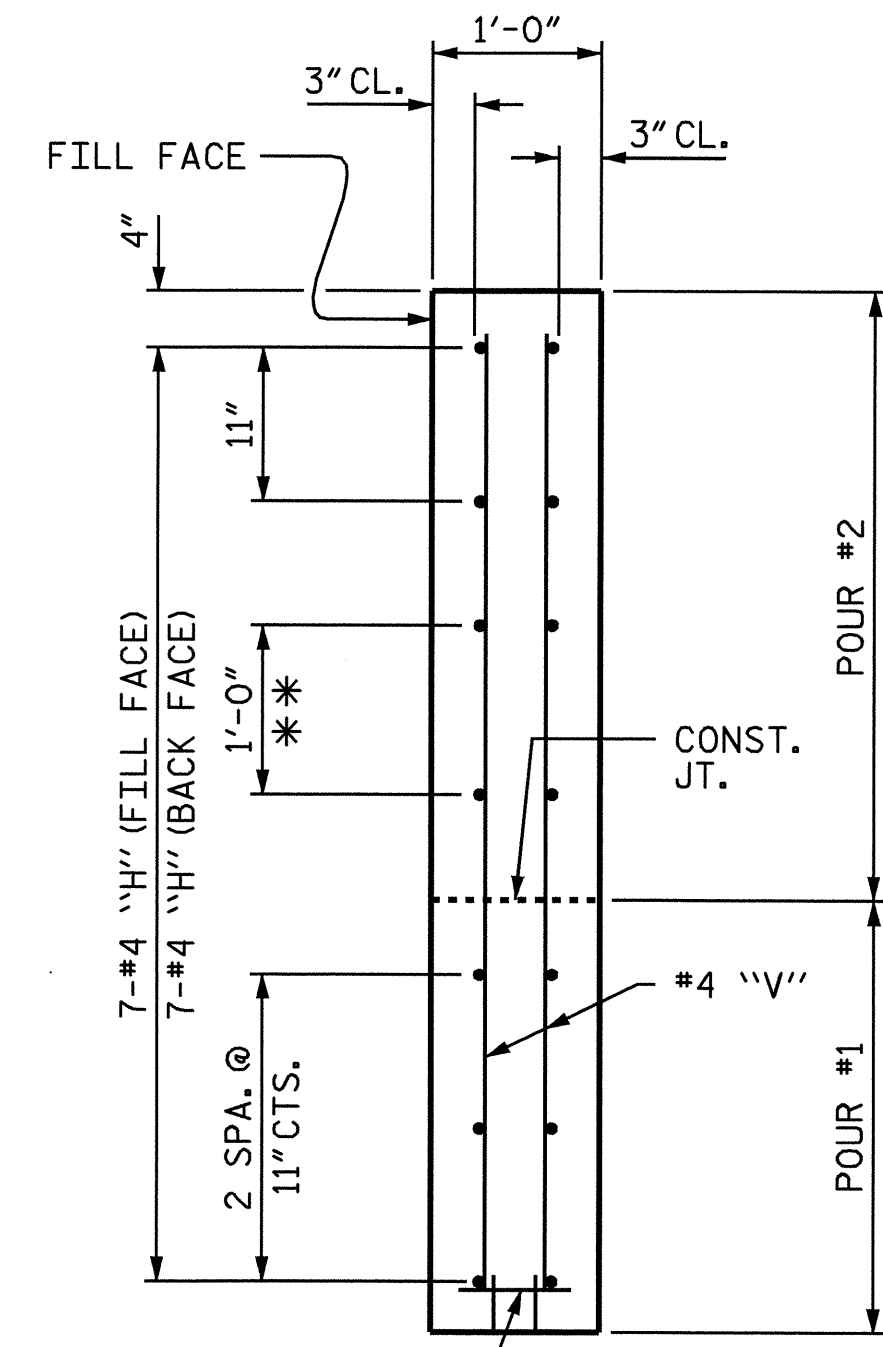


ELEVATION OF WING W1



ELEVATION OF WING W2

** TO MATCH K1 BARS IN BACKWALL



SECTION X-X

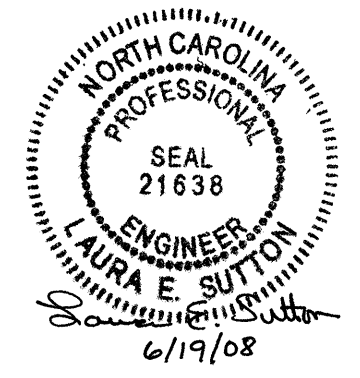
PROJECT NO. B-4055
 CARTERET COUNTY
 STATION: 16+72.00 -L-

SHEET 2 OF 3

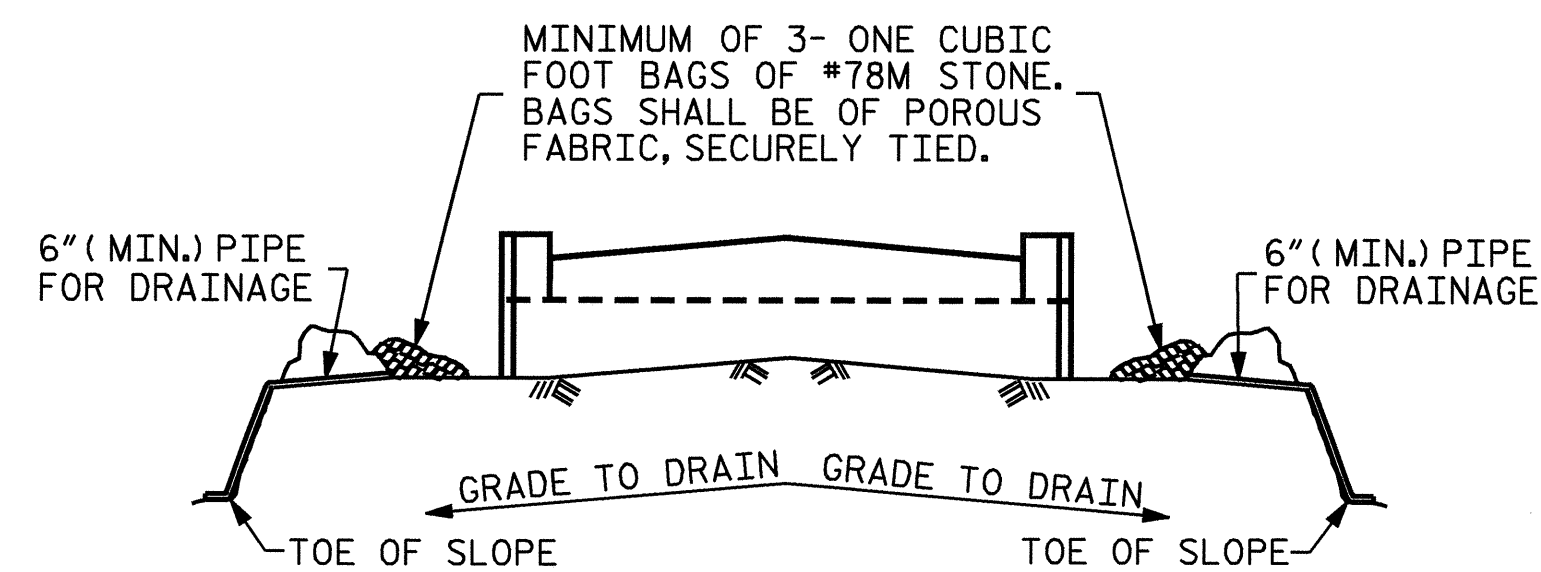
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			23



DRAWN BY: B. L. GREEN DATE: 4/06
 CHECKED BY: P. C. BREWER DATE: 4/25/06

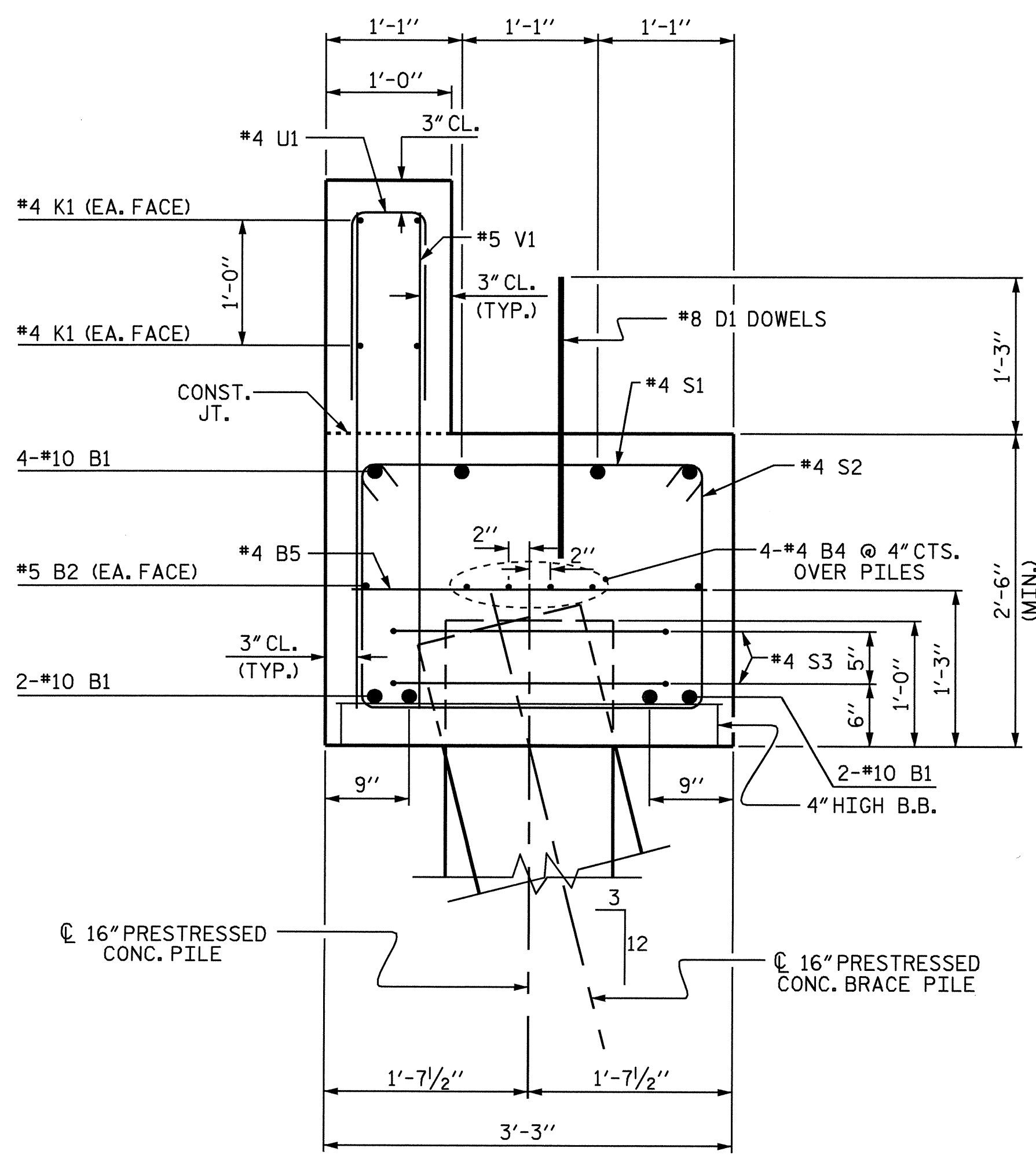


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

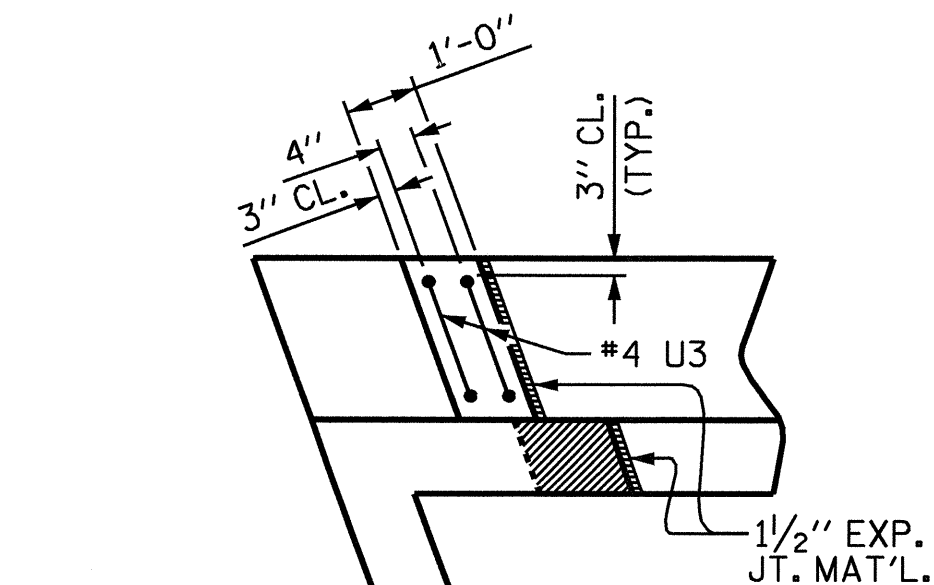
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

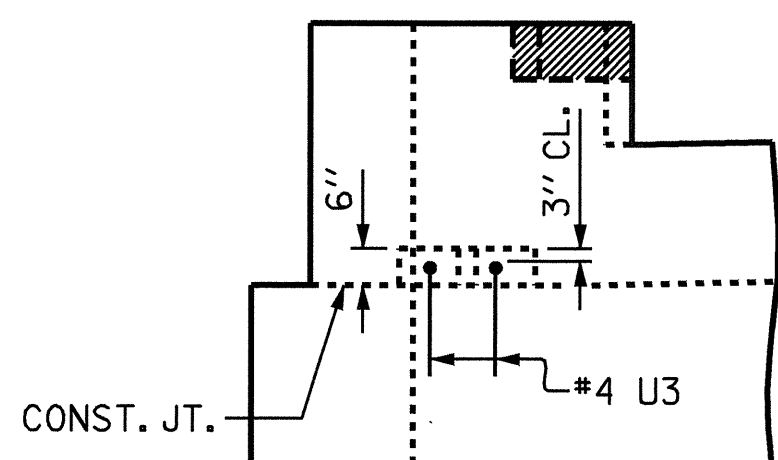
TEMPORARY DRAINAGE AT END BENT



SECTION A-A



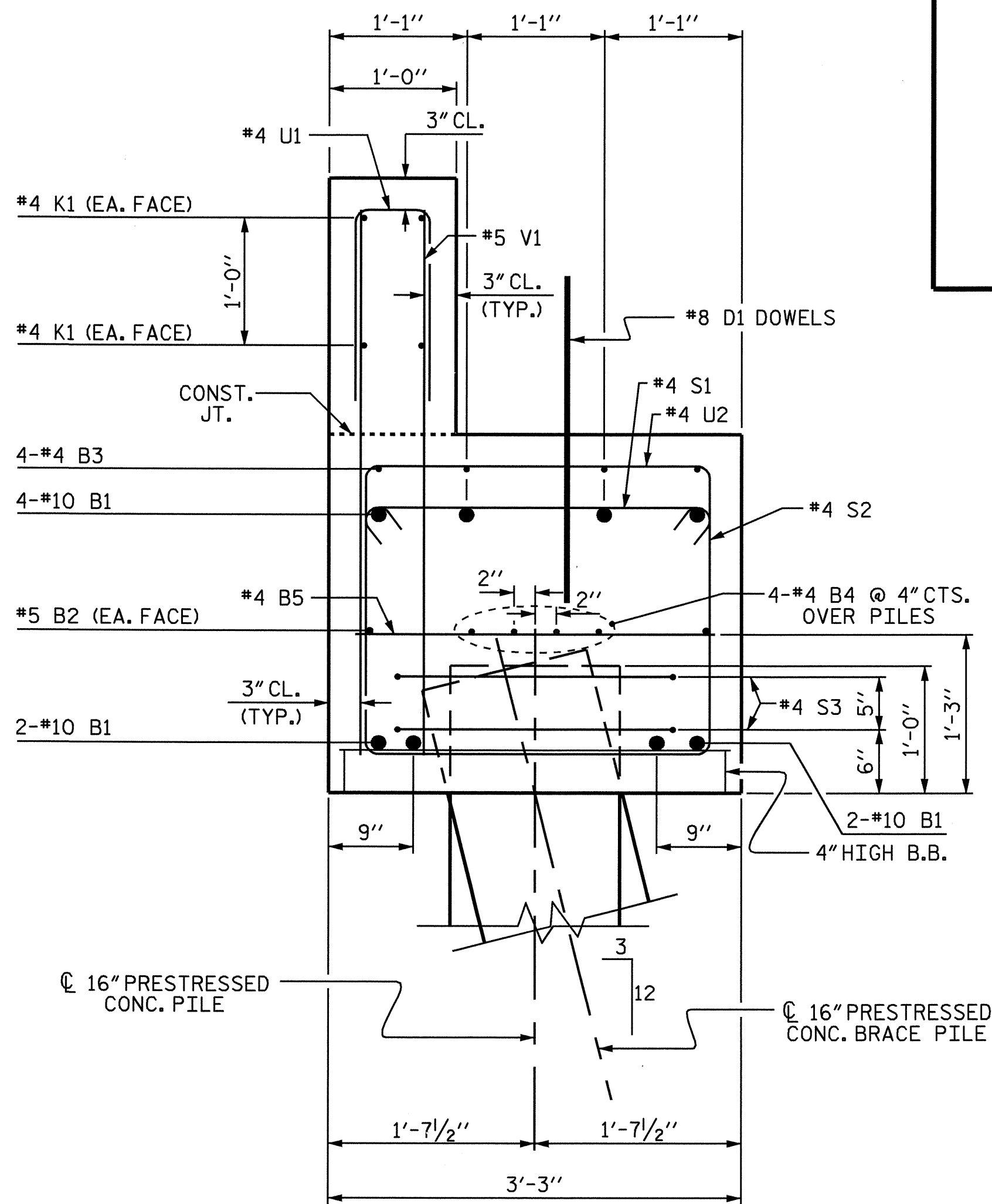
PLAN



ELEVATION

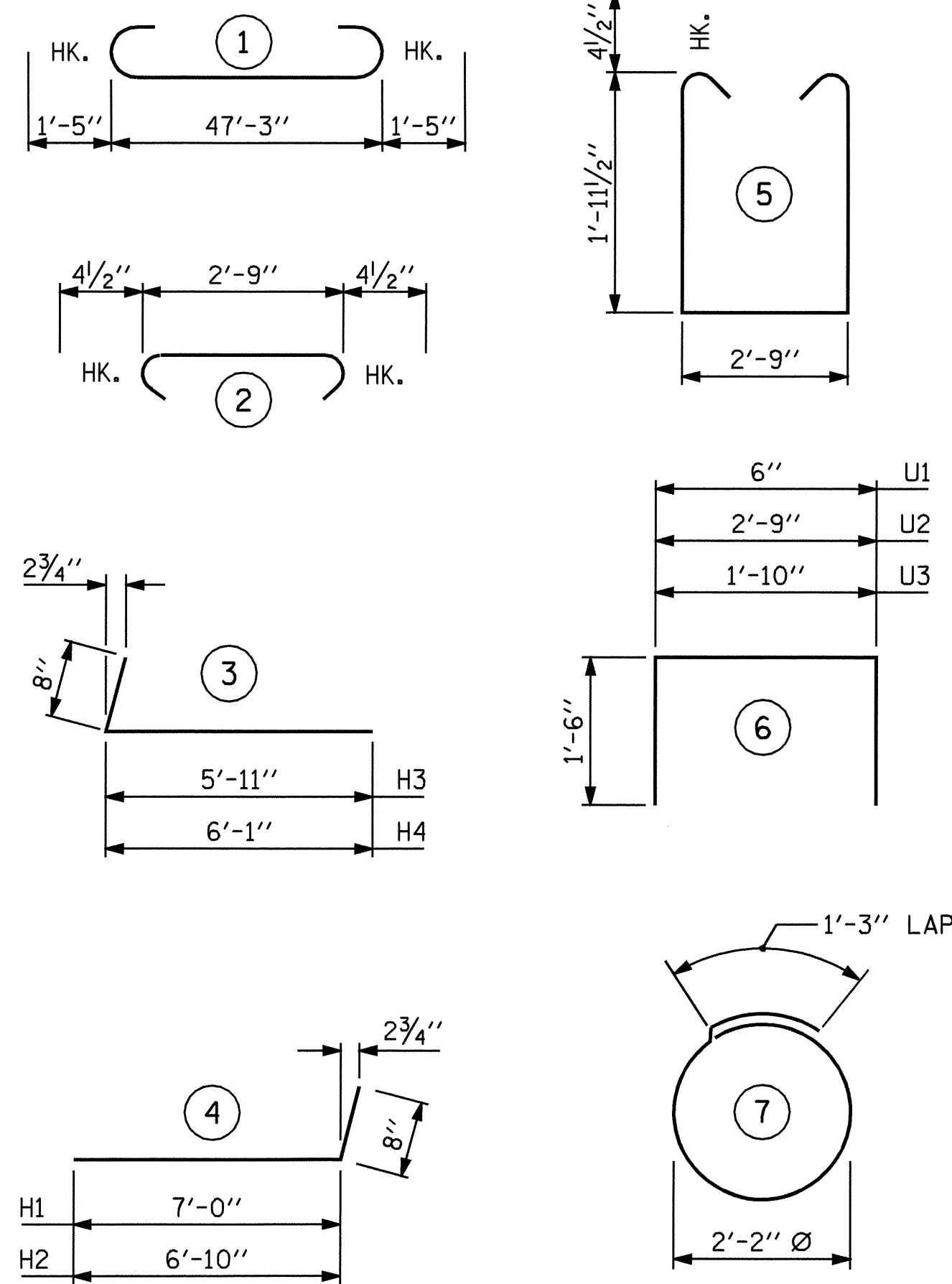
LATERAL GUIDE DETAILS

(LEFT SIDE SHOWN, RIGHT SIDE SIMILAR)



SECTION B-B

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	8	#10	1	50'-1"	1724
* B2	2	#5	STR	47'-5"	99
* B3	4	#4	STR	23'-3"	62
* B4	8	#4	STR	25'-2"	134
* B5	12	#4	STR	2'-9"	22
* D1	26	#8	STR	2'-3"	156
* H1	7	#4	4	7'-8"	36
* H2	7	#4	4	7'-6"	35
* H3	7	#4	3	6'-7"	31
* H4	7	#4	3	6'-9"	32
* H5	8	#4	STR	3'-6"	19
* K1	8	#4	STR	25'-2"	134
* S1	44	#4	2	3'-6"	103
* S2	44	#4	5	7'-5"	218
* S3	16	#4	7	8'-1"	86
* U1	40	#4	6	3'-6"	94
* U2	16	#4	6	5'-9"	61
* U3	4	#4	6	4'-10"	13
* V1	80	#5	STR	3'-10"	320
* V2	24	#4	STR	5'-8"	91
* V3	26	#4	STR	5'-9"	100

* EPOXY COATED REINFORCING STEEL LBS. 3,570

CLASS AA CONCRETE BREAKDOWN :			
POUR #1 - CAP & LOWER WINGS	CU. YDS.	16.1	
POUR #2 - BACKWALL & UPPER WINGS	CU. YDS.	5.5	
POUR #3 - LATERAL GUIDES	CU. YDS.	0.1	
TOTAL	CU. YDS.	21.7	

16" PRESTRESSED CONCRETE PILES NO. = 8 LIN. FT. 360

PROJECT NO. B-4055
 CARTERET COUNTY
 STATION: 16+72.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 1



DRAWN BY: B. L. GREEN DATE: 4/06
 CHECKED BY: P. C. BREWER DATE: 4/25/06

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

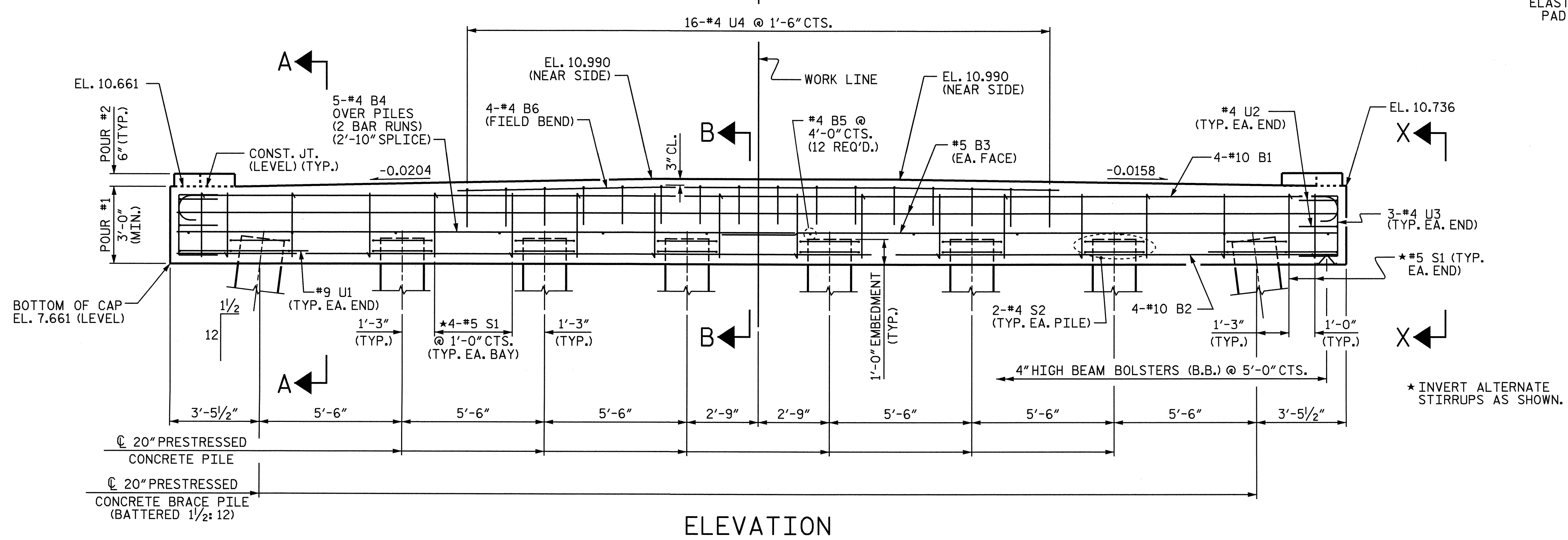
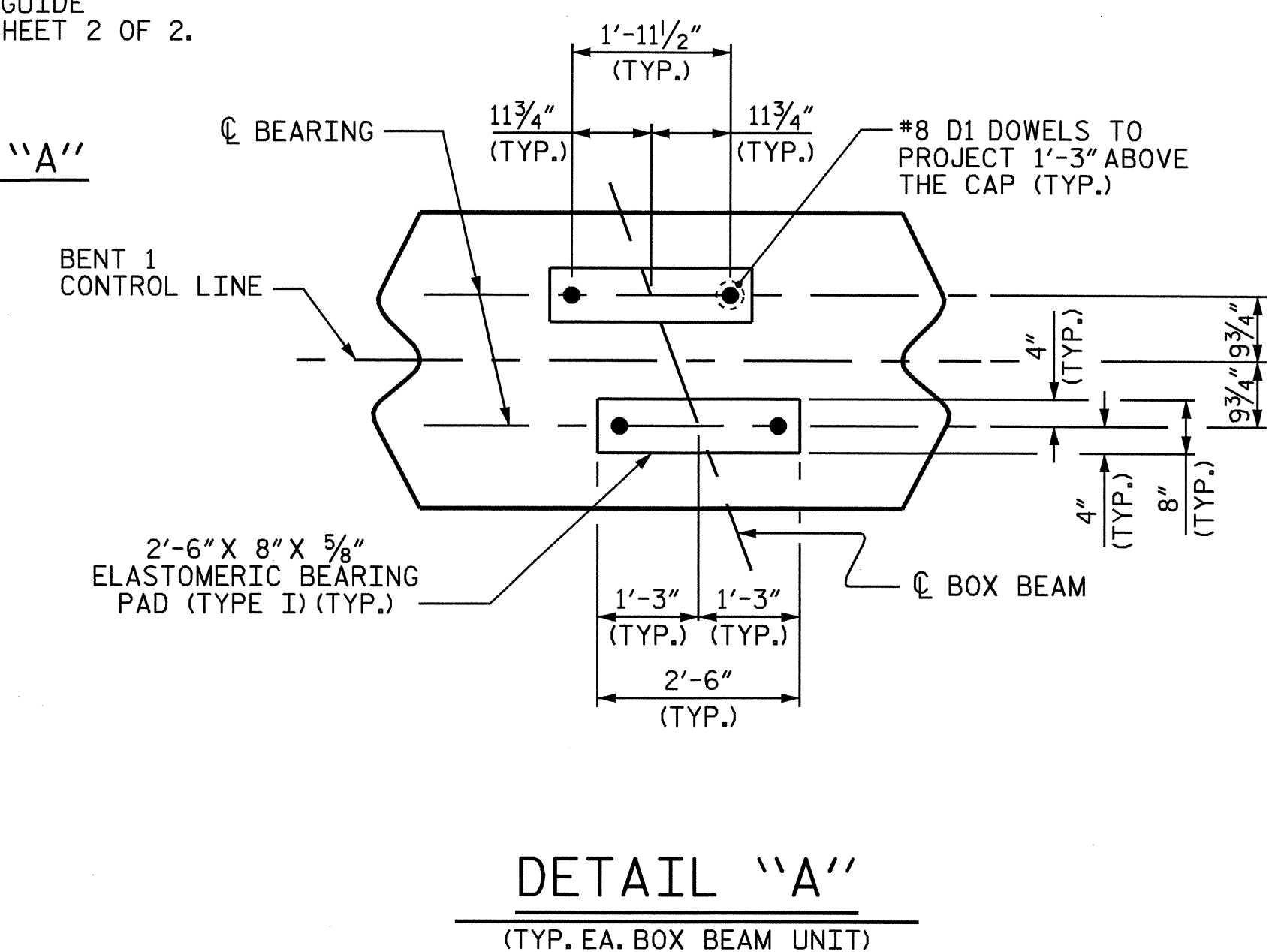
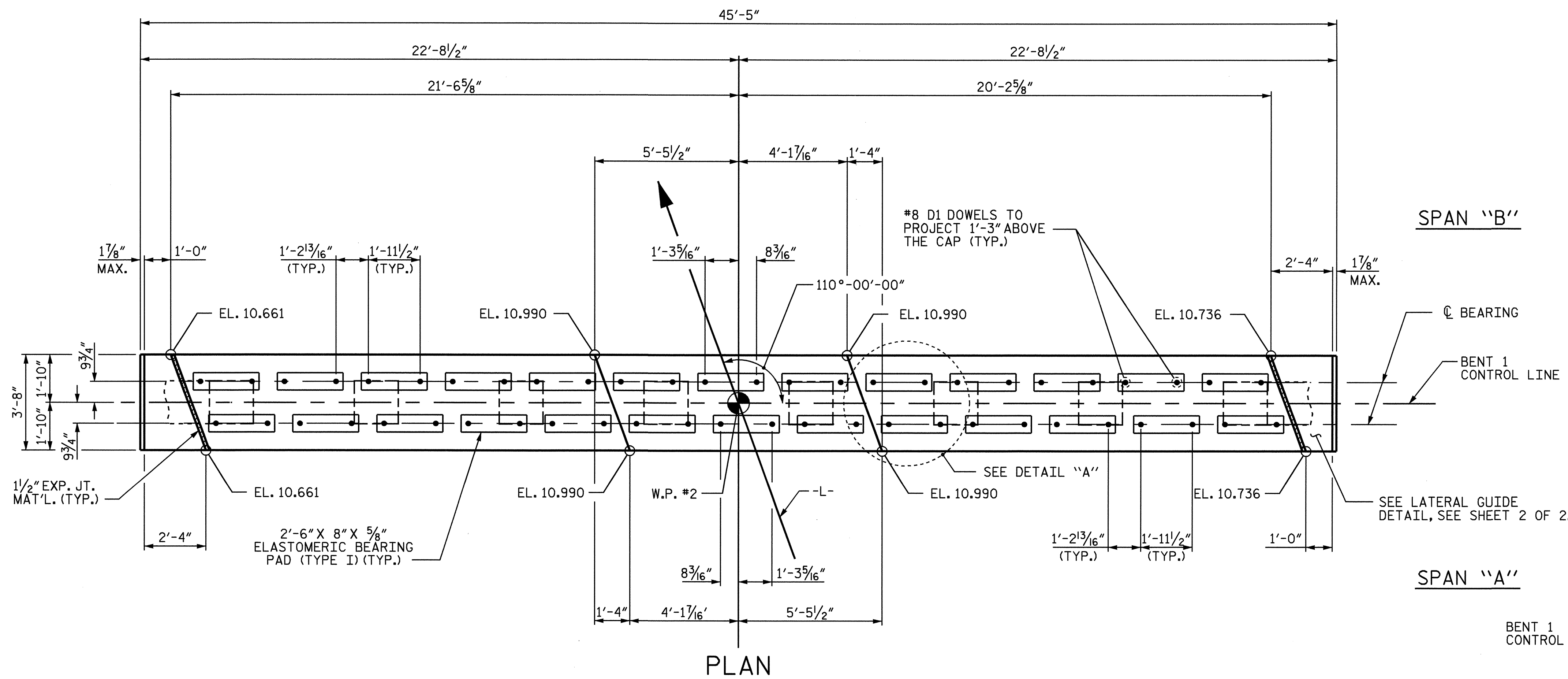
TOTAL SHEETS 23

NOTES

STIRRUPS AND U4 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

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

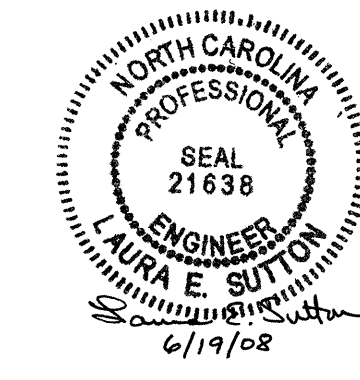
CONCRETE DISPLACED BY 20" SQUARE PRESTRESSED CONCRETE PILES HAS BEEN DEDUCTED FROM THE CONCRETE QUANTITY.



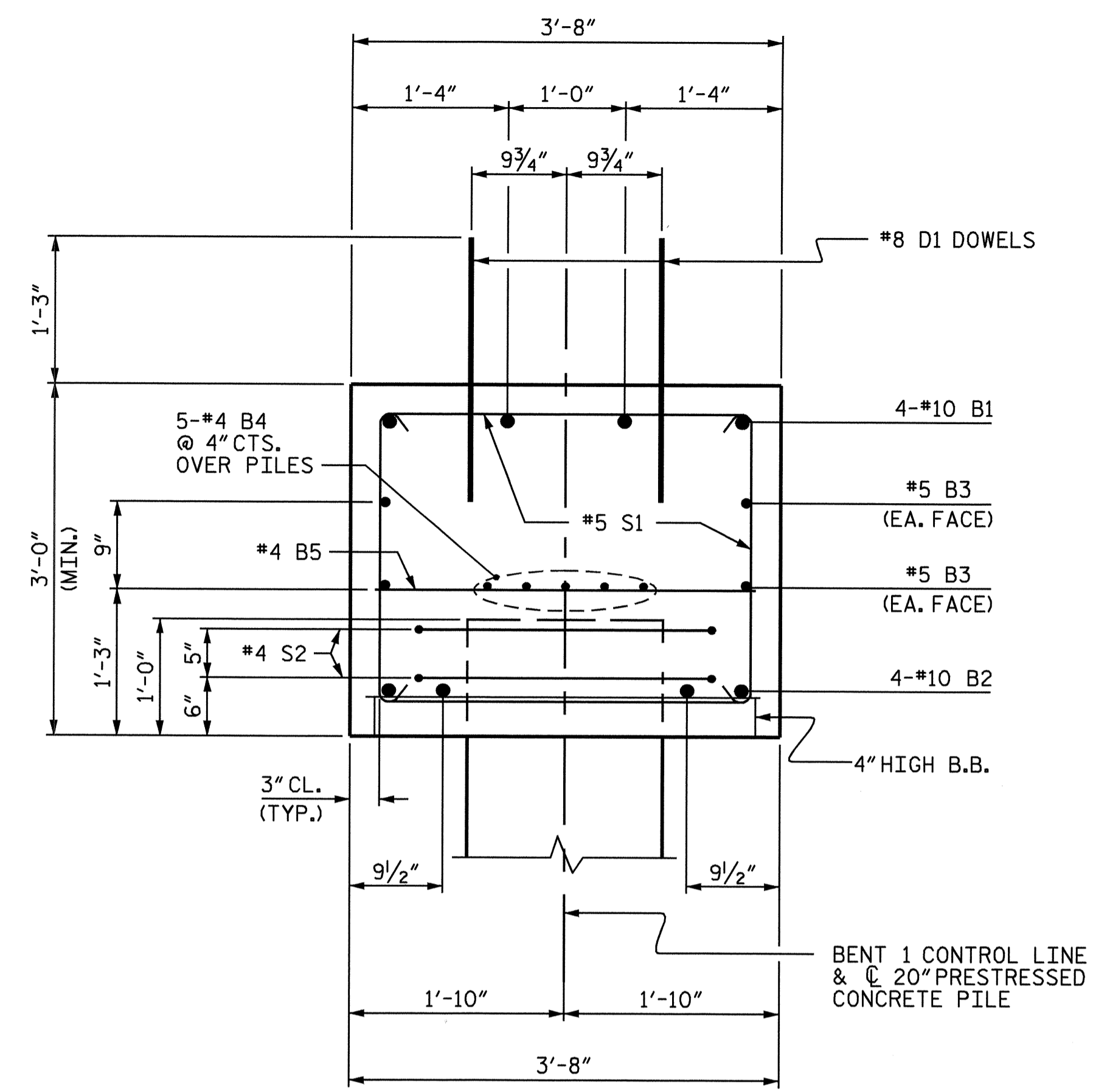
PROJECT NO. B-4055
CARTERET COUNTY
 STATION: 16+72.00 -L-

SHEET 1 OF 2

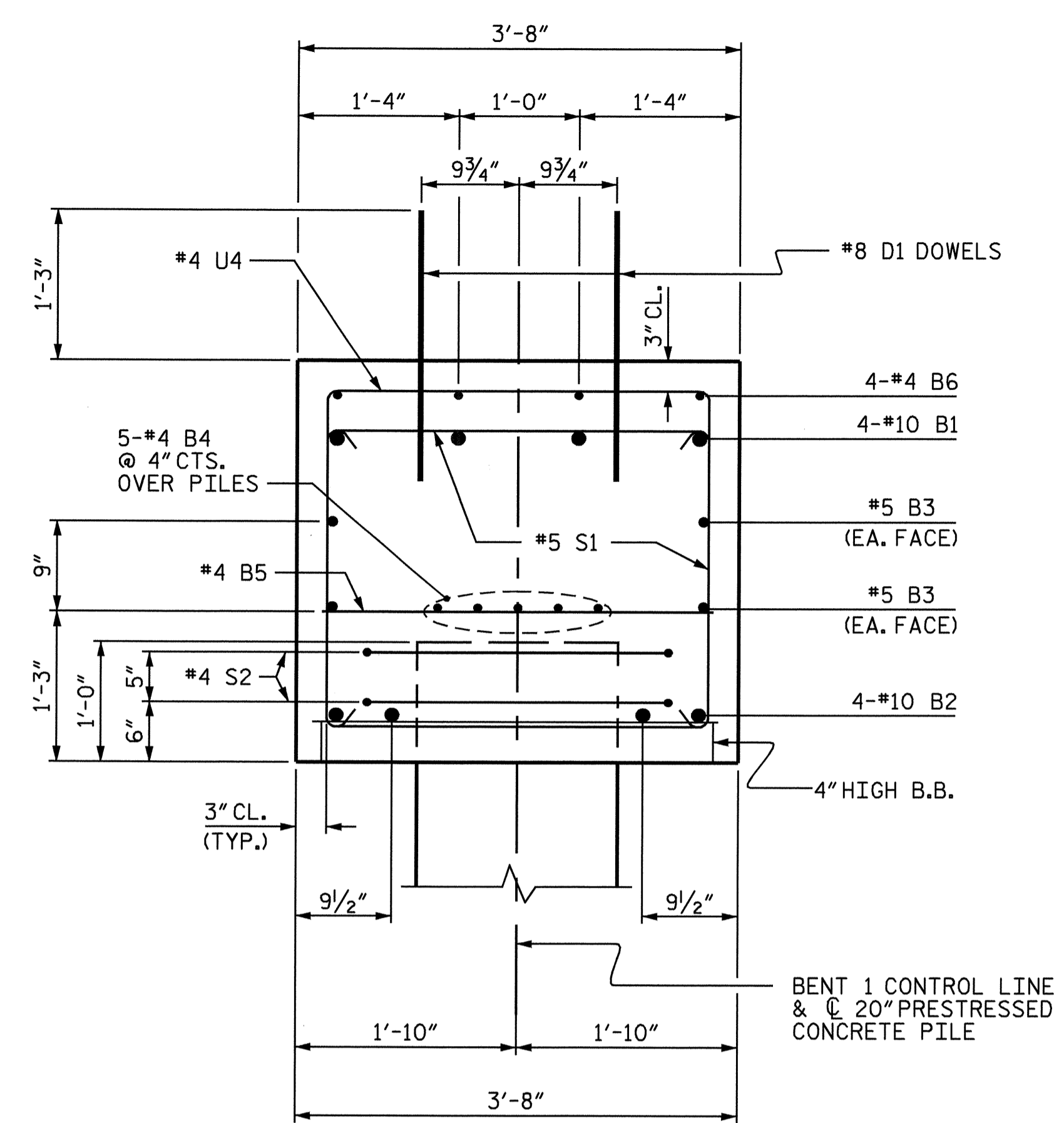
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SUBSTRUCTURE BENT 1
REVISIONS						
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			SHEET NO. S-14 TOTAL SHEETS 23
2			4			



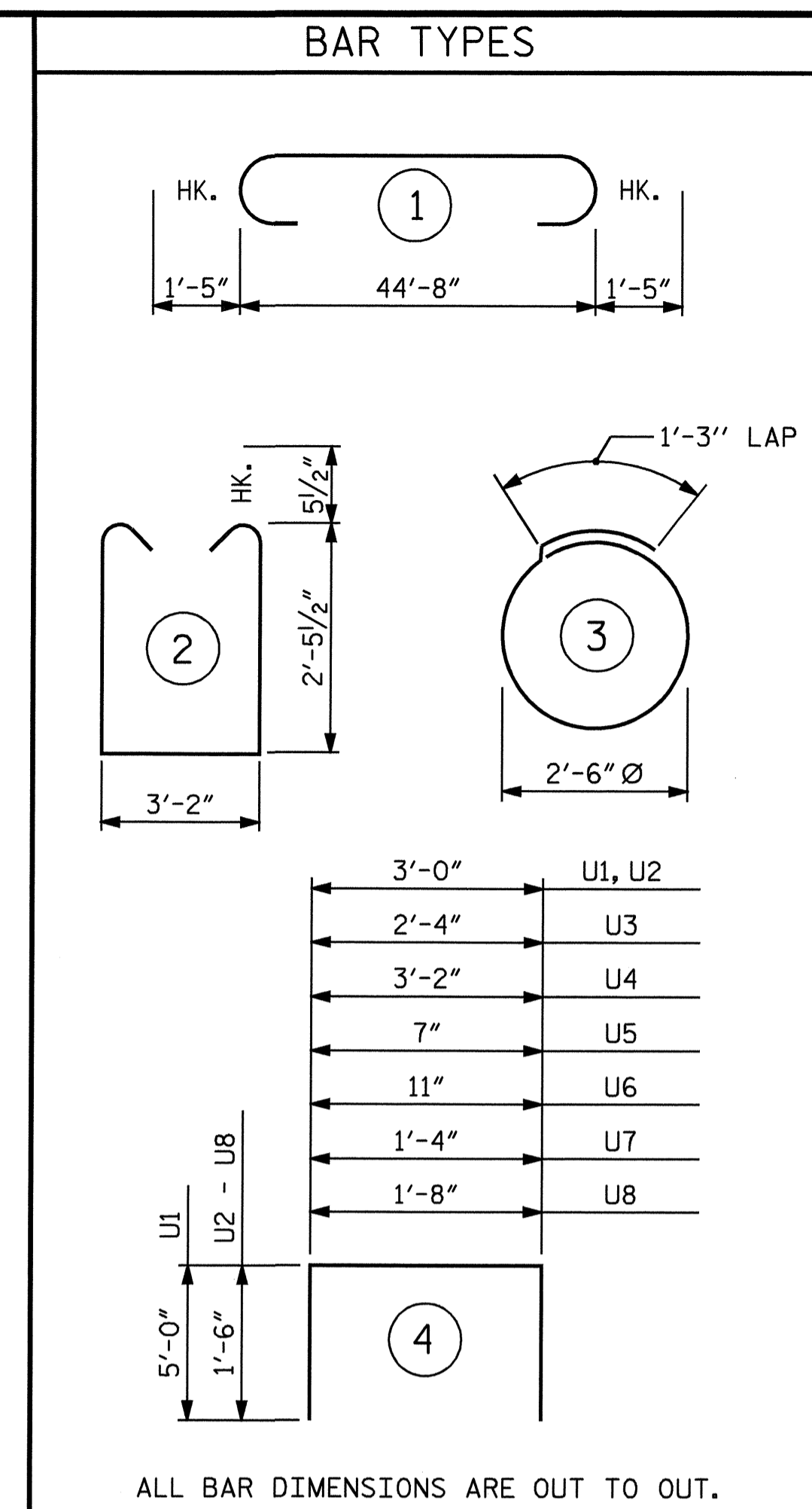
DRAWN BY : E.C. LOCKLEAR DATE : 4-24-06
 CHECKED BY : P.C. BREWER DATE : 4-27-06



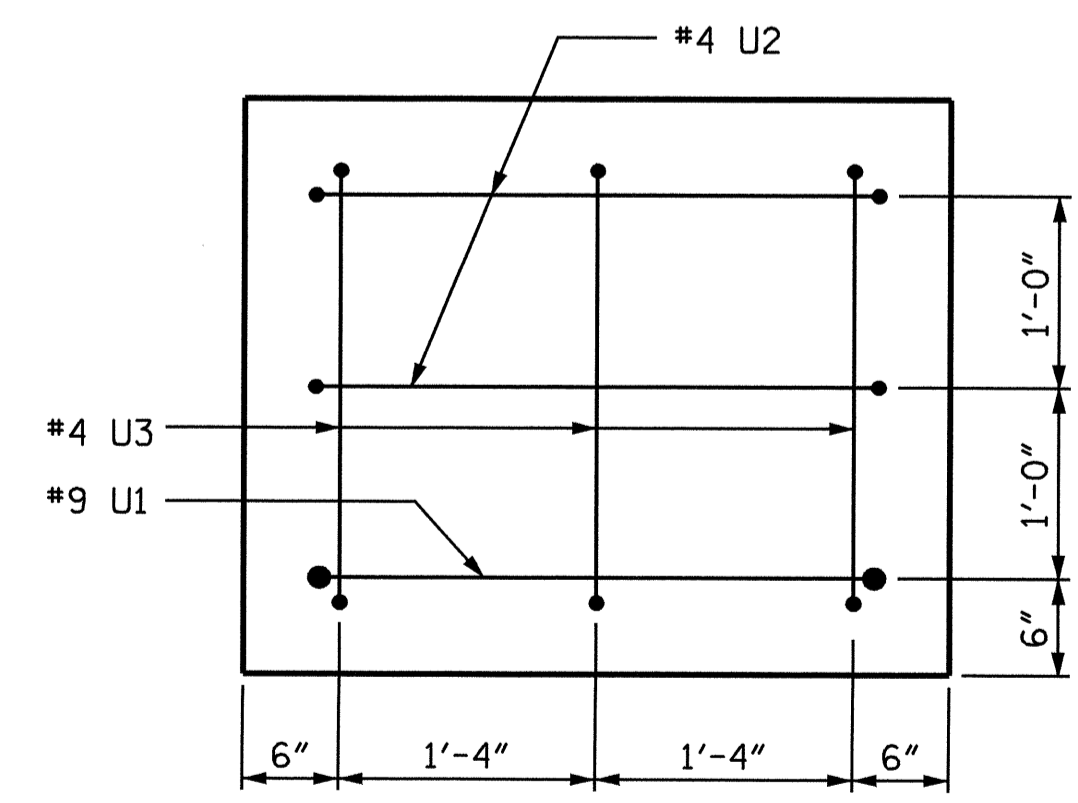
SECTION A-A



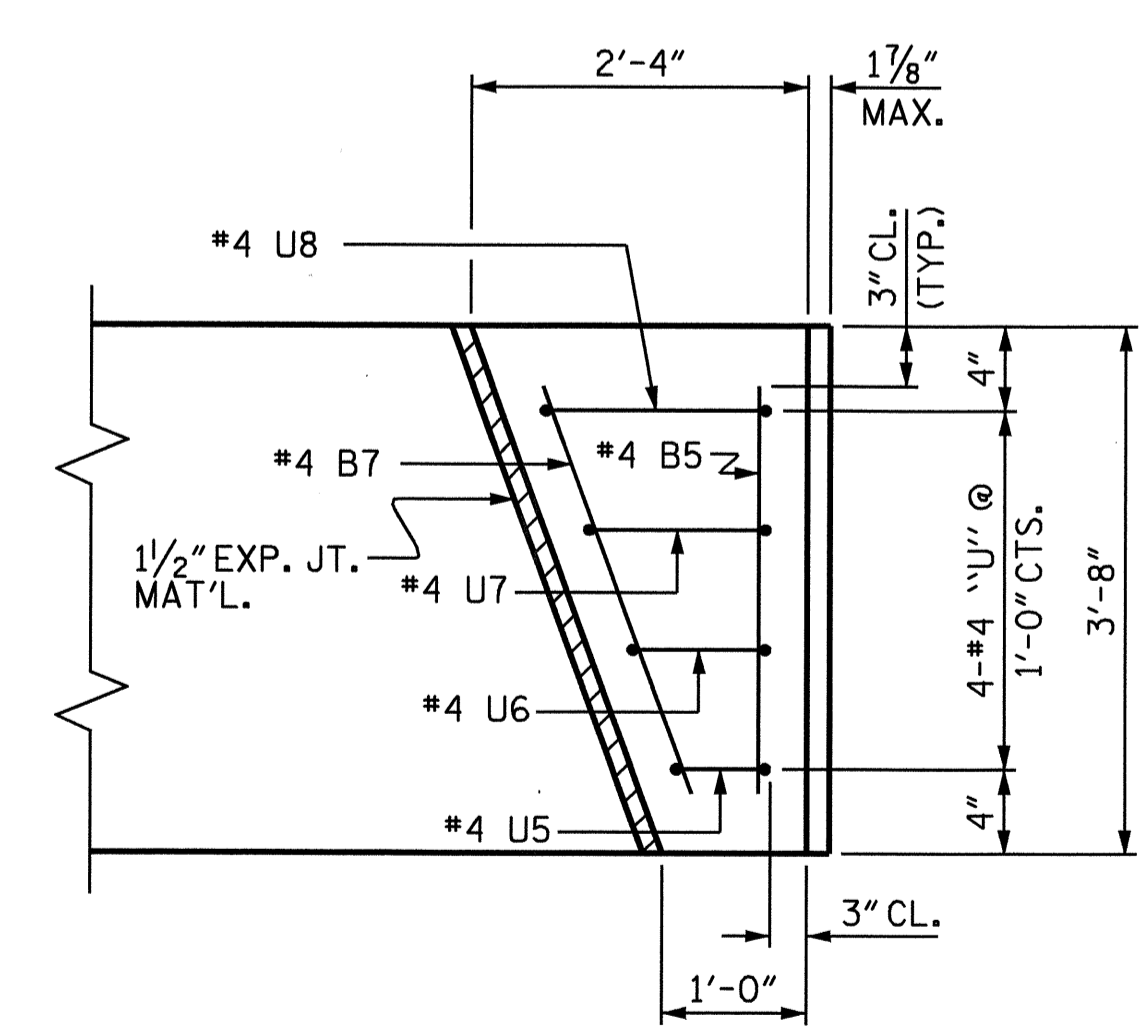
SECTION B-B



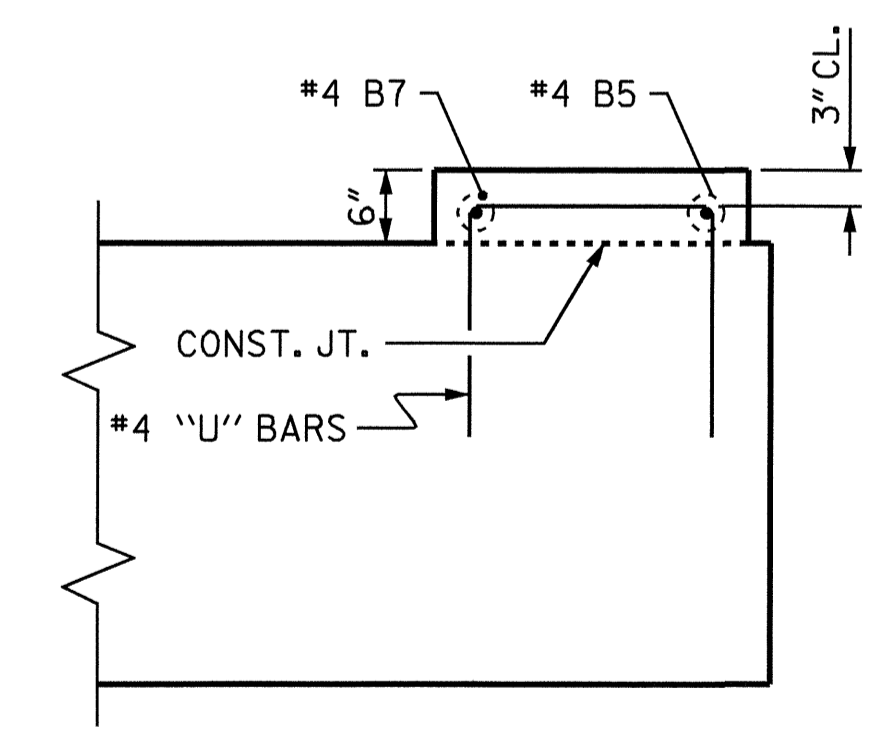
BILL OF MATERIAL					
BENT 1					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	4	#10	1	47'-6"	818
* B2	4	#10	STR	44'-10"	772
* B3	4	#5	STR	44'-10"	187
* B4	10	#4	STR	23'-11"	160
* B5	14	#4	STR	3'-2"	29
* B6	4	#4	STR	23'-3"	62
* B7	2	#4	STR	3'-4"	4
* D1	52	#8	STR	2'-3"	312
* S1	32	#5	2	9'-0"	300
* S2	16	#4	3	9'-2"	98
* U1	2	#9	4	13'-0"	88
* U2	4	#4	4	6'-0"	16
* U3	6	#4	4	5'-4"	21
* U4	16	#4	4	6'-2"	66
* U5	2	#4	4	3'-7"	5
* U6	2	#4	4	3'-11"	5
* U7	2	#4	4	4'-4"	6
* U8	2	#4	4	4'-8"	6
* EPOXY COATED REINFORCING STEEL				LBS.	2,955
CLASS AA CONCRETE BREAKDOWN :					
POUR #1 - CAP				CU. YDS.	18.9
POUR #2 - LATERAL GUIDES				CU. YDS.	0.2
TOTAL				CU. YDS.	19.1
20" PRESTRESSED CONCRETE PILES					
NO. = 8				LIN. FT.	400



VIEW X-X



PLAN

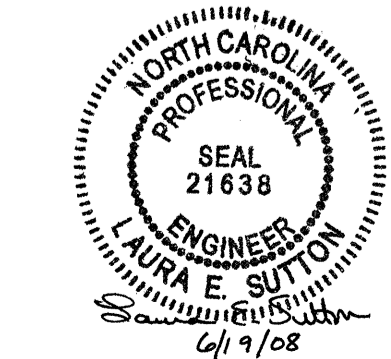


ELEVATION

LATERAL GUIDE DETAIL

PROJECT NO. B-4055
CARTERET COUNTY
 STATION: 16+72.00 -L-
 SHEET 2 OF 2

STATE OF NORTH CAROLINA					
DEPARTMENT OF TRANSPORTATION					
RALEIGH					
SUBSTRUCTURE					
BENT 1					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S-15
TOTAL SHEETS					23



DRAWN BY: E.C. LOCKLEAR DATE: 4-24-06
 CHECKED BY: P.C. BREWER DATE: 4-27-06

NOTES

STIRRUPS AND U1 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

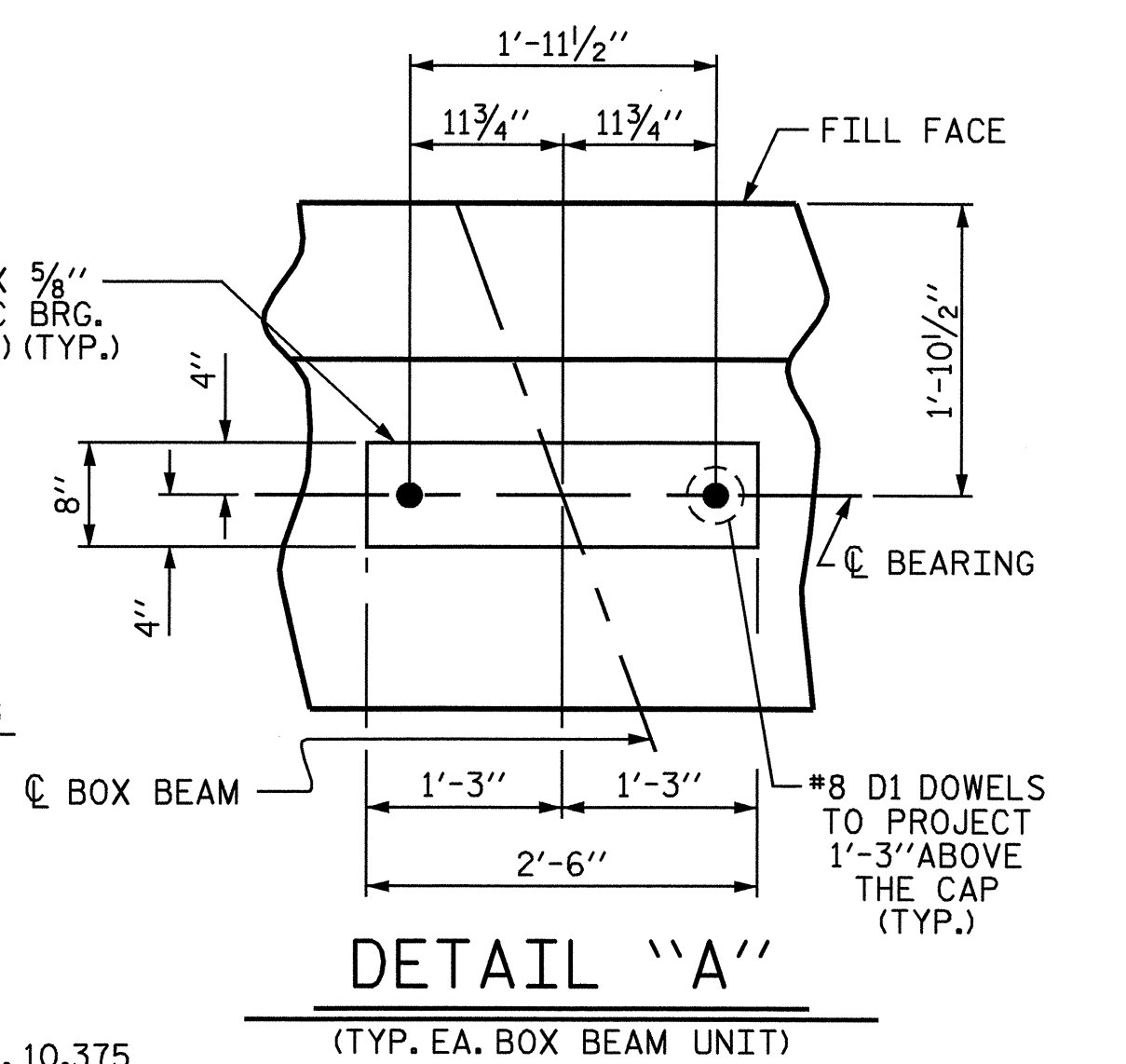
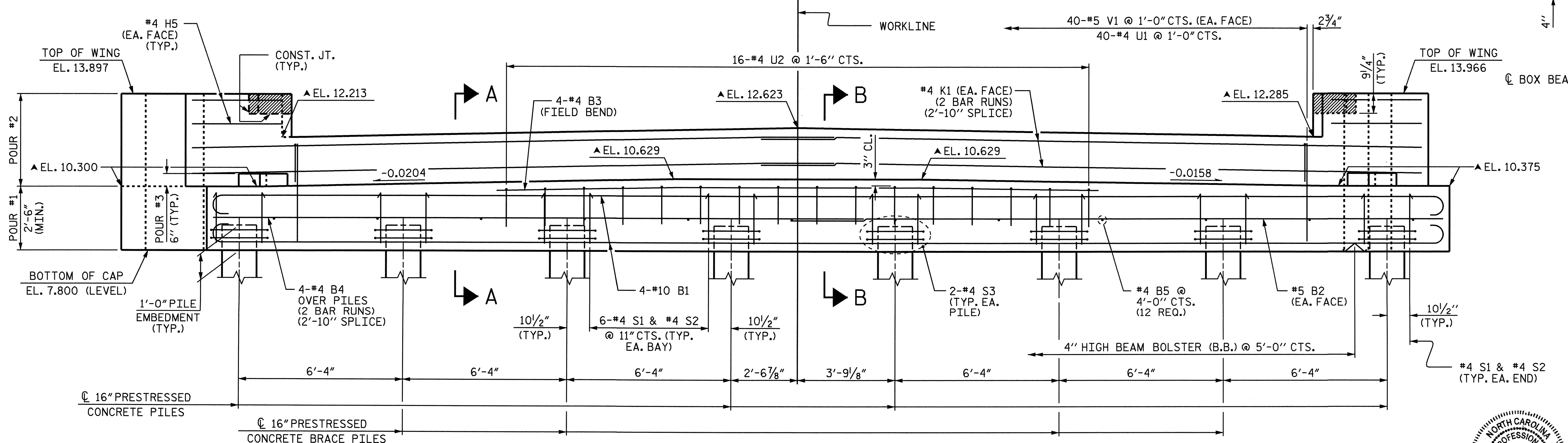
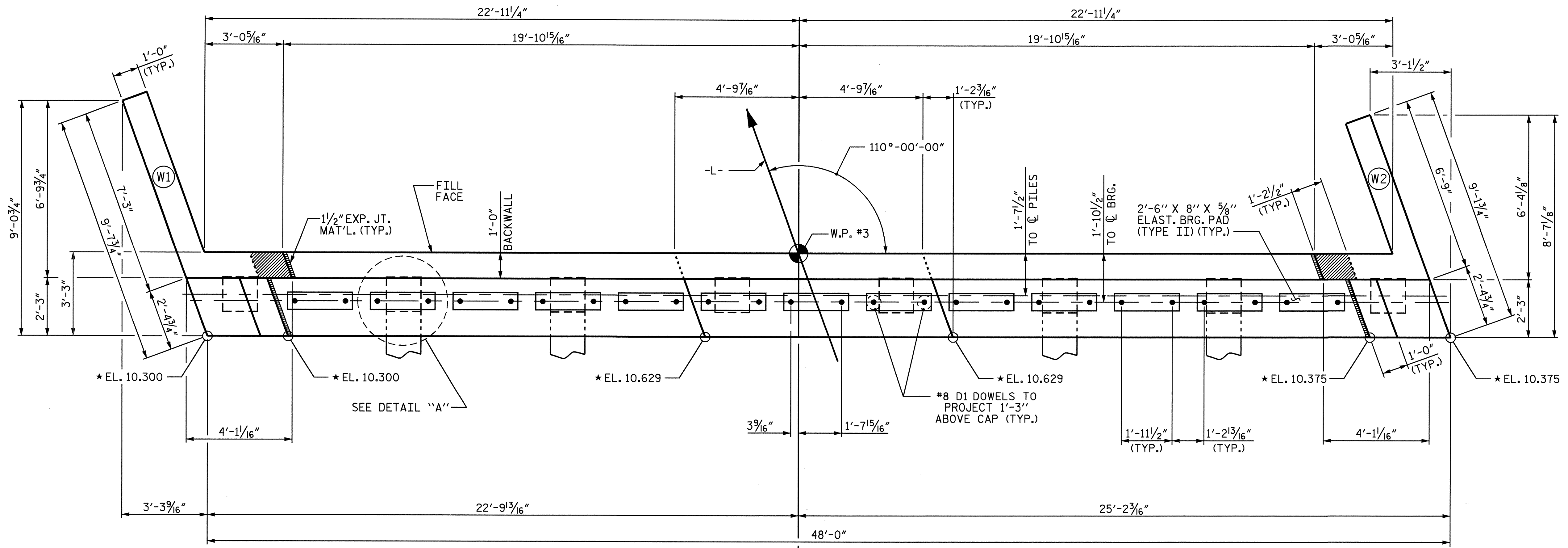
THE LATERAL GUIDES AT EACH END OF THE CAP ARE NOT TO BE POURED UNTIL AFTER THE BOX BEAM UNITS ARE IN PLACE.

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

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

THE #5 V1 BARS IN THE BACKWALL SHALL BE PLACED 3" CLEAR FROM THE TOP OF THE BACKWALL.

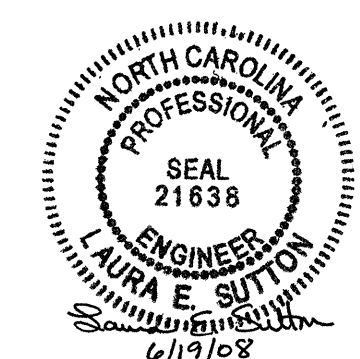
CONCRETE DISPLACED BY THE 16" PRESTRESSED CONCRETE PILES HAS BEEN DEDUCTED FROM THE CONCRETE QUANTITY.



PROJECT NO. B-4055
CARTERET COUNTY
STATION: 16+72.00 -L-
SHEET 1 OF 3

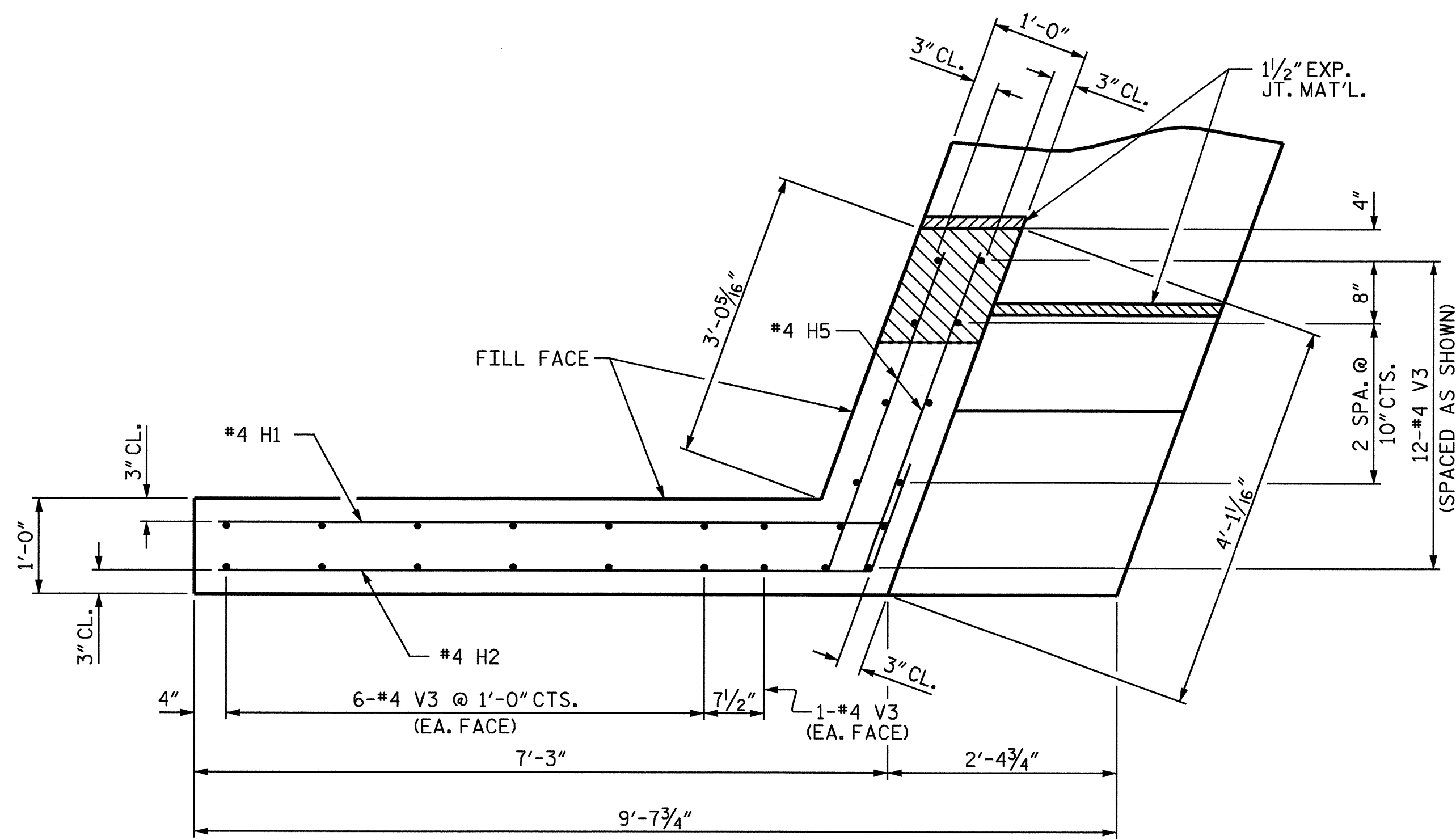
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT 2					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S-16
TOTAL SHEETS 23

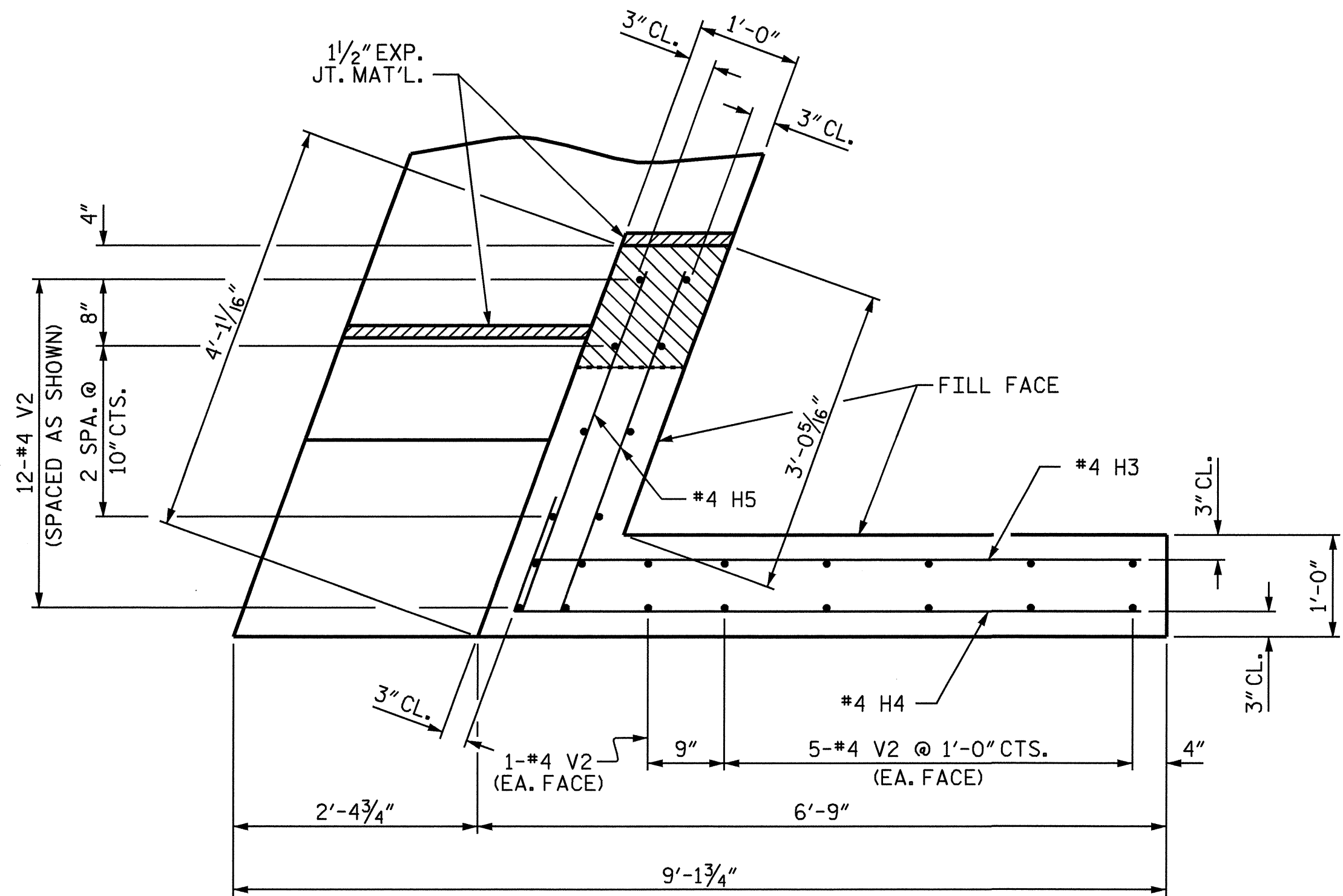


DRAWN BY: B. L. GREEN DATE: 4-13-06
CHECKED BY: P. C. BREWER DATE: 4/26/06

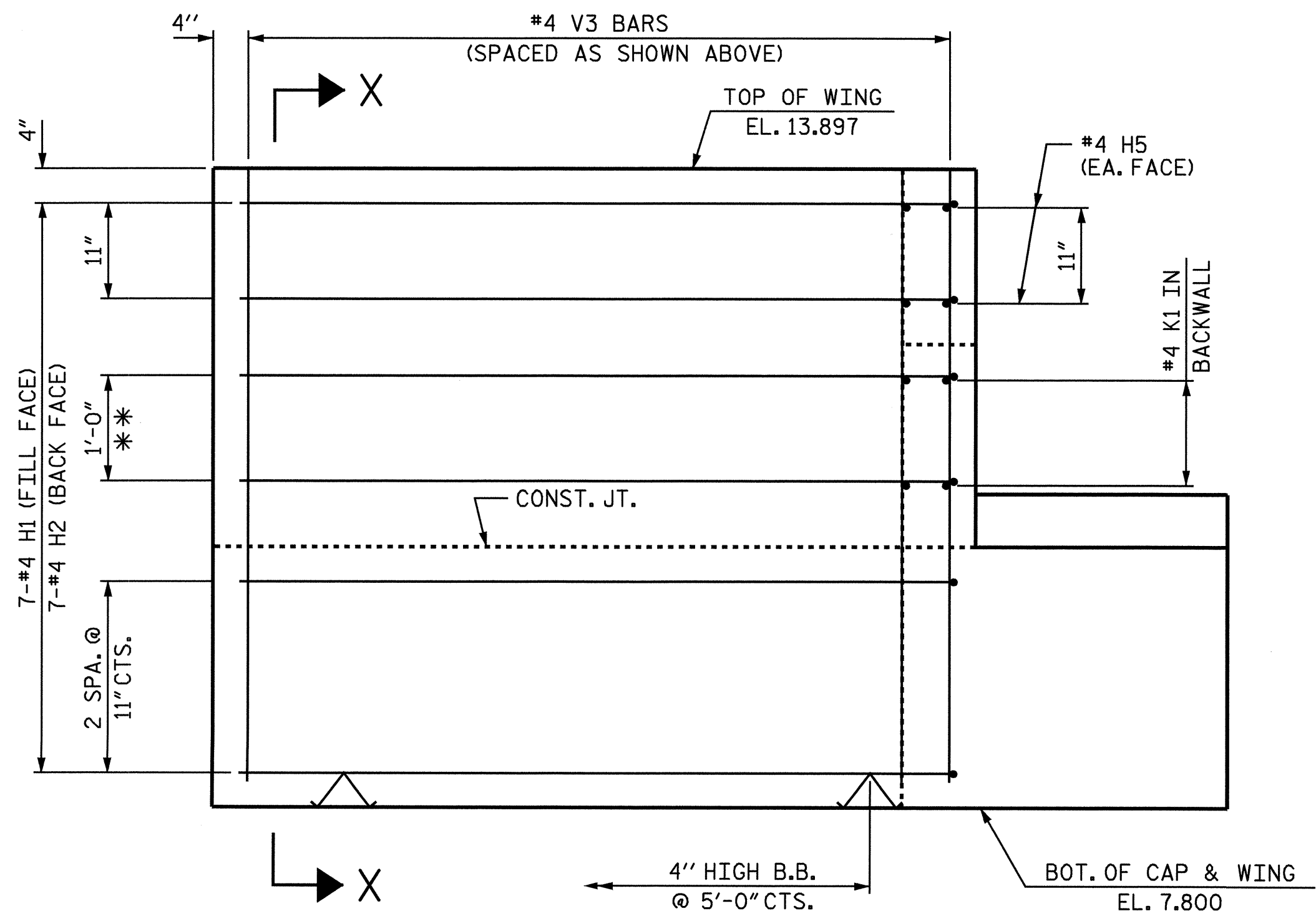
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LSUTTON



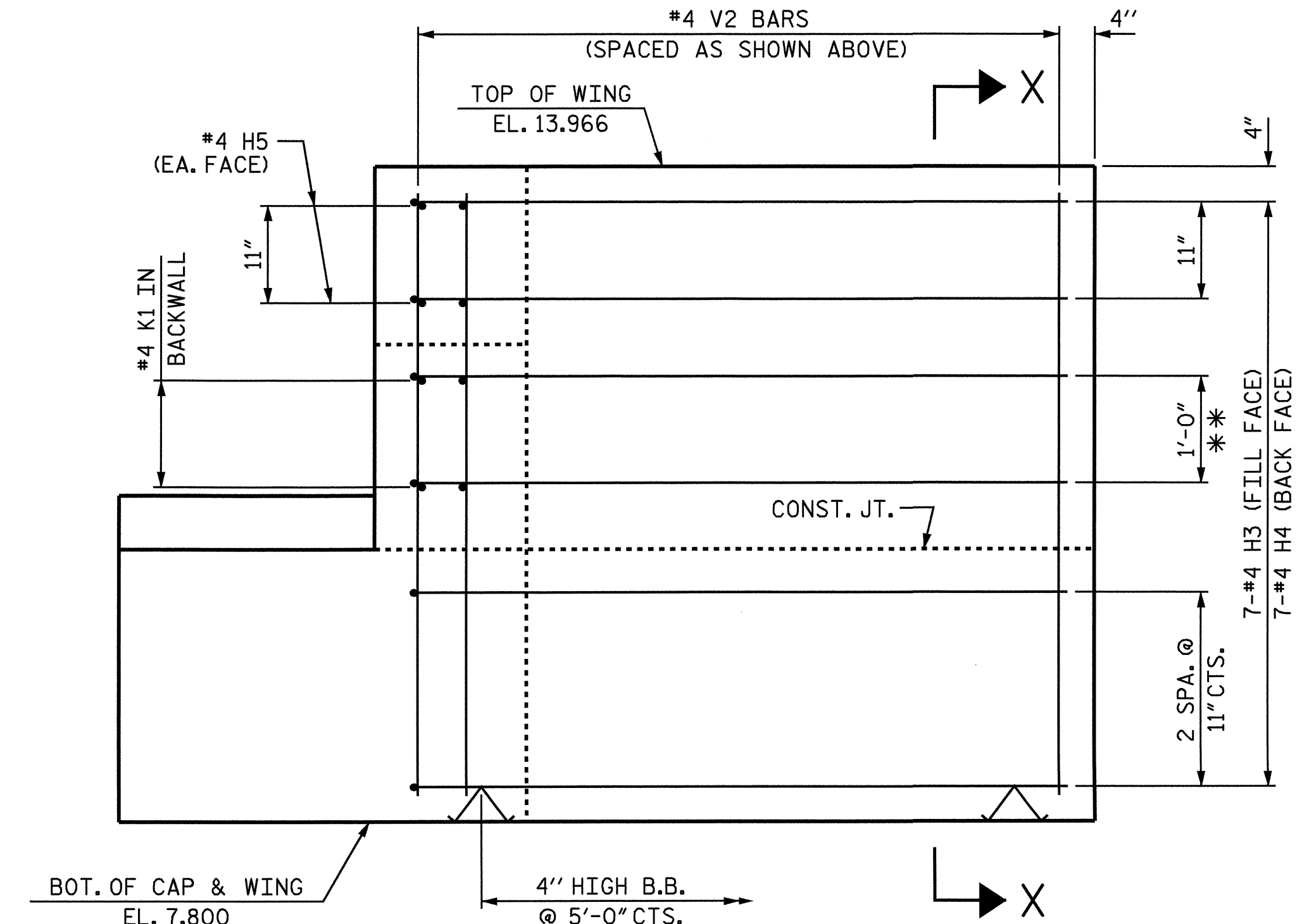
PLAN OF WING W1



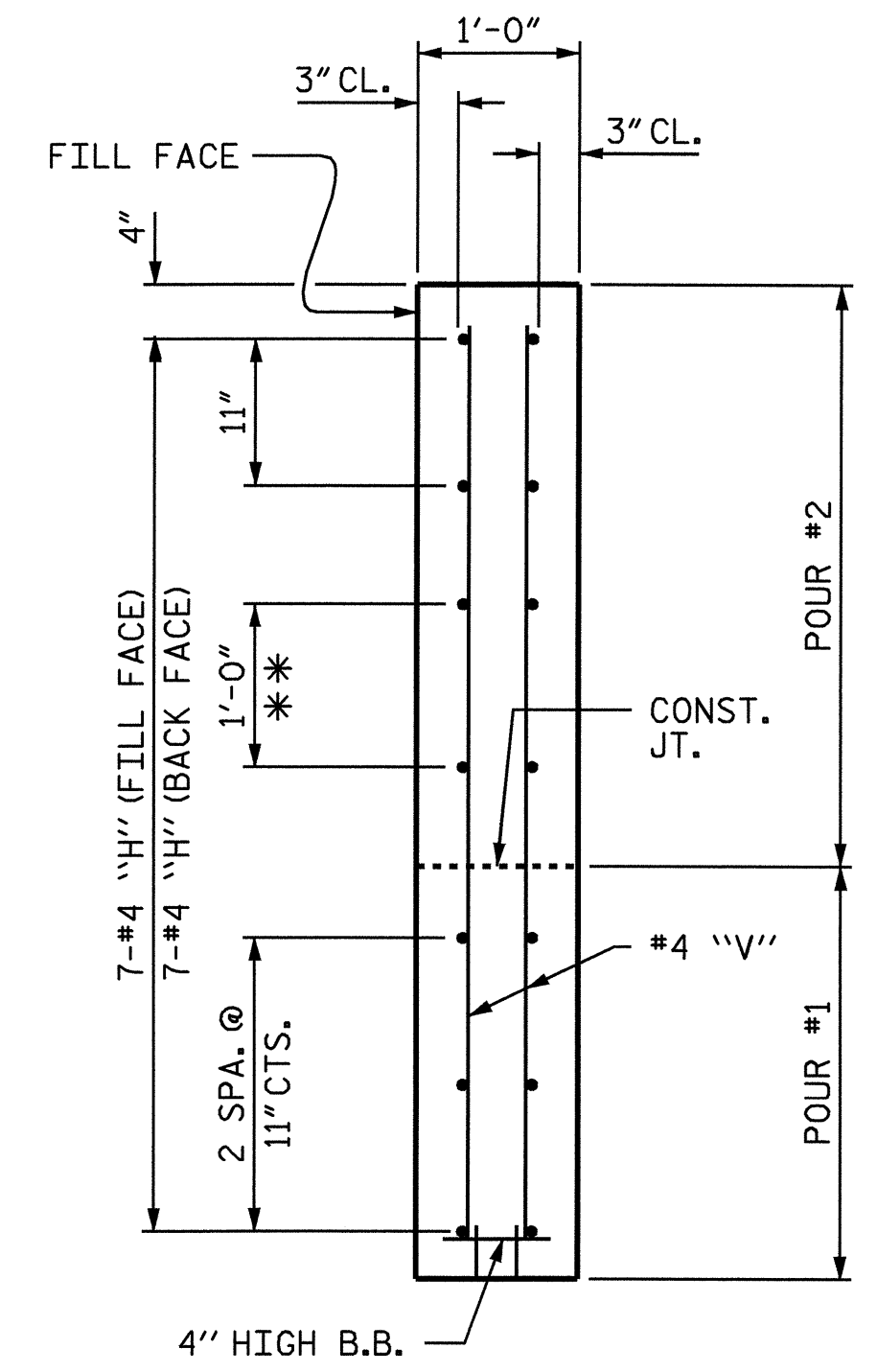
PLAN OF WING W2



ELEVATION OF WING W1



ELEVATION OF WING W2



SECTION X-X

** TO MATCH K1 BARS IN BACKWALL

DRAWN BY: B. L. GREEN DATE: 4/06
 CHECKED BY: P. C. BREWER DATE: 4/25/06

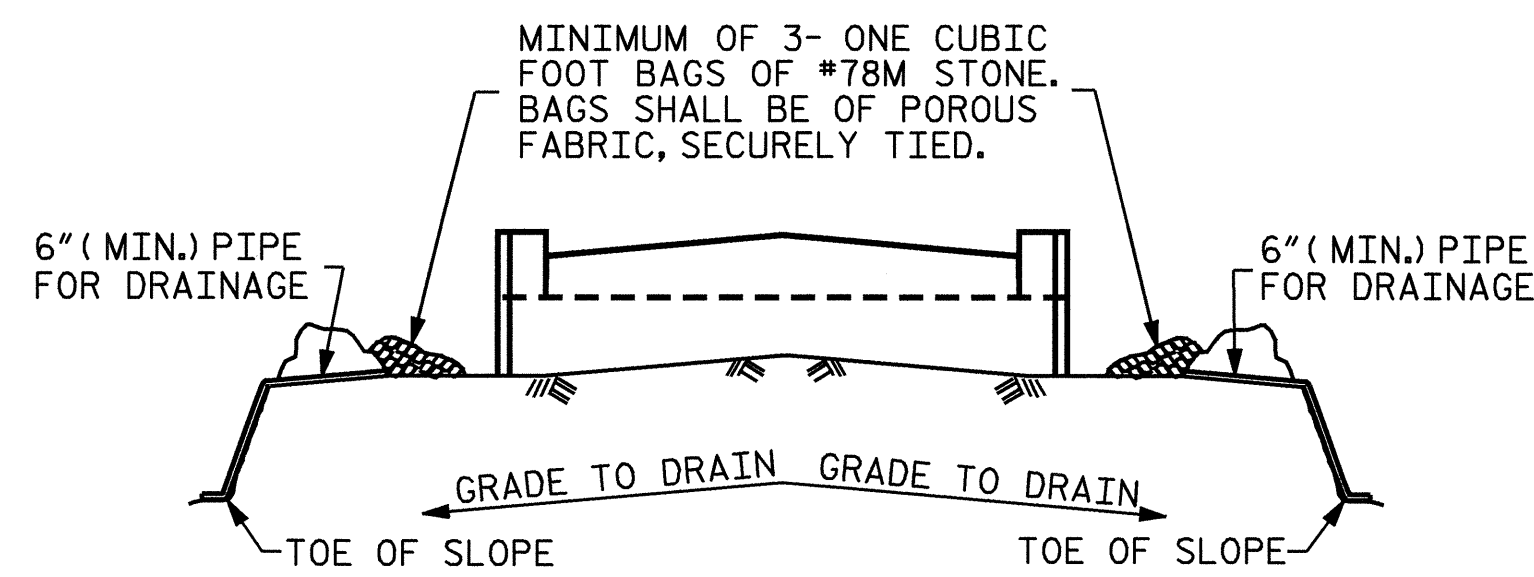
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 LSUTTON



PROJECT NO. B-4055
 CARTERET COUNTY
 STATION: 16+72.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT 2					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-17 TOTAL SHEETS 23

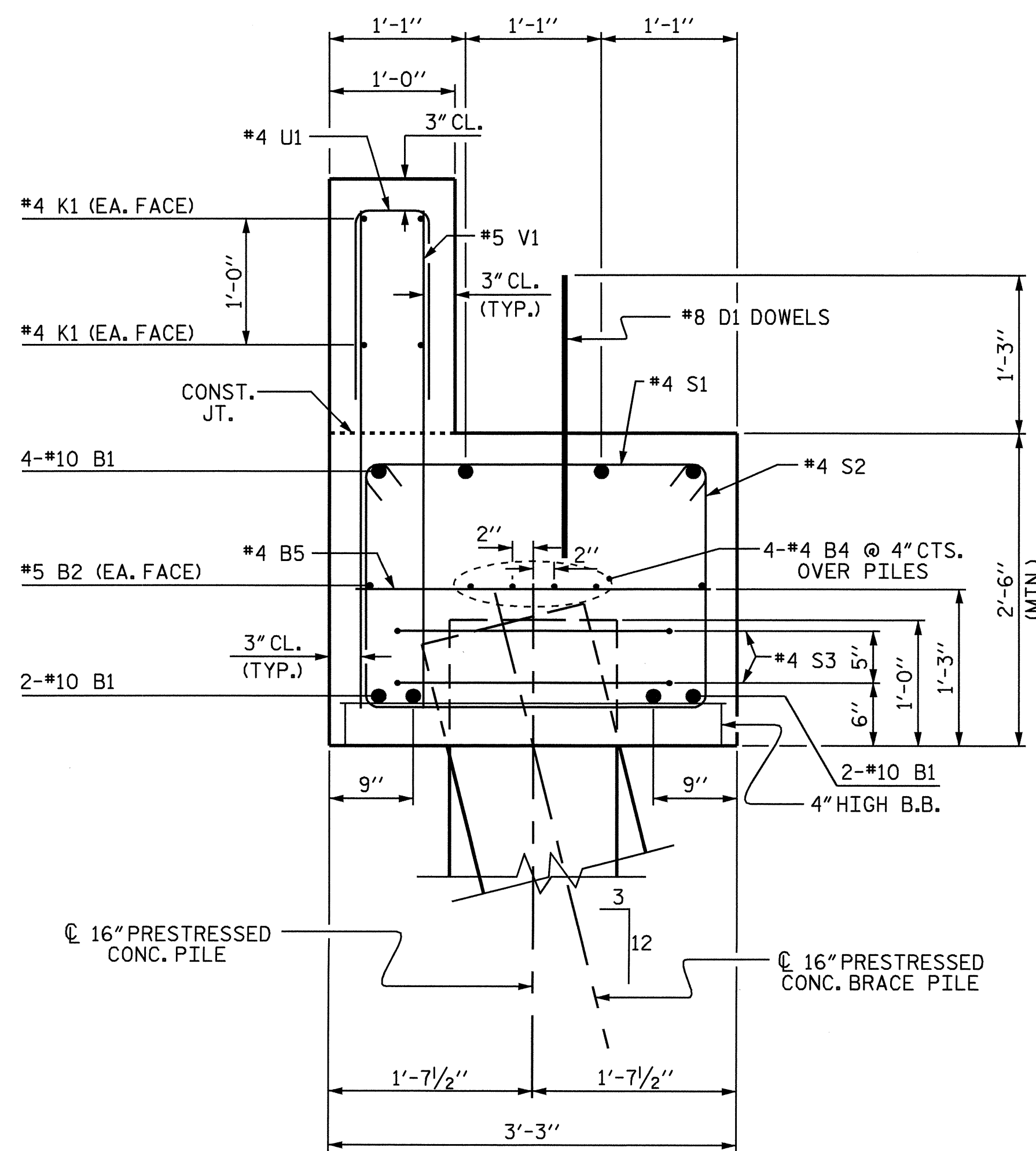


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

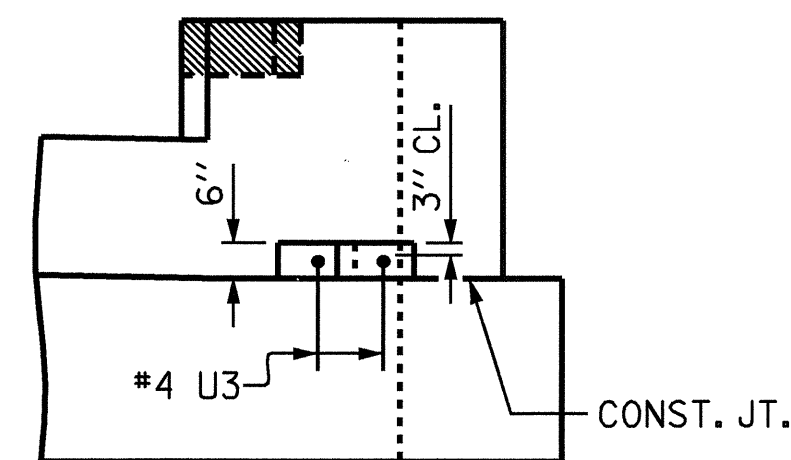
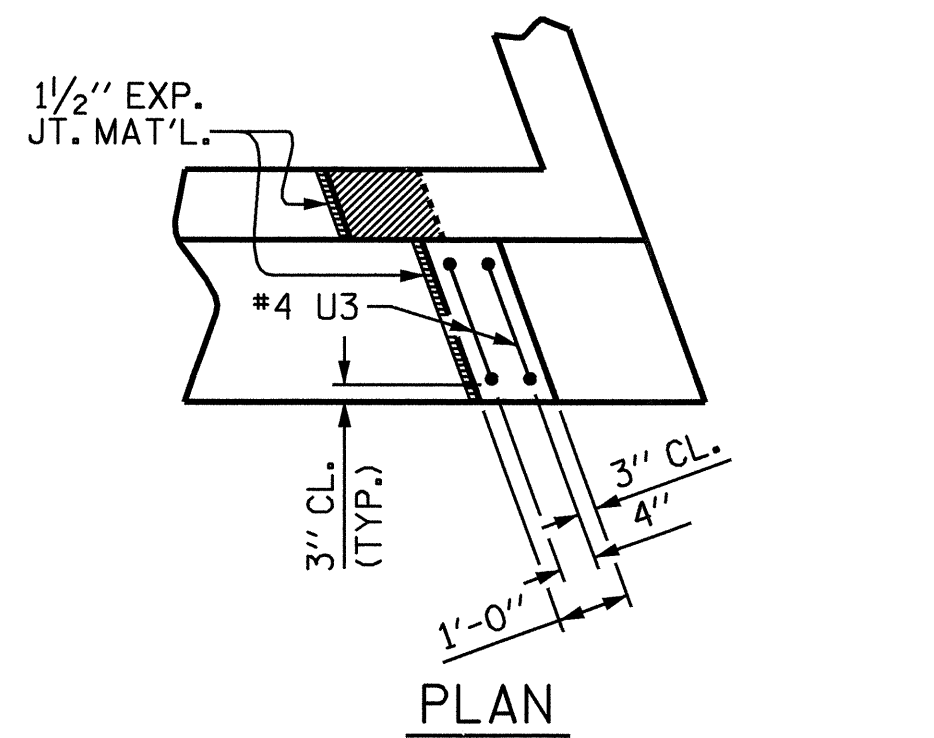
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



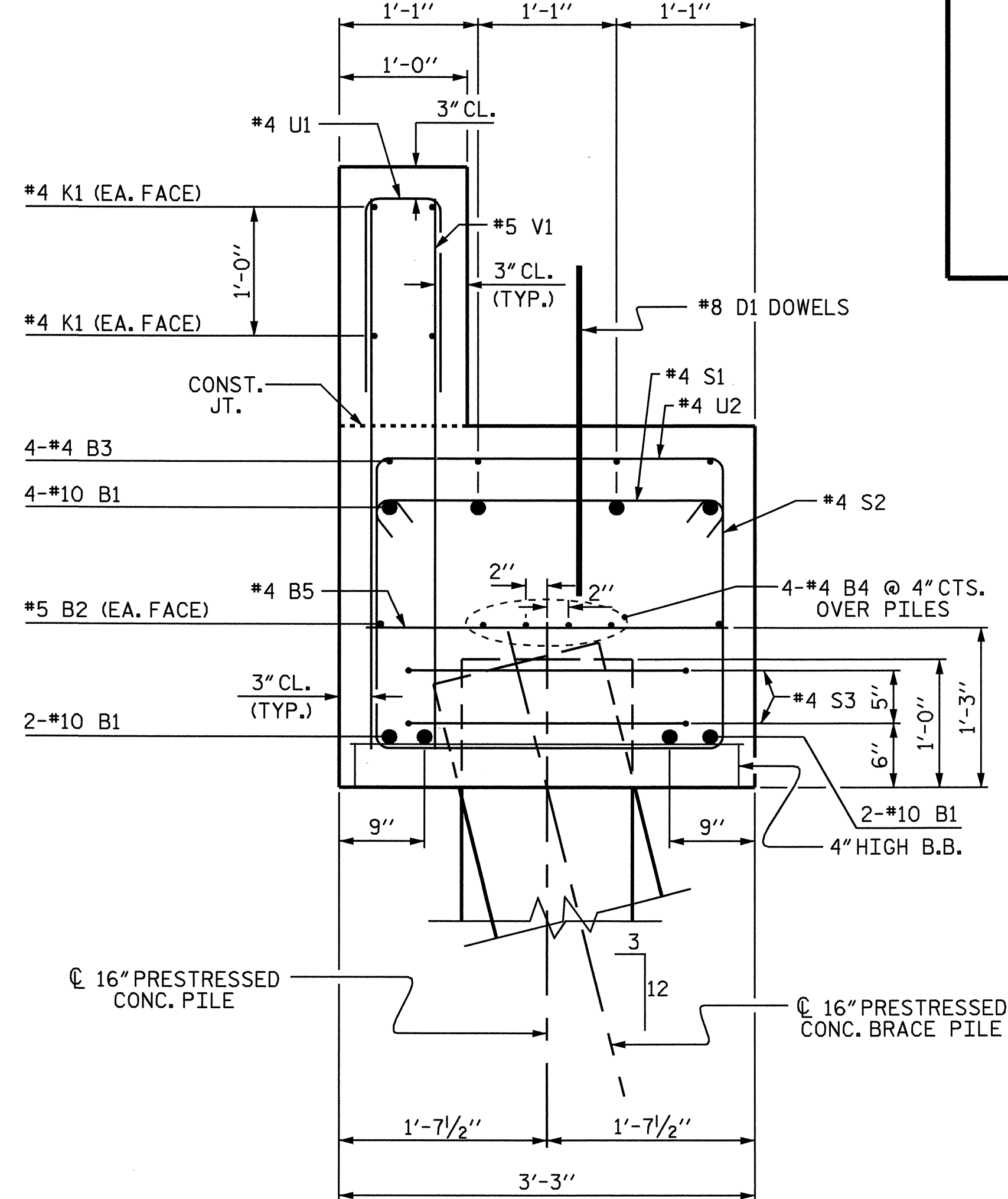
SECTION A-A

DRAWN BY: B. L. GREEN DATE: 4/06
 CHECKED BY: P. C. BREWER DATE: 4/25/06



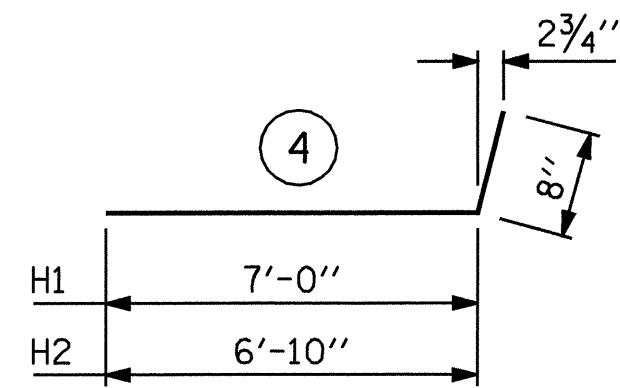
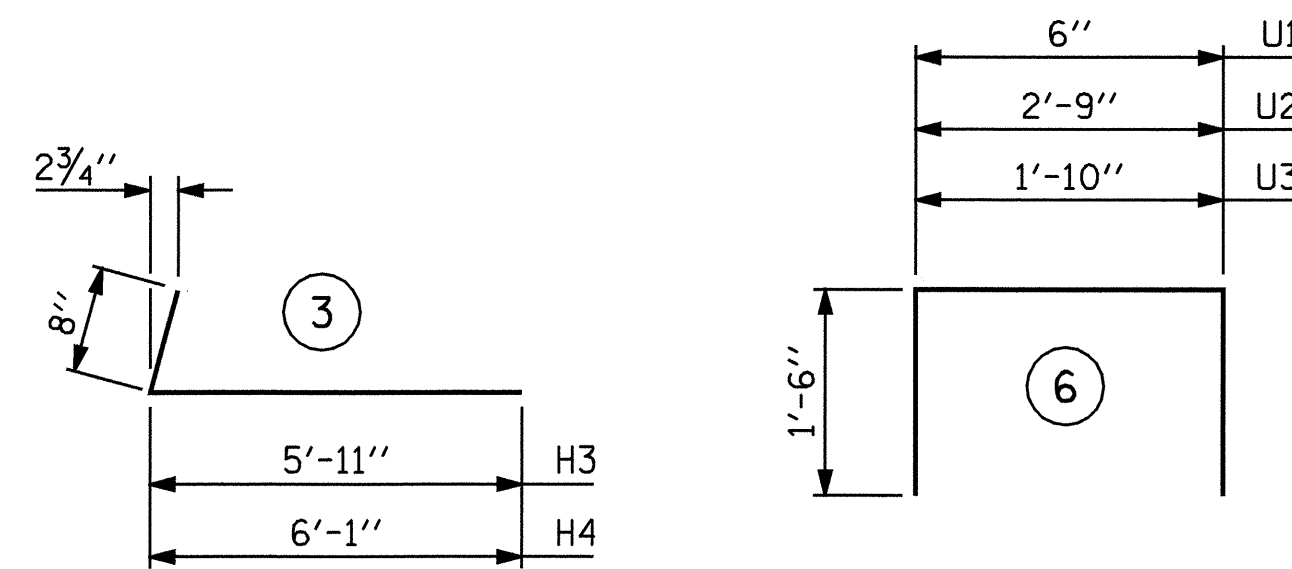
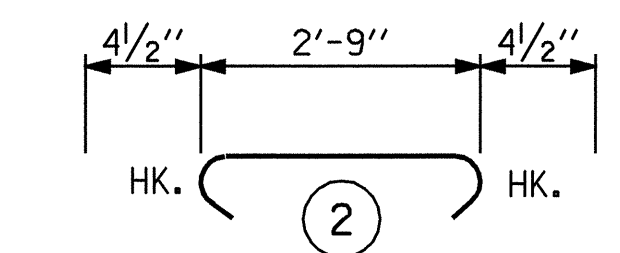
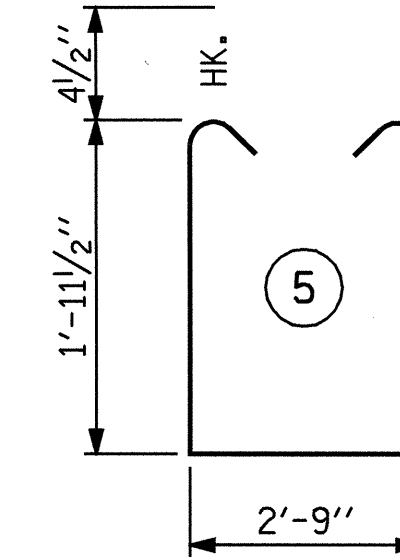
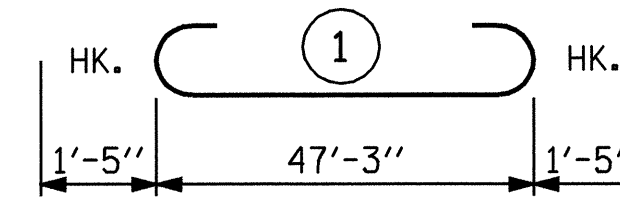
LATERAL GUIDE DETAILS

(RIGHT SIDE SHOWN, LEFT SIDE SIMILAR)



SECTION B-B

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	8	#10	1	50'-1"	1724
* B2	2	#5	STR	47'-5"	99
* B3	4	#4	STR	23'-3"	62
* B4	8	#4	STR	25'-2"	134
* B5	12	#4	STR	2'-9"	22
* D1	26	#8	STR	2'-3"	156
* H1	7	#4	4	7'-8"	36
* H2	7	#4	4	7'-6"	35
* H3	7	#4	3	6'-7"	31
* H4	7	#4	3	6'-9"	32
* H5	8	#4	STR	3'-6"	19
* K1	8	#4	STR	25'-2"	134
* S1	44	#4	2	3'-6"	103
* S2	44	#4	5	7'-5"	218
* S3	16	#4	7	8'-1"	86
* U1	40	#4	6	3'-6"	94
* U2	16	#4	6	5'-9"	61
* U3	4	#4	6	4'-10"	13
* V1	80	#5	STR	3'-10"	320
* V2	24	#4	STR	5'-7"	90
* V3	26	#4	STR	5'-6"	96

* EPOXY COATED REINFORCING STEEL LBS. 3,565

CLASS AA CONCRETE BREAKDOWN :	CU. YDS.	WEIGHT
POUR #1 - CAP & LOWER WINGS	16.1	
POUR #2 - BACKWALL & UPPER WINGS	5.5	
POUR #3 - LATERAL GUIDES	0.1	
TOTAL	21.7	

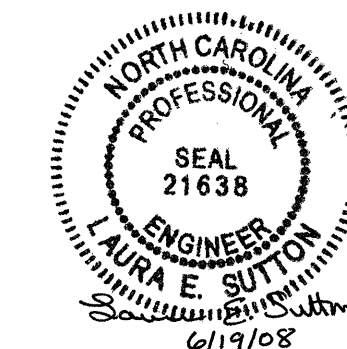
16" PRESTRESSED CONCRETE PILES NO. = 8 LIN. FT. 360

PROJECT NO. B-4055
 CARTERET COUNTY
 STATION: 16+72.00 -L-

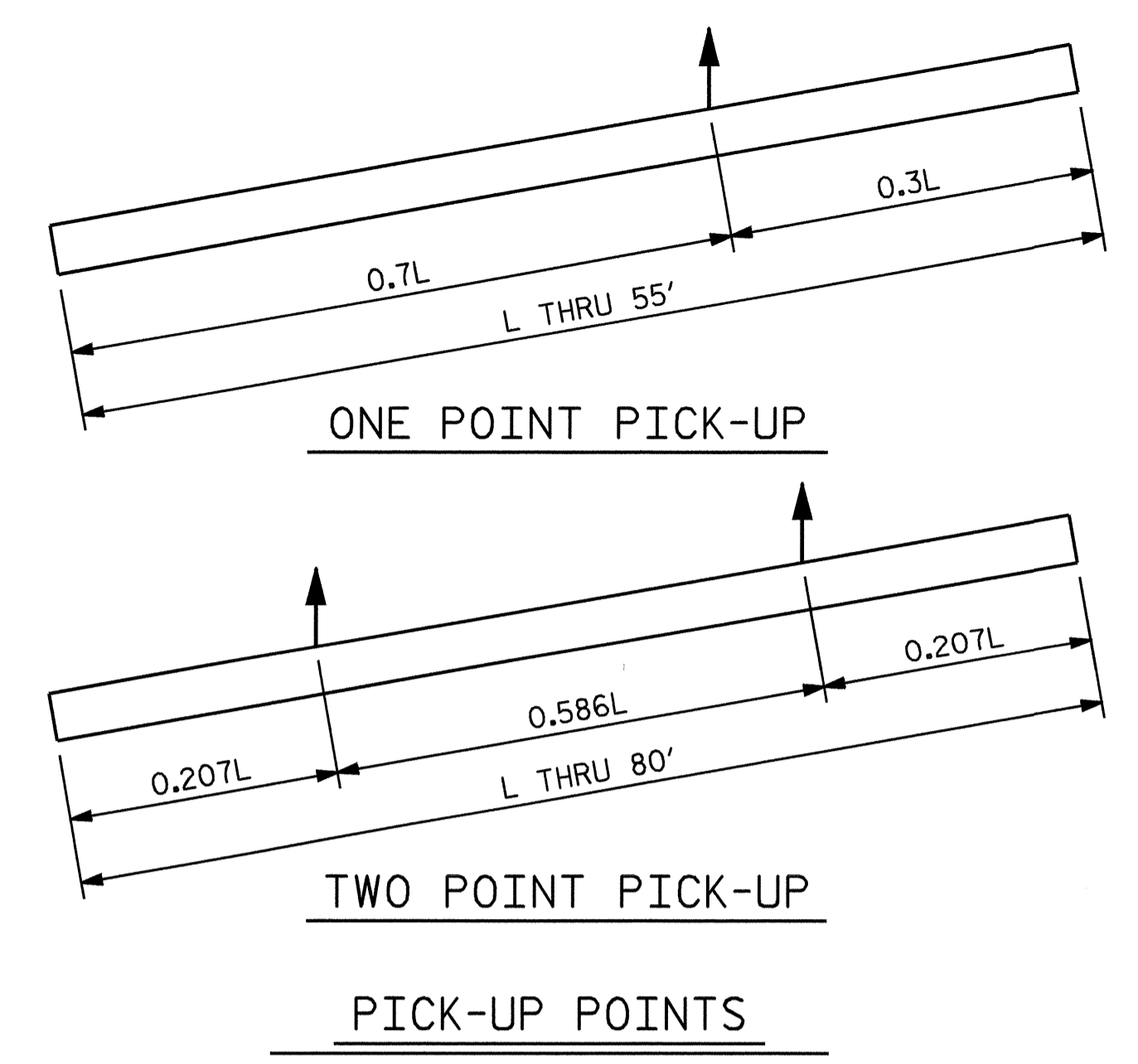
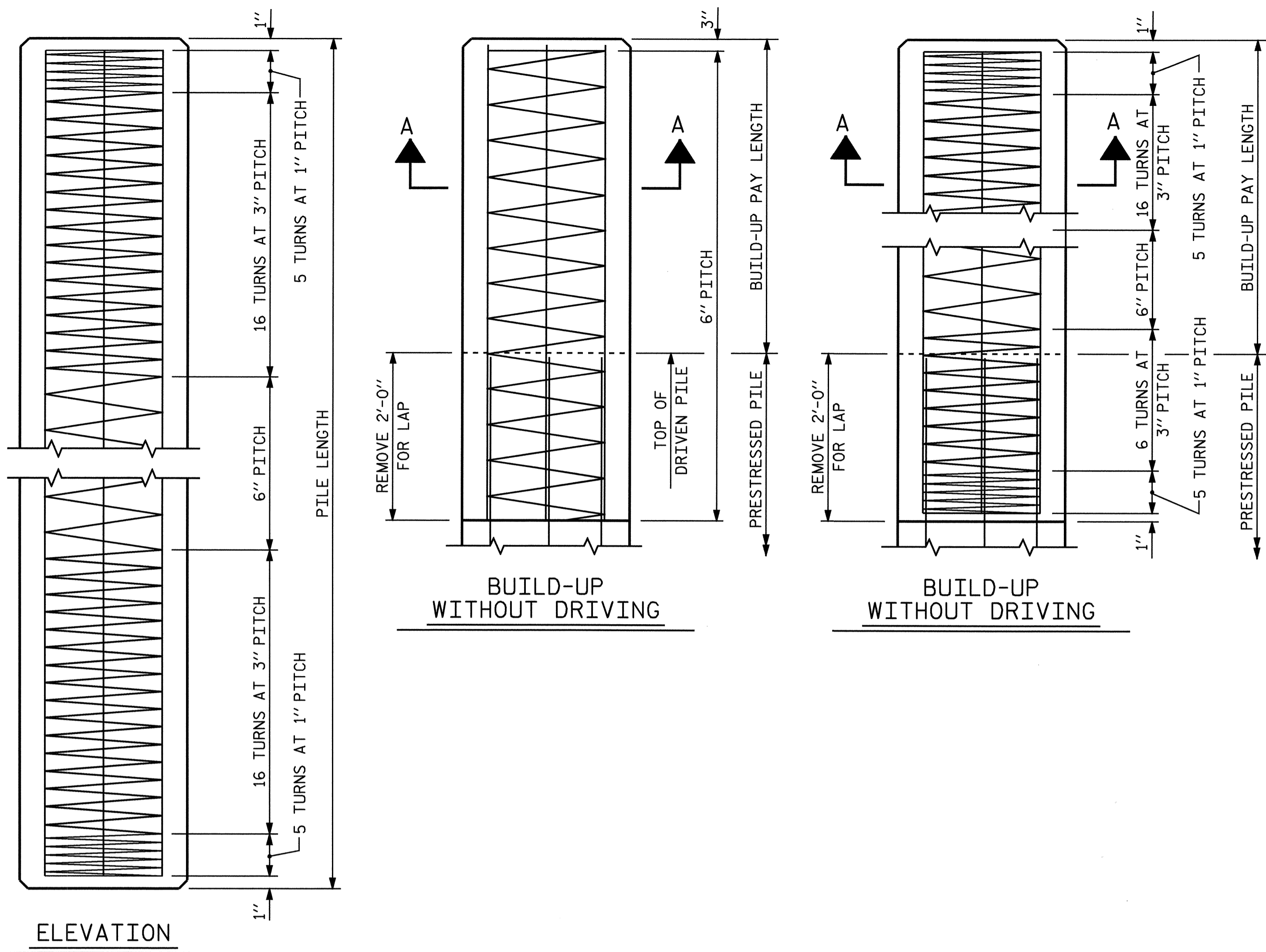
SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 2



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			23



NOTES

CONCRETE DESIGN DATA : $f'_c = 5,000$ PSI ; $f_c = 2,000$ PSI

IMPACT IN HANDLING = 50%

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE PILE SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 3500 PSI.

IN DRIVING PILES, A METHOD APPROVED BY THE ENGINEER SHALL BE USED, WHEREBY THE HEAD OF THE PILE IS NOT DAMAGED.

PROPOSED DEVICES FOR LIFTING PILES, RECESS DETAILS, AND PATCHING MATERIAL SHALL BE DETAILED IN SHOP DRAWINGS. AFTER ATTACHMENTS HAVE BEEN REMOVED, OPENINGS SHALL BE REPAIRED SUCH THAT THE APPEARANCE OF THE PILE IS UNIFORM.

WHERE CAST-IN-PLACE LIFTING DEVICES ARE NOT USED, PICK-UP POINTS TO BE INDICATED WITH A BLACK MARK 2" WIDE.

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 STANDARD SPECIFICATIONS.

THE CONTRACTOR SHALL USE THE FOLLOWING STRAND TYPE:

SIZE	GRADE	NUMBER OF STRANDS	AREA	ULTIMATE STRENGTH	APPLIED PRESTRESS FORCE
1/2"	270 L.R.	8	0.153	41,300 LBS. PER STRAND	30,980 LBS. PER STRAND

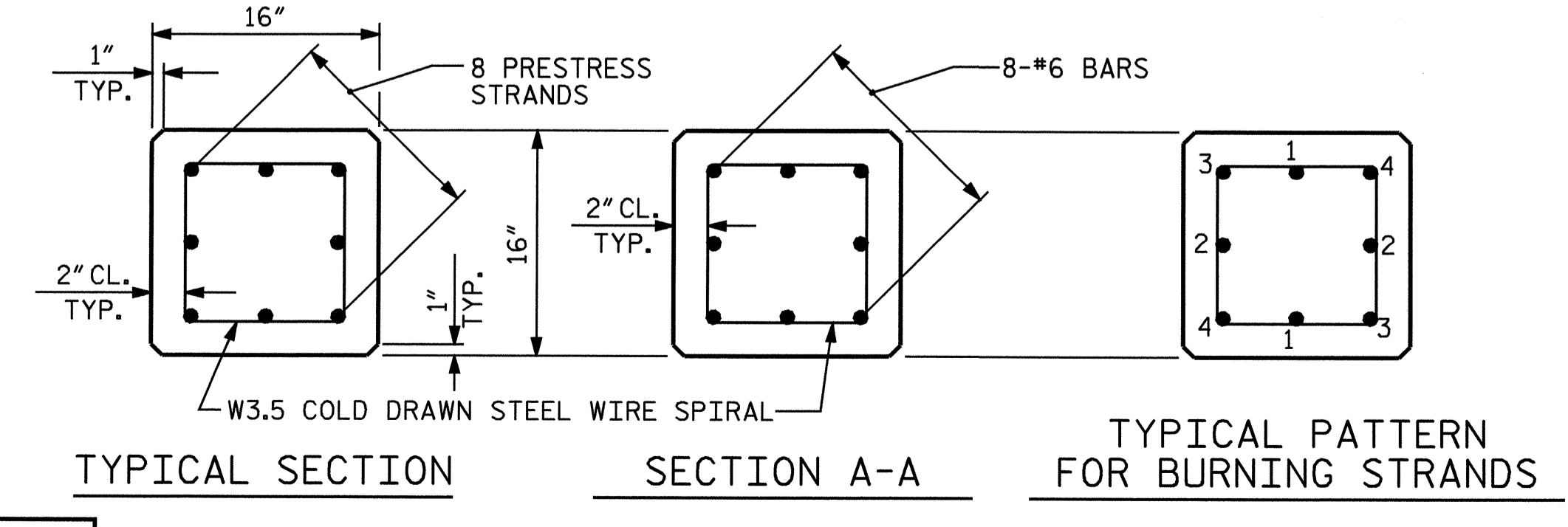
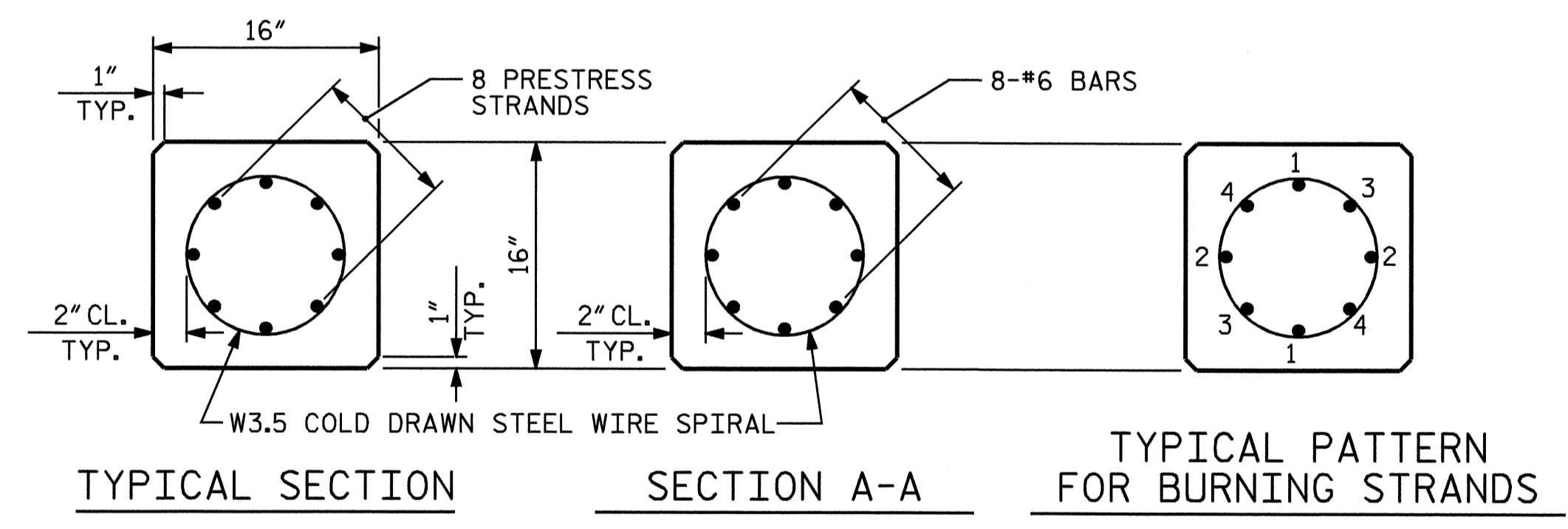
THE SLIP-FORM METHOD OF CASTING PILES WILL NOT BE PERMITTED.

IF STRAND STRESS IS RELIEVED BY BURNING, THE STRANDS SHALL BE BURNED IN OPPOSITE PAIRS AS INDICATED IN THE TYPICAL PATTERN SHOWN. FOR ANY NUMBER OF STRANDS BURN IN OPPOSITE PAIRS AND SYMMETRICAL ABOUT BOTH VERTICAL AND HORIZONTAL AXES, STRANDS 1-1 SHALL BE BURNED BEFORE 2-2, ETC. NOT MORE THAN 4 STRANDS, SAY 3-3 AND 4-4, MAY BE BURNED AT ANY ONE SECTION BEFORE THESE SAME PAIRS OF STRANDS ARE BURNED AT BOTH ENDS OF THE BED AND BETWEEN EACH PAIR OF PILES IN THE BED.

BUILD-UPS SHALL BE OF CLASS AA CONCRETE WITH 20% ADDITIONAL CEMENT. NO DRIVING OF THE BUILD-UP PILE WILL BE PERMITTED UNTIL THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF 4,500 PSI AND UNTIL A PERIOD OF SEVEN DAYS HAS ELAPSED SINCE CASTING OF THE BUILD-UP.

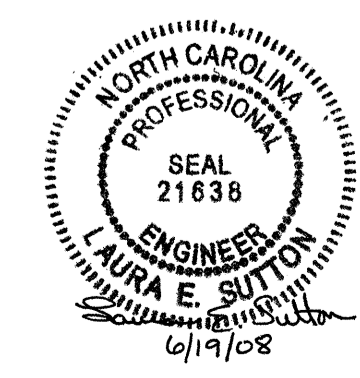
THE WATER/CEMENT RATIO FOR CONCRETE PILES SHALL NOT EXCEED 0.40.

PRESTRESSED CONCRETE PILES SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR.



LENGTH	CONCRETE CU. YDS.	PILE WT. TONS	ONE PICK-UP POINTS		TWO PICK-UP POINTS	
			0.3L	0.7L	0.207L	0.586L
25'-0"	1.63	3.31	7'-6"	17'-6"	5'-2"	14'-8"
30'-0"	1.96	3.97	9'-0"	21'-0"	6'-2 1/2"	17'-7"
35'-0"	2.29	4.63	10'-6"	24'-6"	7'-3"	20'-6"
40'-0"	2.61	5.29	12'-0"	28'-0"	8'-3 1/2"	23'-5"
45'-0"	2.94	5.95	13'-6"	31'-6"	9'-4"	26'-4"
50'-0"	3.27	6.61	15'-0"	35'-0"	10'-4"	29'-4"
55'-0"	3.59	7.28	16'-6"	38'-6"	11'-4 1/2"	32'-3"
60'-0"	3.92	7.94			12'-5"	35'-2"
65'-0"	4.25	8.60			13'-5 1/2"	38'-1"
70'-0"	4.57	9.26			14'-6"	41'-0"
75'-0"	4.90	9.92			15'-6 1/2"	43'-11"
80'-0"	5.23	10.58			16'-7"	46'-10"

PROJECT NO. B-4055
CARTERET COUNTY
 STATION: 16+72.00 -L-



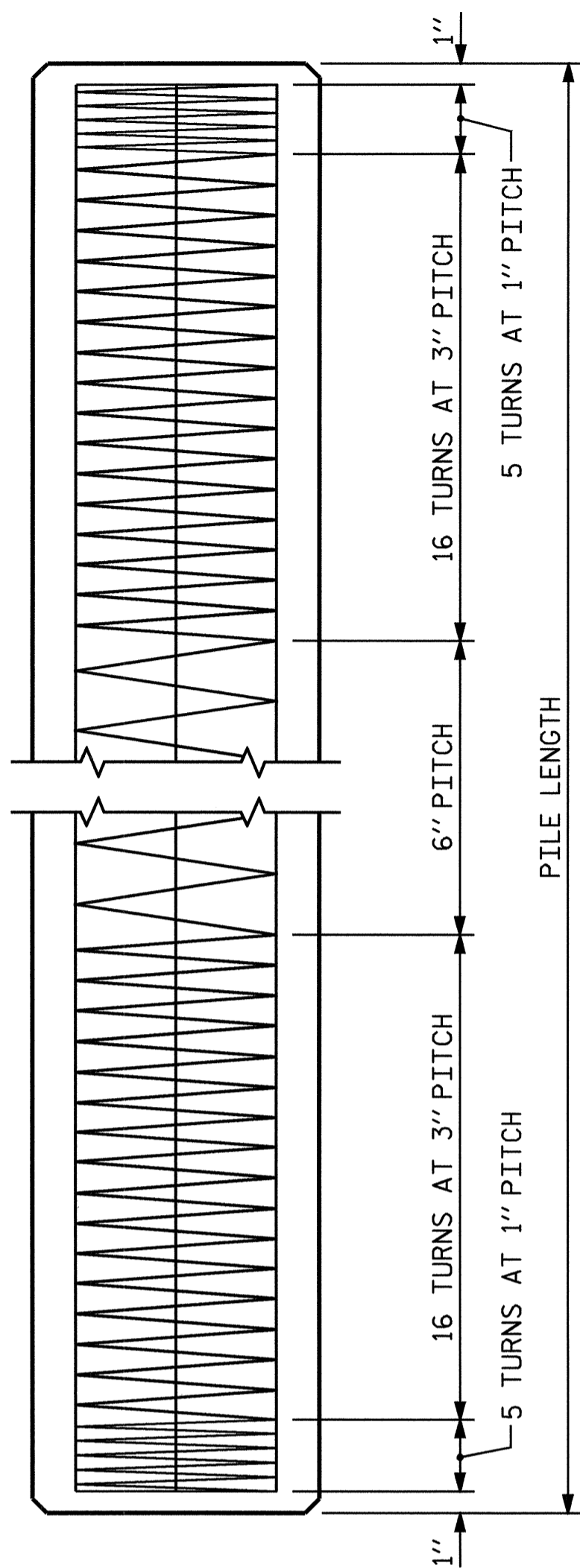
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
 16" PRESTRESSED
 CONCRETE PILE

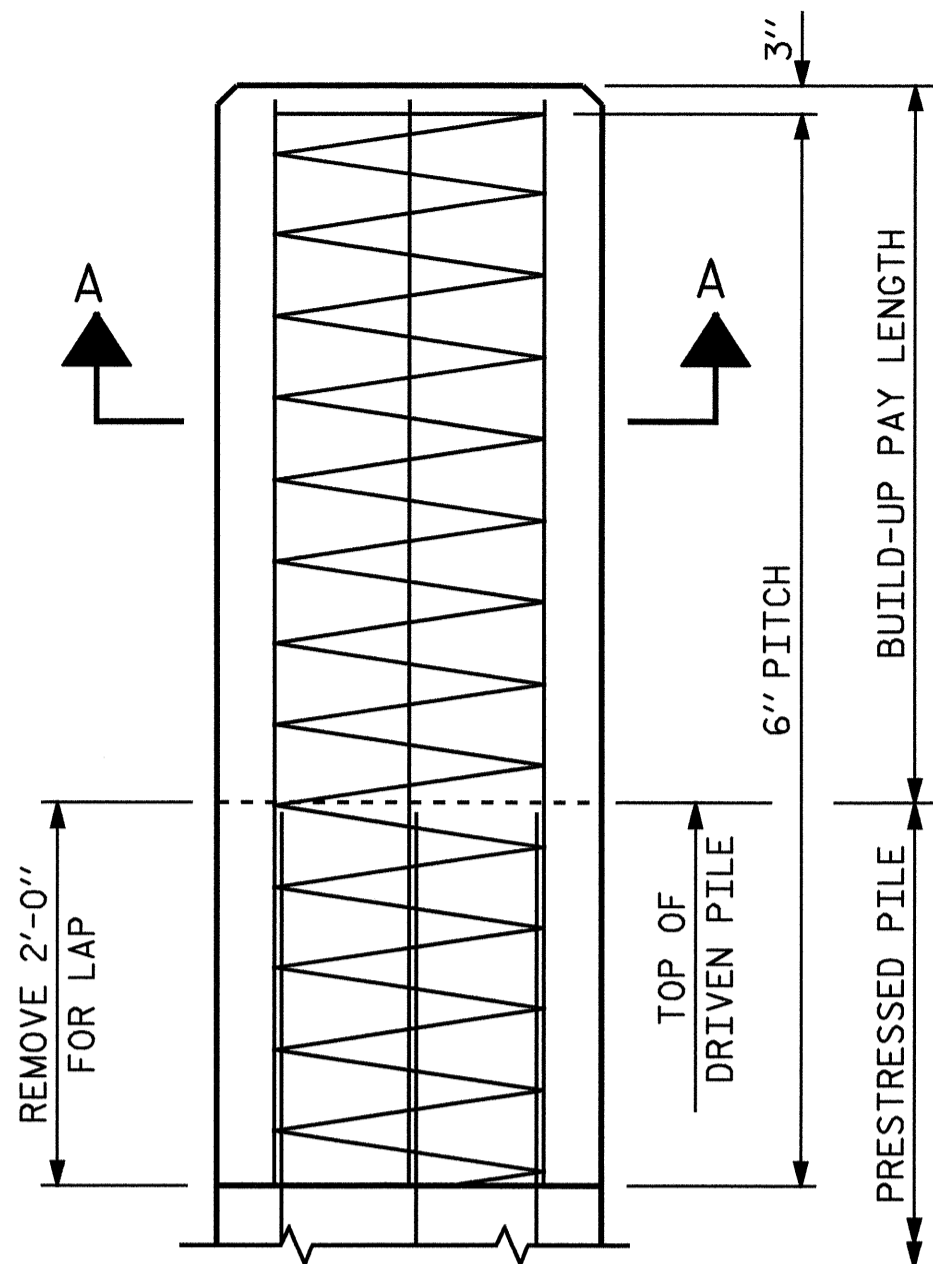
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-19
2			4			TOTAL SHEETS 23

ASSEMBLED BY : B. L. GREEN DATE : 4/06
 CHECKED BY : P. C. BREWER DATE : 4/26/06
 DRAWN BY : RH 9/98
 CHECKED BY : LES 10/98

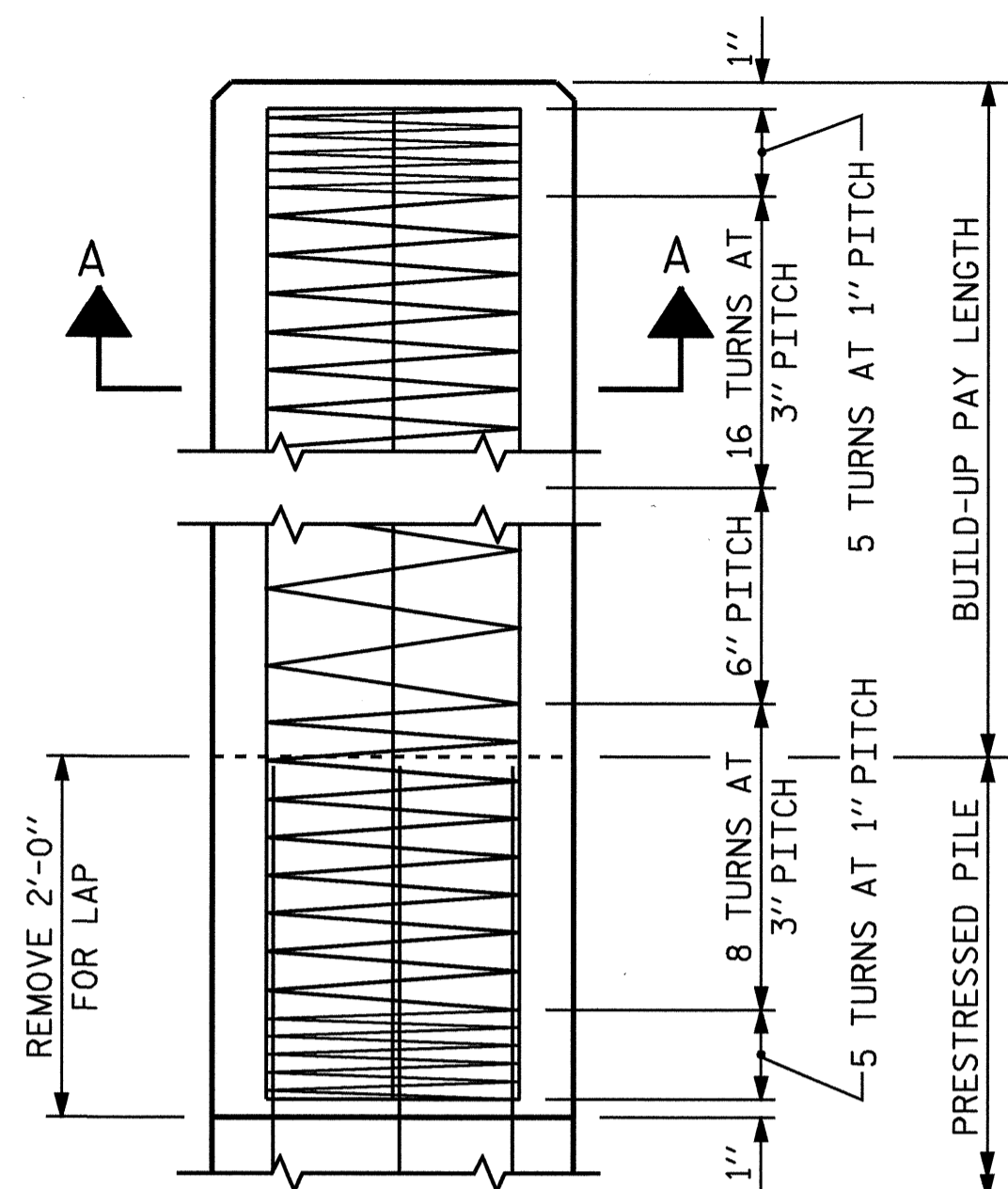
ADDED 12/2/98
 REV. 8/16/99RR RWW/LES
 REV. 5/1/06 TLA/GM



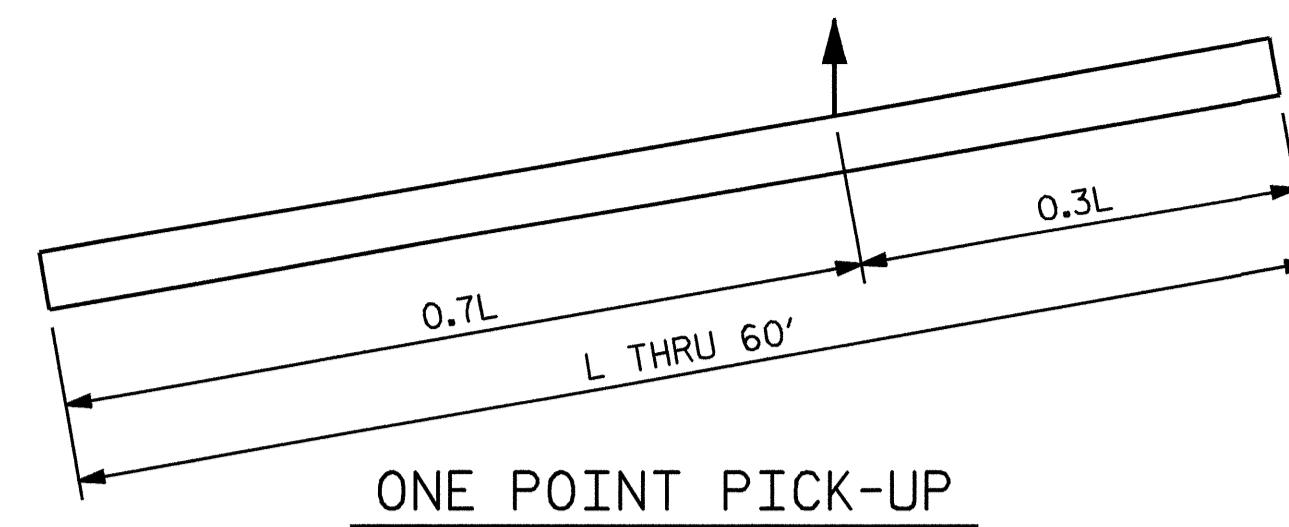
ELEVATION



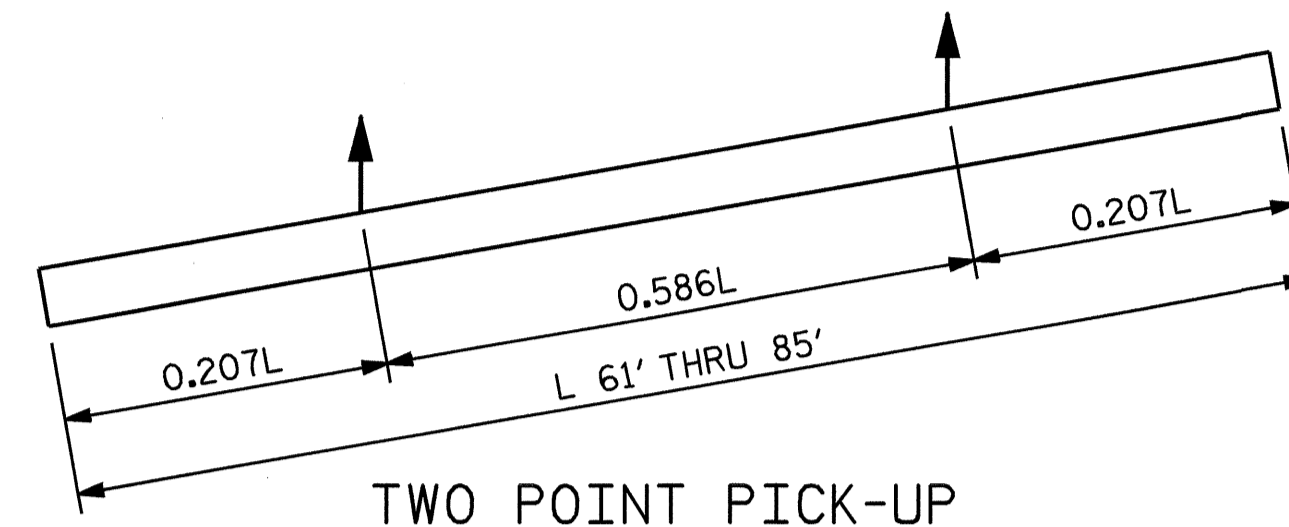
BUILD-UP WITHOUT DRIVING



BUILD-UP WITHOUT DRIVING



ONE POINT PICK-UP



TWO POINT PICK-UP

PICK-UP POINTS

NOTES

CONCRETE DESIGN DATA : $f'_c = 5,000$ PSI ; $f_c = 2,000$ PSI

IMPACT IN HANDLING = 50%

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE PILE SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 3500 PSI.

IN DRIVING PILES, A METHOD APPROVED BY THE ENGINEER SHALL BE USED, WHEREBY THE HEAD OF THE PILE IS NOT DAMAGED.

PROPOSED DEVICES FOR LIFTING PILES, RECESS DETAILS, AND PATCHING MATERIAL SHALL BE DETAILED IN SHOP DRAWINGS. AFTER ATTACHMENTS HAVE BEEN REMOVED, OPENINGS SHALL BE REPAIRED SUCH THAT THE APPEARANCE OF THE PILE IS UNIFORM.

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 STANDARD SPECIFICATIONS.

THE CONTRACTOR SHALL USE THE FOLLOWING STRAND TYPE:

SIZE	GRADE	NUMBER OF STRANDS	AREA	ULTIMATE STRENGTH	APPLIED PRESTRESS FORCE
1/2"	270 L.R.	12	0.153	41,300 LBS. PER STRAND	30,980 LBS. PER STRAND

STRANDS SHALL BE EQUALLY SPACED AS SHOWN IN THE "TYPICAL SECTION".

A CIRCULAR STRAND PATTERN SHALL NOT BE PERMITTED.

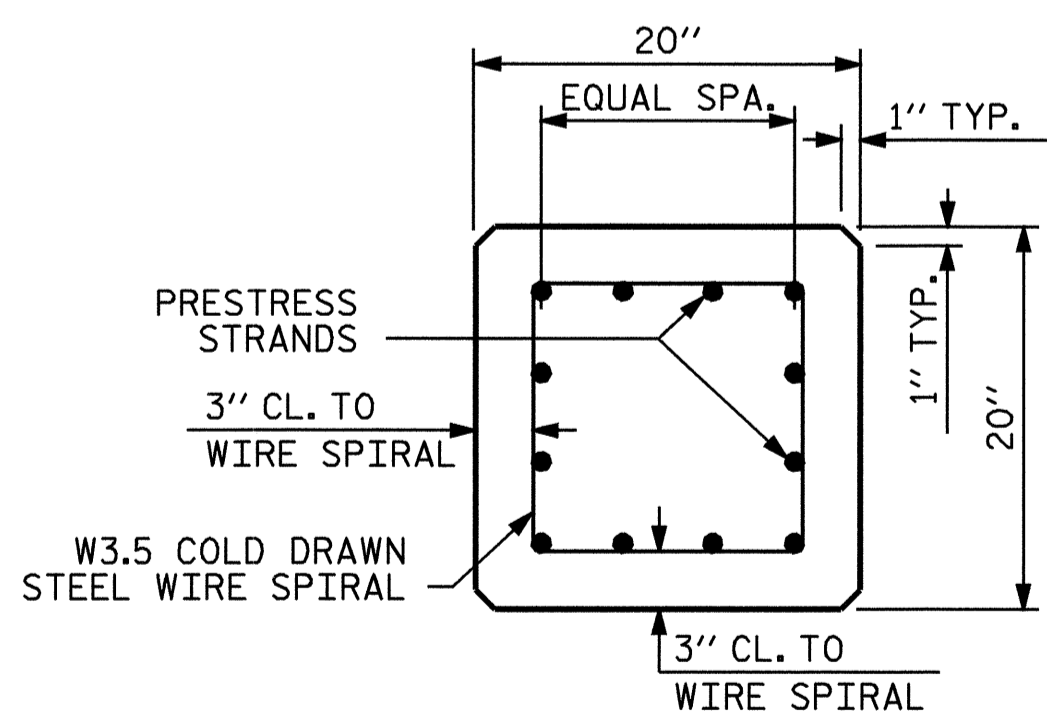
THE SLIP-FORM METHOD OF CASTING PILES WILL NOT BE PERMITTED.

IF STRAND STRESS IS RELIEVED BY BURNING, THE STRANDS SHALL BE BURNED IN OPPOSITE PAIRS AS INDICATED IN THE TYPICAL PATTERN SHOWN. FOR ANY NUMBER OF STRANDS BURN IN OPPOSITE PAIRS AND SYMMETRICAL ABOUT BOTH VERTICAL AND HORIZONTAL AXES, STRANDS 1-1 SHALL BE BURNED BEFORE 2-2, ETC. NOT MORE THAN 4 STRANDS, SAY 5-5 AND 6-6, MAY BE BURNED AT ANY ONE SECTION BEFORE THESE SAME PAIRS OF STRANDS ARE BURNED AT BOTH ENDS OF THE BED AND BETWEEN EACH PAIR OF PILES IN THE BED.

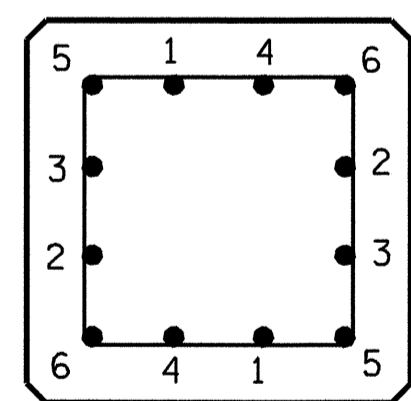
BUILD-UPS SHALL BE OF CLASS AA CONCRETE WITH 20% ADDITIONAL CEMENT. NO DRIVING OF THE BUILT-UP PILE WILL BE PERMITTED UNTIL THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF 4,500 PSI AND UNTIL A PERIOD OF SEVEN DAYS HAS ELAPSED SINCE CASTING OF THE BUILD-UP.

THE WATER/CEMENT RATIO FOR CONCRETE PILES SHALL NOT EXCEED 0.40.

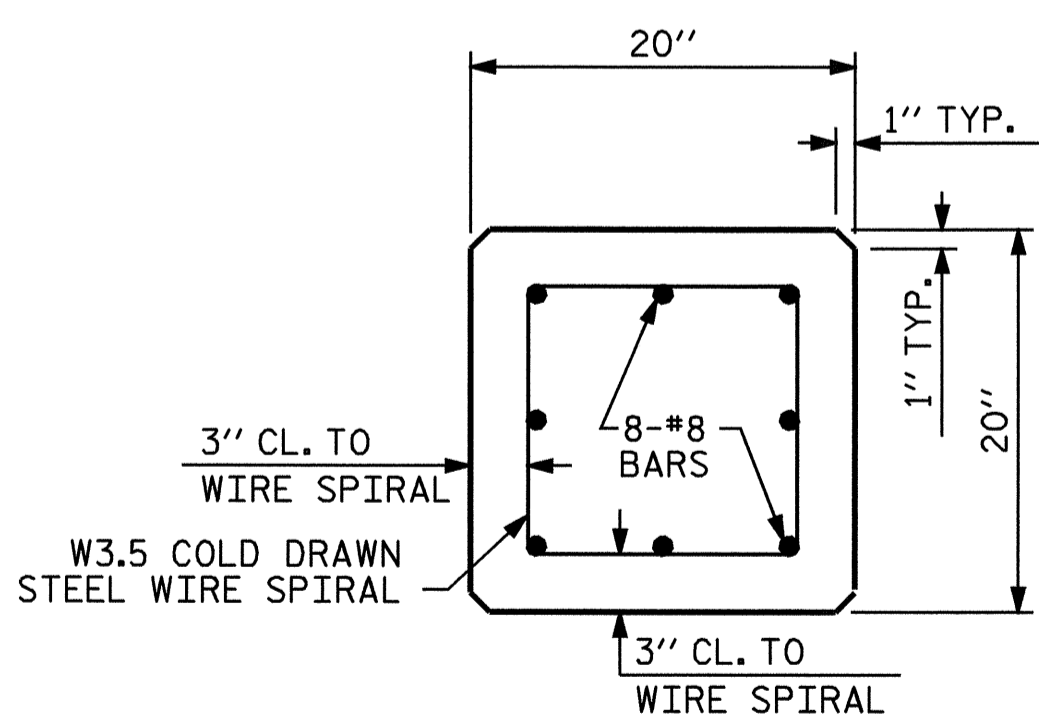
PRESTRESSED CONCRETE PILES SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR.



TYPICAL SECTION



TYPICAL PATTERN FOR BURNING STRANDS



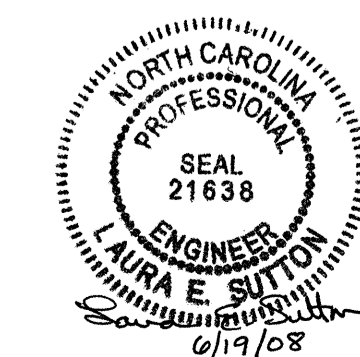
SECTION A-A

QUANTITIES FOR ONE 20" SQUARE PILE

LENGTH	CONCRETE CU. YDS.	PILE WT. TONS	ONE PICK-UP POINTS		TWO PICK-UP POINTS	
			0.3L	0.7L	0.207L	0.586L
25'-0"	2.56	5.18	7'-6"	17'-6"		
30'-0"	3.07	6.22	9'-0"	21'-0"		
35'-0"	3.58	7.26	10'-6"	24'-6"		
40'-0"	4.09	8.29	12'-0"	28'-0"		
45'-0"	4.61	9.33	13'-6"	31'-6"		
50'-0"	5.12	10.36	15'-0"	35'-0"		
55'-0"	5.63	11.40	16'-6"	38'-6"		
60'-0"	6.14	12.44	18'-0"	42'-0"		
65'-0"	6.65	13.47			13'-5 1/2"	38'-1"
70'-0"	7.17	14.51			14'-6"	41'-0"
75'-0"	7.68	15.55			15'-6 1/2"	43'-11"
80'-0"	8.19	16.58			16'-6 1/2"	46'-11"
85'-0"	8.70	17.62			17'-7"	49'-10"

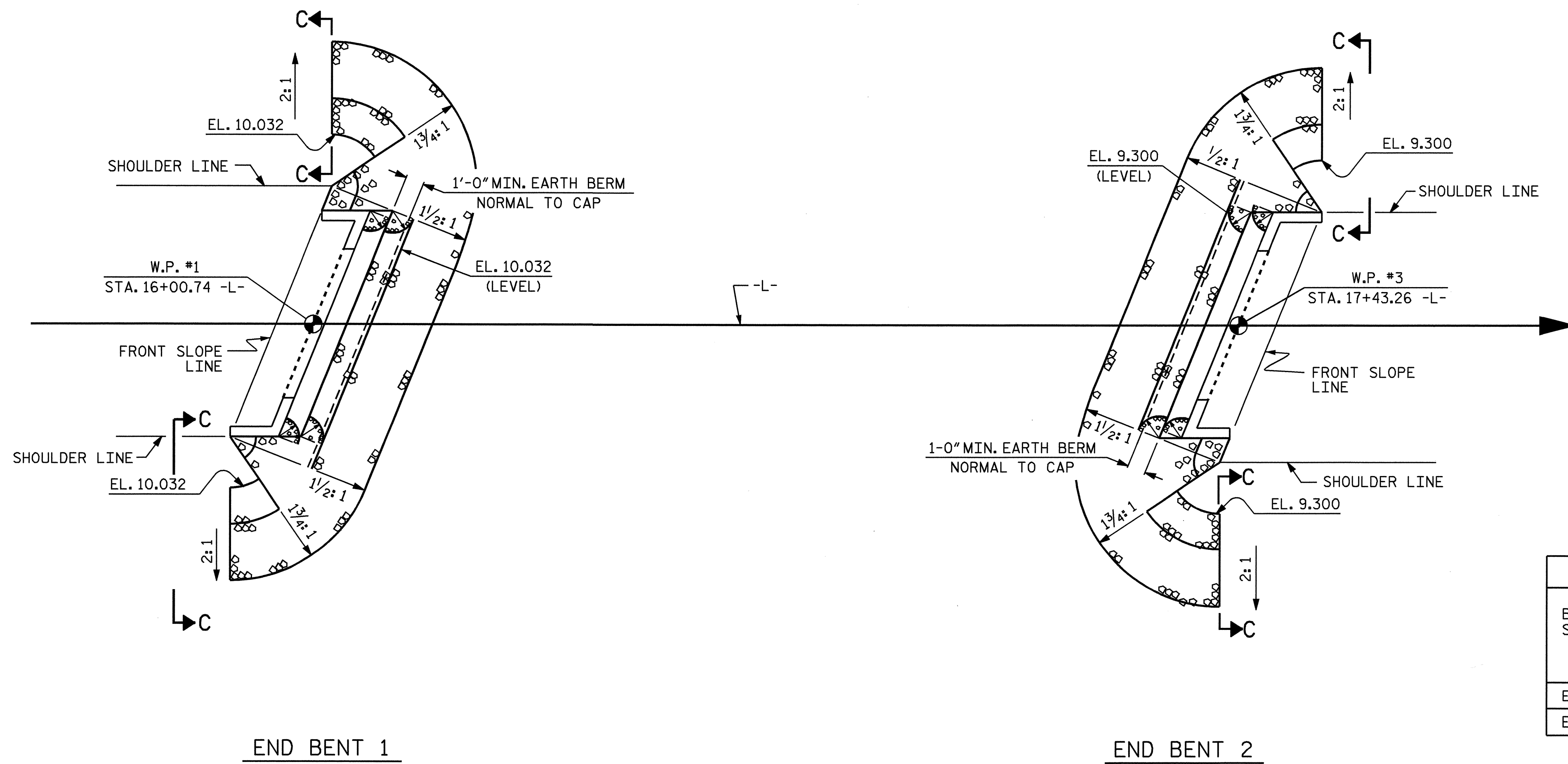
PROJECT NO. B-4055
CARTERET COUNTY
 STATION: 16+72.00 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 20" PRESTRESSED
 CONCRETE PILE

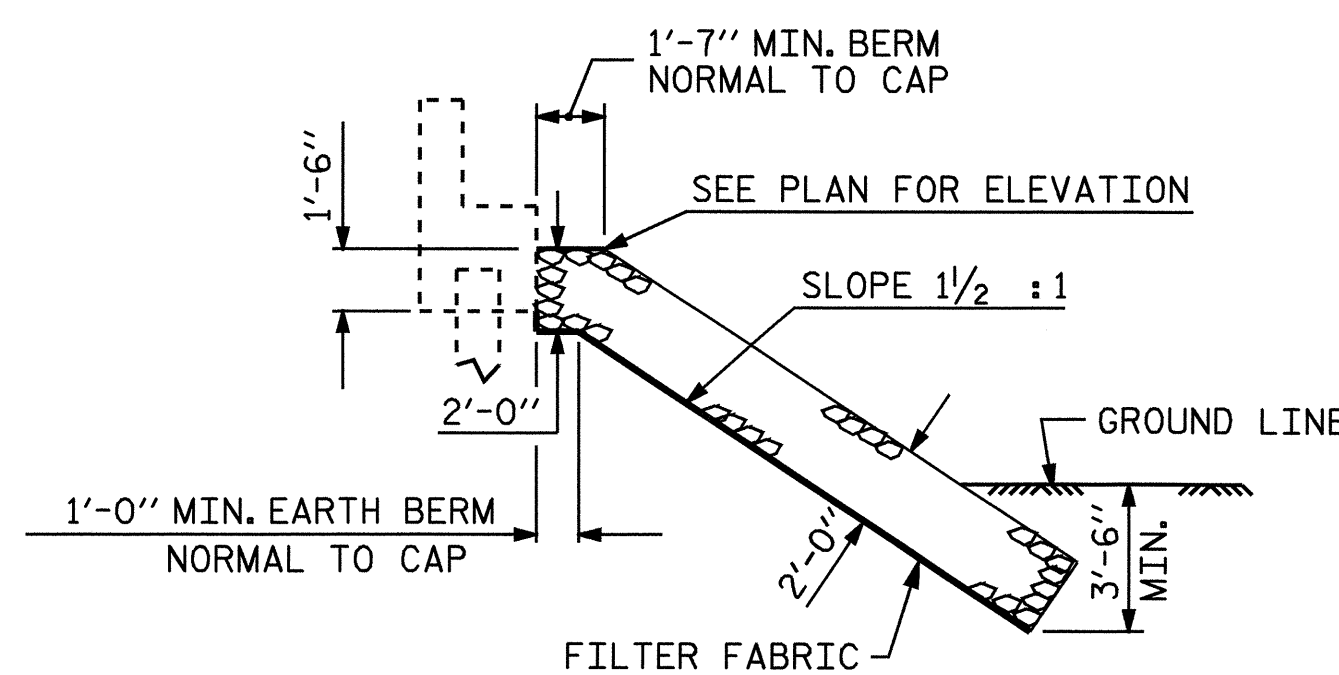


ASSEMBLED BY : E.C. LOCKLEAR DATE : 4-24-06
 CHECKED BY : P.C. BREWER DATE : 4-27-06
 DRAWN BY : WJH 1/89 REV. 6/1/94 EEM/GRP
 CHECKED BY : CRK 3/89 REV. 8/16/99R RAL/LES
 REV. 5/1/06 TLA/GM

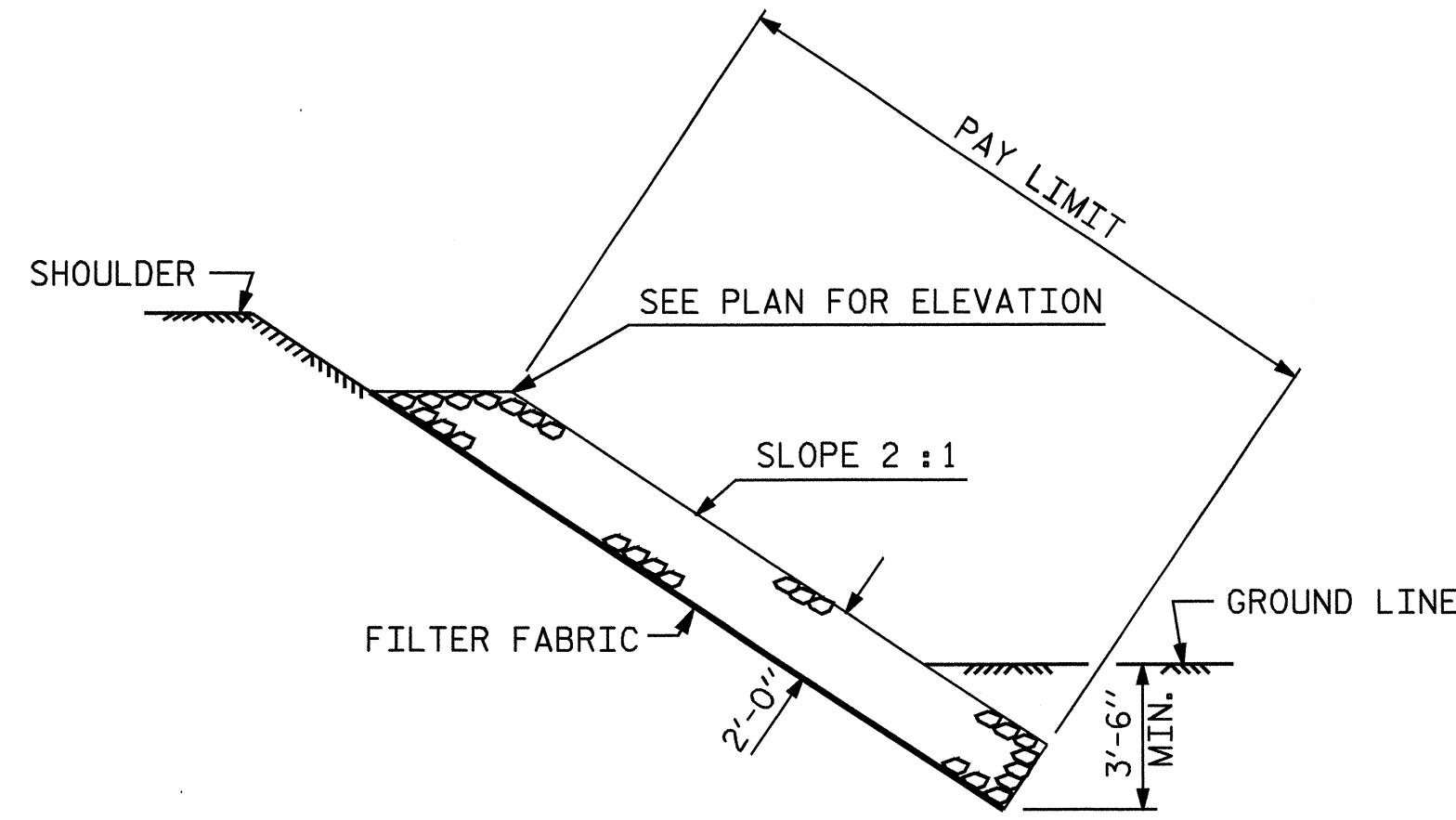
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS
2			4			23



ESTIMATED QUANTITIES		
BRIDGE @ STA. 16+72.00 -L-	RIP RAP CLASS I	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	80	89
END BENT 2	125	138

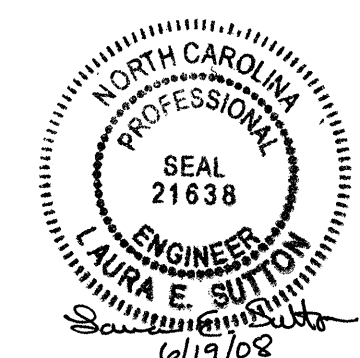


SECTION Q-Q
BERM RIP RAPPED



SECTION C-C

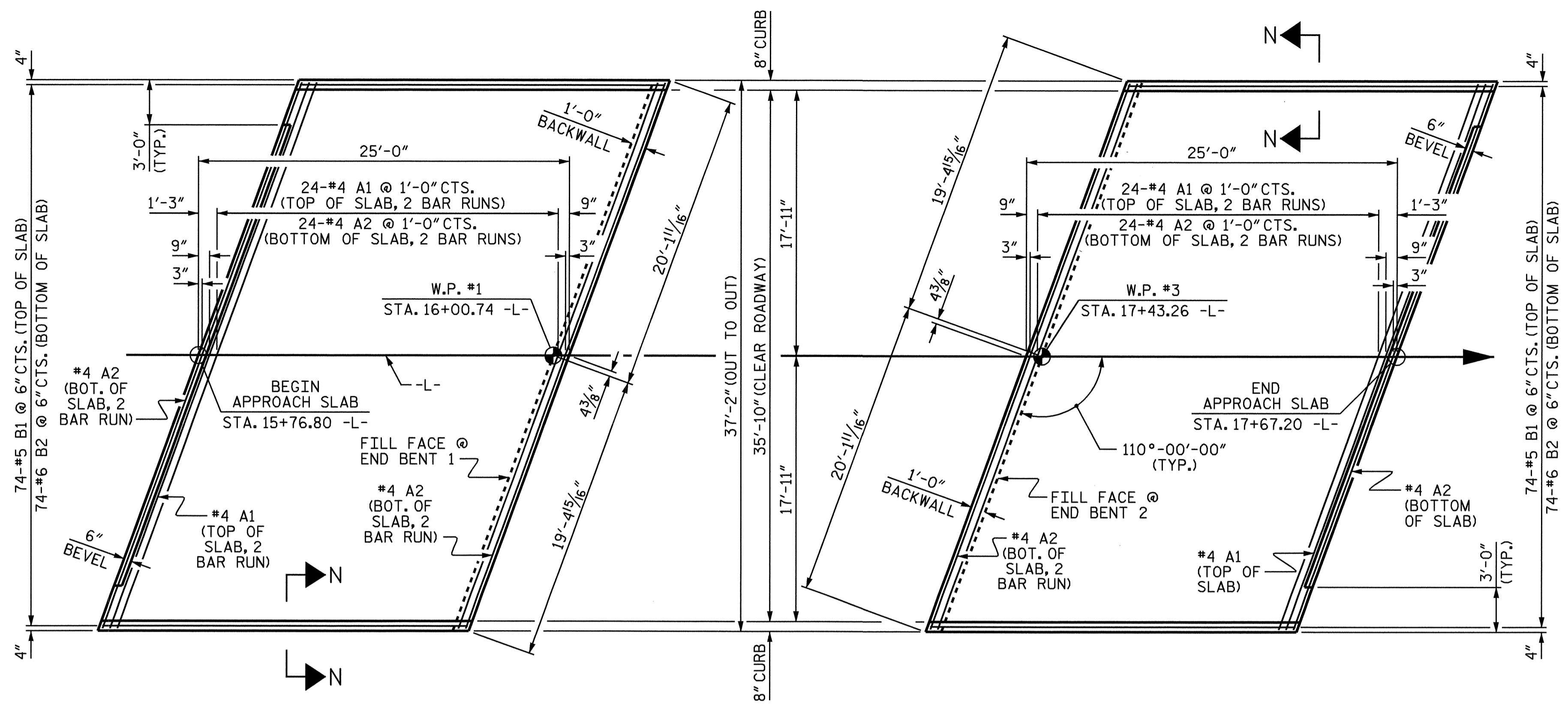
PROJECT NO. B-4055
CARTERET COUNTY
 STATION: 16+72.00 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 RIP RAP DETAILS

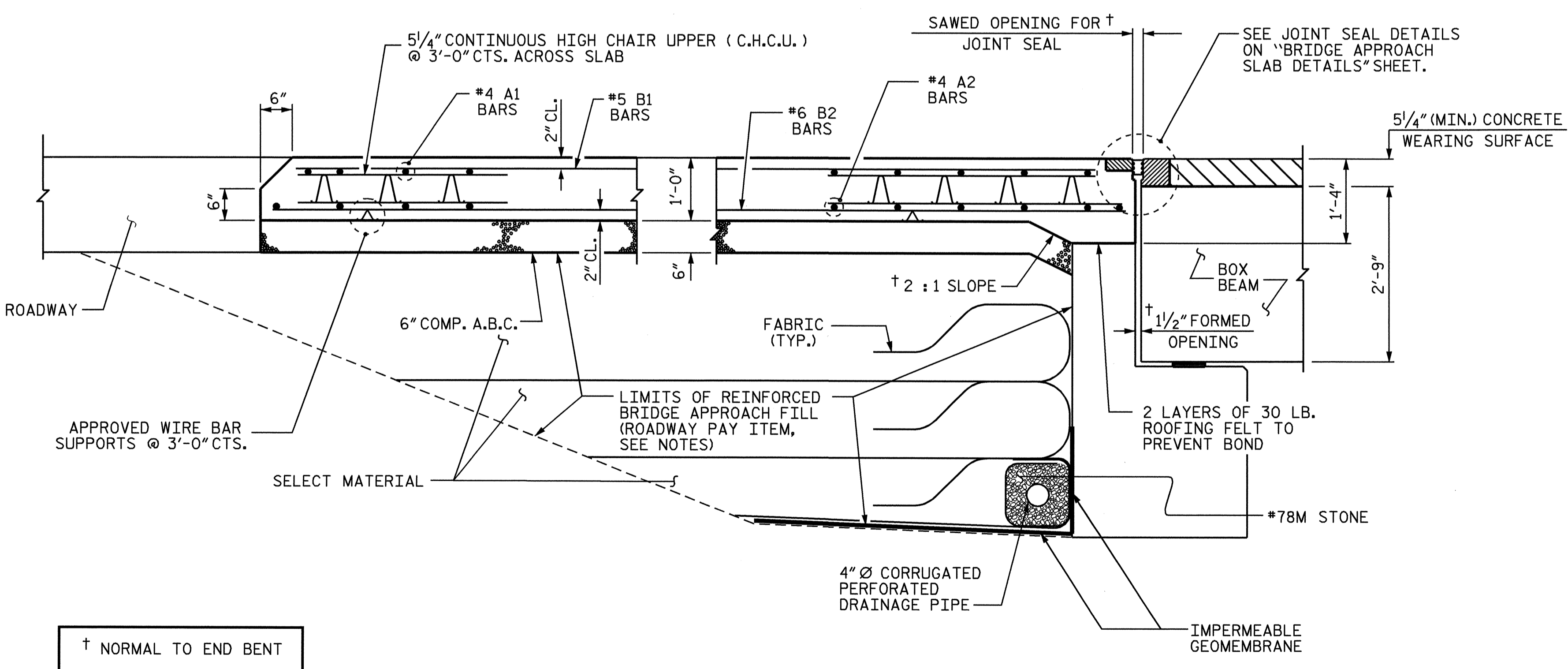
ASSEMBLED BY : E.C. LOCKLEAR DATE : 10-17-05
 CHECKED BY : P.C. BREWER DATE : 10-24-05
 DRAWN BY : FCJ 2/88 REV. 8/16/99 RWW/LES
 CHECKED BY : ARB 8/88 REV. 10/17/00 RWW/LES
 REV. 5/1/06 TLA/GM

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

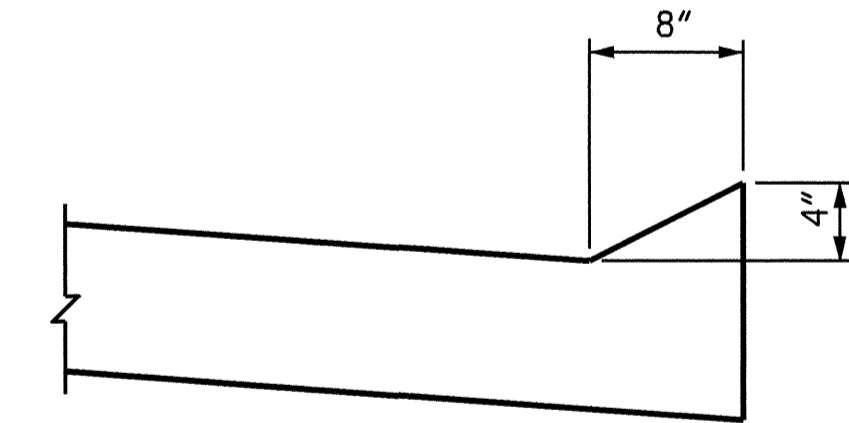


PLAN @ END BENT 1

PLAN @ END BENT 2



SECTION THRU SLAB



SECTION N-N

CURB DETAILS

NOTES

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

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

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

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

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

WITH EVAZOTE JOINT SEAL
FOR EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS.

THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE EVAZOTE JOINT SEAL SHALL BE 3/16".

FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

WITH CONCRETE WEARING SURFACE
APPROACH SLABS SHALL BE POURED AFTER CONCRETE OVERLAY IS POURED.

THE JOINT SHALL BE SAWED AFTER THE CASTING OF THE BARRIER RAIL.

BILL OF MATERIAL

APPROACH SLAB AT END BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	50	#4	STR	20'-8"	690
A2	52	#4	STR	20'-6"	712
*B1	74	#5	STR	23'-9"	1833
B2	74	#6	STR	24'-7"	2732
REINFORCING STEEL				LBS.	3,444
*EPOXY COATED REINFORCING STEEL				LBS.	2,523
CLASS AA CONCRETE				CU. YDS.	35.1
APPROACH SLAB AT END BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	50	#4	STR	20'-8"	690
A2	52	#4	STR	20'-6"	712
*B1	74	#5	STR	23'-9"	1833
B2	74	#6	STR	24'-7"	2732
REINFORCING STEEL				LBS.	3,444
*EPOXY COATED REINFORCING STEEL				LBS.	2,523
CLASS AA CONCRETE				CU. YDS.	35.1

SPLICE CHART

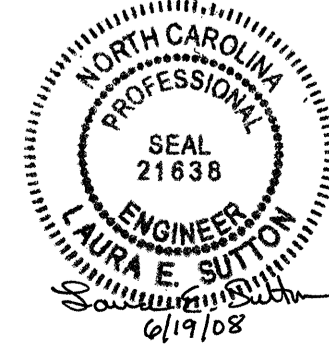
BAR	SIZE	SPLICE
A1	#4	2'-0"
A2	#4	1'-9"

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CARTERET COUNTY
STATION: 16+72.00 -L-

SHEET 1 OF 2

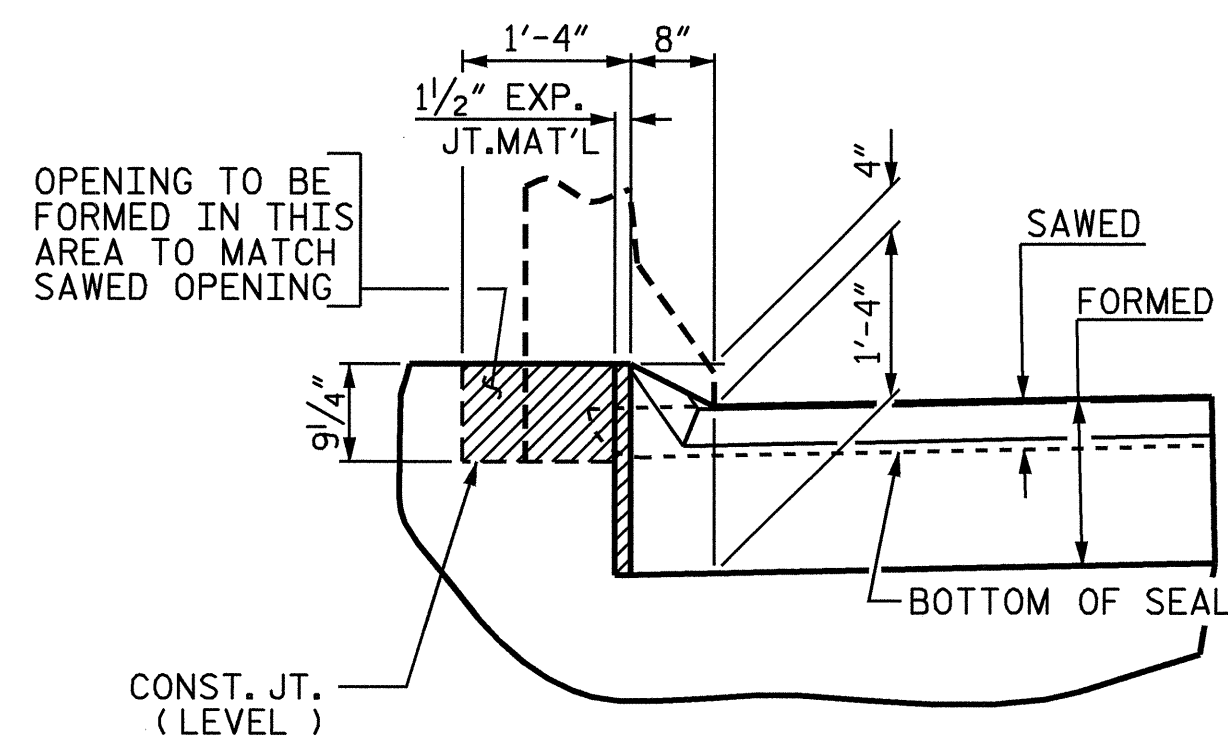
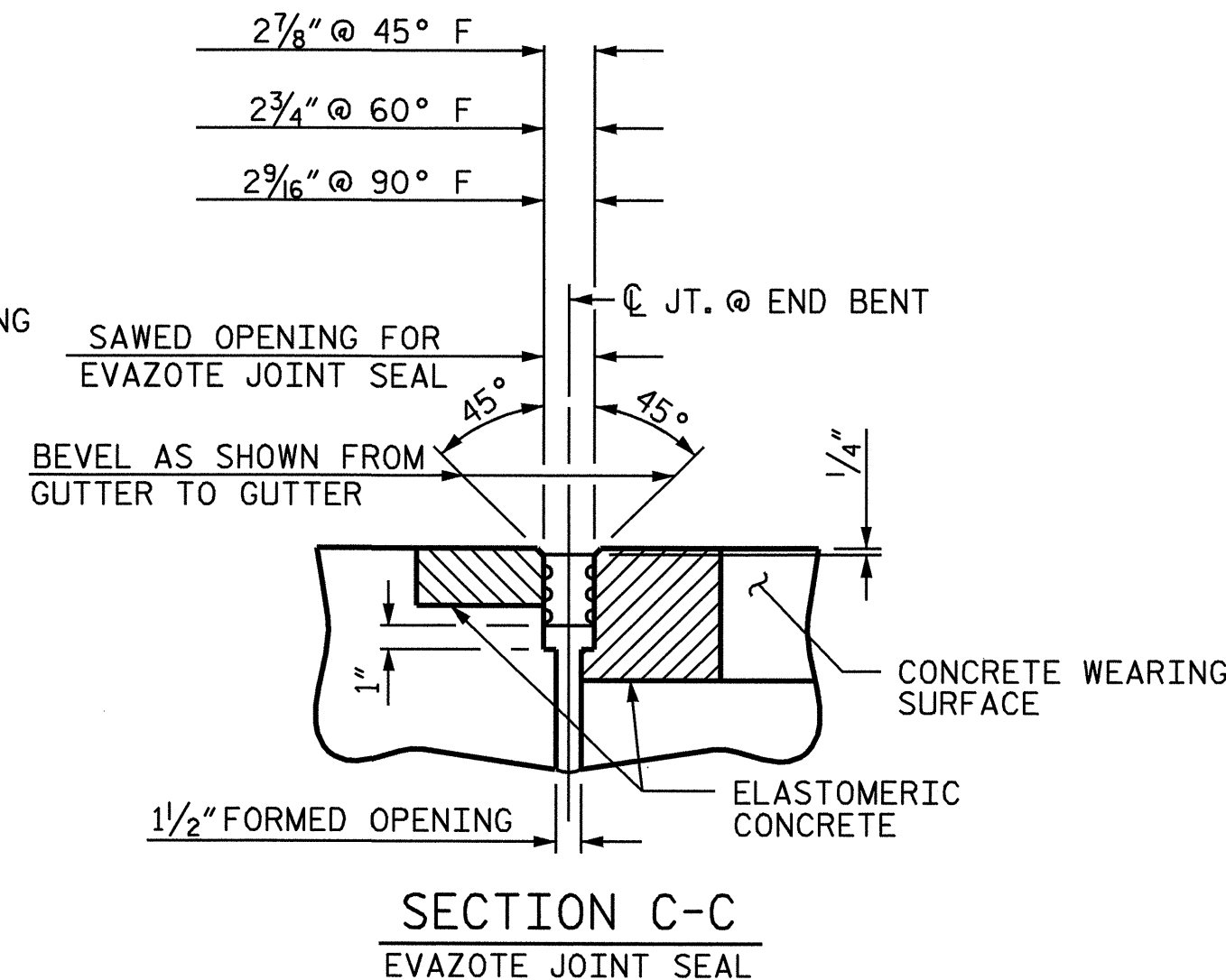
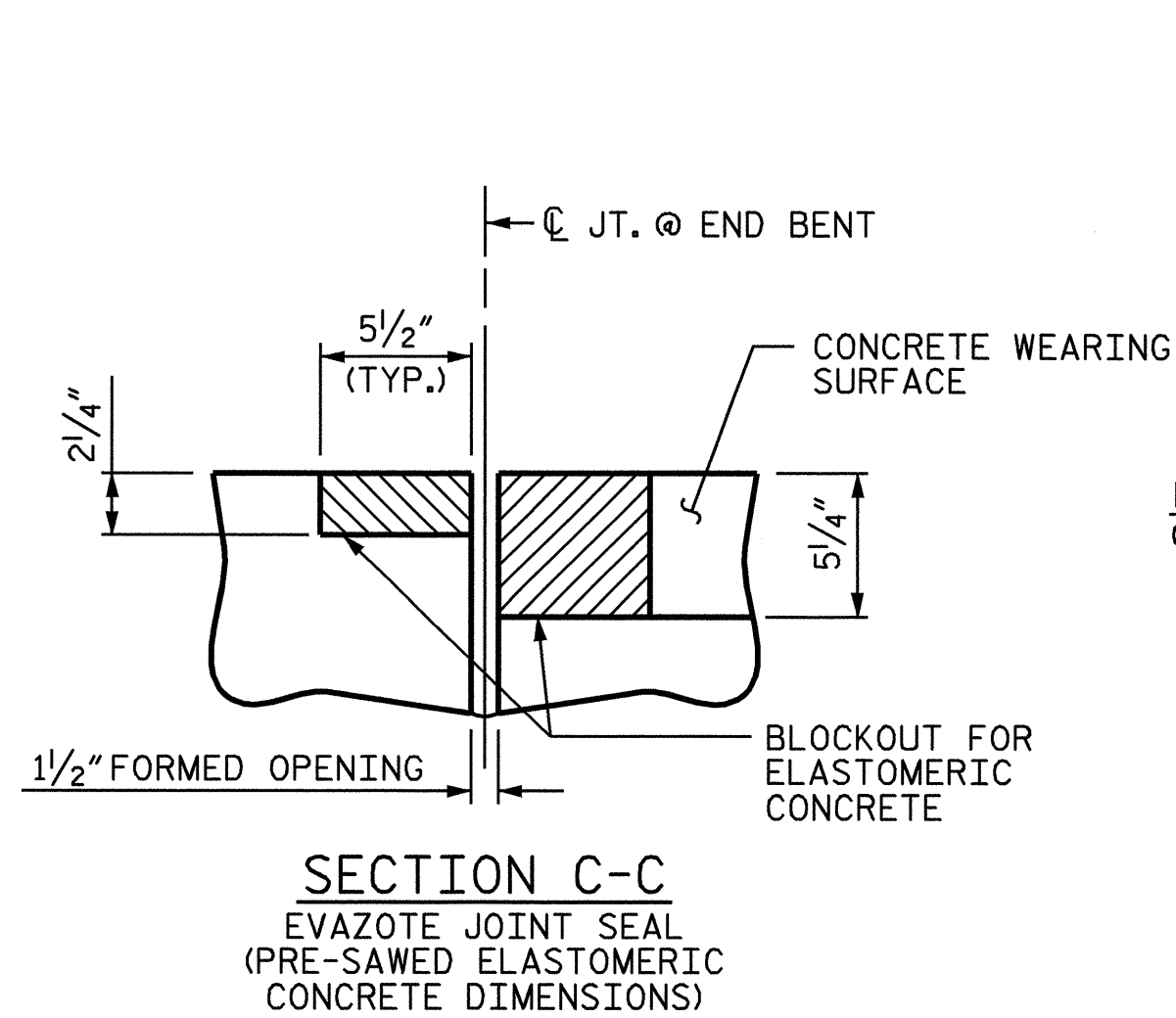
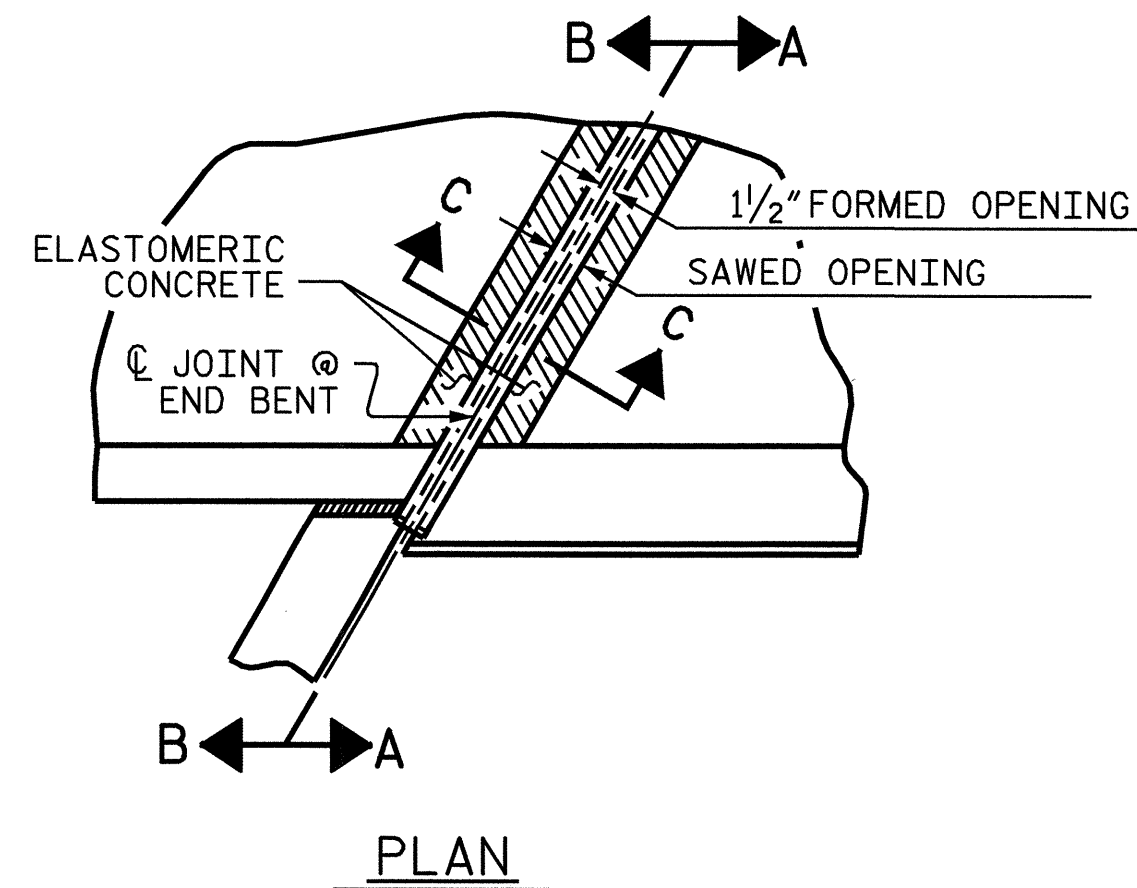
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE BOX BEAM

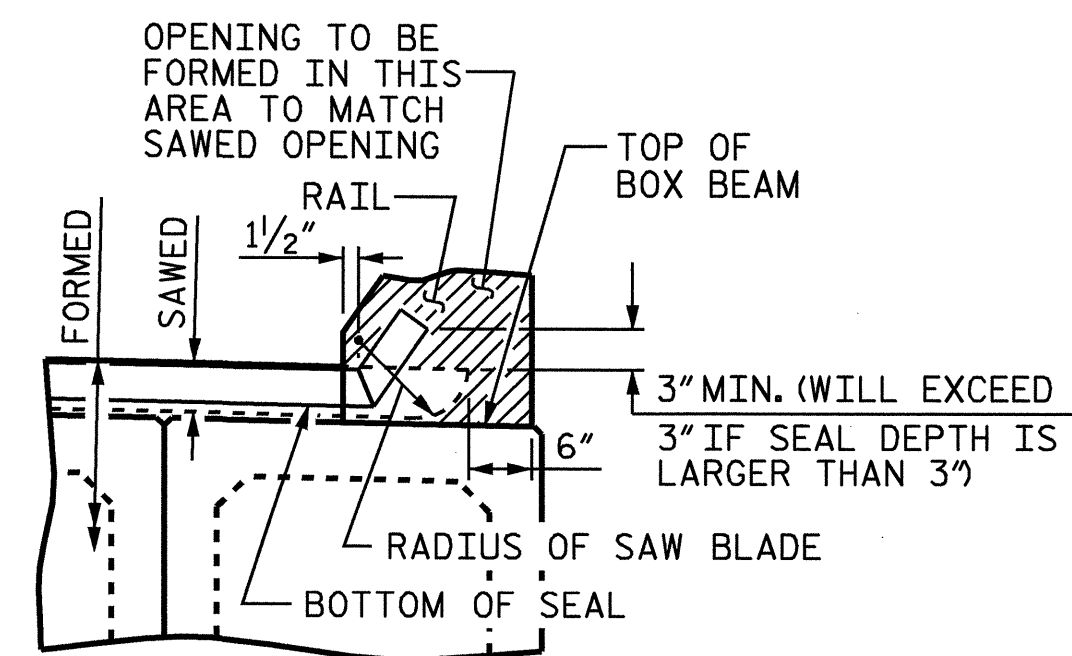


REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-22	
1			3			TOTAL SHEETS	
2			4			23	

DRAWN BY: E.C. LOCKLEAR DATE: 5-23-07
CHECKED BY: P.C. BREWER DATE: 5-30-07



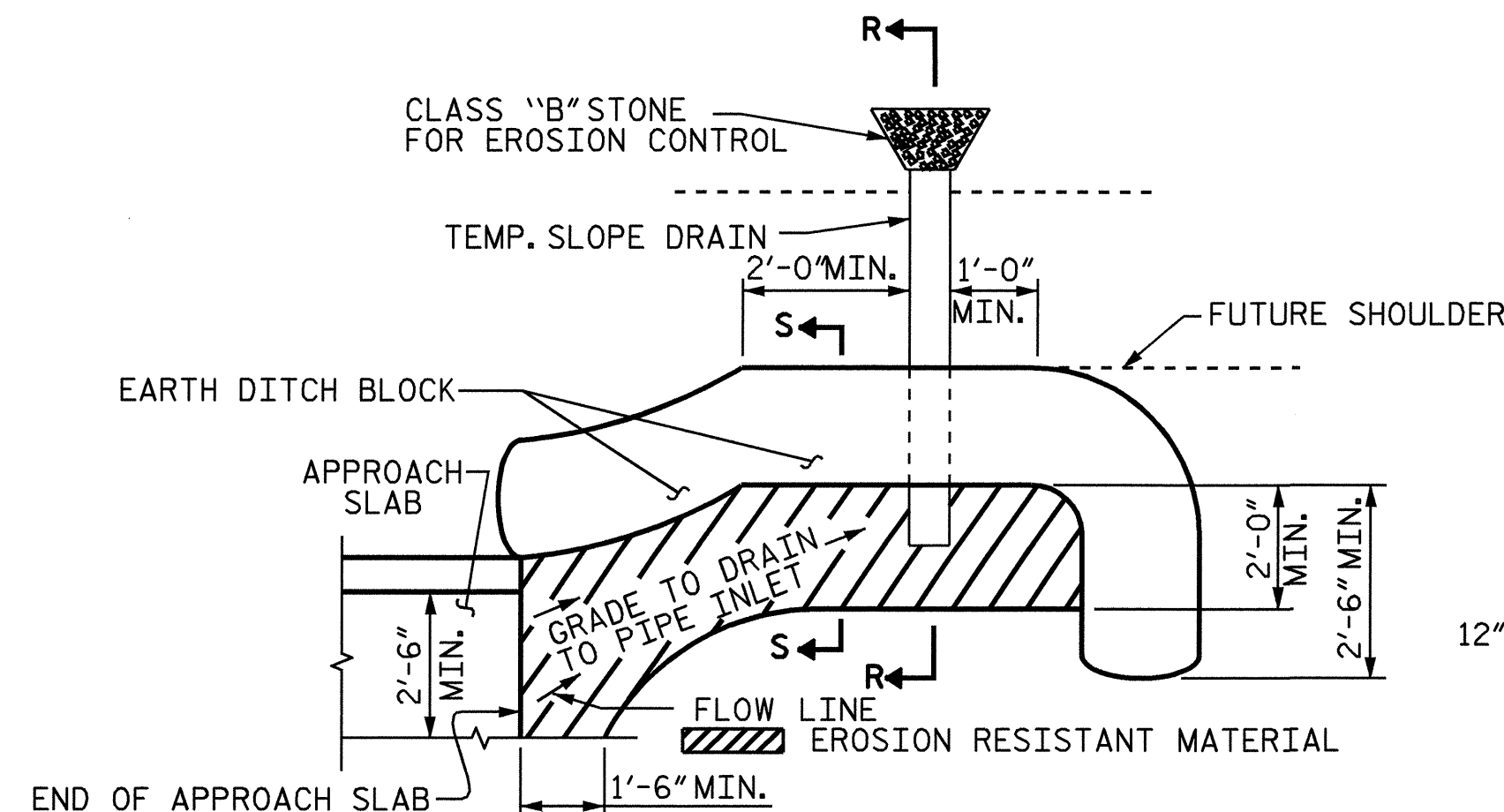
SECTION B-B



SECTION A-A

JOINT SEAL DETAILS @ END BENT

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

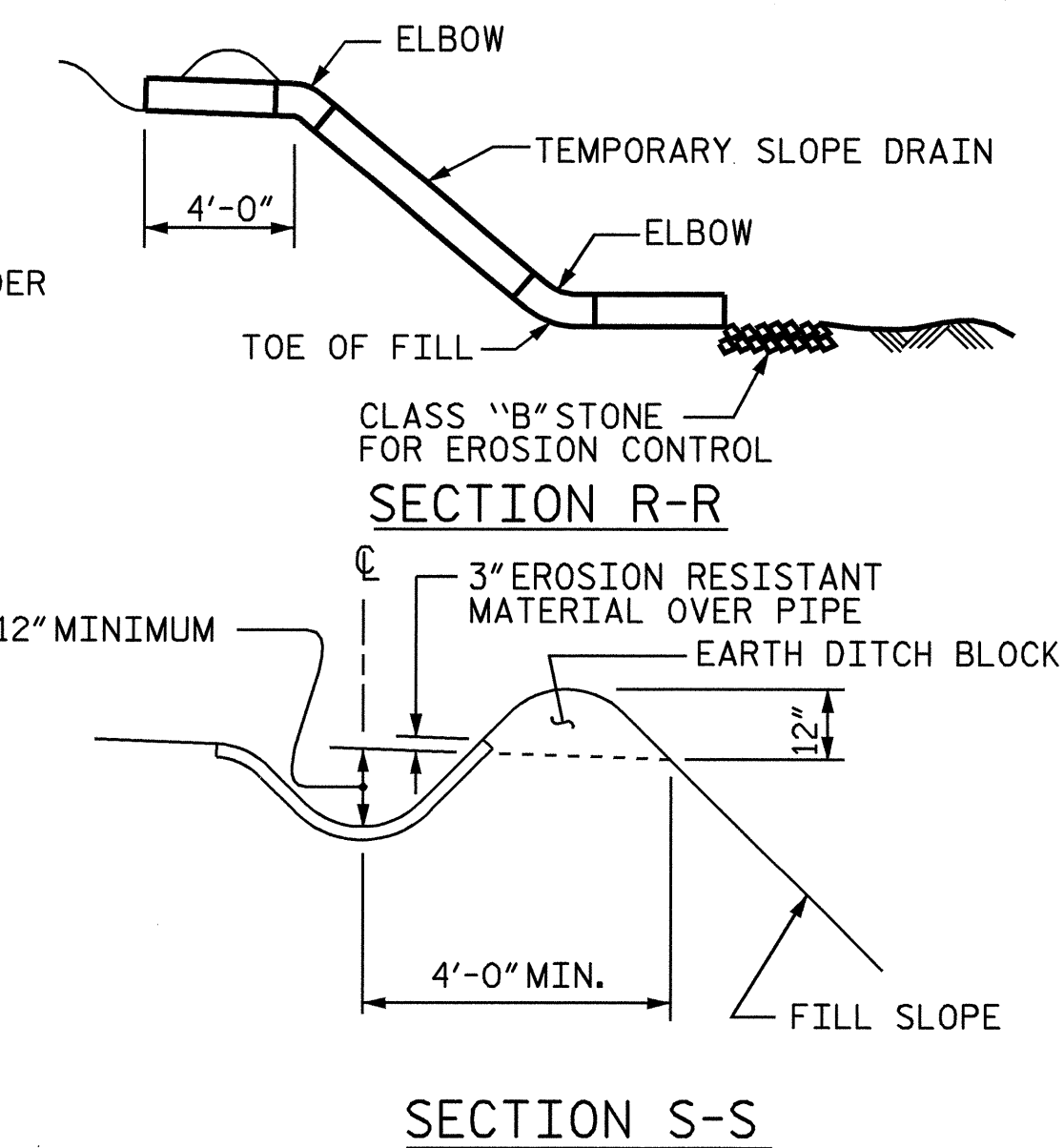


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

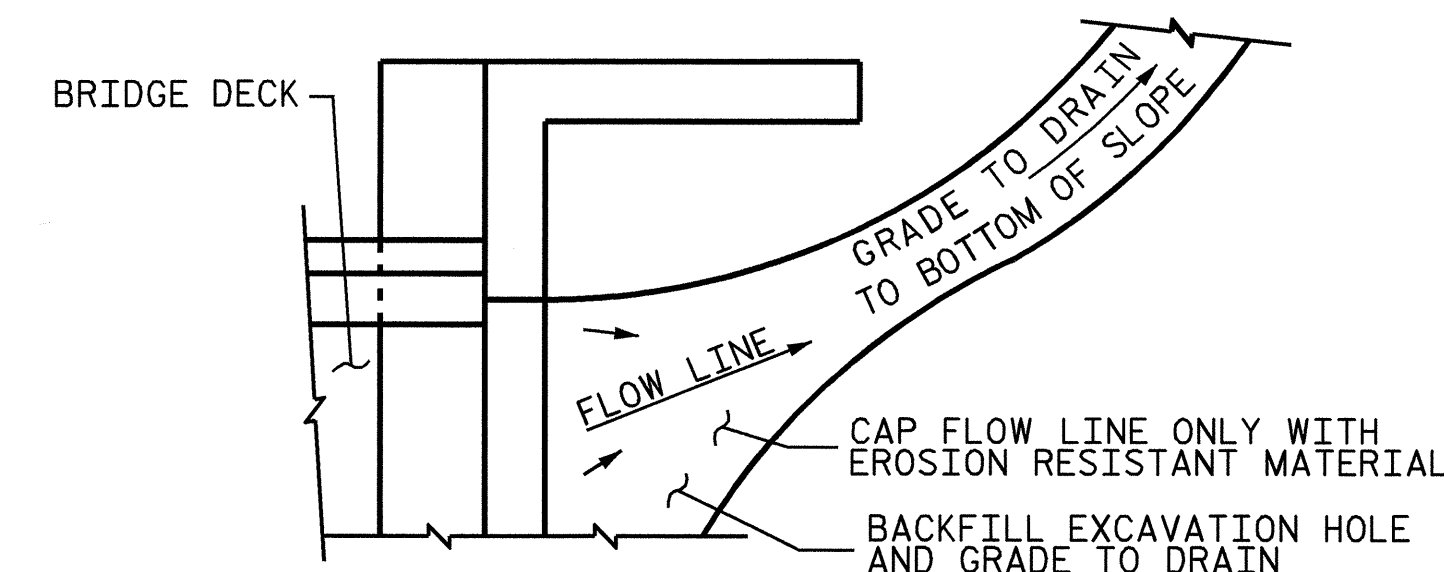
PLAN VIEW

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



SECTION S-S



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

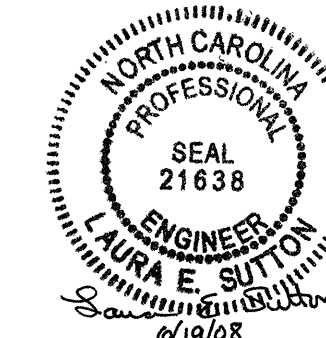
ELASTOMERIC CONCRETE	
END BENT	ELASTOMERIC CONCRETE ** (CU. FT.)
1	10.9
2	10.9
TOTAL	21.8

** BASED ON THE MINIMUM BLOCKOUT SHOWN.

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SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 BRIDGE APPROACH
 SLAB DETAILS



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

ASSEMBLED BY : E.C. LOCKLEAR	DATE : 5-23-07
CHECKED BY : P.C. BREWER	DATE : 5-25-07
DRAWN BY : FCJ 11/88	REV. 10/17/00 RWW/LES
CHECKED BY : ARB 11/88	REV. 5/7/03 RWW/JTE
	REV. 5/1/06R MAA/KMM

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2002 STANDARD SPECIFICATIONS "FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

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

CONCRETE:

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

CONCRETE CHAMFERS:

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

DOWELS:

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

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

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

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

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

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED WITH THE EXCEPTION OF #2 BARS WHICH MAY BE FABRICATED FROM COLD DRAWN STEEL WIRE. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

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

STRUCTURAL STEEL:

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

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

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

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

HANDRAILS AND POSTS:

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

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINISHES 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