

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4285		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33624.1.1	BRZ-1625(2)	P.E.	
33624.2.1	BRZ-1625(2)	R/W, UTIL.	
33624.3.1	BRZ-1625(2)	CONSTR.	

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

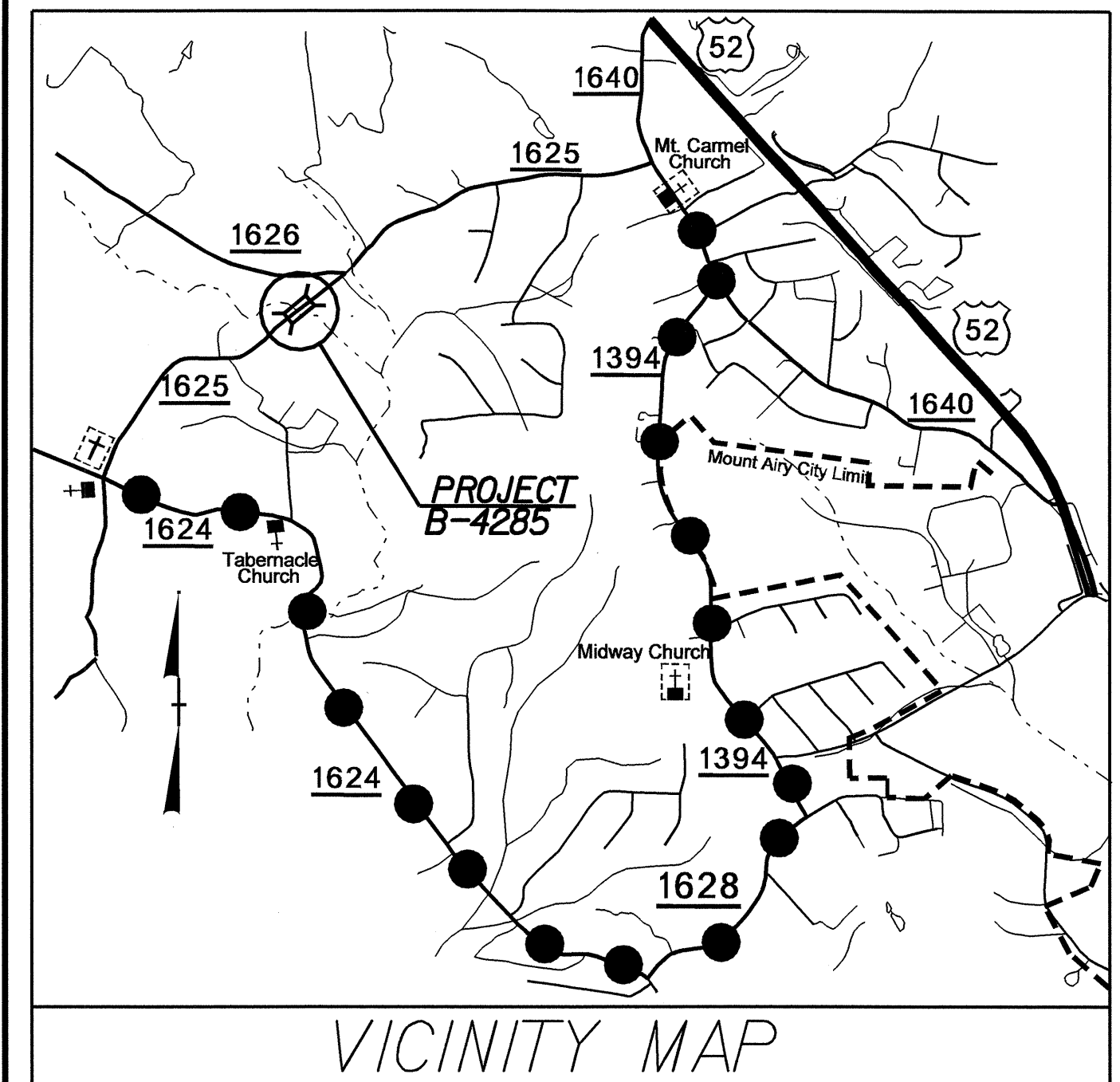
SURRY COUNTY

LOCATION: BRIDGE NO. 221 OVER PAUL'S CREEK ON SR 1625

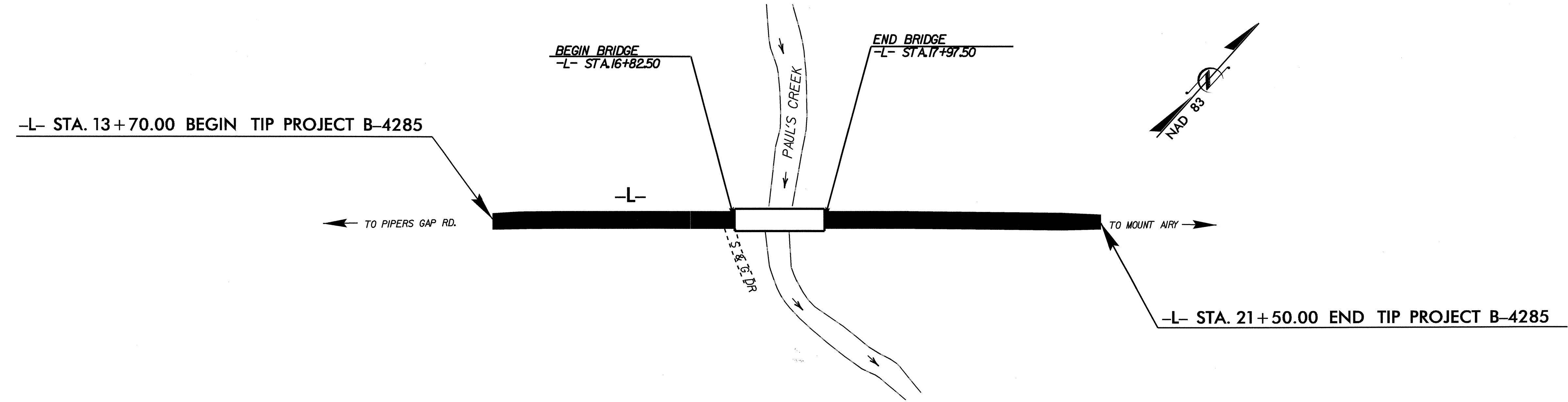
TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURE

TIP PROJECT: B-4285

CONTRACT: C201816

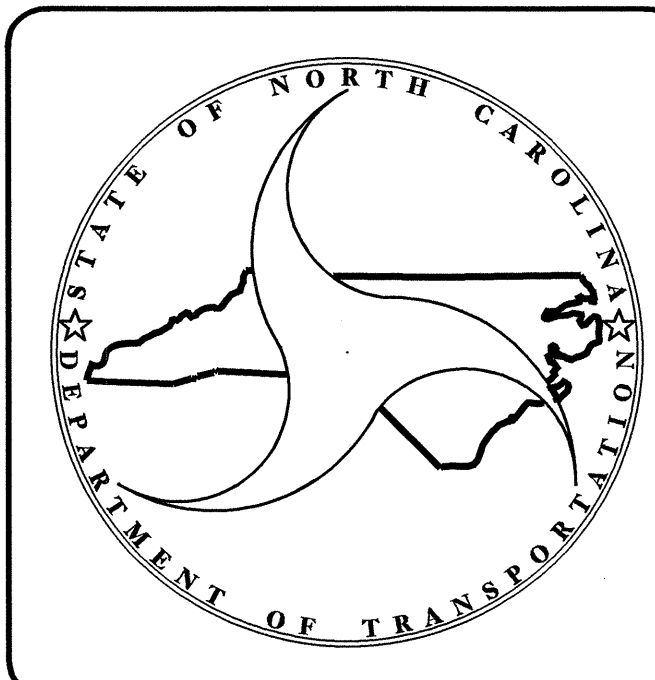


VICINITY MAP
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.
OFFSITE DETOUR ●●●●●●●●●●



STRUCTURE

** DESIGN EXCEPTION REQUIRED TO REDUCE THE DESIGN SPEED FROM 60 MPH TO 40 MPH.
** DESIGN EXCEPTION REQUIRED FOR SAG VERTICAL CURVE.



DESIGN DATA	
ADT 2006 =	1,004
ADT 2025 =	1,400
DHV =	12 %
D =	60 %
T =	4 %*
V =	60 MPH**
* TTST 1%	DUAL 3%
FUNCTIONAL CLASS = RURAL LOCAL	

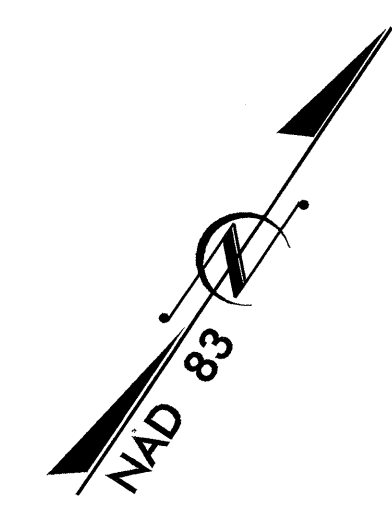
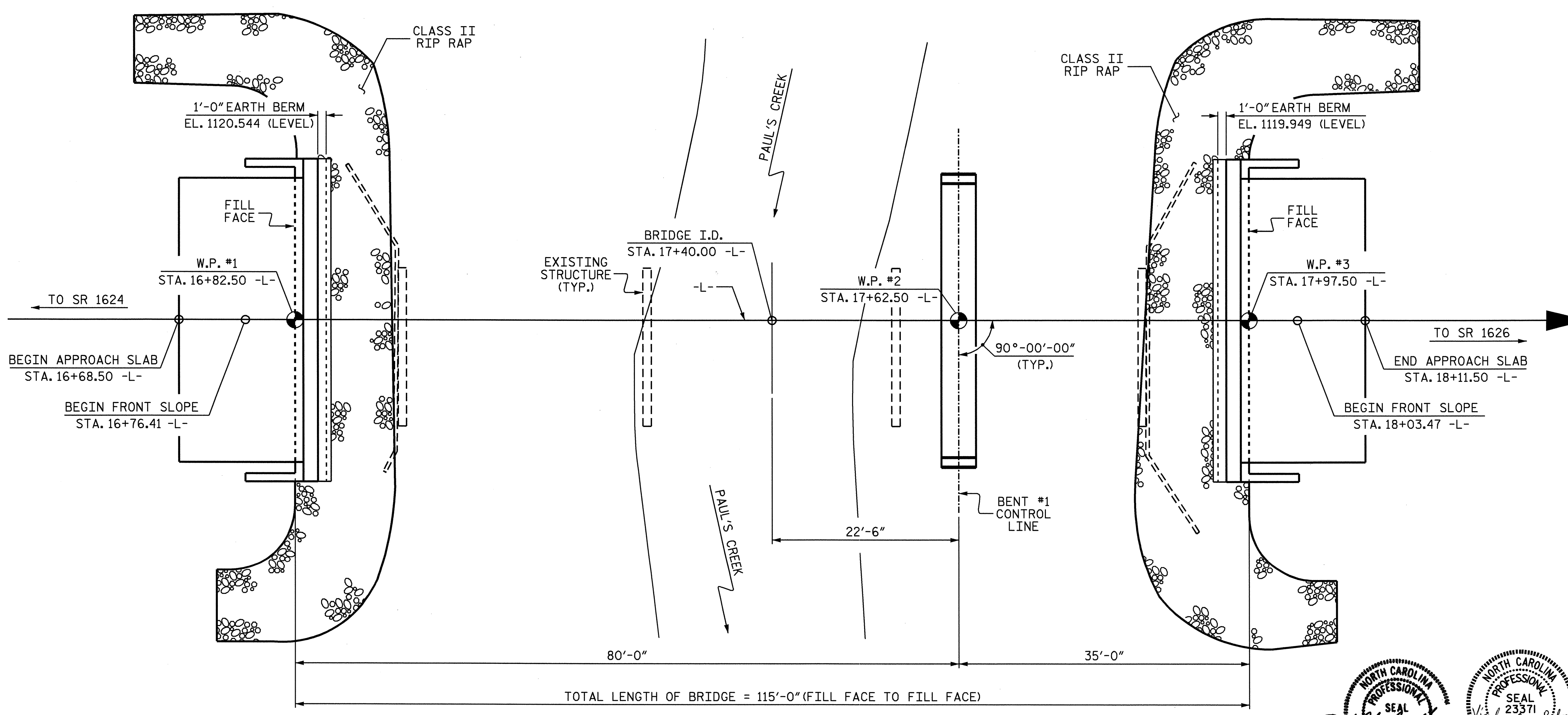
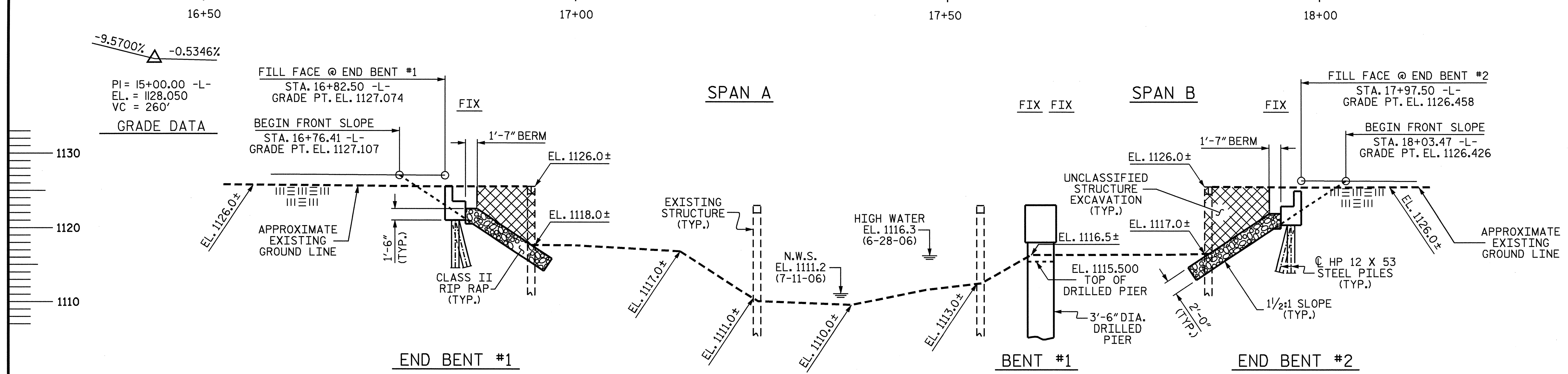
PROJECT LENGTH	
LENGTH OF ROADWAY TIP PROJECT B-4285	= 0.126 MILES
LENGTH OF STRUCTURE TIP PROJECT B-4285	= 0.022 MILES
TOTAL LENGTH OF TIP PROJECT B-4285	= 0.148 MILES

Prepared In the Office of:	
DIVISION OF HIGHWAYS	
1000 BIRCH RIDGE DR., RALEIGH, NC 27610	
2006 STANDARD SPECIFICATIONS	
LETTING DATE:	B. C. Hunt, PE PROJECT ENGINEER
DECEMBER 16, 2008	V. A. Patel, PE PROJECT DESIGN ENGINEER

STRUCTURE DESIGN UNIT

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

30-OCT-2008 14:58
\$\$\$\$\$\$\$\$\$\$\$\$\$DGN\$\$\$\$\$\$\$\$\$\$\$\$\$
vpatel



PROJECT NO. B-4285
 SURRY COUNTY
 STATION: 17+40.00 -L-
 SHEET 1 OF 3 REPLACES BRIDGE #221

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

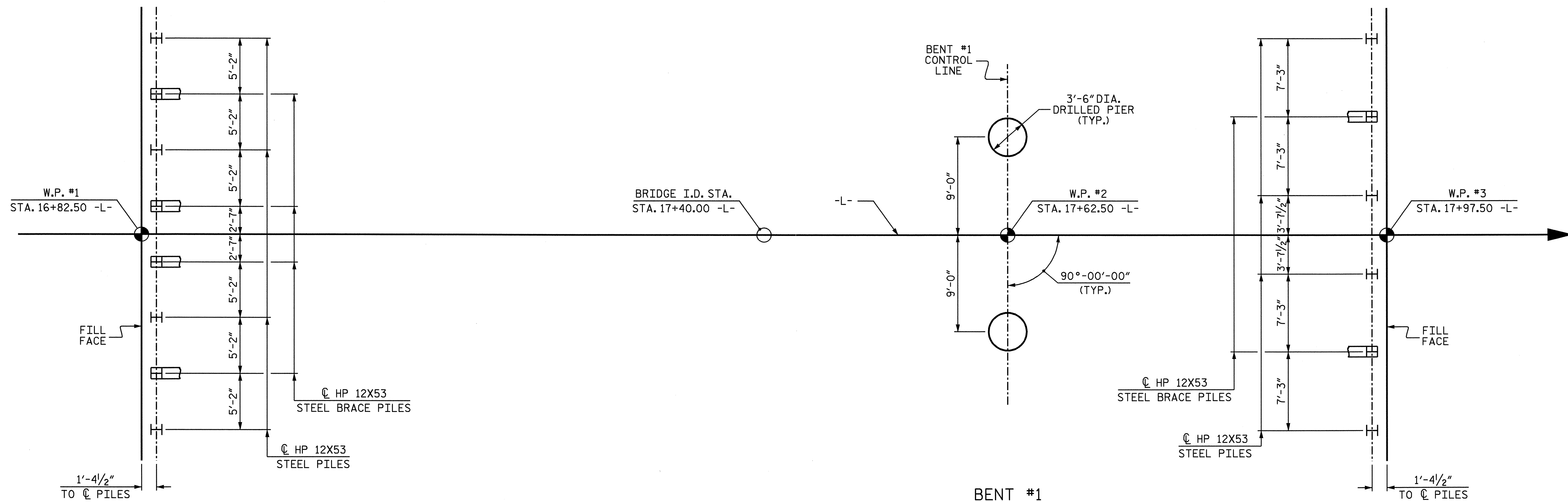
GENERAL DRAWING
 FOR BRIDGE OVER PAUL'S
 CREEK ON SR 1625 (MILLER
 RD) BETWEEN SR 1624
 (PIPERS GAP RD) AND
 SR 1626 (OLD RAIL RD)

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

DRAWN BY: S. DOMBROWSKI DATE: 9/07
 CHECKED BY: K.D. LAYNE DATE: 10/07

PROFESSIONAL SEAL
 NORTH CAROLINA
 SEAL 23371
 CIVIL ENGINEER
 PIPIL A. PATEL
 10/31/08

PLAN
 PILES NOT SHOWN FOR CLARITY



END BENT #1

FOUNDATION LAYOUT

DIMENSIONS LOCATING DRILLED PIERS ARE TO DRILLED PIER CENTER.
 ALL PILES ARE HP 12X53.
 END BENT BRACE PILES ARE BATTERED 3:12.
 DIMENSIONS LOCATING PILES ARE TO THE CENTERLINE OF PILE.

END BENT #2

NOTES

DRIVE PILES AT END BENTS #1 AND #2 TO A REQUIRED BEARING CAPACITY OF 120 TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO.

THE ALLOWABLE BEARING CAPACITY FOR PILES AT END BENTS #1 AND #2 IS 60 TONS PER PILE.

STEEL PILE POINTS ARE REQUIRED FOR STEEL PILES AT END BENTS #1 AND #2. SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

DRILLED PIERS AT BENT #1 ARE DESIGNED FOR BOTH SKIN FRICTION AND END BEARING. CHECK FIELD CONDITIONS FOR THE REQUIRED END BEARING CAPACITY OF 70 TSF.

DRILLED PIERS AT BENT #1 ARE DESIGNED FOR AN APPLIED LOAD OF 267 TONS EACH AT THE TOP OF THE COLUMN.

PERMANENT STEEL CASING MAY BE REQUIRED FOR DRILLED PIERS AT BENT #1. IF REQUIRED, DO NOT EXTEND THE CASING BELOW EL. 1098.000 WITHOUT PRIOR APPROVAL FROM THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR PERMANENT STEEL CASING. SEE DRILLED PIERS SPECIAL PROVISION.

DRILLED PIERS AT BENT #1 SHALL EXTEND TO AN ELEVATION NO HIGHER THAN 1091.000 AND SATISFY THE REQUIRED END BEARING CAPACITY.

THE SCOUR CRITICAL ELEVATION FOR BENT #1 IS EL. 1095.000. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

FOR DRILLED PIERS, SEE DRILLED PIERS SPECIAL PROVISION.

SPT TESTING MAY BE REQUIRED TO DETERMINE THE END BEARING CAPACITY OF THE DRILLED PIERS AT BENT #1. SEE DRILLED PIERS SPECIAL PROVISION.

SID INSPECTIONS MAY BE REQUIRED TO INSPECT THE BOTTOM CLEANLINESS OF THE DRILLED PIERS AT BENT #1. THE ENGINEER WILL DETERMINE THE NEED FOR SID INSPECTIONS. SEE DRILLED PIERS SPECIAL PROVISION.

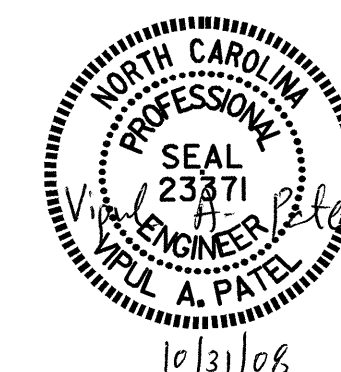
CSL TUBES ARE REQUIRED AND CSL TESTING MAY BE REQUIRED FOR THE DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR CSL TESTING. SEE CROSSHOLE SONIC LOGGING SPECIAL PROVISION.

PROJECT NO. B-4285
SURRY COUNTY
 STATION: 17+40.00 -L-

SHEET 2 OF 3

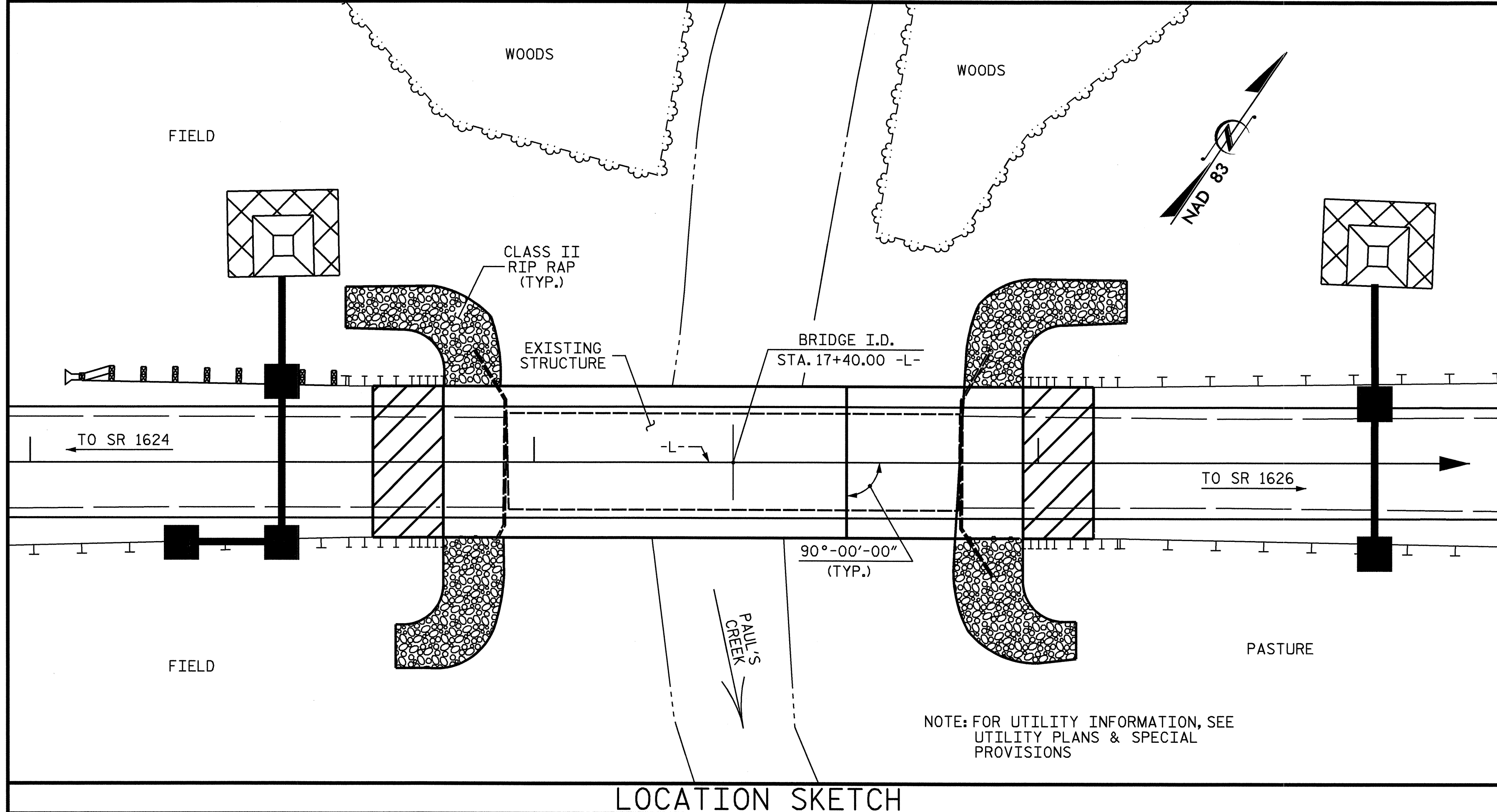
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE OVER PAUL'S
 CREEK ON SR 1625 (MILLER
 RD) BETWEEN SR 1624
 (PIPERS GAP RD) AND
 SR 1626 (OLD RAIL RD)



DRAWN BY : S. DOMBROWSKI DATE : 9/07
 CHECKED BY : K.D. LAYNE DATE : 10/07

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



NOTES

ASSUMED LIVE LOAD = HS 20 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 LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.

THE EXISTING STRUCTURE CONSISTING OF 1 SPAN @ 30'-4", 1 SPAN @ 30'-0", AND 1 SPAN @ 30'-4" AND A CLEAR ROADWAY WIDTH OF 19'-2" AND HAVING A TIMBER DECK WITH ASPHALT WEARING SURFACE ON 8 LINES 14" STEEL I-BEAMS SUPPORTED BY TIMBER CAPS AND TIMBER PILES AND LOCATED AT THE STRUCTURE SITE 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. FOR REMOVAL OF EXISTING STRUCTURE, SEE SPECIAL PROVISIONS.

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 ON SHEET S-1 SHALL BE EXCAVATED FOR A DISTANCE OF 30 FT. EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION.

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

ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.

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

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

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

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS, ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 17+40.00 -L-."

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

HYDRAULIC DATA

DESIGN DISCHARGE	= 5900 C.F.S.
FREQUENCY OF DESIGN FLOOD	= 25 YR.
DESIGN HIGH WATER ELEVATION	= 1123.800
DRAINAGE AREA	= 20.9 SQ.MI.
BASIC DISCHARGE (Q100)	= 9400 C.F.S.
BASIC HIGH WATER ELEVATION	= 1126.900

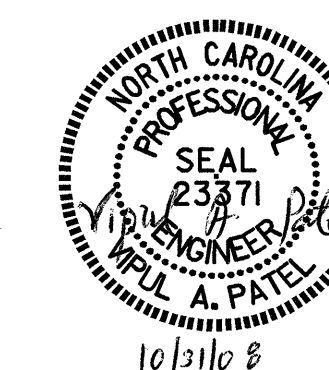
OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	= 8500± C.F.S.
FREQUENCY OF OVERTOPPING FLOOD	= 100 YR.
OVERTOPPING FLOOD ELEVATION	= 1126.400

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" DIA. DRILLED PIER	SID INSPECTION	SPT TESTING	CROSSHOLE SONIC LOGGING	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS
	LUMP SUM	LIN.FT.	LIN.FT.	LIN.FT.	EACH	EACH	EACH	LUMP SUM	CU.YDS.	LUMP SUM
SUPERSTRUCTURE								LUMP SUM		LUMP SUM
END BENT #1									15.4	
BENT #1		41.0	8.0	35.0	1	1	1		22.3	
END BENT #2									15.4	
TOTAL	LUMP SUM	41.0	8.0	35.0	1	1	1	LUMP SUM	53.1	LUMP SUM

TOTAL BILL OF MATERIAL											
	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	HP 12X53 STEEL PILES	STEEL PILE POINTS	CONCRETE BARRIER RAIL	RIIP RAP CLASS II (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 2'-9" PRESTRESSED CONCRETE BOX BEAMS		
	LBS.	LBS.	NO.	LIN.FT.	EACH	LIN.FT.	TONS	SQ.YDS.	LUMP SUM	NO.	LIN.FT.
SUPERSTRUCTURE						225.50			LUMP SUM	22	1238.88
END BENT #1	2,512		8	180	8		205	230			
BENT #1	6,500	1,288									
END BENT #2	2,495		6	150	6		220	245			
TOTAL	11,507	1,288	14	330	14	225.50	425	475	LUMP SUM	22	1238.88

DRAWN BY: S. DOMBROWSKI DATE: 9/07
 CHECKED BY: K.D. LAYNE DATE: 10/07



PROJECT NO. B-4285
 SURRY COUNTY
 STATION: 17+40.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE OVER PAUL'S
 CREEK ON SR 1625 (MILLER
 RD) BETWEEN SR 1624
 (PIPERS GAP RD) AND
 SR 1626 (OLD RAIL RD)

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

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 GROUT.

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

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE BOX BEAM UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 4800 PSI FOR SPAN A AND 4000 PSI FOR SPAN B.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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

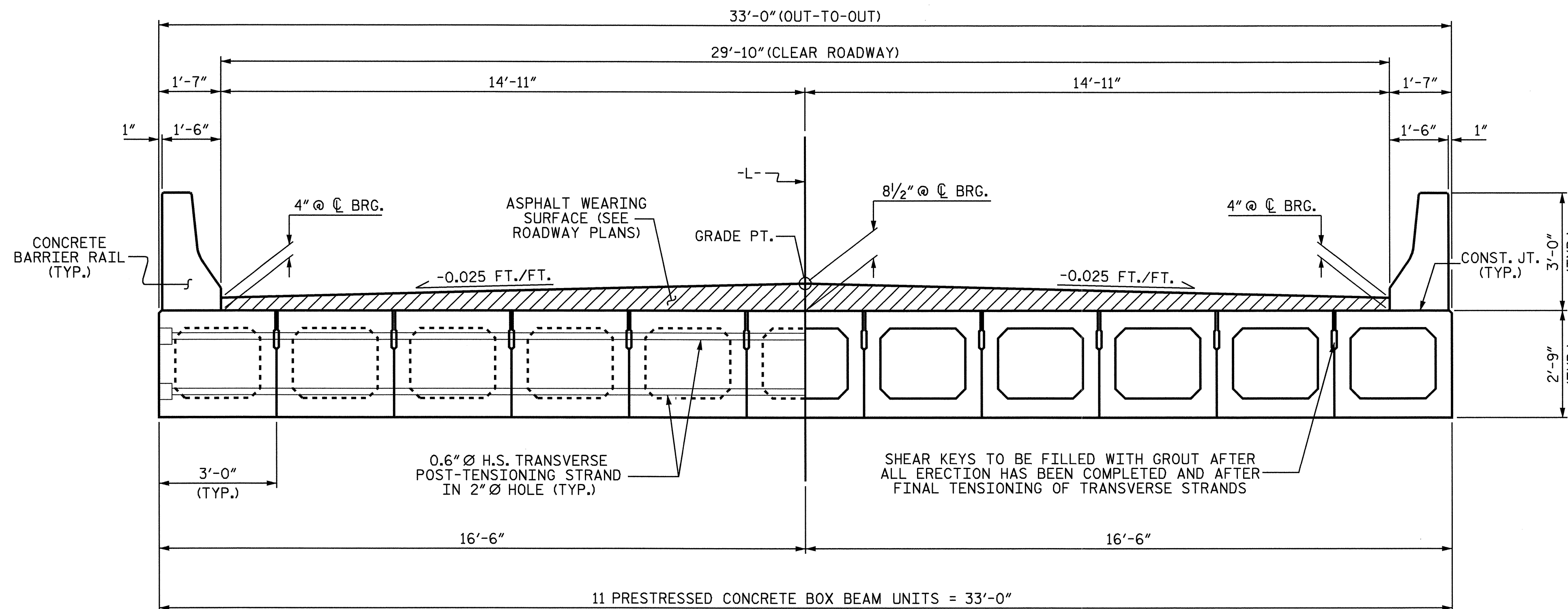
APPLY EPOXY PROTECTIVE COATING TO BOX BEAM UNIT ENDS.

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

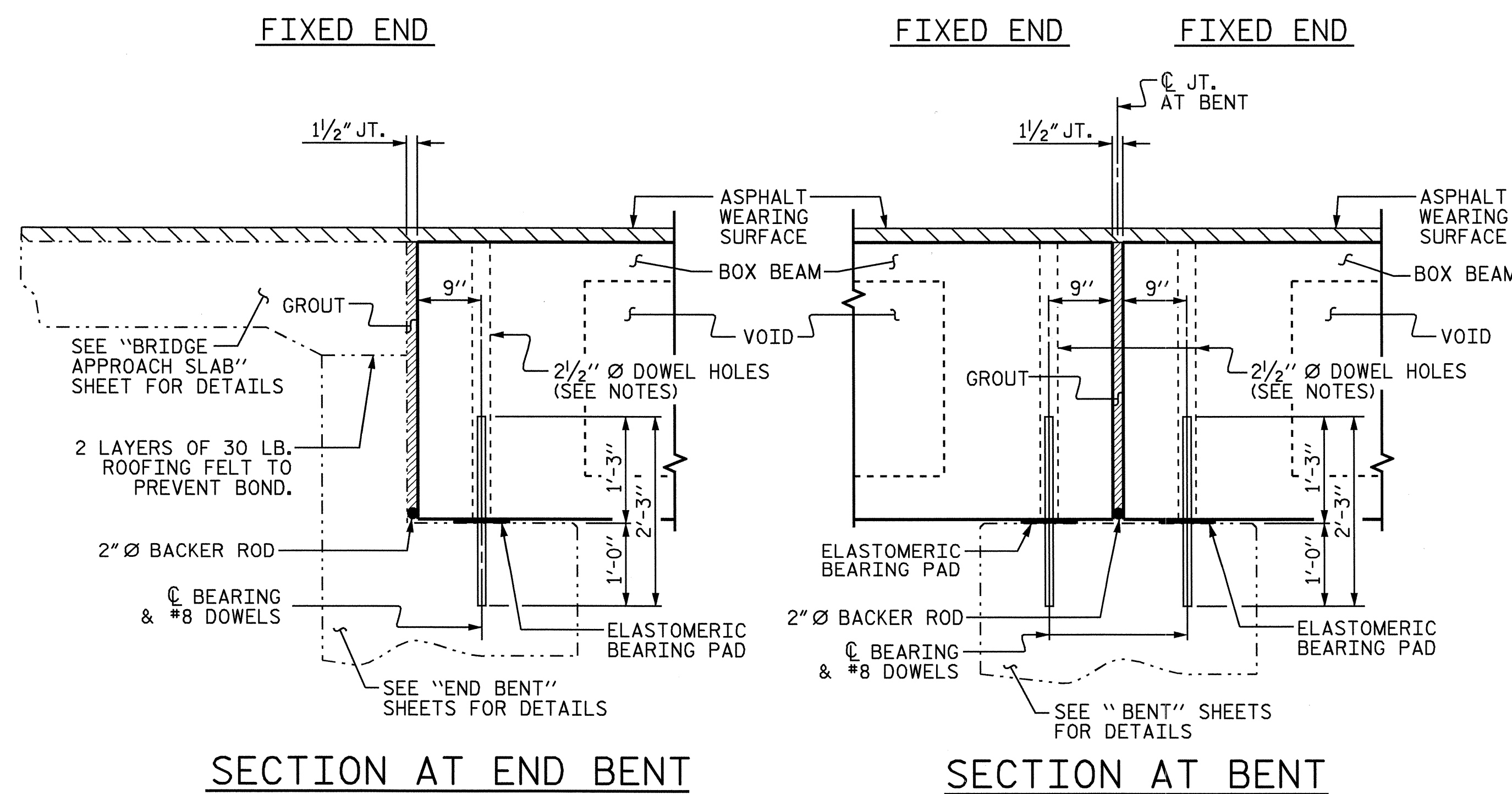
THE LOCATION OF THE VOID DRAINS MAY BE SHIFTED SLIGHTLY WHERE NECESSARY TO CLEAR PRESTRESSING STRANDS OR TRANSVERSE REINFORCING STEEL.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.



TYPICAL SECTION

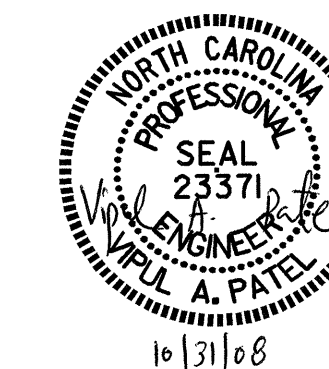


SECTION AT END BENT

SECTION AT BENT

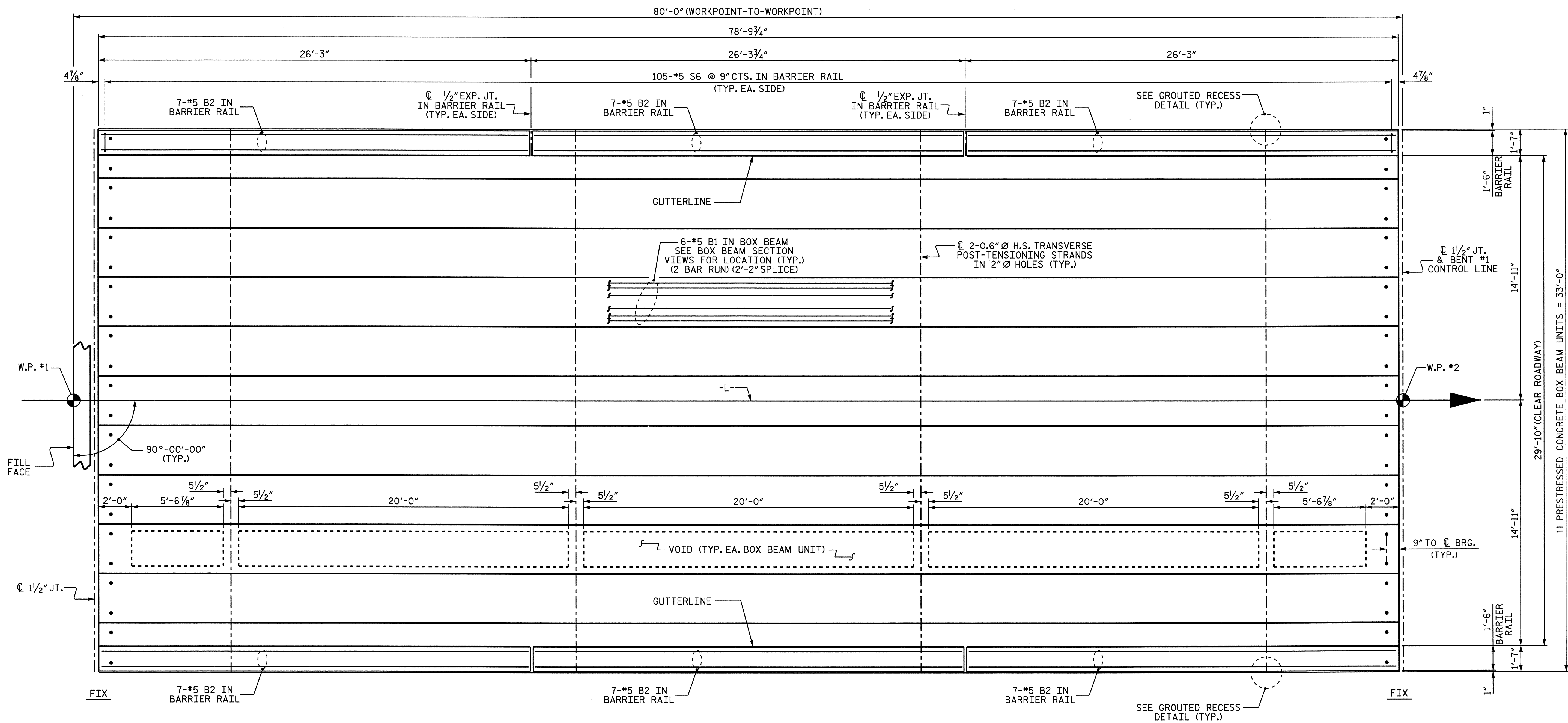
PROJECT NO. B-4285
SURRY COUNTY
 STATION: 17+40.00 -L-

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



ASSEMBLED BY : S. DOMBROWSKI	DATE : 6/07
CHECKED BY : T.R. PETERSON	DATE : 8/07
DRAWN BY : TLA 5/05	ADDED 7/11/05R
CHECKED BY : GM 6/05	REV. 5/1/06 TLA/GM

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



PLAN OF SPAN A

PROJECT NO. B-4285

SURRY COUNTY

STATION: 17+40.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

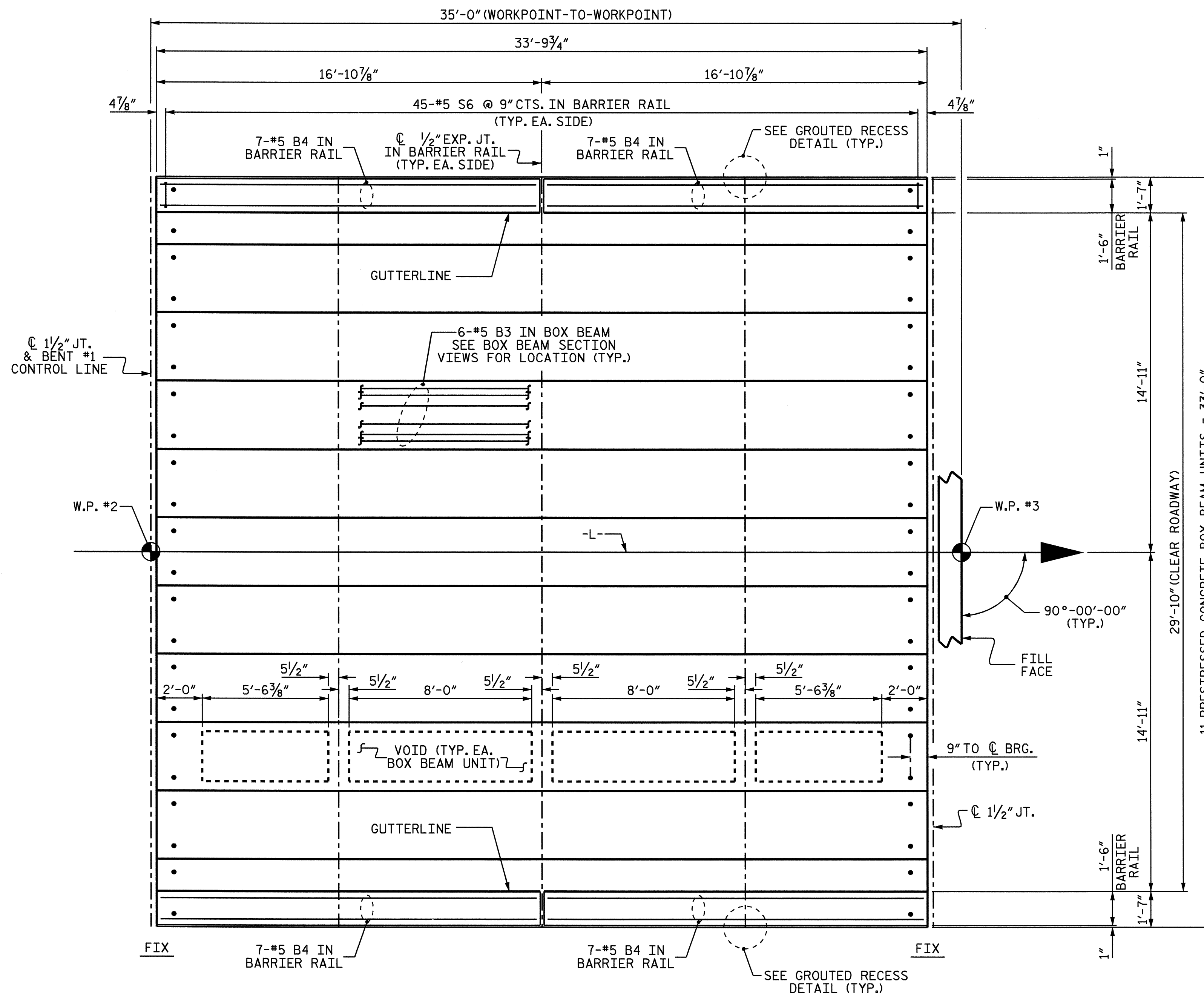
SUPERSTRUCTURE
PLAN OF SPAN A



DRAWN BY: S. DOMBROWSKI DATE: 8/07
CHECKED BY: T.R. PETERSON DATE: 8/07

30-OCT-2008 14:58
R:\Structures\B-4285\Plans\B-4285.sd.PS.dgn
vpatel

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			20



PLAN OF SPAN B

PROJECT NO. B-4285
SURRY COUNTY
 STATION: 17+40.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

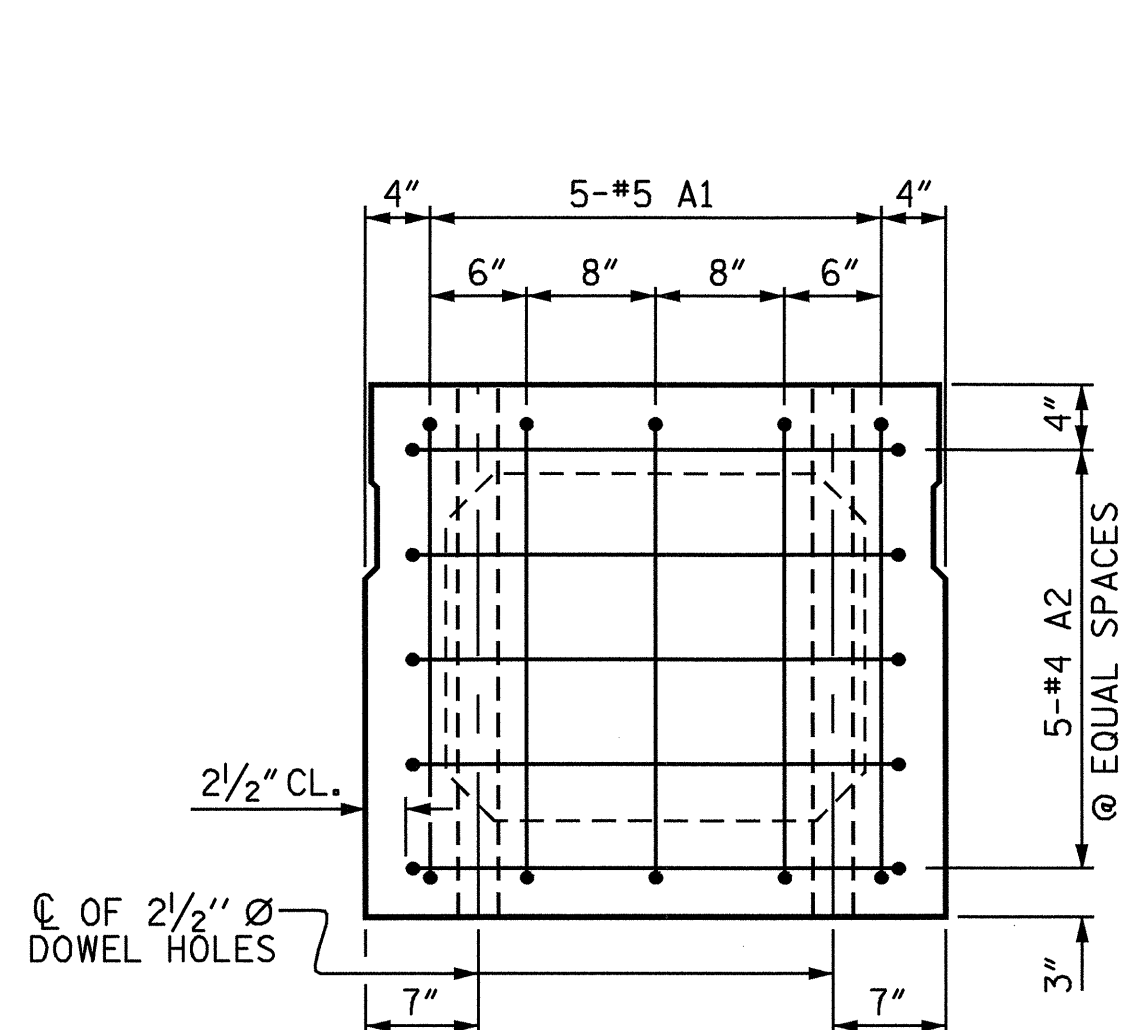
SUPERSTRUCTURE
 PLAN OF SPAN B



DRAWN BY : S. DOMBROWSKI DATE : 8/07
 CHECKED BY : T.R. PETERSON DATE : 8/07

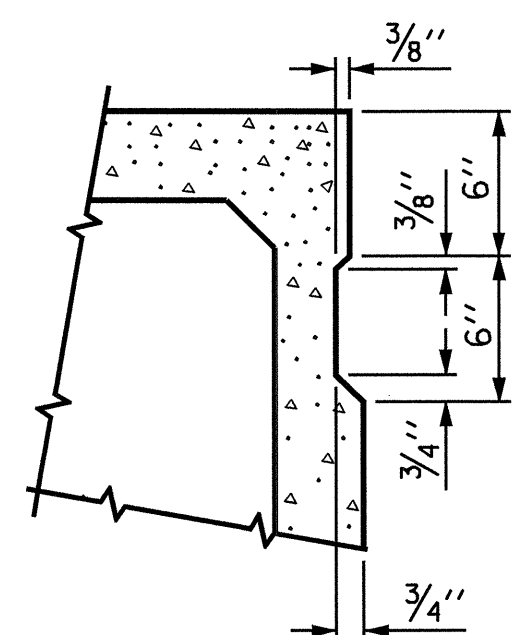
30-OCT-2008 14:58
 R:\Structure\B-4285\Plans\B-4285_sd.PS.dgn
 vpatel

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			20



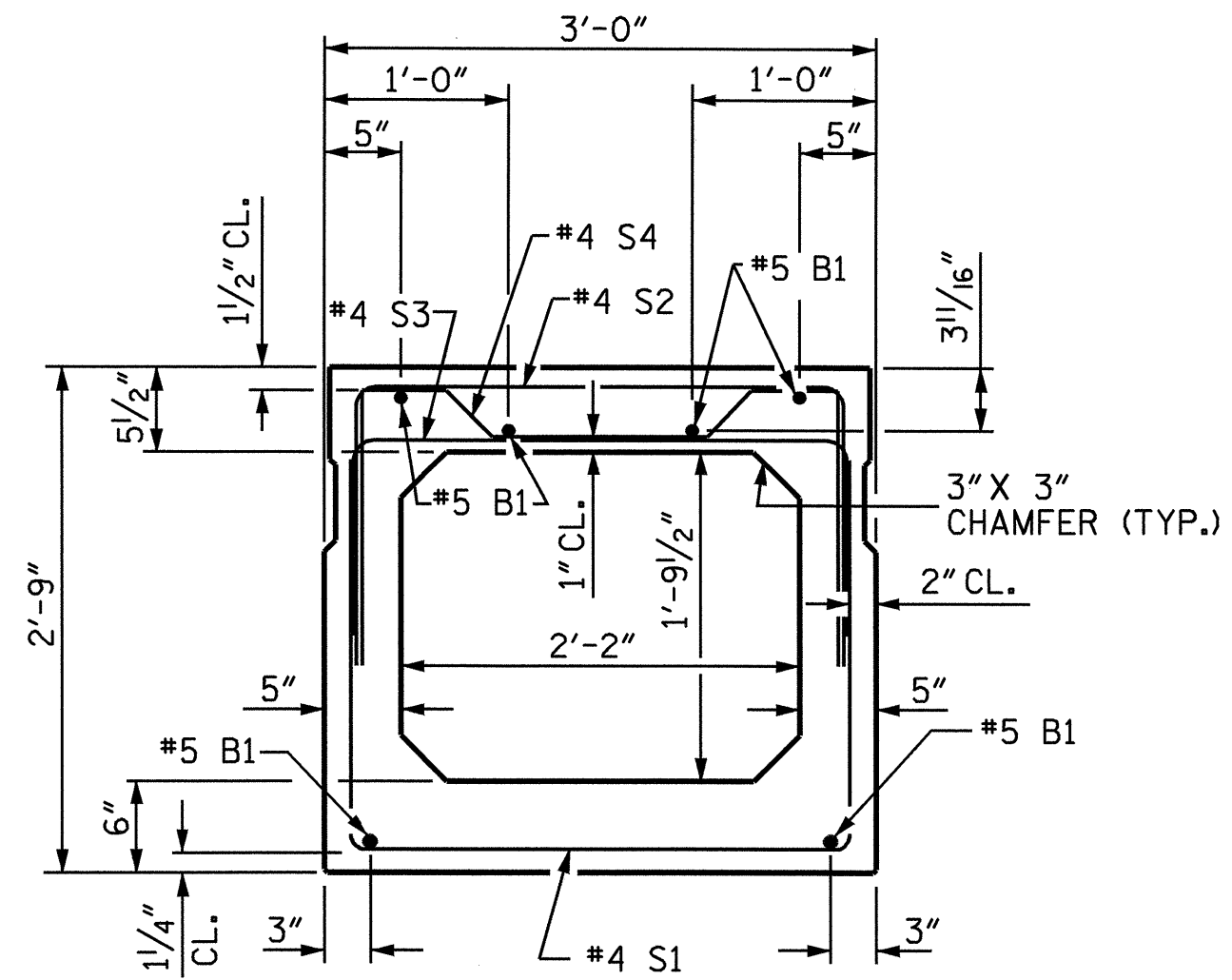
END ELEVATION

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.)



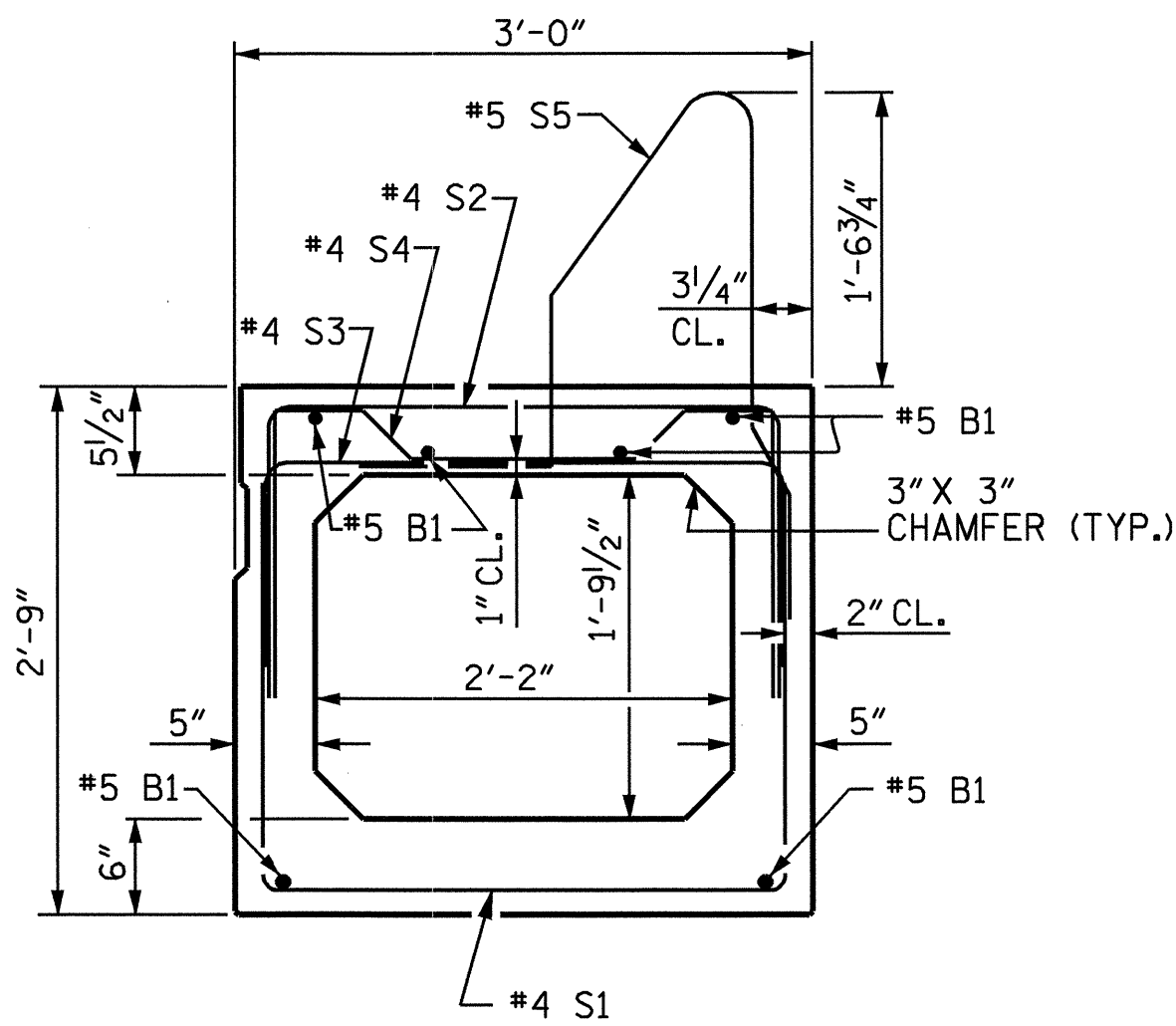
SHEAR KEY DETAIL

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



INTERIOR BOX BEAM SECTION

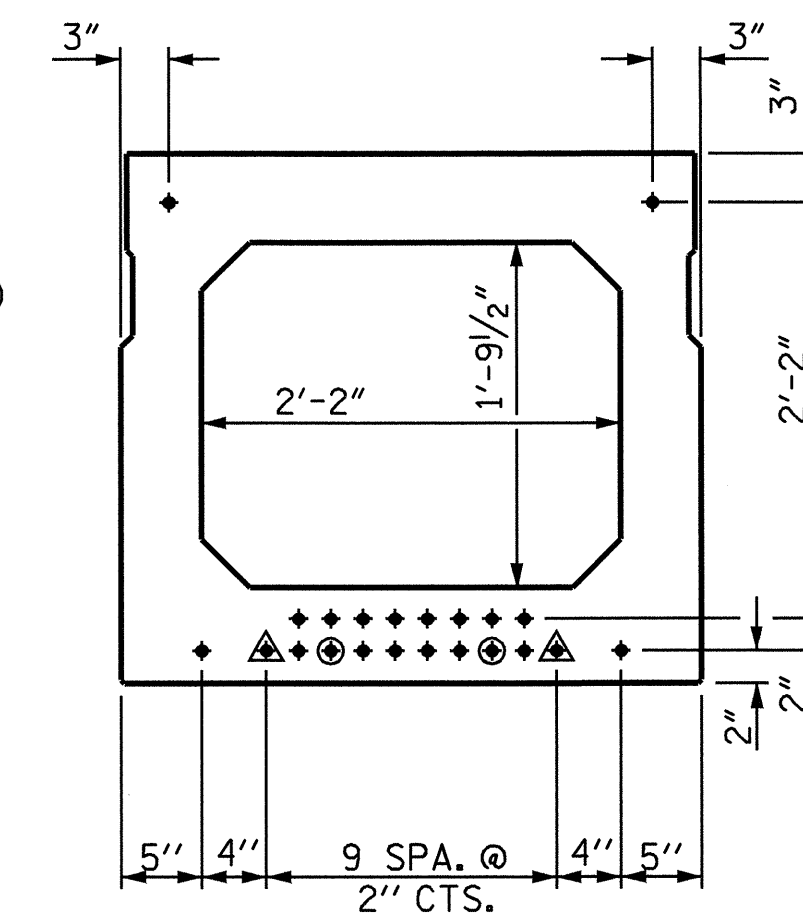
(STRAND LAYOUT NOT SHOWN)



EXTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)

0.6" Ø LOW RELAXATION STRAND LAYOUT



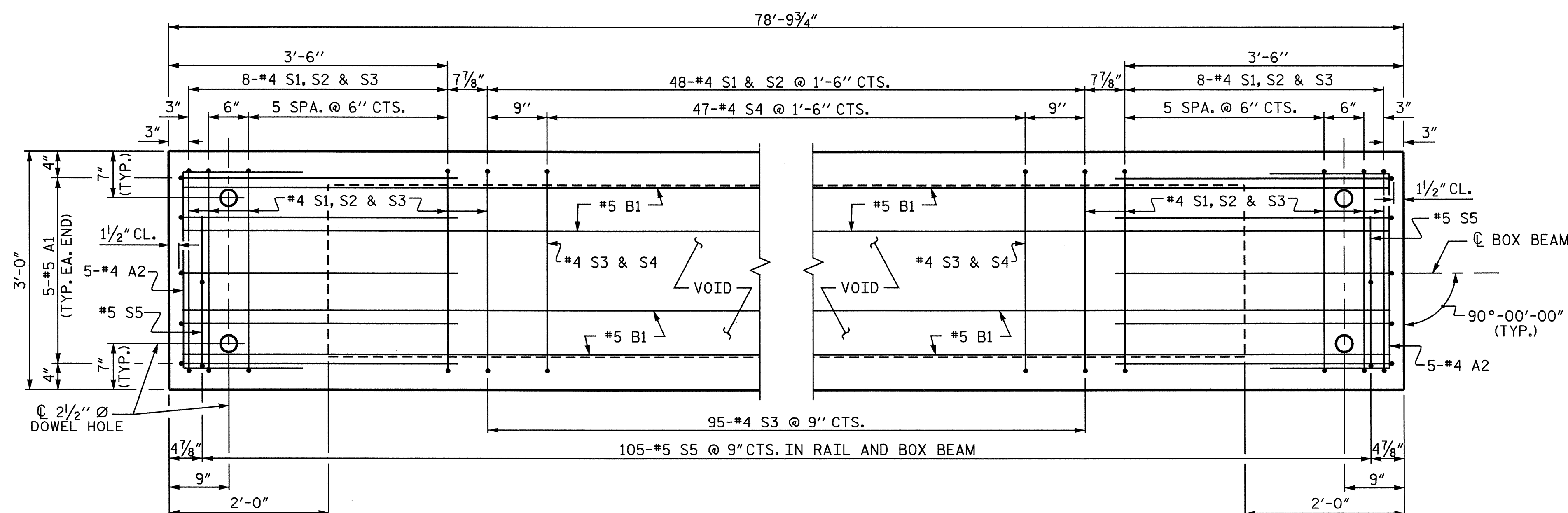
TYPICAL STRAND LOCATION

(22 STRANDS REQUIRED)

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

DEBONDING LEGEND

- FULLY BONDED STRANDS
- △ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER



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.

BAR TYPES	

THIS LEG AT TOP OF UNIT

ALL BAR DIMENSIONS ARE OUT TO OUT

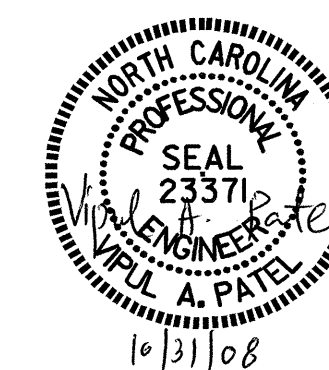
BILL OF MATERIAL FOR ONE BOX BEAM UNIT							
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT LENGTH	EXTERIOR UNIT WEIGHT	INTERIOR UNIT LENGTH	INTERIOR UNIT WEIGHT
A1	10	#5	1	6'-8"	70	6'-8"	70
A2	34	#4	2	5'-7"	127	5'-7"	127
B1	12	#5	STR	40'-4"	505	40'-4"	505
K1	12	#4	6	6'-2"	49	6'-2"	49
K2	8	#4	STR	2'-7"	14	2'-7"	14
S1	64	#4	3	7'-6"	321	7'-6"	321
S2	64	#4	3	5'-8"	242	5'-8"	242
S3	111	#4	3	4'-10"	358	4'-10"	358
S4	47	#4	4	5'-10"	183	5'-10"	183
* S5	105	#5	5	6'-2"	675	--	--
REINFORCING STEEL				1869 LBS.		1869 LBS.	
* EPOXY COATED REINF. STEEL				675 LBS.			
6,000 P.S.I. CONCRETE				14.1 CU. YDS.		13.9 CU. YDS.	
0.6" Ø L.R. STRANDS				No. 22		No. 22	

GRADE 270 STRANDS	
AREA (SQUARE INCHES)	0.217
ULTIMATE STRENGTH (LBS. PER STRAND)	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	43,950

PROJECT NO. B-4285
 SURRY COUNTY
 STATION: 17+40.00 -L-

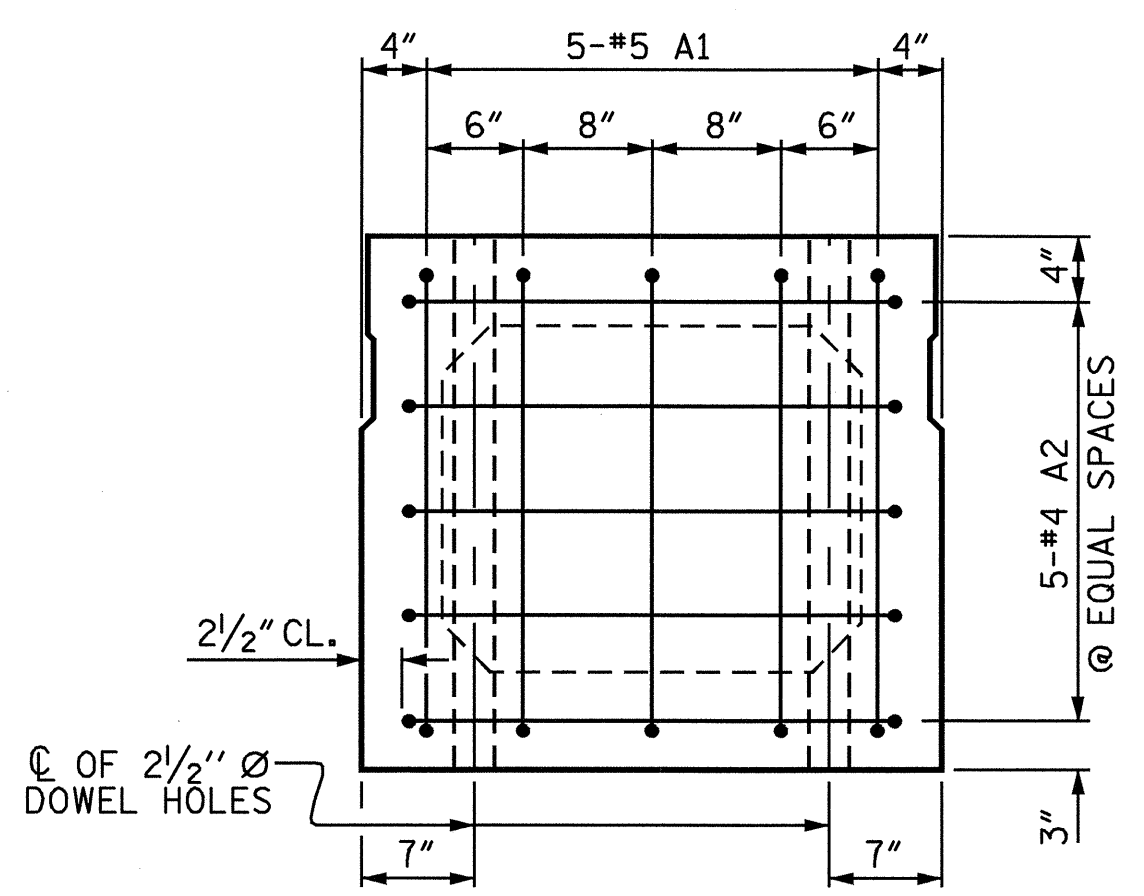
SHEET 1 OF 3

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



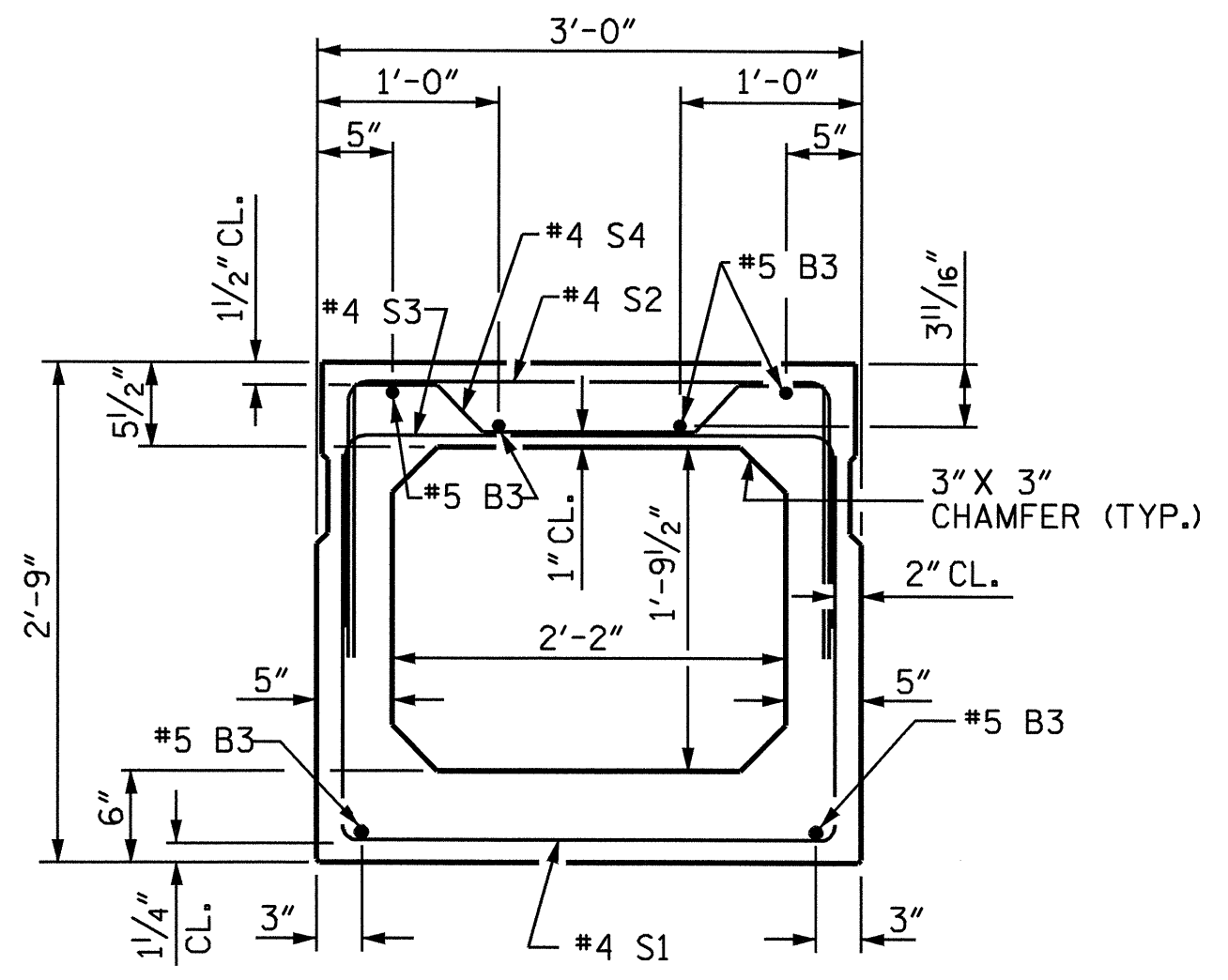
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			20

ASSEMBLED BY : S. DOMBROWSKI	DATE : 8/07
CHECKED BY : T. R. PETERSON	DATE : 8/07
DRAWN BY : TLA 5/05	ADDED 7/11/05
CHECKED BY : GM 6/05	REV. 5/1/06 TLA/GM

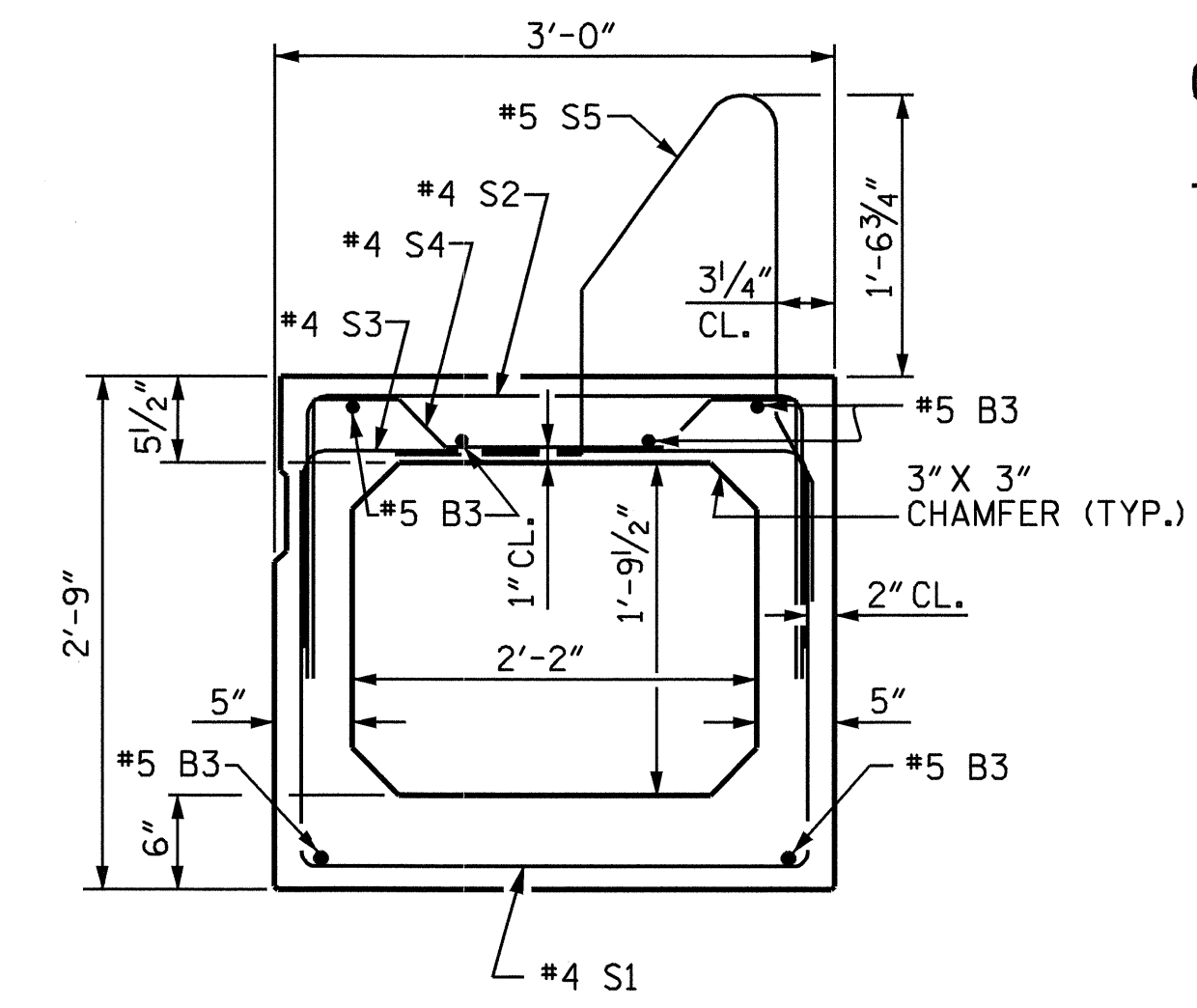


END ELEVATION

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.)

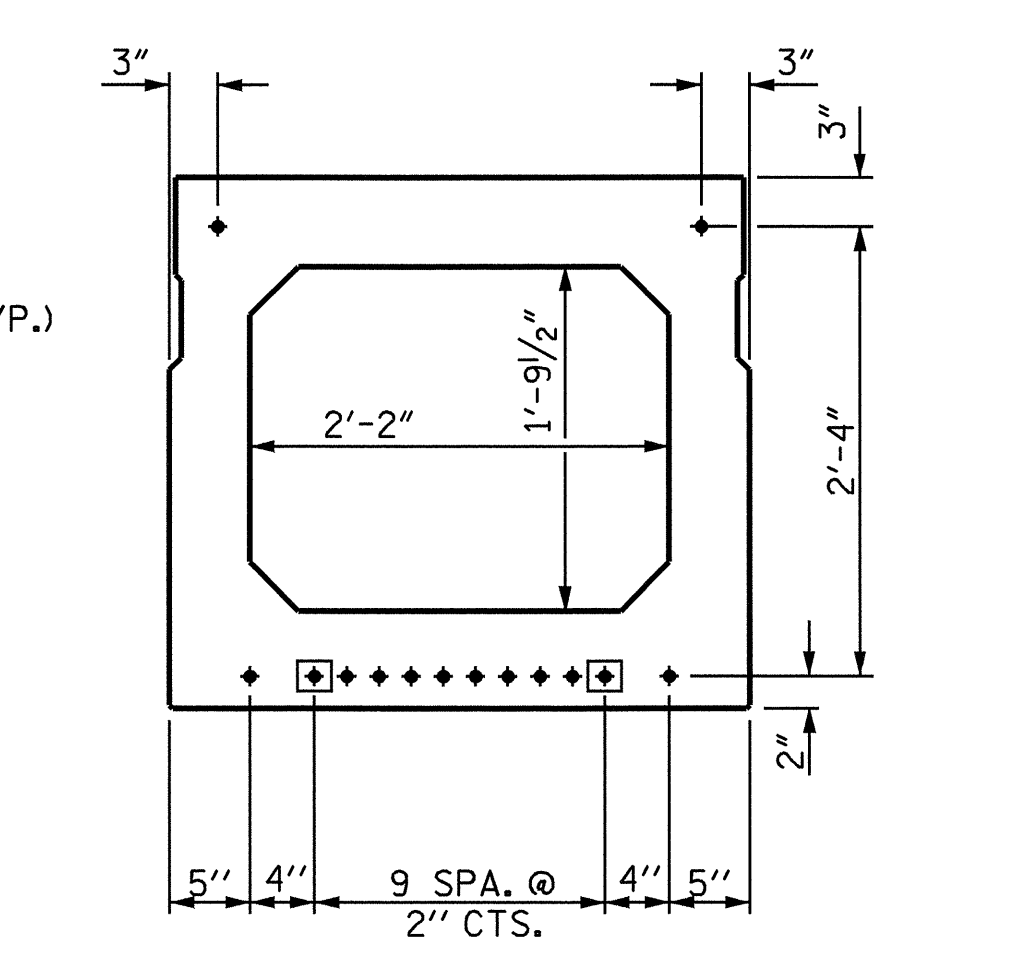


INTERIOR BOX BEAM SECTION
(STRAND LAYOUT NOT SHOWN)



EXTERIOR BOX BEAM SECTION
(STRAND LAYOUT NOT SHOWN)

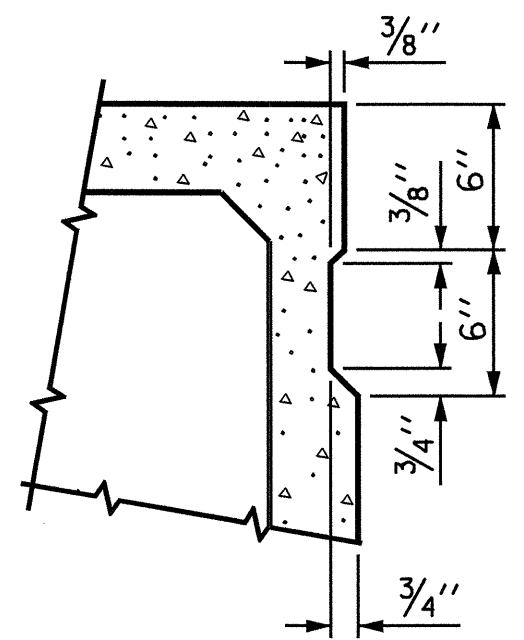
0.6" Ø LOW RELAXATION STRAND LAYOUT



TYPICAL STRAND LOCATION
(14 STRANDS REQUIRED)
(INTERIOR BOX BEAM SECTION SHOWN-EXTERIOR SECTION SIMILAR EXCEPT SHEAR KEY LOCATION)

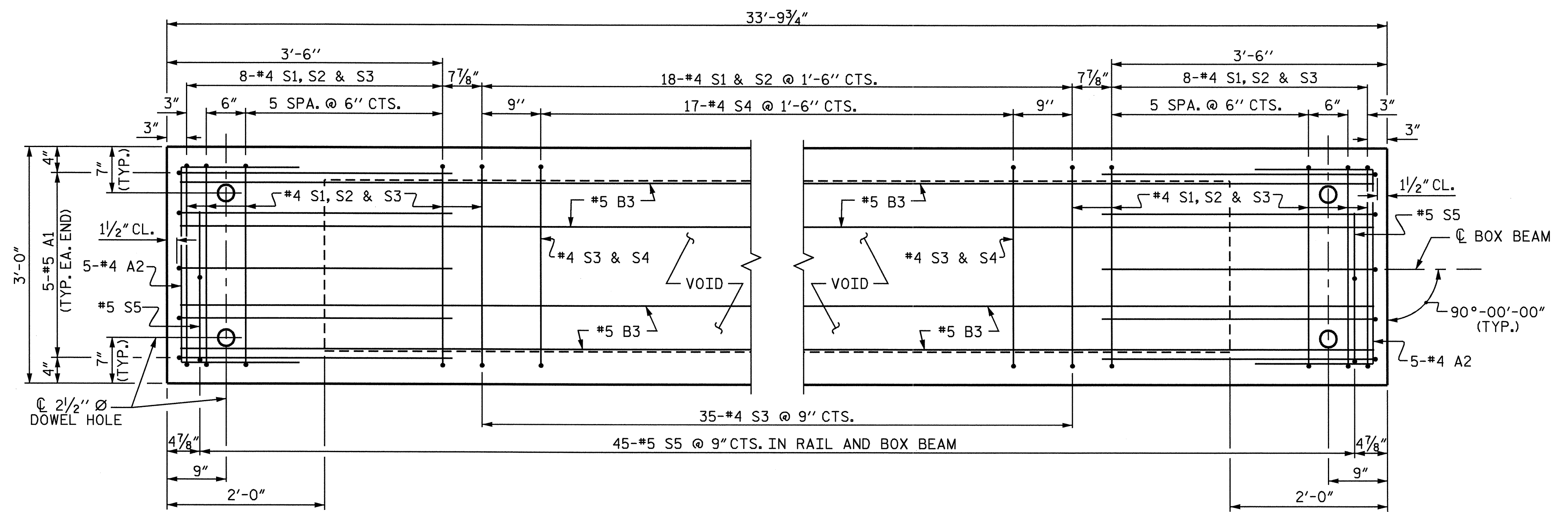
DEBONDING LEGEND

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



SHEAR KEY DETAIL

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



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.

BAR TYPES

1 THIS LEG AT TOP OF UNIT

2

3

4

5

6

ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR ONE BOX BEAM UNIT

				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
A1	10	#5	1	6'-8"	70	6'-8"	70
A2	28	#4	2	5'-7"	104	5'-7"	104
B3	6	#5	STR	33'-5"	209	33'-5"	209
K1	9	#4	6	6'-2"	37	6'-2"	37
K2	6	#4	STR	2'-7"	10	2'-7"	10
S1	34	#4	3	7'-6"	170	7'-6"	170
S2	34	#4	3	5'-8"	129	5'-8"	129
S3	51	#4	3	4'-10"	165	4'-10"	165
S4	17	#4	4	5'-10"	66	5'-10"	66
* S5	45	#5	5	6'-2"	289	--	--
REINFORCING STEEL				960 LBS.		960 LBS.	
* EPOXY COATED REINF. STEEL				289 LBS.			
5,000 P.S.I. CONCRETE				6.5 CU. YDS.		6.5 CU. YDS.	
0.6" Ø L.R. STRANDS				No. 14		No. 14	

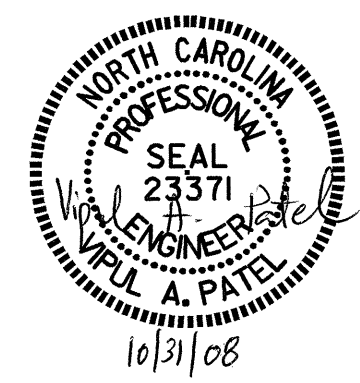
GRADE 270 STRANDS

	0.6" Ø L.R.
AREA (SQUARE INCHES)	0.217
ULTIMATE STRENGTH (LBS. PER STRAND)	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	43,950

PROJECT NO. B-4285
SURRY COUNTY
 STATION: 17+40.00 -L-

SHEET 2 OF 3

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

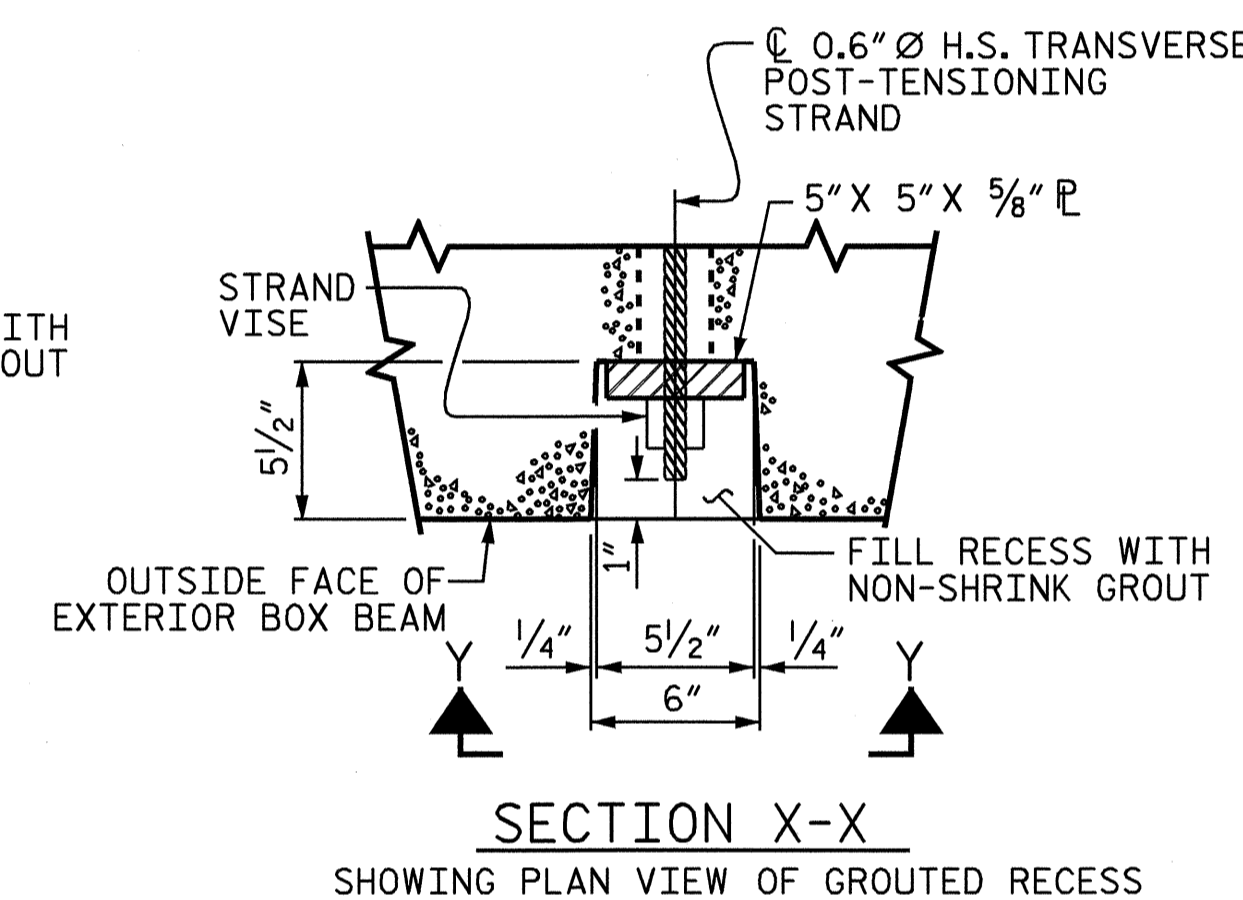
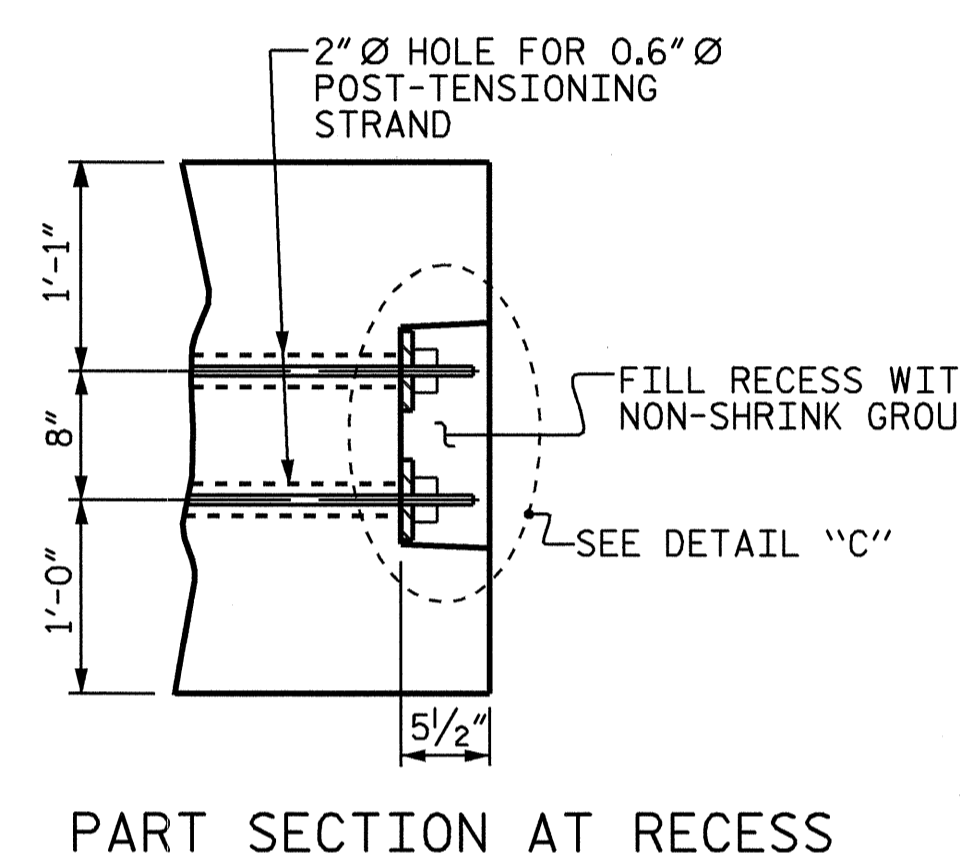
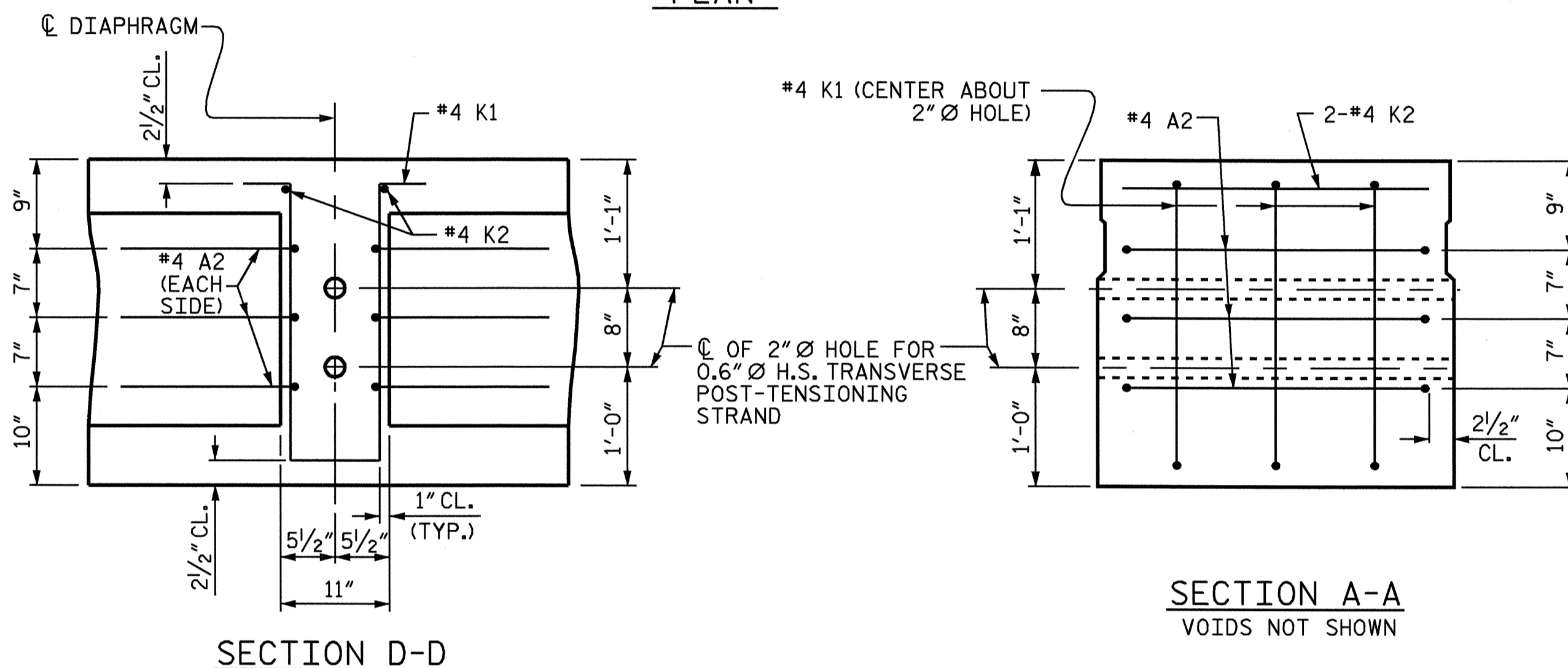
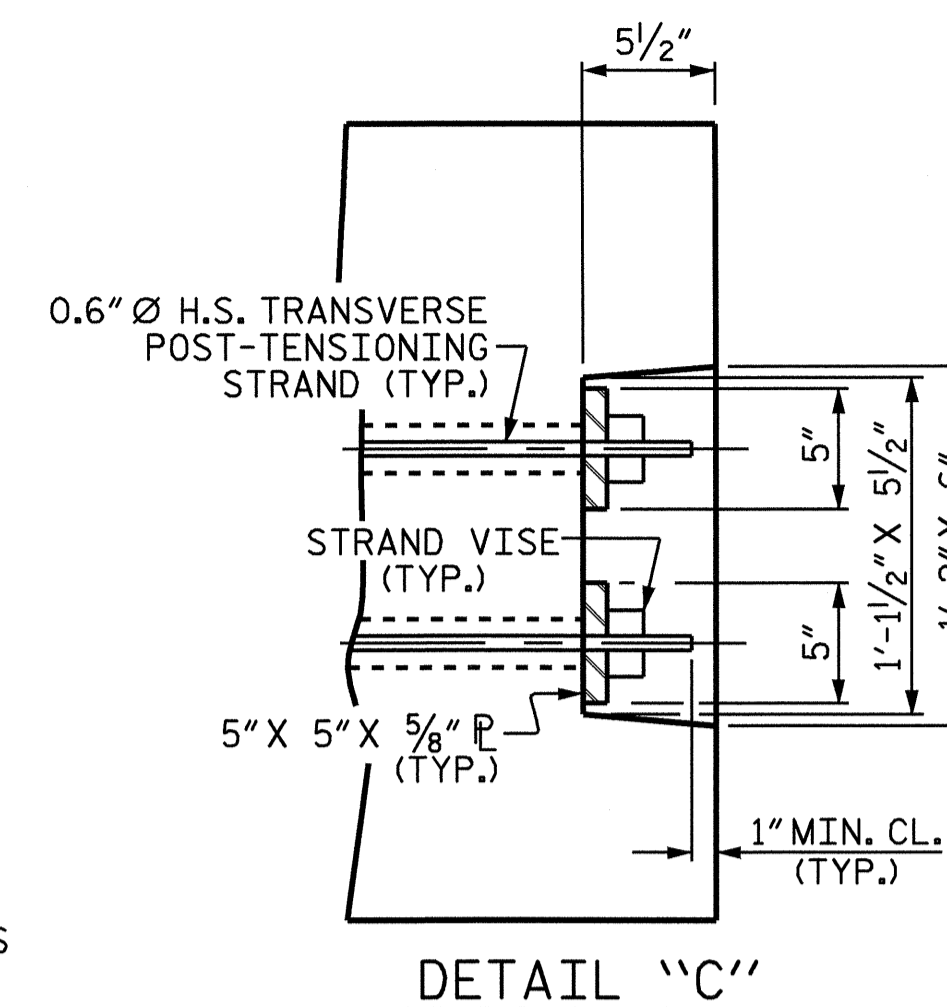
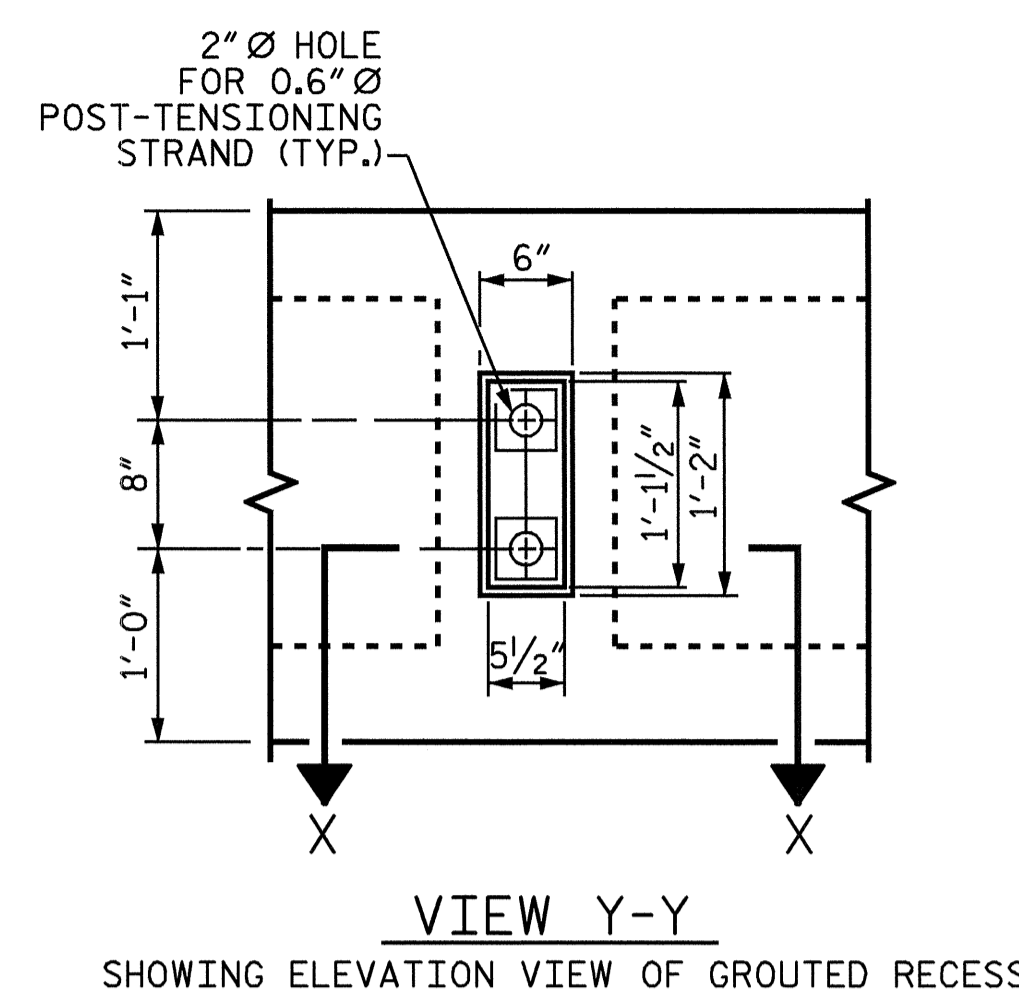
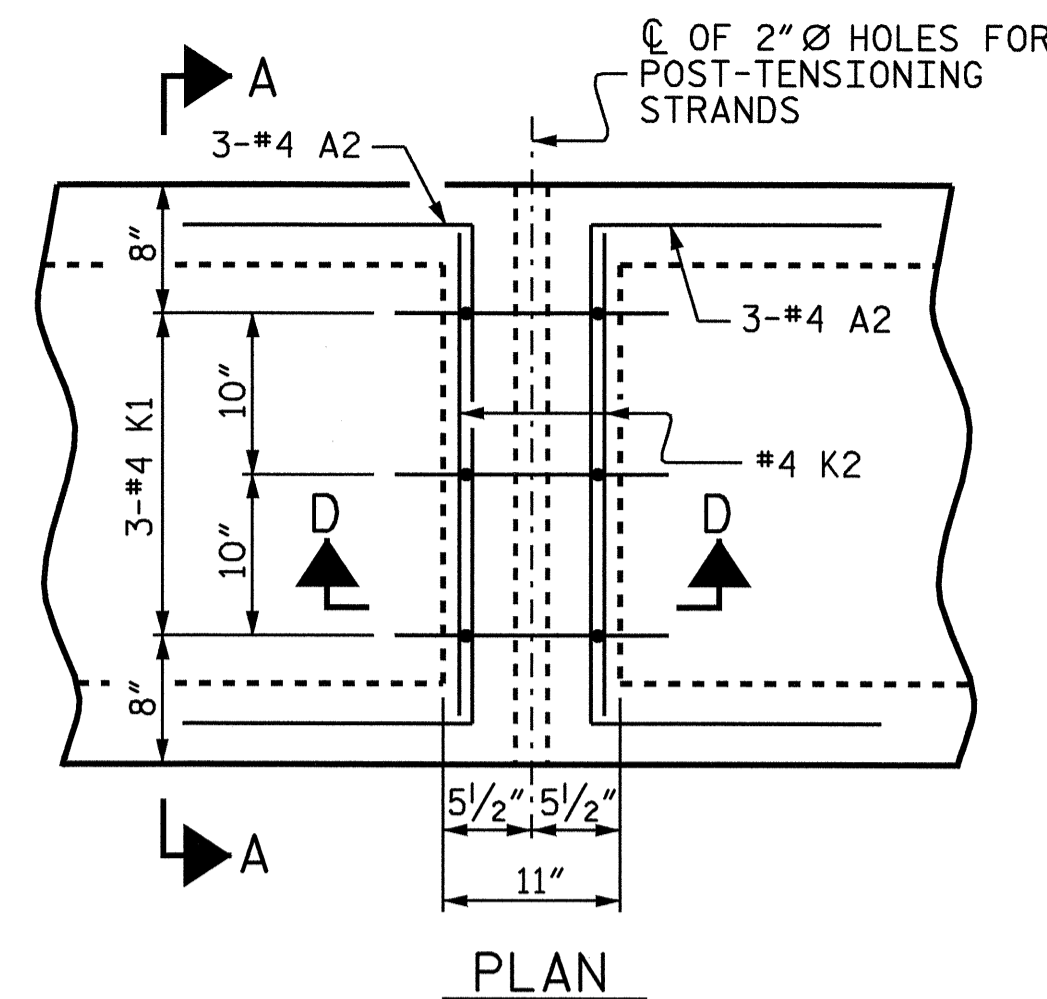


REVISIONS

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

SHEET NO. **S-8**
 TOTAL SHEETS **20**

ASSEMBLED BY : S. DOMBROWSKI	DATE : 8/07
CHECKED BY : T.R. PETERSON	DATE : 9/07
DRAWN BY : TLA 5/05	ADDED 7/11/05
CHECKED BY : GM 6/05	REV. 5/1/06 TLA/GM



BOX BEAM UNITS REQUIRED			
SPAN A	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR	2	78'-9 3/4"	157.63
INTERIOR	9	78'-9 3/4"	709.31
TOTAL	11	78'-9 3/4"	866.94
SPAN B	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR	2	33'-9 3/4"	67.63
INTERIOR	9	33'-9 3/4"	304.31
TOTAL	11	33'-9 3/4"	371.94
TOTAL (SPAN A & B)	22		1238.88

DOUBLE DIAPHRAGM DETAILS

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

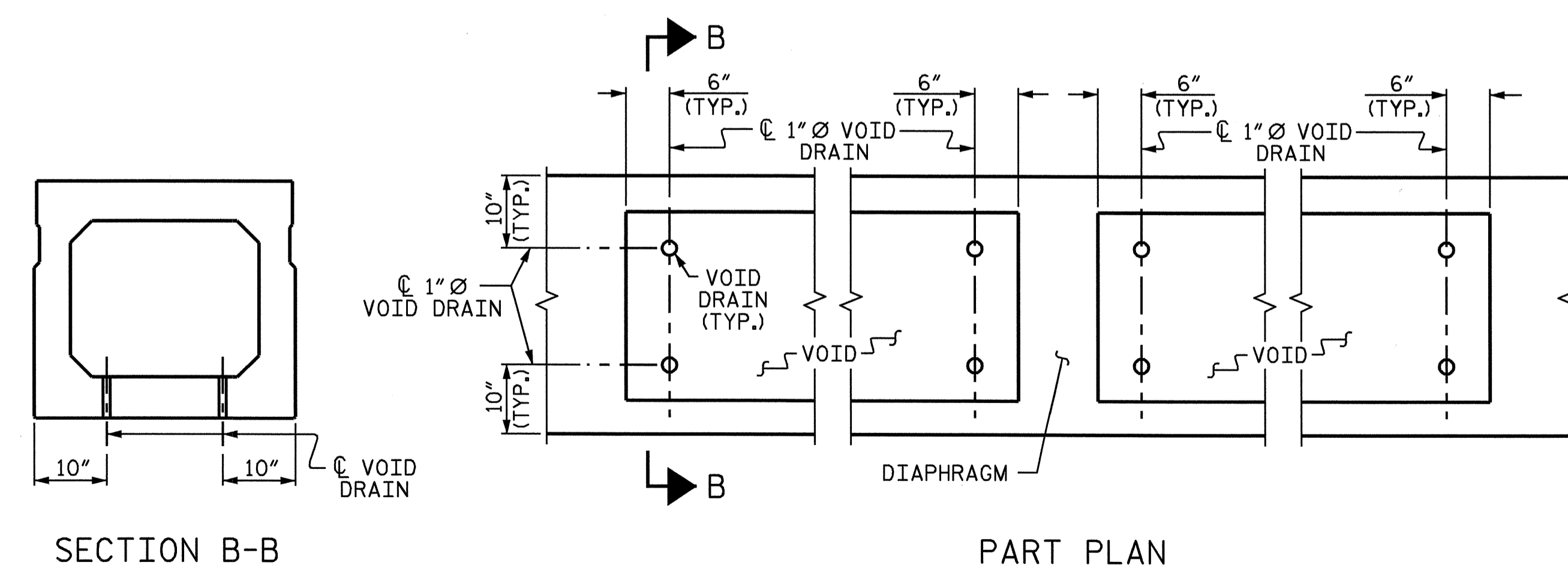
GRouted RECESS DETAIL AT END OF POST-TENSIONED STRANDS OF EXTERIOR BOX BEAM

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) ↑	3/4"	1/16"
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD** ↓	3/4"	1/16"
FINAL CAMBER ↑	2/2"	5/8"

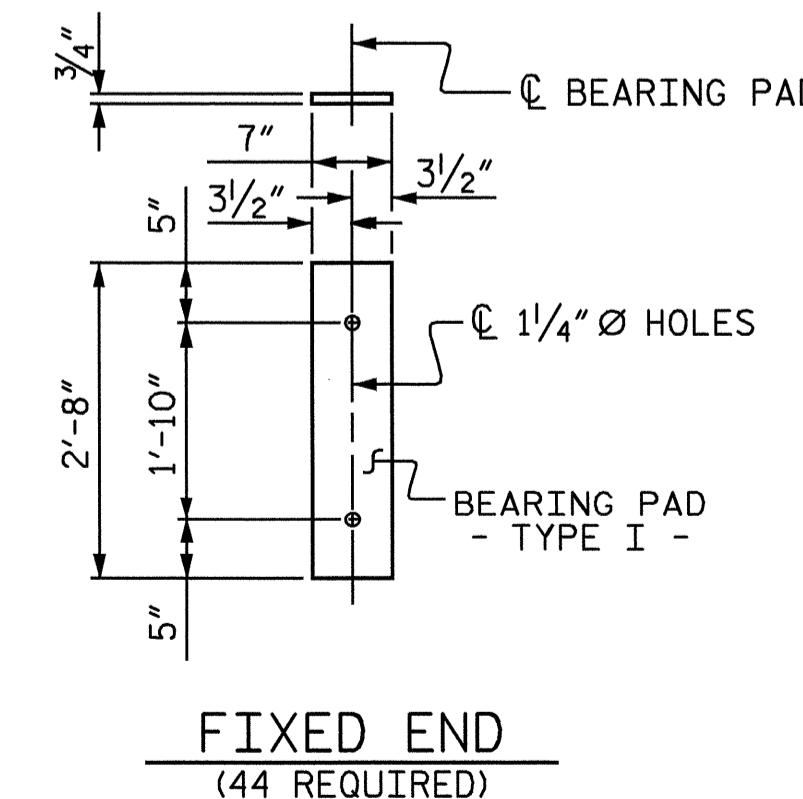
** INCLUDES FUTURE WEARING SURFACE

PROJECT NO. B-4285
SURRY COUNTY
 STATION: 17+40.00 -L-

SHEET 3 OF 3

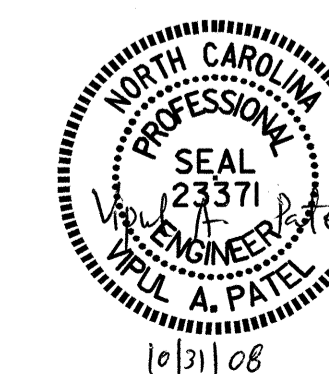


VOID DRAIN DETAILS
 (DIMENSIONS SHOWN ARE TYPICAL FOR EACH VOID)



ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS

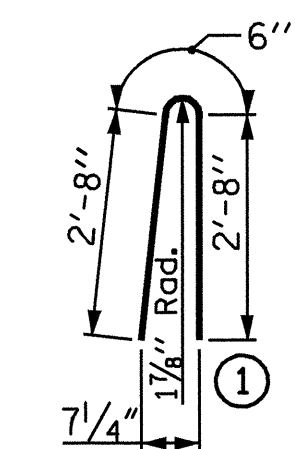


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 3'-0" X 2'-9"
 PRESTRESSED CONCRETE
 BOX BEAM UNIT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			20

ASSEMBLED BY : S. DOMBROWSKI	DATE : 8/07
CHECKED BY : T.R. PETERSON	DATE : 9/07
DRAWN BY : TLA 5/05	ADDED 7/11/05
CHECKED BY : GM 6/05	REV. 5/11/06 TLA/GM

BAR TYPE

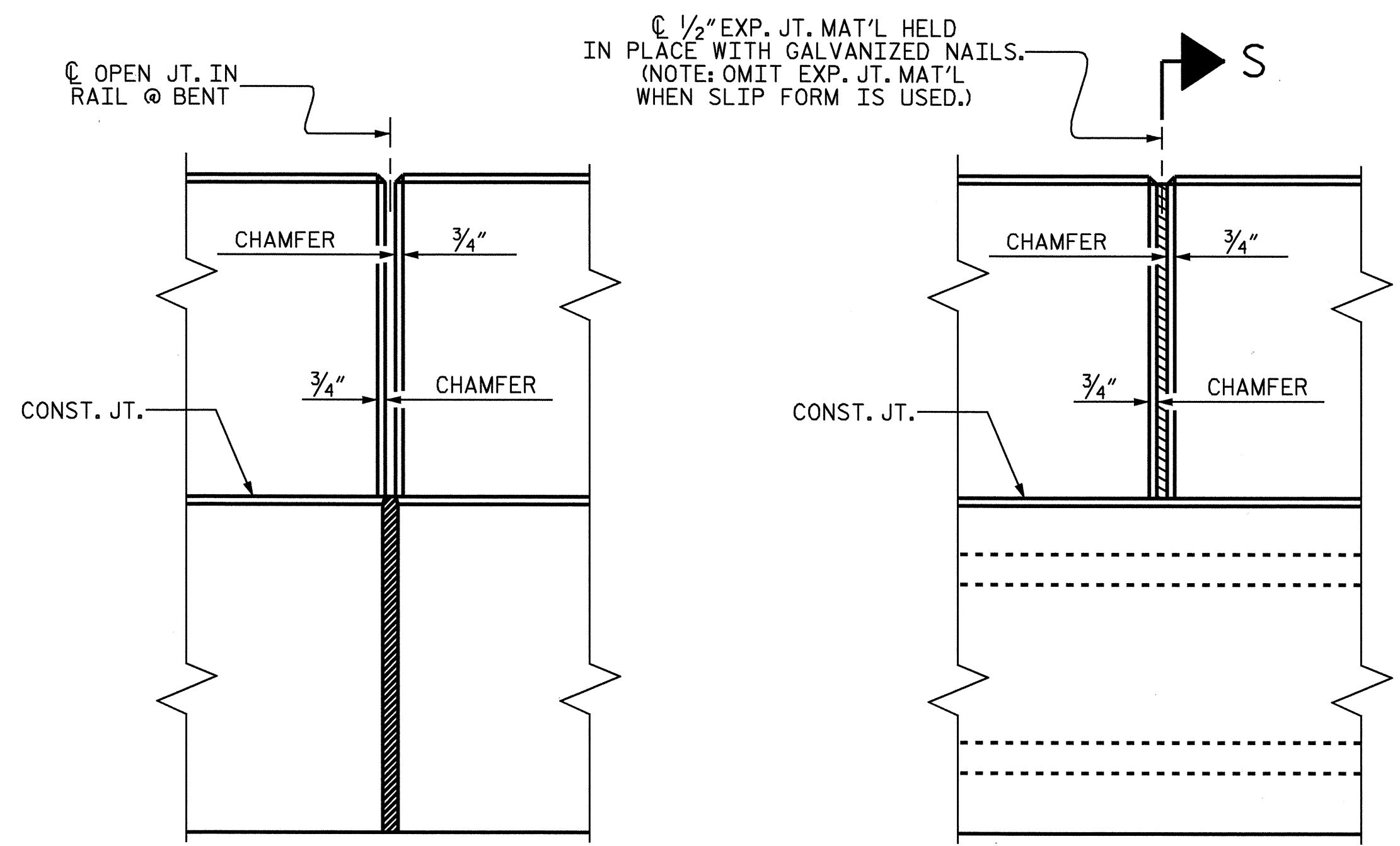


BAR DIMENSIONS ARE OUT TO OUT.

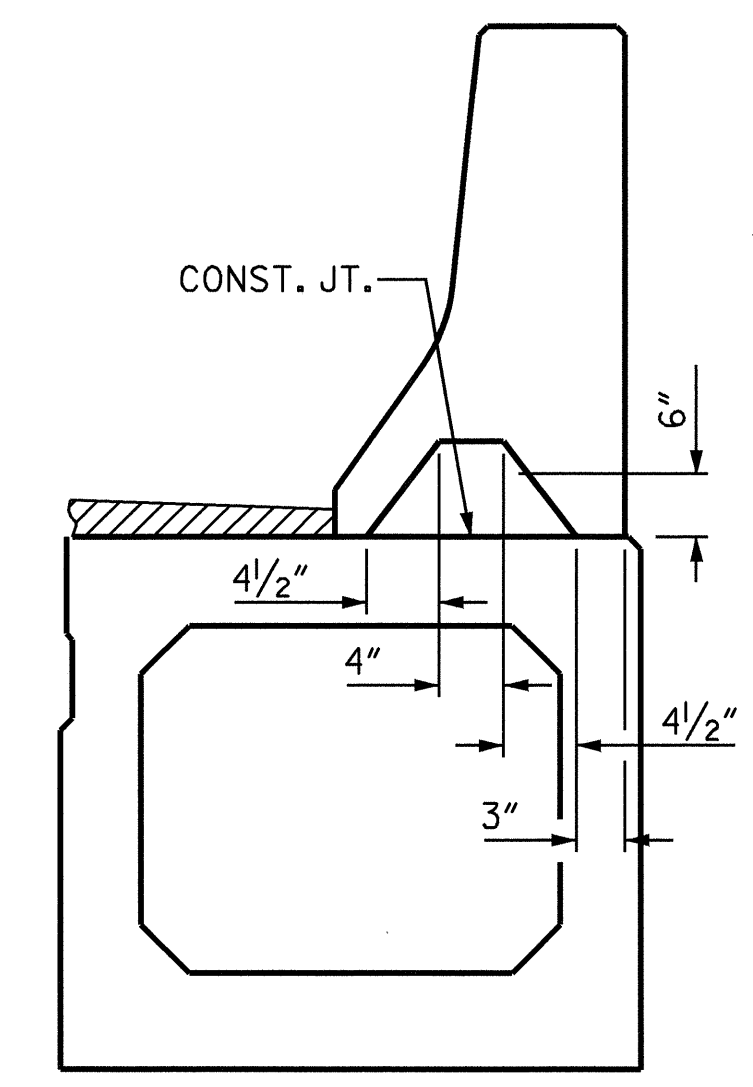
BILL OF MATERIAL FOR CONCRETE BARRIER RAIL

BAR	BARS PER SPAN		TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
	SPAN A	SPAN B					
* B2	42		42	#5	STR	25'-11"	1135
* B4		28	28	#5	STR	16'-6"	482
* S6	210	90	300	#5	1	5'-10"	1825

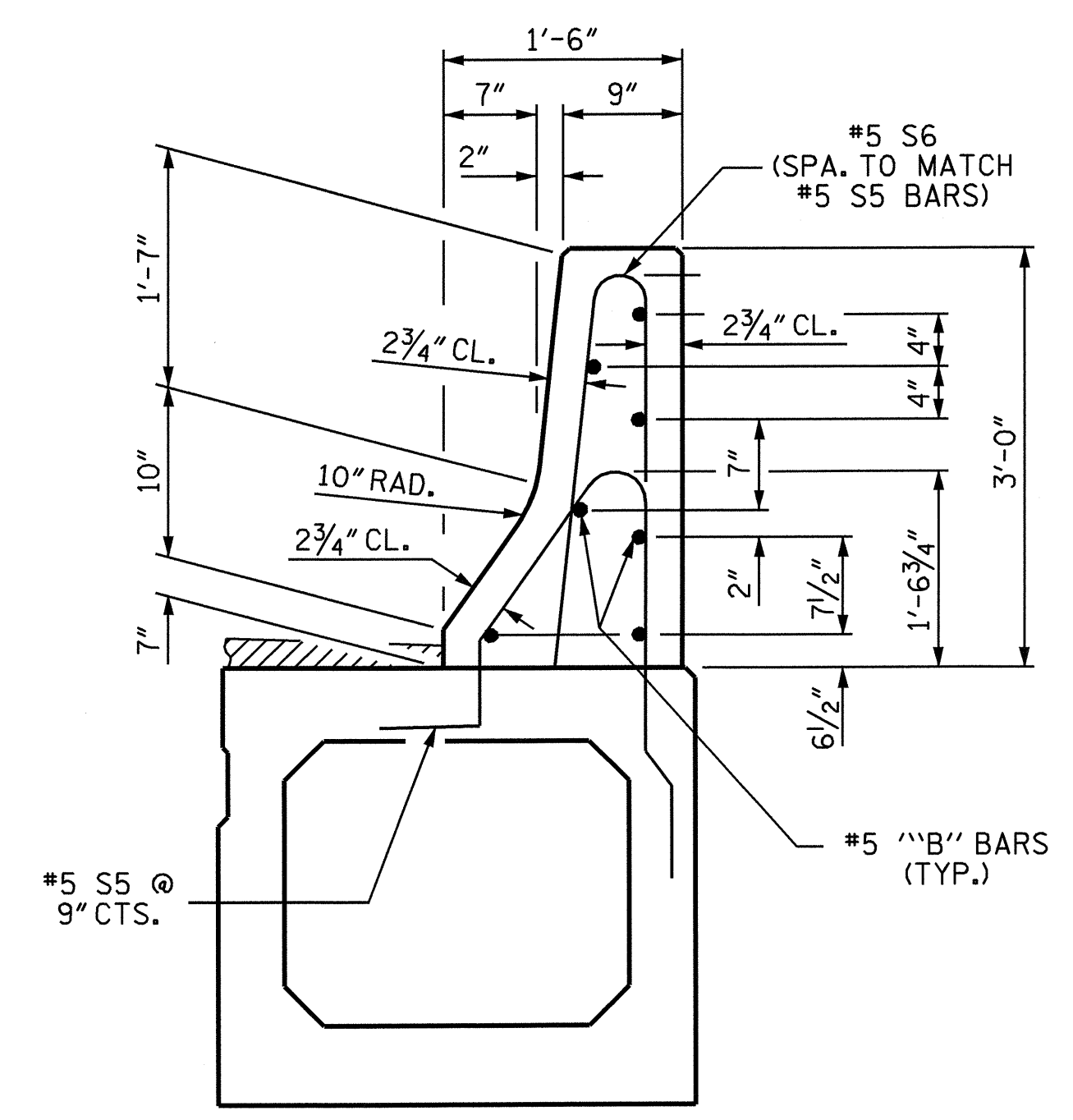
* EPOXY COATED REINFORCING STEEL 3442 LBS.
 CLASS AA CONCRETE 26.8 CU.YDS.
 TOTAL LIN. FT. OF CONCRETE BARRIER RAIL 225.50 LIN. FT.



ELEVATION AT EXPANSION JOINTS



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



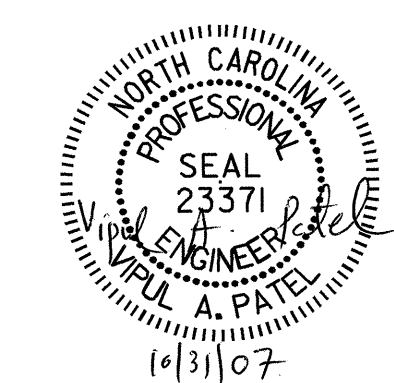
SECTION THRU RAIL

BARRIER RAIL DETAILS

PROJECT NO. B-4285
SURRY COUNTY
 STATION: 17+40.00 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

CONCRETE
 BARRIER RAIL



DRAWN BY : S. DOMBROWSKI DATE : 8/07
 CHECKED BY : T.R. PETERSON DATE : 9/07

REVISIONS						SHEET NO. S-10
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 20
2			4			

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.)

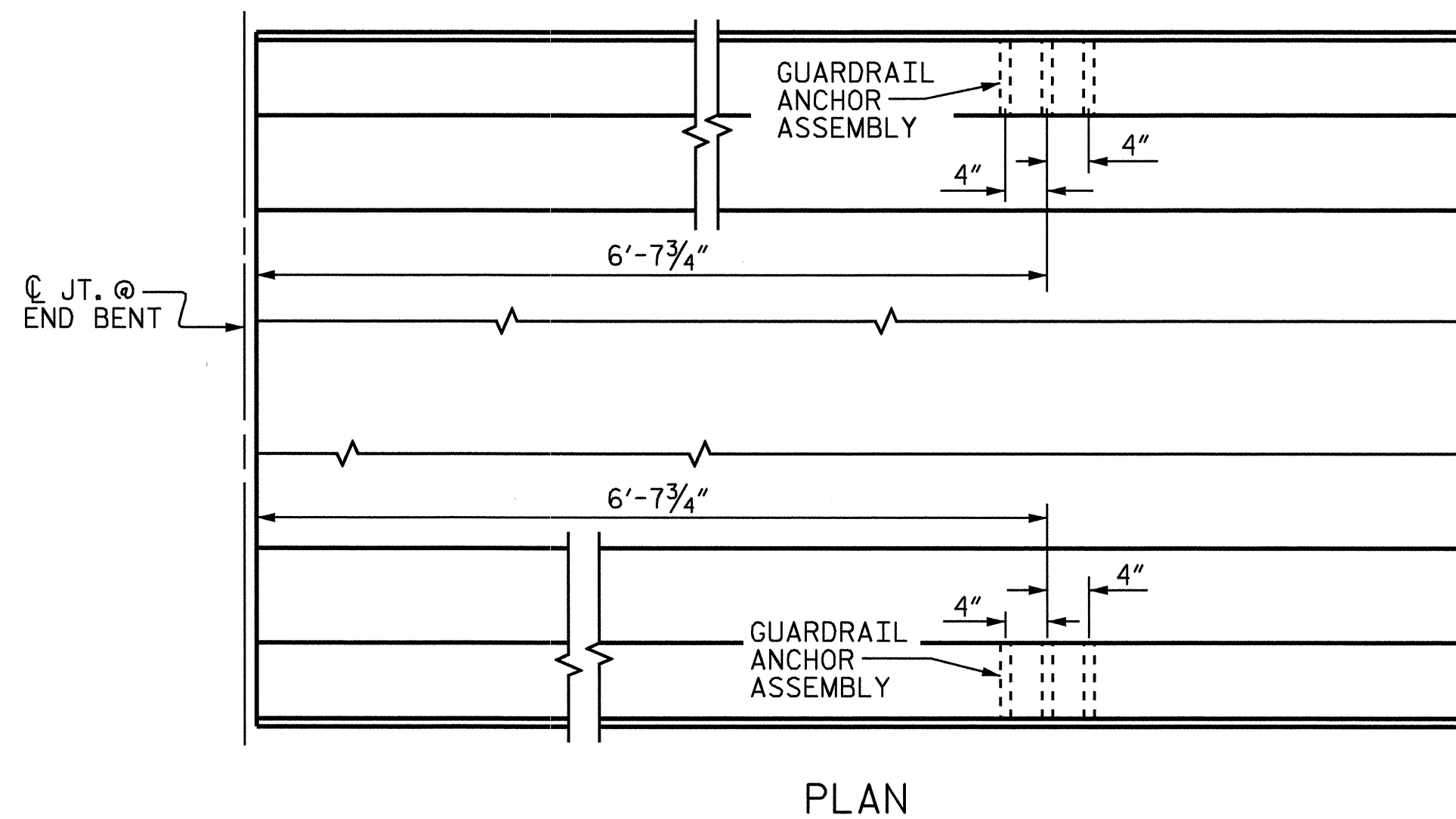
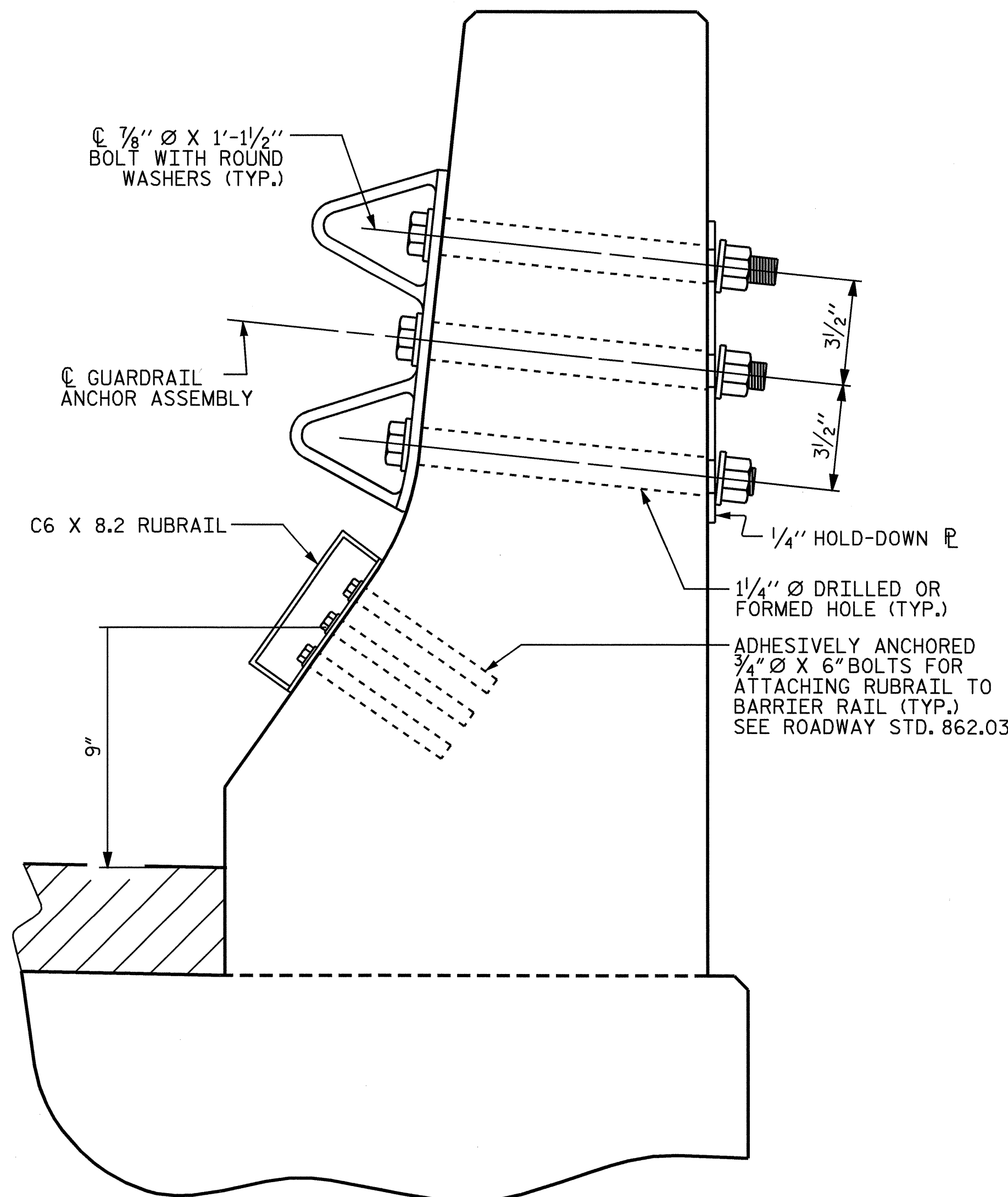
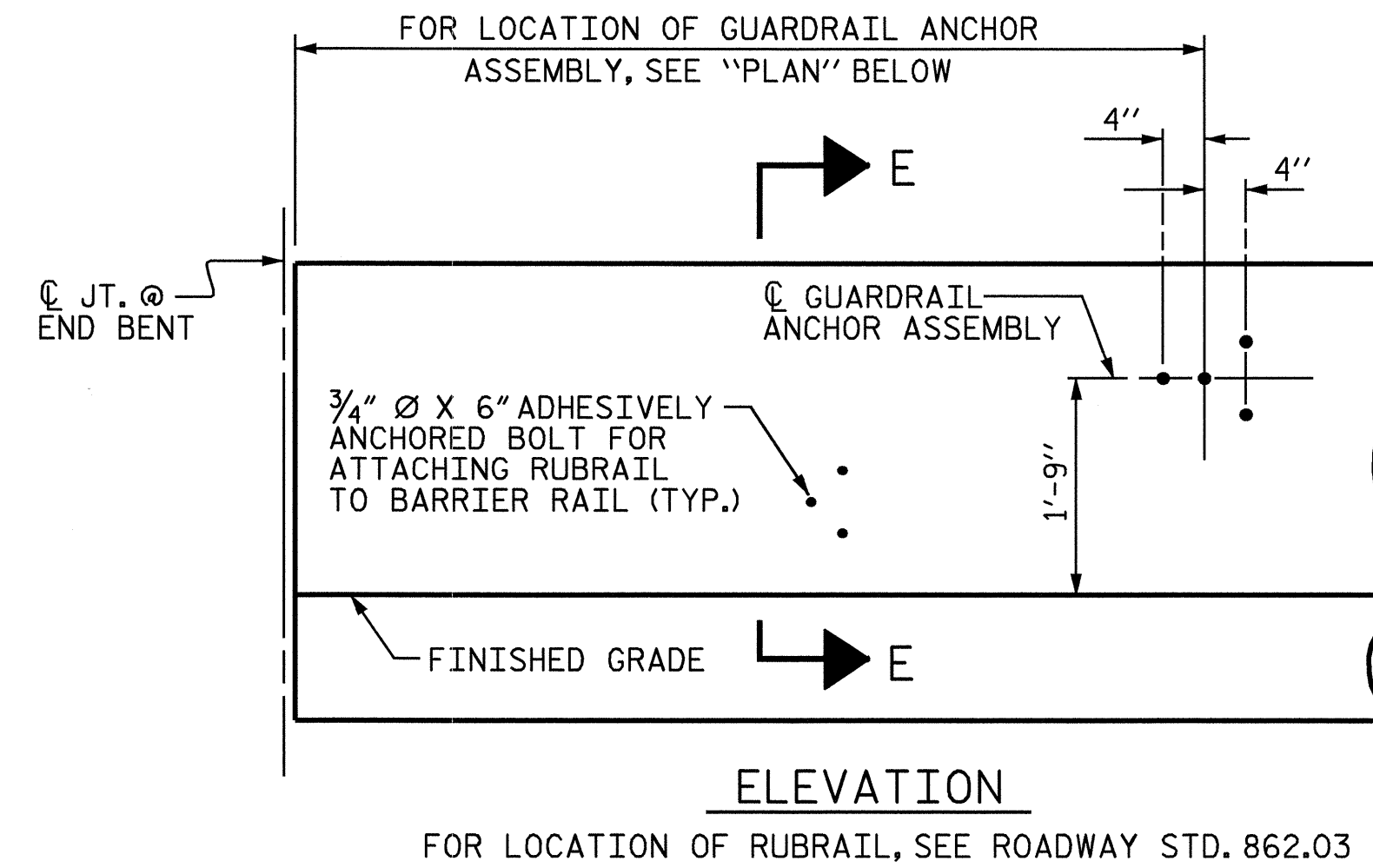
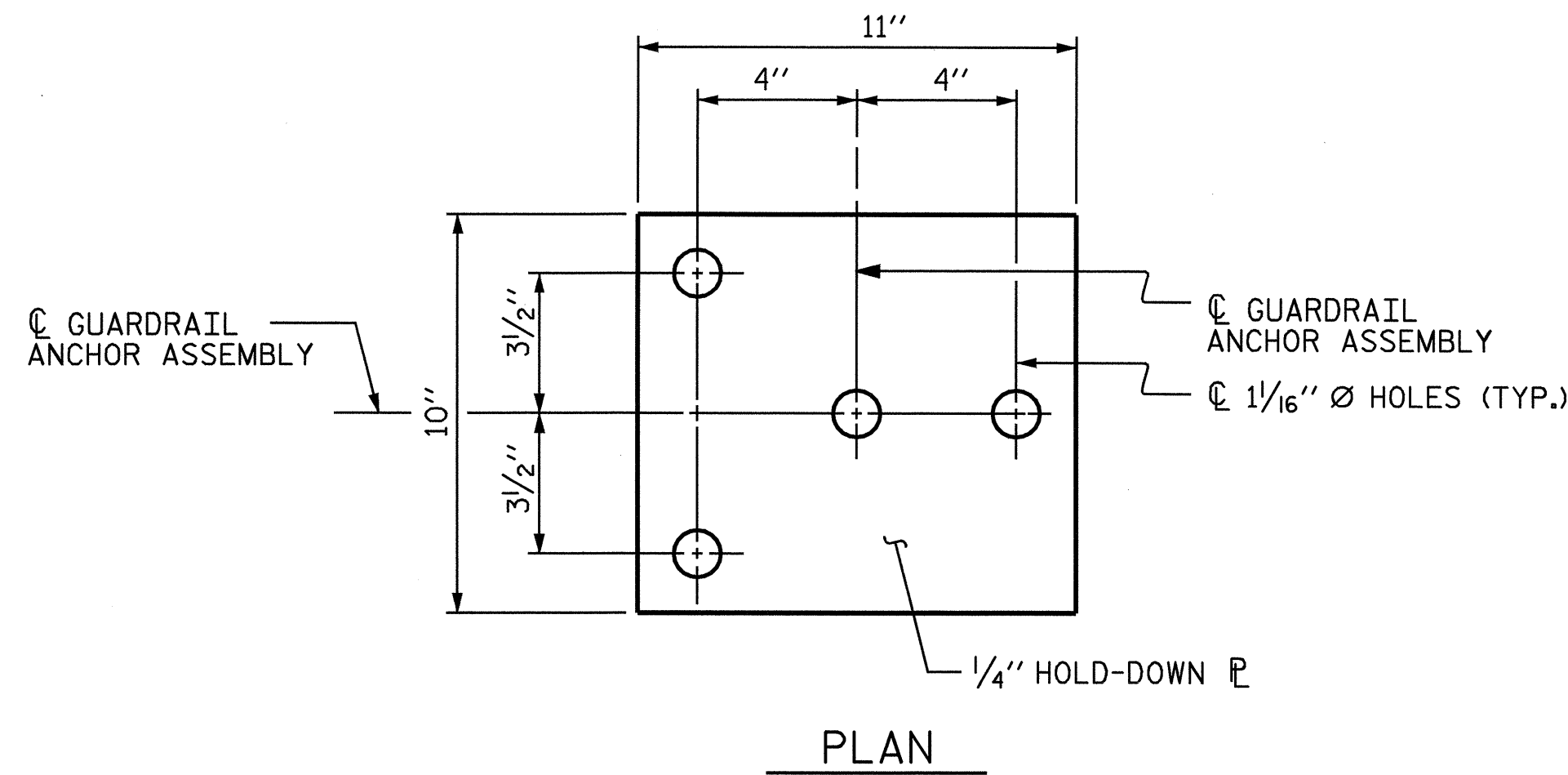
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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.

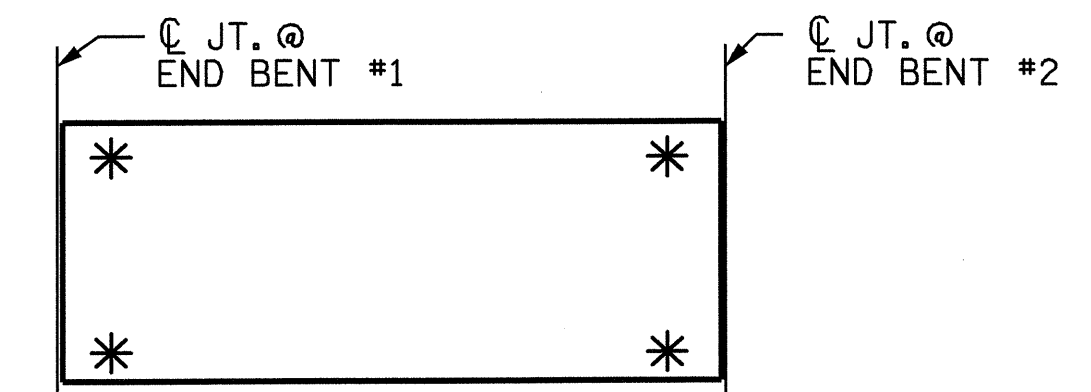
THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

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.



LOCATION OF ANCHORS FOR GUARDRAIL

END BENT #1 SHOWN, END BENT #2 SIMILAR.



SKETCH SHOWING POINTS OF ATTACHMENTS

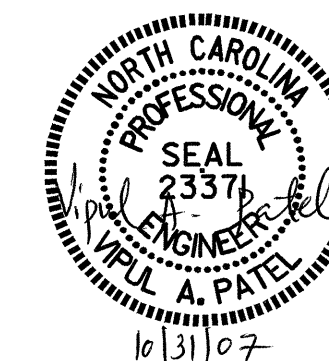
* DENOTES GUARDRAIL ANCHOR ASSEMBLY

SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS

ASSEMBLED BY : S. DOMBROWSKI	DATE : 8/07
CHECKED BY : T.R. PETERSON	DATE : 9/07
DRAWN BY : TLA 5/06	ADDED 5/1/06R KMM/GM
CHECKED BY : GM 5/06	

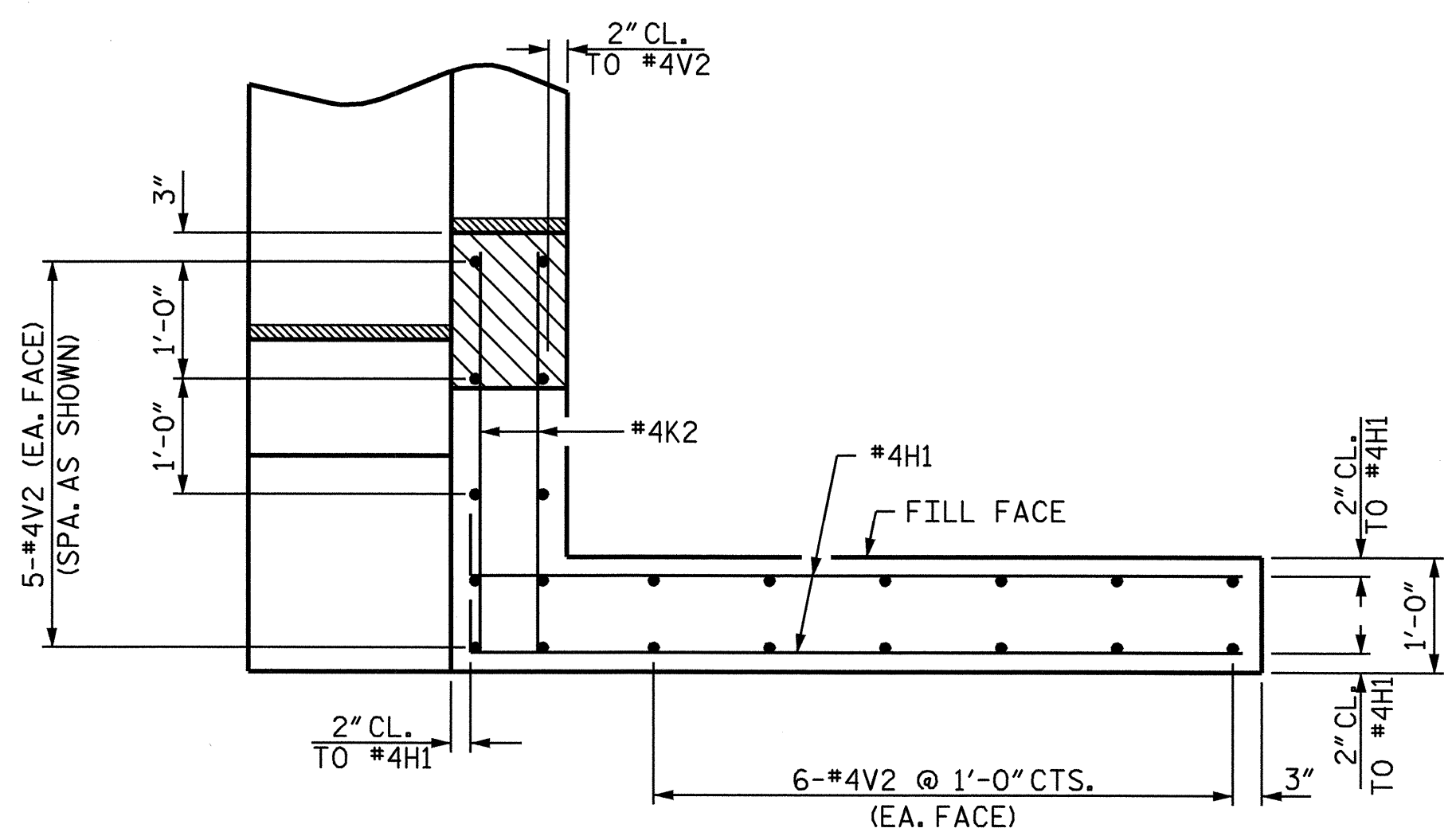
30-OCT-2008 14:57
R:\Structures\B-4285\Plans\B-4285_sd_BR.dgn
vptel



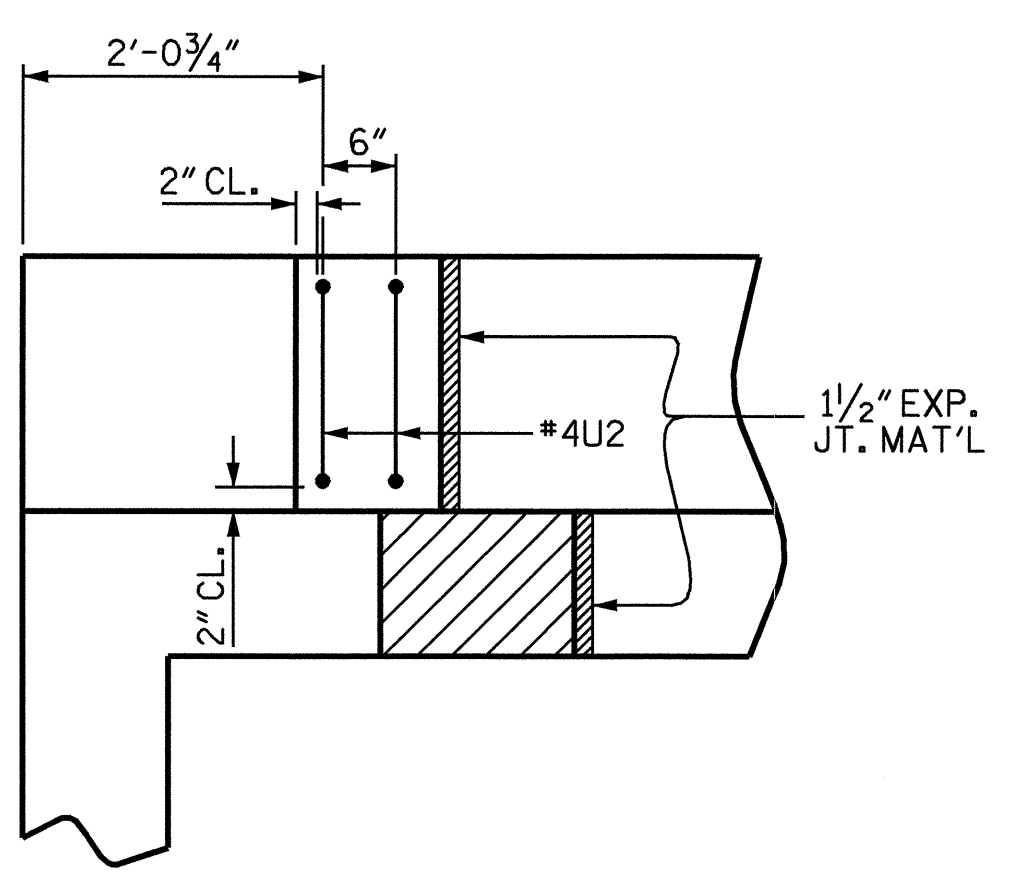
PROJECT NO. B-4285
SURRY COUNTY
 STATION: 17+40.00 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S-11
STANDARD GUARDRAIL ANCHORAGE FOR BARRIER RAIL						
REVISIONS						TOTAL SHEETS 20
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

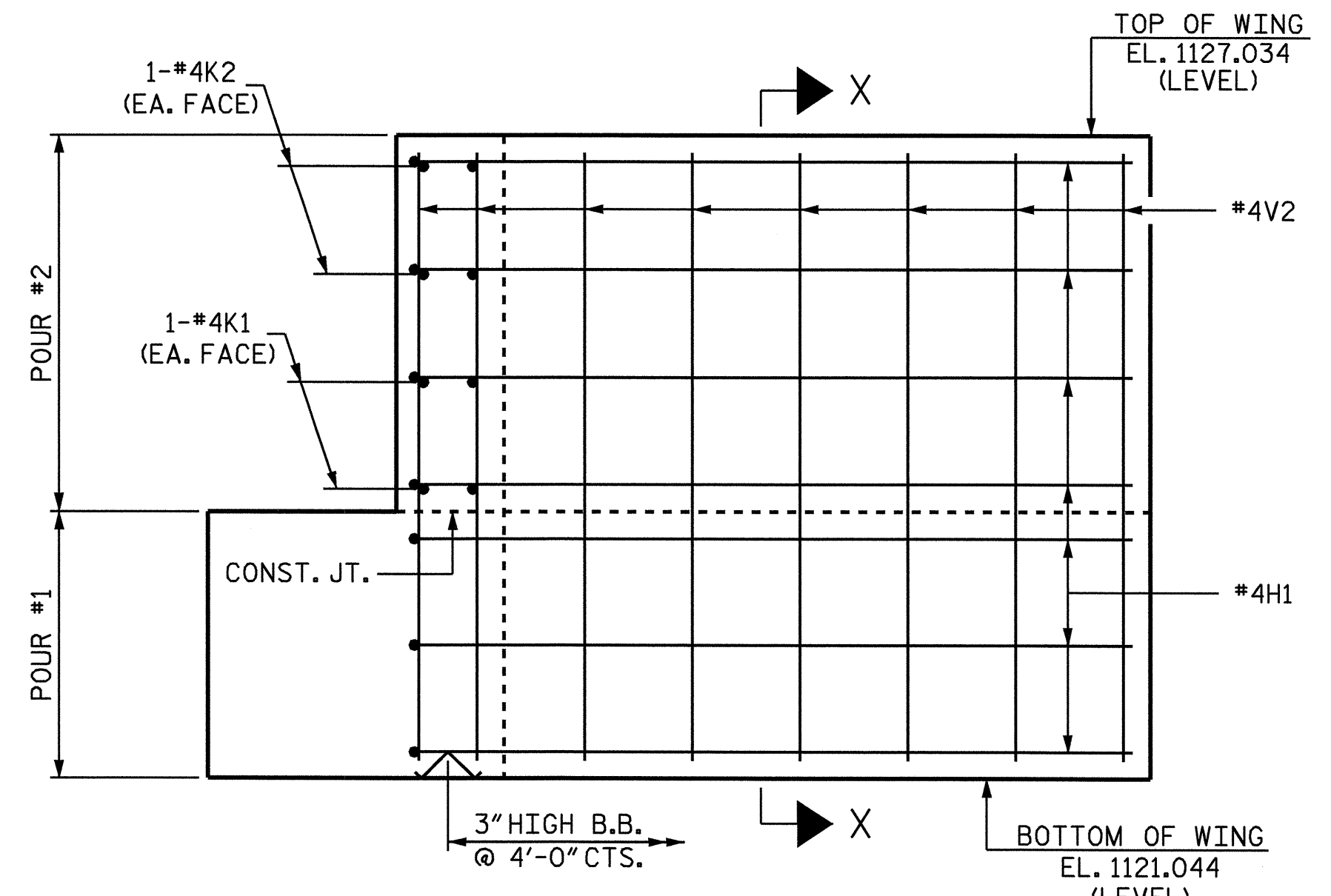
STD. NO. GRA2



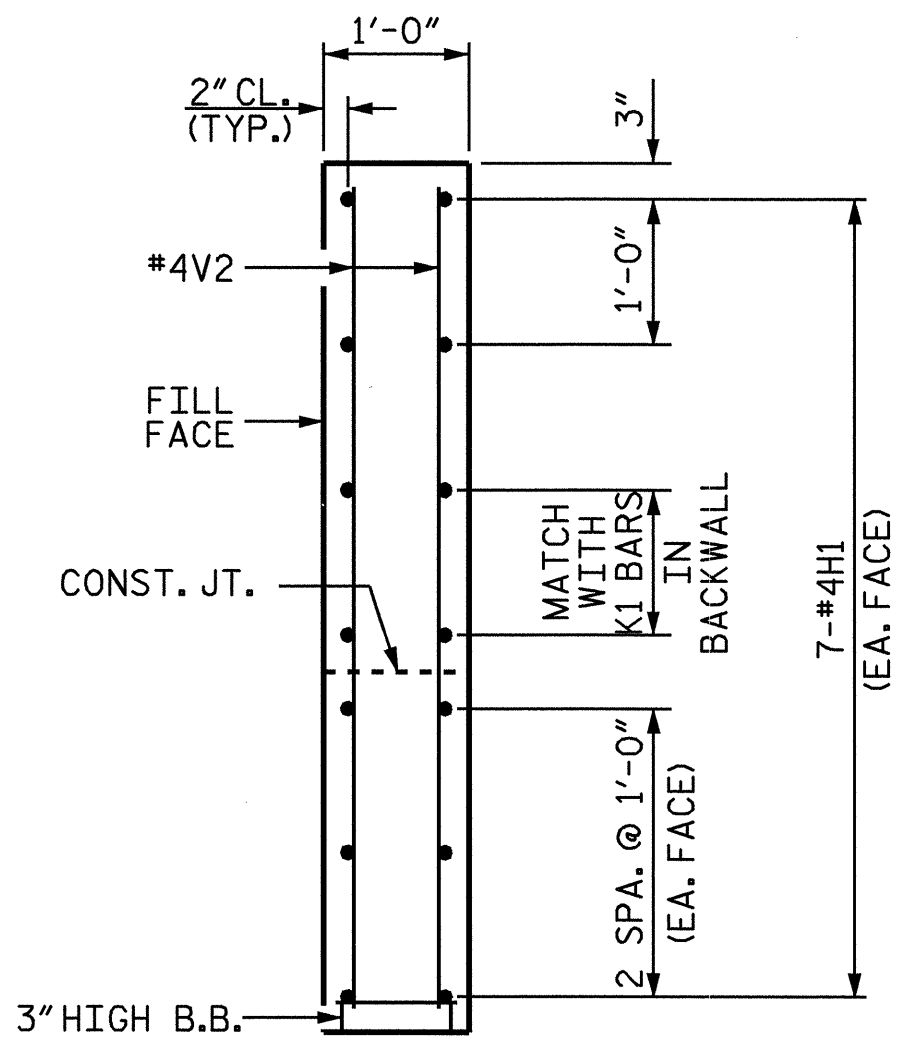
PLAN OF WING - W1
(WING W2 SIMILAR)



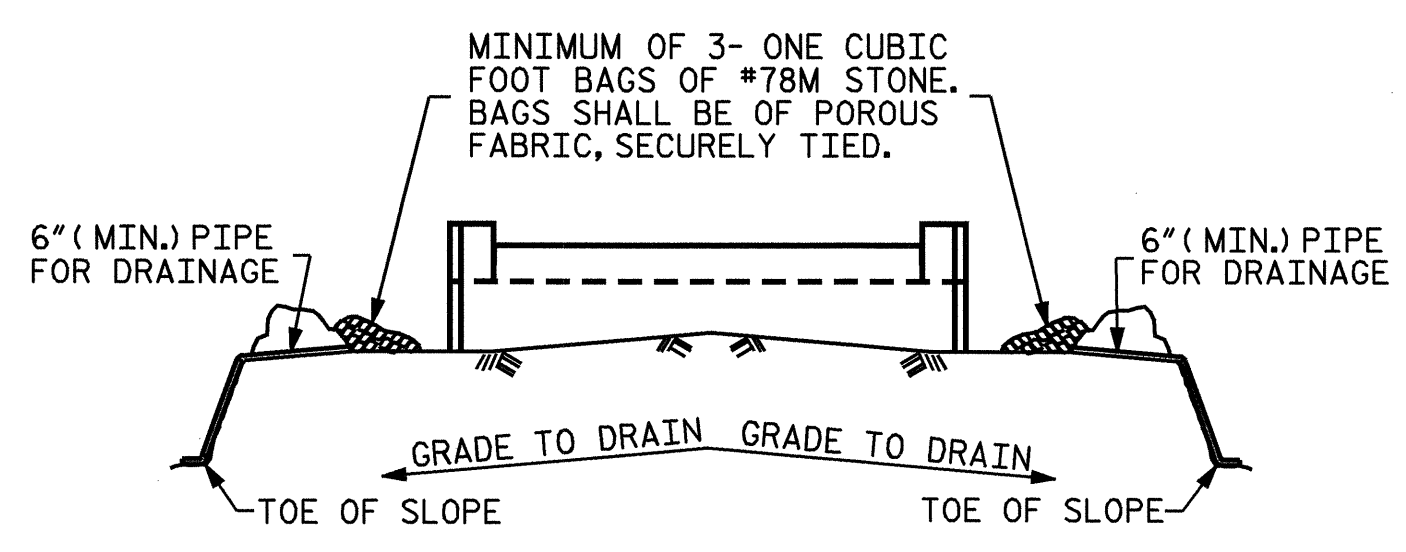
LATERAL GUIDE DETAILS
(EACH END SIMILAR)



ELEVATION OF WING - W1
(WING W2 SIMILAR)



SECTION X-X

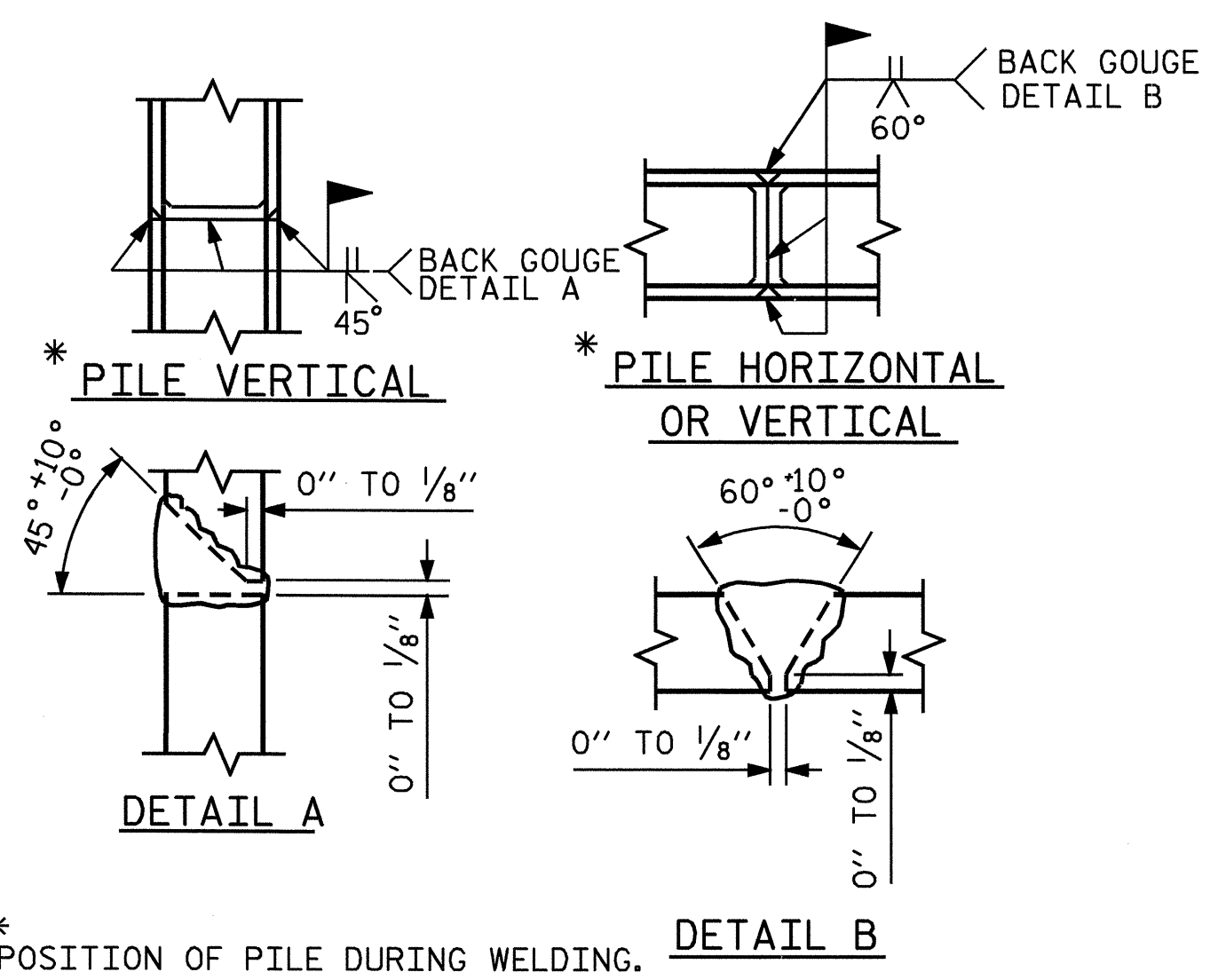


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

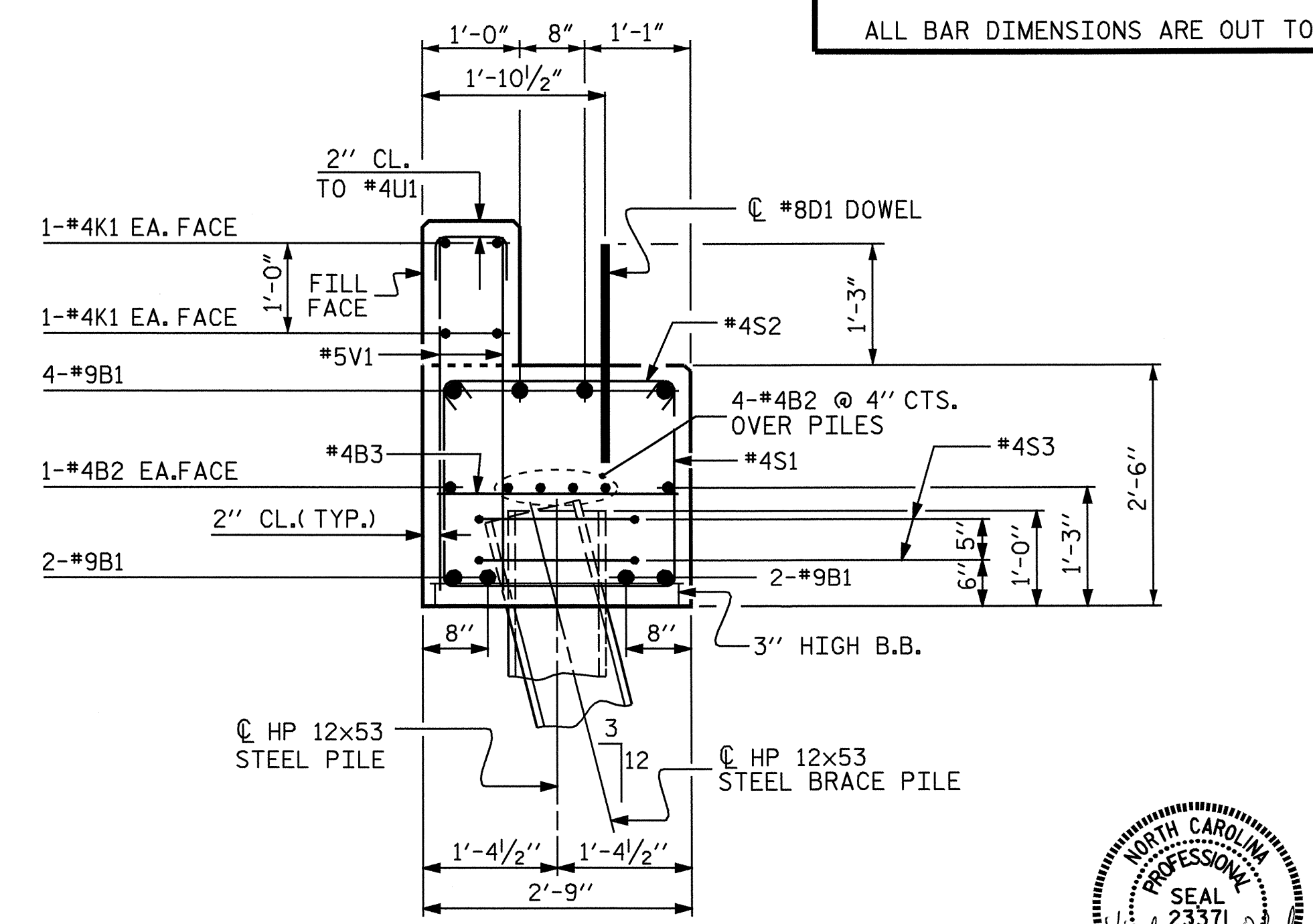
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

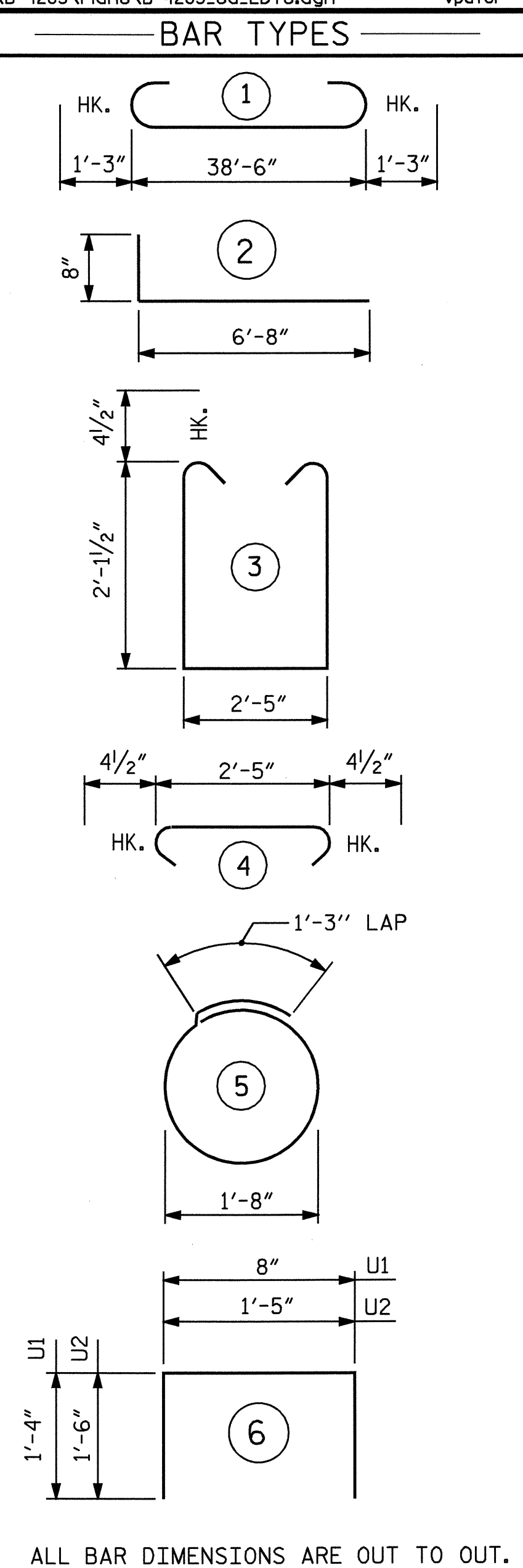
TEMPORARY DRAINAGE AT END BENT



PILE SPLICE DETAILS



SECTION A-A

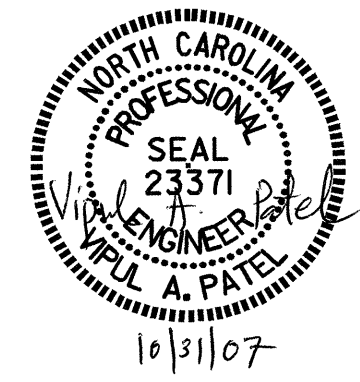


BILL OF MATERIAL					
END BENT #1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	9	1	41'-0"	1115
B2	12	4	STR	20'-7"	165
B3	10	4	STR	2'-5"	16
D1	22	8	STR	2'-3"	132
H1	28	4	2	7'-4"	137
K1	8	4	STR	20'-7"	110
K2	8	4	STR	3'-5"	18
S1	37	4	3	7'-5"	183
S2	37	4	4	3'-2"	78
S3	16	4	5	6'-6"	69
U1	32	4	6	3'-4"	71
U2	4	4	6	4'-5"	12
V1	64	5	STR	3'-7"	239
V2	44	4	STR	5'-8"	167
REINFORCING STEEL					2512 LBS
CLASS "A" CONCRETE BREAKDOWN					
POUR #1 CAP & LOWER PART OF WINGS CU. YDS.					11.0
POUR #2 UPPER WINGS & BACKWALL CU. YDS.					4.3
POUR #3 LATERAL GUIDES CU. YDS.					0.1
CLASS "A" CONCRETE TOTAL CU. YDS.					15.4
HP 12x53 STEEL PILES NO. 8					180 LIN.FT.
STEEL PILE POINTS					8 EA.

PROJECT NO. B-4285
SURRY COUNTY
 STATION: 17+40.00 -L-

SHEET 2 OF 2

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



DRAWN BY: B.E. HOUGH DATE: 3/9/07
 CHECKED BY: KEITH LAYNE DATE: 3/20/07

SHEET NO.
S-13
 TOTAL SHEETS
20

NOTES

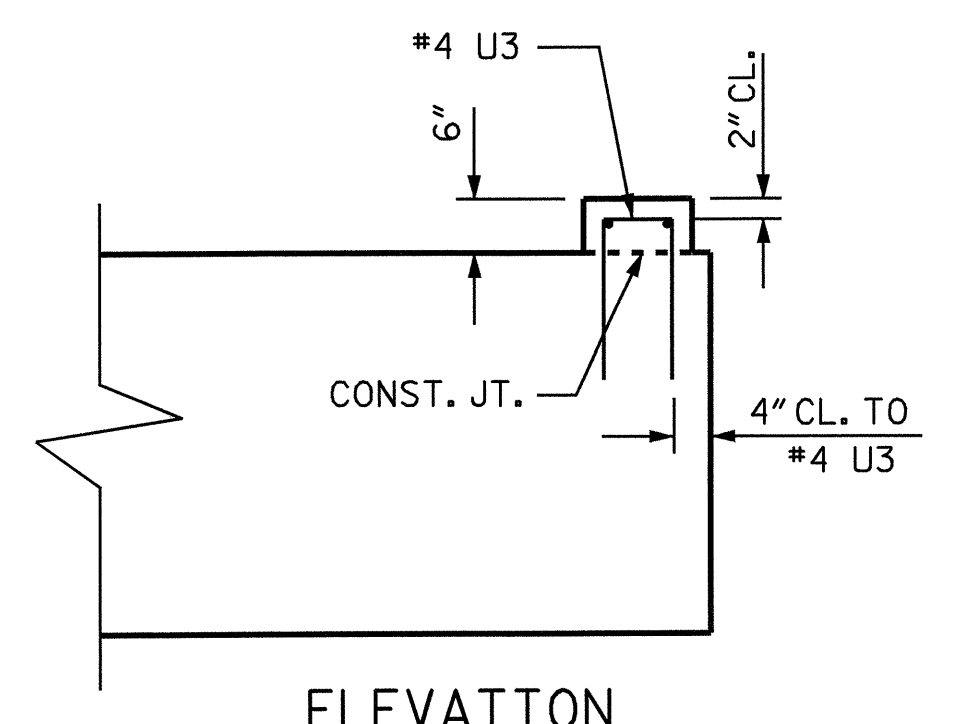
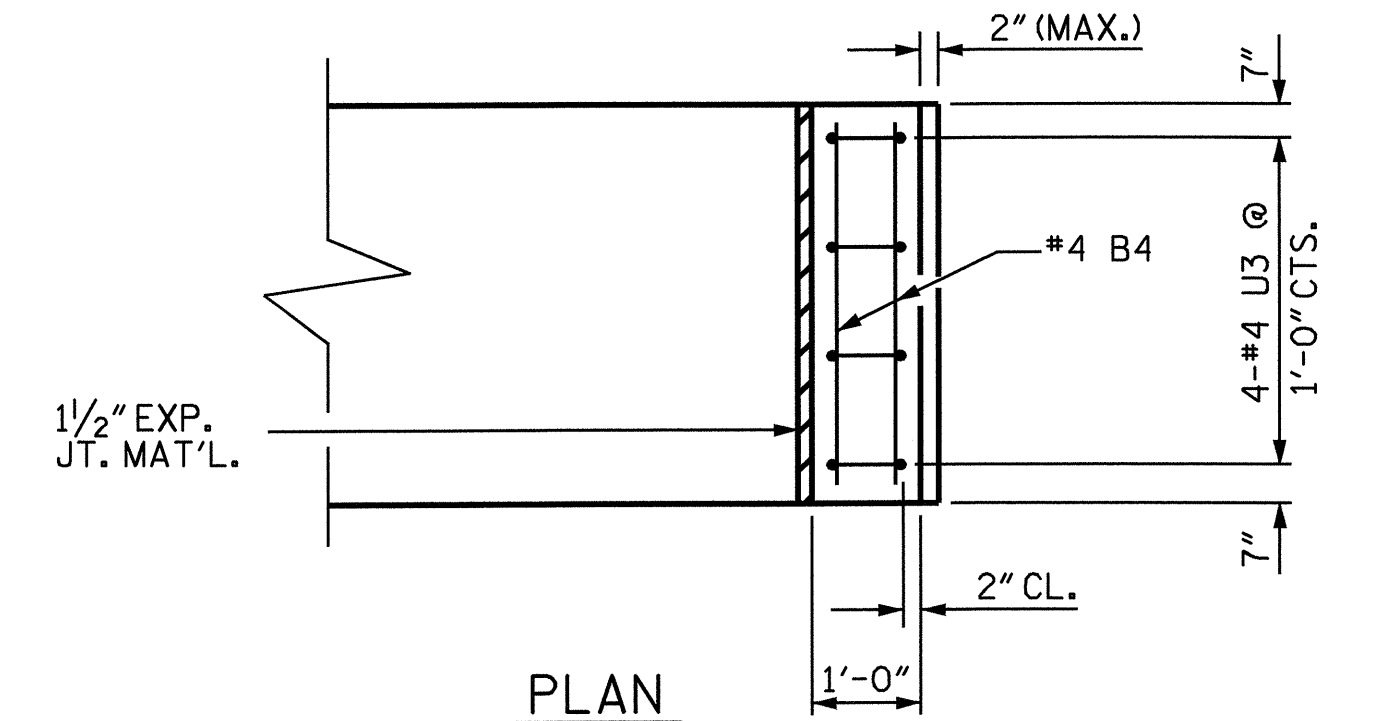
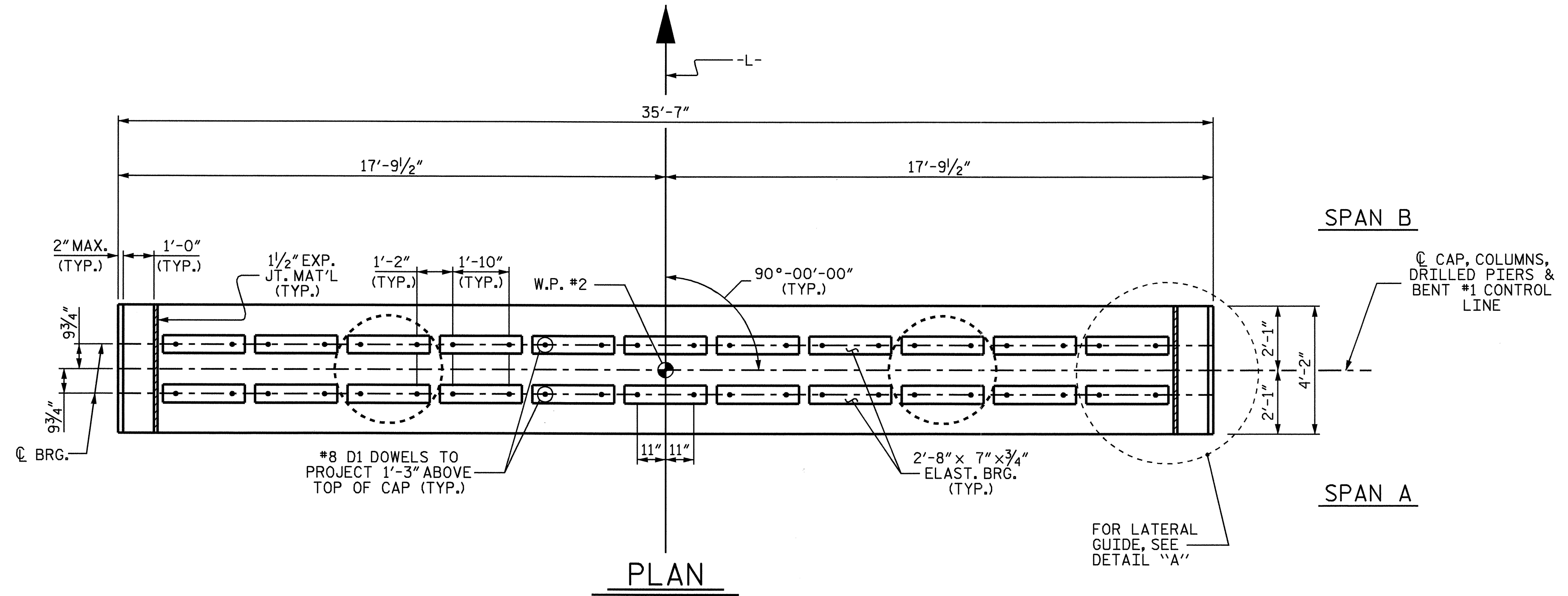
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.
 HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.
 ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".

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

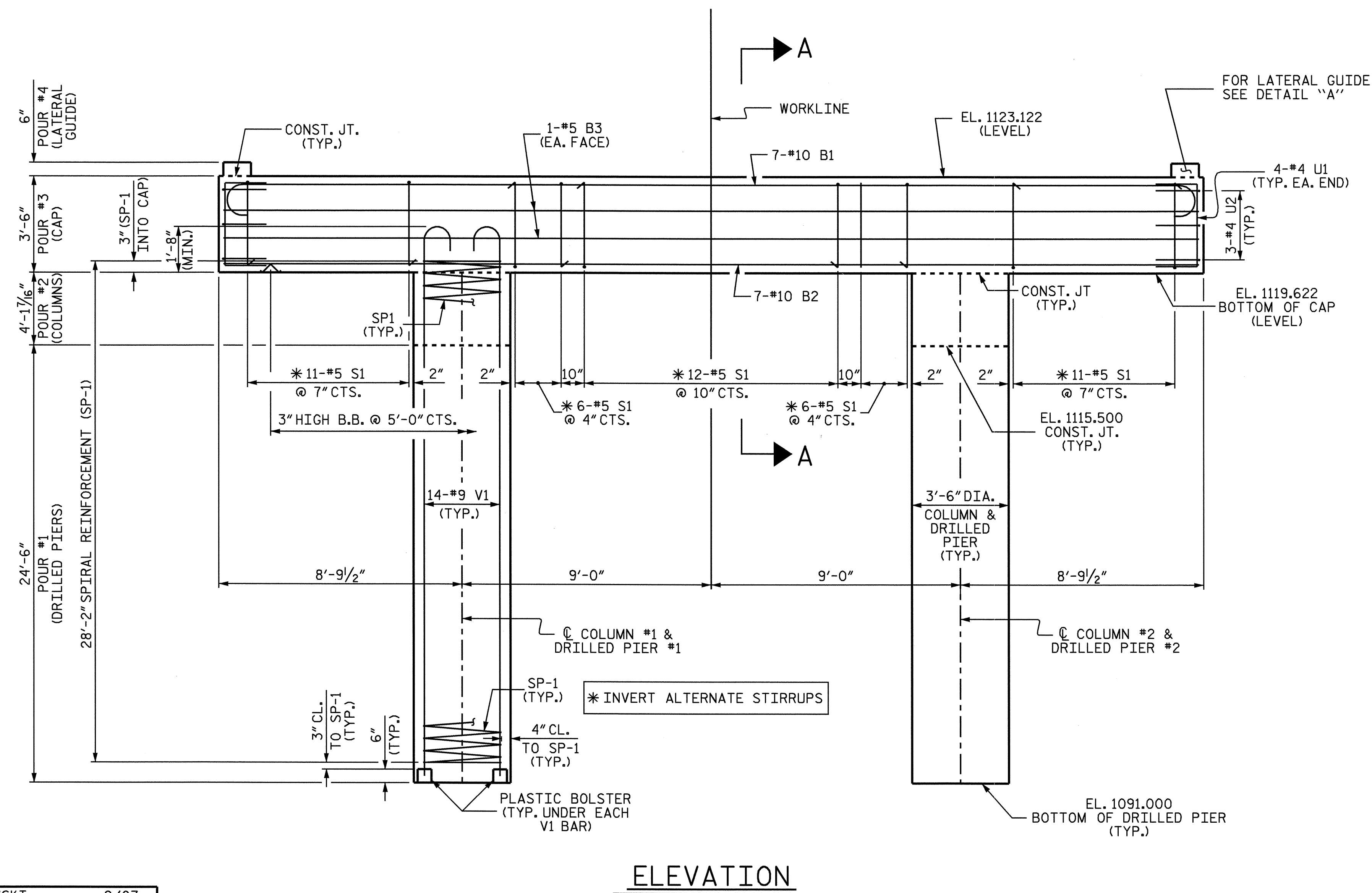
SPlicing OF THE LONGITUDINAL BARS IN THE DRILLED PIER WILL NOT BE PERMITTED.
 THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER BOX BEAM UNITS ARE IN PLACE.

THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.

FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.



DETAIL "A"



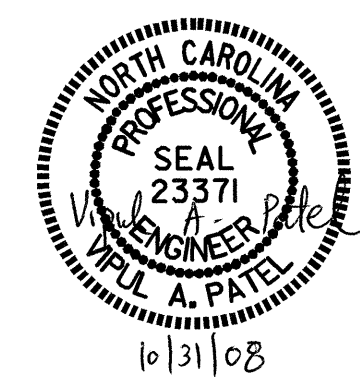
ELEVATION

PROJECT NO. B-4285
 SURRY COUNTY
 STATION: 17+40.00 -L-

SHEET 1 OF 2

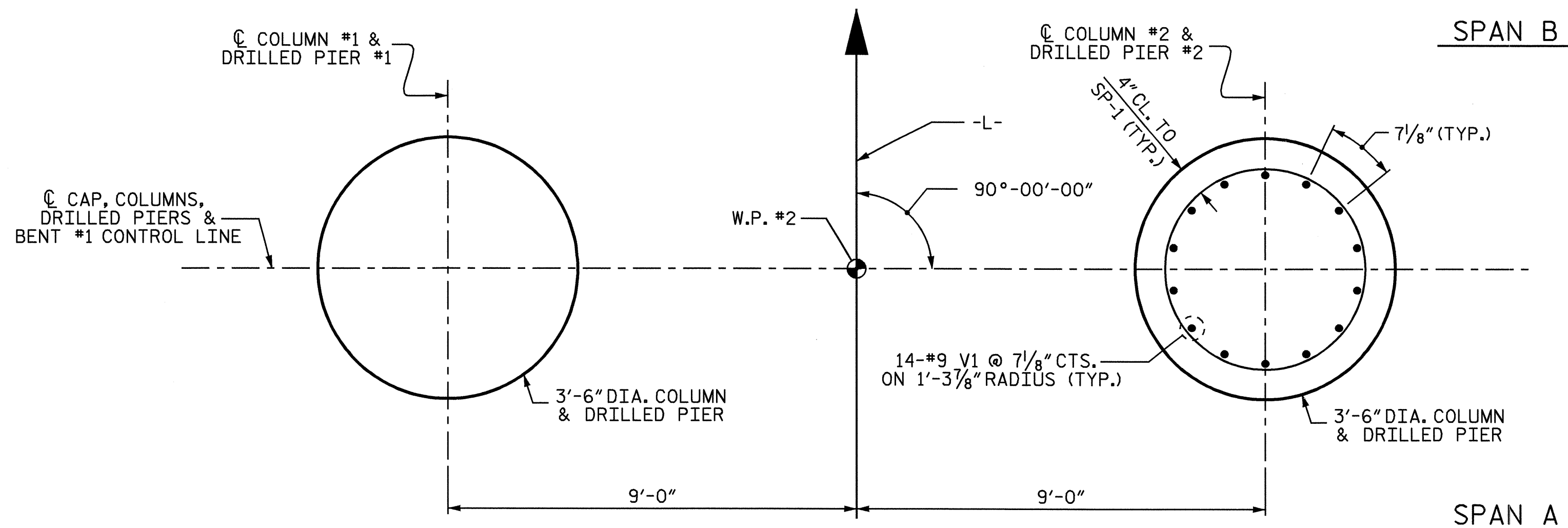
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT #1

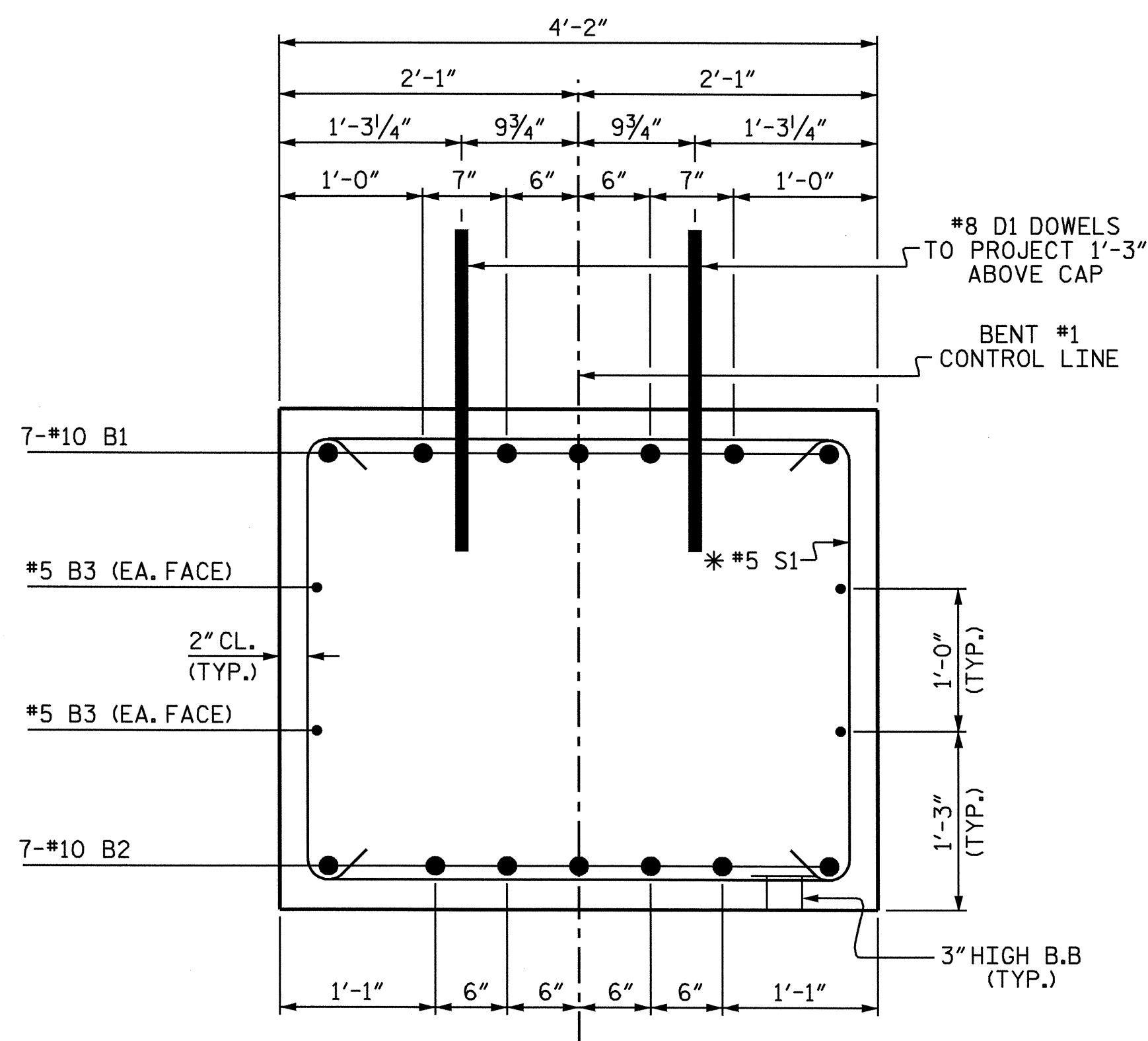


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			20

DRAWN BY: S. DOMBROWSKI DATE: 9/07
 CHECKED BY: K.D. LAYNE DATE: 10/07

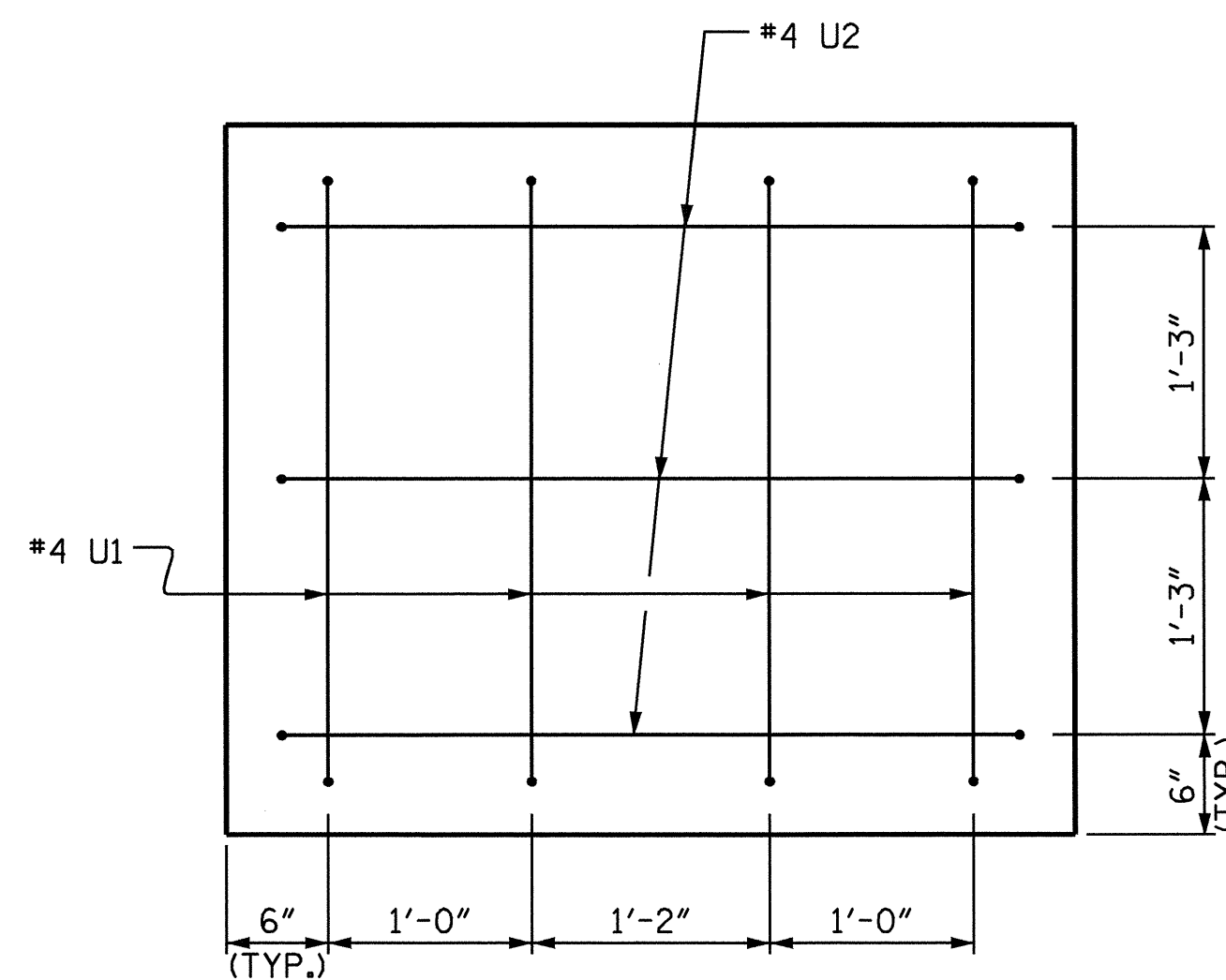


PLAN OF COLUMNS & DRILLED PIERS



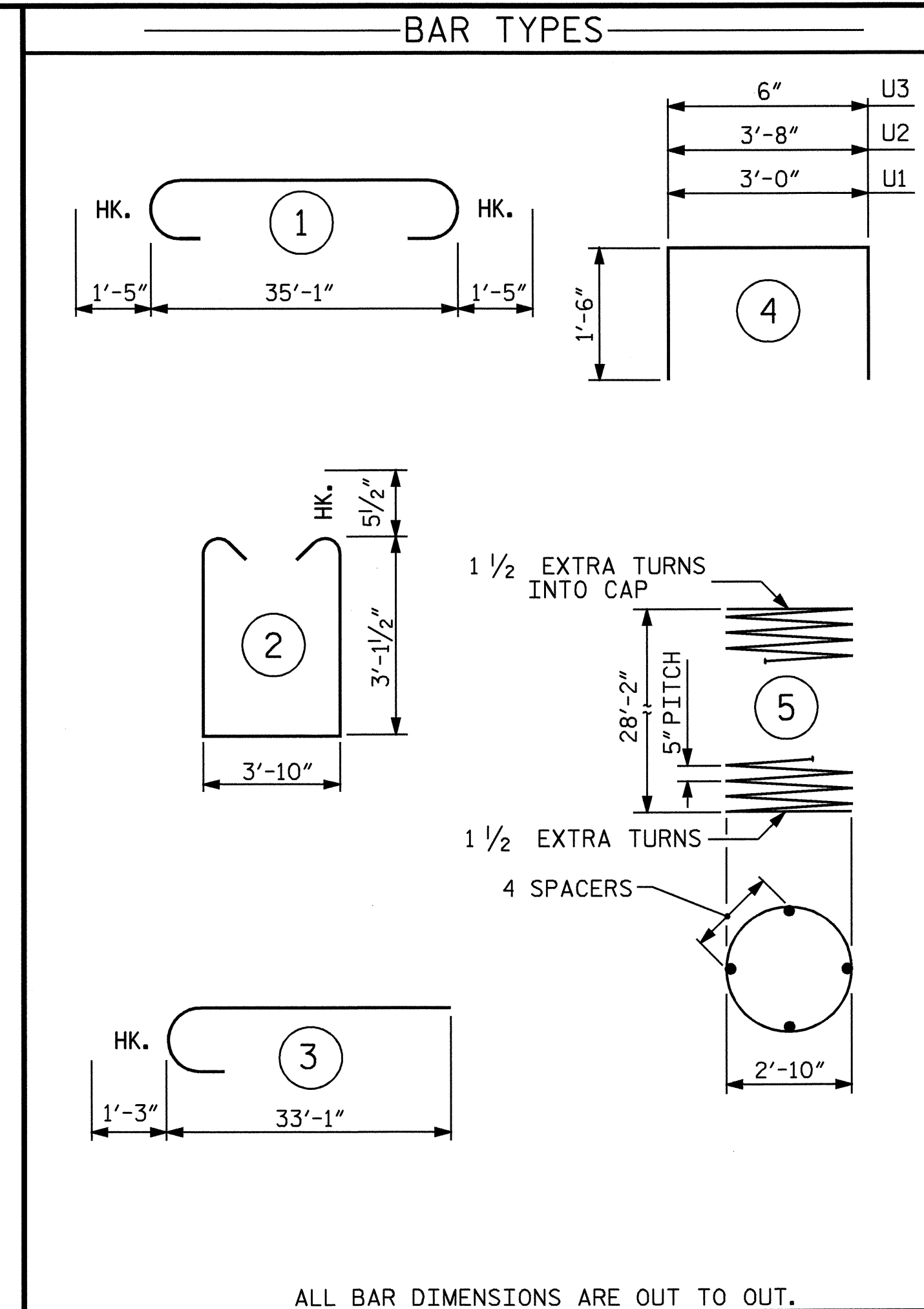
SECTION A-A

* INVERT ALTERNATE STIRRUPS



END VIEW

(TYP. BOTH ENDS)



BILL OF MATERIAL BENT #1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	7	10		37'-11"	1142
B2	7	10	STR	35'-3"	1062
B3	4	5	STR	35'-3"	147
B4	4	4	STR	3'-10"	10
D1	44	8	STR	2'-3"	264
S1	46	5	2	11'-0"	528
U1	8	4	4	6'-0"	32
U2	6	4	4	6'-8"	27
U3	8	4	4	3'-6"	19
V1	28	9	3	34'-4"	3269
TOTAL REINFORCING STEEL LBS.					6500
SP1	2	**	5	617'-7"	1288
TOTAL SPIRAL COLUMN REINFORCING STEEL LBS.					1288
CLASS A CONCRETE BREAKDOWN					
POUR #2 (COLUMNS)					2.9 C.Y.
POUR #3 (BENT CAP)					19.2 C.Y.
POUR #4 (LAT. GUIDE)					0.2 C.Y.
TOTAL CLASS A CONCRETE					22.3 C.Y.
DRILLED PIER QUANTITIES					
DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)					17.5 C.Y.
3'-6" DIA. DRILLED PIERS IN SOIL					41.0 LIN. FT.
3'-6" DIA. DRILLED PIERS NOT IN SOIL					8.0 LIN. FT.
PERMANENT STEEL CASING FOR 3'-6" DIA DRILLED PIER					35.0 LIN. FT.
SID INSPECTION:					1 EACH
SPT TESTING:					1 EACH
CROSSHOLE SONIC LOGGING:					1 EACH
CSL TUBES:					216.0 LIN. FT.

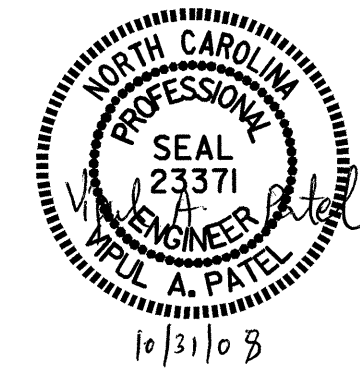
** THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR

PROJECT NO. B-4285
SURRY COUNTY
STATION: 17+40.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT #1

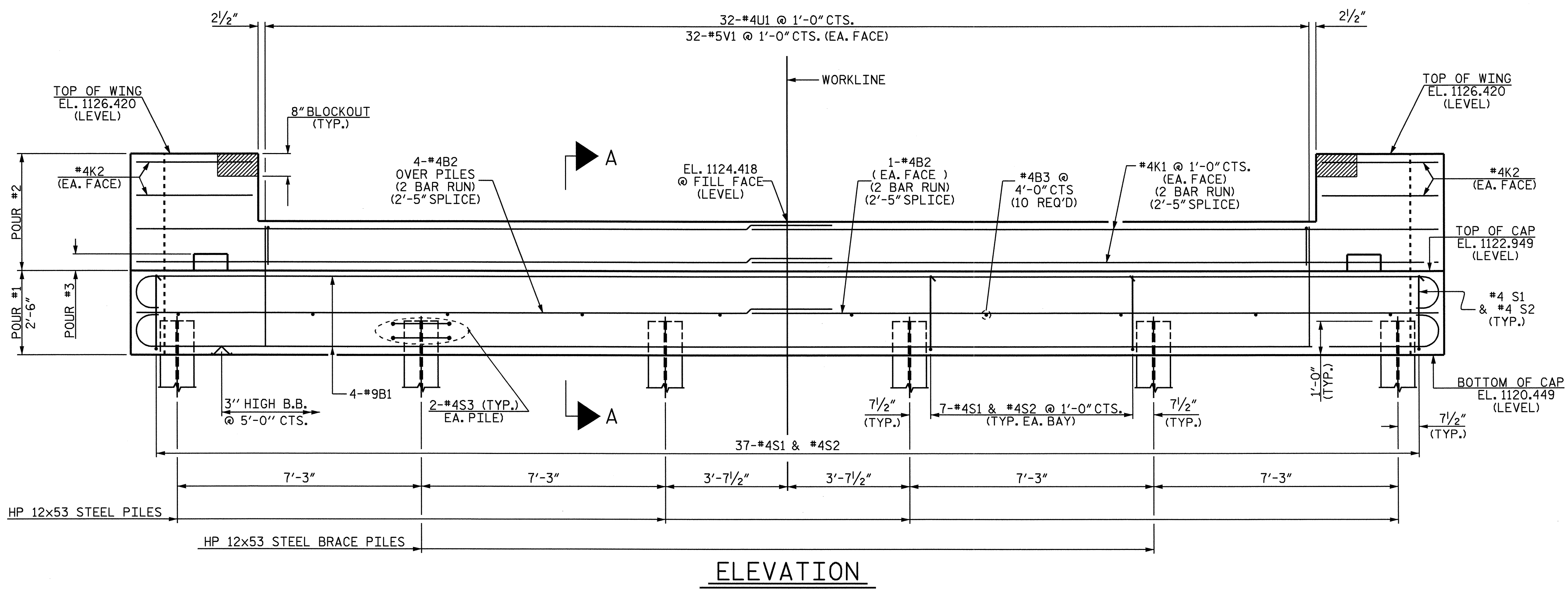
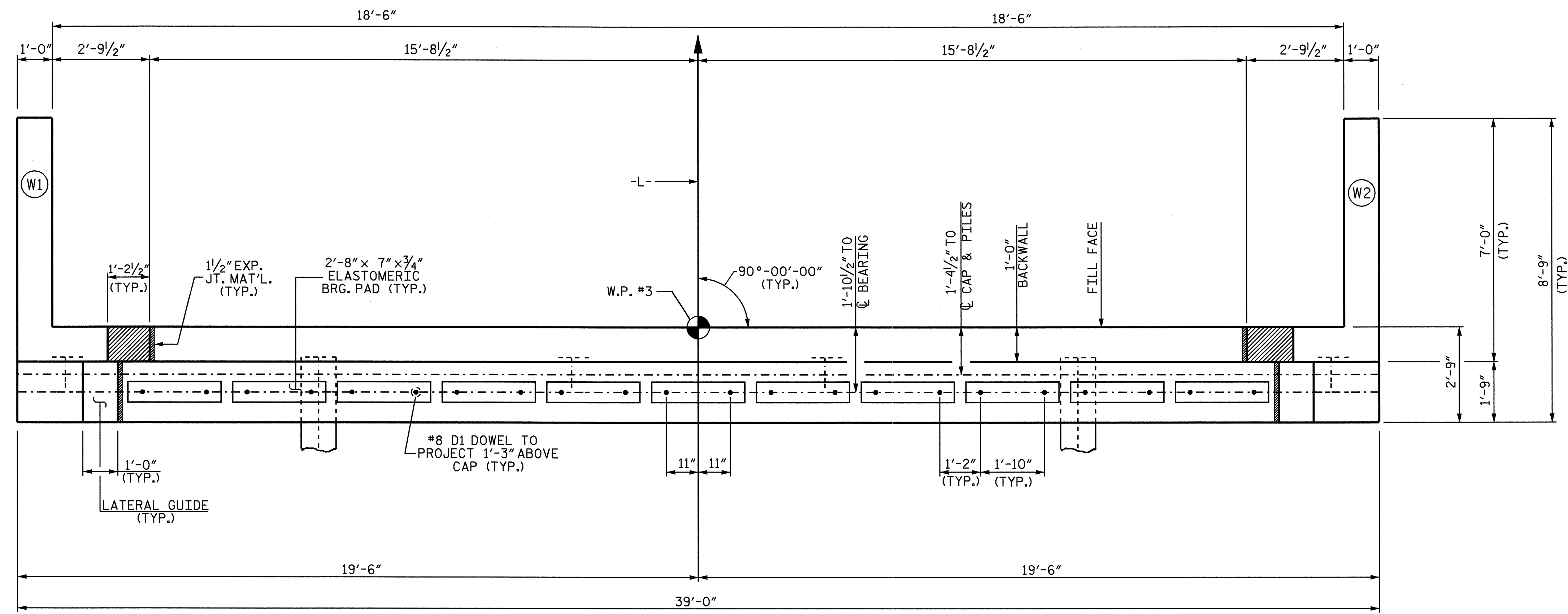


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			20

DRAWN BY: S. DOMBROWSKI DATE: 9/07
CHECKED BY: K.D. LAYNE DATE: 10/07

NOTES

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.
- THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.
- THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER PRESTRESSED BOX BEAMS ARE IN PLACE.
- THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAILS ARE CAST IF SLIP FORMING IS USED.



PROJECT NO. B-4285
 SURRY COUNTY
 STATION: 17+40.00 -L-

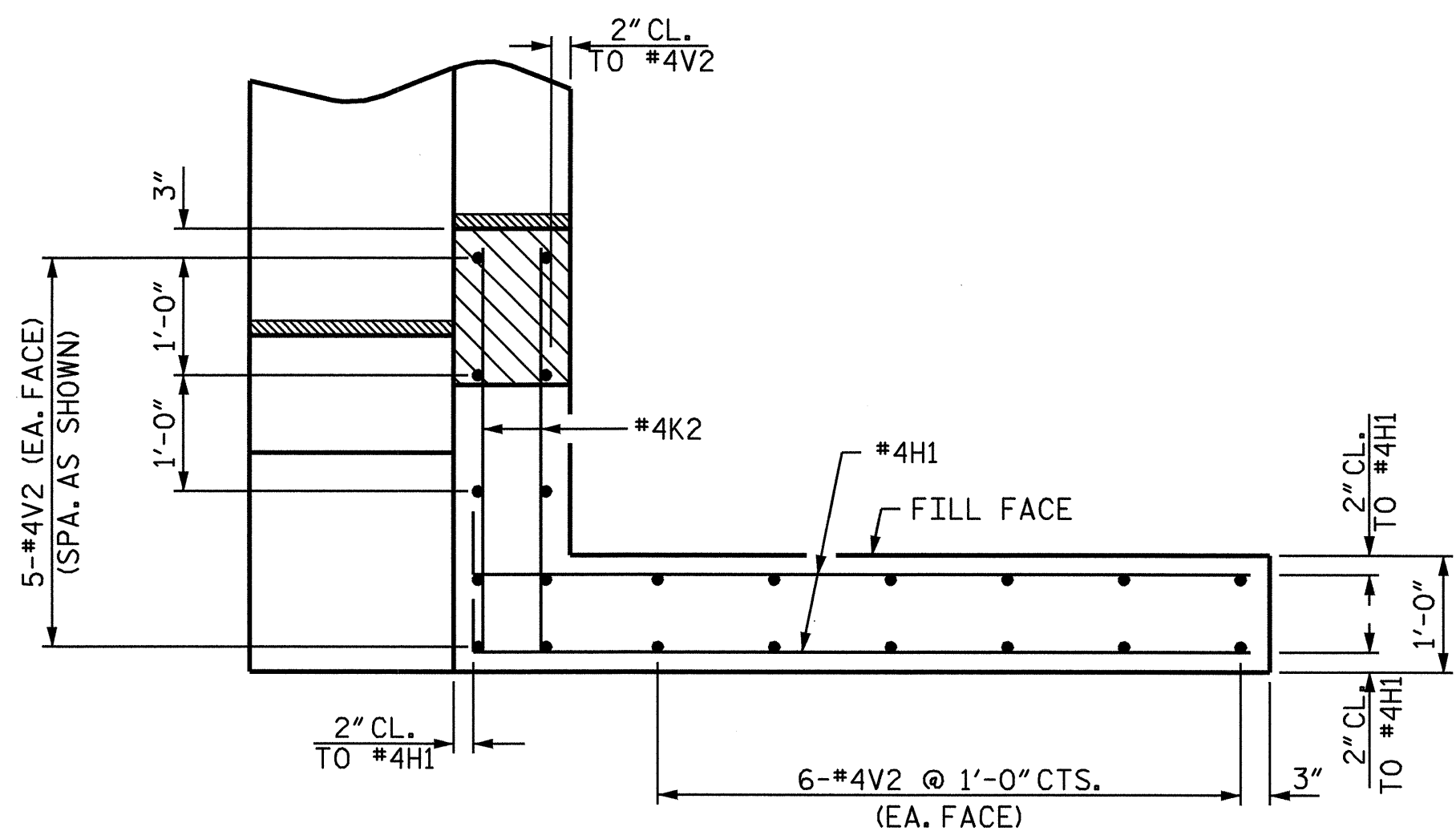
SHEET 1 OF 2

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

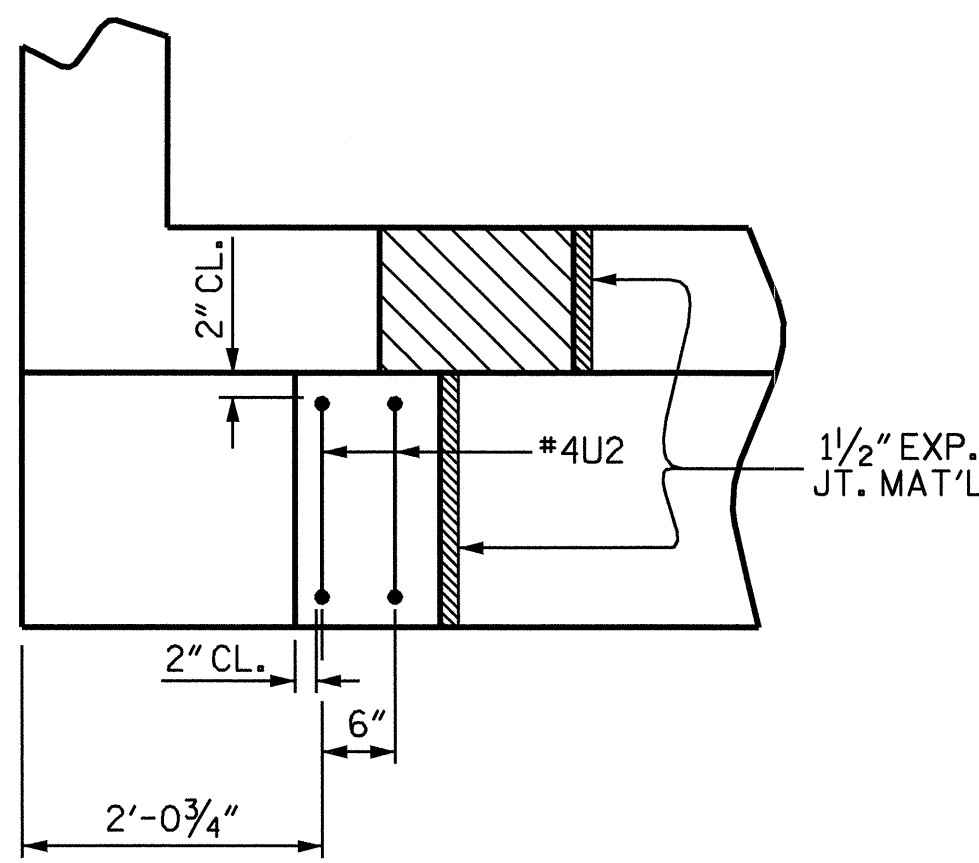


DRAWN BY: B.E. HOUGH DATE: 3/19/07
 CHECKED BY: KEITH LAYNE DATE: 3/20/07

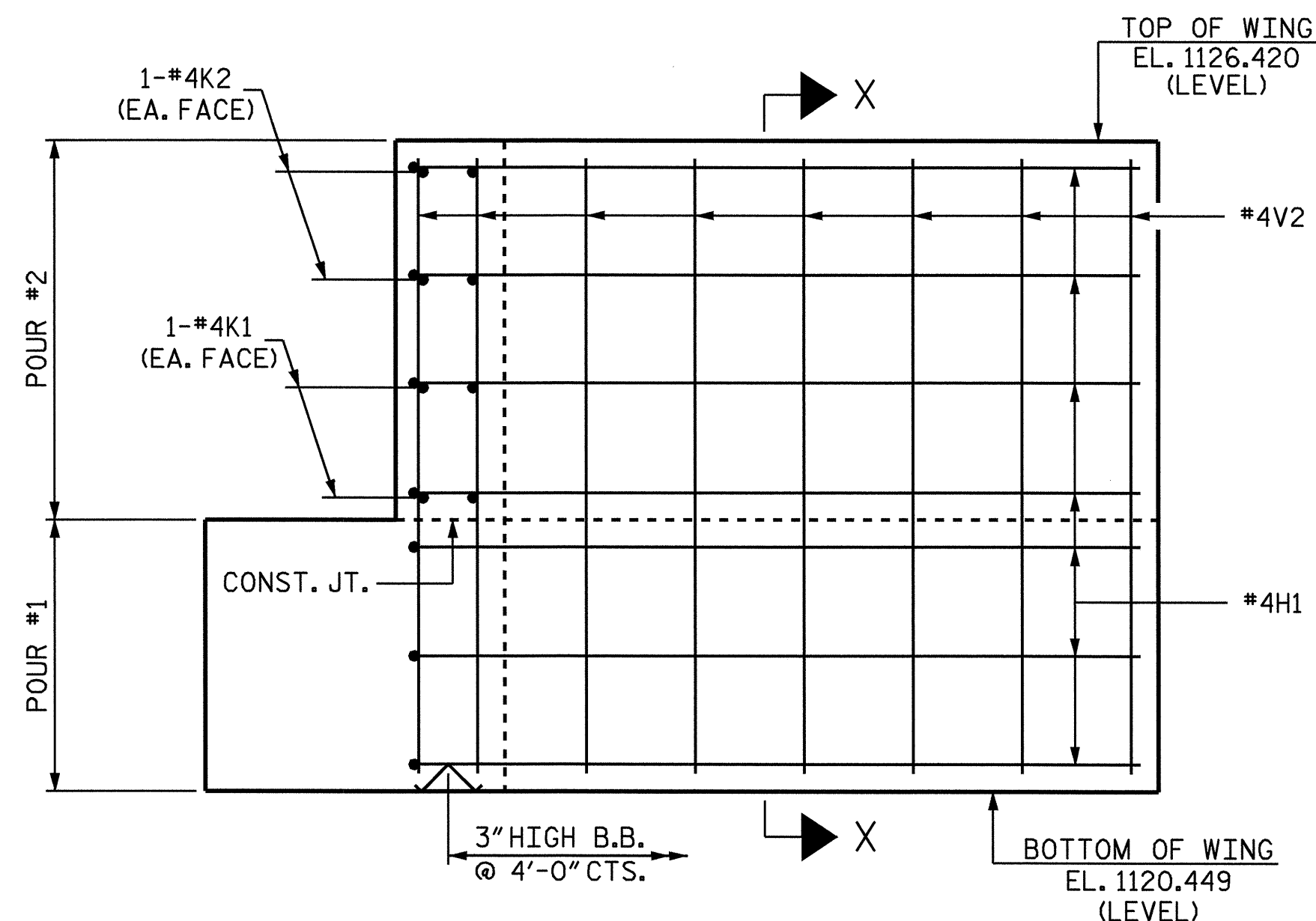
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16	
1			3			TOTAL SHEETS	20
2			4				



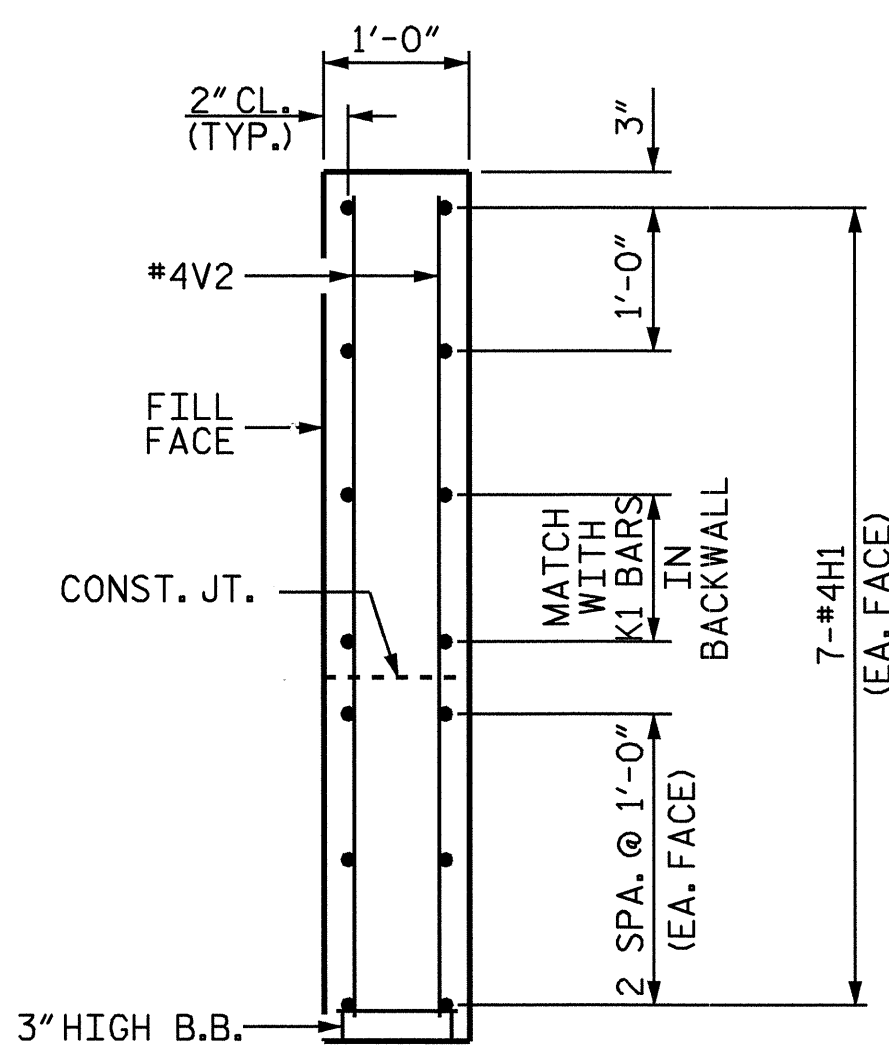
PLAN OF WING - W2
(WING W1 SIMILAR)



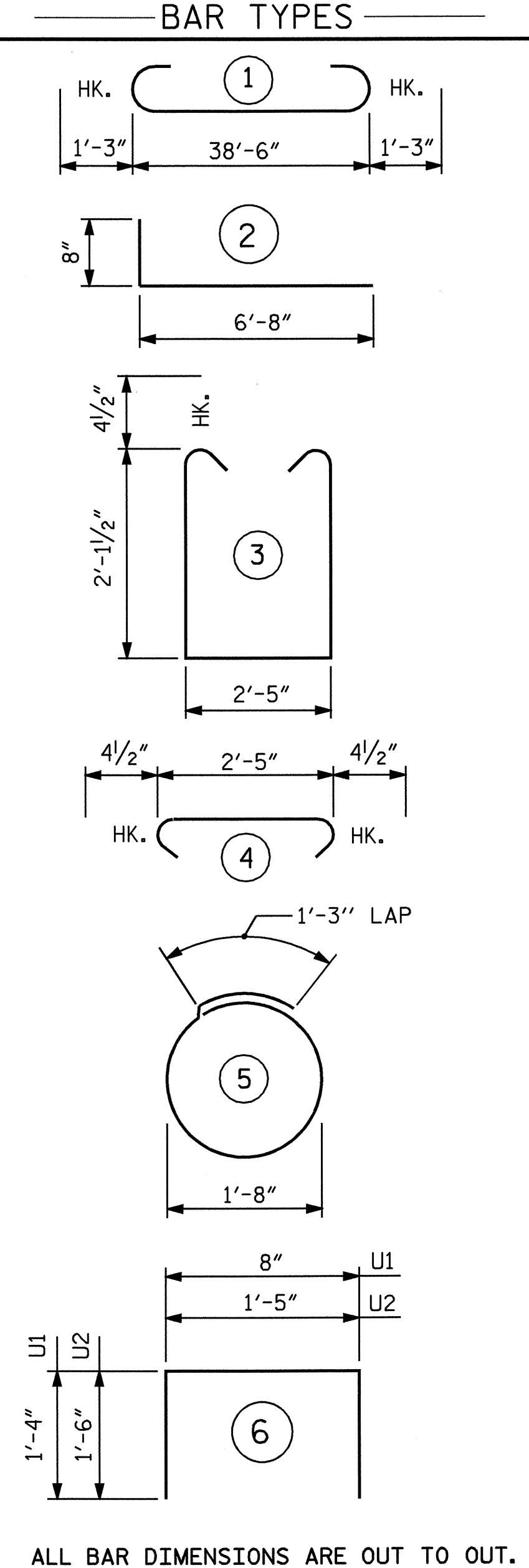
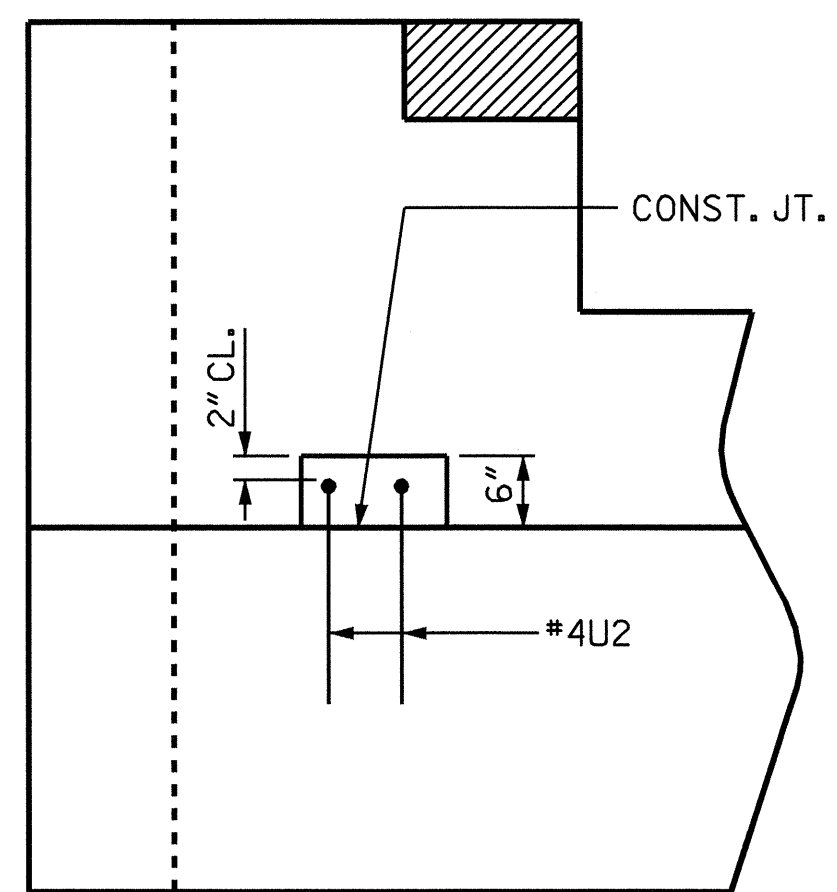
LATERAL GUIDE DETAILS
(EACH END SIMILAR)



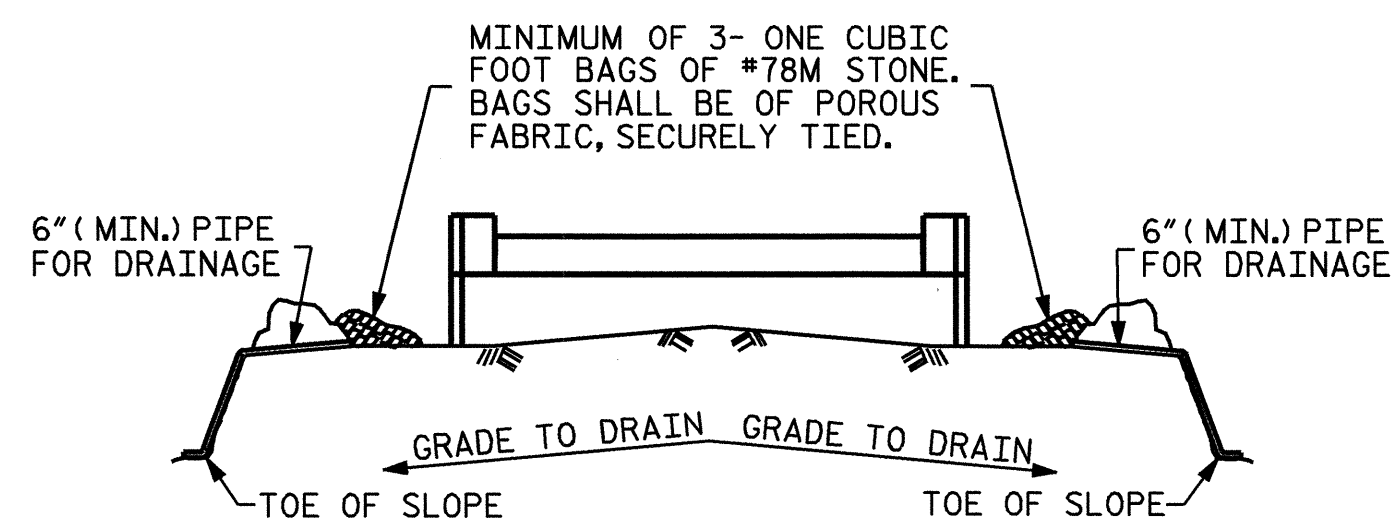
ELEVATION OF WING - W2
(WING W1 SIMILAR)



SECTION X-X



BILL OF MATERIAL					
END BENT #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	9	1	41'-0"	1115
B2	12	4	STR	20'-7"	165
B3	10	4	STR	2'-5"	16
D1	22	8	STR	2'-3"	132
H1	28	4	2	7'-4"	137
K1	8	4	STR	20'-7"	110
K2	8	4	STR	3'-5"	18
S1	37	4	3	7'-5"	183
S2	37	4	4	3'-2"	78
S3	12	4	5	6'-6"	52
U1	32	4	6	3'-4"	71
U2	4	4	6	4'-5"	12
V1	64	5	STR	3'-7"	239
V2	44	4	STR	5'-8"	167
REINFORCING STEEL					2495 LBS
CLASS "A" CONCRETE BREAKDOWN					
POUR #1 CAP & LOWER PART OF WINGS					CU. YDS. 11.0
POUR #2 UPPER WINGS & BACKWALL					CU. YDS. 4.3
POUR #3 LATERAL GUIDES					CU. YDS. 0.1
CLASS "A" CONCRETE TOTAL					CU. YDS. 15.4
HP 12x53 STEEL PILES					150 LIN.FT.
NO. 6					
STEEL PILE POINTS					6 EA.

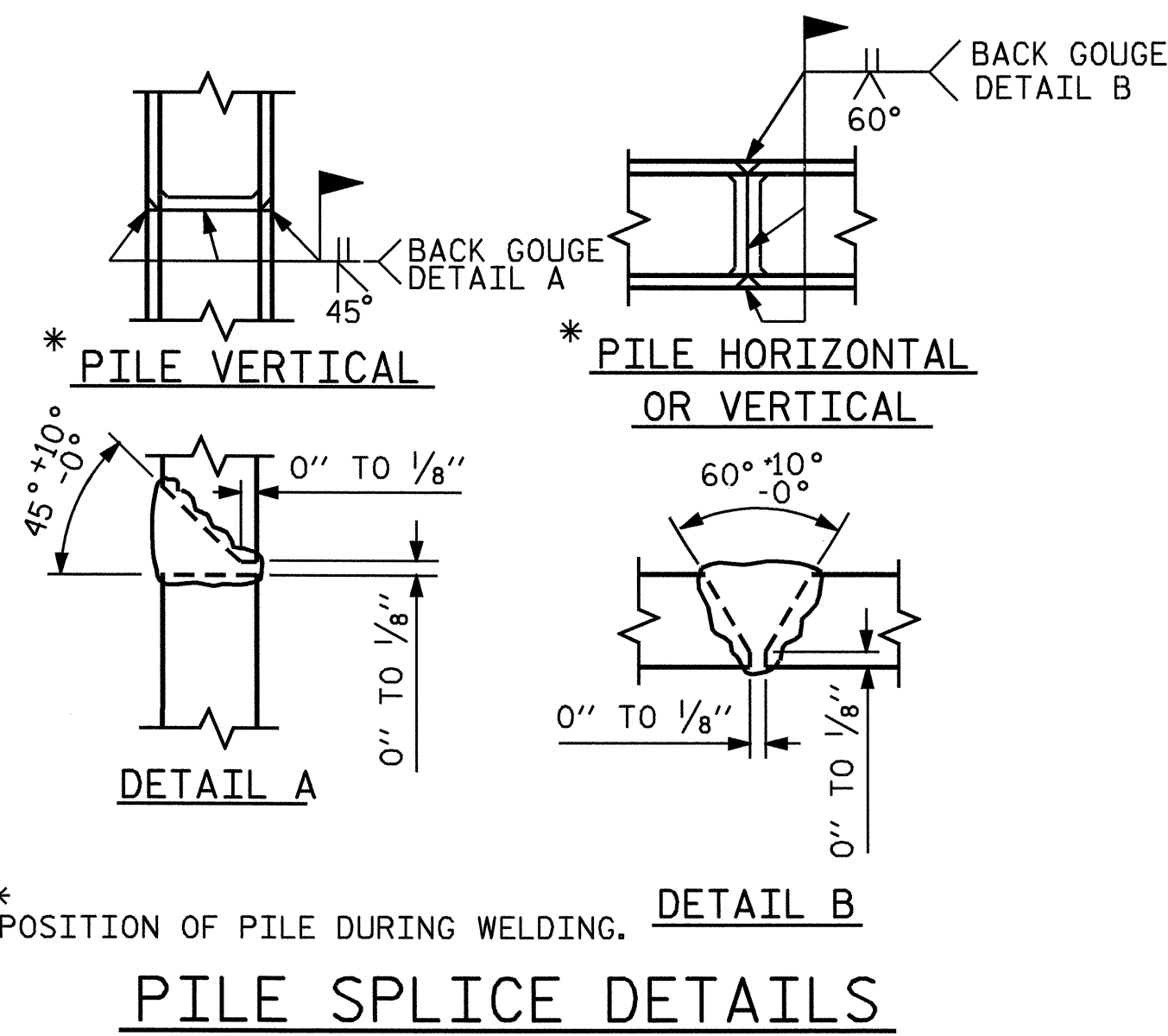


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

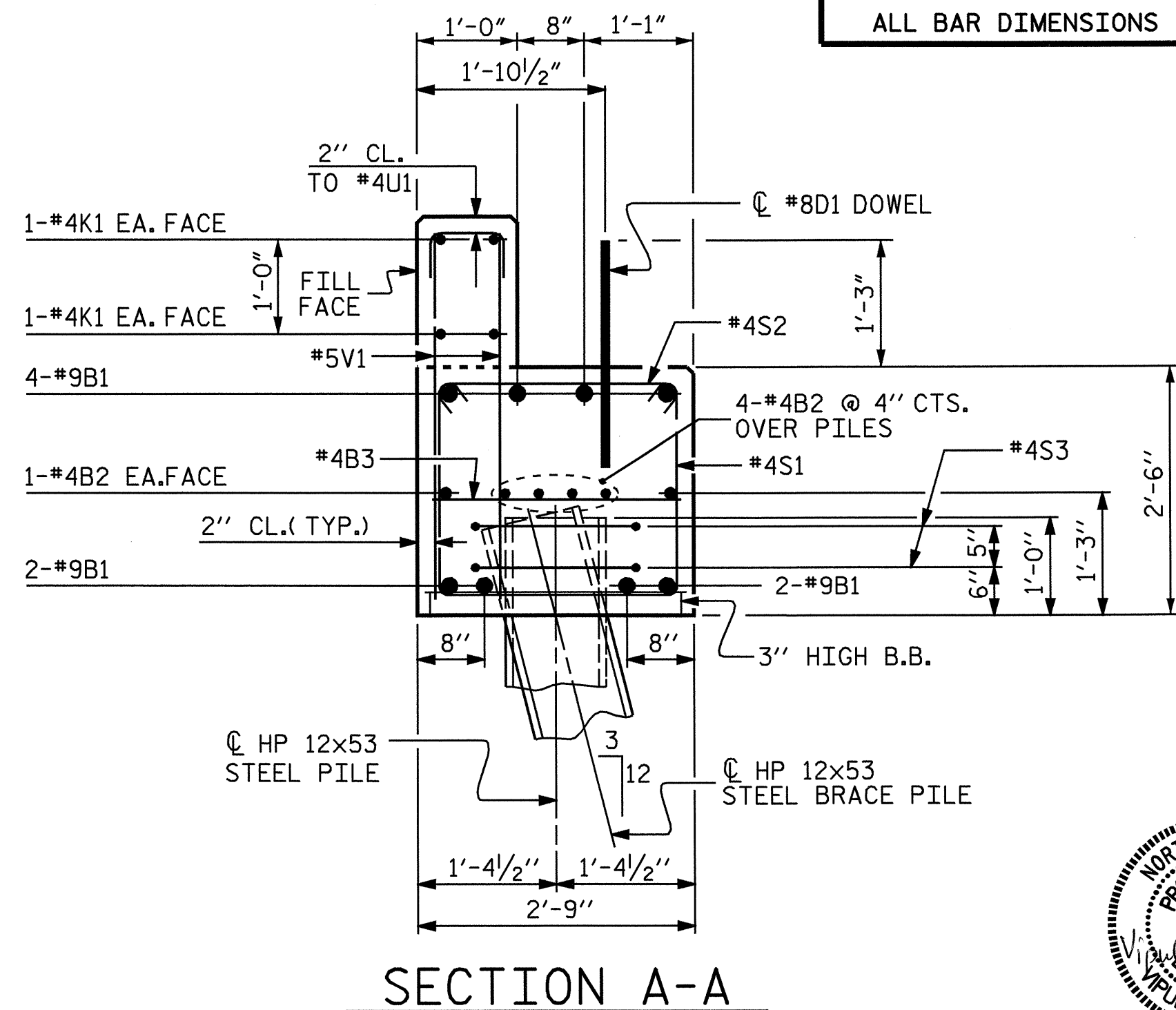
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



* POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

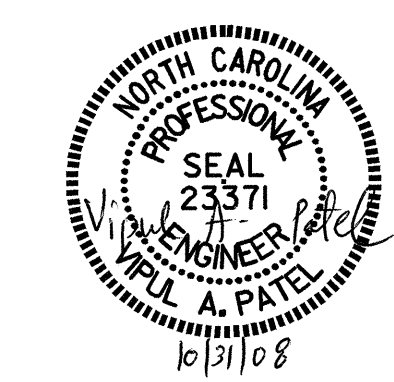


SECTION A-A

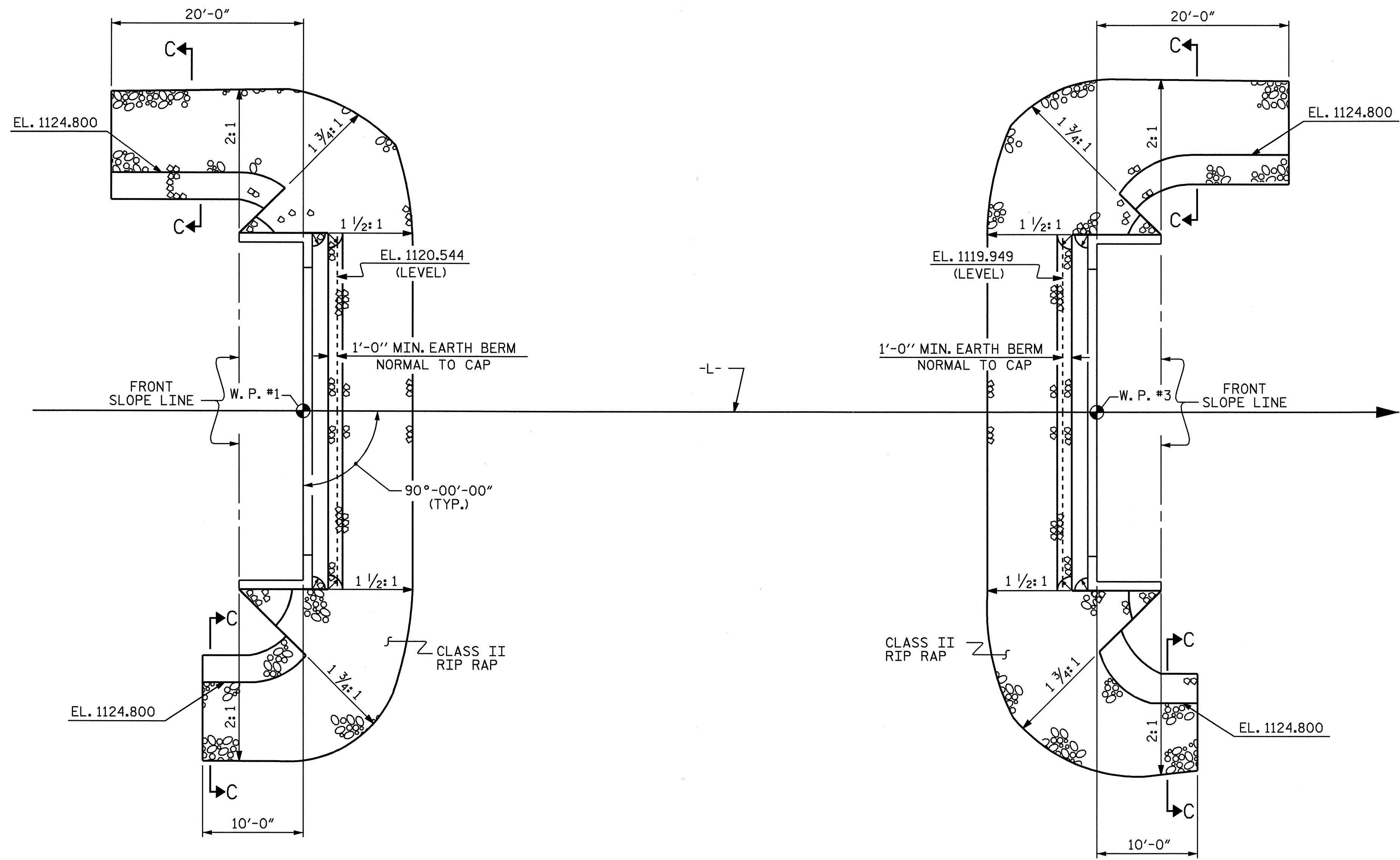
PROJECT NO. B-4285
SURRY COUNTY
STATION: 17+40.00 -L-

SHEET 2 OF 2

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

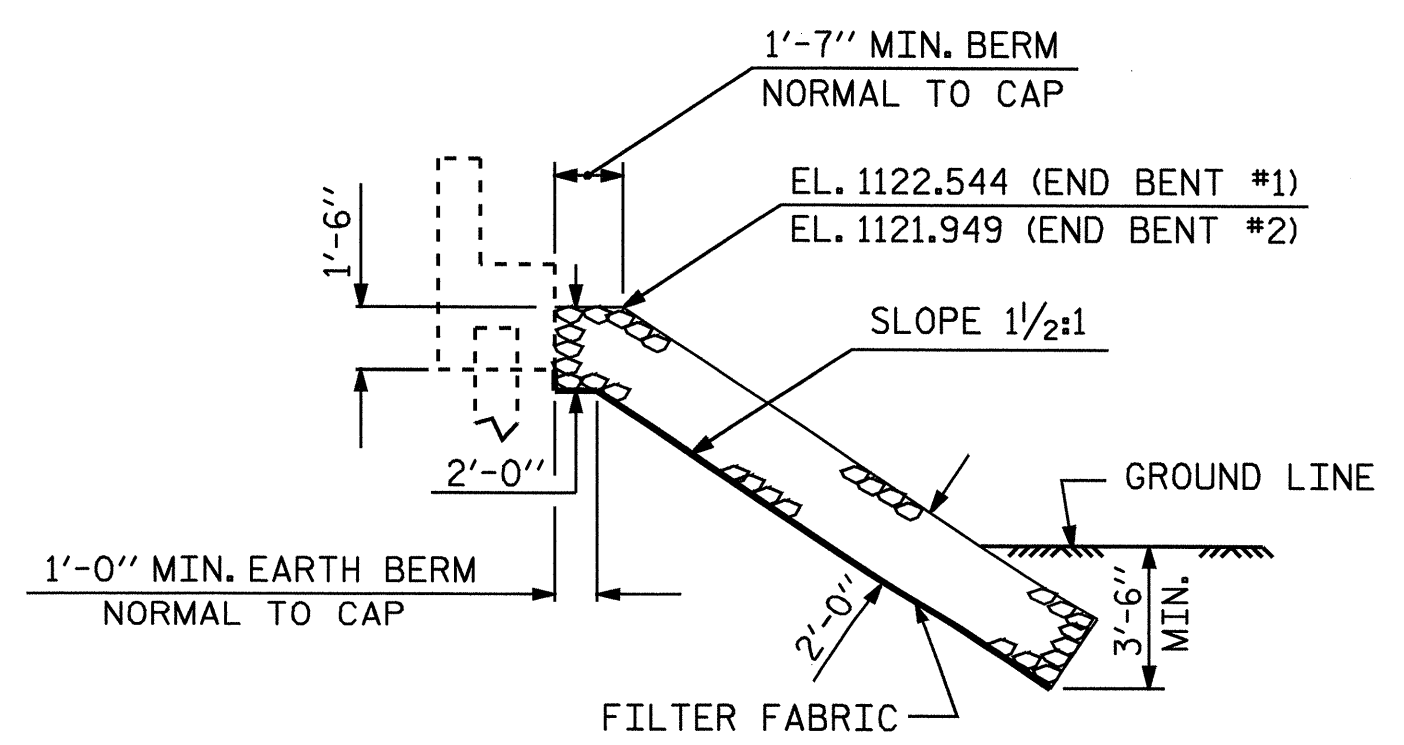


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS 20
2			4			

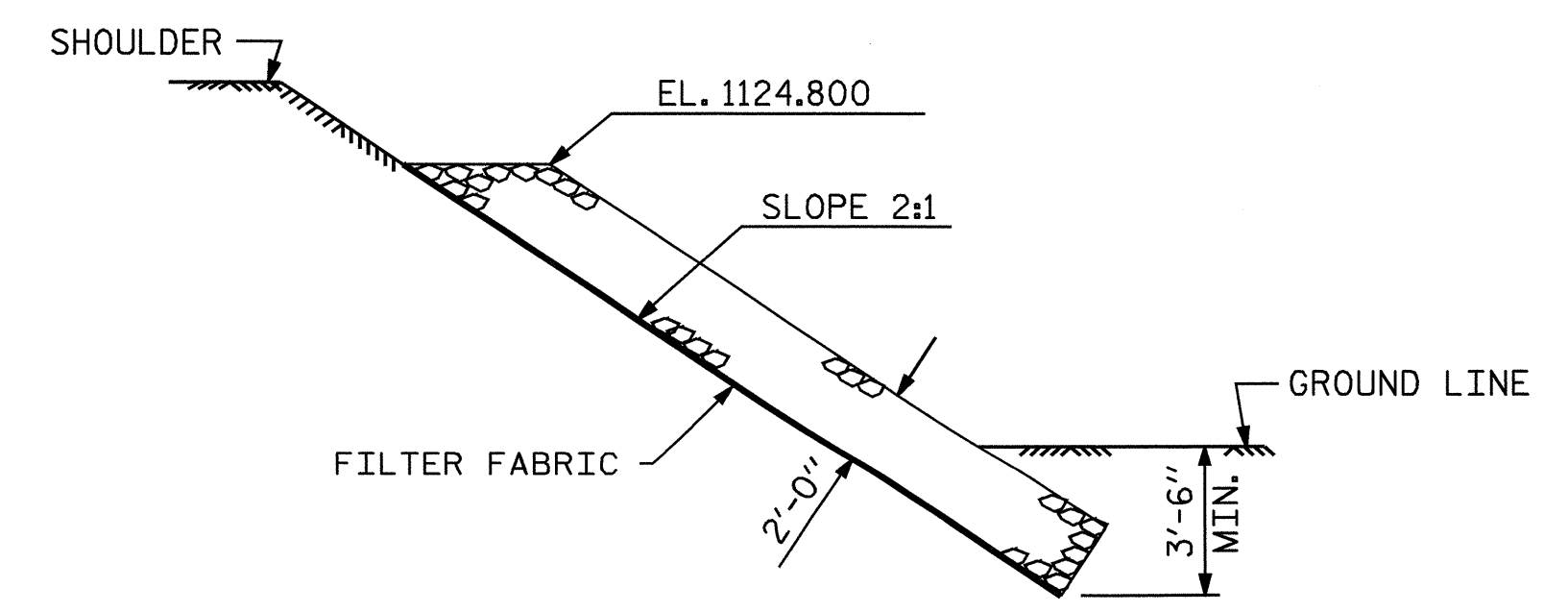


PLAN OF RIP RAP

ESTIMATED QUANTITIES		
BRIDGE @ STA. 17+40.00 -L-	RIP RAP CLASS II	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT #1	205	230
END BENT #2	220	245



SECTION C-C
BERM RIP RAPPED



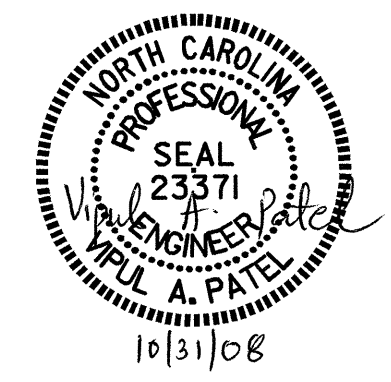
SECTION C-C

PROJECT NO. B-4285
SURRY COUNTY
 STATION: 17+40.00 -L-

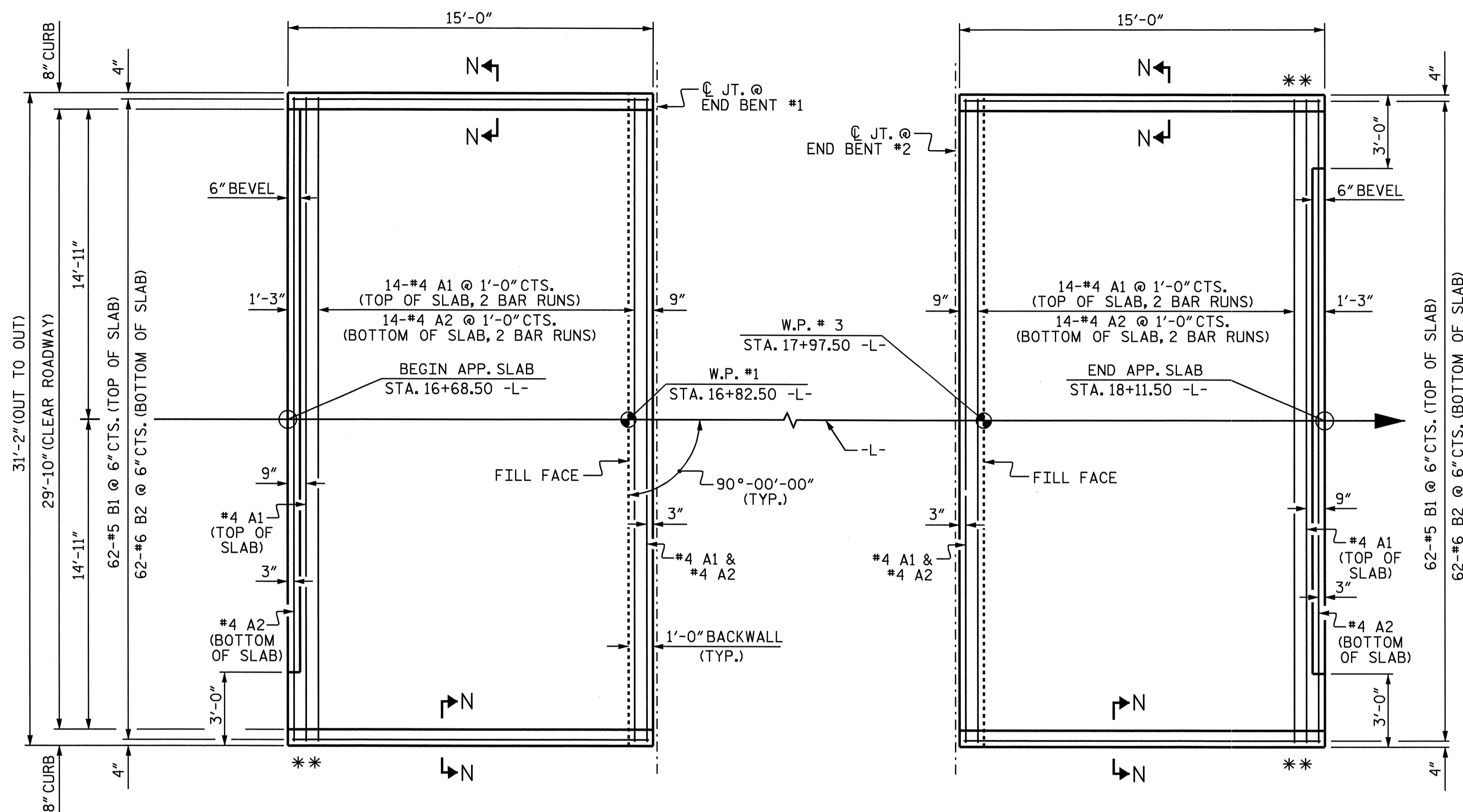
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
 RIP RAP DETAILS

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



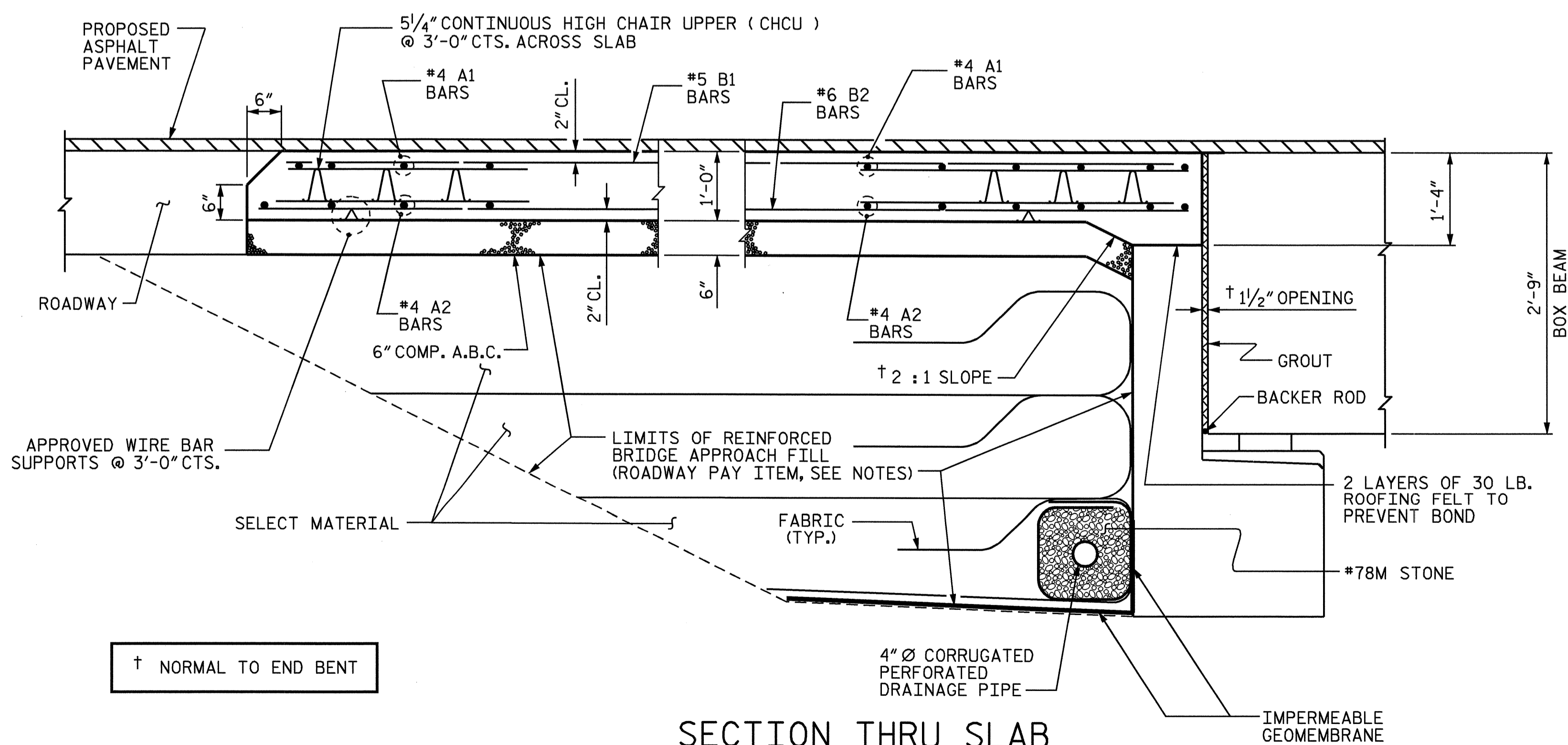
ASSEMBLED BY : R. G. EMERSON DATE : 02/07
 CHECKED BY : S. DOMBROWSKI DATE : 02/07
 DRAWN BY : FCJ 2/88 REV. 8/16/99 RWW/LES
 CHECKED BY : ARB 8/88 REV. 10/17/00 RWW/LES
 REV. 5/1/06 TLA/GM



PLAN @ END BENT #1

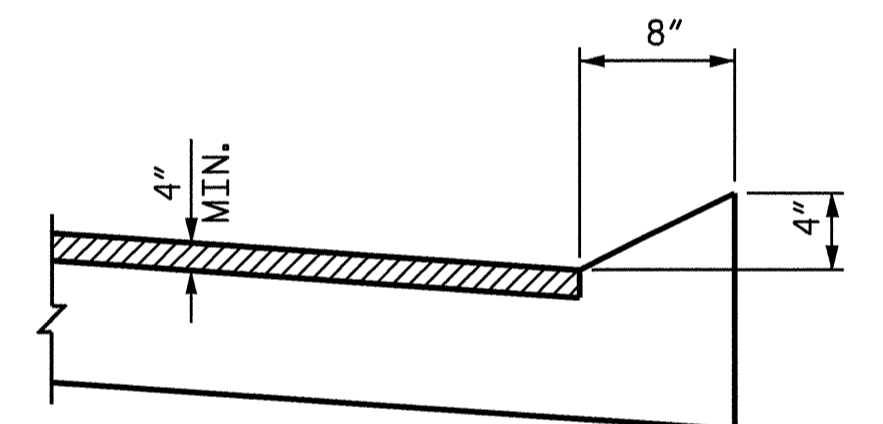
PLAN @ END BENT #2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

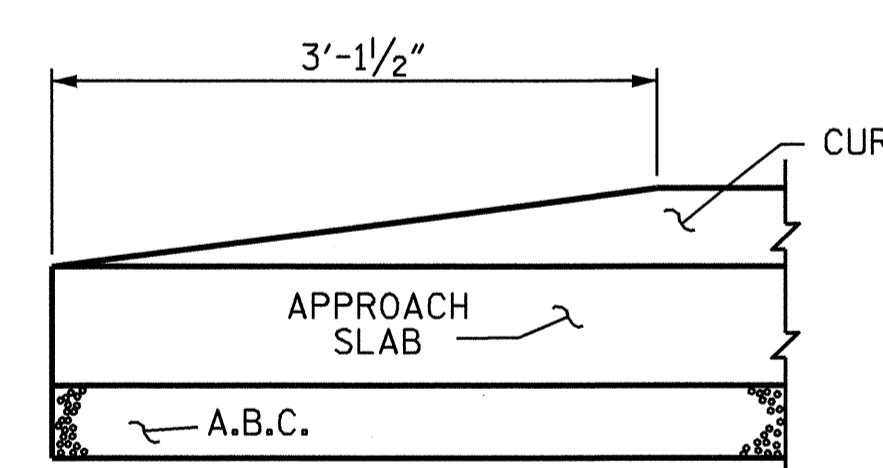


SECTION THRU SLAB

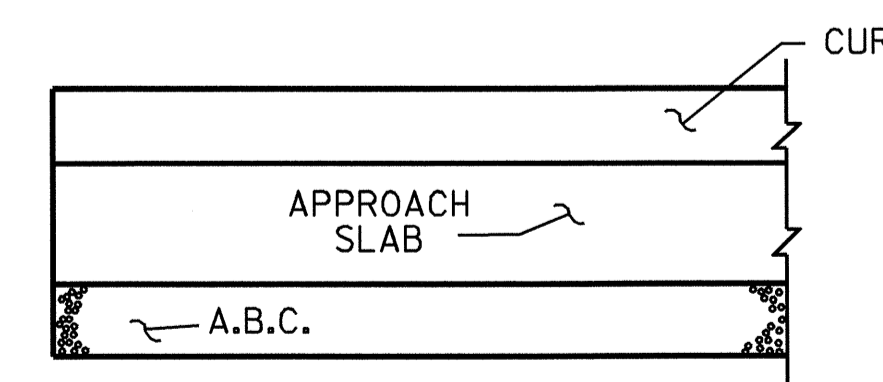
SHOWING SECTION WITHOUT CONCRETE WEARING SURFACE



SECTION N-N



END OF CURB WITHOUT SHOULDER BERM GUTTER



** END OF CURB WITH SHOULDER BERM GUTTER

CURB DETAILS

NOTES

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

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.

FOR JOINT DETAILS, SEE "PRESTRESSED CONCRETE BOX BEAM UNIT" SHEETS.

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

BILL OF MATERIAL

APPROACH SLAB AT EB #1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	32	#4	STR	16'-6"	353
A2	32	#4	STR	16'-4"	349
*B1	62	#5	STR	14'-2"	916
B2	62	#6	STR	14'-8"	1366

REINFORCING STEEL LBS. 1715

* EPOXY COATED REINFORCING STEEL LBS. 1269

CLASS AA CONCRETE C.Y. 17.8

APPROACH SLAB AT EB #2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	32	#4	STR	16'-6"	353
A2	32	#4	STR	16'-4"	349
*B1	62	#5	STR	14'-2"	916
B2	62	#6	STR	14'-8"	1366

REINFORCING STEEL LBS. 1715

* EPOXY COATED REINFORCING STEEL LBS. 1269

CLASS AA CONCRETE C.Y. 17.8

SPLICE CHART

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

PROJECT NO. B-4285

SURRY COUNTY

STATION: 17+40.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

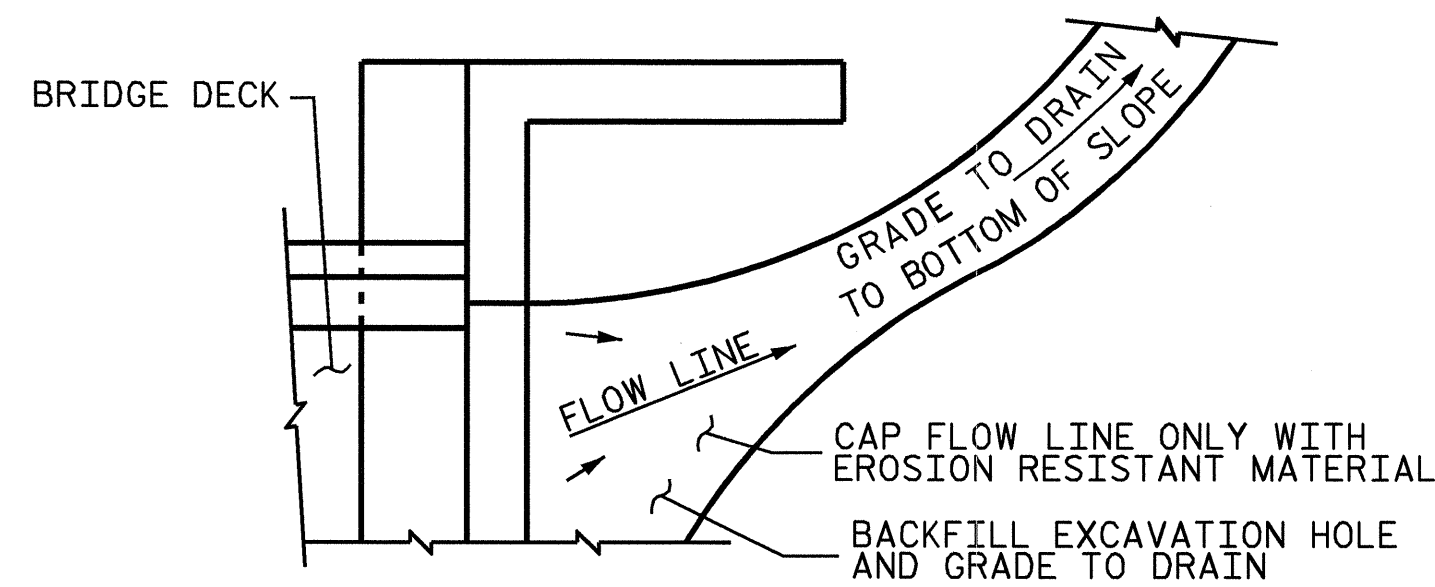
STANDARD

BRIDGE APPROACH SLAB
FOR FLEXIBLE PAVEMENT



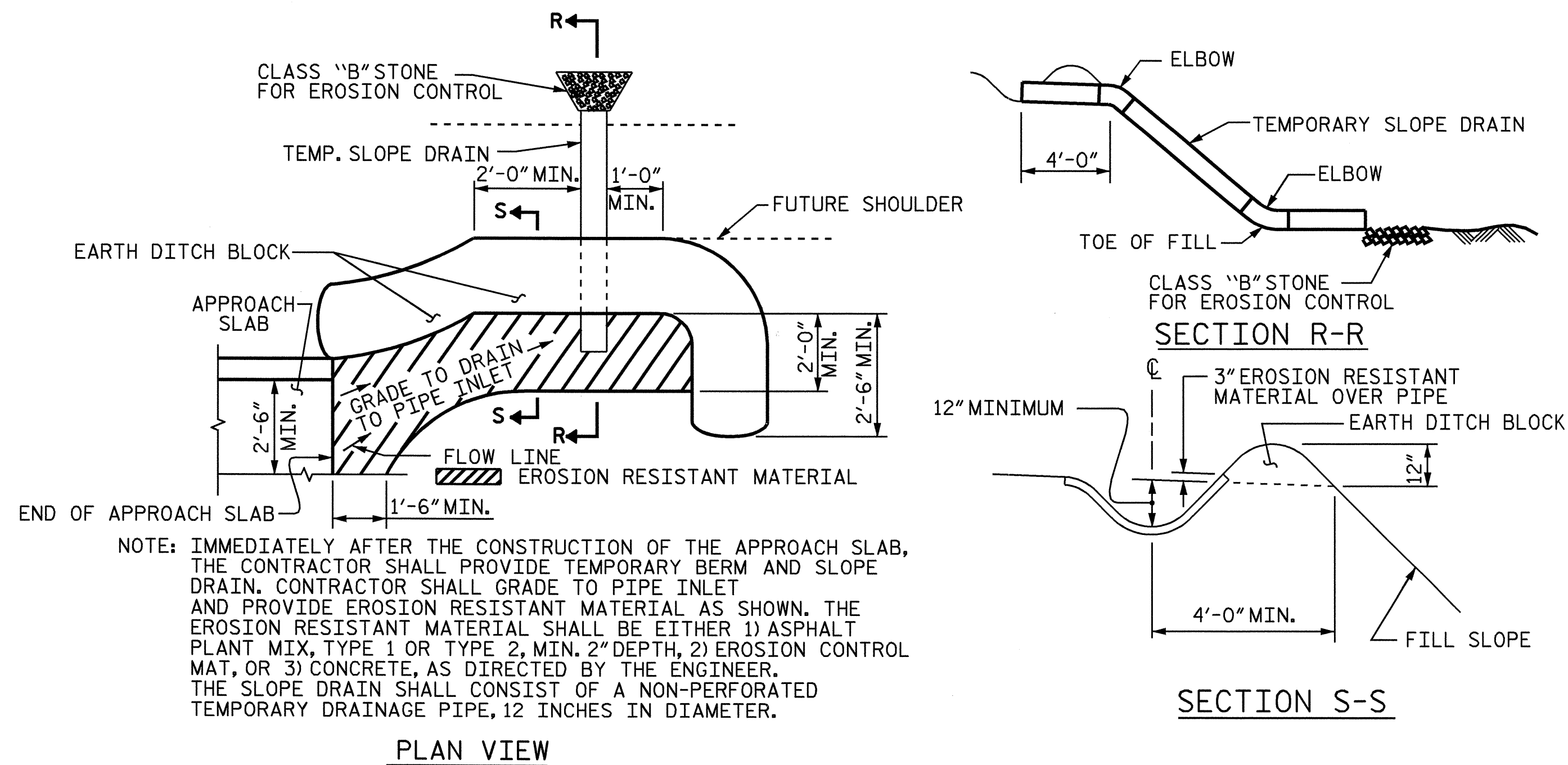
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			20
2			4			20

ASSEMBLED BY: R. G. EMERSON	DATE: 02/07
CHECKED BY: S. DOMBROWSKI	DATE: 02/07
DRAWN BY: EEM 3/95	REV. 7/10/01 LES/RDR
CHECKED BY: VAP 3/95	REV. 5/7/03R RHW/JTE
	REV. 5/1/06R KMM/GM



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



PLAN VIEW

SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

PROJECT NO. B-4285
SURRY COUNTY
 STATION: 17+40.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						1988
STANDARD						SHEET NO.
BRIDGE APPROACH SLAB DETAILS						S-20
TOTAL SHEETS						20
REVISIONS						
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			



ASSEMBLED BY : R. G. EMERSON	DATE : 02/07
CHECKED BY : S. DOMBROWSKI	DATE : 02/07
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

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