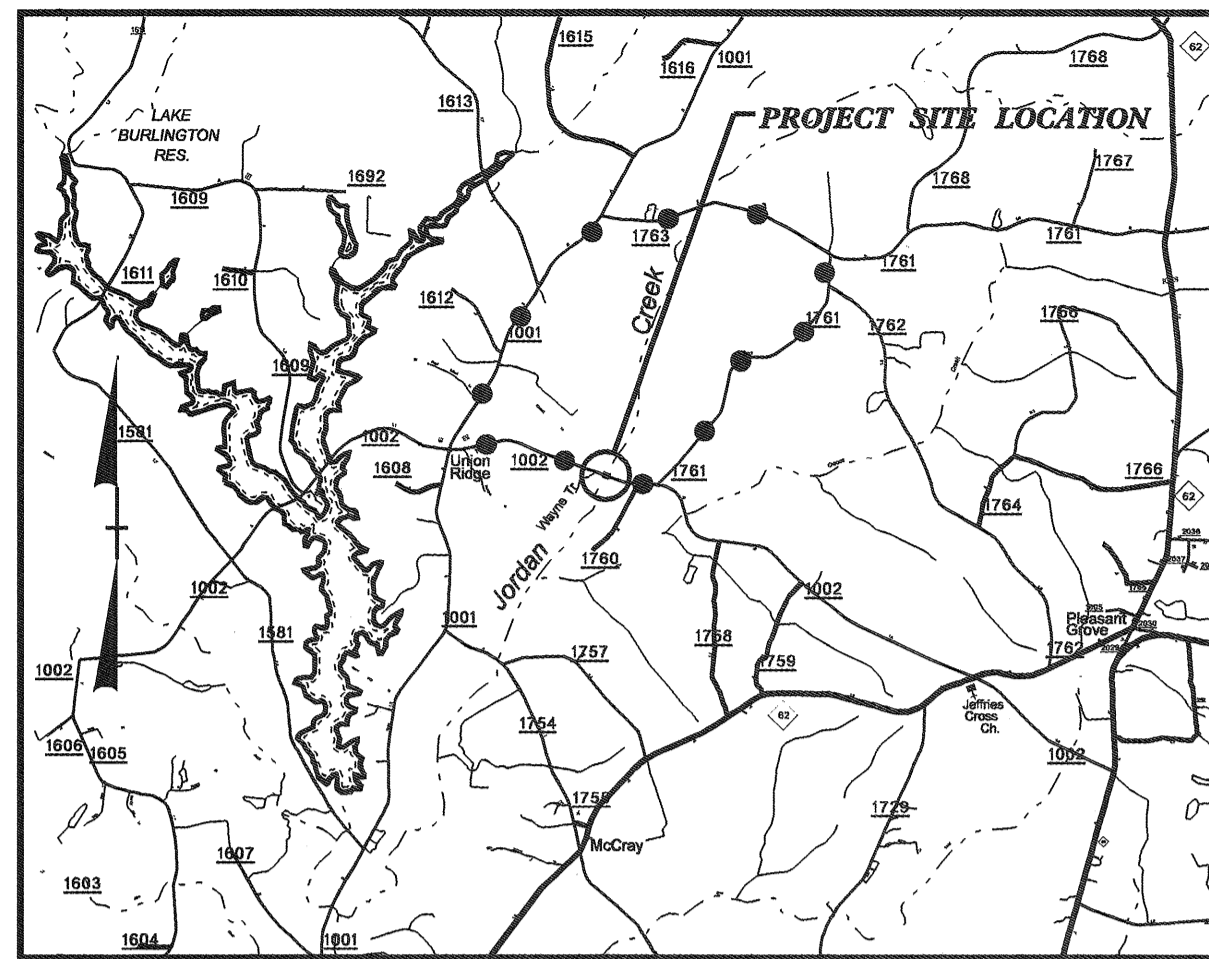


CONTRACT: C201644 TIP PROJECT: B-4000

STRUCTURE

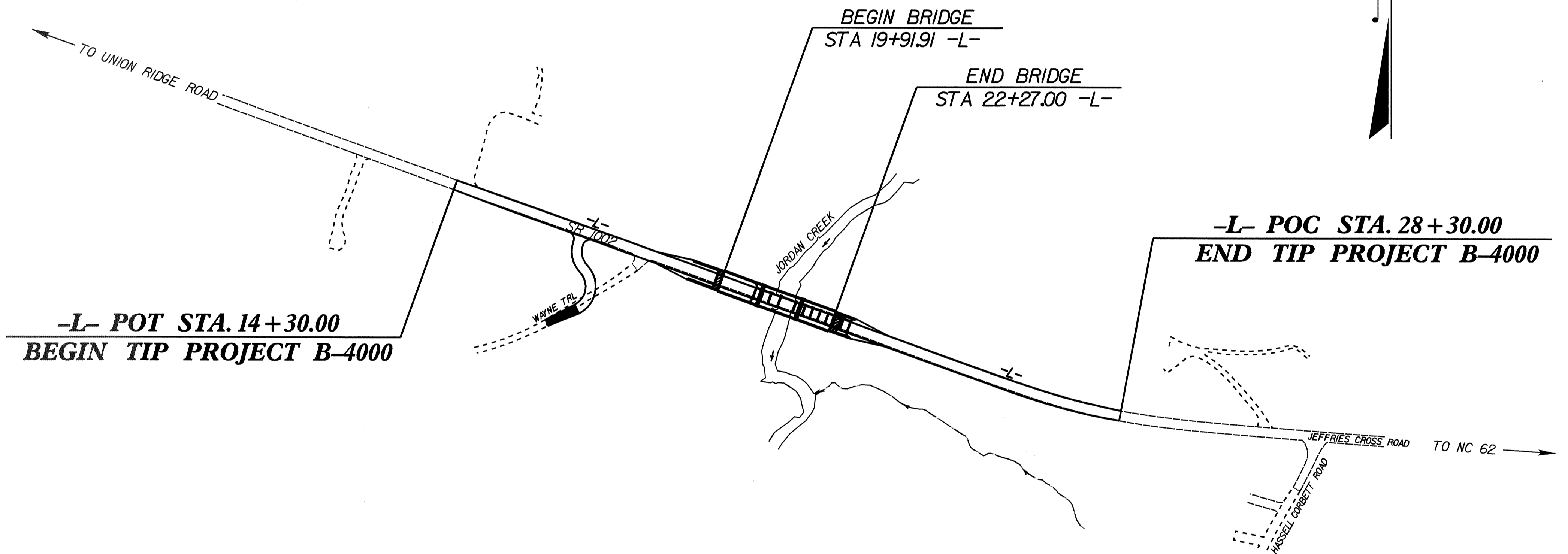


VICINITY MAP
DETOUR ROUTE ————

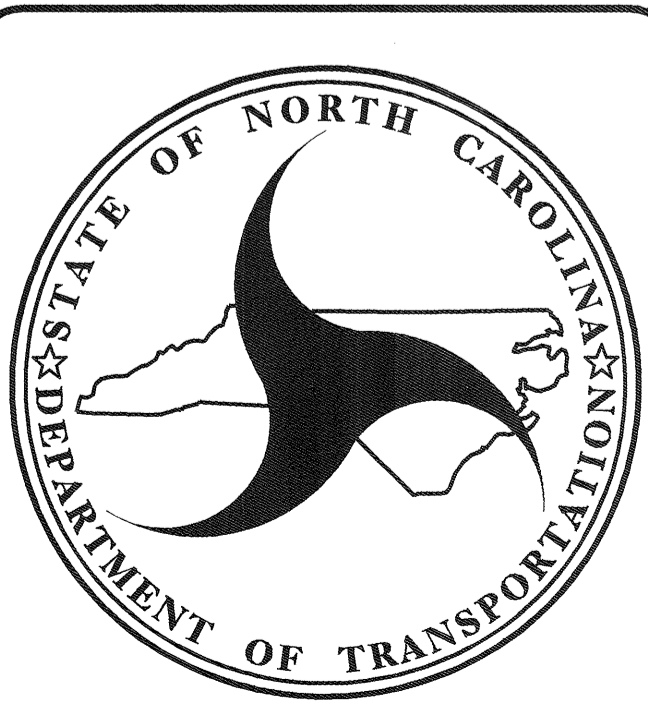
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ALAMANCE COUNTY

LOCATION: BRIDGE NO. 45 OVER JORDAN CREEK ON SR 1002 (JEFFRIES CROSS ROAD)

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



STATE		STATE PROJECT REFERENCE NO.
N.C.		B-4000
WSB NO.	P.A. PROJ. NO.	DESCRIPTION
33368.1.1	BRZ-1002(11)	PE
33368.2.1	BRZ-1002(11)	RW & UTIL
33368.3.1	BRZ-1002(11)	CONSTRUCTION



DESIGN DATA
 ADT 2006 = 767
 ADT 2026 = 1434
 DHV = 10 %
 D = 55 %
 T = 7 % *
 V = 55 MPH
 * (TTST 1% + DUAL 6%)
FUNCTIONAL CLASSIFICATION:
 RURAL MINOR COLLECTOR
 DESIGN EXCEPTION REQUIRED
 FOR VERTICAL CURVATURE AND
 MAXIMUM GRADE.

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4000 = 0.220 mi
 LENGTH STRUCTURE TIP PROJECT B-4000 = 0.045 mi
 TOTAL LENGTH OF TIP PROJECT B-4000 = 0.265 mi

2006 STANDARD SPECIFICATIONS

LETTING DATE :
JULY 17, 2007

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

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

D. E. PETREY, P. E.
 PROJECT DESIGN ENGINEER

STRUCTURE DESIGN UNIT
 RALEIGH, N.C. 27610

GREGORY R. PERFETTI
 6-1-07

DIVISION OF HIGHWAYS
 STATE OF NORTH CAROLINA

 STATE DESIGN ENGINEER
DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

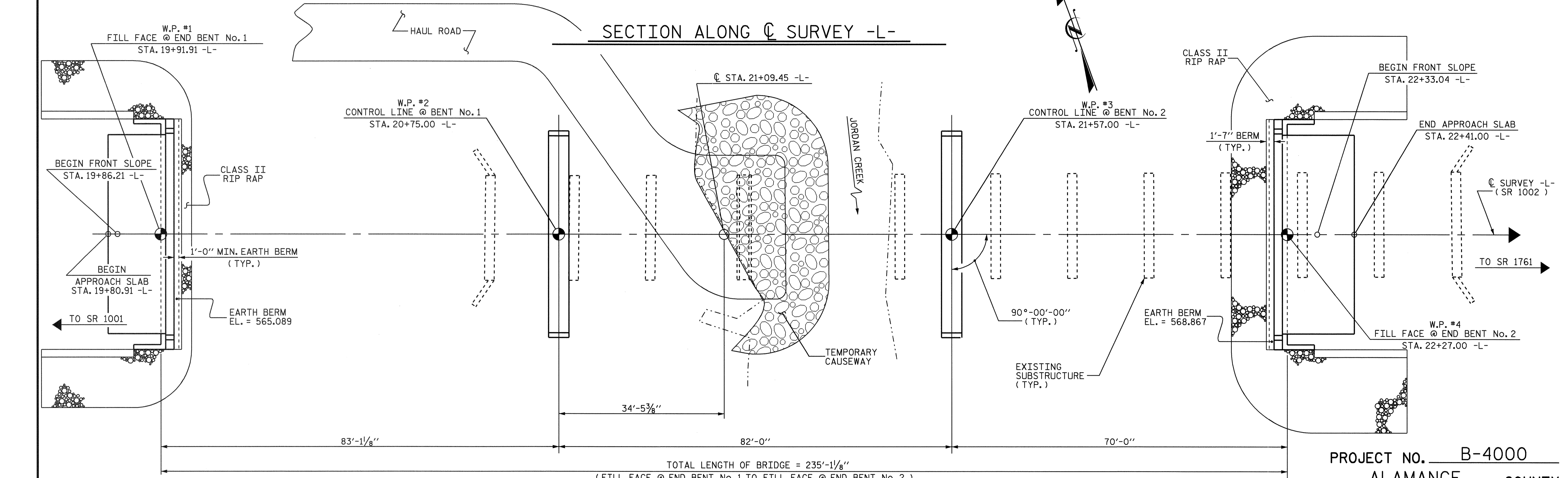
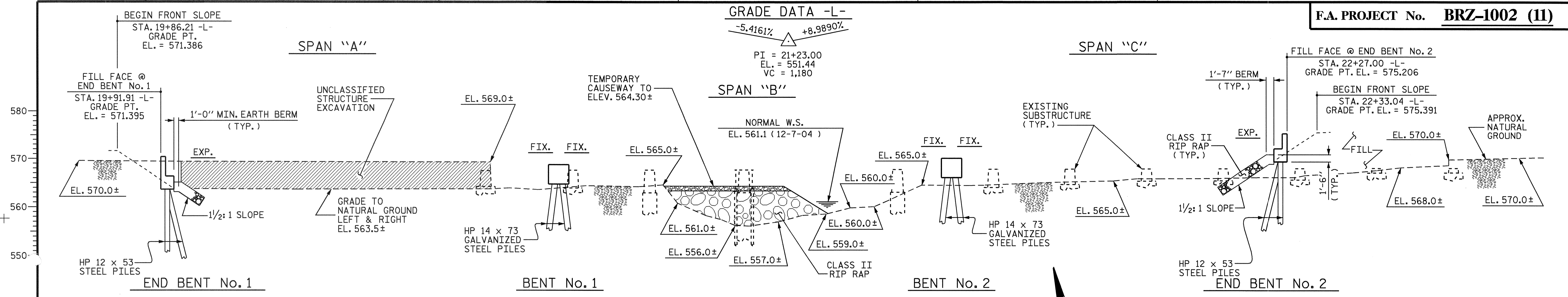
APPROVED _____ DATE _____
 DIVISION ADMINISTRATOR

20+00

21+00

22+00

F.A. PROJECT No. **BRZ-1002 (11)**



PLAN

(PILES NOT SHOWN IN PLAN VIEW FOR CLARITY)

HYDROGRAPHIC DATA

DESIGN DISCHARGE-----	2600 CFS
FREQUENCY OF DESIGN FLOOD-----	25 YR.
DESIGN HIGH WATER ELEVATION-----	569.2
DRAINAGE AREA-----	13.8 SQ.MI.
BASIC DISCHARGE (Q100)-----	3800 CFS
BASIC HIGH WATER ELEVATION-----	570.7
OVERTOPPING FLOOD DATA	
OVERTOPPING DISCHARGE-----	4600 CFS
FREQUENCY OF OVERTOPPING FLOOD-----	200 YRS
* OVERTOPPING FLOOD ELEVATION-----	571.5

* OVERTOPPING OCCURS @ ROADWAY STATION 19+76.66 -L-



PROJECT NO. B-4000
ALAMANCE COUNTY
 STATION: 21+09.45 -L-

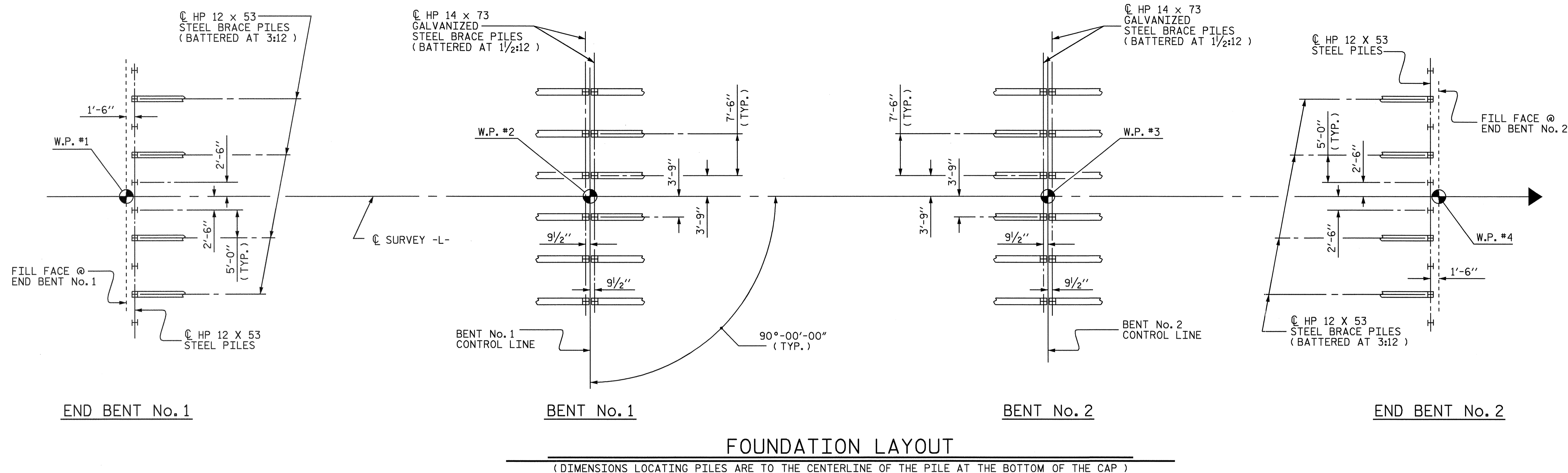
SHEET 1 OF 3 REPLACES BRIDGE #45

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 BRIDGE ON
 SR 1002 (JEFFRIES CROSS RD.)
 OVER JORDAN CREEK
 BETWEEN SR 1001 AND SR 1761

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS 24
2			4			

DRAWN BY : MIKE BRITT DATE : 1-26-07
 CHECKED BY : A.V. ROYAL DATE : 2-1-07



NOTES :

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

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 TIMBER DECK WITH AWS ON I-BEAMS, STEEL CHANNELS & TIMBER JOISTS AND SPANS OF 1 @ 16'-7 1/2", 1 @ 16', 1 @ 20', 1 @ 32', 1 @ 20', 5 @ 16' AND 1 @ 16'-1 1/2" WITH A CLEAR ROADWAY WIDTH OF 21'-1" ON ABUTMENTS & INT BENTS OF MASS CONCRETE WITH STEEL CAP & PILE CRUTCHES EACH SIDE OF BENT #3 AND LOCATED AT THE SITE OF THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE FURTHER DETERIORATE, THIS LOAD LIMITATION MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

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

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA 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 21+09.45 -L-."

AT THE CONTRACTOR'S OPTION, AND UPON REMOVAL OF THE CAUSEWAY, THE CLASS II RIP RAP USED IN THE CAUSEWAY MAY BE PLACED AS RIP RAP SLOPE PROTECTION. SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS AT STATION 21+09.45 -L-.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

THE SCOUR CRITICAL ELEVATION FOR BENT No. 1 AND BENT No. 2 IS ELEVATION 550 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

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

DRIVE PILES AT BENT No. 1 AND BENT No. 2 TO A REQUIRED BEARING CAPACITY OF 150 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.

STEEL PILE POINTS ARE REQUIRED FOR THE STEEL PILES AT BENT No. 1 AND No. 2. SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

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

THE ALLOWABLE BEARING CAPACITY FOR PILES AT BENT No. 1 AND BENT No. 2 IS 70 TONS PER PILE.

GALVANIZE STEEL PILES AT BENT No. 1 AND BENT No. 2 IN ACCORDANCE WITH SECTION 450 OF THE STANDARD SPECIFICATIONS.

REMOVAL OF THE EXISTING STRUCTURE TO BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE FIRST INTERIOR BENT SHALL BE REMOVED COMPLETELY TO AVOID INTERFERENCE WITH THE PROPOSED BENT No. 1 PILES.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR VERTICAL CONCRETE BARRIER RAIL, SEE SPECIAL PROVISIONS.



PROJECT NO. B-4000
ALAMANCE COUNTY
STATION: 21+09.45 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
BRIDGE ON
SR 1002 (JEFFRIES CROSS RD.)
OVER JORDAN CREEK
BETWEEN SR 1001 AND SR 1761

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
1			3			TOTAL SHEETS
2			4			24

DRAWN BY : MIKE BRITT DATE : 1-30-07
CHECKED BY : A.V. ROYAL DATE : 2-1-07

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 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 3" 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 7500 PSI FOR SPANS A & B AND A COMPRESSIVE STRENGTH OF NOT LESS THAN 6000 PSI FOR SPAN C.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

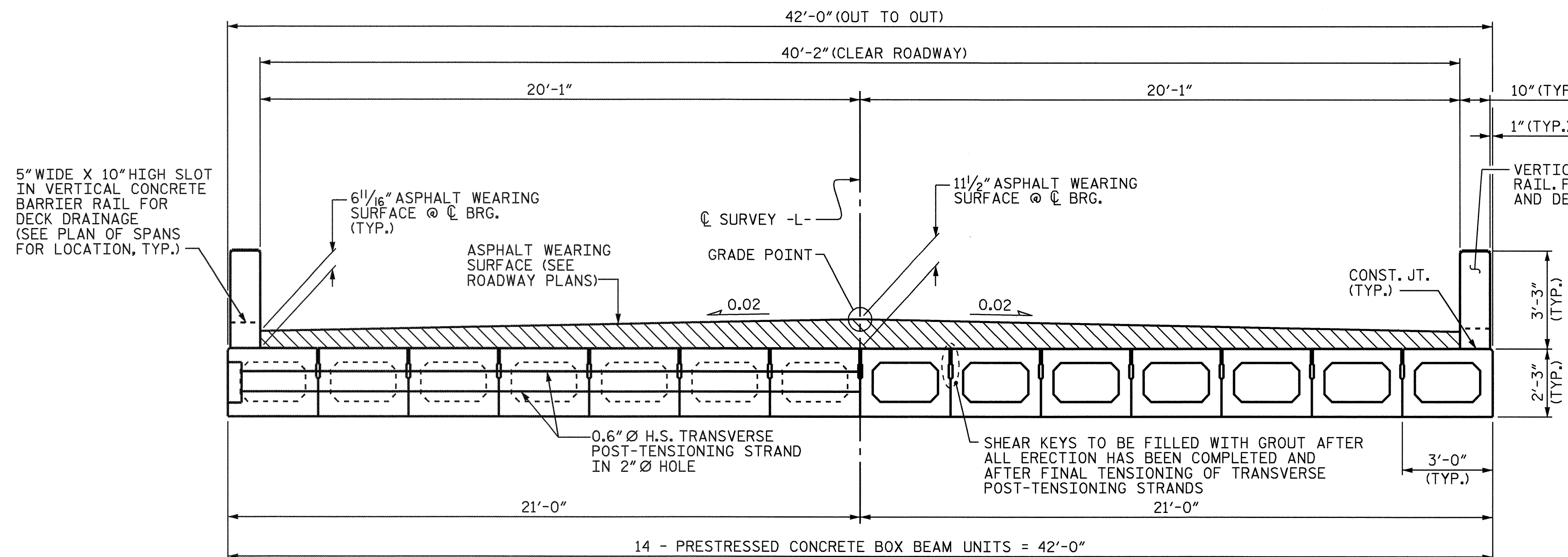
PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE BOX BEAM UNIT ENDS.

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.

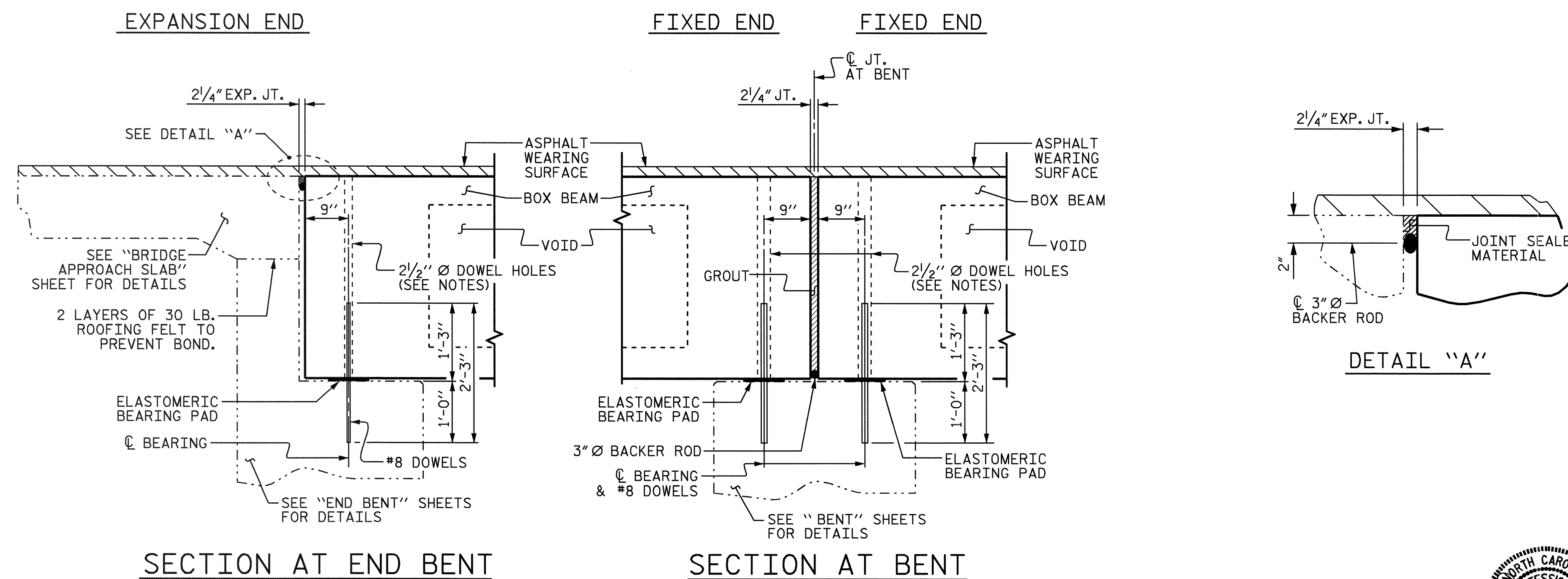
FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.



HALF SECTION AT INTERMEDIATE DIAPHRAGMS

HALF SECTION AT VOIDS

TYPICAL SECTION



SECTION AT END BENT

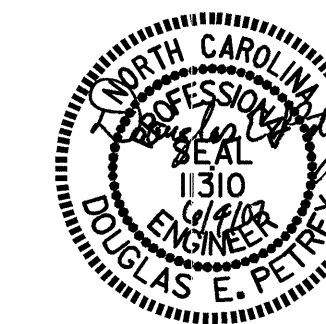
SECTION AT BENT

DETAIL "A"

PROJECT NO. B-4000
ALAMANCE COUNTY
 STATION: 21+09.45 -L-

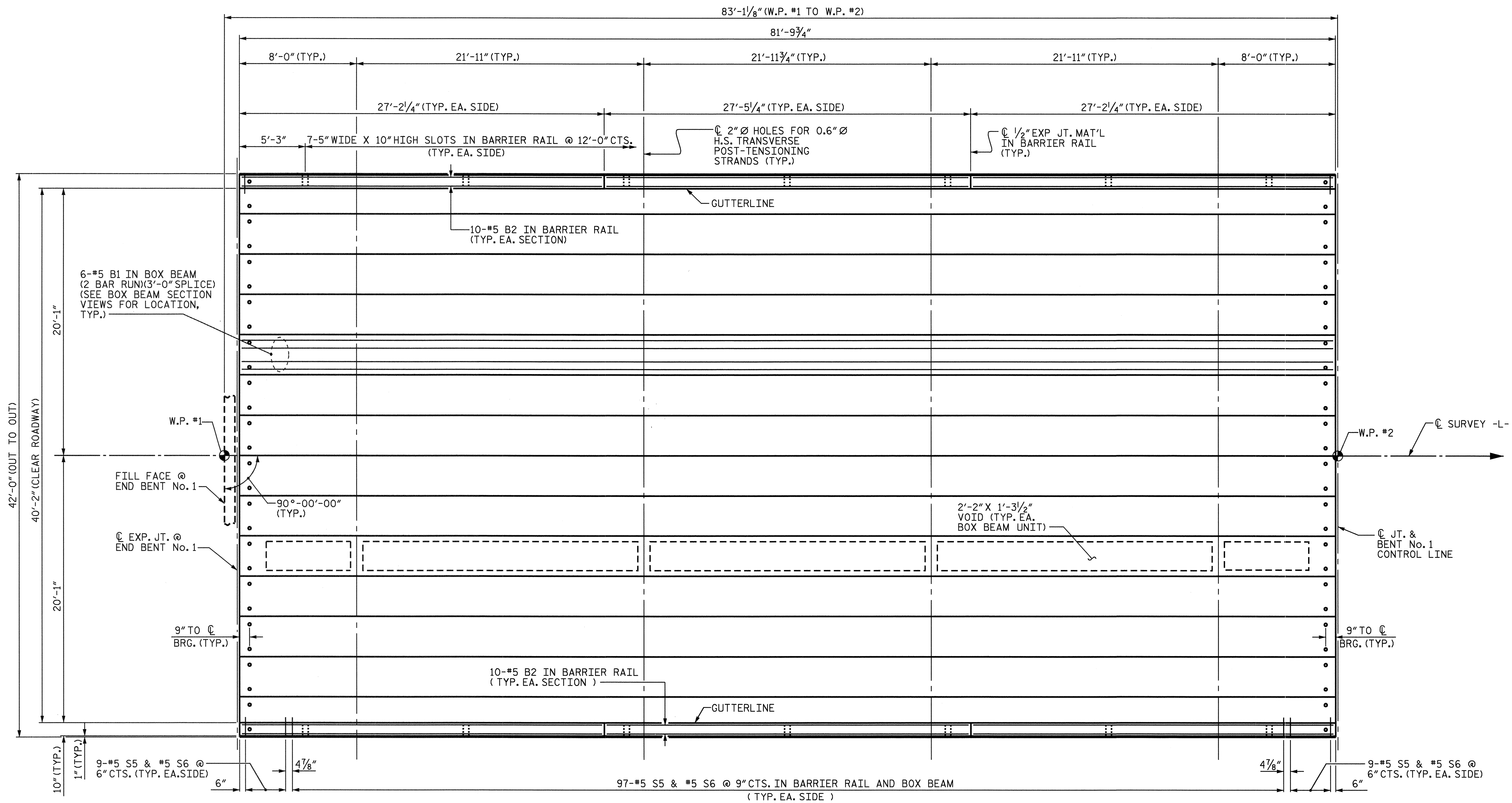
SHEET 1 OF 9

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

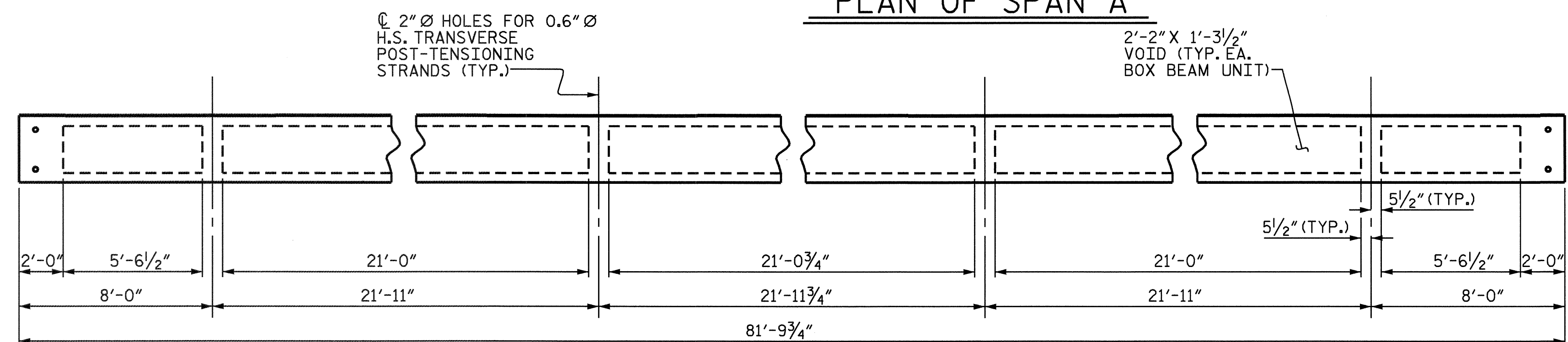


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS
2			4			24

ASSEMBLED BY: A.R.CHESSON/NAP DATE: 9-06
CHECKED BY: B.N. GRADY DATE: 10-06
DRAWN BY: TLA 5/05
CHECKED BY: GM 6/05
ADDED 7/11/05R
REV. 5/1/06
TLA/GM



PLAN OF SPAN A



PLAN OF BOX BEAM UNIT

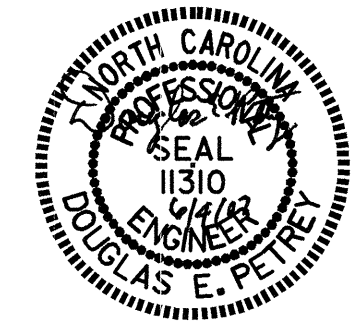
PROJECT NO. B-4000
ALAMANCE COUNTY
 STATION: 21+09.45 -L-

SHEET 2 OF 9

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

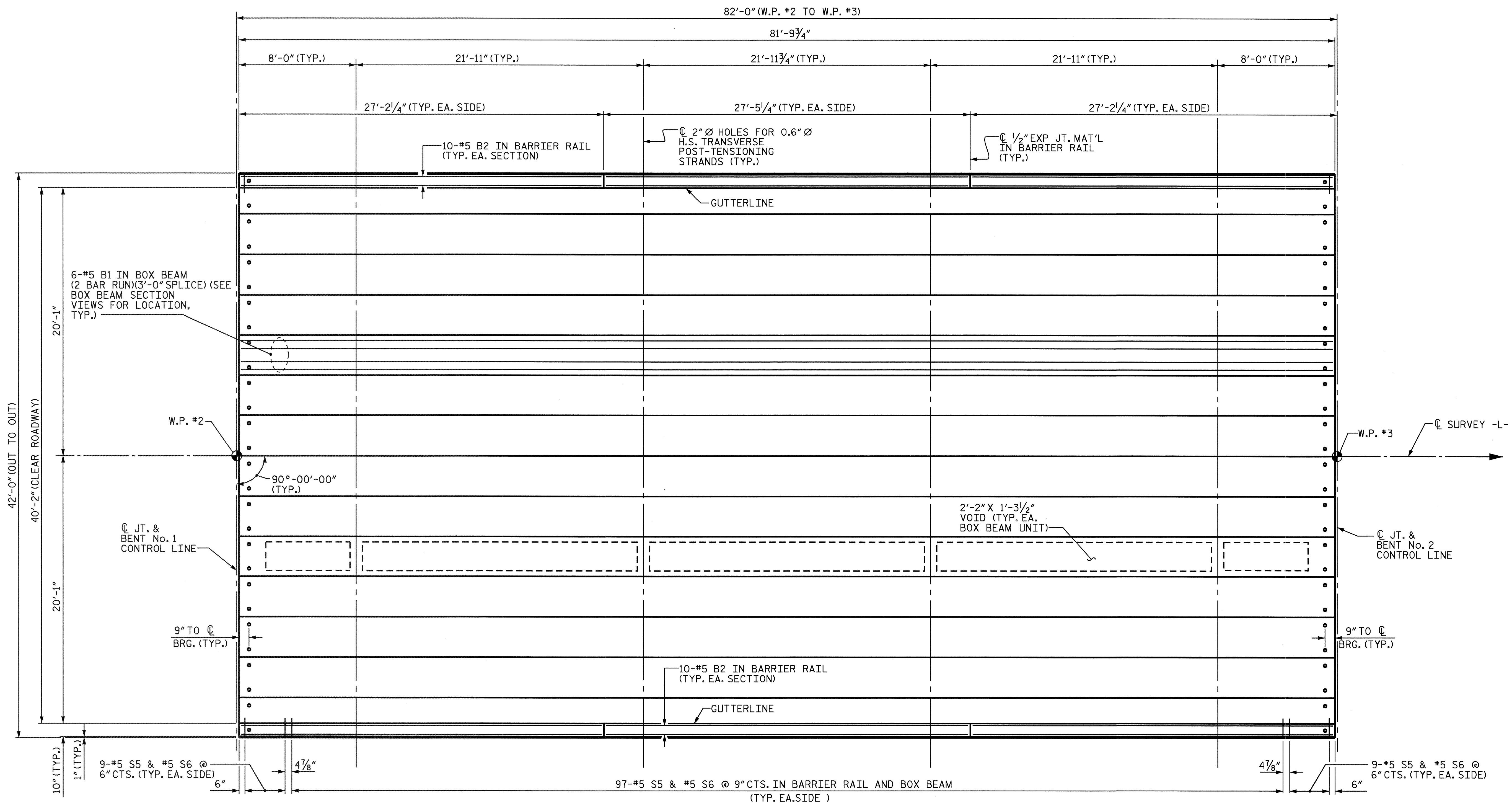
SUPERSTRUCTURE
 PLAN OF SPAN A

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			24

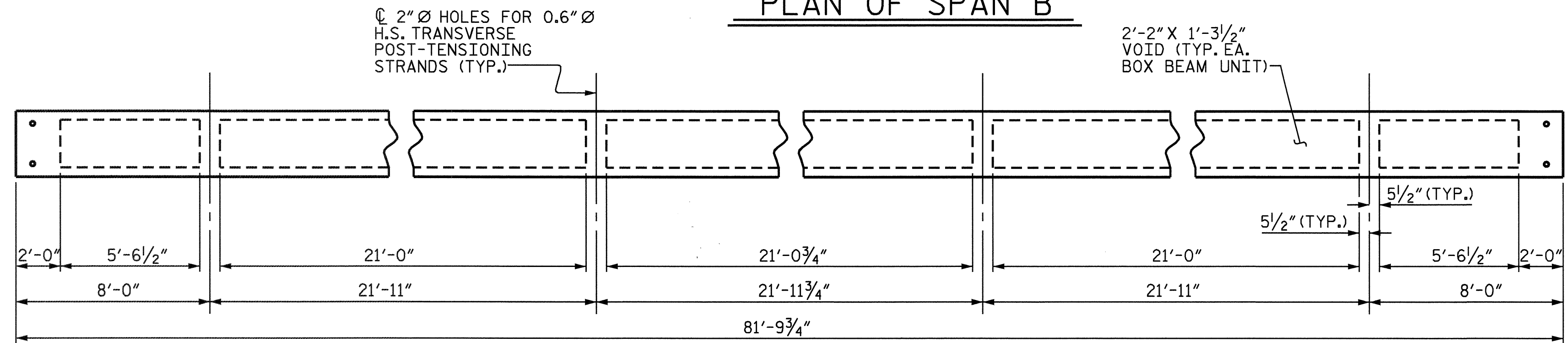


DRAWN BY : A.R.CHESSON / NAP DATE : 9-06
 CHECKED BY : B.N. GRADY DATE : 10-06

22-FEB-2007 08:10
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 mbr111



PLAN OF SPAN B



PLAN OF BOX BEAM UNIT

PROJECT NO. B-4000
ALAMANCE COUNTY
 STATION: 21+09.45 -L-

SHEET 3 OF 9

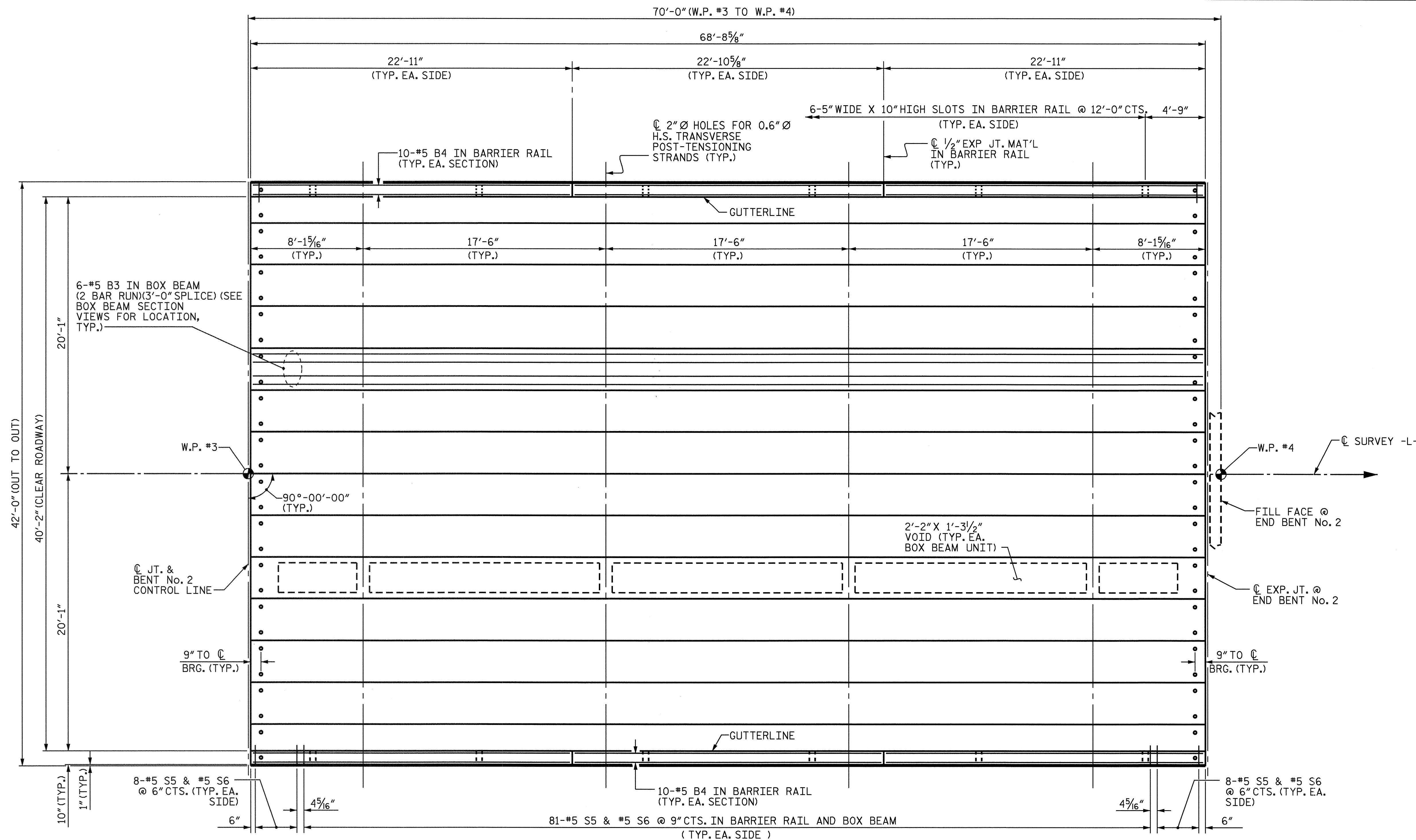
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 PLAN OF SPAN B

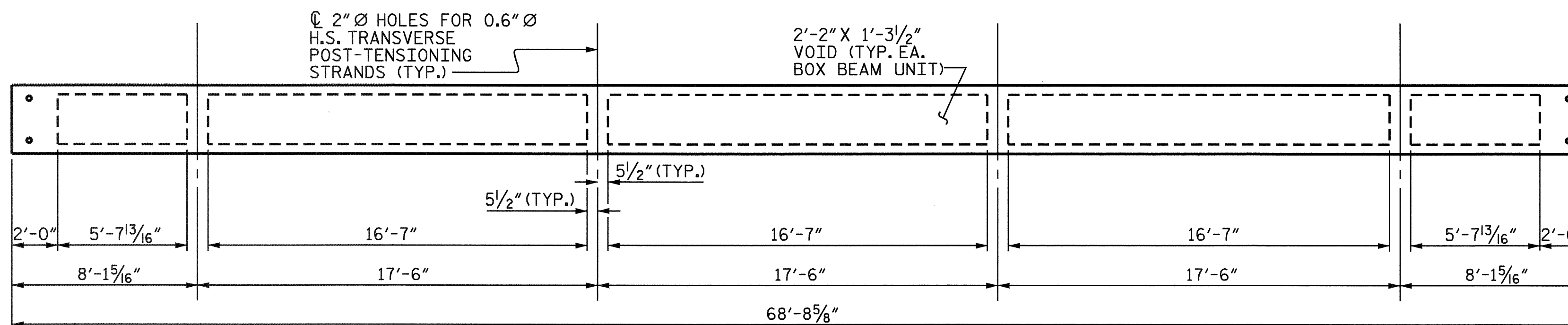


DRAWN BY: A.R.CHESSON / NAP DATE: 9-06
 CHECKED BY: B.N. GRADY DATE: 10-06

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			24



PLAN OF SPAN C



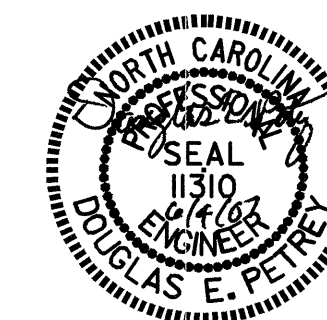
PLAN OF BOX BEAM UNIT

PROJECT NO. B-4000
ALAMANCE COUNTY
 STATION: 21+09.45 -L-

SHEET 4 OF 9

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

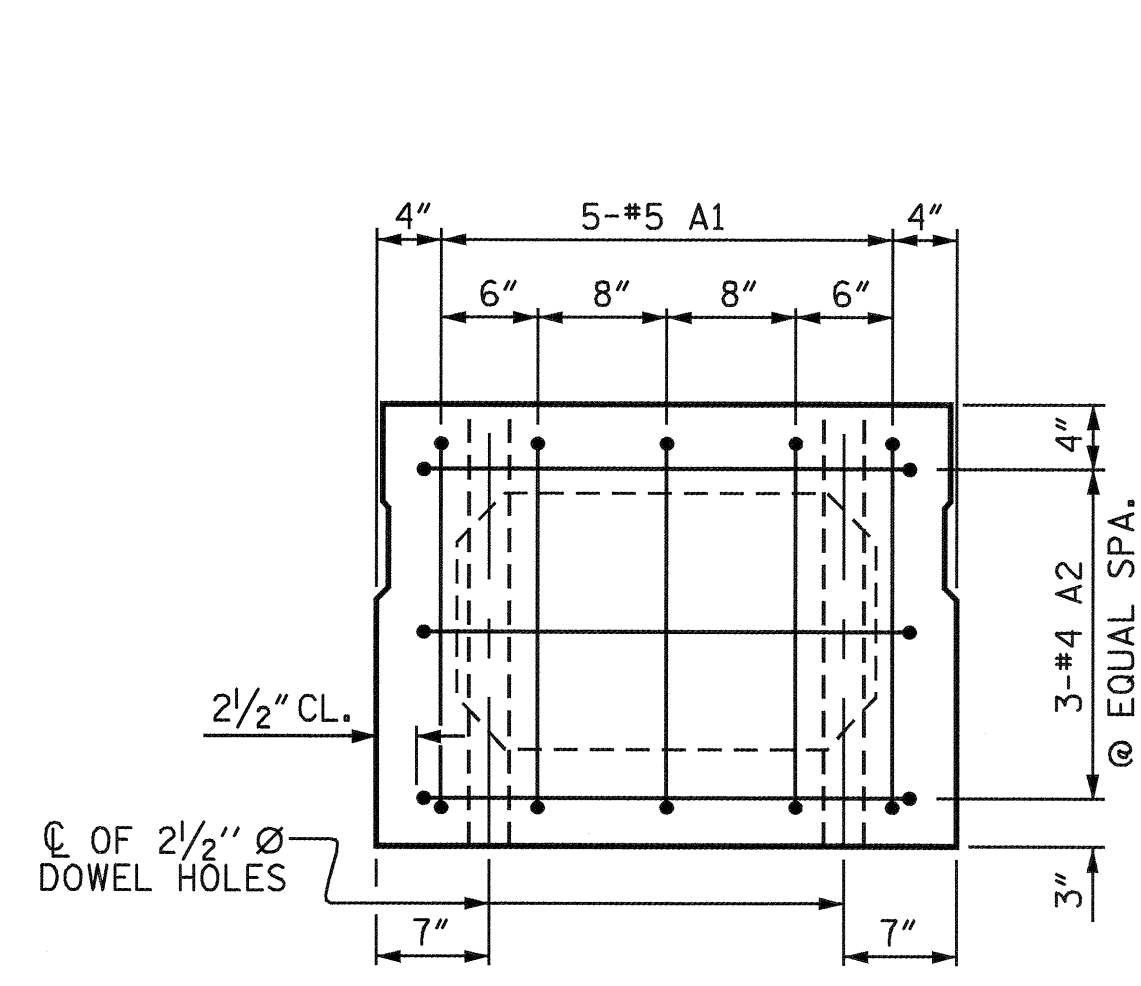
SUPERSTRUCTURE
 PLAN OF SPAN C



DRAWN BY: A.R.CHESSON / NAP DATE: 9-06
 CHECKED BY: B.N. GRADY DATE: 10-06

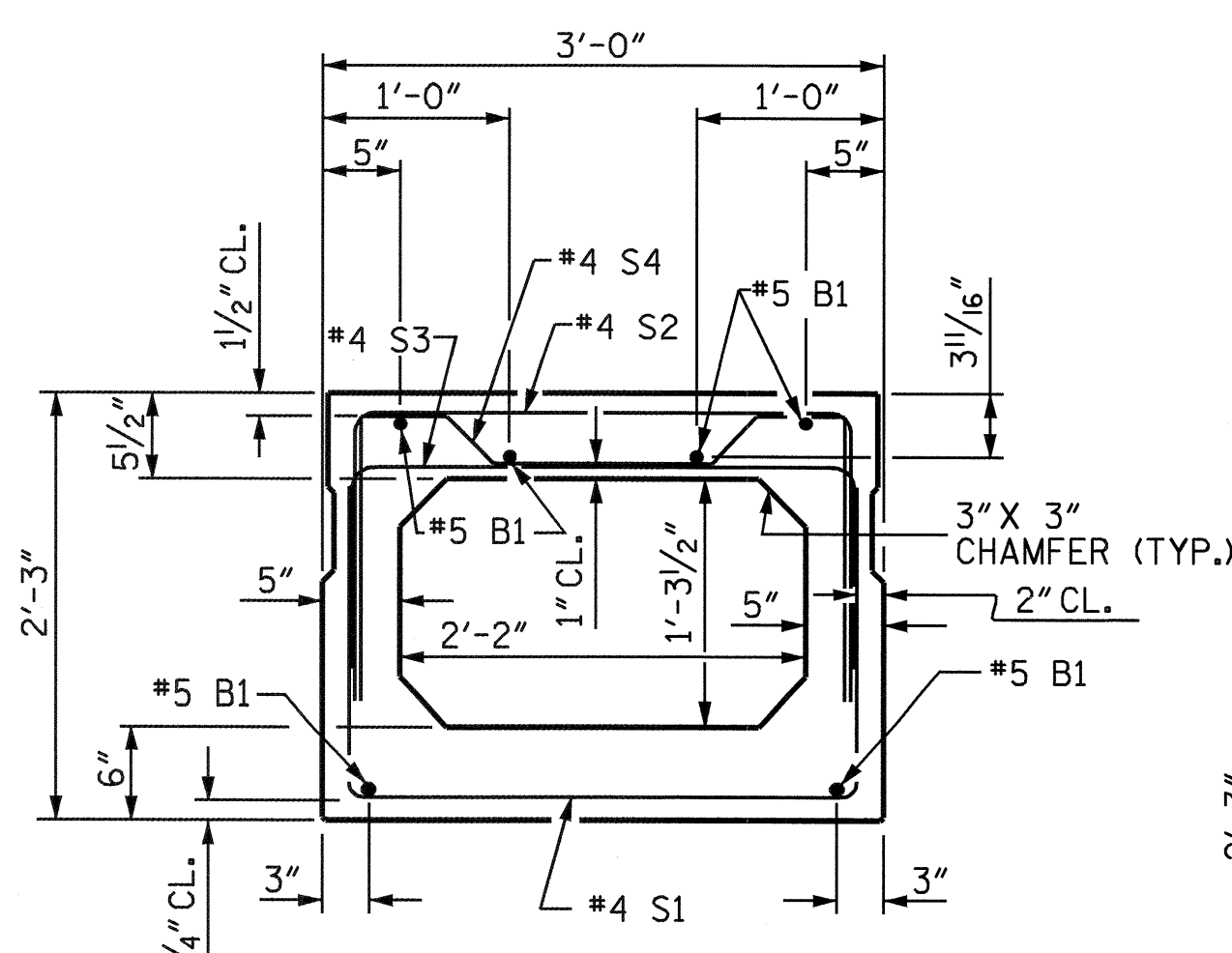
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			24



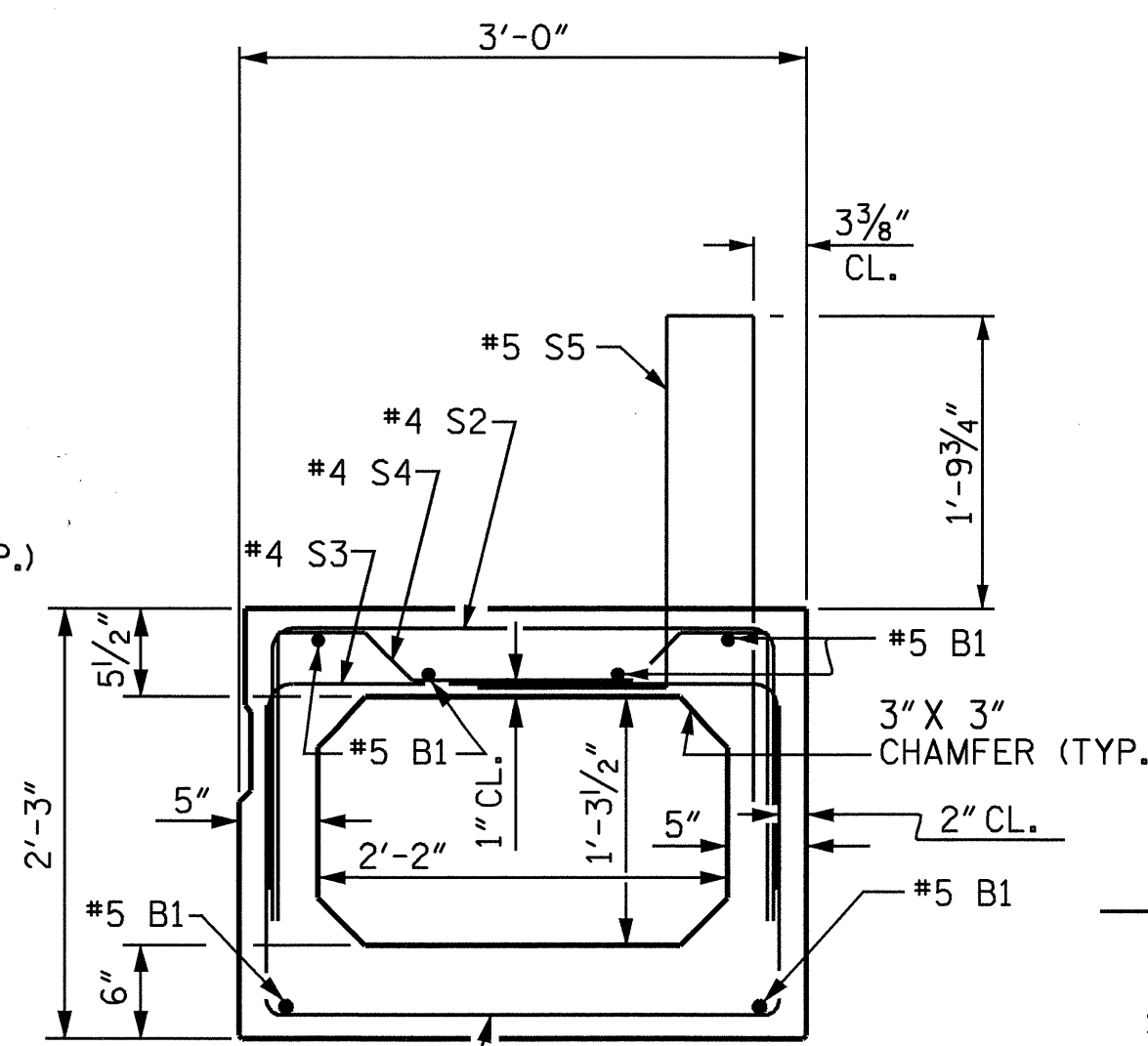
END ELEVATION

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.)



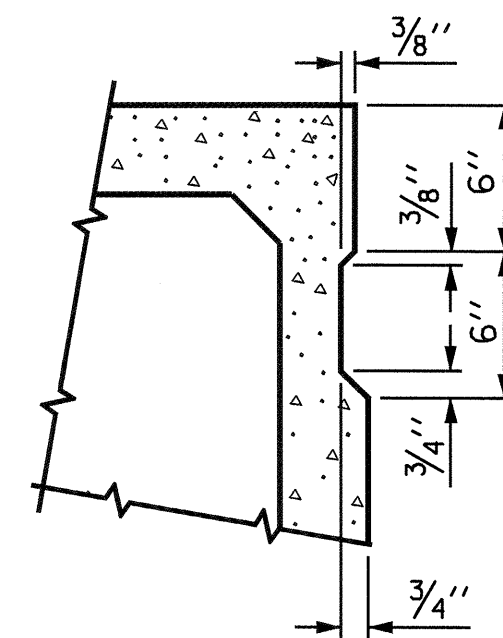
INTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)



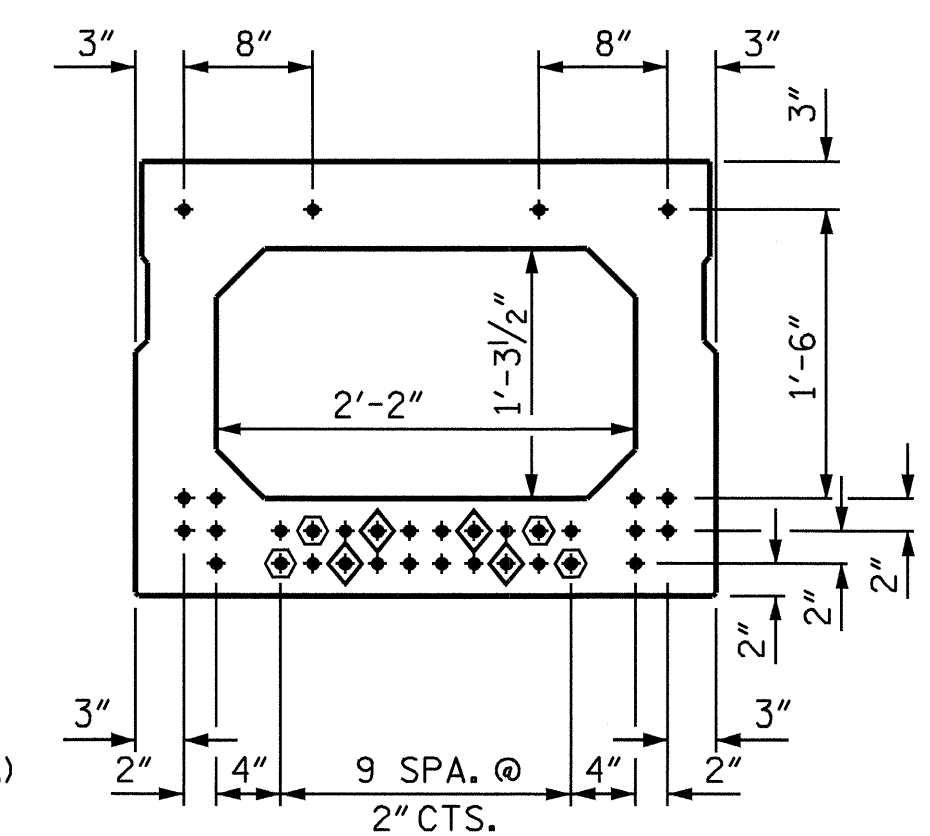
EXTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)



SHEAR KEY DETAIL

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



TYPICAL STRAND LOCATION

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

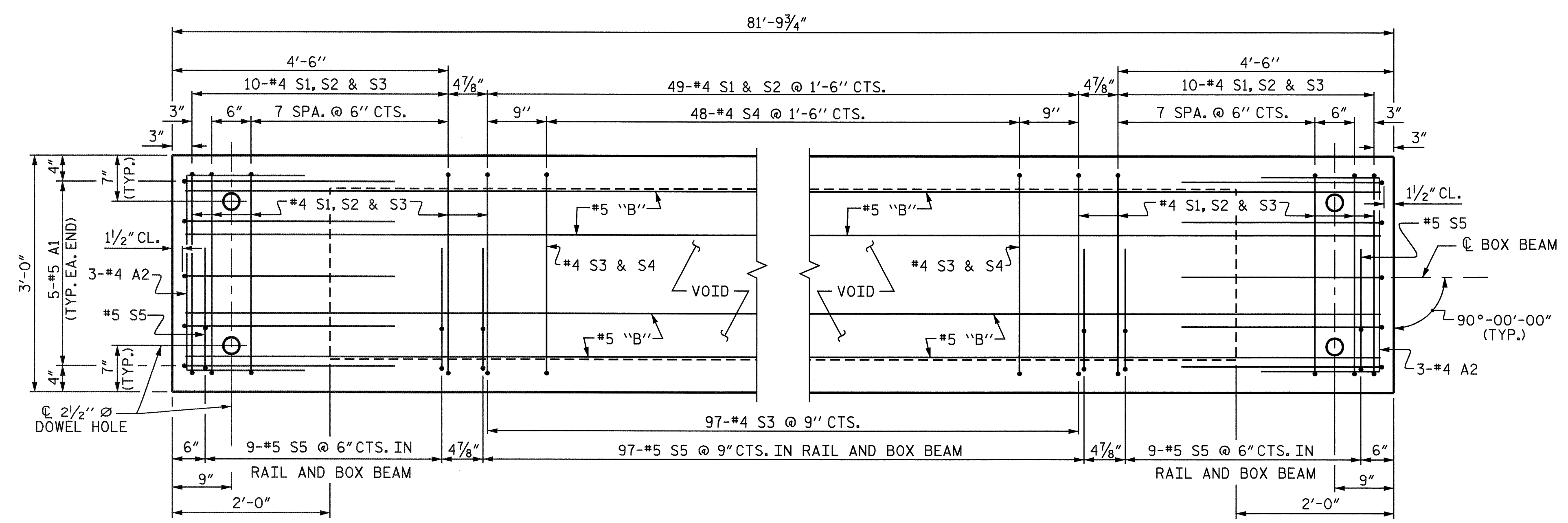
DEBONDING LEGEND

- FULLY BONDED STRANDS
- ◆ STRANDS DEBONDED FOR 8'-0" FROM END OF GIRDER
- ⬢ STRANDS DEBONDED FOR 12'-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.

0.6" Ø LOW RELAXATION STRAND LAYOUT

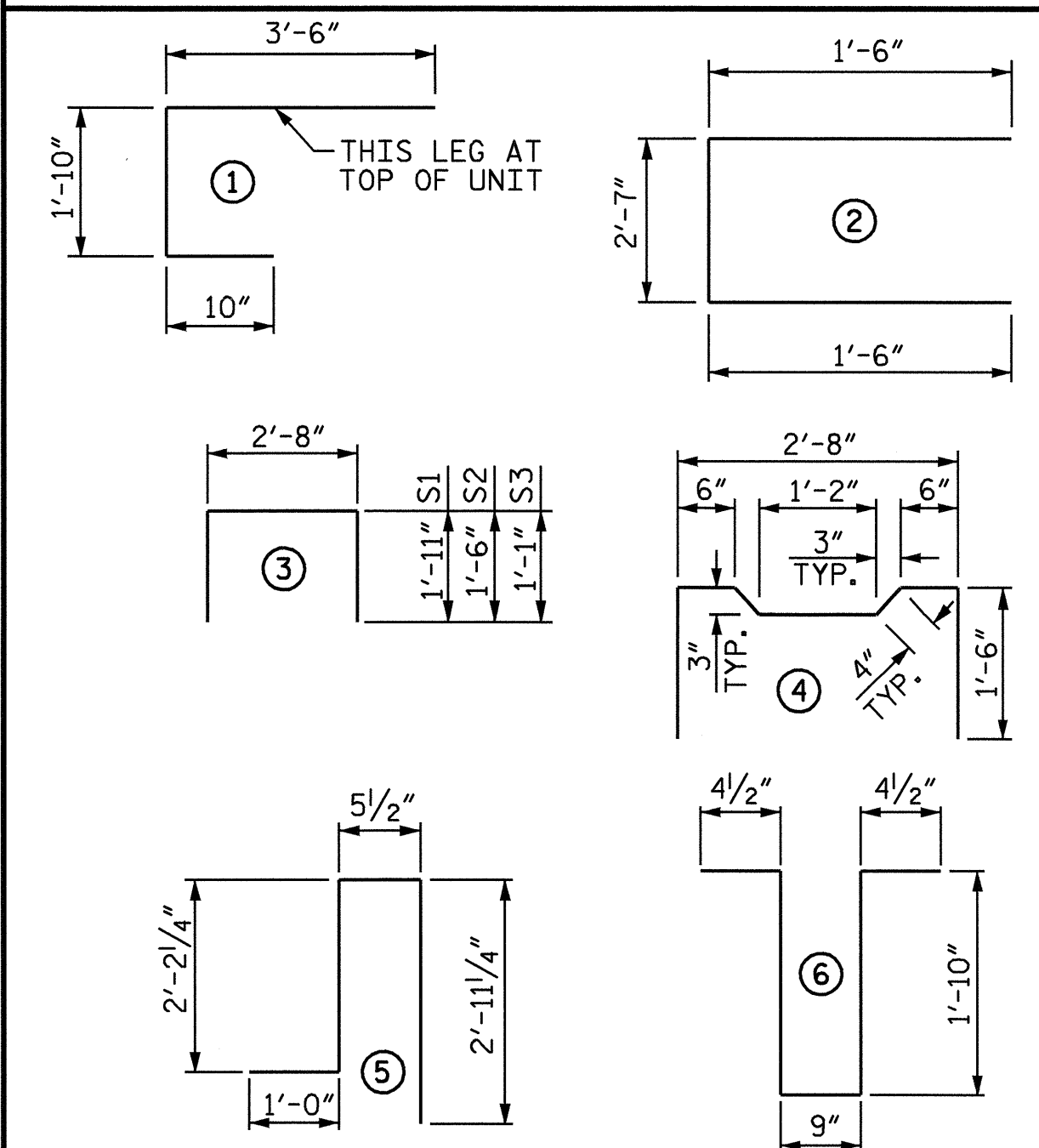
GRADE 270 STRANDS	
AREA (SQUARE INCHES)	0.6" Ø L.R.
ULTIMATE STRENGTH (LBS. PER STRAND)	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	43,950



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



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR ONE BOX BEAM SECTION

BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT LENGTH	EXTERIOR UNIT WEIGHT	INTERIOR UNIT LENGTH	INTERIOR UNIT WEIGHT
A1	10	#5	1	6'-2"	64	6'-2"	64
A2	22	#4	2	5'-7"	82	5'-7"	82
B1	12	#5	STR	42'-3"	529	42'-3"	529
K1	12	#4	6	5'-2"	41	5'-2"	41
K2	8	#4	STR	2'-7"	14	2'-7"	14
S1	69	#4	3	6'-6"	300	6'-6"	300
S2	69	#4	3	5'-8"	261	5'-8"	261
S3	117	#4	3	4'-10"	378	4'-10"	378
S4	48	#4	4	5'-10"	187	5'-10"	187
* S5	115	#5	5	6'-7"	790	--	--
REINFORCING STEEL				1,856 LBS.		1,856 LBS.	
* EPOXY COATED REINF. STEEL				790 LBS.			
9400 P.S.I. CONCRETE				13.1 CU. YDS.		13.1 CU. YDS.	
0.6" Ø L.R. STRANDS				No. 34		No. 34	

NOTE: INITIAL CONCRETE STRENGTH OF 7500 P.S.I.

PROJECT NO. B-4000
ALAMANCE COUNTY
 STATION: 21+09.45 -L-

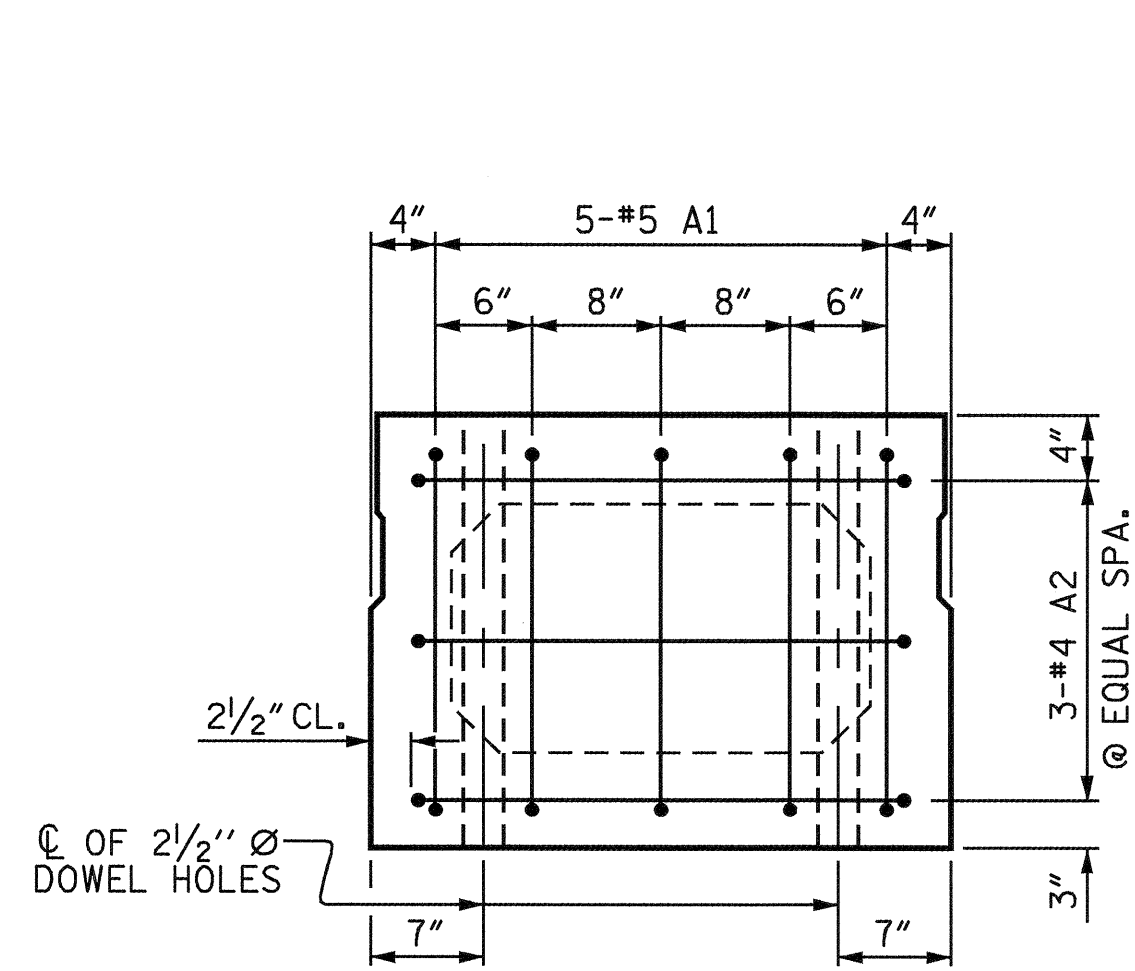
SHEET 5 OF 9

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



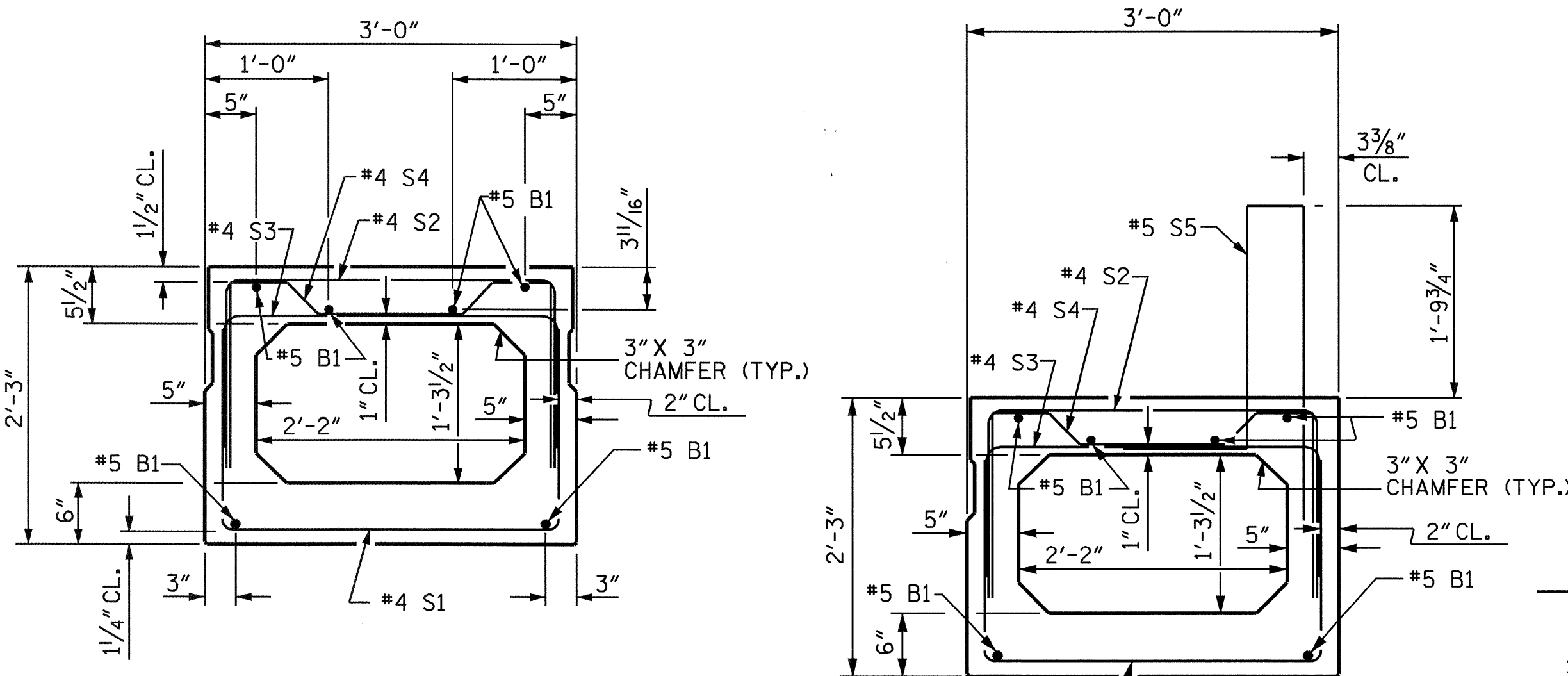
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS 24
2			4			

ASSEMBLED BY: A.R.CHESSON/NAP	DATE: 9-06
CHECKED BY: B.N. GRADY	DATE: 10-06
DRAWN BY: TLA	5/05
CHECKED BY: GM	6/05
ADDED	7/11/05



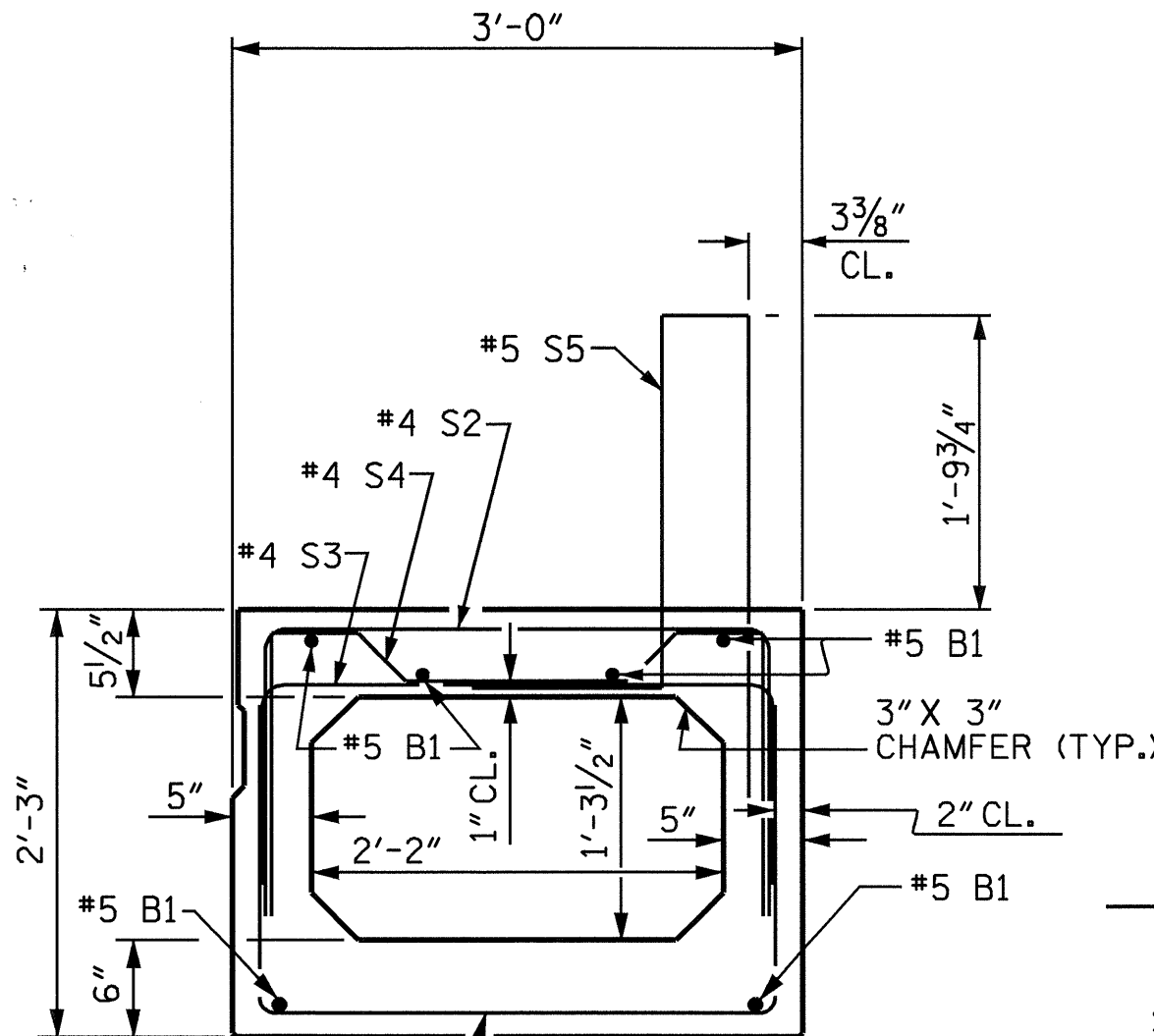
END ELEVATION

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.



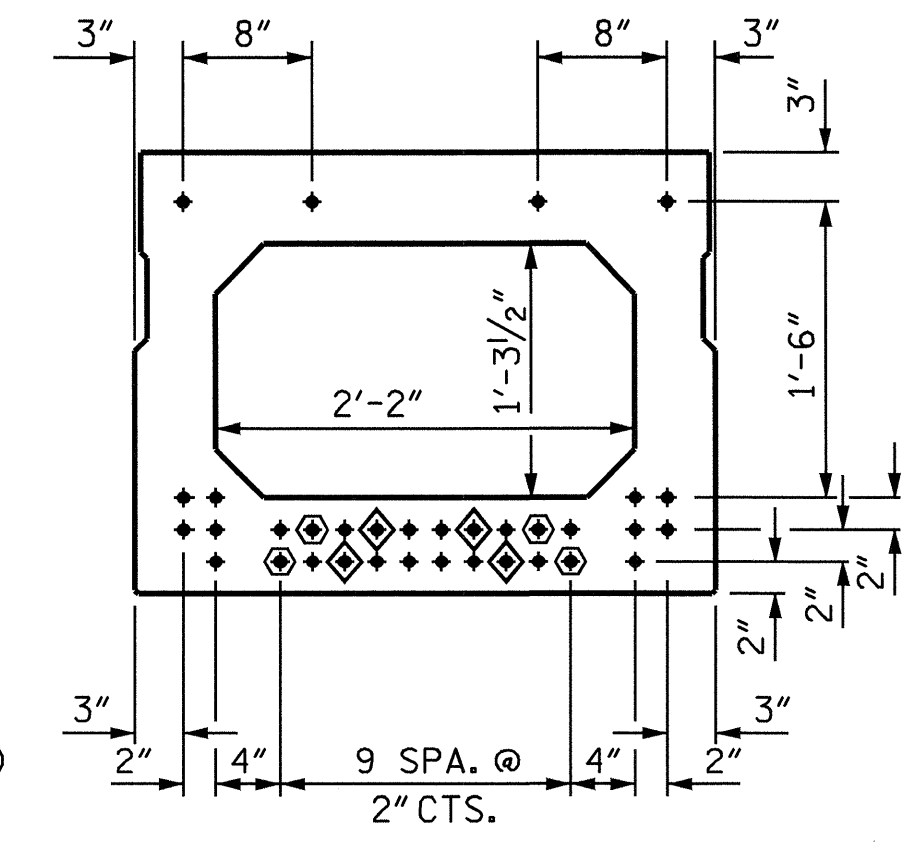
INTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)



EXTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)



TYPICAL STRAND LOCATION

(34 STRANDS REQUIRED)

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

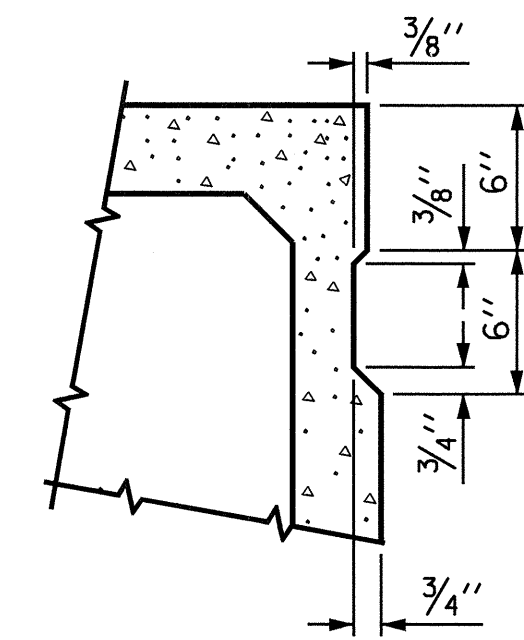
DEBONDING LEGEND

- FULLY BONDED STRANDS
- ◆ STRANDS DEBONDED FOR 8'-0" FROM END OF GIRDER
- ⬡ STRANDS DEBONDED FOR 12'-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.

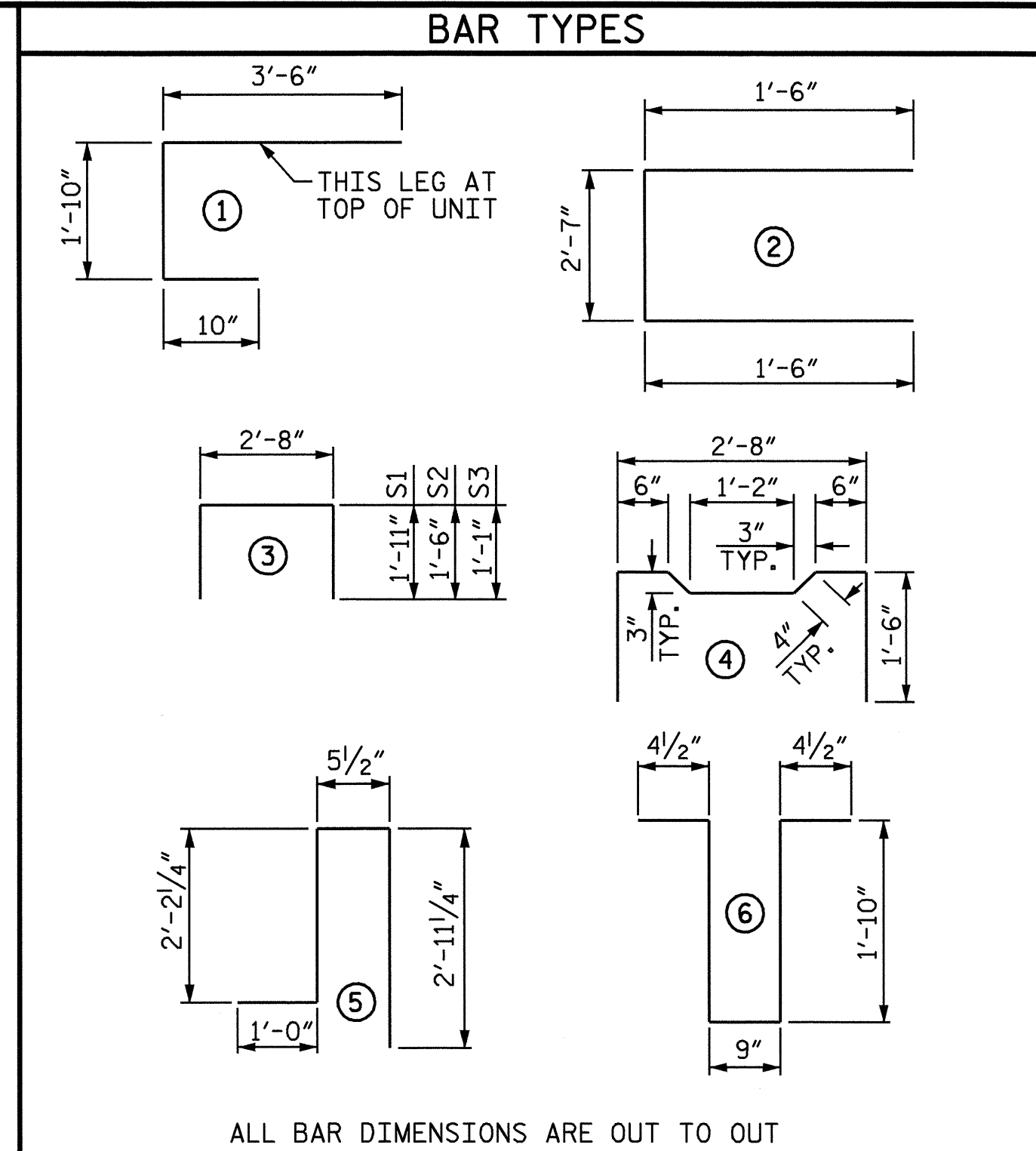
0.6" Ø LOW RELAXATION STRAND LAYOUT

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



SHEAR KEY DETAIL

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

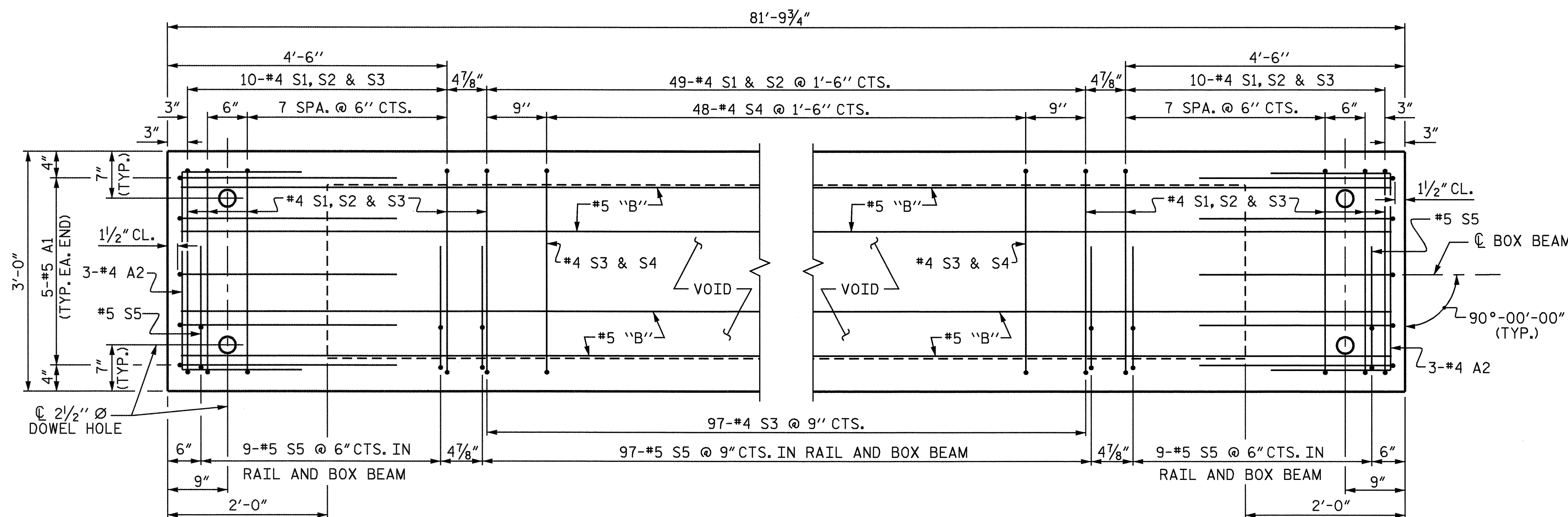


ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR ONE BOX BEAM SECTION

BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
A1	10	#5	1	6'-2"	64	6'-2"	64
A2	22	#4	2	5'-7"	82	5'-7"	82
B1	12	#5	STR	42'-3"	529	42'-3"	529
K1	12	#4	6	5'-2"	41	5'-2"	41
K2	8	#4	STR	2'-7"	14	2'-7"	14
S1	69	#4	3	6'-6"	300	6'-6"	300
S2	69	#4	3	5'-8"	261	5'-8"	261
S3	117	#4	3	4'-10"	378	4'-10"	378
S4	48	#4	4	5'-10"	187	5'-10"	187
* S5	115	#5	5	6'-7"	790	--	--
REINFORCING STEEL					1,856 LBS.		1,856 LBS.
* EPOXY COATED REINF. STEEL					790 LBS.		
9400 P.S.I. CONCRETE					13.1 CU. YDS.		13.1 CU. YDS.
0.6" Ø L.R. STRANDS					No. 34		No. 34

NOTE: INITIAL CONCRETE STRENGTH OF 7500 P.S.I.



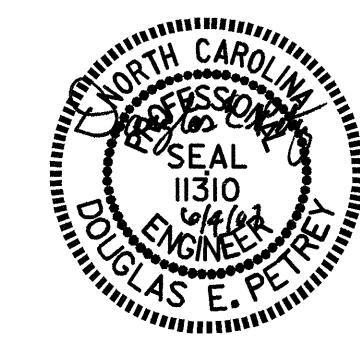
PLAN OF BOX BEAM

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.

PROJECT NO. B-4000
ALAMANCE COUNTY
 STATION: 21+09.45 -L-

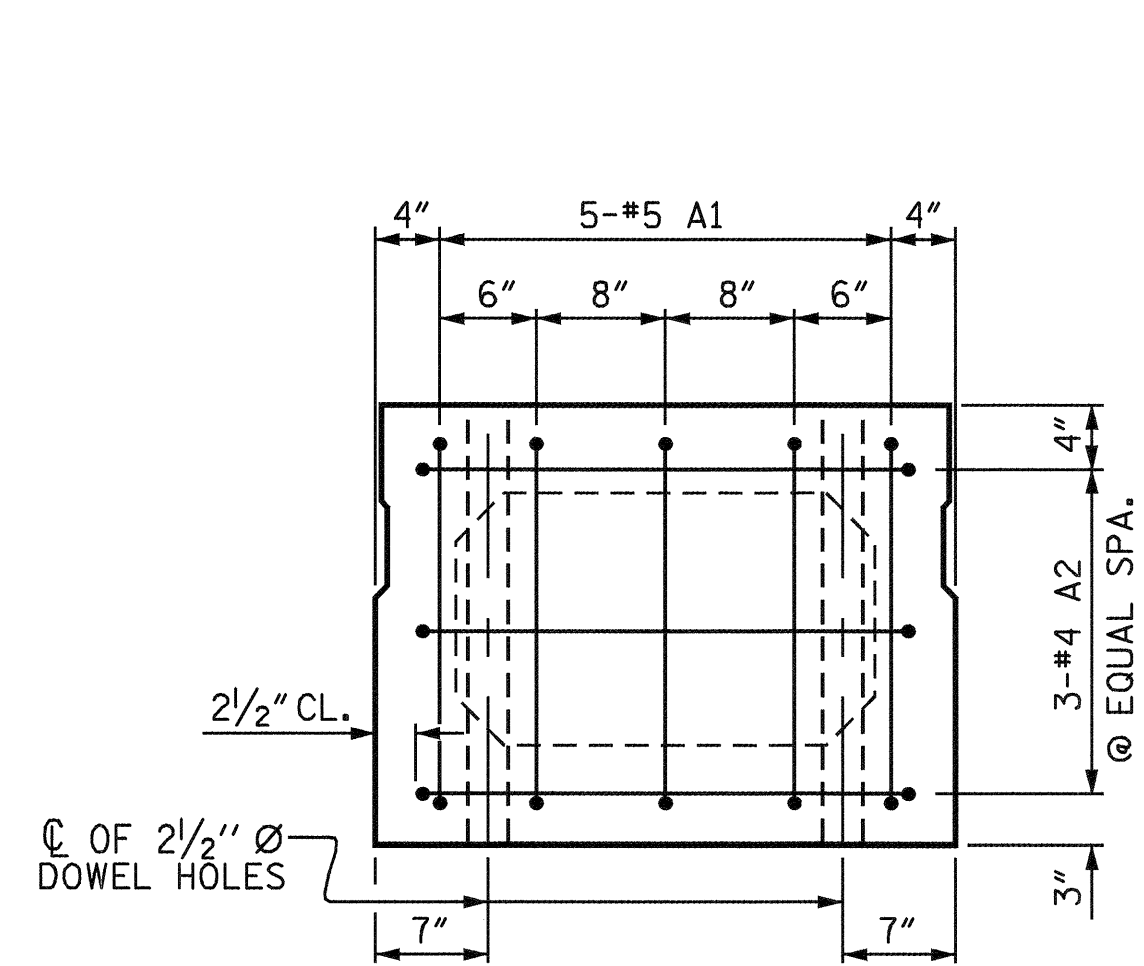
SHEET 6 OF 9

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



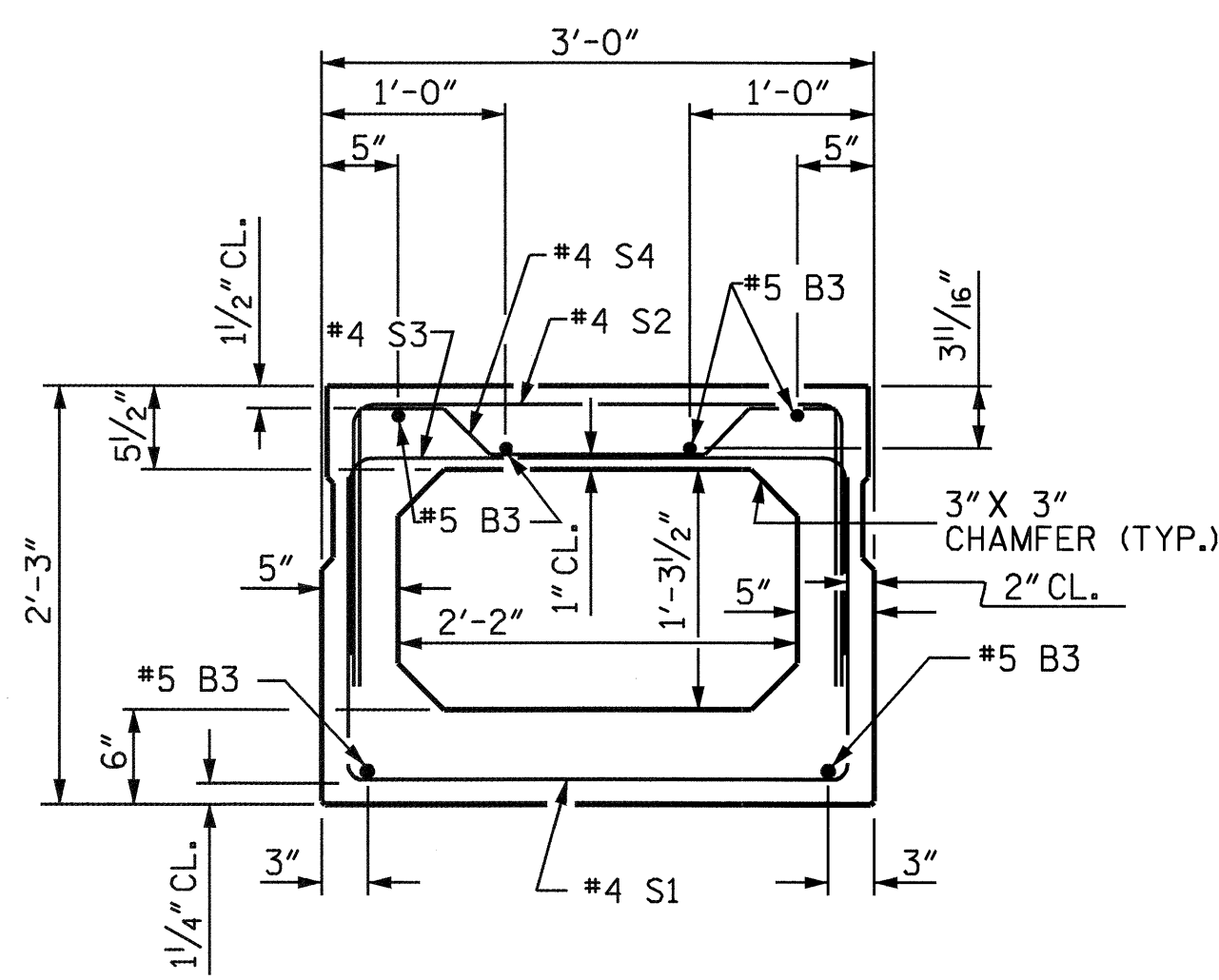
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			5-9
2			4			TOTAL SHEETS 24

ASSEMBLED BY: A.R.CHESSON/NAP	DATE: 9-06
CHECKED BY: B.N. GRADY	DATE: 10-06
DRAWN BY: TLA	5/05
CHECKED BY: GM	6/05
ADDED	7/11/05



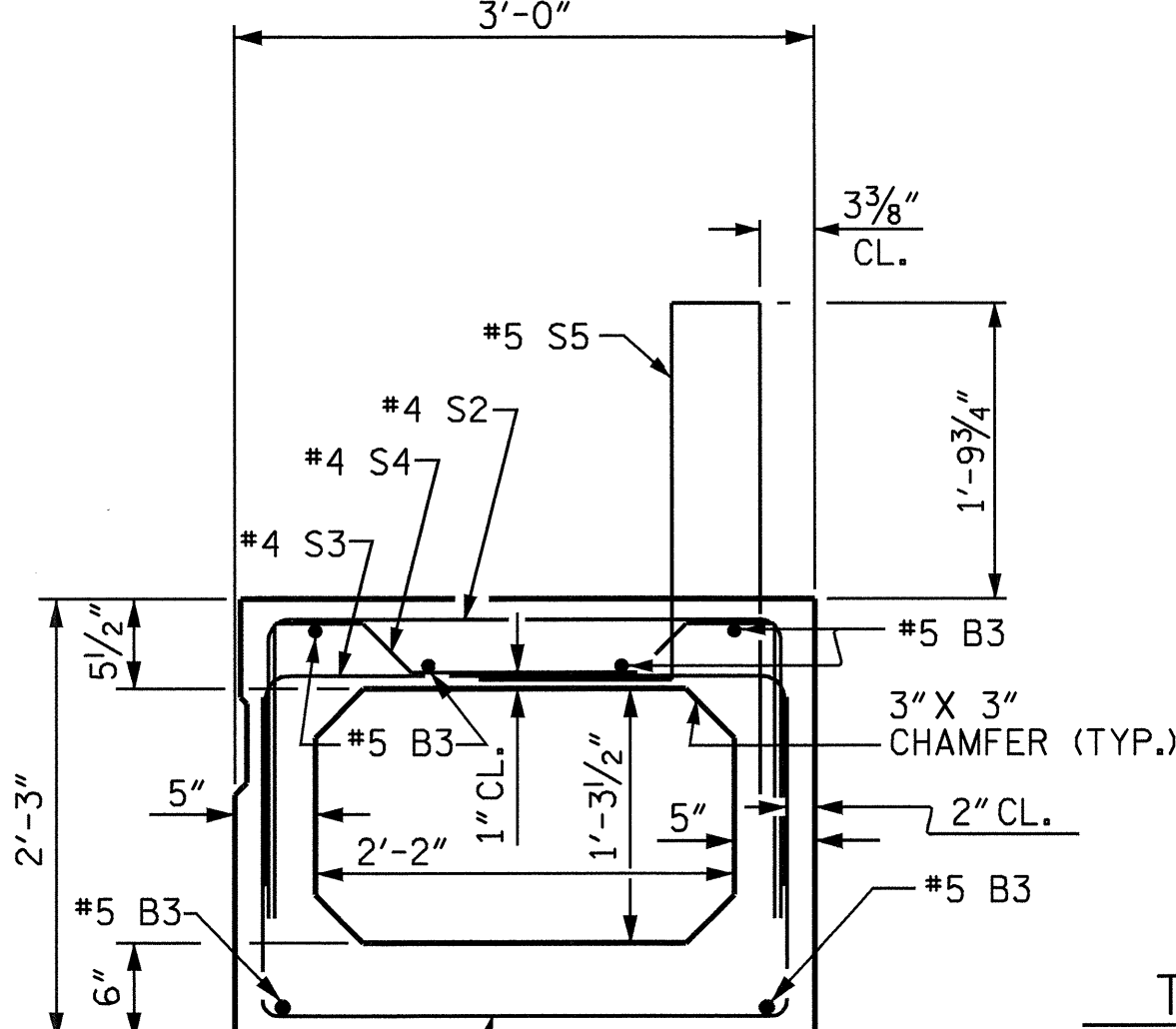
END ELEVATION

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.)



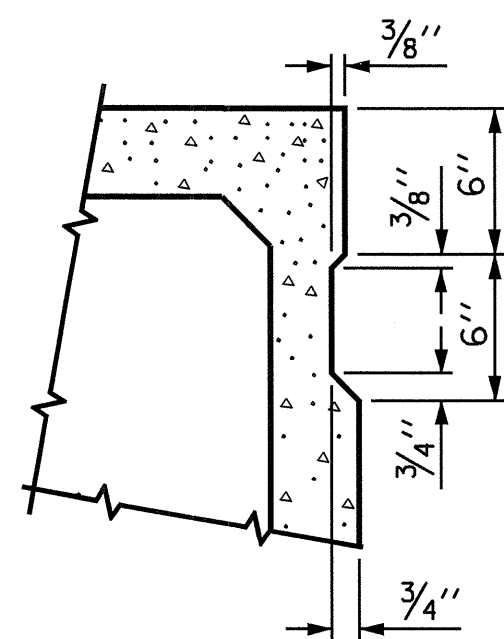
INTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)



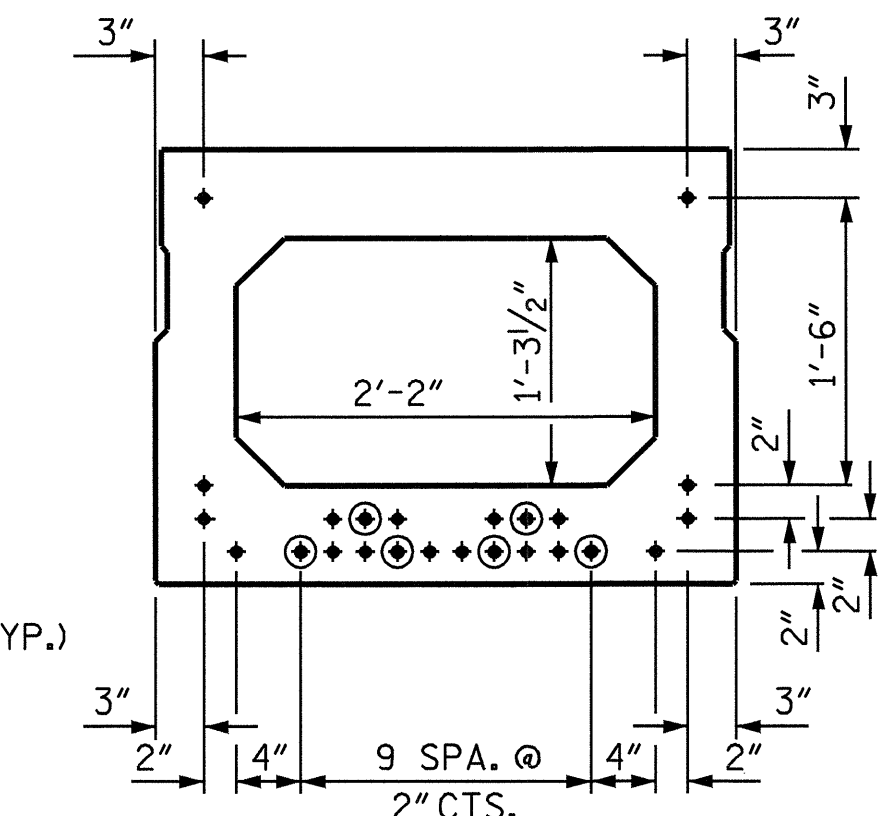
EXTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)



SHEAR KEY DETAIL

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



TYPICAL STRAND LOCATION

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

DEBONDING LEGEND

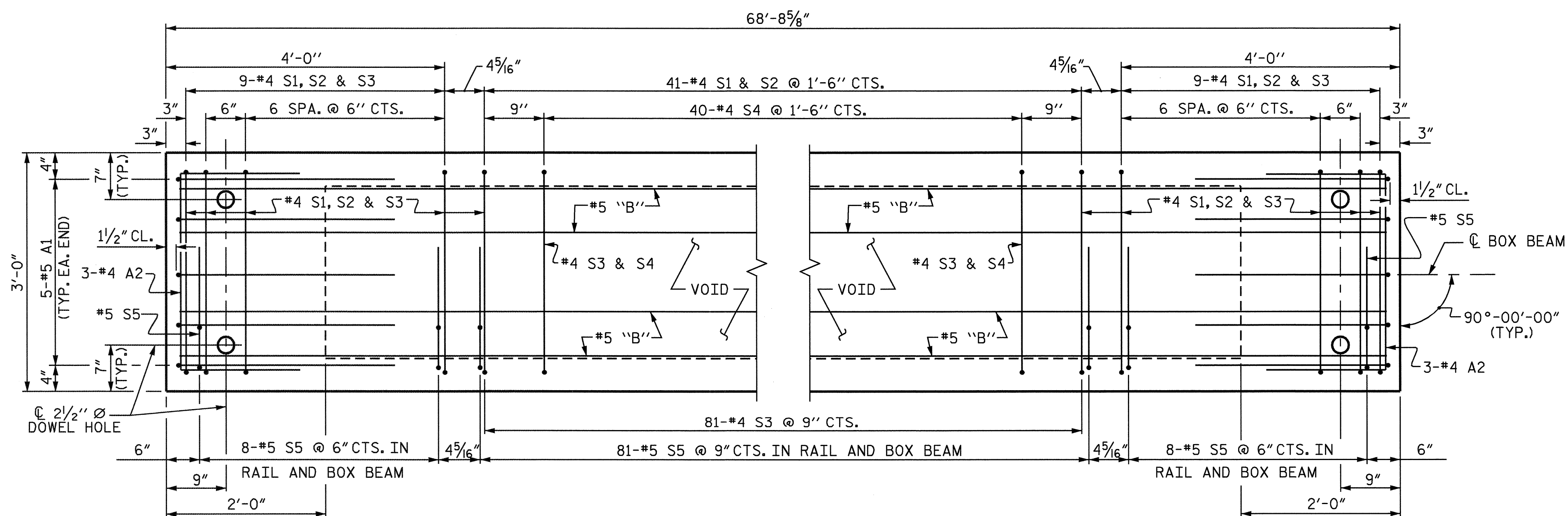
- FULLY BONDED STRANDS
- ⊙ STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER

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.

0.6" Ø LOW RELAXATION STRAND LAYOUT

GRADE 270 STRANDS

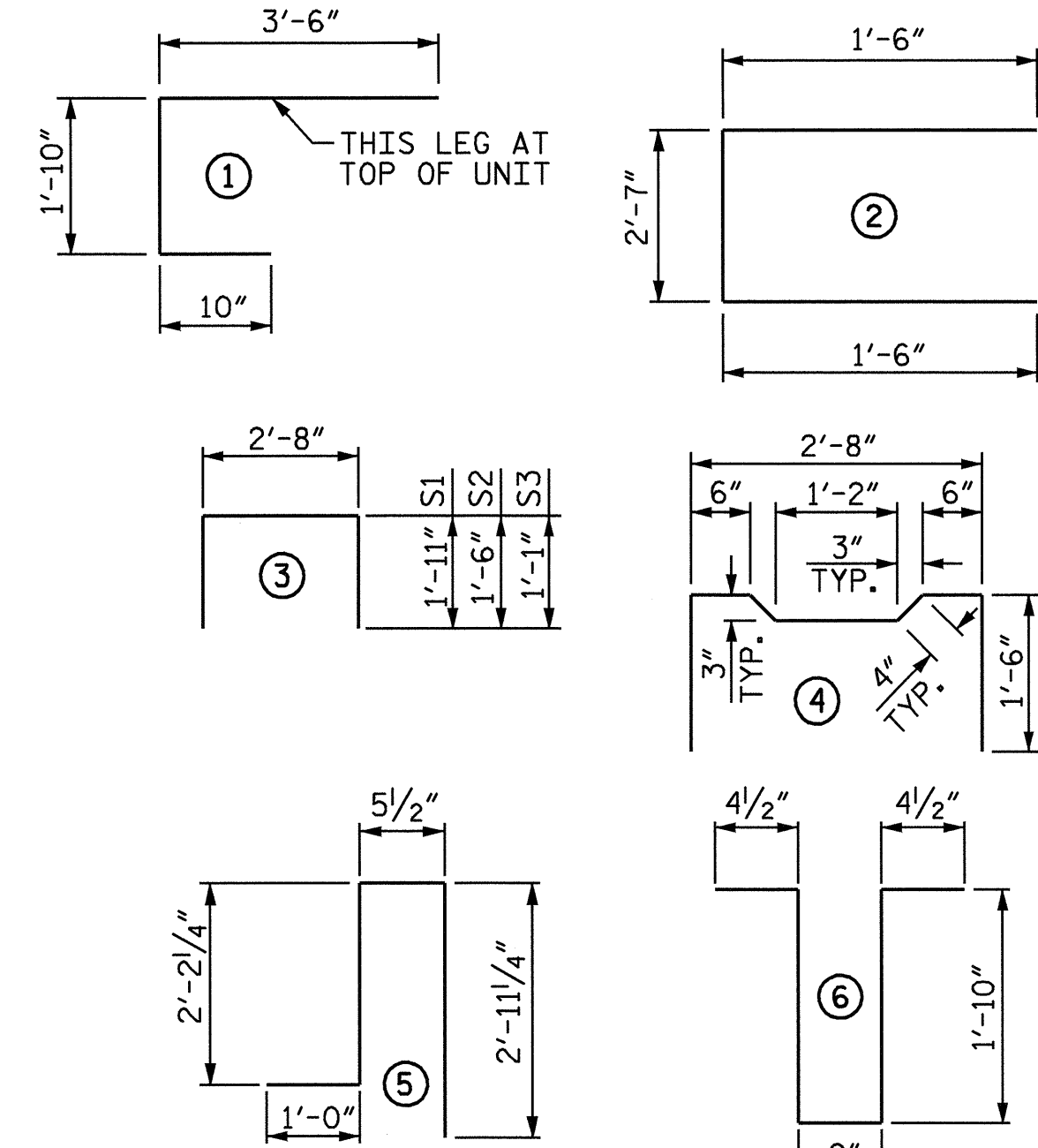
	0.6" Ø L.R.
AREA (SQUARE INCHES)	0.217
ULTIMATE STRENGTH (LBS. PER STRAND)	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	43,950



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



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR ONE BOX BEAM SECTION

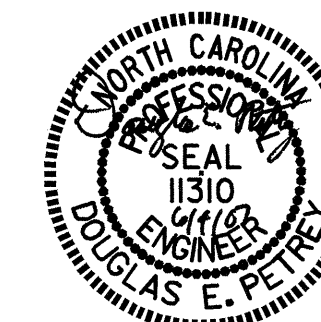
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
A1	10	#5	1	6'-2"	64	6'-2"	64
A2	22	#4	2	5'-7"	82	5'-7"	82
B3	12	#5	STR	35'-9"	447	35'-9"	447
K1	12	#4	6	5'-2"	41	5'-2"	41
K2	8	#4	STR	2'-7"	14	2'-7"	14
S1	59	#4	3	6'-6"	256	6'-6"	256
S2	59	#4	3	5'-8"	223	5'-8"	223
S3	99	#4	3	4'-10"	320	4'-10"	320
S4	40	#4	4	5'-10"	156	5'-10"	156
*S5	97	#5	5	6'-7"	666	--	--
REINFORCING STEEL				1,603 LBS.		1,603 LBS.	
* EPOXY COATED REINF. STEEL				666 LBS.			
7500 P.S.I. CONCRETE				10.9 CU. YDS.		10.9 CU. YDS.	
0.6" Ø L.R. STRANDS				No. 24		No. 24	

NOTE: INITIAL CONCRETE STRENGTH OF 6000 P.S.I.

PROJECT NO. B-4000
ALAMANCE COUNTY
 STATION: 21+09.45 -L-

SHEET 7 OF 9

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



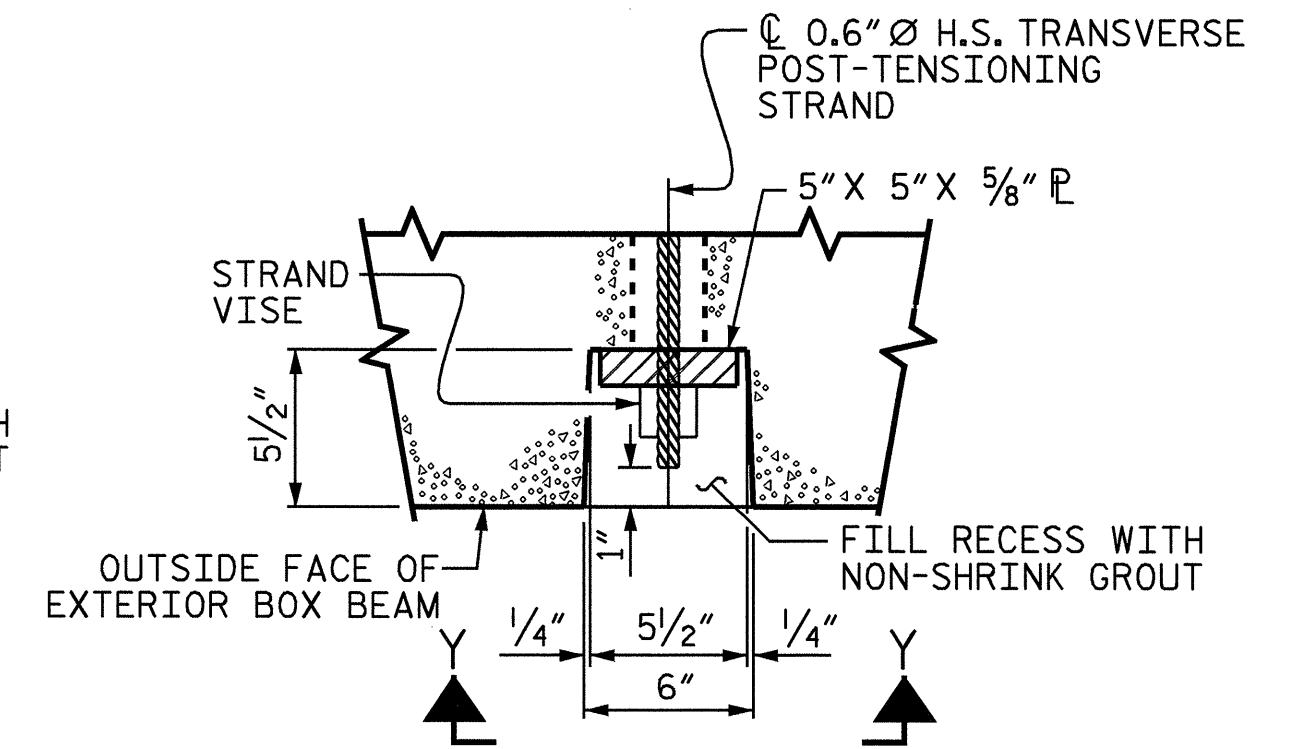
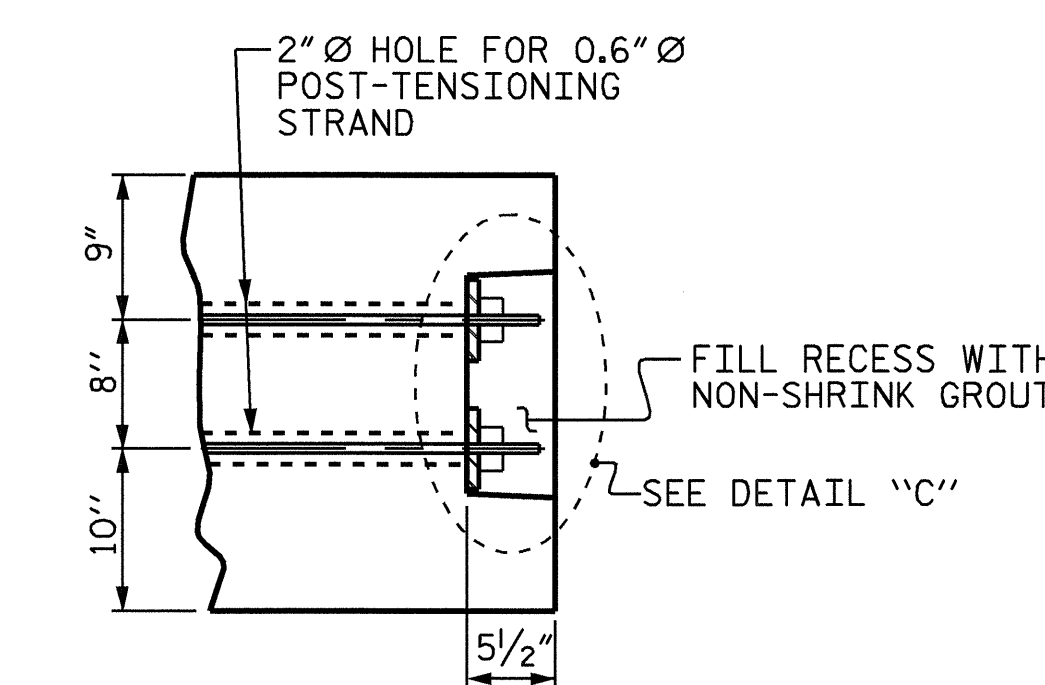
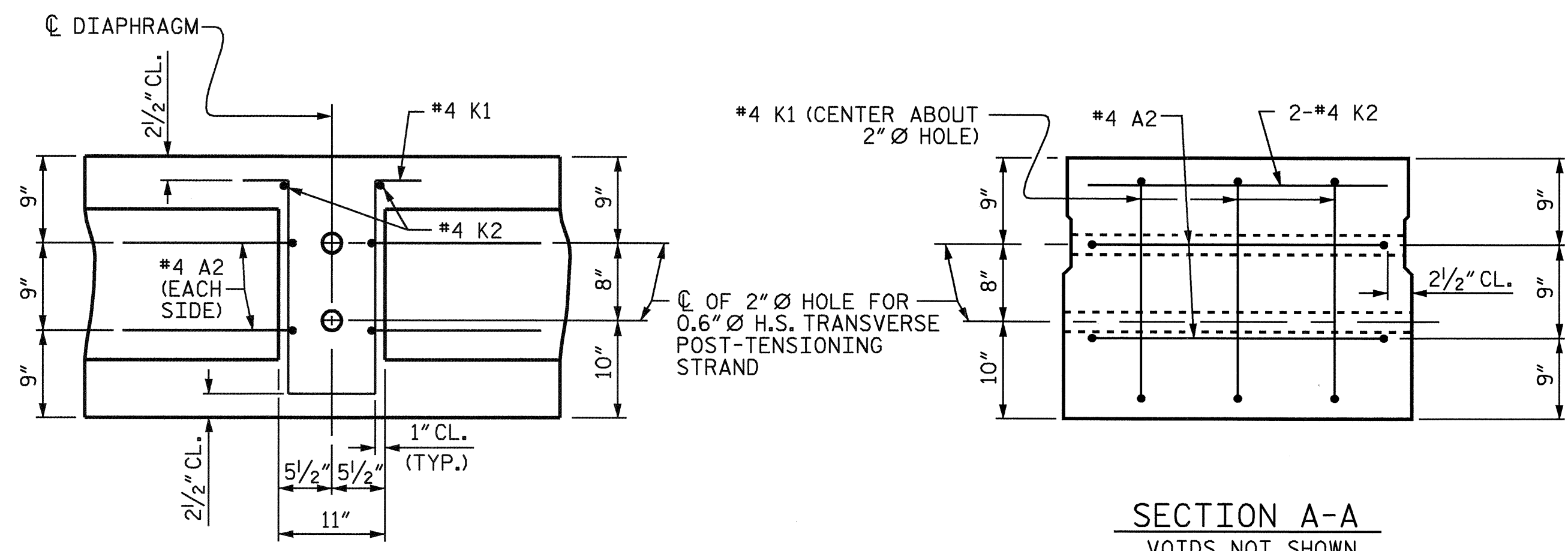
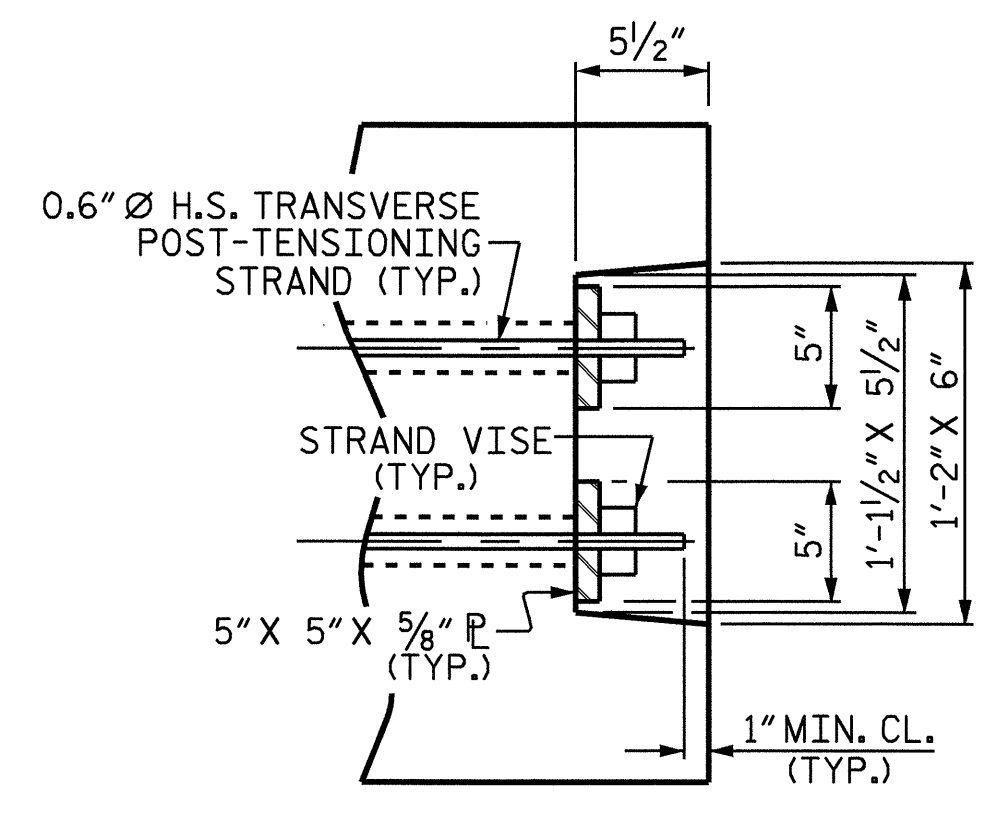
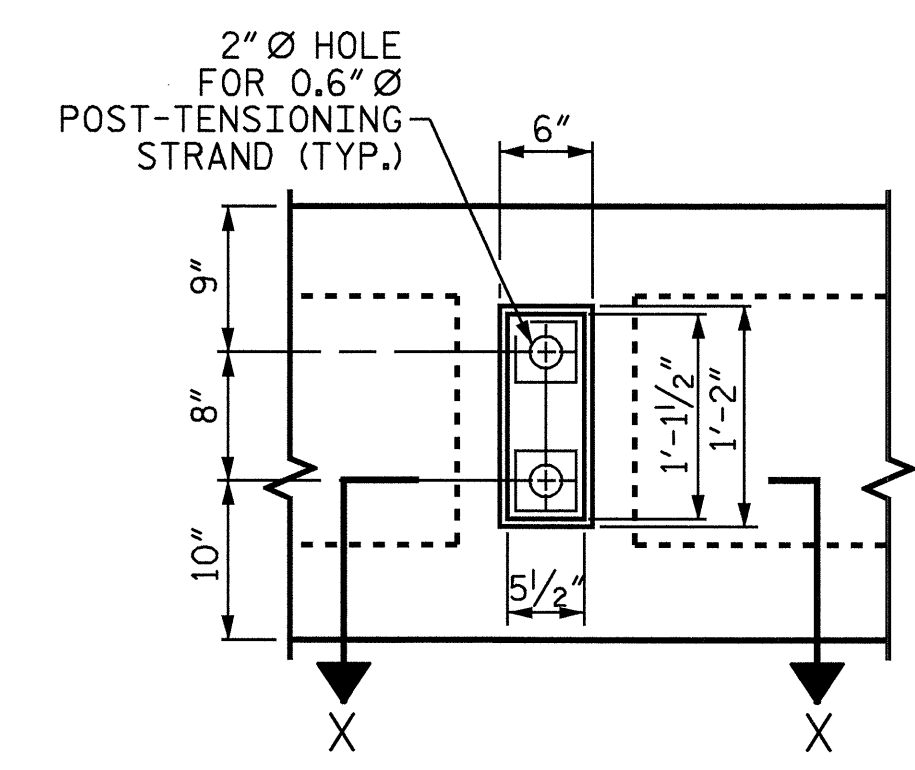
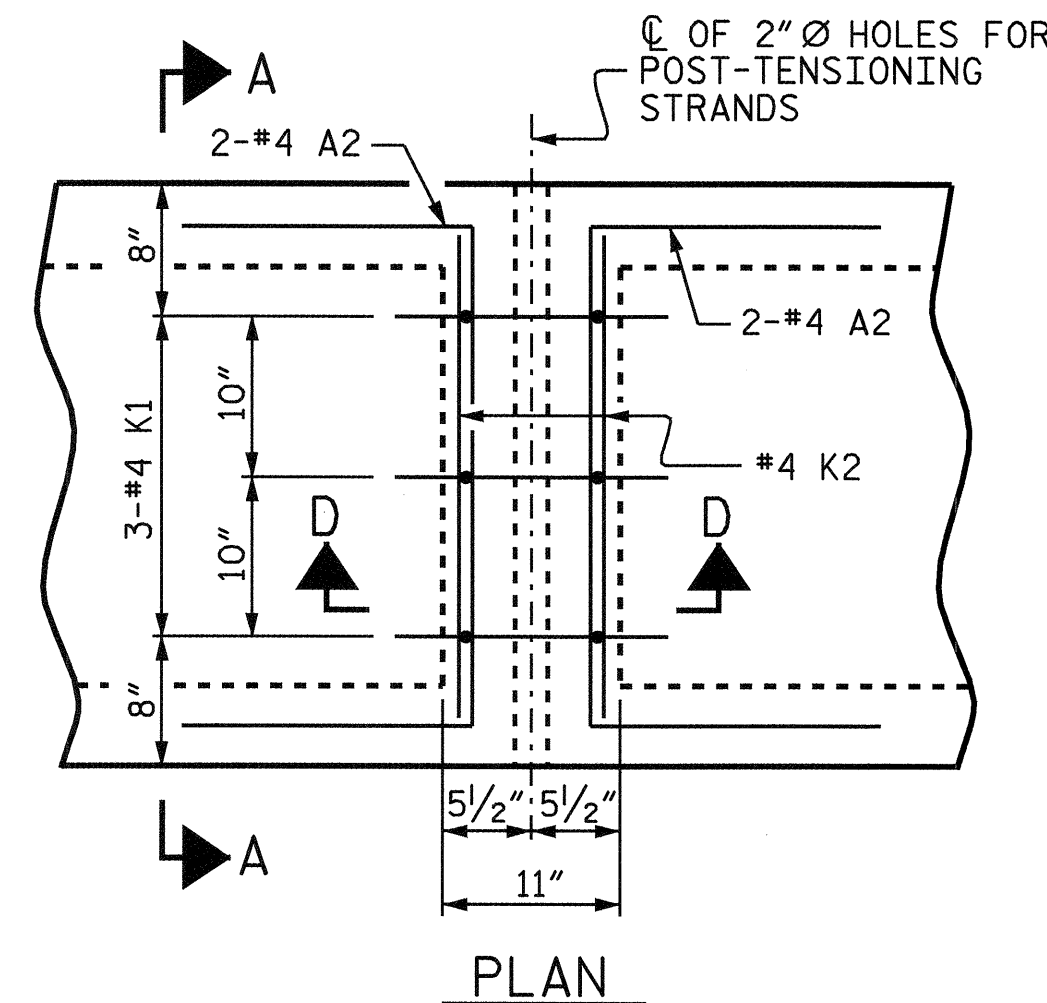
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			24

(SHT 1C)

STD. NO. PCBB2

ASSEMBLED BY: A.R.CHESSON/NAP DATE: 9-06
 CHECKED BY: B.N. GRADY DATE: 11-06
 DRAWN BY: TLA 5/05
 CHECKED BY: GM 6/05

22-FEB-2007 08:11
 R:\Structures\B4000\achesson\m\crosstation\B4000_SD_PCBB.DGN
 mbr11+



SECTION D-D

SECTION A-A
VOIDS NOT SHOWN

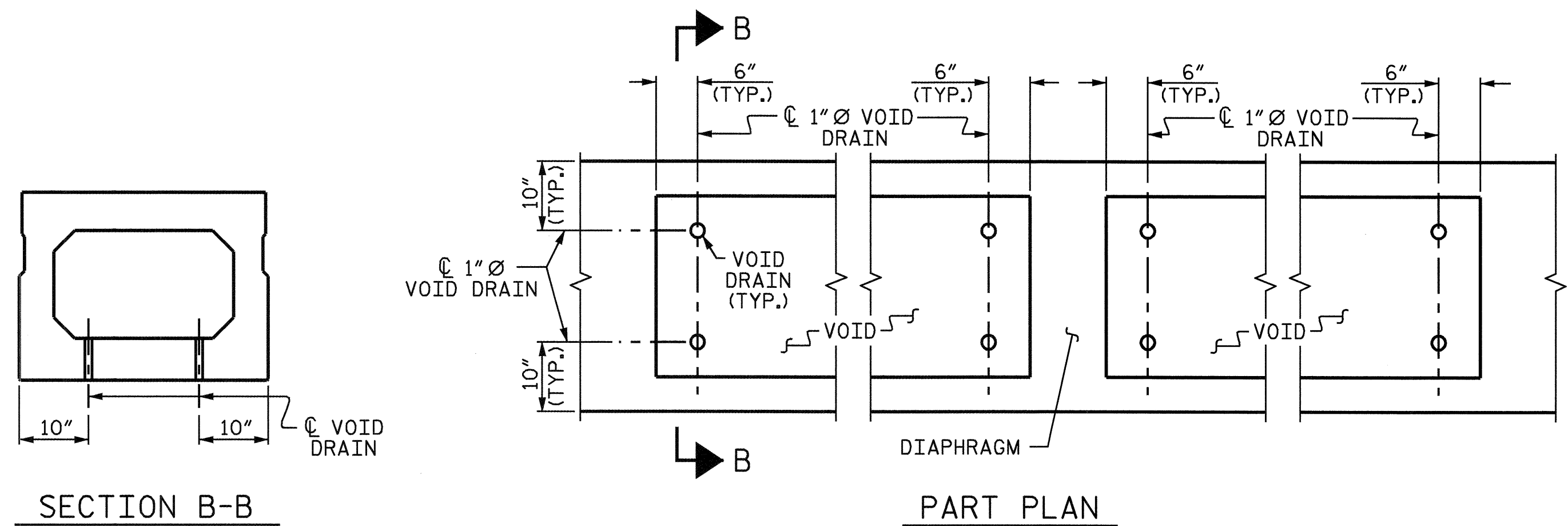
PART SECTION AT RECESS

SECTION X-X
SHOWING PLAN VIEW OF GROUDED RECESS

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**



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

DEAD LOAD DEFLECTION AND CAMBER		
	3'-0" x 2'-3"	
	0.6" Ø L.R. STRAND	
	SPANS A & B	SPAN C
CAMBER (BEAM ALONE IN PLACE) ↓	5/4"	3 ¹³ / ₁₆ "
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD ** ↓	1/4"	13/16"
FINAL CAMBER ↑	4"	3"

** INCLUDES FUTURE WEARING SURFACE

PROJECT NO. B-4000
ALAMANCE COUNTY
STATION: 21+09.45 -L-

SHEET 8 OF 9



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

REVISIONS						TOTAL SHEETS
NO.	BY:	DATE:	NO.	BY:	DATE:	24
1			3			
2			4			

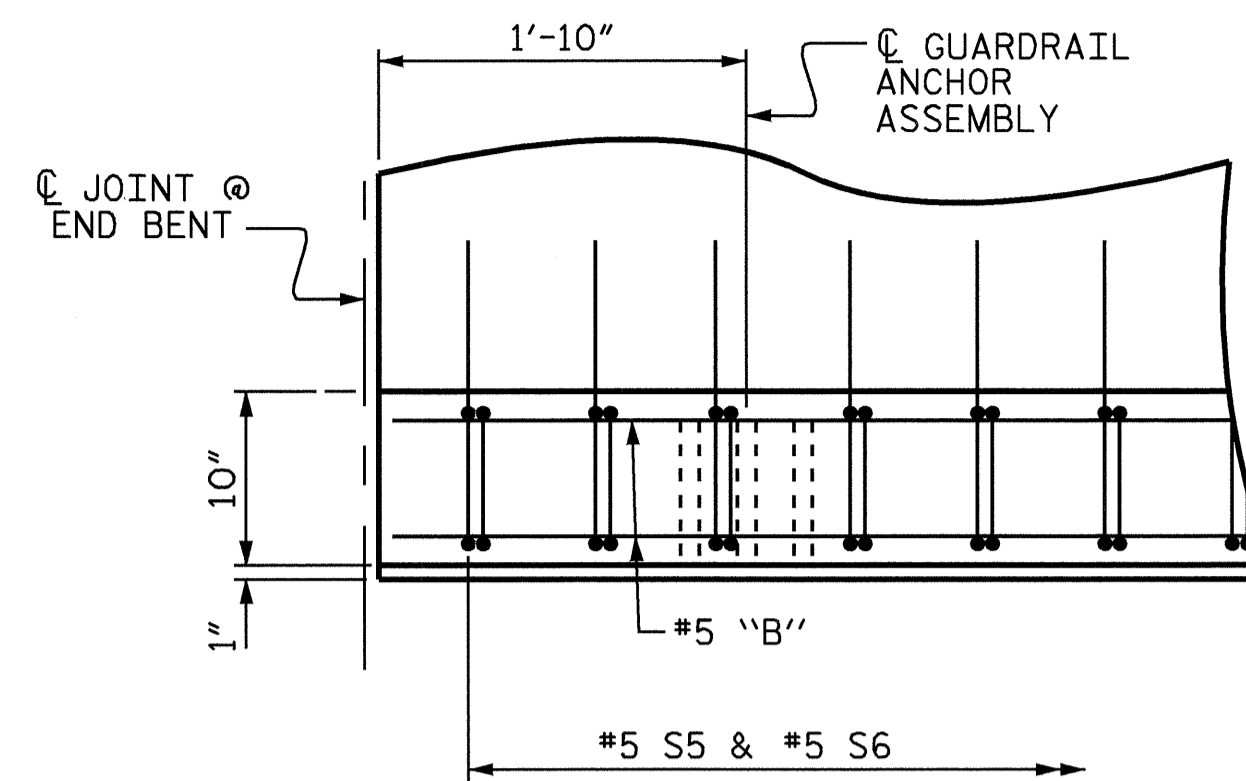
ASSEMBLED BY: A.R.CHESSON/NAP	DATE: 9-06
CHECKED BY: B.N. GRADY	DATE: 10-06
DRAWN BY: TLA	5/05
CHECKED BY: GM	6/05
ADDED	7/11/05

NOTES

ALL REINFORCING STEEL IN CONCRETE BARRIER RAILS SHALL BE EPOXY COATED.

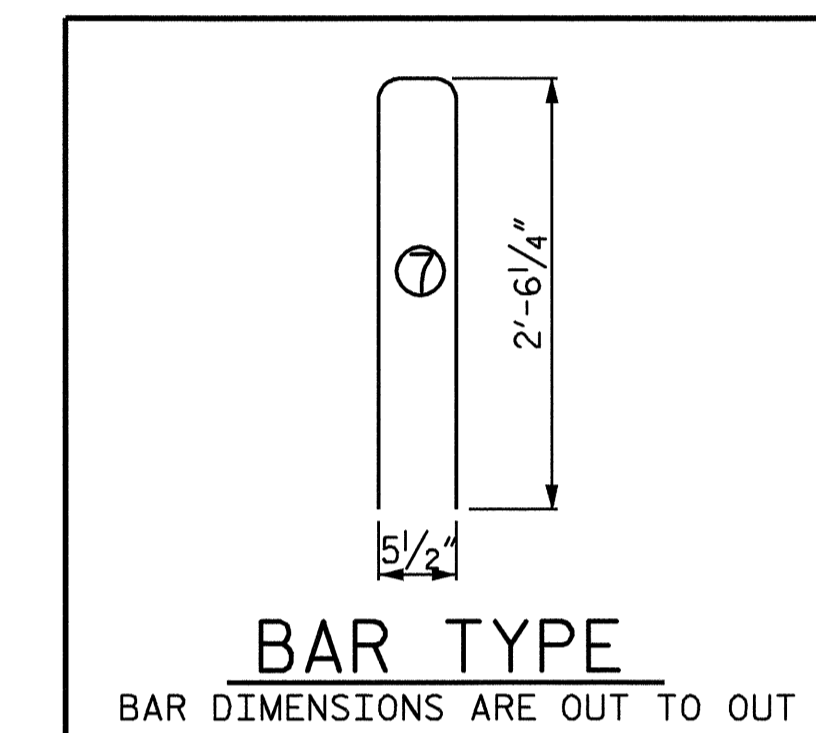
FOR DETAILS OF GUARDRAIL ANCHOR ASSEMBLIES, SEE "GUARDRAIL ANCHORAGE DETAILS" SHEET.

* BOTTOM PAIR OF #5 "B" BARS IN BARRIER RAIL TO BE FIELD CUT AS REQUIRED TO MAINTAIN 2" CLEAR TO THE DRAINAGE SLOTS.

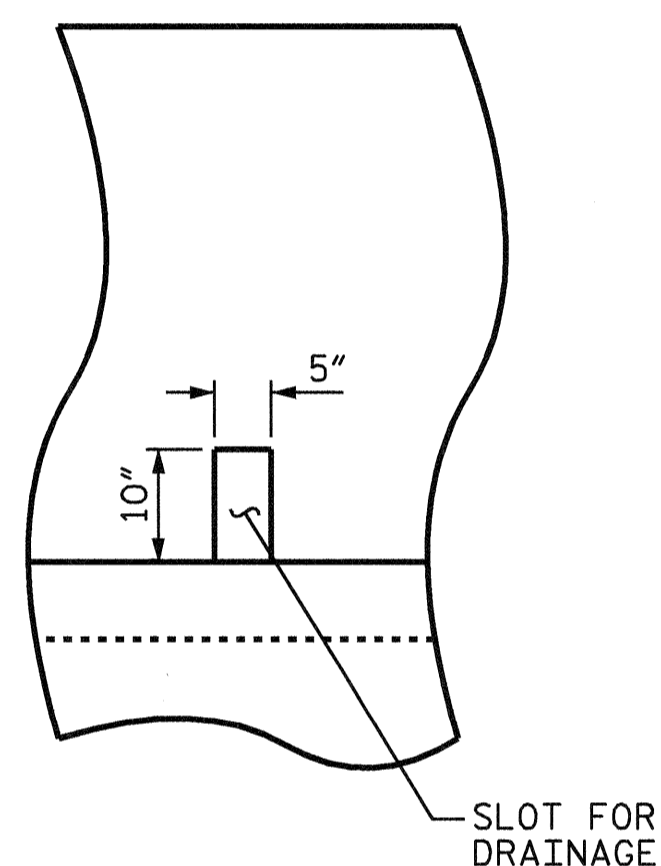


PLAN OF BARRIER RAIL

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL								
BAR	BARS PER SPAN			TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
	SPAN A	SPAN B	SPAN C					
*B2	60	60	-	120	#5	STR	26'-10"	3358
*B4	-	-	60	60	#5	STR	22'-6"	1408
*S6	115	115	97	327	#5	7	5'-6"	1876
* EPOXY COATED REINFORCING STEEL								6642 LBS.
CLASS AA CONCRETE								46.6 CU.YDS.
TOTAL LIN. FT. OF VERTICAL CONCRETE BARRIER RAIL								464.69 LIN. FT.

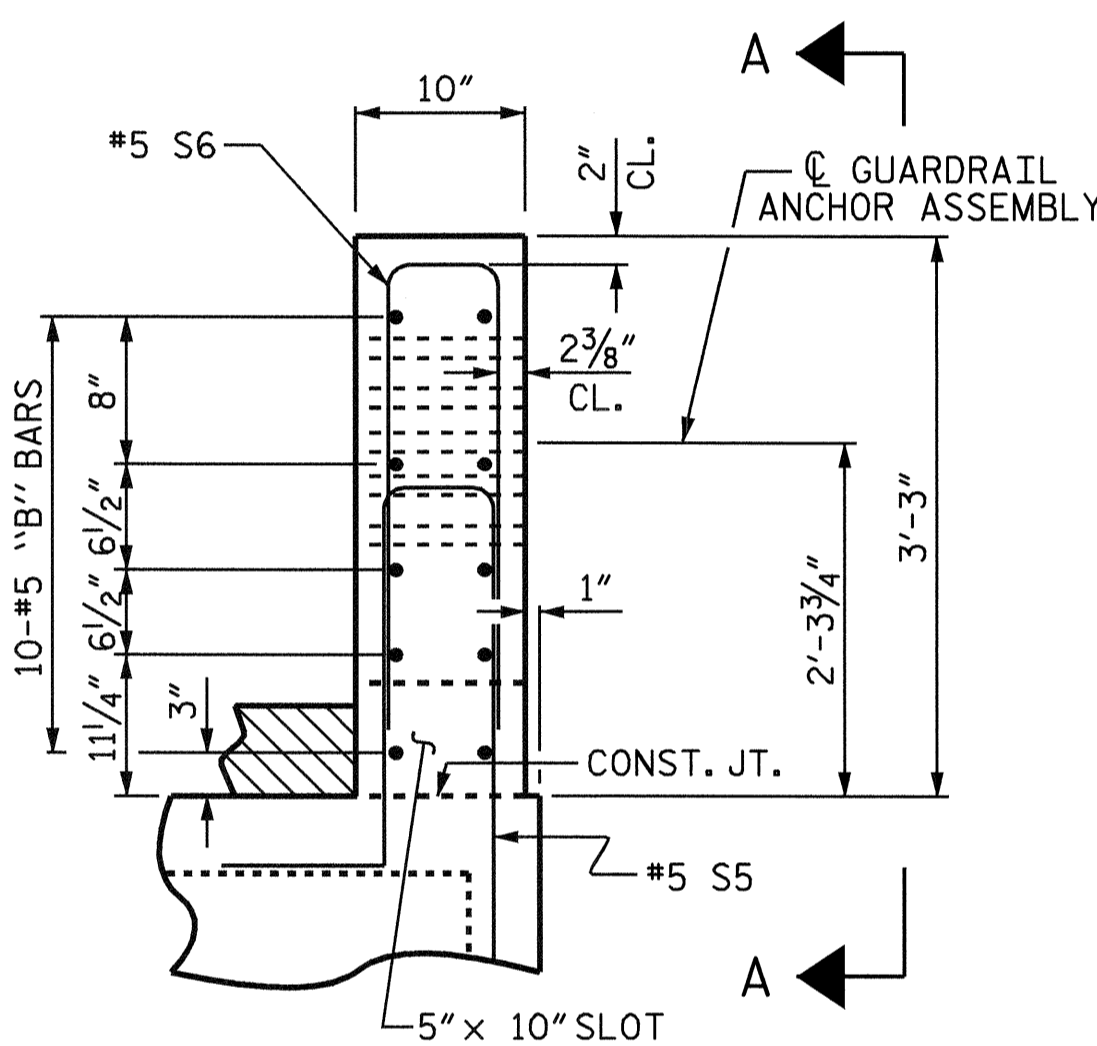


BOX BEAM UNITS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
SPAN A			
INTERIOR	12	81'-9 3/4"	981'-9"
EXTERIOR	2	81'-9 3/4"	163'-7 1/2"
SPAN B			
INTERIOR	12	81'-9 3/4"	981'-9"
EXTERIOR	2	81'-9 3/4"	163'-7 1/2"
SPAN C			
INTERIOR	12	68'-8 5/8"	824'-7 1/2"
EXTERIOR	2	68'-8 5/8"	137'-5 1/4"
TOTAL	42		3,252.81

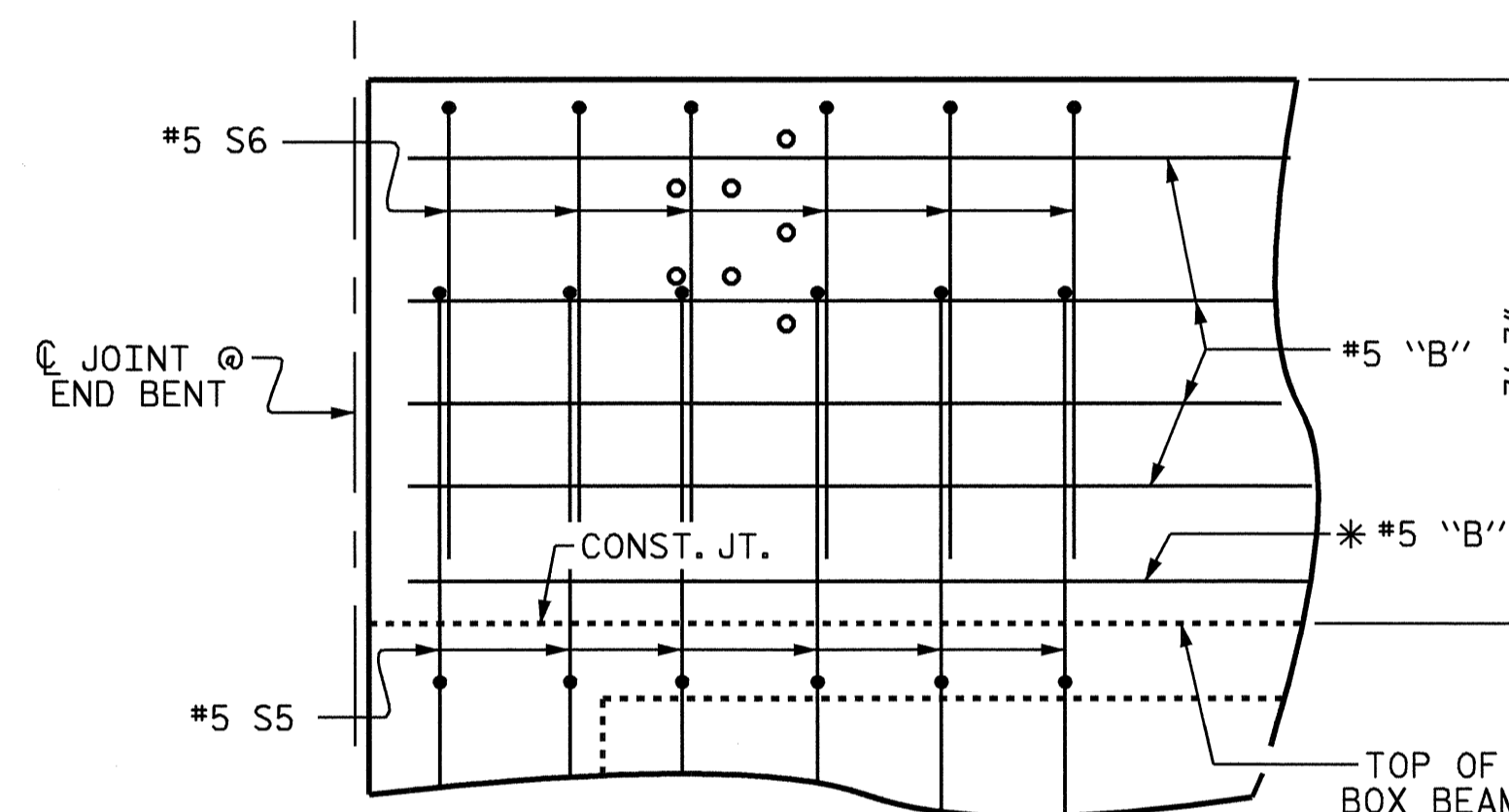


VIEW A-A

SEE PLAN OF SPAN FOR SLOT LOCATIONS (SLOT LOCATION MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CENTER SLOTS BETWEEN #5 S5 & #5 S6 BARS IN BARRIER RAIL)



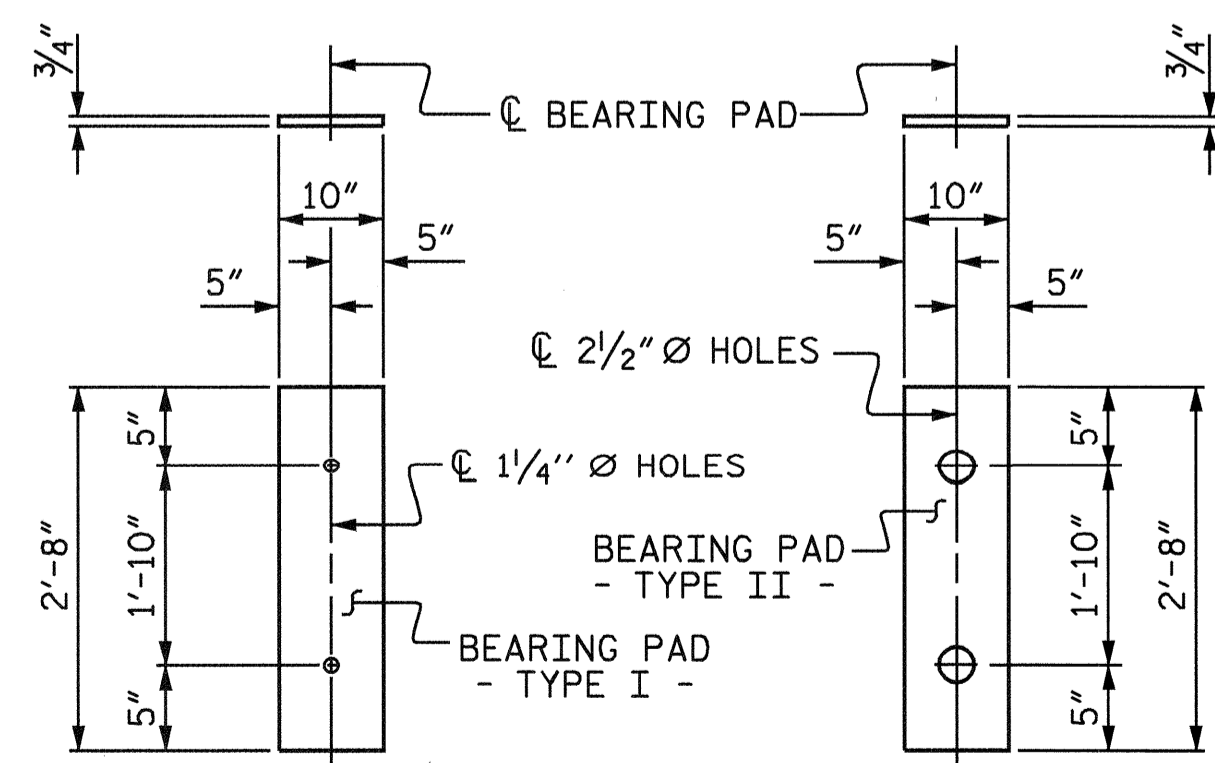
END VIEW



ELEVATION

VERTICAL CONCRETE BARRIER RAIL DETAILS

(SEE "PRESTRESSED CONCRETE BOX BEAM UNIT" SHEETS FOR SPACING OF "S" BARS)



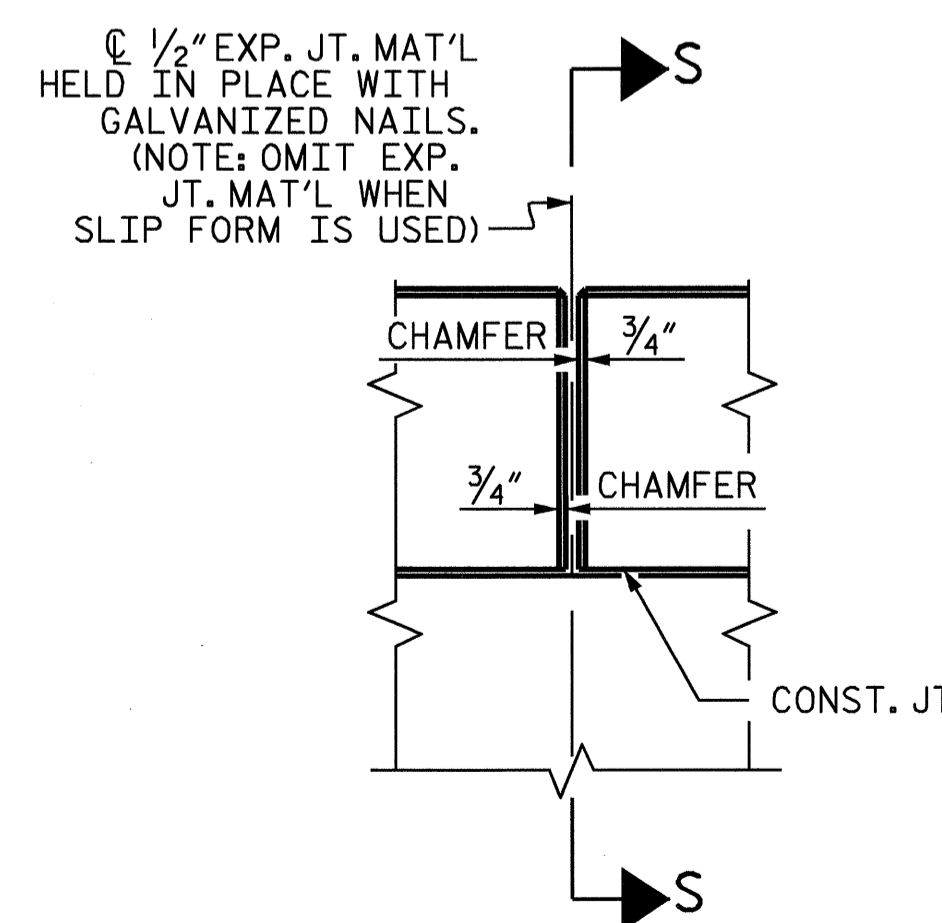
FIXED END

(TYPE I - 56 REQ'D)

EXPANSION END

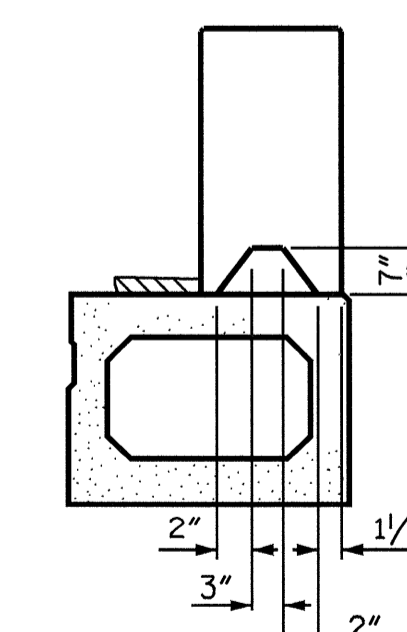
(TYPE II - 28 REQ'D)

ELASTOMERIC BEARING DETAILS



ELEVATION AT EXPANSION JOINTS

(IN BARRIER RAIL)



SECTION S-S

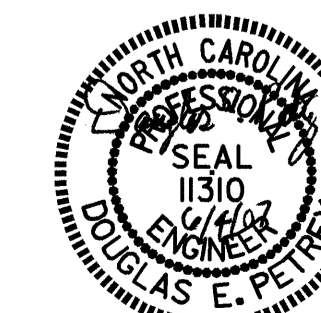
AT DAM IN OPEN JOINT (THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)

PROJECT NO. B-4000
ALAMANCE COUNTY
 STATION: 21+09.45 -L-

SHEET 9 OF 9

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

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



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-12
2			4			TOTAL SHEETS 24

ASSEMBLED BY : A.R.CHESSON/NAP	DATE: 9-06
CHECKED BY : B.N. GRADY	DATE: 10-06
DRAWN BY : TLA 3/05	ADDED
CHECKED BY :	

NOTES

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

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

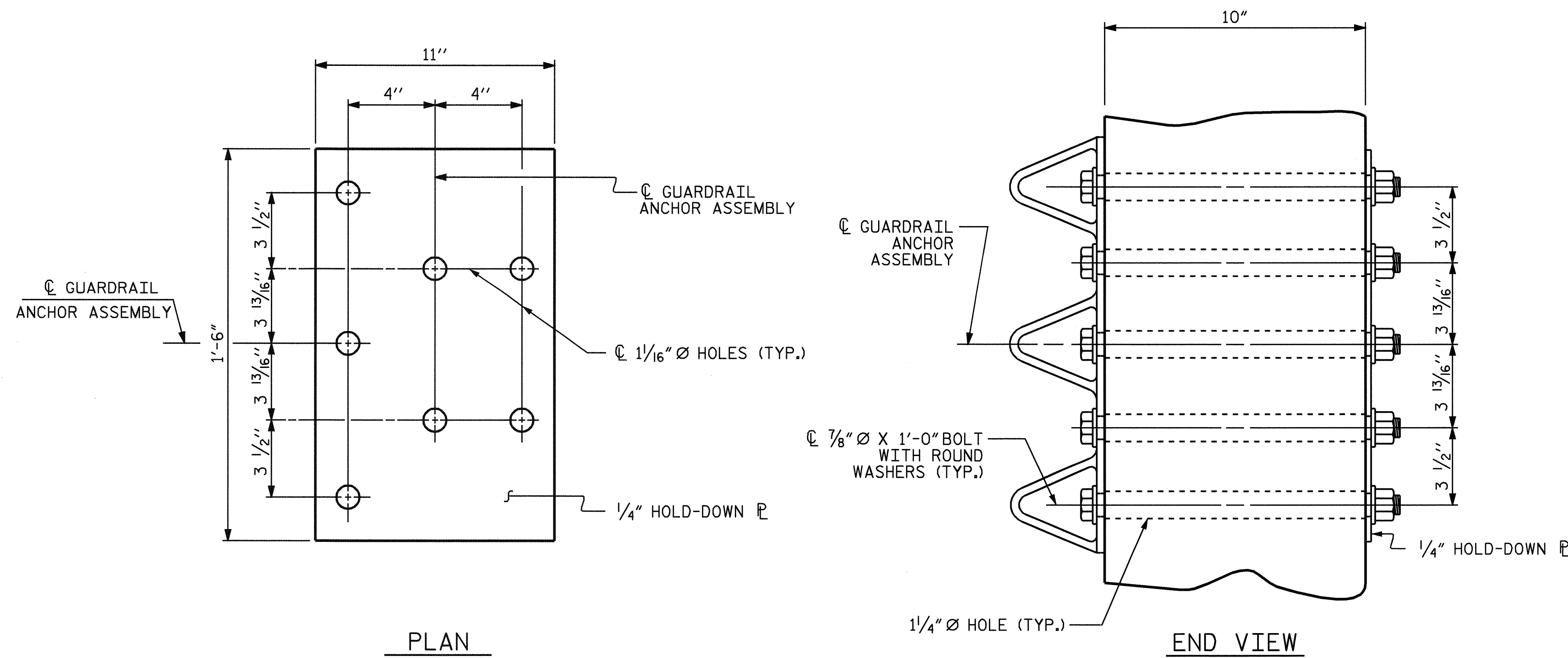
BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS.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

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

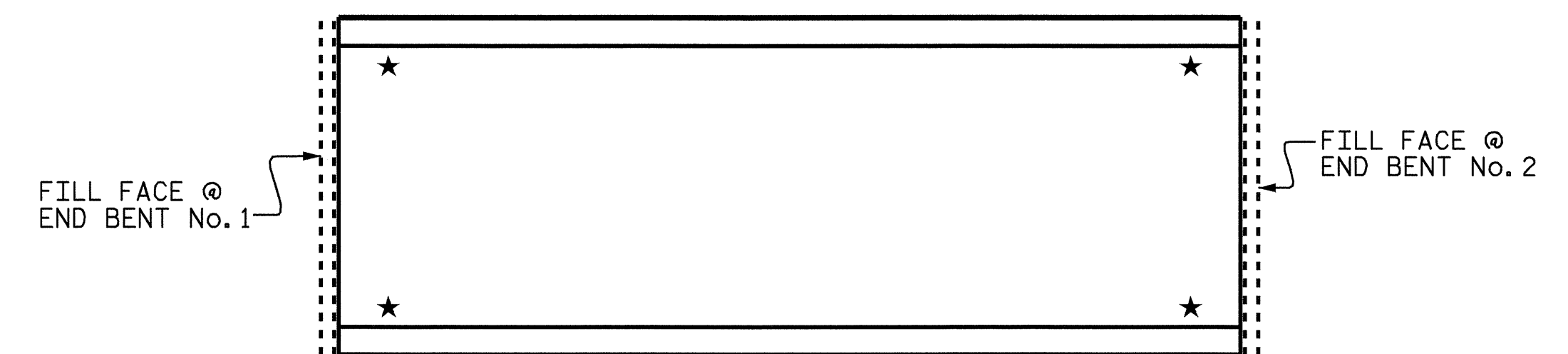
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

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

THE 1/4" Ø HOLES SHALL BE FORMED. DRILLING WILL NOT BE PERMITTED.

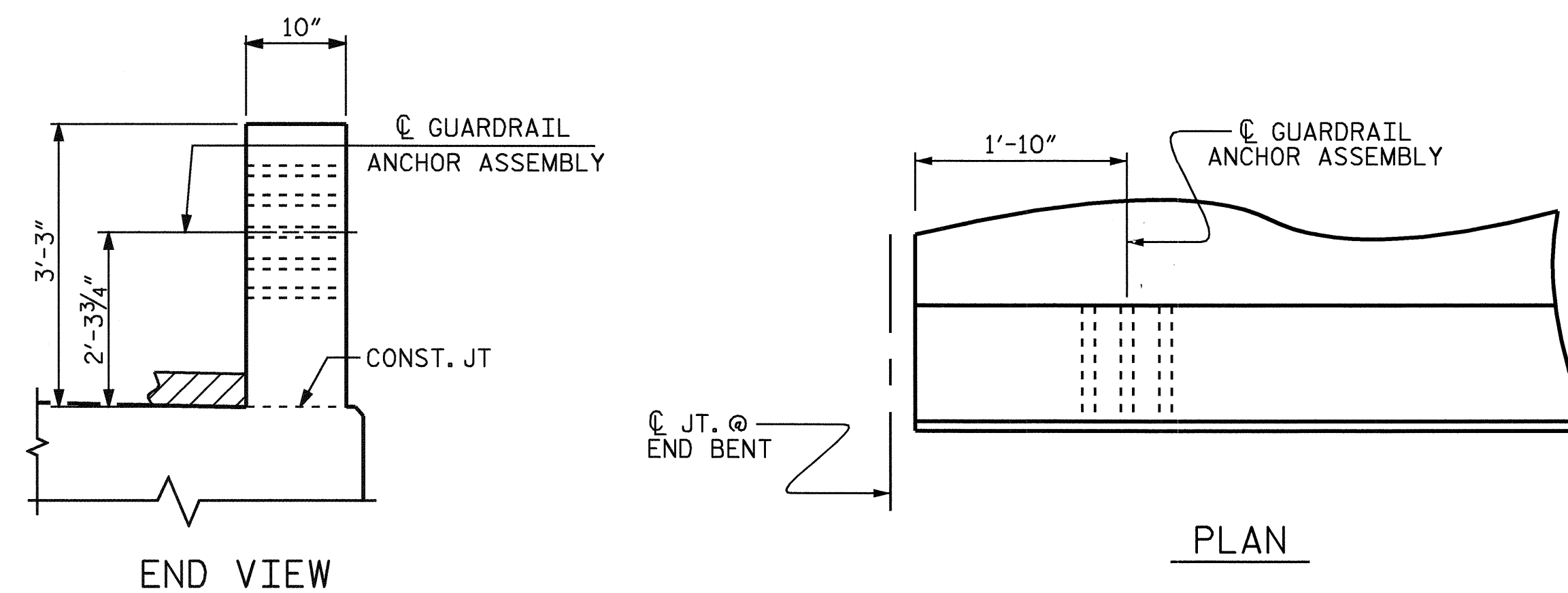


GUARDRAIL ANCHOR ASSEMBLY DETAILS



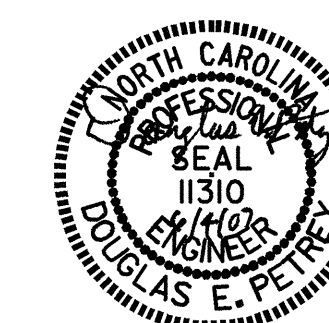
SKETCH SHOWING POINTS OF ATTACHMENT

★ LOCATION OF GUARDRAIL ATTACHMENT



LOCATION OF GUARDRAIL ANCHOR

PROJECT NO. B-4000
ALAMANCE COUNTY
 STATION: 21+09.45 -L-

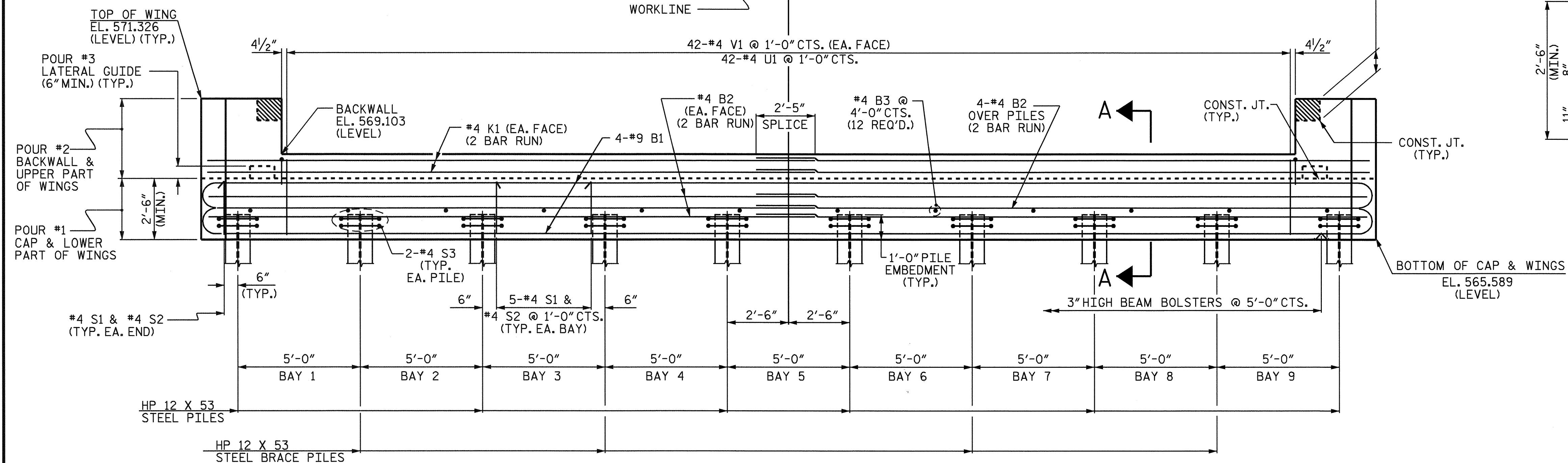
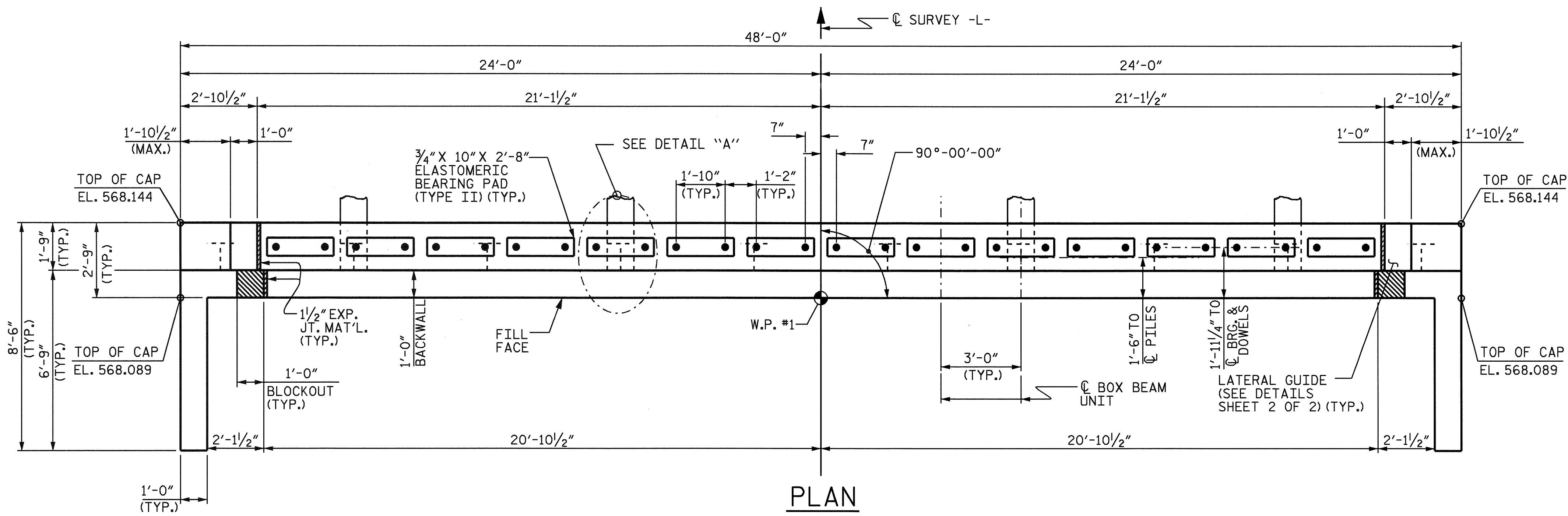


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 GUARDRAIL ANCHORAGE
 DETAILS

JUNE		1994	
REVISIONS			
NO.	BY:	DATE:	NO.
1			3
2			4
SHEET NO.			S-13
TOTAL SHEETS			24

ASSEMBLED BY : A.R.CHESSON/NAP DATE: 9-06
 CHECKED BY : B.N. GRADY DATE: 10-06
 DRAWN BY : EEM 6/94
 CHECKED BY : RGW 6/94

REV. 8/16/99 RWW/LES
 REV. 10/17/00 RWW/LES
 REV. 5/7/03 RWW/JTE



NOTES:

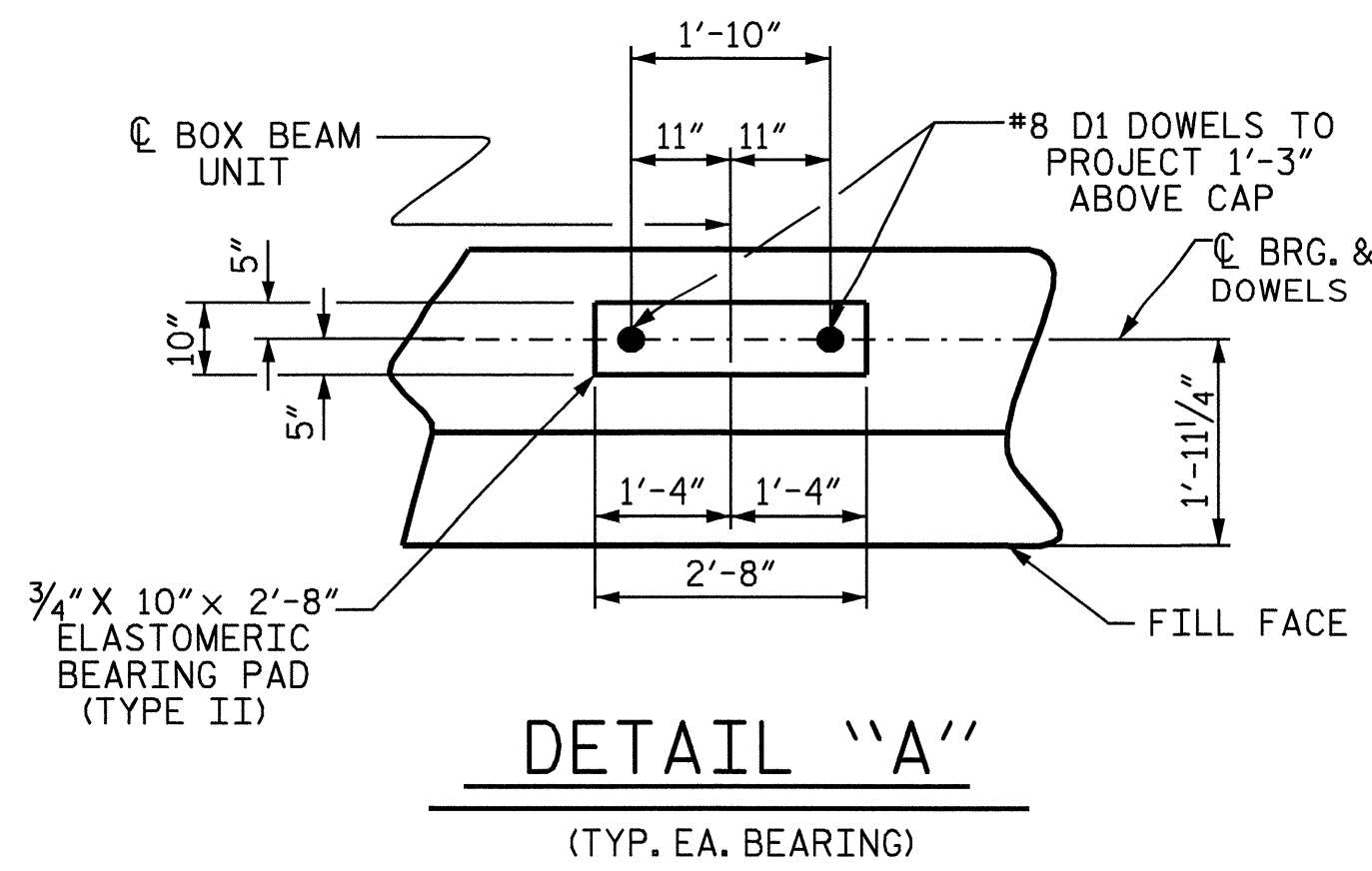
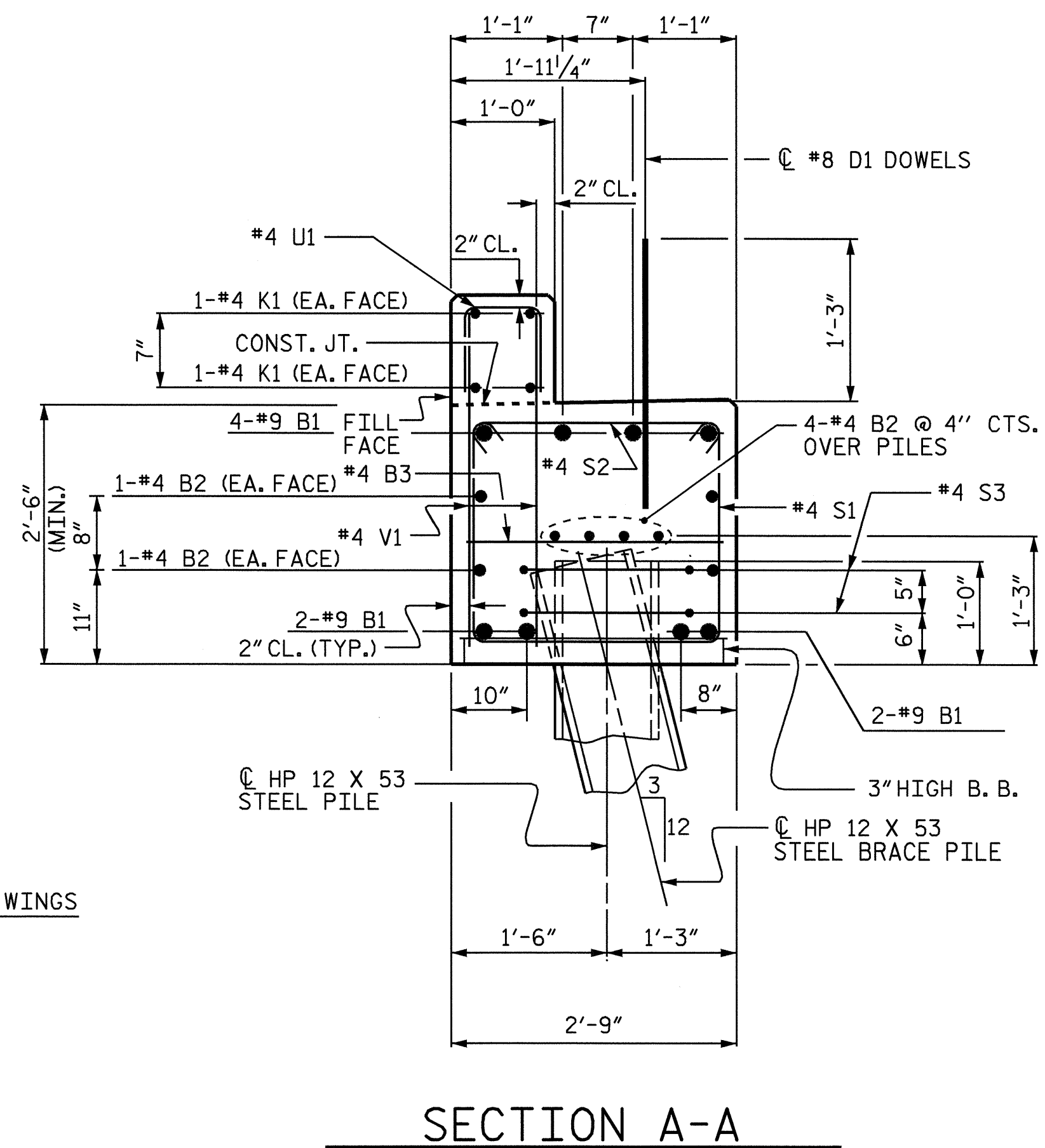
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

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

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

THE TOP SURFACE OF THE END BENT CAP IS SLOPED LONGITUDINALLY.

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



PROJECT NO. B-4000
 ALAMANCE COUNTY
 STATION: 21+09.45 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

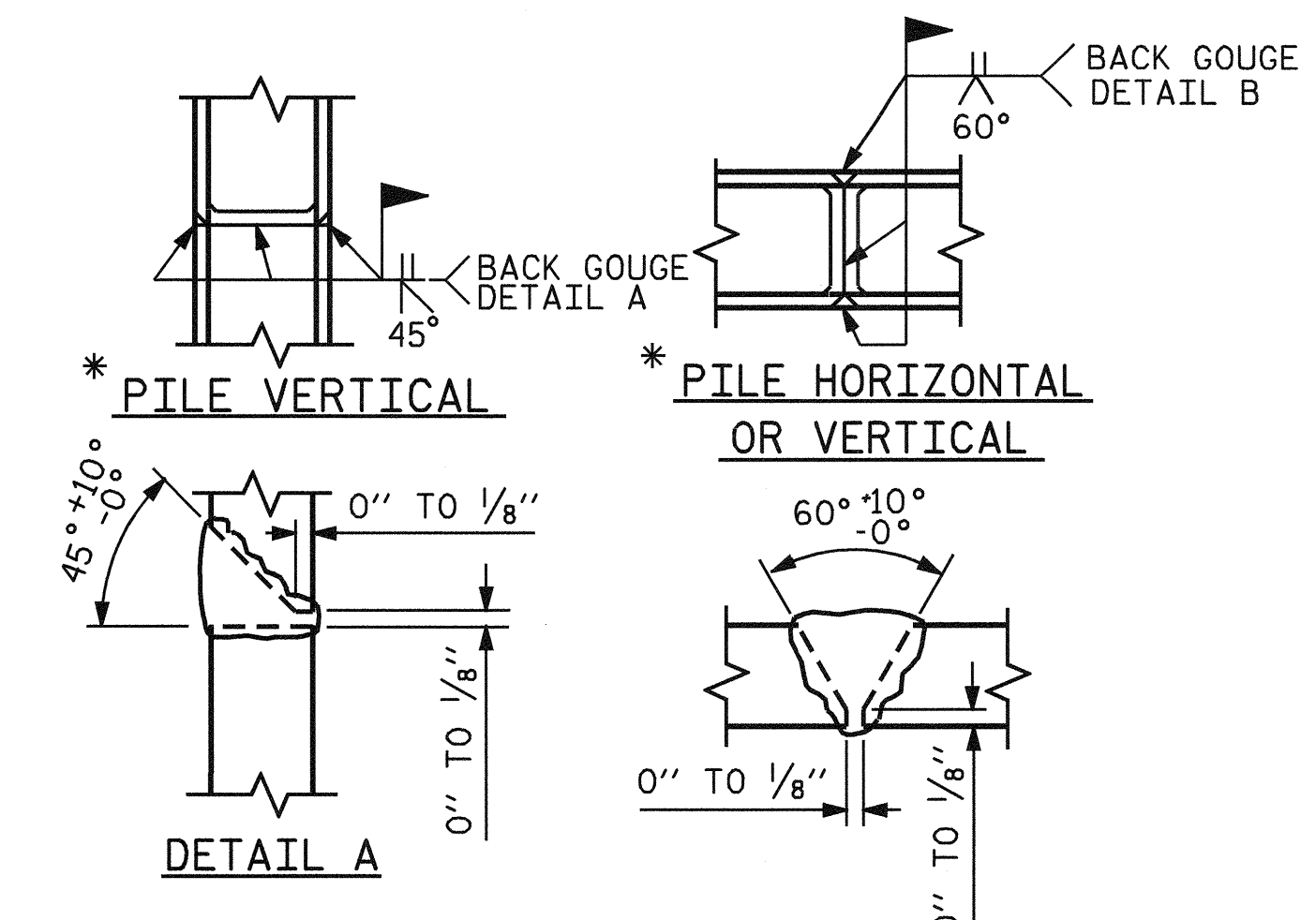
SUBSTRUCTURE
 END BENT No. 1

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14	
1			3			TOTAL SHEETS	
2			4			24	

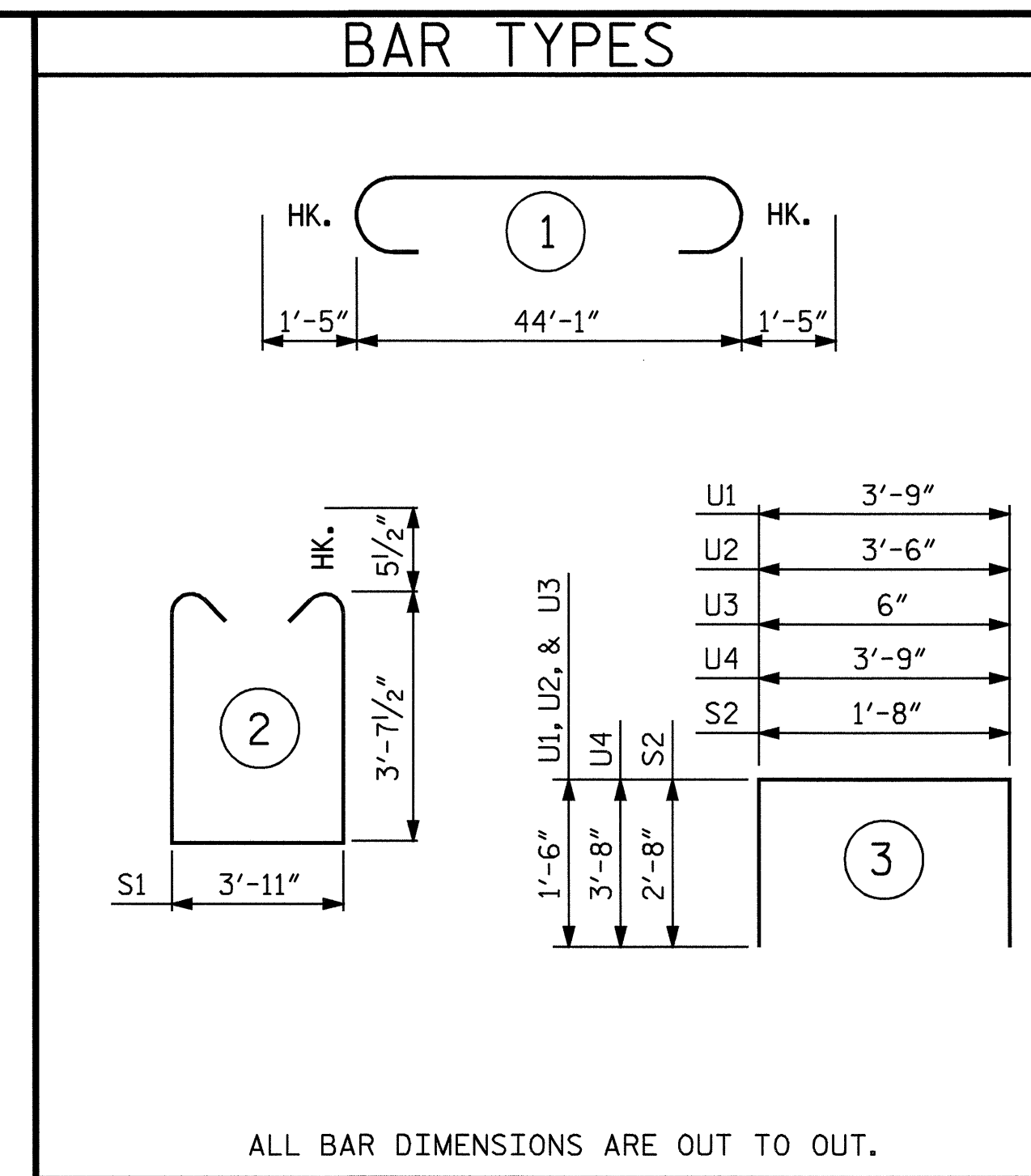
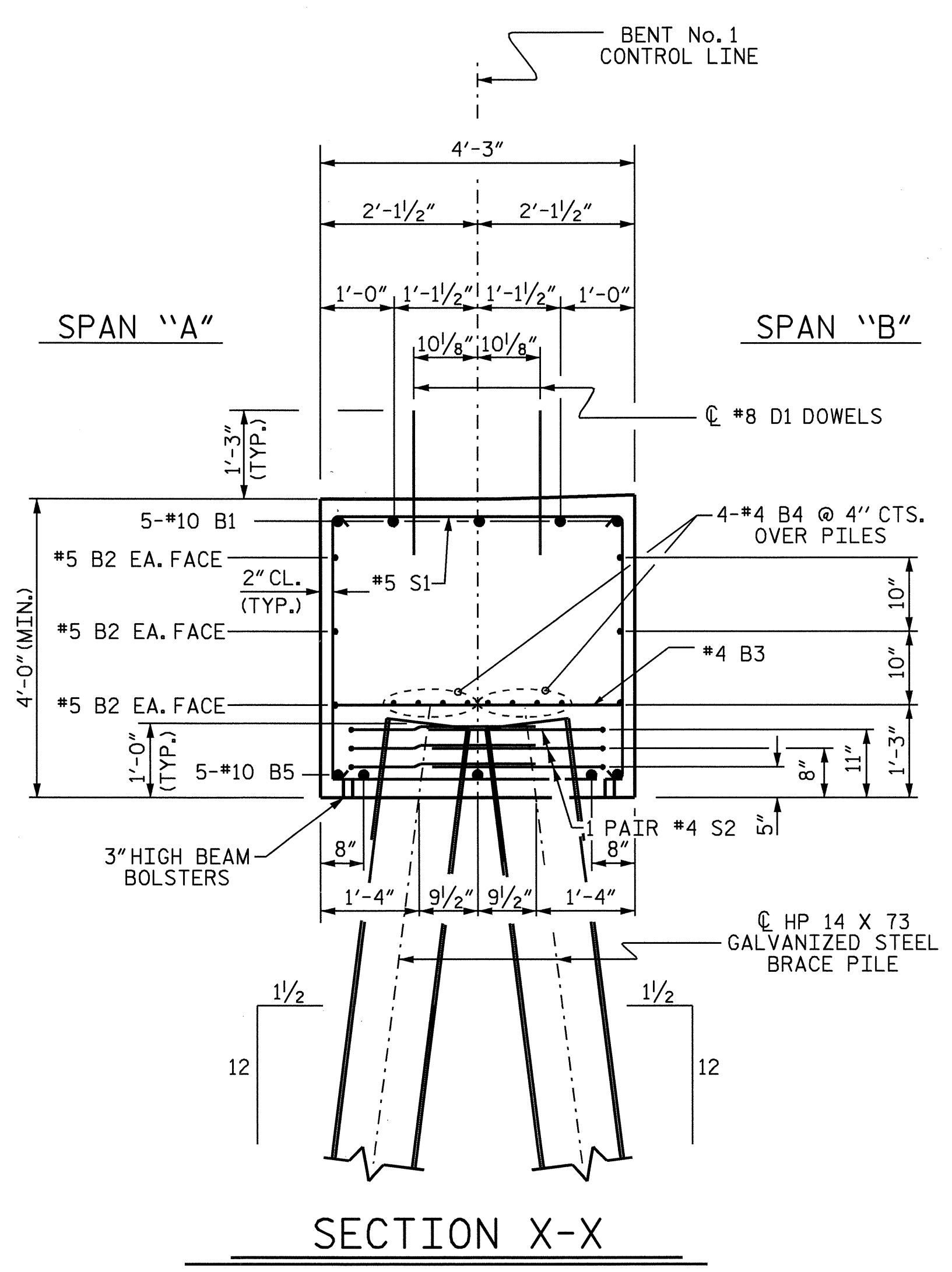
DRAWN BY: R. G. EMERSON/PEL DATE: 9/06
 CHECKED BY: B. N. GRADY DATE: 9/06

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POSITION OF PILE DURING WELDING.
PILE SPLICE DETAILS



BILL OF MATERIAL
BENT No. 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	5	#10	1	46'-11"	1009
B2	6	#5	STR	44'-3"	277
B3	15	#4	STR	3'-11"	39
B4	16	#4	STR	23'-4"	249
B5	5	#10	STR	44'-3"	952
D1	56	#8	STR	2'-3"	336
S1	41	#5	2	12'-1"	517
S2	36	#4	3	7'-0"	168
U1	6	#4	3	6'-9"	27
U2	8	#4	3	6'-6"	35
U3	10	#4	3	3'-6"	23
U4	2	#9	3	11'-1"	75

REINFORCING STEEL = 3707 LBS

CLASS A CONCRETE BREAKDOWN :

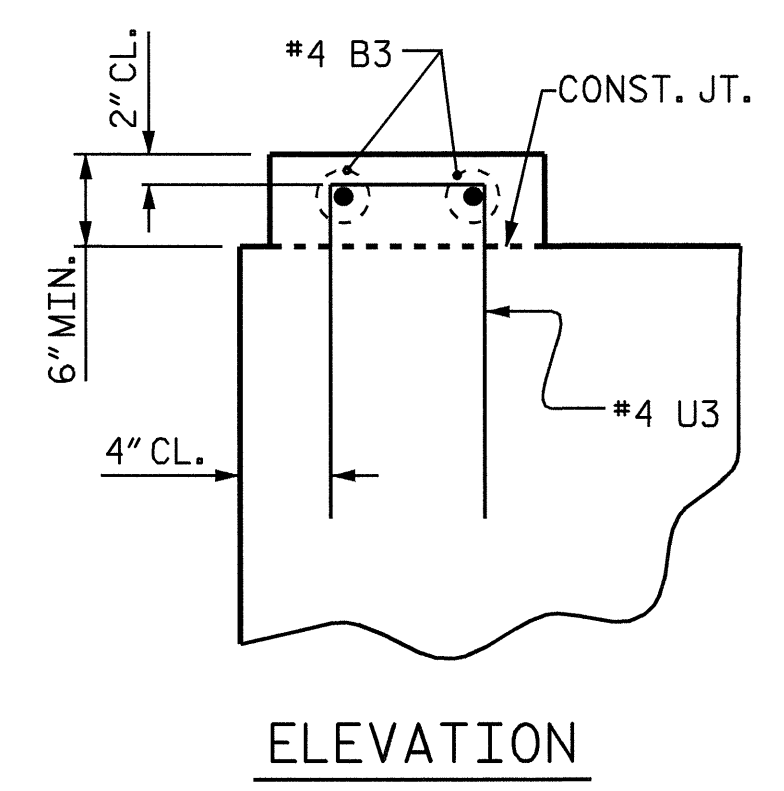
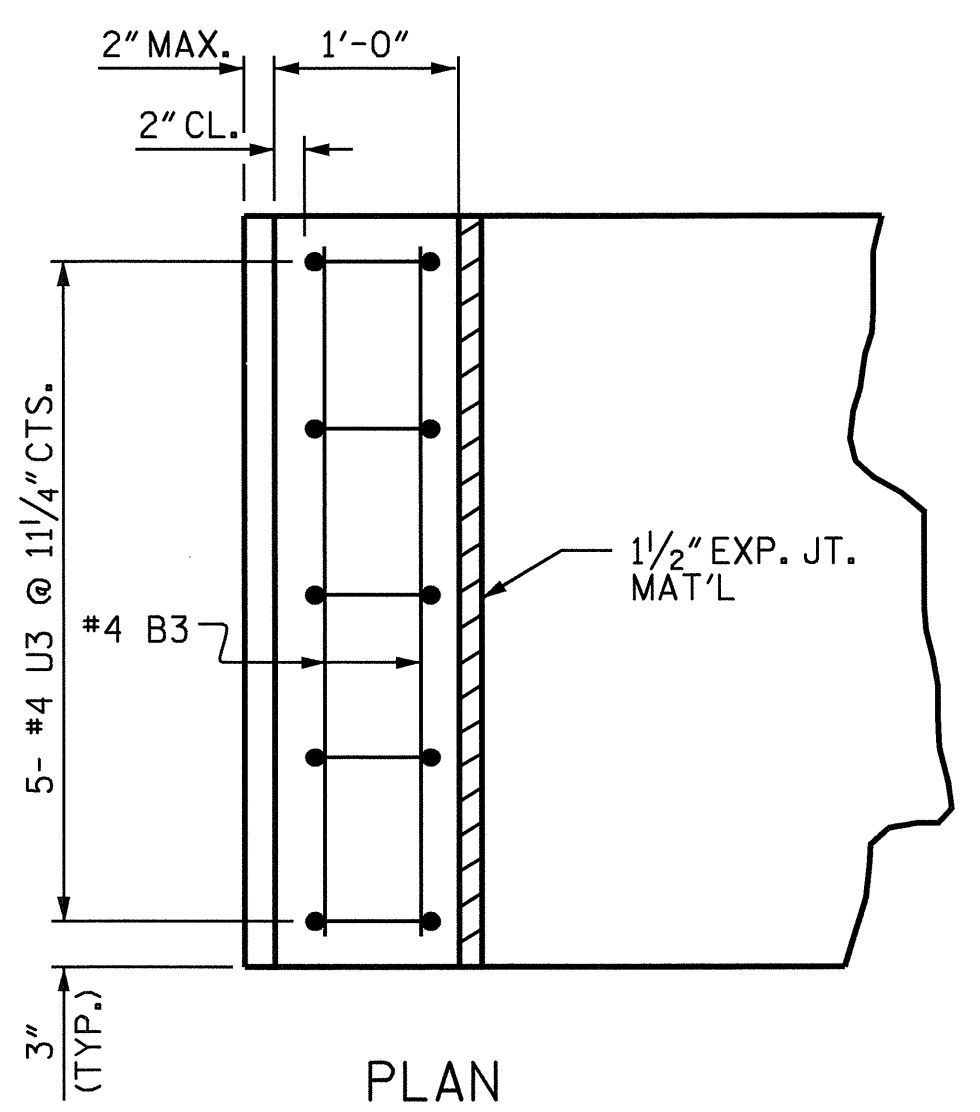
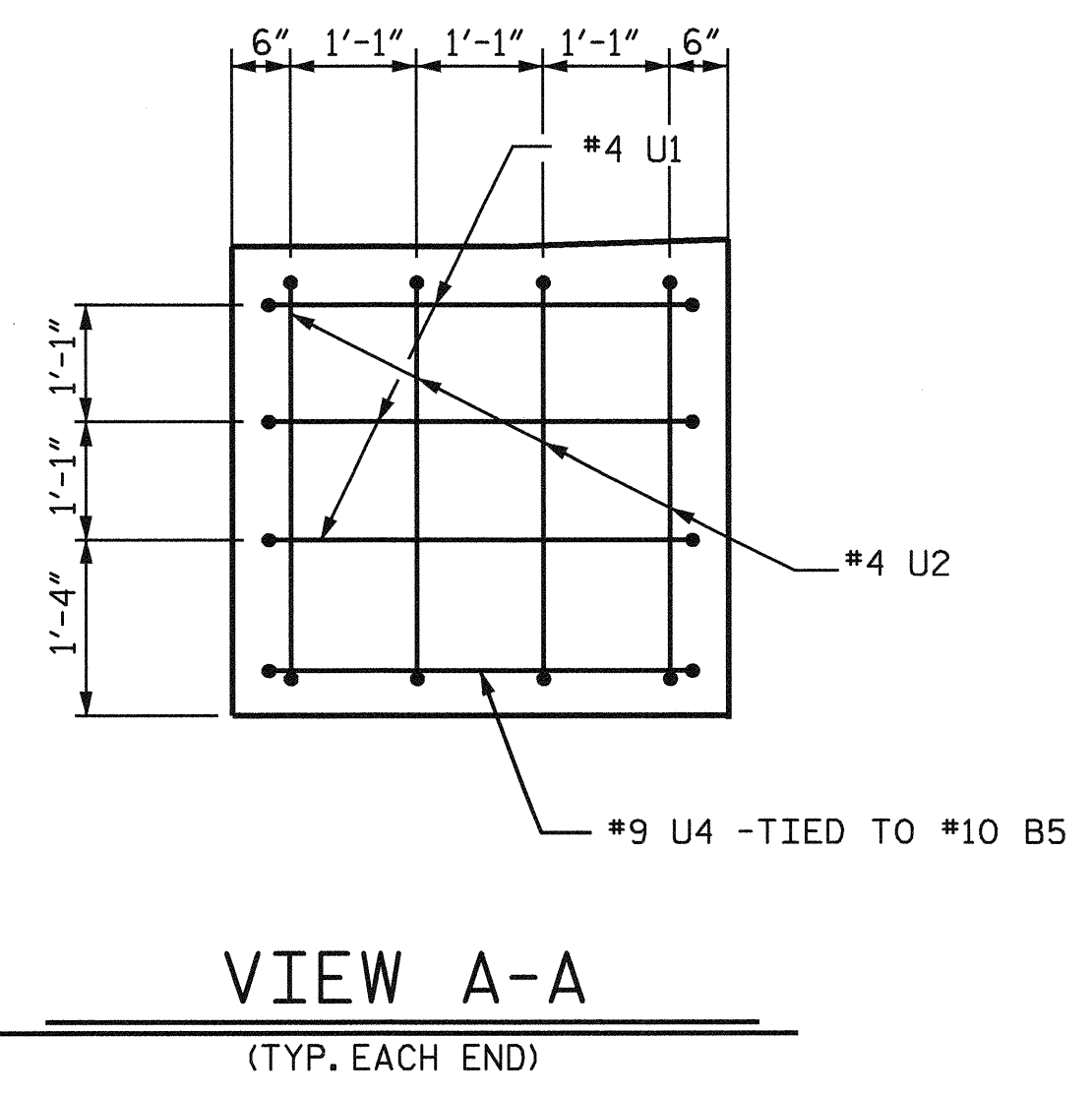
POUR #1 (CAP) 28.2 C.Y.

POUR #2 (LATERAL GUIDES) 0.2 C.Y.

TOTAL 28.4 C.Y.

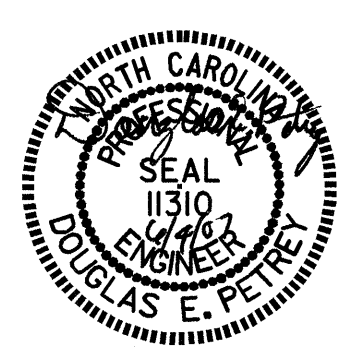
HP 14 X 73 GALVANIZED STEEL PILES No. 12 LIN. FT. 360

STEEL PILE POINTS 12 EA.



LATERAL GUIDE DETAIL
(LEFT LATERAL GUIDE SHOWN ; RIGHT LATERAL GUIDE SIMILAR)

PROJECT NO. B-4000
ALAMANCE COUNTY
STATION: 21+09.45 -L-



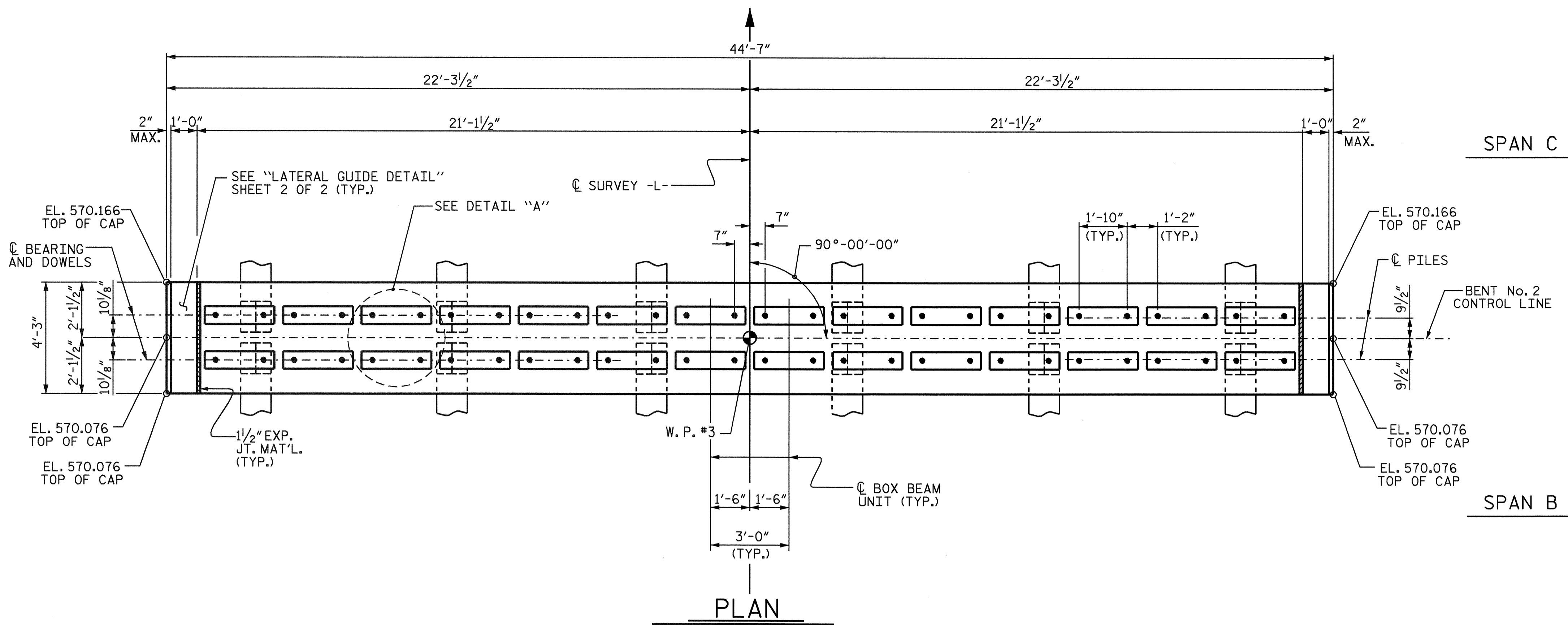
SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT No. 1

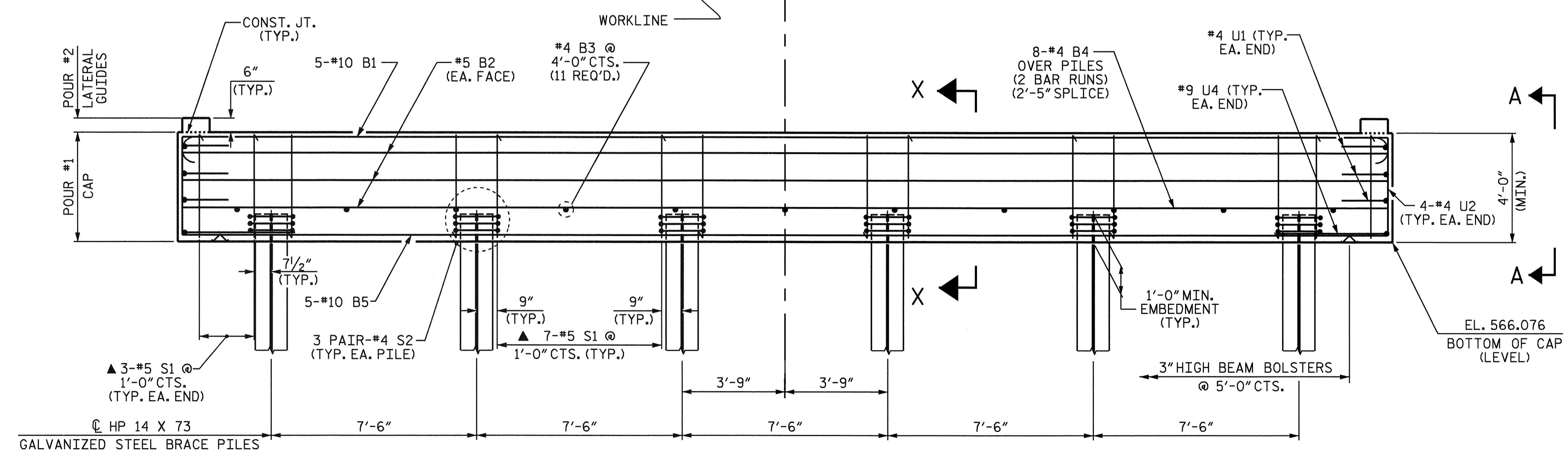
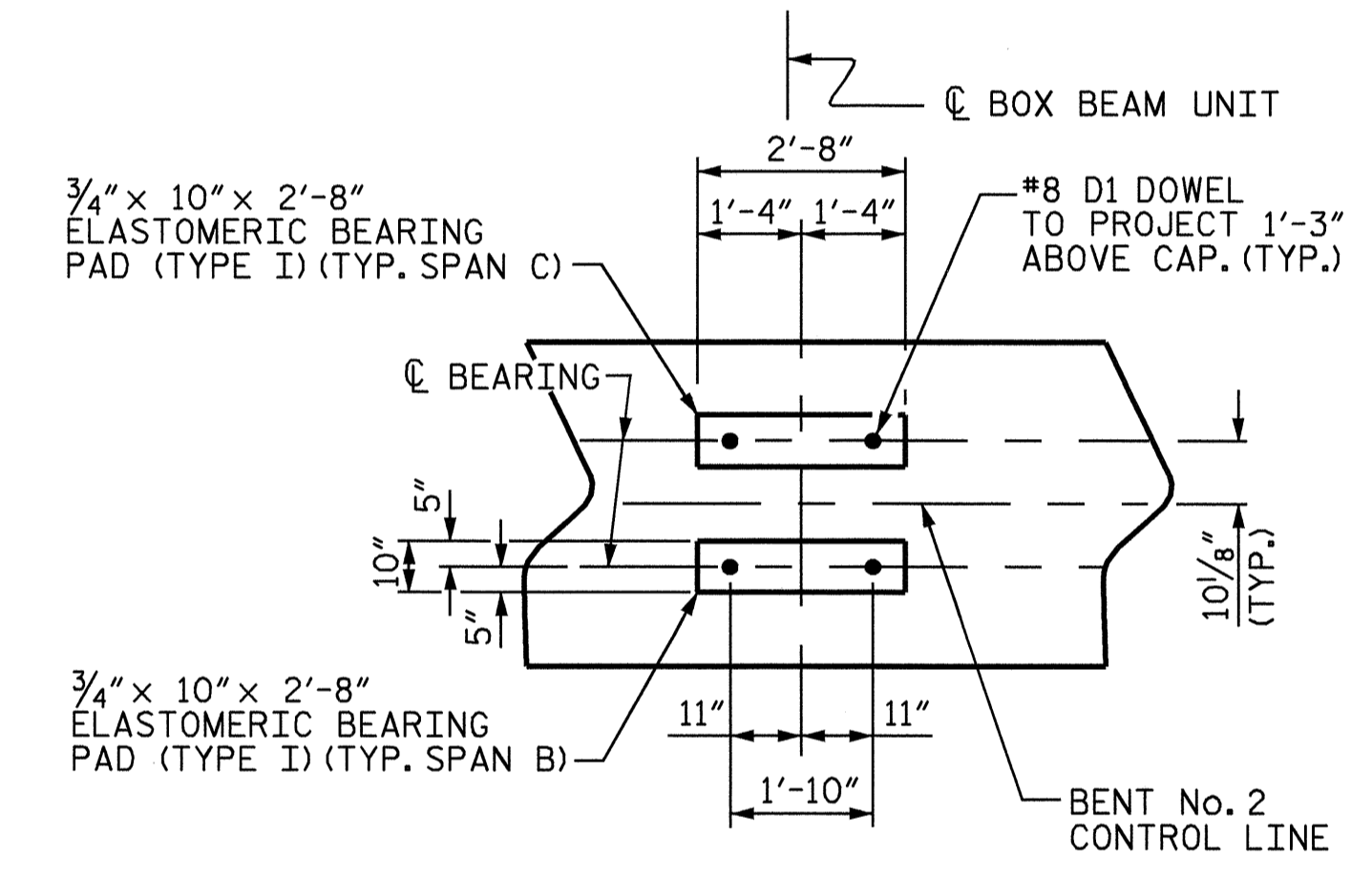
DRAWN BY : A.V. ROYAL DATE : 8/06
CHECKED BY : B.N. GRADY DATE : 9/06

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			24



NOTES:

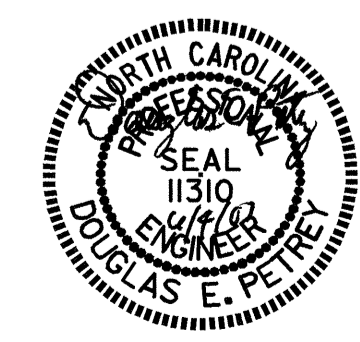
- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.
- THE LATERAL GUIDES ARE NOT TO BE POURED UNTIL AFTER THE BOX BEAM UNITS ARE IN PLACE.
- ▲ INVERT ALTERNATE STIRRUPS AS SHOWN.
- THE STEEL PILES SHALL BE GALVANIZED IN ACCORDANCE WITH SECTION 450 OF THE STANDARD SPECIFICATIONS.
- FOR VIEW A-A AND SECTION X-X, SEE SHEET 2 OF 2.



PROJECT NO. B-4000
ALAMANCE COUNTY
 STATION: 21+09.45 -L-

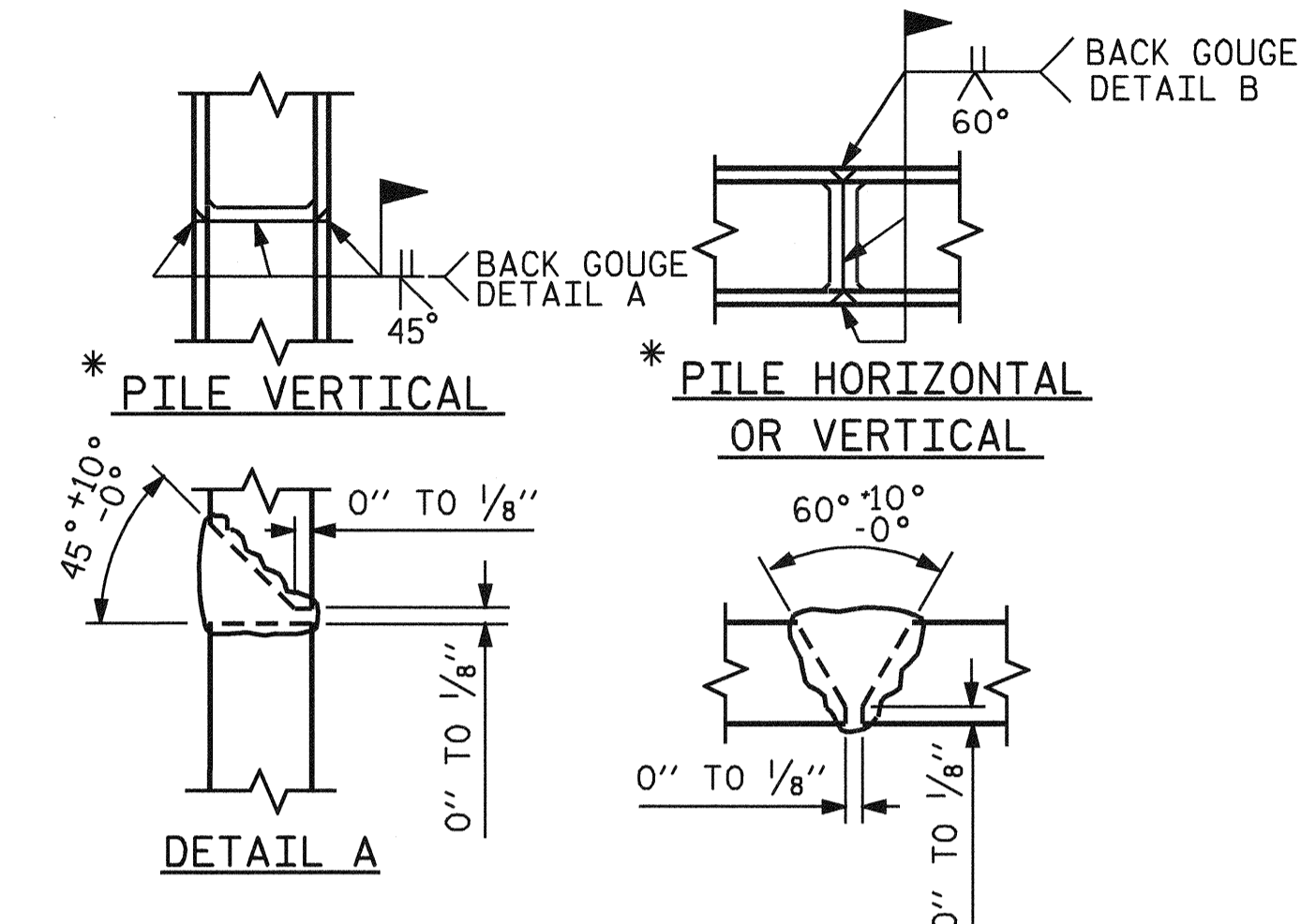
SHEET 1 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENT No. 2					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-18
					TOTAL SHEETS 24

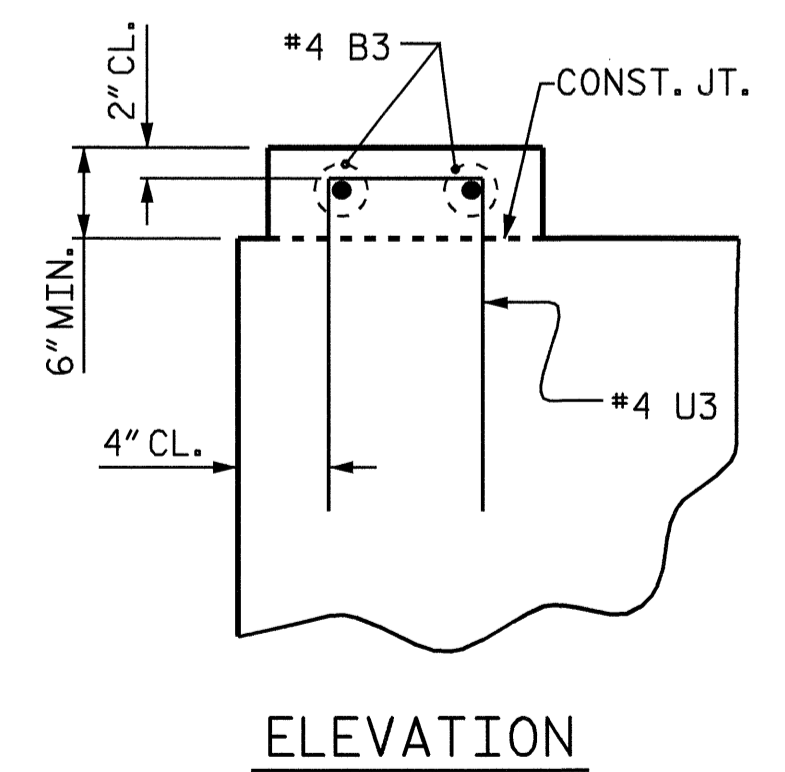
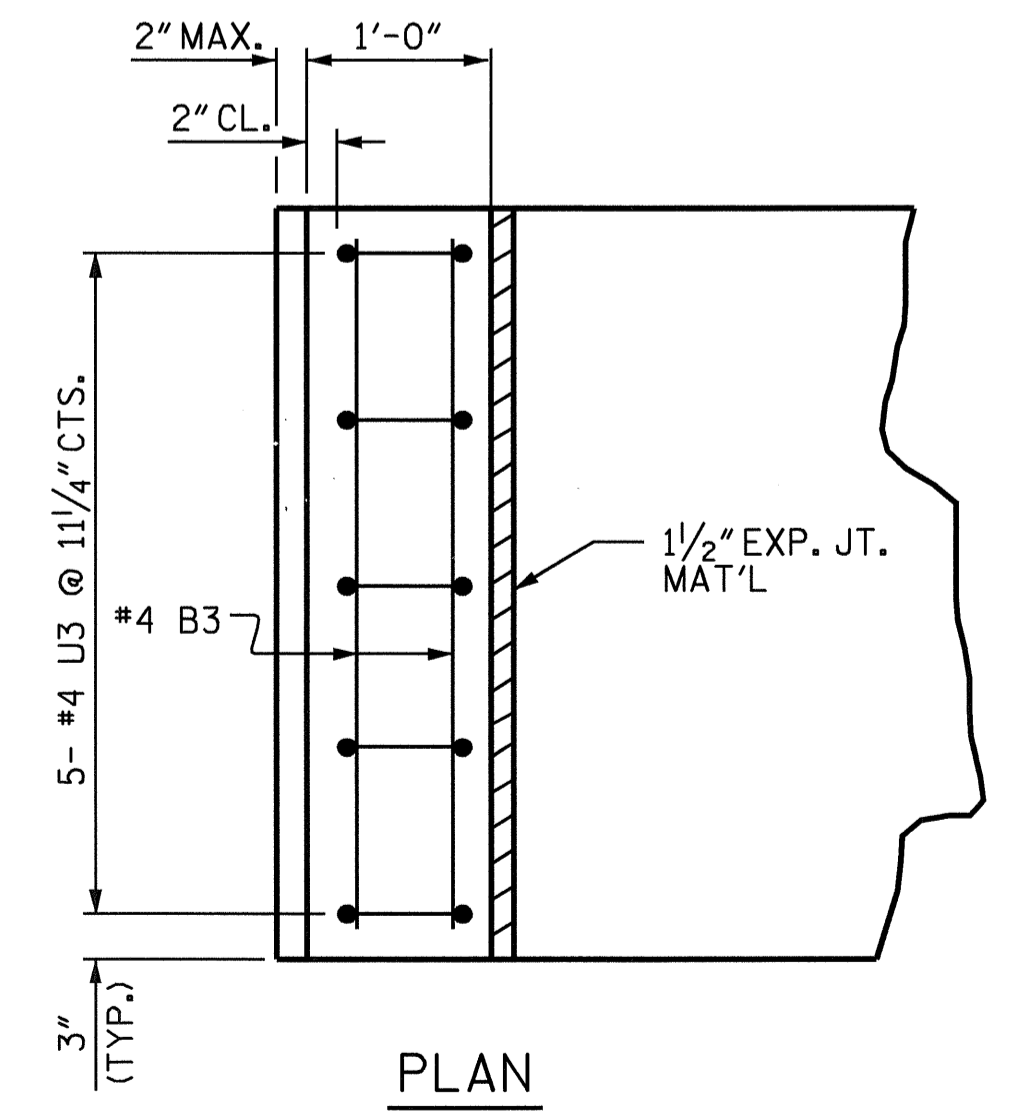
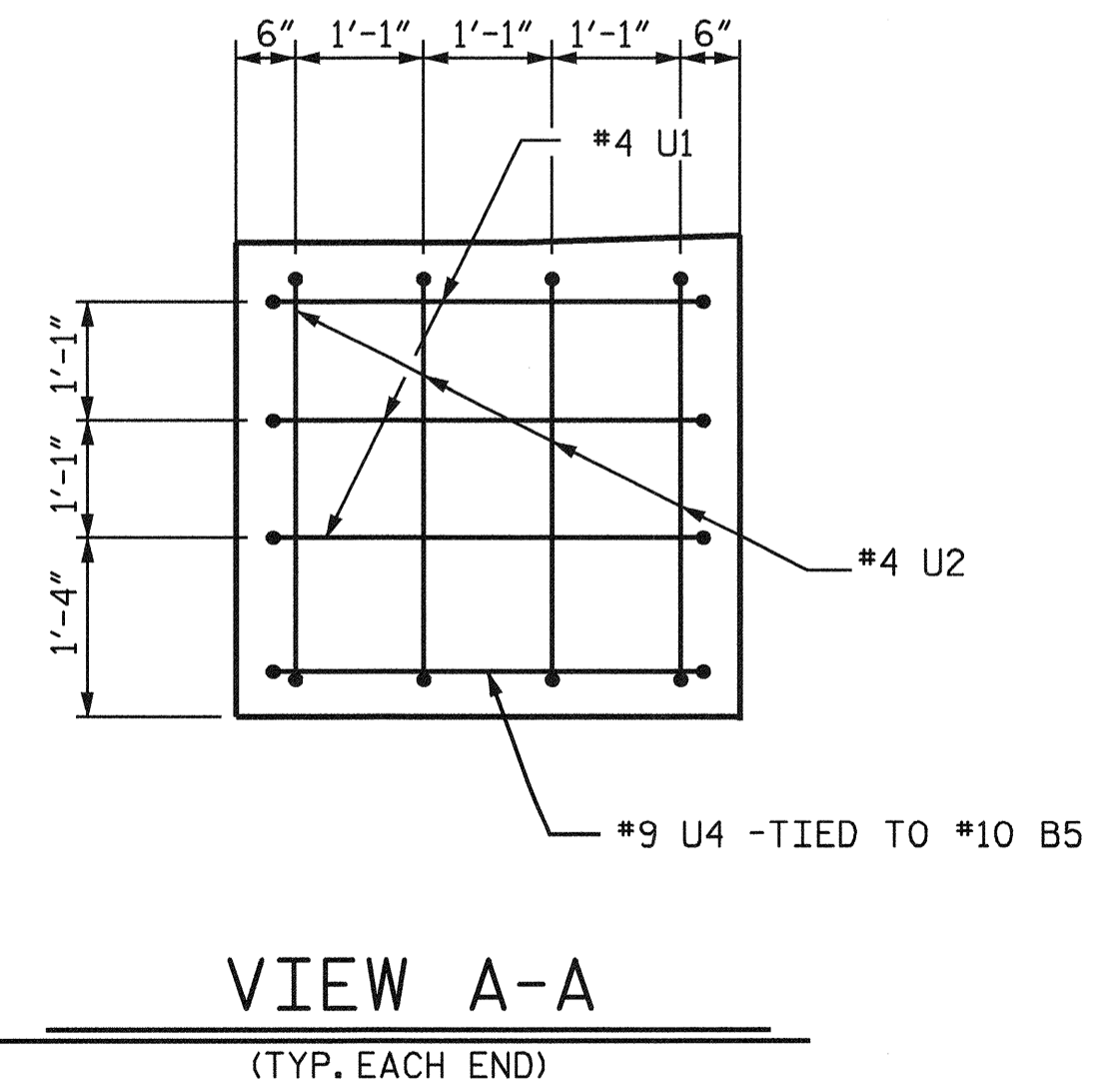
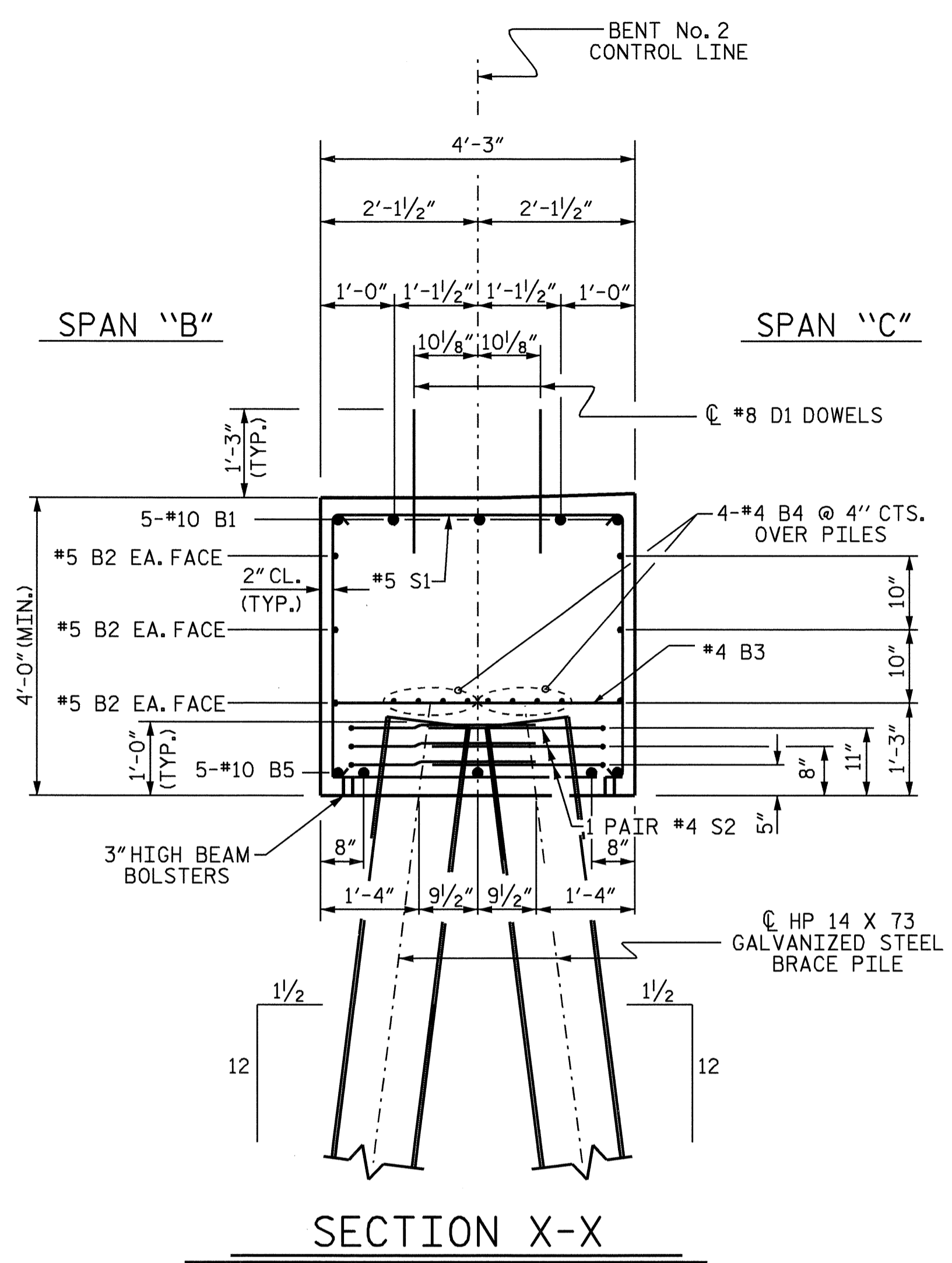


DRAWN BY: A. V. ROYAL DATE: 8/06
 CHECKED BY: B. N. GRADY DATE: 9/06

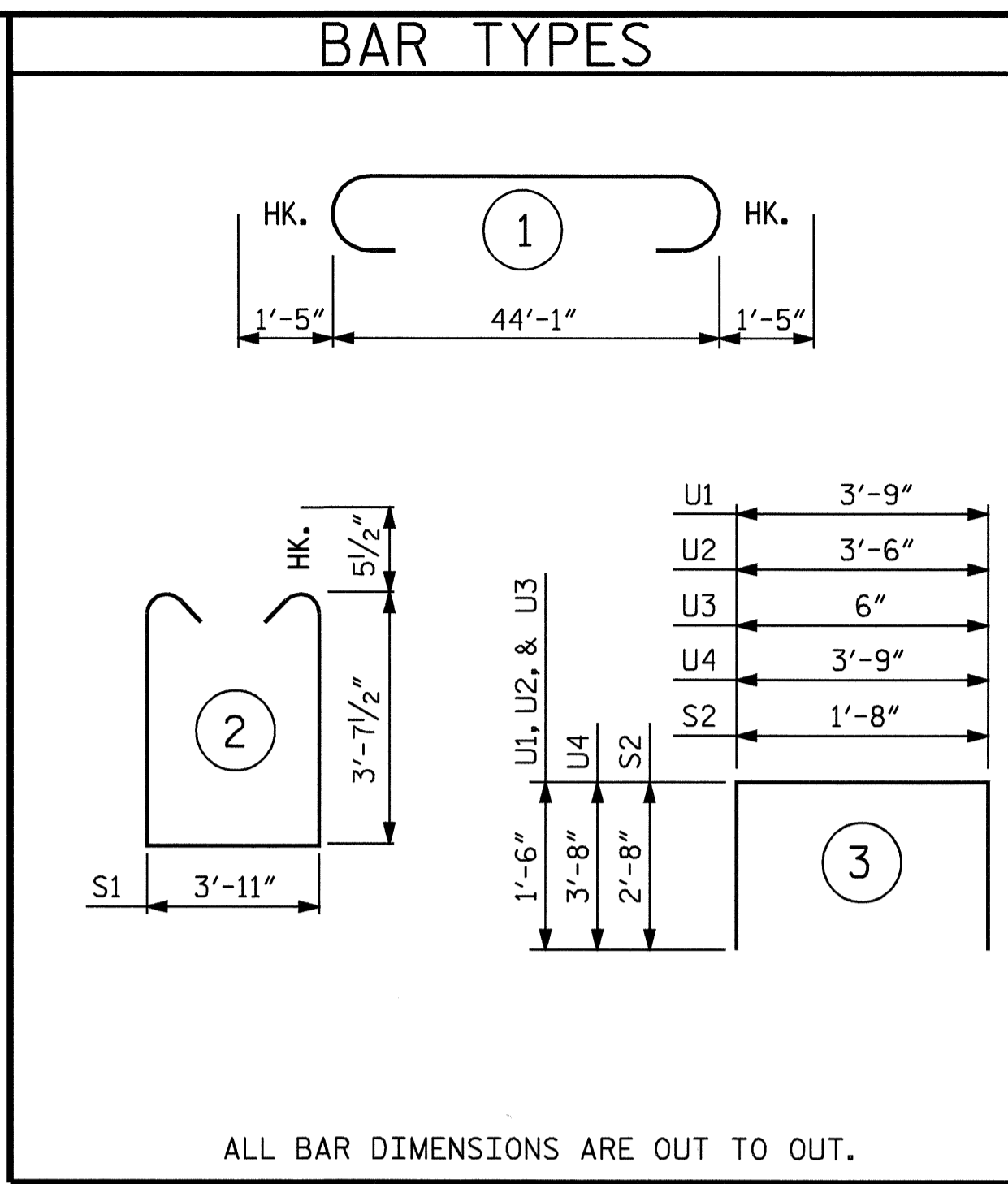
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 mbr111



POSITION OF PILE DURING WELDING.
PILE SPLICE DETAILS



LATERAL GUIDE DETAIL
(LEFT LATERAL GUIDE SHOWN ; RIGHT LATERAL GUIDE SIMILAR)



BILL OF MATERIAL					
BENT No. 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	5	#10		46'-11"	1009
B2	6	#5	STR	44'-3"	277
B3	15	#4	STR	3'-11"	39
B4	16	#4	STR	23'-4"	249
B5	5	#10	STR	44'-3"	952
D1	56	#8	STR	2'-3"	336
S1	41	#5		12'-1"	517
S2	36	#4		7'-0"	168
U1	6	#4		6'-9"	27
U2	8	#4		6'-6"	35
U3	10	#4		3'-6"	23
U4	2	#9		11'-1"	75
REINFORCING STEEL					= 3707 LBS
CLASS A CONCRETE BREAKDOWN :					
POUR #1 (CAP)				28.2 C.Y.	
POUR #2 (LATERAL GUIDES)				0.2 C.Y.	
				TOTAL	28.4 C.Y.
HP 14 X 73 GALVANIZED STEEL PILES					
No. 12				LIN. FT.	360
STEEL PILE POINTS					12 EA.

PROJECT NO. B-4000
ALAMANCE COUNTY
 STATION: 21+09.45 -L-
 SHEET 2 OF 2

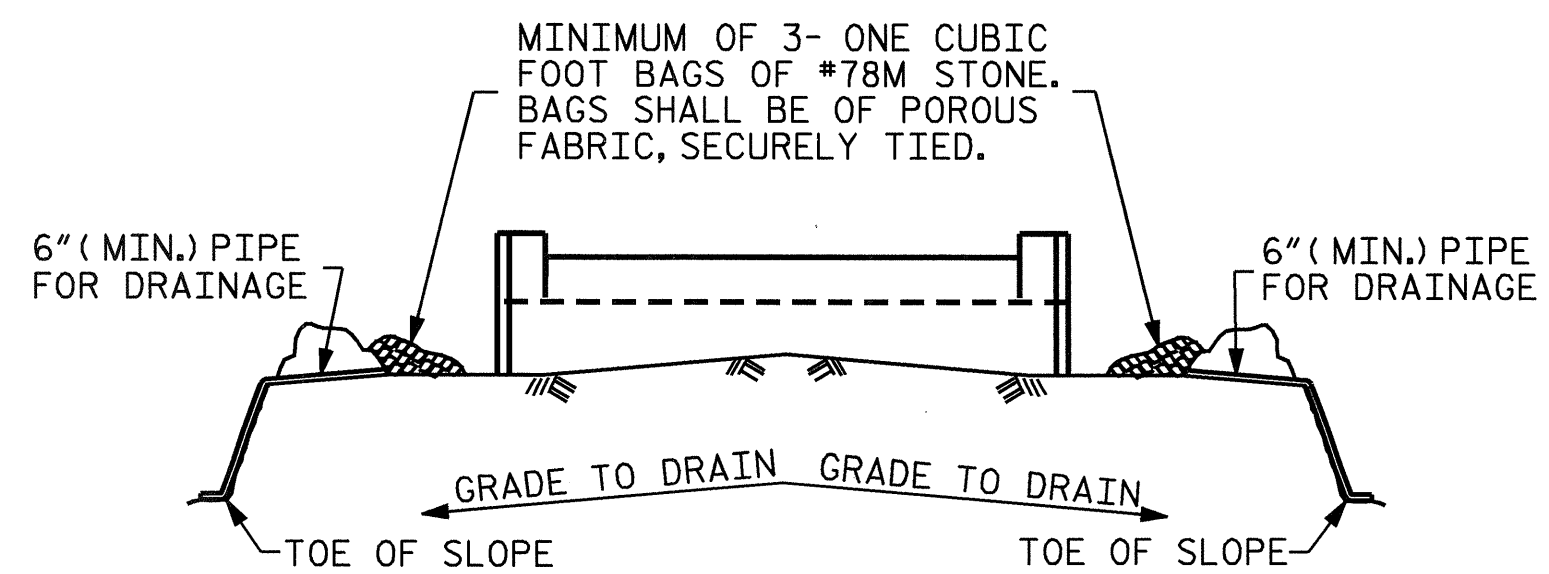


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT No. 2

DRAWN BY : A.V. ROYAL DATE : 8/06
 CHECKED BY : B.N. GRADY DATE : 9/06

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19	
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2			4				

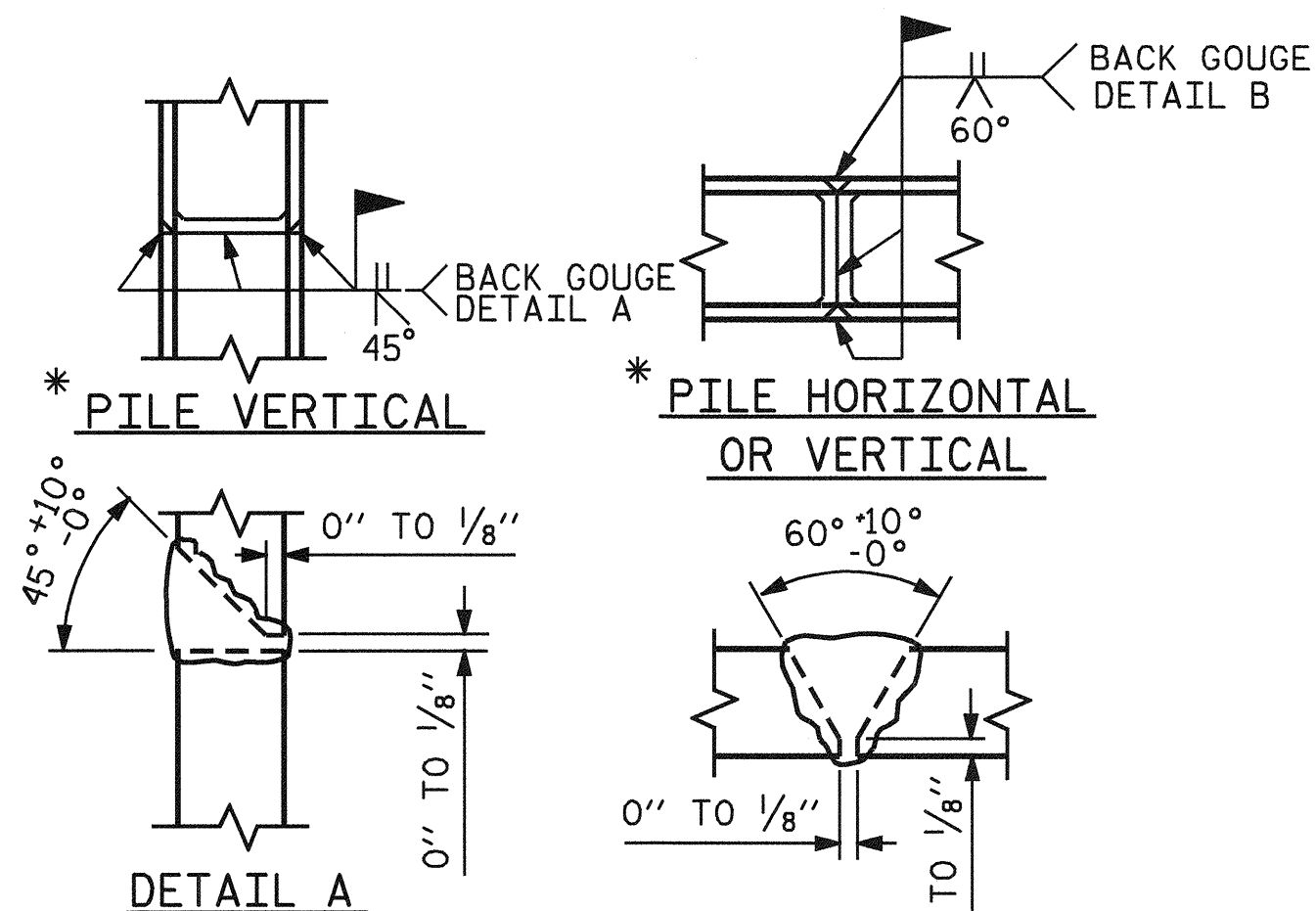


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

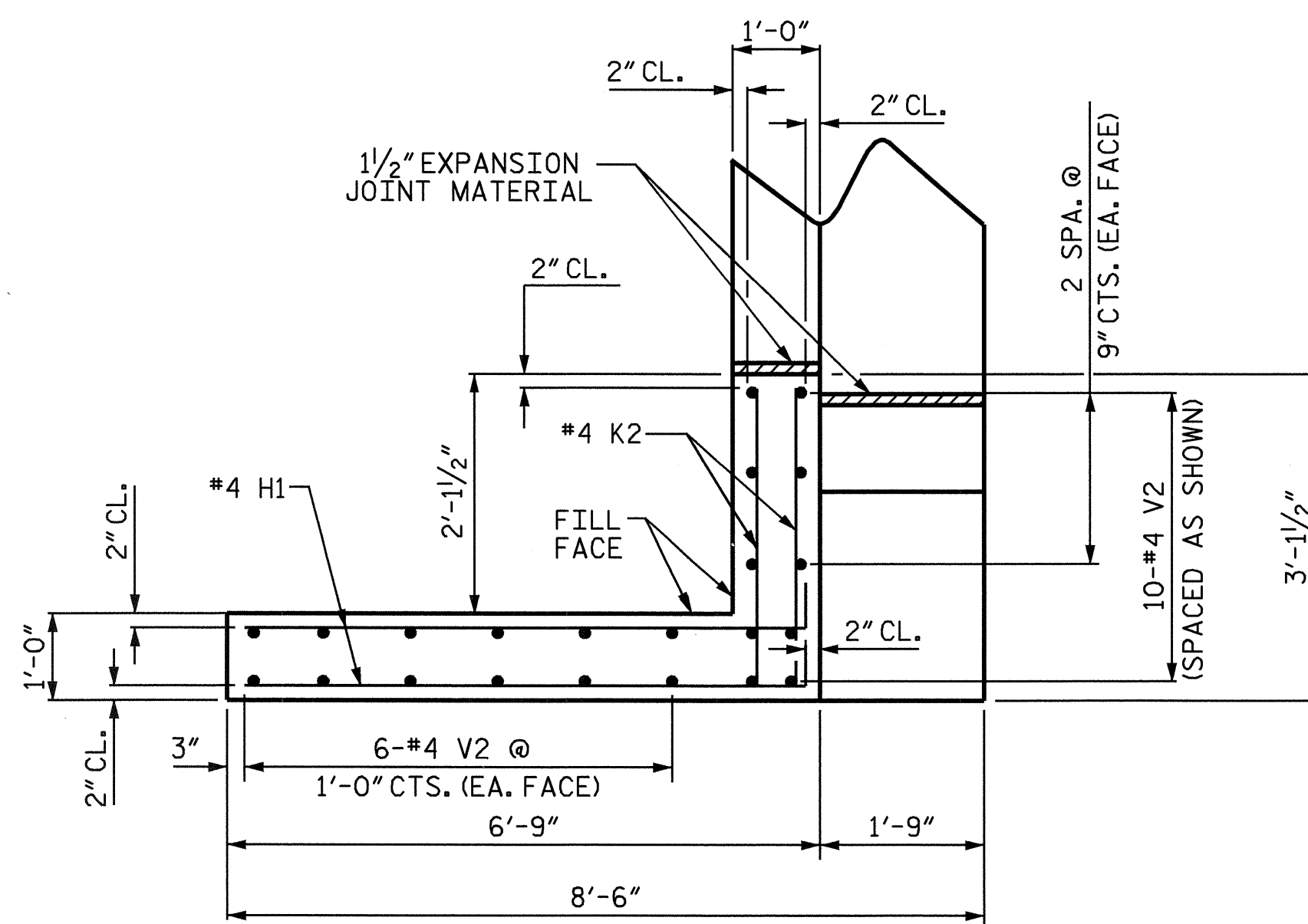
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



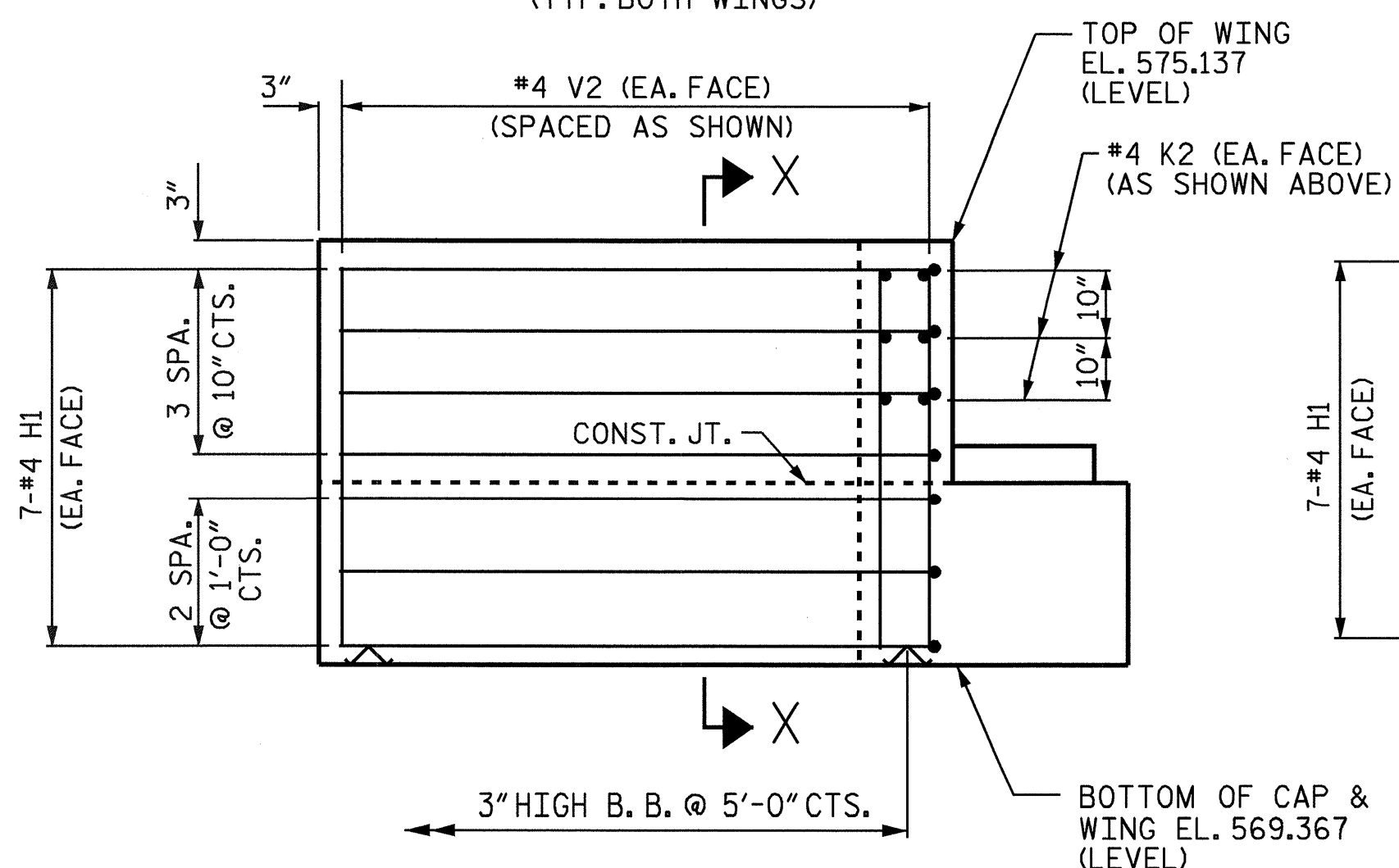
* POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS



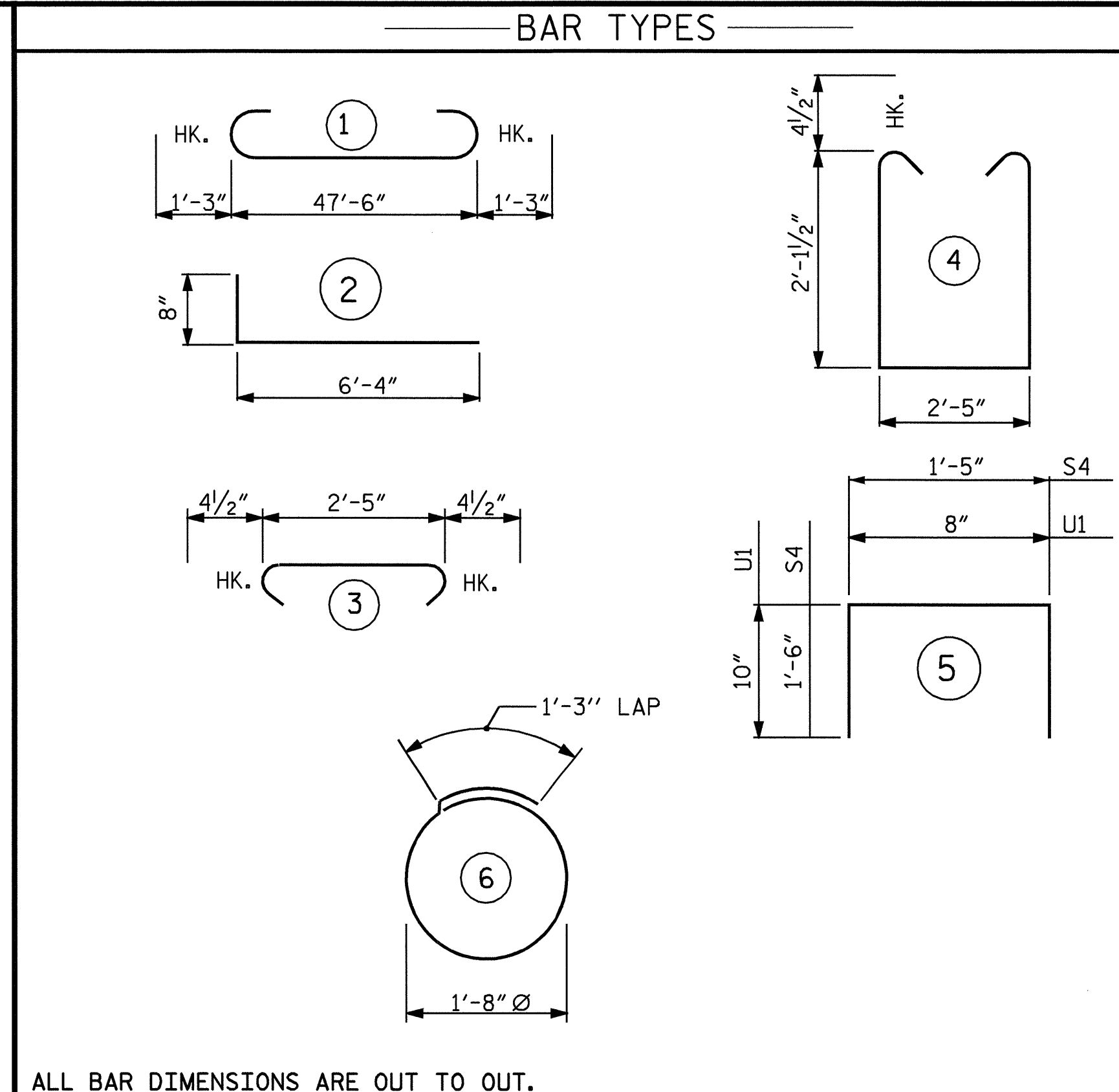
PLAN OF WING

(TYP. BOTH WINGS)

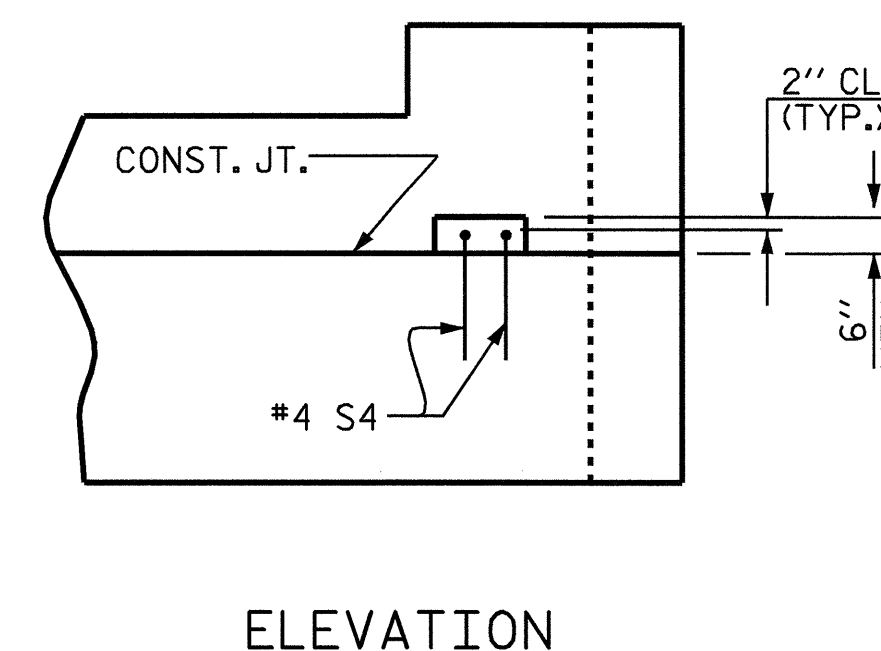
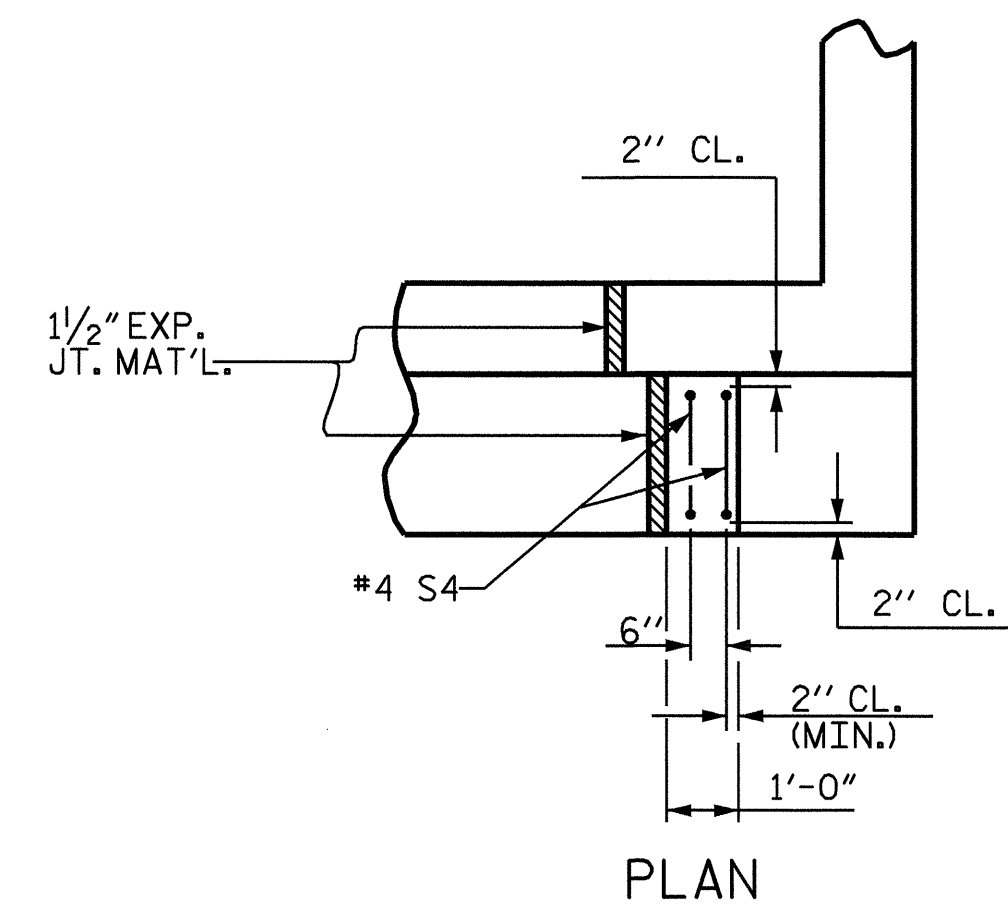


ELEVATION

(TYP. BOTH WINGS)



ALL BAR DIMENSIONS ARE OUT TO OUT.



LATERAL GUIDE DETAILS

(RIGHT LATERAL GUIDE SHOWN, LEFT END SIMILAR)

BILL OF MATERIAL					
END BENT No. 2					
BAR No.	SIZE	TYPE	LENGTH	WEIGHT	
B1	8	9	1	50'-0"	1360
B2	16	4	STR	25'-1"	268
B3	12	4	STR	2'-5"	19
D1	28	8	STR	2'-3"	168
H1	28	4	2	7'-0"	131
K1	8	4	STR	25'-1"	134
K2	12	4	STR	2'-9"	22
S1	47	4	4	7'-5"	233
S2	47	4	3	3'-2"	99
S3	20	4	6	6'-6"	87
S4	4	4	5	4'-5"	12
U1	42	4	5	2'-4"	65
V1	84	4	STR	3'-1"	173
V2	44	4	STR	5'-4"	157
REINFORCING STEEL				LBS.	2928
CLASS A CONCRETE BREAKDOWN :					
POUR #1 (CAP & LOWER WINGS)				13.4 C. Y.	
POUR #2 (UPPER WINGS & BACKWALL)				3.7 C. Y.	
POUR #3 (LATERAL GUIDES)				0.1 C. Y.	
TOTAL				17.2 C. Y.	
HP 12 X 53 STEEL PILES					
No. 10				LIN. FT. = 300	

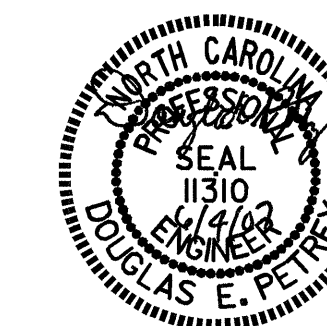
PROJECT NO. B-4000
ALAMANCE COUNTY
STATION: 21+09.45 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

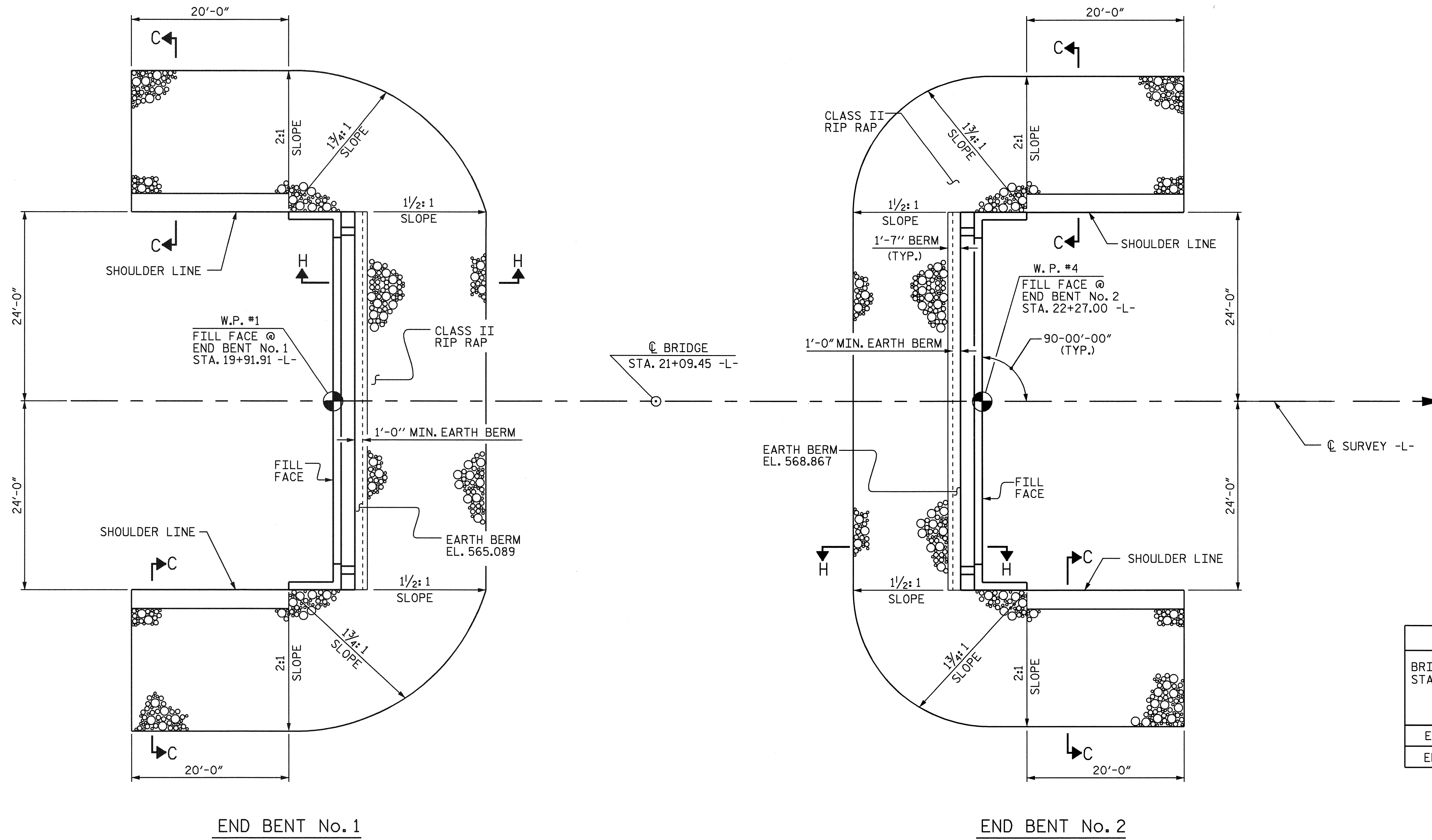
END BENT No. 2



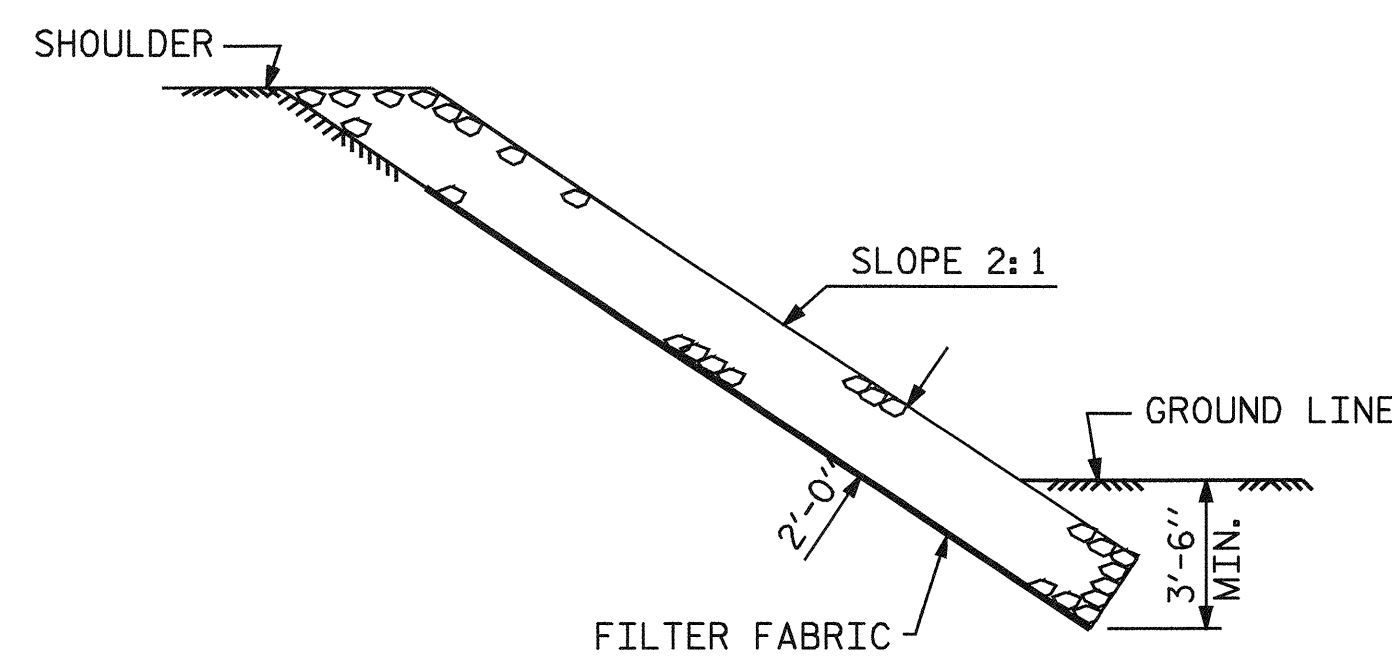
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
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2			4			

DRAWN BY : R. G. EMERSON/PEL DATE : 9/06
CHECKED BY : B. N. GRADY DATE : 9/06

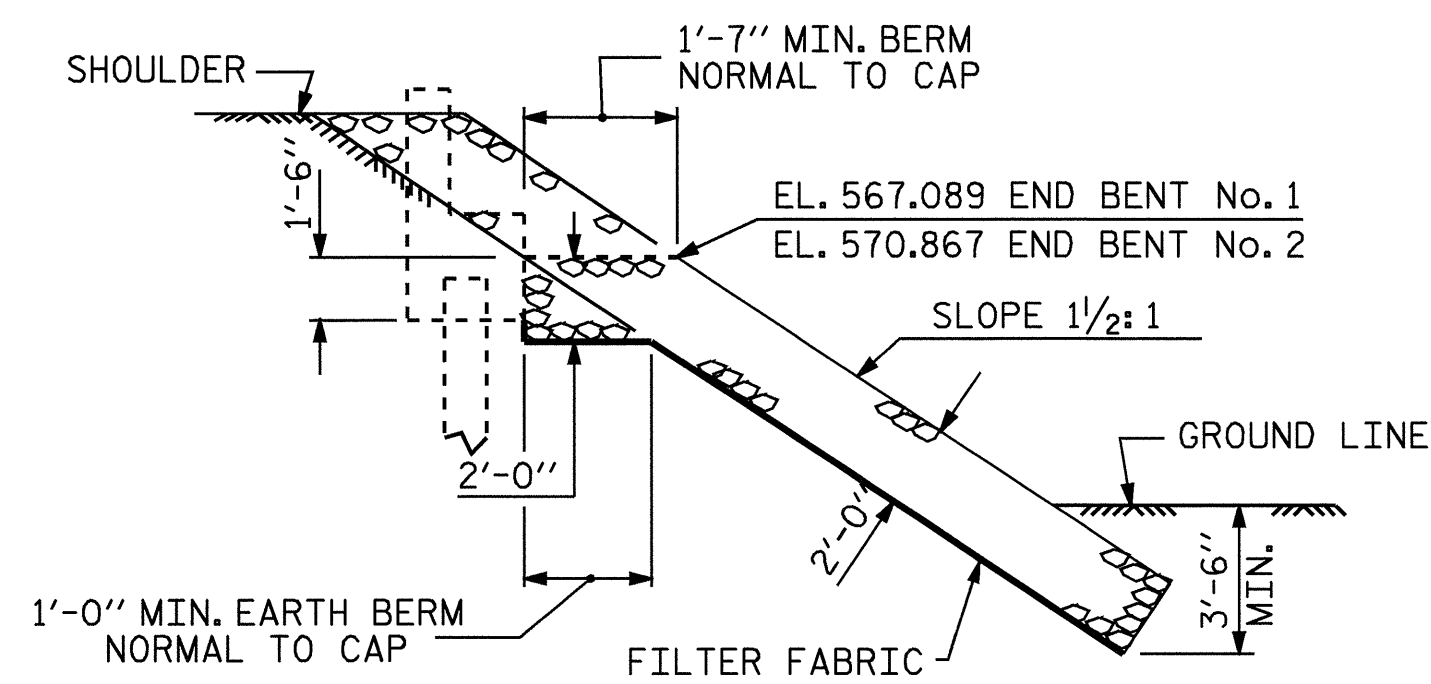
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ESTIMATED QUANTITIES		
BRIDGE @ STA. 21+09.45 -L-	RIP RAP CLASS II	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	180	200
END BENT 2	215	240



SECTION C-C

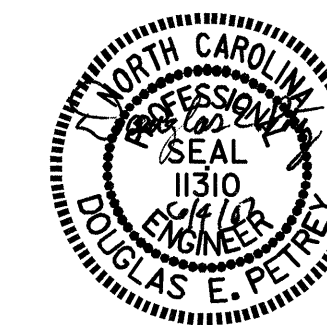


SECTION H-H

PROJECT NO. B-4000
ALAMANCE COUNTY
 STATION: 21+09.45 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

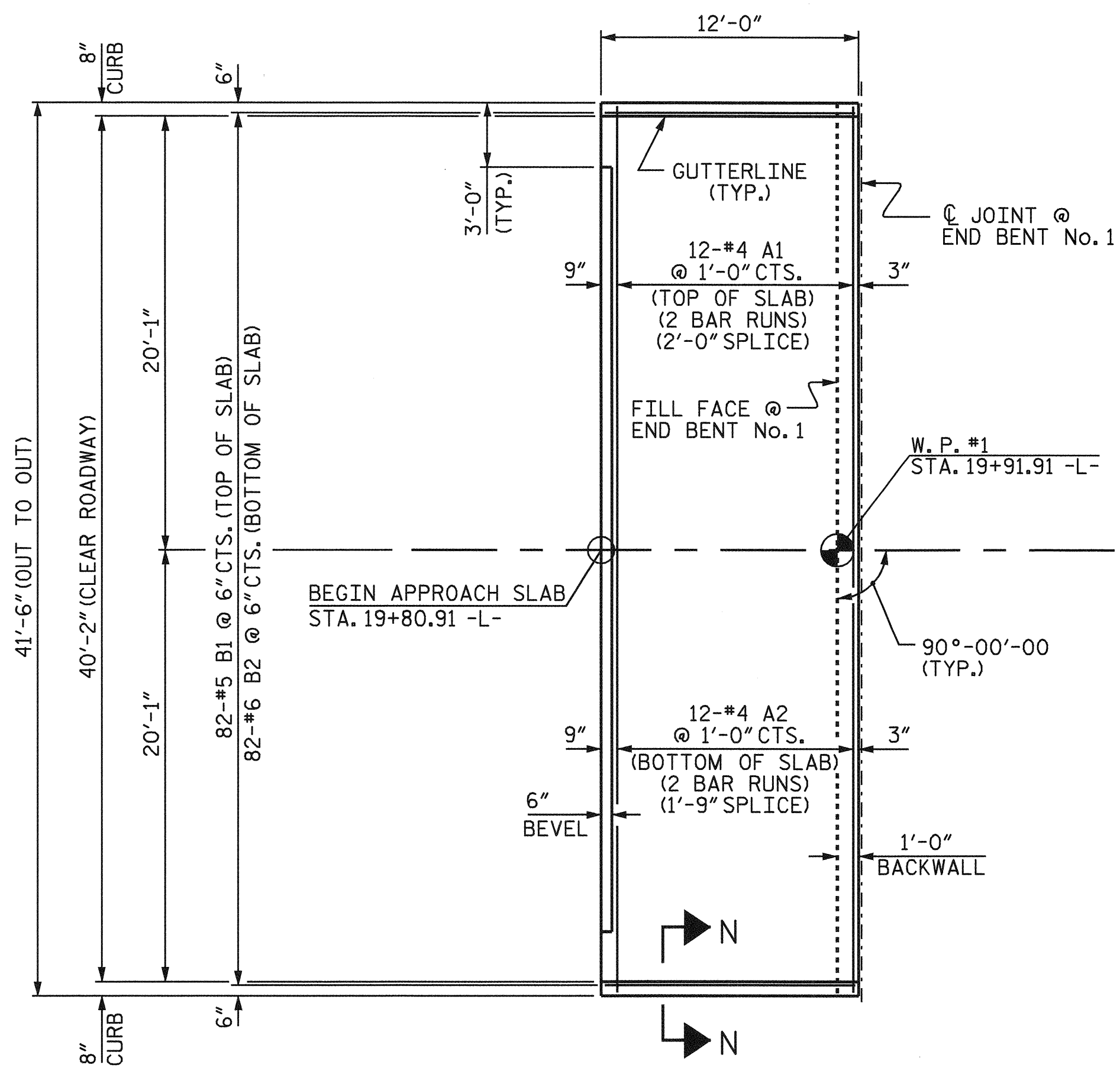
RIP RAP DETAILS



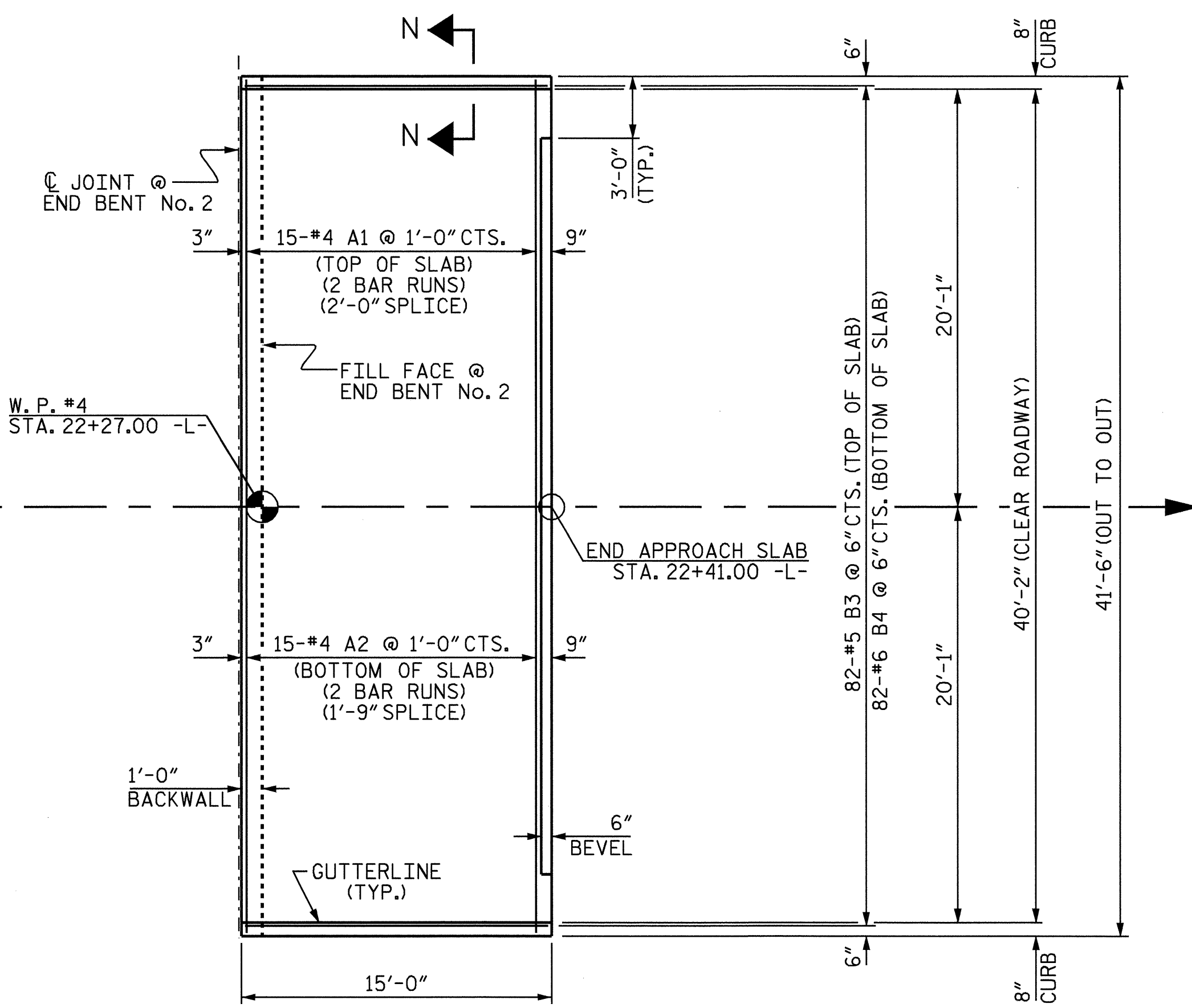
DRAWN BY : P. LACKEY/AVR DATE : 01/07
 CHECKED BY : ARC/DEP DATE : 01/07

22-FEB-2007 08:25
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REVISIONS						SHEET NO. S-22
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 24
2			4			

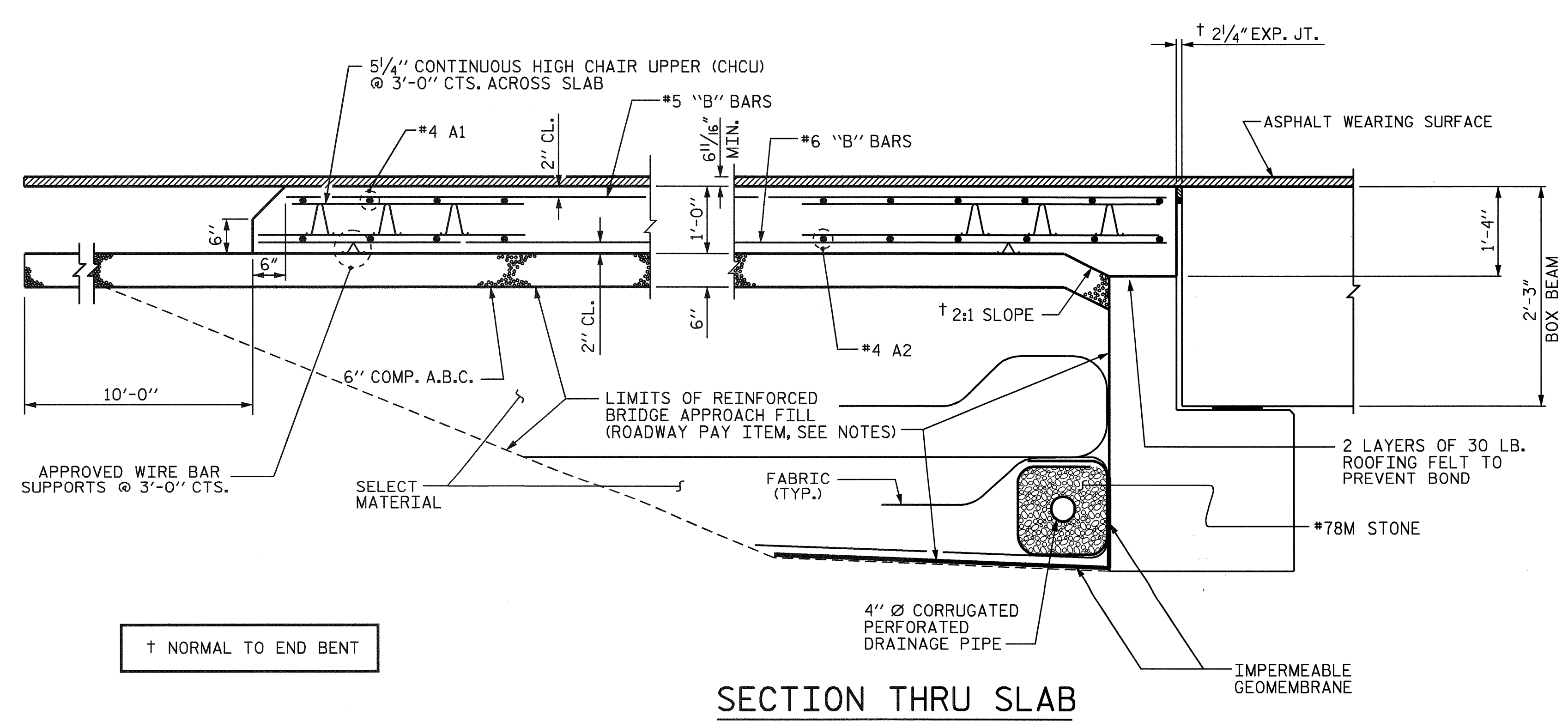


PLAN @ END BENT No. 1

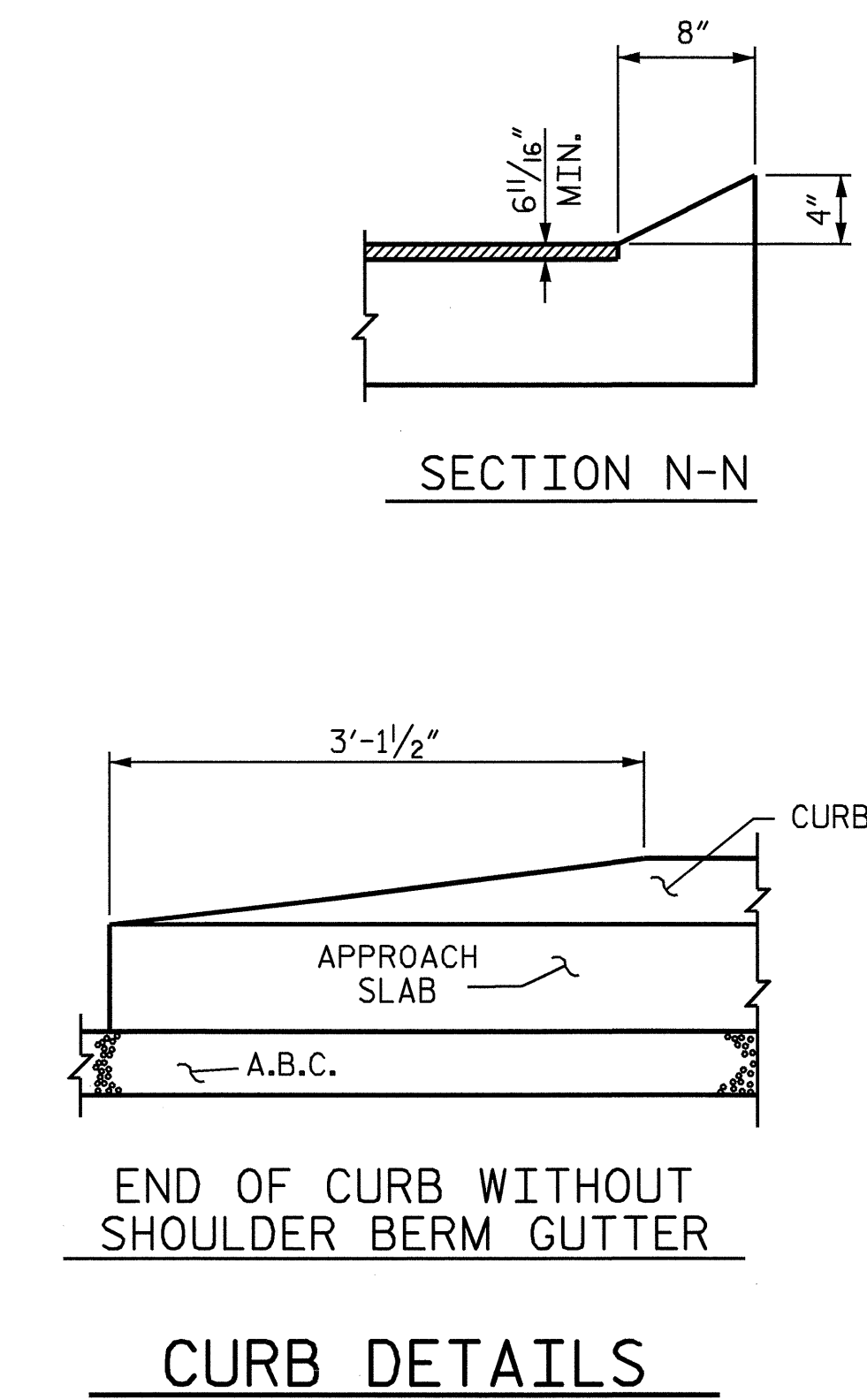


PLAN @ END BENT No. 2

BILL OF MATERIAL					
APPROACH SLAB AT END BENT No. 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	24	#4	STR	21'-7"	346
A2	24	#4	STR	21'-6"	345
* B1	82	#5	STR	11'-4"	969
B2	82	#6	STR	11'-8"	1437
REINFORCING STEEL				LBS.	1782
* EPOXY COATED REINFORCING STEEL				LBS.	1315
CLASS AA CONCRETE				C. Y.	19.4
APPROACH SLAB AT END BENT No. 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	30	#4	STR	21'-7"	433
A2	30	#4	STR	21'-6"	431
* B3	82	#5	STR	14'-4"	1226
B4	82	#6	STR	14'-8"	1806
REINFORCING STEEL				LBS.	2237
* EPOXY COATED REINFORCING STEEL				LBS.	1659
CLASS AA CONCRETE				C. Y.	24.1



SECTION THRU SLAB



CURB DETAILS

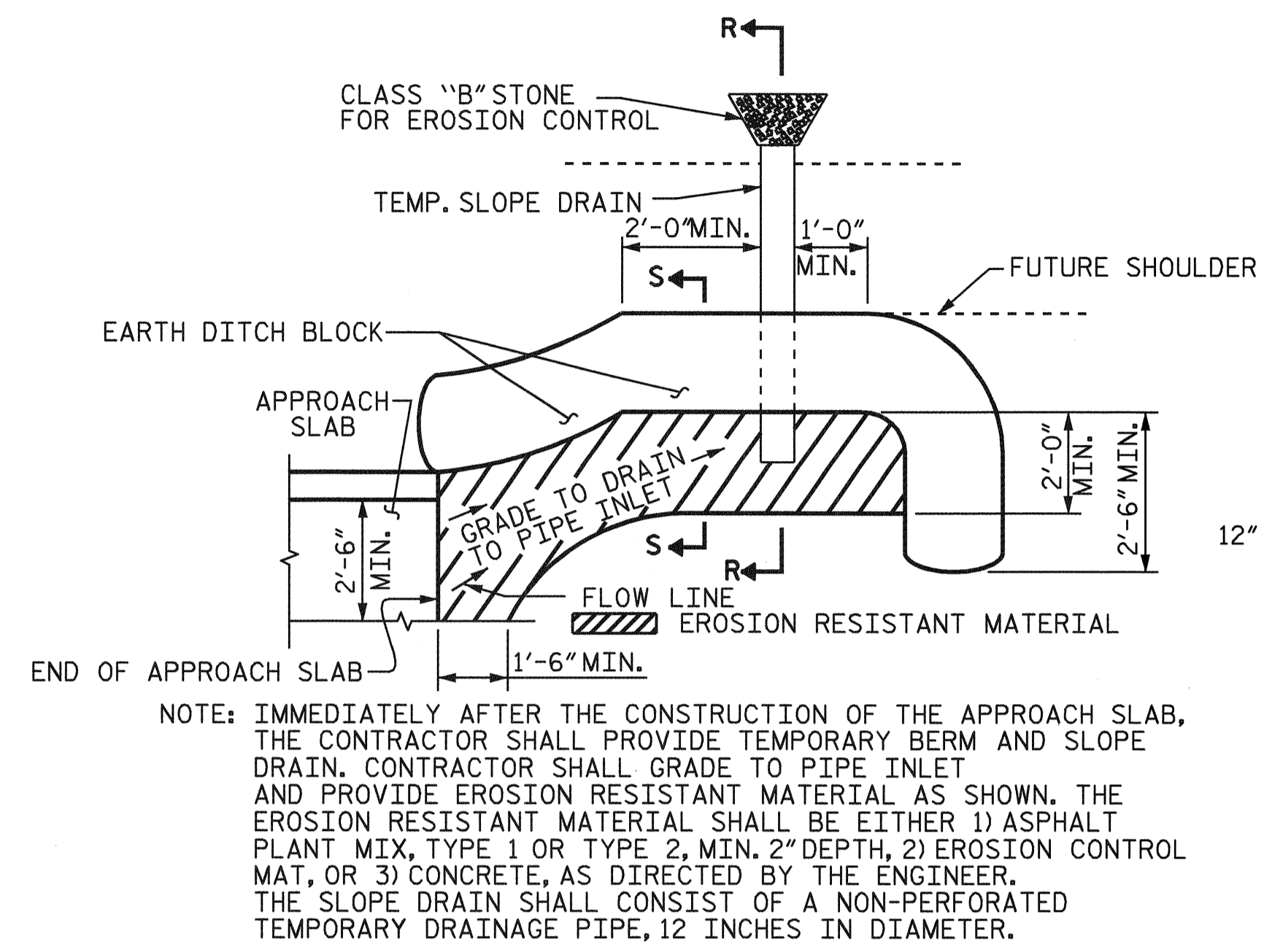
PROJECT NO. B-4000
ALAMANCE COUNTY
 STATION: 21+09.45 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA					
DEPARTMENT OF TRANSPORTATION					
RALEIGH					
BRIDGE APPROACH					
SLAB FOR					
PRESTRESSED CONCRETE					
BOX BEAM					
MAR.				1995	
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S-23
TOTAL SHEETS					24

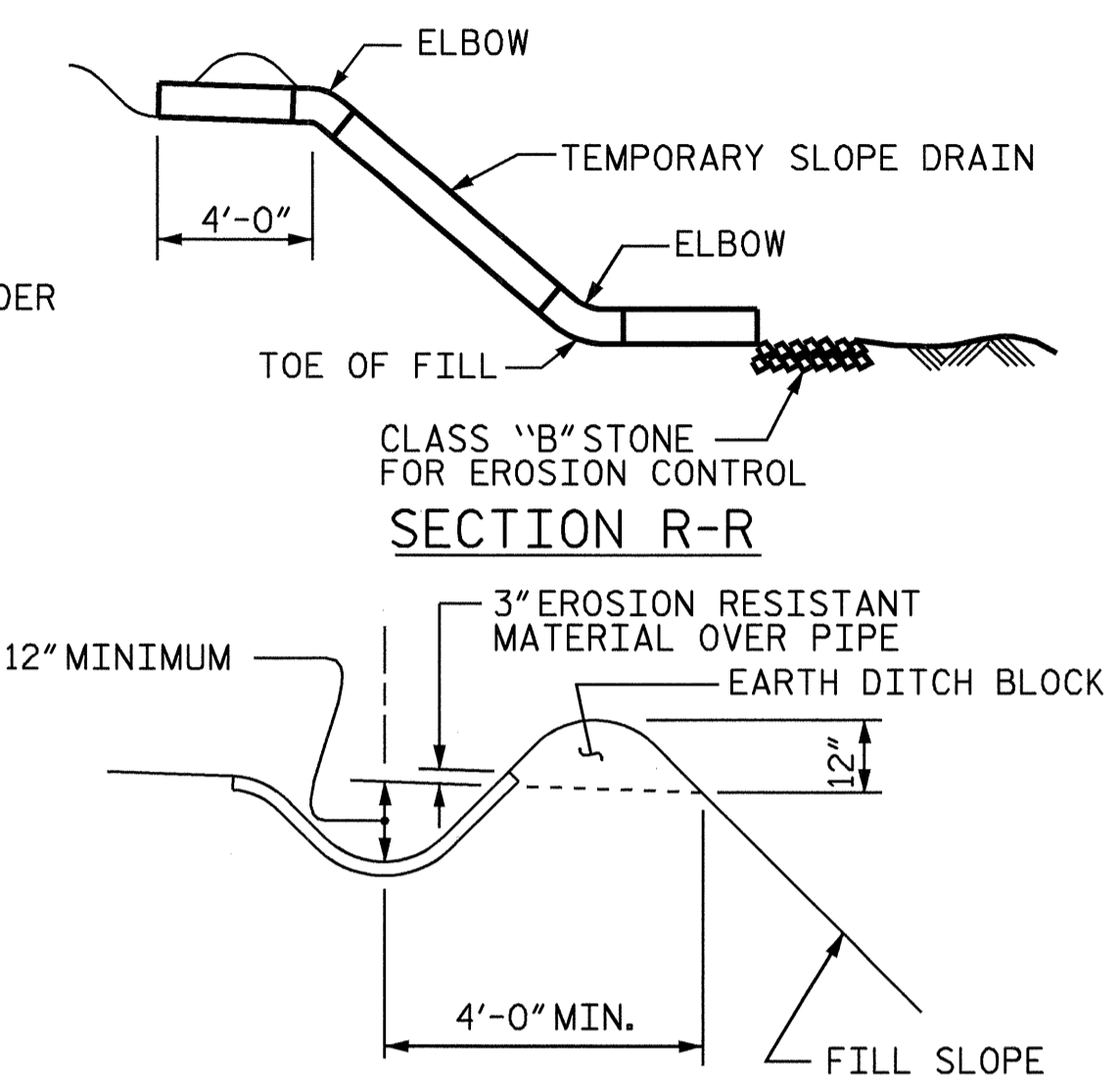


ASSEMBLED BY : A. V. ROYAL	DATE : 09/06
CHECKED BY : RGE/DEP	DATE : 01/07
DRAWN BY : EEM 3/95	REV. 10/17/00 RWW/LES
CHECKED BY : VAP 3/95	REV. 7/10/01 LES/RDR
	REV. 5/7/03R RWW/JTE



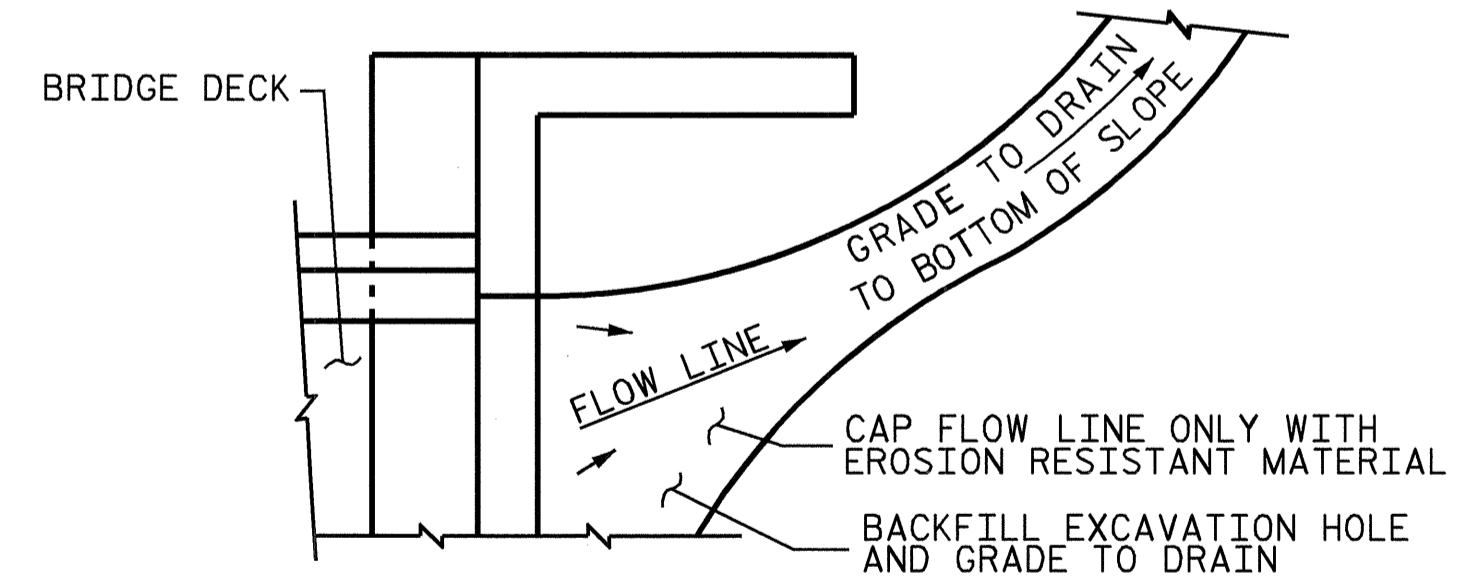
NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

PLAN VIEW



SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS
(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



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

NOTES:

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

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

THE 6" COMP. A.B.C. SHALL EXTEND 10'-0" BEYOND THE END OF THE APPROACH SLAB AND 1'-0" OUTSIDE OF EACH EDGE OF SLAB.

THE CONTRACTOR MAY USE 4" TYPE B-25.0B ASPHALT CONCRETE BASE COURSE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE BASE COURSE SHALL EXTEND 1'-0" BEYOND THE END OF THE APPROACH SLAB AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB.

THE CONTRACTOR MAY USE 5" CLASS "A" CONCRETE BASE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE CONCRETE BASE SHALL EXTEND 1'-0" BEYOND THE END OF THE APPROACH SLAB AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB. THE CONCRETE SHALL BE FINISHED TO A SMOOTH SURFACE AND A LAYER OF 30 LB ROOFING FELT SHALL BE PLACED BETWEEN THE CONCRETE BASE AND THE APPROACH SLAB TO PREVENT BOND. THE APPROACH SLAB SHALL NOT BE CAST UNTIL THE CONCRETE BASE HAS REACHED AN AGE OF THREE CURING DAYS.

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

THE JOINT AT THE END BENT SHALL BE SEALED AS SOON AS PRACTICAL AFTER THE CONSTRUCTION OF THE APPROACH SLAB.

APPROACH SLAB GROOVING IS NOT REQUIRED.

PROJECT NO. B-4000
ALAMANCE COUNTY
STATION: 21+09.45 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH
SLAB DETAILS



ASSEMBLED BY : A. V. ROYAL	DATE : 09/06
CHECKED BY : RGE/DEP	DATE : 01/07
DRAWN BY : FCJ 11/88	REV. 8/16/99 MAB/LES
CHECKED BY : ARB 11/88	REV. 10/17/00 RWW/LES
	REV. 5/7/03 RWW/JTE

1988					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S-24
TOTAL SHEETS					24

