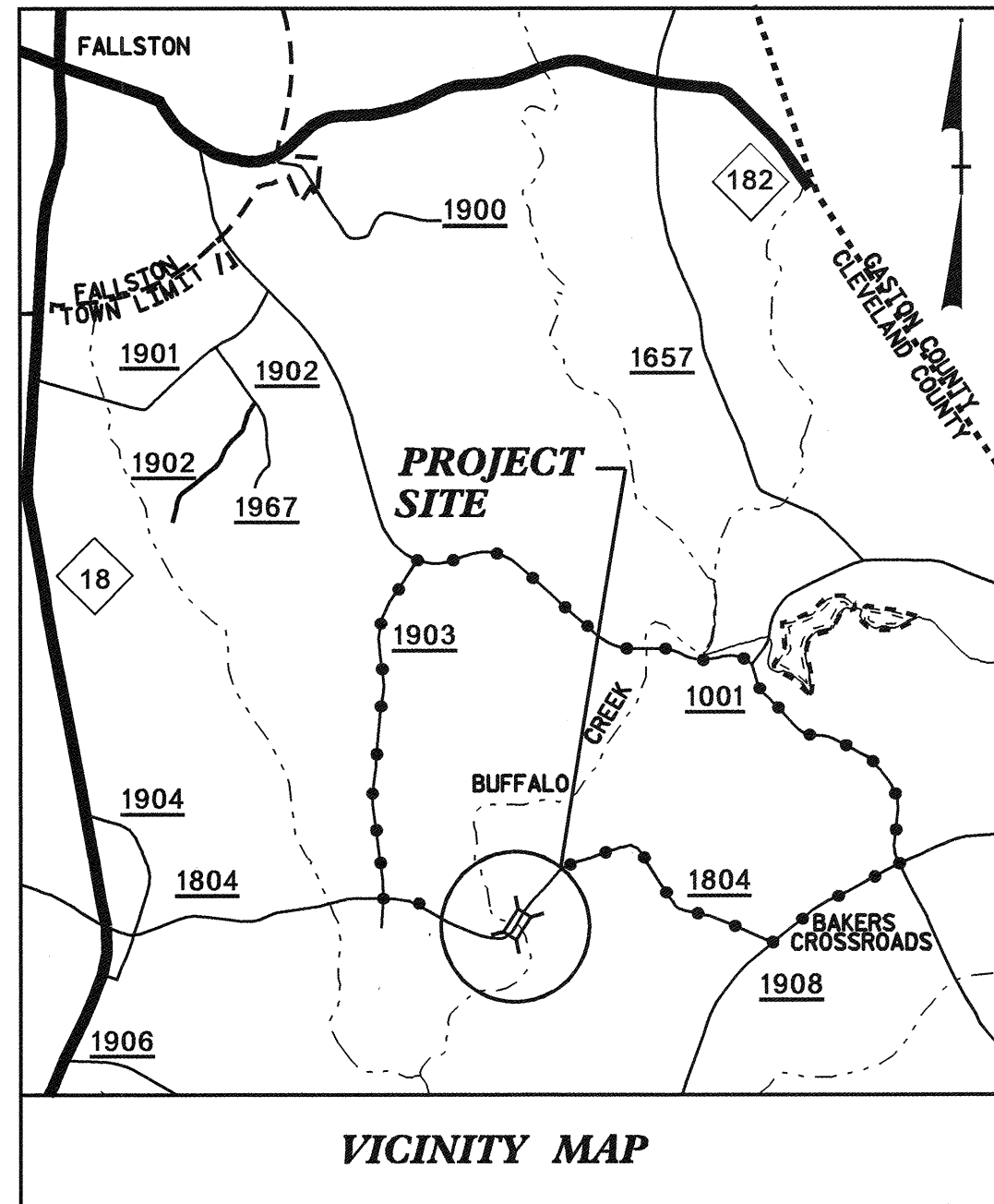


TIP PROJECT: B-4076

CONTRACT: C201497

STRUCTURE



DETOUR ROUTE

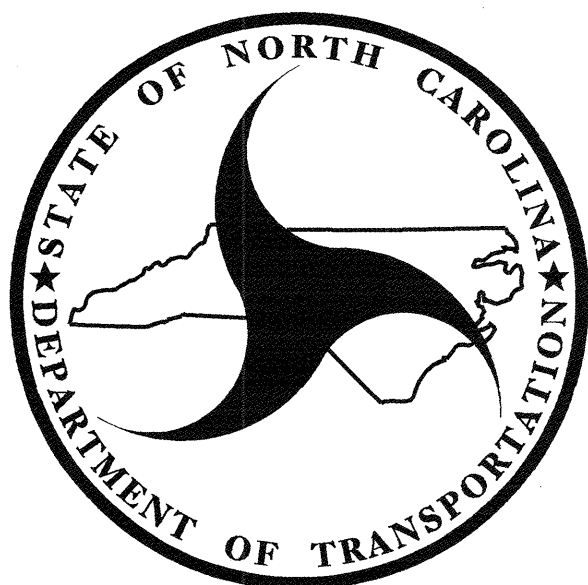
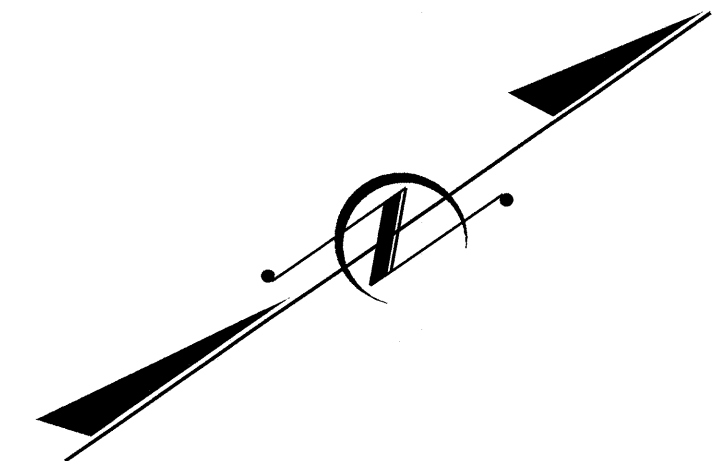
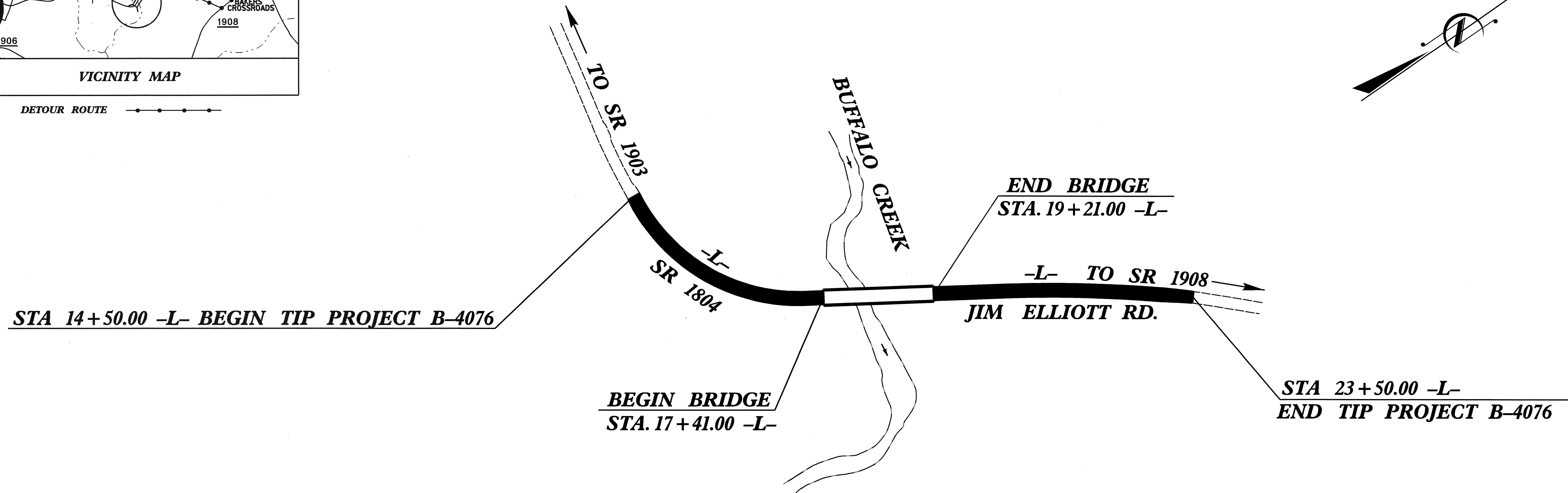
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CLEVELAND COUNTY

LOCATION: BRIDGE NO. 156 OVER BUFFALO CREEK
ON SR 1804 (JIM ELLIOTT RD.)

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.		
N.C.	B-4076		
STATE PROJ. NO.	P.A. PROJ. NO.	DESCRIPTION	
33438.1.1	BRZ-1804(1)	P.E.	
33438.2.1	BRZ-1804(1)	R/W & UTIL.	
33438.3.1	BRZ-1804(1)	CONST.	



DESIGN DATA
 ADT 2007 = 122
 ADT 2027 = 209
 DHV = 10 %
 D = 60 %
 T = 3 % *
 ** V 60 MPH
 * TTST 1% + DUAL 2%
 FUNC. CLASS = LOCAL
 ** DESIGN EXCEPTION REQ'D
 FOR DESIGN SPEED (30 MPH)

PROJECT LENGTH
 LENGTH ROADWAY TIP PROJECT B-4076 = 0.136 MI
 LENGTH STRUCTURE TIP PROJECT B-4076 = 0.034 MI
 TOTAL LENGTH TIP PROJECT B-4076 = 0.170 MI
 2006 STANDARDS SPECIFICATION

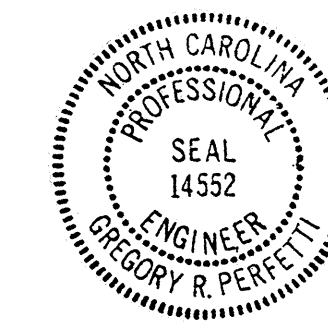
LETTING DATE:
APRIL 17, 2007

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

T. J. BEACH, P. E.
PROJECT DESIGN ENGINEER

STRUCTURE DESIGN UNIT

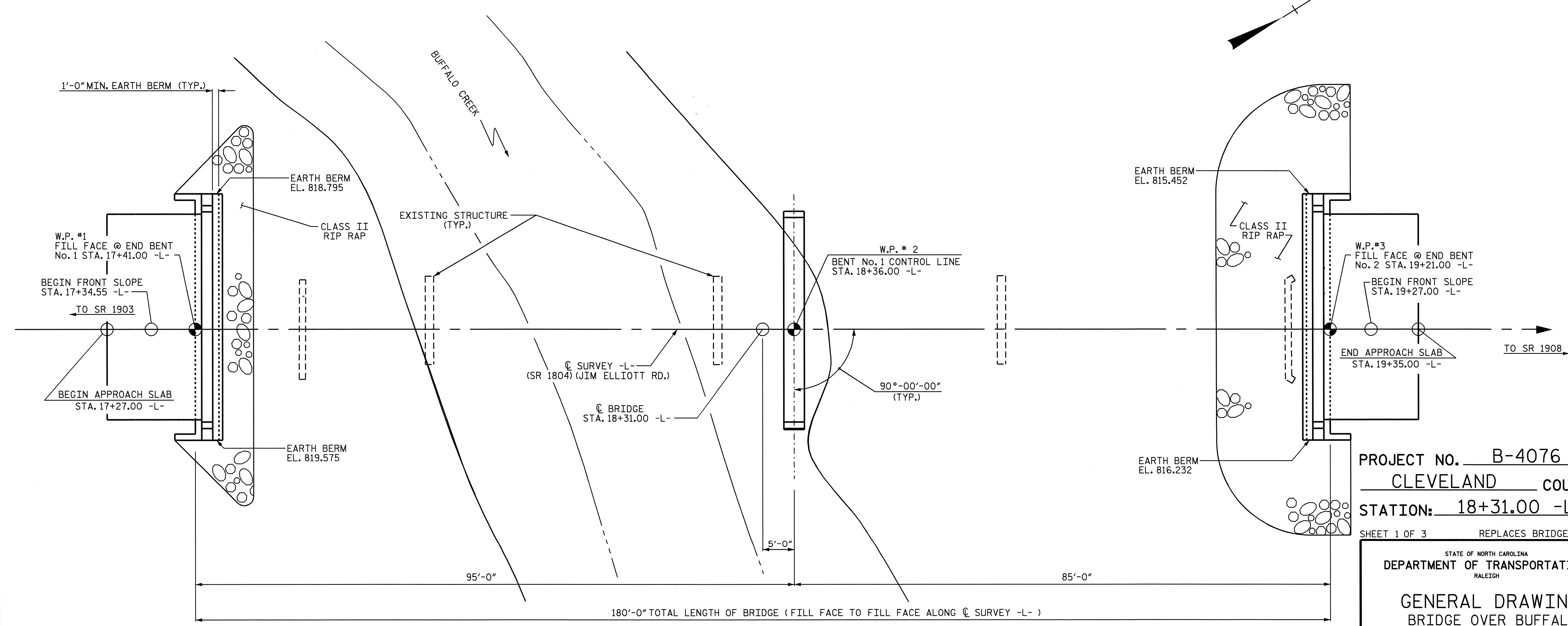
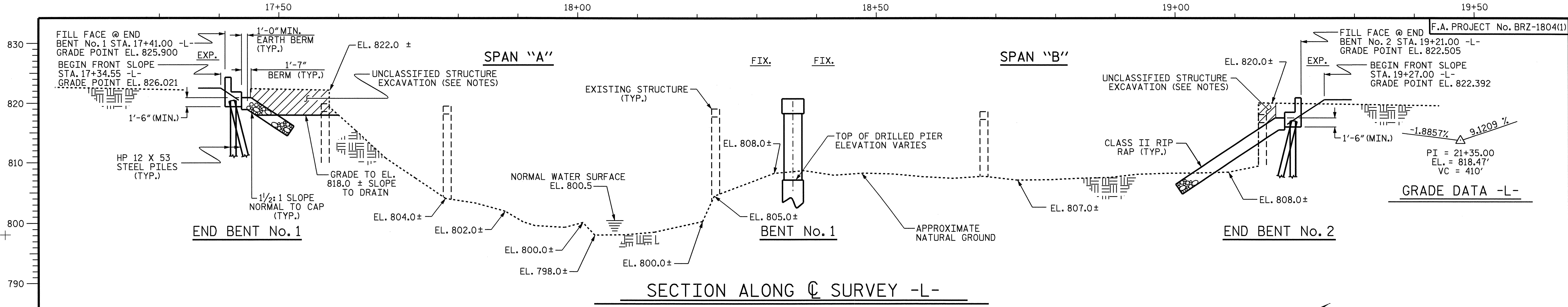


Gregory R. Perrett
3.2.07

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE HIGHWAY ENGINEER - DESIGN
DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

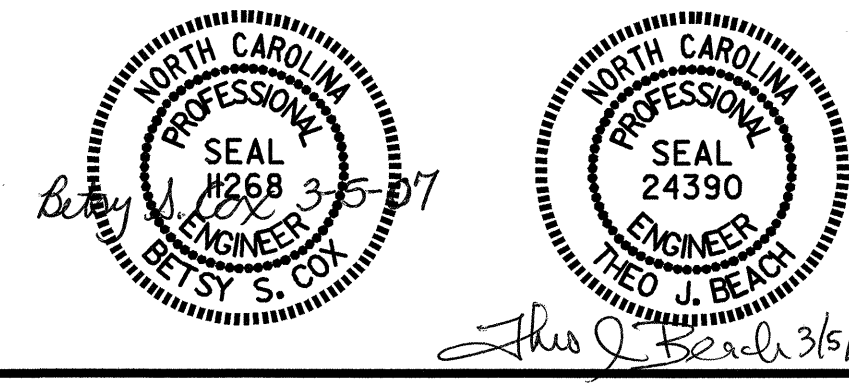
APPROVED FOR
DIVISION ADMINISTRATOR DATE



DRAWN BY : S.B. WILLIAMS DATE : 12-8-06
 CHECKED BY : J. J. BEACH DATE : 12-20-06

05-MAR-2007 13:30
 RA:\Structures\B4076\General\Drawing\B-4076.ed.GD.dgn
 sbwilliams

PLAN
 (FOR CLARITY, PILES AND DRILLED PIERS NOT SHOWN IN PLAN VIEW)



PROJECT NO. B-4076
 CLEVELAND COUNTY
 STATION: 18+31.00 -L-
 SHEET 1 OF 3 REPLACES BRIDGE No. 156

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

NOTES :

ASSUMED LIVE LOAD = HS 20 OR ALTERNATE LOADING, EXCEPT THAT BOX BEAM UNITS 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 4 SPANS OF 1 @ 20'-6 1/2"; 2 @ 44'-9"; 1 @ 45'-9" WITH TIMBER DECK WITH AWS ON I-BEAMS AND CHANNELS WITH A CLEAR ROADWAY WIDTH OF 11.1' ON STEEL CAPS AND STEEL PILES AT END BENT NO. 1 AND BENTS; AND ABUTMENT NO. 2 WITH YOUNT MASONRY 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 DURING CONSTRUCTION OF THE PROPOSED STRUCTURE, 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 25 FT. LEFT AND 21 FT. RIGHT OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION.

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

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 18+31.00 -L-".

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

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 DRILLED PIERS AT BENT No. 1 ARE DESIGNED FOR BOTH SKIN FRICTION AND END BEARING. CHECK FIELD CONDITIONS FOR THE REQUIRED END BEARING CAPACITY OF 14 TSF.

DRILLED PIERS AT BENT No. 1 ARE DESIGNED FOR AN APPLIED LOAD OF 350 TONS EACH AT THE TOP OF THE COLUMN.

PERMANENT STEEL CASING IS NOT REQUIRED FOR DRILLED PIERS AT BENT No. 1

DRILLED PIERS AT BENT No. 1 SHALL EXTEND TO AN ELEVATION NO HIGHER THAN 789.2 FT. AND SATISFY THE REQUIRED END BEARING CAPACITY.

FOR DRILLED PIERS, SEE DRILLED PIERS SPECIAL PROVISION.

SPT TESTING IS REQUIRED TO DETERMINE THE END BEARING CAPACITY OF THE DRILLED PIERS AT BENT No. 1. SEE DRILLED PIERS SPECIAL PROVISION.

DO NOT USE SLURRY CONSTRUCTION FOR THIS PROJECT.

SID INSPECTIONS ARE REQUIRED TO INSPECT THE BOTTOM CLEANLINESS OF THE DRILLED PIERS AT BENT No. 1. 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.

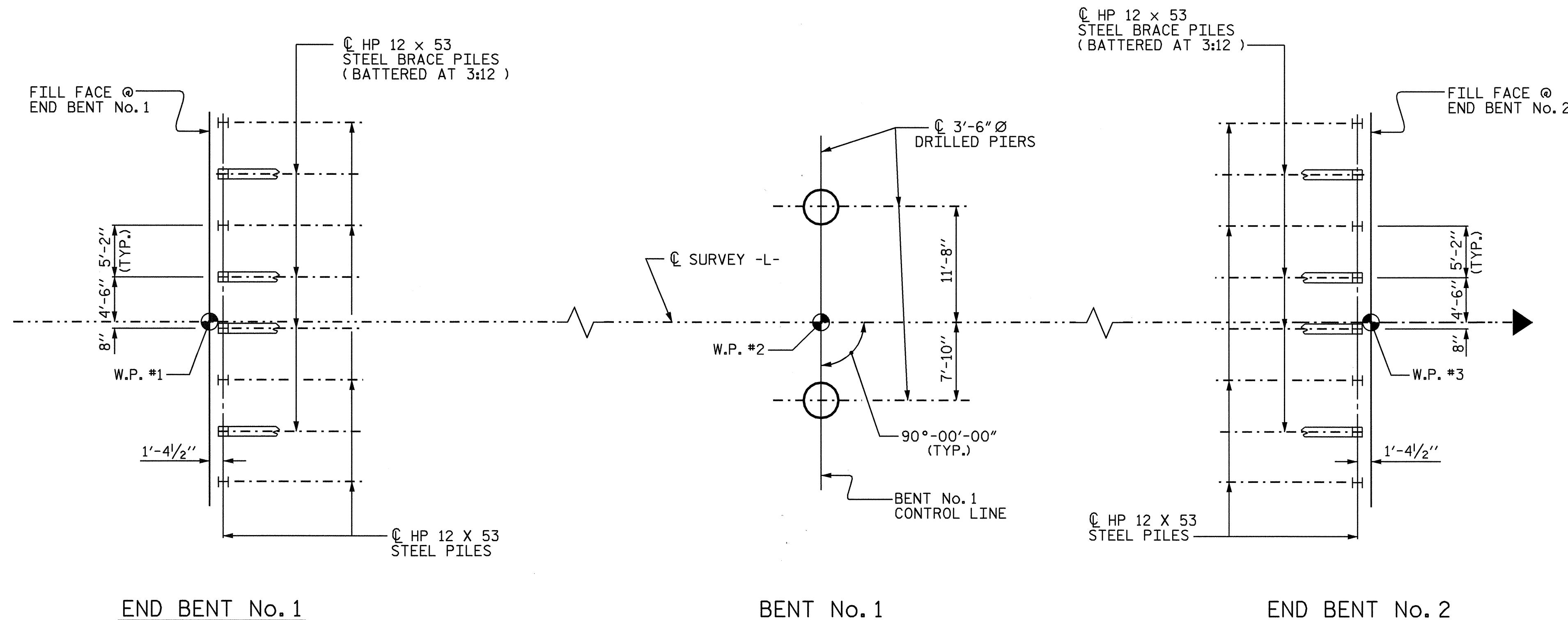
THE SCOUR CRITICAL ELEVATION FOR BENT No. 1 IS 794.0 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

DRIVE PILES AT END BENT No. 1 AND END BENT No. 2 TO A REQUIRED BEARING CAPACITY OF 150 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 BENT No. 1 AND END BENT No. 2 IS 75 TONS PER PILE.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 30,000 TO 40,000 FT.-LBS. PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT No. 1 AND No. 2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM ARTICLE 450-5 OF THE STANDARD SPECIFICATIONS.

FOR VERTICAL CONCRETE BARRIER RAIL, SEE SPECIAL PROVISIONS.



FOUNDATION LAYOUT

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

PROJECT NO. B-4076
CLEVELAND COUNTY
 STATION: 18+31.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

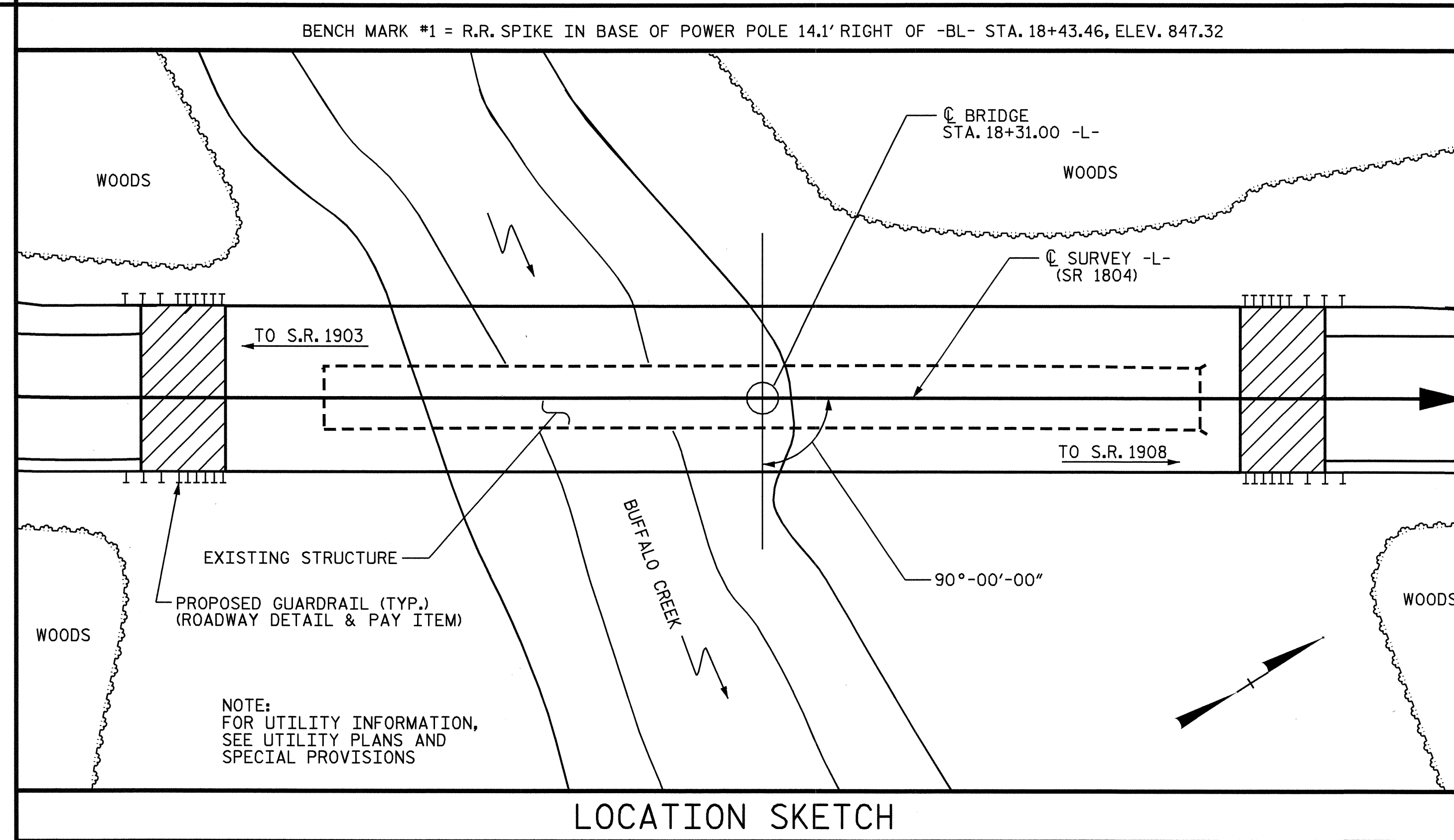
GENERAL DRAWING
 BRIDGE OVER BUFFALO
 CREEK ON SR 1804 BETWEEN
 SR 1903 AND SR 1908



DRAWN BY : S. B. WILLIAMS DATE : 12-11-06
 CHECKED BY : T. J. BEACH DATE : 12-20-06

05-MAR-2007 08:19
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
1			3			TOTAL SHEETS
2			4			22



HYDRAULIC DATA

DESIGN DISCHARGE	= 5900 C.F.S.
FREQUENCY OF DESIGN FLOOD	= 50 YR.
DESIGN HIGH WATER ELEVATION	= 810.64
DRAINAGE AREA	= 36.3 SQ. MI.
BASIC DISCHARGE (Q100)	= 7000 C.F.S.
BASIC HIGH WATER ELEVATION	= 811.32

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	= 20,200 C.F.S.
FREQUENCY OF OVERTOPPING FLOOD	= 500 YR. +
OVERTOPPING FLOOD ELEVATION	= 821.67

TOTAL BILL OF MATERIAL

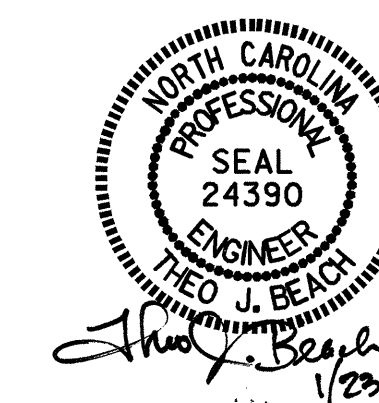
	REMOVAL OF EXISTING STRUCTURE	3'-6" Ø DRILLED PIERS IN SOIL	3'-6" Ø DRILLED PIERS NOT IN SOIL	SID INSPECTION	SPT TESTING	CROSSHOLE SONIC LOGGING	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	HP 12 x 53 STEEL PILES		VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 3'-3" PRESTRESSED CONCRETE BOX BEAMS		
	LUMP SUM	LIN. FT.	LIN. FT.	EACH	EACH	EACH	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	LBS.	No.	LIN. FT.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	No.	LIN. FT.	
SUPERSTRUCTURE							LUMP SUM		LUMP SUM					355.50				LUMP SUM	22	1,953.88
END BENT No. 1								16.8		2,978		8	120		44	49				
BENT No. 1		23.0	14.0	2	2	1		23.5		6,757	1,213				196	218				
END BENT No. 2								16.7		2,978		8	320							
TOTAL	LUMP SUM	23.0	14.0	2	2	1	LUMP SUM	57.0	LUMP SUM	12,713	1,213	16	440	355.50	240	267	LUMP SUM	22	1,953.88	

PROJECT NO. B-4076
CLEVELAND COUNTY
 STATION: 18+31.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 BRIDGE OVER BUFFALO
 CREEK ON SR 1804 BETWEEN
 SR 1903 AND SR 1908



DRAWN BY : S. B. WILLIAMS DATE : 12-8-06
 CHECKED BY : T. J. BEACH DATE : 12-20-06

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

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 2" Ø BACKER ROD SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS. THE JOINT AT THE INTERIOR BENT SHALL BE FILLED WITH GROUT.

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 4600 PSI FOR SPAN A AND 4000 PSI FOR SPAN B.

ALL REINFORCING STEEL IN BARRIER RAIL SHALL BE EPOXY COATED.

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

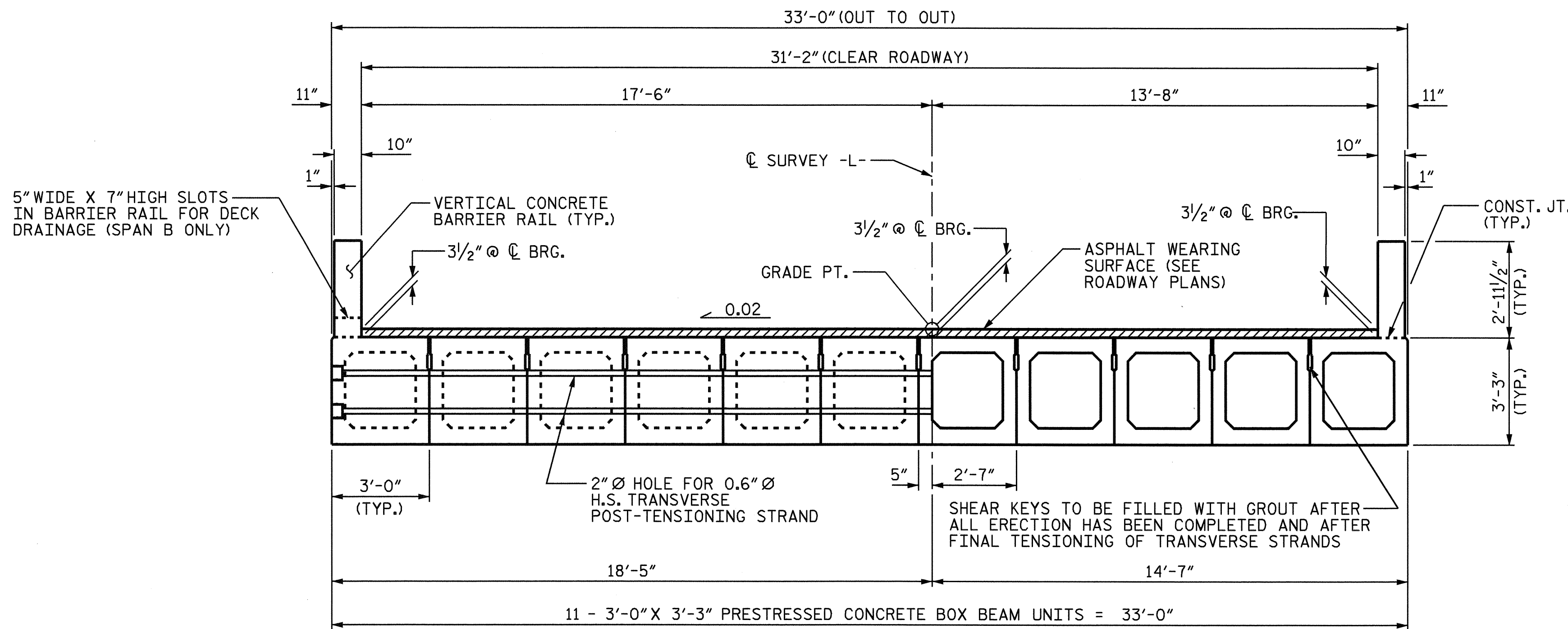
APPLY EPOXY PROTECTIVE COATING TO BOX BEAM UNIT ENDS.

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

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT A SPACING OF 8 FT. TO 10 FT. BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINTS WILL BE REQUIRED FOR SEGMENTS LESS THAN 10 FEET IN LENGTH.

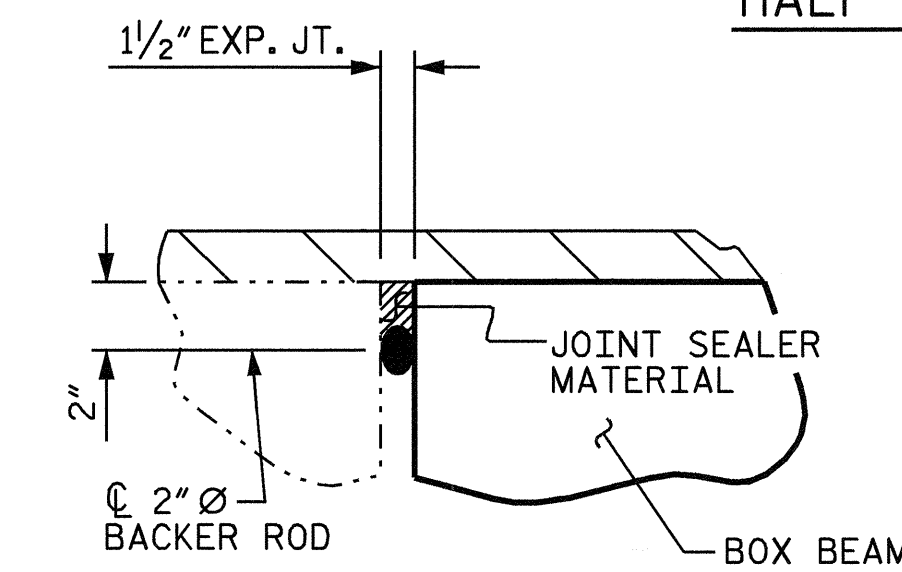
ELASTOMERIC BEARING PADS SHALL BE 60 DUROMETER HARDNESS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

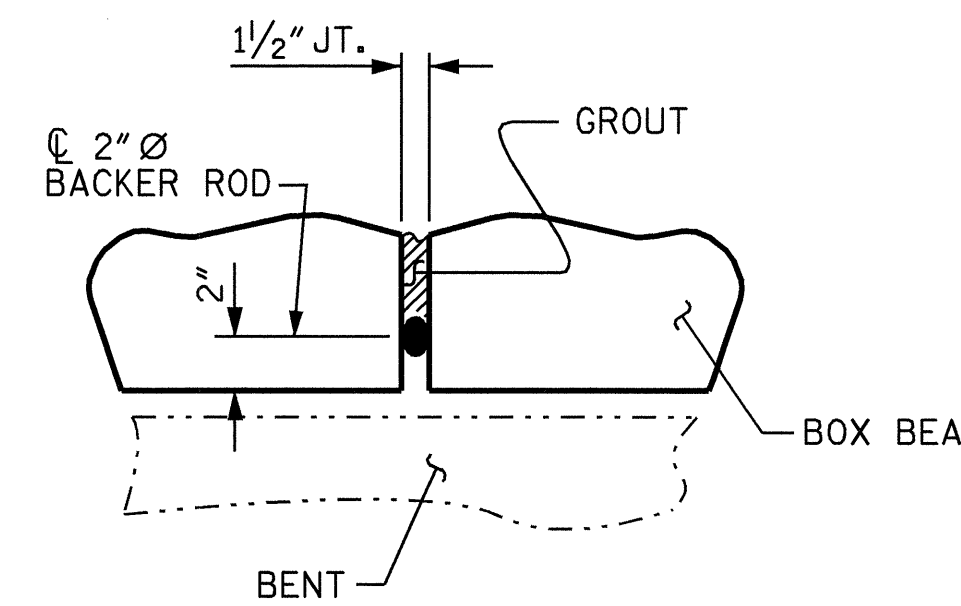


HALF SECTION @ INTERMEDIATE DIAPHRAGMS HALF SECTION @ VOIDS

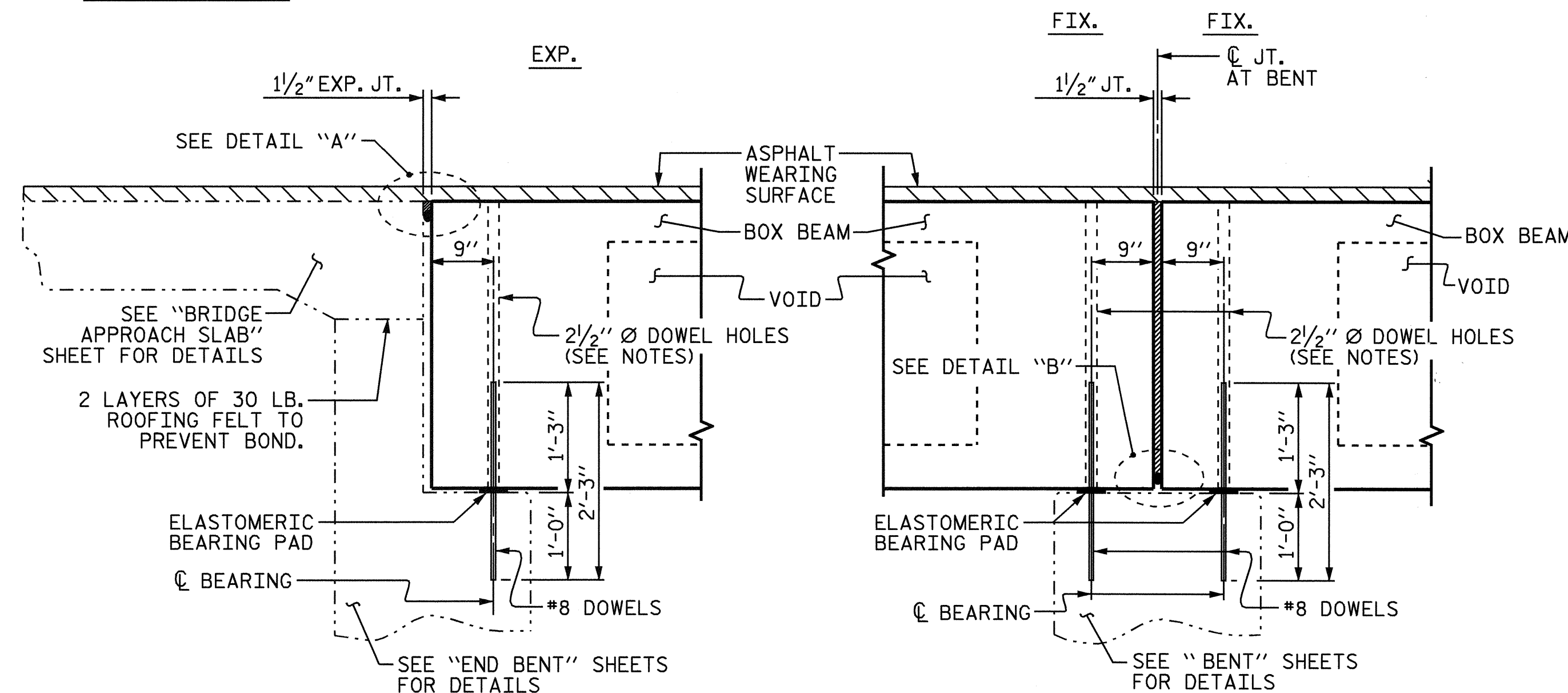
TYPICAL SECTION



DETAIL "A"

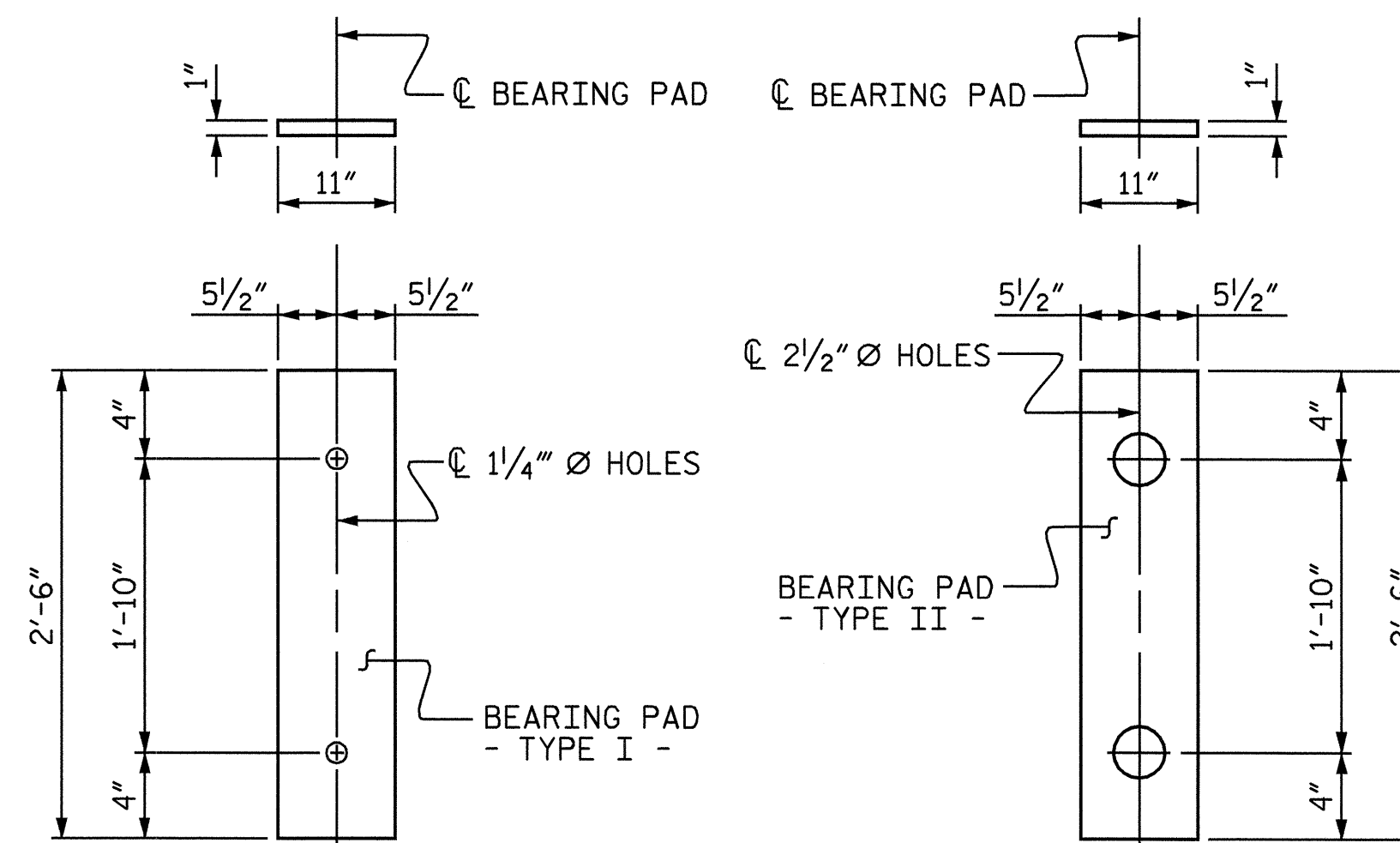


DETAIL "B"



SECTION AT END BENT

SECTION AT BENT



FIXED END
(TYPE I - 22 REQ'D)

EXPANSION END
(TYPE II - 22 REQ'D)

ELASTOMERIC BEARING DETAILS

BEARING PAD SHALL BE 60 DUROMETER HARDNESS

PROJECT NO. B-4076
CLEVELAND COUNTY
 STATION: 18+31.00 -L-

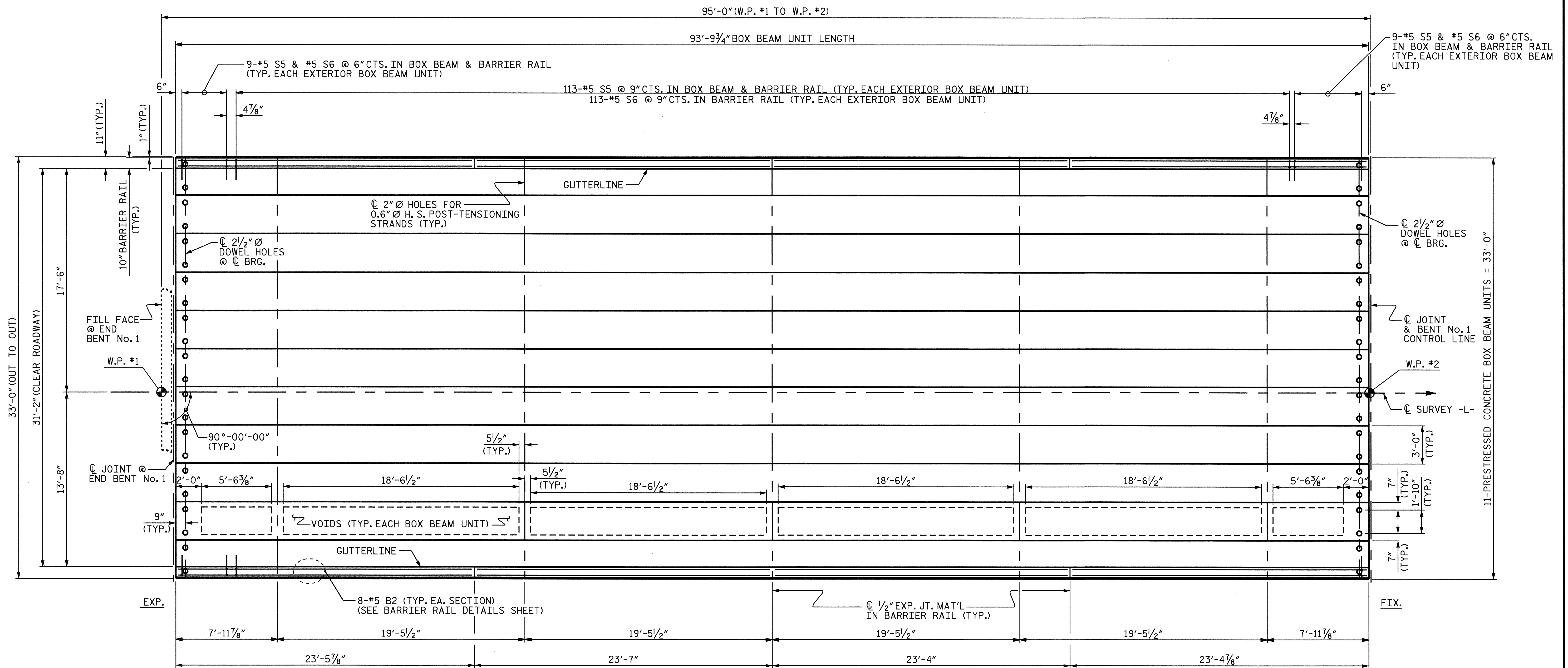
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
STANDARD
3'-0" X 3'-3"
PRESTRESSED CONCRETE
BOX BEAM UNIT

THEO J. BEACH
 3/5/07

ASSEMBLED BY : A. K. PATEL/NAP DATE : 11/29/06
 CHECKED BY : J. M. BRITT DATE : 9/05

05-MAR-2007 07:59
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS
2			4			22

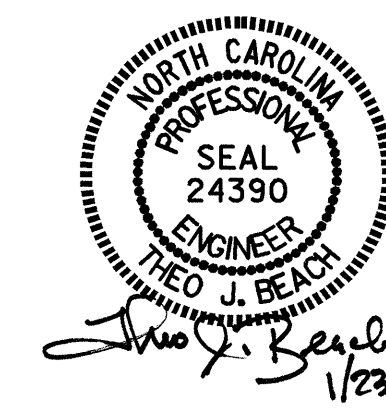


PLAN OF SPAN A

PROJECT NO. B-4076
CLEVELAND COUNTY
 STATION: 18+31.00 -L-

DRAWN BY : A. K. PATEL/NAP DATE : 11/29/06
 CHECKED BY : J. M. BRITT DATE : 9/05

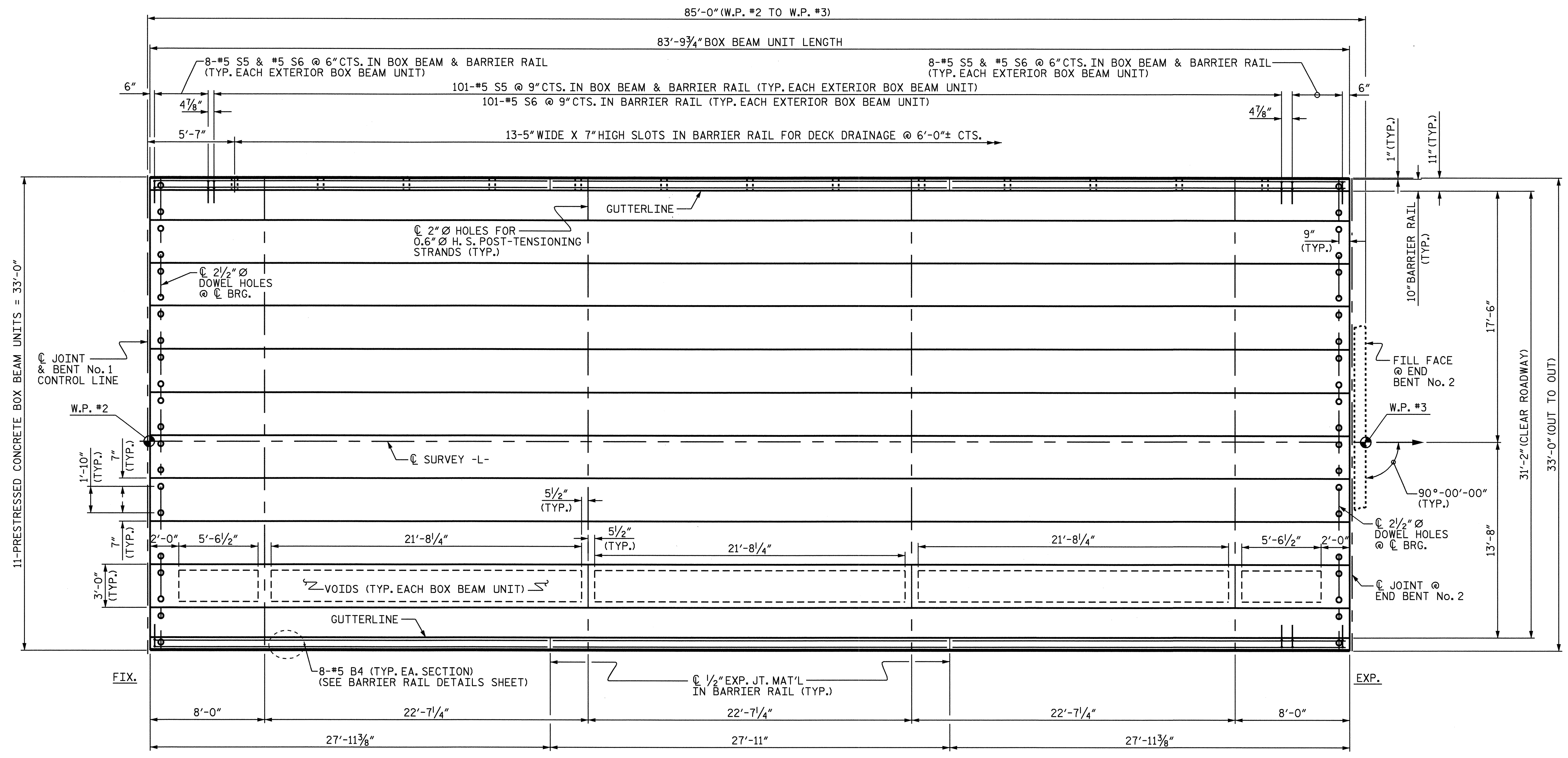
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 sbwilliams



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

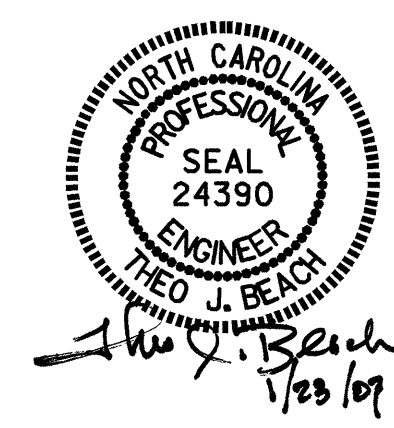
SUPERSTRUCTURE
 PLAN OF SPAN A

REVISIONS						SHEET NO. S-5
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 22
2			4			



PLAN OF SPAN B

PROJECT NO. B-4076
 CLEVELAND COUNTY
 STATION: 18+31.00 -L-



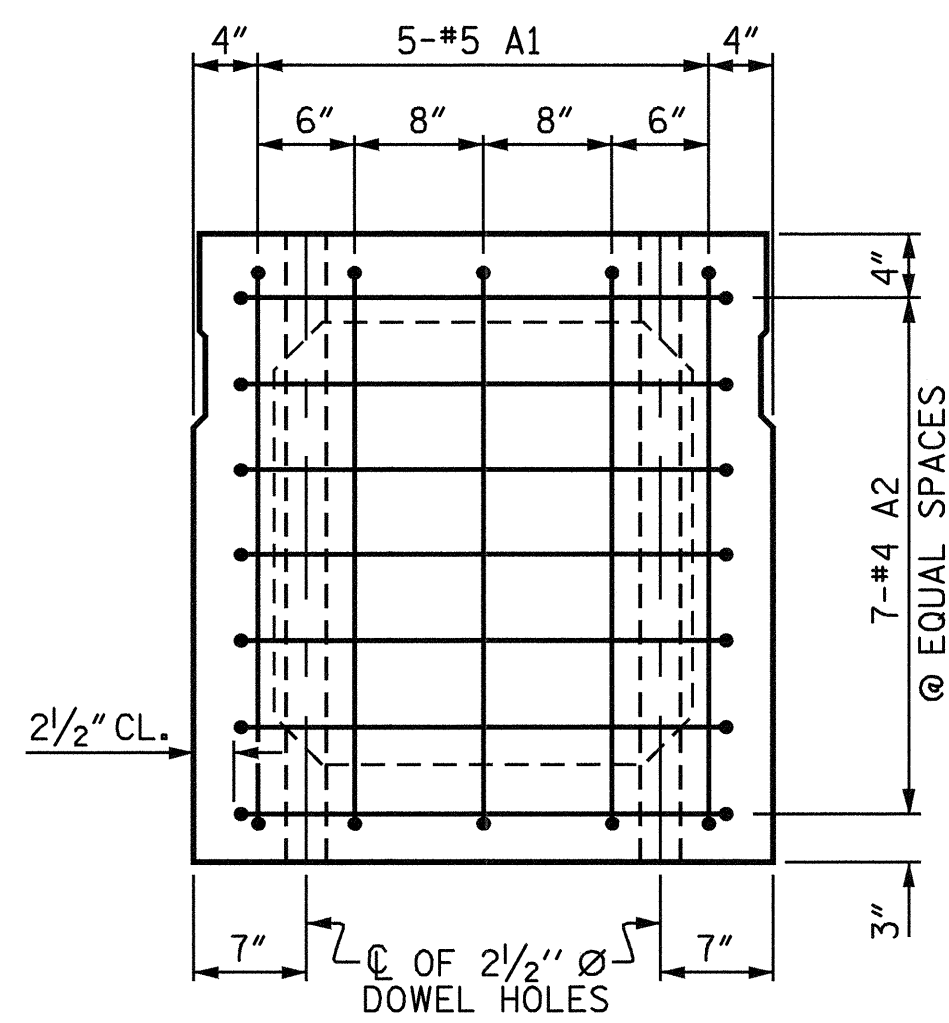
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 PLAN OF SPAN B

REVISIONS						SHEET NO. S-6
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 22
2			4			

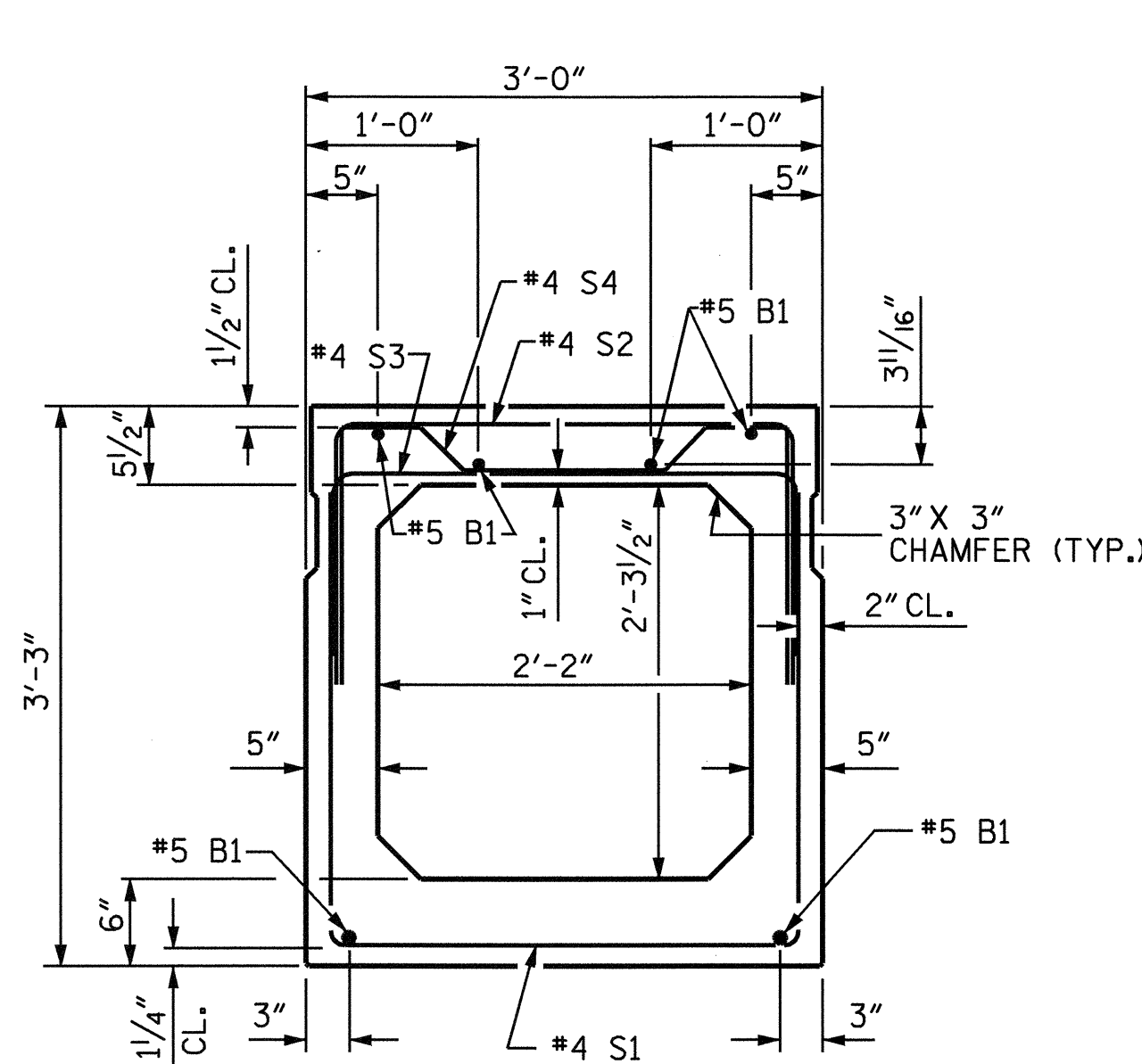
DRAWN BY: A. K. PATEL/NAP DATE: 11/29/06
 CHECKED BY: J. M. BRITT DATE: 9/05

22-JAN-2007 12:15
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 sbwilliams



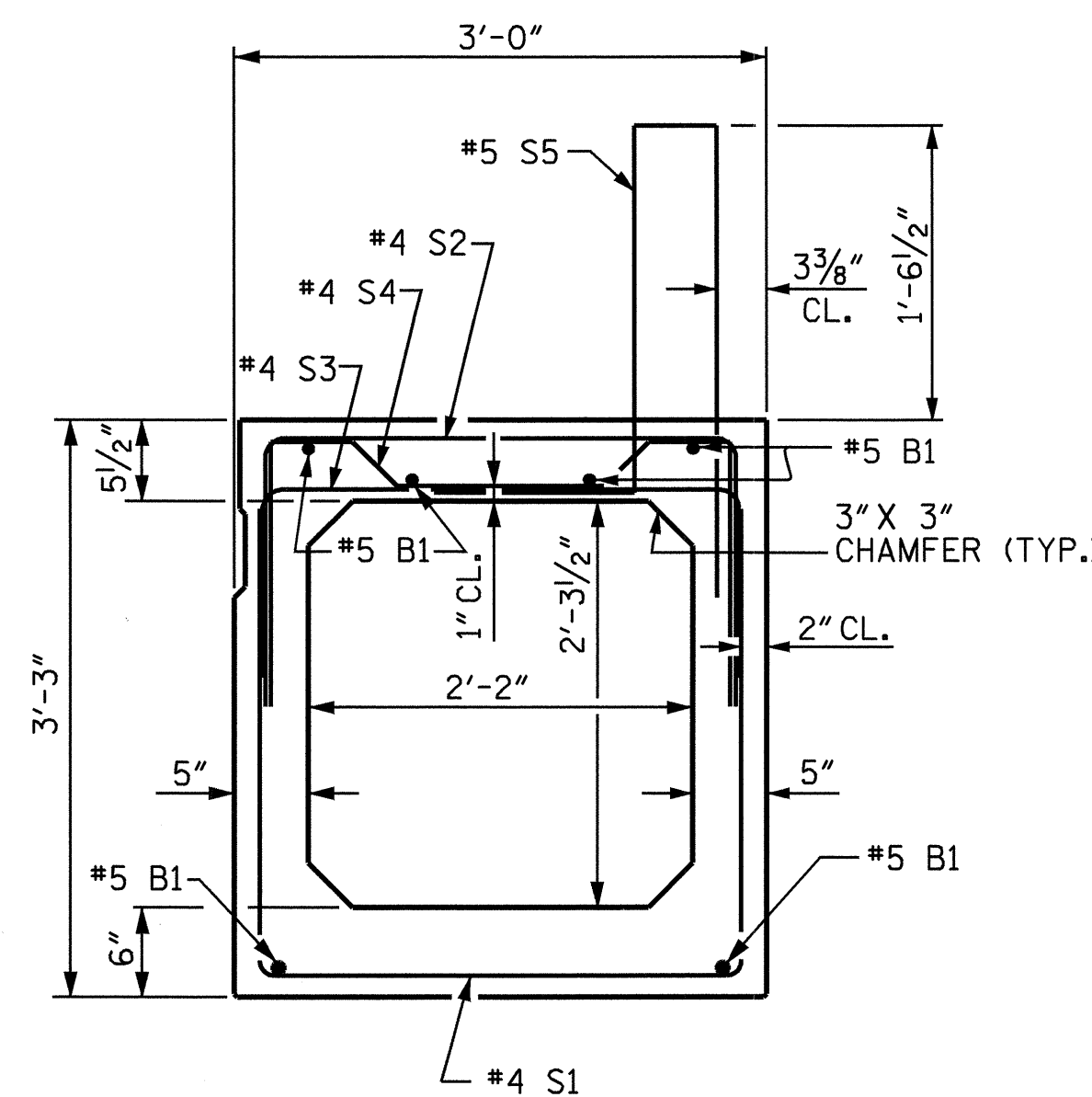
END ELEVATION

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.)



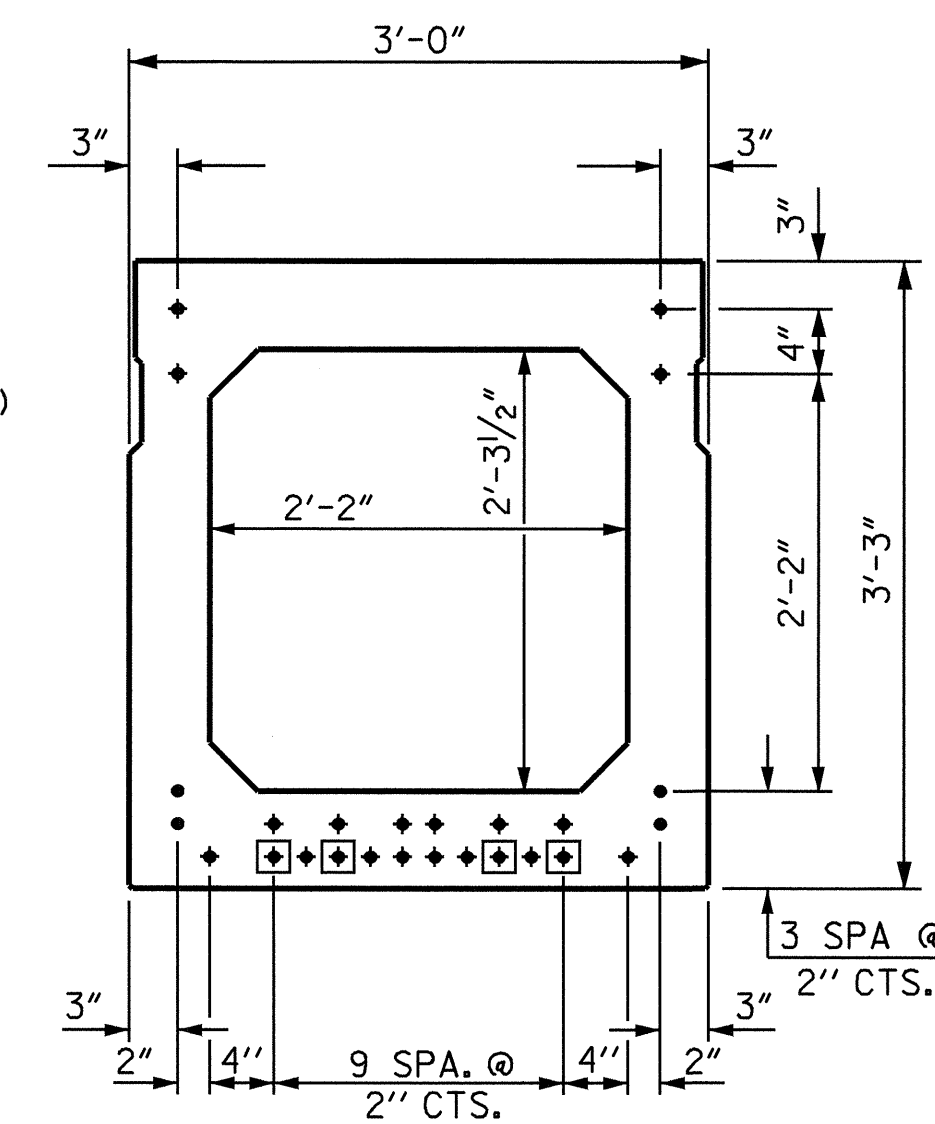
INTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)



EXTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)



TYPICAL STRAND LOCATION

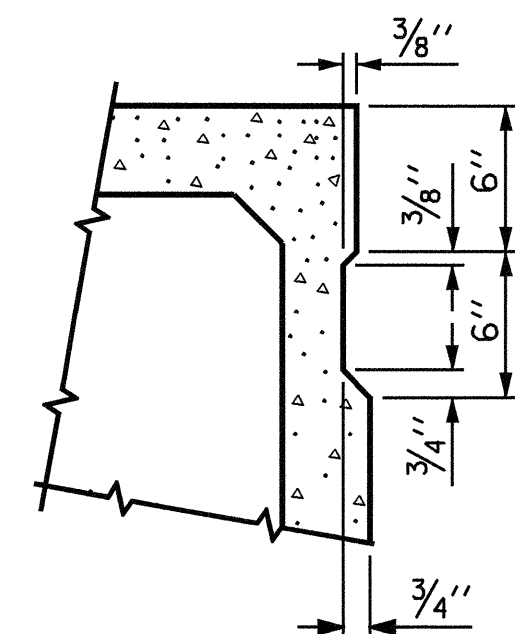
(26 STRANDS REQUIRED)

(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

0.6" Ø LOW RELAXATION STRAND LAYOUT

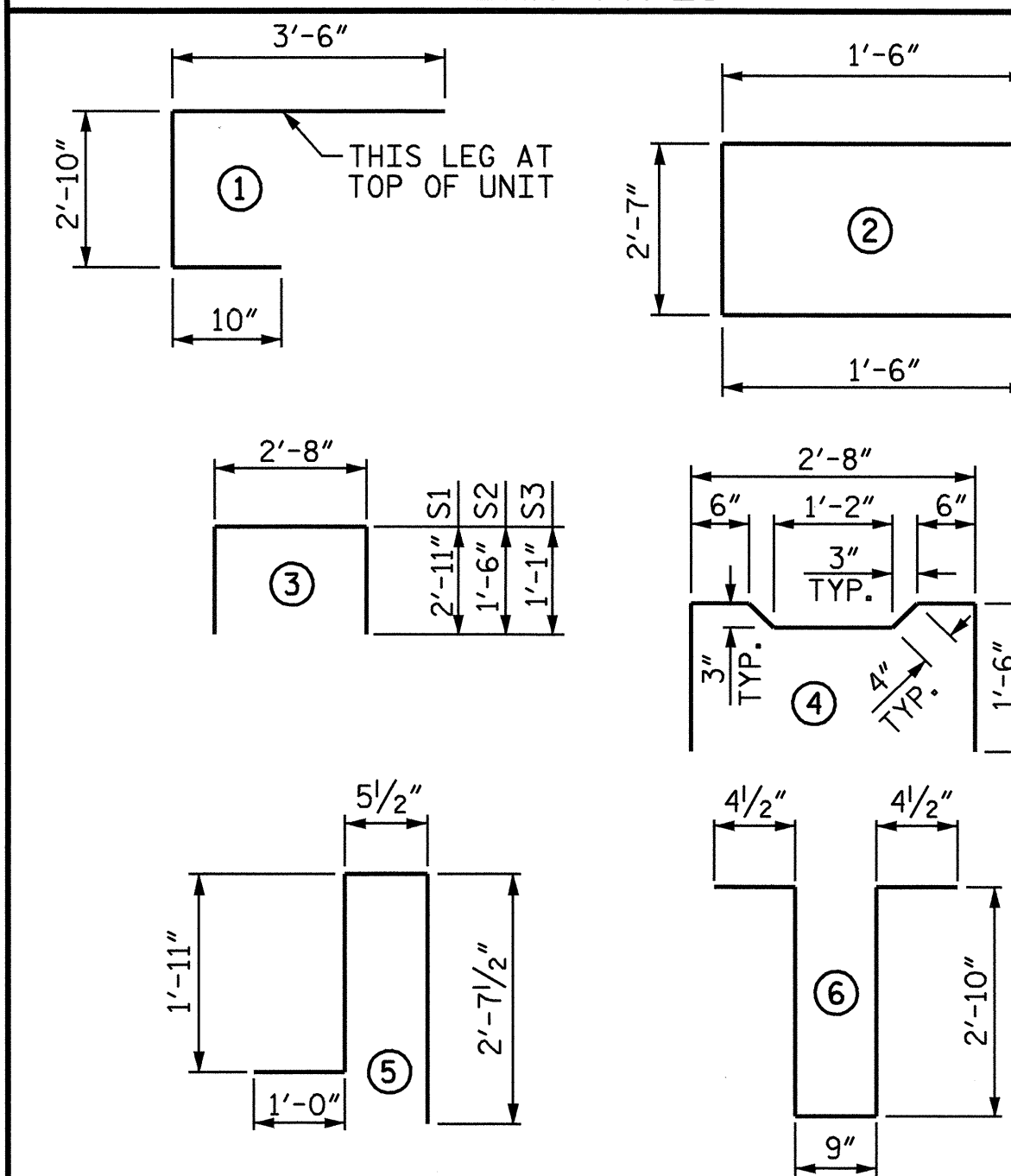


SHEAR KEY DETAIL

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

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

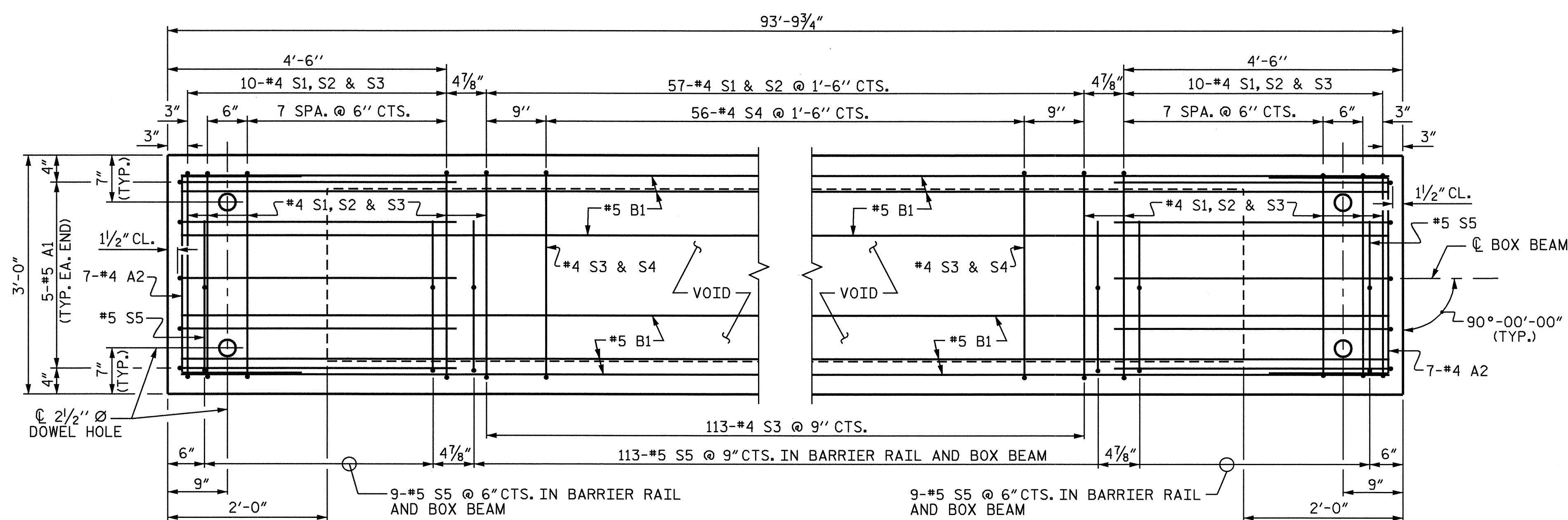
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR ONE BOX BEAM SECTION

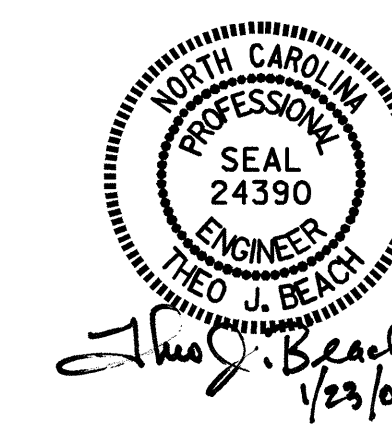
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
A1	10	#5	1	7'-2"	75	7'-2"	75
A2	44	#4	2	5'-7"	164	5'-7"	164
B1	12	#5	STR	48'-0"	601	48'-0"	601
K1	15	#4	6	7'-2"	72	7'-2"	72
K2	10	#4	STR	2'-7"	17	2'-7"	17
S1	77	#4	3	8'-6"	437	8'-6"	437
S2	77	#4	3	5'-8"	291	5'-8"	291
S3	133	#4	3	4'-10"	429	4'-10"	429
S4	56	#4	4	5'-10"	218	5'-10"	218
*S5	131	#5	5	6'-0"	820	--	--
REINFORCING STEEL				2304	LBS.	2304	LBS.
*EPOXY COATED REINF. STEEL				820	LBS.		
5800 P.S.I. CONCRETE				18.4	CU. YDS.	18.3	CU. YDS.
0.6" Ø L.R. STRANDS				No.	26		26



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.

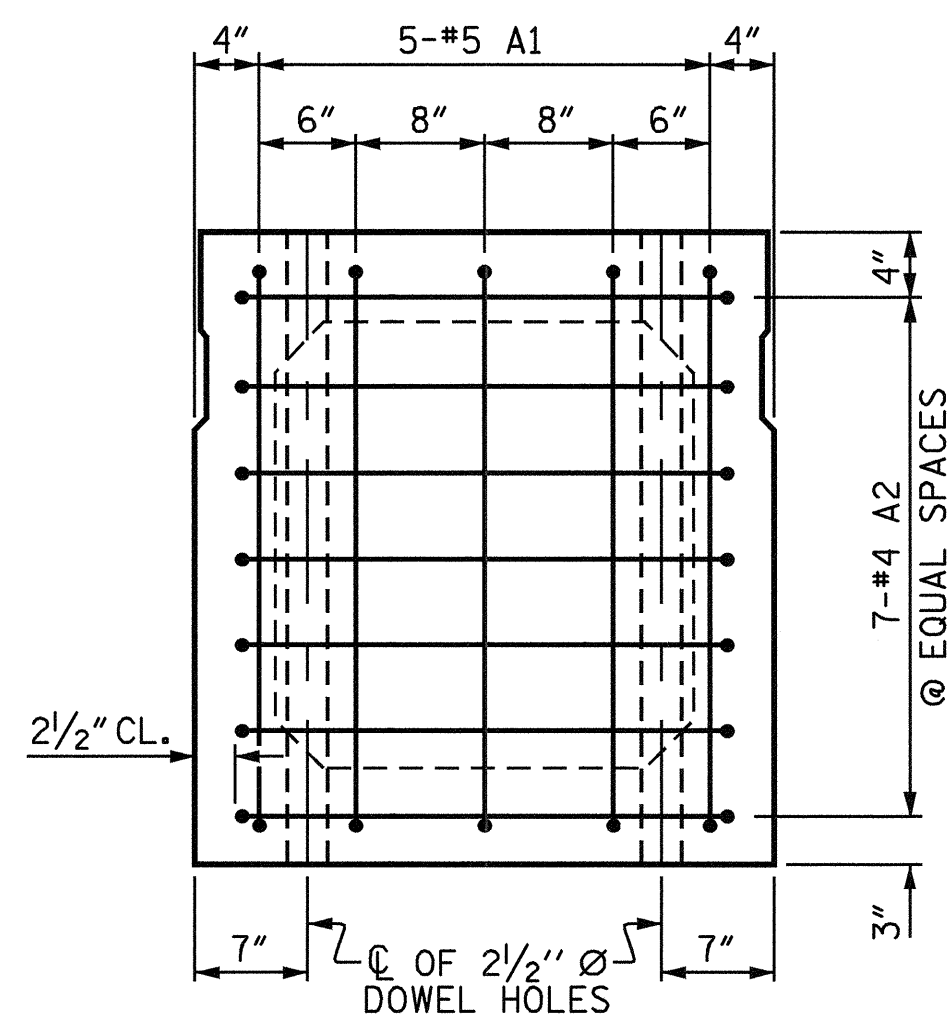
PROJECT NO. B-4076
CLEVELAND COUNTY
 STATION: 18+31.00 -L-



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

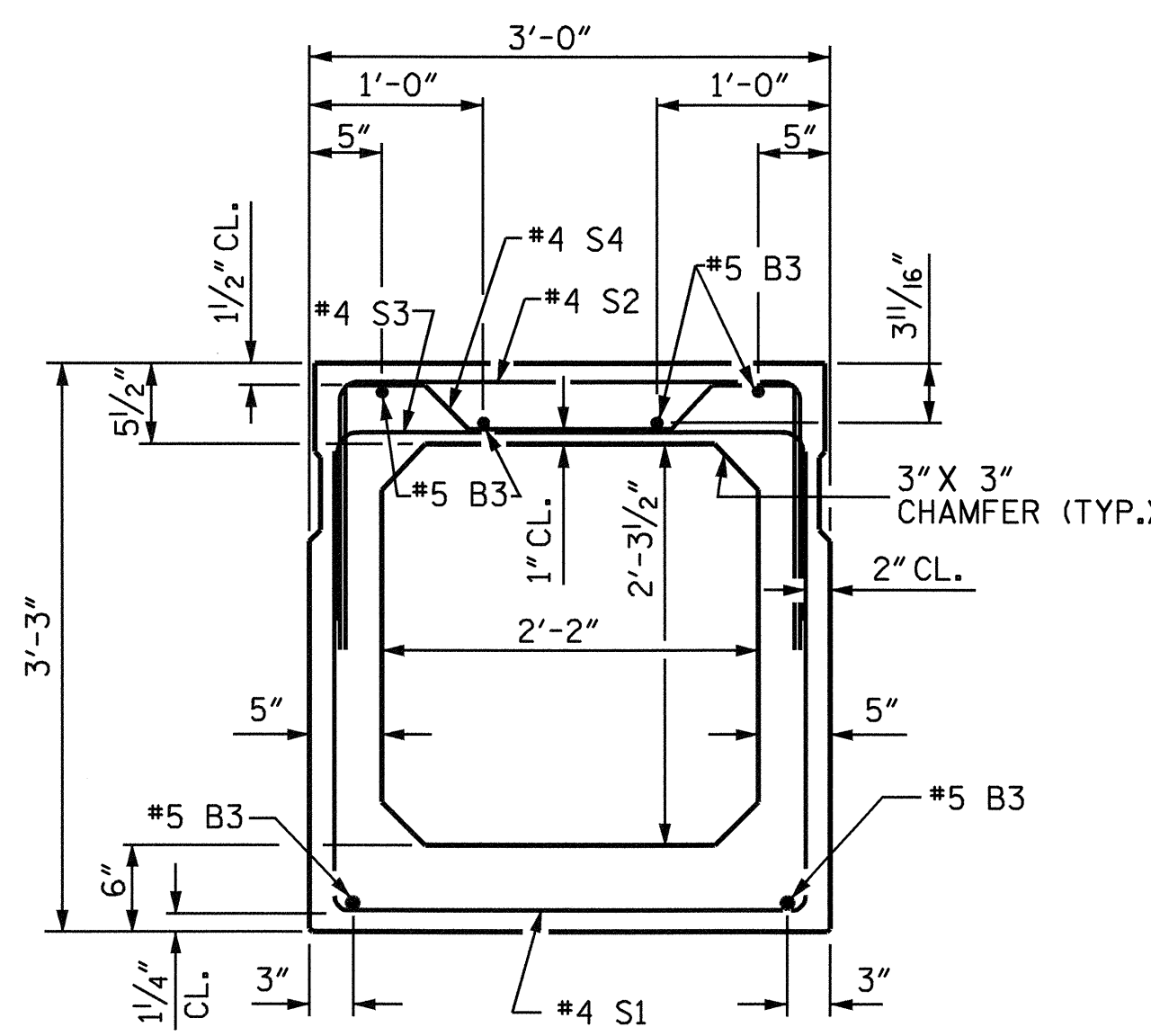
REVISIONS						SHEET NO. S-7
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 22
2			4			

ASSEMBLED BY : A. K. PATEL/NAP DATE : 11/29/06
 CHECKED BY : J. M. BRITT DATE : 9/05



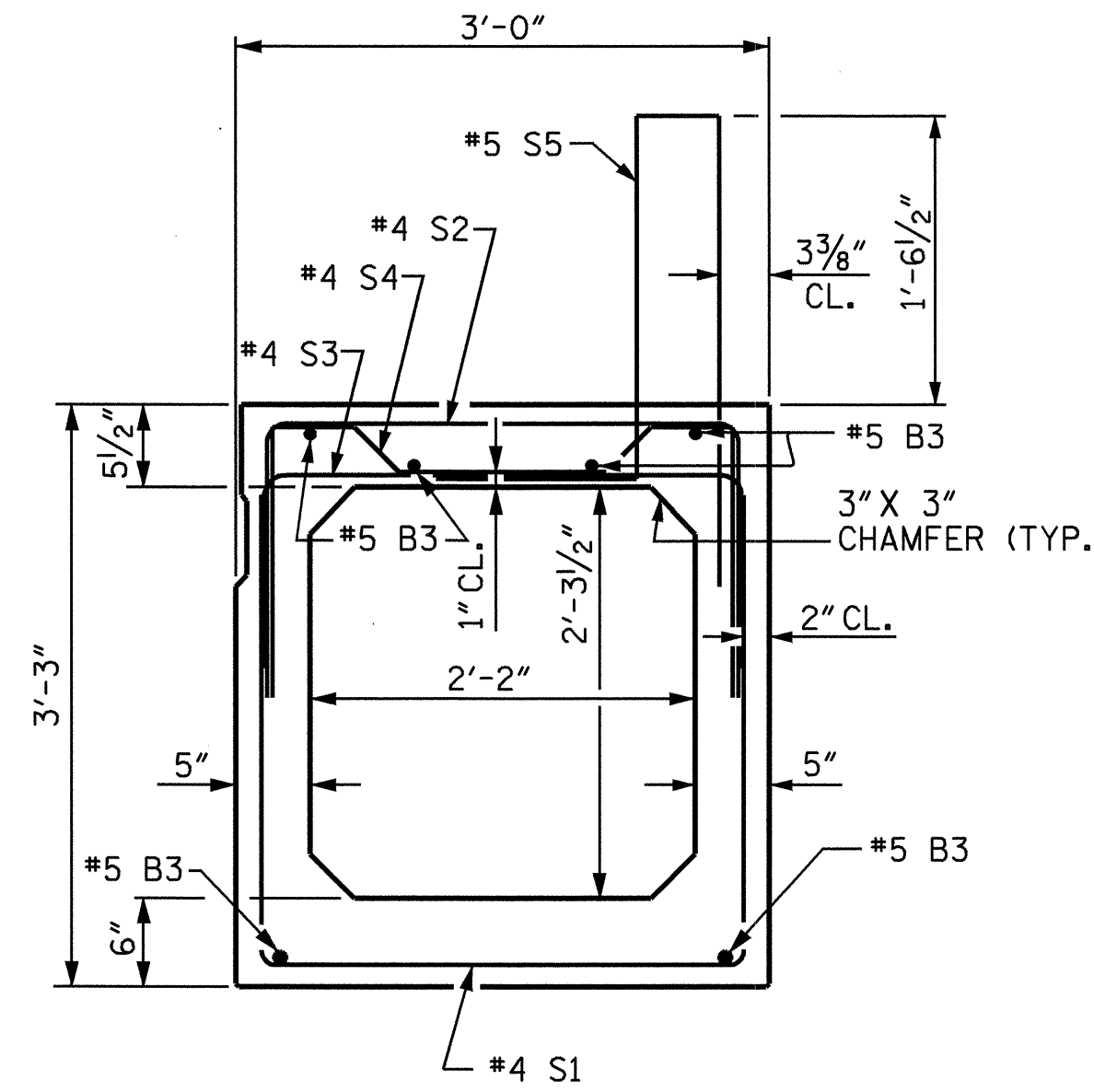
END ELEVATION

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.)



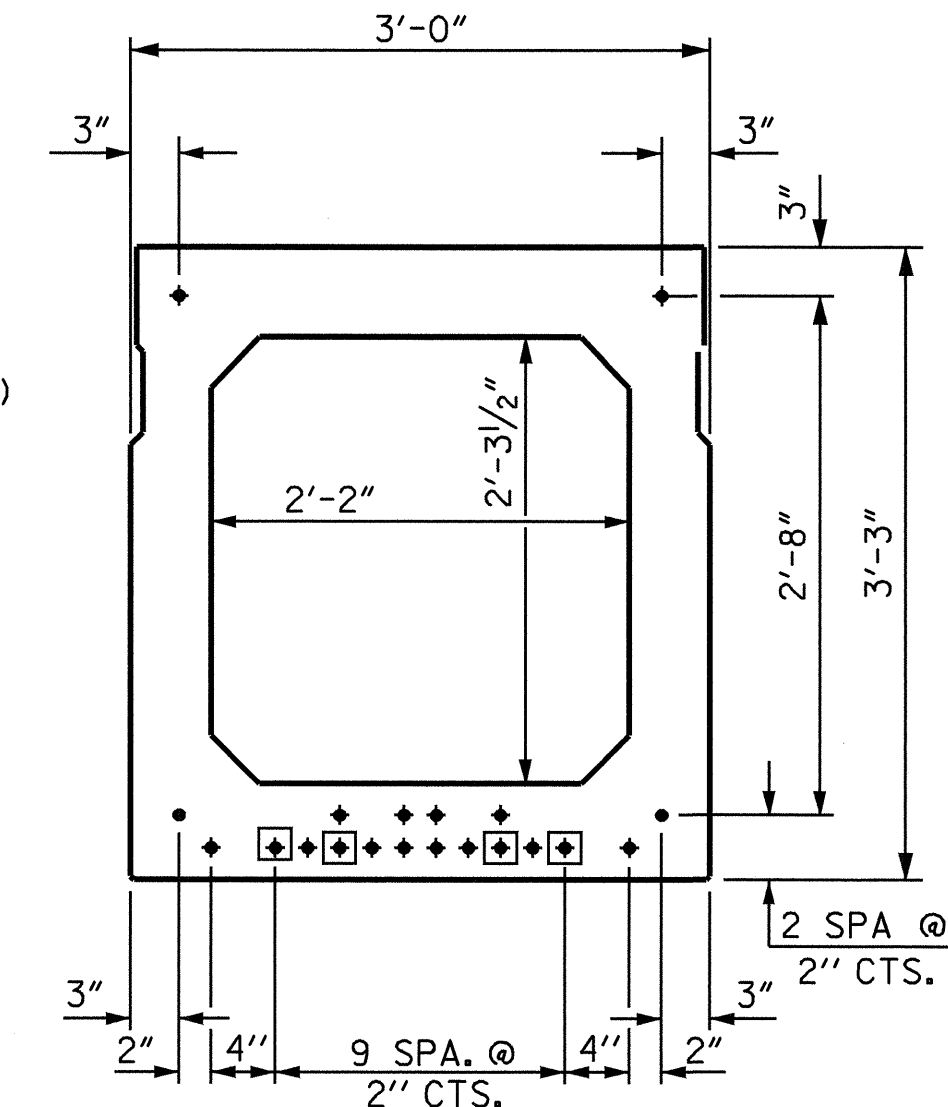
INTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)



EXTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)



TYPICAL STRAND LOCATION

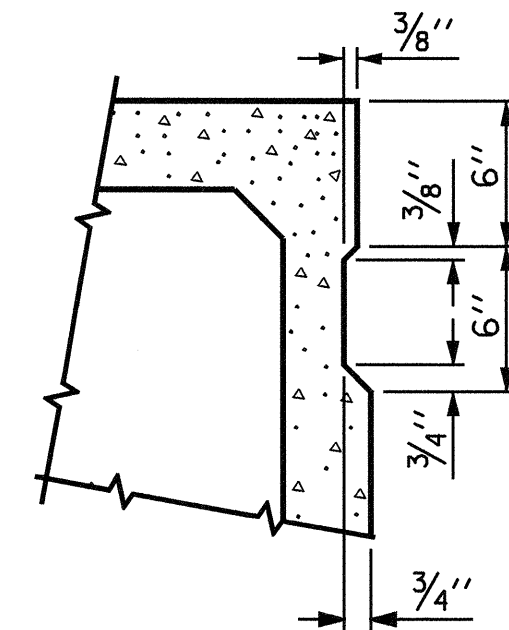
(20 STRANDS REQUIRED)

(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

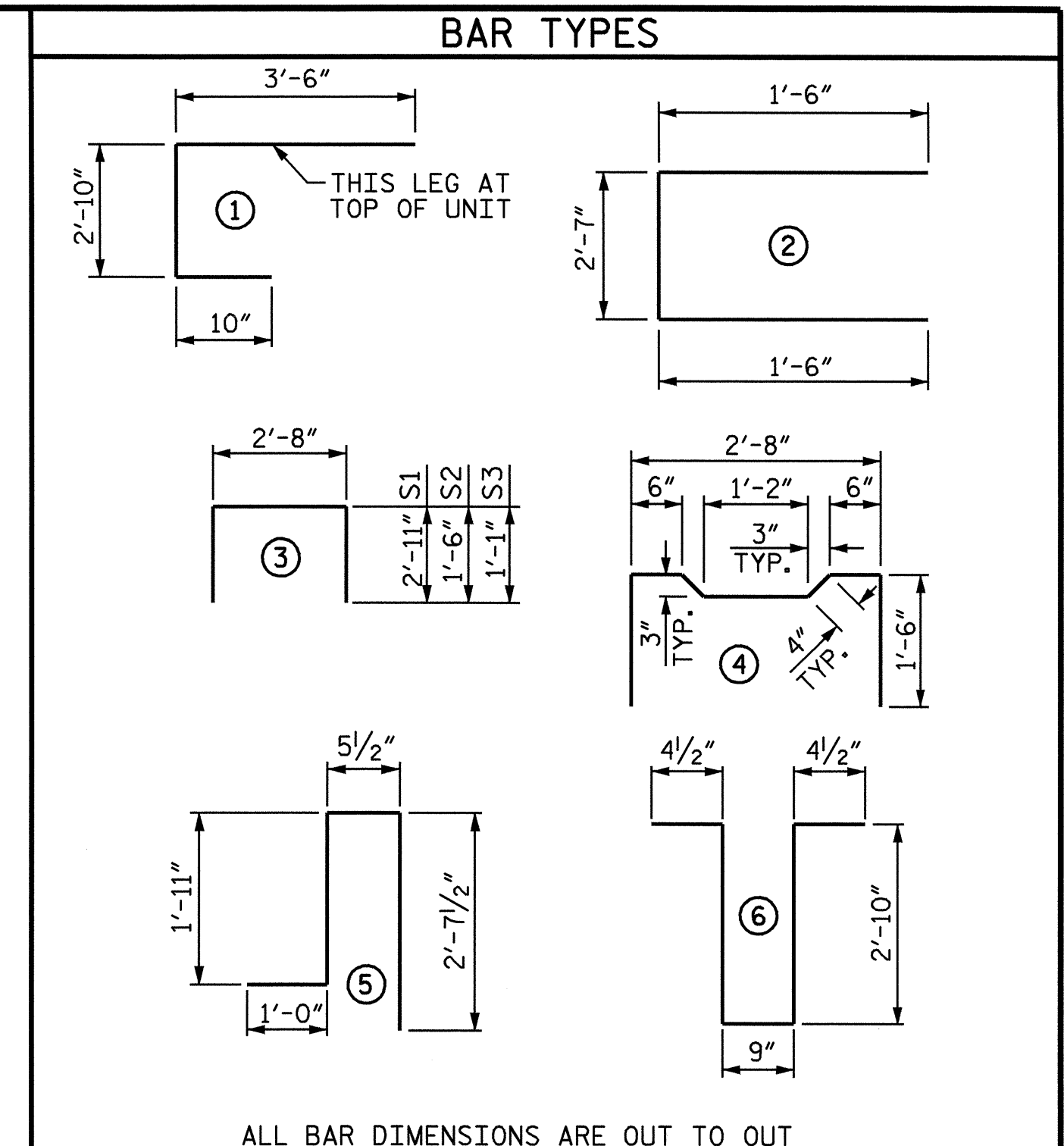
0.6" Ø LOW RELAXATION STRAND LAYOUT



SHEAR KEY DETAIL

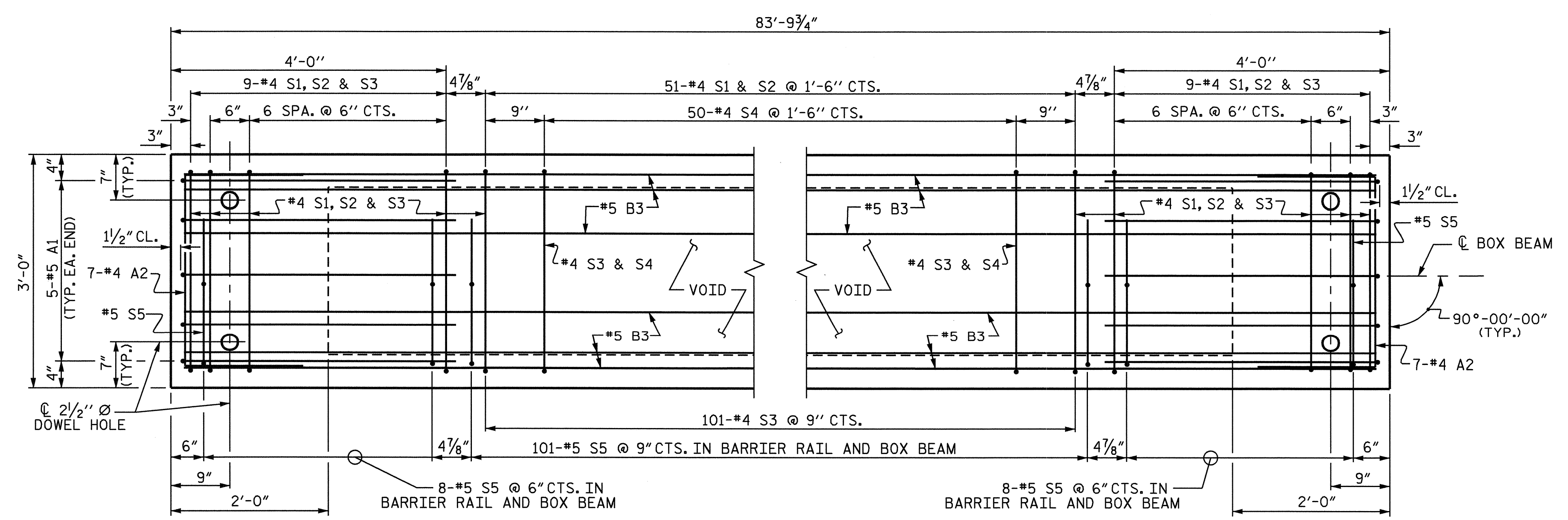
NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR BOX BEAMS.

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



BILL OF MATERIAL FOR ONE BOX BEAM SECTION

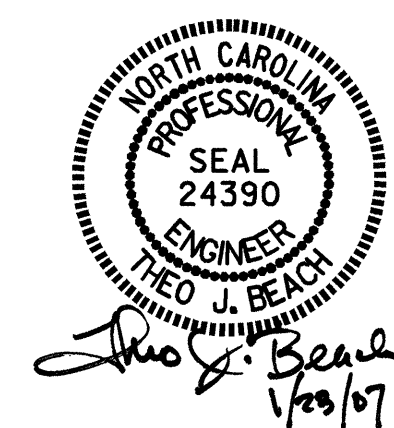
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
A1	10	#5	1	7'-2"	75	7'-2"	75
A2	38	#4	2	5'-7"	142	5'-7"	142
B3	12	#5	STR	43'-0"	538	43'-0"	538
K1	12	#4	6	7'-2"	57	7'-2"	57
K2	8	#4	STR	2'-7"	14	2'-7"	14
S1	69	#4	3	8'-6"	392	8'-6"	392
S2	69	#4	3	5'-8"	261	5'-8"	261
S3	119	#4	3	4'-10"	384	4'-10"	384
S4	50	#4	4	5'-10"	195	5'-10"	195
*S5	117	#5	5	6'-0"	732	--	--
REINFORCING STEEL				2058	LBS.	2058	LBS.
*EPOXY COATED REINF. STEEL				732	LBS.		
5200 P.S.I. CONCRETE				16.5	CU. YDS.	16.4	CU. YDS.
0.6" Ø L.R. STRANDS				No.	20		20



PLAN OF BOX BEAM

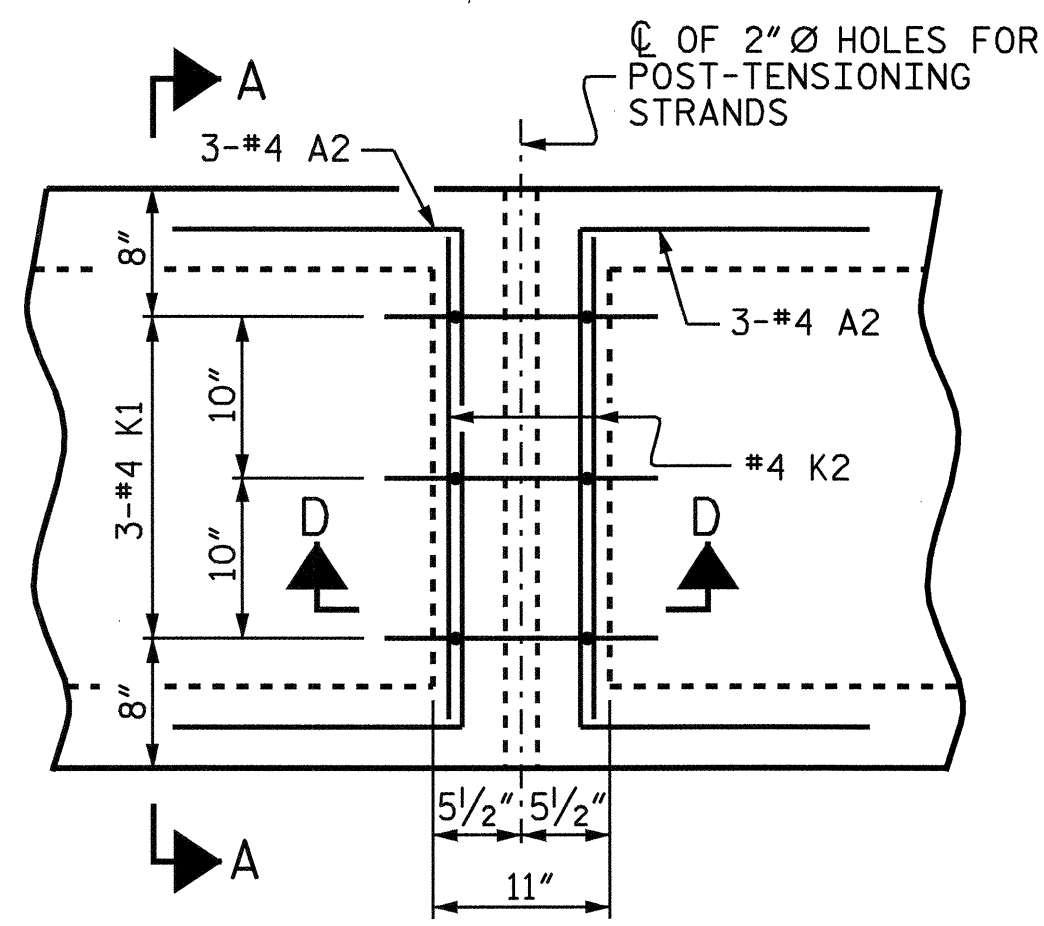
EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S5 BARS. FOR LOCATION OF DIAPHRAGMS, SEE PLAN OF SPANS. FOR REINFORCING STEEL IN DIAPHRAGMS, SEE DIAPHRAGM DETAILS.

PROJECT NO. B-4076
CLEVELAND COUNTY
 STATION: 18+31.00 -L-

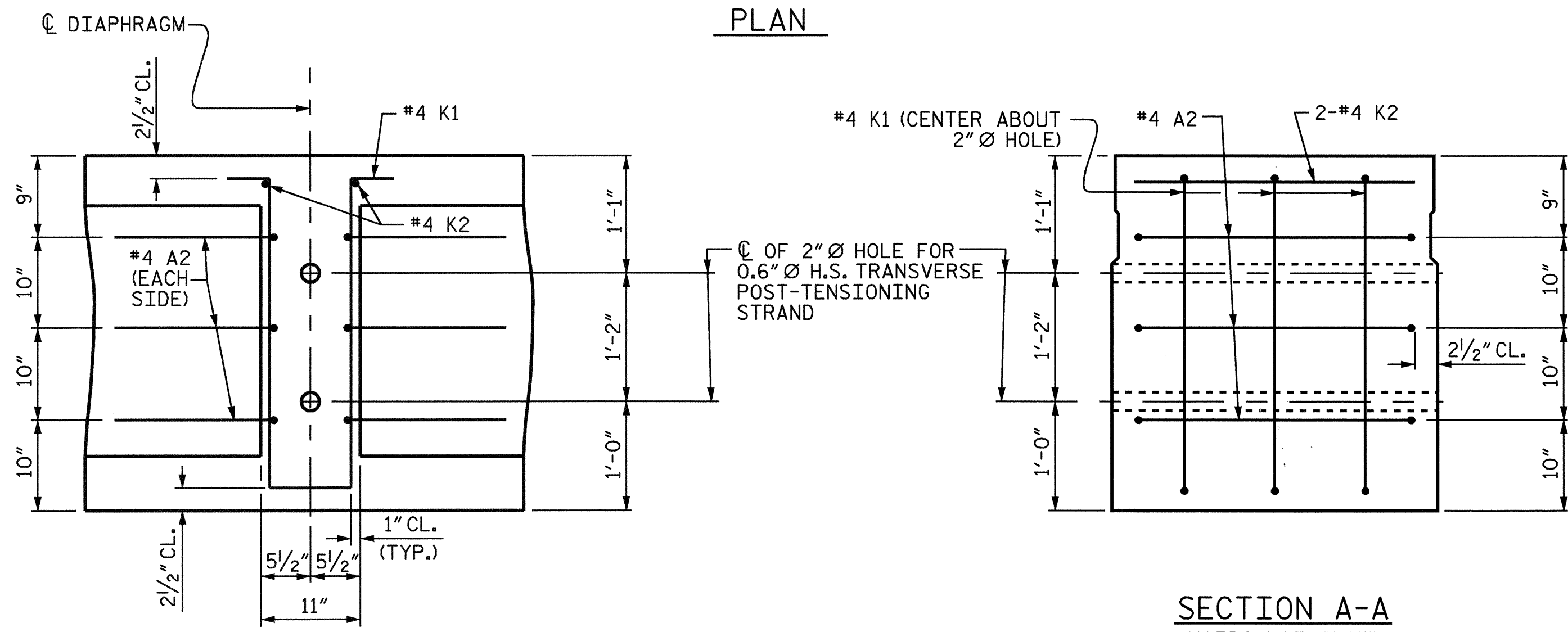


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 3'-0" X 3'-3"
 PRESTRESSED CONCRETE
 BOX BEAM UNIT
 SPAN B

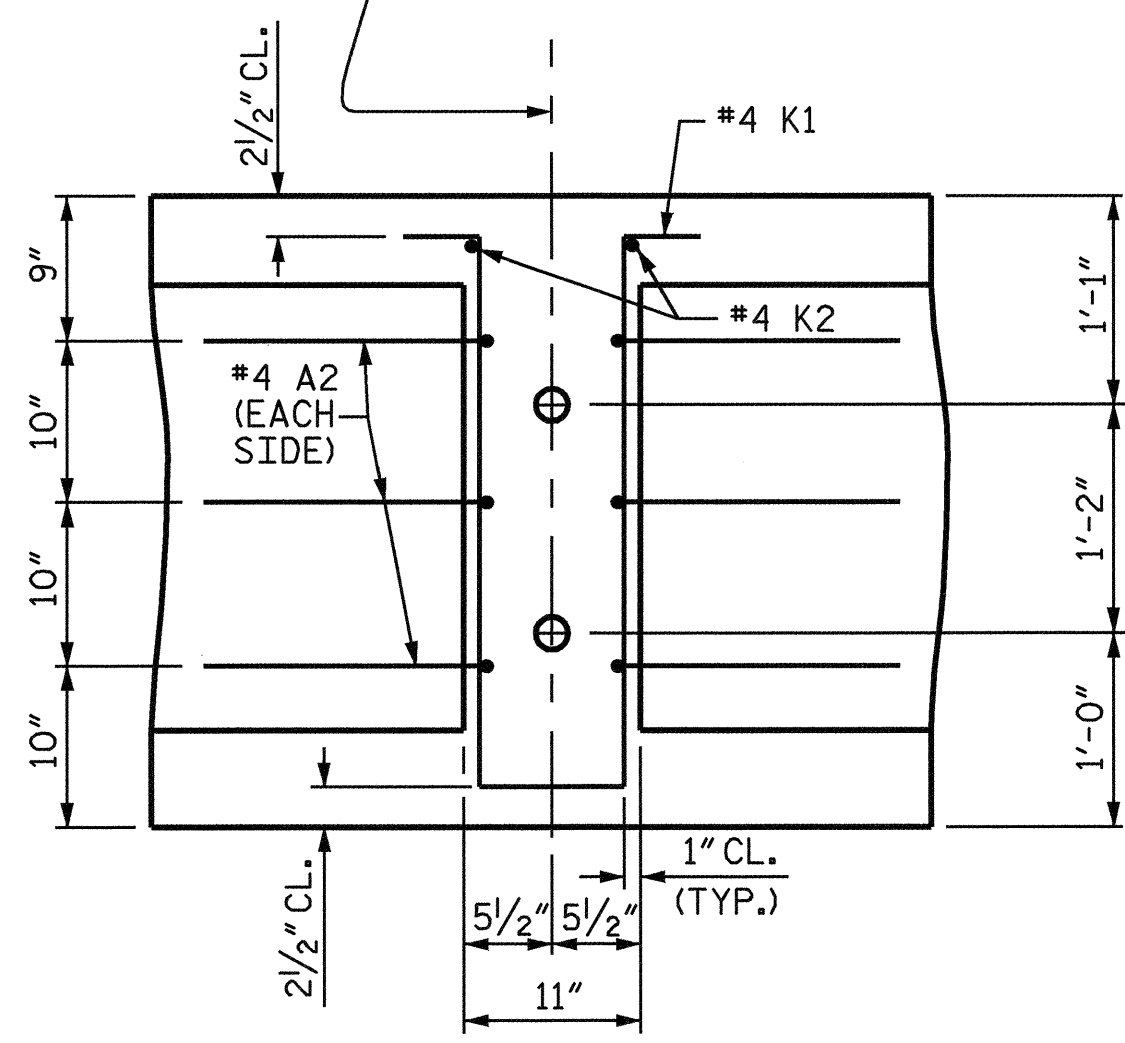
REVISIONS						SHEET NO. S-8
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 22
2			4			



PLAN



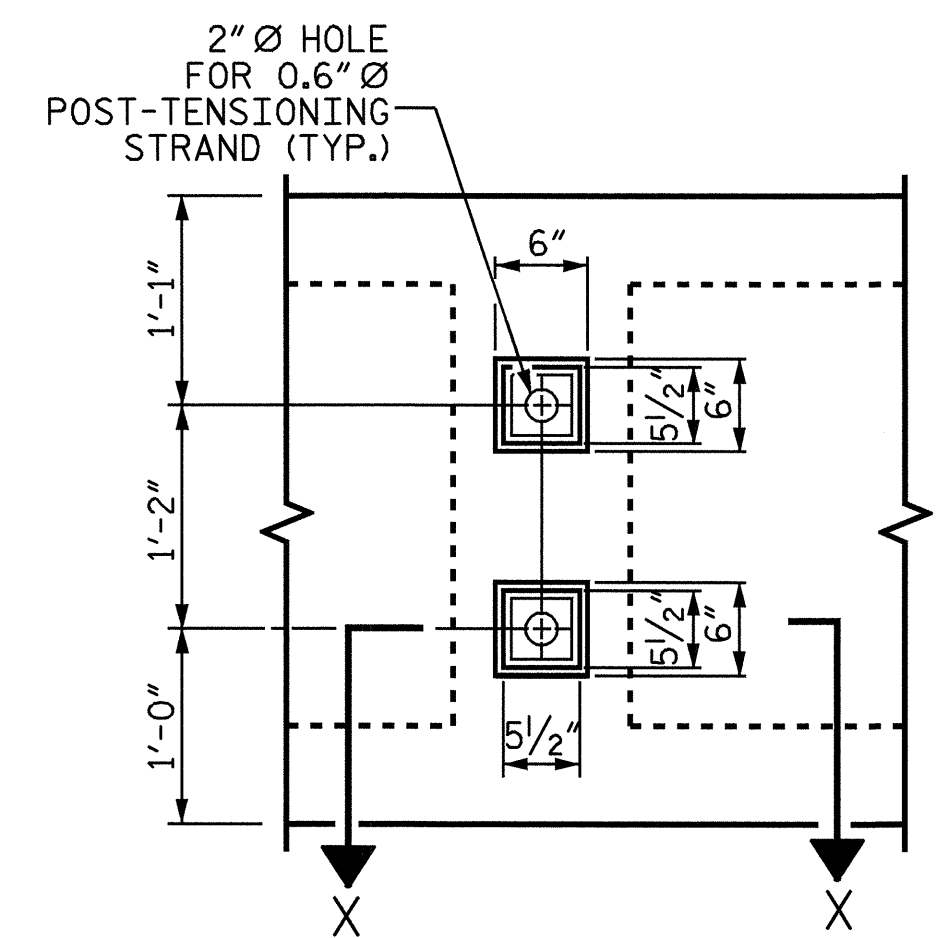
SECTION A-A
VOIDS NOT SHOWN



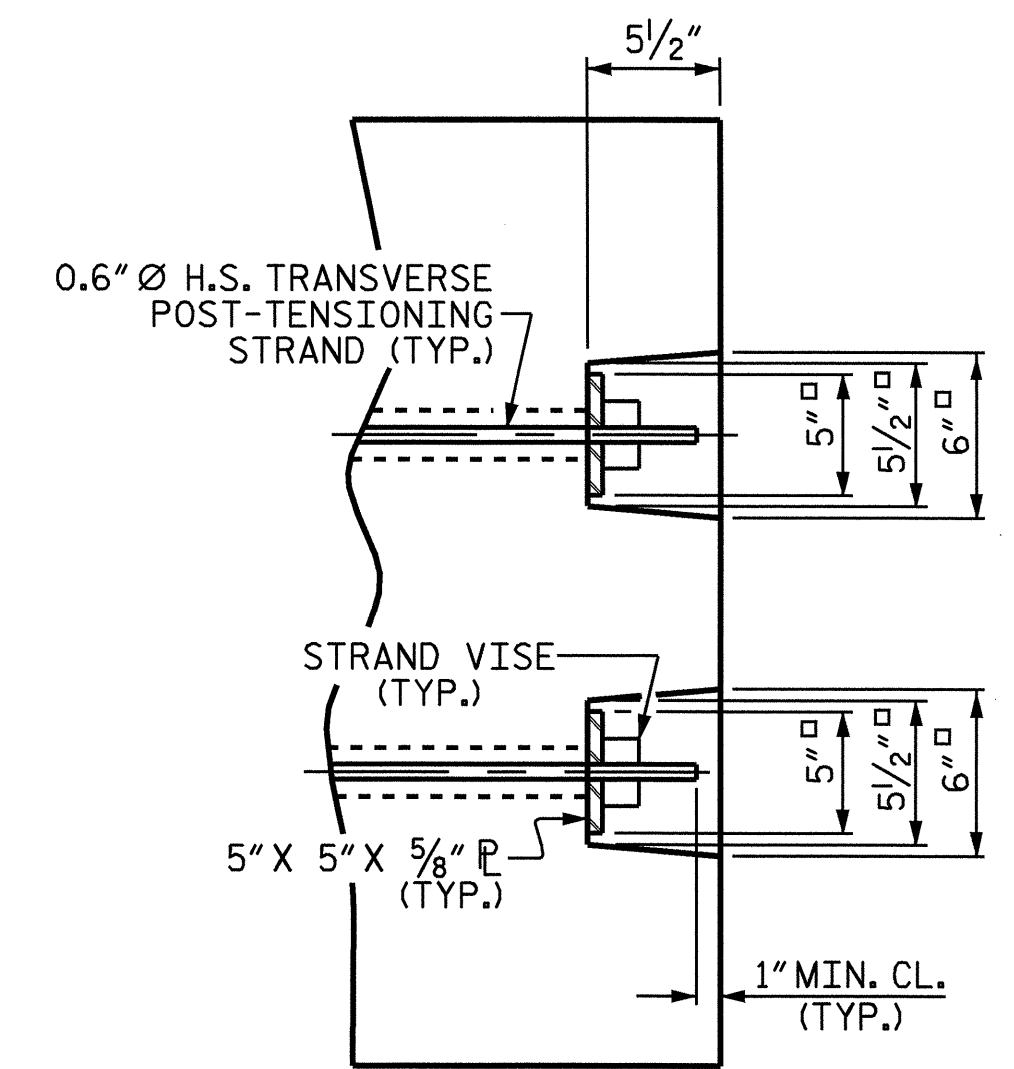
SECTION D-D

DOUBLE DIAPHRAGM DETAILS

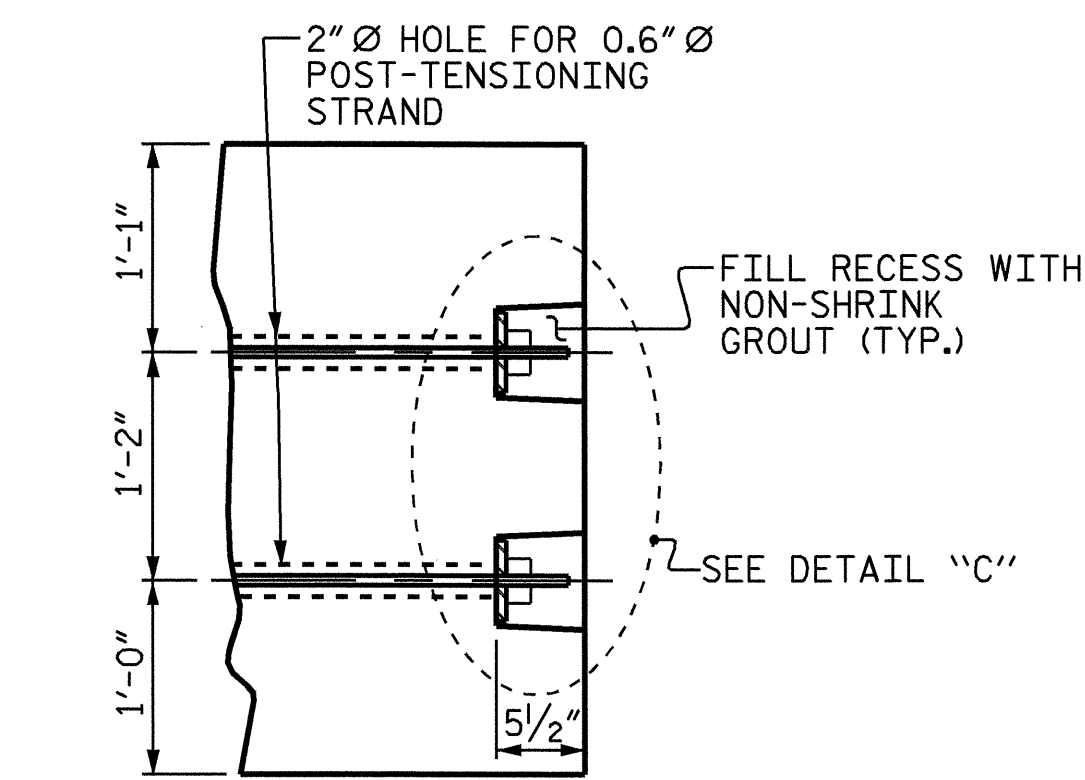
#4 "S" BARS NOT SHOWN. #4 "S" BARS MAY BE SHIFTED SLIGHTLY TO CLEAR 2" Ø HOLE.



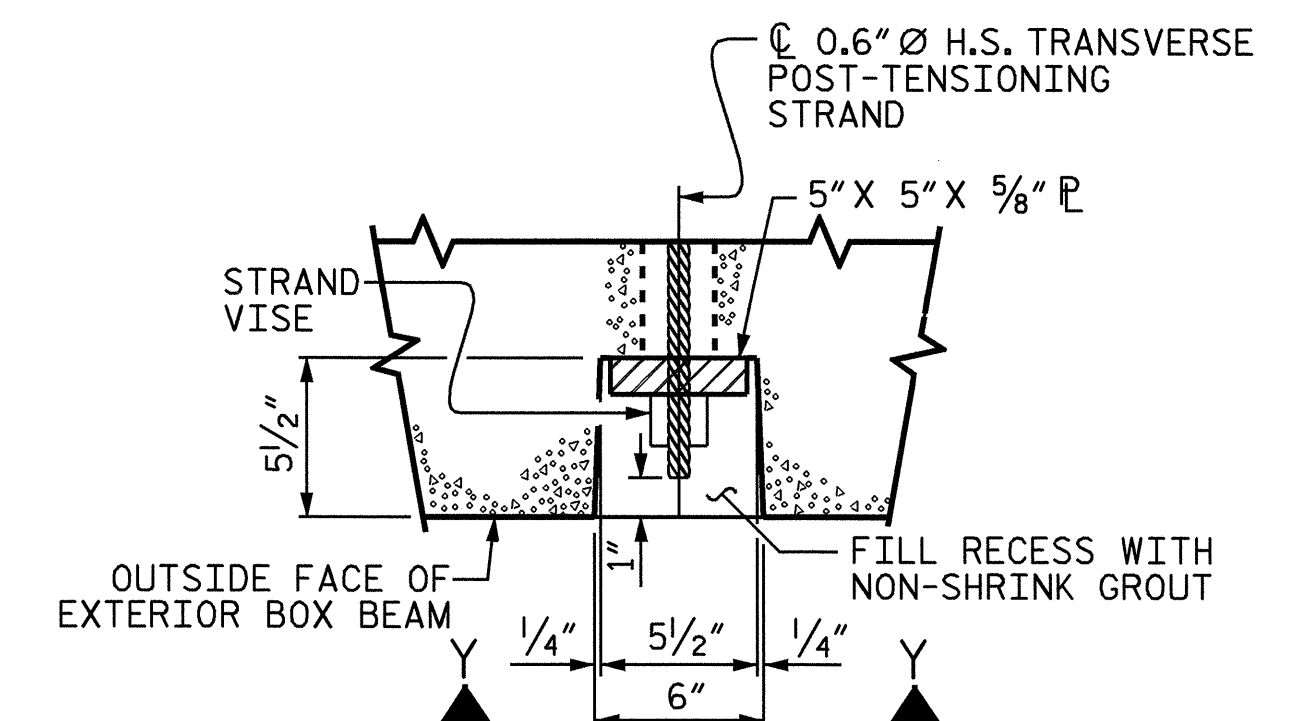
VIEW Y-Y
SHOWING ELEVATION VIEW OF GROUDED RECESS



DETAIL "C"

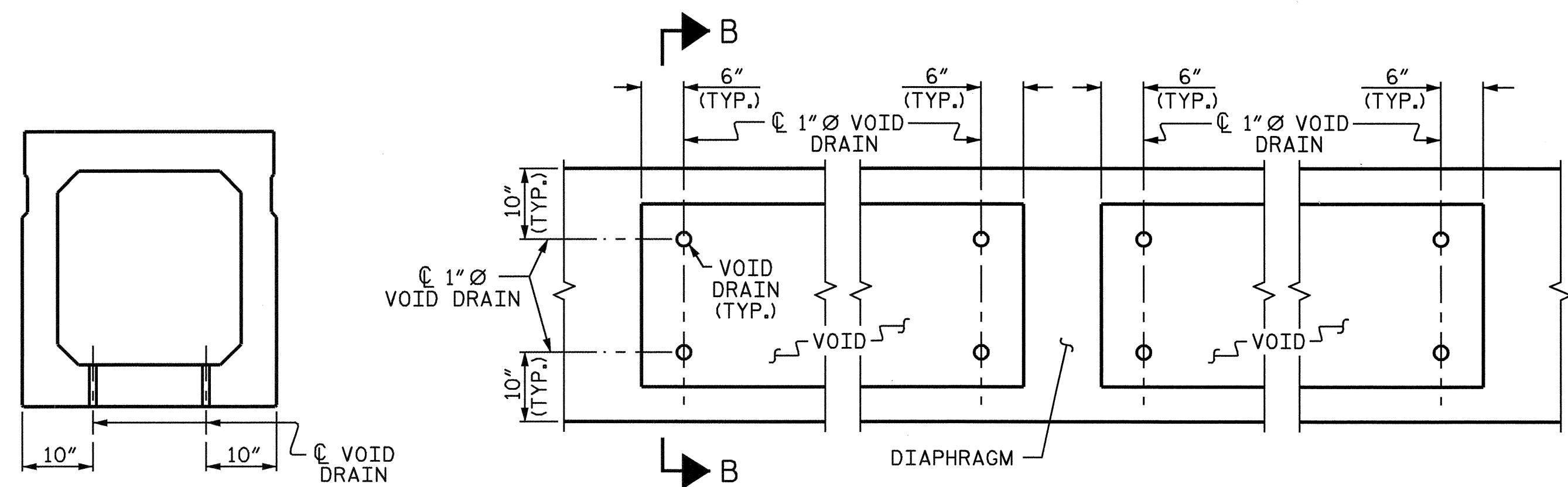


PART SECTION AT RECESS



SECTION X-X
SHOWING PLAN VIEW OF GROUDED RECESS

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



SECTION B-B

PART PLAN

VOID DRAIN DETAILS

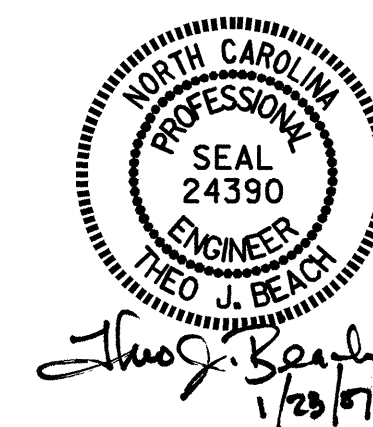
(DIMENSIONS SHOWN ARE TYPICAL FOR EACH VOID)

DEAD LOAD DEFLECTION AND CAMBER		
	3'-0" x 3'-3"	
	0.6" Ø L.R. STRAND	
	SPAN "A"	SPAN "B"
CAMBER (BEAM ALONE IN PLACE) ↑	2 1/2"	2 7/16"
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD ** ↓	3/4"	7/16"
FINAL CAMBER ↑	1 3/4"	2"

** INCLUDES FUTURE WEARING SURFACE

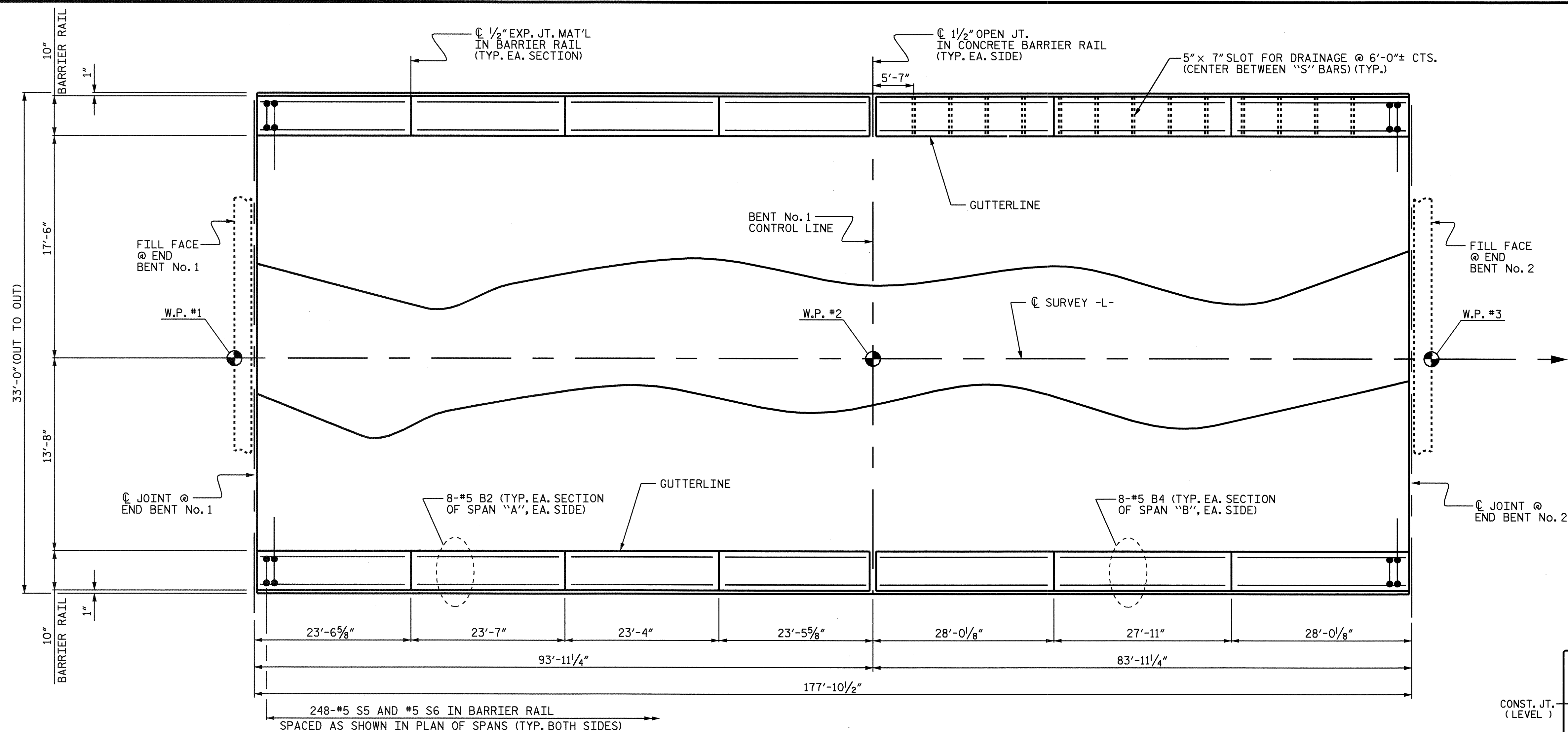
BOX BEAM UNITS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
SPAN A			
EXTERIOR B. B.	2	93'-9 3/4"	187'-7 1/2"
INTERIOR B. B.	9	93'-9 3/4"	844'-3 3/4"
SPAN B			
EXTERIOR B. B.	2	83'-9 3/4"	167'-7 1/2"
INTERIOR B. B.	9	83'-9 3/4"	754'-3 3/4"
TOTAL	22		1953.88'

PROJECT NO. B-4076
CLEVELAND COUNTY
STATION: 18+31.00 -L-



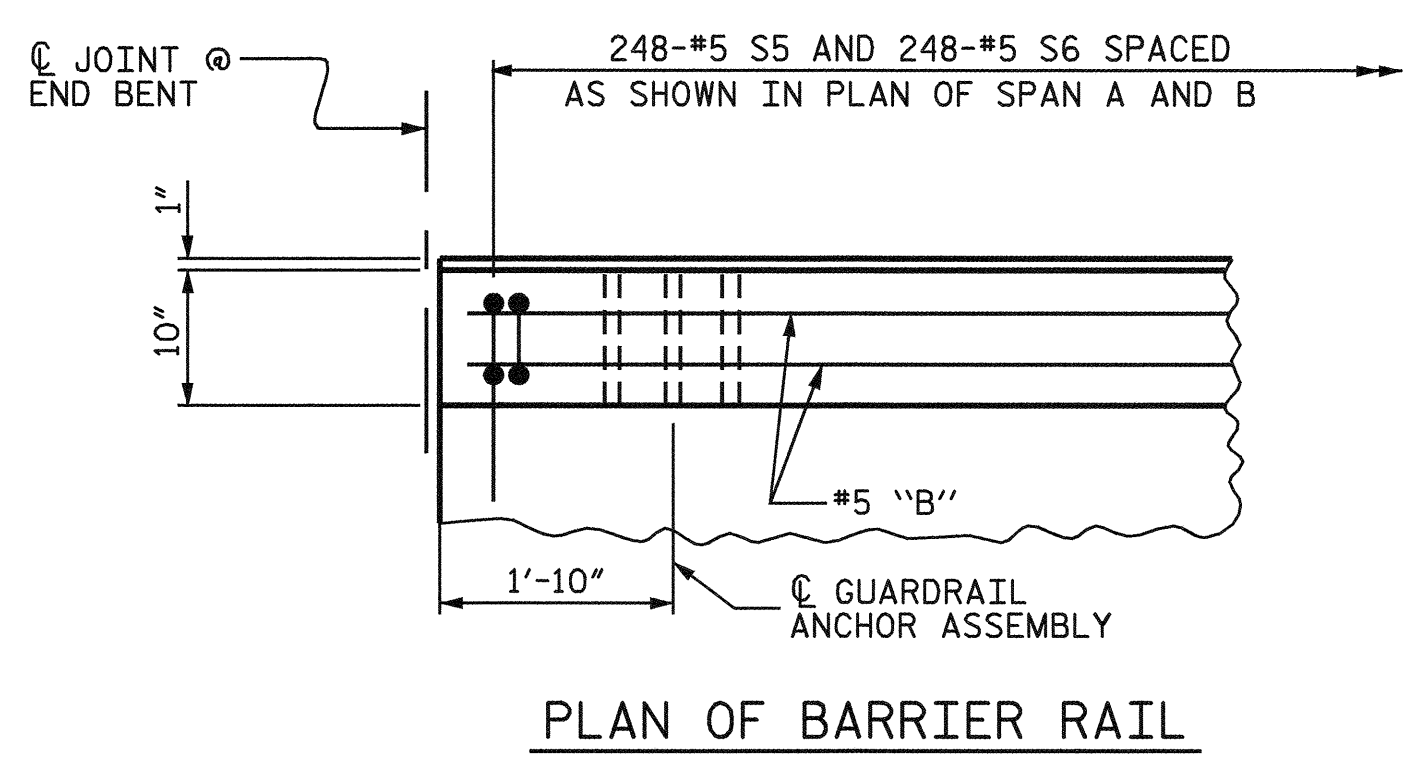
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
3'-0" X 3'-3"
PRESTRESSED CONCRETE
BOX BEAM UNIT

REVISIONS				SHEET NO. S-9
NO.	BY:	DATE:	NO.	
1			3	TOTAL SHEETS 22
2			4	

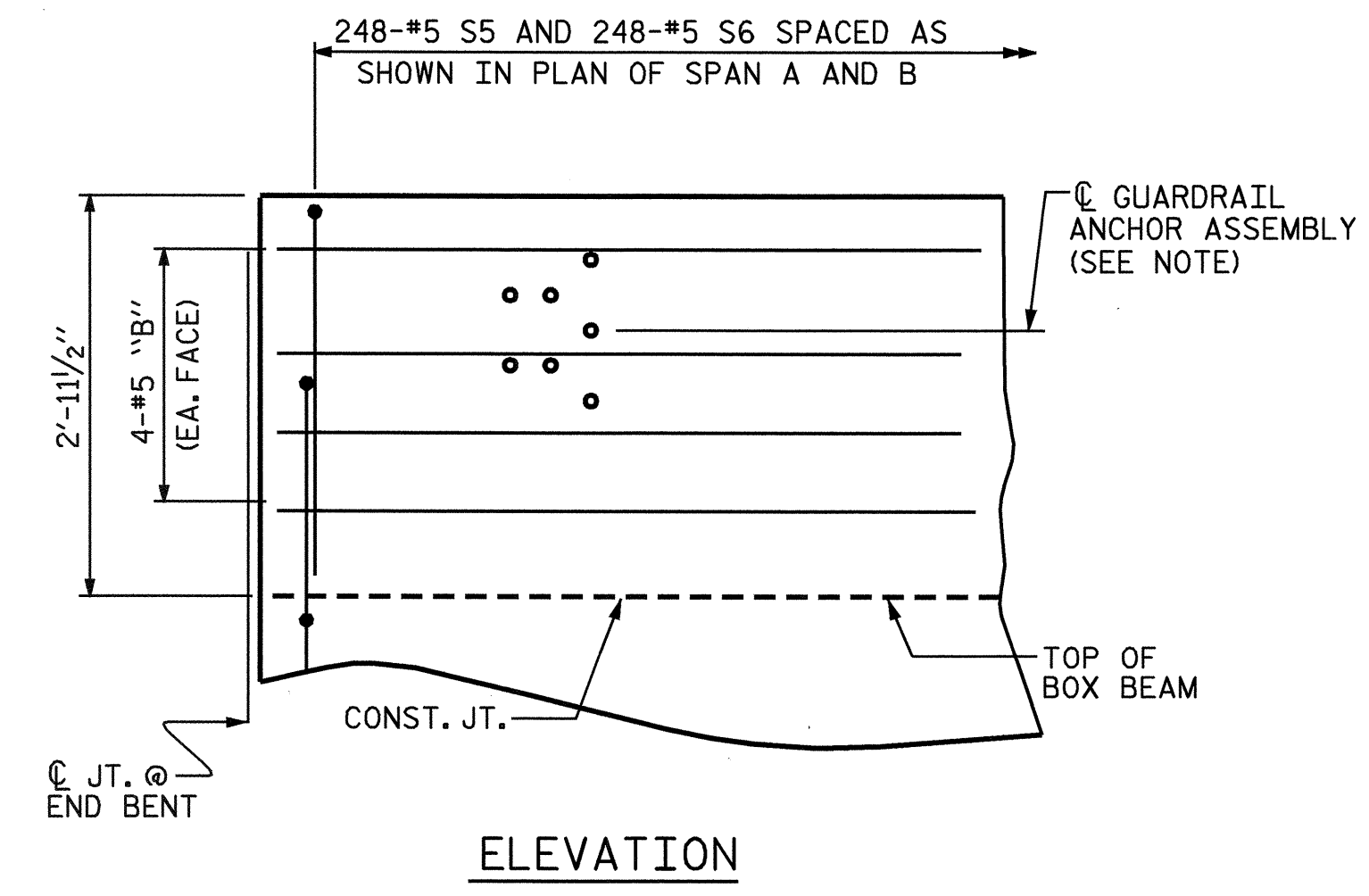


PLAN OF BARRIER RAIL

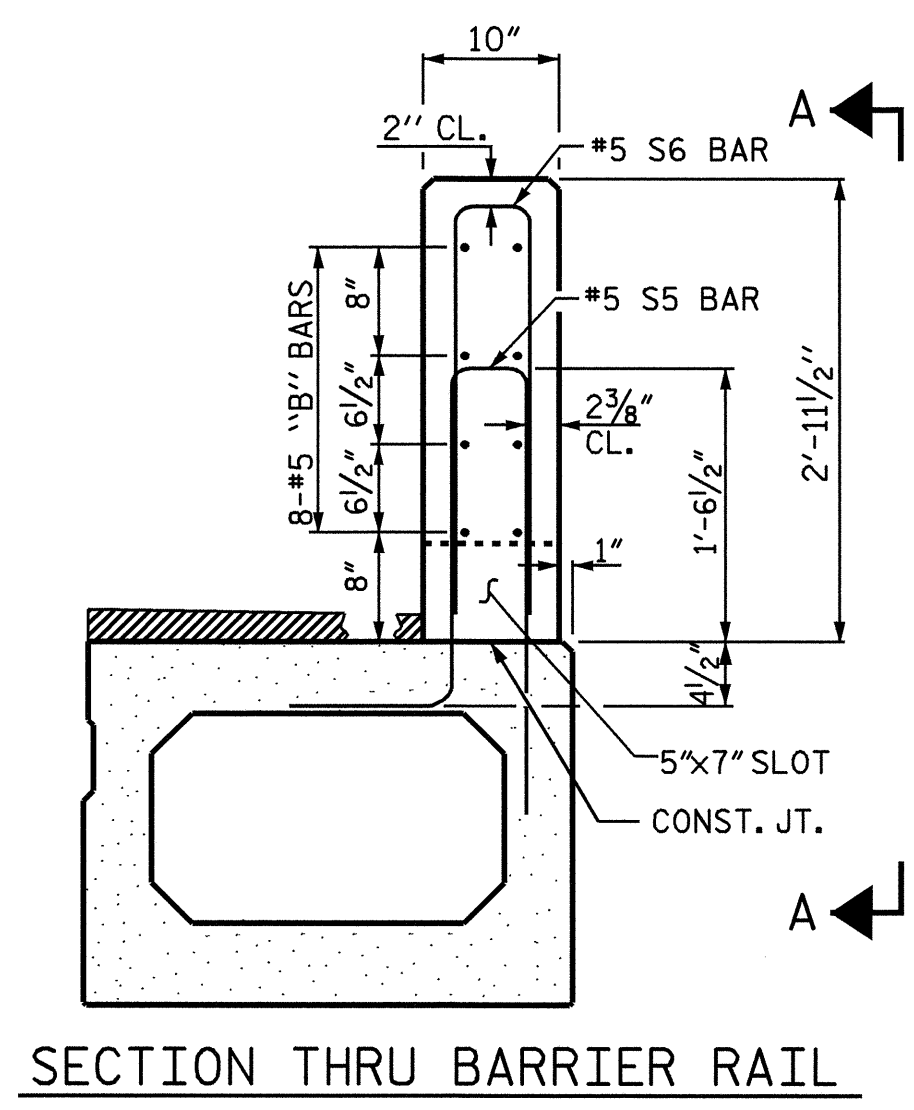
FOR #5 S5 BARS IN BARRIER RAIL AND BOX BEAM, SEE "3'-0" X 3'-3" PRESTRESSED CONCRETE BOX BEAM UNIT" SHEETS.



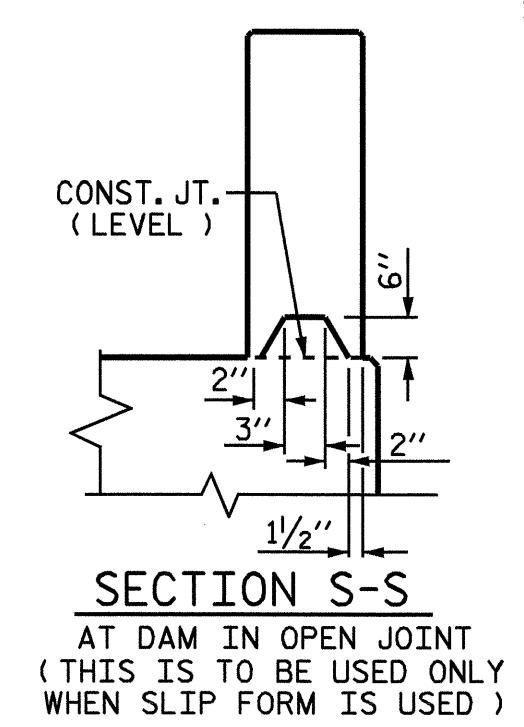
PLAN OF BARRIER RAIL



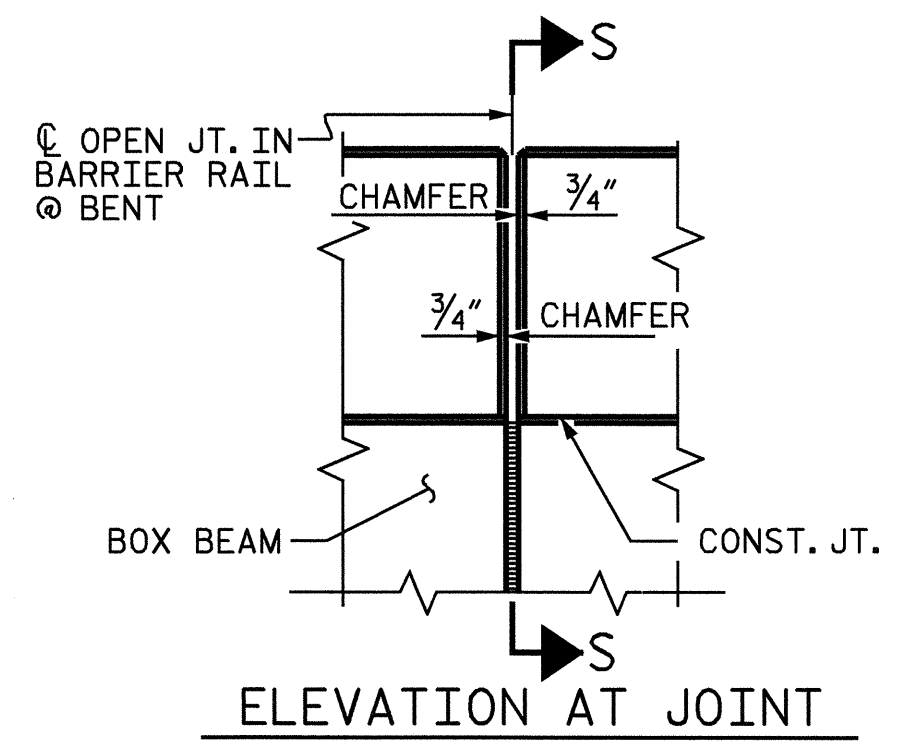
ELEVATION



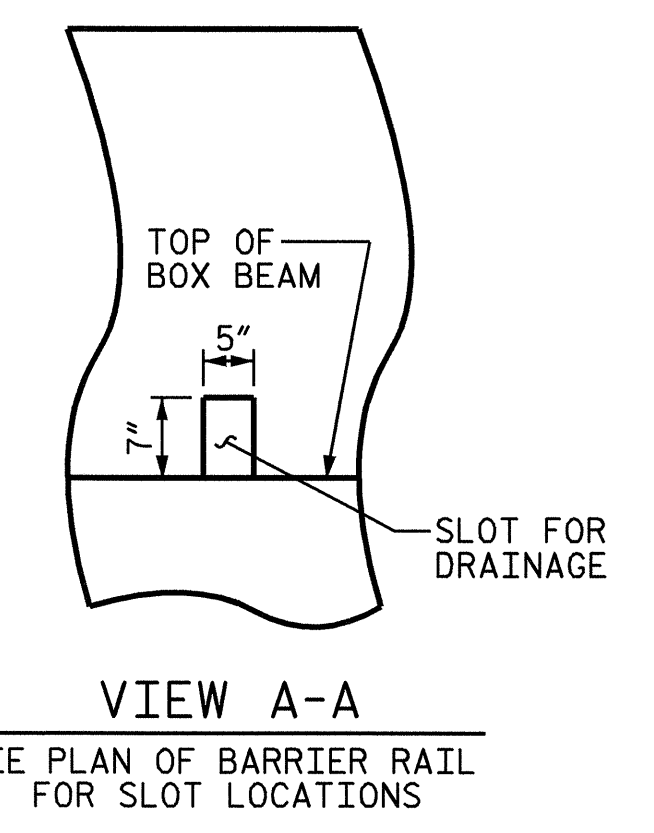
SECTION THRU BARRIER RAIL



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

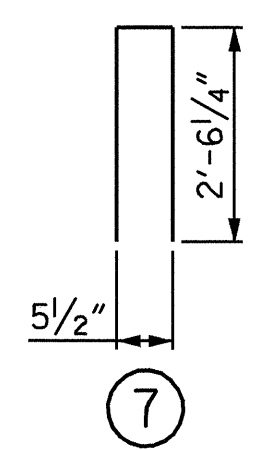


ELEVATION AT JOINT



VIEW A-A
SEE PLAN OF BARRIER RAIL
FOR SLOT LOCATIONS

BILL OF MATERIAL					
FOR TWO VERTICAL CONCRETE BARRIER RAILS					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*B2	64	#5	STR	23'-0"	1535
*B4	48	#5	STR	27'-6"	1377
*S6	496	#5	7	5'-6"	2845
* EPOXY COATED REINF. STEEL = 5757 LBS.					
CLASS AA CONCRETE					32.5 C.Y.
10" X 2'-11 1/2" VERTICAL CONCRETE BARRIER RAIL					355.50 L.F.



BAR TYPE

BAR DIMENSIONS ARE OUT TO OUT

NOTES

- ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.
- FOR DETAILS OF GUARDRAIL ANCHOR ASSEMBLIES, SEE "GUARDRAIL ANCHORAGE DETAILS" SHEET.
- #5 S5 BARS ARE INCLUDED IN THE BILL OF MATERIAL FOR BOX BEAM SECTION.
- FOR VERTICAL CONCRETE BARRIER RAIL, SEE SPECIAL PROVISIONS.



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CLEVELAND COUNTY
 STATION: 18+31.00 -L-

DEPARTMENT OF TRANSPORTATION RALEIGH					
VERTICAL CONCRETE BARRIER RAIL DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S-10
 TOTAL SHEETS 22

DRAWN BY : A. K. PATEL/NAP DATE : 11/29/06
 CHECKED BY : J. M. BRITT DATE : 09/05

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.

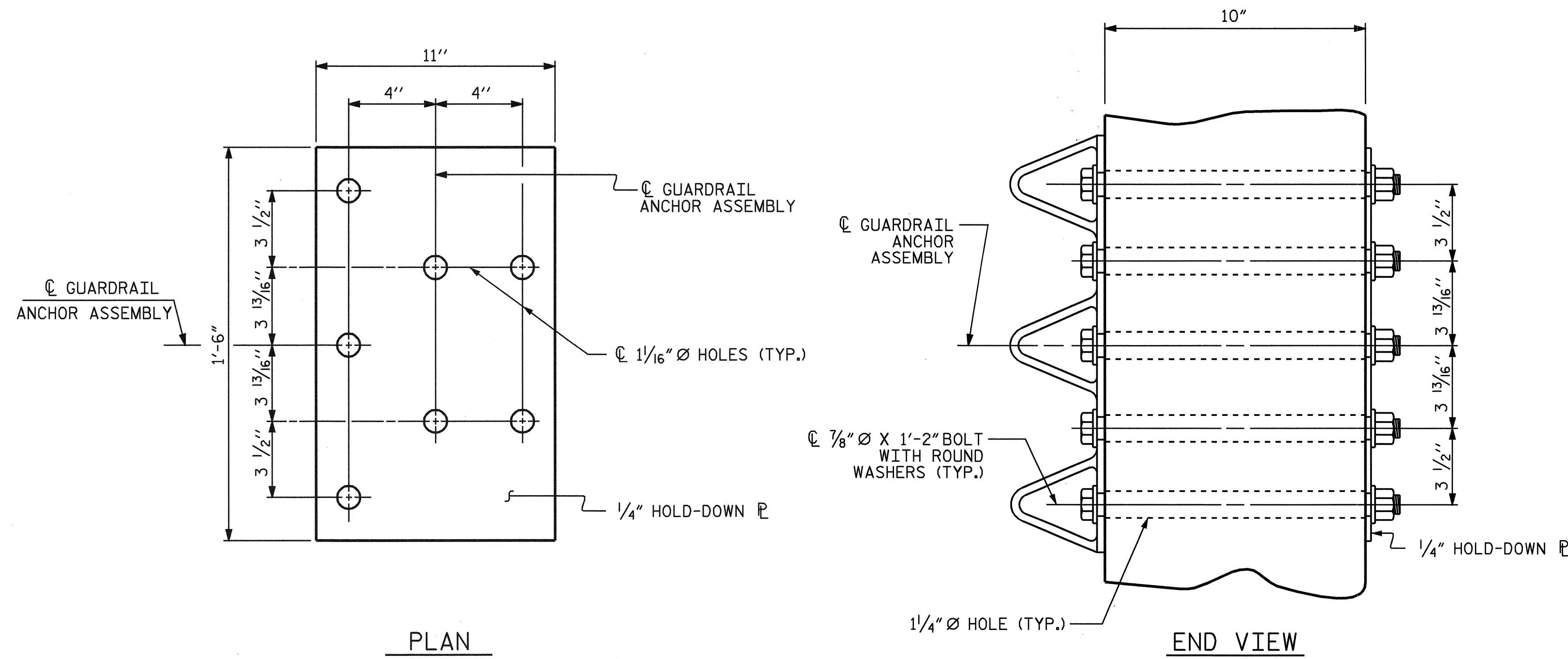
BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS.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

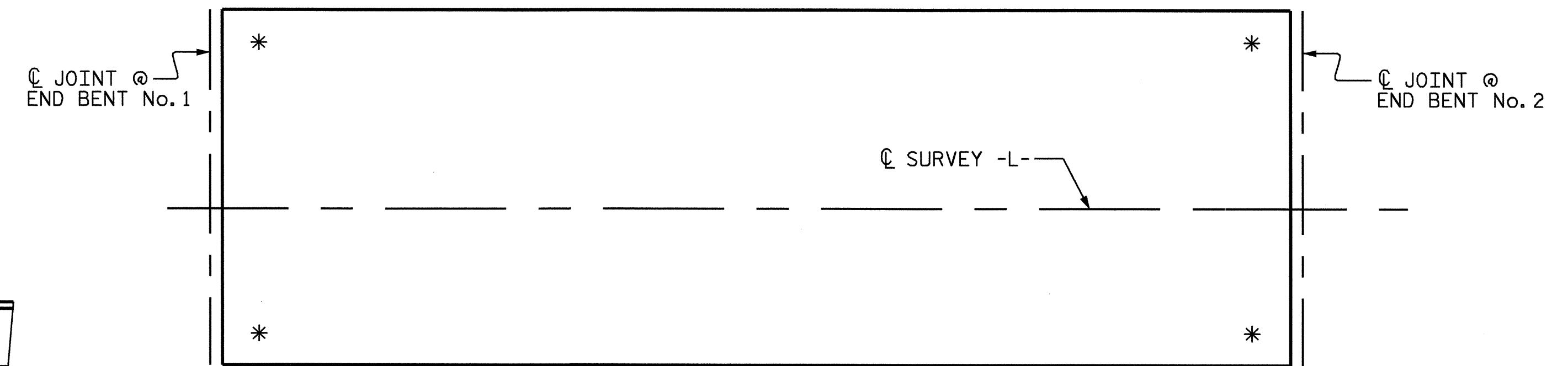
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

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

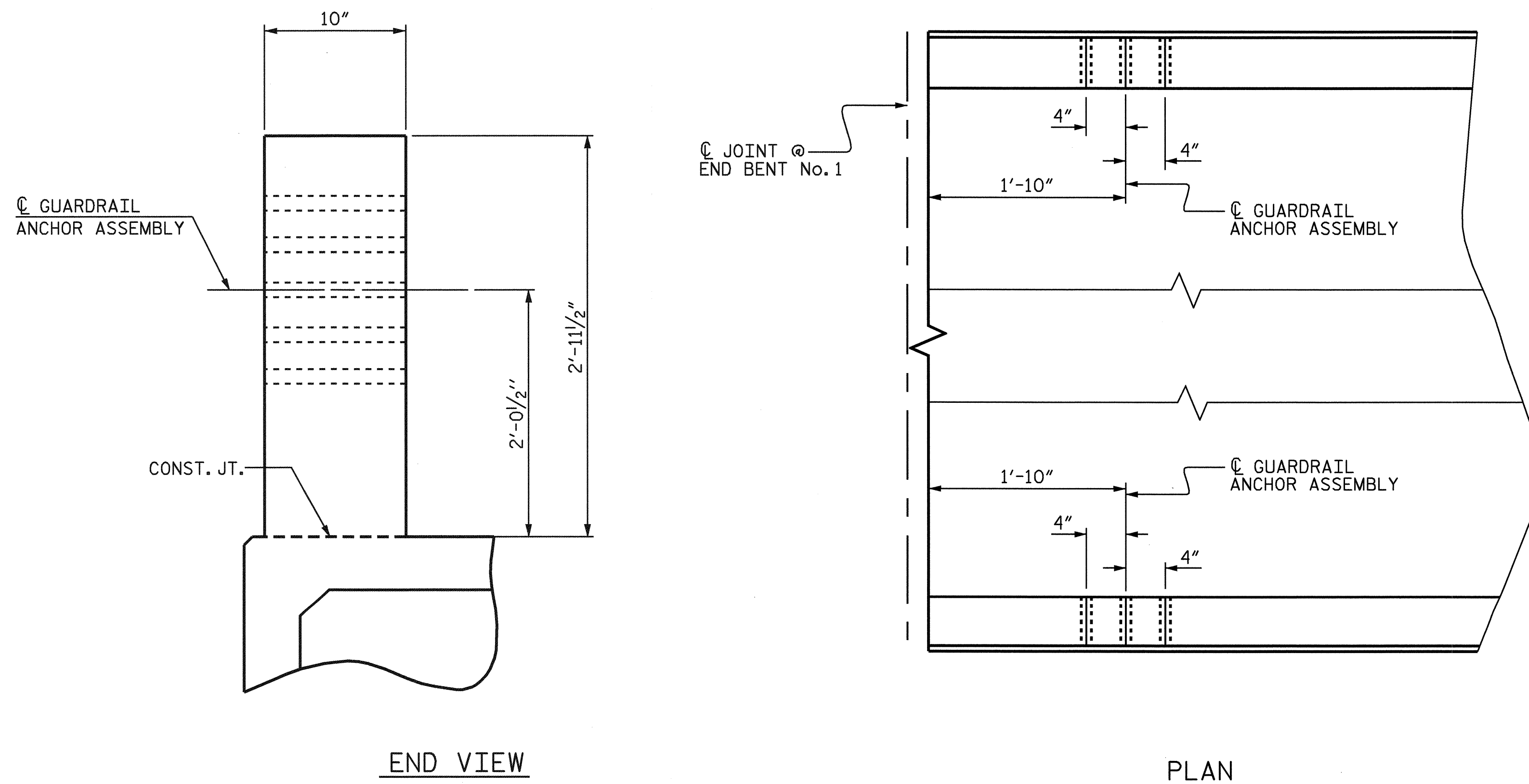
THE 1 1/4" Ø HOLES SHALL BE FORMED.



GUARDRAIL ANCHOR ASSEMBLY DETAILS

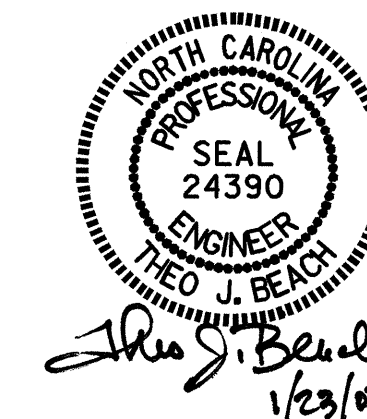


SKETCH SHOWING POINTS OF ATTACHMENT
* LOCATION OF GUARDRAIL ATTACHMENT



LOCATION OF GUARDRAIL ANCHOR

(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR)



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CLEVELAND COUNTY
 STATION: 18+31.00 -L-

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

ASSEMBLED BY : A. K. PATEL / NAP DATE : 11-29-06
 CHECKED BY : J. M. BRITT DATE : 09/05
 DRAWN BY : EEM 6/94 REV. 8/16/99 RWW/LES
 CHECKED BY : RGW 6/94 REV. 10/17/00 RWW/LES
 REV. 5/7/03 RWW/JTE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS 22
2			4			

NOTES:

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

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

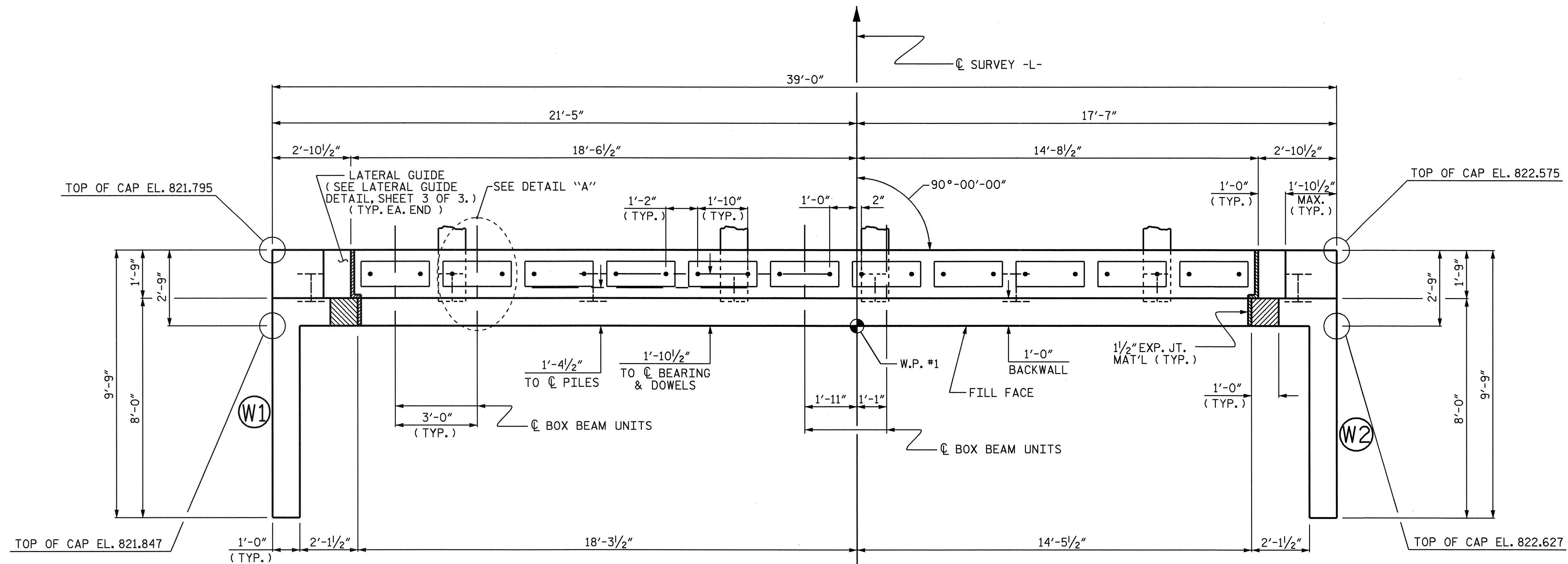
THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR THE REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

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

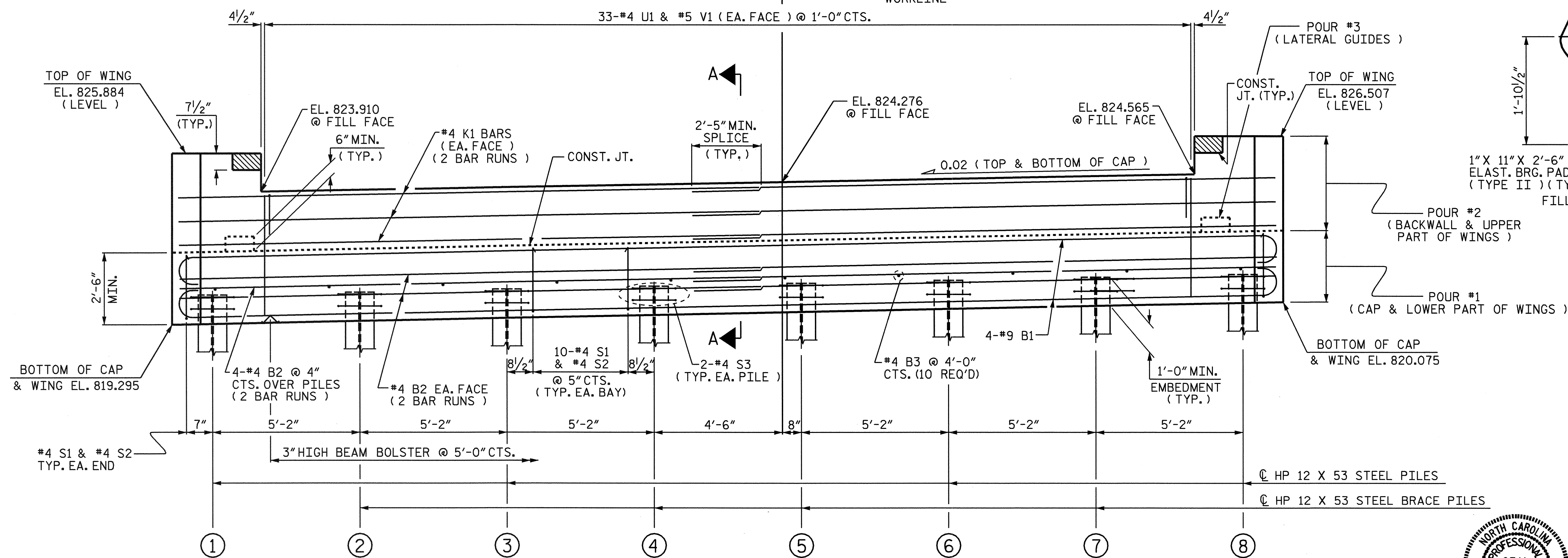
*5 V1 BARS IN BACKWALL SHALL BE PLACED 2" CLEAR FROM TOP OF BACKWALL.

FOR SECTION A-A, SEE SHEET 3 OF 3.

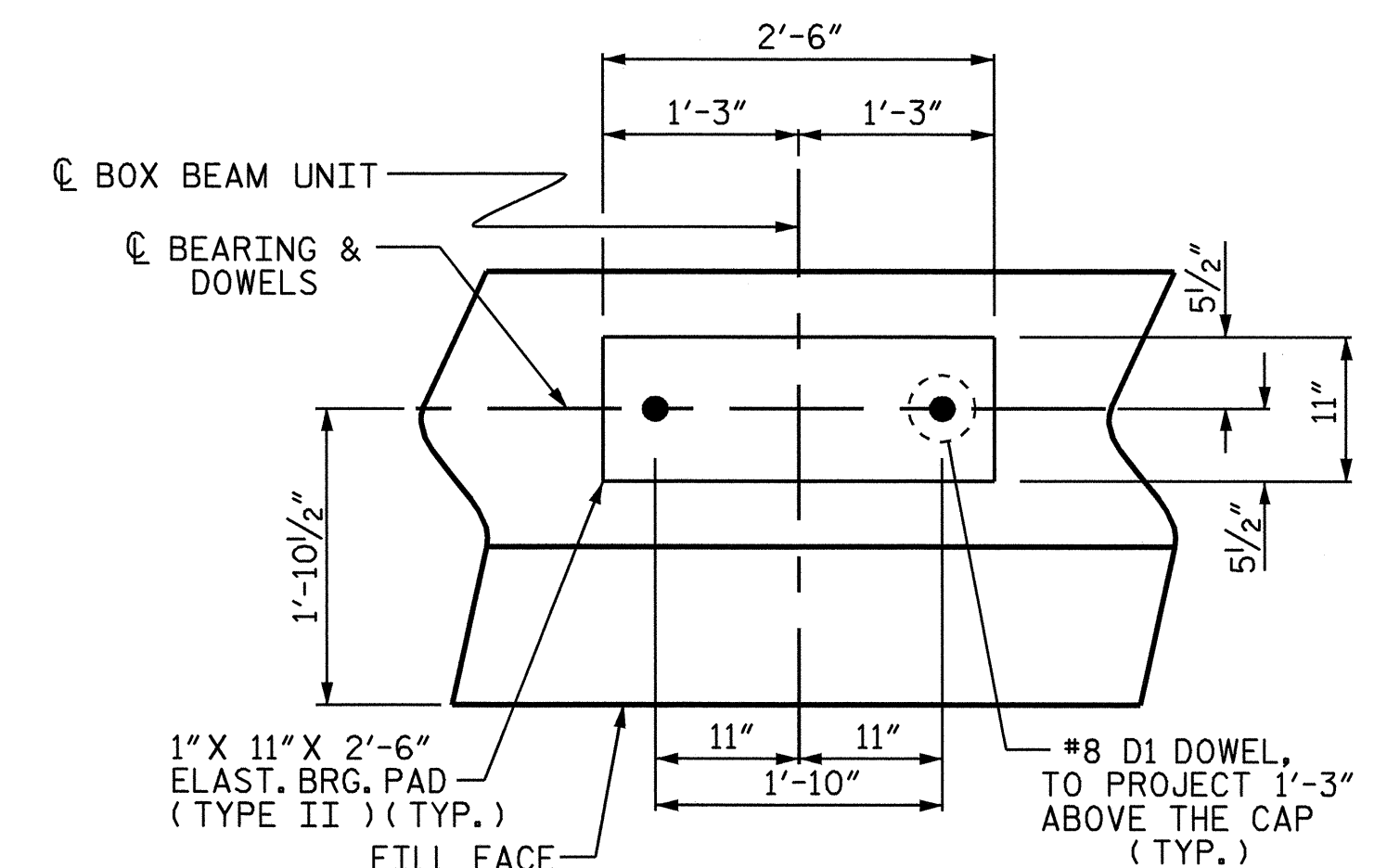
TOP OF PILE ELEVATIONS	
1	820.333
2	820.437
3	820.540
4	820.643
5	820.747
6	820.850
7	820.953
8	821.057



PLAN



ELEVATION



DETAIL "A"
(TYP. EA. BEARING)

PROJECT NO. B-4076
 CLEVELAND COUNTY
 STATION: 18+31.00 -L-

SHEET 1 OF 3

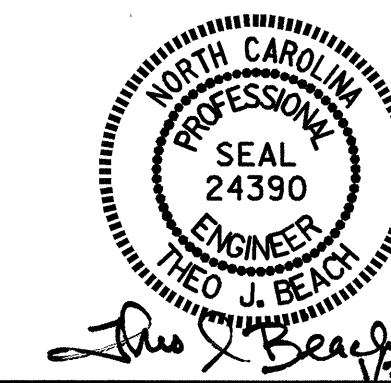
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

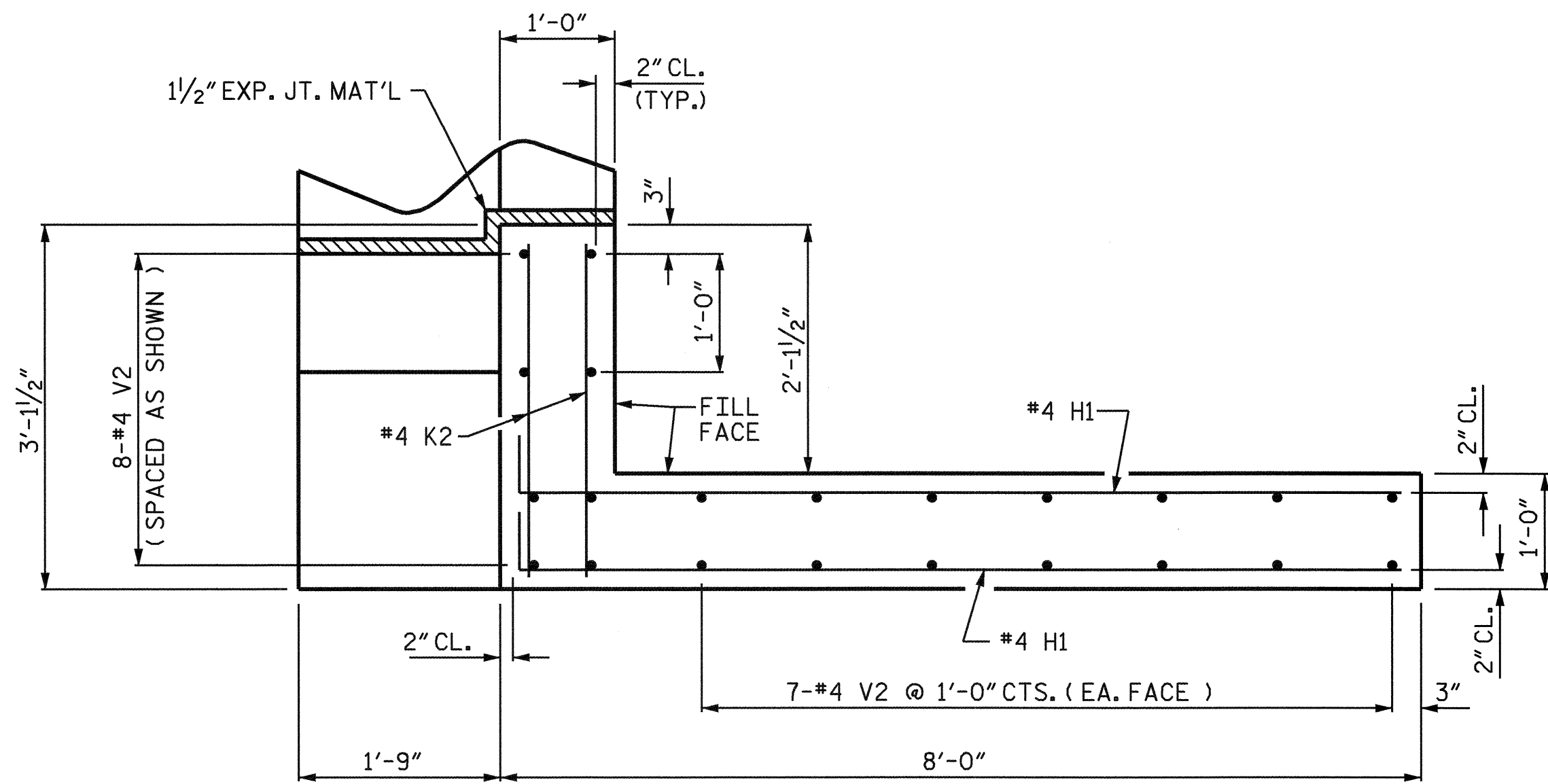
SUBSTRUCTURE
 END BENT No. 1

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

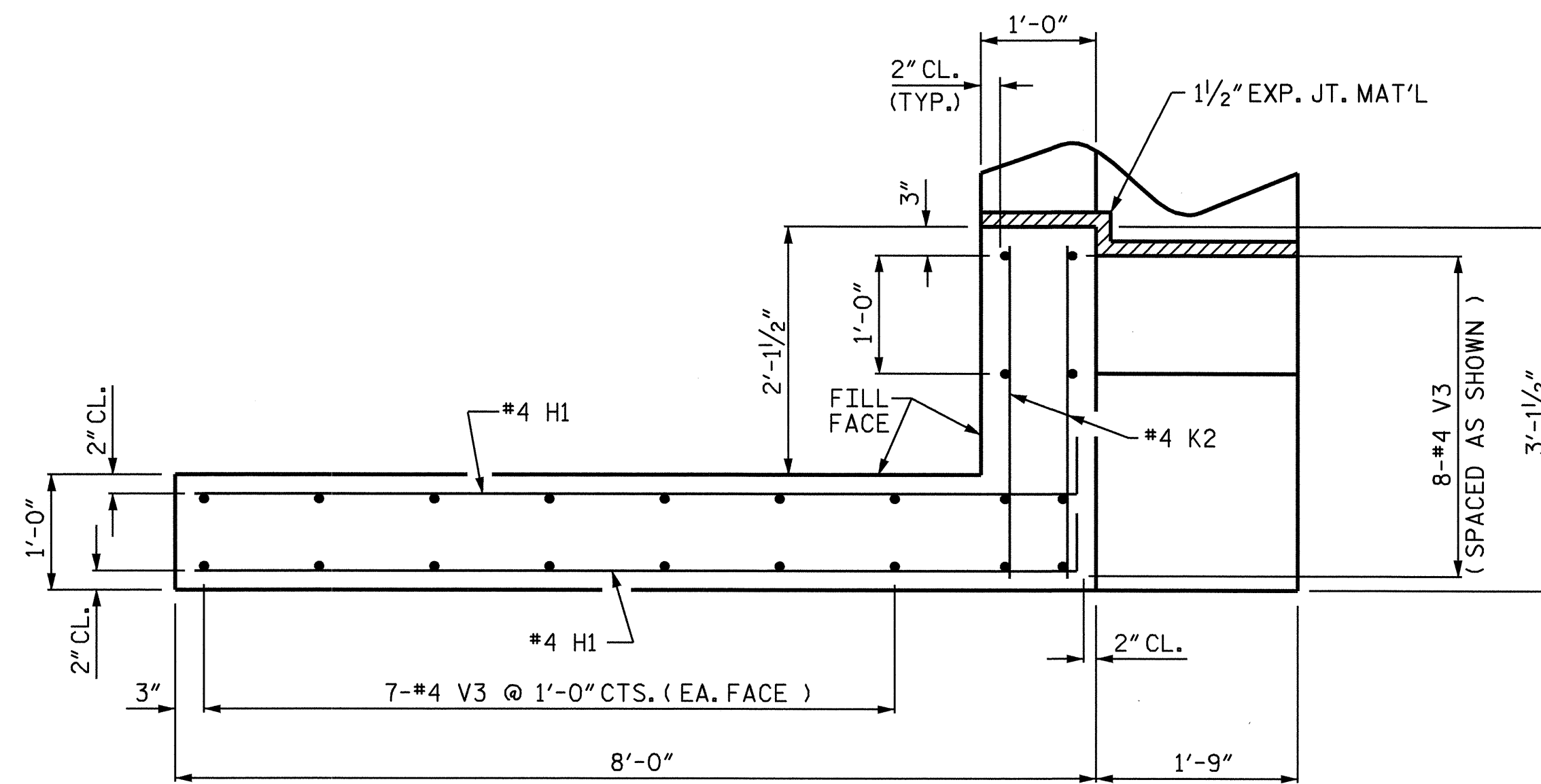
DRAWN BY: N. PIERCE DATE: 11/06
 CHECKED BY: A.K. PATEL DATE: 9/05

22-JAN-2007 12:20
 RA:\Structures\B4076\Substructure\B4076.sd.E*.1.dgn
 sbwlllms

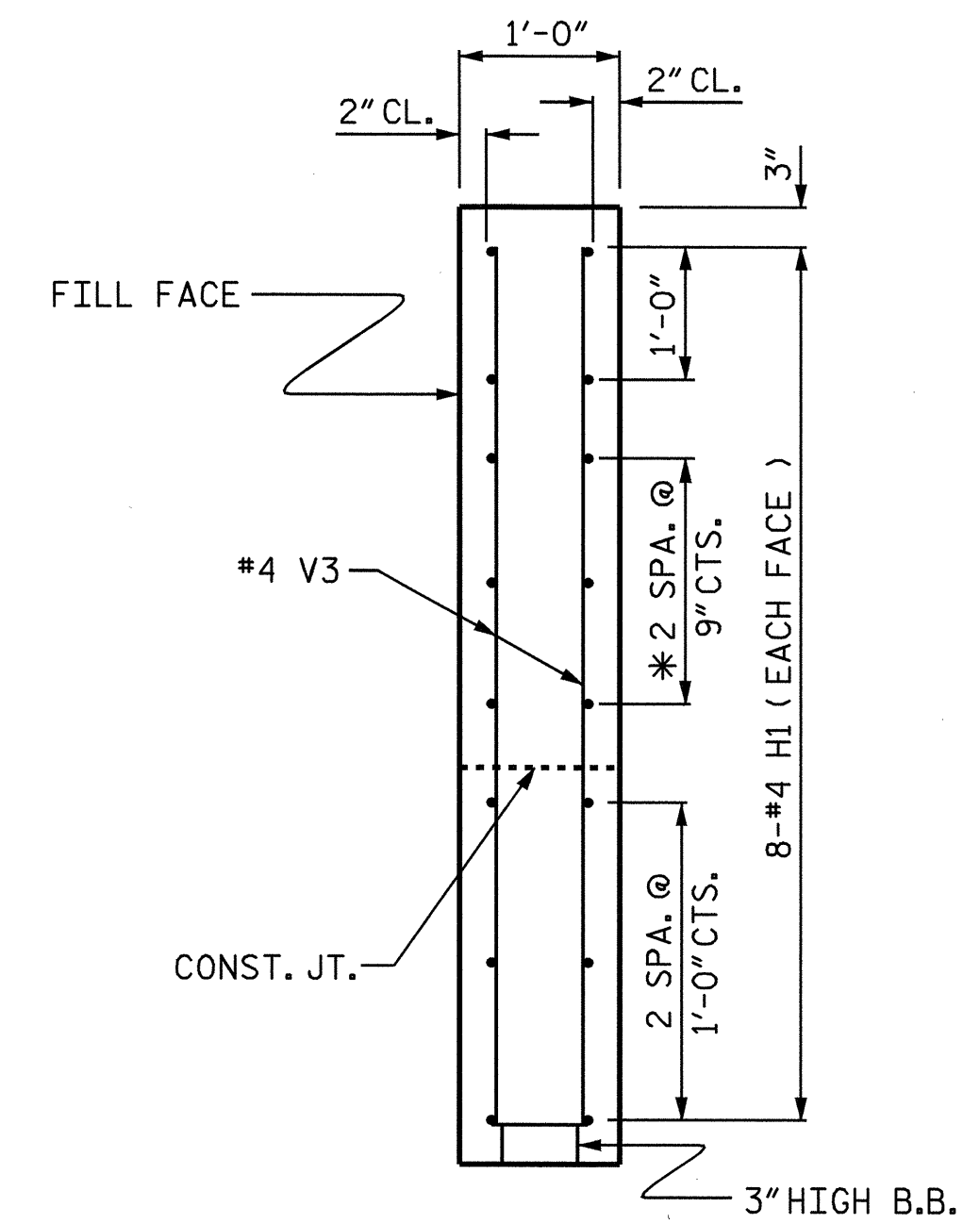




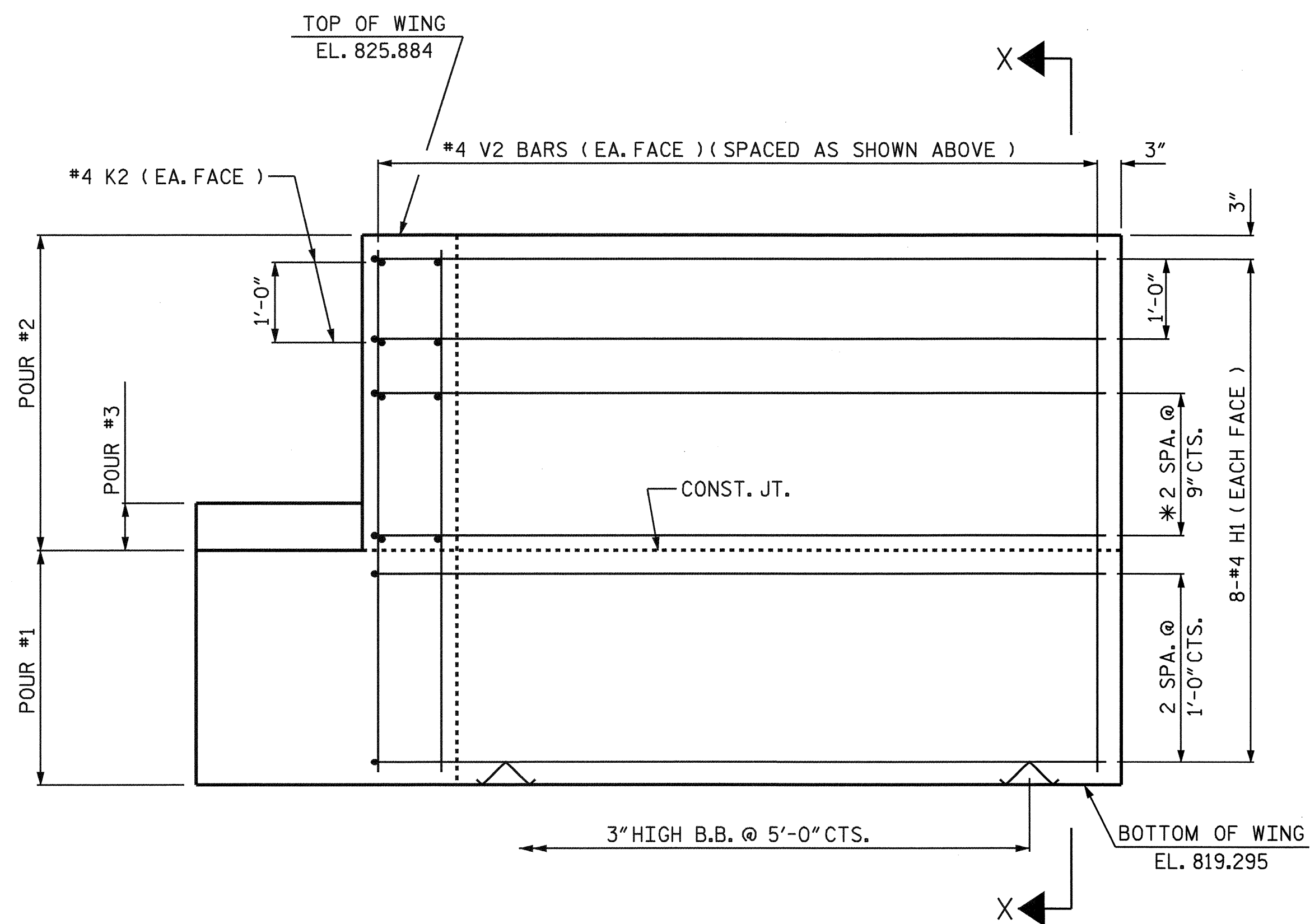
PLAN OF WING (W1)



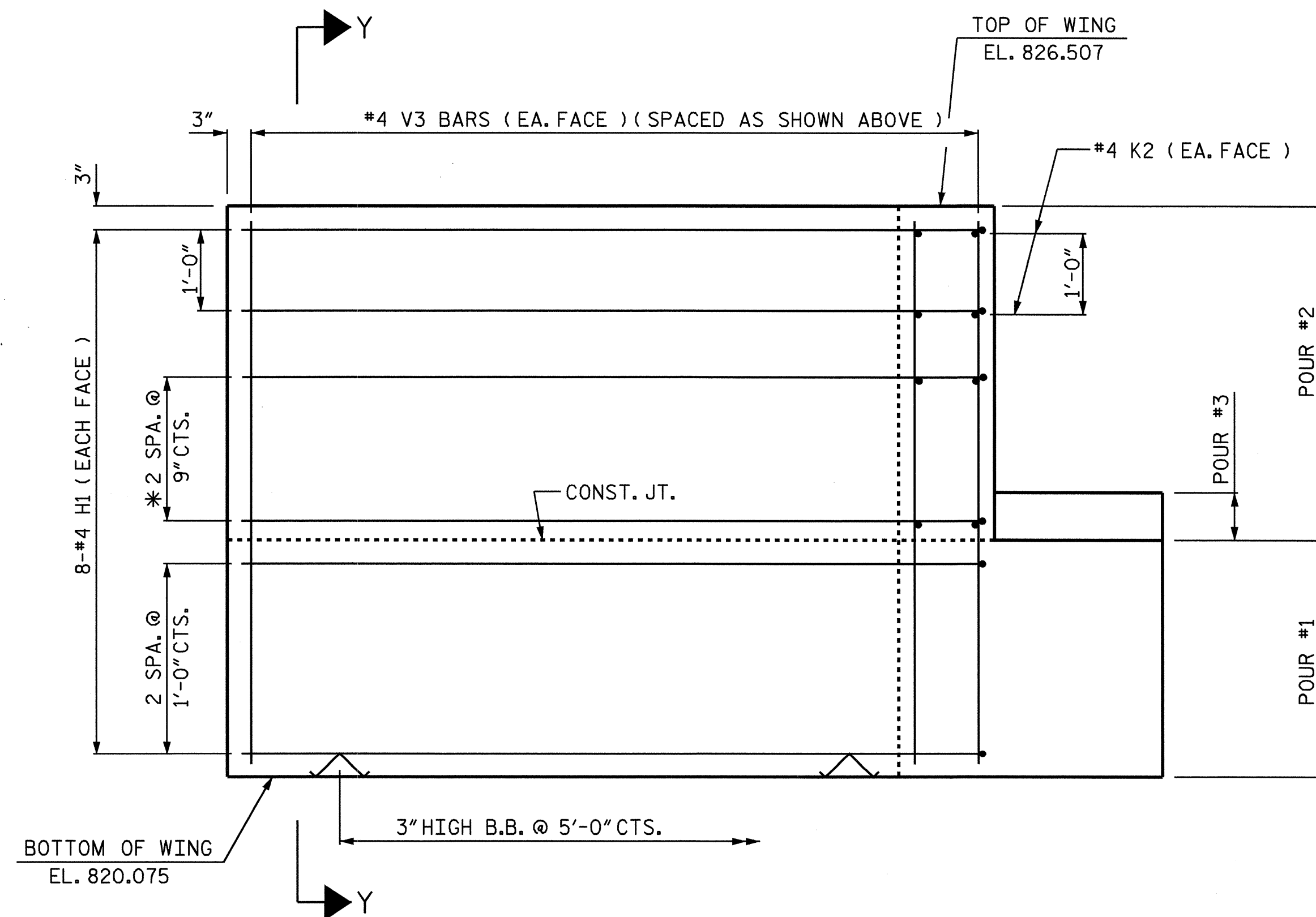
PLAN OF WING (W2)



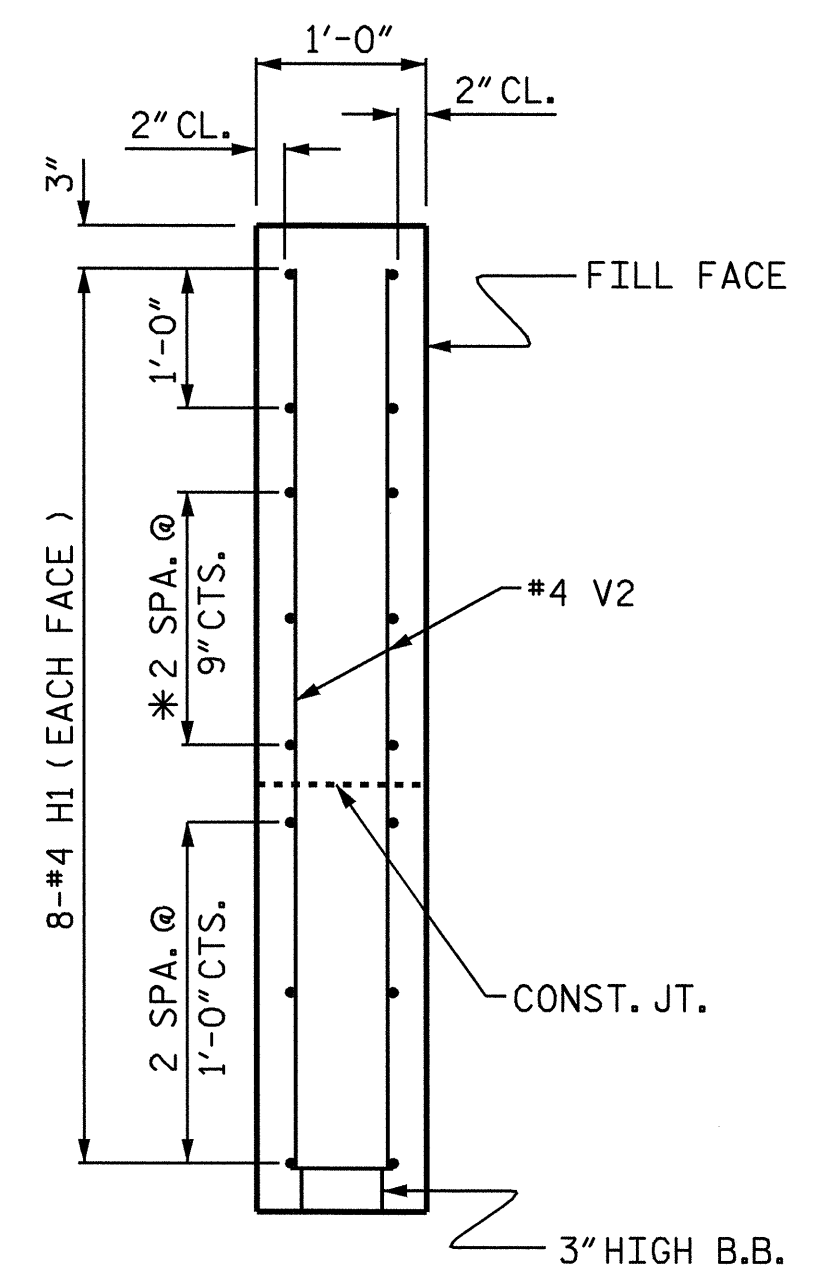
SECTION Y-Y



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



SECTION X-X

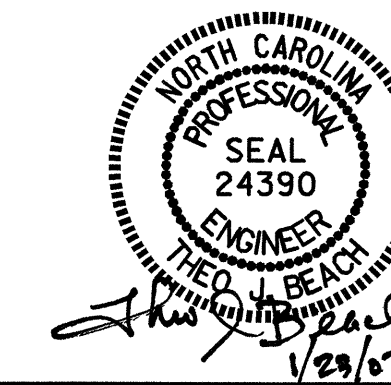
* MATCH THESE #4 H1 BARS TO THE #4 K1 BARS IN THE BACKWALL

PROJECT NO. B-4076
 CLEVELAND COUNTY
 STATION: 18+31.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

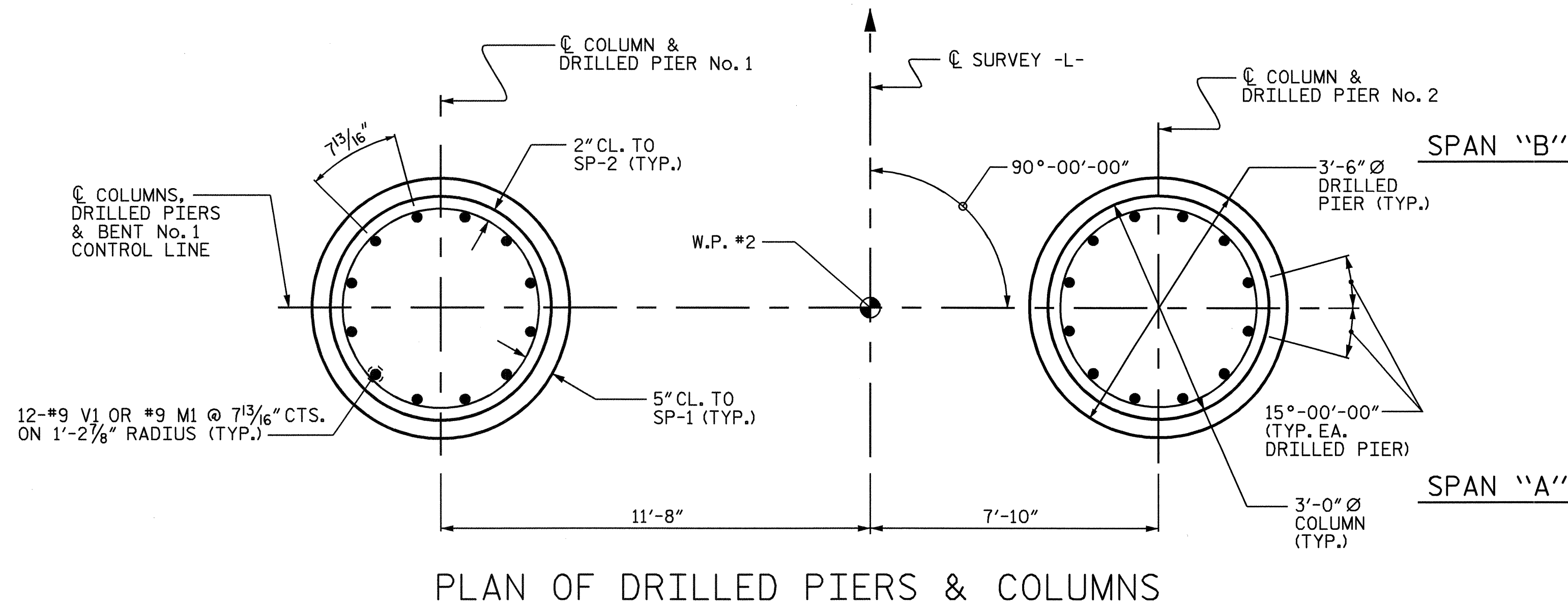
SUBSTRUCTURE
 END BENT No. 1



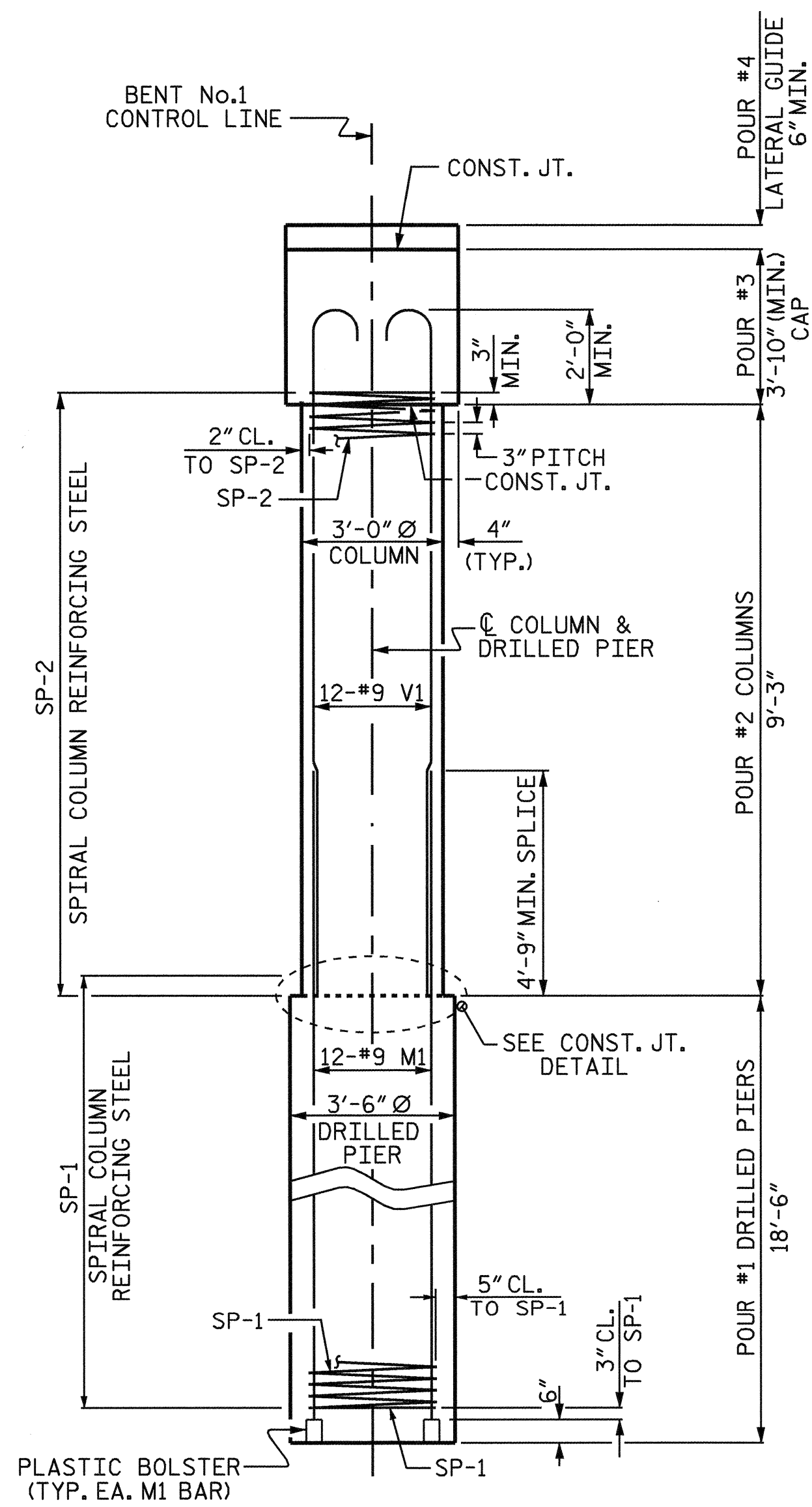
DRAWN BY: N. PIERCE DATE: 11/06
 CHECKED BY: A.K. PATEL DATE: 9/05

22-JAN-2007 12:20
 R:\Structures\b4076\Substructure\B4076_sd.E*.1.dgn
 sbwilliams

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			22

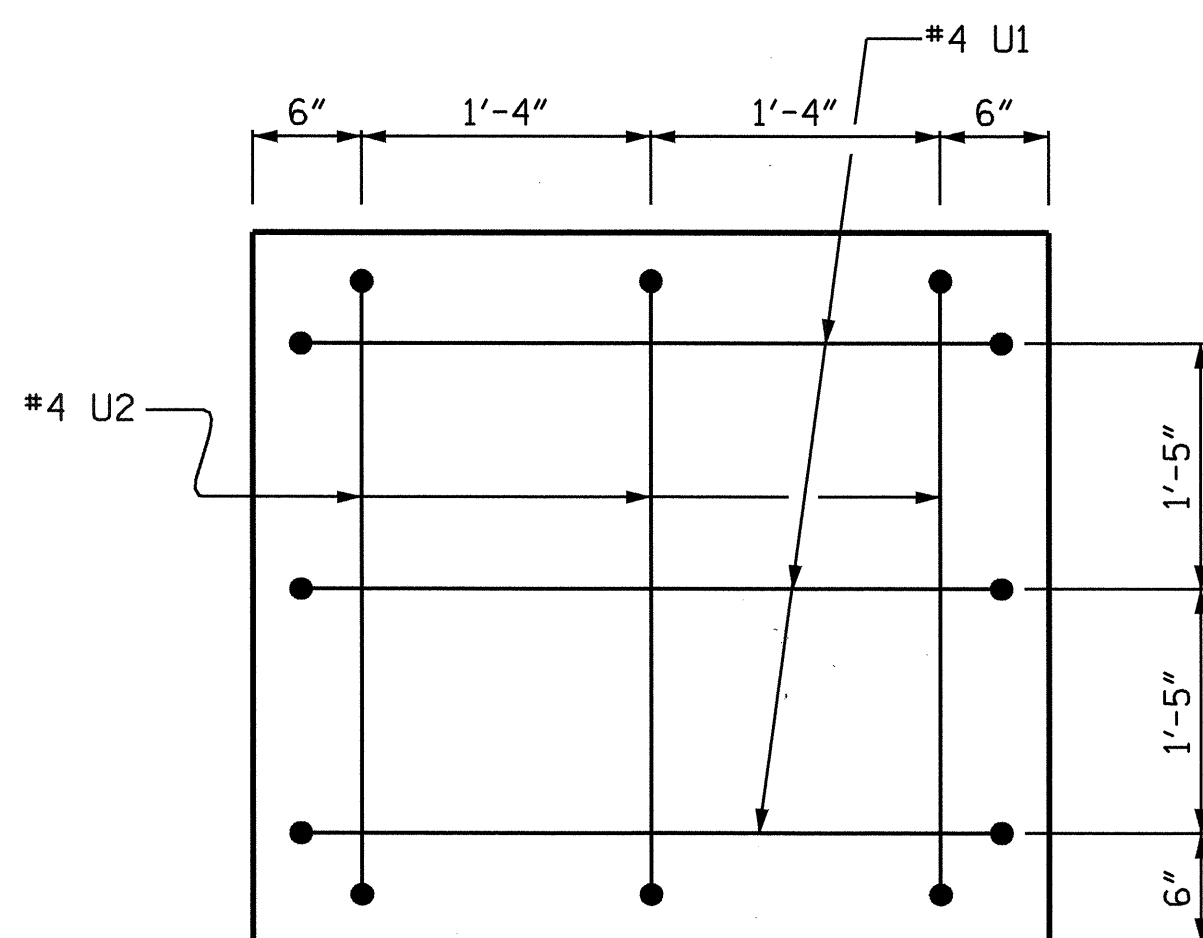


PLAN OF DRILLED PIERS & COLUMNS



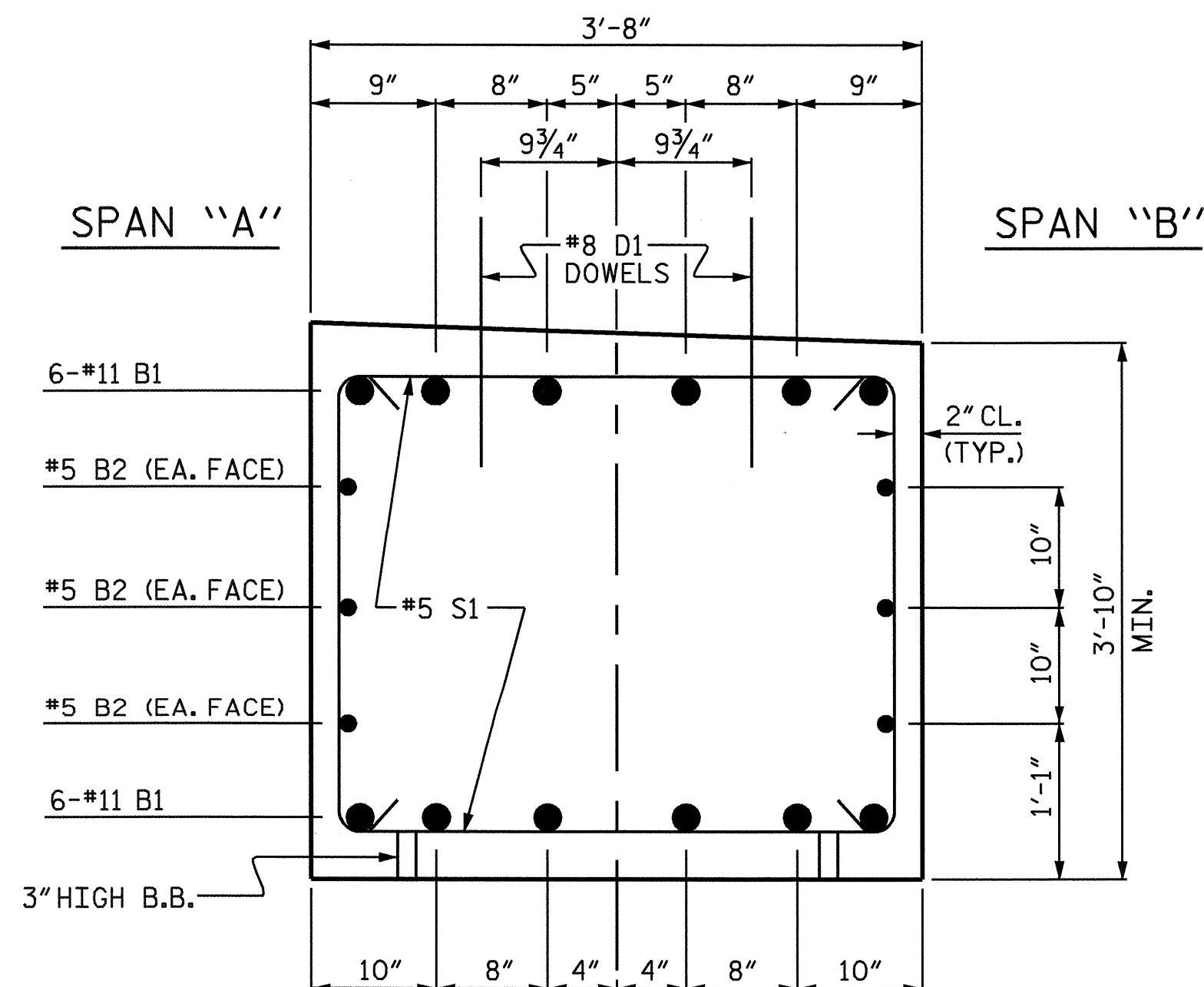
END ELEVATION

REINFORCING STEEL, DIMENSIONS AND DETAILS ARE TYPICAL FOR EACH COLUMN AND DRILLED PIER



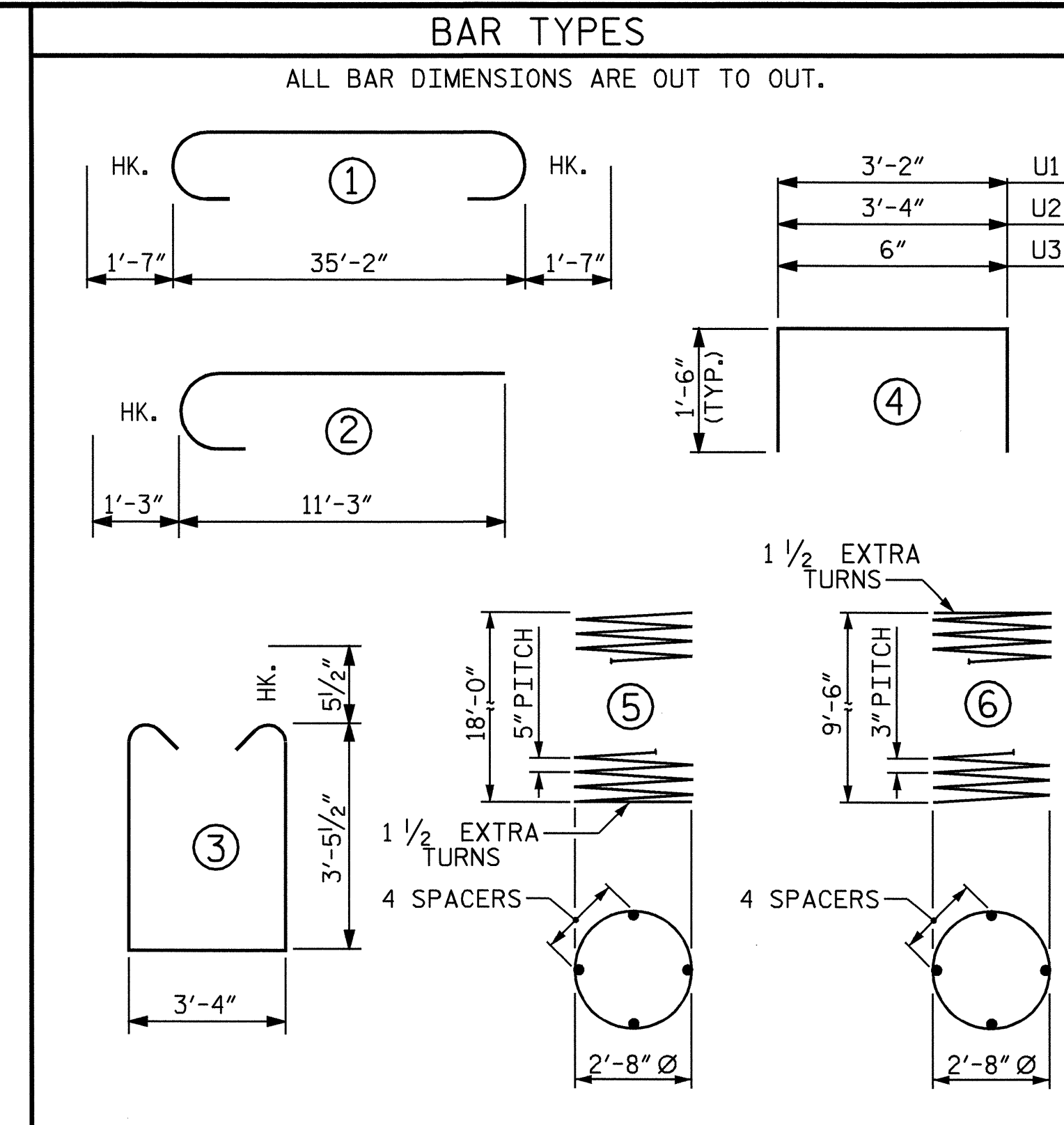
VIEW X-X

(TYP. EACH END)



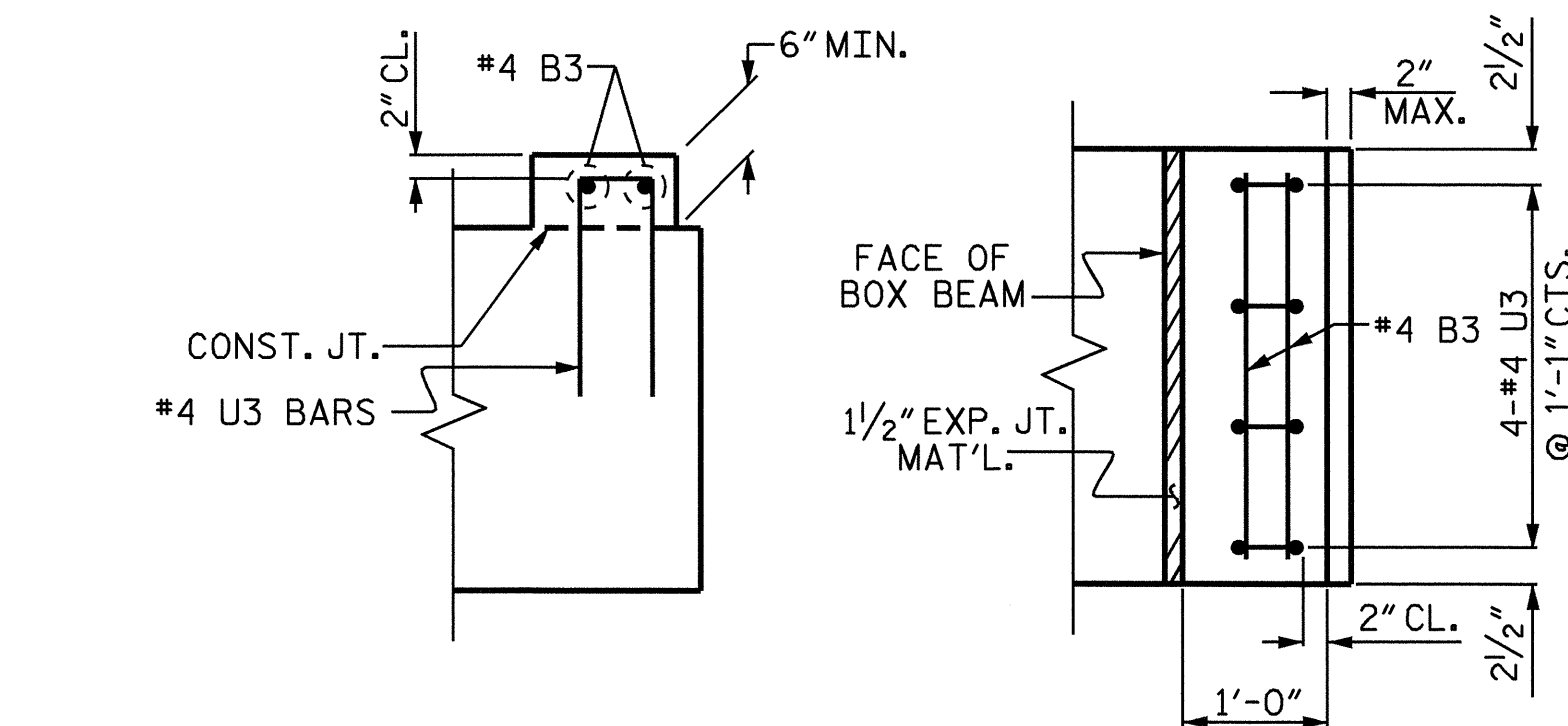
SECTION A-A

BENT No. 1 CONTROL LINE



ELEVATION LATERAL GUIDE DETAIL

(RIGHT LATERAL GUIDE SHOWN, LEFT SIDE SIMILAR)



CONSTRUCTION JOINT DETAIL

BILL OF MATERIAL

BENT No. 1

BAR NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	#11	1	38'-4"	2444
B2	#5	STR	35'-3"	221
B3	#4	STR	3'-4"	9
D1	#8	STR	2'-3"	264
M1	#9	STR	25'-9"	2101
S1	#5	3	11'-2"	629
U1	#4	4	6'-2"	25
U2	#4	4	6'-4"	25
U3	#4	4	3'-6"	19
V1	#9	2	12'-6"	1020

REINFORCING STEEL 6757 LBS

SPIRAL REINFORCING STEEL

SP-1	2	*	5	370'-2"	772
SP-2	2	**	6	330'-1"	441

SPIRAL REINFORCING STEEL 1213 LBS.

CLASS A CONCRETE BREAKDOWN

POUR #2 (COLUMNS)	4.8 C.Y.
POUR #3 (CAP)	18.6 C.Y.
POUR #4 (LATERAL GUIDE)	0.1 C.Y.
TOTAL CLASS A CONCRETE	23.5 C.Y.

DRILLED PIERS

DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS) = 13.2 C.Y.

3'-6" Ø DRILLED PIERS IN SOIL, LIN. FT. = 23.00

3'-6" Ø DRILLED PIERS NOT IN SOIL, LIN. FT. = 14.00

SID INSPECTION	EACH	2
SPT TESTING	EACH	2
CROSSHOLE SONIC LOGGING	EACH	1
CSL TUBES		=168 LIN. FT.

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

* THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

PROJECT NO. B-4076
CLEVELAND COUNTY
STATION: 18+31.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT No.1

REVISIONS

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

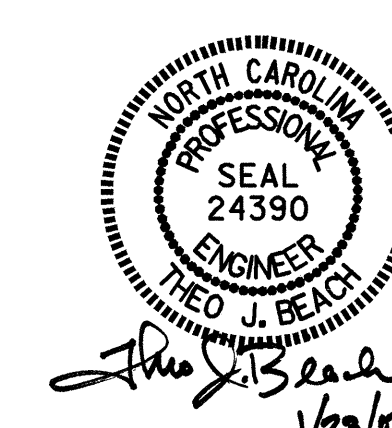
SHEET NO.

S-16

TOTAL SHEETS

22

DRAWN BY: S. B. WILLIAMS DATE: 4-06
CHECKED BY: T. J. BEACH DATE: 9-06



NOTES:

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

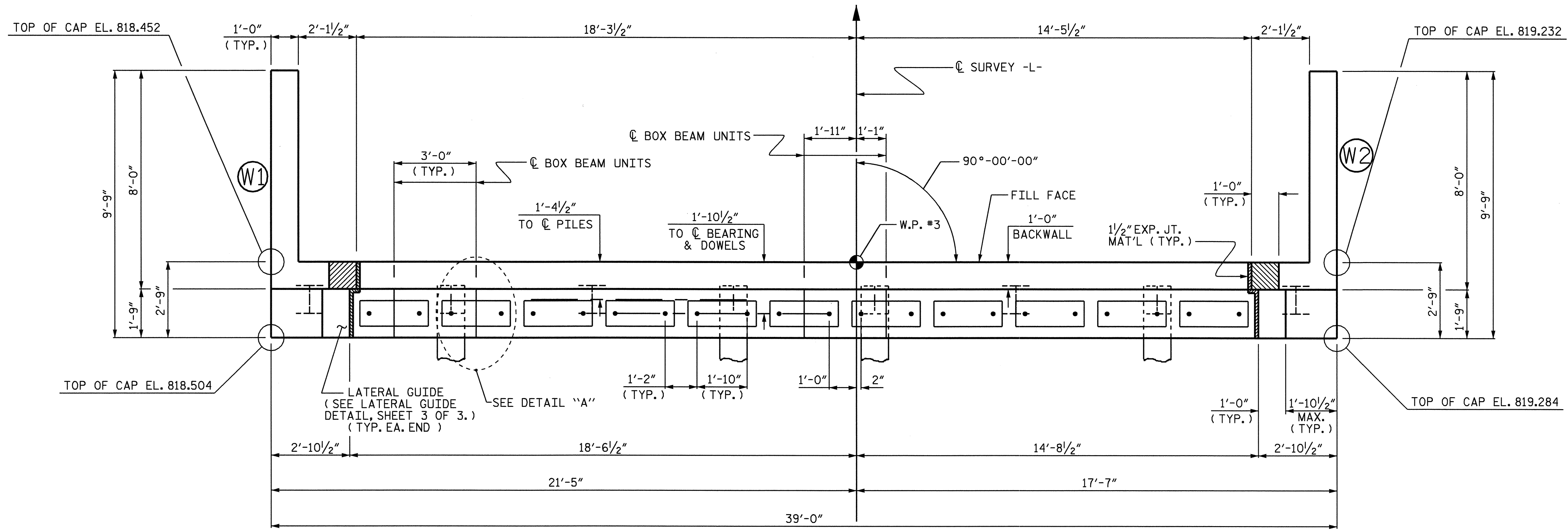
THE LATERAL GUIDES AT EACH END OF THE CAP ARE NOT TO BE POURED UNTIL AFTER THE BOX BEAM UNITS ARE IN PLACE.

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

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

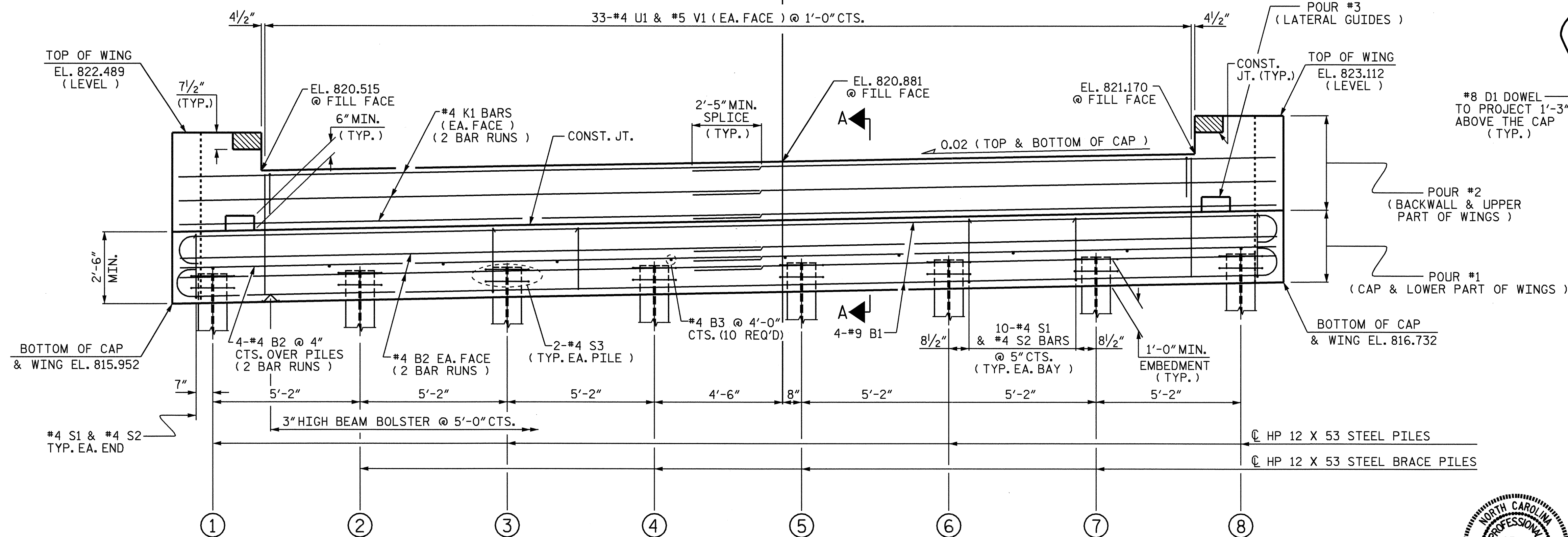
#5 V1 BARS IN BACKWALL SHALL BE PLACED 2" CLEAR FROM TOP OF BACKWALL.

FOR SECTION A-A, SEE SHEET 3 OF 3.

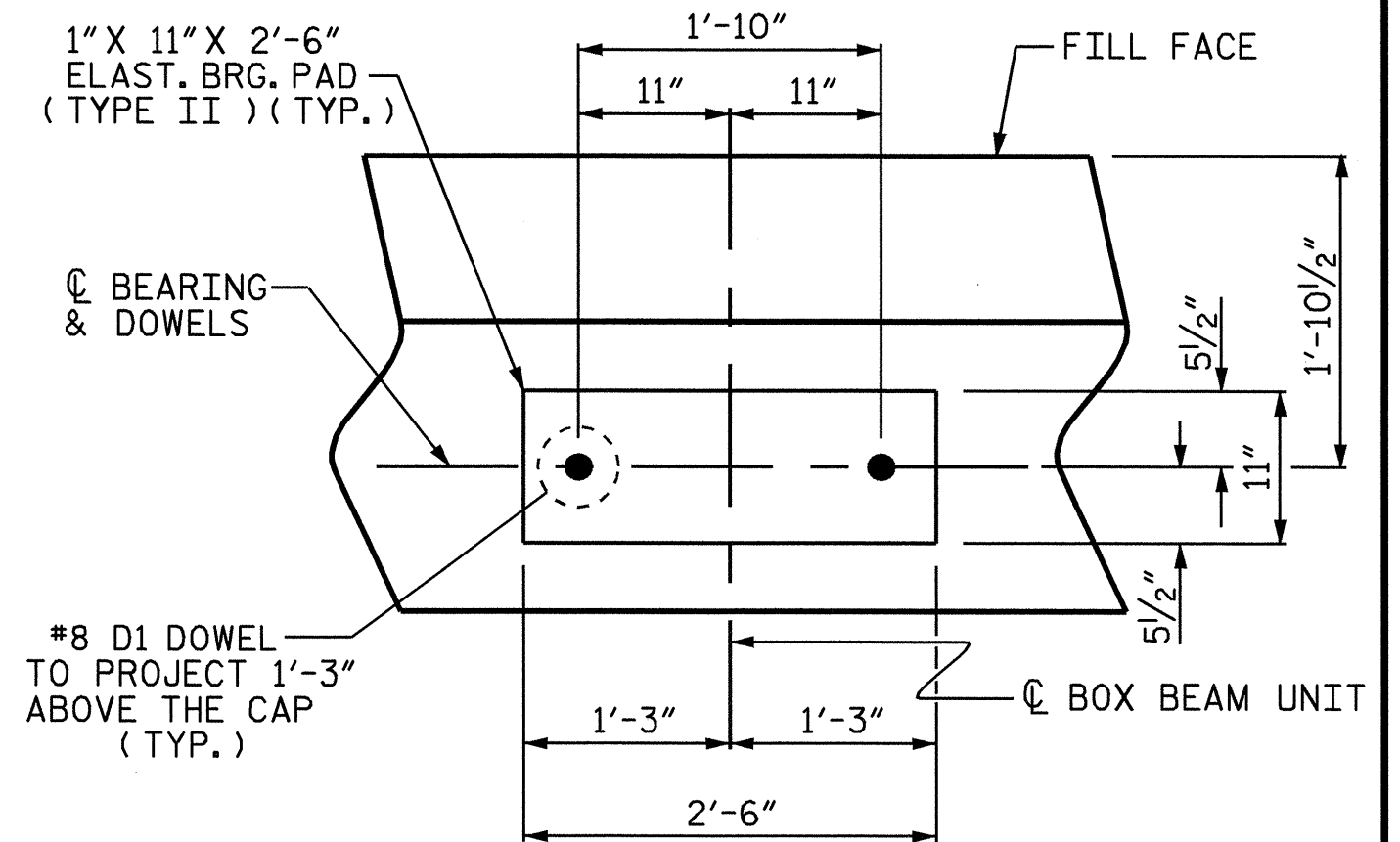


PLAN

TOP OF PILE ELEVATIONS	
1	816.990
2	817.094
3	817.197
4	817.300
5	817.404
6	817.507
7	817.610
8	817.714



ELEVATION



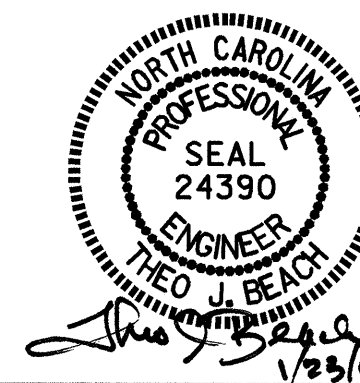
DETAIL "A"
(TYP. EA. BEARING)

PROJECT NO. B-4076
CLEVELAND COUNTY
 STATION: 18+31.00 -L-

SHEET 1 OF 3

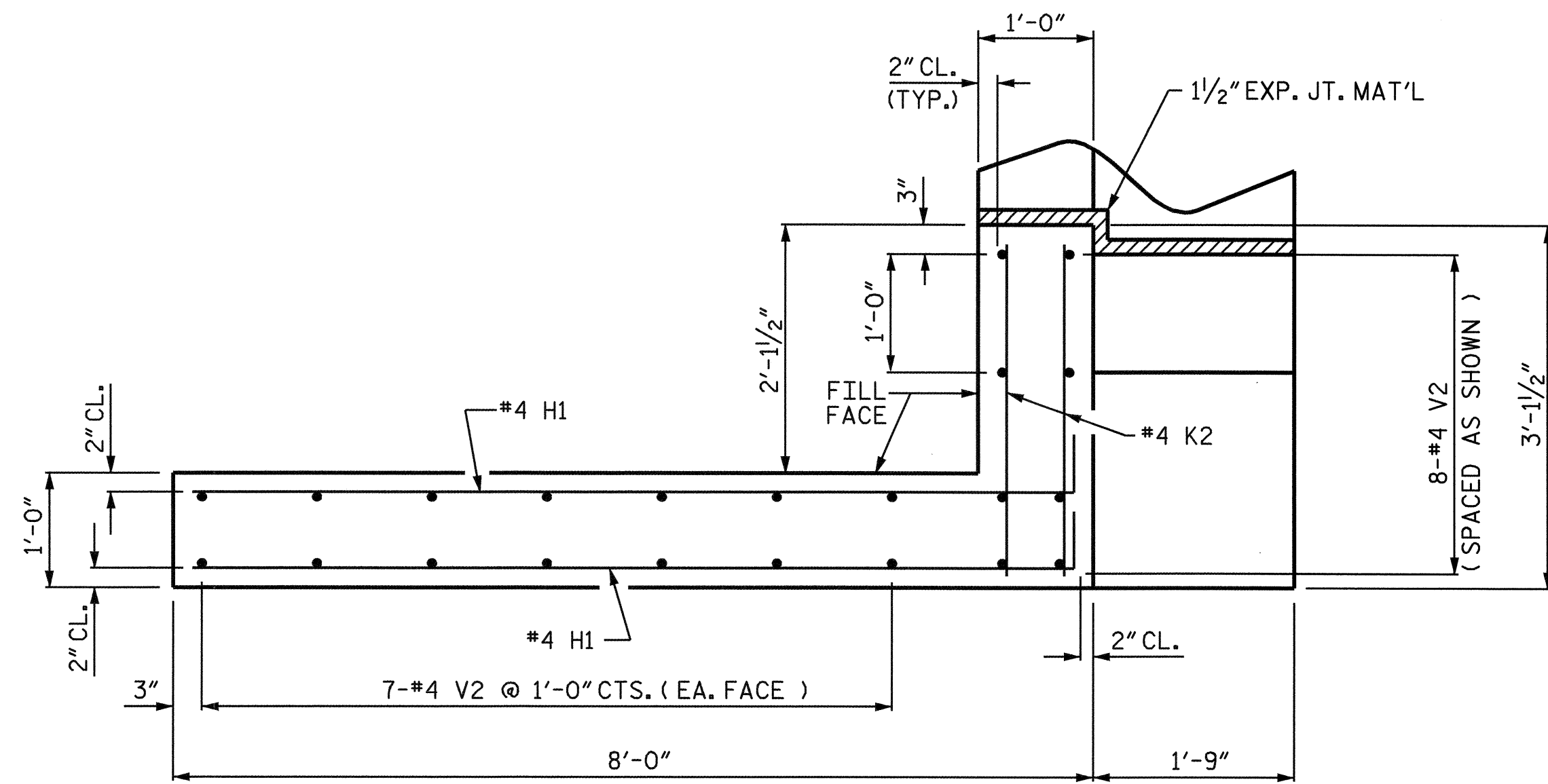
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT No. 2

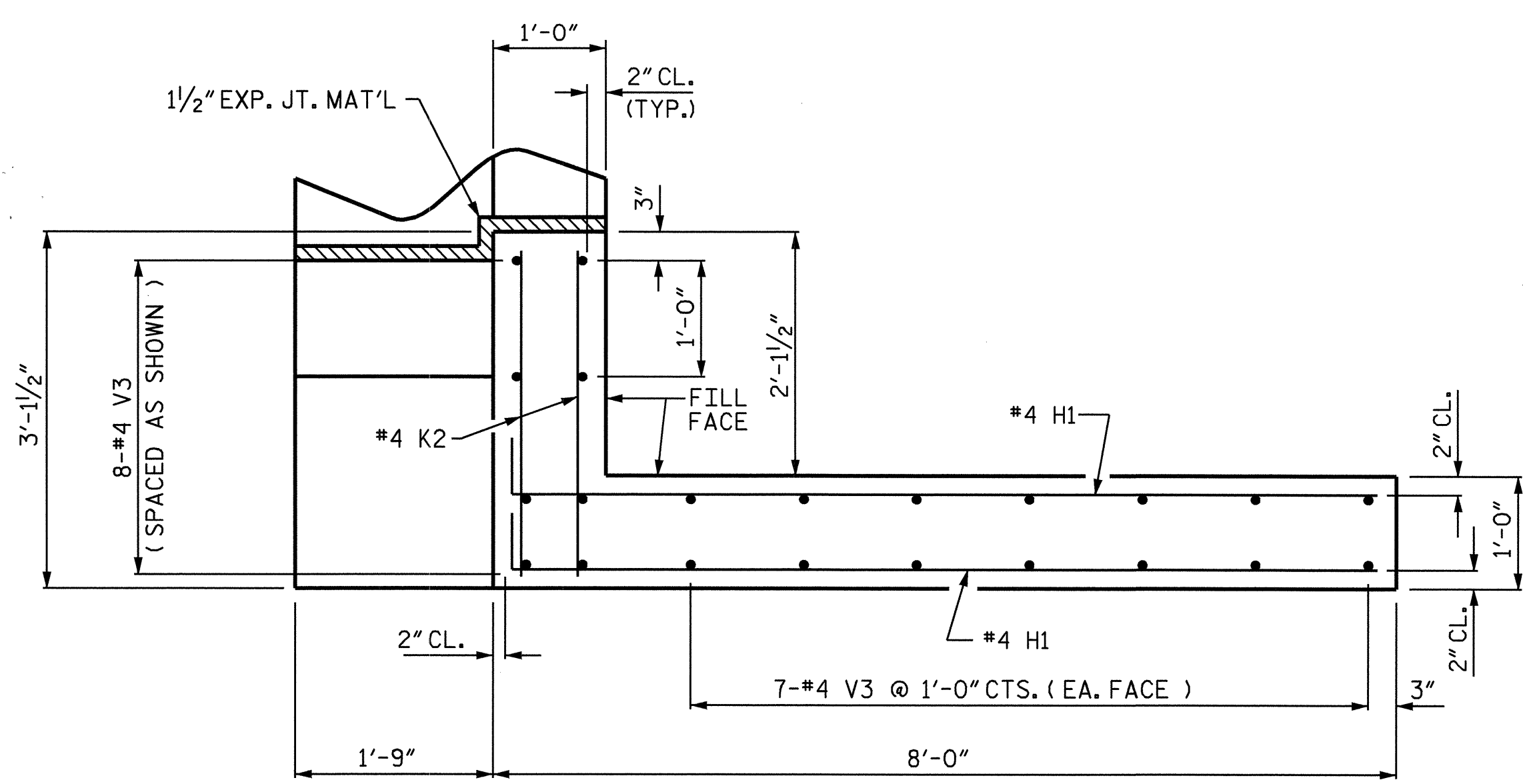


REVISIONS						SHEET NO. S-17
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 22
2			4			

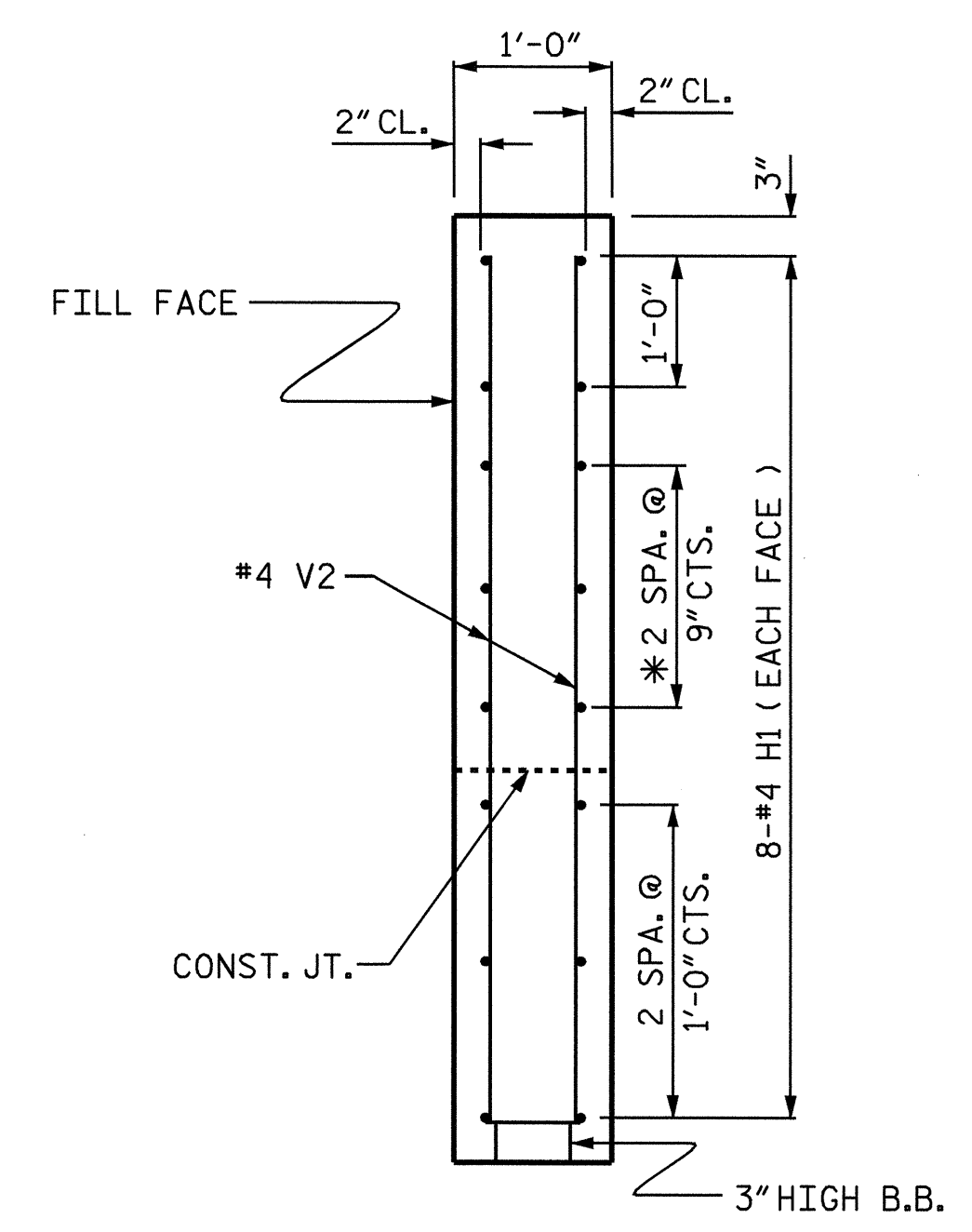
DRAWN BY: N. PIERCE DATE: 11/06
 CHECKED BY: A.K. PATEL DATE: 9/05



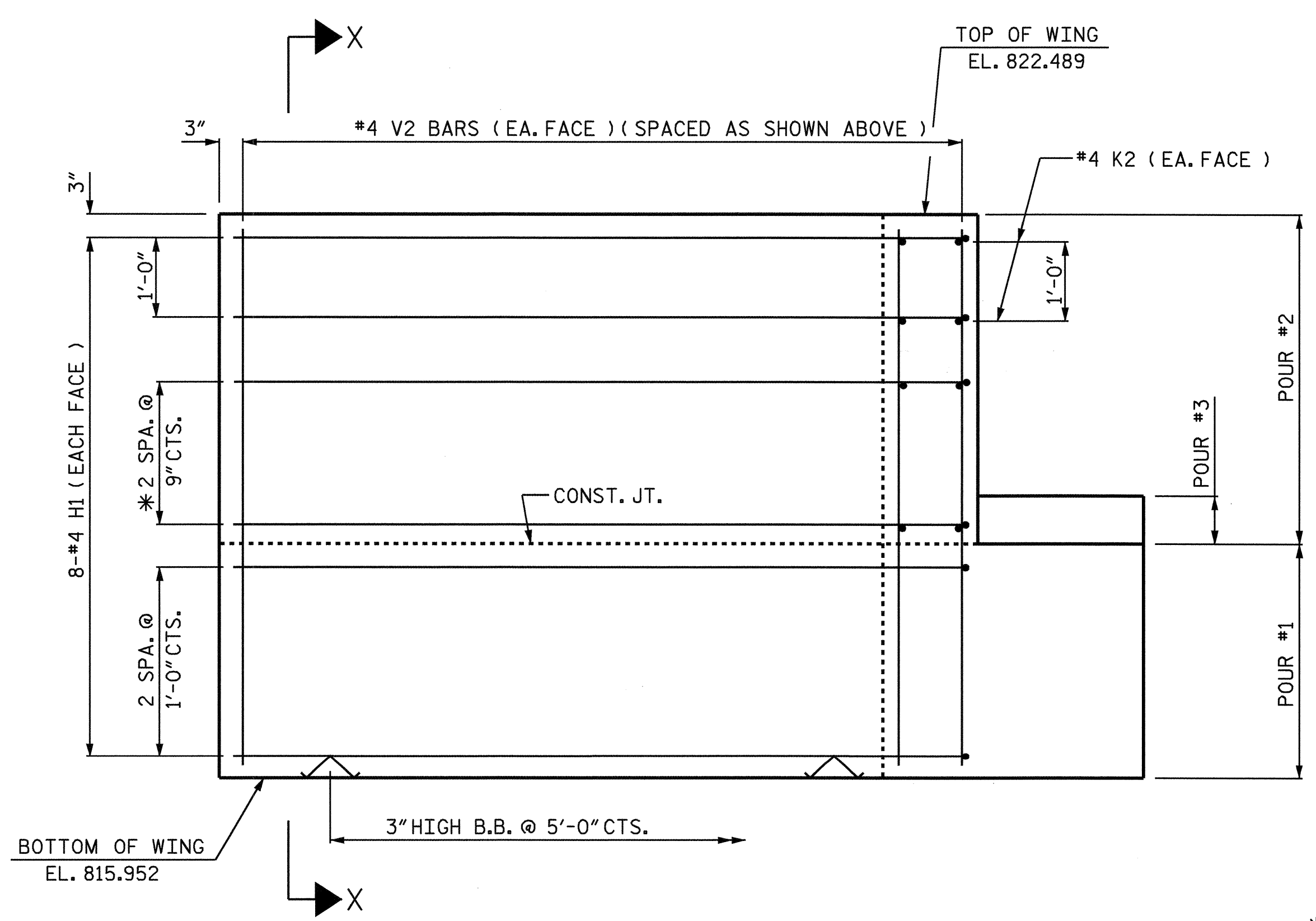
PLAN OF WING (W1)



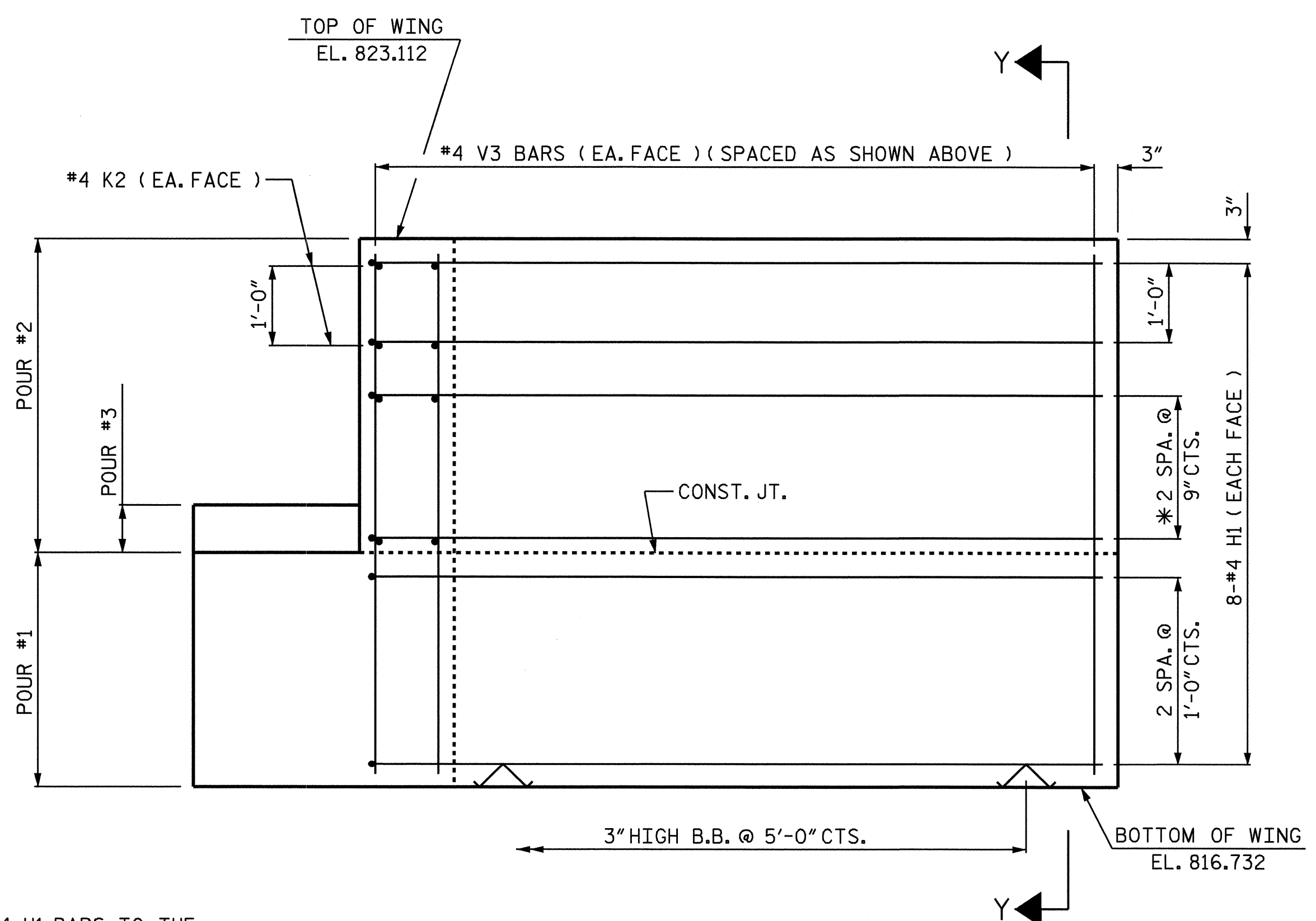
PLAN OF WING (W2)



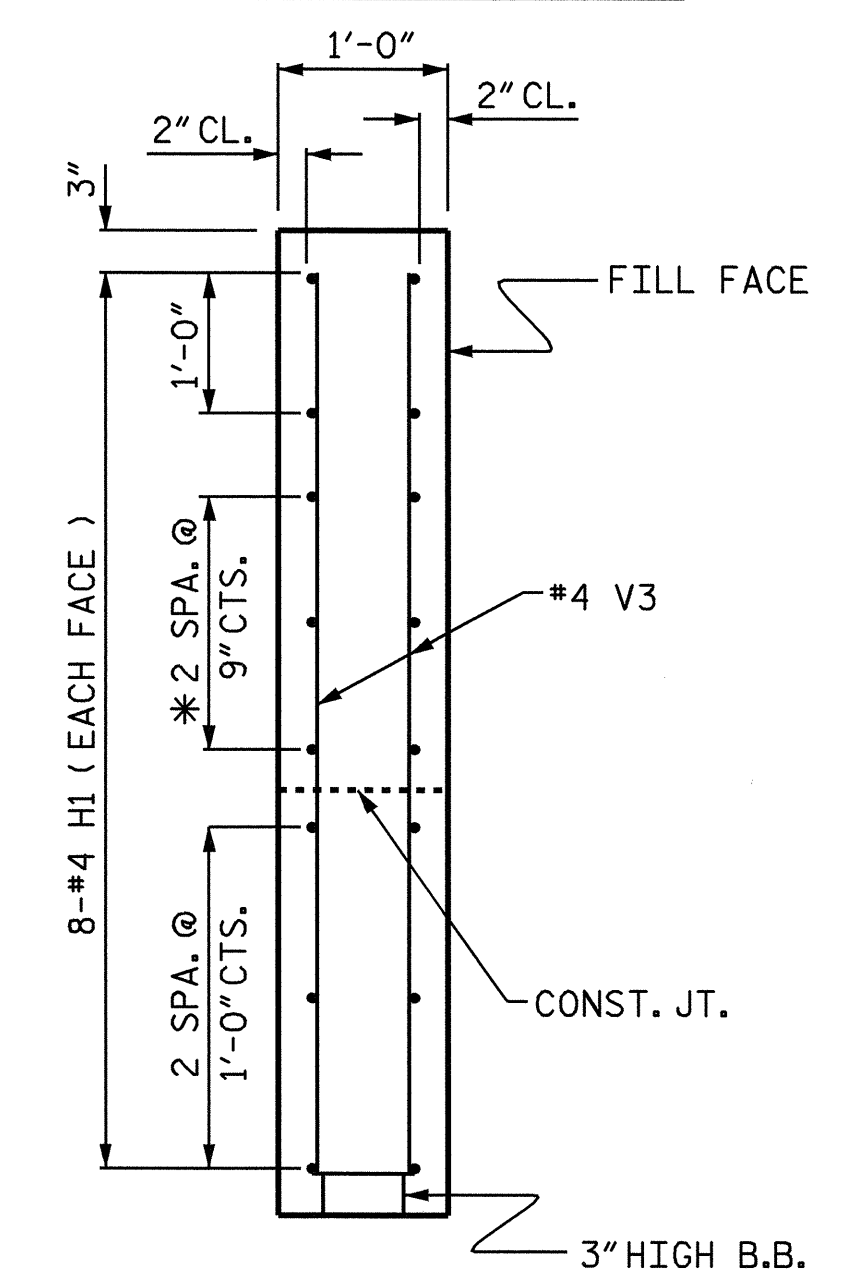
SECTION X-X



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



SECTION Y-Y

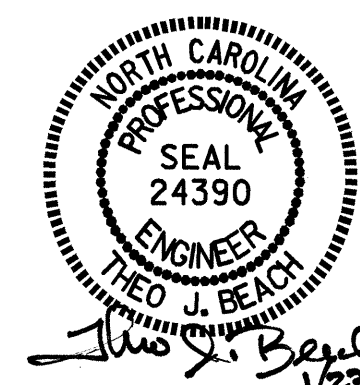
* MATCH THESE #4 H1 BARS TO THE #4 K1 BARS IN THE BACKWALL

PROJECT NO. B-4076
 CLEVELAND COUNTY
 STATION: 18+31.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT No. 2



DRAWN BY: N. PIERCE DATE: 11/06
 CHECKED BY: A.K. PATEL DATE: 9/05

REVISIONS						SHEET NO. S-18
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 22
2			4			

BAR TYPES

BILL OF MATERIAL

END BENT No. 2

BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	41'-0"	1115
B2	16	#4	STR	20'-7"	220
B3	10	#4	STR	2'-5"	16
D1	22	#8	STR	2'-3"	132
H1	32	#4	5	8'-4"	178
K1	12	#4	STR	20'-7"	165
K2	8	#4	STR	2'-9"	15
S1	72	#4	2	7'-5"	357
S2	72	#4	3	3'-2"	152
S3	16	#4	6	6'-6"	69
U1	33	#4	4	3'-8"	81
U2	4	#4	4	4'-5"	12
V1	66	#5	STR	4'-2"	287
V2	22	#4	STR	6'-2"	91
V3	22	#4	STR	6'-0"	88

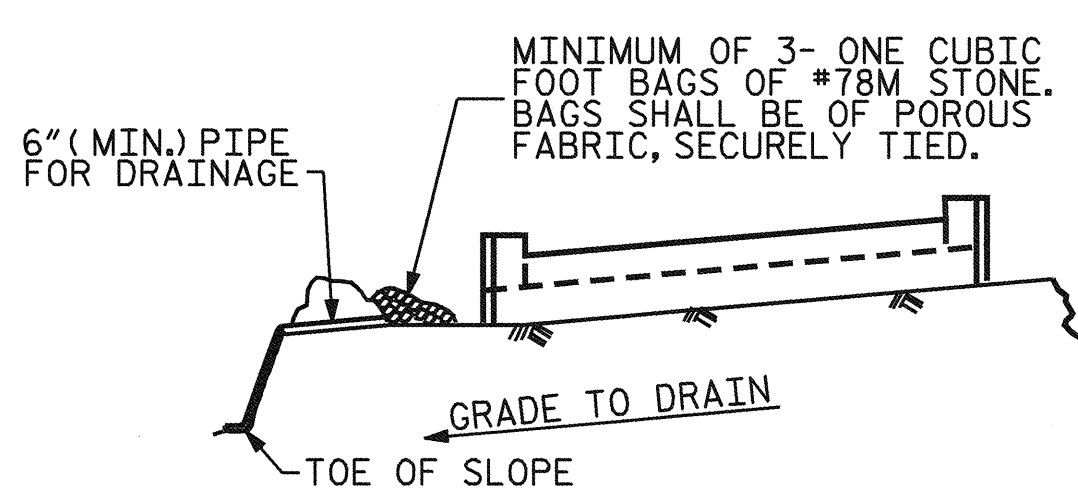
REINFORCING STEEL 2978 LBS.

CLASS A CONCRETE BREAKDOWN

POUR #1	CAP & LOWER PART OF WINGS	11.3 C.Y.
POUR #2	UPPER PART OF WINGS & BACKWALL	5.3 C.Y.
POUR #3	LATERAL GUIDES	0.1 C.Y.
TOTAL CLASS A CONCRETE		16.7 C.Y.

HP 12 X 53 STEEL PILES

NO: 8 LIN. FT. = 320.0

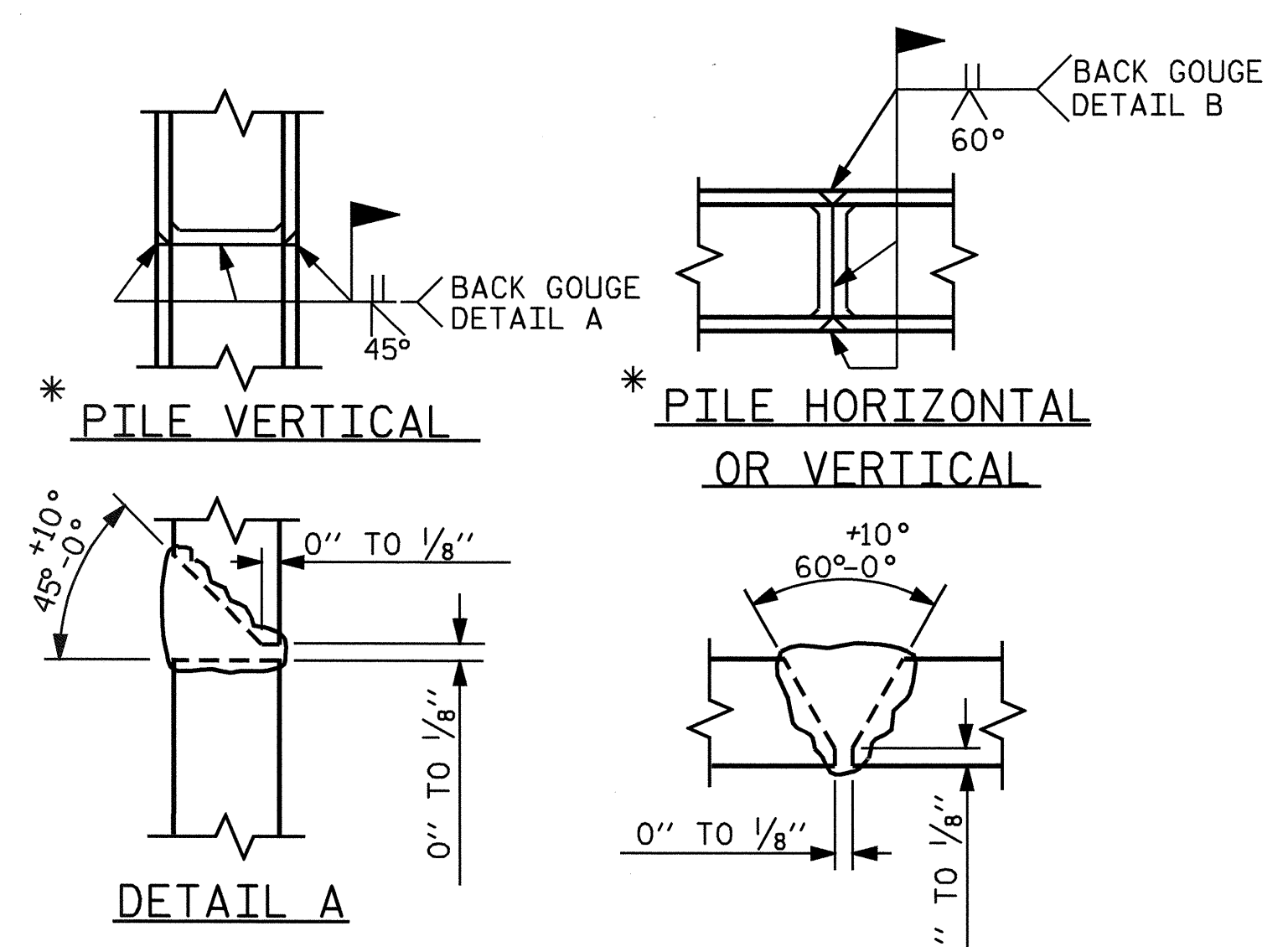


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

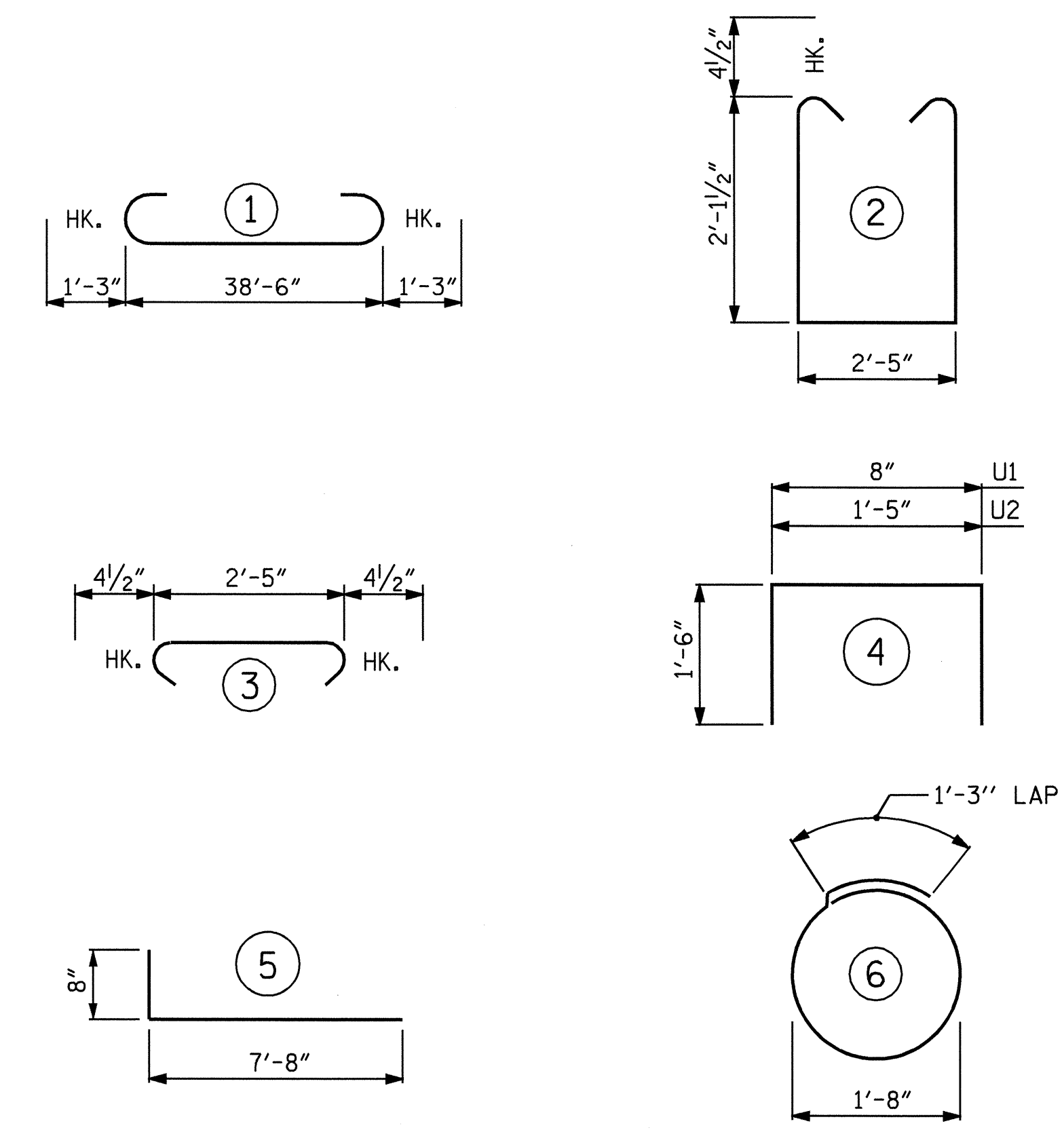
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

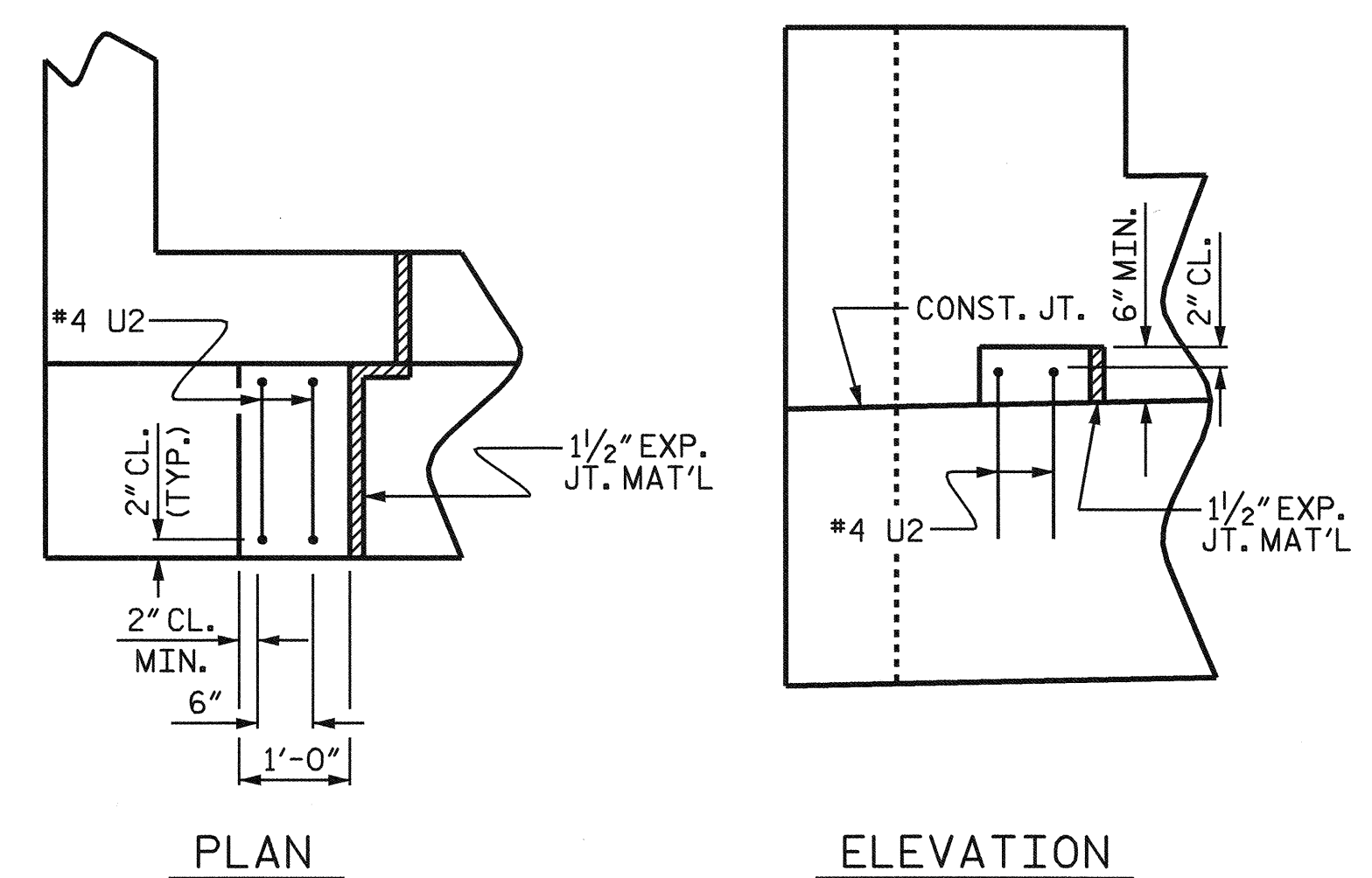


* POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

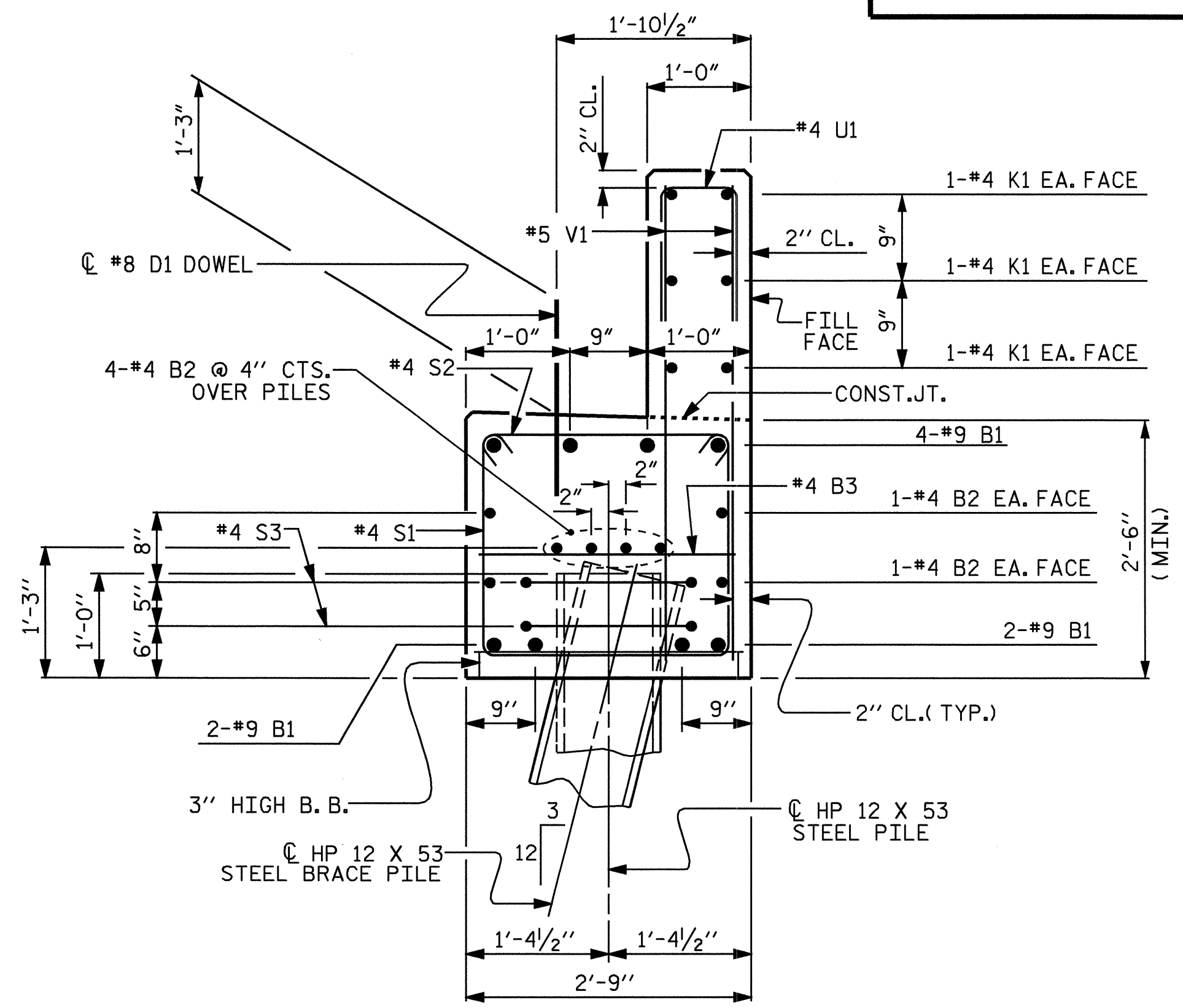


ALL BAR DIMENSIONS ARE OUT TO OUT.



LATERAL GUIDE DETAIL

(LEFT LATERAL GUIDE SHOWN, RIGHT LATERAL GUIDE SIMILAR)



SECTION A-A

PROJECT NO. B-4076

CLEVELAND COUNTY

STATION: 18+31.00 -L-

SHEET 3 OF 3

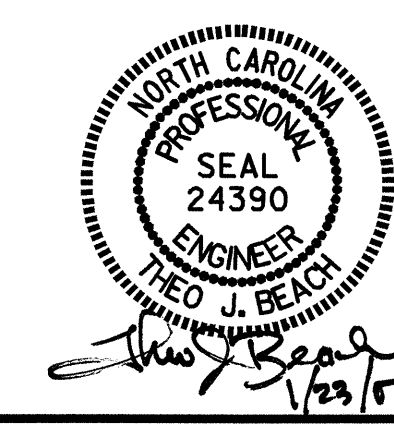
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

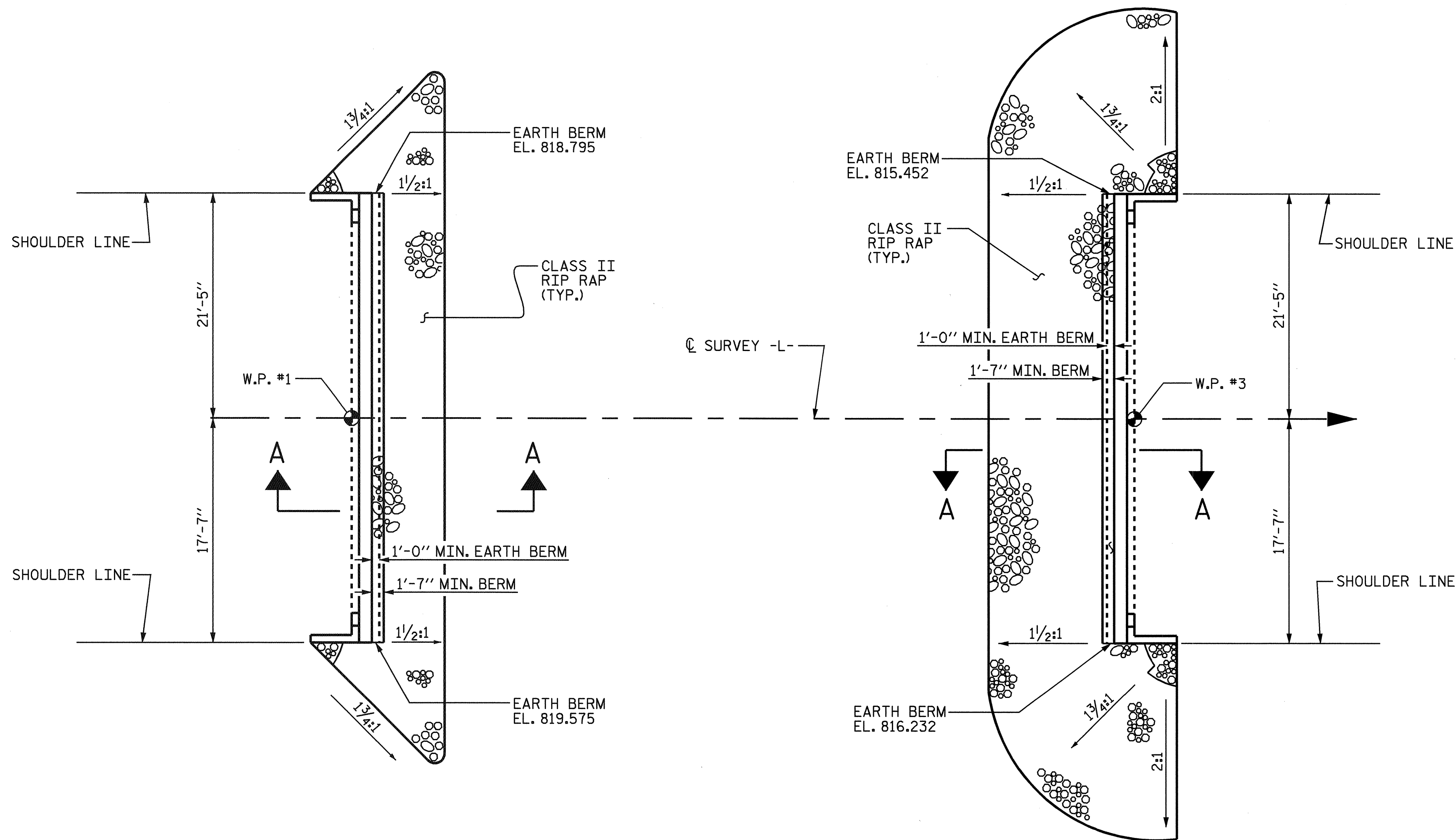
SUBSTRUCTURE
END BENT No. 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			22

DRAWN BY: N. PIERCE DATE: 11/06

CHECKED BY: A.K. PATEL DATE: 9/05

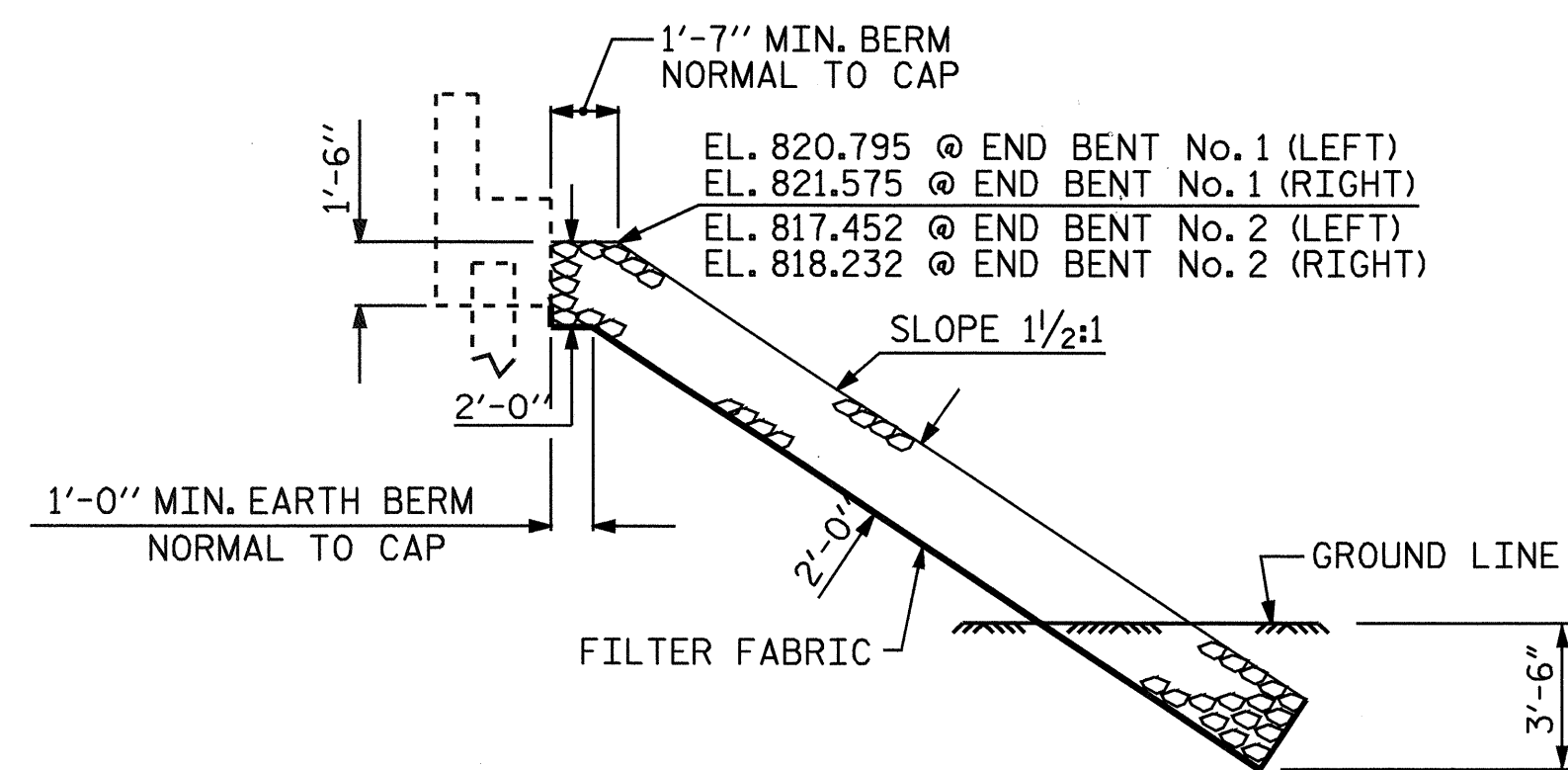




PLAN OF RIP RAP
AT END BENT No. 1

PLAN OF RIP RAP
AT END BENT No. 2

ESTIMATED QUANTITIES		
BRIDGE AT STA. 18+31.00 -L-	RIP RAP CLASS II	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT No. 1	44	49
END BENT No. 2	196	218

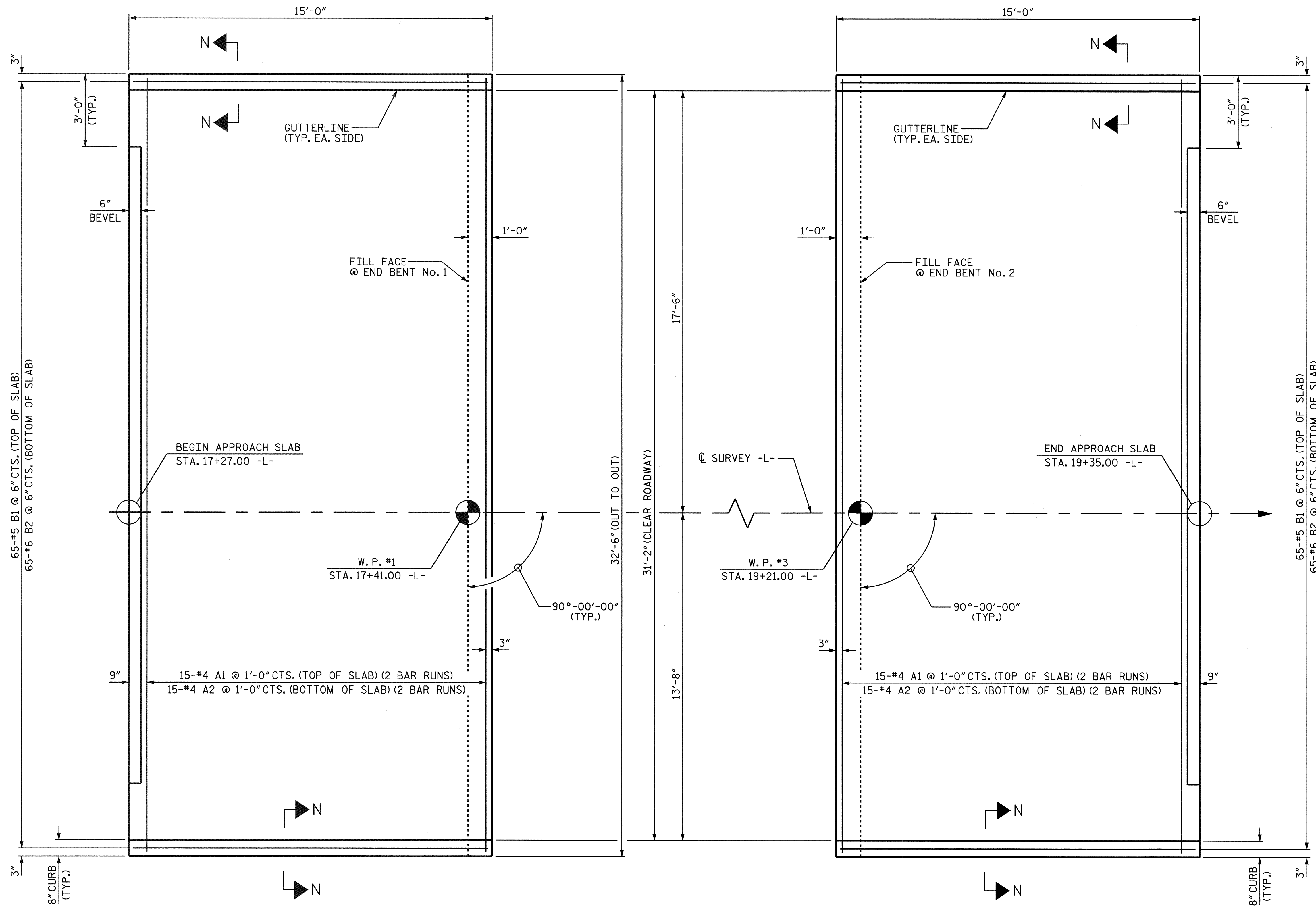


SECTION A-A

PROJECT NO. B-4076
CLEVELAND COUNTY
 STATION: 18+31.00 -L-

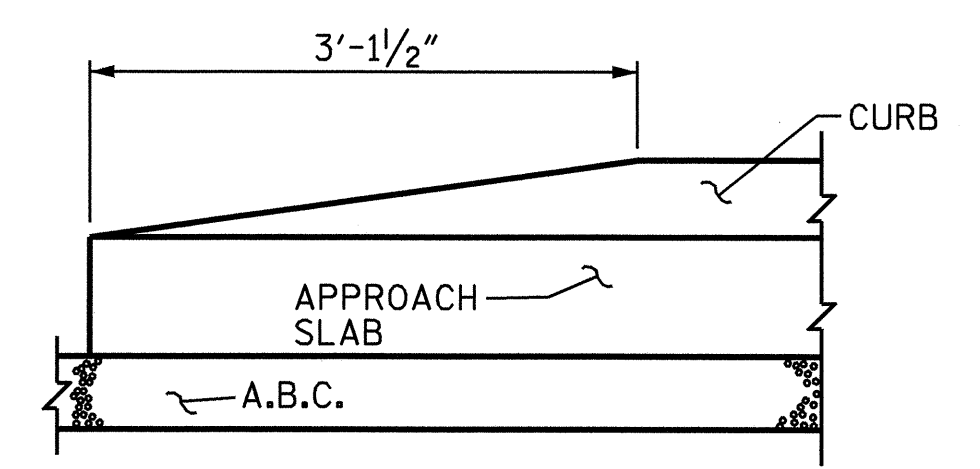
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
— RIP RAP DETAILS —					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

THEO J. BEACH
 3/15/06

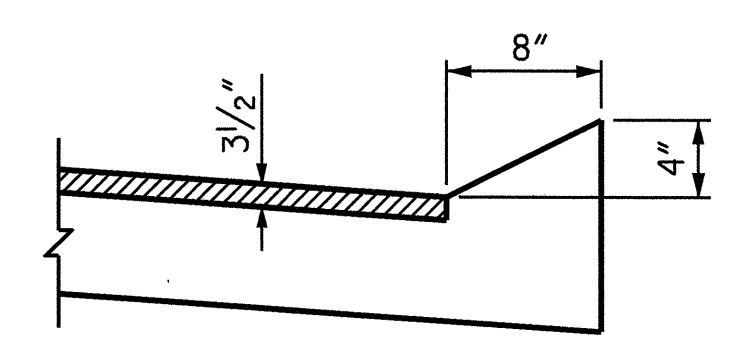


PLAN AT END BENT No. 1

PLAN AT END BENT No. 2



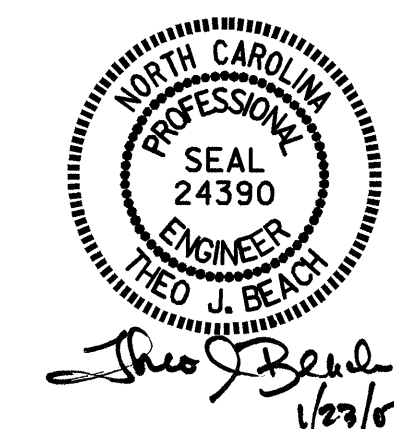
END OF CURB WITHOUT SHOULDER BERM GUTTER



SECTION N-N
CURB DETAILS

PROJECT NO. B-4076
CLEVELAND COUNTY
 STATION: 18+31.00 -L-

SHEET 1 OF 2



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 BRIDGE APPROACH SLAB
 FOR PRESTRESSED
 CONCRETE BOX BEAM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS
2			4			22

DRAWN BY : A. K. PATEL/NAP DATE : 11/30/06
 CHECKED BY : S. B. WILLIAMS DATE : 9/13/05

BILL OF MATERIAL					
FOR ONE APPROACH SLAB (2 REQ'D)					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	30	#4	STR	17'-1"	342
A2	30	#4	STR	17'-0"	341
*B1	65	#5	STR	14'-2"	960
B2	65	#6	STR	14'-8"	1432
REINFORCING STEEL				LBS.	1773
*EPOXY COATED REINFORCING STEEL				LBS.	1302
CLASS AA CONCRETE				C. Y.	18.8

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.

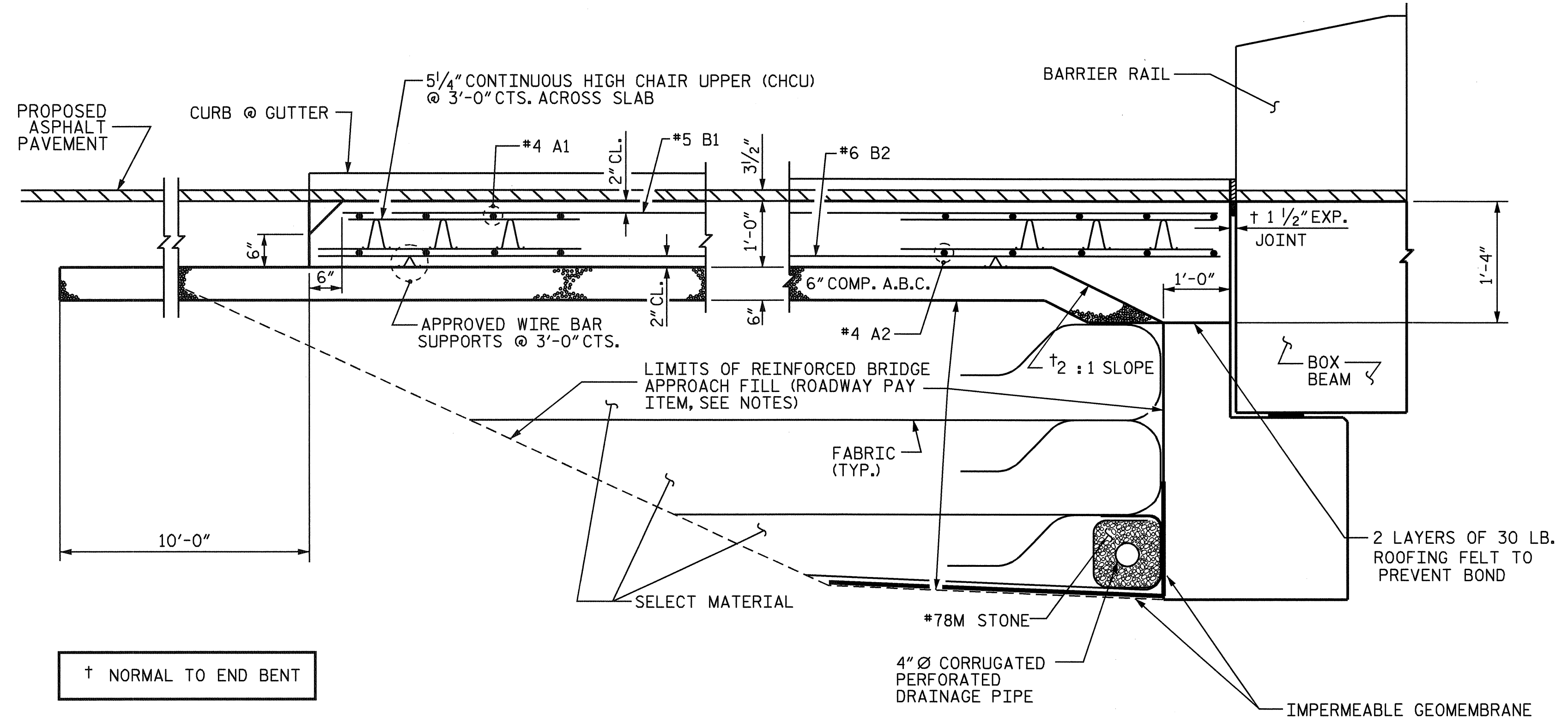
THE CONTRACTOR MAY USE 4" TYPE B-25.0B ASPHALT CONCRETE BASE COURSE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE BASE COURSE SHALL EXTEND 1'-0" BEYOND THE END OF THE APPROACH SLAB AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB.

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 UNIT" SHEETS.

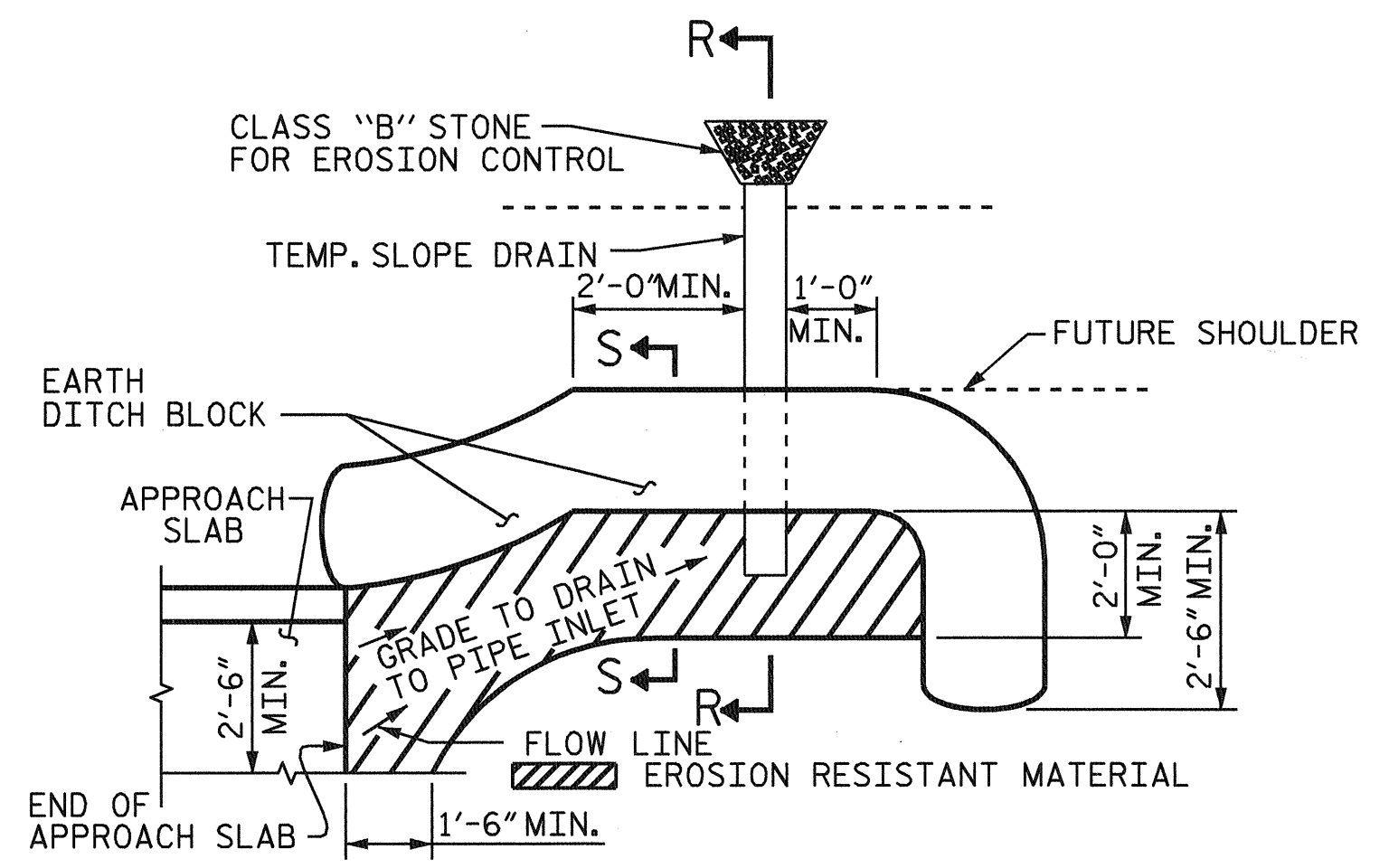
THE JOINT AT THE END BENT SHALL BE SEALED AS SOON AS PRACTICAL AFTER THE CONSTRUCTION OF THE APPROACH SLABS.

APPROACH SLAB GROOVING IS NOT REQUIRED.

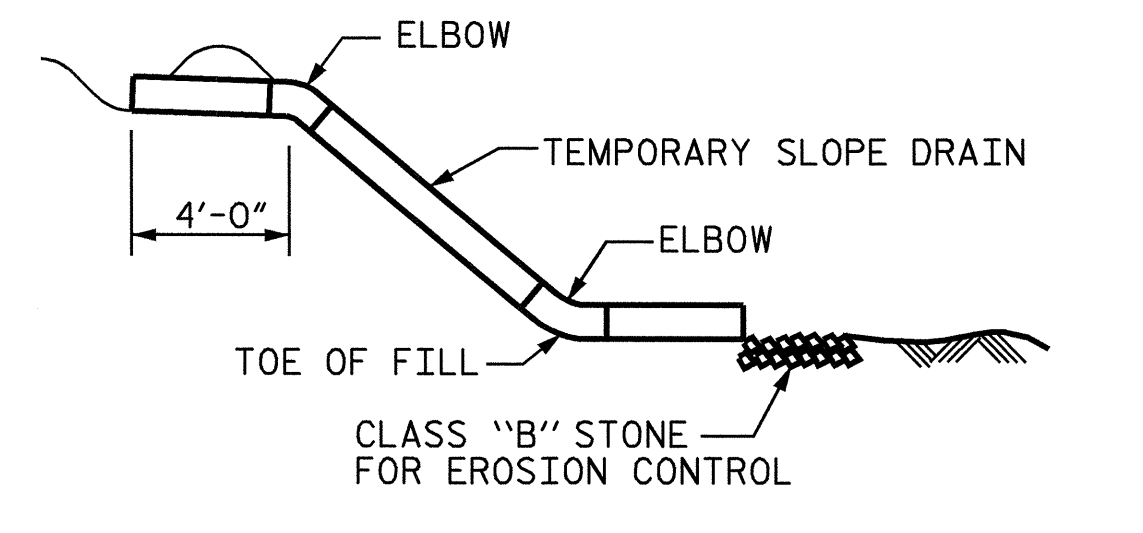


SECTION THRU SLAB

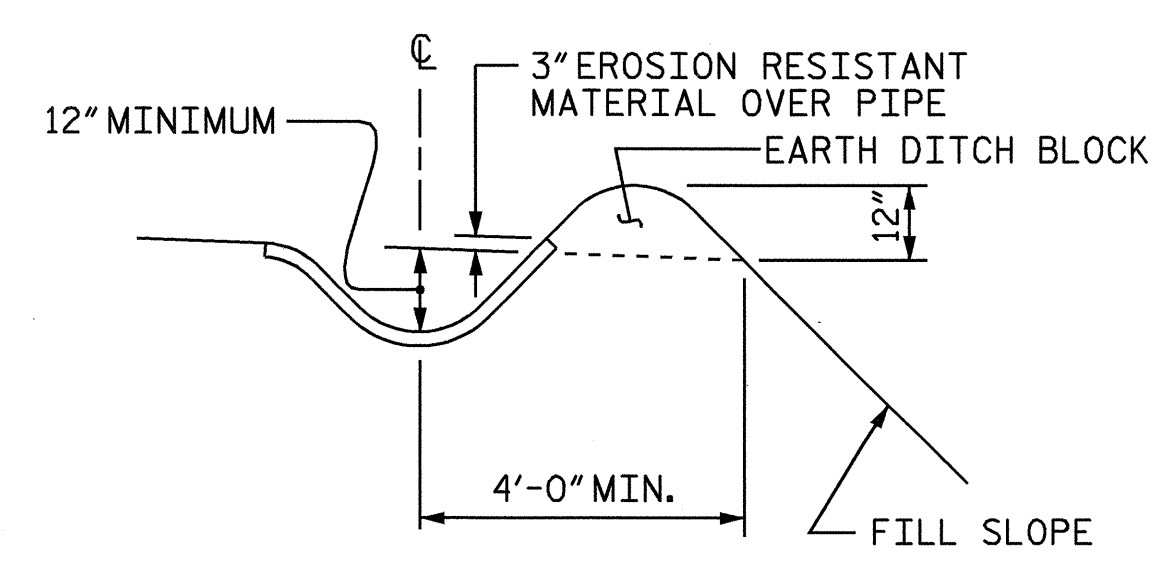
† NORMAL TO END BENT



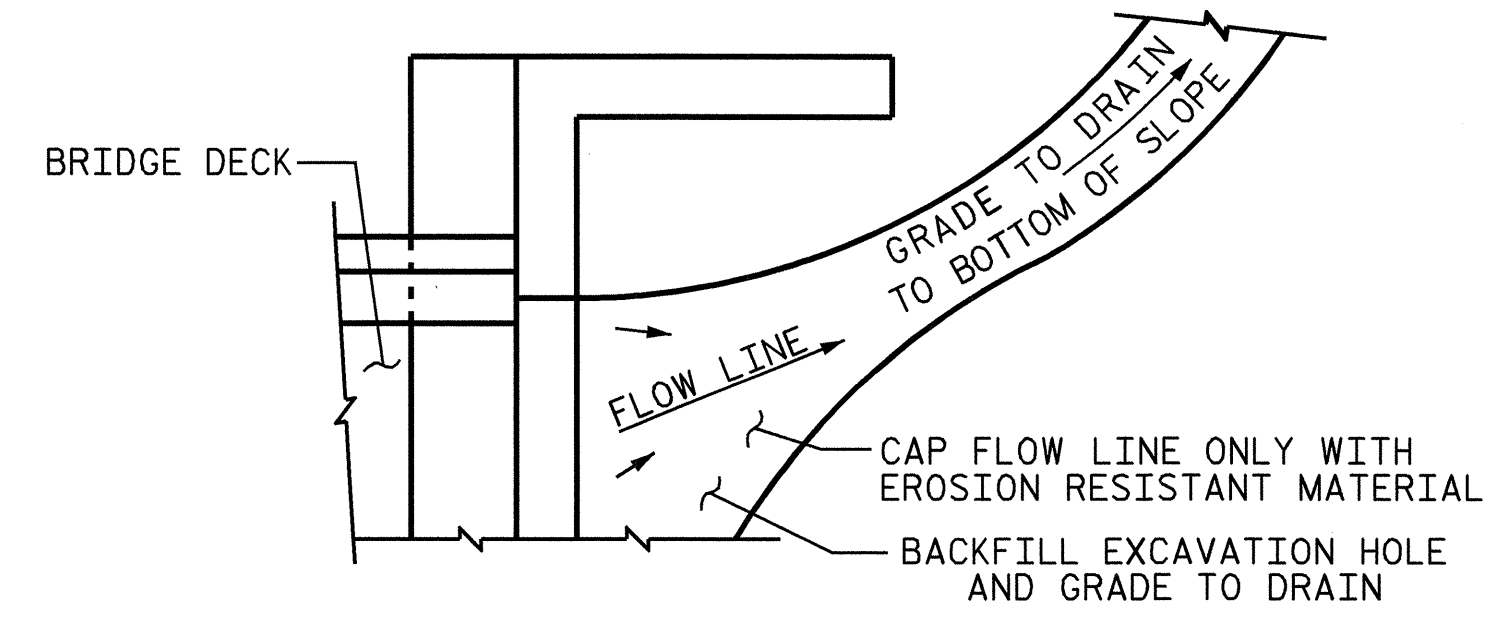
PLAN VIEW



SECTION R-R



SECTION S-S



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

TEMPORARY DRAINAGE DETAIL

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.

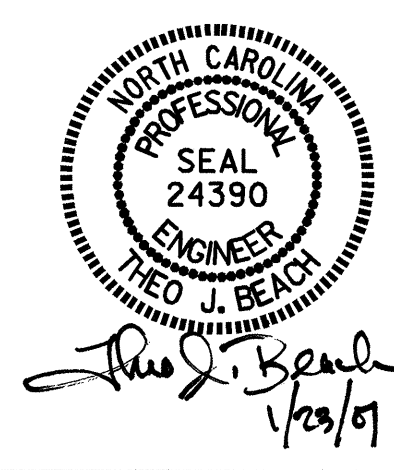
TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

PROJECT NO. **B-4076**
CLEVELAND COUNTY
 STATION: **18+31.00 -L-**

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 BRIDGE APPROACH SLAB
 DETAILS FOR PRESTRESSED
 CONCRETE BOX BEAM



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

