

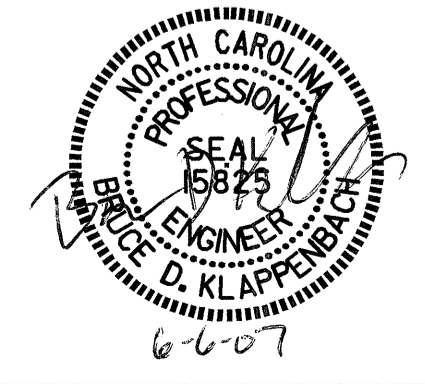
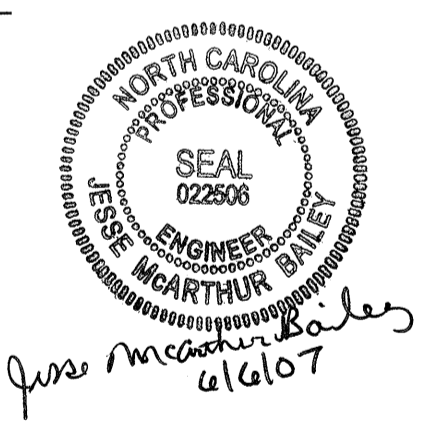
PROJECT NO. B-3863
 JOHNSTON COUNTY
 STATION: 18+79.50 -L-
 SHEET 1 OF 3 REPLACES BRIDGE NO. 151

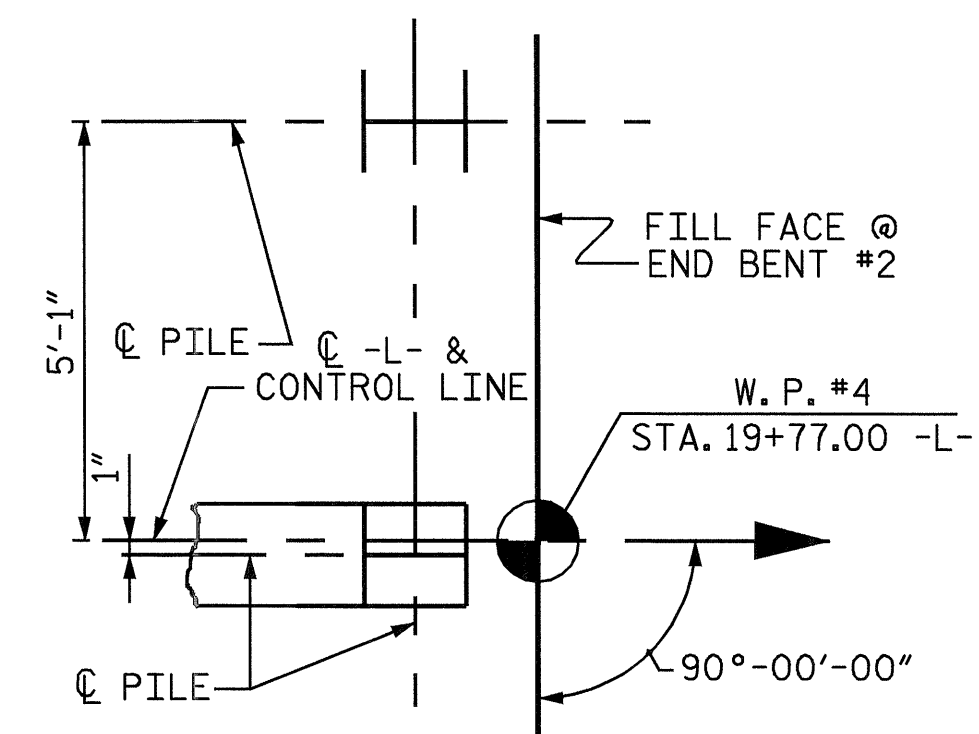
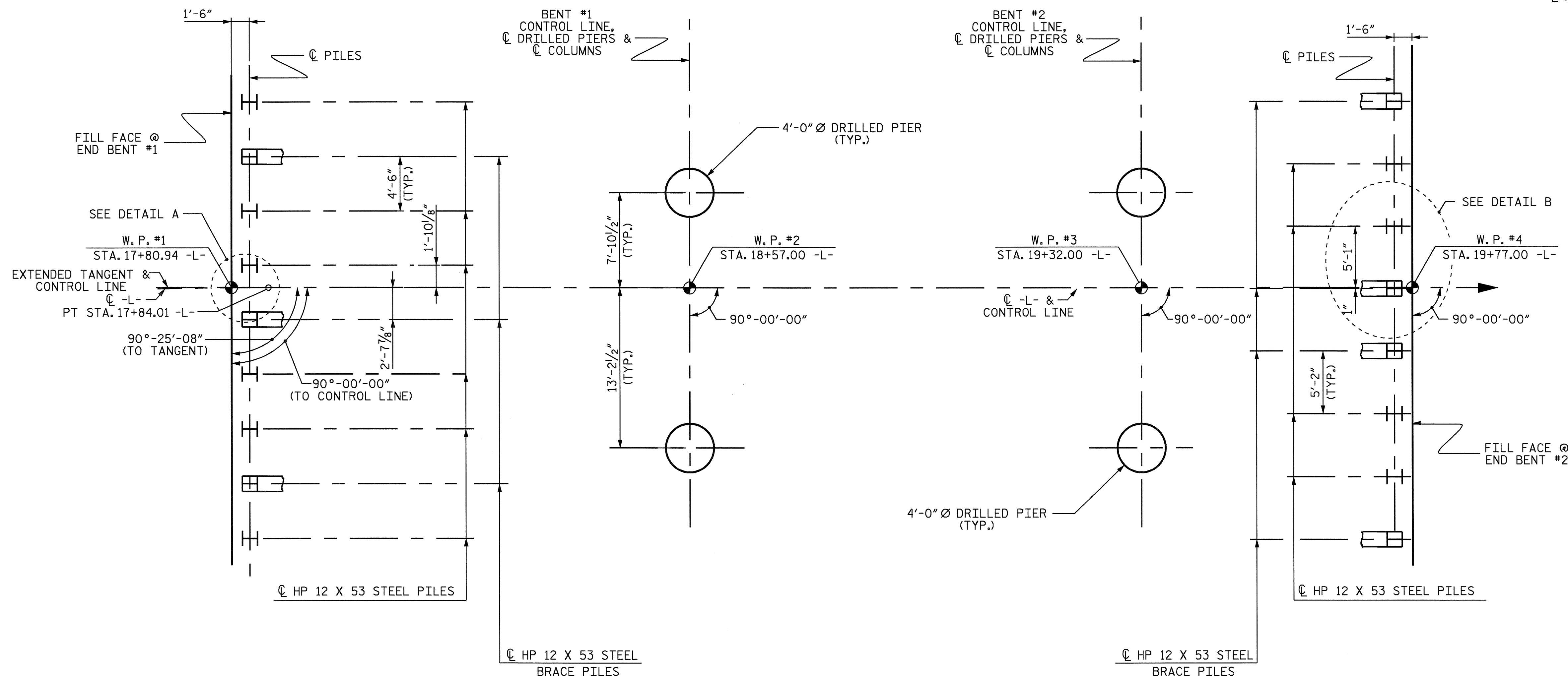
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING FOR
 BRIDGE OVER
 LITTLE RIVER
 ON SR 1722 BETWEEN
 SR 1720 AND SR 1723

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

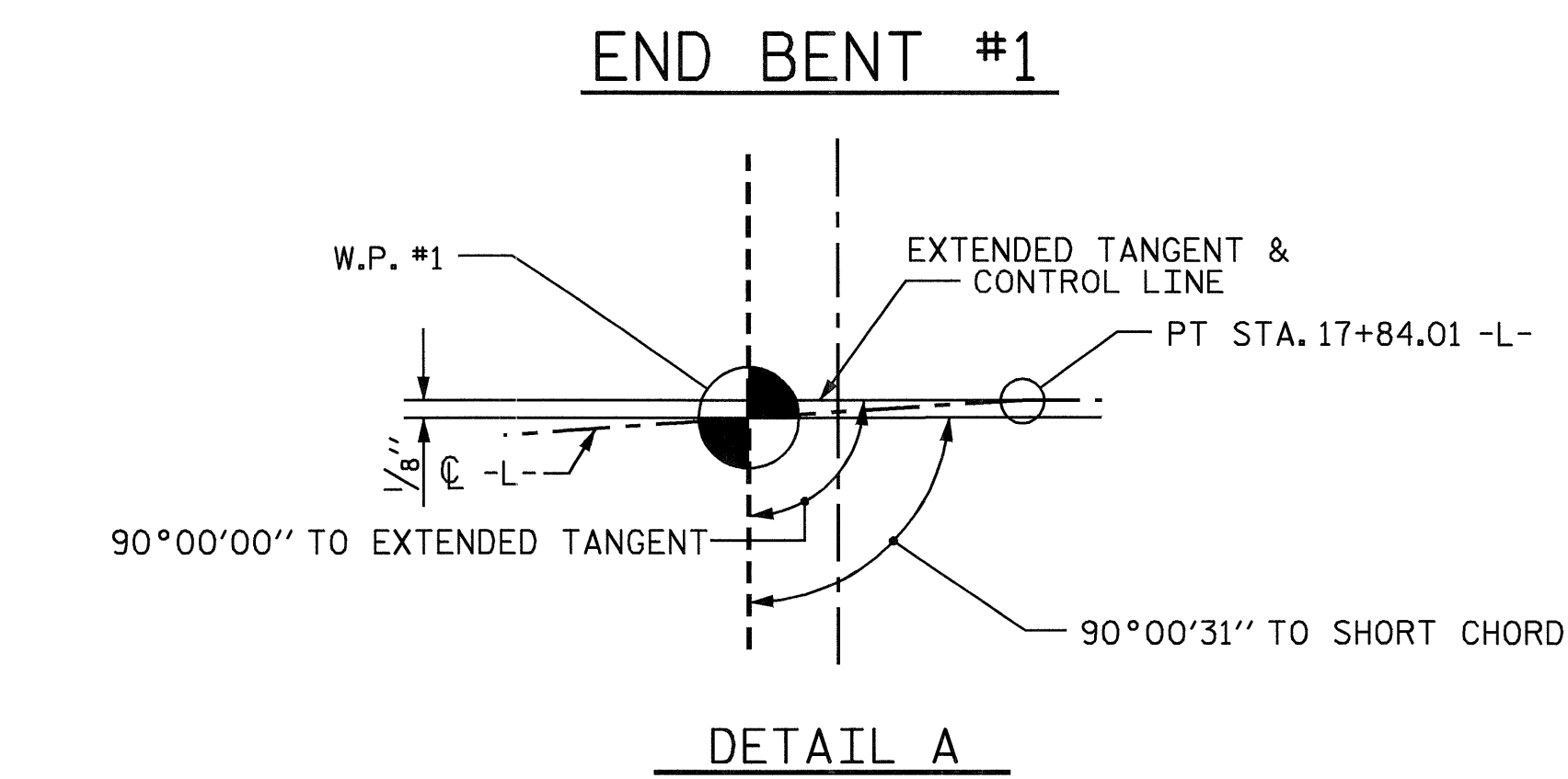
DRAWN BY: H. T. BARBOUR DATE: 2-26-07
 CHECKED BY: AMPH SORSENGINH DATE: 3-07

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 tbarbour





DETAIL B



END BENT #1

DETAIL A

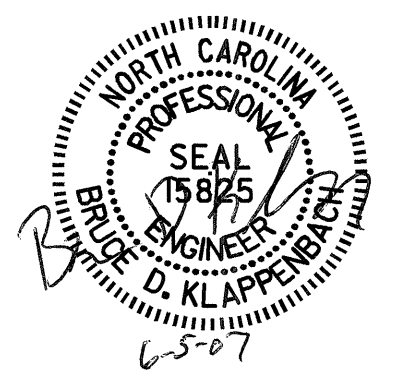
FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO THE PILE CENTERLINE
 BRACE PILES ARE BATTERED 3:12
 ALL PILES ARE HP 12 X 53 STEEL PILES

PROJECT NO. B-3863
JOHNSTON COUNTY
 STATION: 18+79.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING FOR
 BRIDGE OVER
 LITTLE RIVER
 ON SR 1722 BETWEEN
 SR 1720 AND SR 1723



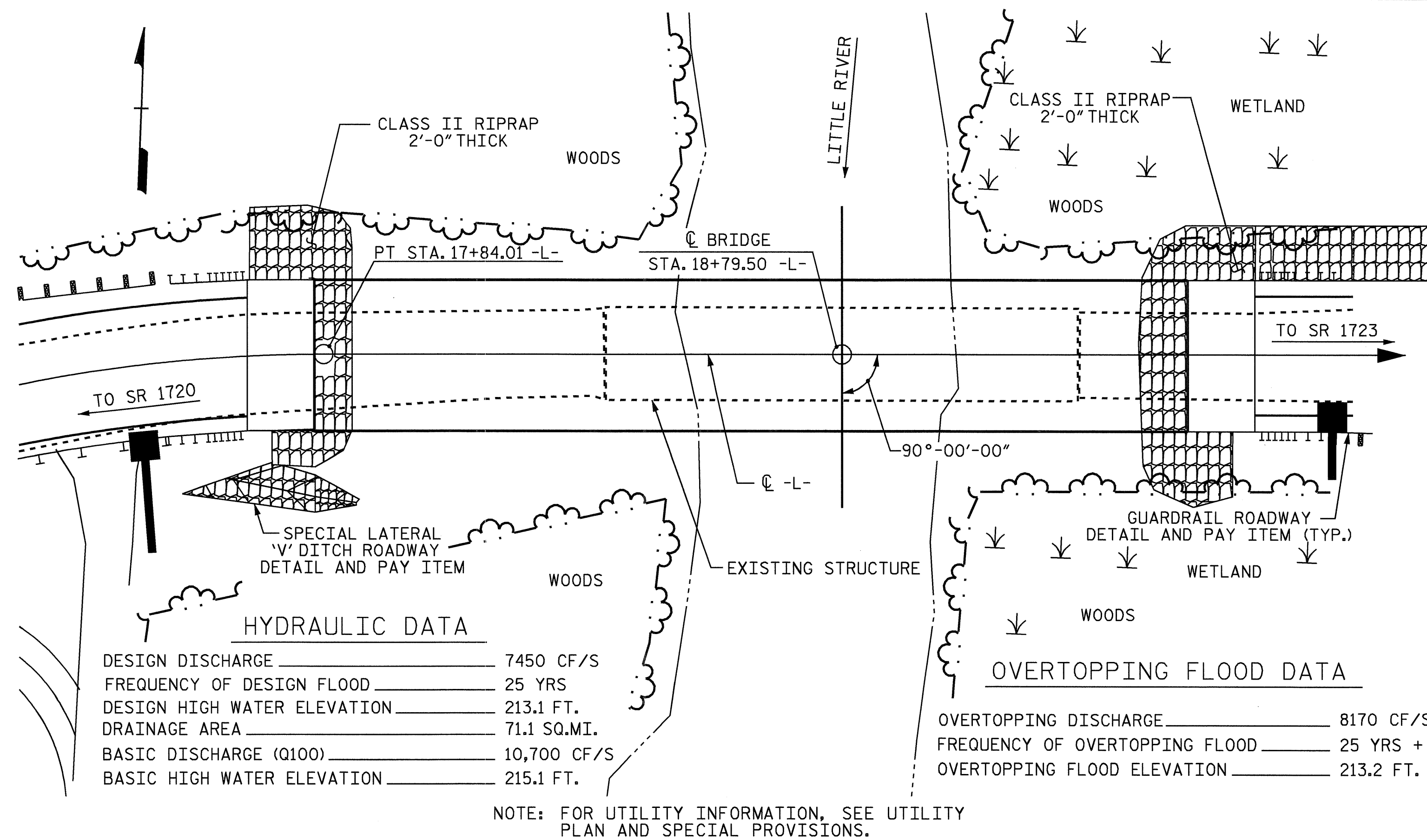
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-2	
1			3			TOTALS	
2			4			25	

DRAWN BY : H. T. BARBOUR DATE : 2-27-07
 CHECKED BY : AMPH. SORSENGINH DATE : 3-07

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NC006

BENCH MARK: BM #2 RAILROAD SPIKE IN 20" Ø POPLAR,
55.12' RT. OF STA. 17+08.45, EL. 213.18 DATUM: NAVD 88



HYDRAULIC DATA

DESIGN DISCHARGE	7450 CF/S
FREQUENCY OF DESIGN FLOOD	25 YRS
DESIGN HIGH WATER ELEVATION	213.1 FT.
DRAINAGE AREA	71.1 SQ.MI.
BASIC DISCHARGE (Q100)	10,700 CF/S
BASIC HIGH WATER ELEVATION	215.1 FT.

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	8170 CF/S
FREQUENCY OF OVERTOPPING FLOOD	25 YRS +
OVERTOPPING FLOOD ELEVATION	213.2 FT.

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

LOCATION SKETCH

TOTAL BILL OF MATERIAL

	CONSTRUCTION MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS	REMOVAL OF EXISTING STRUCTURE	4'-0" Ø DRILLED PIER IN SOIL	4'-0" Ø DRILLED PIER NOT IN SOIL	PERMANENT STEEL CASING FOR 4'-0" Ø DRILLED PIER	SID INSPECTION	CROSSHOLE SONIC LOGGING	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE
	LUMP SUM	LUMP SUM	LIN.FT.	LIN.FT.	LIN.FT.	EACH	EACH	CU. YDS.	CU. YDS.
SUPERSTRUCTURE									
END BENT NO. 1								700	14.4
BENT NO. 1			20.1	17.0	23.1	1	1		30.8
BENT NO. 2			29.0	23.0	27.0	1			24.7
END BENT NO. 2								300	14.4
TOTAL	LUMP SUM	LUMP SUM	49.1	40.0	50.1	2	1	1000	84.3

TOTAL BILL OF MATERIAL

	BRIDGE APPROACH SLABS	SPIRAL COLUMN REINFORCING STEEL	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 2'-3" PRESTRESSED CONC. BOX BEAMS
	LUMP SUM		LBS.	NO. LIN.FT.	LIN.FT.	TONS	SQ. YDS.	LUMP SUM	LIN.FT.
SUPERSTRUCTURE					387.13				2129.19
END BENT NO. 1			2412	9	135	258	287		
BENT NO. 1		1256	7082						
BENT NO. 2		1683	7869						
END BENT NO. 2			2424	8	160	430	478		
TOTAL	LUMP SUM	2939	19787	17	295	387.13	688	765	2129.19

DRAWN BY : H. T. BARBOUR DATE : 2-26-07
CHECKED BY : AMPH. SORSENGINH DATE : 3-07

NOTES

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

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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

THE EXISTING STRUCTURE CONSISTING OF 3 SPANS 1 @ 35'-0", 1 @ 35'-3" AND 1 @ 35'-0", WITH 4 X 8 TIMBER DECK AND 2.25" ASPHALT WEARING SURFACE ON 3 LINES OF 21" I-BEAMS AND 6 LINES OF 8" I BEAMS WITH 10-10" FLOOR BEAMS, WITH A CLEAR ROADWAY WIDTH OF 17'-2", ON TIMBER CAPS AND TIMBER PILES AT THE END BENTS AND INTERIOR BENTS LOCATED AT THE SAME LOCATION AS THE PROPOSED STRUCTURE, SHALL BE REMOVED.

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. EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE MEASURED AND PAID FOR AT THE CONTRACT UNIT PRICE PER CUBIC YARD 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.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

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.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

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+79.50-L-".

DRIVE PILES FOR END BENTS NO.1 AND NO.2 TO A REQUIRED BEARING CAPACITY OF 100 TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO.

THE ALLOWABLE BEARING CAPACITY FOR PILES AT END BENT NO.1 & NO.2 IS 50 TONS PER PILE.

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.

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 60 TSF.

DRILLED PIERS AT BENT NO.1 ARE DESIGNED FOR AN APPLIED LOAD OF 285 TONS EACH AT THE TOP OF THE COLUMN.

PERMANENT STEEL CASING IS REQUIRED FOR DRILLED PIERS AT BENT NO.1. DO NOT EXTEND THE CASING BELOW ELEVATION 189.0 FT. WITHOUT PRIOR APPROVAL FROM THE ENGINEER. SEE DRILLED PIERS SPECIAL PROVISION.

DRILLED PIERS AT BENT NO.1 SHALL EXTEND TO AN ELEVATION NO HIGHER THAN 182.0 FT. AND SATISFY THE REQUIRED END BEARING CAPACITY.

THE SCOUR CRITICAL ELEVATION FOR BENT NO.1 IS ELEVATION 186.0 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

DRILLED PIERS AT BENT NO.2 ARE DESIGNED FOR BOTH SKIN FRICTION AND END BEARING. CHECK FIELD CONDITIONS FOR THE REQUIRED END BEARING CAPACITY OF 45 TSF.

DRILLED PIERS AT BENT NO.2 ARE DESIGNED FOR AN APPLIED LOAD OF 240 TONS EACH AT THE TOP OF THE COLUMN.

PERMANENT STEEL CASING IS REQUIRED FOR DRILLED PIERS AT BENT NO.2 (LEFT). DO NOT EXTEND THE CASING BELOW ELEVATION 184.0 FT. WITHOUT PRIOR APPROVAL FROM THE ENGINEER. SEE DRILLED PIERS SPECIAL PROVISION.

PERMANENT STEEL CASING IS REQUIRED FOR DRILLED PIERS AT BENT NO.2 (RIGHT). DO NOT EXTEND THE CASING BELOW ELEVATION 190.0 FT. WITHOUT PRIOR APPROVAL FROM THE ENGINEER. SEE DRILLED PIERS SPECIAL PROVISION.

INSTALL PERMANENT STEEL CASING AT BENT NO.2 (LEFT) BY VIBRATING, SCREWING OR DRIVING THE CASING BEFORE EXCAVATING OR DISTURBING ANY MATERIAL BELOW ELEVATION 186.8 FT.

DRILLED PIERS AT BENT NO.2 (LEFT) SHALL EXTEND TO AN ELEVATION NO HIGHER THAN 173.0 FT. AND SATISFY THE REQUIRED END BEARING CAPACITY.

DRILLED PIERS AT BENT NO.2 (RIGHT) SHALL EXTEND TO AN ELEVATION NO HIGHER THAN 176.0 FT. AND SATISFY THE REQUIRED END BEARING CAPACITY.

THE SCOUR CRITICAL ELEVATION FOR BENT NO.2 IS ELEVATION 183.0 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

FOR DRILLED PIERS, SEE DRILLED PIERS SPECIAL PROVISION.

SPT TESTING IS NOT REQUIRED TO DETERMINE THE END BEARING CAPACITY OF THE DRILLED PIERS AT BENT NO.1 AND BENT NO.2.

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

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

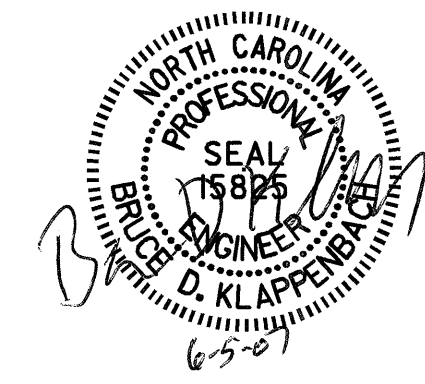
FOR VERTICAL CONCRETE BARRIER RAILS, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS AT STA. 18+79.50-L-, SEE SPECIAL PROVISIONS.

PROJECT NO. B-3863
JOHNSTON COUNTY
STATION: 18+79.50 -L-

SHEET 3 OF 3



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING FOR
BRIDGE OVER
LITTLE RIVER
ON SR 1722 BETWEEN
SR 1720 AND SR 1723

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

SHEET NO. S-3
TOTAL SHEETS 25

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 GROUDED 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.

IN SPANS A & B, 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 5300 PSI.

IN SPANS C, 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 4000 PSI.

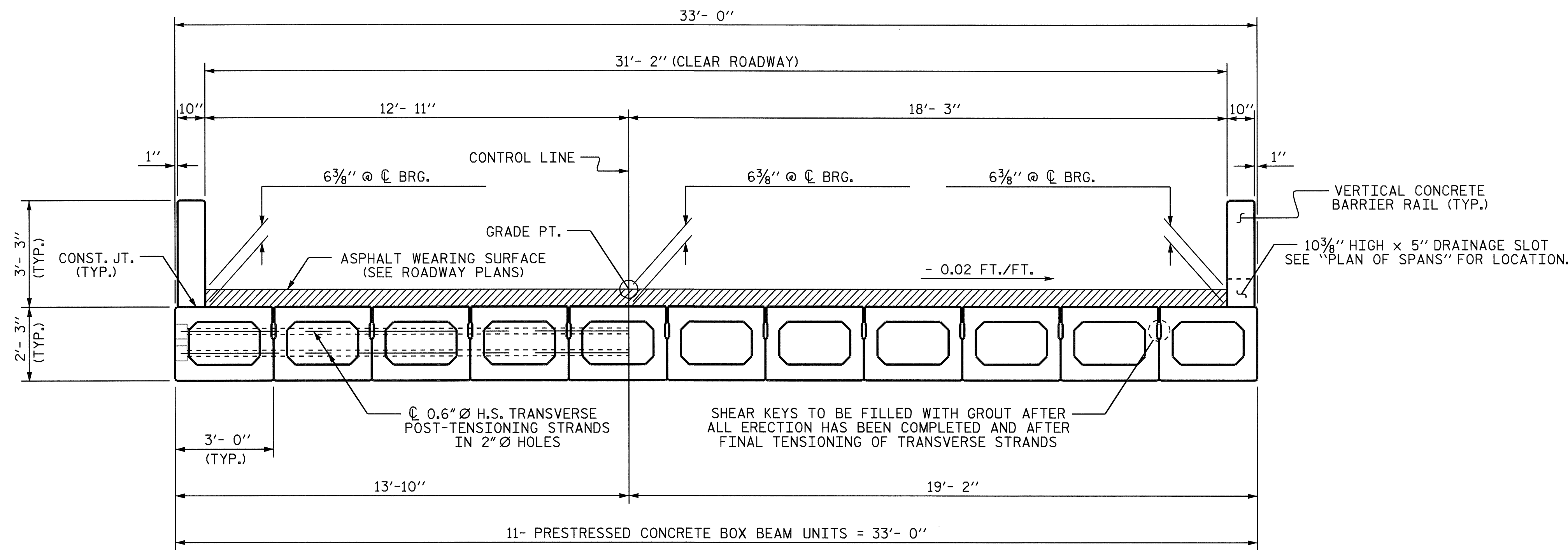
ALL REINFORCING STEEL IN VERTICAL CONCRETE BARRIER RAILS SHALL BE EPOXY COATED.

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

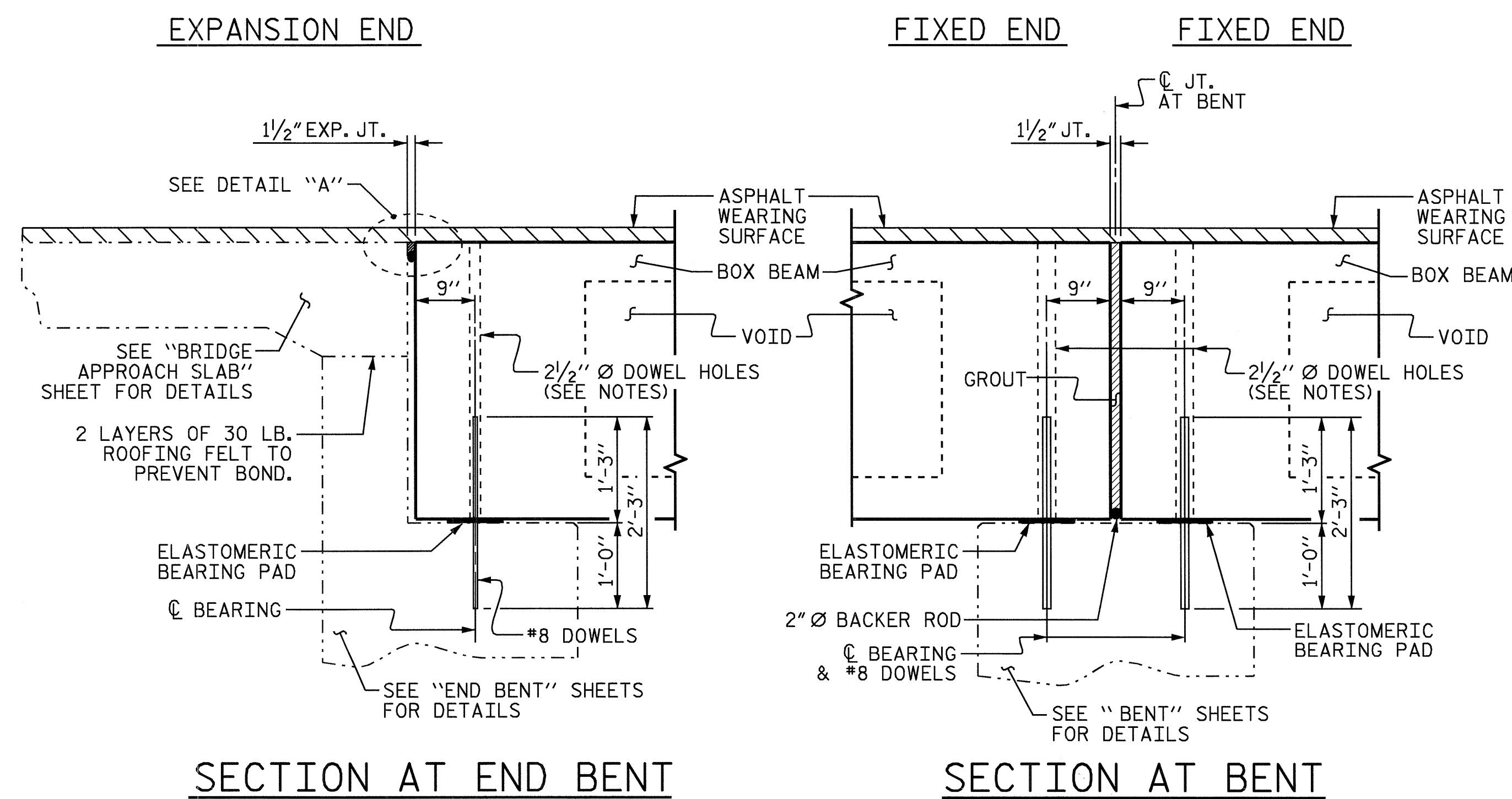
APPLY EPOXY PROTECTIVE COATING TO BOX BEAM UNIT ENDS.

VERTICAL GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE VERTICAL CONCRETE 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 VERTICAL CONCRETE BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF VERTICAL CONCRETE 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.

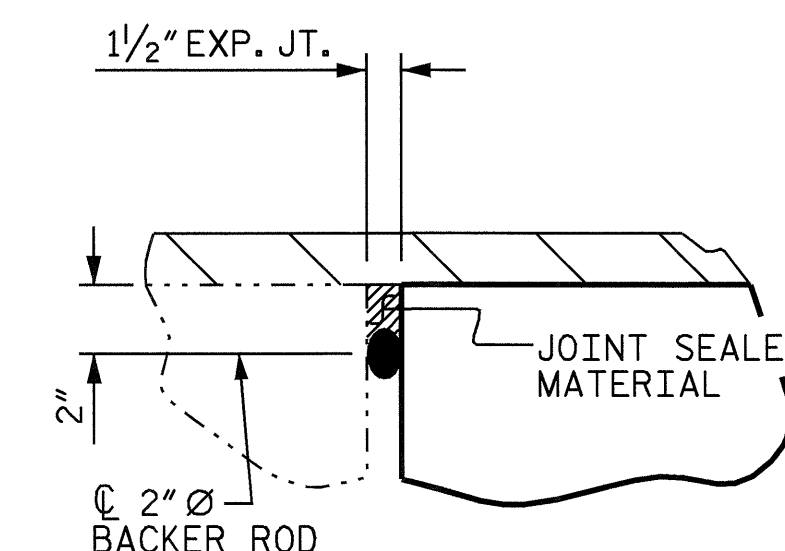


TYPICAL SECTION



SECTION AT END BENT

SECTION AT BENT

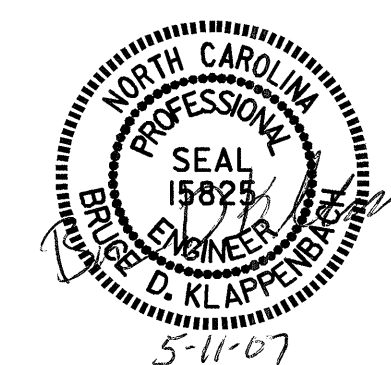


DETAIL A

PROJECT NO. B-3863
JOHNSTON COUNTY
 STATION: 18+79.50 -L-

SHEET 1 OF 8

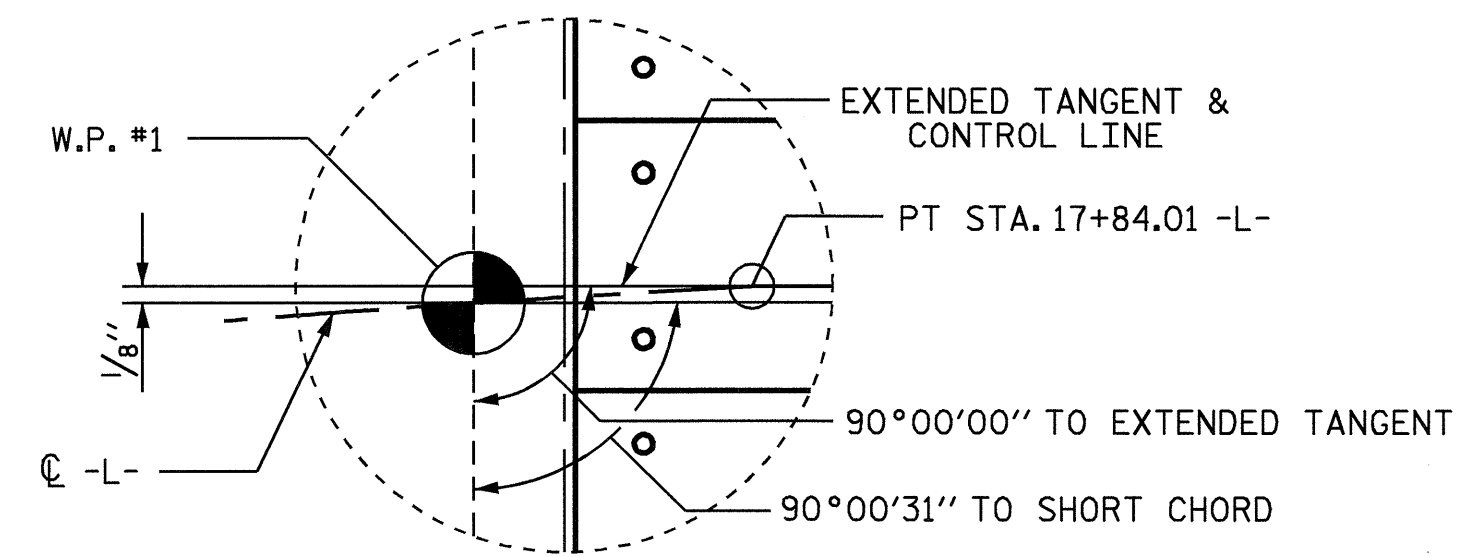
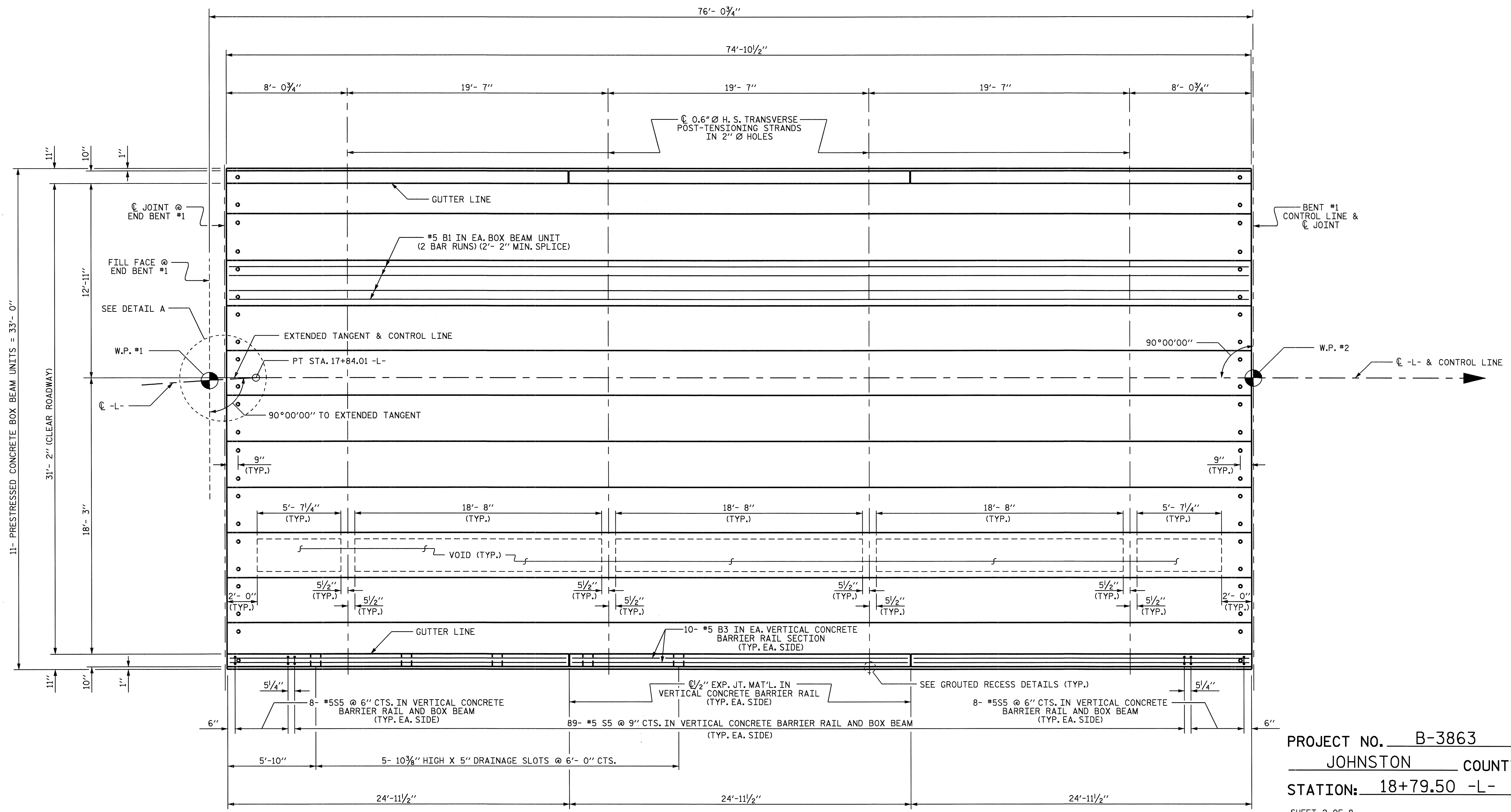
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 3'-0" X 2'-3"
 PRESTRESSED CONCRETE
 BOX BEAM UNIT



ASSEMBLED BY : D. A. GLADDEN DATE : 3-28-06
 CHECKED BY : H. T. BARBOUR DATE : 1-22-07
 DRAWN BY : TLA 5/05
 CHECKED BY : GM 6/05

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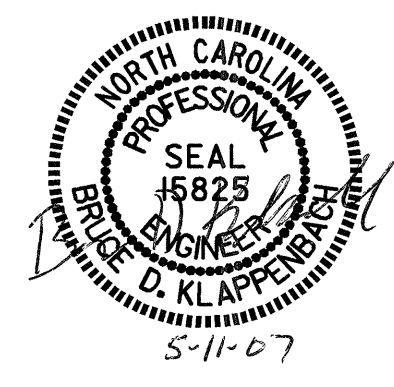
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-4	
1			3			TOTAL SHEETS	25
2			4				



PLAN OF SPAN A

PROJECT NO. B-3863
JOHNSTON COUNTY
 STATION: 18+79.50 -L-

SHEET 2 OF 8

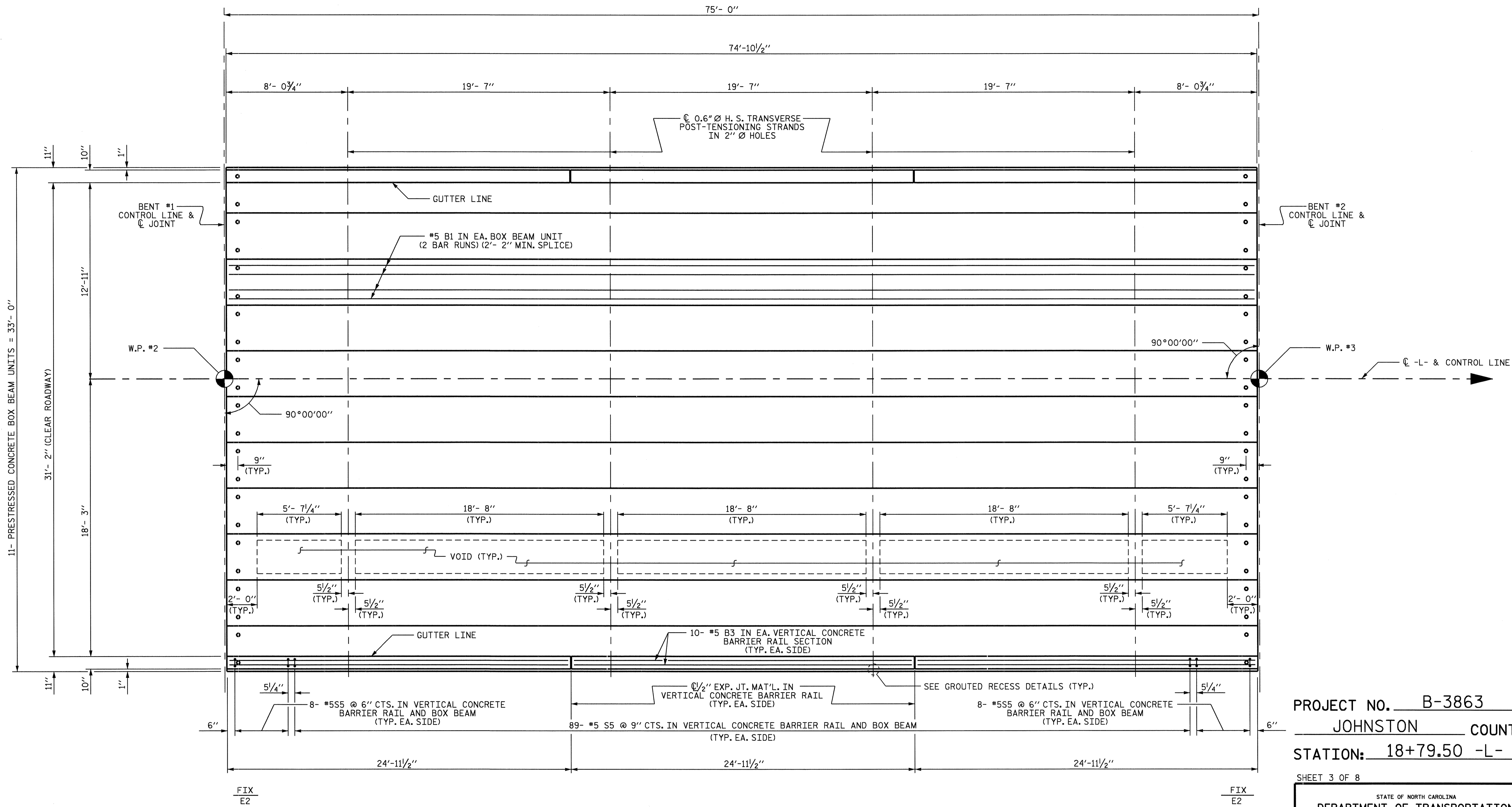


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 3'- 0" X 2'- 3"
 PRESTRESSED CONCRETE
 BOX BEAM UNIT
 PLAN OF SPAN A

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5	
1			3			TOTAL SHEETS	
2			4			25	

DRAWN BY: D. A. GLADDEN DATE: 3-29-06
 CHECKED BY: H. T. BARBOUR DATE: 1-23-07

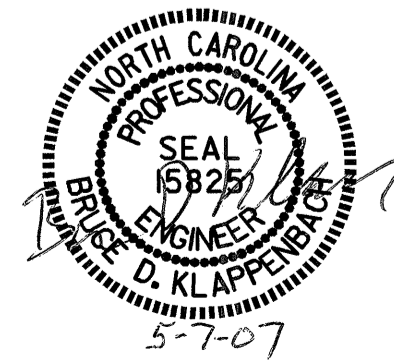
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PLAN OF SPAN B

PROJECT NO. B-3863
JOHNSTON COUNTY
 STATION: 18+79.50 -L-

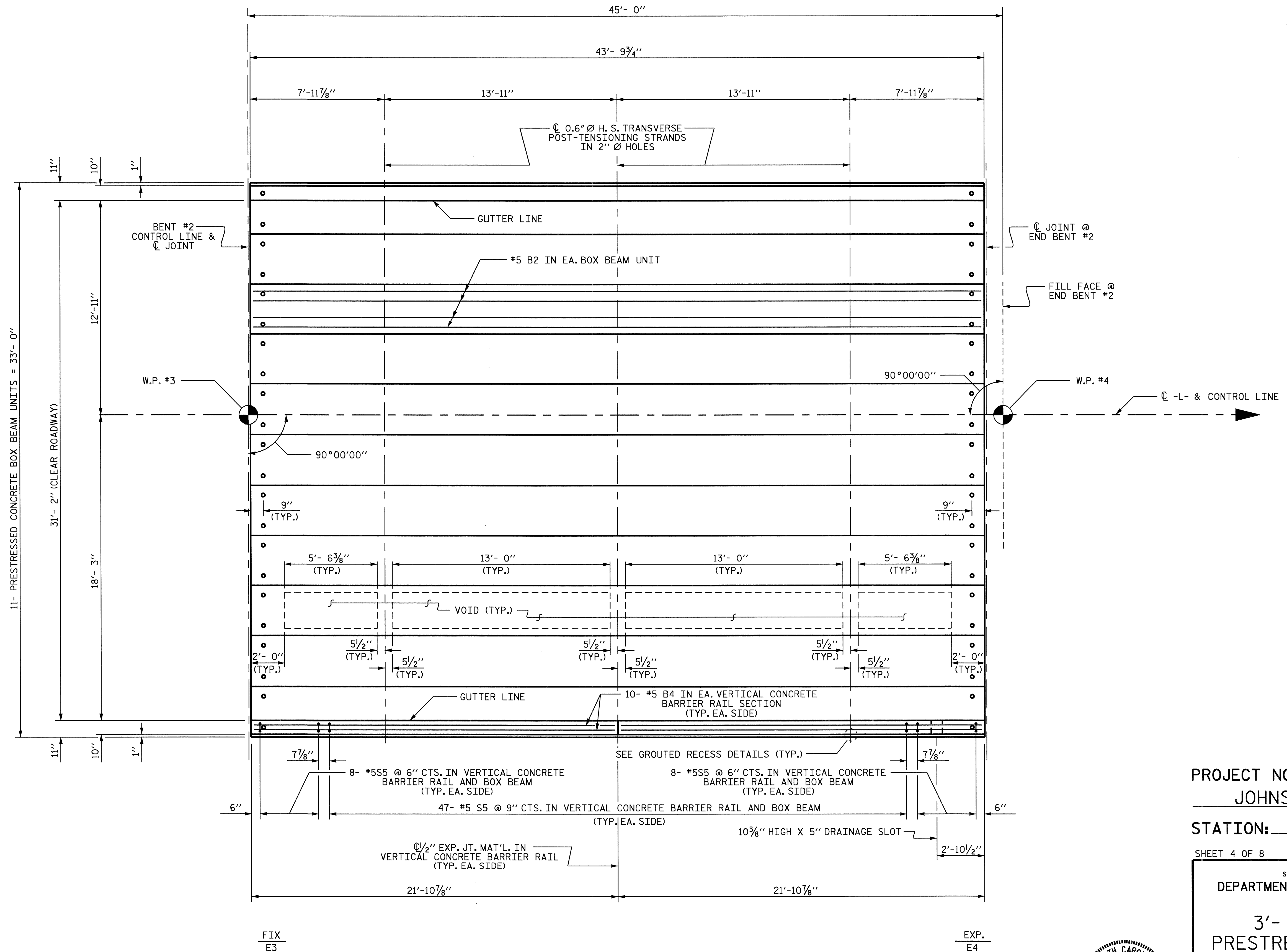
SHEET 3 OF 8
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 3'-0" X 2'-3"
 PRESTRESSED CONCRETE
 BOX BEAM UNIT
 PLAN OF SPAN B



DRAWN BY : D. A. GLADDEN DATE : 3-29-06
 CHECKED BY : H. T. BARBOUR DATE : 1-23-07

REVISIONS						SHEET NO.	
NO.	BY	DATE	NO.	BY	DATE	S-6	
1			3			TOTAL SHEETS	
2			4			25	

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PLAN OF SPAN C

PROJECT NO. B-3863
 JOHNSTON COUNTY
 STATION: 18+79.50 -L-

SHEET 4 OF 8

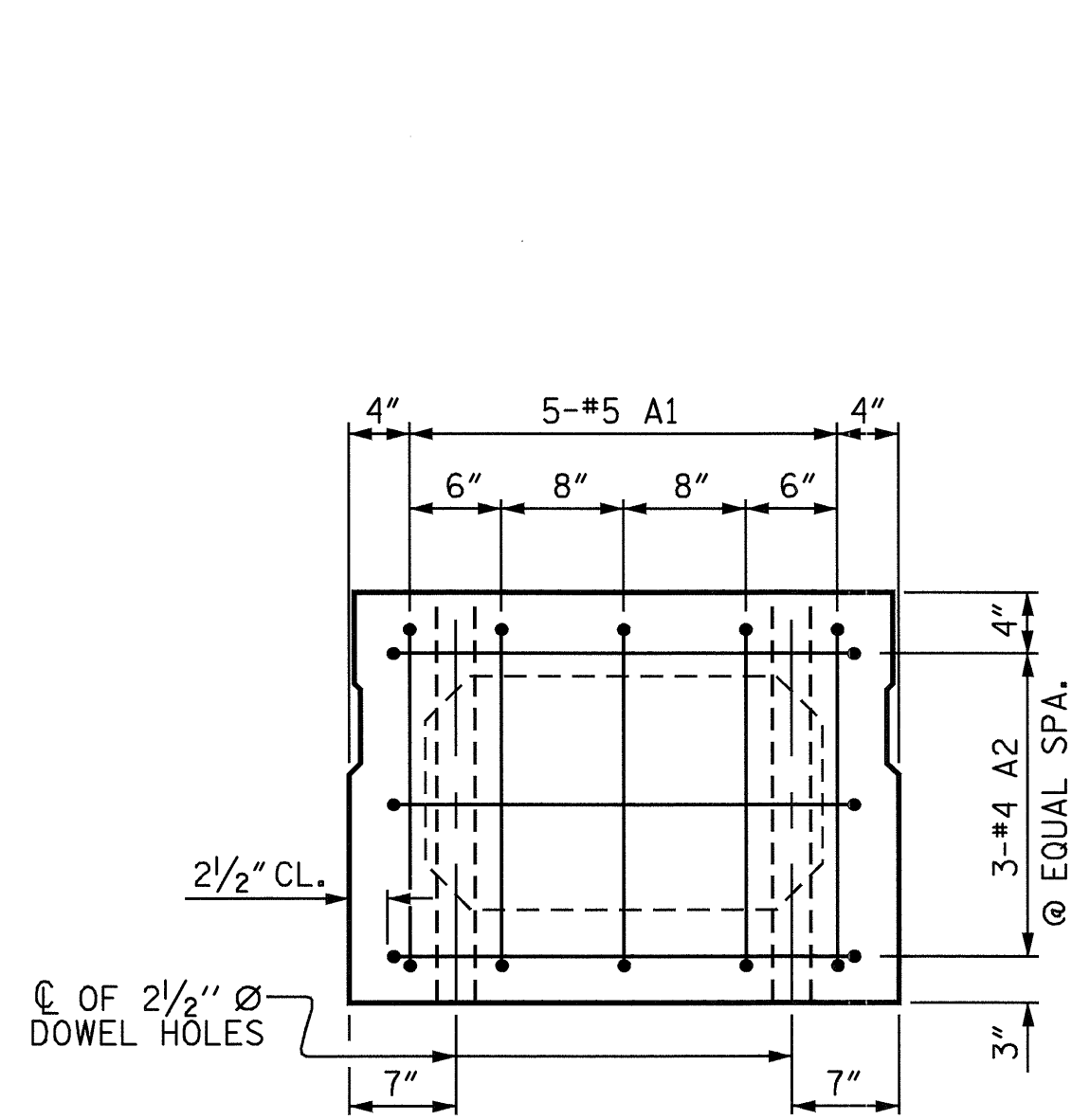
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 3'-0" X 2'-3"
 PRESTRESSED CONCRETE
 BOX BEAM UNIT
 PLAN OF SPAN C



DRAWN BY: D. A. GLADDEN DATE: 3-29-06
 CHECKED BY: H. T. BARBOUR DATE: 1-23-07

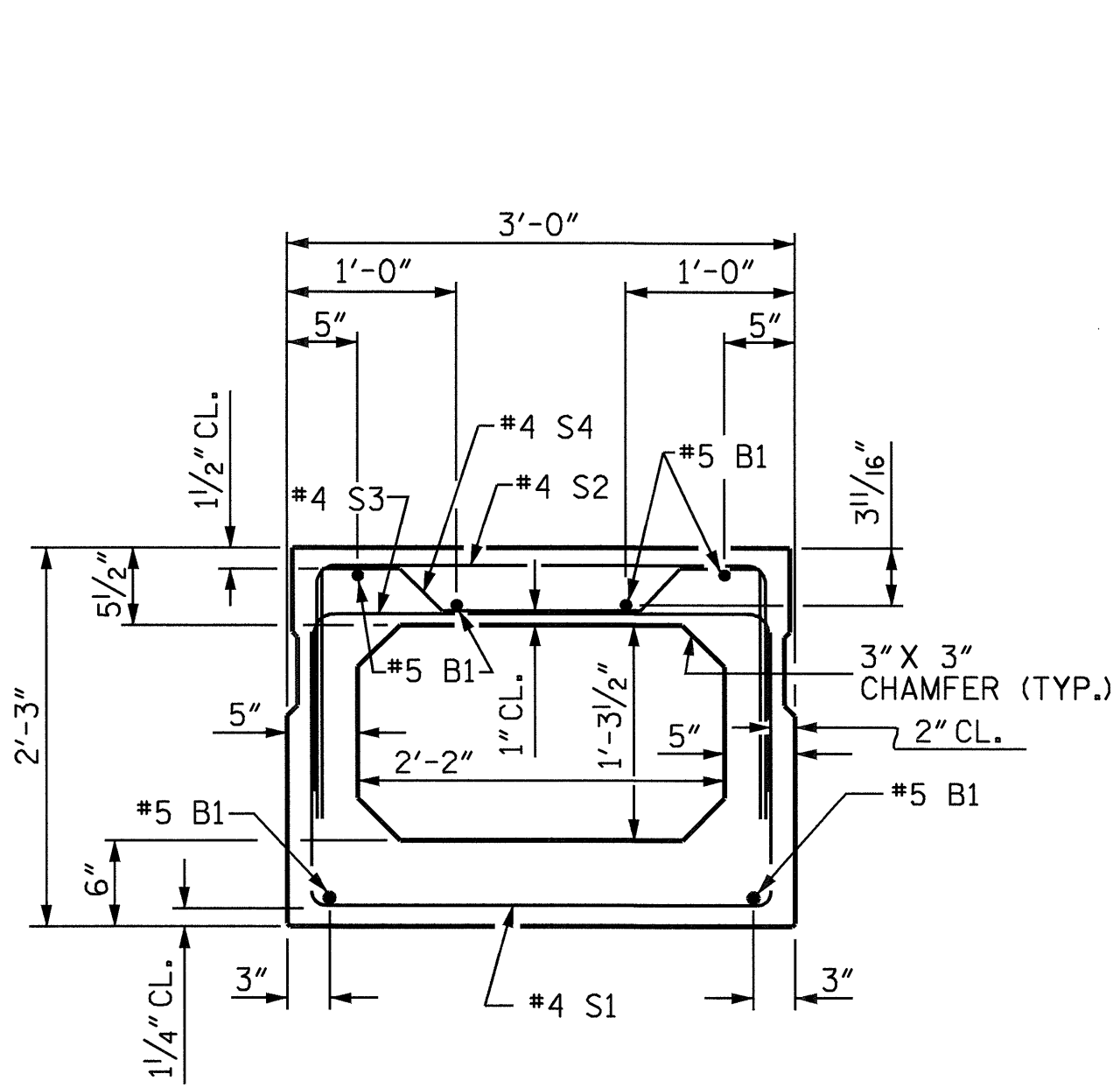
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2			4			25	



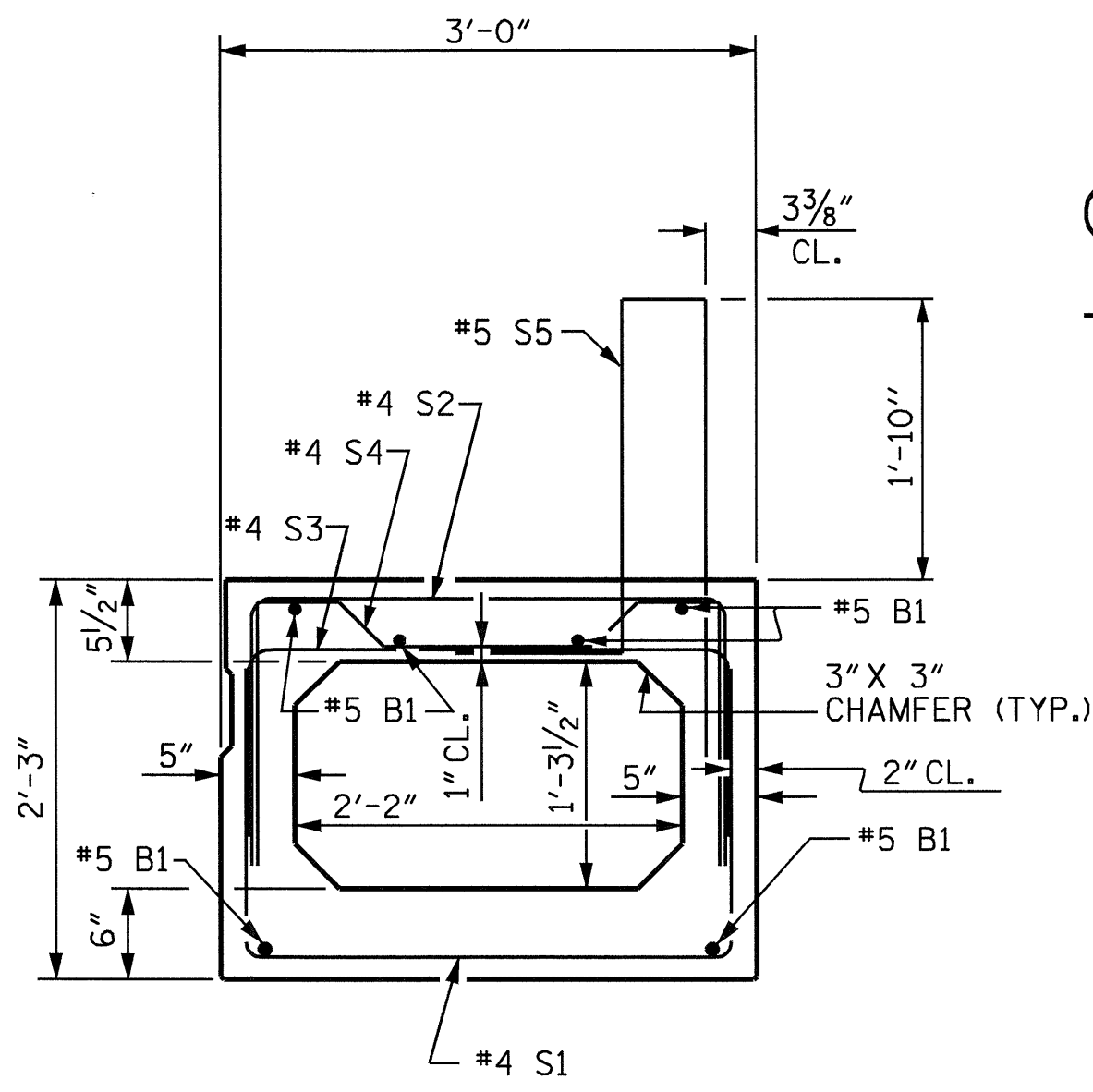
END ELEVATION

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



INTERIOR BOX BEAM SECTION

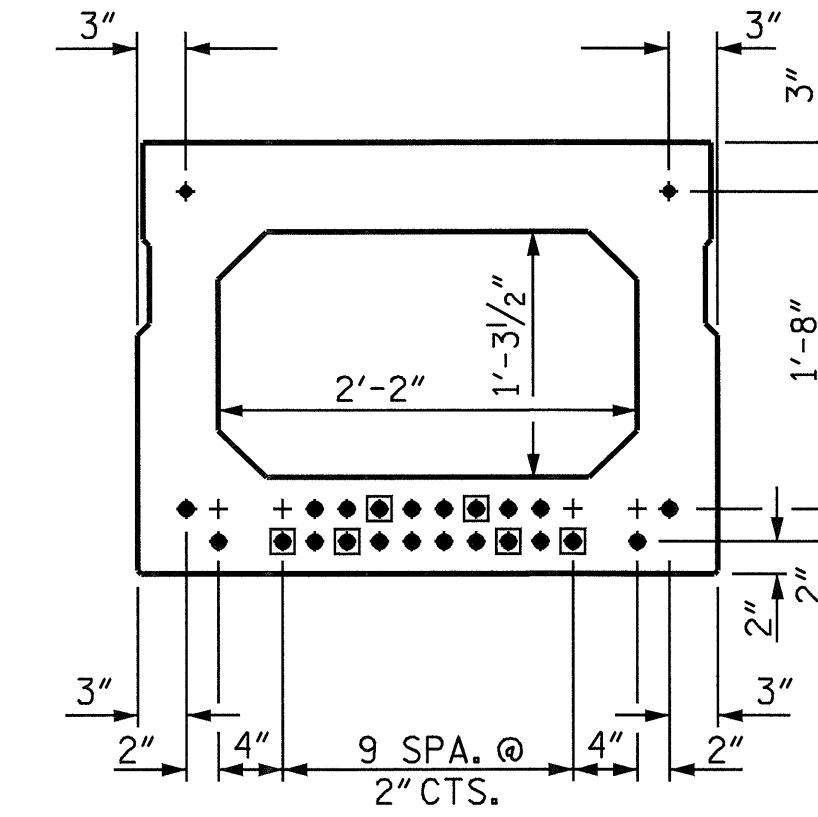
(STRAND LAYOUT NOT SHOWN)



EXTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)

0.6" Ø LOW RELAXATION STRAND LAYOUT



TYPICAL STRAND LOCATION

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

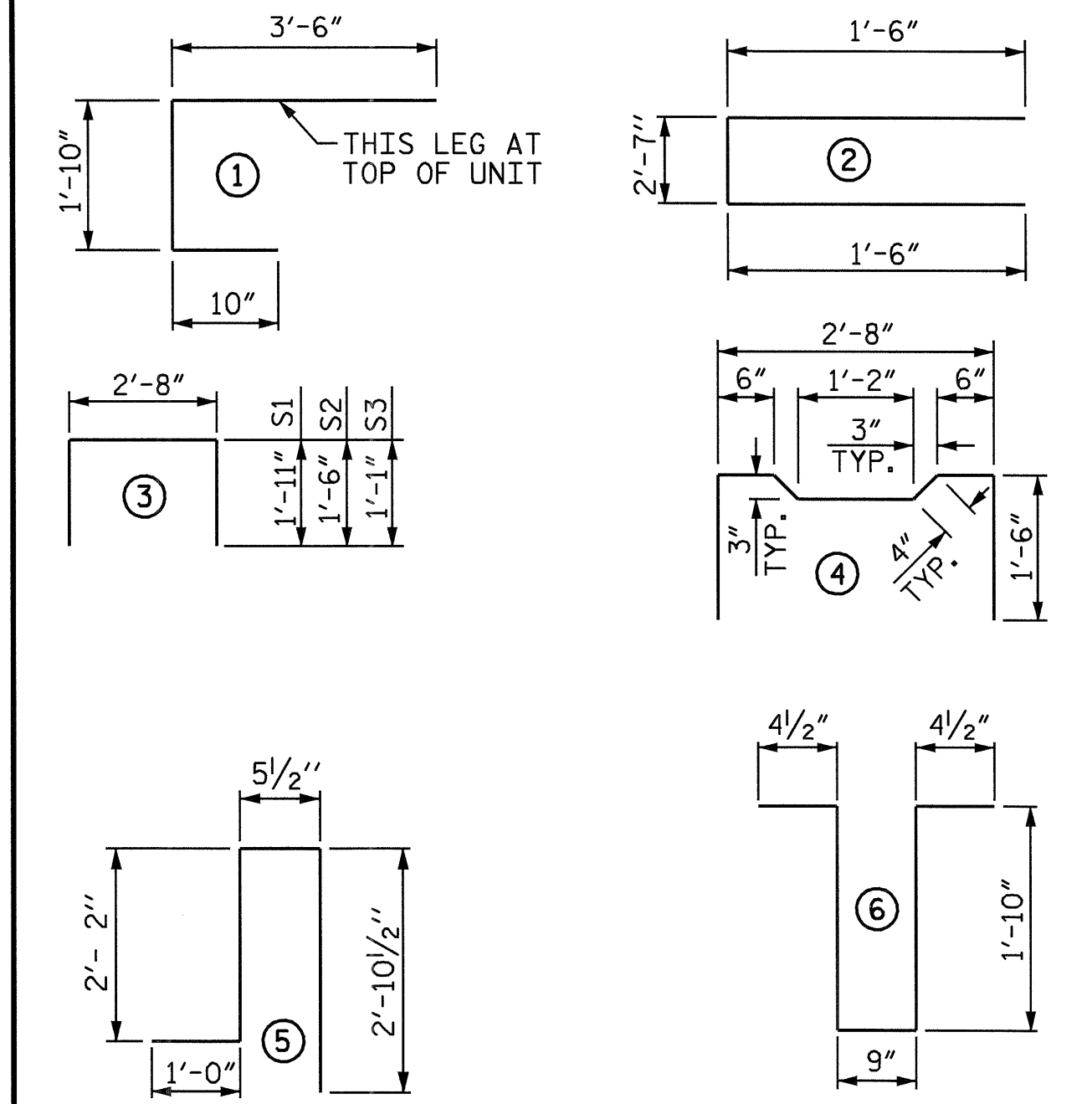
DEBONDING LEGEND

☐ STRANDS DEBONDED FOR 10'-9" FROM END OF GIRDER

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	

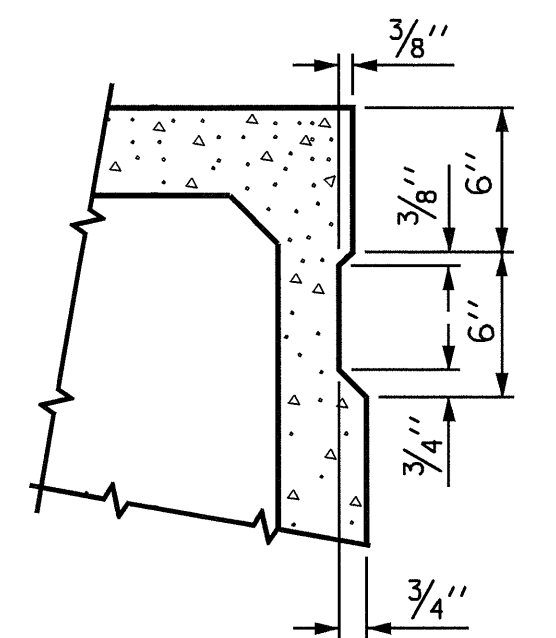
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

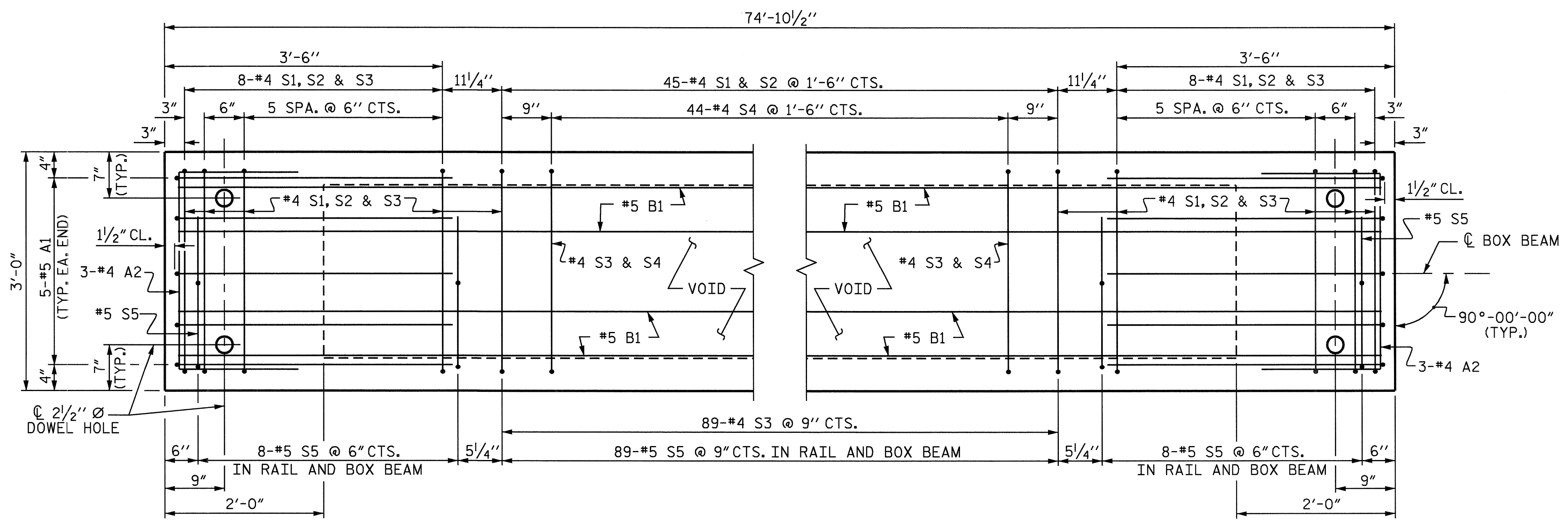
BILL OF MATERIAL FOR ONE BOX BEAM SECTION

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
B1	12	#5	STR	38'-5"	481	38'-5"	481
K1	12	#4	6	5'-2"	41	5'-2"	41
K2	8	#4	STR	2'-7"	14	2'-7"	14
S1	61	#4	3	6'-6"	265	6'-6"	265
S2	61	#4	3	5'-8"	231	5'-8"	231
S3	105	#4	3	4'-10"	339	4'-10"	339
S4	44	#4	4	5'-10"	171	5'-10"	171
*S5	105	#5	5	6'-6"	712	--	--
REINFORCING STEEL				1688	LBS.	1688	LBS.
*EPOXY COATED REINF. STEEL				712	LBS.		
6300 P.S.I. CONCRETE				11.9	CU. YDS.	11.8	CU. YDS.
0.6" Ø L.R. STRANDS				No.	24	No.	24



SHEAR KEY DETAIL

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

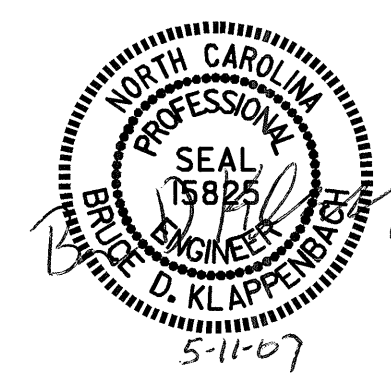


PLAN OF BOX BEAM (SPANS A & B)

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.

ASSEMBLED BY : D. A. GLADDEN DATE : 3-30-06
 CHECKED BY : H. T. BARBOUR DATE : 1-23-07
 DRAWN BY : TLA 5/05
 CHECKED BY : GM 6/05

ADDED 7/11/05

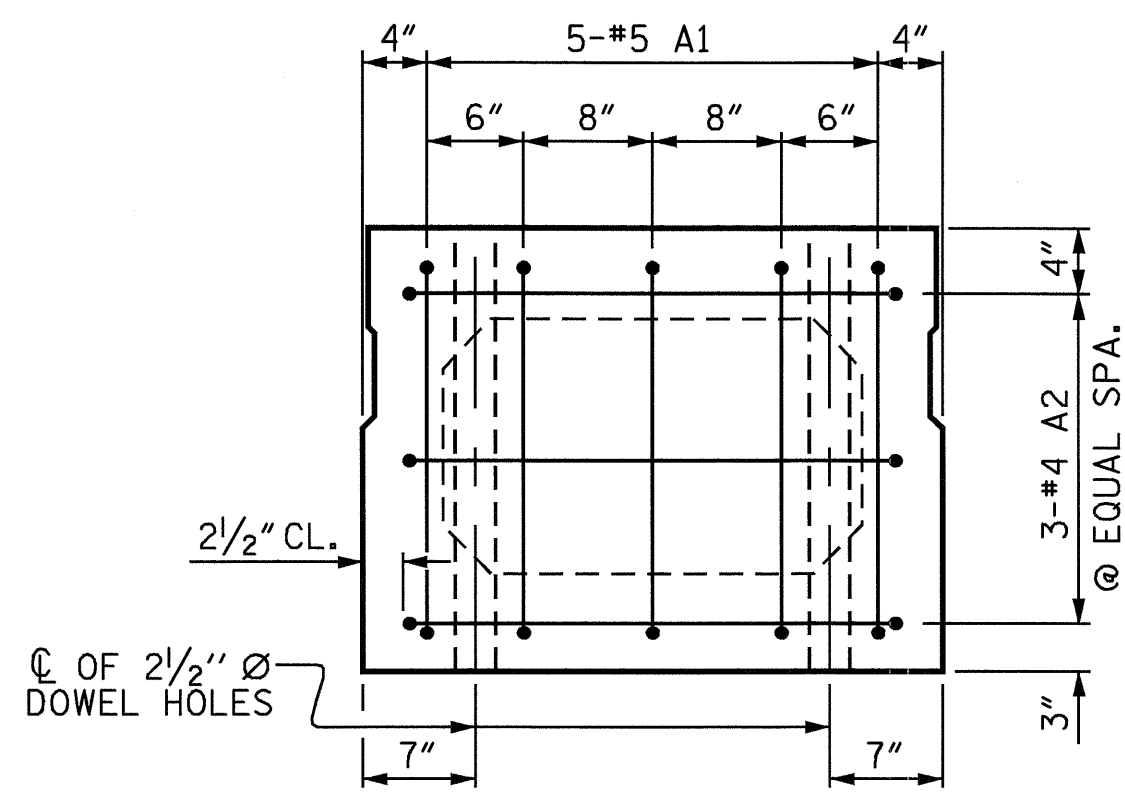


PROJECT NO. B-3863
 COUNTY JOHNSTON
 STATION: 18+79.50 -L-
 SHEET 5 OF 8

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

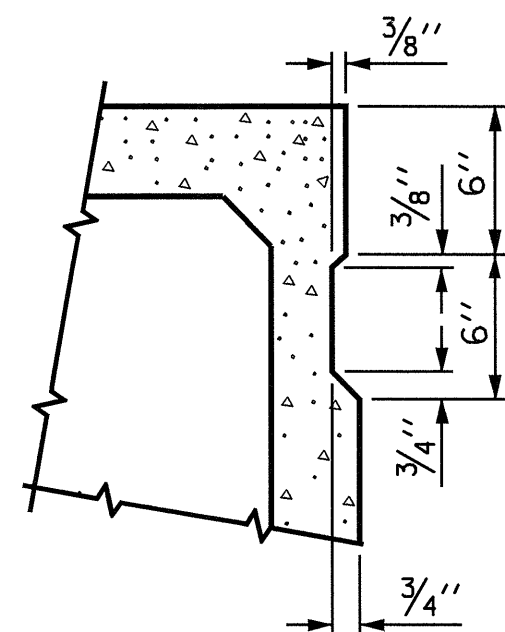
REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

TOTAL SHEETS 25



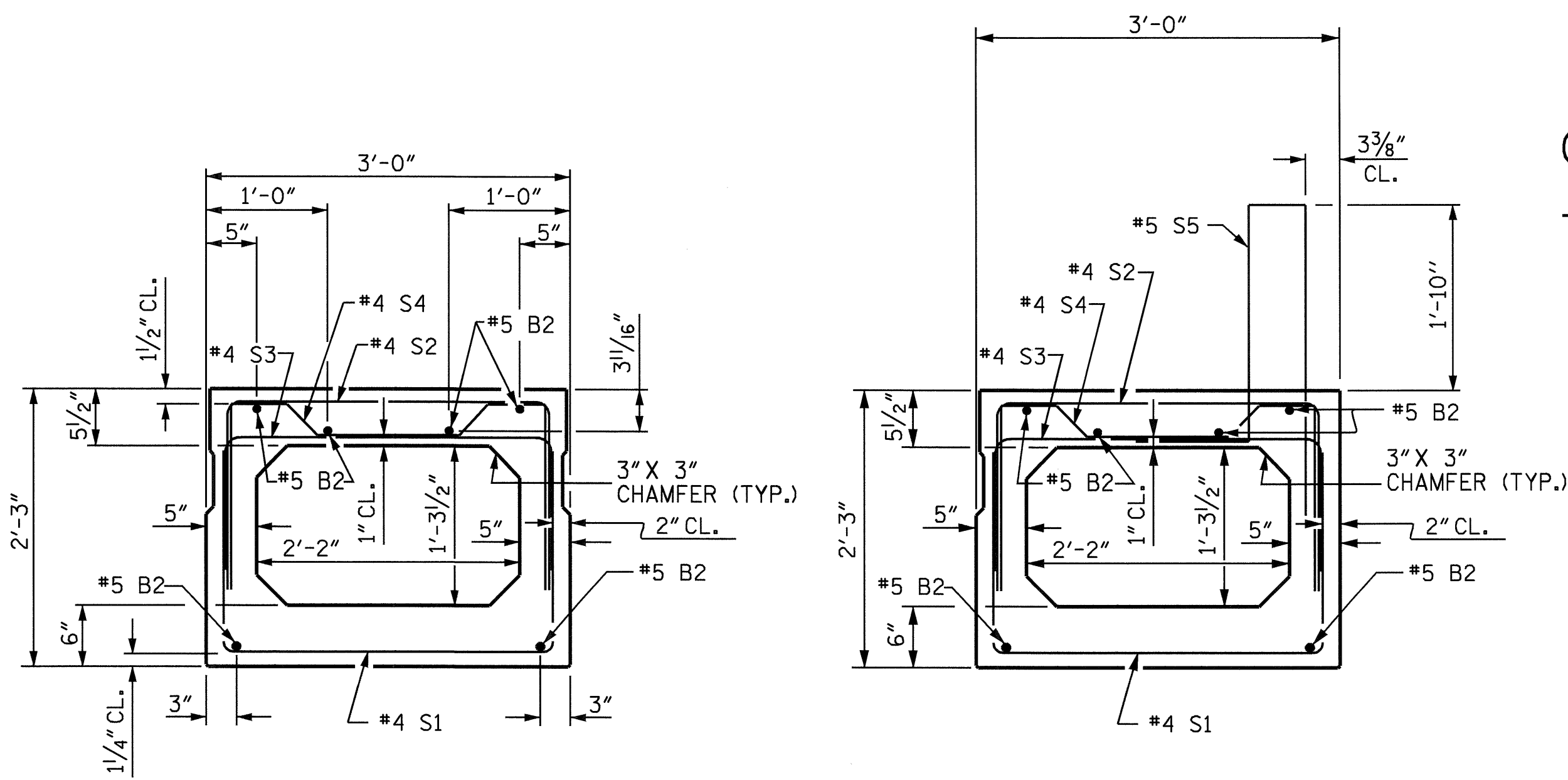
END ELEVATION

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



SHEAR KEY DETAIL

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



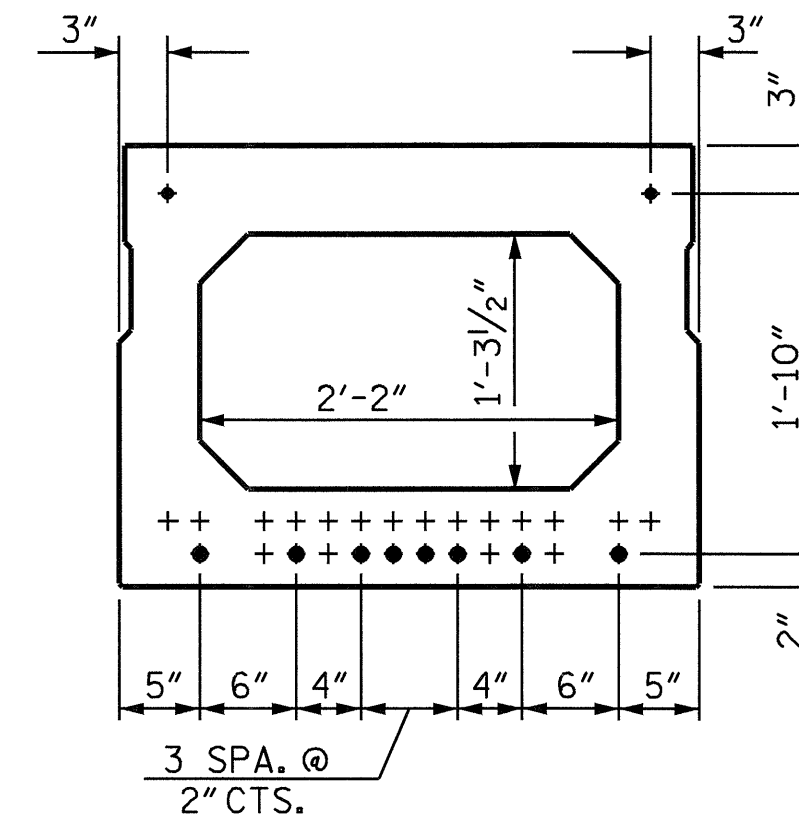
INTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)

EXTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)

0.6" Ø LOW RELAXATION STRAND LAYOUT

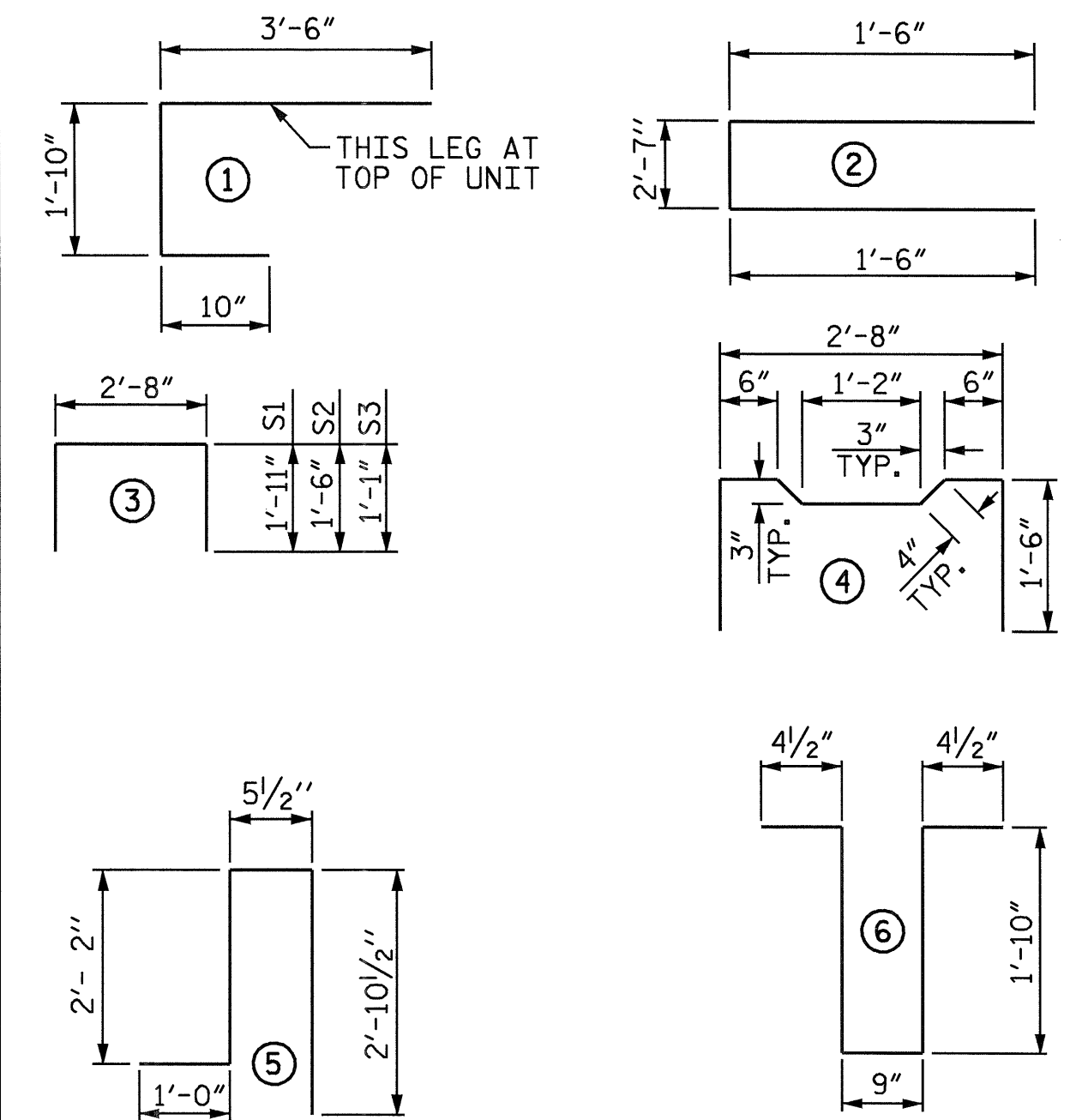


TYPICAL STRAND LOCATION

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

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

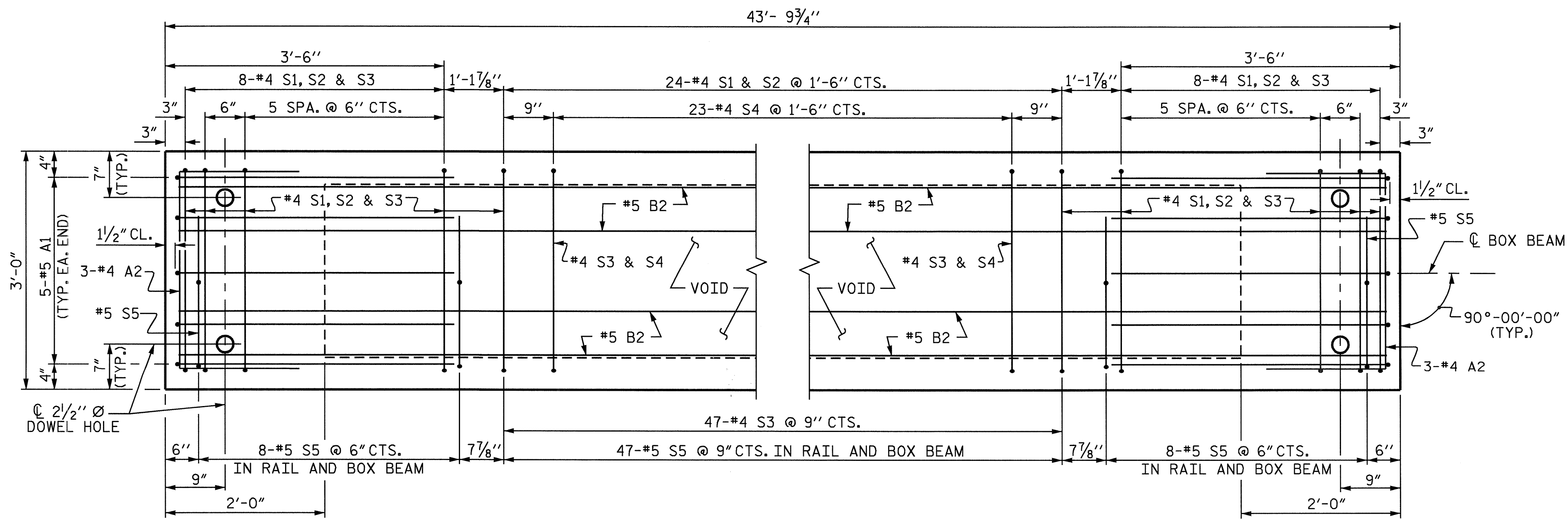
BAR TYPES



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	6'-2"	64	6'-2"	64
A2	18	#4	2	5'-7"	67	5'-7"	67
B2	6	#5	STR	43'-5"	272	43'-5"	272
K1	9	#4	6	5'-2"	31	5'-2"	31
K2	6	#4	STR	2'-7"	10	2'-7"	10
S1	40	#4	3	6'-6"	174	6'-6"	174
S2	40	#4	3	5'-8"	151	5'-8"	151
S3	63	#4	3	4'-10"	203	4'-10"	203
S4	23	#4	4	5'-10"	90	5'-10"	90
*S5	63	#5	5	6'-6"	427	--	--
REINFORCING STEEL				1062 LBS.		1062 LBS.	
*EPOXY COATED REINF. STEEL				427 LBS.			
5000 P.S.I. CONCRETE				7.2 CU. YDS.		7.1 CU. YDS.	
0.6" Ø L.R. STRANDS				No. 10		No. 10	

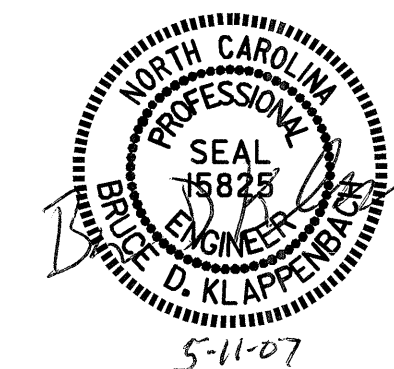


PLAN OF BOX BEAM (SPAN C)

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.

ASSEMBLED BY :	D. A. GLADDEN	DATE :	3-30-06
CHECKED BY :	H. T. BARBOUR	DATE :	1-23-07
DRAWN BY :	TLA	5/05	ADDED 7/11/05
CHECKED BY :	GM	6/05	

11-MAY-2007 09:13
R:\Structures\vgcladden\Microstrat1on\B3863.sd.BX.dgn
bklappenbach

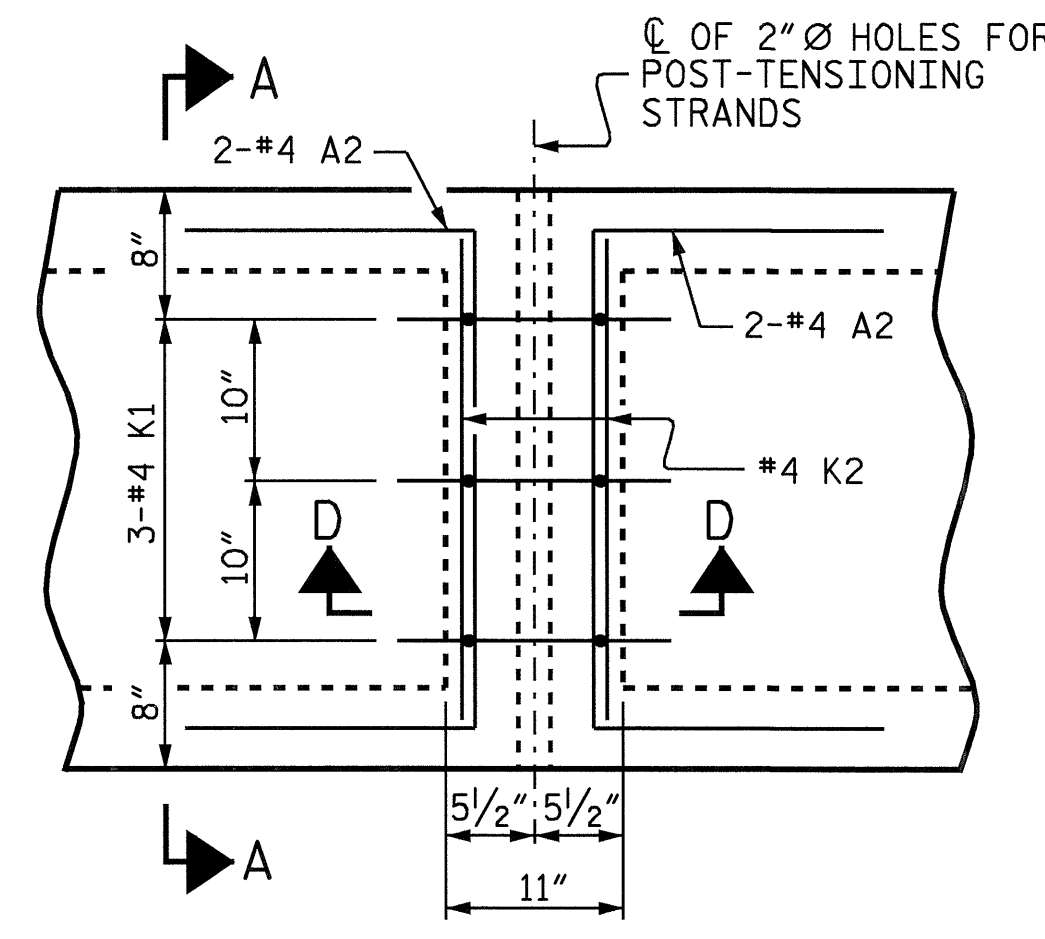


PROJECT NO. B-3863
JOHNSTON COUNTY
STATION: 18+79.50 -L-

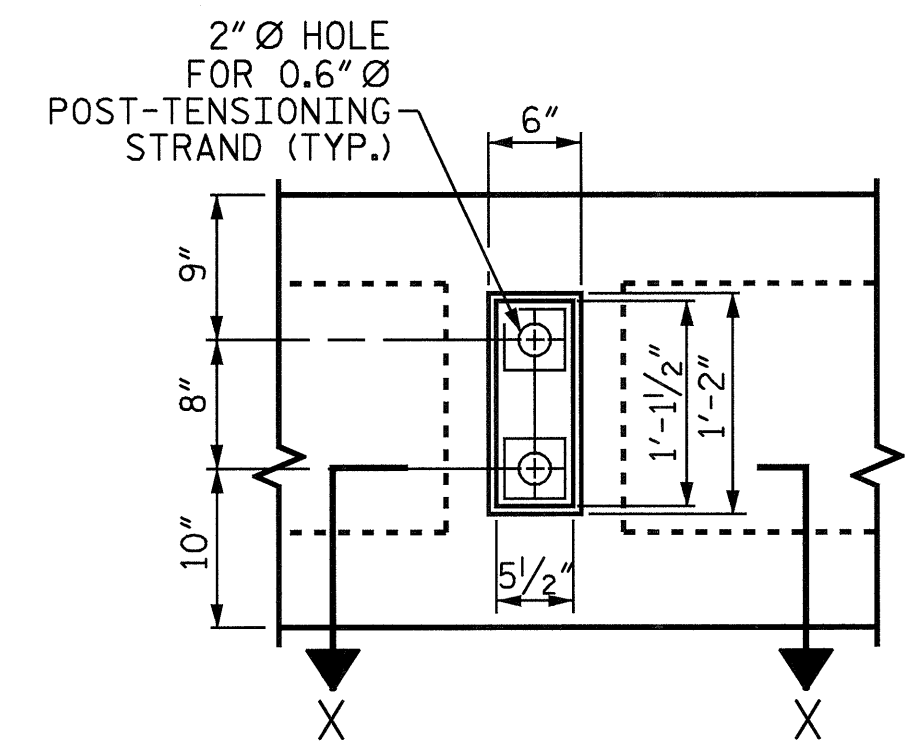
SHEET 6 OF 8

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

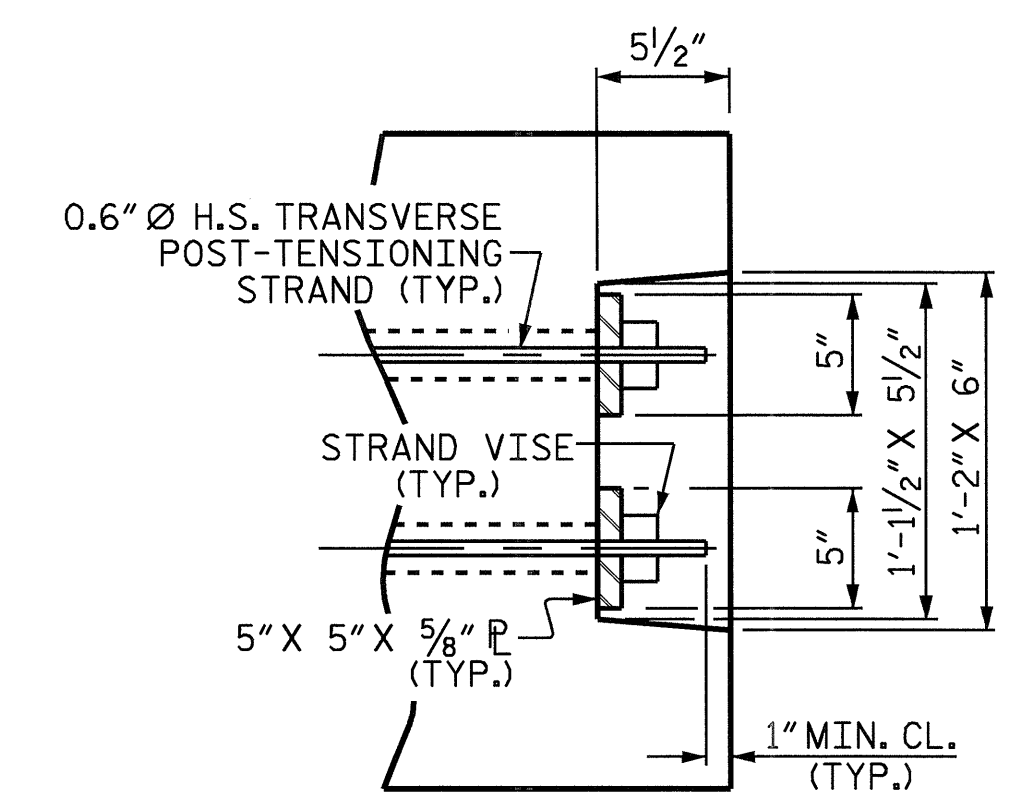
REVISIONS						SHEET NO. S-9
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			25
2			4			



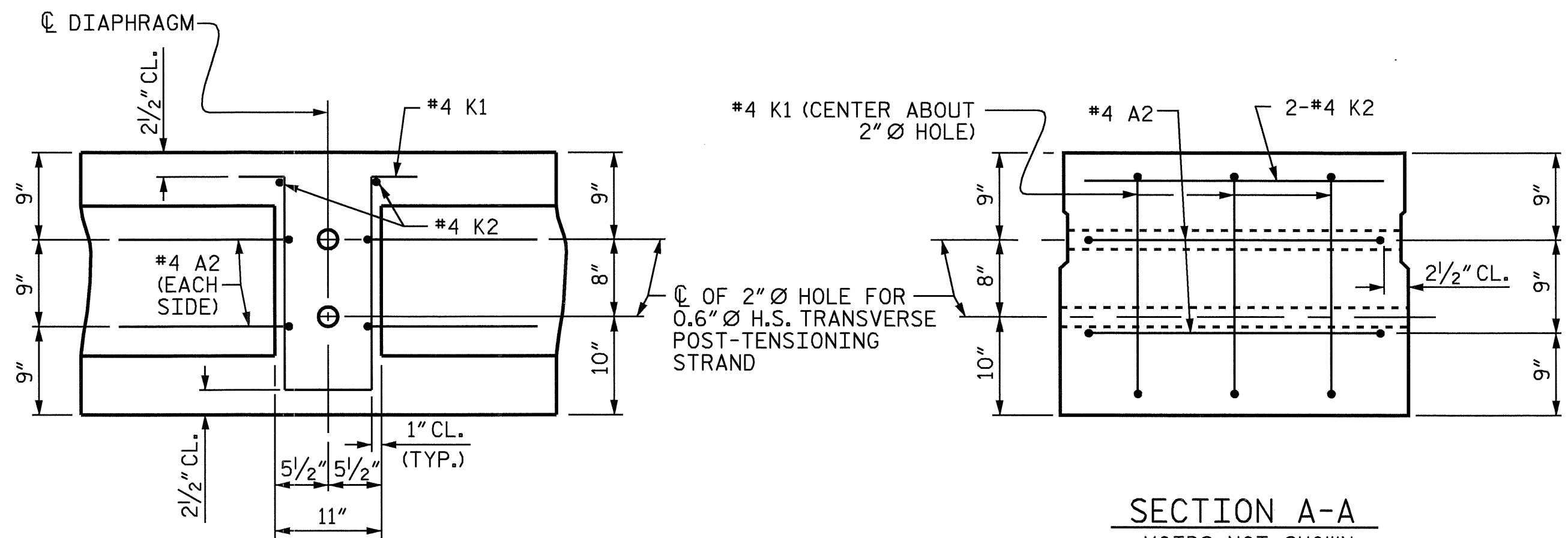
PLAN



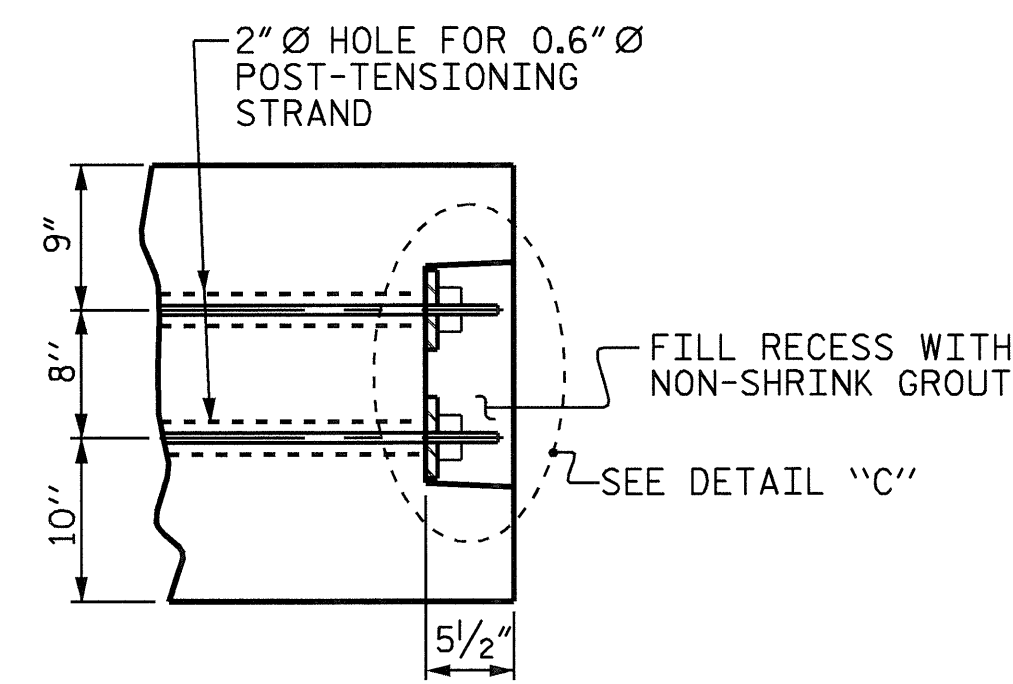
VIEW Y-Y
SHOWING ELEVATION VIEW OF GROUDED RECESS



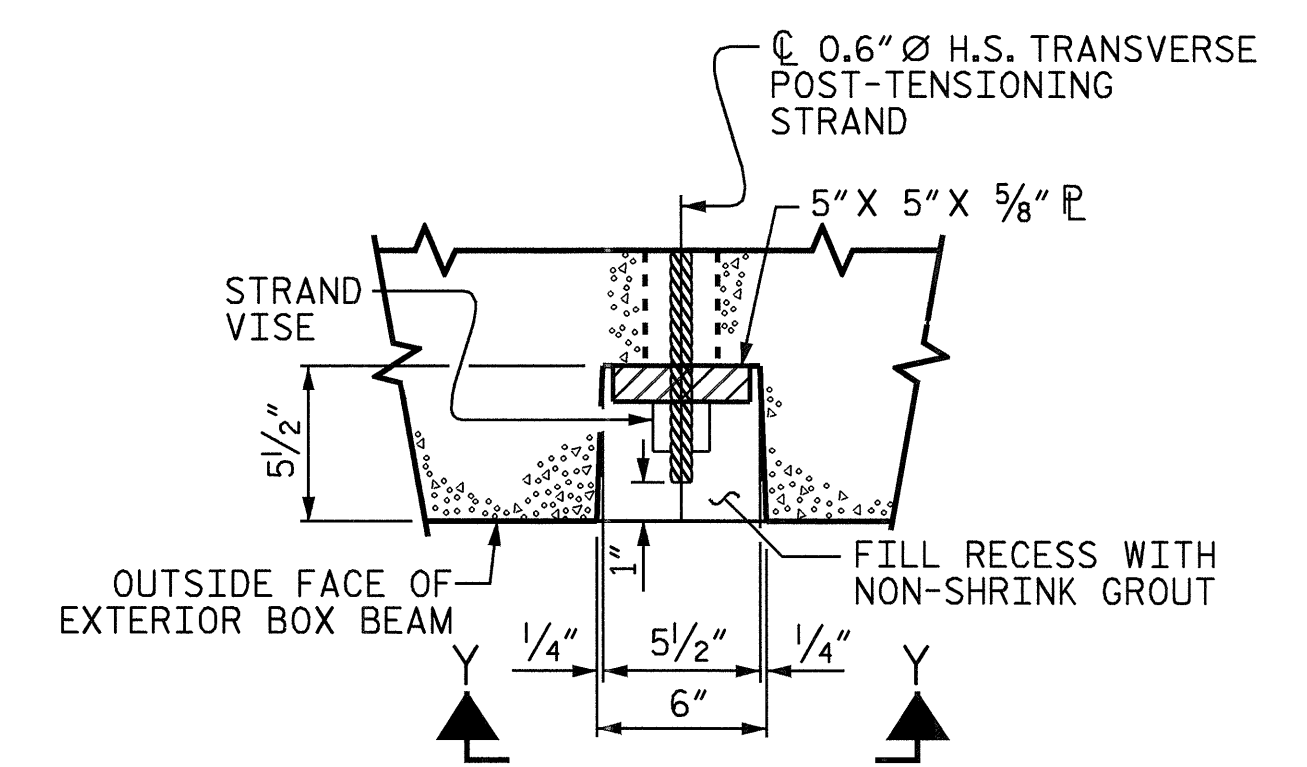
DETAIL "C"



SECTION A-A
VOIDS NOT SHOWN



PART SECTION AT RECESS



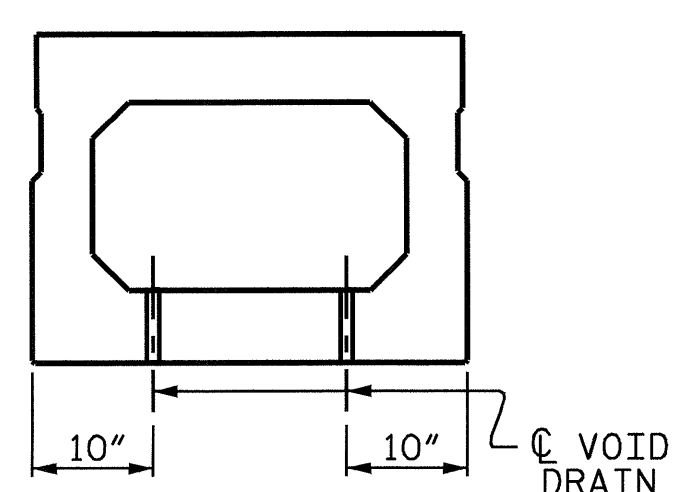
SECTION X-X
SHOWING PLAN VIEW OF GROUDED RECESS

SECTION D-D

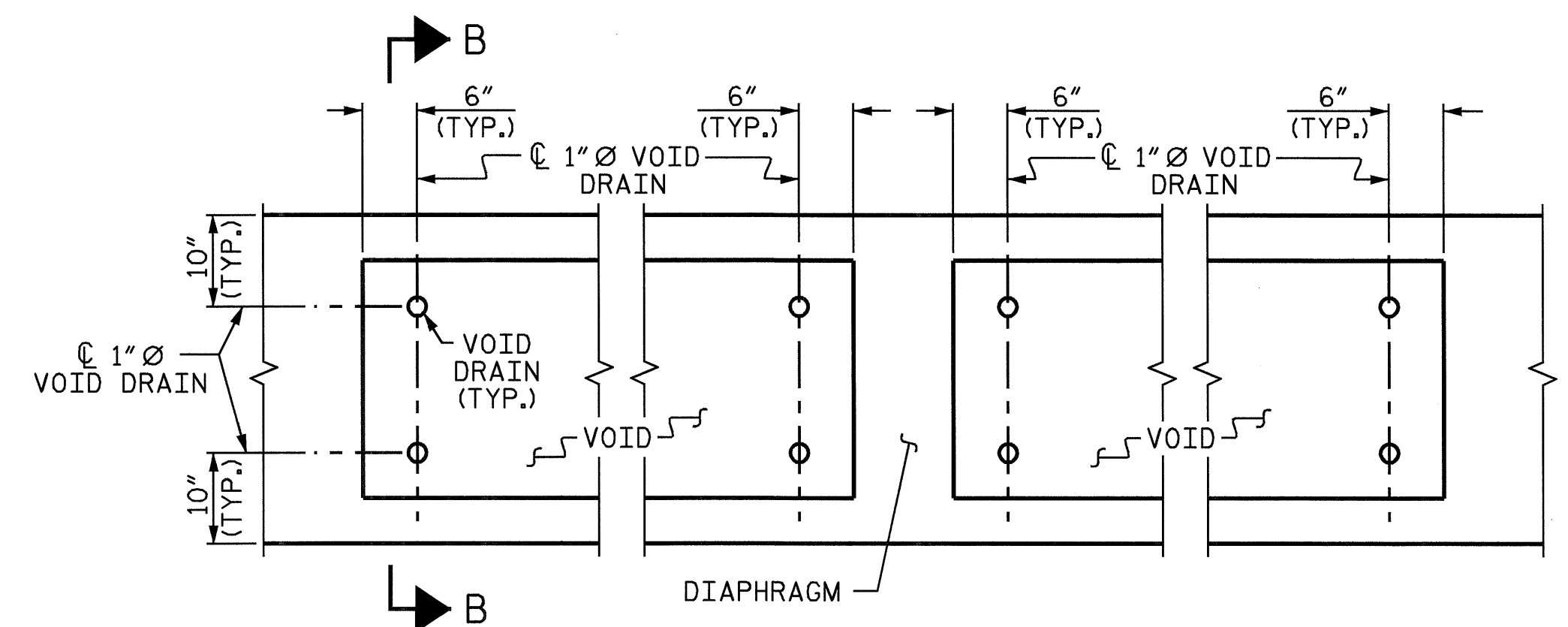
DOUBLE DIAPHRAGM DETAILS

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

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



SECTION B-B



PART PLAN

VOID DRAIN DETAILS

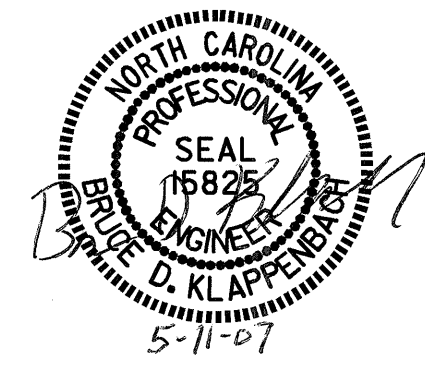
(DIMENSIONS SHOWN ARE TYPICAL FOR EACH VOID)

DEAD LOAD DEFLECTION AND CAMBER			
	3'-0" x 2'-3"		
	0.6" Ø L.R. STRAND		
	SPAN "A"	SPAN "B"	SPAN "C"
CAMBER (BEAM ALONE IN PLACE) ↑	4/4"	4/4"	9/16"
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD ** ↓	5/8"	5/8"	1/8"
FINAL CAMBER ↑	35/8"	35/8"	7/16"

** INCLUDES FUTURE WEARING SURFACE

PROJECT NO. B-3863
JOHNSTON COUNTY
STATION: 18+79.50 -L-

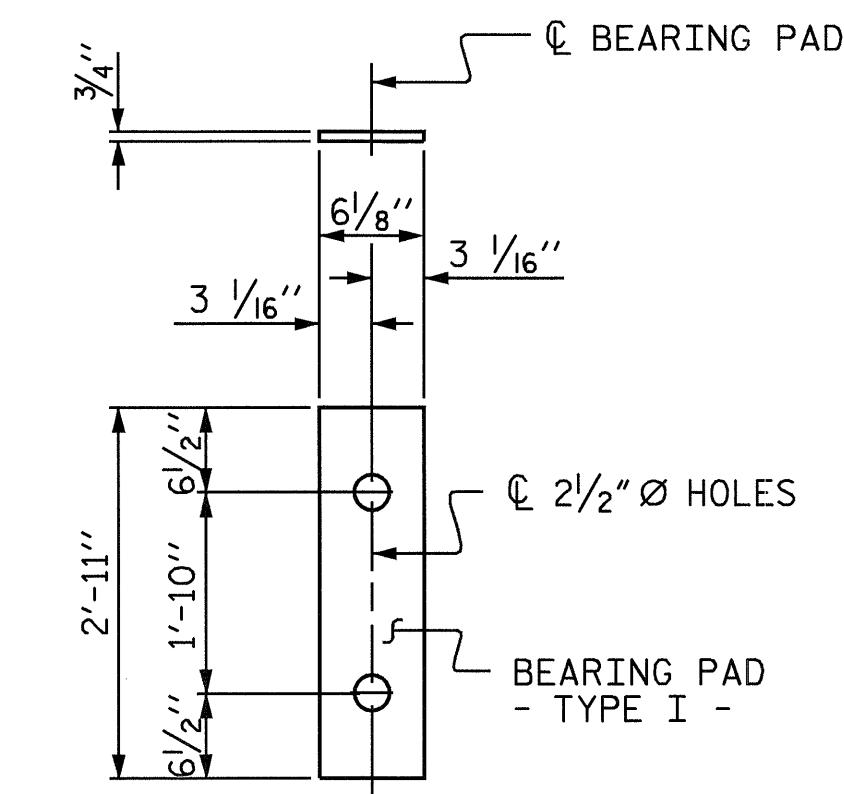
SHEET 7 OF 8



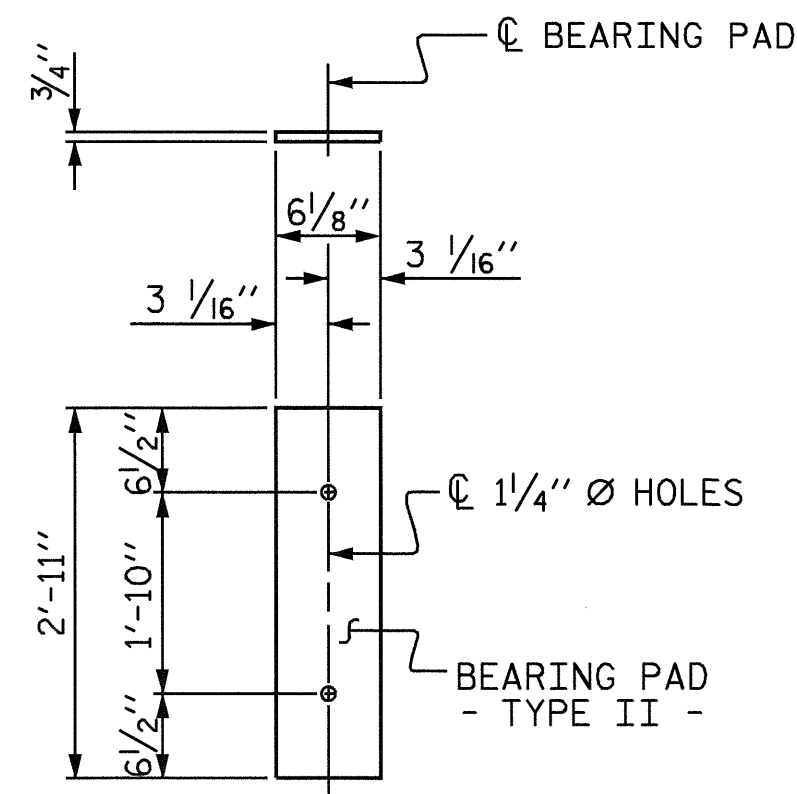
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
3'-0" X 2'-3"
PRESTRESSED CONCRETE
BOX BEAM UNIT

REVISIONS						SHEET NO. S-10
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 25
2			4			

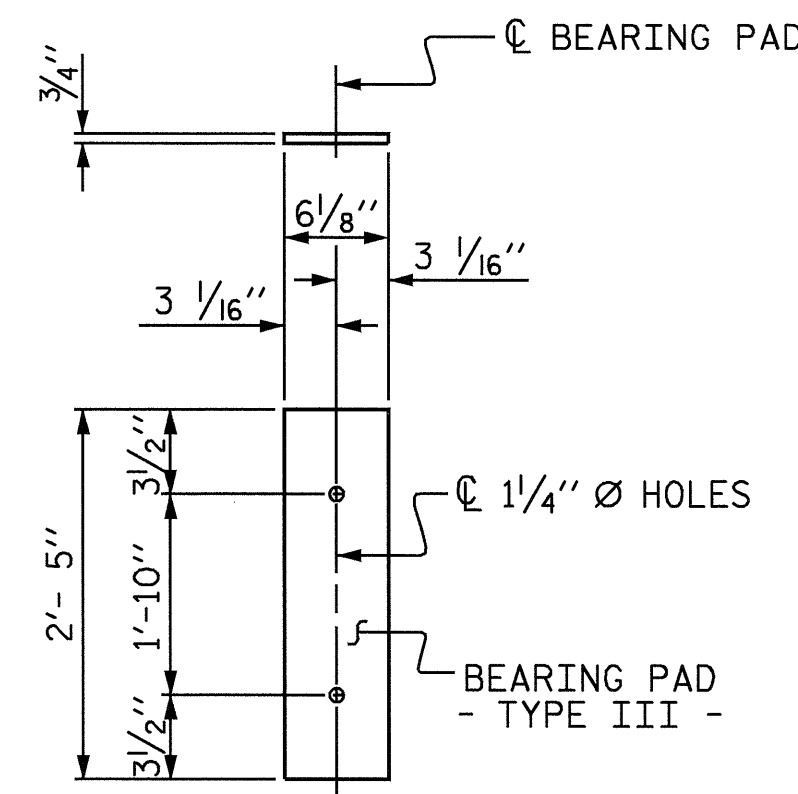
ASSEMBLED BY : D. A. GLADDEN DATE : 3-30-06
CHECKED BY : H. T. BARBOUR DATE : 1-23-07
DRAWN BY : TLA 5/05 ADDED 7/11/05
CHECKED BY : GM 6/05



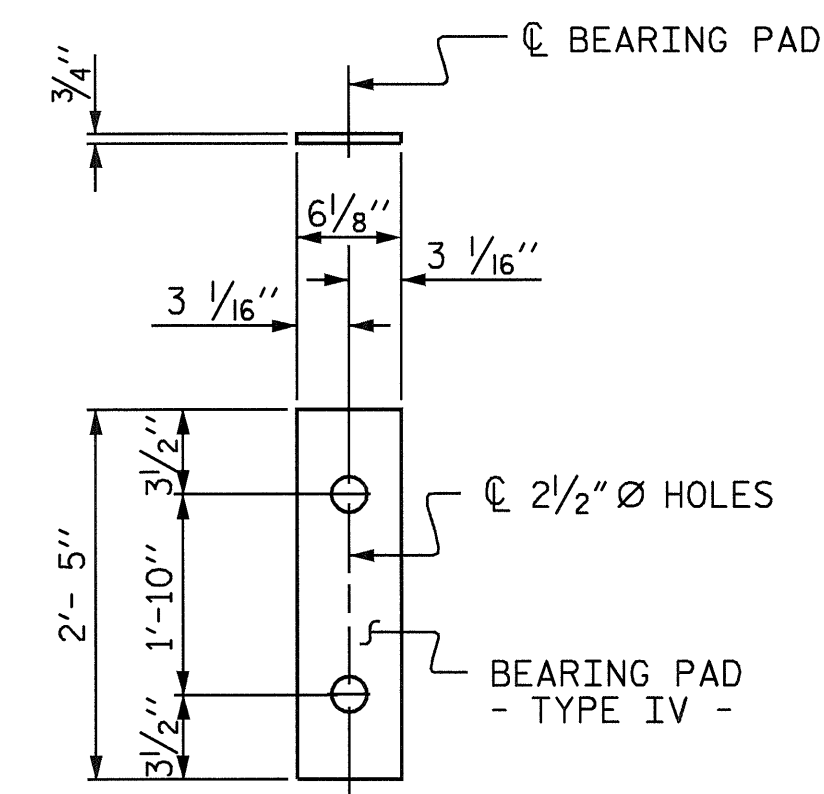
EXPANSION END (E1)
(TYPE I - 11 REQ'D)



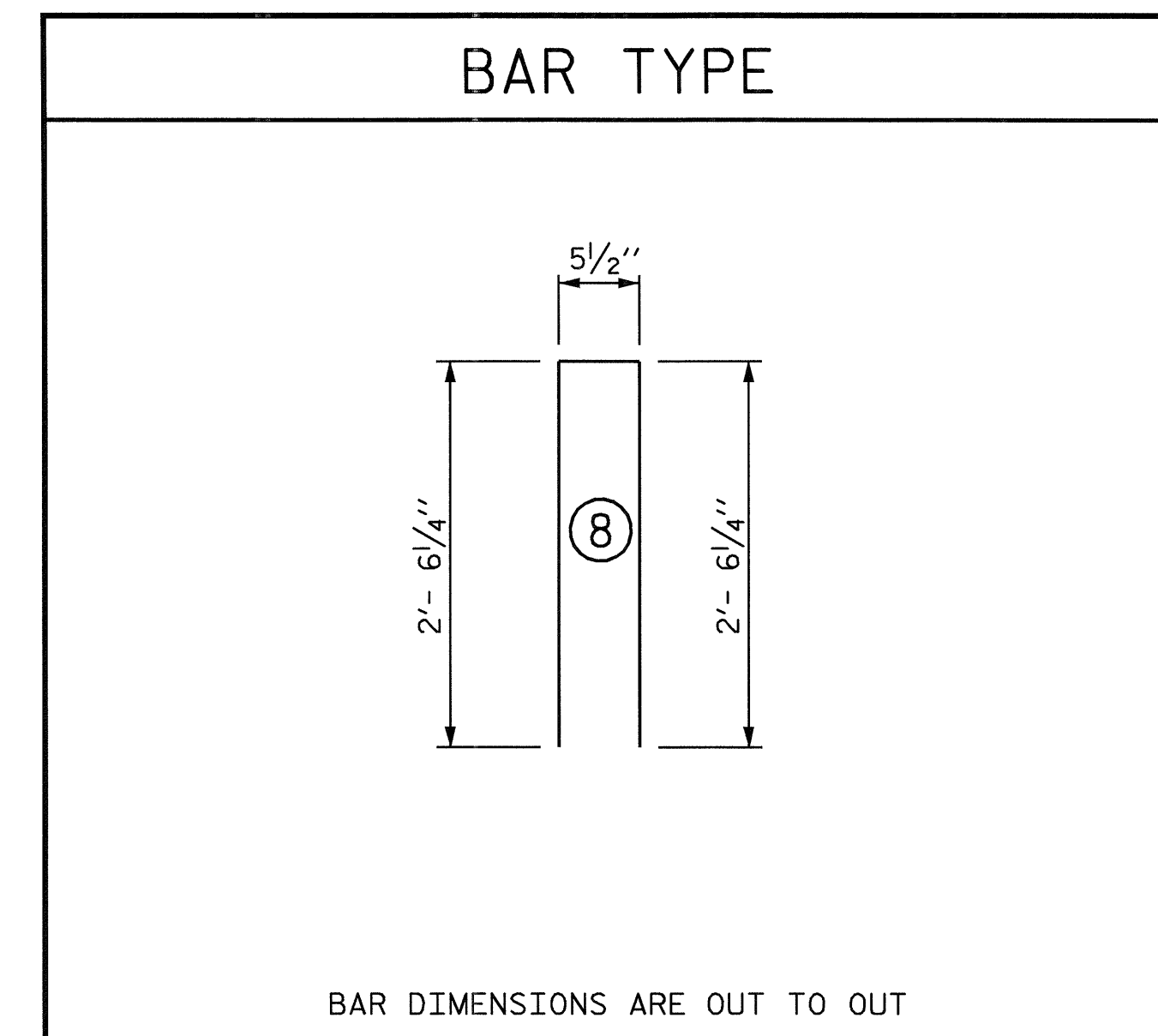
FIXED END (E2)
(TYPE II - 33 REQ'D)



FIXED END (E3)
(TYPE III - 11 REQ'D)



EXPANSION END (E4)
(TYPE IV - 11 REQ'D)



ELASTOMERIC BEARING DETAILS

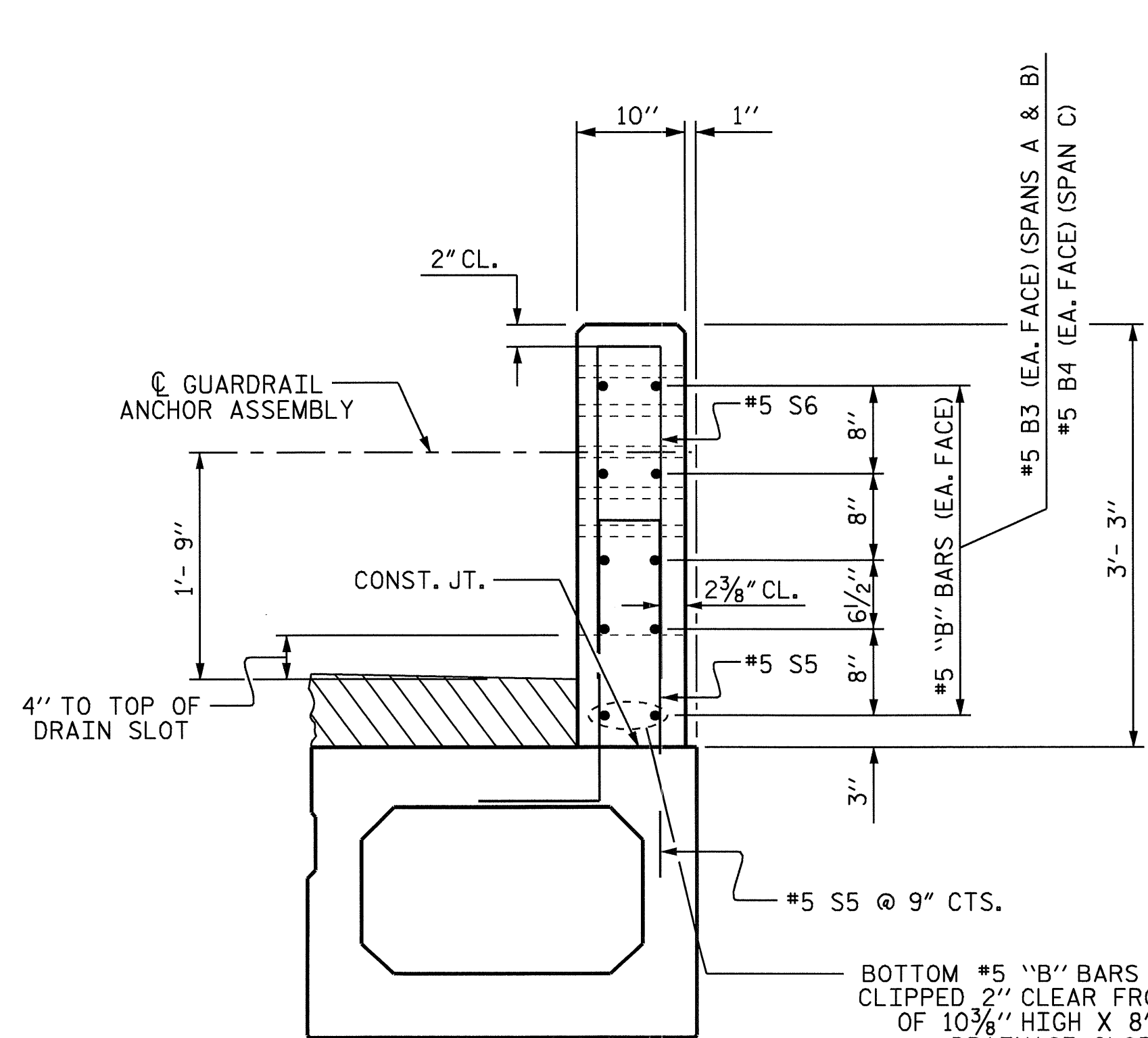
ALL BEARINGS PADS TO BE 60 DUROMETER

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL

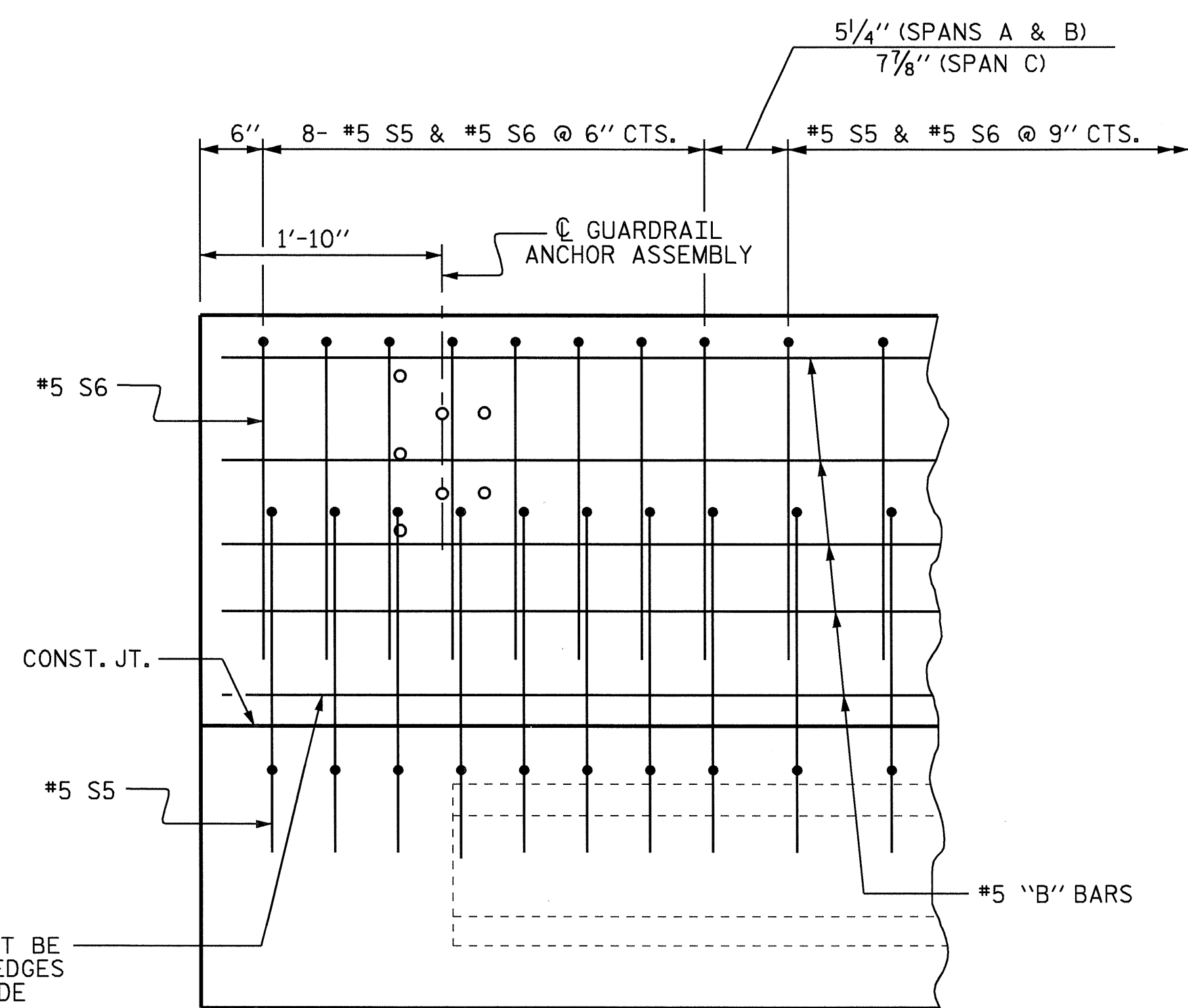
BAR	BARS PER SPAN			TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
	SPAN A	SPAN B	SPAN C					
*B3	60	60		120	#5	STR	24'- 8"	3087
*B4			40	40	#5	STR	21'- 6"	897
*S6	210	210	126	546	#5	8	5'- 6"	3132
* EPOXY COATED REINFORCING STEEL								7116 LBS.
CLASS AA CONCRETE								38.5 CU. YD.
TOTAL LIN. FT. OF CONCRETE BARRIER RAIL								387.13

BOX BEAM UNITS REQUIRED

	NUMBER	LENGTH	TOTAL LENGTH
SPAN A	11	74'-10 1/2"	823'- 7 1/2"
SPAN B	11	74'-10 1/2"	823'- 7 1/2"
SPAN C	11	43'- 9 3/4"	481'-11 1/4"
TOTAL			2129'- 2 1/4"

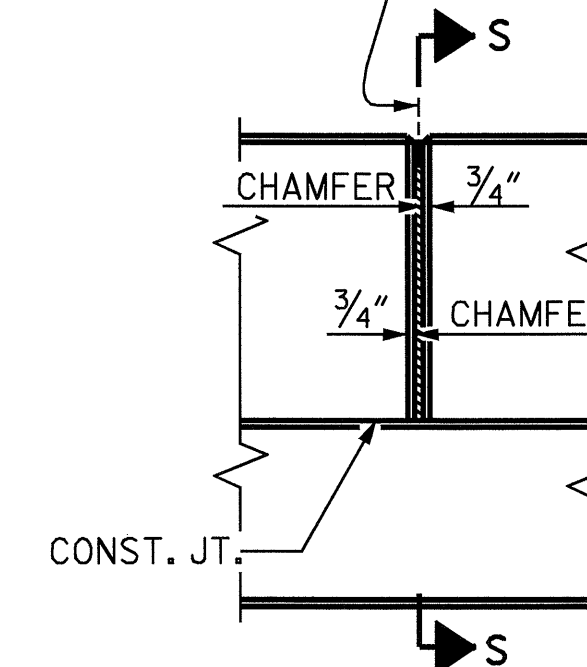


END VIEW



ELEVATION

1/2" EXP. JT. MAT'L HELD IN PLACE WITH GALVANIZED NAILS. (NOTE: OMIT EXP. JT. MAT'L. WHEN SLIP FORM IS USED)



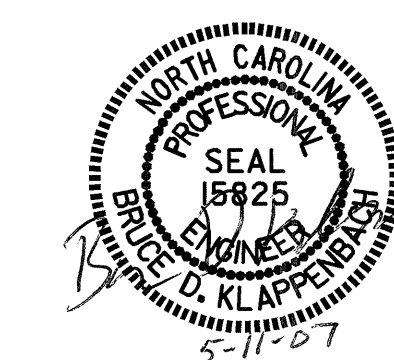
ELEVATION AT EXPANSION JOINT

BOTTOM #5 "B" BARS MUST BE CLIPPED 2" CLEAR FROM EDGES OF 10 3/8" HIGH X 8" WIDE DRAINAGE SLOTS.

VERTICAL CONCRETE BARRIER RAIL DETAILS

PROJECT NO. B-3863
JOHNSTON COUNTY
STATION: 18+79.50 -L-

SHEET 8 OF 8



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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-11
2			4			TOTAL SHEETS 25

ASSEMBLED BY: D. A. GLADDEN DATE: 3-30-06
CHECKED BY: H. T. BARBOUR DATE: 1-23-07
DRAWN BY: TLA 5/05
CHECKED BY: GM 6/05
ADDED 7/11/05R

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.

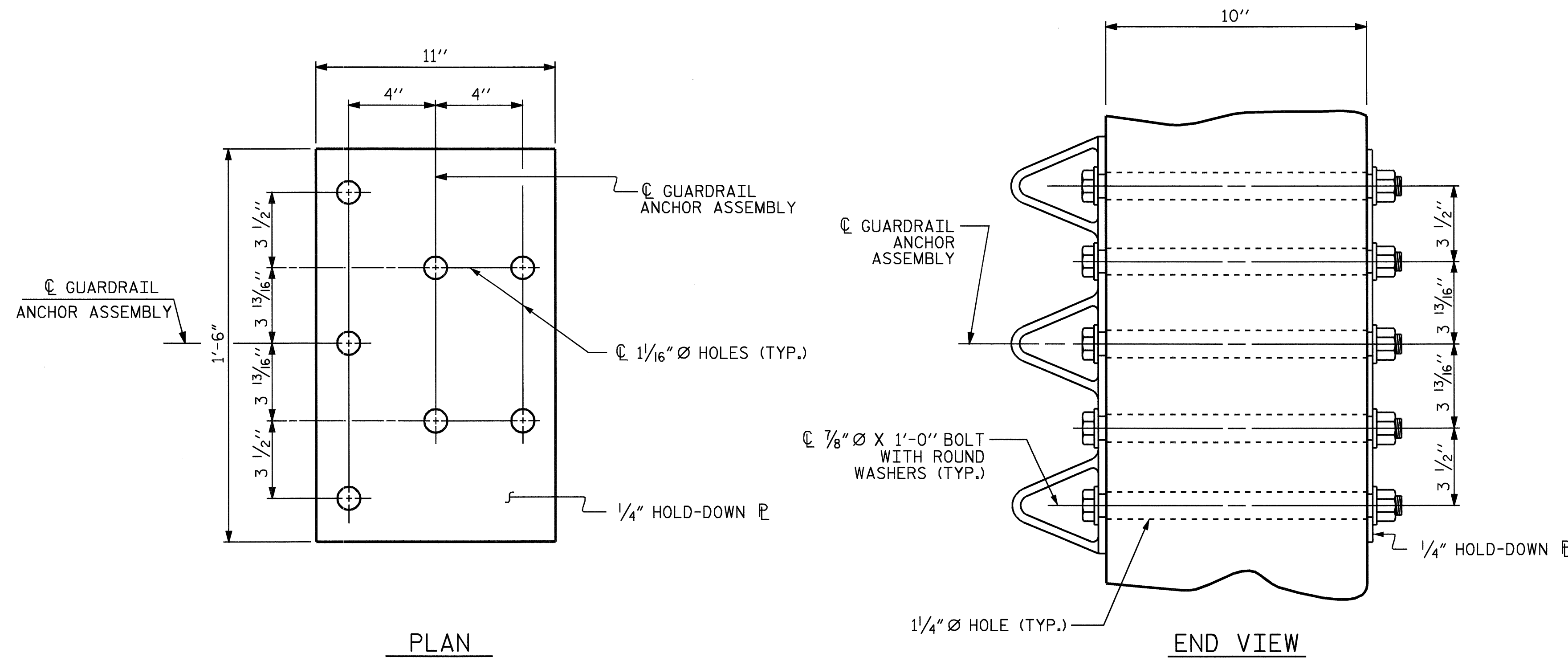
BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS.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

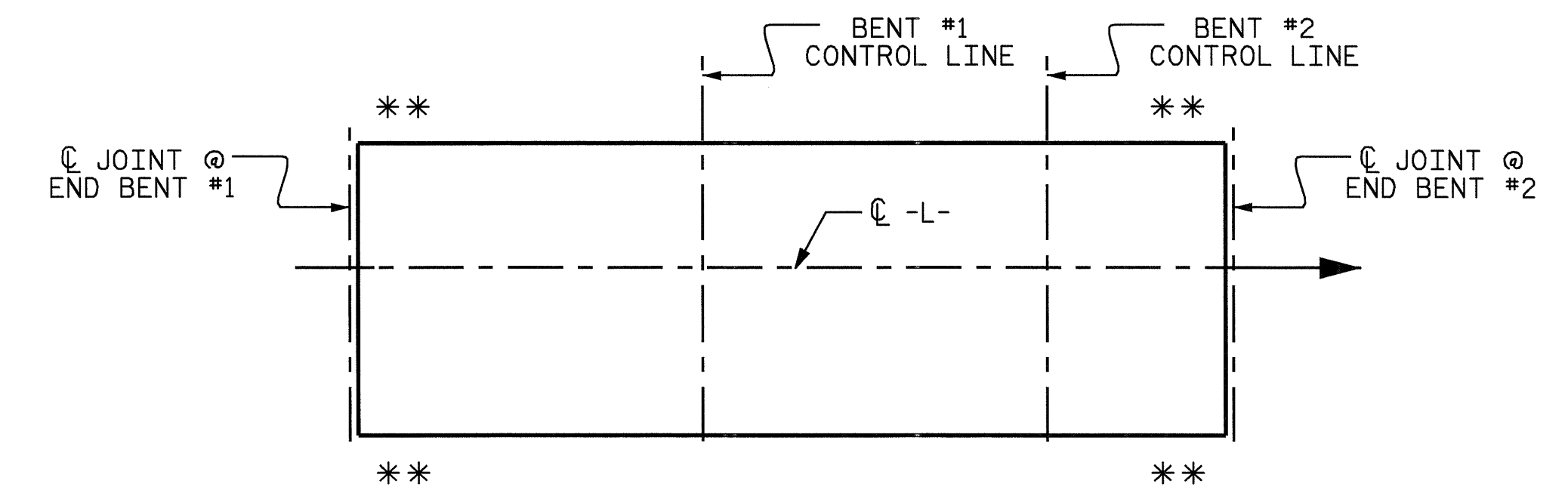
THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



PLAN

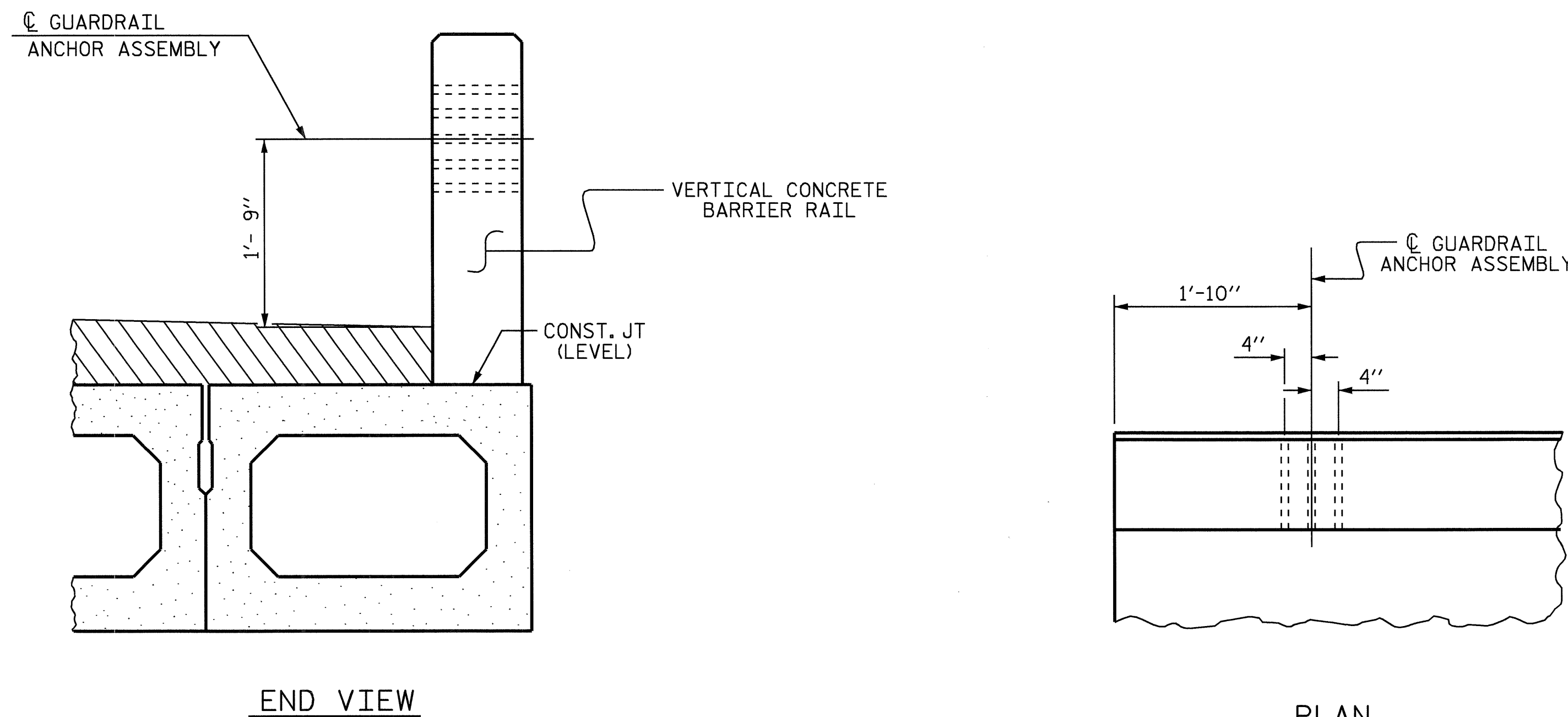
END VIEW

GUARDRAIL ANCHOR ASSEMBLY DETAILS



SKETCH SHOWING POINTS OF ATTACHMENT

** LOCATION OF GUARDRAIL ATTACHMENT

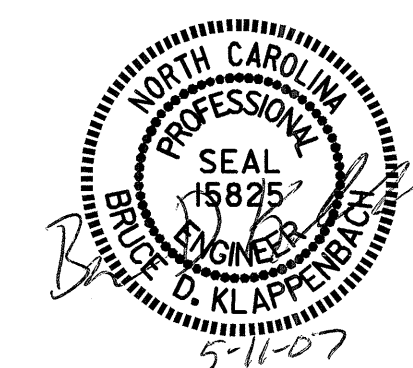


END VIEW

PLAN

LOCATION OF ANCHOR ASSEMBLY FOR GUARDRAIL

PROJECT NO. B-3863
JOHNSTON COUNTY
 STATION: 18+79.50 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GUARDRAIL ANCHORAGE
 DETAILS FOR
 VERTICAL CONCRETE
 BARRIER RAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : D. A. GLADDEN DATE : 4-9-06
 CHECKED BY : H. T. BARBOUR DATE : 1-23-07

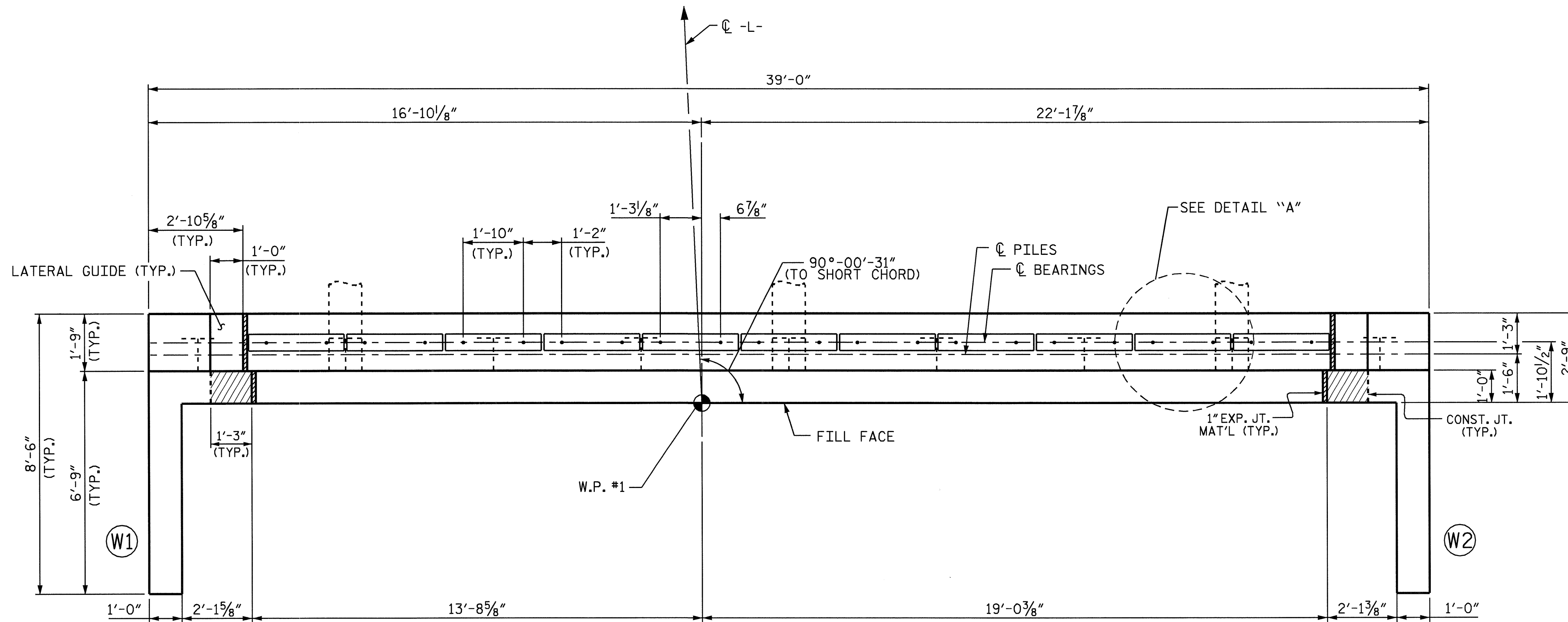
NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #801 DOWELS.

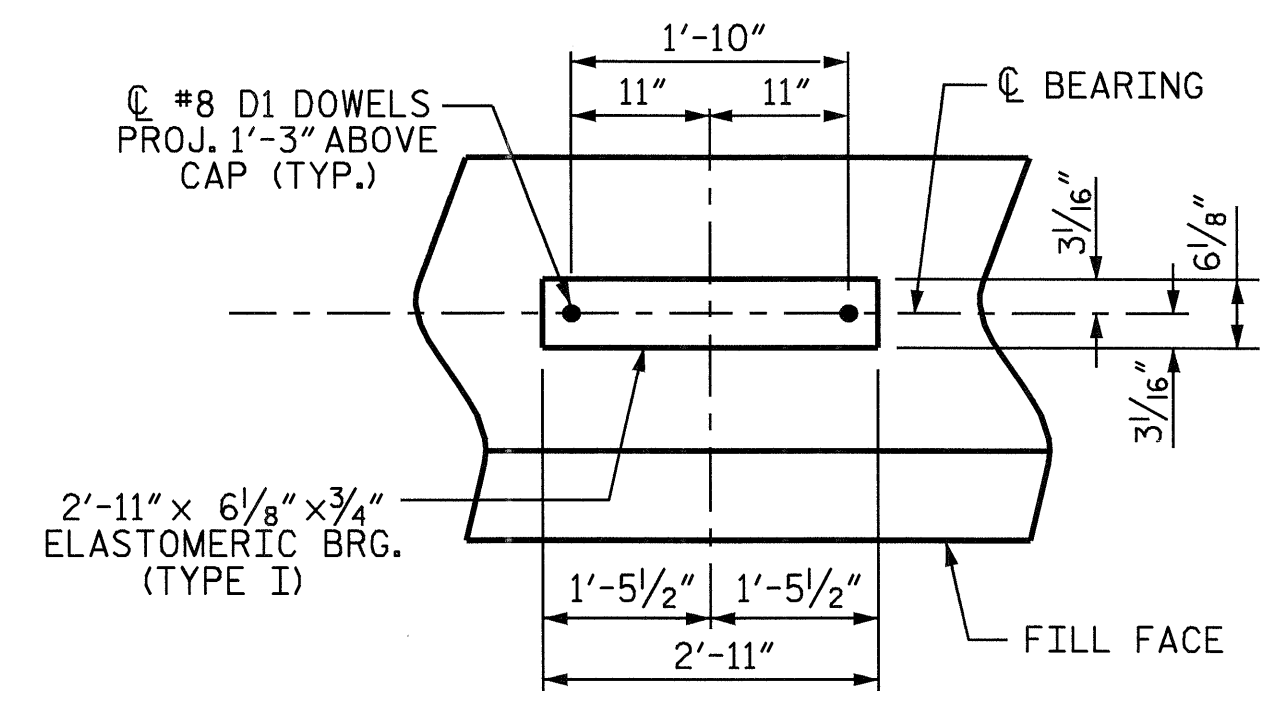
THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

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

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

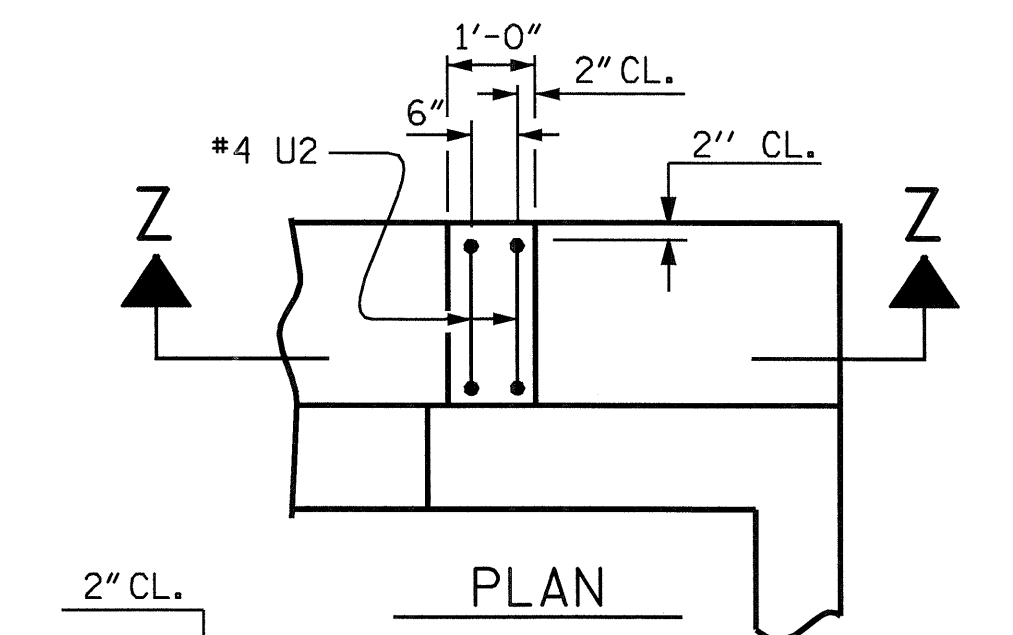


PLAN

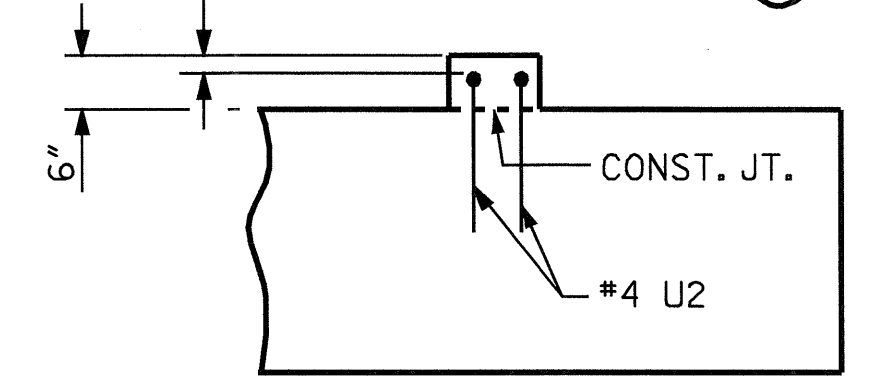


DETAIL A

PILE #	ELEVATION
PILE #1	210.104
PILE #2	210.014
PILE #3	209.924
PILE #4	209.834
PILE #5	209.744
PILE #6	209.654
PILE #7	209.564
PILE #8	209.474
PILE #9	209.384

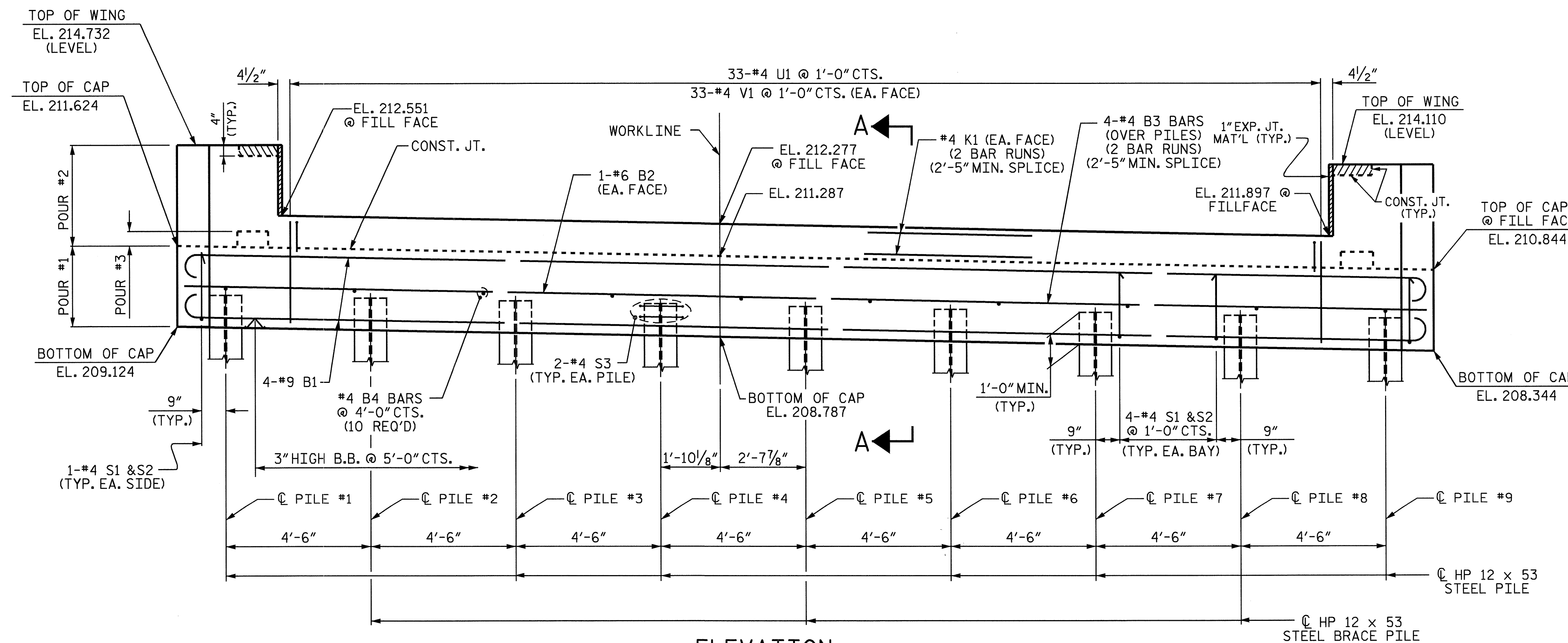


PLAN



SECTION Z-Z

DETAIL B



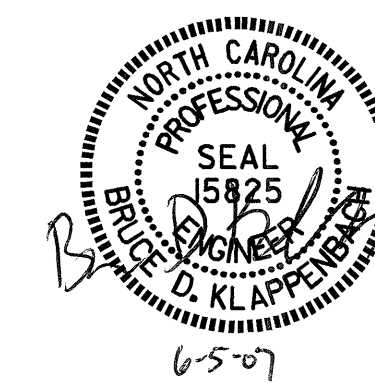
ELEVATION

PROJECT NO. B-3863
JOHNSTON COUNTY
 STATION: 18+79.50 -L-

SHEET 1 OF 3

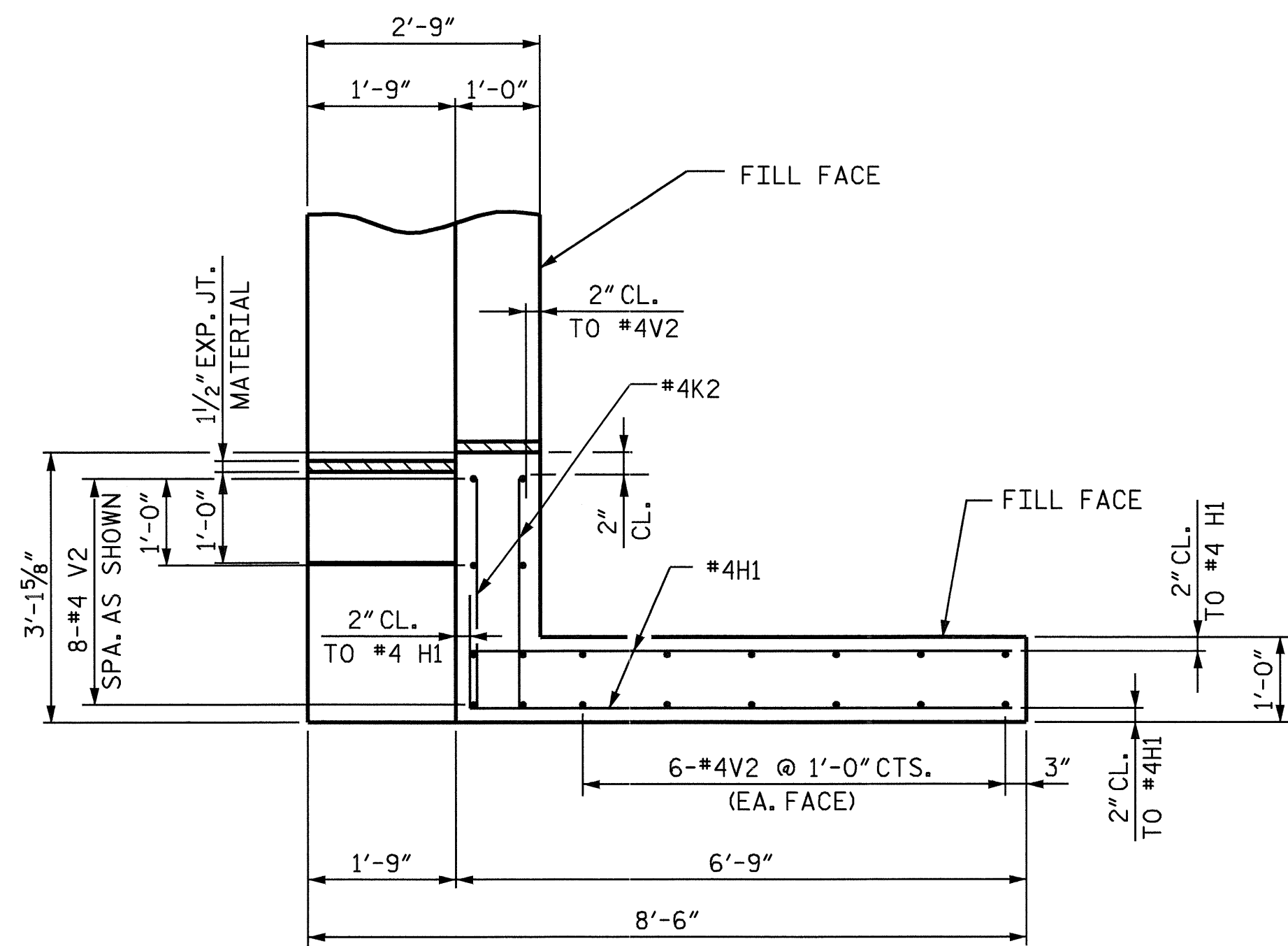
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 END BENT #1**

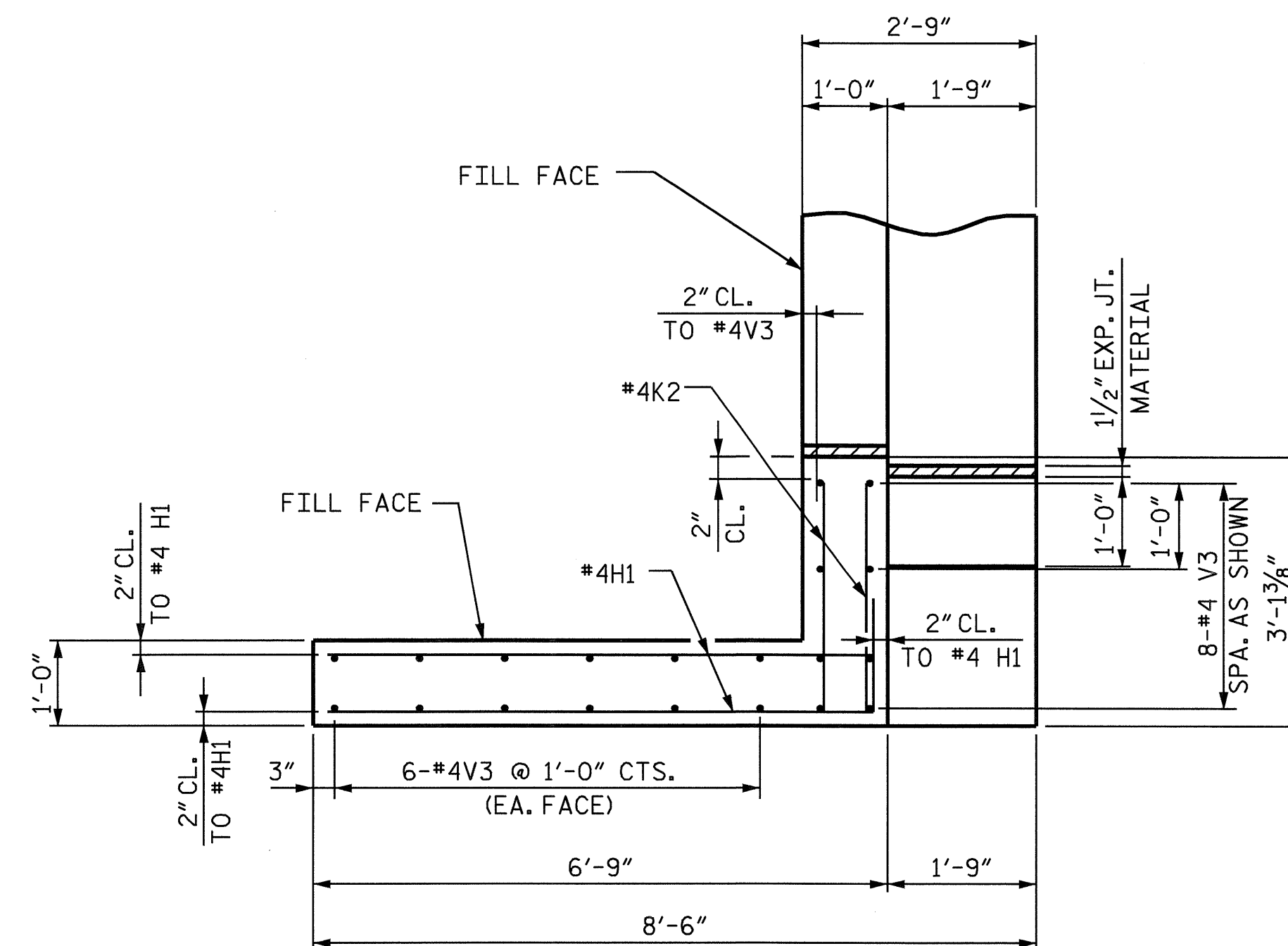


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			25

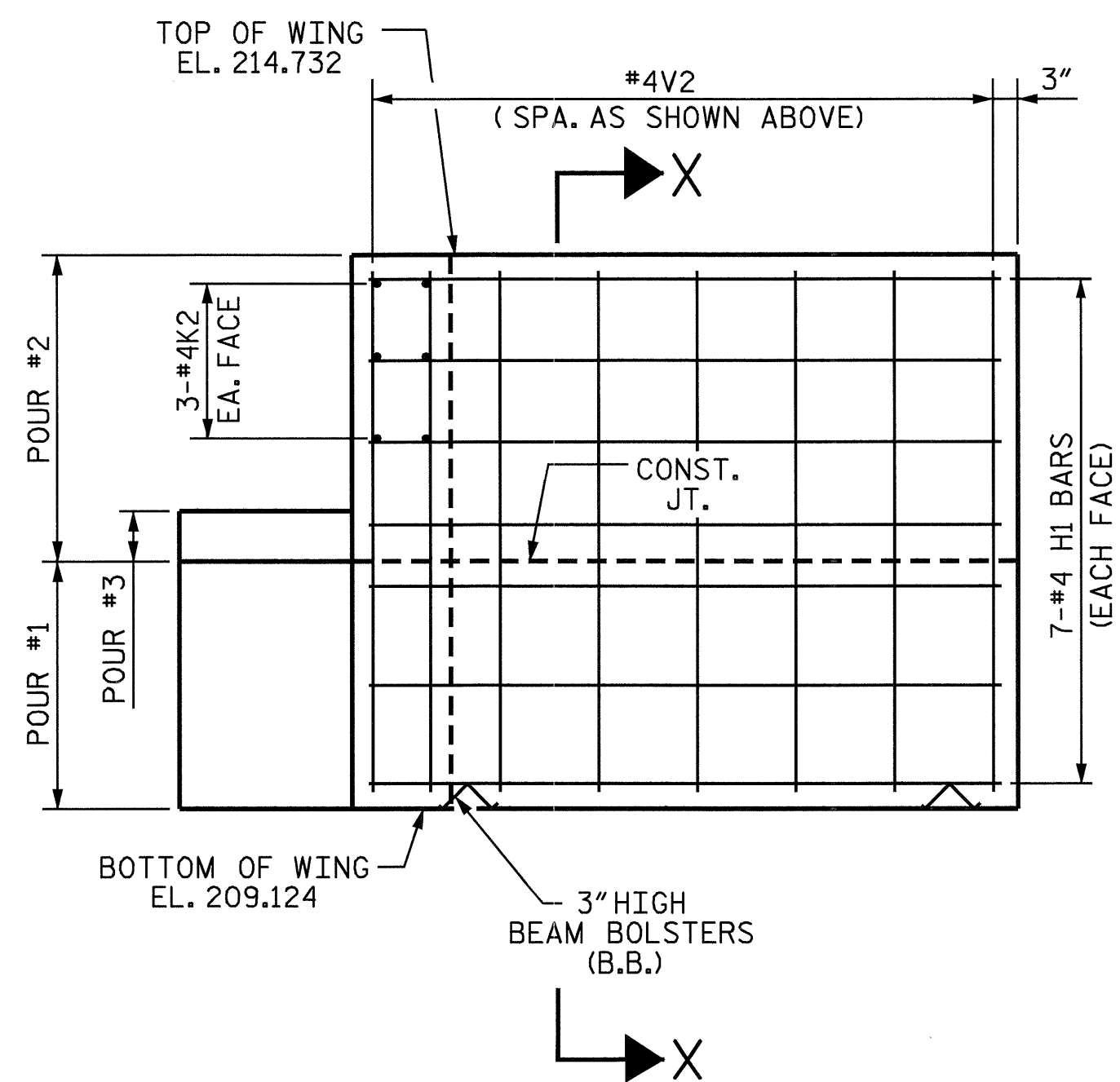
DRAWN BY : M. G. SHAIKH DATE : 08-04-06
 CHECKED BY : D. A. GLADDEN DATE : 08-16-06



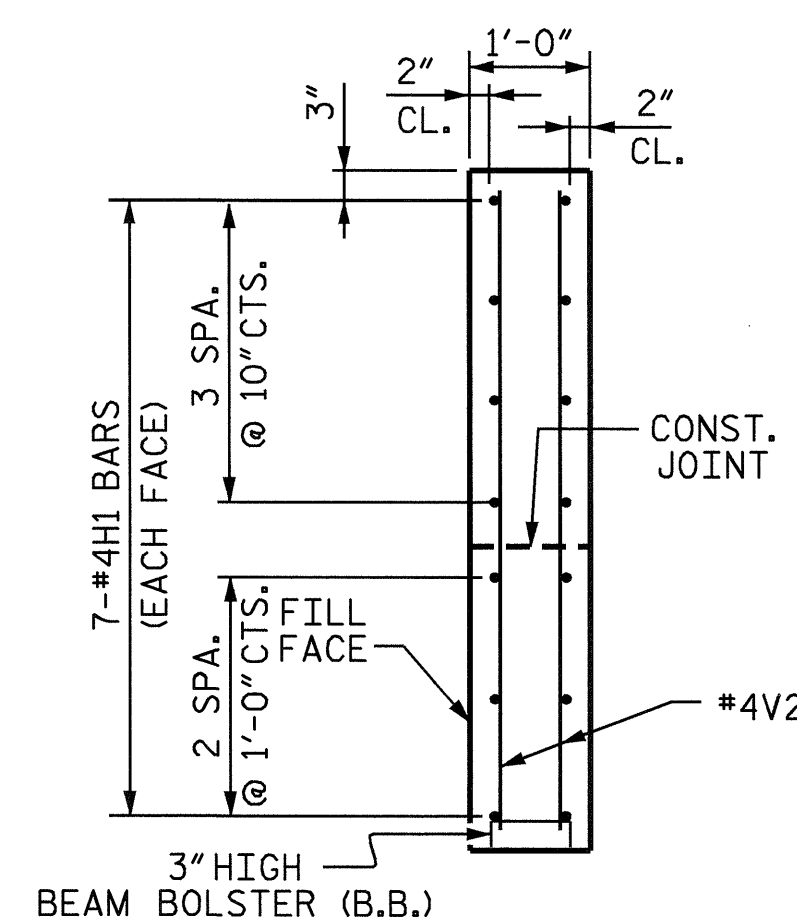
PLAN OF LEFT WING (W1)



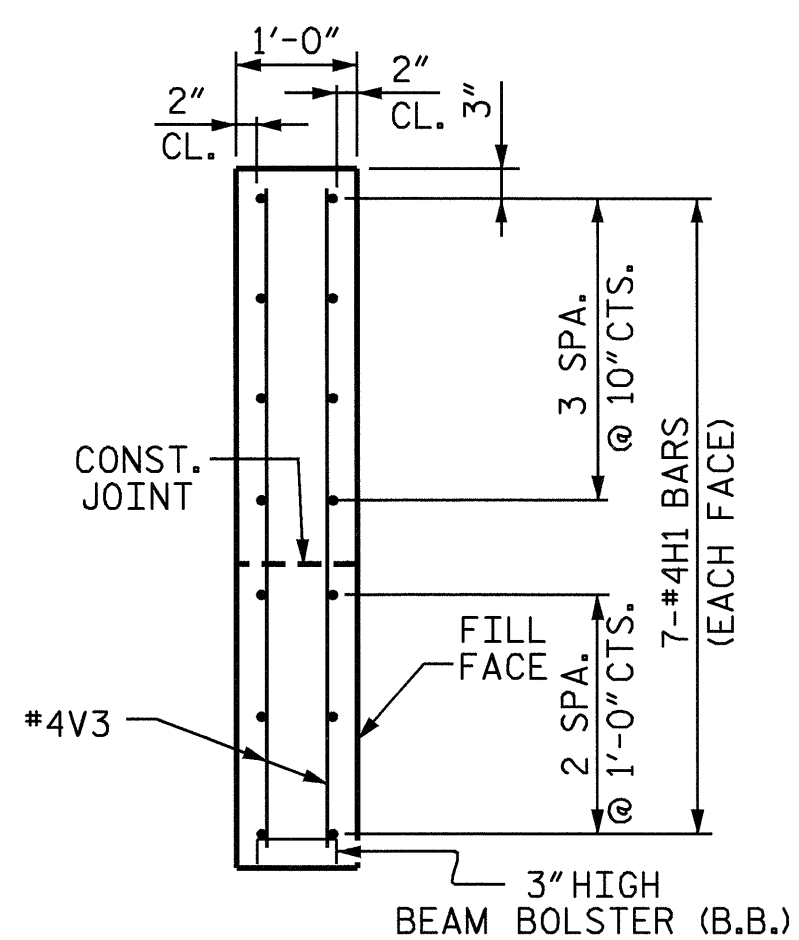
PLAN OF RIGHT WING (W2)



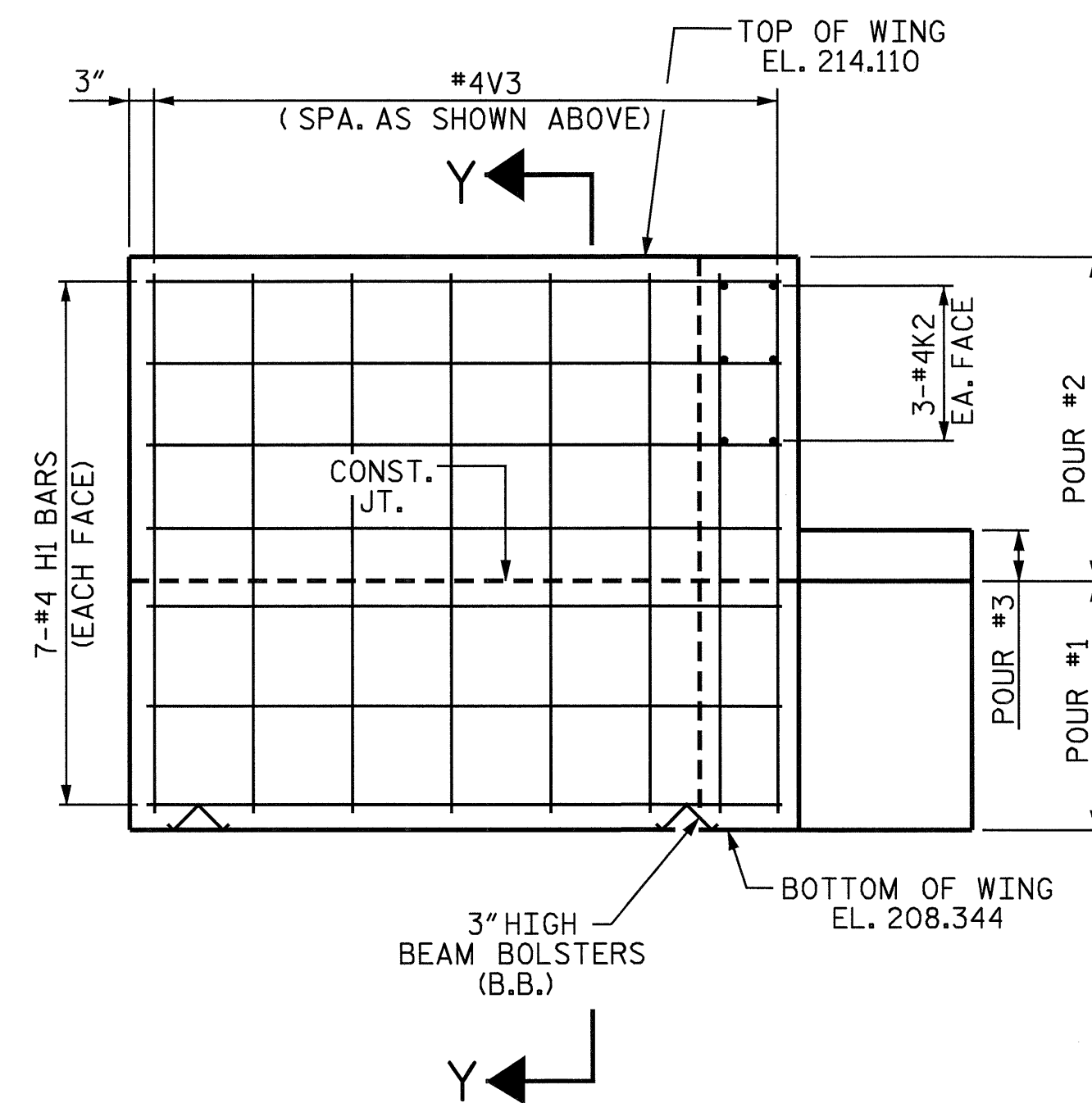
ELEVATION OF LEFT WING (W1)



SECTION X-X



SECTION Y-Y



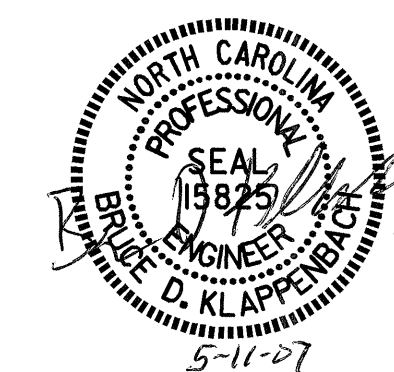
ELEVATION OF RIGHT WING (W2)

PROJECT NO. B-3863
JOHNSTON COUNTY
 STATION: 18+79.50 -L-

SHEET 2 OF 3

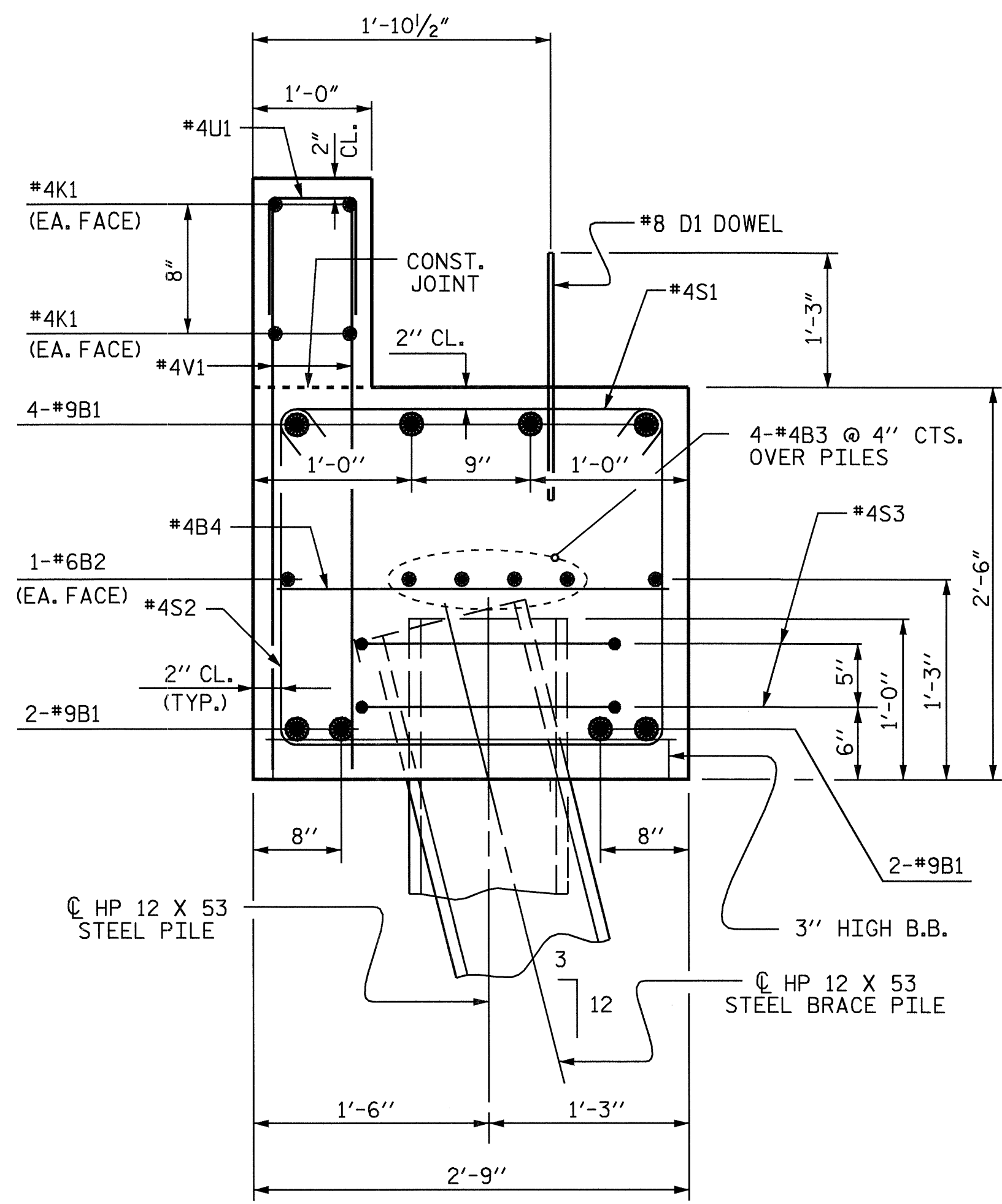
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT #1

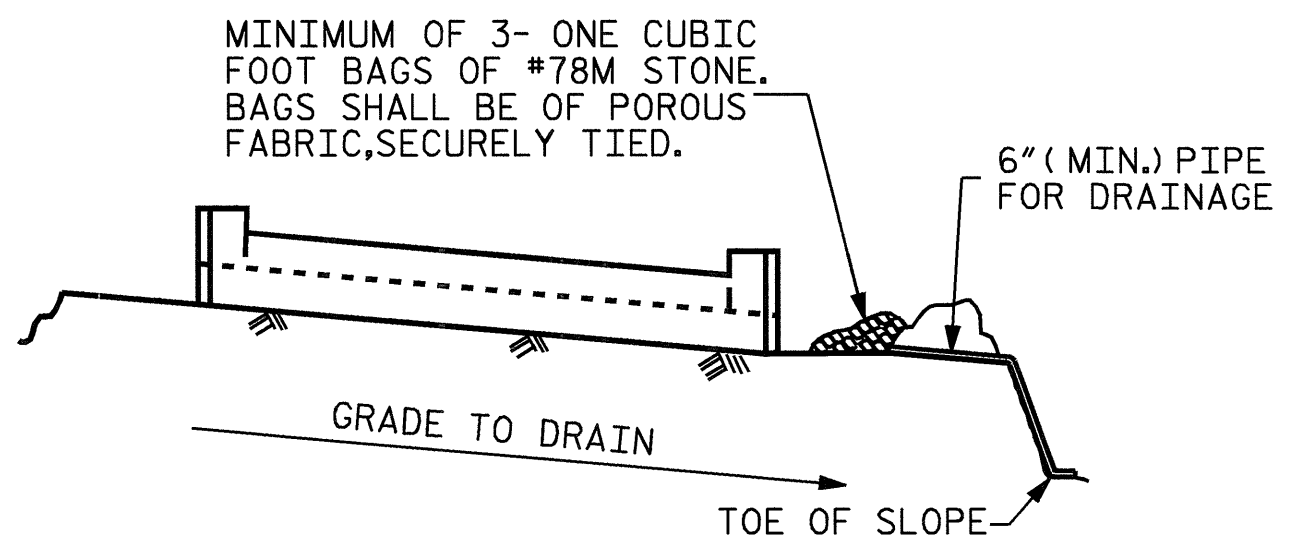


DRAWN BY: M. G. SHAIKH DATE: 08-09-06
 CHECKED BY: D. A. GLADDEN DATE: 08-16-06

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			25



SECTION A-A



MINIMUM OF 3- ONE CUBIC FOOT BAGS OF #78M STONE. BAGS SHALL BE OF POROUS FABRIC, SECURELY TIED.

6\"/>

GRADE TO DRAIN

TOE OF SLOPE

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 DETEIORATED AND LOST THEIR EFFECTIVENESS.

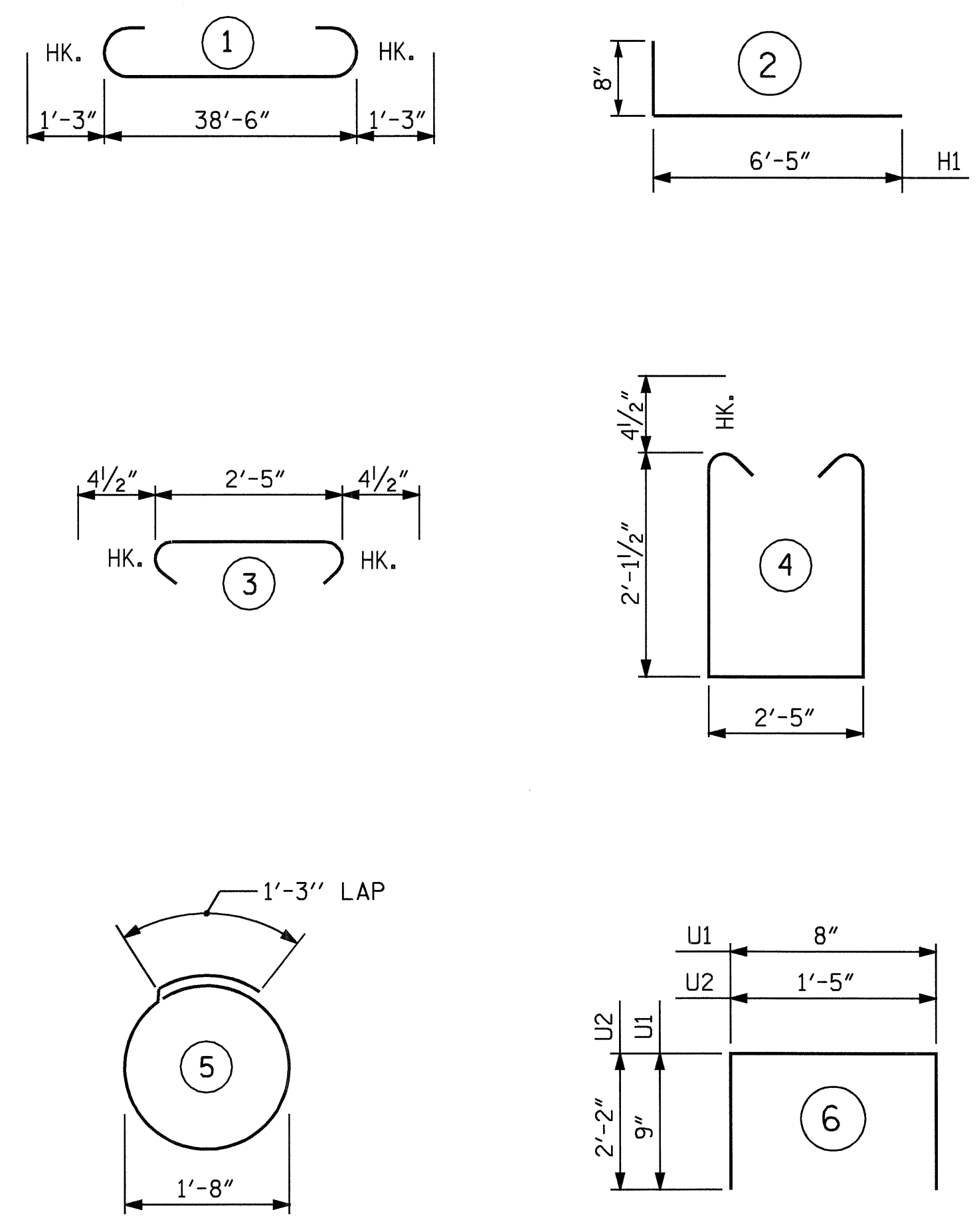
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

DRAWN BY : M. G. SHAIKH DATE : 08-10-06
 CHECKED BY : D. A. GLADDEN DATE : 08-16-06

11-MAY-2007 11:04
 I:\Structures\mshalkh\Microstation\B-3863.sd.E*.dgn
 mshalkh

BAR TYPE



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

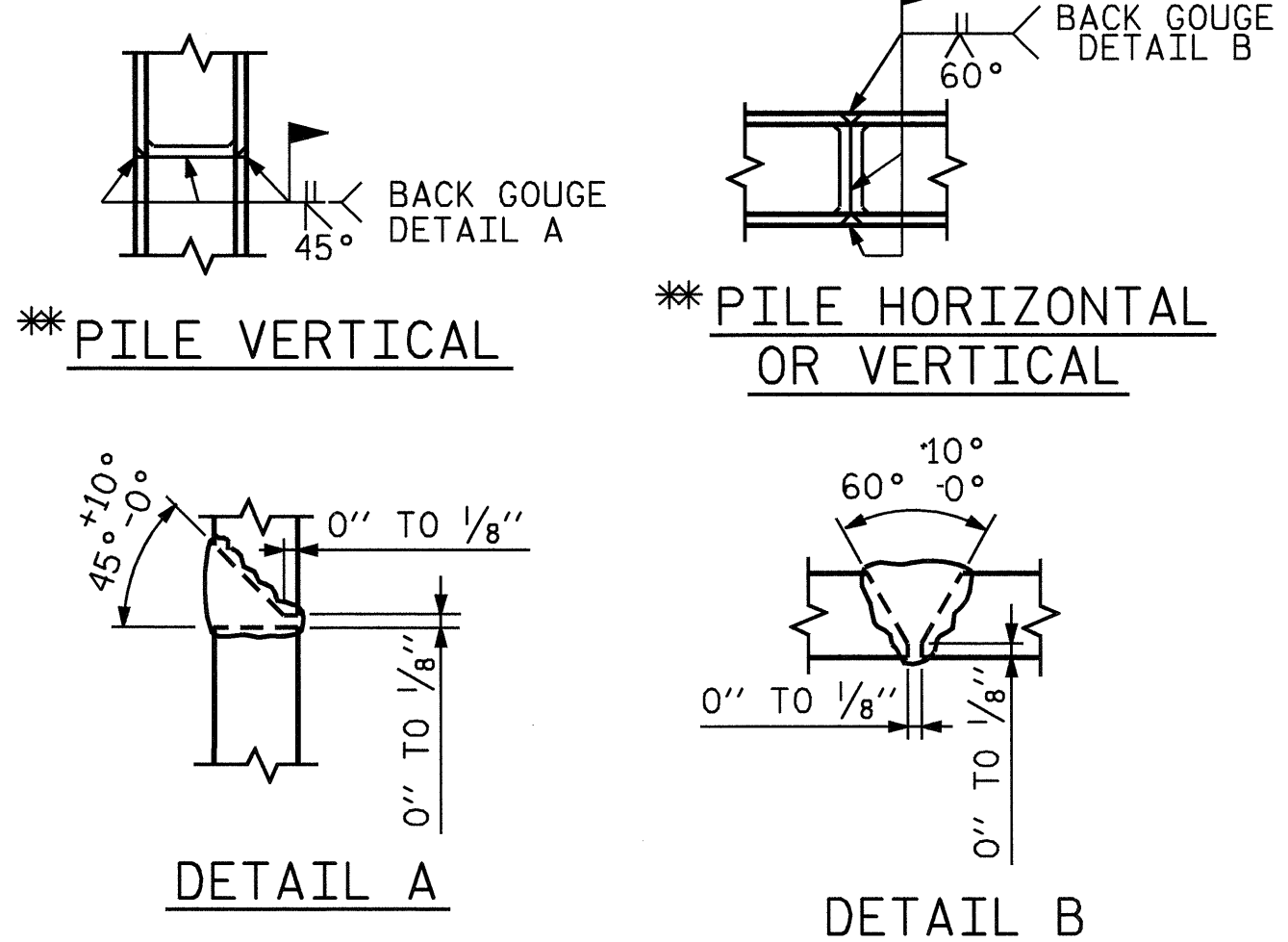
FOR END BENT #1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	41'-0"	1115
B2	2	#6	STR	38'-8"	116
B3	8	#4	STR	20'-7"	110
B4	10	#4	STR	2'-5"	16
D1	22	#8	STR	2'-3"	132
H1	28	#4	2	7'-1"	132
K1	8	#4	STR	20'-7"	110
K2	12	#4	STR	2'-9"	22
S1	34	#4	3	3'-2"	72
S2	34	#4	4	7'-5"	168
S3	18	#4	5	6'-6"	78
U1	33	#4	6	2'-2"	48
U2	4	#4	6	5'-9"	15
V1	66	#4	STR	3'-1"	136
V2	20	#4	STR	5'-3"	70
V3	20	#4	STR	5'-5"	72
REINFORCING STEEL				=	2412 LBS

CLASS A CONCRETE BREAKDOWN

POUR #1	CAP & LOWER PART OF WINGS	C.Y.	11.0
POUR #2	UPPER PART OF WINGS & BACKWALL	C.Y.	3.3
POUR #3	LATERAL GUIDES	C.Y.	0.1
TOTAL CLASS A CONCRETE		C.Y.	14.4

HP 12 X 53 STEEL PILES	NO. 9	LIN. FT.	135
------------------------	-------	----------	-----



***PILE VERTICAL**

***PILE HORIZONTAL OR VERTICAL**

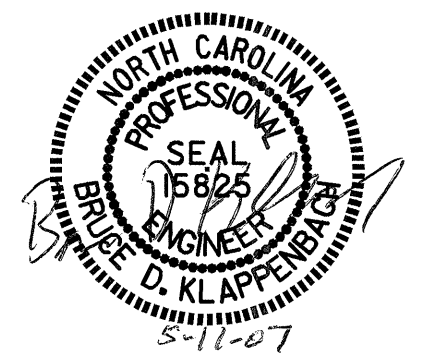
*** POSITION OF PILE DURING WELDING. PILE SPLICE DETAILS**

PROJECT NO. B-3863
JOHNSTON COUNTY
 STATION: 18+79.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

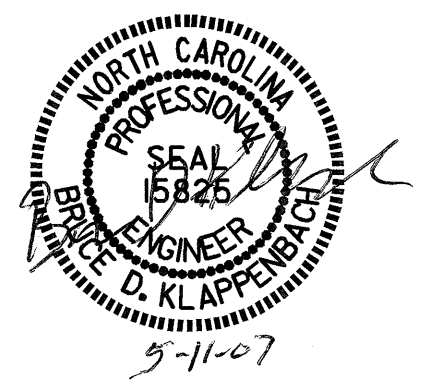
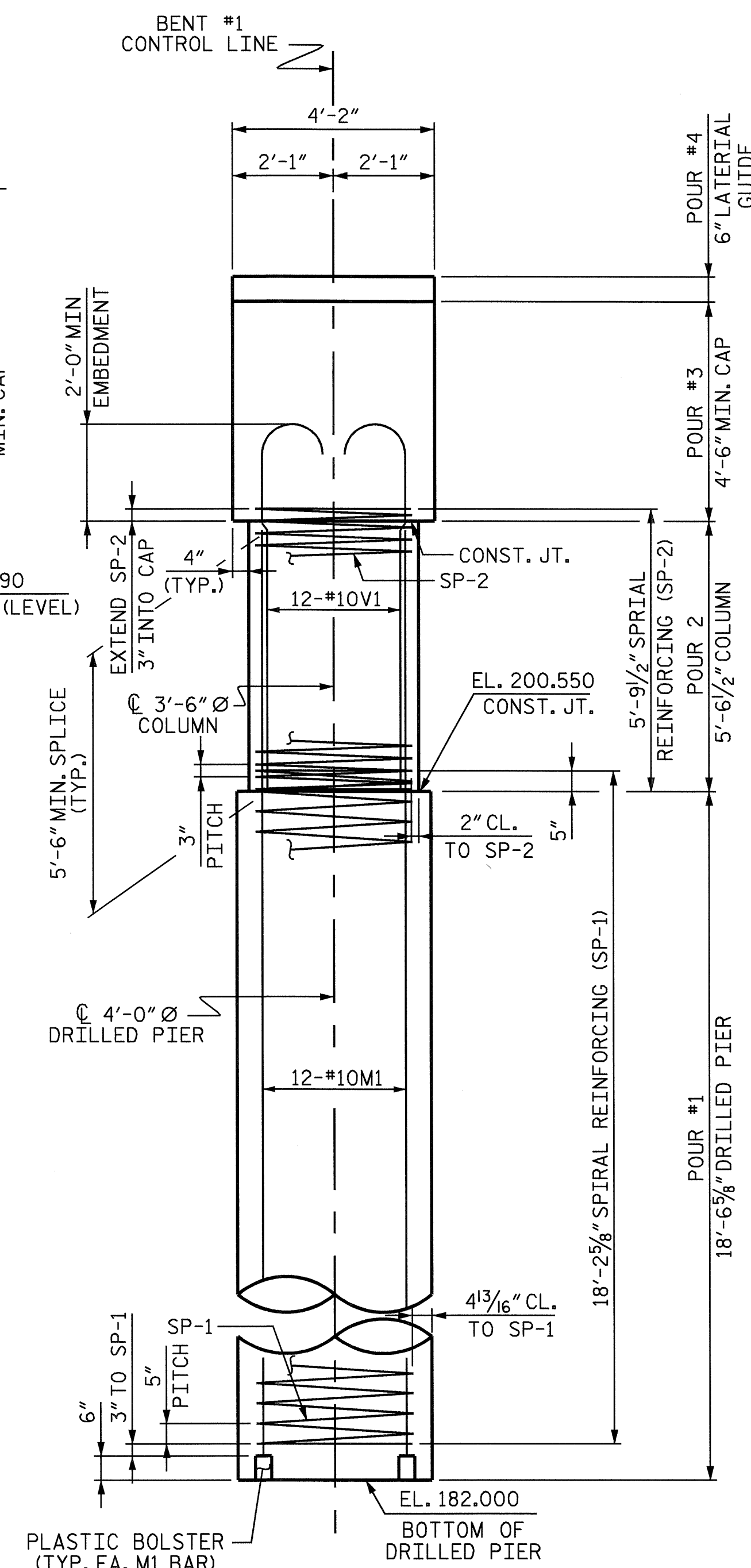
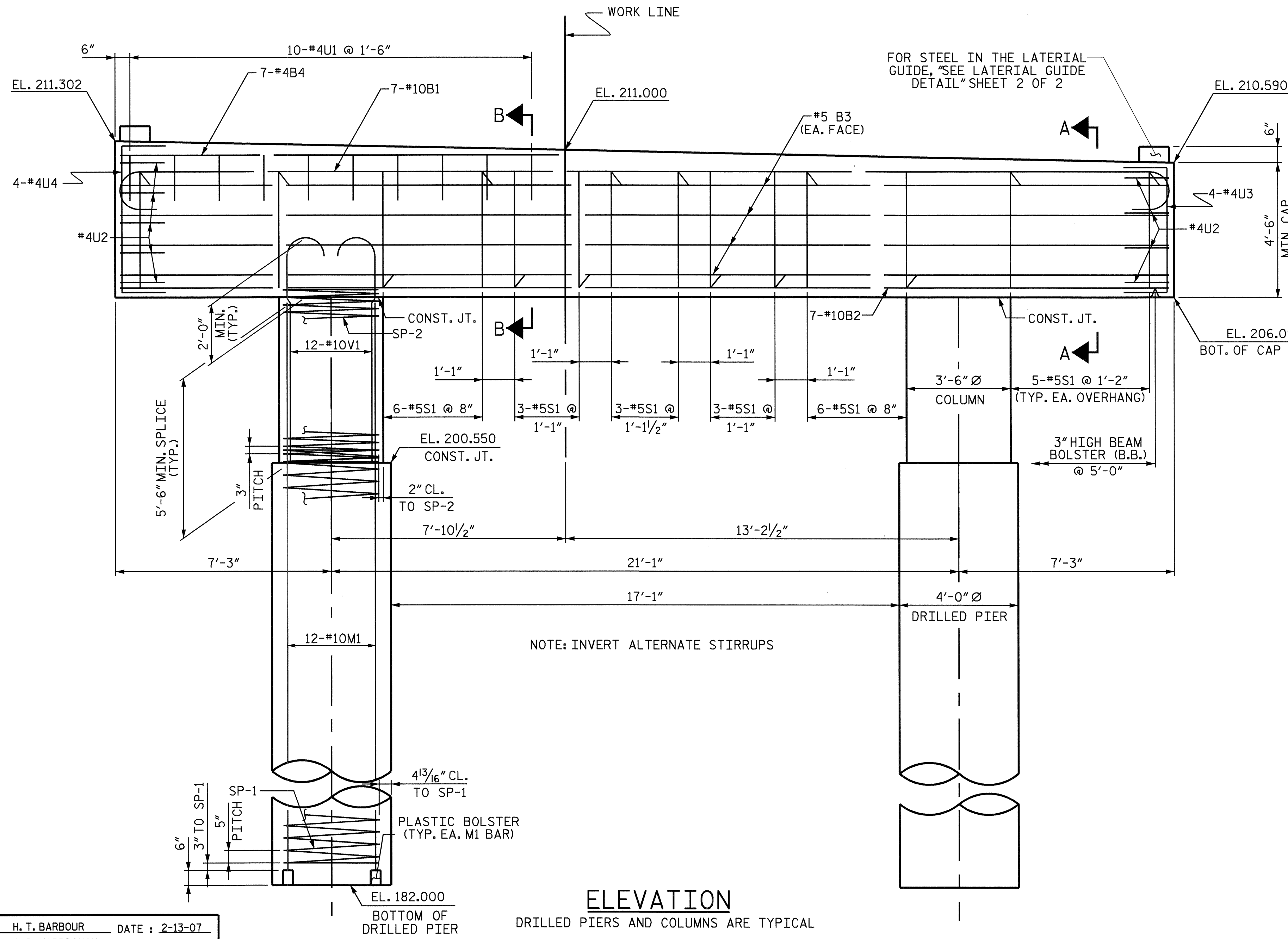
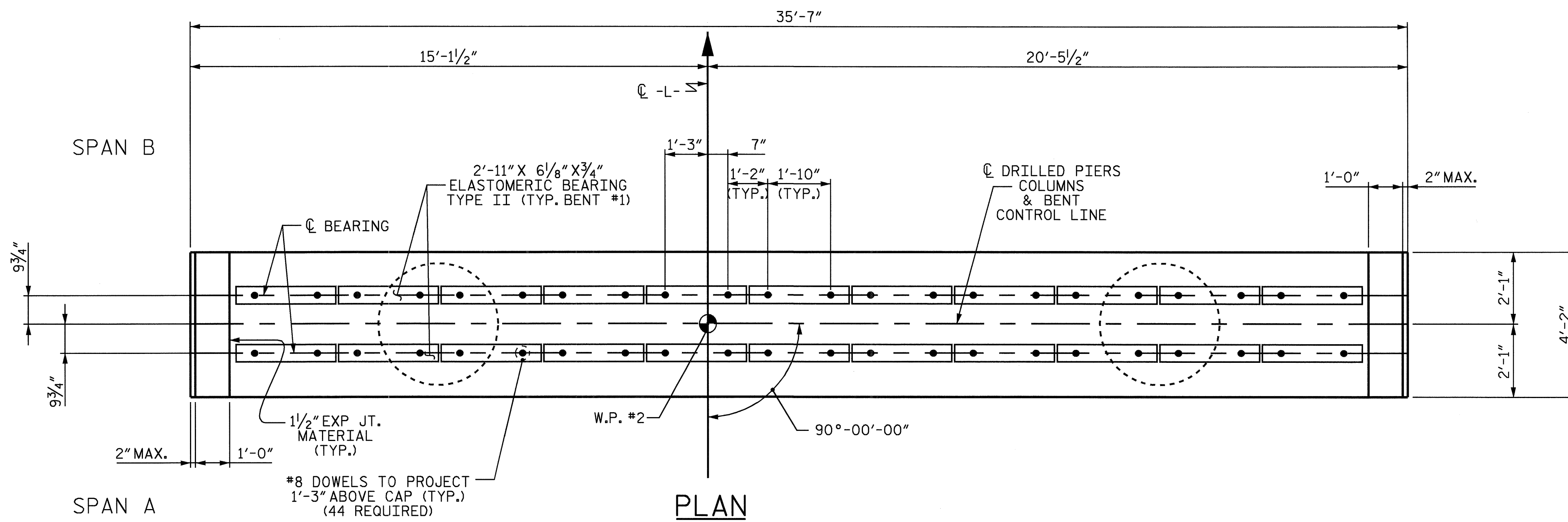
**SUBSTRUCTURE
 END BENT #1**



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			25

NOTES

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
- HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.
- THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.
- SPLICING OF THE LONGITUDINAL BARS IN THE DRILLED PIER WILL NOT BE PERMITTED.
- THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.
- THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE.
- FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.

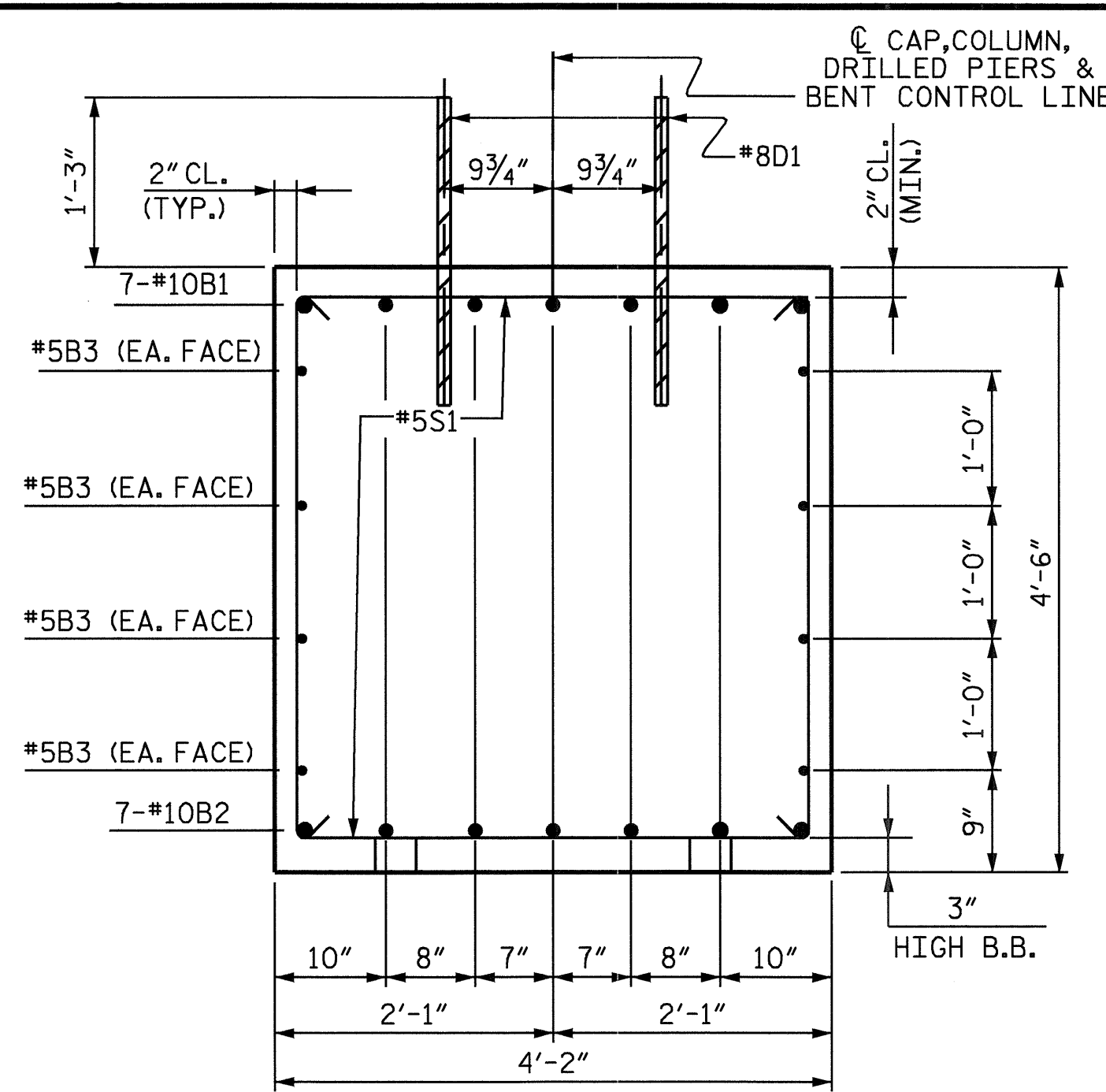


PROJECT NO. B-3863
JOHNSTON COUNTY
 STATION: 18+79.50-L-

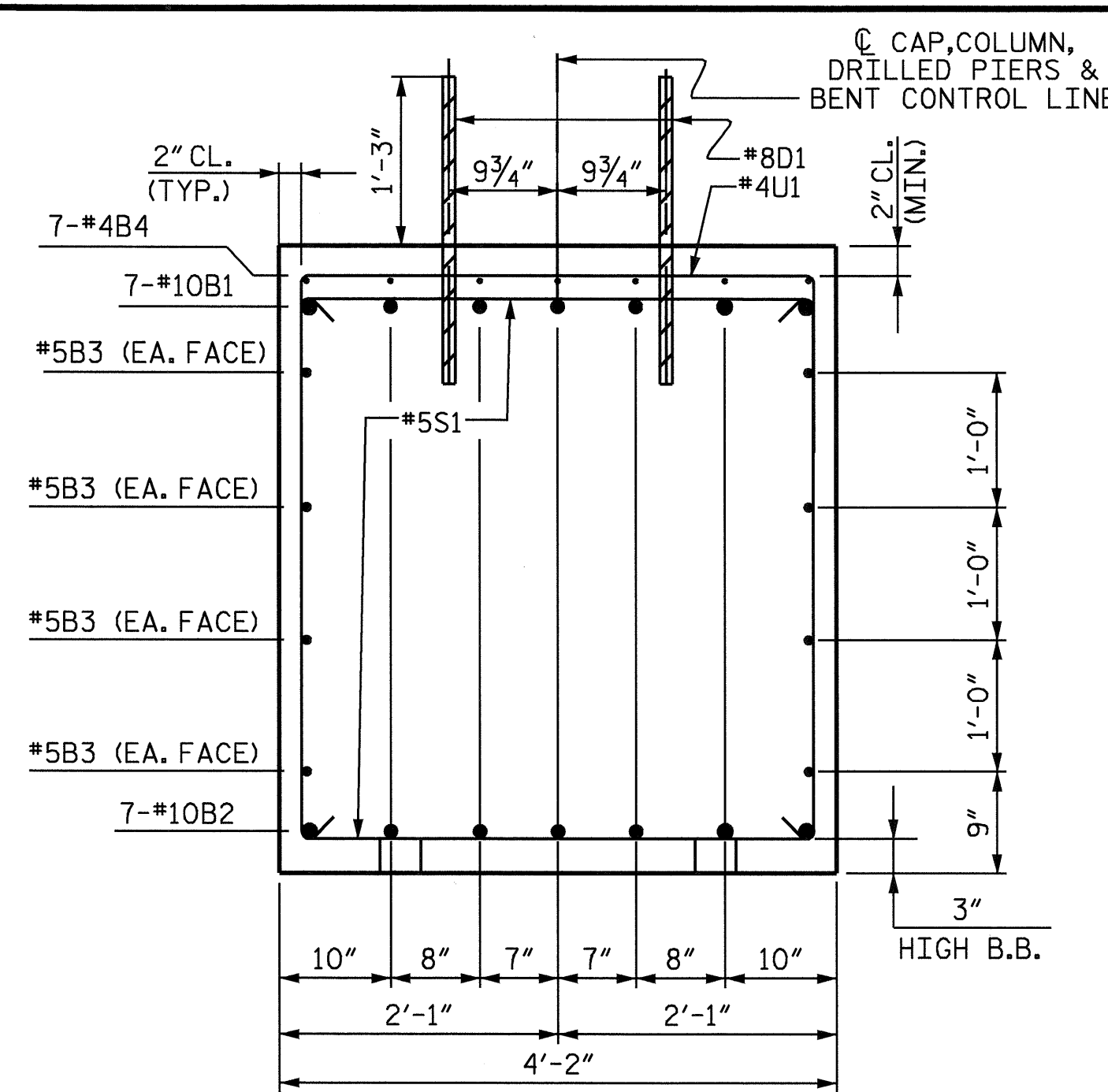
SHEET 1 OF 2

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16	
1			3			TOTAL SHEETS 25	
2			4				

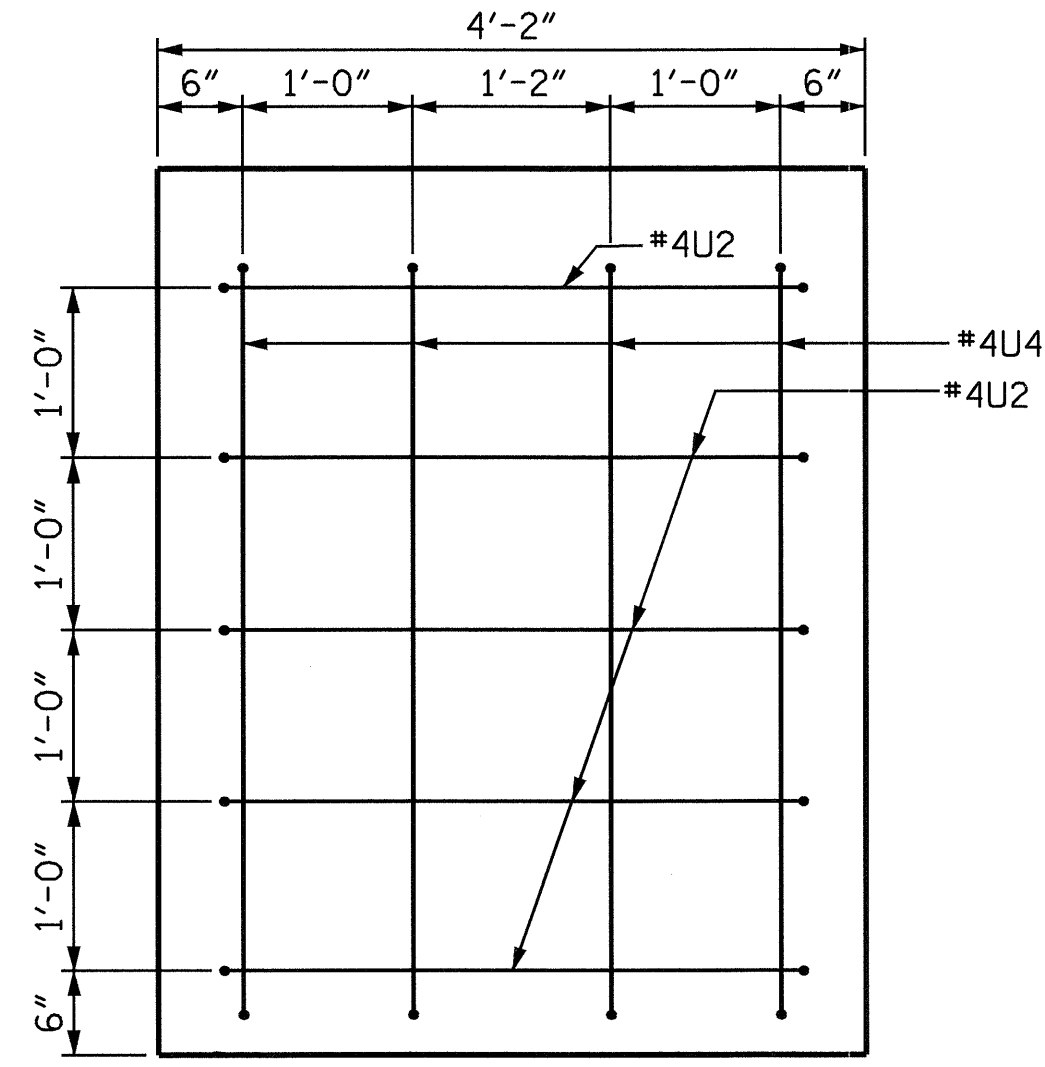
DRAWN BY: H. T. BARBOUR DATE: 2-13-07
 CHECKED BY: C. R. YARBROUGH DATE: 4-07



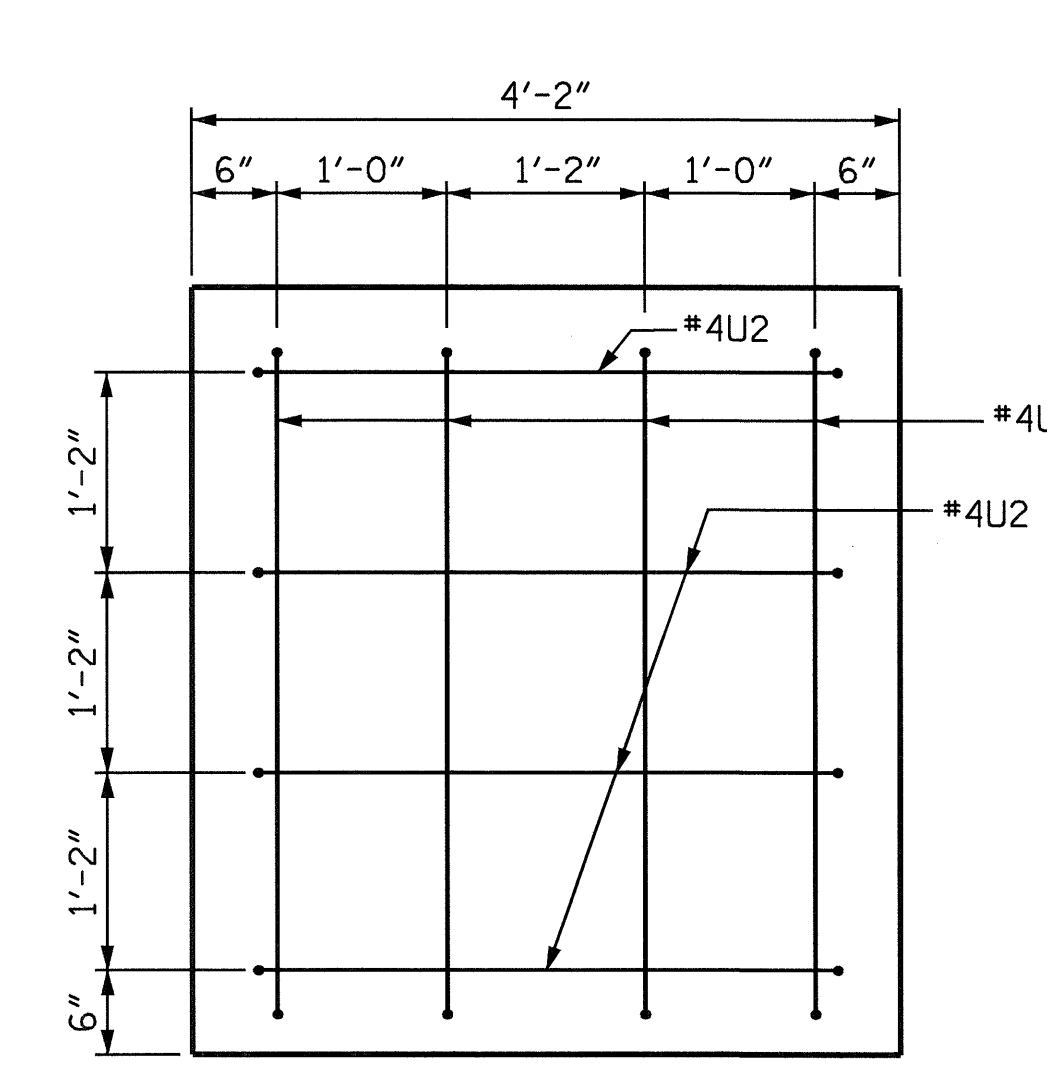
SECTION A-A



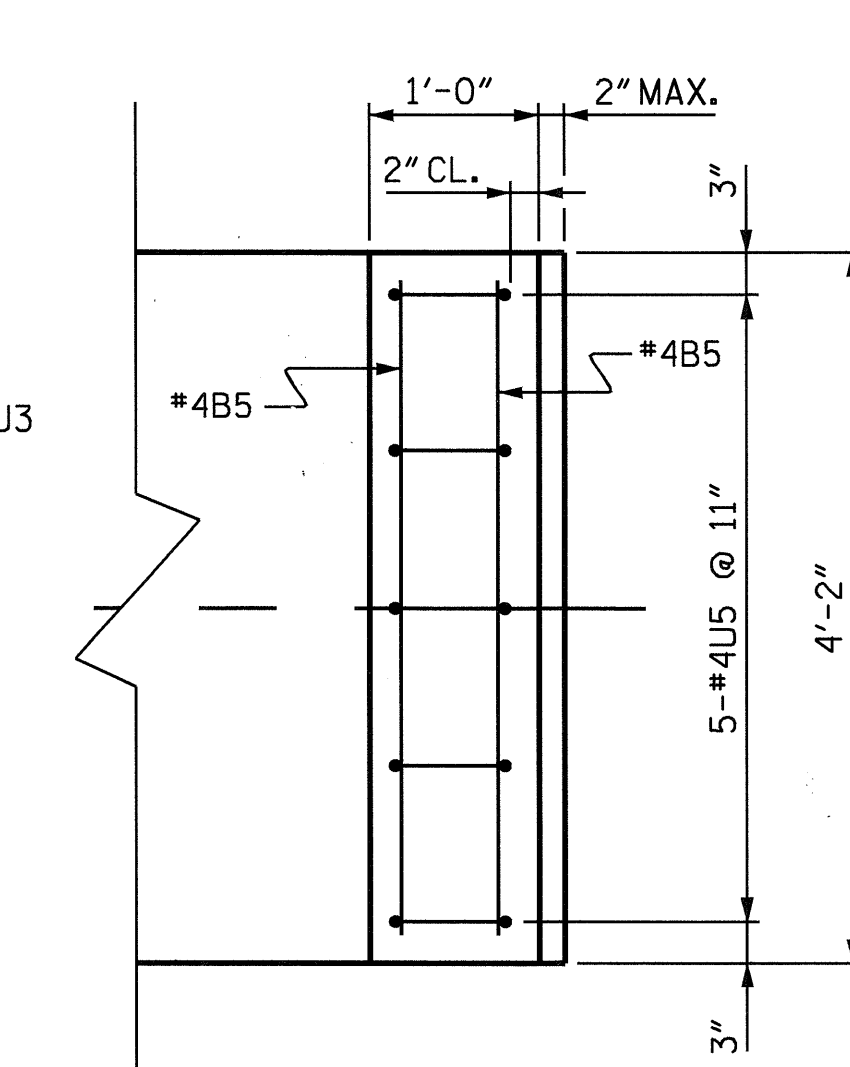
SECTION B-B



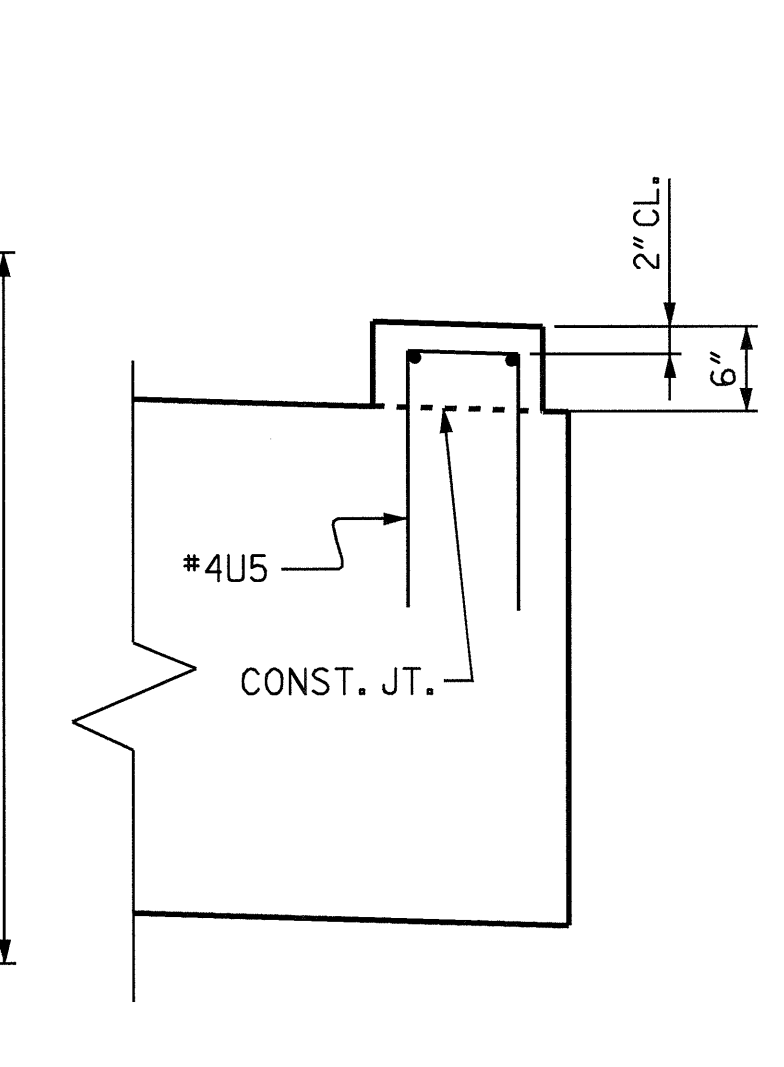
LEFT END VIEW



RIGHT END VIEW

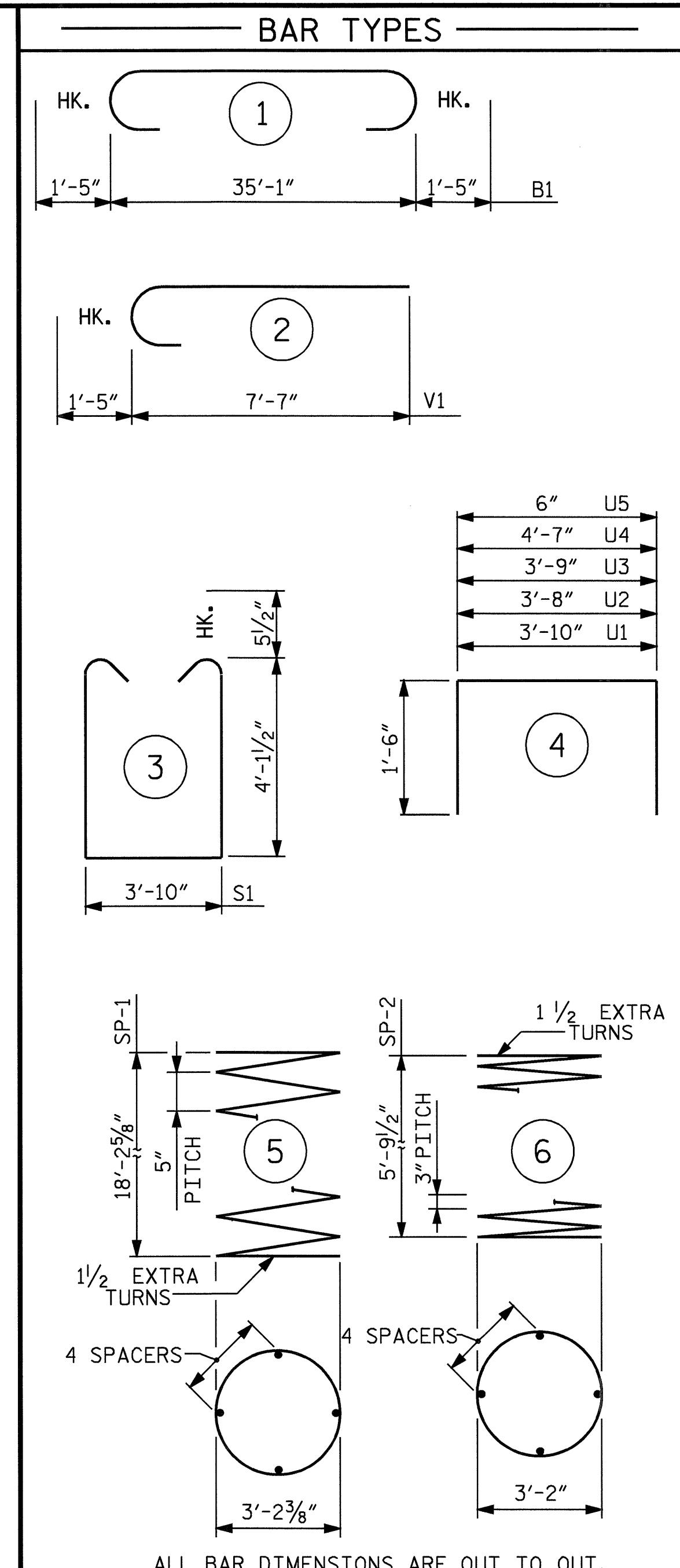


PLAN



ELEVATION

LATERAL GUIDE DETAILS

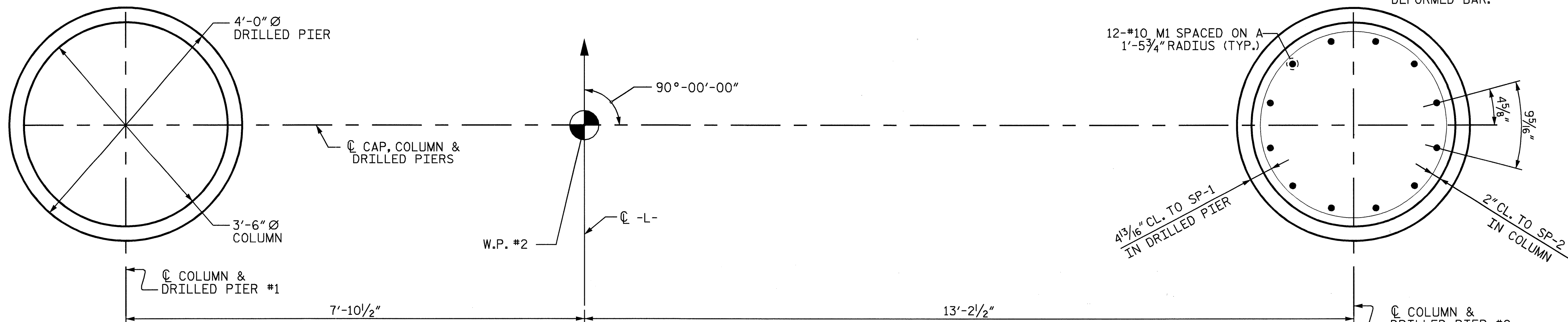


ALL BAR DIMENSIONS ARE OUT TO OUT.

* 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.

BILL OF MATERIAL					
BENT #1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	7	#10		37'-11"	1142
B2	7	#10	STR.	35'-3"	1062
B3	8	#5	STR.	35'-3"	294
B4	7	#4	STR.	14'-9"	69
B5	4	#4	STR.	3'-10"	10
D1	44	#8	STR.	2'-3"	264
M1	24	#10	STR.	26'-7"	2745
S1	31	#5	3	13'-0"	420
U1	10	#4	4	6'-10"	46
U2	9	#4	4	6'-8"	40
U3	4	#4	4	6'-9"	18
U4	4	#4	4	7'-7"	20
U5	10	#4	4	3'-6"	23
V1	24	#10	2	9'-0"	929
REINFORCING STEEL (LBS.)					7082
SP-1	2	*	5	446'-11"	932
SP-2	2	**	6	242'-8"	324
SPIRAL REINFORCING STEEL (LBS.)					1256
CLASS A CONCRETE					
POUR #2 (COLUMN)					3.9 C.Y.
POUR #3 (CAP)					26.7 C.Y.
POUR #4 (LATERIAL GUIDES)					.2 C.Y.
TOTAL					30.8 C.Y.

DRILLED PIERS	
DRILLED PIER CONCRETE (CU. YARDS)	
POUR #1 (DRILLED PIERS)	17.3 C.Y.
4'-0" Ø DRILLED PIERS IN SOIL	20.1 FT.
4'-0" Ø DRILLED PIERS NOT IN SOIL	17.0 FT.
CSL TUBES	168.4 FT.
CROSSHOLE SONIC LOGGING	1 EACH
SID INSPECTION	1 EACH
PERMANENT STEEL CASING FOR 4'-0" Ø DRILLED PIERS	23.1 FT.



PLAN OF DRILLED PIERS

ALL DRILLED PIERS ARE IDENTICAL

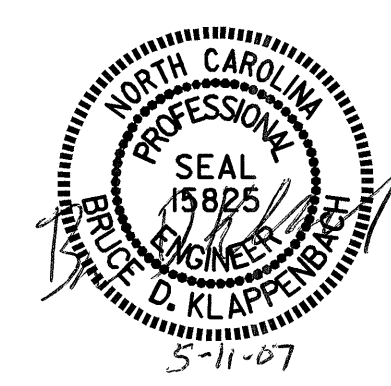
DRAWN BY : H. T. BARBOUR DATE : 1-30-07
 CHECKED BY : C. R. YARBROUGH DATE : 4-07

11-MAY-2007 11:14
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 TBARBOUR

PROJECT NO. B-3863
 JOHNSTON COUNTY
 STATION: 18+79.50-L-
 SHEET 2 OF 2

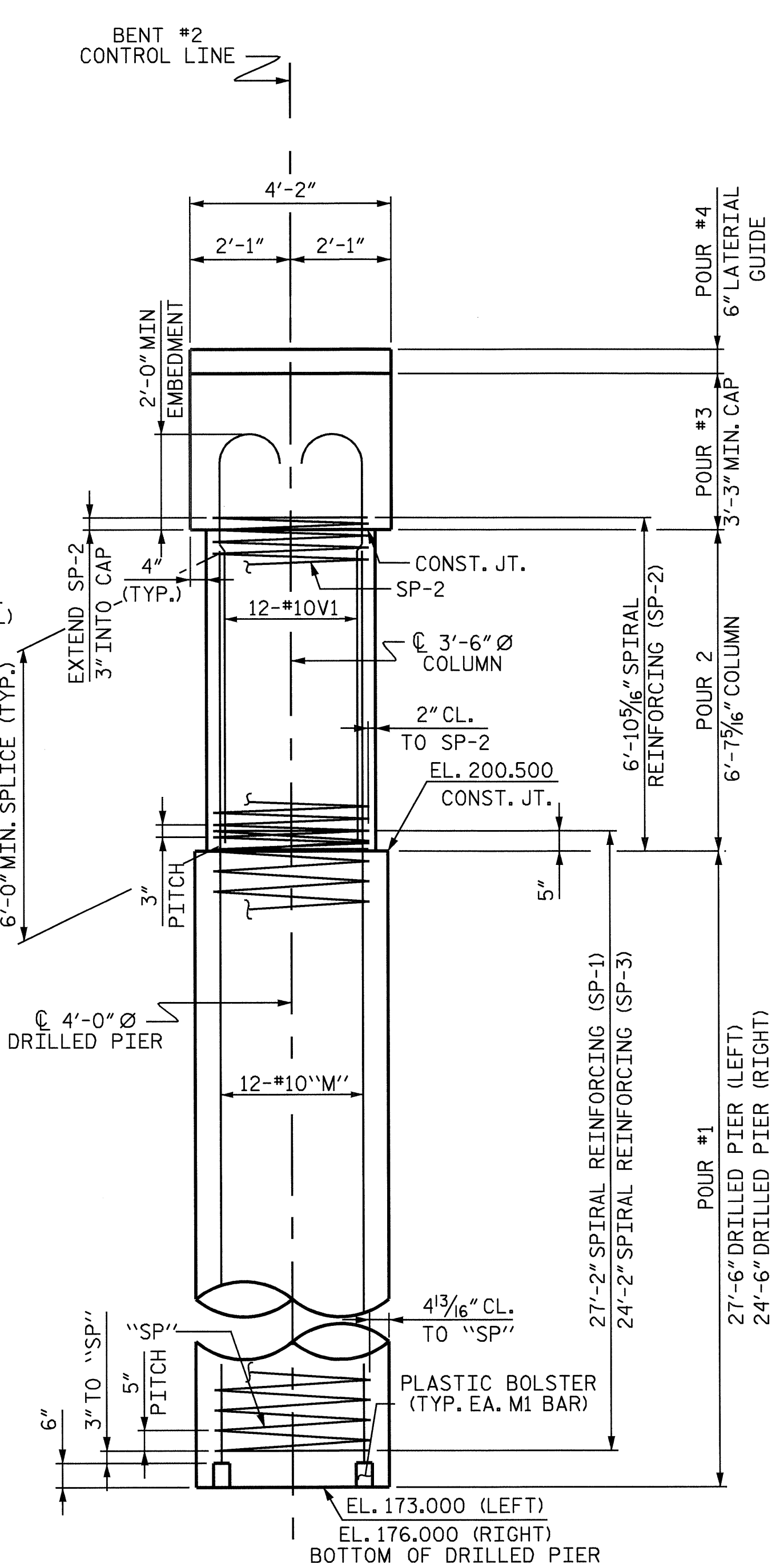
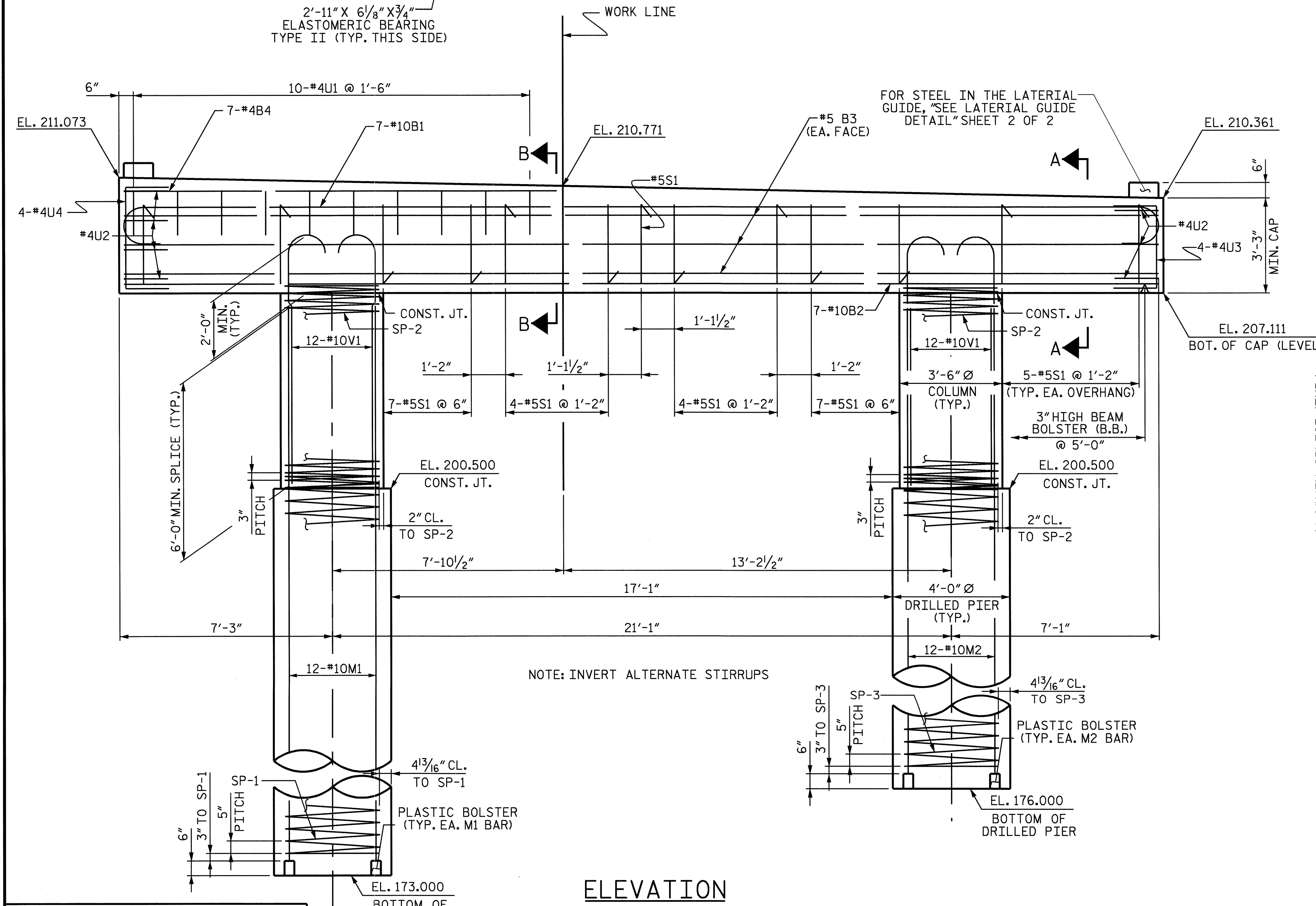
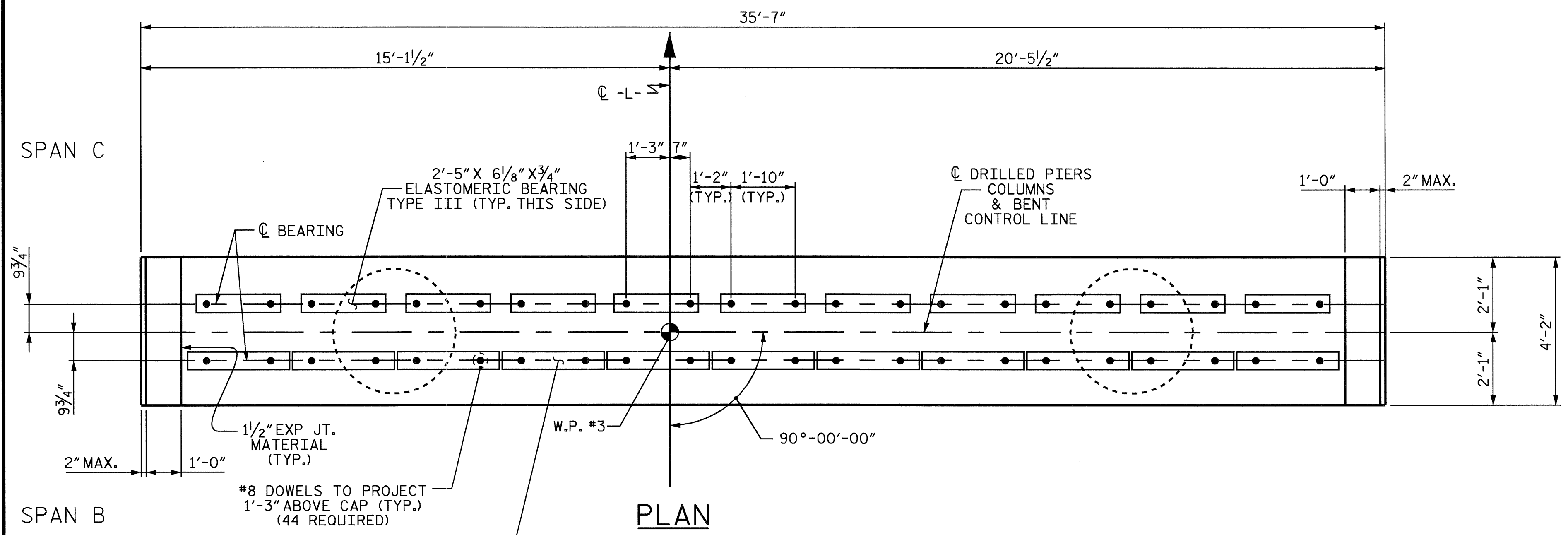
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENT #1					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S-17
TOTAL SHEETS 25



NOTES

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
- HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.
- THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.
- SPLICING OF THE LONGITUDINAL BARS IN THE DRILLED PIER WILL NOT BE PERMITTED.
- THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.
- THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE.
- FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.



PROJECT NO. B-3863
JOHNSTON COUNTY
 STATION: 18+79.50-L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

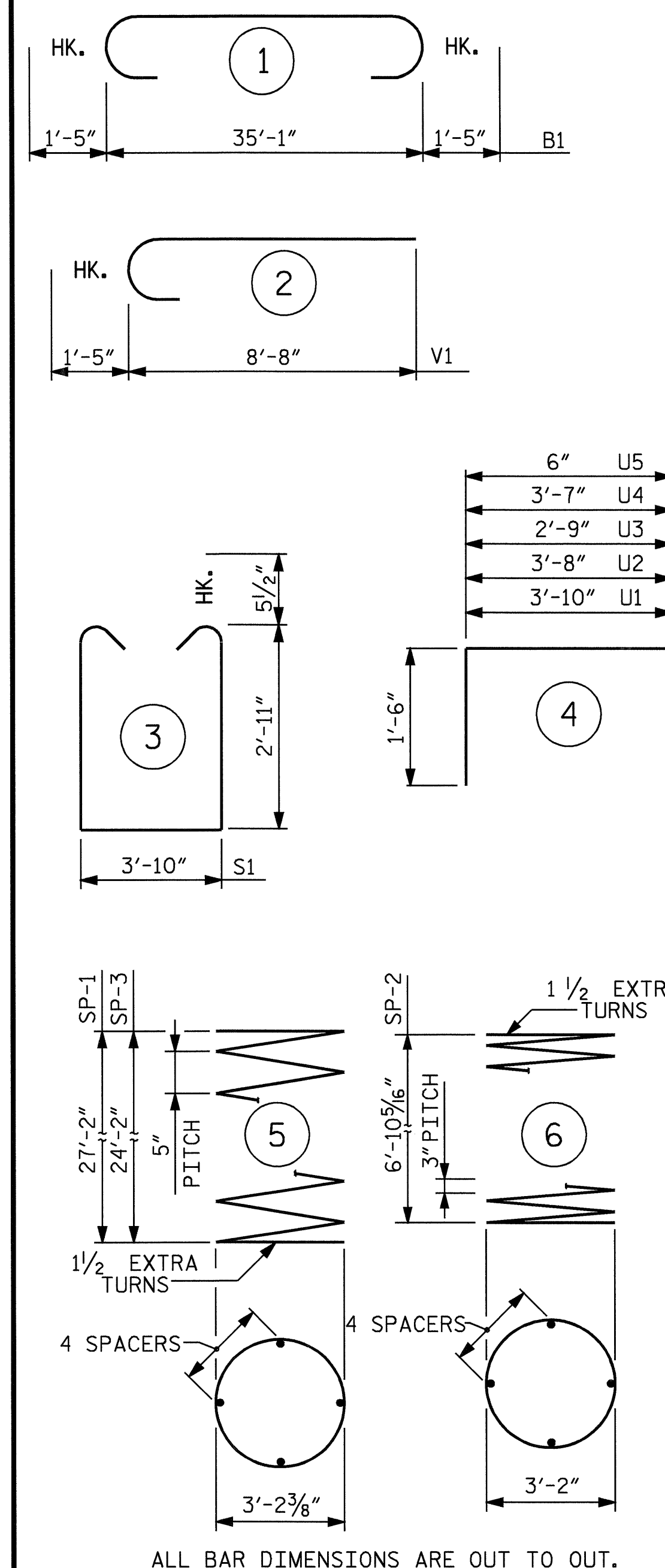
SUBSTRUCTURE BENT #2

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	5-18
1			3			TOTAL SHEETS
2			4			25

DRAWN BY: H. T. BARBOUR DATE: 2-13-07
 CHECKED BY: C. R. YARBROUGH DATE: 4-07

11-MAY-2007 11:02
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 TBARBOUR

BAR TYPES



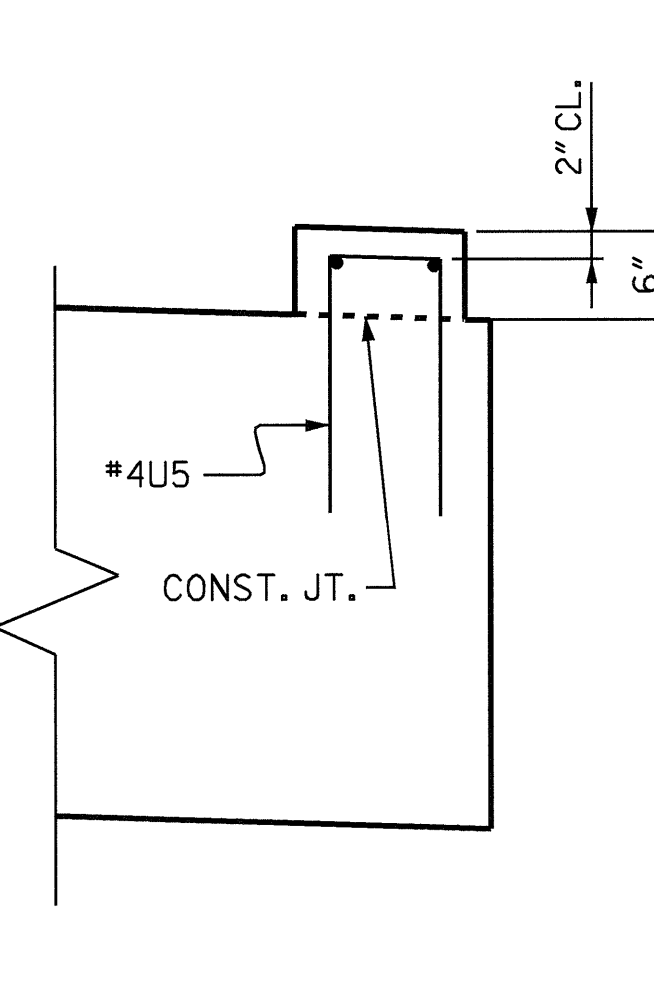
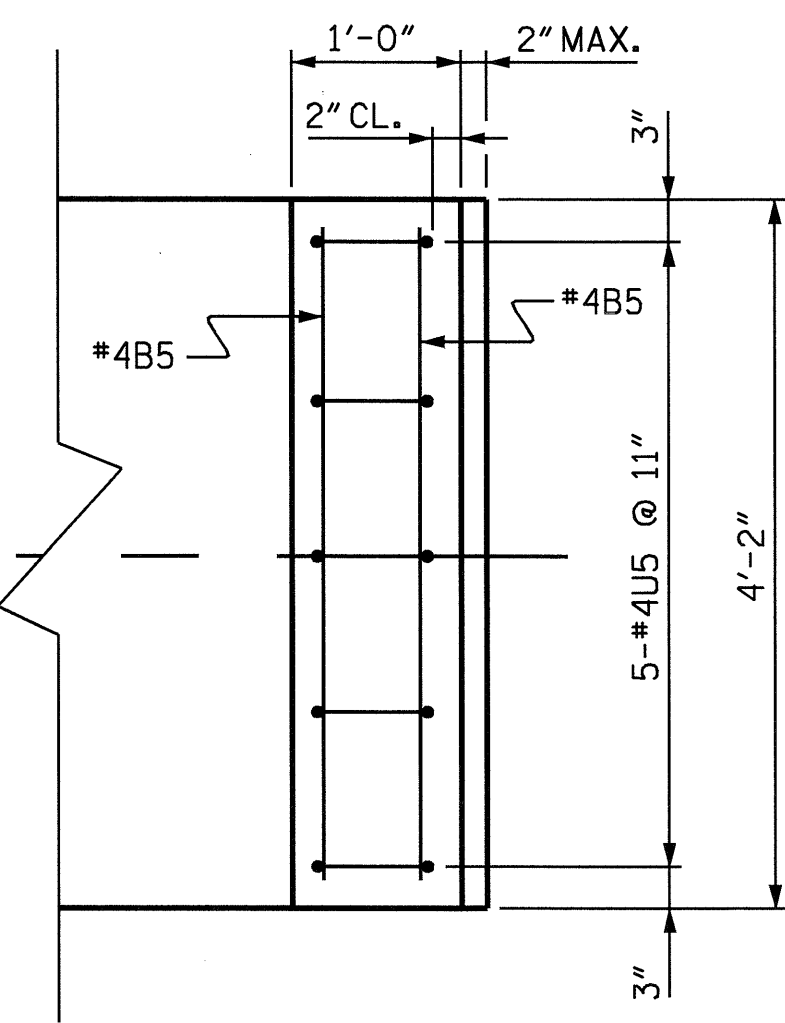
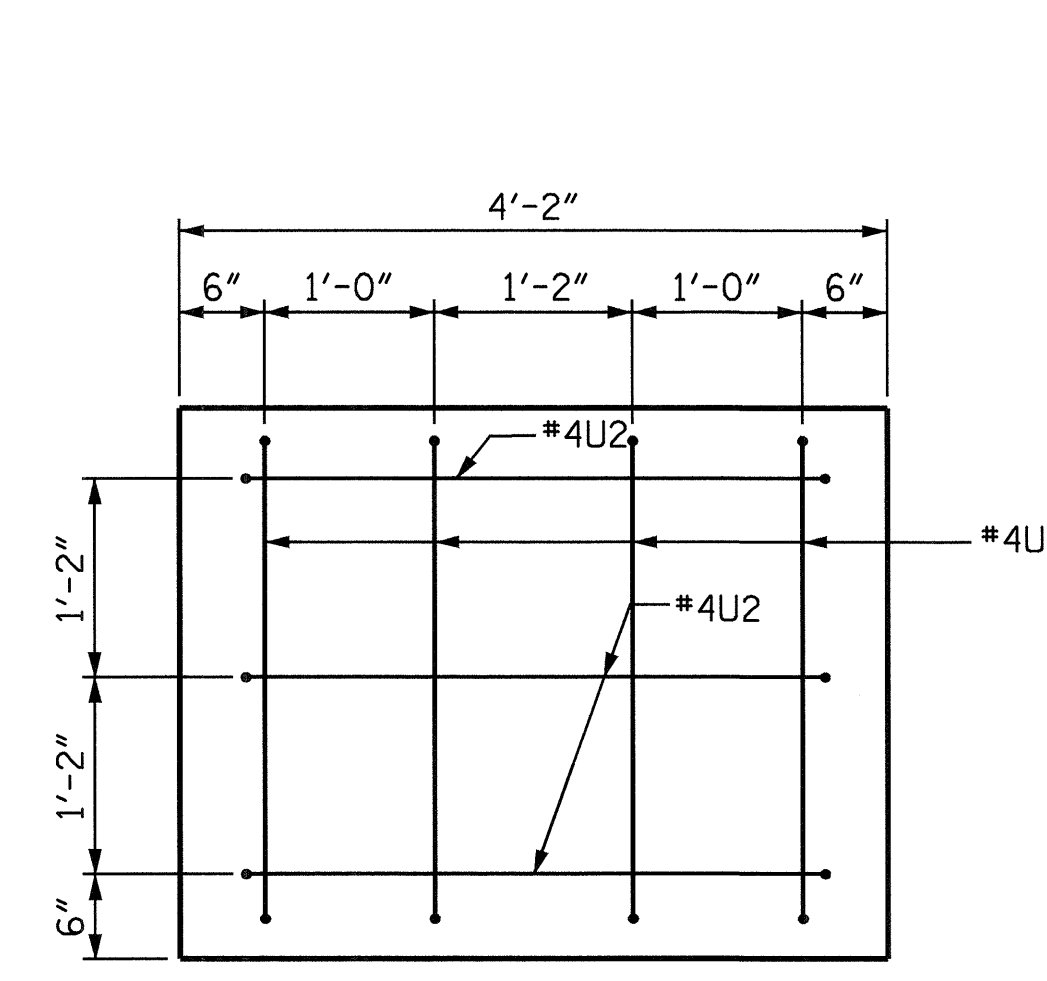
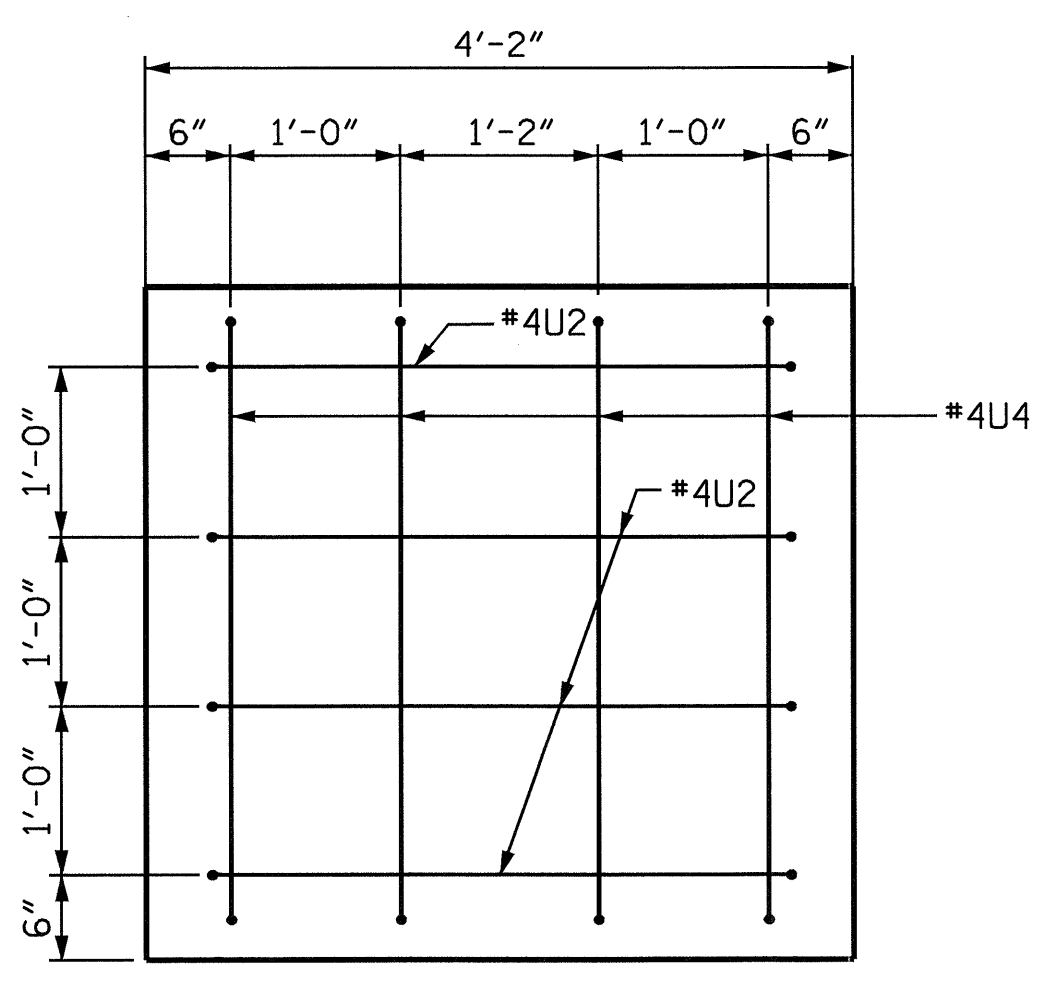
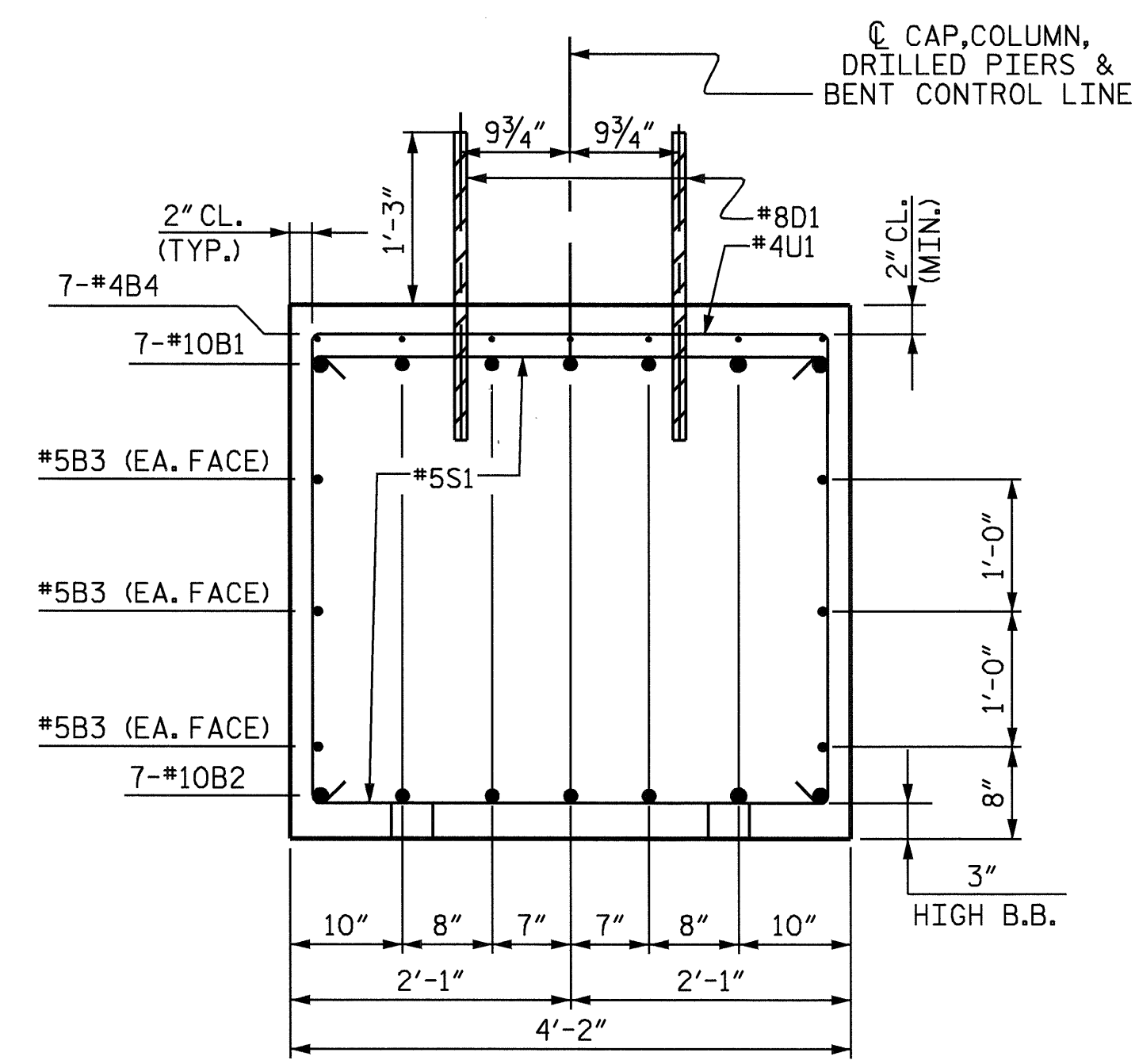
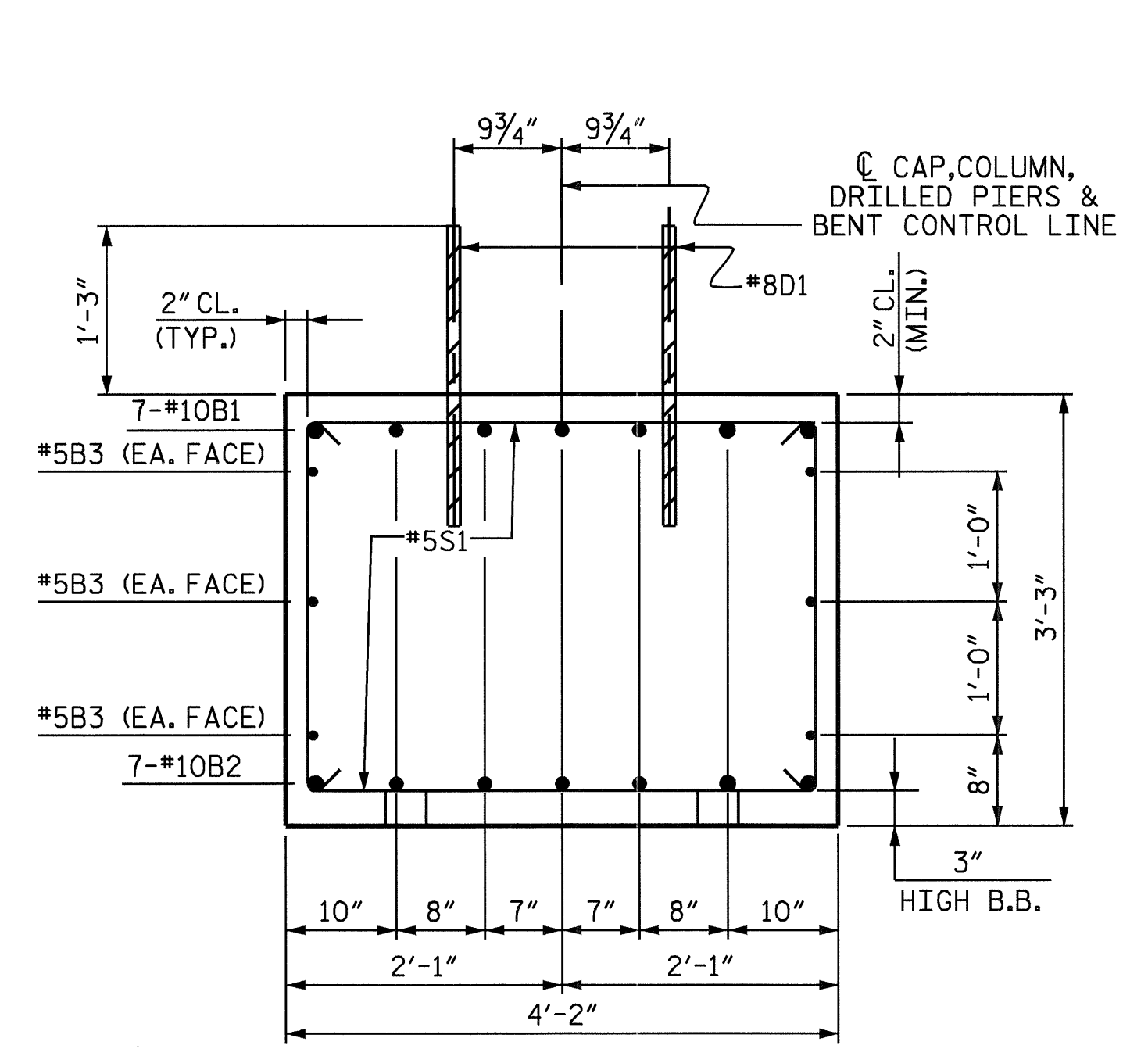
BILL OF MATERIAL

BENT #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	7	#10	1	37'-11"	1142
B2	7	#10	STR.	35'-3"	1062
B3	6	#5	STR.	35'-3"	221
B4	7	#4	STR.	14'-9"	69
B5	4	#4	STR.	3'-10"	10
D1	44	#8	STR.	2'-3"	264
M1	12	#10	STR.	36'-0"	1859
M2	12	#10	STR.	33'-0"	1704
S1	33	#5	3	10'-7"	364
U1	10	#4	4	6'-10"	46
U2	7	#4	4	6'-8"	31
U3	4	#4	4	5'-9"	15
U4	4	#4	4	6'-7"	18
U5	10	#4	4	3'-6"	23
V1	24	#10	2	10'-1"	1041

REINFORCING STEEL (LBS.)					7869
SP-1	1	*	5	659'-3"	688
SP-2	2	**	6	284'-4"	380
SP-3	1	*	5	590'-1"	615
SPIRAL REINFORCING STEEL (LBS.)					1683

CLASS A CONCRETE	
POUR #2 (COLUMN)	4.7 C.Y.
POUR #3 (CAP)	19.8 C.Y.
POUR #4 (LATERAL GUIDES)	.2 C.Y.
TOTAL	24.7 C.Y.

DRILLED PIERS	
DRILLED PIER CONCRETE (CU. YARDS)	
POUR #1 (DRILLED PIERS)	24.2 C.Y.
4'-0" Ø DRILLED PIERS IN SOIL	29.0 FT.
4'-0" Ø DRILLED PIERS NOT IN SOIL	23.0 FT.
CSL TUBES	228.0 FT.
SID INSPECTION	1 EACH
PERMANENT STEEL CASING FOR 4'-0" Ø DRILLED PIERS	27.0 FT.



LATERAL GUIDE DETAILS

* THE SP-1 & SP-3 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.

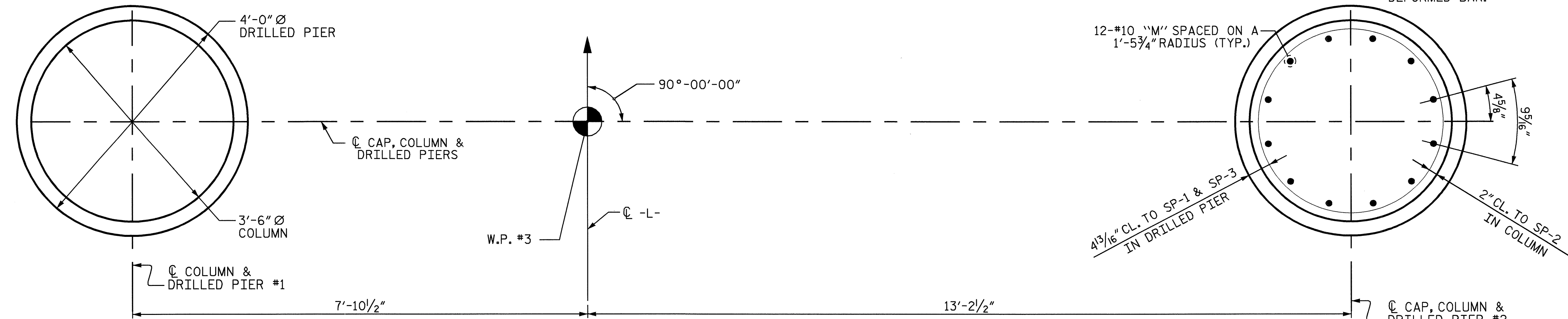
** THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

2" MIN. CONCRETE COVER FROM END OF CAP REQUIRED FOR ALL #4"U" BARS.

#4"U" BARS MAY BE SHIFTED UP TO 2" TO CLEAR "B" BARS.

2" MIN. CONCRETE COVER FROM END OF CAP REQUIRED FOR ALL #4"U" BARS.

#4"U" BARS MAY BE SHIFTED UP TO 2" TO CLEAR "B" BARS.



PLAN OF DRILLED PIERS

PROJECT NO. B-3863

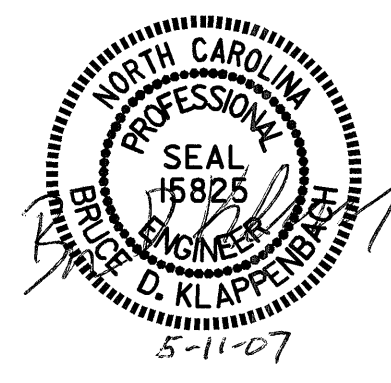
JOHNSTON COUNTY

STATION: 18+79.50-L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT #2



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

TOTAL SHEETS: 25

DRAWN BY: H. T. BARBOUR DATE: 1-30-07

CHECKED BY: C. R. YARBROUGH DATE: 4-07

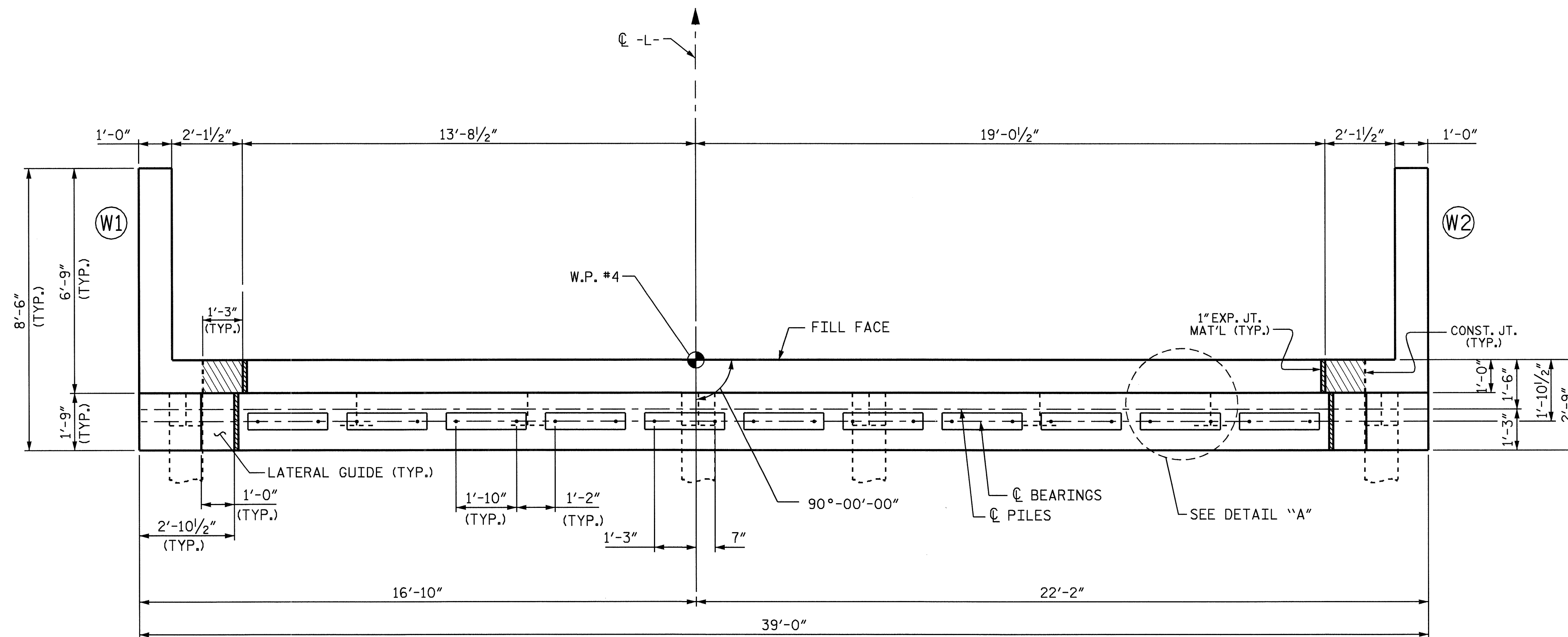
NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #8D1 DOWELS.

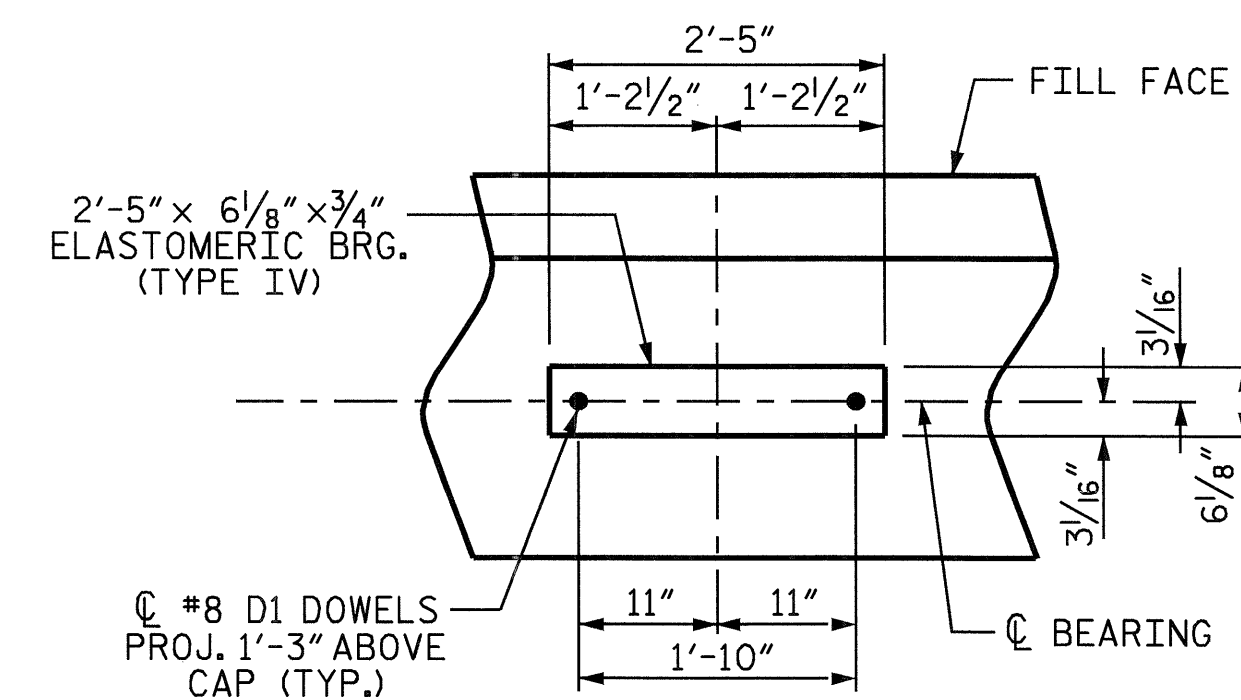
THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

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

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

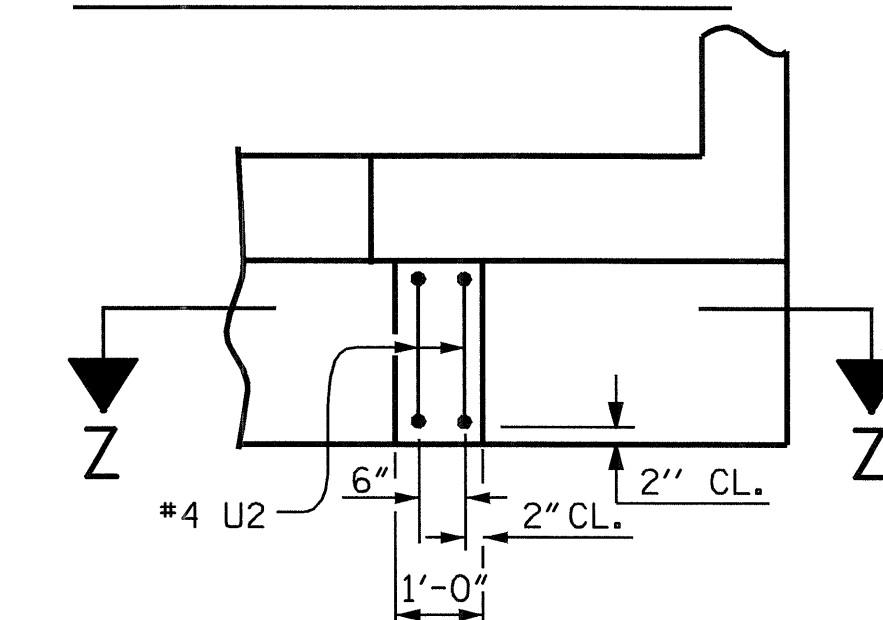


PLAN

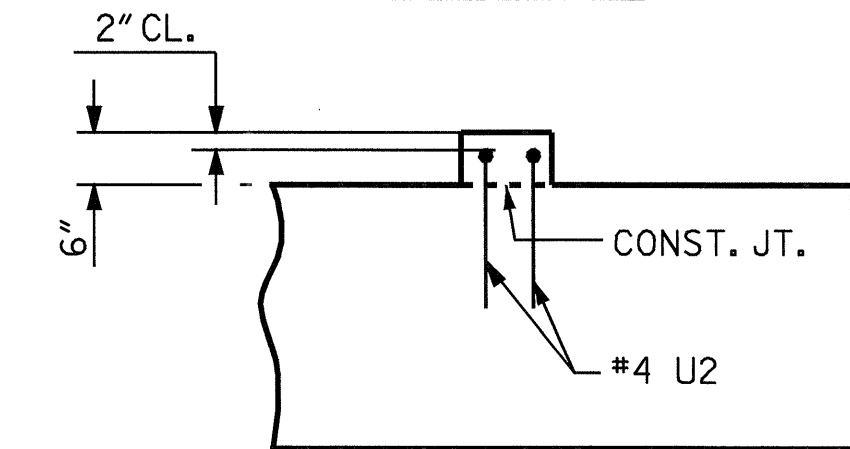


DETAIL A

PILE #	ELEVATION
PILE #1	209.457
PILE #2	209.354
PILE #3	209.251
PILE #4	209.147
PILE #5	209.044
PILE #6	208.941
PILE #7	208.837
PILE #8	208.734

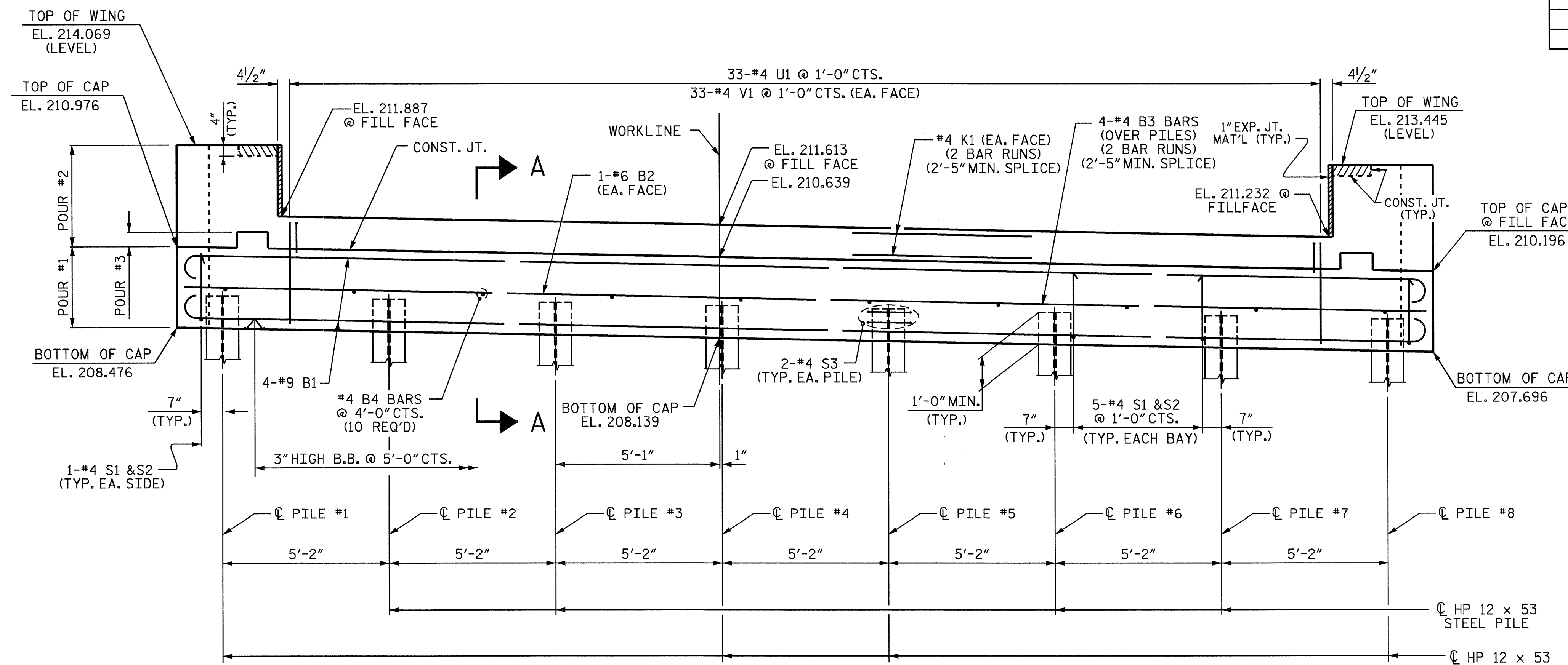


PLAN



SECTION Z-Z

DETAIL B

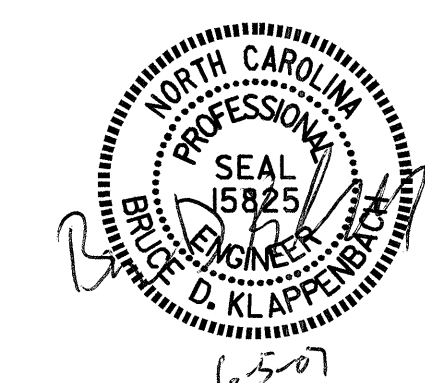


ELEVATION

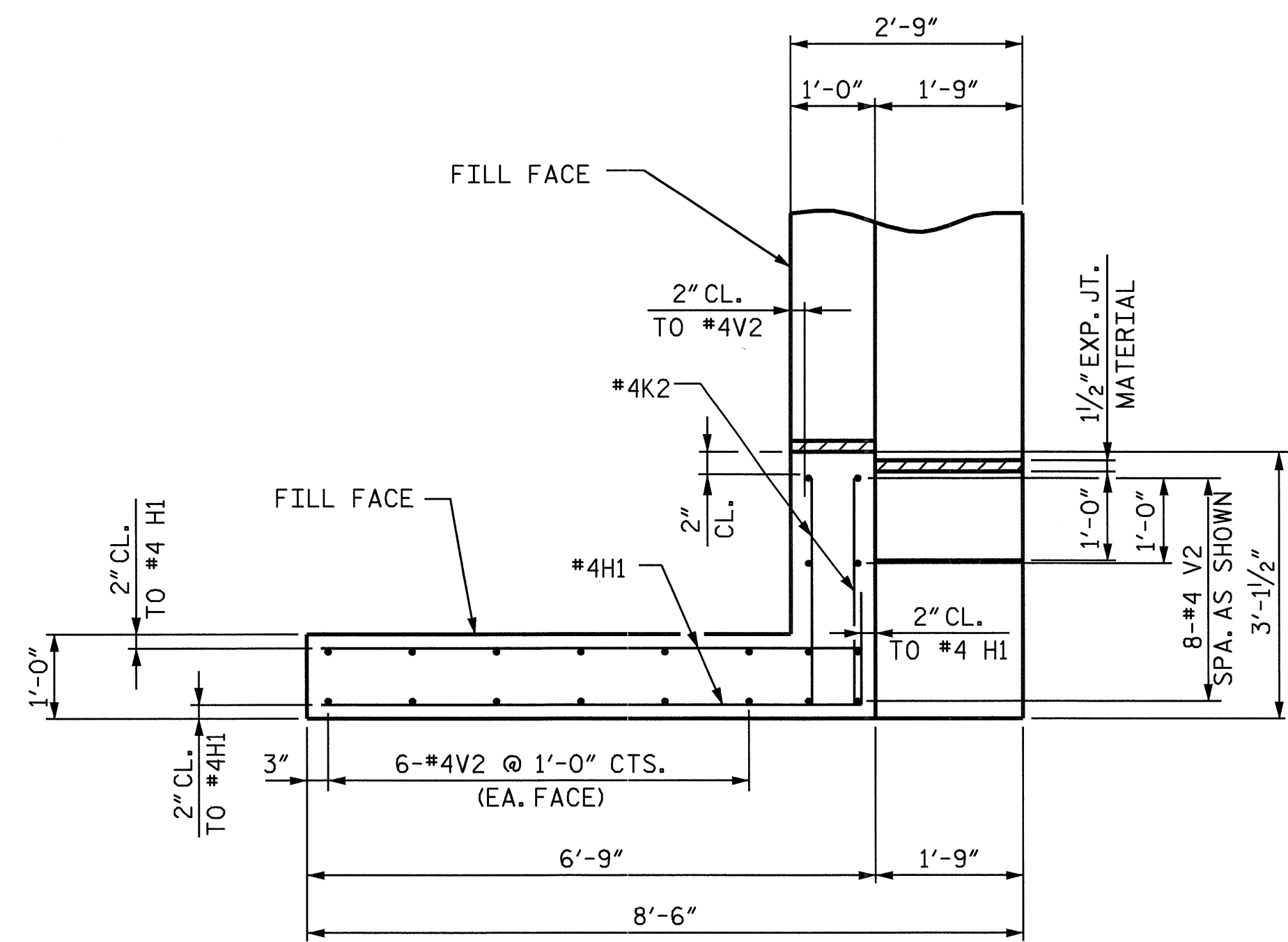
PROJECT NO. B-3863
 JOHNSTON COUNTY
 STATION: 18+79.50 -L-

SHEET 1 OF 3

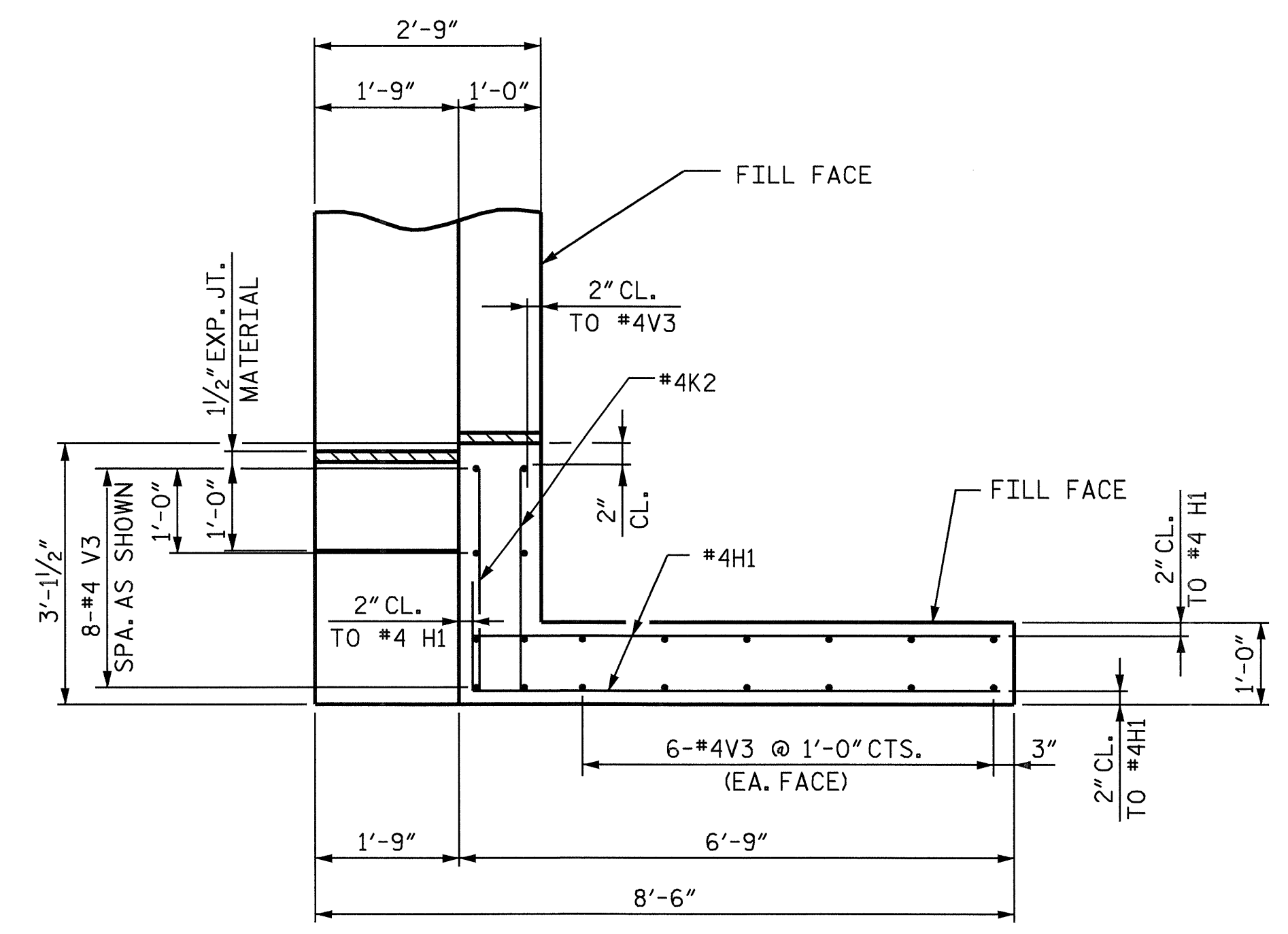
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT #2					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-20					TOTAL SHEETS 25



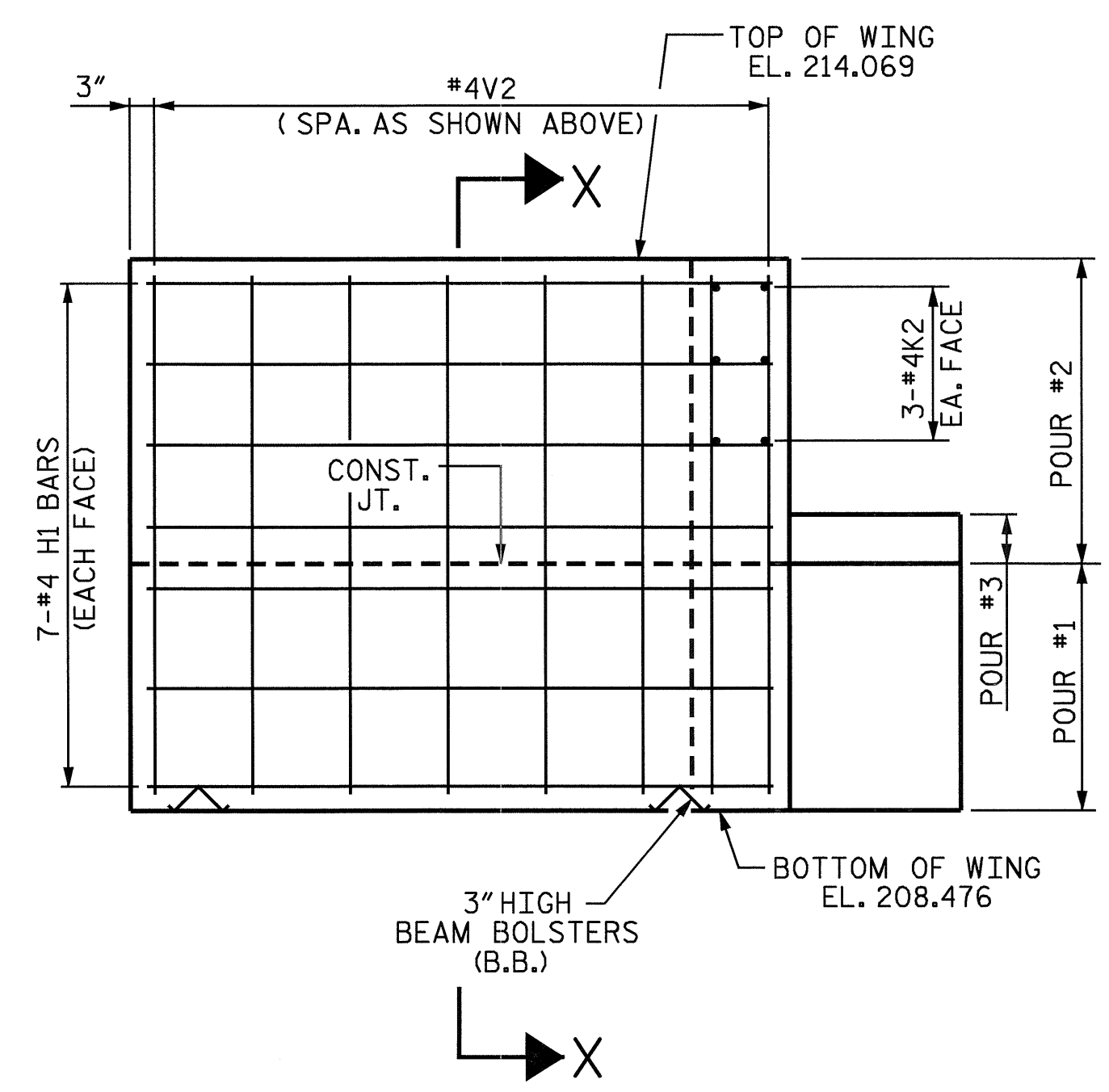
DRAWN BY : M. G. SHAIKH DATE : 08-04-06
 CHECKED BY : D. A. GLADDEN DATE : 08-16-06



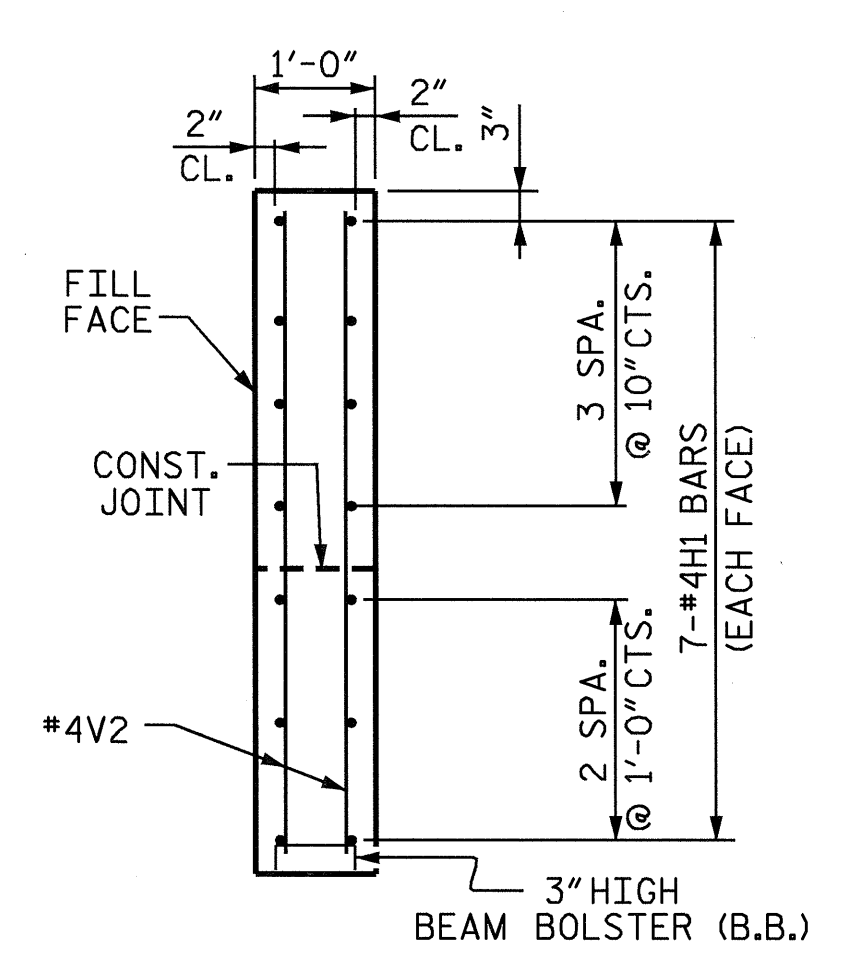
PLAN OF LEFT WING (W1)



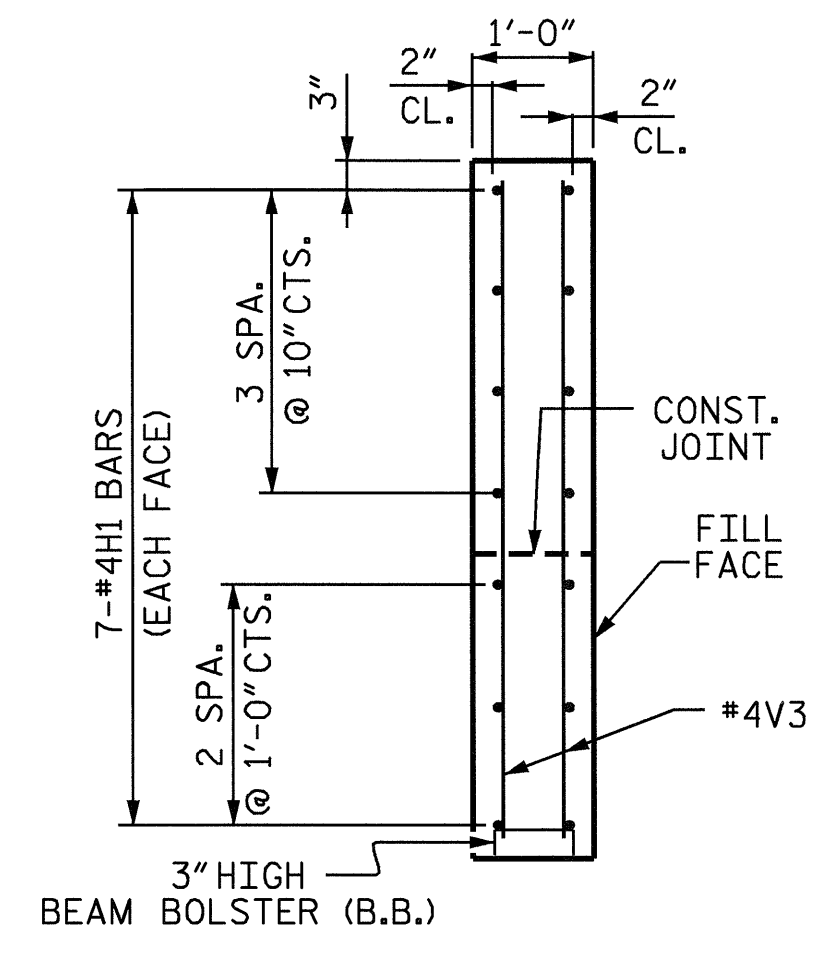
PLAN OF LEFT WING (W2)



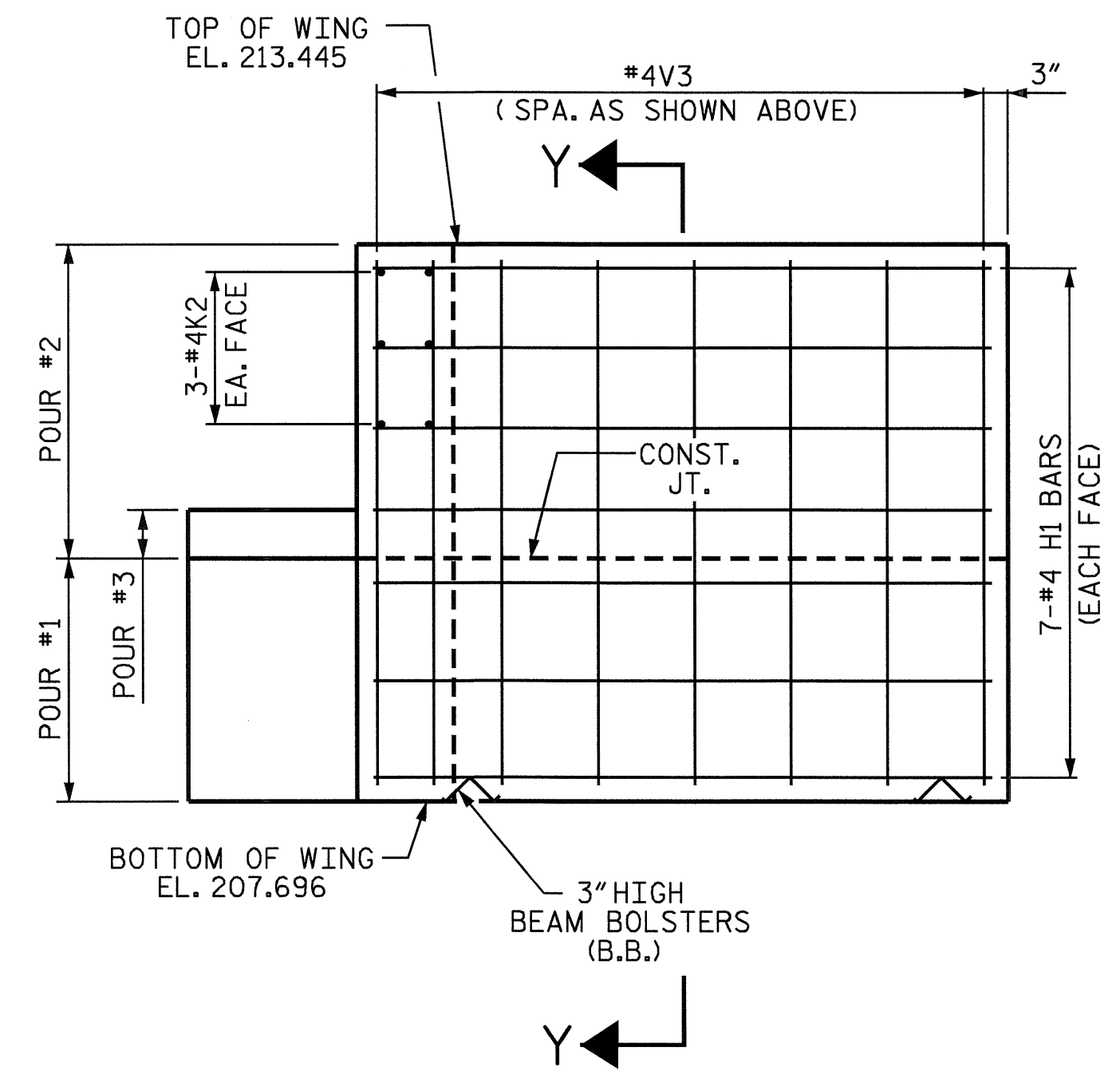
ELEVATION OF LEFT WING (W1)



SECTION X-X



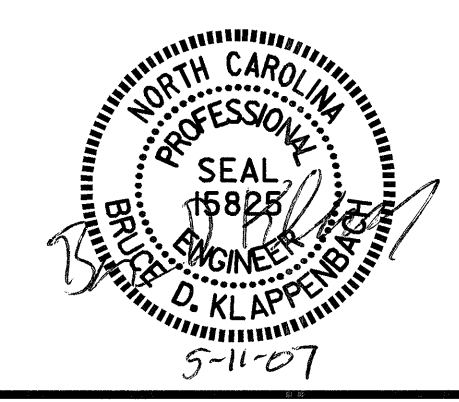
SECTION Y-Y



ELEVATION OF RIGHT WING (W2)

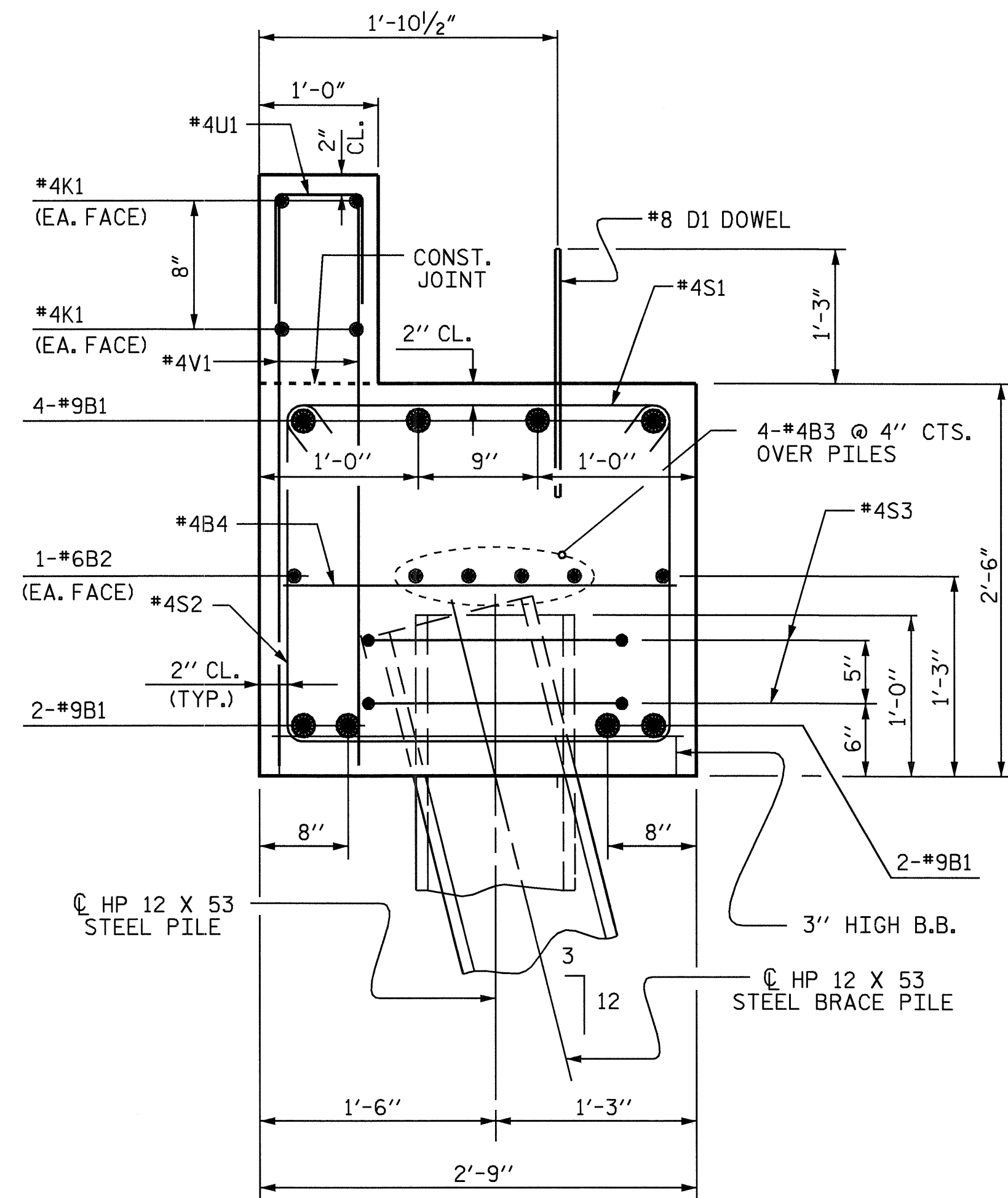
PROJECT NO. B-3863
JOHNSTON COUNTY
 STATION: 18+79.50 -L-
 SHEET 2 OF 3

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

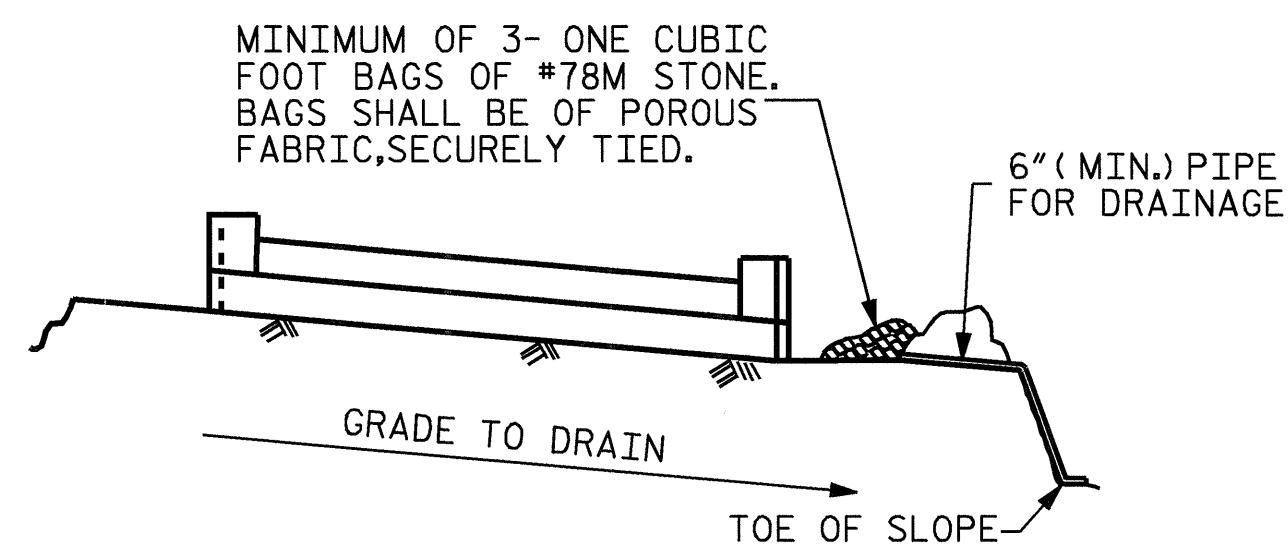


DRAWN BY : M. G. SHAIKH DATE : 08-09-06
 CHECKED BY : D. A. GLADDEN DATE : 08-16-06

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21	
1			3			TOTAL SHEETS 25	
2			4				



SECTION A-A



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.

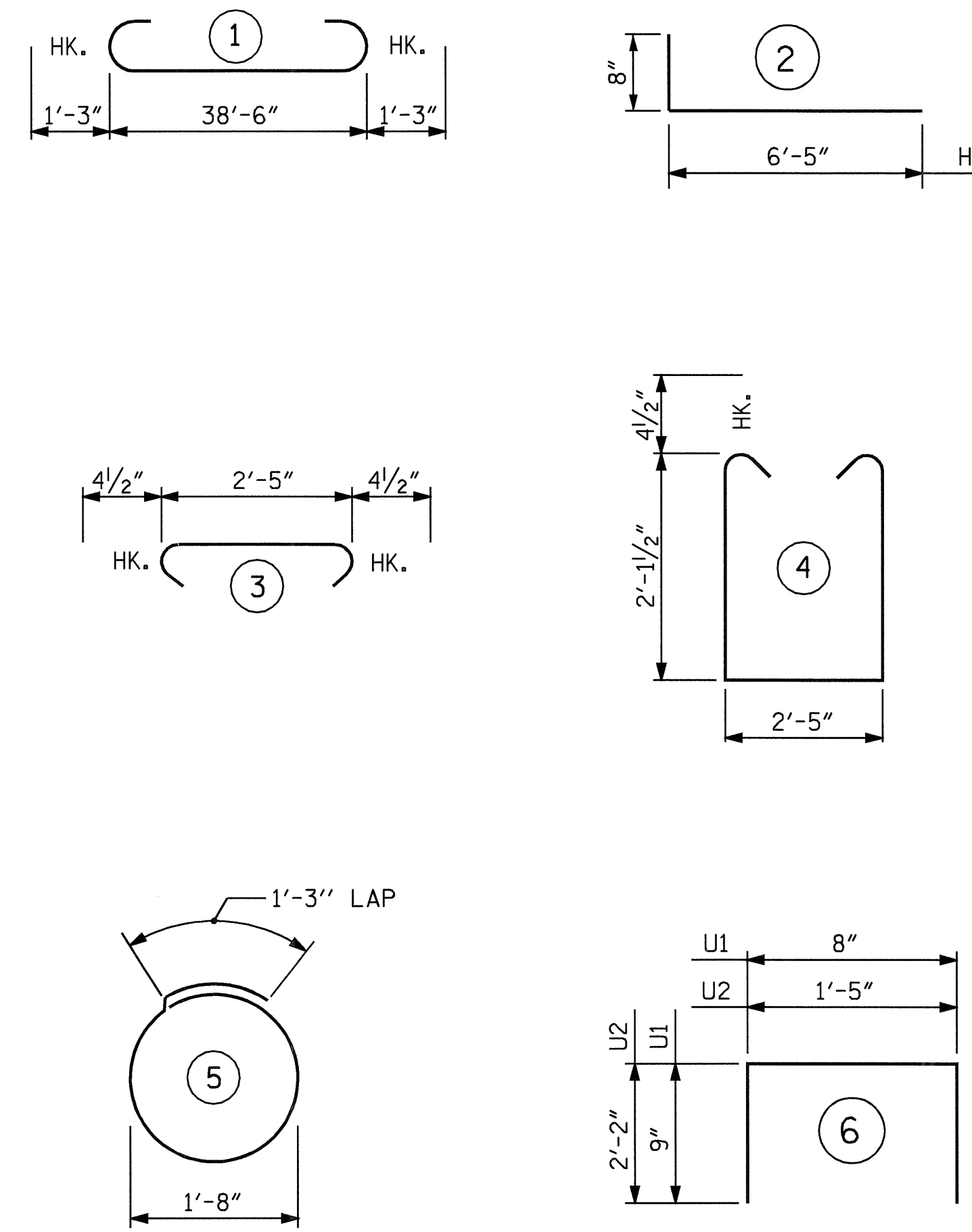
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

DRAWN BY : M. G. SHAIKH DATE : 08-10-06
 CHECKED BY : D. A. GLADDEN DATE : 08-16-06

11-MAY-2007 11:20
 I:\Structures\mshalkh\Microstation\B-3863.sd.E*.dgn
 mshalkh

BAR TYPE



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

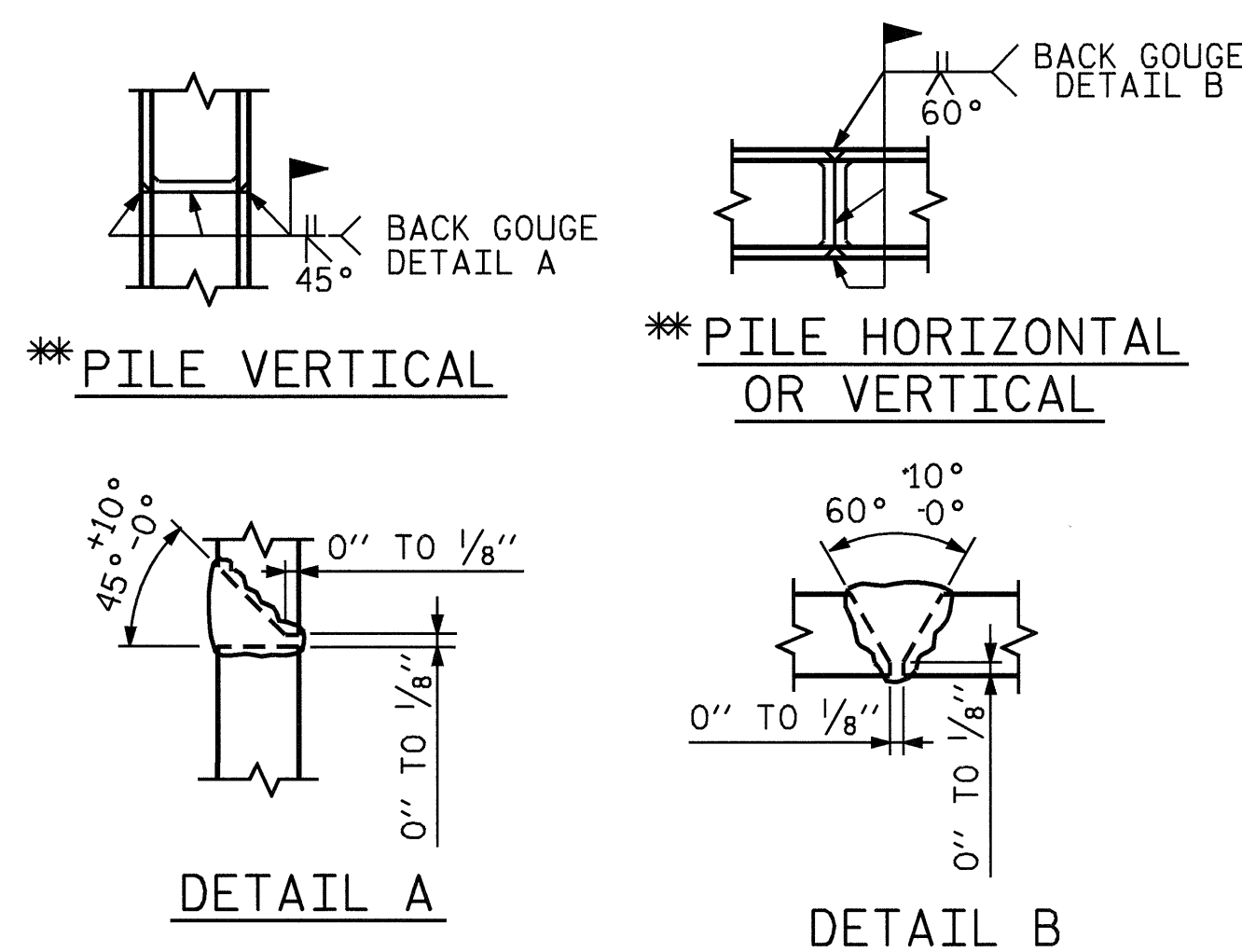
FOR END BENT #2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	41'-0"	1115
B2	2	#6	STR	38'-8"	116
B3	8	#4	STR	20'-7"	110
B4	10	#4	STR	2'-5"	16
D1	22	#8	STR	2'-3"	132
H1	28	#4	2	7'-1"	132
K1	8	#4	STR	20'-7"	110
K2	12	#4	STR	2'-9"	22
S1	37	#4	3	3'-2"	78
S2	37	#4	4	7'-5"	183
S3	16	#4	5	6'-6"	69
U1	33	#4	6	2'-2"	48
U2	4	#4	6	5'-9"	15
V1	66	#4	STR	3'-1"	136
V2	20	#4	STR	5'-3"	70
V3	20	#4	STR	5'-5"	72
REINFORCING STEEL					= 2424 LBS

CLASS A CONCRETE BREAKDOWN

POUR #1	CAP & LOWER PART OF WINGS	C.Y.	11.0
POUR #2	UPPER PART OF WINGS & BACKWALL	C.Y.	3.3
POUR #3	LATERAL GUIDES	C.Y.	0.1
TOTAL CLASS A CONCRETE		C.Y.	14.4

HP 12 X 53 STEEL PILES	NO. 8	LIN. FT.	160
------------------------	-------	----------	-----



** PILE VERTICAL

** PILE HORIZONTAL OR VERTICAL

DETAIL A

DETAIL B

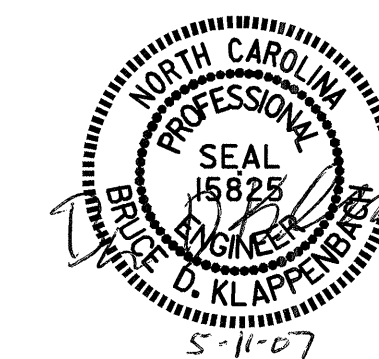
** POSITION OF PILE DURING WELDING.
PILE SPLICE DETAILS

PROJECT NO. B-3863
JOHNSTON COUNTY
 STATION: 18+79.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

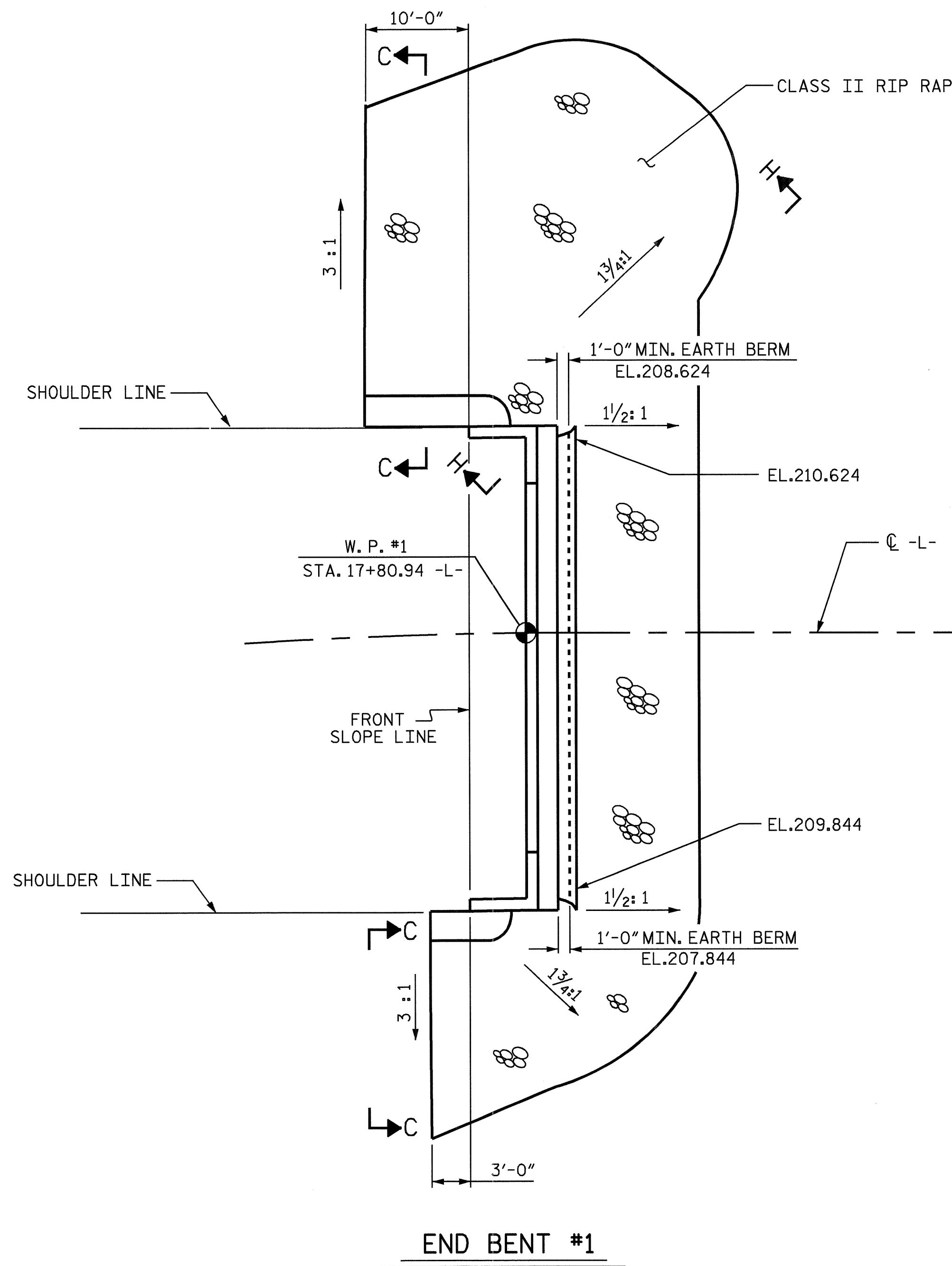
SUBSTRUCTURE
 END BENT #2



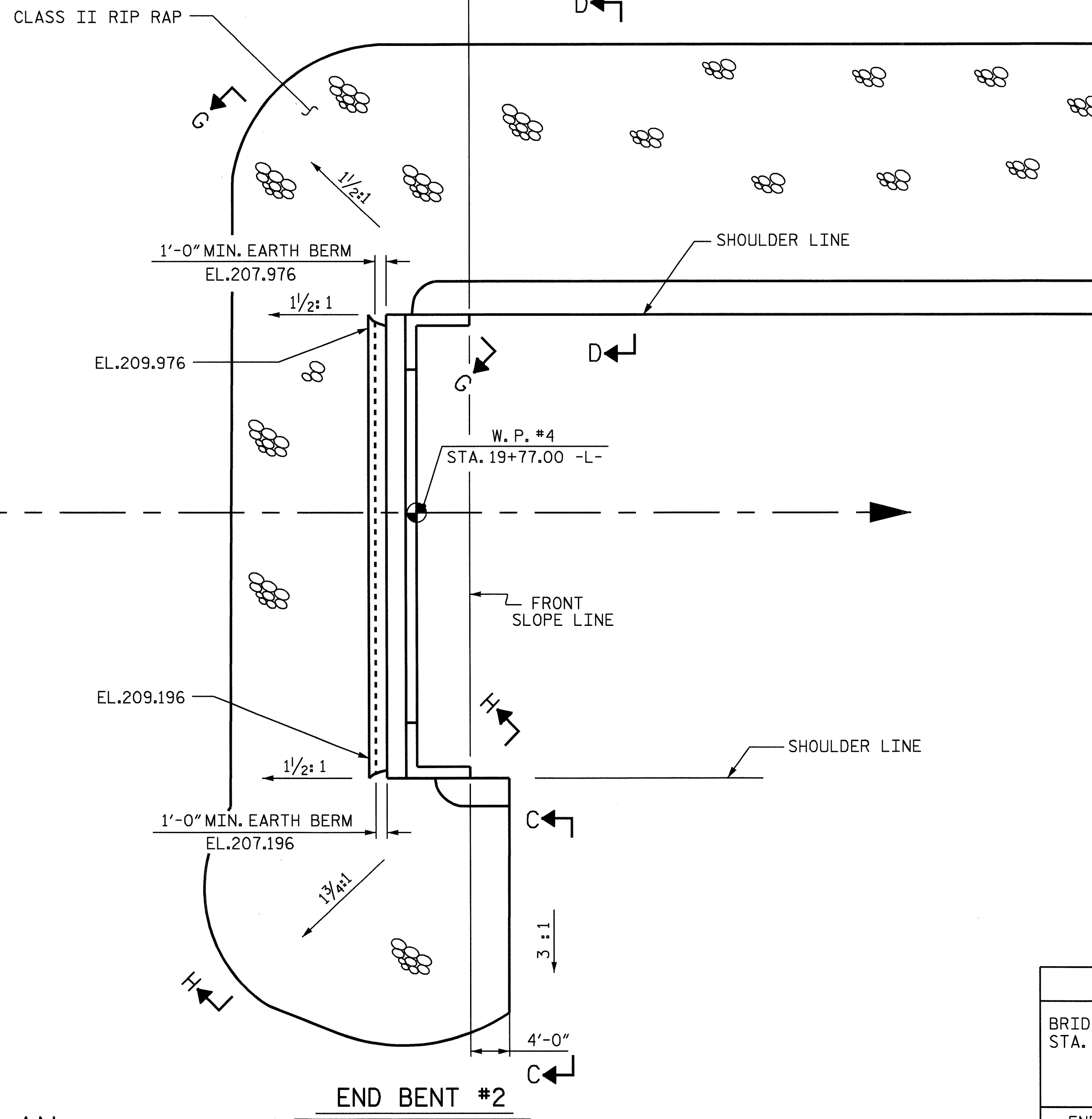
REVISIONS

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

SHEET NO.
 S-22
 TOTAL SHEETS
 25

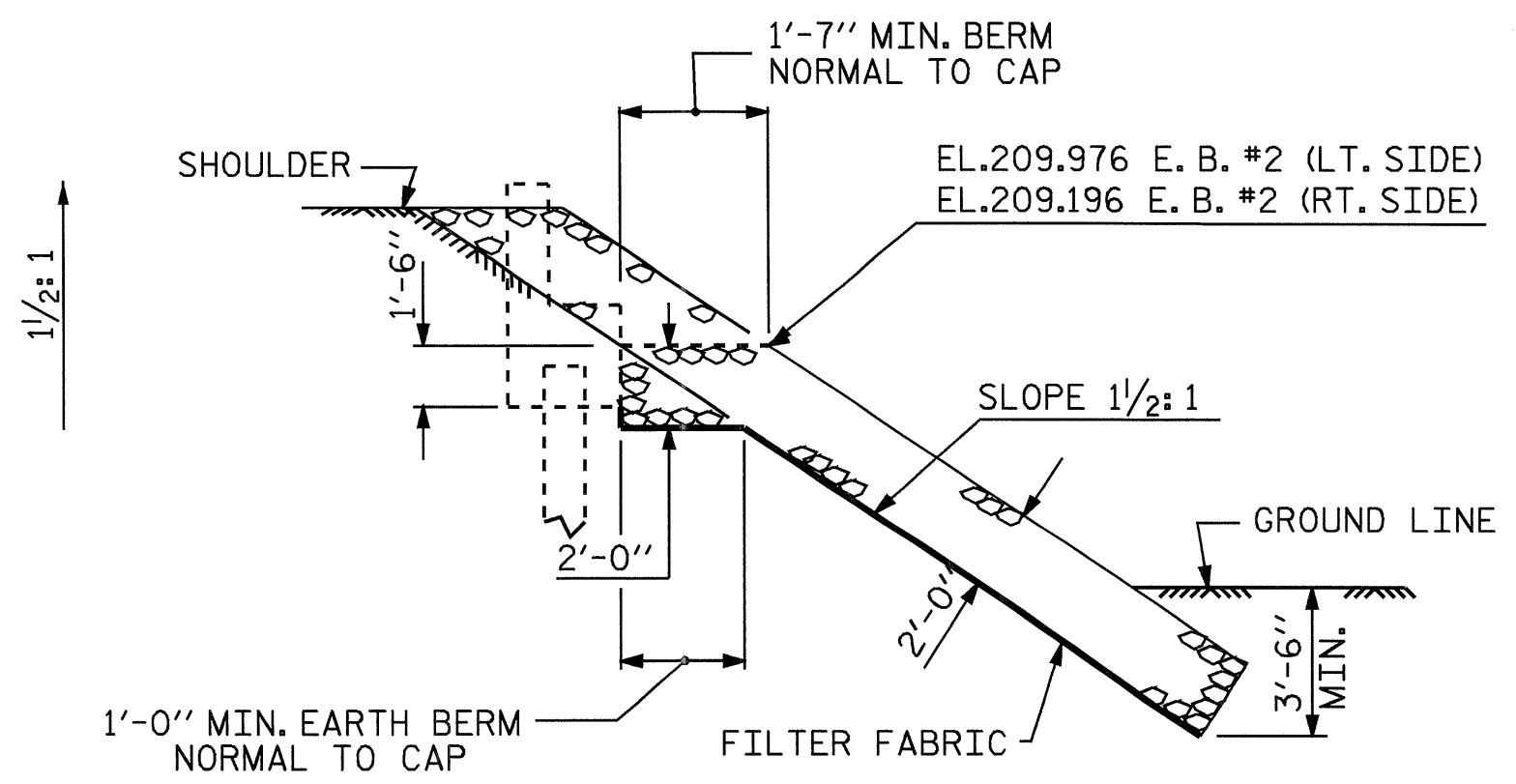


END BENT #1

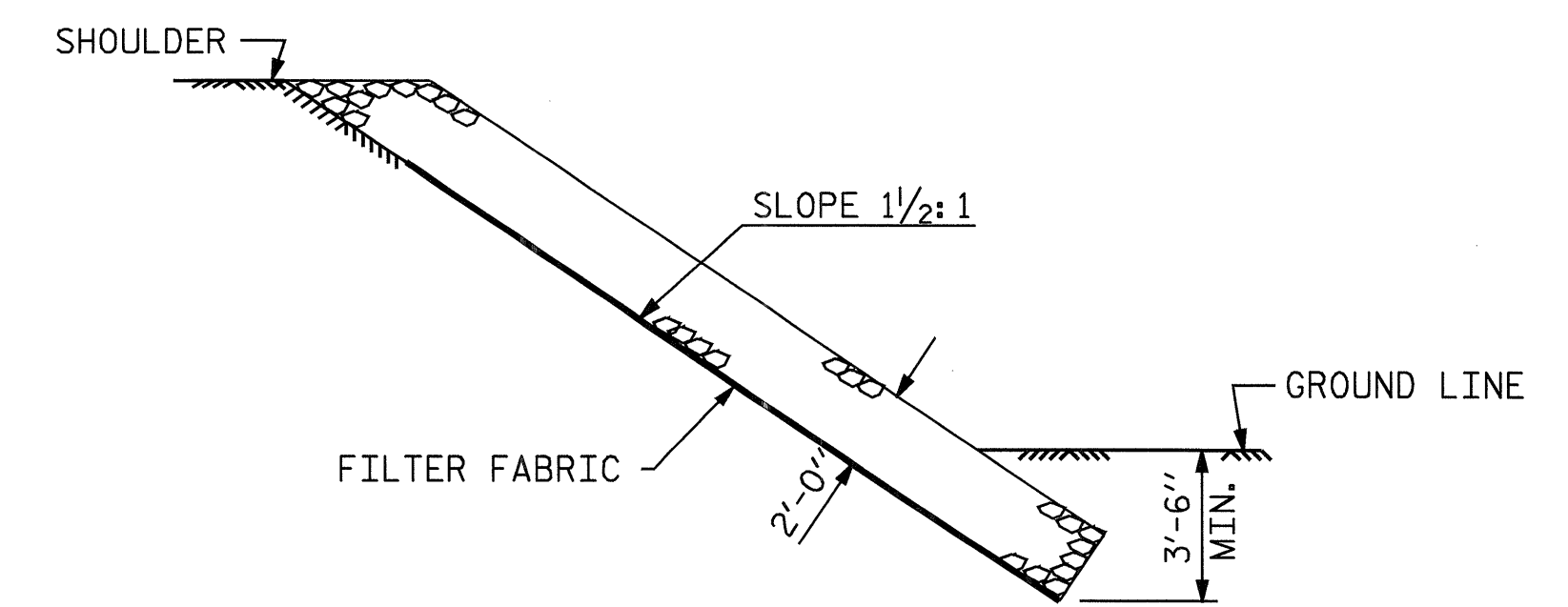


END BENT #2

PLAN

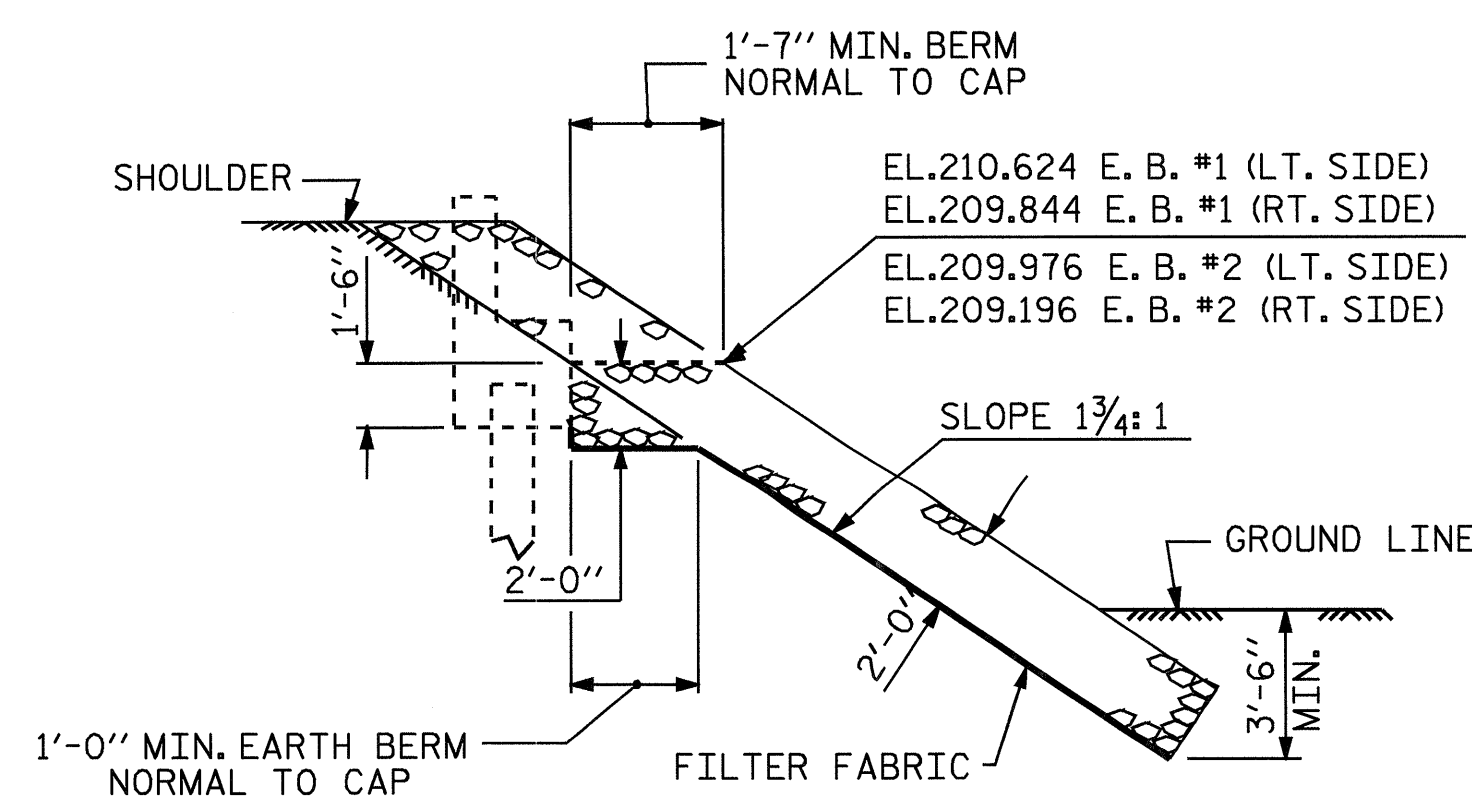


SECTION G-G

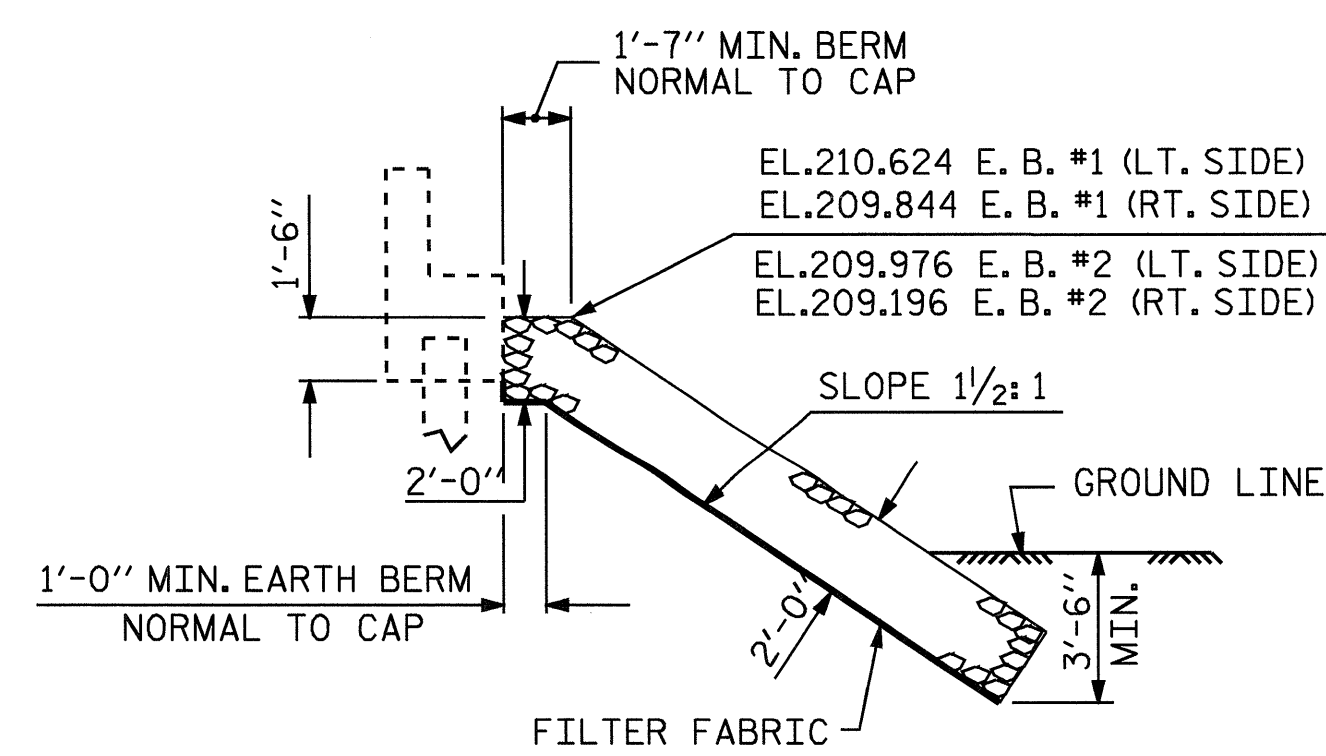


SECTION D-D

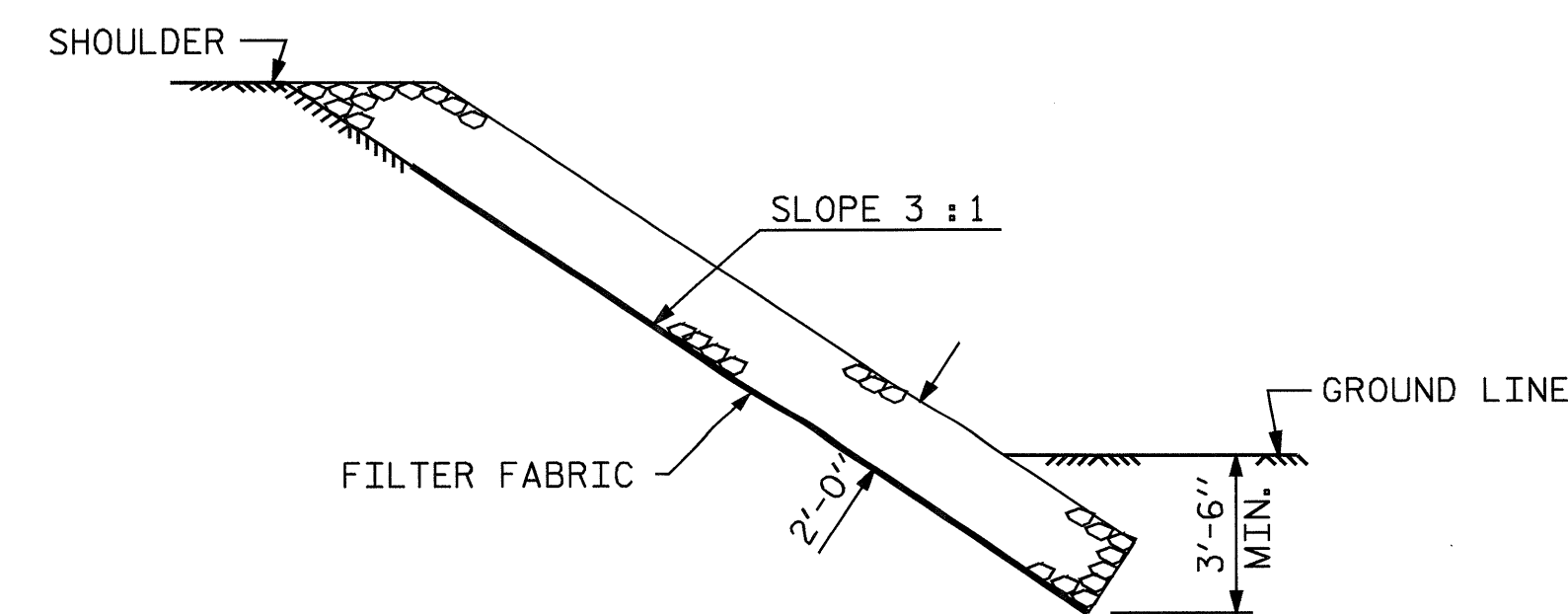
ESTIMATED QUANTITIES		
BRIDGE @ STA. 18+79.50 -L-	RIP RAP CLASS II	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	258	287
END BENT 2	430	478
TOTAL	688	765



SECTION H-H



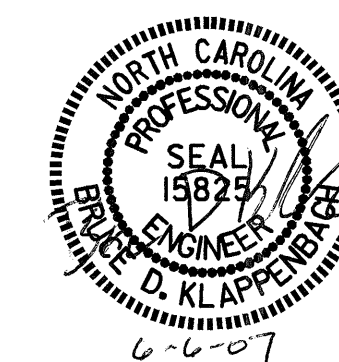
SECTION C-C
BERM RIP RAPPED



SECTION C-C

PROJECT NO. B-3863
JOHNSTON COUNTY
 STATION: 18+79.50-L-

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



ASSEMBLED BY : M. G. SHAIKH DATE : 4-13-07
 CHECKED BY : A. SORSENGINH DATE : 4-21-07
 DRAWN BY : FCJ 2/88
 CHECKED BY : ARB 8/88

REV. 7/17/98 REK/RWW
 REV. 8/16/99 RWW/LES
 REV. 10/17/00 RWW/LES

REVISIONS						SHEET NO. S-23
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 25
2			4			

NOTES

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

TEMPORARY DRAINAGE AND TEMPORARY BERM AND SLOPE DRAINS WILL BE PAID FOR UNDER THE LUMP SUM PRICE FOR BRIDGE APPROACH SLAB.

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 SLAB 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.

BILL OF MATERIAL

APPROACH SLAB AT END BENT #1

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

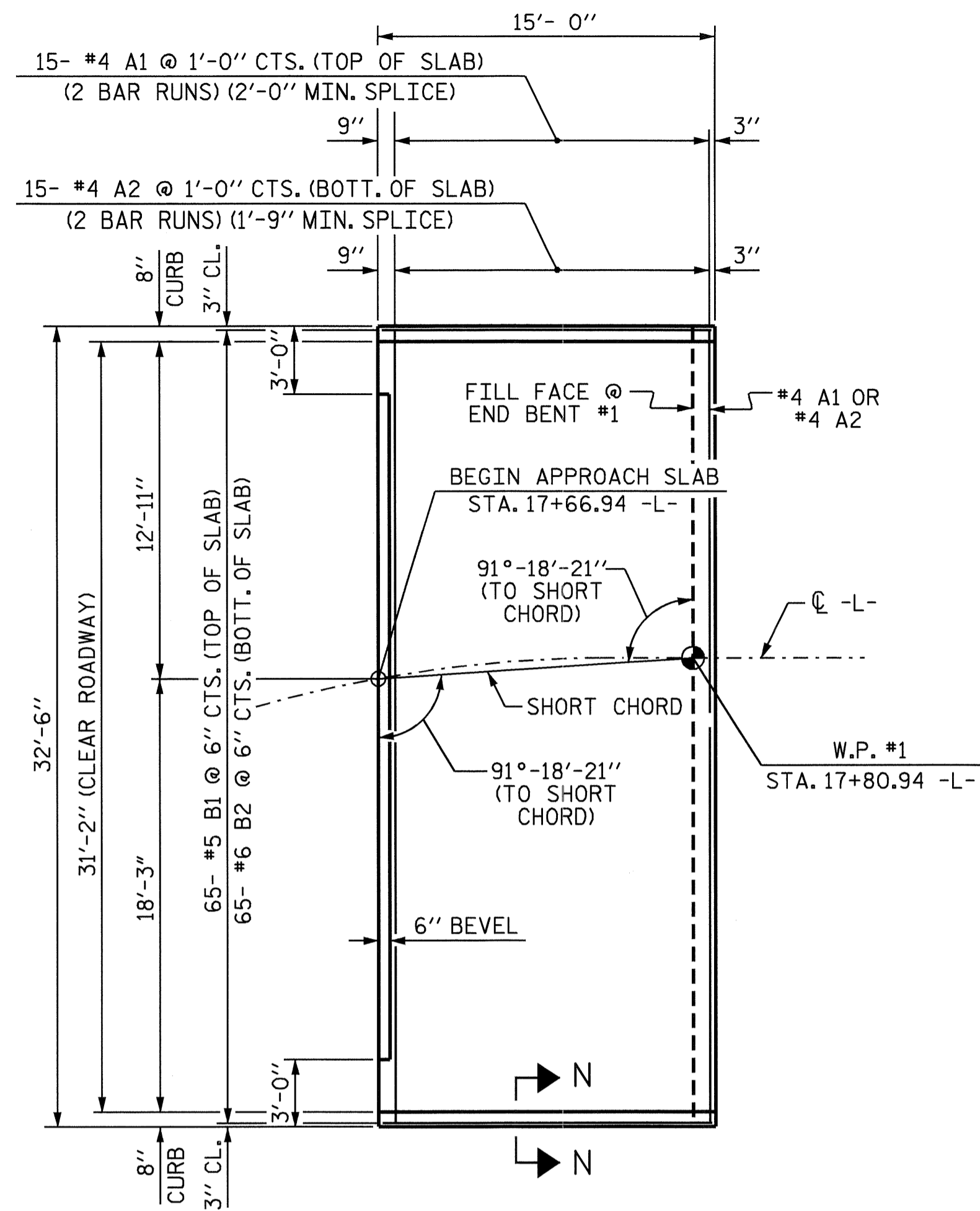
CLASS AA CONCRETE	C. Y.	18.6
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APPROACH SLAB AT END BENT #2

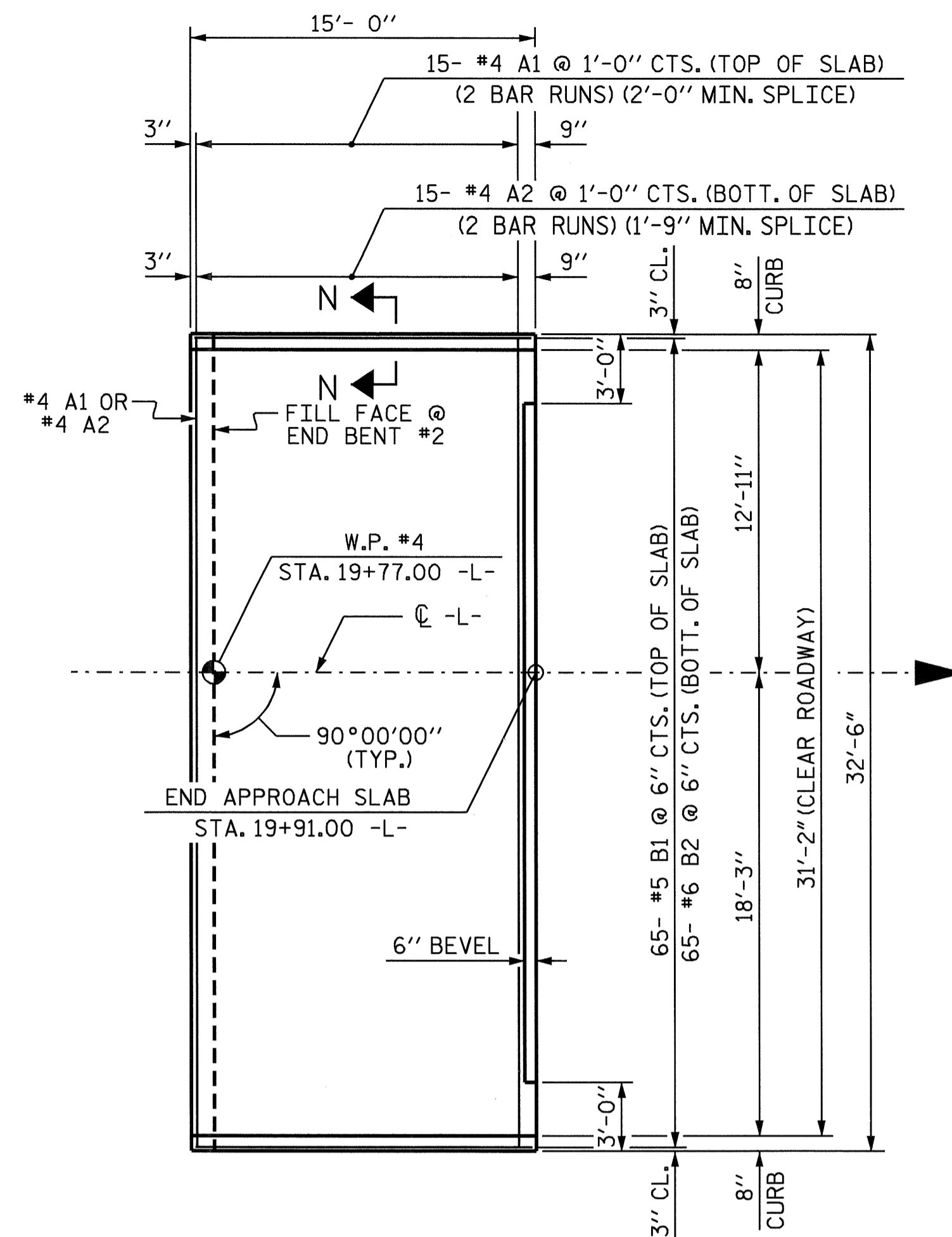
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	30	#4	STR	17'-1"	342
A2	30	#4	STR	17'-0"	341
*B1	65	#5	STR	14'-2"	960
B2	65	#6	STR	14'-8"	1432

REINFORCING STEEL	LBS.	1773
*EPOXY COATED REINFORCING STEEL	LBS.	1302

CLASS AA CONCRETE	C. Y.	18.6
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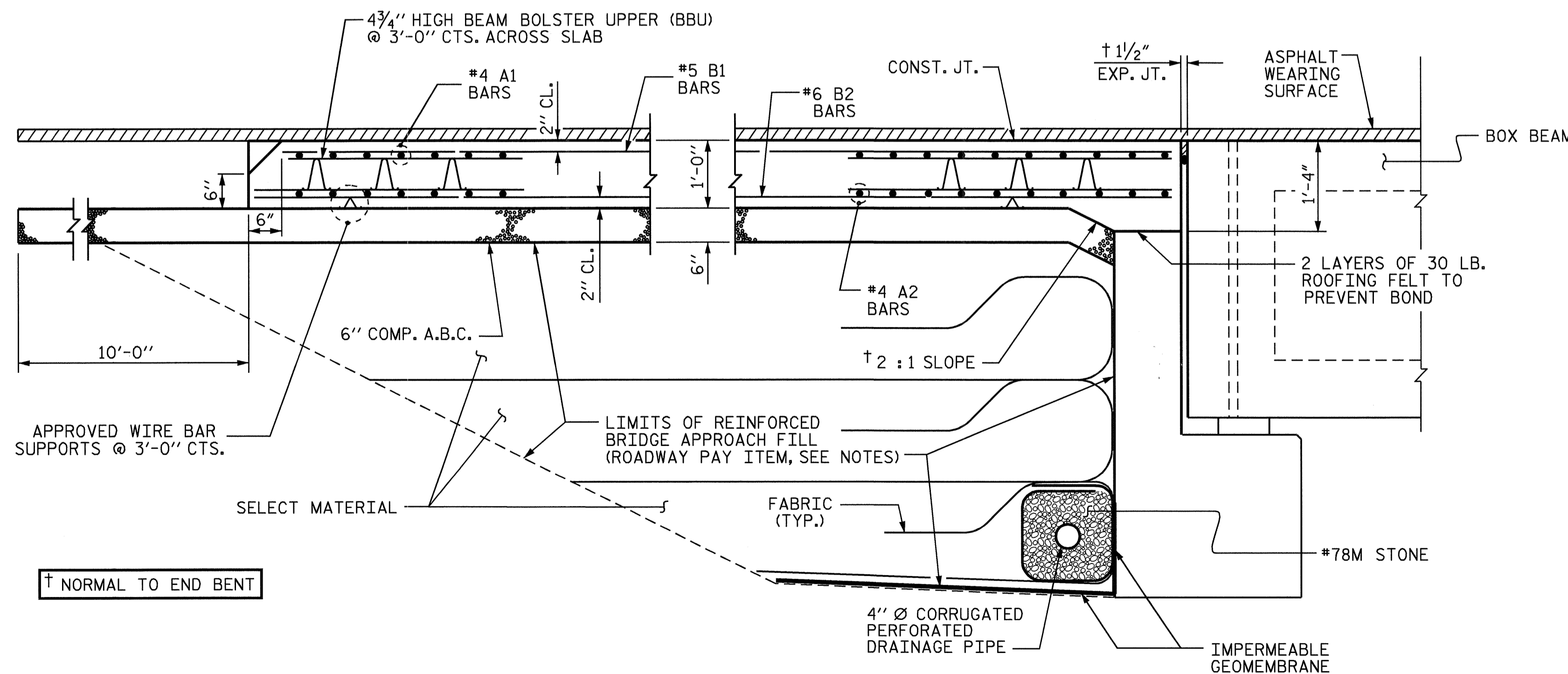


PLAN APPROACH SLAB @ END BENT #1

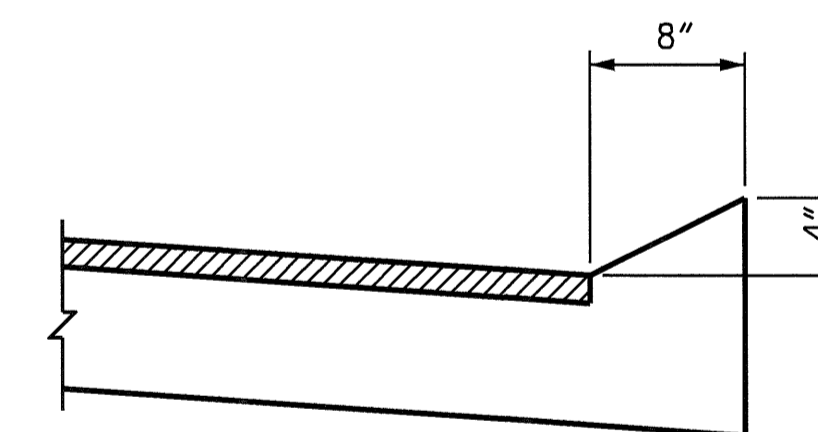


PLAN APPROACH SLAB @ END BENT #2

ARC OFFSET ARE NEGLIGIBLE, THEREFORE NOT SHOWN.



SECTION THRU SLAB



SECTION N-N

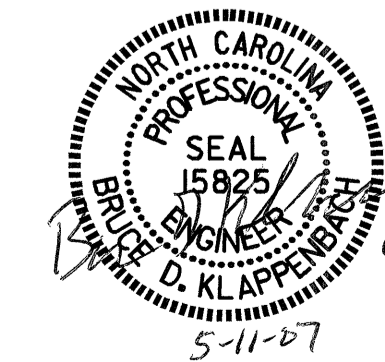
CURB DETAILS

PROJECT NO. B-3863
JOHNSTON COUNTY
 STATION: 18+79.50 -L-

SHEET 1 OF 2

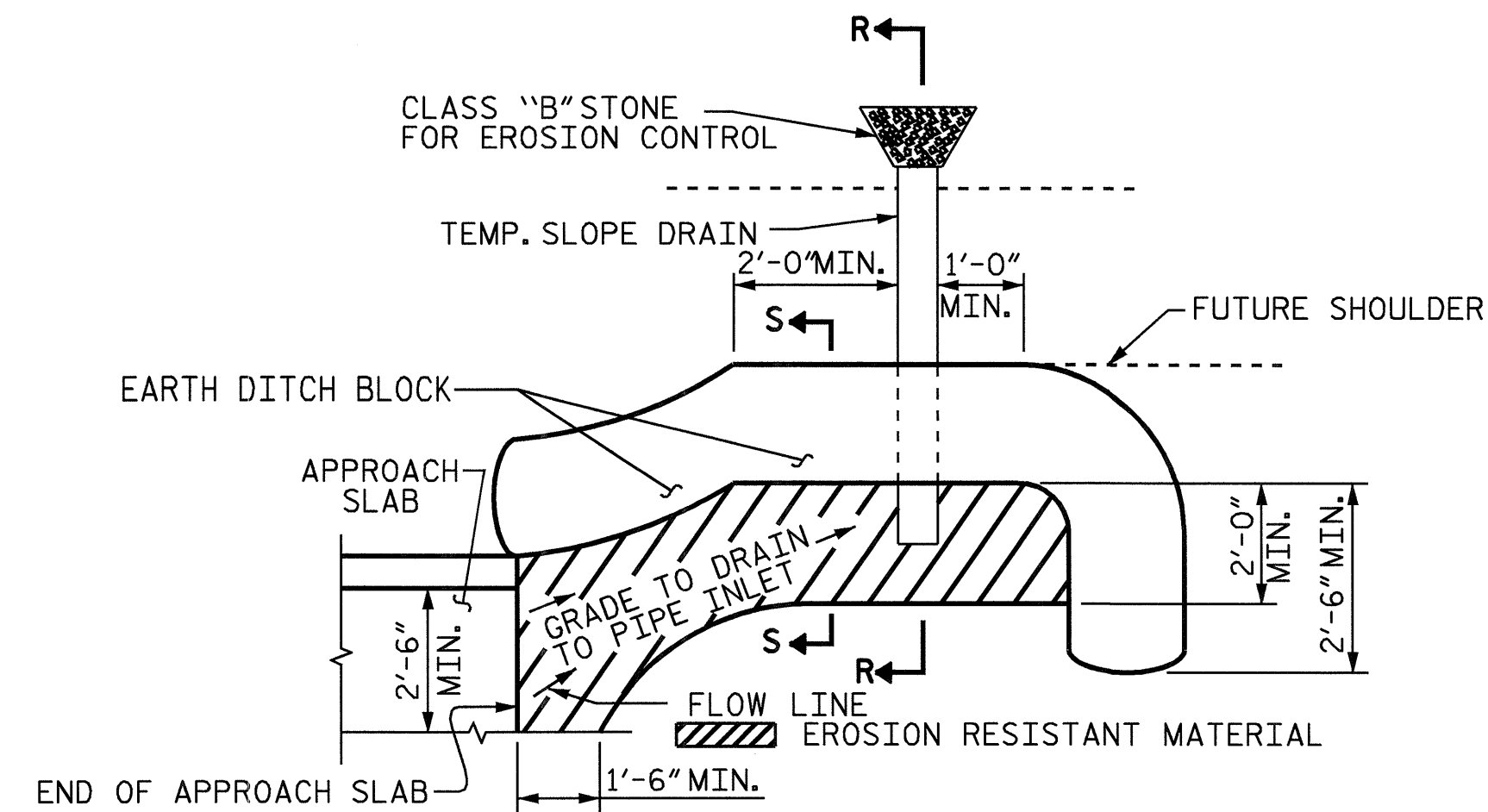
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE BOX BEAM



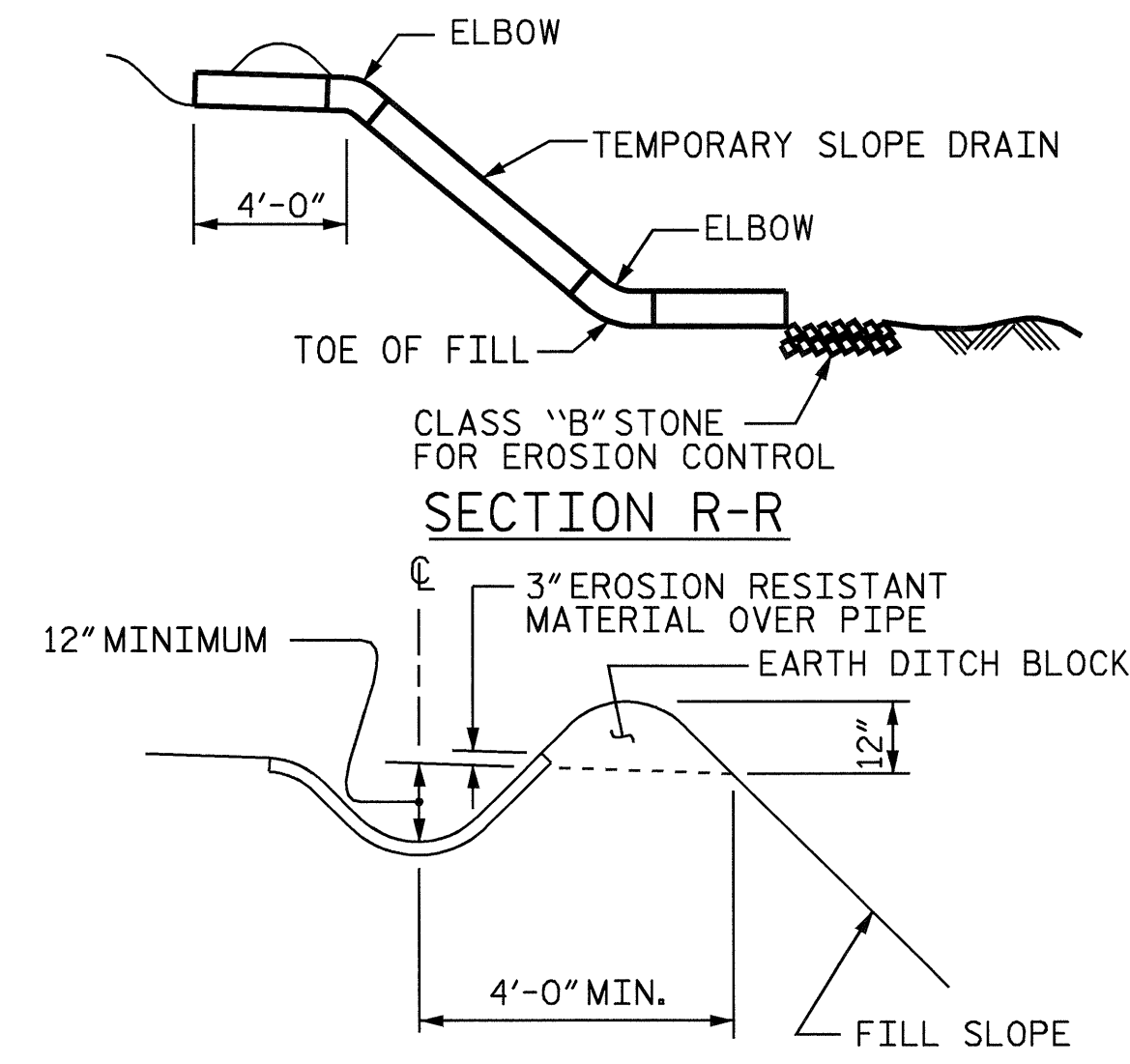
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-24	
1			3			TOTAL SHEETS	25
2			4				

ASSEMBLED BY :	M. G. SHAIKH	DATE :	4-12-06
CHECKED BY :	H. T. BARBOUR	DATE :	4-21-06
DRAWN BY :	FCJ	6/87	REV. 10/17/00 RWW/LES
CHECKED BY :	EGA	6/87	REV. 7/10/01 LES/RDR
			REV. 5/7/03R RWW/JTE



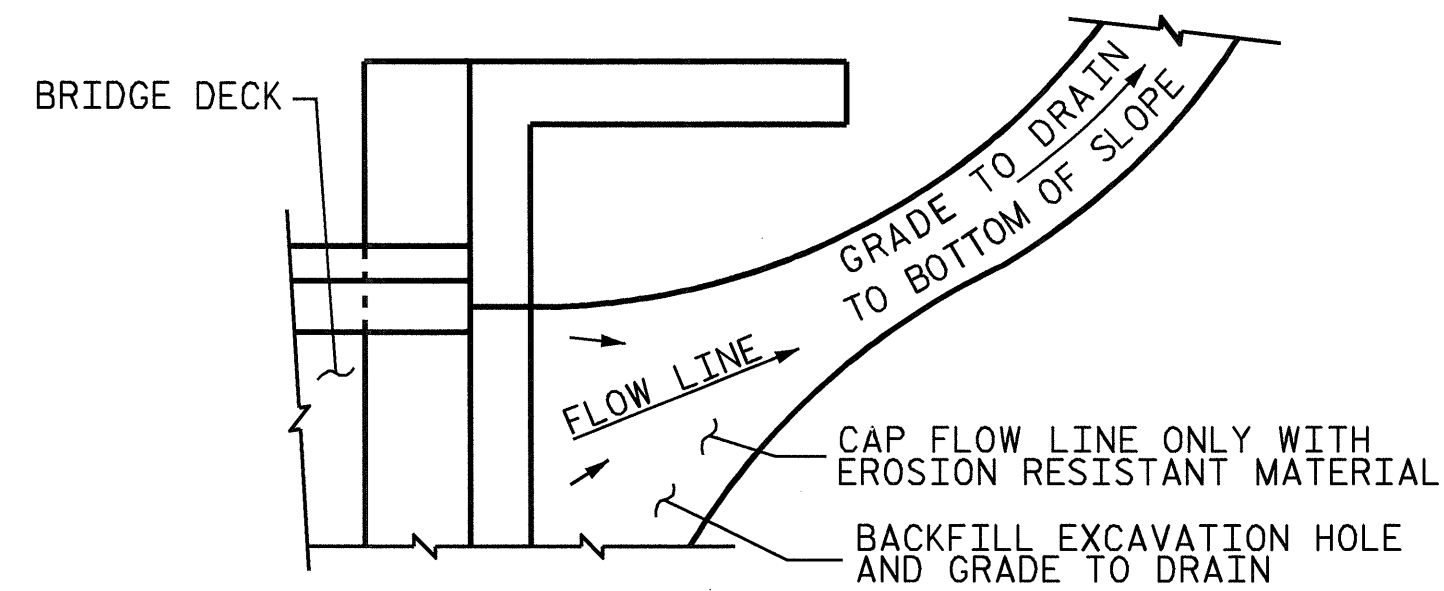
NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 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



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.

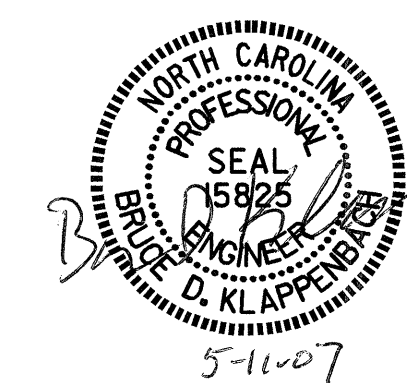
TEMPORARY DRAINAGE DETAIL

PROJECT NO. B-3863
JOHNSTON COUNTY
 STATION: 18+79.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

BRIDGE APPROACH
 SLAB DETAILS



ASSEMBLED BY :	M. G. SHAIKH	DATE :	4-13-06
CHECKED BY :	H. T. BARBOUR	DATE :	4-21-06
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

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

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

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

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

CONCRETE:

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

CONCRETE CHAMFERS:

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

DOWELS:

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

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

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.

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

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

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

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

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

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

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

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

HANDRAILS AND POSTS:

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

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINISHES AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105-4.

ENGLISH

JANUARY, 1990

STD. NO. SN