

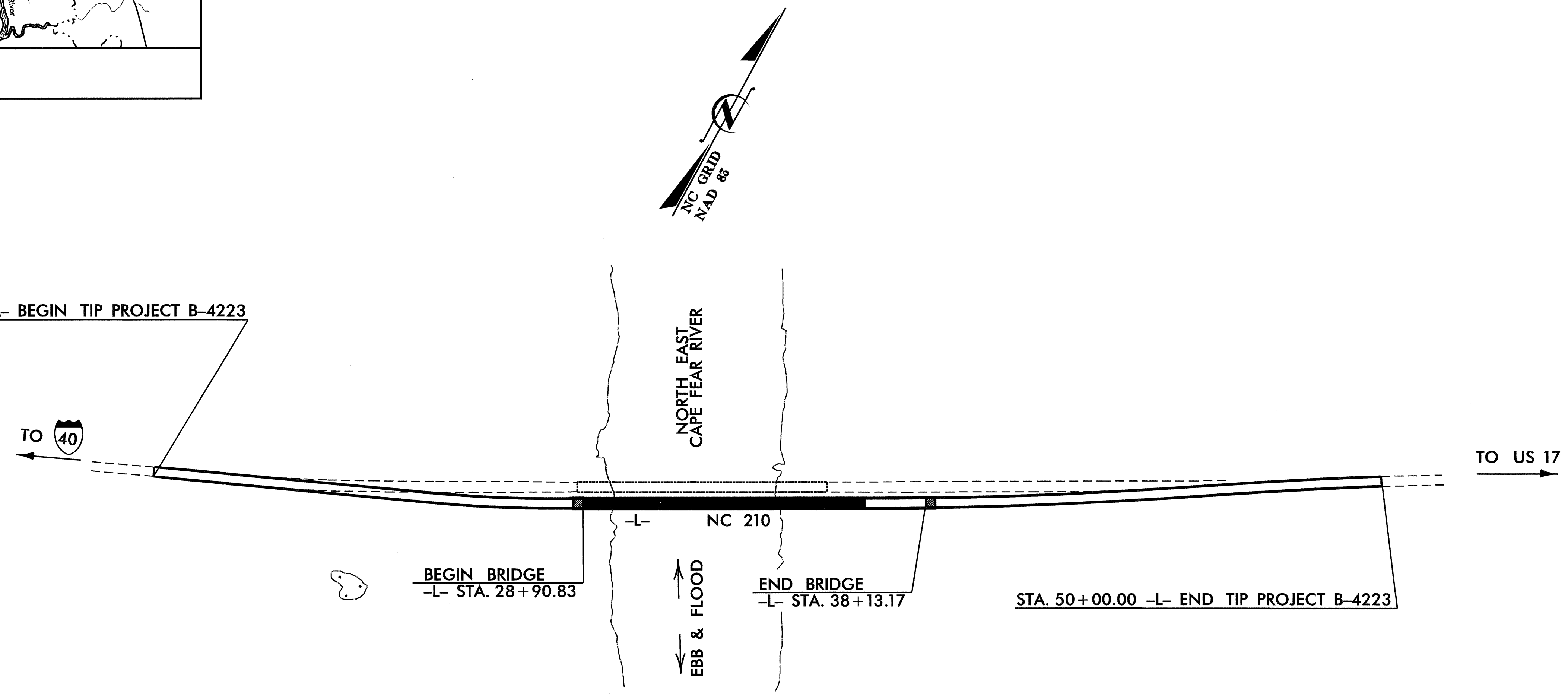
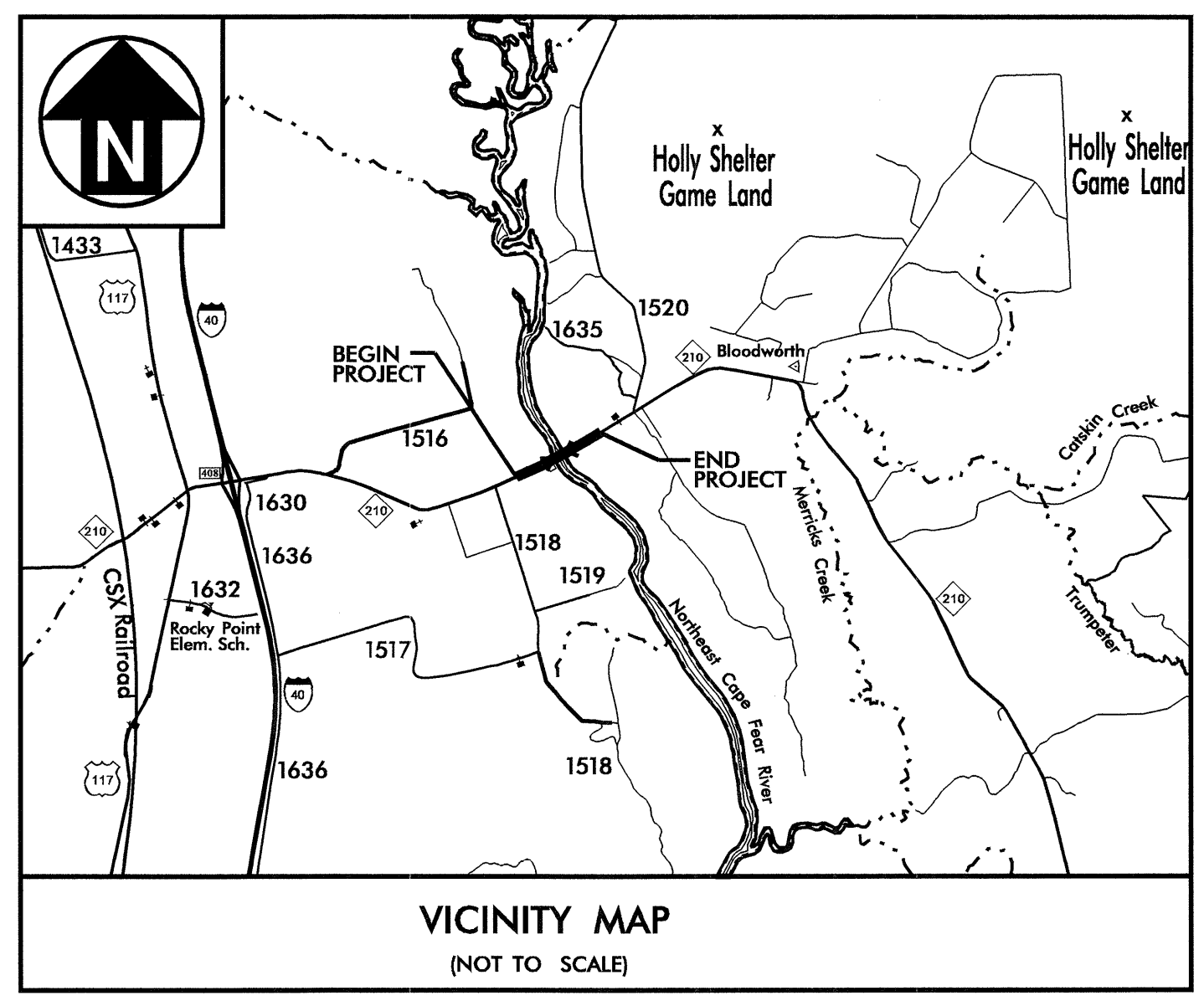
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4223		
WBS NO.	P.A. PROJ. NO.	DESCRIPTION	
33567.1.1	BRSTP-0210(4)	P.E.	
33567.2.1	BRSTP-0210(4)	R.O.W., UTIL.	
33567.3.1	BRSTP-0210(4)	CONST.	

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PENDER COUNTY

LOCATION: BRIDGE NO. 21 ON NC 210 OVER
NORTHEAST CAPE FEAR RIVER

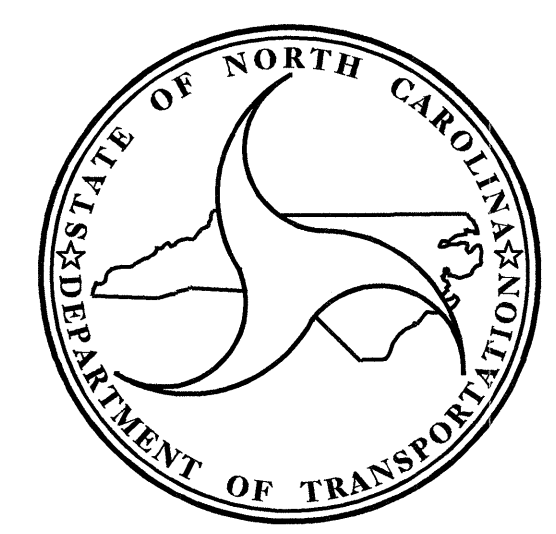
TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURE



STRUCTURE

TIP PROJECT: B-4223

CONTRACT: C201483



DESIGN DATA

ADT 2006 =	4,100
ADT 2026 =	7,600
DHV =	14 %
D =	65 %
T =	10 % *
V =	60 MPH
* TTST 4% DUAL 6%	
FUNC CLASS = MAJOR RURAL COLLECTOR	

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4223	=	0.432 MILES
LENGTH STRUCTURE TIP PROJECT B-4223	=	0.174 MILES
TOTAL LENGTH STATE TIP PROJECT B-4223	=	0.606 MILES

Prepared In the Office of:

DIVISIONS OF HIGHWAYS

2006 STANDARD SPECIFICATIONS

LETTING DATE: MAY 15, 2007

Q. H. NGUYEN, P.E.
PROJECT ENGINEER

J. R. DUGGINS, P.E.
PROJECT DESIGN ENGINEER

STRUCTURE DESIGN UNIT
1000 BIRCH RIDGE DRIVE
RALEIGH, NC 27610

Perretti
3.27.07

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

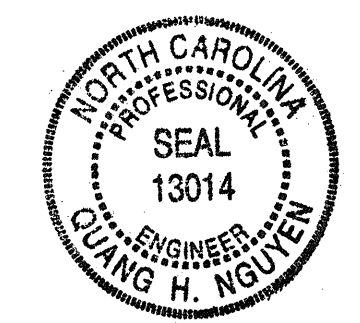
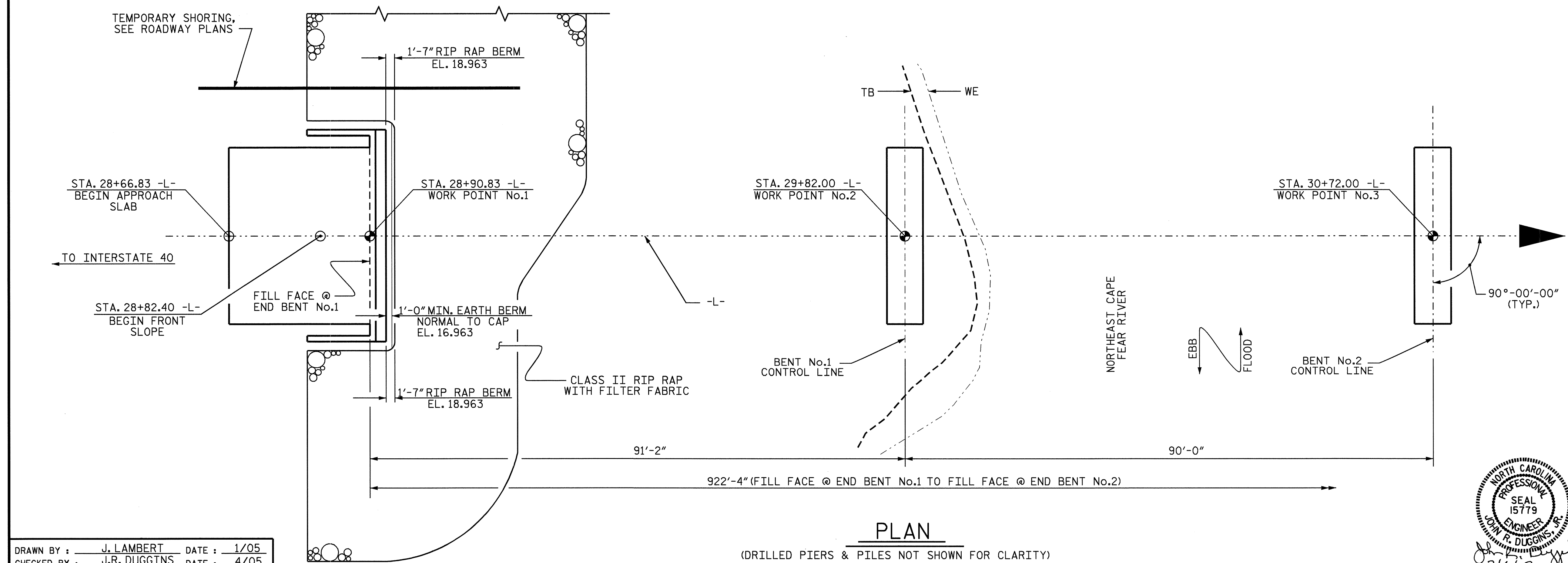
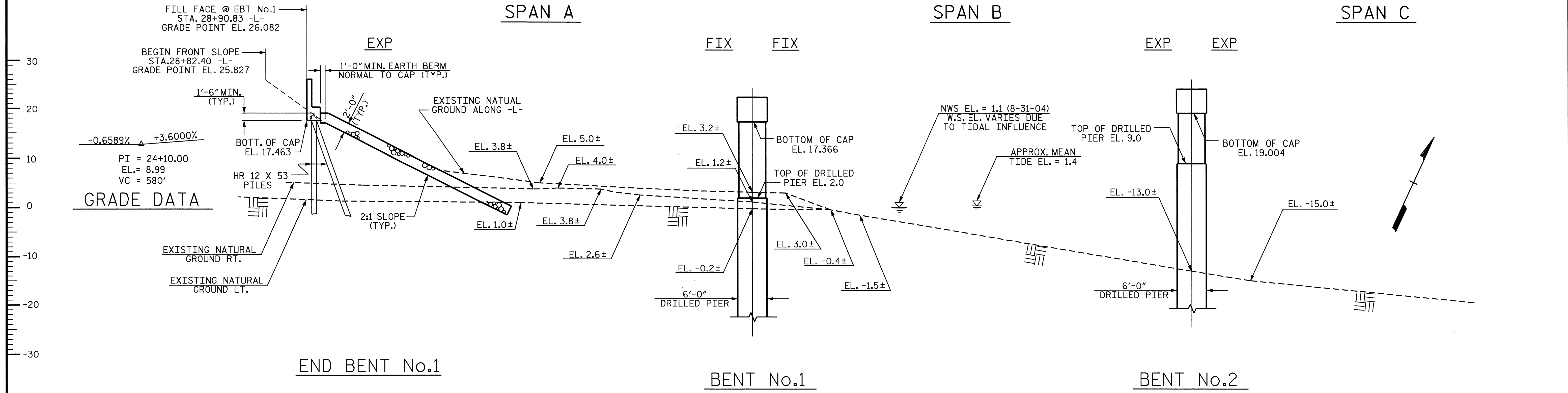
STATE DESIGN ENGINEER

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR

P.E.

DATE



Quang H. Nguyen 3-7-07

PROJECT NO. B-4223
PENDER COUNTY
 STATION: 33+52.00 -L-

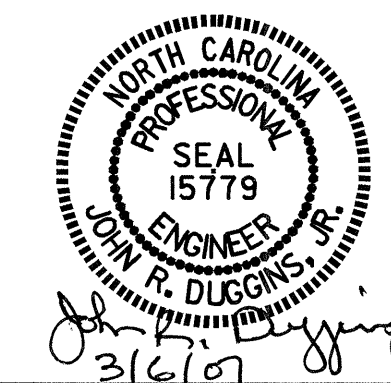
SHEET 1 OF 10 REPLACES BRIDGE No. 21

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE ON NC 210
 OVER NORTHEAST CAPE FEAR
 RIVER BETWEEN SR 1518
 AND SR 1520

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			64

DRAWN BY: J. LAMBERT DATE: 1/05
 CHECKED BY: J.R. DUGGINS DATE: 4/05



31+00

32+00

33+00

SPAN C

SPAN D

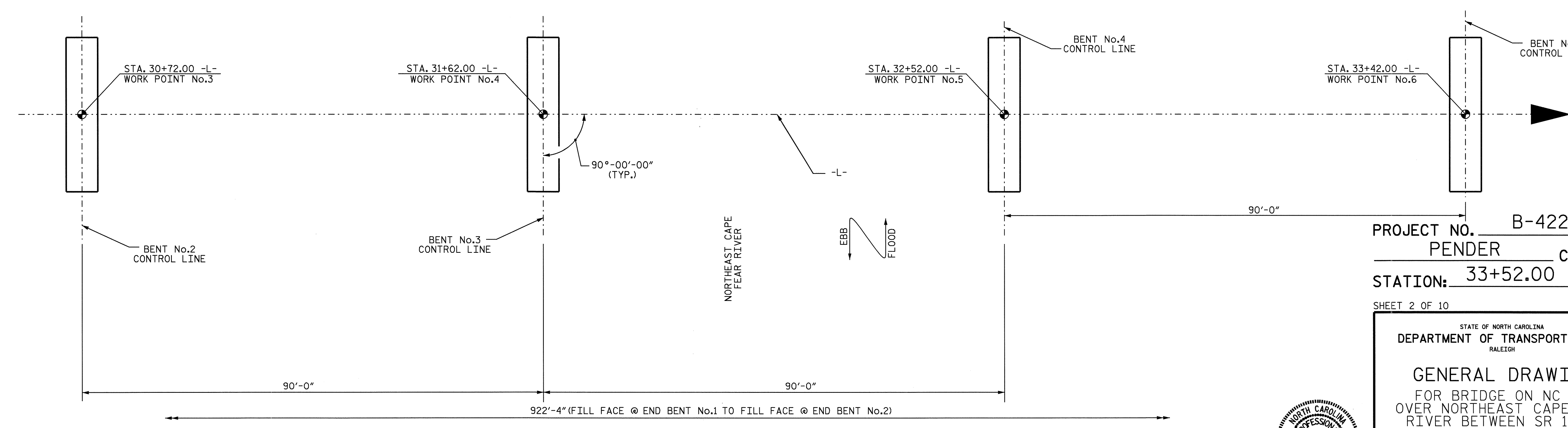
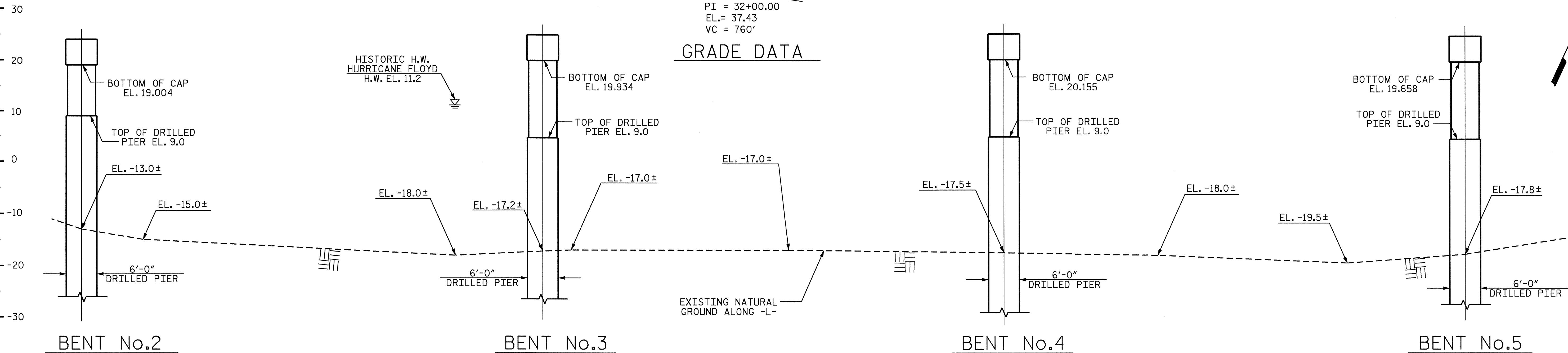
SPAN E

EXP EXP

FIX FIX

EXP EXP

FIX FIX

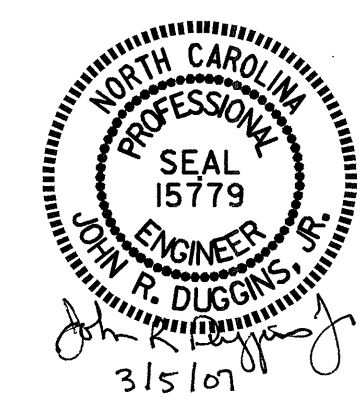


PROJECT NO. B-4223
PENDER COUNTY
 STATION: 33+52.00 -L-

SHEET 2 OF 10

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

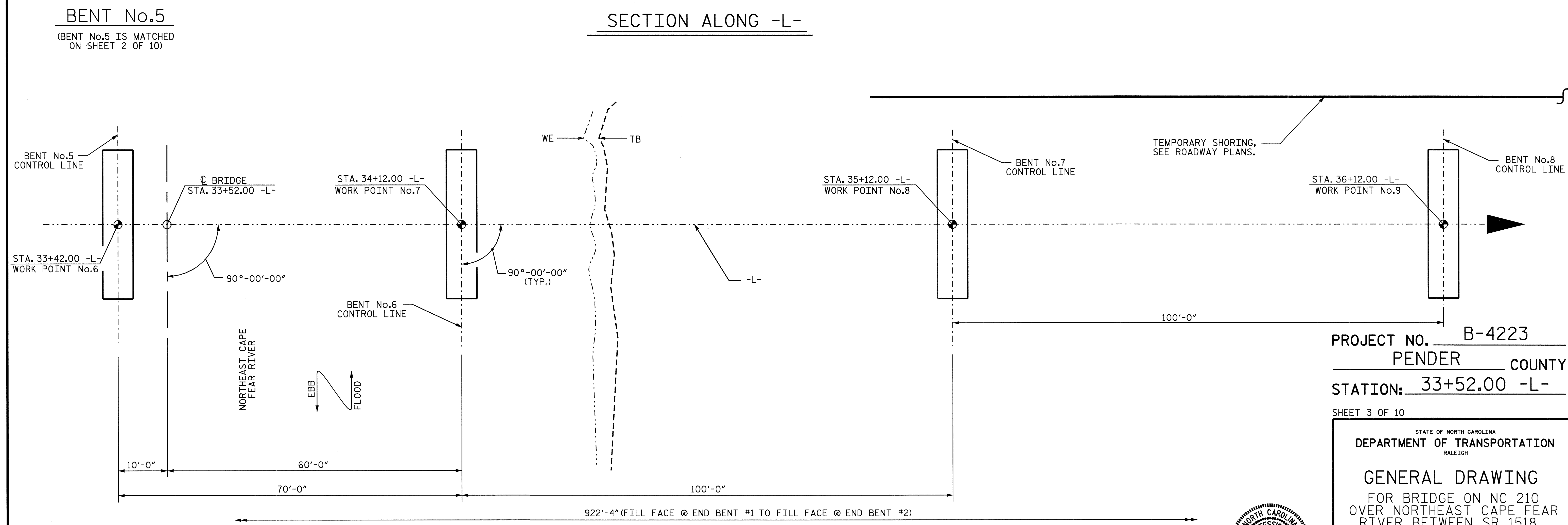
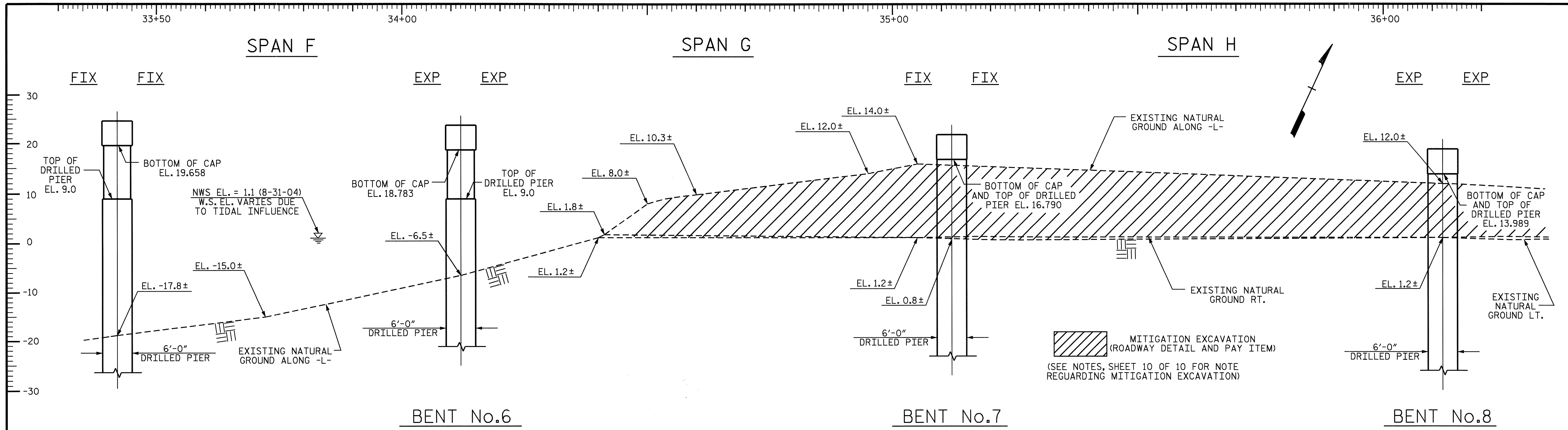
GENERAL DRAWING
 FOR BRIDGE ON NC 210
 OVER NORTHEAST CAPE FEAR
 RIVER BETWEEN SR 1518
 AND SR 1520



DRAWN BY : J. LAMBERT DATE : 1/05
 CHECKED BY : J.R. DUGGINS DATE : 4/05

PLAN
 (DRILLED PIERS & PILES NOT SHOWN FOR CLARITY)

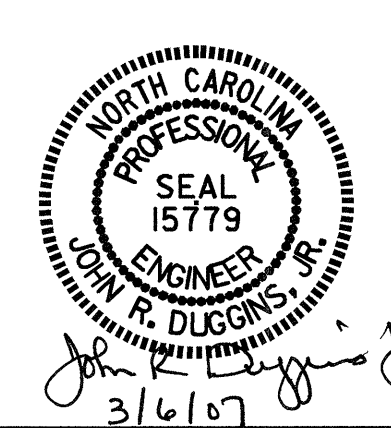
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			64



PROJECT NO. B-4223
 PENDER COUNTY
 STATION: 33+52.00 -L-
 SHEET 3 OF 10

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

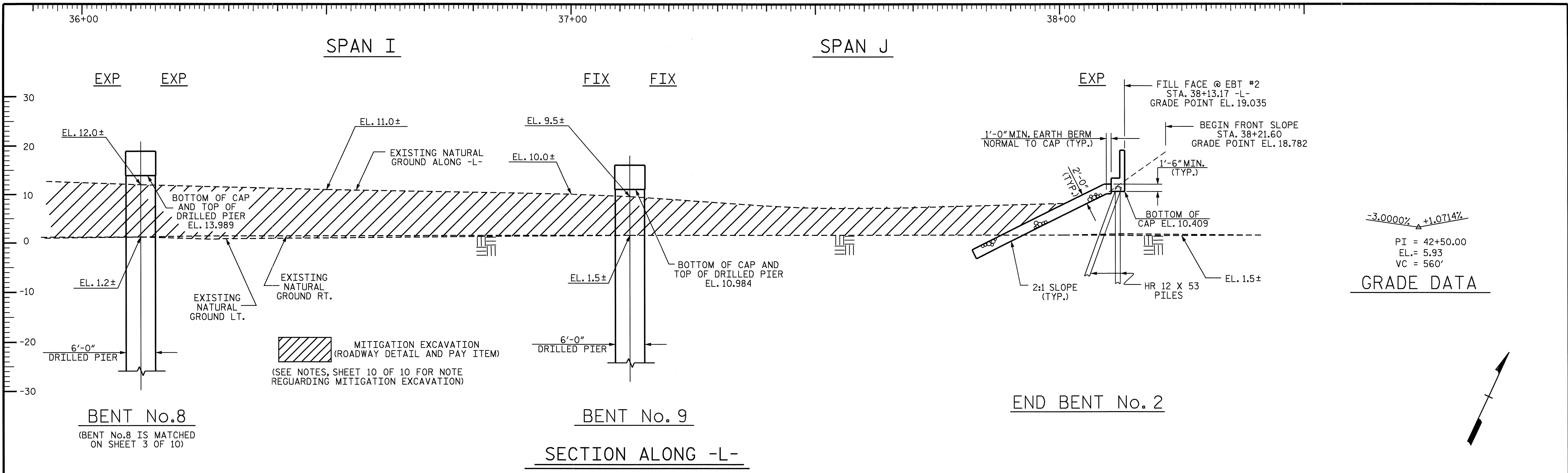
GENERAL DRAWING
 FOR BRIDGE ON NC 210
 OVER NORTHEAST CAPE FEAR
 RIVER BETWEEN SR 1518
 AND SR 1520



REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3	
1			3			TOTAL SHEETS	
2			4			64	

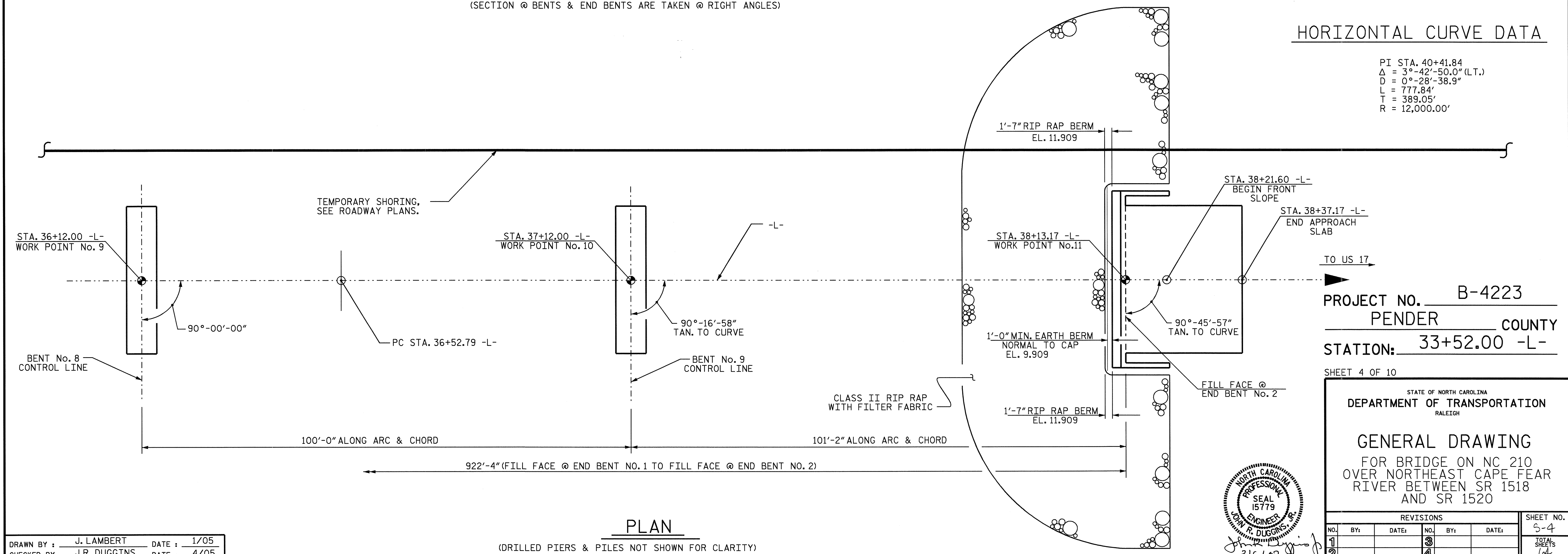
DRAWN BY: J. LAMBERT DATE: 1/05
 CHECKED BY: J.R. DUGGINS DATE: 4/05

PLAN
 (DRILLED PIERS & PILES NOT SHOWN FOR CLARITY)



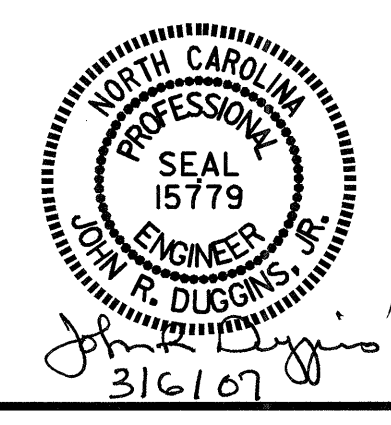
HORIZONTAL CURVE DATA

PI STA. 40+41.84
 $\Delta = 3^\circ-42'-50.0''$ (LT.)
 D = 0°-28'-38.9"
 L = 777.84'
 T = 389.05'
 R = 12,000.00'



DRAWN BY: J. LAMBERT DATE: 1/05
 CHECKED BY: J.R. DUGGINS DATE: 4/05

06-MAR-2007 15:36
 R:\Structures\B4223\J Lambert\Microstation\B4223.sd.GD.01.dgn
 J Lambert



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE ON NC 210
 OVER NORTHEAST CAPE FEAR
 RIVER BETWEEN SR 1518
 AND SR 1520

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			5-4
2			4			64

NCBDS

FOUNDATION NOTES

DRILLED PIERS AT BENT No.1 THROUGH No. 5 ARE DESIGNED FOR BOTH SKIN FRICTION AND END BEARING. CHECK FIELD CONDITIONS FOR THE REQUIRED END BEARING CAPACITY OF 24 TSF.

DRILLED PIERS AT BENT No. 6 THROUGH No. 9 ARE DESIGNED FOR BOTH SKIN FRICTION AND END BEARING. CHECK FIELD CONDITIONS FOR THE REQUIRED END BEARING CAPACITY OF 18 TSF.

DRILLED PIERS AT BENT No.1 THROUGH BENT No. 9 ARE DESIGNED FOR AN APPLIED LOAD OF 337 TONS EACH AT THE TOP OF THE COLUMN.

DRILLED PIERS AT BENT No.1 THROUGH No. 5 MUST EXTEND TO AN ELEVATION NO HIGHER THAN -58 FT. AND SATISFY THE REQUIRED END BEARING CAPACITY.

DRILLED PIERS AT BENT No. 6 THROUGH No. 9 MUST EXTEND TO AN ELEVATION NO HIGHER THAN -48 FT. AND SATISFY THE REQUIRED END BEARING CAPACITY.

FOR DRILLED PIERS, SEE DRILLED PIER SPECIAL PROVISION.

PERMANENT STEEL CASING IS REQUIRED FOR DRILLED PIERS AT BENT No.1 THROUGH BENT No. 6. DO NOT EXTEND THE CASING BELOW ELEVATION -20 FT., -23 FT., -28 FT., -28 FT., -28 FT., & -16 FT. RESPECTIVELY WITHOUT PRIOR APPROVAL FROM THE ENGINEER. SEE DRILLED PIERS SPECIAL PROVISION.

PERMANENT STEEL CASING MAY BE REQUIRED FOR DRILLED PIERS AT BENT No.7 THROUGH BENT No. 9. IF REQUIRED, DO NOT EXTEND THE CASING BELOW ELEVATION -12 FT., -12 FT., & -14 FT. RESPECTIVELY WITHOUT PRIOR APPROVAL FROM THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR PERMANENT STEEL CASING. SEE DRILLED PIERS SPECIAL PROVISION.

SLURRY CONSTRUCTION IS REQUIRED FOR DRILLED PIERS AT BENT No.1 THROUGH BENT No. 9. SEE DRILLED PIERS SPECIAL PROVISION.

THE SCOUR CRITICAL ELEVATION FOR BENT No.1 THROUGH BENT No. 5 IS -28 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

THE SCOUR CRITICAL ELEVATION FOR BENT No.6 THROUGH BENT No. 5 IS -21 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

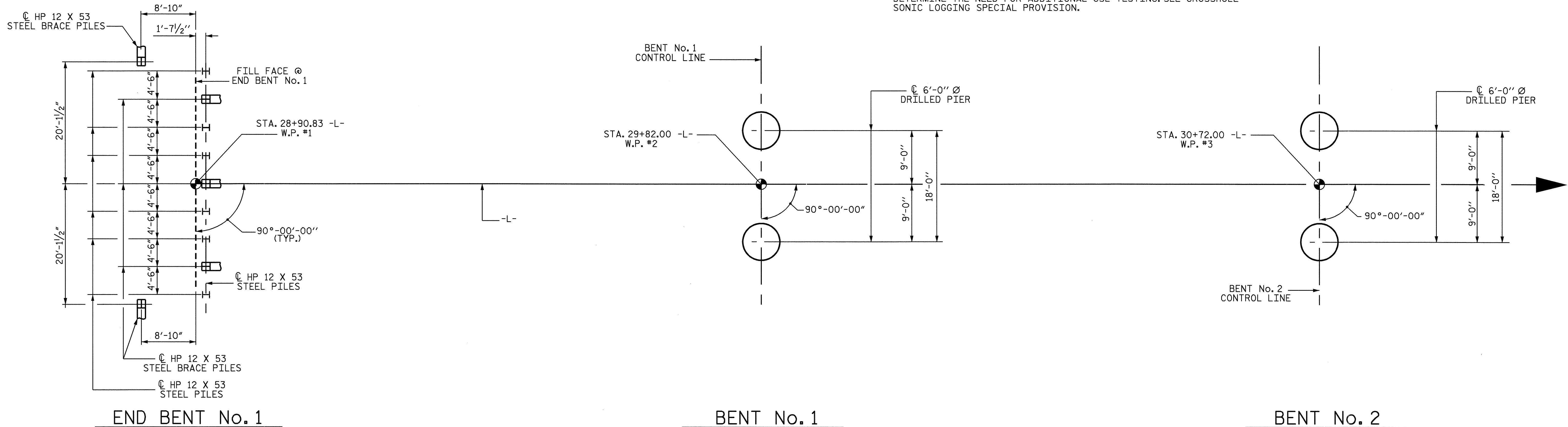
SPT TESTING IS REQUIRED TO DETERMINE THE END BEARING CAPACITY OF THE DRILLED PIERS AT BENT No.1 THROUGH BENT No. 9. SEE DRILLED PIERS SPECIAL PROVISION.

SID INSPECTIONS ARE REQUIRED TO INSPECT THE BOTTOM CLEANLINESS OF THE DRILLED PIERS AT BENT No.1 THROUGH BENT No. 9 (THE ENGINEER WILL DETERMINE THE NEED FOR SID INSPECTIONS.) SEE DRILLED PIERS SPECIAL PROVISION.

DRIVE PILES AT END BENT No.1 AND END BENT No.2 TO A REQUIRED BEARING CAPACITY OF 100 TONS EACH. 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 50 TONS PER PILE.

CSL TUBES ARE REQUIRED FOR THE DRILLED PIERS. A CSL TEST WILL BE PERFORMED ON THE FIRST PRODUCTION DRILLED PIER. NO OTHER DRILLED PIER CONCRETE PLACEMENT WILL BE ALLOWED UNTIL THE DEPARTMENT DETERMINES THAT THE CSL TEST RESULTS OF THE FIRST PRODUCTION DRILLED PIER ARE ACCEPTABLE. THE ENGINEER WILL DETERMINE THE NEED FOR ADDITIONAL CSL TESTING. SEE CROSSHOLE SONIC LOGGING SPECIAL PROVISION.



FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES AND DRILLED PIERS ARE SHOWN TO THE PILE AND DRILLED PIER CENTERLINE AT THE BOTTOM OF CAP.

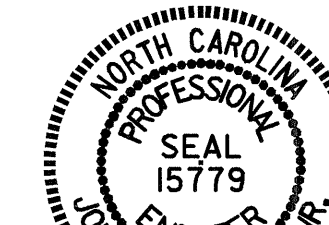
BRACE PILES AT END BENTS ARE BATTERED 3 : 12.

PROJECT NO. B-4223
PENDER COUNTY
 STATION: 33+52.00 -L-

SHEET 5 OF 10

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

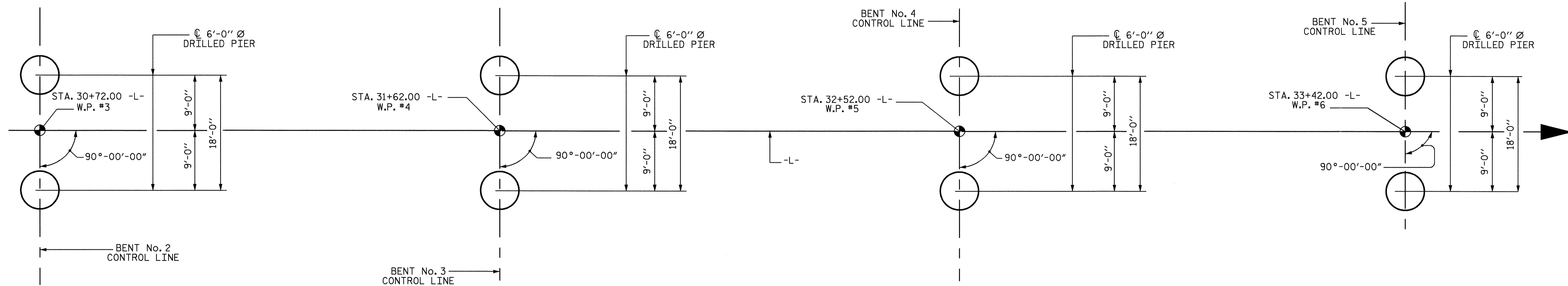
GENERAL DRAWING
 FOR BRIDGE ON NC 210
 OVER NORTHEAST CAPE FEAR RIVER
 BETWEEN SR 1518 AND SR 1520



John R. Duggins
 3/16/06

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			5-5
2			4			64

DRAWN BY: M. POOLE DATE: 01/06
 CHECKED BY: J.R. DUGGINS DATE: 12/06



BENT No. 2

BENT No. 3

BENT No. 4

BENT No. 5

FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES AND DRILLED PIERS ARE SHOWN TO THE PILE AND DRILLED PIER CENTERLINE AT THE BOTTOM OF CAP.

BRACE PILES AT END BENTS ARE BATTERED 3 : 12.

PROJECT NO. B-4223
PENDER COUNTY
 STATION: 33+52.00 -L-

SHEET 6 OF 10

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE ON NC 210
 OVER NORTHEAST CAPE FEAR RIVER
 BETWEEN SR 1518 AND SR 1520

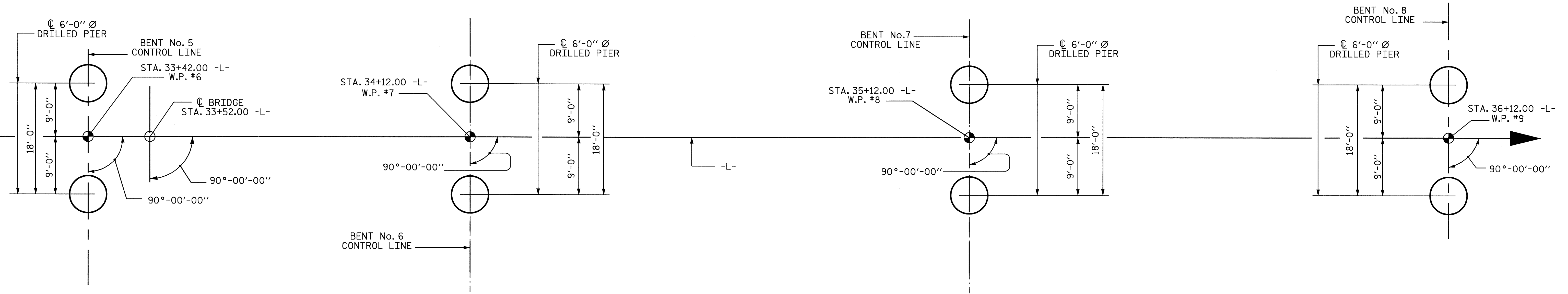


DRAWN BY : M. POOLE DATE : 01/06
 CHECKED BY : J.R. DUGGINS DATE : 12/06

13-FEB-2007 10:03
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 mpoole

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

TOTAL SHEETS: 64



BENT No. 5

BENT No. 6

BENT No. 7

BENT No. 8

FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES AND DRILLED PIERS ARE SHOWN TO THE PILE AND DRILLED PIER CENTERLINE AT THE BOTTOM OF CAP.

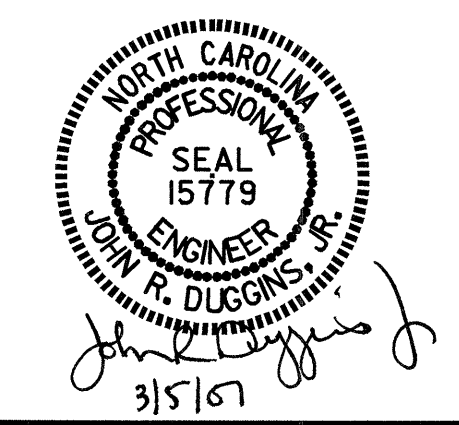
BRACE PILES AT END BENTS ARE BATTERED 3 : 12.

PROJECT NO. B-4223
PENDER COUNTY
 STATION: 33+52.00 -L-

SHEET 7 OF 10

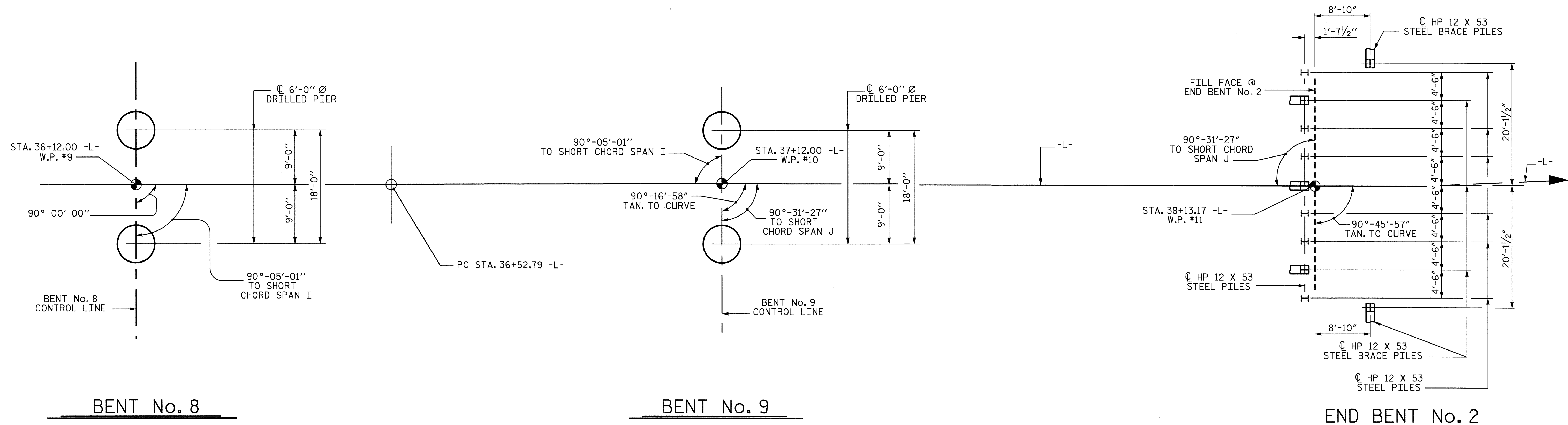
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE ON NC 210
 OVER NORTHEAST CAPE FEAR RIVER
 BETWEEN SR 1518 AND SR 1520



DRAWN BY: M. POOLE DATE: 01/06
 CHECKED BY: J.R. DUGGINS DATE: 12/06

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			64



BENT No. 8

BENT No. 9

END BENT No. 2

FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES AND DRILLED PIERS ARE SHOWN TO THE PILE AND DRILLED PIER CENTERLINE AT THE BOTTOM OF CAP.

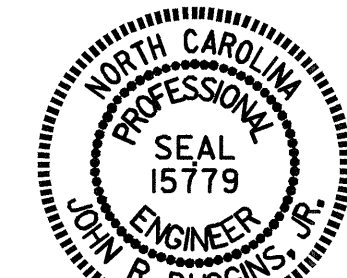
BRACE PILES AT END BENTS ARE BATTERED 3 : 12.

PROJECT NO. B-4223
PENDER COUNTY
 STATION: 33+52.00 -L-

SHEET 8 OF 10

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE ON NC 210
 OVER NORTHEAST CAPE FEAR RIVER
 BETWEEN SR 1518 AND SR 1520

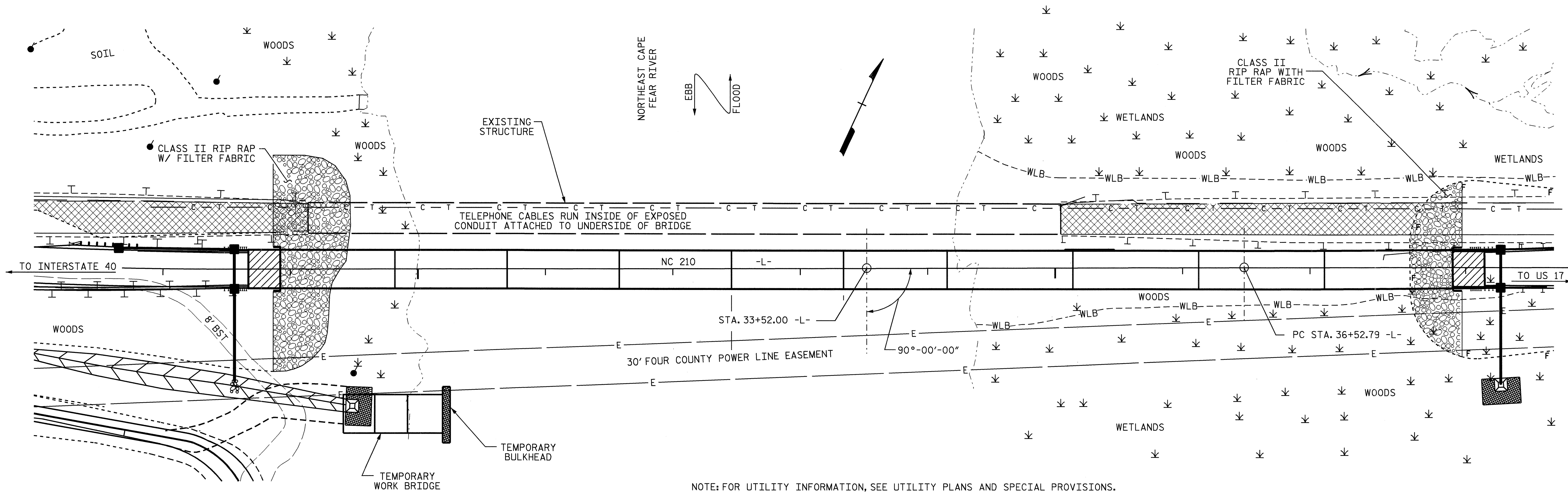


DRAWN BY: M. POOLE DATE: 01/06
 CHECKED BY: J.R. DUGGINS DATE: 12/06

06-MAR-2007 09:45
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 mpoole

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			3-8
2			4			64

BM #1 : R.R. SPIKE SET IN BASE OF 18" OAK TREE AT -BL- STA. 26+57.12 -L-, 187.41' LT., EL. 7.54 FT.



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

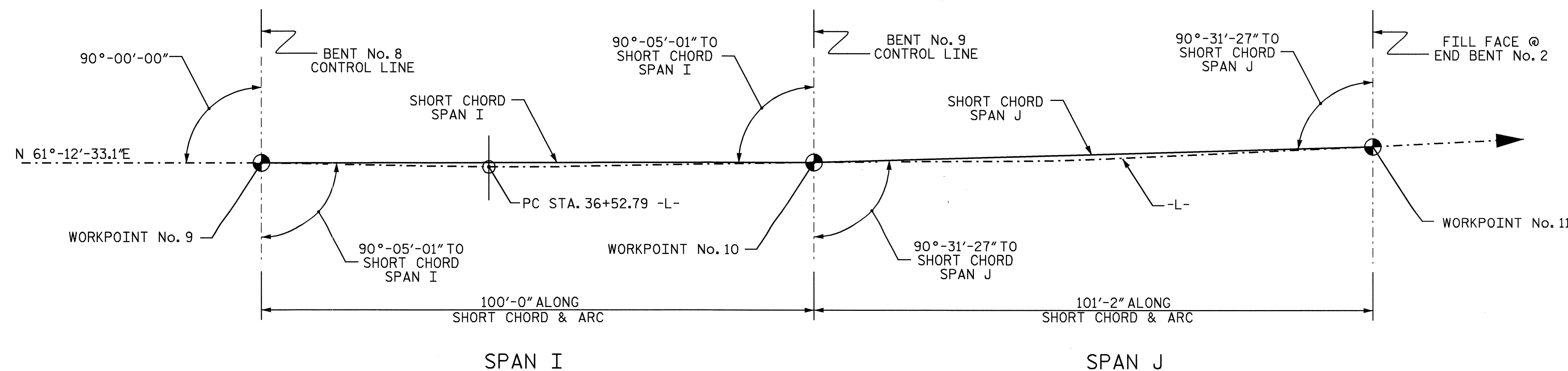
LOCATION SKETCH

HYDRAULIC DATA

DESIGN DISCHARGE	= 24000 c.f.s.
FREQUENCY OF DESIGN FLOOD	= 50 YRS.
DESIGN HIGH WATER ELEVATION	= 5.4 FT.
DRAINAGE AREA	= 1326 sq. ml.
BASIC DISCHARGE (Q100)	= 2700 c.f.s.
BASIC HIGH WATER ELEVATION	= 6.5 FT.

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	= 32300 c.f.s.
FREQUENCY OF OVERTOPPING FLOOD	= 200 +/- YR.
* OVERTOPPING FLOOD ELEVATION	= 8.1 FT.
* OVERTOPPING OCCURS AT ROADWAY STA. 42+82.600 -L- +/- AT ROADWAY SAG.	



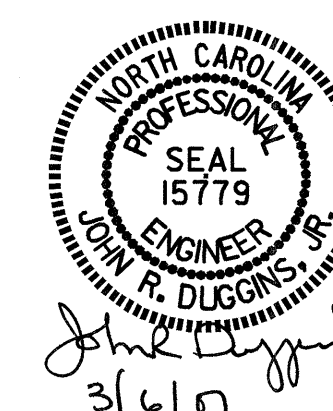
SHORT CHORD LAYOUT SPANS I AND J

PROJECT NO. B-4223
 PENDER COUNTY
 STATION: 33+52.00 -L-

SHEET 9 OF 10

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE ON NC 210
 OVER NORTHEAST CAPE FEAR
 RIVER BETWEEN SR 1518
 AND SR 1520



DRAWN BY : J. LAMBERT DATE : 1/05
 CHECKED BY : J.R. DUGGINS DATE : 4/05

REVISIONS						TOTAL SHEETS
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			9
2			4			64

TOTAL BILL OF MATERIAL

	CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS	REMOVAL OF EXISTING STRUCTURE	6'-0" Ø DRILLED PIERS	PERMANENT STEEL CASING FOR 6'-0" Ø DRILLED PIERS	SID INSPECTION	SPT TESTING	CROSSHOLE SONIC LOGGING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	54" PRESTRESSED CONCRETE GIRDERS	HP 12 X 53 STEEL PILES	TWO BAR METAL RAIL	1'-2" X 2'-6" CONCRETE PARAPET	RIP RAP CLASS II 2'-0" THICK	FILTER FABRIC FOR DRAINAGE	ELASTOMERIC BEARINGS	EVAZOTE JOINT SEALS	STRUCTURE DRAINAGE SYSTEM		
	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	EACH	EACH	EACH	SQ. FT.	SQ. FT.	CU.YD.	LUMP SUM	LBS.	LBS.	NO.	LIN. FT.	NO.	LIN. FT.	LIN. FT.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	LUMP SUM	LUMP SUM
SUPERSTRUCTURE	LUMP SUM	LUMP SUM						29,985	26,064		LUMP SUM			40	3653.33			1,825.33	1,840.33			LUMP SUM	LUMP SUM	LUMP SUM
END BENT 1										27.8		4,097			11	385				720	798			
BENT 1			120.00	44.00	2	2				60.8		24,343	6,260											
BENT 2			134.00	64.00	2	2				51.4		24,752	6,357											
BENT 3			134.00	74.00	2	2				53.0		24,927	6,443											
BENT 4			134.00	74.00	2	2				53.4		24,985	6,465											
BENT 5			134.00	74.00	2	2				52.6		24,868	6,422											
BENT 6			114.00	50.00	2	2				51.0		22,355	5,531											
BENT 7			129.58	57.58	2	2				33.8		20,135	5,298											
BENT 8			123.98	51.98	2	2				33.8		19,472	5,096											
BENT 9			117.96	49.96	2	2				33.8		18,771	4,828											
END BENT 2										27.8		4,097			11	330				300	332			
TOTAL	LUMP SUM	LUMP SUM	1,141.52	539.52	18	18	6	29,985	26,064	479.2	LUMP SUM	212,802	52,700	40	3653.33	22	715	1,825.33	1,840.33	1,020	1,130	LUMP SUM	LUMP SUM	LUMP SUM

NOTES

ASSUMED LIVE LOAD = HS 20 OR ALTERNATE LOADING EXCEPT THAT THE GIRDERS 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.

PRESTRESSED CONCRETE DECK PANELS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.

THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS AT BENT NO. 1 IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.

THE EXISTING STRUCTURE CONSISTING OF 13 SPANS, 6 @ 45', 1 @ 50', AND 6 @ 45', WITH REINFORCED CONCRETE DECK ON I-BEAMS AND A CLEAR ROADWAY WIDTH OF 24' ON A SUBSTRUCTURE CONSISTING OF REINFORCED CONCRETE CAPS ON STEEL H-PILES. END BENTS AND BENTS AND LOCATED 40'+/- UPSTREAM FROM 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, THE 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 MITIGATION EXCAVATION SHALL BE PERFORMED AS DIRECTED BY THE ENGINEER, EXCAVATION TO THE FINAL ELEVATION SHALL NOT OCCUR UNTIL CONSTRUCTION ACCESS TO THE EXCAVATED AREA IS NO LONGER REQUIRED. FOR MITIGATION EXCAVATION, SEE ROADWAY PLANS AND PAY ITEM.

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 SECURING VESSELS, SEE SPECIAL PROVISIONS.

FOR LIMITS OF TEMPORARY SHORING, SEE TRAFFIC CONTROL PLANS. FOR TEMPORARY SHORING PAY ITEM, SEE ROADWAY PLANS.

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."

NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR HIGH STRENGTH BOLTS, SEE SPECIAL PROVISIONS.

THE TEMPORARY BULKHEAD SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR "CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY ACCESS".

PROJECT NO. B-4223

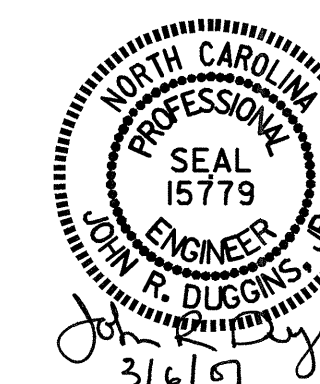
PENDER COUNTY

STATION: 33+52.00 -L-

SHEET 10 OF 10

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON NC 210
OVER NORTHEAST CAPE FEAR
RIVER BETWEEN SR 1518
AND SR 1520

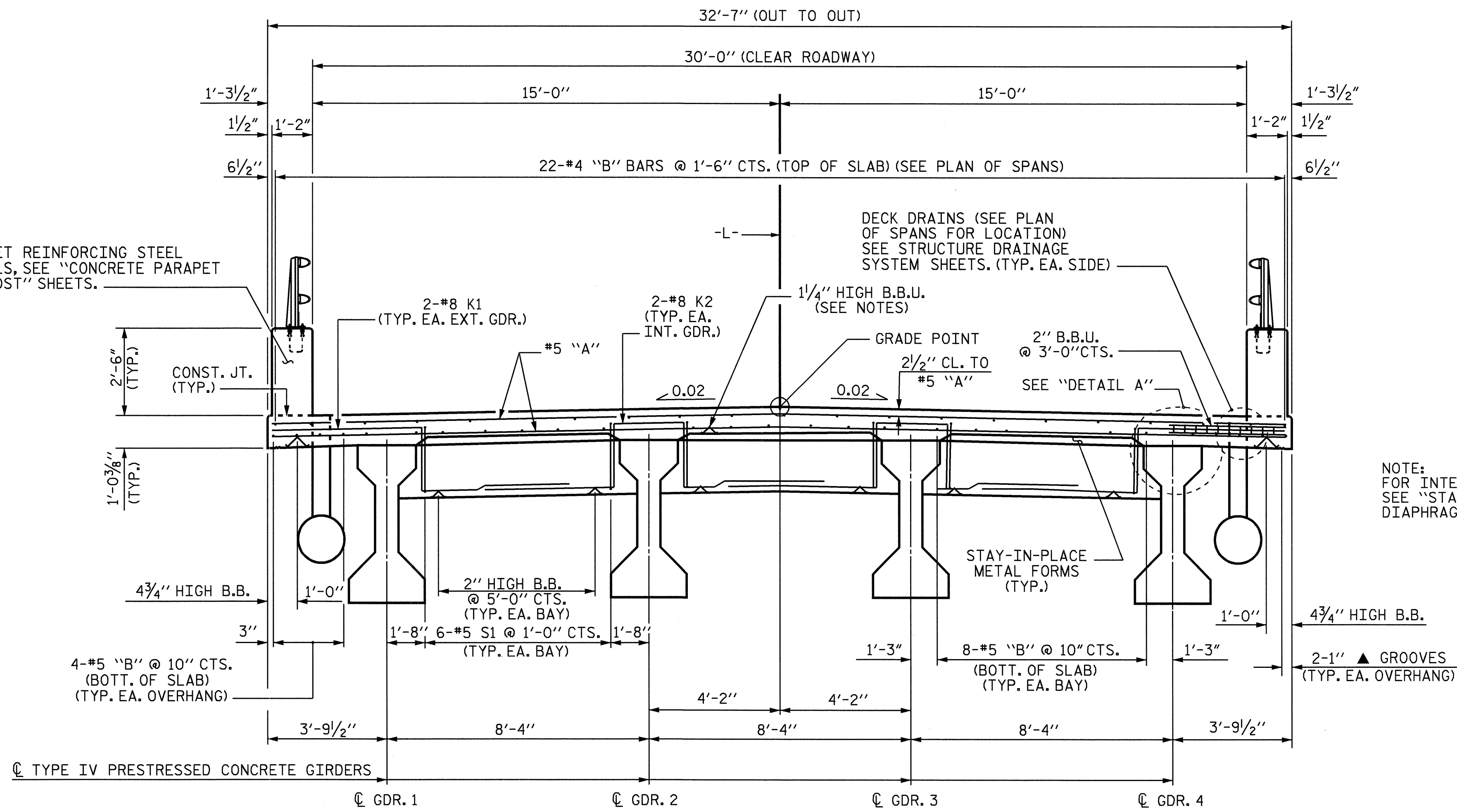


REVISIONS

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

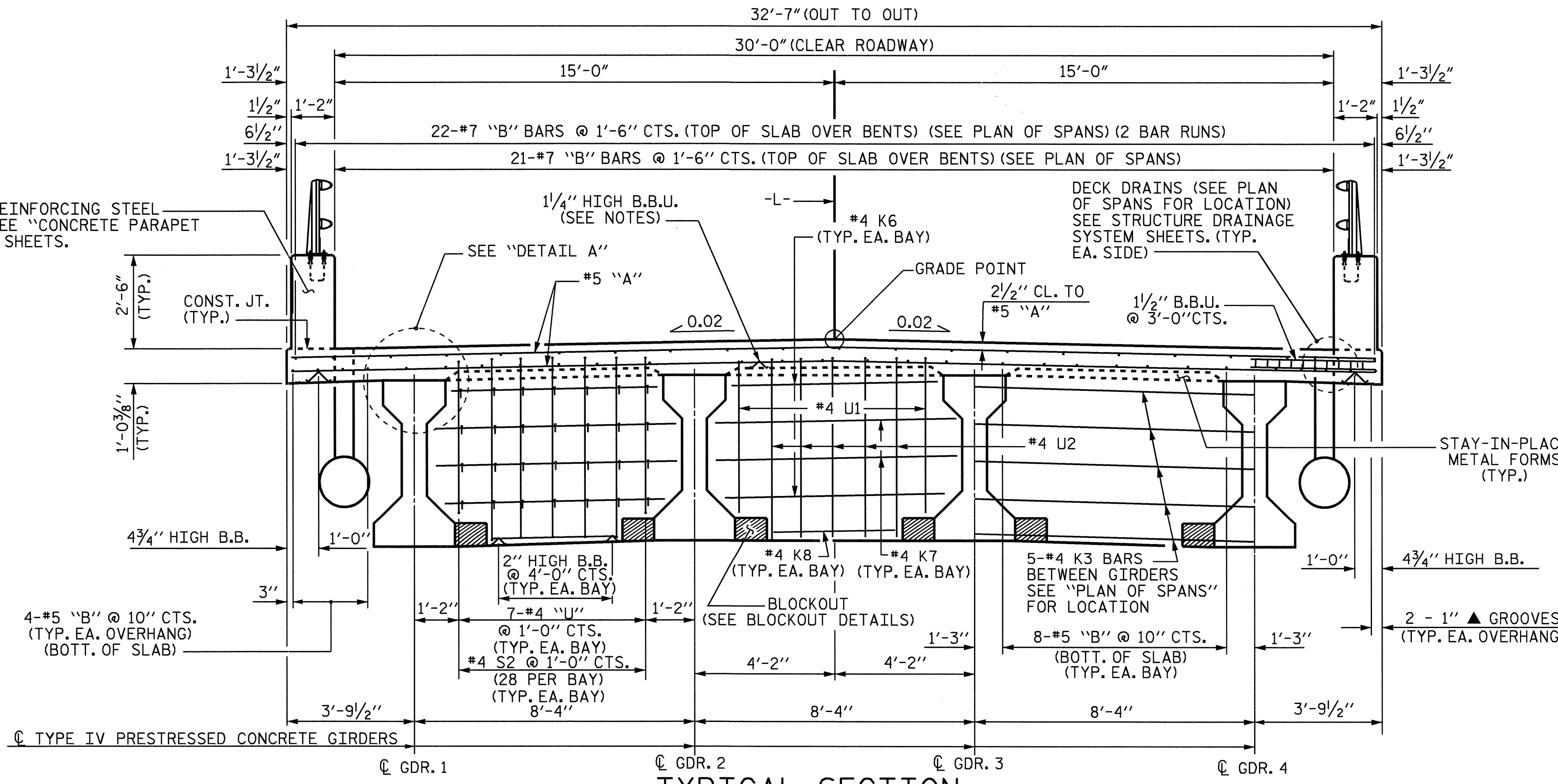
SHEET NO.
3-10
TOTAL SHEETS
64

DRAWN BY : J. LAMBERT DATE : 1/07
CHECKED BY : J. R. DUGGINS DATE : 1/07



TYPICAL SECTION

(SHOWING END BENT & BENTS 2, 4, 6, & 8 DIAPHRAGMS)



TYPICAL SECTION

(SHOWING BENTS 1, 3, 5, 7, & 9 DIAPHRAGMS)

NOTES

PROVIDE 1/4" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF 'A' BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF 'A' BARS A CLEAR DISTANCE OF 2 1/2" ABOVE THE TOP OF THE REMOVABLE FORM.

LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS.

#5 "G" BAR MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO CLEAR REINFORCING STEEL AND STIRRUPS.

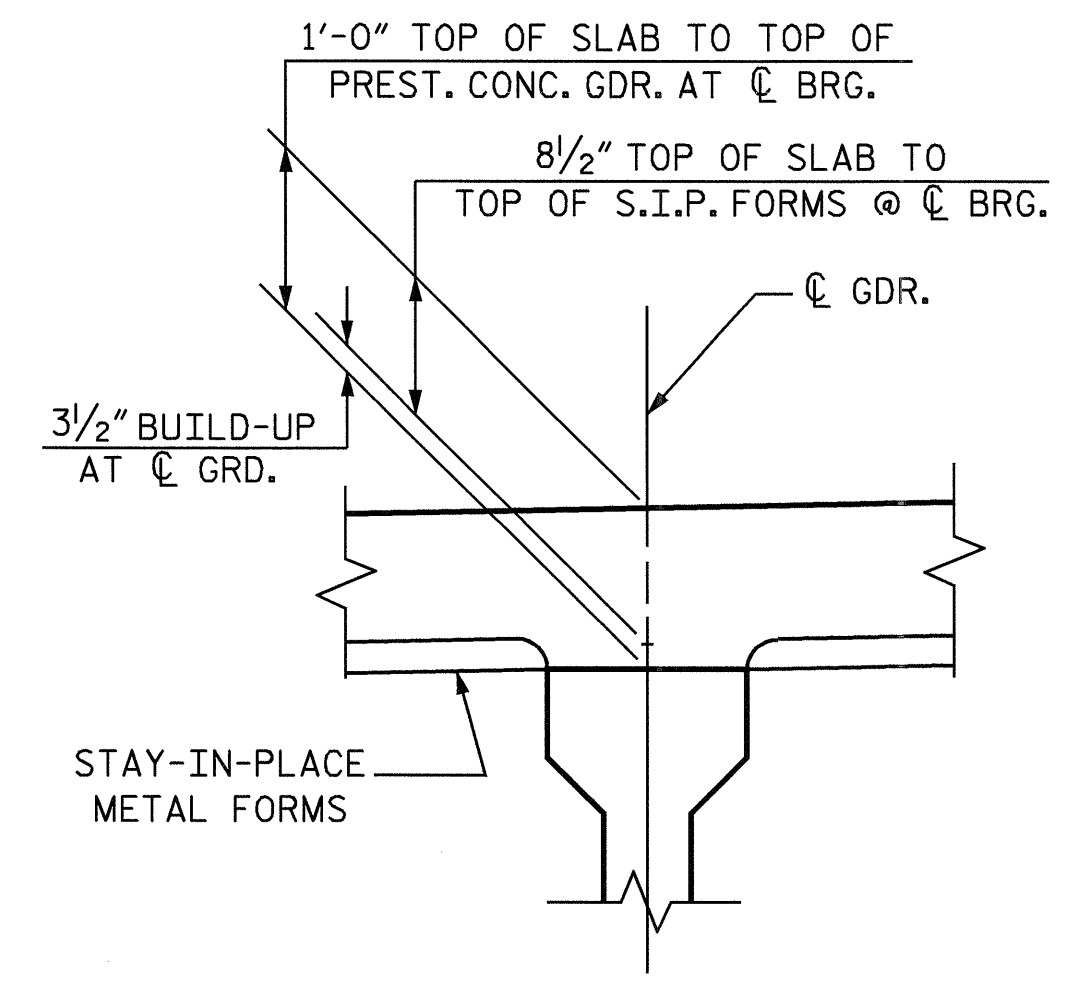
ALL REINFORCING STEEL IN PARAPET SHALL BE EPOXY COATED.

PARAPET IN A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

PREVIOUSLY CAST CONCRETE IN A CONTINUOUS UNIT SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE UNIT.

PRESTRESSED CONCRETE DECK PANELS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.

NOTE: FOR INTERMEDIATE DIAPHRAGMS, SEE "STANDARD INTERMEDIATE DIAPHRAGMS" SHEET.



DETAIL A

DRAWN BY: M. POOLE DATE: 03/05
CHECKED BY: D. HODGE DATE: 07/05

06-FEB-2007 10:40
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m\poole

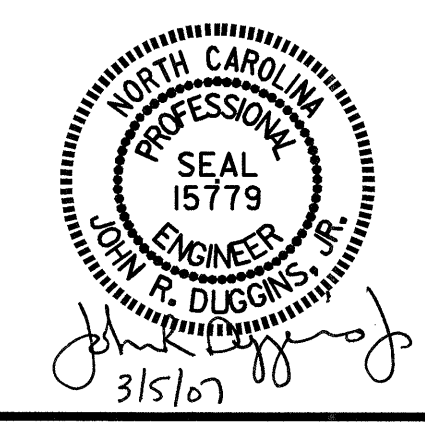
PROJECT NO. B-4223
PENDER COUNTY
STATION: 33+52.00 -L-

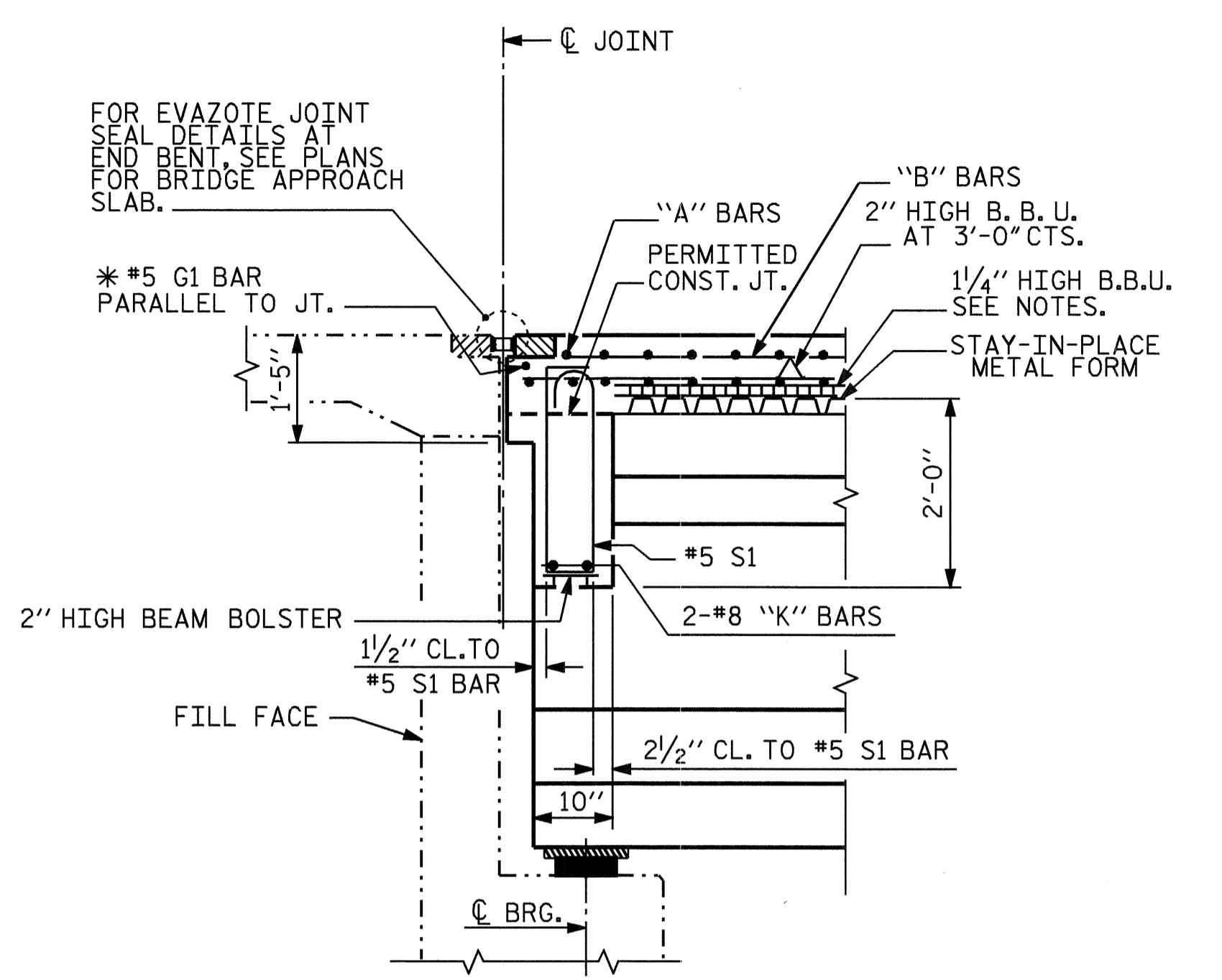
SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

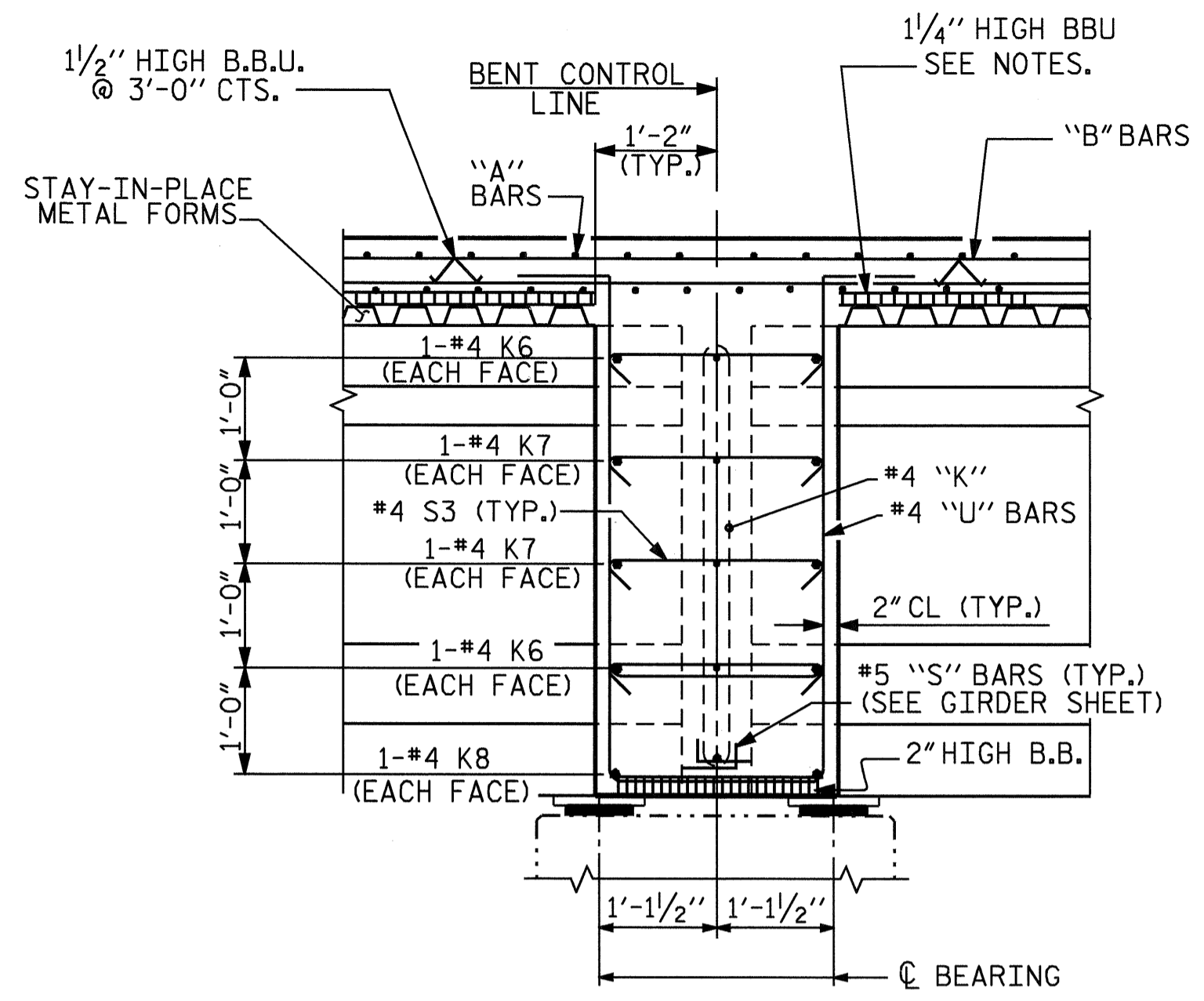
**SUPERSTRUCTURE
TYPICAL SECTION**

REVISIONS						SHEET NO. 5-11
NO.	BY:	DATE:	NO.	BY:	DATE:	
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2			4			6A

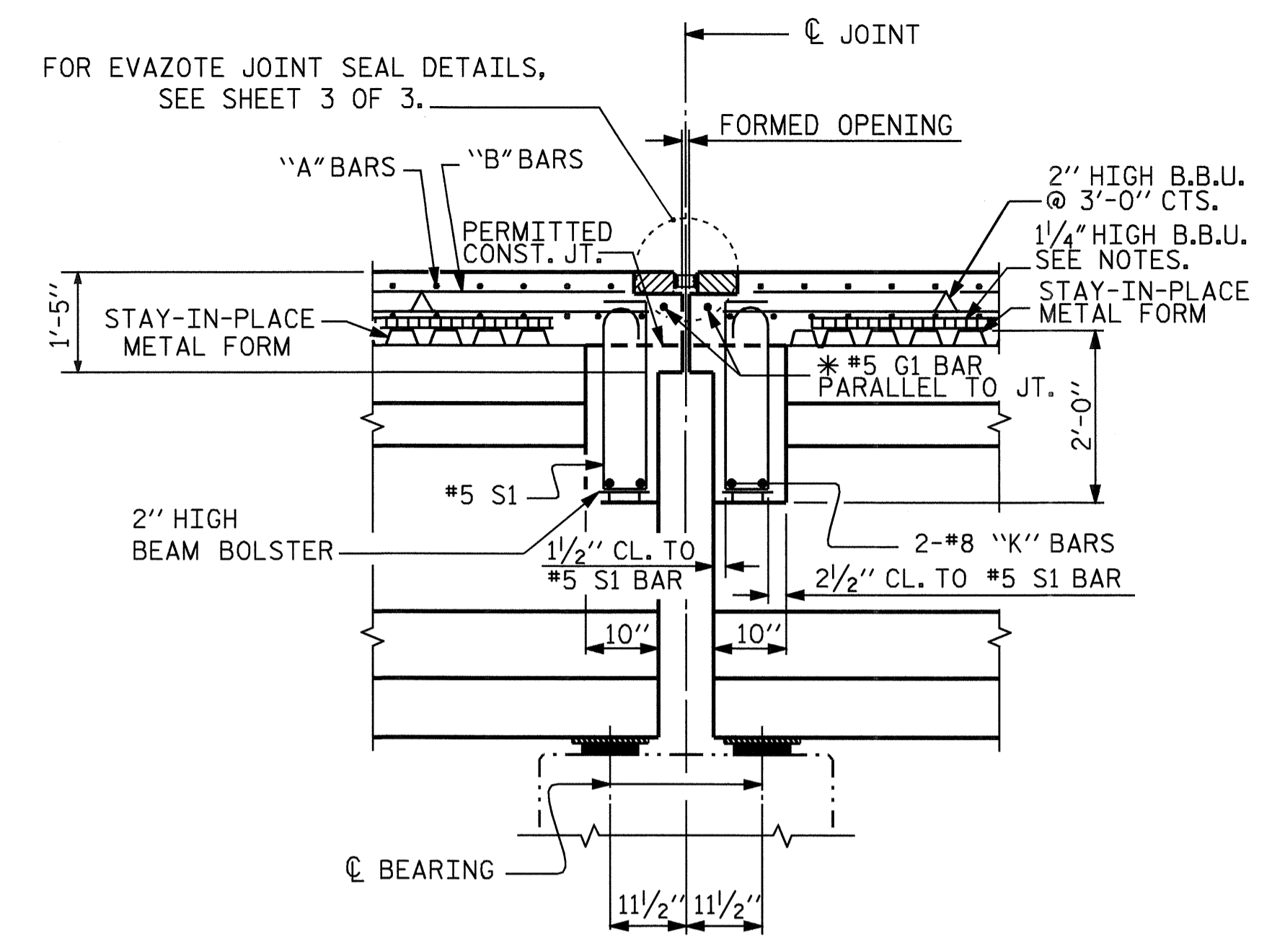




SECTION THRU END BENT DIAPHRAGM

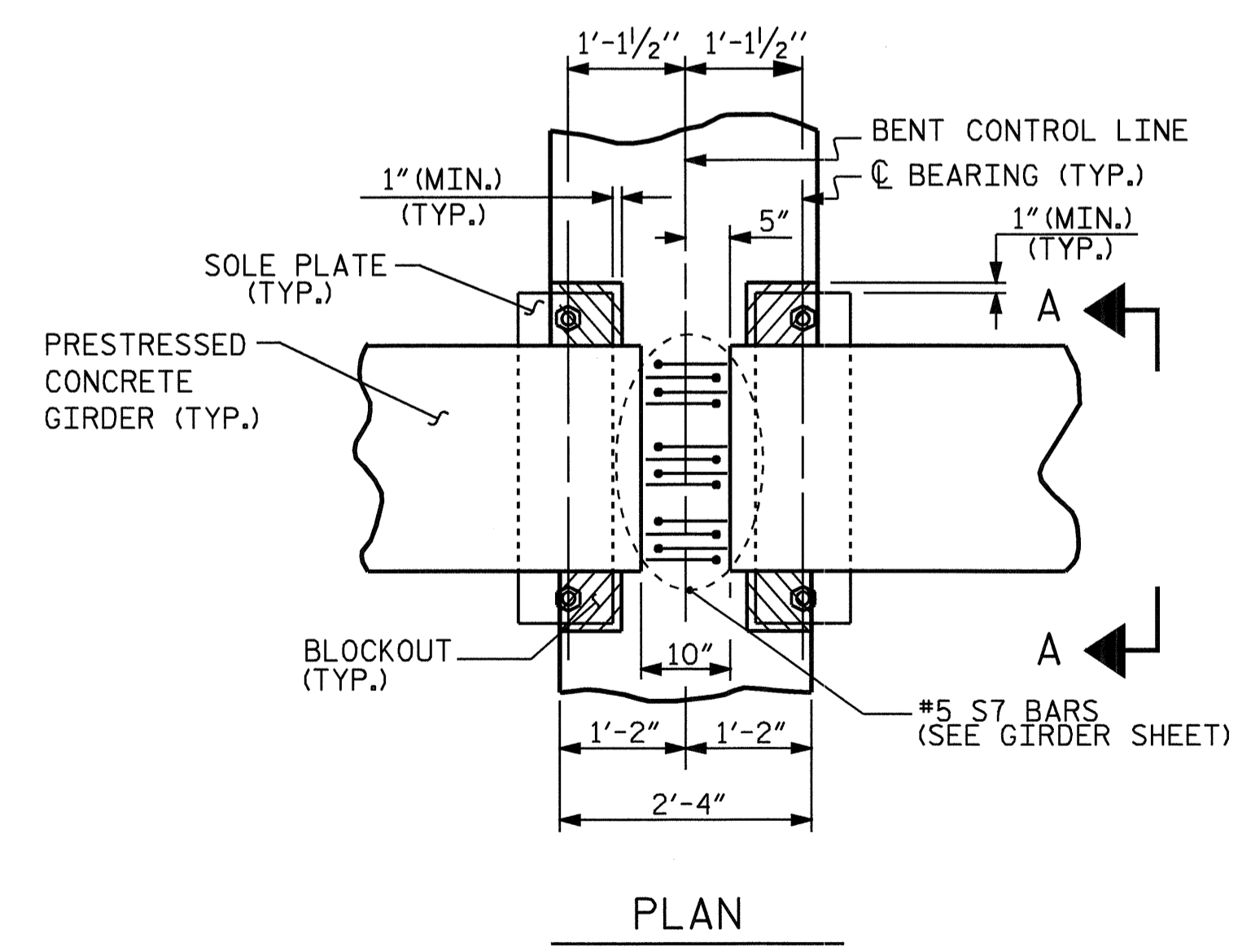


SECTION THRU CONTINUOUS BENT DIAPHRAGM
(BENTS 1, 3, 5, 7, & 9)



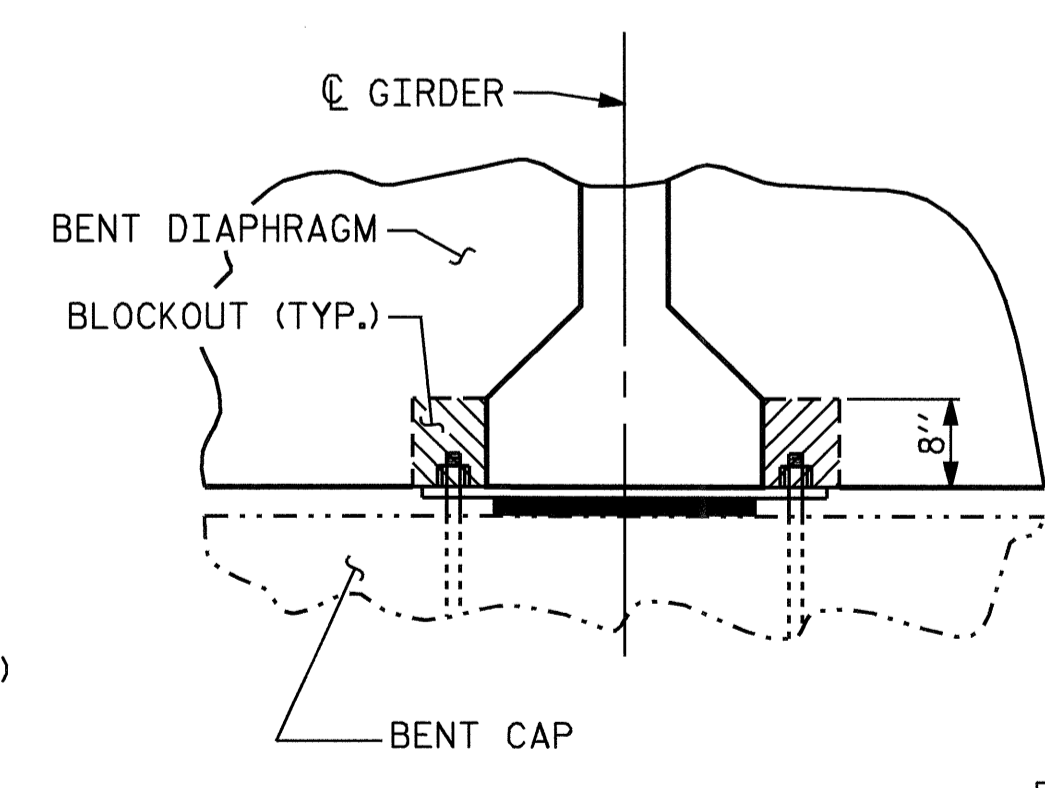
SECTION THRU BENT DIAPHRAGM
(BENTS 2, 4, 6, & 8)

* #5G1 BAR MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO CLEAR REINFORCING STEEL AND STIRRUPS.

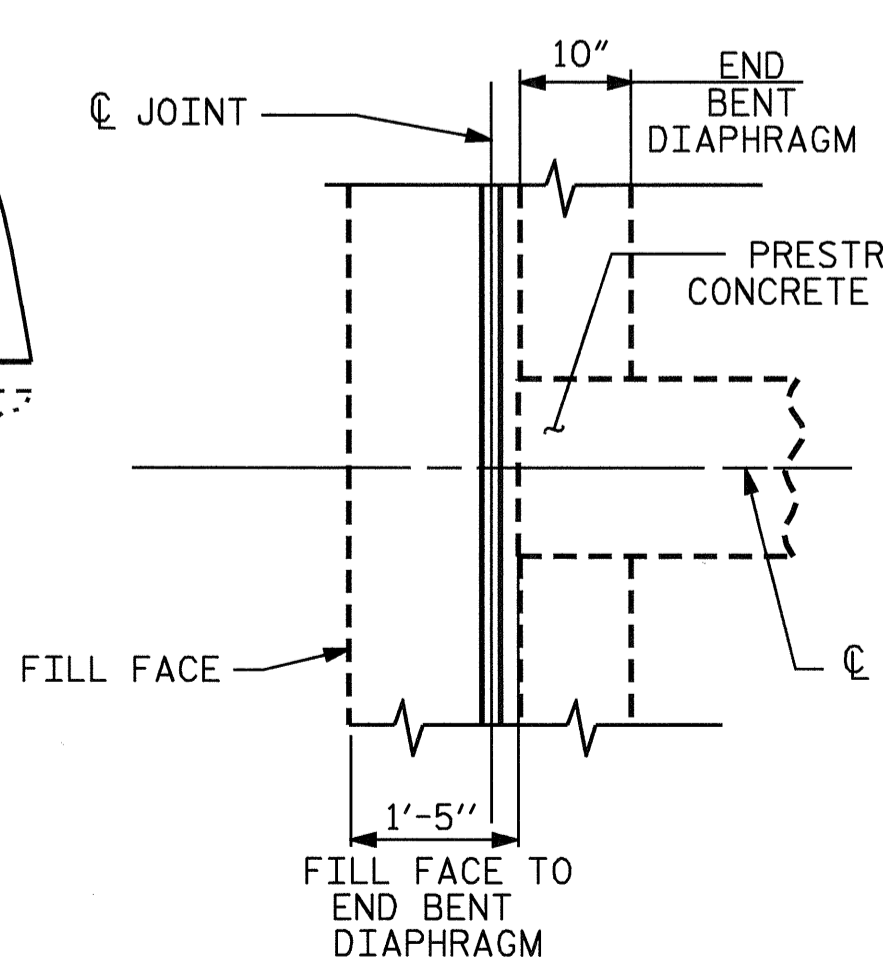


CONTINUOUS BENT DIAPHRAGM BLOCKOUT DETAIL

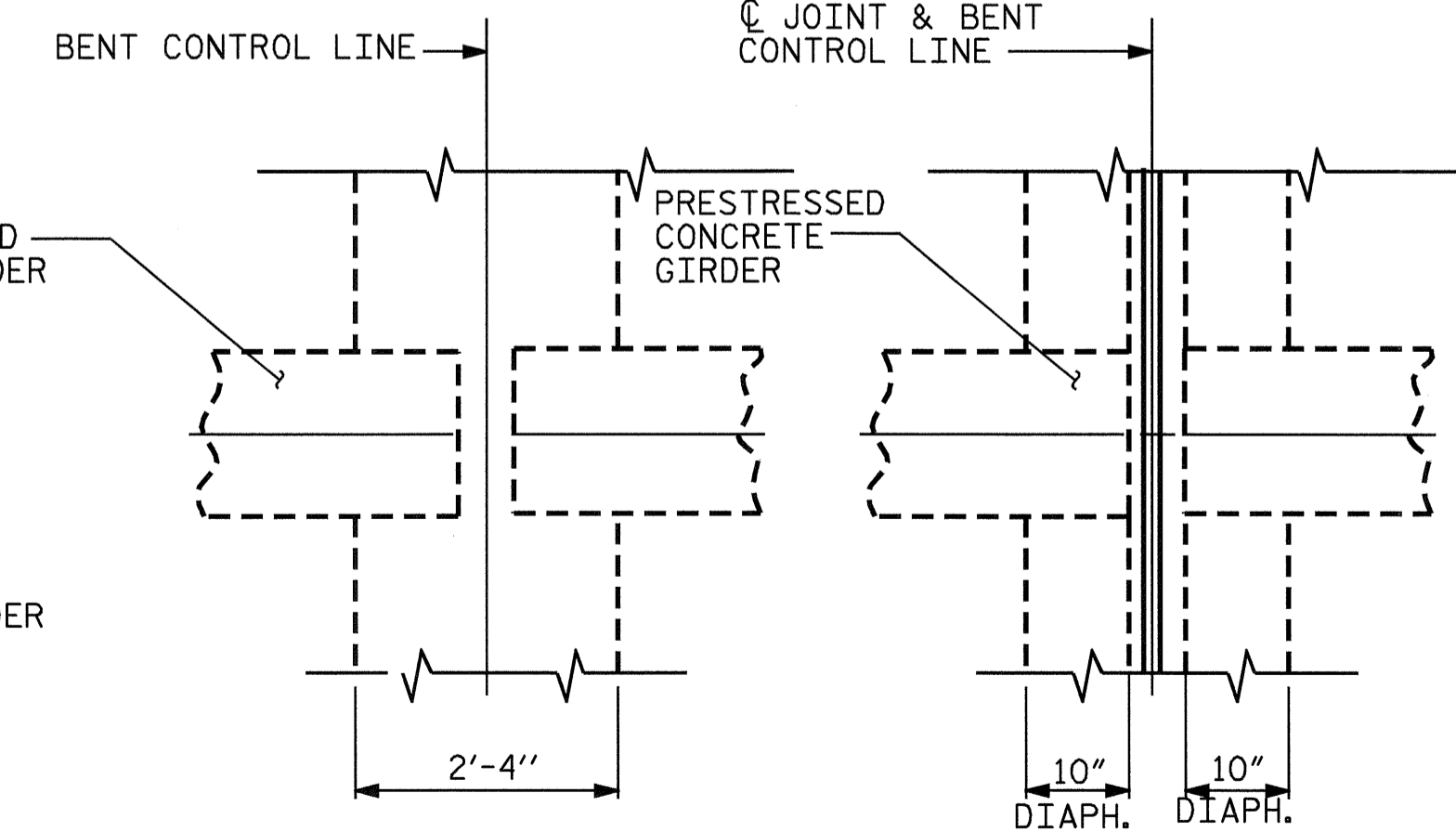
(BENTS 1, 3, 5, 7, & 9)



SECTION A-A

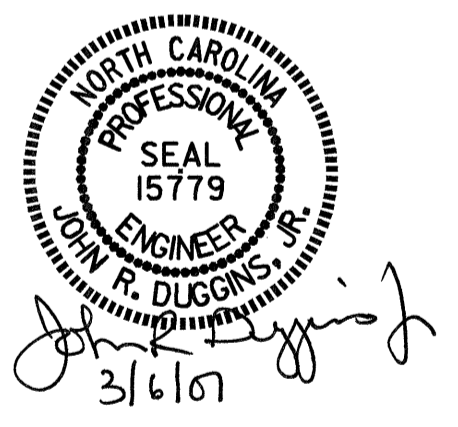


END BENT DIAPHRAGM



CONTINUOUS BENT DIAPHRAGM
(BENTS 1, 3, 5, 7 & 9)

BENT DIAPHRAGM
(BENTS 2, 4, 6, & 8)



PROJECT NO. B-4223
PENDER COUNTY
 STATION: 33+52.00 -L-

SHEET 2 OF 3

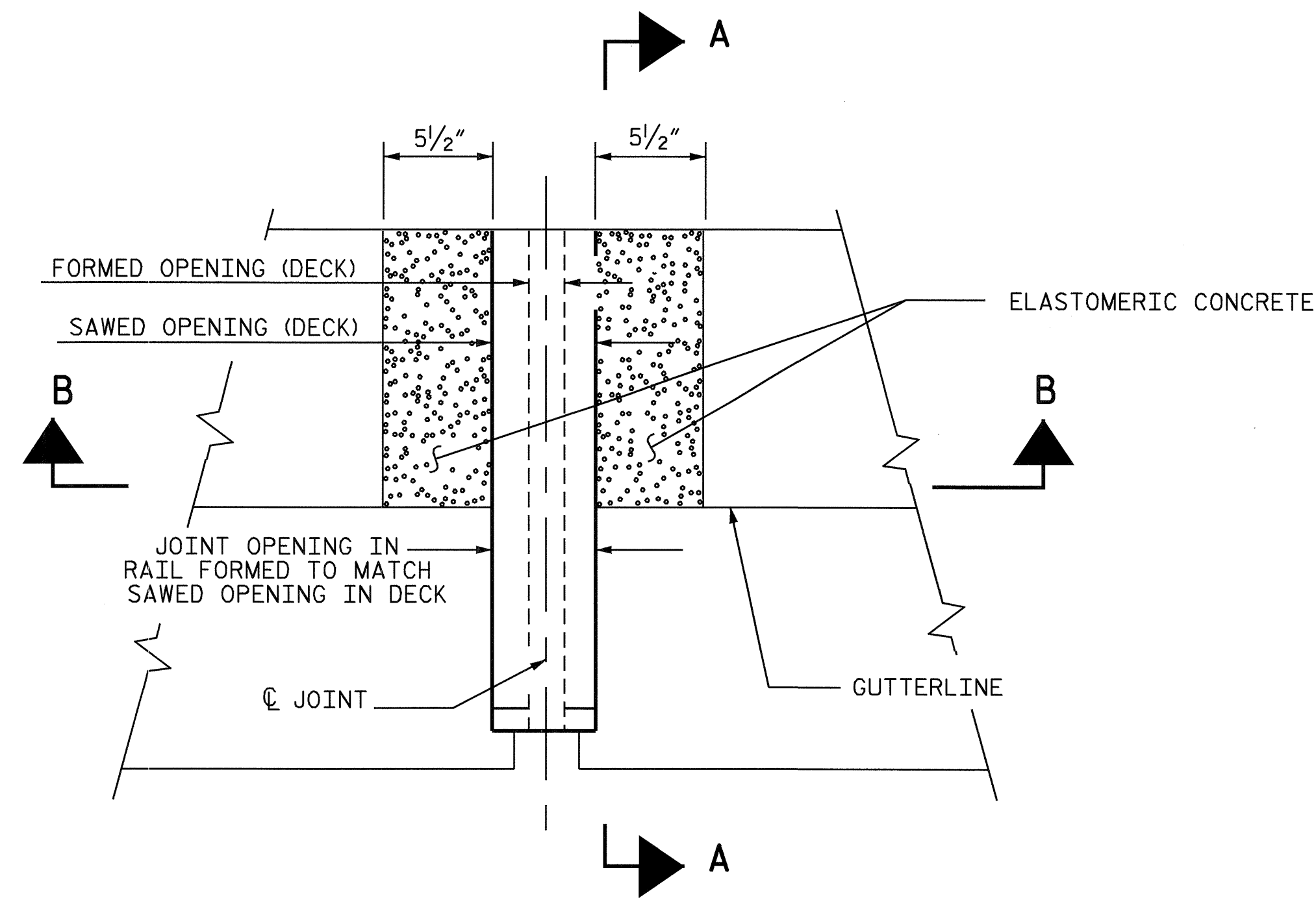
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 TYPICAL SECTION**

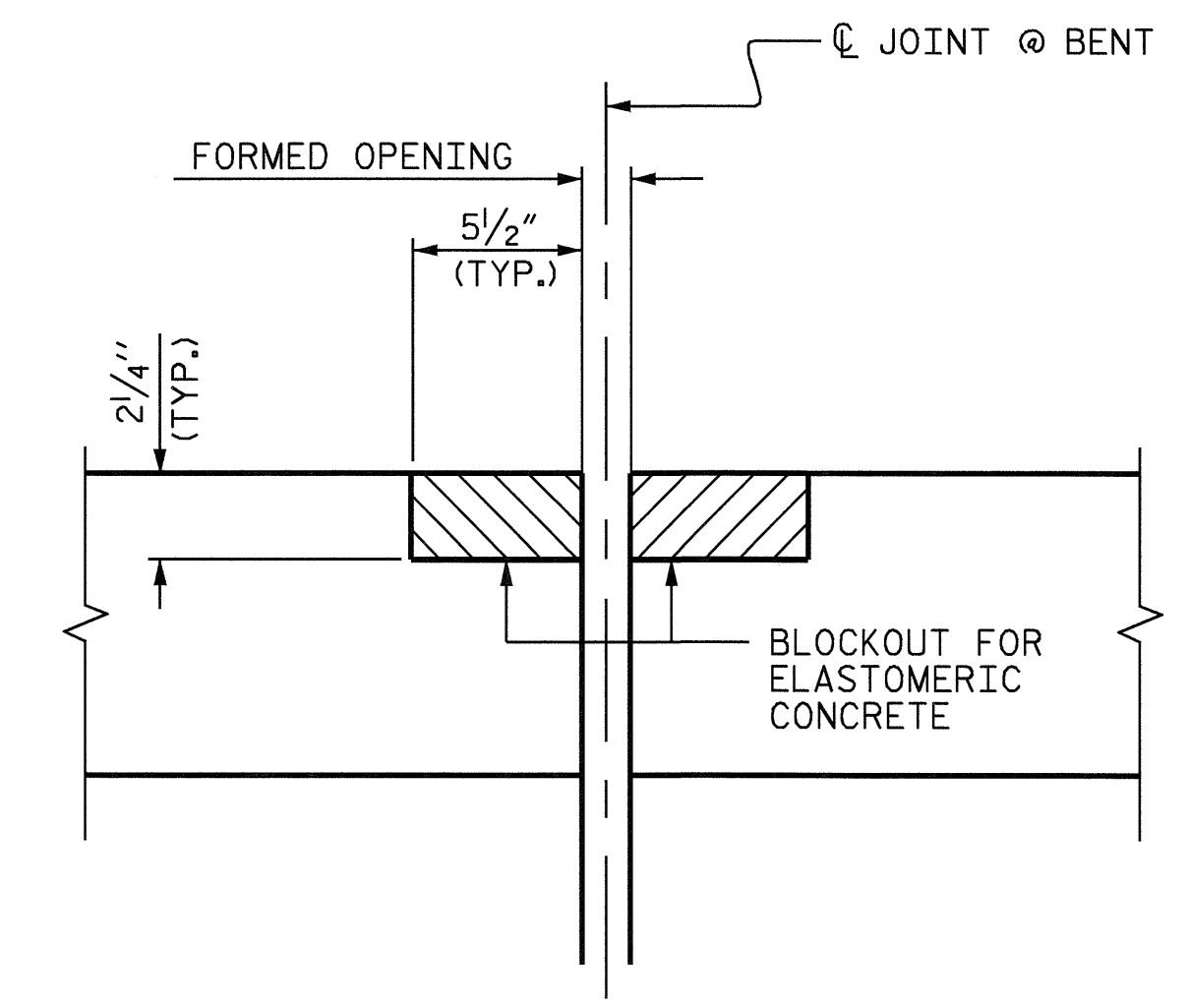
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 dahodge

REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			CA



PLAN

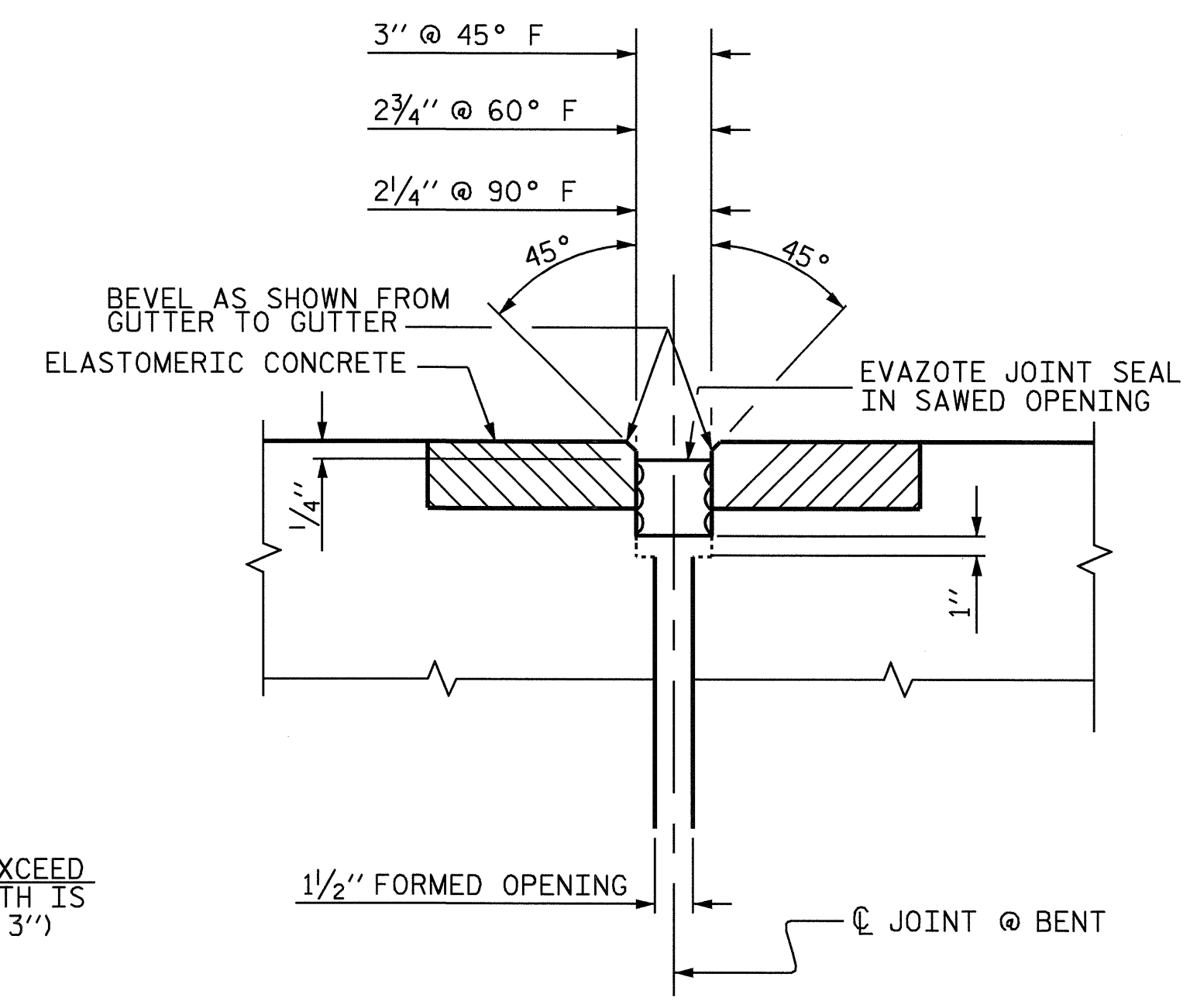


SECTION B-B

EVAZOTE JOINT SEAL (PRE-SAWED ELASTOMERIC CONCRETE DIMENSIONS)

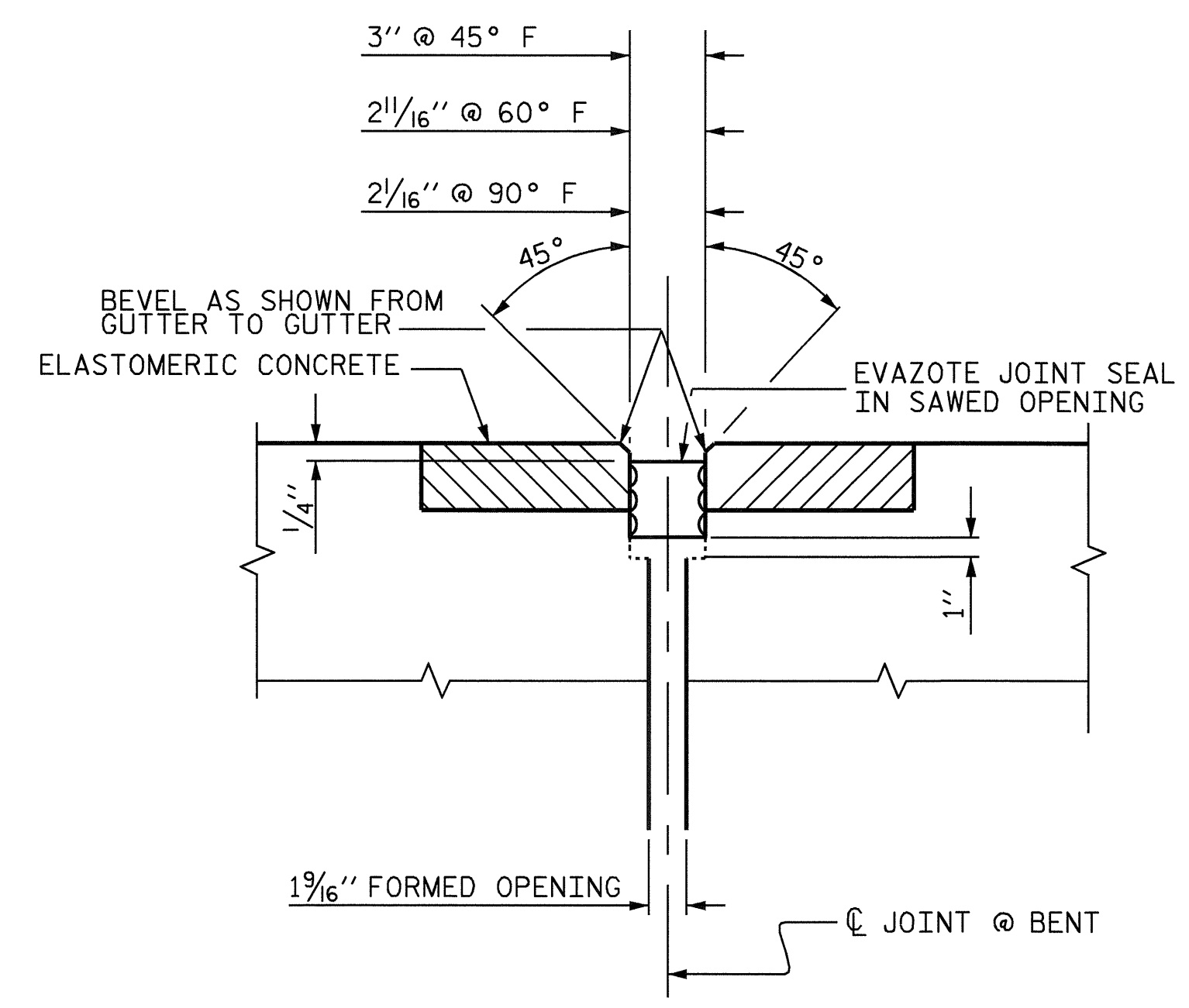
NOTES

THE JOINT SHALL BE SAWED PRIOR TO THE CASTING OF THE PARAPET.
FOR EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS.
FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.
THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE EVAZOTE JOINT SEAL SHALL BE 3/16"



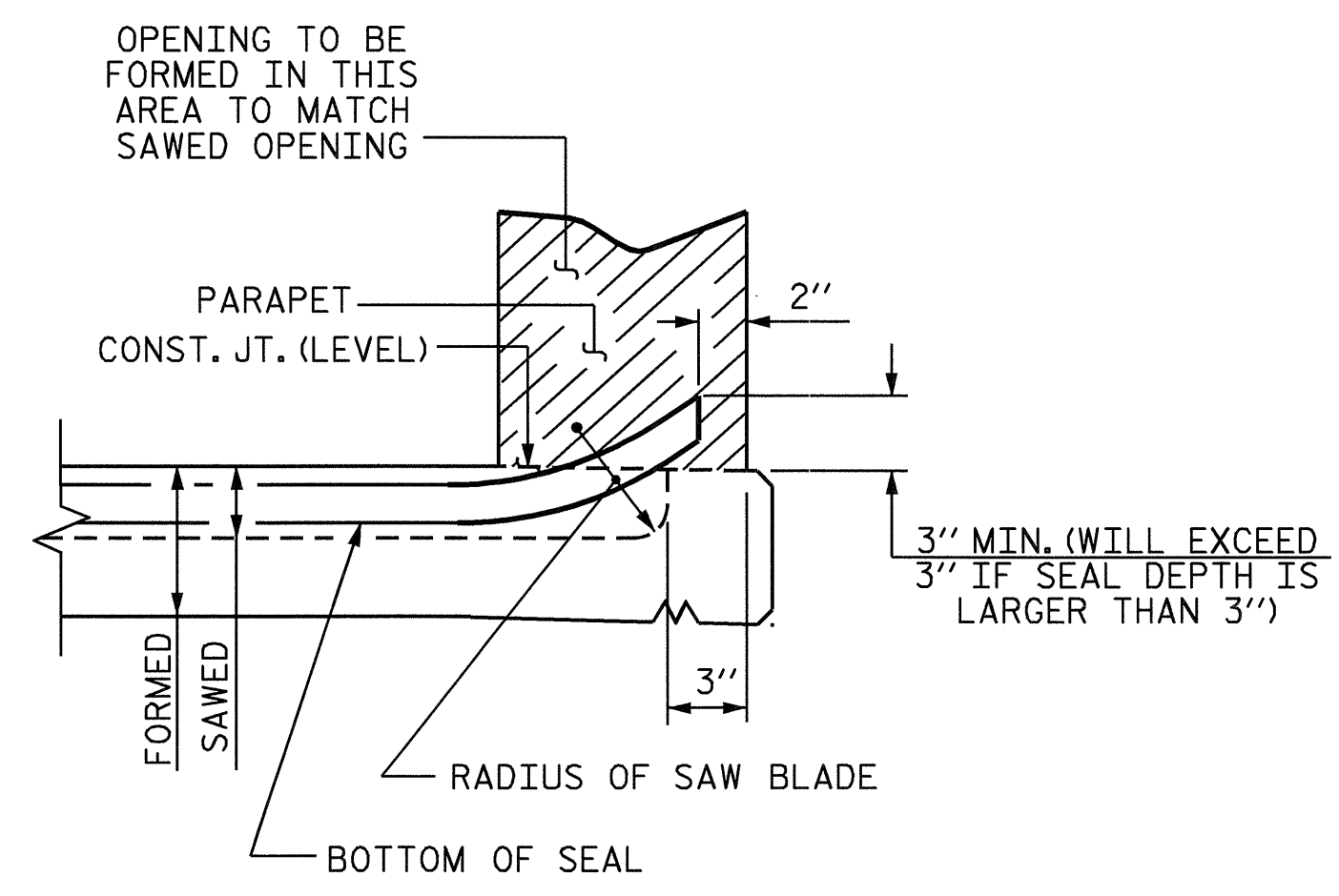
SECTION B-B

EVAZOTE JOINT SEAL (FOR EVAZOTE JOINT SEAL, SEE SPECIAL PROVISIONS)
(BENTS 2, 4 & 6)



SECTION B-B

EVAZOTE JOINT SEAL (FOR EVAZOTE JOINT SEAL, SEE SPECIAL PROVISIONS)
(BENT 8)



SECTION A-A

ELASTOMERIC CONCRETE	
BENT No.	ELASTOMERIC CONCRETE * (CU. FT.)
2	5.2
4	5.2
6	5.2
8	5.2
TOTAL	20.8

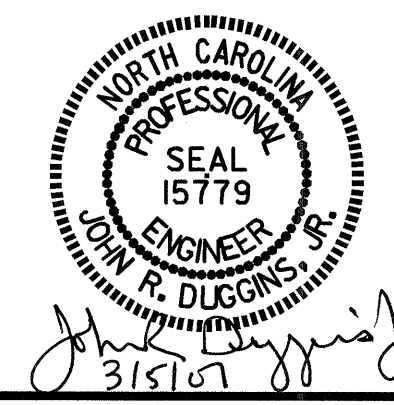
* BASED ON MINIMUM BLOCKOUT SHOWN

PROJECT NO. B-4223
PENDER COUNTY
STATION: 33+52.00 -L-

SHEET 3 OF 3

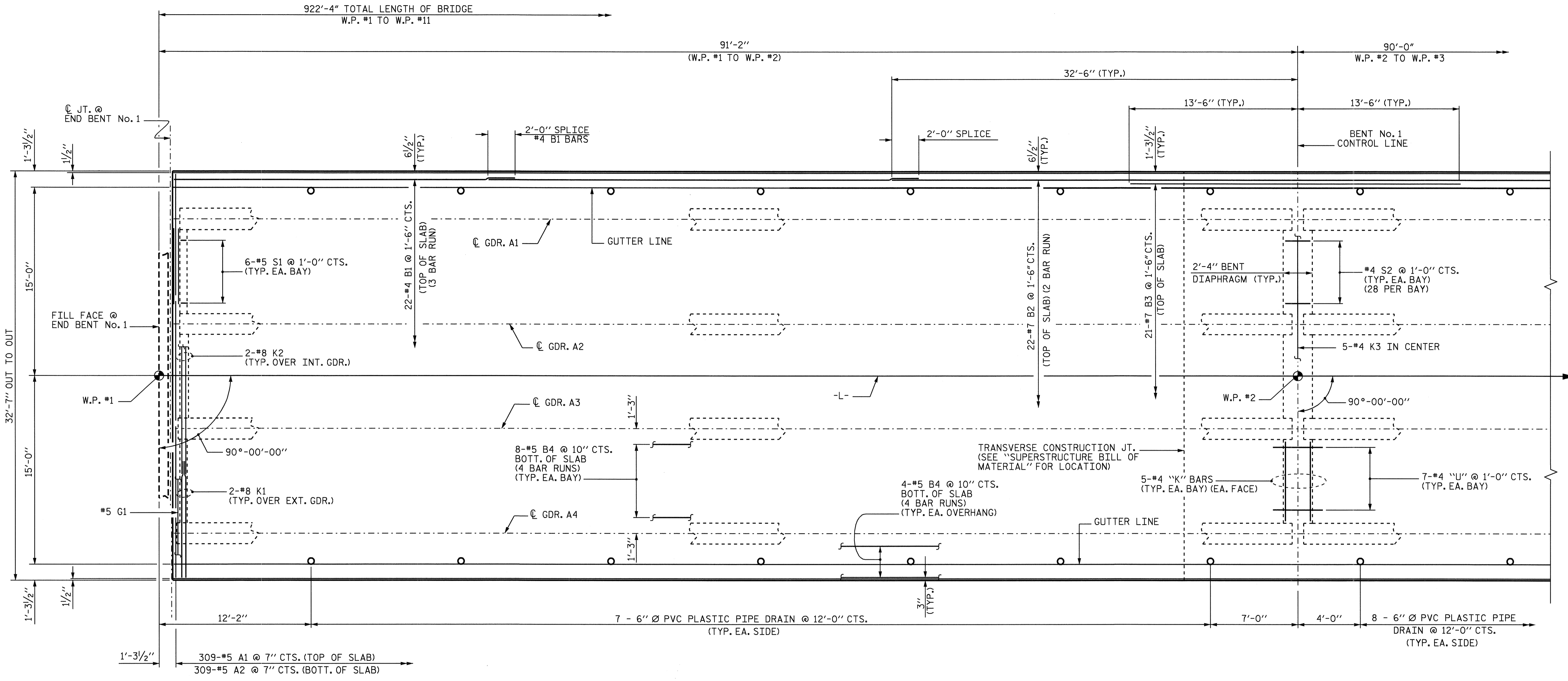
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
TYPICAL SECTION



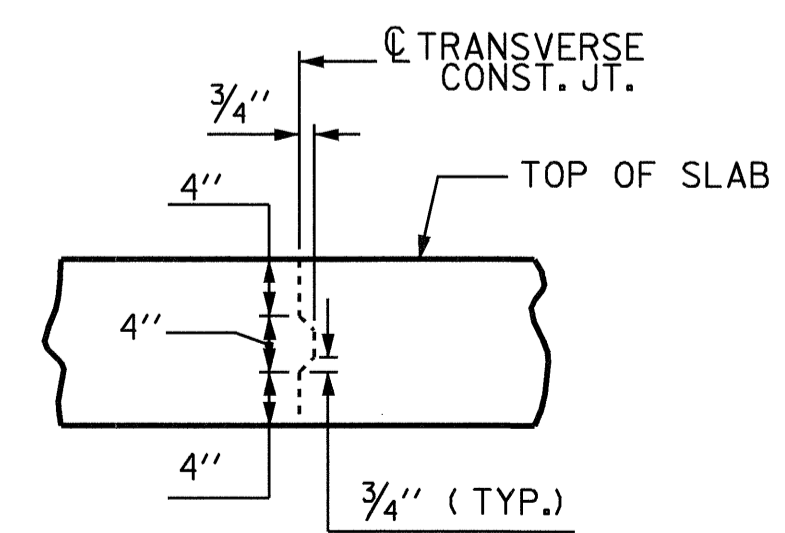
ASSEMBLED BY : M. POOLE	DATE : 10/05
CHECKED BY : D. HODGE	DATE : 02/06
DRAWN BY : EEM 1/96	REV. 10/17/00 RWW/LES
CHECKED BY : RGW 1/96	REV. 7/10/01 LES/RDR
	REV. 5/7/03RR RWW/JTE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-13
2			4			TOTAL SHEETS 14



PLAN OF SPAN A

FOR REINFORCING STEEL IN PARAPET, SEE "PARAPET AND END POST DETAILS" SHEET



TRANSVERSE CONSTRUCTION JOINT DETAIL

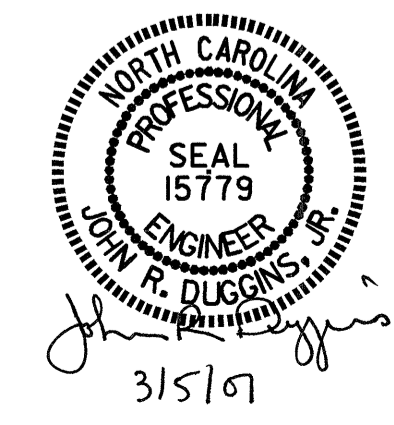
NOTE: REINFORCING STEEL IN SLAB NOT SHOWN. LONGITUDINAL REINFORCING STEEL SHALL BE CONTINUOUS THRU JOINT

PROJECT NO. B-4223
PENDER COUNTY
 STATION: 33+52.00 -L-

SHEET 1 OF 10

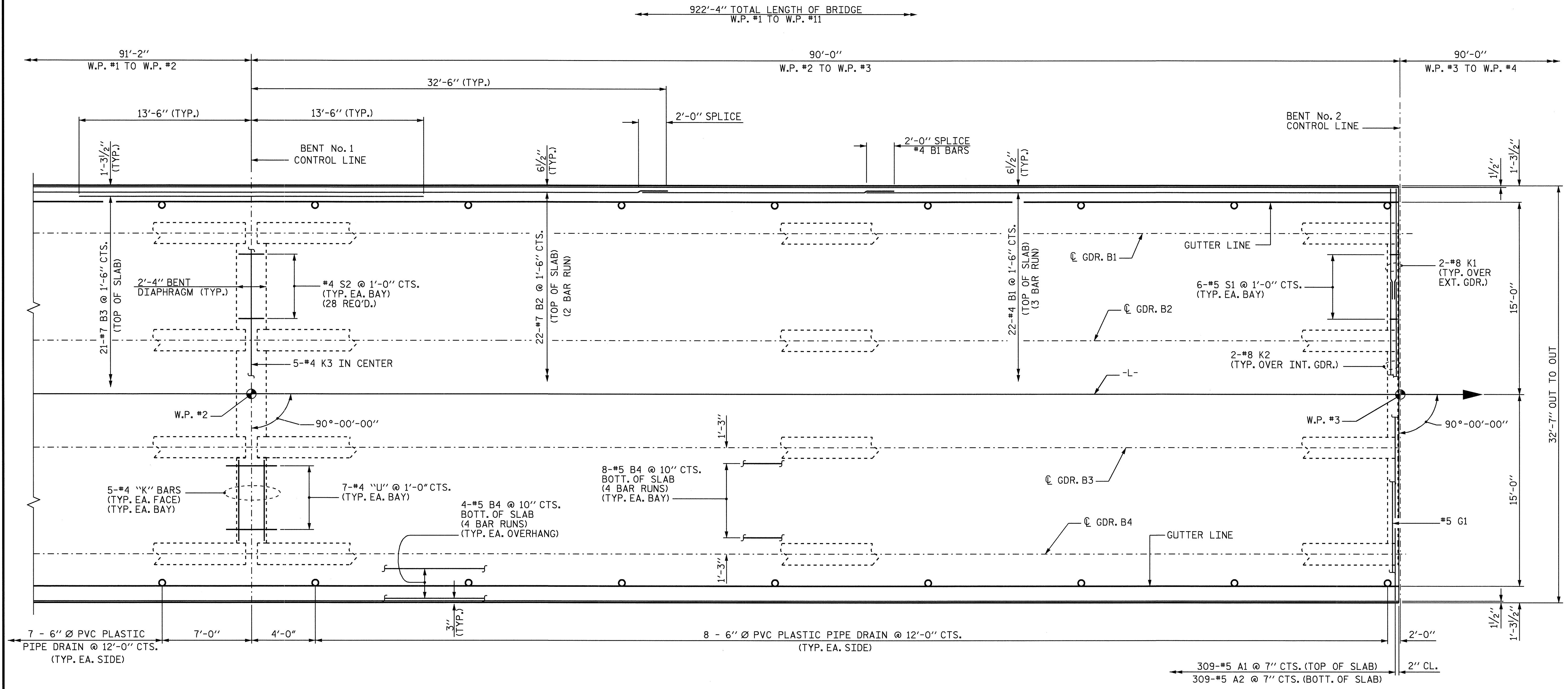
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 PLAN OF SPAN A**



DRAWN BY: M. POOLE DATE: 4/05
 CHECKED BY: D. HODGE DATE: 08/05

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			5-19
2			4			TOTAL SHEETS 64



PLAN OF SPAN B

FOR REINFORCING STEEL IN PARAPET, SEE "PARAPET AND END POST DETAILS" SHEET

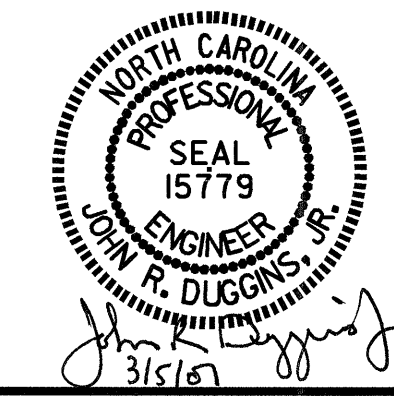
PROJECT NO. B-4223
PENDER COUNTY
 STATION: 33+52.00 -L-

SHEET 2 OF 10

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

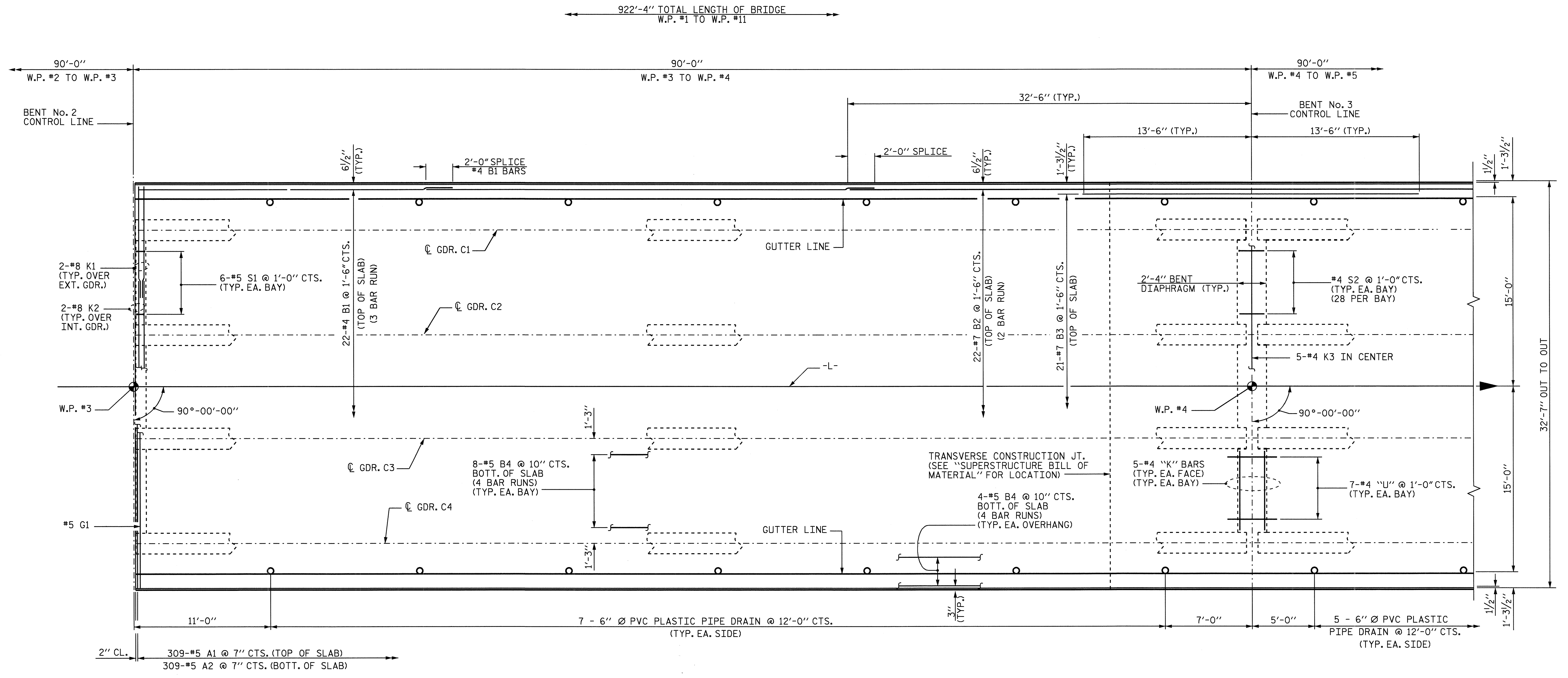
**SUPERSTRUCTURE
 PLAN OF SPAN B**

REVISIONS						SHEET NO. S-15
NO.	BY:	DATE:	NO.	BY:	DATE:	
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2			4			



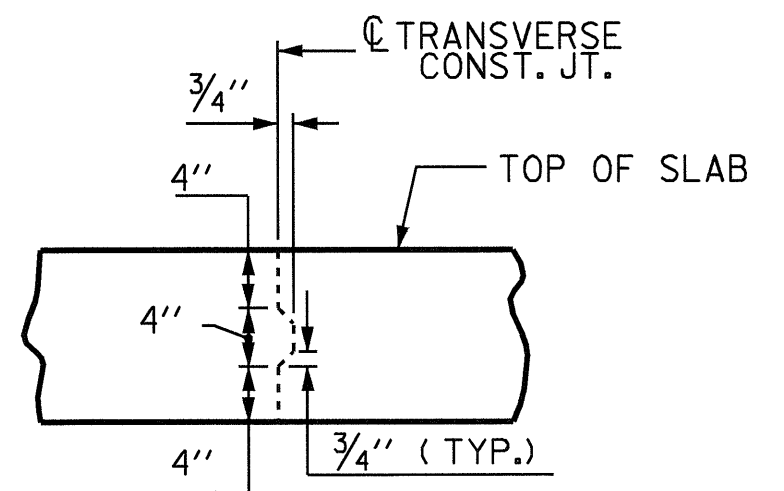
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 mpoole



PLAN OF SPAN C

FOR REINFORCING STEEL IN PARAPET, SEE "PARAPET AND END POST DETAILS" SHEET



TRANSVERSE CONSTRUCTION JOINT DETAIL

NOTE: REINFORCING STEEL IN SLAB NOT SHOWN. LONGITUDINAL REINFORCING STEEL SHALL BE CONTINUOUS THRU JOINT

PROJECT NO. B-4223
PENDER COUNTY
 STATION: 33+52.00 -L-

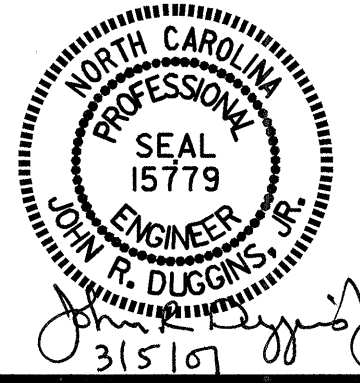
SHEET 3 OF 10

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

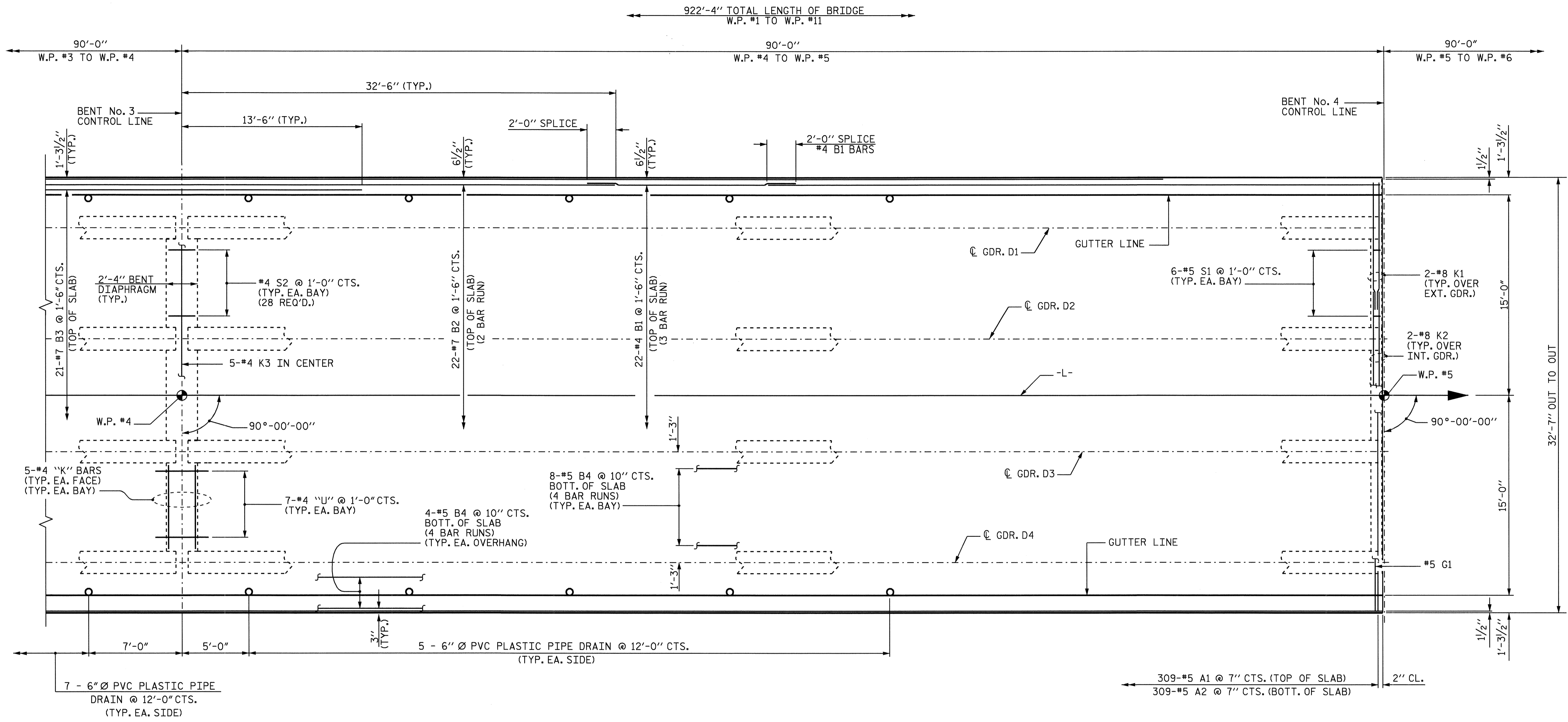
**SUPERSTRUCTURE
 PLAN OF SPAN C**

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

TOTAL SHEETS: 64



DRAWN BY: M. POOLE DATE: 4/05
 CHECKED BY: D. HODGE DATE: 08/05

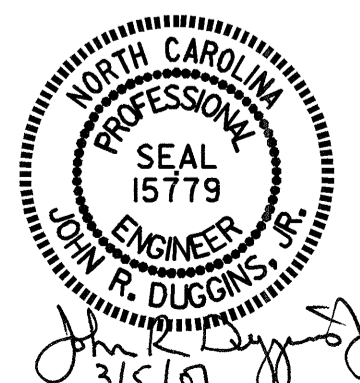


PLAN OF SPAN D

FOR REINFORCING STEEL IN PARAPET, SEE "PARAPET AND END POST DETAILS" SHEET

PROJECT NO. B-4223
PENDER COUNTY
 STATION: 33+52.00 -L-

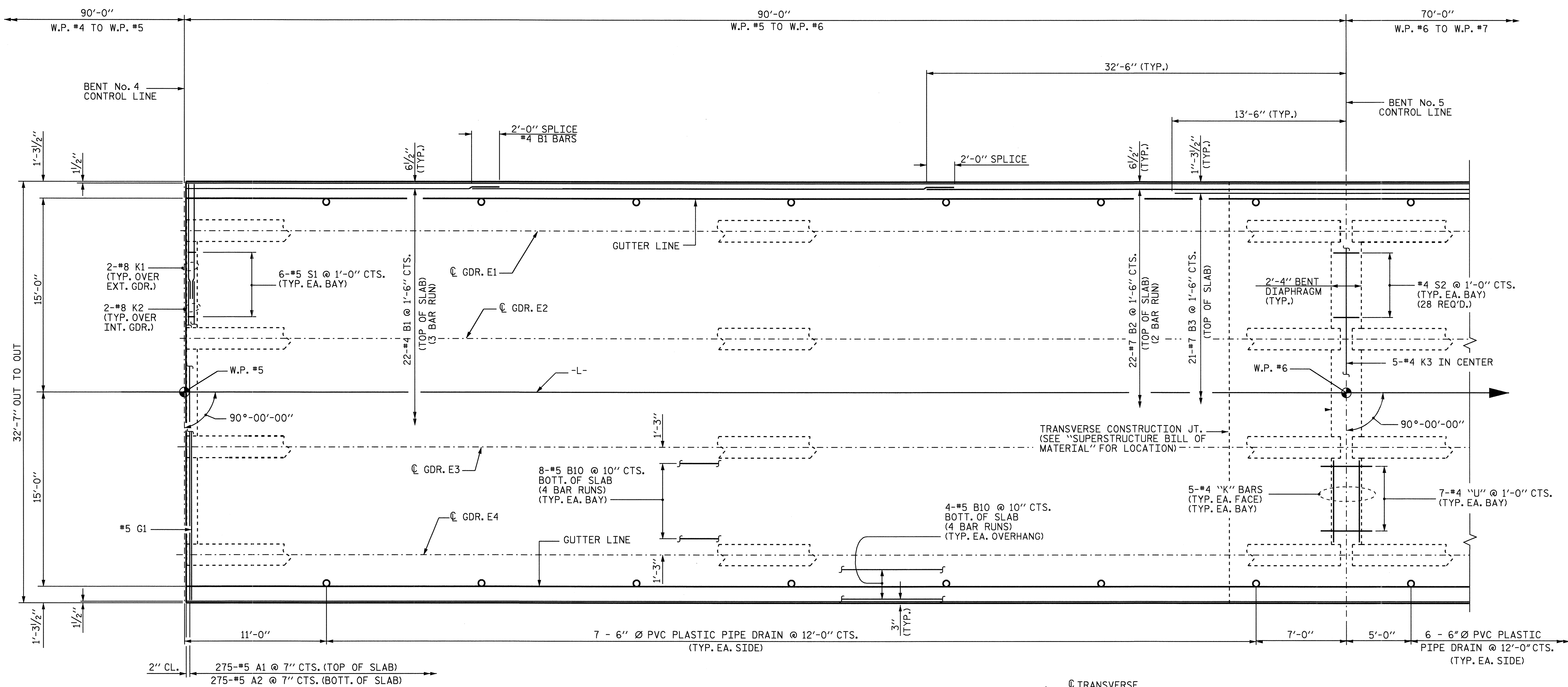
SHEET 4 OF 10
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPAN D



DRAWN BY: M. POOLE DATE: 4/05
 CHECKED BY: D. HODGE DATE: 08/05

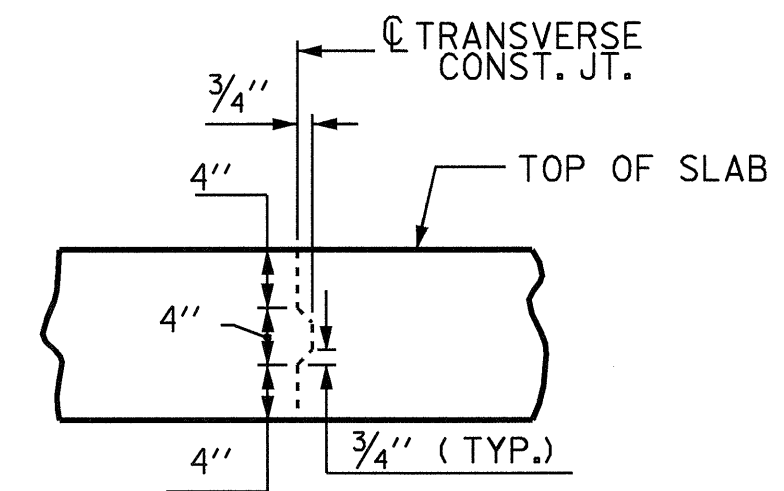
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-17	
1			3			TOTAL SHEETS	
2			4			6	

922'-4" TOTAL LENGTH OF BRIDGE
W.P. #1 TO W.P. #11



PLAN OF SPAN E

FOR REINFORCING STEEL IN PARAPET, SEE "PARAPET AND END POST DETAILS" SHEET



TRANSVERSE CONSTRUCTION JOINT DETAIL

NOTE: REINFORCING STEEL IN SLAB NOT SHOWN. LONGITUDINAL REINFORCING STEEL SHALL BE CONTINUOUS THRU JOINT

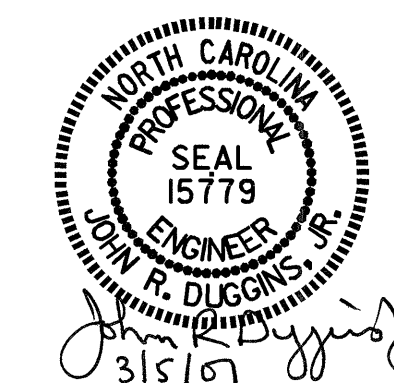
PROJECT NO. B-4223
PENDER COUNTY
 STATION: 33+52.00 -L-

SHEET 5 OF 10

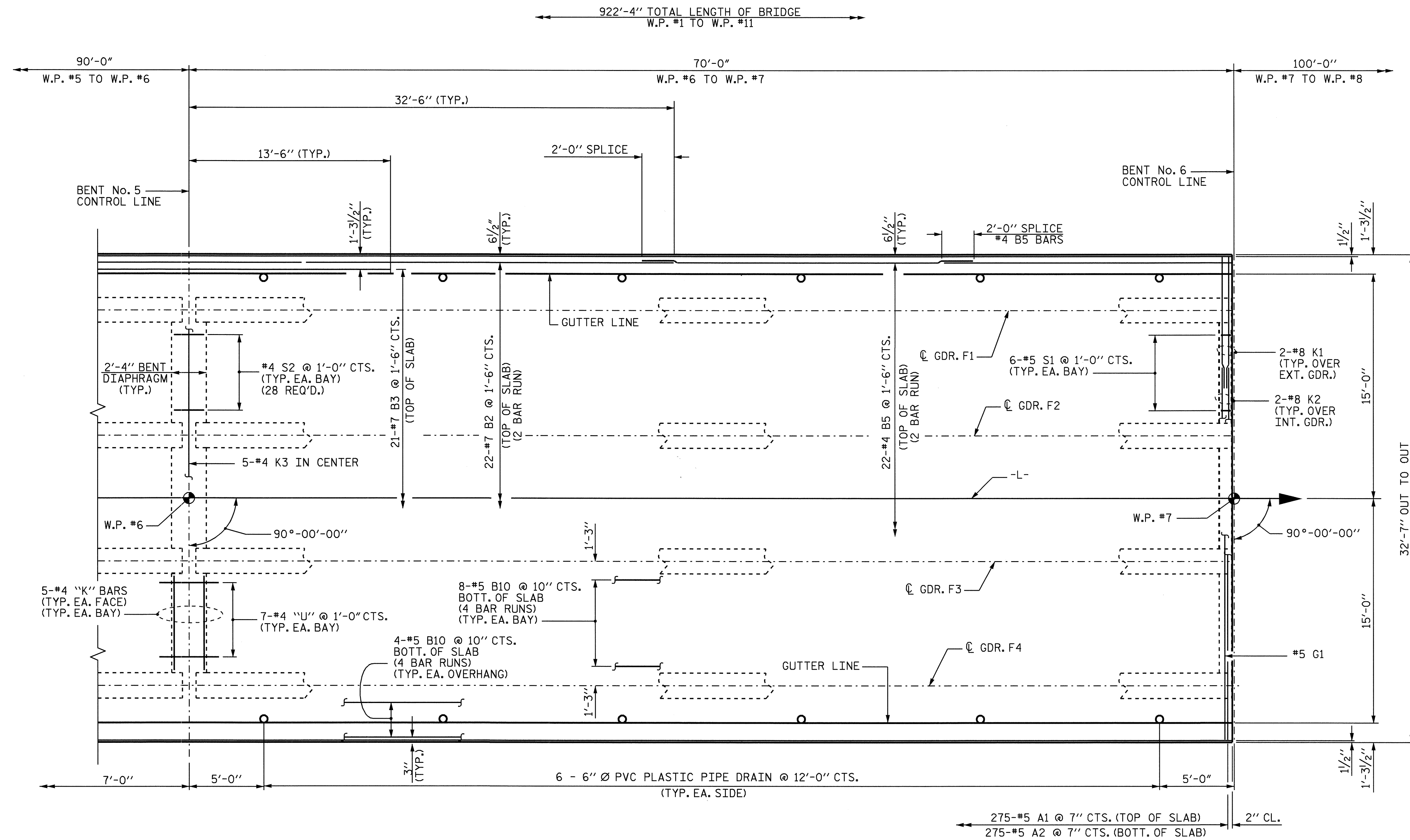
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPAN E

DRAWN BY: M. POOLE DATE: 4/05
 CHECKED BY: D. HODGE DATE: 08/05

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			6



PLAN OF SPAN F

FOR REINFORCING STEEL IN PARAPET, SEE "PARAPET AND END POST DETAILS" SHEET

PROJECT NO. B-4223

PENDER COUNTY

STATION: 33+52.00 -L-

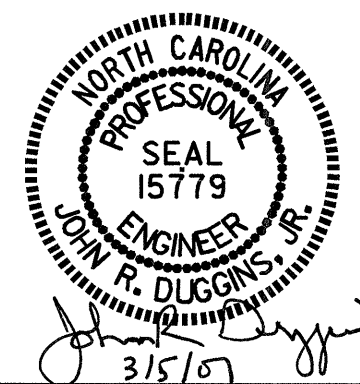
SHEET 6 OF 10

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
PLAN OF SPAN F

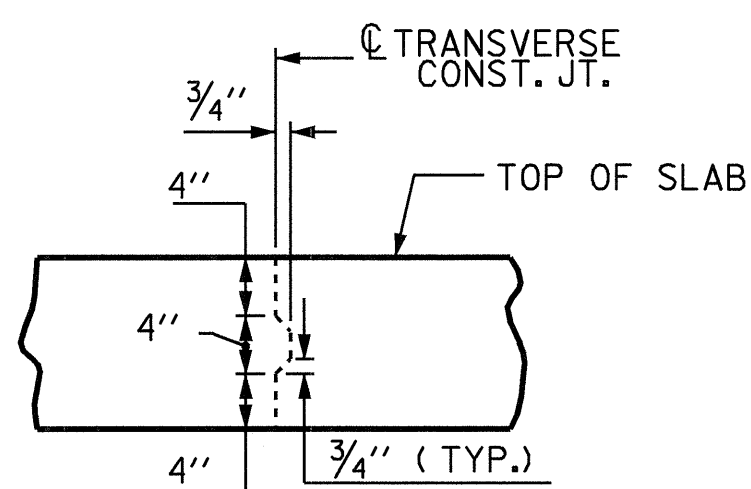
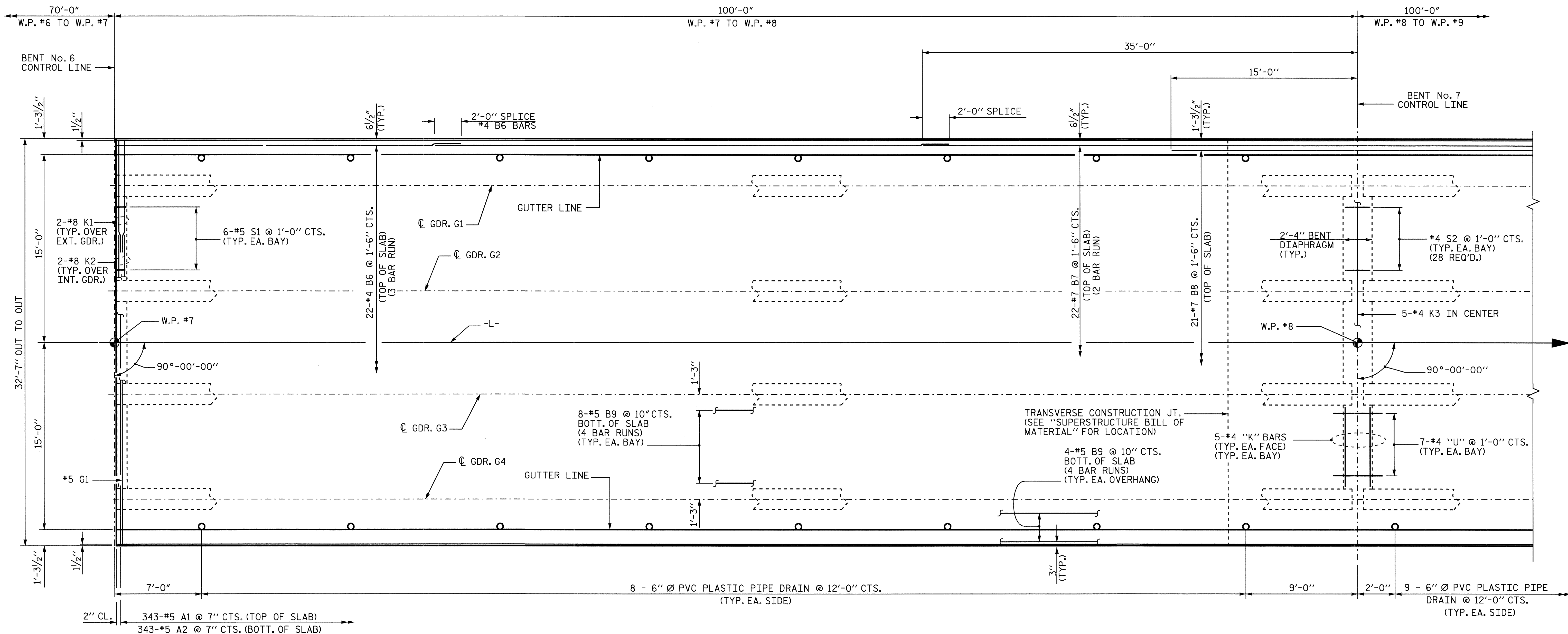
REVISIONS						TOTAL SHEETS
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			64
2			4			

SHEET NO. 3-19



DRAWN BY: M. POOLE DATE: 4/05
CHECKED BY: D. HODGE DATE: 08/05

922'-4" TOTAL LENGTH OF BRIDGE
W.P. #1 TO W.P. #11



PLAN OF SPAN G

FOR REINFORCING STEEL IN PARAPET, SEE
"PARAPET AND END POST DETAILS" SHEET

TRANSVERSE CONSTRUCTION JOINT DETAIL

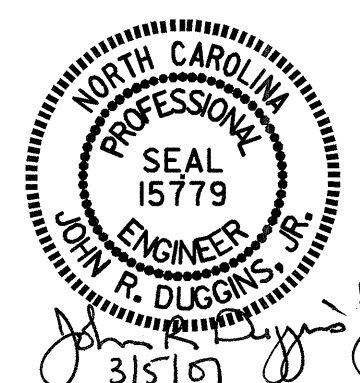
NOTE: REINFORCING STEEL IN SLAB NOT SHOWN.
LONGITUDINAL REINFORCING STEEL SHALL BE
CONTINUOUS THRU JOINT

PROJECT NO. B-4223
PENDER COUNTY
STATION: 33+52.00 -L-

SHEET 7 OF 10

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

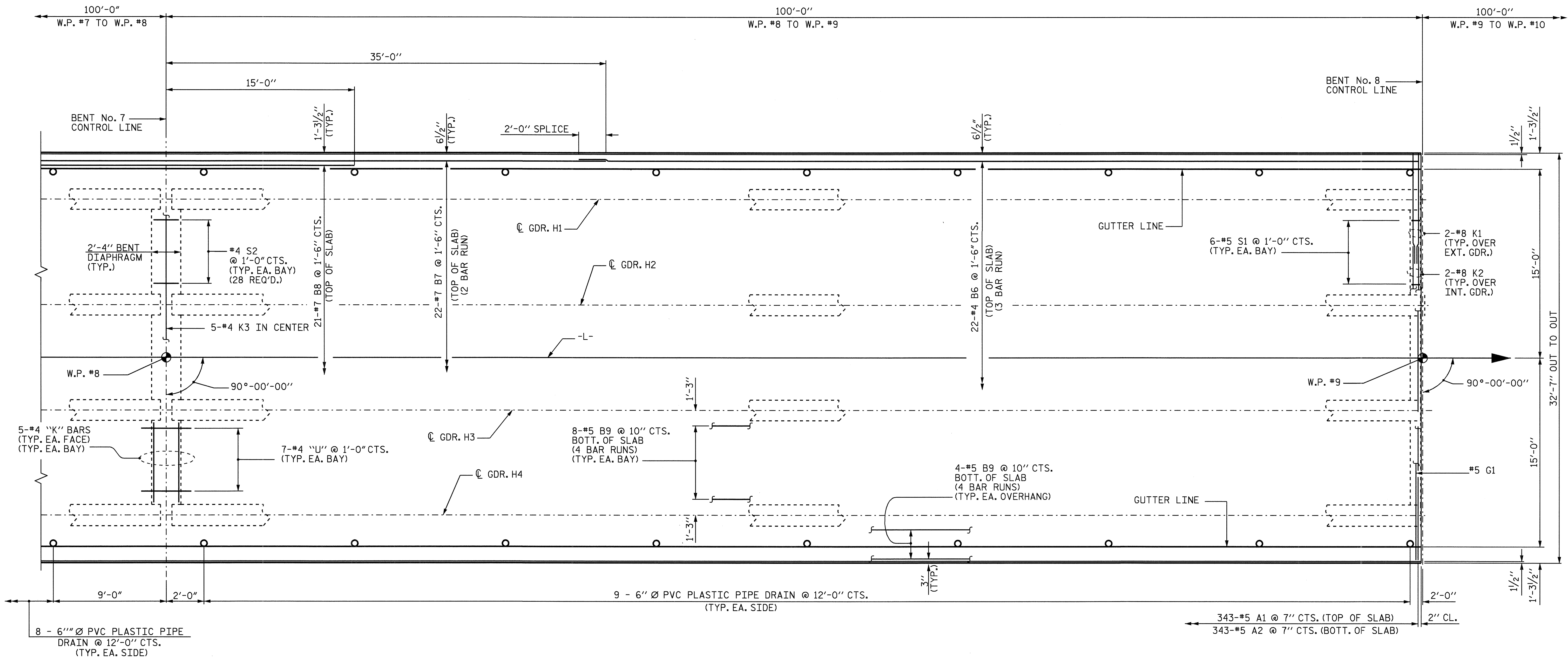
**SUPERSTRUCTURE
PLAN OF SPAN G**



DRAWN BY: M. POOLE DATE: 4/05
CHECKED BY: D. HODGE DATE: 08/05

REVISIONS						SHEET NO. 3-20
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			64

922'-4" TOTAL LENGTH OF BRIDGE
W.P. #1 TO W.P. #11



PLAN OF SPAN H

FOR REINFORCING STEEL IN PARAPET, SEE
"PARAPET AND END POST DETAILS" SHEET

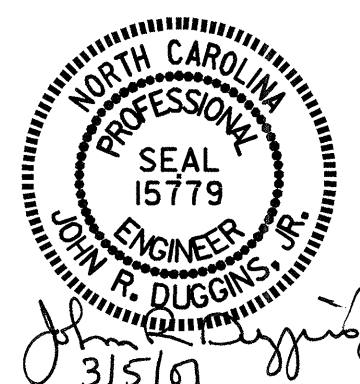
PROJECT NO. B-4223
PENDER COUNTY
STATION: 33+52.00 -L-

SHEET 8 OF 10

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**SUPERSTRUCTURE
PLAN OF SPAN H**

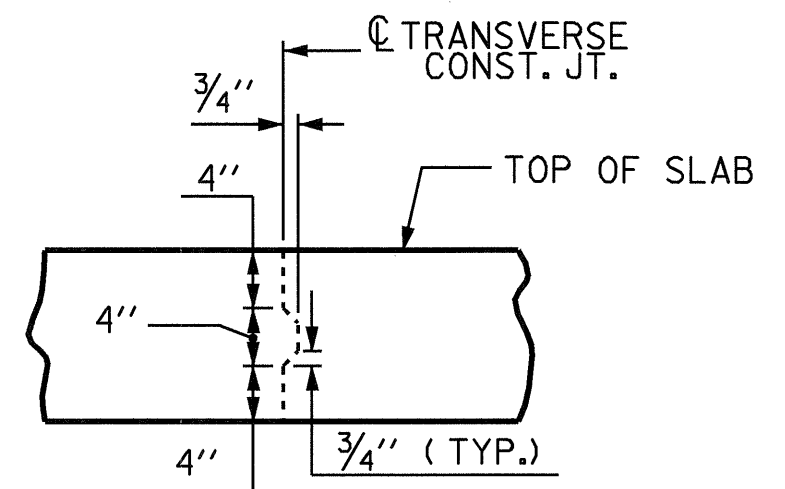
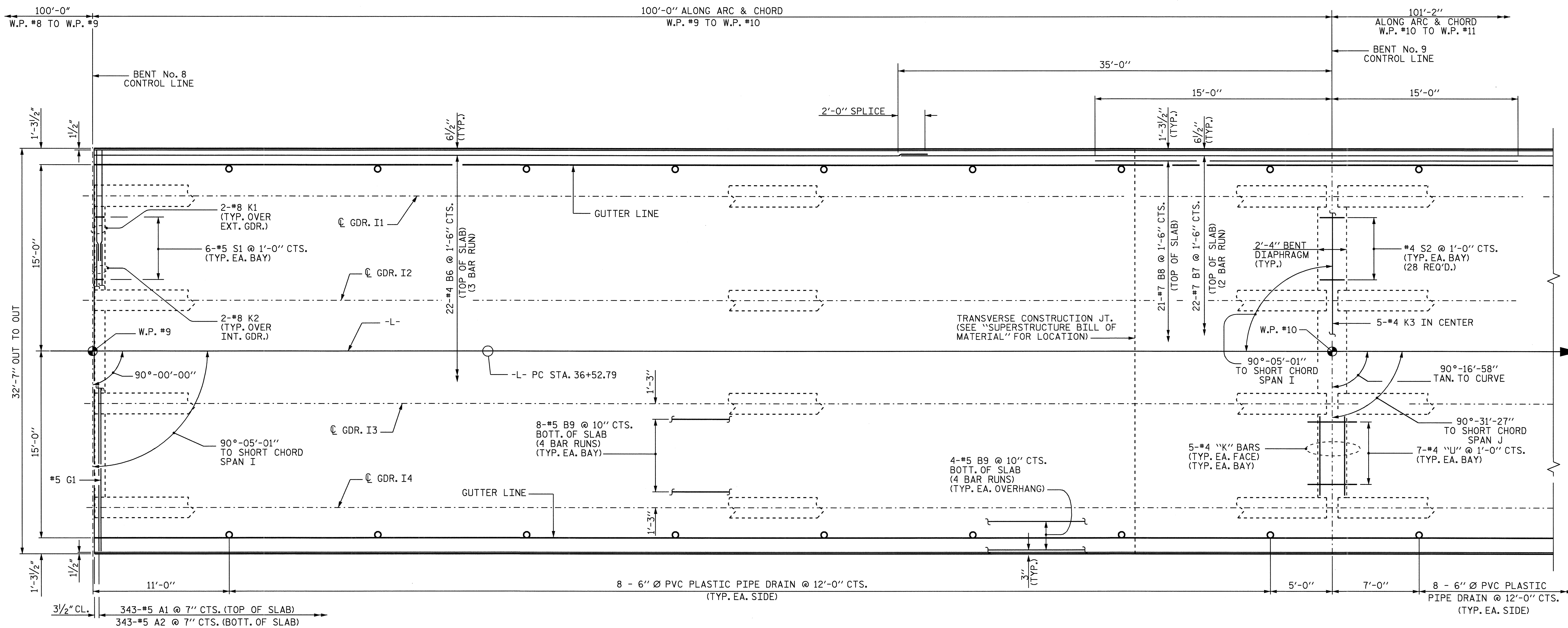
REVISIONS						SHEET NO.
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2			4			6A



DRAWN BY: M. POOLE DATE: 4/05
CHECKED BY: D. HODGE DATE: 08/05

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mpoole

922'-4" TOTAL LENGTH OF BRIDGE
W.P. #1 TO W.P. #11



TRANSVERSE CONSTRUCTION JOINT DETAIL

NOTE: REINFORCING STEEL IN SLAB NOT SHOWN.
LONGITUDINAL REINFORCING STEEL SHALL BE CONTINUOUS THRU JOINT

PLAN OF SPAN I

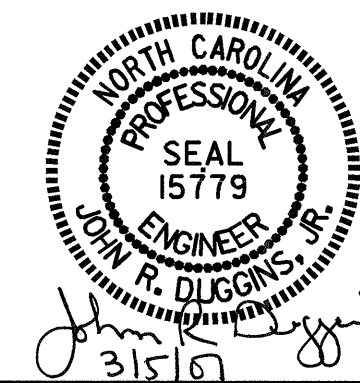
FOR REINFORCING STEEL IN PARAPET, SEE "PARAPET AND END POST DETAILS" SHEET

PROJECT NO. B-4223
PENDER COUNTY
STATION: 33+52.00 -L-

SHEET 9 OF 10

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

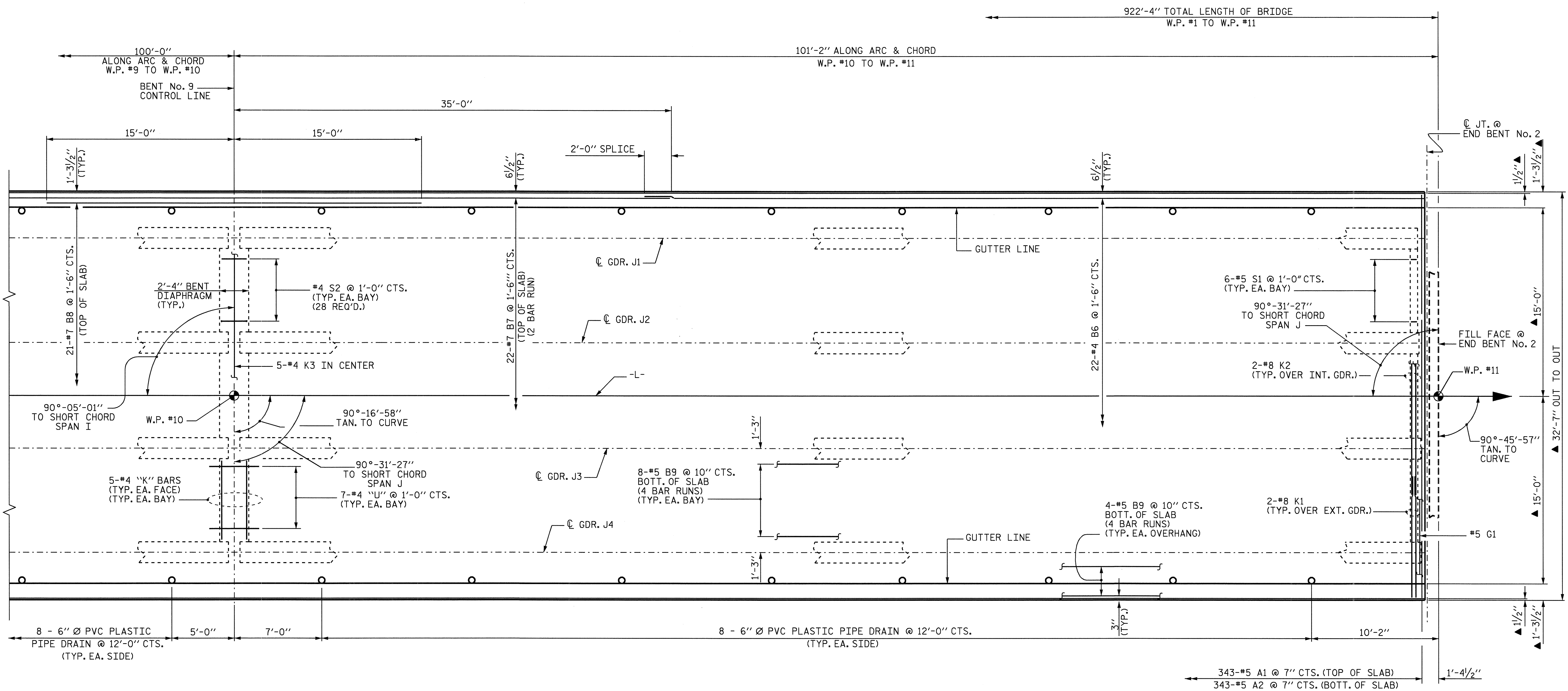
**SUPERSTRUCTURE
PLAN OF SPAN I**



DRAWN BY: M. POOLE DATE: 4/05
CHECKED BY: D. HODGE DATE: 08/05

06-FEB-2007 11:03
R:\STRUCT\4223\mpoole\MICR05\B4223.sd.S2-01.dgn
mpoole

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	3-22	
1			3			TOTAL SHEETS	64
2			4				



PLAN OF SPAN J

FOR REINFORCING STEEL IN PARAPET, SEE "PARAPET AND END POST DETAILS" SHEET

▲ RADIAL DIMENSION

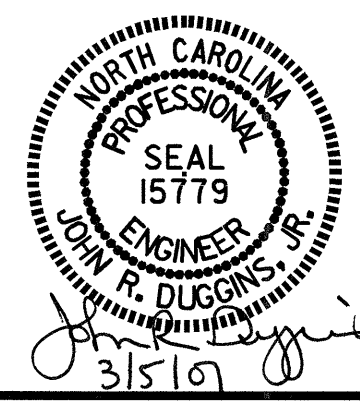
PROJECT NO. B-4223
PENDER COUNTY
 STATION: 33+52.00 -L-

SHEET 10 OF 10

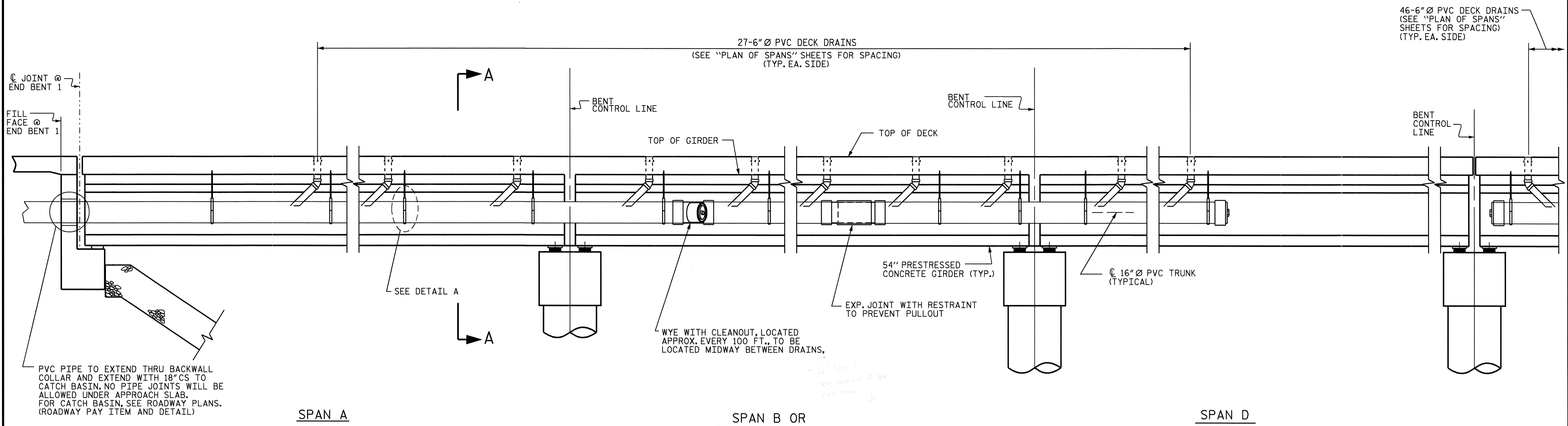
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 PLAN OF SPAN J**

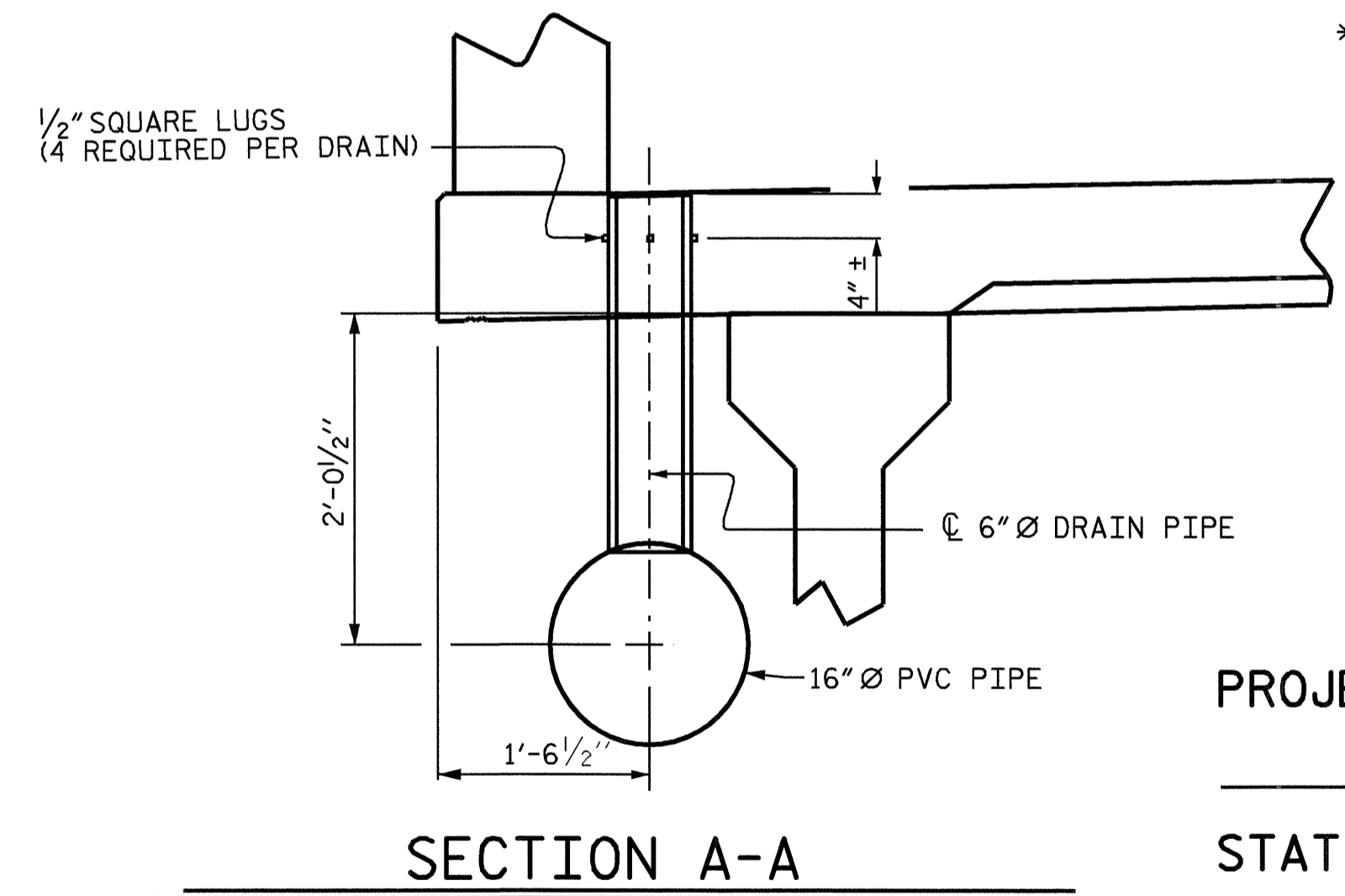
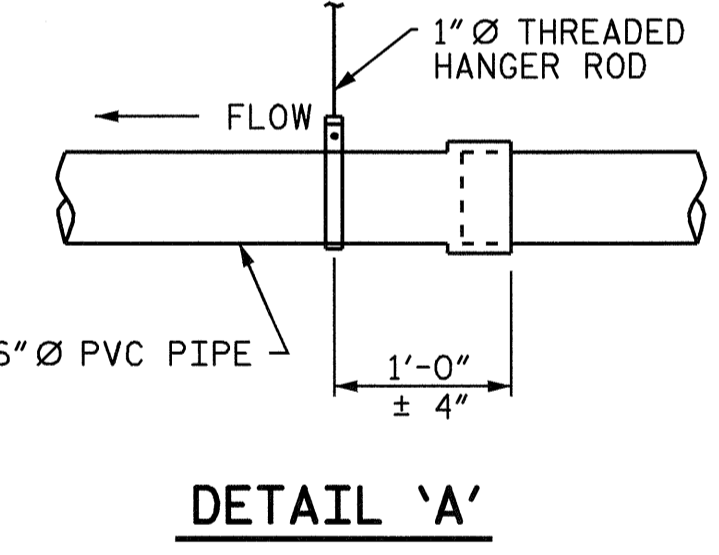
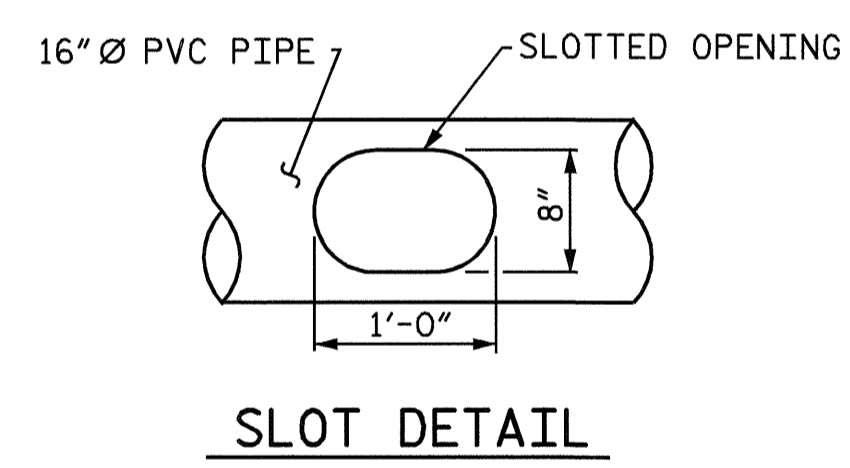
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-23
1			3			TOTAL SHEETS
2			4			10



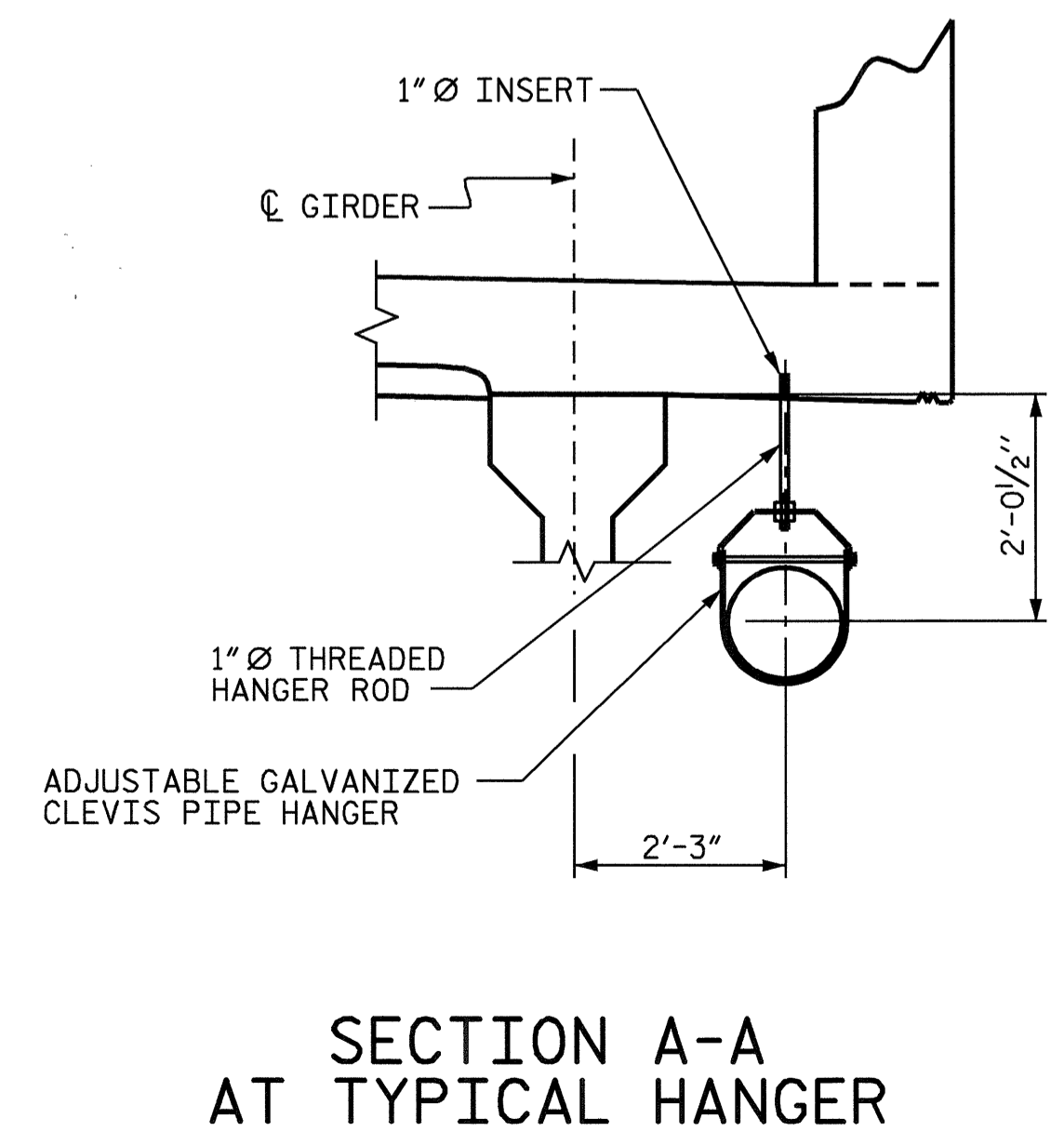
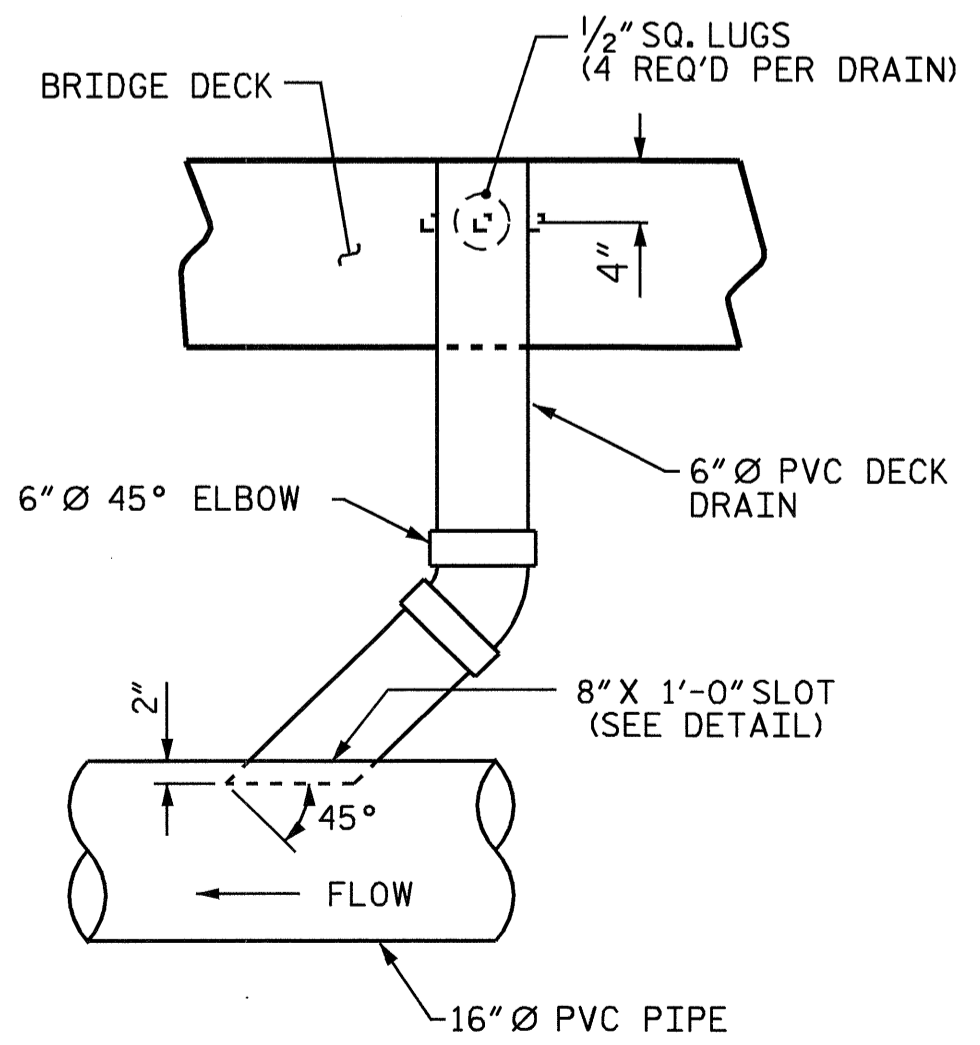
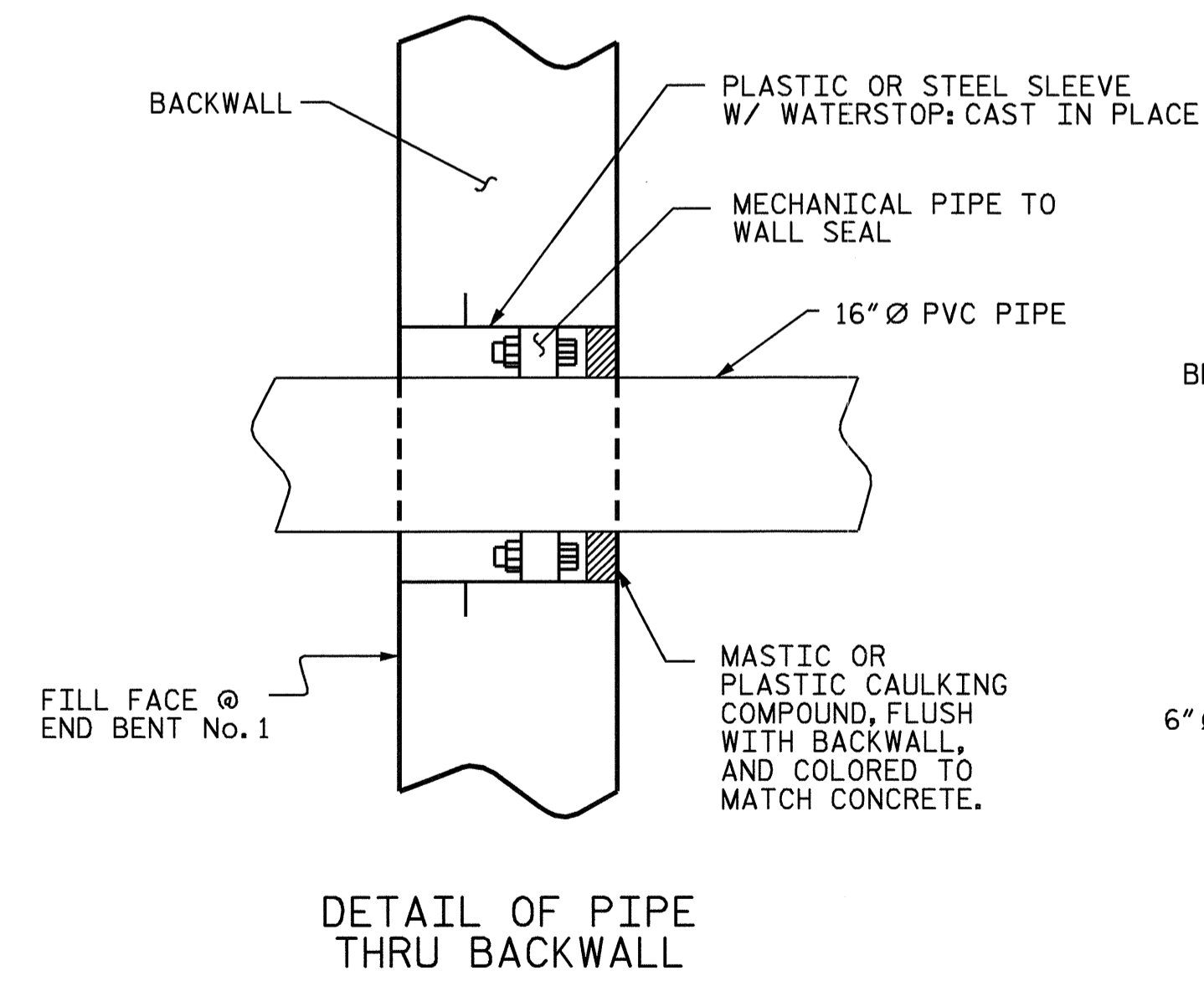
DRAWN BY: M. POOLE DATE: 4/05
 CHECKED BY: D. HODGE DATE: 08/05



ELEVATION OF DRAINAGE SYSTEM



TOP OF FLOOR DRAINS TO BE SET 3/8" BELOW SURFACE OF SLAB.
4-1/2" SQUARE LUGS TO BE GLUED TO THE P.V.C. PIPE PLASTIC PIPE AT EQUAL SPACES AROUND THE PIPE DRAIN APPROXIMATELY 4" FROM TOP OF THE PIPE.
THE 6" Ø PVC PLASTIC PIPE AND FITTINGS SHALL BE SCHEDULE 40 AND CONFORM TO ASTM D1785.



PROJECT NO. B-4223
PENDER COUNTY
 STATION: 33+52.00 -L-

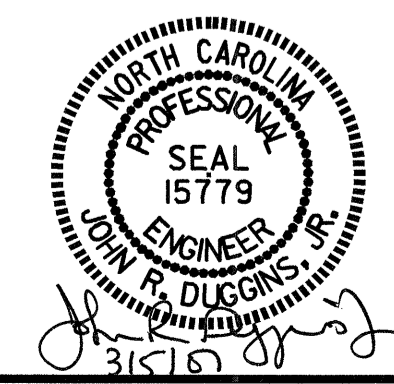
SHEET 1 OF 2

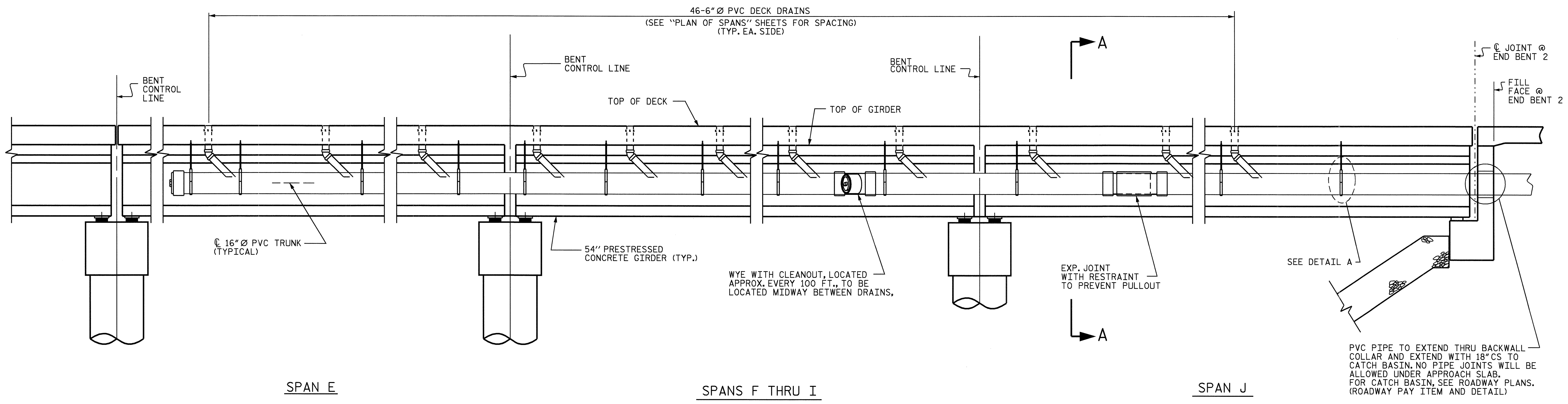
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 STRUCTURE
 DRAINAGE SYSTEM**

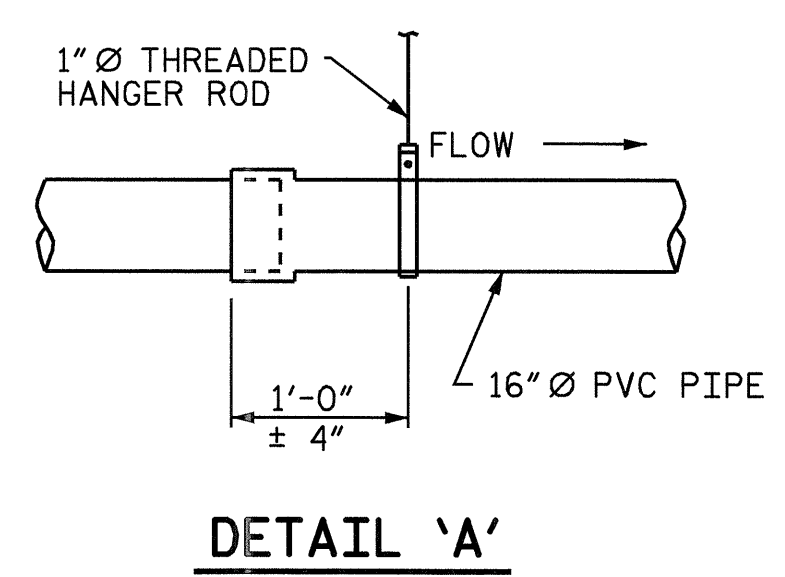
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-24
1			3			TOTAL SHEETS
2			4			62

DRAWN BY: M. POOLE DATE: 04/05
 CHECKED BY: D. HODGE DATE: 08/05

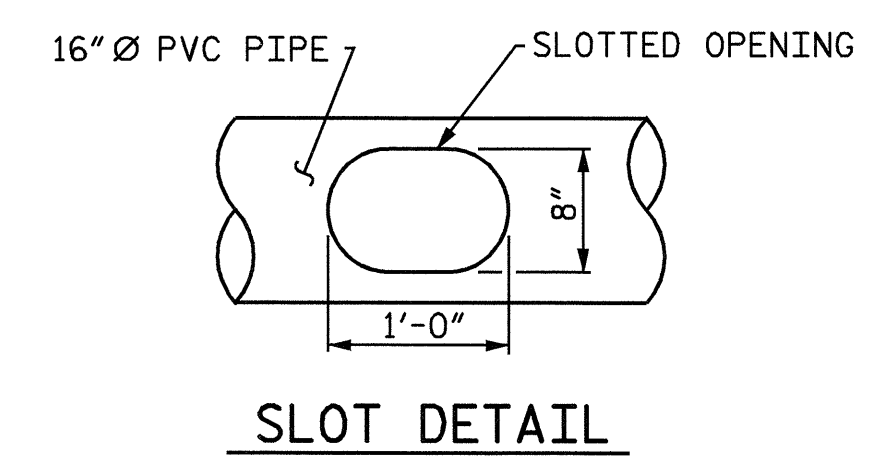




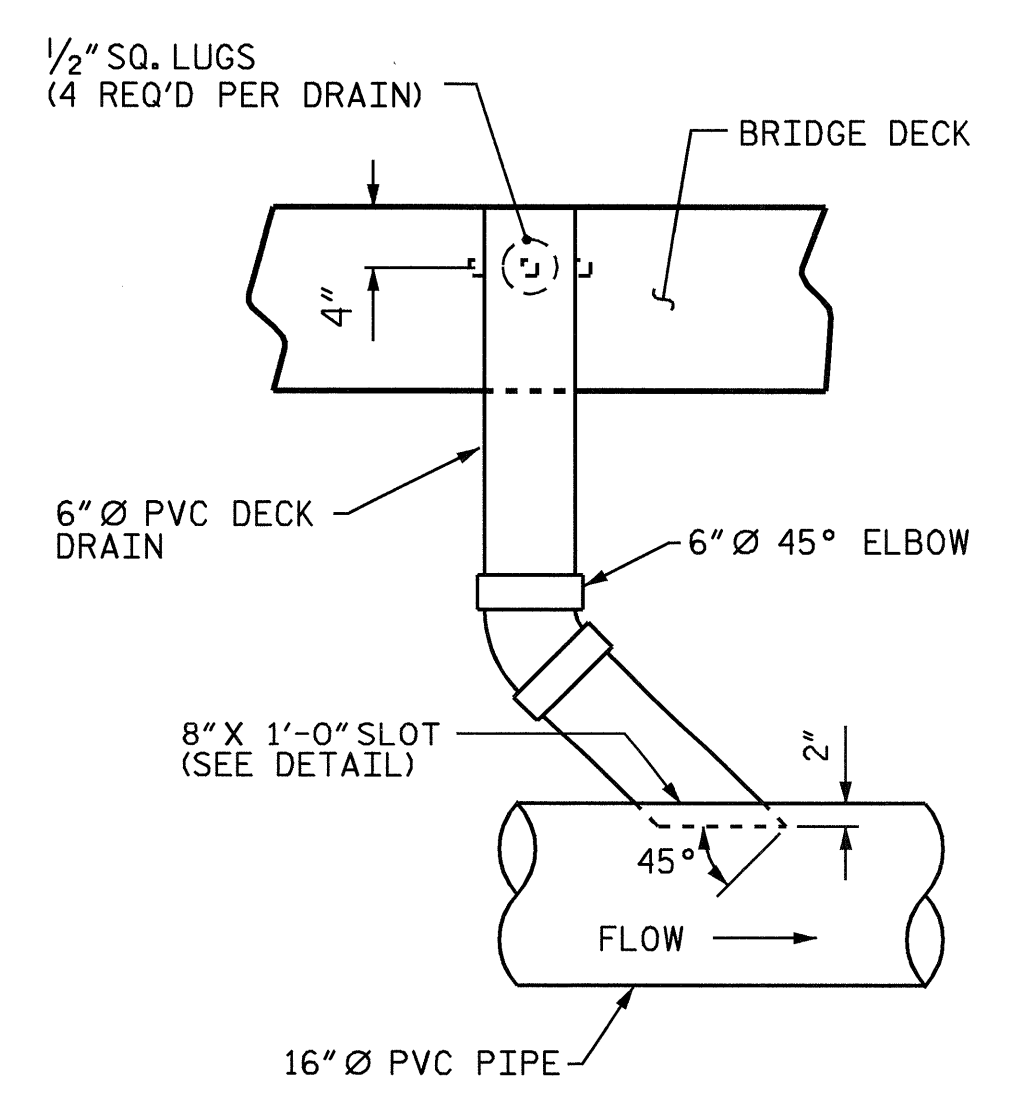
ELEVATION OF DRAINAGE SYSTEM



DETAIL 'A'



SLOT DETAIL



ELEVATION VIEW OF DECK DRAIN AND DRAIN LINE INTERSECTION

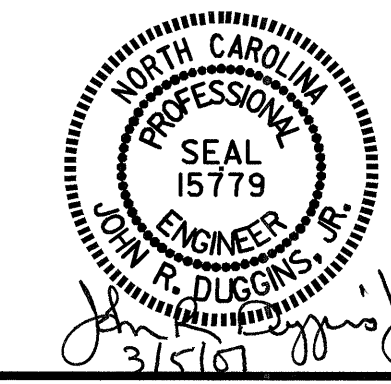
NOTES

- THE CONTRACTOR SHALL SUBMIT A PLAN FOR THE DRAINAGE SYSTEM, INCLUDING, BUT NOT LIMITED TO, ATTACHMENTS TO THE BRIDGE, PIPE ALIGNMENT AND PIPE LENGTHS, AND ALL NECESSARY FITTINGS, ELBOWS, WYES, ADAPTERS, GUIDES AND JOINTS.
- DRAINAGE SYSTEM WILL BE PAID FOR UNDER THE PAY ITEM "STRUCTURE DRAINAGE SYSTEM". FOR "STRUCTURE DRAINAGE SYSTEM", SEE SPECIAL PROVISIONS.
- THE CONTRACTOR SHALL DETERMINE THE QUANTITY OF FITTINGS, PIPE LENGTHS, GUIDES, AND ATTACHMENTS REQUIRED TO CARRY THE WATER FROM THE DECK DRAINS TO THE OUTLETS.
- BOLTS, NUTS, AND WASHERS SHALL BE HIGH STRENGTH AND GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
- CONCRETE INSERTS SHALL BE OF AN APPROVED GALVANIZED TYPE HAVING A MINIMUM WORKING LOAD TENSION CAPACITY OF 4.2 KIPS.
- IN LIEU OF CASTING INSERTS INTO THE DECK, RODS MAY BE ADHESIVELY ANCHORED TO THE DECK.
- DRAINAGE SYSTEM SHALL BE PLACED TO PROVIDE A MINIMUM SLOPE OF -0.5% TOWARDS OUTLET.
- FITTING JOINTS SHALL BE SOLVENT CEMENT TYPE.
- PIPE JOINTS SHALL BE ELASTOMERIC TYPE.
- FOR SECTION A-A, SEE SHEET 1 OF 2.
- PIPE AND FITTINGS SHALL BE PVC, SDR 35, ASTM D 3034

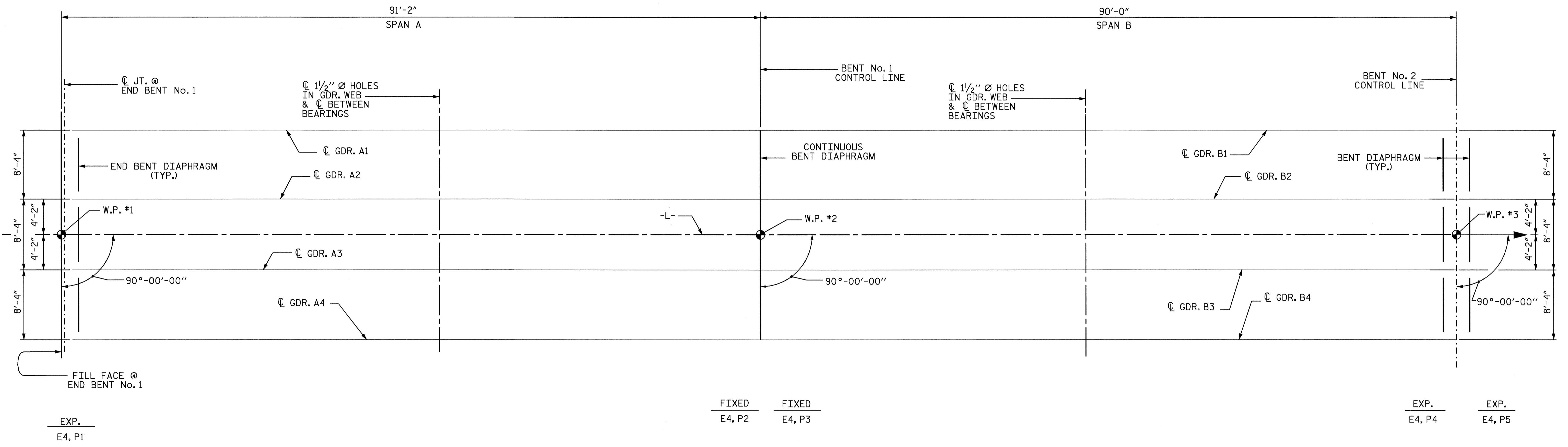
PROJECT NO. B-4223
PENDER COUNTY
 STATION: 33+52.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE STRUCTURE DRAINAGE SYSTEM					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 64
					S-25



DRAWN BY: M. POOLE DATE: 04/05
 CHECKED BY: D. HODGE DATE: 08/05



FRAMING PLAN

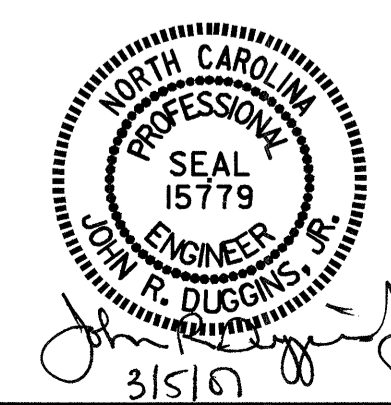
PROJECT NO. B-4223
PENDER COUNTY
 STATION: 33+52.00 -L-

SHEET 1 OF 5

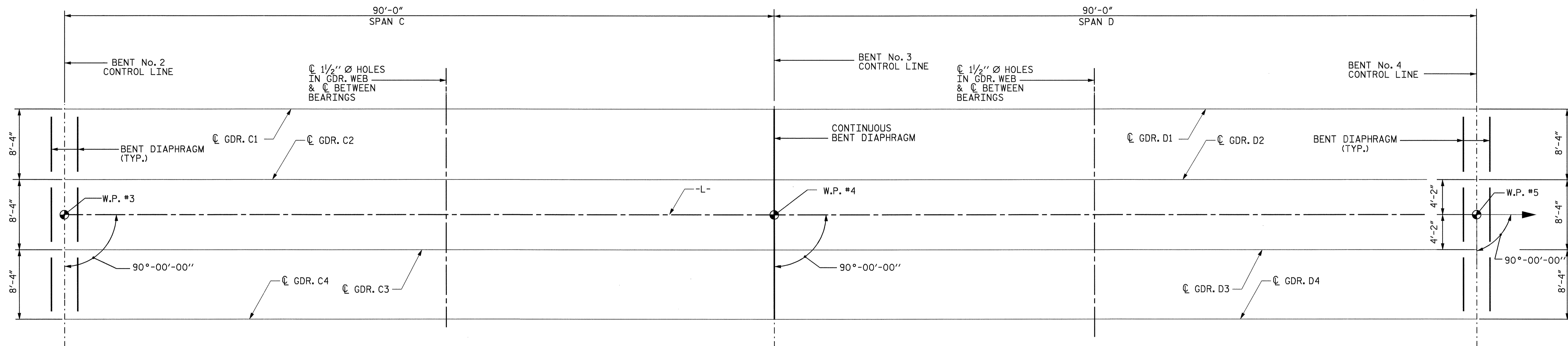
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 FRAMING PLAN
 SPANS A & B

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			5-26
2			4			TOTAL SHEETS 64



DRAWN BY : M. POOLE DATE : 04/05
 CHECKED BY : D. HODGE DATE : 09/05



EXP. E4, P4 EXP. E4, P5

FIXED E4, P6 FIXED E4, P7

EXP. E4, P8 EXP. E4, P9

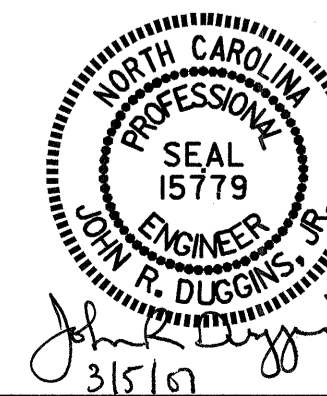
FRAMING PLAN

PROJECT NO. B-4223
PENDER COUNTY
STATION: 33+52.00 -L-

SHEET 2 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

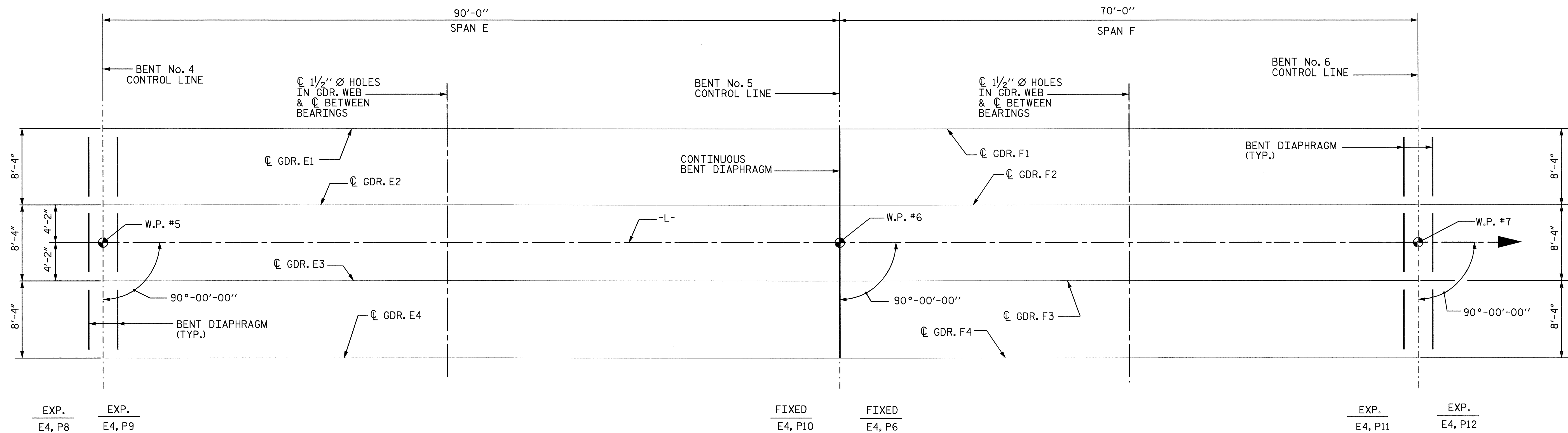
SUPERSTRUCTURE
FRAMING PLAN
SPANS C & D



DRAWN BY: M. POOLE DATE: 04/05
CHECKED BY: D. HODGE DATE: 09/05

06-FEB-2007 13:21
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mpoole

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-27	
1			3			TOTAL SHEETS	64
2			4				



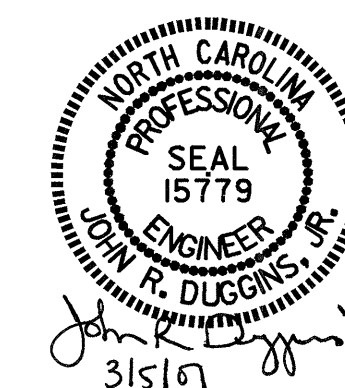
FRAMING PLAN

PROJECT NO. B-4223
PENDER COUNTY
 STATION: 33+52.00 -L-

SHEET 3 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

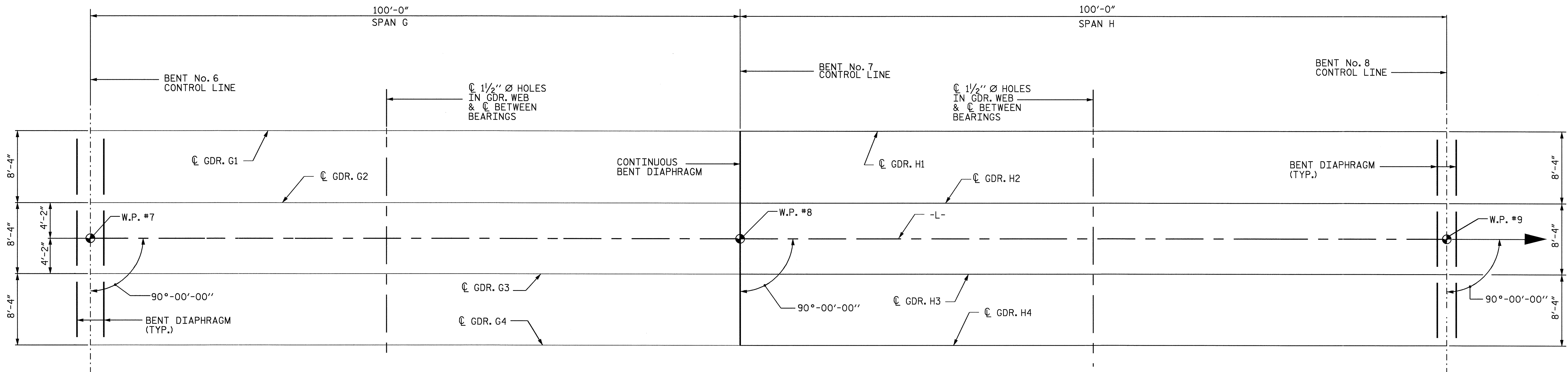
SUPERSTRUCTURE
 FRAMING PLAN
 SPANS E & F



DRAWN BY: M. POOLE DATE: 04/05
 CHECKED BY: D. HODGE DATE: 09/05

06-FEB-2007 13:21
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 mpoole

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			5-28
2			4			64



EXP.
E4, P11

EXP.
E4, P12

FIXED
E4, P13

FIXED
E4, P14

EXP.
E4, P15

EXP.
E4, P16

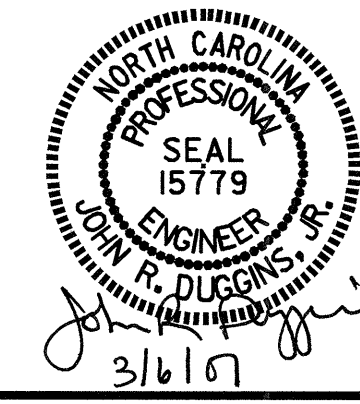
FRAMING PLAN

PROJECT NO. B-4223
PENDER COUNTY
 STATION: 33+52.00 -L-

SHEET 4 OF 5

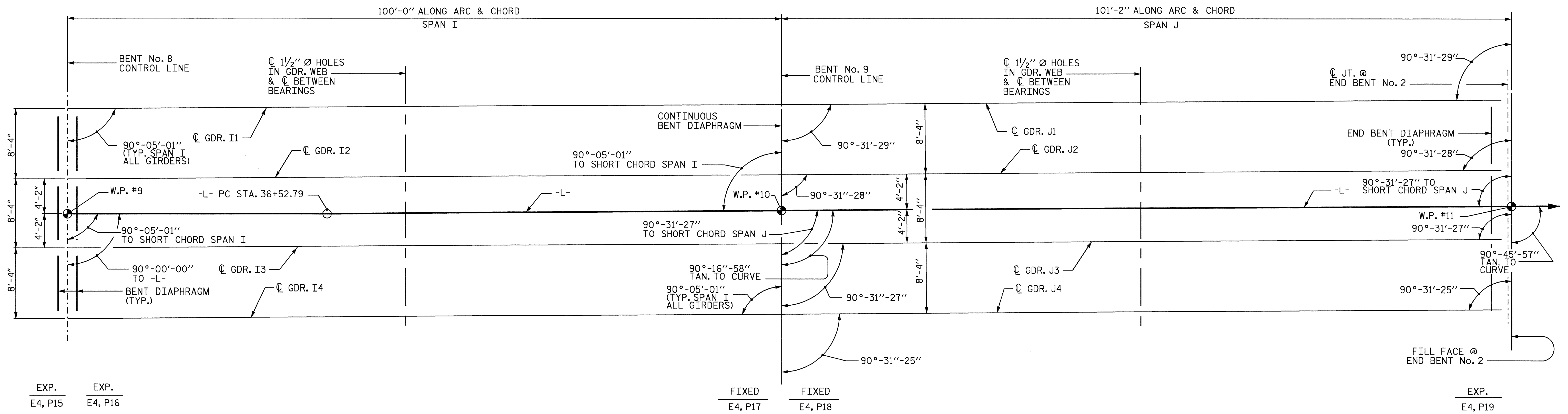
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 FRAMING PLAN
 SPANS G & H



DRAWN BY : M. POOLE DATE : 04/05
 CHECKED BY : D. HODGE DATE : 09/05

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			5-29
2			4			64

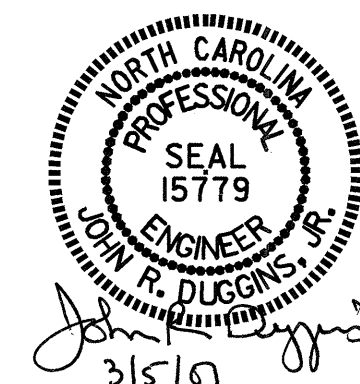


FRAMING PLAN

PROJECT NO. B-4223
PENDER COUNTY
 STATION: 33+52.00 -L-

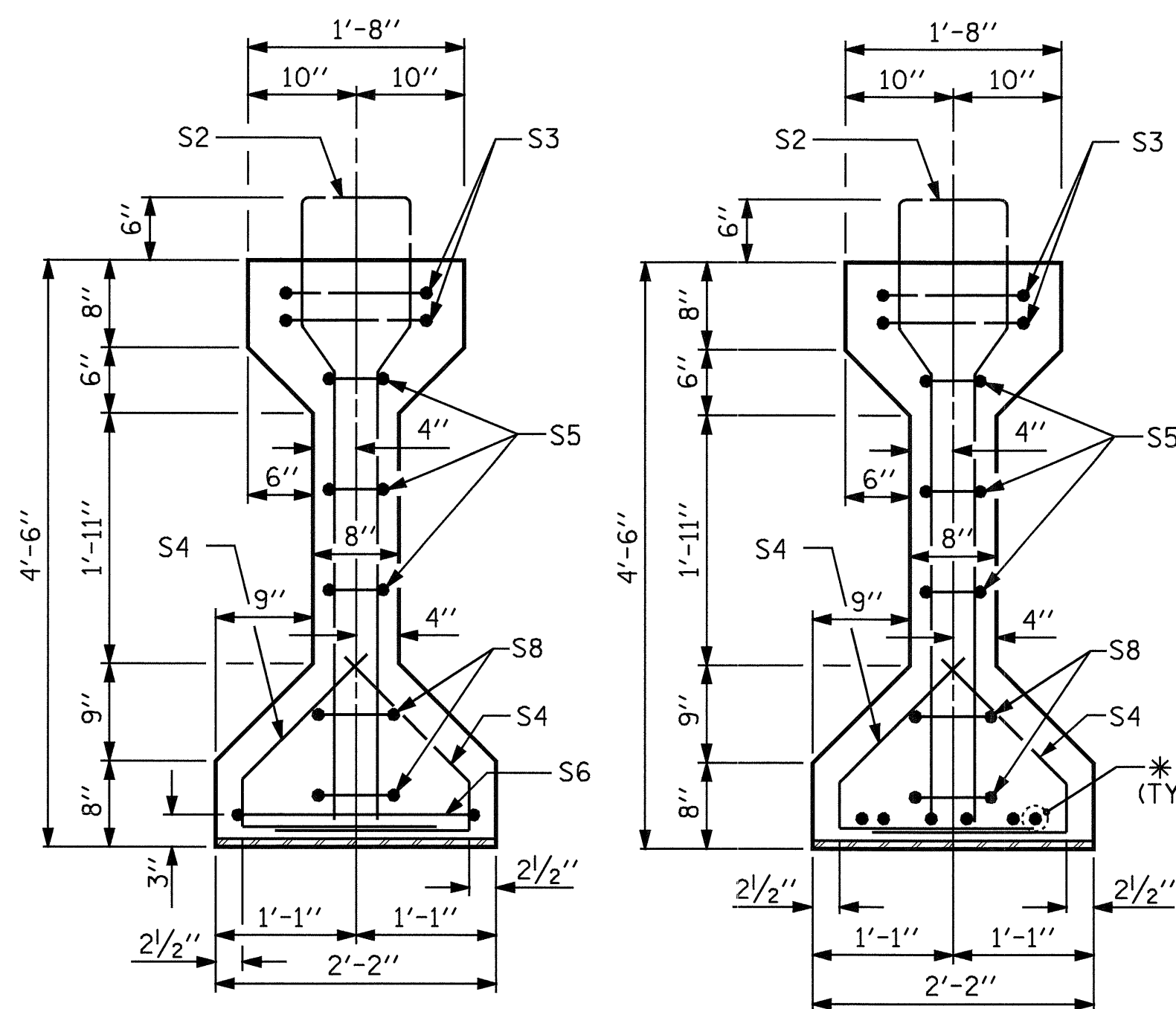
SHEET 5 OF 5

STATE OF NORTH CAROLINA
 RALEIGH
 SUPERSTRUCTURE
 FRAMING PLAN
 SPANS I & J



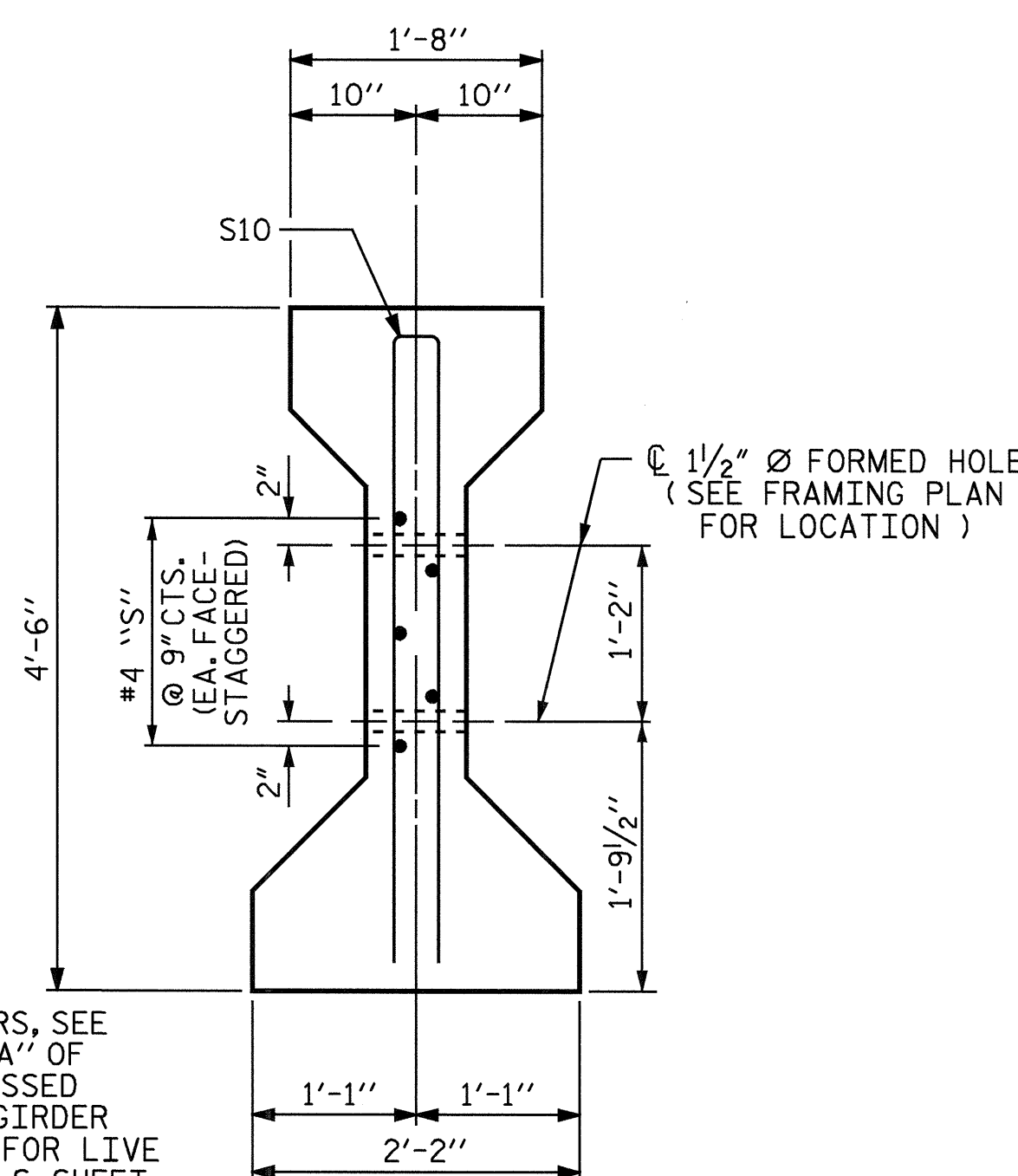
DRAWN BY : M. POOLE DATE : 04/05
 CHECKED BY : D. HODGE DATE : 09/05

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			5-30
2			4			6A



SECTION A-A

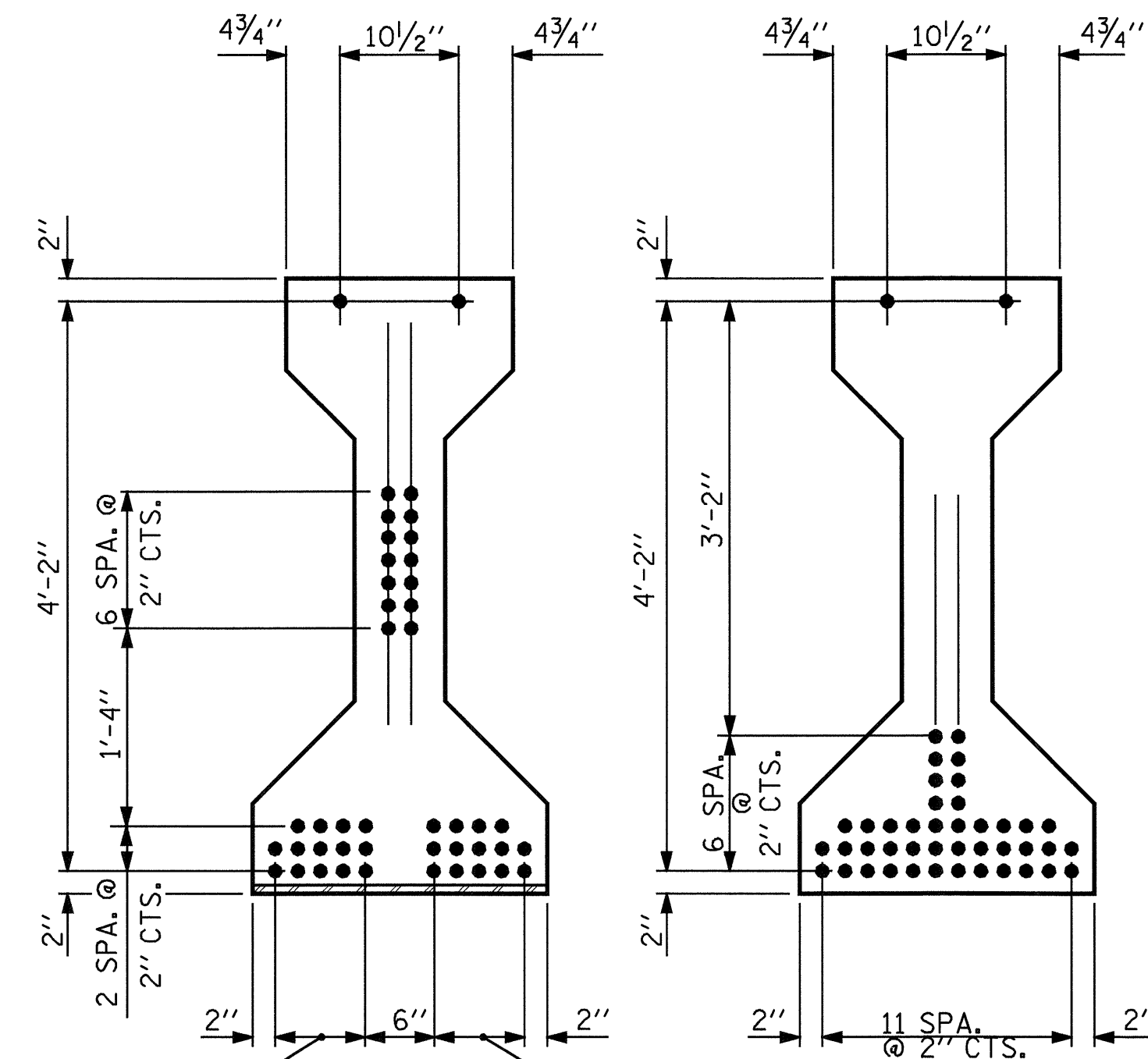
SECTION B-B



SECTION C-C

(S1 BARS NOT SHOWN)

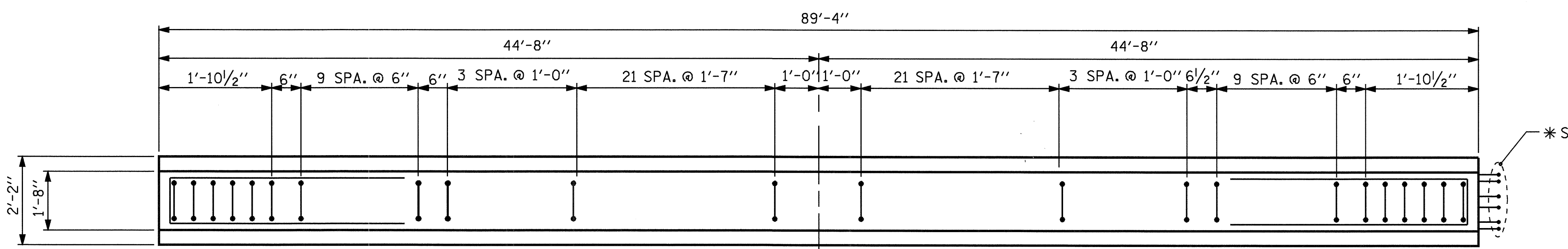
* FOR S7 BARS, SEE
DETAIL "A" OF
PRESTRESSED
CONCRETE GIRDER
CONTINUOUS FOR LIVE
LOAD DETAILS SHEET



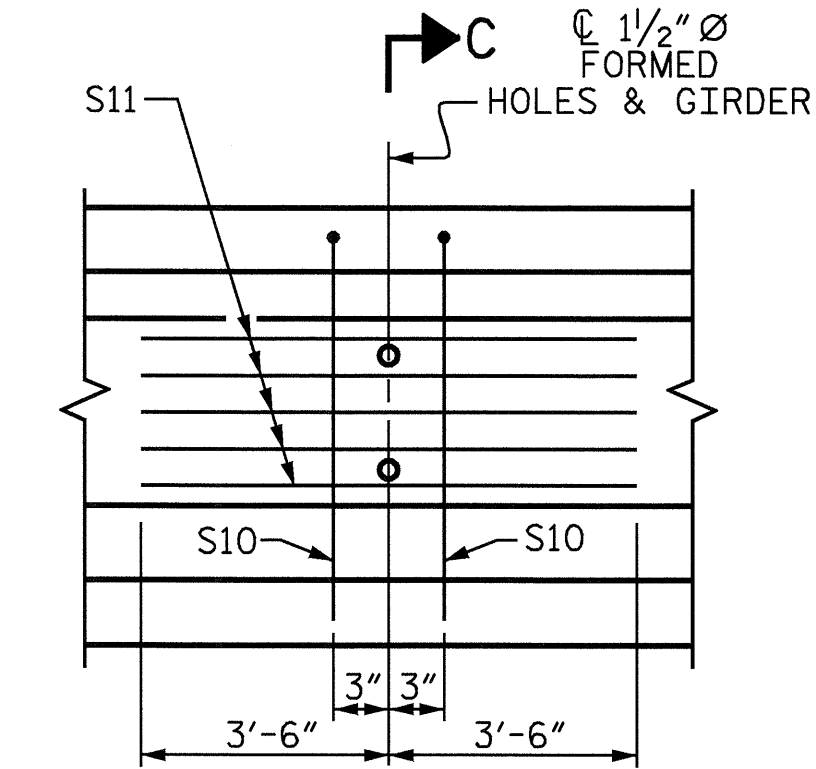
AT END OF GIRDER

AT C OF GIRDER

1/2" Ø LOW RELAXATION STRAND LAYOUT

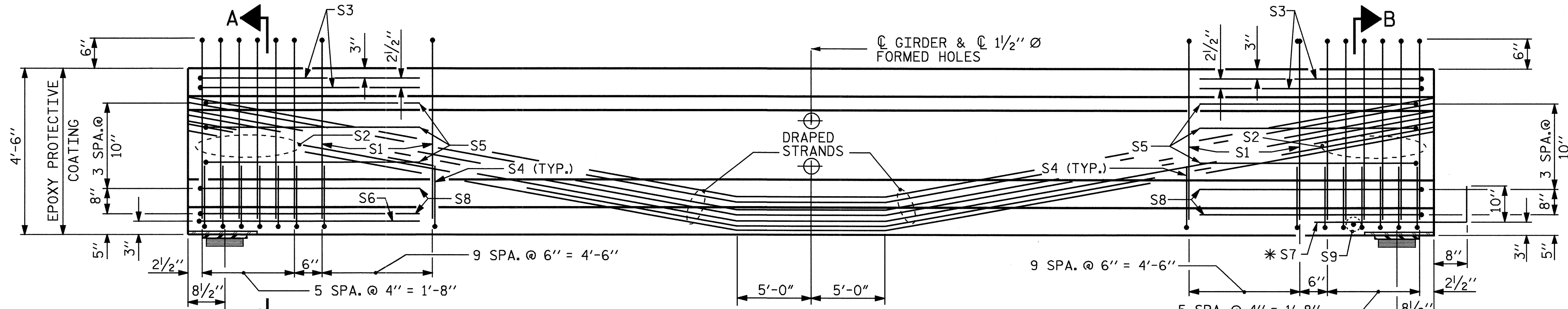


PLAN OF GIRDER



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM
REINFORCING STEEL FOR GIRDER Nos. 1-4
(FOR ALL EXTERIOR GIRDERS AND
INTERIOR GIRDERS WITH 70° ≤ SKEW ≤ 110°)



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR S10 & S11 BARS)

AHEAD STATION SPAN A, C, & E

AHEAD STATION SPAN B & D

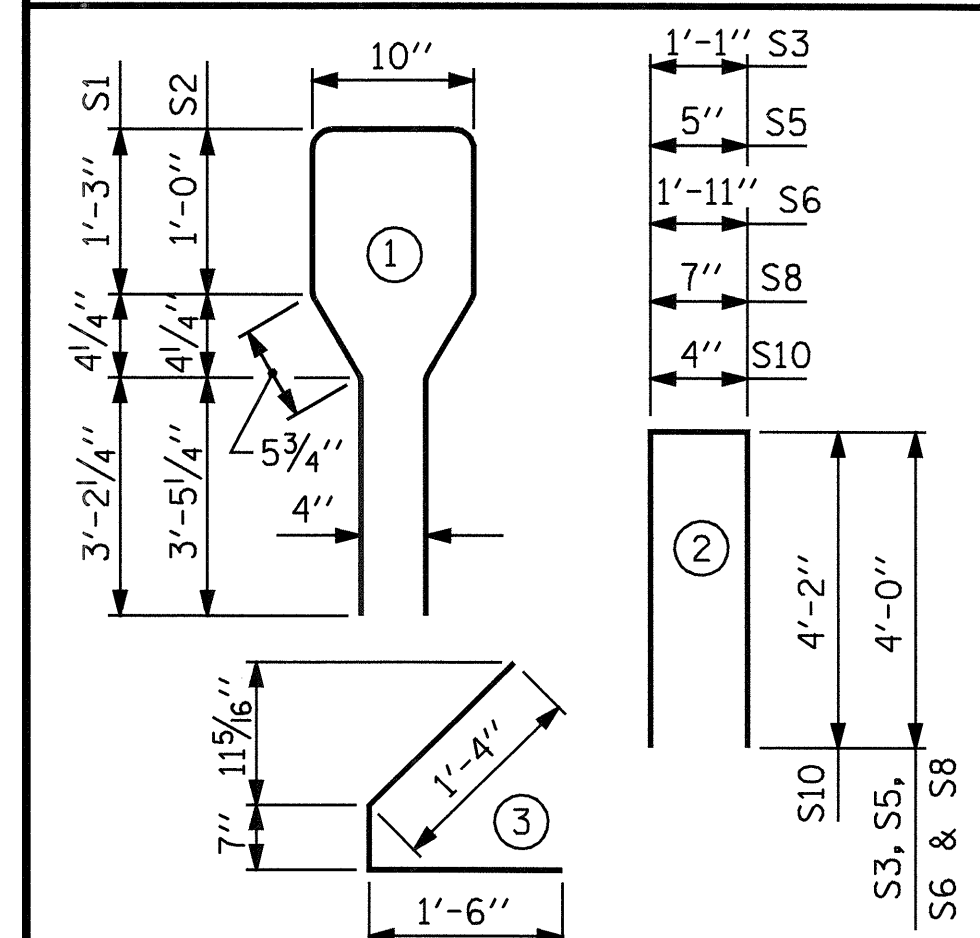
1/2" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.153	41,300	30,980

REINFORCING STEEL FOR ONE GIRDER					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	70	#4	1	10'-8"	499
S2	12	#6	1	10'-8"	192
S3	4	#4	2	9'-1"	24
S4	64	#4	3	3'-5"	146
S5	6	#4	2	8'-5"	34
S6	1	#4	2	9'-11"	7
*S7	6	#5	STR	3'-8"	23
S8	4	#4	2	8'-7"	23
S9	1	#3	STR	1'-10"	1
S10	2	#5	2	8'-8"	18
S11	5	#4	STR	7'-0"	23

* NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



QUANTITIES FOR ONE GIRDER

REINFORCING STEEL	7000 PSI CONCRETE	1/2" Ø L.R. STRANDS
LB.	C.Y.	No.
990	18.1	44

GIRDERS REQUIRED

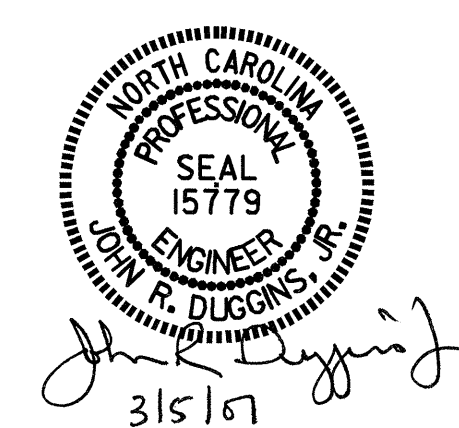
NUMBER	LENGTH	TOTAL LENGTH
20	89.33	1786.66

PROJECT NO. B-4223
PENDER COUNTY
STATION: 33+52.00 -L-

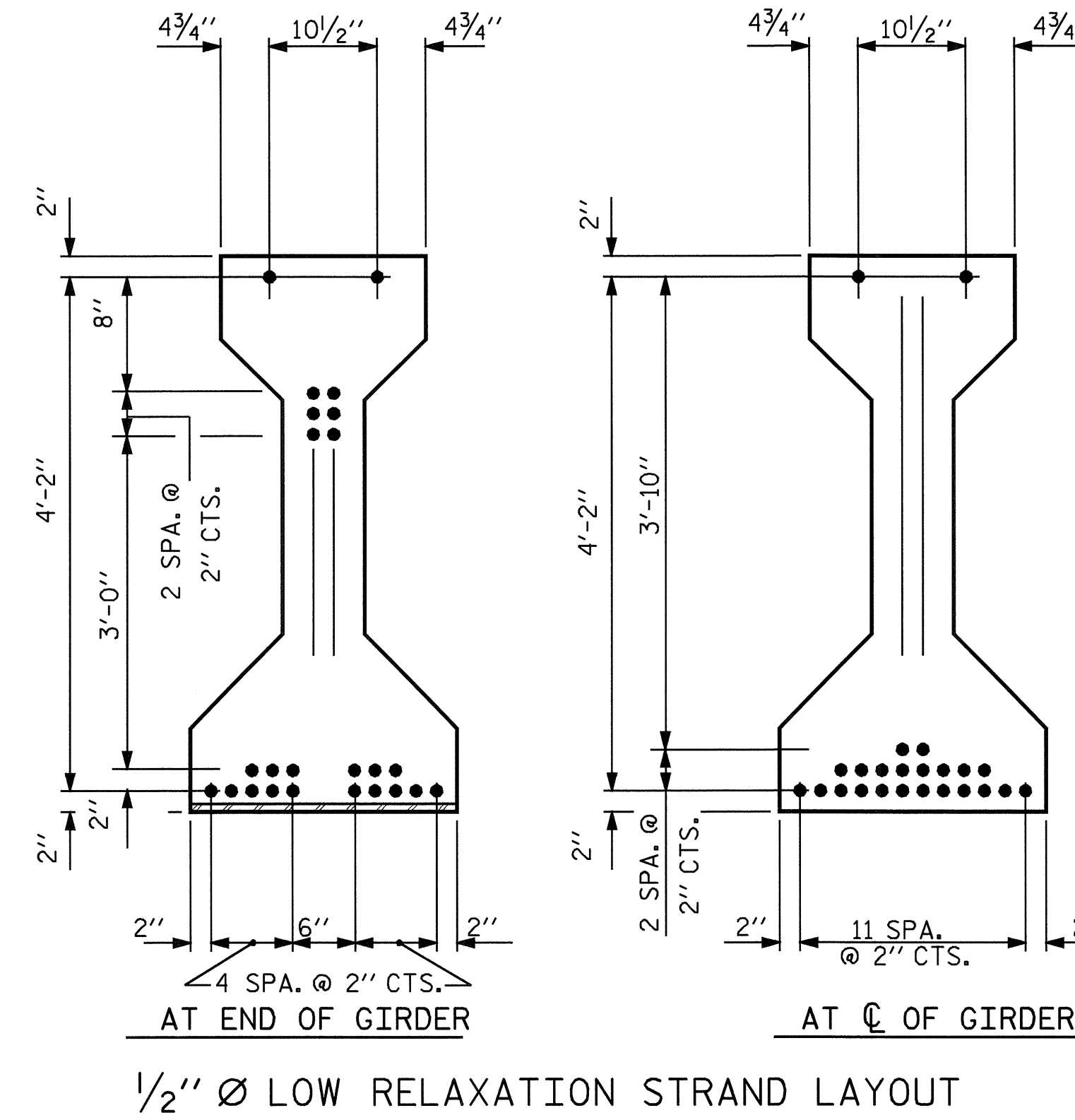
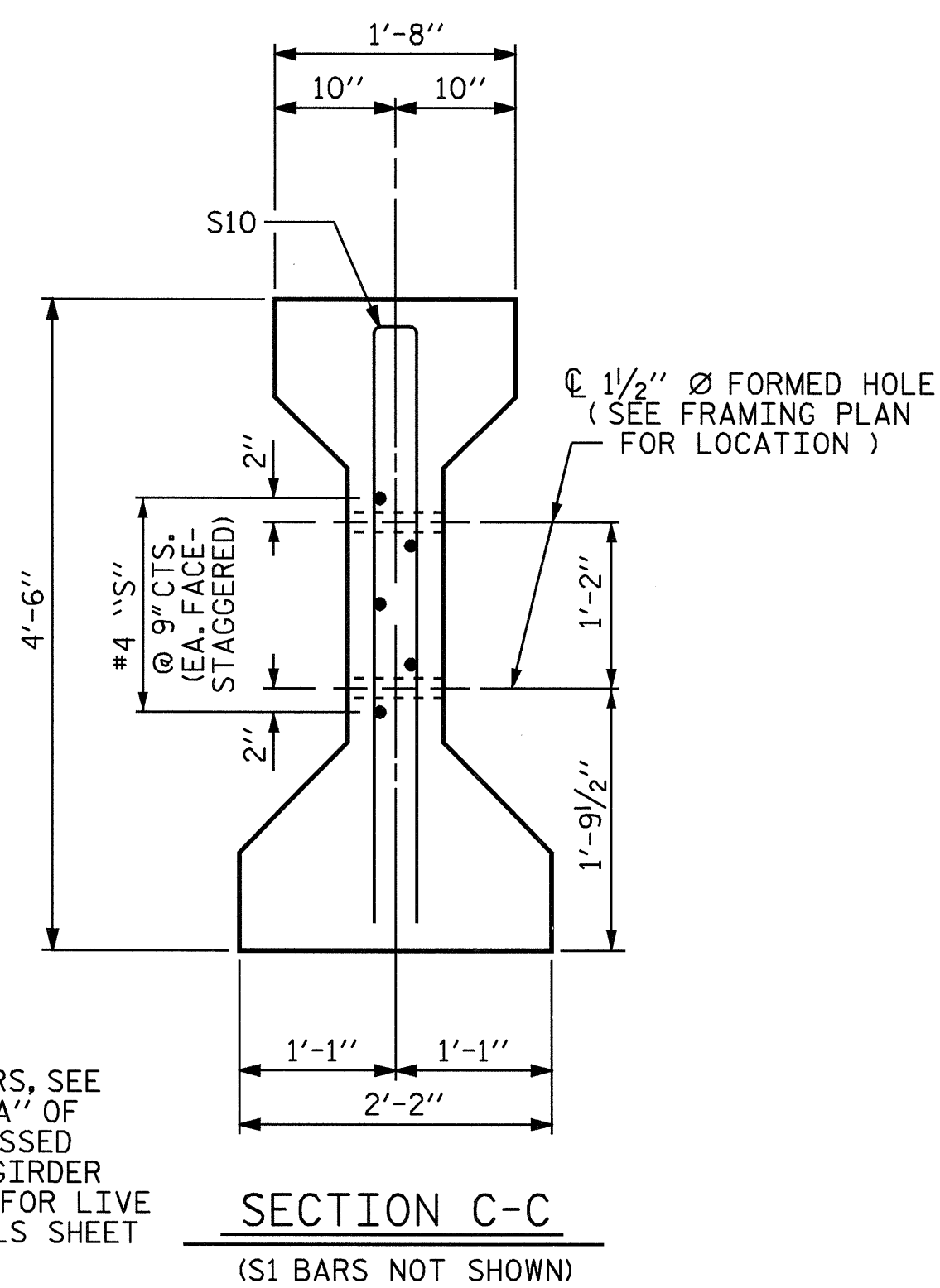
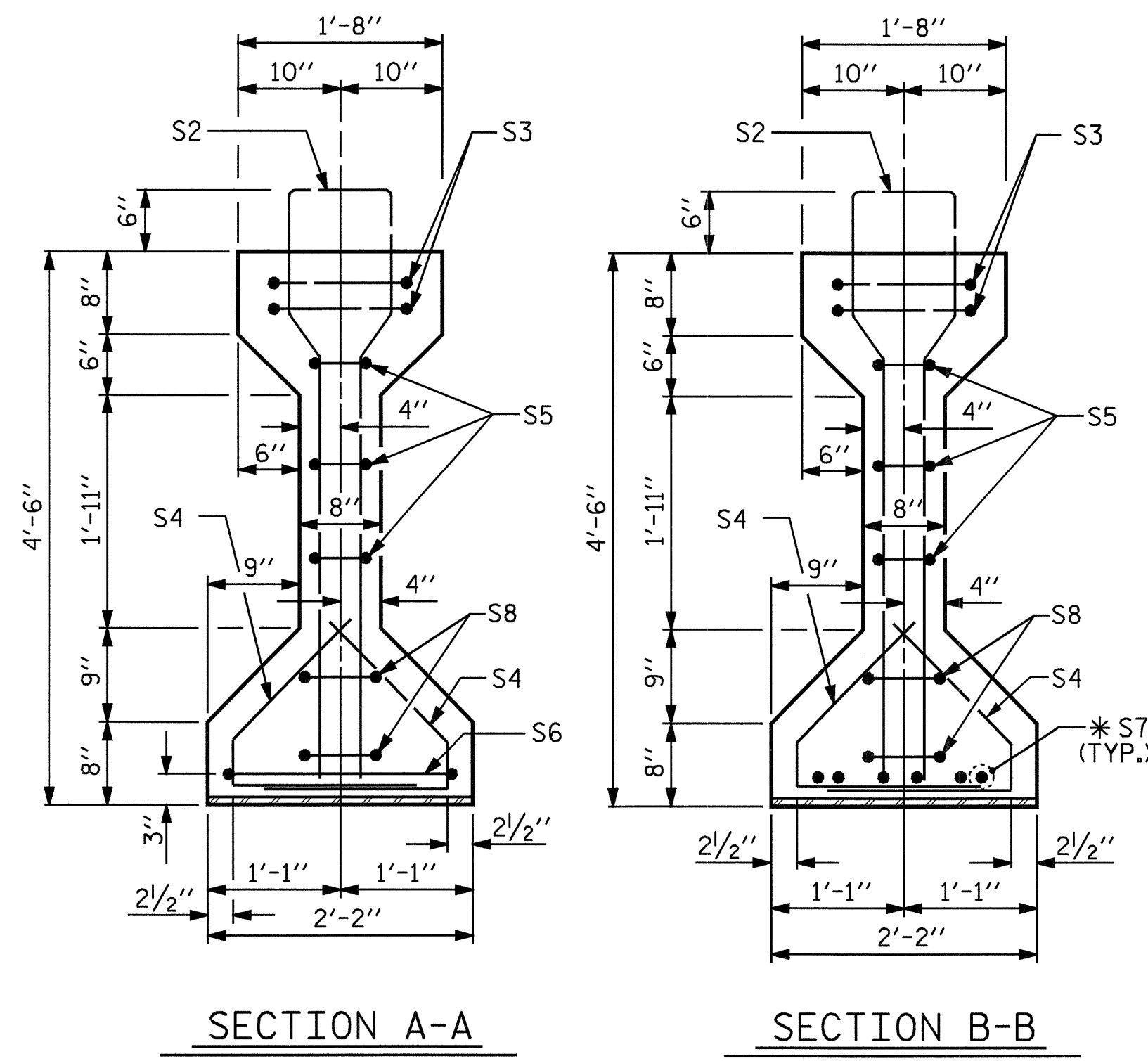
SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

AASHTO TYPE IV
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
SPANS A, B, C, D, & E



ASSEMBLED BY : M. POOLE	DATE : 01/07
CHECKED BY : S.W. PEARCE	DATE : 01/07
DRAWN BY : ELR 8/91	REV. 7/17/98 RWW/LES
CHECKED BY : GRP 8/91	REV. 10/17/00R RWW/LES
	REV. 5/1/06 TLA/GM



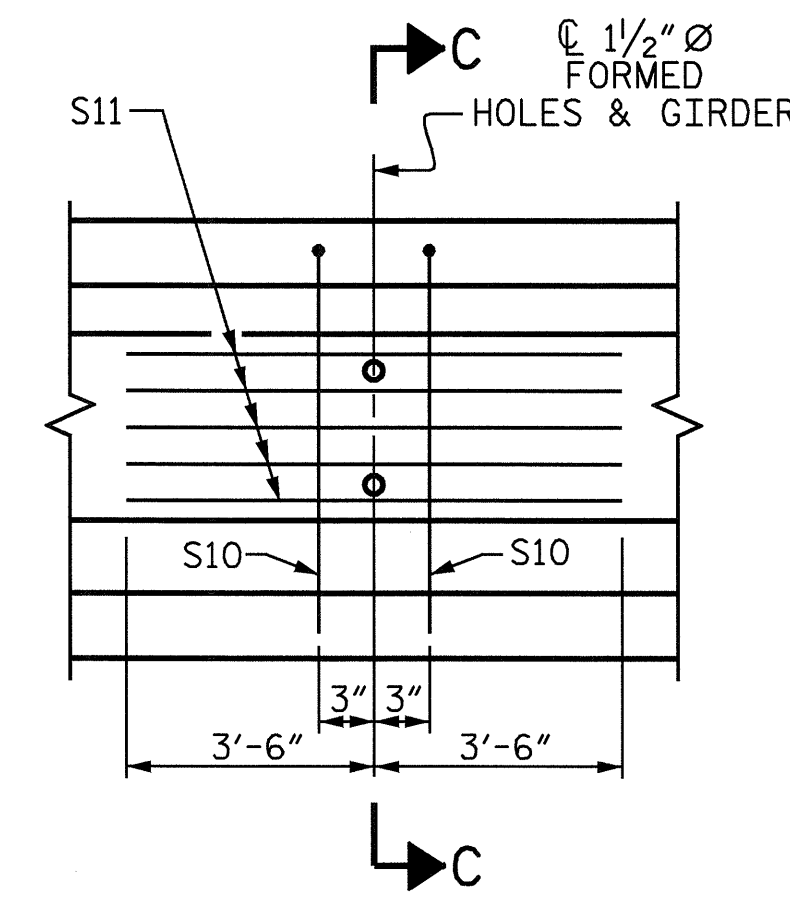
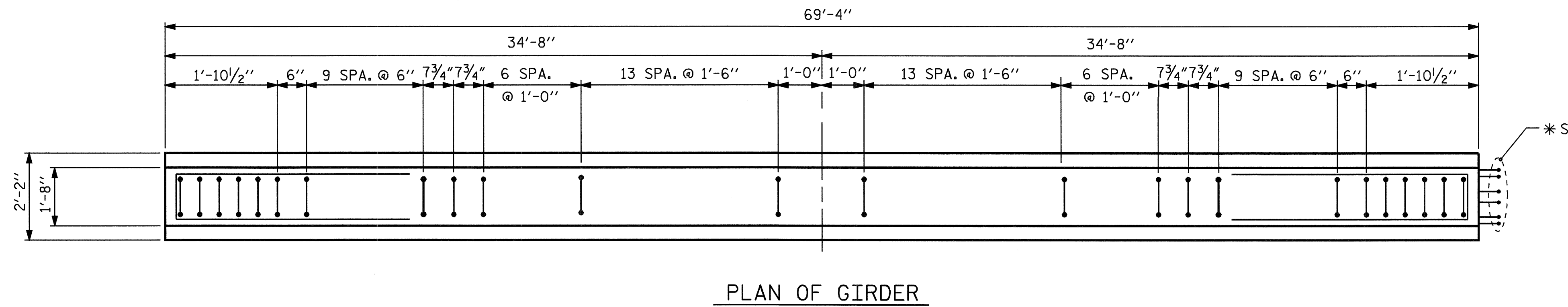
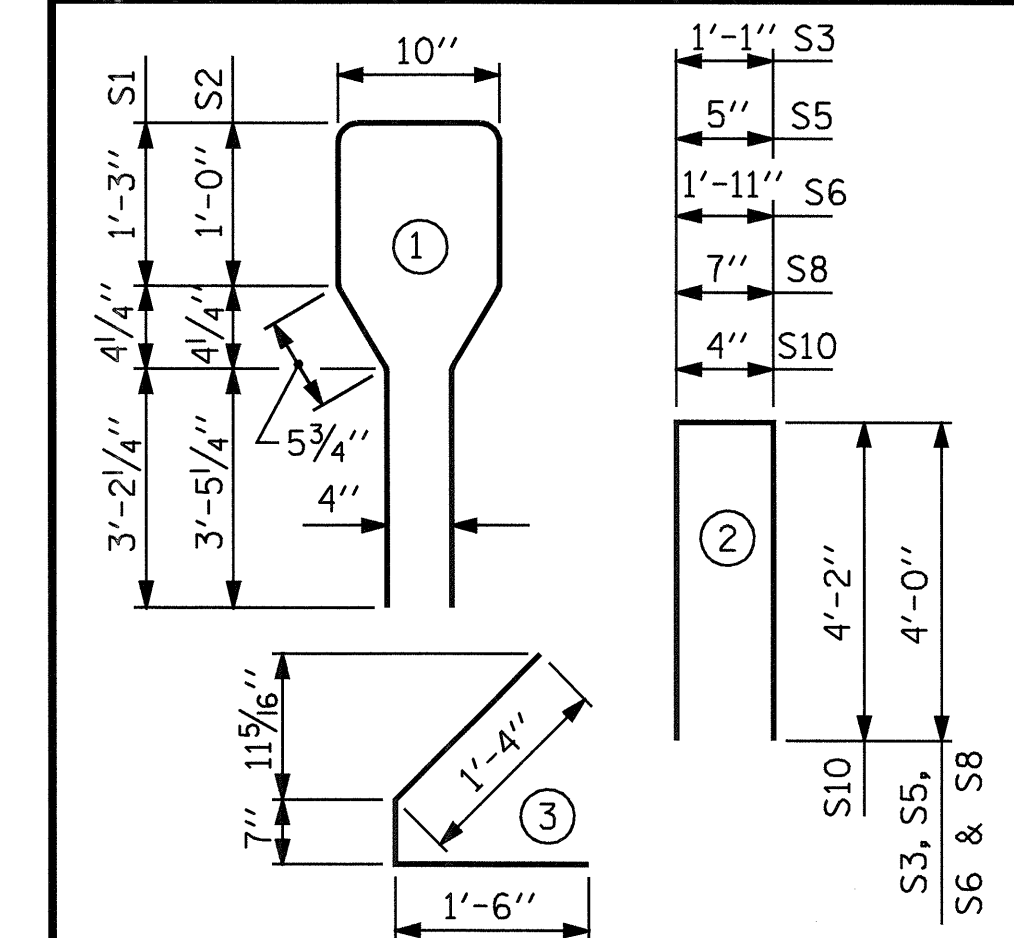
* FOR S7 BARS, SEE
DETAIL "A" OF
PRESTRESSED
CONCRETE GIRDER
CONTINUOUS FOR LIVE
LOAD DETAILS SHEET

1/2" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.153	41,300	30,980

REINFORCING STEEL FOR ONE GIRDER					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	62	#4	1	10'-8"	442
S2	12	#6	1	10'-8"	192
S3	4	#4	2	9'-1"	24
S4	64	#4	3	3'-5"	146
S5	6	#4	2	8'-5"	34
S6	1	#4	2	9'-11"	7
* S7	6	#5	STR	3'-8"	23
S8	4	#4	2	8'-7"	23
S9	1	#3	STR	1'-10"	1
S10	2	#5	2	8'-8"	18
S11	5	#4	STR	7'-0"	23

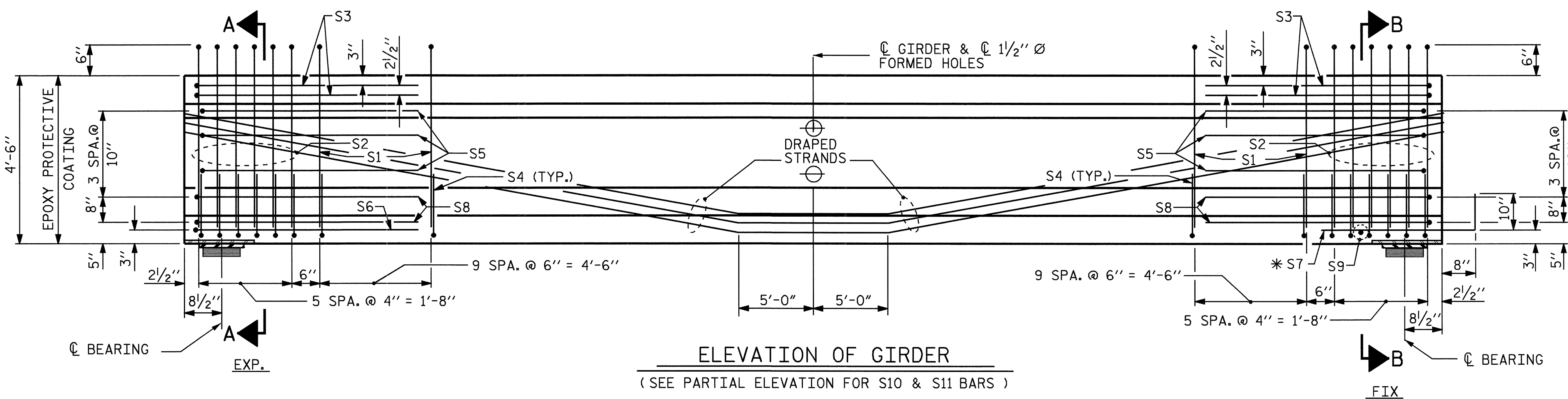
* NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES
ALL BAR DIMENSIONS ARE OUT-TO-OUT



QUANTITIES FOR ONE GIRDER			
REINFORCING STEEL	5000 PSI CONCRETE	1/2" Ø L.R. STRANDS	
LB.	C.Y.	No.	
933	14.1	24	

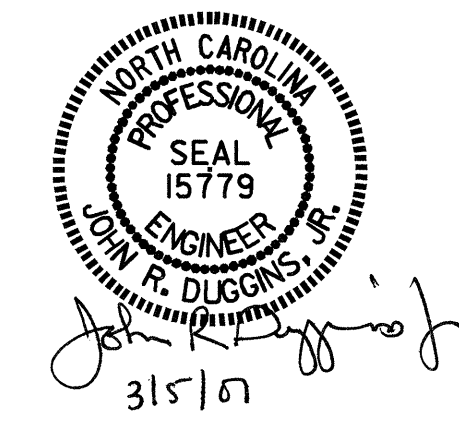
GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
4	69.33	277.33



SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. 1-4 (FOR ALL EXTERIOR GIRDERS AND INTERIOR GIRDERS WITH 70° ≤ SKEW ≤ 110°)

ASSEMBLED BY : M. POOLE DATE : 01/07
CHECKED BY : S.W. PEARCE DATE : 01/07
DRAWN BY : ELR 8/91 REV. 7/17/98 RWW/LES
CHECKED BY : GRP 8/91 REV. 10/17/00 RWW/LES
REV. 5/1/06 TLA/GM

14-FEB-2007 15:04
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mpoole

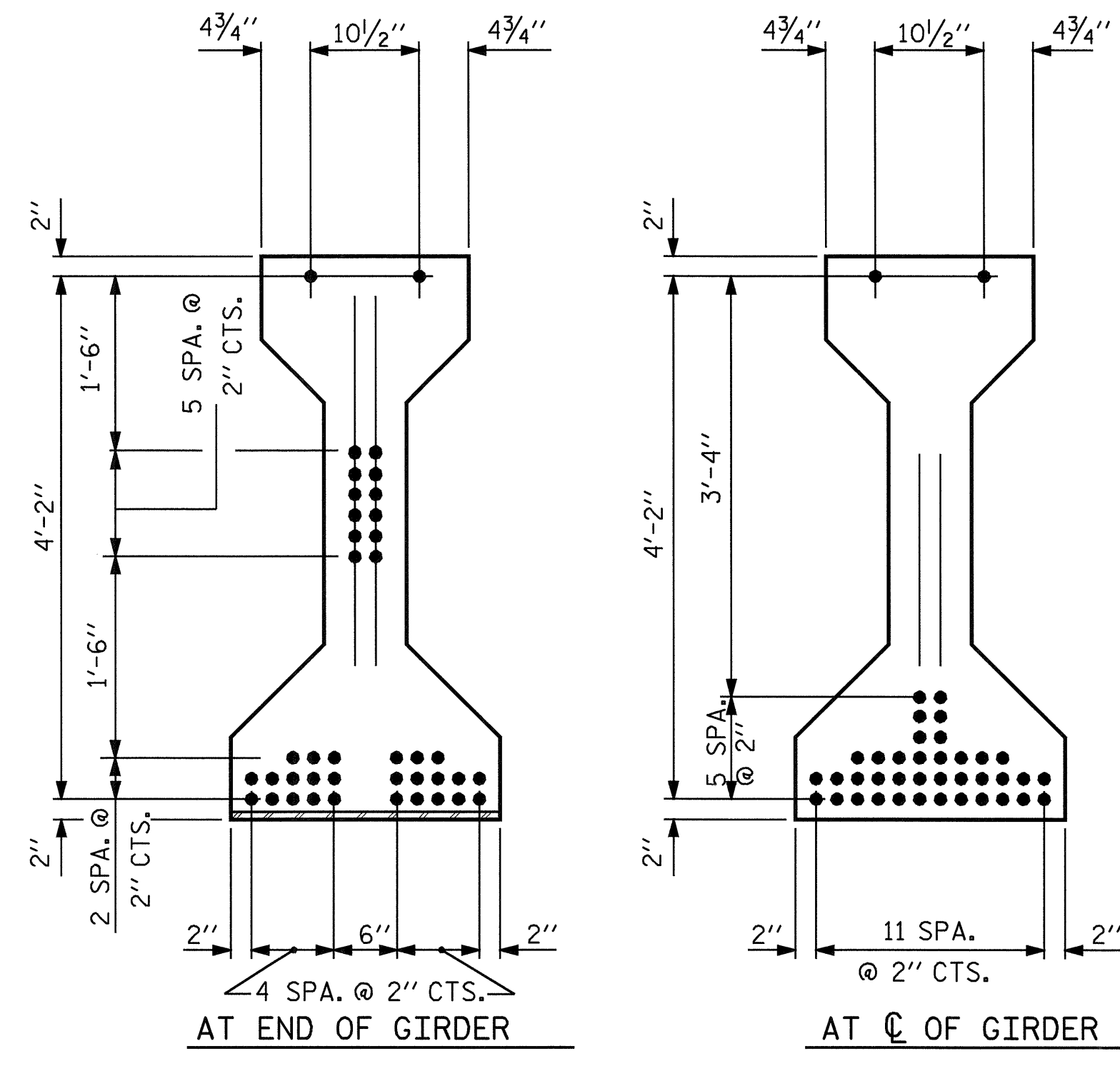
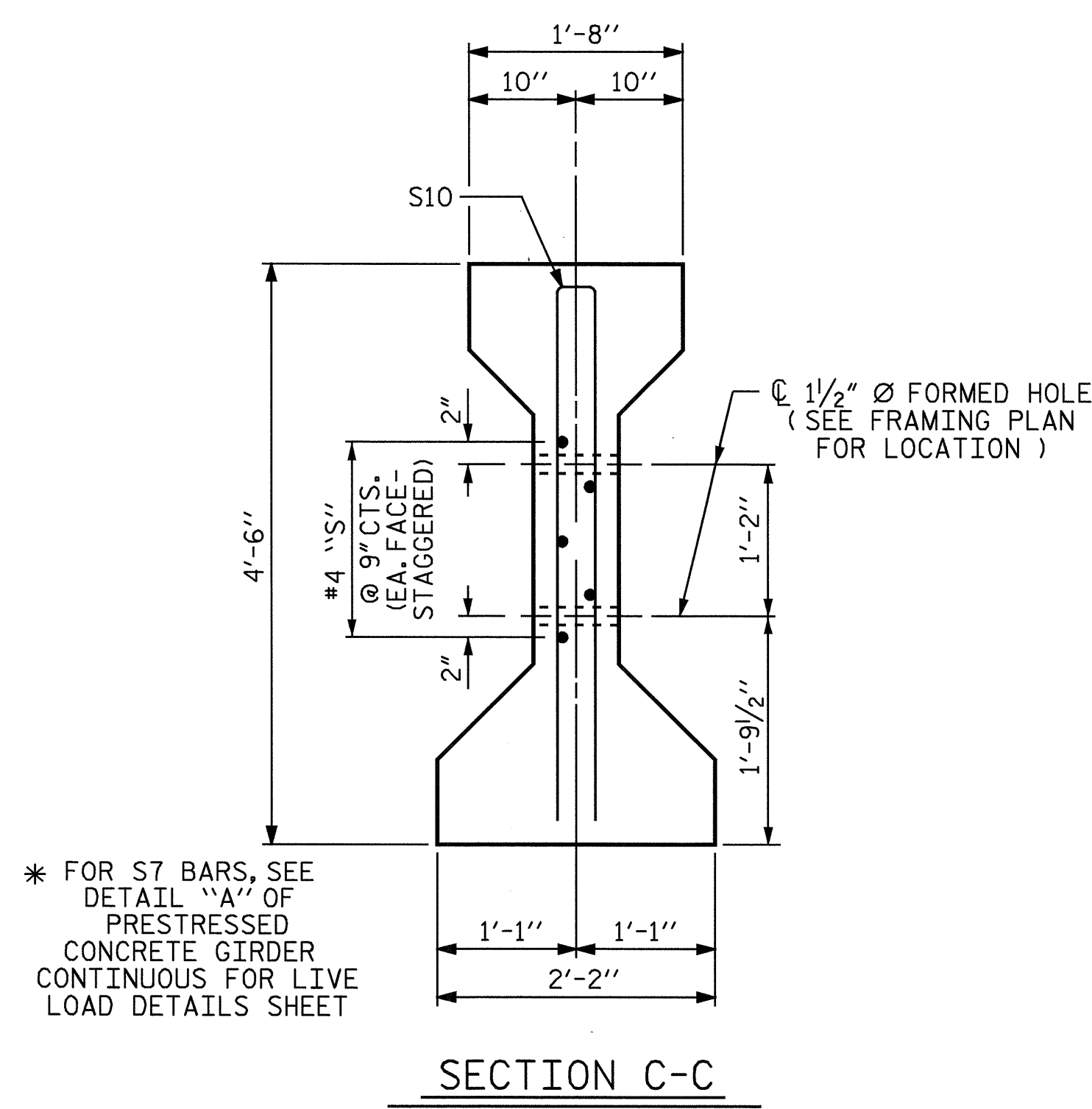
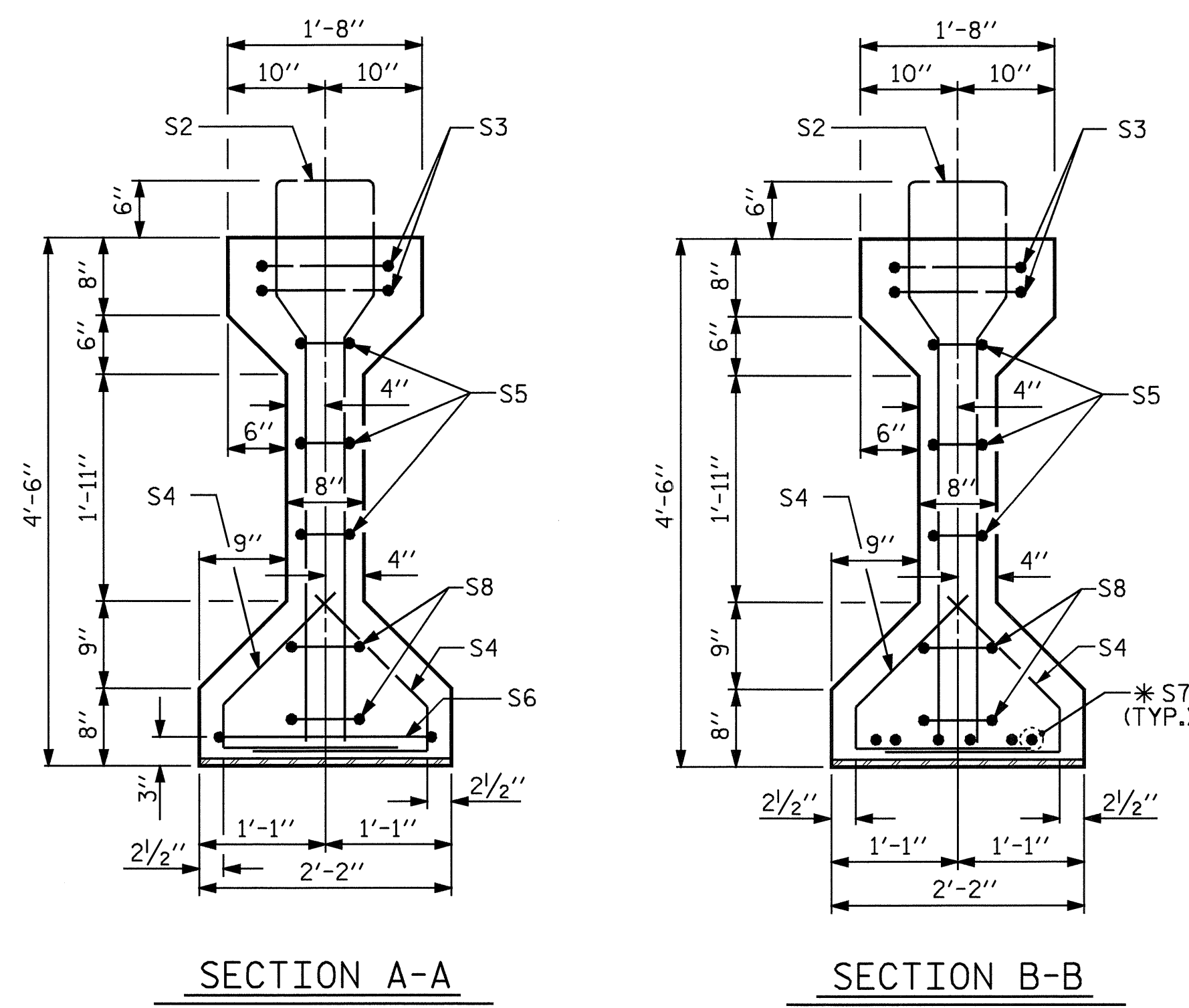


PROJECT NO. B-4223
PENDER COUNTY
STATION: 33+52.00 -L-
SHEET 2 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
AASHTO TYPE IV PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD SPAN F					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

TOTAL SHEETS: 64

STD. NO. PCG6

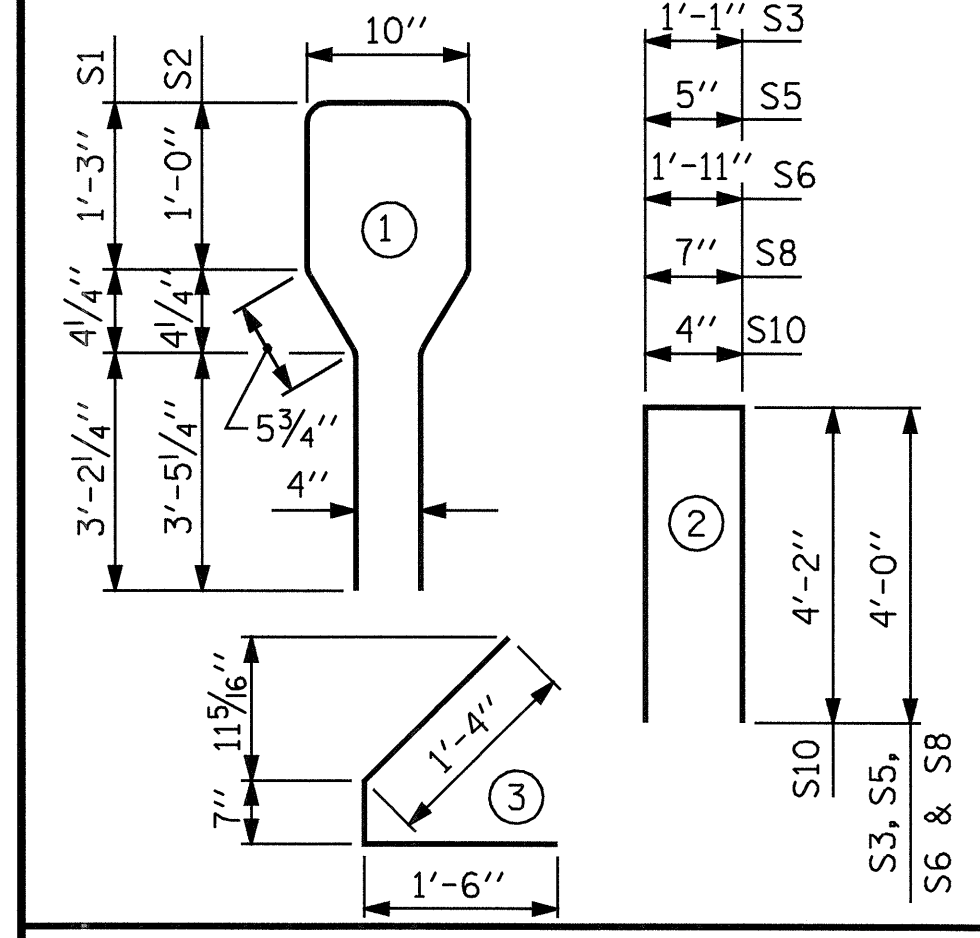


0.6 Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	82	#4	1	10'-8"	584
S2	12	#6	1	10'-8"	192
S3	4	#4	2	9'-1"	24
S4	64	#4	3	3'-5"	146
S5	6	#4	2	8'-5"	34
S6	1	#4	2	9'-11"	7
*S7	6	#5	STR	3'-8"	23
S8	4	#4	2	8'-7"	23
S9	1	#3	STR	1'-10"	1
S10	2	#5	2	8'-8"	18
S11	5	#4	STR	7'-0"	23

* NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES
ALL BAR DIMENSIONS ARE OUT-TO-OUT



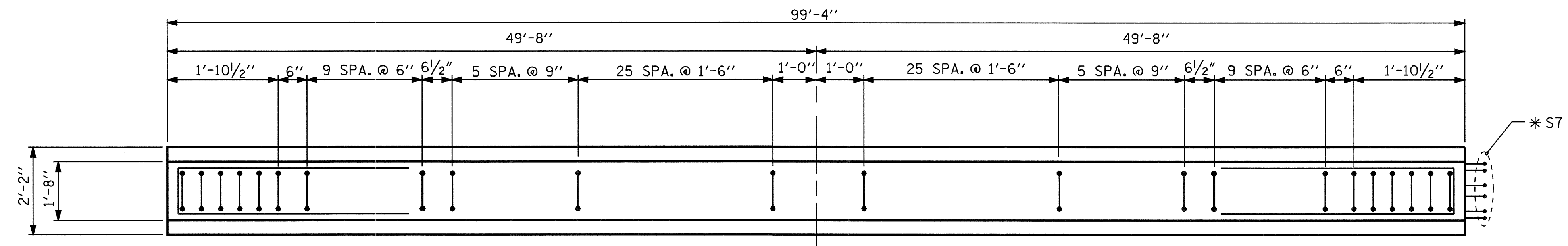
QUANTITIES FOR ONE GIRDER			
REINFORCING STEEL LB.	7800 PSI CONCRETE C.Y.	0.6 Ø L.R. STRANDS No.	
1075	20.2	40	

GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
16	99.33	1589.33

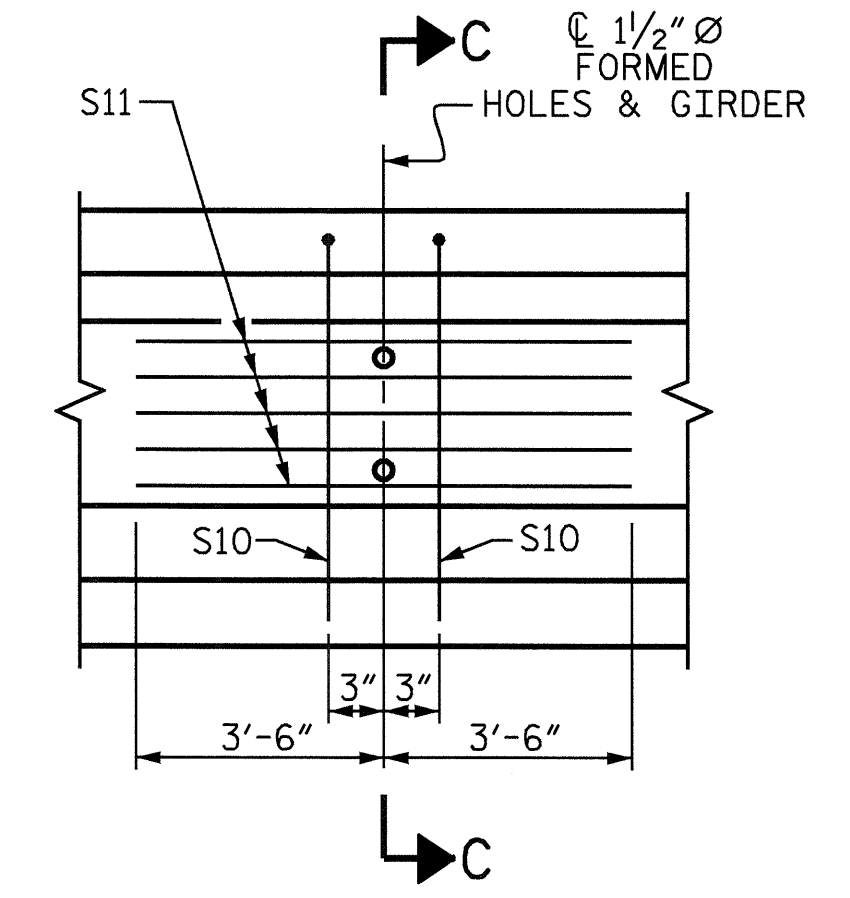
* FOR S7 BARS, SEE DETAIL "A" OF PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS SHEET

SECTION C-C
(S1 BARS NOT SHOWN)

0.6 Ø LOW RELAXATION STRAND LAYOUT

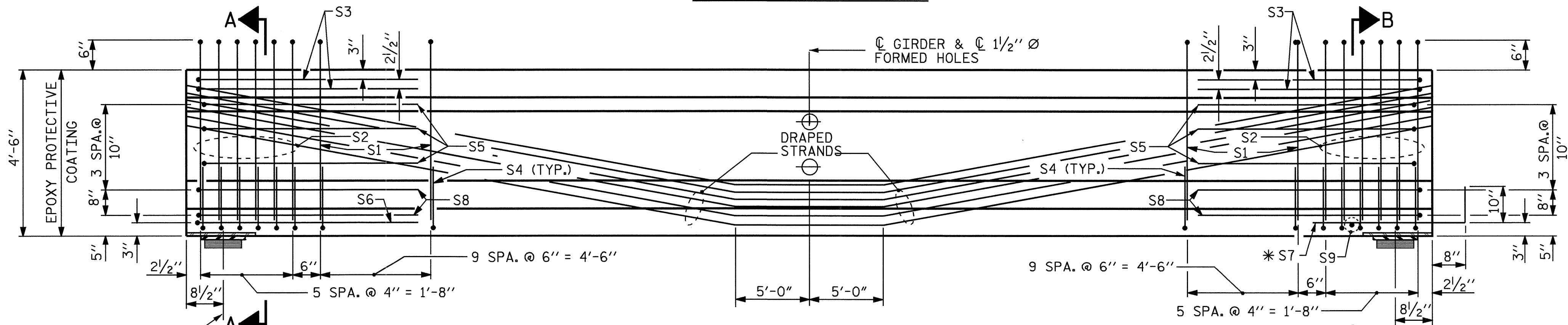


PLAN OF GIRDER



PARTIAL ELEVATION

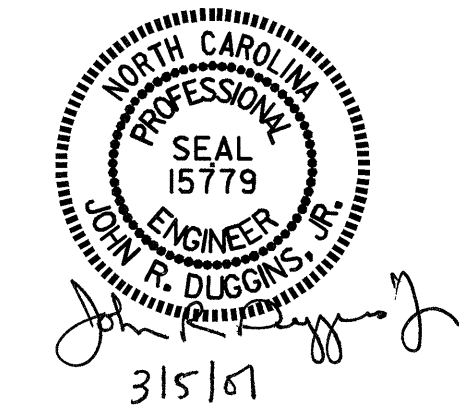
SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. 1-4 (FOR ALL EXTERIOR GIRDERS AND INTERIOR GIRDERS WITH 70° ≤ SKEW ≤ 110°)



ELEVATION OF GIRDER
(SEE PARTIAL ELEVATION FOR S10 & S11 BARS)

NOTE: THE UPLIFT FORCE DUE TO DRAPED STRANDS IS 21.6 KIPS

ASSEMBLED BY : M. POOLE	DATE : 01/07
CHECKED BY : S.W. PEARCE	DATE : 01/07
DRAWN BY : ELR 8/91	REV. 7/17/98 RWW/LES
CHECKED BY : GRP 8/91	REV. 10/17/00R RWW/LES
	REV. 5/1/06 TLA/GM



PROJECT NO. B-4223
PENDER COUNTY
STATION: 33+52.00 -L-

SHEET 3 OF 3

REVISIONS						SHEET NO. S-33
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 64
2			4			

NOTES

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW-RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL SHALL BE GRADE 60.

APPLY EPOXY PROTECTIVE COATING TO END OF GIRDER SURFACES INDICATED IN ELEVATION VIEW. FOR EPOXY PROTECTIVE COATING.

EMBEDDED PLATE "B-1" SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. BEVEL EDGES OF PLATE "B-1" TO GIVE CLOSE FIT BUT NOT TIGHT FIT TO STEEL CASTING FORM.

ANCHOR STUDS SHALL CONFORM TO AASHTO M169 GRADES 1010 THROUGH 1020 OR APPROVED EQUAL, AND SHALL MEET THE TYPE "B" REQUIREMENTS OF SUBSECTION 7.3 OF THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE.

AT ENDS OF GIRDERS TO BE EMBEDDED IN CONCRETE DIAPHRAGMS OR END WALLS, PRESTRESSING STRANDS MAY EXTEND A MAXIMUM OF 2" BEYOND THE GIRDER ENDS. OTHERWISE, PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE GIRDER ENDS.

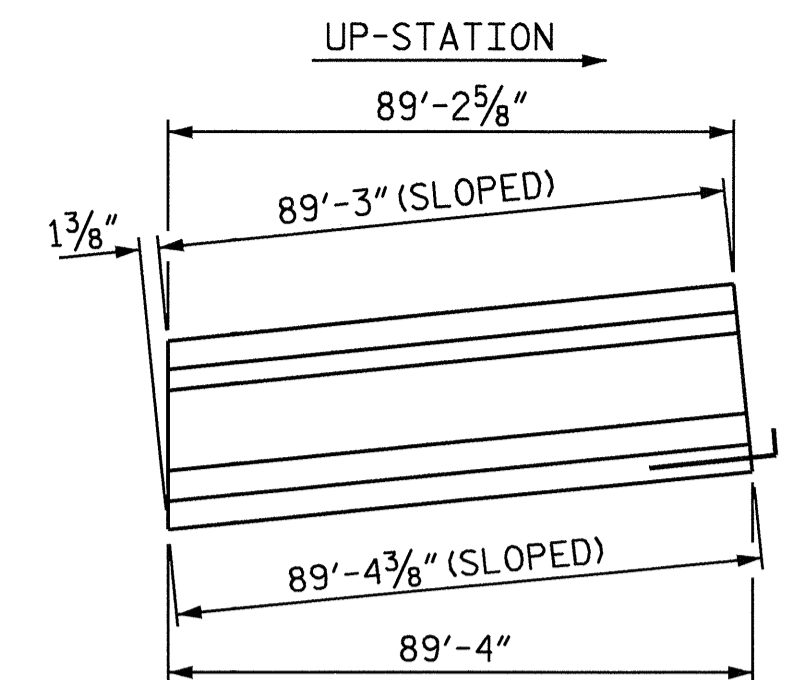
THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN : 4800 PSI FOR SPANS A THRU E
4000 PSI FOR SPAN F
6200 PSI FOR SPANS G THRU J

DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

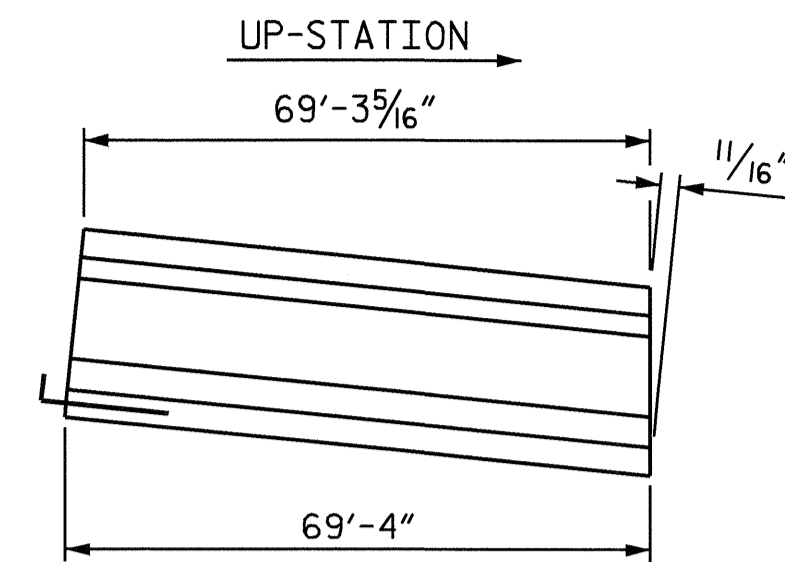
THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4", SHALL BE RAKED TO A DEPTH OF 1/4".

WHEN DRAPED STRANDS ARE DETAILED, THE LONGITUDINAL LOCATION OF THE HOLD DOWN DEVICES SHALL BE WITHIN 6" OF THE LOCATION SHOWN AND THE CENTER OF GRAVITY OF THE GROUP OF DRAPED STRANDS SHALL BE LOCATED WITHIN 1/2" OF THE THEORETICAL LOCATION SHOWN.

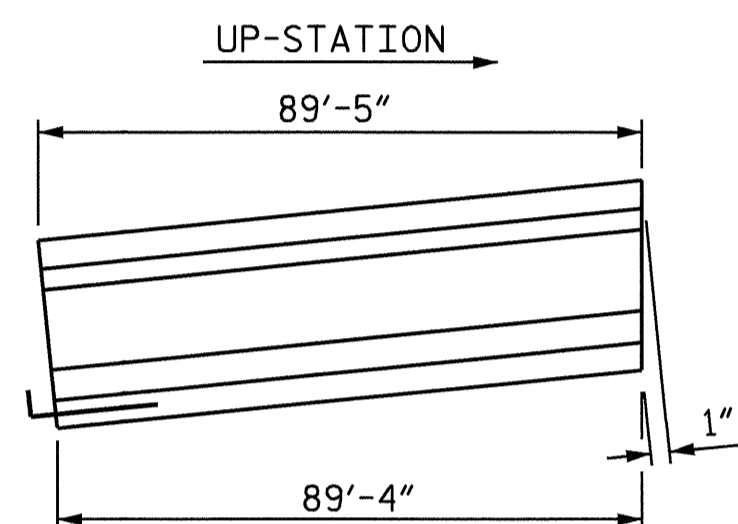
FOR CRACK REPAIR OF PRESTRESSED CONCRETE GIRDERS, SEE SPECIAL PROVISIONS.



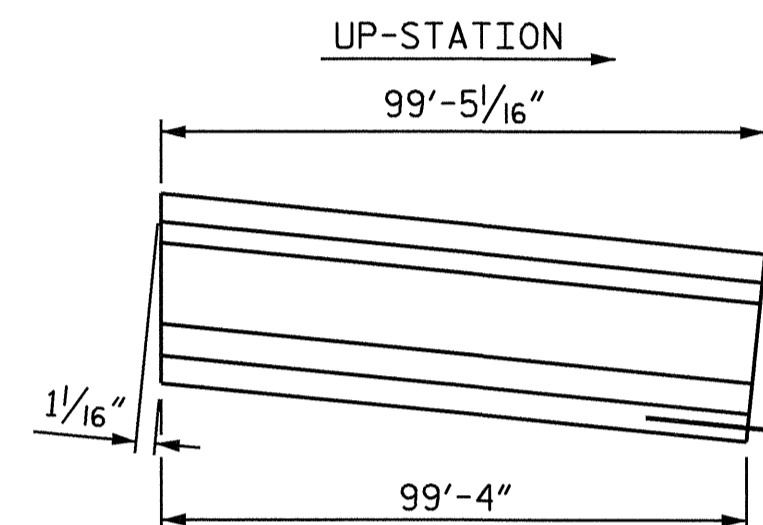
SPAN A
ELEVATION OF GIRDER
SHOWING BEVEL AND SLOPE LENGTH



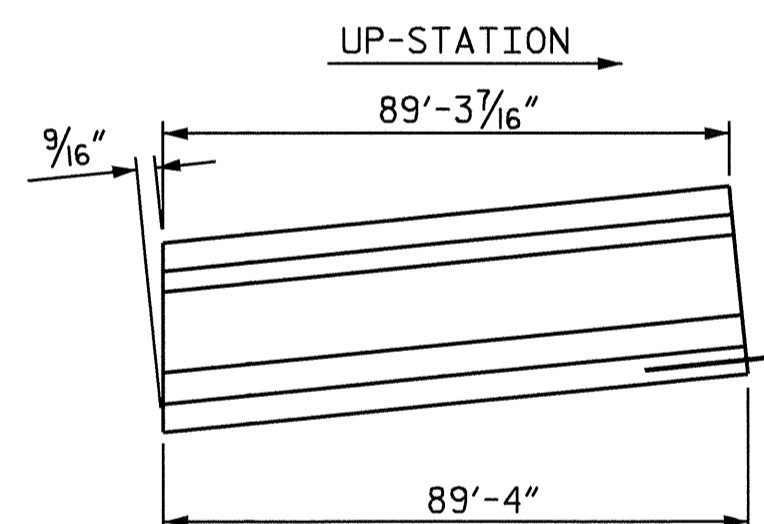
SPAN F
ELEVATION OF GIRDER
SHOWING BEVEL



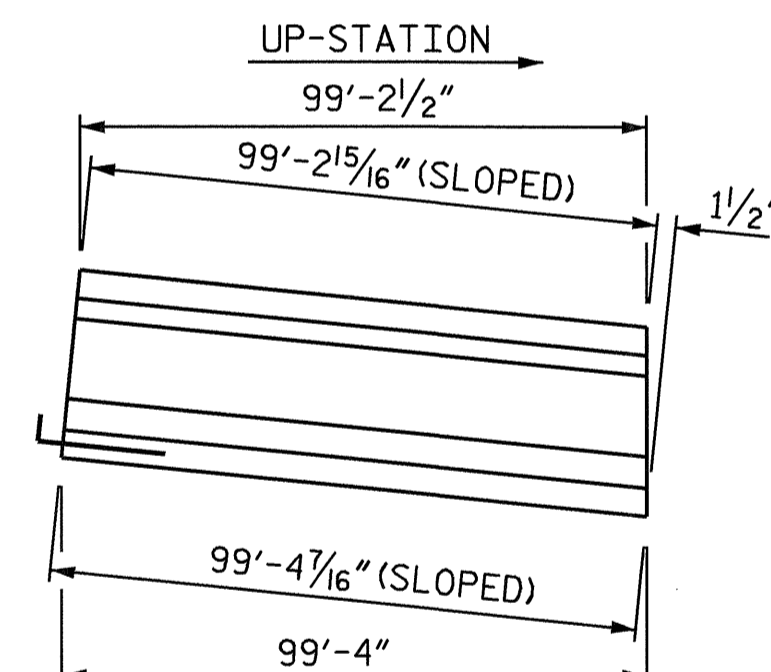
SPAN B
ELEVATION OF GIRDER
SHOWING BEVEL



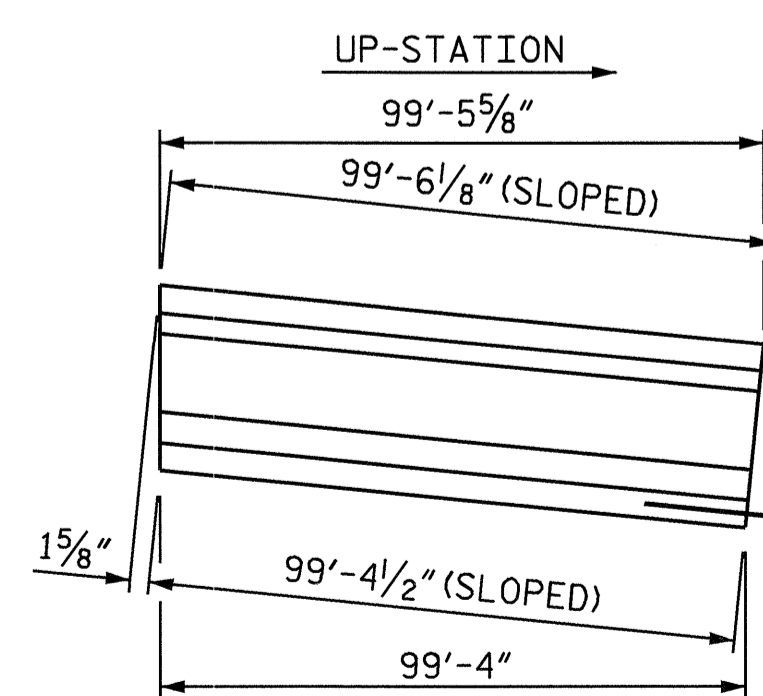
SPAN G
ELEVATION OF GIRDER
SHOWING BEVEL



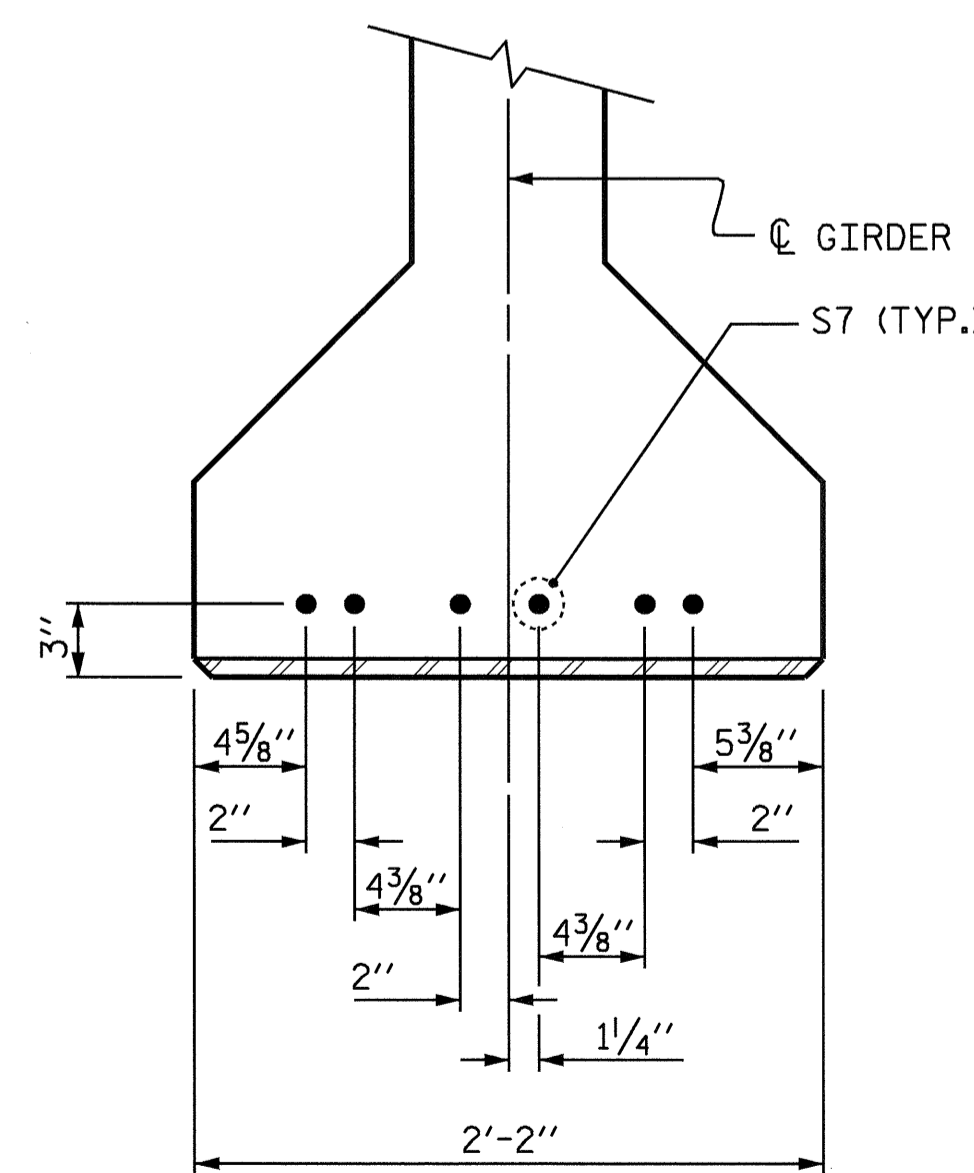
SPAN C
ELEVATION OF GIRDER
SHOWING BEVEL



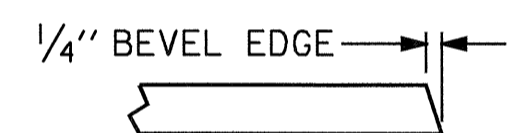
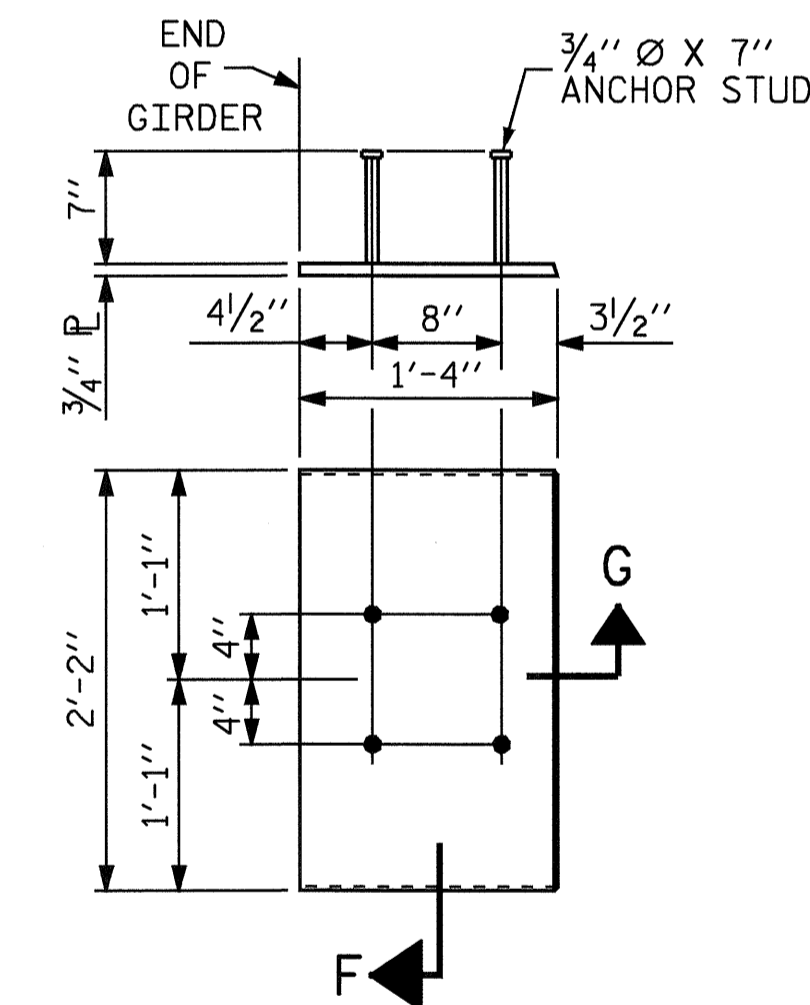
SPAN H
ELEVATION OF GIRDER
SHOWING BEVEL AND SLOPE LENGTH



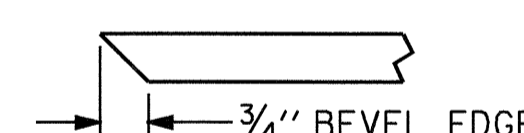
SPANS I & J
ELEVATION OF GIRDER
SHOWING BEVEL AND SLOPE LENGTH



DETAIL "A"
(FOR AASHTO TYPE IV GIRDERS)



SECTION "G"



SECTION "F"

(SEE NOTES)

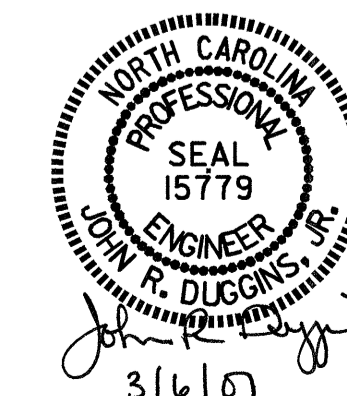
**EMBEDDED PLATE "B-1" DETAILS
FOR AASHTO TYPE IV GIRDER**

(2 REQ'D PER GIRDER)

PROJECT NO. B-4223
PENDER COUNTY
STATION: 33+52.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
DETAILS



ASSEMBLED BY : M. POOLE	DATE : 06/05
CHECKED BY : D. HODGE	DATE : 08/05
DRAWN BY : ELR 11/91	REV. 8/16/99 MAB/LES
CHECKED BY : GRP 11/91	REV. 10/17/00 RWW/LES
	REV. 7/10/01RR LES/RDR

REVISIONS						TOTAL SHEETS
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			34
2			4			4

STRUCTURAL STEEL NOTES

ALL INTERMEDIATE DIAPHRAGM STEEL, CONNECTOR PLATES AND PLATE WASHERS SHALL BE AASHTO M270 GRADE 50 OR APPROVED EQUAL.

TENSION ON THE AASHTO M164 BOLTS THROUGH THE CHANNEL MEMBER SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH ARTICLE 440-10 OF THE STANDARD SPECIFICATIONS.

TENSION ON THE AASHTO M164 BOLTS THROUGH THE GIRDER WEB SHALL BE SNUG TIGHTENED FOLLOWED BY AN ADDITIONAL 1/4 TURN.

THE CHANNELS, ANGLES, BOLTS, WASHERS, PLATE WASHERS AND DIRECT TENSION INDICATORS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS, OR METALLIZED. FOR METALLIZATION, SEE SPECIAL PROVISIONS. APPLY TSC WITH THE ALLOY (85 / 15 ZINC (W-Zn-AL-2)) TO THE THICKNESS OF 8 MIL AND A SEAL COAT OF 0.5 MIL.

USE A MINIMUM 7/16" THICK PLATE WASHER WITH STANDARD HOLES UNDER EACH BOLT HEAD AND NUT. THE PLATE WASHERS SHALL HAVE SUFFICIENT SIZE TO COVER THE HOLES AFTER INSTALLATION. DIRECT TENSION INDICATORS ARE TO BE USED IN CONJUNCTION WITH THE PLATE WASHERS.

PROVIDE SUFFICIENT LENGTH OF ALL BOLTS TO ACCOMMODATE WASHERS, DIRECT TENSION INDICATORS, THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

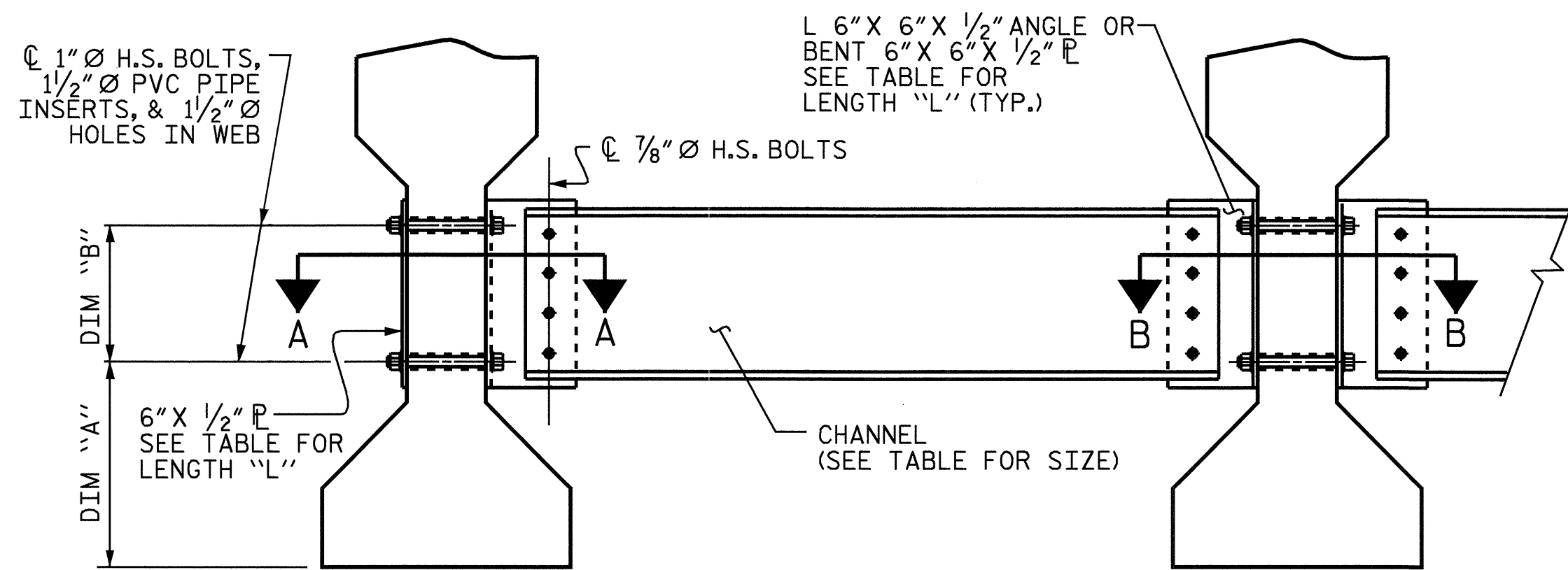
INTERMEDIATE DIAPHRAGM ASSEMBLY SHALL COMPLY WITH SECTION 1072 OF THE STANDARD SPECIFICATIONS.

CONTRACTOR SHALL SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

IN THE EXTERIOR BAYS, TEMPORARY STRUTS SHALL BE PLACED BETWEEN PRESTRESSED GIRDERS ADJACENT TO THE STEEL DIAPHRAGMS. STRUTS SHALL REMAIN IN PLACE 3 DAYS AFTER CONCRETE IS PLACED. ALL AASHTO M164 H.S. BOLTS SHALL BE FULLY TIGHTENED AFTER THE STRUTS HAVE BEEN REMOVED.

THE COST OF THE STEEL DIAPHRAGMS AND ASSEMBLIES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE GIRDERS.

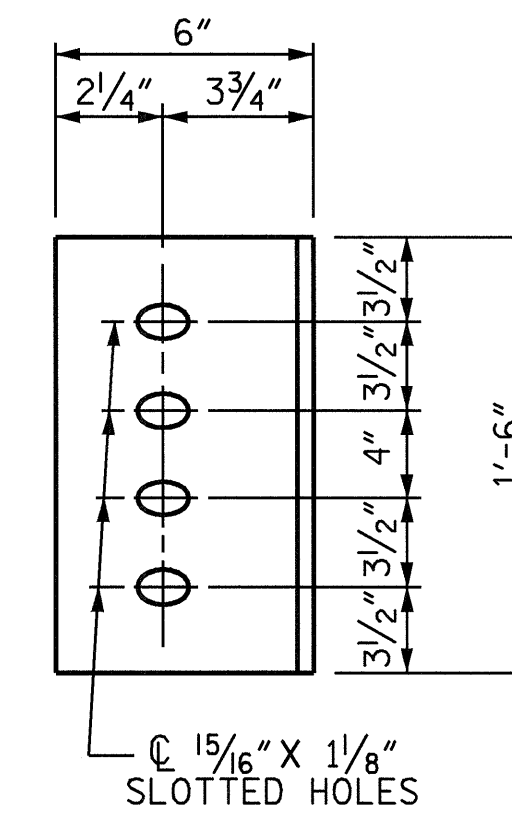
FOR HIGH STRENGTH BOLTS, SEE SPECIAL PROVISIONS.



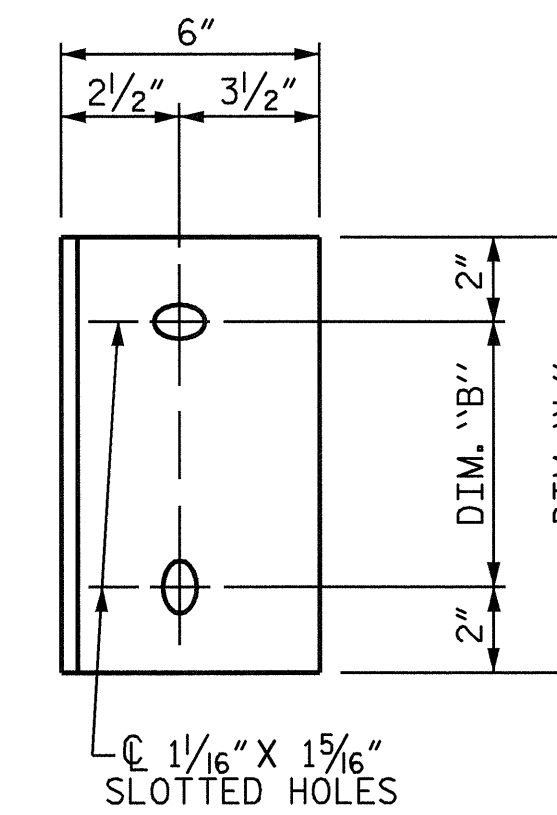
EXTERIOR GIRDER
INTERIOR GIRDER
PART SECTION AT INTERMEDIATE DIAPHRAGM
(TYPE III OR TYPE IV GIRDER SHOWN)

TABLE

GIRDER TYPE	CHANNEL SIZE	DIM "A"	DIM "B"	DIM "L"
IV	MC 18 x 42.7	1'-9 1/2"	1'-2"	1'-6"



DIAPHRAGM FACE
(TYPE III OR TYPE IV GDR.)



WEB FACE

CONNECTOR PLATE DETAILS

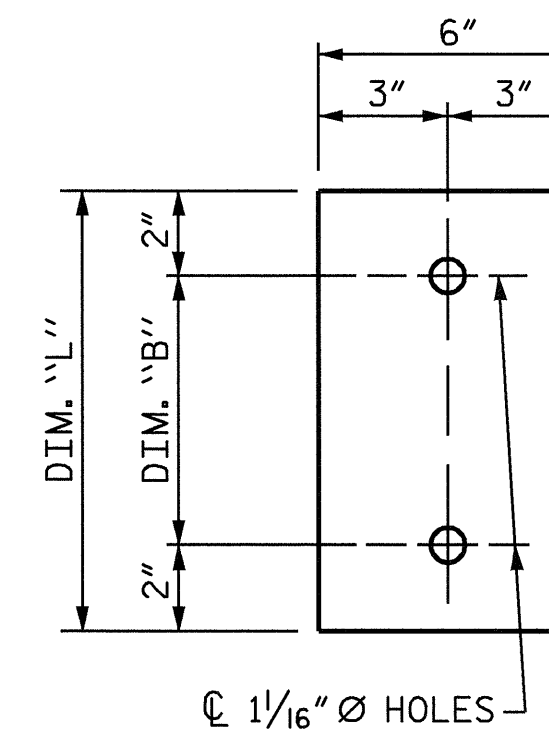
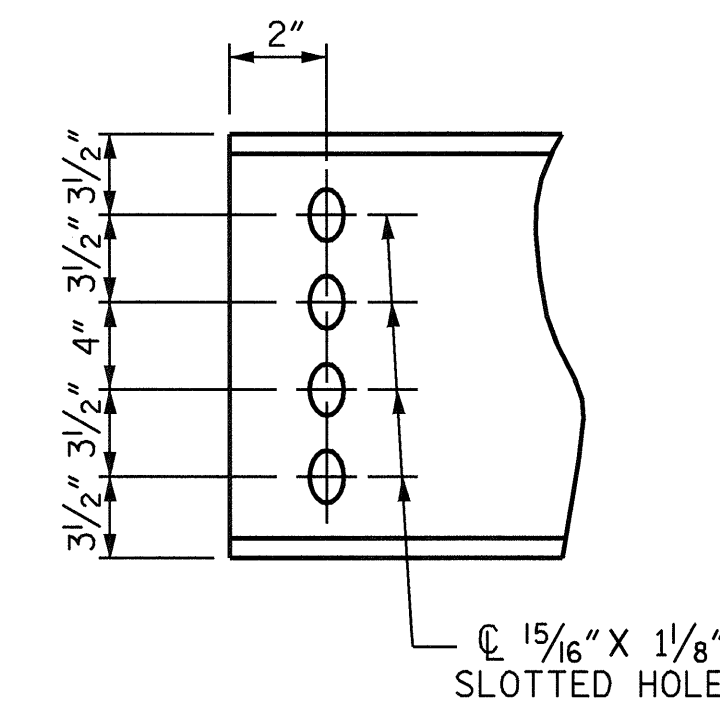
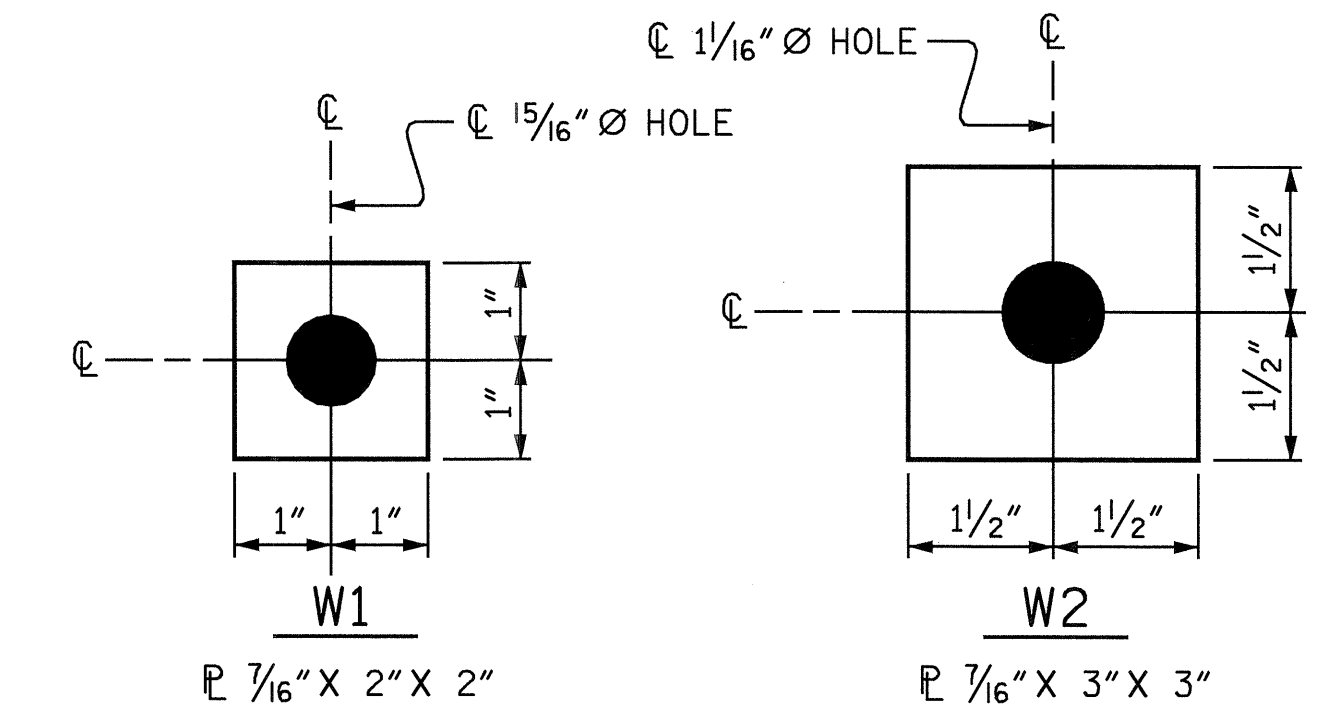


PLATE DETAILS



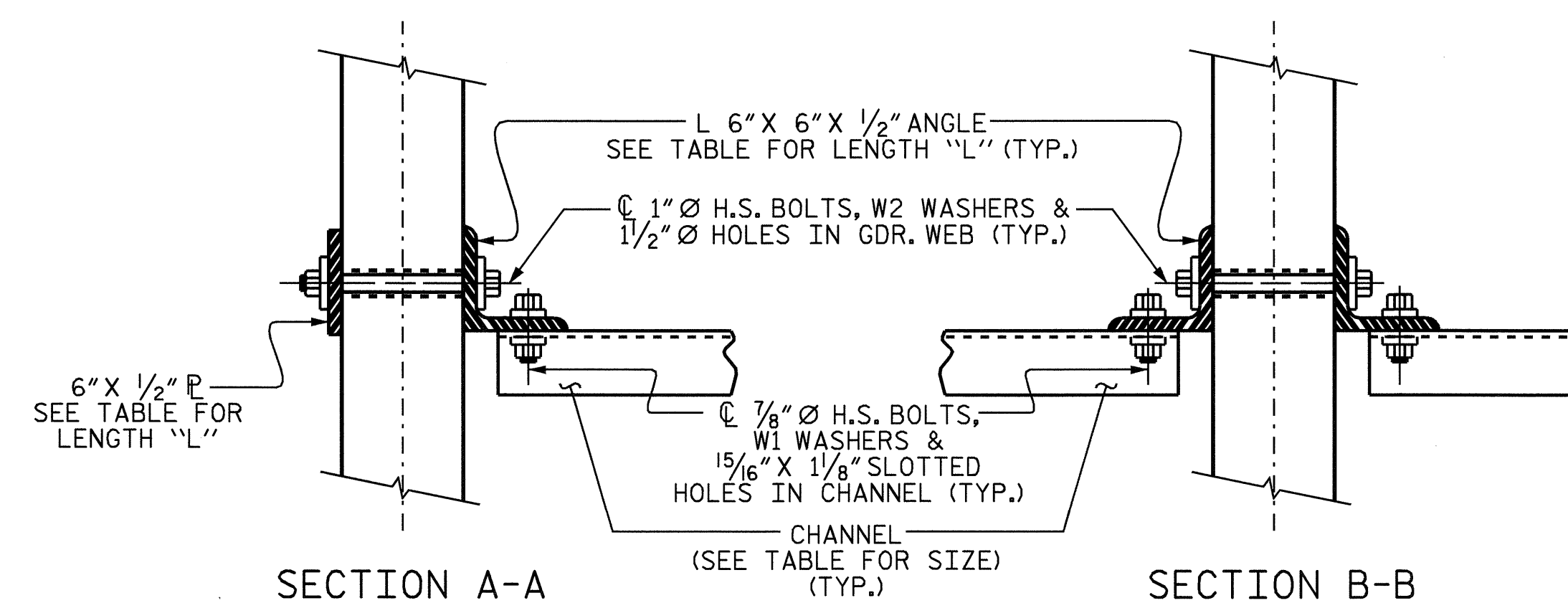
CHANNEL END
(TYPE III OR TYPE IV GDR.)



USE WITH 7/8" Ø HVY. HEX NUTS & DIRECT TENSION INDICATOR WASHERS AT DIAPHRAGM CHANNEL TO CONNECTOR PLATE CONNECTIONS
USE WITH 1" Ø HVY. HEX NUTS & DIRECT TENSION INDICATOR WASHERS AT CONNECTOR PLATE TO GIRDER CONNECTIONS

WASHER DETAILS

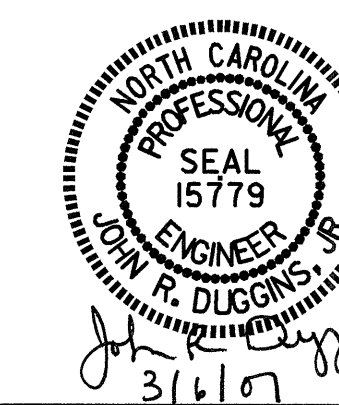
PROJECT NO. B-4223
PENDER COUNTY
STATION: 33+52.00 -L-



CONNECTION DETAILS
(FOR SKEW = 90°)

ASSEMBLED BY : M. POOLE DATE : 11/05
CHECKED BY : D. HODGE DATE : 12/05
DRAWN BY : TLA 6/05 ADDED 10/21/05
CHECKED BY : VC 6/05

06-MAR-2007 10:41
R:\STRUCT\B4223\m\poole\Microstation\B4223.sd.G1.01.dgn
m\poole



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	3-35
1			3			TOTAL SHEETS
2			4			64

STD.No.PCG12

NOTES

AT ALL FIXED POINTS OF SUPPORT, NUTS FOR ANCHOR BOLTS ARE TO BE TIGHTENED FINGER TIGHT AND THEN BACKED OFF 1/2 TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURR WITH A SHARP POINTED TOOL.

THE 2" Ø PIPE SLEEVE SHALL BE CUT FROM SCHEDULE 40 PVC PLASTIC PIPE. THE PVC PLASTIC PIPE SHALL MEET THE REQUIREMENTS OF ASTM D1785.

STEEL SOLE PLATES, ANCHOR BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

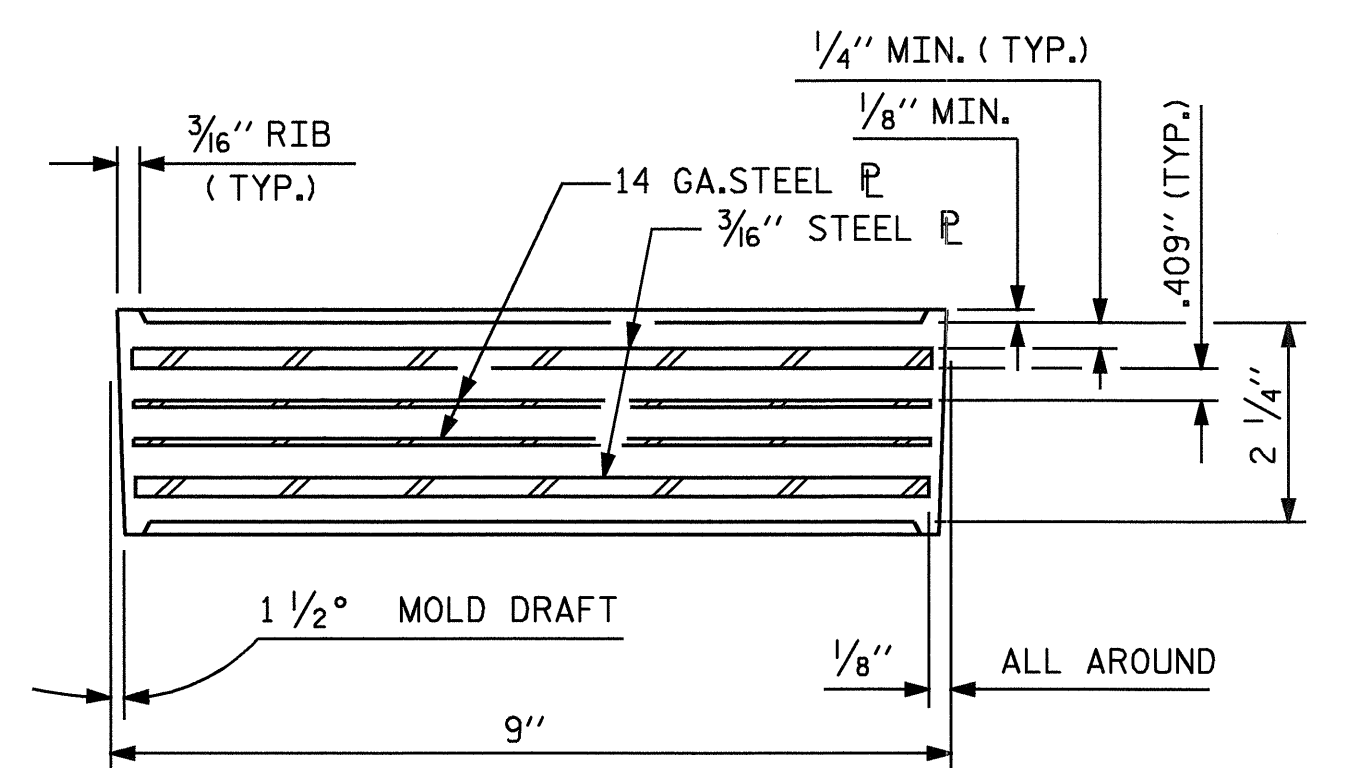
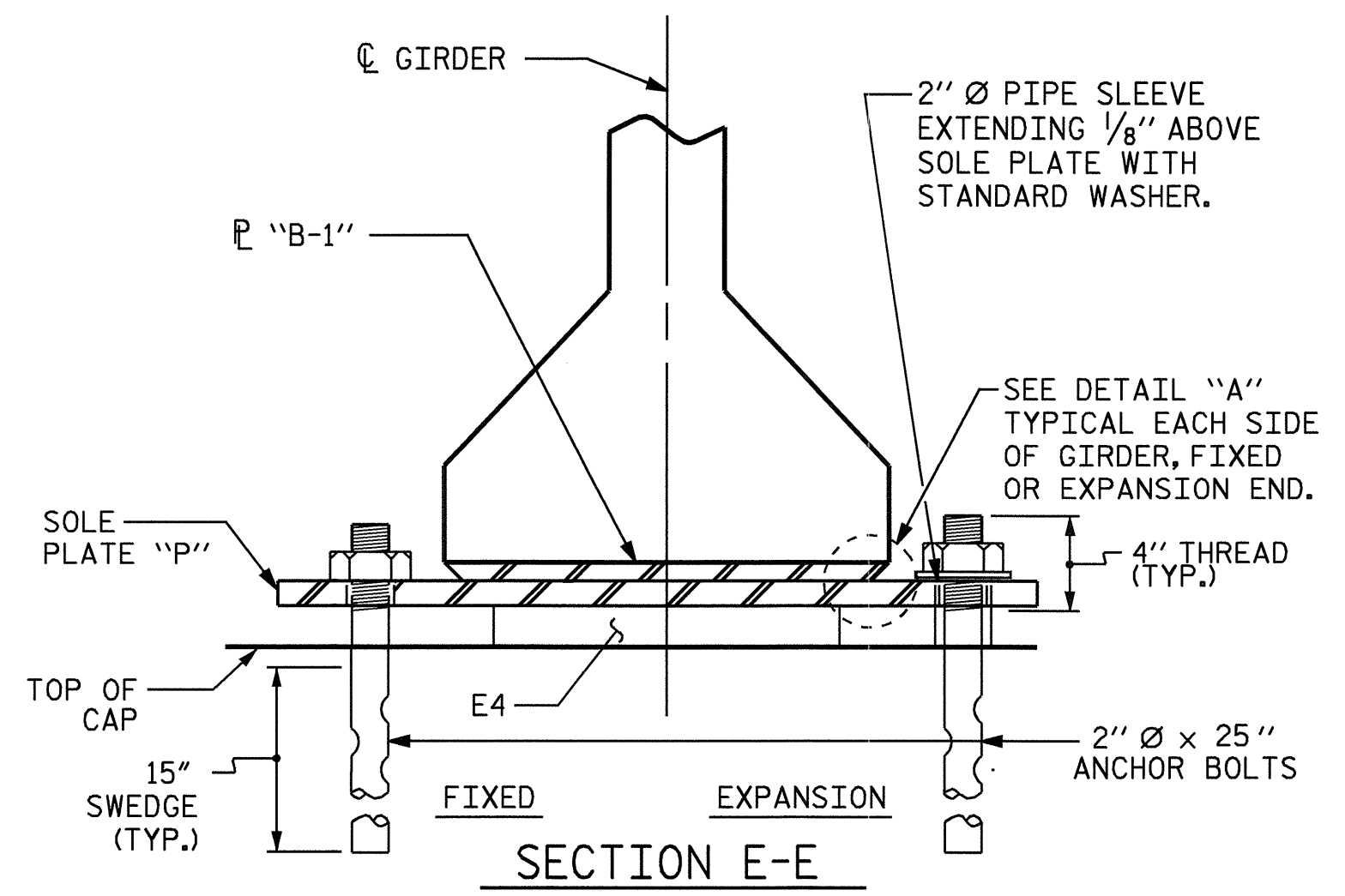
PRIOR TO WELDING, GRIND THE GALVANIZED SURFACE OF THE PORTION OF THE EMBEDDED PLATE AND SOLE PLATE THAT ARE TO BE WELDED. AFTER WELDING, DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

WHEN WELDING THE SOLE PLATE TO THE EMBEDDED PLATE IN THE GIRDER, USE TEMPERATURE INDICATING WAX PENS, OR OTHER SUITABLE MEANS, TO ENSURE THAT THE TEMPERATURE OF THE SOLE PLATE DOES NOT EXCEED 300°F. TEMPERATURES ABOVE THIS MAY DAMAGE THE ELASTOMER.

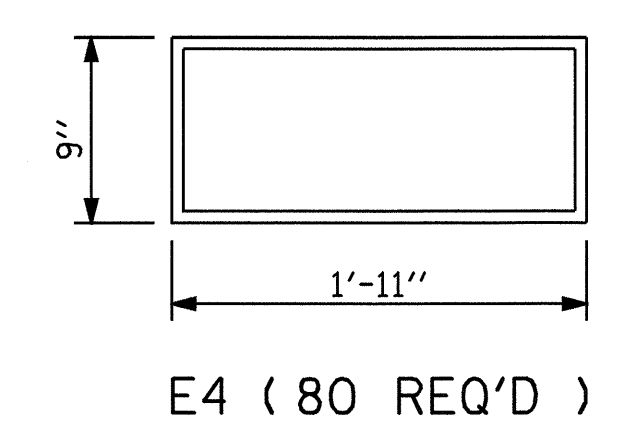
SOLE PLATE "P", BOLTS, NUTS, WASHERS, AND PIPE SLEEVE SHALL BE INCLUDED IN THE PAY ITEM FOR PRESTRESSED CONCRETE GIRDERS.

ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. NO SHOP DRAWINGS ARE REQUIRED FOR ANCHOR BOLTS, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

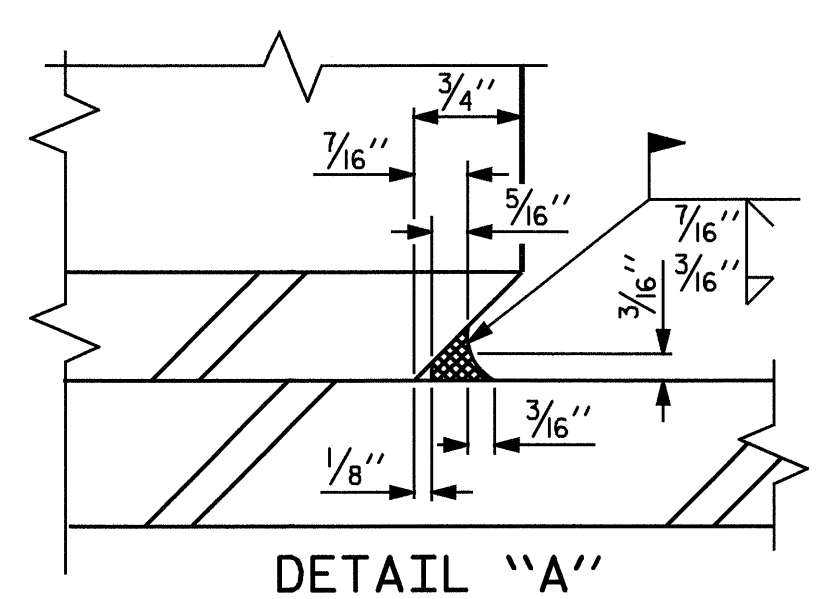
ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.



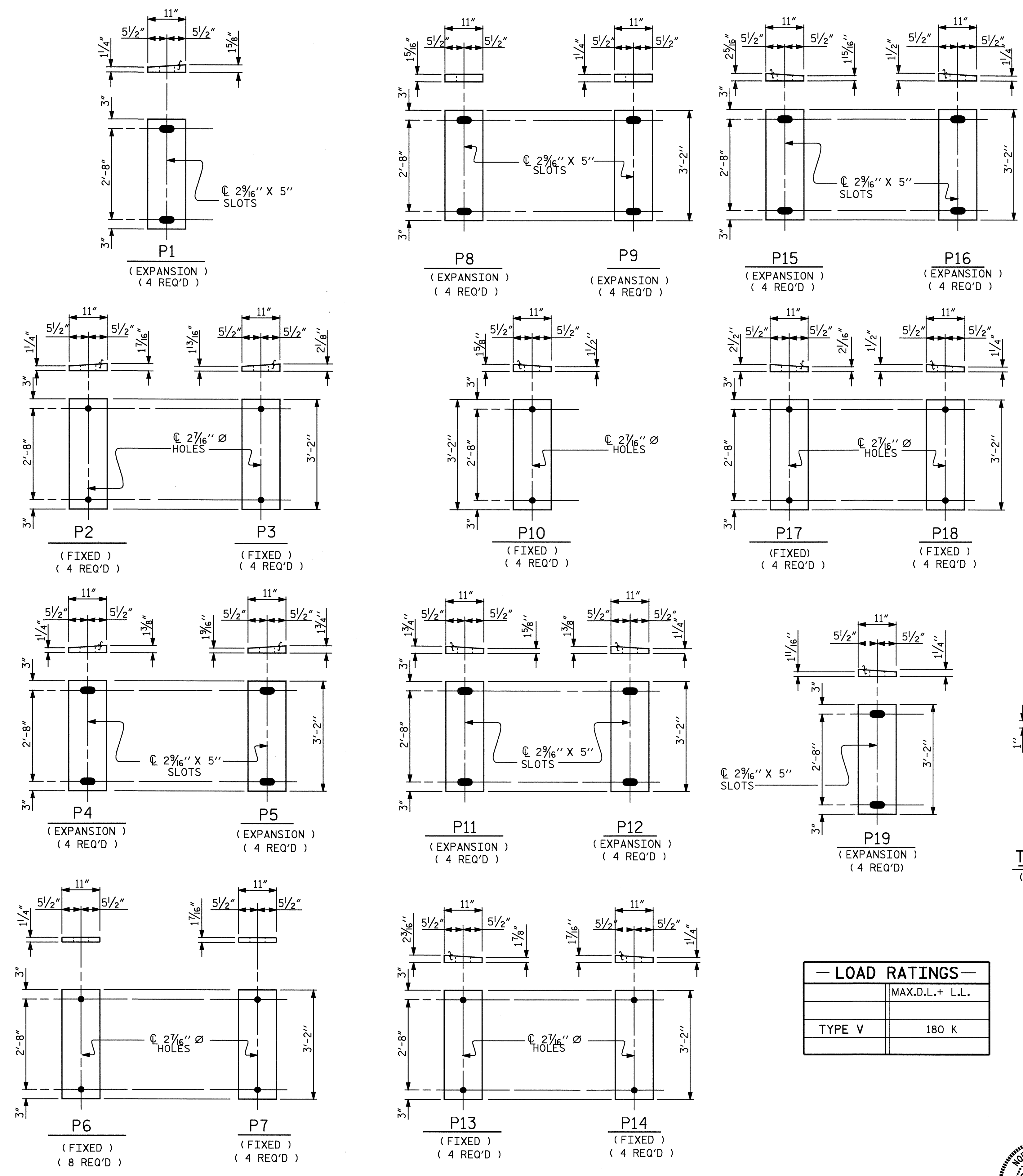
TYPICAL SECTION OF ELASTOMERIC BEARINGS



PLAN VIEW OF ELASTOMERIC BEARING TYPE V

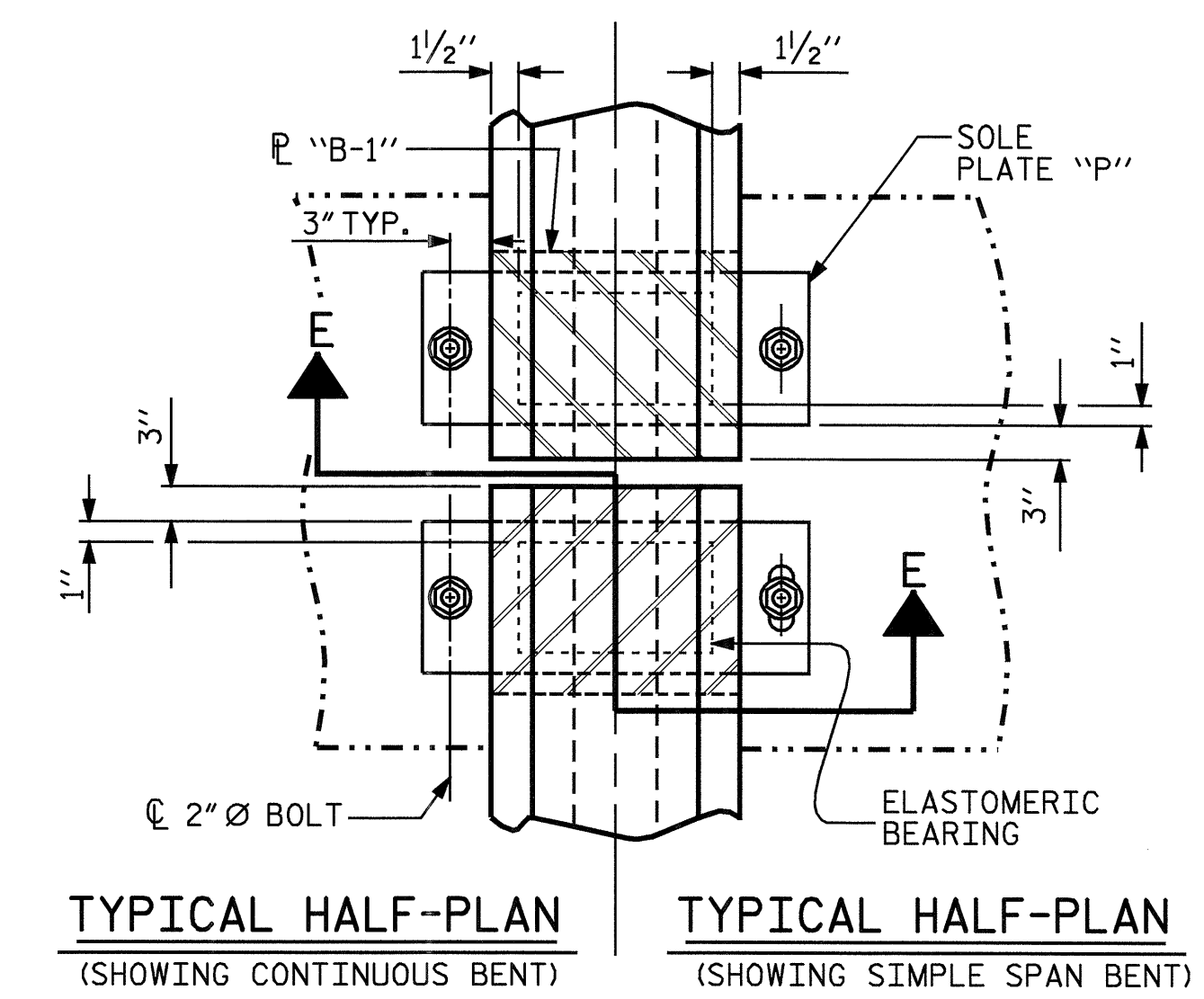


DETAIL "A"



SOLE PLATE DETAILS ("P")

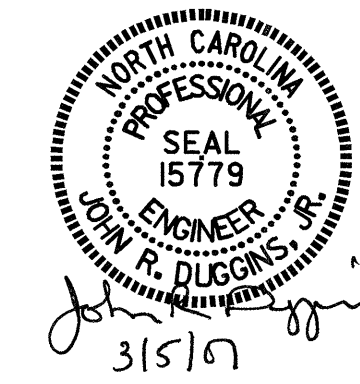
LOAD RATINGS	
	MAX.D.L.+ L.L.
TYPE V	180 K



TYPICAL HALF-PLAN (SHOWING CONTINUOUS BENT) TYPICAL HALF-PLAN (SHOWING SIMPLE SPAN BENT)

PROJECT NO. B-4223
 PENDER COUNTY
 STATION: 33+52.00 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
ELASTOMERIC BEARING DETAILS
 PRESTRESSED CONCRETE GIRDER SUPERSTRUCTURE



ASSEMBLED BY : M. POOLE	DATE : 4/2005
CHECKED BY : D. HODGE	DATE : 08/2005
DRAWN BY : EEM 2/97	ADDED 2/6/97
CHECKED BY : VAP 2/97	REV. 8/16/99 RWW/LES
	REV. 10/17/00 RWW/LES

REVISIONS						SHEET NO. S-36
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 64
2			4			

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																																	
1/2" Ø LOW RELAXATION	SPANS A, B, C, D, & E											SPANS A, B, C, D, & E											SPANS A, B, C, D, & E										
	GIRDER 1											GIRDERS 2 & 3											GIRDER 4										
TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.093	0.176	0.241	0.283	0.297	0.283	0.241	0.176	0.093	0.000	0.000	0.093	0.176	0.241	0.283	0.297	0.283	0.241	0.176	0.093	0.000	0.000	0.093	0.176	0.241	0.283	0.297	0.283	0.241	0.176	0.093	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.037	0.070	0.096	0.113	0.119	0.113	0.096	0.070	0.037	0.000	0.000	0.037	0.070	0.096	0.112	0.118	0.112	0.096	0.070	0.037	0.000	0.000	0.037	0.070	0.096	0.113	0.119	0.113	0.096	0.070	0.037	0.000
FINAL CAMBER ↑	0	1/16"	1/4"	13/4"	2"	2 1/8"	2"	13/4"	1 1/4"	1 1/16"	0	0	1/16"	1/4"	13/4"	2"	2 1/8"	2"	13/4"	1 1/4"	1 1/16"	0	0	1/16"	1/4"	13/4"	2"	2 1/8"	2"	13/4"	1 1/4"	1 1/16"	0

* INCLUDES FUTURE WEARING SURFACE
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT " FINAL CAMBER ", WHICH IS GIVEN IN INCHES (FRACTION FORM).

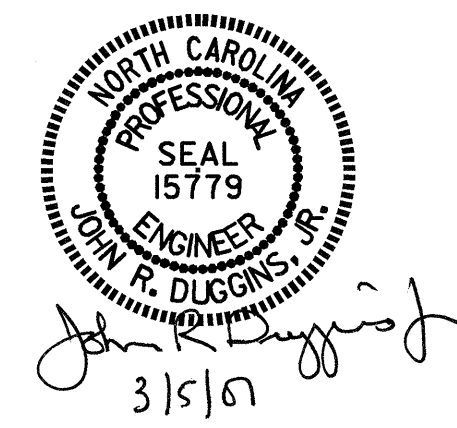
DEAD LOAD DEFLECTION TABLE FOR GIRDERS																																	
1/2" Ø LOW RELAXATION	SPAN F											SPAN F											SPAN F										
	GIRDER 1											GIRDERS 2 & 3											GIRDER 4										
TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.031	0.059	0.081	0.095	0.100	0.095	0.081	0.059	0.031	0.000	0.000	0.031	0.059	0.081	0.095	0.100	0.095	0.081	0.059	0.031	0.000	0.000	0.031	0.059	0.081	0.095	0.100	0.095	0.081	0.059	0.031	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.016	0.030	0.041	0.048	0.050	0.048	0.041	0.030	0.016	0.000	0.000	0.016	0.030	0.041	0.048	0.051	0.048	0.041	0.030	0.016	0.000	0.000	0.016	0.030	0.041	0.048	0.050	0.048	0.041	0.030	0.016	0.000
FINAL CAMBER ↑	0	3/16"	3/8"	1/2"	5/16"	5/8"	3/4"	1/2"	3/8"	3/16"	0	0	3/16"	3/8"	1/2"	5/16"	5/8"	3/4"	1/2"	3/8"	3/16"	0	0	3/16"	3/8"	1/2"	5/16"	5/8"	3/4"	1/2"	3/8"	3/16"	0

* INCLUDES FUTURE WEARING SURFACE
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT " FINAL CAMBER ", WHICH IS GIVEN IN INCHES (FRACTION FORM).

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																																	
0.6" Ø LOW RELAXATION	SPANS G, H, I, & J											SPANS G, H, I, & J											SPANS G, H, I, & J										
	GIRDER 1											GIRDERS 2 & 3											GIRDER 4										
TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.134	0.254	0.347	0.407	0.427	0.407	0.347	0.254	0.134	0.000	0.000	0.134	0.254	0.347	0.407	0.427	0.407	0.347	0.254	0.134	0.000	0.000	0.134	0.254	0.347	0.407	0.427	0.407	0.347	0.254	0.134	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.054	0.103	0.141	0.165	0.173	0.165	0.141	0.103	0.054	0.000	0.000	0.054	0.102	0.140	0.164	0.172	0.164	0.140	0.102	0.054	0.000	0.000	0.054	0.103	0.141	0.165	0.173	0.165	0.141	0.103	0.054	0.000
FINAL CAMBER ↑	0	15/16"	1 1/4"	2 1/2"	2 7/8"	3 1/16"	2 7/8"	2 1/2"	1 3/4"	1 5/16"	0	0	15/16"	1 1/4"	2 1/2"	2 5/16"	3 1/16"	2 5/16"	2 1/2"	1 3/4"	1 5/16"	0	0	15/16"	1 1/4"	2 1/2"	2 7/8"	3 1/16"	2 7/8"	2 1/2"	1 3/4"	1 5/16"	0

* INCLUDES FUTURE WEARING SURFACE
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT " FINAL CAMBER ", WHICH IS GIVEN IN INCHES (FRACTION FORM).

PROJECT NO. B-4223
PENDER COUNTY
 STATION: 33+52.00 -L-

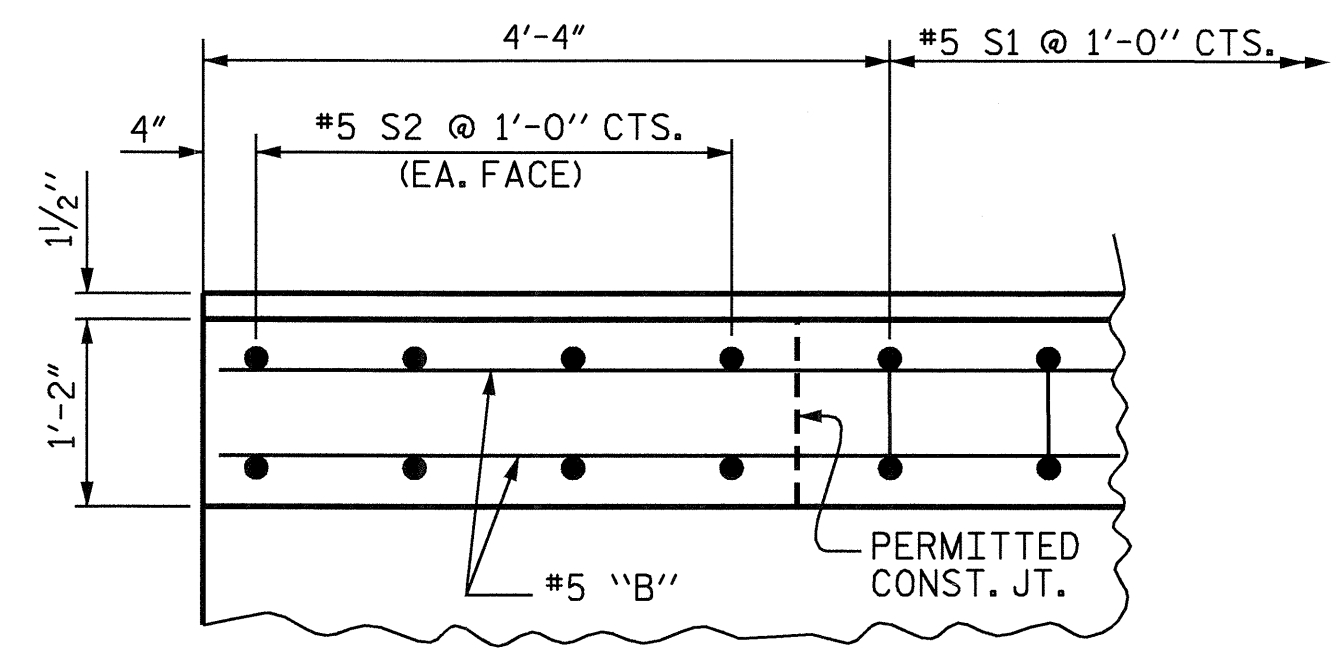


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

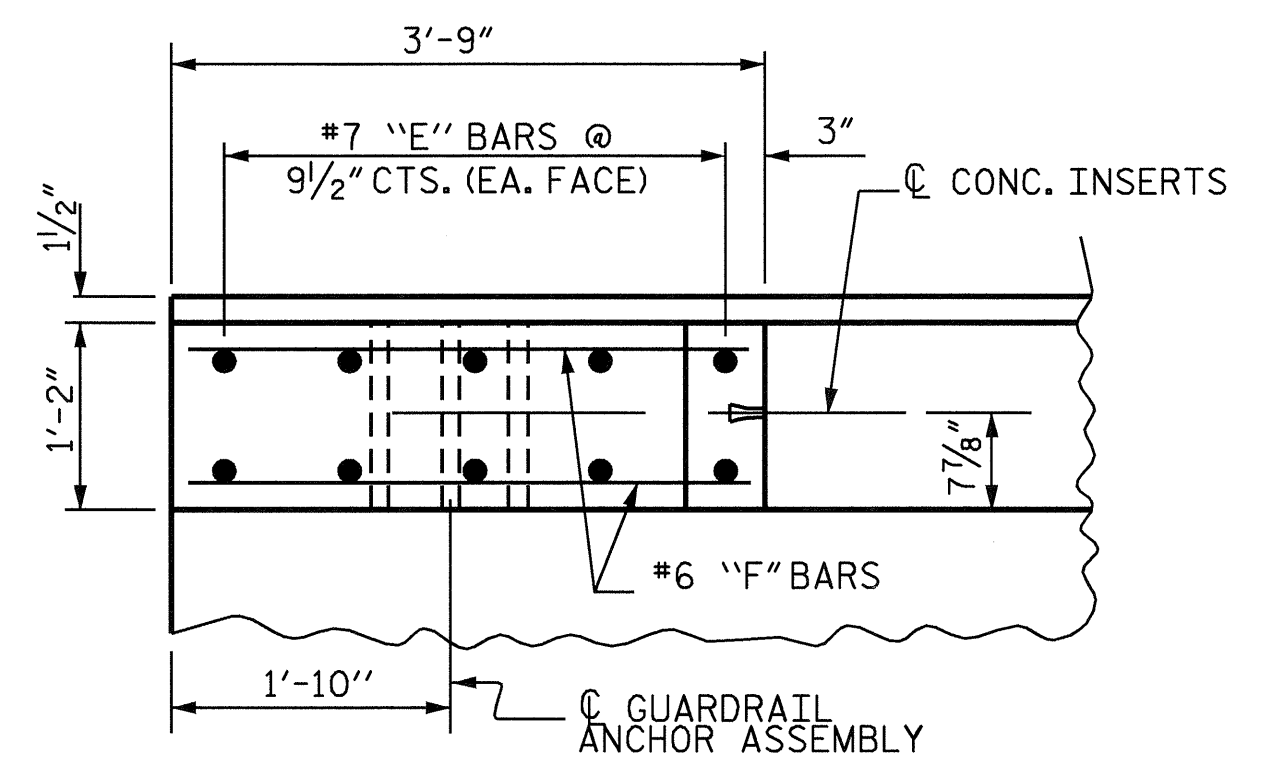
SUPERSTRUCTURE
 DEAD LOAD
 DEFLECTIONS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			5-37
2			4			TOTAL SHEETS 64

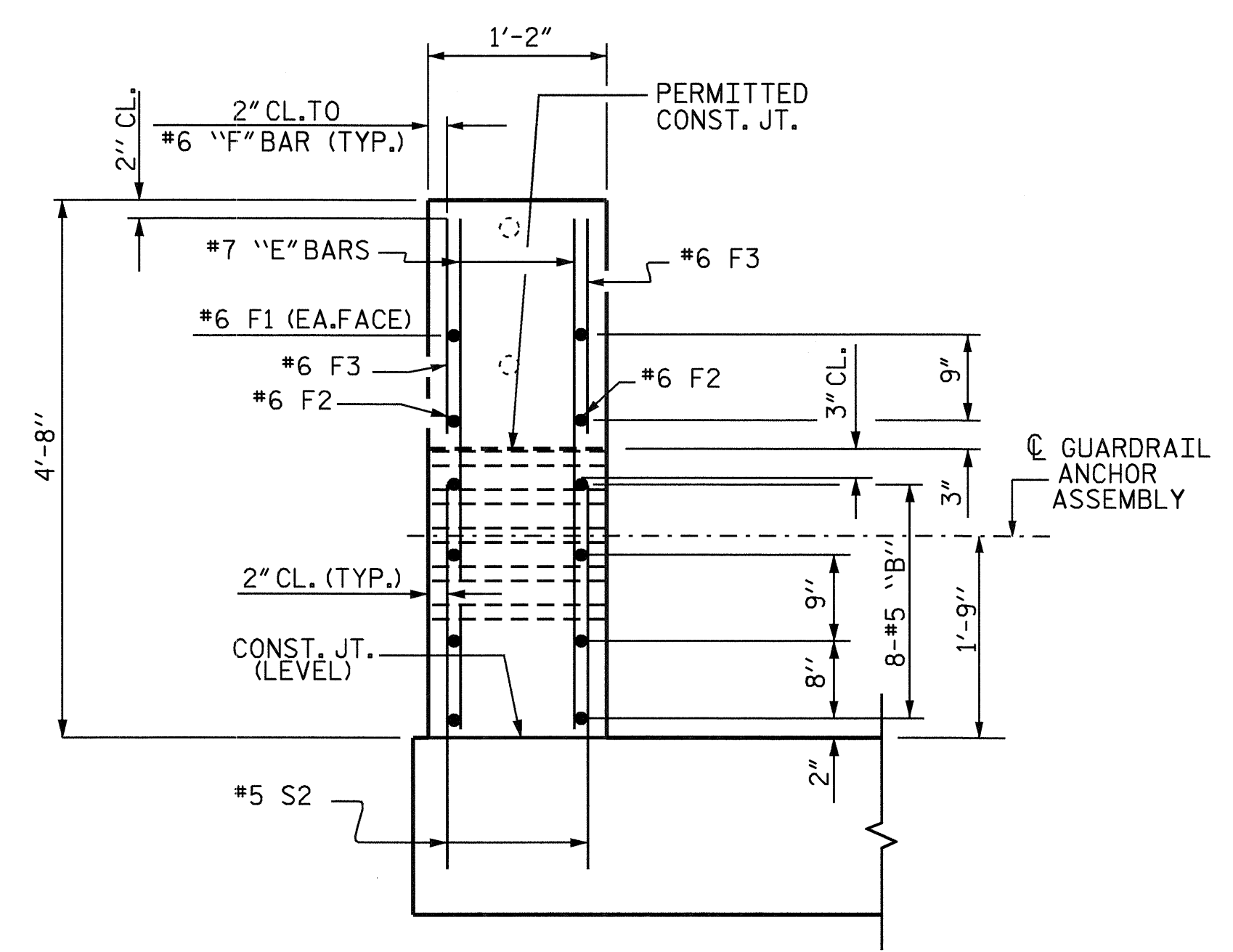
DRAWN BY : M. POOLE DATE : 02/06
 CHECKED BY : D. HODGE DATE : 03/06



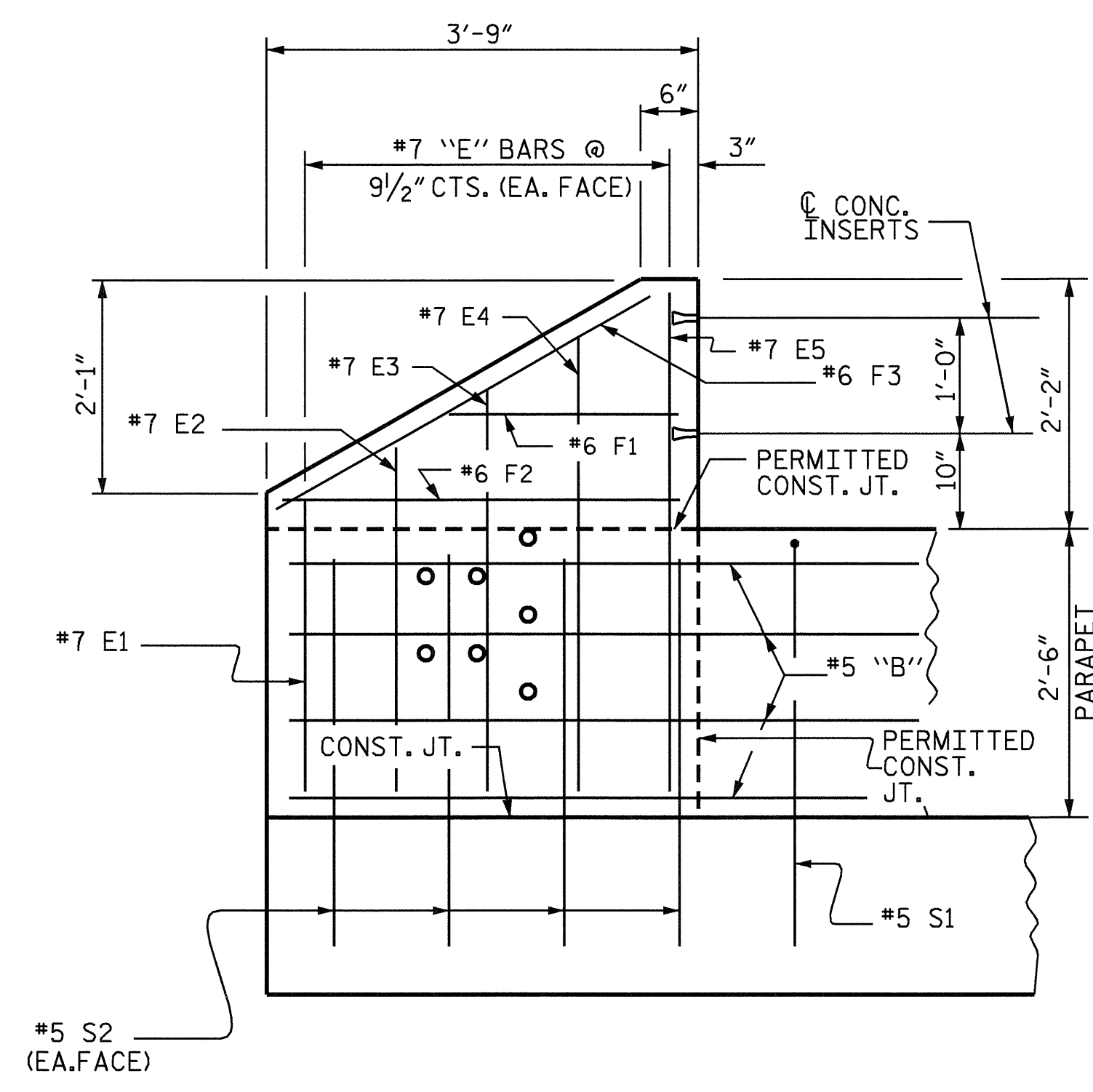
PLAN OF PARAPET



PLAN OF END POST



END VIEW



ELEVATION

PARAPET AND END POST FOR TWO BAR RAIL

NOTES

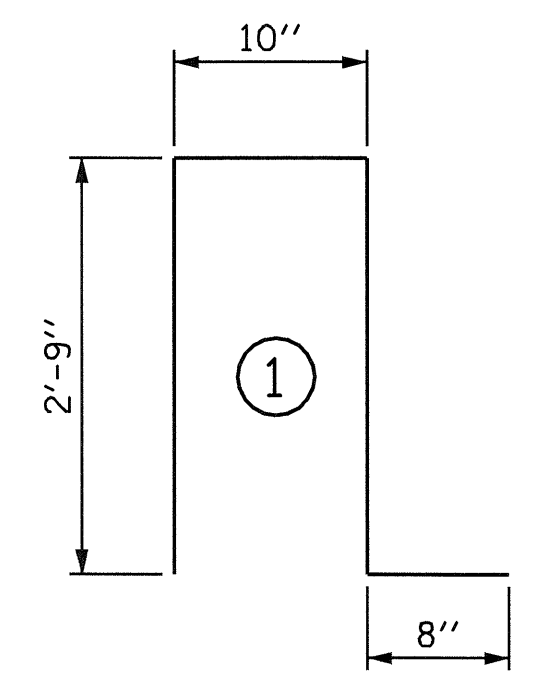
- FOR DETAILS OF CONCRETE INSERT AND GUARDRAIL ANCHOR ASSEMBLY, SEE "RAIL POST SPACINGS AND END OF RAIL DETAILS" SHEETS.
- ALL DIMENSIONS ARE TAKEN ALONG OUTSIDE EDGE OF PARAPET.
- ALL REINFORCING STEEL IN CONCRETE PARAPET SHALL BE EPOXY COATED.
- THE REINFORCING STEEL & CONCRETE IN THE END POSTS IS INCLUDED IN THE UNIT PRICE BID FOR THE CONCRETE PARAPET.
- THE #5 S2 BARS SHALL BE INSTALLED USING AN ADHESIVE ANCHORING SYSTEM AFTER SAWING THE JOINT. THE YIELD LOAD FOR THE #5 S2 BARS IS 18.6 KIPS. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

BILL OF MATERIAL

CONCRETE PARAPET & END POSTS					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	160	5	STR	46'-7"	7774
* B2	32	5	STR	36'-7"	1221
* B3	128	5	STR	51'-7"	6887
* E1	8	7	STR	2'-6"	41
* E2	8	7	STR	3'-0"	49
* E3	8	7	STR	3'-6"	57
* E4	8	7	STR	4'-0"	65
* E5	8	7	STR	4'-4"	71
* F1	8	6	STR	1'-10"	22
* F2	8	6	STR	3'-0"	36
* F3	8	6	STR	3'-4"	40
* S1	1786	5	1	7'-0"	13040
* S2	120	5	STR	3'-0"	375

* EPOXY COATED REINFORCING STEEL 29678 LBS.
CLASS AA CONCRETE 199.5 C.Y.
1'-2" X 2'-6" CONCRETE PARAPET 1840.33 LIN. FEET

BAR TYPE



BAR DIMENSION IS OUT TO OUT

SPLICE LENGTHS

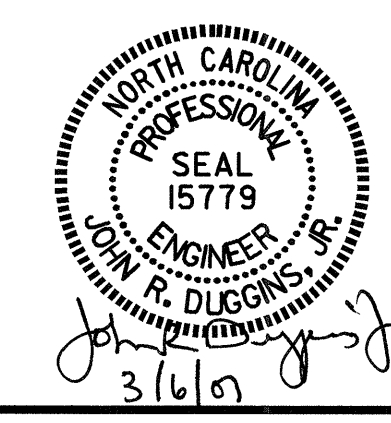
#5 'B' BARS	3'-5" SPLICE
-------------	--------------

PROJECT NO. B-4223
PENDER COUNTY
STATION: 33+52.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

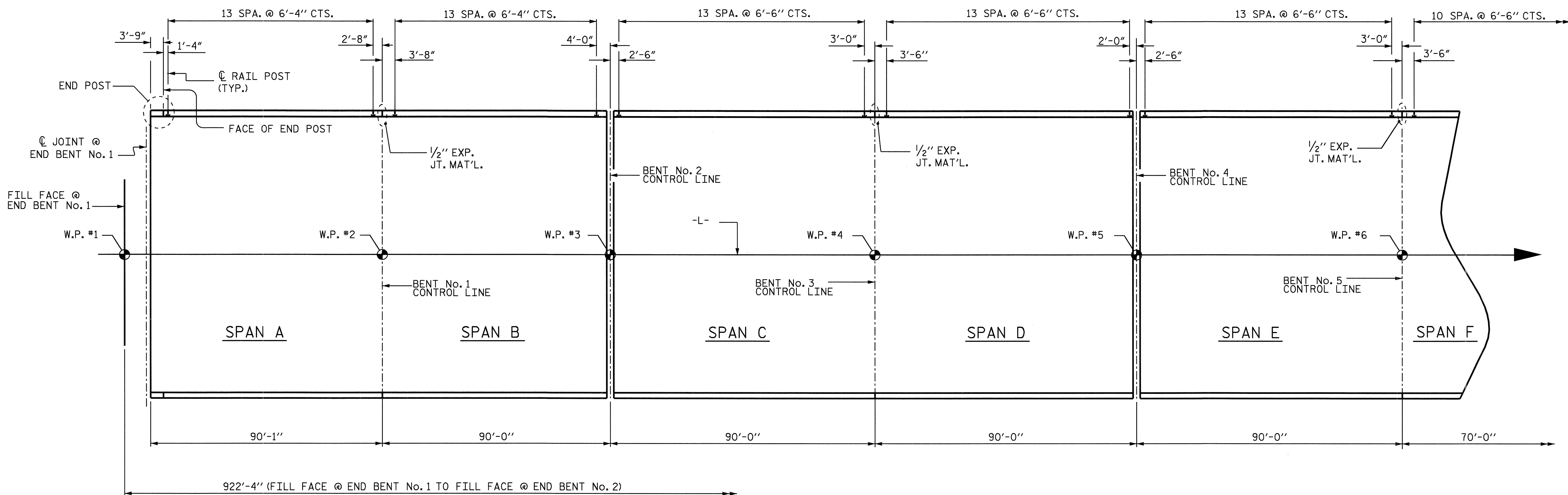
PARAPET & END POST
DETAILS



DRAWN BY: M. POOLE DATE: 04/05
CHECKED BY: D. HODGE DATE: 11/05

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

TOTAL SHEETS 64



PLAN OF PARAPET AND RAIL POST SPACINGS

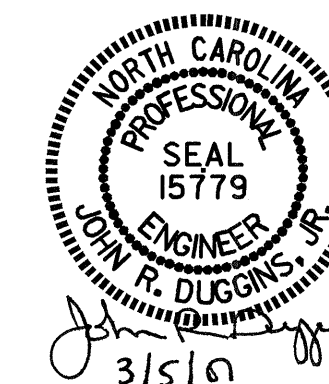
(INFORMATION SHOWN IS TYPICAL FOR EACH SIDE OF BRIDGE)

PROJECT NO. B-4223
PENDER COUNTY
 STATION: 33+52.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

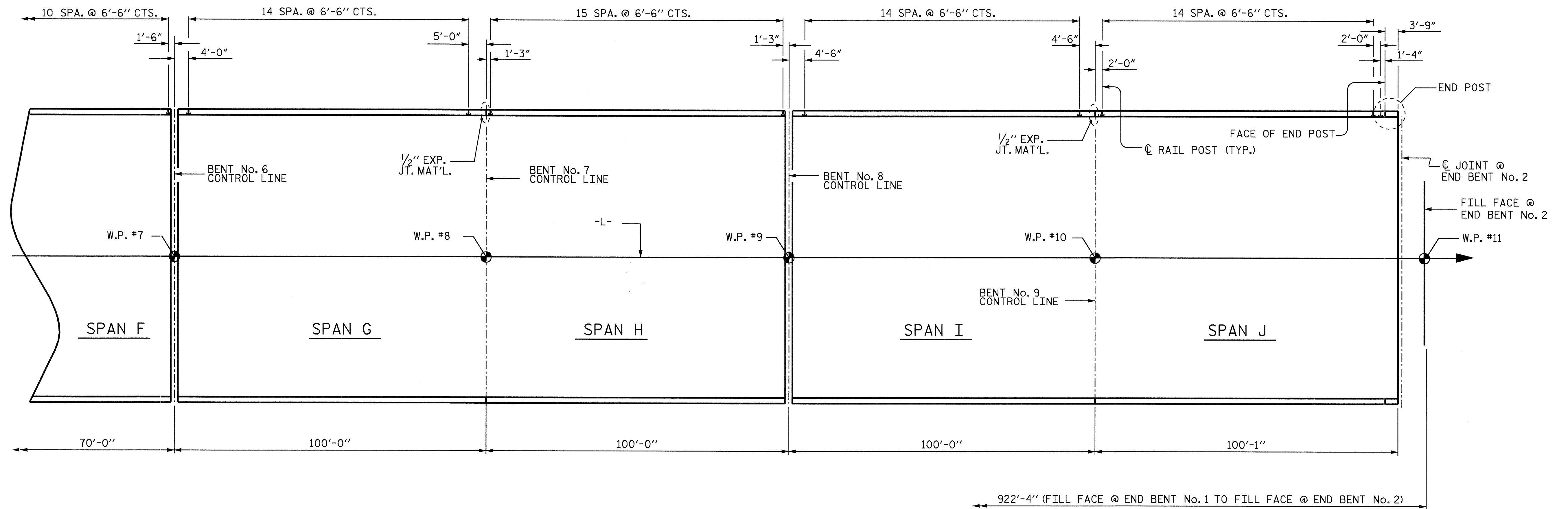
RAIL POST SPACING
 AND
 END OF RAIL DETAILS
 FOR TWO BAR METAL RAIL



DRAWN BY: M. POOLE DATE: 11/05
 CHECKED BY: D. HODGE DATE: 12/05

06-FEB-2007 13:18
 R:\STRUCT\4223\m\poole\m\rostation\B3916.sd..2MR1.01.dgn
 mpoole

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			64



PLAN OF PARAPET AND RAIL POST SPACINGS

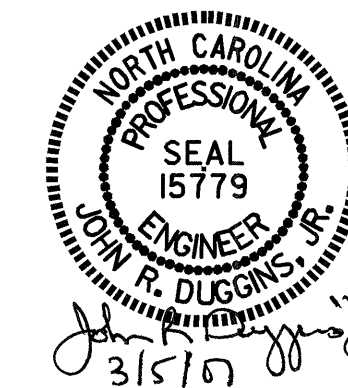
(INFORMATION SHOWN IS TYPICAL FOR EACH SIDE OF BRIDGE)

PROJECT NO. B-4223
PENDER COUNTY
 STATION: 33+52.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

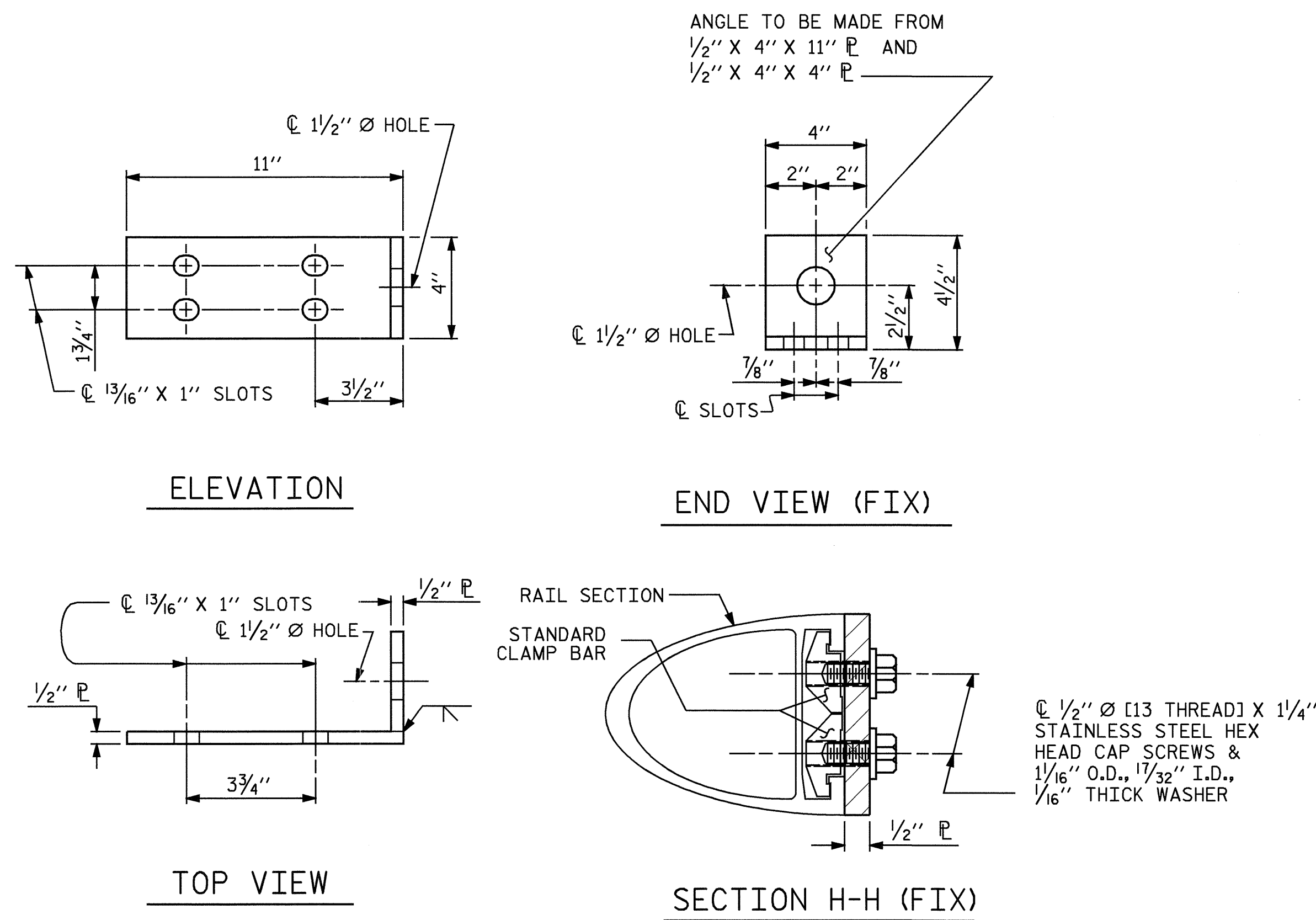
RAIL POST SPACING
 AND
 END OF RAIL DETAILS
 FOR TWO BAR METAL RAIL



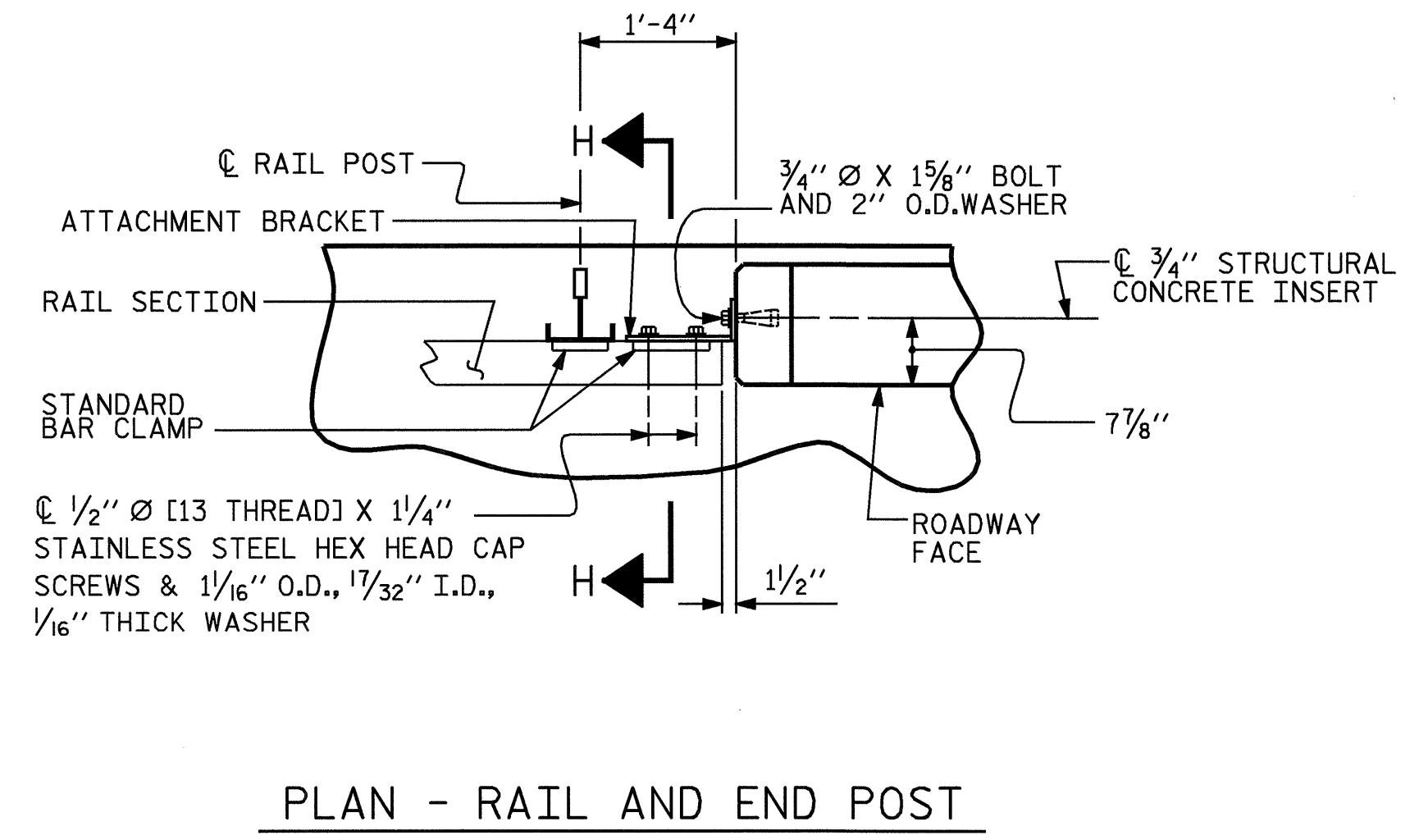
DRAWN BY: M. POOLE DATE: 11/05
 CHECKED BY: D. HODGE DATE: 12/05

06-FEB-2007 13:18
 R:\STRUCT\B4223\mpoole\Microstation\B3916.sd_2MR1_01.dgn
 mpoole

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S-41
2			4			67



FIXED
DETAILS FOR ATTACHING METAL RAIL TO END POST



PLAN - RAIL AND END POST

NOTES
STRUCTURAL CONCRETE INSERT

THE STRUCTURAL CONCRETE INSERT ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:

- FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1 1/2".
- 1 - 3/4" Ø X 1 5/8" BOLT WITH WASHER. BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø X 1 5/8" GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)
- WIRE STRUT SHOWN IN THE CONCRETE INSERT ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 3/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

NOTES
METAL RAIL TO END POST CONNECTION

THE METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:

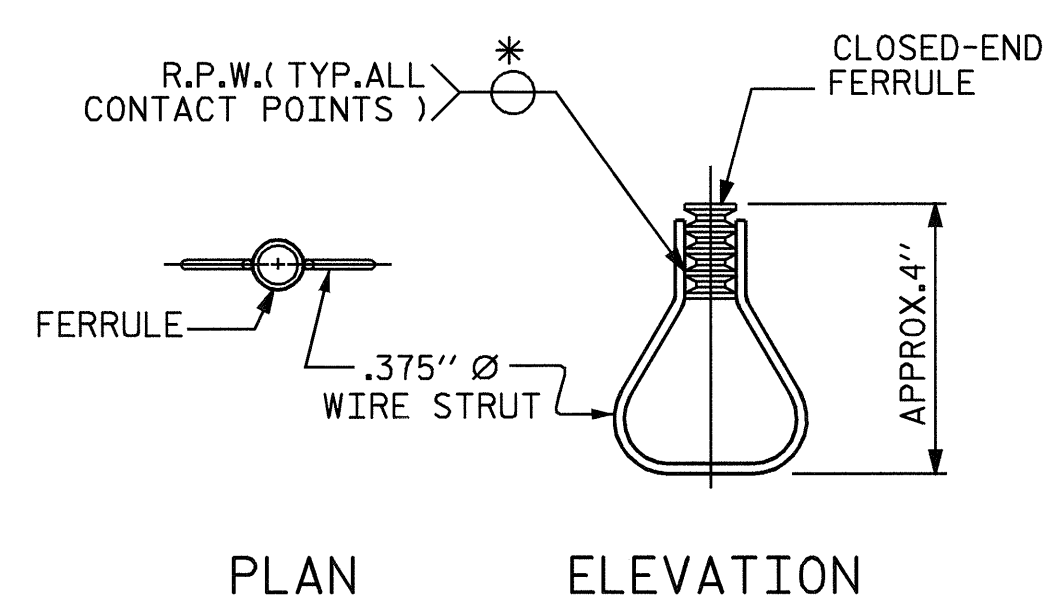
- 1/2" PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
- 3/4" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A 3/4" Ø X 1 5/8" BOLT WITH 2" O.D. WASHER IN PLACE. THE 3/4" Ø X 1 5/8" BOLT SHALL HAVE N. C. THREADS.
- CAP SCREWS FOR RAIL ATTACHMENT TO ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F593 ALLOY 305 STAINLESS STEEL. CAP SCREWS TO BE CENTERED IN SLOTS AT 60°F.
- STANDARD CLAMP BARS (SEE METAL RAIL SHEET).
- 1/2" Ø PIPE SLEEVES (IF REQUIRED) TO BE GALVANIZED.

THE COST OF THE STANDARD CLAMP BARS AND CAP SCREWS USED IN THE METAL RAIL TO END POST CONNECTION SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF 2 BAR METAL RAILS.

THE 3/4" STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.

THE COST OF THE 3/4" STRUCTURAL CONCRETE INSERT ASSEMBLY, AND THE 1/2" PLATES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE 3/4" Ø X 1 5/8" BOLT WITH WASHER SHALL BE REPLACED WITH A 3/4" Ø X 6 1/2" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE 3/4" Ø X 1 5/8" BOLT SHALL APPLY TO THE 3/4" Ø X 6 1/2" BOLT. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.



STRUCTURAL CONCRETE INSERT
* EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.

PROJECT NO. B-4223
PENDER COUNTY
STATION: 33+52.00 -L-
SHEET 3 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
RAIL POST SPACINGS AND END OF RAIL DETAILS FOR TWO BAR METAL RAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					5-42
TOTAL SHEETS					64

ASSEMBLED BY : M. POOLE	DATE : 04/05
CHECKED BY : D. HODGE	DATE : 11/05
DRAWN BY : FCJ 1/88	REV. 8/16/99 RWW/LES
CHECKED BY : CRK 3/89	REV. 10/17/00 LES/RDR
	REV. 5/7/03 RWW/JTE

NORTH CAROLINA
PROFESSIONAL
SEAL
15779
ENGINEER
DAN R. DUGGINS, JR.
[Signature]
315107

NOTES

AT THE CONTRACTOR'S OPTION, METAL RAIL MAY BE EITHER ALUMINUM OR GALVANIZED STEEL IN ACCORDANCE WITH THE REQUIREMENTS OF THE GENERAL NOTES AND THE FOLLOWING SPECIFICATIONS FOR THE ALTERNATE MATERIALS; HOWEVER, THE CONTRACTOR WILL BE REQUIRED TO USE THE SAME RAIL MATERIAL ON ALL STRUCTURES ON THE PROJECT FOR WHICH METAL RAIL IS DESIGNATED.

ALUMINUM RAILS

MATERIAL FOR POSTS, BASES AND RAILS, EXPANSION BARS AND CLAMP BARS SHALL BE ASTM B-221 ALLOY 6061-T6. MATERIAL FOR RIVETS SHALL BE ASTM B316 ALLOY 6061-T6. RIVETS SHALL BE STANDARD BUTTON HEAD AND CONE POINT COLD DRIVEN AS PER DRAWING.

THE BASE OF RAIL POSTS, OR ANY OTHER ALUMINUM SURFACE IN CONTACT WITH CONCRETE SHALL BE THOROUGHLY COATED WITH AN ALUMINUM IMPREGNATED CAULKING COMPOUND OF APPROVED QUALITY.

MATERIAL FOR SHIMS TO BE ASTM B209 ALLOY 6061-T6.

GALVANIZED STEEL RAILS

MATERIAL AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:

POST, POST BASES, RAILS, EXPANSION BARS AND CLAMP BARS: AASHTO M270 GRADE 36 STRUCTURAL STEEL - GALVANIZED TO AASHTO M111.

RIVETS: RIVETS SHALL MEET THE REQUIREMENTS OF ASTM A502 FOR GRADE 1 RIVETS.

THE CUT ENDS OF GALVANIZED STEEL RAILING, AFTER GRINDING SMOOTH SHALL BE GIVEN TWO COATS OF ZINC RICH PAINT MEETING THE REQUIREMENTS OF FEDERAL SPECIFICATION MIL-P-26915 USAF TYPE 1, OR OF FEDERAL SPECIFICATIONS TT-P-641.

SHIMS: SHIMS SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.

RAIL CAPS: RAIL CAPS SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.

GENERAL NOTES

RAILING SHALL BE CONTINUOUS FROM END POST TO END POST OF BRIDGE. EACH JOINT IN RAIL LENGTH SHALL BE SPLICED AS DETAILED. PANEL LENGTHS OF RAIL SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS.

FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE STANDARD NO. BMR2.

CAP SCREWS SHALL BE ASTM F593 ALLOY 305 STAINLESS STEEL. WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.

CERTIFIED MILL REPORTS ARE REQUIRED FOR RAILS AND POSTS. SHOP INSPECTION IS NOT REQUIRED.

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

METHOD OF MEASUREMENT FOR METAL RAILS: FOR LENGTH OF METAL RAILS TO BE PAID FOR, SEE THE STANDARD SPECIFICATIONS.

CURVED RAIL USAGE: WHERE RAILS ARE TO BE USED ON BRIDGES ON HORIZONTAL AND/OR VERTICAL CURVATURE THE CONTRACTOR MAY, AT HIS OPTION, HAVE THE REQUIRED CURVATURE IN THE RAIL FORMED IN THE SHOP OR IN THE FIELD. IN EITHER EVENT, THE RAIL SHALL CONFORM WITHOUT BUCKLING OR KINKING TO THE REQUIRED CURVATURE IN A UNIFORM MANNER ACCEPTABLE TO THE ENGINEER.

TO INSURE FUTURE IDENTIFICATION OF THE FABRICATOR, A PERMANENT IDENTIFYING MARK SHALL BE PLACED ON EACH POST. THE METHOD OF MARKING AND LOCATION SHALL BE SUCH THAT IT DOES NOT DETRACT FROM THE APPEARANCE OF THE POST, BUT REMAINS VISIBLE AFTER RAIL PLACEMENT.

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

ALLOY 6351-T5 MAY BE SUBSTITUTED FOR ALLOY 6061-T6 WHERE APPLICABLE.

MINOR VARIATIONS IN DETAILS OF METAL RAIL WILL BE CONSIDERED. DETAILS OF SUCH VARIATIONS, IF DESIRED, SHALL BE SUBMITTED FOR APPROVAL.

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

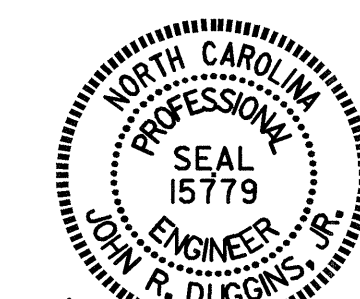
PAY LENGTH = 1825.33 LIN. FT.

PROJECT NO. B-4223
PENDER COUNTY
 STATION: 33+52.00 -L-

SHEET 1 OF 2

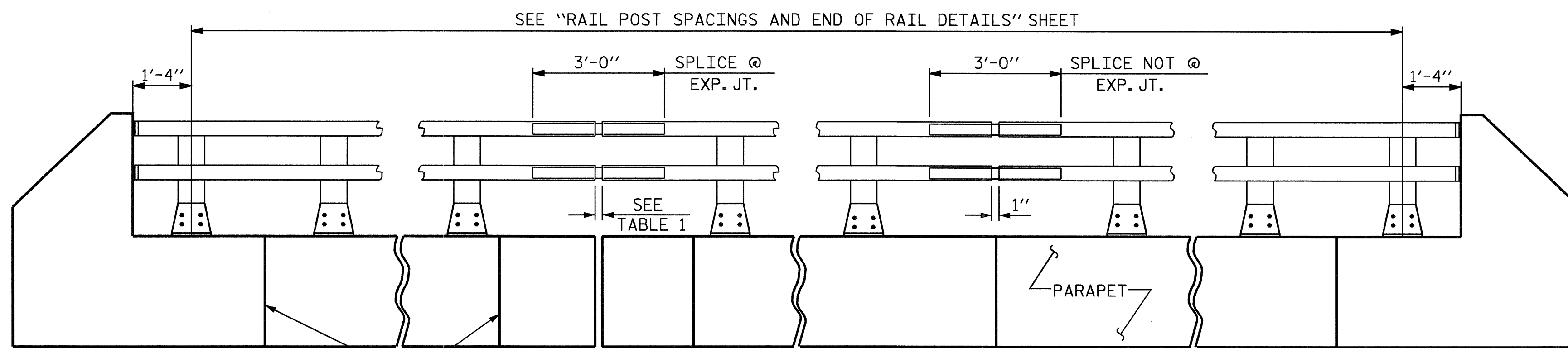
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
 2 BAR METAL RAIL



John R. Dugan
 3/6/07

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	5-43	
1			3			TOTAL SHEETS	
2			4			64	

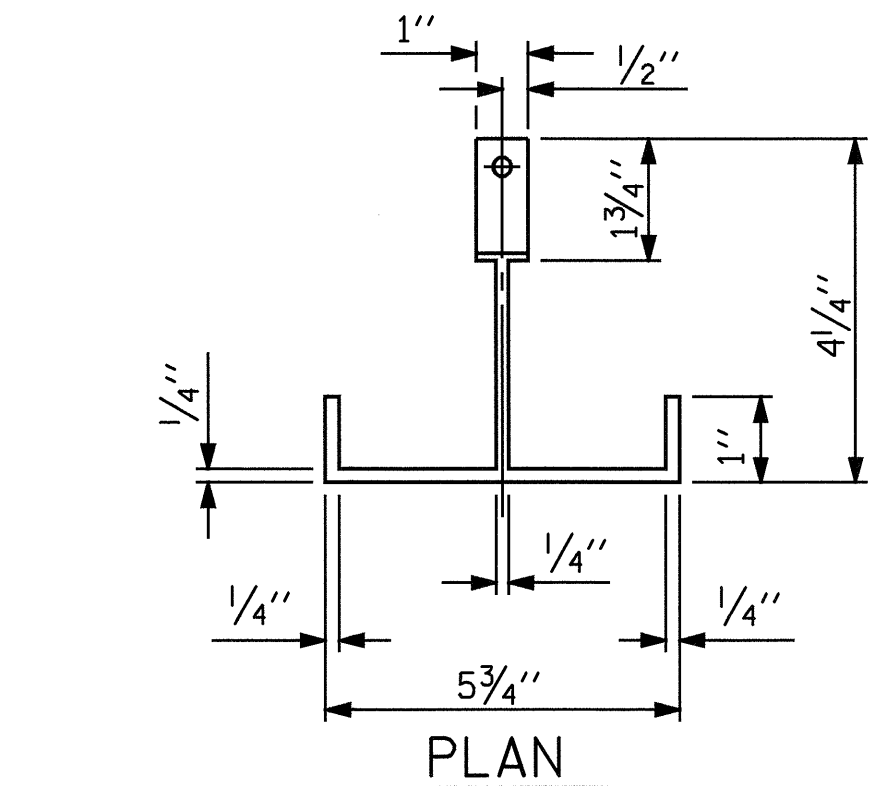


ELEVATION

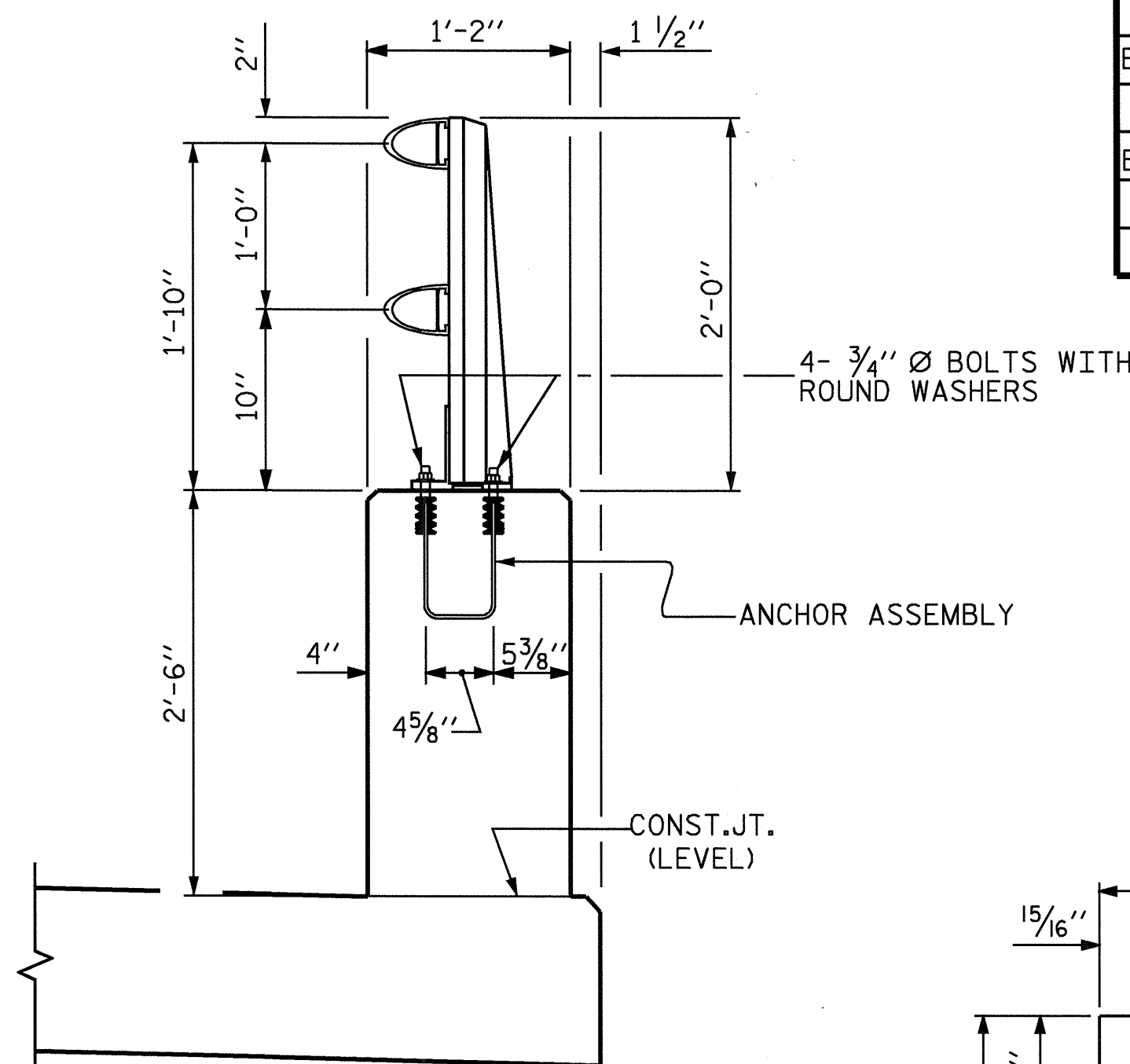
TOOLED CONTRACTION JT. (SEE NOTES)

NOTE: FOR ATTACHMENT OF METAL RAIL TO END POST, SEE STANDARD NO. BMR2.

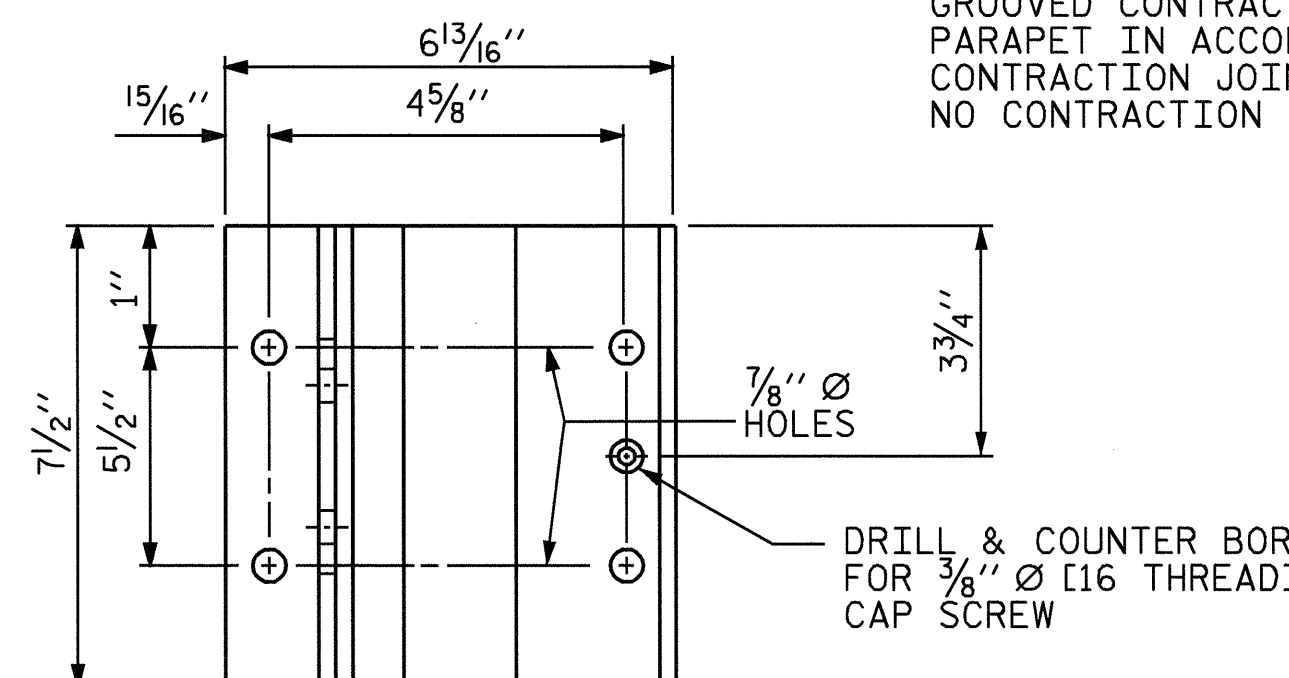
TABLE 1	
EXP. JT. @	RAIL OPENING
BENT No. 2	1 3/8"
BENT No. 4	1 3/8"
BENT No. 6	1 3/8"
BENT No. 8	1 9/16"



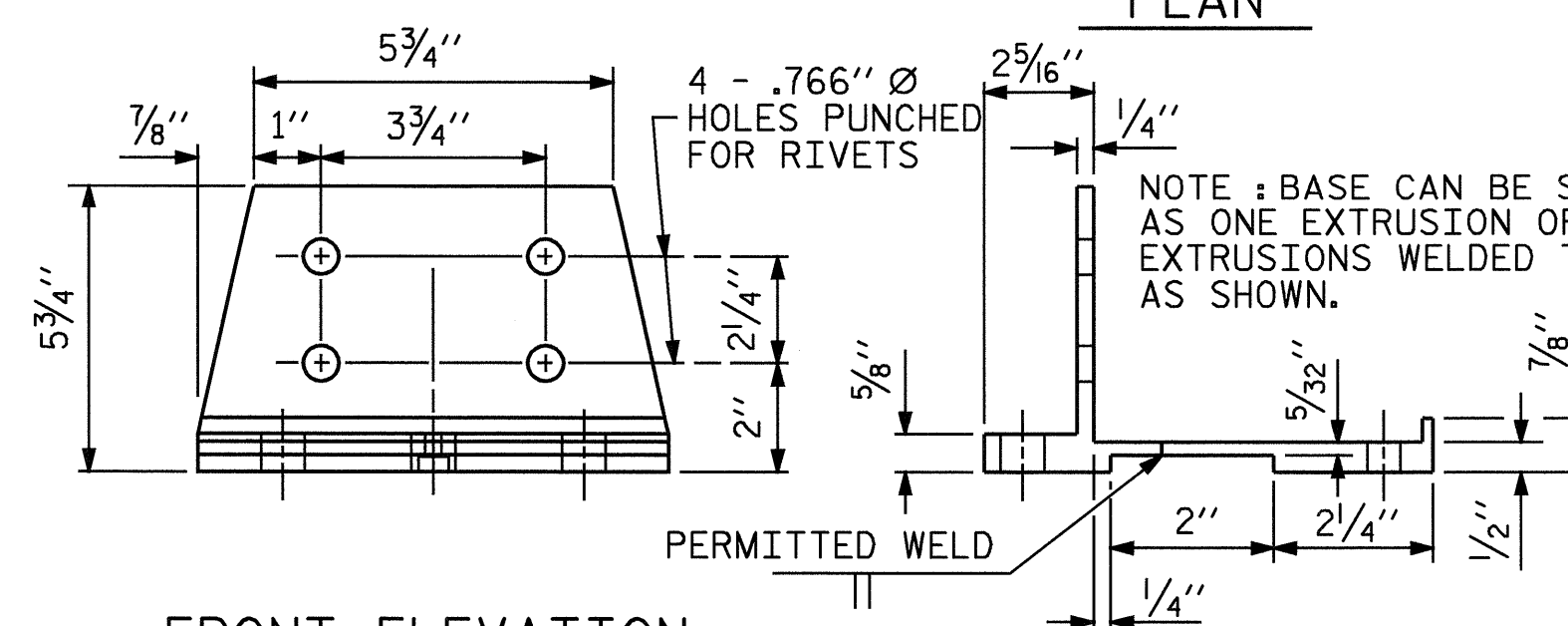
PLAN



SECTION THRU PARAPET AND RAIL



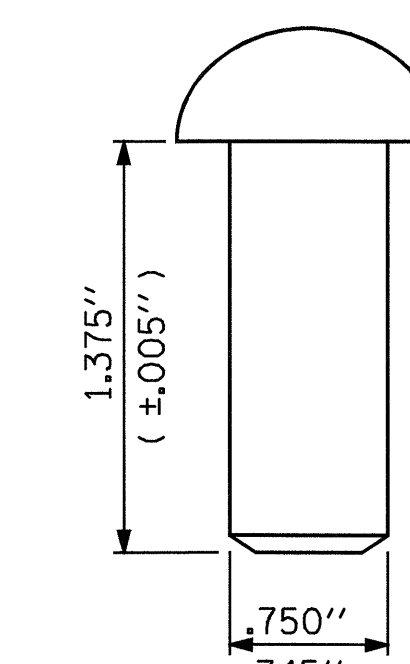
PLAN



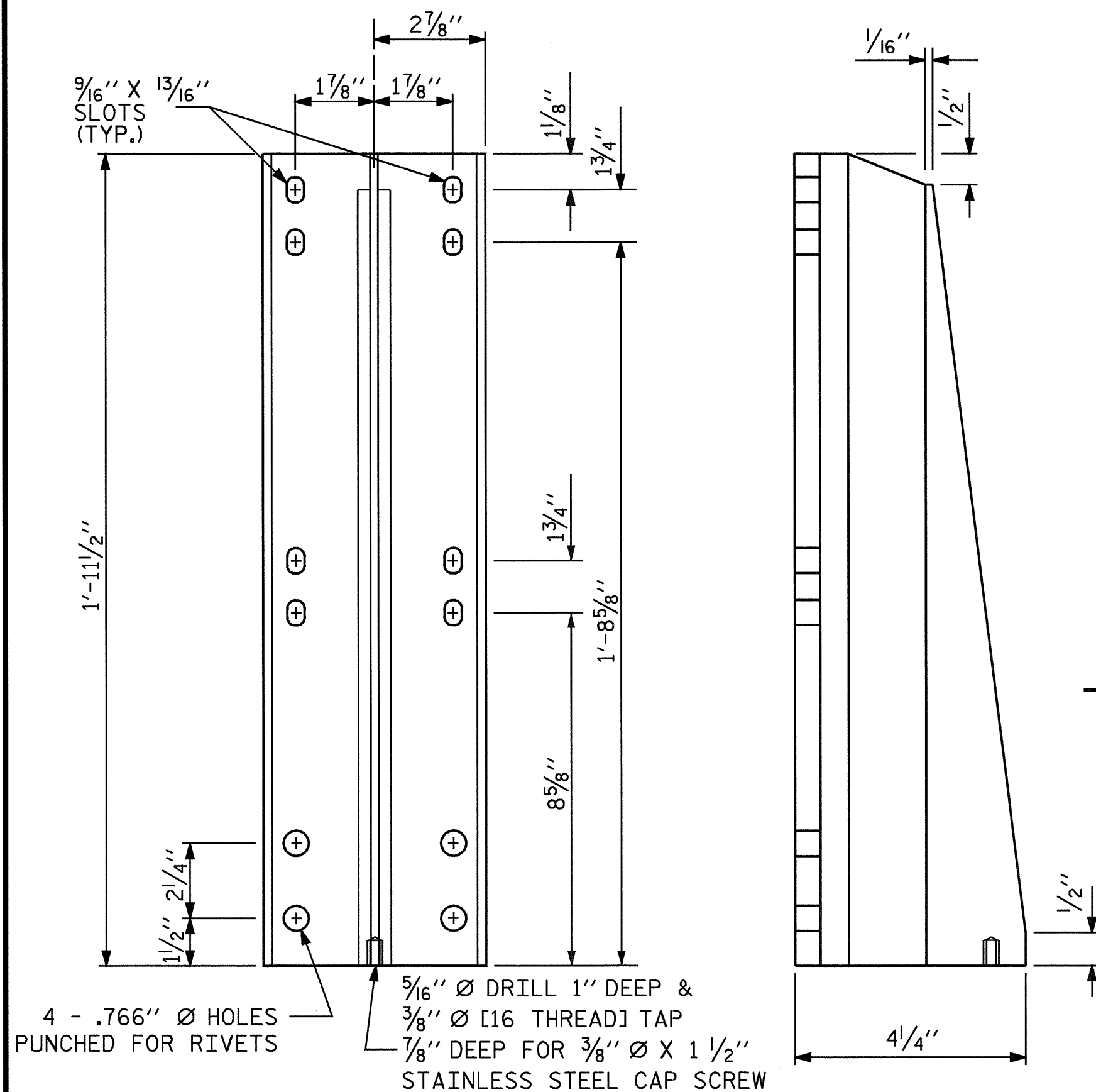
FRONT ELEVATION

SIDE ELEVATION

POST BASE DETAILS



RIVET DETAIL



FRONT ELEVATION

SIDE ELEVATION

DETAILS OF POST

ASSEMBLED BY : M. POOLE	DATE : 08/05
CHECKED BY : D. HODGE	DATE : 08/05
DRAWN BY : EEM 6/94	REV. 10/17/00 LES/RDR
CHECKED BY : RGW 6/94	REV. 5/7/03R RWW/JTE
	REV. 5/1/06 TLA/GM

NOTES

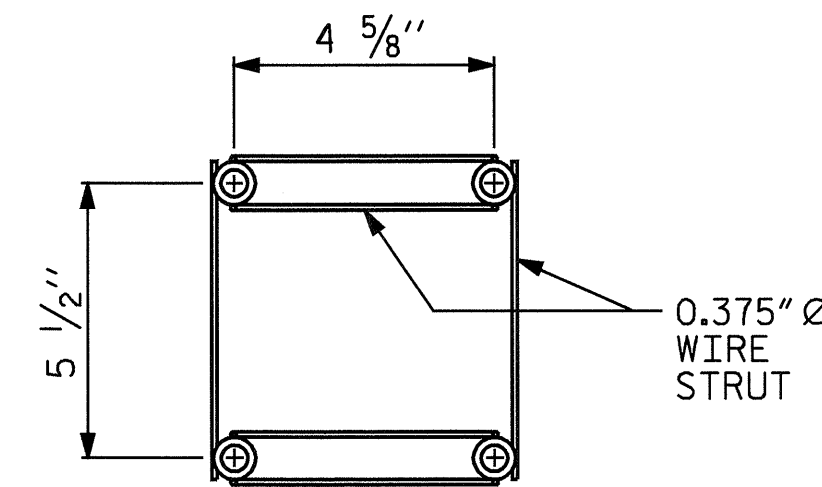
STRUCTURAL CONCRETE ANCHOR ASSEMBLY

THE STRUCTURAL CONCRETE ANCHOR ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS :

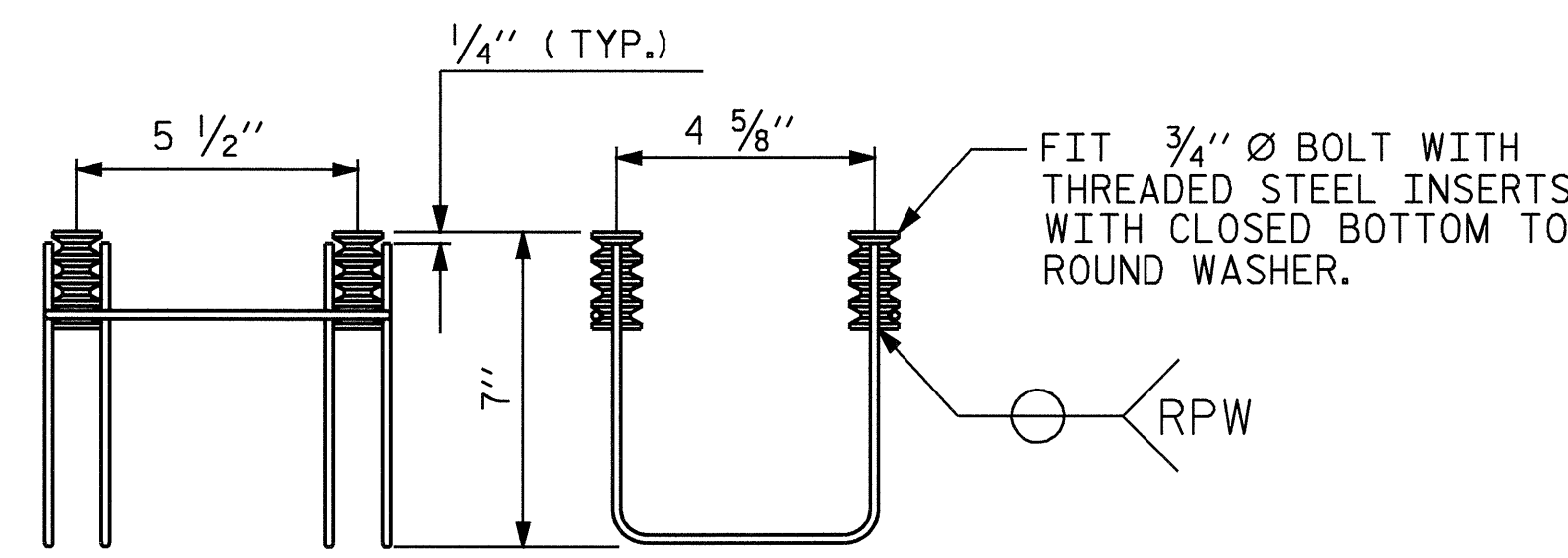
- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2" FOR 3/4" FERRULES.
- B. 4 - 3/4" Ø X 2 1/2" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø X 2 1/2" GALVANIZED BOLTS 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.
- C. WIRE STRUT SHOWN IN THE CONCRETE ANCHOR ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 1/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.
- D. THE METAL RAIL ANCHOR ASSEMBLIES TO BE HOT DIPPED GALVANIZED TO CONFORM TO REQUIREMENTS OF AASHTO M111.
- E. THE COST OF THE METAL RAIL ANCHOR ASSEMBLY WITH BOLTS AND WASHERS COMPLETE IN PLACE SHALL BE INCLUDED IN THE PRICE BID FOR LINEAR FEET OF METAL RAIL.
- F. BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.

THE CONTRACTOR, AT HIS OPTION, MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN LIEU OF THE METAL RAIL ANCHOR ASSEMBLY. THE YIELD LOAD OF THE 3/4" Ø BOLT IS 10 KIPS. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS REQUIRED.

WHEN ADHESIVELY ANCHORED ANCHOR BOLTS ARE USED, BOLTS SHALL MEET THE REQUIREMENTS OF ASTM F593 ALLOY 304 STAINLESS STEEL WITH MINIMUM 75,000 PSI ULTIMATE STRENGTH. NUTS SHALL MEET THE REQUIREMENTS OF ASTM F594 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.



PLAN



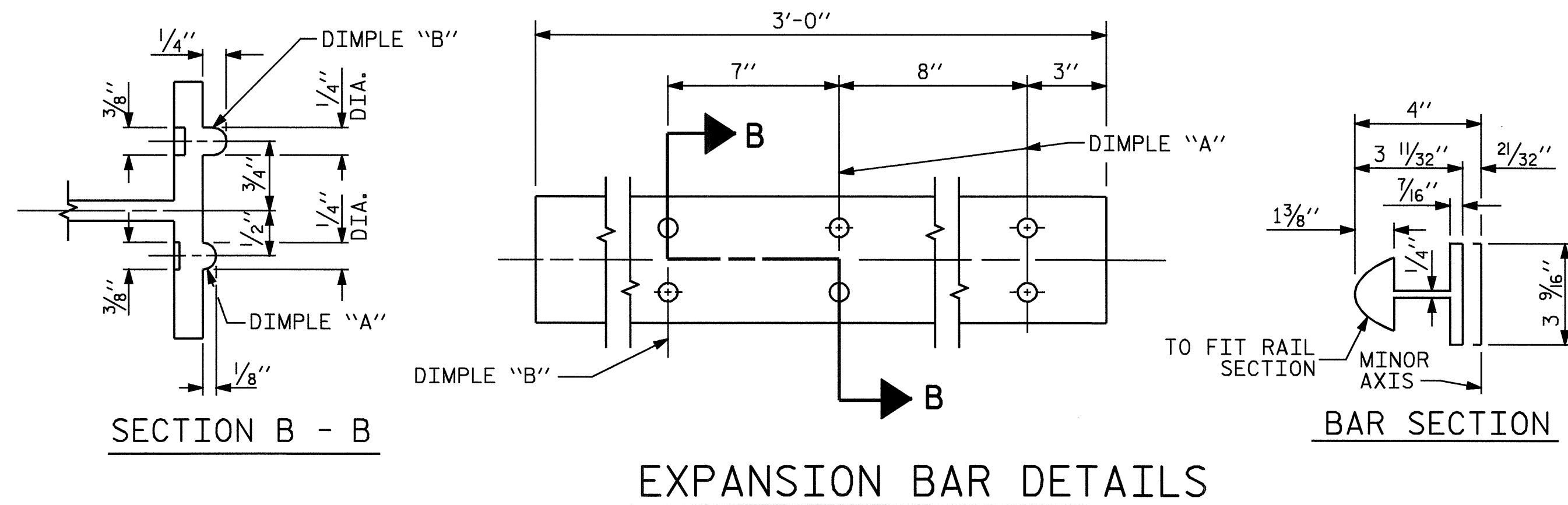
SIDE VIEW

ELEVATION

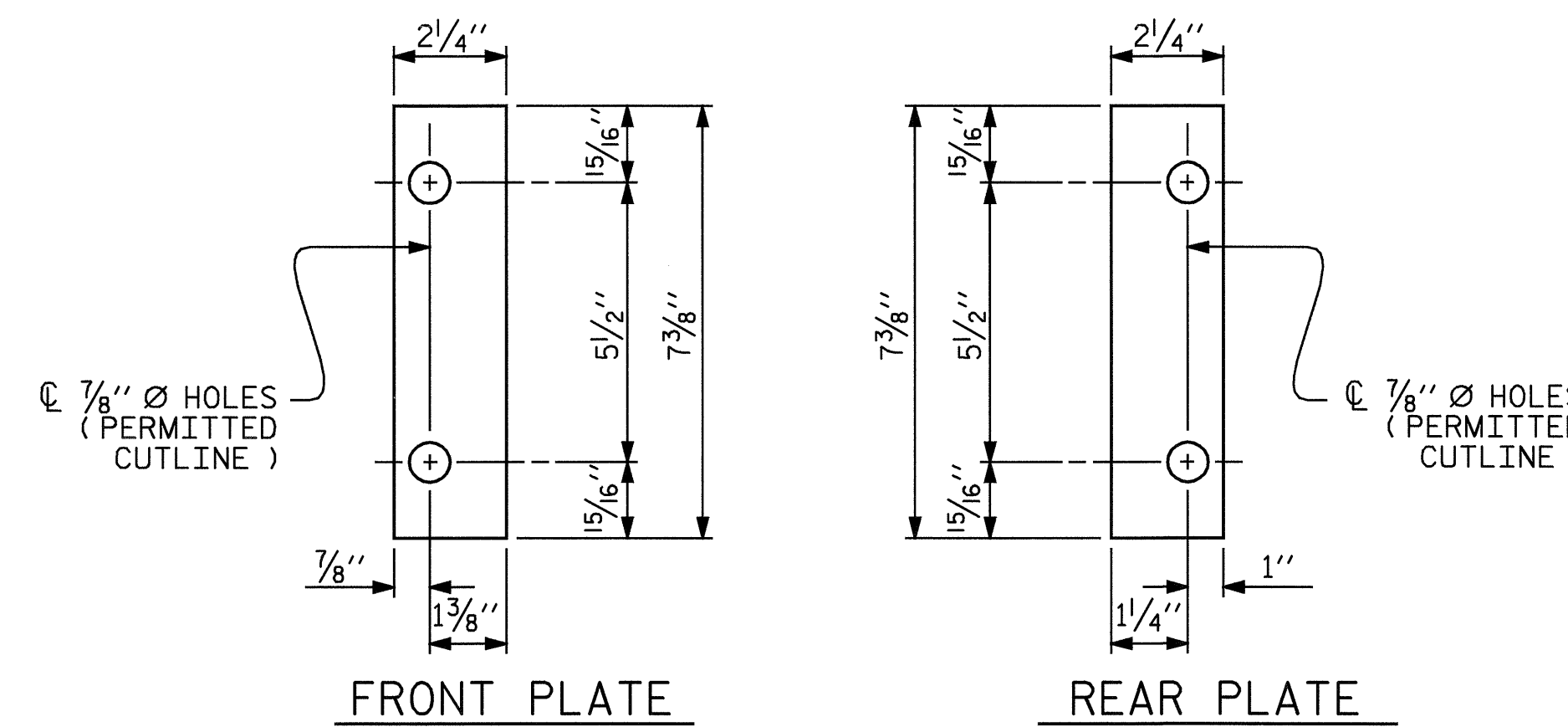
MINIMUM LENGTH OF THREADS IN INSERT (FERRULE) : 1 3/4"

4-BOLT METAL RAIL ANCHOR ASSEMBLY

(284 ASSEMBLIES REQUIRED)



EXPANSION BAR DETAILS

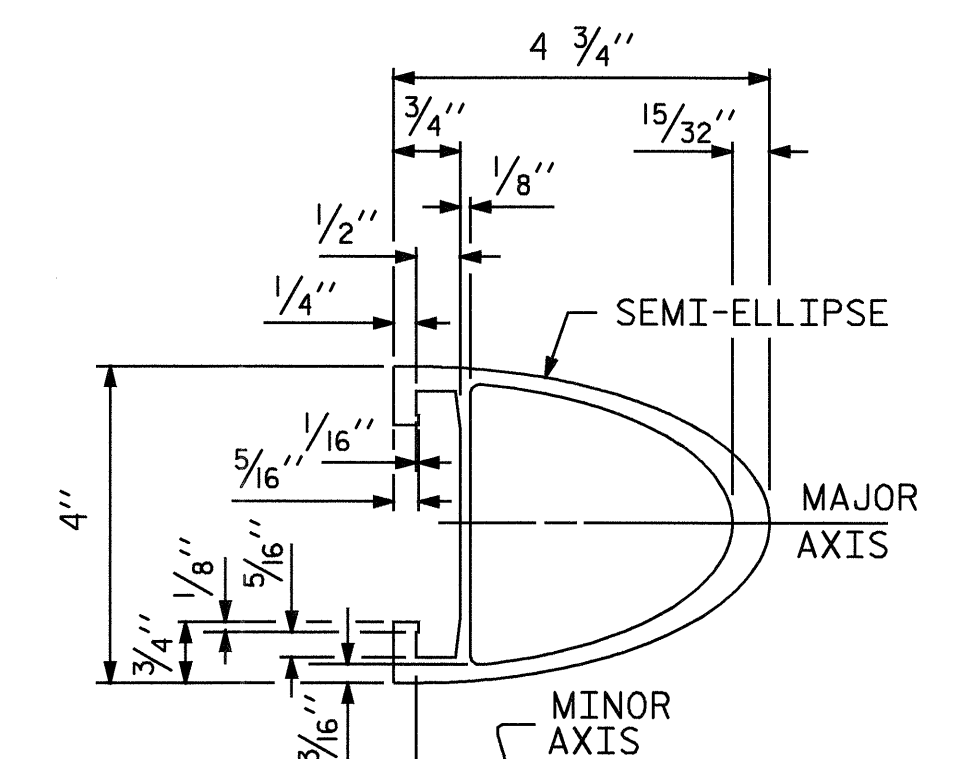


FRONT PLATE

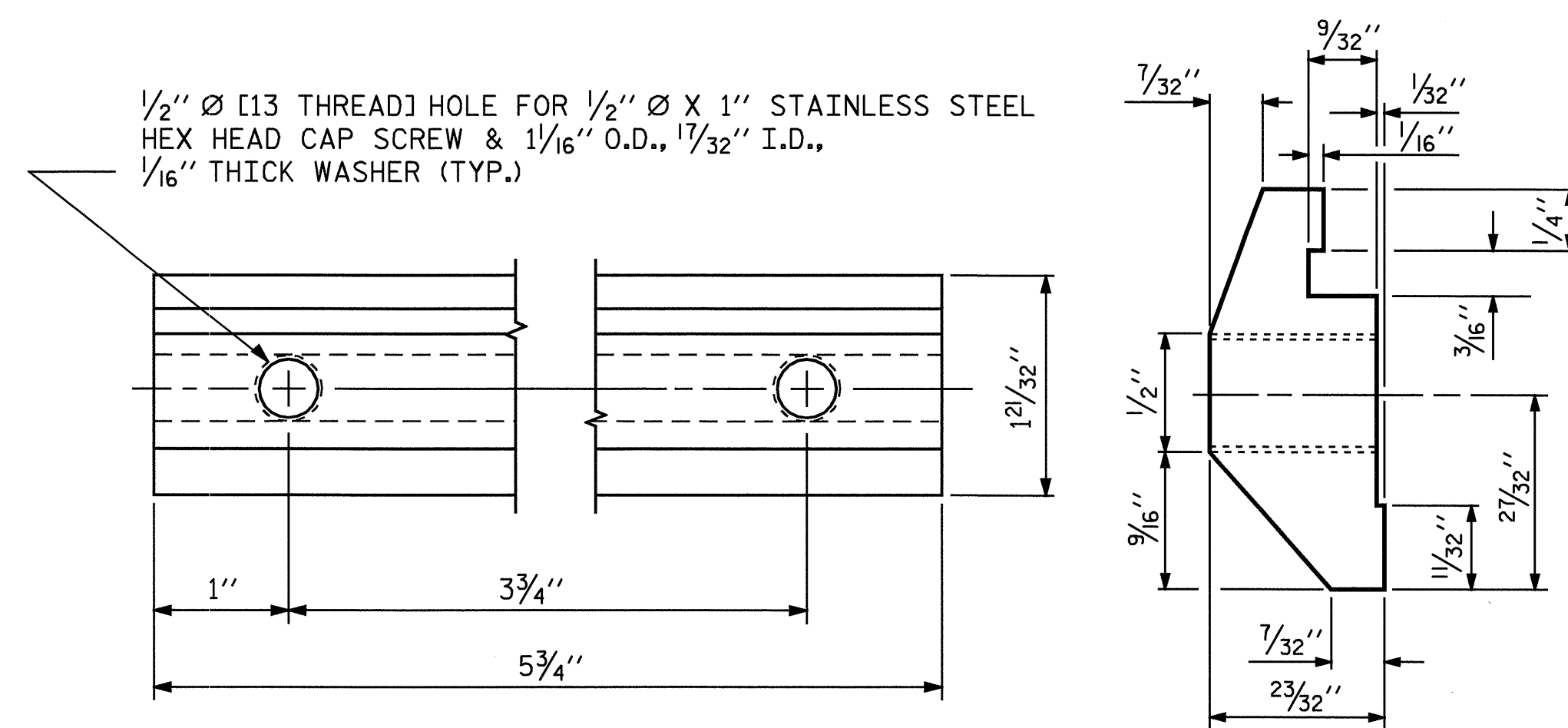
REAR PLATE

SHIM DETAILS

NOTE : SHIMS MAY BE CUT ALONG PERMITTED CUTLINE OR SLOTTED TO EDGE OF PLATE TO FACILITATE PLACEMENT.

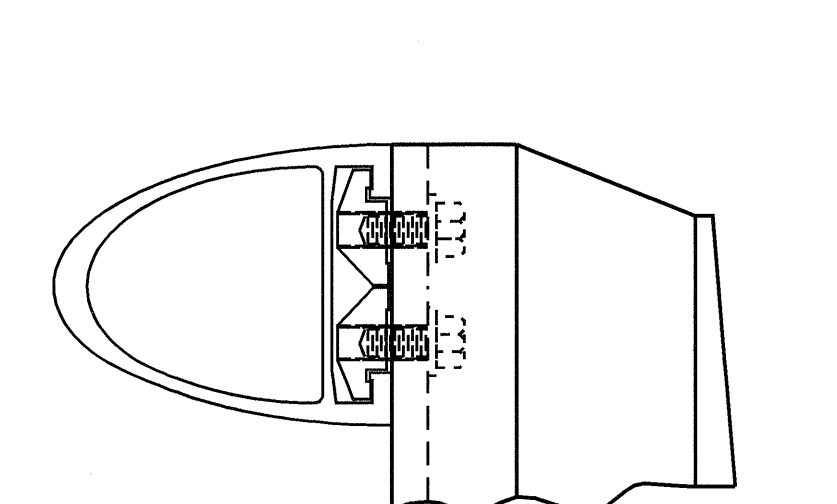


RAIL SECTION

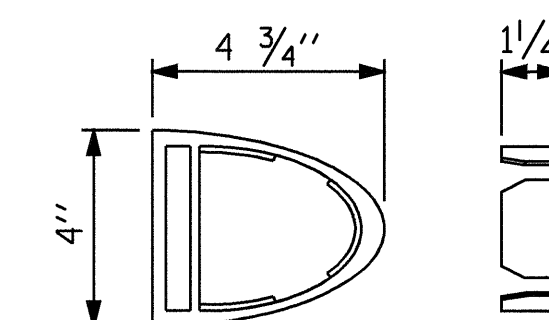


CLAMP BAR DETAIL

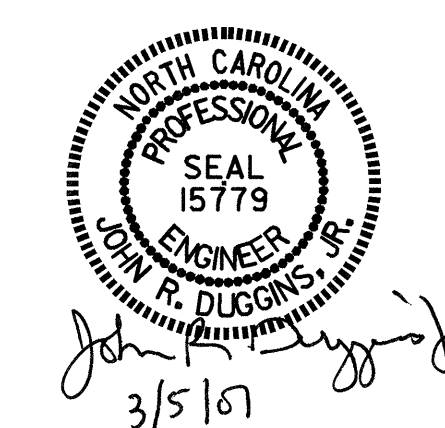
(4 REQUIRED PER POST)



CLAMP ASSEMBLY



RAIL CAP



PROJECT NO. B-4223
 PENDER COUNTY
 STATION: 33+52.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

2 BAR METAL RAIL

ASSEMBLED BY :	M. POOLE	DATE :	08/05
CHECKED BY :	D. HODGE	DATE :	08/05
DRAWN BY :	EEM 6/94	REV. 2/6/97	EEM/RGW
CHECKED BY :	RGW 6/94	REV. 8/16/99	MAB/LES
		REV. 5/7/03	RWW/JTE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			5-44
2			4			67

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.

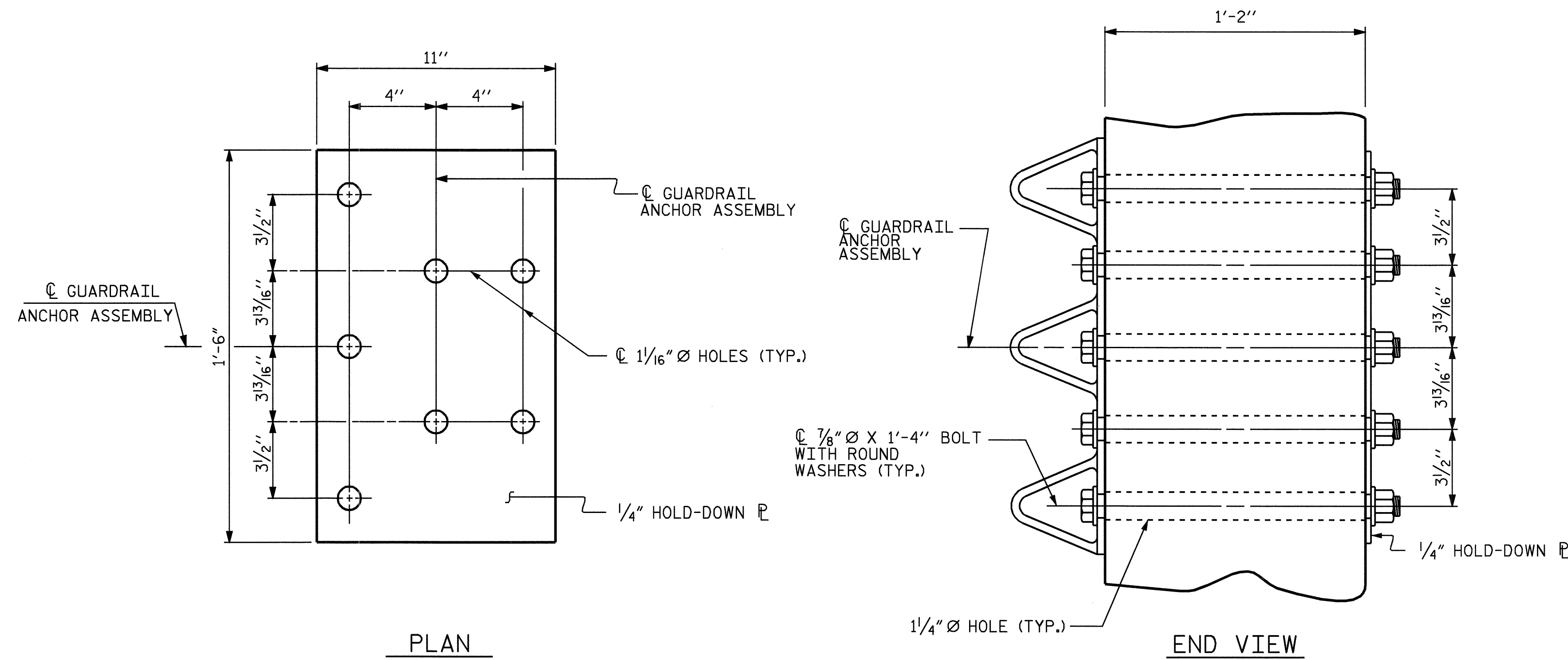
BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS.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

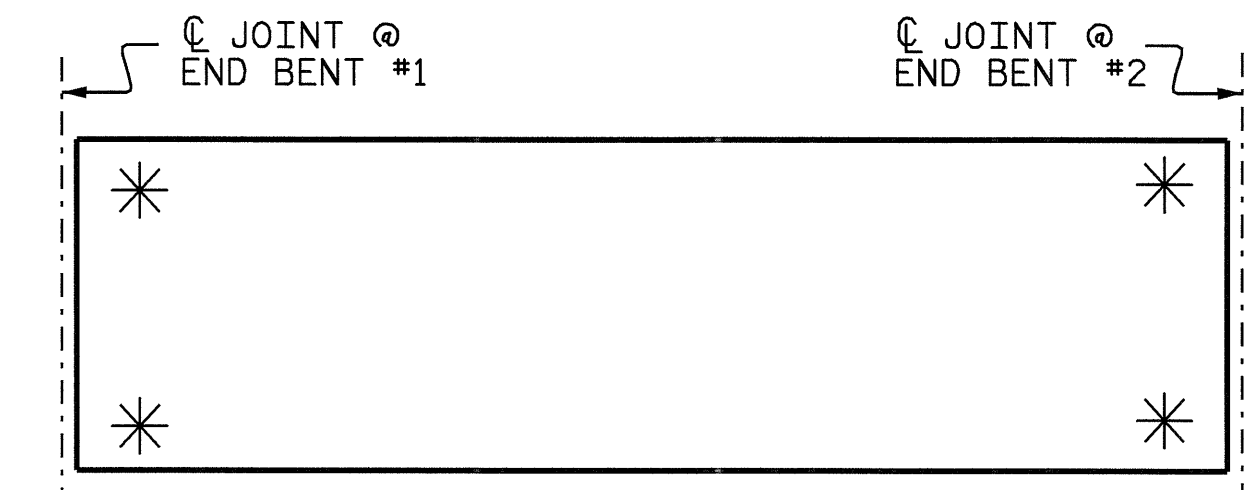
THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



PLAN

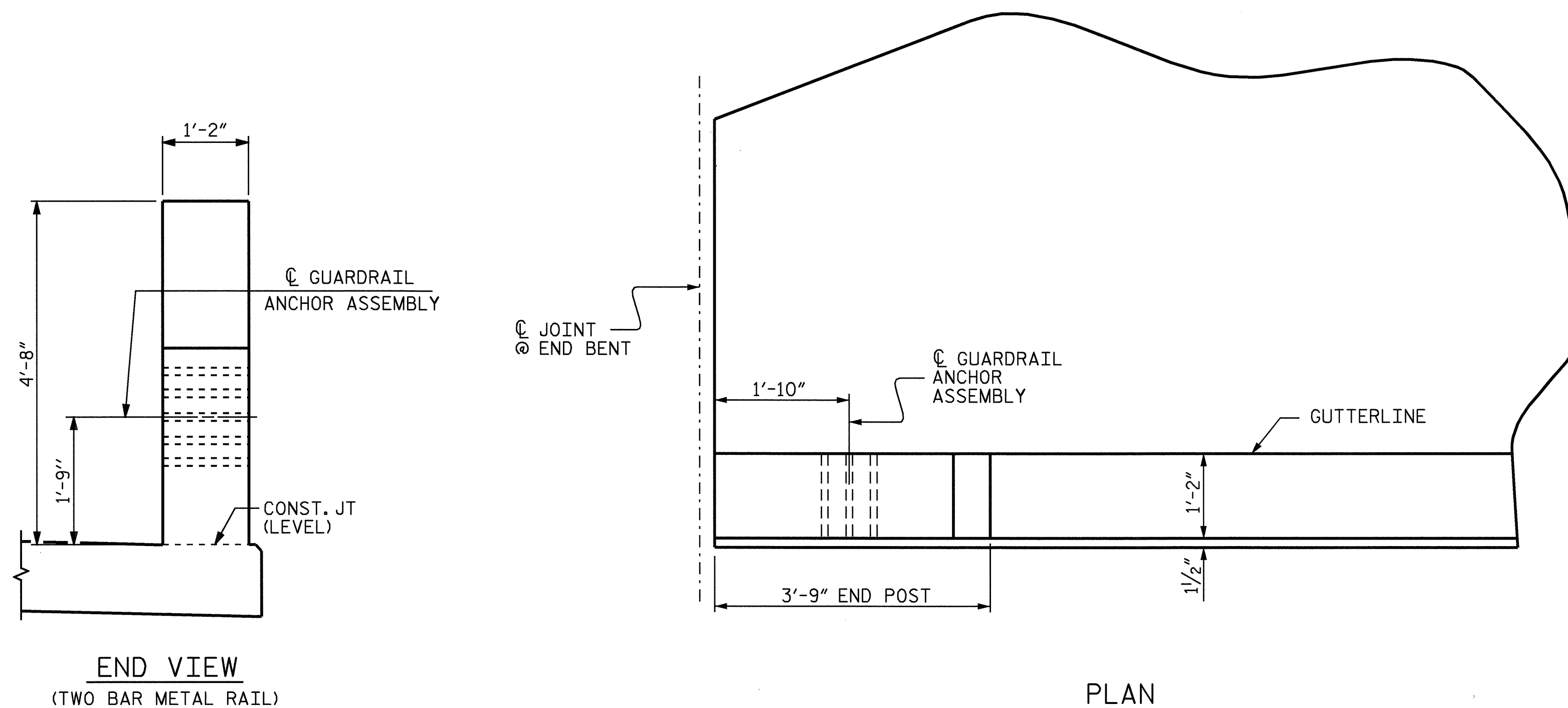
END VIEW

GUARDRAIL ANCHOR ASSEMBLY DETAILS



SKETCH SHOWING POINTS OF ATTACHMENT

* LOCATION OF GUARDRAIL ATTACHMENT



END VIEW

(TWO BAR METAL RAIL)

PLAN

LOCATION OF GUARDRAIL ANCHOR AT END POST

PROJECT NO. B-4223
PENDER COUNTY
 STATION: 33+52.00 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GUARDRAIL ANCHORAGE
 DETAILS
 FOR METAL RAILS

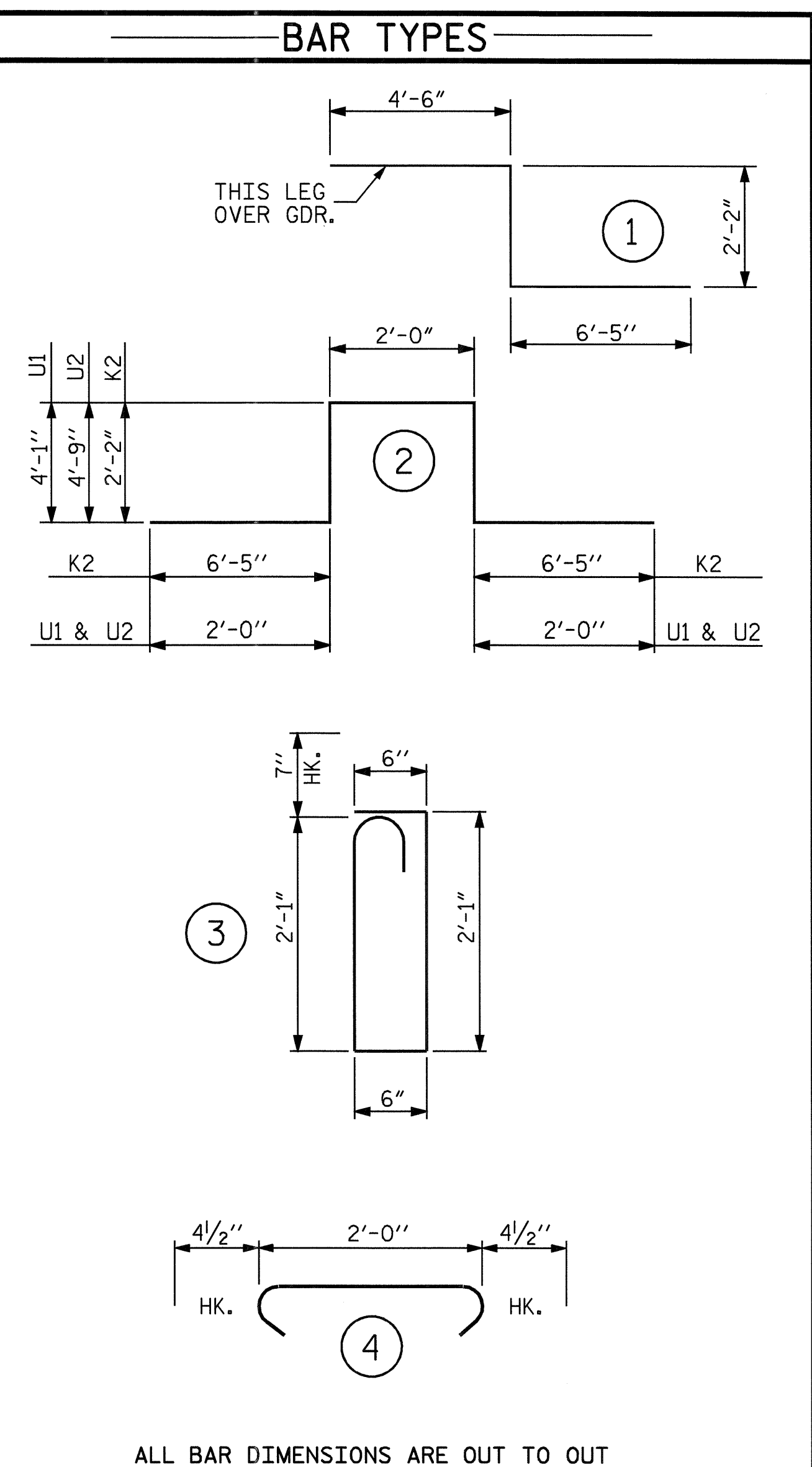


John R. Duggins
 3/5/07

ASSEMBLED BY : M. POOLE	DATE : 09/05
CHECKED BY : D. HODGE	DATE : 12/05
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:	
1			3			S-45
2			4			TOTAL SHEETS 67

REINFORCING BAR SCHEDULE					REINFORCING BAR SCHEDULE					REINFORCING BAR SCHEDULE					REINFORCING BAR SCHEDULE					REINFORCING BAR SCHEDULE										
SPANS A & B					SPANS C & D					SPANS E & F					SPANS G & H					SPANS I & J										
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR NO.	SIZE	TYPE	LENGTH	WEIGHT						
* A1	309	5	STR	32'-3"	10394	* A1	309	5	STR	32'-3"	10394	* A1	275	5	STR	32'-3"	9250	* A1	343	5	STR	32'-3"	11537	* A1	343	5	STR	32'-3"	11537	
A2	309	5	STR	32'-3"	10394	A2	309	5	STR	32'-3"	10394	A2	275	5	STR	32'-3"	9250	A2	343	5	STR	32'-3"	11537	A2	343	5	STR	32'-3"	11537	
* B1	132	4	STR	21'-2"	1866	* B1	132	4	STR	21'-2"	1866	* B1	66	4	STR	21'-2"	933	* B6	132	4	STR	23'-8"	2087	* B6	132	4	STR	23'-8"	2087	
* B2	44	7	STR	35'-2"	3163	* B2	44	7	STR	35'-2"	3163	* B2	44	7	STR	35'-2"	3163	* B7	44	7	STR	37'-8"	3388	* B7	44	7	STR	37'-8"	3388	
* B3	21	7	STR	27'-0"	1159	* B3	21	7	STR	27'-0"	1159	* B3	21	7	STR	27'-0"	1159	* B8	21	7	STR	30'-0"	1288	* B8	21	7	STR	30'-0"	1288	
* B4	128	5	STR	46'-7"	6219	* B4	128	5	STR	46'-7"	6219	* B5	44	4	STR	20'-8"	607	* B9	128	5	STR	51'-10"	6920	* B9	128	5	STR	51'-10"	6920	
* B10	128	5	STR	41'-7"	5552																									
* G1	2	5	STR	32'-3"	67	* G1	2	5	STR	32'-3"	67	* G1	2	5	STR	32'-3"	67	* G1	2	5	STR	32'-3"	67	* G1	2	5	STR	32'-3"	67	
* K1	8	8	1	13'-1"	279	* K1	8	8	1	13'-1"	279	* K1	8	8	1	13'-1"	279	* K1	8	8	1	13'-1"	279	* K1	8	8	1	13'-1"	279	
* K2	8	8	2	19'-2"	409	* K2	8	8	2	19'-2"	409	* K2	8	8	2	19'-2"	409	* K2	8	8	2	19'-2"	409	* K2	8	8	2	19'-2"	409	
* K3	5	4	STR	25'-4"	85	* K3	5	4	STR	25'-4"	85	* K3	5	4	STR	25'-4"	85	* K3	5	4	STR	25'-4"	85	* K3	5	4	STR	25'-4"	85	
* K6	12	4	STR	6'-4"	51	* K6	12	4	STR	6'-4"	51	* K6	12	4	STR	6'-4"	51	* K6	12	4	STR	6'-4"	51	* K6	12	4	STR	6'-4"	51	
* K7	12	4	STR	7'-4"	59	* K7	12	4	STR	7'-4"	59	* K7	12	4	STR	7'-4"	59	* K7	12	4	STR	7'-4"	59	* K7	12	4	STR	7'-4"	59	
* K8	6	4	STR	4'-8"	19	* K8	6	4	STR	4'-8"	19	* K8	6	4	STR	4'-8"	19	* K8	6	4	STR	4'-8"	19	* K8	6	4	STR	4'-8"	19	
* S1	36	5	3	5'-9"	216	* S1	36	5	3	5'-9"	216	* S1	36	5	3	5'-9"	216	* S1	36	5	3	5'-9"	216	* S1	36	5	3	5'-9"	216	
* S2	84	4	4	2'-9"	154	* S2	84	4	4	2'-9"	154	* S2	84	4	4	2'-9"	154	* S2	84	4	4	2'-9"	154	* S2	84	4	4	2'-9"	154	
* U1	6	4	2	14'-2"	57	* U1	6	4	2	14'-2"	57	* U1	6	4	2	14'-2"	57	* U1	6	4	2	14'-2"	57	* U1	6	4	2	14'-2"	57	
* U2	15	4	2	15'-6"	155	* U2	15	4	2	15'-6"	155	* U2	15	4	2	15'-6"	155	* U2	15	4	2	15'-6"	155	* U2	15	4	2	15'-6"	155	
REINFORCING STEEL 16981 LBS.					REINFORCING STEEL 16981 LBS.					REINFORCING STEEL 15170 LBS.					REINFORCING STEEL 18825 LBS.					REINFORCING STEEL 18825 LBS.										
* EPOXY COATED REINFORCING STEEL 17765 LBS.					* EPOXY COATED REINFORCING STEEL 17765 LBS.					* EPOXY COATED REINFORCING STEEL 16295 LBS.					* EPOXY COATED REINFORCING STEEL 19483 LBS.					* EPOXY COATED REINFORCING STEEL 19483 LBS.										
* THESE BARS ARE EPOXY COATED					* THESE BARS ARE EPOXY COATED					* THESE BARS ARE EPOXY COATED					* THESE BARS ARE EPOXY COATED					* THESE BARS ARE EPOXY COATED										



SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS

BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPET, AND BARRIER RAIL		APPROACH SLABS		PARAPET AND BARRIER RAIL
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#4	2'-0"	1'-9"	2'-0"	1'-9"	2'-9"
#5	2'-6"	2'-2"	2'-6"	2'-2"	3'-5"
#6	3'-0"	2'-7"	3'-10"	2'-7"	4'-4"
#7	5'-3"	3'-6"			
#8	6'-10"	4'-7"			

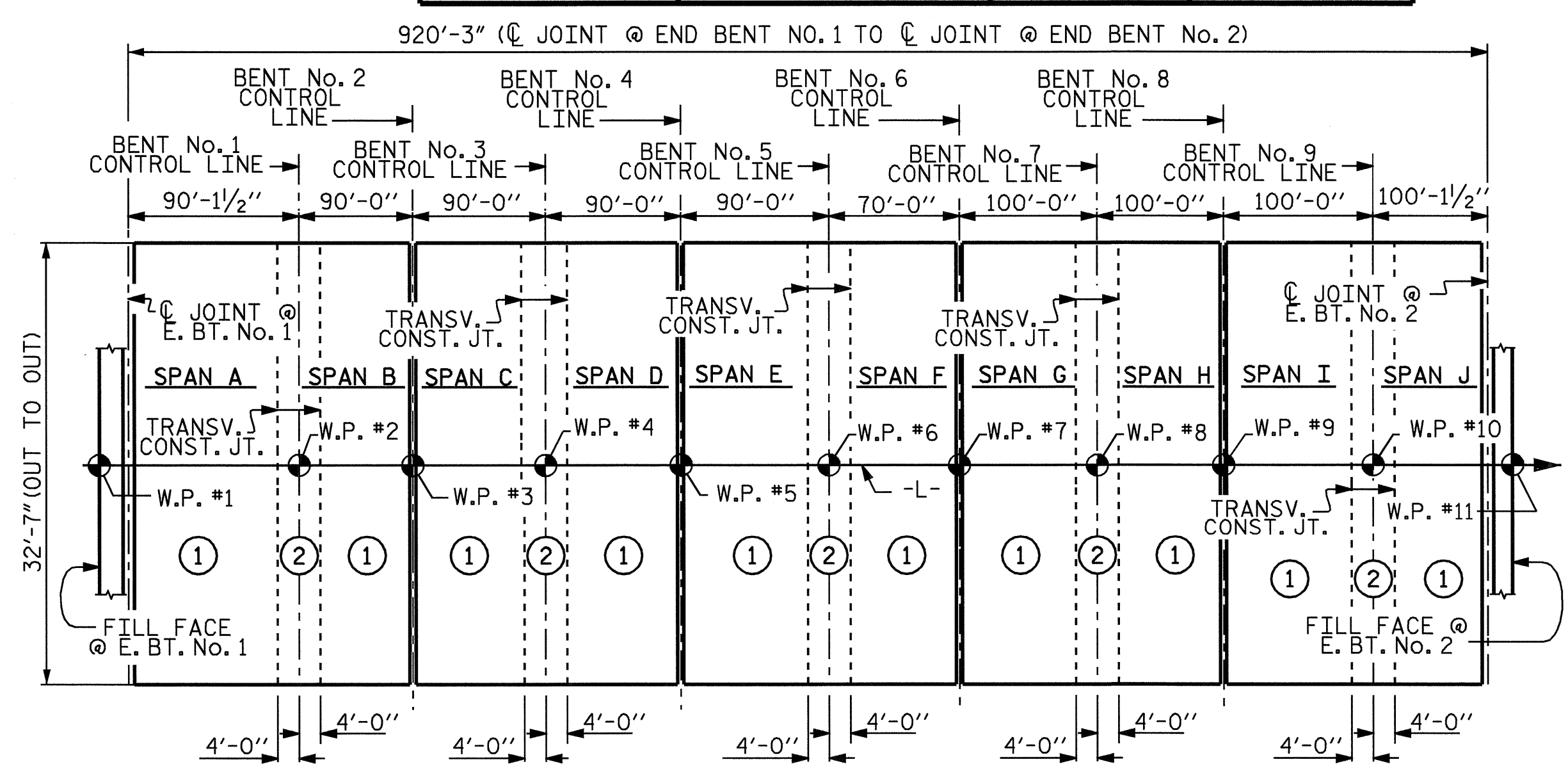
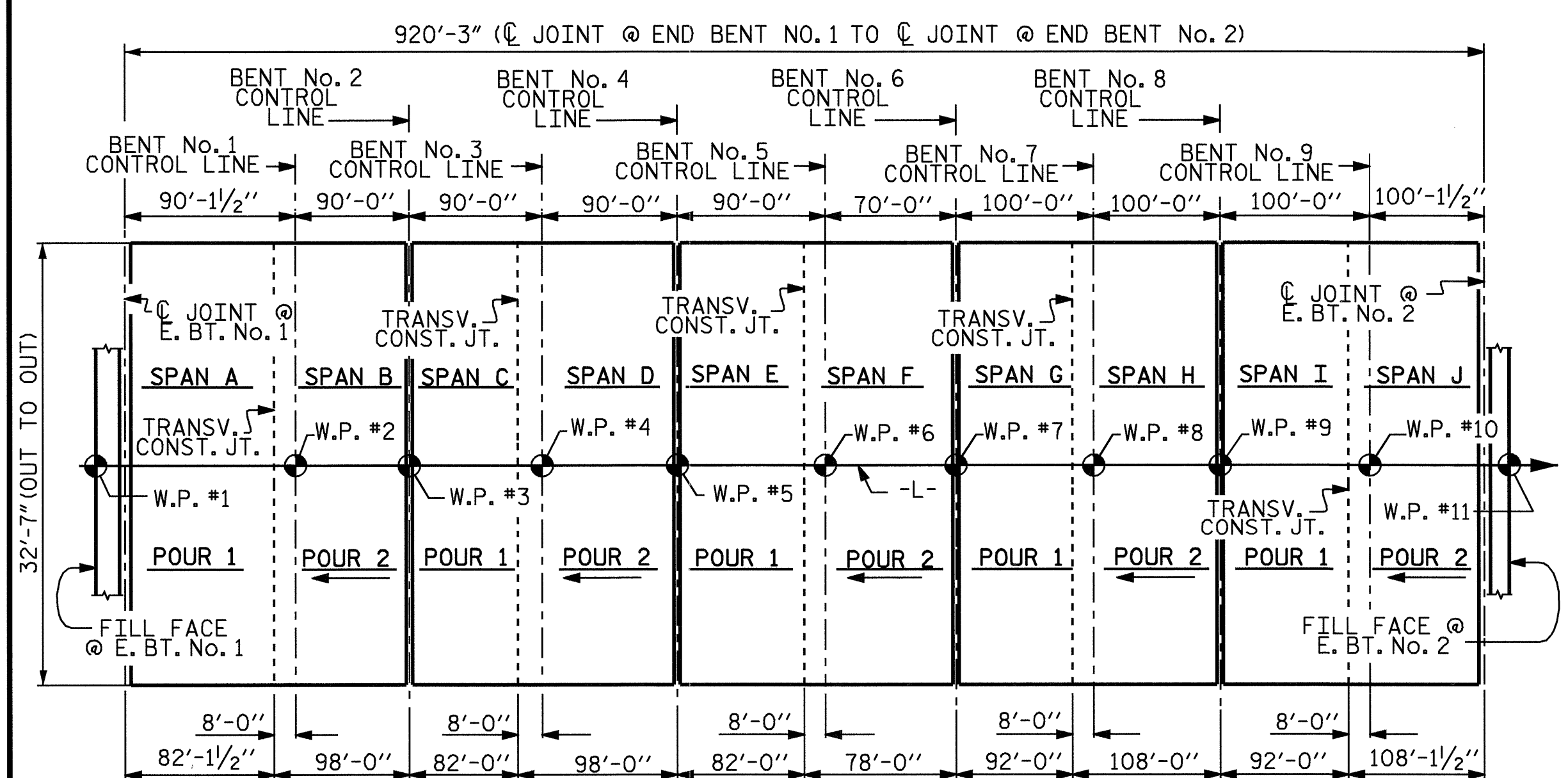
GROOVING BRIDGE FLOORS

BRIDGE DECK	24764 SQ.FT.
APPROACH SLABS	1300 SQ.FT.
TOTAL	26064 SQ.FT.

	CLASS AA CONCRETE BREAKDOWN		REINFORCING STEEL LBS	EPOXY COATED REINFORCING STEEL LBS
	CU. YDS.			
SPAN A & B	POUR 1	96.5	16981	17765
	POUR 2	123.9		
SPAN C & D	POUR 1	96.3	16981	17765
	POUR 2	123.9		
SPAN E & F	POUR 1	96.3	15170	16295
	POUR 2	100.7		
SPAN G & H	POUR 1	107.9	18825	19483
	POUR 2	135.4		
SPAN I & J	POUR 1	107.9	18825	19483
	POUR 2	135.6		
TOTAL **		1124.4	86782	90791

** QUANTITIES FOR PARAPET ARE NOT INCLUDED

ALL BAR DIMENSIONS ARE OUT TO OUT

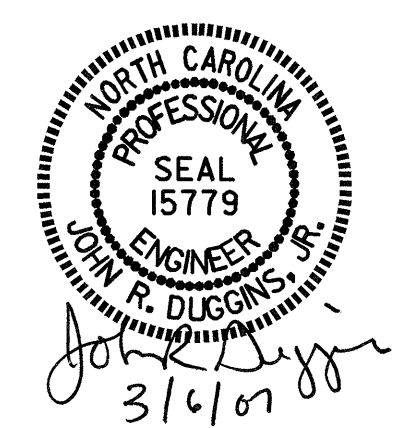


CONCRETE POURING SEQUENCE AND LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB (SQ. FT. = 29,985)

OPTIONAL POURING SEQUENCE

POUR ② CAN NOT BE STARTED UNTIL BOTH ADJACENT ① POURS REACH A MINIMUM OF 3000 PSI.

ASSEMBLED BY :	M. POOLE	DATE :	06/05
CHECKED BY :	D. HODGE	DATE :	09/05
DRAWN BY :	JMB 5/87	REV. 6/1/94	EEM/GRP
CHECKED BY :	SJD 9/87	REV. 8/16/99	RWW/LES



PROJECT NO. B-4223
 PENDER COUNTY
 STATION: 33+52.00 -L-

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-46 TOTAL SHEETS 64
2			4			

NOTES

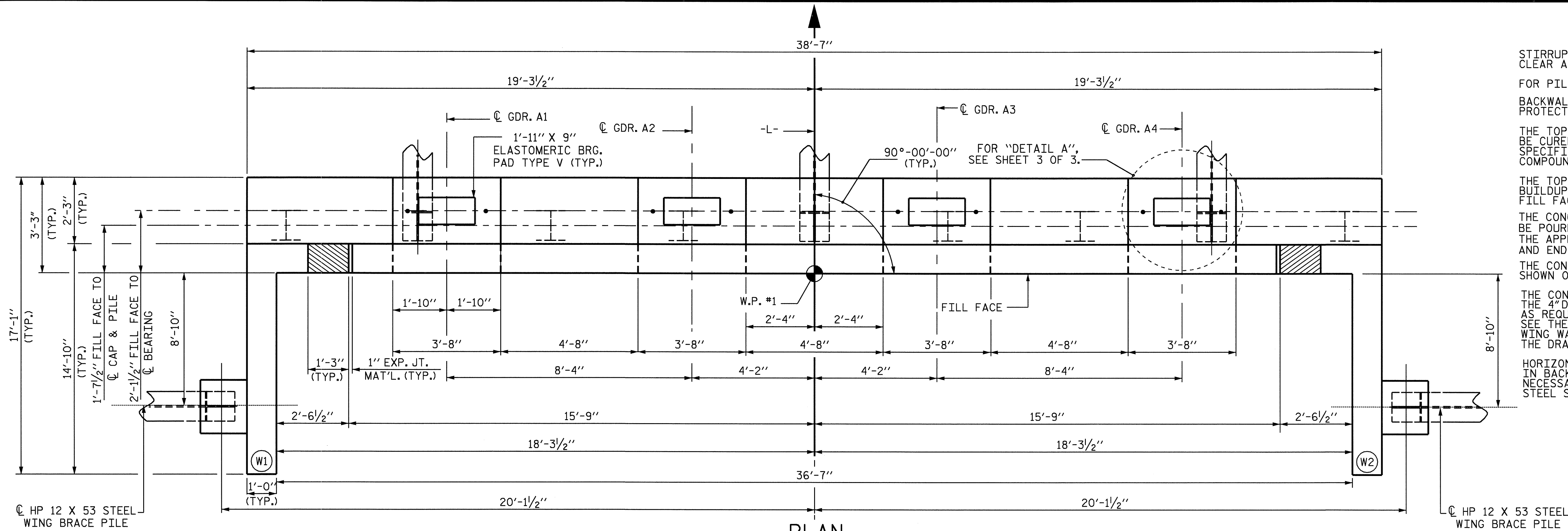
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.
 BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

THE TOP SURFACE AREAS OF THE END BENT CAPS SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

THE TOP SURFACE OF THE CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.
 THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE JOINT BETWEEN THE DECK AND THE APPROACH SLAB HAS BEEN SAWED AND THE PARAPET AND END POST ARE CAST IF SLIP FORMING IS USED.
 THE CONTRACTOR SHALL VERIFY THE SLEEVE ELEVATION SHOWN ON PLANS BEFORE CONSTRUCTION OF THE BACKWALL.

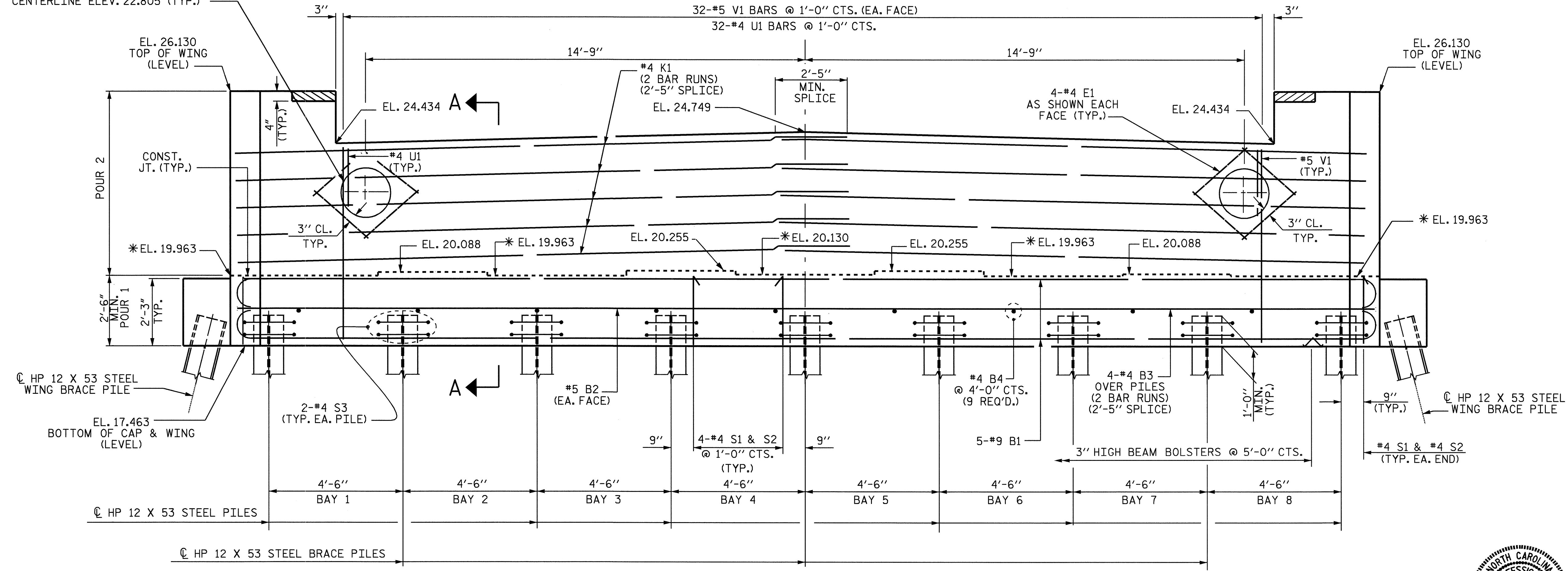
THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS. SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

HORIZONTAL AND VERTICAL REINFORCING STEEL IN BACKWALL SHALL BE FIELD BENT OR CUT AS NECESSARY TO INSTALL 20" O.D. PLASTIC OR STEEL SLEEVE.



PLAN

20" O.D. PLASTIC OR STEEL SLEEVE
 W / WATERSTOP,
 CENTERLINE ELEV. 22.805 (TYP.)



ELEVATION

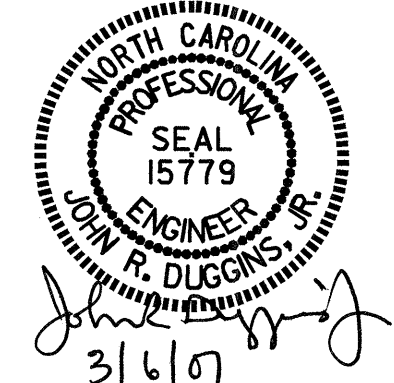
* FOR LOCATION OF ELEVATION BETWEEN BRIDGE SEAT BUILD-UPS, SEE SECTION A-A, SHEET 3 OF 3.

PROJECT NO. B-4223
 PENDER COUNTY
 STATION: 33+52.00-L-

SHEET 1 OF 3

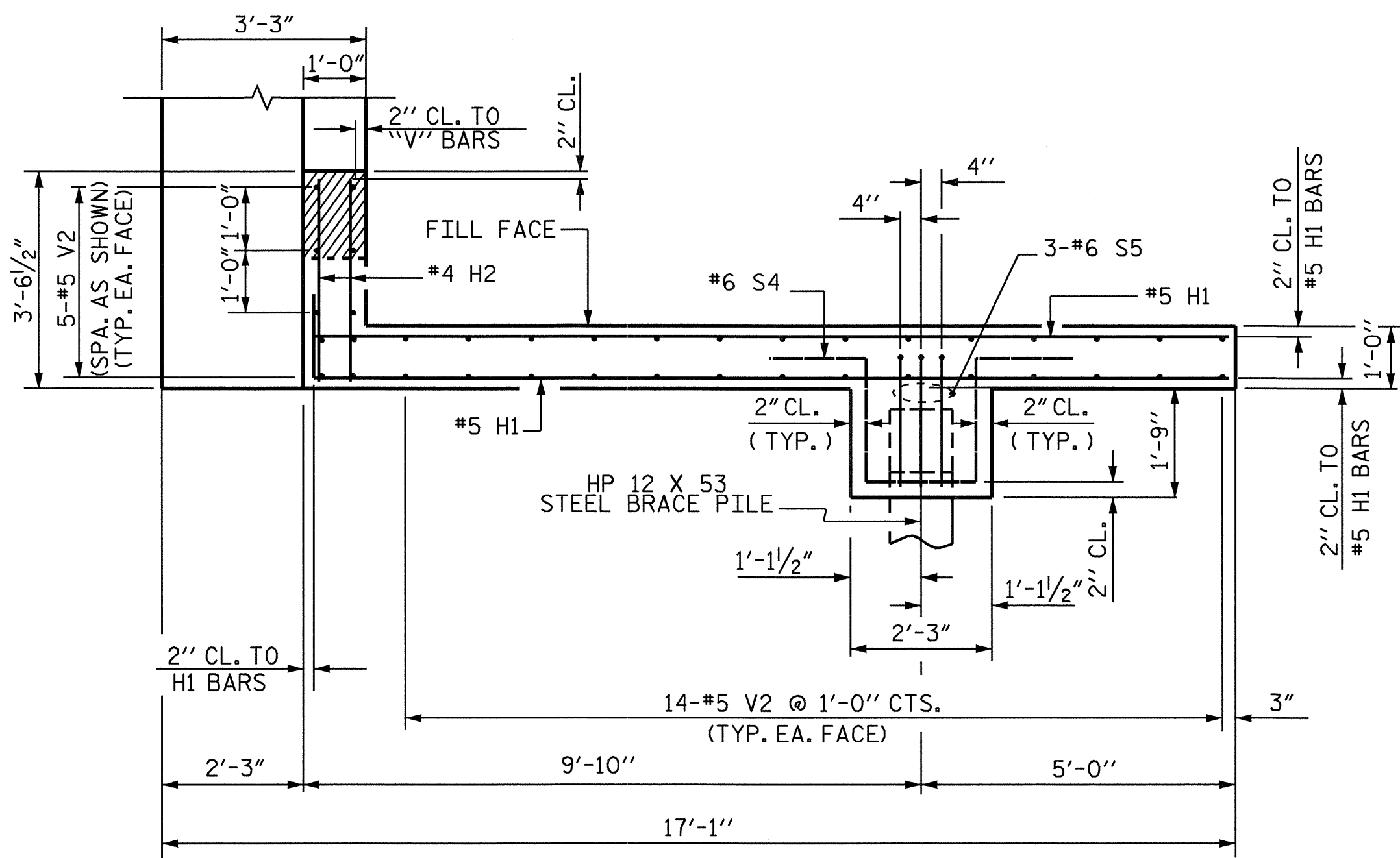
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 END BENT No. 1**

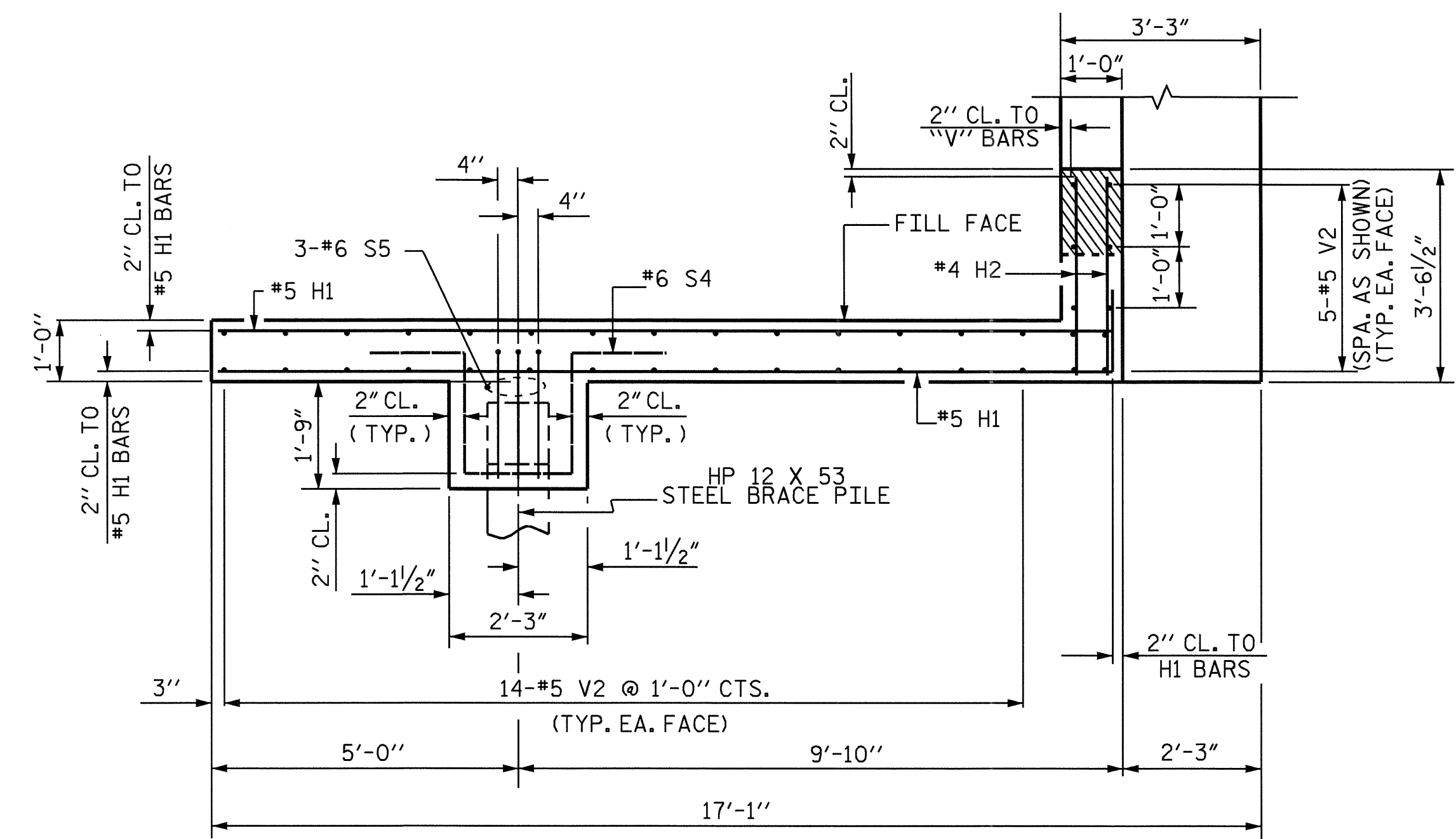


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			5-47
2			4			64

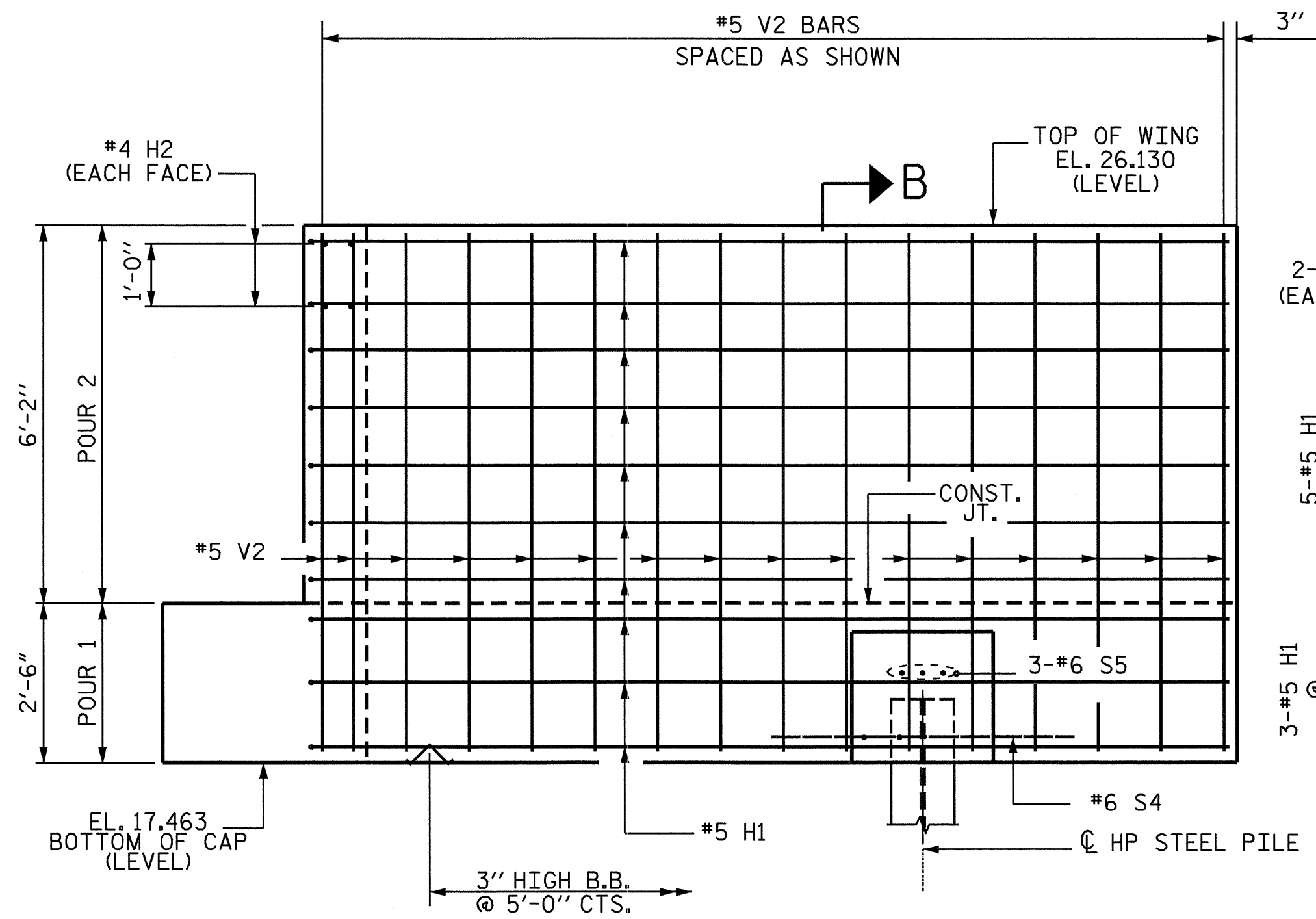
DRAWN BY: M. POOLE DATE: 12/05
 CHECKED BY: J. LAMBERT DATE: 03/06



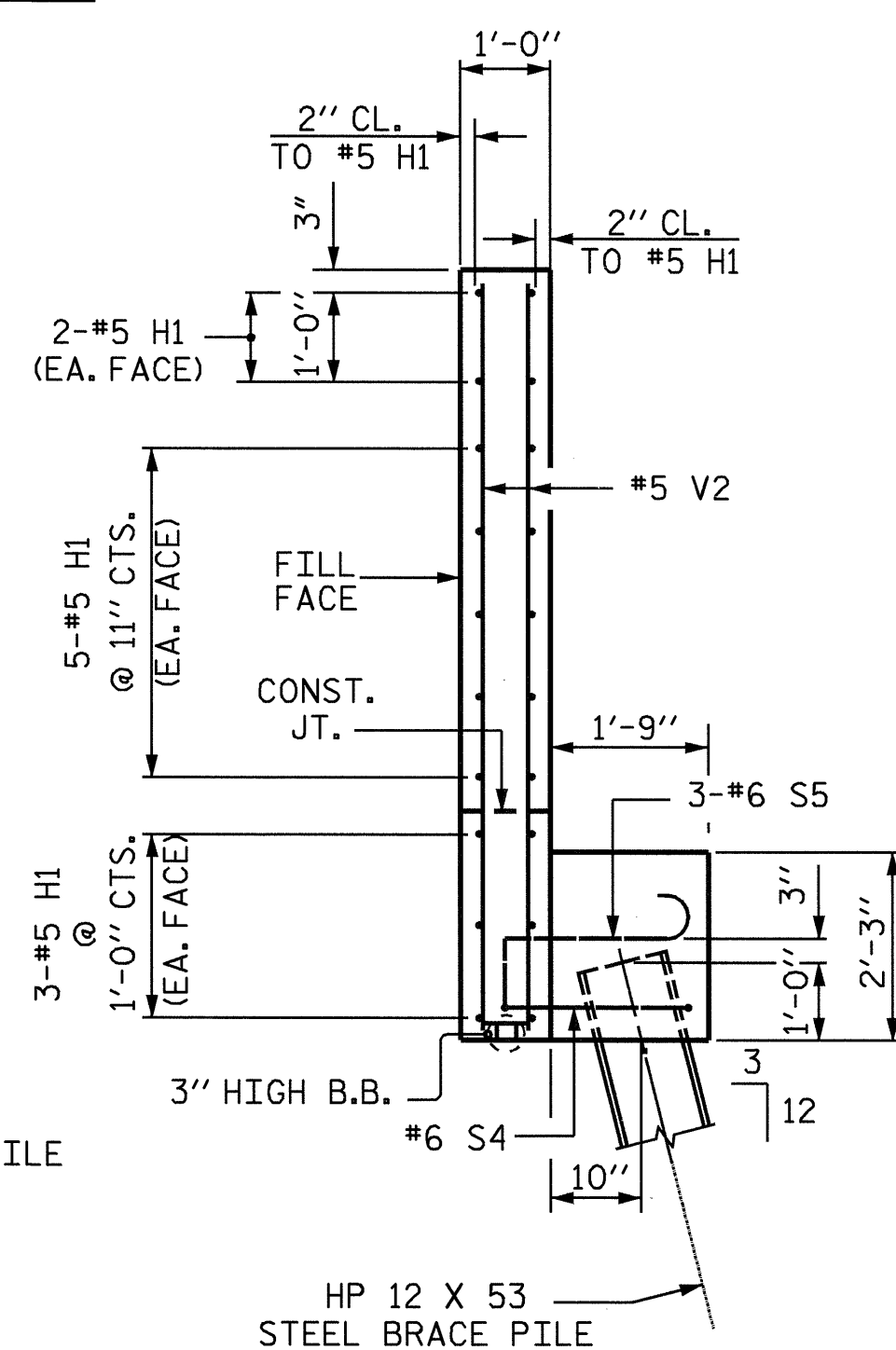
PLAN OF WING - W1



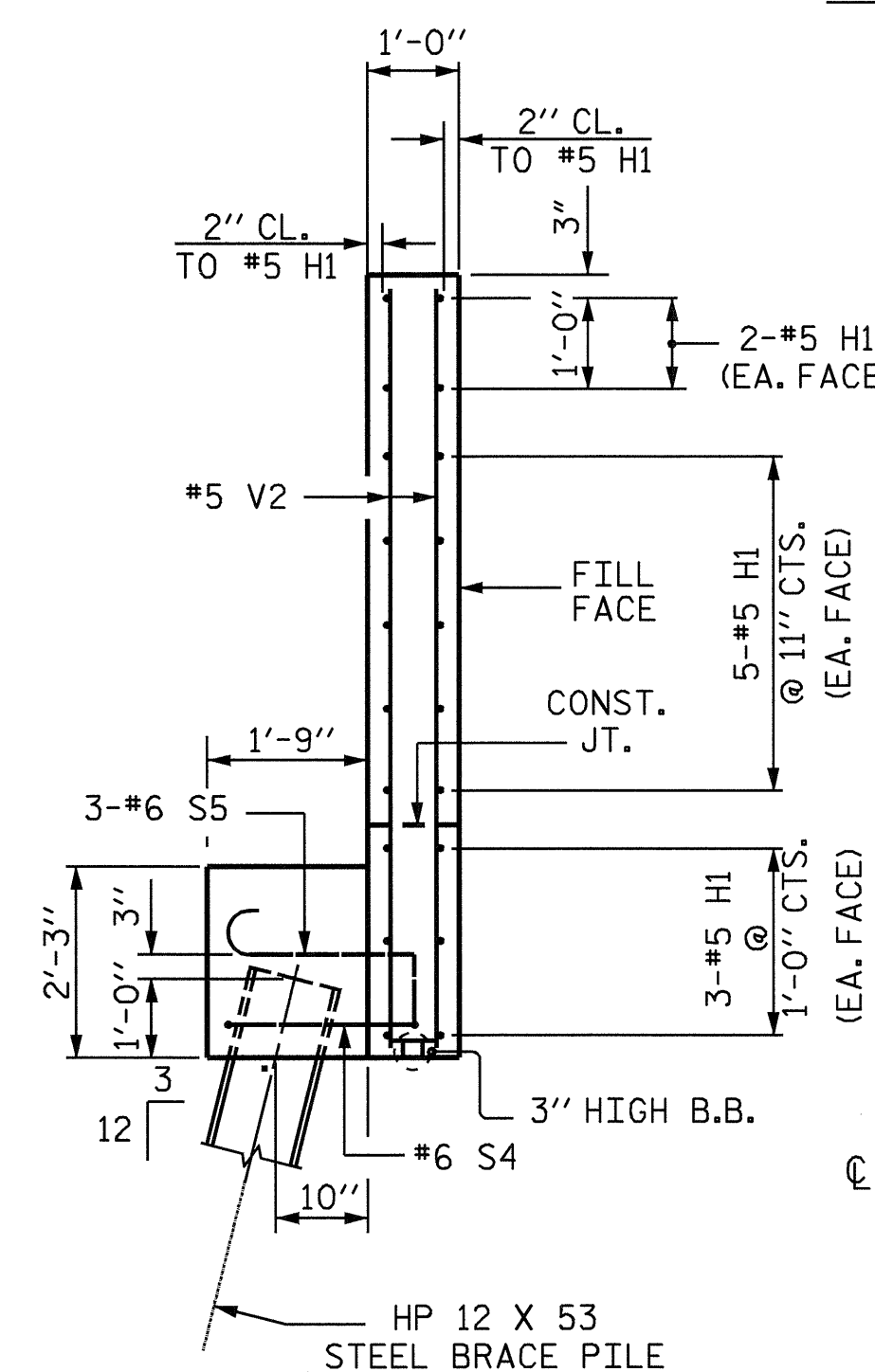
PLAN OF WING - W2



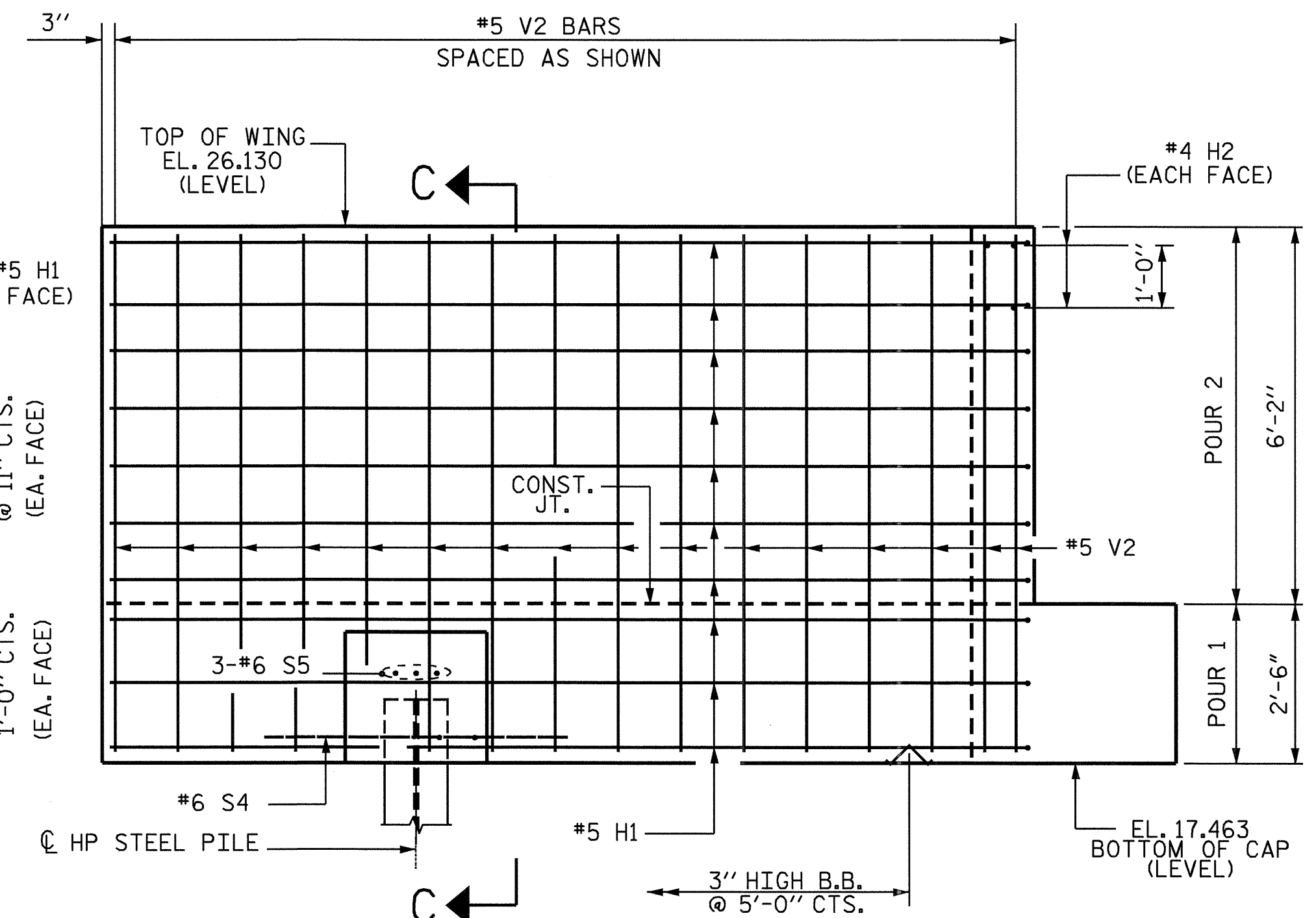
ELEVATION OF WING - W1



SECTION B-B



SECTION C-C



ELEVATION OF WING - W2

PROJECT NO. B-4223
 PENDER COUNTY
 STATION: 33+52.00-L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT No. 1

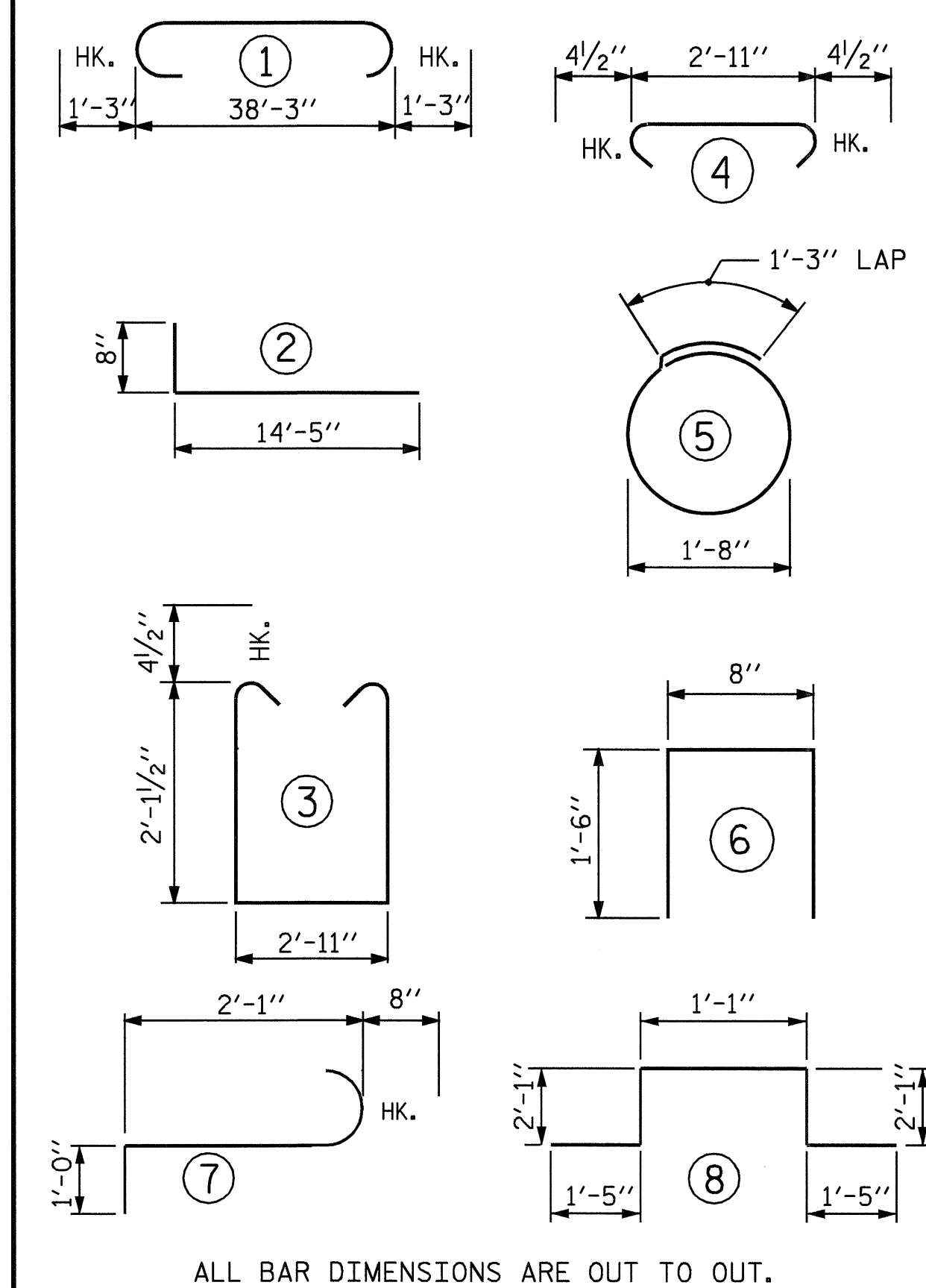


DRAWN BY: M. POOLE DATE: 12/05
 CHECKED BY: J. LAMBERT DATE: 06/06

06-MAR-2007 12:15
 RA:\STRUCT\B4223\m\poole\MICROS\B4223.sd.E1.01.dgn
 mpoole

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-48
1			3			TOTAL SHEETS
2			4			64

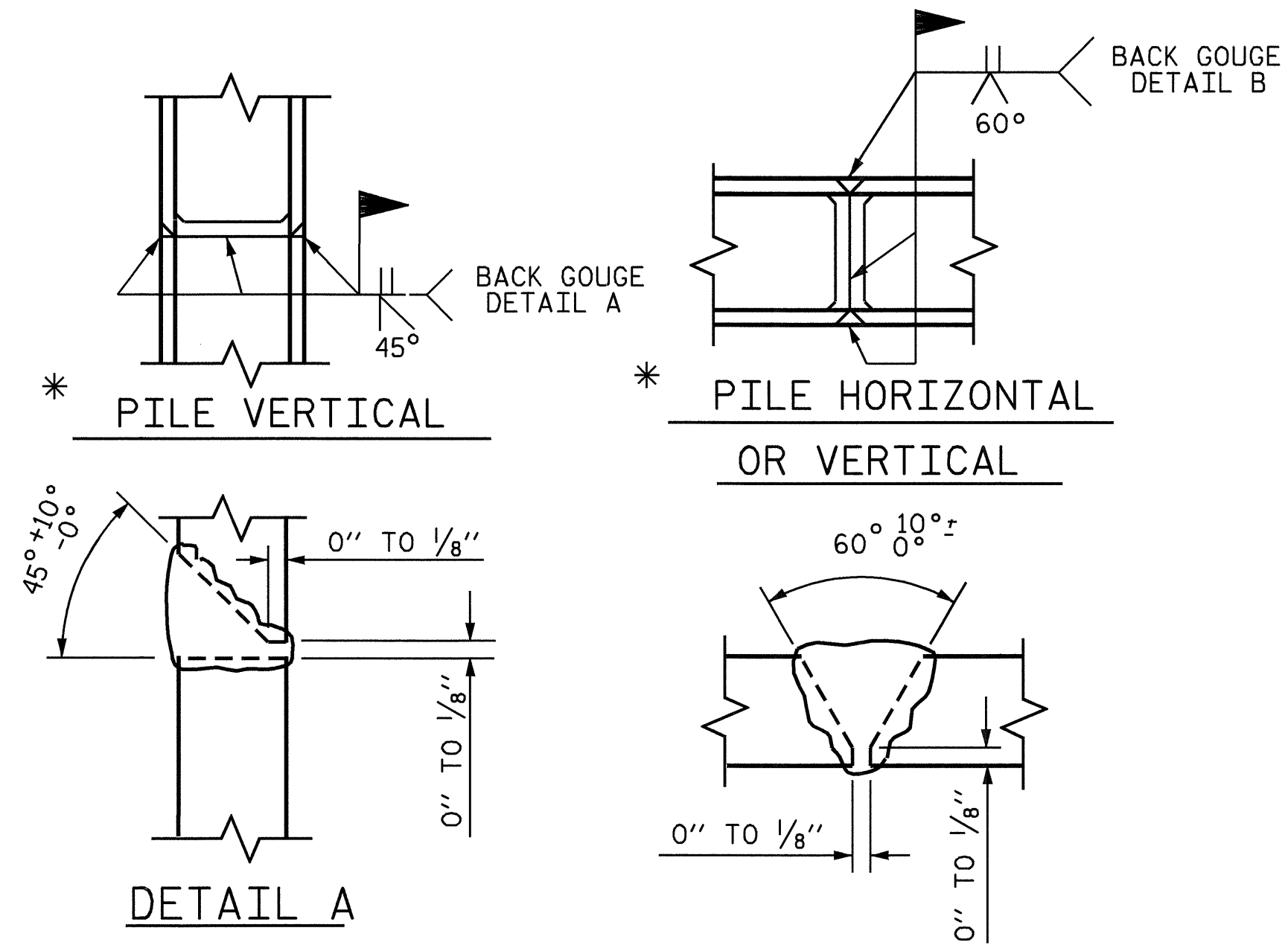
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

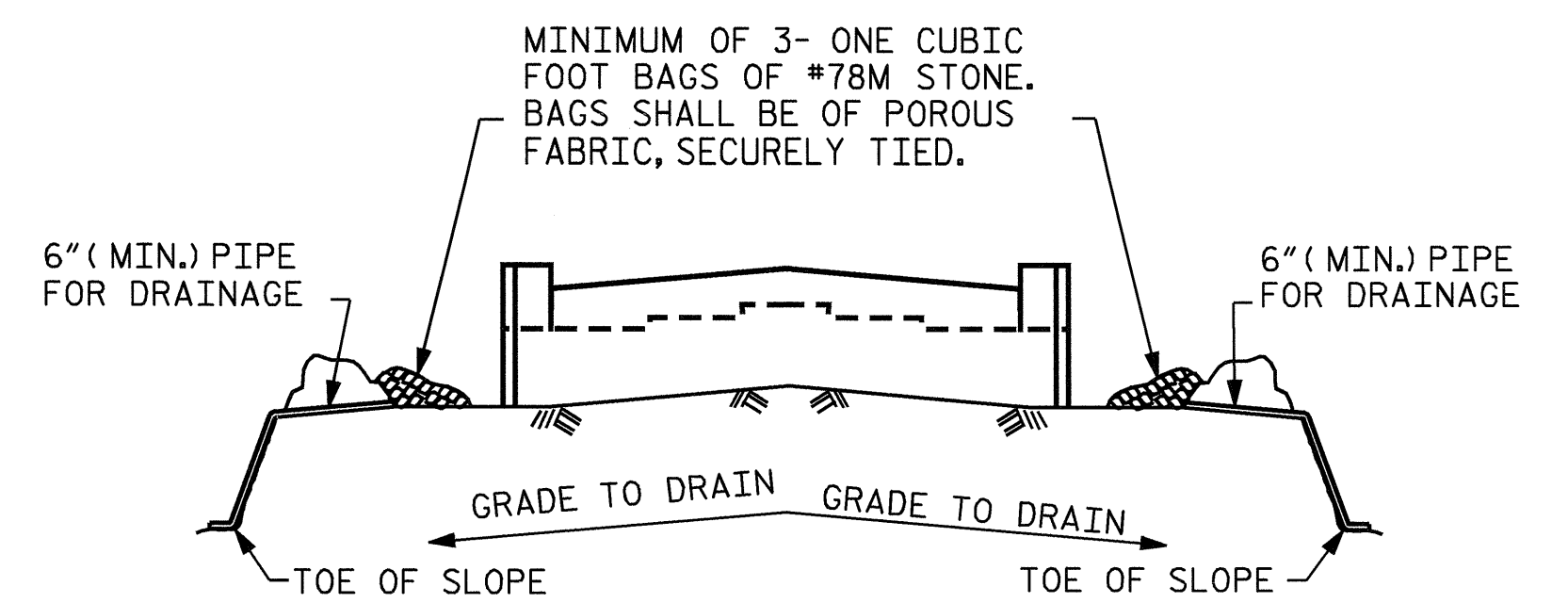
BILL OF MATERIAL

END BENT No. 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#9	1	40'-9"	1386
B2	2	#5	STR	38'-1"	79
B3	8	#4	STR	20'-4"	109
B4	9	#4	STR	2'-11"	18
E1	16	#4	STR	4'-0"	43
H1	40	#5	2	15'-1"	629
H2	8	#4	STR	3'-2"	17
K1	20	#4	STR	20'-4"	272
S1	34	#4	3	7'-11"	180
S2	34	#4	4	3'-8"	83
S3	18	#4	5	6'-6"	78
S4	2	#6	8	8'-11"	27
S5	6	#6	7	3'-9"	34
U1	32	#4	6	3'-8"	78
V1	64	#5	STR	6'-3"	417
V2	76	#5	STR	8'-2"	647
REINFORCING STEEL					4097 LBS
CLASS A CONCRETE BREAKDOWN					
POUR 1					15.1 C.Y.
POUR 2					12.7 C.Y.
TOTAL					27.8 C.Y.
HP 12 x 53 STEEL PILES					
NO. 11					385 LIN. FEET



* POSITION OF PILE DURING WELDING. DETAIL B

PILE SPLICE DETAILS

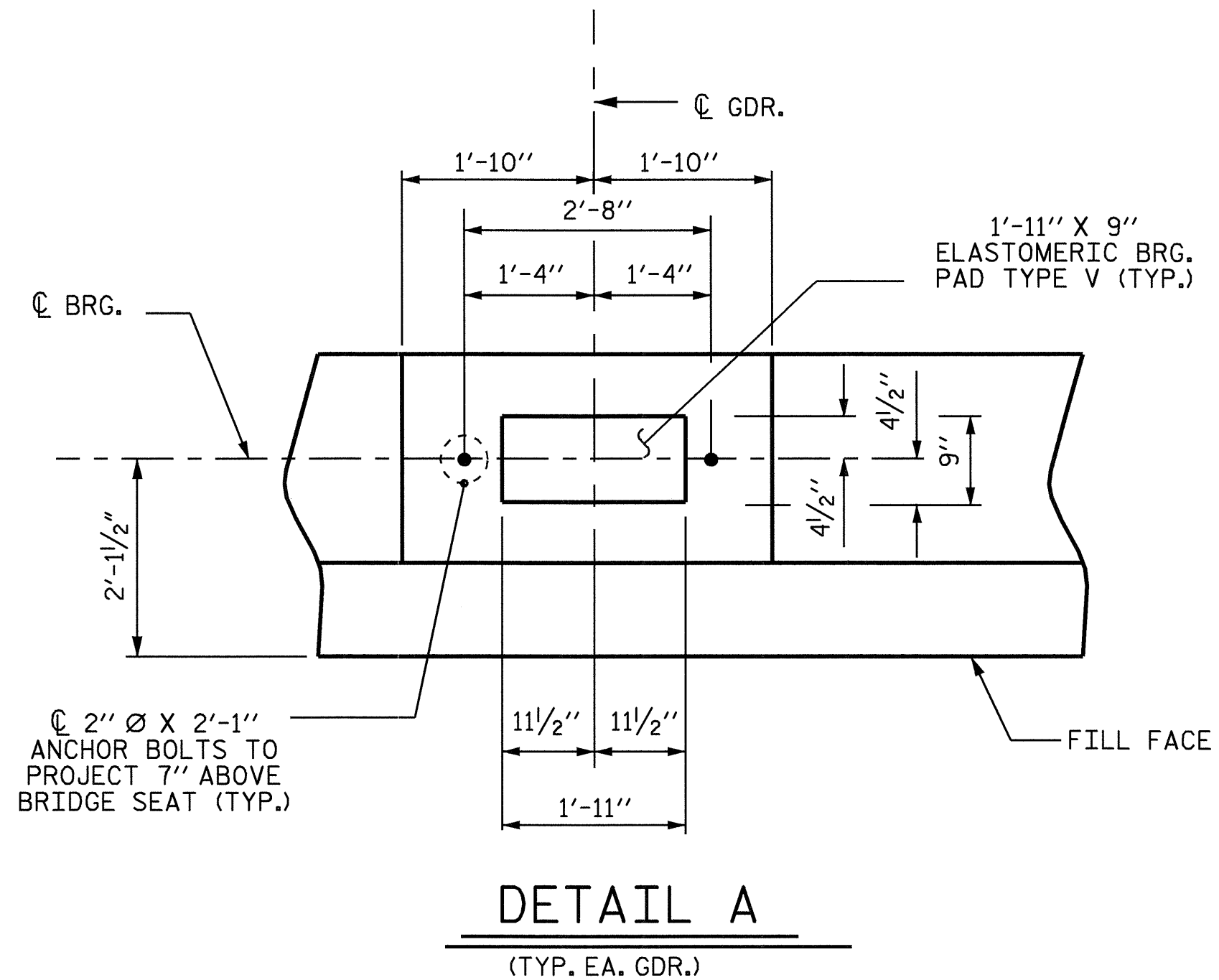


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

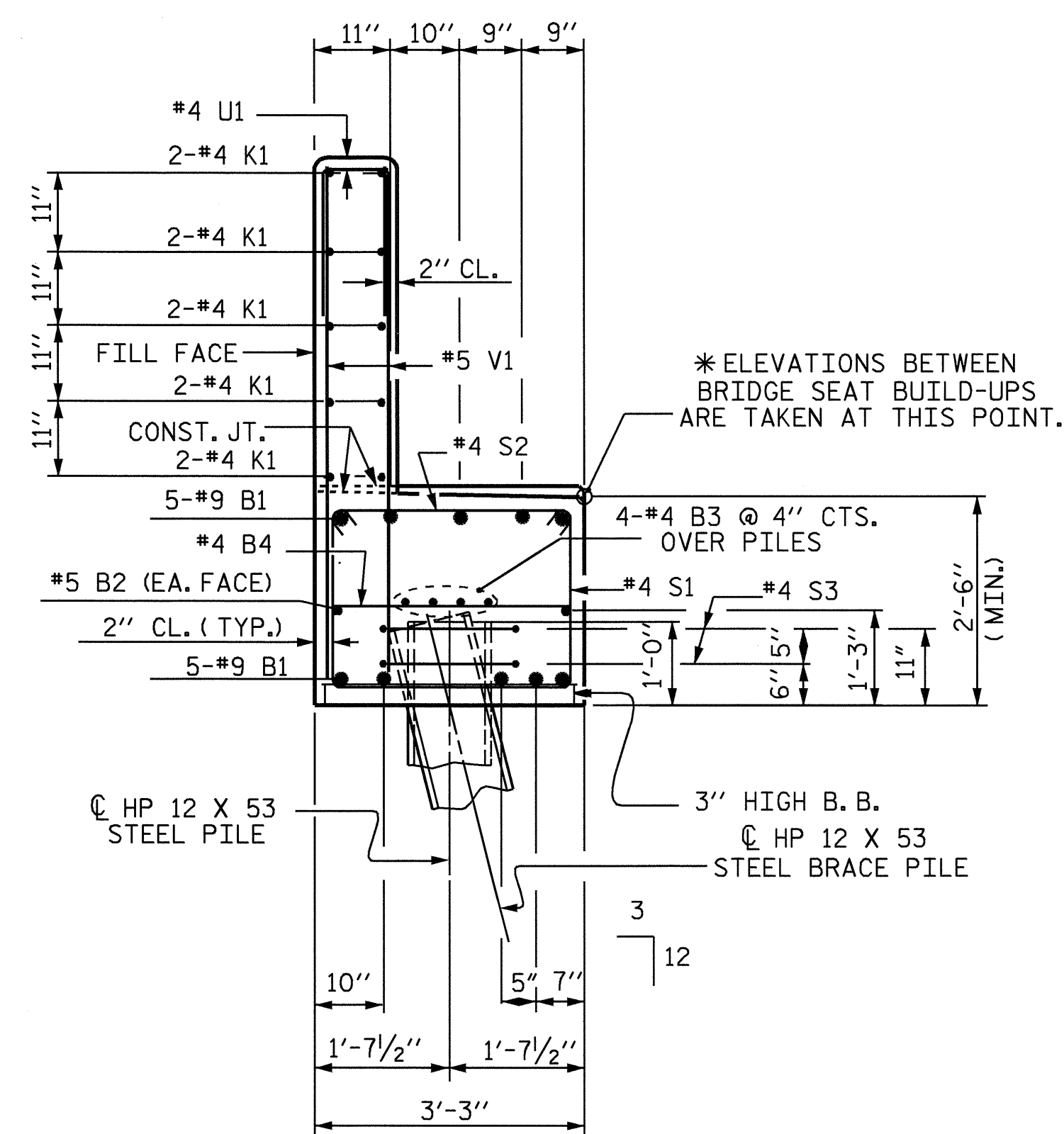
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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



DETAIL A
(TYP. EA. GDR.)



SECTION A-A

PROJECT NO. B-4223
PENDER COUNTY
 STATION: 33+52.00-L-
 SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT No. 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			3-49
2			4			64

Professional Engineer Seal
 SEAL 15779
 JOHN R. DUGGINS, JR.
 3/16/07

DRAWN BY: M. POOLE DATE: 12/05
 CHECKED BY: J. LAMBERT DATE: 06/06

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.

ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".

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

SPLICING OF THE LONGITUDINAL BARS IN THE DRILLED PIER WILL NOT BE PERMITTED.

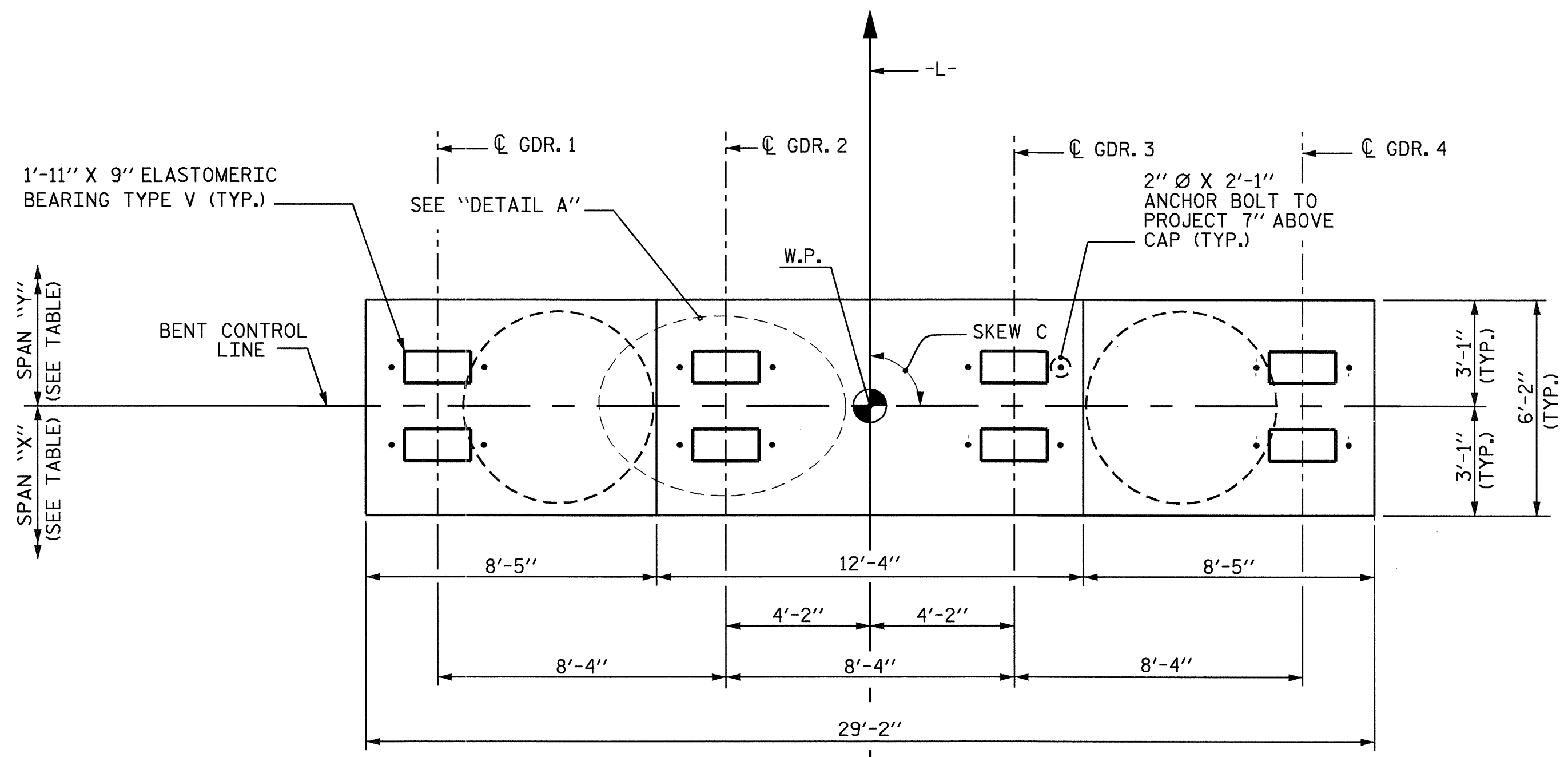
MECHANICAL COUPLERS SHALL BE USED TO JOIN THE LONGITUDINAL DRILLED PIER REINFORCING STEEL. THE HEIGHT OF THE COUPLERS SHALL BE STAGGERED ON ALTERNATING BARS BY 1'-6" AND THE DRILLED PIER STEEL SHALL BE CUT ACCORDINGLY.

FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.

"U" BARS IN THE END OF CAP MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR "B" BARS.

2" MINIMUM CONCRETE OVER FROM END OF CAP REQUIRED FOR ALL "U" BARS.

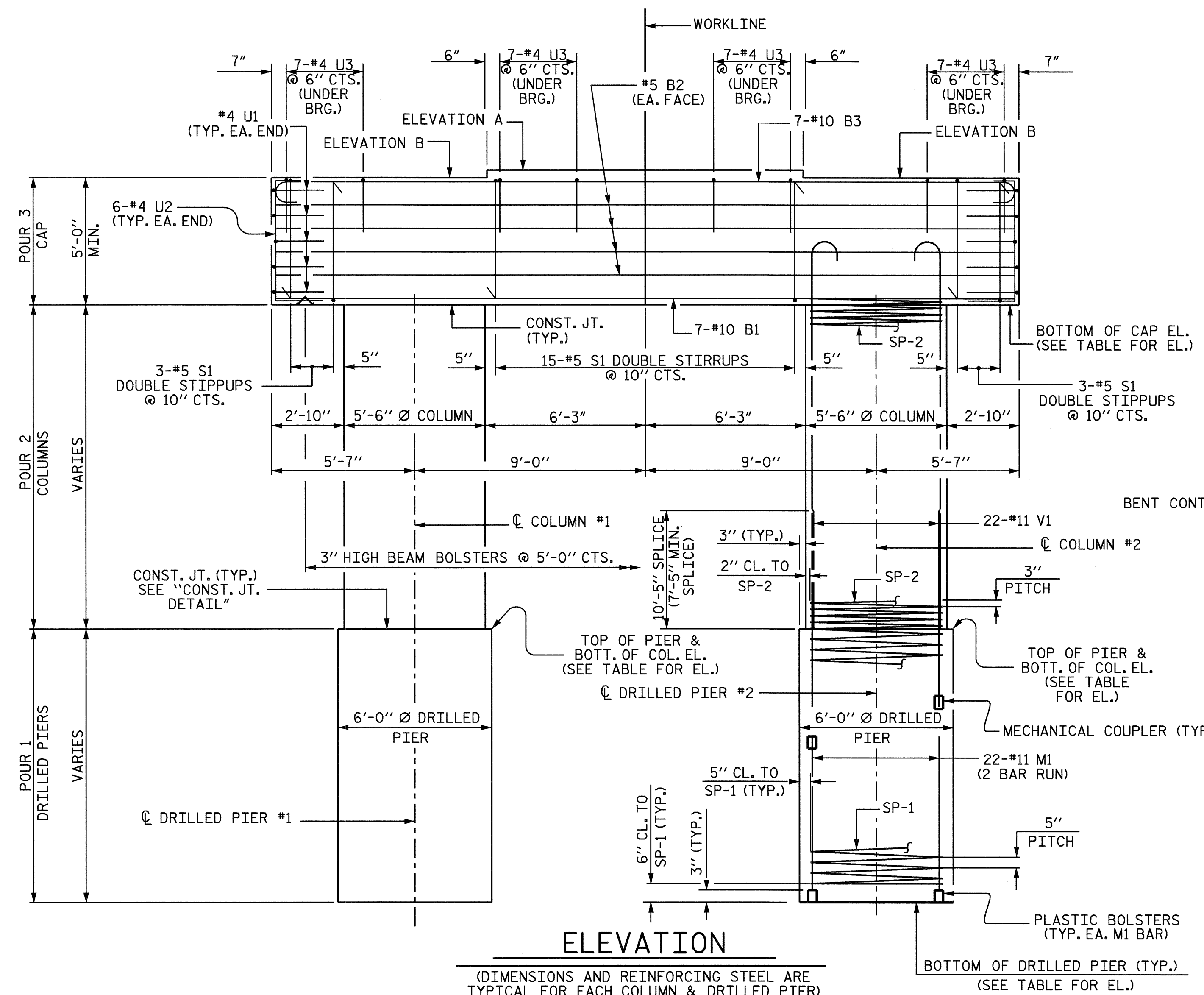
THE CONTRACTOR SHALL ALIGN THE "V" BARS AS SHOWN IN THE PLAN OF DRILLED PIERS AND COLUMNS.



W.P.	STA. -L-	SKEW "C"	JT.	SPAN "X"	SPAN "Y"	DIM. A	DIM. B	
BT. 1	2	29+82.00	90°	FIX	SPAN A	SPAN B	2'-3"	1'-1/2"
BT. 2	3	30+72.00	90°	EXP	SPAN B	SPAN C	1'-11"	11/2"
BT. 3	4	31+62.00	90°	FIX	SPAN C	SPAN D	2'-3"	1'-1/2"
BT. 4	5	32+52.00	90°	EXP	SPAN D	SPAN E	1'-11"	11/2"
BT. 5	6	33+42.00	90°	FIX	SPAN E	SPAN F	2'-3"	1'-1/2"
BT. 6	7	34+12.00	90°	EXP	SPAN F	SPAN G	1'-11"	11/2"

	BOTT. OF CAP EL.	ELEVATION A	ELEVATION B	BOTT. OF DRILLED PIER ELEV.	TOP OF DRILLED PIER & BOTT. OF COL. EL.
BT. 1	17.366	22.532	22.366	-58.000	2.000
BT. 2	19.004	24.171	24.004	-58.000	9.000
BT. 3	19.934	25.101	24.934	-58.000	9.000
BT. 4	20.155	25.322	25.155	-58.000	9.000
BT. 5	19.658	24.825	24.658	-58.000	9.000
BT. 6	18.783	23.949	23.783	-48.000	9.000

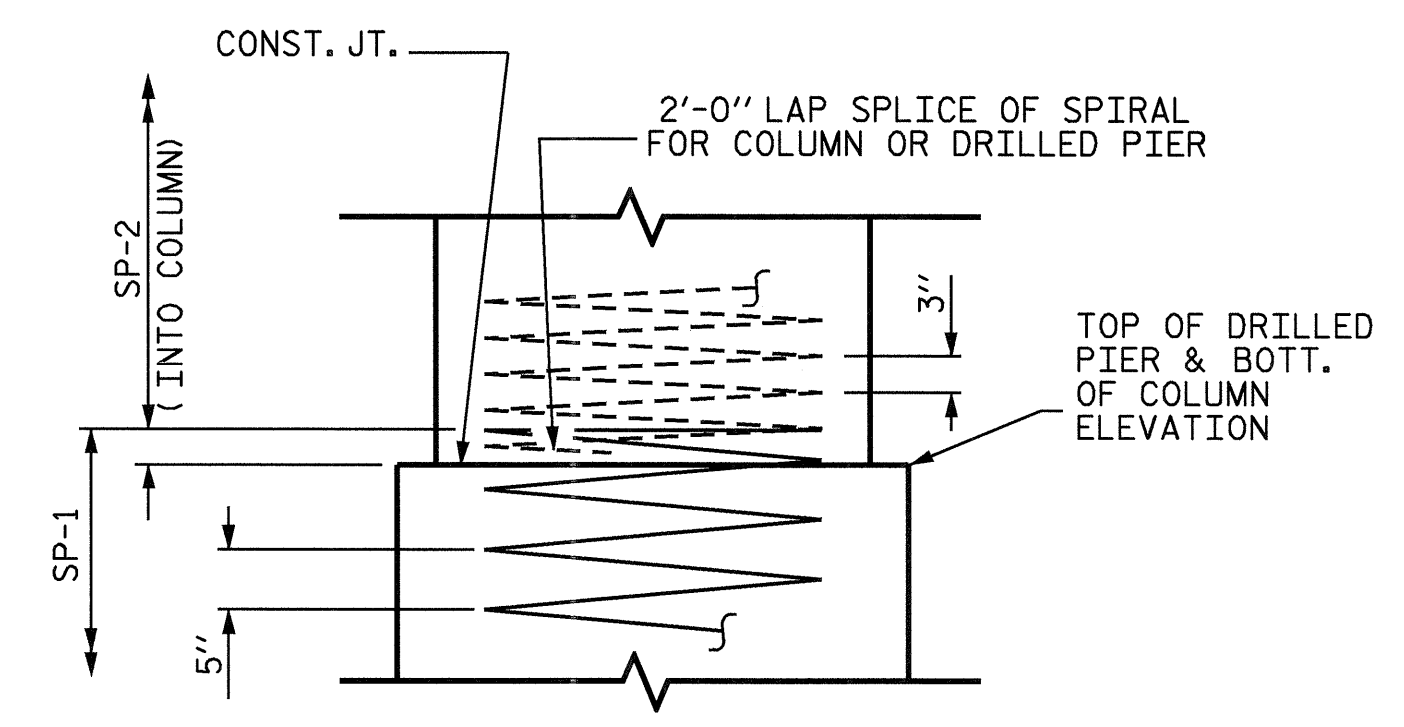
PLAN



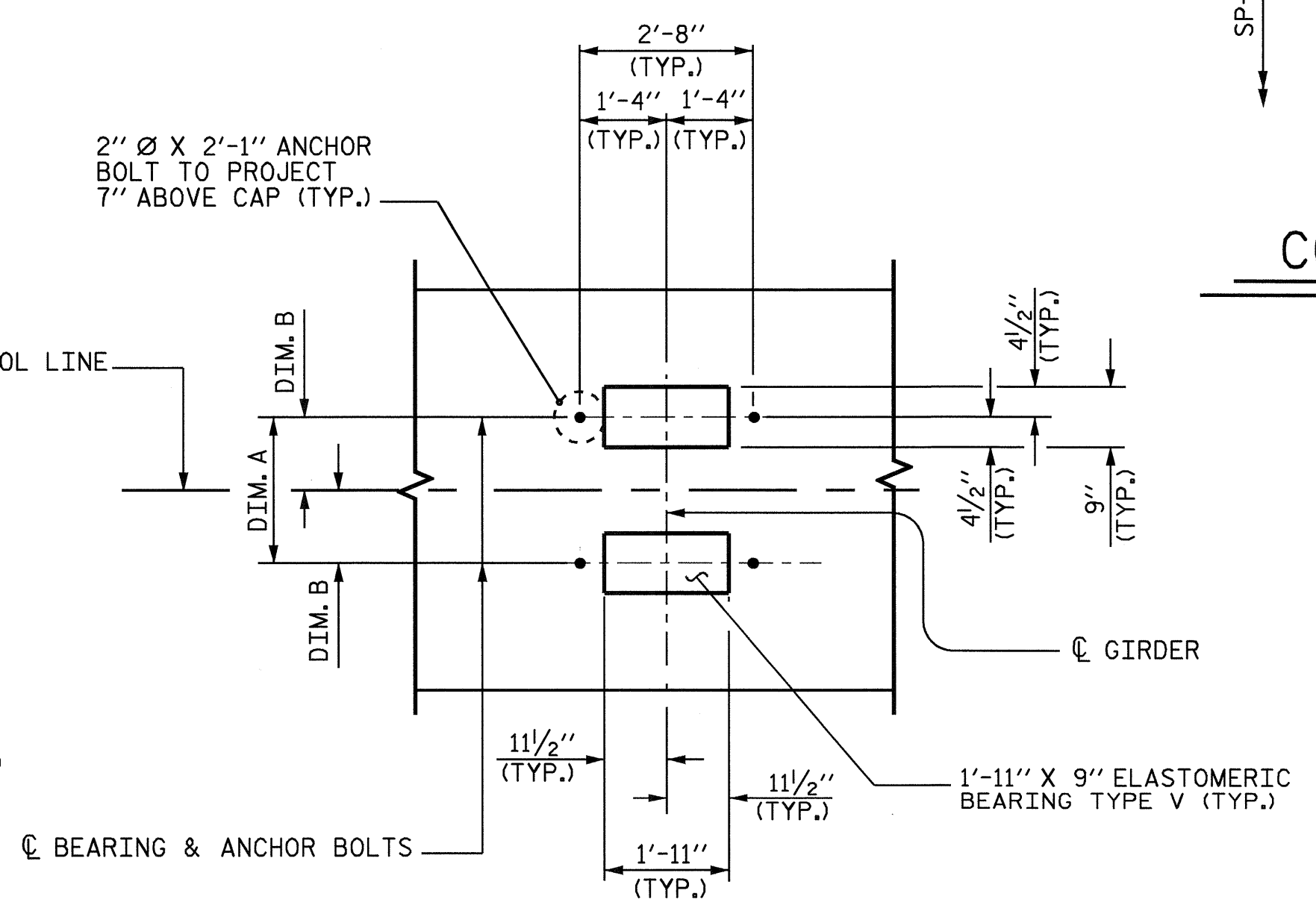
ELEVATION

(DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & DRILLED PIER)

INVERT ALTERNATE STIRRUPS



CONSTRUCTION JOINT DETAIL



DETAIL A

PROJECT NO. B-4223
PENDER COUNTY
 STATION: 33+52.00 -L-

SHEET 1 OF 3

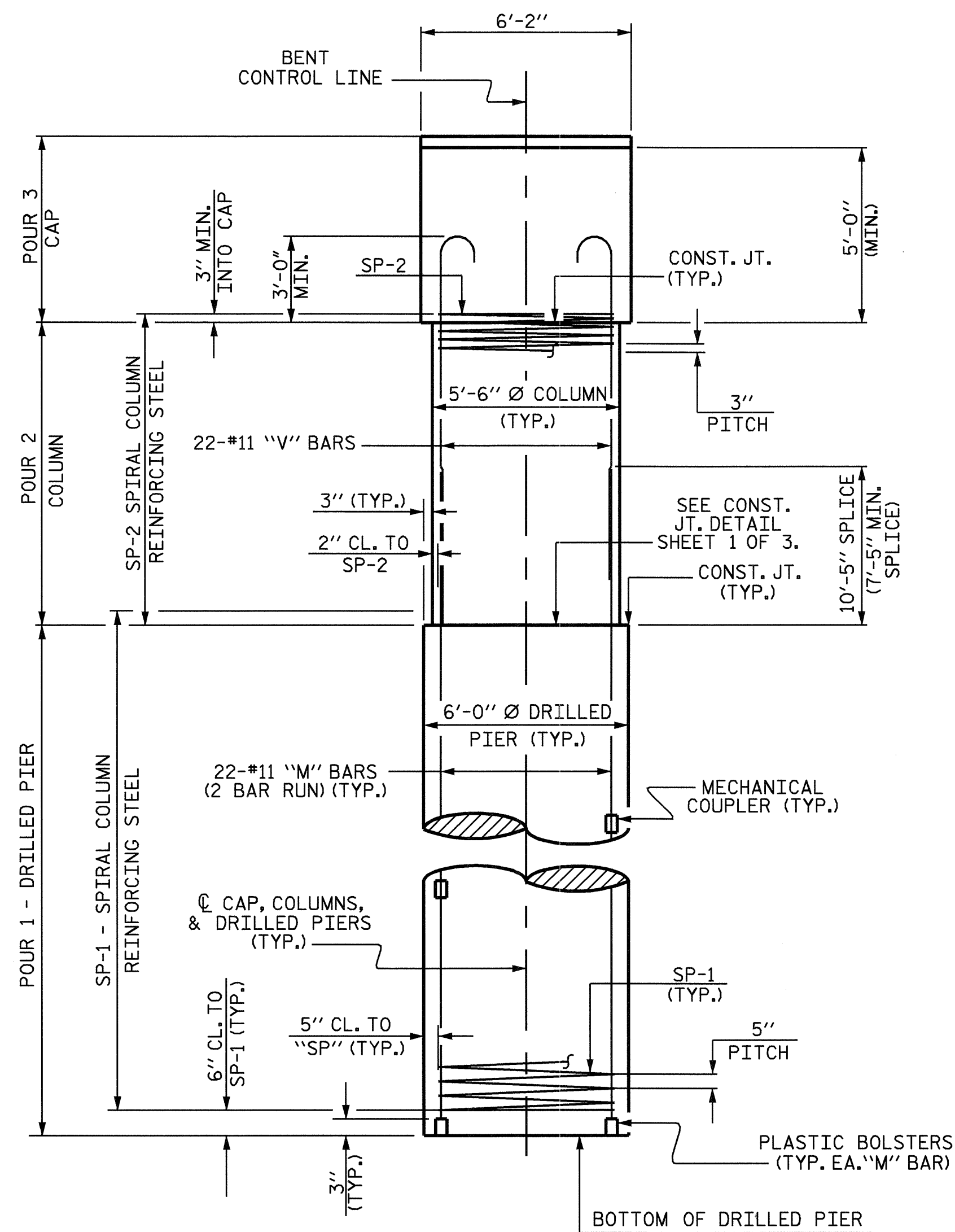
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENTS No. 1 THRU No. 6

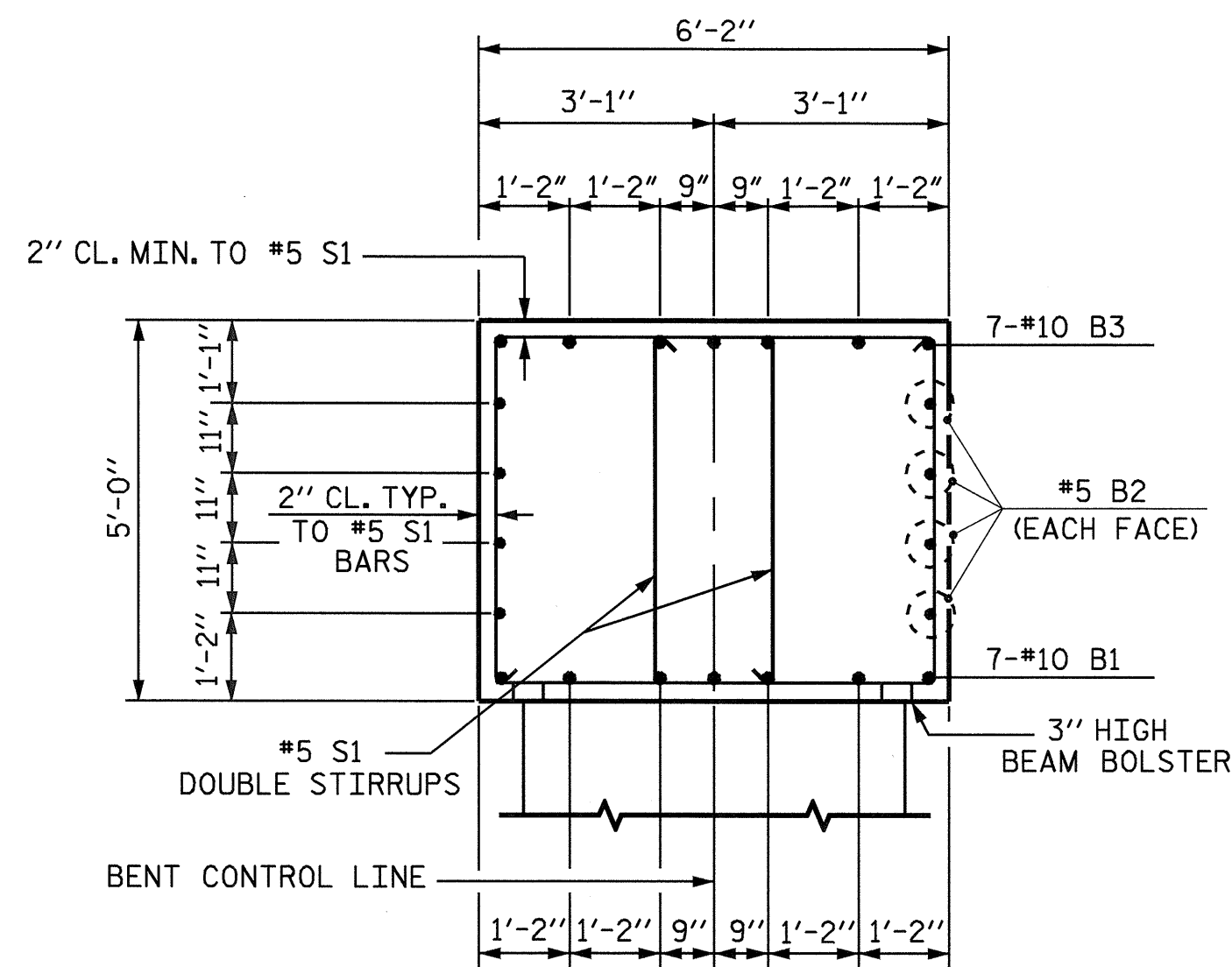
REVISIONS						SHEET NO. S-50
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 64
2			4			



DRAWN BY: M. POOLE DATE: 12/05
 CHECKED BY: J. LAMBERT DATE: 06/06

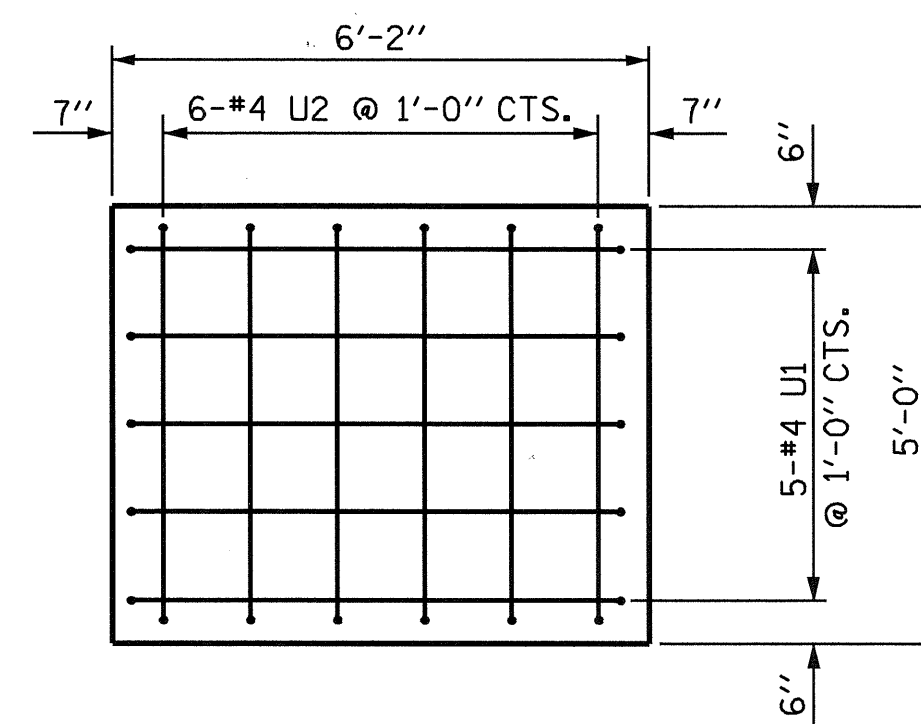


END ELEVATION



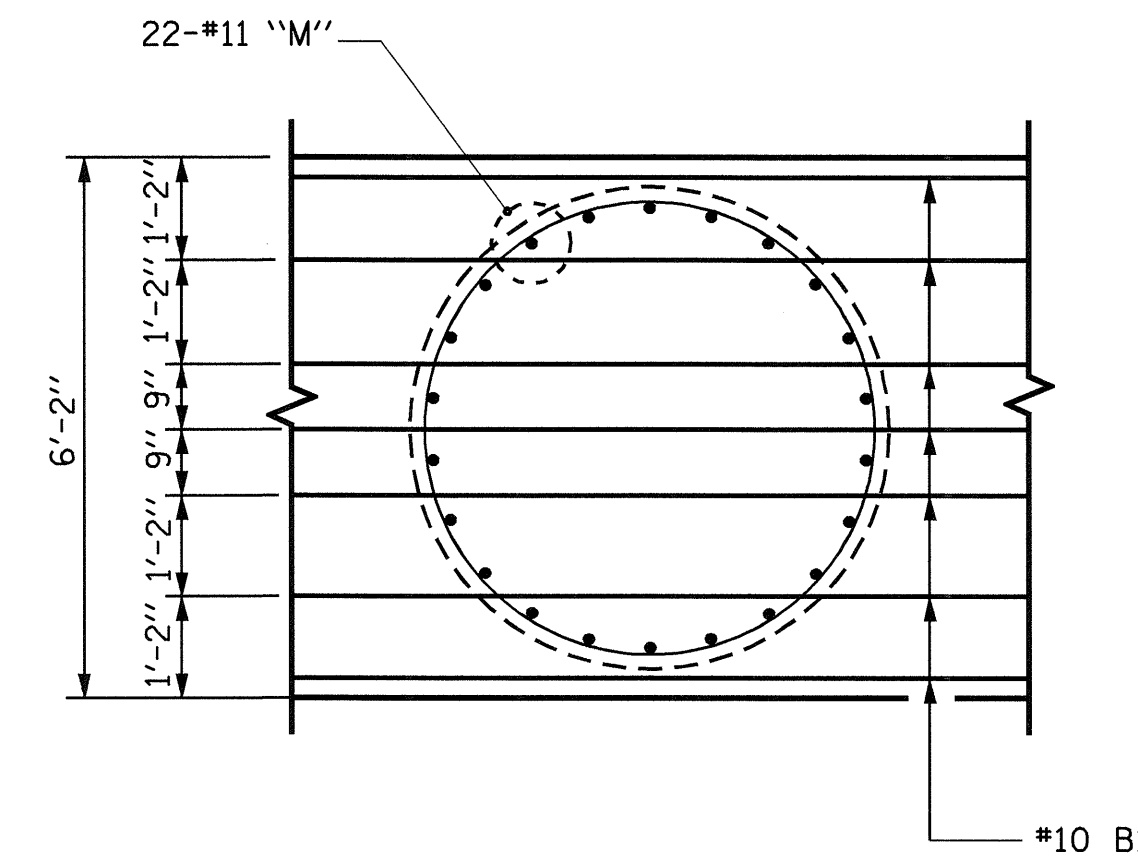
SECTION THRU CAP

TYPICAL EACH END

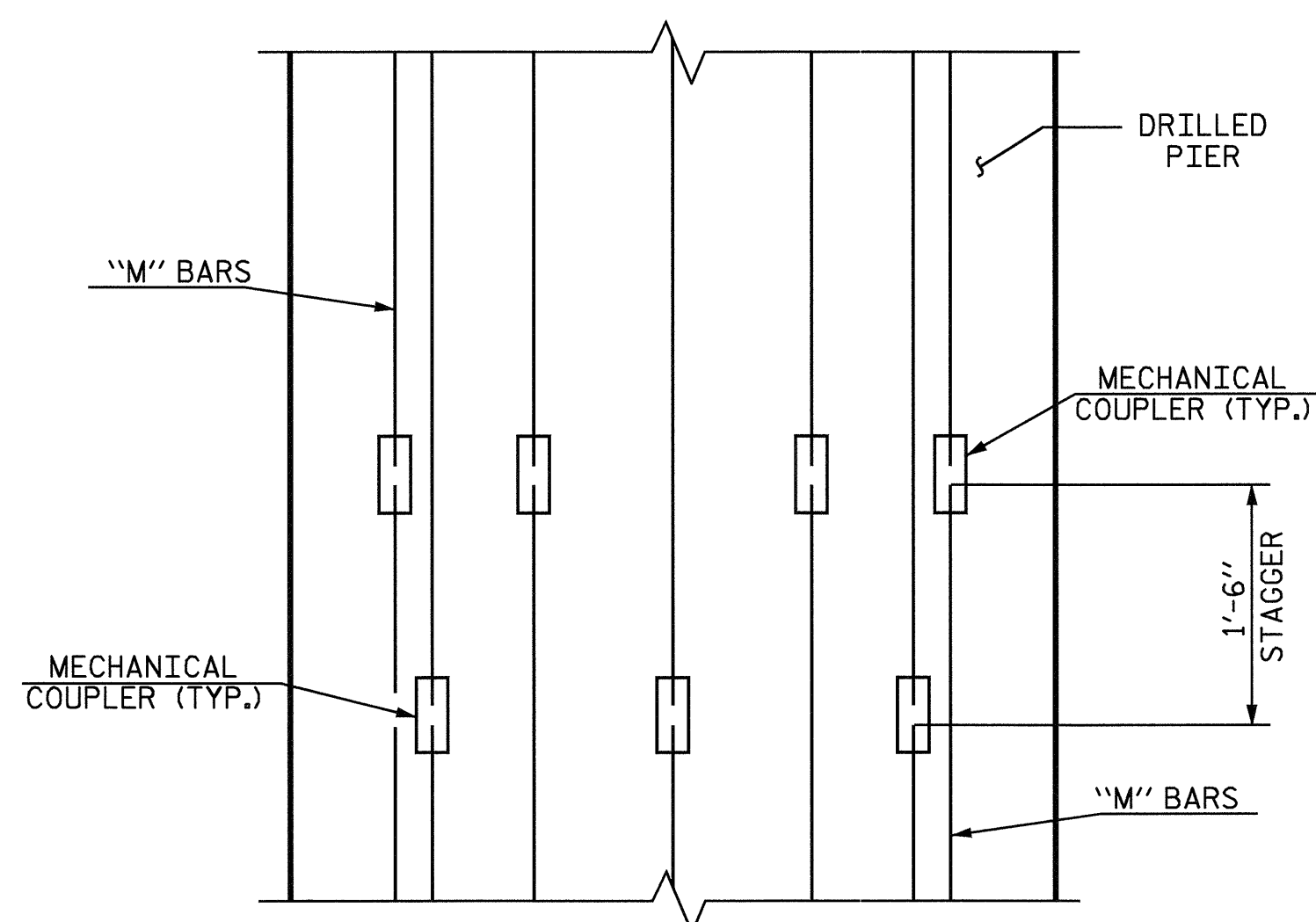


END VIEW

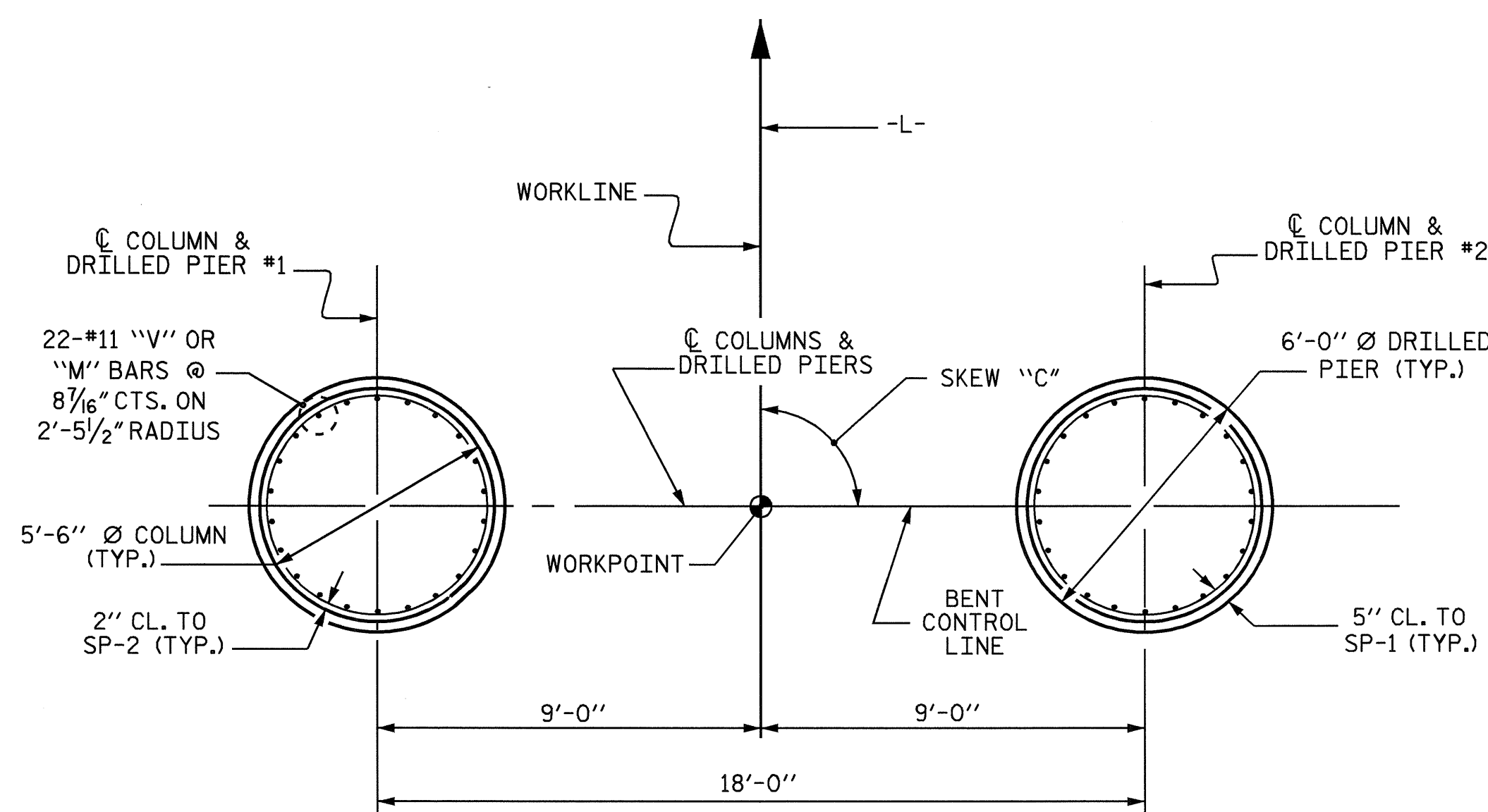
(TYPICAL EACH END)



BOTTOM OF CAP



MECHANICAL COUPLER STAGGER DETAIL

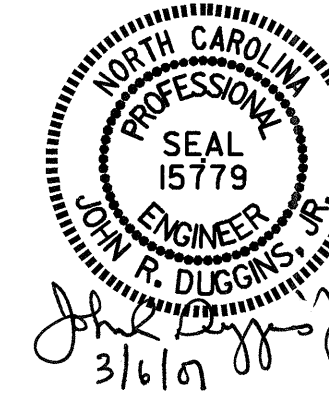


PLAN OF DRILLED PIERS & COLUMNS

(REINFORCING STEEL IS TYPICAL FOR EACH COLUMN & DRILLED PIER)
FOR SKEW "C", SEE TABLES SHEET 1 OF 3.

DRAWN BY : M. POOLE DATE : 12/05
CHECKED BY : J. LAMBERT DATE : 06/06

06-MAR-2007 10:46
R:\STRUCT\B4223\m\poole\Microstation\B4223.sd.B1.01.dgn
mpoole



PROJECT NO. B-4223
PENDER COUNTY
STATION: 33+52.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENTS No. 1 THRU No. 6

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			5-51
2			4			6A

BILL OF MATERIAL

BENT No. 1						BENT No. 2						BENT No. 3						BENT No. 4					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT		BAR NO.	SIZE	TYPE	LENGTH	WEIGHT		BAR NO.	SIZE	TYPE	LENGTH	WEIGHT		BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	7	10	STR	28'-10"	868	B1	7	10	STR	28'-10"	868	B1	7	10	STR	28'-10"	868	B1	7	10	STR	28'-10"	868
B2	8	5	STR	28'-10"	241	B2	8	5	STR	28'-10"	241	B2	8	5	STR	28'-10"	241	B2	8	5	STR	28'-10"	241
B3	7	10	1	31'-7"	951	B3	7	10	1	31'-7"	951	B3	7	10	1	31'-7"	951	B3	7	10	1	31'-7"	951
M1	88	11	STR	35'-8"	16676	M1	88	11	STR	39'-2"	18312	M1	88	11	STR	39'-2"	18312	M1	88	11	STR	39'-2"	18312
S1	42	5	4	13'-11"	610	S1	42	5	4	13'-11"	610	S1	42	5	4	13'-11"	610	S1	42	5	4	13'-11"	610
U1	10	4	3	8'-8"	58	U1	10	4	3	8'-8"	58	U1	10	4	3	8'-8"	58	U1	10	4	3	8'-8"	58
U2	12	4	3	7'-6"	60	U2	12	4	3	7'-6"	60	U2	12	4	3	7'-6"	60	U2	12	4	3	7'-6"	60
U3	28	4	3	9'-10"	184	U3	28	4	3	9'-10"	184	U3	28	4	3	9'-10"	184	U3	28	4	3	9'-10"	184
V1	44	11	2	20'-1"	4695	V1	44	11	2	14'-10"	3468	V1	44	11	2	15'-7"	3643	V1	44	11	2	15'-10"	3701
REINFORCING STEEL					24343 LBS	REINFORCING STEEL					24752 LBS	REINFORCING STEEL					24927 LBS	REINFORCING STEEL					24985 LBS
SP-1	2	***	6	2330'-8"	4862	SP-1	2	***	6	2603'-11"	5432	SP-1	2	***	6	2603'-11"	5432	SP-1	2	***	6	2603'-11"	5432
SP-2	2	**	5	1046'-9"	1398	SP-2	2	**	5	692'-5"	925	SP-2	2	**	5	756'-10"	1011	SP-2	2	**	5	773'-0"	1033
SPIRAL COLUMN REINFORCING STEEL					6260 LBS	SPIRAL COLUMN REINFORCING STEEL					6357 LBS	SPIRAL COLUMN REINFORCING STEEL					6443 LBS	SPIRAL COLUMN REINFORCING STEEL					6465 LBS
CLASS A CONCRETE BREAKDOWN						CLASS A CONCRETE BREAKDOWN						CLASS A CONCRETE BREAKDOWN						CLASS A CONCRETE BREAKDOWN					
POUR 2 (COLUMNS)					27.0 C.Y.	POUR 2 (COLUMNS)					17.6 C.Y.	POUR 2 (COLUMNS)					19.2 C.Y.	POUR 2 (COLUMNS)					19.6 C.Y.
POUR 3 (CAP)					33.8 C.Y.	POUR 3 (CAP)					33.8 C.Y.	POUR 3 (CAP)					33.8 C.Y.	POUR 3 (CAP)					33.8 C.Y.
TOTAL					60.8 C.Y.	TOTAL					51.4 C.Y.	TOTAL					53.0 C.Y.	TOTAL					53.4 C.Y.
DRILLED PIER QUANTITIES						DRILLED PIER QUANTITIES						DRILLED PIER QUANTITIES						DRILLED PIER QUANTITIES					
DRILLED PIER CONCRETE BREAKDOWN						DRILLED PIER CONCRETE BREAKDOWN						DRILLED PIER CONCRETE BREAKDOWN						DRILLED PIER CONCRETE BREAKDOWN					
POUR 1 (DRILLED PIERS)					125.7 C.Y.	POUR 1 (DRILLED PIERS)					140.3 C.Y.	POUR 1 (DRILLED PIERS)					140.3 C.Y.	POUR 1 (DRILLED PIERS)					140.3 C.Y.
6'-0" Ø DRILLED PIERS					120.00 LIN. FT.	6'-0" Ø DRILLED PIERS					134.00 LIN. FT.	6'-0" Ø DRILLED PIERS					134.00 LIN. FT.	6'-0" Ø DRILLED PIERS					134.00 LIN. FT.
PERMANENT STEEL CASING					44.00 LIN. FT.	PERMANENT STEEL CASING					64.00 LIN. FT.	PERMANENT STEEL CASING					74.00 LIN. FT.	PERMANENT STEEL CASING					74.00 LIN. FT.
CSL TUBES					750 LIN. FT.	CSL TUBES					835 LIN. FT.	CSL TUBES					835 LIN. FT.	CSL TUBES					835 LIN. FT.

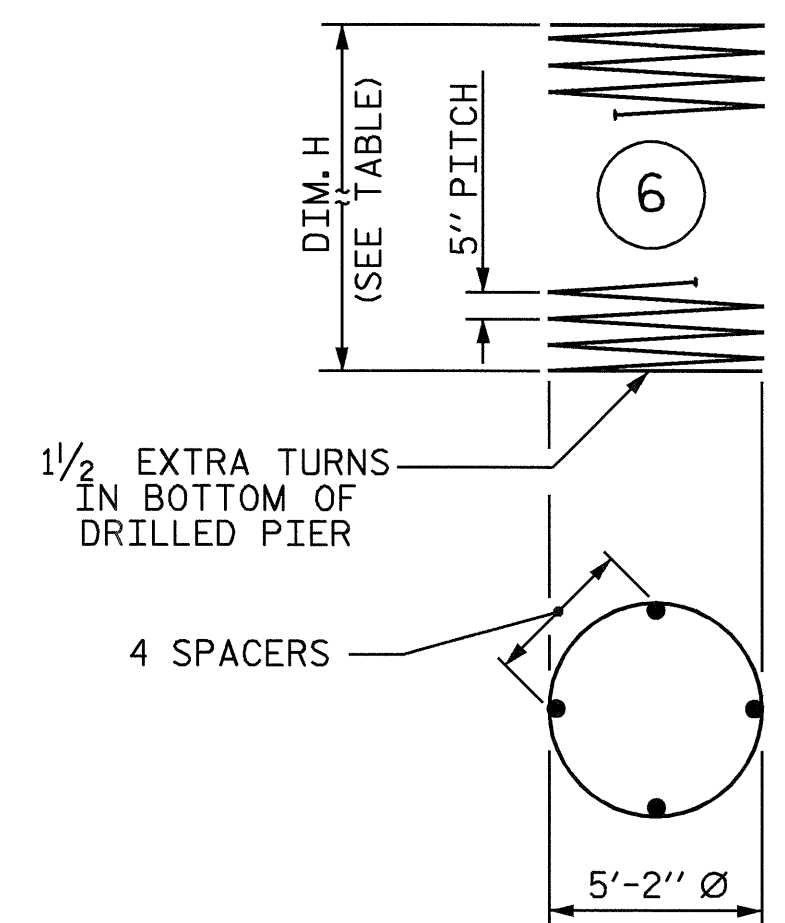
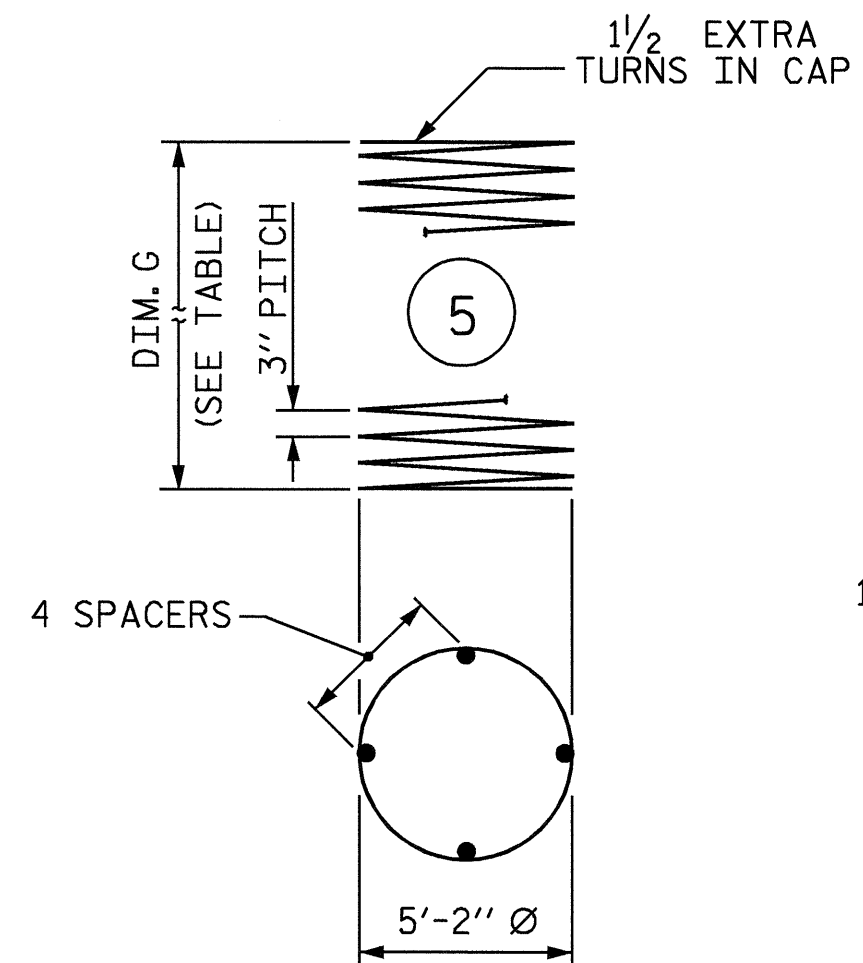
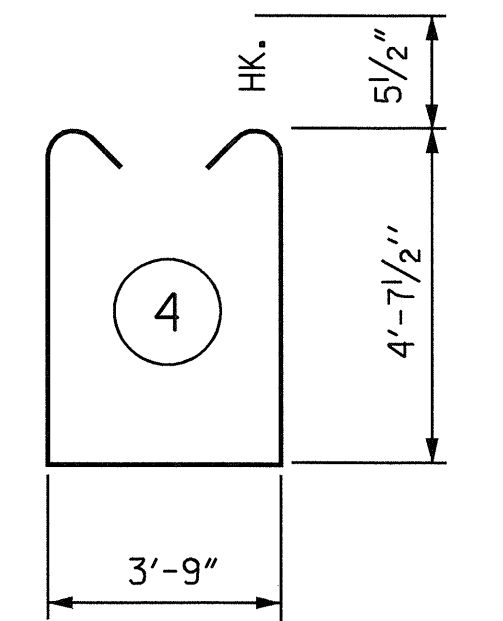
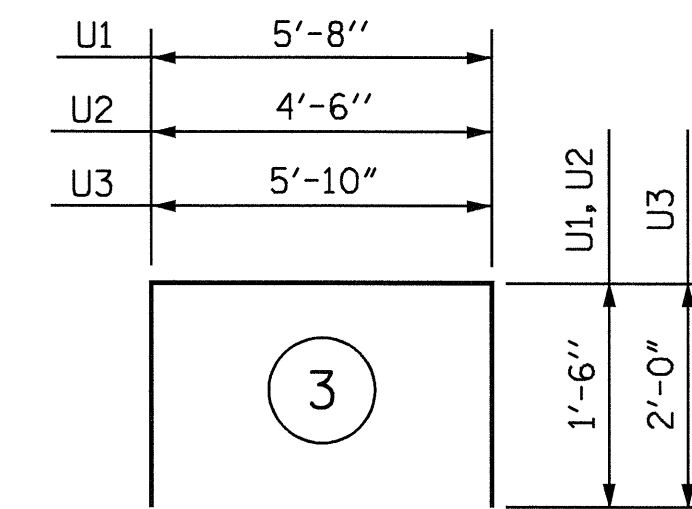
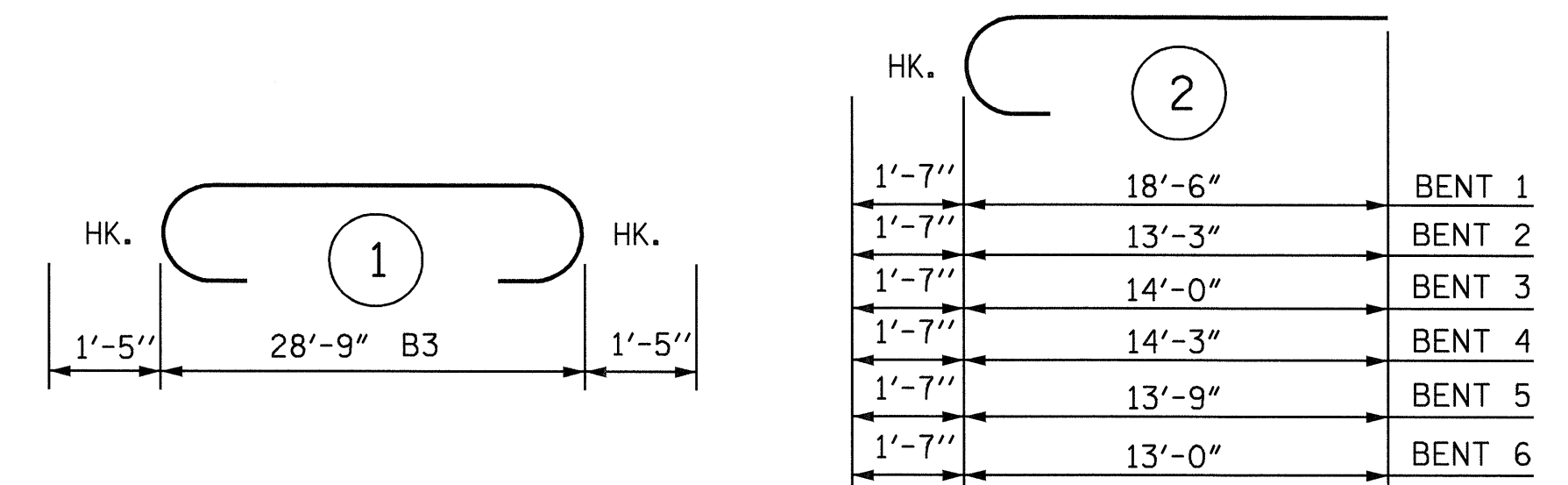
BENT No. 5						BENT No. 6					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT		BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	7	10	STR	28'-10"	868	B1	7	10	STR	28'-10"	868
B2	8	5	STR	28'-10"	241	B2	8	5	STR	28'-10"	241
B3	7	10	1	31'-7"	951	B3	7	10	1	31'-7"	951
M1	88	11	STR	39'-2"	18312	M1	88	11	STR	34'-2"	15974
S1	42	5	4	13'-11"	610	S1	42	5	4	13'-11"	610
U1	10	4	3	8'-8"	58	U1	10	4	3	8'-8"	58
U2	12	4	3	7'-6"	60	U2	12	4	3	7'-6"	60
U3	28	4	3	9'-10"	184	U3	28	4	3	9'-10"	184
V1	44	11	2	15'-4"	3584	V1	44	11	2	14'-7"	3409
REINFORCING STEEL					24868 LBS	REINFORCING STEEL					22355 LBS
SP-1	2	***	6	2603'-11"	5432	SP-1	2	***	6	2218'-2"	4627
SP-2	2	**	5	740'-9"	990	SP-2	2	**	5	676'-4"	904
SPIRAL COLUMN REINFORCING STEEL					6422 LBS	SPIRAL COLUMN REINFORCING STEEL					5531 LBS
CLASS A CONCRETE BREAKDOWN						CLASS A CONCRETE BREAKDOWN					
POUR 2 (COLUMNS)					18.8 C.Y.	POUR 2 (COLUMNS)					17.2 C.Y.
POUR 3 (CAP)					33.8 C.Y.	POUR 3 (CAP)					33.8 C.Y.
TOTAL					52.6 C.Y.	TOTAL					51.0 C.Y.
DRILLED PIER QUANTITIES						DRILLED PIER QUANTITIES					
DRILLED PIER CONCRETE BREAKDOWN						DRILLED PIER CONCRETE BREAKDOWN					
POUR 1 (DRILLED PIERS)					140.3 C.Y.	POUR 1 (DRILLED PIERS)					119.4 C.Y.
6'-0" Ø DRILLED PIERS					134.00 LIN. FT.	6'-0" Ø DRILLED PIERS					114.00 LIN. FT.
PERMANENT STEEL CASING					74.00 LIN. FT.	PERMANENT STEEL CASING					50.00 LIN. FT.
CSL TUBES					835 LIN. FT.	CSL TUBES					715 LIN. FT.

DRAWN BY: M. POOLE DATE: 01/06
 CHECKED BY: J. LAMBERT DATE: 06/06

08-MAR-2007 08:58
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 mpoole

BAR TYPES

	DIM. G	DIM. H
BT. #1	15'-8"	59'-9"
BT. #2	10'-4"	66'-9"
BT. #3	11'-3"	66'-9"
BT. #4	11'-6"	66'-9"
BT. #5	10'-11"	66'-9"
BT. #6	10'-1"	56'-9"



ALL BAR DIMENSIONS ARE OUT TO OUT.

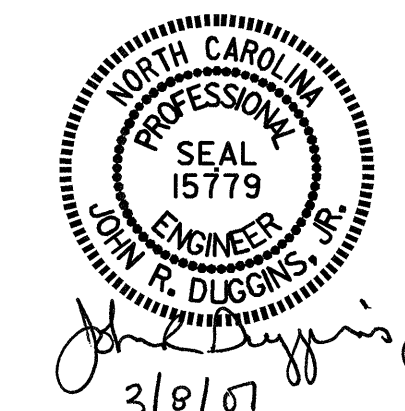
** THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.
 *** THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.

PROJECT NO. B-4223
 PENDER COUNTY
 STATION: 33+52.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENTS No. 1 THRU No. 6



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			5-52
2			4			TOTAL SHEETS 64

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.

ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".

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

SPlicing OF THE LONGITUDINAL BARS IN THE DRILLED PIER WILL NOT BE PERMITTED.

MECHANICAL COUPLERS SHALL BE USED TO JOIN THE LONGITUDINAL DRILLED PIER REINFORCING STEEL. THE HEIGHT OF THE COUPLERS SHALL BE STAGGERED ON ALTERNATING BARS BY 1'-6" AND THE DRILLED PIER STEEL SHALL BE CUT ACCORDINGLY.

FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.

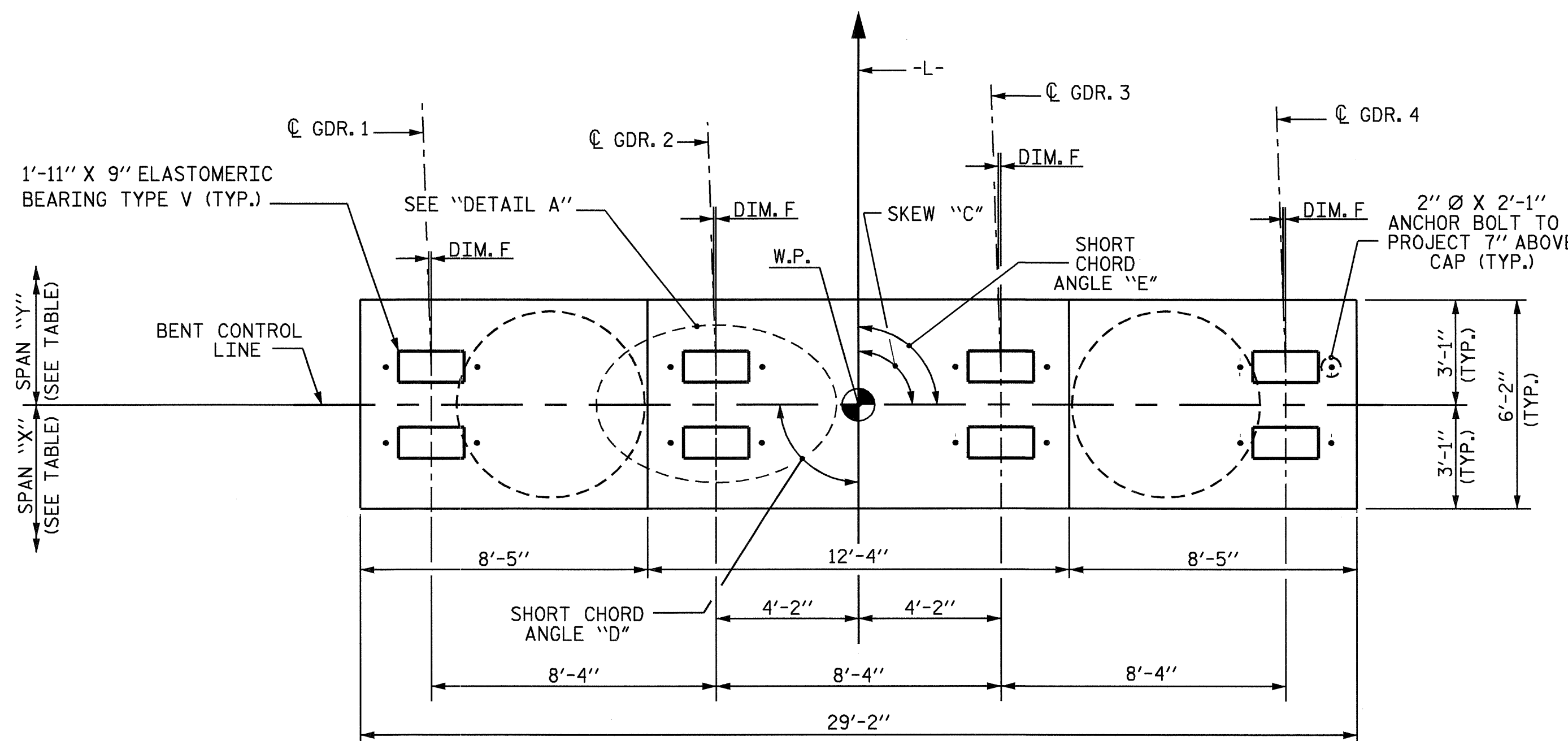
"U" BARS IN THE END OF CAP MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR "B" BARS.

2" MINIMUM CONCRETE OVER FROM END OF CAP REQUIRED FOR ALL "U" BARS.

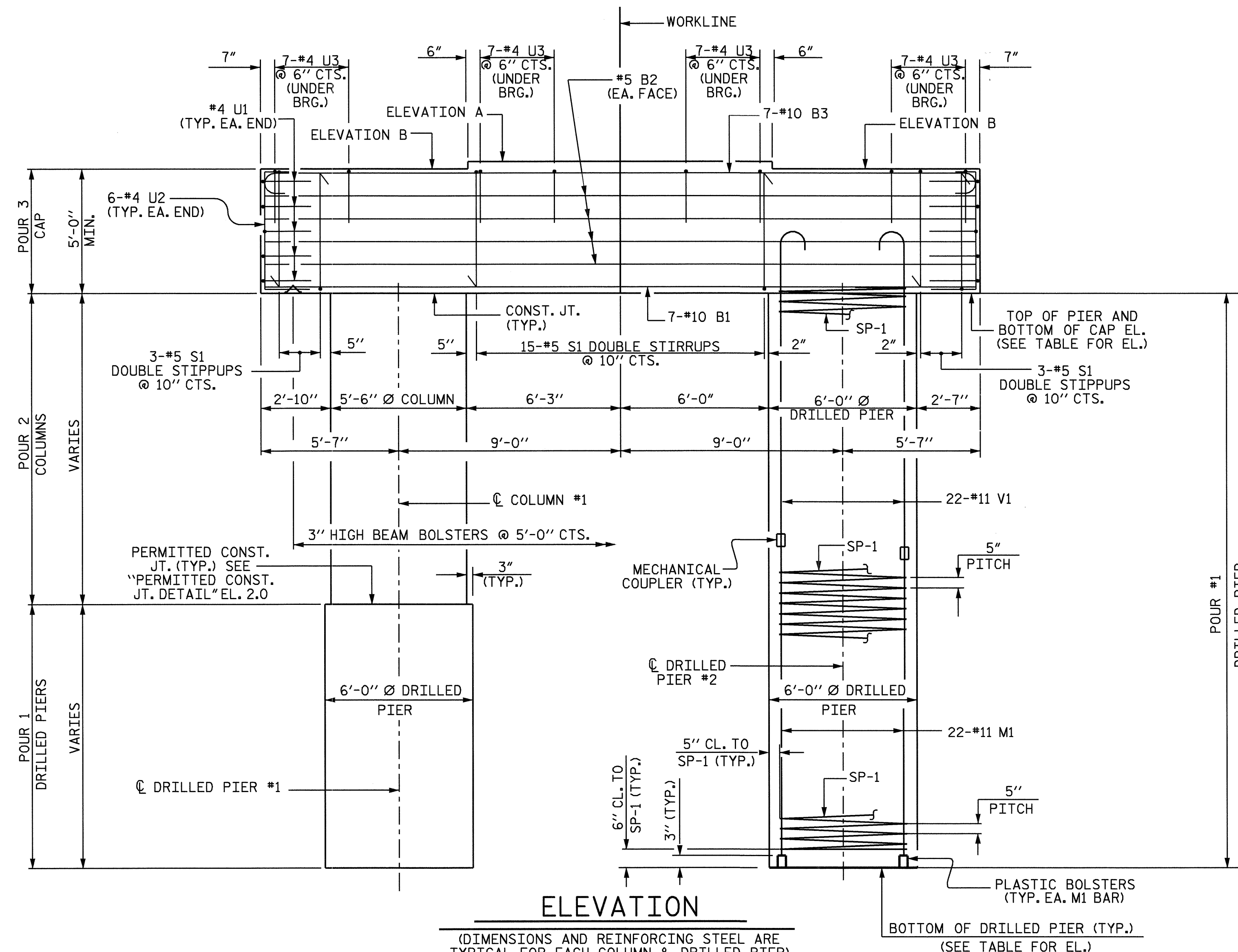
THE CONTRACTOR SHALL ALIGN THE "V" BARS AS SHOWN IN THE PLAN OF DRILLED PIERS AND COLUMNS.

	W.P.	STA. -L-	SKEW "C"	JT.	SPAN "X"	SPAN "Y"	DIM. A	DIM. B
BT. 7	8	35+12.00	90°	FIX	SPAN G	SPAN H	2'-3"	1'-1 1/2"
BT. 8	9	36+12.00	90°	EXP	SPAN H	SPAN I	1'-11"	11 1/2"
BT. 9	10	37+12.00	90°-16'-58"	FIX	SPAN I	SPAN J	2'-3"	1'-1 1/2"

	BOTT. OF CAP. EL.	EL. A	EL. B	BOTT. OF DRILLED PIER ELEV.	TOP OF DRILLED PIER & BOTT. OF CAP EL.	SHORT CHORD ANGLE "D"	SHORT CHORD ANGLE "E"	DIM. F
BT. 7	16.790	21.957	21.790	-48.000	16.790	90°	90°	0
BT. 8	13.989	19.156	18.989	-48.000	13.989	90°	90°-05'-01"	0
BT. 9	10.984	16.151	15.984	-48.000	10.984	90°-05'-01"	90°-31'-27"	5/16"



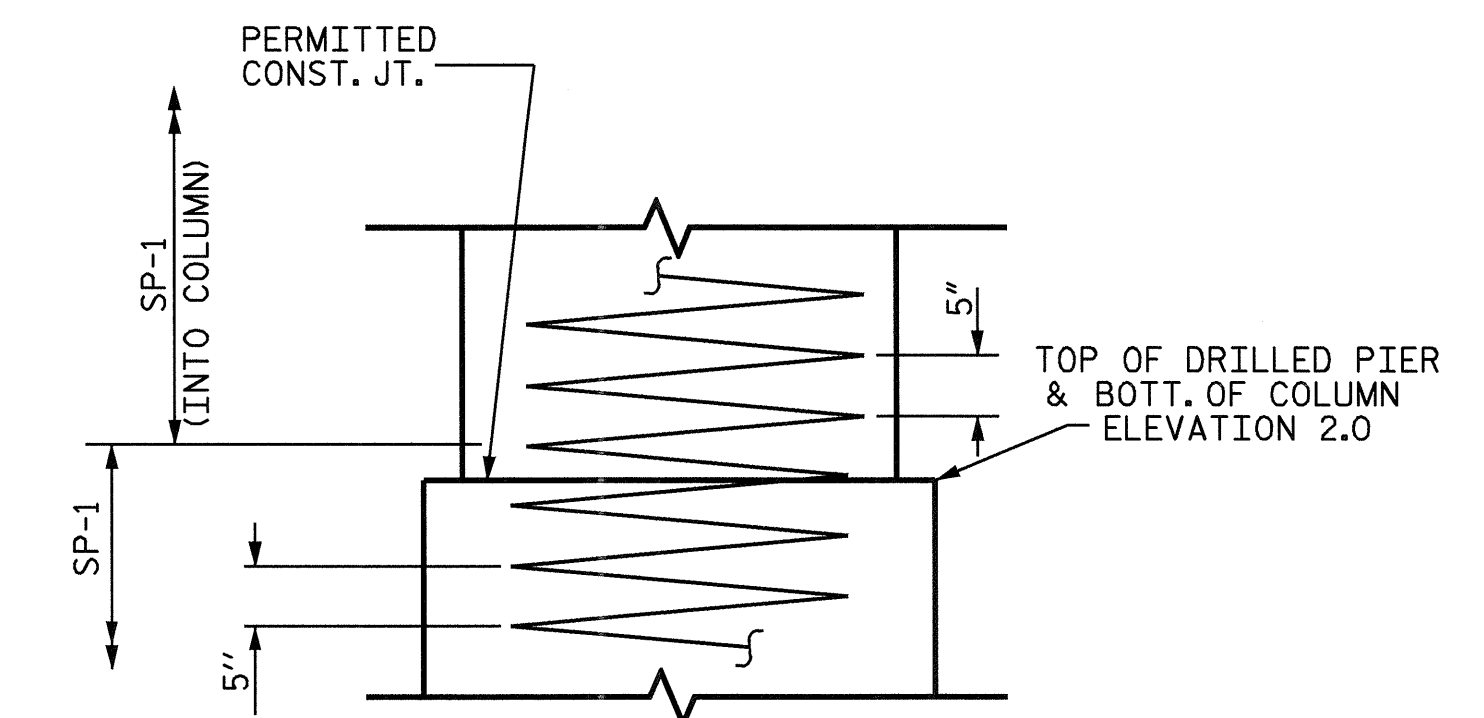
PLAN



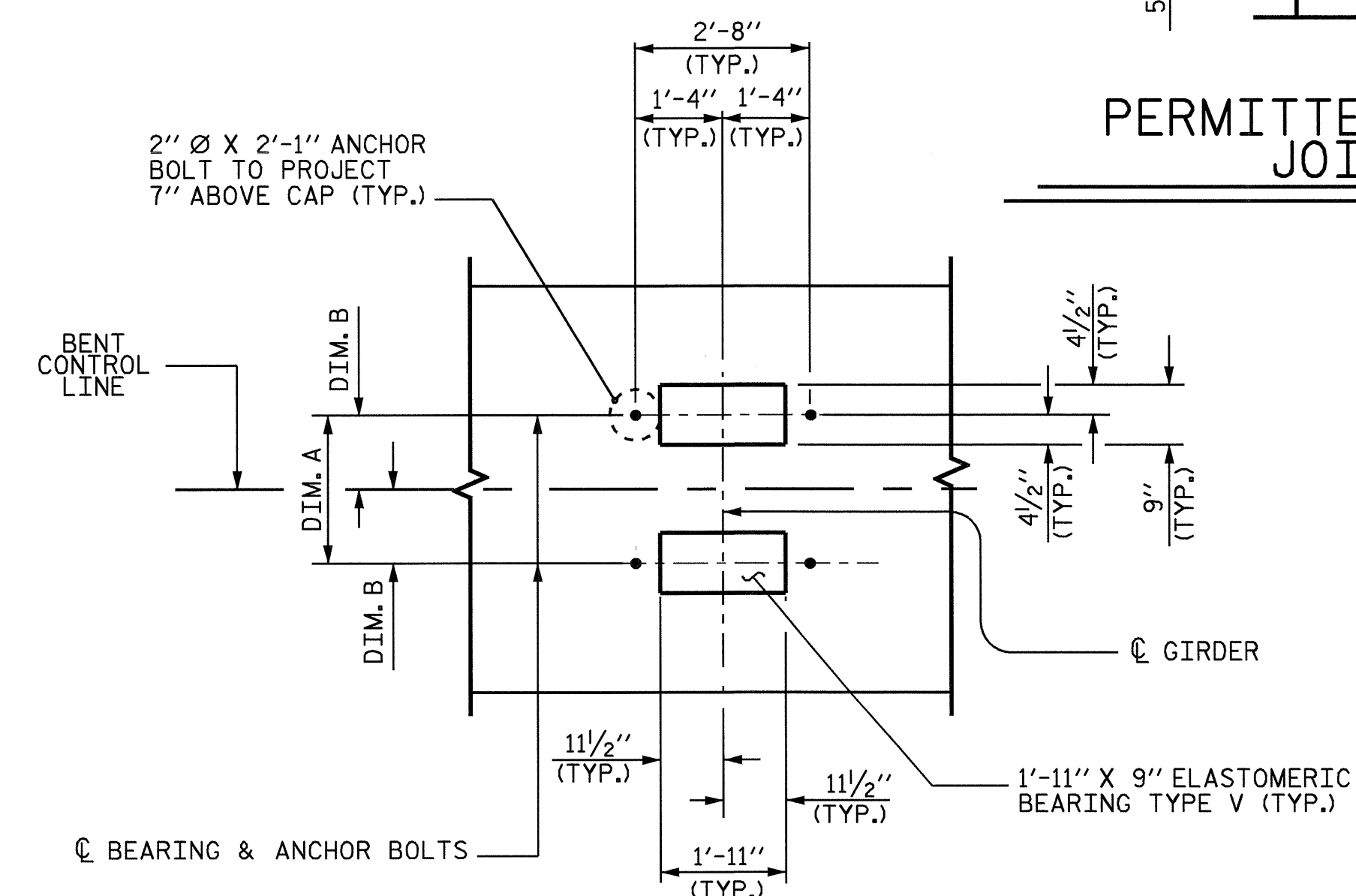
ELEVATION

(DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & DRILLED PIER)

INVERT ALTERNATE STIRRUPS



PERMITTED CONSTRUCTION JOINT DETAIL



DETAIL A

PROJECT NO. B-4223
PENDER COUNTY
 STATION: 33+52.00 -L-

SHEET 1 OF 3

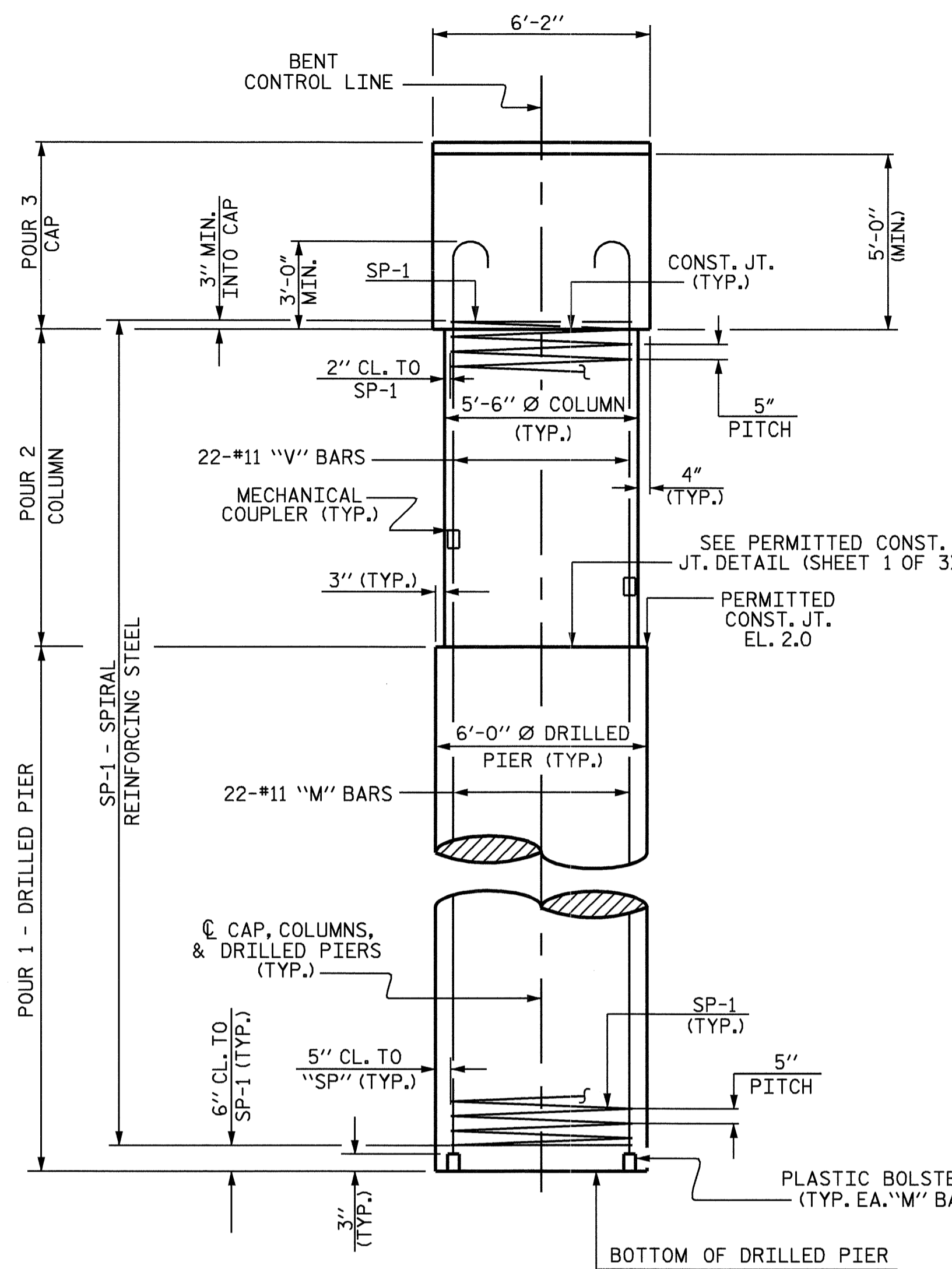
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENTS No. 7 THRU No. 9



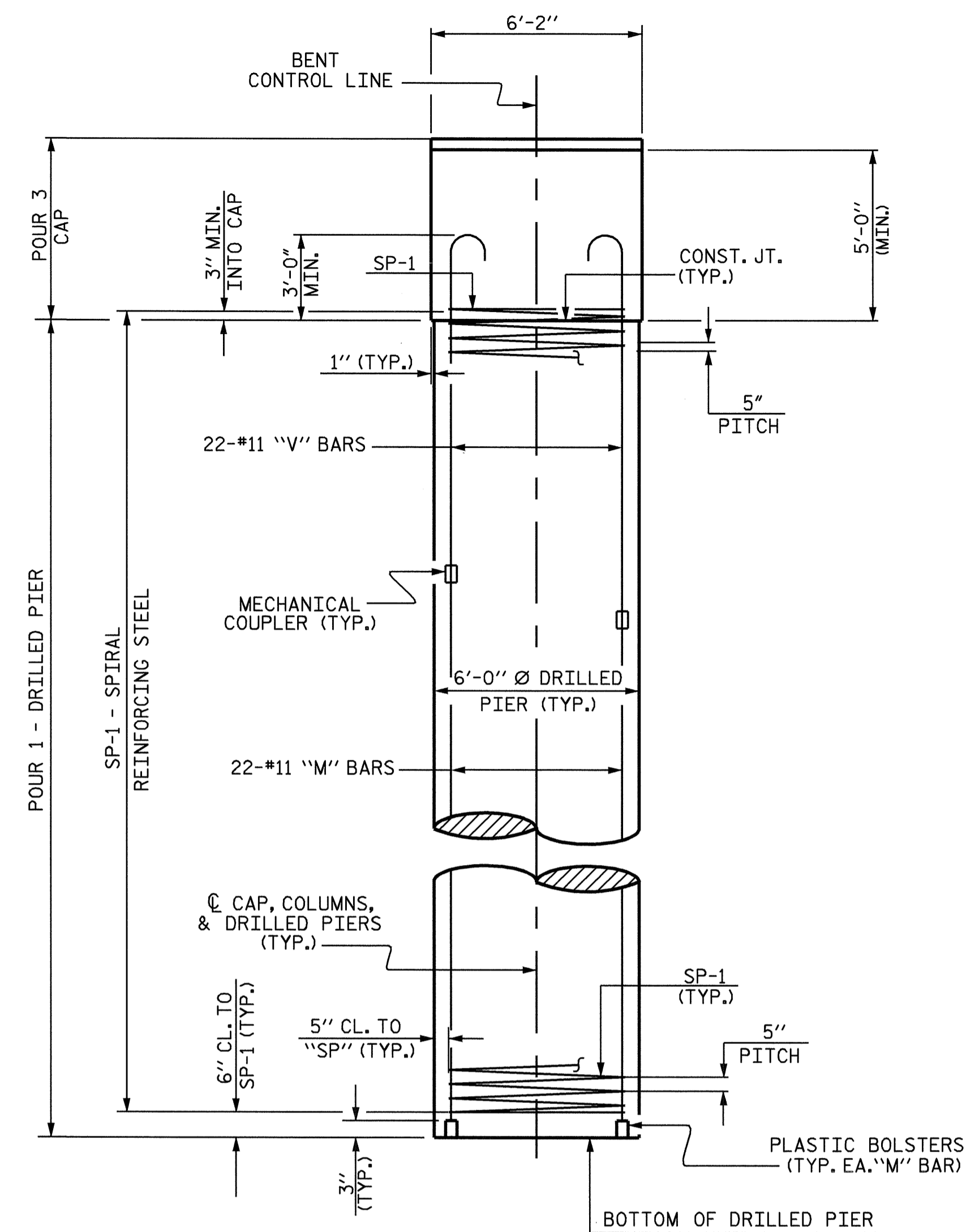
REVISIONS						TOTAL SHEETS
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			5-53
2			4			6A

DRAWN BY: M. POOLE DATE: 12/05
 CHECKED BY: J. LAMBERT DATE: 06/06



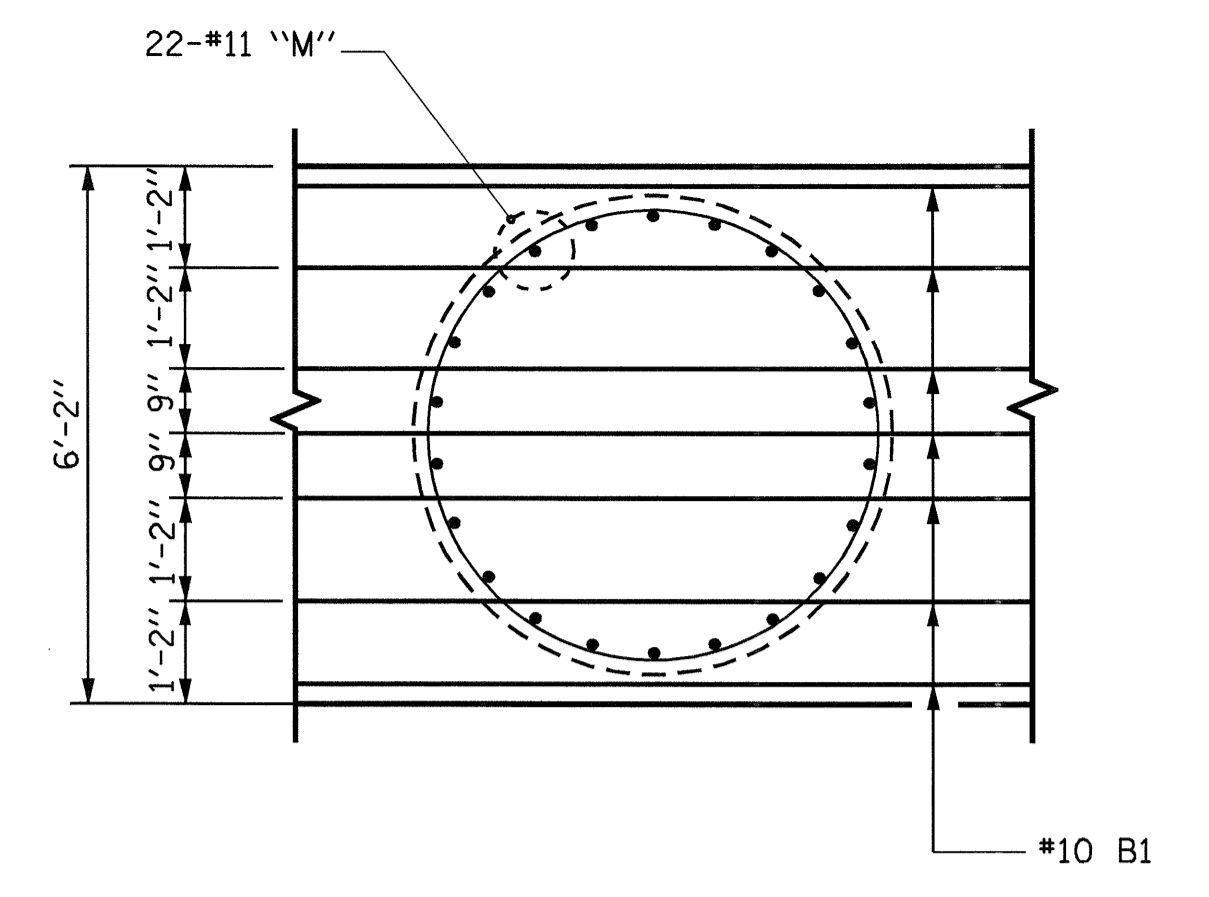
END ELEVATION

(SHOWING DRILLED PIER AND COLUMN END VIEW)
(IF PERMITTED CONSTRUCTION JOINT IS USED)

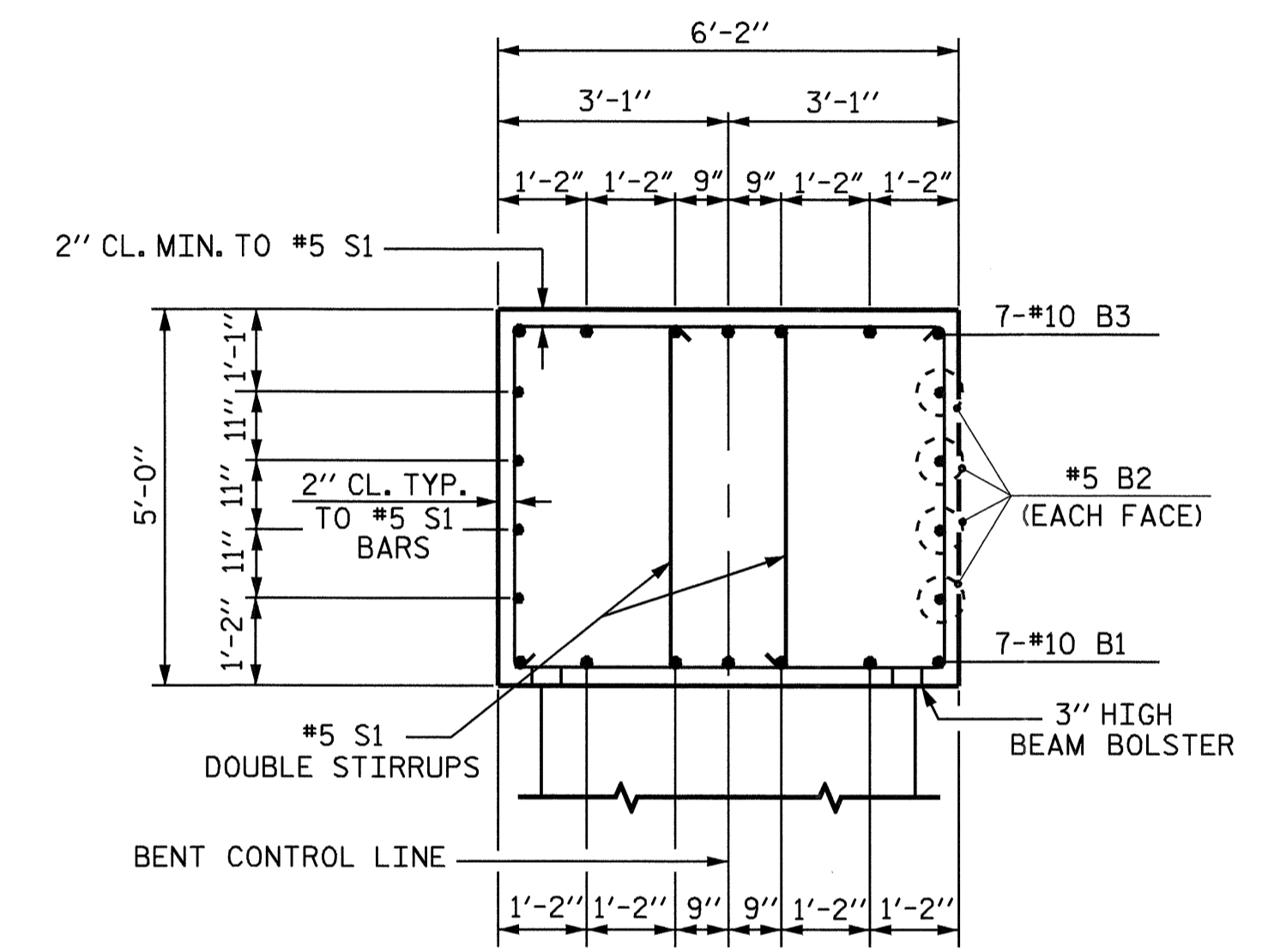


END ELEVATION

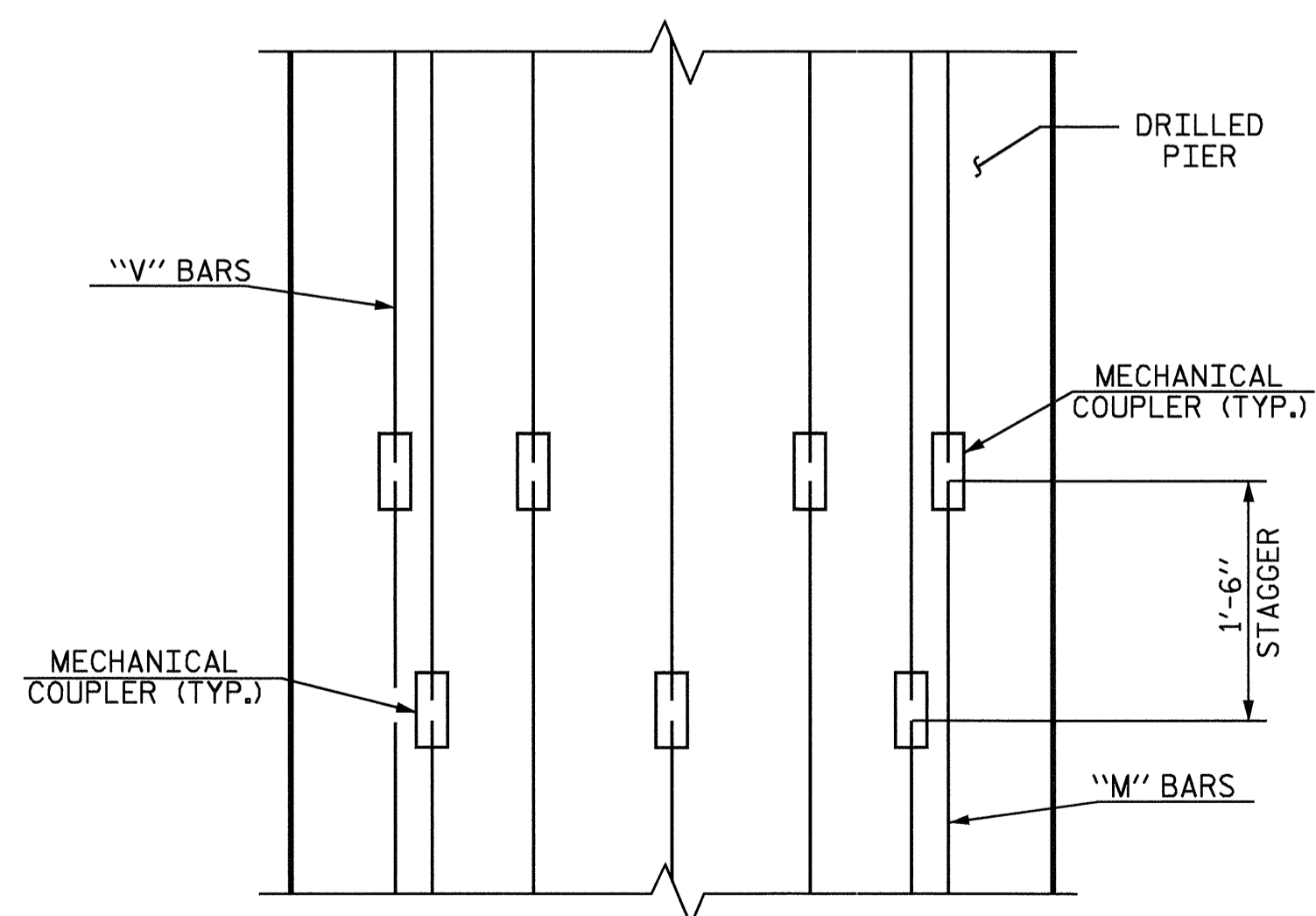
(SHOWING DRILLED PIER END VIEW)



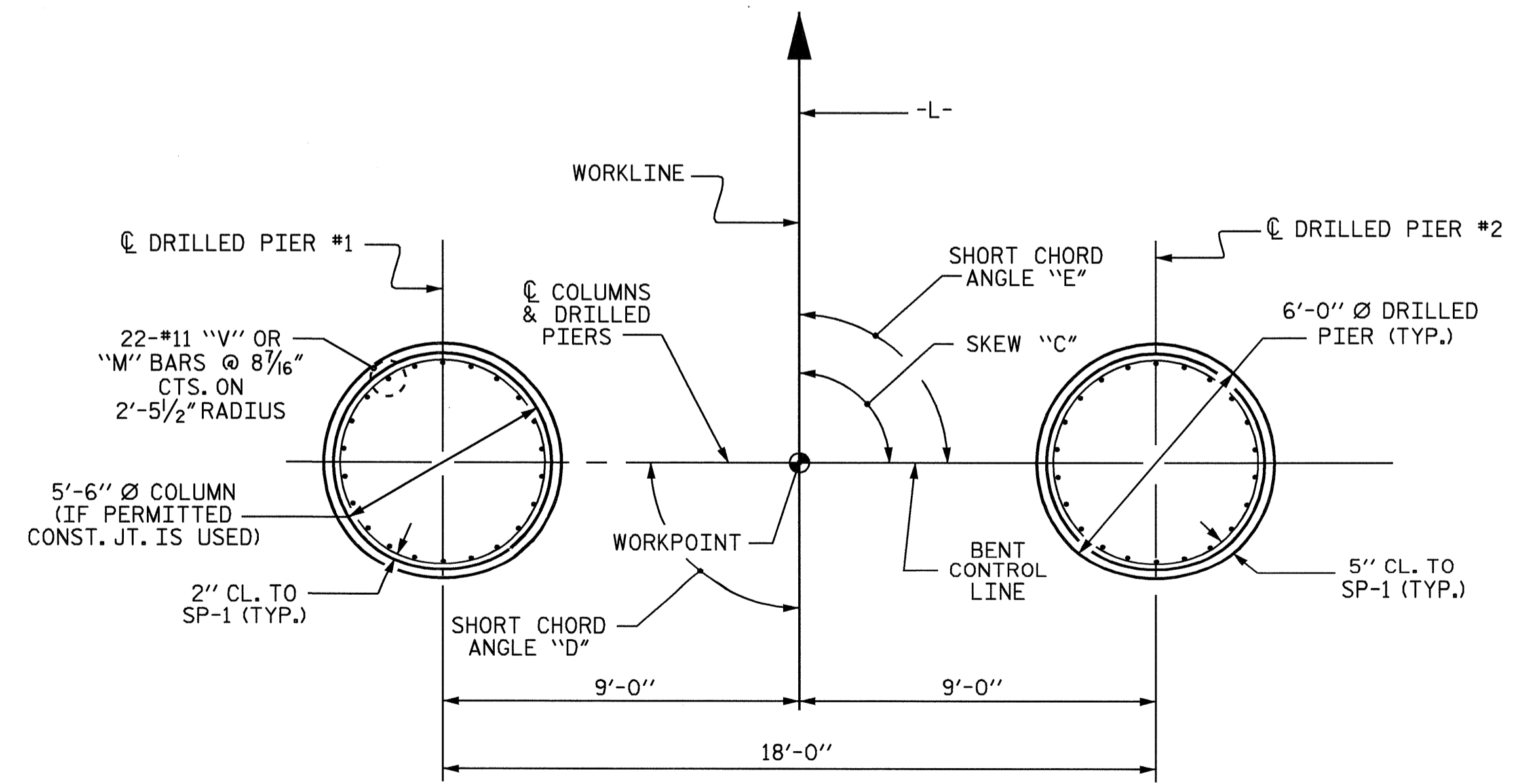
BOTTOM OF CAP



SECTION THRU CAP

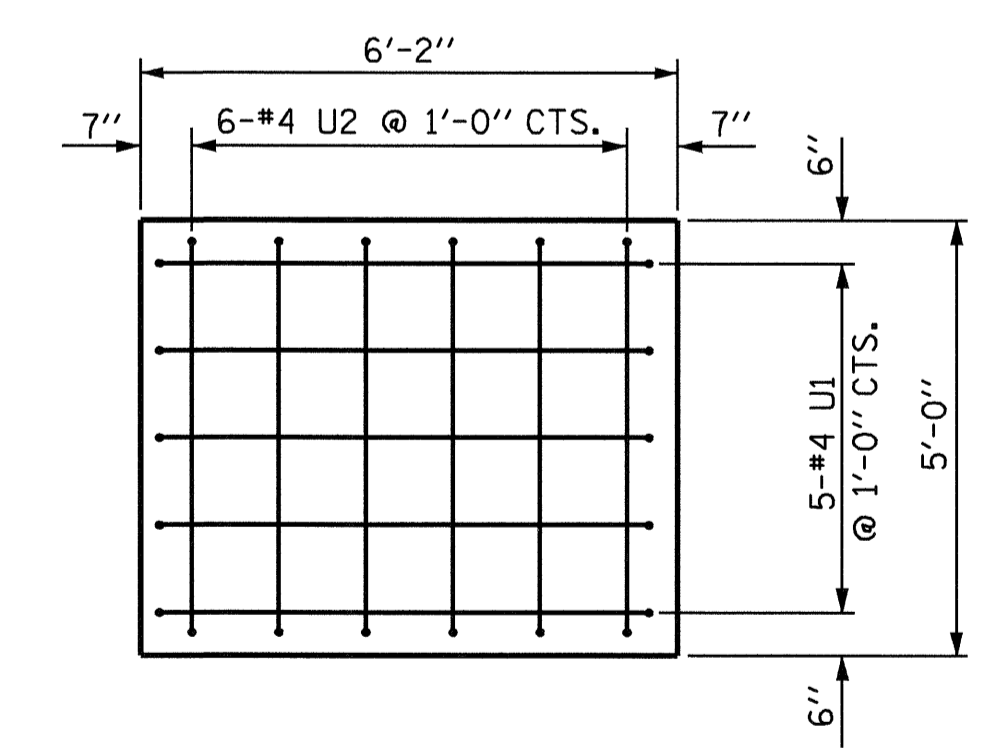


MECHANICAL COUPLER STAGGER DETAIL



PLAN OF DRILLED PIERS & COLUMNS

(REINFORCING STEEL IS TYPICAL FOR EACH COLUMN & DRILLED PIER)
FOR SKEW "C" AND ANGLES "D" AND "E", SEE TABLES SHEET 1 OF 3.



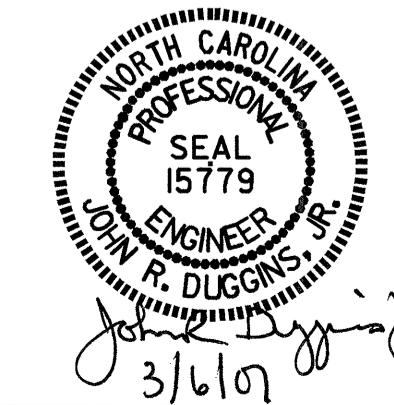
END VIEW

(TYPICAL EACH END)

PROJECT NO. B-4223
PENDER COUNTY
STATION: 33+52.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENTS No. 7 THRU No. 9					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. 5-54 TOTAL SHEETS 64

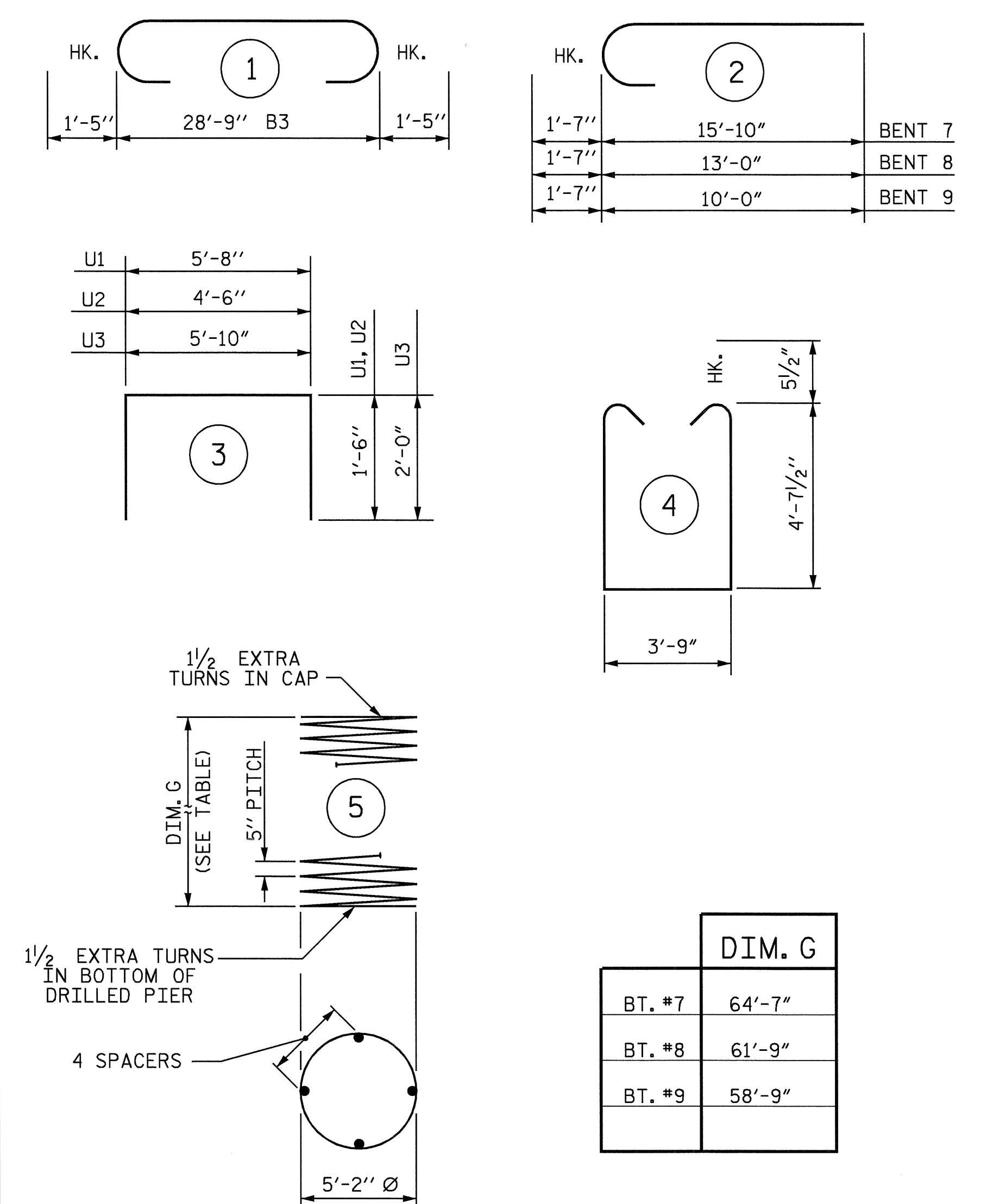


DRAWN BY: M. POOLE DATE: 12/05
CHECKED BY: J. LAMBERT DATE: 06/06

BILL OF MATERIAL

BENT No. 7						BENT No. 8						BENT No. 9					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	7	10	STR	28'-10"	868	B1	7	10	STR	28'-10"	868	B1	7	10	STR	28'-10"	868
B2	8	5	STR	28'-10"	241	B2	8	5	STR	28'-10"	241	B2	8	5	STR	28'-10"	241
B3	7	10	1	31'-7"	951	B3	7	10	1	31'-7"	951	B3	7	10	1	31'-7"	951
M1	44	11	STR	56'-0"	13091	M1	44	11	STR	56'-0"	13091	M1	44	11	STR	56'-0"	13091
S1	42	5	4	13'-11"	610	S1	42	5	4	13'-11"	610	S1	42	5	4	13'-11"	610
U1	10	4	3	8'-8"	58	U1	10	4	3	8'-8"	58	U1	10	4	3	8'-8"	58
U2	12	4	3	7'-6"	60	U2	12	4	3	7'-6"	60	U2	12	4	3	7'-6"	60
U3	28	4	3	9'-10"	184	U3	28	4	3	9'-10"	184	U3	28	4	3	9'-10"	184
V1	44	11	2	17'-5"	4072	V1	44	11	2	14'-7"	3409	V1	44	11	2	11'-7"	2708
REINFORCING STEEL 20135 LBS						REINFORCING STEEL 19472 LBS						REINFORCING STEEL 18771 LBS					
BAR NO. SIZE TYPE LENGTH WEIGHT SP-1 2 *** 5 2539'-8" 5298						BAR NO. SIZE TYPE LENGTH WEIGHT SP-1 2 *** 5 2443'-2" 5096						BAR NO. SIZE TYPE LENGTH WEIGHT SP-1 2 *** 5 2314'-7" 4828					
SPIRAL COLUMN REINFORCING STEEL 5298 LBS						SPIRAL COLUMN REINFORCING STEEL 5096 LBS						SPIRAL COLUMN REINFORCING STEEL 4828 LBS					
CLASS A CONCRETE BREAKDOWN						CLASS A CONCRETE BREAKDOWN						CLASS A CONCRETE BREAKDOWN					
POUR 3 (CAP) 33.8 C.Y.						POUR 3 (CAP) 33.8 C.Y.						POUR 3 (CAP) 33.8 C.Y.					
TOTAL 33.8 C.Y.						TOTAL 33.8 C.Y.						TOTAL 33.8 C.Y.					
DRILLED PIER QUANTITIES						DRILLED PIER QUANTITIES						DRILLED PIER QUANTITIES					
DRILLED PIER CONCRETE BREAKDOWN						DRILLED PIER CONCRETE BREAKDOWN						DRILLED PIER CONCRETE BREAKDOWN					
POUR 1 (DRILLED PIERS) 135.7 C.Y.						POUR 1 (DRILLED PIERS) 129.8 C.Y.						POUR 1 (DRILLED PIERS) 123.5 C.Y.					
6'-0" Ø DRILLED PIERS 129.58 LIN. FT.						6'-0" Ø DRILLED PIERS 123.98 LIN. FT.						6'-0" Ø DRILLED PIERS 117.96 LIN. FT.					
PERMANENT STEEL CASING 57.58 LIN. FT.						PERMANENT STEEL CASING 51.98 LIN. FT.						PERMANENT STEEL CASING 49.96 LIN. FT.					
CSL TUBES 810 LIN. FT.						CSL TUBES 775 LIN. FT.						CSL TUBES 740 LIN. FT.					

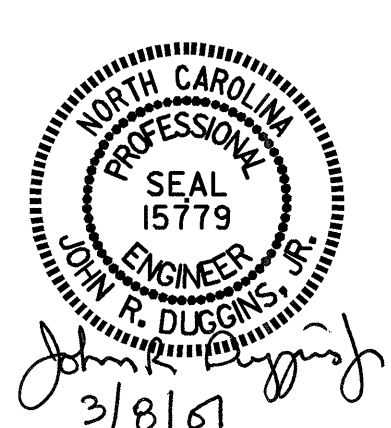
BAR TYPES



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.

PROJECT NO. B-4223
PENDER COUNTY
 STATION: 33+52.00 -L-

SHEET 3 OF 3
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENTS No. 7 THRU No. 9

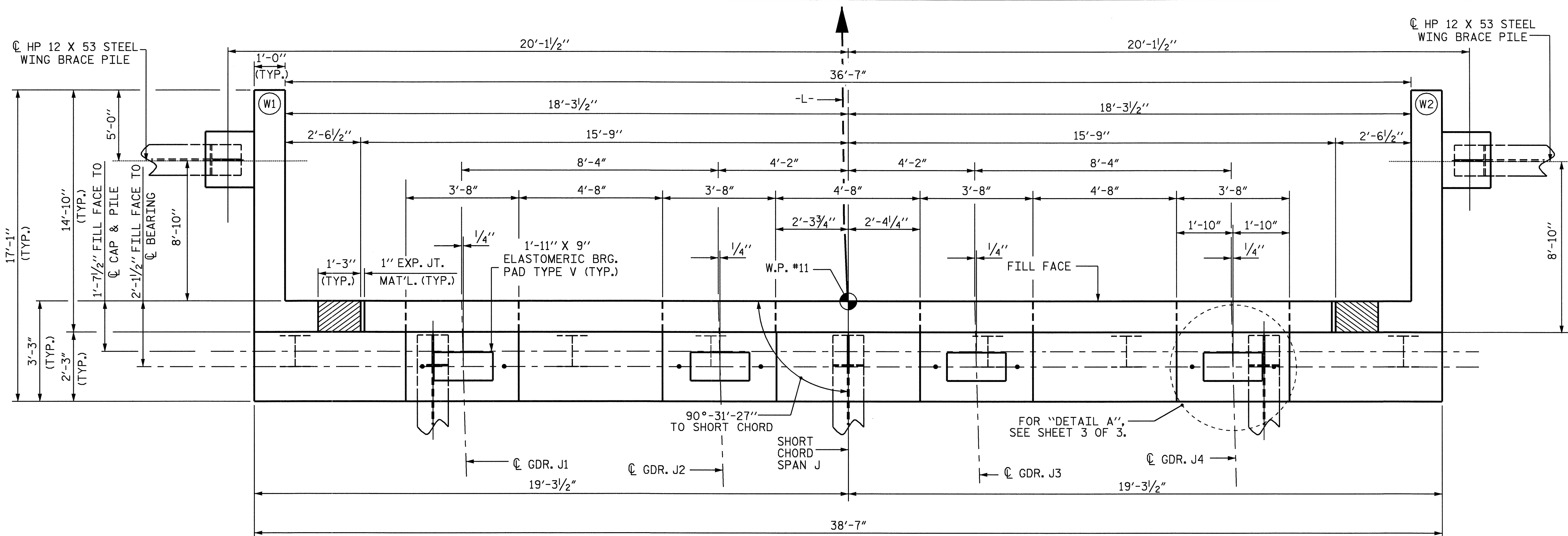


REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	9-55	
1			3			TOTAL SHEETS	
2			4			64	

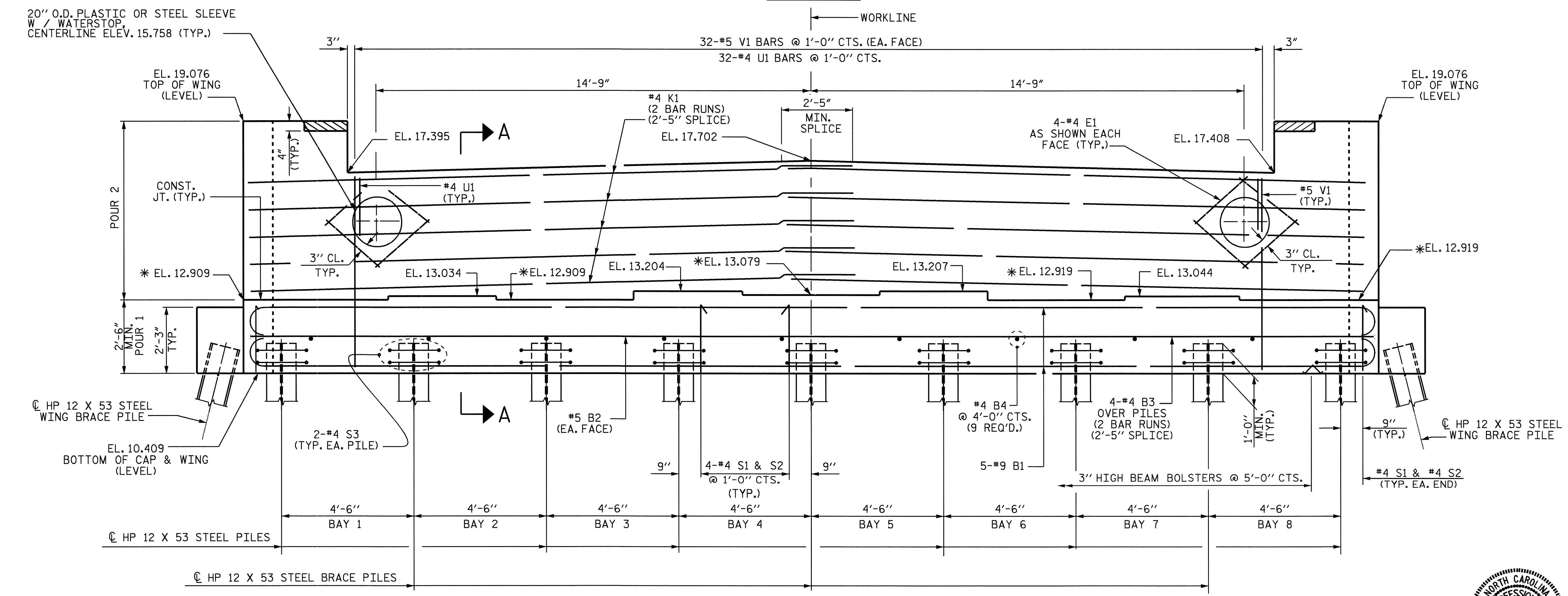
DRAWN BY: M. POOLE DATE: 01/06
 CHECKED BY: J. LAMBERT DATE: 06/06

NOTES

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
- FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.
- BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.
- THE TOP SURFACE AREAS OF THE END BENT CAPS SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.
- THE TOP SURFACE OF THE CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.
- THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE JOINT BETWEEN THE DECK AND THE APPROACH SLAB HAS BEEN SAWED AND THE PARAPET AND END POST ARE CAST IF SLIP FORMING IS USED.
- THE CONTRACTOR SHALL VERIFY THE SLEEVE ELEVATION SHOWN ON PLANS BEFORE CONSTRUCTION OF THE BACKWALL.
- 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.
- HORIZONTAL AND VERTICAL REINFORCING STEEL IN BACKWALL SHALL BE FIELD BENT OR CUT AS NECESSARY TO INSTALL 20" O.D. PLASTIC OR STEEL SLEEVE.



PLAN



ELEVATION

*FOR LOCATION OF ELEVATION BETWEEN BRIDGE SEAT BUILD-UPS, SEE SECTION A-A, SHEET 3 OF 3.

DRAWN BY : M. POOLE DATE : 12/05
 CHECKED BY : J. LAMBERT DATE : 03/06

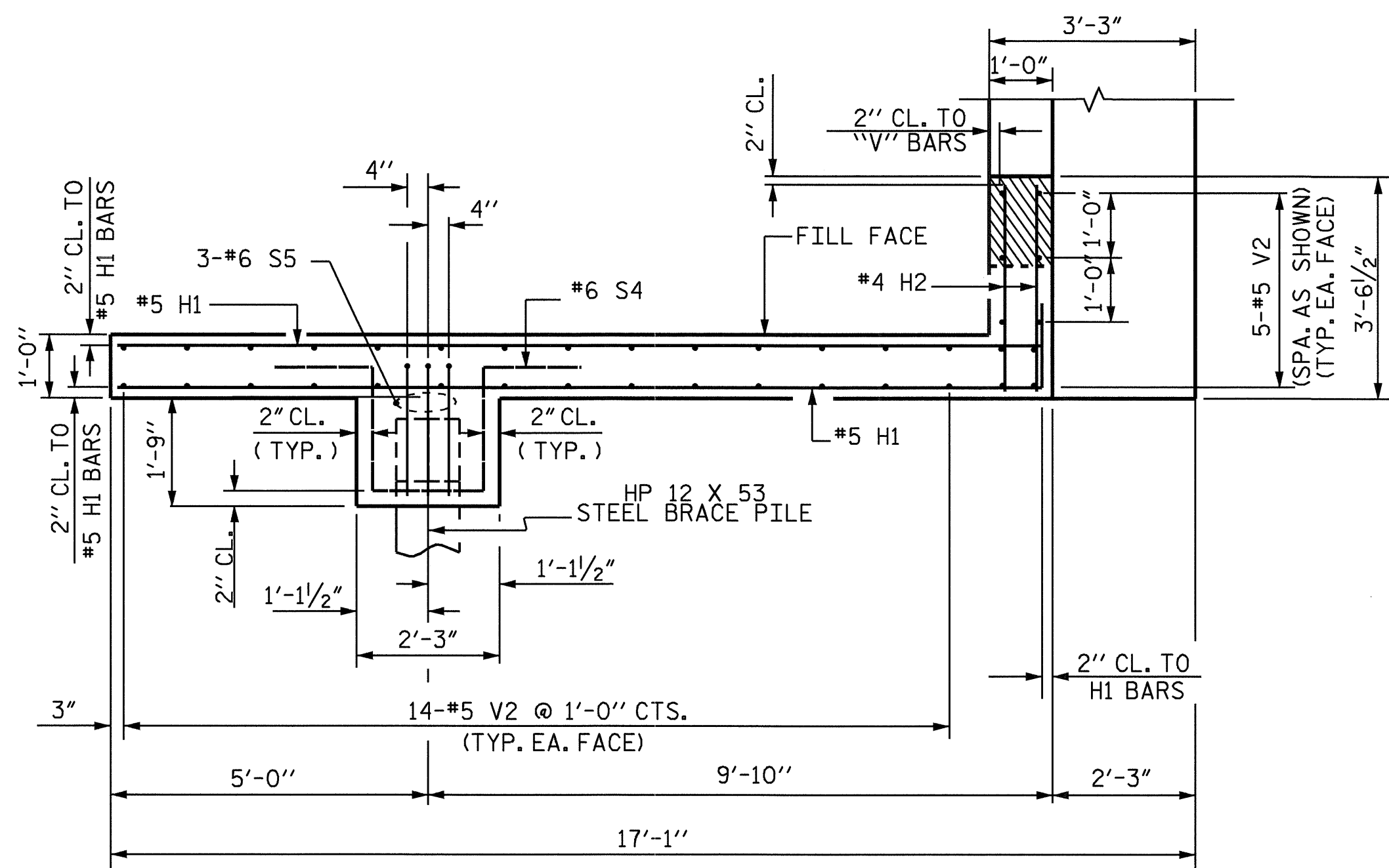
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PROJECT NO. B-4223
 PENDER COUNTY
 STATION: 33+52.00-L-
 SHEET 1 OF 3

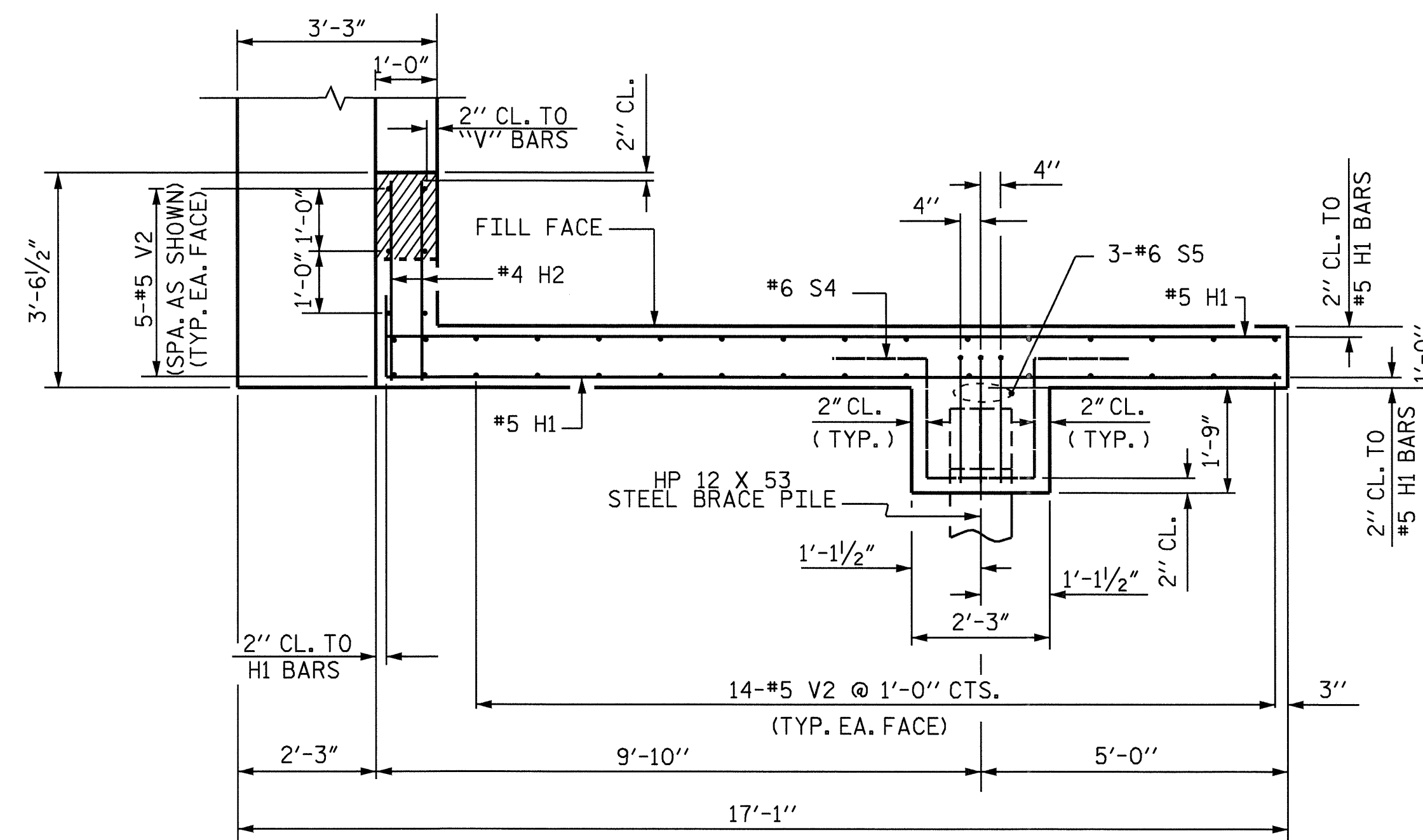
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NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			56
2			4			64



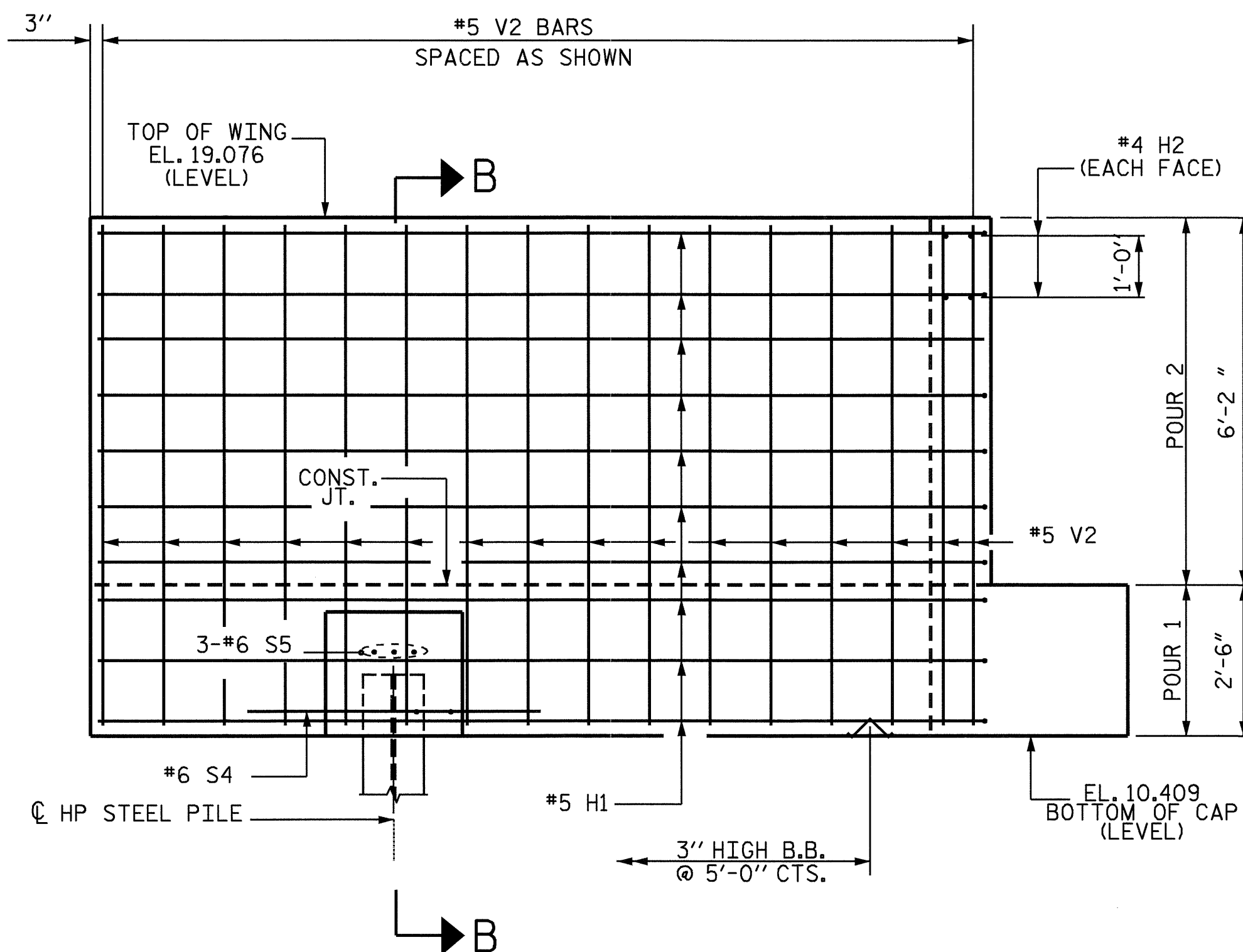
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT No. 2



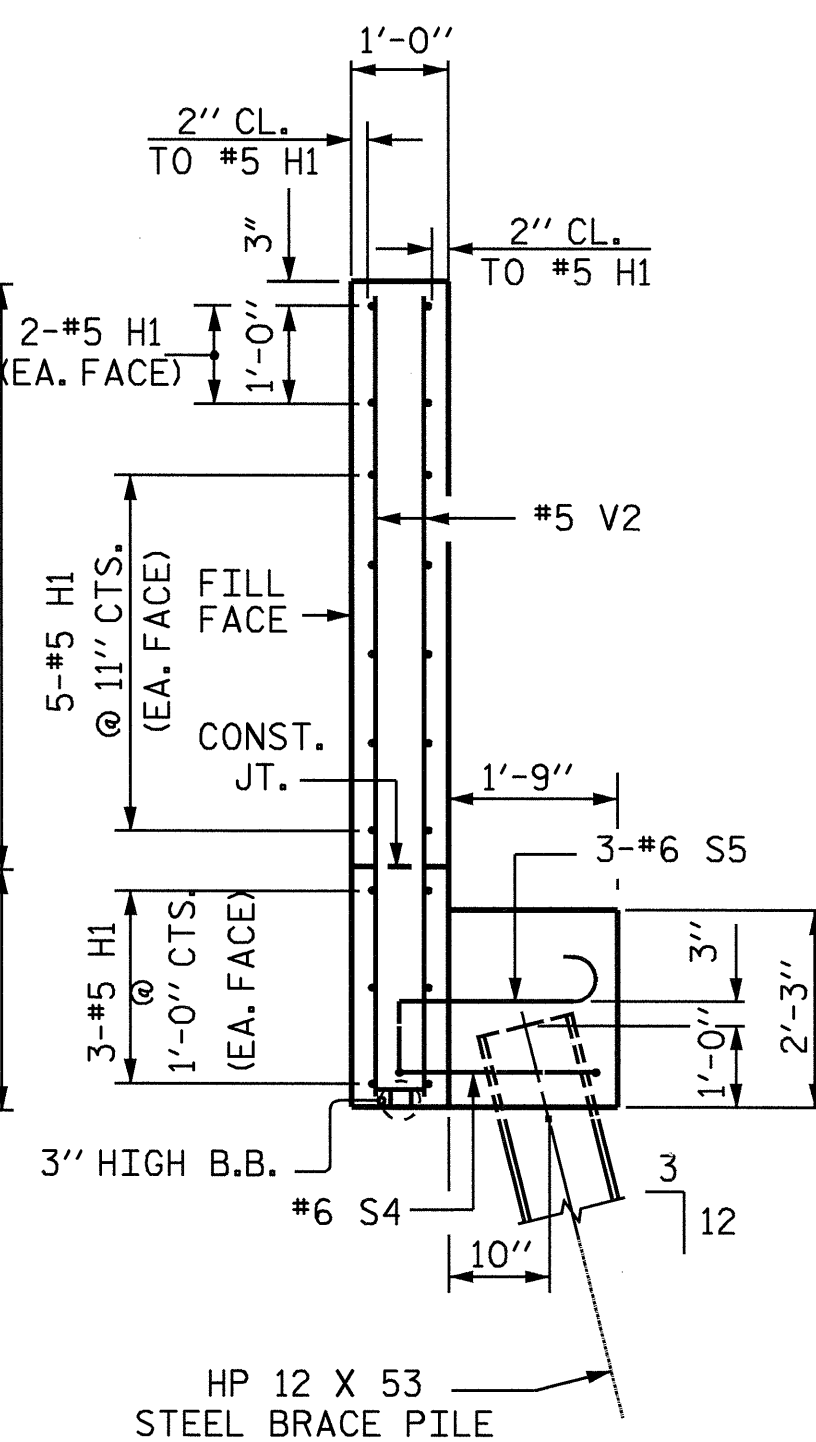
PLAN OF WING - W1



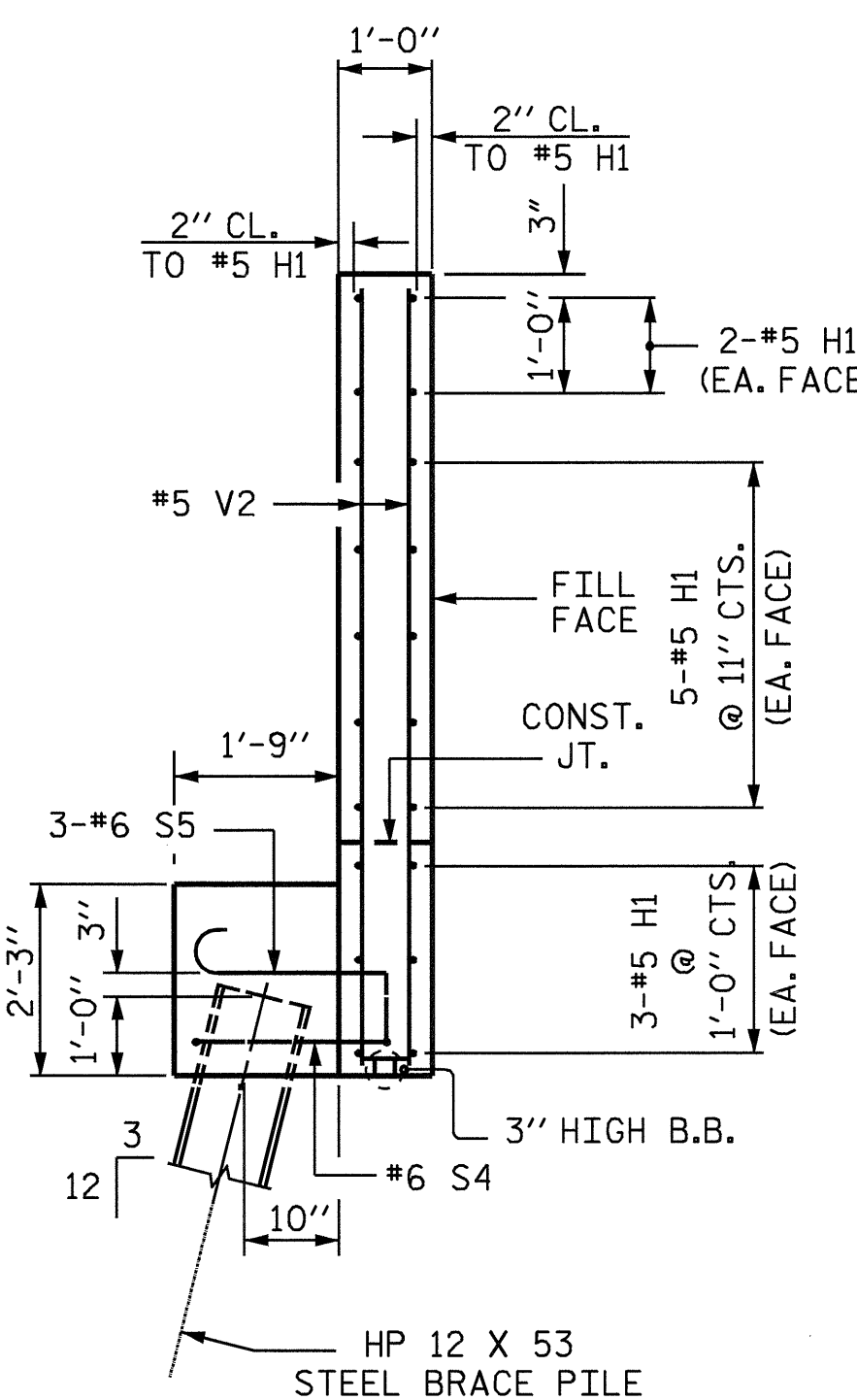
PLAN OF WING - W2



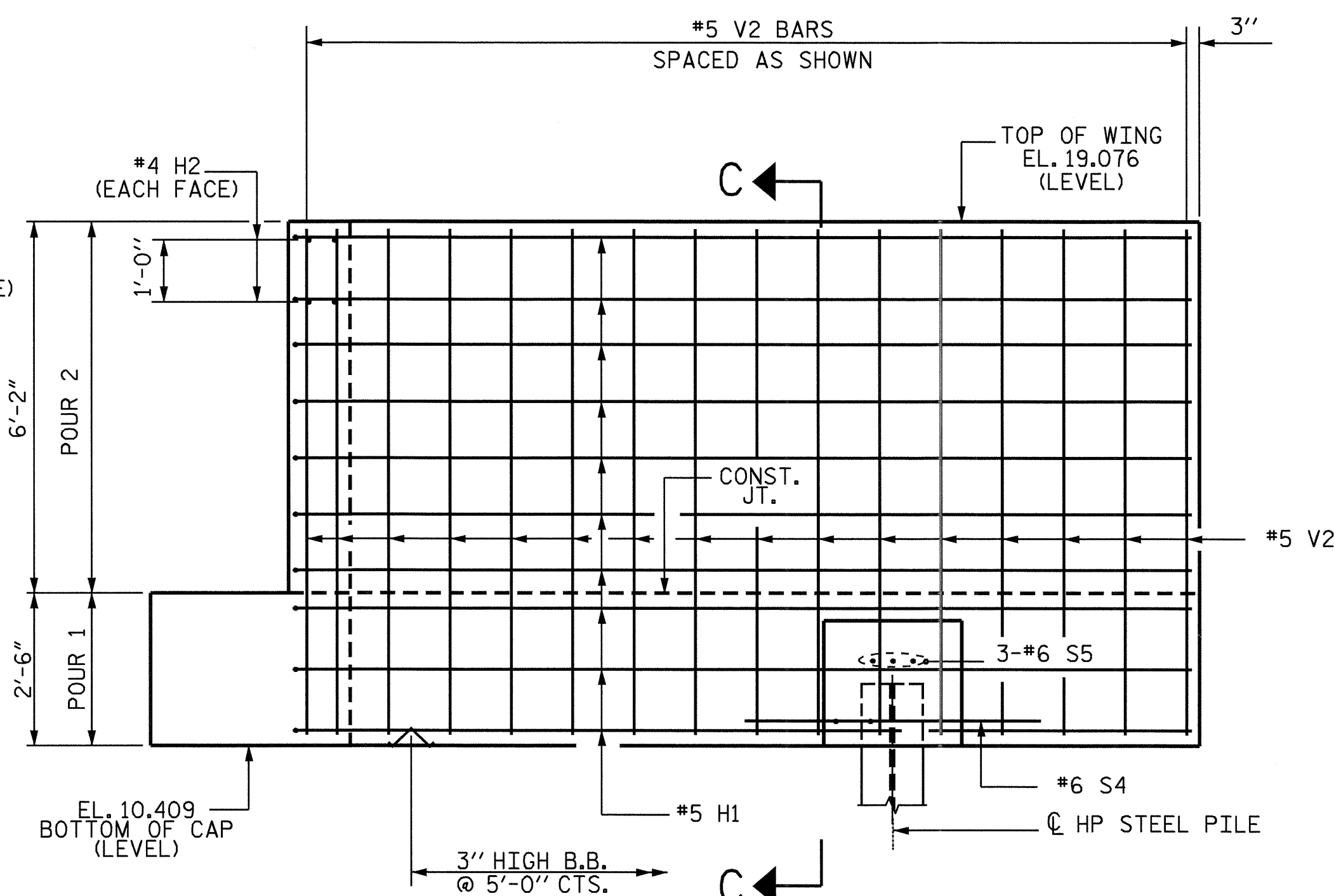
ELEVATION OF WING - W1



SECTION B-B



SECTION C-C



ELEVATION OF WING - W2

PROJECT NO. B-4223
PENDER COUNTY
 STATION: 33+52.00-L-

SHEET 2 OF 3

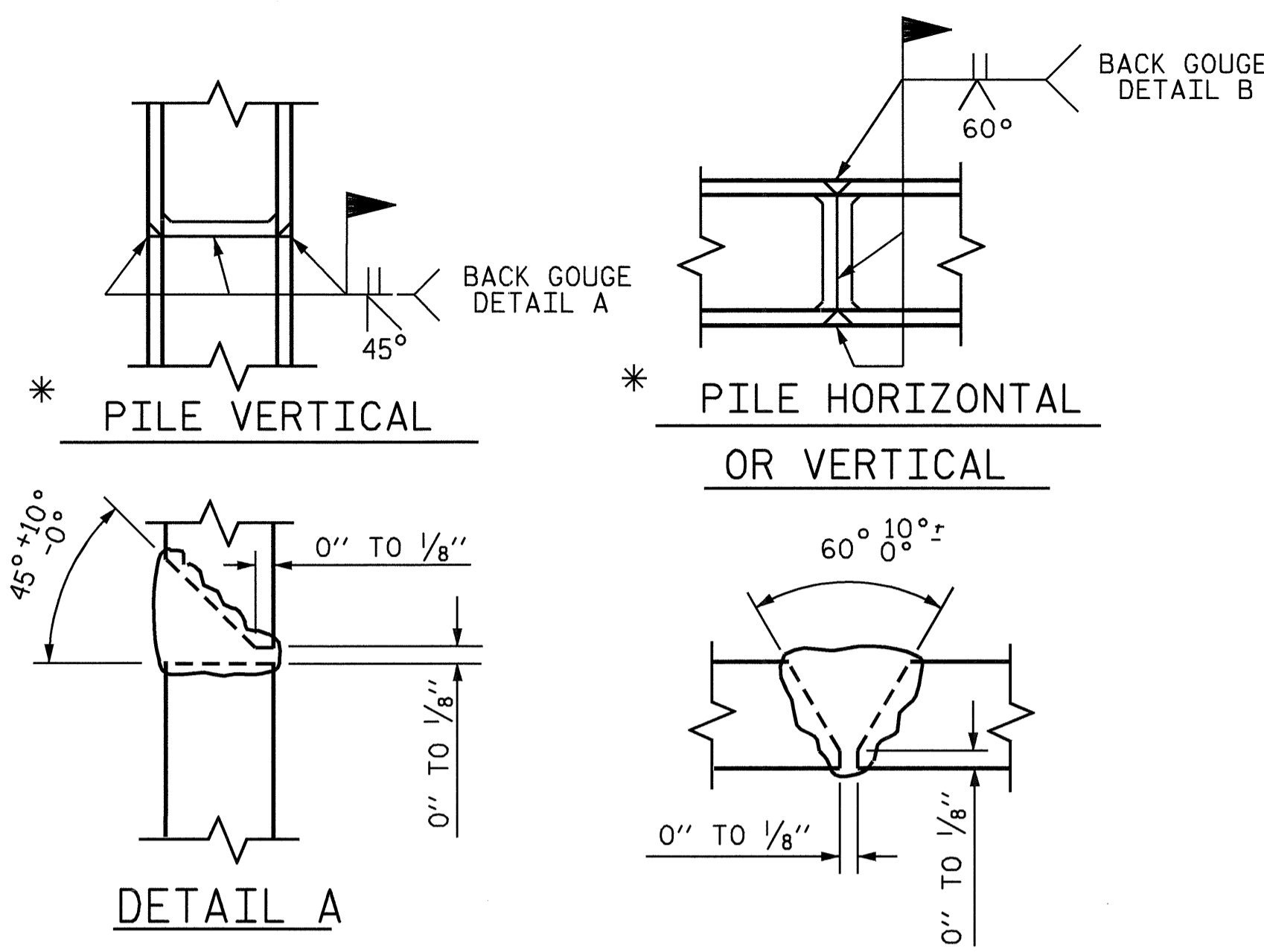
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT No. 2



DRAWN BY: M. POOLE DATE: 12/05
 CHECKED BY: J. LAMBERT DATE: 06/06

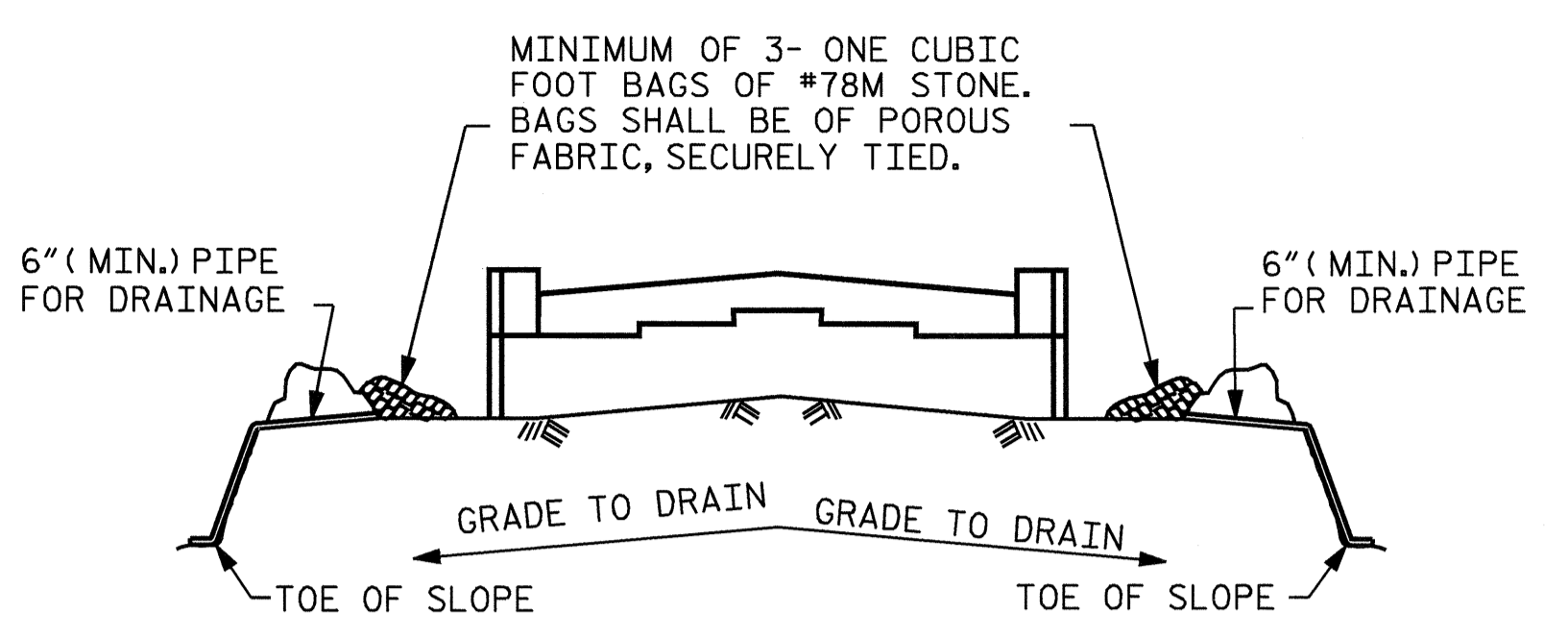
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 mpool

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-57	
1			3			TOTAL SHEETS	64
2			4				



* POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS



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

6" (MIN.) PIPE FOR DRAINAGE

6" (MIN.) PIPE FOR DRAINAGE

GRADE TO DRAIN

GRADE TO DRAIN

TOE OF SLOPE

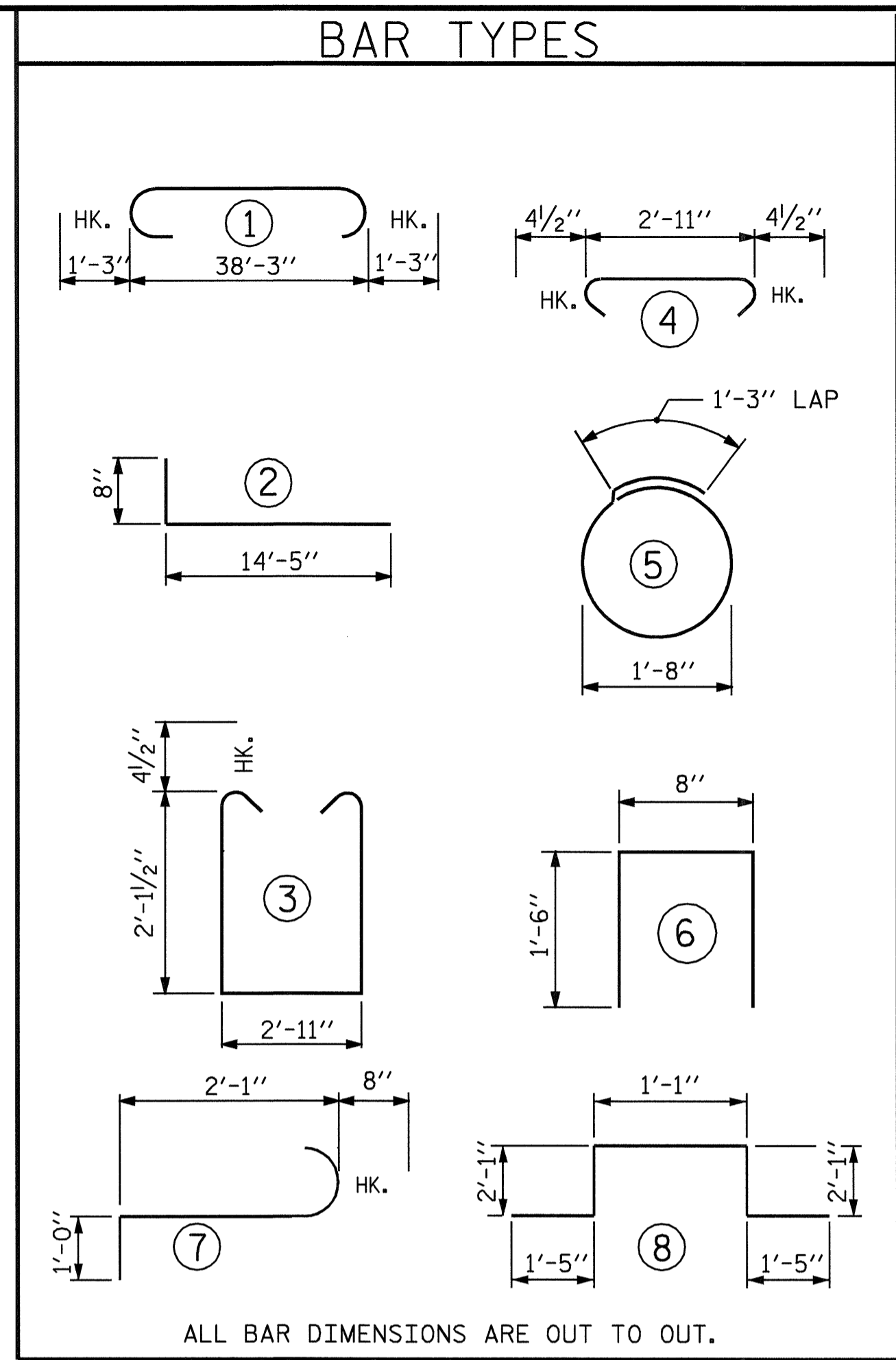
TOE OF SLOPE

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 DETERIORATED AND LOST THEIR EFFECTIVENESS.

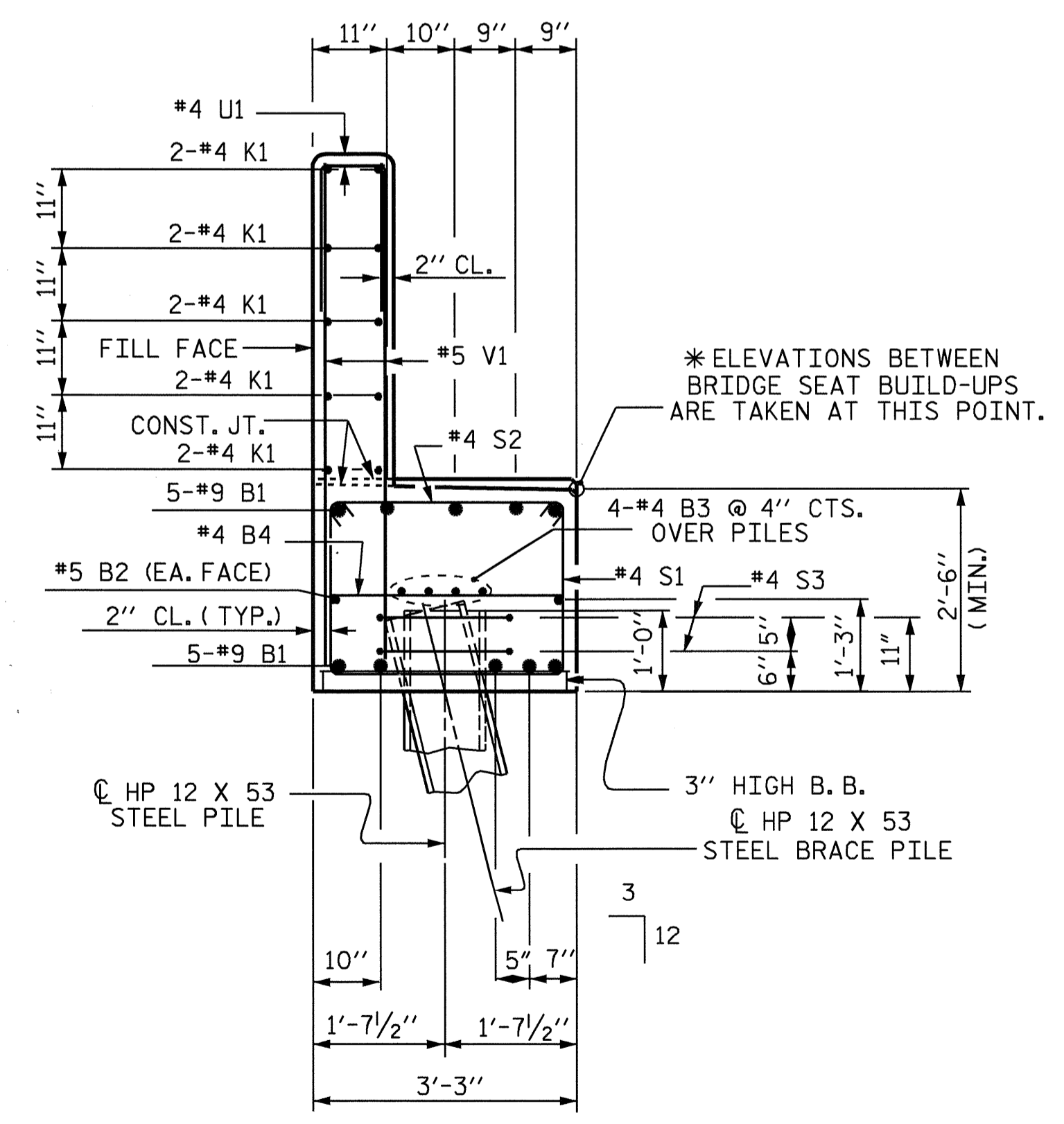
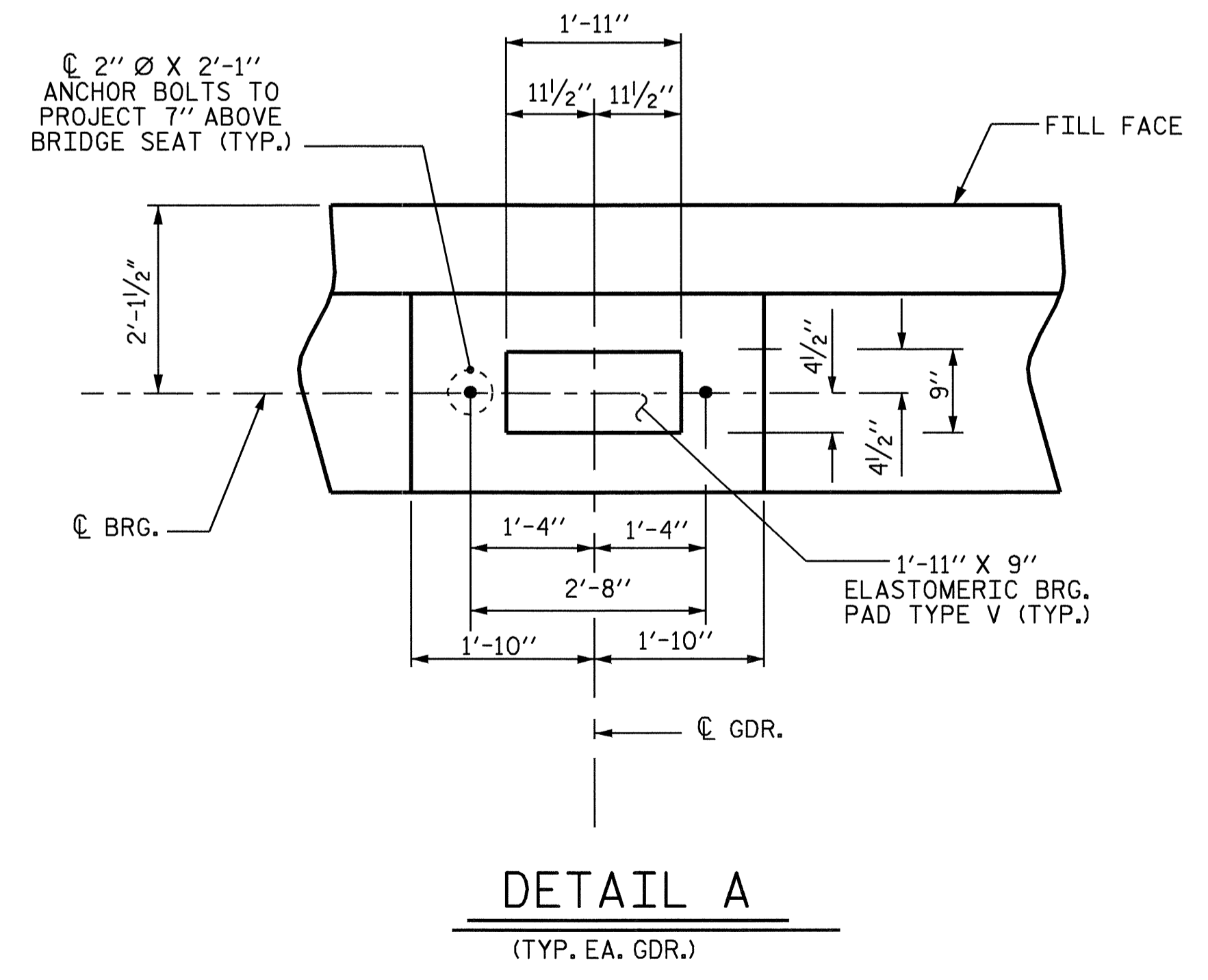
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



ALL BAR DIMENSIONS ARE OUT TO OUT.

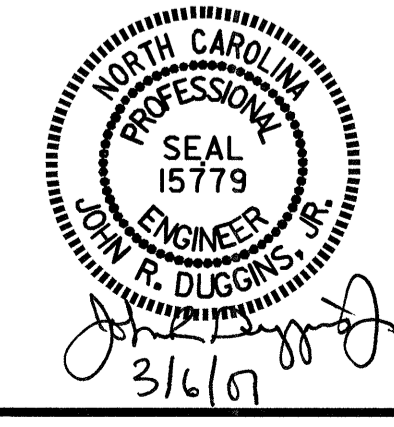
BILL OF MATERIAL					
END BENT No. 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#9	1	40'-9"	1386
B2	2	#5	STR	38'-1"	79
B3	8	#4	STR	20'-4"	109
B4	9	#4	STR	2'-11"	18
E1	16	#4	STR	4'-0"	43
H1	40	#5	2	15'-1"	629
H2	8	#4	STR	3'-2"	17
K1	20	#4	STR	20'-4"	272
S1	34	#4	3	7'-11"	180
S2	34	#4	4	3'-8"	83
S3	18	#4	5	6'-6"	78
S4	2	#6	8	8'-11"	27
S5	6	#6	7	3'-9"	34
U1	32	#4	6	3'-8"	78
V1	64	#5	STR	6'-3"	417
V2	76	#5	STR	8'-2"	647
REINFORCING STEEL					4097 LBS
CLASS A CONCRETE BREAKDOWN					
POUR 1					15.1 C.Y.
POUR 2					12.7 C.Y.
TOTAL					27.8 C.Y.
HP 12 x 53 STEEL PILES					
NO. 11					330 LIN. FEET



SECTION A-A

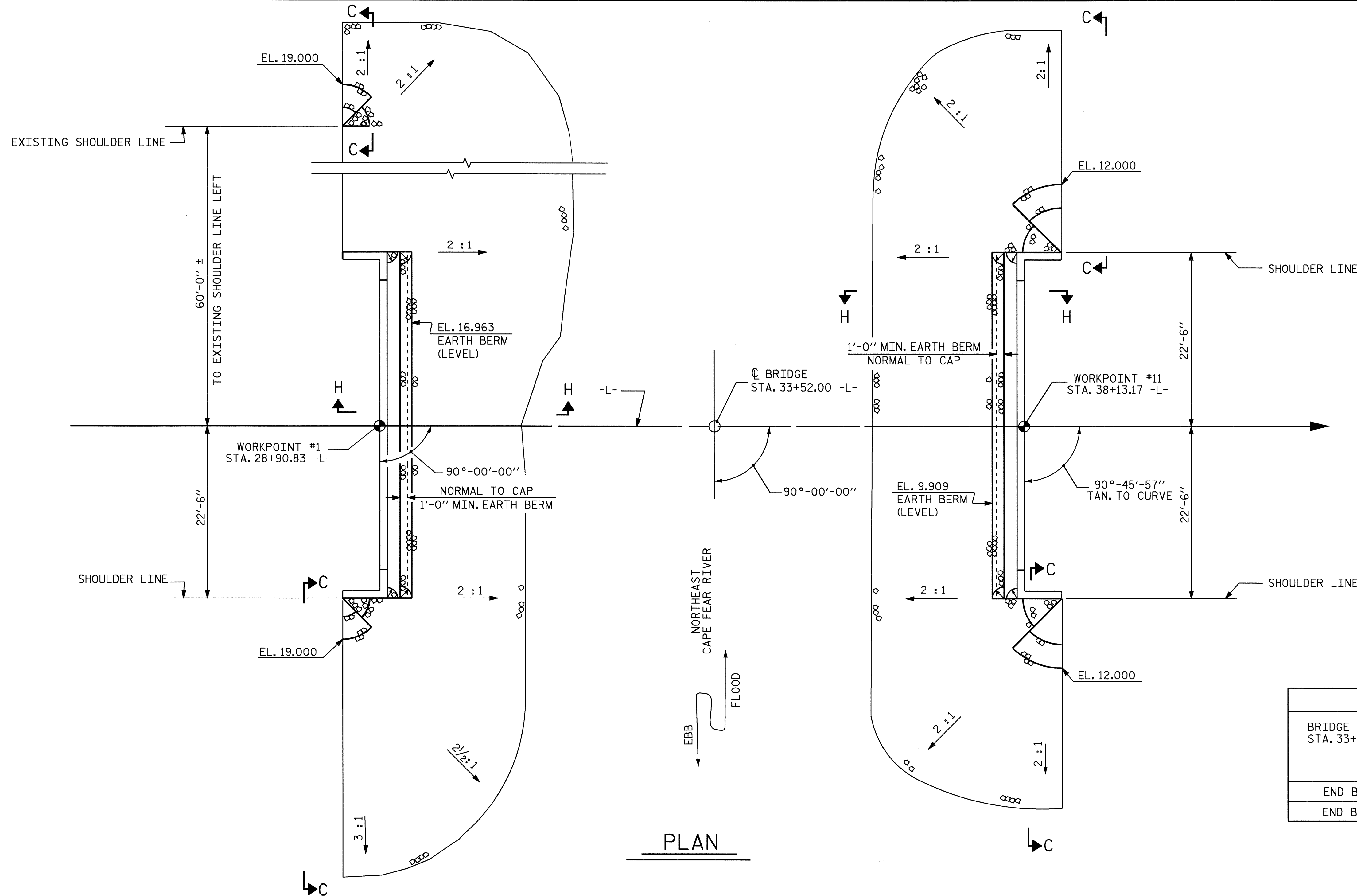
PROJECT NO. B-4223
PENDER COUNTY
 STATION: 33+52.00-L-
 SHEET 3 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT No. 2					
REVISIONS					TOTAL SHEETS
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					5-58
					64



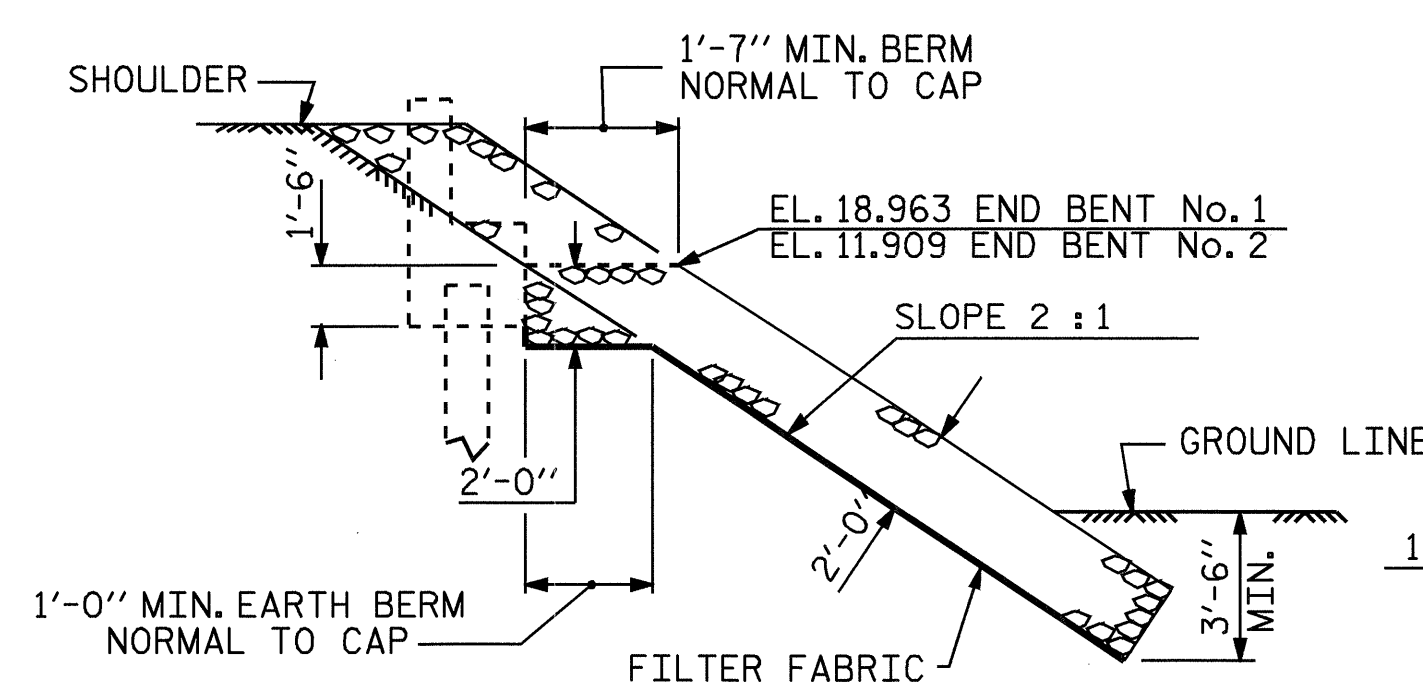
DRAWN BY: M. POOLE DATE: 12/05
 CHECKED BY: J. LAMBERT DATE: 06/06

NOTES :
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.

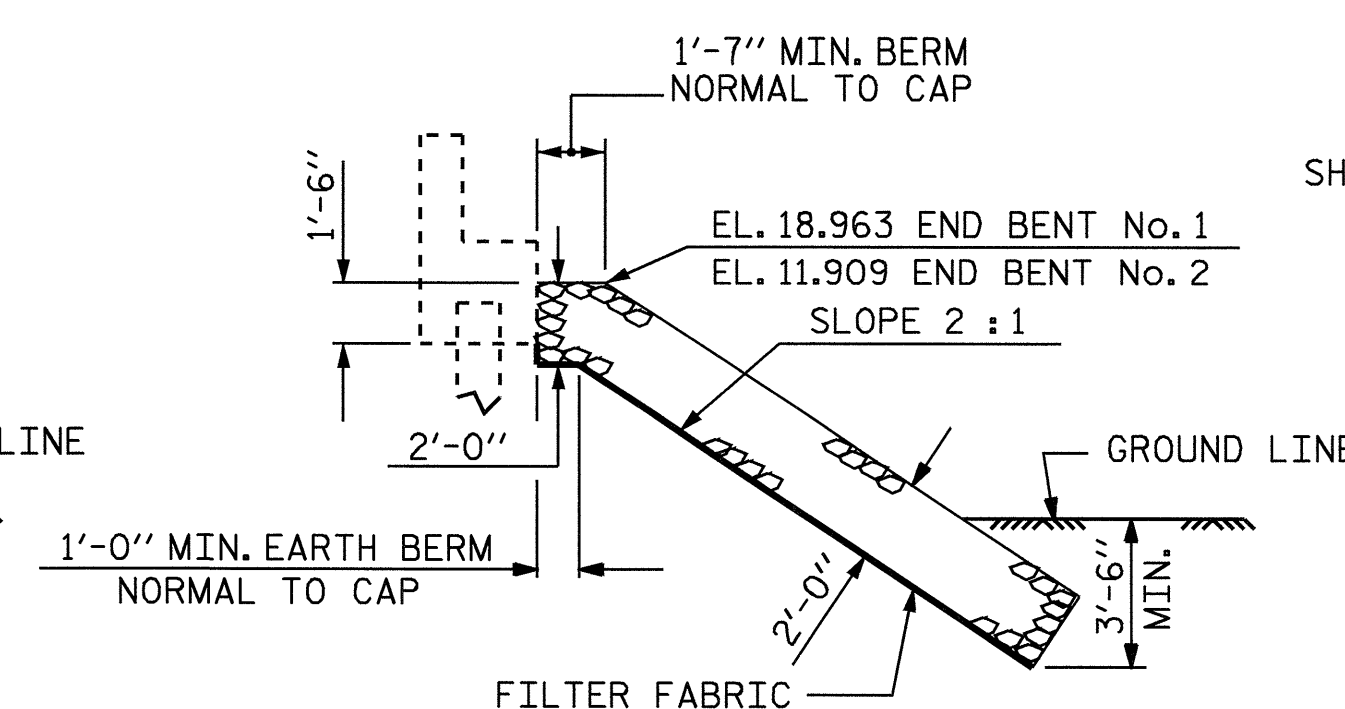


PLAN

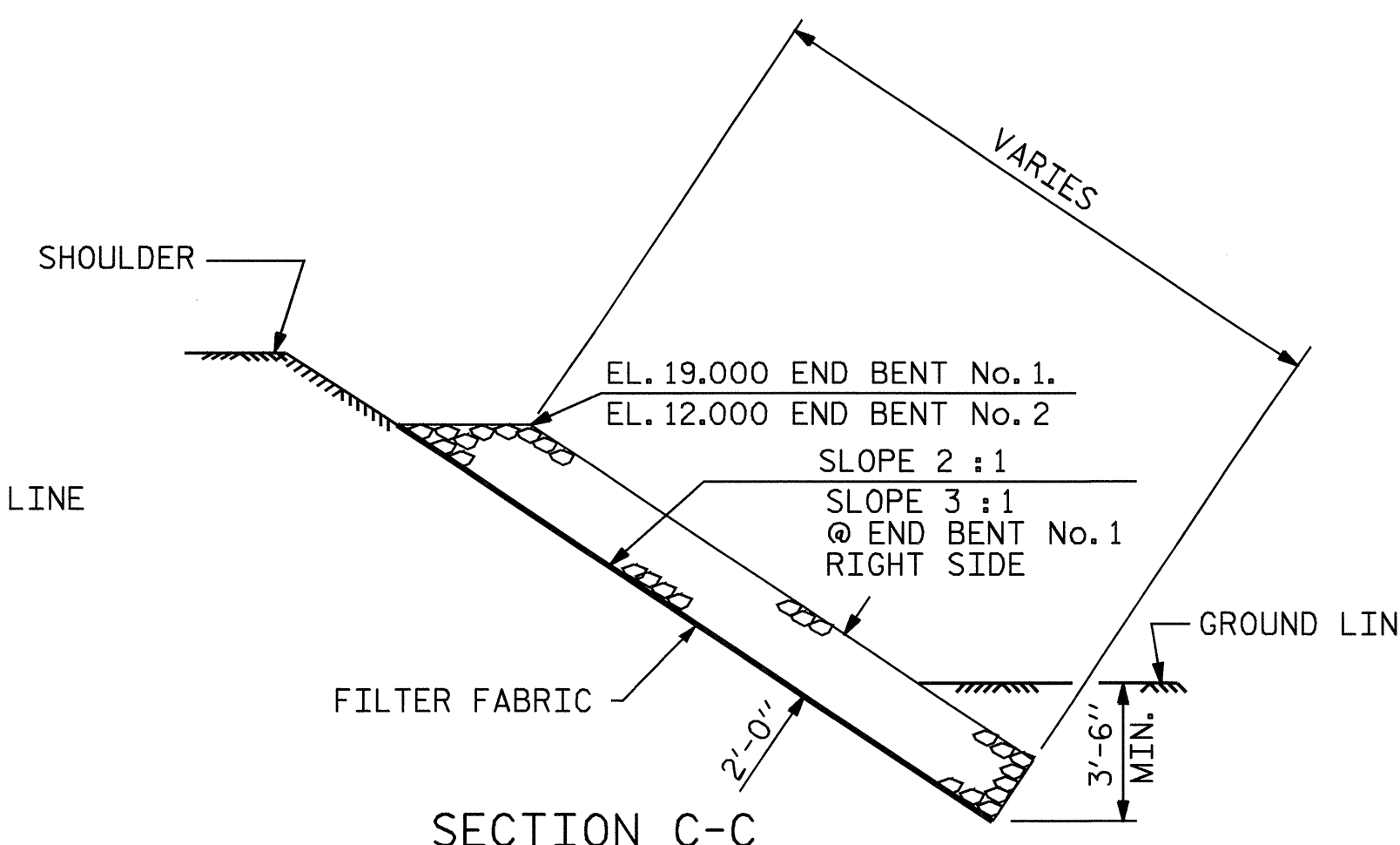
ESTIMATED QUANTITIES		
BRIDGE @ STA. 33+52.00 -L-	RIP RAP CLASS II	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT No. 1	720	798
END BENT No. 2	300	332



SECTION H-H



SECTION C-C
BERM RIP RAPPED

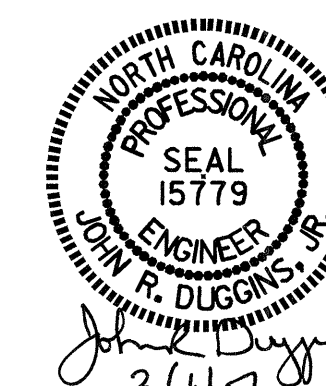


SECTION C-C

PROJECT NO. B-4223
PENDER COUNTY
STATION: 33+52.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

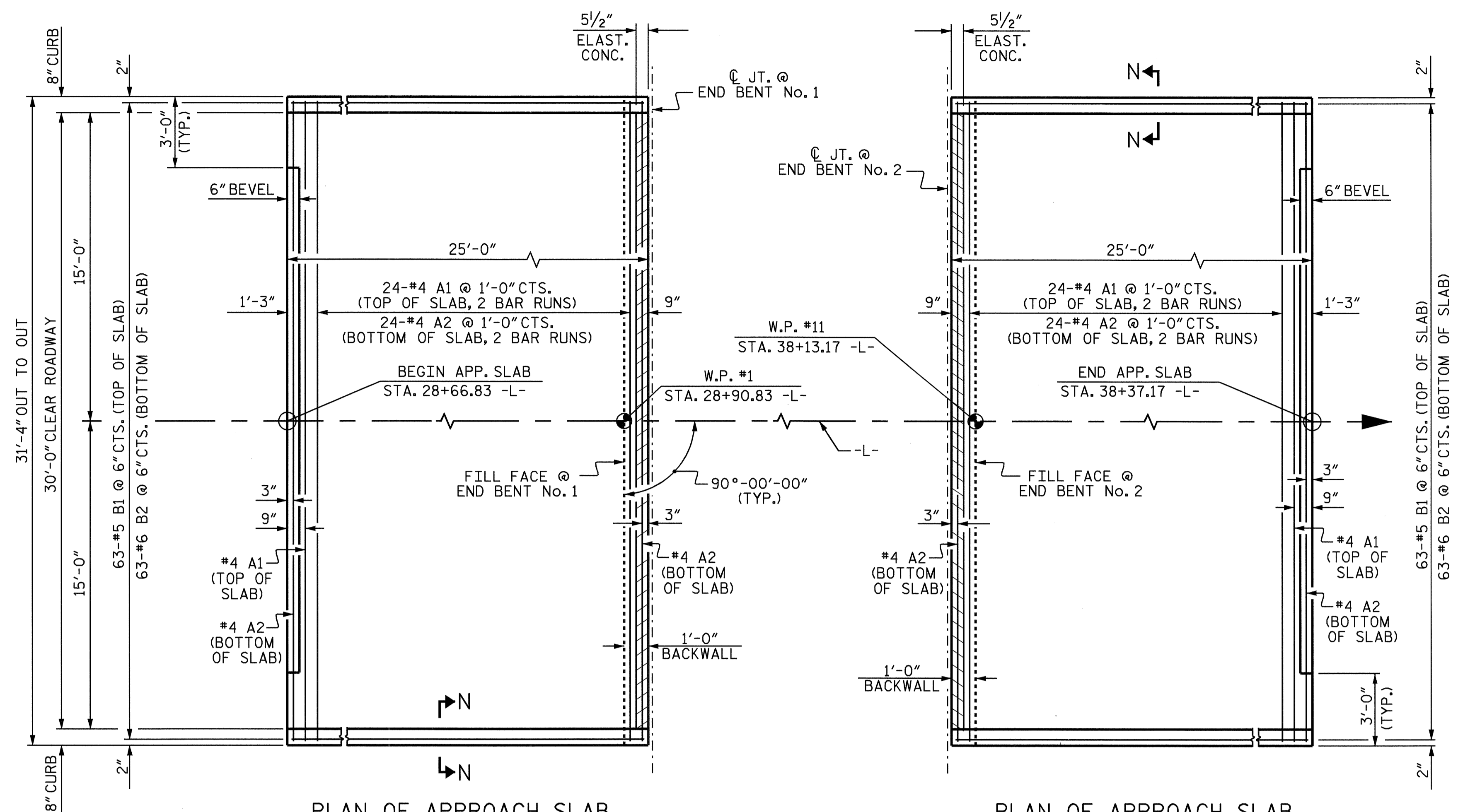
== RIP RAP DETAILS ==



ASSEMBLED BY : M. POOLE DATE : 11/05
CHECKED BY : J.R. DUGGINS DATE : 01/06
DRAWN BY : FCJ 2/88 REV. 7/17/98 REK/RWW
CHECKED BY : ARB 8/88 REV. 8/16/99 RWW/LES
REV. 10/17/00 RWW/LES

06-MAR-2007 10:52
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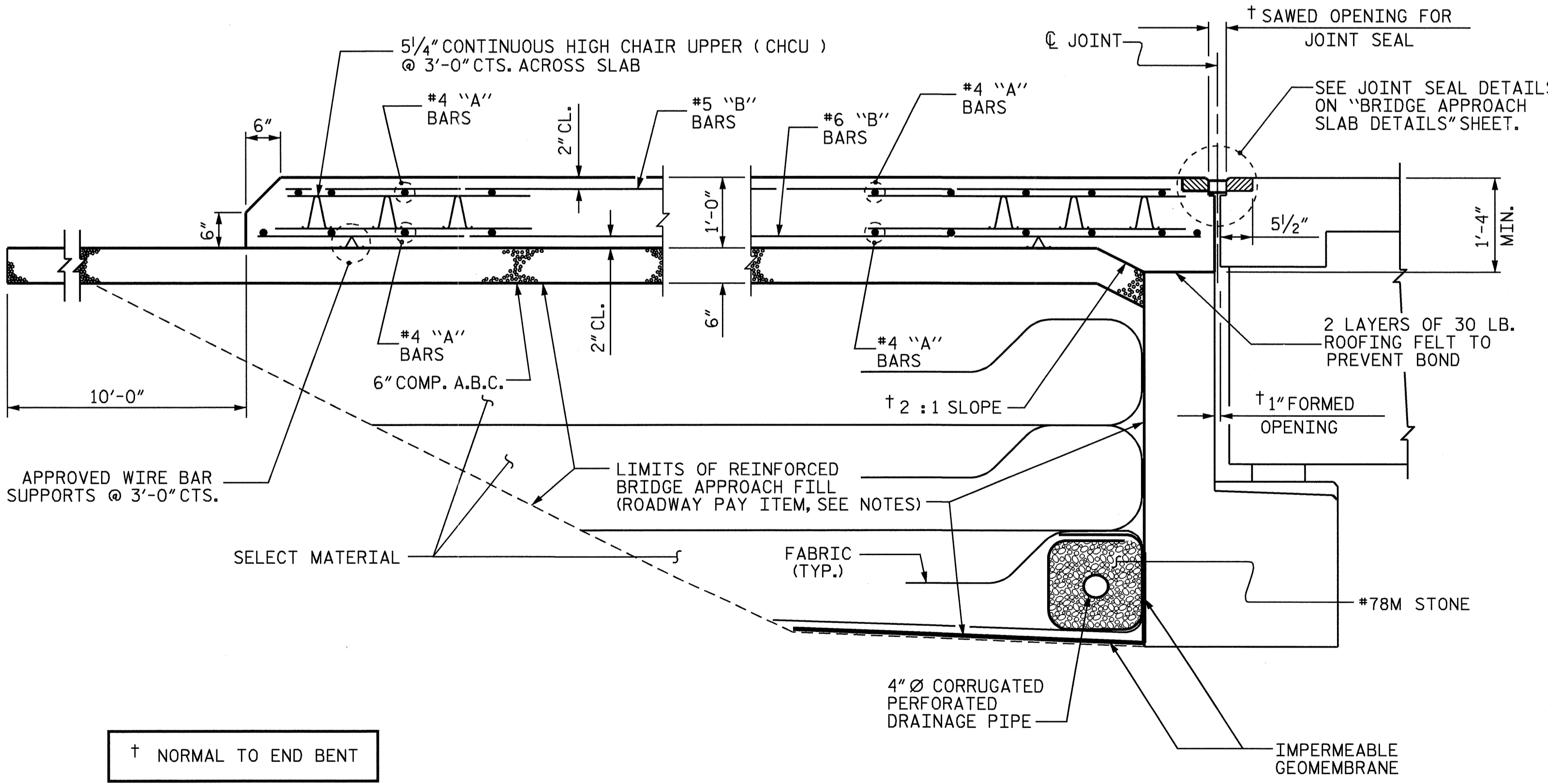
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			5-59
2			4			64



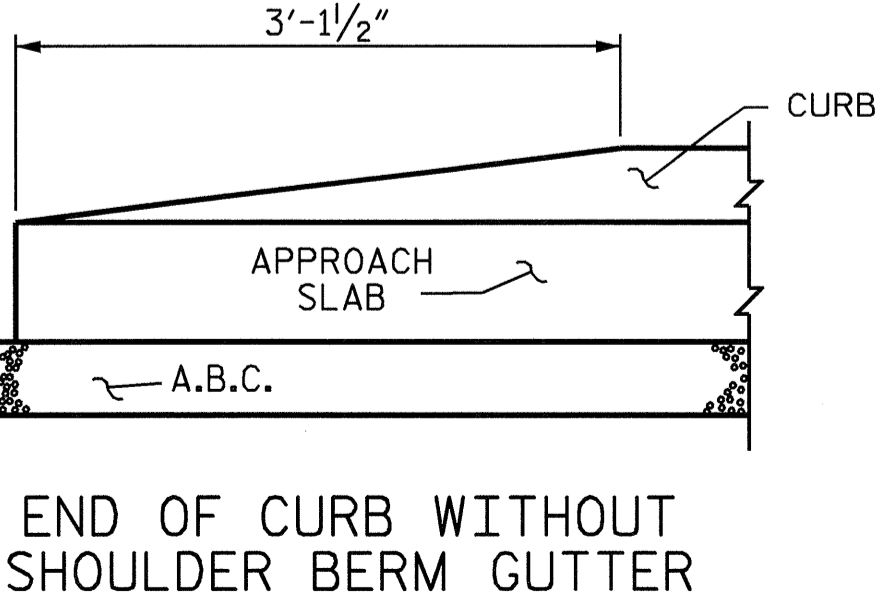
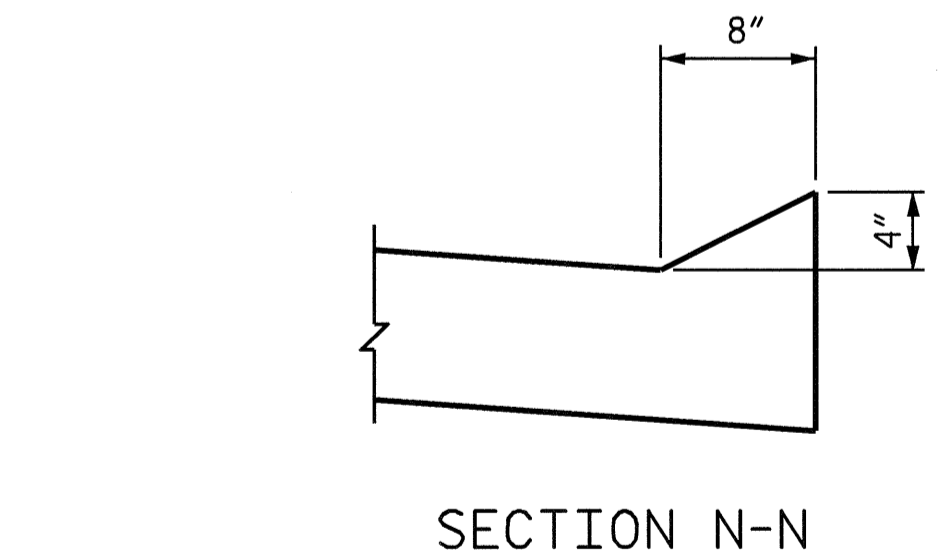
PLAN OF APPROACH SLAB @ END BENT No. 1

PLAN OF APPROACH SLAB @ END BENT No. 2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



SECTION THRU SLAB



CURB DETAILS

NOTES

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

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

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.

THE JOINT SHALL BE SAWS PRIOR TO THE CASTING OF THE PARAPET AND END POST.

WITH EVAZOTE JOINT SEAL

FOR EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS.

THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE EVAZOTE JOINT SEAL SHALL BE 2 1/2".

FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

BILL OF MATERIAL					
APPROACH SLAB AT EB No.1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	50	#4	STR	16'-6"	551
A2	52	#4	STR	16'-5"	570
*B1	63	#5	STR	23'-9"	1561
B2	63	#6	STR	24'-8"	2334
REINFORCING STEEL					LBS. 2904
*EPOXY COATED REINFORCING STEEL					LBS. 2112
CLASS AA CONCRETE					C. Y. 29.4
APPROACH SLAB AT EB No.2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	50	#4	STR	16'-6"	551
A2	52	#4	STR	16'-5"	570
*B1	63	#5	STR	23'-9"	1561
B2	63	#6	STR	24'-8"	2334
REINFORCING STEEL					LBS. 2904
*EPOXY COATED REINFORCING STEEL					LBS. 2112
CLASS AA CONCRETE					C. Y. 29.4

PROJECT NO. B-4223
 PENDER COUNTY
 STATION: 33+52.00 -L-

SHEET 1 OF 2

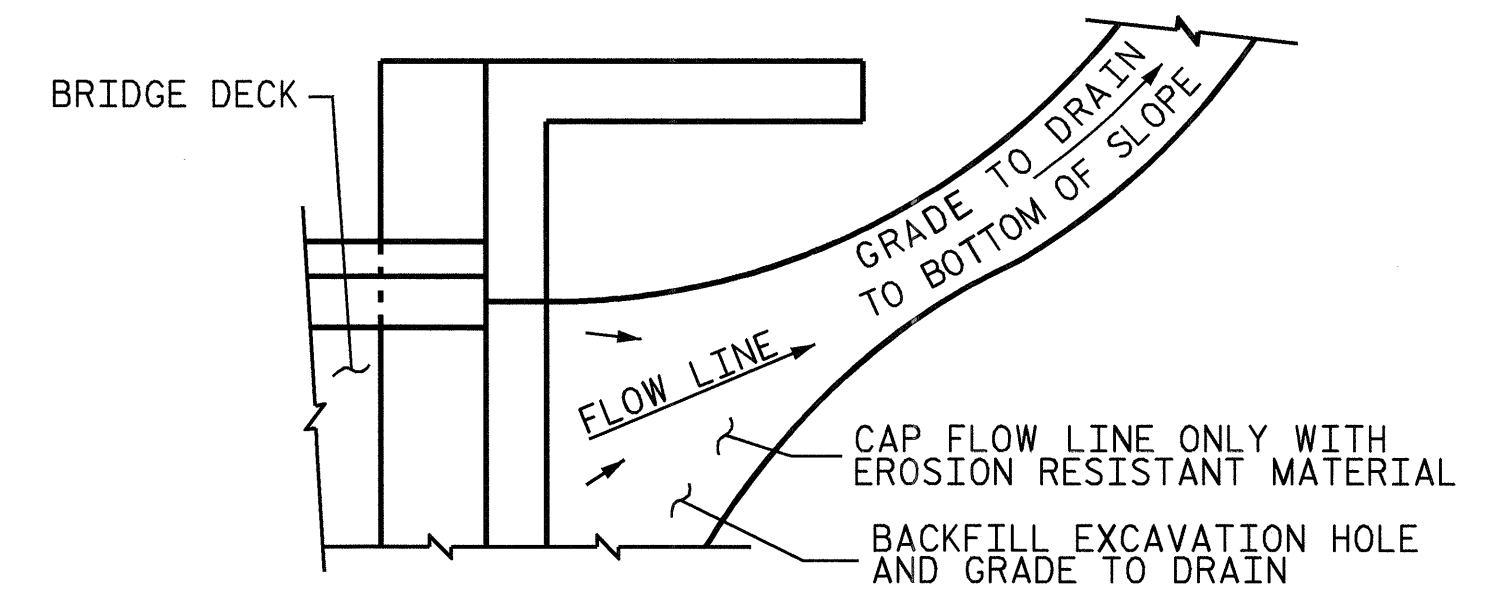
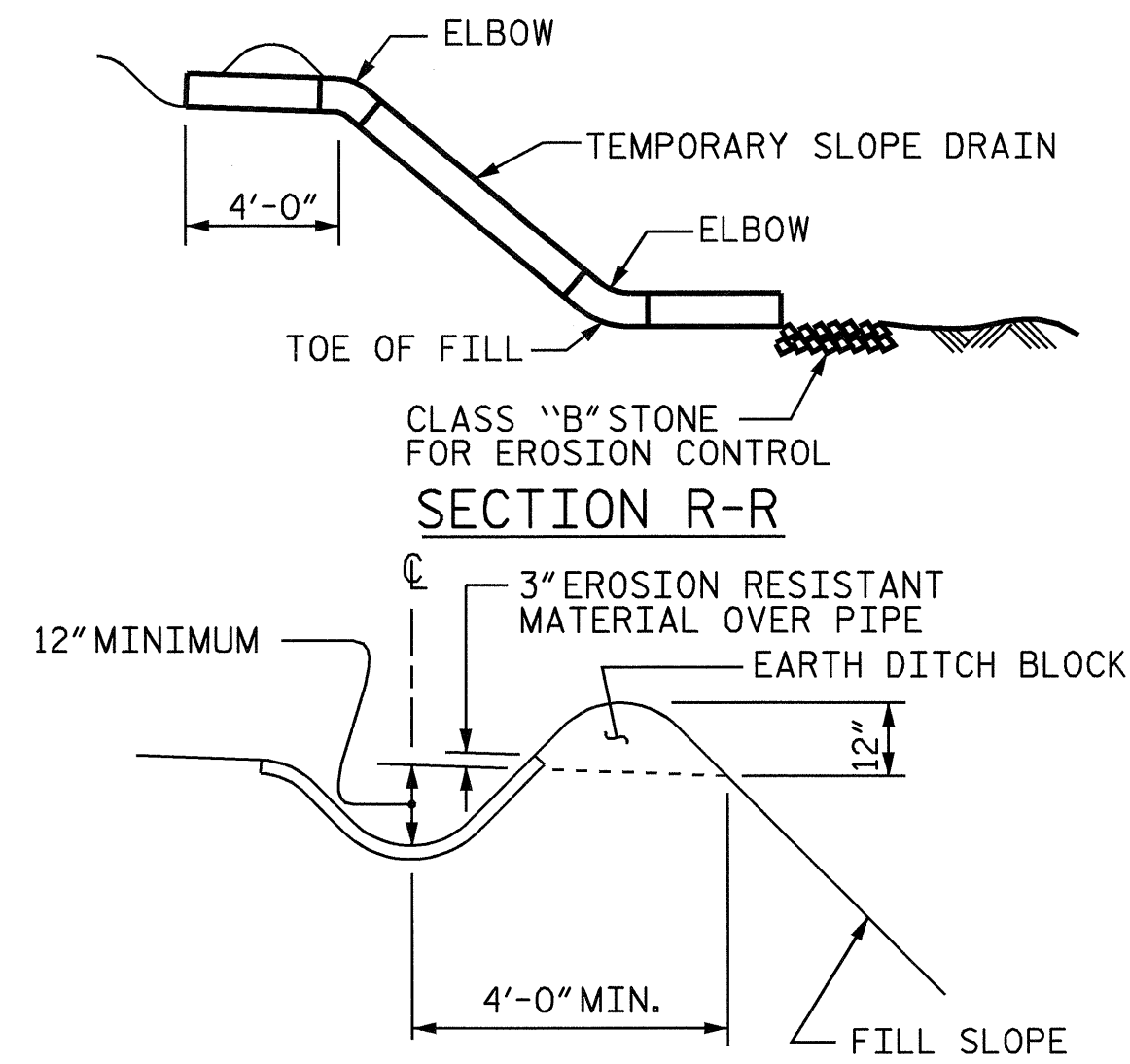
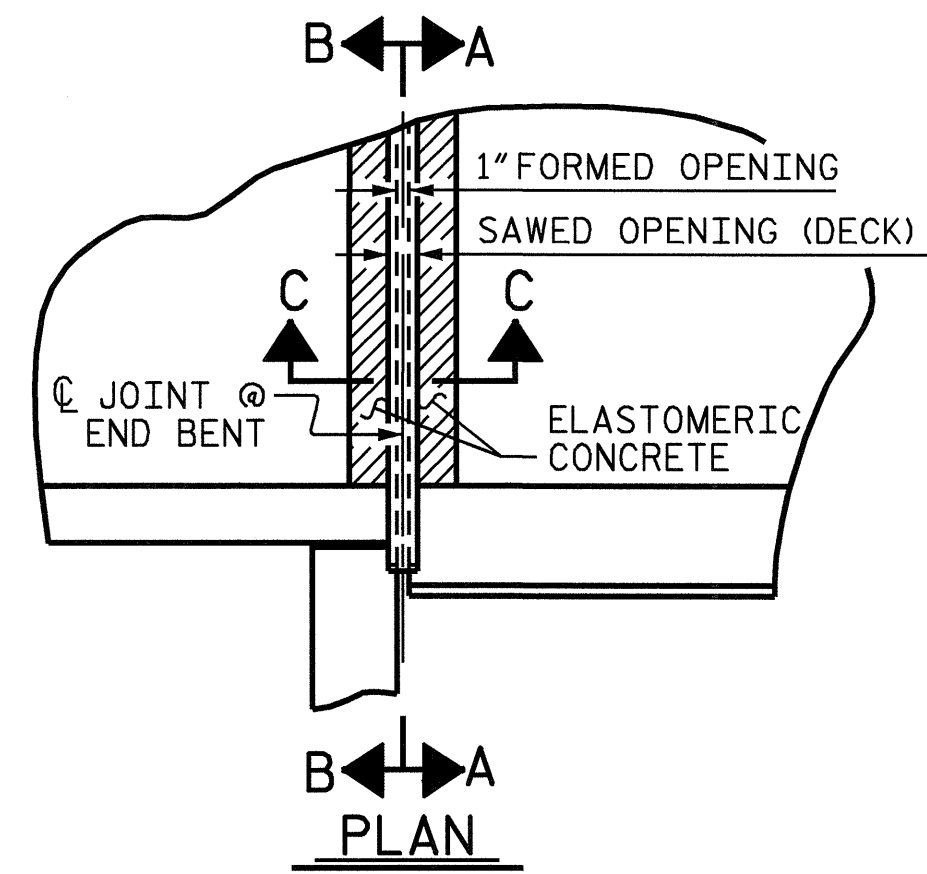
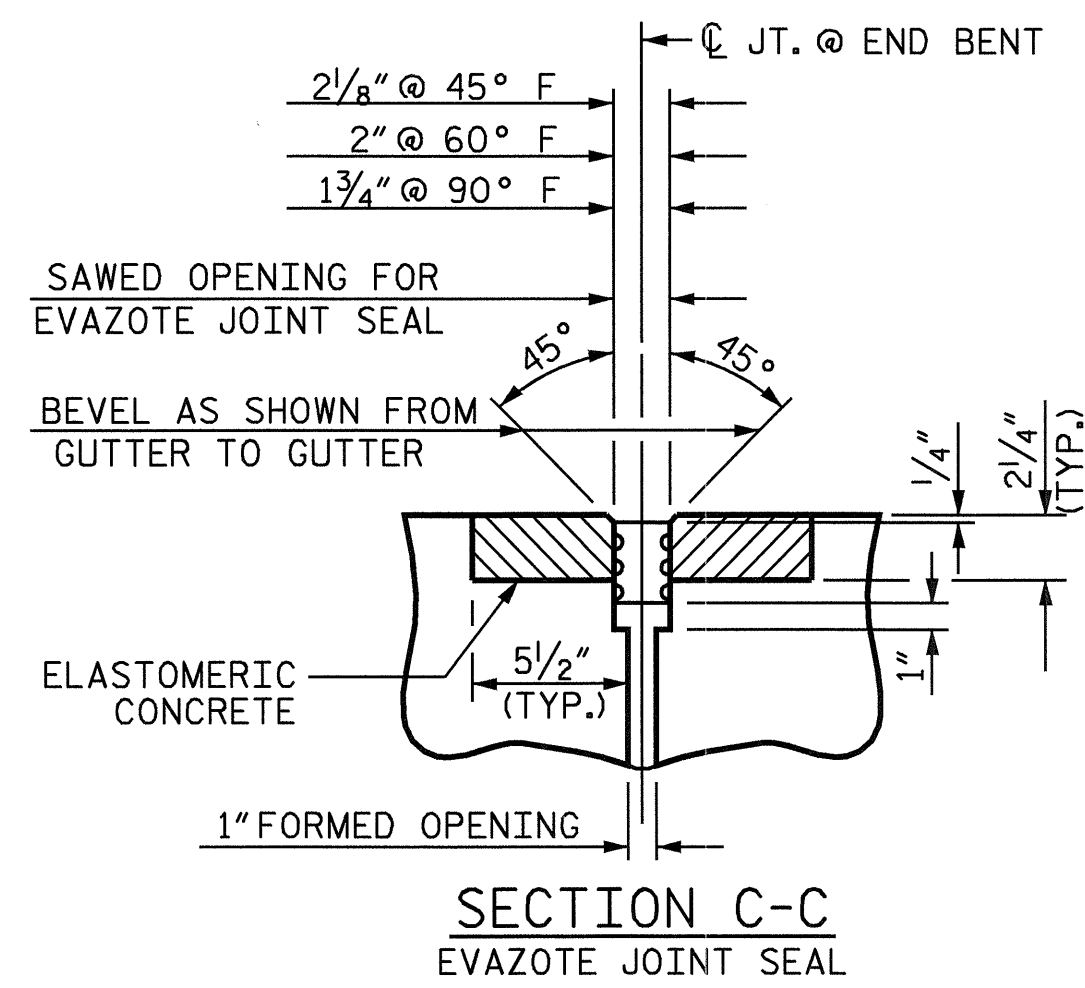
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 BRIDGE APPROACH SLAB
 FOR FLEXIBLE PAVEMENT

MAR. 1995

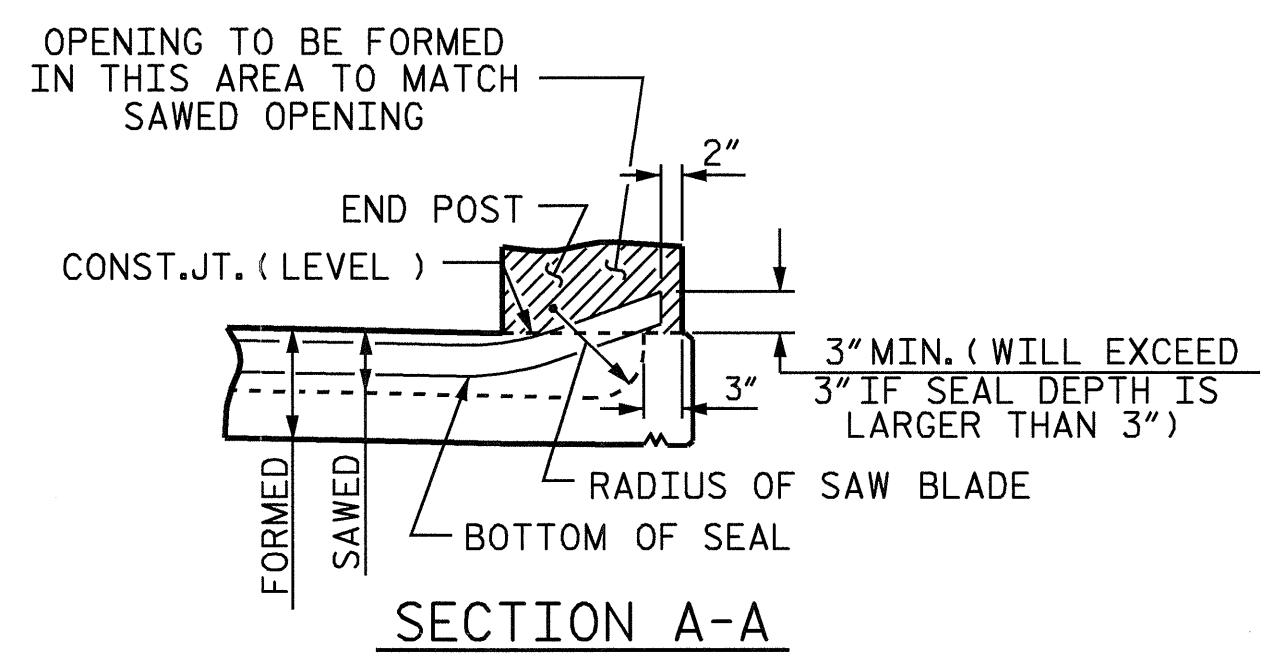
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NO.	BY:	DATE:	NO.	BY:	DATE:
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2			4		

SHEET NO. S-60
 TOTAL SHEETS 64

ASSEMBLED BY: J. LAMBERT DATE: 11/05
 CHECKED BY: L.L. MURPHY DATE: 12/05
 DRAWN BY: EEM 3/95 REV. 10/17/00 RWW/LES
 CHECKED BY: VAP 3/95 REV. 7/10/01 LES/RDR
 REV. 5/7/03RR RWW/JTE

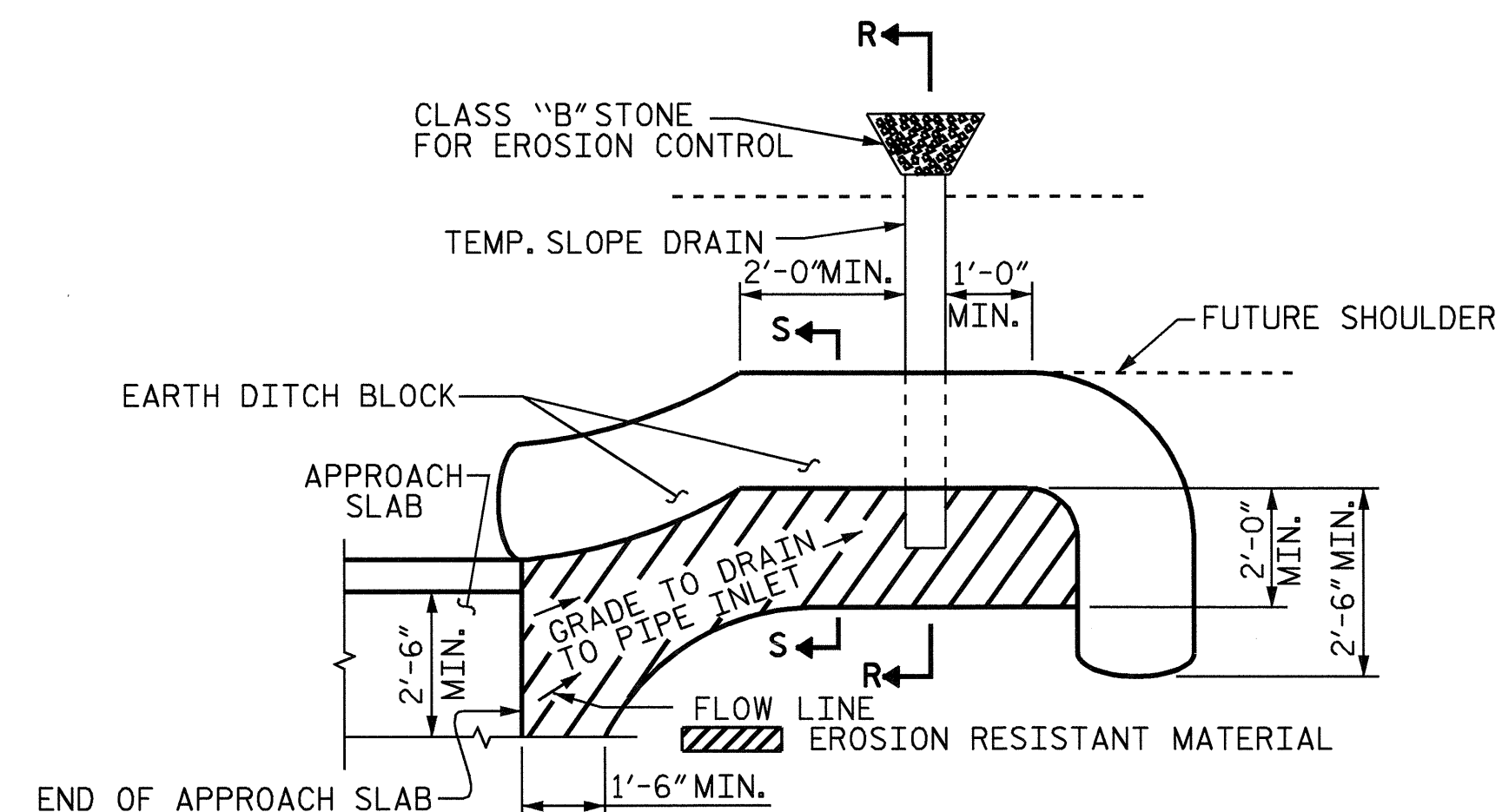
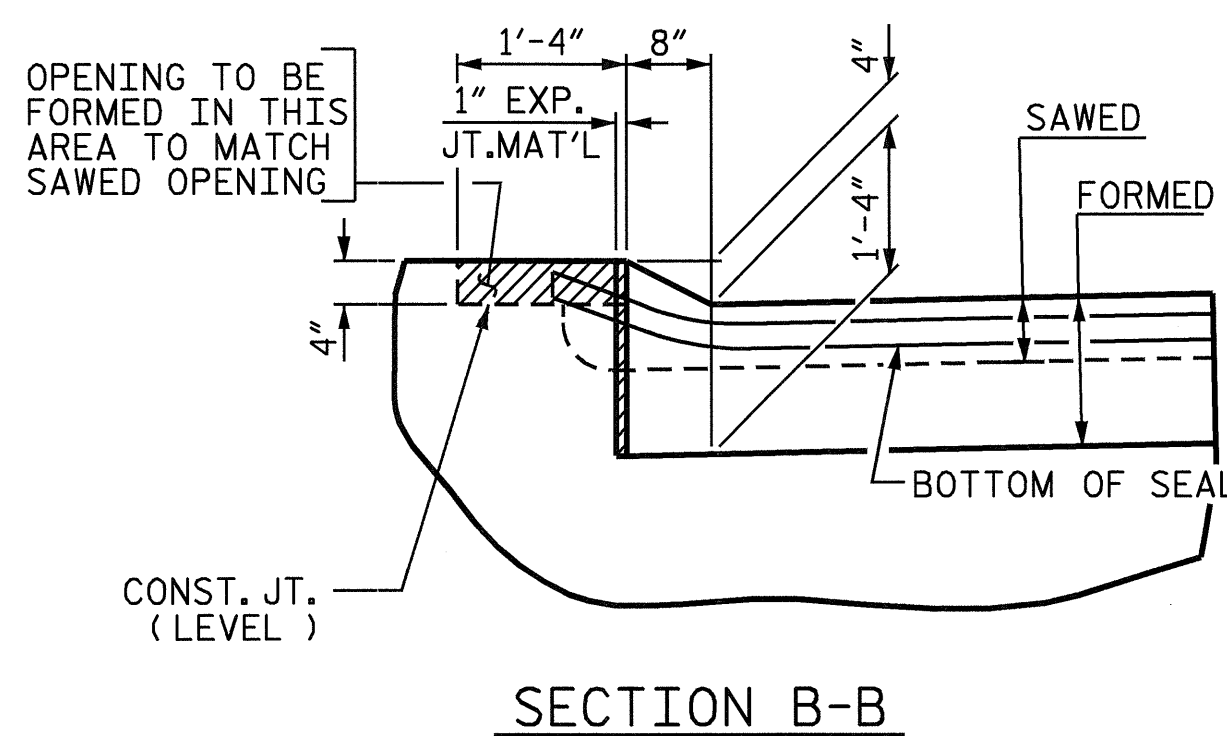


NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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



ELASTOMERIC CONCRETE	
END BENT No.	ELASTOMERIC CONCRETE * (CU. FT.)
1	5.2
2	5.2
TOTAL	10.4

* BASED ON THE MINIMUM BLOCKOUT SHOWN



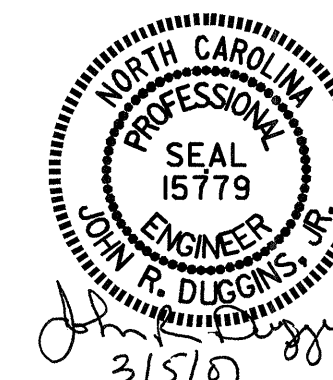
NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

JOINT SEAL DETAILS @ END BENT

TEMPORARY BERM AND SLOPE DRAIN DETAILS

ASSEMBLED BY : J. LAMBERT DATE : 11/05
 CHECKED BY : L.L. MURPHY DATE : 12/05
 DRAWN BY : FCJ 11/88 MAB/LES
 CHECKED BY : ARB 11/88 REV. 10/17/00 RWW/LES
 REV. 8/16/99 MAB/LES
 REV. 5/7/03 RWW/JTE

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PROJECT NO. B-4223
PENDER COUNTY
 STATION: 33+52.00 -L-

SHEET 2 OF 2

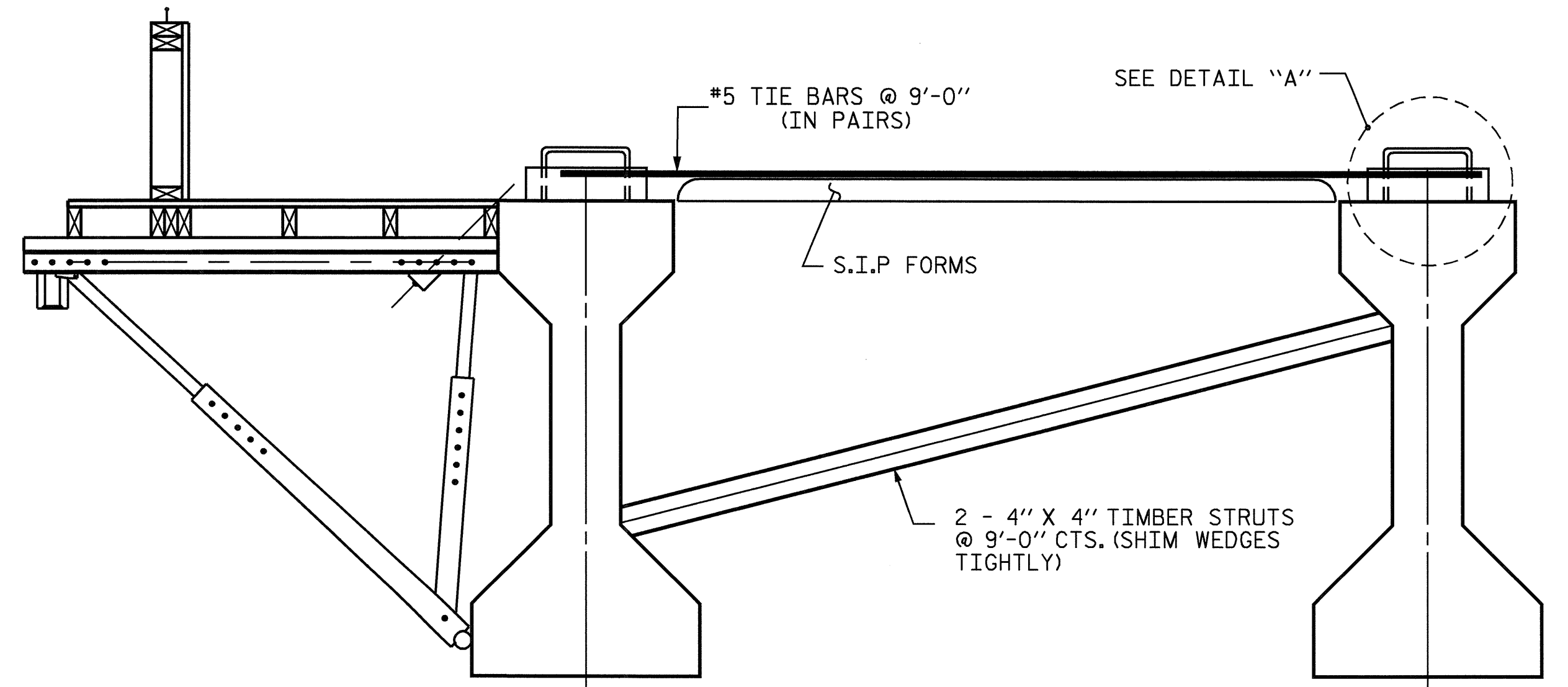
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD

BRIDGE APPROACH
 SLAB DETAILS

REVISIONS						1988	
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.	
1			3			S-61	
2			4			TOTAL SHEETS	
						64	

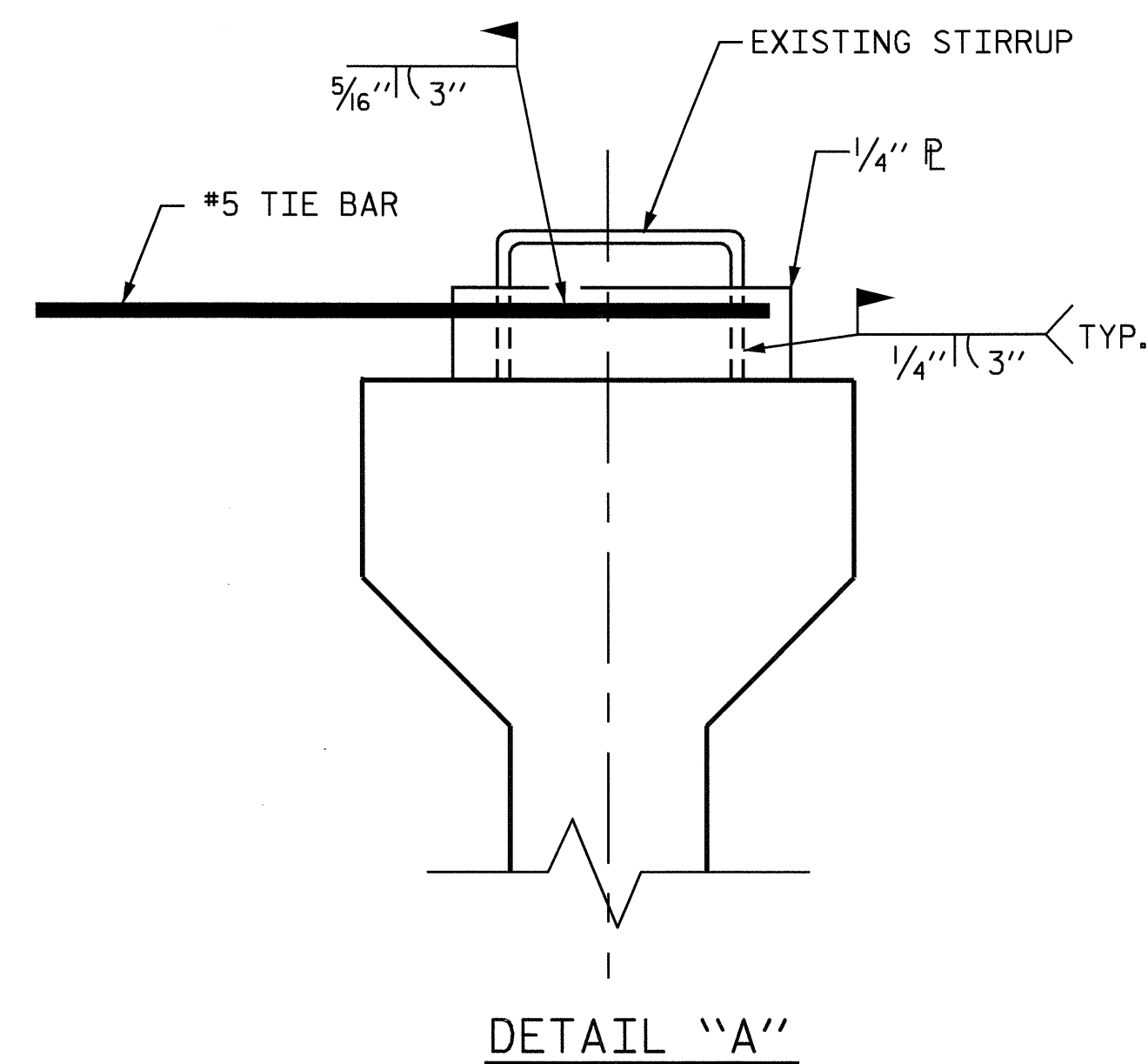
STD. NO. BAS10



EXTERIOR GIRDER

INTERIOR GIRDER

DETAIL OF REQUIRED OVERHANG FALSEWORK BRACING SYSTEM



DETAIL "A"

NOTES:

EACH #5 TIE BAR SHALL BE WELDED TO ONE STIRRUP LOOP AS SHOWN IN DETAIL "A". #5 TIE BARS SHALL BE WELDED TO TWO ADJACENT STIRRUPS OF THE EXTERIOR GIRDER AND THE ADJACENT INTERIOR GIRDER BETWEEN PERMANENT DIAPHRAGMS. WELD STEEL PLATES IN BETWEEN THE TIE BARS AND THE STIRRUP LOOP. WELDING TWO TIE BARS TO THE SAME STIRRUP LOOP SHALL NOT BE PERMITTED.

MAXIMUM SPACING BETWEEN THE BRACING (TIE BARS-TIMBER STRUT) IS 9'-0" CTS. #5 TIE BARS SHALL BE LOCATED OVER A TIMBER STRUT.

INSTALL TIE BARS AND TIMBER STRUTS PRIOR TO PLACEMENT OF CONCRETE OR SCREED WEIGHT ONTO THE OVERHANG FALSEWORK.

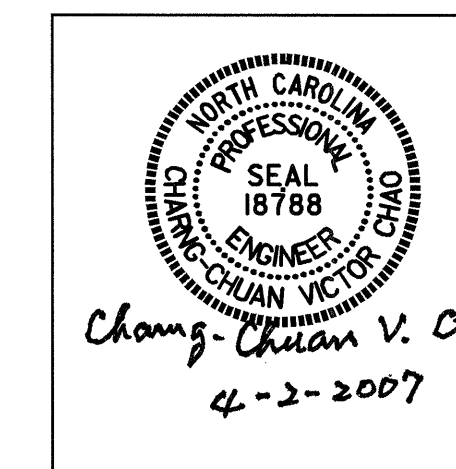
PROJECT NO. B-4223
PENDER COUNTY
 STATION: 33+52.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD OVERHANG FALSEWORK

AASHTO TYPES
 III, IV, V, AND VI



DRAWN BY: R. WRIGHT 06/04 DATE : _____
 CHECKED BY: C. V. CHAO 06/04 DATE : _____

02-APR-2007 11:07
 D:\wdir\Victor\OverhangFalsework\TIEBAR&STRUT\B-4223.TYPE_IV\B4223OverHangSheets.dgn
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			5-6A
2			4			TOTAL SHEETS 6A

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

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

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

CONCRETE:

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

CONCRETE CHAMFERS:

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

DOWELS:

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

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

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

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

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

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

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

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

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

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

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

HANDRAILS AND POSTS:

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

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

SPECIAL NOTES:

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

ENGLISH

JANUARY, 1990