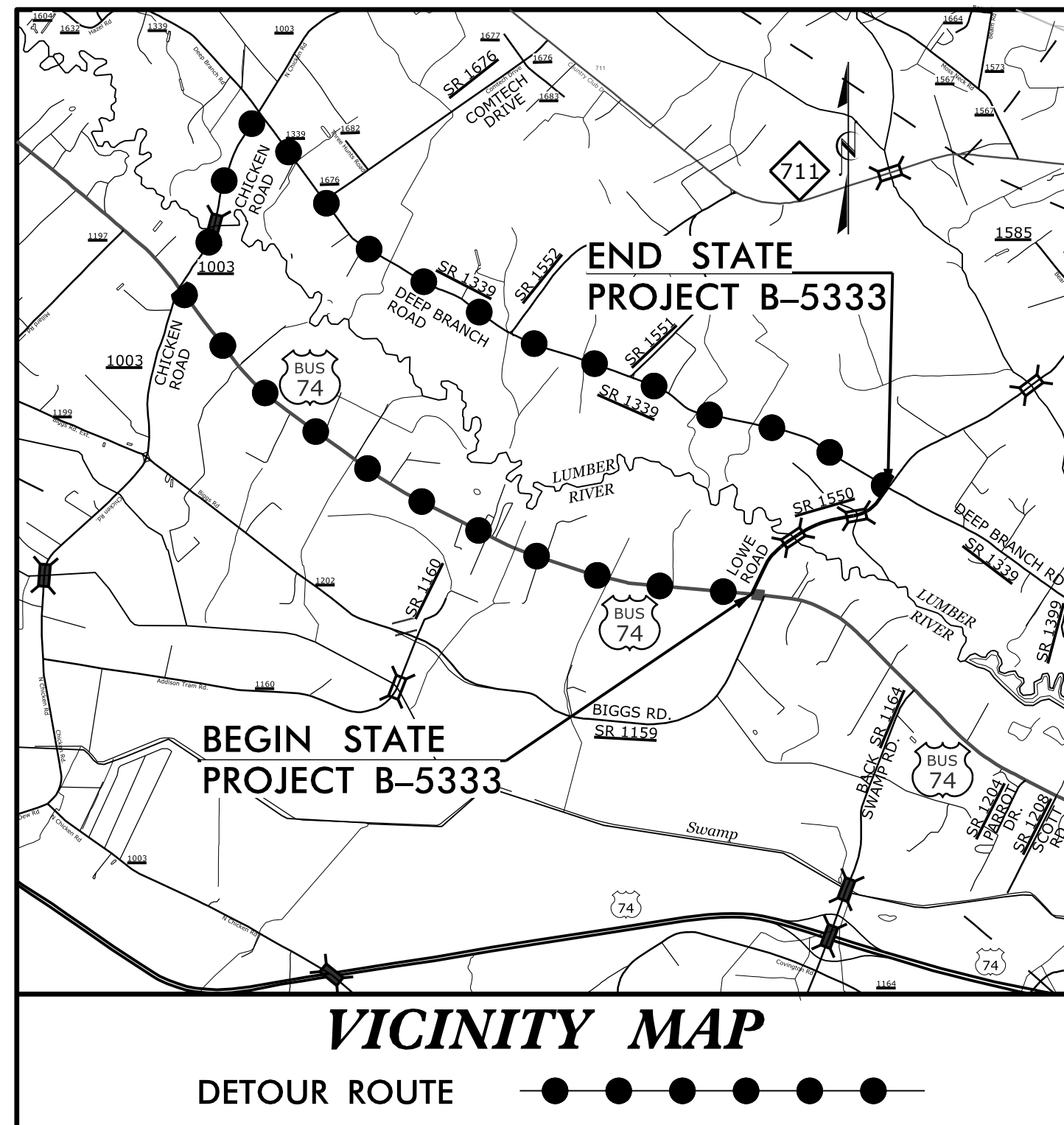


TIP PROJECT: B-5333



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

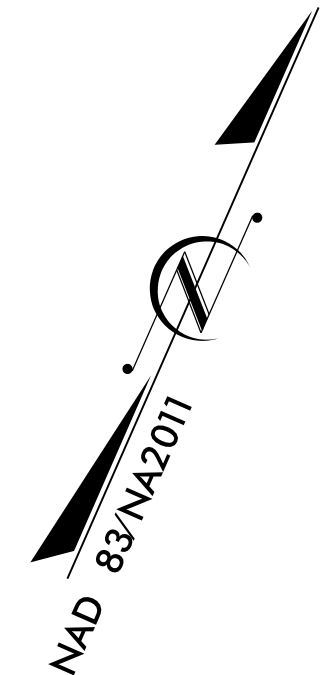
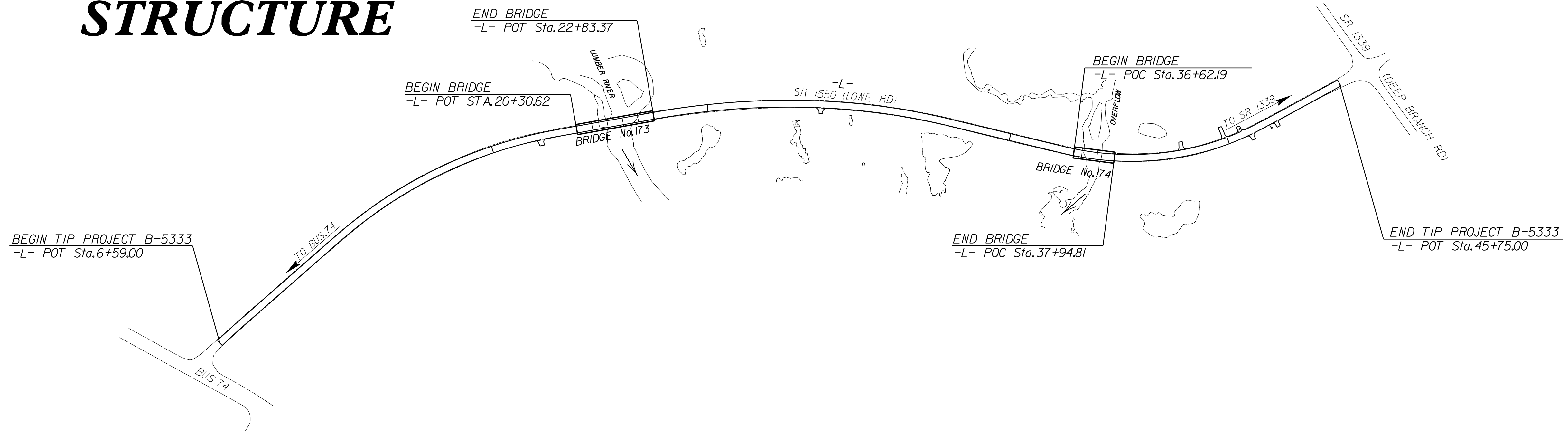
ROBESON COUNTY

**LOCATION: BRIDGE NO. 173 OVER LUMBER RIVER AND
BRIDGE NO. 174 OVER OVERFLOW ON SR 1550 (LOWE ROAD)**

**TYPE OF WORK: GRADING, PAVING, RESURFACING, DRAINAGE,
AND STRUCTURES**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5333	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
46047.1.1	BRZ-1550(2)	P.E.	

STRUCTURE



CONTRACT:

DESIGN DATA

ADT 2017 =	1,700
ADT 2037 =	2,300
K =	9 %
D =	60 %
T =	6 % *
V =	60 MPH
* TTST =	1% DUAL 5%
FUNC CLASS =	MINOR COLLECTOR
	SUB REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-5333 =	0.669 MILES
LENGTH STRUCTURE TIP PROJECT B-5333 =	0.073 MILES
TOTAL LENGTH TIP PROJECT B-5333 =	0.742 MILES

NCDOT CONTACT: REKHA PATEL, P.E.
NCDOT TPMU

PLANS PREPARED FOR NCDOT BY:

Dewberry
2601 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: MARCH 18, 2016
LETTING DATE: MARCH 21, 2017

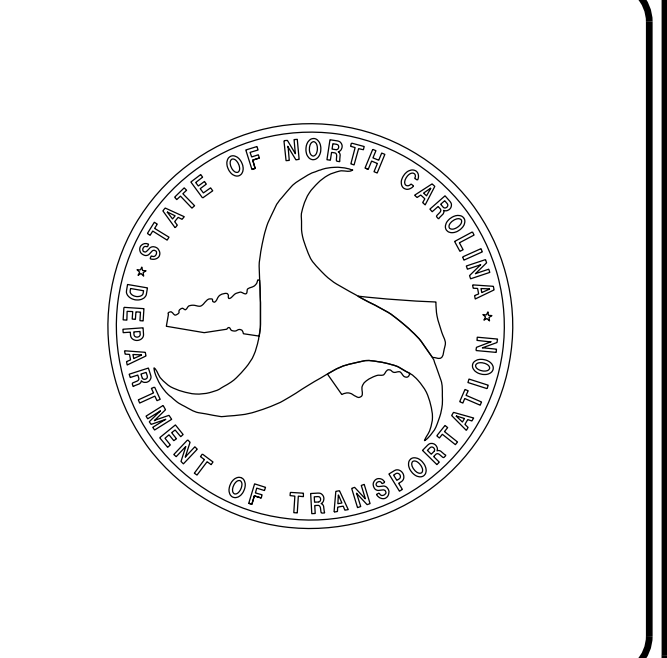
LLOYD M. PEARSON, P.E.
PROJECT ENGINEER

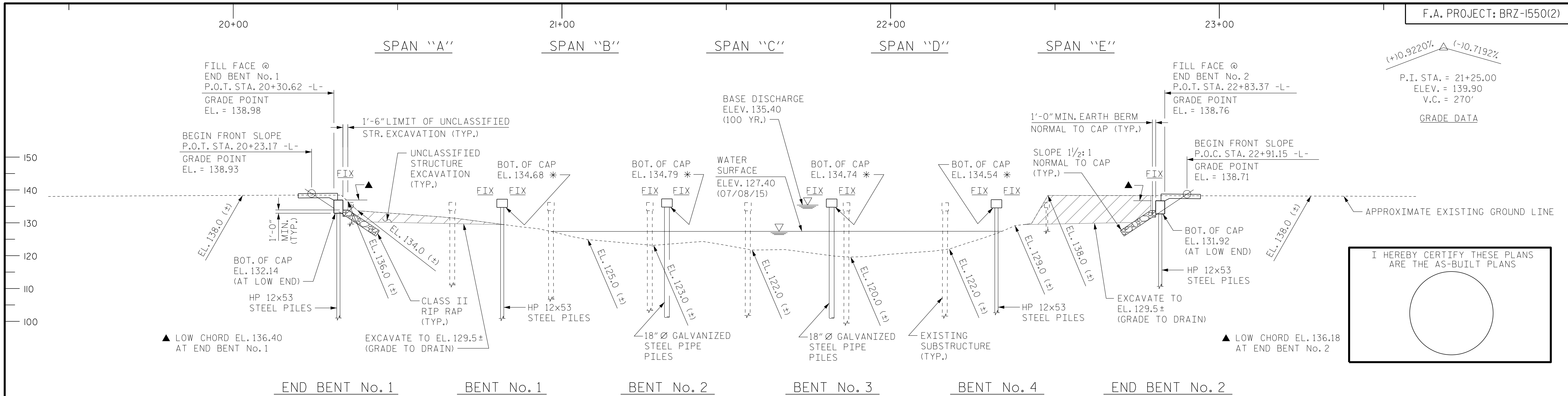
JENNIFER R. McROY, P.E.
PROJECT DESIGN ENGINEER

BRIDGE ENGINEER

DocuSigned by:
Jennifer R. McRoy 6/6/2016
E1114C791288475
SIGNATURE: _____ P.E.

SEAL
032076
ENGINEER
JENNIFER R. McROY





I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

HORIZONTAL CURVE DATA -L-

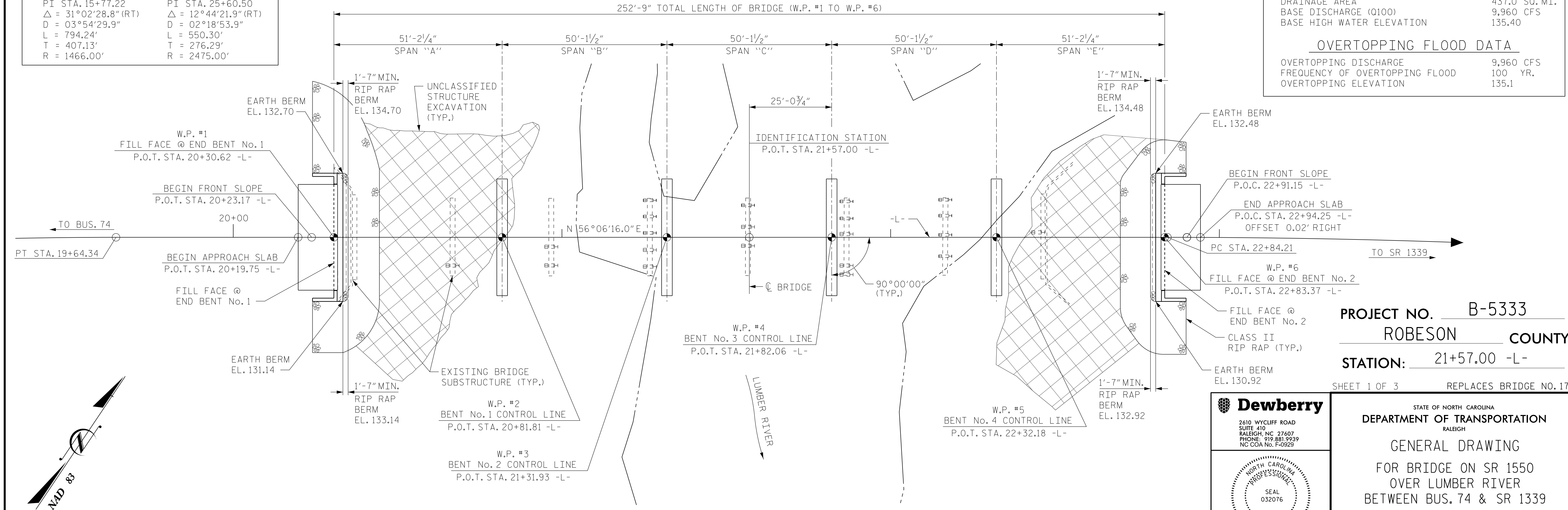
PI STA. 15+77.22	PI STA. 25+60.50
Δ = 31°02'28.8" (RT)	Δ = 12°44'21.9" (RT)
D = 03°54'29.9"	D = 02°18'53.9"
L = 794.24'	L = 550.30'
T = 407.13'	T = 276.29'
R = 1466.00'	R = 2475.00'

HYDRAULIC DATA

DESIGN DISCHARGE	7,120 CFS
FREQUENCY OF DESIGN DISCHARGE	25 YR.
DESIGN HIGH WATER ELEVATION	134.3
DRAINAGE AREA	437.0 SQ. MI.
BASE DISCHARGE (Q100)	9,960 CFS
BASE HIGH WATER ELEVATION	135.40

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	9,960 CFS
FREQUENCY OF OVERTOPPING FLOOD	100 YR.
OVERTOPPING ELEVATION	135.1



PROJECT NO. **B-5333**
ROBESON COUNTY
STATION: **21+57.00 -L-**
SHEET 1 OF 3 REPLACES BRIDGE NO. 173

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

SEAL
032076

ENGINEER
JENNIFER R. MCKAY

DocuSigned by:
Jennifer R. McKay
6/6/2016
E1114C79128475...

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON SR 1550
OVER LUMBER RIVER
BETWEEN BUS. 74 & SR 1339
30'-10" CLEAR ROADWAY - 90° SKEW

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

SHEET No. **S01-1**
TOTAL SHEETS 24

DRAWN BY: MTB DATE: 04/16
CHECKED BY: JRM DATE: 04/16

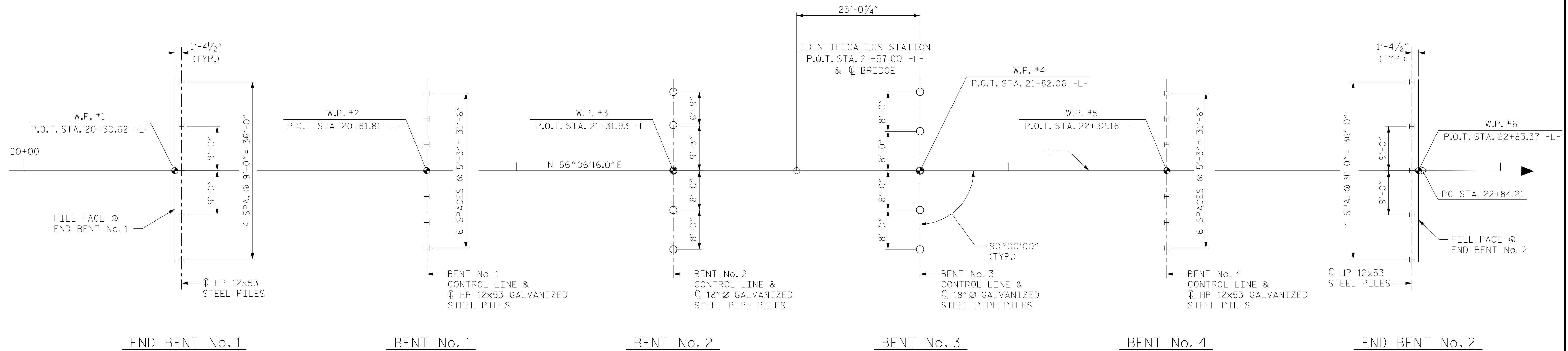
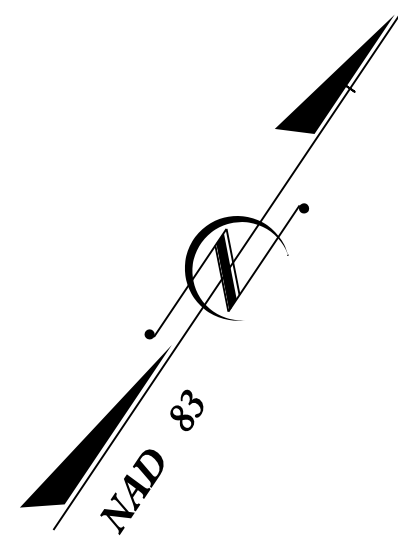
6/2/2016 8:11:58 AM 1:3 GPE.dgn
USER: mckayj

NOTES:

PILE DIMENSIONS ARE SHOWN TO THE CENTERLINE OF THE PILES.
 FOR PILES, SEE GEOTECHNICAL SPECIAL PROVISIONS AND SECTION 450 OF THE STANDARD SPECIFICATIONS.
 PILES AT END BENT No.1 AND END BENT No.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 105 TONS PER PILE.
 DRIVE PILES AT END BENT No.1 AND END BENT No.2 TO A REQUIRED DRIVING RESISTANCE OF 175 TONS PER PILE.
 PILES AT BENT No.1 AND BENT No.4 ARE DESIGNED FOR A FACTORED RESISTANCE OF 105 TONS PER PILE.
 DRIVE PILES AT BENT No.1 AND BENT No.4 TO A REQUIRED DRIVING RESISTANCE OF 175 TONS PER PILE.
 PILES AT BENT No.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 165 TONS PER PILE.
 DRIVE PILES AT BENT No.2 TO A REQUIRED DRIVING RESISTANCE OF 275 TONS PER PILE.
 PILES AT BENT No.3 ARE DESIGNED FOR A FACTORED RESISTANCE OF 155 TONS PER PILE.
 DRIVE PILES AT BENT No.3 TO A REQUIRED DRIVING RESISTANCE OF 260 TONS PER PILE.
 TESTING PILES WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING MAY BE REQUIRED AT END BENT Nos.1 AND 2, AND AT BENT Nos.1 AND 4. THE ENGINEER WILL DETERMINE THE NEED FOR PDA TESTING. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

NOTES: (CONT'D.)

TESTING THE FIRST PRODUCTION PILE WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING IS REQUIRED AT BENT No.2 OR BENT No.3. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
 IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 60,000 TO 100,000 FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT BENT Nos.2 AND 3. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.
 INSTALL PILES AT BENT No.1 TO A TIP ELEVATION NO HIGHER THAN 104 FEET.
 INSTALL PILES AT BENT No.2 TO A TIP ELEVATION NO HIGHER THAN 97 FEET.
 INSTALL PILES AT BENT No.3 TO A TIP ELEVATION NO HIGHER THAN 90 FEET.
 INSTALL PILES AT BENT No.4 TO A TIP ELEVATION NO HIGHER THAN 103 FEET.
 PIPE PILE PLATES ARE REQUIRED FOR STEEL PIPE PILES AT BENT Nos.2 AND 3. USE PIPE PILE PLATES WITH A DIAMETER EQUAL TO THE PIPE PILE DIAMETER. FOR STEEL PIPE PILE PLATES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
 THE SCOUR CRITICAL ELEVATION FOR BENT No.1 IS ELEVATION 124.0 FEET. THE SCOUR CRITICAL ELEVATION FOR BENT No.2 IS ELEVATION 118.0 FEET. THE SCOUR CRITICAL ELEVATION FOR BENT No.3 IS ELEVATION 114.0 FEET. THE SCOUR CRITICAL ELEVATION FOR BENT No.4 IS ELEVATION 121.0 FEET. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.



FOUNDATION LAYOUT

PROJECT NO. B-5333
ROBESON COUNTY
 STATION: 21+57.00 -L-

SHEET 2 OF 3 REPLACES BRIDGE NO. 173

6/2/2016 8:42:37 AM 173_FOUNDLAY.dgn USER: mbelisle

DRAWN BY : MTB DATE : 04/16
 CHECKED BY : JRM DATE : 04/16

Dewberry
 2610 WYCLIFF ROAD
 SUITE 410
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 NC COA No. F-0929

STATE OF NORTH CAROLINA
 PROFESSIONAL ENGINEER
 SEAL
 032076
 JENNIFER R. MCKAY

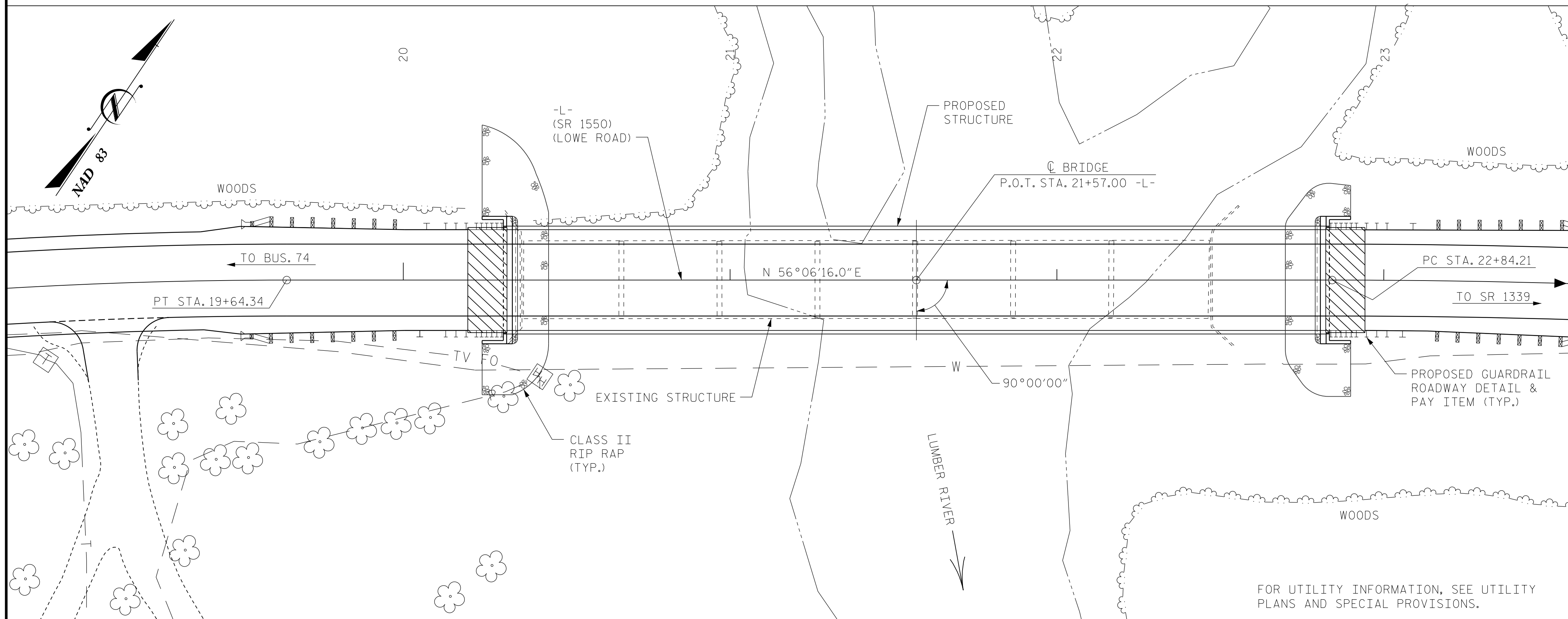
DocuSigned by:
 Jennifer R. McKay 6/6/2016
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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE ON SR 1550
 OVER LUMBER RIVER
 BETWEEN BUS. 74 & SR 1339
 30'-10" CLEAR ROADWAY - 90° SKEW

REVISIONS						SHEET No. S01-2
No.	BY:	DATE:	No.	BY:	DATE:	
1			3			TOTAL SHEETS 24
2			4			

BENCH MARK: BM#80
 -L- STATION 14+86.25, 62.80' LEFT
 ELEV. = 132.74', NAD 83/NA 2011 (N: 317247 E: 1958451)



LOCATION SKETCH

NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
 THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
 THIS BRIDGE IS LOCATED IN SEISMIC ZONE 2.
 THE EXISTING STRUCTURE CONSISTING OF 7 SPANS (1 @ 30'-6", 5 @ 30'-0", AND 1 @ 30'-6") WITH A SUPERSTRUCTURE CONSISTING OF PRESTRESSED CONCRETE CHANNELS WITH A 24'± CLEAR ROADWAY WIDTH ON CONCRETE CAPS AND TIMBER PILES WITH STEEL CRUTCHBENTS AND LOCATED AT EXISTING CROSSING FOR PROPOSED STRUCTURE, SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 40.6 FT± EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

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

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED 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.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 21+57.00".

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

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

NOTES (CONT'D.):

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
 FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
 FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
 FOR ASBESTOS ASSESSMENT, SEE SPECIAL PROVISIONS.

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE AT STA. 21+57.00 -L-	PDA TESTING	UNCLASSIFIED STRUCTURE EXCAVATION AT STA. 21+57.00 -L-	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	HP 12x53 STEEL PILES	HP 12x53 GALVANIZED STEEL PILES	PP 18x0.50 GALVANIZED STEEL PILES	PIPE PILE PLATES	
	LUMP SUM	EACH	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	NO.	LIN. FT.	NO.	LIN. FT.	EACH
SUPERSTRUCTURE					LUMP SUM						
END BENT No. 1			LUMP SUM	21.6		3257	5	260			
BENT No. 1				10.7		2124		7	462		
BENT No. 2				10.1		2137			5	405	
BENT No. 3				10.1		2137			5	380	
BENT No. 4				10.7		2124		7	392		
END BENT No. 2			LUMP SUM	21.6		3257	5	285			
TOTAL	LUMP SUM	2	LUMP SUM	84.8	LUMP SUM	15036	24	545	14	854	10

TOTAL BILL OF MATERIAL (CONT'D.)

PILE REDRIVES	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" x 1'-9" PRESTRESSED CONCRETE CORED SLAB UNIT	ASBESTOS ASSESSMENT
EACH	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	NO.	LIN. FT.
	501.25			LUMP SUM	55	2750
3		132	142			
3						
3						
3						
3		102	108			
18	501.25	234	250	LUMP SUM	55	2750

PROJECT NO. B-5333
ROBESON COUNTY
STATION: 21+57.00 -L-

SHEET 3 OF 3 REPLACES BRIDGE NO. 173

Dewberry
 2610 WYCLIFF ROAD
 SUITE 410
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 NC COA No. F-0929



DocuSigned by:
 Jennifer R. McCoy 6/6/2016
 E114791288475...

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE ON SR 1550
 OVER LUMBER RIVER
 BETWEEN BUS. 74 & SR 1339
 30'-10" CLEAR ROADWAY - 90° SKEW

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	S01-3
1			3			TOTAL SHEETS
2			4			24

6/2/2016 8:53:38 AM 173.LOC.dgn USER: modelisle

DRAWN BY : MTB DATE : 04/16
 CHECKED BY : JRM DATE : 04/16

LOAD AND RESISTANCE FACTOR RATING (LRFD) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93(Inv)	N/A	1	1.394	--	1.75	0.276	1.57	50'	EL	24.5	0.531	1.39	50'	EL	2.45	0.80	0.276	1.44	50'	EL	24.5		
	HL-93(Opr)	N/A	--	1.807	--	1.35	0.276	2.03	50'	EL	24.5	0.531	1.81	50'	EL	2.45	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	2	1.667	60.007	1.75	0.276	1.95	50'	EL	24.5	0.531	1.67	50'	EL	2.45	0.80	0.276	1.79	50'	EL	24.5		
	HS-20(Opr)	36.000	--	2.161	77.787	1.35	0.276	2.52	50'	EL	24.5	0.531	2.16	50'	EL	2.45	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	3.635	49.079	1.4	0.276	4.95	50'	EL	24.5	0.531	4.7	50'	EL	2.45	0.80	0.276	3.64	50'	EL	24.5	
		SNGARBS2	20.000	--	2.871	57.42	1.4	0.276	3.91	50'	EL	24.5	0.531	3.42	50'	EL	2.45	0.80	0.276	2.87	50'	EL	24.5	
		SNAGRIS2	22.000	--	2.778	61.109	1.4	0.276	3.78	50'	EL	19.6	0.531	3.21	50'	EL	2.45	0.80	0.276	2.78	50'	EL	24.5	
		SNCOTTS3	27.250	--	1.814	49.418	1.4	0.276	2.47	50'	EL	24.5	0.531	2.36	50'	EL	2.45	0.80	0.276	1.81	50'	EL	24.5	
		SNAGGRS4	34.925	--	1.577	55.063	1.4	0.276	2.15	50'	EL	24.5	0.531	2.01	50'	EL	2.45	0.80	0.276	1.58	50'	EL	24.5	
		SNS5A	35.550	--	1.537	54.657	1.4	0.276	2.09	50'	EL	24.5	0.531	2.07	50'	EL	2.45	0.80	0.276	1.54	50'	EL	24.5	
		SNS6A	39.950	--	1.438	57.43	1.4	0.276	1.96	50'	EL	24.5	0.531	1.91	50'	EL	2.45	0.80	0.276	1.44	50'	EL	24.5	
	TTST	SNS7B	42.000	--	1.370	57.54	1.4	0.276	1.87	50'	EL	24.5	0.531	1.91	50'	EL	2.45	0.80	0.276	1.37	50'	EL	24.5	
		TNAGRIT3	33.000	--	1.761	58.118	1.4	0.276	2.4	50'	EL	24.5	0.531	2.25	50'	EL	2.45	0.80	0.276	1.76	50'	EL	24.5	
		TNT4A	33.075	--	1.777	58.759	1.4	0.276	2.42	50'	EL	24.5	0.531	2.17	50'	EL	2.45	0.80	0.276	1.78	50'	EL	24.5	
		TNT6A	41.600	--	1.480	61.558	1.4	0.276	2.01	50'	EL	24.5	0.531	2.08	50'	EL	2.45	0.80	0.276	1.48	50'	EL	24.5	
		TNT7A	42.000	--	1.502	63.087	1.4	0.276	2.05	50'	EL	24.5	0.531	1.94	50'	EL	2.45	0.80	0.276	1.50	50'	EL	24.5	
		TNT7B	42.000	--	1.566	65.773	1.4	0.276	2.13	50'	EL	24.5	0.531	1.84	50'	EL	2.45	0.80	0.276	1.57	50'	EL	24.5	
		TNAGRIT4	43.000	--	1.486	63.902	1.4	0.276	2.02	50'	EL	24.5	0.531	1.77	50'	EL	2.45	0.80	0.276	1.49	50'	EL	24.5	
TNAGT5A	45.000	--	1.388	62.47	1.4	0.276	1.89	50'	EL	24.5	0.531	1.8	50'	EL	2.45	0.80	0.276	1.39	50'	EL	24.5			
TNAGT5B	45.000	3	1.360	61.206	1.4	0.276	1.85	50'	EL	24.5	0.531	1.68	50'	EL	2.45	0.80	0.276	1.36	50'	EL	24.5			

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ_{DC}	γ_{DW}
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

- 1.
- 2.
- 3.
- 4.

CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

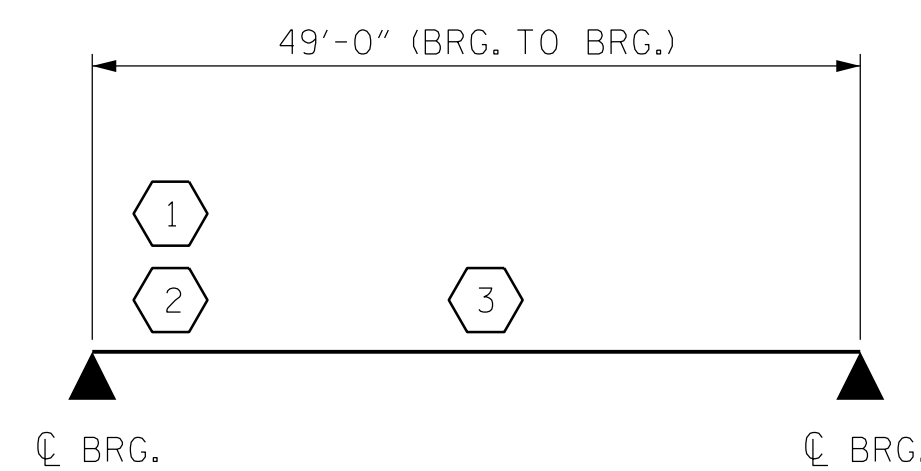
2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER
EL - EXTERIOR LEFT GIRDER
ER - EXTERIOR RIGHT GIRDER



LRFR SUMMARY
FOR SPANS 'A' THRU 'E'

PROJECT NO. B-5333
ROBESON COUNTY
STATION: 21+57.00 -L-

BRIDGE NO. 173

Dewberry
2301 BEXWOODS DRIVE
SUITE 200
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-9929

NORTH CAROLINA
PROFESSIONAL
SEAL
032076
ENGINEER
JENNIFER R. MCKAY

DocuSigned by:
Jennifer R. McKay 6/6/2016
E114C79128475...

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

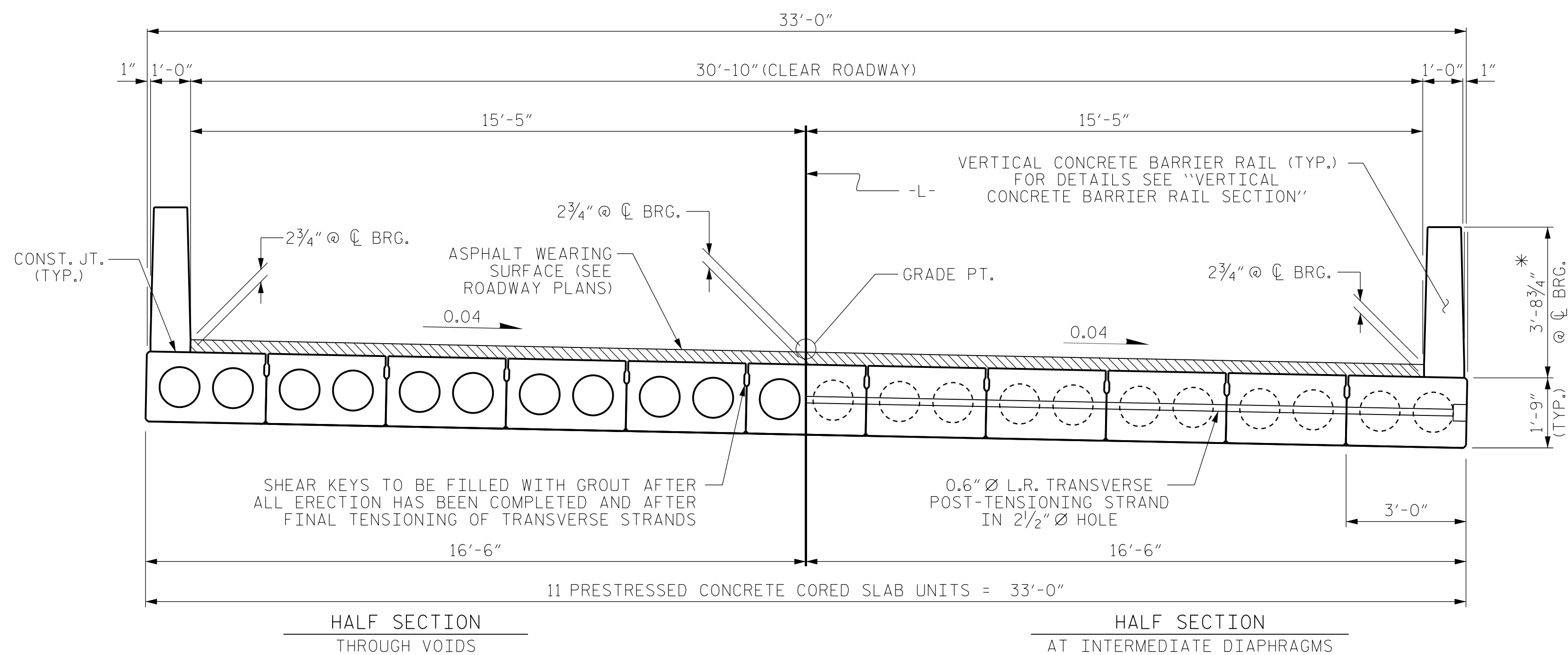
STANDARD
LRFR SUMMARY FOR
50' CORED SLAB UNIT
90° SKEW
(NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	
1			3			S01-4 TOTAL SHEETS 24
2			4			

STD. NO. 21LRFRI-90S-50L

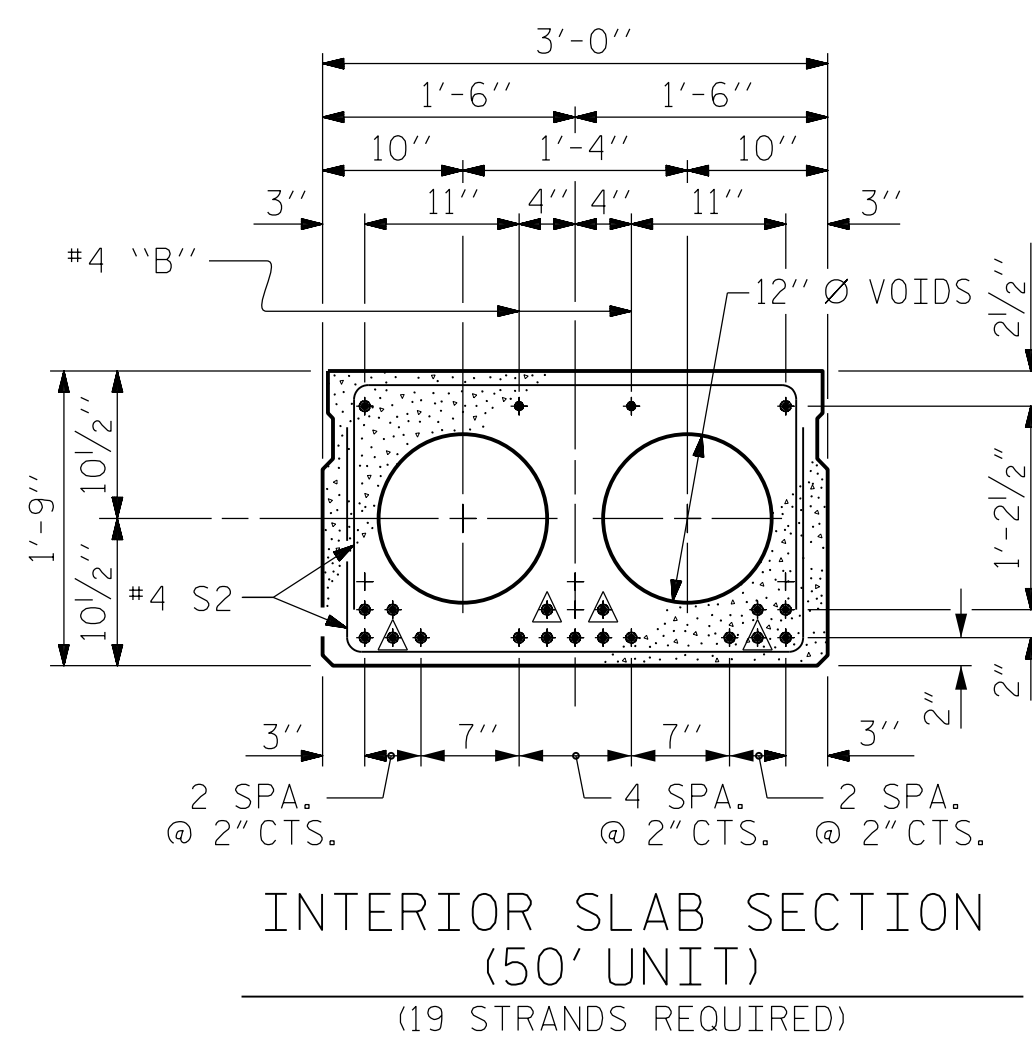
ASSEMBLED BY : MTB	DATE : 04/16
CHECKED BY : JRM	DATE : 04/16
DRAWN BY : CVC 6/10	
CHECKED BY : DNS 6/10	

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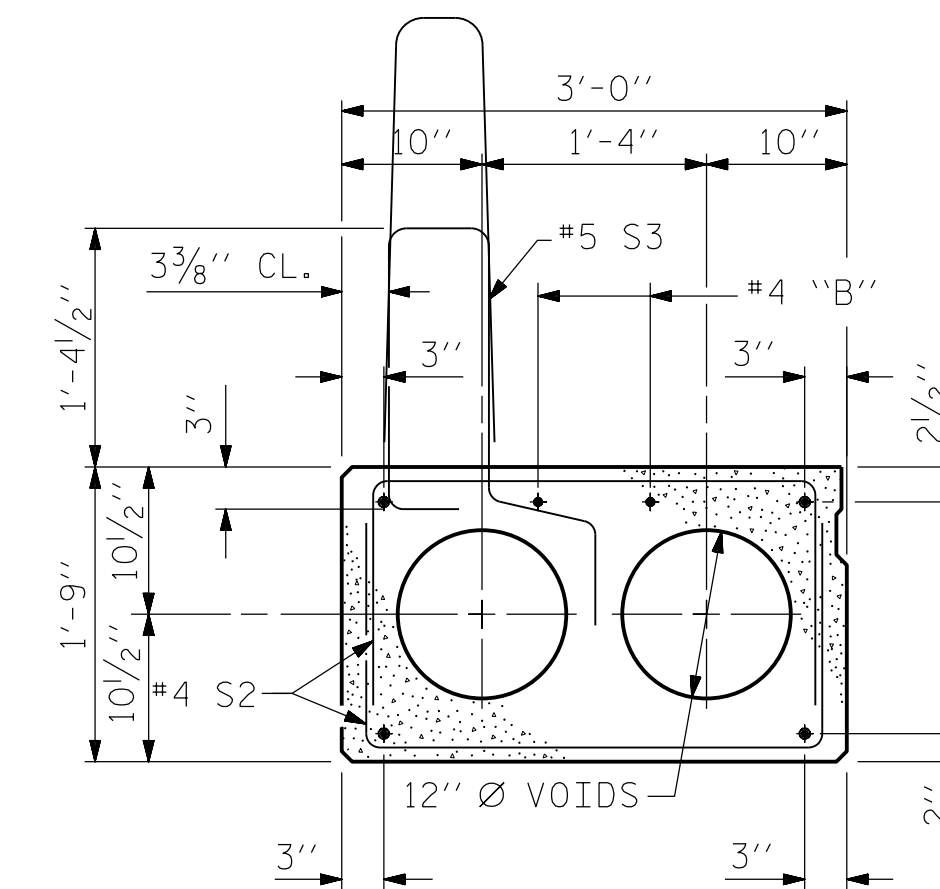


TYPICAL SECTION

* - THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.



0.6" Ø LOW RELAXATION STRAND LAYOUT



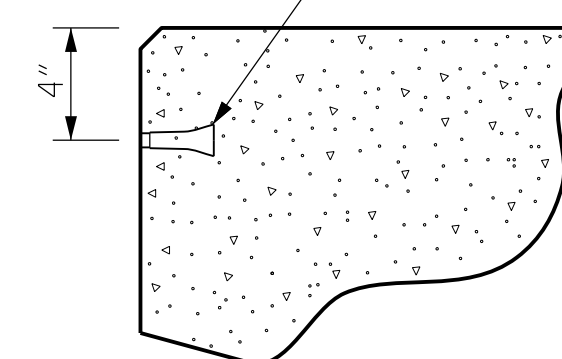
EXT. SLAB SECTION

(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)

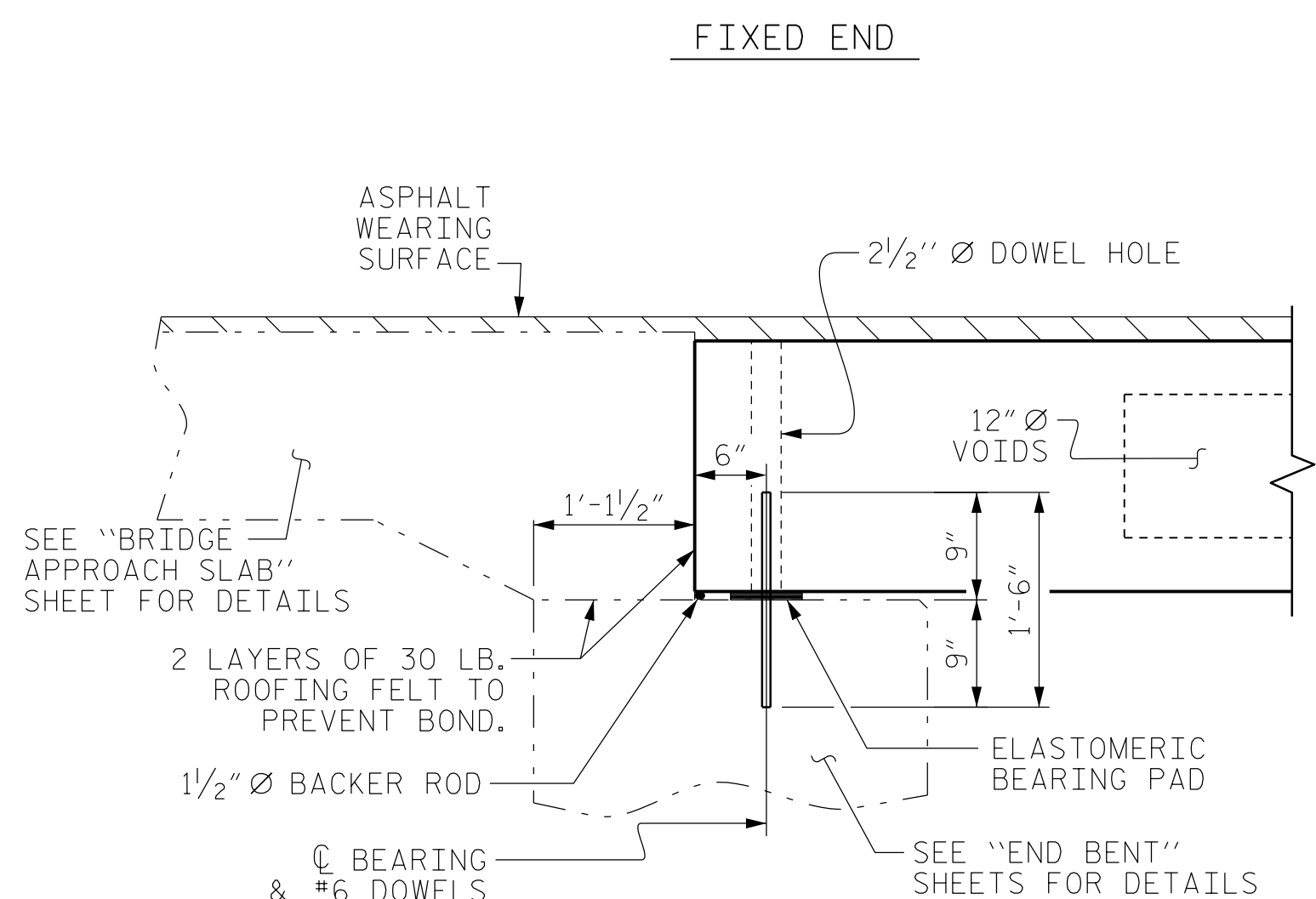
- ⊗ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 6'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.
- ⊙ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 2'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.
- ⊕ OPTIONAL FULL LENGTH DEBONDED STRANDS. THESE STRANDS ARE NOT REQUIRED. IF THE FABRICATOR CHOOSES TO INCLUDE THESE STRANDS IN THE CORED SLAB UNIT, THE STRANDS SHALL BE DEBONDED FOR THE FULL LENGTH OF THE UNIT AT NO ADDITIONAL COST. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND

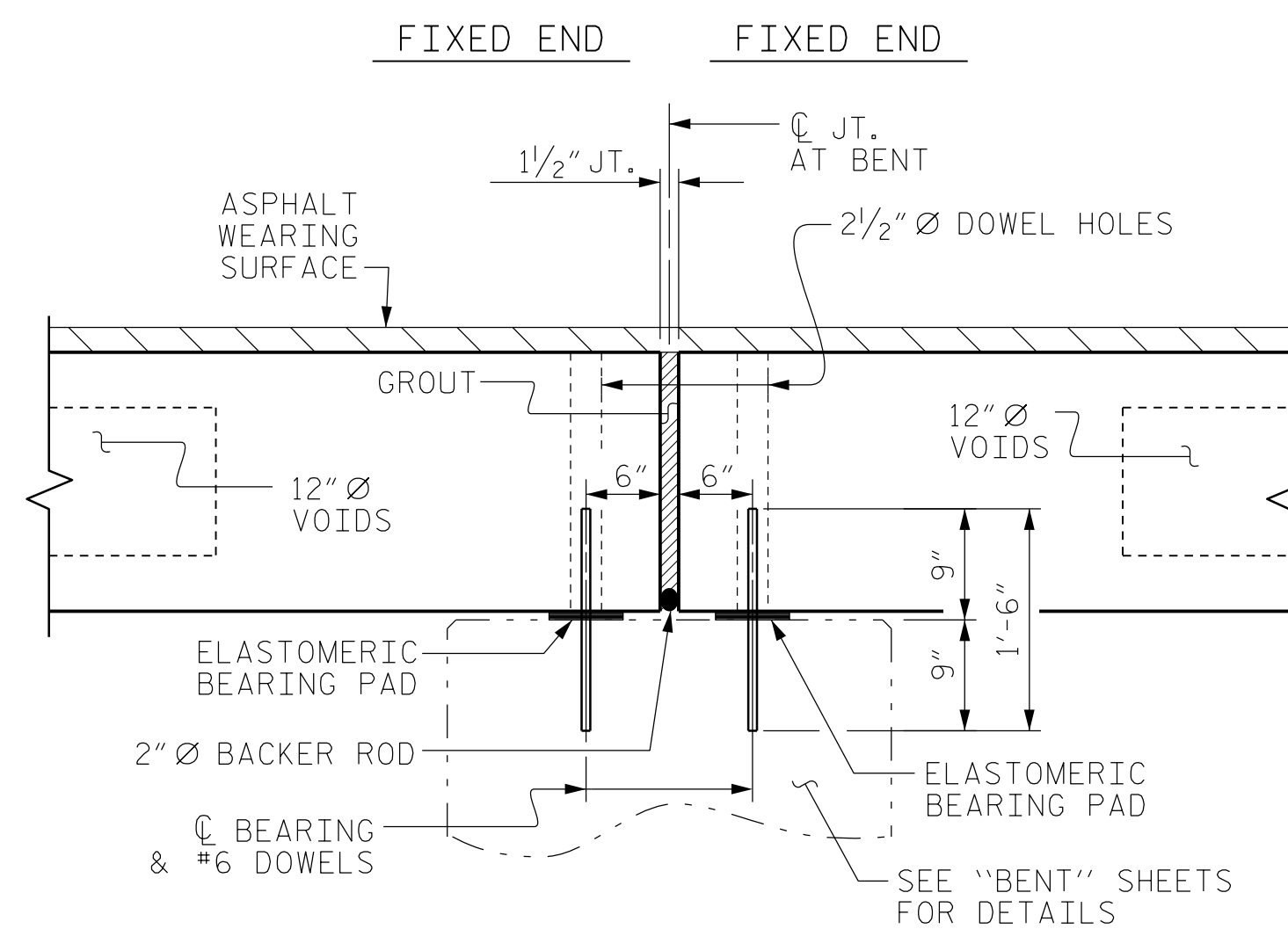
PERMITTED THREADED INSERT CAST IN OUTSIDE FACE OF EXTERIOR UNIT AND RECESSED 3/8" SIZE TO BE DETERMINED BY CONTRACTOR.



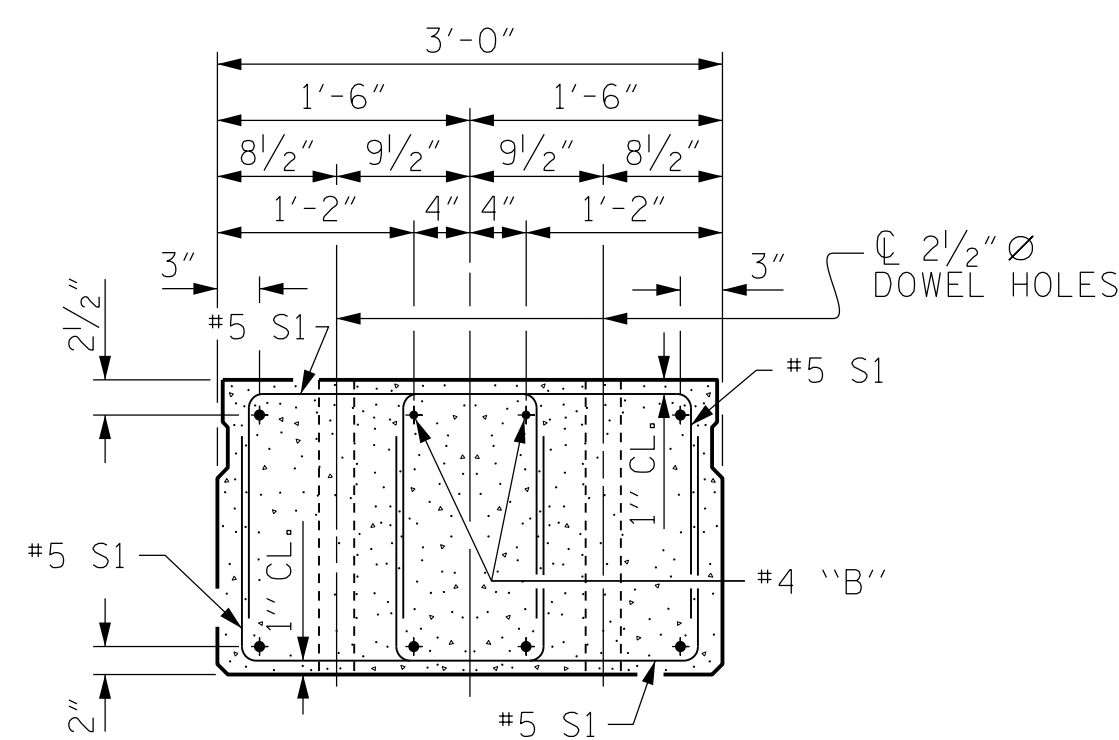
THREADED INSERT DETAIL



SECTION AT END BENT

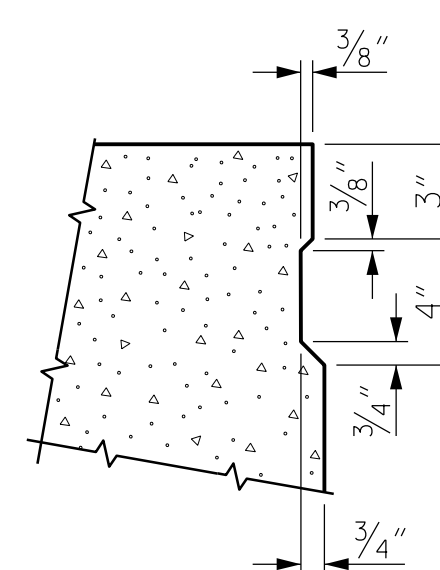


SECTION AT BENT



END ELEVATION

SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN.) INTERIOR SLAB UNIT SHOWN-EXTERIOR SLAB UNIT SIMILAR EXCEPT SHEAR KEY LOCATION.



SHEAR KEY DETAIL

NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.

PROJECT NO. B-5333
 ROBESON COUNTY
 STATION: 21+57.00 -L-

SHEET 1 OF 3 BRIDGE NO. 173

Dewberry
 2301 REWOODS DRIVE
 SUITE 200
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 NC COA No. F-0929

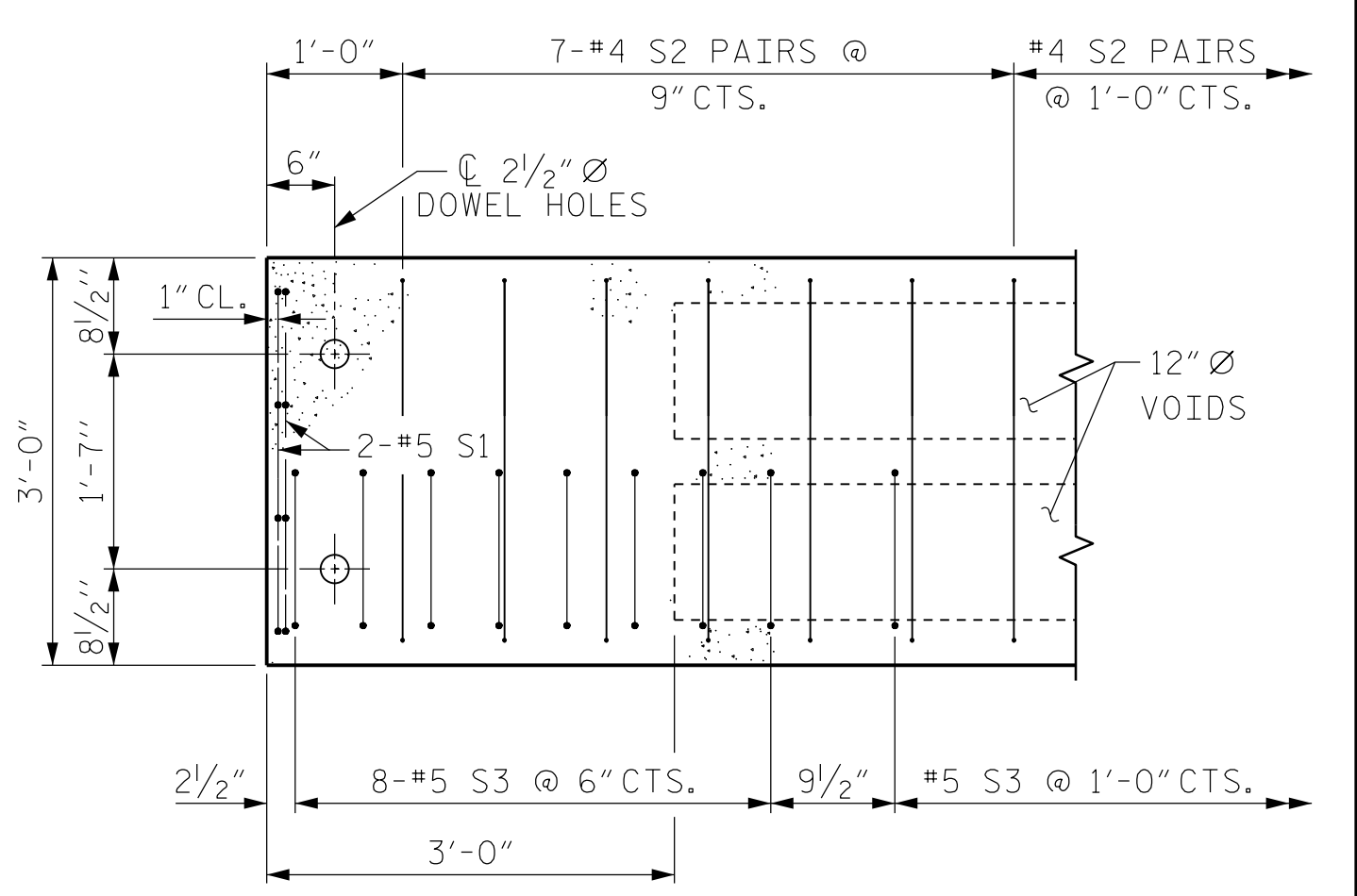
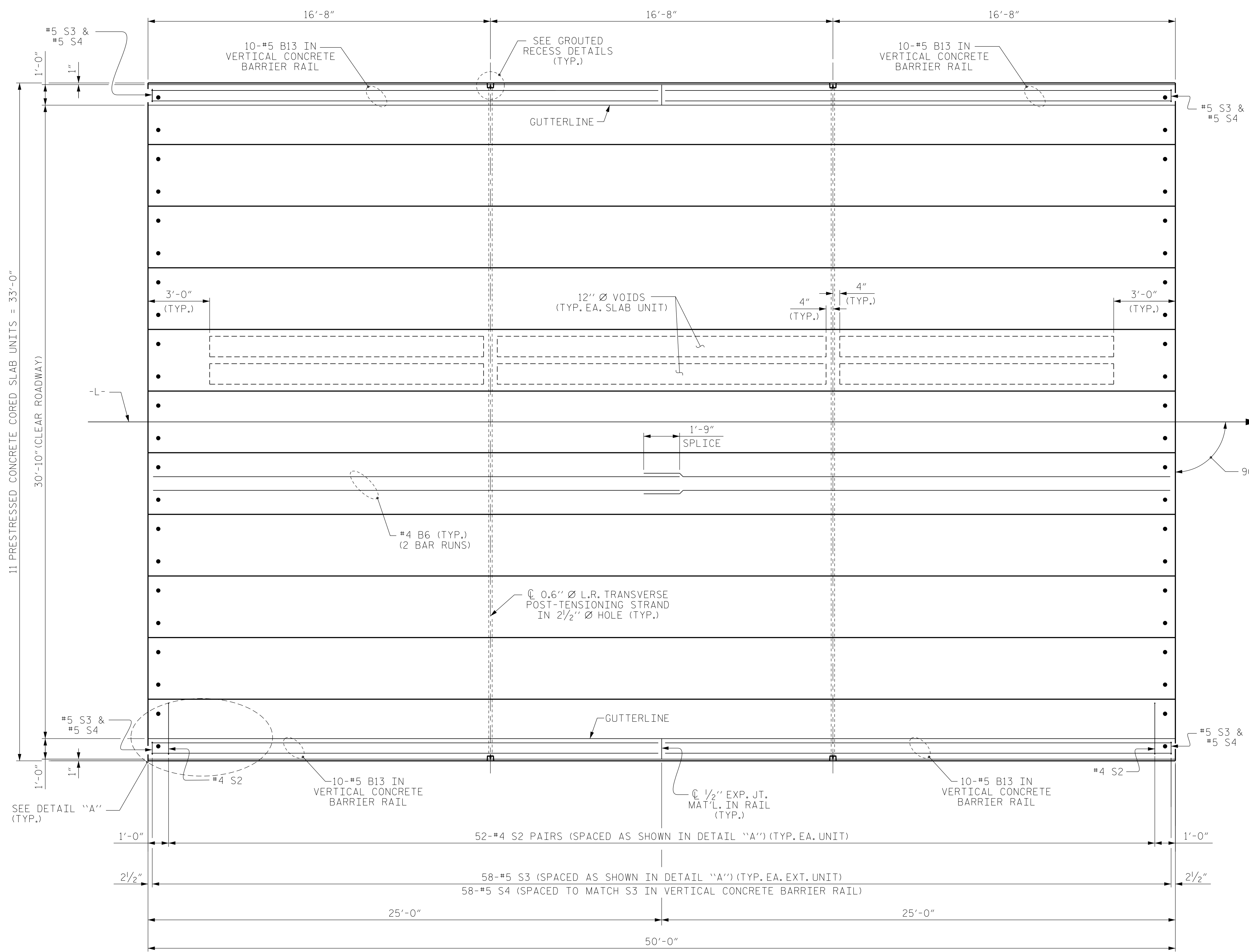
STATE OF NORTH CAROLINA
 PROFESSIONAL ENGINEER
 SEAL 032076
 JENNIFER R. MCGOY

DocuSigned by:
 Jennifer R. McGoy 6/6/2016
 E11146791288475...

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 3'-0" X 1'-9"
 PRESTRESSED CONCRETE
 CORED SLAB UNIT
 90° SKEW

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

ASSEMBLED BY :	MTB	DATE :	04/16
CHECKED BY :	JRM	DATE :	04/16
DRAWN BY :	DCE 5/09	REV. 12/11	MAA/AAC
CHECKED BY :	BCH 6/09	REV. 9/14	MAA/TMG



DETAIL "A"
 (TYPICAL EACH END OF UNIT)
 NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.

PLAN OF UNIT

PROJECT NO. B-5333
ROBESON COUNTY
 STATION: 21+57.00 -L-
 SHEET 2 OF 3 BRIDGE NO. 173

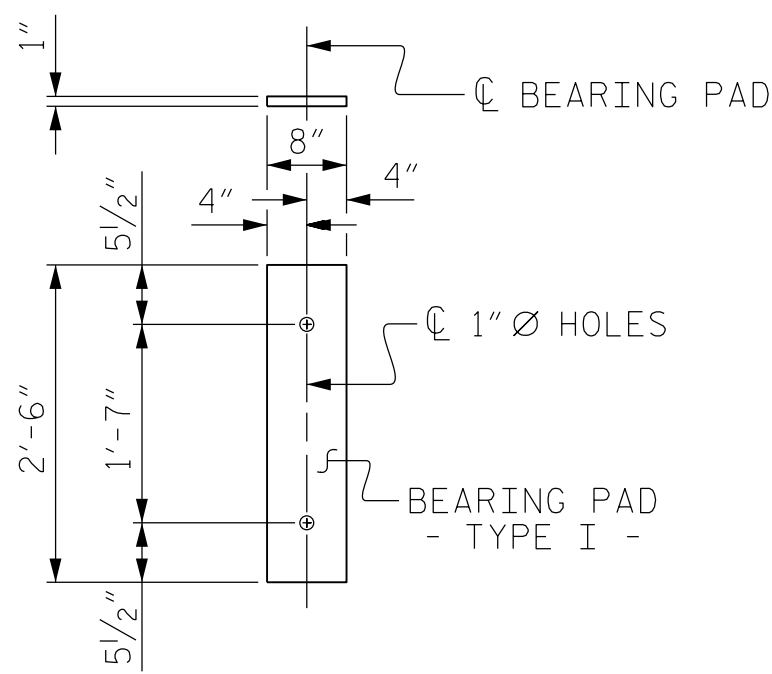
Dewberry
 2301 REXWOODS DRIVE
 SUITE 200
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 NC COA No. F-08229

SEAL
 032076
 ENGINEER
 JENNIFER R. MCKAY

DocuSigned by:
 Jennifer R. McKay 6/6/2016
 E1114C791288475...

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH				SHEET No.
PLAN OF 50' UNIT 30'-10" CLEAR ROADWAY 90° SKEW				S01-6
REVISIONS				TOTAL SHEETS
No.	BY:	DATE:	No.	DATE:
1			3	
2			4	
				24

ASSEMBLED BY :	MTB	DATE :	04/16
CHECKED BY :	JRM	DATE :	04/16
DRAWN BY :	DGE 3/09	REV. 12/5/11	MAA/AAC
CHECKED BY :	BCH 3/09	REV. 8/14	MAA/TMG

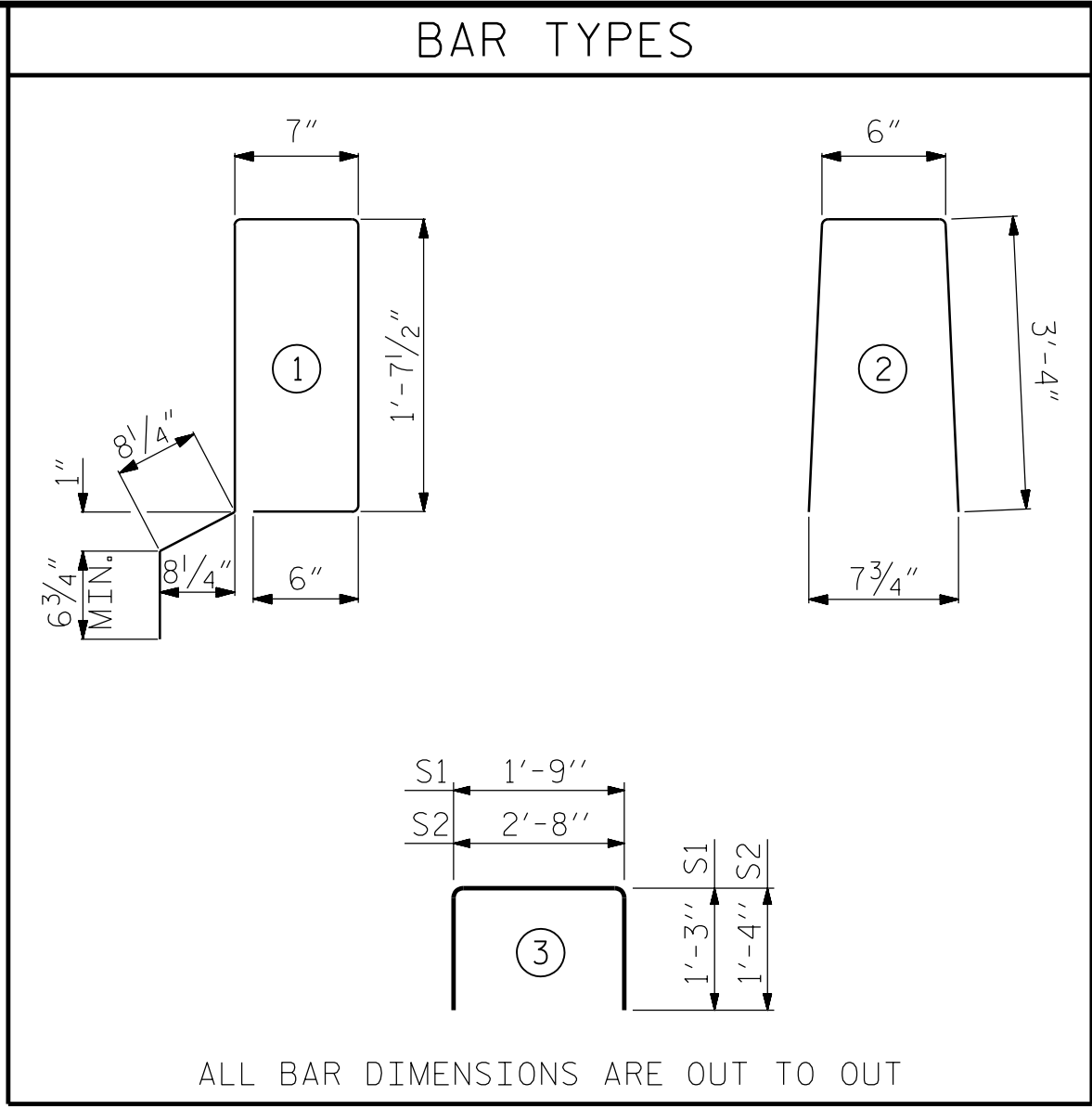


ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS.

BILL OF MATERIAL FOR ONE 50' CORED SLAB UNIT

BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
B6	4	#4	STR	25'-9"	69	25'-9"	69
S1	8	#5	3	4'-3"	35	4'-3"	35
S2	104	#4	3	5'-4"	371	5'-4"	371
*S3	58	#5	1	5'-7"	338		
REINFORCING STEEL				LBS.	475	LBS.	475
*EPOXY COATED REINFORCING STEEL				LBS.	338		
6500 P.S.I. CONCRETE				CU. YDS.	7.1	CU. YDS.	7.1
0.6" Ø L.R. STRANDS				No.	19	No.	19



NOTES

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

ALL REINFORCING STEEL CAST WITH THE CORED SLAB SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE CORED SLABS.

RECESSES FOR TRANSVERSE STRANDS SHALL BE GROUTED AFTER THE TENSIONING OF THE STRANDS.

THE 2 1/2" Ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

THE BACKER RODS SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

WHEN CORED SLABS ARE CAST, AN INTERNAL HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDEWAYS. AT LEAST SIX WEEKS PRIOR TO CASTING CORED SLABS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL DETAILS, LOCATION AND SPACING OF THE HOLD-DOWNS SHALL BE INDICATED.

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

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE CORED SLAB UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

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

FLAME CUTTING OF THE TRANSVERSE POST-TENSIONING STRAND IS NOT ALLOWED.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN THE REQUIRED STRENGTH SHOWN IN THE "CONCRETE RELEASE STRENGTH" TABLE.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THE PERMITTED THREADED INSERTS ARE DETAILED AS AN OPTION FOR THE CONTRACTOR TO ATTACH FALSEWORK AND FORMWORK DURING CONSTRUCTION.

THE PERMITTED THREADED INSERTS IN THE EXTERIOR UNITS SHALL BE SIZED BY THE CONTRACTOR, SPACED AT 4'-0" CENTERS AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS. STAINLESS STEEL THREADED INSERTS MAY BE USED AS AN ALTERNATE.

THE PERMITTED THREADED INSERTS SHALL BE GROUTED BY THE CONTRACTOR IMMEDIATELY FOLLOWING REMOVAL OF THE FALSEWORK.

THE COST OF THE PERMITTED THREADED INSERTS SHALL BE INCLUDED IN THE PRICE BID FOR THE PRECAST UNITS.

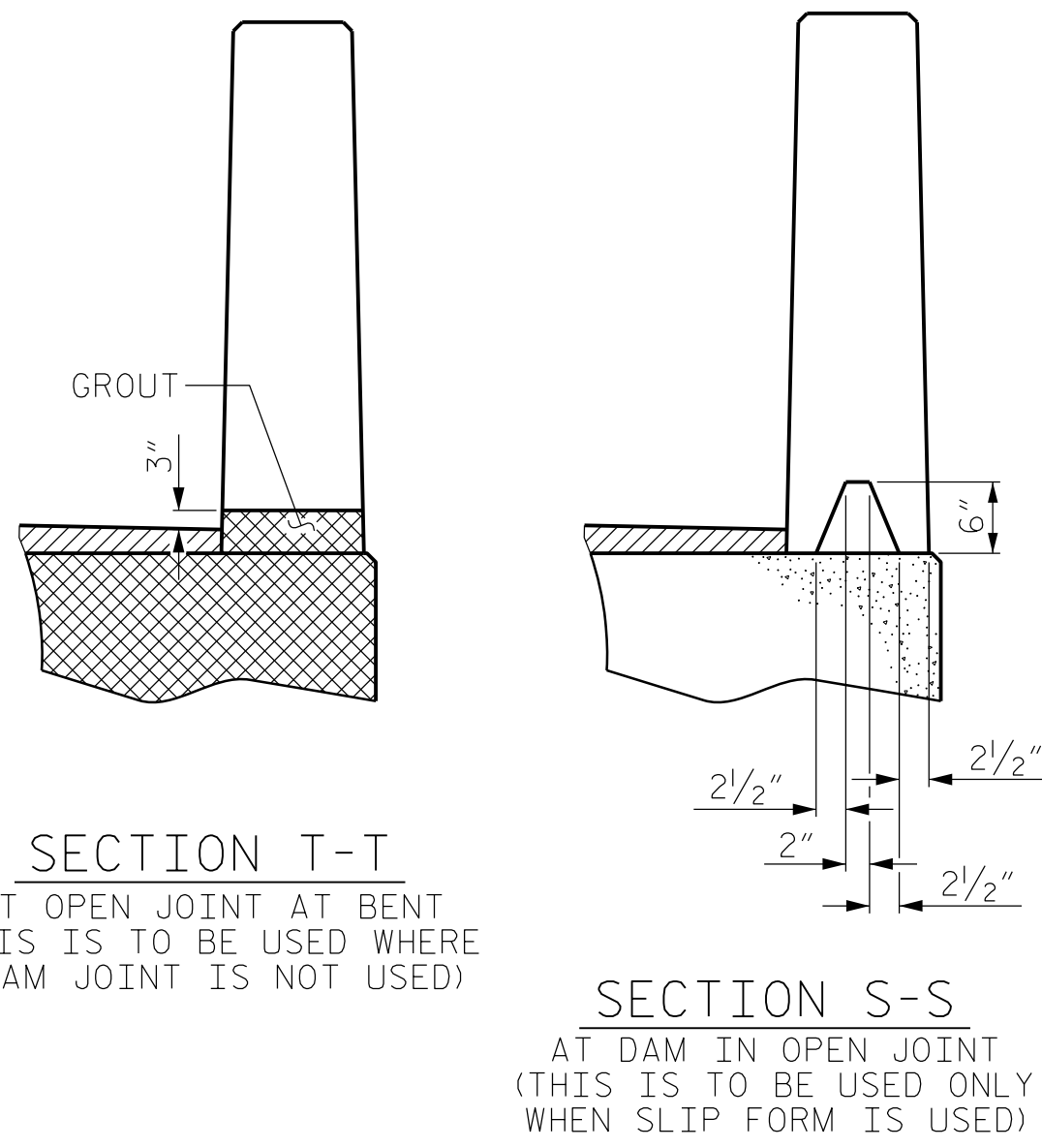
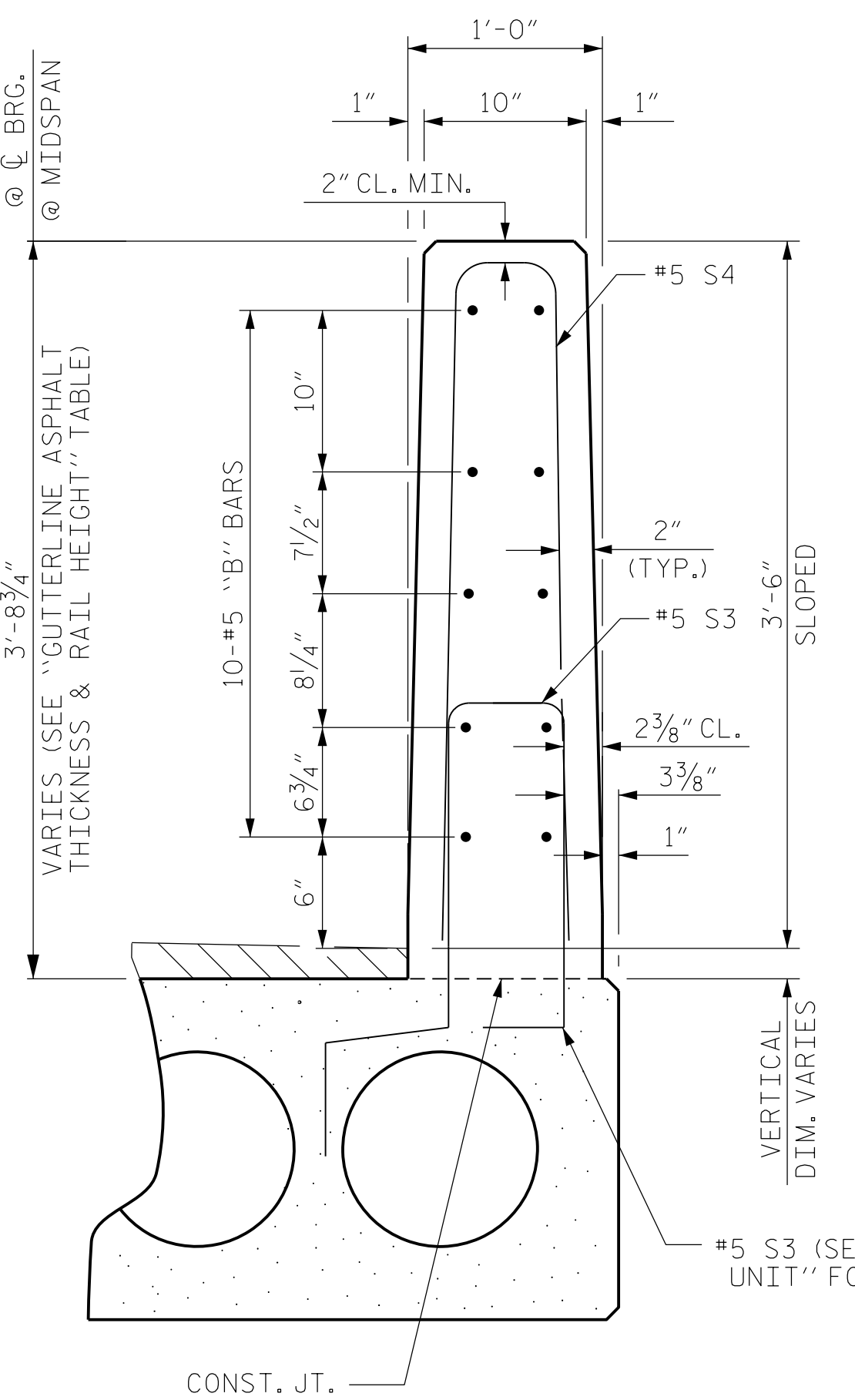
DEAD LOAD DEFLECTION AND CAMBER

3'-0" x 1'-9"	
50' CORED SLAB UNIT	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	1 1/2" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	3/8" ↓
FINAL CAMBER	1 1/8" ↑

** INCLUDES FUTURE WEARING SURFACE

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL

BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
50' UNIT						
*B13	40	400	#5	STR	24'-7"	5130
*S4	116	580	#5	2	7'-2"	4335
*EPOXY COATED REINFORCING STEEL					LBS.	9465
CLASS AA CONCRETE					CU.YDS.	64.0
TOTAL VERTICAL CONCRETE BARRIER RAIL					LN. FT.	501.25



GRADE 270 STRANDS

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

CORED SLABS REQUIRED

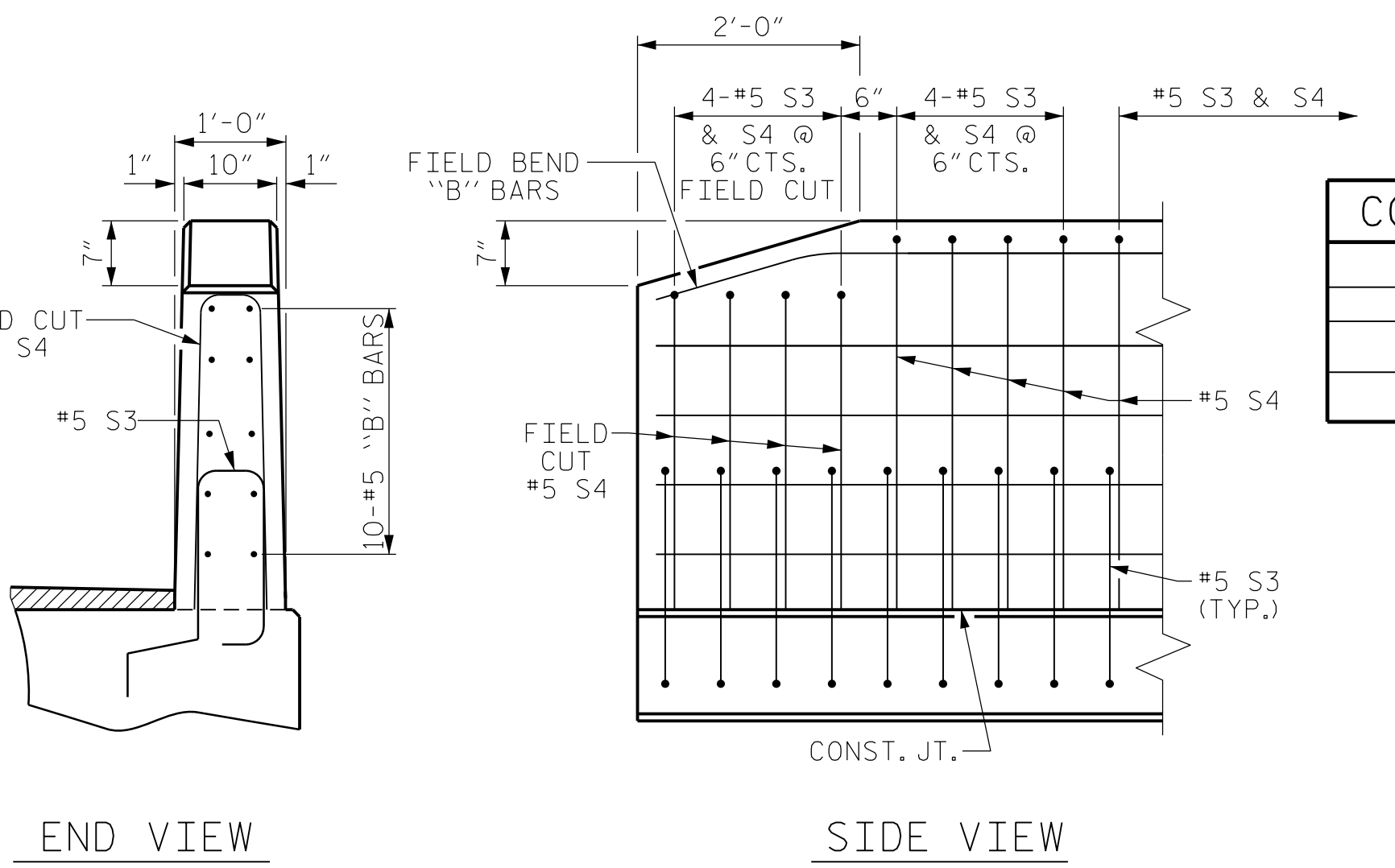
	NUMBER	LENGTH	TOTAL LENGTH
50' UNIT			
EXTERIOR C.S.	10	50'-0"	500'-0"
INTERIOR C.S.	45	50'-0"	2250'-0"
TOTAL	55	50'-0"	2750'-0"

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT

	ASPHALT OVERLAY THICKNESS	RAIL HEIGHT
	@ MID-SPAN	@ MID-SPAN
50' UNITS	1 5/8"	3'-7 5/8"

CONCRETE RELEASE STRENGTH

UNIT	PSI
50' UNITS	4900



END OF RAIL DETAILS

PROJECT NO. B-5333
ROBESON COUNTY
 STATION: 21+57.00 -L-
 SHEET 3 OF 3 BRIDGE NO. 173

Dewberry
 2301 REYNOLDS DRIVE
 SUITE 200
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 NC COA No. F-9929

JENNIFER R. MELOY
 ENGINEER
 SEAL 032076
 DocuSigned by:
 Jennifer R. Meloy 6/6/2016
 E1114079128475

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

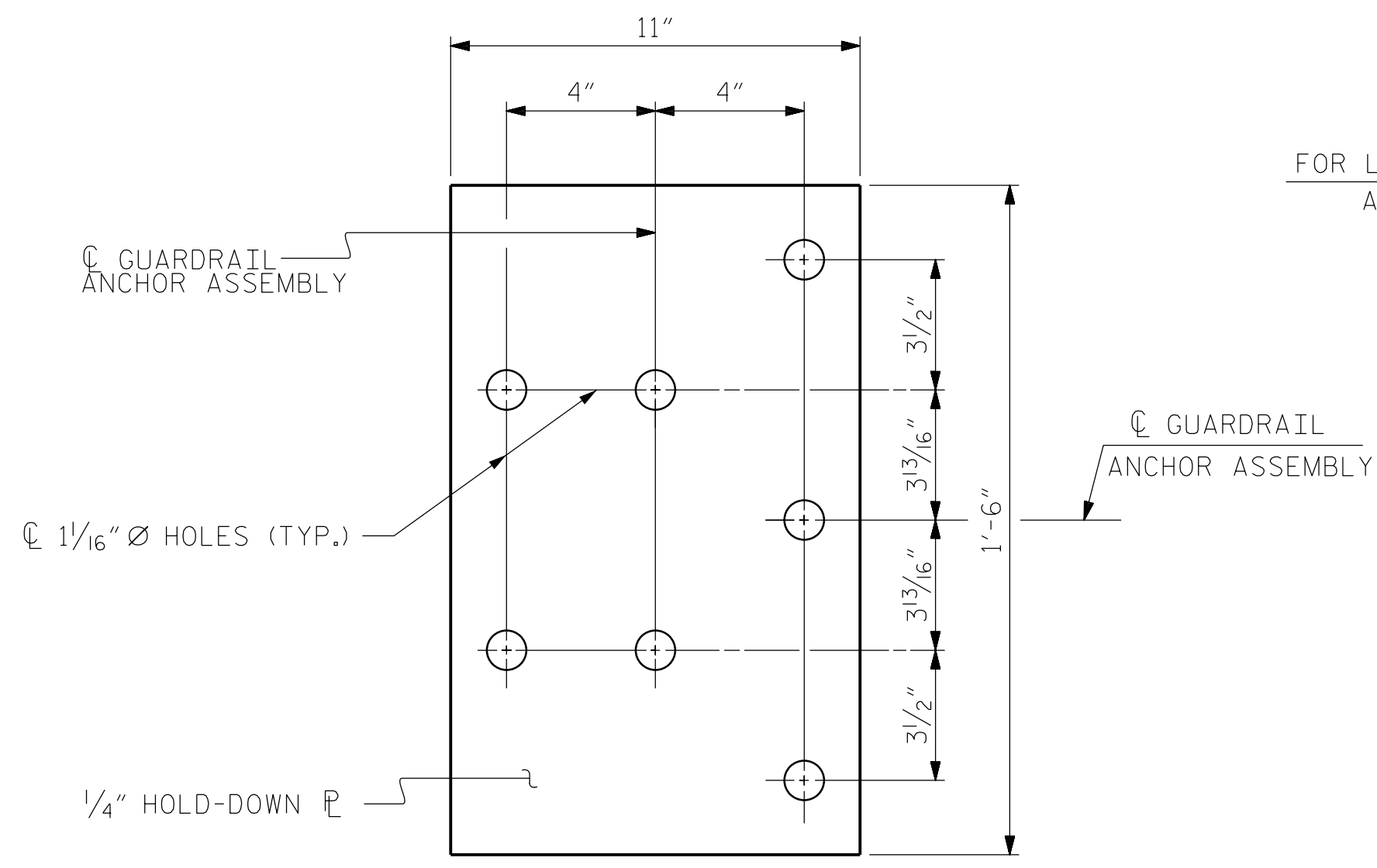
STANDARD
 3'-0" X 1'-9"
 PRESTRESSED CONCRETE
 CORED SLAB UNIT
 90° SKEW

REVISIONS						SHEET No.
No.	BY	DATE	No.	BY	DATE	SHEET No.
1			3			S01-7 TOTAL SHEETS 24
2			4			

STD. NO. 21'PCS3-33-905

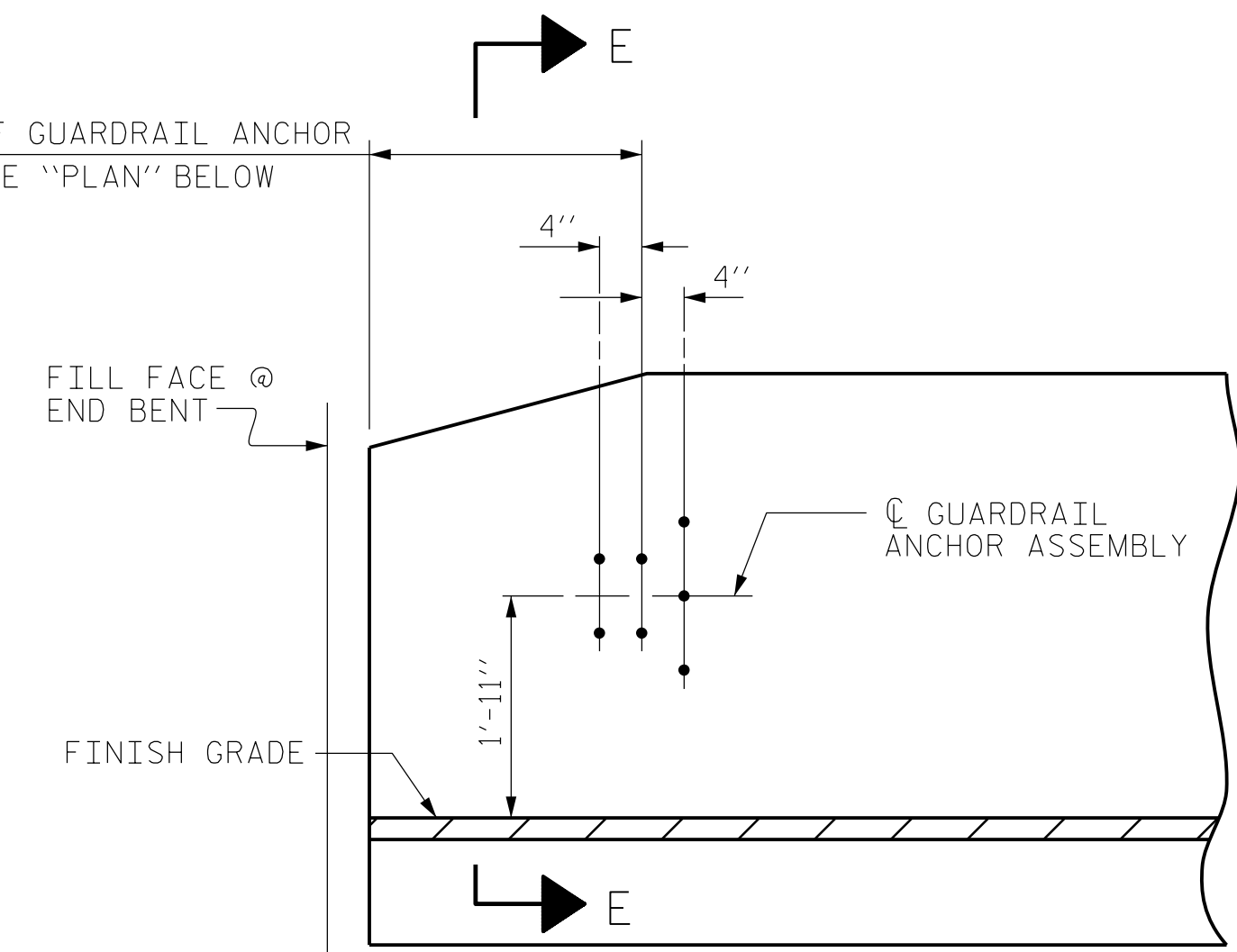
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CHECKED BY :	JRM	DATE :	04/16
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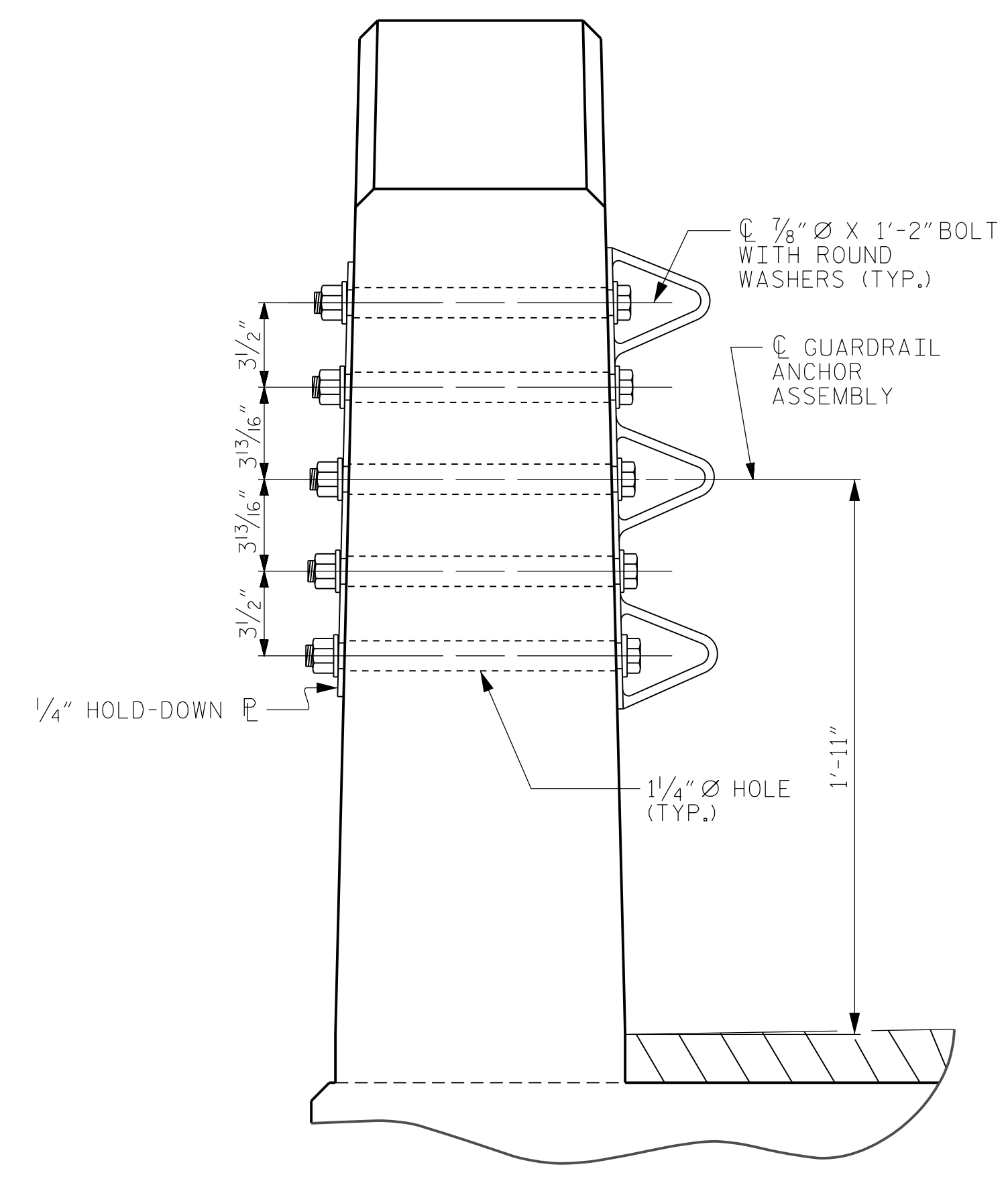


PLAN

FOR LOCATION OF GUARDRAIL ANCHOR ASSEMBLY, SEE "PLAN" BELOW

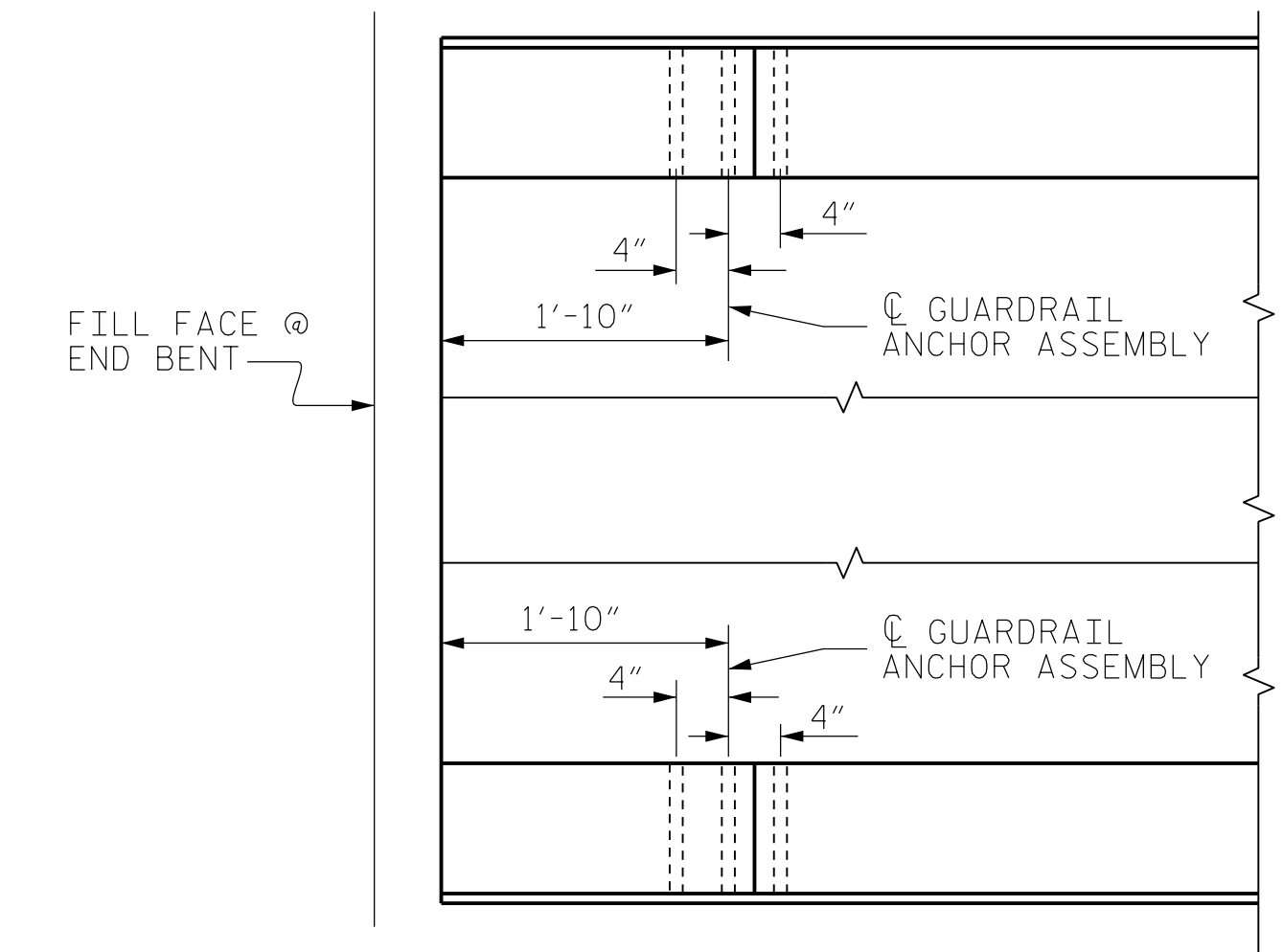


ELEVATION



SECTION E-E

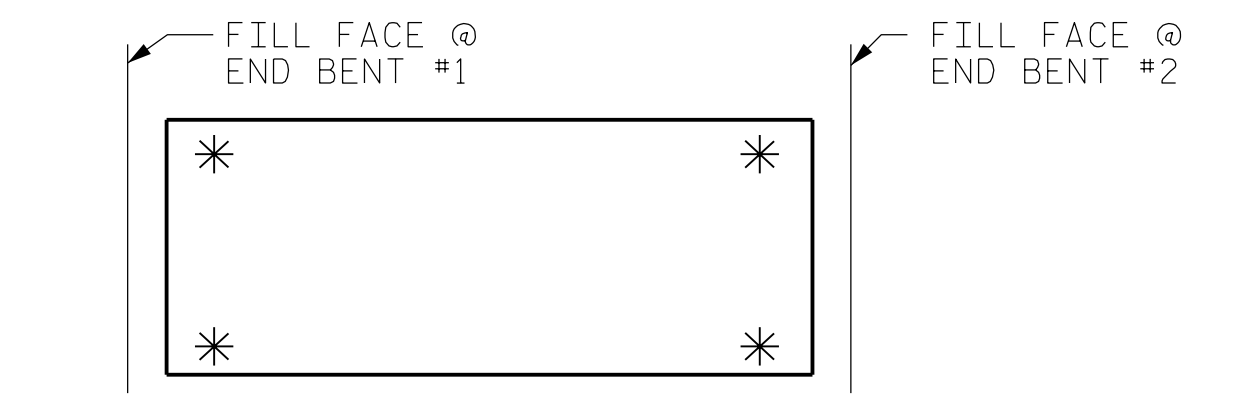
GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

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



SKETCH SHOWING POINTS OF ATTACHMENT

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

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.)
- THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.
- AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.
- THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR VERTICAL CONCRETE BARRIER RAIL.
- THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.
- THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

PROJECT NO. B-5333
ROBESON COUNTY
 STATION: 21+57.00 -L-

BRIDGE NO. 173

Dewberry
 2610 WYCLIFF ROAD
 SUITE 410
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 NC COA No. F-0929



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GUARDRAIL ANCHORAGE
 FOR VERTICAL CONCRETE
 BARRIER RAIL

REVISIONS						SHEET No. S01-8
No.	BY:	DATE:	No.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			24

DRAWN BY : MTB DATE : 04/16
 CHECKED BY : JRM DATE : 04/16

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 USER: mbelisle
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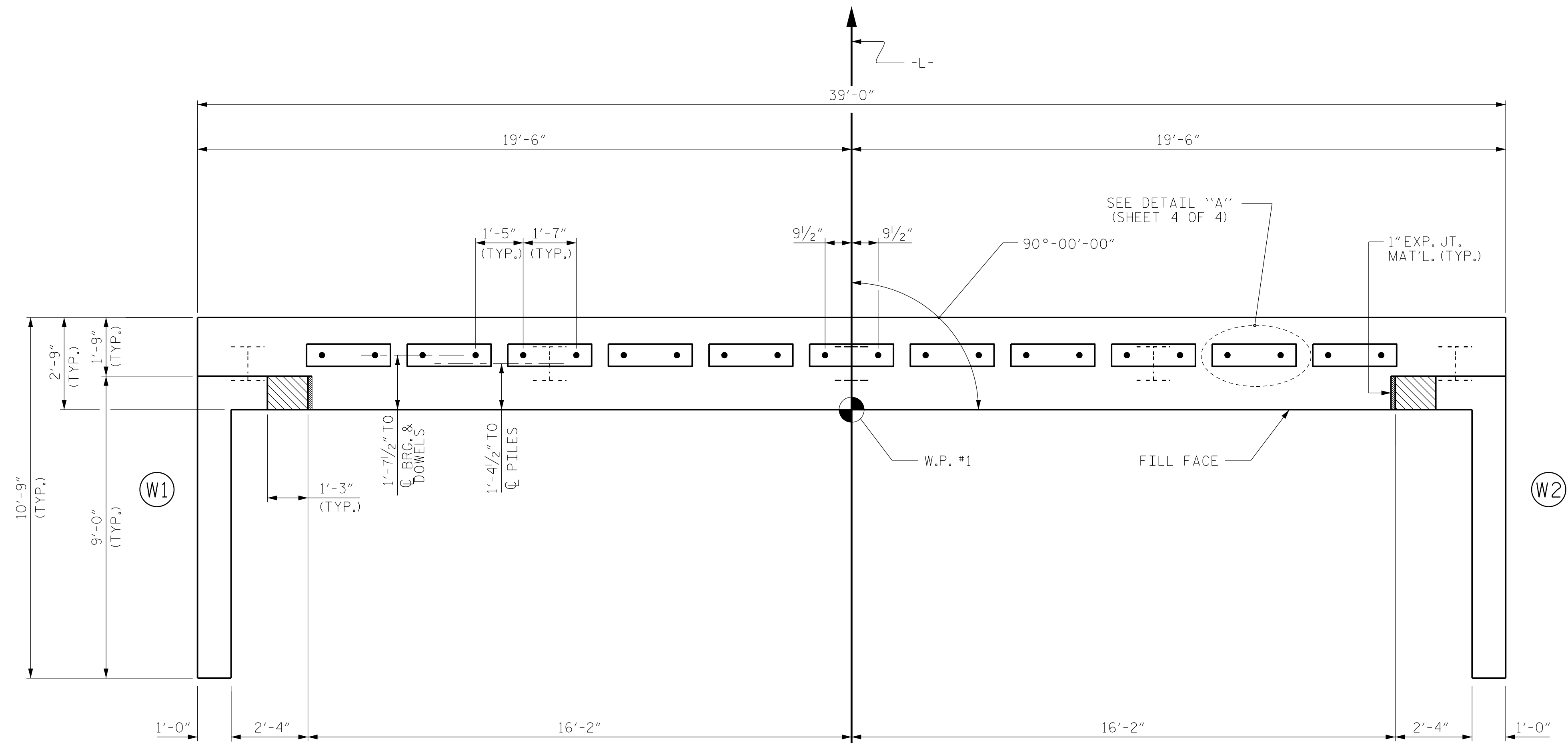
NOTES

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

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

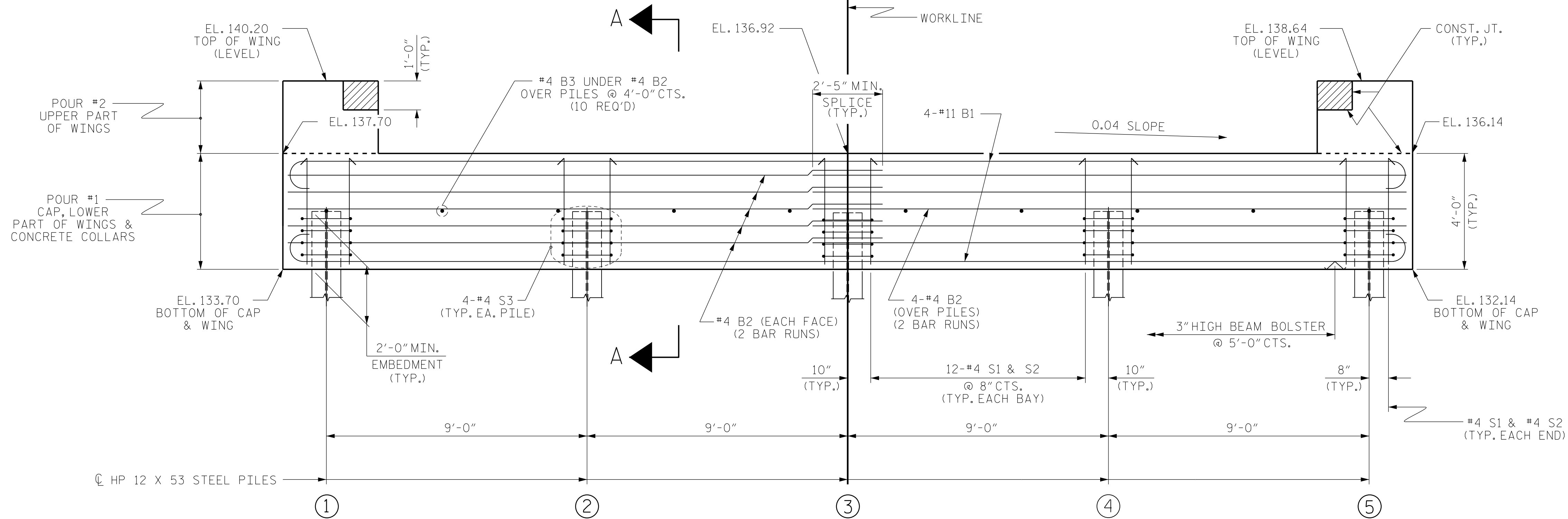
FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



PLAN

TOP OF PILE ELEVATIONS	
①	135.66
②	135.30
③	134.94
④	134.58
⑤	134.22



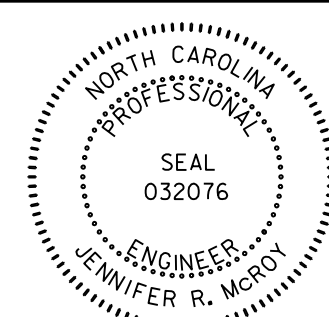
ELEVATION

WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 4 OF 4.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

PROJECT NO. B-5333
ROBESON COUNTY
STATION: 21+57.00 -L-

SHEET 1 OF 4 BRIDGE NO. 173

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT No. 1

REVISIONS						SHEET No.	
No.	BY:	DATE:	No.	BY:	DATE:	S01-9	
1			3			TOTAL SHEETS	
2			4			24	

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USER: mbelisle
DRAWN BY: MTB DATE: 04/16
CHECKED BY: JRM DATE: 04/16

DocuSigned by:
Jennifer R. McKay
6/6/2016
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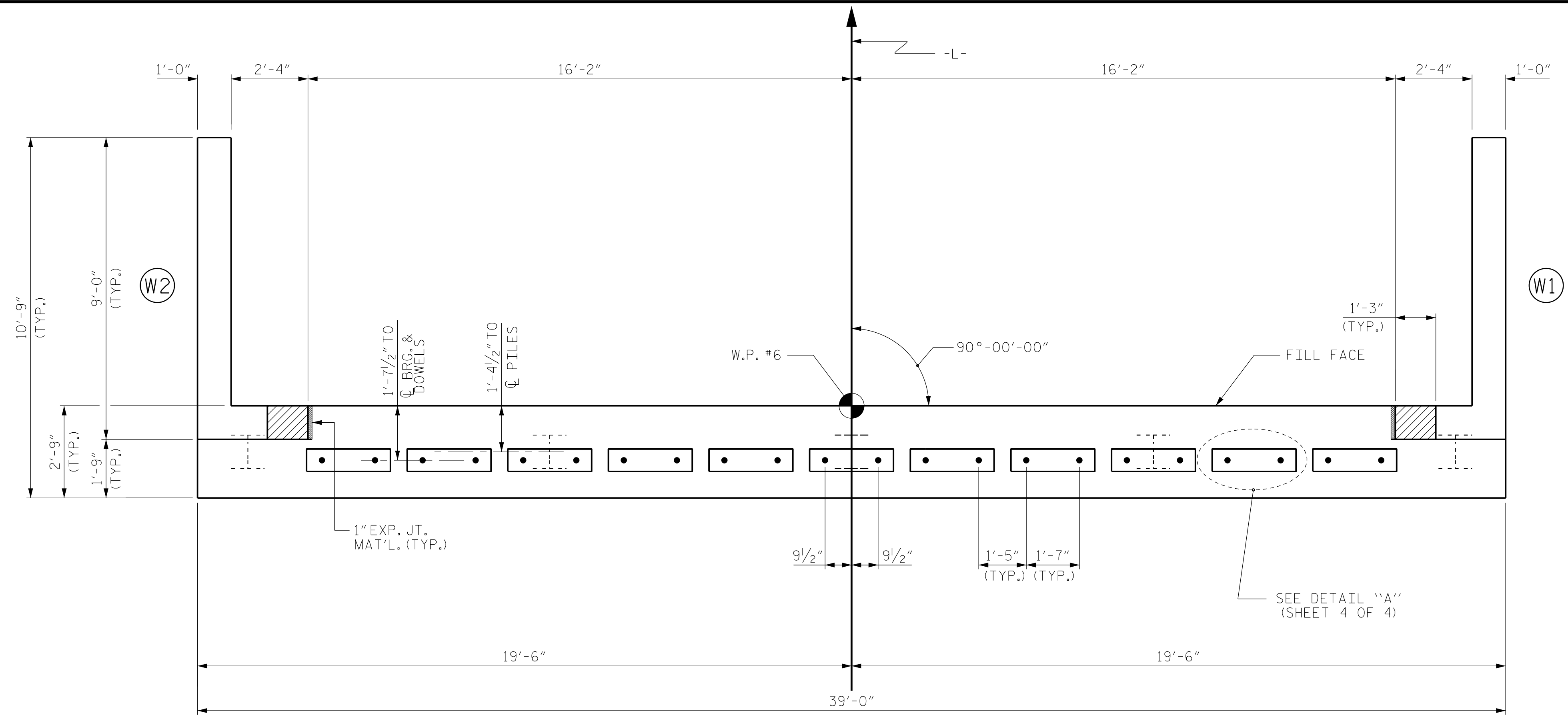
NOTES

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

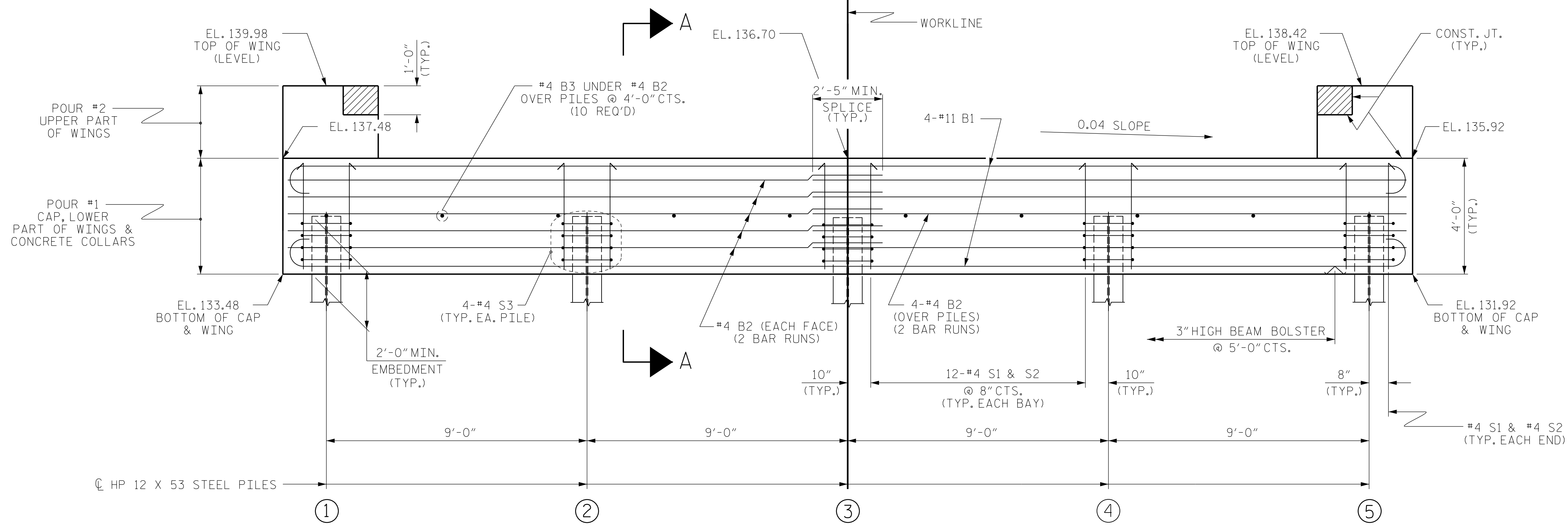
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



PLAN



ELEVATION

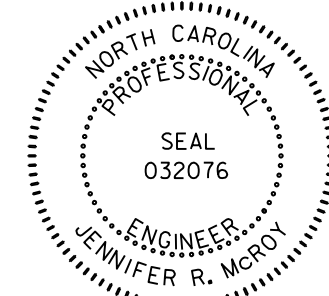
WINGS NOT SHOWN FOR CLARITY.
 FOR SECTION A-A, SEE SHEET 4 OF 4.
 CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
 SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

TOP OF PILE ELEVATIONS	
①	135.44
②	135.08
③	134.72
④	134.36
⑤	134.00

PROJECT NO. B-5333
ROBESON COUNTY
 STATION: 21+57.00 -L-

SHEET 2 OF 4 BRIDGE NO. 173

Dewberry
 2610 WYCLIFF ROAD
 SUITE 410
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 NC COA No. F-0929



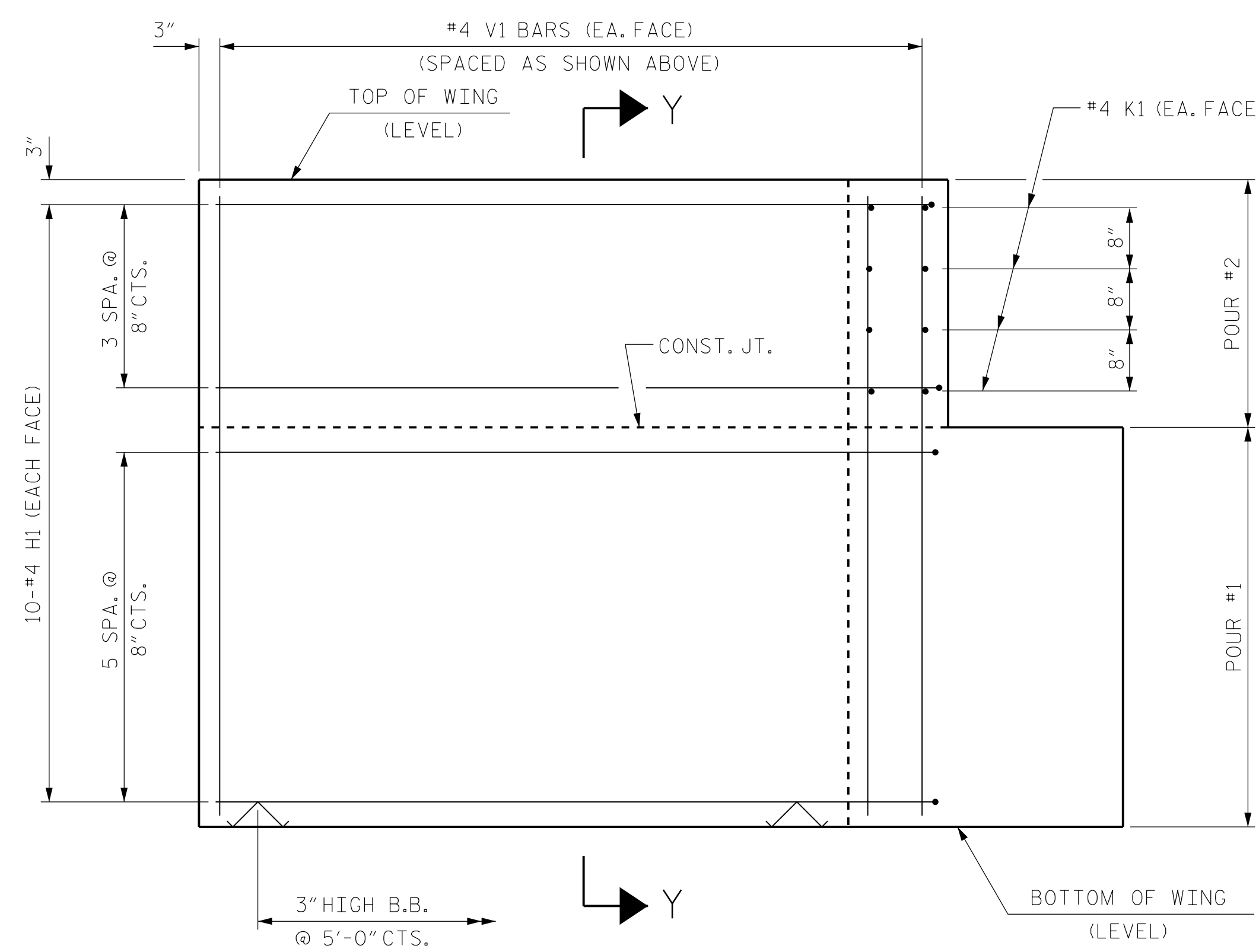
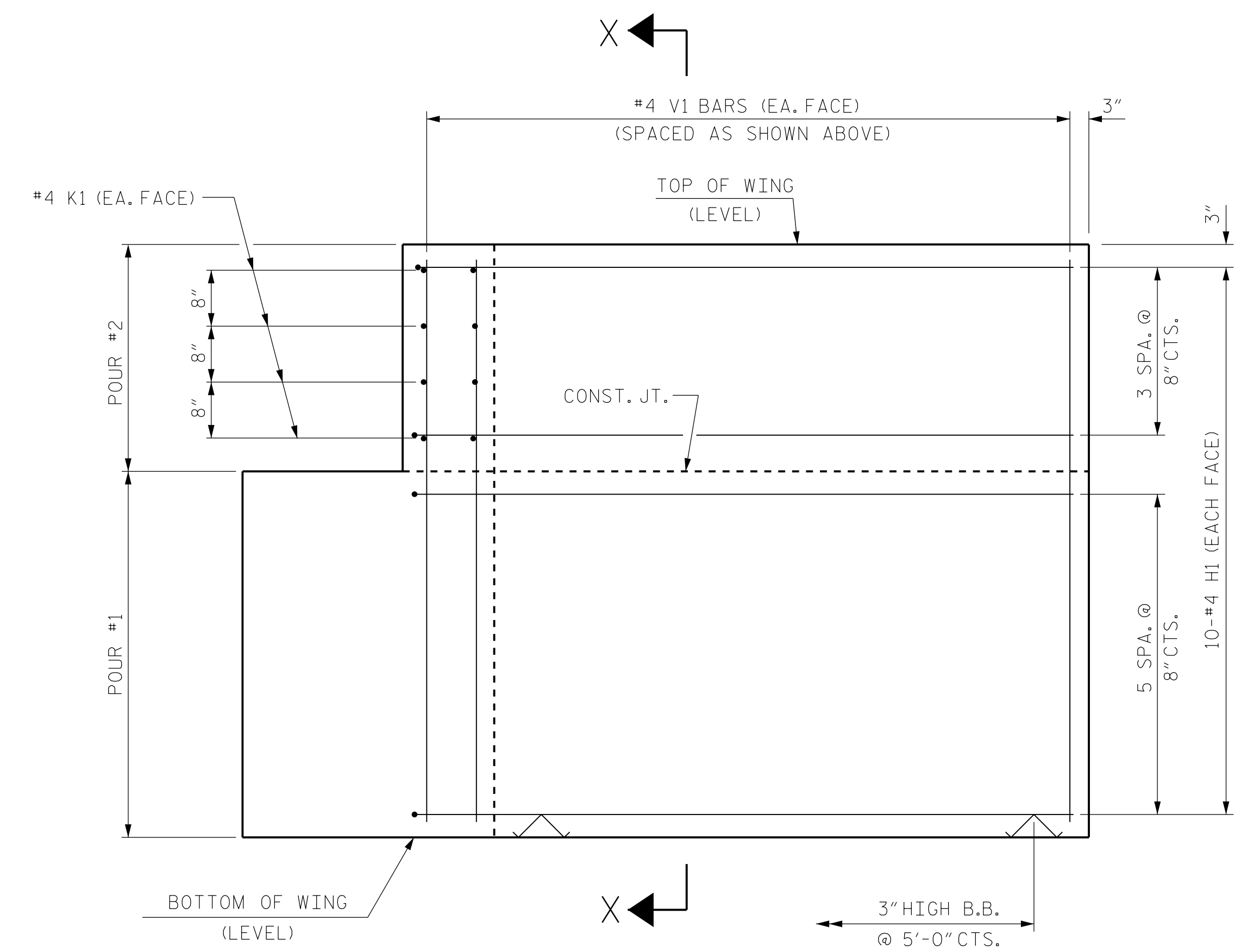
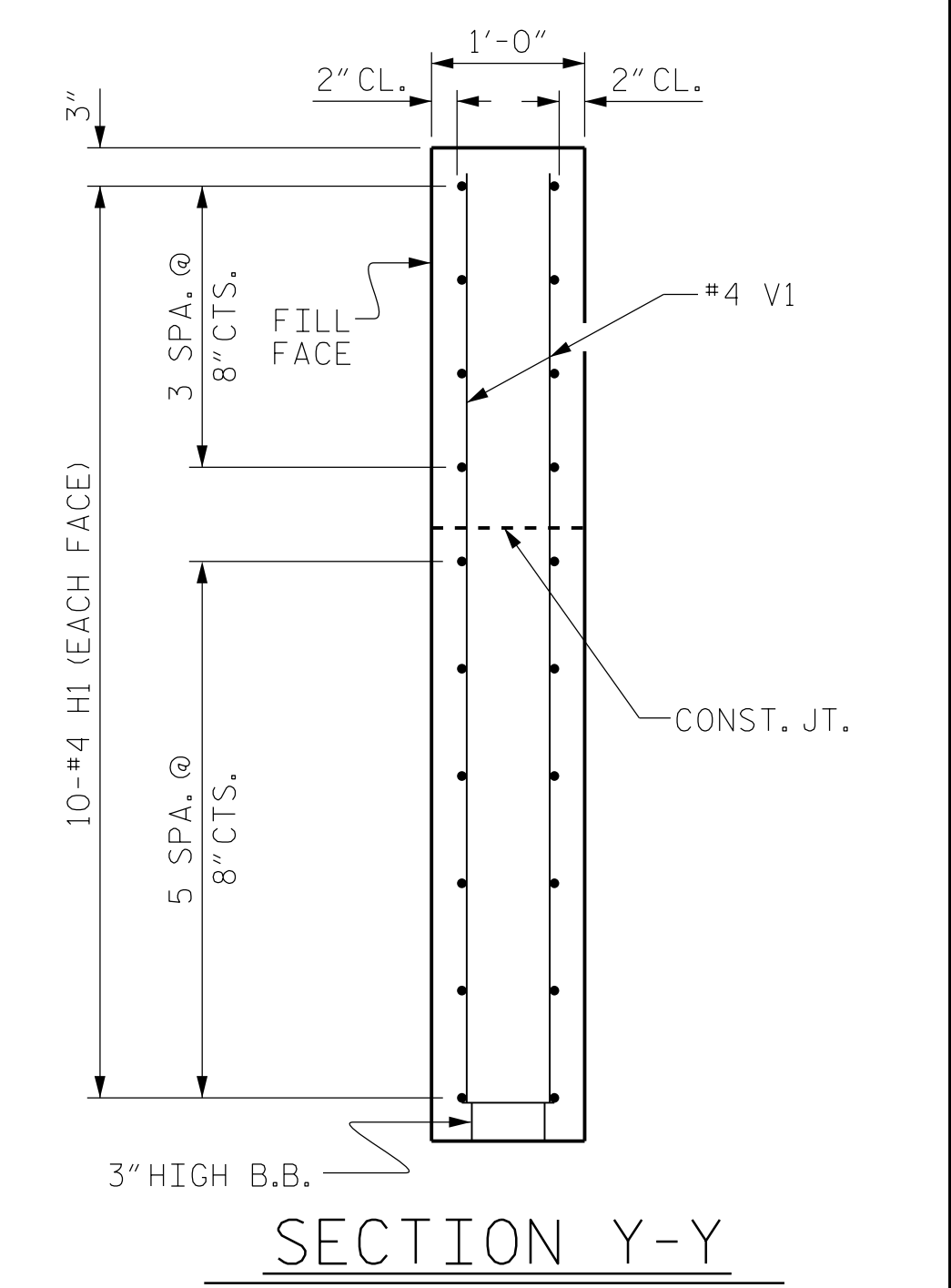
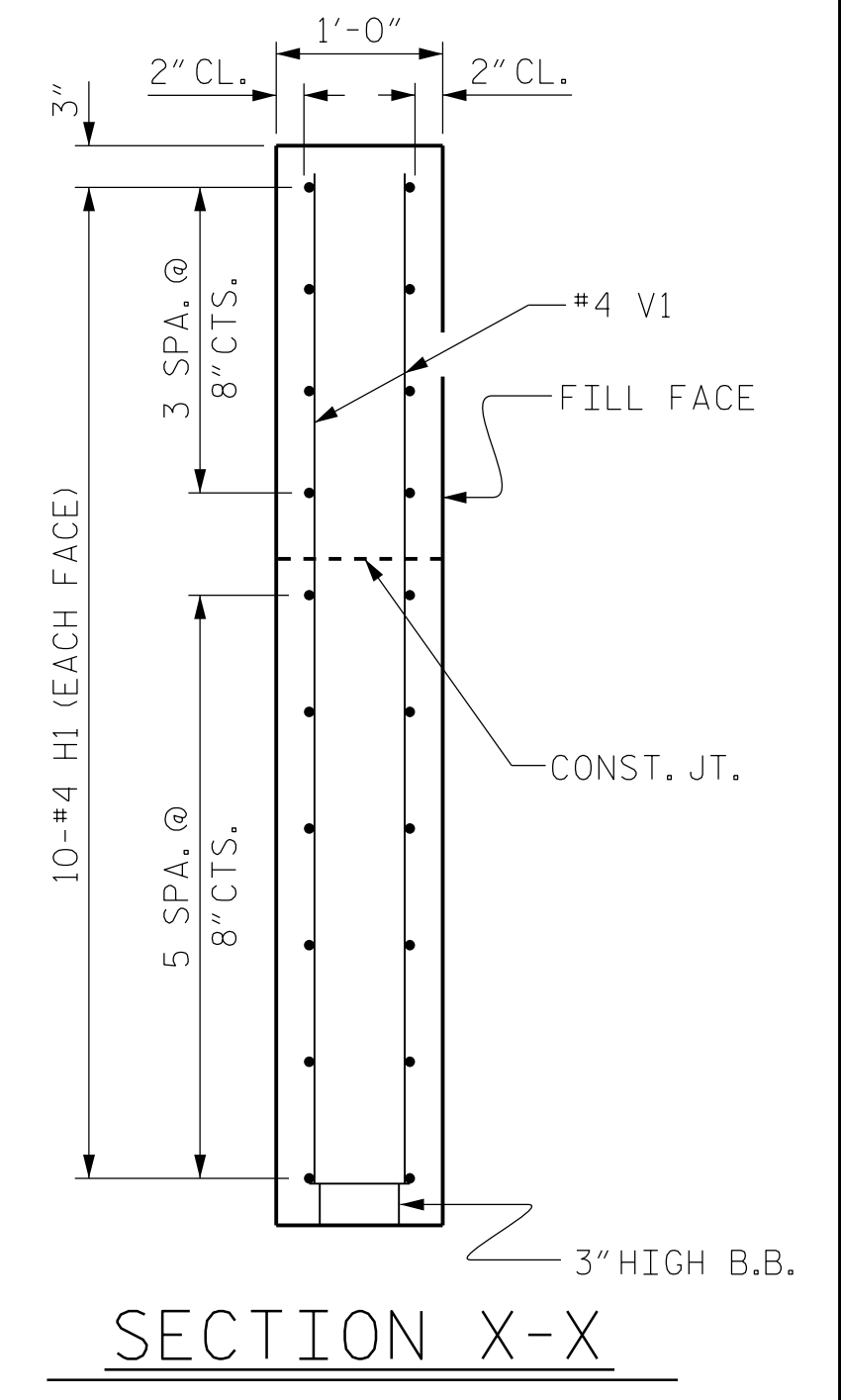
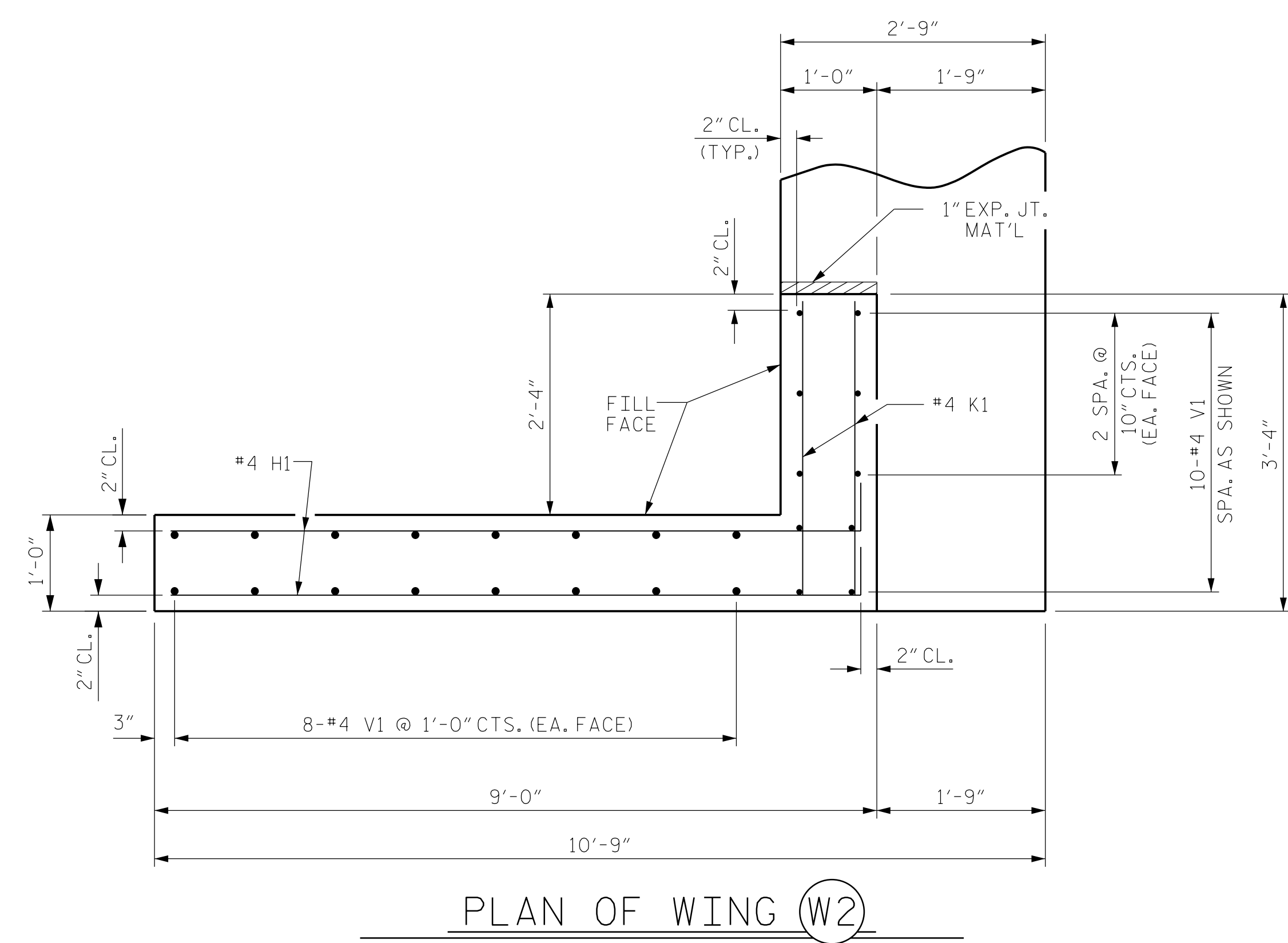
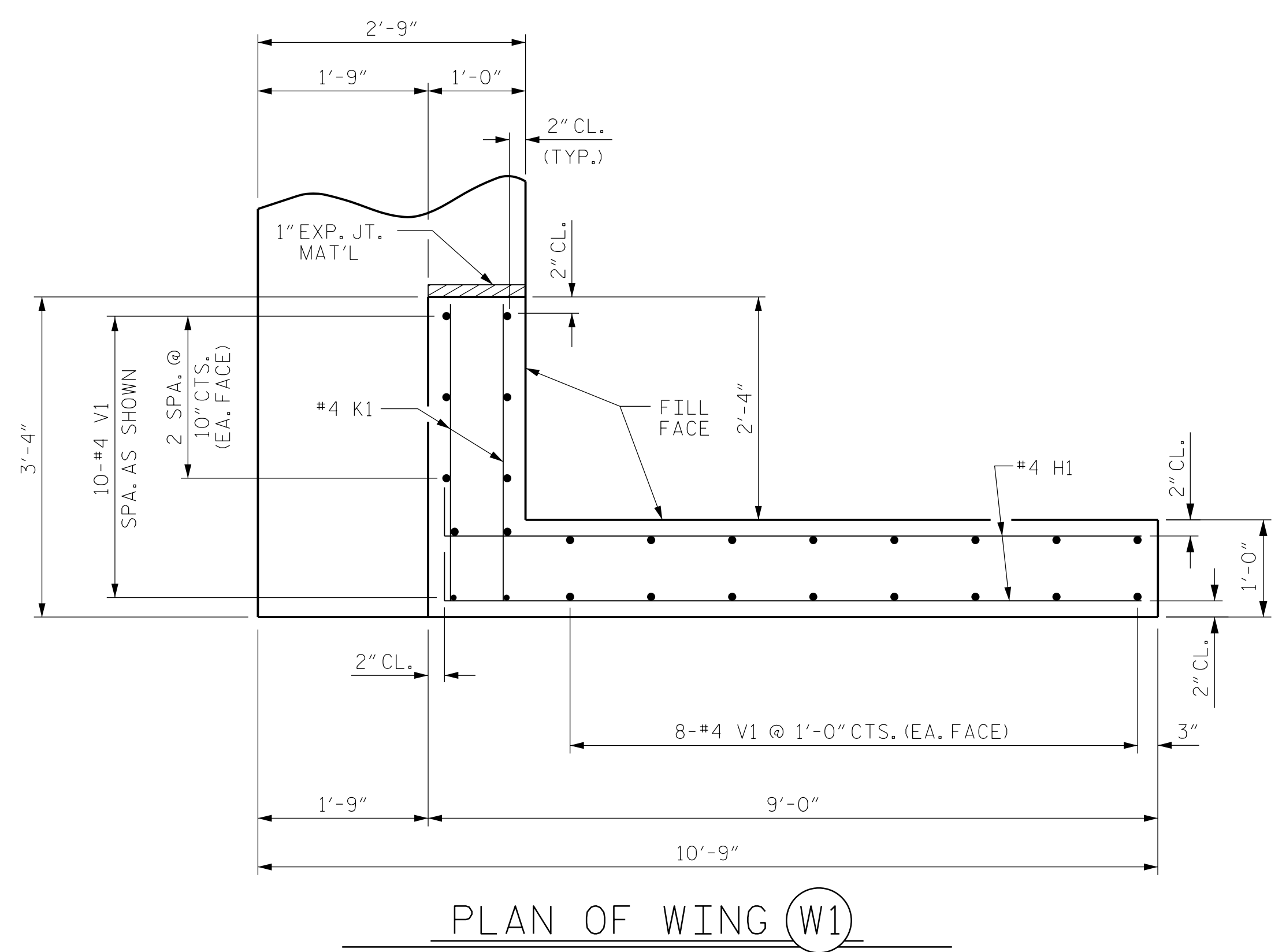
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT No. 2

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

DocuSigned by:
 Jennifer R. McCoy
 6/6/2016
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6/3/2016 9:04:56 AM
 USER: mbe1111
 DRAWN BY : MTB DATE : 04/16
 CHECKED BY : JRM DATE : 04/16



ELEVATION OF WING (W1)

ELEVATION OF WING (W2)

WING DETAILS

PROJECT NO. B-5333
 ROBESON COUNTY
 STATION: 21+57.00 -L-
 SHEET 3 OF 4 BRIDGE NO. 173

Dewberry
 2301 REWOODS DRIVE
 SUITE 200
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 NC COA No. F-0929

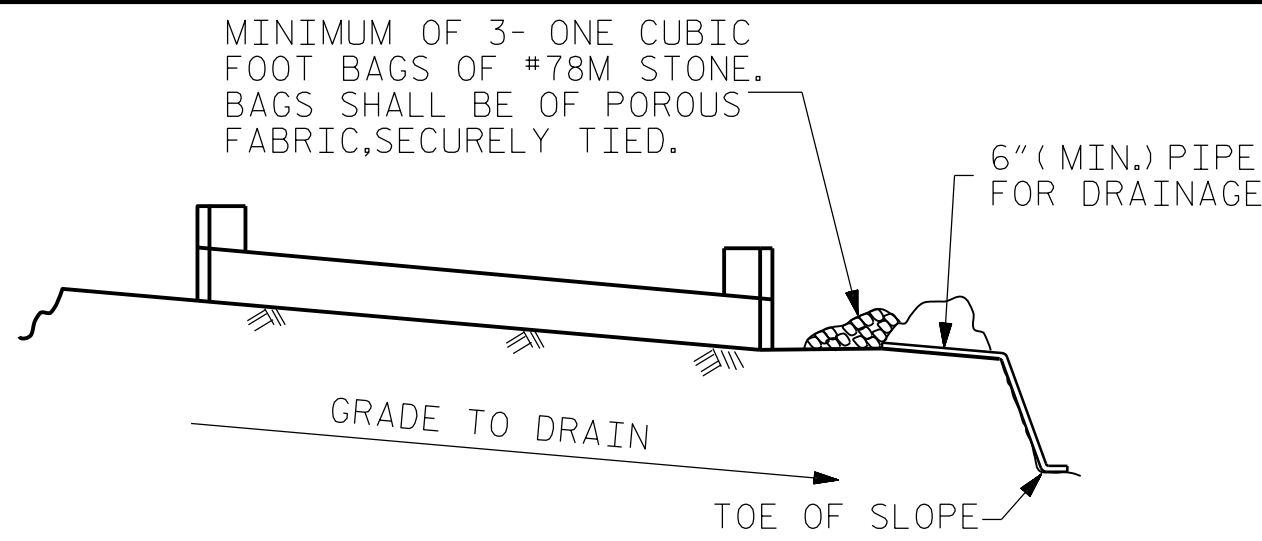
SEAL 032076
 ENGINEER
 JENNIFER R. MCKAY

DocuSigned by:
 Jennifer R. McKay 6/6/2016
 E1114C791288475...

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT WING DETAILS					
REVISIONS					
No.	BY:	DATE:	No.	BY:	DATE:
1			3		
2			4		
SHEET No. S01-11					TOTAL SHEETS 24

6/3/2016 9:08:00 AM
 C:\Users\jrb\OneDrive\Documents\173_EB\WINGS.dgn
 USER: jrb

ASSEMBLED BY : MTB	DATE : 04/16
CHECKED BY : JRM	DATE : 04/16
DRAWN BY : WJH 12/11	REV. 4/15
CHECKED BY : AAC 12/11	MAA/TMG

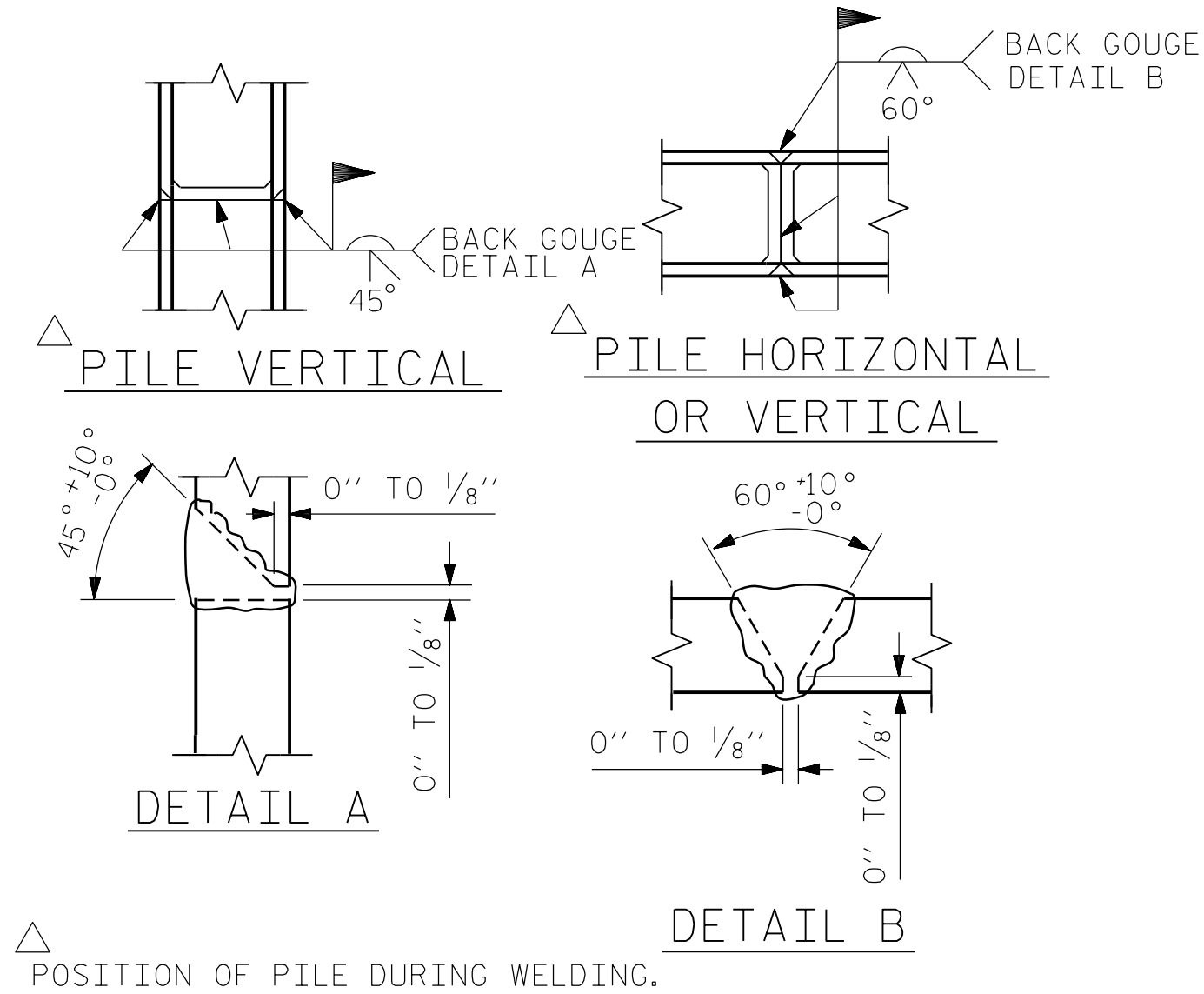


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

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

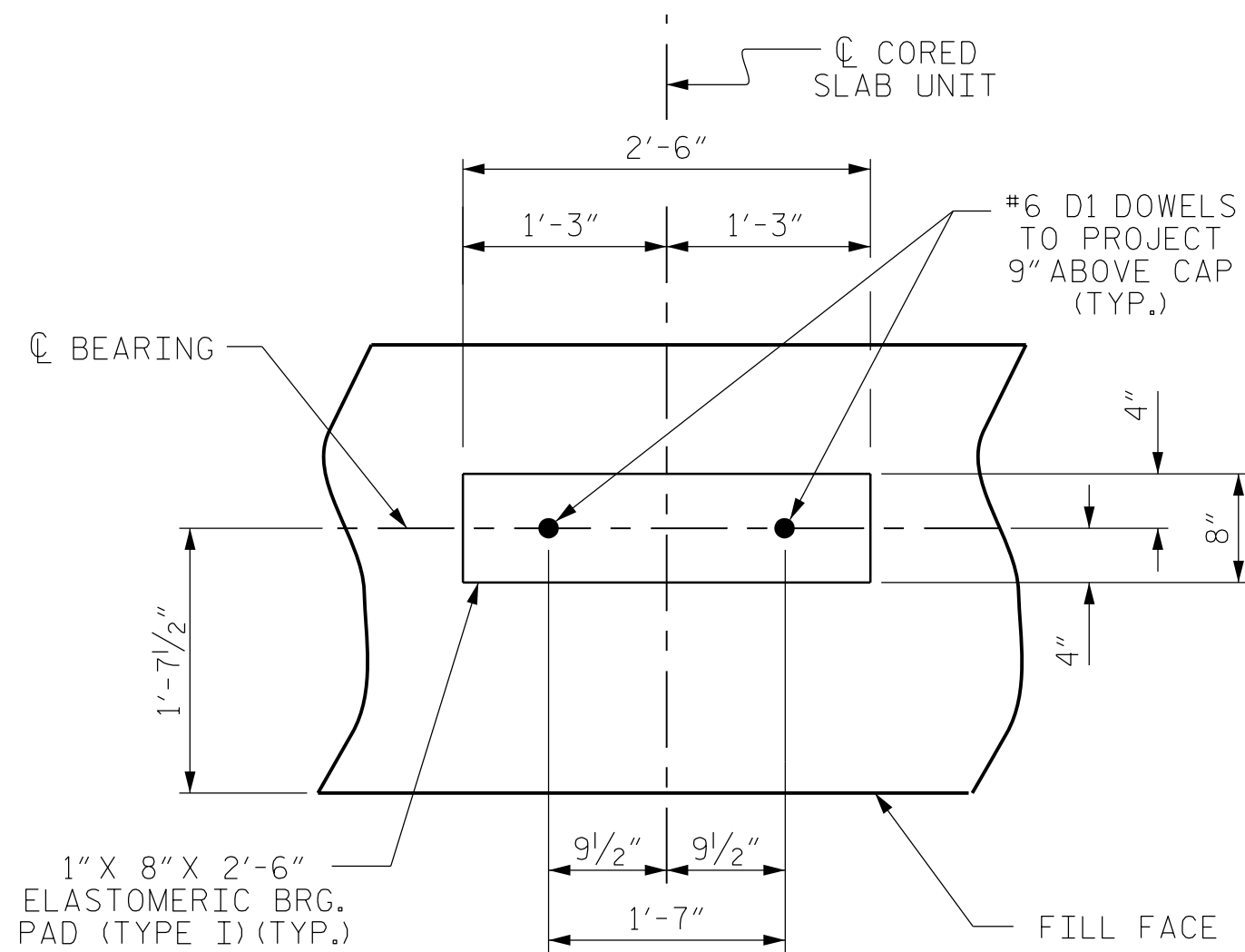
TEMPORARY DRAINAGE AT END BENT



PILE SPLICE DETAILS

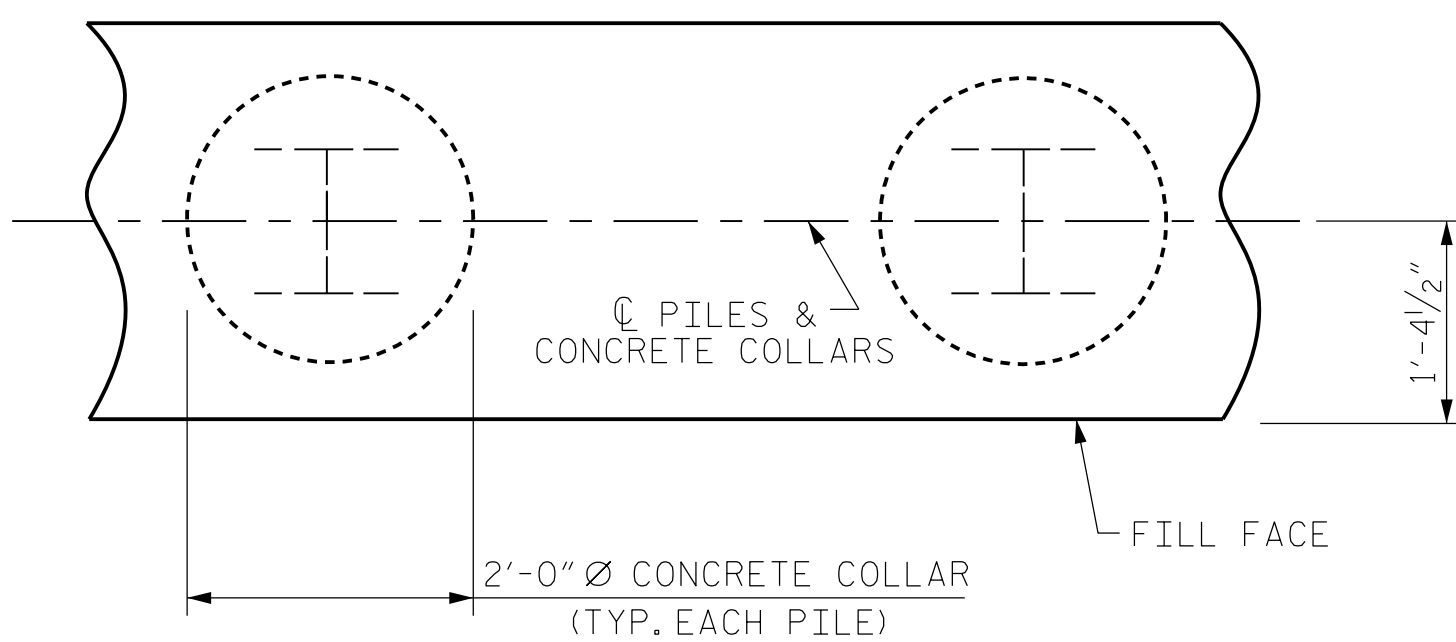
BILL OF MATERIAL FOR ONE END BENT					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#11	1	41'-8"	1771
B2	28	#4	STR	20'-7"	385
B3	10	#4	STR	2'-5"	16
D1	22	#6	STR	1'-6"	50
H1	40	#4	2	9'-4"	249
K1	16	#4	STR	2'-11"	31
S1	50	#4	3	10'-5"	348
S2	50	#4	4	3'-2"	106
S3	20	#4	5	6'-6"	87
V1	52	#4	STR	6'-2"	214
REINFORCING STEEL (FOR ONE END BENT)					3257 LBS.
CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)					
POUR #1	CAP, LOWER PART OF WINGS & COLLARS				19.5 C.Y.
POUR #2	UPPER PART OF WINGS				2.1 C.Y.
TOTAL CLASS A CONCRETE					21.6 C.Y.

BAR TYPES	
END BENT No. 1 HP 12 X 53 STEEL PILES NO: 5 LIN. FT. = 260	END BENT No. 2 HP 12 X 53 STEEL PILES NO: 5 LIN. FT. = 285



DETAIL "A"

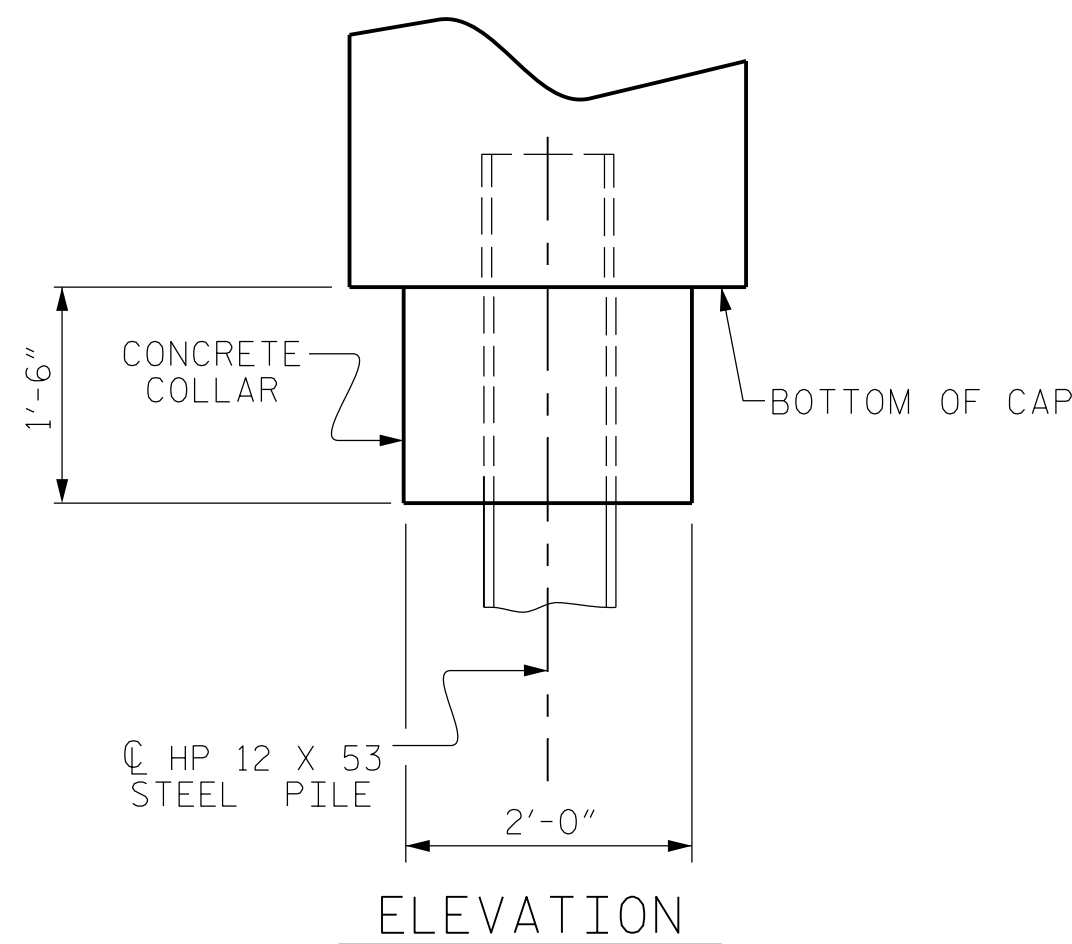
(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION) (DIMENSIONS ARE TYPICAL EACH BEARING)



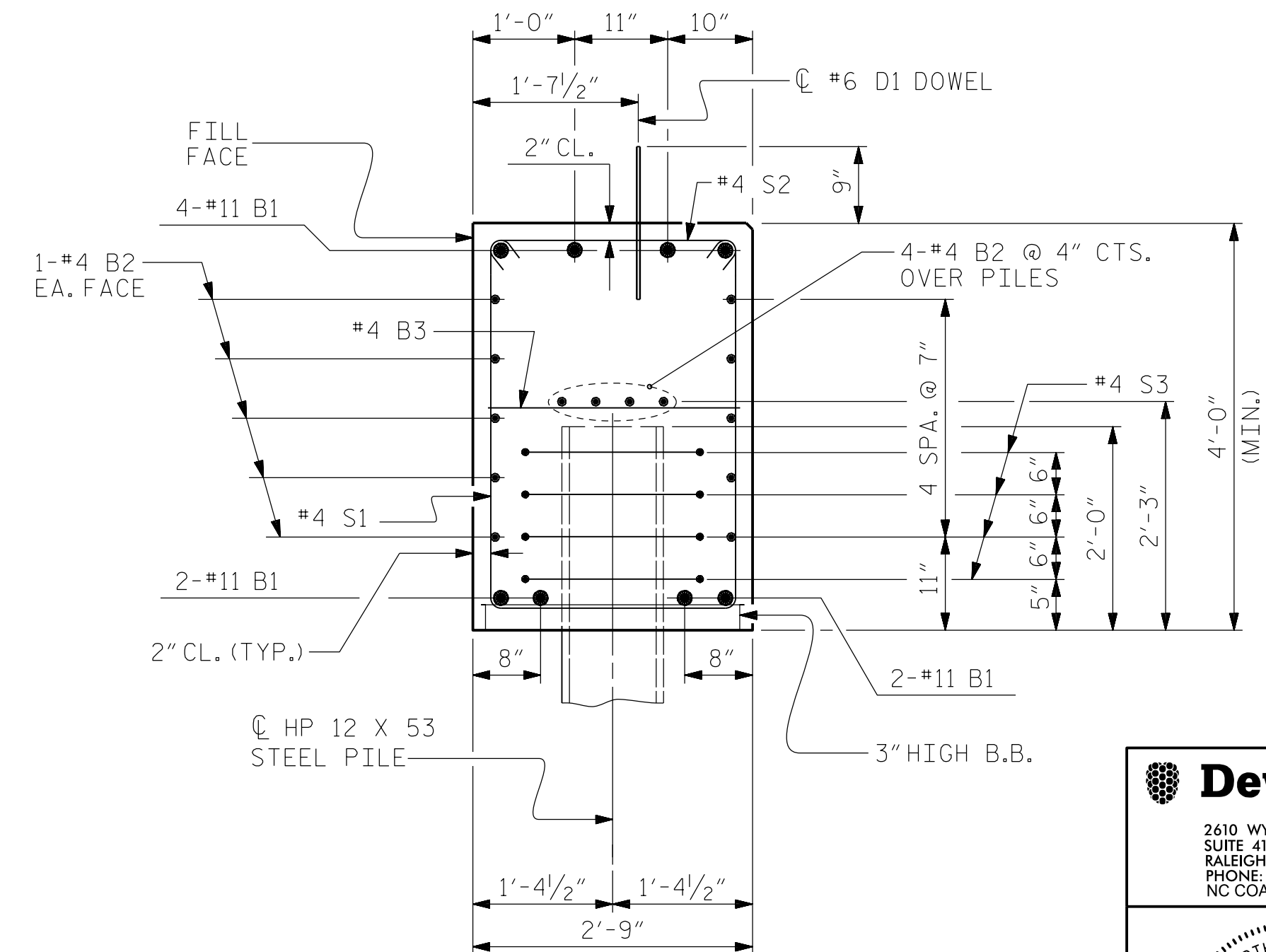
PLAN

CORROSION PROTECTION FOR STEEL PILES DETAIL

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



ELEVATION



SECTION A-A

(CONCRETE COLLAR NOT SHOWN FOR CLARITY. SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL.")

PROJECT NO. B-5333
ROBESON COUNTY
STATION: 21+57.00 -L-

SHEET 4 OF 4 BRIDGE NO. 173

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

NORTH CAROLINA PROFESSIONAL ENGINEER
SEAL 032076
JENNIFER R. McROY

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
END BENT No. 1 & 2
DETAILS

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

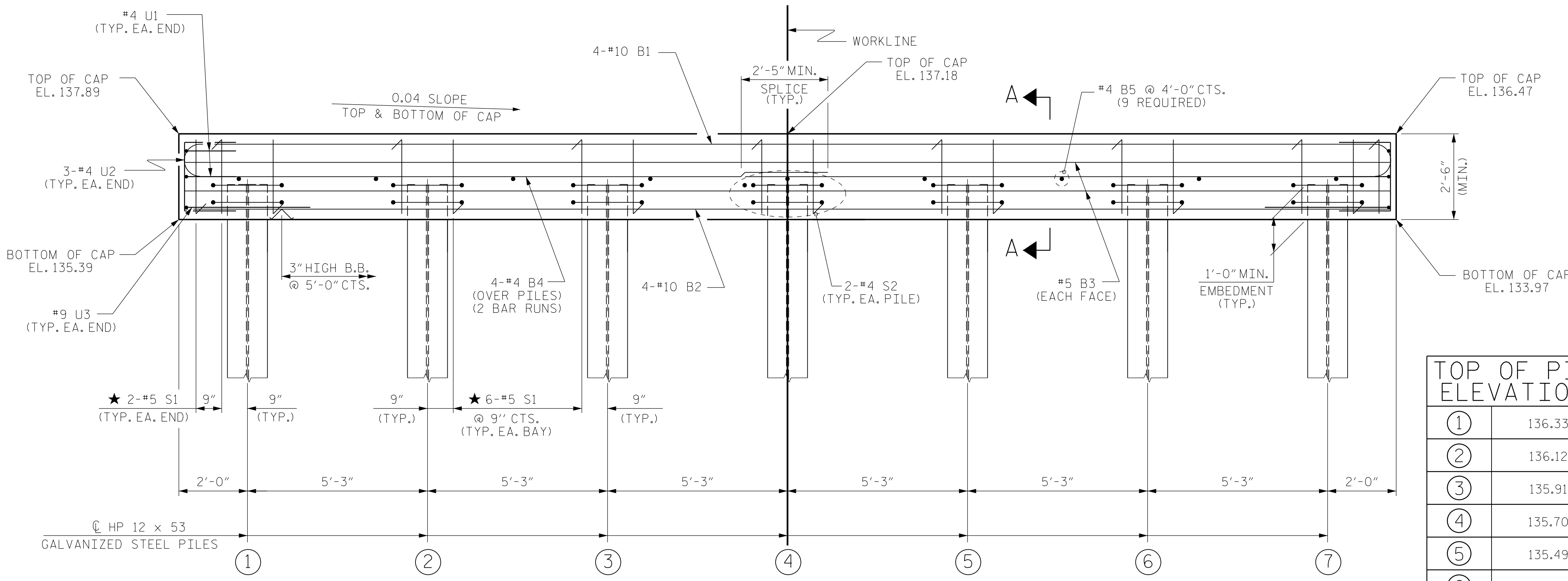
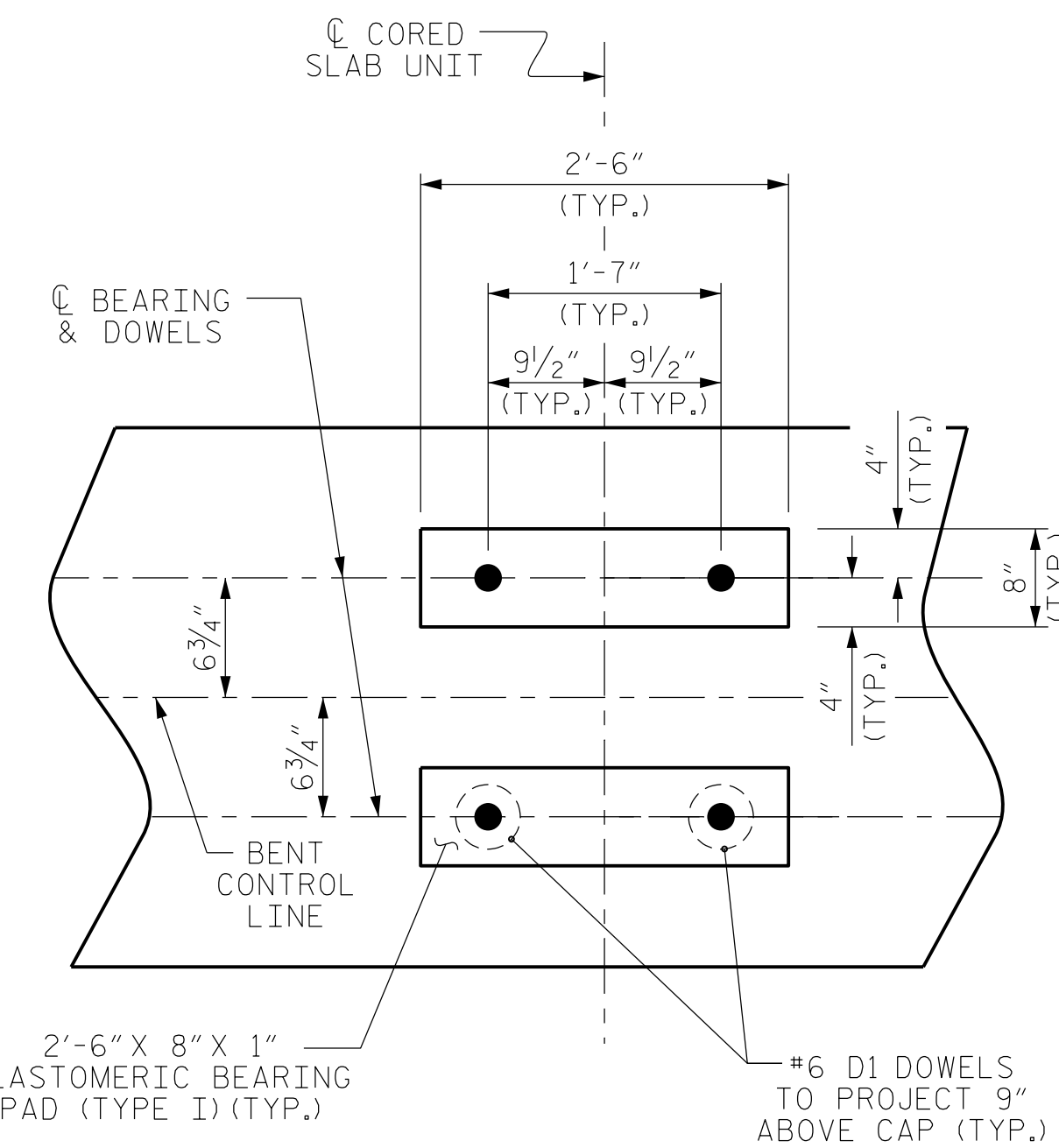
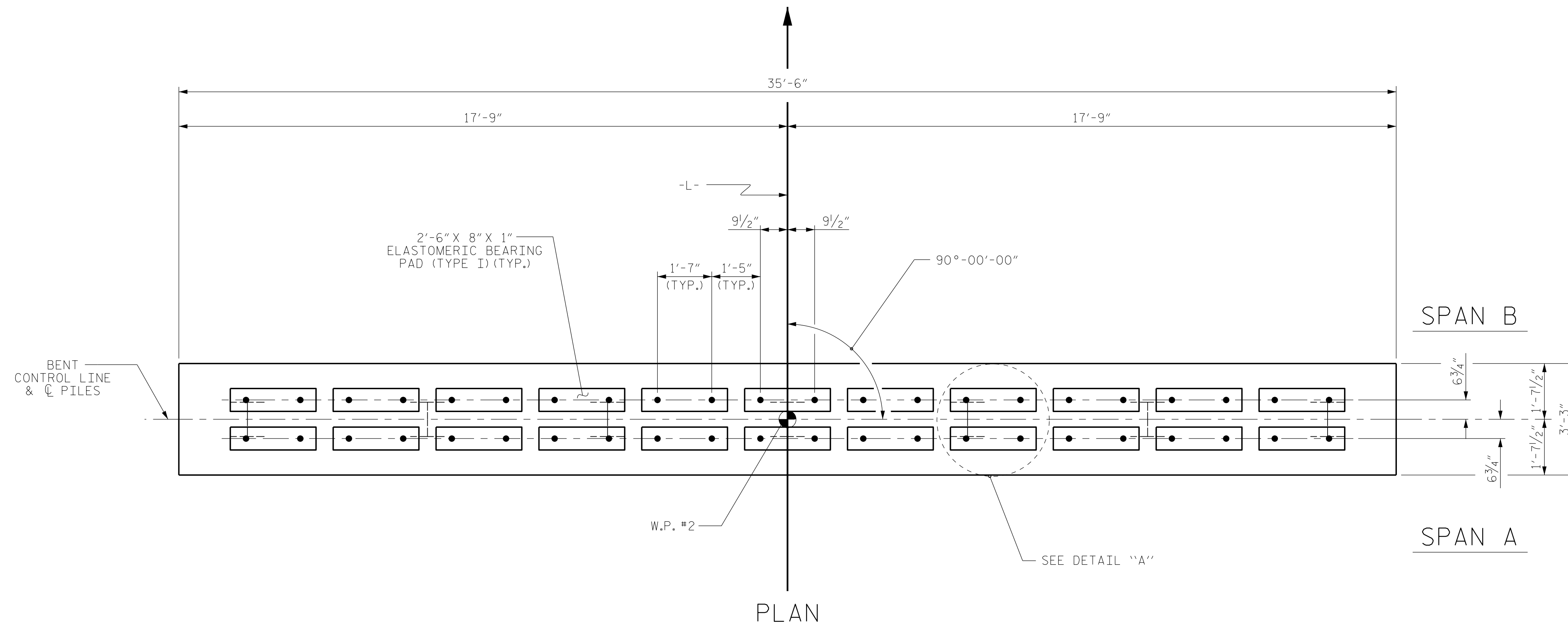
TOTAL SHEETS 24

6/2/2016 9:13:34 AM
C:\Users\jrb\Documents\173.EBTDTL.dgn
USER: jrb

DRAWN BY: MTB DATE: 04/16
CHECKED BY: JRM DATE: 04/16

NOTES

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.
- ★ INVERT ALTERNATE STIRRUPS.
- GALVANIZE THE TOP OF EACH INTERIOR BENT PILE A MINIMUM OF 26 FEET, GALVANIZE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.



TOP OF PILE ELEVATIONS	
①	136.33
②	136.12
③	135.91
④	135.70
⑤	135.49
⑥	135.28
⑦	135.07

DETAIL "A"
(DIMENSIONS ARE TYPICAL EACH BEARING)

PROJECT NO. B-5333
ROBESON COUNTY
 STATION: 21+57.00 -L-
 SHEET 1 OF 2 BRIDGE NO. 173

Dewberry
 2610 WYCLIFF ROAD
 SUITE 410
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 NC COA No. F-0929

SEAL
 032076
 ENGINEER
 JENNIFER R. MCDY

DocuSigned by:
 Jennifer R. Mcdy 6/6/2016
 E1114C791288475...

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT No. 1

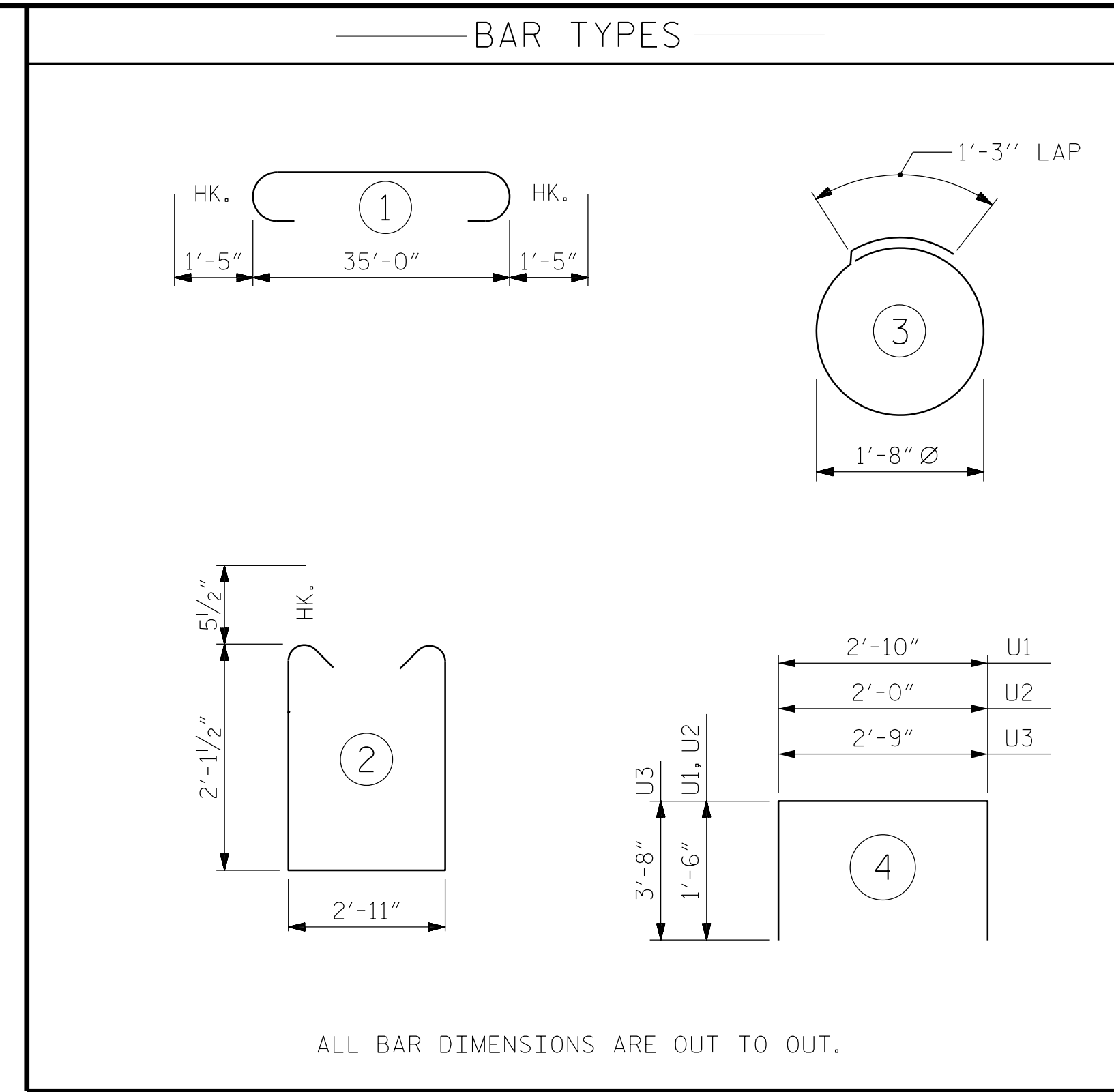
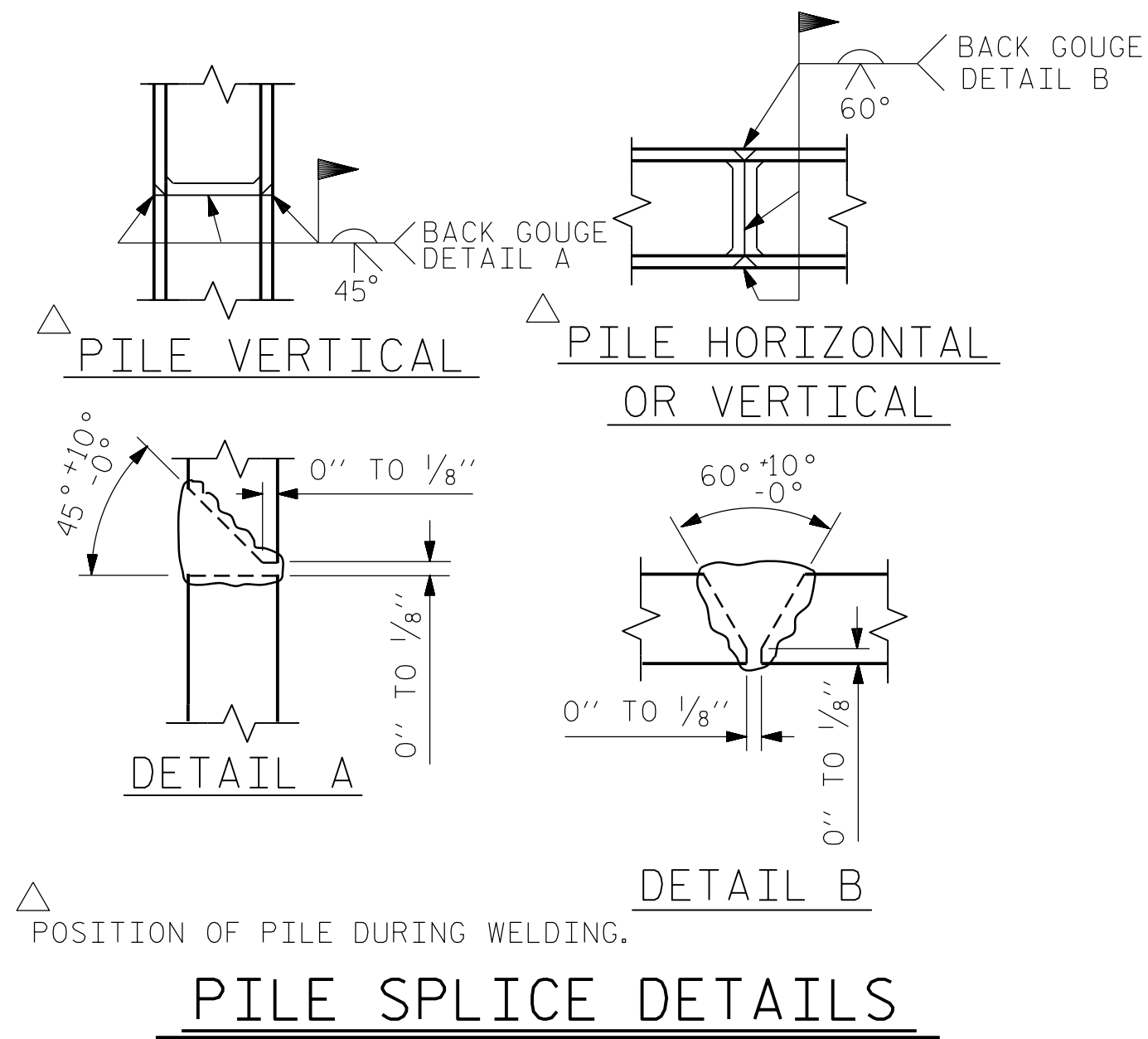
REVISIONS					
No.	BY:	DATE:	No.	BY:	DATE:
1			3		
2			4		

SHEET No.
S01-13
 TOTAL SHEETS
 24

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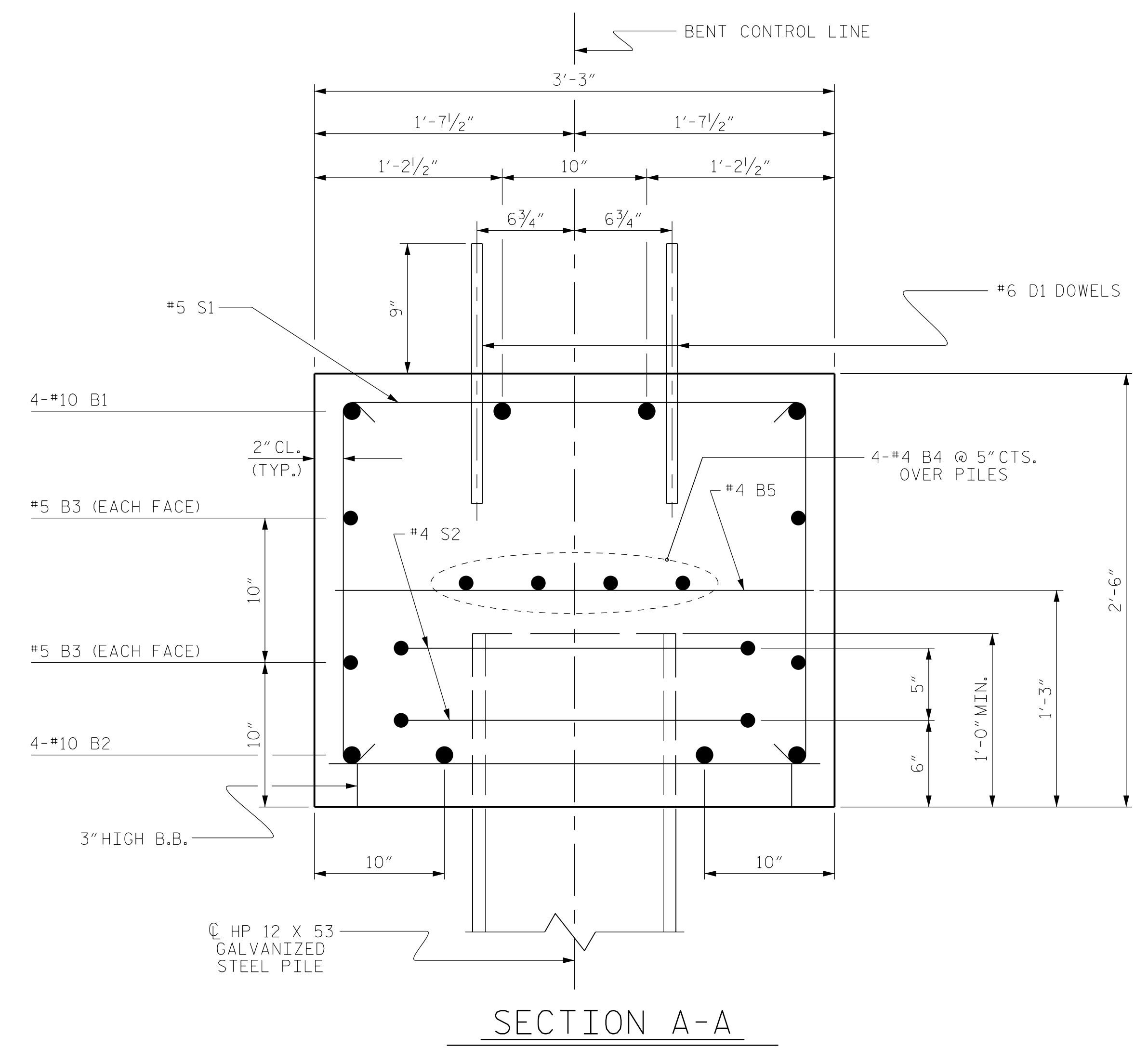
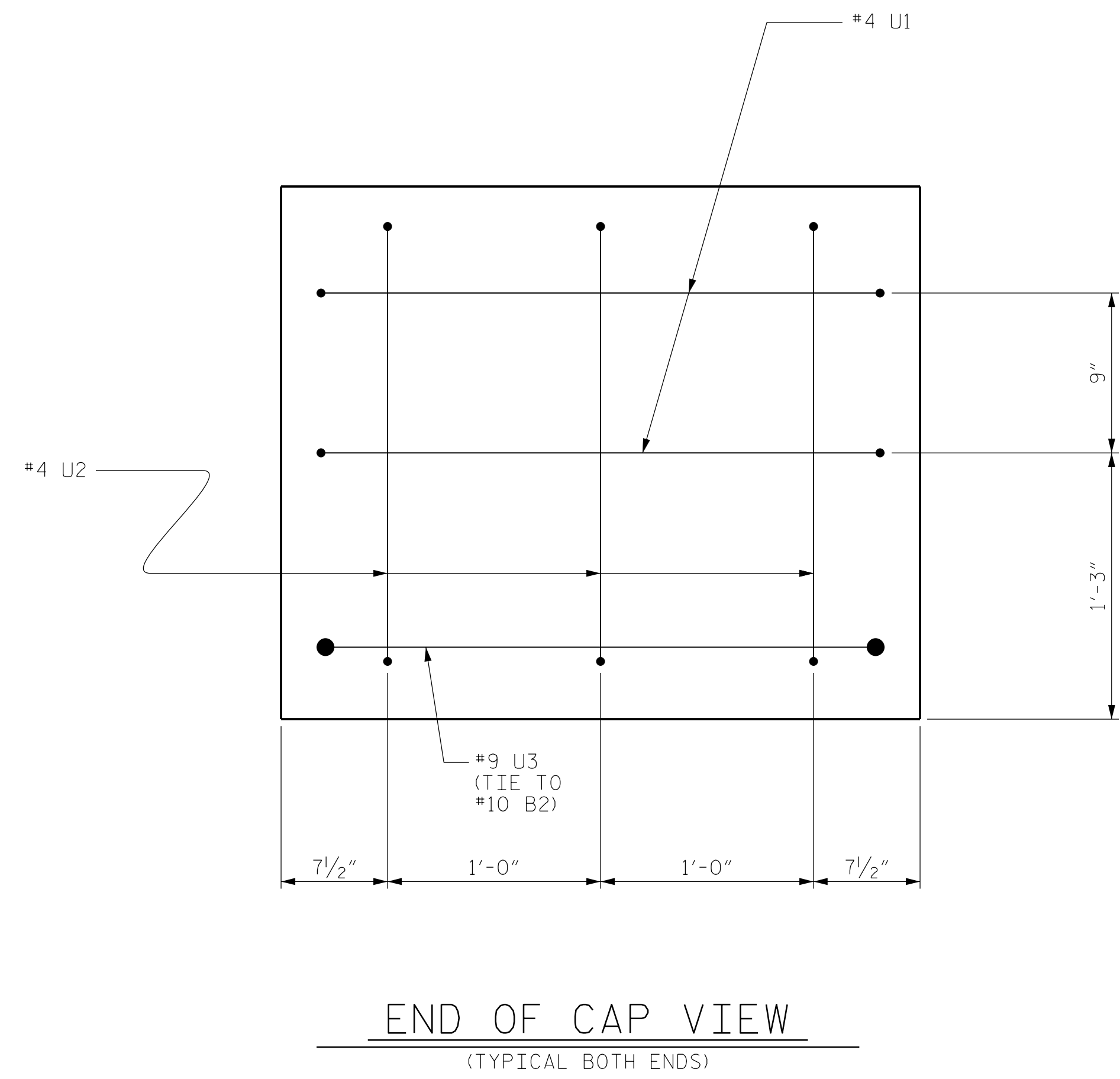
DRAWN BY : MTB DATE : 04/16
 CHECKED BY : JRM DATE : 04/16

ELEVATION
 FOR SECTION A-A, SEE SHEET 2 OF 2



BILL OF MATERIAL FOR ONE BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10		37'-10"	651
B2	4	#10	STR	35'-2"	605
B3	4	#5	STR	35'-2"	147
B4	8	#4	STR	18'-10"	101
B5	9	#4	STR	2'-11"	18
D1	44	#6	STR	1'-6"	99
S1	40	#5	2	8'-1"	337
S2	14	#4	3	6'-6"	61
U1	4	#4	4	5'-10"	16
U2	6	#4	4	5'-0"	20
U3	2	#9	4	10'-1"	69
REINFORCING STEEL (FOR ONE BENT)				2124 LBS	
CLASS A CONCRETE BREAKDOWN (FOR ONE BENT)					
TOTAL CLASS A CONCRETE				10.7 C.Y.	
HP 12 X 53 GALVANIZED STEEL PILES (FOR ONE BENT)					
No. 7				LIN. FT. 462	



PROJECT NO. B-5333
ROBESON COUNTY
 STATION: 21+57.00 -L-

Dewberry
 2610 WYCLIFF ROAD
 SUITE 410
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 NC COA No. F-0929

SEAL
 032076
 ENGINEER
 JENNIFER R. MEROY

DocuSigned by:
 Jennifer R. Meroy 6/6/2016
 E1144C791288475..

SHEET 2 OF 2 BRIDGE NO. 173

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT No. 1

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

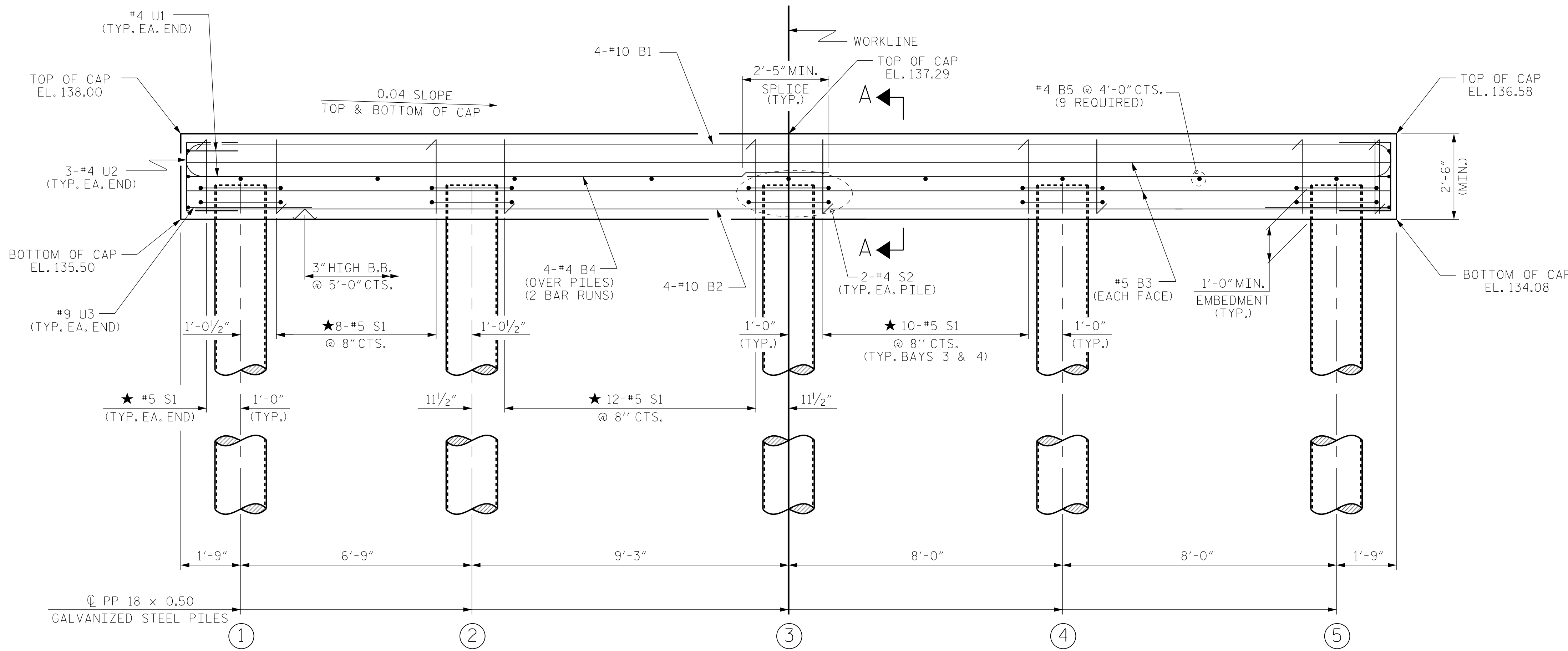
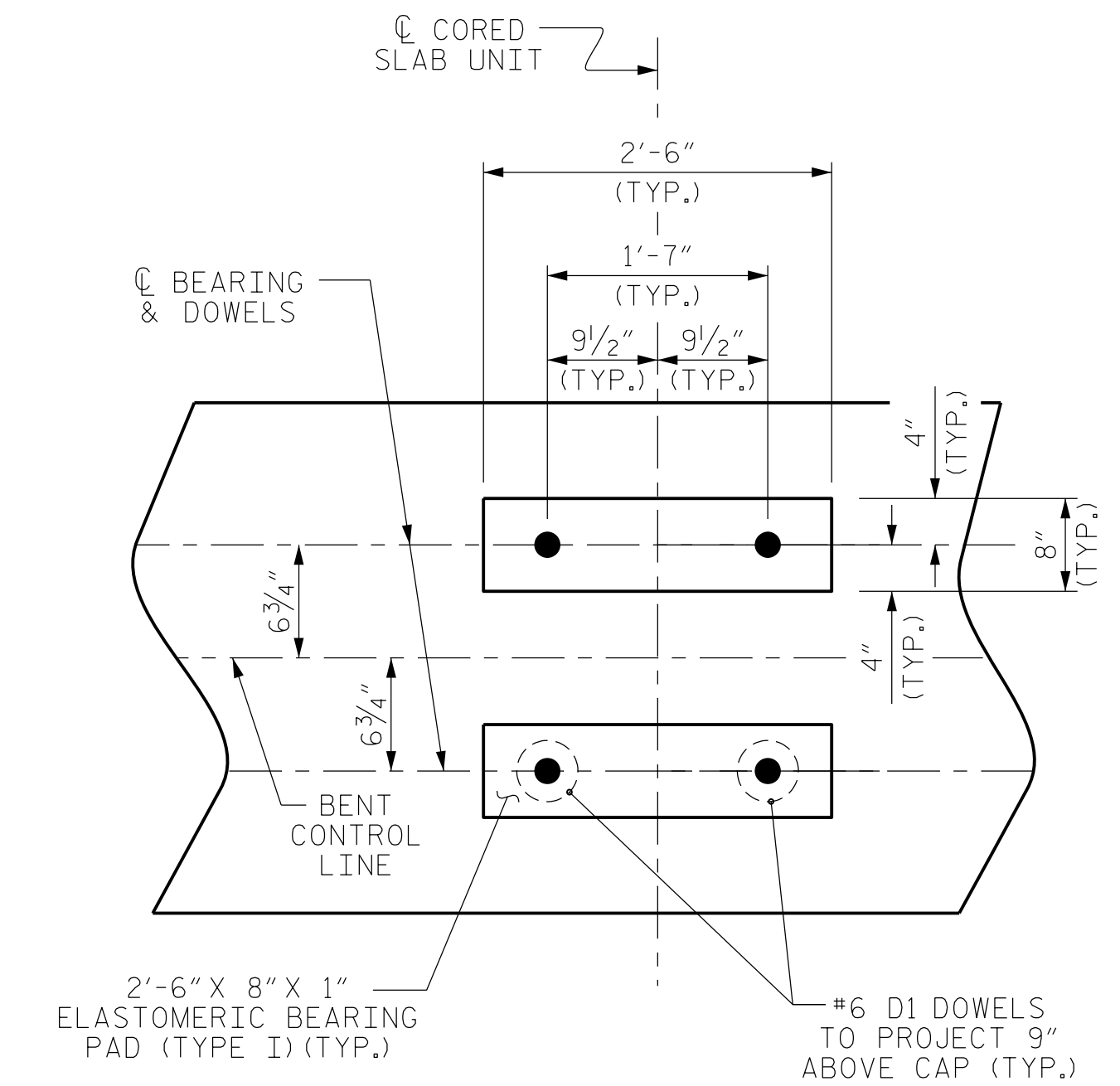
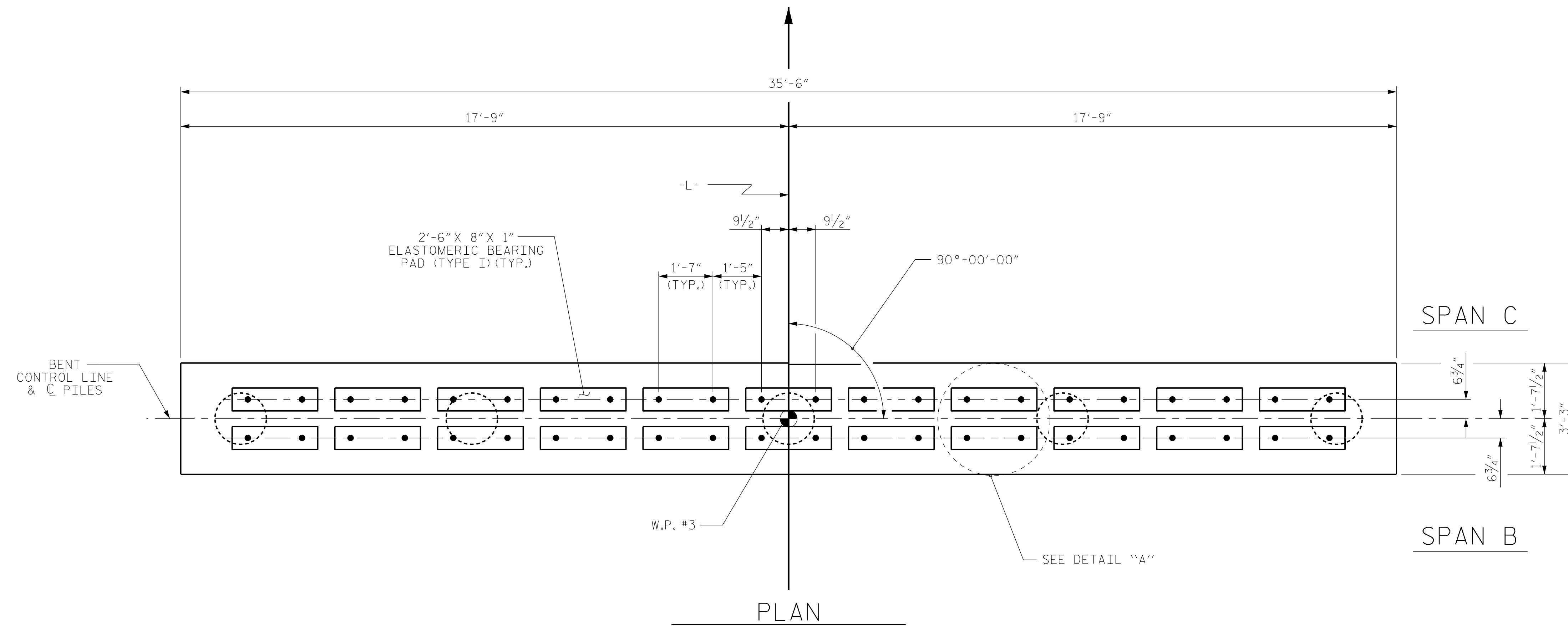
SHEET No. **S01-14**
 TOTAL SHEETS 24

6/2/2016 8:00:57 AM
 USER: mdelisle

DRAWN BY : MTB DATE : 04/16
 CHECKED BY : JRM DATE : 04/16

NOTES

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.
- ★ INVERT ALTERNATE STIRRUPS.
- FOR ADDITIONAL REINFORCING STEEL IN PP 18 x 0.50 GALVANIZED STEEL PILES, SEE SHEET 3 OF 3.
- GALVANIZE THE TOP OF EACH INTERIOR BENT PILE A MINIMUM OF 27 FEET, GALVANIZE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.

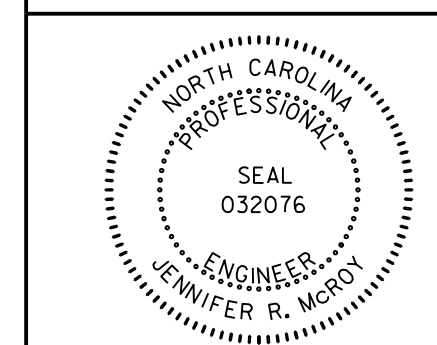


TOP OF PILE ELEVATIONS	
①	136.46
②	136.19
③	135.82
④	135.50
⑤	135.18

PROJECT NO. B-5333
ROBESON COUNTY
 STATION: 21+57.00 -L-

SHEET 1 OF 3 BRIDGE NO. 173

Dewberry
 2610 WYCLIFF ROAD
 SUITE 410
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 NC COA No. F-0929



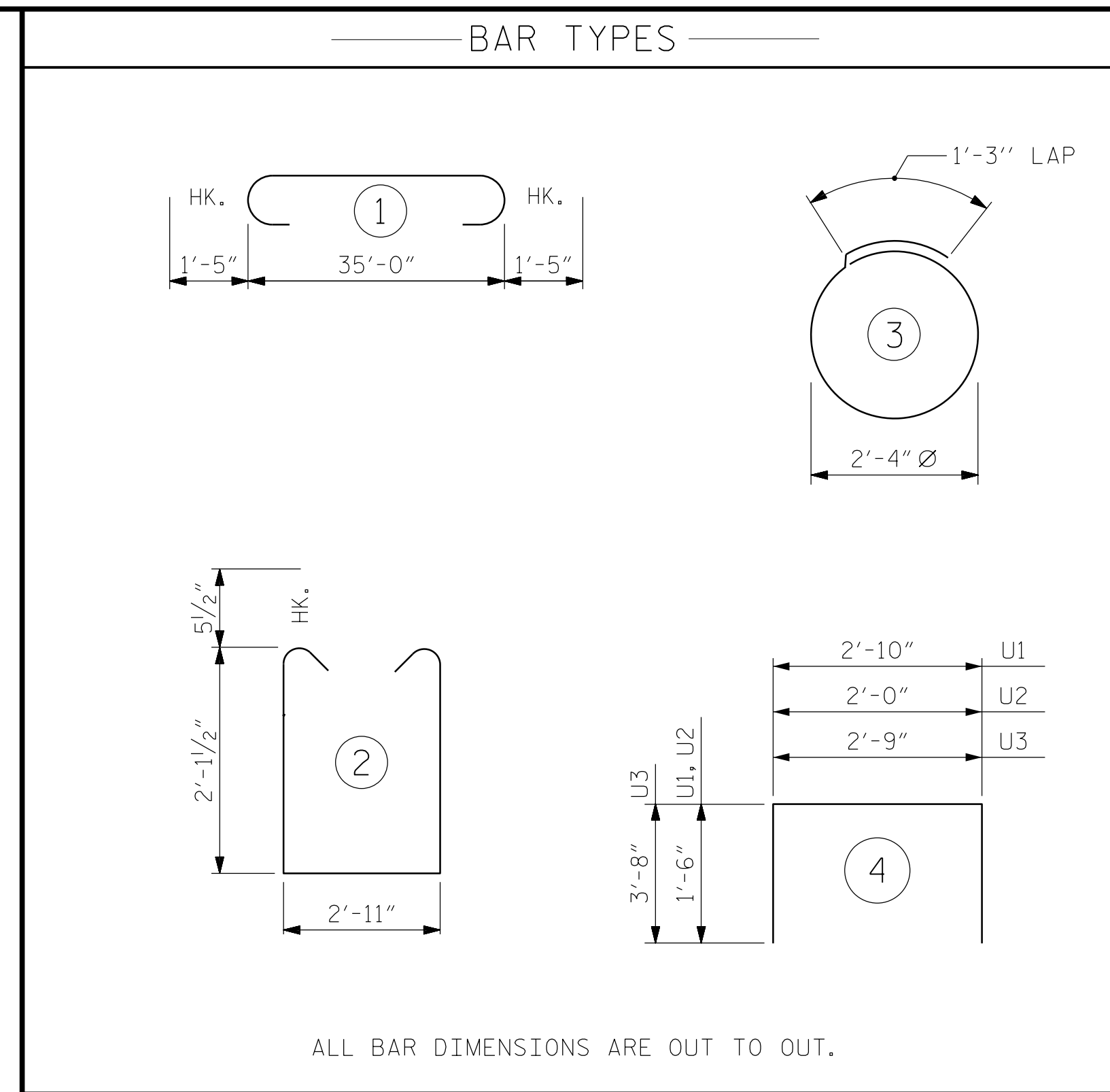
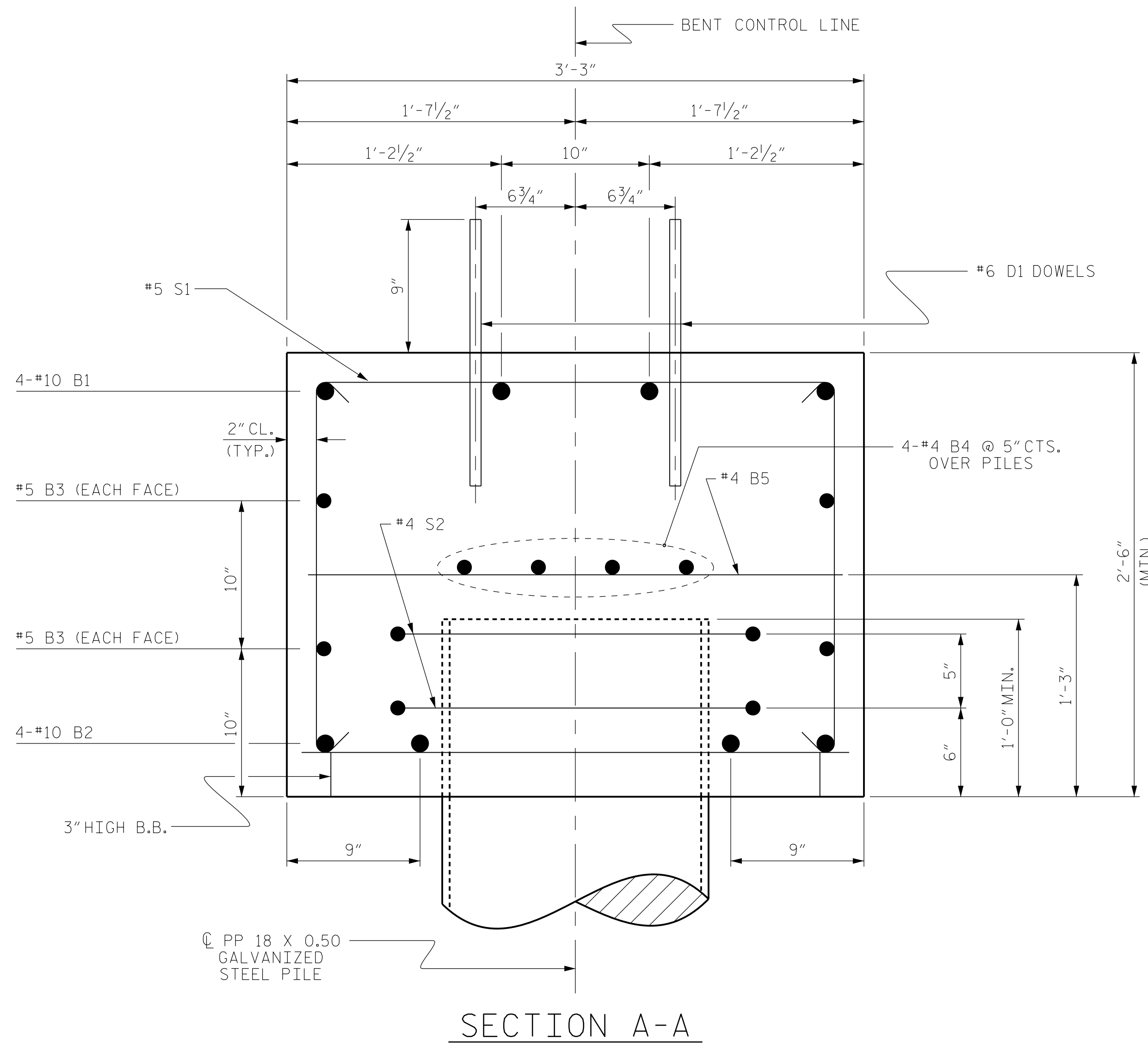
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT No. 2

REVISIONS						SHEET No. S01-15
No.	BY:	DATE:	No.	BY:	DATE:	
1			3			TOTAL SHEETS 24
2			4			

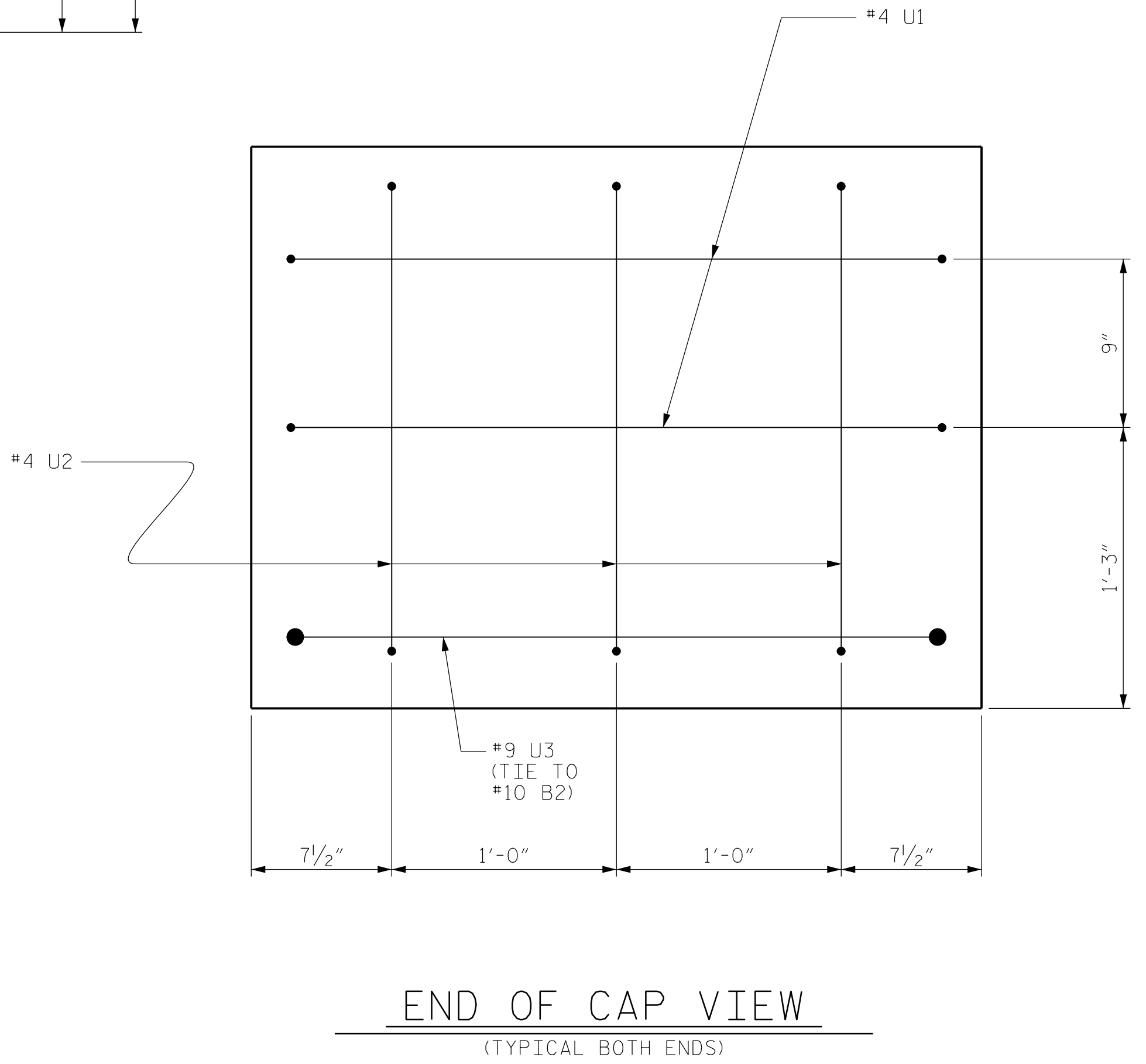
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DRAWN BY : MTB DATE : 04/16
 CHECKED BY : JRM DATE : 04/16

ELEVATION
 FOR SECTION A-A, SEE SHEET 2 OF 3



ALL BAR DIMENSIONS ARE OUT TO OUT.



BILL OF MATERIAL FOR ONE BENT					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	1	37'-10"	651
B2	4	#10	STR	35'-2"	605
B3	4	#5	STR	35'-2"	147
B4	8	#4	STR	18'-10"	101
B5	9	#4	STR	2'-11"	18
D1	44	#6	STR	1'-6"	99
S1	42	#5	2	8'-1"	354
S2	10	#4	3	8'-7"	57
U1	4	#4	4	5'-10"	16
U2	6	#4	4	5'-0"	20
U3	2	#9	4	10'-1"	69
REINFORCING STEEL (FOR ONE BENT)					2137 LBS
CLASS A CONCRETE BREAKDOWN (FOR ONE BENT)					
TOTAL CLASS A CONCRETE					▲ 10.1 C.Y.
PP 18 x 0.50 GALVANIZED STEEL PILES (FOR ONE BENT)					
No. 5					LIN. FT. 405
PIPE PILE PLATES					No. = 5
PILE EXCAVATION IN SOIL					LIN. FT. 0
PILE EXCAVATION NOT IN SOIL					LIN. FT. 0

▲ CONCRETE DISPLACED BY THE PP 18 x 0.50 GALVANIZED STEEL PILES HAS BEEN DEDUCTED FROM THE CONCRETE QUANTITY.

PROJECT NO. B-5333
ROBESON COUNTY
 STATION: 21+57.00 -L-
 SHEET 2 OF 3 BRIDGE NO. 173

Dewberry
 2610 WYCLIFF ROAD
 SUITE 410
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 NC COA No. F-0929

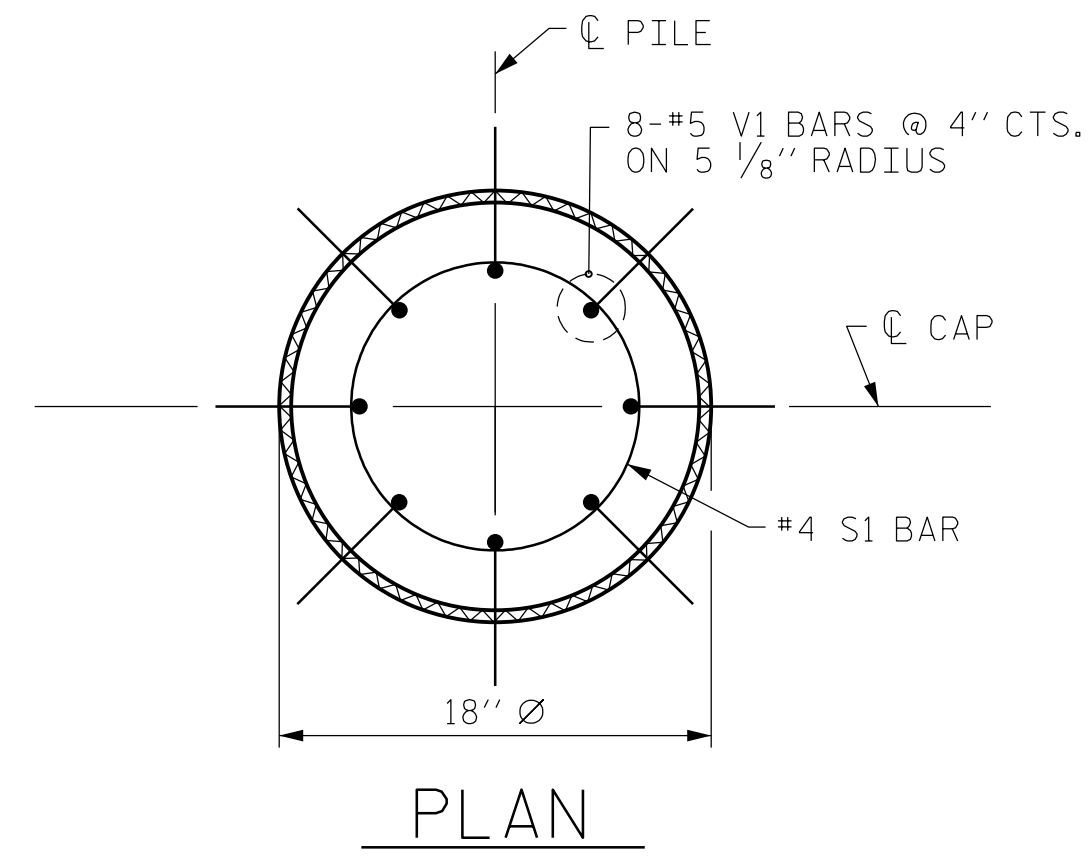
SEAL
 032076
 ENGINEER
 JENNIFER R. McROY

Drawn/Checked by:
 Jennifer R. McRoy 6/6/2016

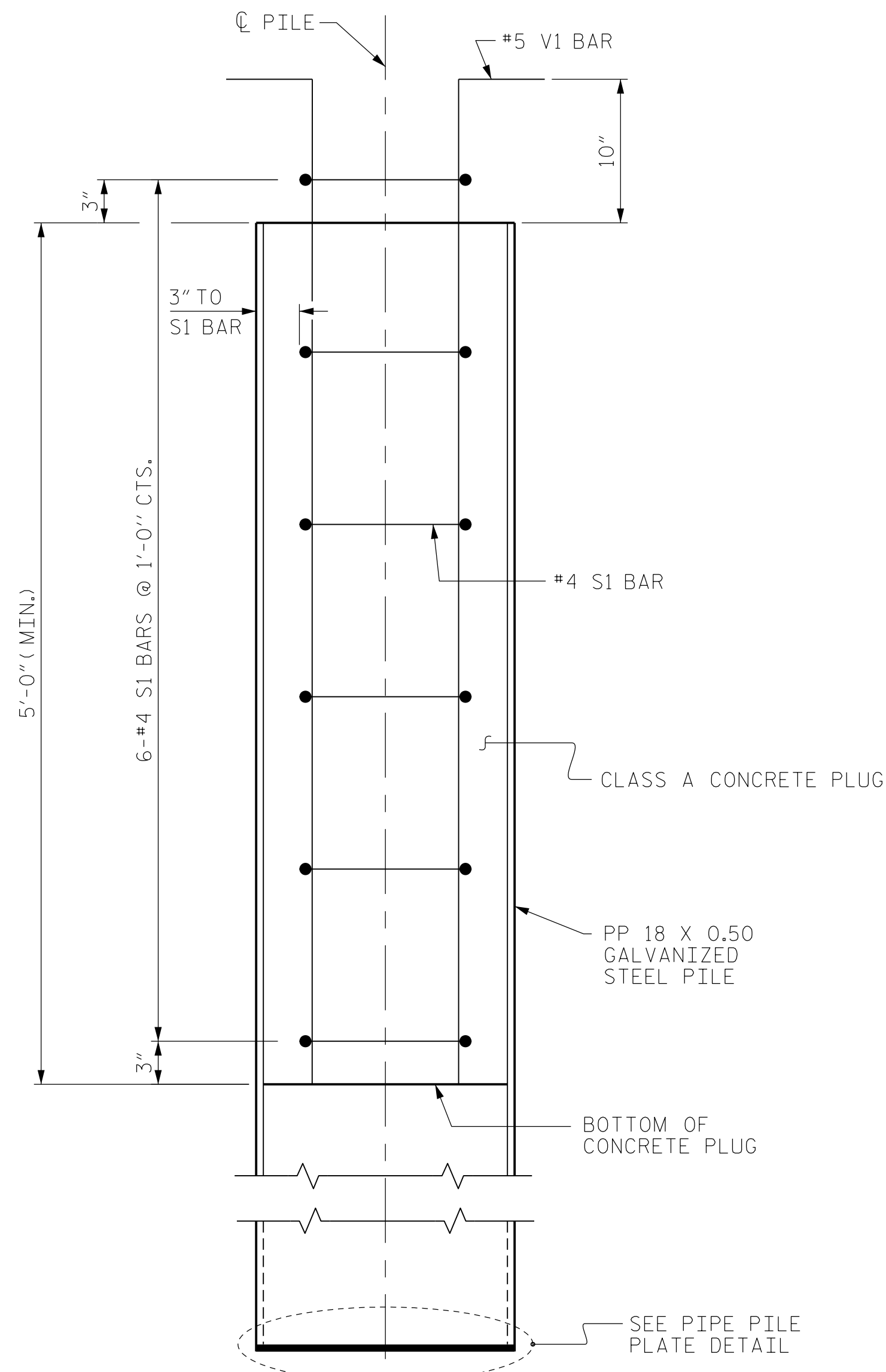
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No.	BY	DATE	No.	BY	DATE
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2			4		

SHEET No. **S01-16**
 TOTAL SHEETS 24

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 DRAWN BY : MTB DATE : 04/16
 CHECKED BY : JRM DATE : 04/16

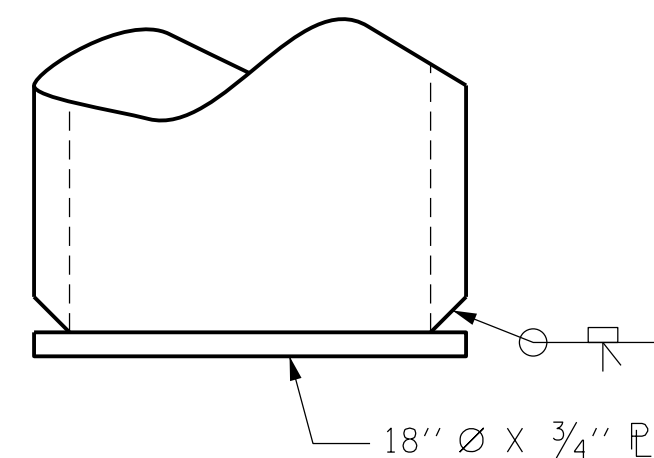


PLAN

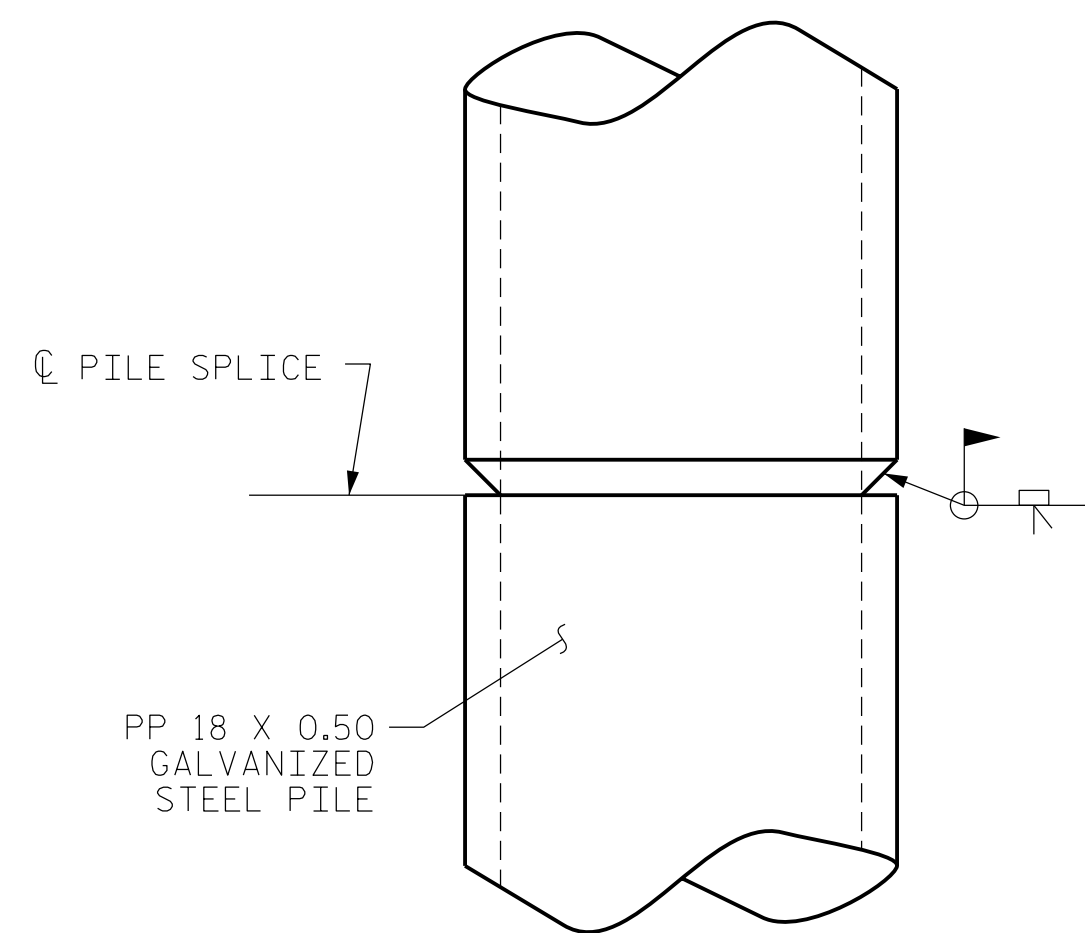


ELEVATION

PP 18 X 0.50 GALVANIZED STEEL PILE
(CLOSED END)



PIPE PILE PLATE DETAIL



PIPE PILE SPLICE DETAIL

NOTES

PIPE PILES SHALL BE IN ACCORDANCE WITH SECTION 1084 OF THE STANDARD SPECIFICATIONS.

GALVANIZE STEEL PIPE PILES IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS UNLESS METALLIZING IS REQUIRED. GALVANIZING OR METALLIZING PIPE PILE PLATES IS NOT REQUIRED.

PIPE PILE PLATES, SHALL BE IN ACCORDANCE WITH SECTION 450 OF THE STANDARD SPECIFICATIONS.

REMOVE AND REPLACE OR REPAIR TO THE SATISFACTION OF THE ENGINEER PILES THAT ARE DAMAGED, DEFORMED OR COLLAPSED DURING INSTALLATION OR DRIVING.

PILE SPLICES SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AND AWS D1.1.

FOR CLOSED END PIPE PILES, REMOVE ALL SOIL AND WATER FROM INSIDE THE PILES JUST PRIOR TO PLACING REINFORCING STEEL AND CONCRETE FOR THE CONCRETE PLUG.

FORM THE CONCRETE PLUG SUCH THAT THE REINFORCING STEEL OR CONCRETE DOES NOT MOVE AND THE CLEARANCE FROM THE REINFORCING STEEL TO THE INSIDE OF THE PILE IS MAINTAINED AFTER CONCRETE PLACEMENT. DO NOT PLACE CONCRETE IN THE BENT CAP UNTIL THE CONCRETE PLUG HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 1500 PSI.

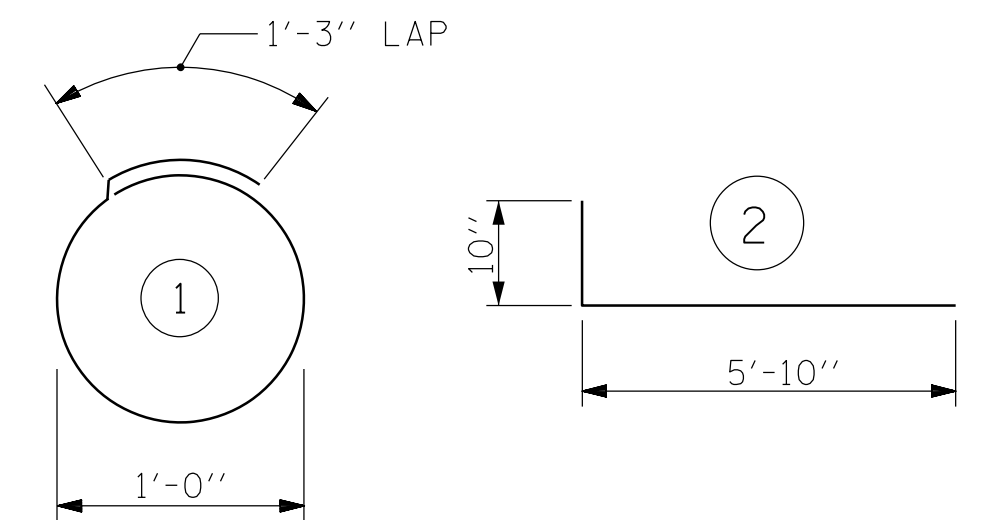
THE REINFORCING STEEL, CLASS A CONCRETE, AND GALVANIZING ARE CONSIDERED INCIDENTAL TO THE CONTRACT UNIT PRICE BID PER LINEAR FOOT FOR PP 18 X 0.50 GALVANIZED STEEL PILES.

BILL OF MATERIAL FOR ONE
PP 18 X 0.50 GALVANIZED STEEL PILE

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
S1	6	#4	1	4'-5"	18
V1	8	#5	2	6'-8"	56
REINFORCING STEEL =				74	lbs

CLASS A CONCRETE
5'-0" MINIMUM PLUG 0.3 CY

BAR TYPES

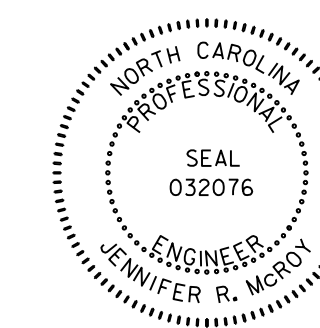


ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. B-5333
ROBESON
21+57.00 -L-

SHEET 3 OF 3 BRIDGE NO. 173

Dewberry
2301 REYWOODS DRIVE
SUITE 200
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929



Designed by:
Jennifer R. McRoy 6/6/2016

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
18" STEEL PIPE PILE
BENT No. 2

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

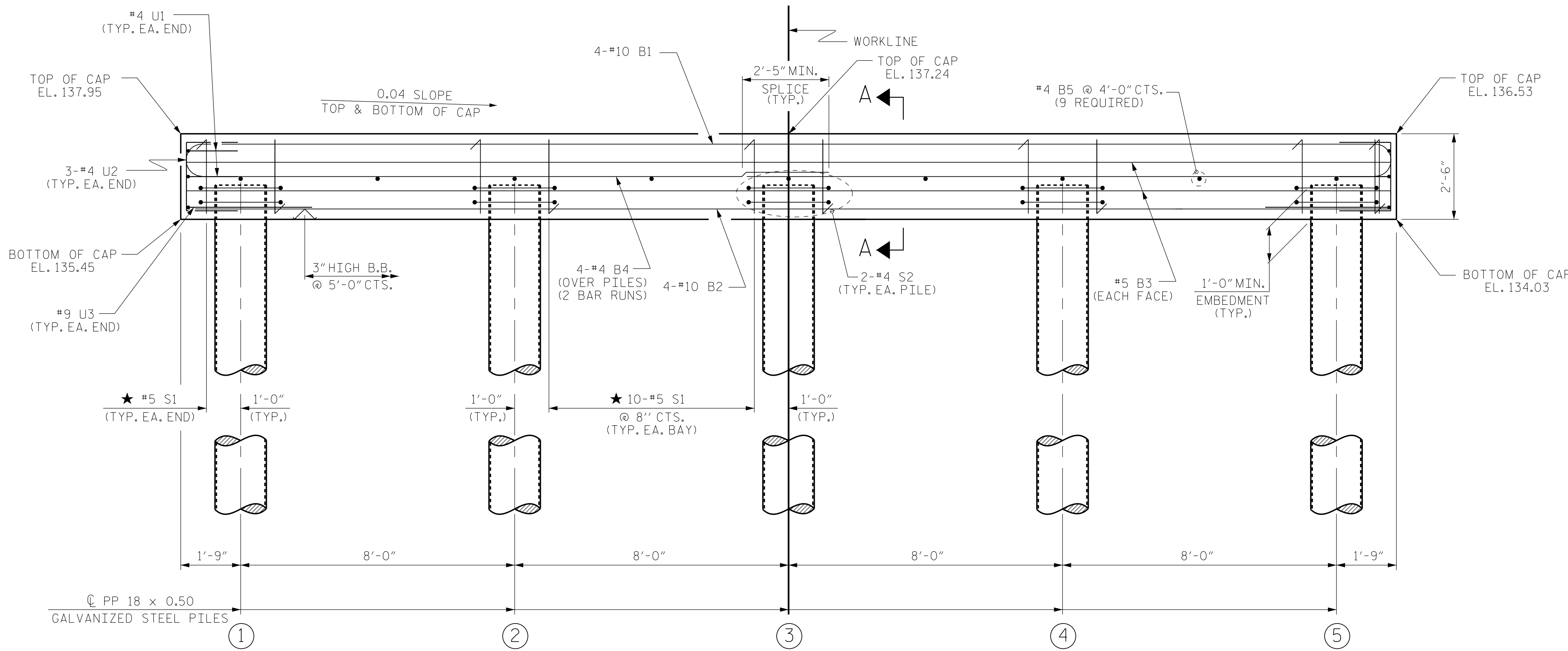
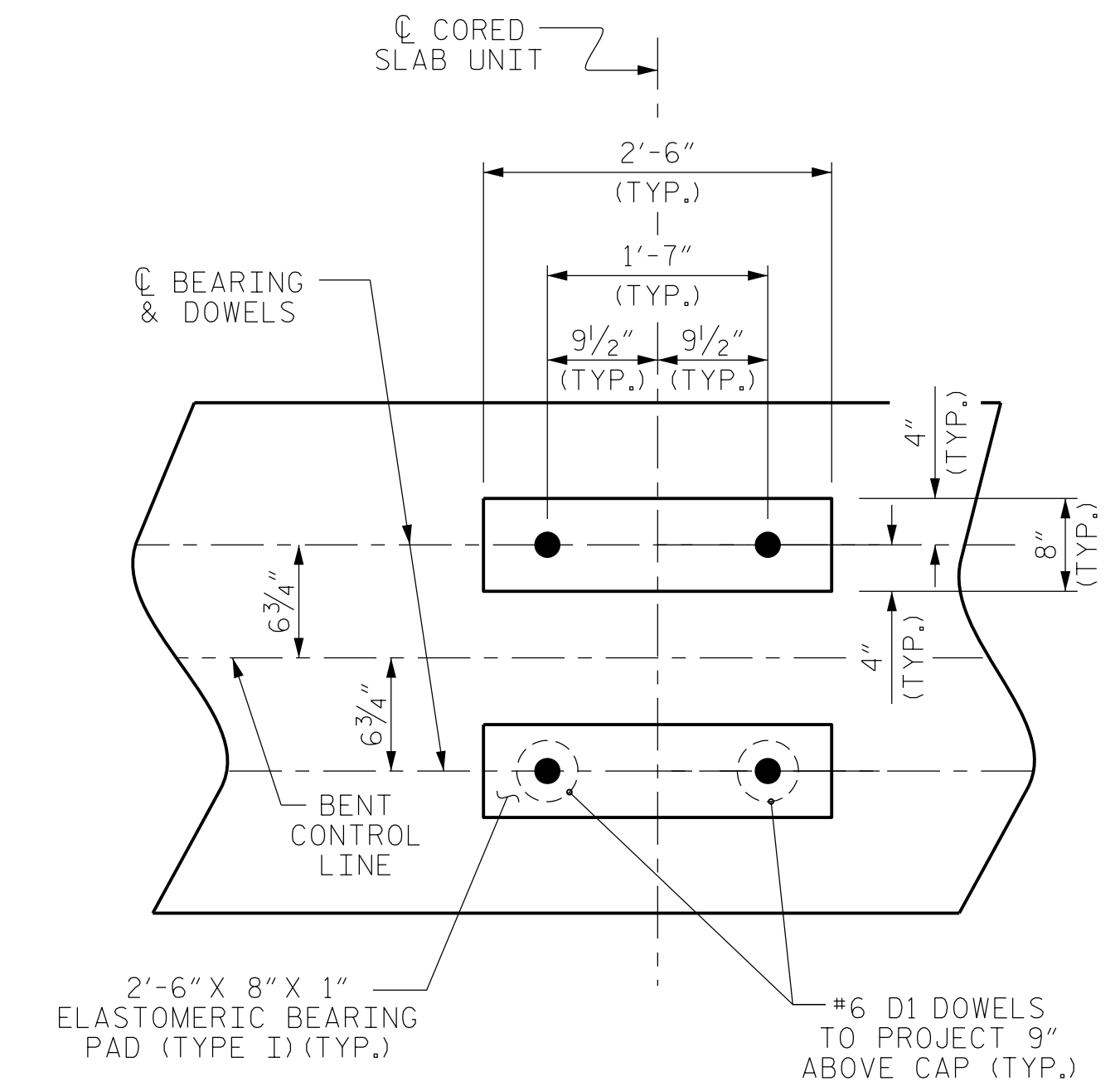
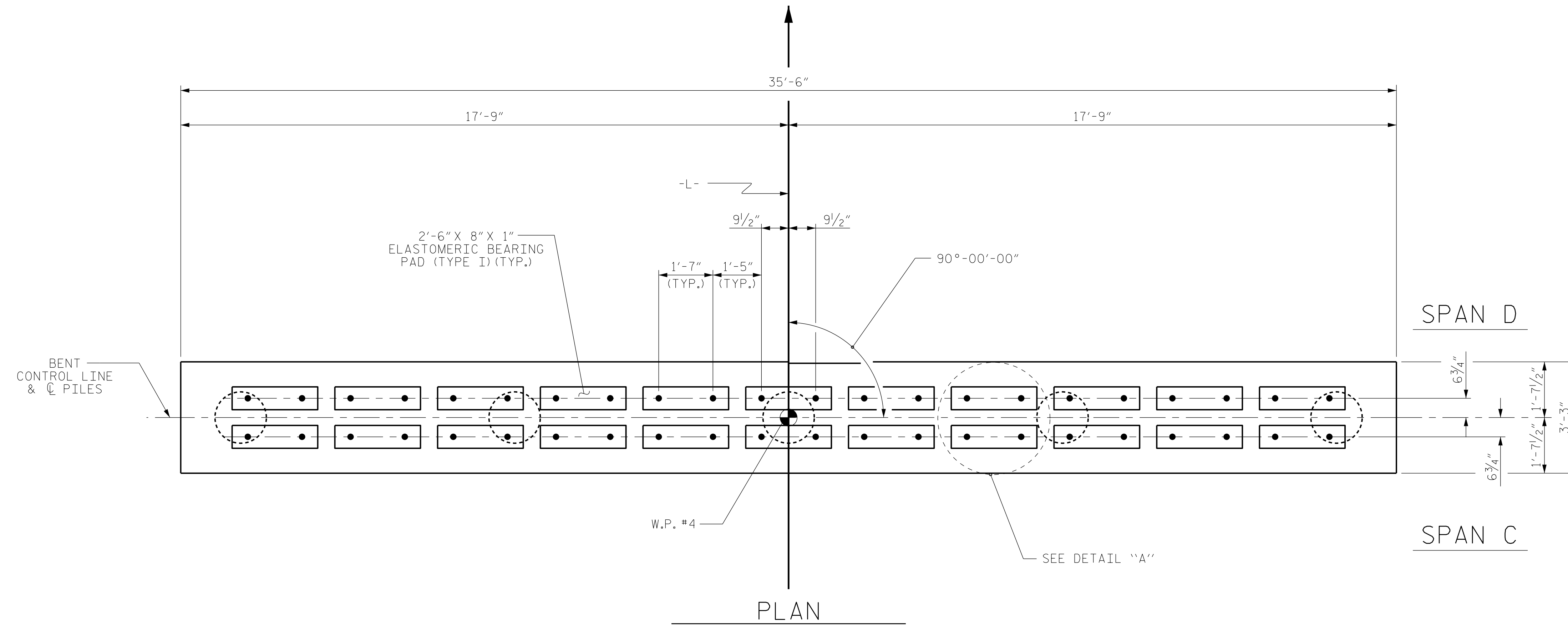
TOTAL SHEETS 24

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ASSEMBLED BY : MTB	DATE : 04/16
CHECKED BY : JRM	DATE : 04/16
DRAWN BY : RWW 1/01	REV. 10/1/05 LBG/TLA
CHECKED BY : LES 1/01	REV. 5/1/06R MAA/KMM
	REV. 10/1/11 MAA/GM

NOTES

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.
- ★ INVERT ALTERNATE STIRRUPS.
- FOR ADDITIONAL REINFORCING STEEL IN PP 18 x 0.50 GALVANIZED STEEL PILES, SEE SHEET 3 OF 3.
- GALVANIZE THE TOP OF EACH INTERIOR BENT PILE A MINIMUM OF 27 FEET, GALVANIZE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.



TOP OF PILE ELEVATIONS	
①	136.41
②	136.09
③	135.77
④	135.45
⑤	135.13

DETAIL "A"
(DIMENSIONS ARE TYPICAL EACH BEARING)

PROJECT NO. B-5333
ROBESON COUNTY
 STATION: 21+57.00 -L-

SHEET 1 OF 3 BRIDGE NO. 173

Dewberry
 2610 WYCLIFF ROAD
 SUITE 410
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 NC COA No. F-0929

SEAL
 032076
 ENGINEER
 JENNIFER R. MCGOY

DocuSigned by:
 Jennifer R. McGoy
 6/6/2016
 E114C791288475

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT No. 3

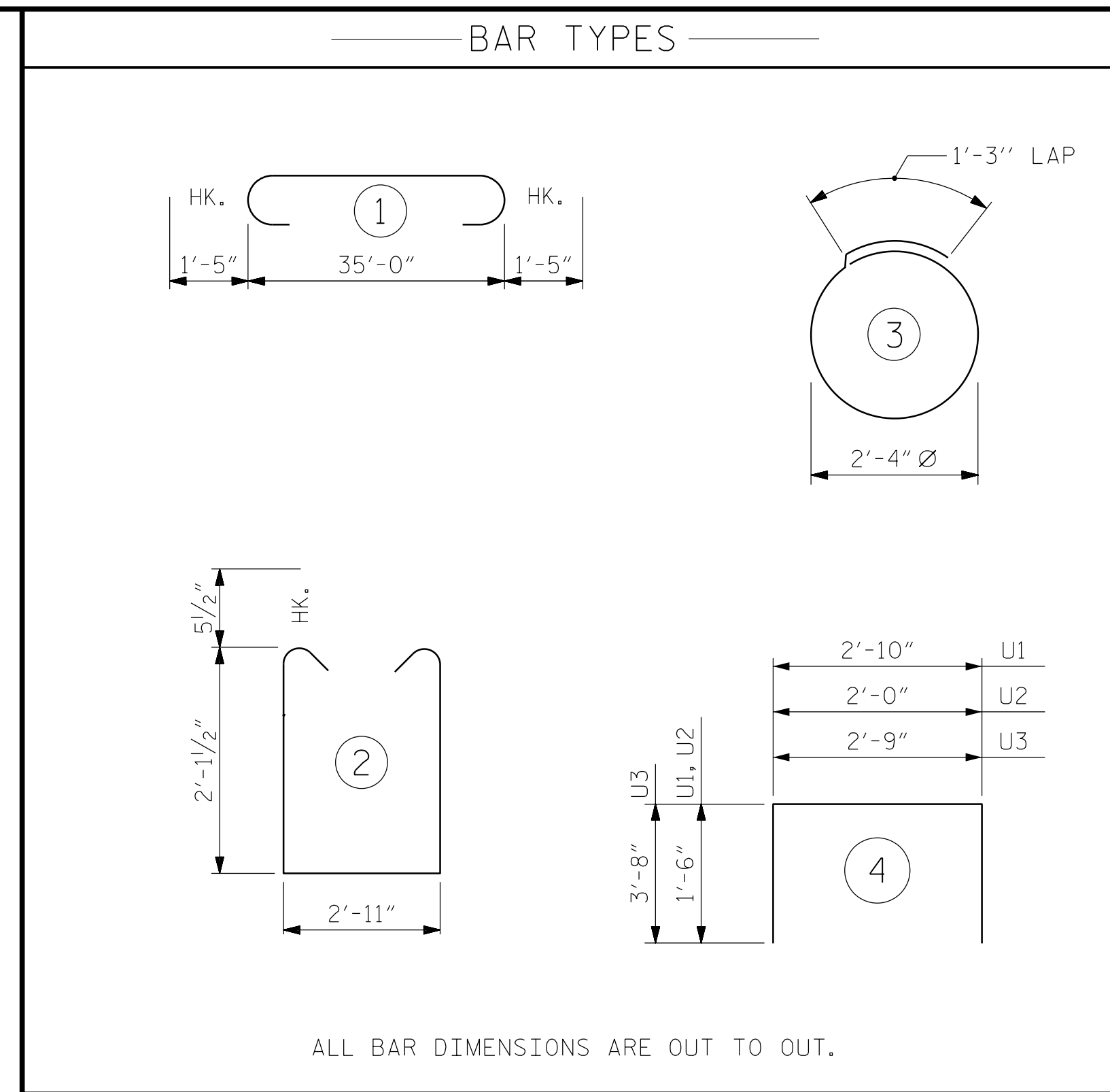
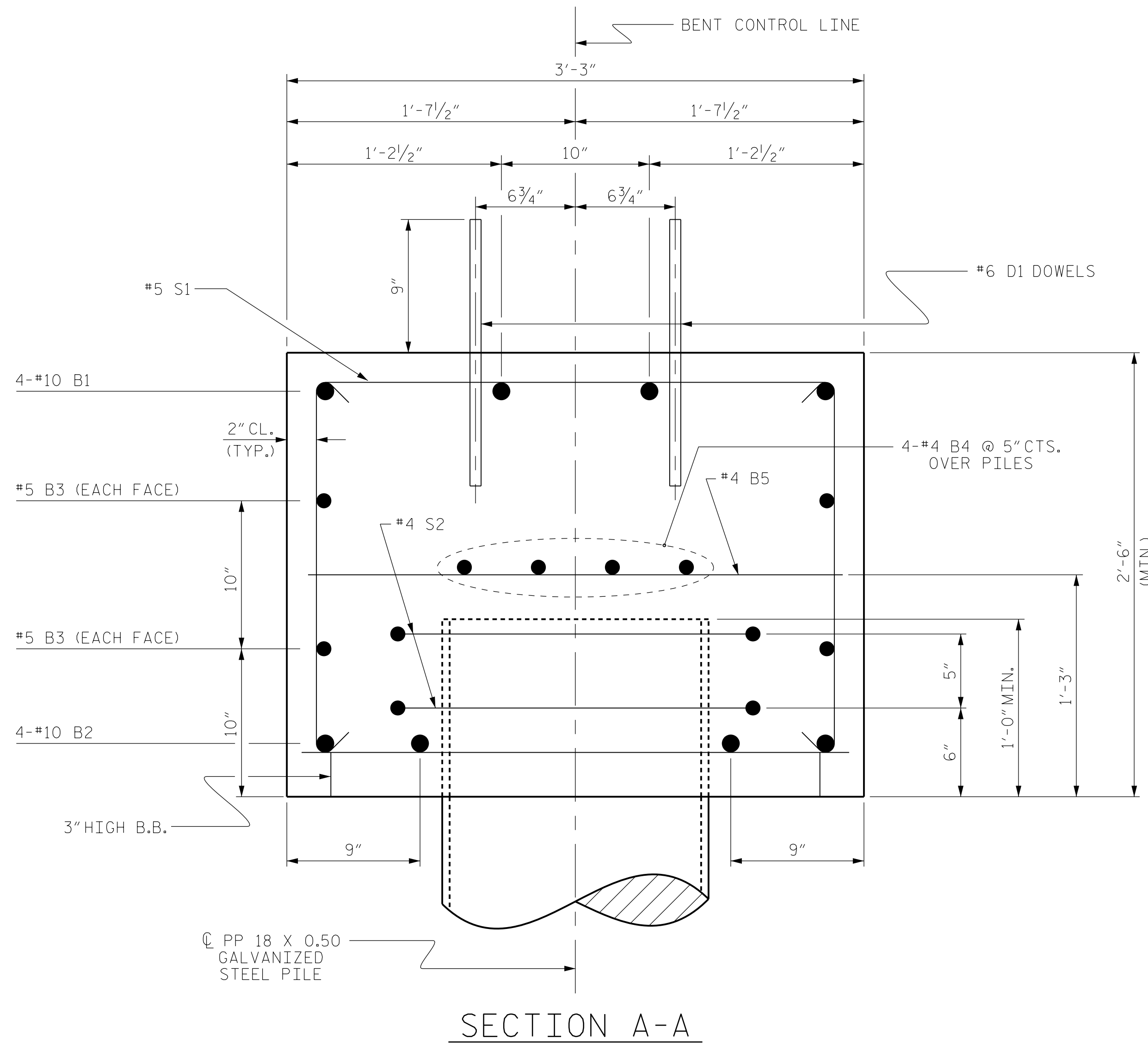
REVISIONS					
No.	BY	DATE	No.	BY	DATE
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2			4		

SHEET No.
S01-18
 TOTAL SHEETS
 24

ELEVATION
 FOR SECTION A-A, SEE SHEET 2 OF 3

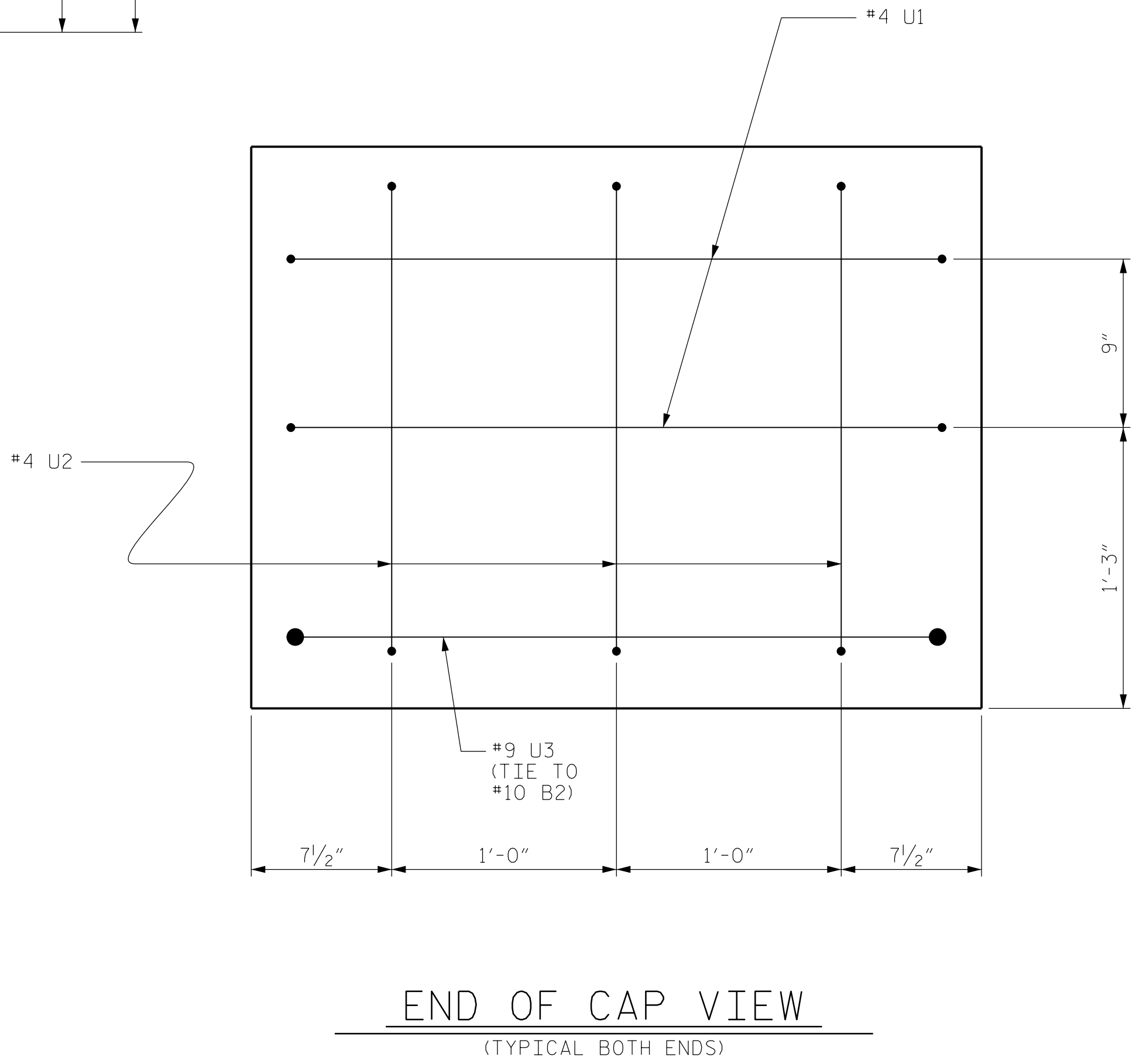
6/2/2016 8:57:02 AM
 USER: mbelisle

DRAWN BY : MTB DATE : 04/16
 CHECKED BY : JRM DATE : 04/16



BILL OF MATERIAL FOR ONE BENT					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	1	37'-10"	651
B2	4	#10	STR	35'-2"	605
B3	4	#5	STR	35'-2"	147
B4	8	#4	STR	18'-10"	101
B5	9	#4	STR	2'-11"	18
D1	44	#6	STR	1'-6"	99
S1	42	#5	2	8'-1"	354
S2	10	#4	3	8'-7"	57
U1	4	#4	4	5'-10"	16
U2	6	#4	4	5'-0"	20
U3	2	#9	4	10'-1"	69
REINFORCING STEEL (FOR ONE BENT)					2137 LBS
CLASS A CONCRETE BREAKDOWN (FOR ONE BENT)					
TOTAL CLASS A CONCRETE					▲ 10.1 C.Y.
PP 18 x 0.50 GALVANIZED STEEL PILES (FOR ONE BENT)					
No. 5					LIN. FT. 380
PIPE PILE PLATES					No. = 5
PILE EXCAVATION IN SOIL					LIN. FT. 0
PILE EXCAVATION NOT IN SOIL					LIN. FT. 0

ALL BAR DIMENSIONS ARE OUT TO OUT.



▲ CONCRETE DISPLACED BY THE PP 18 x 0.50 GALVANIZED STEEL PILES HAS BEEN DEDUCTED FROM THE CONCRETE QUANTITY.

PROJECT NO. B-5333
ROBESON COUNTY
 STATION: 21+57.00 -L-

SHEET 2 OF 3 BRIDGE NO. 173

Dewberry
 2610 WYCLIFF ROAD
 SUITE 410
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 NC COA No. F-0929

SEAL
 032076
 NORTH CAROLINA PROFESSIONAL ENGINEER
 JENNIFER R. McROFF

Designed by:
 Jennifer R. McRoff/6/2016
 E114C791288475..

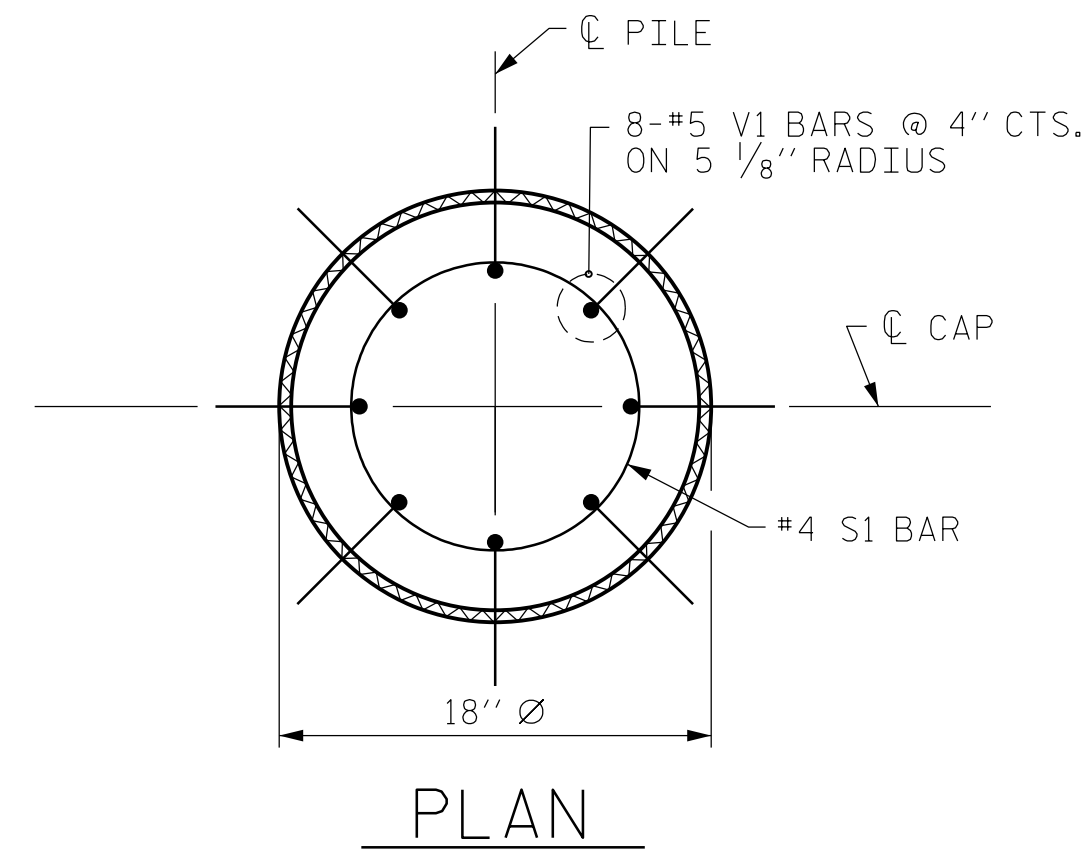
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT No. 3

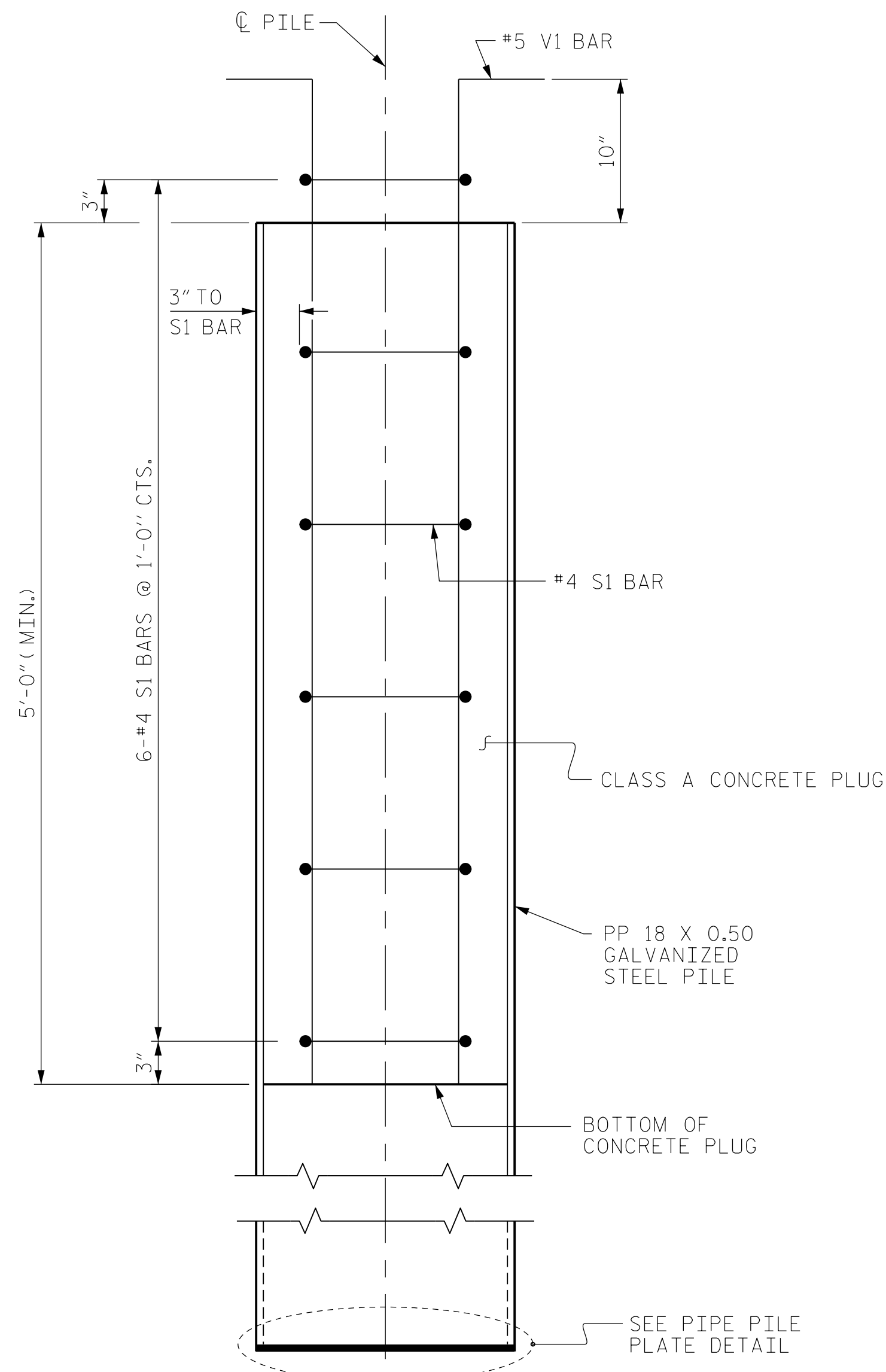
REVISIONS					
No.	BY:	DATE:	No.	BY:	DATE:
1			3		
2			4		

SHEET No. **S01-19**
 TOTAL SHEETS 24

6/2/2016 8:00:08 AM
 USER: mbelisle
 DRAWN BY : MTB DATE : 04/16
 CHECKED BY : JRM DATE : 04/16

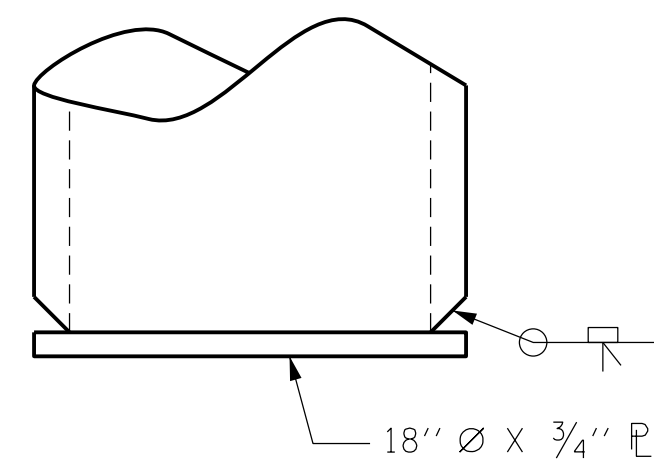


PLAN

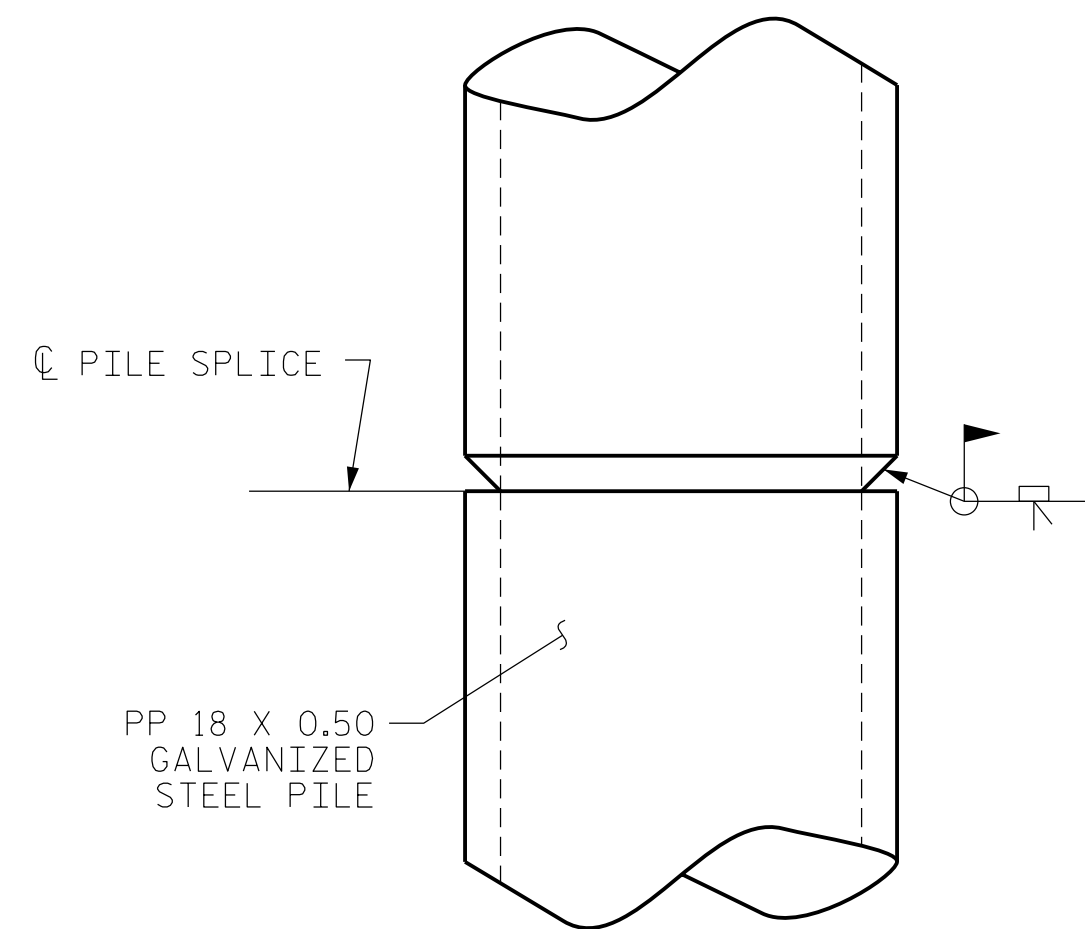


ELEVATION

PP 18 X 0.50 GALVANIZED STEEL PILE
(CLOSED END)



PIPE PILE PLATE DETAIL



PIPE PILE SPLICE DETAIL

NOTES

PIPE PILES SHALL BE IN ACCORDANCE WITH SECTION 1084 OF THE STANDARD SPECIFICATIONS.

GALVANIZE STEEL PIPE PILES IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS UNLESS METALLIZING IS REQUIRED. GALVANIZING OR METALLIZING PIPE PILE PLATES IS NOT REQUIRED.

PIPE PILE PLATES, SHALL BE IN ACCORDANCE WITH SECTION 450 OF THE STANDARD SPECIFICATIONS.

REMOVE AND REPLACE OR REPAIR TO THE SATISFACTION OF THE ENGINEER PILES THAT ARE DAMAGED, DEFORMED OR COLLAPSED DURING INSTALLATION OR DRIVING.

PILE SPLICES SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AND AWS D1.1.

FOR CLOSED END PIPE PILES, REMOVE ALL SOIL AND WATER FROM INSIDE THE PILES JUST PRIOR TO PLACING REINFORCING STEEL AND CONCRETE FOR THE CONCRETE PLUG.

FORM THE CONCRETE PLUG SUCH THAT THE REINFORCING STEEL OR CONCRETE DOES NOT MOVE AND THE CLEARANCE FROM THE REINFORCING STEEL TO THE INSIDE OF THE PILE IS MAINTAINED AFTER CONCRETE PLACEMENT. DO NOT PLACE CONCRETE IN THE BENT CAP UNTIL THE CONCRETE PLUG HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 1500 PSI.

THE REINFORCING STEEL, CLASS A CONCRETE, AND GALVANIZING ARE CONSIDERED INCIDENTAL TO THE CONTRACT UNIT PRICE BID PER LINEAR FOOT FOR PP 18 X 0.50 GALVANIZED STEEL PILES.

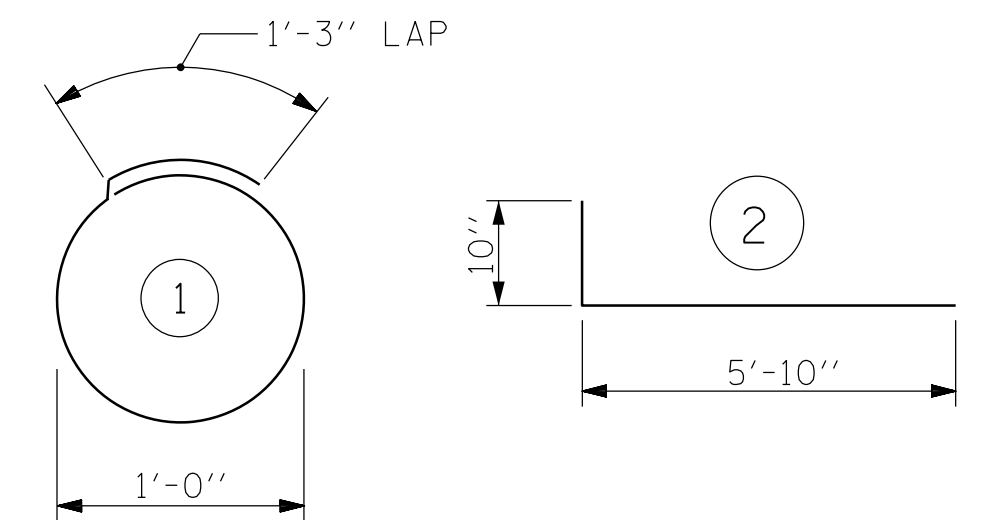
BILL OF MATERIAL FOR ONE
PP 18 X 0.50 GALVANIZED STEEL PILE

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
S1	6	#4	1	4'-5"	18
V1	8	#5	2	6'-8"	56
REINFORCING STEEL =				74	lbs

CLASS A CONCRETE

5'-0" MINIMUM PLUG 0.3 CY

BAR TYPES

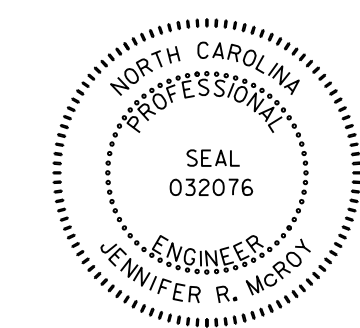


ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. B-5333
ROBESON
21+57.00 -L-

SHEET 3 OF 3 BRIDGE NO. 173

Dewberry
2301 REYWOODS DRIVE
SUITE 200
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929



DocuSigned by:
Jennifer R. McRoy 6/6/2016

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
18" STEEL PIPE PILE
BENT No. 3

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

TOTAL SHEETS: 24

6/3/2016 8:42:24 AM 173.BENT3-3.dgn USER: mcb1111

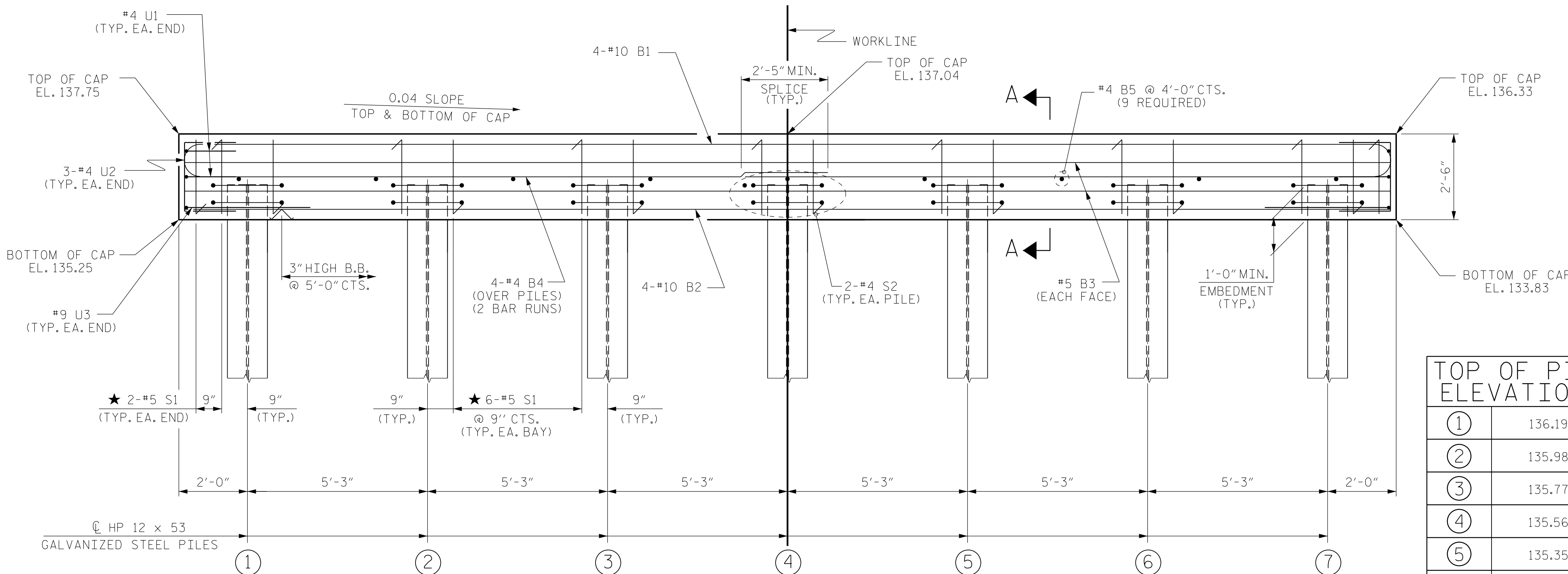
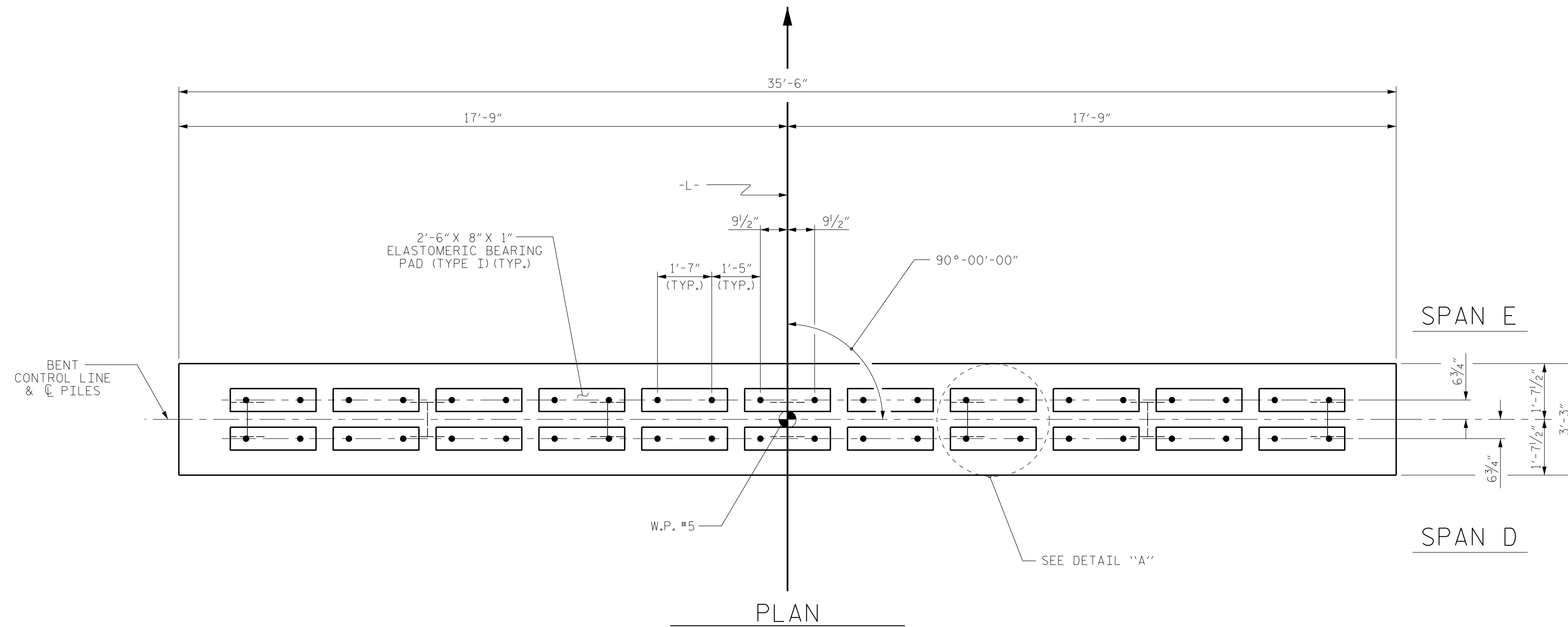
ASSEMBLED BY : MTB	DATE : 04/16
CHECKED BY : JRM	DATE : 04/16
DRAWN BY : RWW 1/01	REV. 10/1/05 LBG/TLA
CHECKED BY : LES 1/01	REV. 5/1/06R MAA/KMM
	REV. 10/1/11 MAA/GM

NOTES

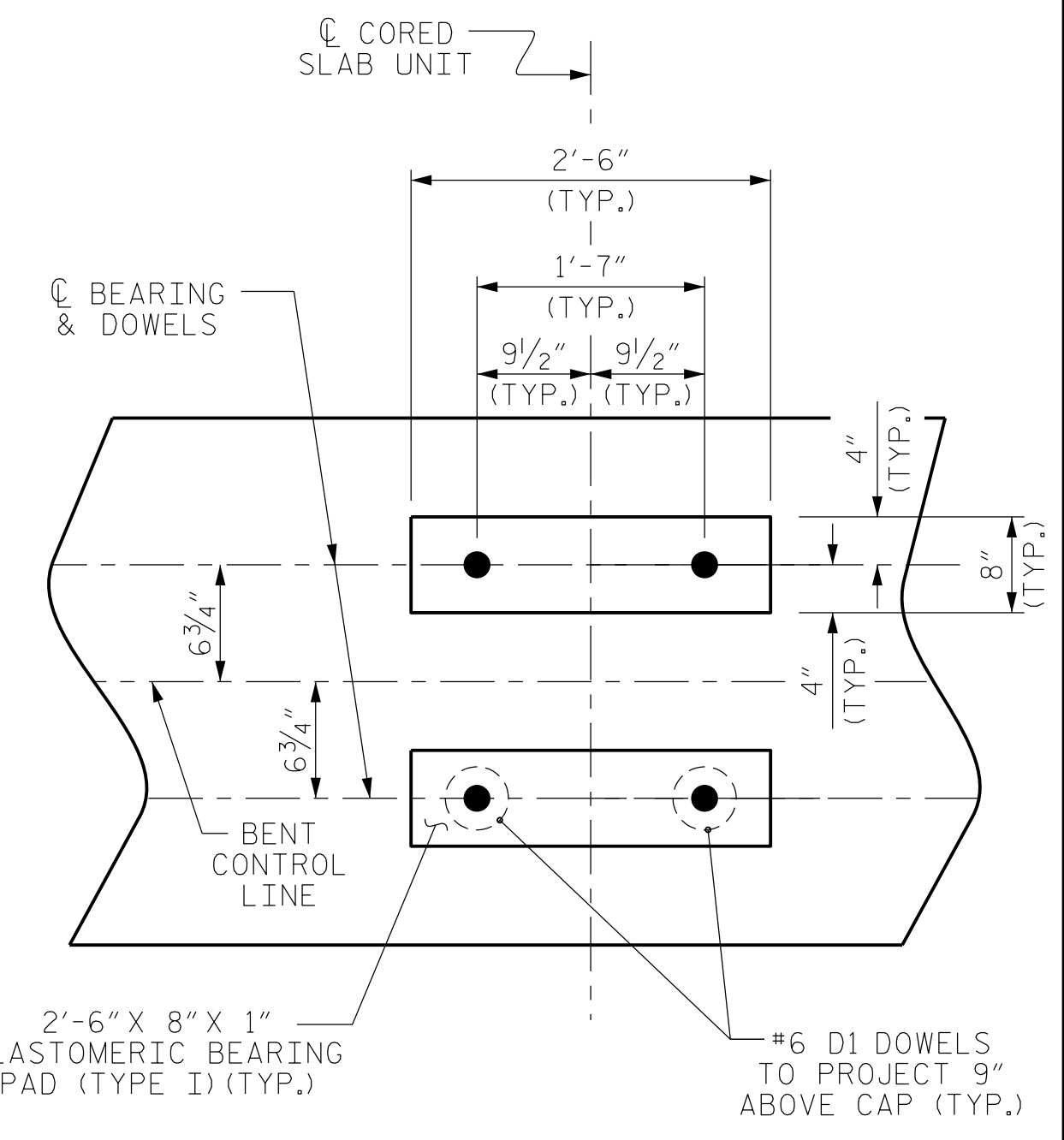
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

★ INVERT ALTERNATE STIRRUPS.

GALVANIZE THE TOP OF EACH INTERIOR BENT PILE A MINIMUM OF 29 FEET. GALVANIZE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.



TOP OF PILE ELEVATIONS	
①	136.19
②	135.98
③	135.77
④	135.56
⑤	135.35
⑥	135.14
⑦	134.93



PROJECT NO. B-5333
ROBESON COUNTY
 STATION: 21+57.00 -L-
 SHEET 1 OF 2 BRIDGE NO. 173

Dewberry
 2610 WYCLIFF ROAD
 SUITE 410
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 NC COA No. F-0929

SEAL
 032076
 ENGINEER
 JENNIFER R. MCDY

DocuSigned by:
 Jennifer R. McRoy 6/6/2016
 E1114C791288475...

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

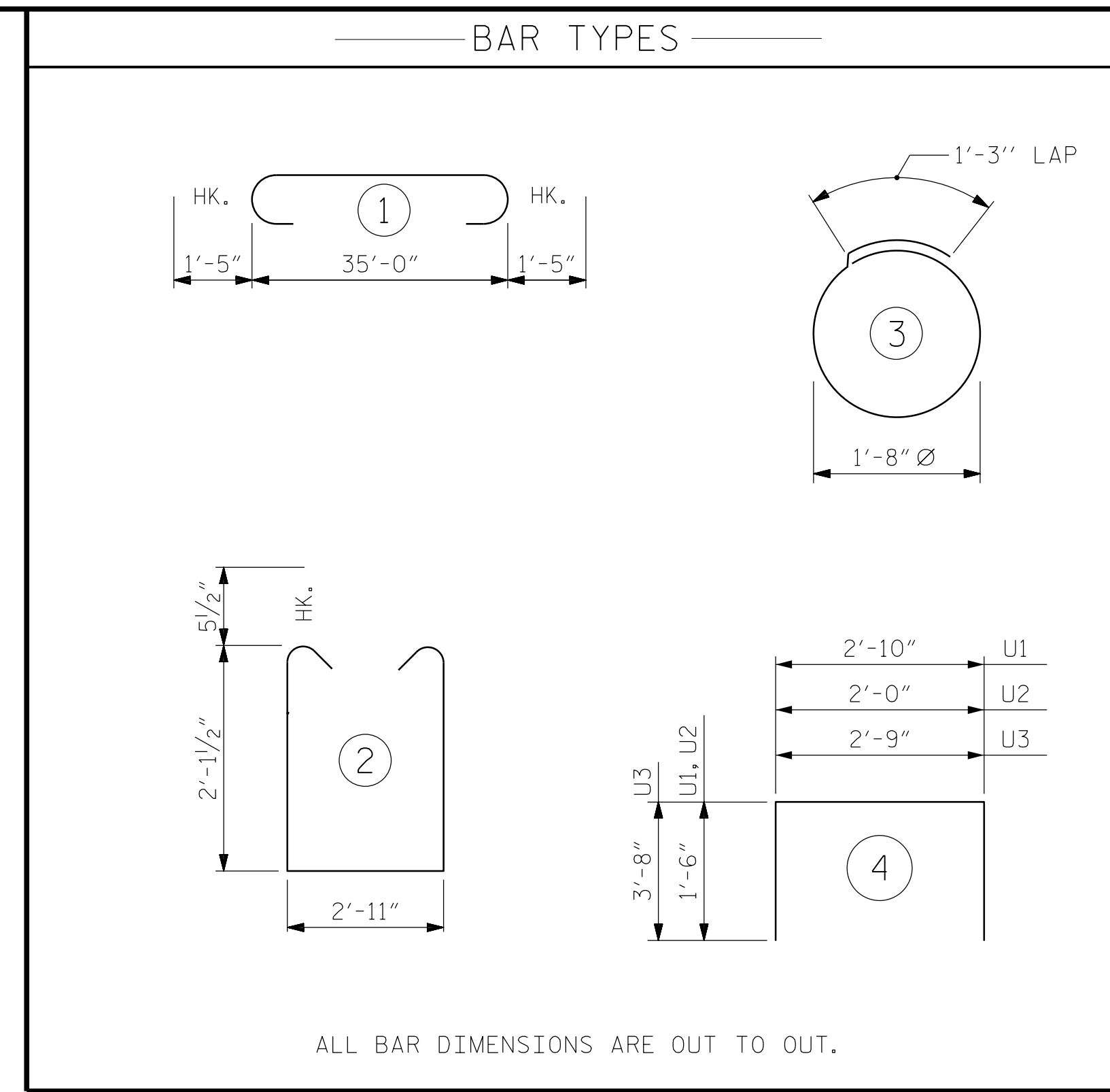
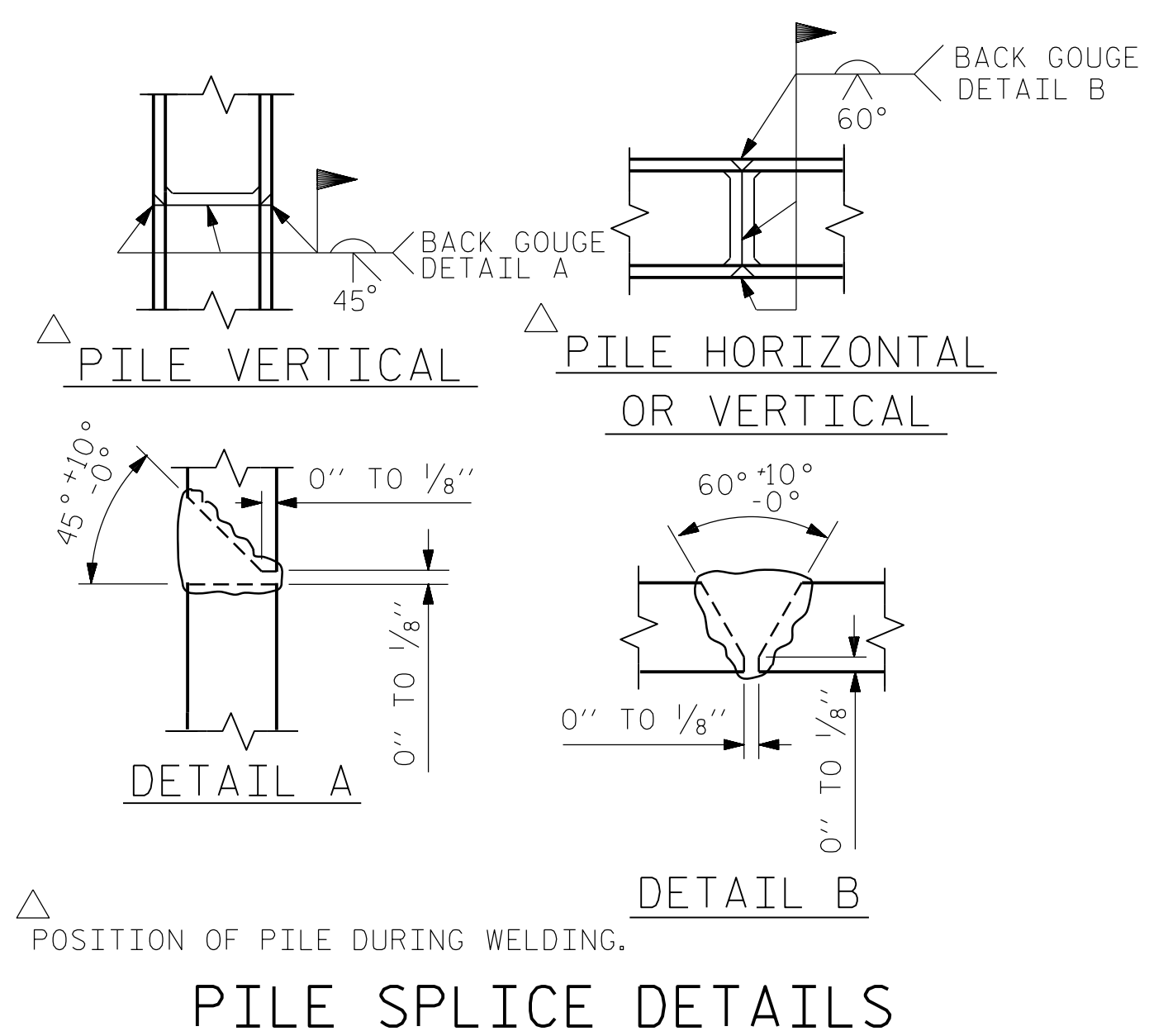
SUBSTRUCTURE
 BENT No. 4

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

SHEET No.
S01-21
 TOTAL SHEETS
 24

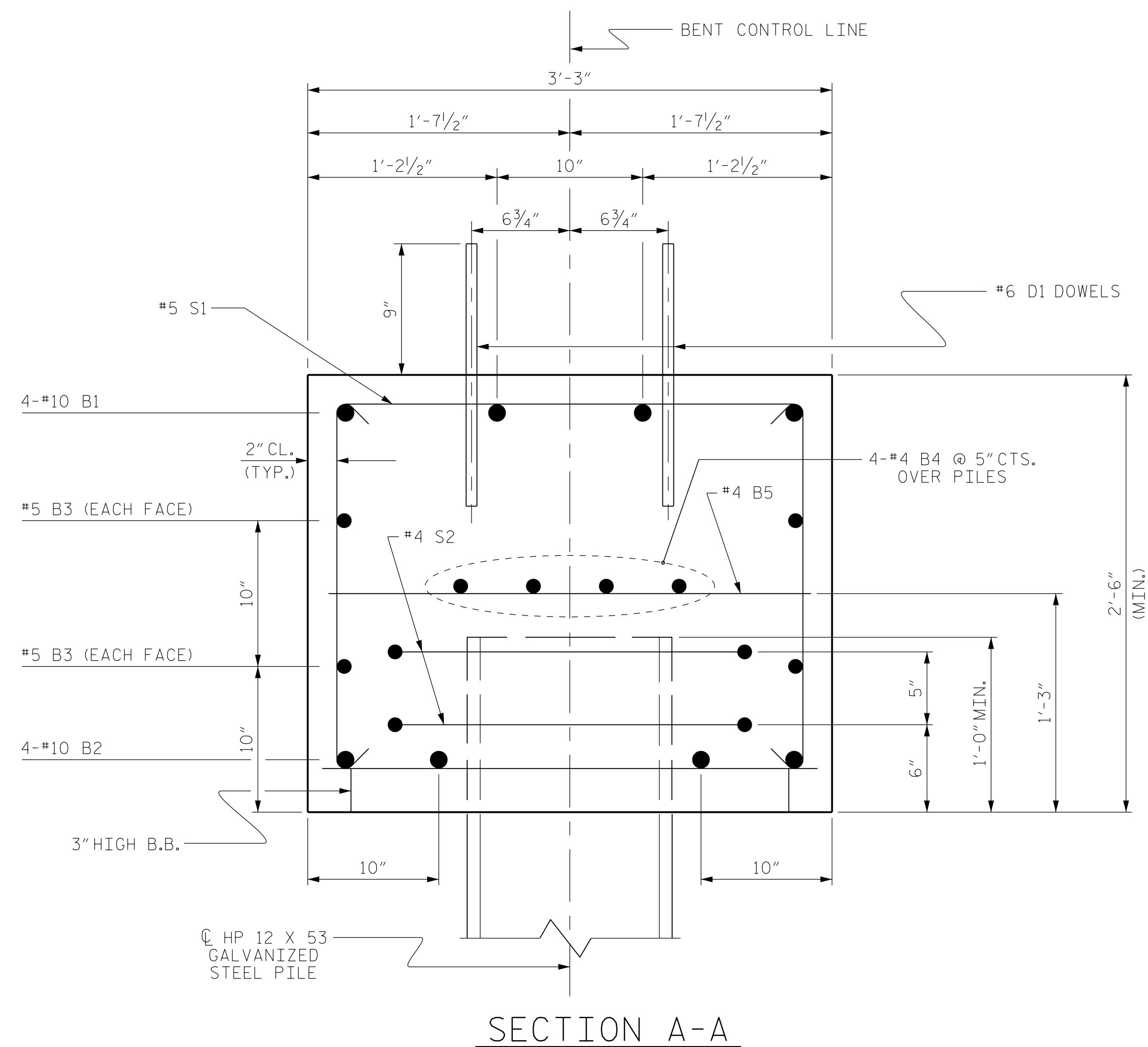
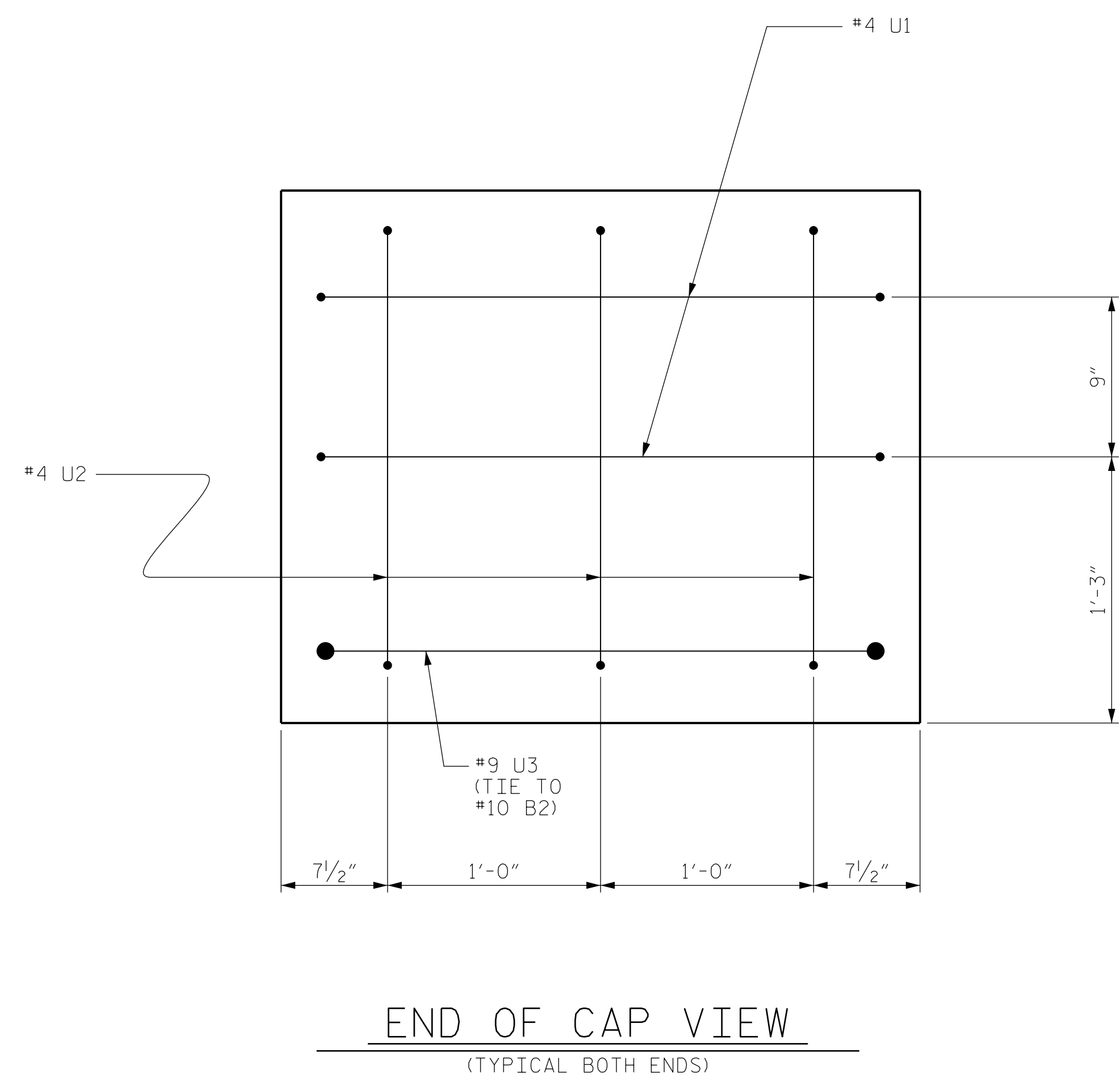
6/2/2016 8:56:16 AM 173.BENT4-1.dgn
 USER: mcdy@dsi.com

DRAWN BY : MTB DATE : 04/16
 CHECKED BY : JRM DATE : 04/16



BILL OF MATERIAL FOR ONE BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10		37'-10"	651
B2	4	#10	STR	35'-2"	605
B3	4	#5	STR	35'-2"	147
B4	8	#4	STR	18'-10"	101
B5	9	#4	STR	2'-11"	18
D1	44	#6	STR	1'-6"	99
S1	40	#5	2	8'-1"	337
S2	14	#4	3	6'-6"	61
U1	4	#4	4	5'-10"	16
U2	6	#4	4	5'-0"	20
U3	2	#9	4	10'-1"	69
REINFORCING STEEL (FOR ONE BENT)					2124 LBS
CLASS A CONCRETE BREAKDOWN (FOR ONE BENT)					
TOTAL CLASS A CONCRETE					10.7 C.Y.
HP 12 X 53 GALVANIZED STEEL PILES (FOR ONE BENT)					
No. 7					LIN. FT. 392



PROJECT NO. B-5333
ROBESON COUNTY
 STATION: 21+57.00 -L-
 SHEET 2 OF 2 BRIDGE NO. 173

Dewberry
 2610 WYCLIFF ROAD
 SUITE 410
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 NC COA No. F-0929

SEAL 032076
 ENGINEER
 JENNIFER R. MEROY

DocuSigned by:
 Jennifer R. Meroy 6/6/2016

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT No. 4

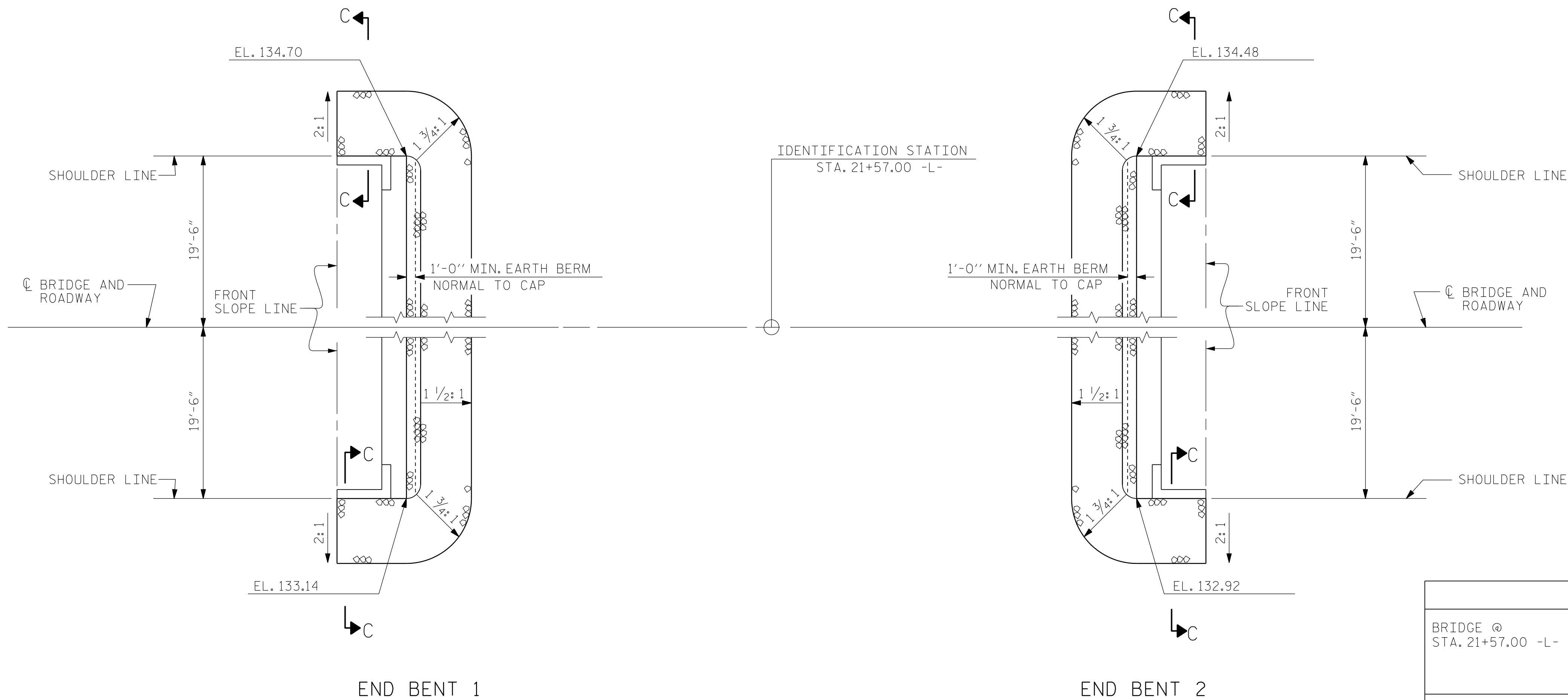
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No.	BY	DATE	No.	BY	DATE
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2			4		

SHEET No. **S01-22**
 TOTAL SHEETS 24

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 USER: mbelisle

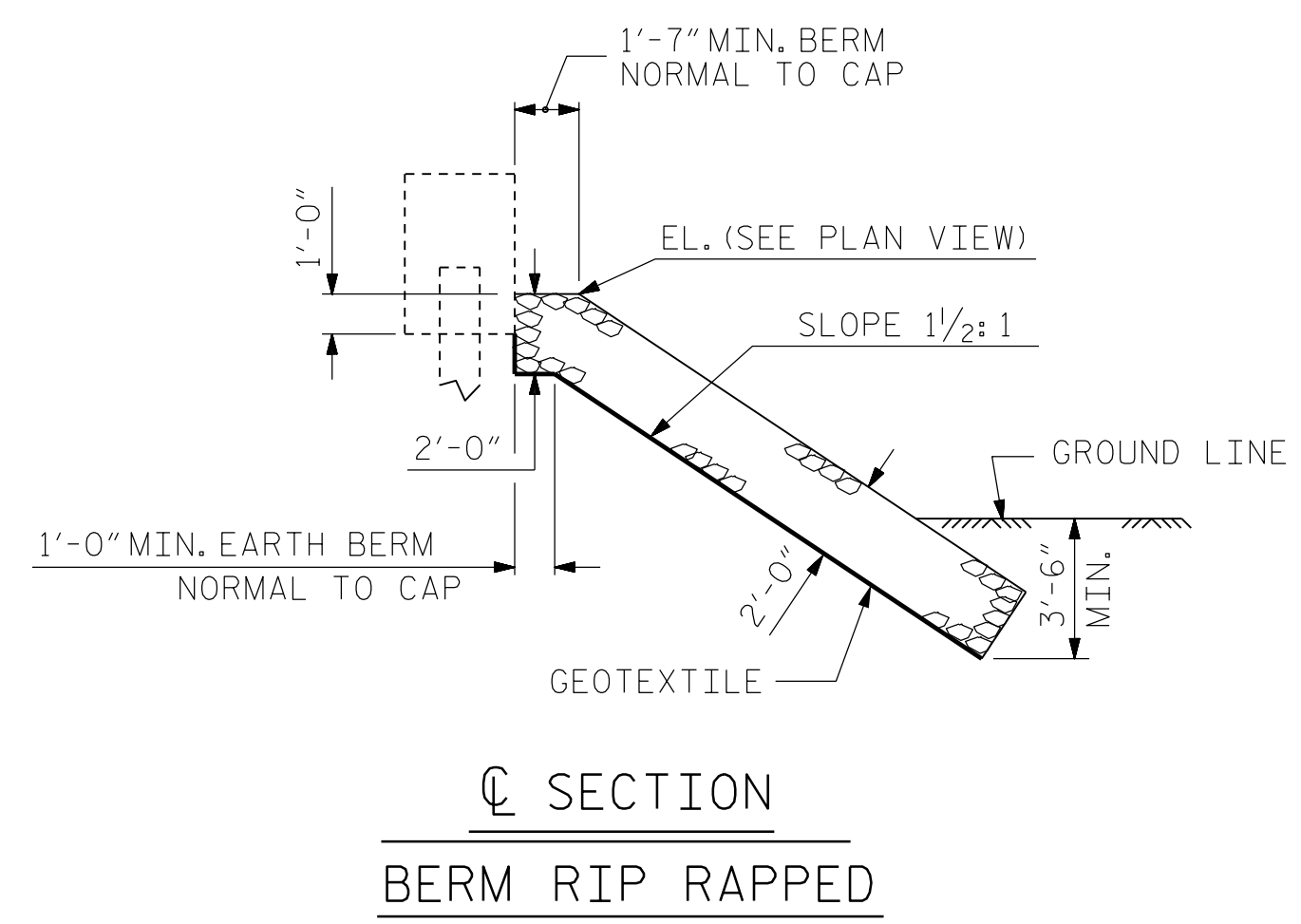
DRAWN BY : MTB DATE : 04/16
 CHECKED BY : JRM DATE : 04/16

NOTES :
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.

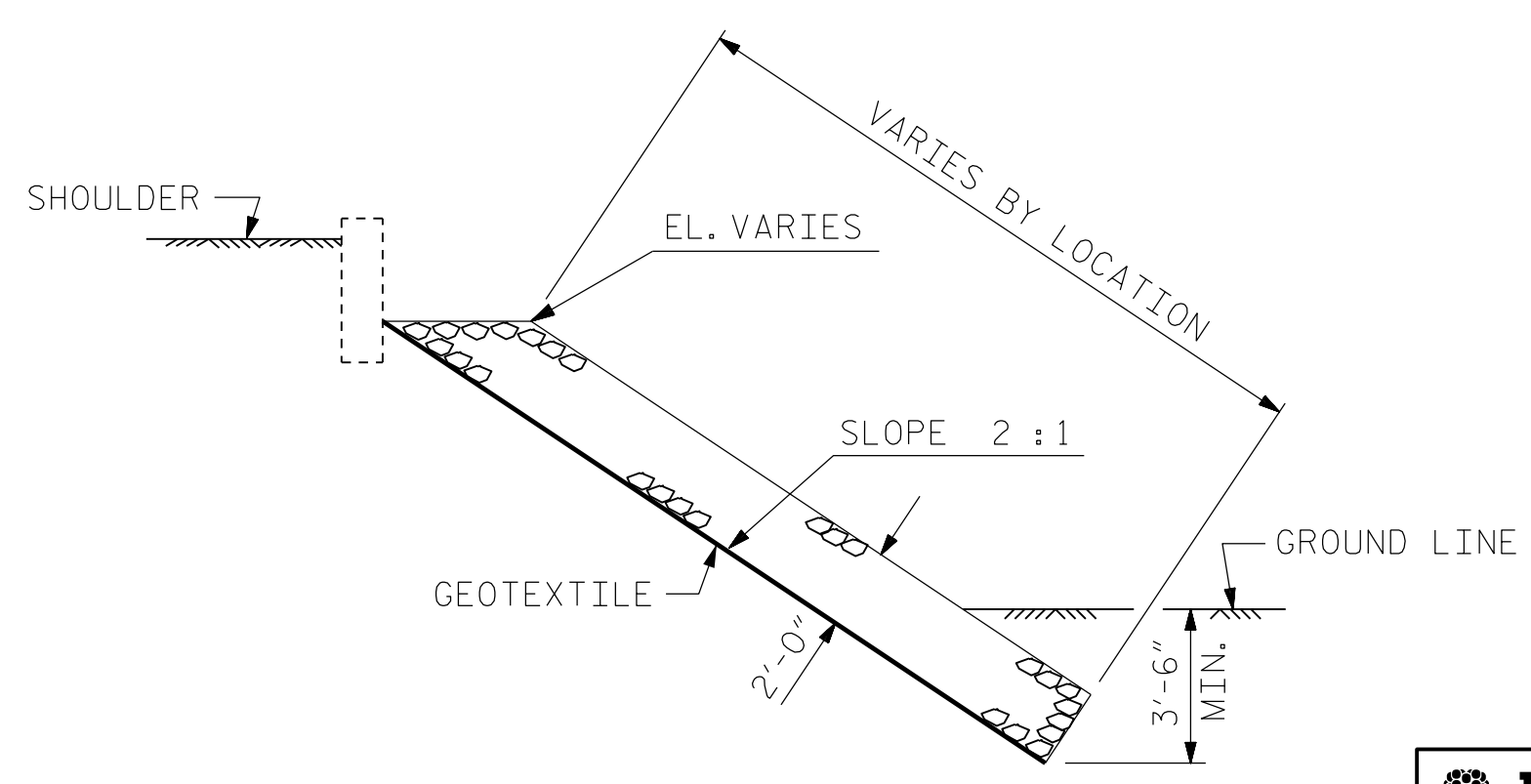


PLAN

ESTIMATED QUANTITIES		
BRIDGE @ STA. 21+57.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	132	142
END BENT 2	102	108



SECTION
BERM RIP RAPPED



SECTION C-C

PROJECT NO. B-5333
ROBESON COUNTY
STATION: 21+57.00 -L-

BRIDGE NO. 173

Dewberry
2301 REYWOODS DRIVE
SUITE 200
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

SEAL
032076
ENGINEER
JENNIFER R. McROY

DocuSigned by:
Jennifer R. McRoy
6/6/2016

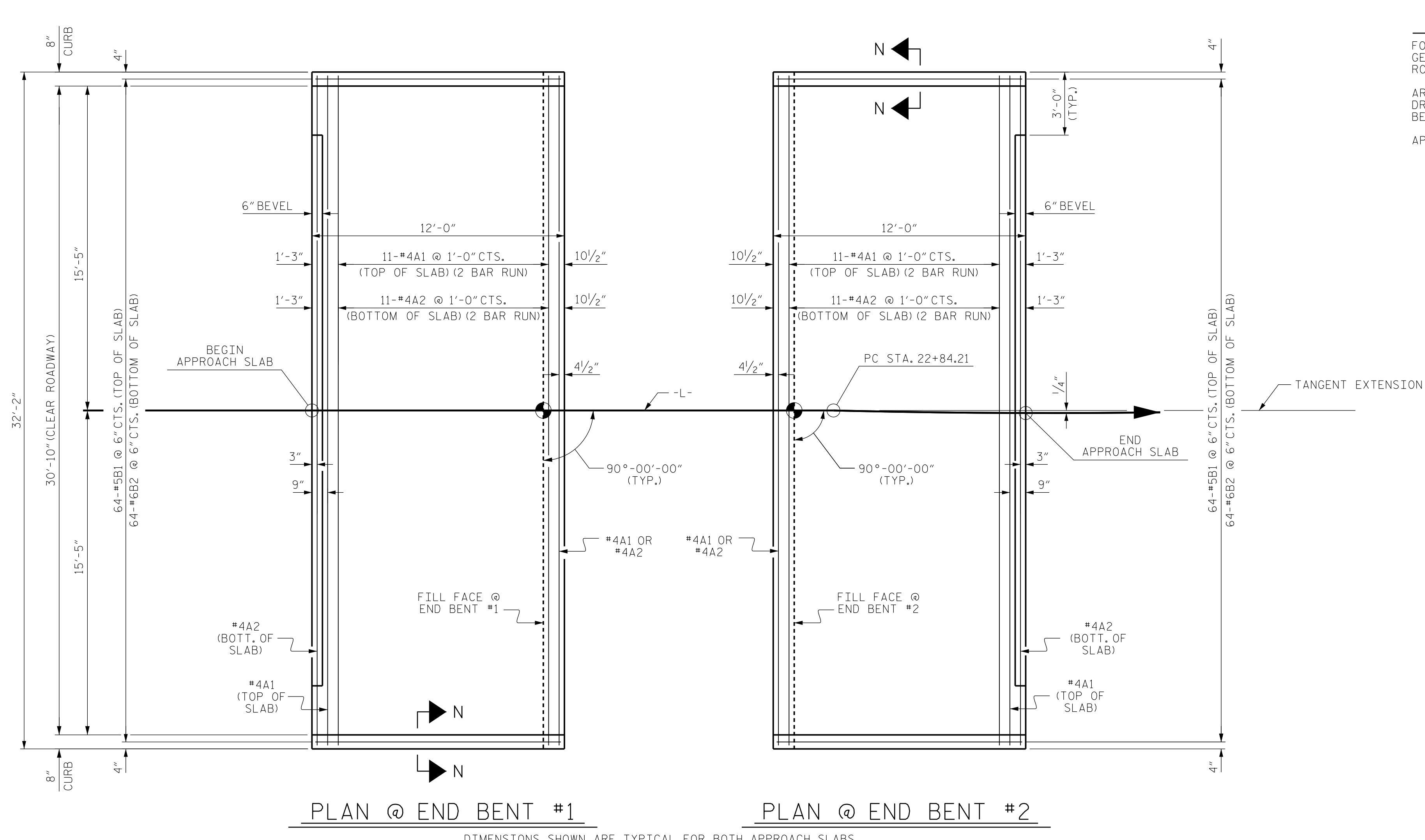
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
= RIP RAP DETAILS =

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

SHEET No. S01-23
TOTAL SHEETS 24

ASSEMBLED BY : MTB	DATE : 04/16
CHECKED BY : JRM	DATE : 04/16
DRAWN BY : REK 1/84	REV. 5/1/06R TLA/GM
CHECKED BY : RDU 1/84	REV. 10/1/11 MAA/GM
	REV. 12/21/11 MAA/GM

6/3/2016 9:05:11 AM USER: mcdi151e

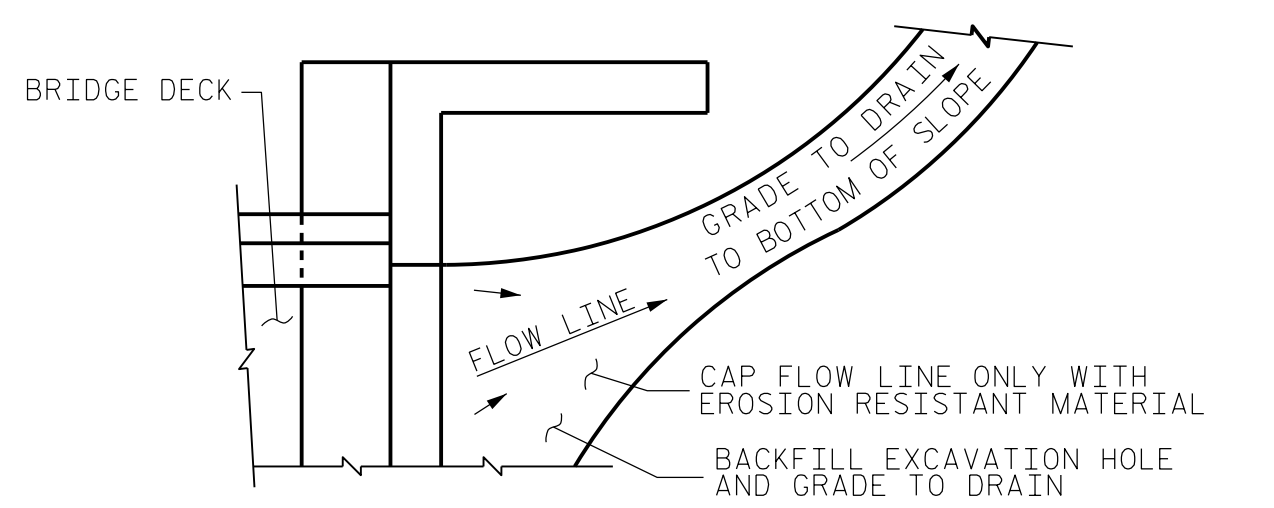


NOTES

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

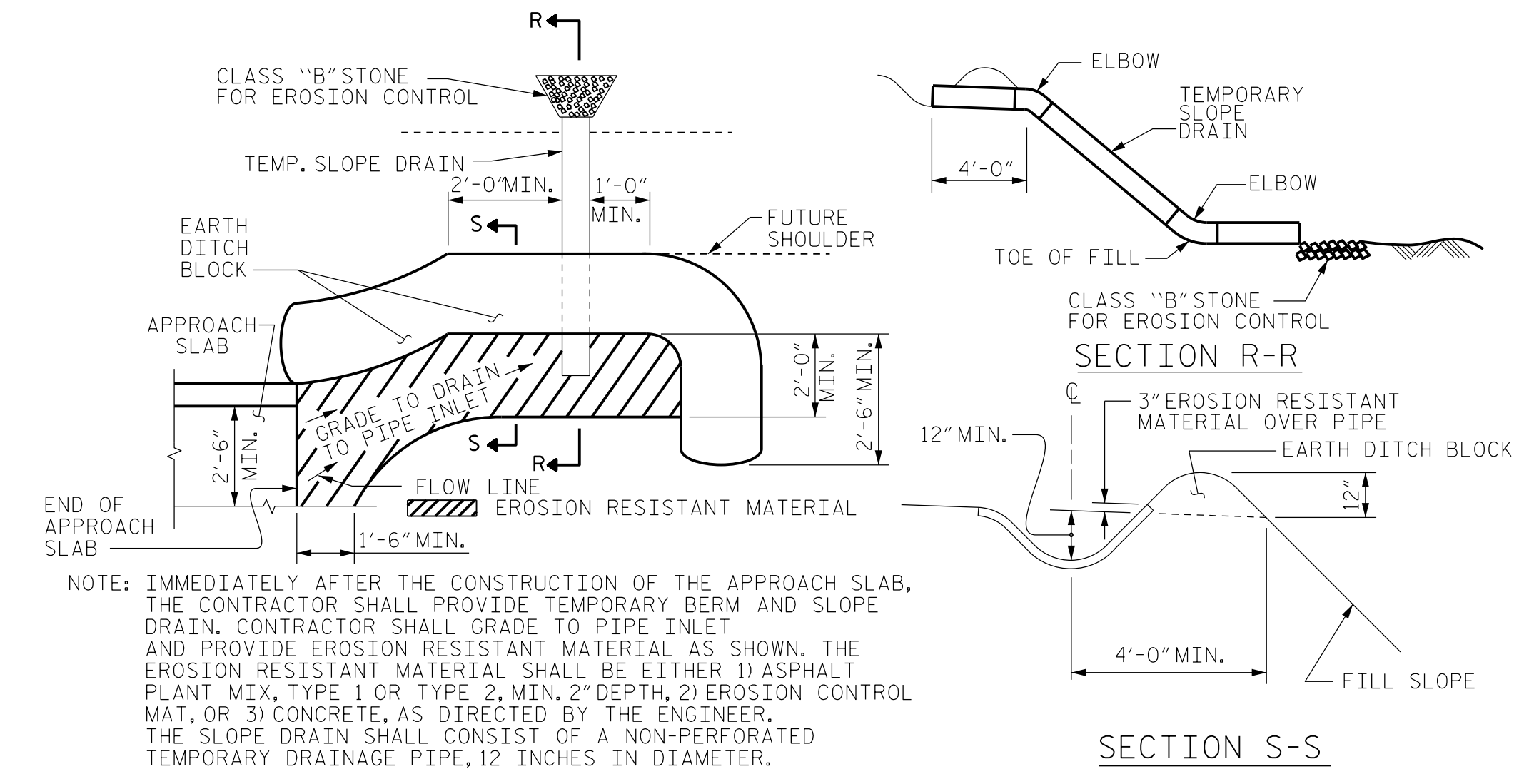
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

APPROACH SLAB GROOVING IS NOT REQUIRED.



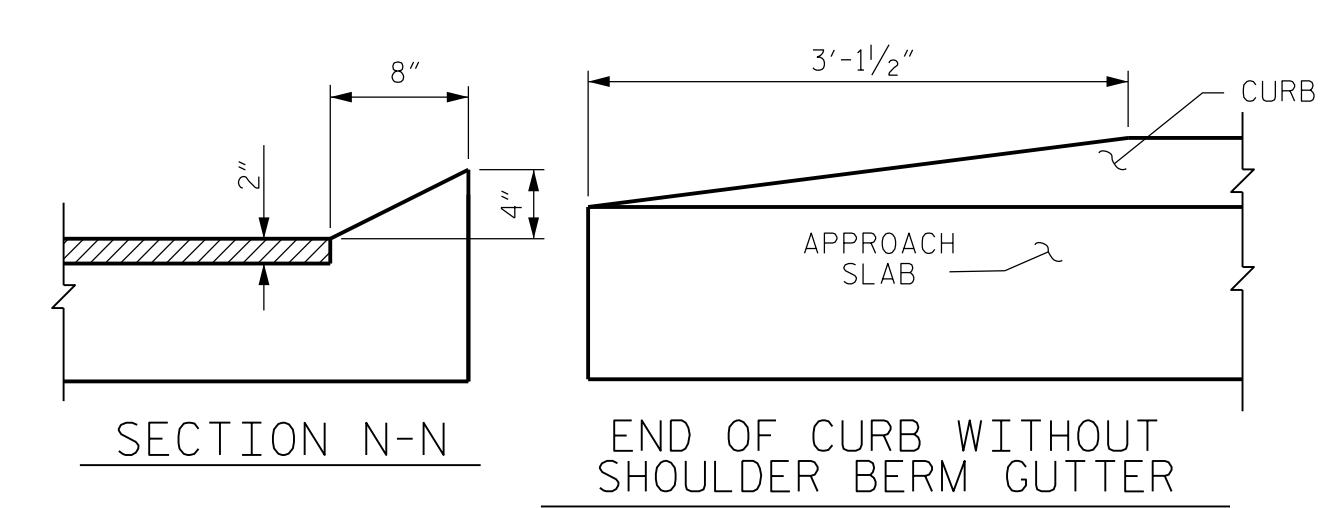
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL



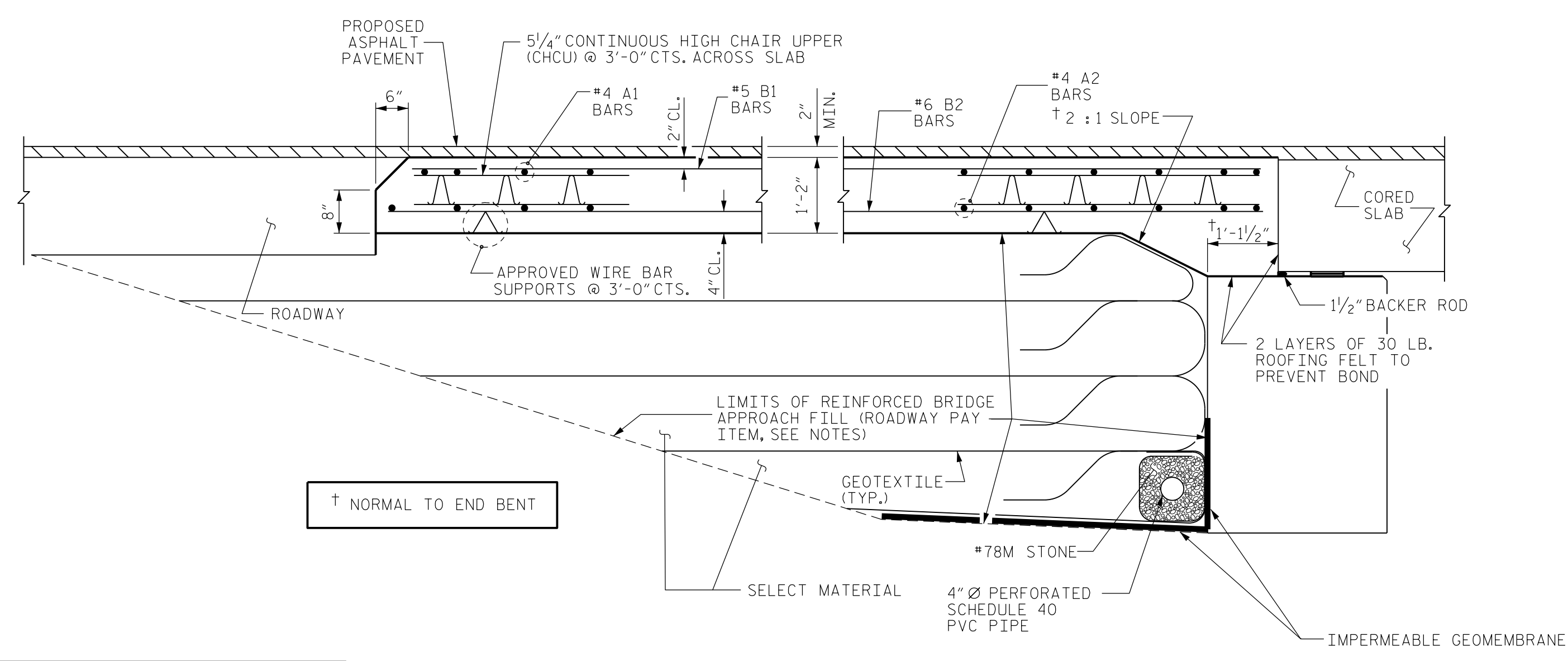
NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

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



SPLICE LENGTHS

BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	1'-9"
#5	2'-6"	2'-2"
#6	3'-10"	2'-7"



SECTION THRU SLAB

BILL OF MATERIAL

APPROACH SLAB AT EB #1						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	26	#4	STR	16'-11"	294	
A2	26	#4	STR	16'-9"	291	
*B1	64	#5	STR	11'-2"	745	
B2	64	#6	STR	11'-8"	1121	
REINFORCING STEEL					LBS.	1412
* EPOXY COATED REINFORCING STEEL					LBS.	1039
CLASS AA CONCRETE					C. Y.	18.4

APPROACH SLAB AT EB #2						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	26	#4	STR	16'-11"	294	
A2	26	#4	STR	16'-9"	291	
*B1	64	#5	STR	11'-2"	745	
B2	64	#6	STR	11'-8"	1121	
REINFORCING STEEL					LBS.	1412
* EPOXY COATED REINFORCING STEEL					LBS.	1039
CLASS AA CONCRETE					C. Y.	18.4

PROJECT NO. B-5333
ROBESON COUNTY
STATION: 21+57.00 -L-
BRIDGE NO. 173

Dewberry
2301 REYNOLDS DRIVE
SUITE 200
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-9929

SEAL 032076
ENGINEER
JENNIFER R. McROY

DocuSigned by:
Jennifer R. McRoy 6/6/2016
E114C791288475...

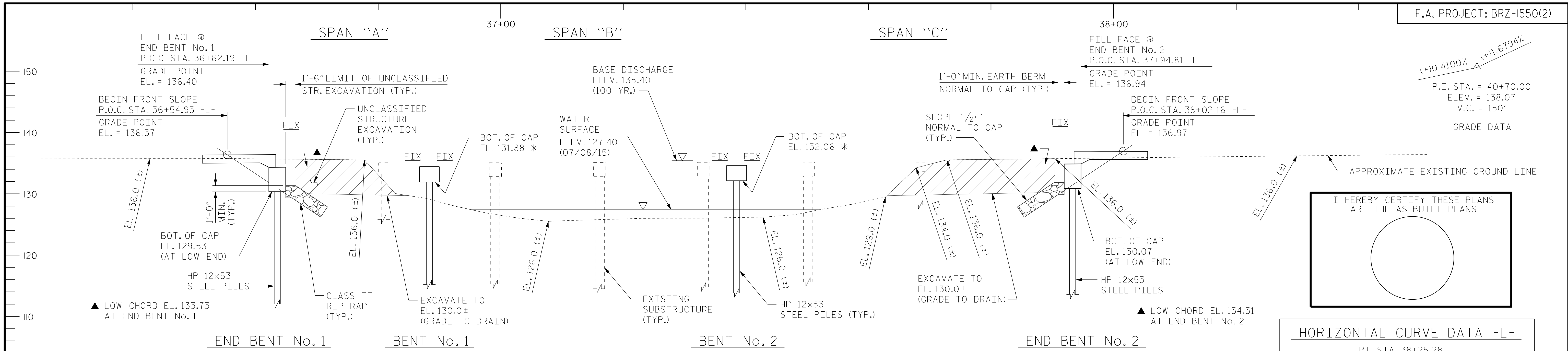
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
BRIDGE APPROACH SLAB
CORED SLAB UNIT
(SUB-REGIONAL TIER)
90° SKEW

REVISIONS			SHEET No. S01-24
No.	BY:	DATE:	
1		3	TOTAL SHEETS 24
2		4	

6/2/2016 8:52:45 AM 173_APPSLAB.dgn USER: modelist

ASSEMBLED BY : MTB DATE : 04/16
CHECKED BY : JRM DATE : 04/16
DRAWN BY : SHS/MAA 5-09
CHECKED BY : BCH 5-09
REV. 9-15 MAA/TMG



I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

HORIZONTAL CURVE DATA -L-

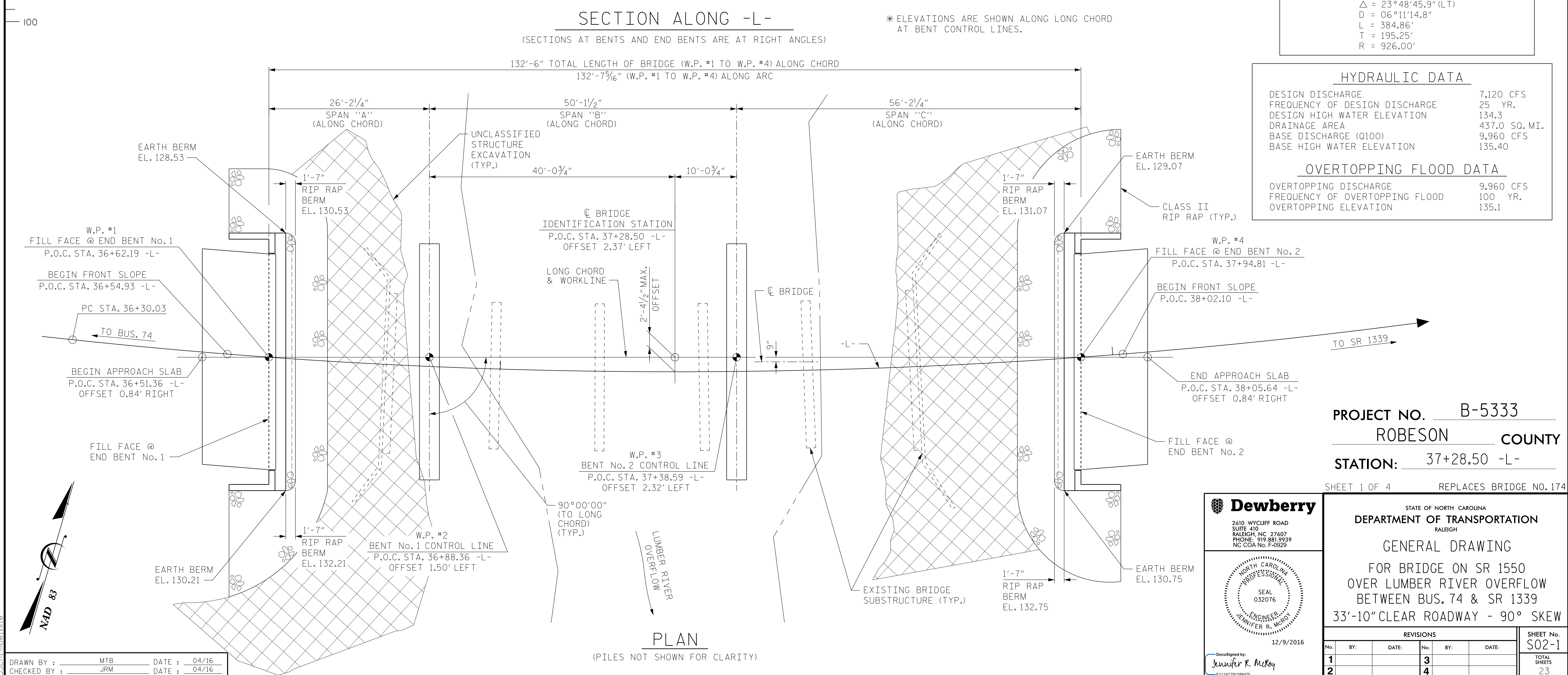
PI STA.	38+25.28
Δ	23°48'45.9" (LT)
D	06°11'14.8"
L	384.86'
T	195.25'
R	926.00'

HYDRAULIC DATA

DESIGN DISCHARGE	7,120 CFS
FREQUENCY OF DESIGN DISCHARGE	25 YR.
DESIGN HIGH WATER ELEVATION	134.3
DRAINAGE AREA	437.0 SQ. MI.
BASE DISCHARGE (Q100)	9,960 CFS
BASE HIGH WATER ELEVATION	135.40

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	9,960 CFS
FREQUENCY OF OVERTOPPING FLOOD	100 YR.
OVERTOPPING ELEVATION	135.1



PROJECT NO. **B-5333**
ROBESON COUNTY
 STATION: **37+28.50 -L-**
 SHEET 1 OF 4 REPLACES BRIDGE NO. 174

Dewberry
 2610 WYCLIFF ROAD
 SUITE 410
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 NC COA No. F-0929

12/9/2016
 Jennifer R. McRoy
 ENGINEER

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

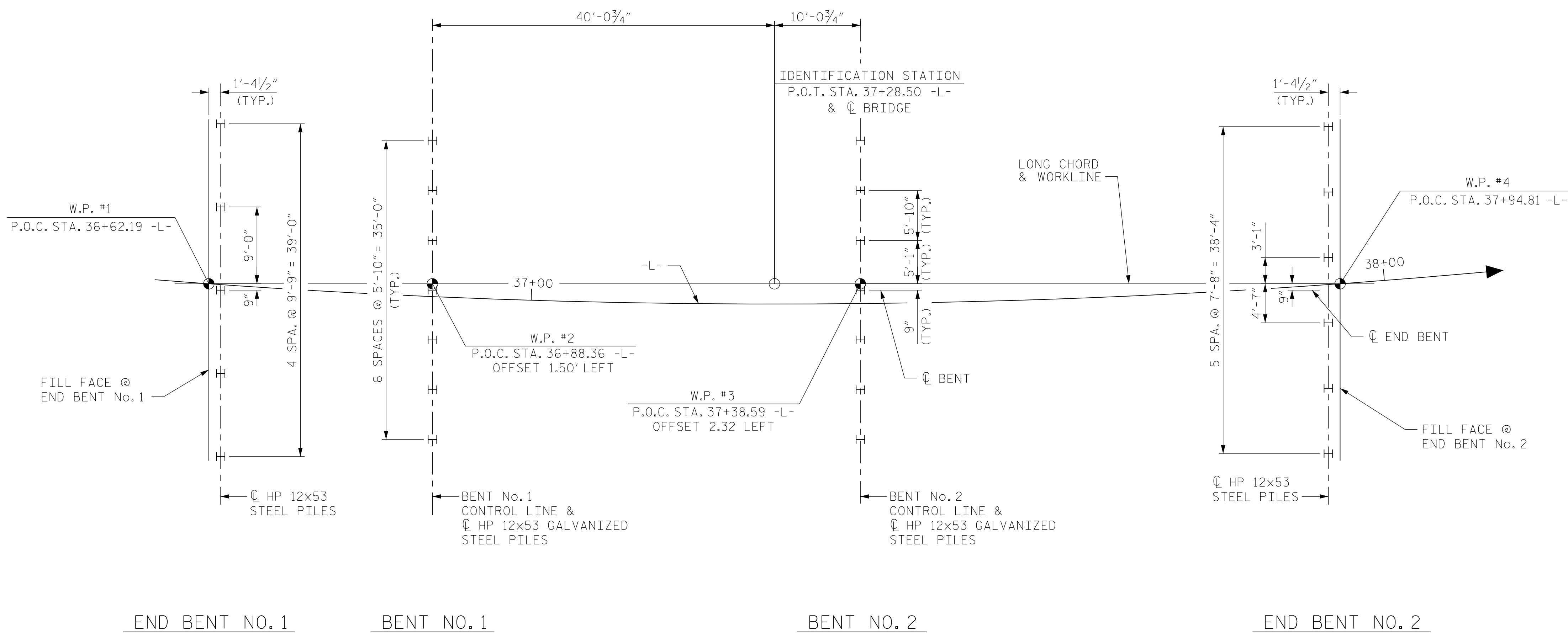
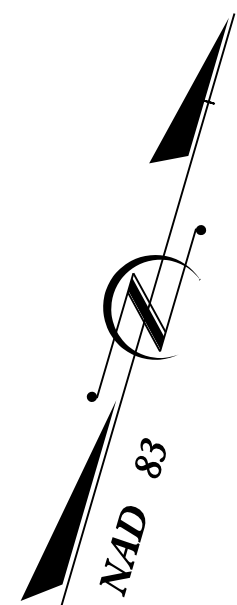
GENERAL DRAWING
 FOR BRIDGE ON SR 1550
 OVER LUMBER RIVER OVERFLOW
 BETWEEN BUS. 74 & SR 1339
 33'-10" CLEAR ROADWAY - 90° SKEW

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

SHEET No. **S02-1**
 TOTAL SHEETS 23

DRAWN BY: MTB DATE: 04/16
 CHECKED BY: JRM DATE: 04/16

6/16/2016 10:05:52 AM GPE.dgn
 USER: mdelisle



FOUNDATION LAYOUT

NOTES:

- PILE DIMENSIONS ARE SHOWN TO THE CENTERLINE OF THE PILES.
- FOR PILES, SEE GEOTECHNICAL SPECIAL PROVISIONS AND SECTION 450 OF THE STANDARD SPECIFICATIONS.
- PILES AT END BENT No.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 80 TONS PER PILE.
- DRIVE PILES AT END BENT No.1 TO A REQUIRED DRIVING RESISTANCE OF 135 TONS PER PILE.
- PILES AT END BENT No.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 120 TONS PER PILE.
- DRIVE PILES AT END BENT No.2 TO A REQUIRED DRIVING RESISTANCE OF 200 TONS PER PILE.
- PILES AT BENT No.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 85 TONS PER PILE.
- DRIVE PILES AT BENT No.1 TO A REQUIRED DRIVING RESISTANCE OF 145 TONS PER PILE.
- PILES AT BENT No.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 120 TONS PER PILE.
- DRIVE PILES AT BENT No.2 TO A REQUIRED DRIVING RESISTANCE OF 200 TONS PER PILE.
- TESTING PILES WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING MAY BE REQUIRED. THE ENGINEER WILL DETERMINE THE NEED FOR PDA TESTING. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
- INSTALL PILES AT BENT No.1 TO A TIP ELEVATION NO HIGHER THAN 104 FEET.
- INSTALL PILES AT BENT No.2 TO A TIP ELEVATION NO HIGHER THAN 103 FEET.
- THE SCOUR CRITICAL ELEVATION FOR BENT No.1 IS ELEVATION 124.0 FEET. THE SCOUR CRITICAL ELEVATION FOR BENT No.2 IS ELEVATION 121.0 FEET. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

PROJECT NO. B-5333
ROBESON COUNTY
 STATION: 37+28.50 -L-

SHEET 2 OF 4 REPLACES BRIDGE NO.174

Dewberry
 2610 WYCLIFF ROAD
 SUITE 410
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 NC COA No. F-0929

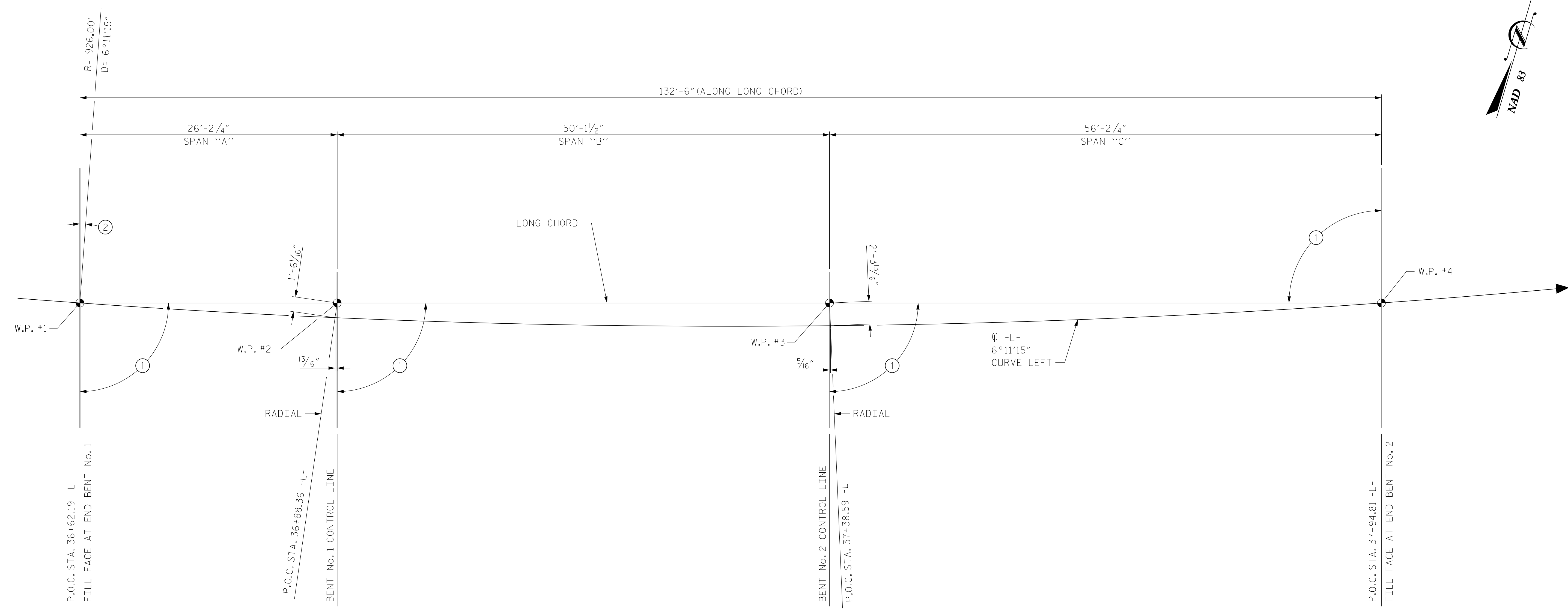
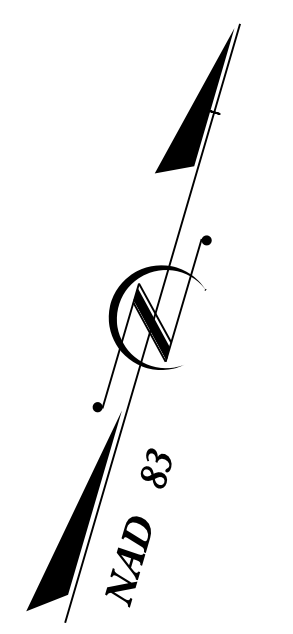
12/9/2016

DocuSigned by:
 Jennifer R. McCoy
 E1114C791288475

STATE OF NORTH CAROLINA					
DEPARTMENT OF TRANSPORTATION					
RALEIGH					
GENERAL DRAWING					
FOR BRIDGE ON SR 1550					
OVER LUMBER RIVER OVERFLOW					
BETWEEN BUS. 74 & SR 1339					
33'-10" CLEAR ROADWAY - 90° SKEW					
REVISIONS					SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:
1			3		
2			4		
TOTAL SHEETS					23
					SHEET No. S02-2

12/9/2016 8:51:56 AM
 USER: jrmr04

DRAWN BY : MTB DATE : 04/16
 CHECKED BY : JRM DATE : 04/16



LONG CHORD LAYOUT
(ALL BENTS AND END BENTS ARE PARALLEL)

TABLE OF ANGLES	
No.	ANGLE
1	90°00'00"
2	4°06'10"

PROJECT NO. B-5333
ROBESON COUNTY
 STATION: 37+28.50 -L-

SHEET 3 OF 4 REPLACES BRIDGE NO. 174

12/9/2016 8:01:38 AM J:\P\174_LONGCHORD.dgn USER: jrm204

DRAWN BY : MTB DATE : 04/16
 CHECKED BY : JRM DATE : 04/16

Dewberry
 2610 WYCLIFF ROAD
 SUITE 410
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 NC COA No. F-0929

SEAL
 032076
 ENGINEER
 JENNIFER R. MEROY
 12/9/2016

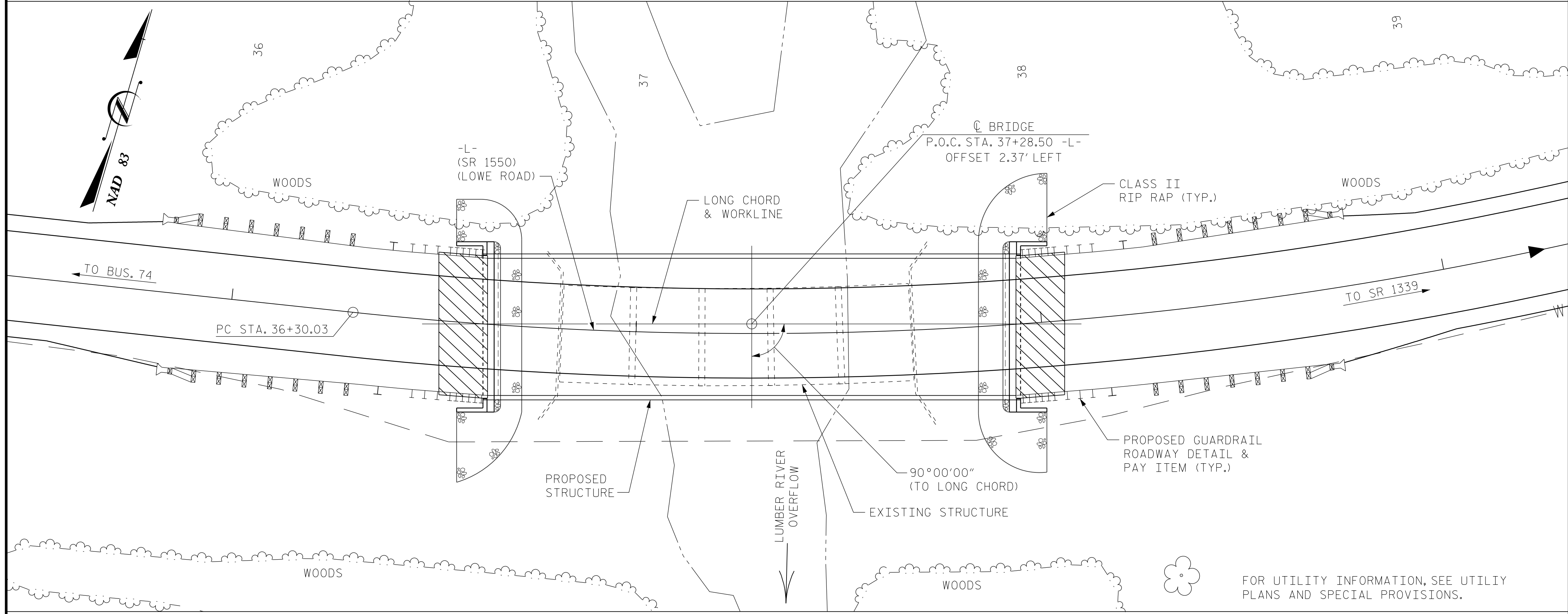
DocuSigned by:
 Jennifer R. Meroy
 E1114C791288475

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE ON SR 1550
 OVER LUMBER RIVER OVERFLOW
 BETWEEN BUS. 74 & SR 1339
 33'-10" CLEAR ROADWAY - 90° SKEW

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	S02-3
1			3			TOTAL SHEETS
2			4			23

BENCH MARK: BM#81
 -L- STATION 42+09.61, 62.36 RIGHT
 ELEV. = 149.16', NAD 83/NA 2011 (N: 318374 E: 1960921)



LOCATION SKETCH

NOTES:
 ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
 THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
 THIS BRIDGE IS LOCATED IN SEISMIC ZONE 2.
 THE EXISTING STRUCTURE CONSISTING OF 5 SPANS (1 @ 17'-8", 3 @ 17'-0", AND 1 @ 17'-10") WITH A SUPERSTRUCTURE CONSISTING OF REINFORCED CONCRETE FLOOR ON TIMBER JOISTS WITH A 24'± CLEAR ROADWAY WIDTH ON TIMBER CAPS AND PILES WITH STEEL CRUTCHBENTS AND LOCATED AT EXISTING CROSSING FOR PROPOSED STRUCTURE, SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.
 THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 40.7 FT± EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.
 THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COSTS INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.
 REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED 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.
 INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 37+28.50".
 ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.
 THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18 - EVALUATING SCOUR AT BRIDGES".
 THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 40 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. PAYMENT FOR THE SAMPLES OF REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.
 FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
 FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
 FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

NOTES (CONT'D.):

- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
- FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
- FOR ASBESTOS ASSESSMENT, SEE SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE AT STA. 37+28.50 -L-	PDA TESTING	UNCLASSIFIED STRUCTURE EXCAVATION AT STA. 37+28.50 -L-	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	HP 12x53 STEEL PILES	HP 12x53 GALVANIZED STEEL PILES	PILE REDRIVES	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" x 1'-9" PRESTRESSED CONCRETE CORED SLAB UNIT	ASBESTOS ASSESSMENT			
	LUMP SUM	EACH	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	NO.	LIN. FT.	NO.	LIN. FT.	EACH	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	NO.	LIN. FT.	LUMP SUM
SUPERSTRUCTURE					LUMP SUM					260.75			LUMP SUM	36	1560			
END BENT No. 1			LUMP SUM	22.5		3071	5	210		3				71	77			
BENT No. 1				11.6		2292			7	357	3							
BENT No. 2				11.6		2292			7	427	3							
END BENT No. 2			LUMP SUM	22.6		3443	6	342		3				86	93			
TOTAL	LUMP SUM	1	LUMP SUM	68.3	LUMP SUM	11,098	11	552	14	784	12	260.75	157	170	LUMP SUM	36	1560	LUMP SUM

PROJECT NO. B-5333
ROBESON COUNTY
 STATION: 37+28.50 -L-

SHEET 4 OF 4 REPLACES BRIDGE NO. 174

Dewberry
 2610 WYCLIFF ROAD
 SUITE 410
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 NC COA No. F-0929

SEAL
 032076
 ENGINEER
 JENNIFER R. McROY
 12/9/2016

DocuSigned by:
 Jennifer R. McRoy
 E114C791288475

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE ON SR 1550
 OVER LUMBER RIVER OVERFLOW
 BETWEEN BUS. 74 & SR 1339
 33'-10" CLEAR ROADWAY - 90° SKEW

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	S02-4
1			3			TOTAL SHEETS
2			4			23

DRAWN BY : MTB DATE : 04/16
 CHECKED BY : JRM DATE : 04/16

12/26/2016 8:05:50 AM Loc.dgn
 USER: jrmr04

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ_{DC}	γ_{DW}
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

LOAD AND RESISTANCE FACTOR RATING (LRFD) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						LIVELOAD FACTORS	MOMENT					SHEAR					LIVELOAD FACTORS	MOMENT						
							DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)		DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93(Inv)	N/A	1	1.018	--	1.75	0.284	2.53	25'	EL	12	0.591	1.02	25'	EL	1.2	0.80	0.284	2.34	25'	EL	12		
	HL-93(Opr)	N/A	--	1.319	--	1.35	0.284	3.29	25'	EL	12	0.591	1.32	25'	EL	1.2	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	2	1.178	42.397	1.75	0.284	3.76	25'	EL	12	0.591	1.18	25'	EL	1.2	0.80	0.284	3.46	25'	EL	12		
	HS-20(Opr)	36.000	--	1.527	54.959	1.35	0.284	4.87	25'	EL	12	0.591	1.53	25'	EL	1.2	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	2.728	36.833	1.4	0.284	6.83	25'	EL	12	0.591	2.73	25'	EL	1.2	0.80	0.284	5.04	25'	EL	12	
		SNGARBS2	20.000	--	2.186	43.718	1.4	0.284	6.39	25'	EL	12	0.591	2.19	25'	EL	1.2	0.80	0.284	4.72	25'	EL	12	
		SNAGRIS2	22.000	--	2.141	47.107	1.4	0.284	6.83	25'	EL	12	0.591	2.14	25'	EL	1.2	0.80	0.284	5.04	25'	EL	12	
		SNCOTTS3	27.250	--	1.385	37.731	1.4	0.284	3.57	25'	EL	12	0.591	1.38	25'	EL	1.2	0.80	0.284	2.64	25'	EL	12	
		SNAGGRS4	34.925	--	1.332	46.511	1.4	0.284	3.56	25'	EL	12	0.591	1.33	25'	EL	1.2	0.80	0.284	2.62	25'	EL	12	
		SNS5A	35.550	--	1.392	49.477	1.4	0.284	3.45	25'	EL	12	0.591	1.39	25'	EL	1.2	0.80	0.284	2.54	25'	EL	12	
		SNS6A	39.950	--	1.334	53.31	1.4	0.284	3.23	25'	EL	12	0.591	1.33	25'	EL	1.2	0.80	0.284	2.39	25'	EL	12	
	SNS7B	42.000	--	1.344	56.455	1.4	0.284	3.23	25'	EL	12	0.591	1.34	25'	EL	1.2	0.80	0.284	2.37	25'	EL	12		
	TTST	TNAGRIT3	33.000	--	1.634	53.934	1.4	0.284	4.55	25'	EL	12	0.591	1.63	25'	EL	1.2	0.80	0.284	3.36	25'	EL	12	
		TNT4A	33.075	--	1.483	49.049	1.4	0.284	3.95	25'	EL	12	0.591	1.48	25'	EL	1.2	0.80	0.284	2.92	25'	EL	12	
		TNT6A	41.600	--	1.398	58.138	1.4	0.284	3.71	25'	EL	12	0.591	1.4	25'	EL	1.2	0.80	0.284	2.74	25'	EL	12	
		TNT7A	42.000	--	1.391	58.419	1.4	0.284	3.84	25'	EL	12	0.591	1.39	25'	EL	1.2	0.80	0.284	2.83	25'	EL	12	
		TNT7B	42.000	--	1.343	56.385	1.4	0.284	3.46	25'	EL	12	0.591	1.34	25'	EL	1.2	0.80	0.284	2.55	25'	EL	12	
TNAGRIT4		43.000	--	1.340	57.604	1.4	0.284	3.71	25'	EL	12	0.591	1.34	25'	EL	1.2	0.80	0.284	2.73	25'	EL	12		
TNAGT5A	45.000	--	1.367	61.501	1.4	0.284	3.71	25'	EL	12	0.591	1.37	25'	EL	1.2	0.80	0.284	2.73	25'	EL	12			
TNAGT5B	45.000	3	1.239	55.766	1.4	0.284	3.65	25'	EL	9.6	0.591	1.24	25'	EL	1.2	0.80	0.284	2.71	25'	EL	9.6			

NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

-
-
-
-

CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

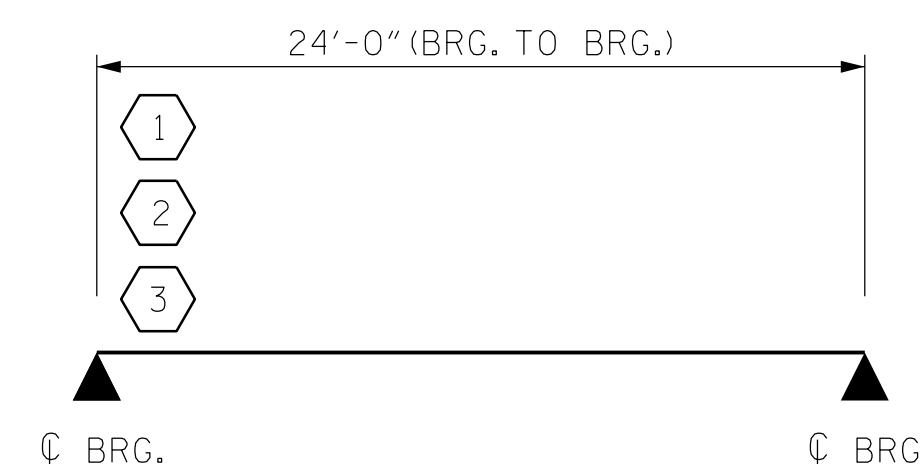
② DESIGN LOAD RATING (HS-20)

③ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER
EL - EXTERIOR LEFT GIRDER
ER - EXTERIOR RIGHT GIRDER



LRFR SUMMARY
FOR SPAN 'A'

PROJECT NO. B-5333

ROBESON COUNTY

STATION: 37+28.50 -L-

SHEET 1 OF 3 BRIDGE NO. 174

Dewberry

2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

NORTH CAROLINA
PROFESSIONAL
SEAL
032076
ENGINEER
JENNIFER R. MEYER

12/9/2016

DocuSigned by:
Jennifer R. Meyer
E11146791288475

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
LRFR SUMMARY FOR
25' CORED SLAB UNIT
90° SKEW
(NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET No.	
No.	BY:	DATE:	No.	BY:	DATE:	TOTAL SHEETS	
1			3			S02-5	
2			4			23	

STD. NO. 21LRFR1-90S-25L

ASSEMBLED BY :	MTB	DATE :	04/16
CHECKED BY :	JRM	DATE :	04/16
DRAWN BY :	CVC	6/10	.
CHECKED BY :	DNS	6/10	.

12/9/2016 8:05:51 AM JRM_LRFRL.dgn USER: jrmrj

LOAD AND RESISTANCE FACTOR RATING (LRFD) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						LIVELOAD FACTORS	MOMENT					SHEAR					LIVELOAD FACTORS	MOMENT						
							DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)		DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93(Inv)	N/A	1	1.394	--	1.75	0.276	1.57	50'	EL	24.5	0.531	1.39	50'	EL	2.45	0.80	0.276	1.44	50'	EL	24.5		
	HL-93(Opr)	N/A	--	1.807	--	1.35	0.276	2.03	50'	EL	24.5	0.531	1.81	50'	EL	2.45	N/A	--	--	--	--	--	--	
	HS-20(Inv)	36.000	2	1.667	60.007	1.75	0.276	1.95	50'	EL	24.5	0.531	1.67	50'	EL	2.45	0.80	0.276	1.79	50'	EL	24.5		
	HS-20(Opr)	36.000	--	2.161	77.787	1.35	0.276	2.52	50'	EL	24.5	0.531	2.16	50'	EL	2.45	N/A	--	--	--	--	--	--	
LEGAL LOAD RATING	SV	SNSH	13.500	--	3.635	49.079	1.4	0.276	4.95	50'	EL	24.5	0.531	4.7	50'	EL	2.45	0.80	0.276	3.64	50'	EL	24.5	
		SNGARBS2	20.000	--	2.871	57.42	1.4	0.276	3.91	50'	EL	24.5	0.531	3.42	50'	EL	2.45	0.80	0.276	2.87	50'	EL	24.5	
		SNAGRIS2	22.000	--	2.778	61.109	1.4	0.276	3.78	50'	EL	19.6	0.531	3.21	50'	EL	2.45	0.80	0.276	2.78	50'	EL	24.5	
		SNCOTTS3	27.250	--	1.814	49.418	1.4	0.276	2.47	50'	EL	24.5	0.531	2.36	50'	EL	2.45	0.80	0.276	1.81	50'	EL	24.5	
		SNAGGRS4	34.925	--	1.577	55.063	1.4	0.276	2.15	50'	EL	24.5	0.531	2.01	50'	EL	2.45	0.80	0.276	1.58	50'	EL	24.5	
		SNS5A	35.550	--	1.537	54.657	1.4	0.276	2.09	50'	EL	24.5	0.531	2.07	50'	EL	2.45	0.80	0.276	1.54	50'	EL	24.5	
		SNS6A	39.950	--	1.438	57.43	1.4	0.276	1.96	50'	EL	24.5	0.531	1.91	50'	EL	2.45	0.80	0.276	1.44	50'	EL	24.5	
	SNS7B	42.000	--	1.370	57.54	1.4	0.276	1.87	50'	EL	24.5	0.531	1.91	50'	EL	2.45	0.80	0.276	1.37	50'	EL	24.5		
	TTST	TNAGRIT3	33.000	--	1.761	58.118	1.4	0.276	2.4	50'	EL	24.5	0.531	2.25	50'	EL	2.45	0.80	0.276	1.76	50'	EL	24.5	
		TNT4A	33.075	--	1.777	58.759	1.4	0.276	2.42	50'	EL	24.5	0.531	2.17	50'	EL	2.45	0.80	0.276	1.78	50'	EL	24.5	
		TNT6A	41.600	--	1.480	61.558	1.4	0.276	2.01	50'	EL	24.5	0.531	2.08	50'	EL	2.45	0.80	0.276	1.48	50'	EL	24.5	
		TNT7A	42.000	--	1.502	63.087	1.4	0.276	2.05	50'	EL	24.5	0.531	1.94	50'	EL	2.45	0.80	0.276	1.50	50'	EL	24.5	
		TNT7B	42.000	--	1.566	65.773	1.4	0.276	2.13	50'	EL	24.5	0.531	1.84	50'	EL	2.45	0.80	0.276	1.57	50'	EL	24.5	
		TNAGRIT4	43.000	--	1.486	63.902	1.4	0.276	2.02	50'	EL	24.5	0.531	1.77	50'	EL	2.45	0.80	0.276	1.49	50'	EL	24.5	
TNAGT5A		45.000	--	1.388	62.47	1.4	0.276	1.89	50'	EL	24.5	0.531	1.8	50'	EL	2.45	0.80	0.276	1.39	50'	EL	24.5		
TNAGT5B	45.000	3	1.360	61.206	1.4	0.276	1.85	50'	EL	24.5	0.531	1.68	50'	EL	2.45	0.80	0.276	1.36	50'	EL	24.5			

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ_{DC}	γ_{DW}
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

- 1.
- 2.
- 3.
- 4.

CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

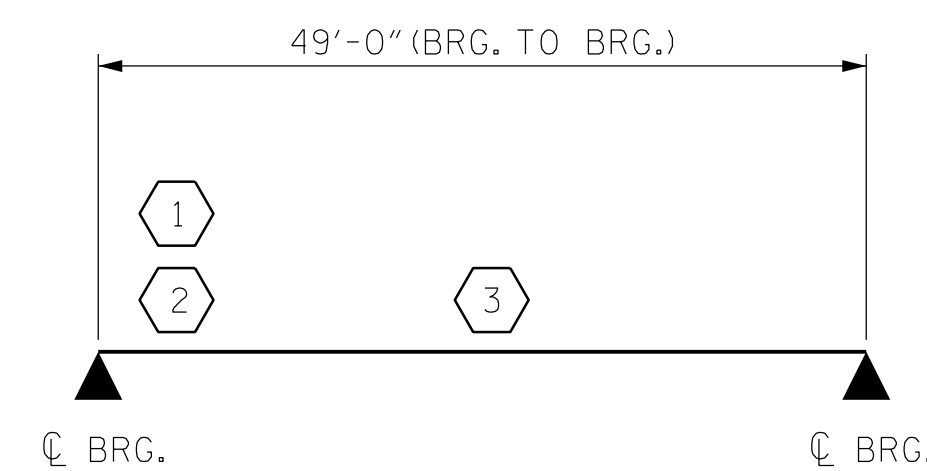
2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER
 EL - EXTERIOR LEFT GIRDER
 ER - EXTERIOR RIGHT GIRDER



LRFR SUMMARY
FOR SPAN 'B'

PROJECT NO. B-5333
ROBESON COUNTY
STATION: 37+28.50 -L-

SHEET 2 OF 3 BRIDGE NO. 174

Dewberry

2610 WYCLIFF ROAD
 SUITE 410
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 NC COA No. F-0929

NORTH CAROLINA
 PROFESSIONAL
 SEAL
 032076
 ENGINEER
 JENNIFER R. McROY
 12/9/2016

DocuSigned by:
Jennifer R. McRoy

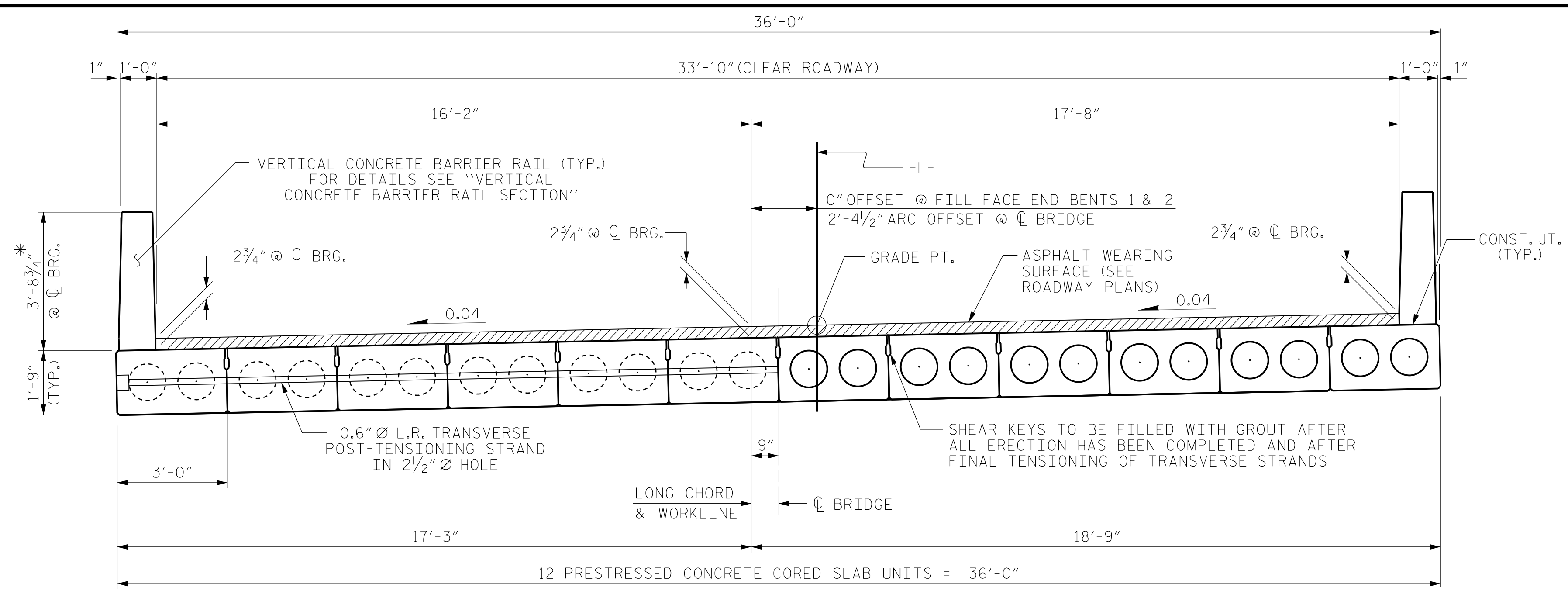
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
LRFR SUMMARY FOR
50' CORED SLAB UNIT
90° SKEW
(NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	SHEET No.
1			3			23
2			4			TOTAL SHEETS
						23

12/9/2016 8:21:45 AM I:\HSN\174_LRFR2.dgn USER: jmcroy

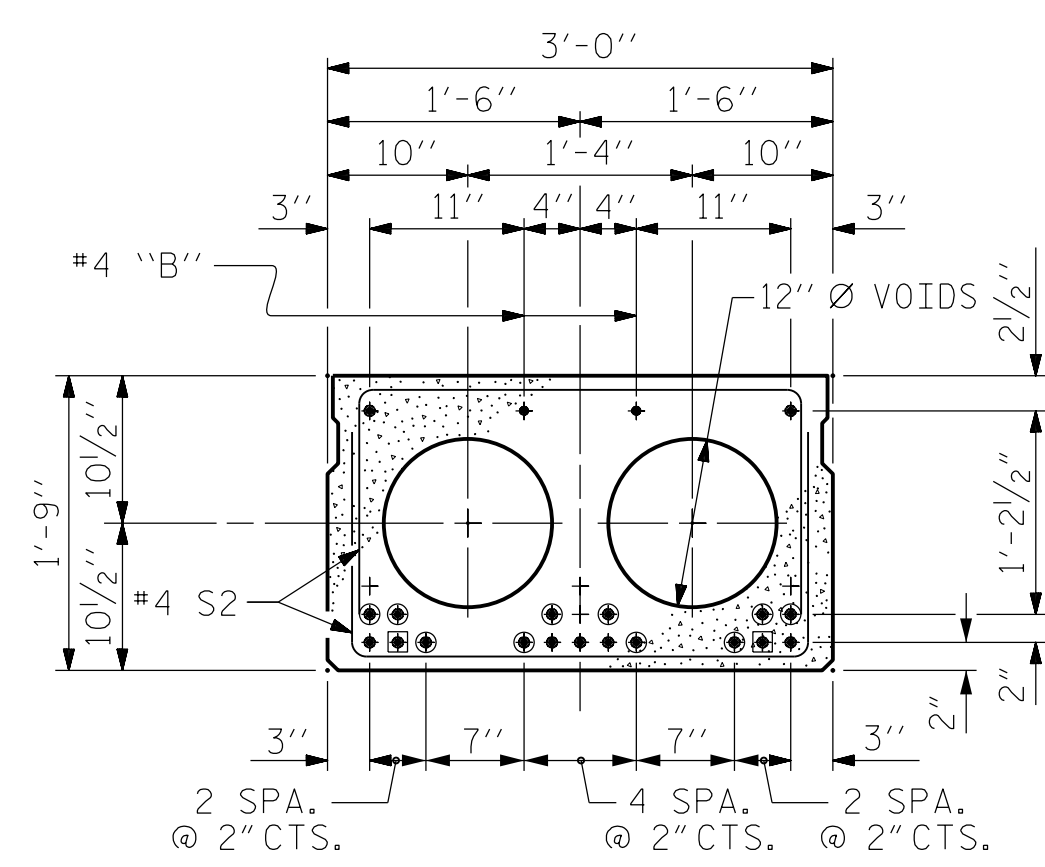
ASSEMBLED BY :	MTB	DATE :	04/16
CHECKED BY :	JRM	DATE :	04/16
DRAWN BY :	CVC	6/10	.
CHECKED BY :	DNS	6/10	.



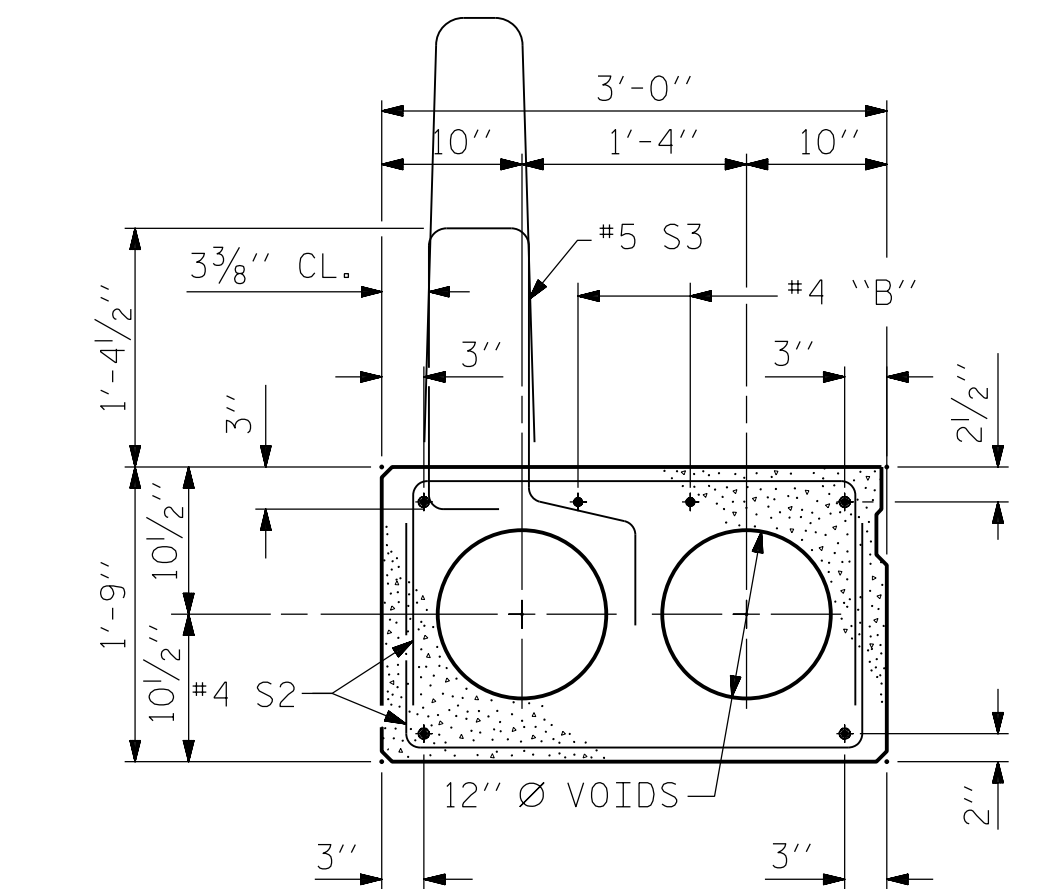
HALF SECTION AT INTERMEDIATE DIAPHRAGMS
 HALF SECTION THROUGH VOIDS

TYPICAL SECTION

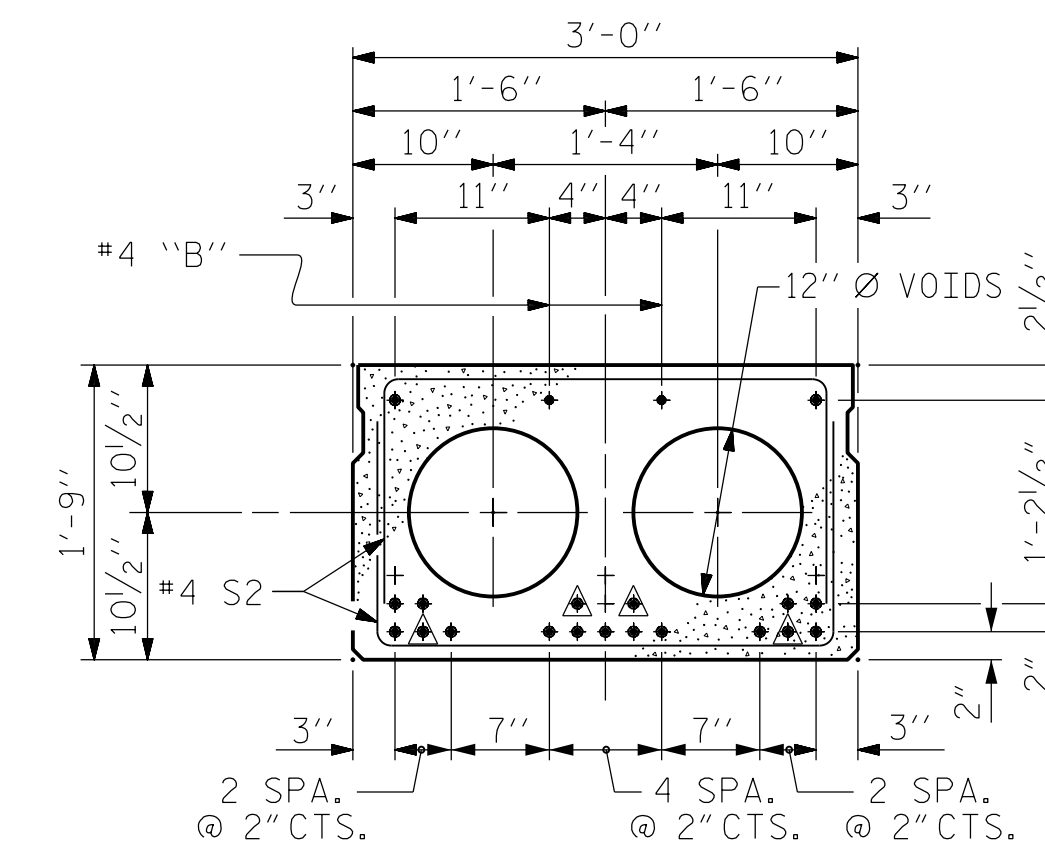
* - THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.



INTERIOR SLAB SECTION (25' UNIT)
 (9 STRANDS REQUIRED)



EXT. SLAB SECTION
 (FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)



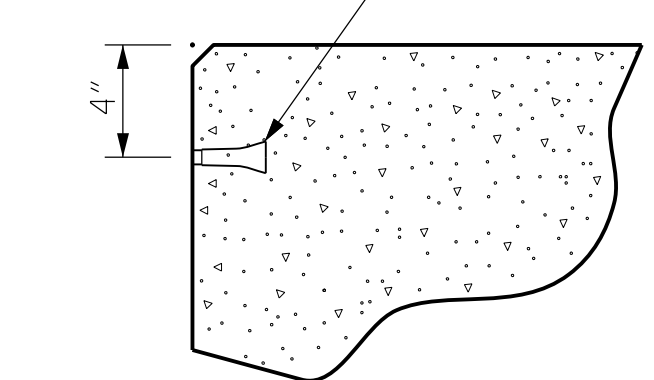
INTERIOR SLAB SECTION (50' & 55' UNIT)
 (19 STRANDS REQUIRED)

- DEBONDING LEGEND**
- ▲ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 6'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.
 - BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 2'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.
 - OPTIONAL FULL LENGTH DEBONDED STRANDS. THESE STRANDS ARE NOT REQUIRED. IF THE FABRICATOR CHOOSES TO INCLUDE THESE STRANDS IN THE CORED SLAB UNIT, THE STRANDS SHALL BE DEBONDED FOR THE FULL LENGTH OF THE UNIT AT NO ADDITIONAL COST. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

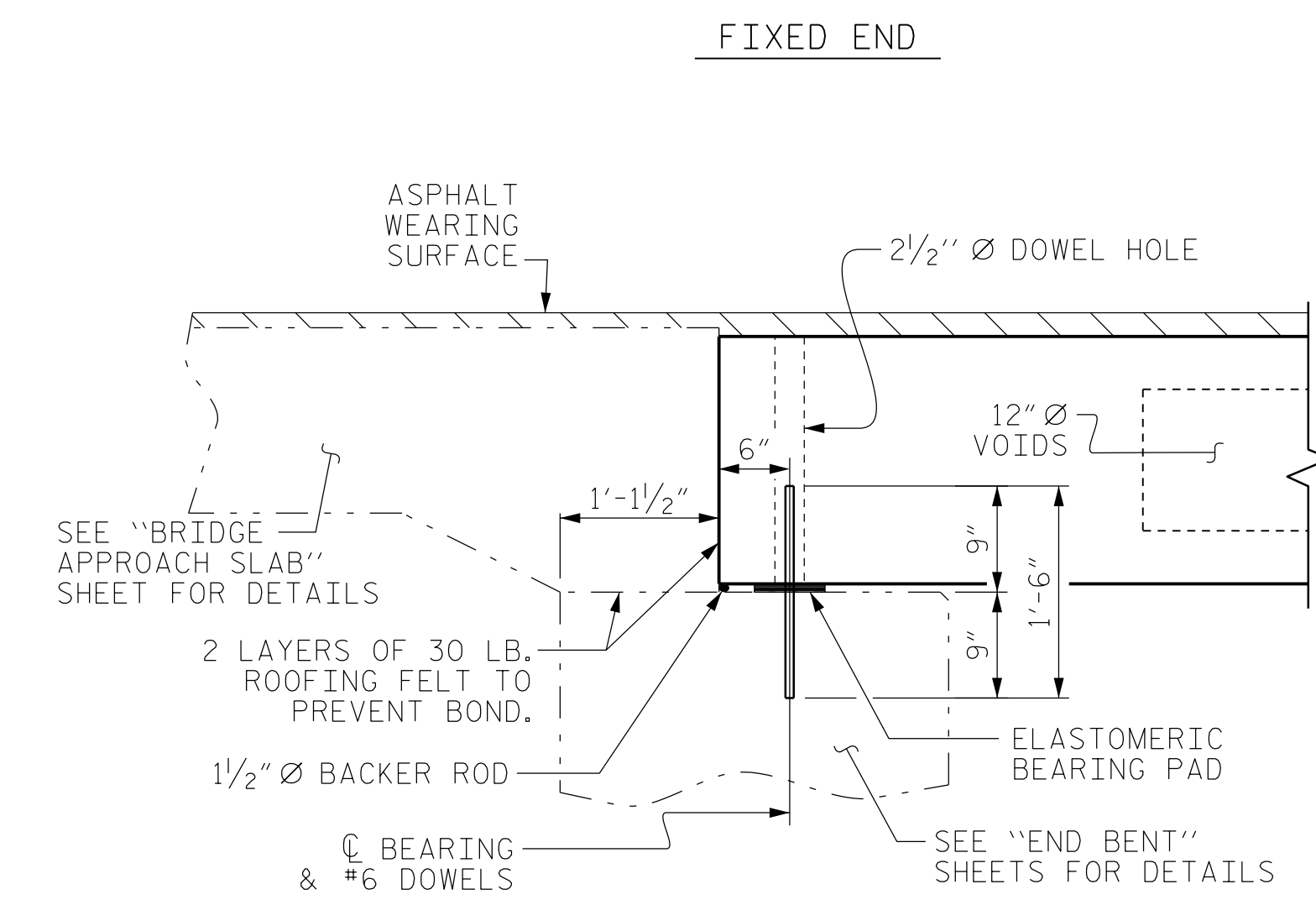
0.6" Ø LOW RELAXATION STRAND LAYOUT

DEBONDING LEGEND

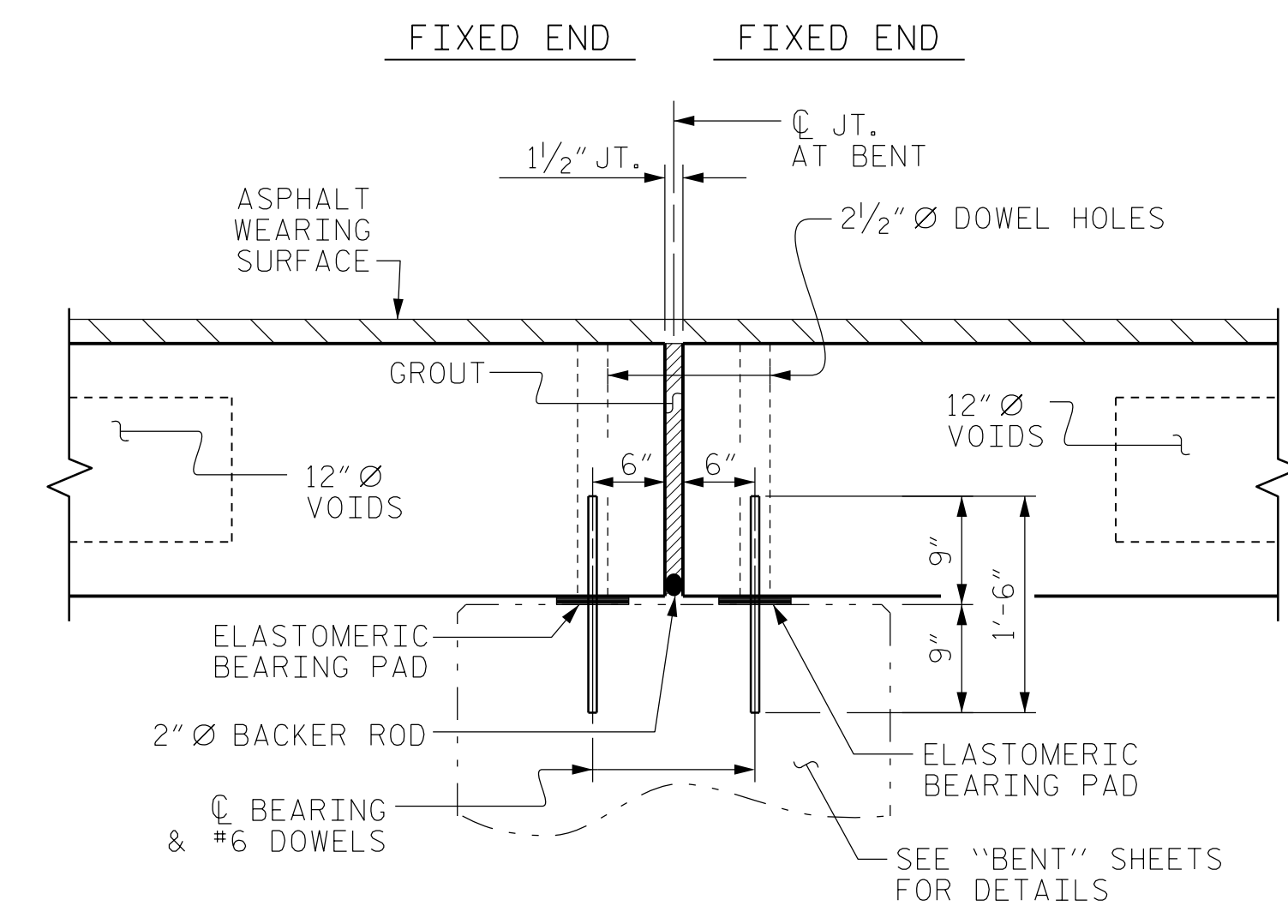
PERMITTED THREADED INSERT CAST IN OUTSIDE FACE OF EXTERIOR UNIT AND RECESSED 3/8" SIZE TO BE DETERMINED BY CONTRACTOR.



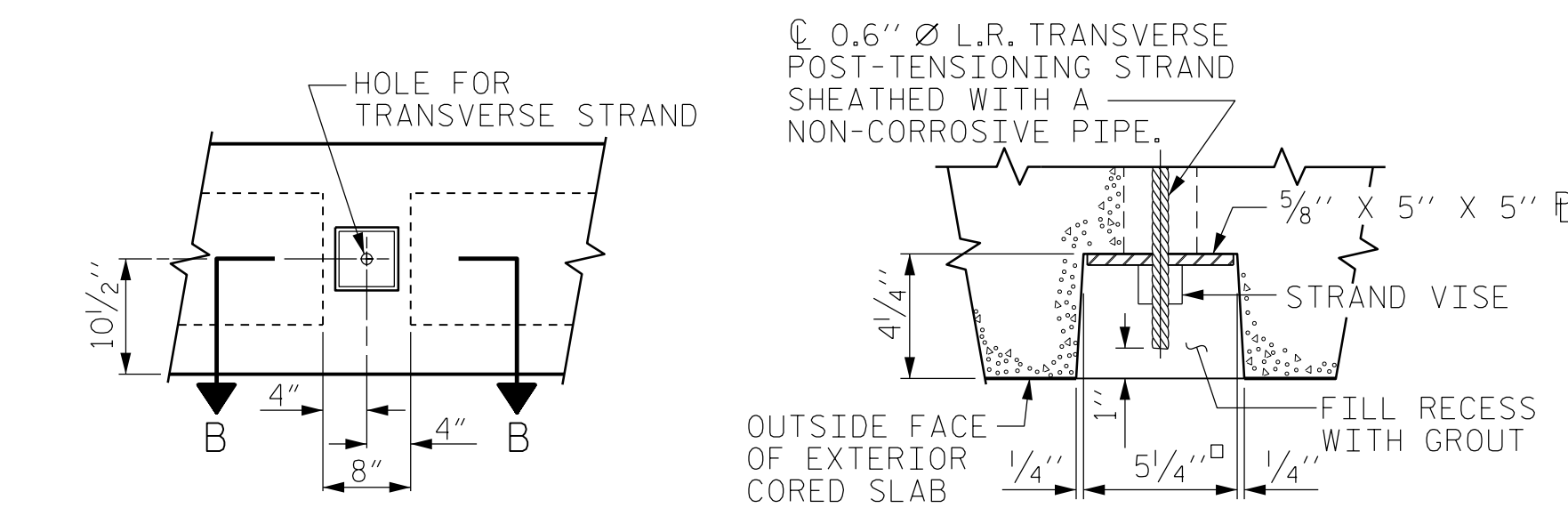
THREADED INSERT DETAIL



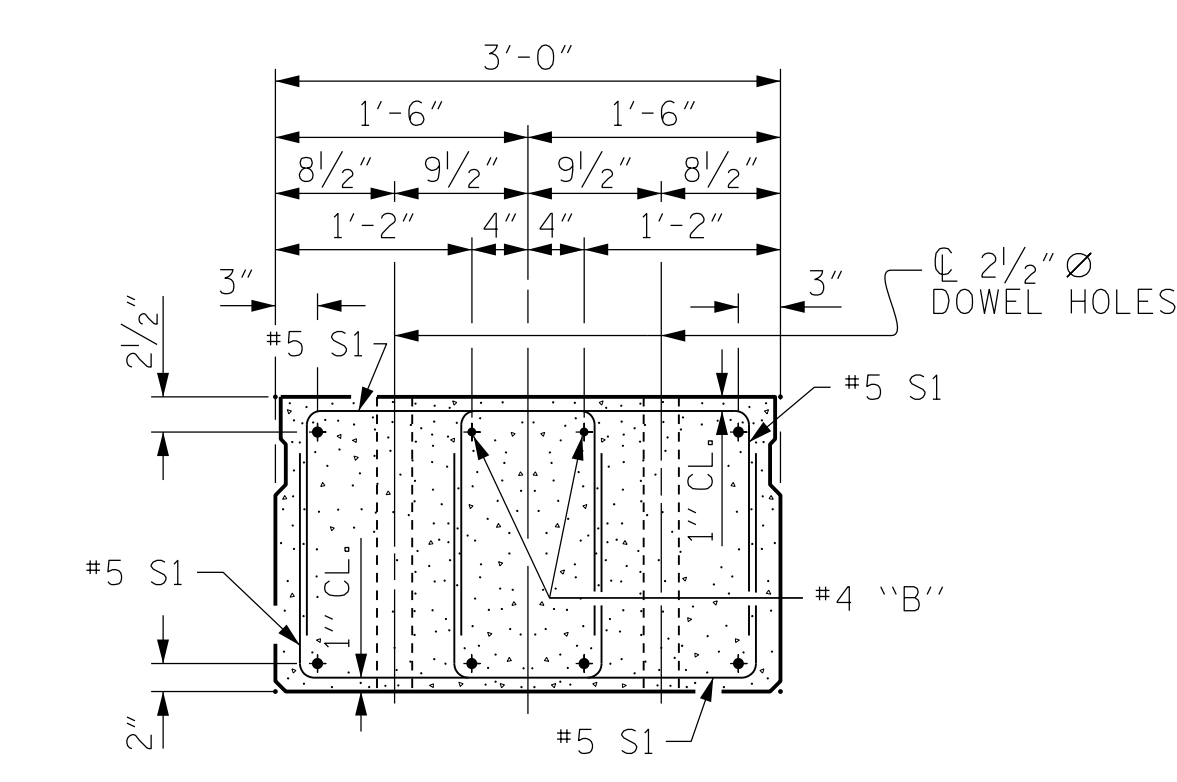
SECTION AT END BENT



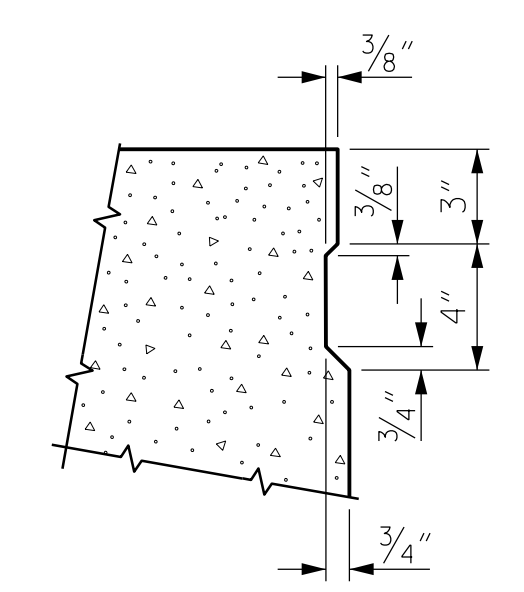
SECTION AT BENT



ELEVATION VIEW
 SECTION B-B
GROUTED RECESS AT END OF POST-TENSIONING STRAND OF CORED SLABS



END ELEVATION
 SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN.)
 INTERIOR SLAB UNIT SHOWN-EXTERIOR SLAB UNIT SIMILAR EXCEPT SHEAR KEY LOCATION.



SHEAR KEY DETAIL
 NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.

PROJECT NO. **B-5333**
ROBESON COUNTY
 STATION: **37+28.50 -L-**

SHEET 1 OF 6 BRIDGE NO. 174

Dewberry
 2610 WYCLIFF ROAD
 SUITE 410
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 NC COA No. F-0929

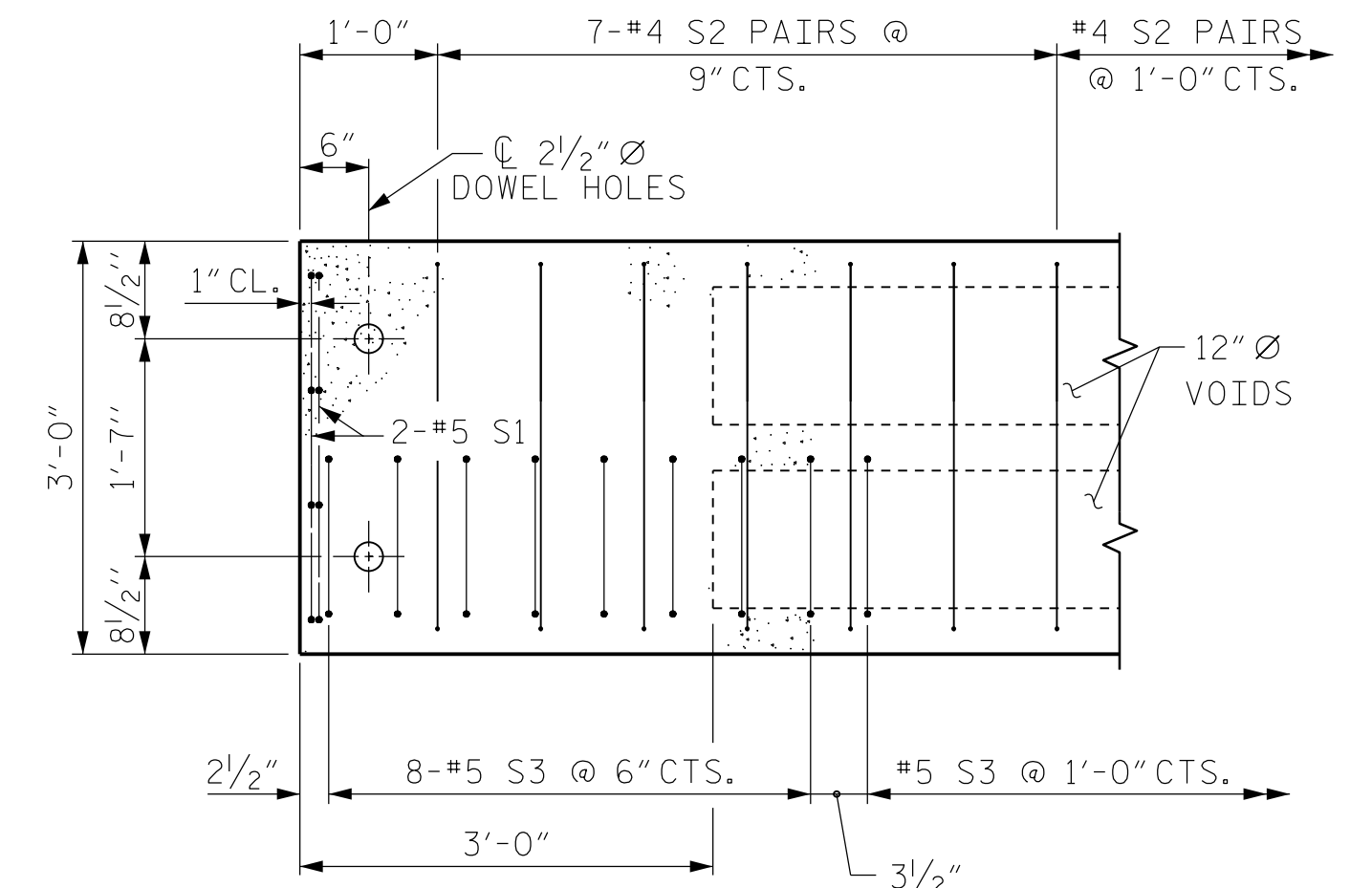
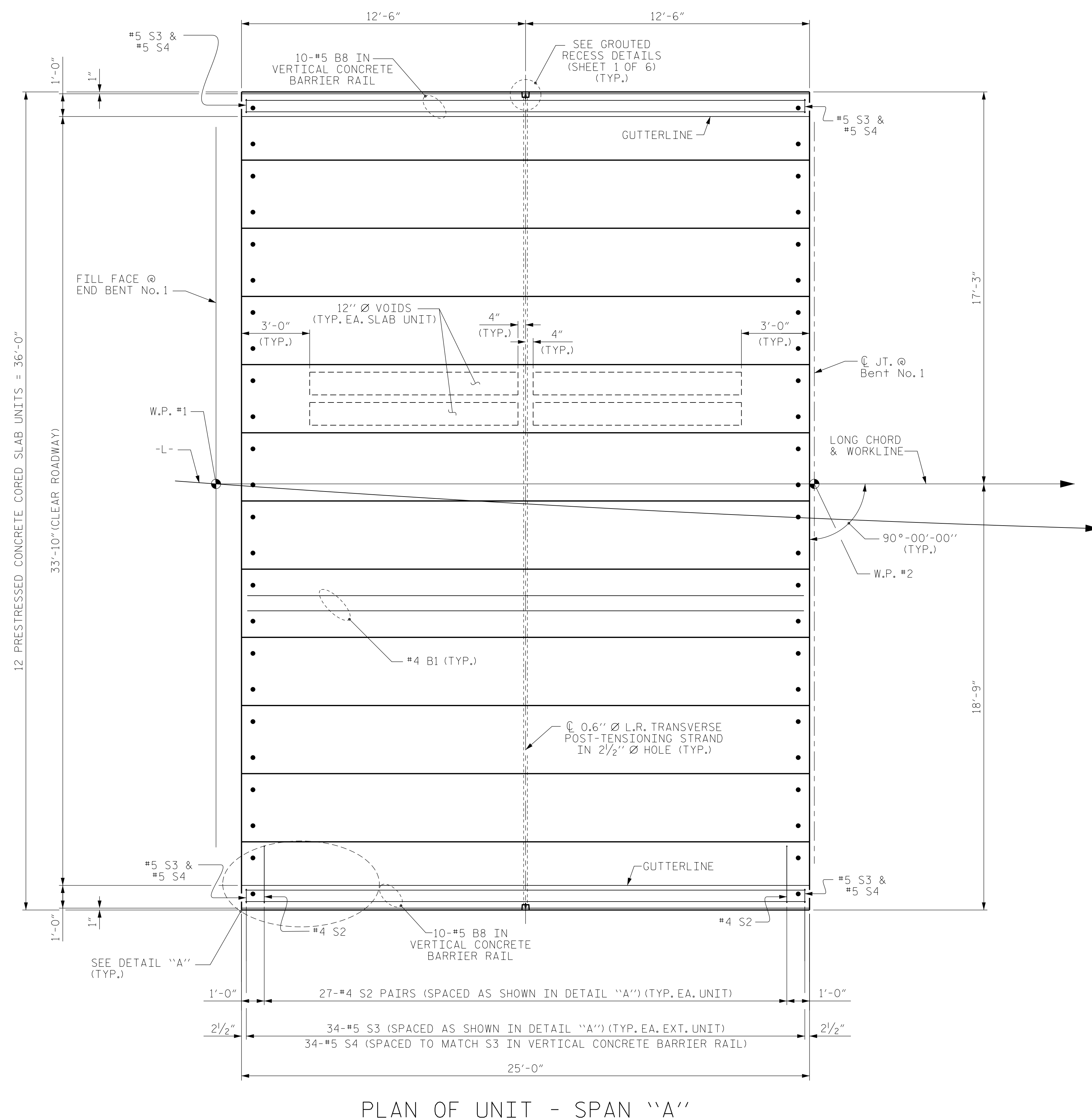
SEAL
 032076
 ENGINEER
 JENNIFER R. MEROY
 12/9/2016

DocuSigned by:
 Jennifer R. Meroy
 E11140791288475

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD 3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLAB UNIT 90° SKEW					
REVISIONS					
No.	BY:	DATE:	No.	BY:	DATE:
1			3		
2			4		
SHEET No. S02-8					TOTAL SHEETS 23

12/16/2016 8:53:03 AM SECT1.dgn
 USER: jmeroy

DRAWN BY: MTB DATE: 04/16
 CHECKED BY: JRM DATE: 04/16



DETAIL "A"
 (TYPICAL EACH END OF UNIT)
 NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.

PROJECT NO. B-5333
ROBESON COUNTY
 STATION: 37+28.50 -L-
 SHEET 2 OF 6 BRIDGE NO. 174

Dewberry
 2610 WYCLIFF ROAD
 SUITE 410
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 NC COA No. F-0929

12/9/2016
 Jennifer R. McCoy
 E114C791288475



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

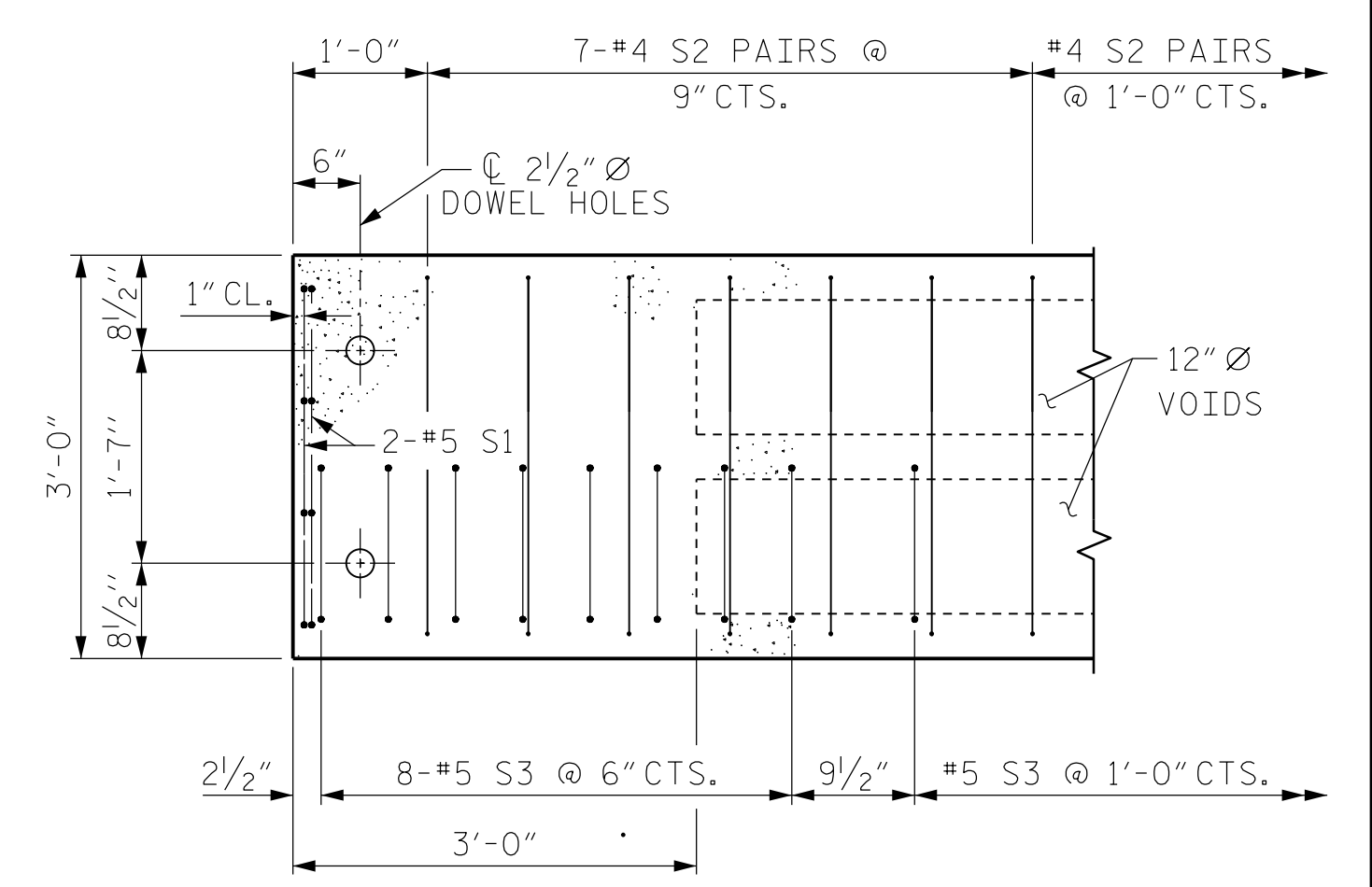
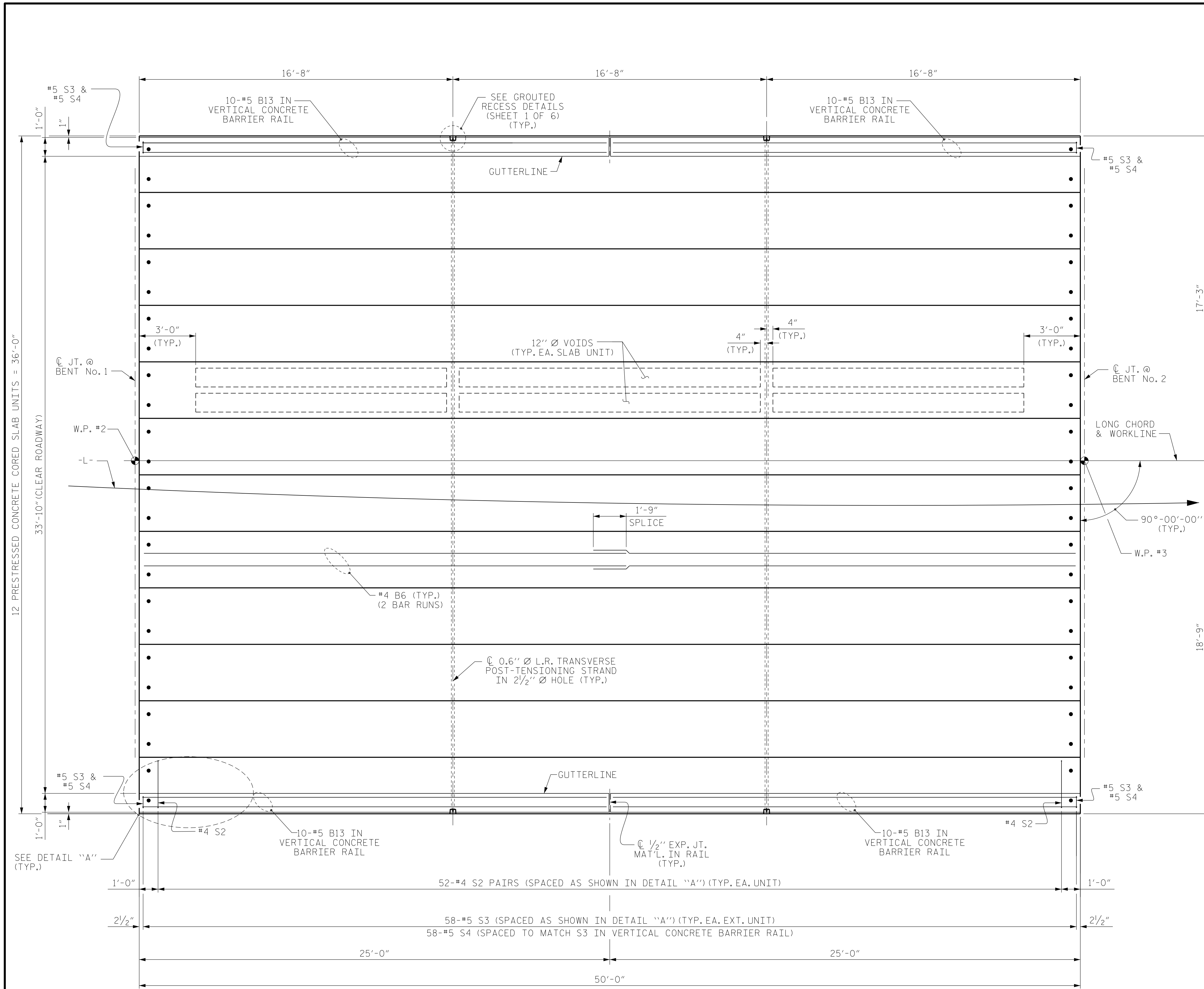
PLAN OF 25' UNIT
 33'-10" CLEAR ROADWAY
 90° SKEW

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	TOTAL SHEETS
1			3			23
2			4			

12/9/2016 8:53:39 AM SPANIA.dgn
 USER: jrmr04

DRAWN BY : MTB DATE : 04/16
 CHECKED BY : JRM DATE : 04/16

PLAN OF UNIT - SPAN "A"



DETAIL "A"
 (TYPICAL EACH END OF UNIT)
 NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.

PROJECT NO. B-5333
ROBESON COUNTY
 STATION: 37+28.50 -L-
 SHEET 3 OF 6 BRIDGE NO. 174

Dewberry
 2610 WYCLIFF ROAD
 SUITE 410
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 NC COA No. F-9929

SEAL
 032076
 ENGINEER
 JENNIFER R. MCGOY
 12/9/2016

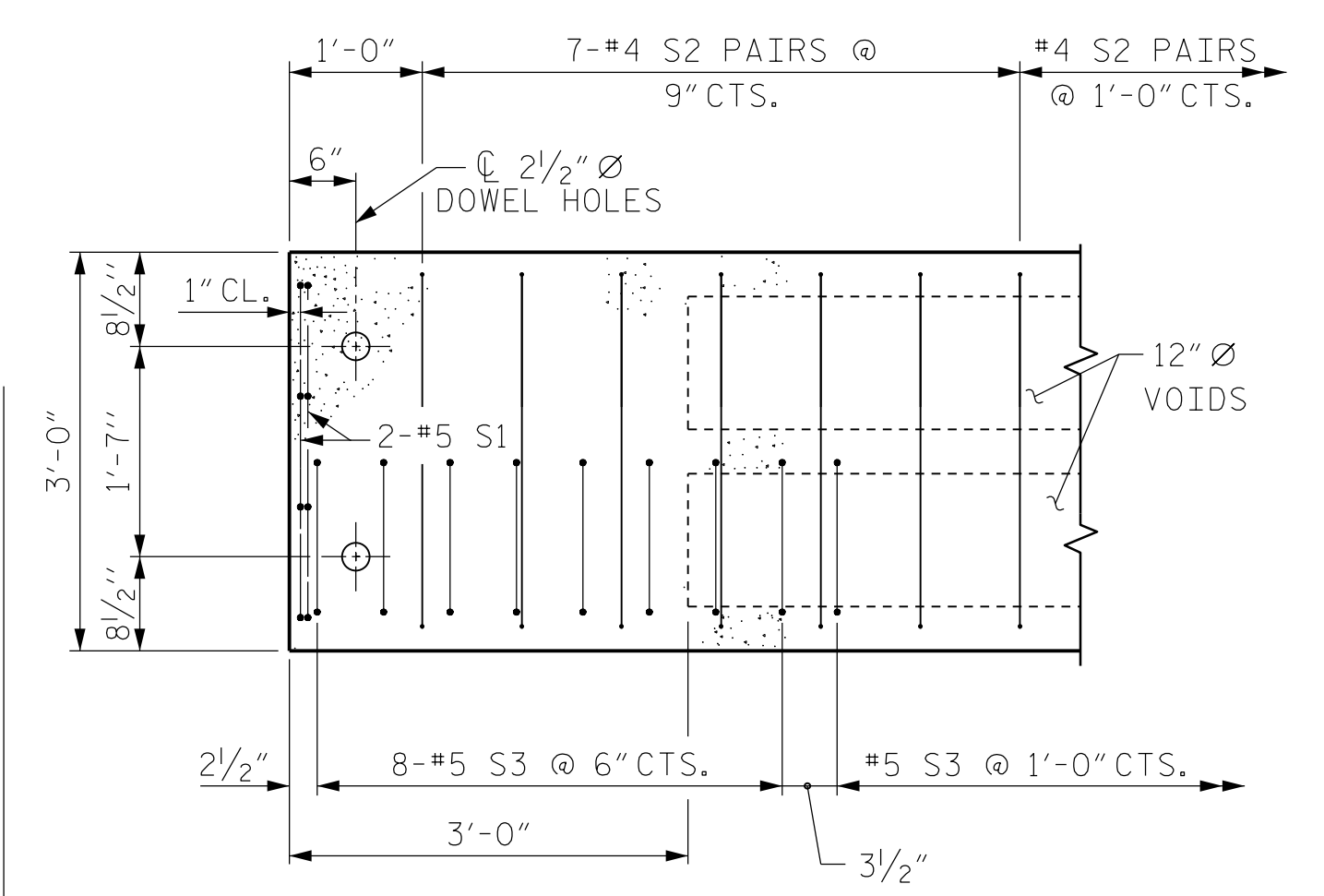
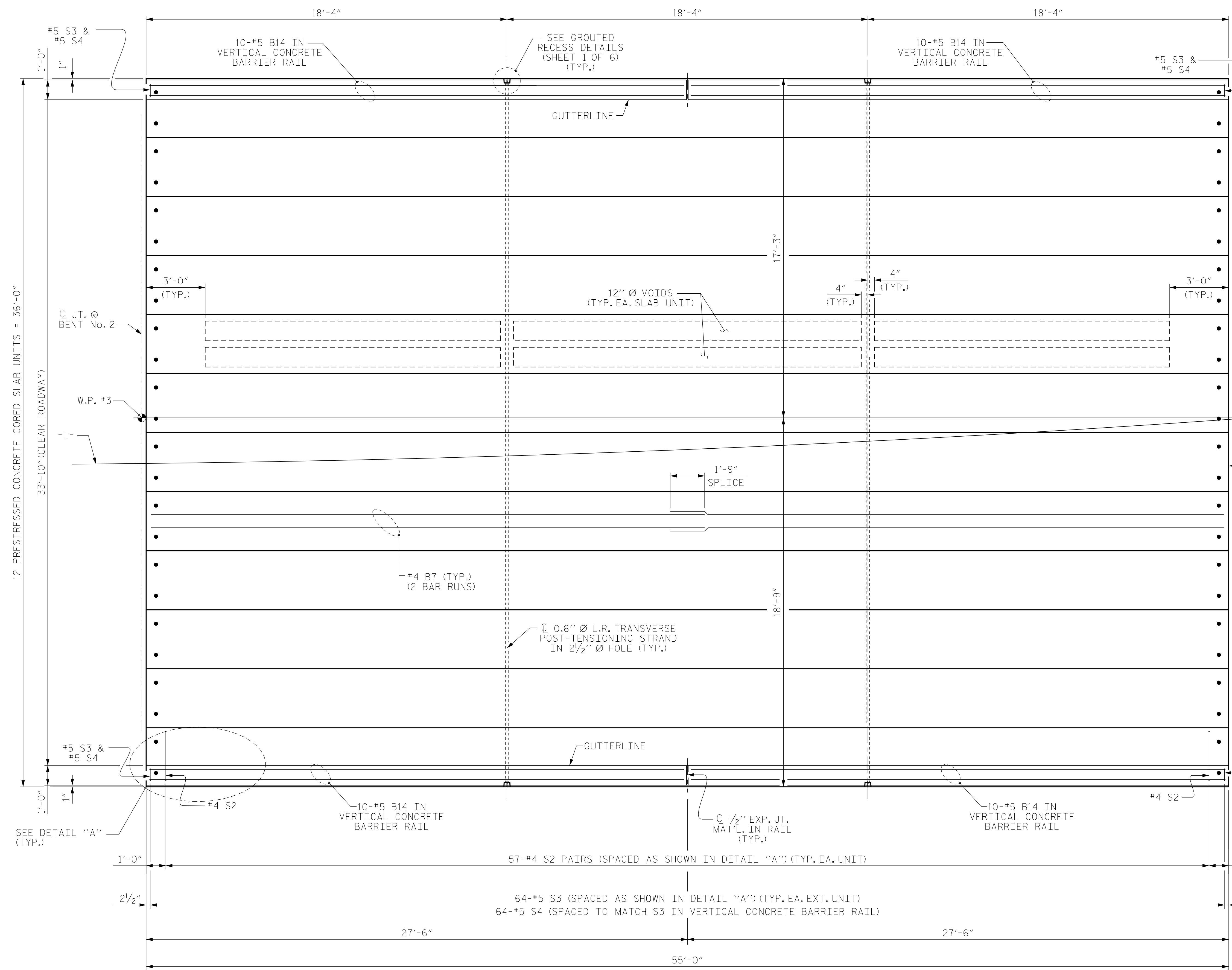
DocuSigned by:
 Jennifer R. McGoy
 E114C791288475...

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET No. S02-10 TOTAL SHEETS 23
PLAN OF 50' UNIT 33'-10" CLEAR ROADWAY 90° SKEW						
REVISIONS						
No.	BY:	DATE:	No.	BY:	DATE:	
1			3			
2			4			

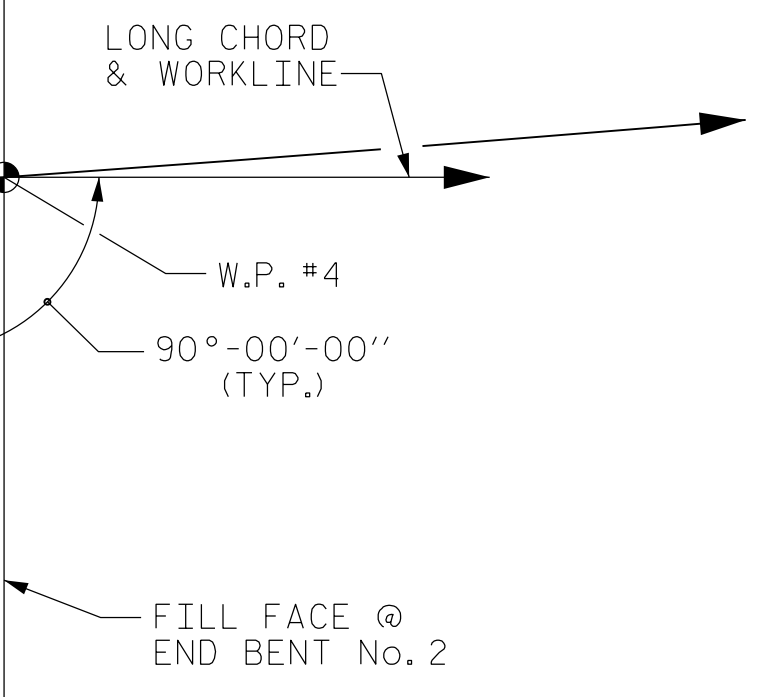
PLAN OF UNIT - SPAN "B"

12/9/2016 8:41:14 AM I:\4_SPANB.dgn
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DRAWN BY : MTB DATE : 04/16
 CHECKED BY : JRM DATE : 04/16



DETAIL "A"
 (TYPICAL EACH END OF UNIT)
 NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.



12/14/2016 8:47:46 AM SPAN.C.dgn
 USER: jrm204

DRAWN BY : MTB DATE : 04/16
 CHECKED BY : JRM DATE : 04/16

PROJECT NO. B-5333
ROBESON COUNTY
 STATION: 37+28.50 -L-
 SHEET 4 OF 6 BRIDGE NO. 174

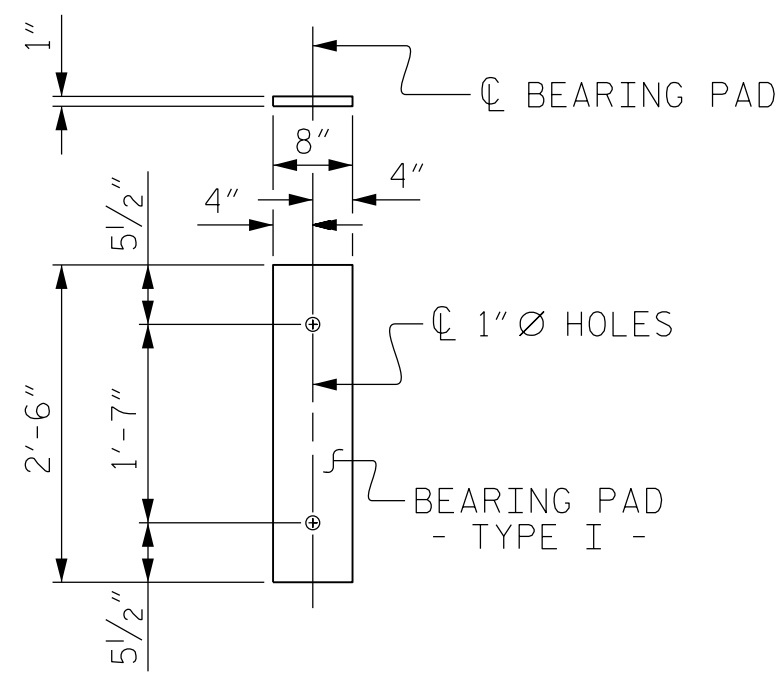
Dewberry
 2610 WYCLIFF ROAD
 SUITE 410
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 NC COA No. F-0929

NORTH CAROLINA
 PROFESSIONAL
 SEAL
 032076
 ENGINEER
 JENNIFER R. McROY
 12/9/2016

DocuSigned by:
 Jennifer R. McRoy
 E1114C791288475

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	S02-11
1			3			TOTAL SHEETS
2			4			23

PLAN OF UNIT - SPAN "C"



FIXED END
(TYPE I - 72 REQ'D)

ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS.

DEAD LOAD DEFLECTION AND CAMBER	
25' CORED SLAB UNIT	3'-0" x 1'-9"
	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	1/4" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	1/8" ↓
FINAL CAMBER	1/8" ↑

** INCLUDES FUTURE WEARING SURFACE

DEAD LOAD DEFLECTION AND CAMBER	
50' & 55' CORED SLAB UNIT	3'-0" x 1'-9"
	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	1/2" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	3/8" ↓
FINAL CAMBER	1/8" ↑

** INCLUDES FUTURE WEARING SURFACE

CORED SLABS REQUIRED			
25' UNIT	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	25'-0"	50'-0"
INTERIOR C.S.	10	25'-0"	250'-0"
TOTAL	12	25'-0"	300'-0"

CORED SLABS REQUIRED			
50' UNIT	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	50'-0"	100'-0"
INTERIOR C.S.	10	50'-0"	500'-0"
TOTAL	12	50'-0"	600'-0"

CORED SLABS REQUIRED			
55' UNIT	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	55'-0"	110'-0"
INTERIOR C.S.	10	55'-0"	550'-0"
TOTAL	12	55'-0"	660'-0"

CONCRETE RELEASE STRENGTH	
UNIT	PSI
25' UNITS	4000
50' & 55' UNITS	4900

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

NOTES

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

ALL REINFORCING STEEL CAST WITH THE CORED SLAB SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE CORED SLABS.

RECESSES FOR TRANSVERSE STRANDS SHALL BE GROUTED AFTER THE TENSIONING OF THE STRANDS.

THE 2 1/2" Ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

THE BACKER RODS SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

WHEN CORED SLABS ARE CAST, AN INTERNAL HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDEWAYS. AT LEAST SIX WEEKS PRIOR TO CASTING CORED SLABS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL DETAILS, LOCATION AND SPACING OF THE HOLD-DOWNS SHALL BE INDICATED.

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

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE CORED SLAB UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

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

FLAME CUTTING OF THE TRANSVERSE POST-TENSIONING STRAND IS NOT ALLOWED.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN THE REQUIRED STRENGTH SHOWN IN THE "CONCRETE RELEASE STRENGTH" TABLE.

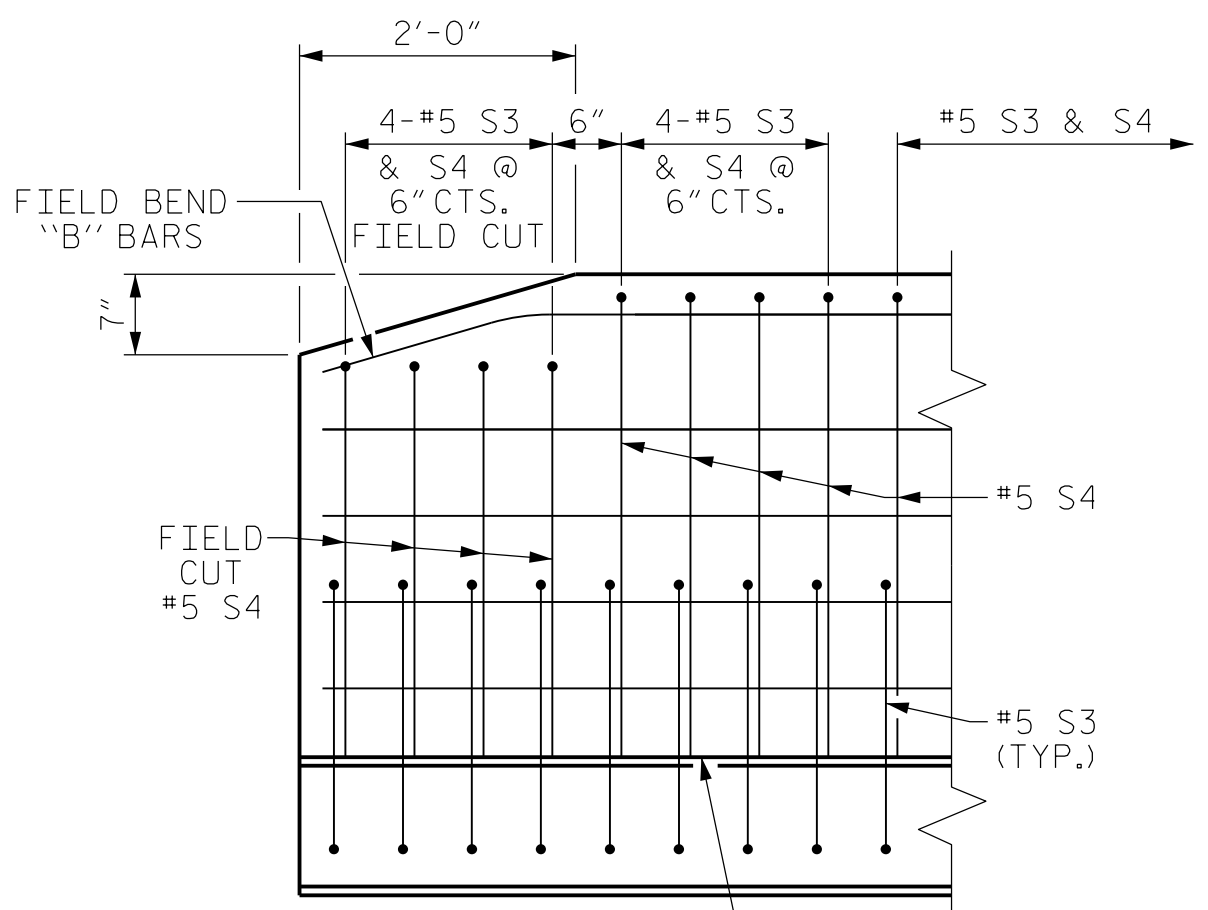
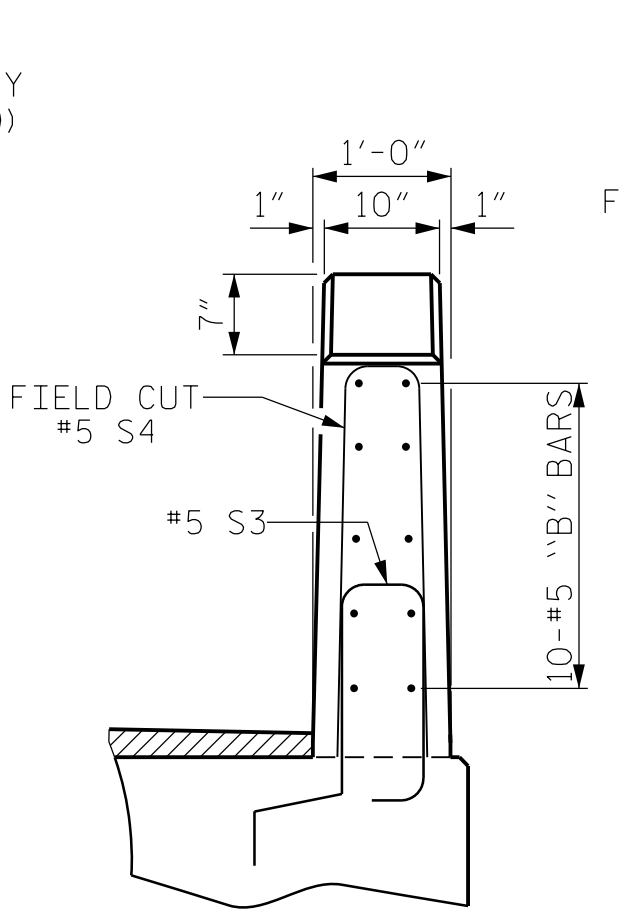
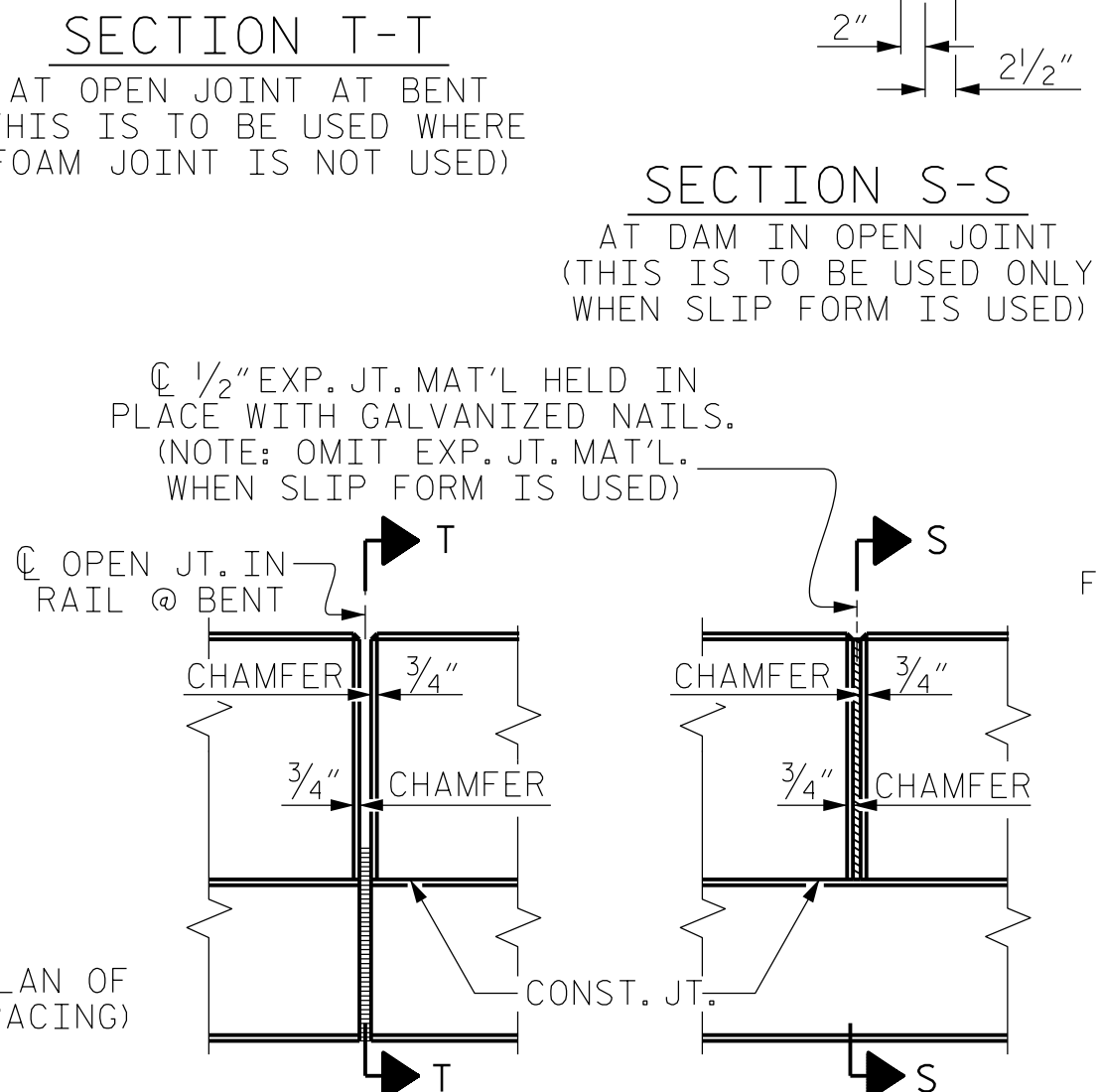
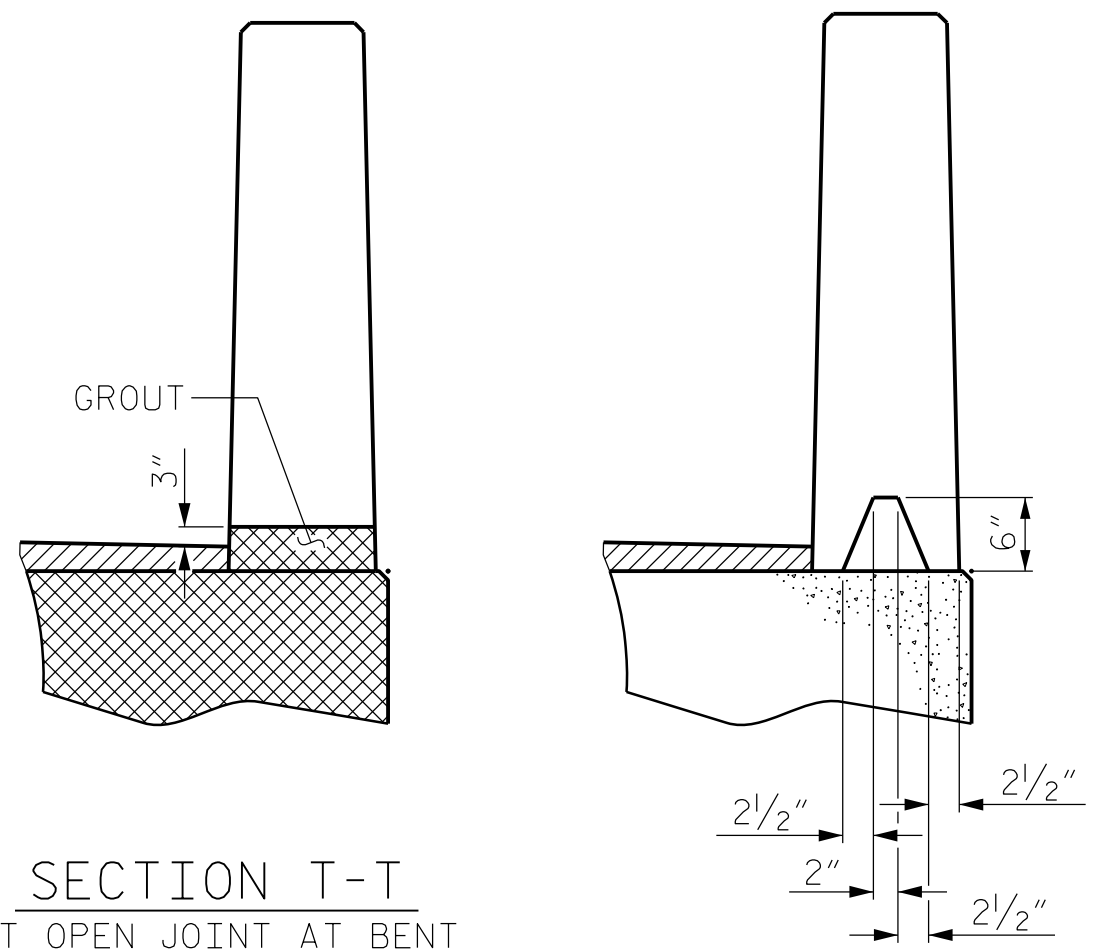
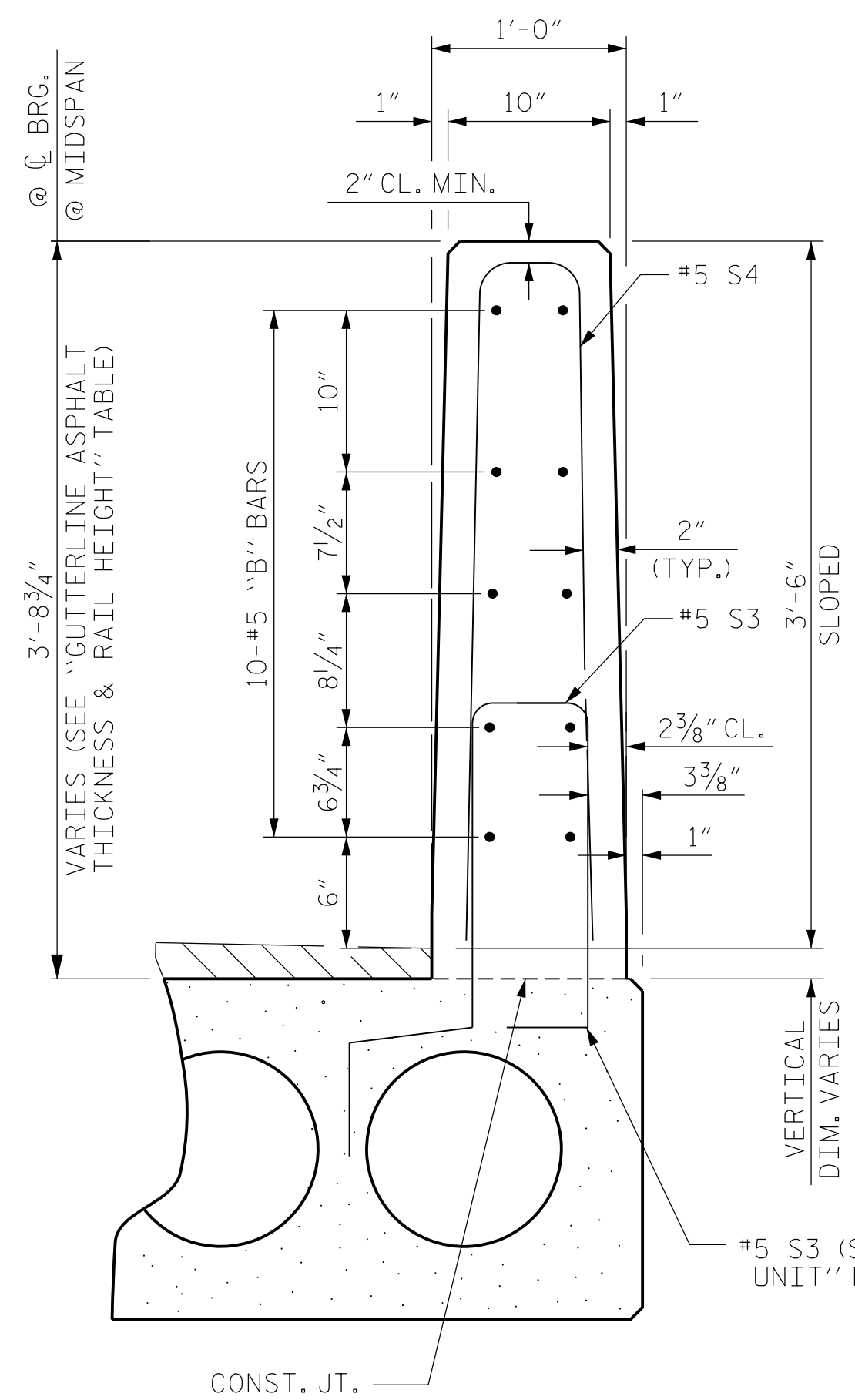
FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THE PERMITTED THREADED INSERTS ARE DETAILED AS AN OPTION FOR THE CONTRACTOR TO ATTACH FALSEWORK AND FORMWORK DURING CONSTRUCTION.

THE PERMITTED THREADED INSERTS IN THE EXTERIOR UNITS SHALL BE SIZED BY THE CONTRACTOR, SPACED AT 4'-0" CENTERS AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS. STAINLESS STEEL THREADED INSERTS MAY BE USED AS AN ALTERNATE.

THE PERMITTED THREADED INSERTS SHALL BE GROUTED BY THE CONTRACTOR IMMEDIATELY FOLLOWING REMOVAL OF THE FALSEWORK.

THE COST OF THE PERMITTED THREADED INSERTS SHALL BE INCLUDED IN THE PRICE BID FOR THE PRECAST UNITS.



END OF RAIL DETAILS

PROJECT NO. B-5333
ROBESON COUNTY
 STATION: 37+28.50 -L-
 SHEET 5 OF 6 BRIDGE NO. 174

Dewberry
 2601 WYCLIFF ROAD
 SUITE 410
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 NC COA No. F-0929

STATE OF NORTH CAROLINA
 PROFESSIONAL ENGINEER
 SEAL 032076
 JENNIFER R. MCKAY

12/9/2016

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
 3'-0" X 1'-9"
 PRESTRESSED CONCRETE
 CORED SLAB UNIT
 90° SKEW

REVISIONS					SHEET No.
No.	BY	DATE	No.	BY	DATE
1			3		
2			4		

TOTAL SHEETS: 23

ASSEMBLED BY :	MTB	DATE :	04/16
CHECKED BY :	JRM	DATE :	04/16
DRAWN BY :	DCE 5/09	REV. 12/11	MAA/AAC
CHECKED BY :	BCH 6/09	REV. 11/14	MAA/TMG

BILL OF MATERIAL FOR ONE 25' CORED SLAB UNIT							
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
B1	2	#4	STR	24'-8"	33	24'-8"	33
S1	8	#5	3	4'-3"	35	4'-3"	35
S2	54	#4	3	5'-4"	192	5'-4"	192
* S3	34	#5	1	5'-7"	198		
REINFORCING STEEL				LBS.	260		260
* EPOXY COATED REINFORCING STEEL				LBS.	198		
5000 P.S.I. CONCRETE				CU. YDS.	3.7		3.7
0.6" Ø L.R. STRANDS				No.	9		9

BILL OF MATERIAL FOR ONE 50' CORED SLAB UNIT							
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
B6	4	#4	STR	25'-9"	69	25'-9"	69
S1	8	#5	3	4'-3"	35	4'-3"	35
S2	104	#4	3	5'-4"	371	5'-4"	371
* S3	58	#5	1	5'-7"	338		
REINFORCING STEEL				LBS.	475		475
* EPOXY COATED REINFORCING STEEL				LBS.	338		
6500 P.S.I. CONCRETE				CU. YDS.	7.1		7.1
0.6" Ø L.R. STRANDS				No.	19		19

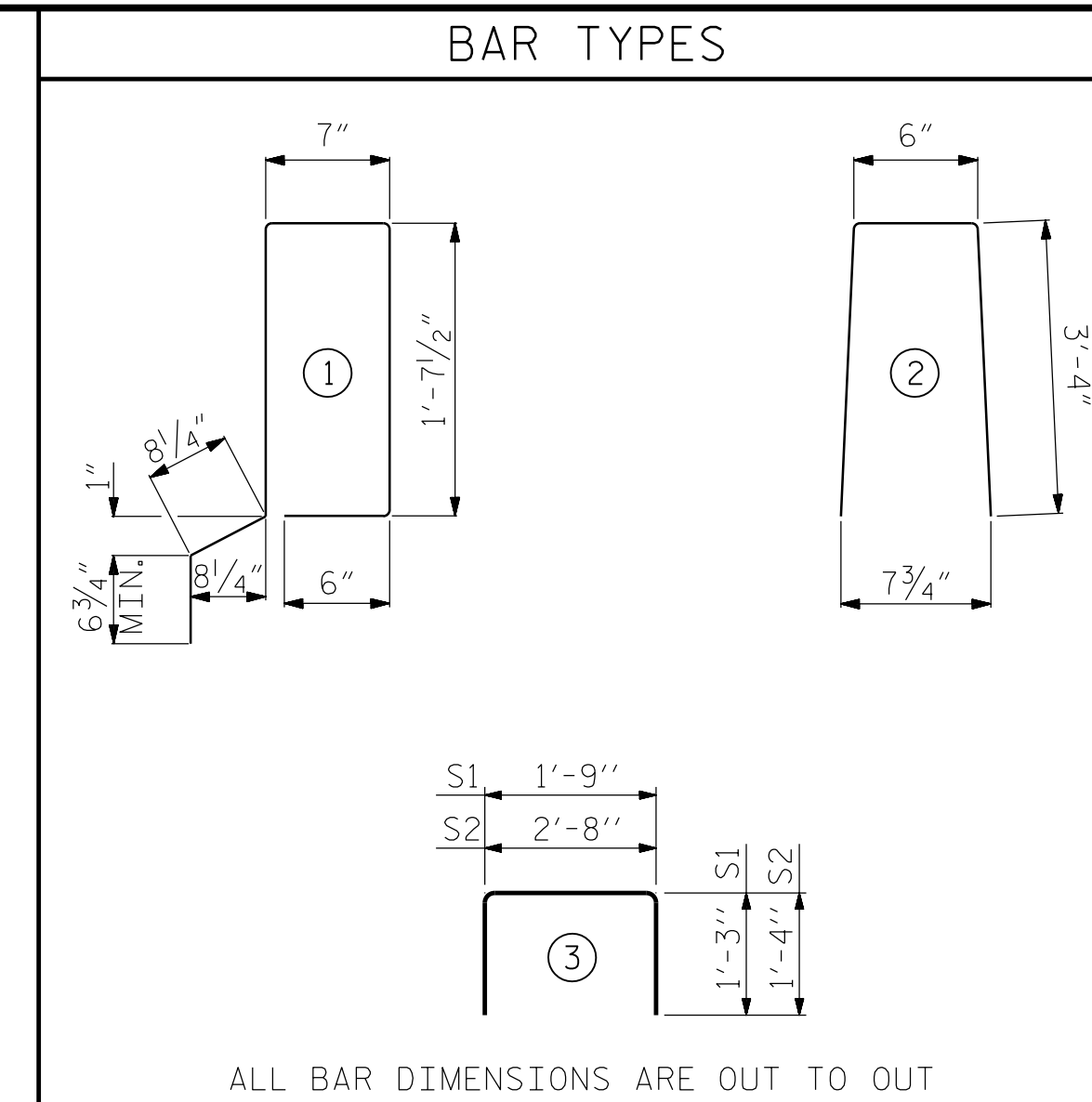
BILL OF MATERIAL FOR ONE 55' CORED SLAB UNIT							
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
B7	4	#4	STR	28'-3"	75	28'-3"	75
S1	8	#5	3	4'-3"	35	4'-3"	35
S2	114	#4	3	5'-4"	406	5'-4"	406
* S3	64	#5	1	5'-7"	373		
REINFORCING STEEL				LBS.	516		516
* EPOXY COATED REINFORCING STEEL				LBS.	373		
6500 P.S.I. CONCRETE				CU. YDS.	7.8		7.8
0.6" Ø L.R. STRANDS				No.	19		19

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL						
BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
25' UNIT						
* B8	20	20	#5	STR	24'-7"	513
* S4	68	68	#5	2	7'-2"	508
* EPOXY COATED REINFORCING STEEL				LBS.		1021
CLASS AA CONCRETE				CU. YDS.		6.4
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.		50.25

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL						
BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
50' UNIT						
* B13	40	40	#5	STR	24'-7"	1026
* S4	116	116	#5	2	7'-2"	867
* EPOXY COATED REINFORCING STEEL				LBS.		1893
CLASS AA CONCRETE				CU. YDS.		12.8
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.		100.25

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL						
BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
55' UNIT						
* B14	40	40	#5	STR	27'-1"	1130
* S4	128	128	#5	2	7'-2"	957
* EPOXY COATED REINFORCING STEEL				LBS.		2087
CLASS AA CONCRETE				CU. YDS.		14.1
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.		110.25

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT		
	ASPHALT OVERLAY THICKNESS	RAIL HEIGHT
	@ MID-SPAN	@ MID-SPAN
25' UNITS	2 5/8"	3'-8 5/8"
50' & 55' UNITS	1 5/8"	3'-7 5/8"



ALL BAR DIMENSIONS ARE OUT TO OUT

PROJECT NO. B-5333
ROBESON COUNTY
 STATION: 37+28.50 -L-
 SHEET 6 OF 6 BRIDGE NO. 174

Dewberry
 2601 WYCLIFF ROAD
 SUITE 410
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 NC COA No. F-0929

SEAL
 032076
 ENGINEER
 JENNIFER R. McROY
 12/9/2016

DocuSigned by:
 Jennifer R. McRoy
 E1114C291298475

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 3'-0" X 1'-9"
 PRESTRESSED CONCRETE
 CORED SLAB UNIT
 90° SKEW

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

TOTAL SHEETS: 23

ASSEMBLED BY : MTB	DATE : 04/16
CHECKED BY : JRM	DATE : 04/16
DRAWN BY : DCE 5/09	REV. 12/11 MAA/AAC
CHECKED BY : BCH 6/09	REV. 11/14 MAA/TMG

12/8/2016 8:55:51 AM SPANDTL62.dgn USER: jrm

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.)

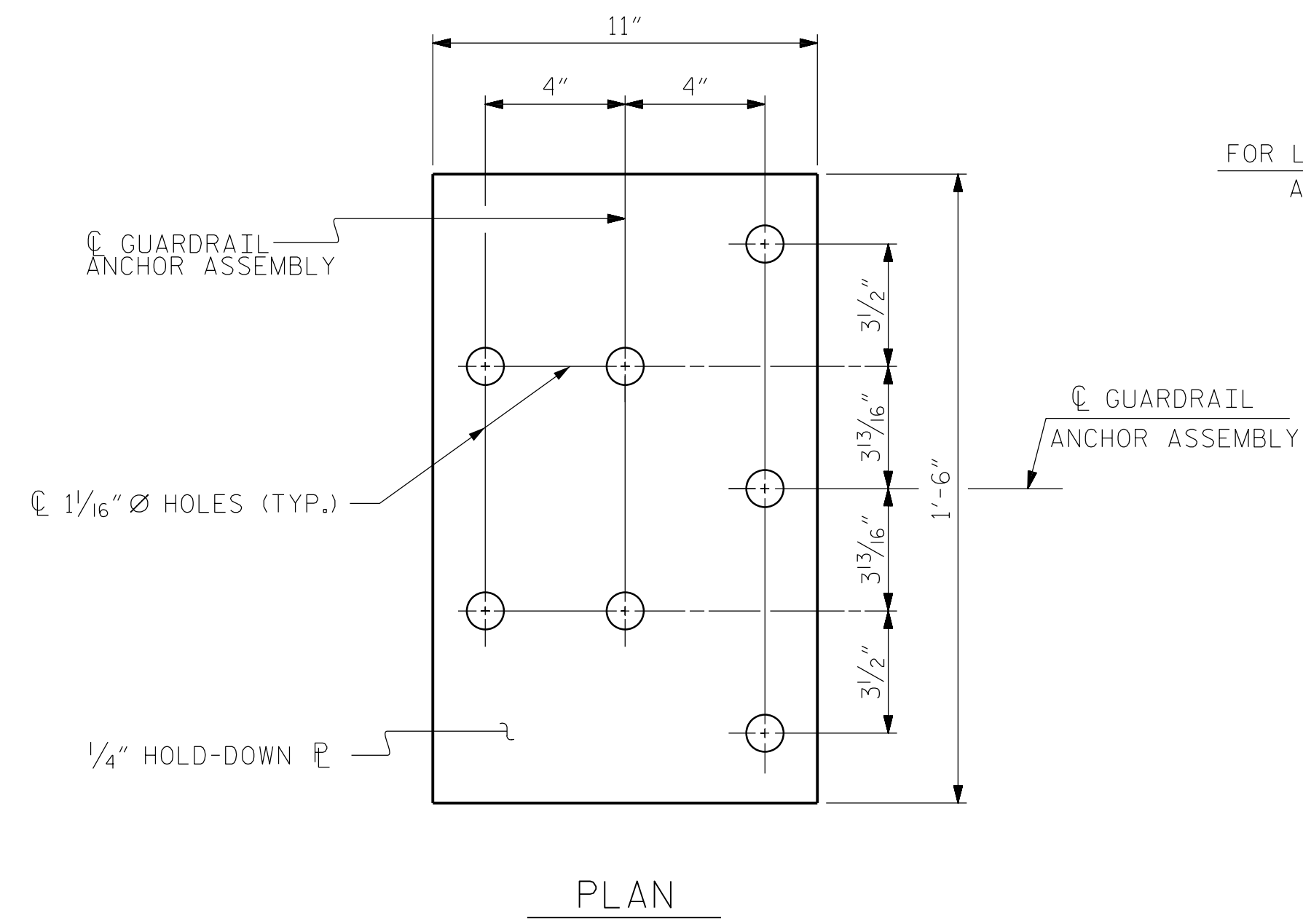
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

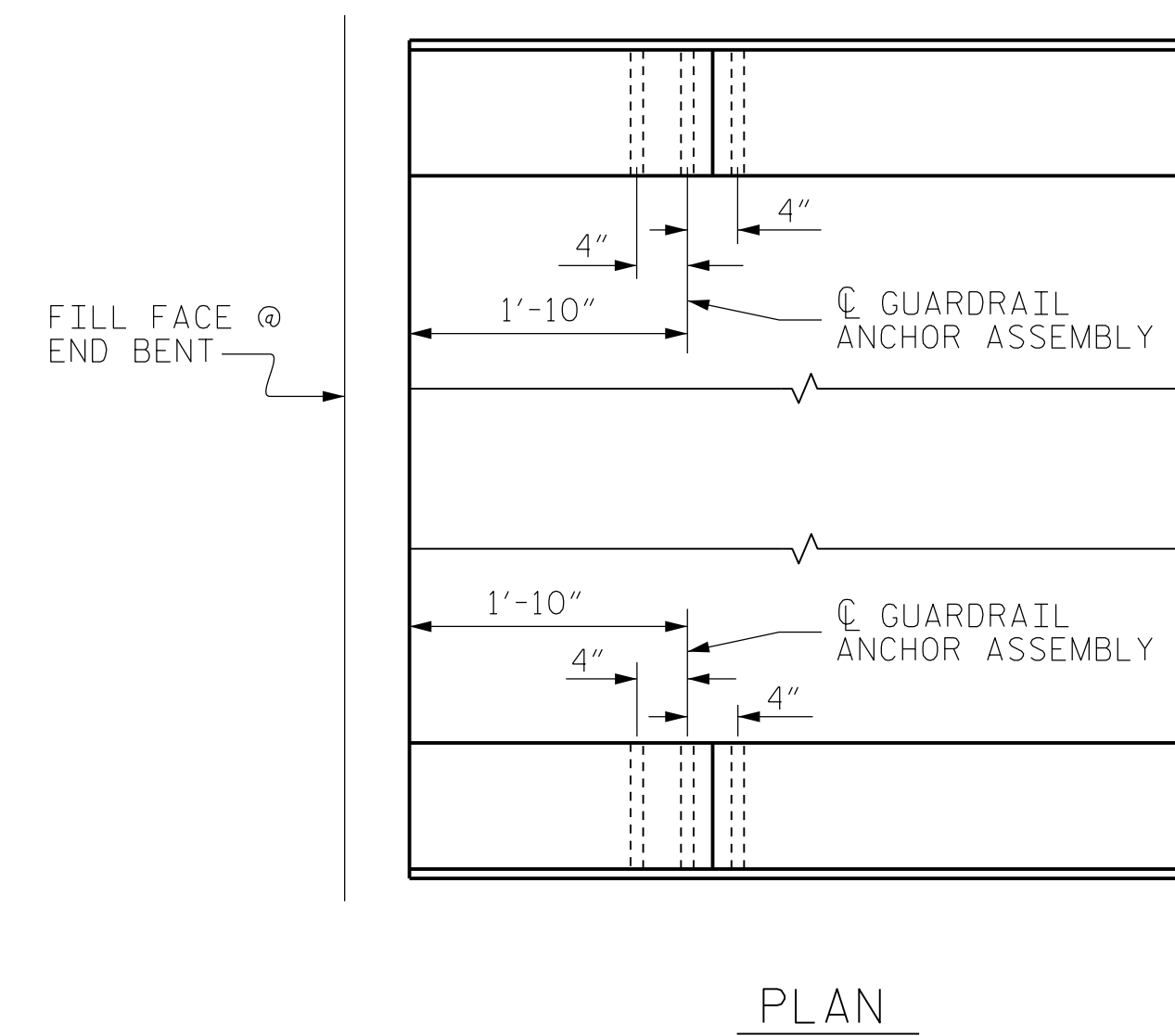
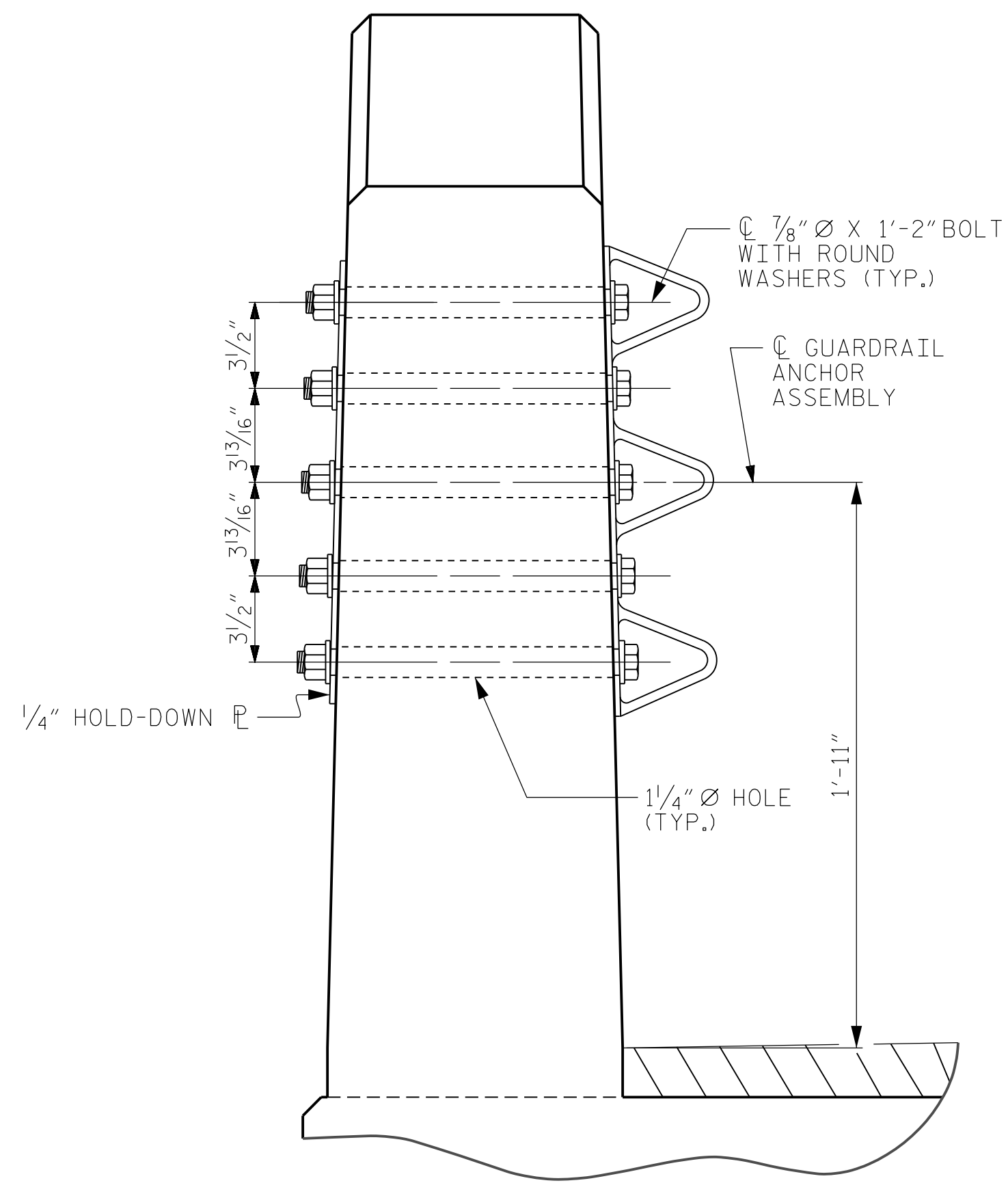
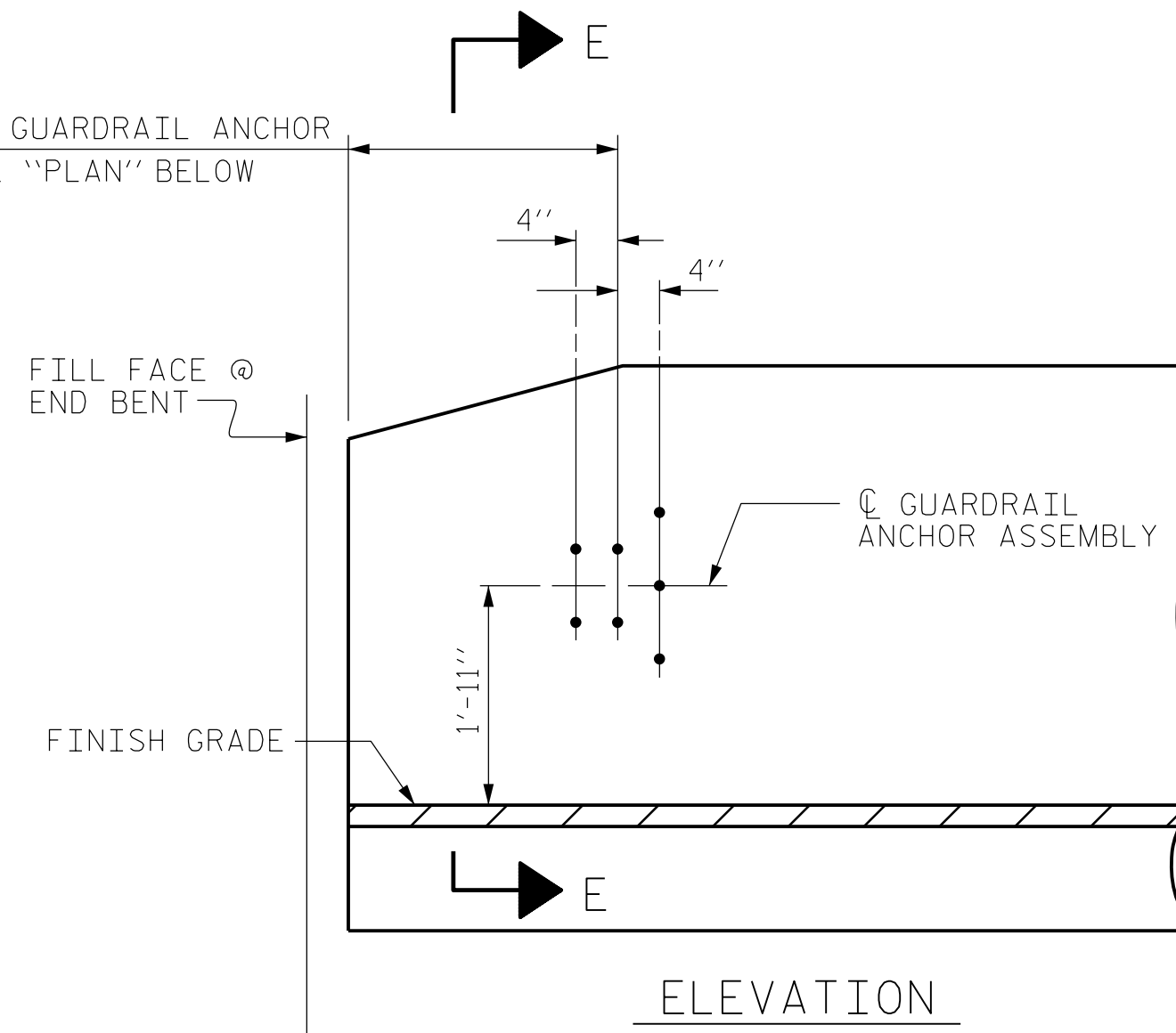
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR VERTICAL CONCRETE BARRIER RAIL.

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

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

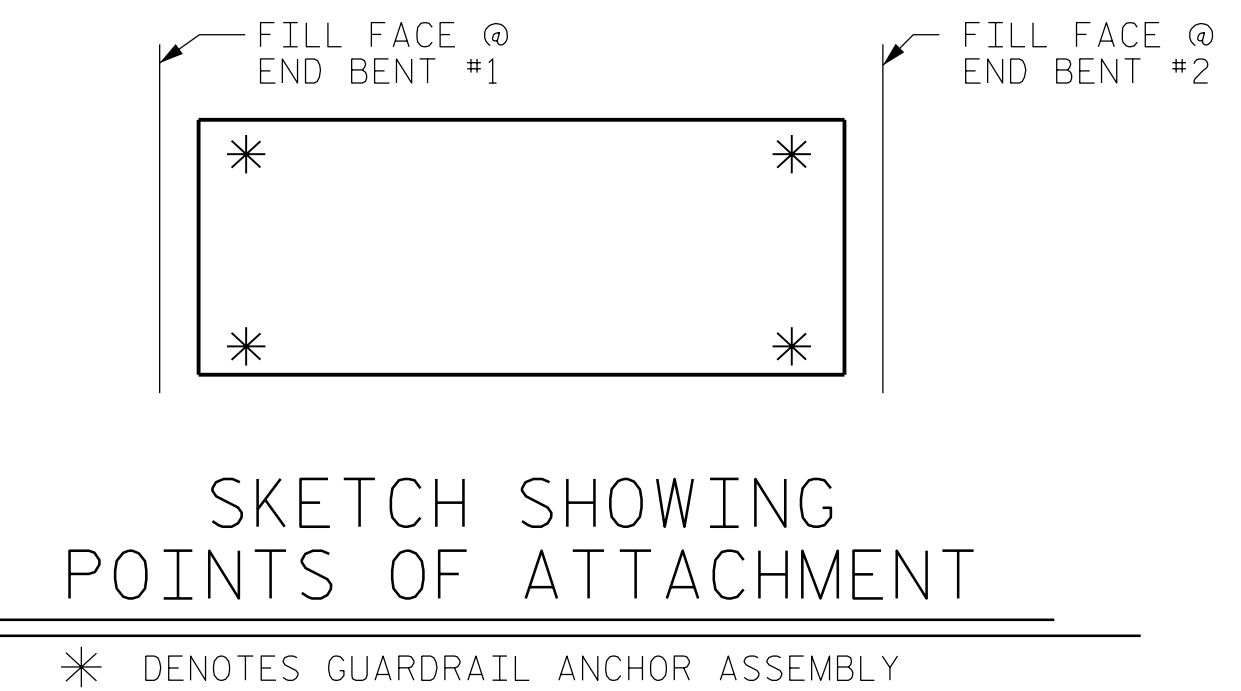


FOR LOCATION OF GUARDRAIL ANCHOR ASSEMBLY, SEE "PLAN" BELOW



LOCATION OF ANCHORS FOR GUARDRAIL

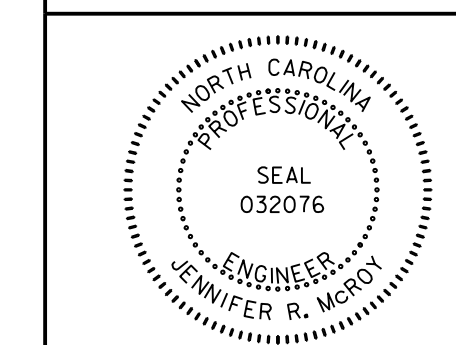
END BENT #1 SHOWN, END BENT #2 SIMILAR.



PROJECT NO. B-5333
ROBESON COUNTY
 STATION: 37+28.50 -L-

BRIDGE NO. 174

Dewberry
 2610 WYCLIFF ROAD
 SUITE 410
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 NC COA No. F-0929



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GUARDRAIL ANCHORAGE
 FOR VERTICAL CONCRETE
 BARRIER RAIL

REVISIONS					SHEET No. S02-14
No.	BY:	DATE:	No.	DATE:	
1			3		TOTAL SHEETS 23
2			4		

DocuSigned by:
 Jennifer R. McCoy
 E1146791288475

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DRAWN BY : MTB DATE : 04/16
 CHECKED BY : JRM DATE : 04/16

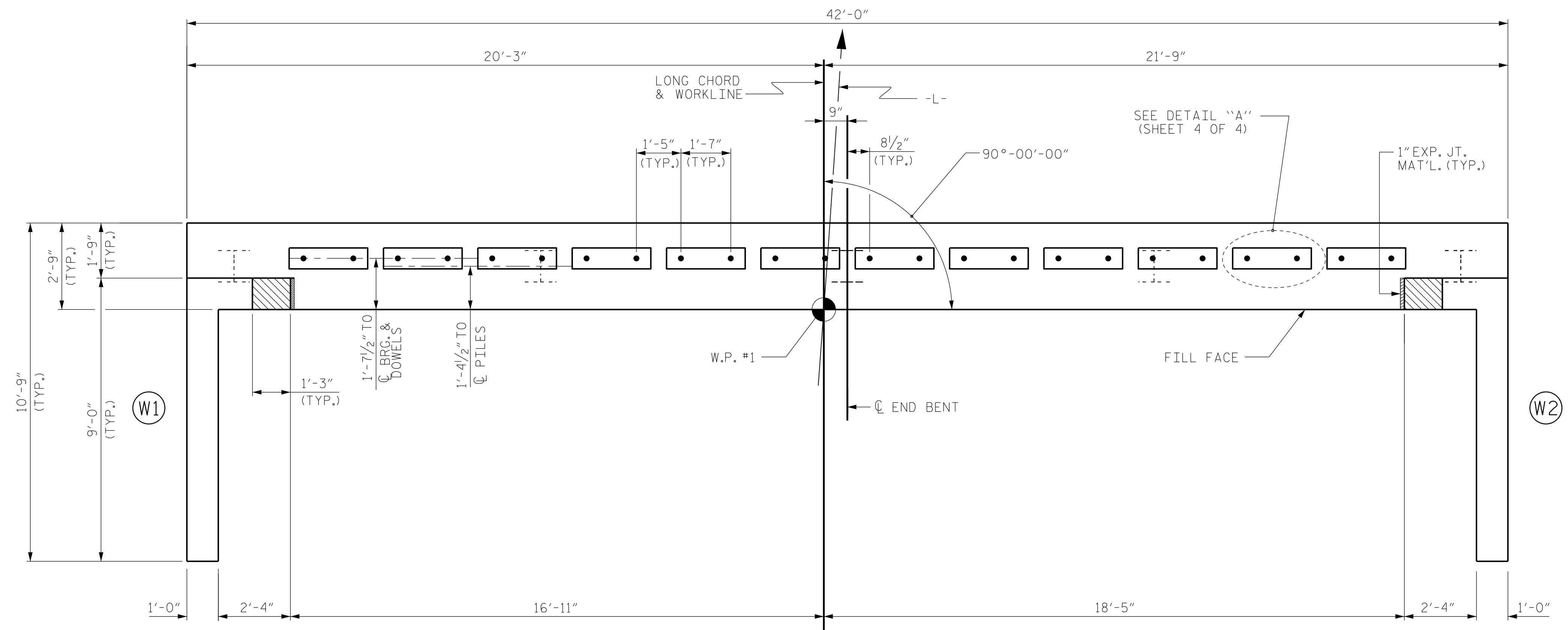
NOTES

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

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

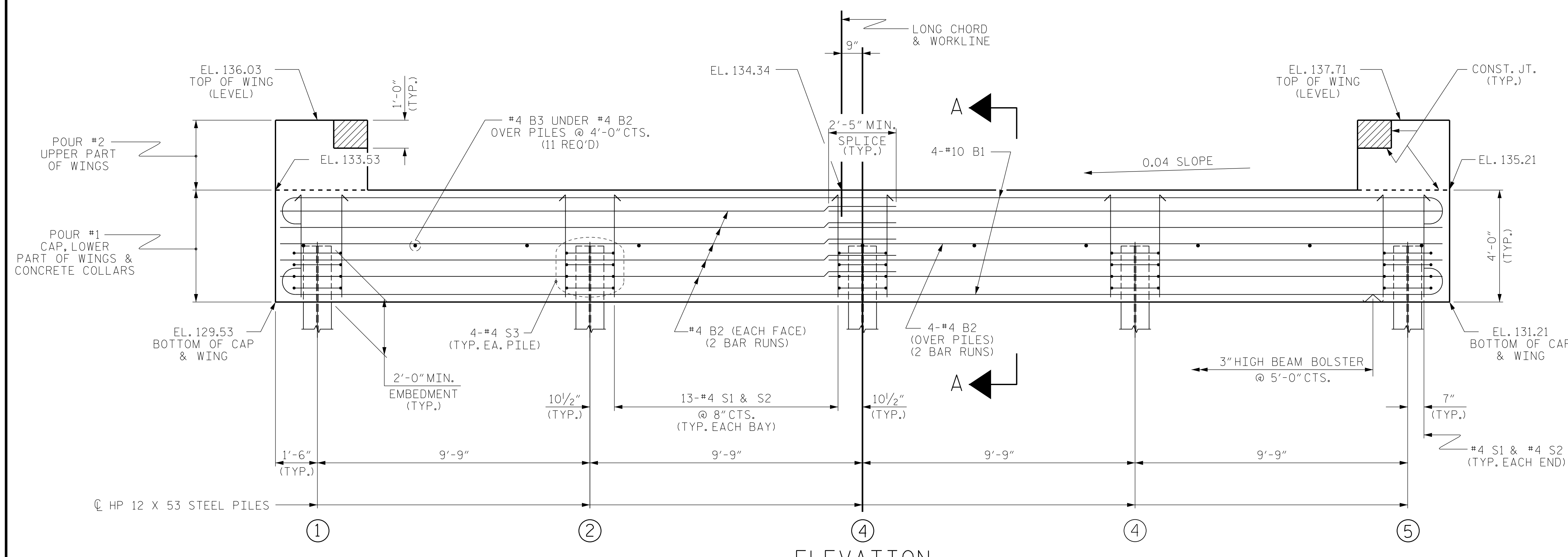
FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



PLAN

TOP OF PILE ELEVATIONS	
①	131.61
②	132.00
③	132.39
④	132.78
⑤	133.17



ELEVATION

WINGS NOT SHOWN FOR CLARITY.
 FOR SECTION A-A, SEE SHEET 4 OF 4.
 CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
 SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

PROJECT NO. B-5333
ROBESON COUNTY
 STATION: 37+28.50 -L-
 SHEET 1 OF 4 BRIDGE NO. 174

Dewberry
 2610 WYCLIFF ROAD
 SUITE 410
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 NC COA No. F-0929

12/9/2016
 ENGINEER
 JENNIFER R. McROY
 SEAL 032076

DocuSigned by:
 Jennifer R. McRoy
 E1140791288475

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT No. 1					
REVISIONS					SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 23

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 CHECKED BY : JRM DATE : 04/16

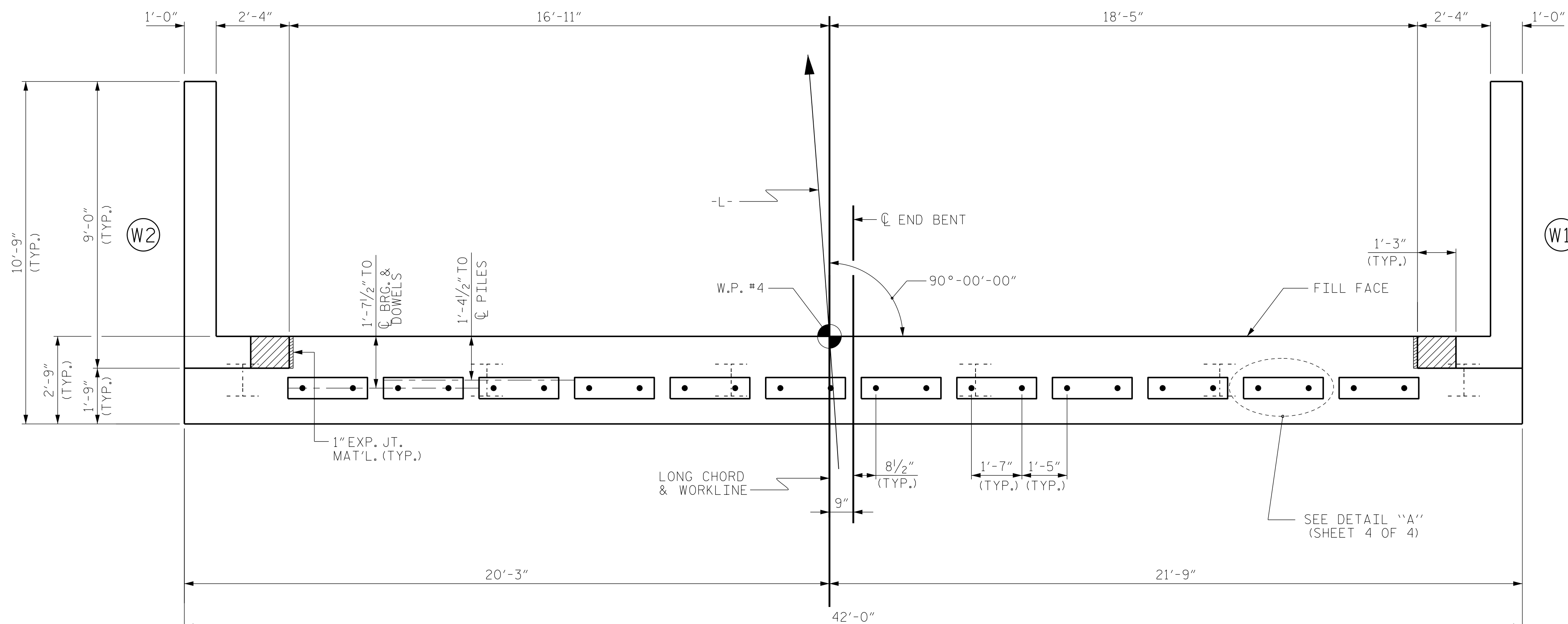
NOTES

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

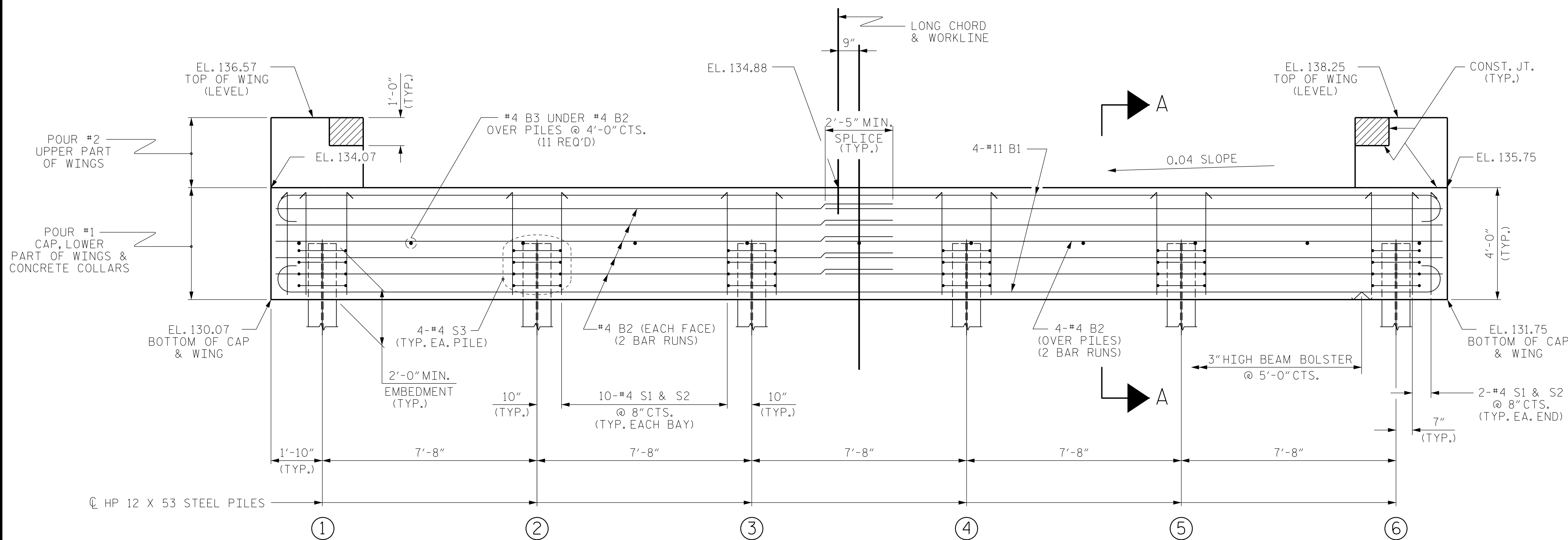
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



PLAN



ELEVATION

WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 4 OF 4.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

TOP OF PILE ELEVATIONS	
①	132.16
②	132.47
③	132.78
④	133.08
⑤	133.39
⑥	133.70

PROJECT NO. B-5333

ROBESON COUNTY

STATION: 37+28.50 -L-

SHEET 2 OF 4 BRIDGE NO. 174



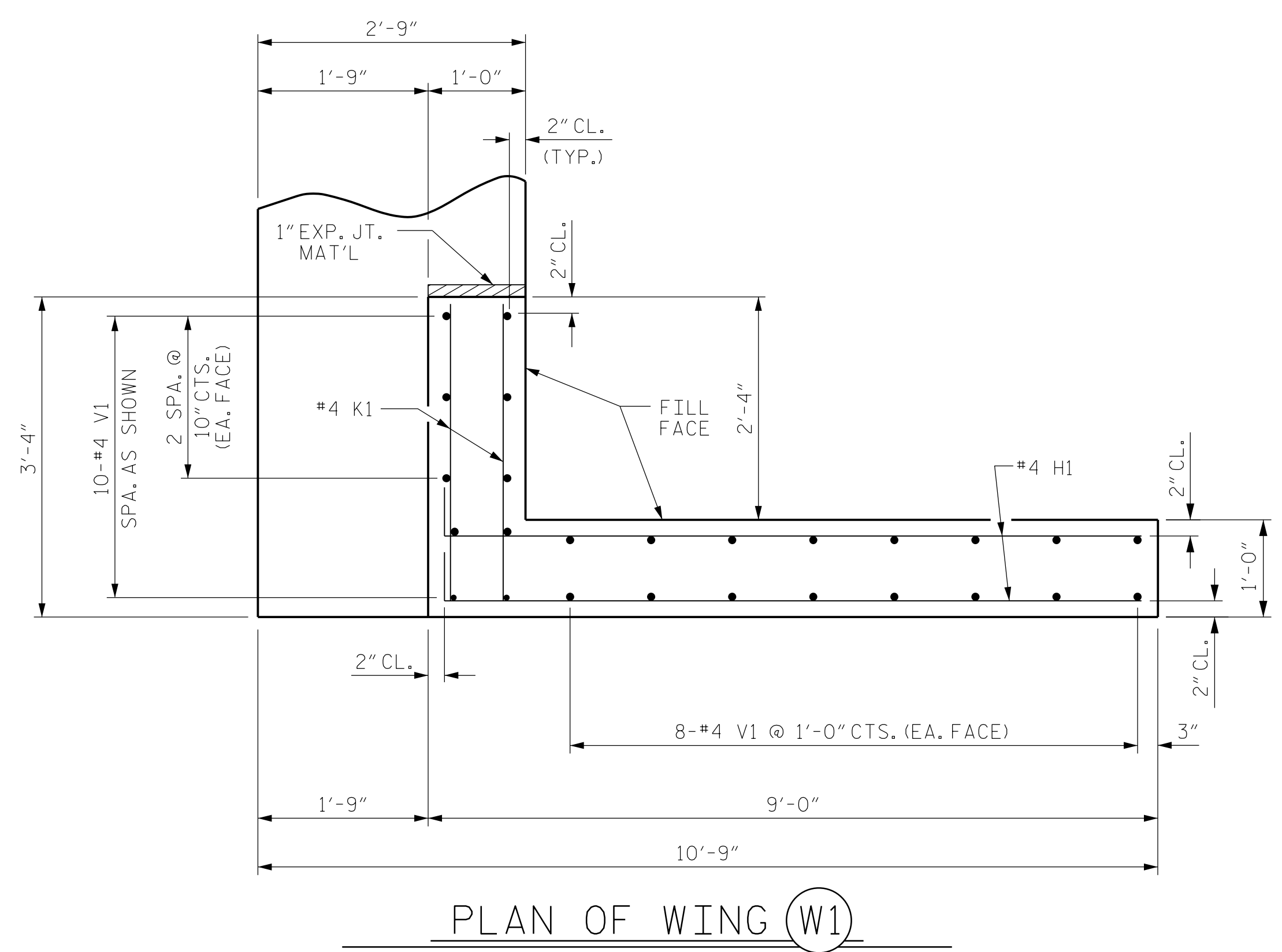
DocuSigned by:
Jennifer R. McRoy
E114C791288475

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

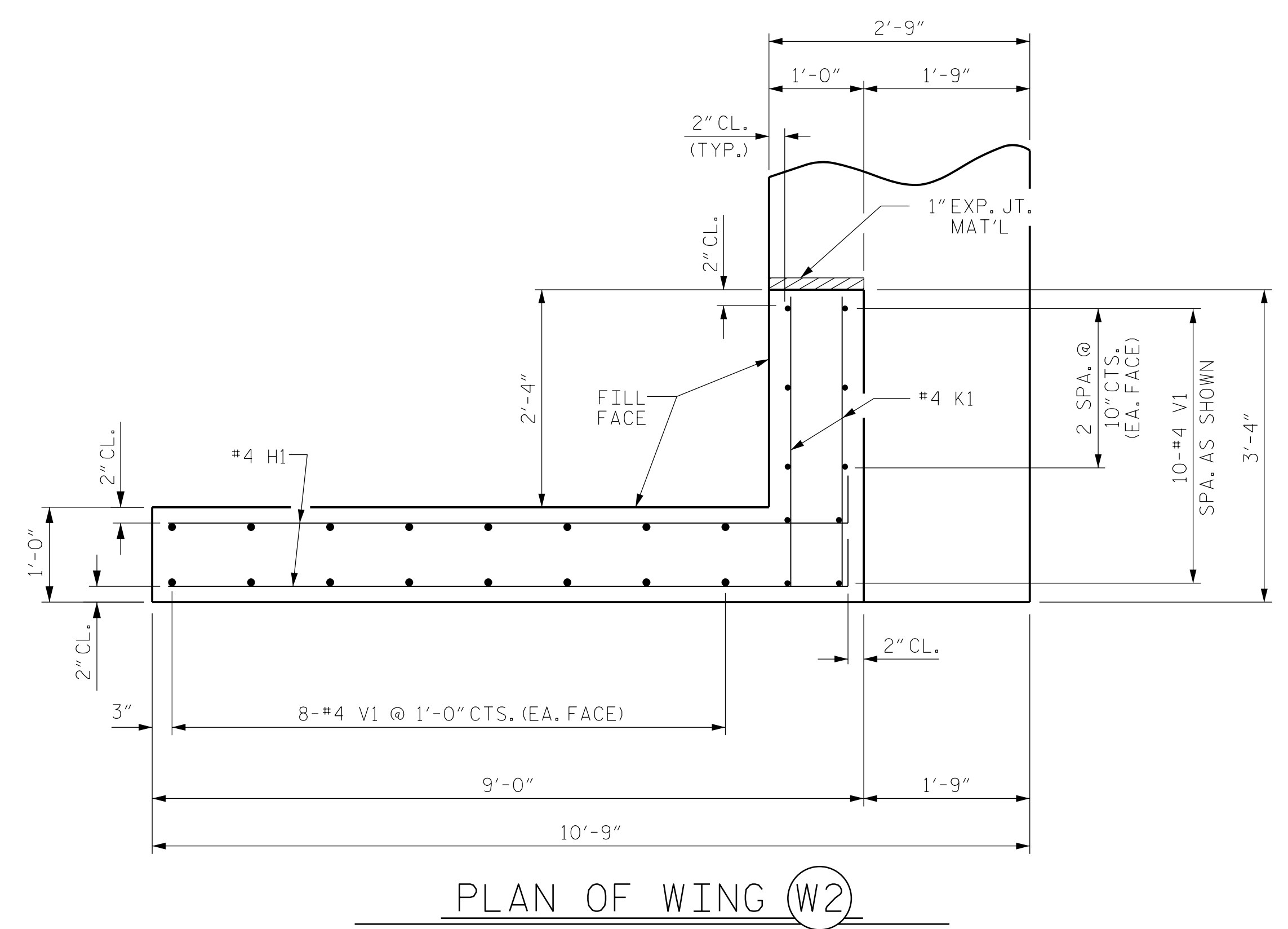
TOTAL SHEETS: 23

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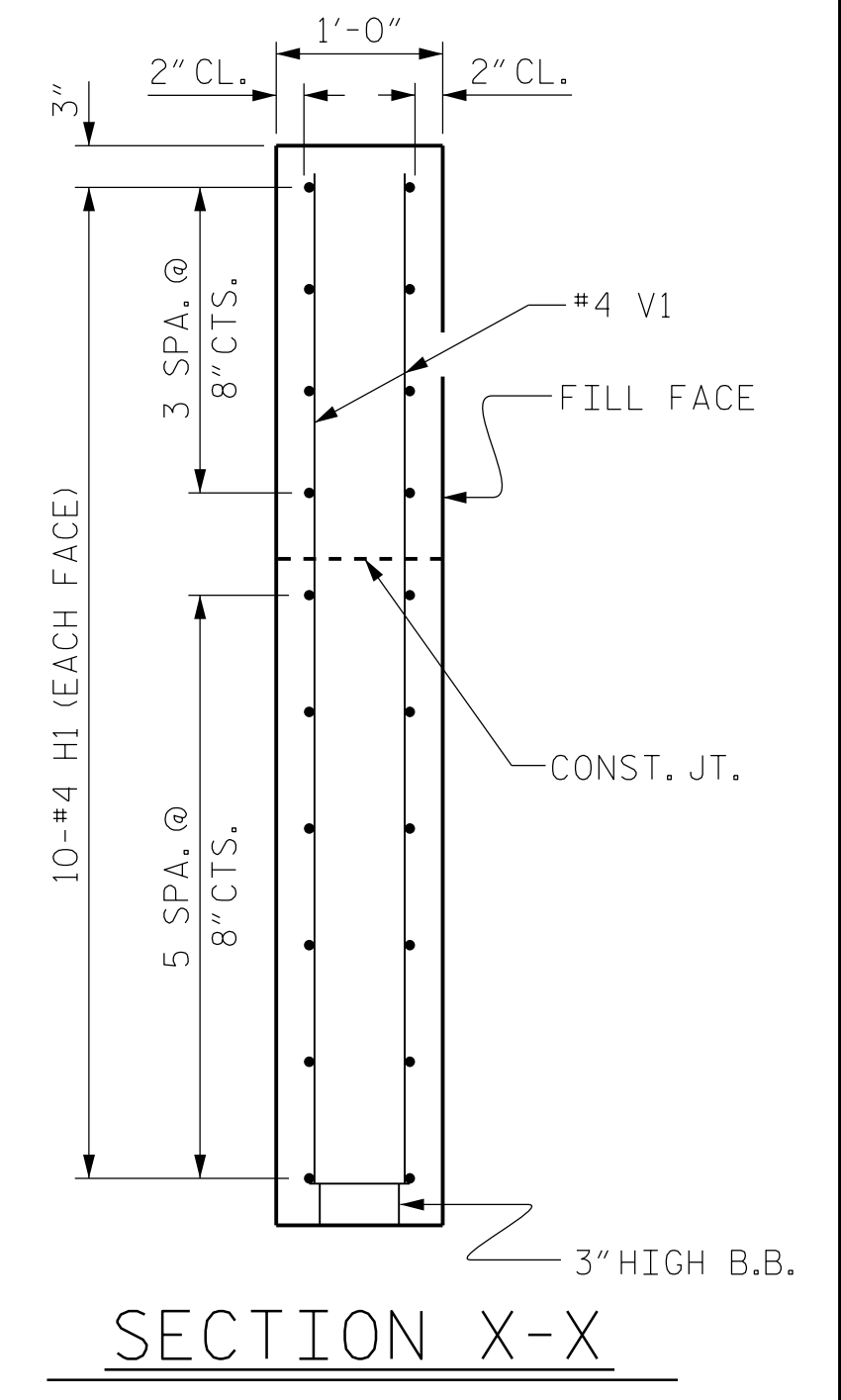
DRAWN BY: MTB DATE: 04/16
 CHECKED BY: JRM DATE: 04/16



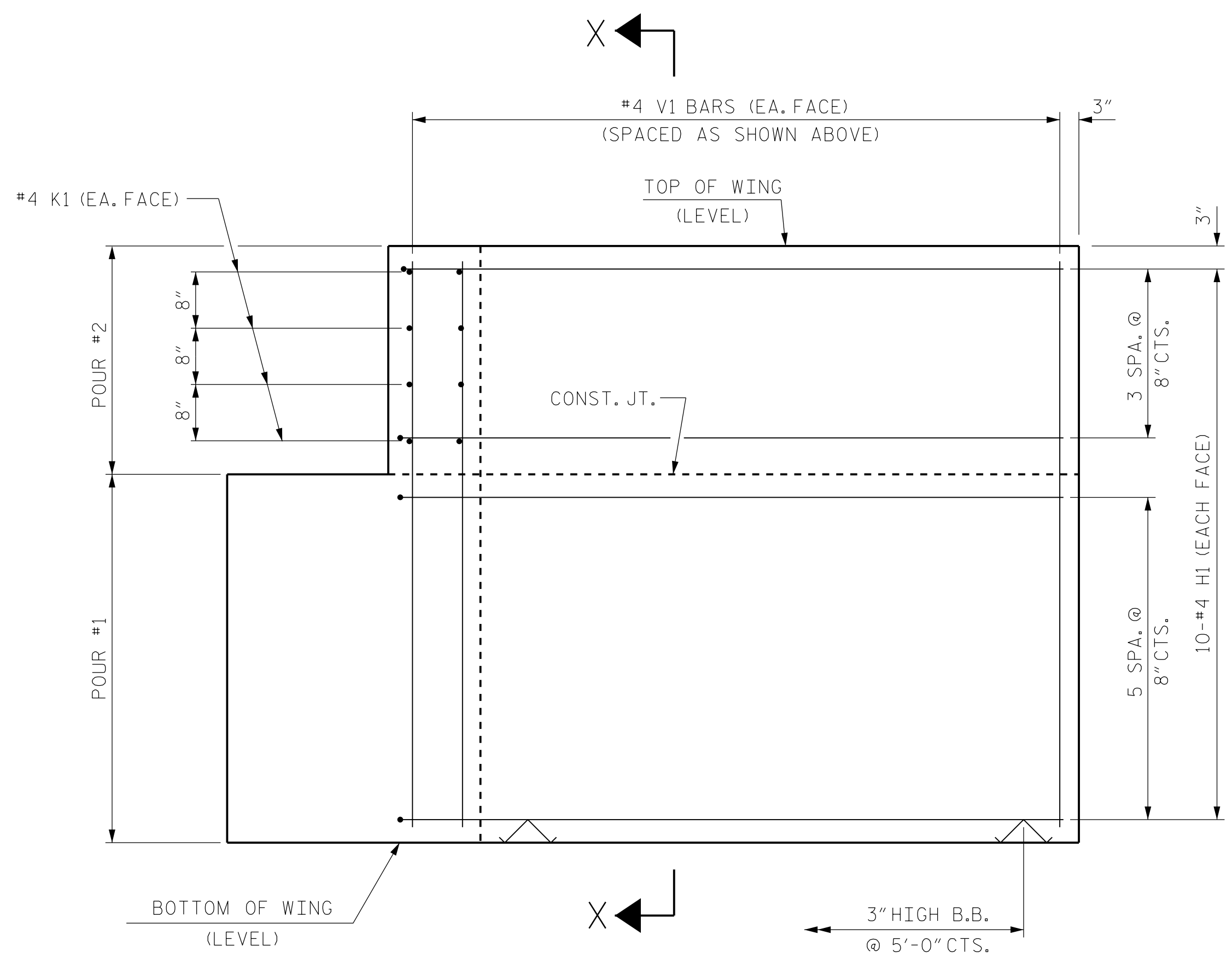
PLAN OF WING (W1)



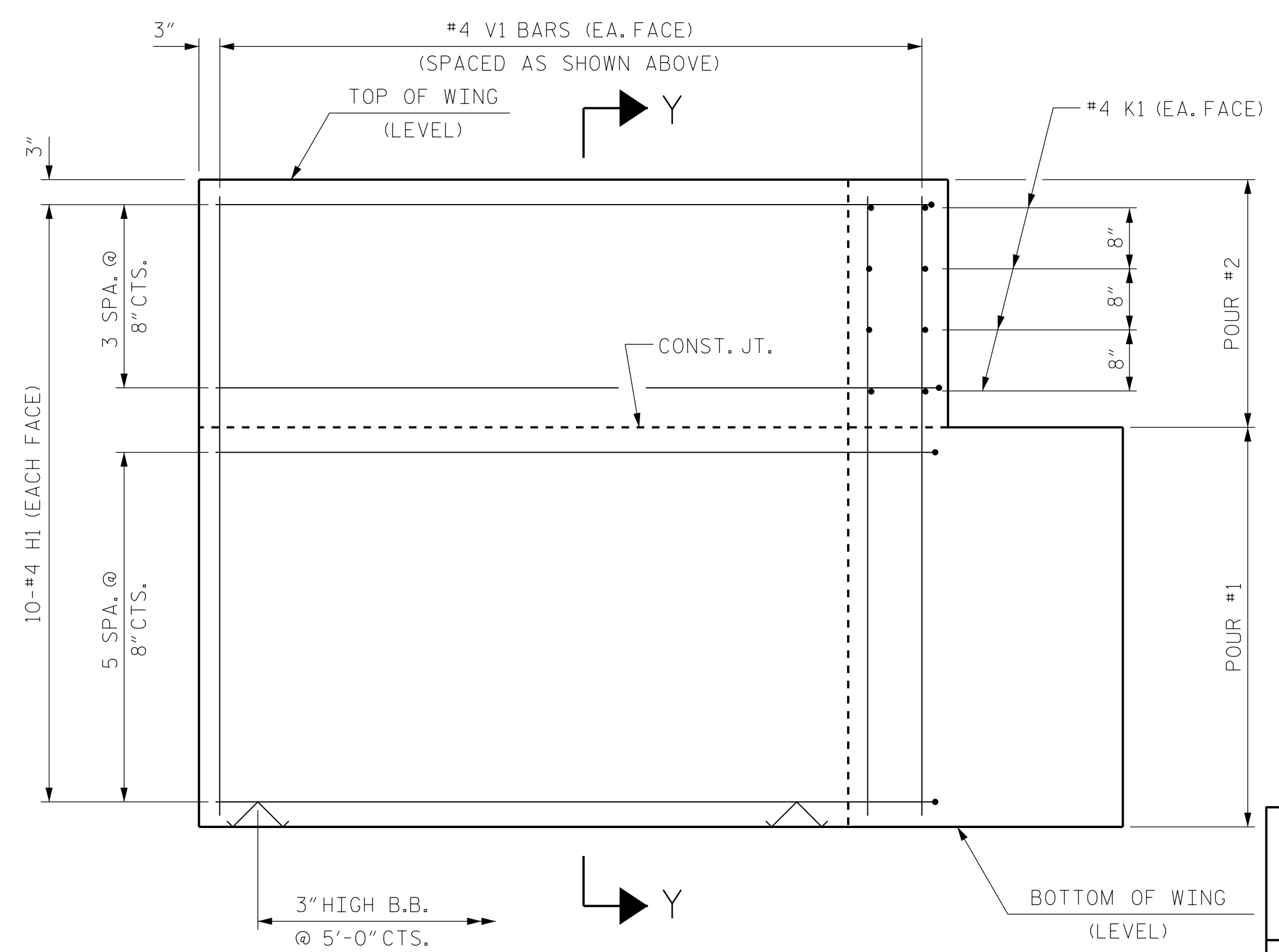
PLAN OF WING (W2)



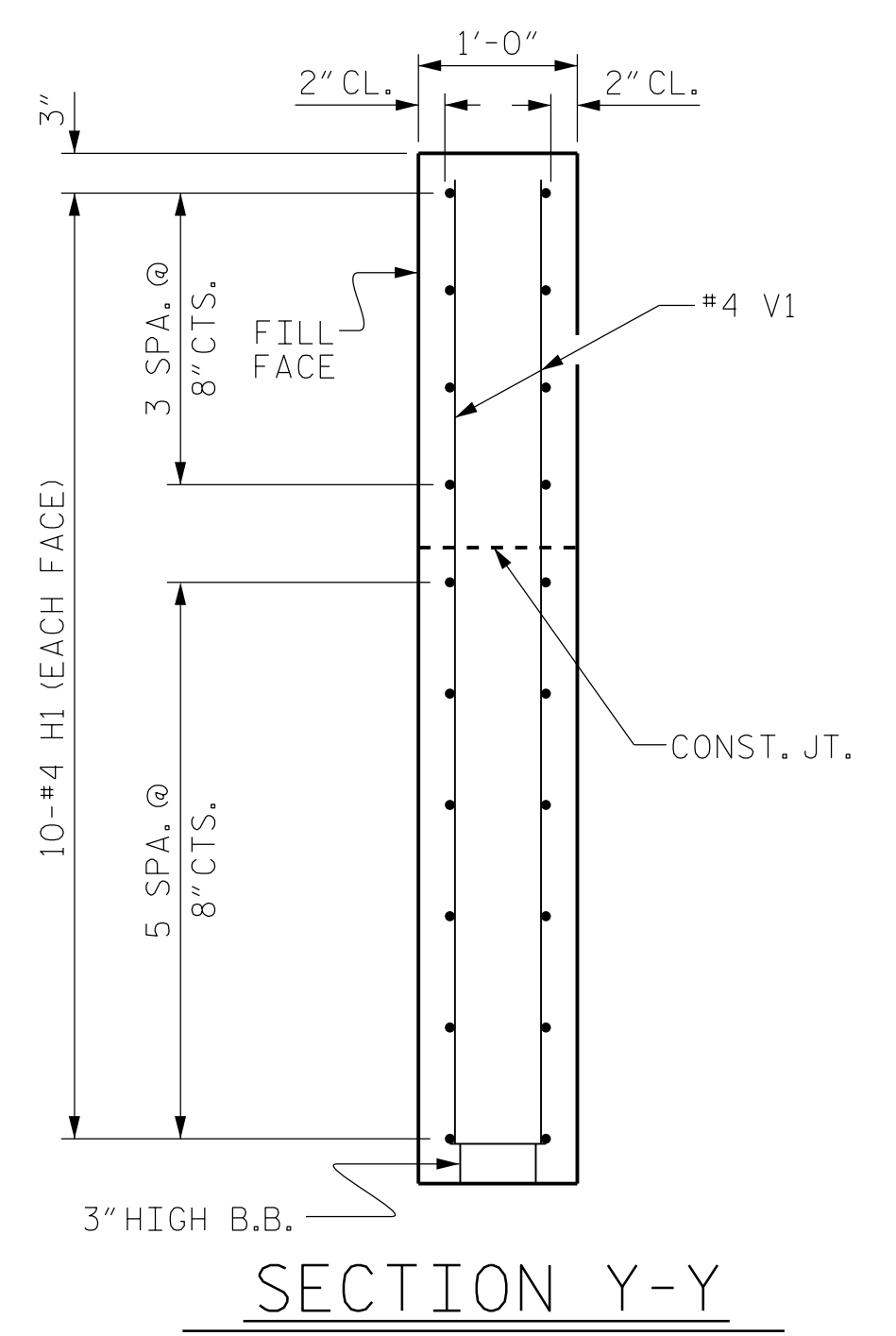
SECTION X-X



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



SECTION Y-Y

PROJECT NO. B-5333
 ROBESON COUNTY
 STATION: 37+28.50 -L-
 SHEET 3 OF 4 BRIDGE NO. 174

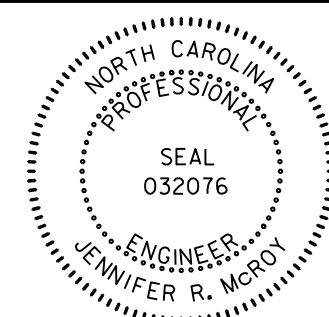
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ASSEMBLED BY :	MTB	DATE :	04/16
CHECKED BY :	JRM	DATE :	04/16
DRAWN BY :	WJH 12/11	REV. 4/15	MAA/TMG
CHECKED BY :	AAC 12/11		

WING DETAILS

Dewberry
 2610 WYCLIFF ROAD
 SUITE 410
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 NC COA No. F-0929

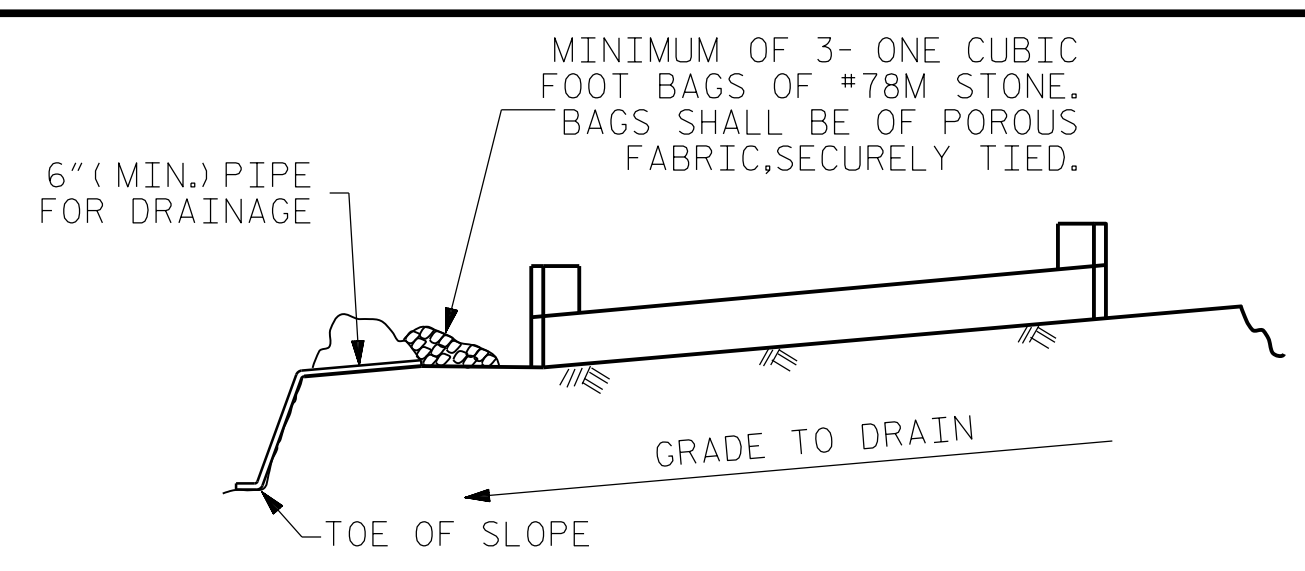
12/9/2016
 Jennifer R. Meley
 E11140791288475



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT
 WING DETAILS

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	TOTAL SHEETS
1			3			23
2			4			

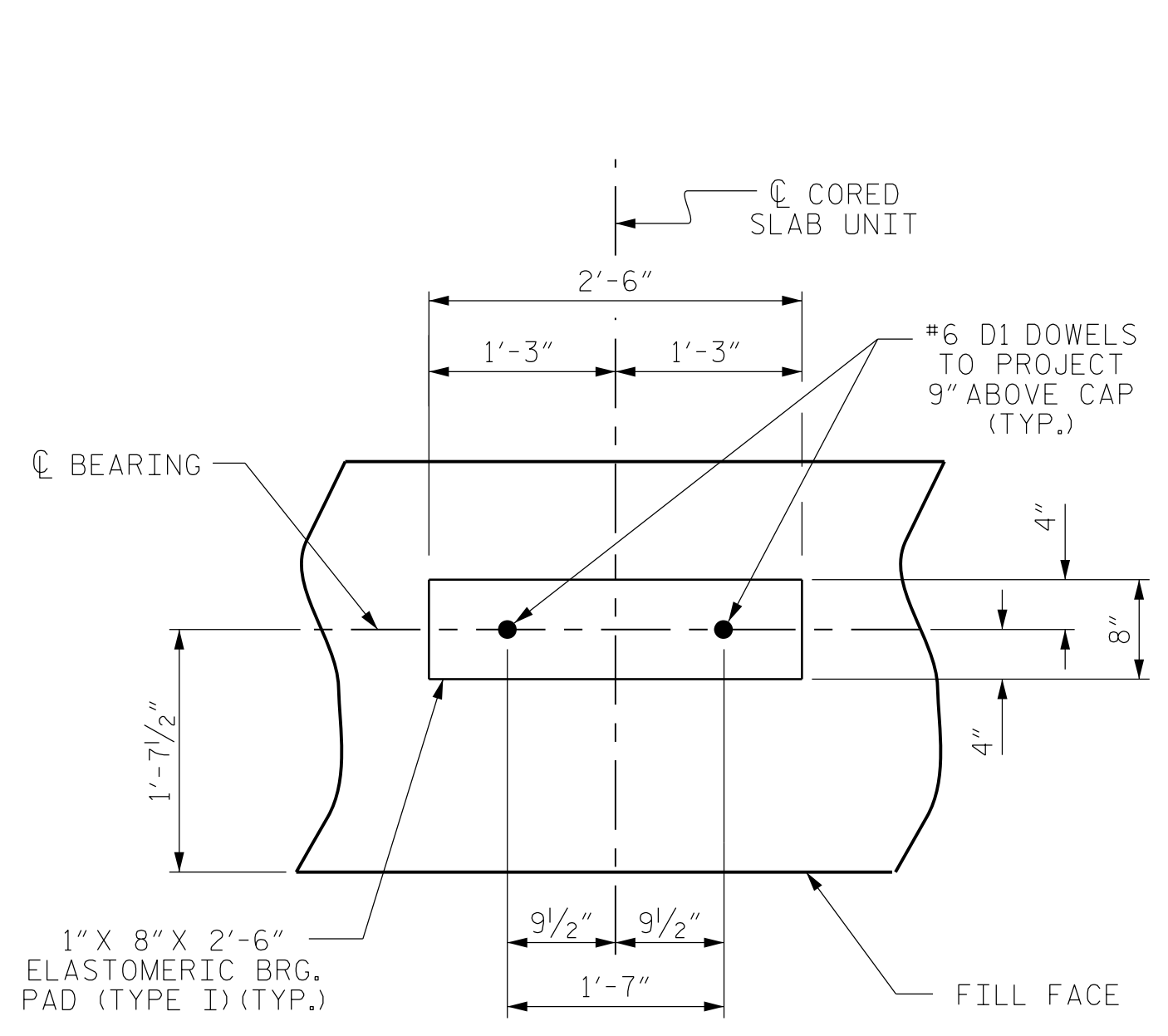


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

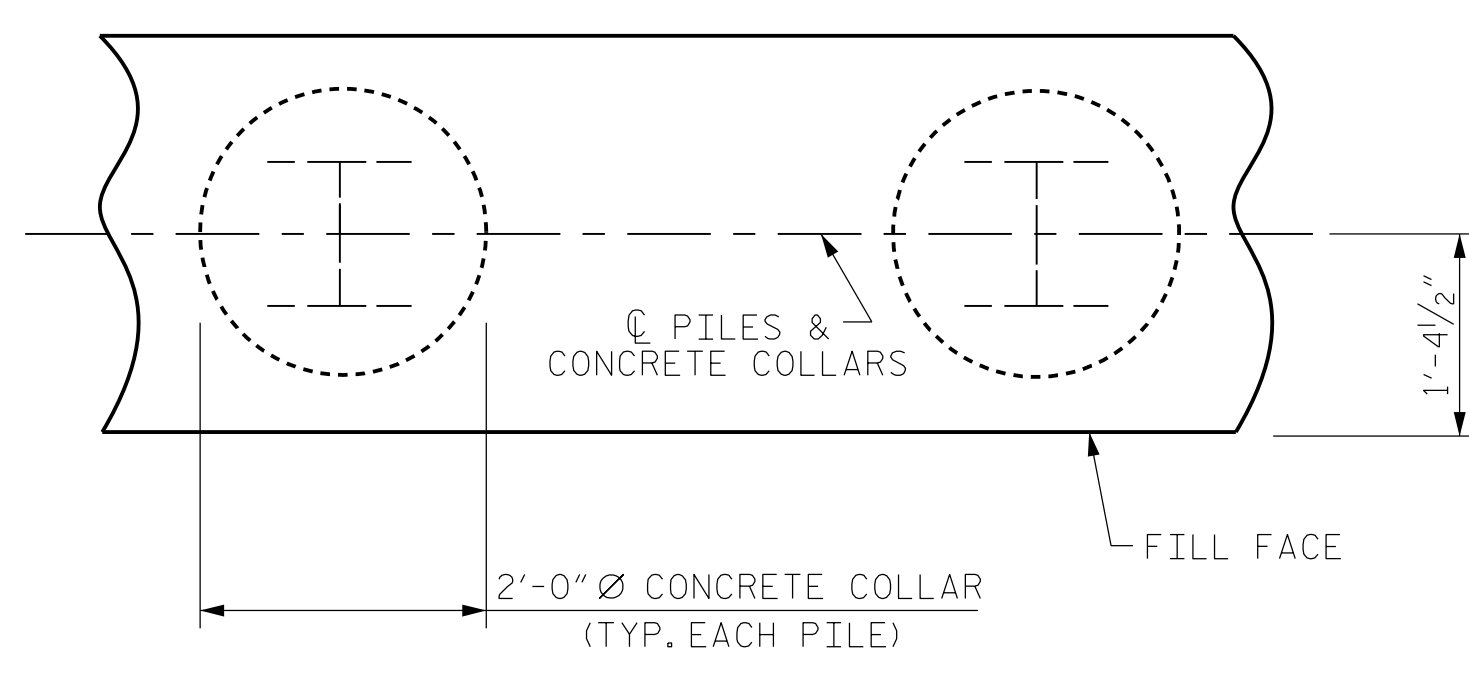
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



DETAIL "A"

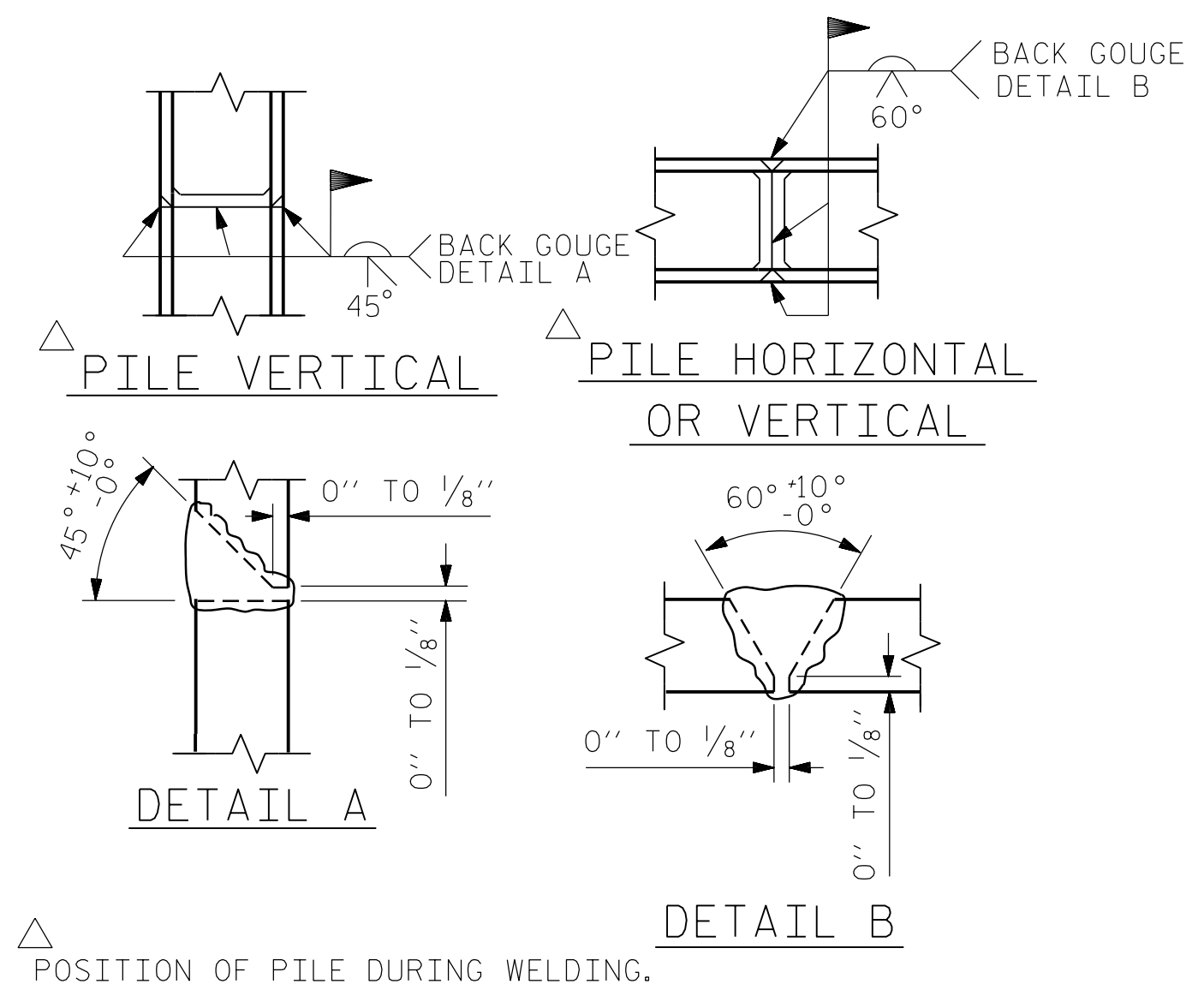
(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)



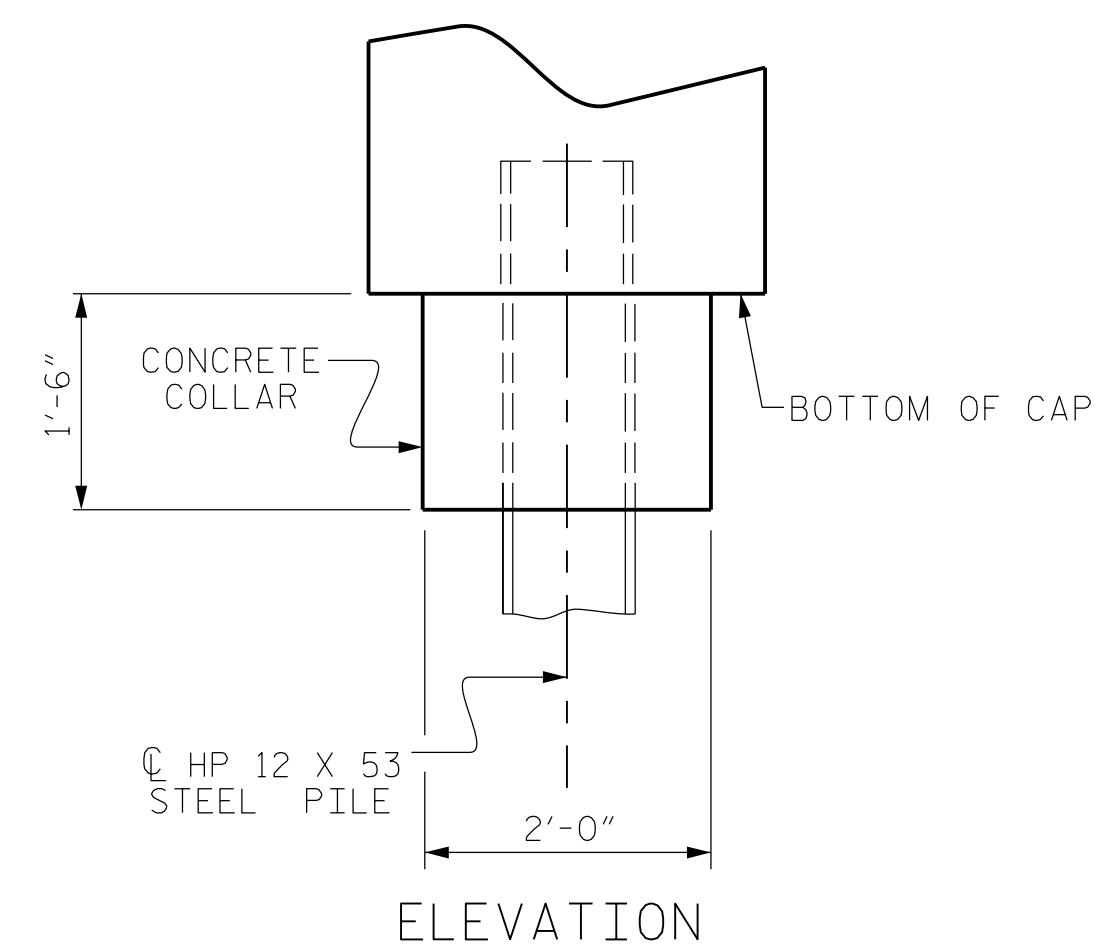
PLAN

CORROSION PROTECTION FOR STEEL PILES DETAIL

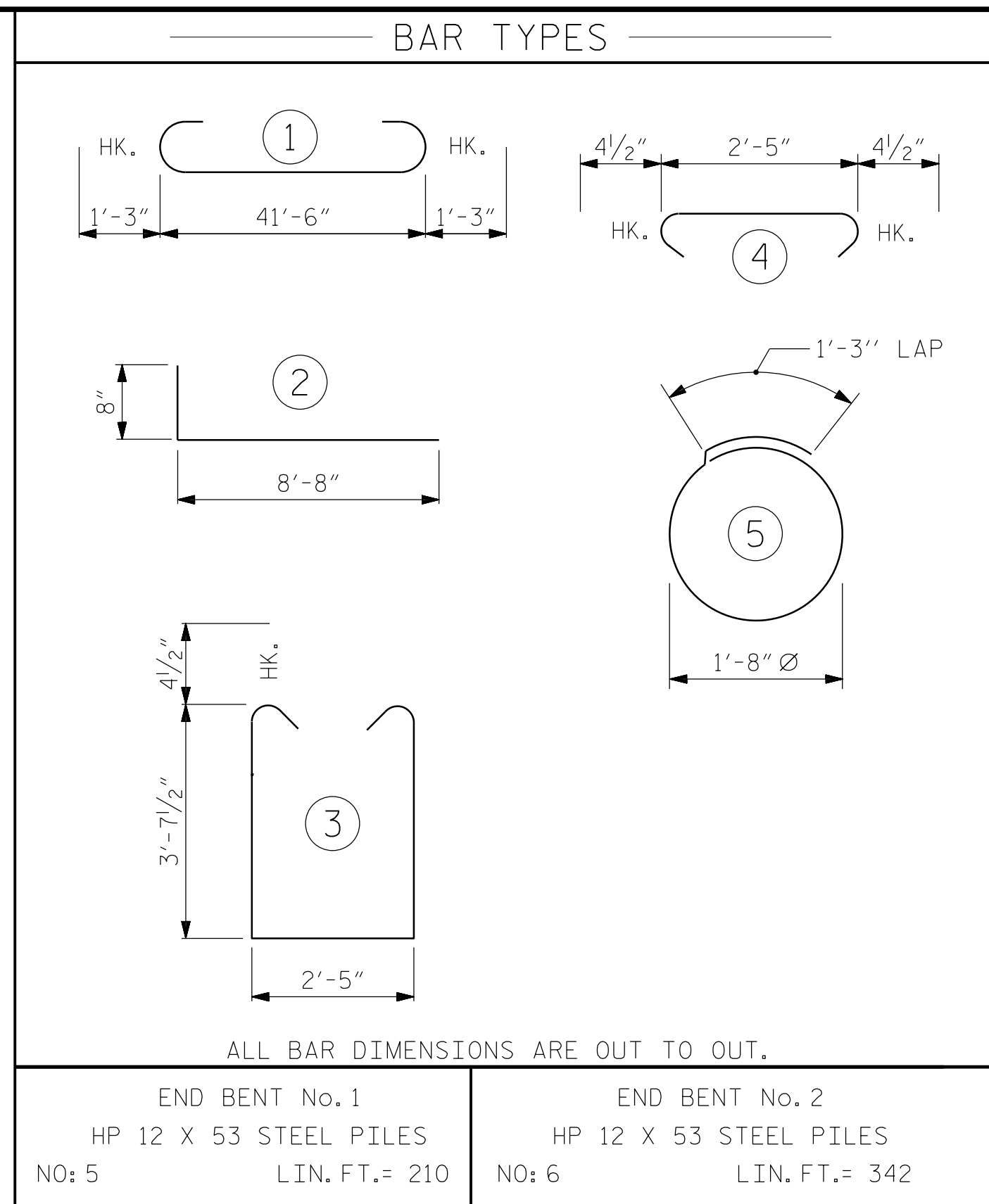
(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)



PILE SPLICE DETAILS

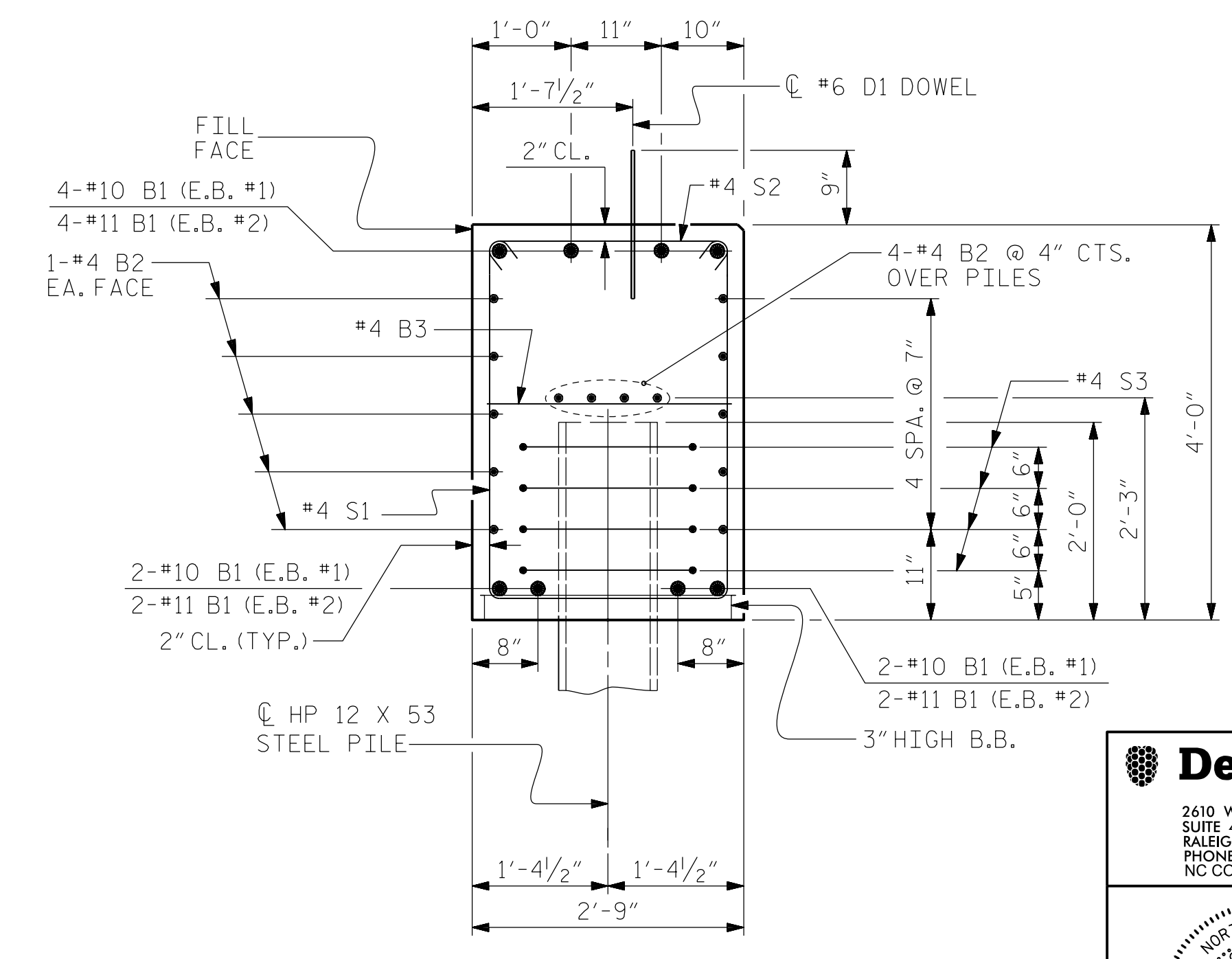


ELEVATION



END BENT No. 1	END BENT No. 2
HP 12 X 53 STEEL PILES	HP 12 X 53 STEEL PILES
NO: 5	NO: 6
LIN. FT.= 210	LIN. FT.= 342

BILL OF MATERIAL FOR END BENT No. 1						BILL OF MATERIAL FOR END BENT No. 2					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT		BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	#8		44'-0"	1515		B1	#8		44'-0"	1870	
B2	#4	STR	22'-1"	413		B2	#4	STR	22'-1"	413	
B3	#4	STR	2'-5"	18		B3	#4	STR	2'-5"	18	
D1	#6	STR	1'-6"	54		D1	#6	STR	1'-6"	54	
H1	#4	2	9'-4"	249		H1	#4	2	9'-4"	249	
K1	#4	STR	2'-11"	31		K1	#4	STR	2'-11"	31	
S1	#4	3	10'-5"	376		S1	#4	3	10'-5"	376	
S2	#4	4	3'-2"	114		S2	#4	4	3'-2"	114	
S3	#4	5	6'-6"	87		S3	#4	5	6'-6"	104	
V1	#4	STR	6'-2"	214		V1	#4	STR	6'-2"	214	
REINFORCING STEEL (FOR END BENT No. 1)					3071 LBS.	REINFORCING STEEL (FOR END BENT No. 2)					3443 LBS.
CLASS A CONCRETE BREAKDOWN (FOR END BENT No. 1)						CLASS A CONCRETE BREAKDOWN (FOR END BENT No. 2)					
POUR #1	CAP, LOWER PART OF WINGS & COLLARS			20.4 C.Y.		POUR #1	CAP, LOWER PART OF WINGS & COLLARS			20.5 C.Y.	
POUR #2	UPPER PART OF WINGS			2.1 C.Y.		POUR #2	UPPER PART OF WINGS			2.1 C.Y.	
TOTAL CLASS A CONCRETE					22.5 C.Y.	TOTAL CLASS A CONCRETE					22.6 C.Y.



SECTION A-A

(CONCRETE COLLAR NOT SHOWN FOR CLARITY. SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL.")

PROJECT NO. B-5333
ROBESON COUNTY
STATION: 37+28.50 -L-
SHEET 4 OF 4 BRIDGE NO. 174

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

Professional Engineer
SEAL 032076
JENNIFER R. MEROY
12/9/2016

DocuSigned by:
Jennifer R. Meroy
E1114C791288475

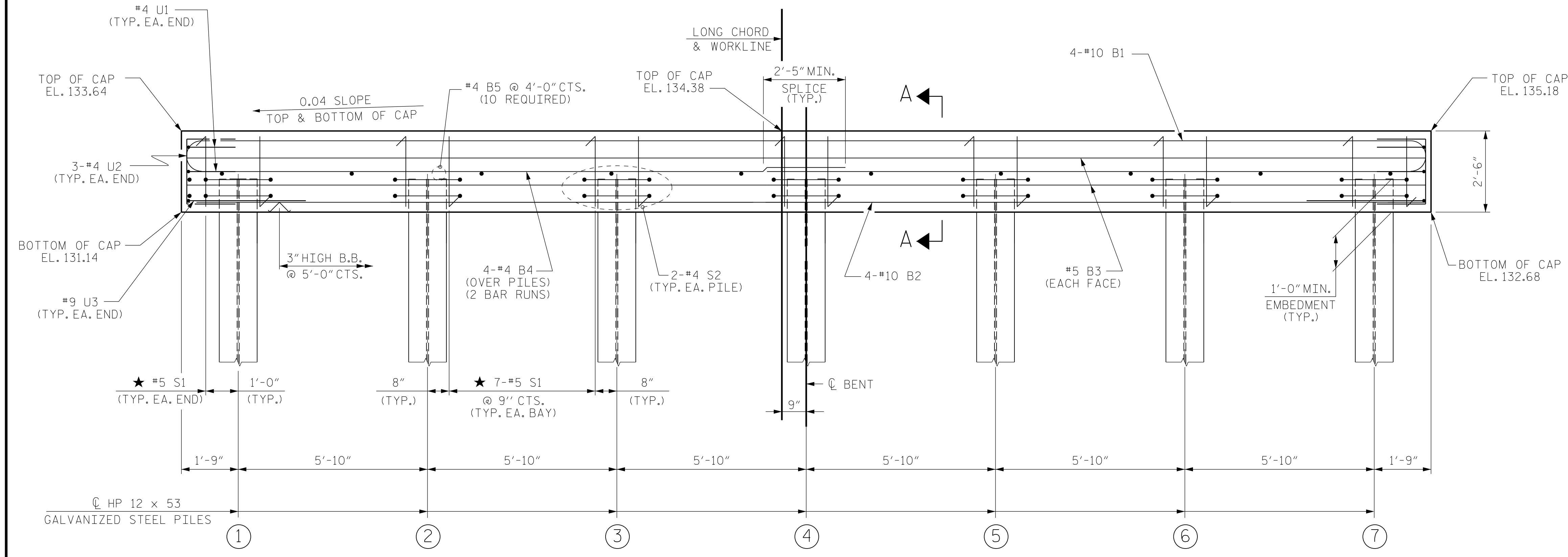
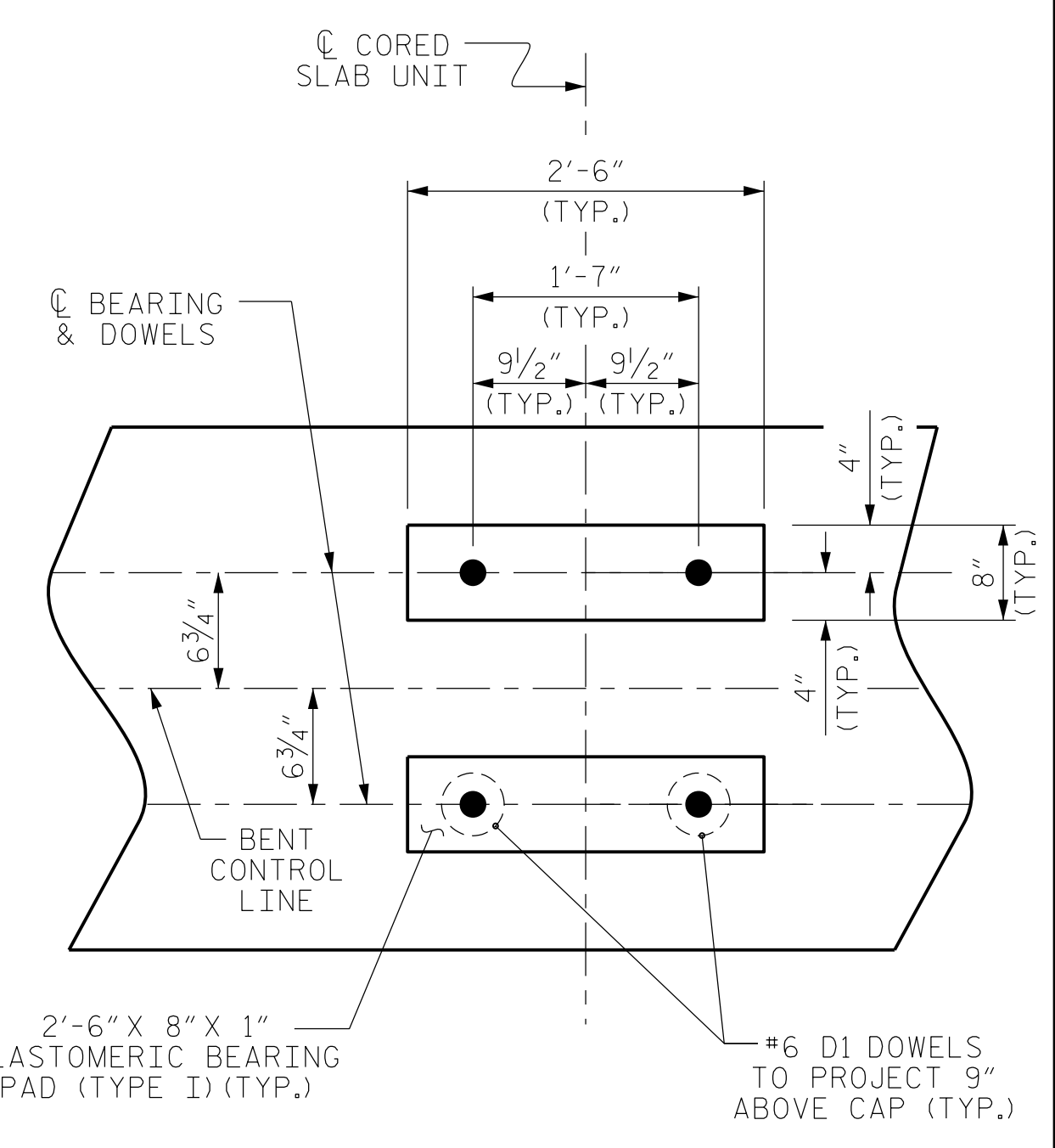
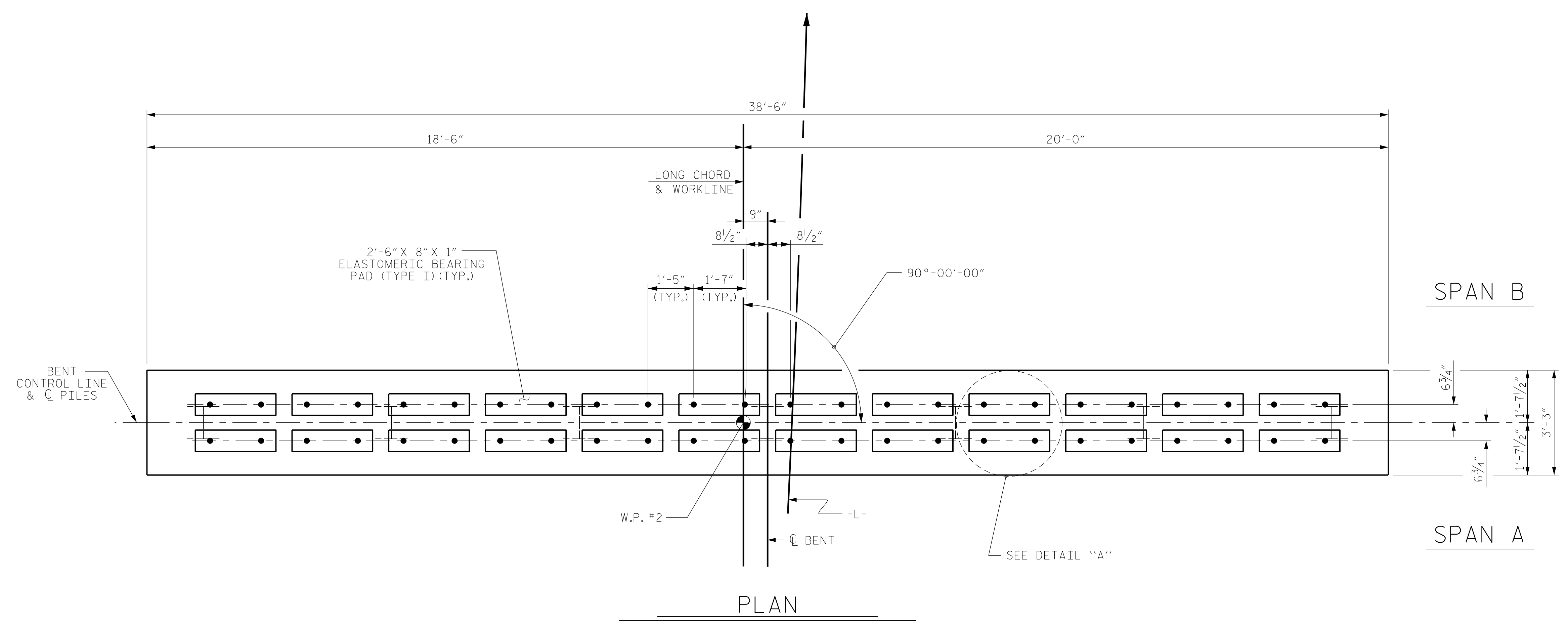
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE					
END BENT No. 1 & 2 DETAILS					
REVISIONS					SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
					23

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USER: jmeroy

DRAWN BY: MTB DATE: 04/16
CHECKED BY: JRM DATE: 04/16

NOTES

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.
- ★ INVERT ALTERNATE STIRRUPS.
- GALVANIZE THE TOP OF EACH INTERIOR BENT PILE A MINIMUM OF 23 FEET. GALVANIZE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.



TOP OF PILE ELEVATIONS	
①	132.23
②	132.46
③	132.70
④	132.93
⑤	133.16
⑥	133.40
⑦	133.63

PROJECT NO. B-5333
 ROBESON COUNTY
 STATION: 37+28.50 -L-

SHEET 1 OF 3 BRIDGE NO. 174

Dewberry
 2610 WYCLIFF ROAD
 SUITE 410
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 NC COA No. F-0929

SEAL
 032076
 ENGINEER
 JENNIFER R. MCKAY
 12/9/2016

DocuSigned by:
 Jennifer R. McKay
 E1114C791288475

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT No. 1

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

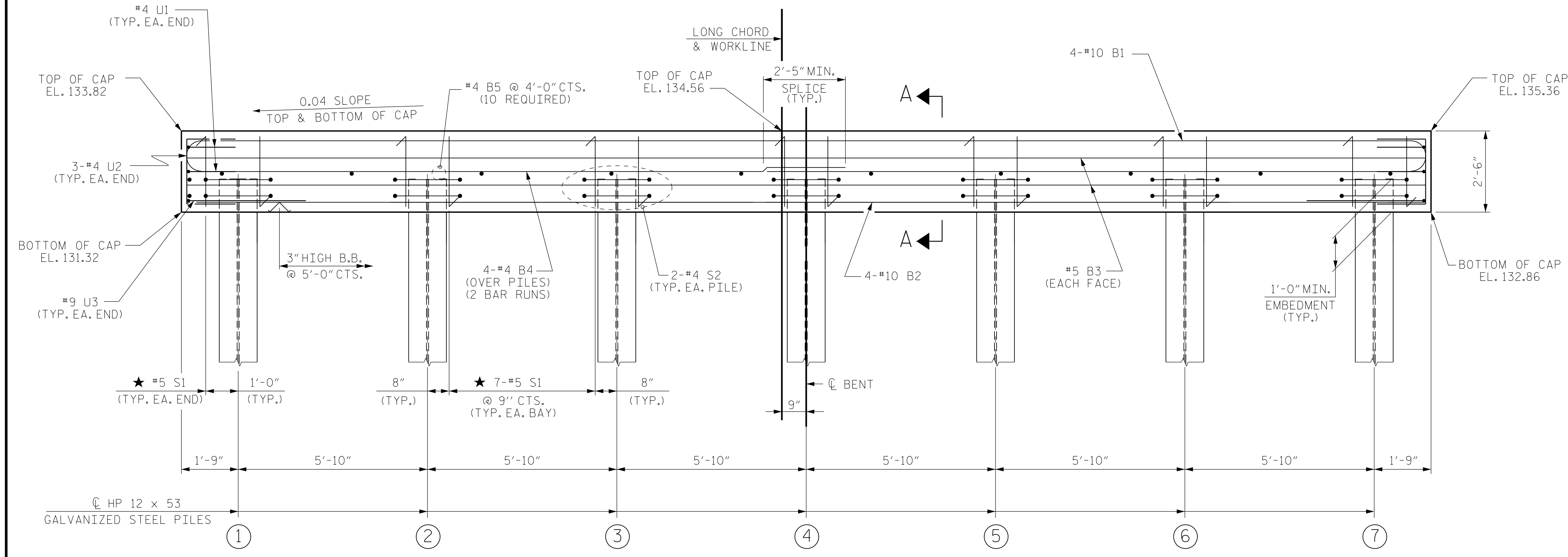
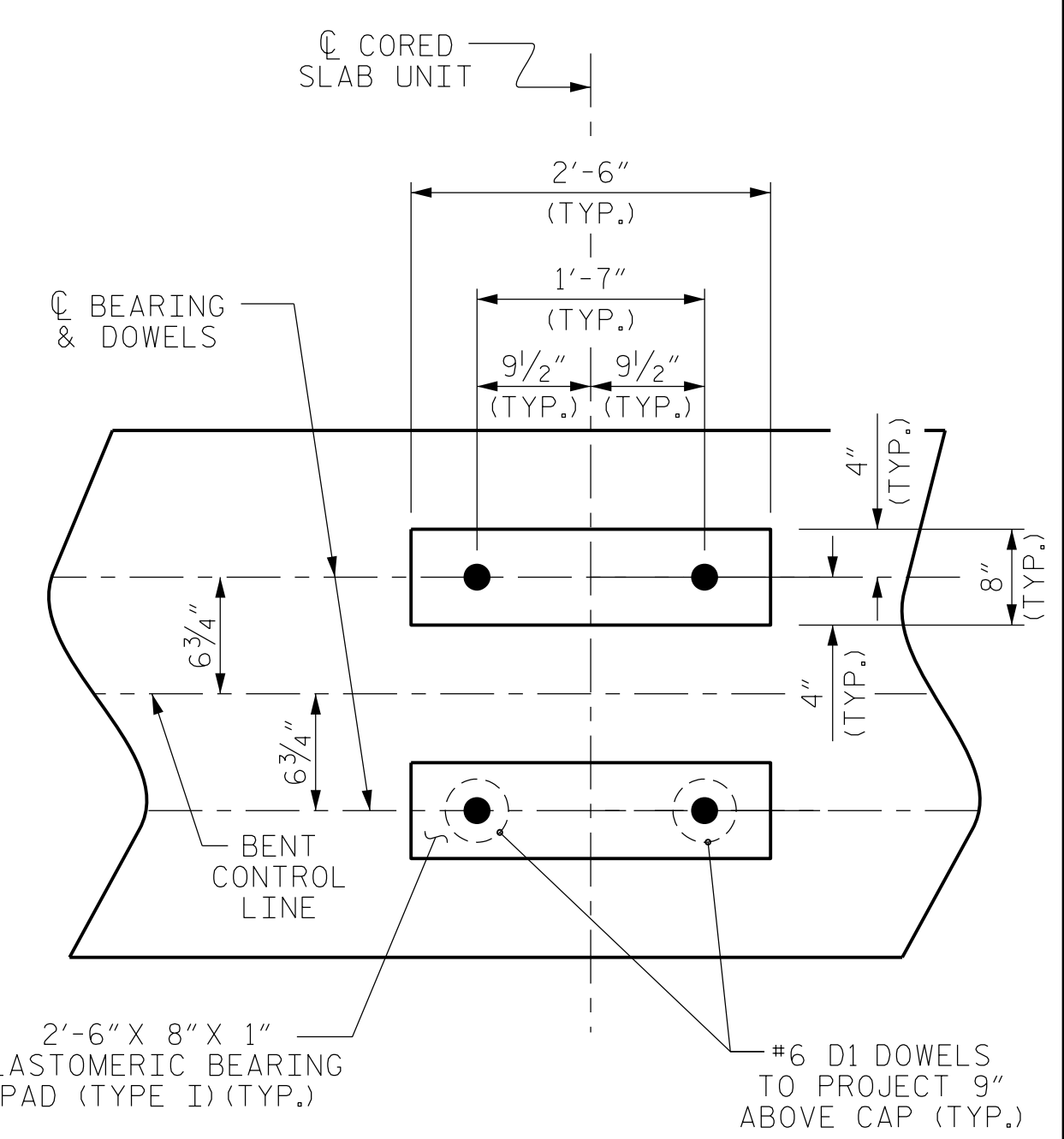
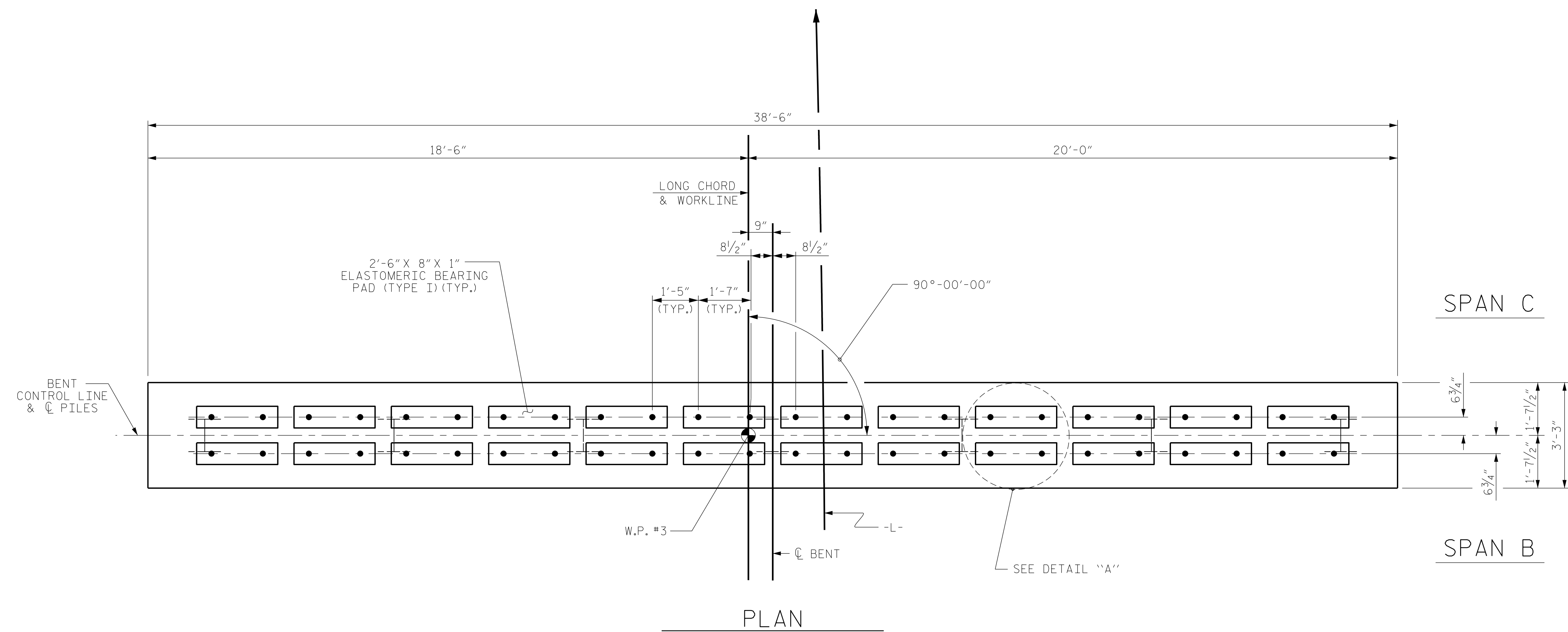
SHEET No.
S02-19
 TOTAL SHEETS
 23

DRAWN BY : MTB DATE : 04/16
 CHECKED BY : JRM DATE : 04/16

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 USER: jrm204

NOTES

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.
- ★ INVERT ALTERNATE STIRRUPS.
- GALVANIZE THE TOP OF EACH INTERIOR BENT PILE A MINIMUM OF 26 FEET, GALVANIZE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.



TOP OF PILE ELEVATIONS	
①	132.41
②	132.64
③	132.88
④	133.11
⑤	133.34
⑥	133.58
⑦	133.81

PROJECT NO. B-5333
ROBESON COUNTY
 STATION: 37+28.50 -L-

SHEET 2 OF 3 BRIDGE NO. 174

Dewberry
 2610 WYCLIFF ROAD
 SUITE 410
 RALEIGH, NC 27607
 PHONE: 919.881.9339
 NC COA No. F-0929

SEAL
 032076
 ENGINEER
 JENNIFER R. McROY
 12/9/2016

DocuSigned by:
 Jennifer R. McRoy
 E1140791288475

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
 RALEIGH

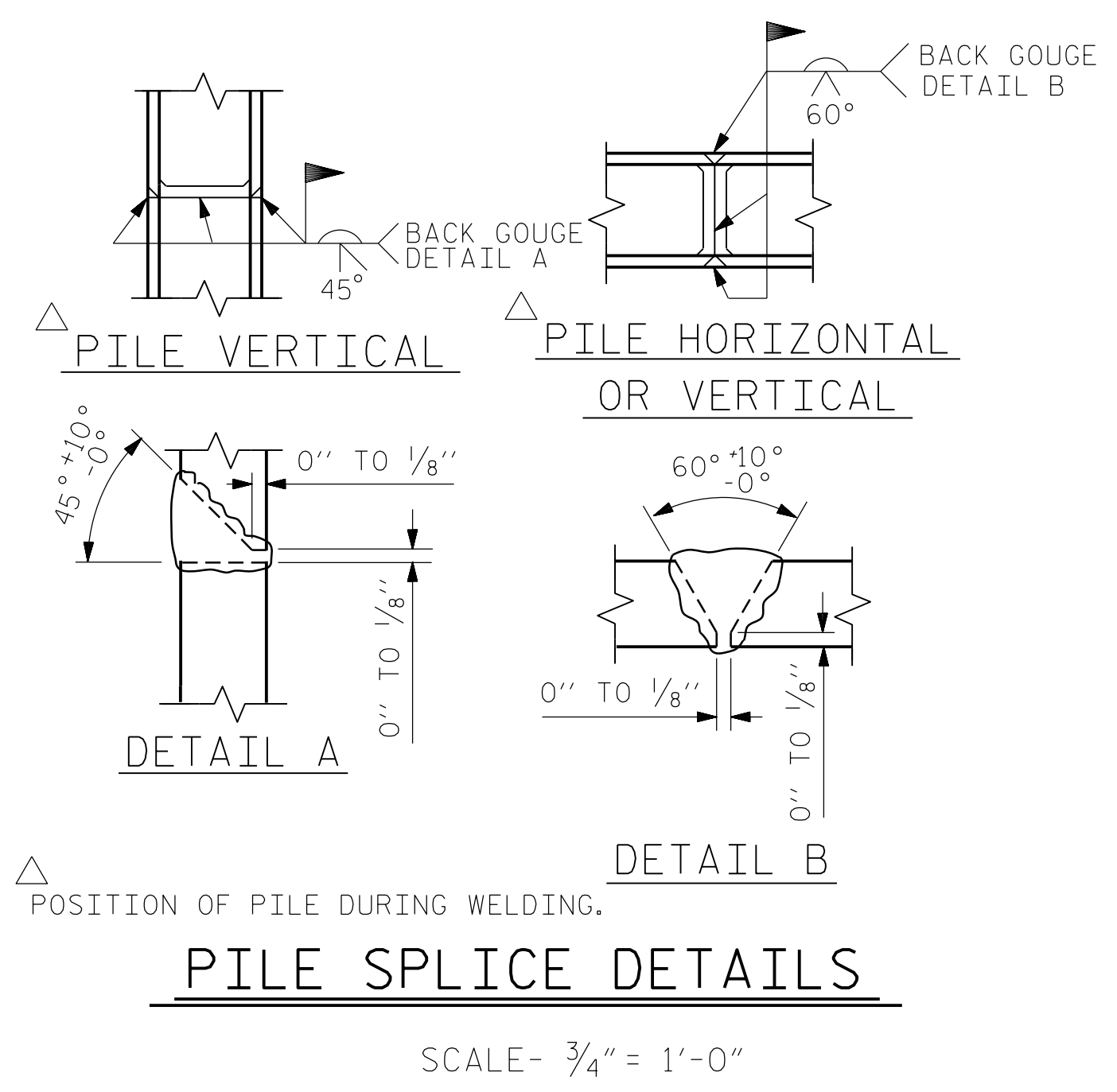
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BENT No. 2

REVISIONS					
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SHEET No.
S02-20
 TOTAL SHEETS
 23

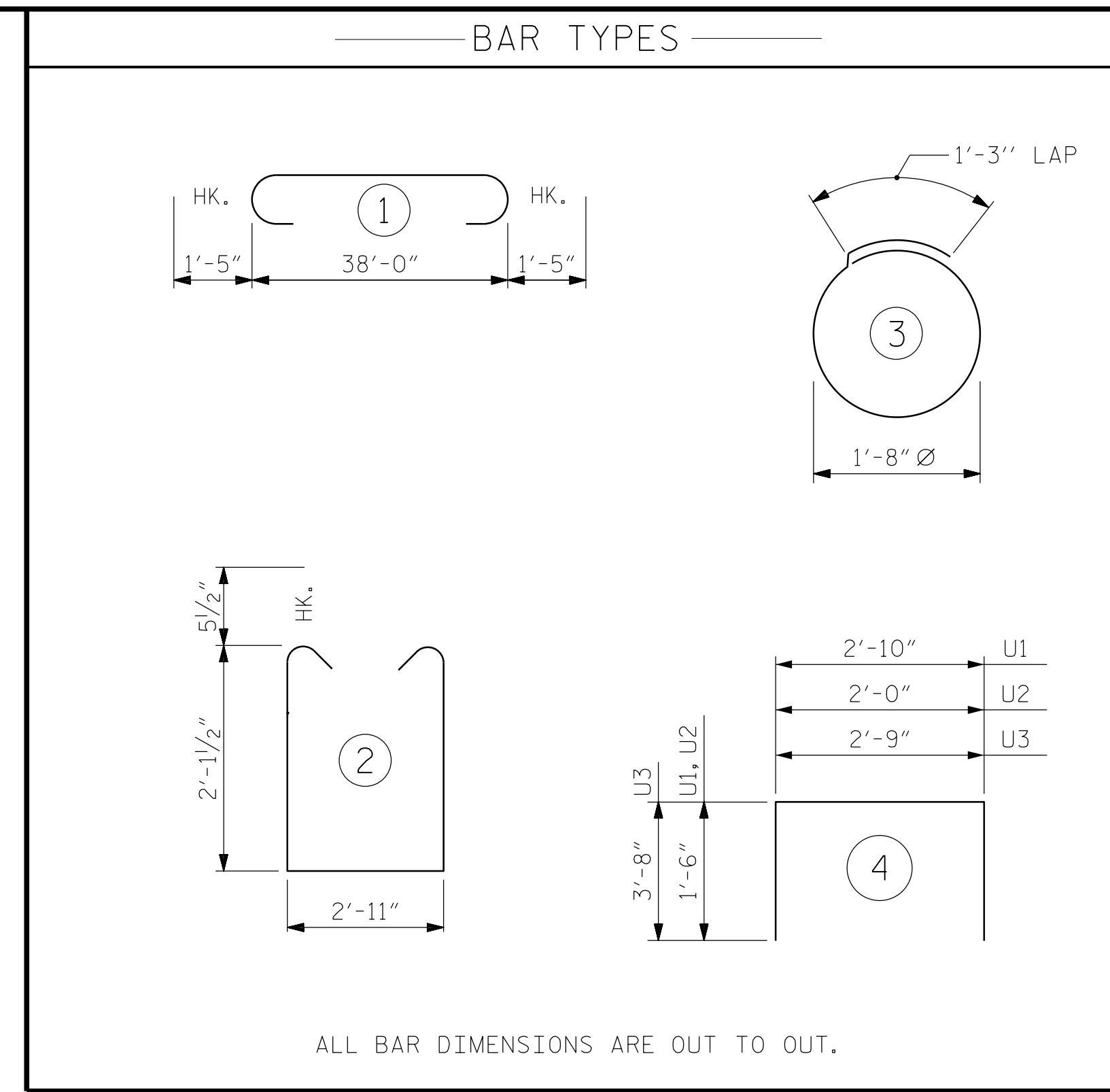
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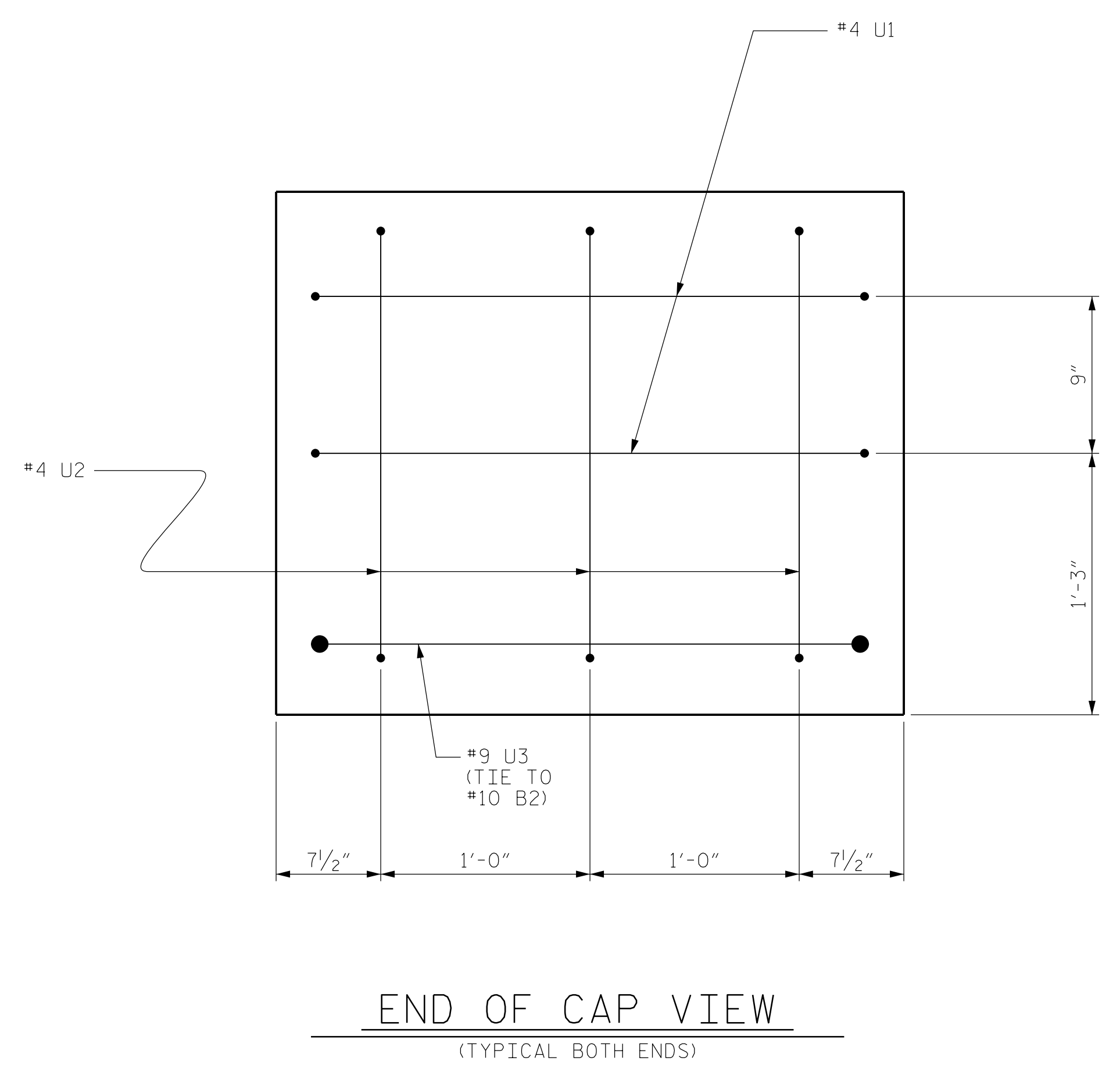
PILE SPLICE DETAILS

SCALE - 3/4" = 1'-0"

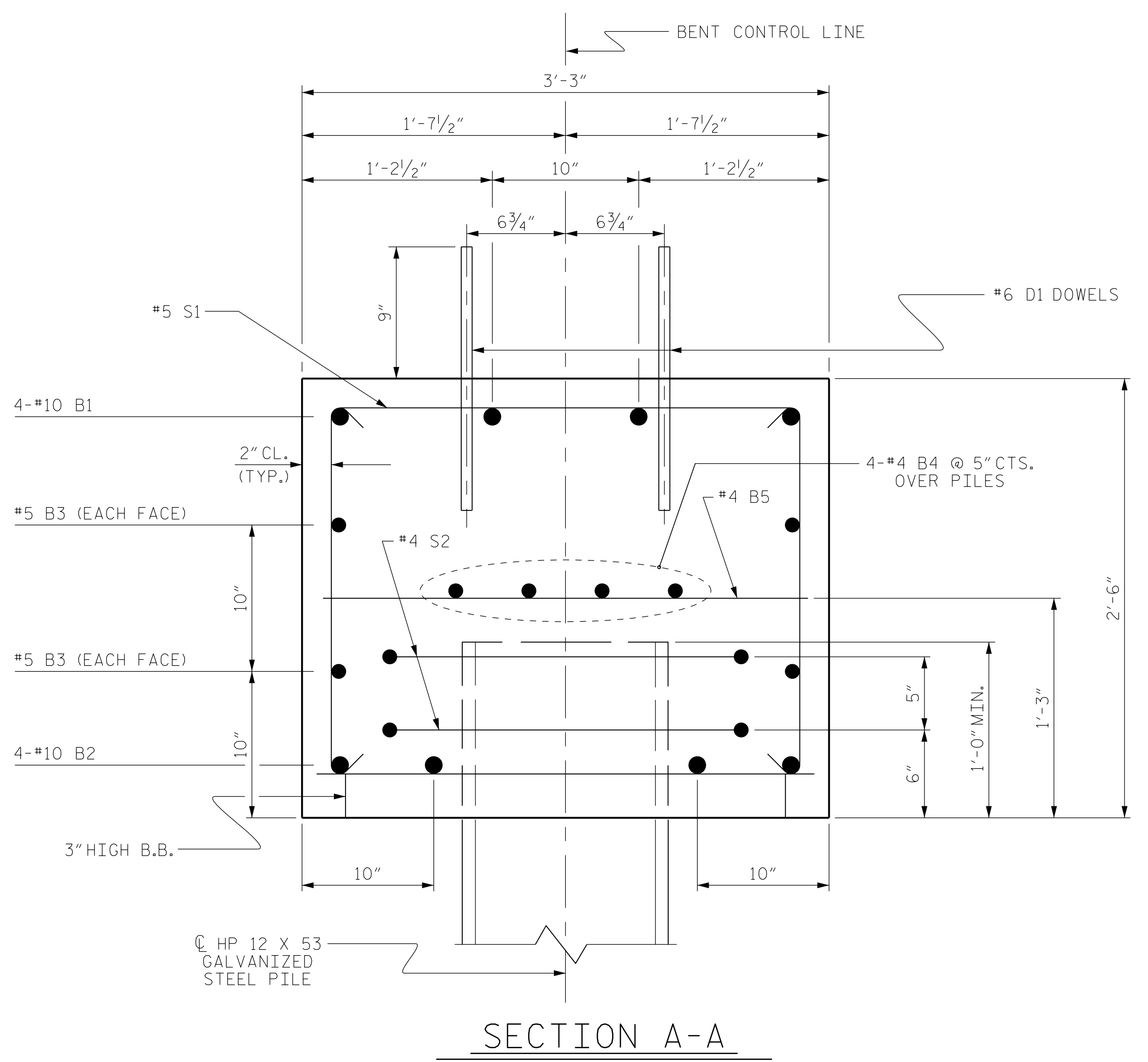


ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL FOR ONE BENT					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	1	40'-10"	703
B2	4	#10	STR	38'-2"	657
B3	4	#5	STR	38'-2"	159
B4	8	#4	STR	20'-4"	109
B5	10	#4	STR	2'-11"	19
D1	48	#6	STR	1'-6"	108
S1	44	#5	2	8'-1"	371
S2	14	#4	3	6'-6"	61
U1	4	#4	4	5'-10"	16
U2	6	#4	4	5'-0"	20
U3	2	#9	4	10'-1"	69
REINFORCING STEEL (FOR ONE BENT)					2292 LBS.
CLASS A CONCRETE BREAKDOWN (FOR ONE BENT)					
TOTAL CLASS A CONCRETE					11.6 C.Y.
HP 12 X 53 GALVANIZED STEEL PILES (FOR BENT No. 1)					
No. 7					LIN. FT. 357
HP 12 X 53 GALVANIZED STEEL PILES (FOR BENT No. 2)					
No. 7					LIN. FT. 427



END OF CAP VIEW
(TYPICAL BOTH ENDS)



SECTION A-A

PROJECT NO. B-5333
ROBESON COUNTY
 STATION: 37+28.50 -L-
 SHEET 3 OF 3 BRIDGE NO. 174

Dewberry
 2610 WYCLIFF ROAD
 SUITE 410
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 NC COA No. F-0929

SEAL
 032076
 ENGINEER
 JENNIFER R. MCKAY
 12/9/2016

DocuSigned by:
 Jennifer R. McKay
 F114C791298475

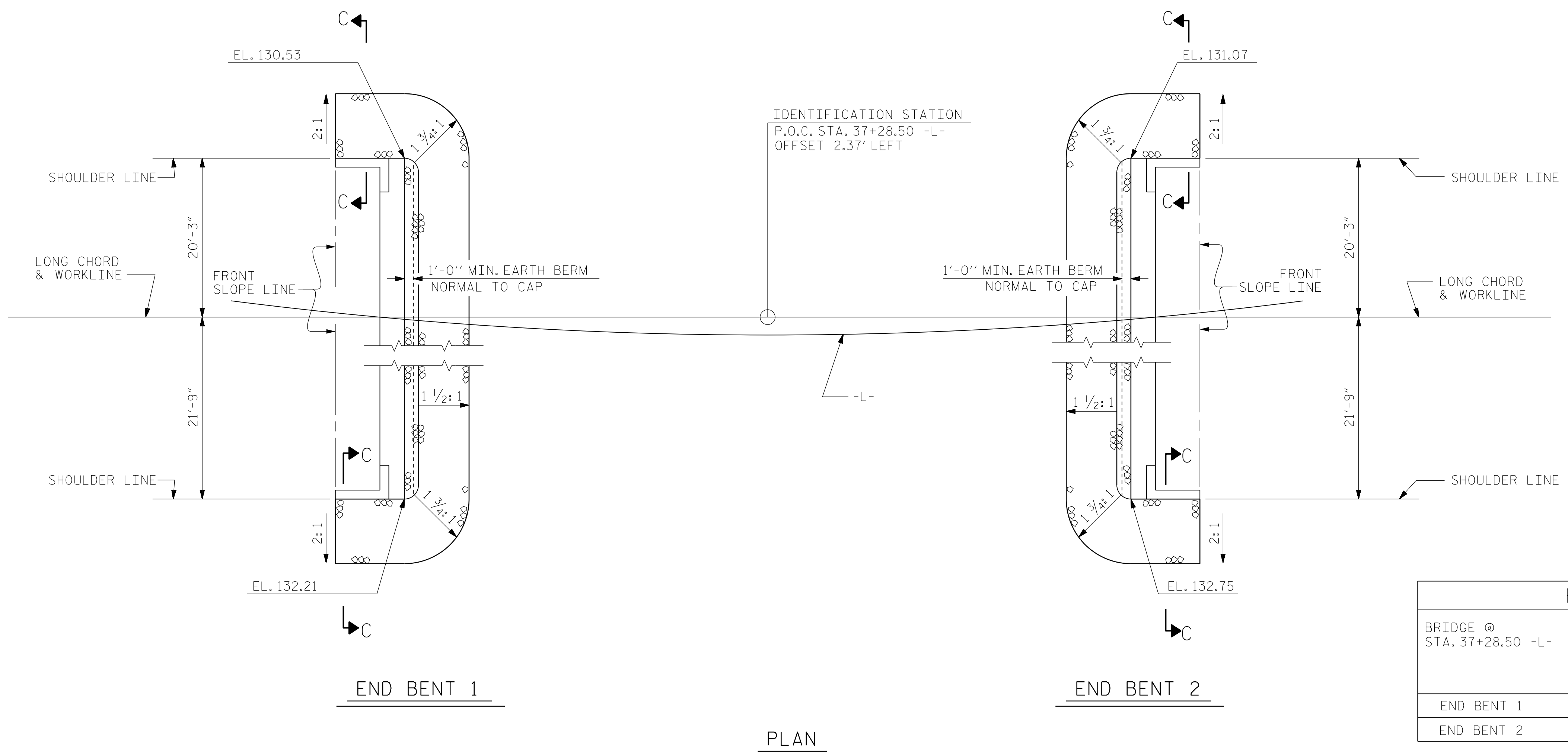
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No.	BY:	DATE:	No.	BY:	DATE:
1			3		
2			4		

TOTAL SHEETS: 23

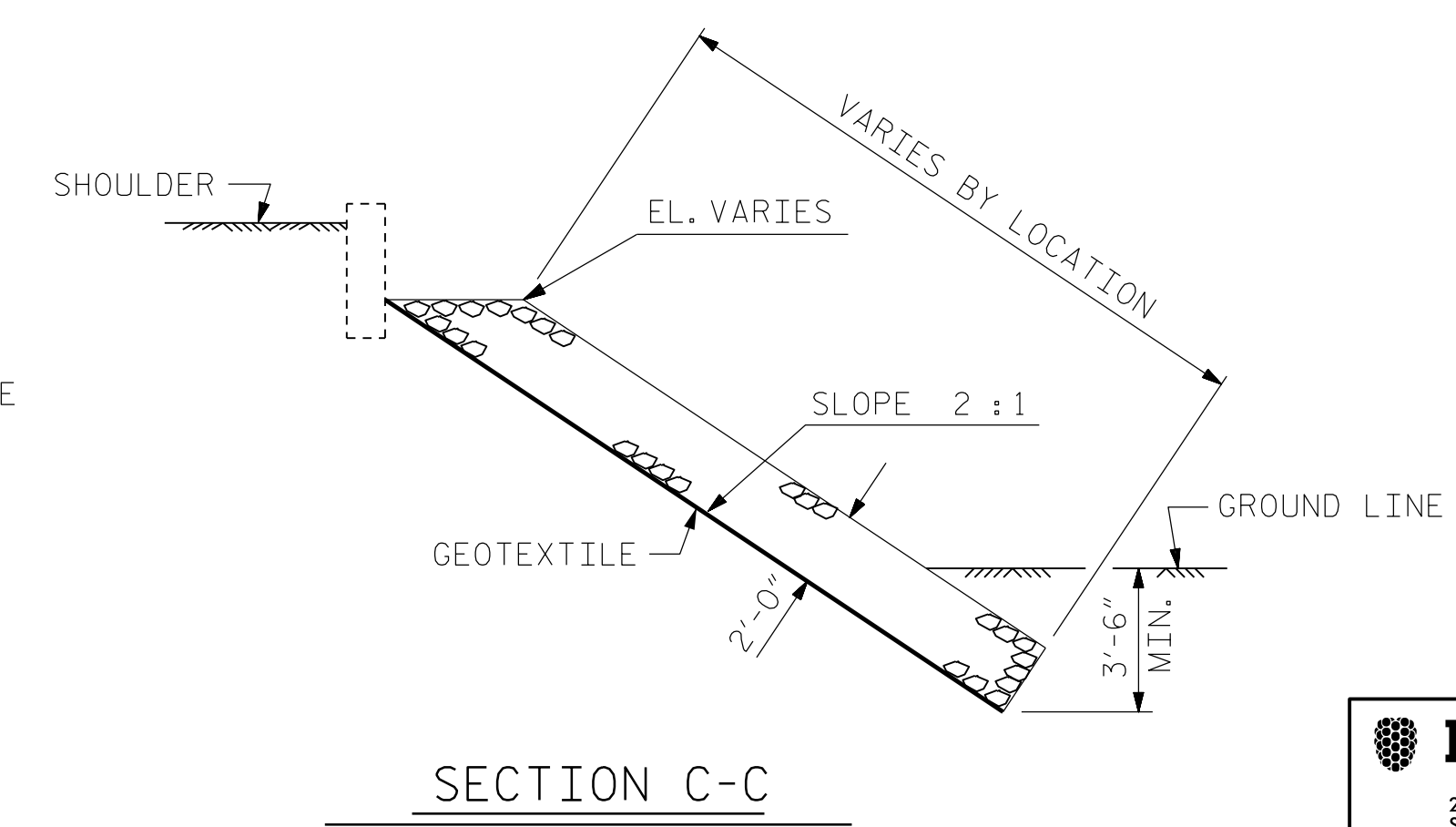
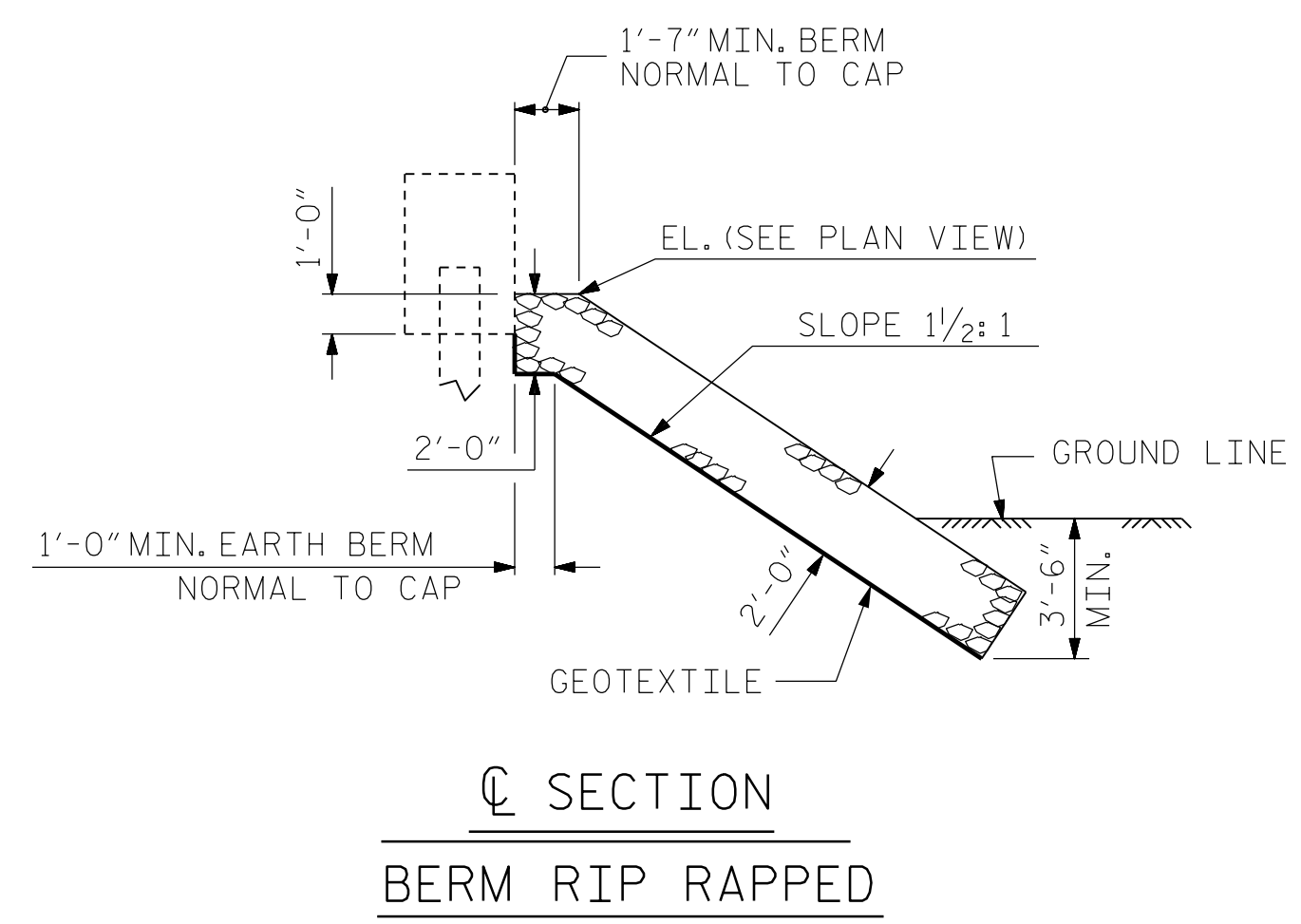
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DRAWN BY : MTB DATE : 04/16
 CHECKED BY : JRM DATE : 04/16

NOTES :
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.



ESTIMATED QUANTITIES		
BRIDGE @ STA. 37+28.50 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	71	77
END BENT 2	86	93



PROJECT NO. B-5333
ROBESON COUNTY
STATION: 37+28.50 -L-
BRIDGE NO. 174

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

NORTH CAROLINA
PROFESSIONAL
ENGINEER
JENNIFER R. MEROY
SEAL
032076
12/9/2016

DocuSigned by:
Jennifer R. Meroy
E11146791288475

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

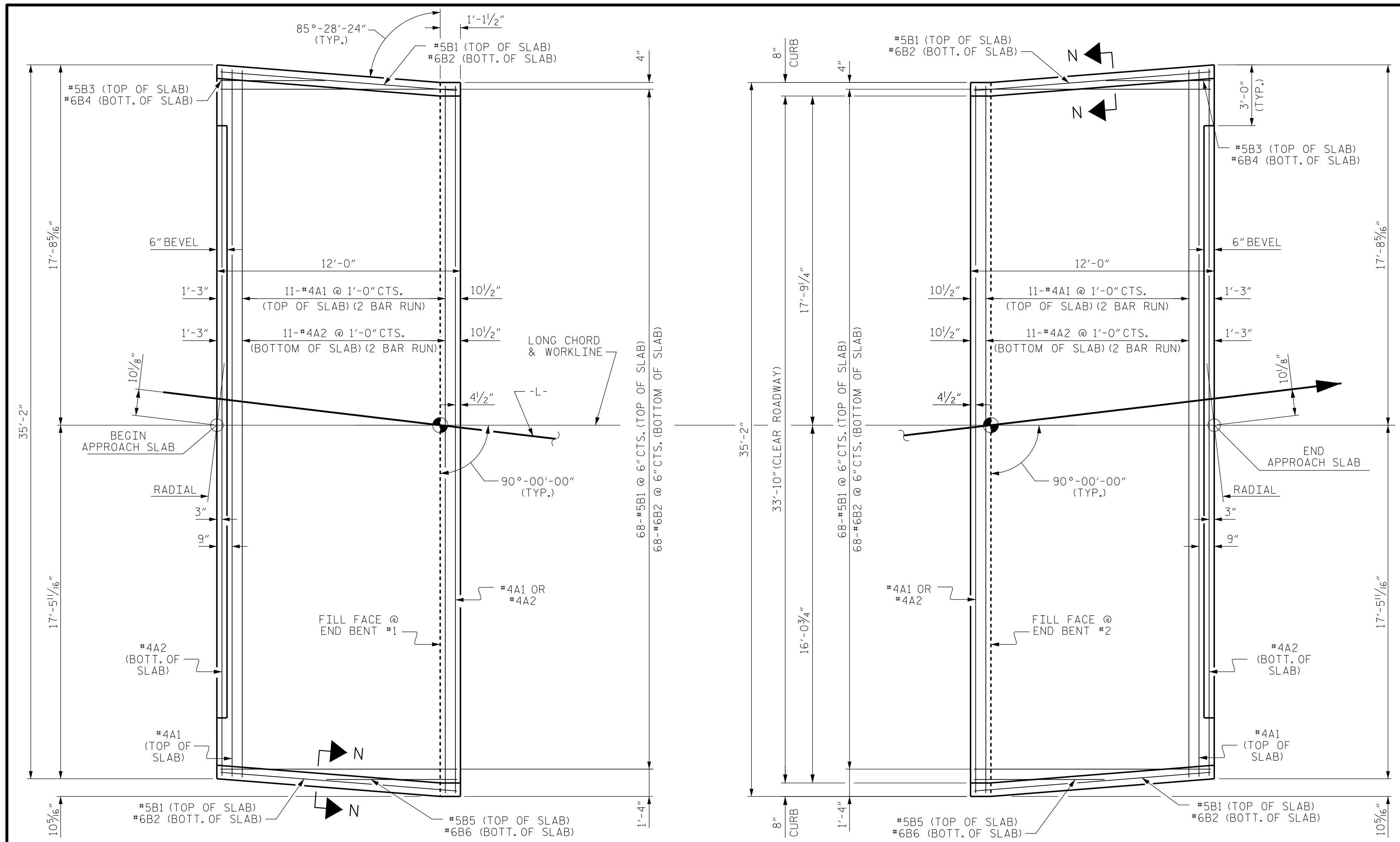
—RIP RAP DETAILS—

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

SHEET No.
S02-22
TOTAL SHEETS
23

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DRAWN BY : MTB DATE : 04/16
CHECKED BY : JRM DATE : 04/16



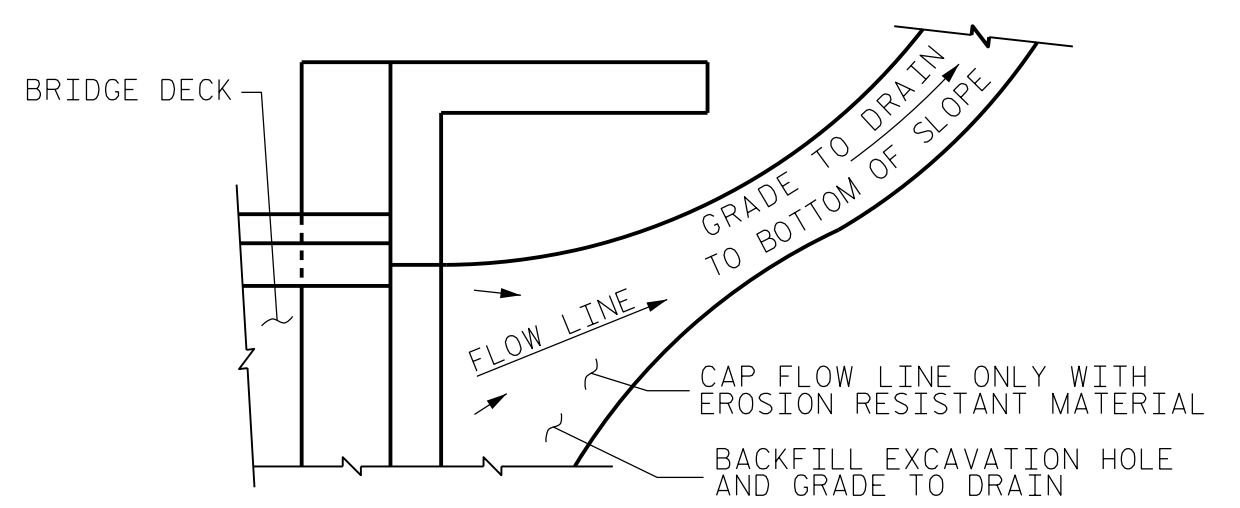
PLAN @ END BENT #1

PLAN @ END BENT #2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

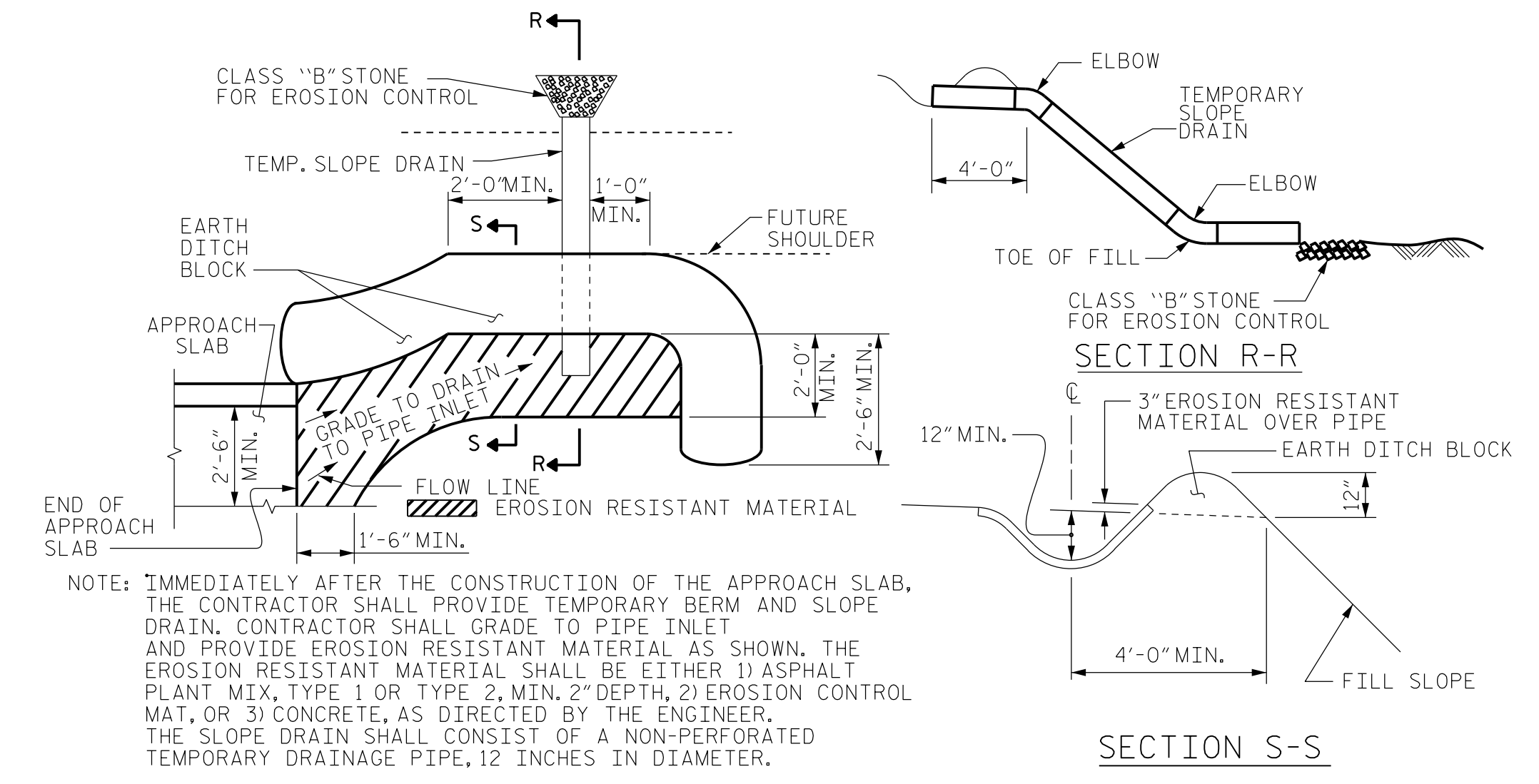
NOTES

FOR REINFORCED BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, IMPERMEABLE GEOMEMBRANE, 4" Ø DRAINAGE PIPE, #78M STONE, AND SELECT MATERIAL, SEE ROADWAY PLANS.
 AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.
 APPROACH SLAB GROOVING IS NOT REQUIRED.



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

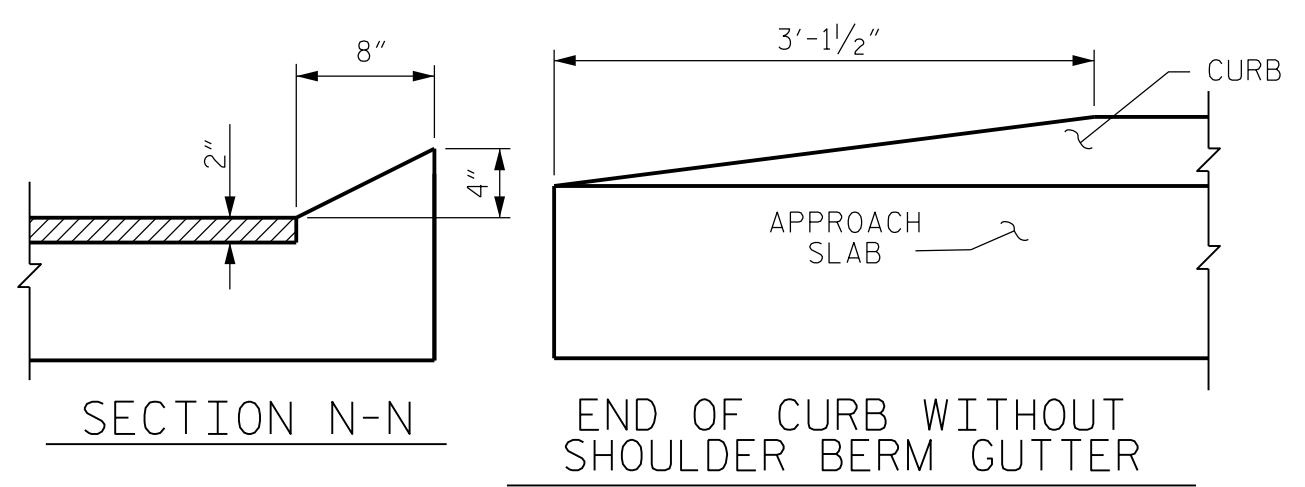
TEMPORARY DRAINAGE DETAIL



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

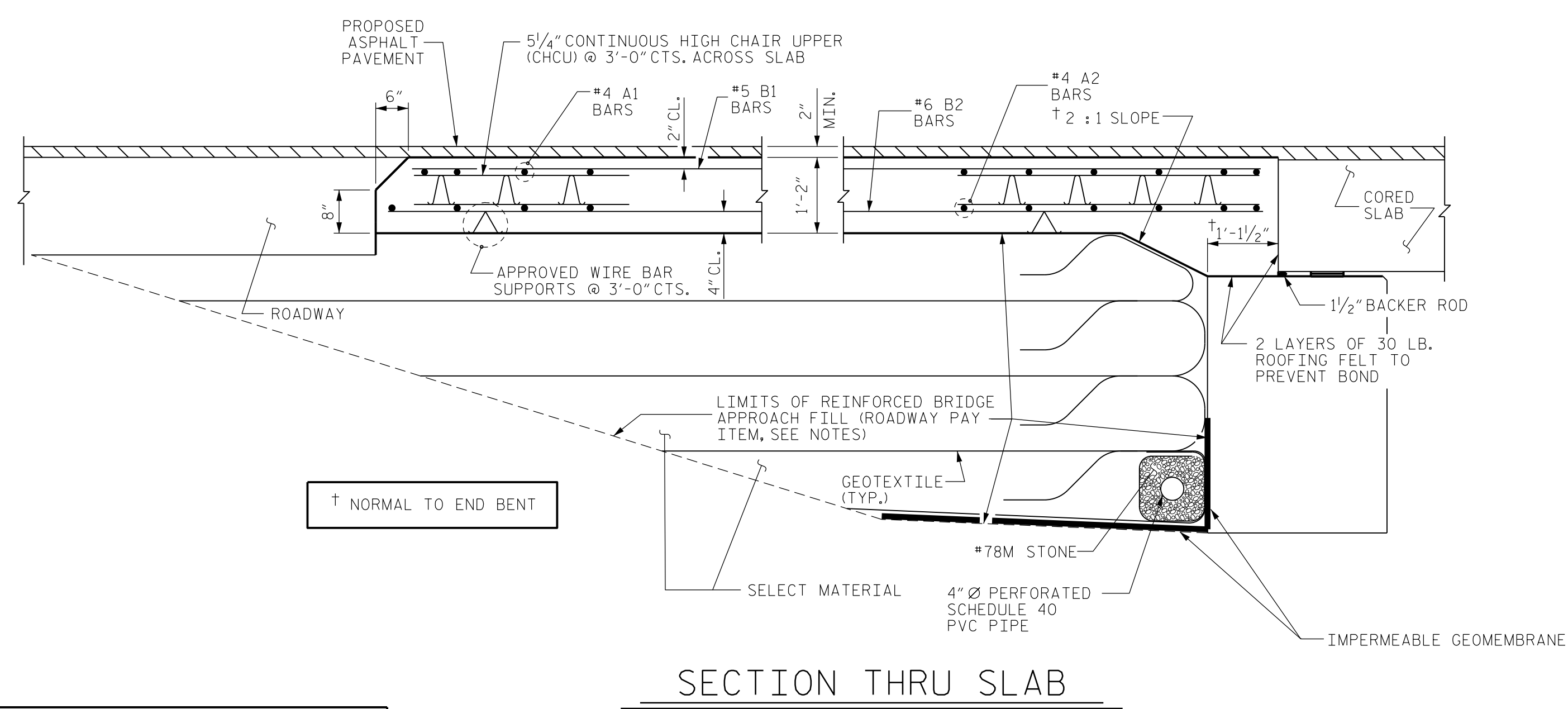
TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



CURB DETAILS

SPlice LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	1'-9"
#5	2'-6"	2'-2"
#6	3'-10"	2'-7"



SECTION THRU SLAB

BILL OF MATERIAL					
APPROACH SLAB AT EB #1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	26	#4	STR	18'-6"	321
A2	26	#4	STR	18'-4"	318
*B1	70	#5	STR	11'-2"	815
B2	70	#6	STR	11'-8"	1227
*B3	1	#5	STR	5'-2"	5
B4	1	#6	STR	5'-2"	8
*B5	1	#5	STR	6'-4"	7
B6	1	#6	STR	6'-4"	10
REINFORCING STEEL				LBS.	1563
*EPOXY COATED REINFORCING STEEL				LBS.	1148
CLASS AA CONCRETE				C. Y.	20.1
APPROACH SLAB AT EB #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	26	#4	STR	18'-6"	321
A2	26	#4	STR	18'-4"	318
*B1	70	#5	STR	11'-2"	815
B2	70	#6	STR	11'-8"	1227
*B3	1	#5	STR	5'-2"	5
B4	1	#6	STR	5'-2"	8
*B5	1	#5	STR	6'-4"	7
B6	1	#6	STR	6'-4"	10
REINFORCING STEEL				LBS.	1563
*EPOXY COATED REINFORCING STEEL				LBS.	1148
CLASS AA CONCRETE				C. Y.	20.1

PROJECT NO. R-5333
ROBESON COUNTY
 STATION: 37+28.50 -L-
 BRIDGE NO. 174

Dewberry
 2610 WYCLIFF ROAD
 SUITE 410
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 NC COA No. F-0929

SEAL 032076
 ENGINEER
 JENNIFER R. McROY
 12/9/2016

DocuSigned by:
 Jennifer R. McRoy
 E114C791288475

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE CORED SLAB UNIT (SUB-REGIONAL TIER) 90° SKEW					
REVISIONS					SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 23

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 USER: jrmcroy

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