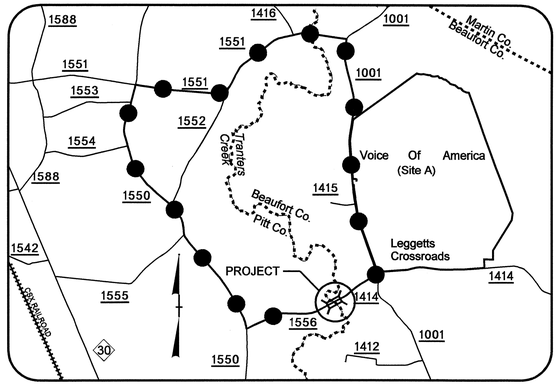
TIP PROJECT: B–4022

CONTRACT: C201496



VICINITY MAP

DETOUR ROUTE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PITT & BEAUFORT COUNTY

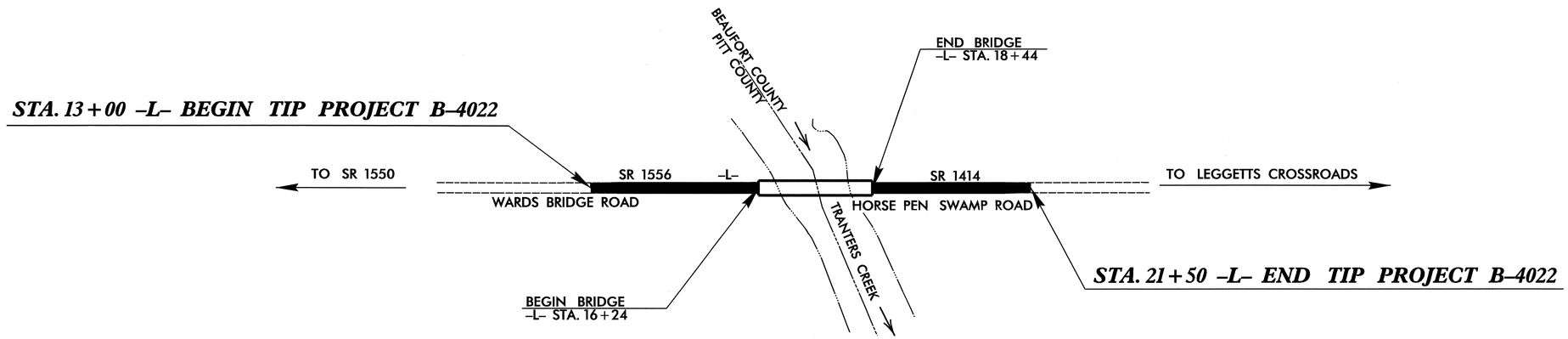
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B–4022		

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33389.1.1	BRZ–1414(2)	PE
33389.2.1	BRZ–1414(2)	R /W, UTILITIES
33389.3.1	BRZ–1414(2)	CONST.

LOCATION: BRIDGE NO. 90 OVER TRANTERS CREEK ON SR 1414 & SR 1556

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

NAD 83 /95



STRUCTURE

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DESIGN DATA

ADT 2008 = 478
ADT 2028 = 739
DHV = 10 %
D = 60 %
T = 3 % *
V = 60 MPH
* TTST =1% DUAL =2%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B–4022 = 0.119 MILES
LENGTH STRUCTURE TIP PROJECT B–4022 = 0.042 MILES
TOTAL LENGTH TIP PROJECT B–4022 = 0.161 MILES

Prepared In the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610

2006 STANDARD SPECIFICATIONS

LETTING DATE:
JANUARY 15, 2008

B. C. HUNT, PE
PROJECT ENGINEER

T. G. PAYNE, PE
PROJECT DESIGN ENGINEER

STRUCTURE DESIGN UNIT

STATE BRIDGE DESIGN ENGINEER

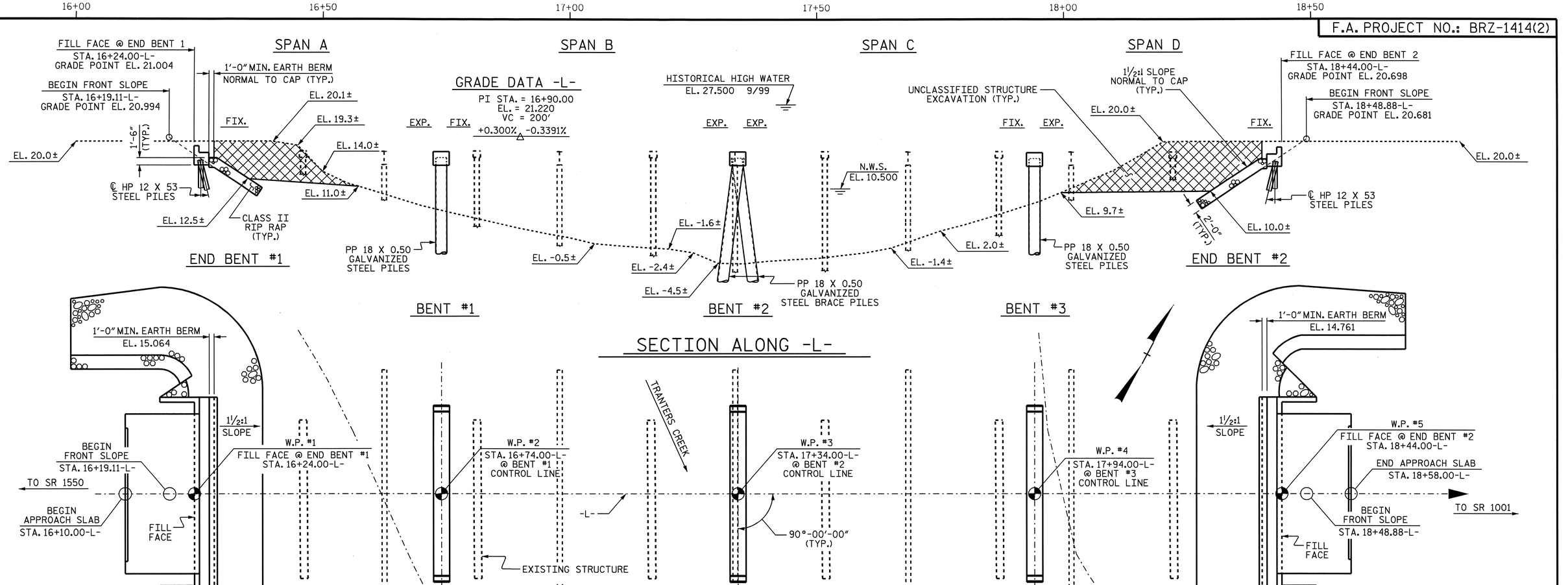
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE DESIGN ENGINEER

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR *DATE*

F.A. PROJECT NO.: BRZ-1414(2)



PLAN
(PILES NOT SHOWN FOR CLARITY)

PROJECT NO. B-4022

PITT/BEAUFORT COUNTY

STATION: 17+34.00-L-

SHEET 1 OF 3 REPLACES BRIDGE NO. 90

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON SR 1414 & SR 1556 BETWEEN SR 1550 & SR 1001 OVER TRANTERS CREEK

NORTH CAROLINA PROFESSIONAL SEAL 14091 ENGINEER BRIAN CHARLES HUNT
12/5/07

NORTH CAROLINA PROFESSIONAL SEAL 20211 ENGINEER THOMAS GLENN PAYNE
10/22/07

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

DRAWN BY : S.H. SOCKWELL/K.B. DATE : 2/24/06
CHECKED BY : T.G. PAYNE DATE : 09/07

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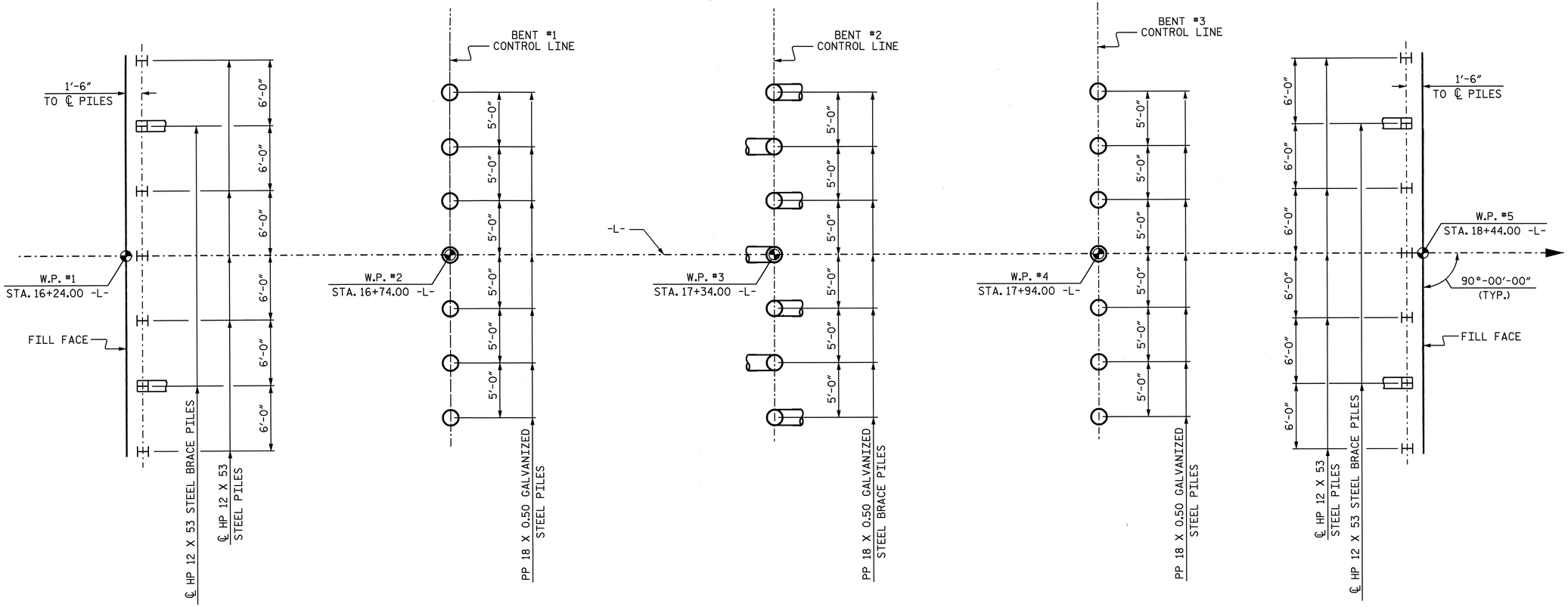

END BENT #1 | BENT #1 | BENT #2 | BENT #3 | END BENT #2

FOUNDATION LAYOUT

BENT #2 BRACE PIPE PILES ARE BATTERED 1½:12
BRACE PILES AT END BENTS ARE BATTERED 3:12
DIMENSIONS LOCATING PILES ARE SHOWN TO CENTERLINE OF PILES

FOUNDATION NOTES

DRIVE PILES AT END BENT #1 AND END BENT #2 TO A REQUIRED BEARING CAPACITY OF 100 TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO.

DRIVE PILES AT BENT #1 THROUGH BENT #3 TO A REQUIRED BEARING CAPACITY OF 150 TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO PLUS ANY ADDITIONAL CAPACITY TO ACCOUNT FOR DOWNDRAG OR NEGATIVE SKIN FRICTION AND SCOUR.

THE ALLOWABLE BEARING CAPACITY FOR PILES AT END BENT #1 AND END BENT #2 IS 50 TONS PER PILE.

THE ALLOWABLE BEARING CAPACITY FOR PILES AT BENT #1 THROUGH BENT #3 IS 70 TONS PER PILE.

DRIVE PILES AT BENT #1 AND BENT #3 TO A TIP ELEVATION NO HIGHER THAN -23.000.

DRIVE PILES AT BENT #2 TO A TIP ELEVATION NO HIGHER THAN -29.000.

THE SCOUR CRITICAL ELEVATION FOR BENT #1 THROUGH BENT #3 IS -5.000, -16.000 AND -5.000 RESPECTIVELY. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

PIPE PILE PLATES ARE REQUIRED FOR THE PIPE PILES AT BENT #1 THROUGH BENT #3. USE PIPE PILE PLATES WITH A DIAMETER EQUAL TO THE PIPE PILE DIAMETER. SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

TESTING THE FIRST PRODUCTION PILE WITH THE PILE DRIVING ANALYZER (PDA) DURING DRIVING, RE-STRIKING OR RE-DRIVING IS REQUIRED AT BENT #1, BENT #2 OR BENT #3. SEE PILE DRIVING ANALYZER SPECIAL PROVISION.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 33,000 FT.-LBS. TO 60,000 FT.-LBS. PER BLOW WILL BE REQUIRED TO DRIVE PILES AT BENT #1, BENT #2 AND BENT #3. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM ARTICLE 450-5 OF THE STANDARD SPECIFICATIONS.

PROJECT NO. B-4022
PITT/BEAUFORT COUNTY
STATION: 17+34.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON SR 1414 & SR 1556 BETWEEN SR 1550 & SR 1001 OVER TRANTERS CREEK

NORTH CAROLINA PROFESSIONAL SEAL 20211 ENGINEER THOMAS G. PAYNE
10/22/07

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

DRAWN BY : S.H. SOCKWELL/R. G. E. DATE : 2/24/06
CHECKED BY : M. K. BEARD DATE : 07/07

19-OCT-2007 15:29
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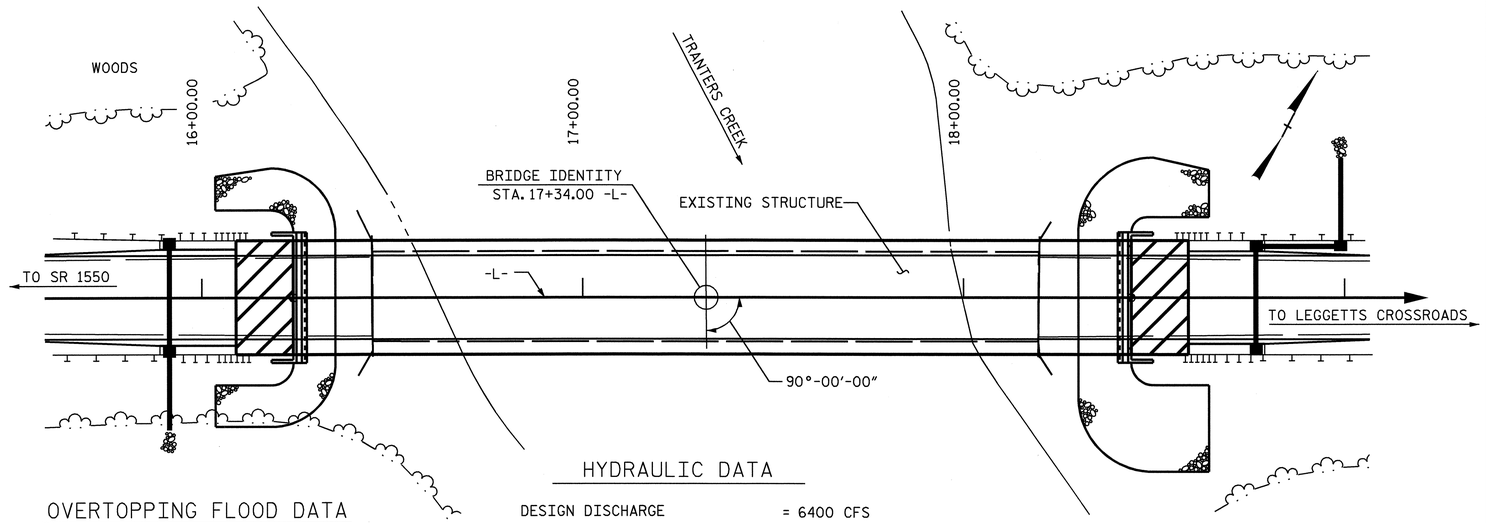
BENCH MARK IS BM #1 RR SPIKE SET IN 36"OAK 106'RIGHT OF -BL- STA. 12+18.00, EL. 14.870



OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	= 7800 CFS
FREQUENCY OF OVERTOPPING FLOOD	= 50 YRS.
OVERTOPPING FLOOD ELEVATION	= 19.500

HYDRAULIC DATA

DESIGN DISCHARGE	= 6400 CFS
FREQUENCY OF DESIGN FLOOD	= 25 YRS.
DESIGN HIGH WATER ELEVATION	= 18.100
DRAINAGE AREA	= 197 SQ. MI.
BASIC DISCHARGE (Q100)	= 9300 CFS
BASIC HIGH WATER ELEVATION	= 20.800

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

LOCATION SKETCH

NOTES

ASSUMED LIVE LOAD = HS 20 OR ALTERNATE LOADING, EXCEPT THAT CONCRETE BOX BEAM UNITS HAVE BEEN DESIGNED FOR HS 25.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AASHTO STANDARD SPECIFICATIONS FOR SEISMIC DESIGN OF HIGHWAY BRIDGES FOR SEISMIC PERFORMANCE CATEGORY A.

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

FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.

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

THE EXISTING STRUCTURE CONSISTING OF 5 SPANS (1 @ 35'-3", 3 @ 35'-0", AND 1 @ 35'-3"); WITH A BRIDGE DECK WIDTH OF 24 FEET ON A STEEL PLANK FLOOR ON I-BEAMS WITH EXTERIOR AND INTERIOR BENTS ON TIMBER CAPS ON TIMBER PILES AND LOCATED AT THE EXISTING CROSSING SHALL BE REMOVED. THE EXISTING STRUCTURE HAS BEEN STRENGTHENED WITH AN EXTRA STEEL I-BEAM SUBSTRUCTURE. SEE SPECIAL PROVISION FOR "REMOVAL OF EXISTING STRUCTURE".

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".

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

THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH HEC 18, "EVALUATING SCOUR AT BRIDGES", MAY, 2001.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA (SHEET S1) SHALL BE EXCAVATED FOR A DISTANCE OF 25 FT. EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THE ESTIMATED QUANTITY IS LESS THAN 500 CUBIC YARDS. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION.

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

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

THIS BRIDGE SHALL BE CONSTRUCTED USING TOP-DOWN CONSTRUCTION METHODS. THE USE OF A TEMPORARY CAUSEWAY OR WORK BRIDGE IS NOT PERMITTED.

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.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

NORTH CAROLINA PROFESSIONAL SEAL 20211 ENGINEER THOMAS G. PAYNE
10/22/07

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	PDA TESTING	PDA ASSISTANCE	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	HP 12 X 53 STEEL PILES		PP 18 X 0.50 GALVANIZED STEEL PILES		PIPE PILE PLATES	PILE REDRIVES	CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 2'-3" PRESTRESSED CONCRETE BOX BEAMS	
	LUMP SUM	EACH	EACH	LUMP SUM	CU.YDS.	LUMP SUM	LBS.	NO.	LIN.FT.	NO.	LIN.FT.	EACH	EACH	LIN.FT.	TONS	SQ.YDS.	LUMP SUM	NO.	LIN.FT.
SUPERSTRUCTURE	LUMP SUM			LUMP SUM		LUMP SUM								435.50			LUMP SUM	44	2391.14
END BENT #1					14.8		2393	7	350						341	379			
BENT #1					11.4		2344			7	350	7							
BENT #2					11.4		2344			7	350	7							
BENT #3					11.4		2344			7	350	7							
END BENT #2					14.8		2393	7	350						457	508			
TOTAL	LUMP SUM	2	2	LUMP SUM	63.8	LUMP SUM	11818	14	700	21	1050	21	20	435.50	798	887	LUMP SUM	44	2391.14

PROJECT NO. B-4022
PITT/BEAUFORT COUNTY
STATION: 17+34.00-L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON SR 1414 & SR 1556 BETWEEN SR 1550 & SR 1001 OVER TRANTERS CREEK

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

DRAWN BY : S.H. SOCKWELL/K.B. DATE : 2/24/06
CHECKED BY : T.G. PAYNE DATE : 09/07

19-OCT-2007 15:29
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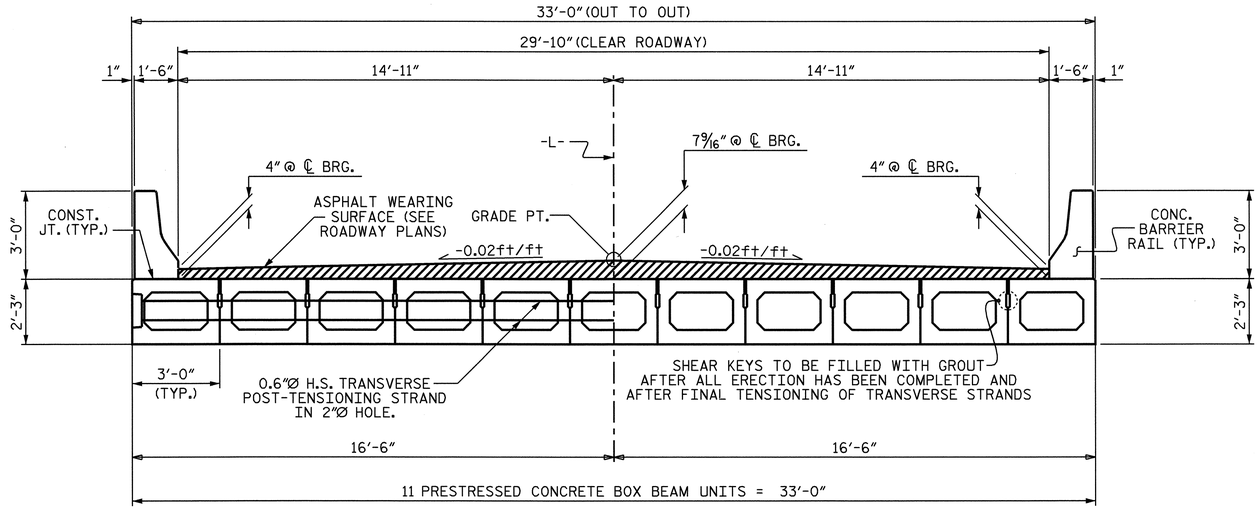
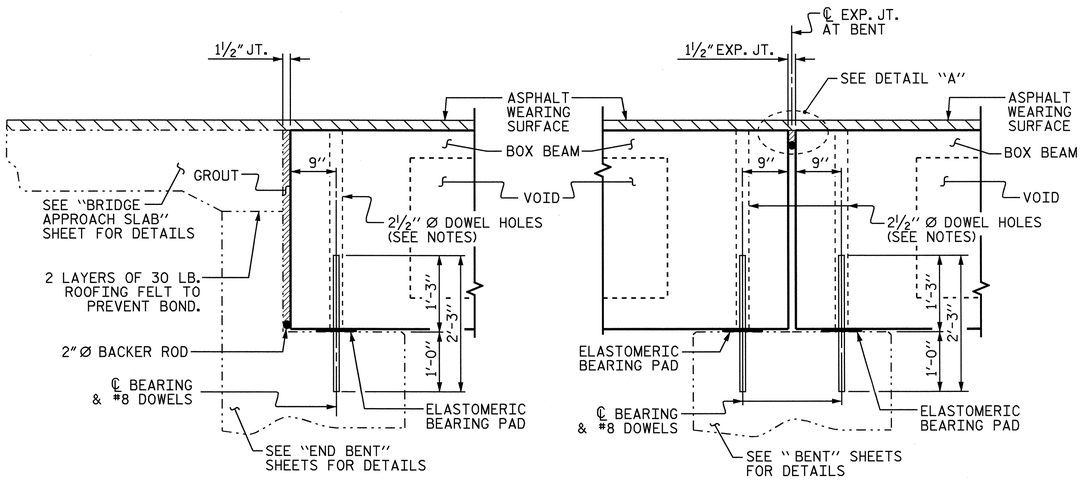
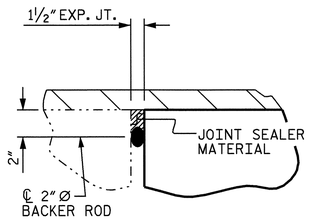


TYPICAL SECTION



SECTION AT END BENT

SECTION AT BENT



DETAIL "A"

NOTES

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

ALL REINFORCING STEEL CAST WITH THE BOX BEAM SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE BOX BEAMS.

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

THE 2½"Ø DOWEL HOLES AT FIXED ENDS OF BOX BEAM SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT. THE 2½"Ø DOWEL HOLES AT EXPANSION ENDS OF BOX BEAM SECTIONS SHALL BE FILLED WITH JOINT SEALER MATERIAL TO 1½" ABOVE THE TOP OF DOWELS AND THEN FILLED WITH GROUT.

THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF TYPE SL LOW MODULUS SILICONE SEALANT. THE 2"Ø BACKER ROD SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE BOX BEAM UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 5000 PSI FOR SPANS A & D AND 6200 PSI FOR SPANS B & C.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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

APPLY EPOXY PROTECTIVE COATING TO BOX BEAM UNIT ENDS.

VERTICAL GROOVED CONTRACTION JOINTS, ½" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A VERTICAL CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

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

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

PROJECT NO. B-4022

PITT/BEAUFORT COUNTY

STATION: 17+34.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

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

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

NORTH CAROLINA PROFESSIONAL SEAL 20211 ENGINEER THOMAS G. PAYNE
10/23/07

ASSEMBLED BY : S.H. SOCKWELL/K.B. DATE : 8/18/05	
CHECKED BY : J.P. ADAMS DATE : 8/19/05	
DRAWN BY : TLA 5/05	ADDED 7/11/05R
CHECKED BY : GM 6/05	REV. 5/1/06 TLA/GM

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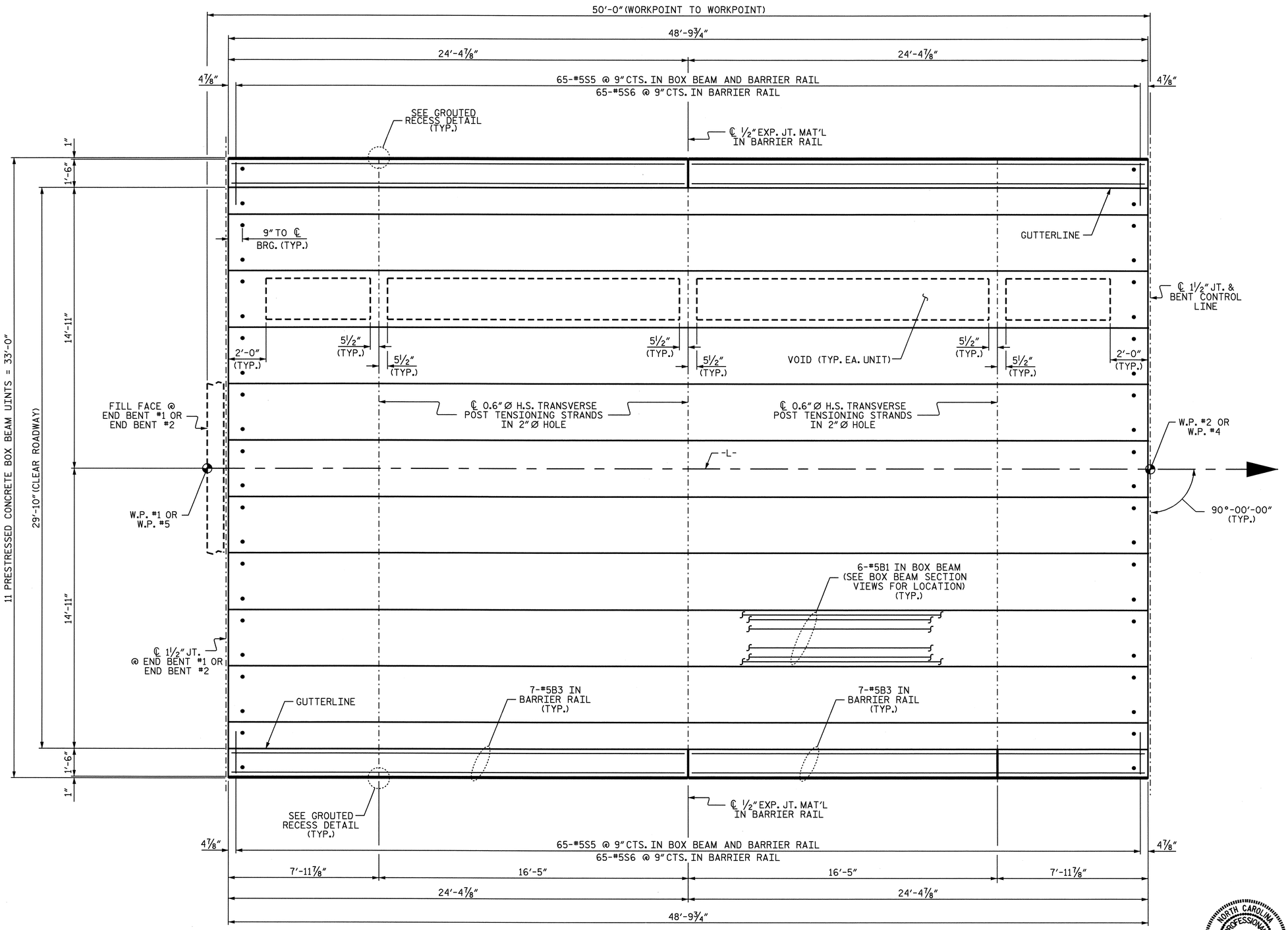

PLAN OF SPAN A OR SPAN D

SPAN A SHOWN, SPAN D SIMILAR.

DRAWN BY : S.H. SOCKWELL DATE : 8/18/05
CHECKED BY : J.P. ADAMS DATE : 8/19/05

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PROJECT NO. B-4022
PITT/BEAUFORT COUNTY
STATION: 17+34.00 -L-

SHEET 1 OF 2

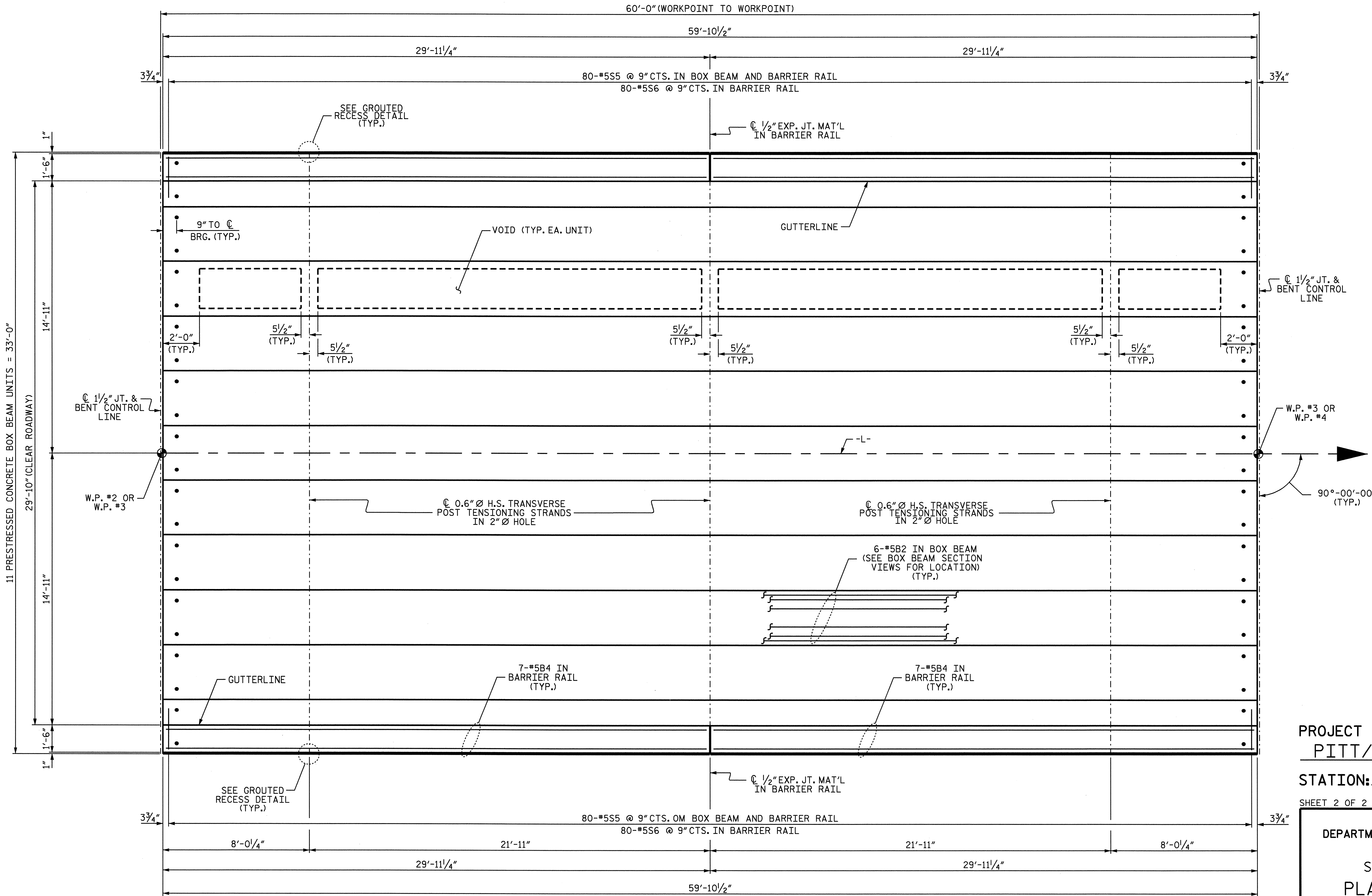
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPAN A OR SPAN D

NORTH CAROLINA PROFESSIONAL SEAL 20211 ENGINEER THOMAS G. CHUNE
12/5/07

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



PLAN OF SPAN B OR SPAN C

NORTH CAROLINA PROFESSIONAL SEAL 20211 ENGINEER THOMAS E. PAYNE 12/5/07

PROJECT NO. B-4022

PITT/BEAUFORT COUNTY

STATION: 17+34.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPAN B OR SPAN C

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

DRAWN BY : S.H. SOCKWELL DATE : 8/18/05
CHECKED BY : J.P. ADAMS DATE : 8/19/05

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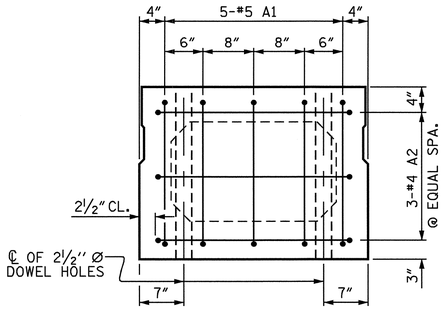
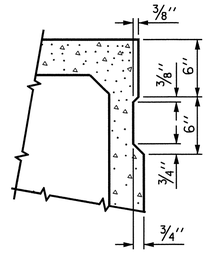


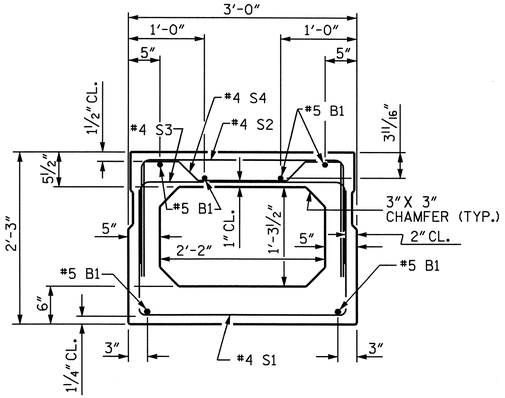
END ELEVATION

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



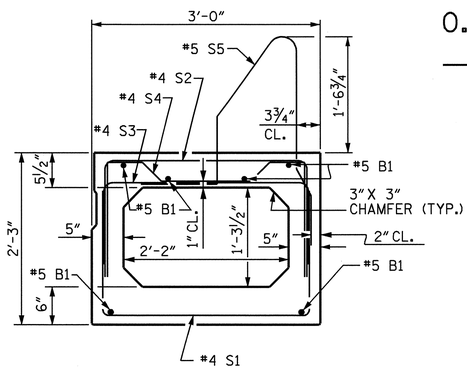
SHEAR KEY DETAIL

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



INTERIOR BOX BEAM SECTION

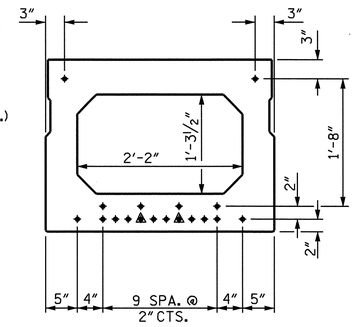
(STRAND LAYOUT NOT SHOWN)



EXTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)

0.6" Ø LOW RELAXATION STRAND LAYOUT



TYPICAL STRAND LOCATION

(18 STRANDS REQUIRED)

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

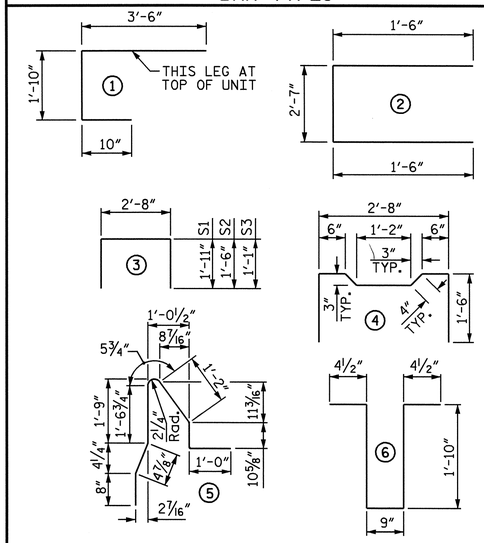
DEBONDING LEGEND

- ● FULLY BONDED STRANDS
- ◬ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER

BOND SHALL BE BROKEN ON STRANDS AS SHOWN FOR THE SPECIFIED LENGTH FROM EACH END OF THE BOX BEAM. SEE STANDARD SPECIFICATION ARTICLE 1078-7.

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

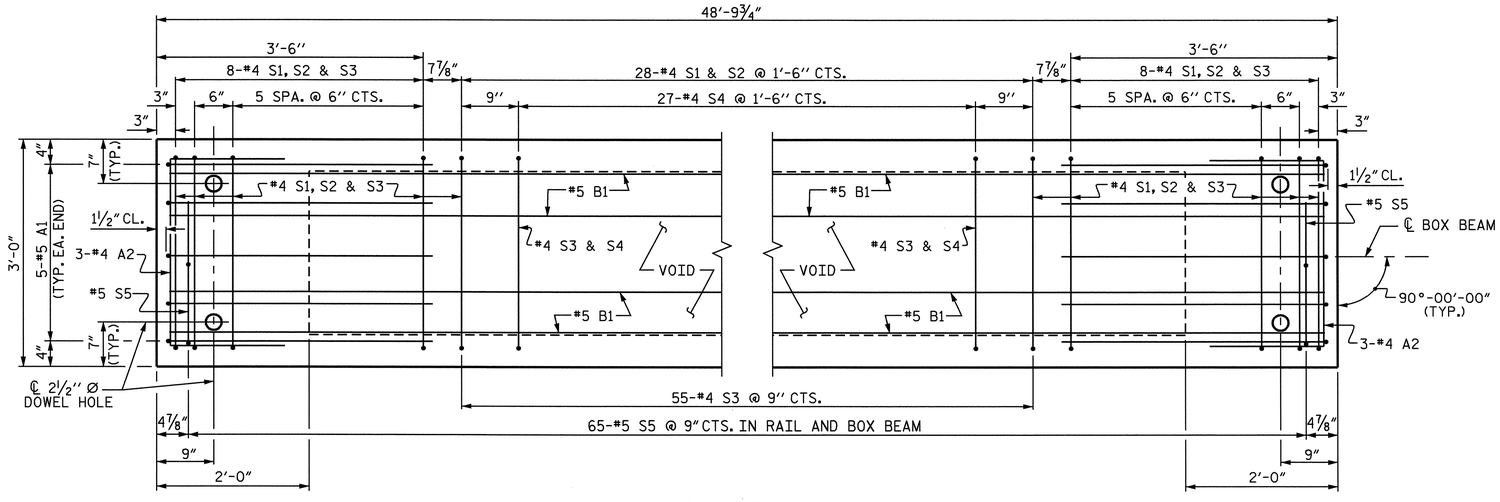
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR ONE BOX BEAM SECTION

				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
A1	10	#5	1	6'-2"	64	6'-2"	64
A2	18	#4	2	5'-7"	67	5'-7"	67
B1	6	#5	STR	48'-5"	303	48'-5"	303
K1	9	#4	6	5'-2"	31	5'-2"	31
K2	6	#4	STR	2'-7"	10	2'-7"	10
S1	44	#4	3	6'-6"	191	6'-6"	191
S2	44	#4	3	5'-8"	167	5'-8"	167
S3	71	#4	3	4'-10"	229	4'-10"	229
S4	27	#4	4	5'-10"	105	5'-10"	105
✳ S5	65	#5	5	6'-2"	418	--	--
REINFORCING STEEL					1167 LBS.		1167 LBS.
✳ EPOXY COATED REINF. STEEL					418 LBS.		
6300 P.S.I. CONCRETE					8.0 CU. YDS.		7.9 CU. YDS.
0.6" Ø L.R. STRANDS					No. 18		No. 18



PLAN OF BOX BEAM

EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S5 BARS.
FOR LOCATION OF DIAPHRAGMS, SEE PLAN OF SPANS.
FOR REINFORCING STEEL IN DIAPHRAGMS, SEE DIAPHRAGM DETAILS, STD. NO. PCBB3.

PROJECT NO. B-4022

PITT/BEAUFORT COUNTY

STATION: 17+34.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
3'-0" X 2'-3"
PRESTRESSED CONCRETE
BOX BEAM UNIT
SPAN A & SPAN D

NORTH CAROLINA PROFESSIONAL SEAL 20211 ENGINEER THOMAS B. PAYNE
10/23/07

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			25

ASSEMBLED BY : S.H. SOCKWELL/K.B.	DATE : 8/18/05
CHECKED BY : J.P. ADAMS	DATE : 8/19/05
DRAWN BY : TLA 5/05	ADDED 7/11/05
CHECKED BY : GM 6/05	REV. 5/1/06 TLA/GM

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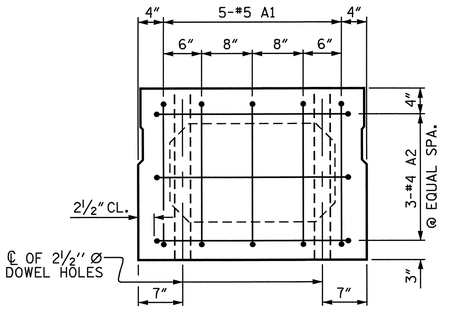
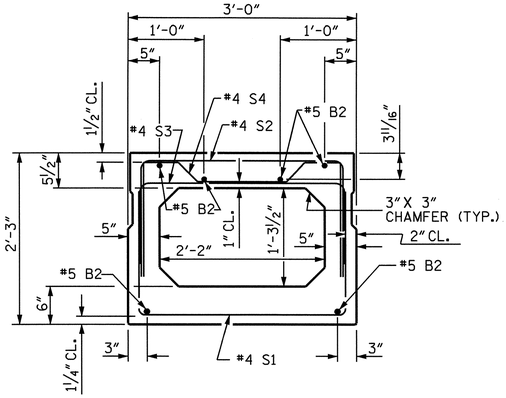
klayne

STD. NO. PCBB2



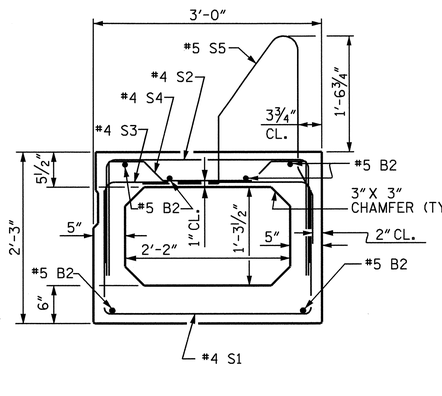
END ELEVATION

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



INTERIOR BOX BEAM SECTION

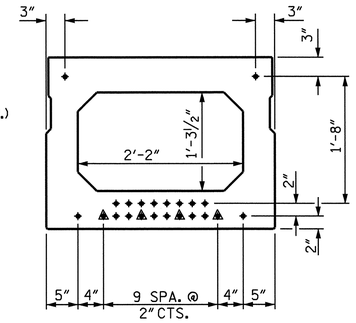
(STRAND LAYOUT NOT SHOWN)



EXTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)

0.6" Ø LOW RELAXATION STRAND LAYOUT



TYPICAL STRAND LOCATION

(22 STRANDS REQUIRED)

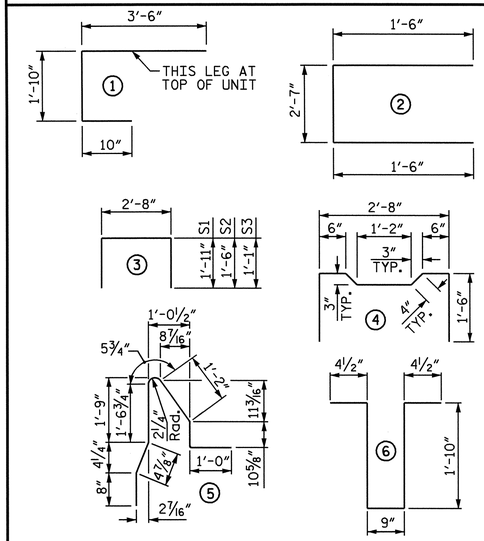
(INTERIOR BOX BEAM SECTION SHOWN-EXTERIOR SECTION SIMILAR EXCEPT SHEAR KEY LOCATION)

DEBONDING LEGEND

- ● FULLY BONDED STRANDS
- ◬ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER

BOND SHALL BE BROKEN ON STRANDS AS SHOWN FOR THE SPECIFIED LENGTH FROM EACH END OF THE BOX BEAM. SEE STANDARD SPECIFICATION ARTICLE 1078-7.

BAR TYPES



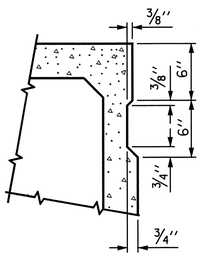
ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR ONE BOX BEAM SECTION

				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
A1	10	#5	1	6'-2"	64	6'-2"	64
A2	18	#4	2	5'-7"	67	5'-7"	67
B2	6	#5	STR	59'-6"	372	59'-6"	372
K1	9	#4	6	5'-2"	31	5'-2"	31
K2	6	#4	STR	2'-7"	10	2'-7"	10
S1	51	#4	3	6'-6"	221	6'-6"	221
S2	51	#4	3	5'-8"	193	5'-8"	193
S3	85	#4	3	4'-10"	274	4'-10"	274
S4	34	#4	4	5'-10"	132	5'-10"	132
✳ S5	80	#5	5	6'-2"	515	--	--
REINFORCING STEEL					1364 LBS.		1364 LBS.
✳ EPOXY COATED REINF. STEEL					515 LBS.		
8000 P.S.I. CONCRETE					9.6 CU. YDS.		9.5 CU. YDS.
0.6" Ø L.R. STRANDS					No. 22		No. 22

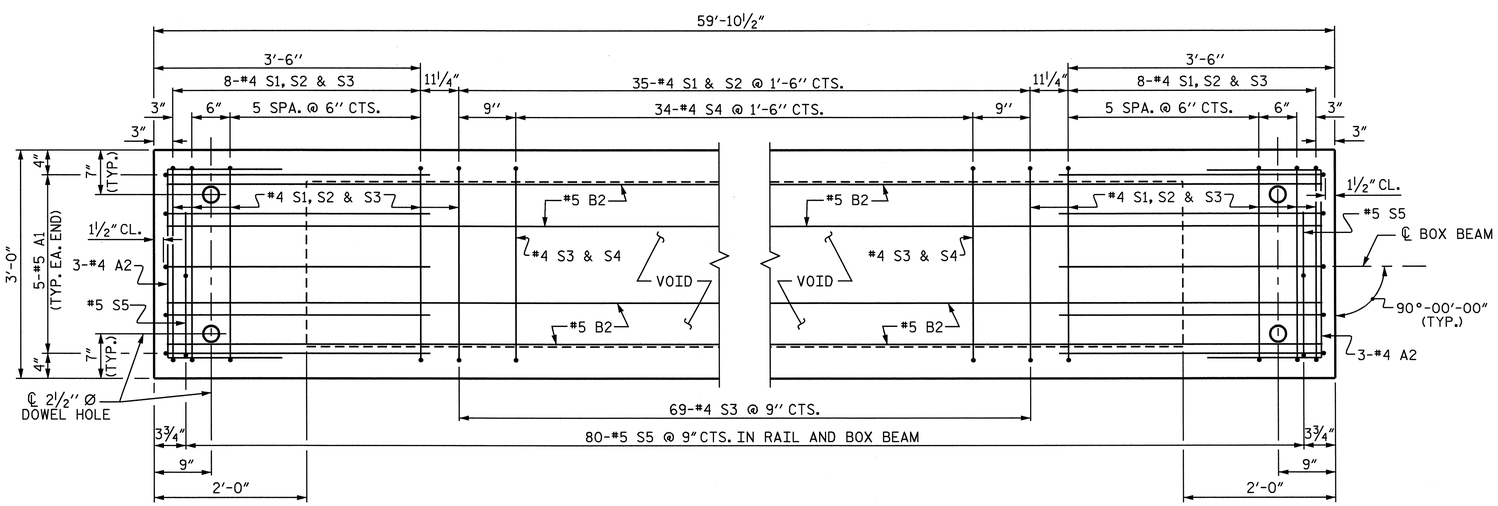
GRADE 270 STRANDS

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



SHEAR KEY DETAIL

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



PLAN OF BOX BEAM

EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S5 BARS.
FOR LOCATION OF DIAPHRAGMS, SEE PLAN OF SPANS.
FOR REINFORCING STEEL IN DIAPHRAGMS, SEE DIAPHRAGM DETAILS, STD. NO. PCBB3.

PROJECT NO. B-4022
PITT/BEAUFORT COUNTY
STATION: 17+34.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD 3'-0" X 2'-3" PRESTRESSED CONCRETE BOX BEAM UNIT SPAN B & SPAN C

NORTH CAROLINA PROFESSIONAL SEAL 20211 ENGINEER THOMAS G. LAYNE
10/23/07

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			25

STD. NO. PCBB2

ASSEMBLED BY : S.H. SOCKWELL/K.B. DATE : 8/18/05
CHECKED BY : J.P. ADAMS DATE : 8/19/05

DRAWN BY : TLA 5/05
CHECKED BY : GM 6/05

ADDED 7/11/05
REV. 5/1/06 TLA/GM

19-OCT-2007 15:29
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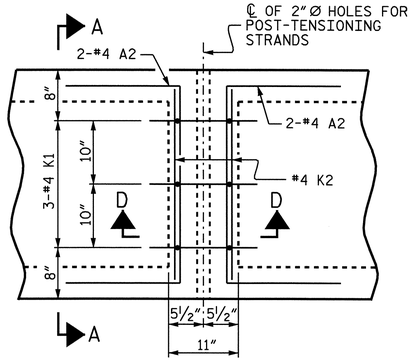
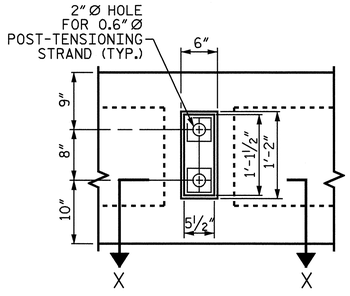
klayne

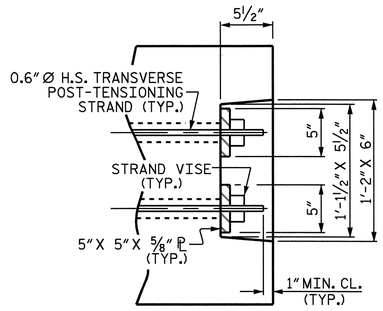


PLAN

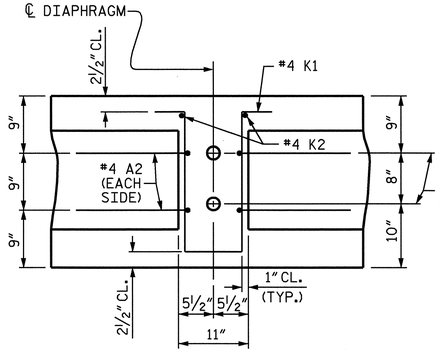


VIEW Y-Y

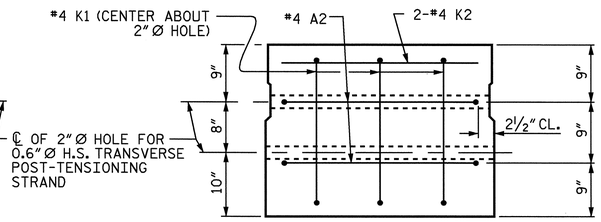
SHOWING ELEVATION VIEW OF GROUTED RECESS



DETAIL "C"

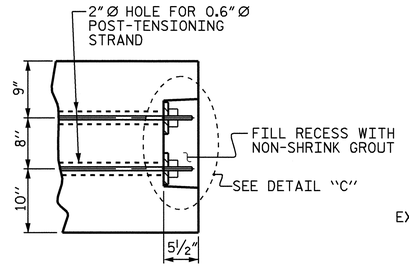


SECTION D-D

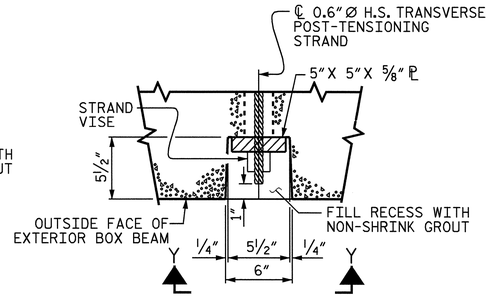


SECTION A-A

VOIDS NOT SHOWN



PART SECTION AT RECESS

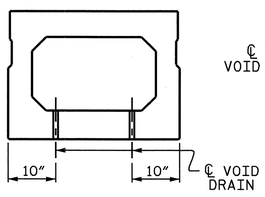


SECTION X-X

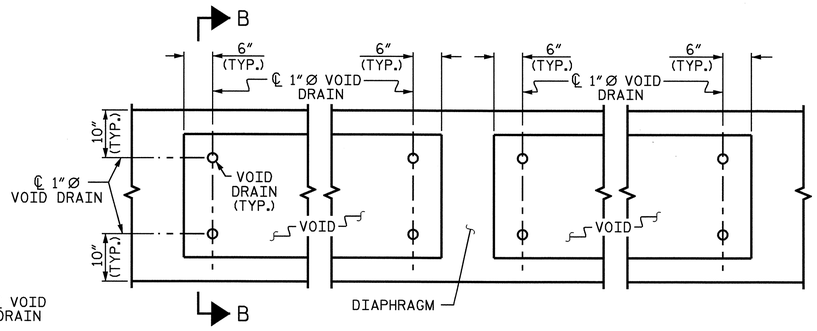
SHOWING PLAN VIEW OF GROUTED RECESS

DOUBLE DIAPHRAGM DETAILS

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



SECTION B-B



PART PLAN

VOID DRAIN DETAILS

(DIMENSIONS SHOWN ARE TYPICAL FOR EACH VOID)

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

DEAD LOAD DEFLECTION AND CAMBER				
	3'-0" x 2'-3" BOX BEAM			
	0.6"Ø L.R. STRAND			
	SPAN "A"	SPAN "B"	SPAN "C"	SPAN "D"
CAMBER (BEAM ALONE IN PLACE) ↑	1 15/16"	3"	3"	1 15/16"
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD** ↓	3/16"	3/8"	3/8"	3/16"
FINAL CAMBER ↑	1¾"	2⅝"	2⅝"	1¾"

** INCLUDES FUTURE WEARING SURFACE

PROJECT NO. B-4022

PITT/BEAUFORT COUNTY

STATION: 17+34.00 -L-

ASSEMBLED BY : S.H. SOCKWELL/K.B. DATE : 8/18/05
CHECKED BY : T.G. PAYNE DATE : 09/07

DRAWN BY : TLA 5/05
CHECKED BY : GM 6/05

ADDED 7/11/05
REV. 5/1/06 TLA/GM

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NORTH CAROLINA PROFESSIONAL SEAL 20211 ENGINEER THOMAS G. PAYNE
10/23/07

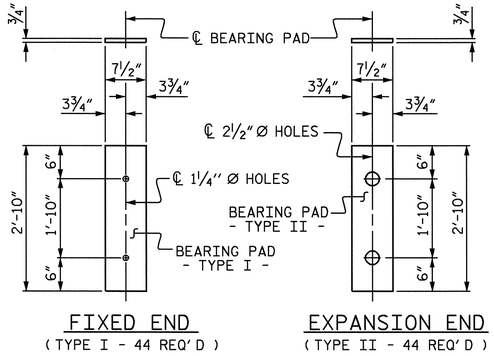
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

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

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

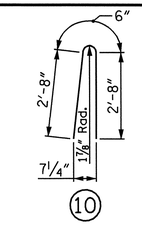
STD. NO. PCBB3



ELASTOMERIC BEARING DETAILS

60 DUROMETER HARDNESS

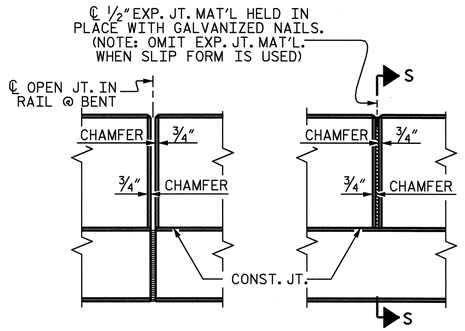
BOX BEAM UNITS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH (FEET)
SPAN A			
EXTERIOR B.B.	2	48'-9 3/4"	97.63
INTERIOR B.B.	9	48'-9 3/4"	439.31
SPAN B			
EXTERIOR B.B.	2	59'-10 1/2"	119.75
INTERIOR B.B.	9	59'-10 1/2"	538.88
SPAN C			
EXTERIOR B.B.	2	59'-10 1/2"	119.75
INTERIOR B.B.	9	59'-10 1/2"	538.88
SPAN D			
EXTERIOR B.B.	2	48'-9 3/4"	97.63
INTERIOR B.B.	9	48'-9 3/4"	439.31
TOTAL	44	———	2391.14



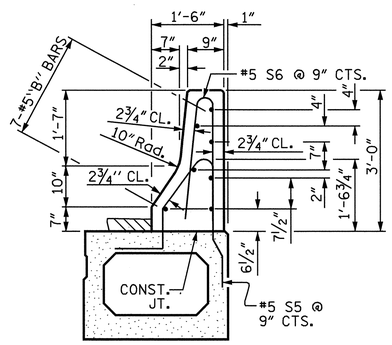
BAR TYPE

BAR DIMENSIONS ARE OUT TO OUT

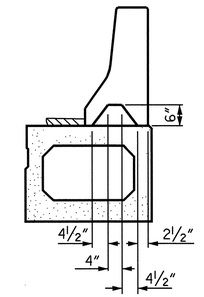
BILL OF MATERIAL FOR CONCRETE BARRIER RAIL										
BAR	BARS PER SPAN					TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
		SPAN A	SPAN B	SPAN C	SPAN D					
✳B3		28			28	56	#5	STR	24'-0"	1402
✳B4			28	28		56	#5	STR	29'-7"	1728
✳S6		130	160	160	130	580	#5	10	5'-10"	3529
✳EPOXY COATED REINFORCING STEEL LBS.										6659
CLASS AA CONCRETE CU.YDS.										51.7
TOTAL LIN. FT. OF CONCRETE BARRIER RAIL										435.50



ELEVATION AT EXPANSION JOINTS



SECTION THRU RAIL



SECTION S-S

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

BARRIER RAIL DETAILS

PROJECT NO. B-4022

PITT/BEAUFORT COUNTY

STATION: 17+34.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

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

NORTH CAROLINA PROFESSIONAL SEAL 20211 ENGINEER THOMAS S. PAYNE
10/23/07

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

ASSEMBLED BY : S.H. SOCKWELL/K.B.	DATE : 8/18/05
CHECKED BY : J.P. ADAMS	DATE : 8/19/05
DRAWN BY : TLA 5/05	ADDED 7/11/05R
CHECKED BY : GM 6/05	REV. 5/1/06 TLA/GM

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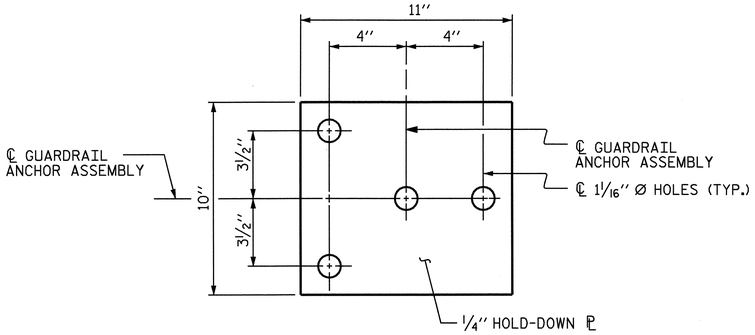
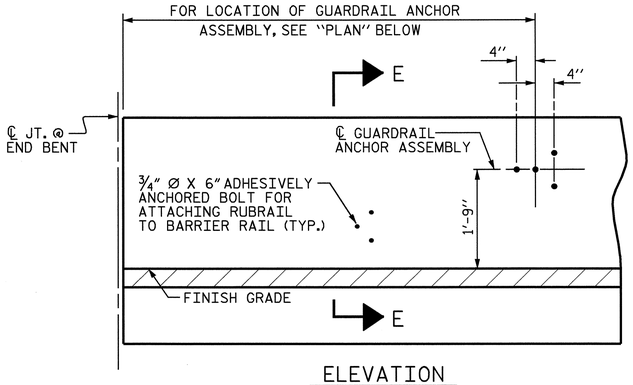
klayne

STD. NO. PCBB8

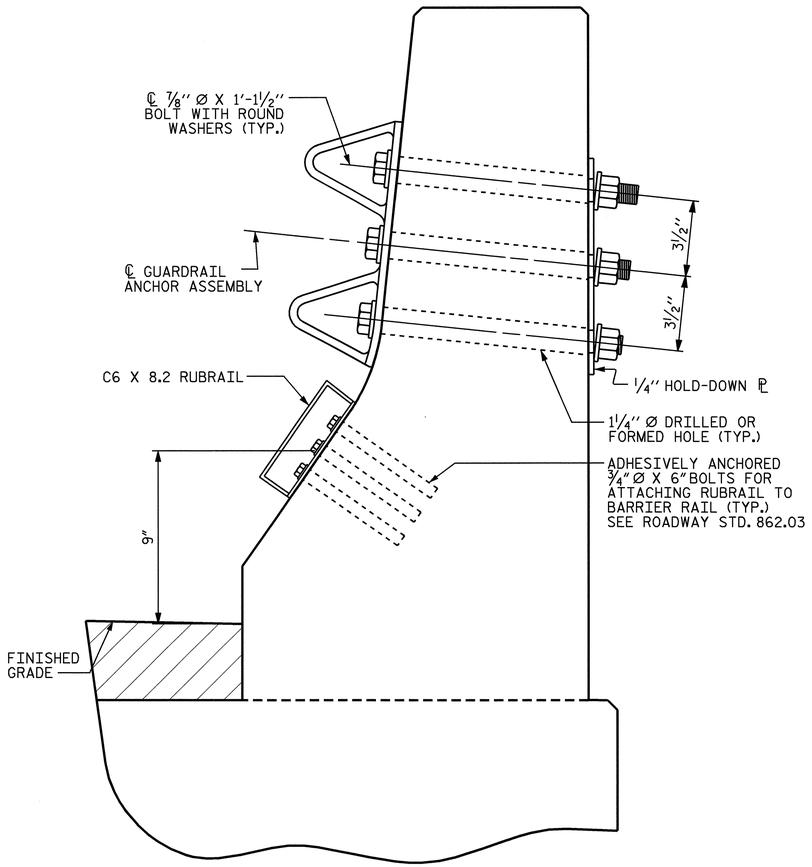


PLAN

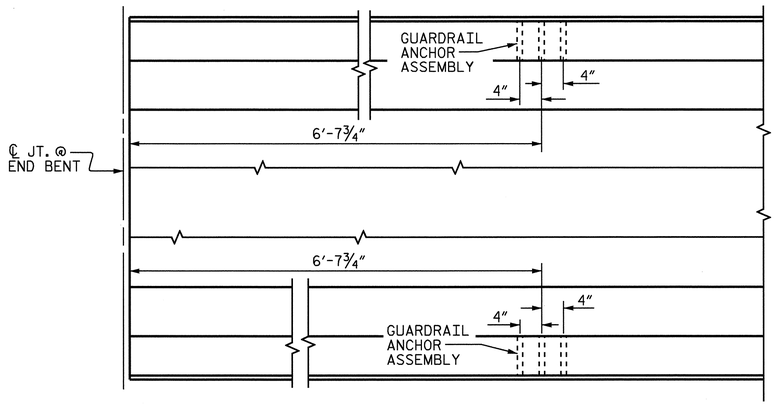


ELEVATION

FOR LOCATION OF RUBRAIL, SEE ROADWAY STD. 862.03



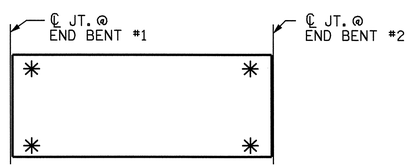
SECTION E-E



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

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



SKETCH SHOWING POINTS OF ATTACHMENTS

✳ DENOTES GUARDRAIL ANCHOR ASSEMBLY

NOTES

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

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 CONCRETE BARRIER RAIL.

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.

THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 3/4''Ø X 6''BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4''Ø BOLT IS 10 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS. SEE ROADWAY STANDARD 862.03 FOR DETAILS AND LOCATION OF THE RUBRAIL.

GUARDRAIL ANCHOR ASSEMBLY DETAILS

PROJECT NO. B-4022

PITT/BEAUFORT COUNTY

STATION: 17+34.00 -L-

ASSEMBLED BY : M.K. BEARD	DATE : 07/07
CHECKED BY : T.G. PAYNE	DATE : 7/23/07
DRAWN BY : TLA 5/06	ADDED 5/1/06R KMM/GM
CHECKED BY : GM 5/06	

19-OCT-2007 15:28
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klayne

NORTH CAROLINA PROFESSIONAL SEAL 20211 ENGINEER THOMAS G. PAYNE
10/23/07

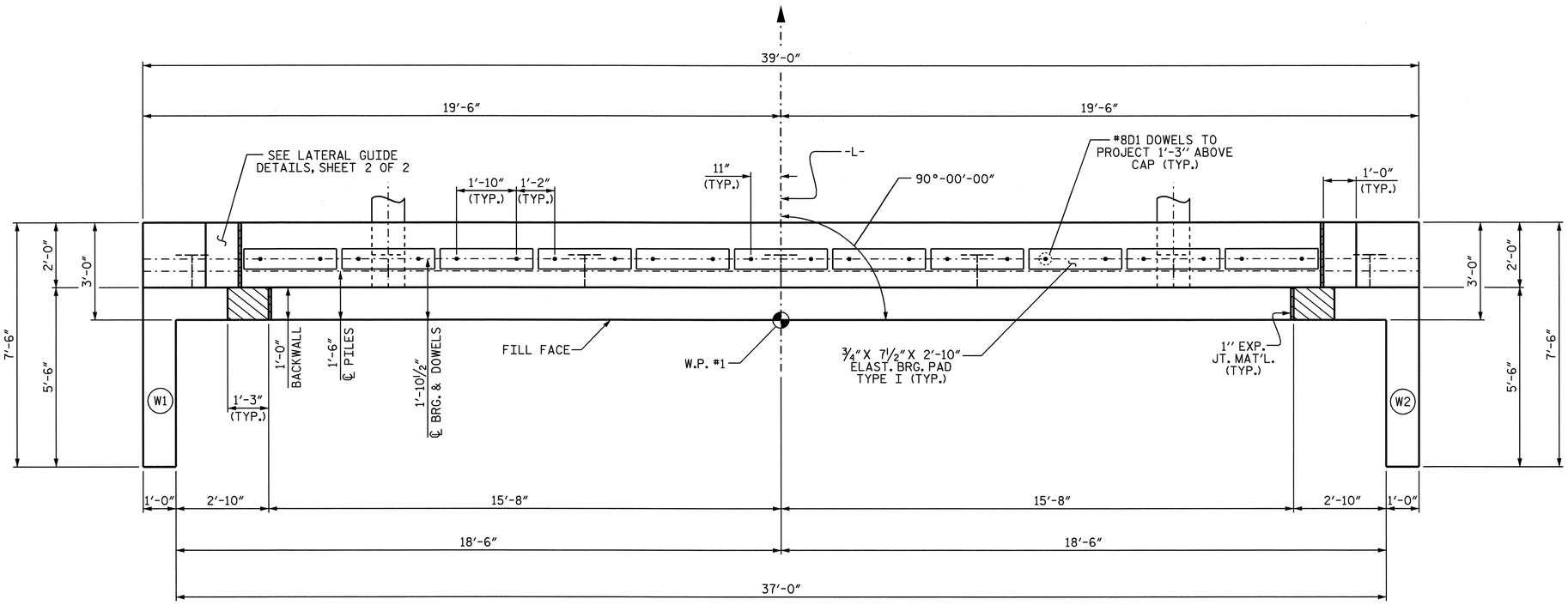
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

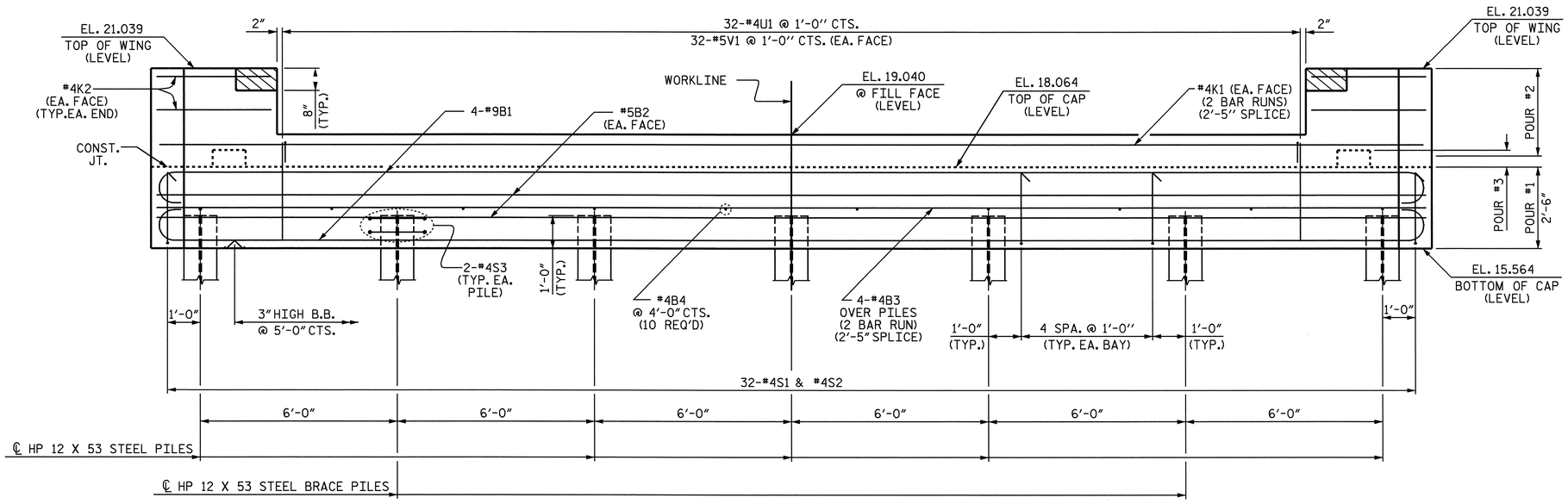
GUARDRAIL ANCHORAGE FOR BARRIER RAIL

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

STD. NO. GRA2



PLAN



ELEVATION

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

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

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

THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER PRESTRESSED BOX BEAMS ARE PLACED.

PROJECT NO. B-4022

PITT/BEAUFORT COUNTY

STATION: 17+34.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

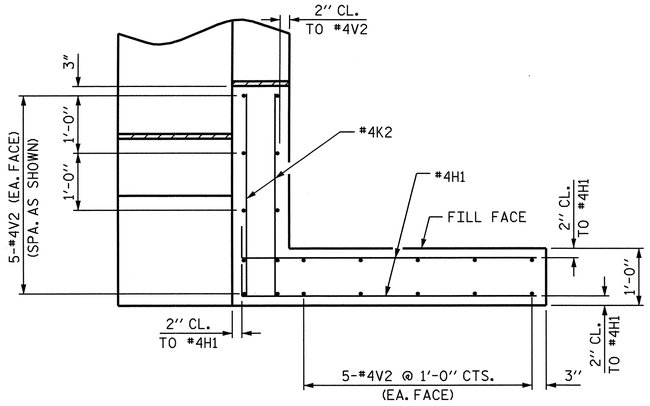
END BENT #1

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

NORTH CAROLINA PROFESSIONAL SEAL 20211 ENGINEER THOMAS G. PAYNE
10/23/07

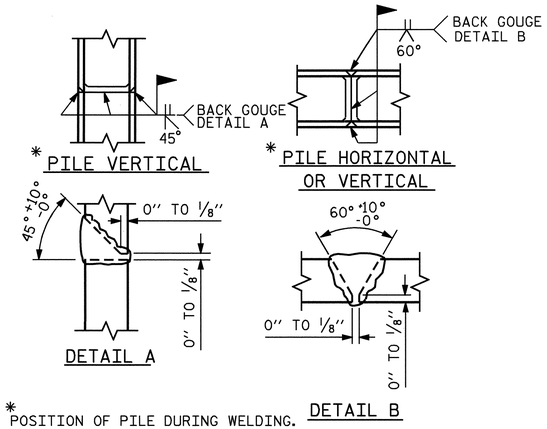
DRAWN BY : J.P. ADAMS/K.B. DATE : 8/16/05
CHECKED BY : S.H. SOCKWELL DATE : 9/2/05

19-OCT-2007 15:28
E:\Structures\b4022\plans\B-4022_sd_Ebts.dgn
klayne



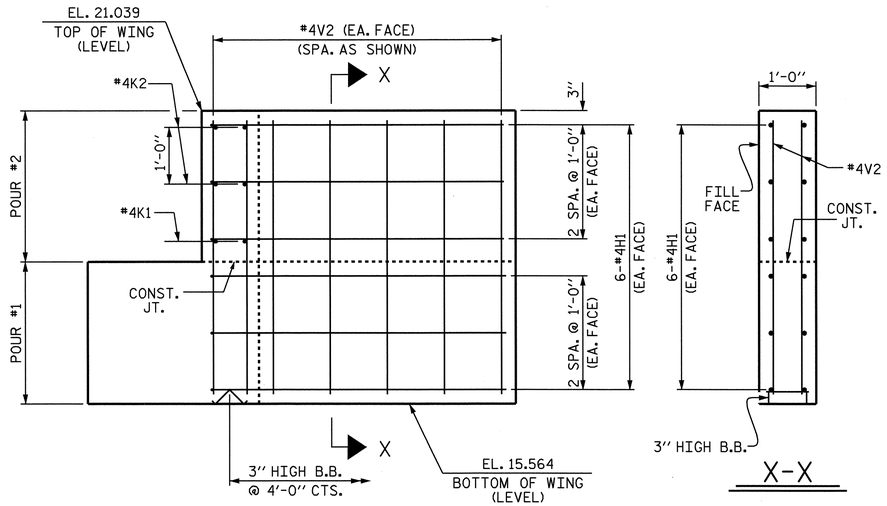
PLAN OF WING

LEFT WING (W1) SHOWN, RIGHT WING (W2) SIMILAR.



* POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

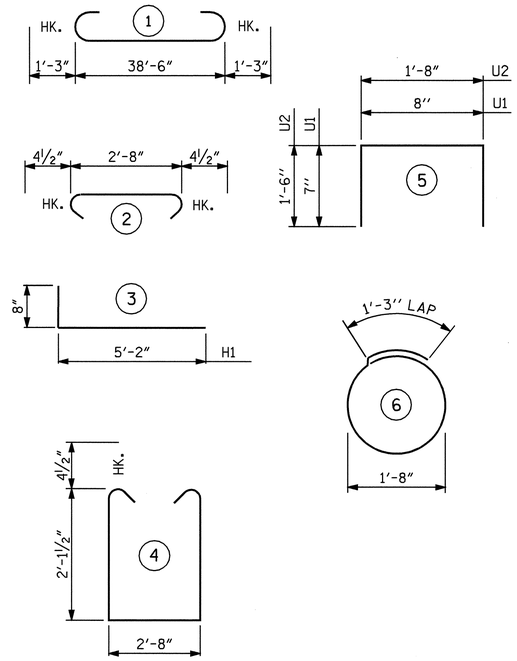


ELEVATION OF WING

LEFT WING (W1) SHOWN, RIGHT WING (W2) SIMILAR.

X-X

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT #1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	9	1	41'-0"	1115
B2	4	5	STR	38'-8"	161
B3	8	4	STR	20'-8"	110
B4	10	4	STR	2'-8"	18
D1	22	8	STR	2'-3"	132
H1	24	4	3	5'-10"	94
K1	4	4	STR	20'-8"	55
K2	8	4	STR	3'-6"	19
S1	32	4	4	7'-8"	164
S2	32	4	2	3'-5"	73
S3	14	4	6	6'-6"	61
U1	32	4	5	1'-10"	39
U2	4	4	5	4'-8"	12
V1	64	5	STR	3'-1"	206
V2	40	4	STR	5'-0"	134

REINFORCING STEEL 2393 LBS.

CLASS "A" CONCRETE BREAKDOWN

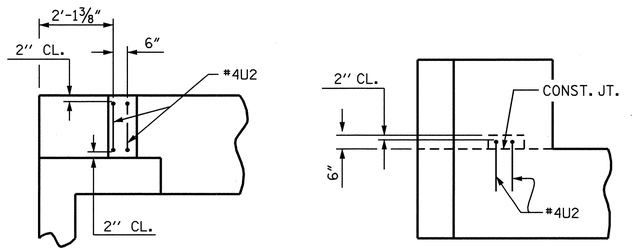
POUR #1 CAP & LOWER PART OF WINGS
CU. YDS. 11.7

POUR #2 UPPER WINGS & BACKWALL
CU. YDS. 3.0

POUR #3 LATERAL GUIDES
CU. YDS. 0.1

CLASS "A" CONCRETE TOTAL
CU. YDS. 14.8

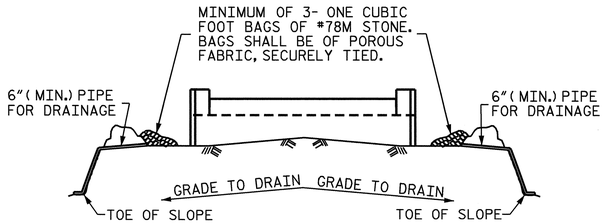
HP 12 X 53 STEEL PILES
NO. 7 350 LIN. FT.



PLAN ELEVATION

LATERAL GUIDE DETAILS

(EACH END SIMILAR)

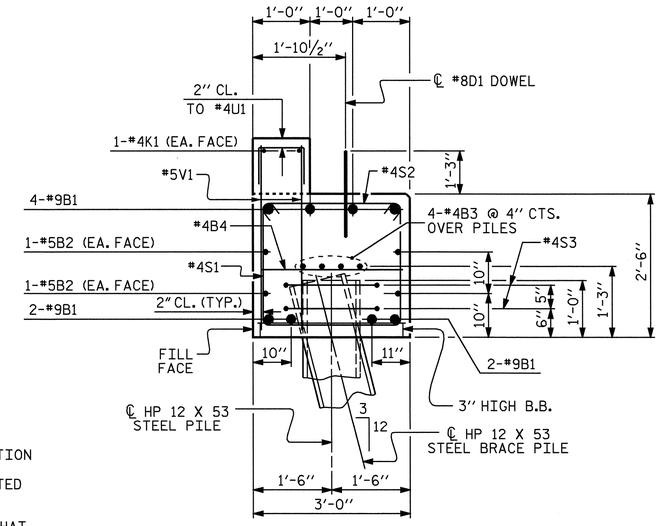


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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



SECTION THRU CAP

NORTH CAROLINA PROFESSIONAL SEAL 20211 ENGINEER THOMAS G. PAYNE (0/23/07

PROJECT NO. B-4022
PITT/BEAUFORT COUNTY
STATION: 17+34.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT #1

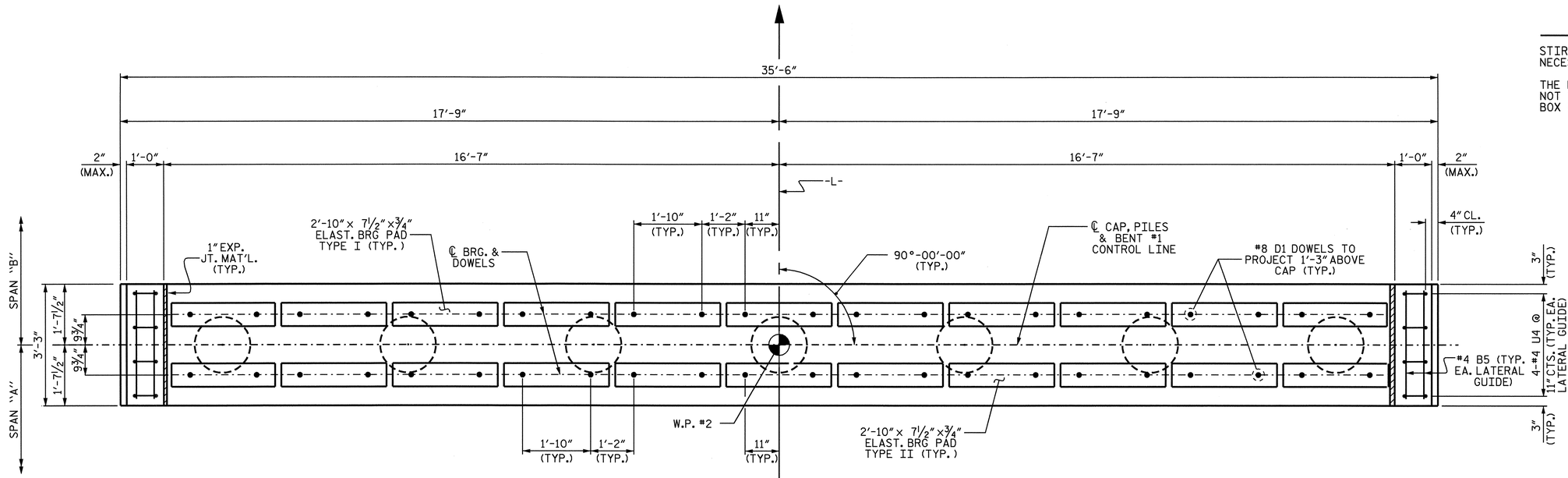
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : J.P. ADAMS/K.B. DATE : 8/17/05
CHECKED BY : S.H. SOCKWELL DATE : 9/2/05

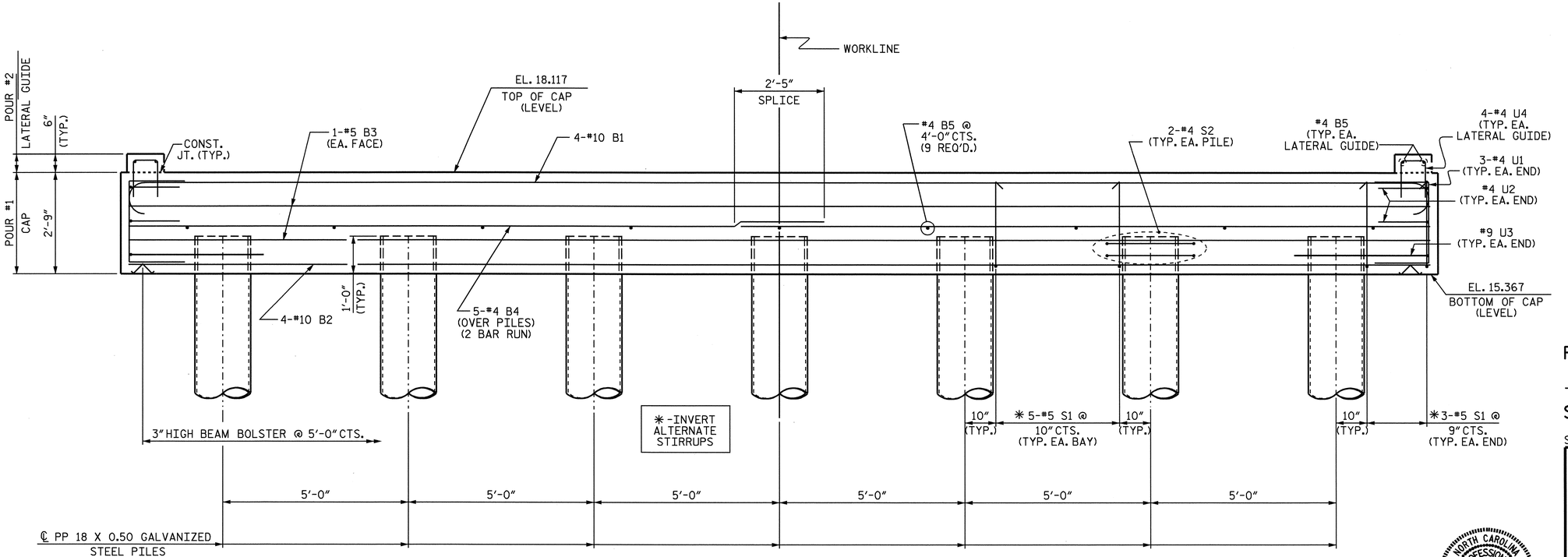
NOTES

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

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



PLAN



ELEVATION

FOR REINFORCING STEEL AND OTHER DETAILS FOR PIPE PILES, SEE "18" STEEL PIPE PILE" SHEET

NORTH CAROLINA PROFESSIONAL SEAL 20211 ENGINEER THOMAS B. PAYNE
10/23/07

PROJECT NO. B-4022

PITT/BEAUFORT COUNTY

STATION: 17+34.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT #1

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

DRAWN BY : S. SOCKWELL/R. E. DATE : 12/06
CHECKED BY : J. P. ADAMS/S. D. DATE : 1/07

19-OCT-2007 15:28
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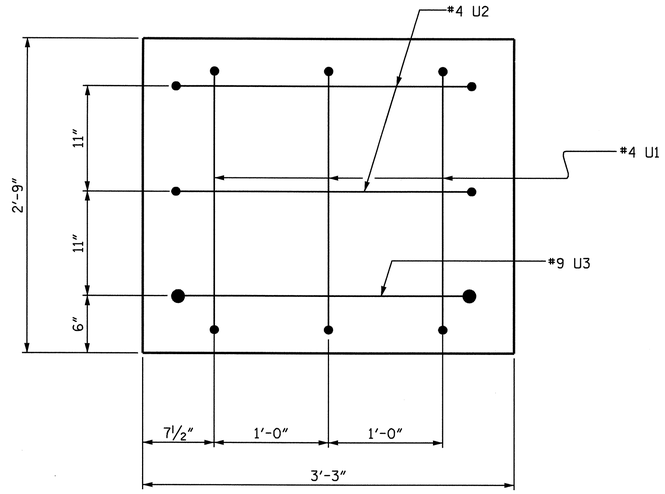
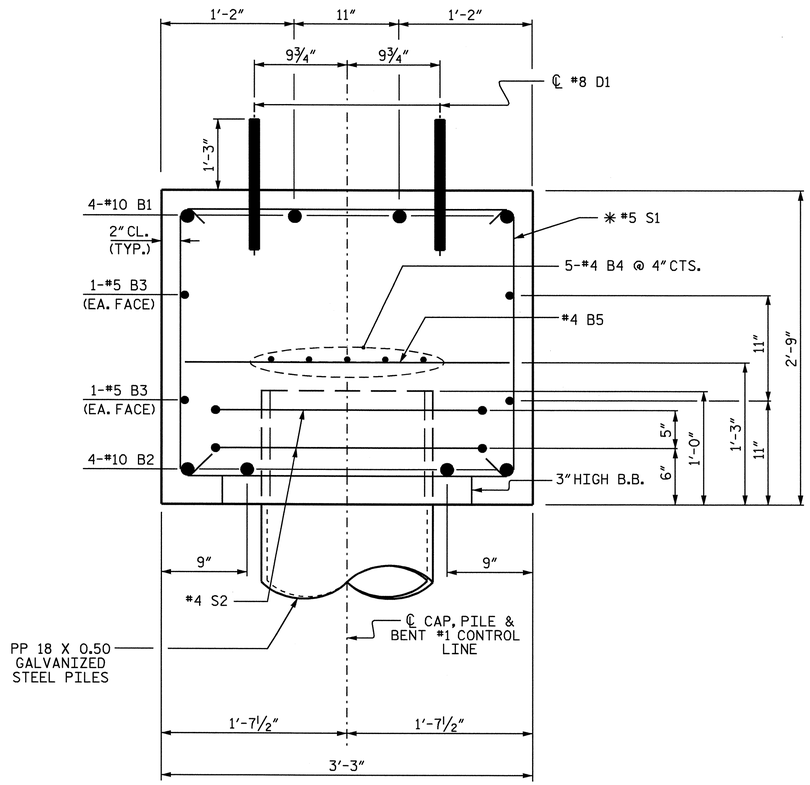
klayne



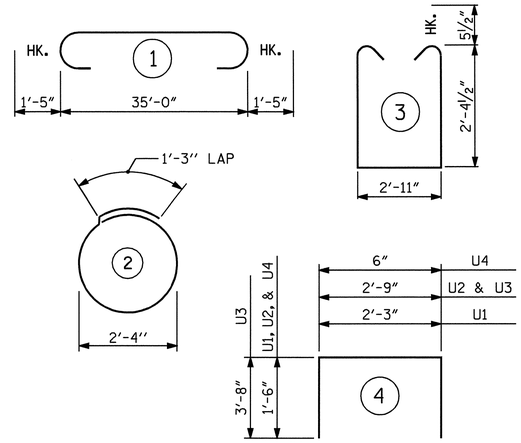
END VIEW



SECTION THRU CAP

✱-INVERT ALTERNATE STIRRUPS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

BENT #1

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	10	#4	STR	18'-10"	126
B5	13	#4	STR	2'-11"	25
D1	44	#8	STR	2'-3"	264
S1	36	#5	3	8'-7"	322
S2	14	#4	2	8'-7"	80
U1	6	#4	4	5'-3"	21
U2	4	#4	4	5'-9"	15
U3	2	#9	4	10'-1"	69
U4	8	#4	4	3'-6"	19

REINFORCING STEEL = 2344 LBS

CLASS "A" CONCRETE

POUR #1 CAP	11.3 yds³
POUR #2 LATERAL GUIDES	.1 yds³
TOTAL	11.4 yds³

PP 18 X 0.50 GALVANIZED STEEL PILES

No. 7	350.0 ft

NOTE: CONCRETE DISPLACED BY PILES HAS BEEN DEDUCTED.

NORTH CAROLINA PROFESSIONAL SEAL 20211 ENGINEER THOMAS E. PAYNE
10/23/07

PROJECT NO. B-4022
PITT/BEAUFORT COUNTY
STATION: 17+34.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT #1

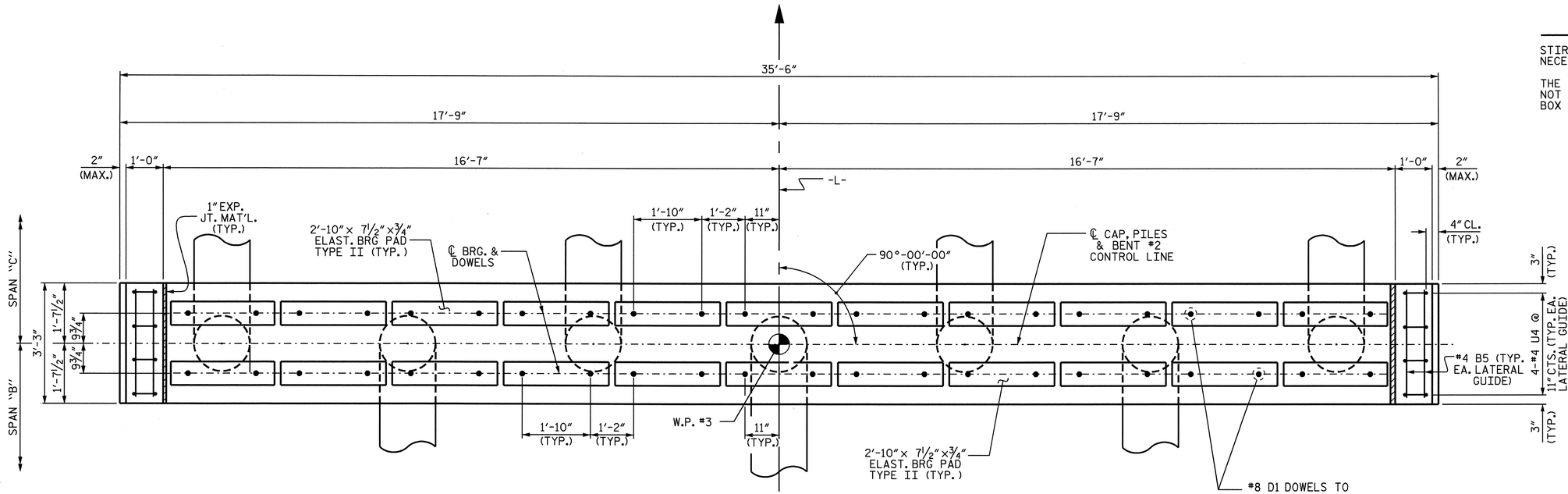
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : S. SOCKWELL/R. E. DATE : 12/06
CHECKED BY : J. P. ADAMS/S. D. DATE : 01/07

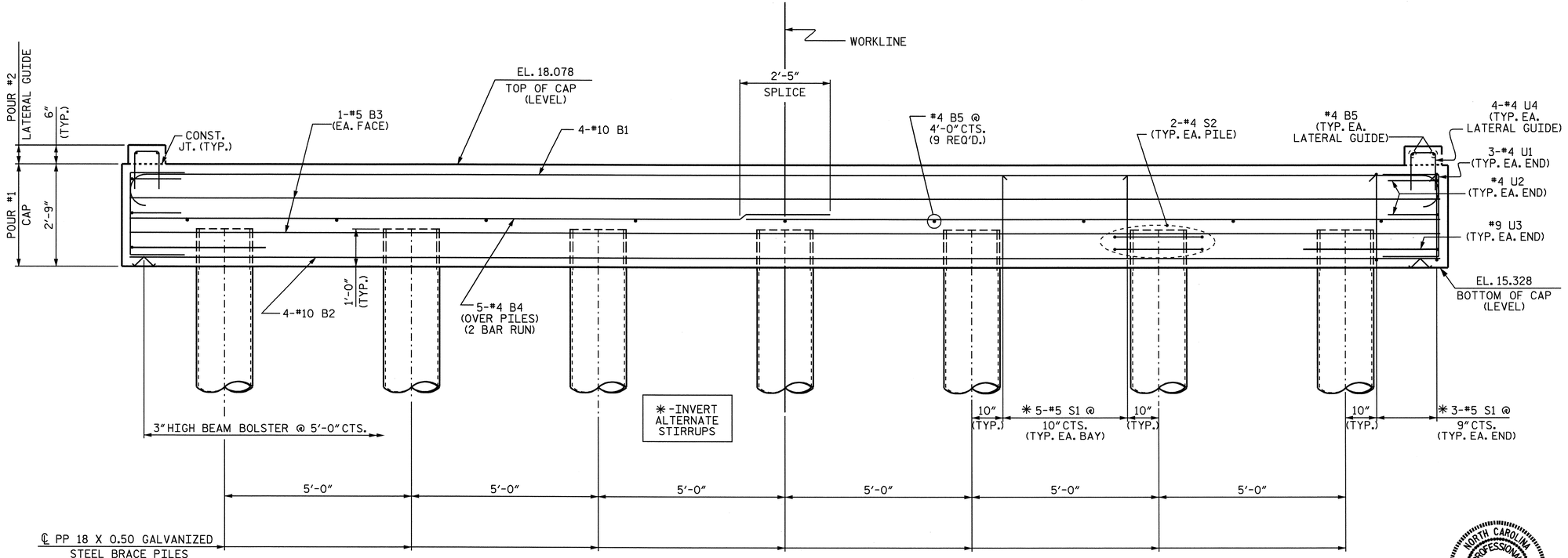
NOTES

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

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



PLAN



ELEVATION

FOR REINFORCING STEEL AND OTHER DETAILS FOR PIPE PILES, SEE "18" STEEL PIPE PILE" SHEET

PROJECT NO. B-4022

PITT/BEAUFORT COUNTY

STATION: 17+34.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT #2

NORTH CAROLINA PROFESSIONAL SEAL 20211 ENGINEER THOMAS G. DAYNE
10/23/07

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

DRAWN BY : S. SOCKWELL/R. E. DATE : 12/06
CHECKED BY : J. P. ADAMS/S. D. DATE : 1/07

19-OCT-2007 15:28
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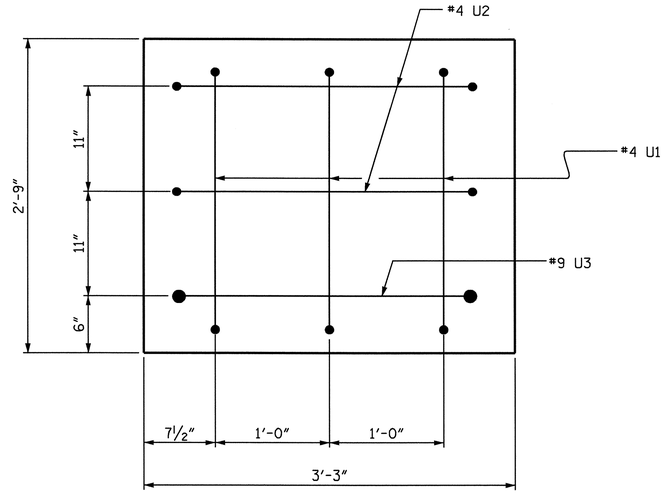
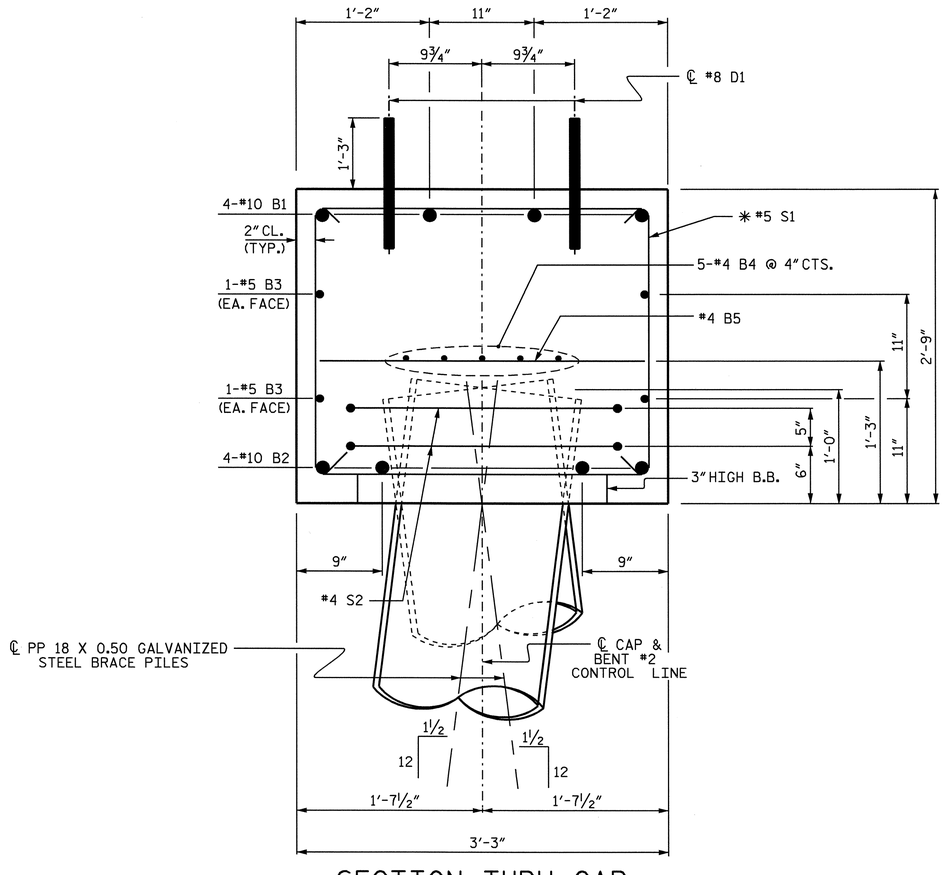
klayne



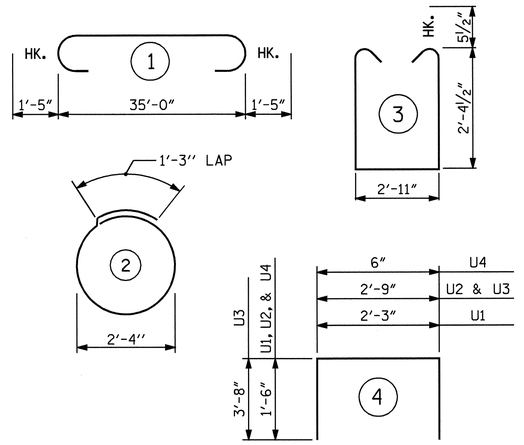
END VIEW



SECTION THRU CAP

*-INVERT ALTERNATE STIRRUPS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

BENT #2

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	10	#4	STR	18'-10"	126
B5	13	#4	STR	2'-11"	25
D1	44	#8	STR	2'-3"	264
S1	36	#5	3	8'-7"	322
S2	14	#4	2	8'-7"	80
U1	6	#4	4	5'-3"	21
U2	4	#4	4	5'-9"	15
U3	2	#9	4	10'-1"	69
U4	8	#4	4	3'-6"	19

REINFORCING STEEL = 2344 LBS

CLASS "A" CONCRETE

POUR #1 CAP 11.3 yds³
POUR #2 LATERAL GUIDES .1 yds³

TOTAL 11.4 yds³

PP 18 X 0.50 GALVANIZED STEEL PILES

No. 7 350.0 ft

NOTE: CONCRETE DISPLACED BY PILES HAS BEEN DEDUCTED.

PROJECT NO. B-4022
PITT/BEAUFORT COUNTY
STATION: 17+34.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT #2

NORTH CAROLINA PROFESSIONAL SEAL 20211 ENGINEER THOMAS G. PAYNE
10/23/07

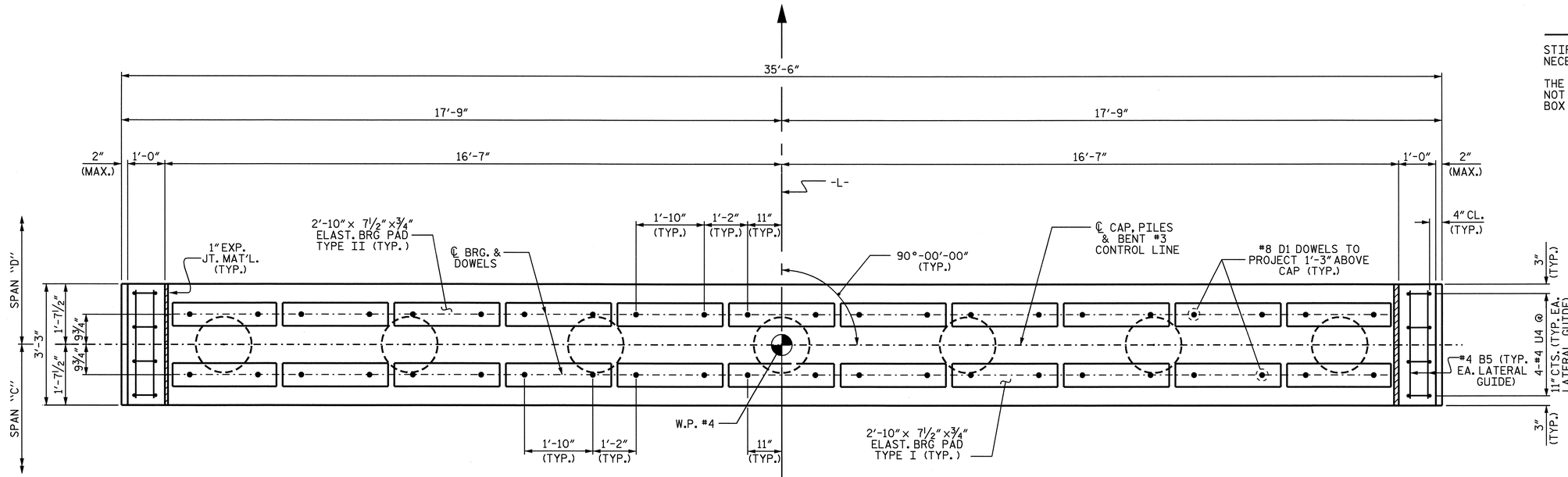
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : S. SOCKWELL/R. E. DATE : 12/06
CHECKED BY : J. P. ADAMS/S. D. DATE : 01/07

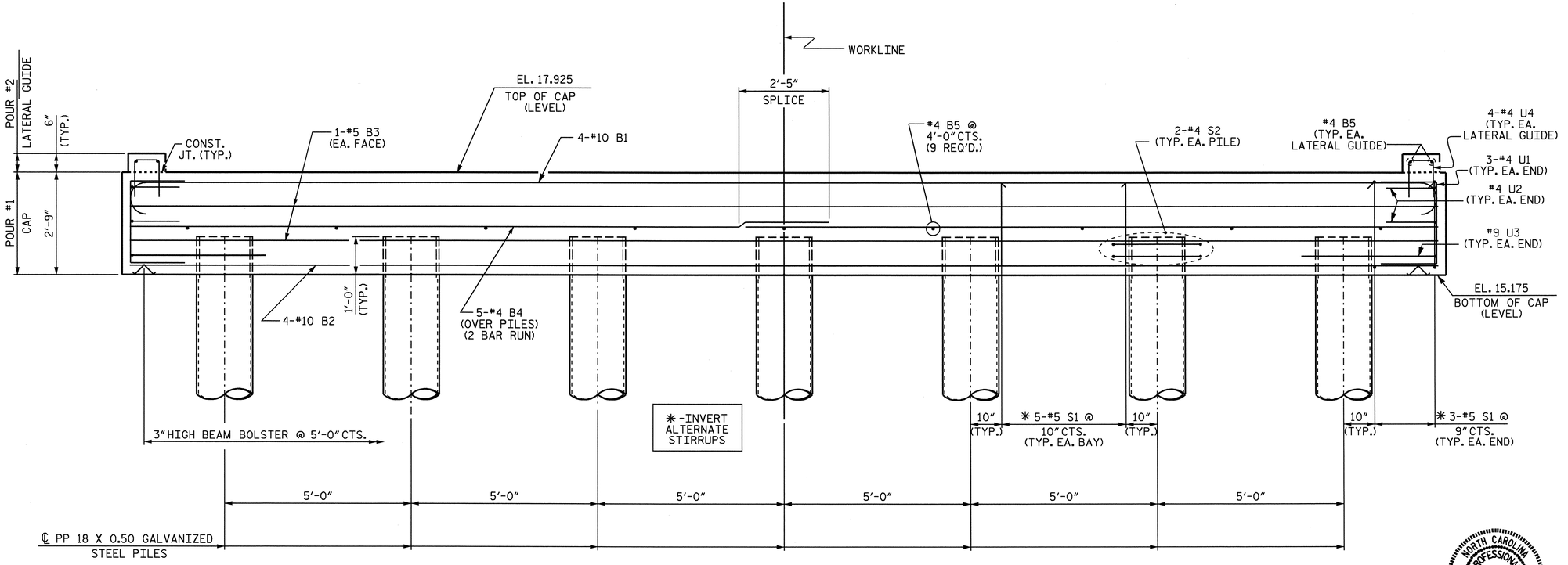
NOTES

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

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



PLAN



ELEVATION

FOR REINFORCING STEEL AND OTHER DETAILS FOR PIPE PILES, SEE "18" STEEL PIPE PILE" SHEET

PROJECT NO. B-4022

PITT/BEAUFORT COUNTY

STATION: 17+34.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT #3

NORTH CAROLINA PROFESSIONAL SEAL 20211 ENGINEER THOMAS C. PAYNE
10/23/07

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

DRAWN BY : S. SOCKWELL/R. E. DATE : 12/06
CHECKED BY : J. P. ADAMS/S. D. DATE : 1/07

19-OCT-2007 15:28
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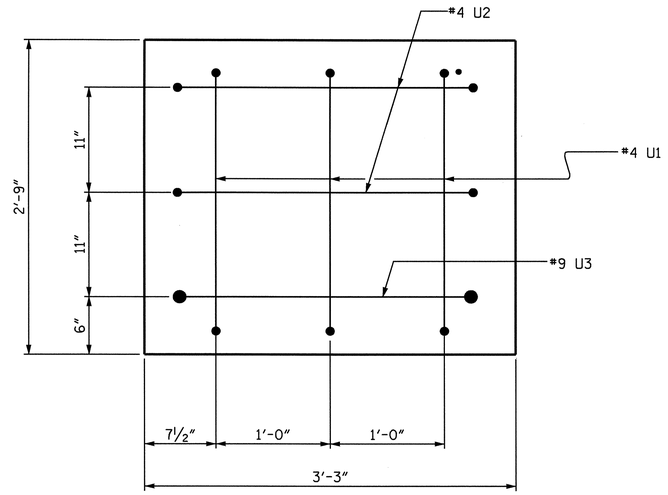
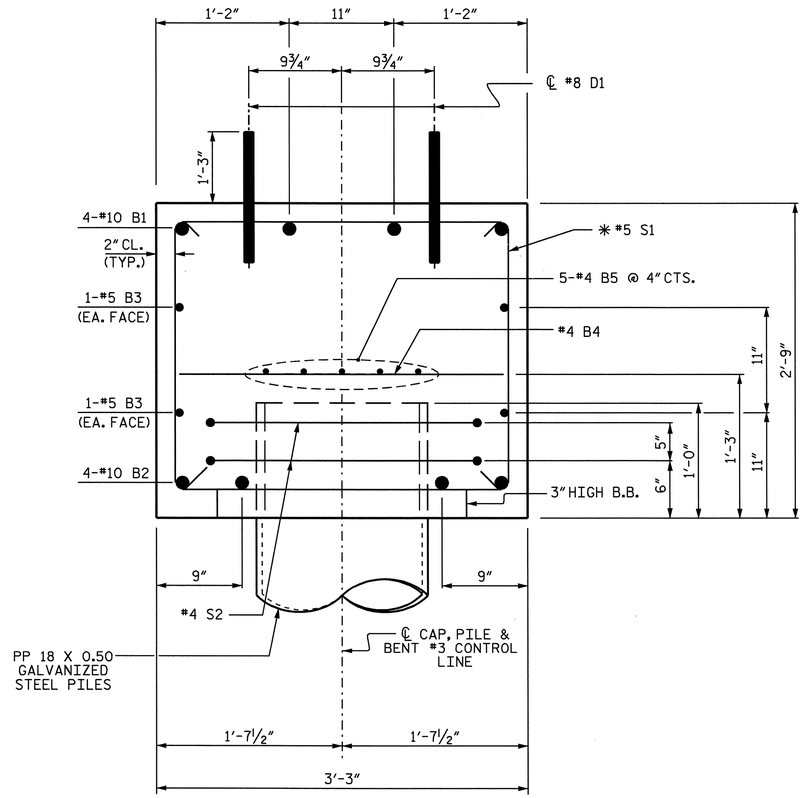
klayne



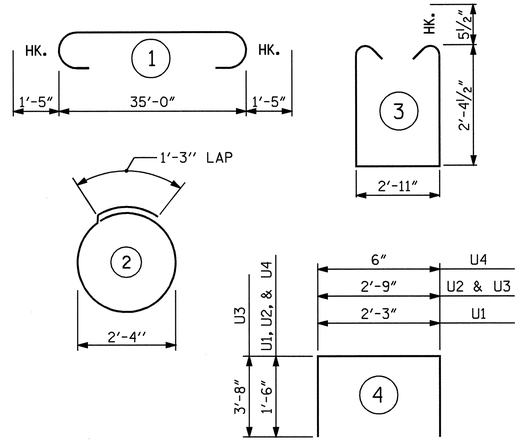
END VIEW



SECTION THRU CAP

✳-INVERT ALTERNATE STIRRUPS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

BENT #3

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	10	#4	STR	18'-10"	126
B5	13	#4	STR	2'-11"	25
D1	44	#8	STR	2'-3"	264
S1	36	#5	3	8'-7"	322
S2	14	#4	2	8'-7"	80
U1	6	#4	4	5'-3"	21
U2	4	#4	4	5'-9"	15
U3	2	#9	4	10'-1"	69
U4	8	#4	4	3'-6"	19
REINFORCING STEEL			=	2344 LBS	

CLASS "A" CONCRETE

POUR #1 CAP	11.3 yds³
POUR #2 LATERAL GUIDES	.1 yds³
TOTAL	11.4 yds³

PP 18 X 0.50 GALVANIZED STEEL PILES

No. 7 350.0 ft

NOTE: CONCRETE DISPLACED BY PILES HAS BEEN DEDUCTED.

PROJECT NO. B-4022

PITT/BEAUFORT COUNTY

STATION: 17+34.00 -L-

SHEET 2 OF 2

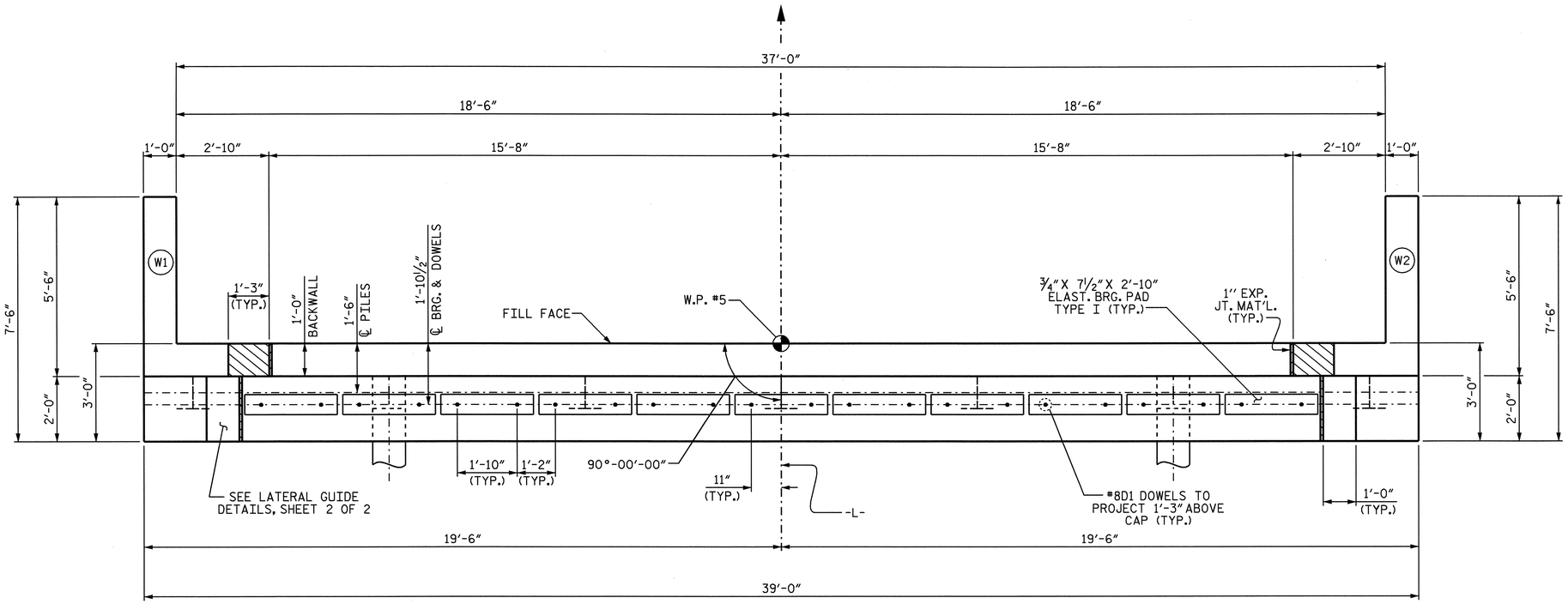
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT #3

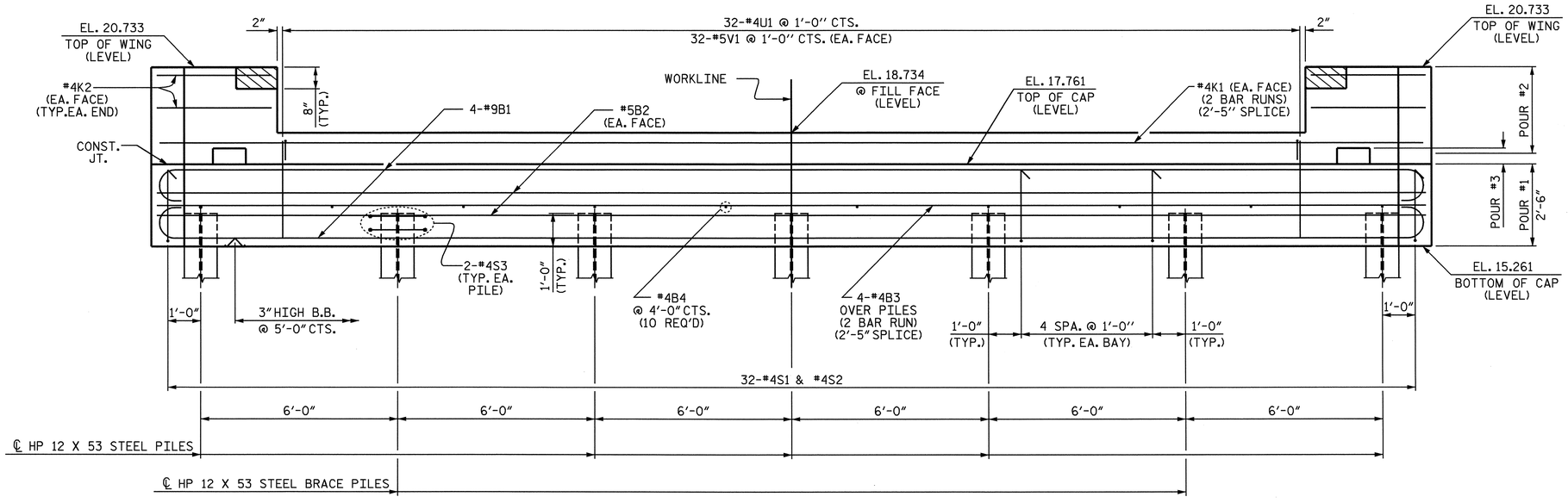
NORTH CAROLINA PROFESSIONAL SEAL 20211 ENGINEER THOMAS G. PAYNE
10/23/07

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : S. SOCKWELL/R. E. DATE : 12/06
CHECKED BY : J. P. ADAMS/S. D. DATE : 01/07



PLAN



ELEVATION

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

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

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

THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER PRESTRESSED BOX BEAMS ARE PLACED.

PROJECT NO. B-4022

PITT/BEAUFORT COUNTY

STATION: 17+34.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

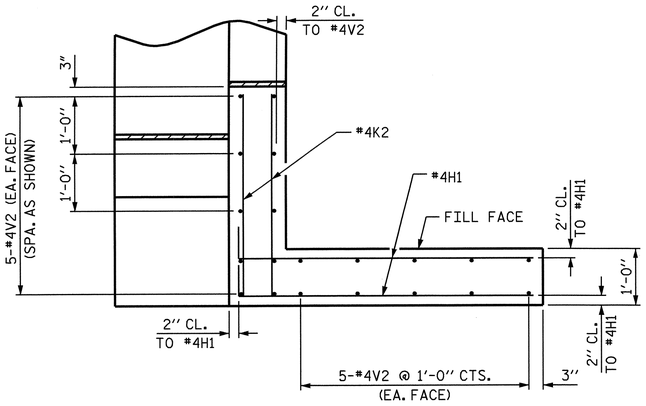
END BENT #2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS
2			4			25

NORTH CAROLINA PROFESSIONAL SEAL 20211 ENGINEER THOMAS G. SAYRE
10/23/07

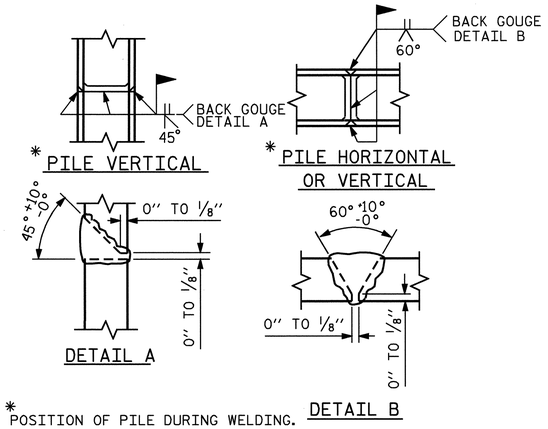
DRAWN BY : J.P. ADAMS/K.B. DATE : 8/16/05
CHECKED BY : S.H. SOCKWELL DATE : 9/2/05

19-OCT-2007 15:28
E:\Structures\b4022\plans\B-4022_sd_Ebts.dgn
klayne



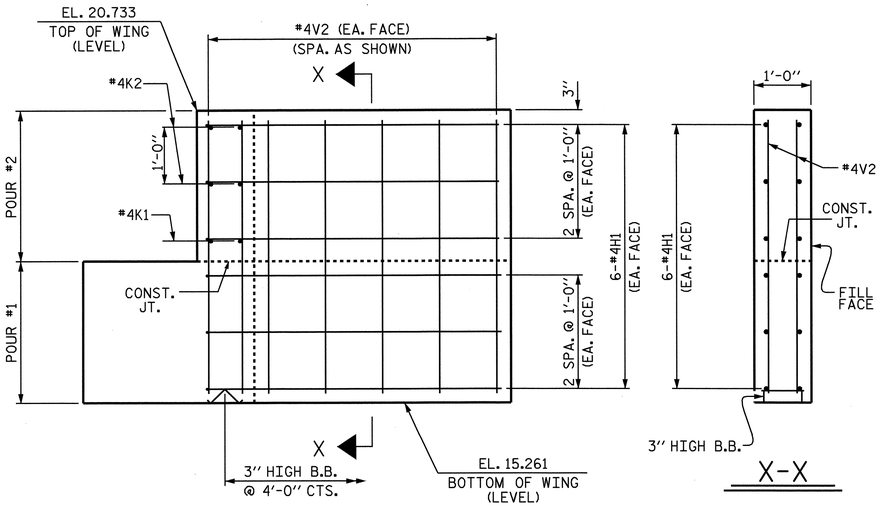
PLAN OF WING

RIGHT WING (W2) SHOWN, LEFT WING (W1) SIMILAR.



* POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS



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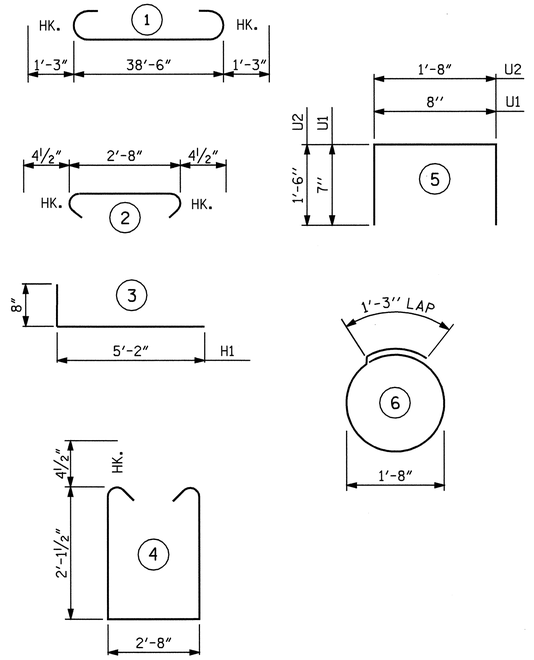
ELEVATION OF WING

RIGHT WING (W2) SHOWN, LEFT WING (W1) SIMILAR.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT #2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	9	1	41'-0"	1115
B2	4	5	STR	38'-8"	161
B3	8	4	STR	20'-8"	110
B4	10	4	STR	2'-8"	18
D1	22	8	STR	2'-3"	132
H1	24	4	3	5'-10"	94
K1	4	4	STR	20'-8"	55
K2	8	4	STR	3'-6"	19
S1	32	4	4	7'-8"	164
S2	32	4	2	3'-5"	73
S3	14	4	6	6'-6"	61
U1	32	4	5	1'-10"	39
U2	4	4	5	4'-8"	12
V1	64	5	STR	3'-1"	206
V2	40	4	STR	5'-0"	134

REINFORCING STEEL 2393 LBS.

CLASS "A" CONCRETE BREAKDOWN

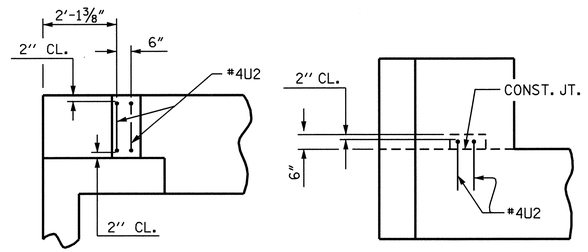
POUR #1 CAP & LOWER PART OF WINGS
CU. YDS. 11.7

POUR #2 UPPER WINGS & BACKWALL
CU. YDS. 3.0

POUR #3 LATERAL GUIDES
CU. YDS. 0.1

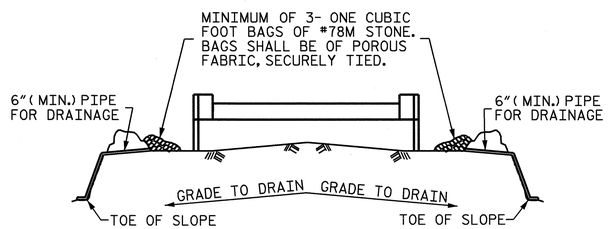
CLASS "A" CONCRETE TOTAL
CU. YDS. 14.8

HP 12 X 53 STEEL PILES
NO. 7 350 LIN. FT.



LATERAL GUIDE DETAILS

(EACH END SIMILAR)

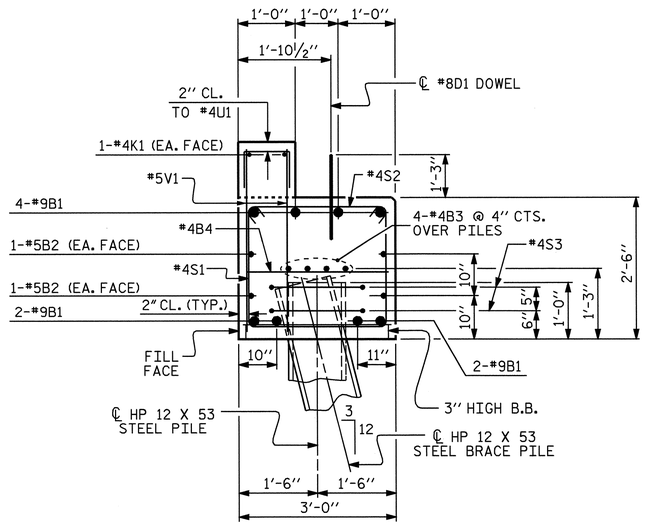


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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



SECTION THRU CAP

PROJECT NO. B-4022
PITT/BEAUFORT COUNTY
STATION: 17+34.00 -L-

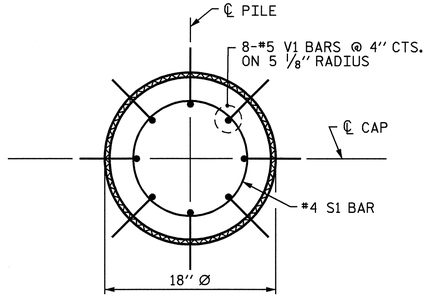
SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

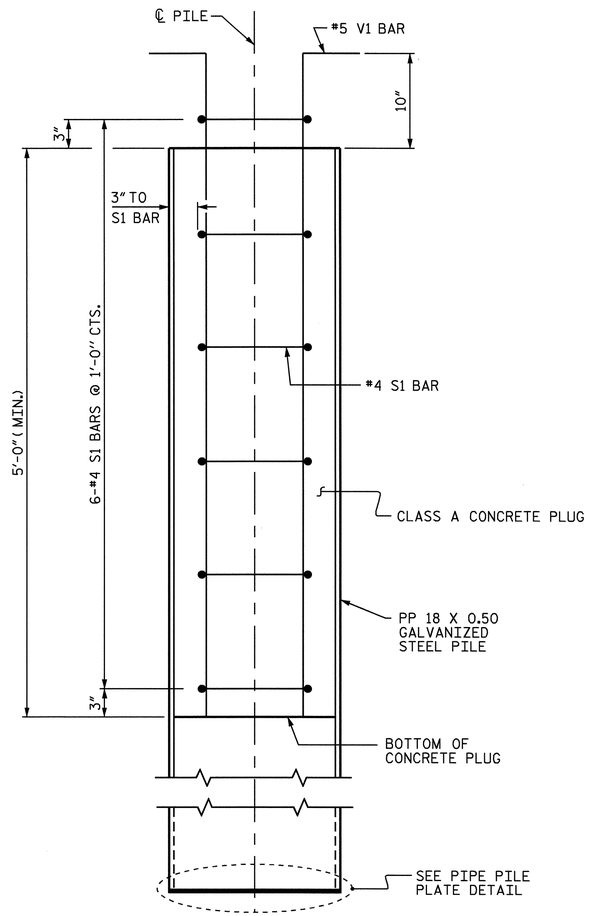
SUBSTRUCTURE
END BENT #2

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

DRAWN BY : J.P. ADAMS/K.B. DATE : 8/17/05
CHECKED BY : S.H. SOCKWELL DATE : 9/2/05



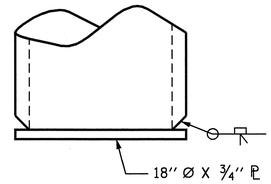
PLAN



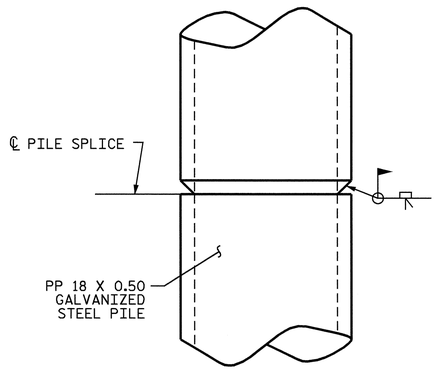
ELEVATION

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, IF REQUIRED, 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.

FOR OPEN END PIPE PILES, REMOVE ENOUGH SOIL AND WATER FROM INSIDE THE PILES TO CONSTRUCT THE CONCRETE PLUG WITHOUT FOULING THE CONCRETE.

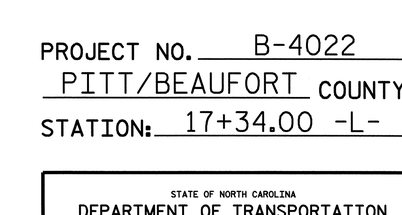
FORM THE CONCRETE PLUG SUCH THAT THE REINFORCING STEEL OR CONCRETE DOES NOT MOVE AND THE CLEARANCE FROM THE REINFORCING STEEL TO THE INSIDE OF THE PILE IS MAINTAINED AFTER CONCRETE PLACEMENT. DO NOT PLACE CONCRETE IN THE BENT CAP UNTIL THE CONCRETE PLUG HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF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

PIPE PILE PLATES	1 EA.

PROJECT NO. B-4022

PITT/BEAUFORT COUNTY

STATION: 17+34.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

18" STEEL PIPE PILE

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

ASSEMBLED BY : S. SOCKWELL/R. G. E. DATE : 12/06		
CHECKED BY : J. P. ADAMS/ S. D. DATE : 1/07		
DRAWN BY : RWW 1/01	REV. 5/7/03	RWW/JTE
CHECKED BY : LES 1/01	REV. 10/1/05	LBG/TLA
	REV. 5/1/06R	MAA/KMM

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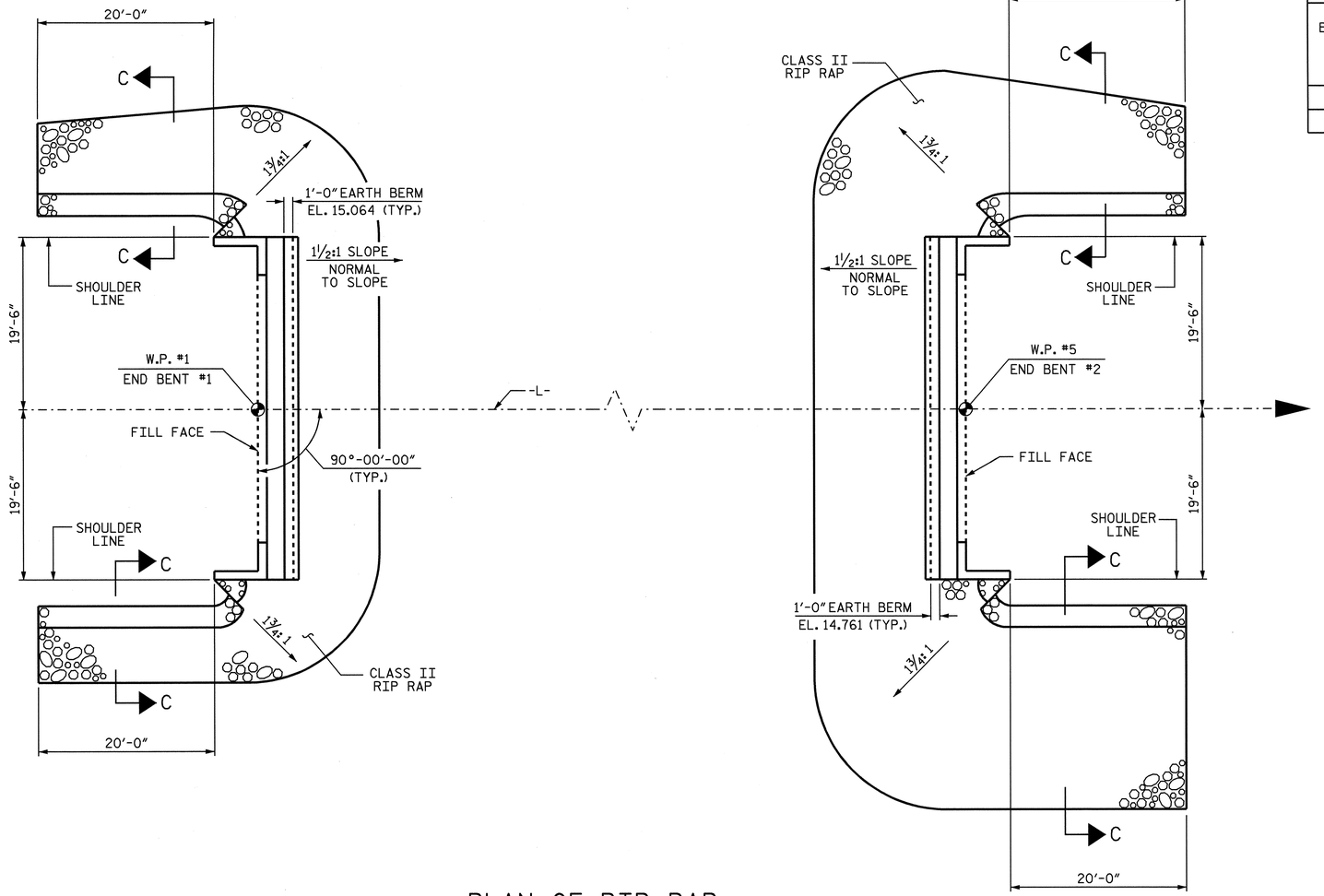
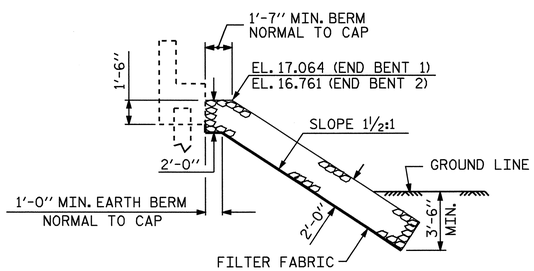
STD. NO. SPP3

ESTIMATED QUANTITIES		
BRIDGE @ STA. 17+34.00-L-	RIP RAP CLASS II	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT #1	341	379
END BENT #2	457	508

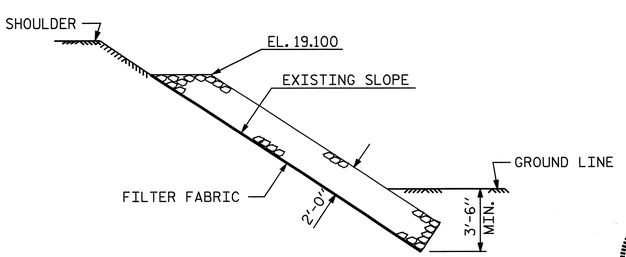


PLAN OF RIP RAP



℄ SECTION

BERM RIP RAPPED



SECTION C-C

PROJECT NO. B-4022

PITT/BEAUFORT COUNTY

STATION: 17+34.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

RIP RAP DETAILS

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

DRAWN BY : S.H. SOCKWELL/K.B. DATE : 5/31/05
CHECKED BY : D.E. HENNESSEE DATE : 6/09/05

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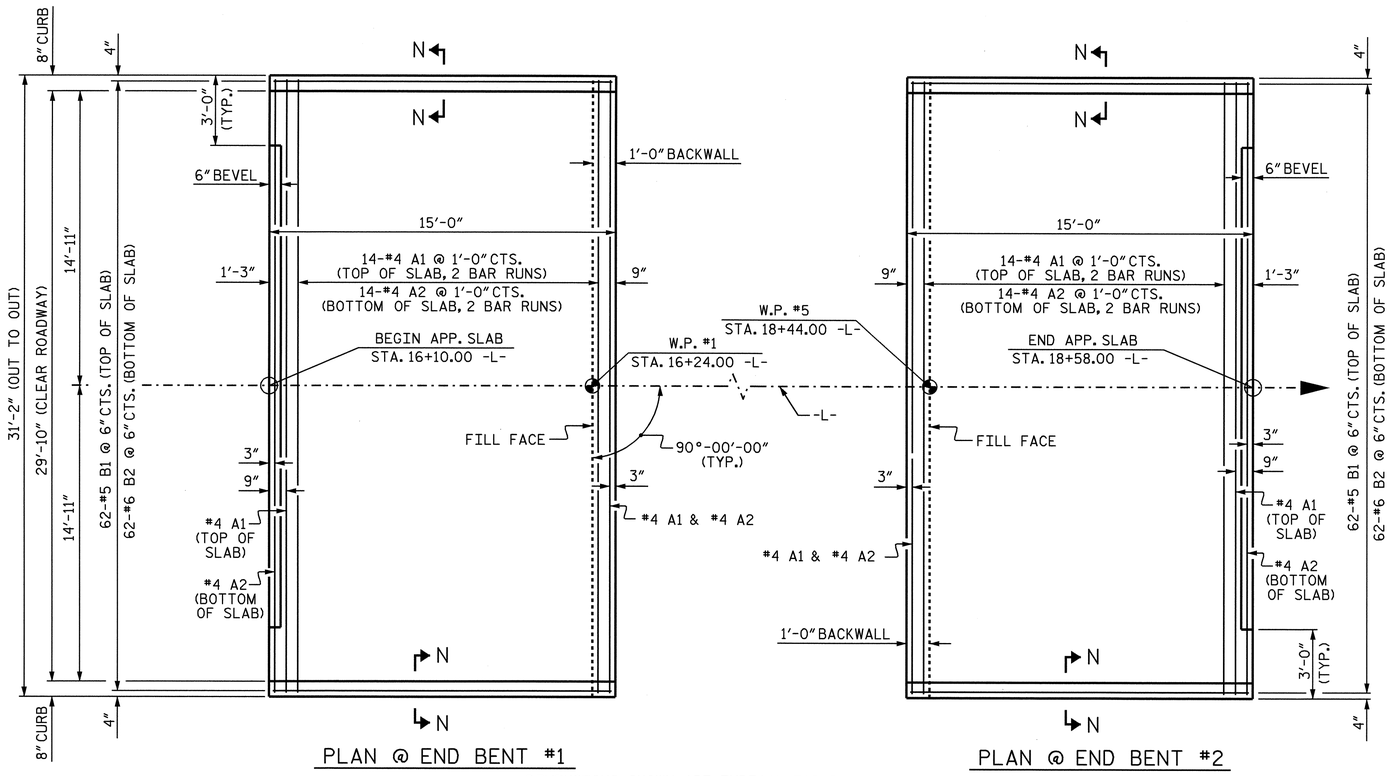


DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

NOTES

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

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

THE 6″ COMP. A.B.C. SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB AND SHALL EXTEND 1′-0″ OUTSIDE OF EACH EDGE OF THE APPROACH SLAB.

THE CONTRACTOR MAY USE 4″ TYPE B-25.0B ASPHALT CONCRETE BASE COURSE IN LIEU OF 6″ COMP. A.B.C. IF THIS OPTION IS USED, THE BASE COURSE SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB, AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB.

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

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

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

APPROACH SLAB GROOVING IS NOT REQUIRED.

BILL OF MATERIAL

APPROACH SLAB AT EB #1

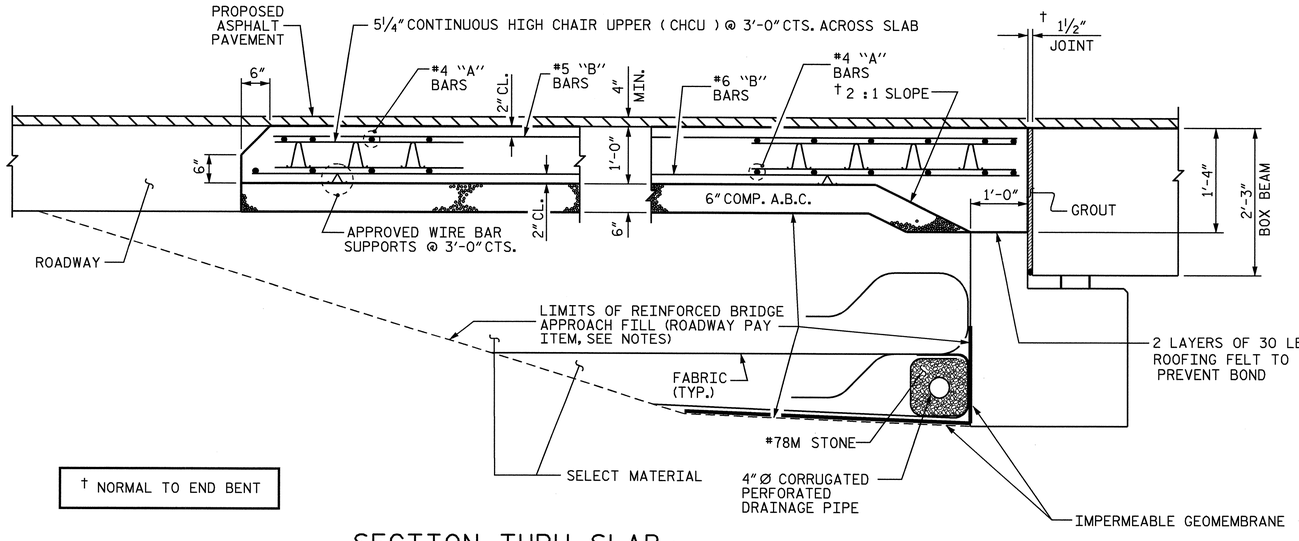
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳A1	32	#4	STR	16′-5″	351
A2	32	#4	STR	16′-4″	349
✳B1	62	#5	STR	14′-2″	916
B2	62	#6	STR	14′-8″	1366
REINFORCING STEEL				LBS.	1715
✳EPOXY COATED REINFORCING STEEL				LBS.	1267
CLASS AA CONCRETE				C.Y.	17.7

APPROACH SLAB AT EB #2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳A1	32	#4	STR	16′-5″	351
A2	32	#4	STR	16′-4″	349
✳B1	62	#5	STR	14′-2″	916
B2	62	#6	STR	14′-8″	1366
REINFORCING STEEL				LBS.	1715
✳EPOXY COATED REINFORCING STEEL				LBS.	1267
CLASS AA CONCRETE				C.Y.	17.7

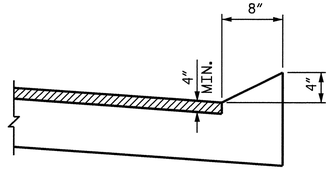
SPLICE CHART

BAR	SPLICE
#4 A1	2′-0″
#4 A2	1′-9″

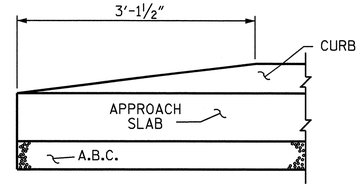


† NORMAL TO END BENT

SECTION THRU SLAB



SECTION N-N



END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS

PROJECT NO. B-4022
PITT/BEAUFORT COUNTY
STATION: 17+34.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE CORED SLAB

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

NORTH CAROLINA PROFESSIONAL SEAL 20211 ENGINEER THOMAS G. PAYNE
10/23/07

ASSEMBLED BY : M.K. BEARD	DATE : 07/07		
CHECKED BY : R.G. EMERSON	DATE : 07/07		
DRAWN BY : FCJ 6/87	REV. 7/10/01	LES/RDR	
CHECKED BY : EGA 6/87	REV. 5/7/03R	RWW/JTE	
	REV. 5/1/06R	KMM/GM	

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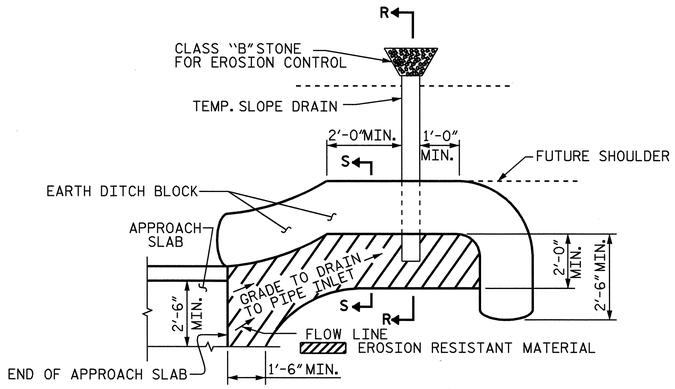
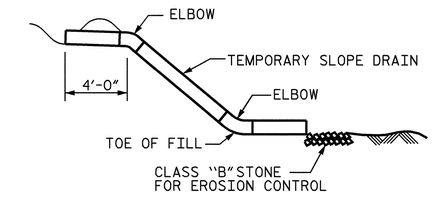
STD. NO. BAS7 (SHT 1)

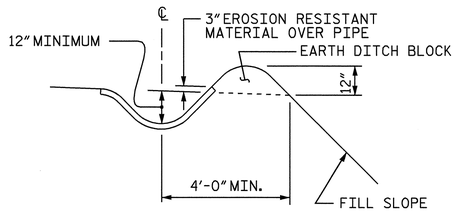


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

PLAN VIEW



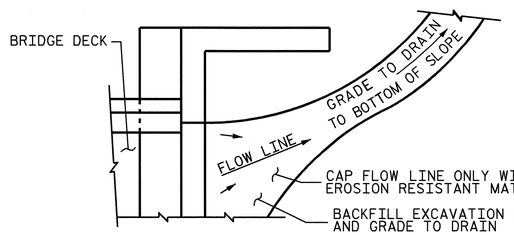
SECTION R-R



SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



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

TEMPORARY DRAINAGE DETAIL

ASSEMBLED BY : M.K. BEARD		DATE : 07/07	
CHECKED BY : R.G. EMERSON		DATE : 07/07	
DRAWN BY : FCJ	11/88	REV. 10/17/00	RWW/LES
CHECKED BY : ARB	11/88	REV. 5/7/03	RWW/JTE
		REV. 5/1/06	TLA/GM

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NORTH CAROLINA PROFESSIONAL SEAL 20211 ENGINEER THOMAS G. PAYNE
10/23/07

PROJECT NO. B-4022
PITT/BEAUFORT COUNTY
STATION: 17+34.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB DETAILS

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

STD. NO. BAS10

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

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

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

CONCRETE:

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

CONCRETE CHAMFERS:

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

DOWELS:

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

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

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

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

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

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

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

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

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

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

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

HANDRAILS AND POSTS:

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

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

SPECIAL NOTES:

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