STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B–4111		

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33466.1.1	BRZ–1135(6)	PE
33466.2.1	BRZ–1135(6)	R/W & UTIL
33466.3.1	BRZ–1135(6)	CONST

TIP NO.: B–4111

CONTRACT: C201547

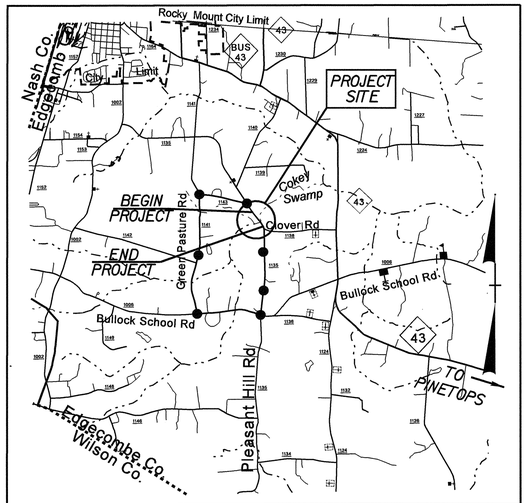
STRUCTURE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

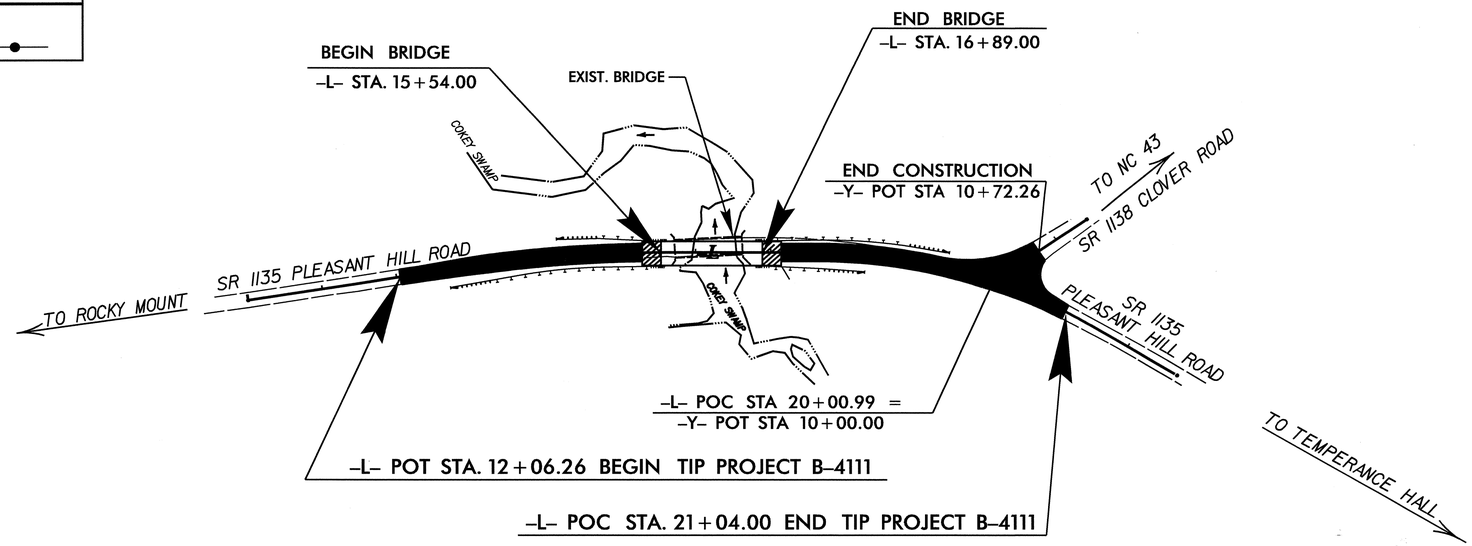
EDGECOMBE COUNTY

LOCATION: BRIDGE NO. 19 OVER COKEY SWAMP AND APPROACHES ON SR 1135 (PLEASANT HILL ROAD)

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE



VICINITY MAP
OFF–SITE DETOUR



DESIGN DATA

ADT 2007	=	1318
ADT 2027	=	2078
DHV	=	11 %
D	=	60 %
* T	=	3 %
V	=	60 MPH
* (TTST 1% + DUAL 2%)		
FUNC CLASS	=	Rural Local

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B–4111 = 0.144 MI
LENGTH STRUCTURE TIP PROJECT B–4111 = 0.026 MI
TOTAL LENGTH OF TIP PROJECT B–4111 = 0.170 MI

Prepared In the Office of:

DIVISION OF HIGHWAYS

1000 Birch Ridge Dr., Raleigh, NC 27610

2006 STANDARD SPECIFICATIONS

LETTING DATE:
MAY 15, 2007

ROY GIROLAMI, P.E.
PROJECT ENGINEER

DAVID ANDERSON, P.E.
PROJECT DESIGN ENGINEER

STRUCTURE DESIGN UNIT

NORTH CAROLINA PROFESSIONAL SEAL 14552 ENGINEER GREGORY R. PERFETTI

3.30.07

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE DESIGN ENGINEER

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

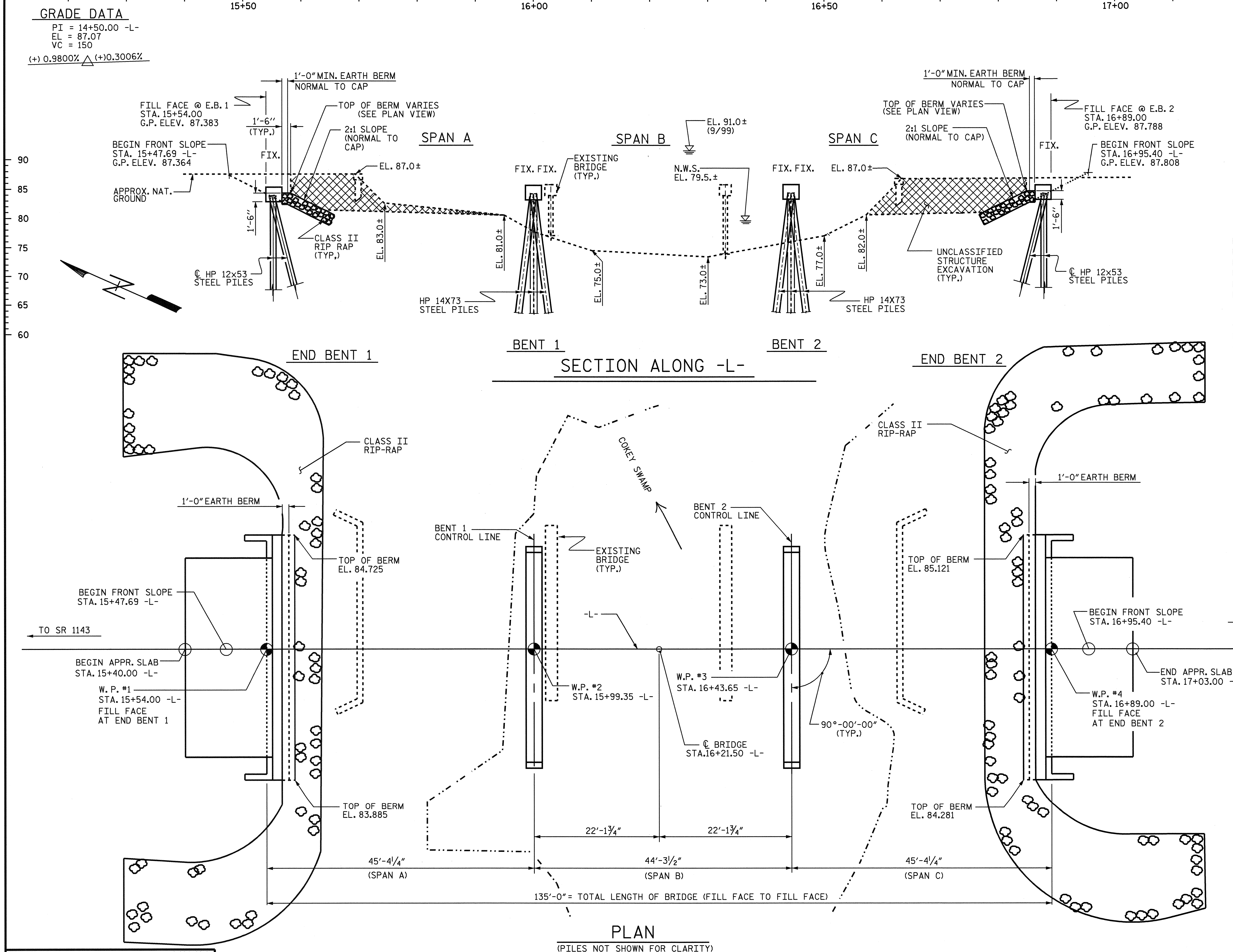
APPROVED
DIVISION ADMINISTRATOR *DATE*

05-FEB-2007 14:54
R:/ROADWAY/PROJ/B4111_RDY_TSH.DGN
danderson

F.A. PROJECT No : BRZ-1135(6)

GRADE DATA

PI = 14+50.00 -L-
EL = 87.07
VC = 150
(+) 0.9800% △ (+)0.3006%



15+50
16+00
16+50
17+00
1'-0" MIN. EARTH BERM NORMAL TO CAP
FILL FACE @ E.B. 1 STA. 15+54.00 G.P. ELEV. 87.383
TOP OF BERM VARIES (SEE PLAN VIEW)
1'-6" (TYP.)
2:1 SLOPE (NORMAL TO CAP)
SPAN A
SPAN B
SPAN C
EL. 91.0± (9/99)
BEGIN FRONT SLOPE STA. 15+47.69 -L- G.P. ELEV. 87.364
FIX.
EL. 87.0±
FIX. FIX.
EXISTING BRIDGE (TYP.)
N.W.S. EL. 79.5.±
APPROX. NAT. GROUND
CLASS II RIP RAP (TYP.)
EL. 83.0±
EL. 81.0±
EL. 75.0±
EL. 73.0±
EL. 77.0±
EL. 82.0±
℄ HP 12x53 STEEL PILES
HP 14X73 STEEL PILES
FILL FACE @ E.B. 2 STA. 16+89.00 G.P. ELEV. 87.788
BEGIN FRONT SLOPE STA. 16+95.40 -L- G.P. ELEV. 87.808
UNCLASSIFIED STRUCTURE EXCAVATION (TYP.)
90
85
80
75
70
65
60
END BENT 1
BENT 1
BENT 2
END BENT 2
SECTION ALONG -L-
CLASS II RIP-RAP
COKEY SWAMP
1'-0" EARTH BERM
BENT 1 CONTROL LINE
BENT 2 CONTROL LINE
TOP OF BERM EL. 84.725
TOP OF BERM EL. 85.121
TOP OF BERM EL. 83.885
TOP OF BERM EL. 84.281
BEGIN FRONT SLOPE STA. 15+47.69 -L-
BEGIN FRONT SLOPE STA. 16+95.40 -L-
TO SR 1143
TO SR 1138
-L-
BEGIN APPR. SLAB STA. 15+40.00 -L-
END APPR. SLAB STA. 17+03.00 -L-
W.P. #1 STA. 15+54.00 -L- FILL FACE AT END BENT 1
W.P. #2 STA. 15+99.35 -L-
W.P. #3 STA. 16+43.65 -L-
W.P. #4 STA. 16+89.00 -L- FILL FACE AT END BENT 2
℄ BRIDGE STA.16+21.50 -L-
90°-00'-00" (TYP.)
22'-1¾"
22'-1¾"
45'-4¼" (SPAN A)
44'-3½" (SPAN B)
45'-4¼" (SPAN C)
135'-0"= TOTAL LENGTH OF BRIDGE (FILL FACE TO FILL FACE)

PLAN
(PILES NOT SHOWN FOR CLARITY)

HYDRAULIC DATA

DESIGN DISCHARGE	1600 c.f.s.
FREQUENCY OF DESIGN FLOOD	25 yr.
DESIGN HIGH WATER ELEVATION	84.300
DRAINAGE AREA	19.2 sq.mi.
BASIC DISCHARGE(Q100)	2650 c.f.s.
BASIC HIGH WATER ELEVATION	85.600

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	1650 c.f.s.
FREQUENCY OF OVERTOPPING FLOOD	25 yr. ±
OVERTOPPING FLOOD ELEVATION	84.400

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 9804 ROY M. GIROLAMI 2-7-07

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 11259 DAVID R. ANDERSON 2/7/07

PROJECT NO. B-4111

EDGECOMBE COUNTY

STATION: 16+21.50 -L-

SHEET 1 OF 3 REPLACES BRIDGE NO. 19

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
BRIDGE ON SR 1135
OVER COKEY SWAMP
BETWEEN
SR 1143 AND SR 1138

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

SHEET NO. S-1
TOTAL SHEETS 18

DRAWN BY : S.M. RASHIDI DATE : 4/28/04
CHECKED BY : M.A. ALLEN DATE : 5/16/05

07-FEB-2007 12:09
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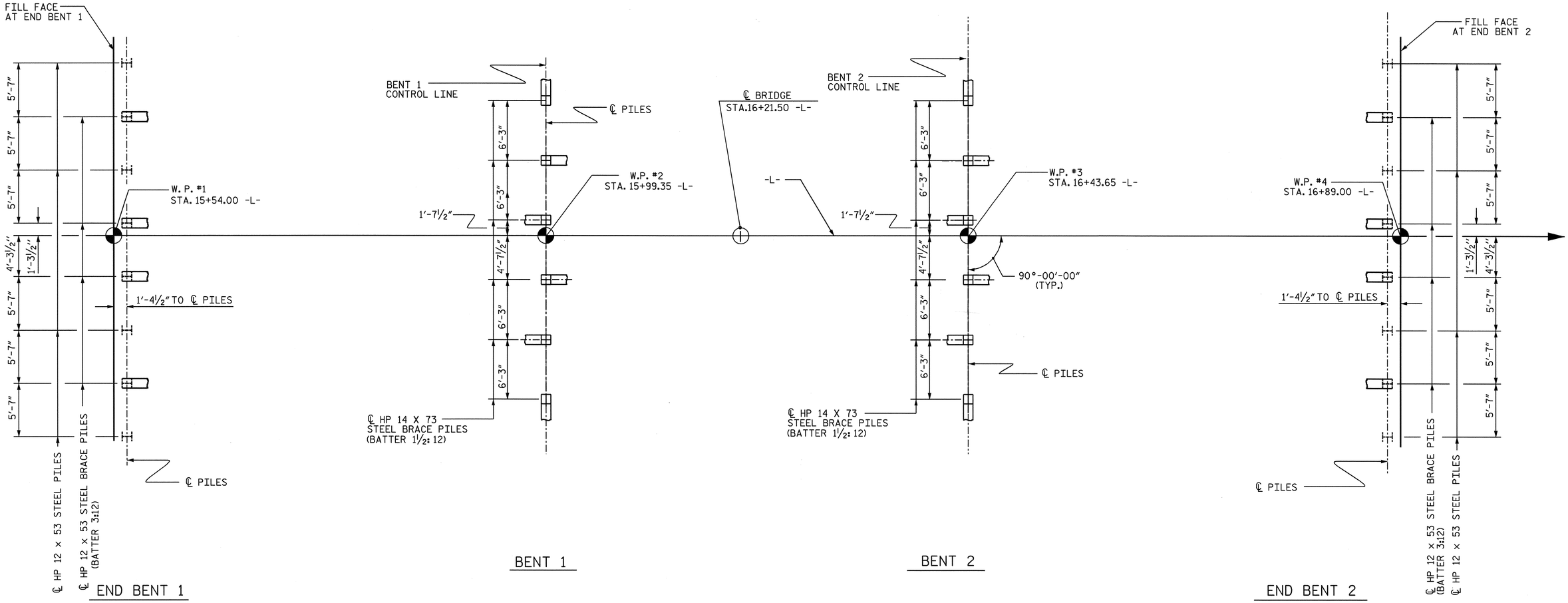
srashidi



FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO PILE CENTERLINES

PROJECT NO. B-4111

EDGECOMBE COUNTY

STATION: 16+21.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

BRIDGE ON SR 1135
OVER COKEY SWAMP
BETWEEN
SR 1143 AND SR 1138

NORTH CAROLINA PROFESSIONAL SEAL 11259 ENGINEER DAVID R ANDERSON

2/7/07

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

DRAWN BY : S. M. RASHIDI DATE : 12/01/05
CHECKED BY : N. Q. TRAN DATE : 12/01/05

07-FEB-2007 10:28
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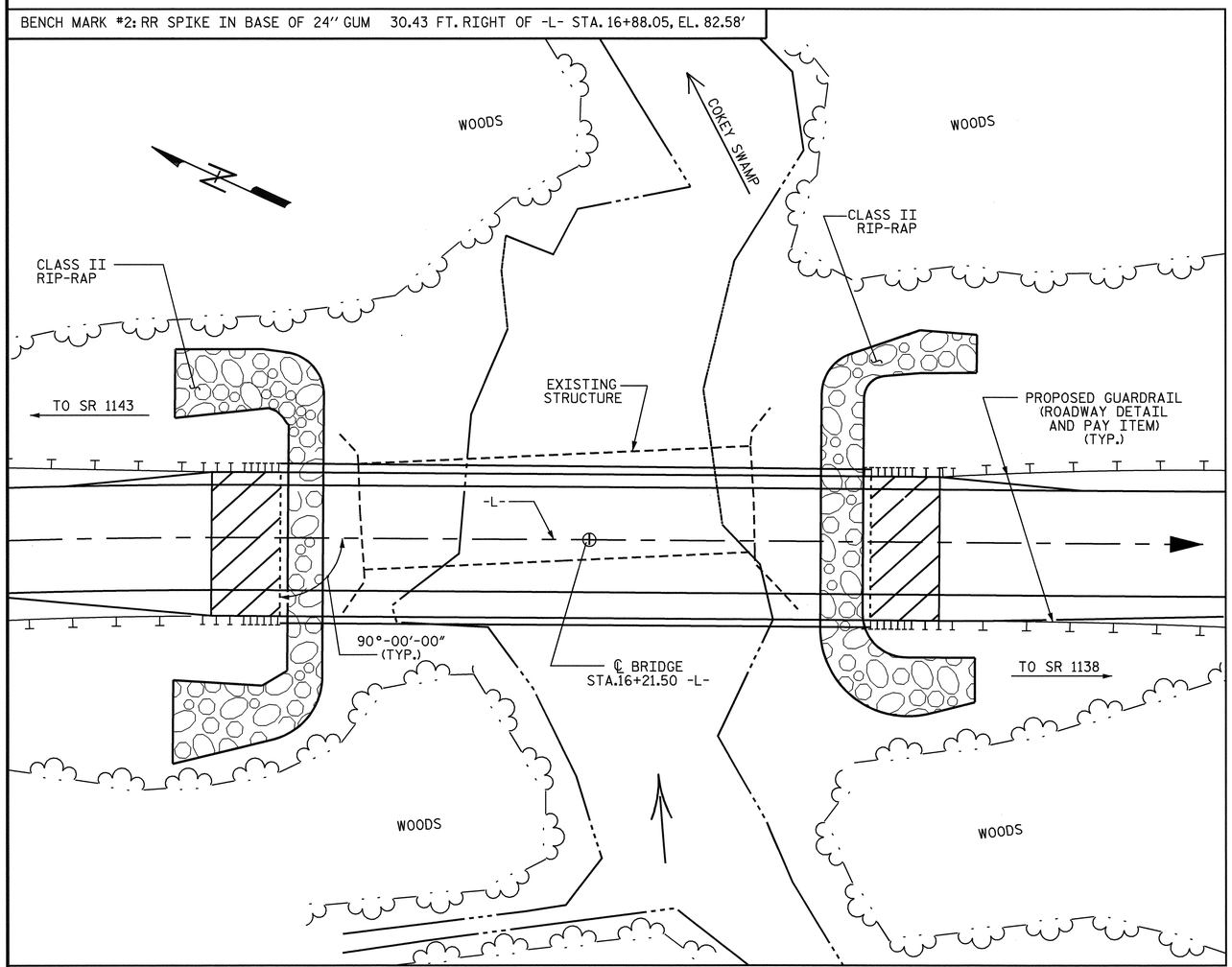
srashidi

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		HP 14 X 73 GALVANIZED STEEL PILES		PILE REDRIVES	CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0"X 1'-9" PRESTRESSED CONCRETE CORED SLABS
	LUMP SUM	EACH	EACH	C.Y.	C.Y.	LUMP SUM	LBS.	NO.	LIN.FT.	NO.	LIN.FT.	EA.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	LIN. FT.
SUPERSTRUCTURE						LUMP SUM							265.00			LUMP SUM	1590.00
END BENT 1				360	12.8		2034	8	360					160	180		
BENT 1		1	1		10.8		1871			6	300	3					
BENT 2					10.8		1871			6	300	3					
END BENT 2				440	12.8		2034	8	360					145	165		
TOTAL	LUMP SUM	1	1	800	47.2	LUMP SUM	7810	16	720	12	600	6	265.00	305	345	LUMP SUM	1590.00



LOCATION SKETCH

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

NOTES

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

ASSUMED LIVE LOAD = HS 20 OR ALTERNATE LOADING, EXCEPT THAT CORED SLAB UNITS HAVE BEEN DESIGNED FOR HS25.

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

FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.

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

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

THE EXISTING STRUCTURE CONSISTING OF 1 SPAN @ 30'-9", 1 SPAN @ 30'-0", 1 SPAN @ 30'-3" @ 24'-4" CLEAR ROADWAY, PPC CHANNELS ON PPC CAP ON TIMBER PILES, AND LOCATED AT THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE FURTHER DETERIORATE, THIS LOAD LIMITATION MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

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

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF APROX. 45 FEET EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE MEASURED AND PAID FOR AT THE CONTRACT UNIT PRICE PER CUBIC YARD FOR UNCLASSIFIED STRUCTURE EXCAVATION.

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

FOR CRANE SAFETY, 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.

NO WAITING PERIOD IS REQUIRED AT END BENTS 1 AND 2.

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 AND BENT 2 TO A REQUIRED BEARING CAPACITY OF 140 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 DOWN DRAG 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 AND BENT 2 IS 60 TONS PER PILE.

THE SCOUR CRITICAL ELEVATION FOR BENT 1 AND BENT 2 IS ELEVATION 57 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

TEST THE FIRST PRODUCTION PILE WITH THE PILE DRIVING ANALYZER (PDA) DURING DRIVING, RESTRIKING OR REDRIVING IS REQUIRED AT BENT 1 OR BENT 2. SEE PILE DRIVING ANALYZER SPECIAL PROVISION.

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

NORTH CAROLINA PROFESSIONAL SEAL 11259 ENGINEER DAVID R. ANDERSON
2/19/07

PROJECT NO. B-4111
EDGECOMBE COUNTY
STATION: 16+21.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

BRIDGE ON SR 1135
OVER COKEY SWAMP
BETWEEN
SR 1143 AND SR 1138

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

DRAWN BY : S. M. RASHIDI DATE : 5-22-06
CHECKED BY : W. F. PARKER DATE : 6-27-06

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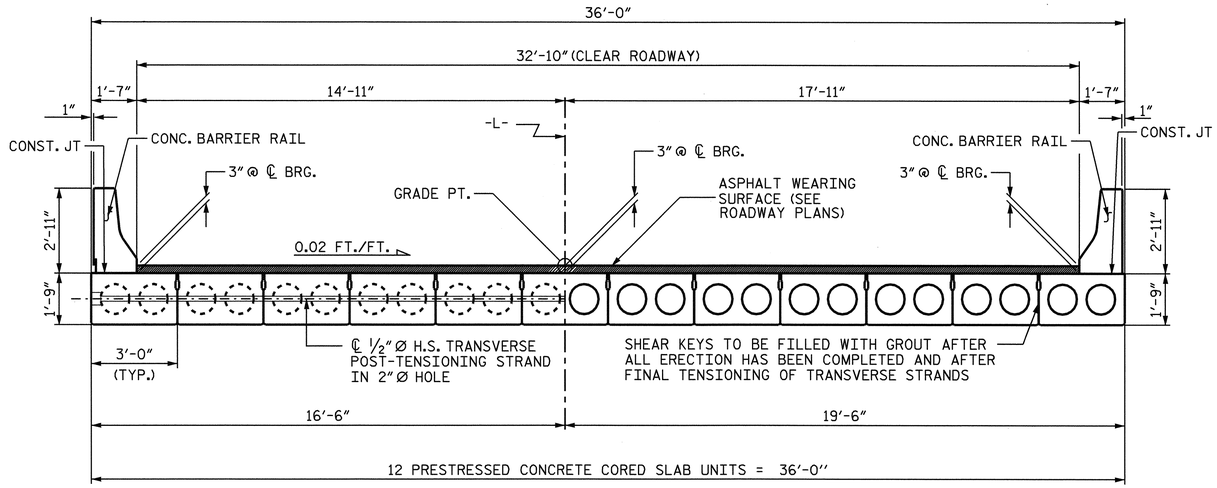
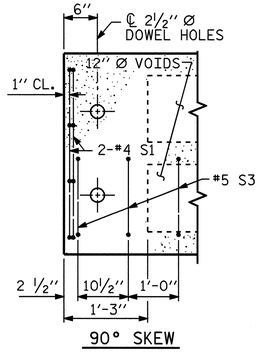
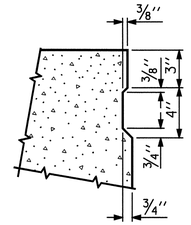


TYPICAL SECTION



90° SKEW

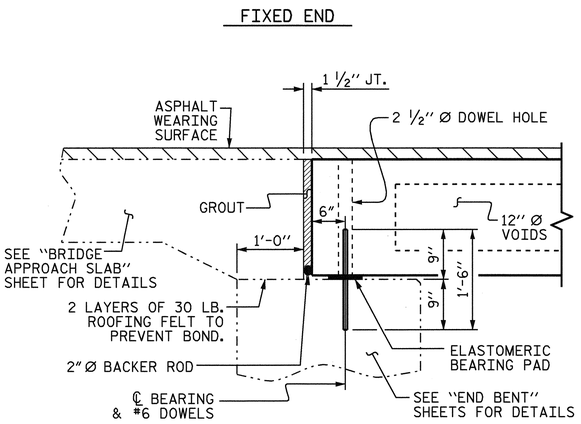


SHEAR KEY DETAIL

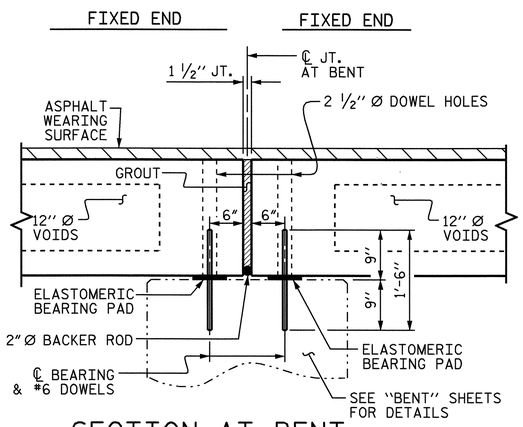
NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.

PART PLAN-EXTERIOR SECTION

NOTE: EXTERIOR SECTION SHOWN-INTERIOR SECTION SIMILAR EXCEPT OMIT S3 BARS.



SECTION AT END BENT



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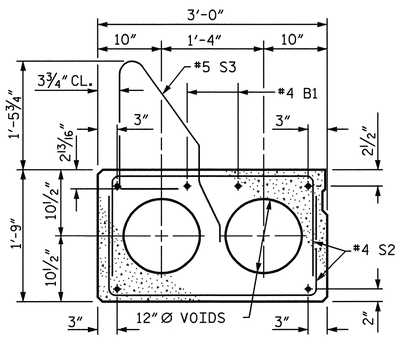
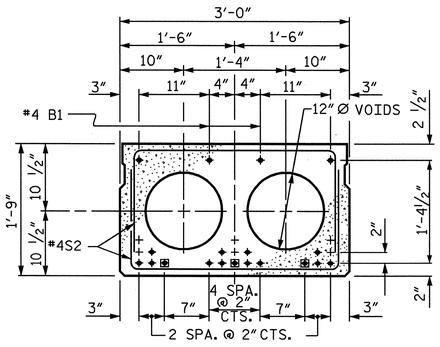


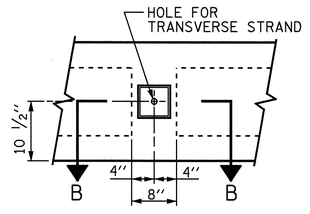
EXTERIOR SLAB SECTION

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

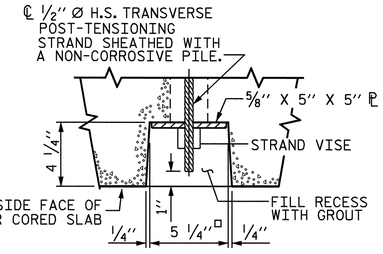


INTERIOR SLAB SECTION
1/2" Ø LOW RELAXATION STRAND LAYOUT

■ BOND SHALL BE BROKEN AT THESE STRANDS AT A DISTANCE OF FOUR FEET FROM THE END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS ARTICLE 1078-7. (17 STRANDS, 3 SHEATHED)

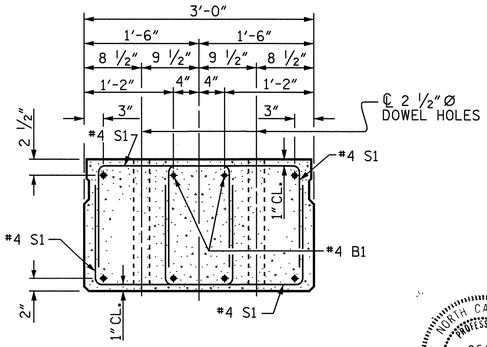


ELEVATION VIEW



SECTION B-B

GROUTED RECESS AT END OF POST-TENSIONED STRAND CORED SLABS



END ELEVATION

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

NORTH CAROLINA PROFESSIONAL SEAL 11259 ENGINEER DAVID R ANDERSON
2/7/07

PROJECT NO. B-4111
EDGECOMBE COUNTY
STATION: 16+21.50 -L-

SHEET 1 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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

ASSEMBLED BY : N. Q. TRAN	DATE : 9/25/06
CHECKED BY : T. A. HARRIS	DATE : 10/27/06

DRAWN BY : WJH 4/89	REV. 10/17/00 RWW/LES
CHECKED BY : FCJ 5/89	REV. 7/10/01RR RWW/LES
	REV. 5/1/06 TLA/GM

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

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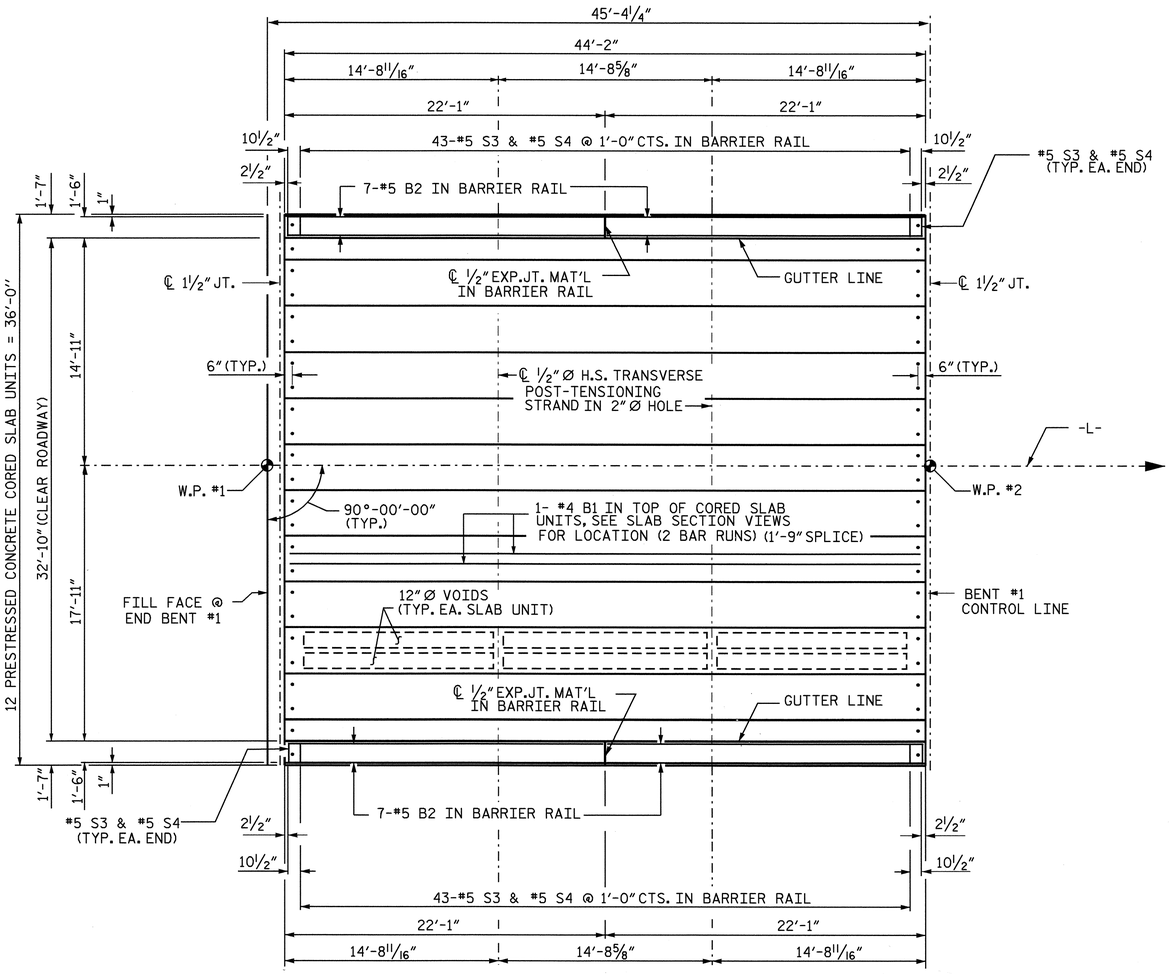
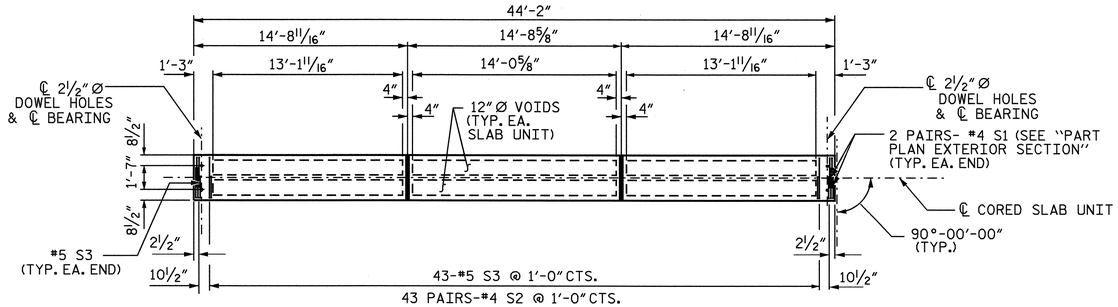
STD. No. PCS2



SPAN A



PLAN OF EXTERIOR SLAB - SPAN A

PLAN FOR INTERIOR SLAB IDENTICAL EXCEPT OMIT S3 BARS

15-FEB-2007 16:00
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wparker

DRAWN BY : N. Q. TRAN DATE : 4-05
CHECKED BY : T. A. HARRIS DATE : 10-06

PROJECT NO. B-4111
EDGECOMBE COUNTY
STATION: 16+21.50 -L-

SHEET 2 OF 6

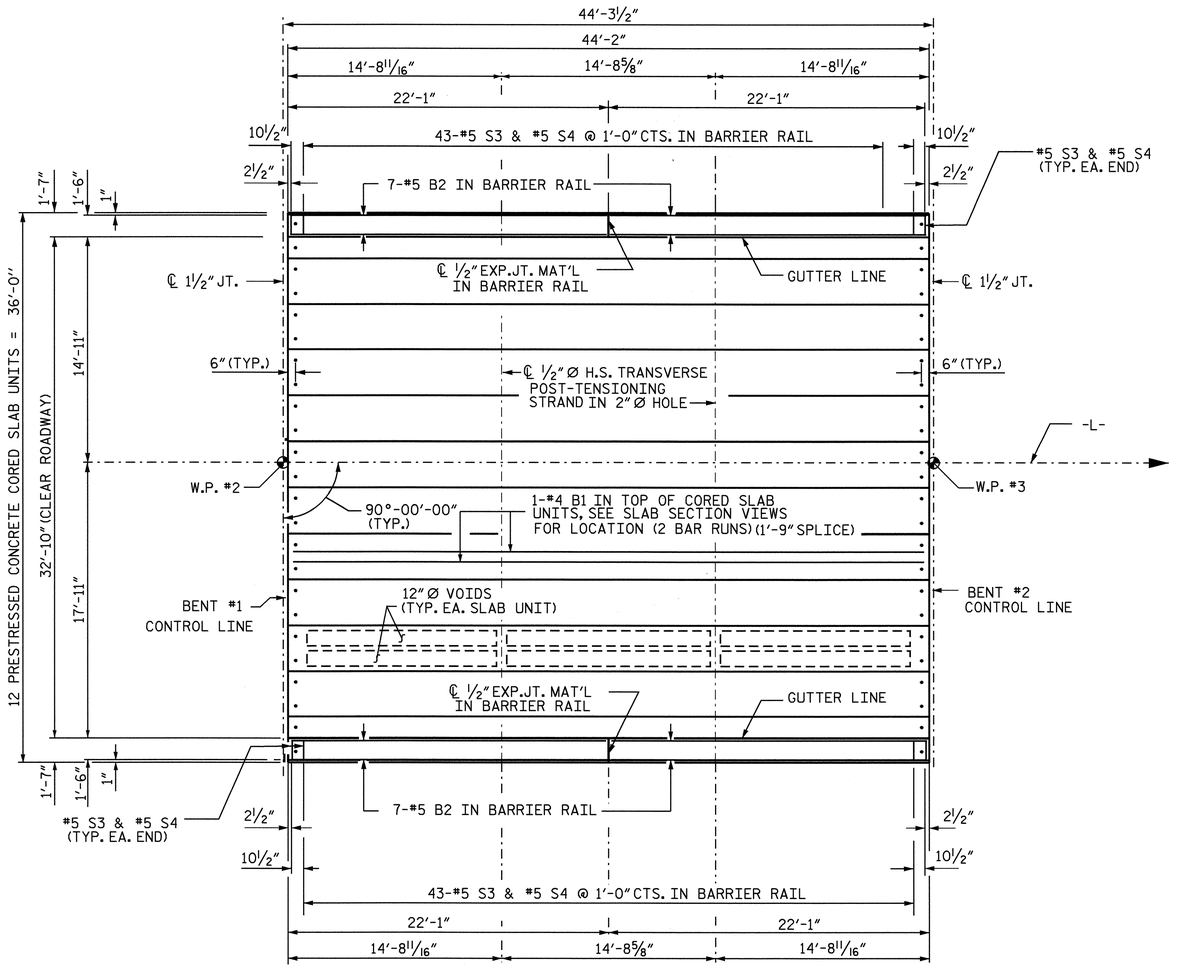
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

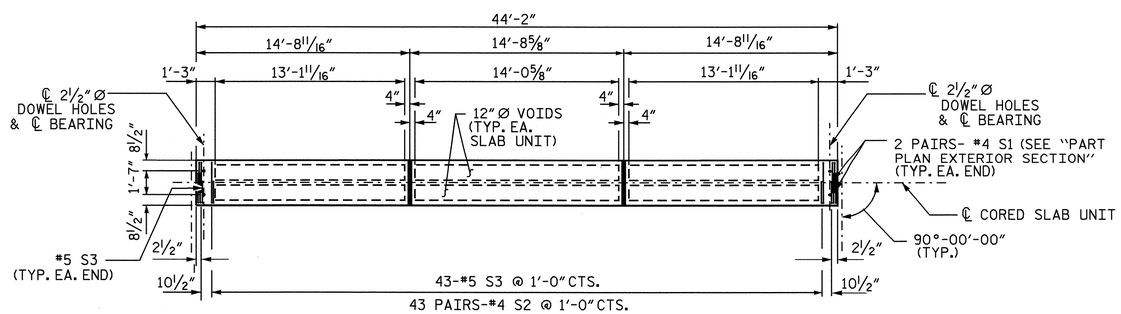
PLAN OF SPAN A

NORTH CAROLINA PROFESSIONAL SEAL 11259 ENGINEER DAVID R ANDERSON
2/19/07

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



SPAN B



PLAN OF EXTERIOR SLAB - SPAN B

PLAN FOR INTERIOR SLAB IDENTICAL EXCEPT OMIT S3 BARS

15-FEB-2007 16:00
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wparker

DRAWN BY : N. Q. TRAN DATE : 4-05
CHECKED BY : T. A. HARRIS DATE : 10-06

NORTH CAROLINA PROFESSIONAL SEAL 11259 ENGINEER DAVID R. ANDERSON
2/19/07

PROJECT NO. B-4111
EDGECOMBE COUNTY
STATION: 16+21.50 -L-

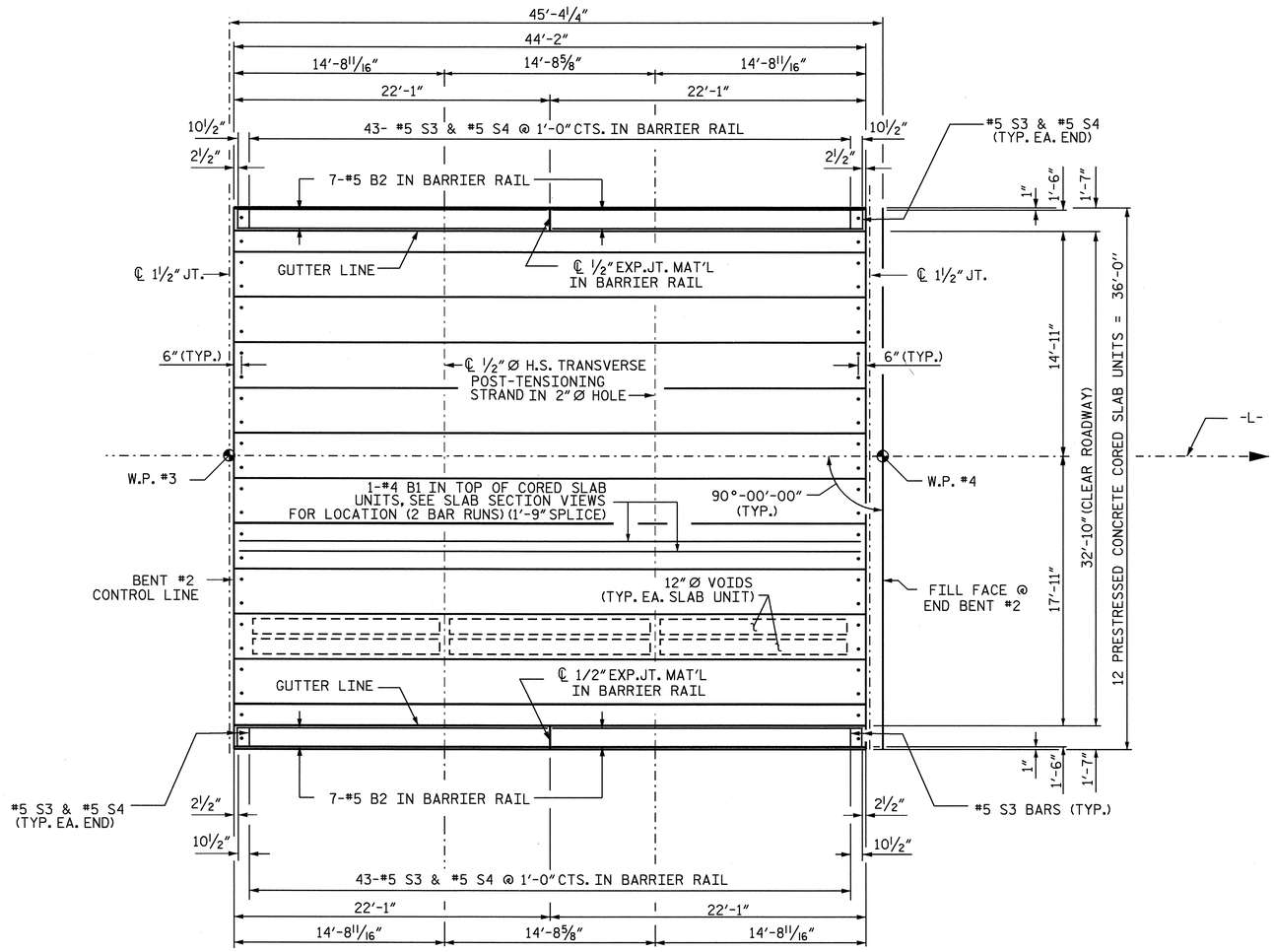
SHEET 3 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

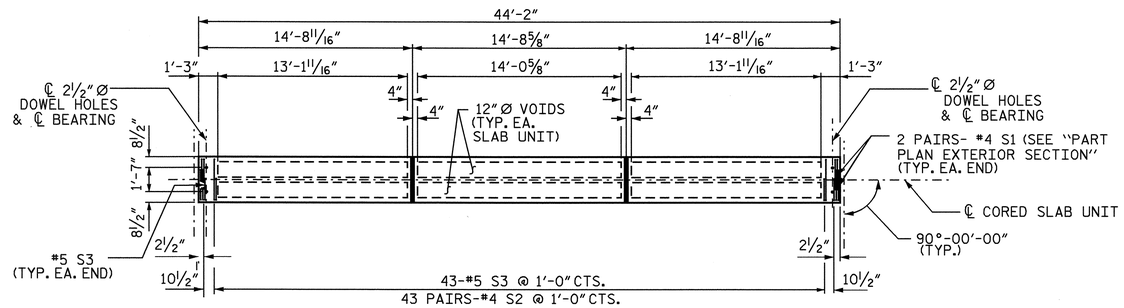
SUPERSTRUCTURE

PLAN OF SPAN B

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



SPAN C



PLAN OF EXTERIOR SLAB - SPAN C

PLAN FOR INTERIOR SLAB IDENTICAL EXCEPT OMIT S3 BARS

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wparker

DRAWN BY : N. Q. TRAN DATE : 4-05
CHECKED BY : T. A. HARRIS DATE : 10-06

NORTH CAROLINA PROFESSIONAL SEAL 11259 ENGINEER DAVID R ANDERSON
2/19/07

PROJECT NO. B-4111
EDGECOMBE COUNTY
STATION: 16+21.50 -L-

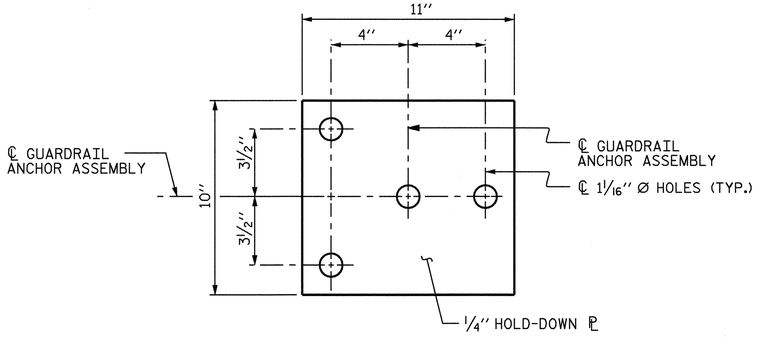
SHEET 4 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

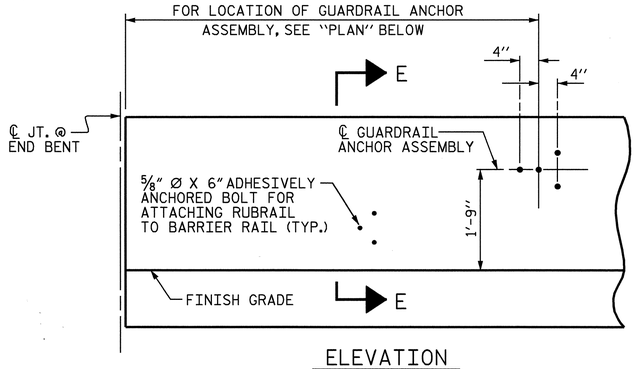
SUPERSTRUCTURE

PLAN OF SPAN C

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			18

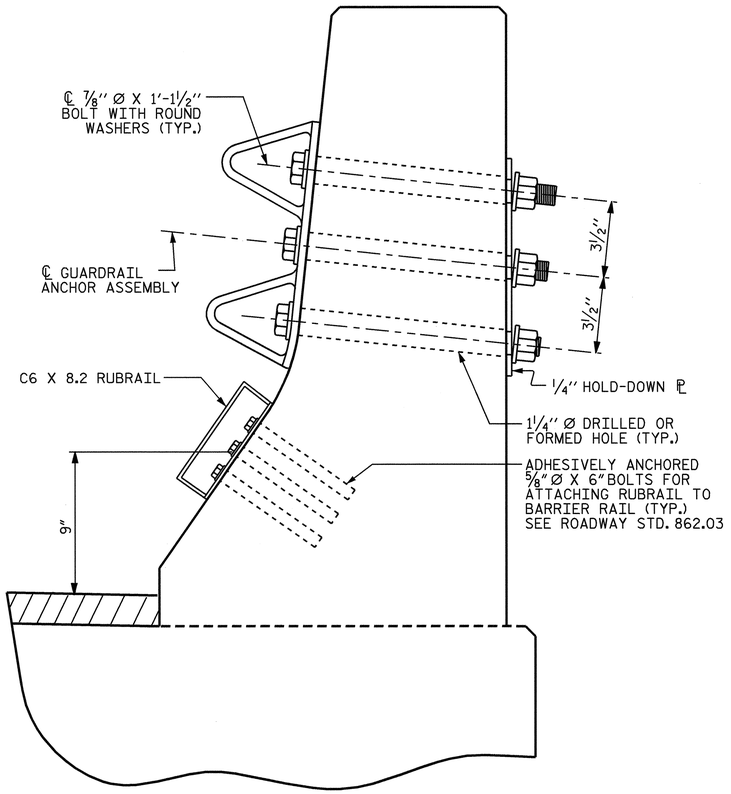


PLAN



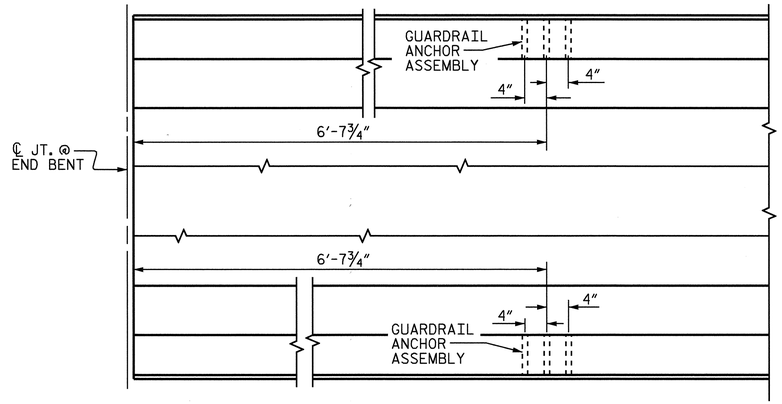
ELEVATION

FOR LOCATION OF RUBRAIL, SEE ROADWAY STD. 862.03



SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

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

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.)

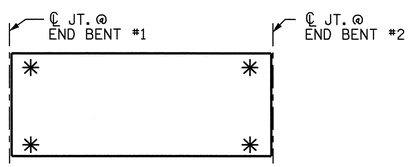
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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 5/8'' Ø X 6'' BOLTS WITH WASHERS. SEE ROADWAY STANDARD 862.03 FOR DETAILS AND LOCATION OF THE RUBRAIL.



SKETCH SHOWING POINTS OF ATTACHMENTS

✳ DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. B-4111

EDGECOMBE COUNTY

STATION: 16+21.50 -L

SHEET 5 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

GUARDRAIL ANCHORAGE FOR BARRIER RAIL

NORTH CAROLINA PROFESSIONAL SEAL 11259 ENGINEER DAVID R ANDERSON

2/7/07

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			18

ASSEMBLED BY : N. Q. TRAN	DATE : 01-07
CHECKED BY : T. A. HARRIS	DATE : 01-07
DRAWN BY : TLA 5/06	ADDED 5/1/06
CHECKED BY : GM 5/06	

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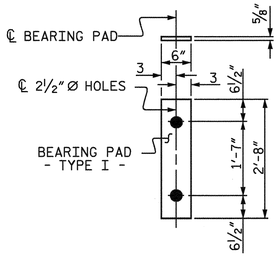
STD. NO. GRA2

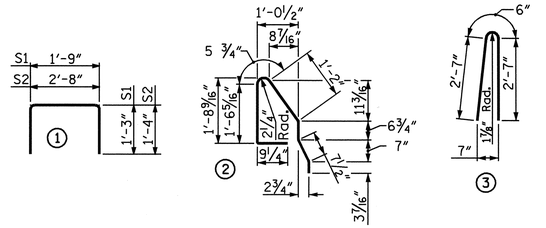
ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.



FIXED END
(TYPE I - 72 REQ'D)

ELASTOMERIC BEARING DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR ONE CORED SLAB SECTION

			EXTERIOR UNIT			INTERIOR UNIT		
BAR	SIZE	TYPE	NUMBER	LENGTH	WEIGHT	NUMBER	LENGTH	WEIGHT
B1	# 4	STR	4	22'-10"	61	4	22'-10"	61
S1	# 4	1	8	4'-3"	23	8	4'-3"	23
S2	# 4	1	86	5'-4"	306	86	5'-4"	306
✳ S3	# 5	2	45	5'-5"	254			
REINFORCING STEEL		LBS.		390				390
✳ EPOXY COATED REINFORCING STEEL		LBS.		254				
5,000 P.S.I. CONCRETE		CU. YDS.		6.2				6.2
½"Ø L.R. STRANDS		No.		17				17

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 2½"Ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH GROUT. FOR GROUT, SEE SPECIAL PROVISIONS.

THE 2"Ø BACKER ROD SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

WHEN CORED SLABS ARE CAST, A POSITIVE HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDEWAYS. THIS SYSTEM SHALL BE DESIGNED TO BE LEFT IN PLACE UNTIL THE CONCRETE HAS REACHED RELEASE STRENGTH. AT LEAST THREE 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.

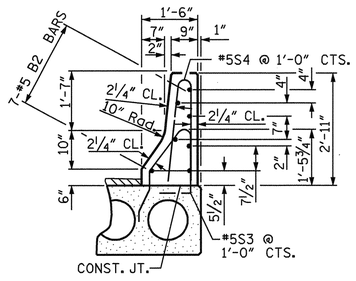
THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 4000 PSI.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

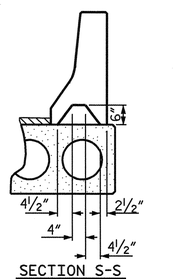
PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE CORED SLAB UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

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 JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.



SECTION THRU RAIL



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

GRADE 270 STRANDS

	½"Ø L.R.
AREA (SQUARE INCHES)	0.153
ULTIMATE STRENGTH (LBS. PER STRAND)	41,300
APPLIED PRESTRESS (LBS. PER STRAND)	30,980

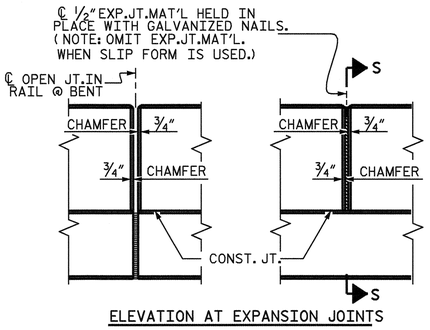
DEAD LOAD DEFLECTION AND CAMBER

	3'-0" x 1'-9"
	½"Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE) ↑	1¼"
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD** ↓	3/16"
FINAL CAMBER ↑	1 1/16"

** INCLUDES FUTURE WEARING SURFACE

CORED SLABS REQUIRED

	SPAN A			SPAN B			SPAN C		
	NUMBER	LENGTH	TOTAL LENGTH	NUMBER	LENGTH	TOTAL LENGTH	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	44'-2"	88'-4"	2	44'-2"	88'-4"	2	44'-2"	88'-4"
INTERIOR C.S.	10	44'-2"	441'-8"	10	44'-2"	441'-8"	10	44'-2"	441'-8"
TOTAL	12		530'-0"	12		530'-0"	12		530'-0"

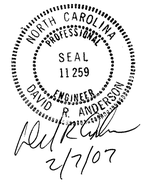


ELEVATION AT EXPANSION JOINTS

BARRIER RAIL DETAILS

BARRIER RAIL BILL OF MATERIAL

BAR	NO. SPAN A	SPAN B	SPAN C	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ B2	28	28	28	84	# 5	STR.	21'-8"	1898
✳ S4	90	90	90	270	# 5	3	5'- 8"	1596
✳ EPOXY COATED REINFORCING STEEL				LBS. 3494				
CLASS AA CONCRETE				CU.YDS. = 30.2				
TOTAL CONCRETE BARRIER RAIL				LIN. FT. = 265.00'				



PROJECT NO. B-4111
EDGECOMBE COUNTY
STATION: 16+21.50 -L-

SHEET 6 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLAB UNIT

SPANS A, B & C

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-9
1			3			TOTAL SHEETS
2			4			18

STD. No. PCS3

ASSEMBLED BY : N.Q. TRAN	DATE : 4-05		
CHECKED BY : T.A. HARRIS	DATE : 10-27-06		
DRAWN BY : WJH 4/89	REV. 7/10/01R	RWW/LES	
CHECKED BY : FCJ 5/89	REV. 5/17/03	RWW/JTZ	
	REV. 5/1//06	TLA/GM	

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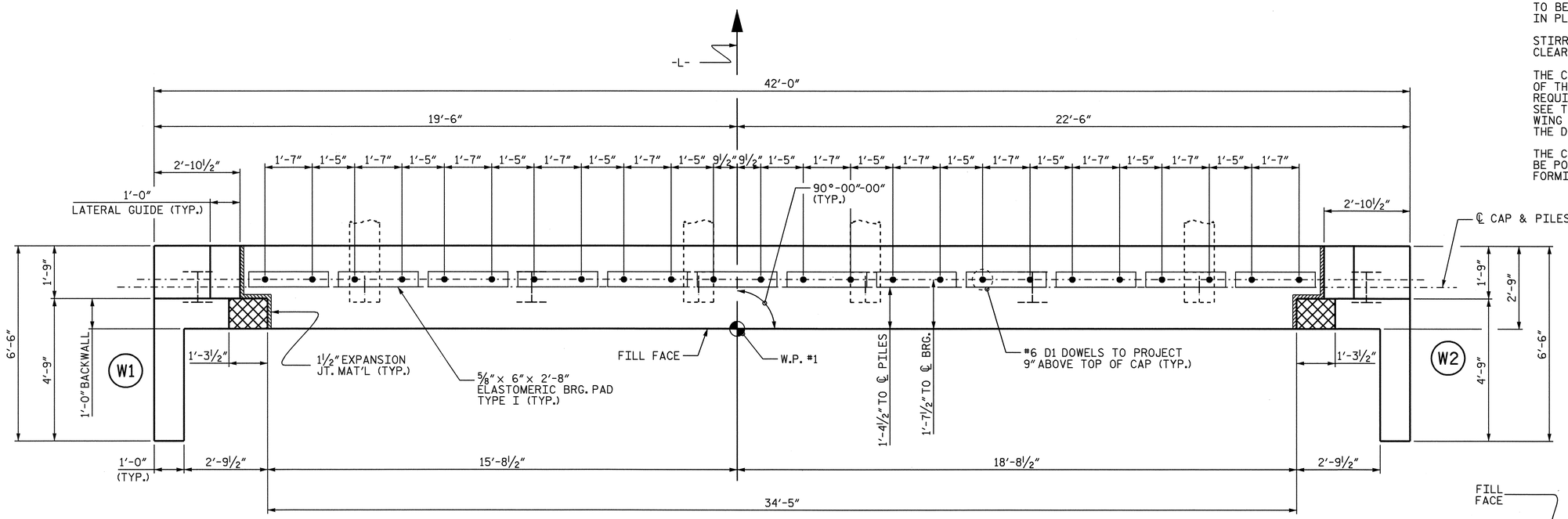
NOTES

THE LATERAL GUIDE AT THE ENDS OF CAP ARE NOT TO BE POURED UNTIL AFTER CORED SLAB UNITS ARE IN PLACE.

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

THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4"Ø 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.

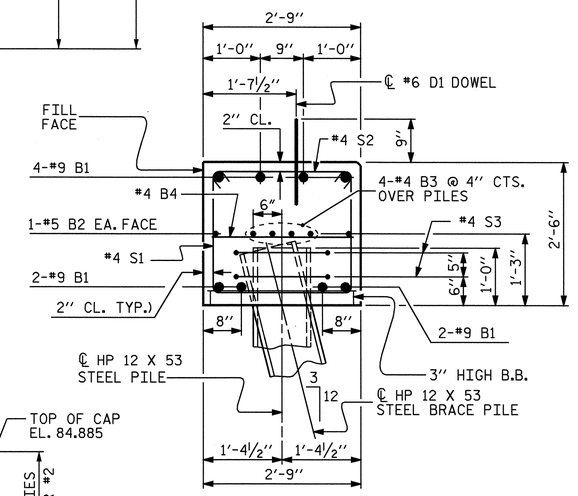
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.



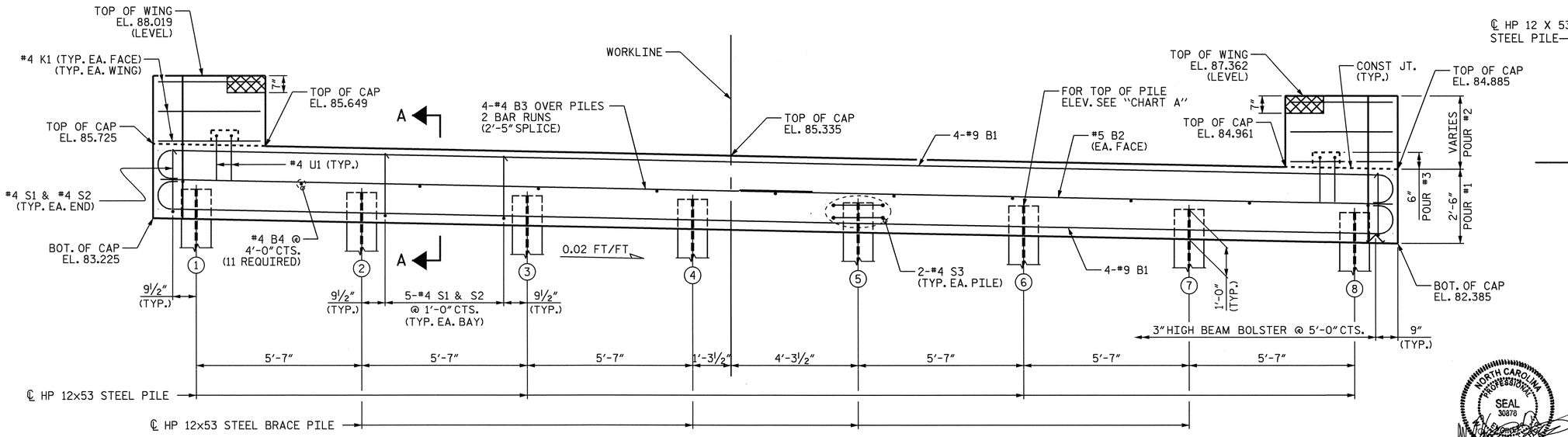
PLAN

PILE #	TOP OF PILE ELEVATIONS
1	84.196
2	84.085
3	83.973
4	83.861
5	83.750
6	83.638
7	83.526
8	83.415

CHART A



SECTION A-A



ELEVATION

NORTH CAROLINA PROFESSIONAL SEAL 30878 ENGINEER WILLIAM KEVIN FISCHER
2/7/07

PROJECT NO. B-4111
EDGECOMBE COUNTY
STATION: 16+21.50 -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:	5-10
1			3			TOTAL SHEETS
2			4			18

DRAWN BY : W.K. FISCHER/MAA DATE : 3/21/05
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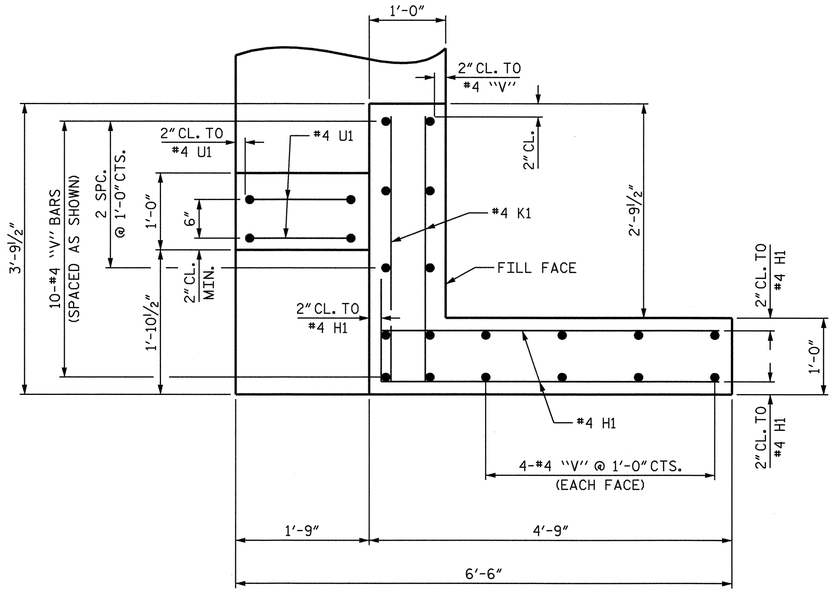
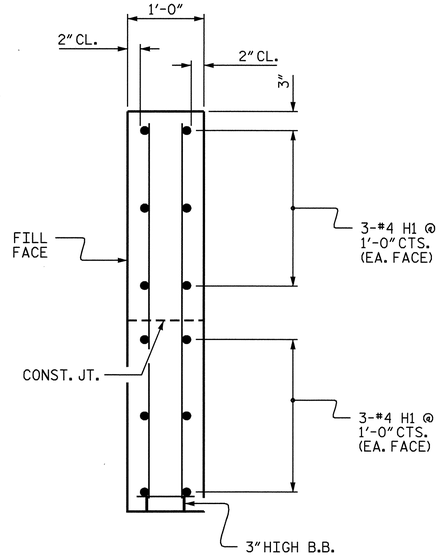
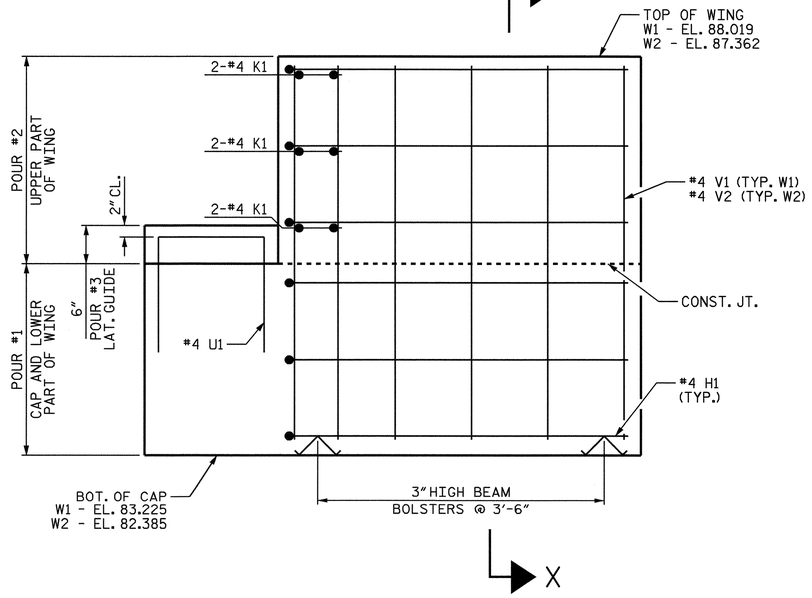


PLAN OF WING - W1

WING W1 SHOWN, WING W2 SIMILAR

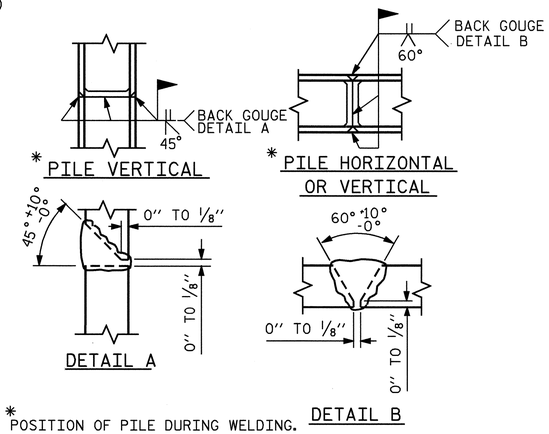


SECTION X-X



ELEVATION OF WING - W1

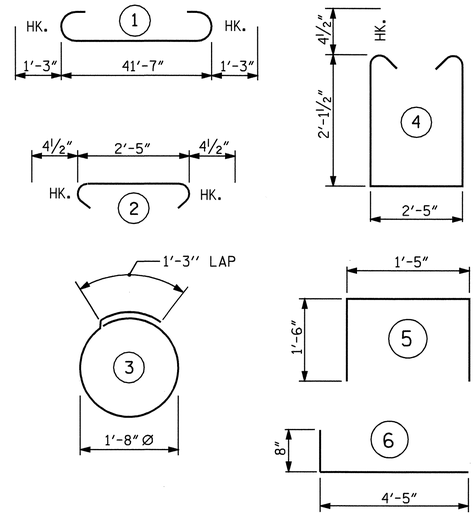
WING W1 SHOWN, WING W2 SIMILAR



* POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	9	1	44'-1"	1199
B2	2	5	STR	41'-8"	87
B3	8	4	STR	22'-1"	118
B4	11	4	STR	2'-5"	18
D1	24	6	STR	1'-6"	54
H1	24	4	6	5'-1"	81
K1	12	4	STR	3'-5"	27
S1	37	4	4	7'-5"	183
S2	37	4	2	3'-2"	78
S3	16	4	3	6'-6"	69
U1	4	4	5	4'-5"	12
V1	18	4	STR	4'-5"	53
V2	18	4	STR	4'-7"	55

REINFORCING STEEL 2034 LBS.

CLASS A CONCRETE BREAKDOWN

POUR 1 - CAP AND LOWER PORTION OF WINGS 11.4 C.Y.

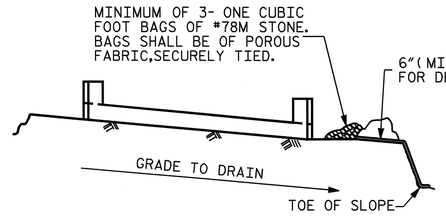
POUR 2 - UPPER PORTION OF WINGS 1.3 C.Y.

POUR 3 - LATERAL GUIDES 0.1 C.Y.

CLASS A CONCRETE TOTAL 12.8 C.Y.

HP 12 x 53 STEEL PILES

NO. 8 360 LIN. FEET



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

PROJECT NO. B-4111

EDGECOMBE COUNTY

STATION: 16+21.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 1

NORTH CAROLINA PROFESSIONAL SEAL 30878 ENGINEER MELVIN FISCHER

2/7/07

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			18

DRAWN BY : W.K. FISCHER/MAA DATE : 3/22/05
CHECKED BY : S. WANCE DATE : 3/05

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wkfischer

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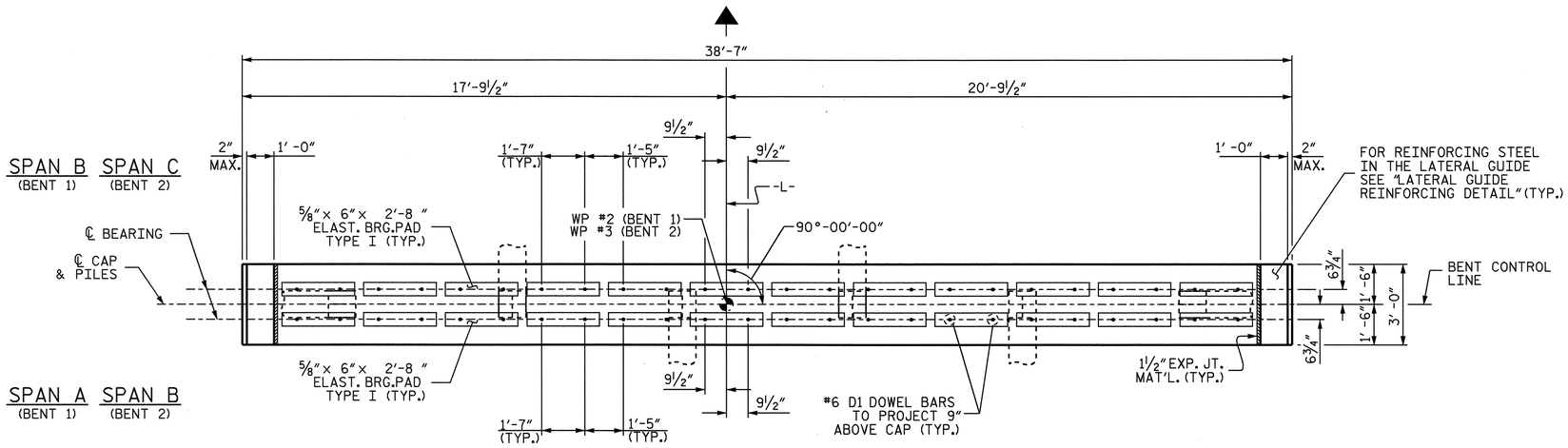
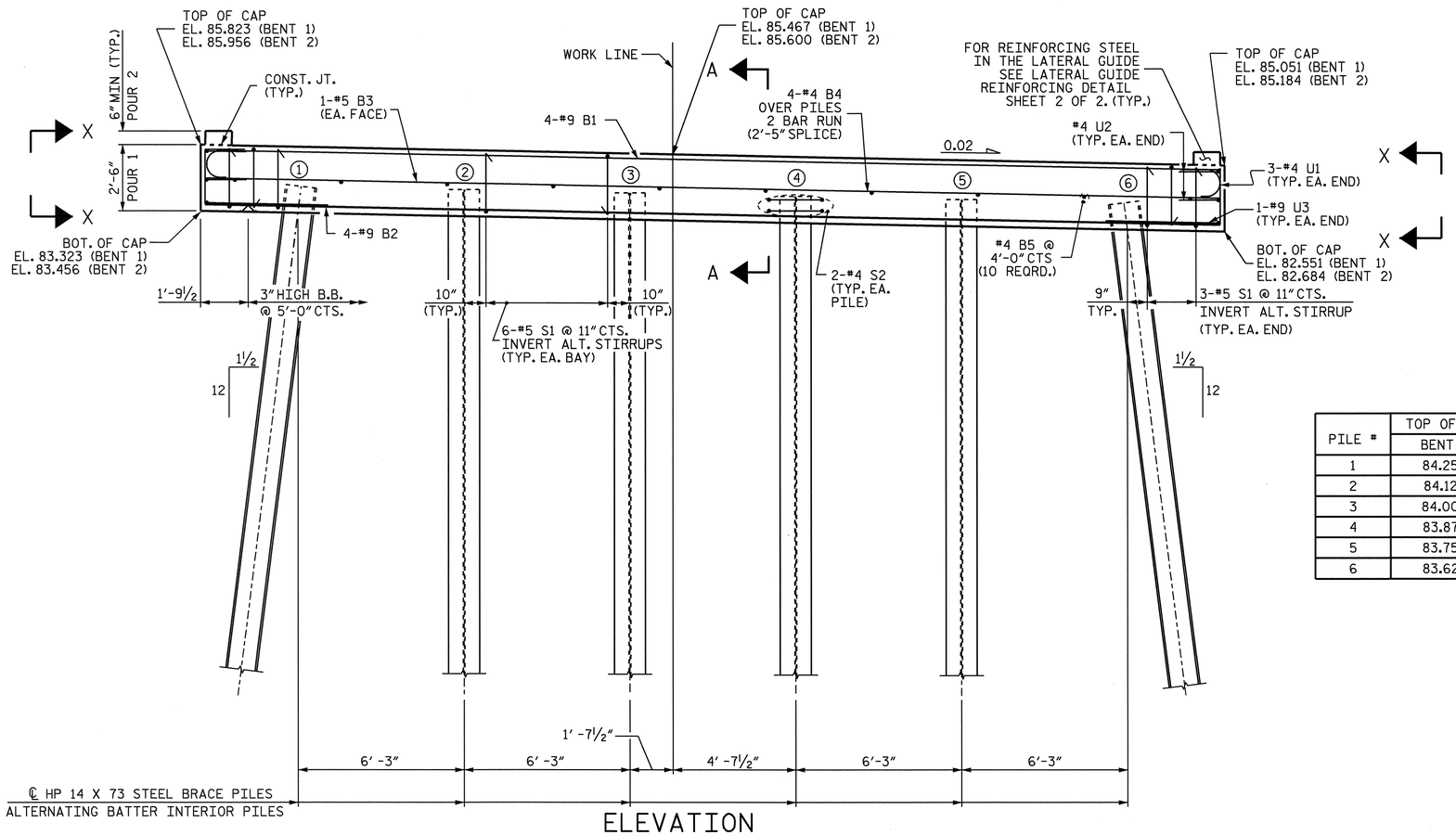
wparker



PLAN



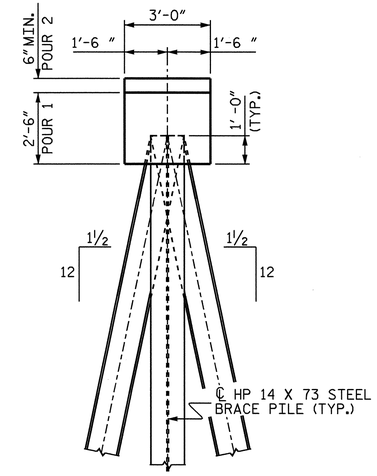
ELEVATION

NOTES:

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

THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE

THE STEEL PILES SHALL BE GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.



END ELEVATION

PILE #	TOP OF PILE ELEVATIONS	
	BENT 1	BENT 2
1	84.250	84.383
2	84.125	84.258
3	84.000	84.133
4	83.875	84.008
5	83.750	83.883
6	83.625	83.758

PROJECT NO. B-4111
EDGECOMBE COUNTY
STATION: 16+21.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

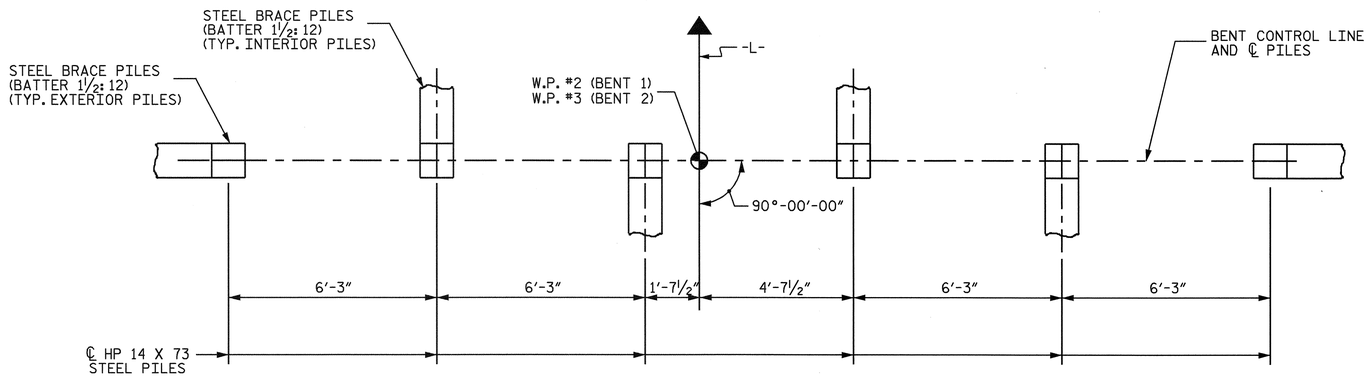
SUBSTRUCTURE

BENTS 1 & 2

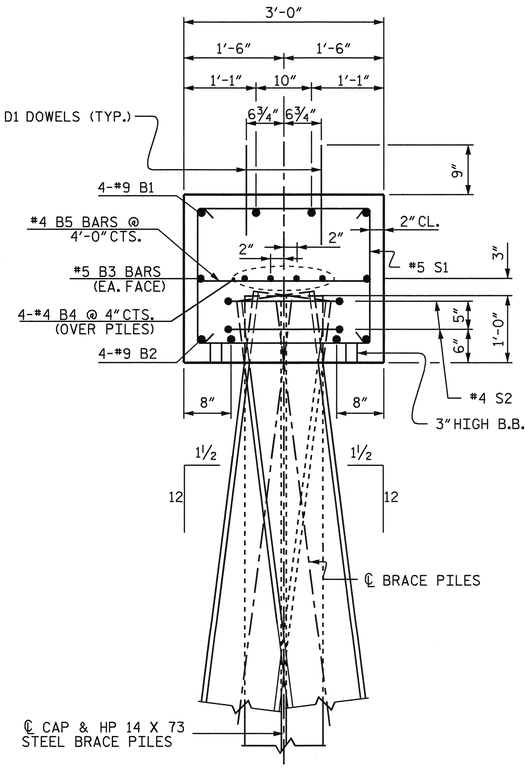
NORTH CAROLINA PROFESSIONAL SEAL 11259 ENGINEER DAVID R. ANDERS
2/19/07

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			18

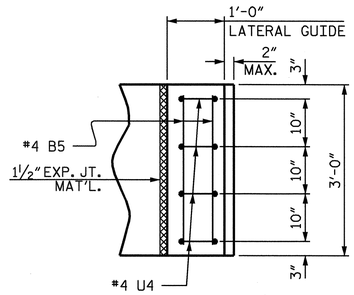
DRAWN BY : J.A. TILLMAN DATE : 11/14/05
CHECKED BY : T.A. HARRIS DATE : 10/31/06



PLAN OF STEEL PILES

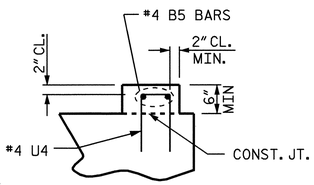


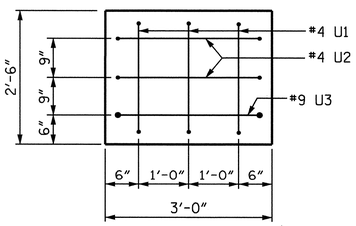
SECTION A-A



LATERAL GUIDE REINFORCING DETAIL

RIGHT END OF THE CAP SHOWN, LEFT END SIMILAR BY ROTATION

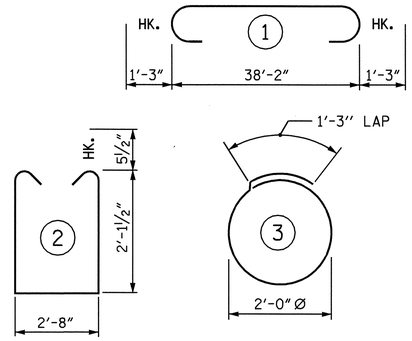




VIEW X-X

SHOWING REINFORCING STEEL AT END OF THE CAP

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	9	1	40'-8"	553
B2	4	9	STR	38'-3"	520
B3	2	5	STR	38'-3"	80
B4	8	4	STR	20'-4"	109
B5	14	4	STR	2'-8"	25
S1	36	5	2	7'-10"	294
S2	12	4	3	7'-7"	61
D1	48	6	STR	1'-6"	108
U1	6	4	4	5'-1"	20
U2	4	4	4	5'-6"	15
U3	2	9	4	9'-10"	67
U4	8	4	4	3'-6"	19

REINFORCING STEEL LBS. 1871

CLASS 'A' CONCRETE
POUR #1 CU. YD. 10.7
POUR #2 CU. YD. 0.1
TOTAL: CU. YD. 10.8

HP 14 X 73 GALVANIZED STEEL PILES
NO. 6 LINEAR FEET 300

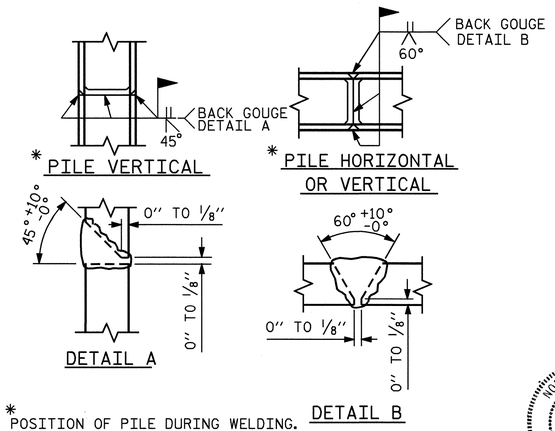
BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	9	1	40'-8"	553
B2	4	9	STR	38'-3"	520
B3	2	5	STR	38'-3"	80
B4	8	4	STR	20'-4"	109
B5	14	4	STR	2'-8"	25
S1	36	5	2	7'-10"	294
S2	12	4	3	7'-7"	61
D1	48	6	STR	1'-6"	108
U1	6	4	4	5'-1"	20
U2	4	4	4	5'-6"	15
U3	2	9	4	9'-10"	67
U4	8	4	4	3'-6"	19

REINFORCING STEEL LBS. 1871

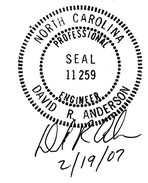
CLASS 'A' CONCRETE
POUR #1 CU. YD. 10.7
POUR #2 CU. YD. 0.1
TOTAL: CU. YD. 10.8

HP 14 X 73 GALVANIZED STEEL PILES
NO. 6 LINEAR FEET 300



* POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS



PROJECT NO. B-4111

EDGECOMBE COUNTY

STATION: 16+21.50 -L-

SHEET 2 OF 2

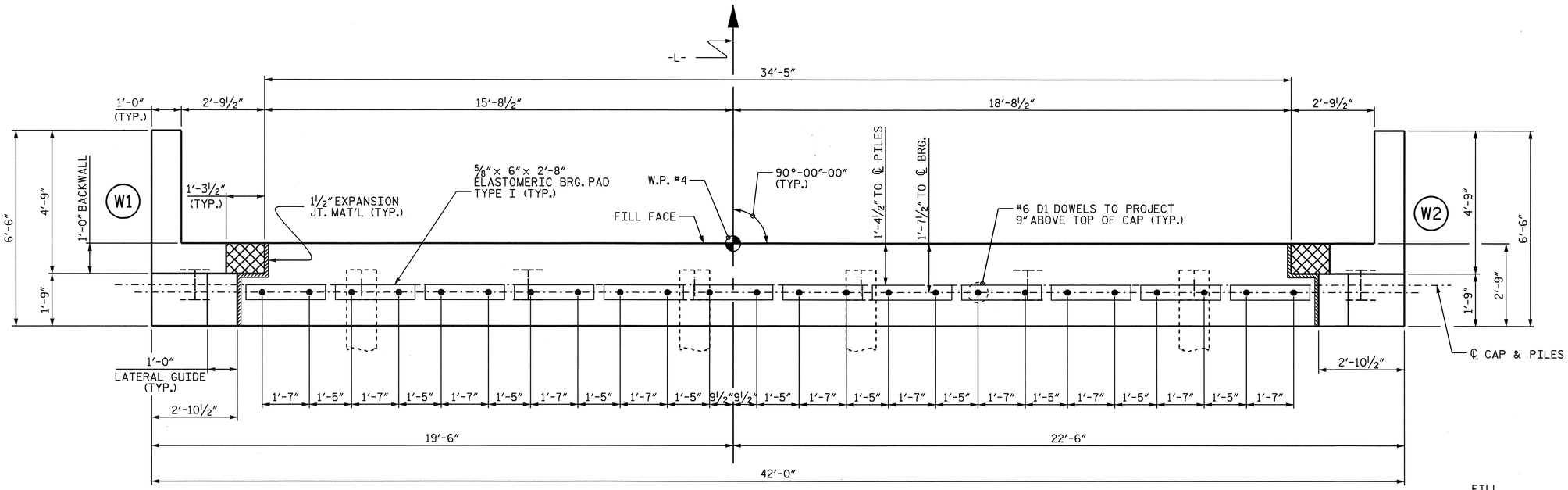
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

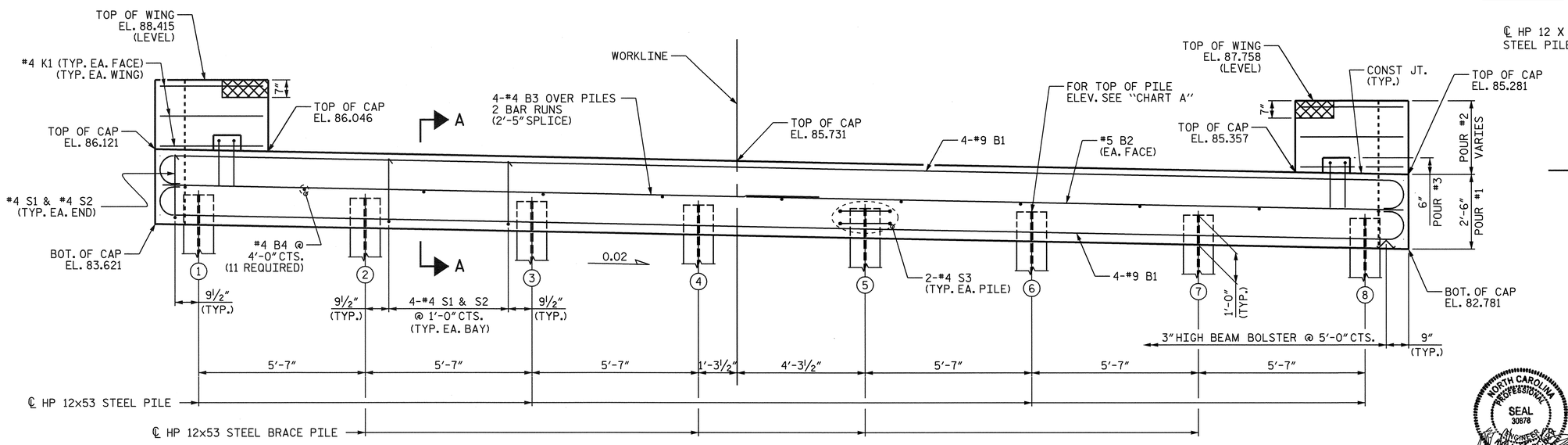
BENTS 1 & 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			18

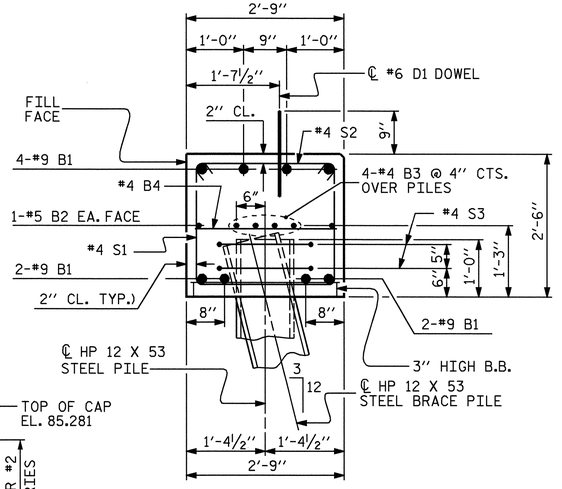
DRAWN BY : J.A. TILLMAN DATE : 11/14/05
CHECKED BY : T.A. HARRIS DATE : 10/31/06



PLAN



ELEVATION



SECTION A-A

NOTES

THE LATERAL GUIDE AT THE ENDS OF CAP ARE NOT TO BE POURED UNTIL AFTER CORED SLAB UNITS ARE IN PLACE.

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

THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4"Ø 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 RAIL IS CAST IF SLIP FORMING IS USED.

PILE #	TOP OF PILE ELEVATIONS
1	84.592
2	84.481
3	84.369
4	84.257
5	84.146
6	84.034
7	83.922
8	83.811

CHART A

PROJECT NO. B-4111

EDGECOMBE COUNTY

STATION: 16+21.50 -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-14
1			3			TOTAL SHEETS
2			4			18

NORTH CAROLINA PROFESSIONAL SEAL 30878 ENGINEER W.K. FISCHER
2/7/07

DRAWN BY : W.K. FISCHER/MAA DATE : 3/21/05
CHECKED BY : S. WANCE DATE : 3/05

06-FEB-2007 08:26
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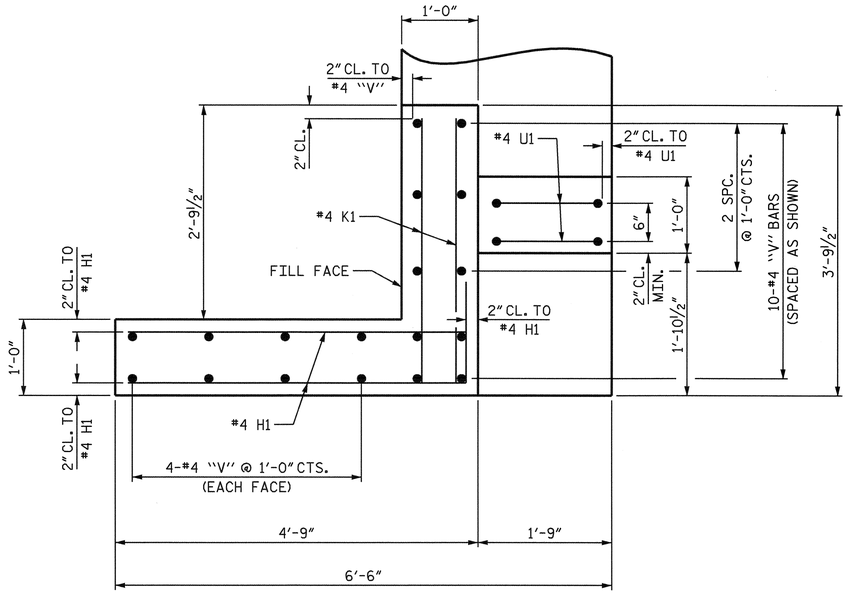
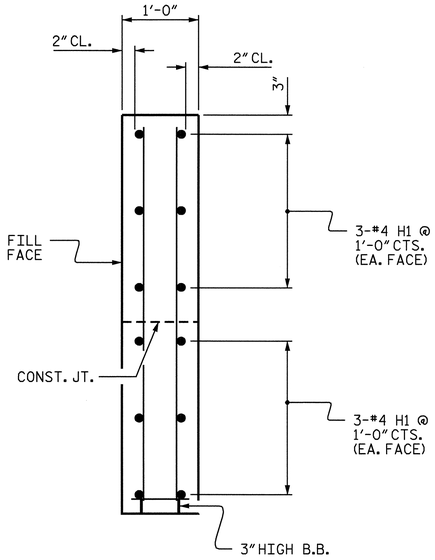
wkfischer

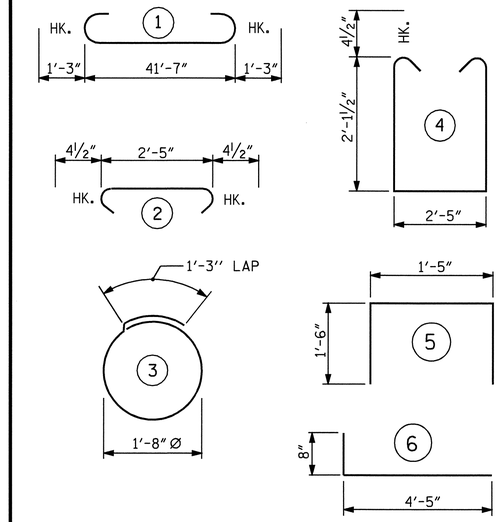


PLAN OF WING - W1

WING W1 SHOWN, WING W2 SIMILAR



SECTION X-X



ALL BAR DIMENSIONS ARE OUT TO OUT.

BAR TYPES

BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	9	1	44'-1"	1199
B2	2	5	STR	41'-8"	87
B3	8	4	STR	22'-1"	118
B4	11	4	STR	2'-5"	18
D1	24	6	STR	1'-6"	54
H1	24	4	6	5'-1"	81
K1	12	4	STR	3'-5"	27
S1	37	4	4	7'-5"	183
S2	37	4	2	3'-2"	78
S3	16	4	3	6'-6"	69
U1	4	4	5	4'-5"	12
V1	18	4	STR	4'-5"	53
V2	18	4	STR	4'-7"	55

REINFORCING STEEL 2034 LBS.

CLASS A CONCRETE BREAKDOWN

POUR 1 - CAP AND LOWER PORTION OF WINGS 11.4 C.Y.

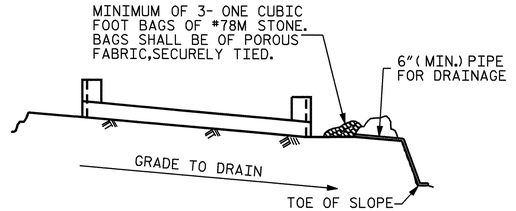
POUR 2 - UPPER PORTION OF WINGS 1.3 C.Y.

POUR 3 - LATERAL GUIDES 0.1 C.Y.

CLASS A CONCRETE TOTAL 12.8 C.Y.

HP 12 x 53 STEEL PILES

NO. 8 360 LIN. FEET

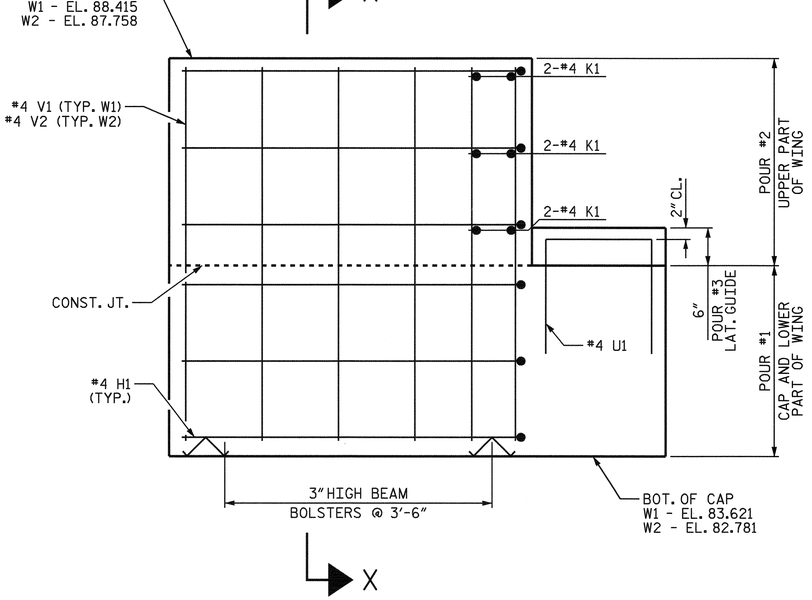


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

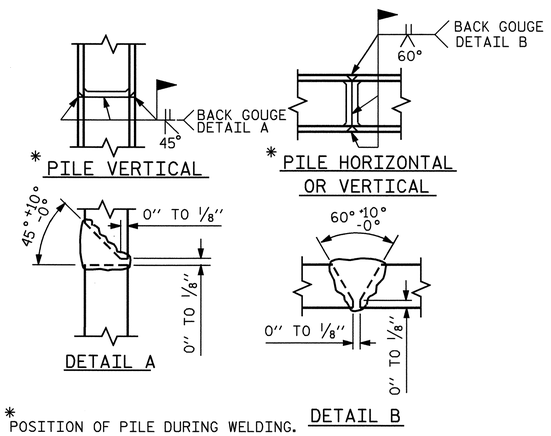
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



ELEVATION OF WING - W1

WING W1 SHOWN, WING W2 SIMILAR



* POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

PROJECT NO. B-4111

EDGECOMBE COUNTY

STATION: 16+21.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 2

NORTH CAROLINA PROFESSIONAL SEAL 30878 ENGINEER W.K. FISCHER

2/7/07

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			18

DRAWN BY : W.K. FISCHER/MAA DATE : 3/22/05
CHECKED BY : S. WANCE DATE : 3/05

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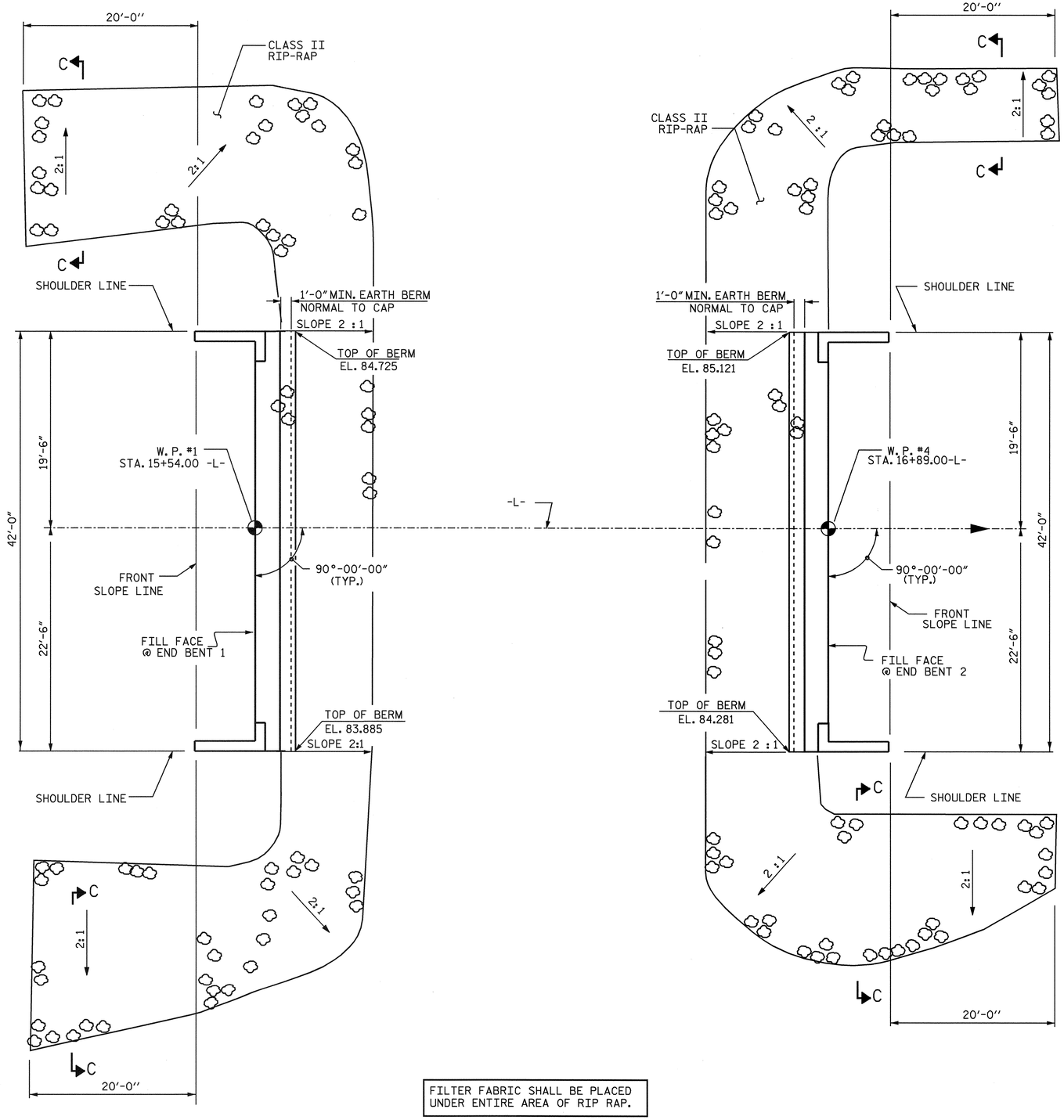
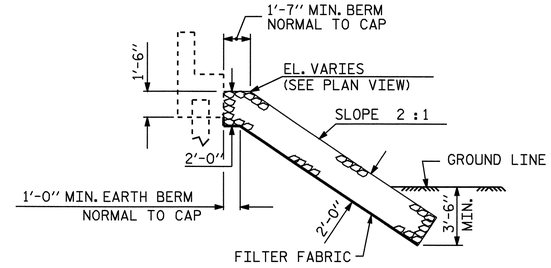
wkfischer



FILTER FABRIC SHALL BE PLACED UNDER ENTIRE AREA OF RIP RAP.

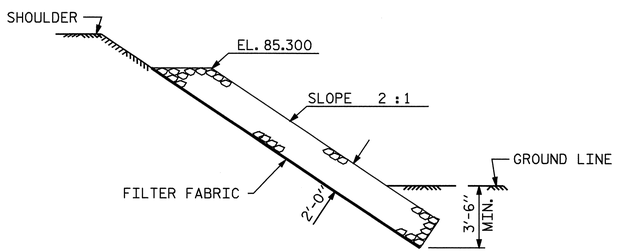
NOTES :

FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.



℄ SECTION

BERM RIP RAPPED



SECTION C-C

ESTIMATED QUANTITIES		
BRIDGE @ STA. 16+21.50-L-	RIP RAP CLASS II	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	160	180
END BENT 2	145	165

PROJECT NO. B-4111

EDGECOMBE COUNTY

STATION: 16+21.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

RIP RAP DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 11259 ENGINEER DAVID R. ANDERSON

2/19/07

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-16
1			3			TOTAL SHEETS
2			4			18

ASSEMBLED BY : N. Q. TRAN	DATE : 8-4-05	
CHECKED BY : S. M. RASHIDI	DATE : 9-14-05	
DRAWN BY : FCJ 2/88	REV. 8/16/99	RWW/LES
CHECKED BY : ARB 8/88	REV. 10/17/00	RWW/LES
	REV. 5/1/06	TLA/GM

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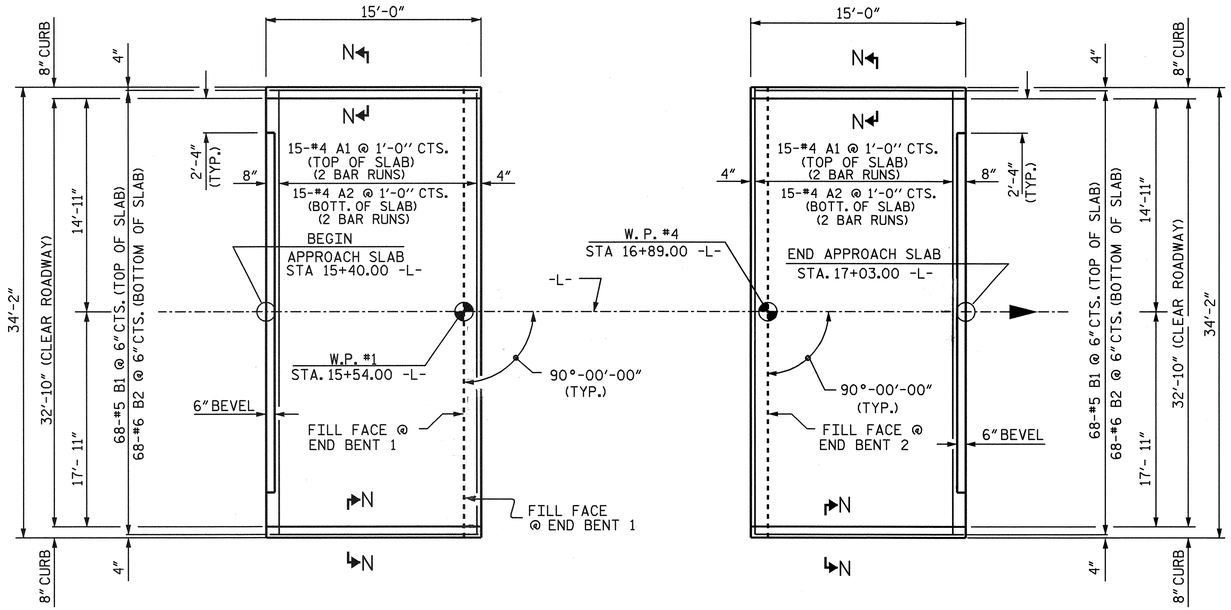
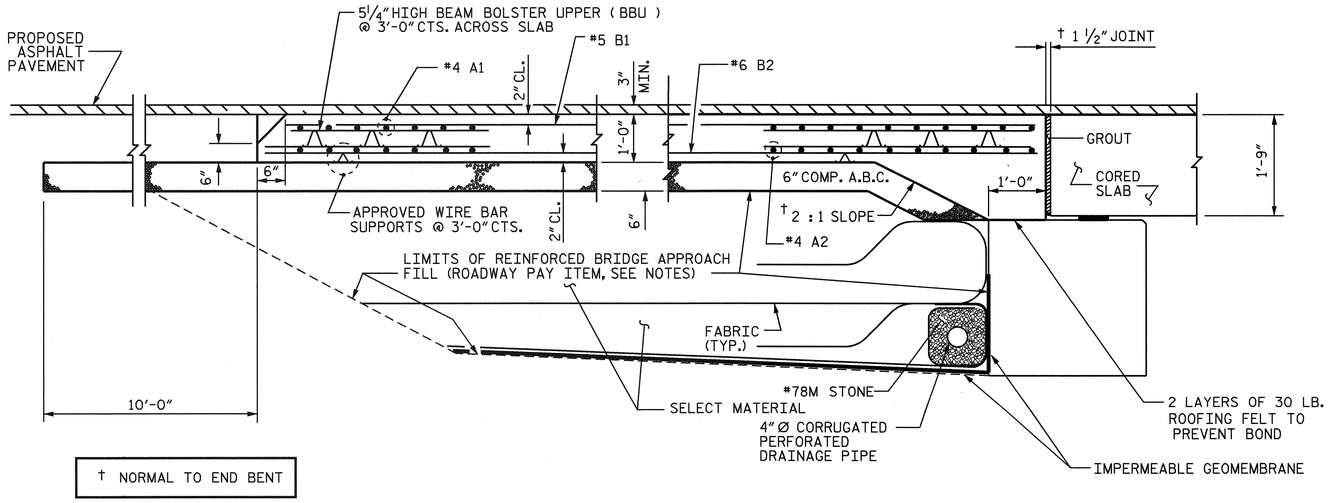
STD. NO. RR2



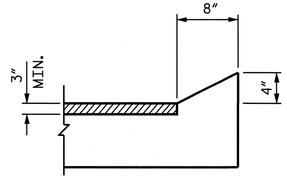
AT END BENT 1 AT END BENT 2

PLAN

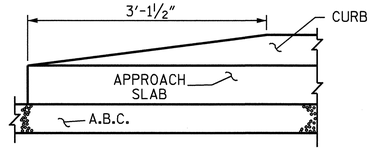


† NORMAL TO END BENT

SECTION THRU SLAB



SECTION N-N



END OF CURB WITHOUT
SHOULDER BERM GUTTER

CURB DETAILS

NOTES

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

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

THE 6" COMP. A.B.C. SHALL EXTEND 10'-0" BEYOND THE END OF THE APPROACH SLAB AND 1'-0" OUTSIDE OF EACH EDGE OF SLAB.

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

THE CONTRACTOR MAY USE 5" CLASS "A" CONCRETE BASE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE CONCRETE BASE SHALL EXTEND 1'-0" BEYOND THE END OF THE APPROACH SLAB AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB. THE CONCRETE SHALL BE FINISHED TO A SMOOTH SURFACE AND A LAYER OF 30 LB ROOFING FELT SHALL BE PLACED BETWEEN THE CONCRETE BASE AND THE APPROACH SLAB TO PREVENT BOND. THE APPROACH SLAB SHALL NOT BE CAST UNTIL THE CONCRETE BASE HAS REACHED AN AGE OF THREE CURING DAYS.

FOR JOINT DETAILS, SEE "PRESTRESSED CONCRETE CORED SLAB UNIT" SHEETS.

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

APPROACH SLAB GROOVING IS NOT REQUIRED.

BILL OF MATERIAL
FOR ONE APPROACH SLAB
(2 REQ'D)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ A1	30	#4	STR	17'-11"	359
A2	30	#4	STR	17'-10"	357
✳ B1	68	#5	STR	14'- 2"	1005
B2	68	#6	STR	14'- 8"	1498
REINFORCING STEEL				LBS.	1855
✳ EPOXY COATED REINFORCING STEEL				LBS.	1364
CLASS AA CONCRETE				C.Y.	20.8

SPLICE CHART

BAR	SPLICE LENGTH
#4 A1	2-0
#4 A2	1-9

PROJECT NO. B-4111
EDGECOMBE COUNTY
STATION: 16+21.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
BRIDGE APPROACH SLAB
FOR PRESTRESSED
CONCRETE CORED SLAB

NORTH CAROLINA PROFESSIONAL SEAL 11259 ENGINEER DAVID R. ANDERSON
2/7/07

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			18

ASSEMBLED BY : N. Q. TRAN		DATE : 7-21-05	
CHECKED BY : S. M. RASHIDI		DATE : 9/14/05	
DRAWN BY : FCJ 6/87	REV. 7/10/01	LES/RDR	
CHECKED BY : EGA 6/87	REV. 5/7/03R	RRW/JTE	
	REV. 5/1/06	TLA/GM	

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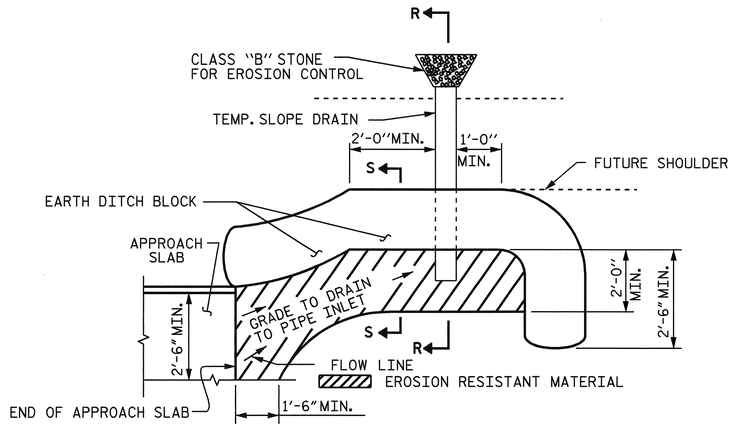
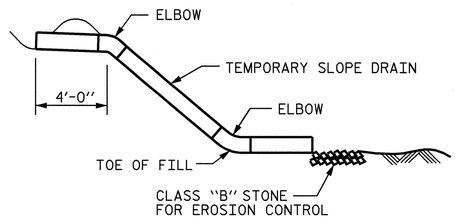
STD. NO. BAS7

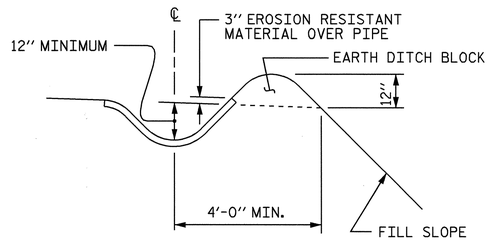


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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



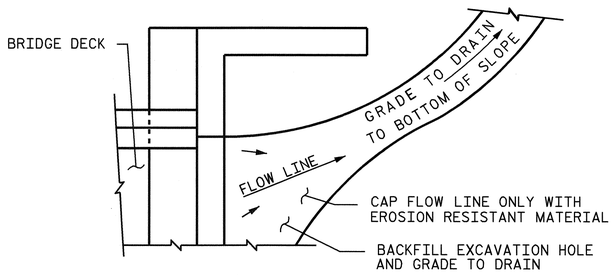
SECTION R-R



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 : N. Q. TRAN		DATE : 7-21-05	
CHECKED BY : S. M. RASHIDI		DATE : 9-14-05	
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	

07-FEB-2007 10:19
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PROJECT NO. B-4111
EDGECOMBE COUNTY
STATION: 16+21.50 -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-18
1			3			TOTAL SHEETS
2			4			18

NORTH CAROLINA PROFESSIONAL SEAL 11259 ENGINEER DAVID R. ANDERSON
2/7/07

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.

ENGLISH

JANUARY, 1990

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