PROJECT: B-4174

CONTRACT: C201600

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

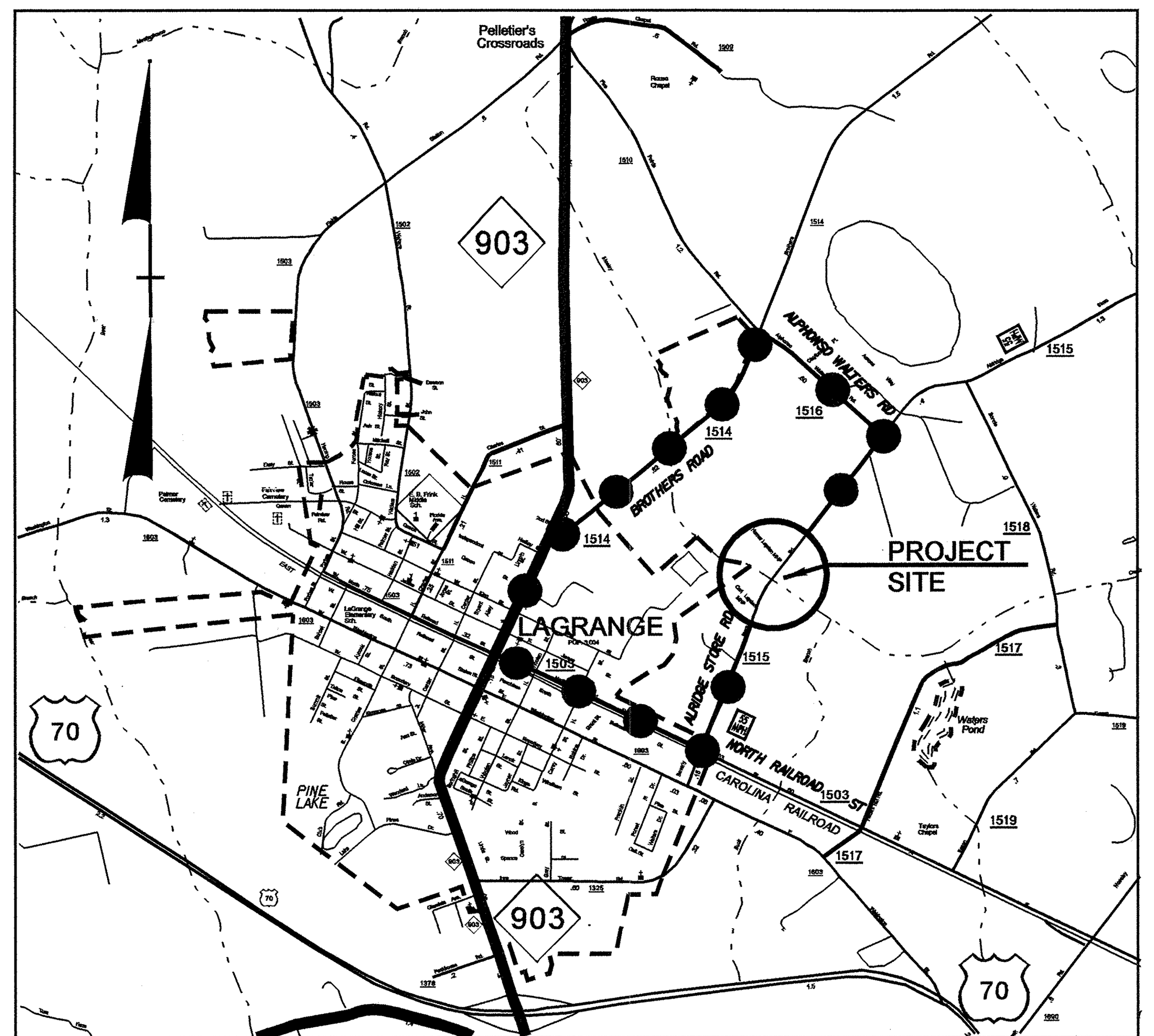
LENOIR COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4174		

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33521.1.1	BRZ-1515(3)	PE
33521.2.1	BRZ-1515(3)	R/W & UTIL
33521.3.1	BRZ-1515(3)	CONST.

LOCATION: BRIDGE NO. 128 OVER MOSELEY CREEK ON SR 1515

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE

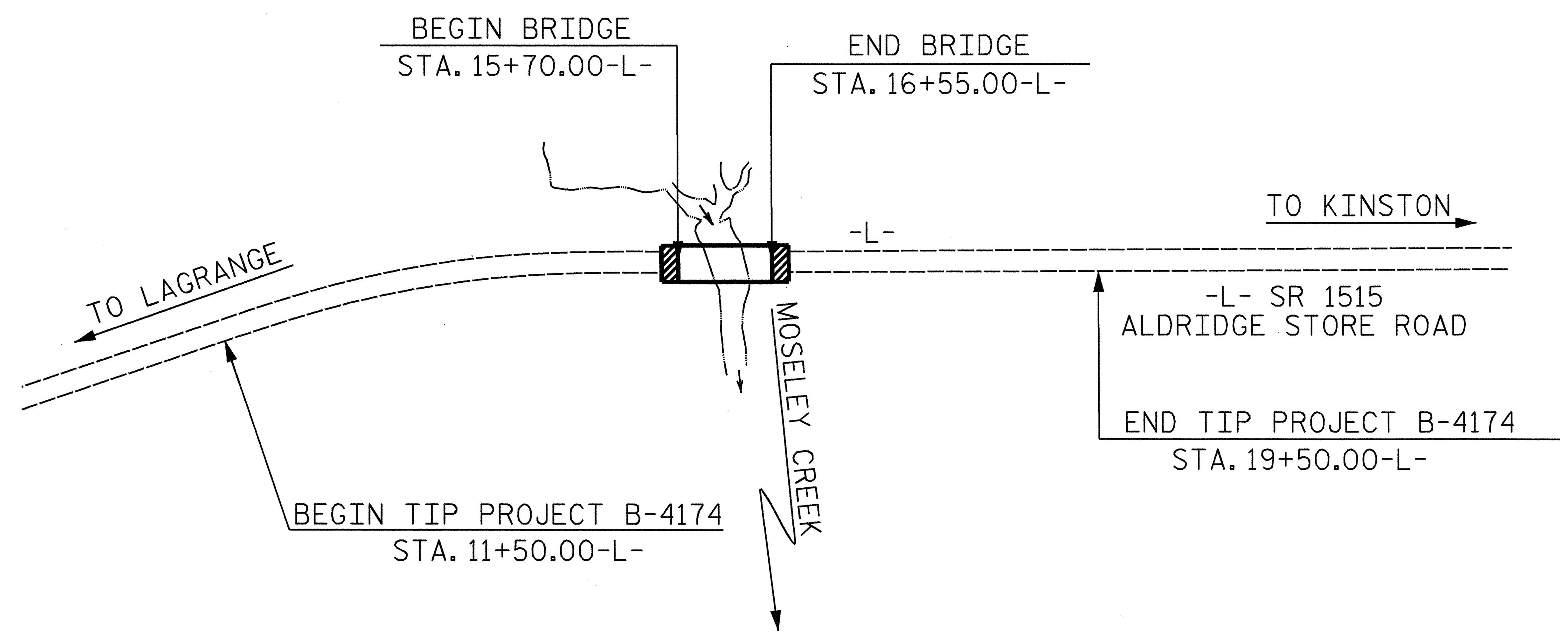


VICINITY MAP

OFFSITE DETOUR ●—●—●

NEAREST SHIPPING POINT: KINSTON ON THE ATLANTIC AND CAROLINA RAILROAD 12± MILES FROM BRIDGE.

STRUCTURES



DESIGN DATA

ADT 2007 = 1174
ADT 2027 = 1870
DHV = 10 %
D = 60 %
T = 6 % *
V = 60 MPH
CLASSIFICATION: RURAL LOCAL
* TTST 2% + DUAL 4%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4174 =	0.136 MILES
LENGTH STRUCTURE TIP PROJECT B-4174 =	0.016 MILES
TOTAL LENGTH TIP PROJECT B-4174 =	0.152 MILES

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

2006 STANDARD SPECIFICATIONS

LETTING DATE:
MARCH 20, 2007

J. M. BAILEY, PE
PROJECT ENGINEER

D. A. DAVENPORT, JR. P.E.
PROJECT DESIGN ENGINEER

STRUCTURE DESIGN

STRUCTURE DESIGN UNIT
1000 BIRCH RIDGE DRIVE
RALEIGH, N.C. 27610

NORTH CAROLINA PROFESSIONAL SEAL 14552 ENGINEER GREGORY R. PERFETTI

1.30.07

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE DESIGN ENGINEER

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR *DATE*

25-JAN-2007 11:23
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
adavenport

F.A. PROJECT NO. : BRZ-1515(3)

15+50 15+60 15+70 15+80 15+90 16+00 16+10 16+20 16+30 16+40 16+50 16+60 16+70 16+80 16+90

95 90 85 80 75 70 65 60

FILL FACE @ END BENT #1
STA. 15+70.00 -L-
GRADE POINT EL. 83.018

BEGIN FRONT SLOPE
STA. 15+66.15 -L-
GRADE POINT
EL. 83.030

SLOPE 1 1/2:1
(NORMAL TO CAP)
(TYP.)

SPAN A

EL. 82.0±

1'-7"
MIN. BERM
(NORMAL TO CAP)

FIX.

EL. 82.0±

APPROXIMATE
EXISTING
GROUND LINE

1'-6"
MIN.

CLASS II
RIP RAP
(TYP.)

EL. 78.0±

EL. 77.0±

EL. 76.0±

WATER SURFACE
ELEVATION 76.0±
(4/20/05)

EL. 75.0±

EL. 77.0±

HP 12 X 53
STEEL PILES

EXISTING
STRUCTURE
(TYP.)

FIX.

FIX.

NORMAL
WATER SURFACE
EL. 76.0±

EL. 73.0±

HP 12 X 53
STEEL PILES

SPAN B

HIGH WATER
EL. 83.0± (1999)

EL. 74.0±

EL. 76.0±

EL. 78.0±

1'-6" TO LIMITS OF
UNCLASSIFIED STRUCTURE
EXCAVATION (TYP.)

1'-7"
MIN. BERM
(NORMAL TO CAP)

FIX.

FILL FACE @ END BENT #2
STA. 16+55.00 -L-
GRADE POINT EL. 82.735

BEGIN FRONT SLOPE
STA. 16+58.80 -L-
GRADE POINT
EL. 82.723

1'-6"
MIN.

EL. 82.0±

HP 12 X 53
STEEL PILES

GRADE DATA-L-

-0.3320% +0.6325%

PI = 17+50.00 -L-
EL = 82.420
VC = 160

UNCLASSIFIED
STRUCTURE EXCAVATION

END BENT #1

BENT #1

END BENT #2

SECTION ALONG ℄ SURVEY

N

CLASS II
RIP RAP
(TYP.)

1'-7" BERM

1'-0" MIN. EARTH BERM
EL. 78.545

1'-7" BERM

1'-0" MIN. EARTH BERM
EL. 78.268

MOSELEY CREEK

BENT #1
CONTROL LINE

STA. 15+56.00 -L-
BEGIN APPROACH SLAB

FILL FACE @
END BENT #1

STA. 16+20.00-L-
W. P. #2

FILL FACE @
END BENT #2

STA. 16+58.80 -L-
BEGIN FRONT SLOPE

TO SR 1503

TO SR 1516

STA.15+66.15 -L-
BEGIN FRONT SLOPE

STA. 15+70.00 -L-
W.P. #1

STA. 16+12.50 -L-
℄ BRIDGE

℄ -L-

EXISTING STRUCTURE
(TYP.)

90°-00'-00"
(TYP.)

STA. 16+69.00 -L-
END APPROACH SLAB

STA. 16+55.00 -L-
W. P. #3

1'-0" MIN. EARTH BERM
EL. 77.285

1'-0" MIN. EARTH BERM
EL. 77.008

1'-7" BERM

42'-6" 7'-6"

50'-0" 35'-0"

85'-0"
(FILL FACE TO FILL FACE)

PLAN

PILES NOT SHOWN IN PLAN VIEW.

PROJECT NO. B-4174

LENOIR COUNTY

STATION: 16+12.50 -L-

SHEET 1 OF 3 REPLACE BRIDGE NO. 128

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING FOR BRIDGE OVER MOSELEY CREEK ON SR 1515 BETWEEN SR 1503 AND SR 1516

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

DRAWN BY : H. T. BARBOUR DATE : 4-24-06
CHECKED BY : C. R. YARBROUGH DATE : 6-16-06

NORTH CAROLINA PROFESSIONAL SEAL 022506 ENGINEER JESSE WARTHUR BAILEY

NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER D. ANDREW DAVENPORT, JR.

19-JAN-2007 14:31
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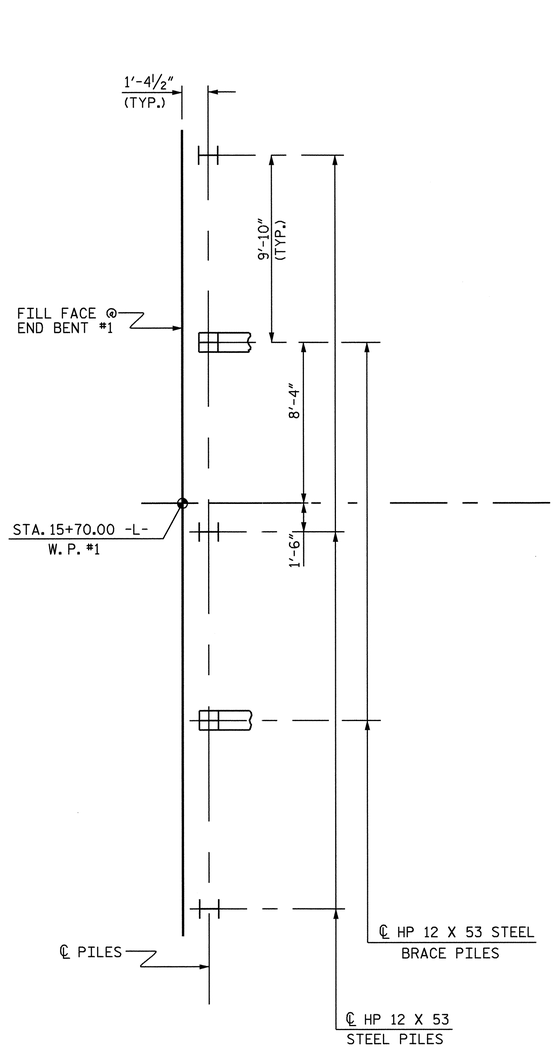
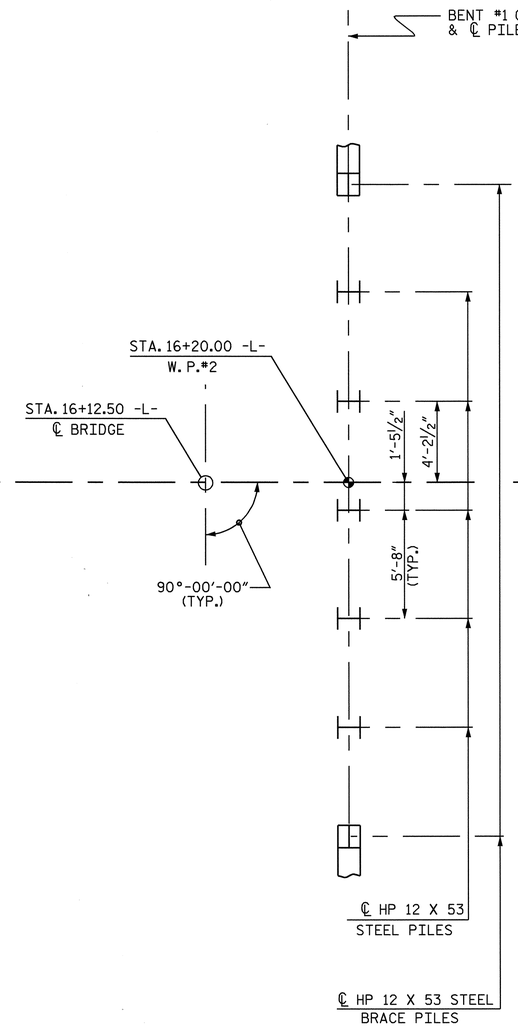
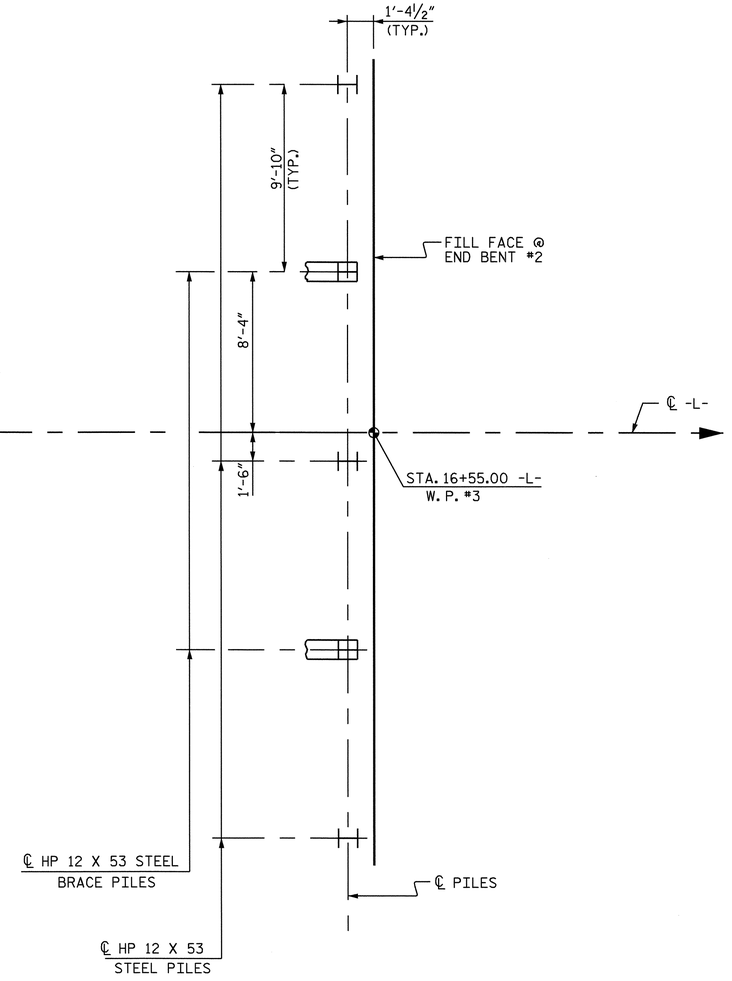
addavenport



END BENT #1



BENT #1



END BENT #2

FOUNDATION LAYOUT

END BENT PILES ARE HP 12 X 53 STEEL PILES.
HP 12 X 53 STEEL BRACE PILES ARE BATTERED 3:12 (END BENTS).
INTERIOR BENT PILES ARE HP 12 X 53 GALVANIZED STEEL PILES.
HP 12 X 53 GALVANIZED STEEL BRACE PILES ARE BATTERED 1½:12 (INTERIOR BENT).
DIMENSIONS LOCATING PILES ARE SHOWN TO THE PILE CENTERLINE.

PROJECT NO. B-4174
LENOIR COUNTY
STATION: 16+12.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING FOR BRIDGE OVER MOSELEY CREEK ON SR 1515 BETWEEN SR 1503 AND SR 1516

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

NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER D. ANDREW DAVENPORT, P.E.
1-19-07

DRAWN BY : H. T. BARBOUR DATE : 4-24-06
CHECKED BY : C. R. YARBROUGH DATE : 6-16-06

19-JAN-2007 12:17
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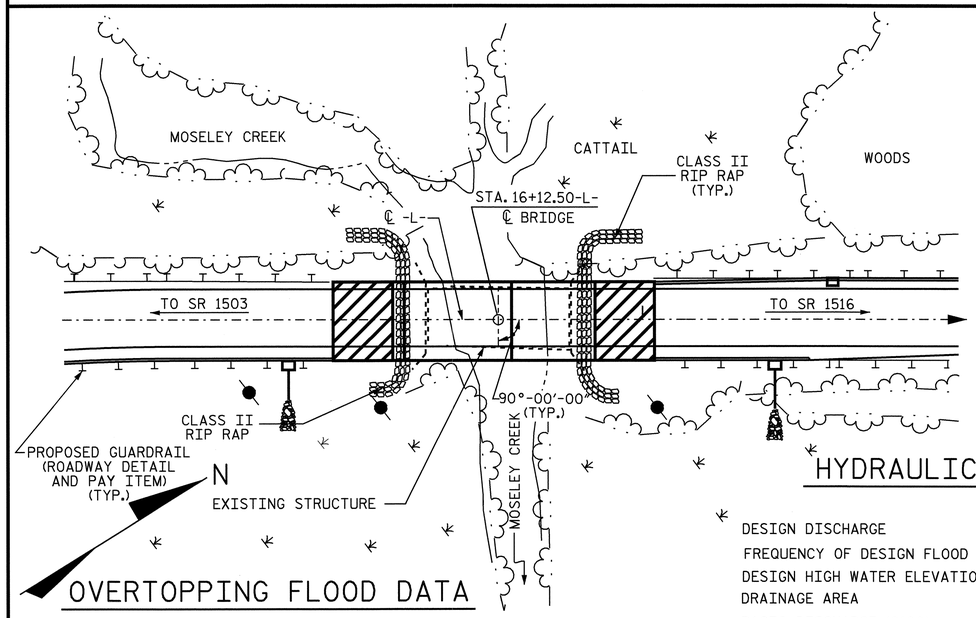
ddavenport

BENCH MARK No. 1: RAILROAD SPIKE IN 18" Ø GUM STA. 18+59.18 -L-, OFFSET 70.97' RT., EL. 82.070



OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	=	2250 C.F.S.
FREQUENCY OF OVERTOPPING FLOOD	=	500 YRS.
OVERTOPPING FLOOD ELEVATION	=	83.340

HYDRAULIC DATA

DESIGN DISCHARGE	=	750 C.F.S.
FREQUENCY OF DESIGN FLOOD	=	25 YRS.
DESIGN HIGH WATER ELEVATION	=	79.370
DRAINAGE AREA	=	4.2 SQ. MI.
BASIC DISCHARGE (Q100)	=	1300 C.F.S.
BASIC HIGH WATER ELEVATION	=	81.030

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

LOCATION SKETCH

NOTES

ASSUMED LIVE LOAD = HS20 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 BRIDGE HAS BEEN DESIGNED BY THE STRENGTH DESIGN METHOD AS SPECIFIED IN AASHTO STANDARD SPECIFICATIONS.

THE EXISTING STRUCTURE CONSISTING OF 2 SPANS 1 @ 30'-6" AND 1 @ 30'-8", PRESTRESSED CONCRETE CHANNELS WITH A 4.5" ASPHALT WEARING SURFACE ON PRECAST CONCRETE CAPS ON TIMBER PILES WITH A CLEAR ROADWAY WIDTH OF 24'-6" AND LOCATED AT THE PROPOSED SITE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT.

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

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 25 FT. EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE 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 THE ACTUAL CONDITIONS AT THE PROJECT SITE.

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

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

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

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

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 SUBMITTAL OF WORKING DRAWINGS, 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.

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

DRIVE PILES AT END BENT NO.1 AND END BENT NO.2 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.

DRIVE PILES AT BENT NO.1 TO A REQUIRED BEARING CAPACITY OF 160 TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWED 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 NO. 1, BENT NO. 1 AND END BENT NO. 2 IS 75 TONS PER PILE.

THE SCOUR CRITICAL ELEVATION FOR BENT NO.1 IS ELEVATION 62.000 FEET. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

TESTING PILES WITH THE PILE DRIVING ANALYZER (PDA) DURING DRIVING, RESTRIKING OR REDRIVING MAY BE REQUIRED. THE ENGINEER WILL DETERMINE THE NEED FOR PDA TESTING. 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 THE PILES AT END BENT NO. 1, BENT NO. 1 AND END BENT NO.2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM ARTICLE 450-5 OF THE STANDARD SPECIFICATIONS.

PROVIDE GALVANIZED STEEL PILES AT INTERIOR BENTS, IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.

FOR PILE DRIVING ANALYZER, SEE SPECIAL PROVISIONS.

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 12 X 53 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 SLAB
	LUMP SUM	EACH	EACH	LUMP SUM	CU. YD.	LUMP SUM	LB	NO.	LIN.FT.	NO.	LIN.FT.	EACH	LIN. FT.	TONS	SQ. YD.	LUMP SUM	LIN. FT.
SUPERSTRUCTURE																	
END BENT NO. 1					12.9		2104	5	300					98	110		
BENT NO. 1					10.8		2023			7	455	7					
END BENT NO. 2					12.9		2103	5	300					131	145		
TOTAL	LUMP SUM	1	1	LUMP SUM	36.600	LUMP SUM	6230	10	600	7	455	7	165.5	229	255	LUMP SUM	991.5

PROJECT NO. B-4174

LENOIR COUNTY

STATION: 16+12.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING FOR BRIDGE OVER MOSELEY CREEK ON SR 1515 BETWEEN SR 1503 AND SR 1516

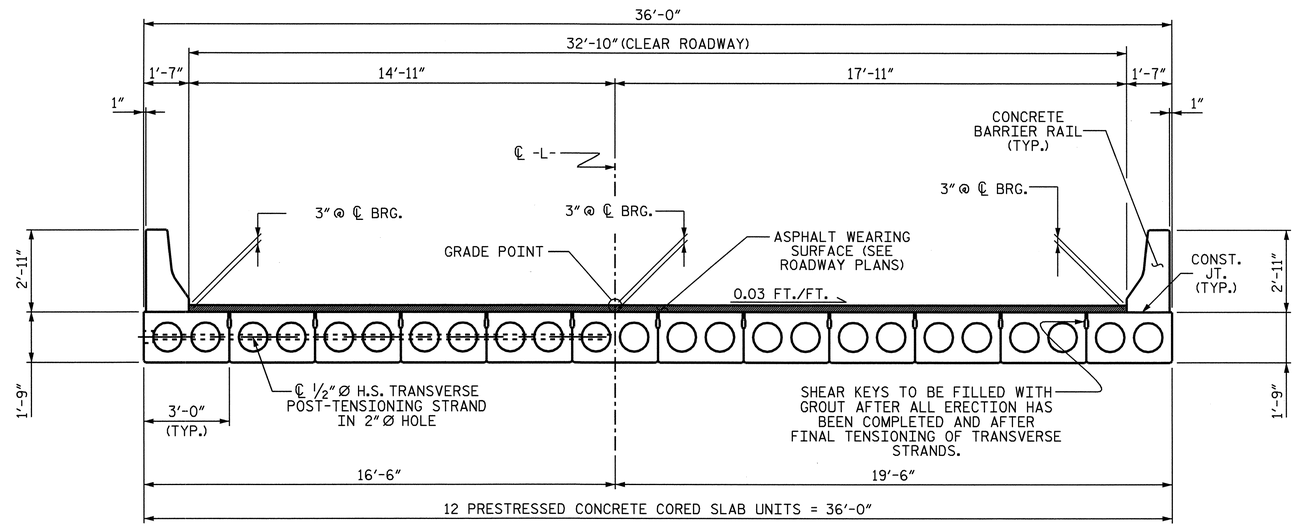
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S-3

TOTAL SHEETS 21

NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER D. ANDRE DAVENPORT, JR.

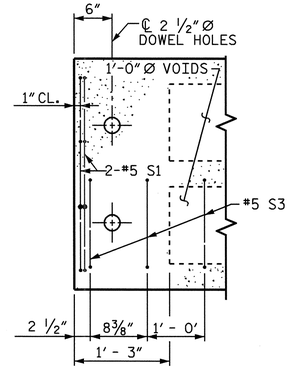
DRAWN BY : H. T. BARBOUR DATE : 4-24-06
CHECKED BY : C.R. YARBROUGH DATE : 6-16-06



TYPICAL SECTION

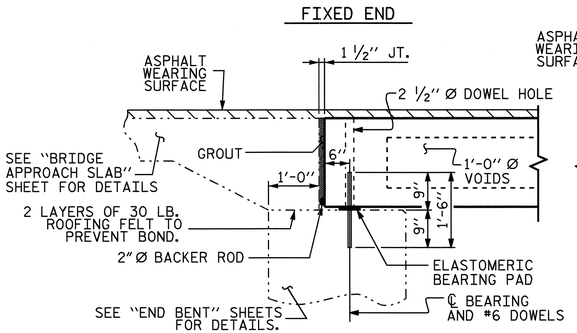
NOTES

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

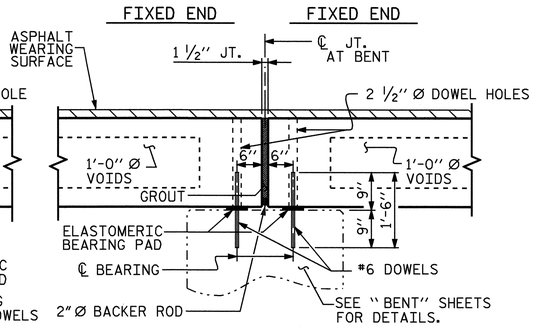


PART PLAN-EXTERIOR SECTION

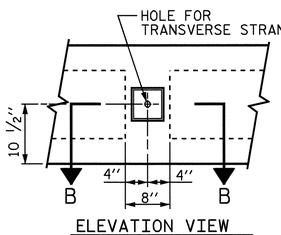
NOTE: EXTERIOR SECTION SHOWN-INTERIOR SECTION SIMILAR EXCEPT OMIT S3 BARS.



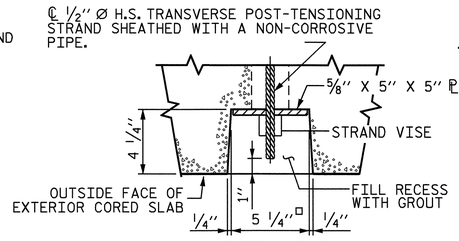
SECTION AT END BENT



SECTION AT BENT

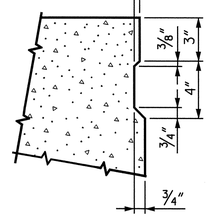


ELEVATION VIEW



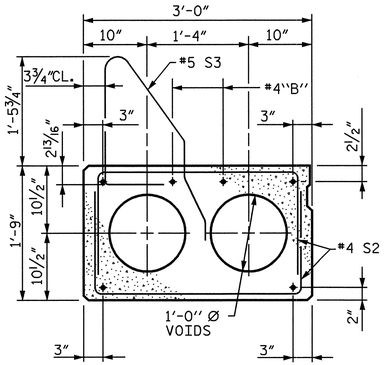
SECTION B-B

GROUTED RECESS AT END OF POST-TENSIONED STRAND OF CORED SLABS



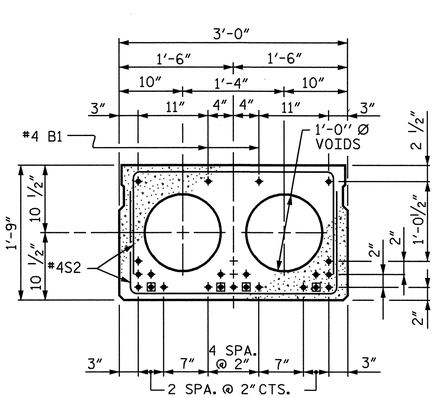
SHEAR KEY DETAIL

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



EXTERIOR SLAB SECTION

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

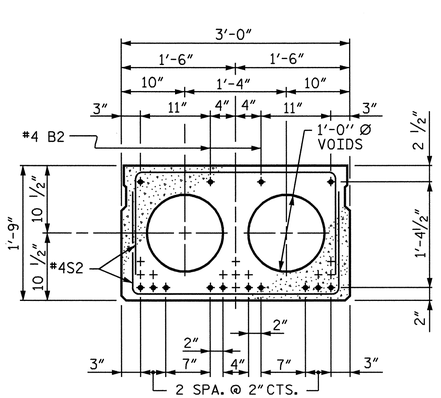


INTERIOR SLAB SECTION

½" Ø LOW RELAXATION STRAND LAYOUT

SPAN A

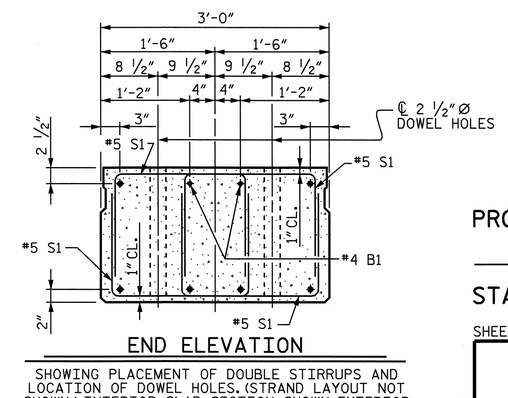
▣ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 4'-0" FROM END OF CORED SLAB UNIT, SEE STANDARD SPECIFICATIONS ARTICLE 1078-7.



INTERIOR SLAB SECTION

½" Ø LOW RELAXATION STRAND LAYOUT

SPAN B



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.

PROJECT NO. B-4174

LENOIR COUNTY

STATION: 16+12.50-L-

SHEET 1 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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

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

DRAWN BY : H.T. BARBOUR DATE : 7-11-05
CHECKED BY : B. L. GREEN DATE : 8-05

19-JAN-2007 12:18
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ddavenport

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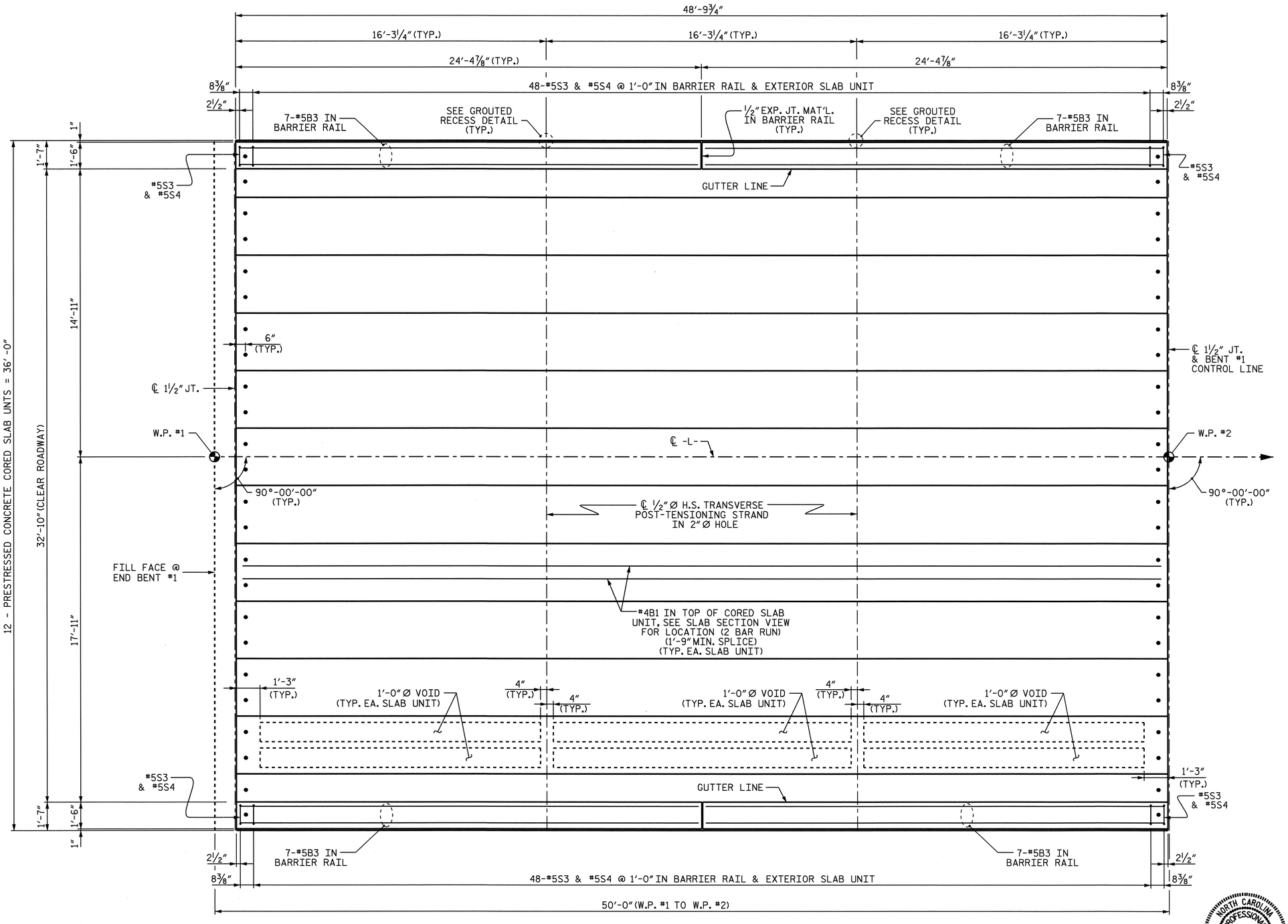
ddavenport



PLAN OF SPAN A

DRAWN BY : H.T. BARBOUR DATE : 7-08-05
CHECKED BY : B. L. GREEN DATE : 8-05

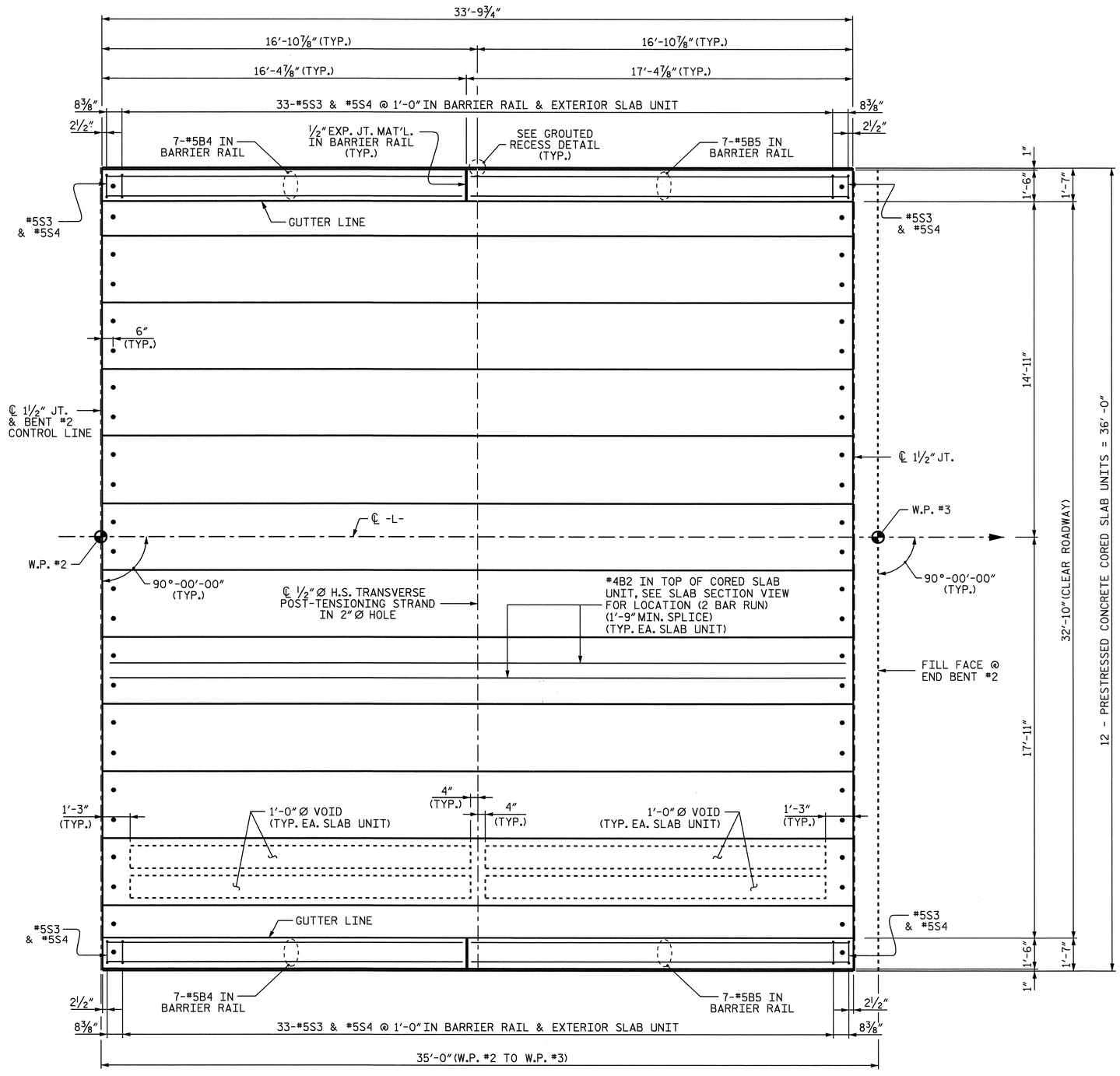
PROJECT NO. B-4174
LENOIR COUNTY
STATION: 16+12.50-L-
SHEET 2 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE PLAN OF SPAN A

NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER D. ANDREW DAVENPORT, JR.
7-14-07

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			21



PLAN OF SPAN B

DRAWN BY : H.T. BARBOUR DATE : 7-08-05
CHECKED BY : B. L. GREEN DATE : 8-05

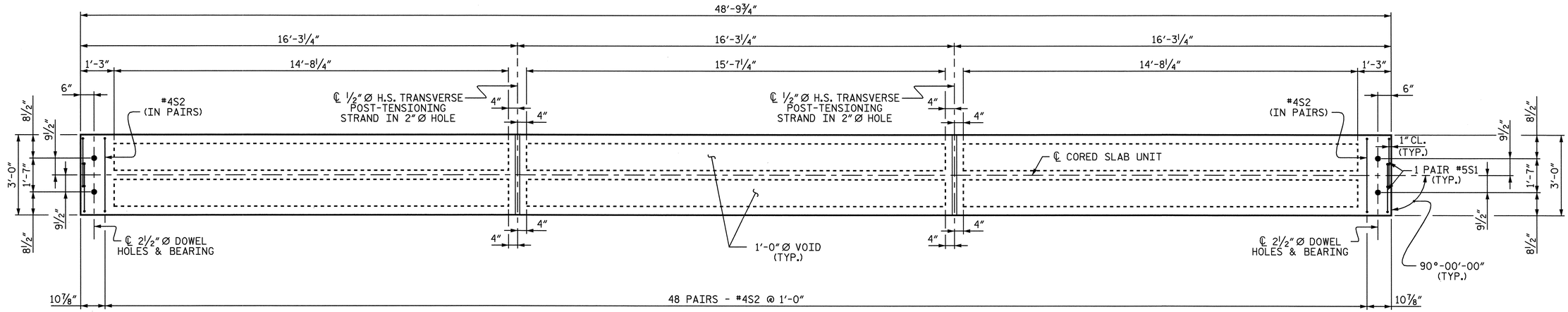
PROJECT NO. B-4174
LENOIR COUNTY
STATION: 16+12.50-L-
SHEET 3 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

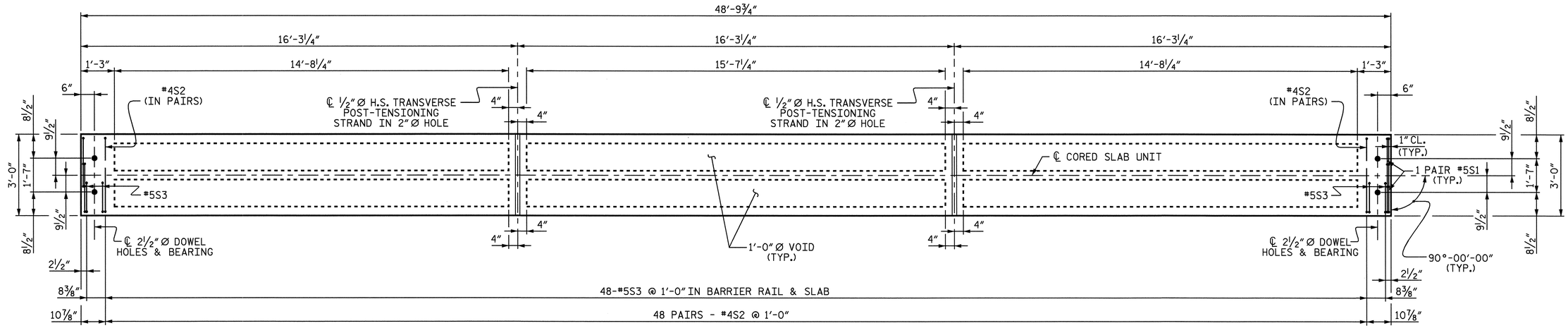
SUPERSTRUCTURE PLAN OF SPAN B

NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER D. ANDREW DAVENPORT, JR.

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			21



PLAN OF INTERIOR SLAB - SPAN A



PLAN OF EXTERIOR SLAB - SPAN A

PROJECT NO. B-4174

LENOIR COUNTY

STATION: 16+12.50-L-

SHEET 4 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE PLAN OF SPAN A CORED SLAB DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			21

NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER D. ANDREW DAVENPORT, JR.
1-19-07

DRAWN BY : H.T. BARBOUR DATE : 7-08-05
CHECKED BY : B. L. GREEN DATE : 8-05

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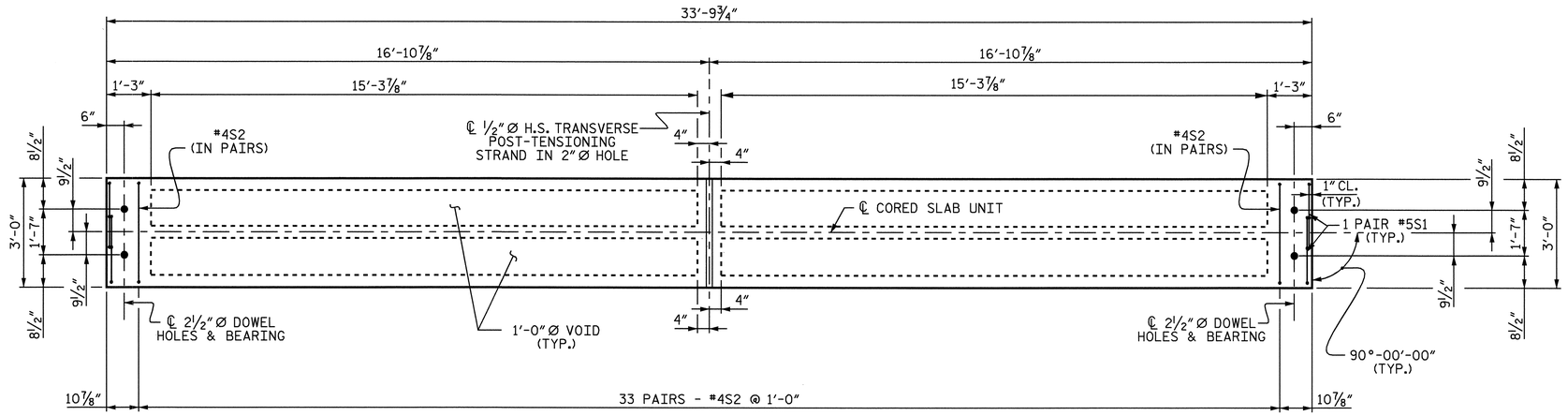
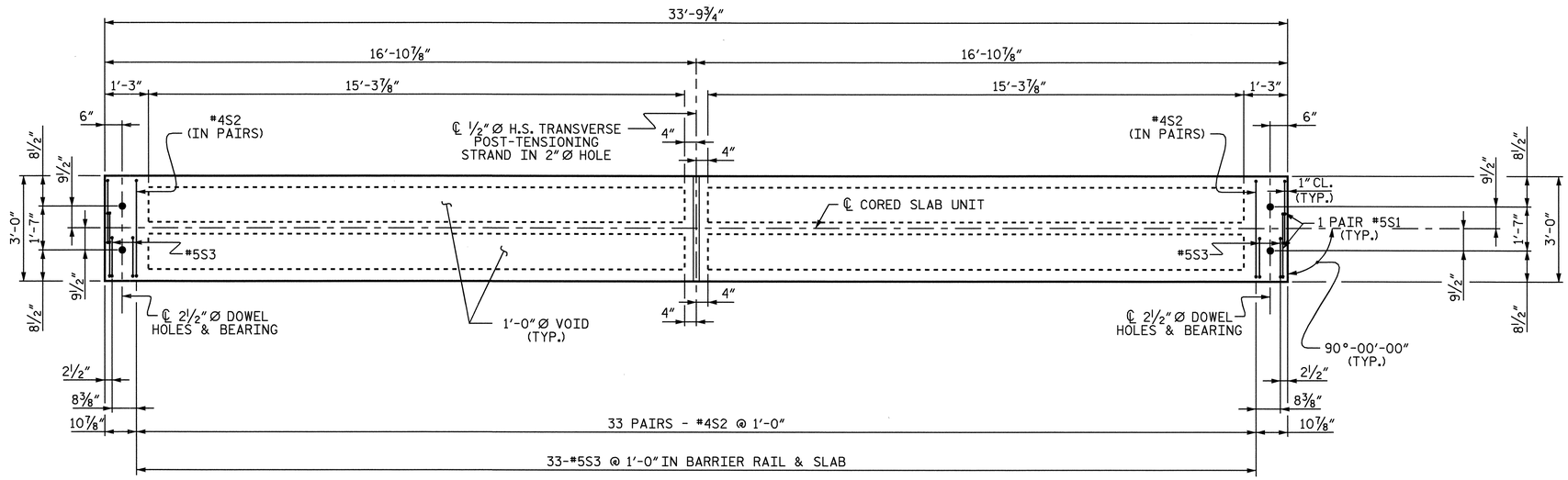


PLAN OF INTERIOR SLAB - SPAN B



PLAN OF EXTERIOR SLAB - SPAN B

PROJECT NO. B-4174

LENOIR COUNTY

STATION: 16+12.50-L-

SHEET 5 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE PLAN OF SPAN B CORED SLAB DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			21

NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER D. ANDREW DAVENPORT JR.

DRAWN BY : H.T. BARBOUR DATE : 7-08-05
CHECKED BY : B. L. GREEN DATE : 8-05

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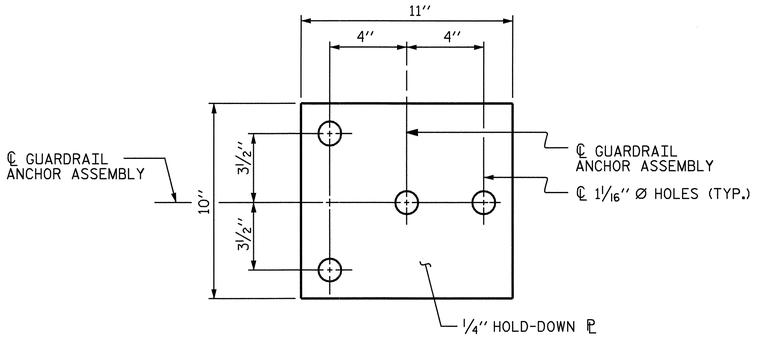
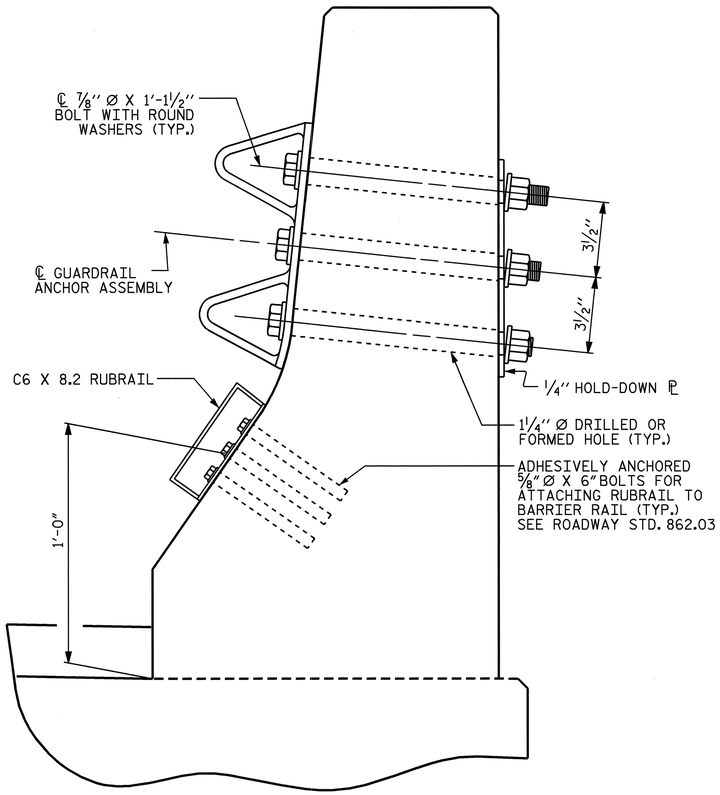
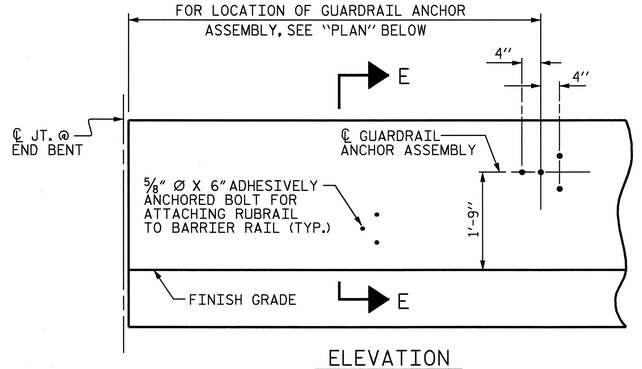


PLAN



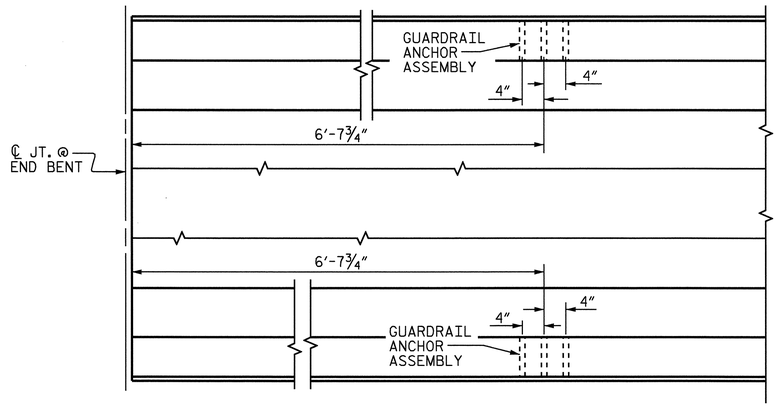
SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS



ELEVATION

FOR LOCATION OF RUBRAIL, SEE ROADWAY STD. 862.03



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

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

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A ¼'' HOLD DOWN PLATE AND 4 - ⅞'' 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 ⅞'' 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.)

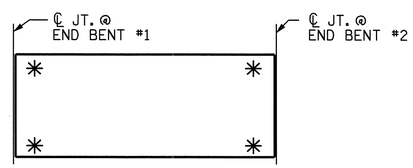
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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 ¼'' 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 ⅝" 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-4174

LENOIR COUNTY

STATION: 16+12.50-L-

SHEET 6 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

GUARDRAIL ANCHORAGE FOR BARRIER RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			21

NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER D. ANDREW DAVENPORT, JR.

ASSEMBLED BY : D. A. DAVENPORT	DATE : 10/31/06
CHECKED BY : H.T. BARBOUR	DATE : 11/16/06
DRAWN BY : TLA 5/06	ADDED 5/1/06
CHECKED BY : GM 5/06	

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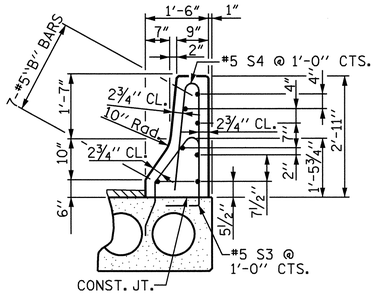
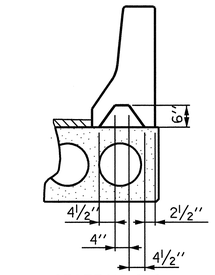
addavenport

STD. NO. GRA2

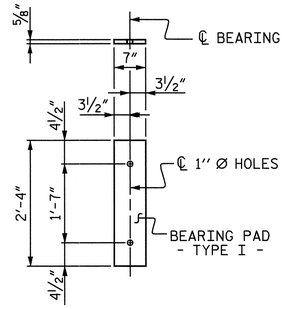
GRADE 270 STRANDS	
	1/2" Ø L.R.
AREA (SQUARE INCHES)	0.153
ULTIMATE STRENGTH (LBS. PER STRAND)	41,300
APPLIED PRESTRESS (LBS. PER STRAND)	30,980



SECTION THRU RAIL

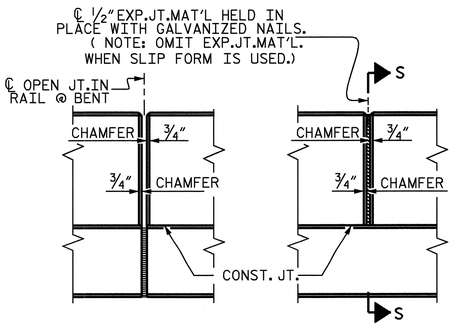


SECTION S-S
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)



FIXED END
(TYPE I -48 REQ'D)

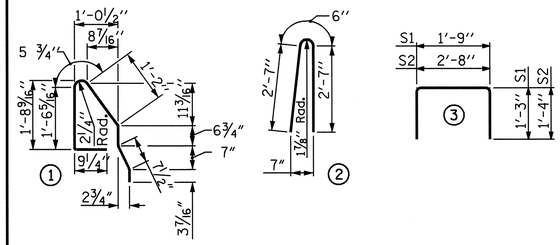
ELASTOMERIC BEARING DETAILS



ELEVATION AT EXPANSION JOINTS

BARRIER RAIL DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR ONE CORED SLAB SECTION

						EXTERIOR UNIT		INTERIOR UNIT	
	BAR	NUMBER	SIZE	TYPE		LENGTH	WEIGHT	LENGTH	WEIGHT
SPAN A	B1	4	#4	STR.		25'-3"	67	25'-3"	67
	S1	8	#5	3		4'-3"	35	4'-3"	35
	S2	96	#4	3		5'-4"	342	5'-4"	342
	✳ S3	50	#5	1		5'-5"	282		
	REINFORCING STEEL			LBS.		444		444	
	✳ EPOXY COATED REINFORCING STEEL			LBS.		282			
	5,000 P.S.I. CONCRETE			CU. YDS.		6.9		6.9	
	½" Ø L.R. STRANDS			No.		21		21	
SPAN B	B2	4	#4	STR.		17'-9"	47	17'-9"	47
	S1	8	#5	3		4'-3"	35	4'-3"	35
	S2	66	#4	3		5'-4"	235	5'-4"	235
	✳ S3	35	#5	1		5'-5"	198		
	REINFORCING STEEL			LBS.		317		317	
	✳ EPOXY COATED REINFORCING STEEL			LBS.		198			
	5,000 P.S.I. CONCRETE			CU. YDS.		4.8		4.8	
	½" Ø L.R. STRANDS			No.		12		12	

BILL OF MATERIAL FOR CONCRETE BARRIER RAIL

BAR	BARS PER SPAN					TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
		SPAN A	SPAN B							
✳ B3		28				28	#5	STR.	24'-0"	701
✳ B4			14			14	#5	STR.	16'-0"	234
✳ B5			14			14	#5	STR.	17'-0"	248
✳ S4		100	70			170	#5	2	5'-8"	1005
✳ EPOXY COATED REINFORCING STEEL						LBS. 2188				
CLASS AA CONCRETE						CU.YDS. 18.9				
TOTAL LIN. FT. OF CONCRETE BARRIER RAIL						165.500				

CORED SLABS REQUIRED

SPAN A

	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	48'-9¾"	97'-7½"
INTERIOR C.S.	10	48'-9¾"	488'-1½"
TOTAL	12		585'-9"

SPAN B

	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	33'-9¾"	67'-7½"
INTERIOR C.S.	10	33'-9¾"	338'-1½"
TOTAL	12		405'-9"

DEAD LOAD DEFLECTION AND CAMBER

	SPAN A	SPAN B
	3'-0" x 1'-9"	3'-0" x 1'-9"
	½" Ø L.R. STRAND	½" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	1 13/16" ↑	5/16" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD ✳✳	1/4" ↓	1/16" ↓
FINAL CAMBER	1 9/16" ↑	1/2" ↑

✳✳ INCLUDES FUTURE WEARING SURFACE

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.

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 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.

PROJECT NO. B-4174
LENOIR COUNTY
STATION: 16+12.50-L-

SHEET 7 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			21

ASSEMBLED BY : H.T. BARBOUR	DATE : 7-11-05	REV. 10/17/00	RWW/LES
CHECKED BY : B. L. GREEN	DATE : 8-05	REV. 7/10/01	RWW/LES
DRAWN BY : WJH 4/89		REV. 5/7/03RRR	RWW/JTE
CHECKED BY : FCJ 5/89			

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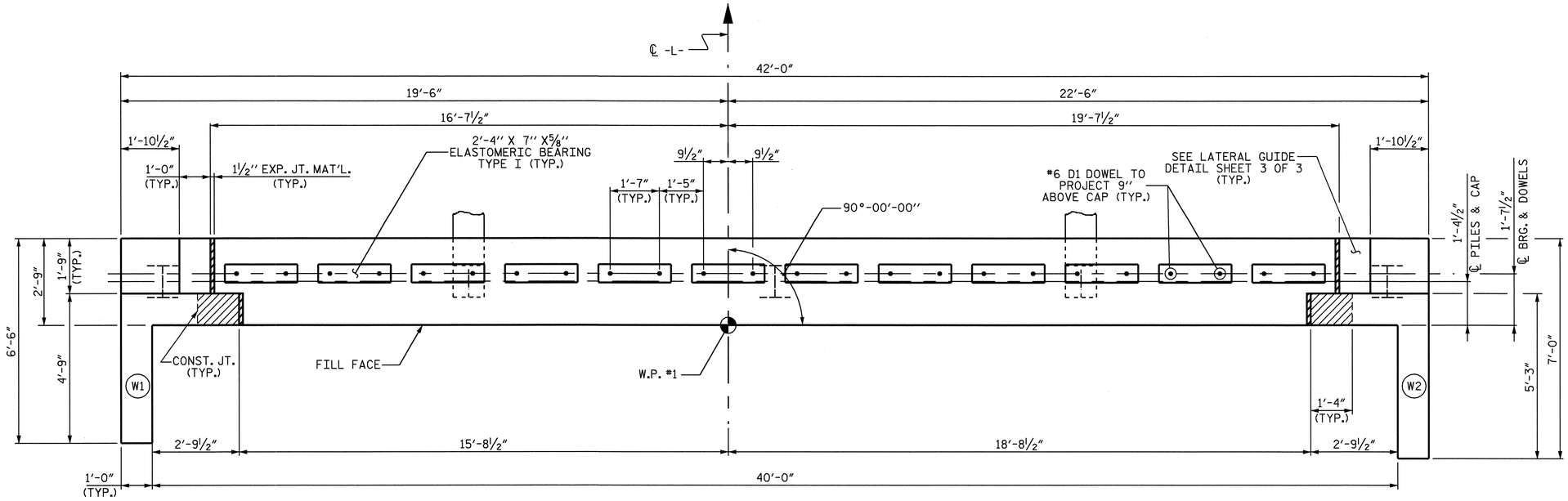
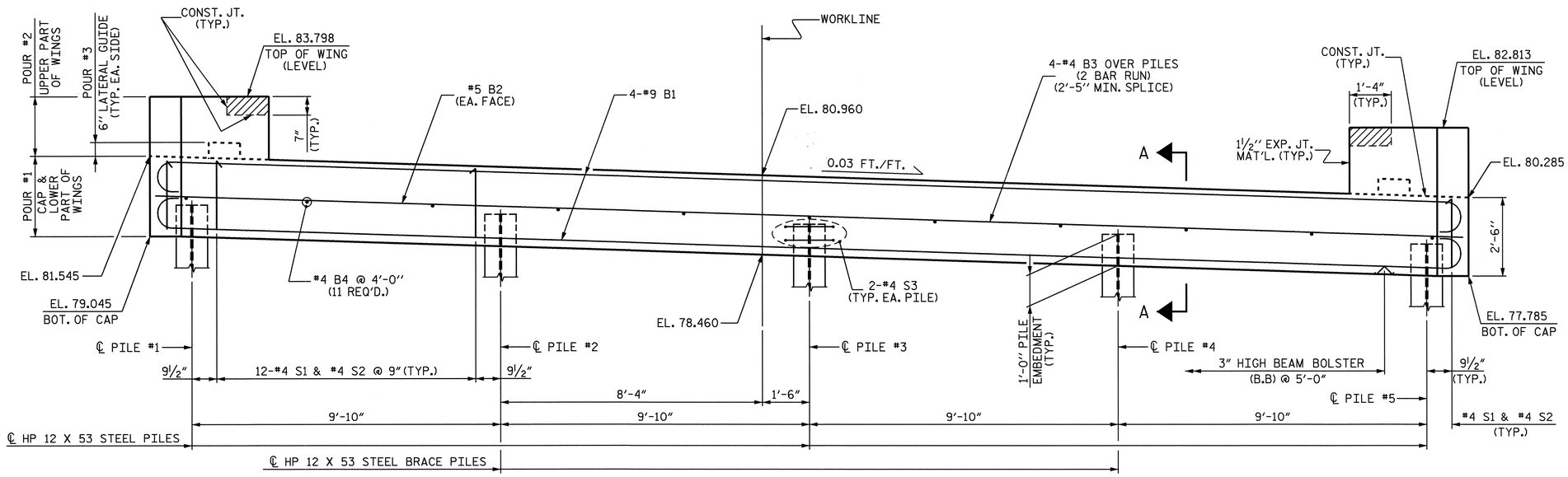
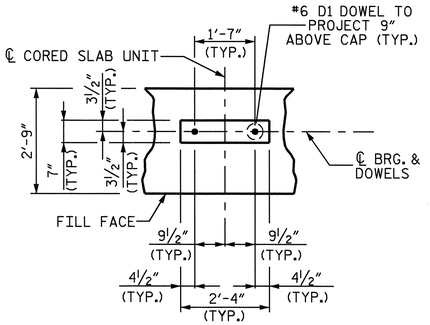
STD. NO. PCS3



PLAN



ELEVATION



BEARING DETAIL

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #6D1 DOWELS.

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

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

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

TOP OF PILE ELEVATIONS	
PILE #	ELEVATION
1	80.005
2	79.710
3	79.415
4	79.120
5	78.825

PROJECT NO. B-4174

LENOIR COUNTY

STATION: 16+12.50 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE END BENT #1

NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER D. ANDREW DAVENPORT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			21

DRAWN BY : B. L. GREEN/AS DATE : 3/06
CHECKED BY : H. T. BARBOUR/DAD DATE : 3/06

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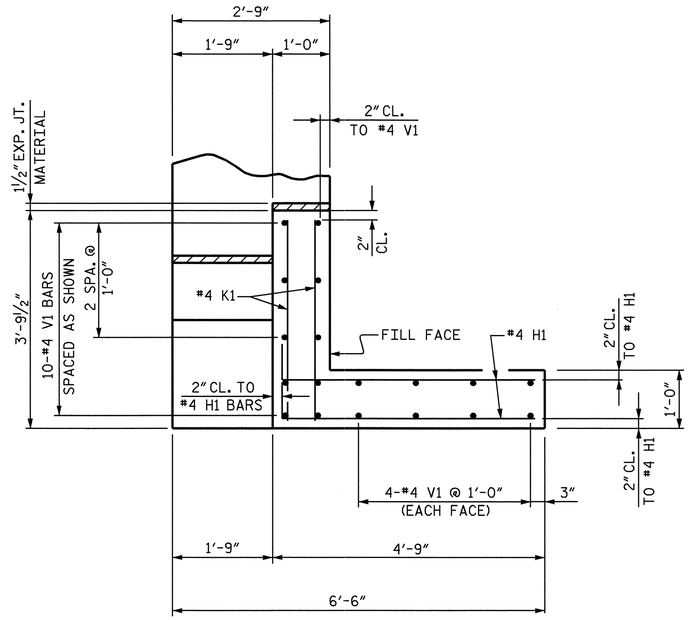
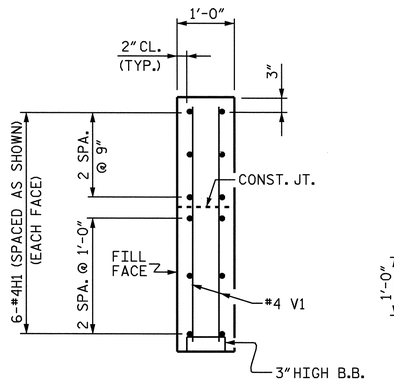
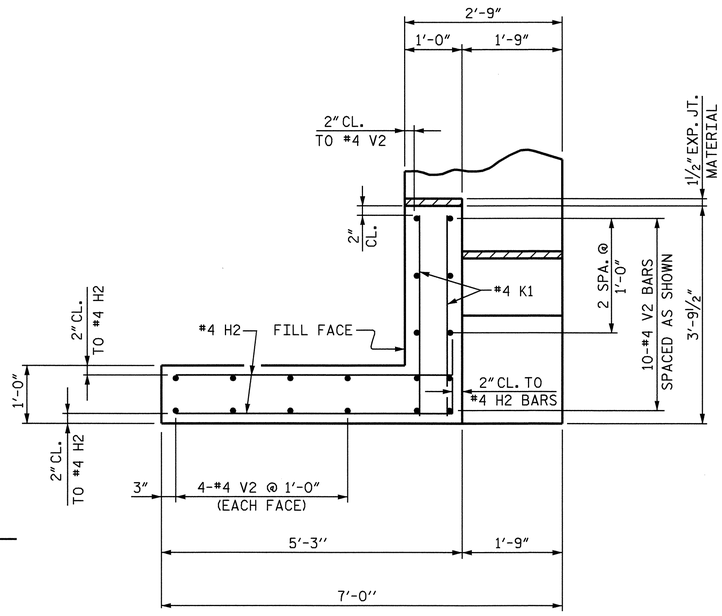


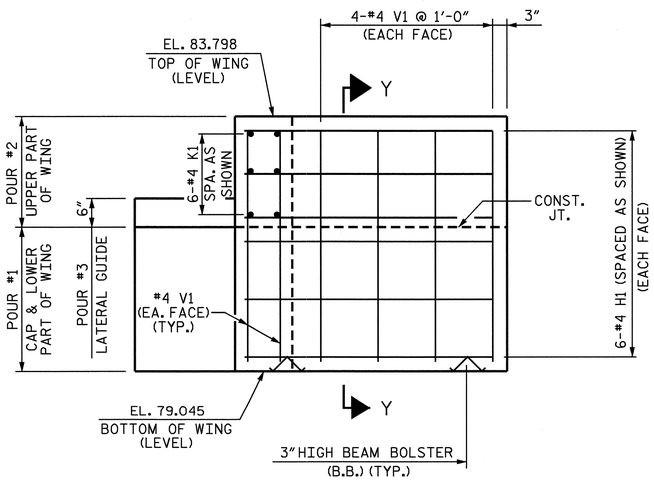
PLAN OF LEFT WING (W1)



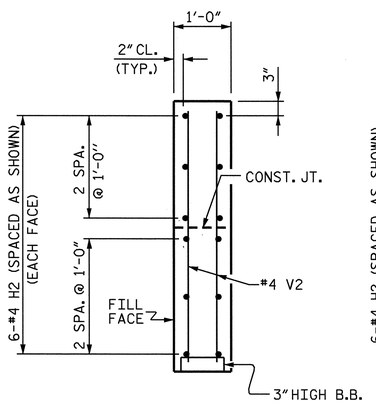
SECTION Y-Y



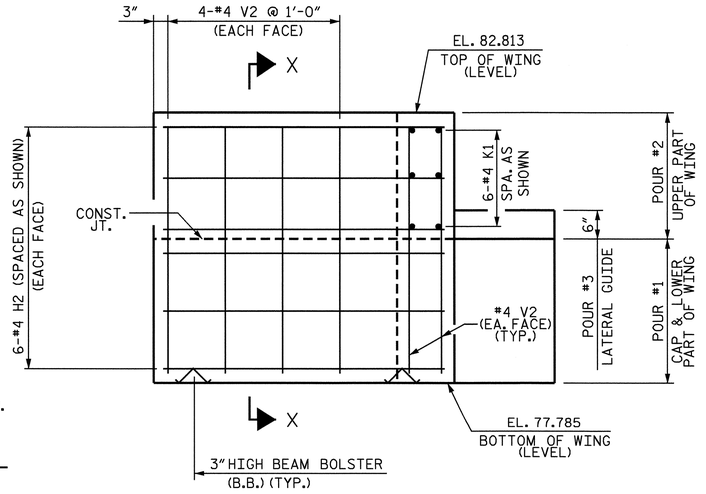
PLAN OF RIGHT WING (W2)



ELEVATION OF LEFT WING (W1)



SECTION X-X



ELEVATION OF RIGHT WING (W2)

PROJECT NO. B-4174

LENOIR COUNTY

STATION: 16+12.50 -L-

SHEET 2 OF 3

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			21

NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER D. ANDREW DAVENPORT, JR.

DRAWN BY : B. L. GREEN/AS DATE : 3/06
CHECKED BY : H. T. BARBOUR/DAD DATE : 3/06

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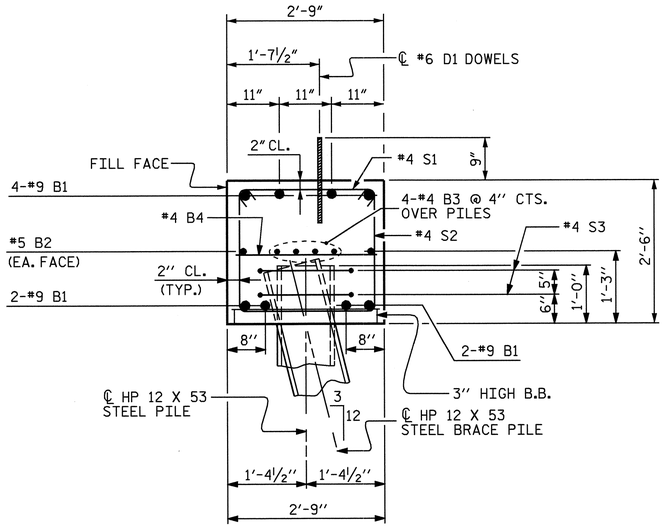
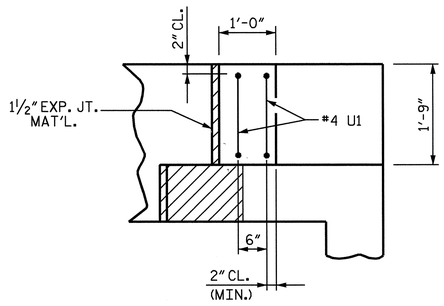
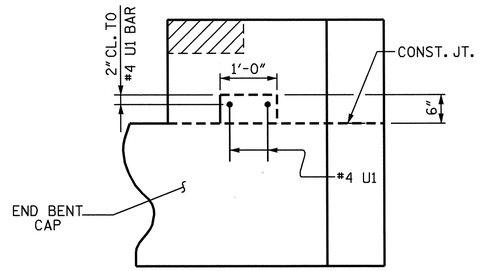


SECTION A-A



PLAN

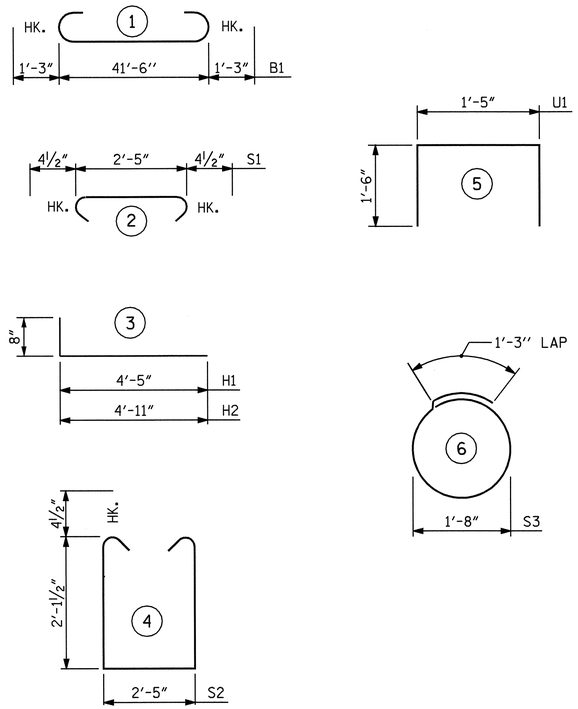


ELEVATION

LATERAL GUIDE

(TYPICAL EACH SIDE)

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	44'-0"	1197
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	12	#4	3	5'-1"	41
H2	12	#4	3	5'-7"	45
K1	12	#4	STR	3'-5"	27
S1	50	#4	2	3'-2"	106
S2	50	#4	4	7'-5"	248
S3	10	#4	6	6'-6"	43
U1	4	#4	5	4'-5"	12
V1	18	#4	STR	4'-5"	53
V2	18	#4	STR	4'-7"	55

REINFORCING STEEL = 2104 LBS.

CLASS A CONCRETE BREAKDOWN

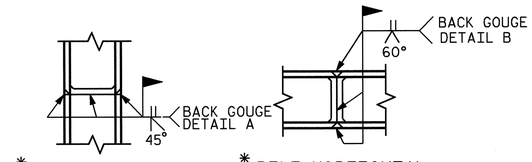
POUR #1 CAP & LOWER PART OF WINGS
11.4 C.Y.

POUR #2 UPPER PART OF WINGS
1.4 C.Y.

POUR #3 LATERAL GUIDES
0.1 C.Y.

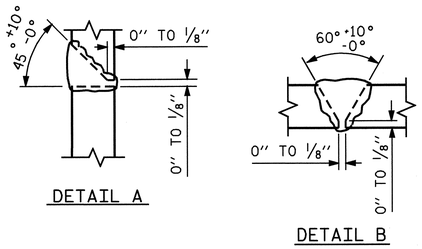
TOTAL CLASS A CONCRETE
12.9 C.Y.

HP 12 X 53 STEEL PILES
No. 5 300 LIN. FT.



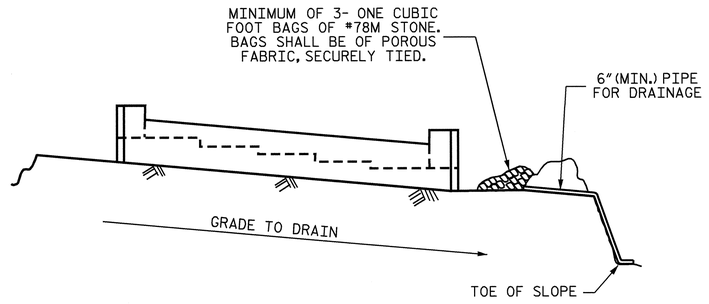
* PILE VERTICAL

* PILE HORIZONTAL OR VERTICAL



PILE SPLICE DETAILS

* POSITION OF PILE DURING WELDING.



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-4174

LENOIR COUNTY

STATION: 16+12.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT #1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			21

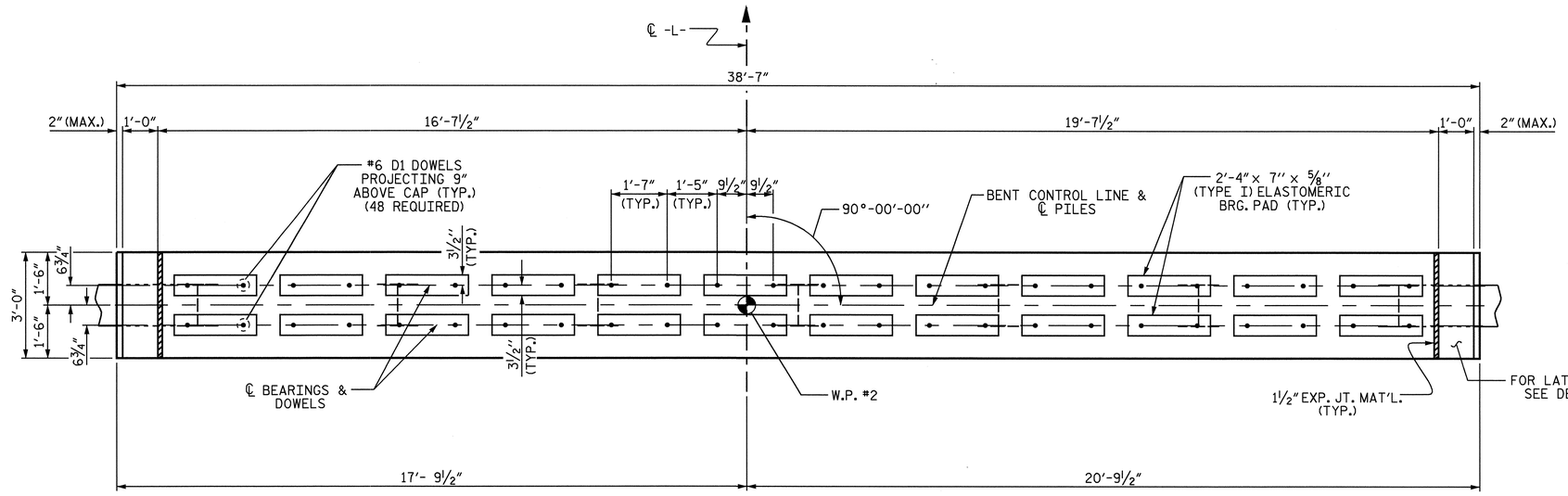
DRAWN BY : B. L. GREEN/AS DATE : 3/06
CHECKED BY : H. T. BARBOUR/DAD DATE : 3/06

19-JAN-2007 12:21
R:\STRUCTØ1\asorsenginh\B4135_sd_E*.dgn
adavenport

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #6 D1 DOWELS.

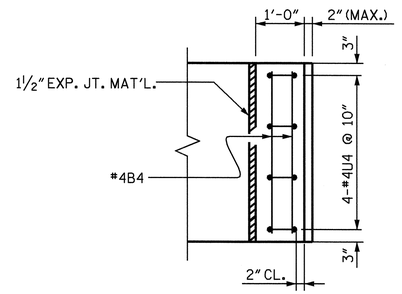
THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE.



PLAN

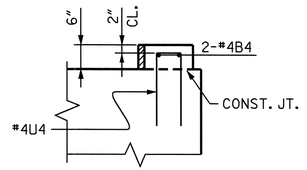
SPAN B

SPAN A



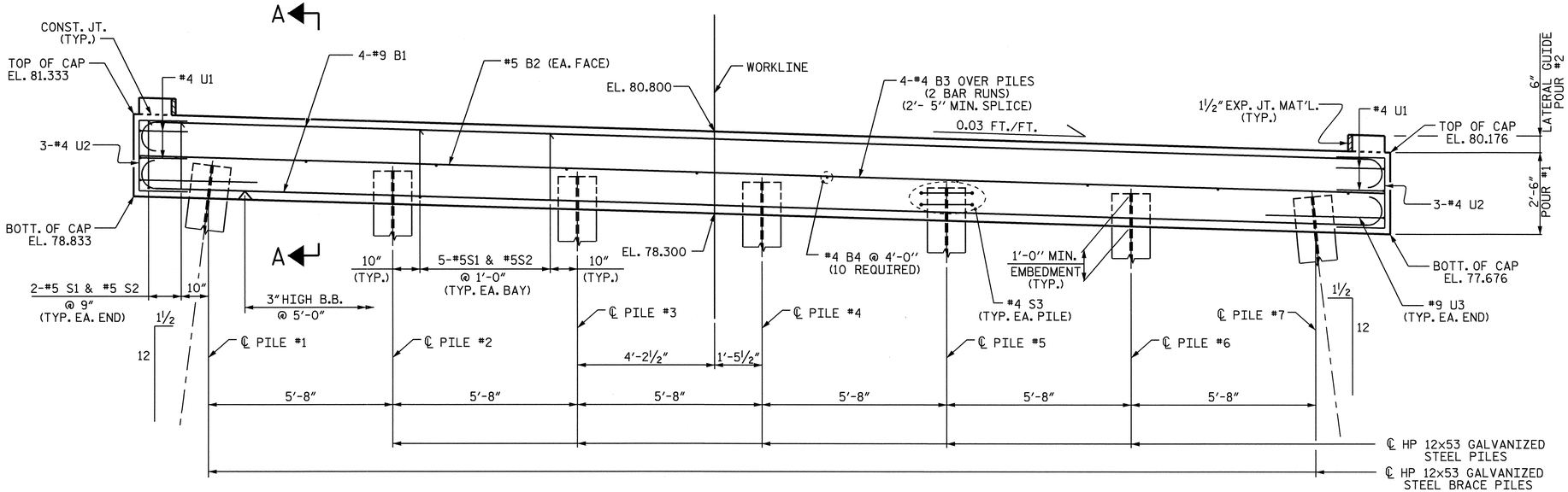
TOP OF PILE ELEVATIONS	
PILE #	ELEVATION
PILE #1	79.766
PILE #2	79.596
PILE #3	79.426
PILE #4	79.256
PILE #5	79.086
PILE #6	78.916
PILE #7	78.746

PLAN



ELEVATION

DETAIL "A"



ELEVATION

PROJECT NO. B-4174

LENOIR COUNTY

STATION: 16+12.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

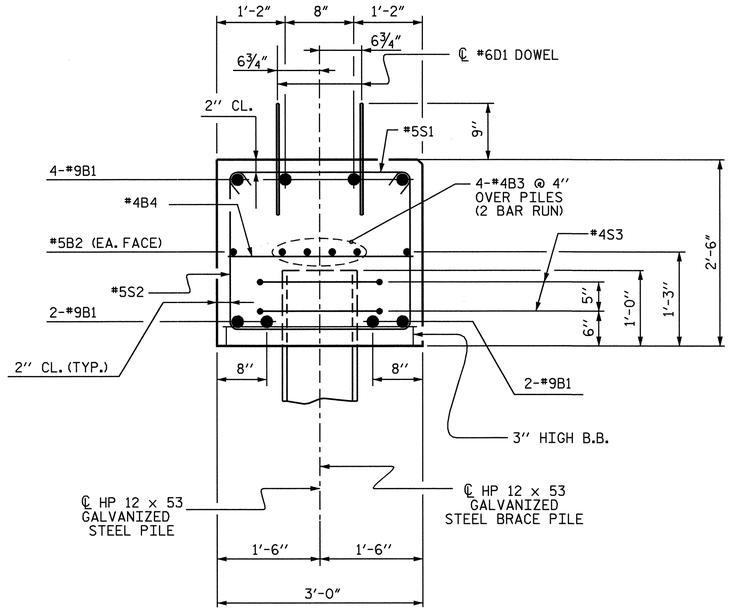
SUBSTRUCTURE BENT #1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			21

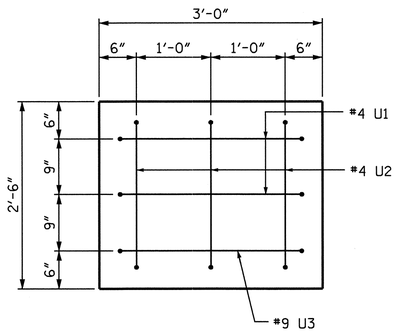
NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER DAVENPORT, JR.

DRAWN BY : M. G. SHAIKH DATE : 4-24-06
CHECKED BY : H. T. BARBOUR DATE : 5-05-06

25-JAN-2007 11:20
R:\STRUCT2\mshaikh\Microstation\B-4174_sd_B*.dgn
addavenport



SECTION A-A

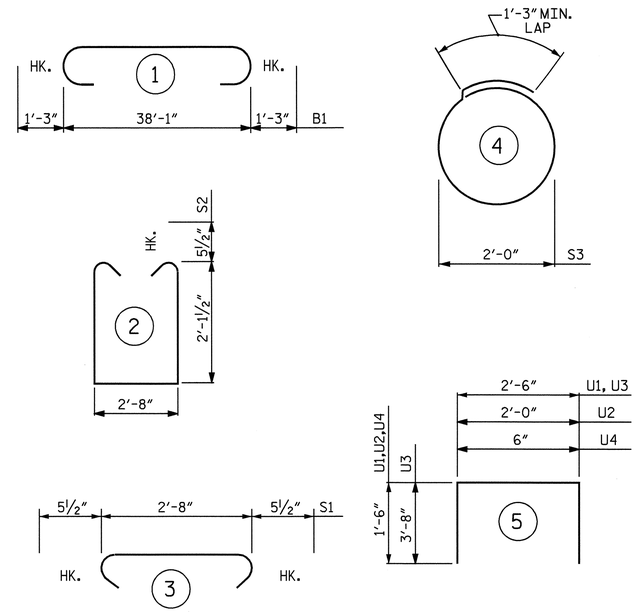


END VIEW

2" MIN. CONCRETE COVER FROM END OF CAP REQUIRED FOR ALL #4U1, #4U2 AND #9U3 BARS.

#4U1, #4U2 AND #9U3 BARS MAY BE SHIFTED UP TO 2" TO CLEAR "B" BARS.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

BENT #1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	40'-7"	1104
B2	2	#5	STR	38'-3"	80
B3	8	#4	STR	20'-4"	109
B4	14	#4	STR	2'-8"	25
D1	48	#6	STR	1'-6"	108
S1	34	#5	3	3'-7"	127
S2	34	#5	2	7'-10"	278
S3	14	#4	4	7'-7"	71
U1	4	#4	5	5'-6"	15
U2	6	#4	5	5'-0"	20
U3	2	#9	5	9'-10"	67
U4	8	#4	5	3'-6"	19

REINFORCING STEEL = 2023 LBS

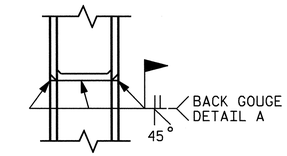
CLASS A CONCRETE

POUR #1 CAP 10.7 C.Y.

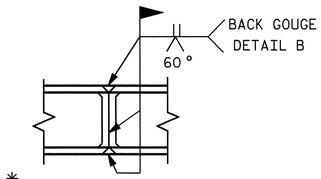
POUR #2 LATERAL GUIDE 0.1 C.Y.

TOTAL CLASS A CONCRETE 10.8 C.Y.

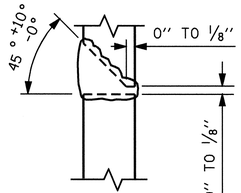
HP 12 x 53 GALVANIZED STEEL PILES NO. 7 LIN. FT. 455



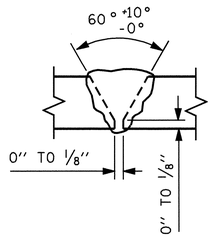
PILE VERTICAL



* PILE HORIZONTAL OR VERTICAL



DETAIL A



DETAIL B

PILE SPLICE DETAILS

* POSITION OF PILE DURING WELDING.

PROJECT NO. B-4174

LENOIR COUNTY

STATION: 16+12.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

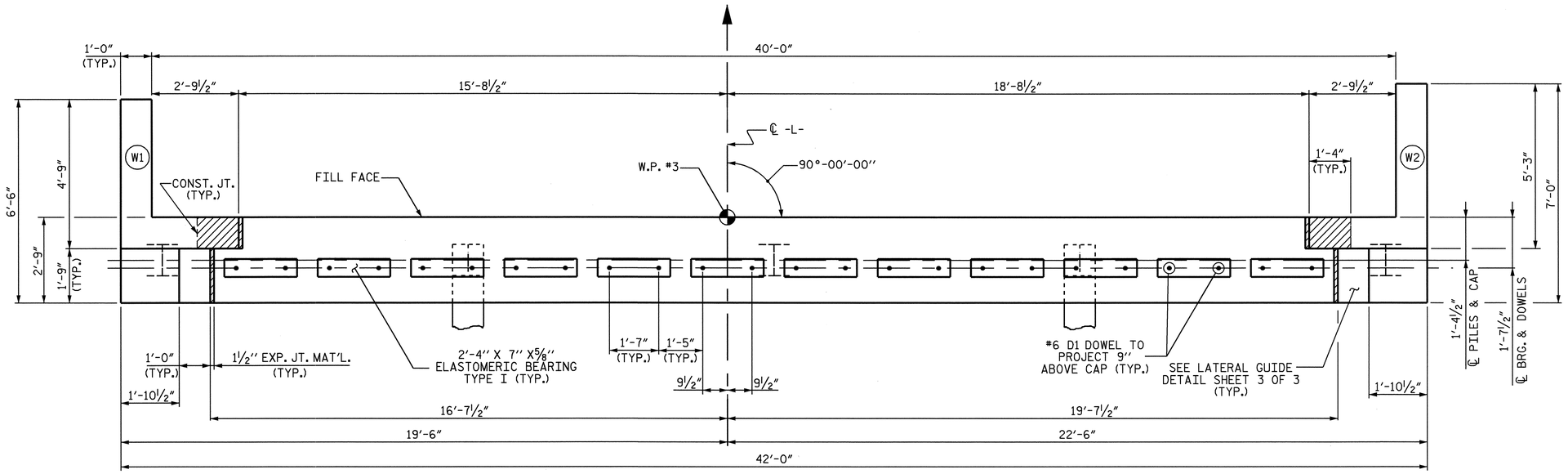
SUBSTRUCTURE

BENT #1

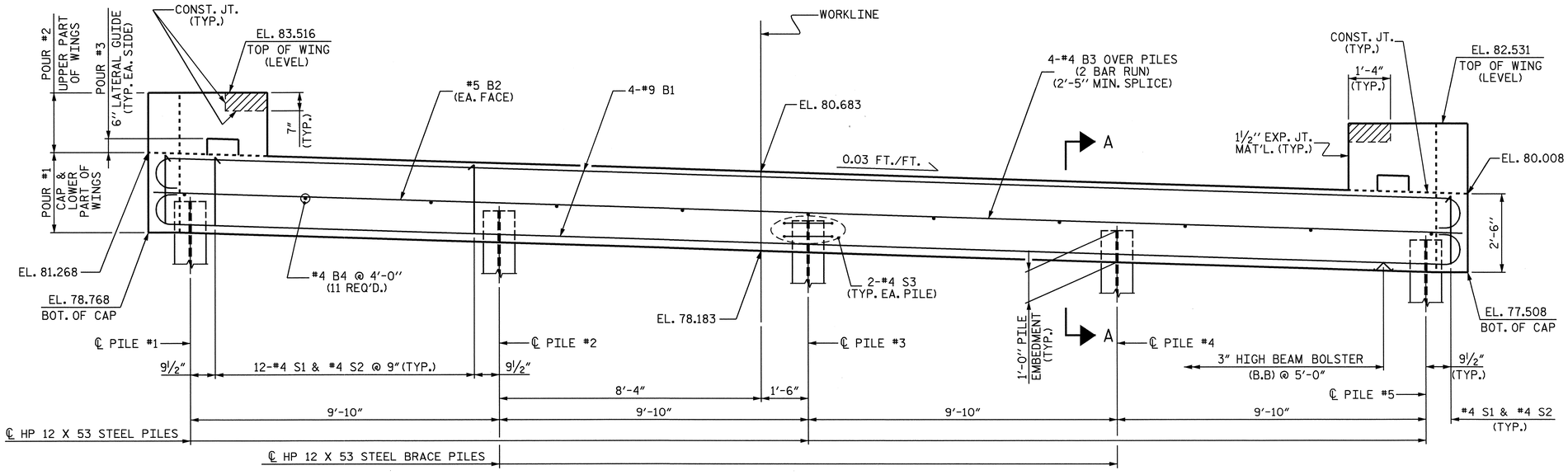
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			21

NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER D. ANDREW DAVENPORT, JR.
1-25-07

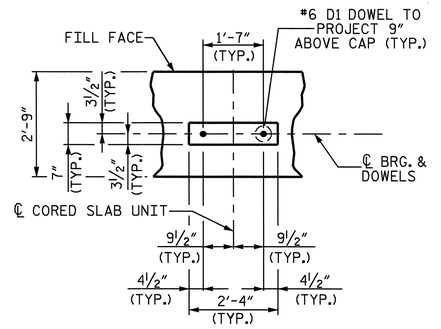
DRAWN BY : M. G. SHAIKH DATE : 4-25-06
CHECKED BY : H. T. BARBOUR DATE : 5-05-06



PLAN



ELEVATION



BEARING DETAIL

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #6D1 DOWELS.

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

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

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

TOP OF PILE ELEVATIONS	
PILE #	ELEVATION
1	79.728
2	79.433
3	79.138
4	78.843
5	78.548

PROJECT NO. B-4174

LENOIR COUNTY

STATION: 16+12.50 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE END BENT #2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			21

NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER D. ANDREW DAVENPORT

DRAWN BY : B. L. GREEN/AS DATE : 3/06
CHECKED BY : H. T. BARBOUR/DAD DATE : 3/06

19-JAN-2007 12:21
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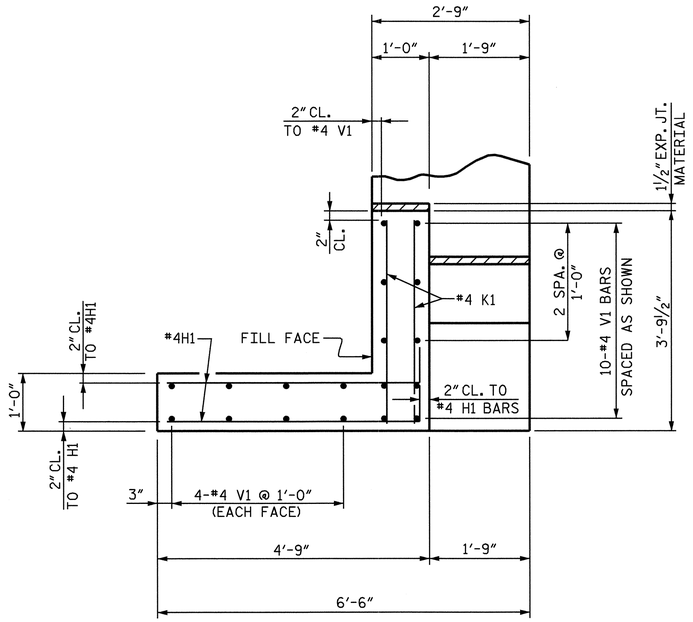
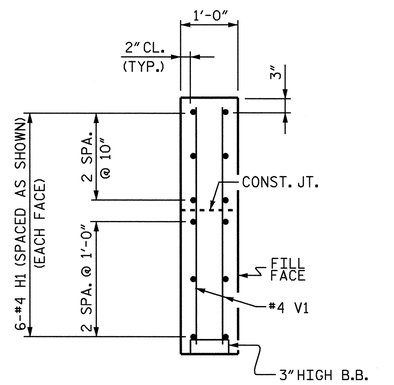
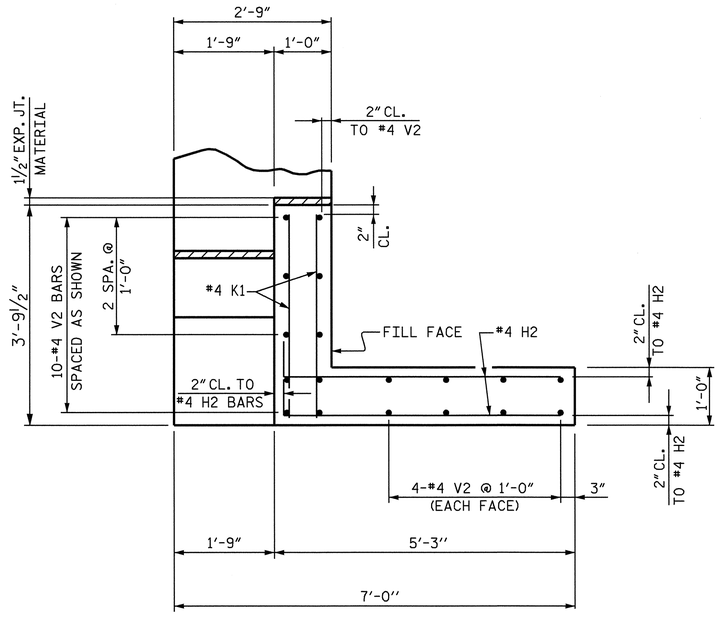
adavenport



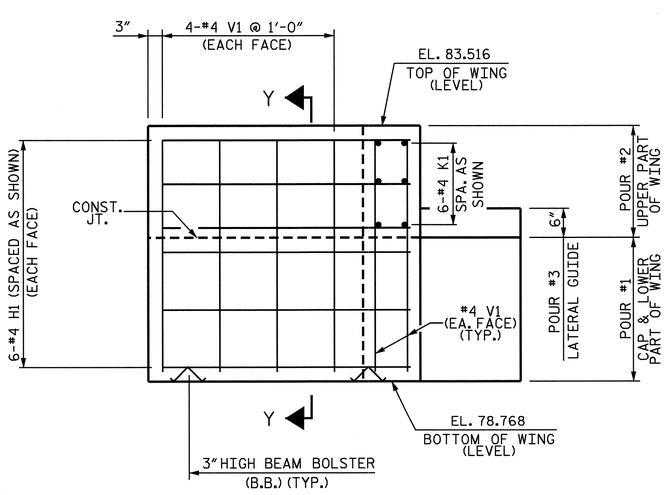
PLAN OF LEFT WING (W1)



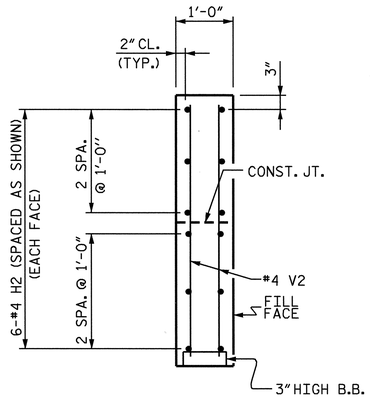
SECTION Y-Y



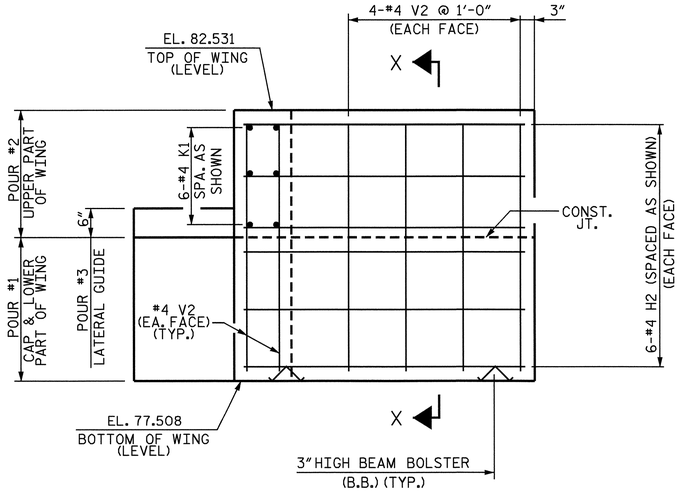
PLAN OF RIGHT WING (W2)



ELEVATION OF LEFT WING (W1)



SECTION X-X



ELEVATION OF RIGHT WING (W2)

PROJECT NO. B-4174

LENOIR COUNTY

STATION: 16+12.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE END BENT #2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			21

NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER C. ANDRE DAVENPORT, JR.

DRAWN BY : B. L. GREEN/AS DATE : 3/06
CHECKED BY : H. T. BARBOUR/DAD DATE : 3/06

19-JAN-2007 12:22
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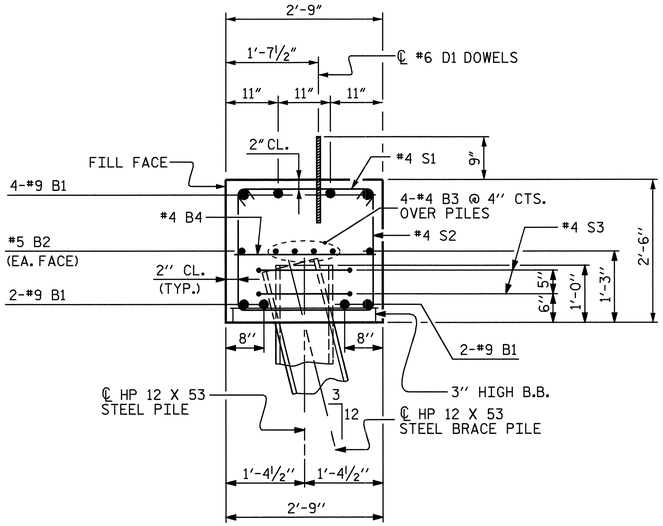
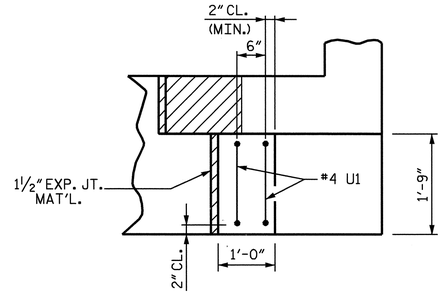
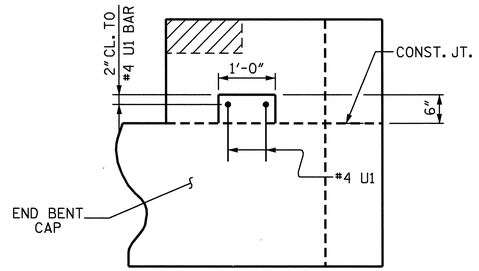


SECTION A-A



PLAN

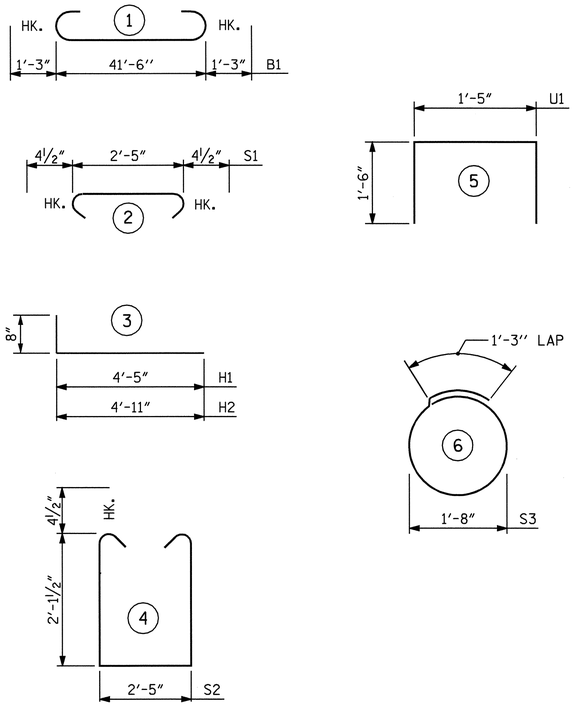


ELEVATION

LATERAL GUIDE

(TYPICAL EACH SIDE)

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	44'-0"	1197
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	12	#4	3	5'-1"	41
H2	12	#4	3	5'-7"	45
K1	12	#4	STR	3'-5"	27
S1	50	#4	2	3'-2"	106
S2	50	#4	4	7'-5"	248
S3	10	#4	6	6'-6"	43
U1	4	#4	5	4'-5"	12
V1	18	#4	STR	4'-4"	52
V2	18	#4	STR	4'-7"	56

REINFORCING STEEL = 2103 LBS.

CLASS A CONCRETE BREAKDOWN

POUR #1 CAP & LOWER PART OF WINGS 11.4 C.Y.

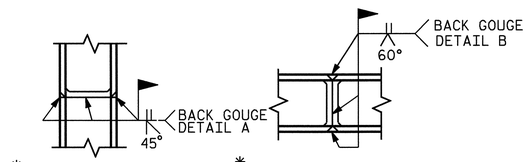
POUR #2 UPPER PART OF WINGS 1.4 C.Y.

POUR #3 LATERAL GUIDES 0.1 C.Y.

TOTAL CLASS A CONCRETE 12.9 C.Y.

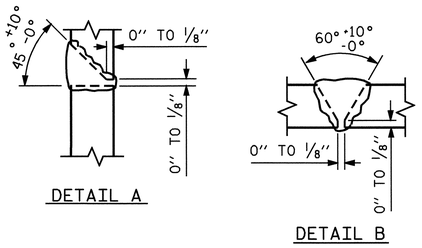
HP 12 X 53 STEEL PILES

No. 5 300 LIN. FT.



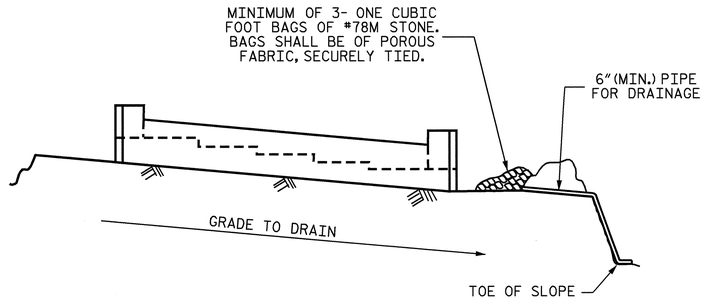
* PILE VERTICAL

* PILE HORIZONTAL OR VERTICAL



PILE SPLICE DETAILS

* POSITION OF PILE DURING WELDING.



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-4174

LENOIR COUNTY

STATION: 16+12.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE END BENT #2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			21

DRAWN BY : B. L. GREEN/AS DATE : 3/06

CHECKED BY : H. T. BARBOUR/DAD DATE : 3/06

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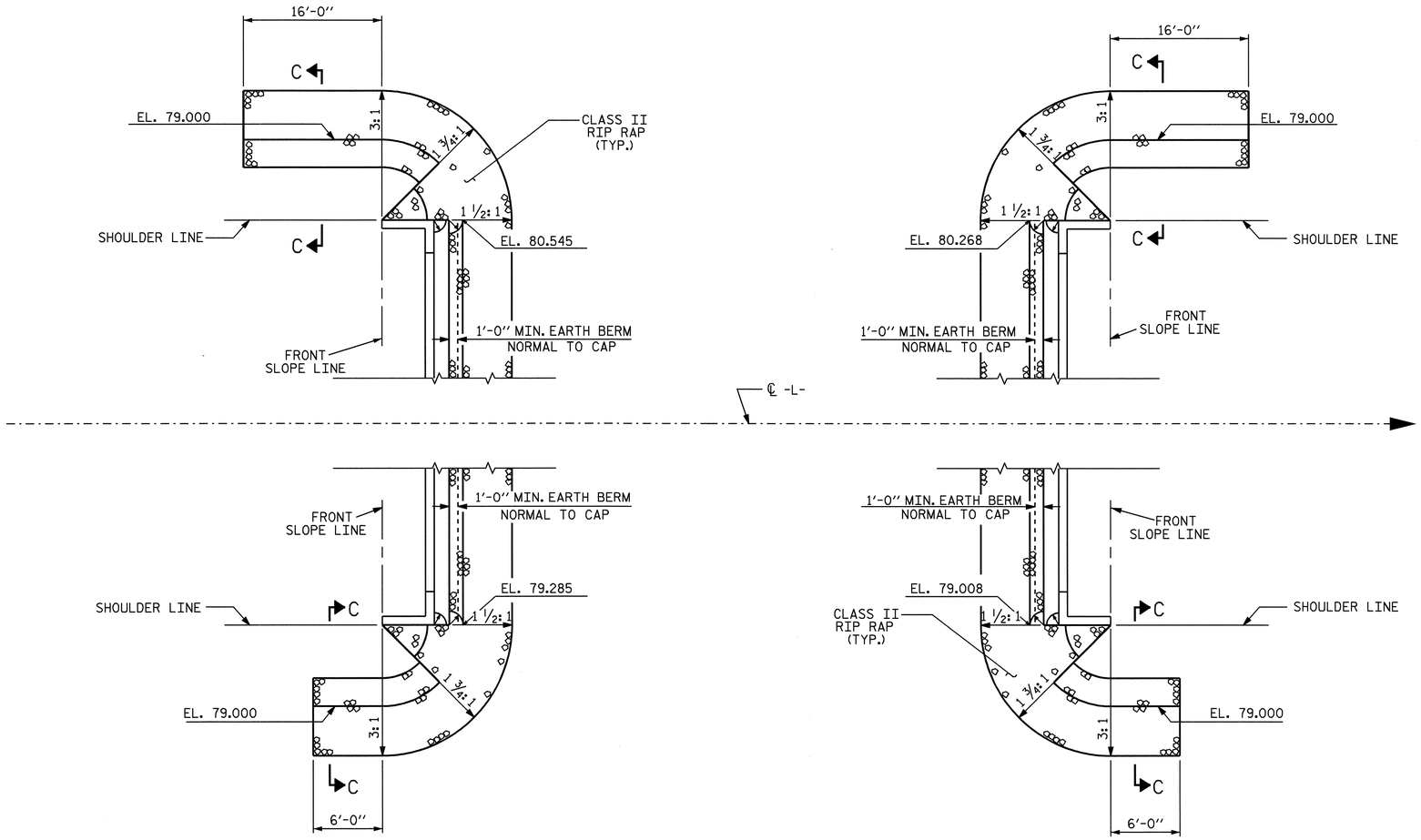
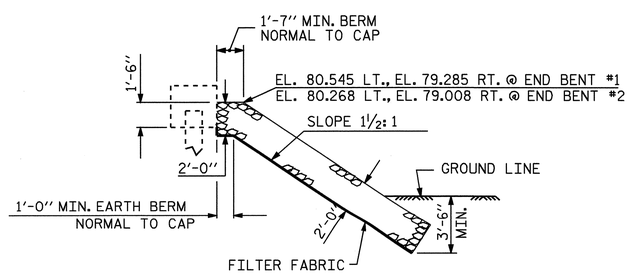


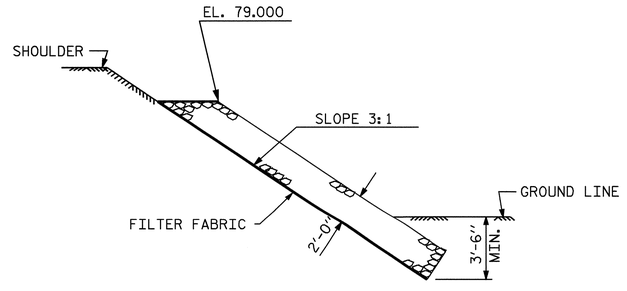
END BENT #1

END BENT #2

PLAN



℄ SECTION
BERM RIP RAPPED



SECTION C-C

ESTIMATED QUANTITIES

BRIDGE @ STA. 16+12.50 -L-	RIP RAP CLASS II	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	98	110
END BENT 2	131	145
TOTAL	229	255

PROJECT NO. B-4174
LENOIR COUNTY
STATION: 16+12.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

RIP RAP DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER D. ANDREW DAVENPORT, JR.

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			21

ASSEMBLED BY : B. L. GREEN	DATE : 8/2005	
CHECKED BY : A. A. COLE	DATE : 8/2005	
DRAWN BY : FCJ 2/88	REV. 7/17/98	REK/RWW
CHECKED BY : ARB 8/88	REV. 8/16/99	RWW/LES
	REV. 10/17/00	RWW/LES

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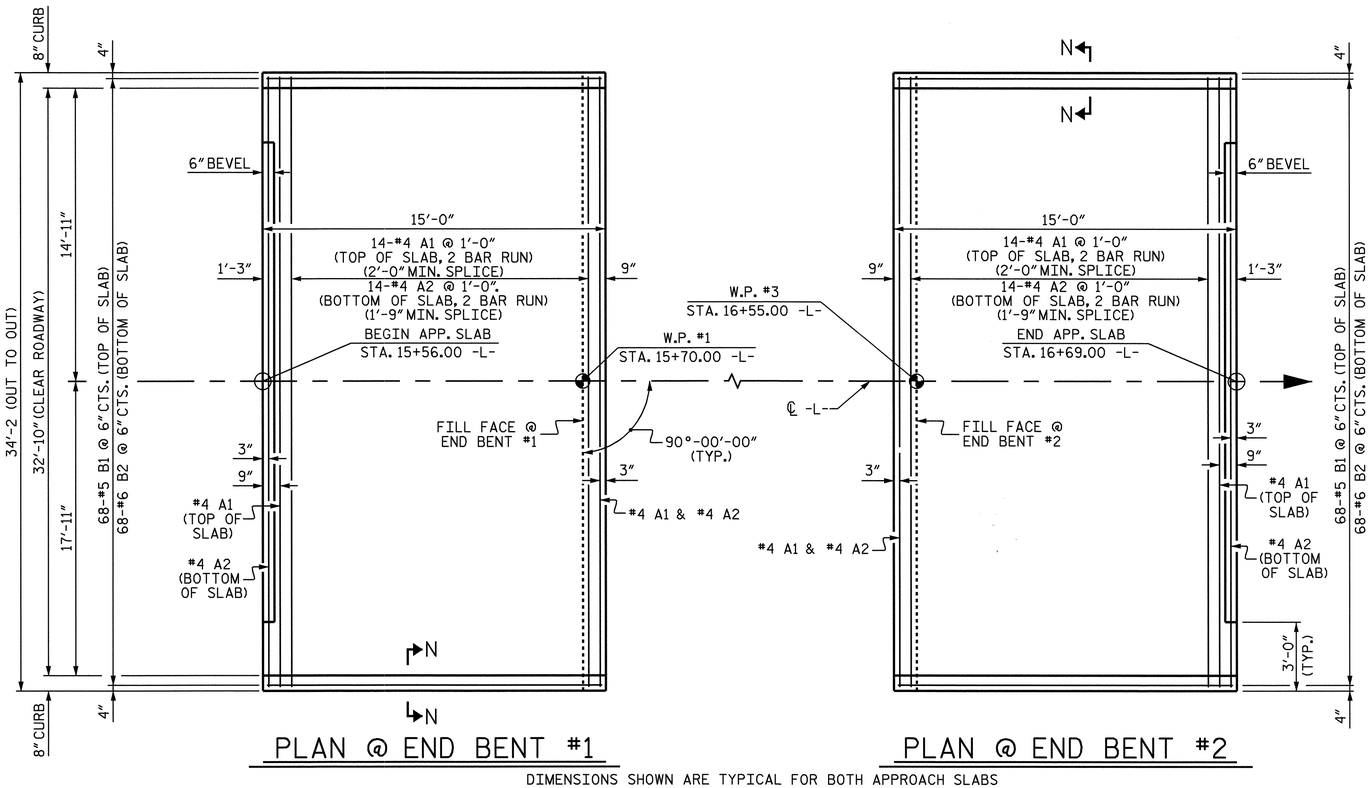
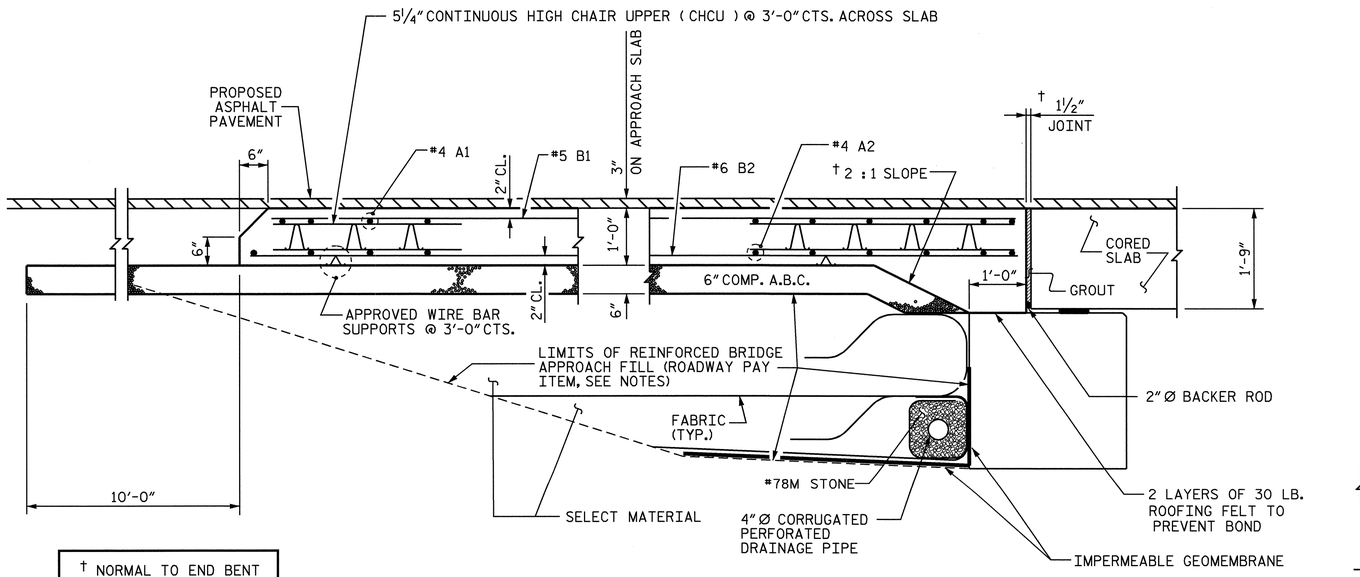
SKEW 90°

NCDOT STD. NO. RR2

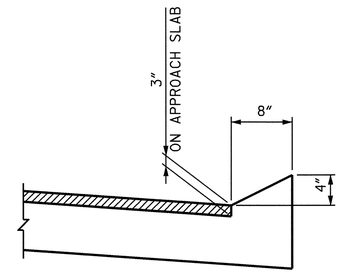


DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

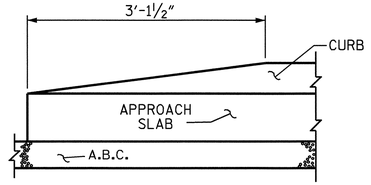


† NORMAL TO END BENT

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 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	17'-11"	383
A2	32	#4	STR	17'-10"	381
✳B1	68	#5	STR	14'-2"	1005
B2	68	#6	STR	14'-8"	1498
REINFORCING STEEL				LBS.	1879
✳EPOXY COATED REINFORCING STEEL				LBS.	1388
CLASS AA CONCRETE				C. Y.	20.9

APPROACH SLAB AT EB #2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳A1	32	#4	STR	17'-11"	383
A2	32	#4	STR	17'-10"	381
✳B1	68	#5	STR	14'-2"	1005
B2	68	#6	STR	14'-8"	1498
REINFORCING STEEL				LBS.	1879
✳EPOXY COATED REINFORCING STEEL				LBS.	1388
CLASS AA CONCRETE				C. Y.	20.9

PROJECT NO. B-4174

LENOIR COUNTY

STATION: 16+12.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE CORED SLAB

NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER D. ANDRE DAVENPORT, JR
1-19-07

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS
2			4			21

ASSEMBLED BY : A. SORSENGINH	DATE : 10/13/06		
CHECKED BY : D. A. DAVENPORT	DATE : 11/7/06		
DRAWN BY : FCJ 6/87	REV. 7/10/01	LES/RDR	
CHECKED BY : EGA 6/87	REV. 5/7/03R	RWW/JTE	
	REV. 5/1/06	TLA/GM	

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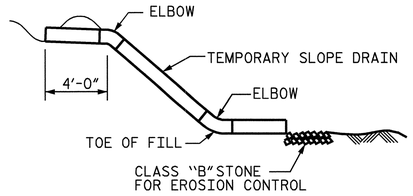
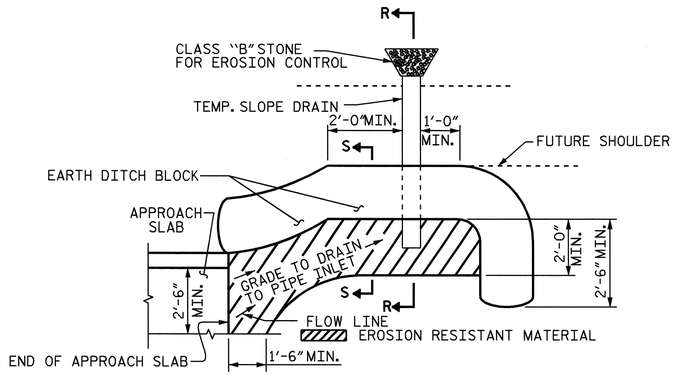
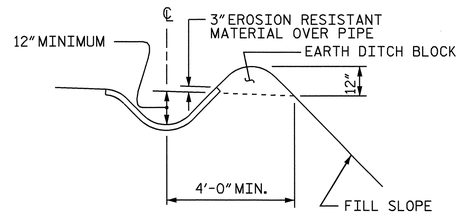


SECTION R-R



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

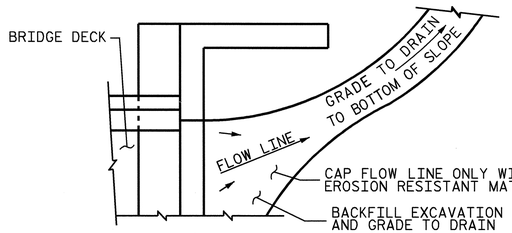
PLAN VIEW



SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(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

PROJECT NO. B-4174

LENOIR COUNTY

STATION: 16+12.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB DETAILS

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

NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER D. ANDRE' DAVENPORT, JR.
1-19-07

ASSEMBLED BY : A. SORSENGINH	DATE : 10/13/06		
CHECKED BY : D. A. DAVENPORT	DATE : 11/7/06		
DRAWN BY : FCJ 11/88	REV. 8/16/99	MAB/LES	
CHECKED BY : ARB 11/88	REV. 10/17/00	RWW/LES	
	REV. 5/1/03	RWW/JTE	

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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

STD. NO. SN