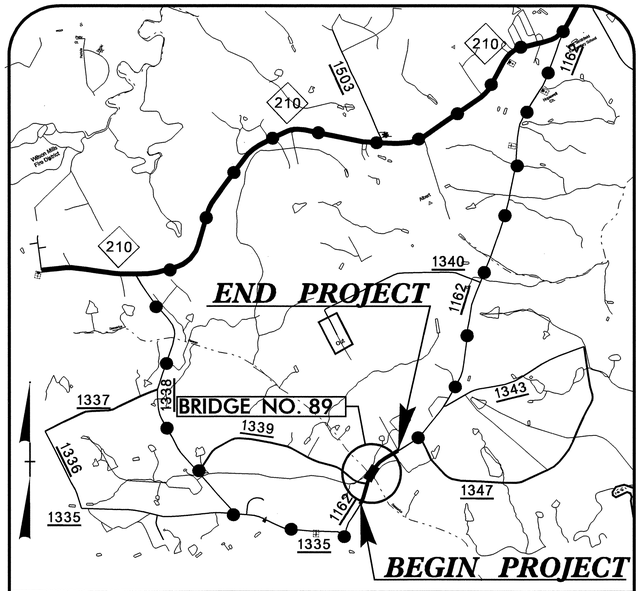
TIP PROJECT: B-4165

CONTRACT: C201971



VICINITY MAP

DETOUR ROUTE

NEAREST SHIPPING POINT: FOUR OAKS ON SEABOARD RR
APPROX. 3 MILES FROM PROJECT

STRUCTURE

STATE OF NORTH CAROLINA

DIVISION OF HIGHWAYS

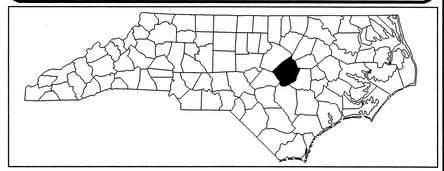
JOHNSTON COUNTY

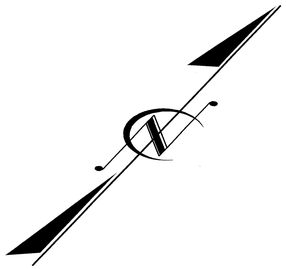
LOCATION: BRIDGE 89 ON SR 1162 OVER SASSARIXA SWAMP

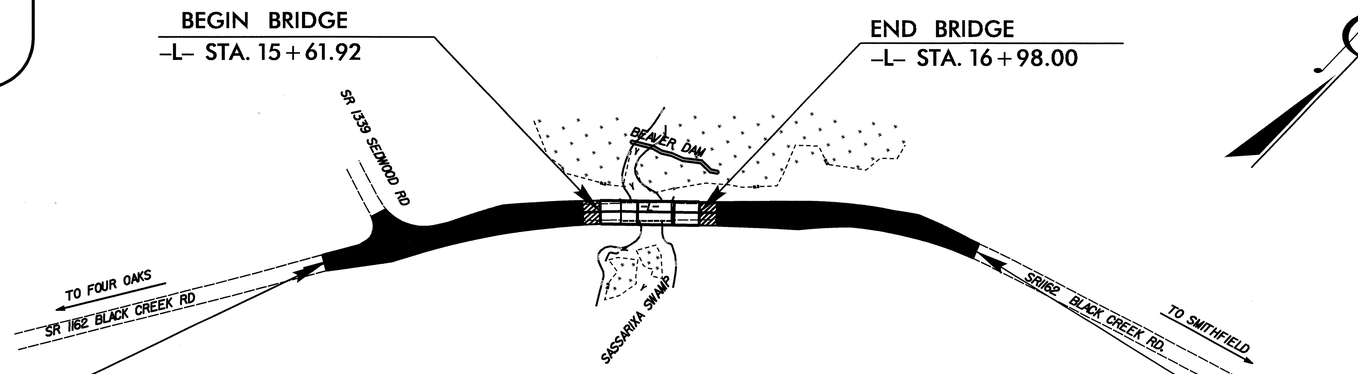
TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4165		

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33513.1.1	BRZ-1162 (5)	PE
33513.2.1	BRZ-1162 (5)	R/W & UTIL.
33513.3.1	BRZ-1162 (5)	CONST.







BEGIN TIP PROJECT B-4165

–L– STA. 11+75.00

END TIP PROJECT B-4165

–L– STA. 20+85.00

DESIGN DATA

ADT 2008 = 3191

ADT 2030 = 6496

DHV = 10 %

D = 60 %

T = 3 % *

V = 60 MPH

* TTST 1% DUAL 2%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4165 = 0.146 MILES

LENGTH STRUCTURE TIP PROJECT B-4165 = 0.026 MILES

TOTAL LENGTH OF PROJECT B-4165 = 0.172 MILES

Prepared In the Office of:

DIVISION OF HIGHWAYS

2006 STANDARD SPECIFICATIONS

LETTING DATE :

NOVEMBER 18, 2008

N.N. BULLOCK, P.E.
PROJECT ENGINEER

A.K. PASCHAL, P.E.
PROJECT DESIGN ENGINEER

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

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE DESIGN ENGINEER

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR *DATE*

F.A. PROJECT NO. BRZ-1162(5)

PI = 16+53.00
EL = 134.340
VC = 150'
+1.0479 % Δ -1.1962 %

GRADE DATA

15+50 16+00 16+50 17+00

150 140 130 120 110

SPAN A SPAN B SPAN C

FILL FACE @ END BENT 1
STA. 15+61.92 -L-
GRADE POINT EL. 133.386

1'-0" MIN.
EARTH BERM
(TYP.)

BEGIN FRONT SLOPE
STA. 15+56.81 -L-
GRADE POINT EL. 133.332

TOP OF TEMPORARY ROCK
CAUSEWAY (WORKPAD)
EL. 126.200

HIGH WATER
EL. 134.100
(9/99)

EXISTING
SUBSTRUCTURE
(TYP.)

FILL FACE @ END BENT 2
STA. 16+98.00 -L-
GRADE POINT EL. 133.734

BEGIN FRONT SLOPE
STA. 17+03.16 -L-
GRADE POINT EL. 133.694

APPROXIMATE
NATURAL GROUND

EL. 132.0±
EL. 128.0±
EL. 126.0±
EL. 133.0±
EL. 128.0±
EL. 125.0±
EL. 122.0±
EL. 124.0±
EL. 125.0±
EL. 122.0±
EL. 121.0±
EL. 138.0±
EL. 130.0±
EL. 119.0±
EL. 126.0±
EL. 132.0±

FIX.

1'-6" (TYP.)

NORMAL
WATER SURFACE
EL. 124.200
(2-9-04)

HP 12 x 53
STEEL PILES

3'-6" Ø
DRILLED PIER
(TYP.)

CLASS II RIP RAP
1½:1 SLOPE
(NORMAL TO CAP)
(TYP.)

HP 12 x 53
STEEL PILES

UNCLASSIFIED
STRUCTURE
EXCAVATION
(SEE NOTES)

HORIZONTAL CURVE DATA

PI = 14+64.33 -L-
Δ = 15° 36' 06.4" (RT)
L = 285.92'
T = 143.85'
R = 1,050.00'

END BENT 1 BENT 1 BENT 2 END BENT 2

SECTION ALONG -L-

(SECTIONS @ BENTS AND END BENTS ARE TAKEN AT RIGHT ANGLES)

1'-0" MIN.
EARTH BERM
EL. 127.397

TEMPORARY ROCK
CAUSEWAY (WORKPAD)

BENT 1
CONTROL LINE

PT STA. 16+06.40 -L-

SASSARIXA SWAMP

EXISTING
SUBSTRUCTURE
(TYP.)

BENT 2
CONTROL LINE

1'-0"
EARTH BERM
EL. 127.726

EXTENDED
TANGENT

TO SR 1335

W.P. #1
STA. 15+61.92 -L-

BEGIN FRONT SLOPE
STA. 15+56.81 -L-

11 5/16"

BEGIN APPROACH SLAB
STA. 15+37.93 -L-

FILL FACE @
END BENT 1

CLASS II
RIP RAP

W.P. #2
STA. 16+13.00 -L-

BRIDGE IDENTITY
STA. 16+30.50 -L-

90°-00'-00"
(TYP.)

W.P. #3
STA. 16+63.00 -L-

W.P. #4
STA. 16+98.00 -L-

BEGIN FRONT SLOPE
STA. 17+03.16 -L-

TO SR 1347

END APPROACH SLAB
STA. 17+22.00 -L-

FILL FACE @
END BENT 2

CLASS II
RIP RAP

6'-7 3/16" (ALONG -L-)
17'-5"
32'-7"

44'-5 9/16" (ALONG EXTENDED TANGENT)

51'-0 15/16" (ALONG -L-)
50'-0"
35'-0"

136'-0 15/16" (FILL FACE TO FILL FACE ALONG -L-)
136'-0 3/4" (TRUE BRIDGE LENGTH FILL FACE TO FILL FACE)

PLAN

(PILES & DRILLED PIERS ARE NOT SHOWN IN PLAN VIEW FOR CLARITY)

NORTH CAROLINA PROFESSIONAL SEAL 12929 ENGINEER NORMAN WEBLETT BULLOCK, JR.
9/30/08

NORTH CAROLINA PROFESSIONAL SEAL 33005 ENGINEER M. KEITH PASCHAL
9/29/08

PROJECT NO. B-4165
JOHNSTON COUNTY
STATION: 16+30.50 -L-

SHEET 1 OF 3 REPLACES BRIDGE #89

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE OVER
SASSARIXA SWAMP
ON SR 1162 BETWEEN
SR 1335 AND SR 1347

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

DRAWN BY : M. FOWLER DATE : 8/6/08
CHECKED BY : J.D. HAWK DATE : 8/08

29-SEP-2008 08:11
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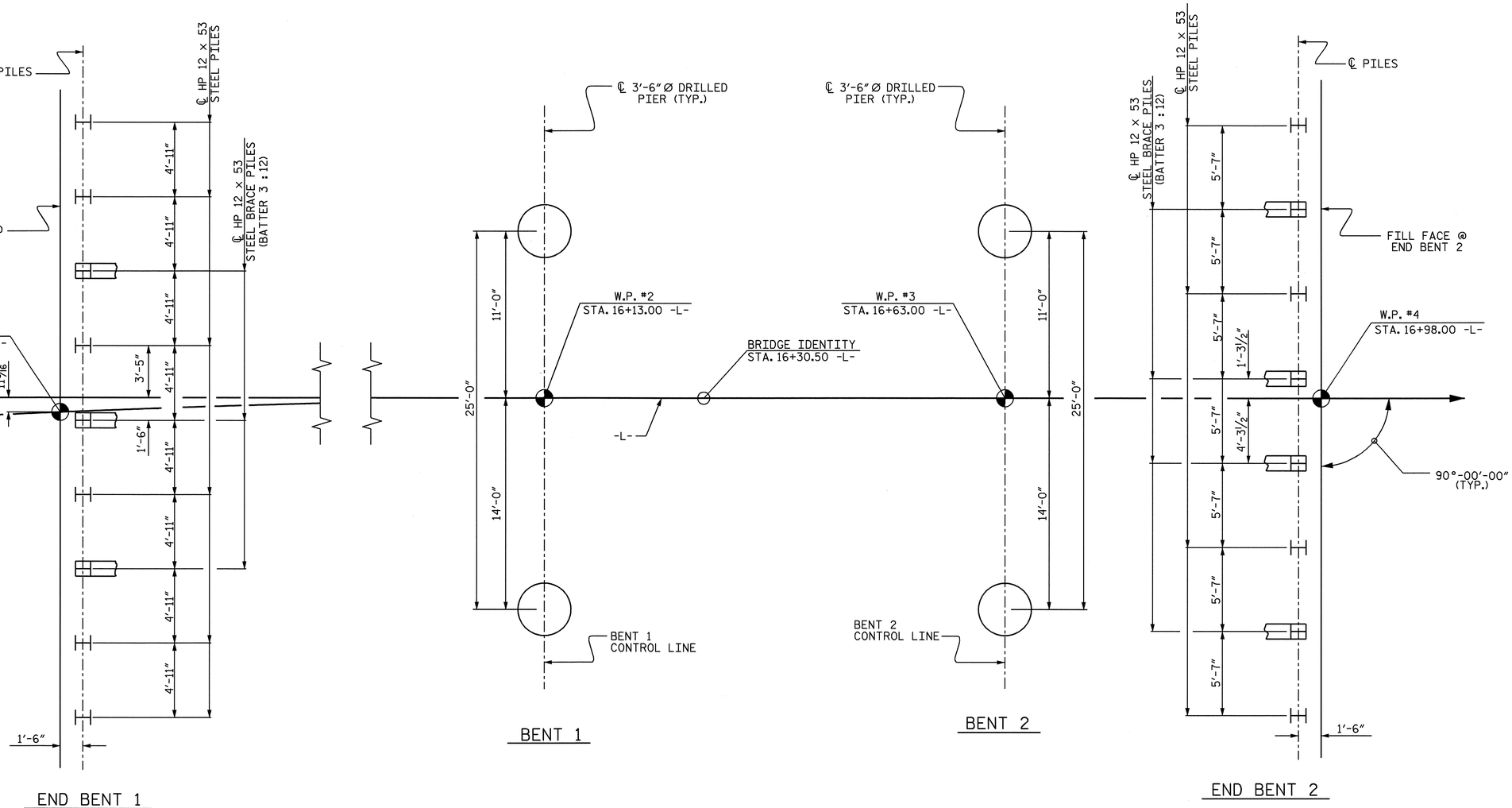
jkharva



FOUNDATION LAYOUT

(DIMENSIONS LOCATING END BENT PILES AND BENT DRILLED PIERS ARE SHOWN TO CENTERLINE PILES AND DRILLED PIERS)

NOTES :

DRILLED PIERS AT BENT 1 AND BENT 2 ARE DESIGNED FOR BOTH SKIN FRICTION AND END BEARING. CHECK FIELD CONDITIONS FOR THE REQUIRED END BEARING CAPACITY OF 45 TSF.

DRILLED PIERS AT BENT 1 AND BENT 2 ARE DESIGNED FOR AN APPLIED LOAD OF 210 TONS EACH AT THE TOP OF THE COLUMN.

INSTALL DRILLED PIERS AT BENT 1 AND BENT 2 TO EXTEND TO AN ELEVATION NO HIGHER THAN 104 FT. AND 102 FT. RESPECTIVELY AND SATISFY THE REQUIRED END BEARING CAPACITY.

PERMANENT STEEL CASING IS REQUIRED FOR DRILLED PIERS AT BENT 1 AND BENT 2. DO NOT EXTEND CASING BELOW ELEVATION 115 FT. FOR BENT 1 AND 111 FT. FOR BENT 2 WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

THE SCOUR CRITICAL ELEVATIONS FOR BENT 1 IS IS 114 FT. AND BENT 2 IS 110 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

SPT TESTING IS NOT REQUIRED TO DETERMINE END BEARING CAPACITY FOR DRILLED PIERS AT BENT 1 AND BENT 2.

SID INSPECTIONS MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR SID INSPECTIONS.

CSL TUBES ARE REQUIRED AND CSL TESTING MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR CSL TESTING. FOR CROSSHOLE SONIC LOGGING, SEE SPECIAL PROVISIONS.

FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.

DRIVE PILES AT 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.

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

PROJECT NO. B-4165

JOHNSTON COUNTY

STATION: 16+30.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON SR 1162
OVER SASSARIXA SWAMP
BETWEEN SR 1335
AND SR 1347

NORTH CAROLINA PROFESSIONAL SEAL 22005 ENGINEER A. KEITH PASCHAL
9/29/08

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

DRAWN BY : M. FOWLER DATE : 8/6/08
CHECKED BY : J.D. HAWK DATE : 8/08

29-SEP-2008 08:11
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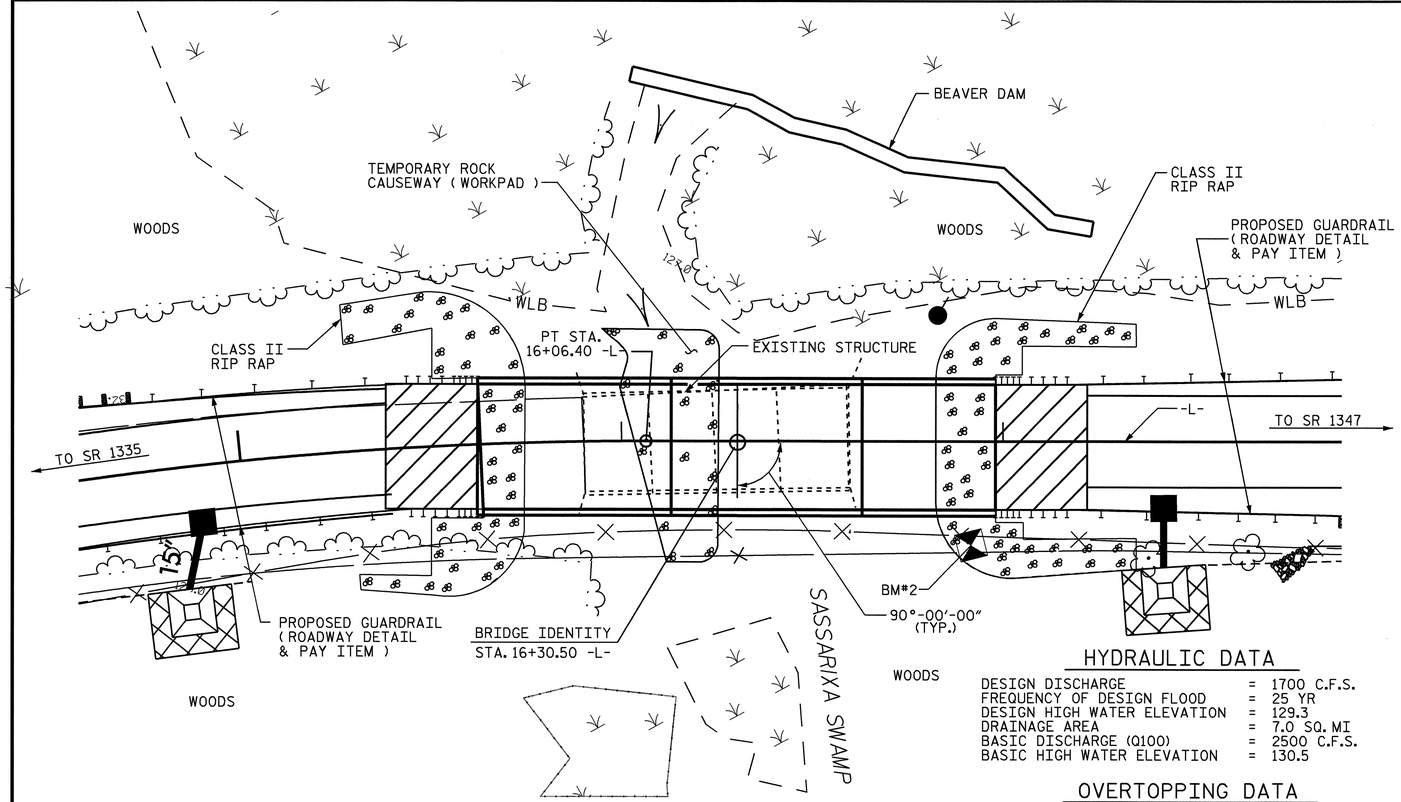
jkharva

B.M #2 : RR SPIKE IN BASE OF 20" GUM 27.91' RT. OF STA. 16+91.63 -L- EL. 129.40



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

LOCATION SKETCH

HYDRAULIC DATA

DESIGN DISCHARGE	=	1700 C.F.S.
FREQUENCY OF DESIGN FLOOD	=	25 YR
DESIGN HIGH WATER ELEVATION	=	129.3
DRAINAGE AREA	=	7.0 SQ. MI
BASIC DISCHARGE (Q100)	=	2500 C.F.S.
BASIC HIGH WATER ELEVATION	=	130.5

OVERTOPPING DATA

OVERTOPPING DISCHARGE	=	3300 C.F.S.
FREQUENCY OF OVERTOPPING FLOOD	=	200 YR
OVERTOPPING FLOOD ELEVATION	=	131.4

TOTAL BILL OF MATERIAL

	CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS	REMOVAL OF EXISTING STRUCTURE	3'-6" Ø DRILLED PIERS IN SOIL	3'-6" Ø DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 3'-6" Ø DRILLED PIERS	SID INSPECTION	CROSSHOLE SONIC LOGGING	UNCLASSIFIED STRUCTURE EXCAVATION	CONCRETE WEARING SURFACE	GROOVING BRIDGE FLOORS	CLASS A CONCRETE
	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	EACH	EACH	CU. YDS.	SQ. FT.	SQ. FT.	CU. YDS.
SUPERSTRUCTURE									4363	5380	
END BENT 1								390			18.7
BENT 1			35.25	12	24.9	1	1				24.5
BENT 2			43.10	8	33.1	1	1				24.5
END BENT 2								480			18.7
TOTAL	LUMP SUM	LUMP SUM	78.35	20	58.0	2	2	870	4363	5380	86.4

TOTAL BILL OF MATERIAL

	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	HP 12 X 53 STEEL PILES		CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE	ELASTOMERIC BEARINGS	EVAZOTE JOINT SEALS	3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS	
	LUMP SUM	LBS.	LBS.	NO.	LIN. FT.	LIN. FT.	TONS	SQ. YARDS	LUMP SUM	LUMP SUM	NO.	LIN. FT.
SUPERSTRUCTURE	LUMP SUM					267.38			LUMP SUM	LUMP SUM	36	1602.75
END BENT 1		2585		9	180		123	137				
BENT 1		7401	1068									
BENT 2		7646	1152									
END BENT 2		2596		8	160		120	134				
TOTAL	LUMP SUM	20,228	2220	17	340	267.38	243	271	LUMP SUM	LUMP SUM	36	1602.75

DRAWN BY : M. FOWLER DATE : 7/7/08
CHECKED BY : J.D. HAWK DATE : 8/08

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NOTES:

ASSUMED LIVE LOAD = HS20 OR ALTERNATE LOADING, EXCEPT THAT THE CORED SLABS HAVE BEEN DESIGNED FOR HS 25.

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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

THE EXISTING STRUCTURE CONSISTING OF FOUR (1 @ 17'-9", 2@ 17'-0" & 1 @ 17'-9") REINFORCED CONCRETE DECK SPANS ON TIMBER JOISTS WITH A CLEAR ROADWAY WIDTH OF 24.0 FEET ON TIMBER CAP AND PILE END BENTS AND BENTS AND LOCATED AT THE PROPOSED STRUCTURE SHALL BE REMOVED.

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 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 35 FT. 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.

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.

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

AT THE CONTRACTOR'S OPTION, AND UPON REMOVAL OF THE CAUSEWAY, THE CLASS II RIP RAP USED IN THE CAUSEWAY MAY BE PLACED AS RIP RAP SLOPE PROTECTION. SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS AT STATION 16+30.50 -L-.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR CONCRETE WEARING SURFACE, SEE SPECIAL PROVISIONS.

PROJECT NO. B-4165
JOHNSTON COUNTY
STATION: 16+30.50 -L-

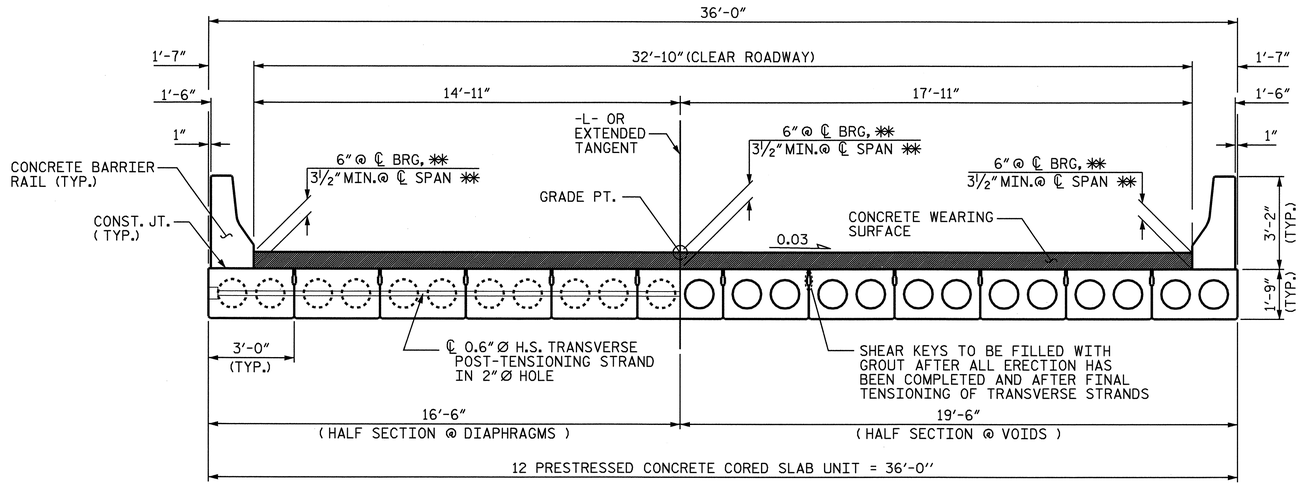
SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON SR 1162
OVER SASSARIXA SWAMP
BETWEEN SR 1335
AND SR 1347

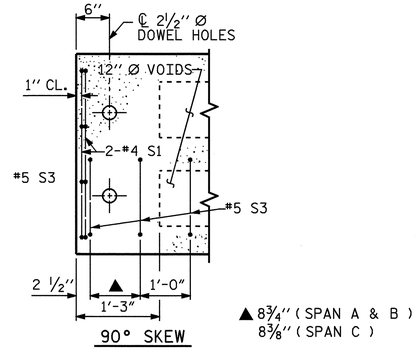
NORTH CAROLINA PROFESSIONAL SEAL 22005 ENGINEER KEITH PASCHAL
9/29/08

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



TYPICAL SECTION

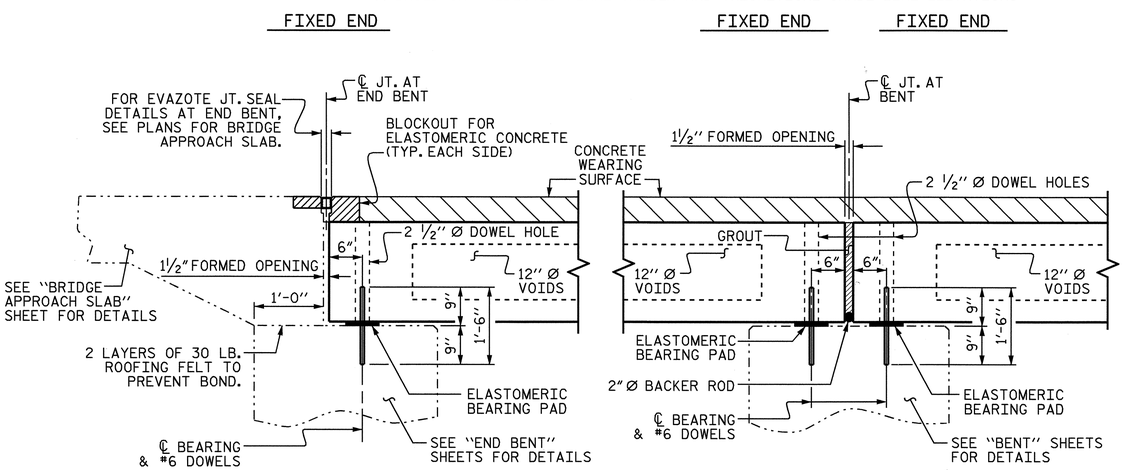
✱✱ BASED ON PREDICTED FINAL CAMBER AND THEORETICAL GRADE LINE ELEVATIONS



90° SKEW

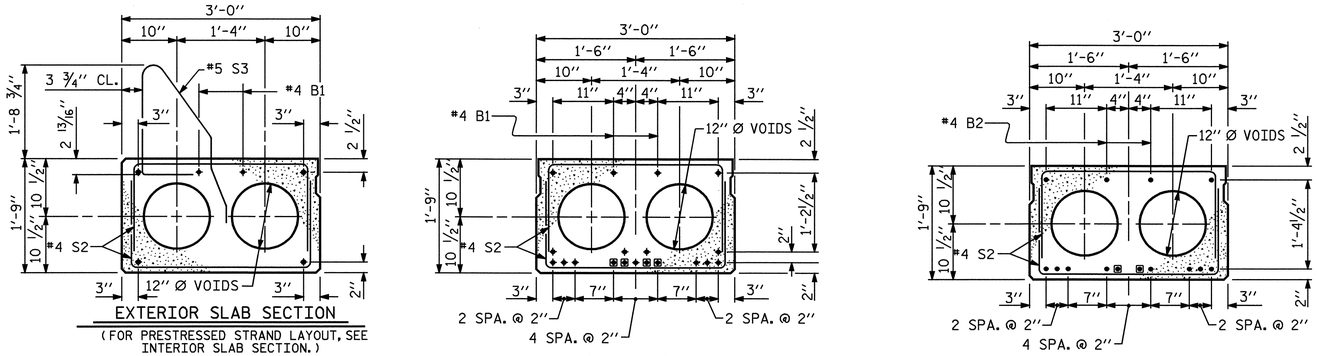
PART PLAN-EXTERIOR SECTION

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



SECTION AT END BENT

SECTION AT BENT

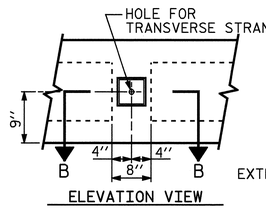


EXTERIOR SLAB SECTION

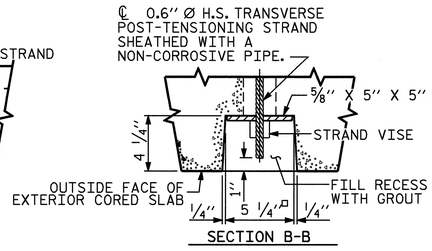
(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)

SPAN A & B INTERIOR SLAB SECTION

SPAN C INTERIOR SLAB SECTION

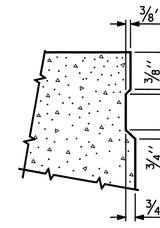


ELEVATION VIEW



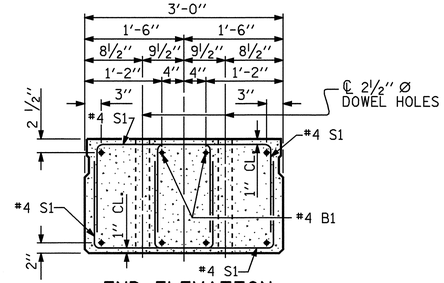
SECTION B-B

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



SHEAR KEY DETAIL

NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR 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.

◉ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 4'-2" FROM END OF CORED SLAB UNIT, SEE STRAND SPECIFICATIONS ARTICLE 1078-7

0.6" Ø LOW RELAXATION STRAND LAYOUT

PROJECT NO. B-4165

JOHNSTON COUNTY

STATION: 16+30.50 -L-

SHEET 1 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
3'-0" X 1'-6"
PRESTRESSED CONCRETE
CORED SLAB UNIT

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

DRAWN BY : J. MYA DATE : 7/24/08
CHECKED BY : J.D. HAWK DATE : 8/08

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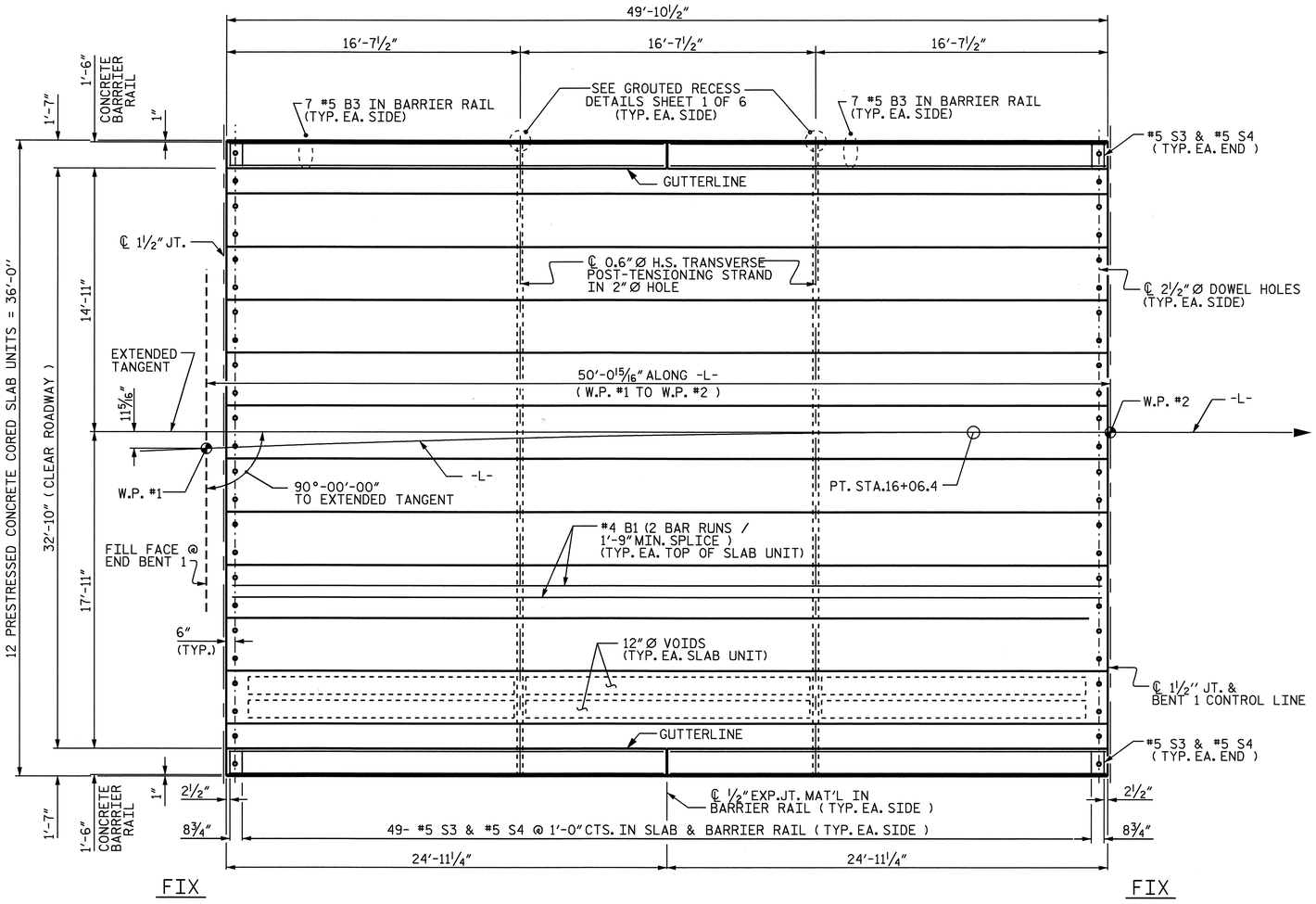
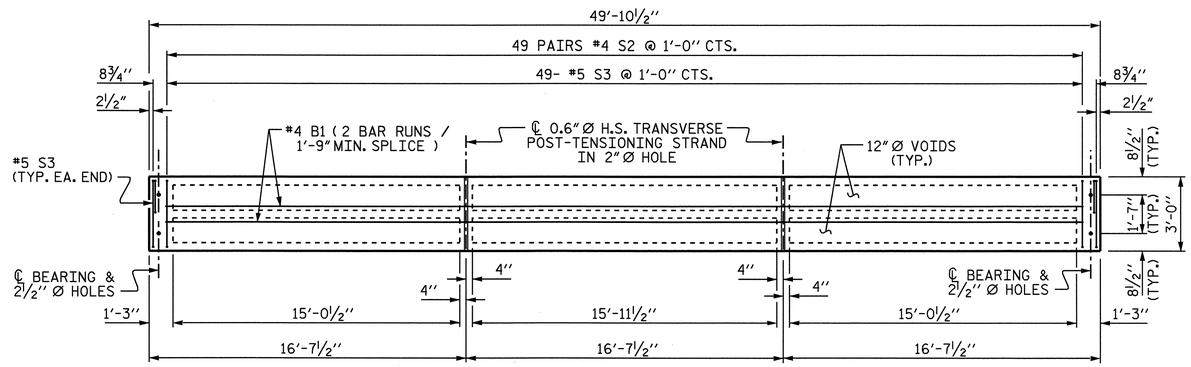
STD. NO. PCS2



PLAN OF SPAN A



PLAN OF CORED SLAB UNIT - SPAN A

EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.
FOR LOCATION OF ADDITIONAL REINFORCING STEEL AT END OF SLAB UNIT,
SEE "PART-PLAN EXTERIOR SECTION" SHEET 1 OF 6.

PROJECT NO. B-4165

JOHNSTON COUNTY

STATION: 16+30.50 -L-

SHEET 2 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE PLAN OF SPAN A

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			22

NORTH CAROLINA PROFESSIONAL SEAL 029008 ENGINEER KEITH PASCHAL

9/29/08

DRAWN BY : J. MYA DATE : 7/24/08
CHECKED BY : J.D. HAWK DATE : 8/08

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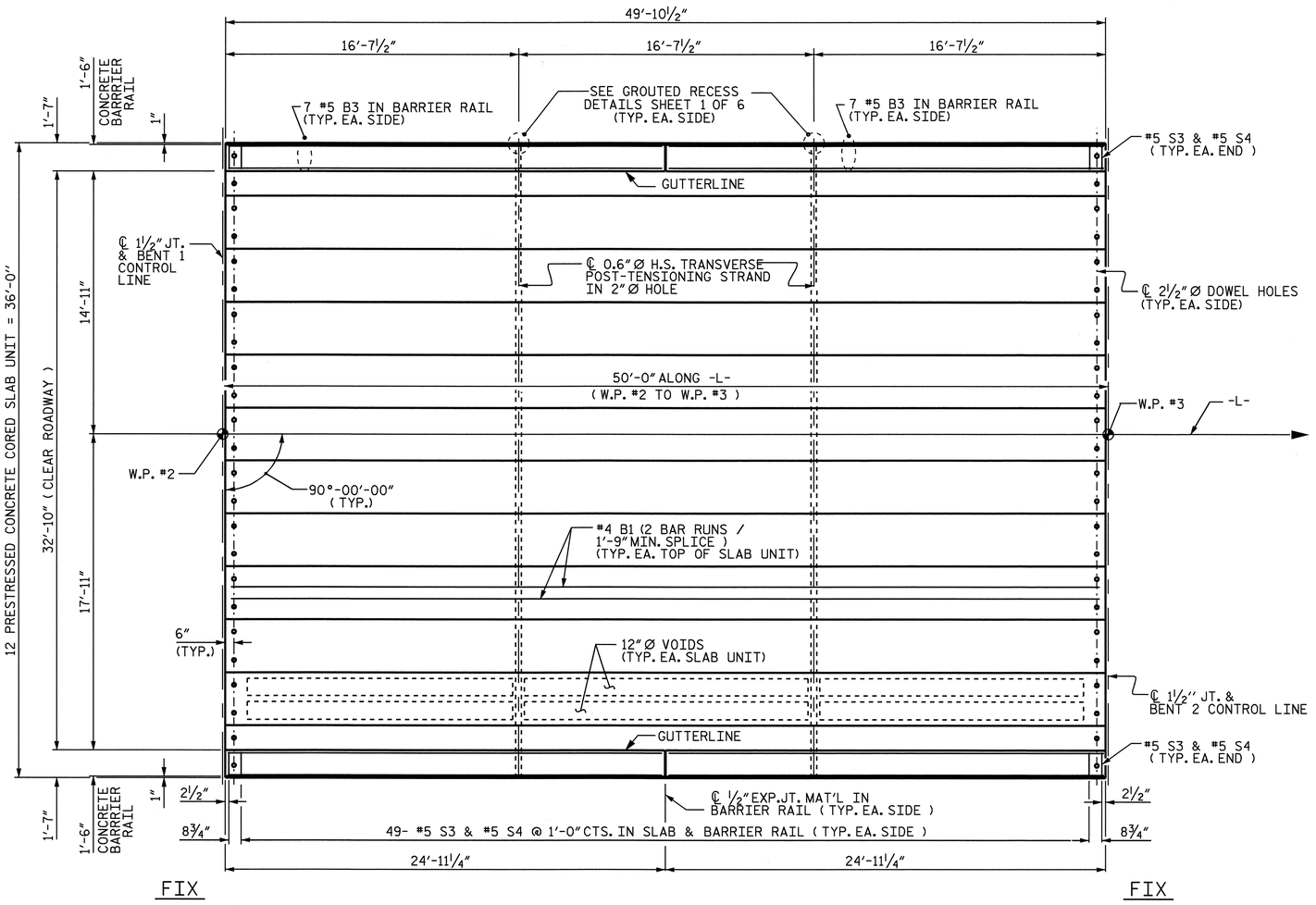
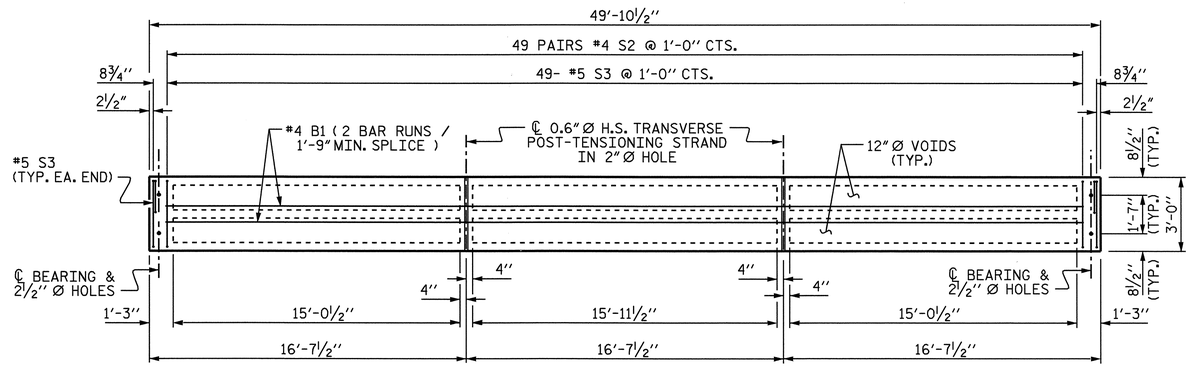
jkharva



PLAN OF SPAN B



PLAN OF CORED SLAB UNIT - SPAN B

EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.
FOR LOCATION OF ADDITIONAL REINFORCING STEEL AT END OF SLAB UNIT, SEE "PART-PLAN EXTERIOR SECTION" SHEET 1 OF 6.

PROJECT NO. B-4165

JOHNSTON COUNTY

STATION: 16+30.50 -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			22

NORTH CAROLINA PROFESSIONAL SEAL 22005 ENGINEER KEITH PASCHAL

9/29/08

DRAWN BY : J. MYA DATE : 7/24/08
CHECKED BY : J.D. HAWK DATE : 8/08

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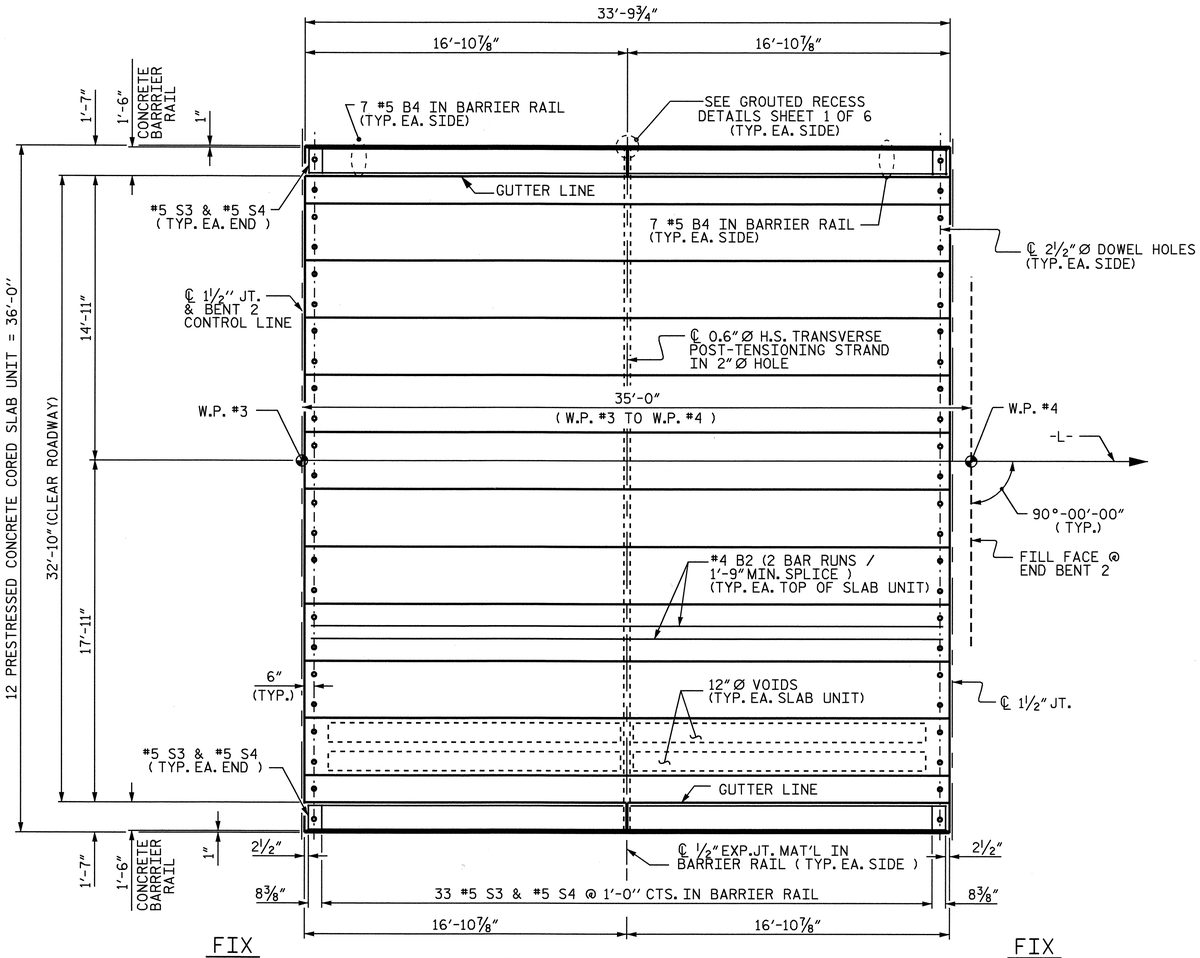
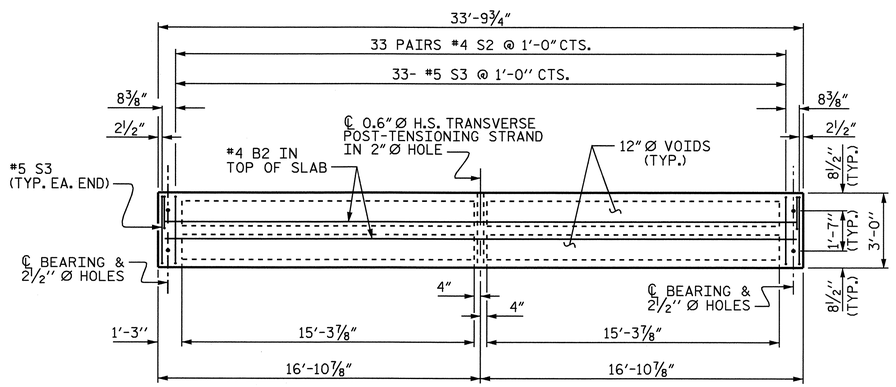


PLAN OF SPAN C



PLAN OF CORED SLAB UNIT - SPAN C

EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.
FOR LOCATION OF ADDITIONAL REINFORCING STEEL AT END OF SLAB UNIT,
SEE "PART-PLAN EXTERIOR SECTION" SHEET 1 OF 6.

PROJECT NO. B-4165

JOHNSTON COUNTY

STATION: 16+30.50 -L-

SHEET 4 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE PLAN OF SPAN C

NORTH CAROLINA PROFESSIONAL SEAL 22005 ENGINEER KEITH PASCHAL

9/29/08

REVISIONS						SHEET NO.
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DRAWN BY : J. MYA DATE : 7/24/08
CHECKED BY : J.D. HAWK DATE : 8/08

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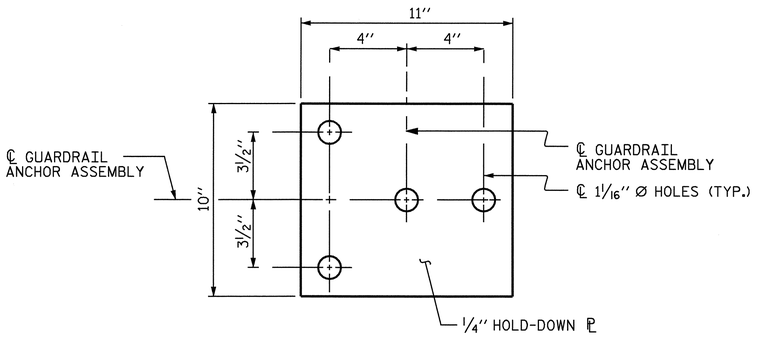
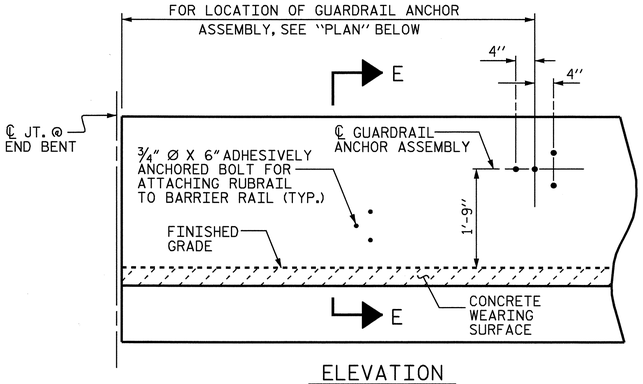
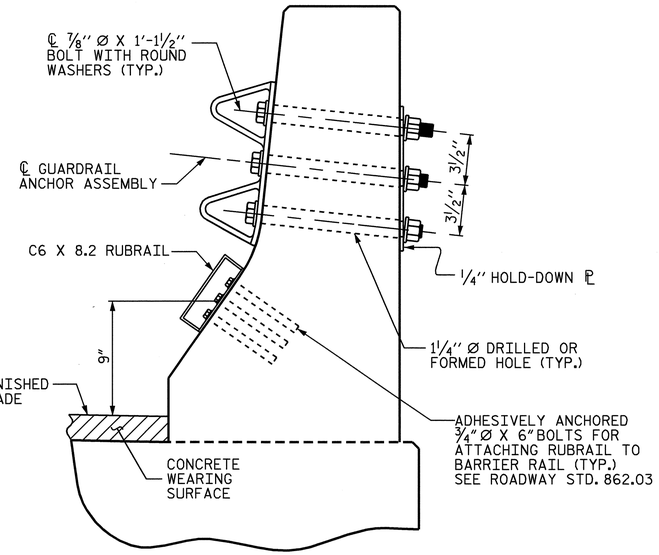


PLAN



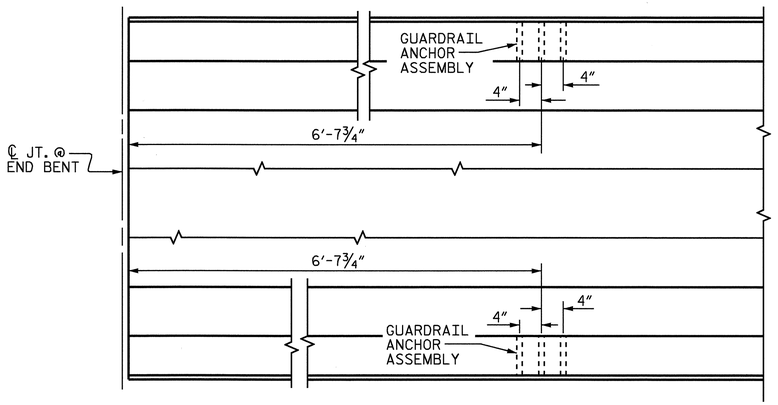
ELEVATION

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 : GUARDRAIL ANCHORAGE

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

THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8'' Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

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

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

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

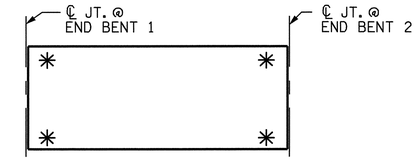
THE 1 1/4'' Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 3/4''Ø X 6'' BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4''Ø BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS. SEE ROADWAY STANDARD 862.03 FOR DETAILS AND LOCATION OF THE RUBRAIL.

NOTES : CONCRETE BARRIER RAIL

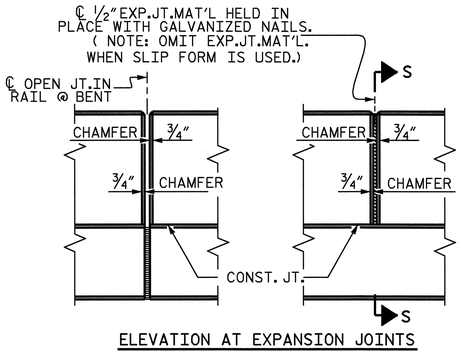
VERTICAL GROOVED CONTRACTION JOINTS, 1/2'' IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A VERTICAL CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION 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.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

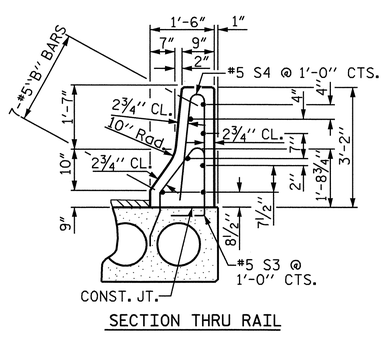


SKETCH SHOWING POINTS OF ATTACHMENTS

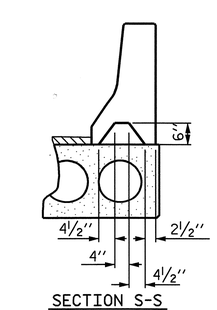
✳ DENOTES GUARDRAIL ANCHOR ASSEMBLY



ELEVATION AT EXPANSION JOINTS



SECTION THRU RAIL



SECTION S-S

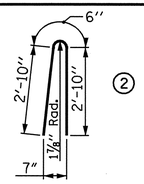
AT DAM IN OPEN JOINT (THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)

BARRIER RAIL DETAILS

BILL OF MATERIAL FOR CONCRETE BARRIER RAIL

BAR	BARS PER SPAN				TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
	SPAN A	SPAN B	SPAN C						
✳ B3	28	28			56	#5	STR	24'-7''	1435
✳ B4			28		28	#5	STR	16'-6''	482
✳ S4	102	102	70		274	#5	2	6'-2''	1762
✳ EPOXY COATED REINFORCING STEEL LBS.									3679
CLASS AA CONCRETE								CU.YDS.	34.2
TOTAL LIN. FT. OF CONCRETE BARRIER RAIL								LIN. FT.	267.38

BAR TYPE



ALL BAR DIMENSIONS ARE OUT TO OUT

9/29/08

PROJECT NO. B-4165

JOHNSTON COUNTY

STATION: 16+30.50 -L-

SHEET 5 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONCRETE BARRIER RAIL DETAILS & GUARDRAIL ANCHORAGE FOR BARRIER RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			22

ASSEMBLED BY : J. MYA	DATE : 7/24/08
CHECKED BY : J.D. HAWK	DATE : 8/08
DRAWN BY : TLA 5/06	ADDED 5/1/06R KMM/GM
CHECKED BY : GM 5/06	

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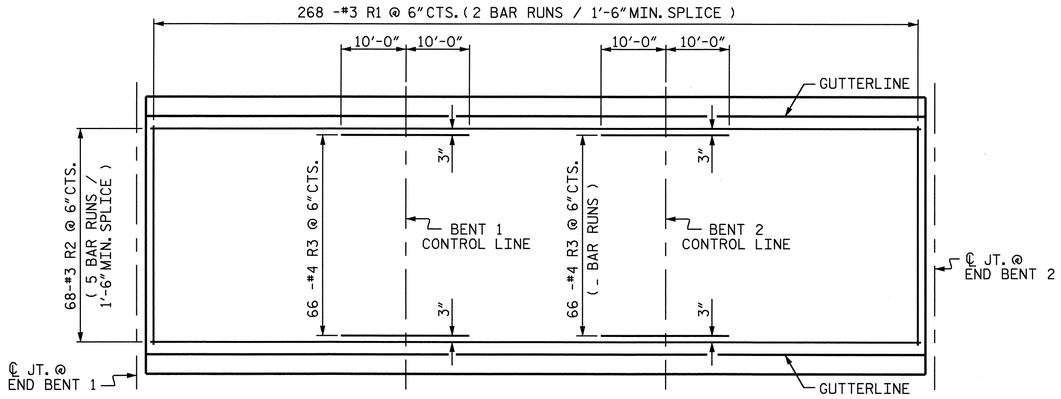
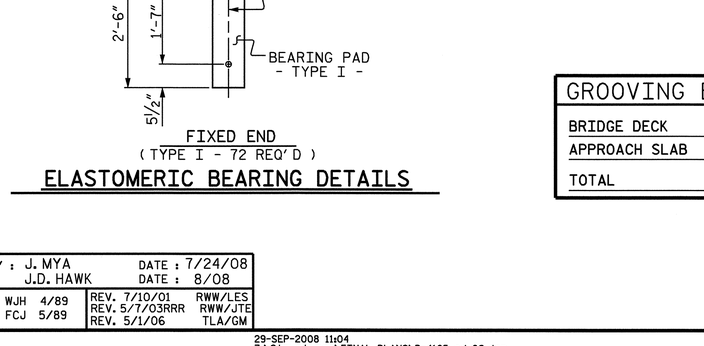


PLAN SHOWING CONCRETE WEARING SURFACE REINFORCING STEEL



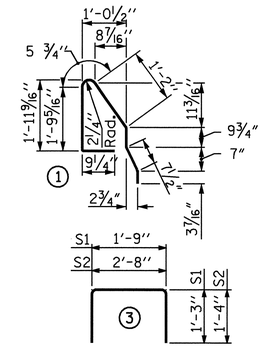
REINFORCING FOR CONCRETE WEARING SURFACE

** BASED ON PREDICTED FINAL CAMBER AND THEORETICAL GRADE LINE ELEVATIONS

BILL OF MATERIAL FOR CONCRETE WEARING SURFACE

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*R1	536	#3	STR	17'-0"	3426
*R2	340	#3	STR	27'-11"	3569
*R3	132	#4	STR	20'-0"	1764
* EPOXY COATED REINFORCING STEEL				LBS.	8759
CONCRETE WEARING SURFACE				SQ. FT.	4363

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

SPAN A AND B

BILL OF MATERIAL FOR ONE CORED SLAB SECTION

				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B1	4	#4	STR	25'-8"	69	25'-8"	69
S1	8	#4	3	4'-3"	23	4'-3"	23
S2	98	#4	3	5'-4"	349	5'-4"	349
* S3	51	#5	1	5'-11"	315		
REINFORCING STEEL LBS.					441		441
* EPOXY COATED REINFORCING STEEL LBS.					315		——
5000 P.S.I. CONCRETE CU. YDS.					7.0		6.9
0.6" Ø L.R. STRANDS No.					17		17

DEAD LOAD DEFLECTION AND CAMBER

	3'-0" x 1'-9"
SPAN A & B	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	1⅞" ↑
DEFLECTION DUE TO CONCRETE WEARING SURFACE	¼" ↓
FINAL CAMBER	1⅜" ↑

SPAN C

BILL OF MATERIAL FOR ONE CORED SLAB SECTION

				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B2	4	#4	STR	17'-8"	47	17'-8"	47
S1	8	#4	3	4'-3"	23	4'-3"	23
S2	66	#4	3	5'-4"	235	5'-4"	235
* S3	35	#5	1	5'-11"	216		
REINFORCING STEEL LBS.					305		305
* EPOXY COATED REINFORCING STEEL LBS.					216		——
5000 P.S.I. CONCRETE CU. YDS.					4.8		4.7
0.6" Ø L.R. STRANDS No.					12		12

DEAD LOAD DEFLECTION AND CAMBER

	3'-0" x 1'-9"
SPAN C	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	7/8" ↑
DEFLECTION DUE TO CONCRETE WEARING SURFACE	1/16" ↓
FINAL CAMBER	13/16" ↑

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.

WHEN A CONCRETE WEARING SURFACE IS DETAILED ON THE CORED SLAB BRIDGE TYPICAL SECTION, THE TOP SURFACE OF THE CORED SLAB UNITS SHALL HAVE A ⅜" RAKED FINISH.

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.

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

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

ALL REINFORCING STEEL IN CONCRETE WEARING SURFACE SHALL BE EPOXY COATED.

PLACEMENT OF THE CONCRETE WEARING SURFACE SHALL OCCUR AFTER CASTING THE CONCRETE RAIL. THE COST OF THE REINFORCING STEEL CAST WITH THE CONCRETE WEARING SURFACE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONCRETE WEARING SURFACE. FOR CONCRETE WEARING SURFACE, SEE SPECIAL PROVISIONS.

TRANSVERSE POST TENSIONING OF THE CORED SLAB SECTIONS SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS, EXCEPT THAT THE 0.6 Ø STRANDS SHALL BE TENSIONED TO 43,950 POUNDS.

CORED SLABS REQUIRED

SPAN A	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	49'-10½"	99'-9"
INTERIOR C.S.	10	49'-10½"	498'-9"
TOTAL	12		598'-6"

CORED SLABS REQUIRED

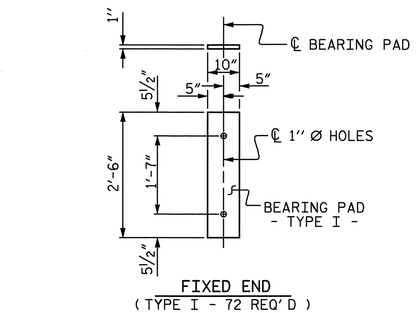
SPAN B	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	49'-10½"	99'-9"
INTERIOR C.S.	10	49'-10½"	498'-9"
TOTAL	12		598'-6"

CORED SLABS REQUIRED

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

GRADE 270 STRANDS

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



FIXED END
(TYPE I - 72 REQ'D)

ELASTOMERIC BEARING DETAILS

GROOVING BRIDGE FLOORS

BRIDGE DECK	3965	SQ.FT.
APPROACH SLAB	1415	SQ.FT.
TOTAL	5380	SQ.FT.

PROJECT NO. B-4165

JOHNSTON COUNTY

STATION: 16+30.50 -L-

SHEET 6 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

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

NORTH CAROLINA PROFESSIONAL SEAL 22006 ENGINEER ANDREW KEITH PASCHAL

9/29/08

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			22

ASSEMBLED BY : J. MYA	DATE : 7/24/08
CHECKED BY : J.D. HAWK	DATE : 8/08
DRAWN BY : WJH 4/89	REV. 7/10/01 RWW/LES
CHECKED BY : FCJ 5/89	REV. 5/7/03RRR RWW/JTE
	REV. 5/1/06 TLA/GM

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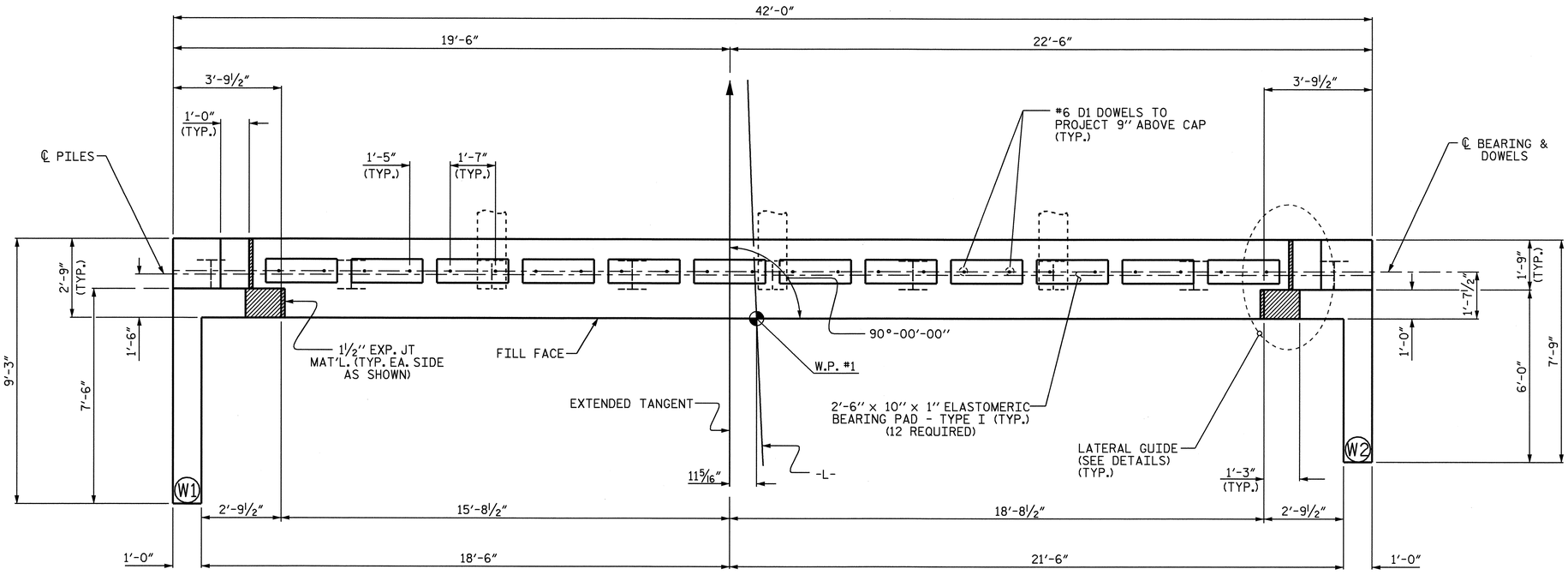


PLAN

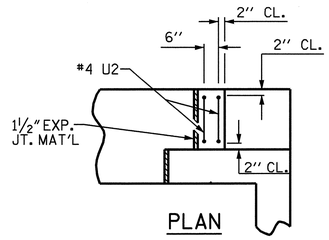
NOTES

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

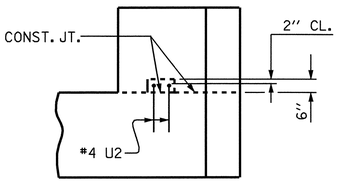
THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE.

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

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.



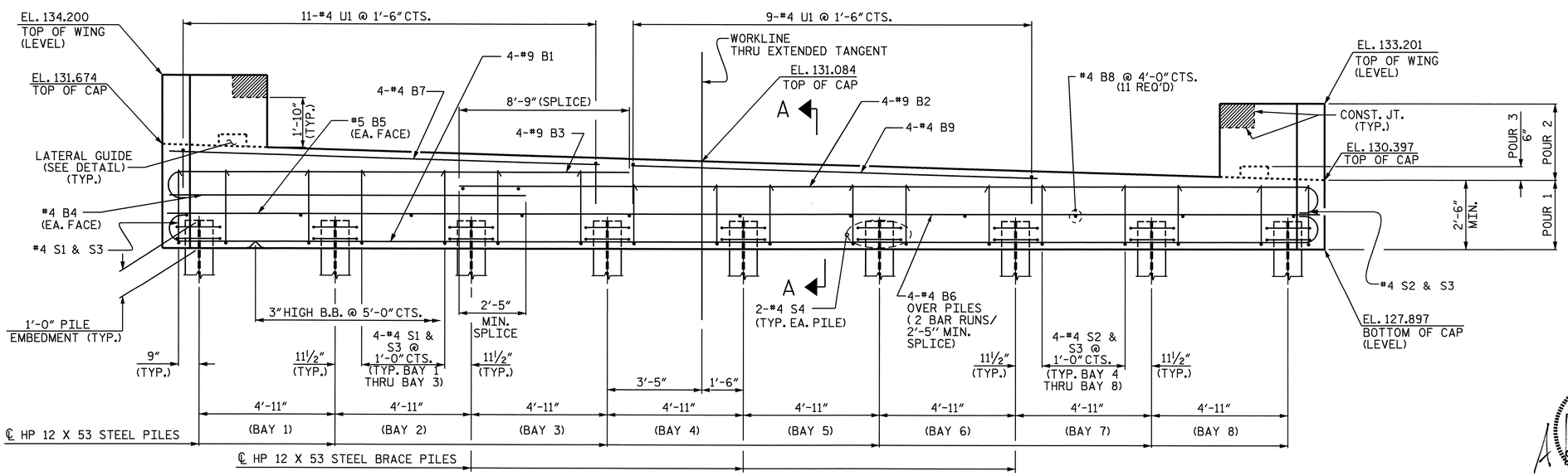
PLAN



ELEVATION

LATERAL GUIDE DETAILS

(EACH END SIMILAR)



ELEVATION

PROJECT NO. B-4165

JOHNSTON COUNTY

STATION: 16+30.50 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 1

NORTH CAROLINA PROFESSIONAL SEAL 22005 ENGINEER KEITH PASCHAL

9/29/08

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			22

DRAWN BY : M.FOWLER DATE : 6/19/08
CHECKED BY : J. G. KHARVA DATE : 8/27/08

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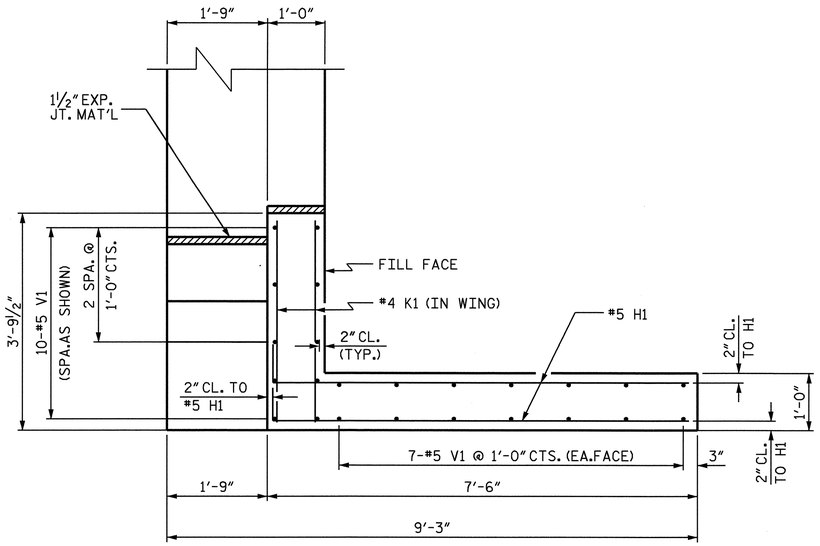
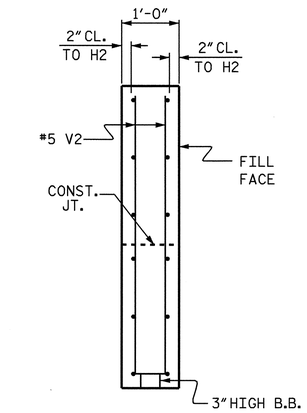
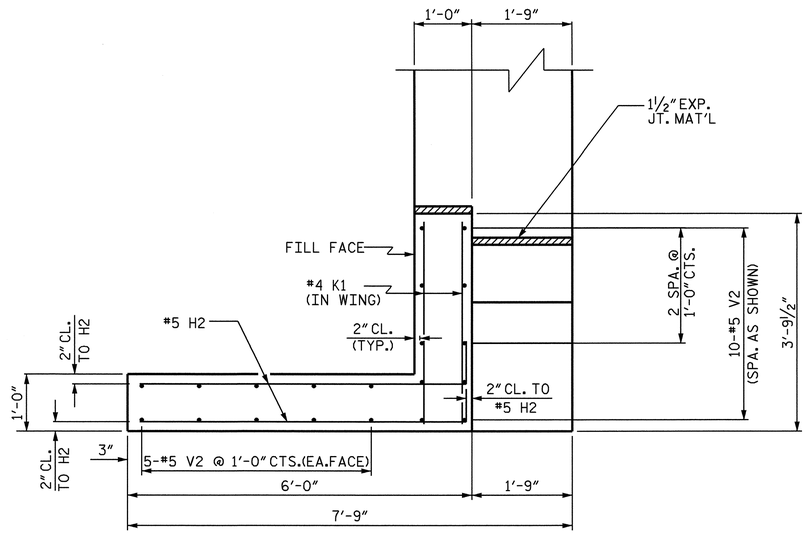


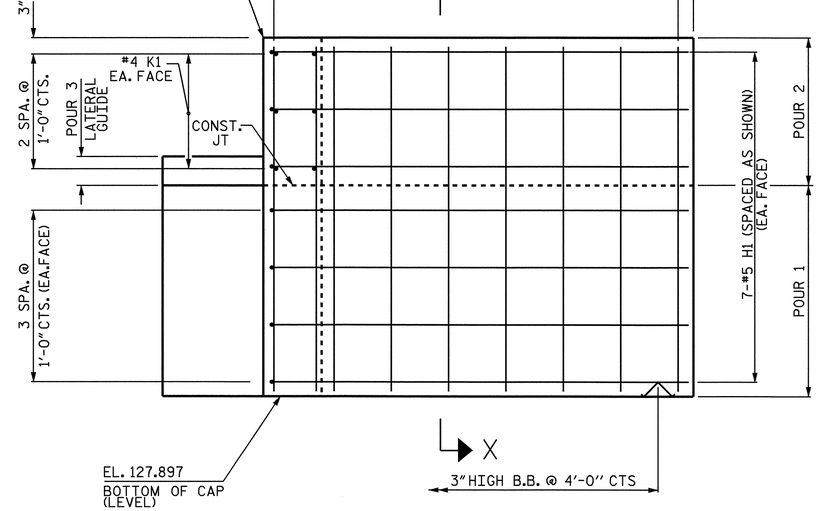
PLAN OF WING (W1)



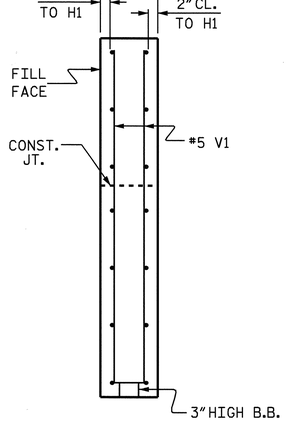
SECTION Y-Y



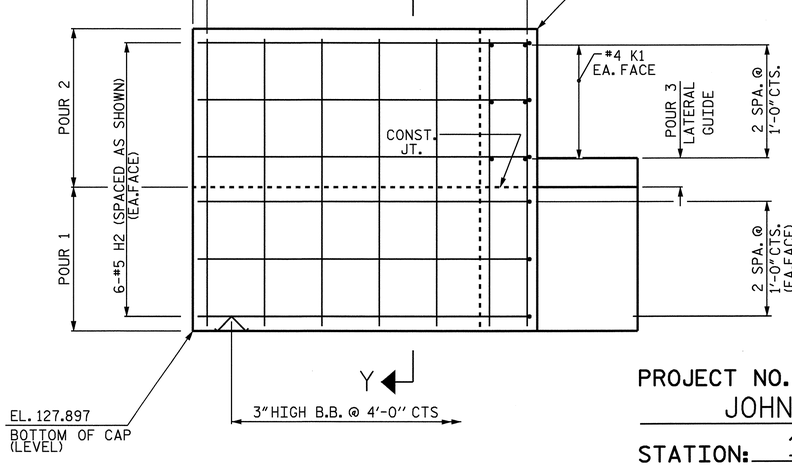
PLAN OF WING (W2)



ELEVATION OF WING (W1)



SECTION X-X



ELEVATION OF WING (W2)

DRAWN BY : M.FOWLER DATE : 6/24/08
CHECKED BY : J. G. KHARVA DATE : 8/27/08

29-SEP-2008 08:16
Z:\Structures\FINAL PLANS\B4165_sd_EB1 & 2.dgn
jkharva

PROJECT NO. B-4165
JOHNSTON COUNTY
STATION: 16+30.50 -L-

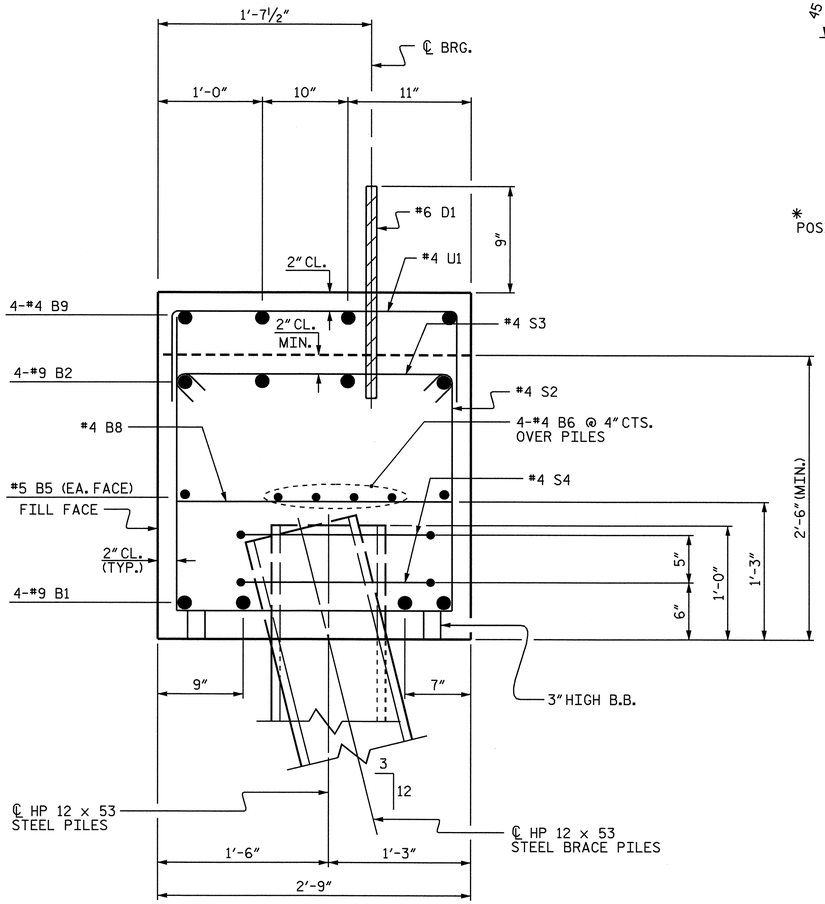
SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

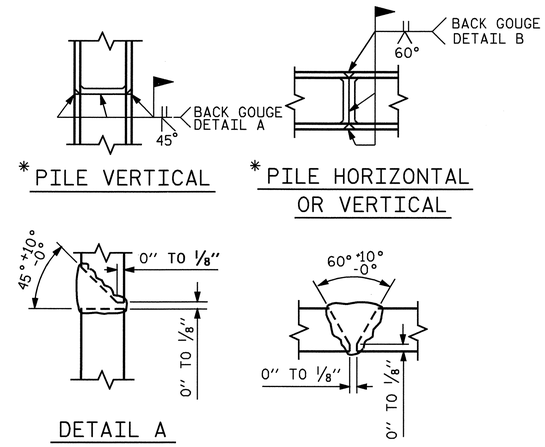
SUBSTUCTURE
END BENT 1

NORTH CAROLINA PROFESSIONAL SEAL 22005 ENGINEER A. KEITH PASCHAL
9/29/08

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			22



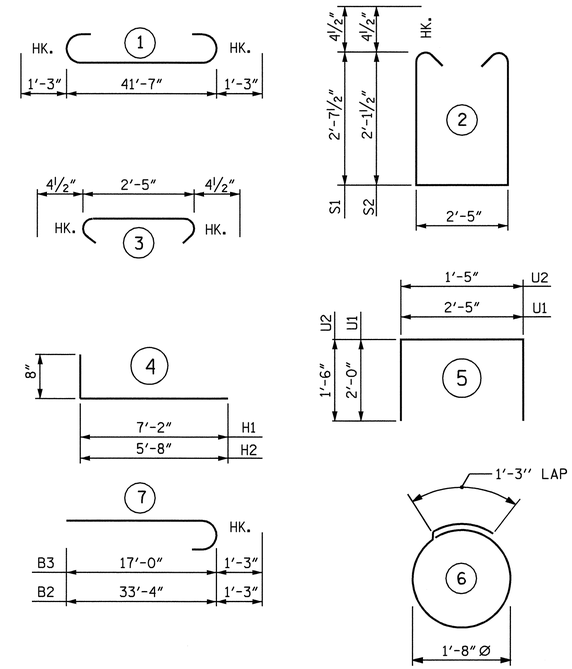
SECTION A-A



* POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

BAR TYPES

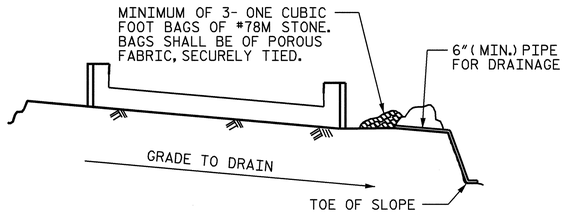


ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL
END BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#9	1	44'-1"	600
B2	4	#9	7	34'-7"	470
B3	4	#9	7	18'-3"	248
B4	2	#4	STR	10'-8"	14
B5	2	#5	STR	41'-8"	87
B6	8	#4	STR	22'-1"	118
B7	4	#4	STR	15'-6"	41
B8	13	#4	STR	2'-5"	21
B9	4	#4	STR	15'-1"	40
D1	24	#6	STR	1'-6"	54
H1	14	#5	4	7'-10"	114
H2	12	#5	4	6'-4"	79
K1	12	#4	STR	3'-5"	27
S1	13	#4	2	8'-5"	73
S2	21	#4	2	7'-5"	104
S3	34	#4	3	3'-2"	72
S4	18	#4	6	6'-6"	78
U1	20	#4	5	6'-5"	86
U2	4	#4	5	4'-5"	12
V1	24	#5	STR	5'-10"	146
V2	20	#5	STR	4'-10"	101

REINFORCING STEEL	LBS.	2585
CLASS A CONCRETE		
POUR 1		
CAP & LOWER PART OF WINGS	17.5	CU. YDS.
POUR 2		
UPPER PART OF WINGS	1.1	CU. YDS.
POUR 3		
LATERAL GUIDES	0.1	CU. YDS.
TOTAL	18.7	CU. YDS.
HP 12 x 53 STEEL PILES		
No. 9	180	LIN.FT.



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 SALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

PROJECT NO. B-4165

JOHNSTON COUNTY

STATION: 16+30.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 1

NORTH CAROLINA PROFESSIONAL SEAL 22005 ENGINEER J. KEITH PASCHAL
9/29/08

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			22

DRAWN BY : M. FOWLER DATE : 6/27/08
CHECKED BY : J. G. KHARVA DATE : 8/28/08

29-SEP-2008 11:34
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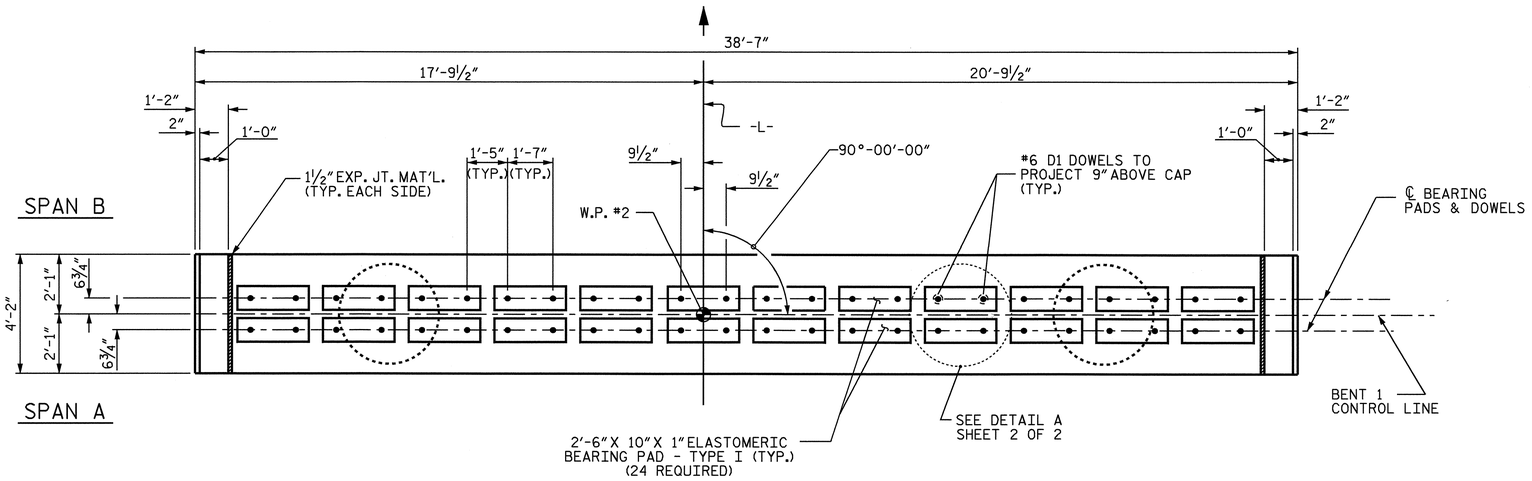
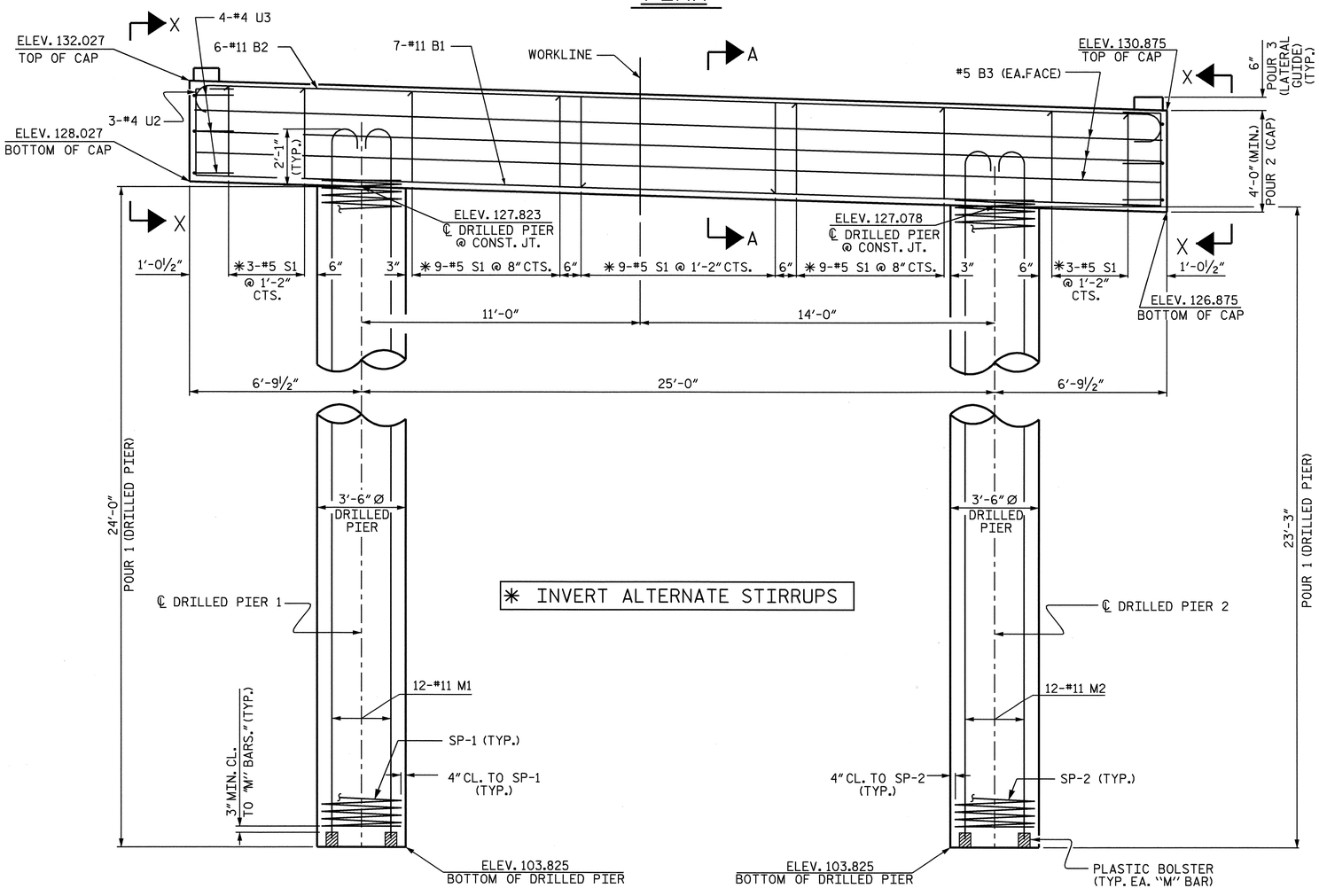
jkharva

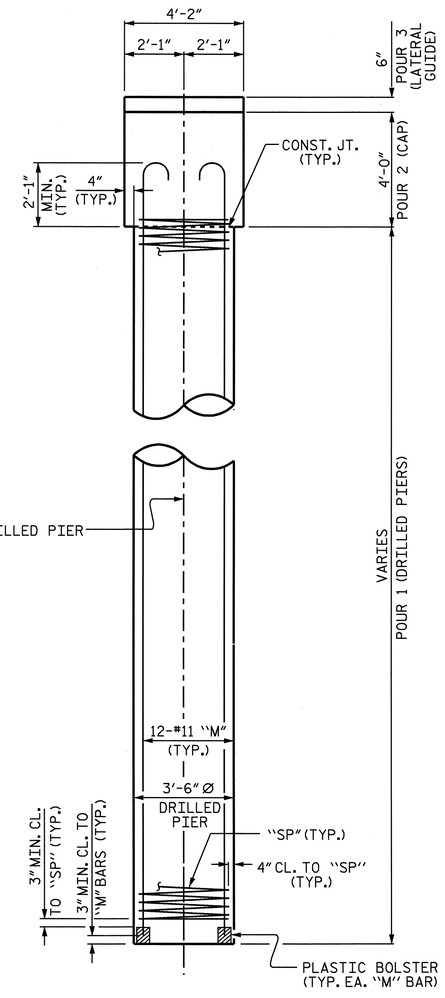


PLAN



* INVERT ALTERNATE STIRRUPS

ELEVATION



END ELEVATION

NOTES

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

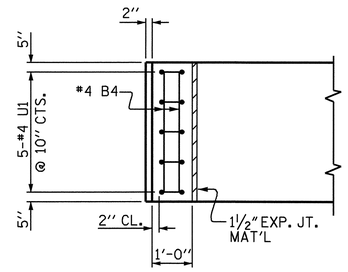
HOOKS ON "M" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

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

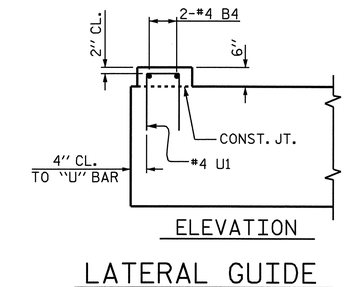
THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.

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

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

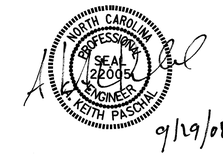


PLAN



ELEVATION

LATERAL GUIDE



9/19/08

PROJECT NO. B-4165

JOHNSTON COUNTY

STATION: 16+30.50 -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-13
1			3			TOTAL SHEETS
2			4			22

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CHECKED BY : J. G. KHARVA DATE : 8/28/08

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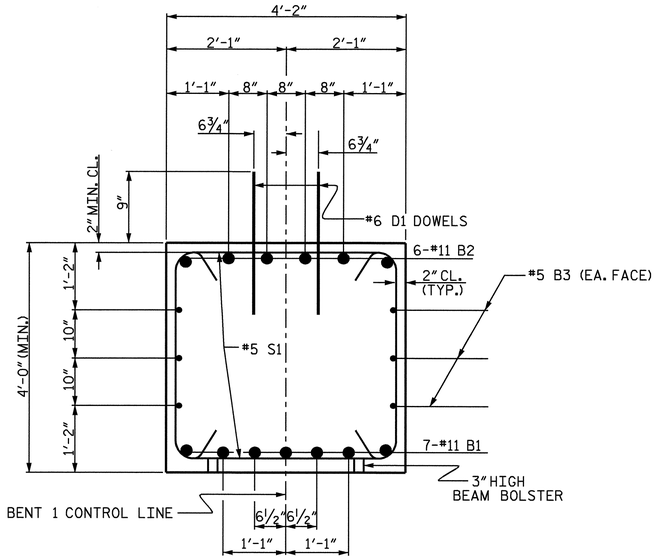
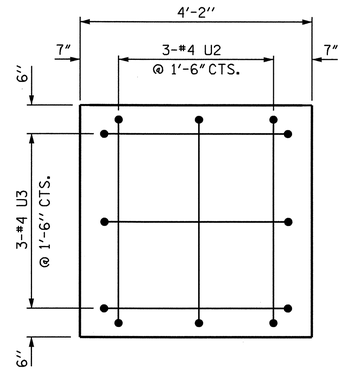
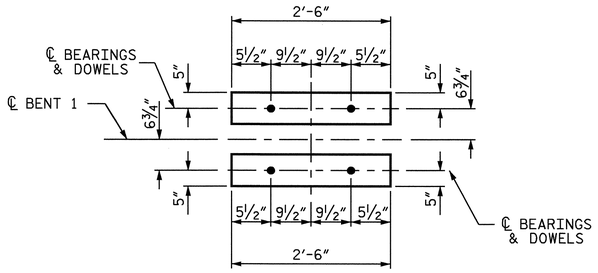
jkharva



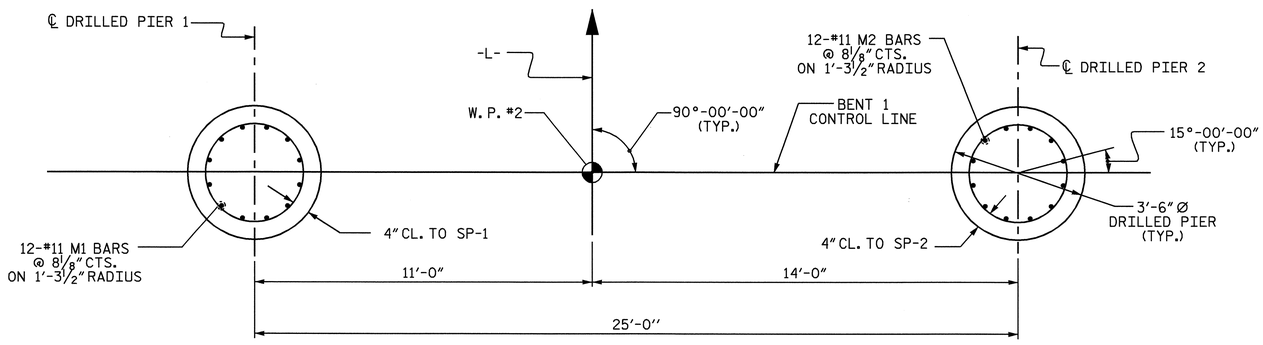
SECTION A-A



VIEW X-X

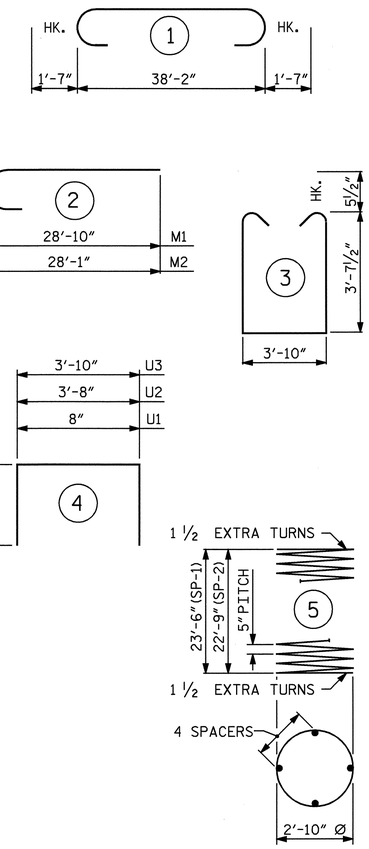


DETAIL A



PLAN OF DRILLED PIERS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	7	#11	1	38'-3"	1422
B2	6	#11	STR	41'-4"	1318
B3	6	#5	STR	38'-3"	239
B4	4	#4	STR	3'-10"	10
D1	48	#6	STR	1'-6"	108
M1	12	#11	2	30'-5"	1939
M2	12	#11	2	29"-8"	1891
S1	33	#5	3	12'-0"	413
U1	10	#4	4	1'-8"	11
U2	6	#4	4	6'-2"	25
U3	6	#4	4	6'-4"	25
REINFORCING STEEL				=	7401 LBS.
SP-1	1	**	5	519'-8"	542
SP-2	1	**	5	503'-11"	526

SPIRAL COLUMN REINFORCING STEEL = 1068 LBS.

CLASS A CONCRETE BREAKDOWN

POUR #2 CAP	24.4 C.Y.
POUR #3 LATERAL GUIDE	0.1 C.Y.
TOTAL	24.5 C.Y.

DRILLED PIERS

DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)	16.8 C.Y.
3'-6" Ø DRILLED PIERS IN SOIL	35.25 LIN. FT.
3'-6" Ø DRILLED PIERS NOT IN SOIL	12.00 LIN. FT.
PERMANENT STEEL CASING FOR 3'-6" Ø DRILLED PIERS	LIN. FT. = 24.9
SID INSPECTION	1 EACH
CROSSHOLE SONIC LOGGING	1 EACH
▲ CSL TUBES	LIN. FT. = 209.0

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

▲ NO SEPARATE PAYMENT WILL BE MADE FOR CSL TUBES. CSL TUBES WILL BE INCLUDED IN THE UNIT BID PRICE FOR DRILLED PIERS.

PROJECT NO. B-4165

JOHNSTON COUNTY

STATION: 16+30.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT 1

NORTH CAROLINA PROFESSIONAL SEAL 22005 ENGINEER A. KEITH PASCHAL
9/29/08

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			22

DRAWN BY : M.FOWLER DATE : 8/18/08
CHECKED BY : J. G. KHARVA DATE : 9/02/08

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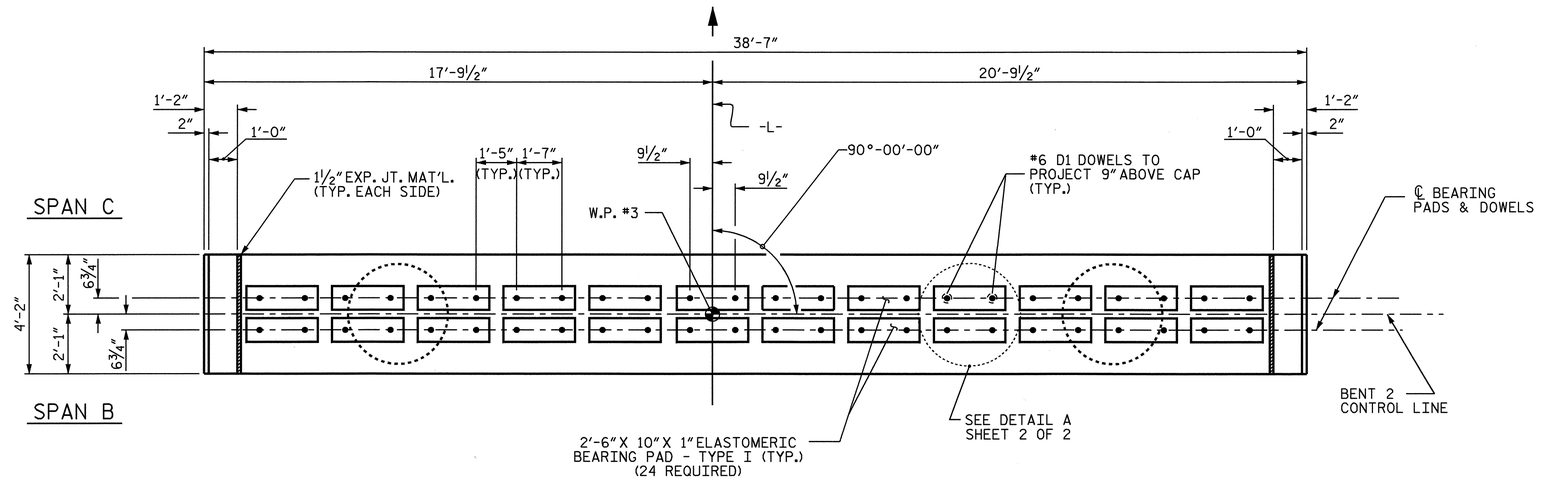
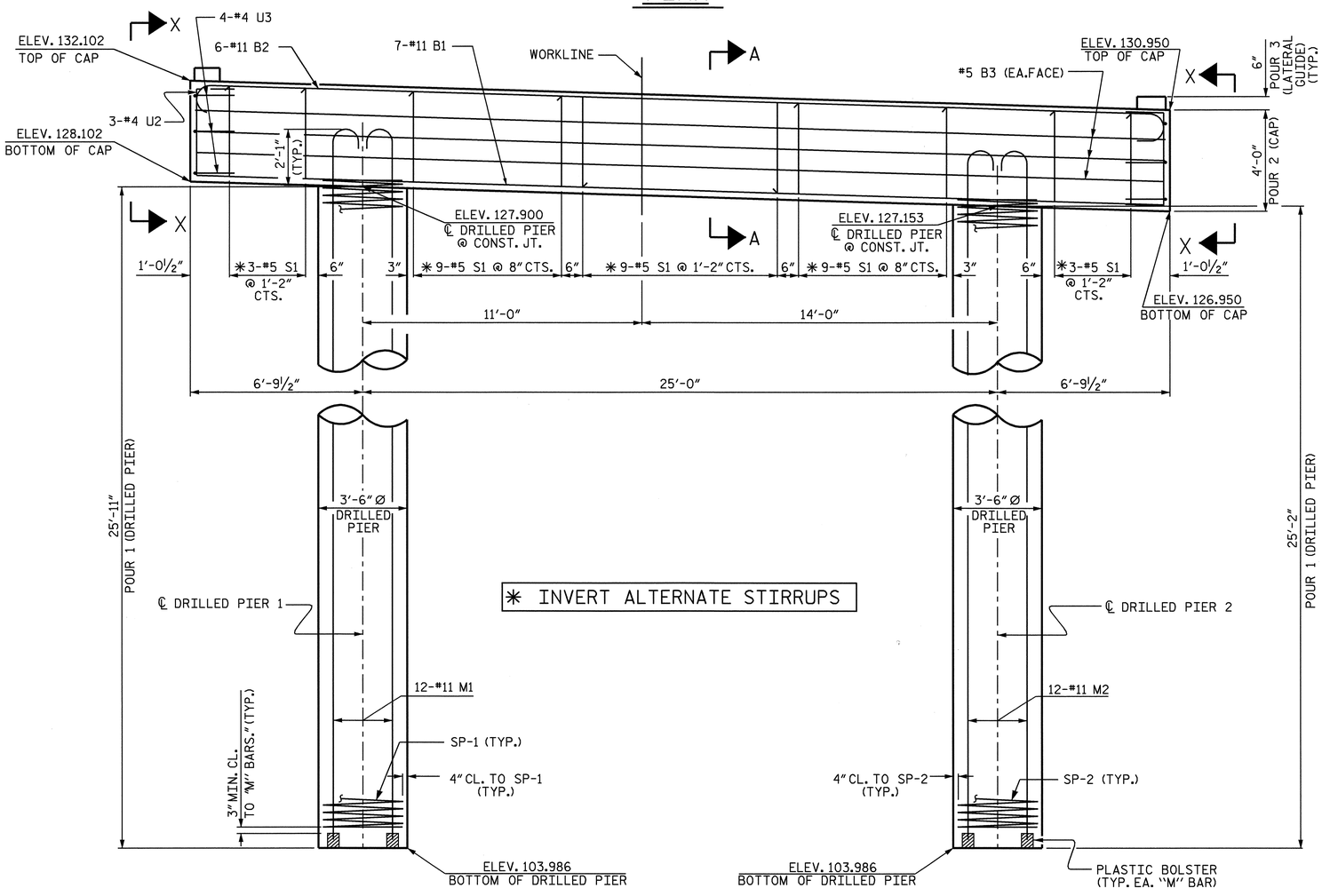
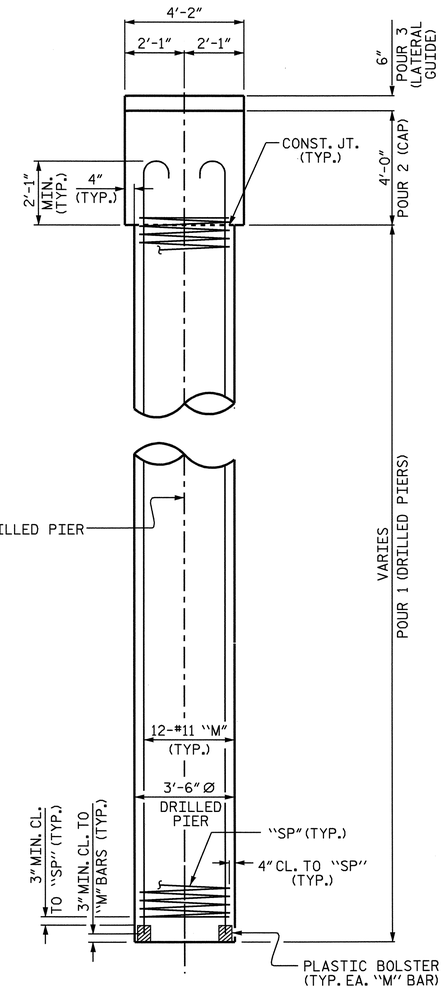


PLAN



* INVERT ALTERNATE STIRRUPS

ELEVATION



END ELEVATION

NOTES

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

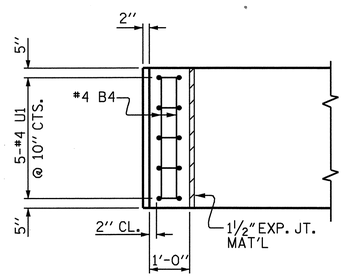
HOOKS ON "M" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

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

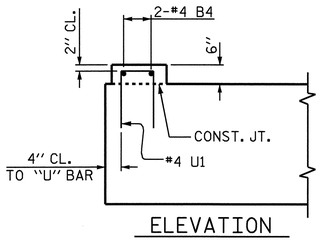
THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.

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

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



PLAN



ELEVATION

LATERAL GUIDE

NORTH CAROLINA PROFESSIONAL SEAL 21009 ENGINEER KEITH PASCHAL

9/29/08

PROJECT NO. B-4165

JOHNSTON COUNTY

STATION: 16+30.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			22

DRAWN BY : M.FOWLER DATE : 8/22/08
CHECKED BY : J. G. KHARVA DATE : 8/28/08

29-SEP-2008 08:18
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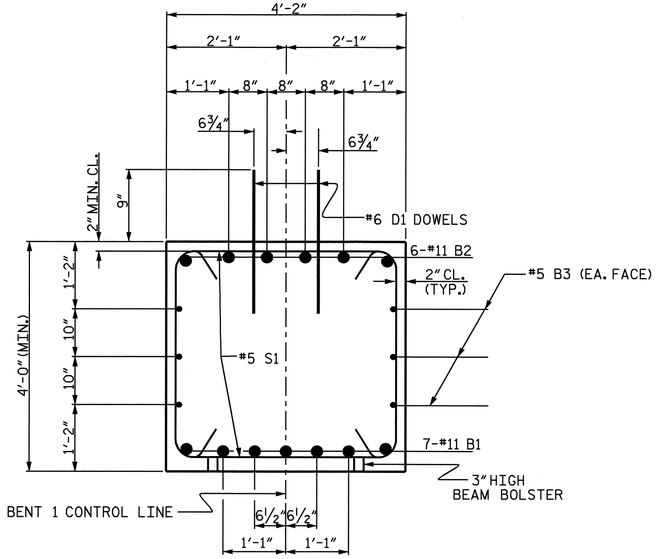
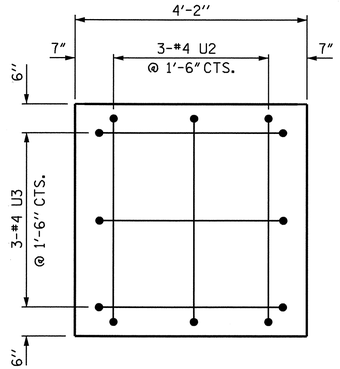
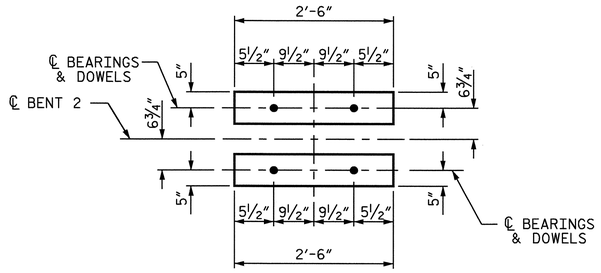
jkharva



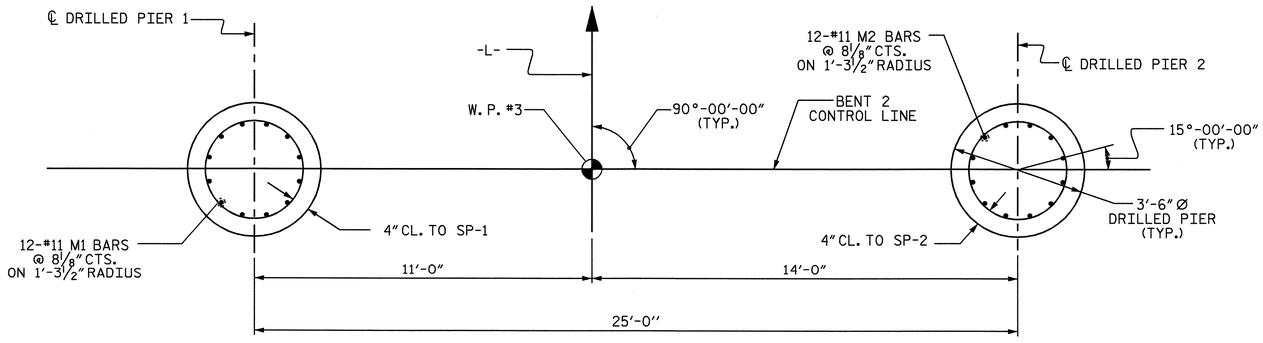
SECTION A-A



VIEW X-X

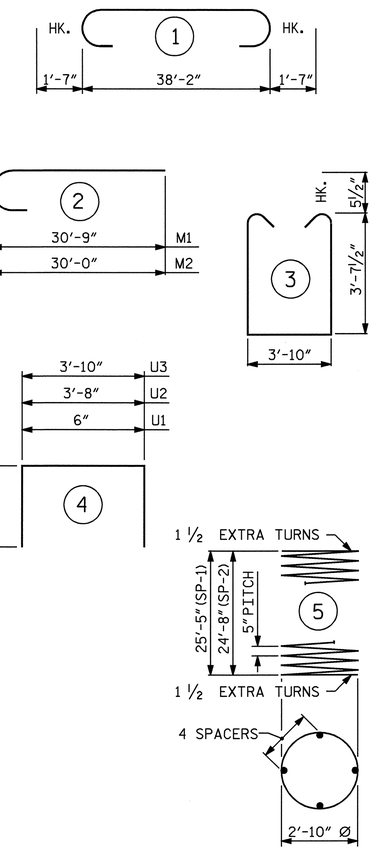


DETAIL A



PLAN OF DRILLED PIERS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	7	#11	1	30'-3"	1422
B2	6	#11	STR	41'-4"	1318
B3	6	#5	STR	38'-3"	239
B4	4	#4	STR	3'-10"	10
D1	48	#6	STR	1'-6"	108
M1	12	#11	2	32'-4"	2061
M2	12	#11	2	31'-7"	2014
S1	33	#5	3	12'-0"	413
U1	10	#4	4	1'-8"	11
U2	6	#4	4	6'-2"	25
U3	6	#4	4	6'-4"	25
REINFORCING STEEL				=	7646 LBS.
SP-1	1	**	5	559'-11"	584
SP-2	1	**	5	544'-2"	568
SPIRAL COLUMN REINFORCING STEEL				=	1152 LBS.

CLASS A CONCRETE BREAKDOWN

POUR #2 CAP	24.4 C.Y.
POUR #3 LATERAL GUIDE	0.1 C.Y.
TOTAL	24.5 C.Y.

DRILLED PIERS

DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)	18.2 C.Y.
3'-6" Ø DRILLED PIERS IN SOIL	43.10 LIN. FT.
3'-6" Ø DRILLED PIERS NOT IN SOIL	8.00 LIN. FT.
PERMANENT STEEL CASING FOR 3'-6" Ø DRILLED PIERS	LIN. FT. = 33.1
SID INSPECTION	1 EACH
CROSSHOLE SONIC LOGGING	1 EACH
▲ CSL TUBES	LIN. FT. = 224.3

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

▲ NO SEPARATE PAYMENT WILL BE MADE FOR CSL TUBES. CSL TUBES WILL BE INCLUDED IN THE UNIT BID PRICE FOR DRILLED PIERS.

PROJECT NO. B-4165

JOHNSTON COUNTY

STATION: 16+30.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT 2

NORTH CAROLINA PROFESSIONAL SEAL 22008 ENGINEER KEITH PASCHAL

9/19/08

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			22

DRAWN BY : M.FOWLER DATE : 8/18/08
CHECKED BY : J. G. KHARVA DATE : 9/02/08

29-SEP-2008 11:02
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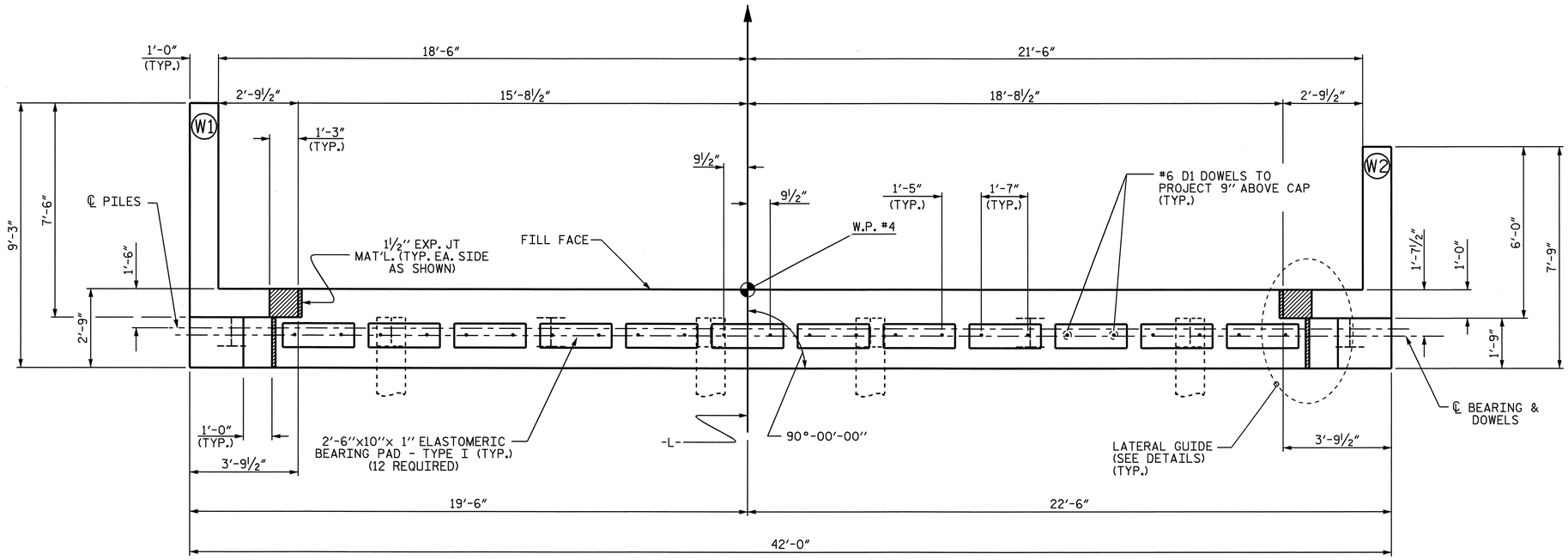
jkharva



PLAN

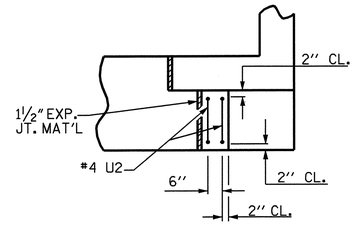
NOTES

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

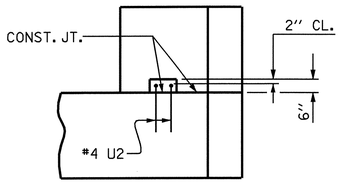
THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE.

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

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.



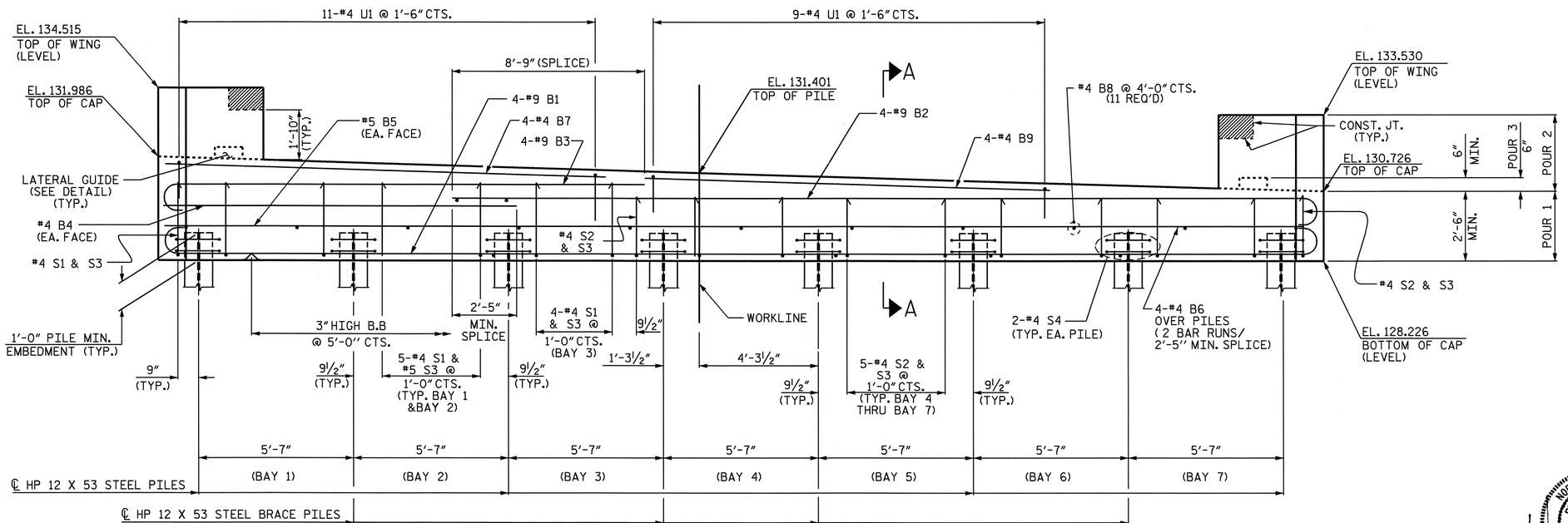
PLAN



ELEVATION

LATERAL GUIDE DETAILS

(EACH END SIMILAR)



ELEVATION

PROJECT NO. B-4165

JOHNSTON COUNTY

STATION: 16+30.50 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 2

NORTH CAROLINA PROFESSIONAL SEAL 22106 ENGINEER A. KEITH PASCHAL

9/9/08

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			22

DRAWN BY : M.FOWLER DATE : 6/19/08
CHECKED BY : J. G. KHARVA DATE : 8/27/08

29-SEP-2008 11:33
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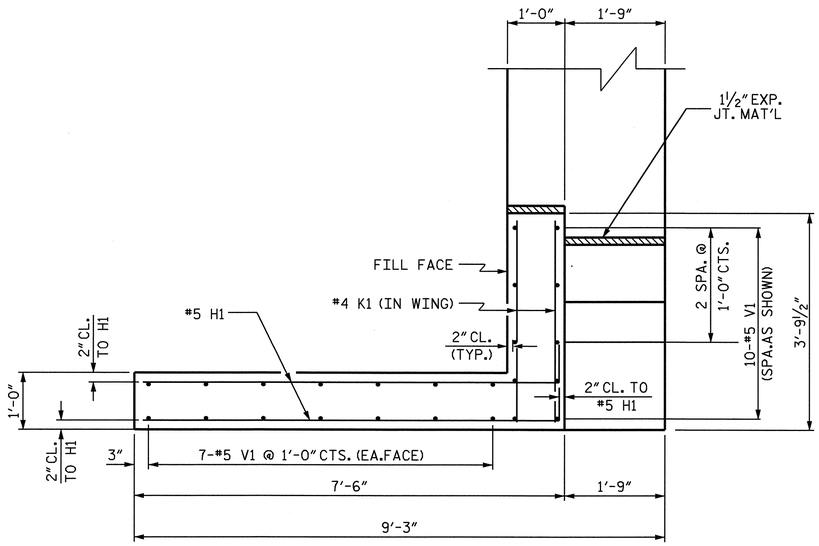
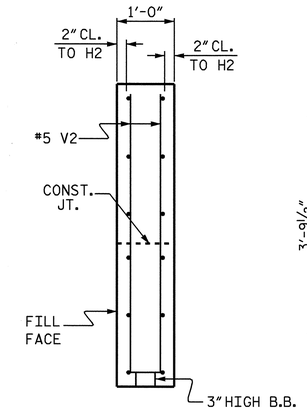
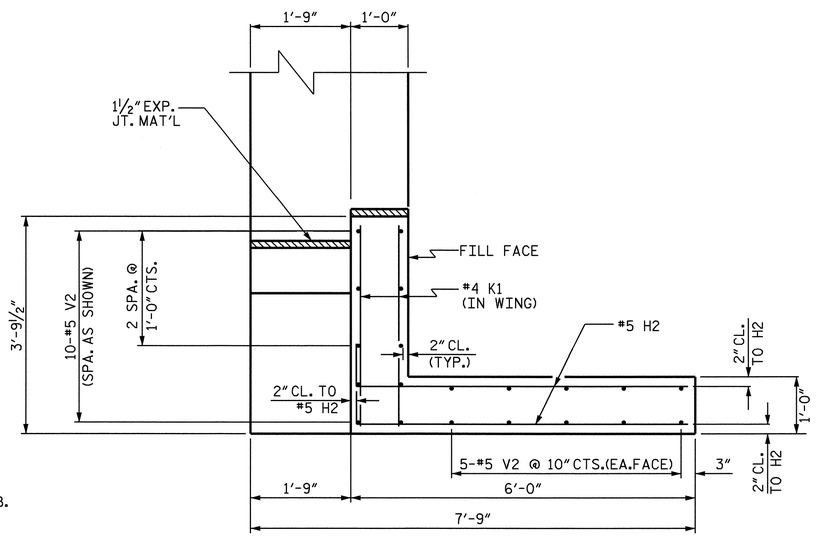
jkharva



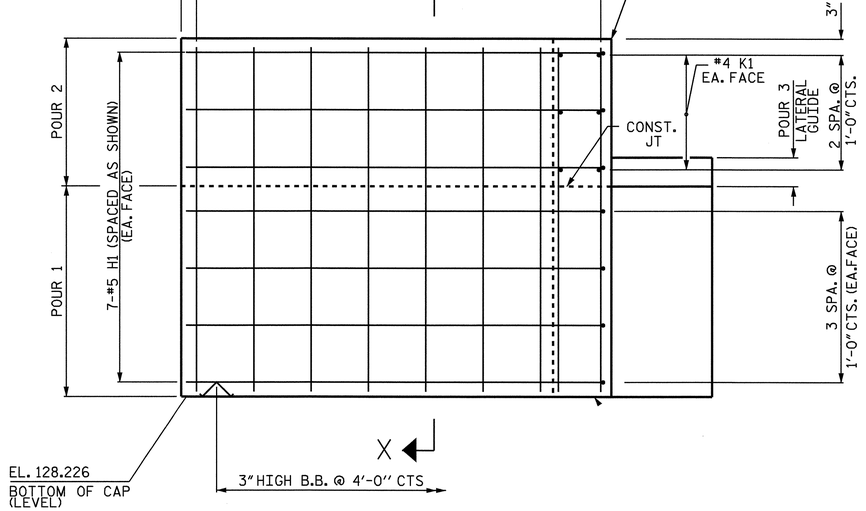
PLAN OF WING (W1)



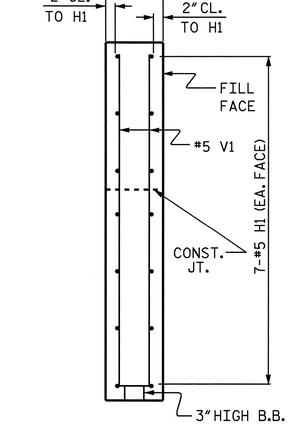
SECTION Y-Y



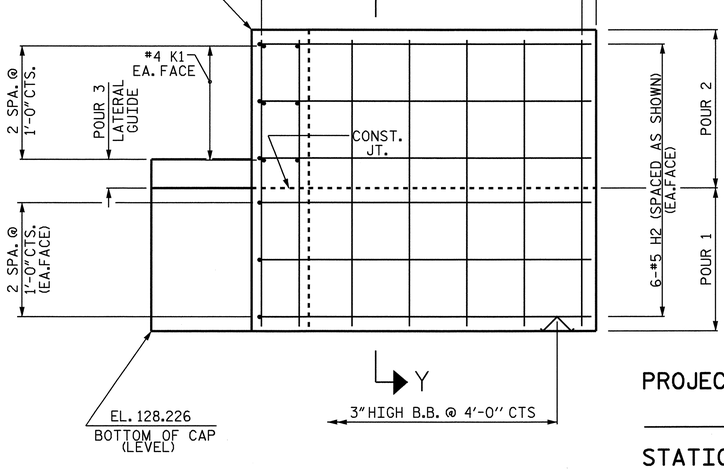
PLAN OF WING (W2)



ELEVATION OF WING (W1)



SECTION X-X



ELEVATION OF WING (W2)

PROJECT NO. B-4165

JOHNSTON COUNTY

STATION: 16+30.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTUCTURE
END BENT 2

NORTH CAROLINA PROFESSIONAL SEAL 12005 ENGINEER A. KEITH PASCHAL

9/29/08

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			22

DRAWN BY : M.FOWLER DATE : 6/24/08
CHECKED BY : J. G. KHARVA DATE : 8/27/08

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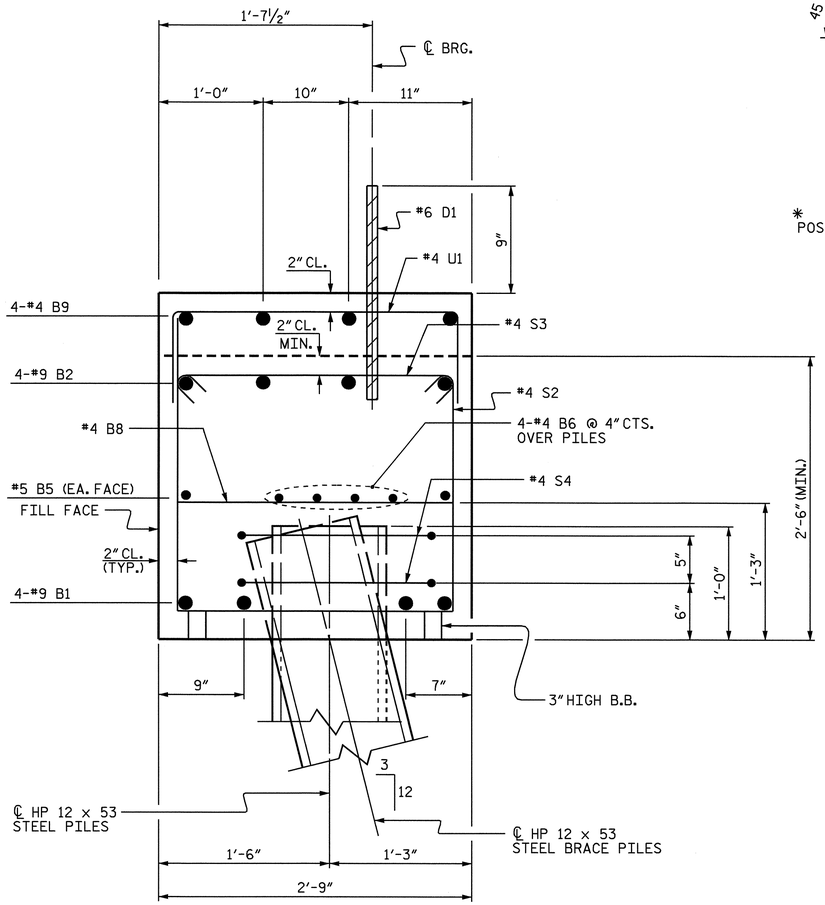
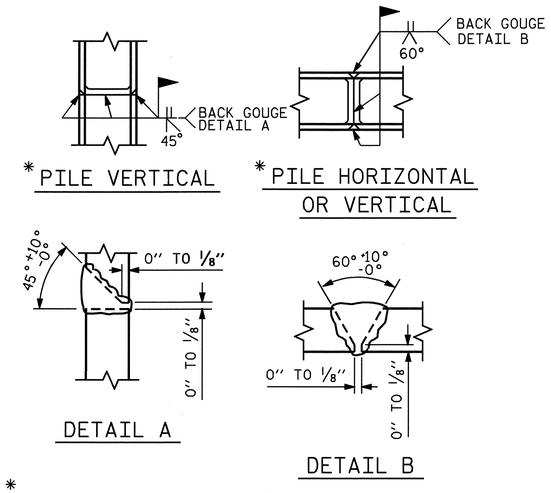
jkharva



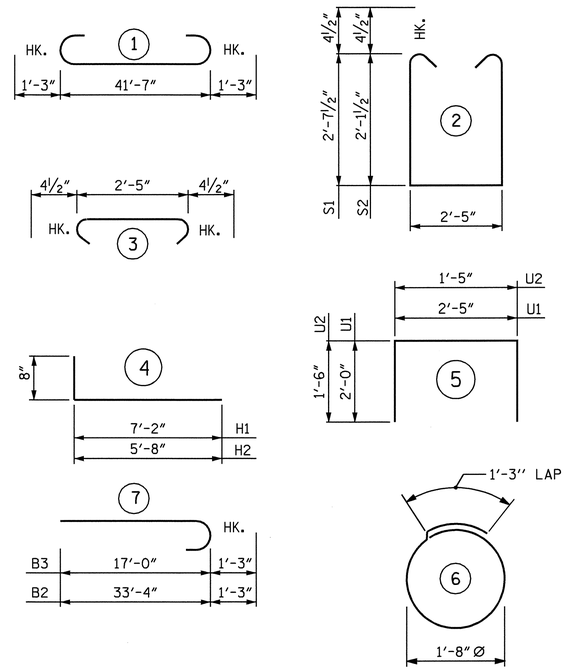
SECTION A-A



* POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

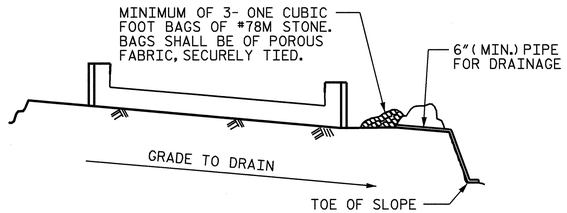
BILL OF MATERIAL
END BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#9	1	44'-1"	600
B2	4	#9	7	34'-7"	470
B3	4	#9	7	18'-3"	248
B4	2	#4	STR	10'-8"	14
B5	2	#5	STR	41'-8"	87
B6	8	#4	STR	22'-1"	118
B7	4	#4	STR	15'-6"	41
B8	13	#4	STR	2'-5"	21
B9	4	#4	STR	15'-1"	40
D1	24	#6	STR	1'-6"	54
H1	14	#5	4	7'-10"	114
H2	12	#5	4	6'-4"	79
K1	12	#4	STR	3'-5"	27
S1	15	#4	2	8'-5"	84
S2	22	#4	2	7'-5"	109
S3	37	#4	3	3'-2"	72
S4	16	#4	6	6'-6"	69
U1	20	#4	5	6'-5"	86
U2	4	#4	5	4'-5"	12
V1	24	#5	STR	5'-11"	148
V2	20	#5	STR	4'-11"	103

REINFORCING STEEL	LBS.	2596

CLASS A CONCRETE		
POUR 1		
CAP & LOWER PART OF WINGS	17.5	CU. YDS.
POUR 2		
UPPER PART OF WINGS	1.1	CU. YDS.
POUR 3		
LATERAL GUIDES	0.1	CU. YDS.
TOTAL	18.7	CU. YDS.

HP 12 x 53 STEEL PILES		
No. 8	160	LIN.FT.



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 SALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

PROJECT NO. B-4165

JOHNSTON COUNTY

STATION: 16+30.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 2

NORTH CAROLINA PROFESSIONAL SEAL 22005 ENGINEER A. KEITH PASCHAL

7/29/08

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			22

DRAWN BY : M. FOWLER DATE : 6/27/08
CHECKED BY : J. G. KHARVA DATE : 8/28/08

29-SEP-2008 11:02
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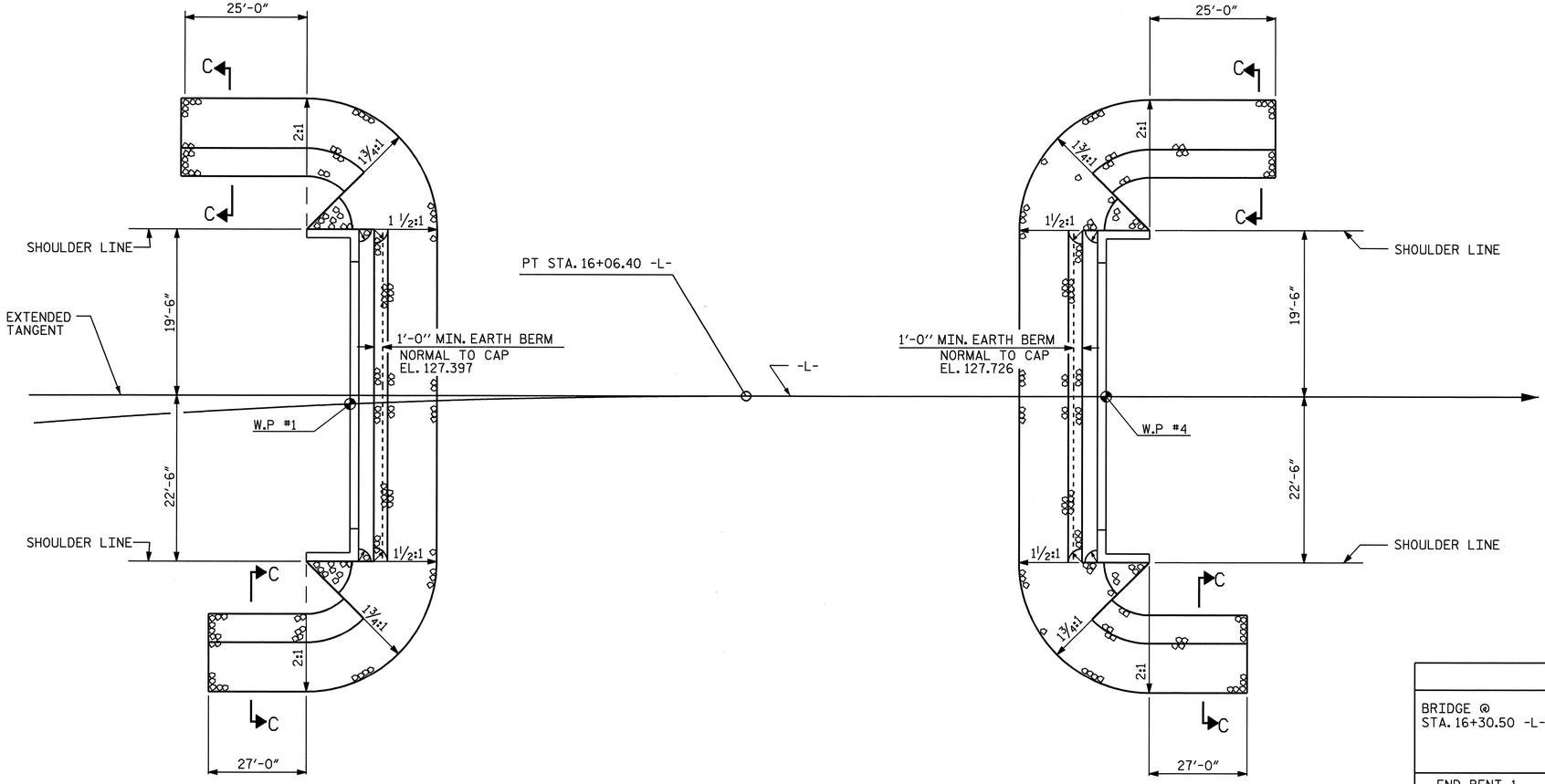
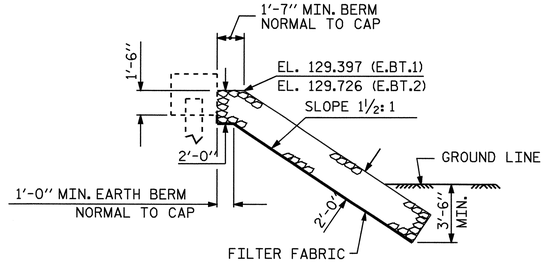
jkharva



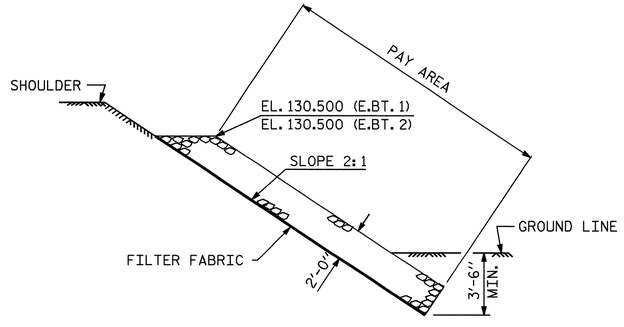
PLAN

ESTIMATED QUANTITIES		
BRIDGE @ STA. 16+30.50 -L-	RIP RAP CLASS II (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	123	137
END BENT 2	120	134
TOTAL	243	271



℄ SECTION

BERM RIP RAPPED



SECTION C-C

PROJECT NO. B-4165

JOHNSTON COUNTY

STATION: 16+30.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

RIP RAP DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 22004 ENGINEER KEITH PASCHAL

7/29/08

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS
2			4			22

ASSEMBLED BY : MARVIN FOWLER	DATE : 8/11/08	
CHECKED BY : J. G. KHARVA	DATE : 8/28/08	
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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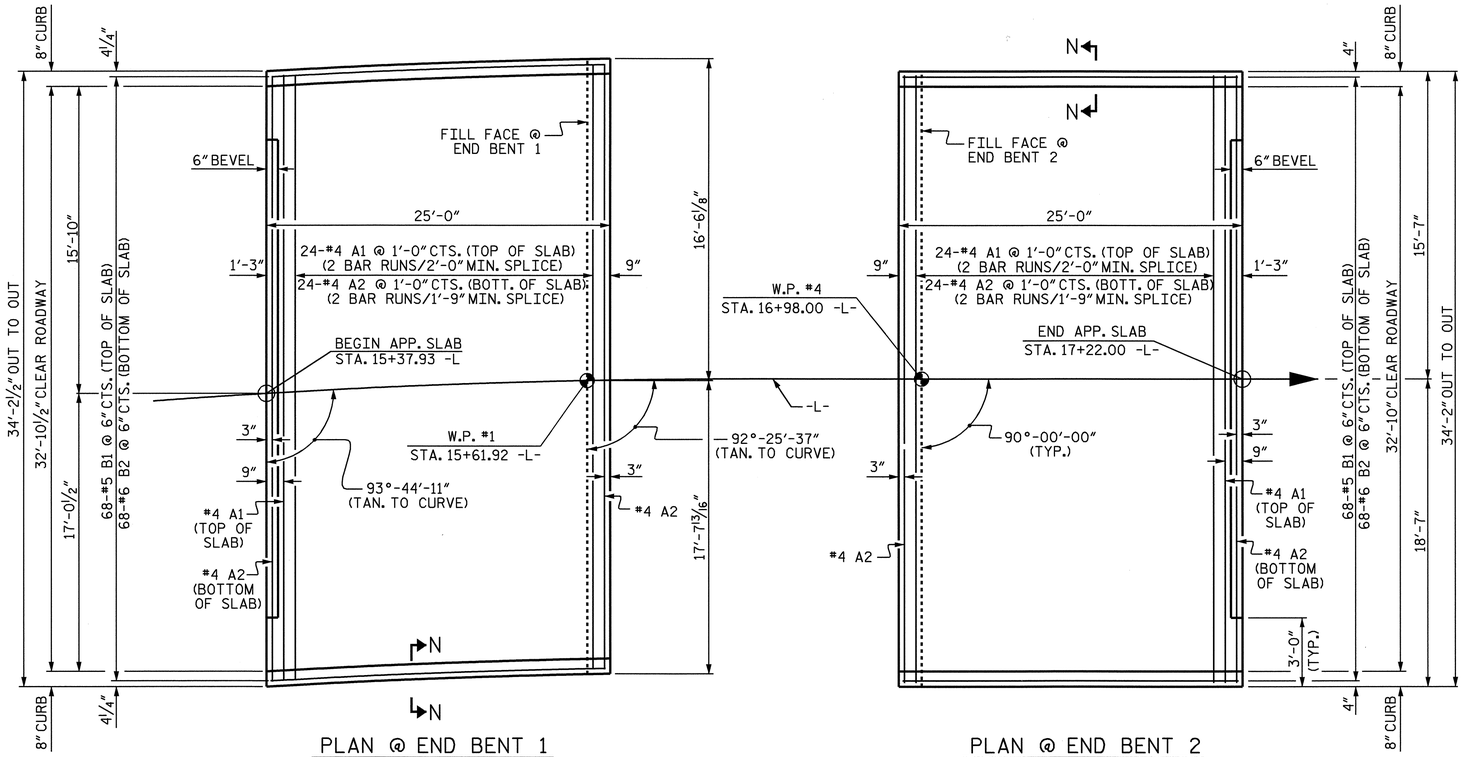
jkharva

SKEW 90°

STD. NO. RR2



NOTES

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

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

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

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

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

FOR EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS.

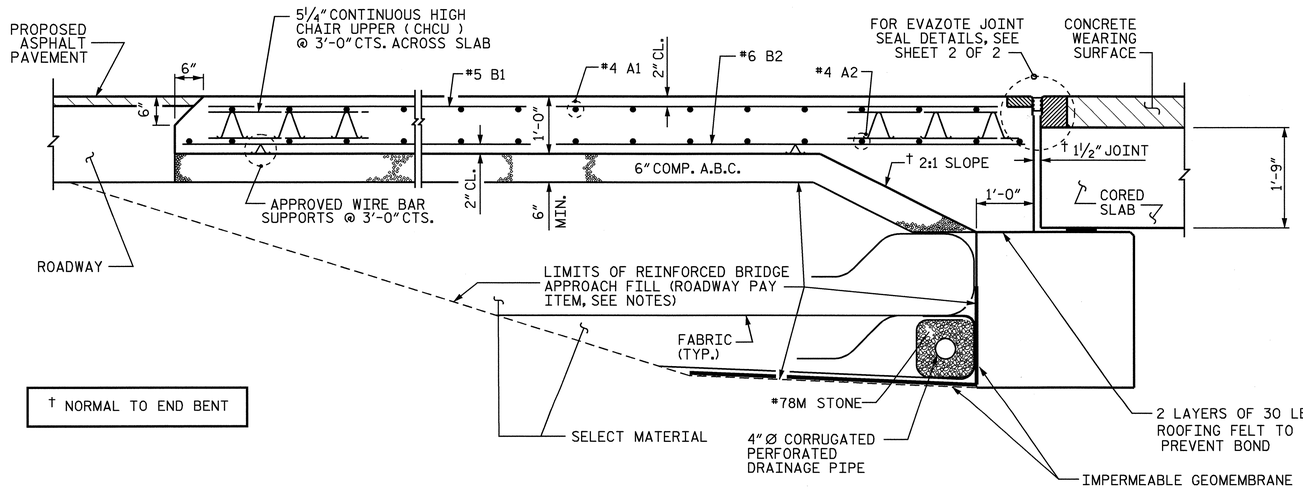
THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE EVAZOTE JOINT SEAL SHALL BE 2½".

FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

APPROACH SLAB GROOVING IS REQUIRED. PAYMENT FOR APPROACH SLAB GROOVING IS INCLUDED IN THE "GROOVING BRIDGE PAY ITEM".

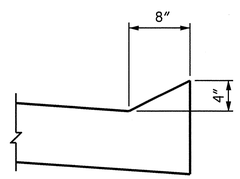
BILL OF MATERIAL FOR ONE APPROACH SLAB (2 REQ'D)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳A1	50	#4	STR	17'-11"	598
A2	52	#4	STR	17'-10"	619
✳B1	68	#5	STR	23'-10"	1690
B2	68	#6	STR	24'-8"	2514
REINFORCING STEEL				LBS.	3133
✳EPOXY COATED REINFORCING STEEL				LBS.	2288
CLASS AA CONCRETE				C. Y.	35.2

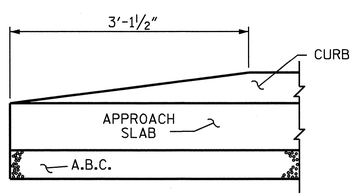


† NORMAL TO END BENT

SECTION THRU SLAB



SECTION N-N



END OF CURB WITHOUT SHOULDER BERM GUTTER
(OMIT TAPER WHEN SHOULDER BERM GUTTER IS REQUIRED)

CURB DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 22105 ENGINEER KEITH PASCHAL
9/29/08

PROJECT NO. B-4165
JOHNSTON COUNTY
STATION: 16+30.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE CORED SLAB

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS
2			4			22

STD. NO. BAS7

ASSEMBLED BY : M.FOWLER	DATE : 7/31/08	
CHECKED BY : J. G. KHARVA	DATE : 09/03/08	
DRAWN BY : EEM 3/95	REV. 7/10/01	LES/RDR
CHECKED BY : VAP 3/95	REV. 5/7/03R	RWW/JTE
	REV. 5/1/06R	KMM/GM

29-SEP-2008 11:49
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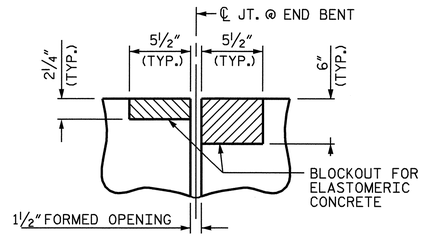
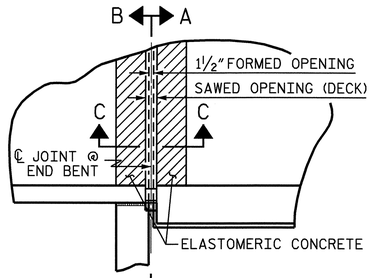
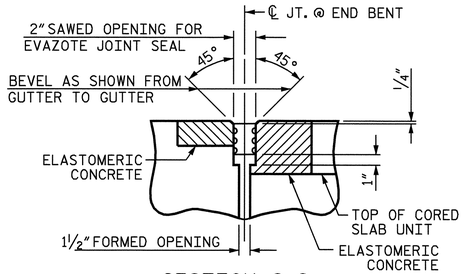
jdhawk



SECTION C-C
EVAZOTE JOINT SEAL
(PRE-SAWED ELASTOMERIC CONCRETE DIMENSIONS)



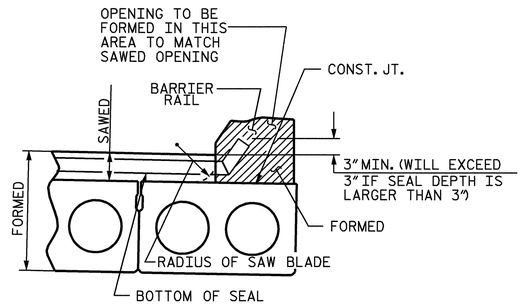
PLAN



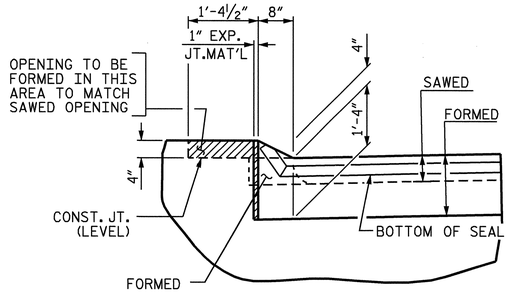
SECTION C-C
EVAZOTE JOINT SEAL
(FIXED)

ELASTOMERIC CONCRETE	
END BENT NO.	ELASTOMERIC CONCRETE * (CU. FT.)
1	10.8
2	10.8
TOTAL	21.6

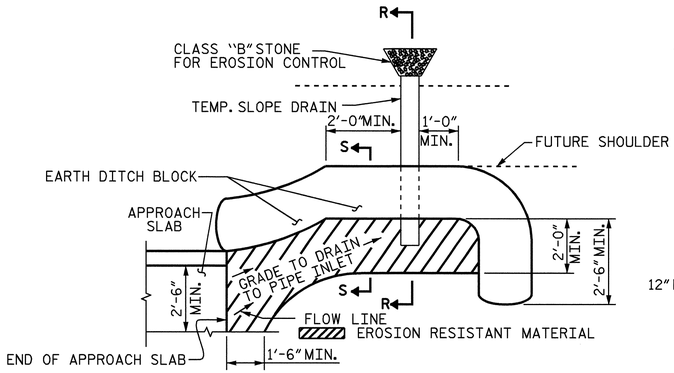
* BASED ON THE MINIMUM BLOCKOUT SHOWN.



SECTION A-A

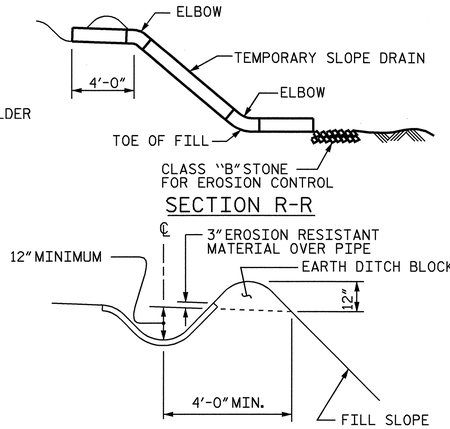


SECTION B-B



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.

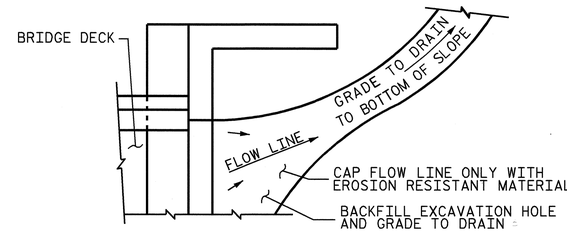
PLAN VIEW



SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



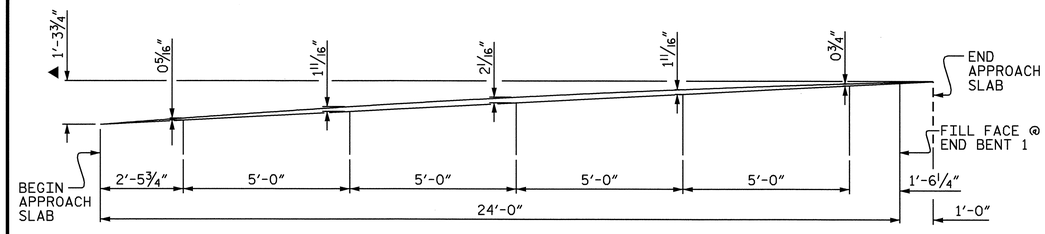
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL

NORTH CAROLINA PROFESSIONAL SEAL 22005 ENGINEER KEITH PASCHAL
9/29/08

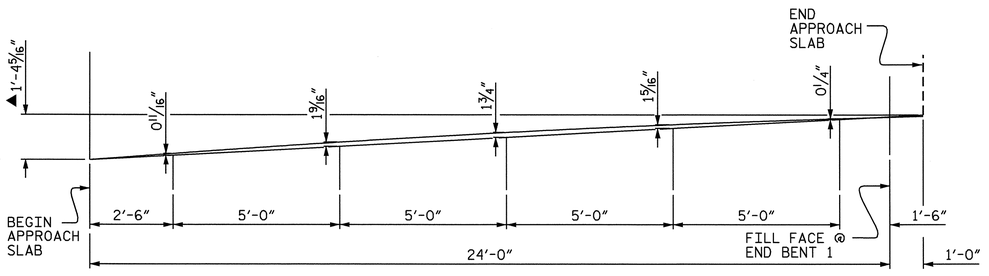
JOINT SEAL DETAILS @ END BENT

EVAZOTE JOINT SEAL TO BE CUT, HEAT WELDED AND TURNED AS SHOWN IN DETAILS ABOVE.



ARC OFFSETS - LEFT SIDE

▲ OFFSET DIMENSION FROM FILL FACE TO BEGIN APPROACH SLAB



ARC OFFSETS - RIGHT SIDE

▲ OFFSET DIMENSION FROM FILL FACE TO BEGIN APPROACH SLAB

ASSEMBLED BY : MARVIN FOWLER		DATE : 01/17/08			
CHECKED BY : J. G. KHARVA		DATE : 09/02/08			
DRAWN BY : FCJ 11/88	REV. 10/17/00	RWW/LES			
CHECKED BY : ARB 11/88	REV. 5/7/03	RWW/JTE			
	REV. 5/1/06R	MAA/KMM			

PROJECT NO. B-4165
JOHNSTON COUNTY
STATION: 16+30.50 -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-22
1			3			TOTAL SHEETS
2			4			22

STD. NO. BAS10

29-SEP-2008 08:20
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jkharva

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

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