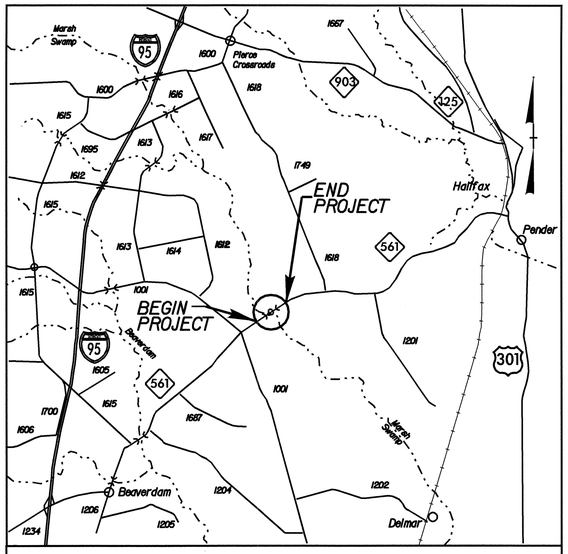
CONTRACT: C201565 TIP PROJECT B-3853



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

HALIFAX COUNTY

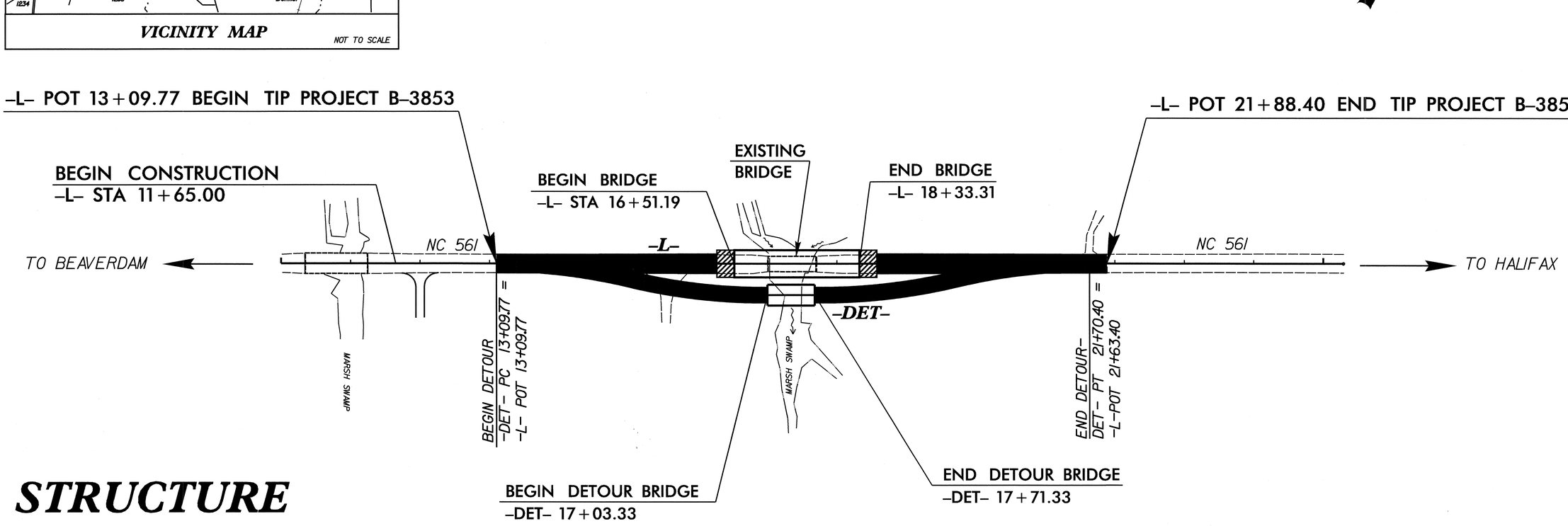
LOCATION: BRIDGE NO. 82 OVER MARSH SWAMP AND APPROACHES ON NC 561

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3853		

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33300.1.1	BRSTP-561(1)	PE
33300.2.2	BRSTP-561(13)	R/W & UTILITY
33300.3.1	BRSTP-561(14)	CONST.

NAD 83



STRUCTURE

DESIGN DATA

ADT 2007	=	1,650 VPD
ADT 2027	=	2,600 VPD
DHV	=	10 %
D	=	60 %
T	=	8 % *
V	=	60 MPH

* TTST 4% DUAL 4%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-3853	=	*0.132 MI*
LENGTH STRUCTURE TIP PROJECT B-3853	=	*0.034 MI*
LENGTH TIP PROJECT B-3853	=	*0.166 MI*

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

2006 STANDARD SPECIFICATIONS

LETTING DATE:
APRIL 17, 2007

B.C. HUNT, P.E.
PROJECT ENGINEER

T.G. PAYNE, P.E.
PROJECT DESIGN ENGINEER

STRUCTURE DESIGN

NORTH CAROLINA PROFESSIONAL SEAL 14552 ENGINEER GREGORY R PERFETTI

2.26.07

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE DESIGN ENGINEER

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR *DATE*

20-FEB-2007 10:06
$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
klayne

F.A.PROJECT NO. BRSTP-561(14)

16+50 17+00 17+50 18+00 18+50

+0.0242 % +0.1500 %

PI = 15+00.00 -L-
EL. = 107.180
VC = 200'

GRADE DATA

SPAN A SPAN B SPAN C

120
110
100
90

FILL FACE @ END BENT #1
STA. 16+51.19 -L-
GRADE POINT EL. 107.407

BEGIN FRONT SLOPE
STA. 16+45.84 -L-
GRADE POINT EL. 107.399

1'-0" EARTH BERM
NORMAL TO CAP
(TYP.)

FIX.

1½:1 SLOPE

APPROXIMATE
EXISTING
GROUND LINE

EL. 106.7±

1'-6"

2'-0"
(TYP.)

EL. 101.0±

EL. 100.6±

UNCLASSIFIED
STRUCTURE
EXCAVATION

HP 12 x 53
STEEL PILES

END BENT #1

TEMPORARY
ACCESS
(WORK BRIDGE)

HIGH WATER
EL. 103.4
(50 YEAR)

FIX. FIX.

N.W.S. EL. 98.5
(JUNE-JULY
2002)

EXISTING
BRIDGE

EL. 106.5±
EL. 100.1±
EL. 94.2±
EL. 92.9±
EL. 92.6±
EL. 93.6±
EL. 93.1±
EL. 93.6±
EL. 92.5±
EL. 94.0±

EL. 101.669
TOP OF DRILLED PIER

BENT #1

BENT #2

FIX. FIX.

EL. 94.6±
EL. 100.1±
EL. 105.3±
EL. 106.5±

EL. 101.759
TOP OF
DRILLED PIER

3'-6"Ø
DRILLED PIER
(TYP.)

UNCLASSIFIED
STRUCTURE
EXCAVATION

CLASS II
RIP RAP
(TYP.)

FIX.

1½:1 SLOPE

FILL FACE @ END BENT #2
STA. 18+33.31 -L-
GRADE POINT EL. 107.680

BEGIN FRONT SLOPE
STA. 18+38.75 -L-
GRADE POINT EL. 107.688

APPROXIMATE
EXISTING
GROUND LINE

EL. 100.9±

1'-6"

EL. 106.6±

HP 12 x 53
STEEL PILES

END BENT #2

SECTION ALONG -L-

MARSH SWAMP

CLASS II
RIP RAP

2 :1 SLOPE

1'-0" EARTH BERM
EL. 101.331

30'-0"

TEMPORARY
ACCESS
(WORK BRIDGE)

25'-0"

25'-0"

8'-0"

STA.17+42.25 -L-
BRIDGE IDENTITY

STA.17+72.25 -L-
W. P. #3

90°-00'-00"
(TYP.)

CLASS II
RIP RAP

1'-0" EARTH BERM
EL. 101.599

2 :1 SLOPE

STA. 16+45.84 -L-
BEGIN FRONT SLOPE

STA.16+51.19 -L-
W. P. #1

TO SR 1001

STA.16+37.19 -L-
BEGIN APPROACH
SLOPE

FILL FACE @
END BENT #1

1½:1 SLOPE
NORMAL
TO CAP

STA.17+12.25 -L-
W. P. #2

-L-

EXISTING
BRIDGE

MARSH SWAMP

BENT #1
CONTROL LINE

BENT #2
CONTROL LINE

STA.18+33.31 -L-
W. P. #4

STA. 18+38.75 -L-
BEGIN FRONT SLOPE

TO SR 1618

STA.18+47.31 -L-
END APPROACH SLAB

1½:1 SLOPE
NORMAL
TO CAP

FILL FACE @
END BENT #2

1'-0" EARTH BERM
EL. 101.331

1'-0" EARTH BERM
EL. 101.599

2 :1 SLOPE

2 :1 SLOPE

30'-0" 30'-0"

61'-0¾" 60'-0" 61'-0¾"

TOTAL LENGTH OF BRIDGE = 182'-1½" (FILL FACE TO FILL FACE)

PLAN

PILES NOT SHOWN IN PLAN VIEW FOR CLARITY

NORTH CAROLINA PROFESSIONAL SEAL 19021 ENGINEER BRUCE CHARLES BUNCH
2/2/07

NORTH CAROLINA PROFESSIONAL SEAL 20211 ENGINEER THOMAS G. PAYNE
2/21/07

DRAWN BY : KEITH D. LAYNE DATE : 3-17-06
CHECKED BY : J. P. ADAMS DATE : 5-05-06

20-FEB-2007 15:20
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tpayne

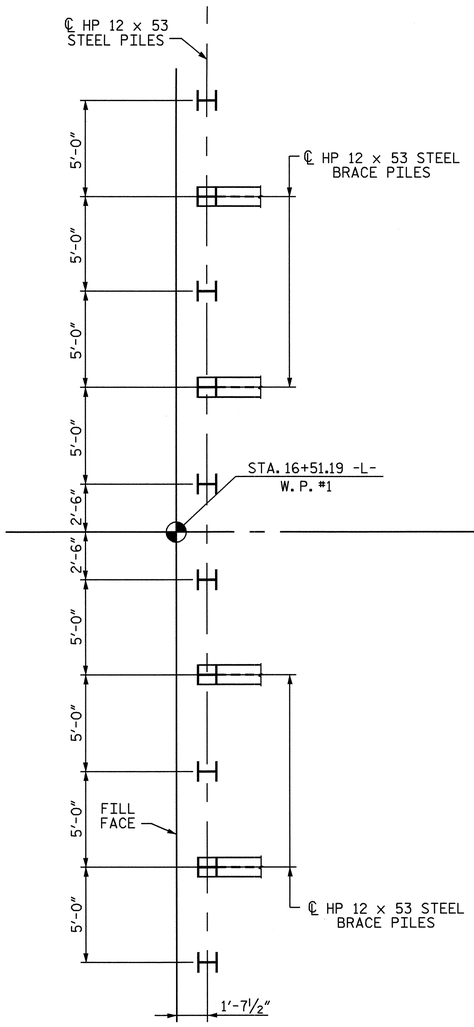
PROJECT NO. B-3853
HALIFAX COUNTY
STATION: 17+42.25 -L-

SHEET 1 OF 3 REPLACES BRIDGE #82

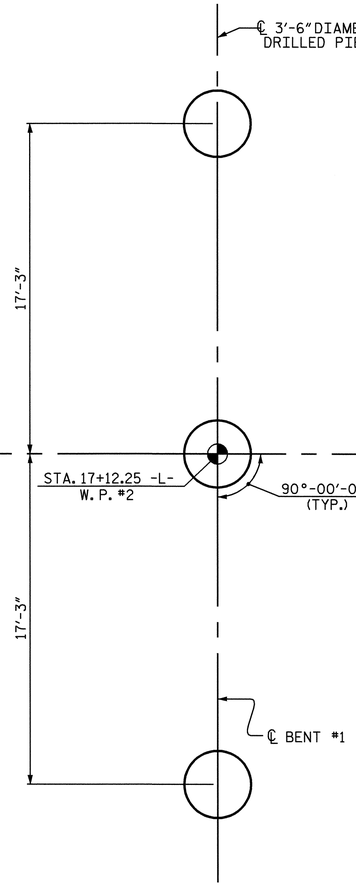
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING FOR BRIDGE OVER MARSH SWAMP ON NC 561 BETWEEN SR 1001 & SR 1618

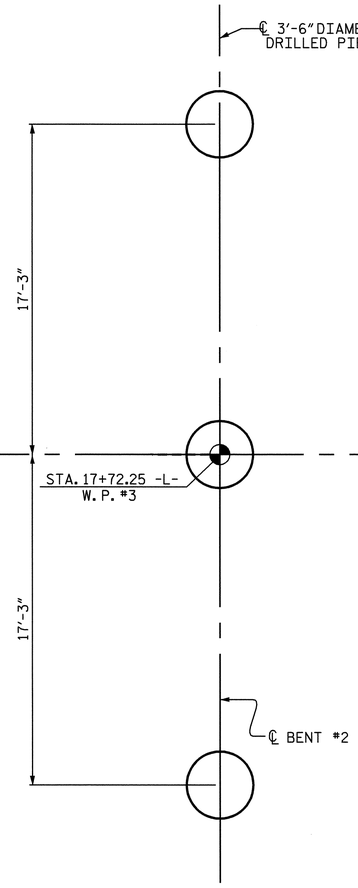
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			22



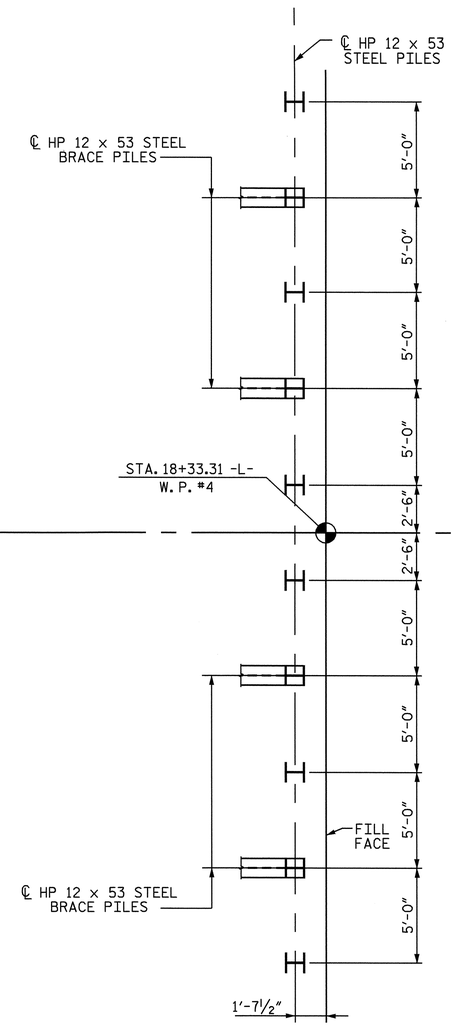
END BENT #1



BENT #1



BENT #2



END BENT #2

FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO THE PILE CENTERLINE.

BRACE PILES AT END BENTS ARE BATTERED 3 : 12

FOUNDATION NOTES

DRIVE PILES FOR END BENTS #1 AND #2 TO A REQUIRED MINIMUM 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 BENTS #1 AND #2 IS 50 TONS PER PILE.

DRILLED PIERS AT BENT #1 AND #2 ARE DESIGNED FOR BOTH SKIN FRICTION AND END BEARING. CHECK FIELD CONDITIONS FOR THE REQUIRED END BEARING CAPACITY OF 45.0 TSF.

DRILLED PIERS AT BENT #1 AND #2 ARE DESIGNED FOR AN APPLIED LOAD OF 270 TONS EACH AT THE TOP OF THE DRILLED PIER.

PERMANENT STEEL CASING IS REQUIRED FOR DRILLED PIERS AT BENT No. 1. DO NOT EXTEND THE CASING BELOW ELEVATION 78.500 AT BENT #1 WITHOUT PRIOR APPROVAL FROM THE ENGINEER. SEE DRILLED PIERS SPECIAL PROVISION.

INSTALL PERMANENT STEEL CASING AT BENT #1 BY VIBRATING, SCREWING OR DRIVING THE CASING BEFORE EXCAVATING OR DISTURBING ANY MATERIAL BELOW ELEVATION 83.400.

DRILLED PIERS AT BENT #1 SHALL EXTEND TO AN ELEVATION NO HIGHER THAN 68.500 AND SATISFY THE REQUIRED END BEARING CAPACITY.

PERMANENT STEEL CASING IS REQUIRED FOR DRILLED PIERS AT BENT #2. DO NOT EXTEND THE CASING BELOW ELEVATION 75.500 AT BENT #2 WITHOUT PRIOR APPROVAL FROM THE ENGINEER. SEE DRILLED PIERS SPECIAL PROVISION.

INSTALL PERMANENT STEEL CASING AT BENT #2 BY VIBRATING, SCREWING OR DRIVING THE CASING BEFORE EXCAVATING OR DISTURBING ANY MATERIAL BELOW ELEVATION 83.400.

DRILLED PIERS AT BENT #2 SHALL EXTEND TO AN ELEVATION NO HIGHER THAN 65.500 AND SATISFY THE REQUIRED END BEARING CAPACITY.

THE SCOUR CRITICAL ELEVATION FOR BENT #1 AND #2 IS ELEVATION 78.500. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

FOR DRILLED PIERS, SEE DRILLED PIERS SPECIAL PROVISION.

SPT TESTING IS NOT REQUIRED TO DETERMINE THE END BEARING CAPACITY OF THE DRILLED PIERS AT BENT #2.

SPT TESTING IS REQUIRED TO DETERMINE THE END BEARING CAPACITY OF THE DRILLED PIERS AT BENT #1. SEE DRILLED PIERS SPECIAL PROVISION.

SID INSPECTIONS MAY BE REQUIRED TO INSPECT THE BOTTOM CLEANLINESS OF THE DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR SID INSPECTIONS. SEE DRILLED PIERS SPECIAL PROVISION.

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

NORTH CAROLINA PROFESSIONAL SEAL 20211 ENGINEER THOMAS G. PAYNE
Thomas G. Payne
2/21/07

PROJECT NO. B-3853

HALIFAX COUNTY

STATION: STA. 17+42.25 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FOUNDATION LAYOUT

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

DRAWN BY : KEITH D. LAYNE DATE : 7-11-05
CHECKED BY : J. P. ADAMS DATE : 5-05-06

20-FEB-2007 09:28
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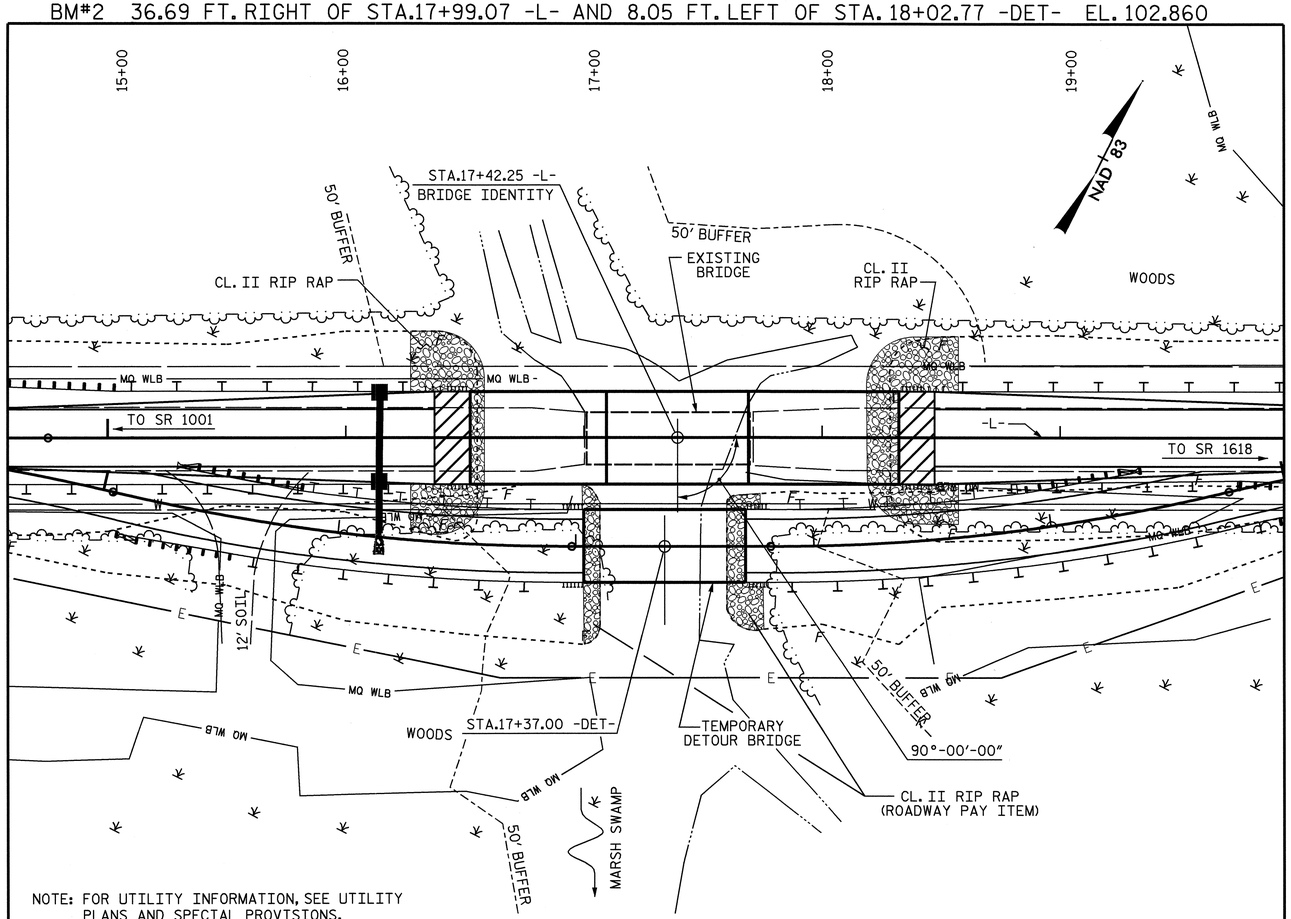
klayne

BM#2 36.69 FT. RIGHT OF STA.17+99.07 -L- AND 8.05 FT. LEFT OF STA. 18+02.77 -DET- EL. 102.860



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

LOCATION SKETCH

NOTES

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

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

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

FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.

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

THE EXISTING STRUCTURE CONSISTING OF 4 SPANS (1 @ 18'-5", 2 @ 17'-0", AND 1 @ 18'-5") OF REINFORCED CONCRETE DECK AND RAILS ON TIMBER JOISTS WITH A CLEAR ROADWAY WIDTH OF 24.1 FT. ON TIMBER CAPS AND TIMBER PILES AT END BENTS AND INTERIOR BENTS OF WHICH BENT No.1 WAS FURTHER REINFORCED BY WITH ADDITIONAL BENTS EACH SIDE CONSISTING OF HP PILES AND HP CAP AND LOCATED AT THE PROPOSED SITE 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 MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 30 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.

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.

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

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

WAITING PERIOD FOR APPROACH SLAB CONSTRUCTION SHALL BE WAIVED.

THE CONTRACTOR WILL BE REQUIRED TO CONSTRUCT, MAINTAIN AND AFTERWARDS REMOVE A TEMPORARY STRUCTURE AT STA.17+37.00 -DET- FOR USE DURING CONSTRUCTION OF THE PROPOSED STRUCTURE. SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY STRUCTURE.

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY ACCESS, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

HYDRAULIC DATA

DESIGN DISCHARGE	3,700 CFS
FREQUENCY OF DESIGN FLOOD	50 YRS
DESIGN HIGH WATER ELEVATION	103.400
DRAINAGE AREA	34.4 SQ.MI.
BASIC DISCHARGE (Q100)	4,700 CFS
BASIC HIGH WATER ELEVATION	104.400

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	15,000 CFS
FREQUENCY OF OVERTOPPING FLOOD	500+ YRS
OVERTOPPING FLOOD ELEVATION	106.800

TOTAL BILL OF MATERIAL

	CONSTRUCTION MAINTENANCE & REMOVAL OF TEMPORARY STRUCTURE	CONSTRUCTION MAINTENANCE & REMOVAL OF TEMPORARY ACCESS	REMOVAL OF EXISTING STRUCTURE	3'-6" DIA. DRILLED PIERS IN SOIL	3'-6" DIA. DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 3'-6" DIA. DRILLED PIER	SID INSPECTION	SPT TESTING	CROSSHOLE SONIC LOGGING	UNCLASSIFIED STRUCTURE EXCAVATION
	LUMP SUM	LUMP SUM	LUMP SUM	LIN FT.	LIN FT.	LIN FT.	EACH	EACH	EACH	CU. YDS.
SUPERSTRUCTURE										
END BENT #1										575
BENT #1				69.8	30.0	69.5	1	3	1	
BENT #2				79.0	30.0	78.8				
END BENT #2										670
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	148.8	60.0	148.3	1	3	1	1245

	CLASS A CONCRETE	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	3'-0" X 2'-3" PRESTRESSED CONCRETE BOX BEAMS	
	CU. YDS.	LUMP SUM	LBS.	LBS.	NO.	LIN. FT.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	NO.	LIN. FT.
SUPERSTRUCTURE		LUMP SUM					360.00			LUMP SUM	42	2514.75
END BENT #1	16.4		2786		10	250		358	398			
BENT #1	19.1		9050	2267								
BENT #2	19.1		9491	2459								
END BENT #2	16.4		2786		10	250		366	406			
TOTAL	71.0	LUMP SUM	24113	4726	20	500	360.00	724	804	LUMP SUM	42	2514.75

PROJECT NO. B-3853

HALIFAX COUNTY

STATION: 17+42.25 -L-

SHEET 3 OF 3

NORTH CAROLINA PROFESSIONAL SEAL 20211 ENGINEER THOMAS G. BAYNE

2/21/07

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING FOR BRIDGE OVER MARSH SWAMP ON NC 561 BETWEEN SR 1001 & SR 1618

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

DRAWN BY : KEITH D. LAYNE DATE : 3-17-06
CHECKED BY : J. P. ADAMS DATE : 5-05-06

20-FEB-2007 09:28
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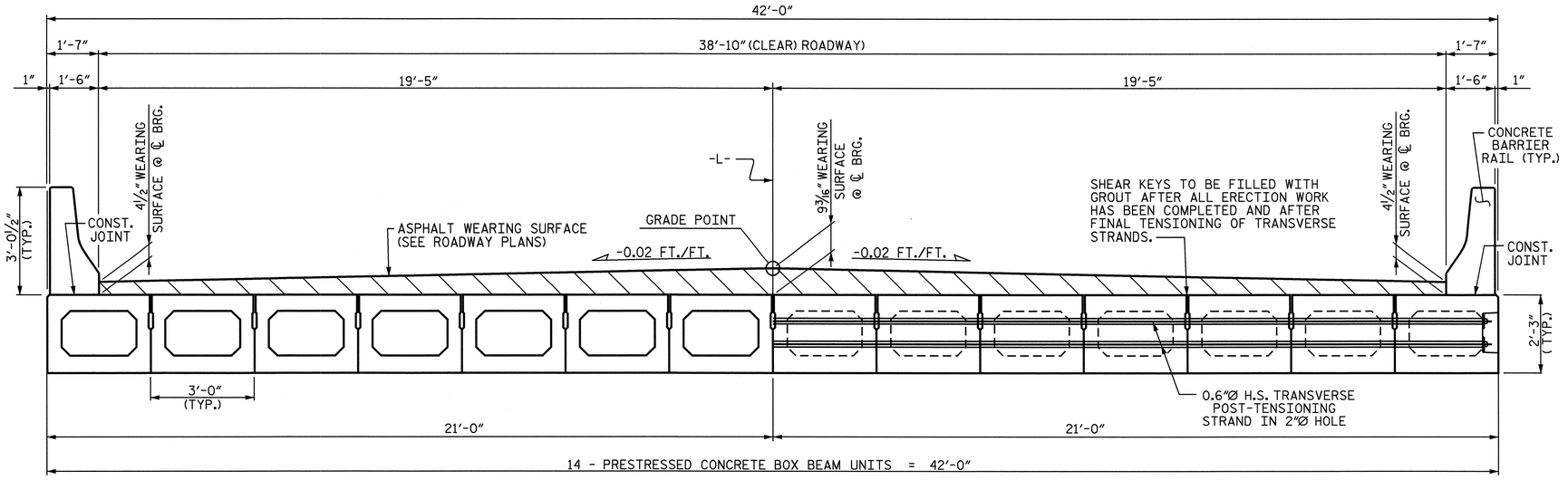

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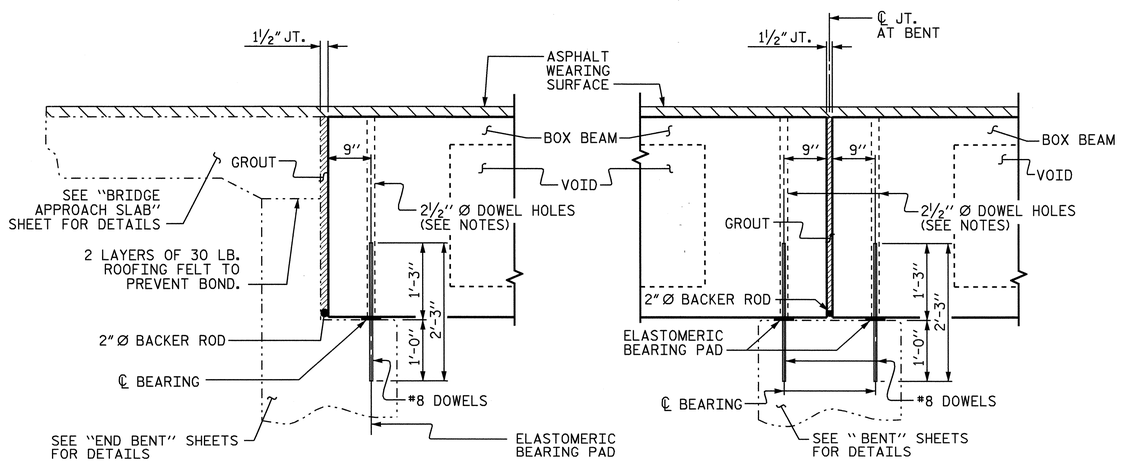

SECTION AT END BENT

SECTION AT BENT

NOTES

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

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

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

THE 2½" Ø DOWEL HOLES AT FIXED ENDS OF 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.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE BOX BEAM UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6000 PSI.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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

APPLY EPOXY PROTECTIVE COATING TO BOX BEAM UNIT ENDS.

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

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

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

PROJECT NO. B-3853

HALIFAX COUNTY

STATION: 17+42.25 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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

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

NORTH CAROLINA PROFESSIONAL SEAL 20211 ENGINEER THOMAS G. PAYNE
2/21/07

ASSEMBLED BY : KEITH D. LAYNE	DATE : 7-27-05
CHECKED BY : S. H. SOCKWELL	DATE : 9-12-05
DRAWN BY : TLA 5/05	ADDED 7/11/05
CHECKED BY : GM 6/05	REV. 5/1/06 : TLA/GM

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tpayne

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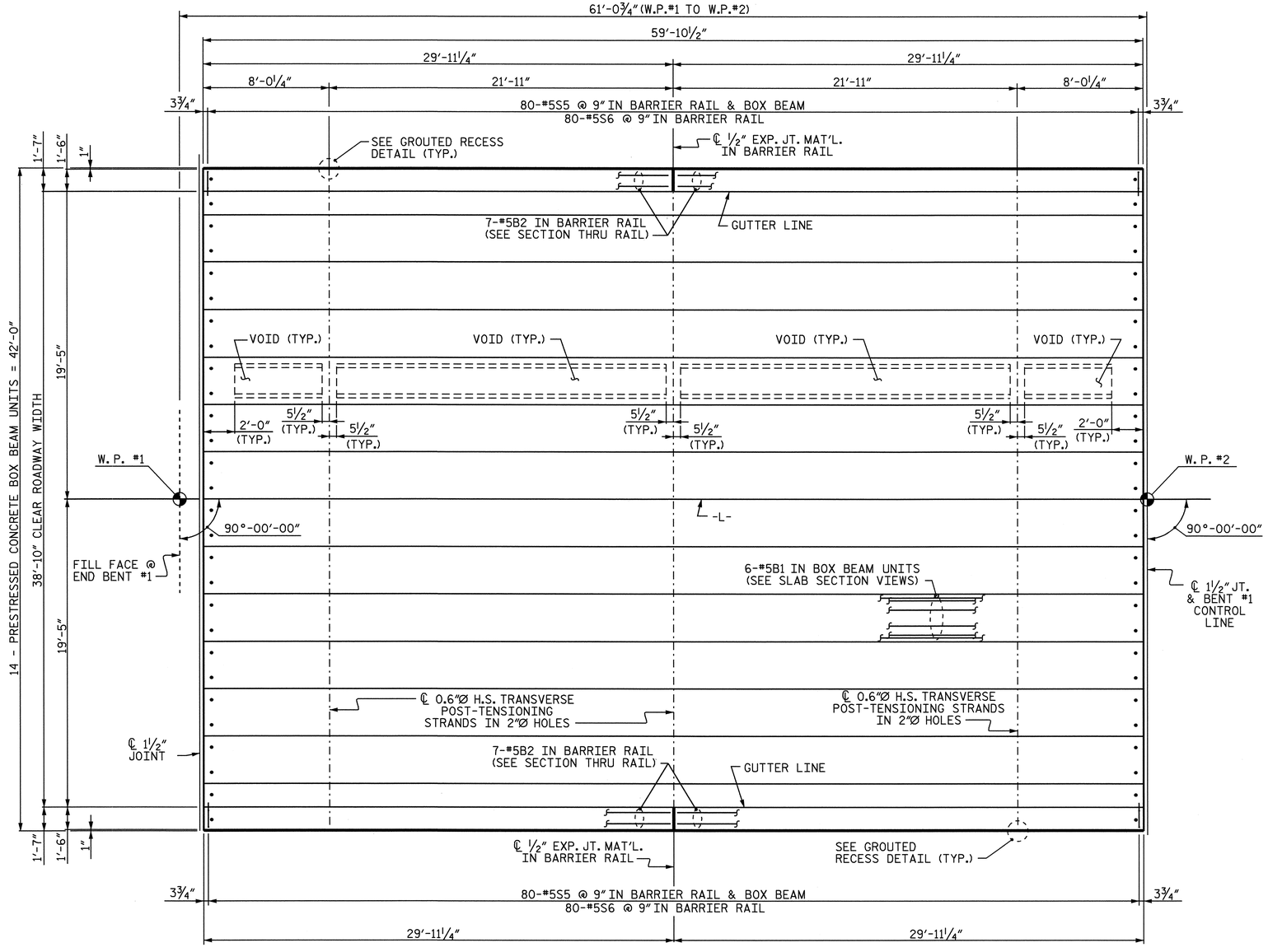

PLAN OF SPAN A

PROJECT NO. B-3853

HALIFAX COUNTY

STATION: 17+42.25 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPAN A

NORTH CAROLINA PROFESSIONAL SEAL 20211 ENGINEER THOMAS G. PAYNE
2/21/07

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

DRAWN BY : KEITH D. LAYNE DATE : 7-27-05
CHECKED BY : S. H. SOCKWELL DATE : 9/12/05

20-FEB-2007 09:28
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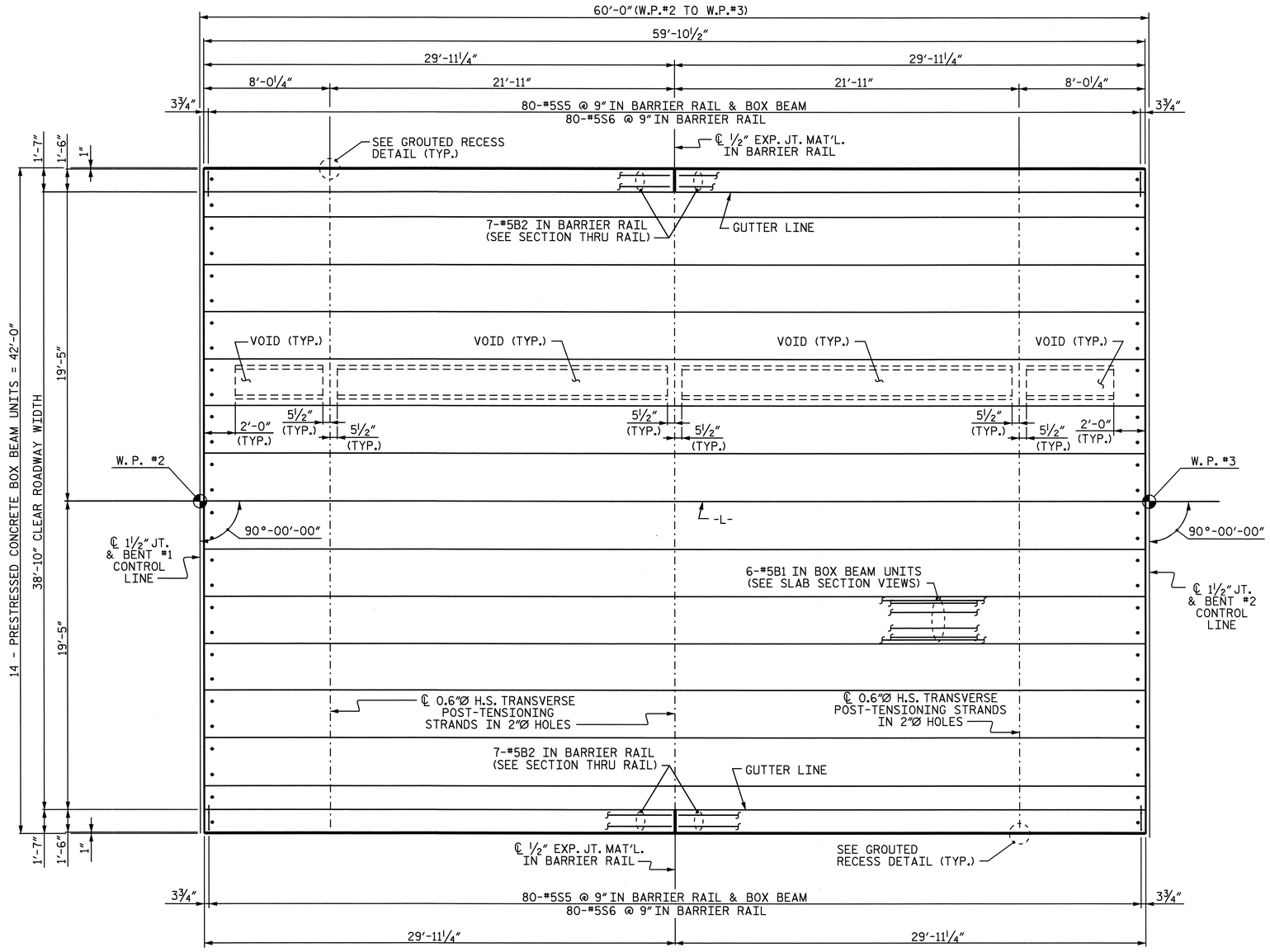
klayne

STR. #1



PLAN OF SPAN B

PROJECT NO. B-3853

HALIFAX COUNTY

STATION: 17+42.25 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPAN B

NORTH CAROLINA PROFESSIONAL SEAL 20211 ENGINEER THOMAS G. LAYNE
2/21/07

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
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DRAWN BY : KEITH D. LAYNE DATE : 7-27-05
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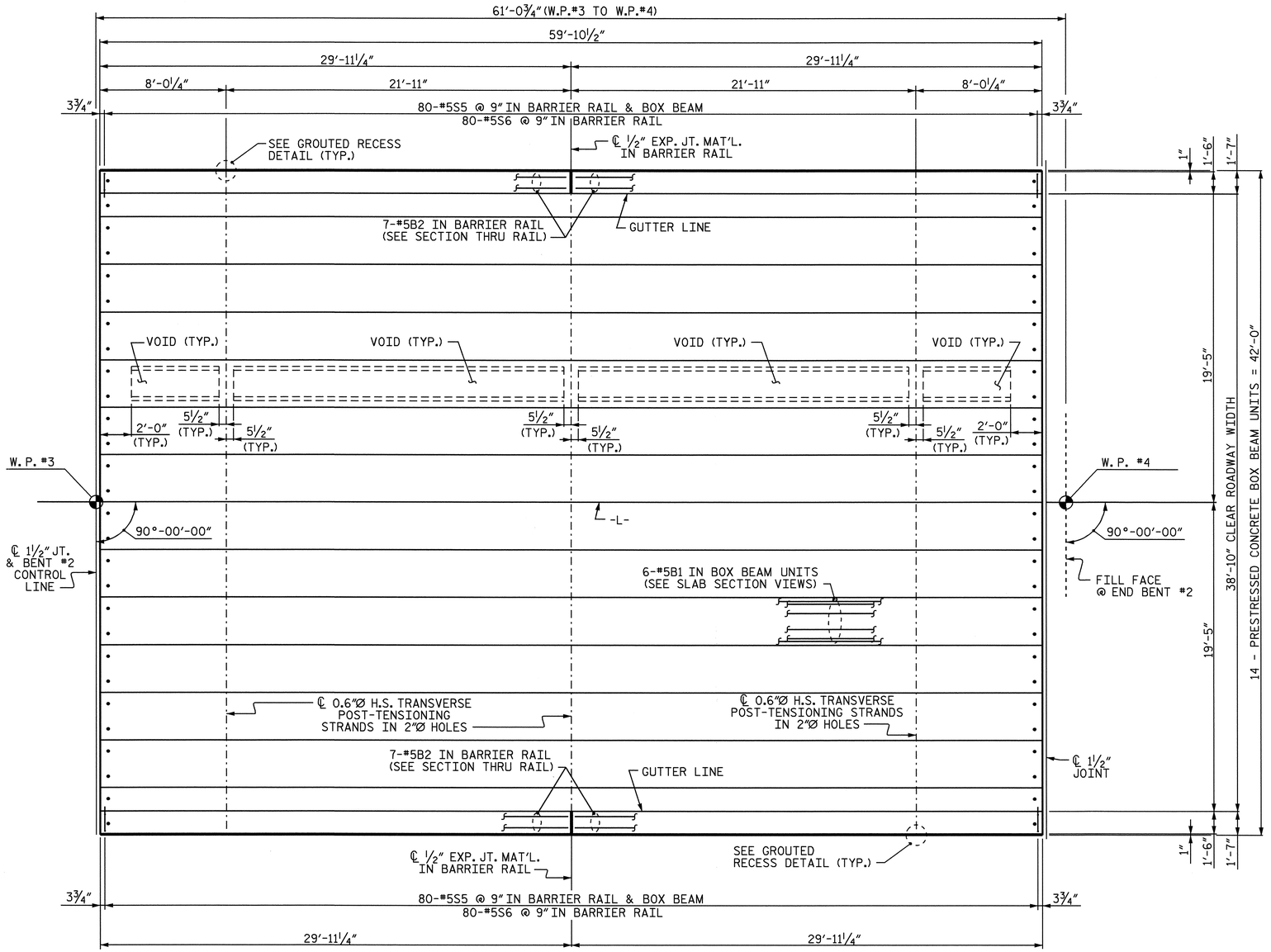

PLAN OF SPAN C

PROJECT NO. B-3853

HALIFAX COUNTY

STATION: 17+42.25 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPAN C

NORTH CAROLINA PROFESSIONAL SEAL 20211 ENGINEER THOMAS G. LAYNE
2/21/07

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
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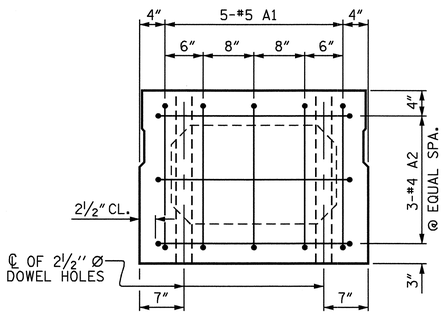
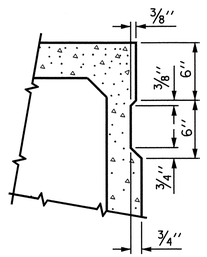


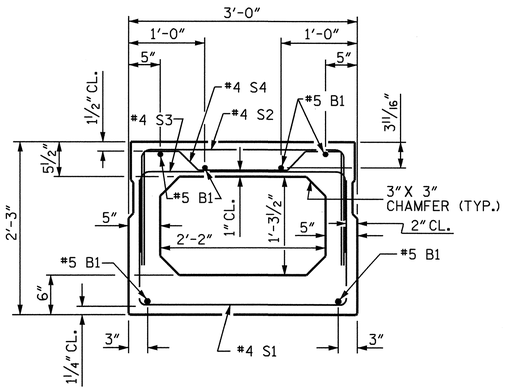
END ELEVATION

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



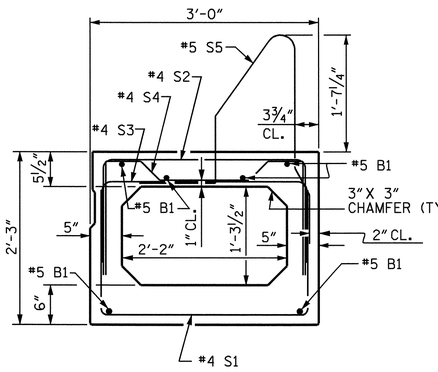
SHEAR KEY DETAIL

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



INTERIOR BOX BEAM SECTION

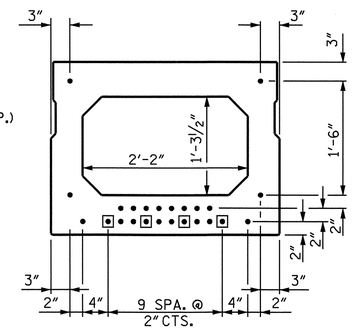
(STRAND LAYOUT NOT SHOWN)



EXTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)

0.6" Ø LOW RELAXATION STRAND LAYOUT



TYPICAL STRAND LOCATION

(24 STRANDS REQUIRED)

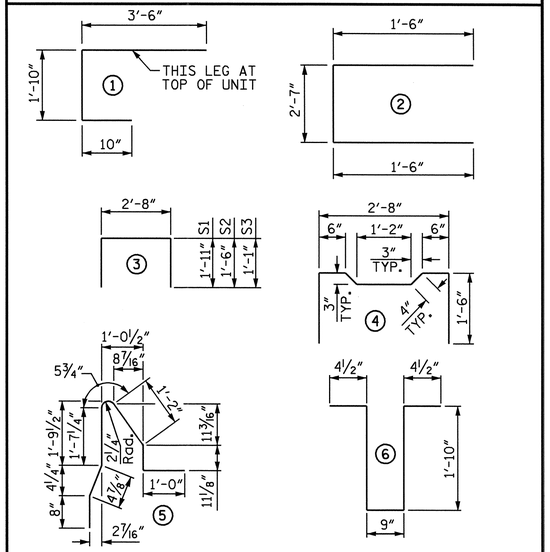
(INTERIOR BOX BEAM SECTION SHOWN-EXTERIOR SECTION SIMILAR EXCEPT SHEAR KEY LOCATION)

DEBONDING LEGEND

- ● FULLY BONDED STRANDS
- ◉ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 4'-0" FROM END OF CONCRETE BOX BEAM UNIT. SEE STANDARD SPECIFICATIONS ARTICLE 1078-7.

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

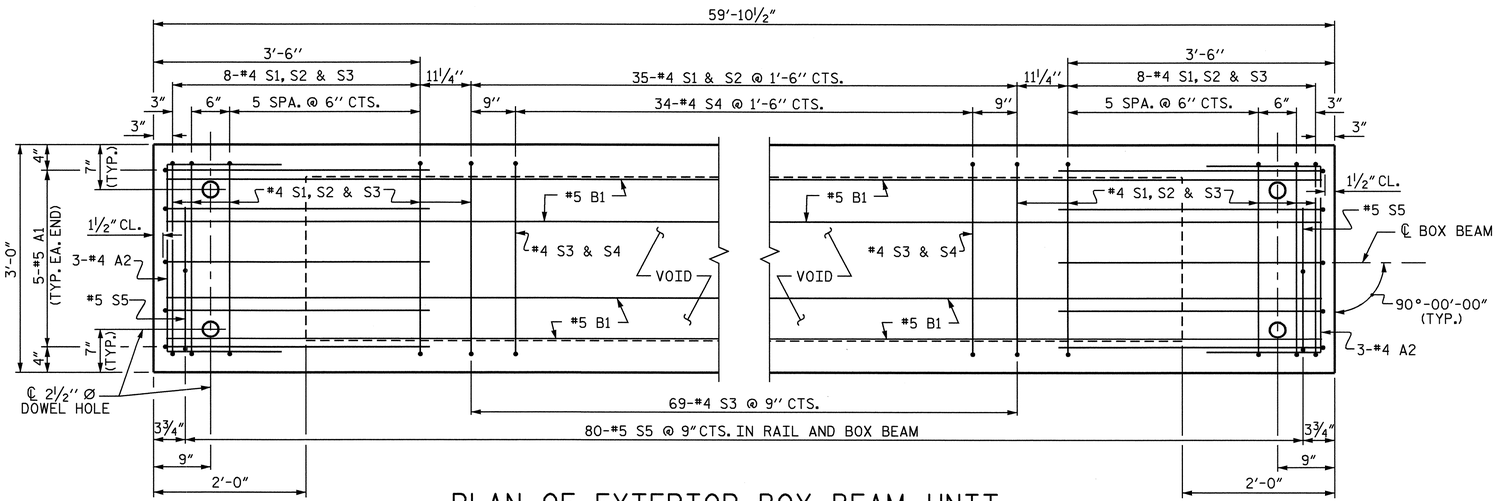
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR ONE BOX BEAM UNIT

				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
A1	10	#5	1	6'-2"	64	6'-2"	64
A2	18	#4	2	5'-7"	67	5'-7"	67
B1	6	#5	STR	59'-6"	372	59'-6"	372
K1	9	#4	6	5'-2"	31	5'-2"	31
K2	6	#4	STR	2'-7"	10	2'-7"	10
S1	51	#4	3	6'-6"	221	6'-6"	221
S2	51	#4	3	5'-8"	193	5'-8"	193
S3	85	#4	3	4'-10"	274	4'-10"	274
S4	34	#4	4	5'-10"	132	5'-10"	132
✱ S5	80	#5	5	6'-3"	522	--	--
REINFORCING STEEL					1,364 Lbs.		1,364 Lbs.
✱ EPOXY COATED REINF. STEEL					522 Lbs.		
7500 P.S.I. CONCRETE					9.7 Cu. Yds.		9.7 Cu. Yds.
0.6" Ø L.R. STRANDS					No. 24		No. 24



PLAN OF EXTERIOR BOX BEAM UNIT

EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S5 BARS.
FOR LOCATION OF DIAPHRAGMS, SEE PLAN OF SPANS.
FOR REINFORCING STEEL IN DIAPHRAGMS, SEE DIAPHRAGM DETAILS.

PROJECT NO. B-3853
HALIFAX COUNTY
STATION: 17+42.25 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

3'-0" X 2'-3" PRESTRESSED CONCRETE BOX BEAM UNIT SPANS A THRU C

NORTH CAROLINA PROFESSIONAL SEAL 20211 ENGINEER THOMAS G. LAYNE
2/21/07

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
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ASSEMBLED BY : KEITH D. LAYNE	DATE : 7-28-05
CHECKED BY : S. H. SOCKWELL	DATE : 9-12-05
DRAWN BY : TLA 5/05	ADDED 7/11/05
CHECKED BY : GM 6/05	REV. 5/1/06 TLA/GM

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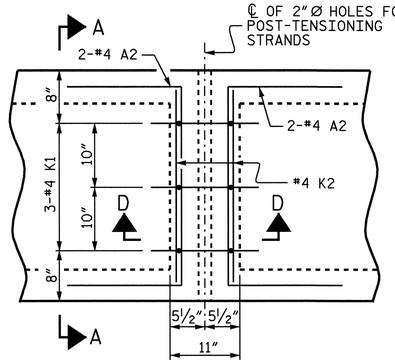
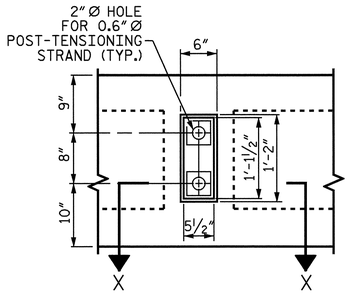
STD. NO. PCBB2

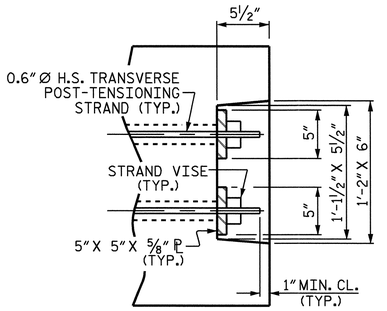


PLAN

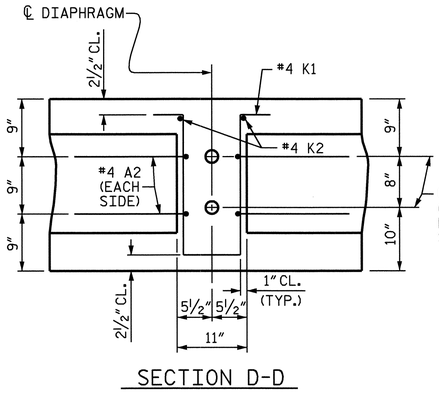


VIEW Y-Y

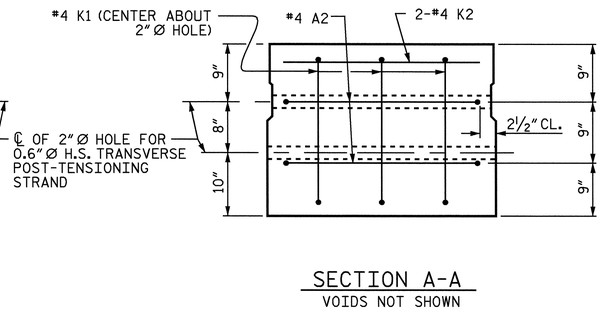
SHOWING ELEVATION VIEW OF GROUTED RECESS



DETAIL "C"

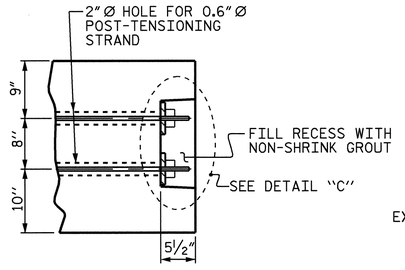


SECTION D-D

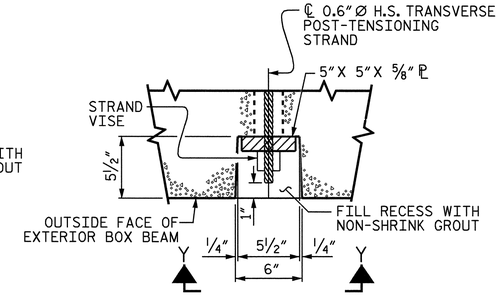


SECTION A-A

VOIDS NOT SHOWN



PART SECTION AT RECESS



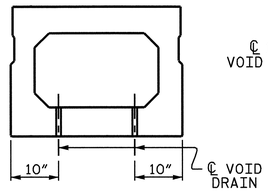
SECTION X-X

SHOWING PLAN VIEW OF GROUTED RECESS

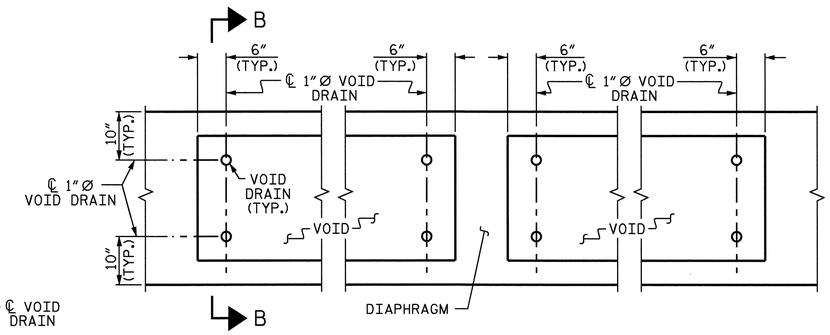
GROUTED RECESS DETAIL AT END OF POST-TENSIONED STRANDS OF EXTERIOR BOX BEAM

DOUBLE DIAPHRAGM DETAILS

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



SECTION B-B



PART PLAN

VOID DRAIN DETAILS

(DIMENSIONS SHOWN ARE TYPICAL FOR EACH VOID)

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

✻✻ INCLUDES FUTURE WEARING SURFACE

PROJECT NO. B-3853

HALIFAX COUNTY

STATION: 17+42.25 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

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

NORTH CAROLINA PROFESSIONAL SEAL 20211 ENGINEER THOMAS G. PAYNE
2/21/07

REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
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ASSEMBLED BY : KEITH D. LAYNE	DATE : 7-28-05
CHECKED BY : S. H. SOCKWELL	DATE : 9-12-05
DRAWN BY : TLA 5/05	ADDED 7/11/05
CHECKED BY : GM 6/05	REV. 5/1/06 TLA/GM

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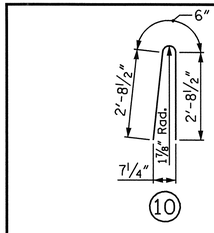
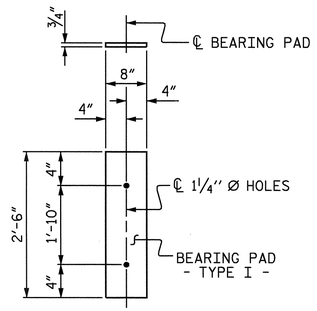
STD. NO. PCBB3

BOX BEAM UNITS REQUIRED				
	EXTERIOR UNITS	INTERIOR UNITS	LENGTH	TOTAL LENGTH
SPAN A	2	12	59′-10½″	838.250
SPAN B	2	12	59′-10½″	838.250
SPAN C	2	12	59′-10½″	838.250
TOTAL	6	36	———	2514.750



BAR TYPE

BAR DIMENSIONS ARE OUT TO OUT

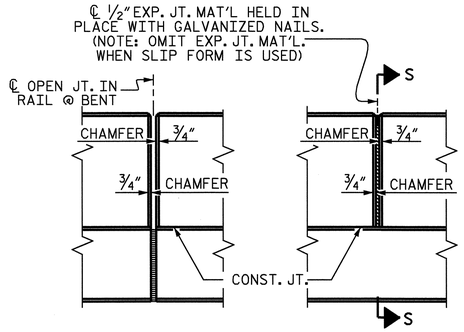


FIXED END

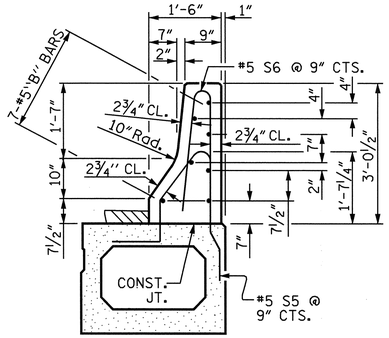
(TYPE I - 84 REQ'D)

ELASTOMERIC BEARING DETAILS

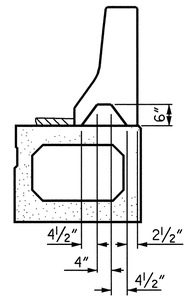
BILL OF MATERIAL FOR CONCRETE BARRIER RAIL										
BAR		BARS PER SPAN				TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
		SPAN A	SPAN B	SPAN C						
✳B2		28	28	28		84	#5	STR	29′-7″	2,592
✳S6		160	160	160		480	#5	10	5′-11″	2,962
✳EPOXY COATED REINFORCING STEEL =										5,554 Lbs.
CLASS AA CONCRETE =										43.5 Cu. Yds.
TOTAL LENGTH OF CONCRETE BARRIER RAIL =										360.00 Lin. Ft.



ELEVATION AT EXPANSION JOINTS



SECTION THRU RAIL



SECTION S-S

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

BARRIER RAIL DETAILS

PROJECT NO. B-3853

HALIFAX COUNTY

STATION: 17+42.25 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
3′-0″ × 2′-3″
PRESTRESSED CONCRETE
BOX BEAM UNIT
DETAILS

REVISIONS						SHEET NO.
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NORTH CAROLINA PROFESSIONAL SEAL 20211 ENGINEER THOMAS L. LAYNE
2/21/07

ASSEMBLED BY : KEITH D. LAYNE	DATE : 7-28-05
CHECKED BY : S. H. SOCKWELL	DATE : 9-12-05
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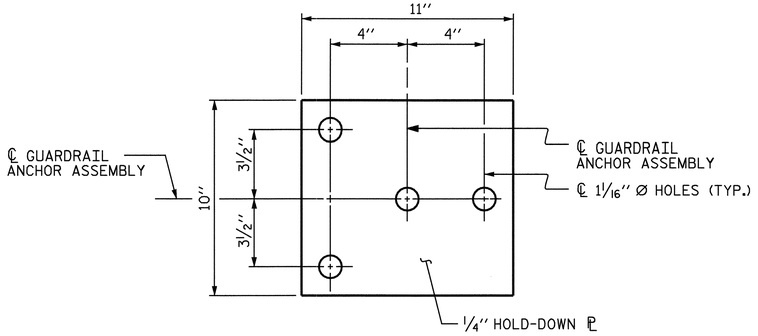
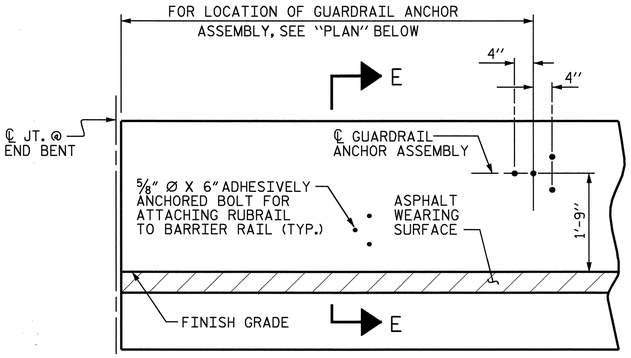
STD. NO. PCBB8

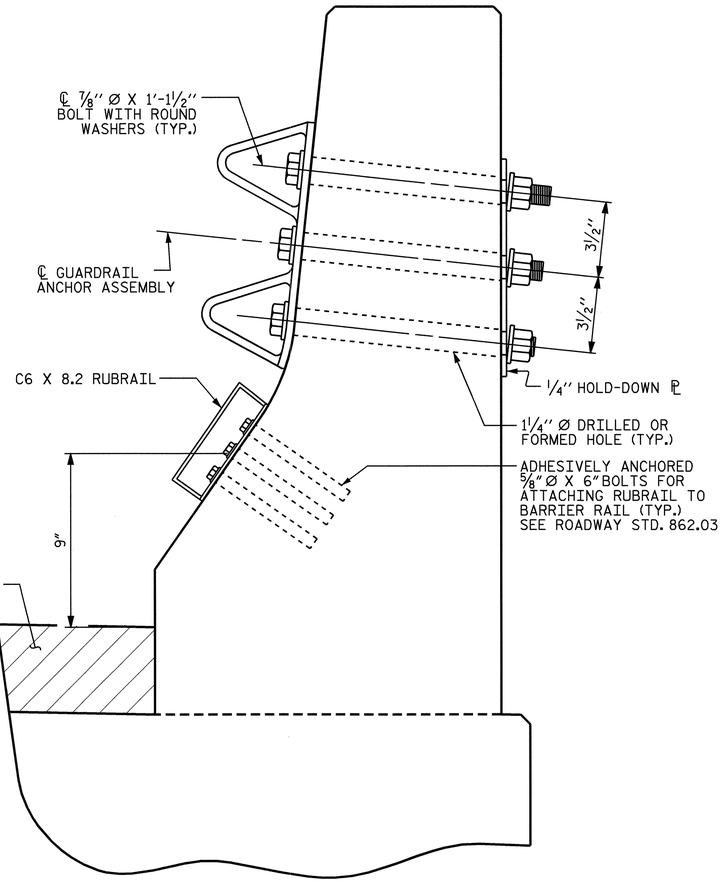


PLAN



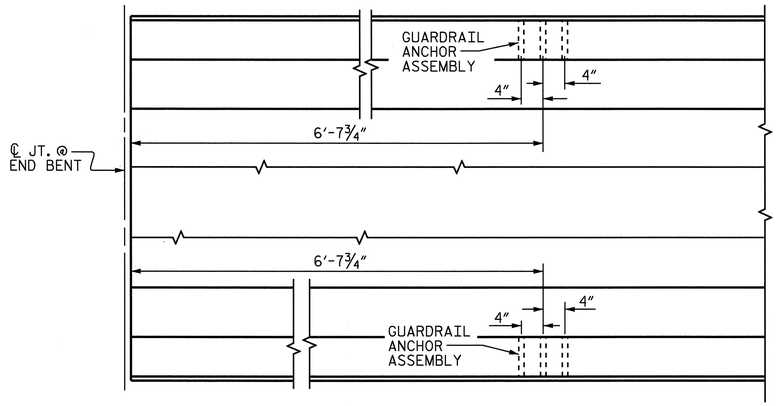
ELEVATION

FOR LOCATION OF RUBRAIL, SEE ROADWAY STD. 862.03



SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

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

NOTES

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

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

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

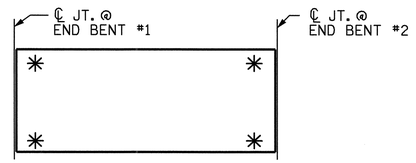
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

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

THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 5/8" Ø X 6" BOLTS WITH WASHERS. SEE ROADWAY STANDARD 862.03 FOR DETAILS AND LOCATION OF THE RUBRAIL.



SKETCH SHOWING POINTS OF ATTACHMENTS

✳ DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. B-3853

HALIFAX COUNTY

STATION: 17+42.25 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

GUARDRAIL ANCHORAGE FOR BARRIER RAIL

NORTH CAROLINA PROFESSIONAL SEAL 20211 ENGINEER THOMAS G PAYNE
2/21/07

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
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ASSEMBLED BY : KEITH D..LAYNE	DATE : 9/12/06
CHECKED BY : T. G. PAYNE	DATE : 12/06
DRAWN BY : TLA 5/06	ADDED 5/1/06
CHECKED BY : GM 5/06	

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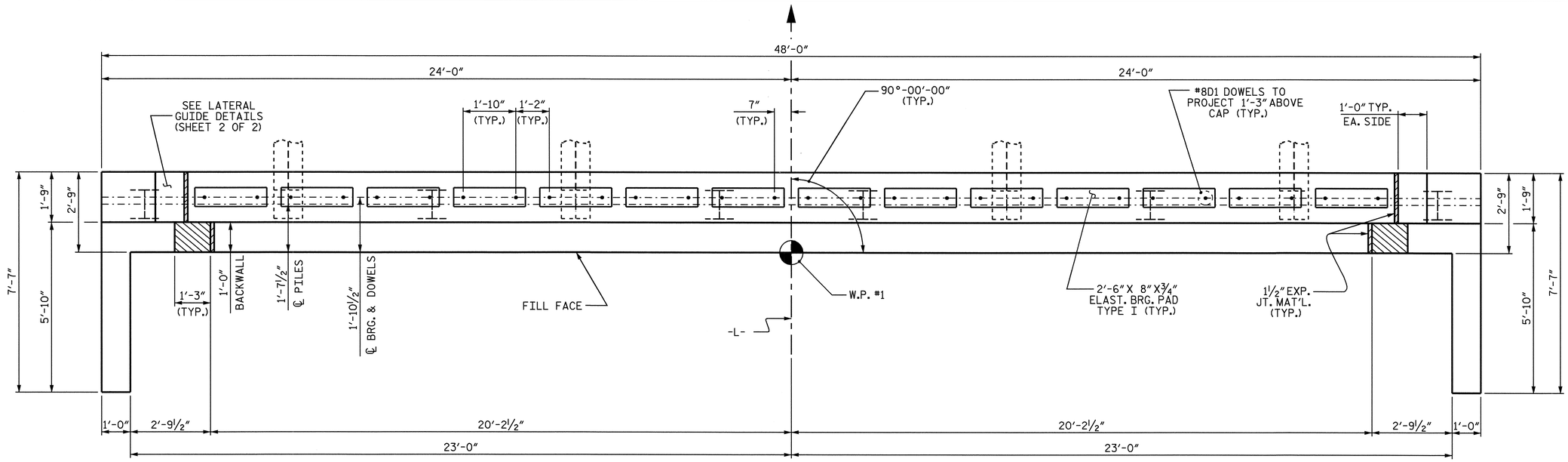
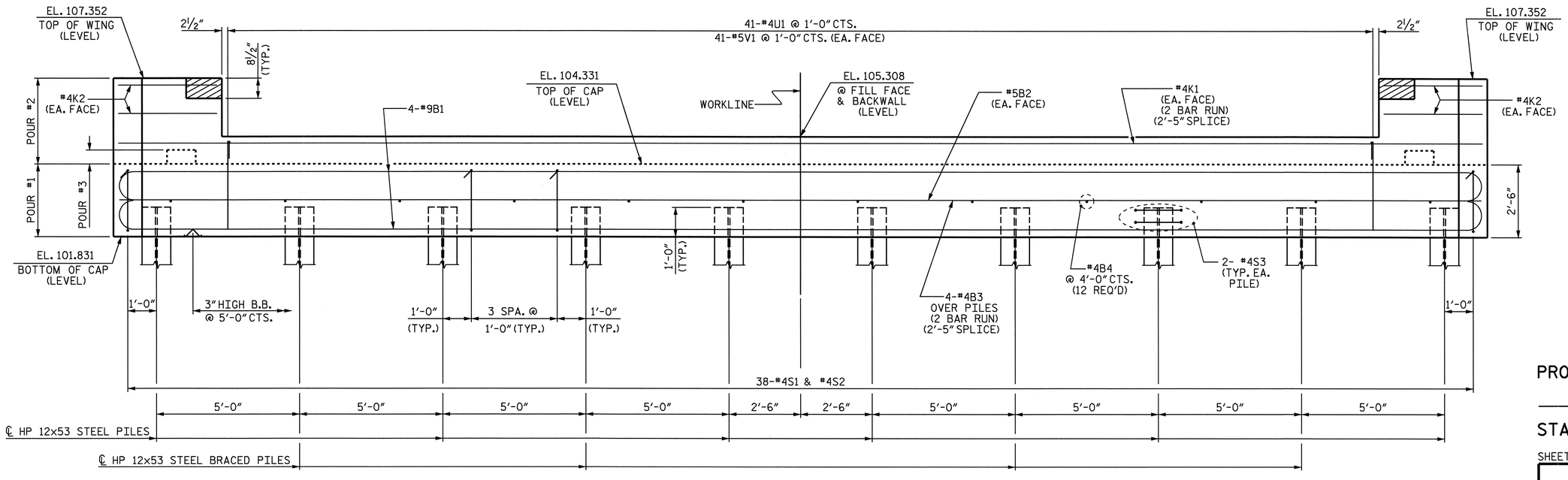
klayne

STD. NO. GRA2



PLAN



ELEVATION

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR 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 PRESTRESSED BOX BEAMS ARE IN PLACE.

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

PROJECT NO. B-3853

HALIFAX COUNTY

STATION: 17+42.25 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT #1

NORTH CAROLINA PROFESSIONAL SEAL 20211 ENGINEER THOMAS G. PAYNE
2/21/07

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

DRAWN BY : H. A. LOCKLEAR DATE : 8-24-05
CHECKED BY : J. P. ADAMS DATE : 3-09-06

20-FEB-2007 09:28
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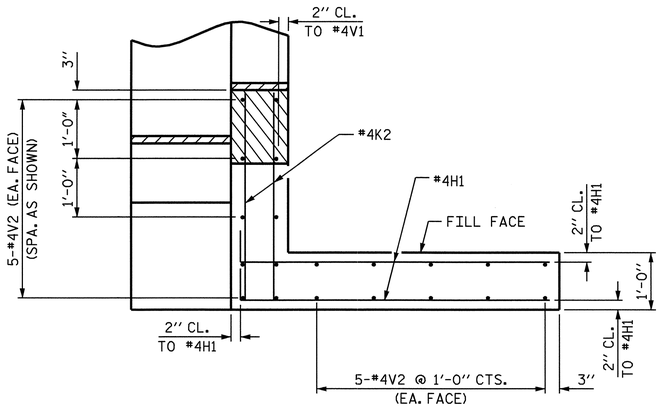
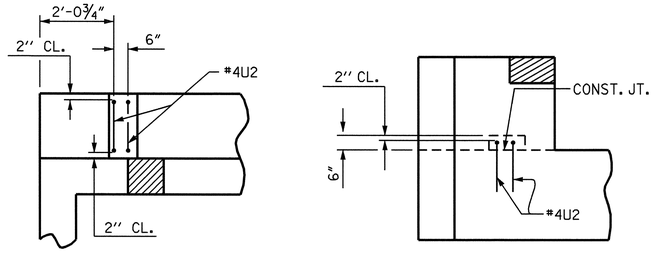
klayne

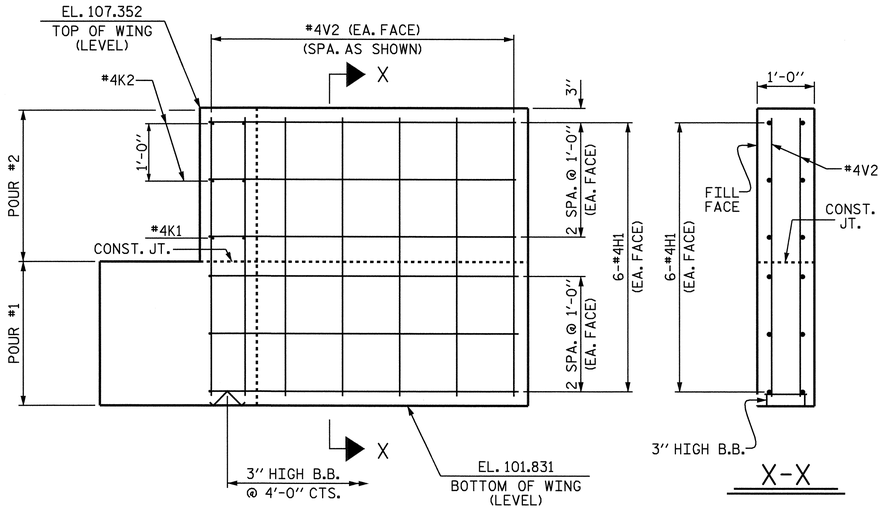


PLAN OF WING

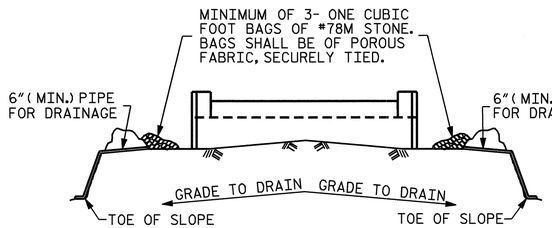


LATERAL GUIDE DETAILS

(EACH END SIMILAR)



ELEVATION OF WING

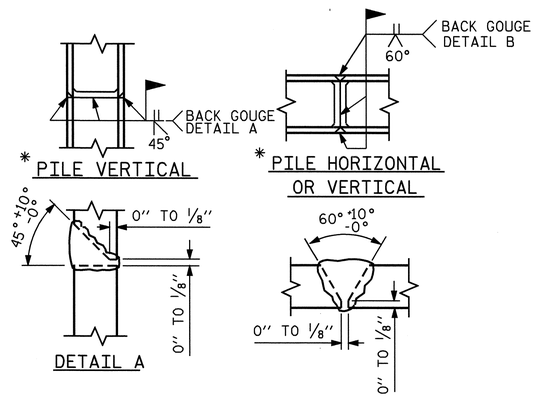


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

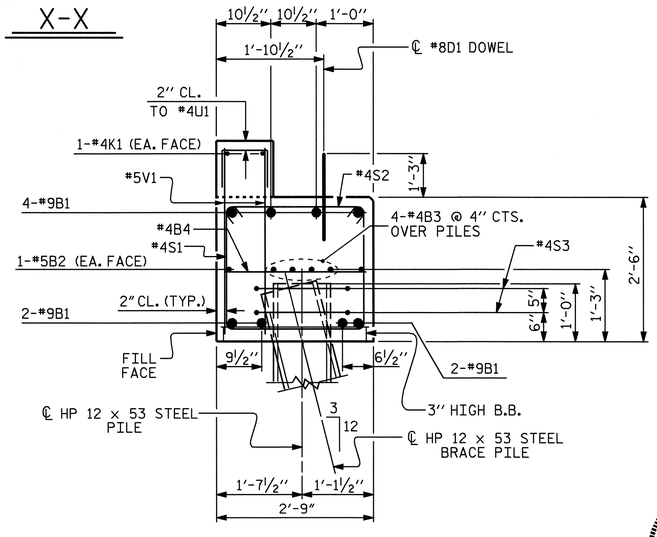
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



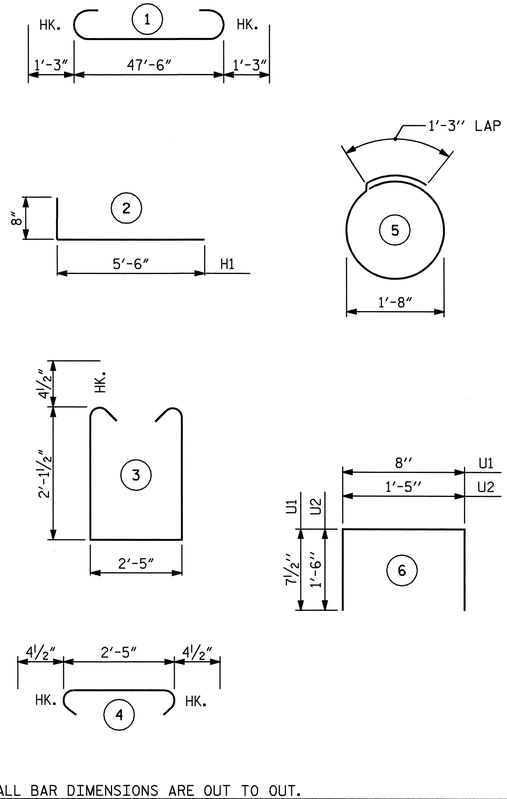
* POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS



SECTION THRU CAP

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	50'-0"	1360
B2	2	5	STR	47'-8"	99
B3	8	4	STR	25'-3"	135
B4	12	4	STR	2'-5"	19
D1	28	8	STR	2'-3"	168
H1	24	4	2	6'-2"	99
K1	4	4	STR	25'-3"	67
K2	8	4	STR	3'-5"	18
S1	38	4	3	7'-5"	188
S2	38	4	4	3'-2"	80
S3	20	4	5	6'-6"	87
U1	41	4	6	1'-11"	52
U2	4	4	6	4'-5"	12
V1	82	5	STR	3'-1"	264
V2	40	4	STR	5'-2"	138

REINFORCING STEEL 2786 LBS

CLASS "A" CONCRETE BREAKDOWN

POUR #1 CAP & LOWER PART OF WINGS
CU. YDS. 13.1

POUR #2 UPPER WINGS & BACKWALL
CU. YDS. 3.2

POUR #3 LATERAL GUIDES
CU. YDS. 0.1

CLASS "A" CONCRETE TOTAL
CU. YDS. 16.4

HP 12 x 53 STEEL PILES
NO. 10 250 LIN. FT.

PROJECT NO. B-3853

HALIFAX COUNTY

STATION: 17+42.25 -L-

SHEET 2 OF 2

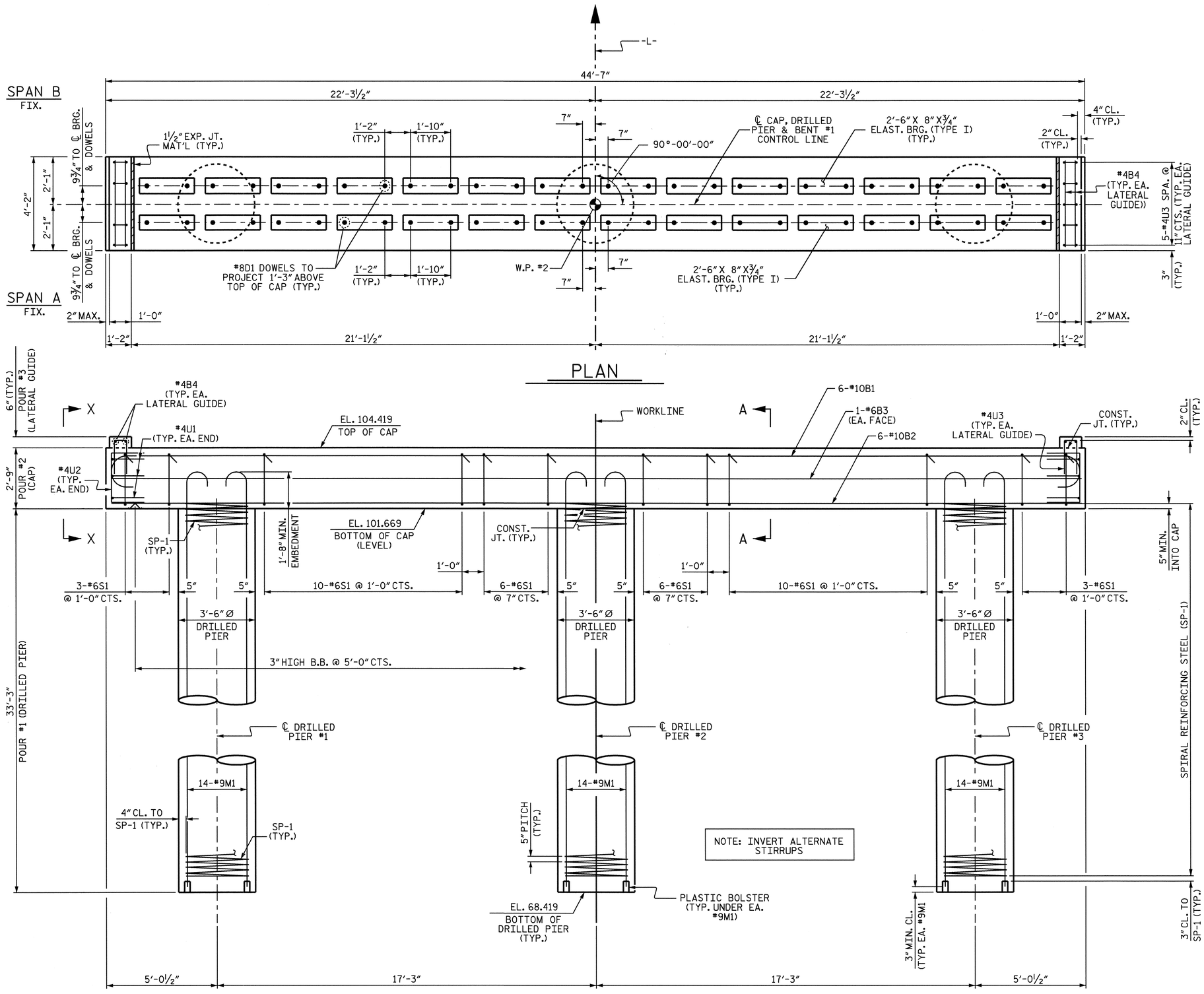
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT #1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			22

NORTH CAROLINA PROFESSIONAL SEAL 20211 ENGINEER THOMAS G. PAYNE 2/21/07

DRAWN BY : H.A. LOCKLEAR DATE : 8-25-05
CHECKED BY : J. P. ADAMS DATE : 3-9-06



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.

PROJECT NO. B-3853

HALIFAX COUNTY

STATION: 17+42.25-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			22

NORTH CAROLINA PROFESSIONAL SEAL 20211 ENGINEER THOMAS G. PAYNE
2/21/07

DRAWN BY : S.H. SOCKWELL DATE : 4/7/06
CHECKED BY : J.P. ADAMS DATE : 4/12/06

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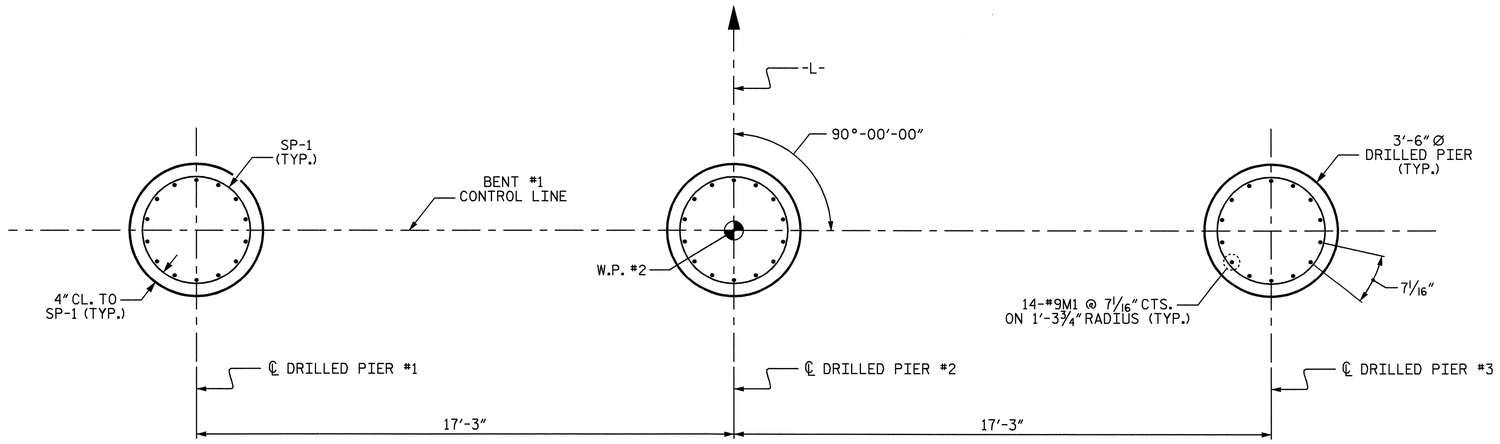
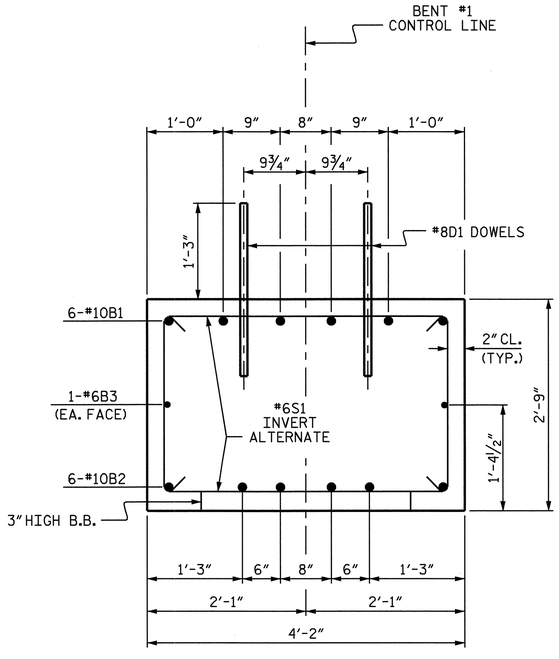
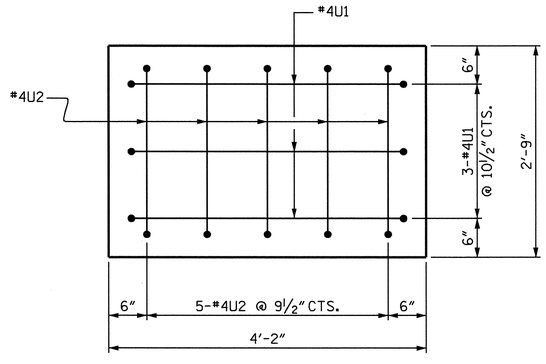


PLAN OF DRILLED PIERS

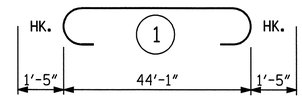


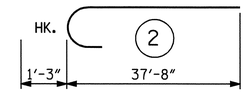
SECTION A-A

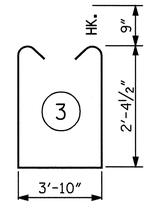


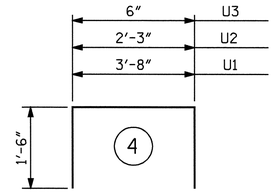
VIEW X-X

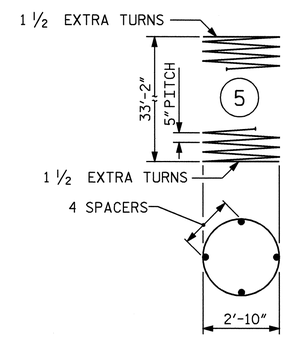
BAR TYPES











ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

BENT #1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#10	1	46'-11"	1211
B2	6	#10	STR	44'-3"	1142
B3	2	#6	STR	44'-3"	133
B4	4	#4	STR	3'-10"	10
D1	56	#8	STR	2'-3"	336
M1	42	#9	2	38'-11"	5557
S1	38	#6	3	10'-1"	576
U1	6	#4	4	6'-8"	27
U2	10	#4	4	5'-3"	35
U3	10	#4	4	3'-6"	23
TOTAL REINFORCING STEEL LBS.					9050
SP-1	3	**	5	724'-4"	2267

SPIRAL COLUMN REINFORCING STEEL LBS. 2267

CLASS A CONCRETE BREAKDOWN

POUR #2 (BENT CAP)	18.9 C.Y.
POUR #3 (LATERAL GUIDE)	.2 C.Y.
TOTAL	19.1 C.Y.

DRILLED PIER QUANTITIES

DRILLED PIER CONCRETE	
POUR #1 (DRILLED PIERS)	35.5 C.Y.
3'-6" Ø DRILLED PIERS IN SOIL	69.8 LIN. FT.
3'-6" Ø DRILLED PIERS NOT IN SOIL	30.0 LIN. FT.
SPT TESTING	3 EA.
SID INSPECTION	1 EA.
CROSSHOLE SONIC LOGGING	1 EA.
PERMANENT STEEL CASING FOR 3'-6" Ø DRILLED PIER	69.5 LIN. FT.
CSL TUBES	429.0 LIN. FT.

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

PROJECT NO. B-3853

HALIFAX COUNTY

STATION: 17+42.25-L-

SHEET 2 OF 2

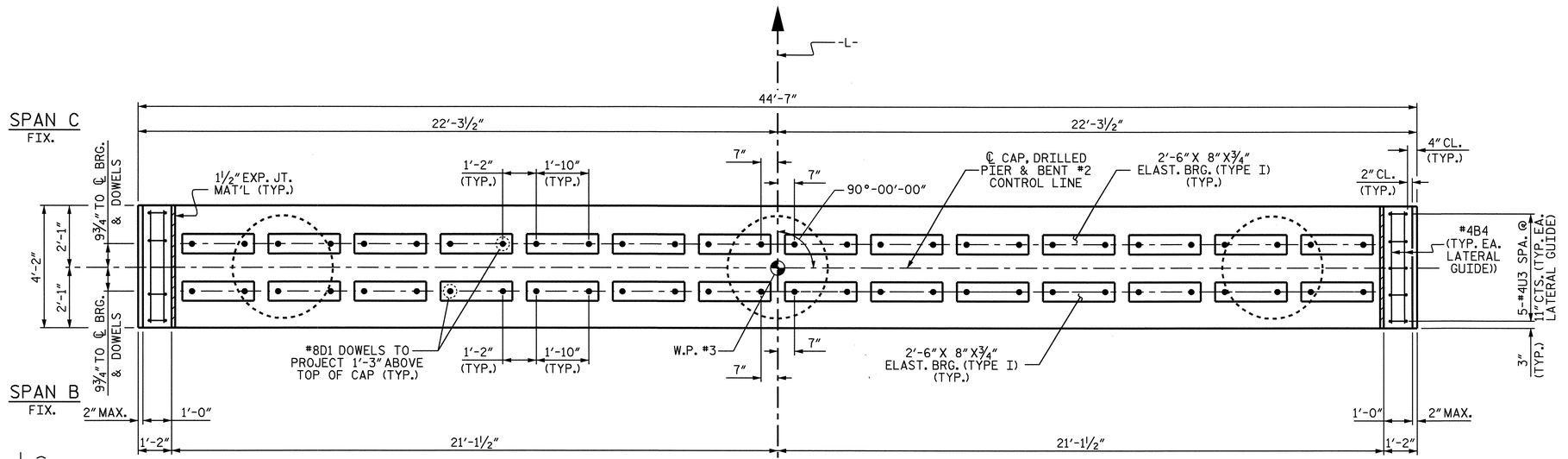
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT #1

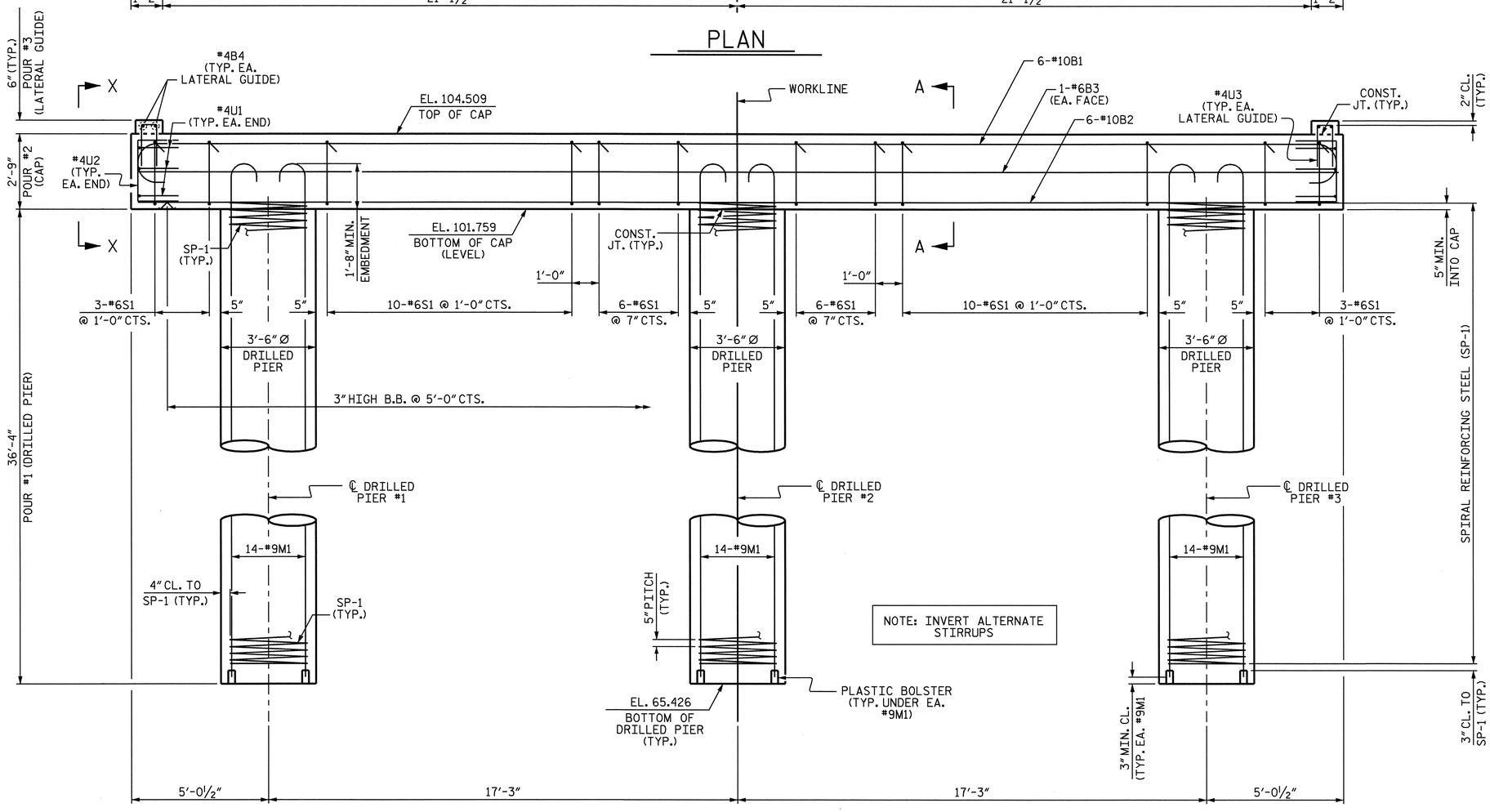
NORTH CAROLINA PROFESSIONAL SEAL 20211 ENGINEER THOMAS G. PAYNE
2/21/07

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

DRAWN BY : S.H. SOCKWELL DATE : 4/7/06
CHECKED BY : J.P. ADAMS DATE : 4/12/06



PLAN



ELEVATION

NOTES

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

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NORTH CAROLINA PROFESSIONAL SEAL 20211 ENGINEER THOMAS G. PAYNE
2/21/07

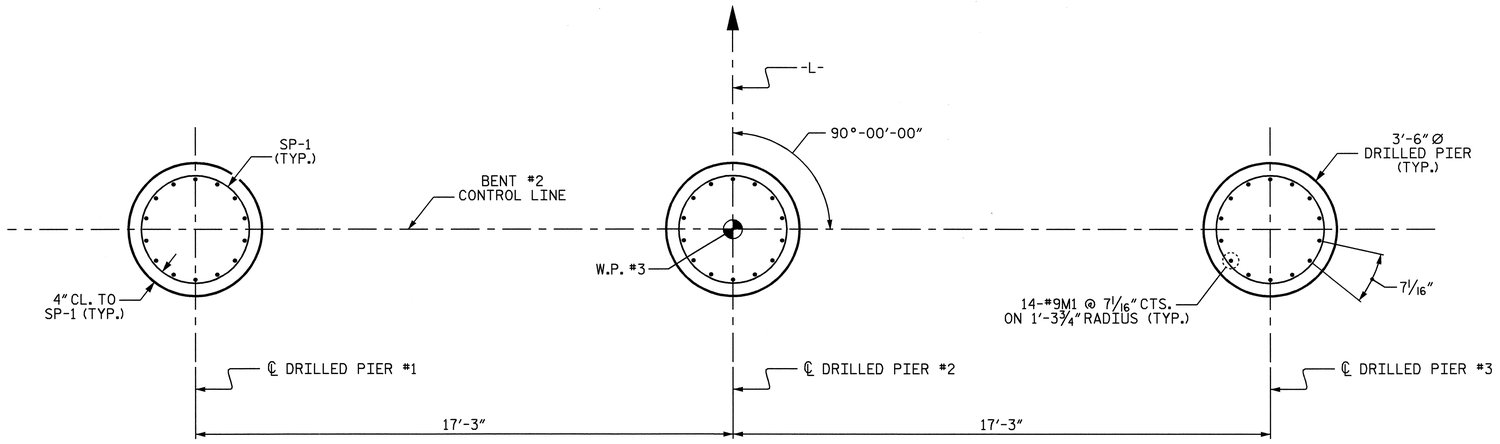
PROJECT NO. B-3853
HALIFAX COUNTY
STATION: 17+42.25-L-

SHEET 1 OF 2

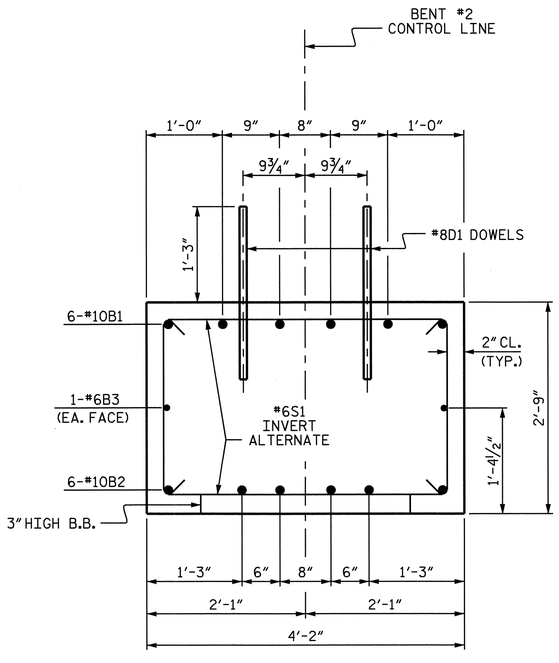
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT #2

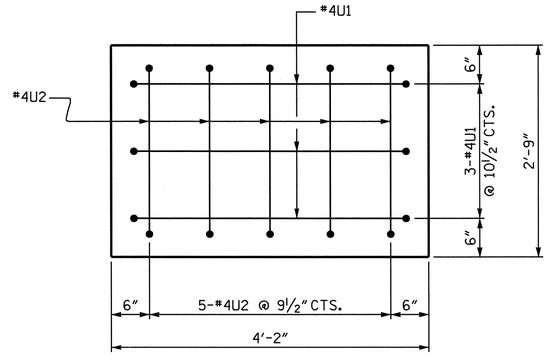
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			22



PLAN OF DRILLED PIERS

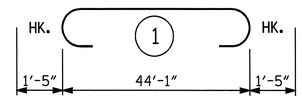


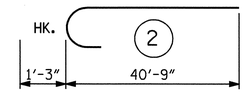
SECTION A-A

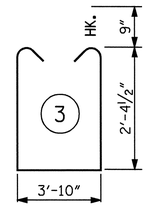


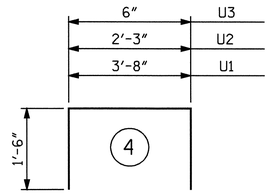
VIEW X-X

BAR TYPES









ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

BENT #2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#10	1	46'-11"	1211
B2	6	#10	STR	44'-3"	1142
B3	2	#6	STR	44'-3"	133
B4	4	#4	STR	3'-10"	10
D1	56	#8	STR	2'-3"	336
M1	42	#9	2	42'-0"	5998
S1	38	#6	3	10'-1"	576
U1	6	#4	4	6'-8"	27
U2	10	#4	4	5'-3"	35
U3	10	#4	4	3'-6"	23
TOTAL REINFORCING STEEL LBS.					9491
SP-1	3	**	5	785'-9"	2459

SPIRAL COLUMN REINFORCING STEEL LBS. 2459

CLASS A CONCRETE BREAKDOWN

POUR #2 (BENT CAP)	18.9 C.Y.
POUR #3 (LATERAL GUIDE)	.2 C.Y.
TOTAL	19.1 C.Y.

DRILLED PIER QUANTITIES

DRILLED PIER CONCRETE	
POUR #1 (DRILLED PIERS)	38.8 C.Y.
3'-6" Ø DRILLED PIERS IN SOIL	79.0 LIN. FT.
3'-6" Ø DRILLED PIERS NOT IN SOIL	30.0 LIN. FT.
PERMANENT STEEL CASING FOR 3'-6" Ø DRILLED PIER	78.8 LIN. FT.
CSL TUBES	466.0 LIN. FT.

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

PROJECT NO. B-3853

HALIFAX COUNTY

STATION: 17+42.25-L-

SHEET 2 OF 2

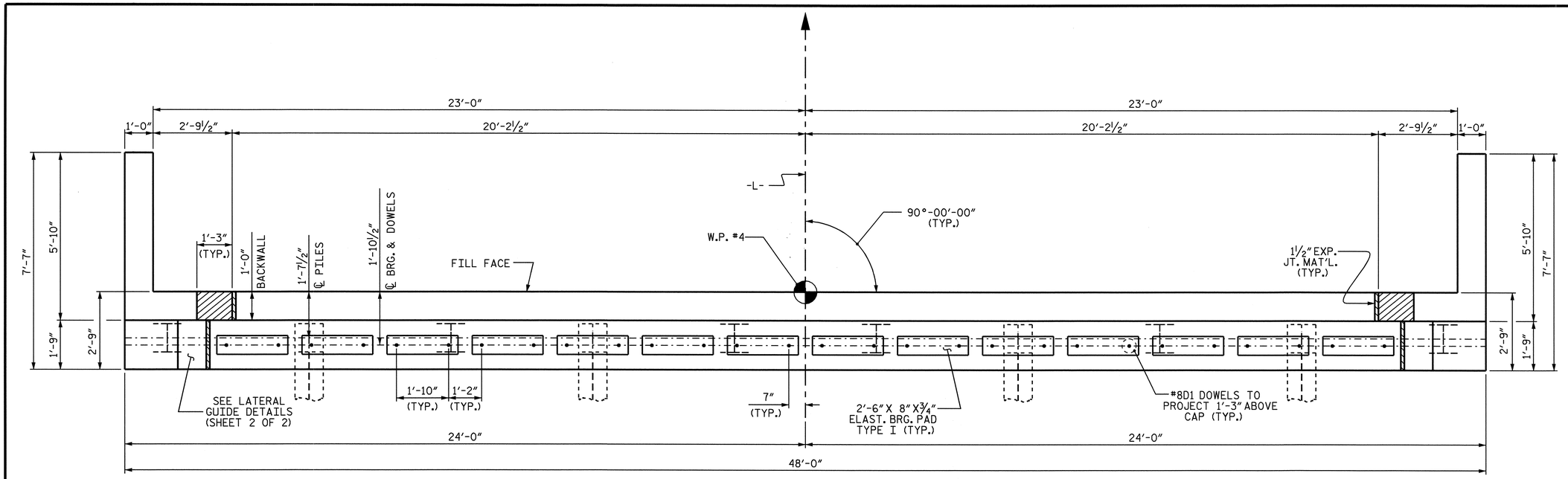
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT #2

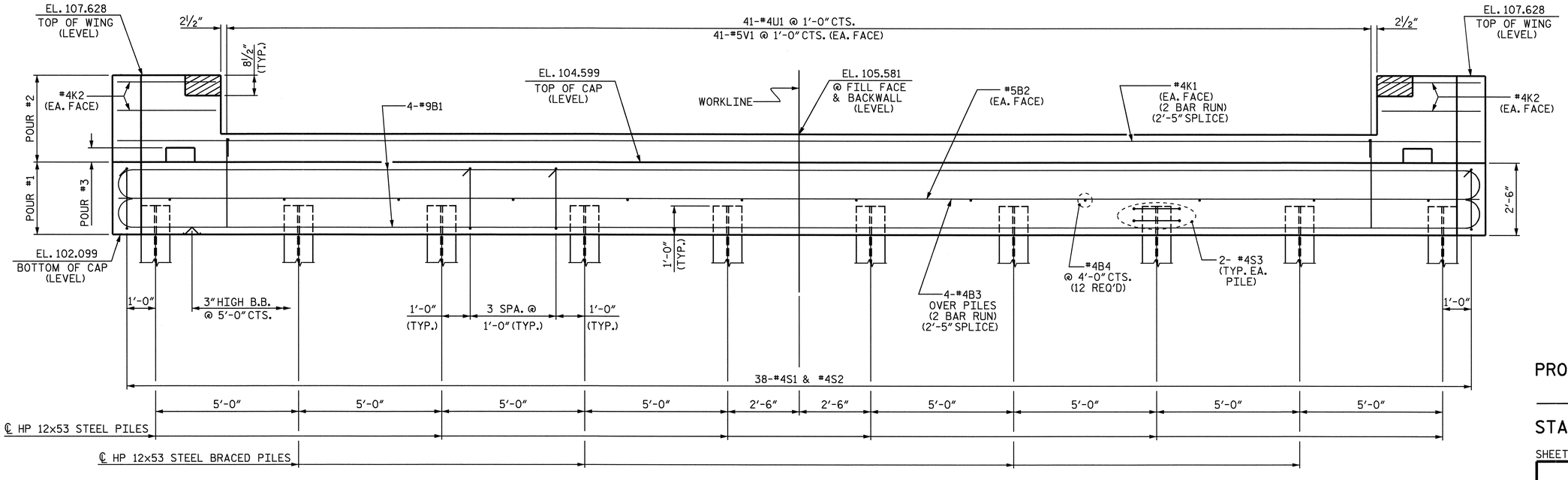
NORTH CAROLINA PROFESSIONAL SEAL 20211 ENGINEER THOMAS G. PAYNE
2/21/07

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

DRAWN BY : S.H. SOCKWELL DATE : 4/7/06
CHECKED BY : J.P. ADAMS DATE : 4/12/06



PLAN



ELEVATION

NOTES

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PROJECT NO. B-3853

HALIFAX COUNTY

STATION: 17+42.25 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT #2

NORTH CAROLINA PROFESSIONAL SEAL 20211 ENGINEER THOMAS G. PAYNE
2/21/07

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

DRAWN BY : H. A. LOCKLEAR DATE : 8-24-05
CHECKED BY : J. P. ADAMS DATE : 3-9-06

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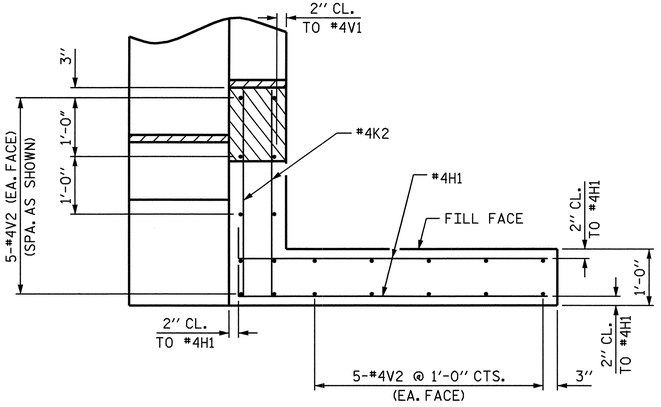
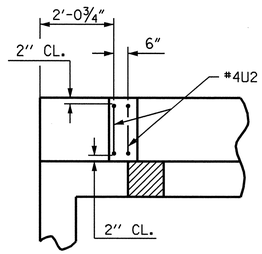
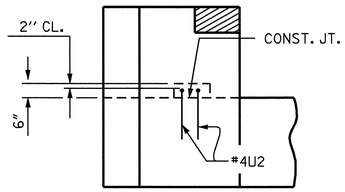
klayne



PLAN OF WING



PLAN

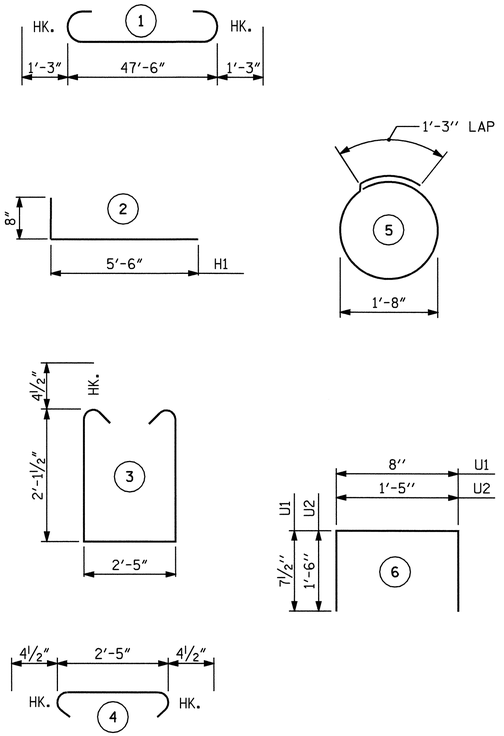


ELEVATION

LATERAL GUIDE DETAILS

(EACH END SIMILAR)

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT #2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	9	1	50'-0"	1360
B2	2	5	STR	47'-8"	99
B3	8	4	STR	25'-3"	135
B4	12	4	STR	2'-5"	19
D1	28	8	STR	2'-3"	168
H1	24	4	2	6'-2"	99
K1	4	4	STR	25'-3"	67
K2	8	4	STR	3'-5"	18
S1	38	4	3	7'-5"	188
S2	38	4	4	3'-2"	80
S3	20	4	5	6'-6"	87
U1	41	4	6	1'-11"	52
U2	4	4	6	4'-5"	12
V1	82	5	STR	3'-1"	264
V2	40	4	STR	5'-2"	138

REINFORCING STEEL 2786 LBS

CLASS "A" CONCRETE BREAKDOWN

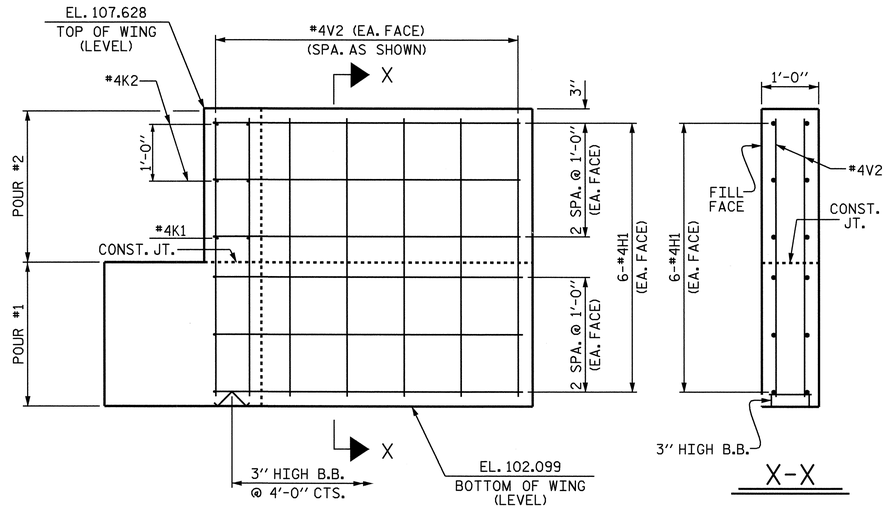
POUR #1 CAP & LOWER PART OF WINGS
CU. YDS. 13.1

POUR #2 UPPER WINGS & BACKWALL
CU. YDS. 3.2

POUR #3 LATERAL GUIDES
CU. YDS. 0.1

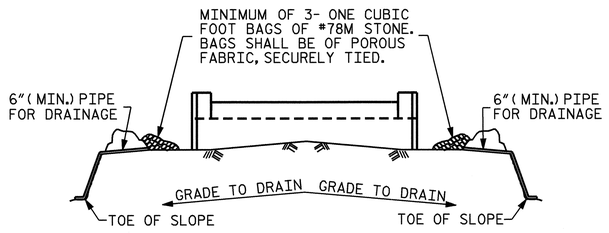
CLASS "A" CONCRETE TOTAL
CU. YDS. 16.4

HP 12 x 53 STEEL PILES
NO. 10 250 LIN. FT.



X-X

ELEVATION OF WING

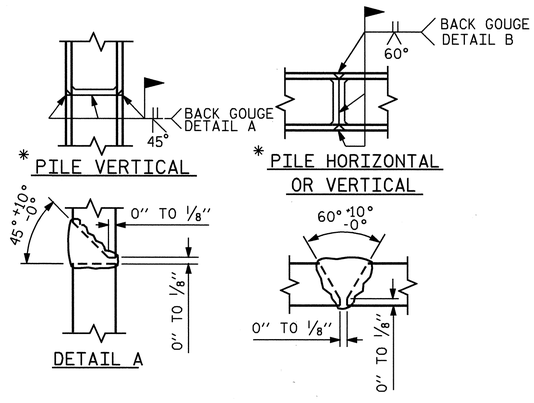


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

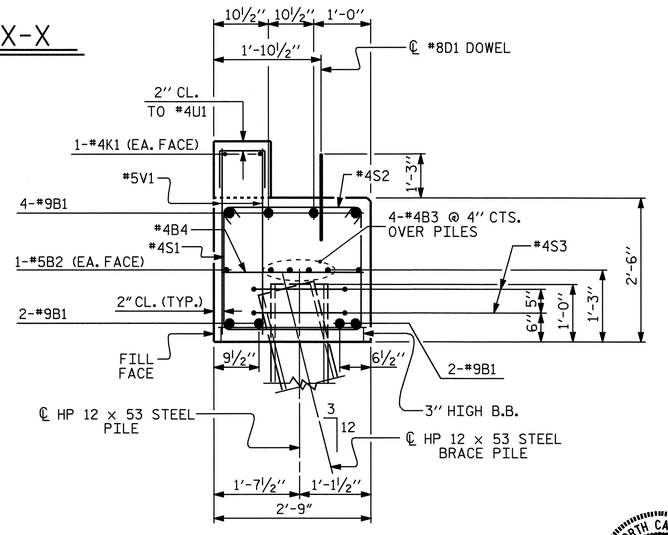
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



* POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS



SECTION THRU CAP

PROJECT NO. B-3853

HALIFAX COUNTY

STATION: 17+42.25 -L-

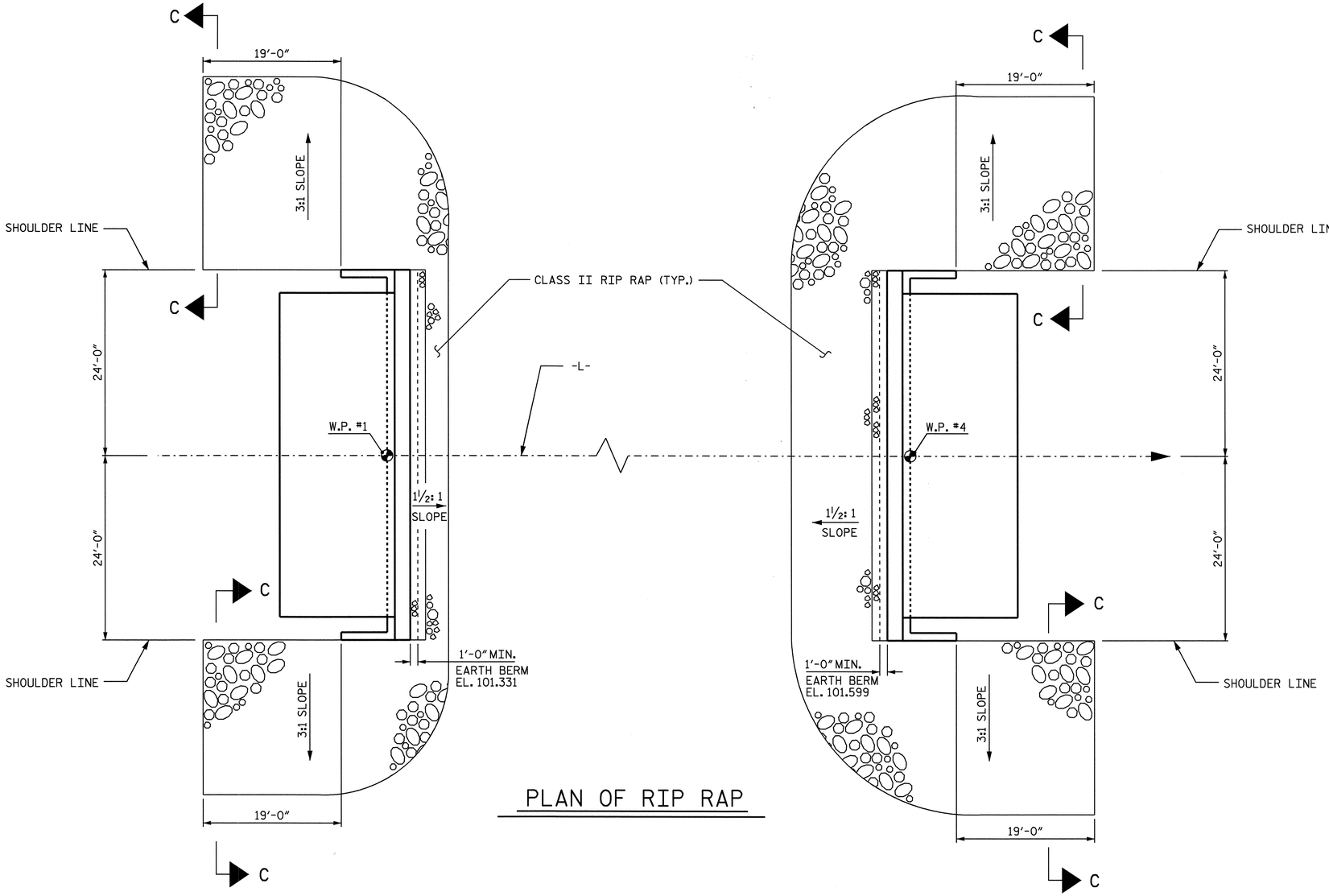
SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

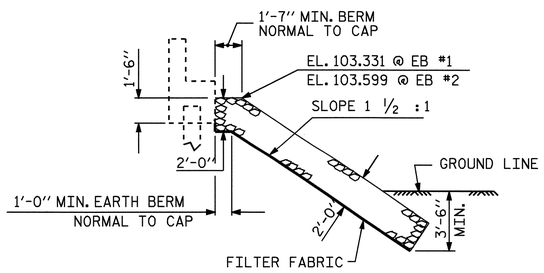
SUBSTRUCTURE
END BENT #2

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

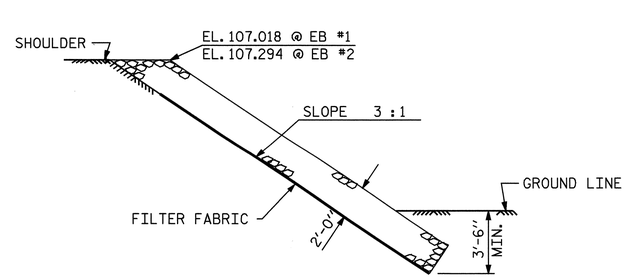
DRAWN BY : H.A. LOCKLEAR DATE : 8-25-05
CHECKED BY : J. P. ADAMS DATE : 3-9-06



PLAN OF RIP RAP



℄ SECTION
BERM RIP RAPPED



SECTION C-C

ESTIMATED QUANTITIES

BRIDGE @ STA. 17+42.25 -L-	RIP RAP CLASS II	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	358	398
END BENT 2	366	406

PROJECT NO. B-3853
HALIFAX COUNTY
STATION: 17+42.25 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

RIP RAP DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 20211 ENGINEER THOMAS G. PAYNE
2/21/07

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

ASSEMBLED BY : A. CHAN	DATE : 9/7/05	
CHECKED BY : KEITH D. LAYNE	DATE : 9/7/05	
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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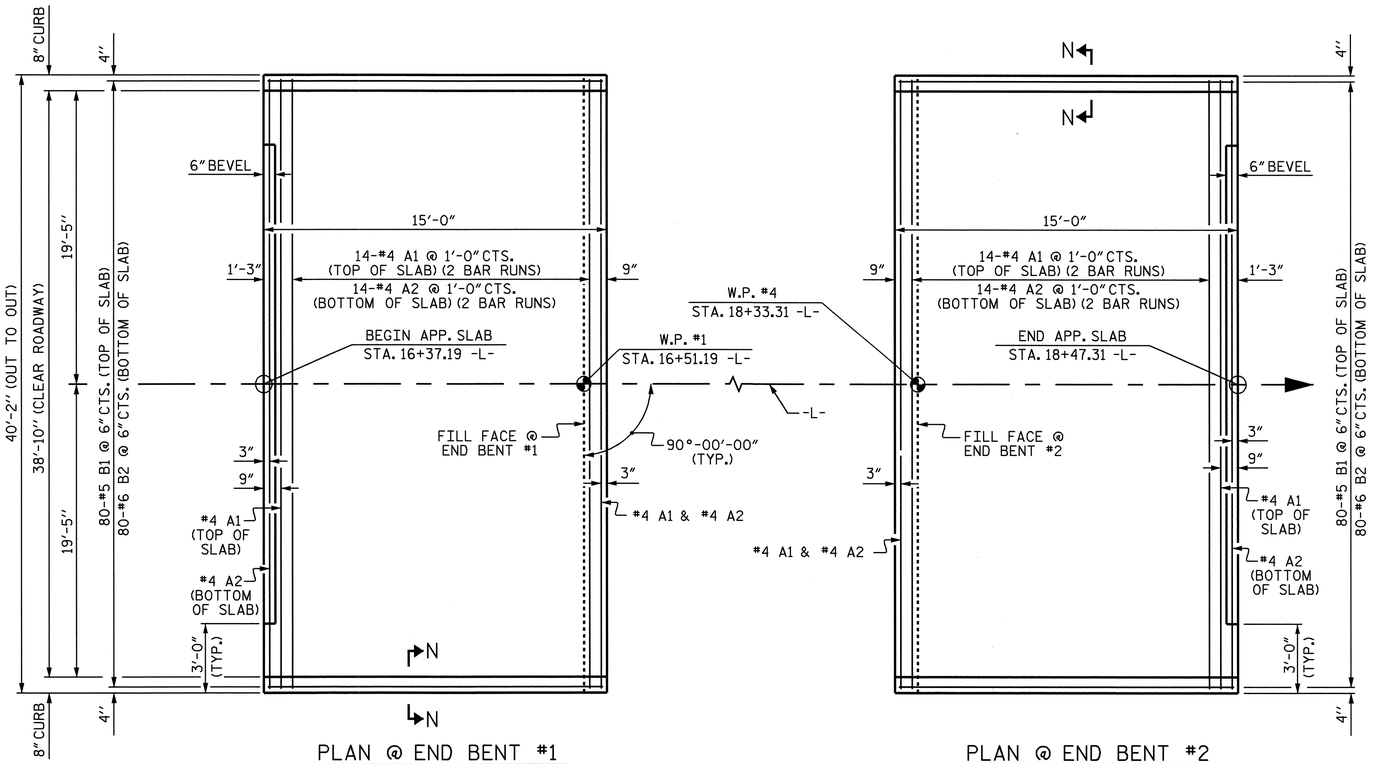


DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

NOTES

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

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

THE 6" COMP. A.B.C. SHALL 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 BOX BEAM UNIT" SHEETS.

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

APPROACH SLAB GROOVING IS NOT REQUIRED.

BILL OF MATERIAL

APPROACH SLAB AT EB #1

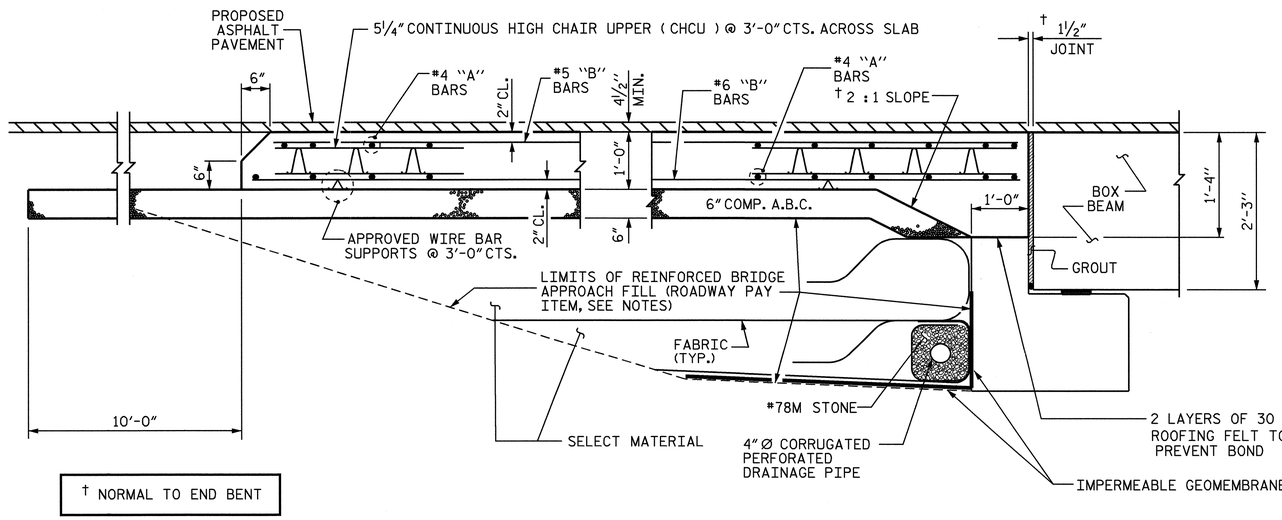
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳A1	32	#4	STR	20'-11"	447
A2	32	#4	STR	20'-10"	445
✳B1	80	#5	STR	14'-2"	1182
B2	80	#6	STR	14'-8"	1762
REINFORCING STEEL				LBS.	2207
✳EPOXY COATED REINFORCING STEEL				LBS.	1629
CLASS AA CONCRETE				C. Y.	23.2

APPROACH SLAB AT EB #2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳A1	32	#4	STR	20'-11"	447
A2	32	#4	STR	20'-10"	445
✳B1	80	#5	STR	14'-2"	1182
B2	80	#6	STR	14'-8"	1762
REINFORCING STEEL				LBS.	2207
✳EPOXY COATED REINFORCING STEEL				LBS.	1629
CLASS AA CONCRETE				C. Y.	23.2

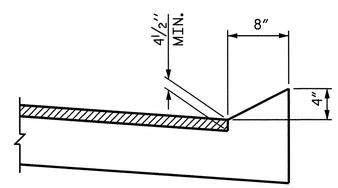
SPLICE

BAR	LENGTH
#4A1	2'-0"
#4A2	1'-9"

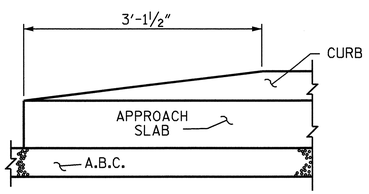


† NORMAL TO END BENT

SECTION THRU SLAB



SECTION N-N



END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS

PROJECT NO. B-3853

HALIFAX COUNTY

STATION: 17+42.25 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE BOX BEAM

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

STD. NO. BAS7

NORTH CAROLINA PROFESSIONAL SEAL 20211 ENGINEER THOMAS G. PAYNE
2/21/07

ASSEMBLED BY : J.P. ADAMS		DATE : 8/24/06	
CHECKED BY : S.H. SOCKWELL		DATE : 8/30/06	
DRAWN BY : FCJ 6/87	REV. 7/10/01	LES/RDR	
CHECKED BY : EGA 6/87	REV. 5/1/03R	RWW/JTE	
	REV. 5/1/06	TLA/GM	

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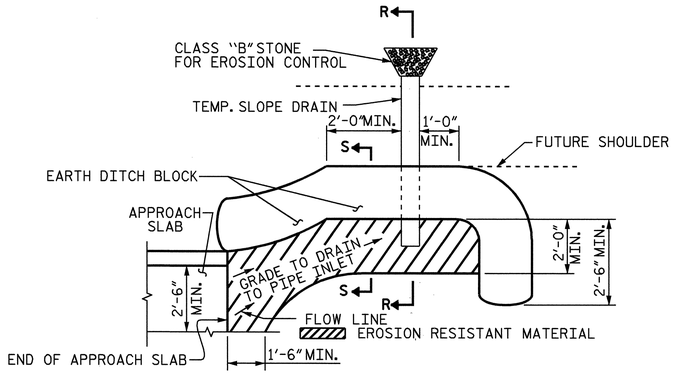
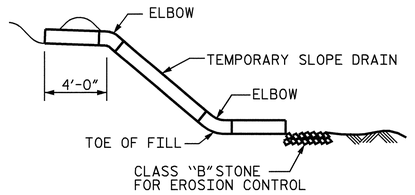
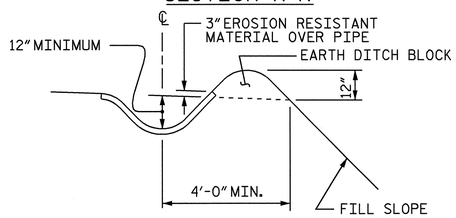


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

PLAN VIEW



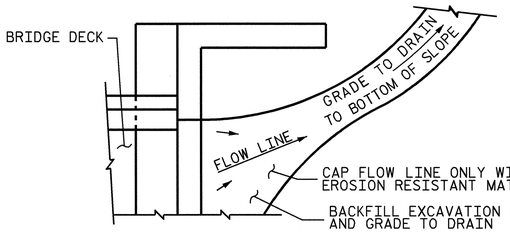
SECTION R-R



SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



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

TEMPORARY DRAINAGE DETAIL

ASSEMBLED BY : J.P. ADAMS		DATE : 8/24/06	
CHECKED BY : S.H. SOCKWELL		DATE : 8/30/06	
DRAWN BY : FCJ 11/88	REV. 10/17/00		RWW/LES
CHECKED BY : ARB 11/88	REV. 5/7/03		RWW/JTE
	REV. 5/1/06		TLA/GM

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PROJECT NO. B-3853

HALIFAX COUNTY

STATION: 17+42.25 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 20211 ENGINEER THOMAS G. LAYNE
2/21/07

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

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.

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