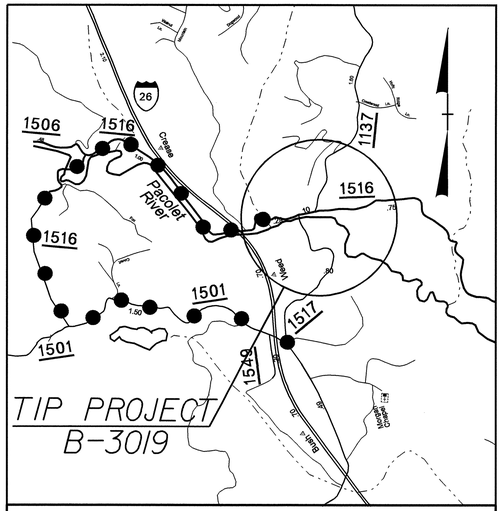
TIP PROJECT: B-3019

CONTRACT: C201784

STRUCTURE



VICINITY MAP

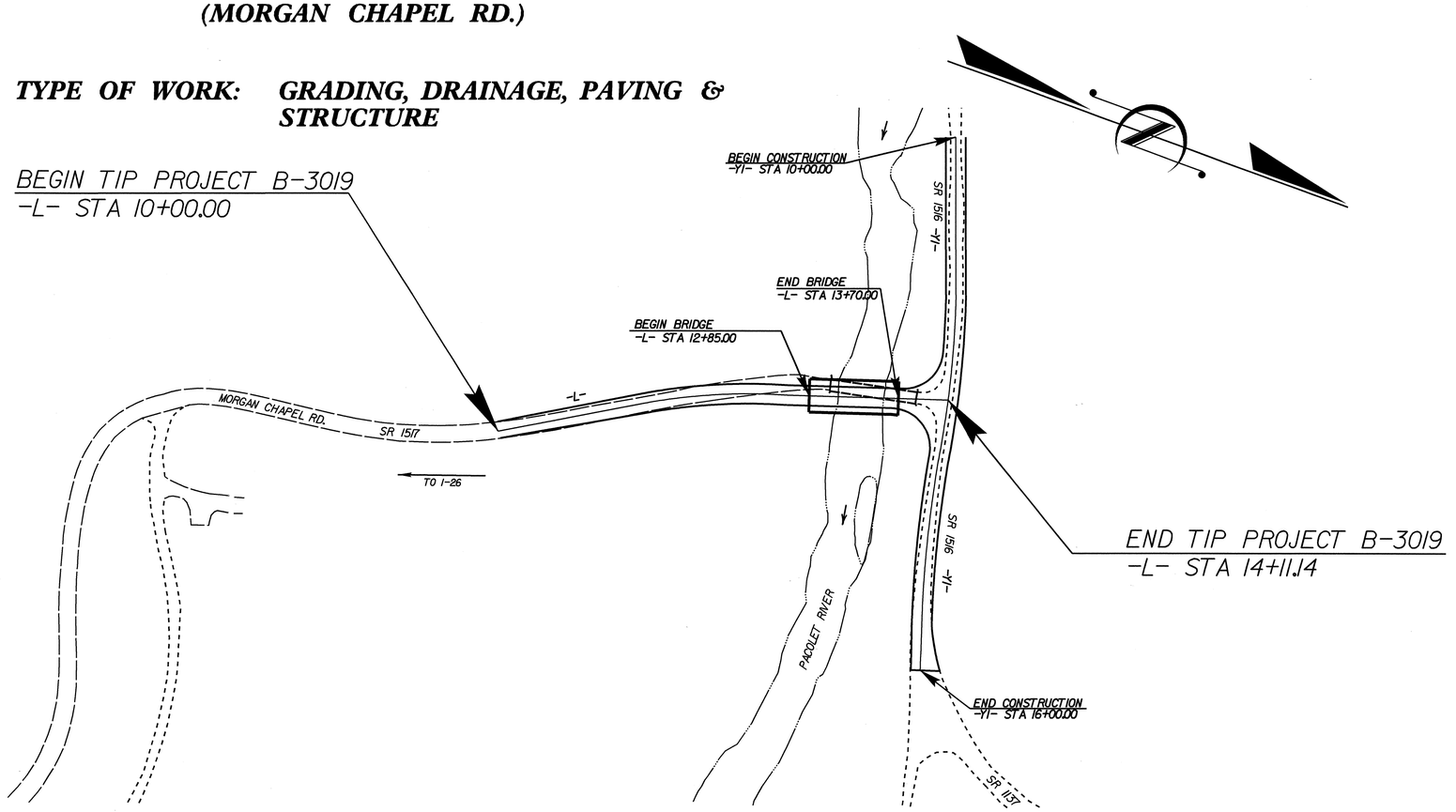
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

POLK COUNTY

STATE	STATE PROJECT REFERENCE NO.		
N.C.	B-3019		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
32815.1.1	BRZ-1517(1)	PE	
32815.3.1	BRZ-1517(1)	ROW, UTIL.	
32815.2.2	BRZ-1517(1)	CONST.	

LOCATION: ***BRIDGE NO. 19 OVER PACOLET RIVER ON SR 1517 (MORGAN CHAPEL RD.)***

TYPE OF WORK: ***GRADING, DRAINAGE, PAVING & STRUCTURE***



DESIGN DATA

ADT 2008	=	200
ADT 2030	=	400
DHV	=	10 %
D	=	60 %
T	=	2 % *
V	=	40 MPH

* TTST 1% DUAL 1%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-3019 = 0.062 MI

LENGTH STRUCTURE TIP PROJECT B-3019 = 0.016 MI

TOTAL LENGTH TIP PROJECT B-3019 = 0.078 MI

2006 STANDARDS SPECIFICATION

LETTING DATE:

MARCH 18, 2008

Prepared In the Office of:

DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
1000 Birch Ridge Drive Raleigh, N.C. 27610

B. S. COX, P.E.
PROJECT ENGINEER

D. E. PETREY, P.E.
PROJECT DESIGN ENGINEER

STRUCTURE DESIGN UNIT

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE HIGHWAY ENGINEER - DESIGN

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED FOR
DIVISION ADMINISTRATOR *DATE*

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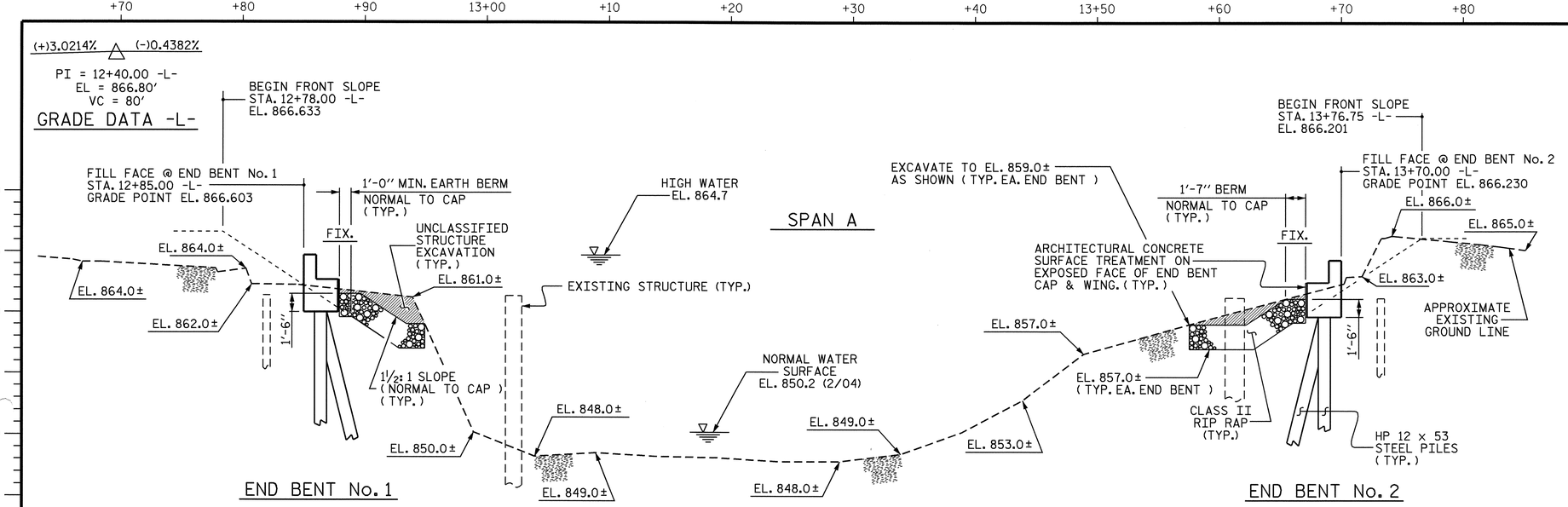
F.A. PROJECT No. BRZ-1517 (1)



SECTION ALONG ℄ SURVEY -L-

SECTIONS AT END BENTS TAKEN AT RIGHT ANGLES TO END BENTS

HYDROGRAPHIC DATA

DESIGN DISCHARGE---------- 5600 CFS
FREQUENCY OF DESIGN FLOOD------- 25 YR.
DESIGN HIGH WATER ELEVATION---- 862.6
DRAINAGE AREA------------------- 46.1 SQ.MI.
BASIC DISCHARGE (Q100)--------- 8200 CFS
BASIC HIGH WATER ELEVATION----- 864.7

OVERTOPPING FLOOD DATA
OVERTOPPING DISCHARGE---------- 8700 CFS
FREQUENCY OF OVERTOPPING FLOOD- 100 YRS+
OVERTOPPING FLOOD ELEVATION---- 865.1

NOTES:

ASSUMED LIVE LOAD = HS20 OR ALTERNATE LOADING, EXCEPT THAT THE BOX BEAM UNITS HAVE BEEN DESIGNED FOR HS25.

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 B.

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 SPANS OF 1 @ 20'-3", 1 @ 60'-0" AND 1 @ 12'-3" WITH A CLEAR ROADWAY WIDTH OF 11'-0" AND NEW TIMBER FLOOR ON I-BEAMS & STEEL PONY TRUSS ON TIMBER CAP/ TIMBER POST & SILL END BENTS AND REINFORCED CONCRETE CAPS/ RUBBLE MASONRY BENTS AND LOCATED AT THE SITE OF THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT. SEE SPECIAL PROVISIONS FOR REMOVAL OF EXISTING STRUCTURE AND RESTORATION AND RE-ERECTION OF TRUSS.

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 20 FT. EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION.

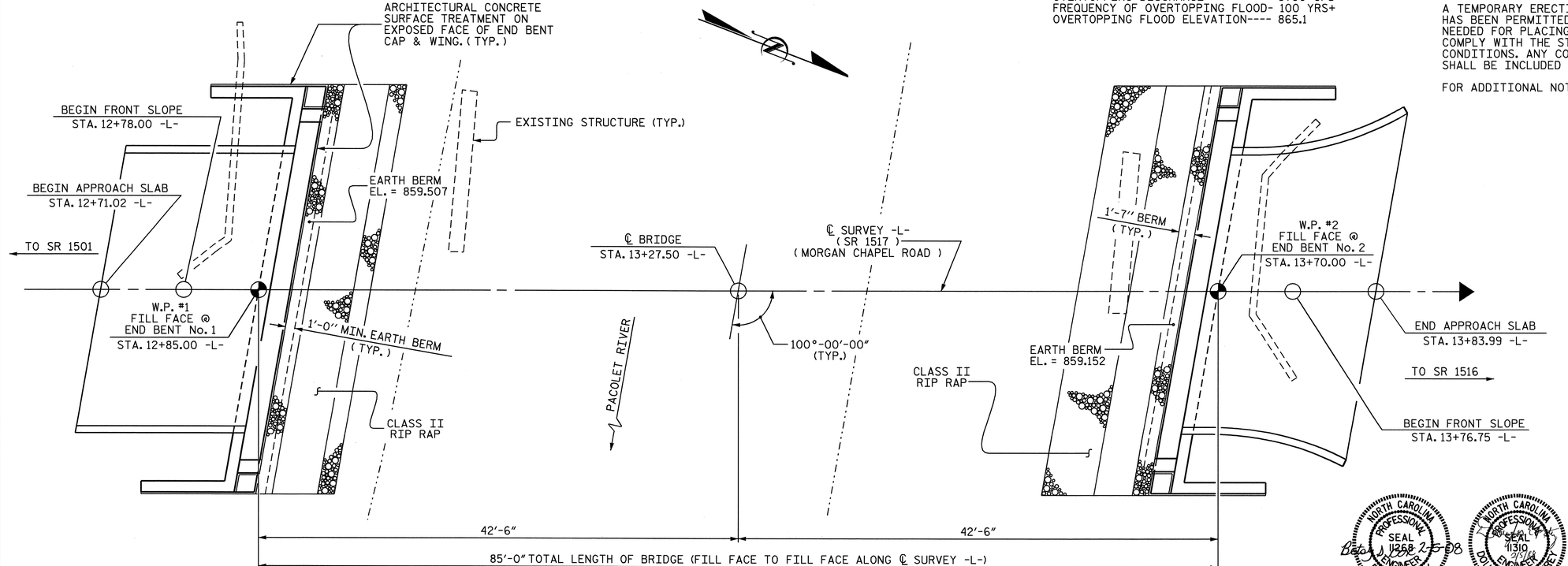
THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED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

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

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

A TEMPORARY ERECTION BENT LOCATED MID-SPAN OF THE PROPOSED BRIDGE HAS BEEN PERMITTED SHOULD THE CONTRACTOR DETERMINE THE BENT IS NEEDED FOR PLACING THE BOX BEAMS. THE TEMPORARY ERECTION BENT SHALL COMPLY WITH THE STANDARD SPECIFICATIONS AND WITH ALL PERMIT CONDITIONS. ANY COST ASSOCIATED WITH THE TEMPORARY ERECTION BENT SHALL BE INCLUDED IN THE VARIOUS STRUCTURE PAY ITEMS.

FOR ADDITIONAL NOTES, SEE SHEET 2 OF 2.



PLAN

PILES NOT SHOWN FOR CLARITY

NORTH CAROLINA PROFESSIONAL SEAL 11258 ENGINEER BETSY S. COX — 2-5-08

NORTH CAROLINA PROFESSIONAL SEAL 11310 ENGINEER DOUGLAS E. PETREY — 2/5/08

DRAWN BY : B.N. GRADY / JMB DATE : 12-07
CHECKED BY : D.E. PETREY DATE : 1-7-08

05-FEB-2008 08:38
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PROJECT NO. B-3019
POLK COUNTY
STATION: 13+27.50 -L-

SHEET 1 OF 2 REPLACES BRIDGE #19

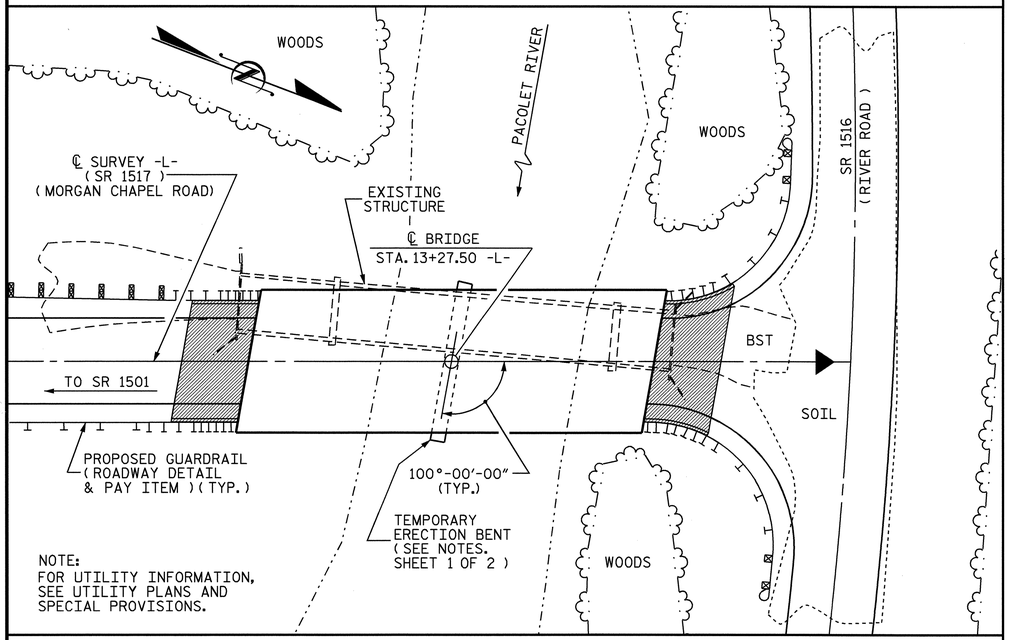
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

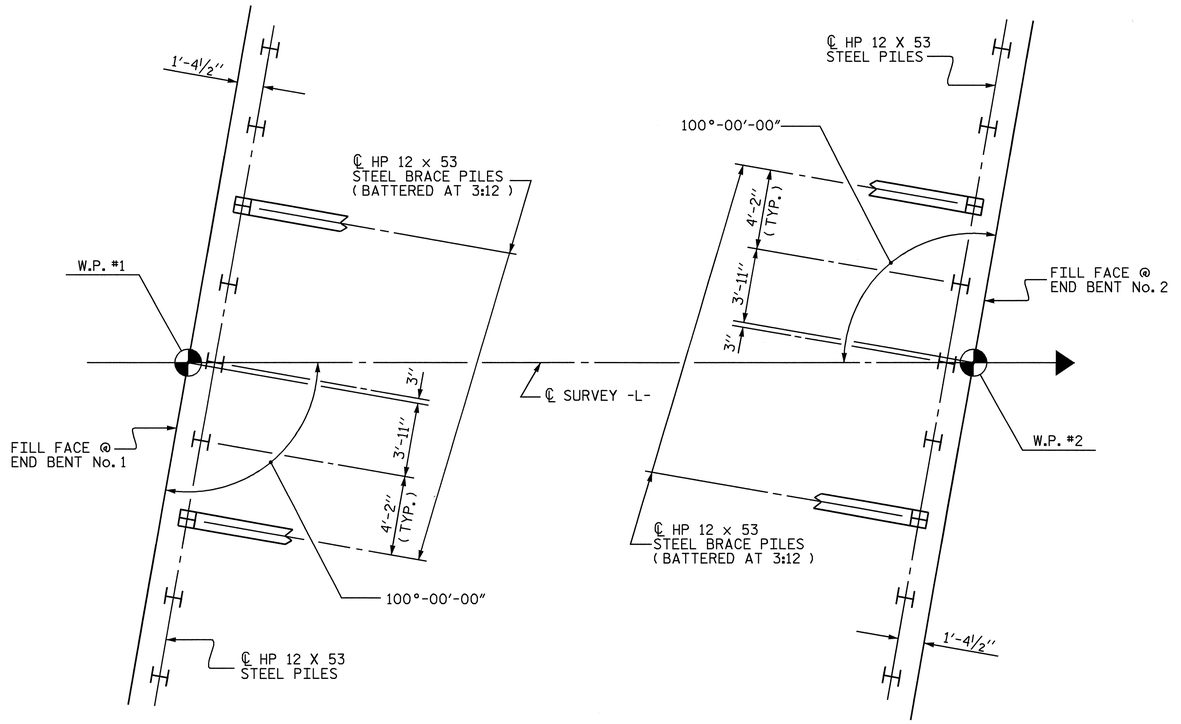
FOR BRIDGE OVER PACOLET RIVER ON SR 1517 (MORGAN CHAPEL ROAD) BETWEEN SR 1501 AND SR 1516

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

BM #1: 8" SPIKE SET IN ROOT OF 10" BRADFORD PEAR TREE 10' LEFT OF STA. 5+01 -BL-, EL. 863.77



LOCATION SKETCH



END BENT No. 1 END BENT No. 2

FOUNDATION LAYOUT

(DIMENSIONS LOCATING PILES ARE TO THE CENTERLINE OF THE PILE AT THE BOTTOM OF THE CAP)

NOTES : (CONTINUED FROM SHEET 1 OF 2)

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.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 13+27.50 -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.

DRIVE PILES AT END BENT No. 1 AND END BENT No. 2 TO A BEARING CAPACITY OF 120 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 No. 1 AND END BENT No. 2 IS 60 TONS PER PILE.

FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

FOR RESTORATION AND RE-ERECTION OF TRUSS, SEE SPECIAL PROVISIONS.

FOR ARCHITECTURAL CONCRETE SURFACE TREATMENT, SEE SPECIAL PROVISIONS.

FOR CONCRETE PENETRATING STAIN, SEE SPECIAL PROVISIONS.

CONTRACTOR SHALL SUBMIT IN ONE PACKAGE TO THE ENGINEER FOR HIS APPROVAL THE ANODIZING COLOR(S) FOR THE 2 BAR METAL RAILS AND THE MATCHING PAINT COLOR(S) PROPOSED FOR THE RESTORED TRUSS SIDE MEMBERS, THE TRUSS CONNECTIONS TO THE CONCRETE PEDESTALS, ANODIZED RAIL CONNECTION PAINT, THE ROADWAY PAINTED GALVANIZED STEEL BEAM GUARDRAIL AND THE CONCRETE PENETRATING STAIN COLOR(S). SEE RESTORATION AND RE-ERECTION OF TRUSS SPECIAL PROVISION AND ROADWAY PAINTED GALVANIZED STEEL BEAM GUARDRAIL SPECIAL PROVISION.

THE CONTRACTOR, AT HIS OPTION, MAY SUBMIT TO THE ENGINEER FOR HIS APPROVAL PLANS AND DETAILS FOR PROVIDING NEW TRUSS SIDE MEMBERS IN LIEU OF RESTORING THE EXISTING TRUSS SIDE MEMBERS. SEE RESTORATION AND RE-ERECTION OF TRUSS SPECIAL PROVISION.

NORTH CAROLINA PROFESSIONAL SEAL 11310 ENGINEER DOUGLAS E. PETREY 2/4/08

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	HP 12 x 53 STEEL PILES		TWO BAR METAL RAIL	1'-6" x 2'-10" CONCRETE PARAPET	RIP RAP CLASS II (2'-0" THICK)	ELASTOMERIC BEARINGS	3'-0" x 3'-3" PRESTRESSED CONCRETE BOX BEAMS		ARCHITECTURAL CONCRETE SURFACE TREATMENT	RESTORATION AND RE-ERECTION OF TRUSS
	LUMP SUM	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	No.	LIN. FT.	LIN. FT.	LIN. FT.	TONS	LUMP SUM	No.	LIN.FT.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE								149.23	165.42			10	827.08		
END BENT No. 1			18.7		2,531	9	180			35					
END BENT No. 2			18.7		2,531	9	250			40					
TOTAL	LUMP SUM	LUMP SUM	37.4	LUMP SUM	5,062	18	430	149.23	165.42	75	LUMP SUM	10	827.08	LUMP SUM	LUMP SUM

PROJECT NO. B-3019

POLK COUNTY

STATION: 13+27.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE OVER PACOLET RIVER ON SR 1517 (MORGAN CHAPEL ROAD) BETWEEN SR 1501 AND SR 1516

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

DRAWN BY : B.N. GRADY / JMB DATE : 12-07
CHECKED BY : D.E. PETREY DATE : 1-7-08

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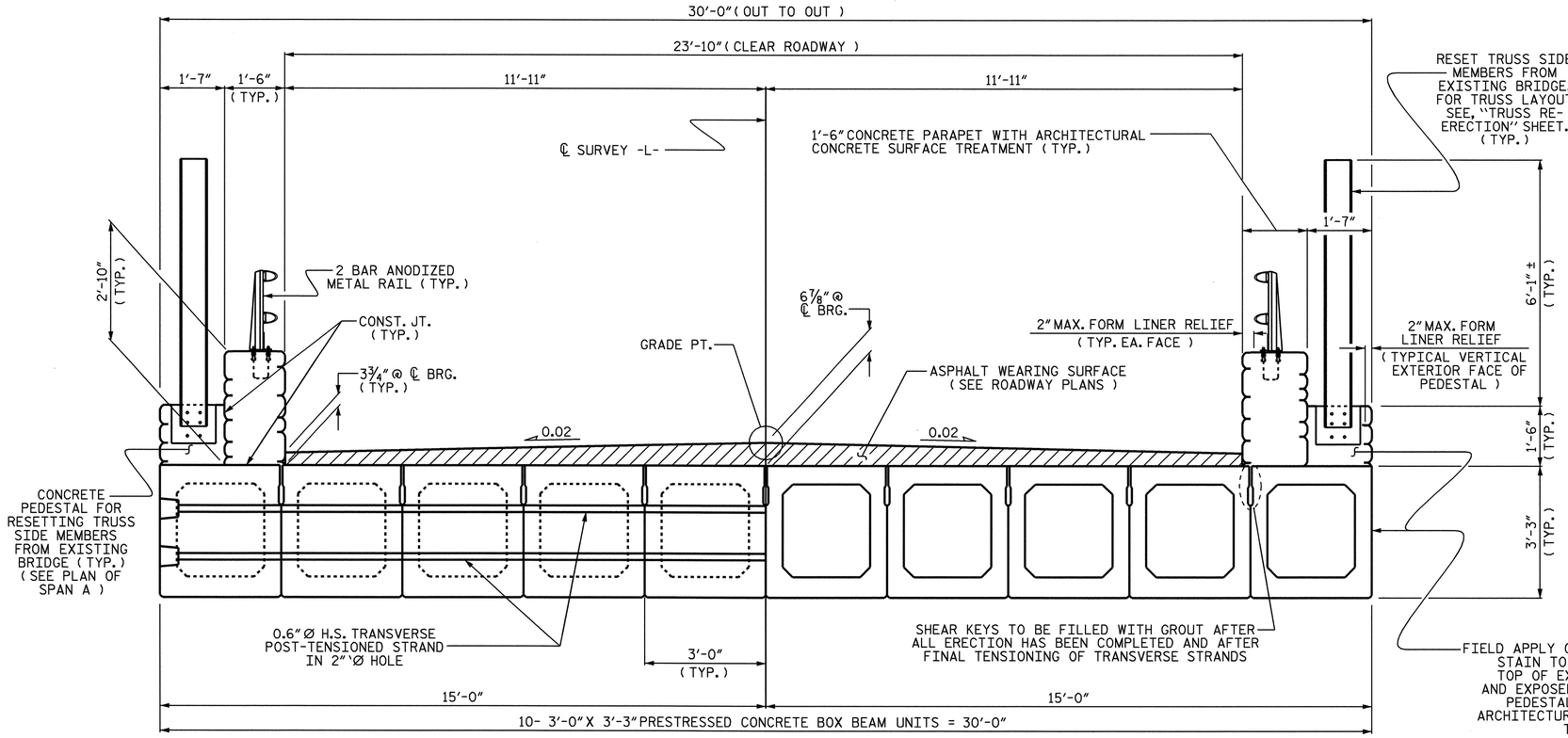


HALF-SECTION AT INTERMEDIATE DIAPHRAGMS

HALF-SECTION AT VOIDS

TYPICAL SECTION

NOTES

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

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

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

THE 2½" Ø DOWEL HOLES AT FIXED ENDS OF BOX BEAM SECTIONS SHALL BE FILLED WITH 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 4800 PSI.

ALL REINFORCING STEEL IN PARAPETS & PEDESTALS 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.

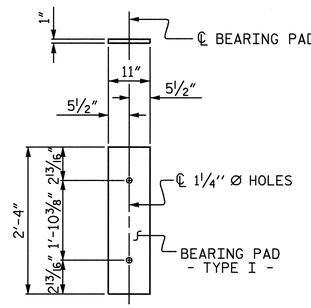
THE LOCATION OF THE VOID DRAINS MAY BE SHIFTED SLIGHTLY WHERE NECESSARY TO CLEAR PRESTRESSING STRANDS OR TRANSVERSE REINFORCING STEEL.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

BEARING PAD SHALL BE 60 DUROMETER HARDNESS.

FOR CONCRETE PENETRATING STAIN, SEE SPECIAL PROVISONS.

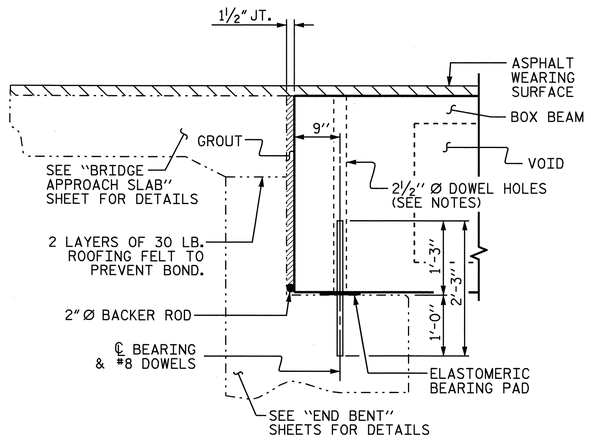


FIXED END
(TYPE I - 20 REQ'D)

ELASTOMERIC BEARING DETAILS

BEARING PAD SHALL BE 60 DUROMETER HARDNESS

FIXED END



SECTION AT END BENT

PROJECT NO. B-3019

POLK COUNTY

STATION: 13+27.50-L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

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

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

NORTH CAROLINA PROFESSIONAL SEAL 11310 ENGINEER DOUGLAS E. PETREY

ASSEMBLED BY : N. PIERCE	DATE : 05-07	DRAWN BY : TLA 5/05	ADDED 7/11/05R REV. 5/1/06 TLA/GM
CHECKED BY : J.M. BRITT	DATE : 07-07	CHECKED BY : GM 6/05	

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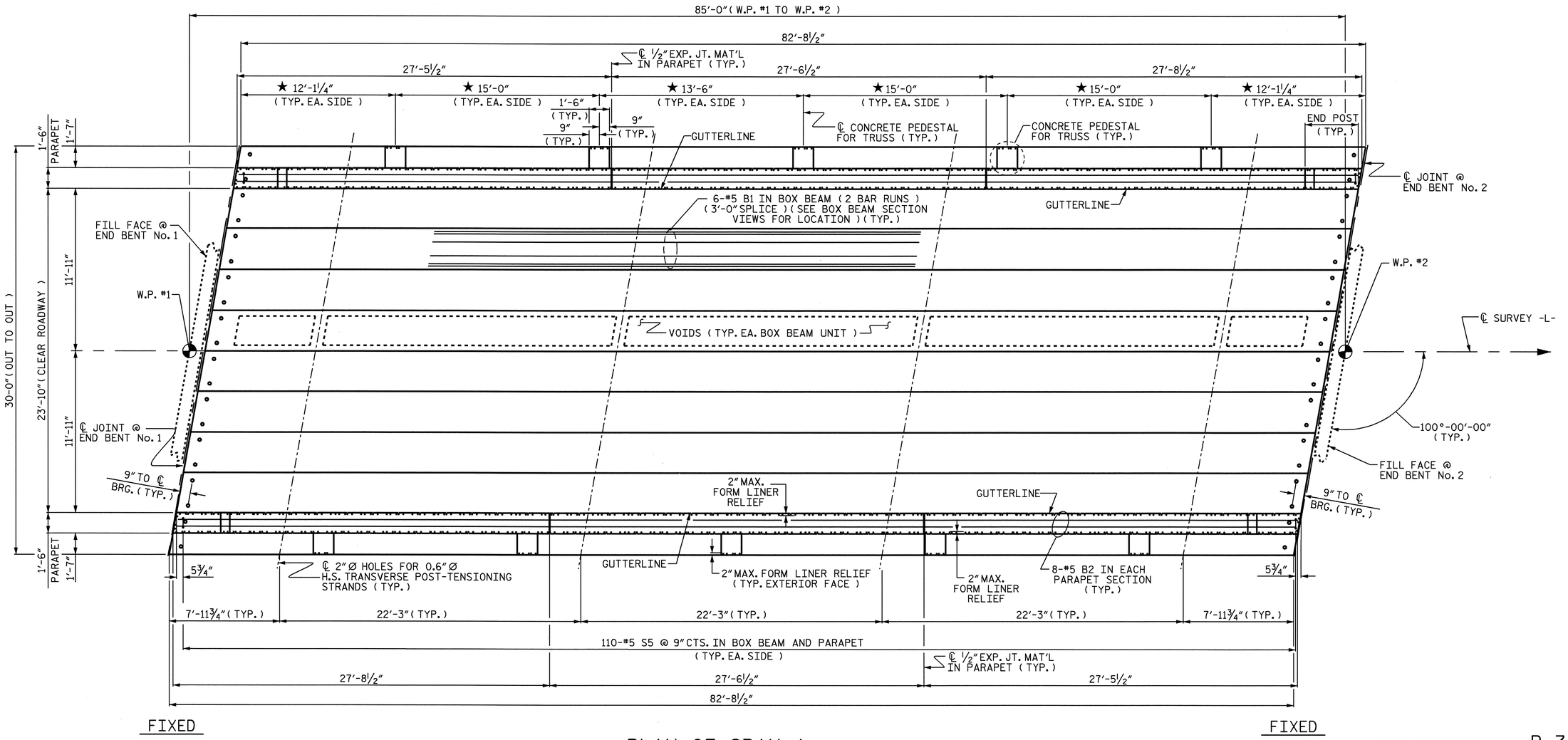
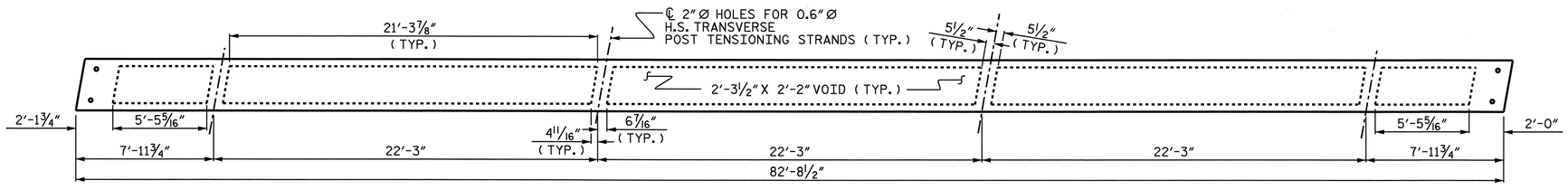
STD. NO. PCBB1

NOTES:

★ CONCRETE PEDESTALS MAY NEED TO BE SHIFTED TO MATCH LAYOUT SHOWN ON "TRUSS RE-ERECTION" SHEET. CONTRACTOR TO VERIFY LOCATION OF PEDESTALS PRIOR TO FABRICATION OF EXTERIOR BOX BEAM UNITS. SEE TRUSS RE-ERECTION SHEET.



PLAN OF SPAN A



PLAN OF BOX BEAM UNIT

PROJECT NO. B-3019

POLK COUNTY

STATION: 13+27.50-L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
PLAN OF SPAN A

NORTH CAROLINA PROFESSIONAL SEAL 11310 ENGINEER DOUGLAS E. PETREE

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

DRAWN BY : N. PIERCE DATE : 05-07
CHECKED BY : J.M. BRITT DATE : 07-07

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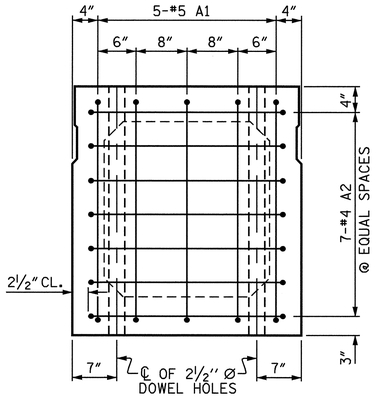
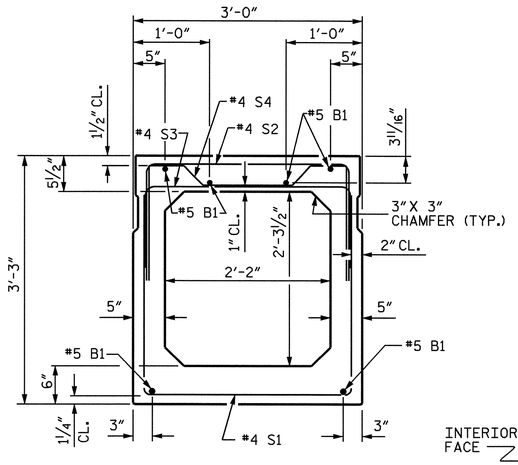


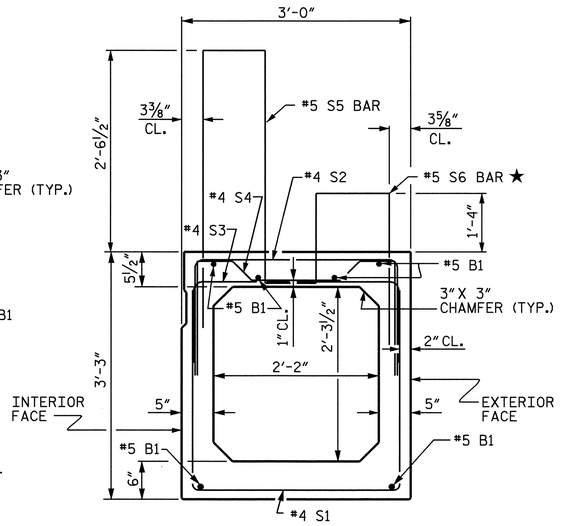
END ELEVATION

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.)



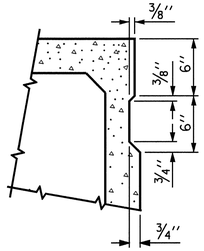
INTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)



EXTERIOR BOX BEAM SECTION

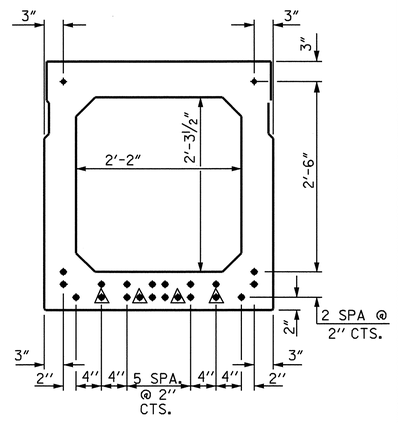
(STRAND LAYOUT NOT SHOWN)



SHEAR KEY DETAIL

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

0.6" Ø LOW RELAXATION STRAND LAYOUT



TYPICAL STRAND LOCATION

(22 STRANDS REQUIRED)

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

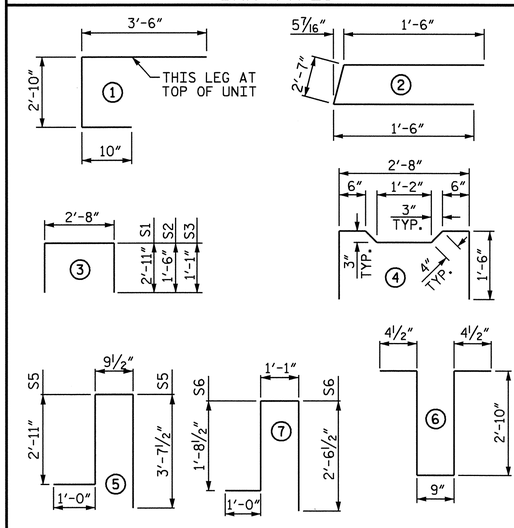
DEBONDING LEGEND

● FULLY BONDED STRANDS

△● STRANDS DEBONDED FOR 4'-0" FROM END OF BEAM

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

BAR TYPES

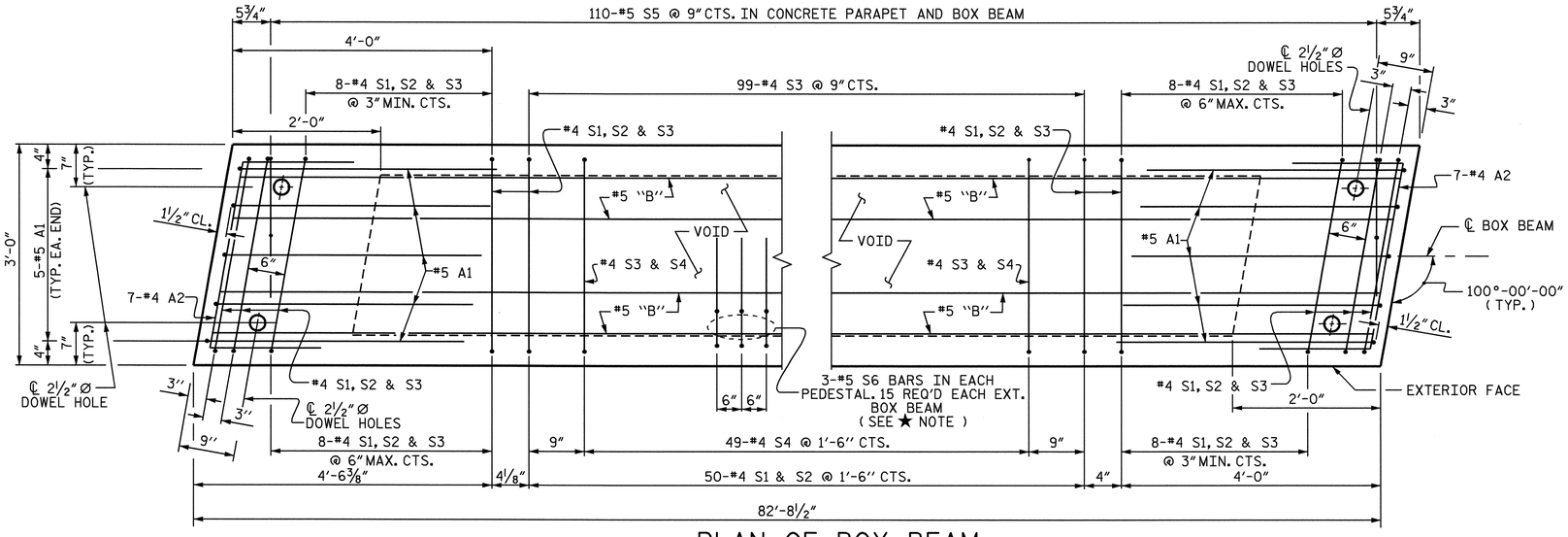


ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR ONE BOX BEAM SECTION

				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
A1	10	#5	1	7'-2"	75	7'-2"	75
A2	38	#4	2	5'-7"	142	5'-7"	142
B1	12	#5	STR	42'-9"	535	42'-9"	535
K1	12	#4	6	7'-2"	57	7'-2"	57
K2	8	#4	STR	2'-7"	14	2'-7"	14
S1	70	#4	3	8'-6"	397	8'-6"	397
S2	70	#4	3	5'-8"	265	5'-8"	265
S3	119	#4	3	4'-10"	384	4'-10"	384
S4	49	#4	4	5'-10"	191	5'-10"	191
✱ S5	110	#5	5	8'-4"	956	--	--
✱ S6	15	#5	7	6'-4"	99	--	--
REINFORCING STEEL					2060 LBS.		2060 LBS.
✱EPOXY COATED REINF. STEEL					1055 LBS.		
6000 P.S.I. CONCRETE					16.2 CU. YDS.		16.2 CU. YDS.
0.6" Ø L.R. STRANDS					No. 22		No. 22

NOTE:
★ BEFORE FABRICATION OF EXTERIOR BOX BEAM UNITS, THE CONTRACTOR SHALL VERIFY THE LOCATION OF THE CONCRETE PEDESTAL FOR TRUSS RE-ERECTION AND LOCATE THE POSITION OF THE 3-#5 S6 BARS PER PEDESTAL TO MAINTAIN 2" MIN. COVER AND AVOID INTERFERENCE WITH ATTACHMENT BOLTS. FOR DETAILS, NOTES & APPROXIMATE LOCATIONS OF CONCRETE PEDESTALS, SEE "TRUSS RE-ERECTION" SHEET.



PLAN OF BOX BEAM

RIGHT EXTERIOR UNIT SHOWN, LEFT EXTERIOR UNIT SIMILAR EXCEPT LOCATIONS OF #5 S6 AND #5 S5, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S5 AND S6 BARS. FOR LOCATION OF DIAPHRAGMS, SEE PLAN OF SPANS. FOR REINFORCING STEEL IN DIAPHRAGMS, SEE DIAPHRAGM DETAILS.

PROJECT NO. B-3019

POLK COUNTY

STATION: 13+27.50-L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

3'-0" X 3'-3" PRESTRESSED CONCRETE BOX BEAM UNIT SPAN "A"

NORTH CAROLINA PROFESSIONAL SEAL 11310 ENGINEER DOUGLAS E. PETREY

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

ASSEMBLED BY : N. PIERCE	DATE : 05-07
CHECKED BY : J.M. BRITT	DATE : 08-07
DRAWN BY : TLA 5/05	ADDED 7/11/05
CHECKED BY : GM 6/05	REV. 5/1/06 TLA/GM

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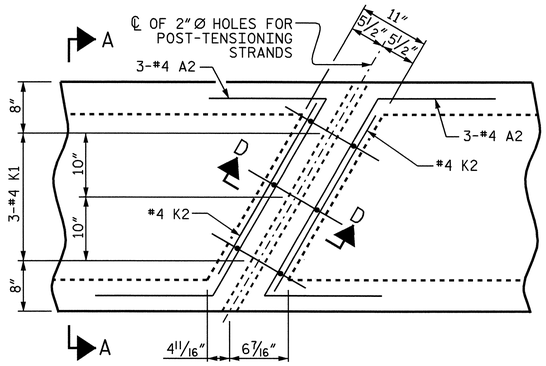
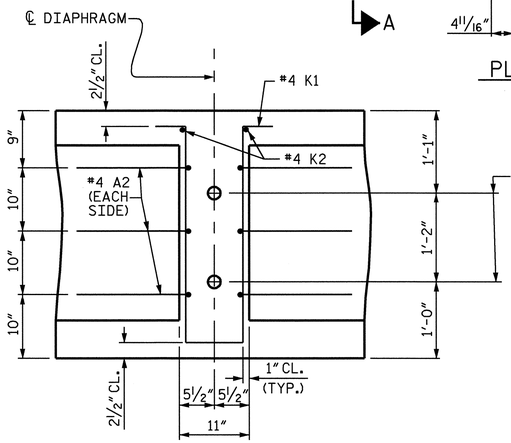
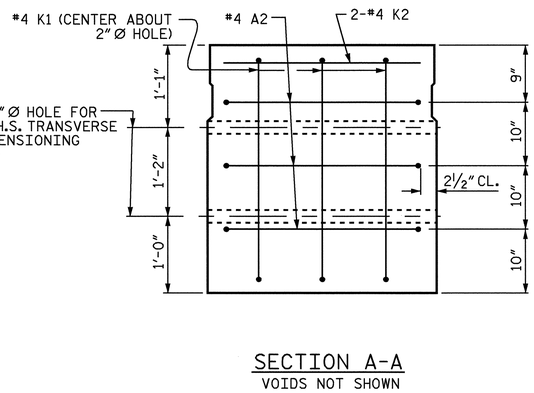
(SHT 6) STD. NO. PCBB6



PLAN



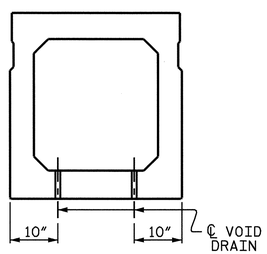
SECTION D-D



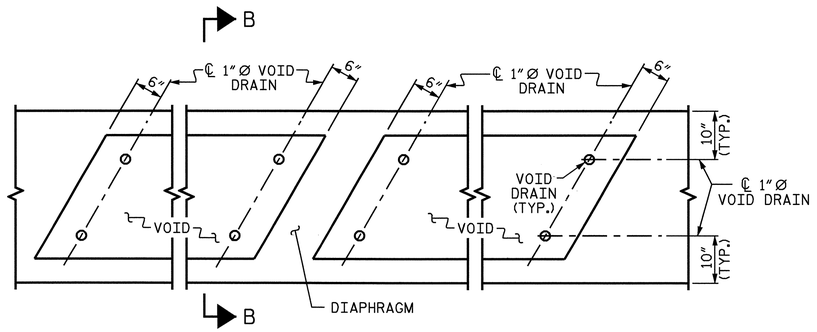
SECTION A-A
VOIDS NOT SHOWN

DOUBLE DIAPHRAGM DETAILS

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



SECTION B-B

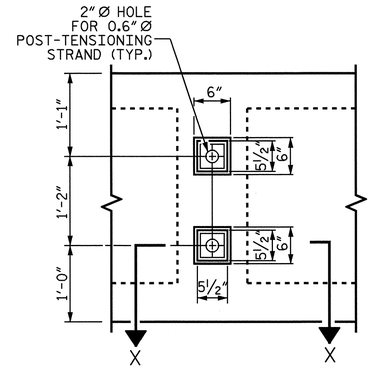


PART PLAN

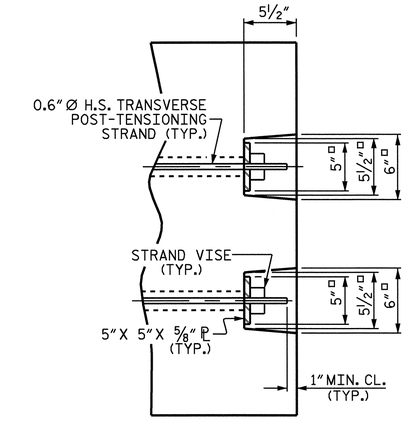
VOID DRAIN DETAILS

(DIMENSIONS SHOWN ARE TYPICAL FOR EACH VOID)

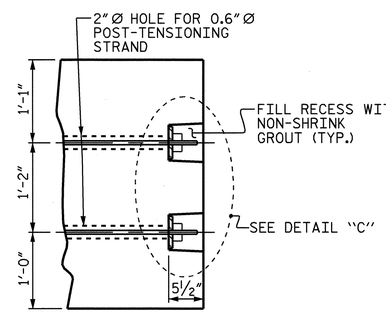
BOX BEAMS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
SPAN A			
EXTERIOR B.B.	2	82'-8½"	165'-5"
INTERIOR B.B.	8	82'-8½"	661'-8"
TOTAL	10	——	827.08'



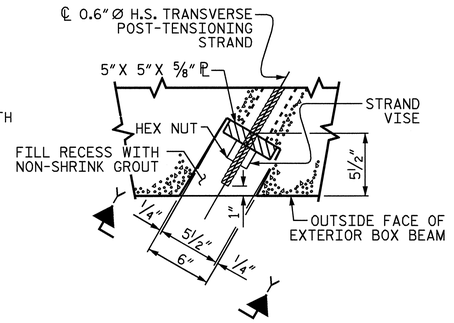
VIEW Y-Y
SHOWING ELEVATION VIEW OF GROUTED RECESS



DETAIL "C"



PART SECTION AT RECESS



SECTION X-X

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

DEAD LOAD DEFLECTION AND CAMBER	
	3'-0"x 3'-3"
	0.6"Ø L.R. STRAND
	SPAN A
CAMBER (BEAM ALONE IN PLACE) ↑	2¾"
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD ** ↓	¾"
FINAL CAMBER ↑	2"

** INCLUDES FUTURE WEARING SURFACE

PROJECT NO. B-3019
POLK COUNTY
STATION: 13+27.50-L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			22

NORTH CAROLINA PROFESSIONAL SEAL 11310 ENGINEER DOUGLAS E. PETREE

STD. NO. PCBB7

ASSEMBLED BY : N. PIERCE	DATE : 05-07		
CHECKED BY : J.M. BRITT	DATE : 08-07		
DRAWN BY : TLA 5/05	ADDED 7/11/05		
CHECKED BY : GM 6/05	REV. 5/1/06	TLA/GM	

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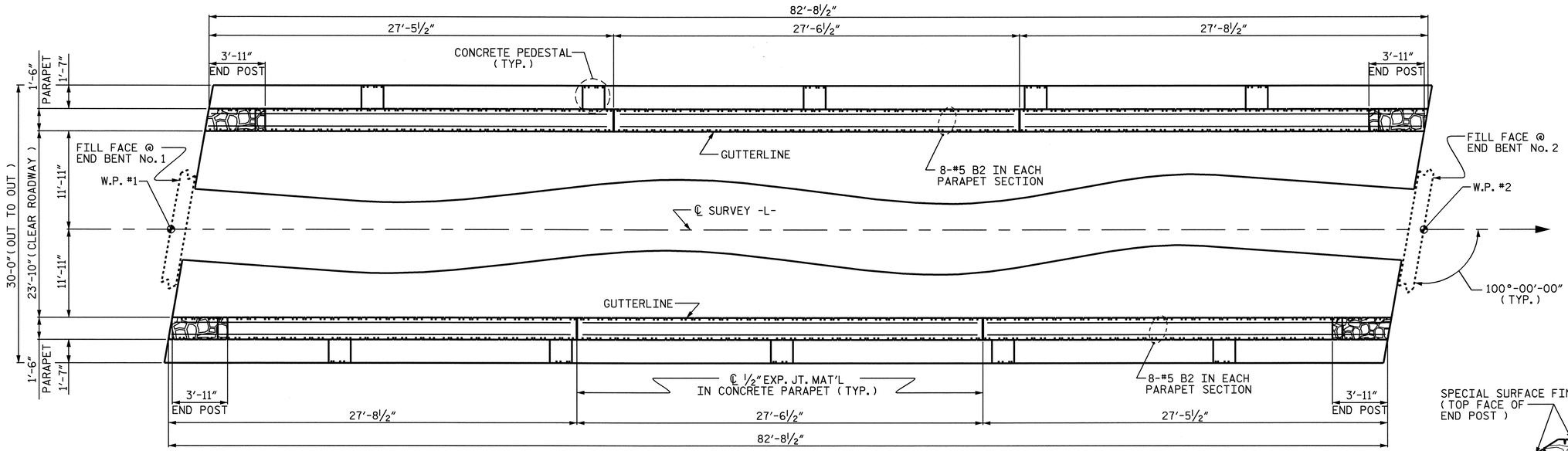
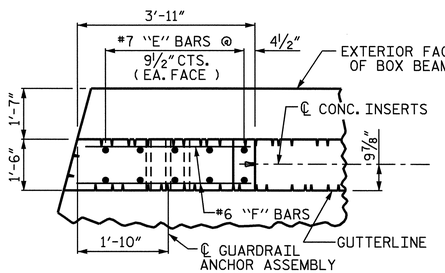
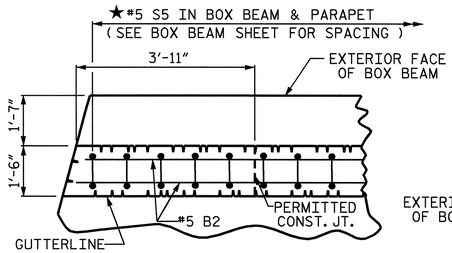


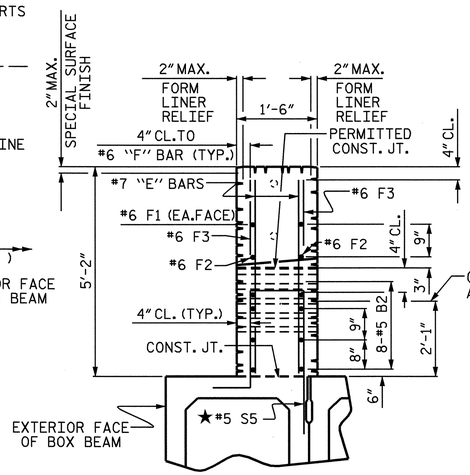
PLAN OF PARAPET



PLAN OF END POST

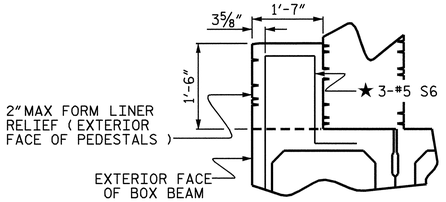


PLAN OF PARAPET



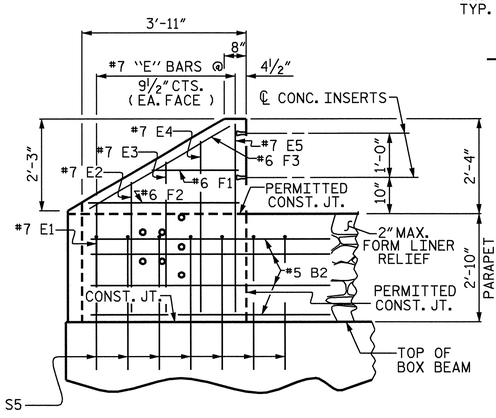
END VIEW

(CONCRETE PEDESTALS NOT SHOWN)

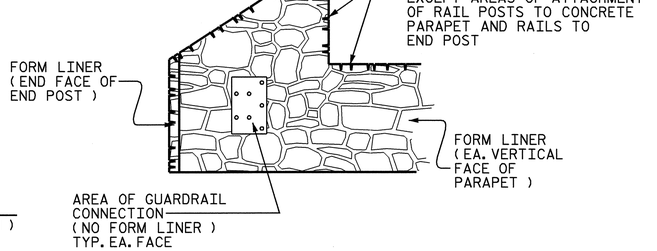


CONCRETE PEDESTAL

(REINFORCING STEEL IN CONCRETE PARAPET NOT SHOWN)



ELEVATION



FORM LINER DETAIL

FOR LOCATION OF GUARDRAIL CONNECTION, SEE "GUARDRAIL ANCHORAGE DETAILS" SHEET

PARAPET AND END POST FOR TWO BAR RAIL

NOTE:
FOR CONCRETE INSERT DETAILS, SEE "RAIL POST SPACING AND END OF RAIL DETAILS" SHEET.

BILL OF MATERIAL

PARAPET AND END POSTS AND PEDESTALS

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳B2	48	#5	STR	27'-1"	1356
✳E1	8	#7	STR	2'-8"	44
✳E2	8	#7	STR	3'-2"	52
✳E3	8	#7	STR	3'-8"	60
✳E4	8	#7	STR	4'-2"	68
✳E5	8	#7	STR	4'-7"	75
✳F1	8	#6	STR	2'-2"	26
✳F2	8	#6	STR	3'-1"	37
✳F3	8	#6	STR	3'-6"	42

✳EPOXY COATED REINF. STEEL = 1760 LBS.	
CLASS AA CONCRETE	
PARAPET & END POSTS	27.3 C.Y.
CLASS AA CONCRETE PEDESTALS	1.4 C.Y.
CONCRETE PARAPET	165.42 L.F.

✳THESE BARS ARE EPOXY COATED

NOTES:
★ #5 S5 AND #5 S6 BARS ARE INCLUDED IN THE BILL OF MATERIAL FOR BOX BEAM SECTION.

THE COST OF THE CONCRETE PEDESTALS COMPLETE IN PLACE ARE INCLUDED IN THE LINEAR FOOT PRICE BID FOR CONCRETE PARAPET.

THE COST OF THE FORM LINERS AND SPECIAL SURFACE FINISH ARE INCLUDED IN THE LUMP SUM PRICE BID FOR ARCHITECTURAL CONCRETE SURFACE TREATMENT.

PROJECT NO. B-3019
POLK COUNTY
STATION: 13+27.50-L-

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CONCRETE PARAPET DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			22

DRAWN BY : N. PIERCE DATE : 05-07
CHECKED BY : J.M. BRITT DATE : 08-07

NORTH CAROLINA PROFESSIONAL SEAL 11310 ENGINEER DOUGLAS E. PETREY

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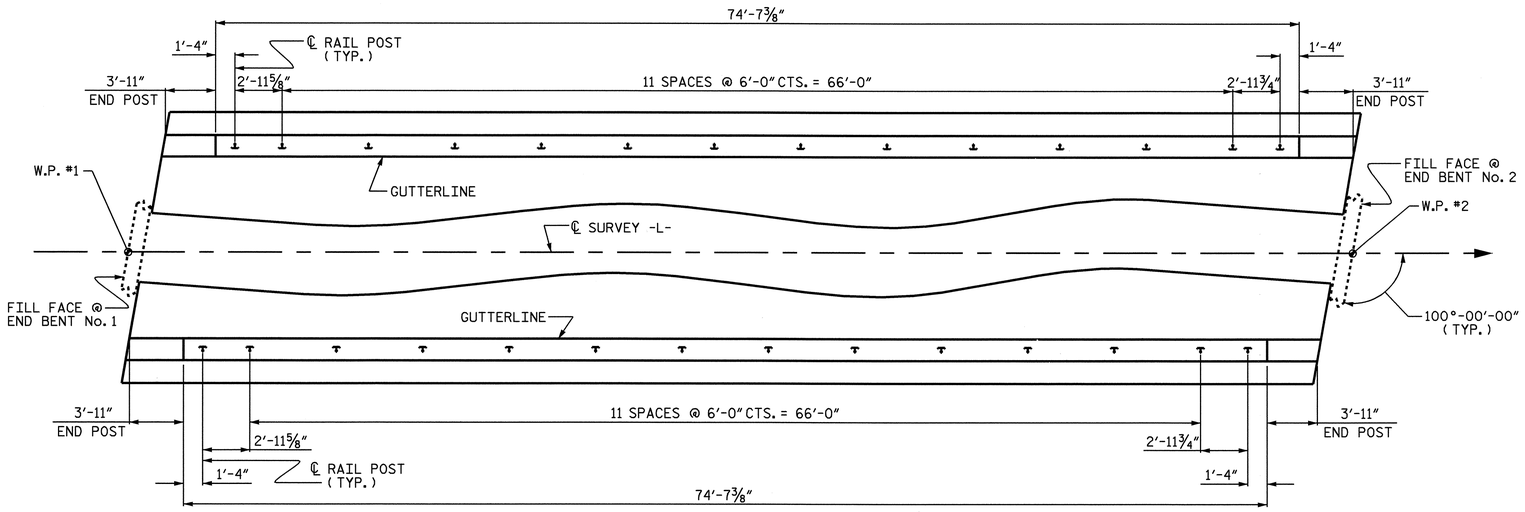
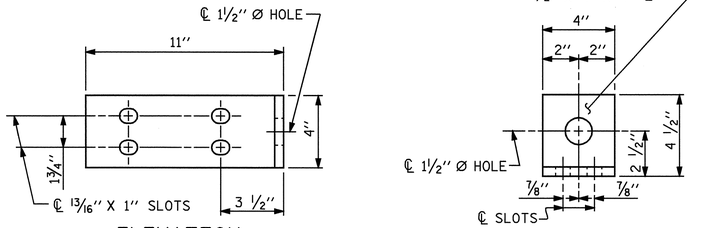


PLAN OF RAIL POST SPACINGS



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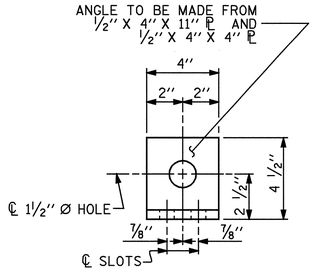
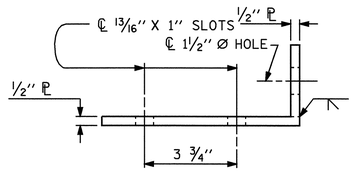
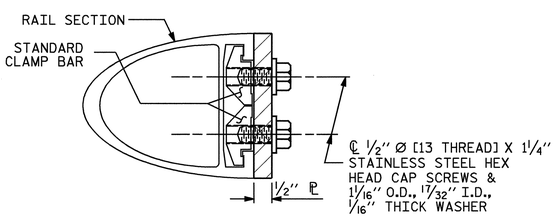


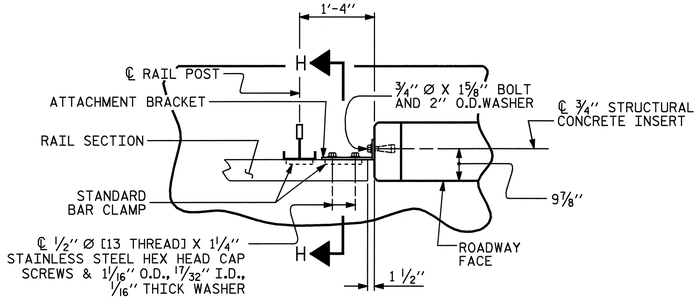
END VIEW



TOP VIEW



SECTION H-H



PLAN - RAIL AND END POST

DETAILS FOR ATTACHING METAL RAIL TO END POST

NOTES

STRUCTURAL CONCRETE INSERT

THE STRUCTURAL CONCRETE INSERT ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:

A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1½".

B. 1 - ¾" Ø X 1⅝" BOLT WITH WASHER. BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE ¾" Ø X 1⅝" GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

C. WIRE STRUT SHOWN IN THE CONCRETE INSERT ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 7/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

NOTES

METAL RAIL TO END POST CONNECTION

THE METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:

A. ½" PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.

B. ¾" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A ¾"Ø X 1⅝" BOLT WITH 2" O.D. WASHER IN PLACE. THE ¾"Ø X 1⅝" BOLT SHALL HAVE N. C. THREADS.

C. CAP SCREWS FOR RAIL ATTACHMENT TO ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F593 ALLOY 305 STAINLESS STEEL. CAP SCREWS TO BE CENTERED IN SLOTS AT 60°F.

D. STANDARD CLAMP BARS (SEE METAL RAIL SHEET).

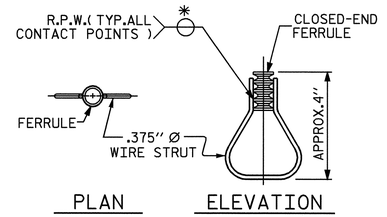
E. ½" Ø PIPE SLEEVES (IF REQUIRED) TO BE GALVANIZED.

THE COST OF THE STANDARD CLAMP BARS AND CAP SCREWS USED IN THE METAL RAIL TO END POST CONNECTION SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF 1 OR 2 BAR METAL RAILS.

THE ¾" STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.

THE COST OF THE ¾" STRUCTURAL CONCRETE INSERT ASSEMBLY, AND THE ½" PLATES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE ¾" Ø X 1⅝" BOLT WITH WASHER SHALL BE REPLACED WITH A ¾"Ø X 6½" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE ¾" Ø X 1⅝" BOLT SHALL APPLY TO THE ¾"Ø X 6 ½" BOLT. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.



PLAN ELEVATION

STRUCTURAL CONCRETE INSERT

*EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.

PROJECT NO. B-3019

POLK COUNTY

STATION: 13+27.50-L-

STATE OF NORTH CAROLINA
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RAIL POST SPACINGS AND END OF RAIL DETAILS
FOR TWO BAR METAL RAIL

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

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 11310 DOUGLAS E. PETREY 2/1/08

ASSEMBLED BY : N. PIERCE	DATE : 05-07		
CHECKED BY : J.M. BRITT	DATE : 08-07		
DRAWN BY : FCJ 1/88	REV. 10/17/00	LES/RDR	
CHECKED BY : CRK 3/89	REV. 5/7/03	RWW/JTE	
	REV. 5/1/06	TLA/GM	

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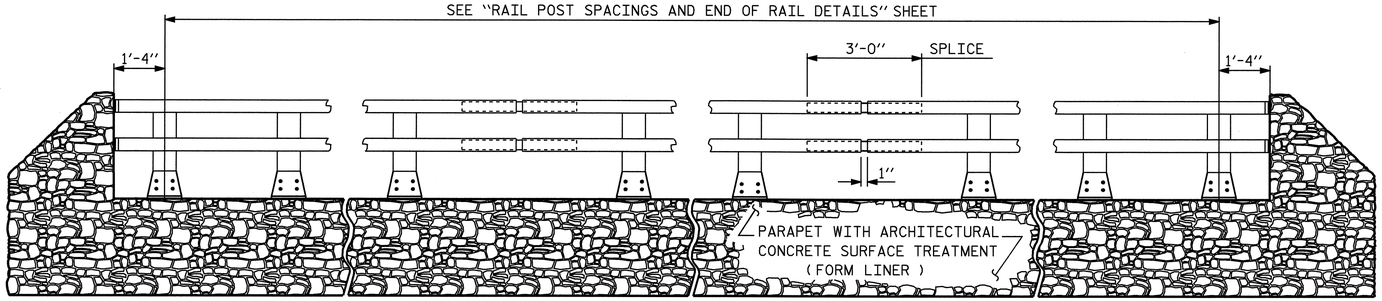
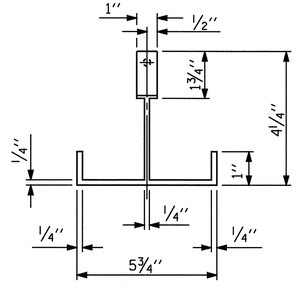
STD. NO. BMR2

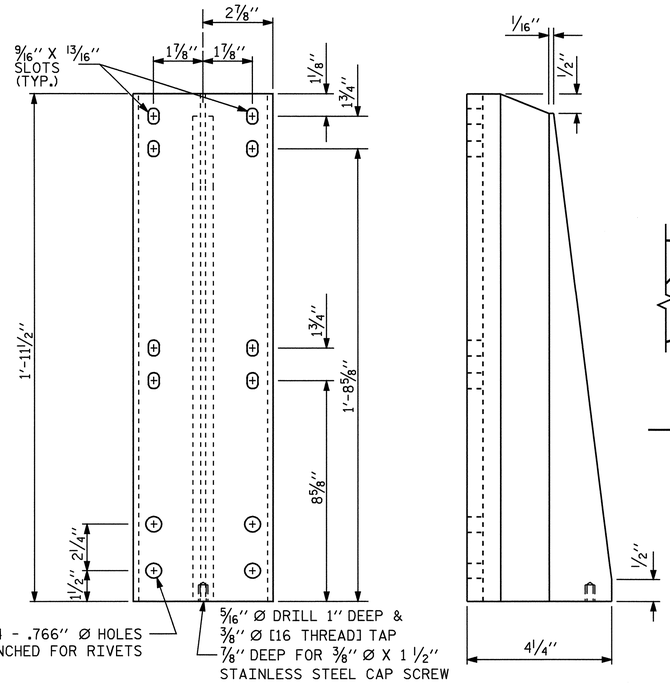


ELEVATION

NOTE : FOR ATTACHMENT OF METAL RAIL TO END POST, SEE STANDARD NO. BMR2.

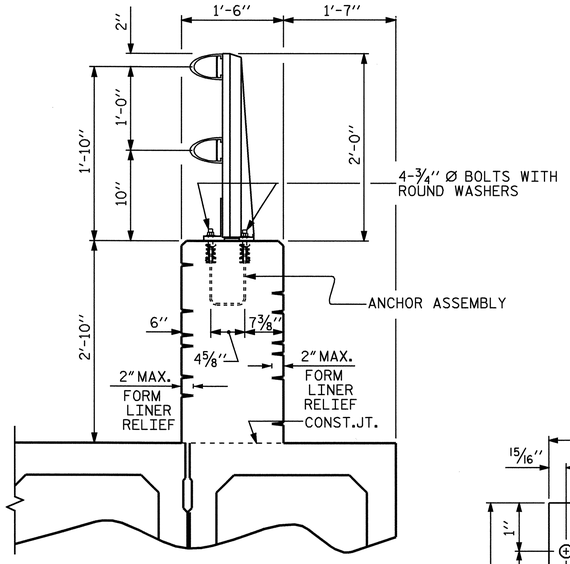


PLAN



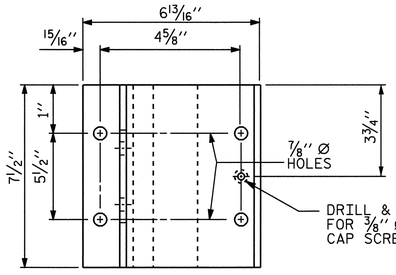
FRONT ELEVATION SIDE ELEVATION

DETAILS OF POST



SECTION THRU PARAPET AND RAIL

(CONCRETE PEDESTALS NOT SHOWN)



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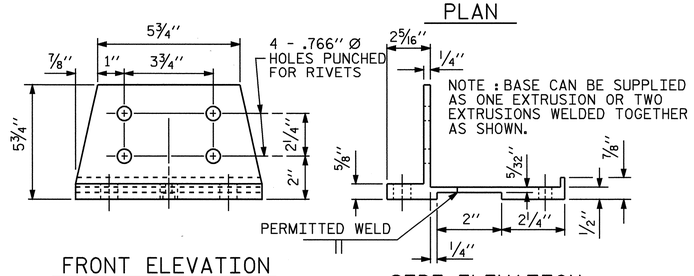
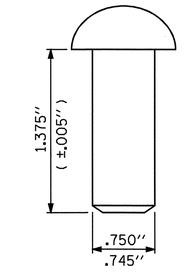


FRONT ELEVATION SIDE ELEVATION

POST BASE DETAILS



RIVET DETAIL

NOTES

ALUMINUM RAILS

MATERIAL FOR POSTS, BASES AND RAILS, EXPANSION BARS AND CLAMP BARS SHALL BE ASTM B-221 ALLOY 6061-T6.

MATERIAL FOR RIVETS SHALL BE ASTM B316 ALLOY 6061-T6. RIVETS SHALL BE STANDARD BUTTON HEAD AND CONE POINT COLD DRIVEN AS PER DRAWING.

THE BASE OF RAIL POSTS, OR ANY OTHER ALUMINUM SURFACE IN CONTACT WITH CONCRETE SHALL BE THOROUGHLY COATED WITH AN ALUMINUM IMPREGNATED CAULKING COMPOUND OF APPROVED QUALITY.

MATERIAL FOR SHIMS TO BE ASTM B209 ALLOY 6061-T6.

ALUMINUM FOR POSTS, BASES, RAILS, EXPANSION BARS, CLAMP BARS, WASHERS, RIVETS, CAPS AND SHIMS SHALL BE ANODIZED. THE CONTRACTOR SHALL SUBMIT THREE (3) SETS OF ASTM B-221 6061-T6 ALUMINUM SAMPLES ANODIZED LIGHT BRONZE, MEDIUM BRONZE AND DARK BRONZE TO THE ENGINEER. THE ENGINEER SHALL SELECT FROM THE SAMPLES FURNISHED BY THE CONTRACTOR THE COLOR WHICH MOST CLOSELY MATCHES THE PAINT COLOR ON THE RE-ERECTED TRUSS AND THE GUARDRAIL ATTACHED TO THE BRIDGE.

AFTER A SHADE OF BRONZE HAS BEEN SELECTED FOR THE RAILING, THE CONTRACTOR SHALL SUBMIT A SAMPLE OF A COMPATIBLE EXTERIOR ACRYLIC HOUSE PAINT TO THE ENGINEER. THIS PAINT SHALL MATCH THE ANODIZED RAIL COLOR AS CLOSELY AS POSSIBLE. AFTER ERECTION OF THE ANODIZED ALUMINUM RAILING, ALL EXPOSED ANCHOR BOLTS, NUTS, WASHERS, MACHINE SCREWS, CAP SCREWS, BOLTS AND BUILT UP ANGLES SHALL BE COATED WITH TWO COATS OF THIS PAINT.

GENERAL NOTES

RAILING SHALL BE CONTINUOUS FROM END POST TO END POST OF BRIDGE. EACH JOINT IN RAIL LENGTH SHALL BE SPLICED AS DETAILED. PANEL LENGTHS OF RAIL SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS.

FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE STANDARD NO. BMR2.

CAP SCREWS SHALL BE ASTM F593 ALLOY 305 STAINLESS STEEL. WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.

CERTIFIED MILL REPORTS ARE REQUIRED FOR RAILS AND POSTS. SHOP INSPECTION IS NOT REQUIRED.

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

METHOD OF MEASUREMENT FOR METAL RAILS: FOR LENGTH OF METAL RAILS TO BE PAID FOR, SEE THE STANDARD SPECIFICATIONS.

CURVED RAIL USAGE: WHERE RAILS ARE TO BE USED ON BRIDGES ON HORIZONTAL AND/OR VERTICAL CURVATURE THE CONTRACTOR MAY, AT HIS OPTION, HAVE THE REQUIRED CURVATURE IN THE RAIL FORMED IN THE SHOP OR IN THE FIELD. IN EITHER EVENT, THE RAIL SHALL CONFORM WITHOUT BUCKLING OR KINKING TO THE REQUIRED CURVATURE IN A UNIFORM MANNER ACCEPTABLE TO THE ENGINEER.

TO INSURE FUTURE IDENTIFICATION OF THE FABRICATOR, A PERMANENT IDENTIFYING MARK SHALL BE PLACED ON EACH POST. THE METHOD OF MARKING AND LOCATION SHALL BE SUCH THAT IT DOES NOT DETRACT FROM THE APPEARANCE OF THE POST, BUT REMAINS VISIBLE AFTER RAIL PLACEMENT.

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

ALLOY 6351-T5 MAY BE SUBSTITUTED FOR ALLOY 6061-T6 WHERE APPLICABLE.

MINOR VARIATIONS IN DETAILS OF METAL RAIL WILL BE CONSIDERED. DETAILS OF SUCH VARIATIONS, IF DESIRED, SHALL BE SUBMITTED FOR APPROVAL.

PAY LENGTH = 149.23 LIN. FT.

PROJECT NO. B-3019

POLK COUNTY

STATION: 13+27.50-L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
2 BAR METAL RAIL

ASSEMBLED BY : N. PIERCE	DATE : 05-07				
CHECKED BY : J.M. BRITT	DATE : 08-07				
DRAWN BY : EEM 6/94	REV. 10/17/00	LES/RDR			
CHECKED BY : RGW 6/94	REV. 5/7/03R	RWW/JTE			
	REV. 5/1/06	TLA/GM			

NORTH CAROLINA PROFESSIONAL SEAL 11310 ENGINEER DOUGLAS E. PETREY

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

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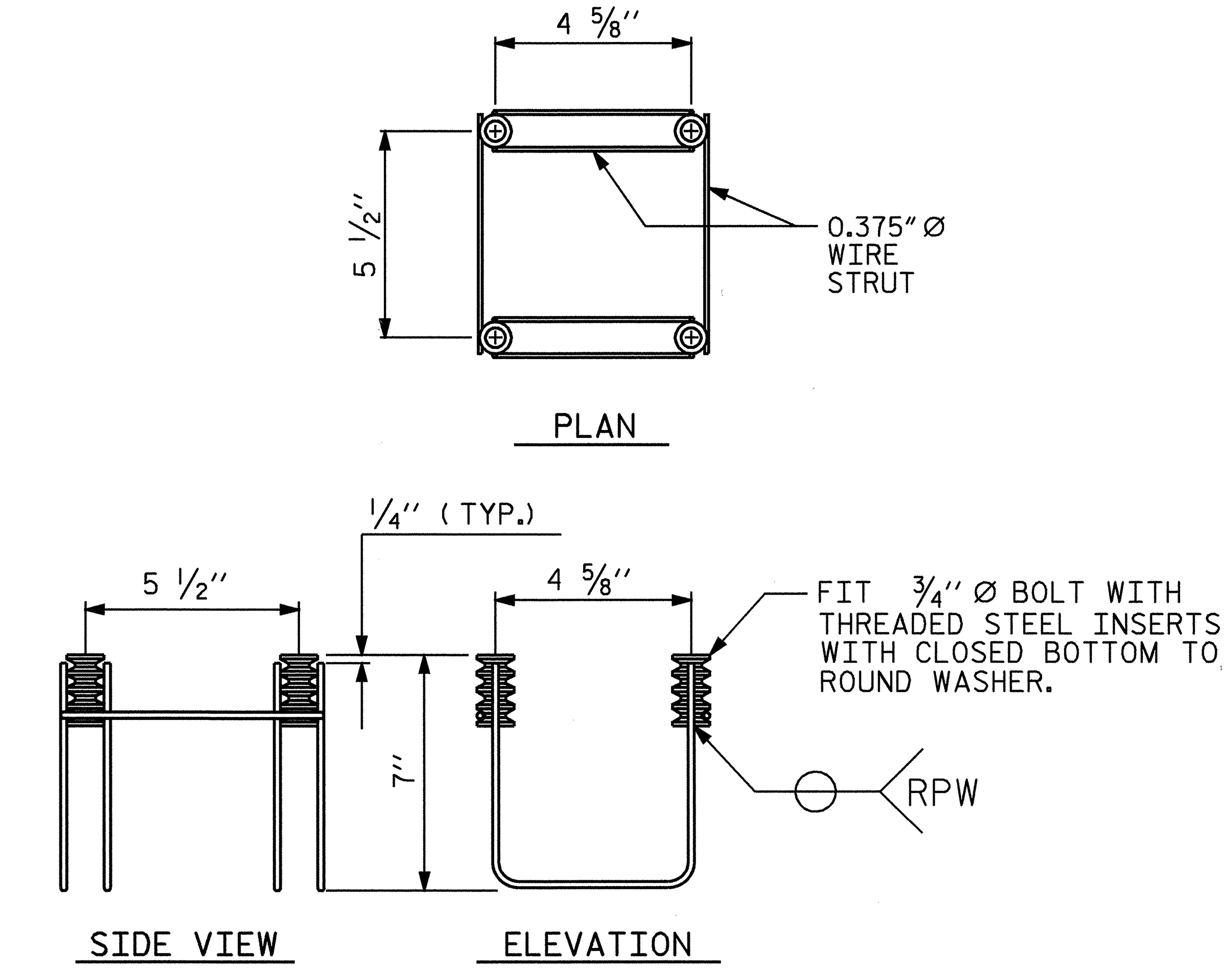
STD. NO. BMR3



MINIMUM LENGTH OF THREADS IN INSERT (FERRULE): 1¾"

4-BOLT METAL RAIL ANCHOR ASSEMBLY

(28 ASSEMBLIES REQUIRED)

NOTES

STRUCTURAL CONCRETE ANCHOR ASSEMBLY

THE STRUCTURAL CONCRETE ANCHOR ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS :

A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2" FOR ¾" FERRULES.

B. 4 - ¾" Ø X 2½" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE ¾" Ø X 2½" GALVANIZED BOLTS 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.

C. WIRE STRUT SHOWN IN THE CONCRETE ANCHOR ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 7/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

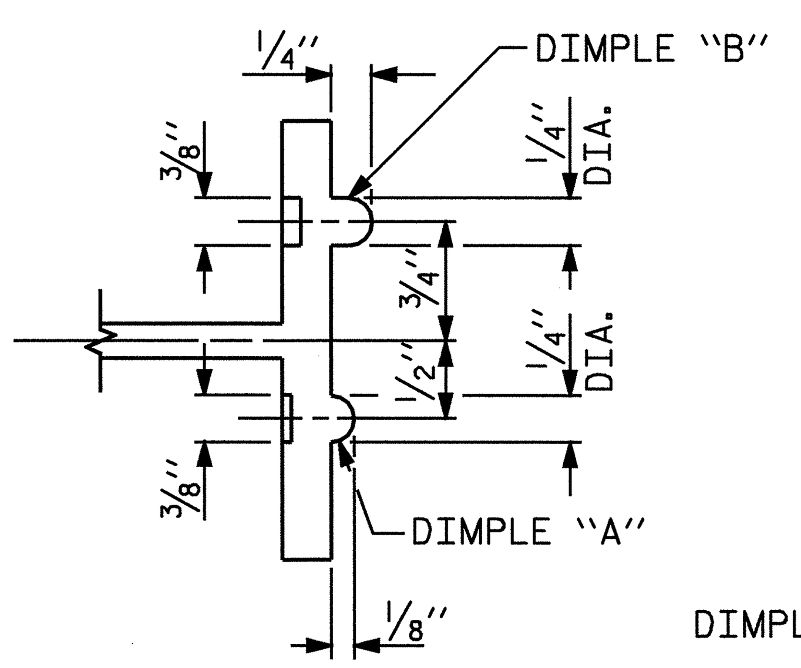
D. THE METAL RAIL ANCHOR ASSEMBLIES TO BE HOT DIPPED GALVANIZED TO CONFORM TO REQUIREMENTS OF AASHTO M111.

E. THE COST OF THE METAL RAIL ANCHOR ASSEMBLY WITH BOLTS AND WASHERS COMPLETE IN PLACE SHALL BE INCLUDED IN THE PRICE BID FOR LINEAR FEET OF METAL RAIL.

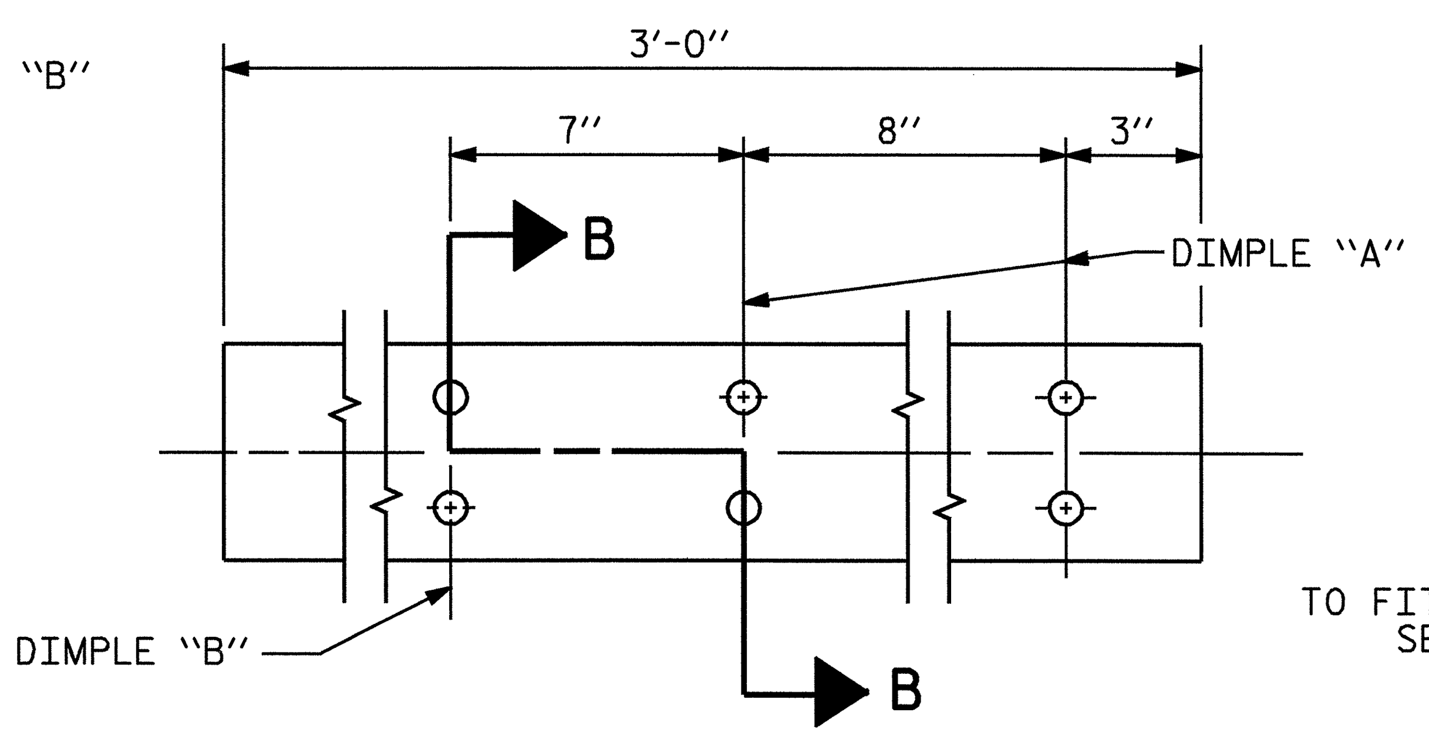
F. BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.

THE CONTRACTOR, AT HIS OPTION, MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN LIEU OF THE METAL RAIL ANCHOR ASSEMBLY. THE YIELD LOAD OF THE ¾" Ø BOLT IS 10 KIPS. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS REQUIRED. FOR ADHESIVELY ANCHORED BOLTS OR DOWELS, SEE SPECIAL PROVISIONS.

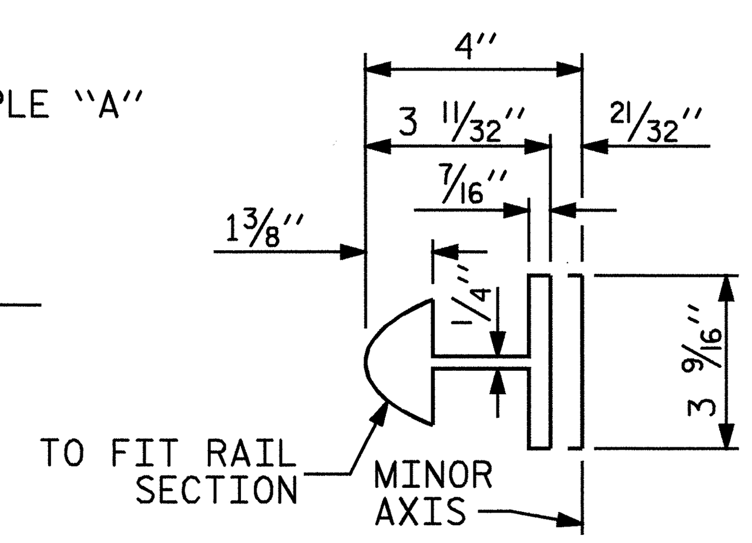
WHEN ADHESIVELY ANCHORED ANCHOR BOLTS ARE USED, BOLTS SHALL MEET THE REQUIREMENTS OF ASTM F593 ALLOY 304 STAINLESS STEEL WITH MINIMUM 75,000 PSI ULTIMATE STRENGTH. NUTS SHALL MEET THE REQUIREMENTS OF ASTM F594 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.



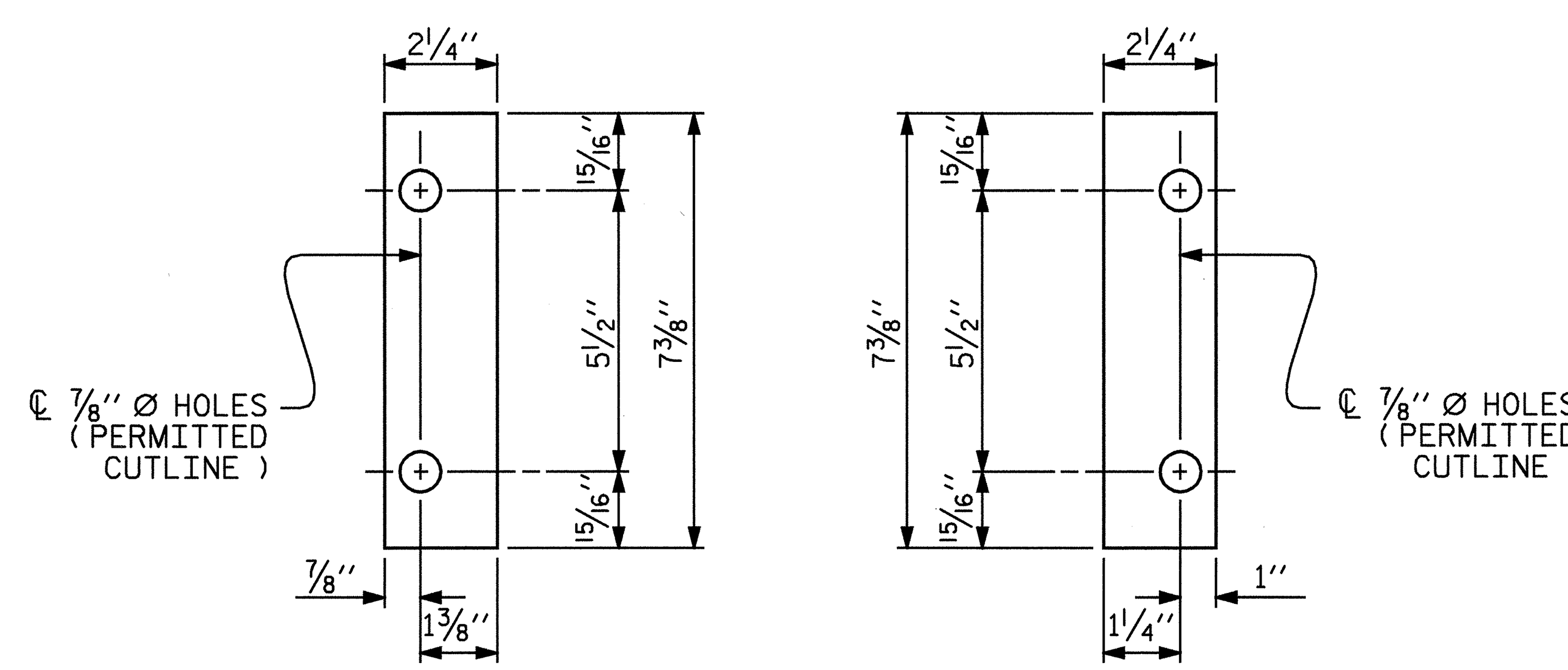
SECTION B - B



EXPANSION BAR DETAILS

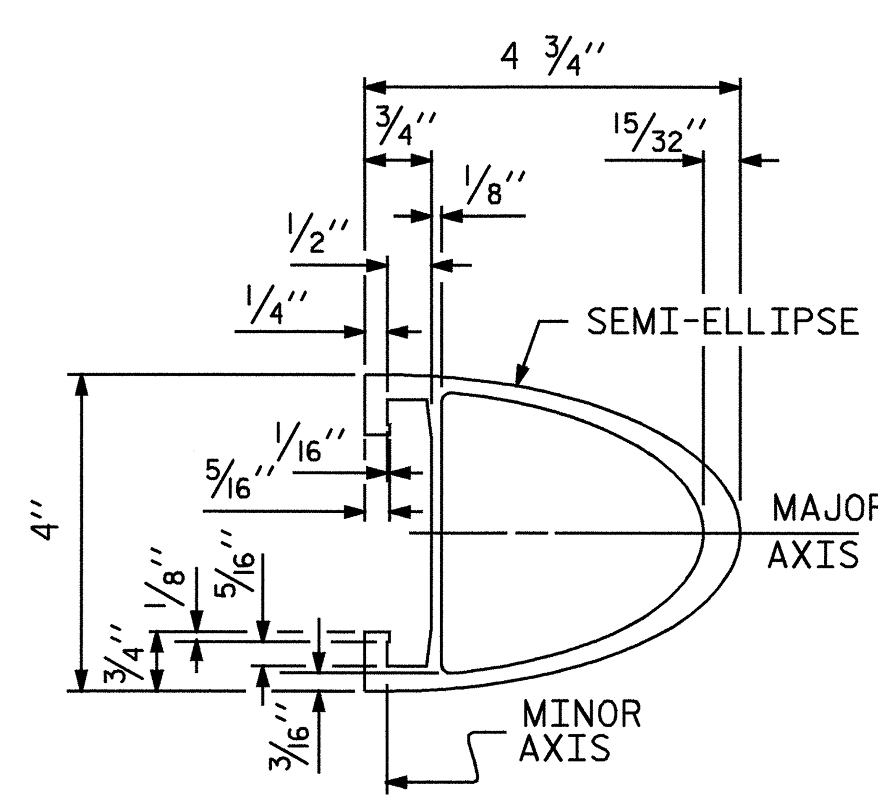


BAR SECTION



SHIM DETAILS

NOTE :
SHIMS MAY BE CUT ALONG PERMITTED CUTLINE OR SLOTTED TO EDGE OF PLATE TO FACILITATE PLACEMENT.



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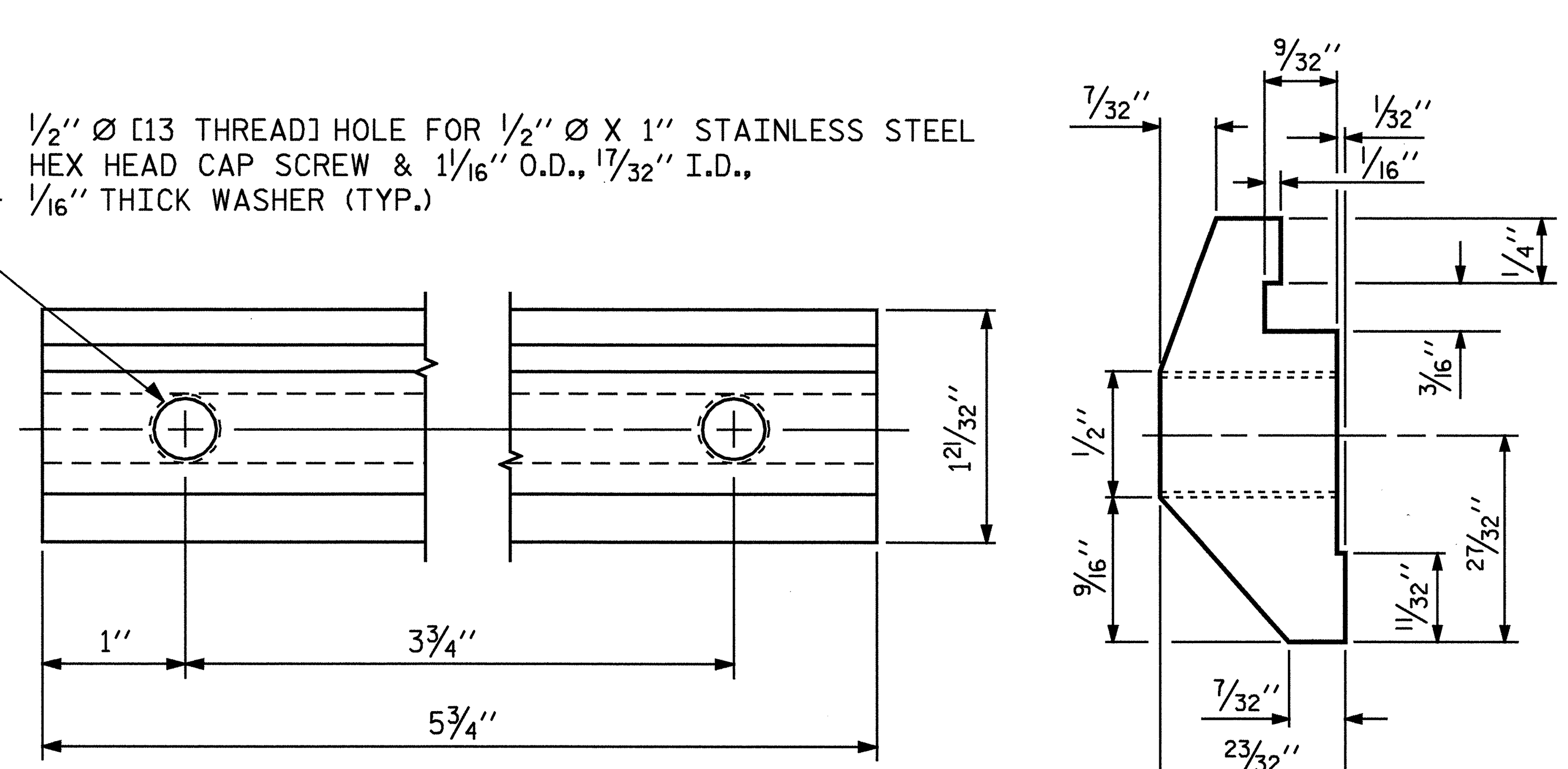
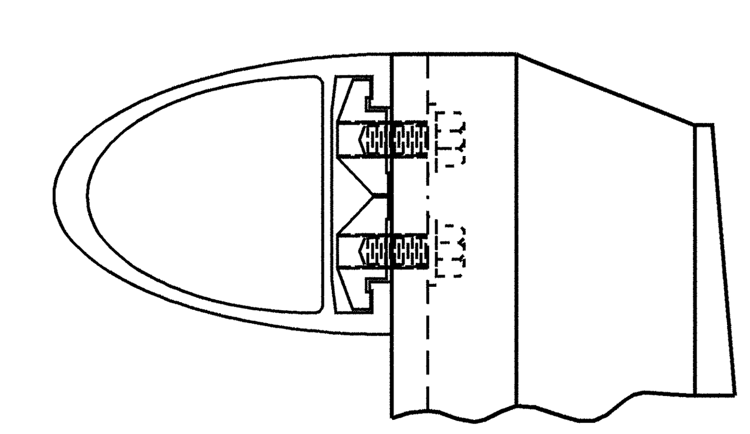
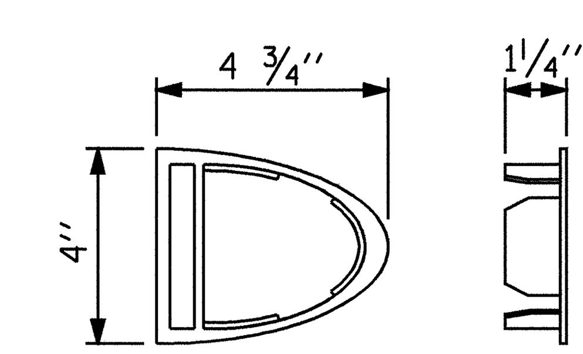


CLAMP BAR DETAIL

(4 REQUIRED PER POST)



CLAMP ASSEMBLY



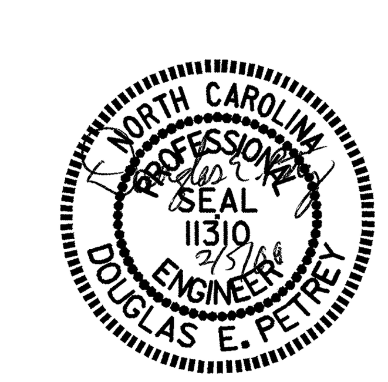
RAIL CAP

PROJECT NO. B-3019
POLK COUNTY
STATION: 13+27.50-L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
2 BAR METAL RAIL



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NO.	BY:	DATE:	NO.	BY:	DATE:		S-10
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CHECKED BY : J.M. BRITT	DATE : 08-07		
DRAWN BY : EEM 6/94	REV. 2/6/97	EEM/RGW	
CHECKED BY : RGW 6/94	REV. 8/16/99	MAB/LES	
	REV. 5/7/03	RWW/JTE	

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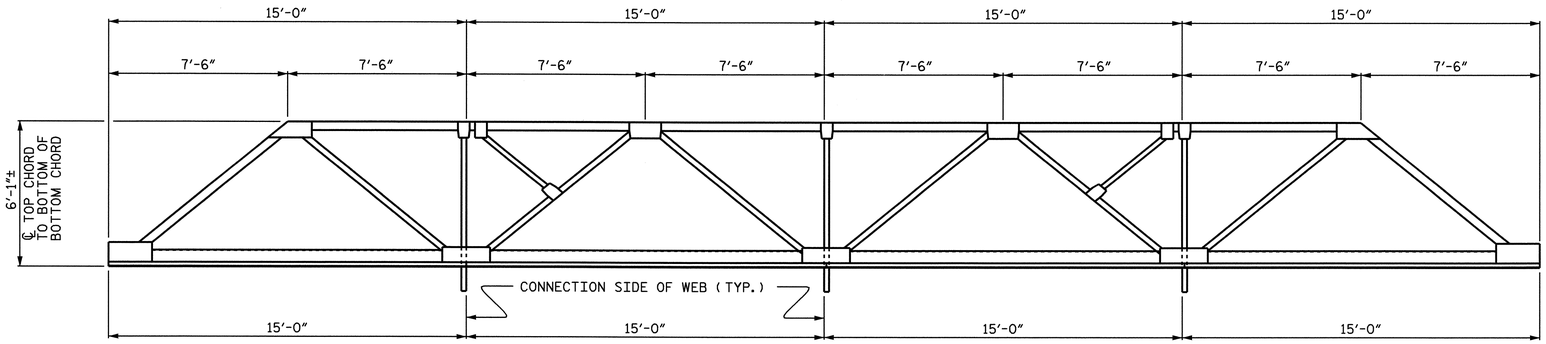


EXISTING TRUSS SIDE MEMBERS ELEVATION

(RIGHT SIDE SHOWN, LEFT SIDE SIMILAR)
(ALL DIMENSIONS ARE APPROXIMATE AND MUST BE FIELD VERIFIED, SEE ★ NOTE)

NOTES:

DIMENSIONS SHOWN FOR THE EXISTING TRUSS SIDE MEMBERS INDICATED ON THESE PLANS ARE 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 TRUSS SIDE MEMBERS SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

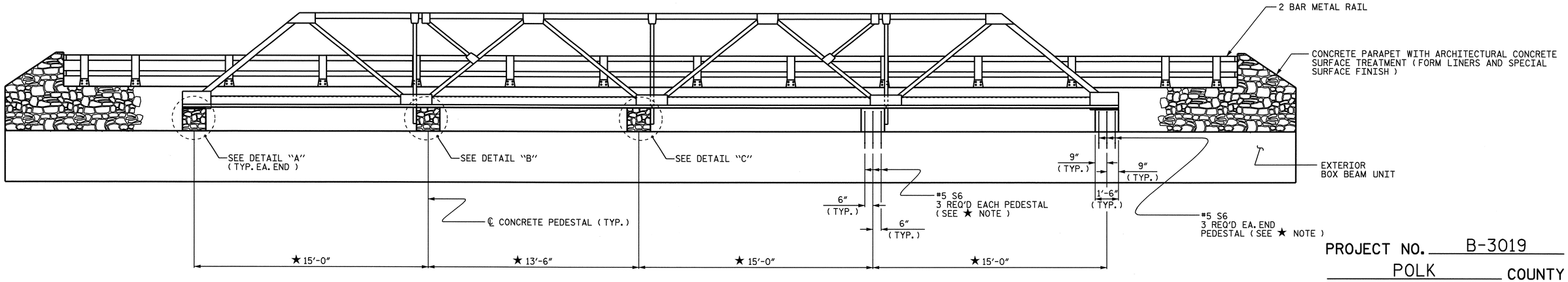
★ EXISTING TRUSS DIMENSIONS MUST BE FIELD VERIFIED AND DETERMINATION OF CONNECTION SIDE OF EXISTING VERTICAL TRUSS CHORD TO CONCRETE PEDESTAL MUST BE DETERMINED PRIOR TO CASTING OF BOX BEAMS SO REINFORCING STEEL IN BOX BEAMS AND CONCRETE PEDESTALS CAN BE LOCATED TO MATCH ACTUAL FIELD CONDITIONS AND AVOID INTERFERENCE WITH ATTACHMENT BOLTS.

THE CONTRACTOR SHALL SUBMIT DETAILED PLANS FOR LOCATIONS OF PEDESTALS, LOCATIONS OF 3-#5 S6 BARS IN BOX BEAMS AND PEDESTALS, AND CONNECTION OF TRUSS SIDE MEMBERS TO PEDESTALS TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO FABRICATION OF THE BOX BEAM UNITS.

CONTRACTOR TO REPLACE THE PORTIONS OF EXISTING TRUSS PLATES, CHANNELS AND I-SECTIONS WHERE REQUIRED DUE TO DETERIORATION AND SECTION LOSS AS DIRECTED BY THE ENGINEER. SEE SPECIAL PROVISIONS FOR RESTORATION AND RE-ERECTION OF TRUSS.

ARCHITECTURAL CONCRETE SURFACE TREATMENT (FORM LINERS) SHALL BE USED ON THE EXTERIOR FACE OF THE PEDESTALS. APPLY CONCRETE PENETRATING STAIN TO ALL OTHER EXPOSED CONCRETE SURFACES OF THE CONCRETE PEDESTALS. SEE ARCHITECTURAL CONCRETE SURFACE TREATMENT AND CONCRETE PENETRATING STAIN SPECIAL PROVISIONS.

FOR DETAILS "A," "B," AND "C" SEE "TRUSS RE-ERECTION CONNECTIONS" SHEET.



TRUSS SIDE MEMBERS RE-ERECTION ELEVATION

(RIGHT SIDE SHOWN, LEFT SIDE SIMILAR)

PROJECT NO. B-3019

POLK COUNTY

STATION: 13+27.50-L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
TRUSS RE-ERECTION

NORTH CAROLINA PROFESSIONAL SEAL 11310 ENGINEER DOUGLAS E. PETREE

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

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CHECKED BY : J.M. BRITT DATE : 08-07

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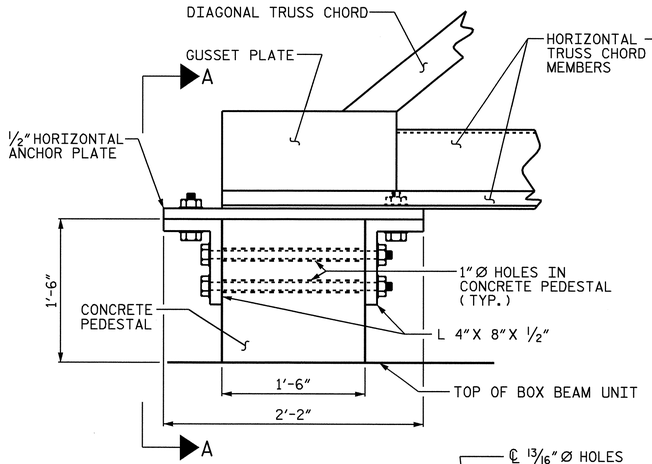
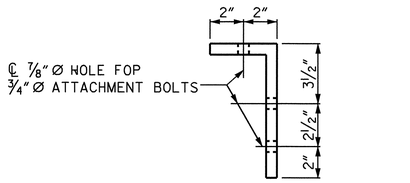
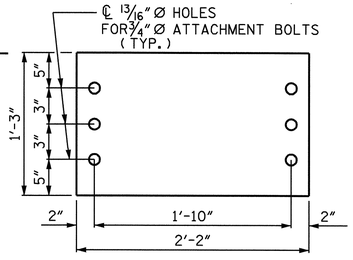


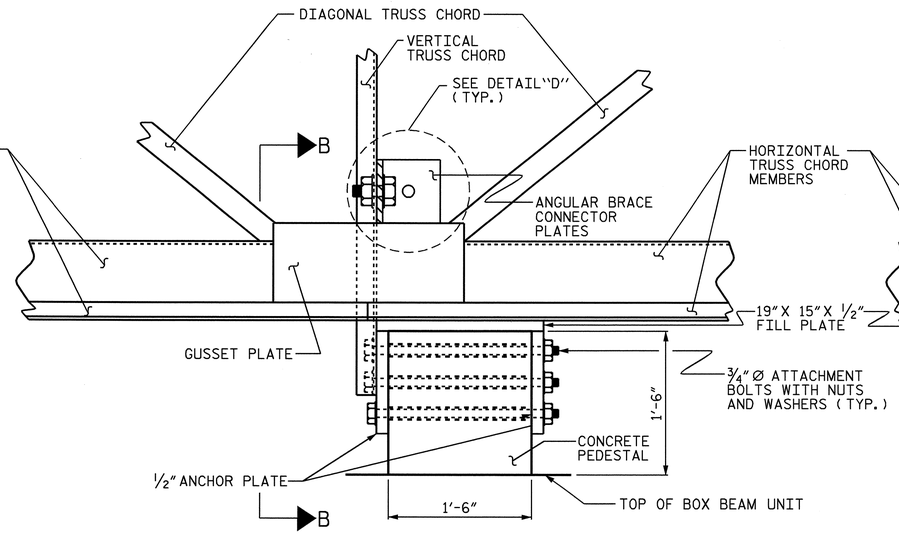
DETAIL "A"



L 4" X 8" X 1/2"



1/2" HORIZONTAL ANCHOR PLATE



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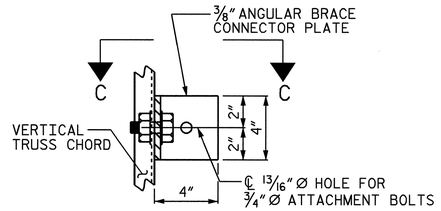

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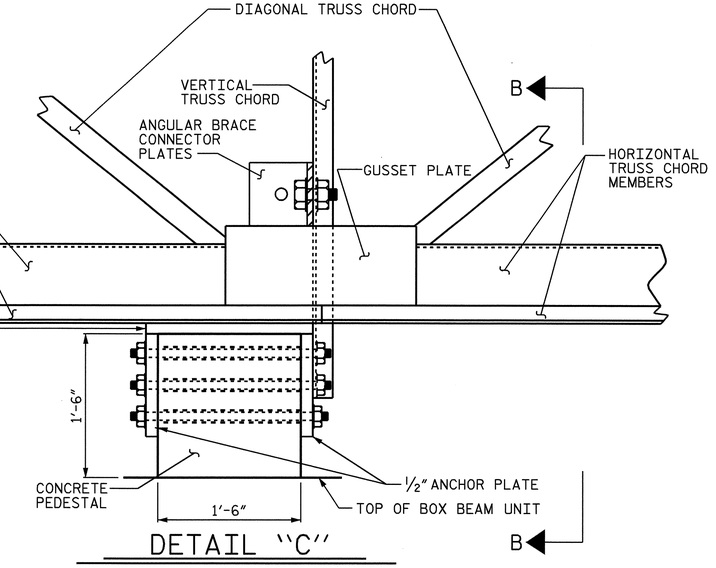


DETAIL "C"

NOTES:

THE TRUSS ANCHOR ASSEMBLIES SHALL CONSIST OF 1/2" ANCHOR PLATES, ANGLES AND 3/4" Ø BOLTS WITH NUTS AND WASHERS.

THE ANCHOR PLATES AND ANGLES SHALL CONFORM TO ASTM M270 GRADE 36. AFTER FABRICATION, THE ANCHOR PLATES AND ANGLES 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 3/4" 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.)

2" MAX RELIEF ON EXTERIOR SURFACE OF CONCRETE PEDESTALS NOT SHOWN FOR CLARITY.

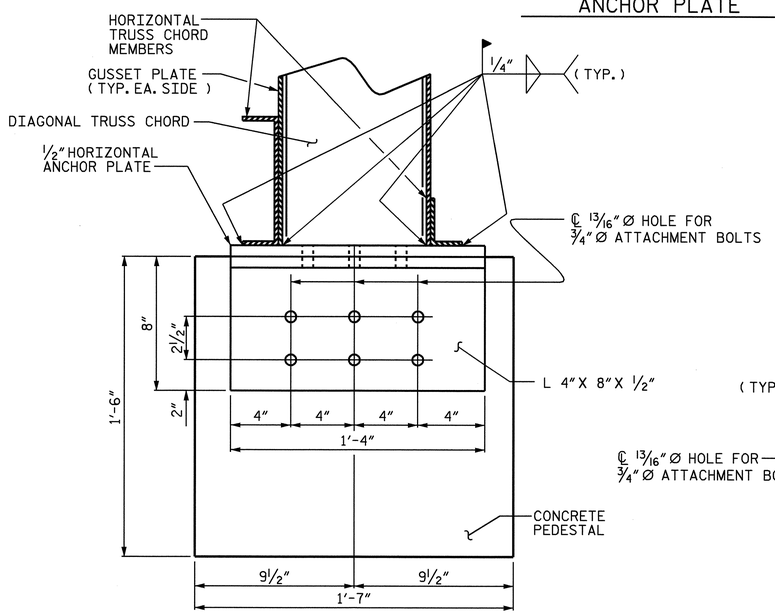
THE CONTRACTOR SHALL SUBMIT A SAMPLE OF A COMPATIBLE EXTERIOR ACRYLIC BASE PAINT TO THE ENGINEER. THE PAINT SHALL MATCH THE RESTORED TRUSS COLOR AS CLOSELY AS POSSIBLE. AFTER RE-ERECTION OF THE TRUSS SIDE MEMBERS IS COMPLETE, ALL EXPOSED COMPONENTS OF THE TRUSS ANCHOR ASSEMBLIES SHALL BE COATED WITH TWO COATS OF THIS PAINT. AT THE CONTRACTOR'S OPTION, HE MAY USE THE TOPCOAT PAINT USED ON THE TRUSS SIDE MEMBERS TO COAT THE EXPOSED COMPONENTS OF THE TRUSS ANCHOR ASSEMBLIES.

THE 1" Ø HOLES IN THE CONCRETE PEDESTALS 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 COST OF THE TRUSS ANCHOR ASSEMBIES WITH BOLTS COMPLETE IN PLACE SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR RESTORATION AND RE-ERECTION OF TRUSS. SEE SPECIAL PROVISIONS.

THE CONTRACTOR, AT HIS OPTION, MAY SUBMIT AN ALTERNATE METHOD OF ATTACHING THE TRUSS SIDE MEMBERS TO THE CONCRETE PEDESTALS. THE USE OF ANY ALTERNATE METHOD SHALL BE APPROVED BY THE ENGINEER.

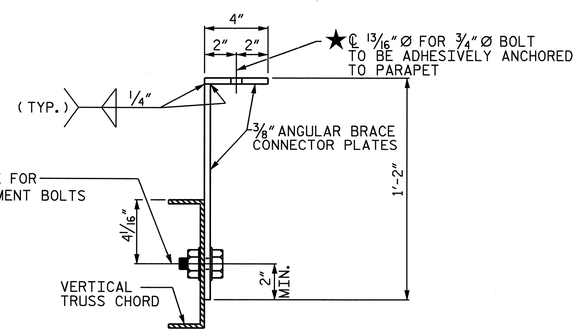
THE CONTRACTOR SHALL SUBMIT TO THE MATERIALS AND TEST UNIT SAMPLES OF THE EXISTING TRUSS TO DETERMINE THE APPROPRIATE METHOD OF WELDING ANCHOR PLATES TO THE TRUSS AND PLUG WELDING RIVET HOLES ON THE VERTICAL TRUSS CHORD MEMBERS WHERE NECESSARY TO AVOID INTERFERENCE WITH HOLES REQUIRED FOR TRUSS RE-ERECTION.



SECTION A-A

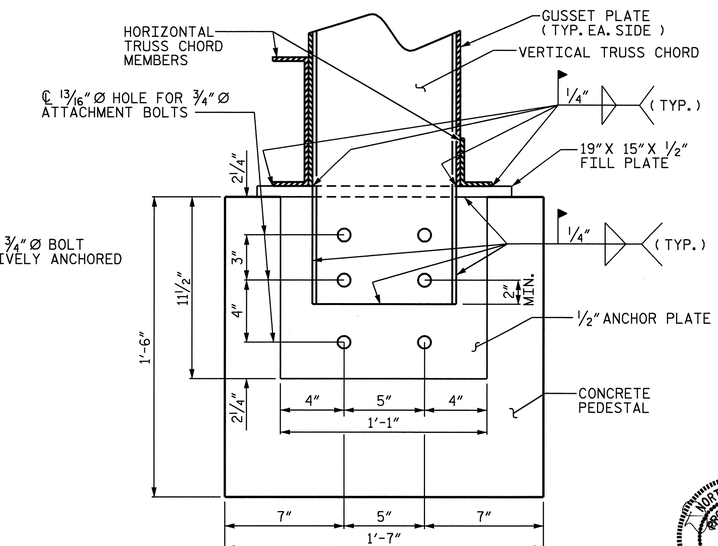
(DIAGONAL TRUSS CHORD NOT SHOWN FOR CLARITY)

★NOTE:
INSTALL THE 3/4" Ø BOLTS INTO THE CONCRETE PARAPET USING AN ADHESIVE BONDING SYSTEM. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED. SEE ADHESIVELY ANCHORED ANCHORED BOLTS OR DOWELS SPECIAL PROVISION.



SECTION C-C

(GUSSET PLATES NOT SHOWN FOR CLARITY)
(6 REQ'D)



SECTION B-B

(DIAGONAL TRUSS CHORDS AND ANGULAR BRACE CONNECTOR PLATES NOT SHOWN FOR CLARITY)

NORTH CAROLINA PROFESSIONAL SEAL 11310 ENGINEER DOUGLAS E. PETREY

PROJECT NO. B-3019
POLK COUNTY
STATION: 13+27.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
TRUSS RE-ERECTION CONNECTIONS

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

DRAWN BY : N. PIERCE DATE : 11-07
CHECKED BY : D.E. PETREY DATE : 11-07

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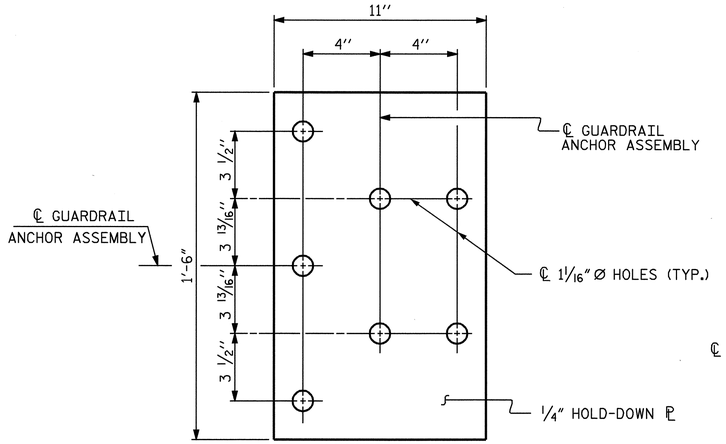

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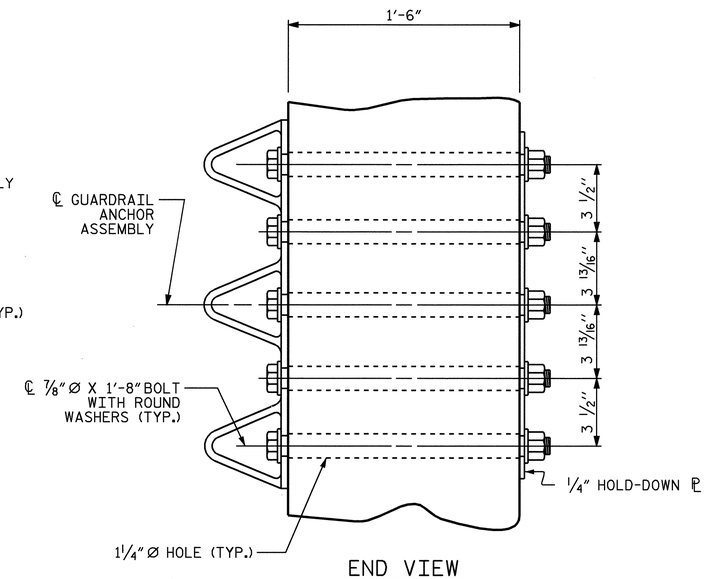


END VIEW

GUARDRAIL ANCHOR ASSEMBLY DETAILS

NOTES

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

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.

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

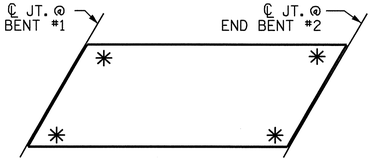
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE END POST TO CLEAR ASSEMBLY BOLTS.

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.

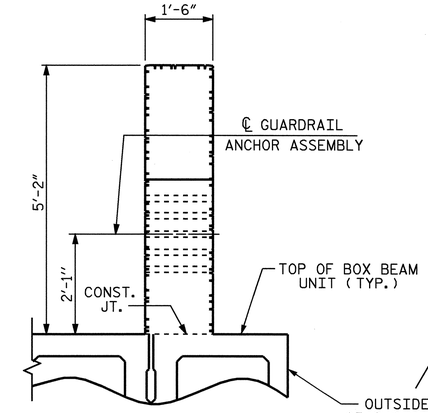
NO ARCHITECTURAL CONCRETE SURFACE TREATMENT (FORM LINERS) SHALL BE USED IN THE AREAS OF GUARDRAIL CONNECTION & HOLD-DOWN ℙ. THESE AREAS SHALL BE SMOOTH AND FLUSH WITH OUTSIDE OF PARAPET.

AFTER ATTACHMENT OF THE GUARDRAIL, ALL EXPOSED PORTIONS OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE COATED WITH TWO COATS OF THE TOPCOAT PAINT USED TO PAINT THE GUARDRAIL.

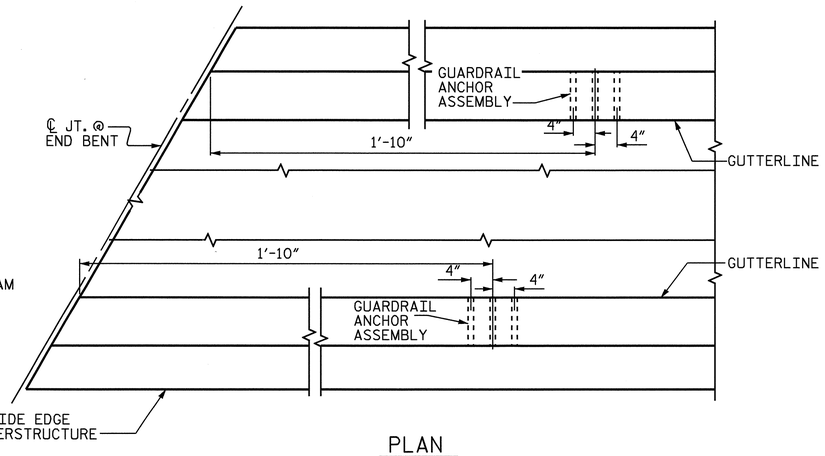


SKETCH SHOWING POINTS OF ATTACHMENT

✳ LOCATION OF GUARDRAIL ATTACHMENT



END VIEW
(CONCRETE PEDESTAL NOT SHOWN)



PLAN

LOCATION OF GUARDRAIL ANCHOR AT END POST

PROJECT NO. B-3019

POLK COUNTY

STATION: 13+27.50-L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS

ASSEMBLED BY : N. PIERCE	DATE : 05-07
CHECKED BY : J.M. BRITT	DATE : 08-07

DRAWN BY : EEM 6/94	REV. 10/17/00 RWW/LES
CHECKED BY : RGW 6/94	REV. 5/7/03 RWW/JTE
	REV. 5/1/06 TLA/GM

NORTH CAROLINA PROFESSIONAL SEAL 11310 ENGINEER DOUGLAS E. PETREE 7/28/08

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
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STD. NO. BMR8

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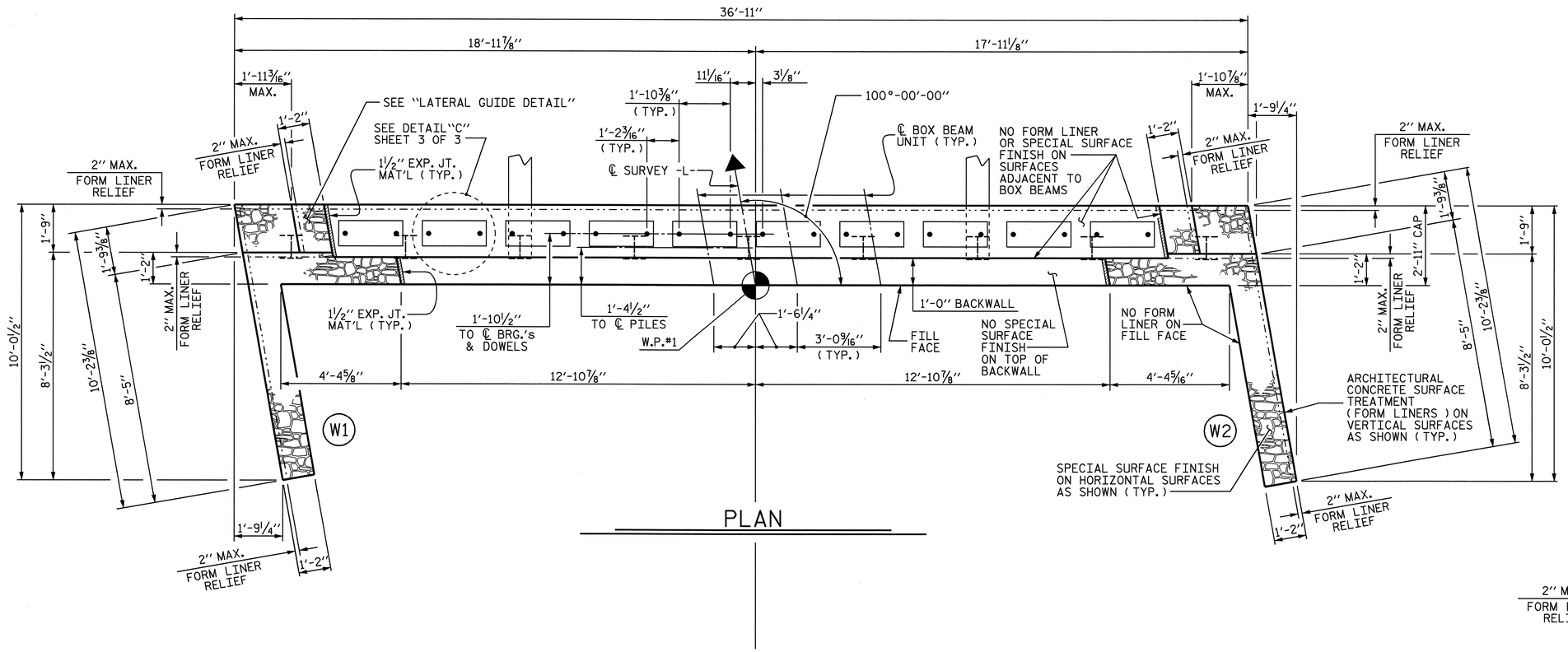
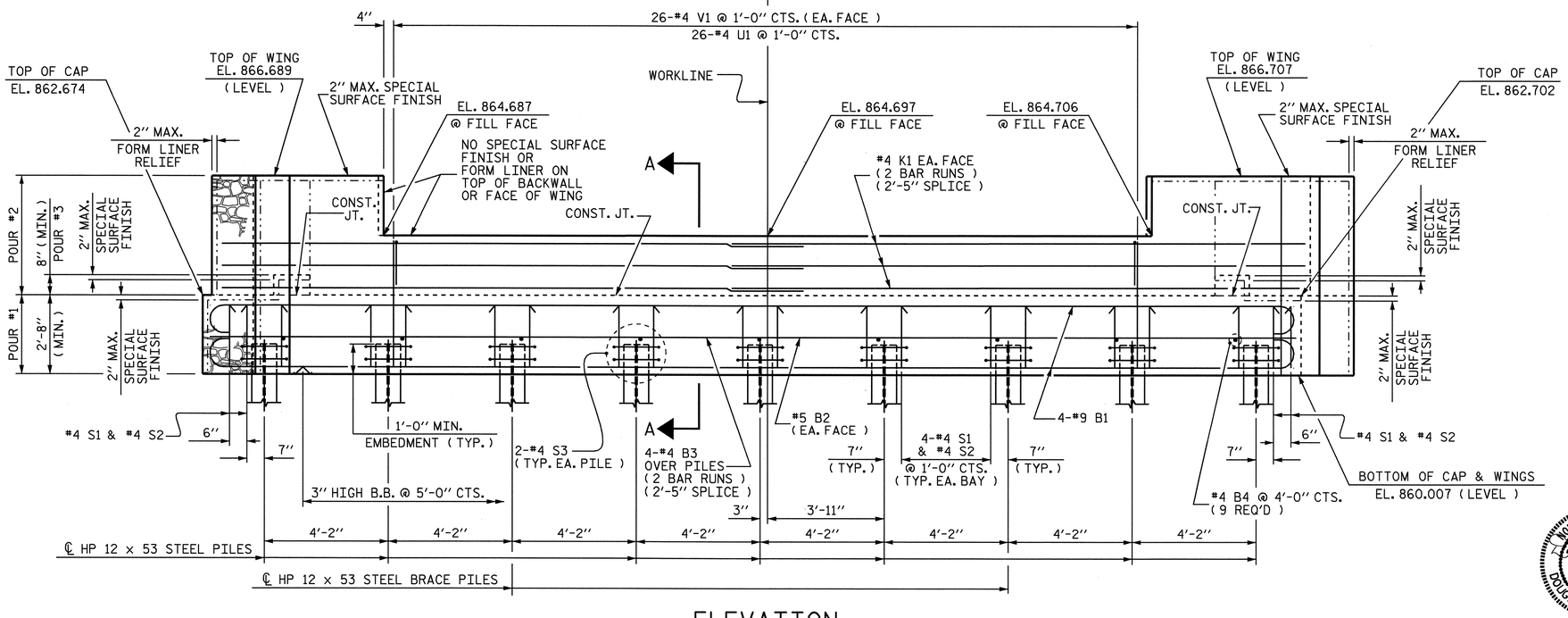


PLAN



ELEVATION

NOTES :

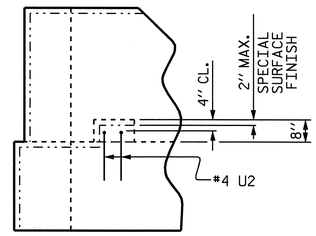
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

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.

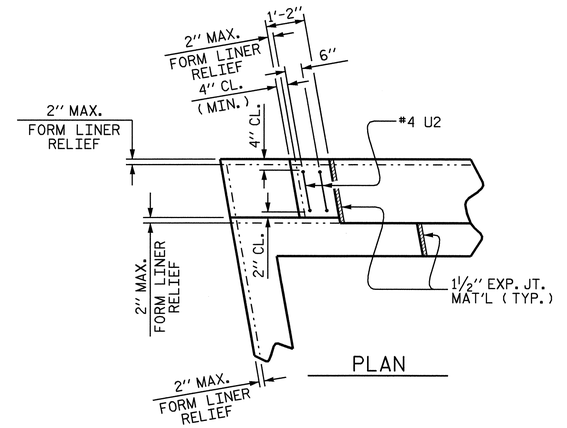
THE LATERAL GUIDE AT EACH END OF CAP IS NOT TO BE POURED UNTIL AFTER THE BOX BEAM UNITS ARE IN PLACE.

FOR SECTION A-A, SEE SHEET 3 OF 3.

FOR SPECIAL SURFACE FINISH AND FORM LINER DETAILS AND PAY ITEM, SEE ARCHITECTURAL CONCRETE SURFACE TREATMENT SPECIAL PROVISION.



ELEVATION



PLAN

LATERAL GUIDE DETAILS

(LEFT LATERAL GUIDE SHOWN, RIGHT END SIMILAR)

PROJECT NO. B-3019

POLK COUNTY

STATION: 13+27.50 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 1

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

NORTH CAROLINA PROFESSIONAL SEAL 11310 ENGINEER DOUGLAS E. PETRET

DRAWN BY : MIKE BRITT DATE : 11-14-07
CHECKED BY : N. PIERCE DATE : 11-29-07

18-JAN-2008 09:00
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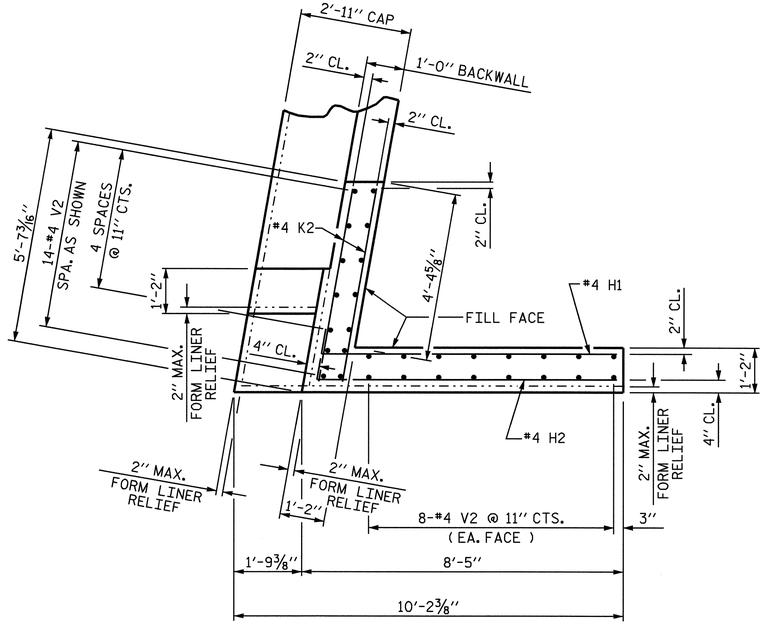
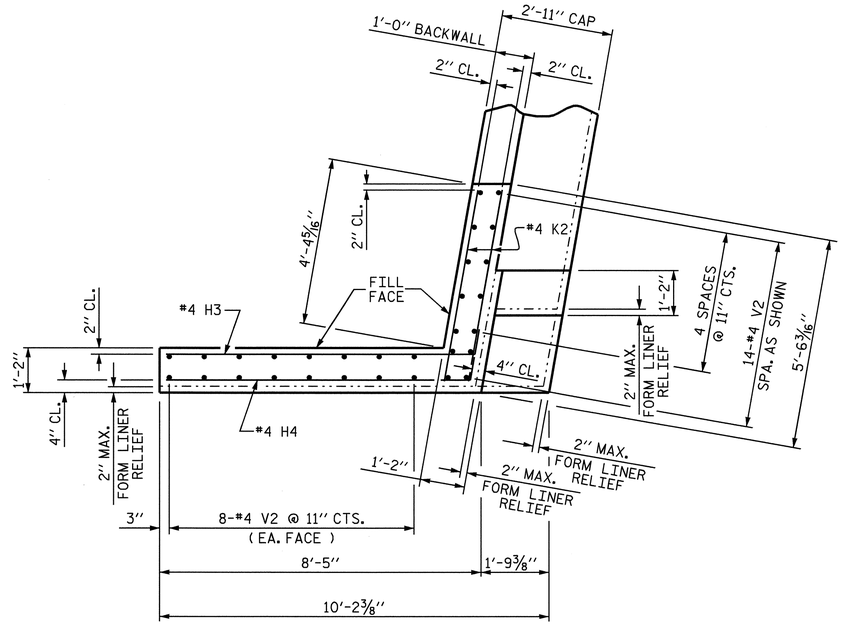
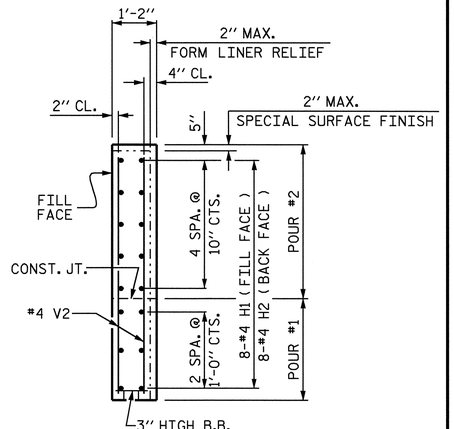
npierce



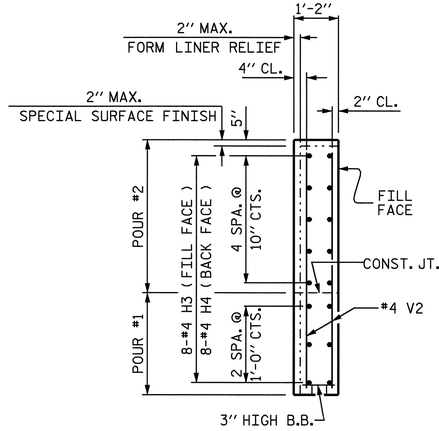
PLAN OF WING W1 (W1)



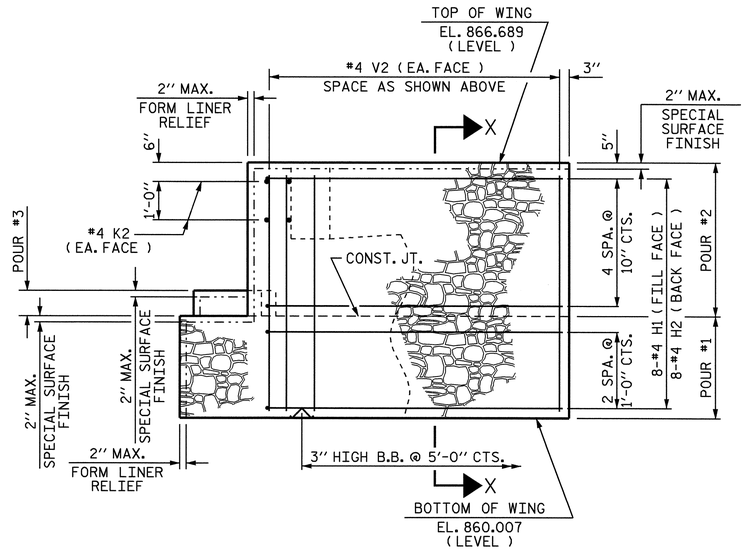
PLAN OF WING W2 (W2)



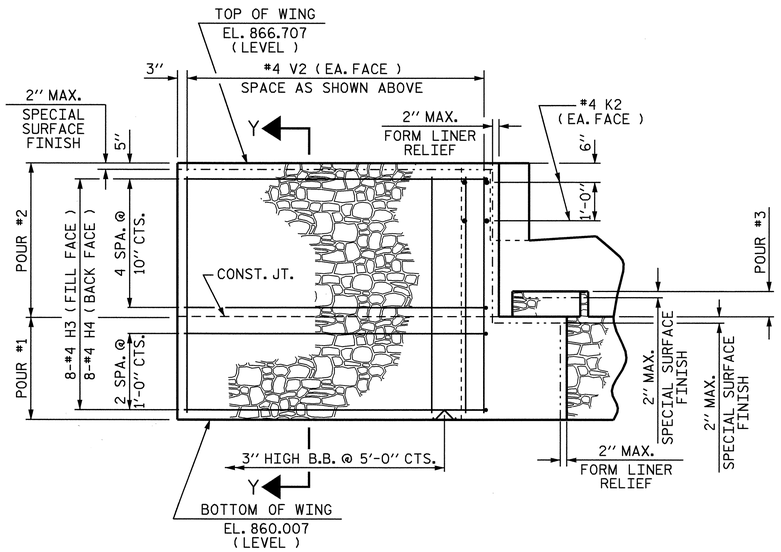
SECTION X-X



SECTION Y-Y



ELEVATION OF WING W1 (W1)



ELEVATION OF WING W2 (W2)

PROJECT NO. B-3019

POLK COUNTY

STATION: 13+27.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 1

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

NORTH CAROLINA PROFESSIONAL SEAL 11310 ENGINEER DOUGLAS E. PETRET

DRAWN BY : MIKE BRITT DATE : 11-15-07
CHECKED BY : N. PIERCE DATE : 11-29-07

18-JAN-2008 09:00
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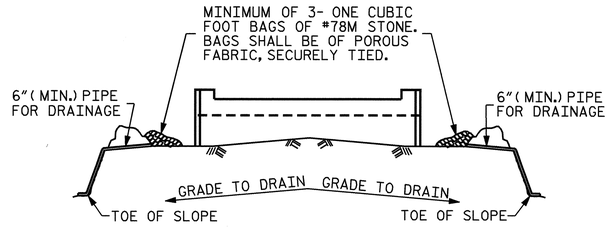
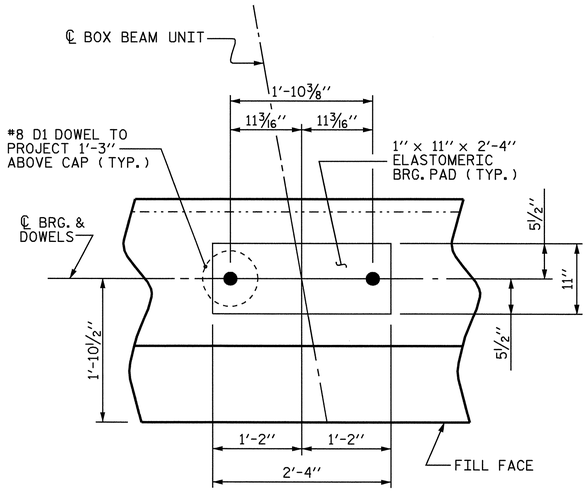


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

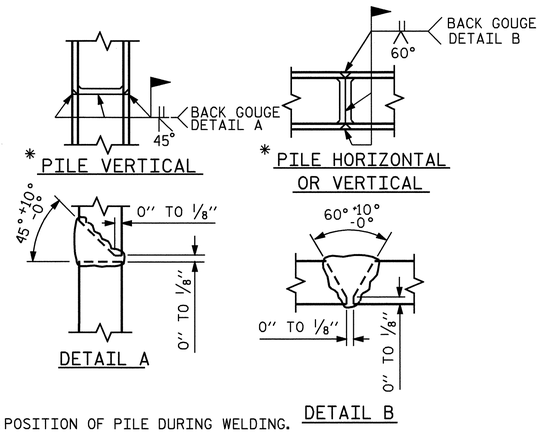
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



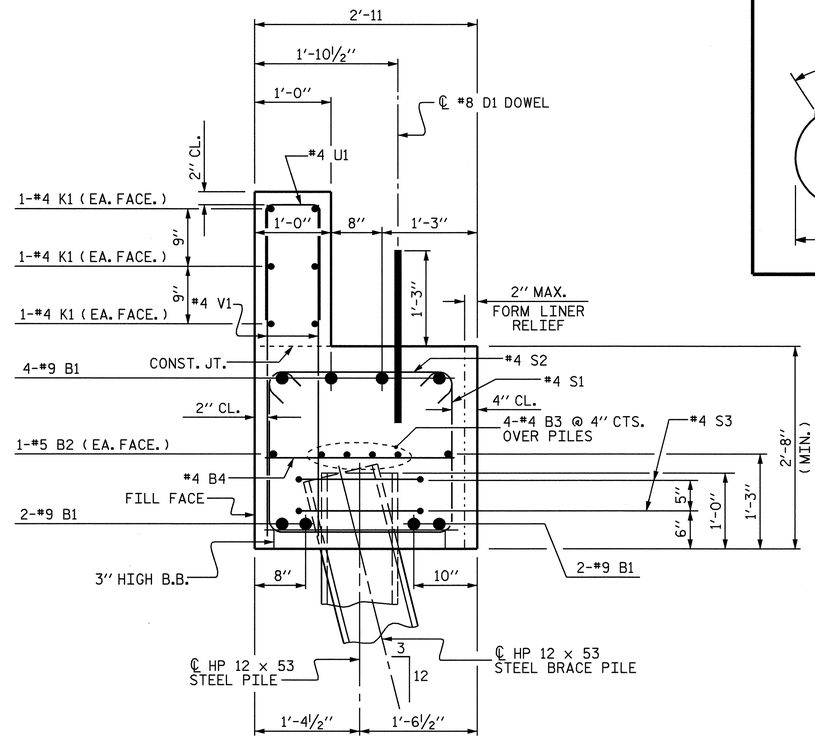
DETAIL "C"

(TYP. EA. BRG.)



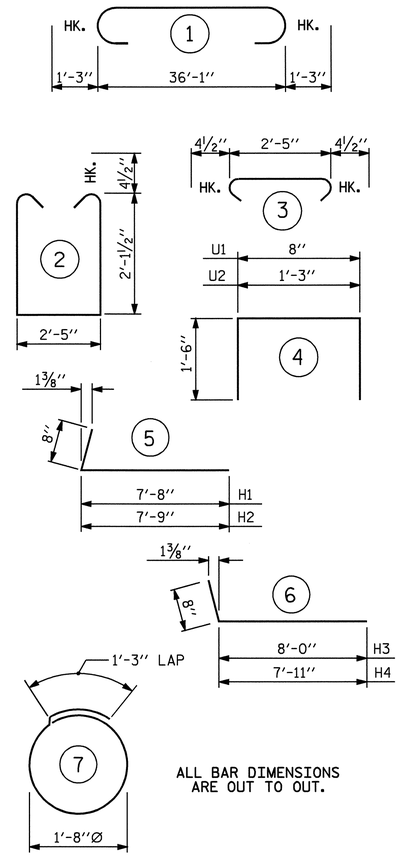
* POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS



SECTION A-A

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL
END BENT No. 1

BAR	No.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	38'-7"	1049
B2	2	#5	STR.	36'-3"	76
B3	8	#4	STR.	19'-4"	103
B4	9	#4	STR.	2'-5"	15
D1	20	#8	STR.	2'-3"	120
H1	8	#4	5	8'-4"	45
H2	8	#4	5	8'-5"	45
H3	8	#4	6	8'-8"	46
H4	8	#4	6	8'-7"	46
K1	12	#4	STR.	19'-4"	155
K2	8	#4	STR.	5'-0"	27
S1	36	#4	2	7'-5"	178
S2	36	#4	3	3'-2"	76
S3	18	#4	7	6'-6"	78
U1	26	#4	4	3'-8"	64
U2	4	#4	4	4'-3"	11
V1	52	#4	STR.	4'-4"	150
V2	60	#4	STR.	6'-2"	247

REINFORCING STEEL 2,531 LBS.

CLASS A CONCRETE BREAKDOWN
POUR #1
CAP & LOWER PART OF WINGS = 12.4 C.Y.
POUR #2
BACKWALL & UPPER PART OF WINGS = 6.2 C.Y.
POUR #3
LATERAL GUIDES = 0.1 C.Y.
TOTAL CLASS A CONCRETE = 18.7 C.Y.

HP 12 x 53 STEEL PILES
No. 9 LIN. FT. 180

PROJECT NO. B-3019
POLK COUNTY
STATION: 13+27.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 1

NORTH CAROLINA PROFESSIONAL SEAL 11310 ENGINEER DOUGLAS E. PETREY 2/5/08

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

DRAWN BY : MIKE BRITT DATE : 11-21-07
CHECKED BY : N. PIERCE DATE : 11-29-07

18-JAN-2008 09:00
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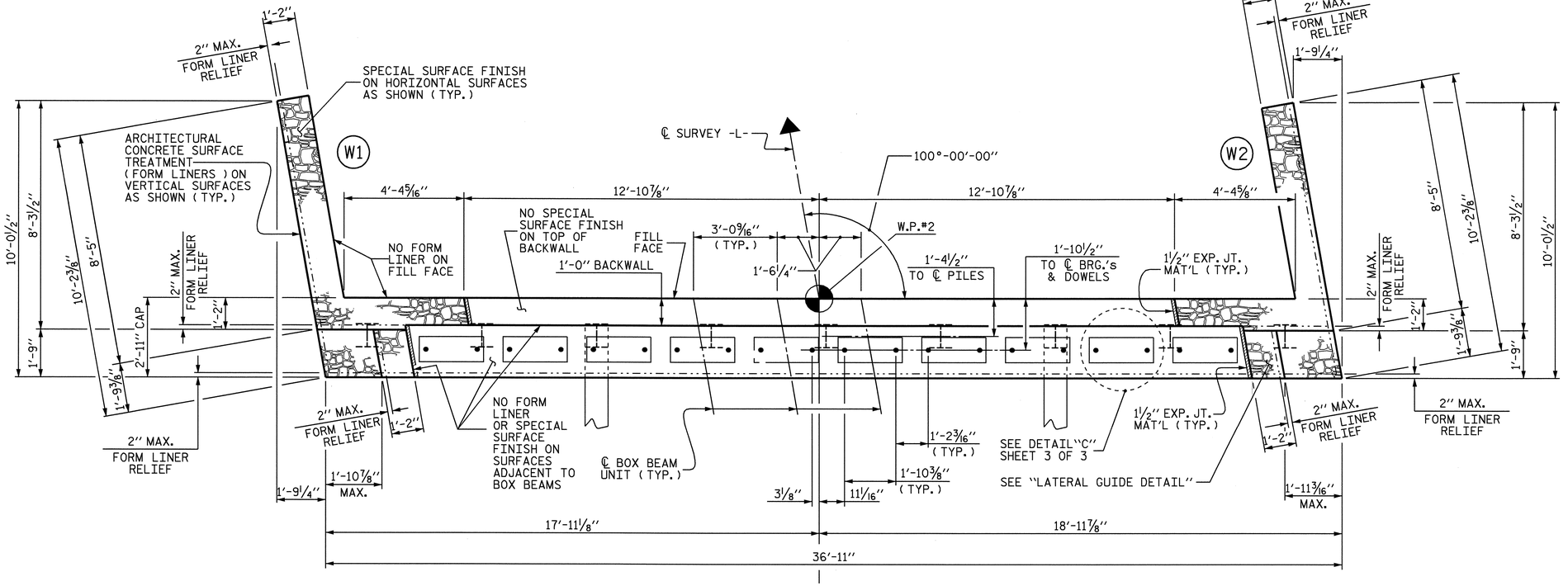
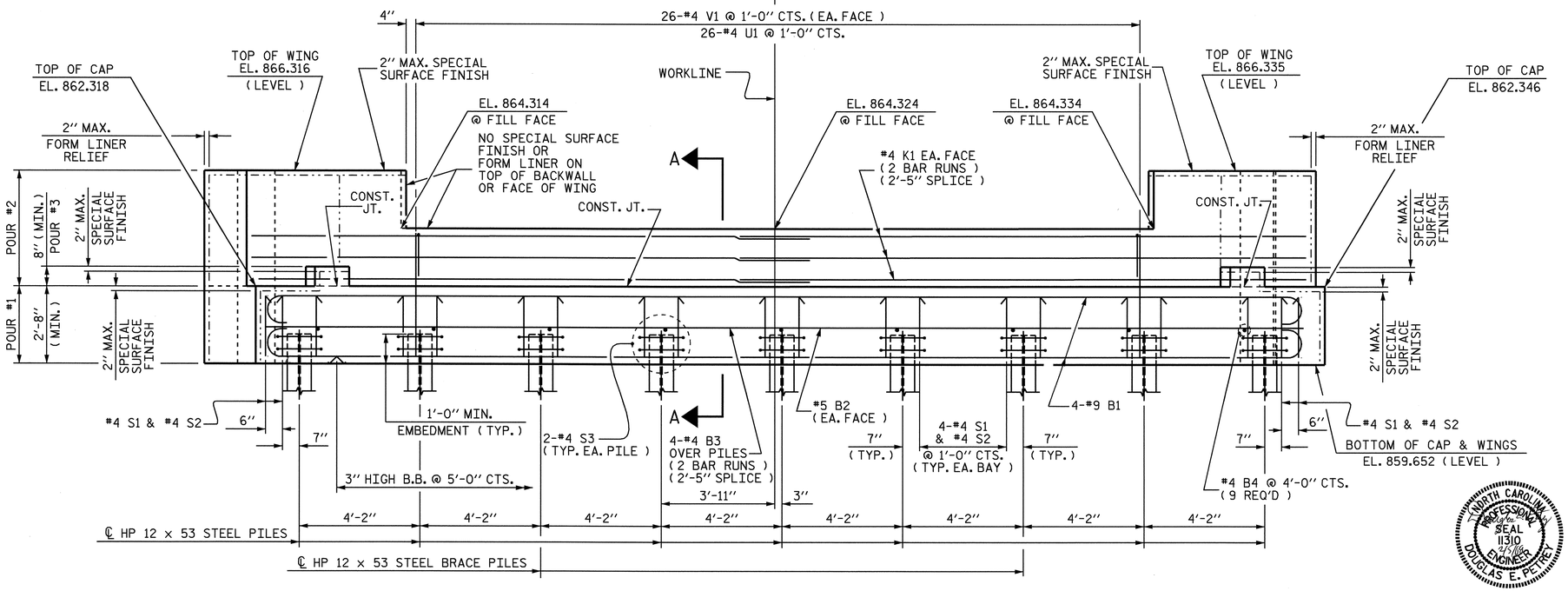


PLAN



ELEVATION

NOTES :

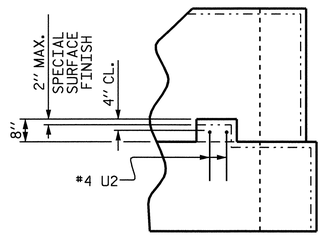
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

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.

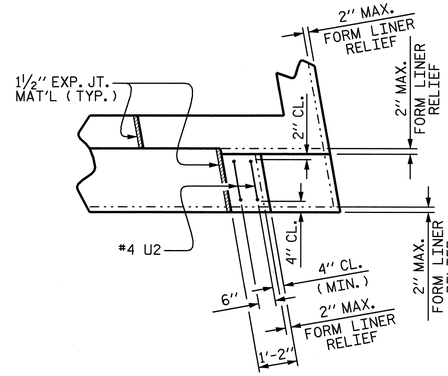
THE LATERAL GUIDE AT EACH END OF CAP IS NOT TO BE POURED UNTIL AFTER THE BOX BEAM UNITS ARE IN PLACE.

FOR SECTION A-A, SEE SHEET 3 OF 3.

FOR SPECIAL SURFACE FINISH AND FORM LINER DETAILS AND PAY ITEM, SEE ARCHITECTURAL CONCRETE SURFACE TREATMENT SPECIAL PROVISION.



ELEVATION



PLAN

LATERAL GUIDE DETAILS

(RIGHT LATERAL GUIDE SHOWN, LEFT END SIMILAR)

PROJECT NO. B-3019

POLK COUNTY

STATION: 13+27.50 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 2

NORTH CAROLINA PROFESSIONAL SEAL 11310 ENGINEER DOUGLAS E. PETREY

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

DRAWN BY : MIKE BRITT DATE : 11-26-07
CHECKED BY : N. PIERCE DATE : 11-29-07

18-JAN-2008 08:59
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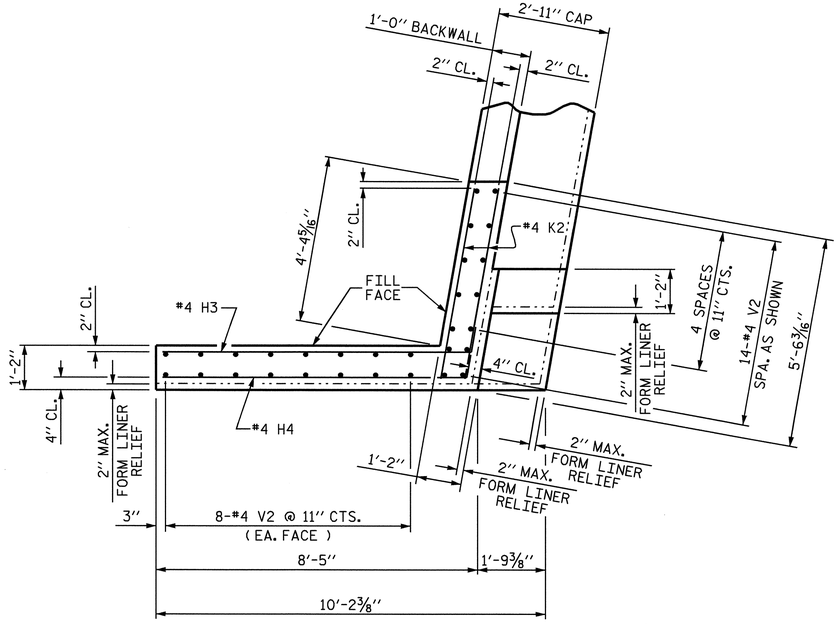
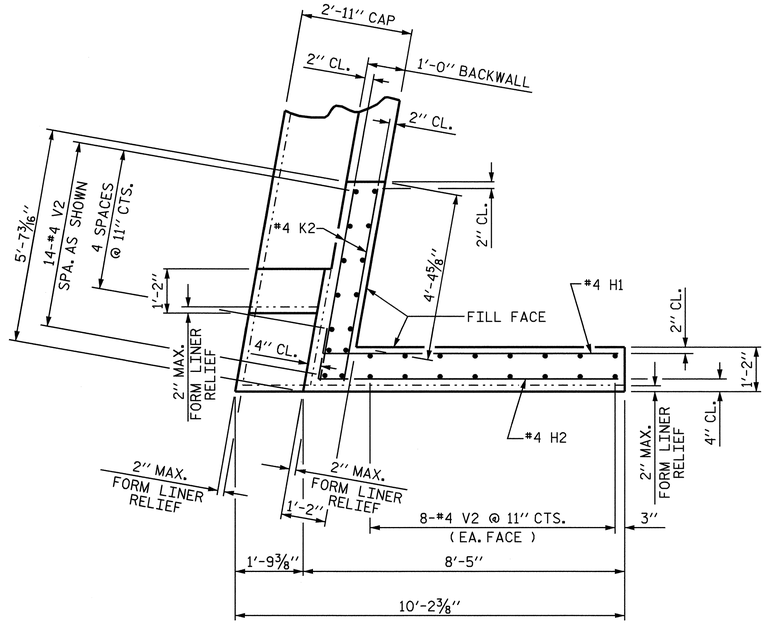
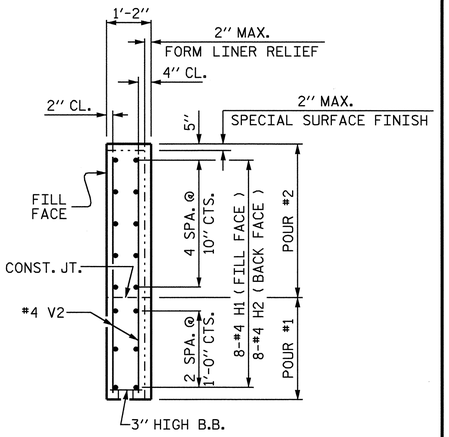


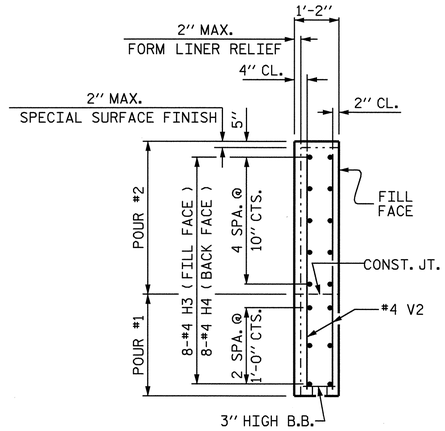
PLAN OF WING W1 (W1)



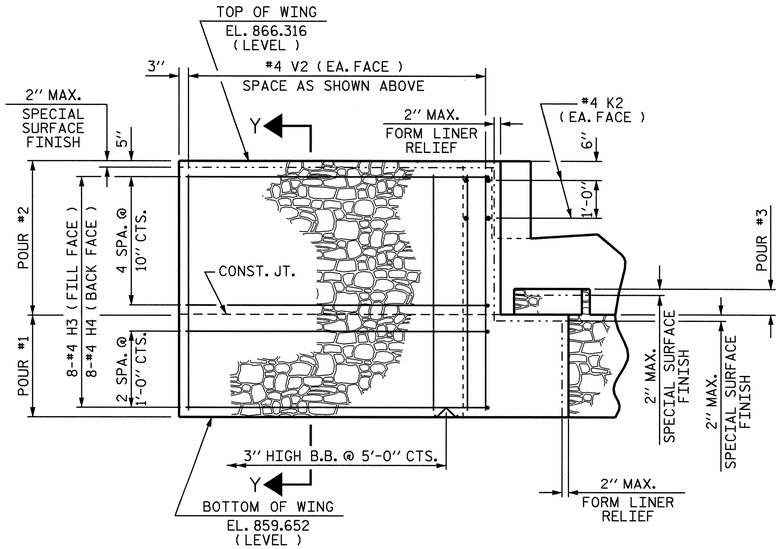
PLAN OF WING W2 (W2)



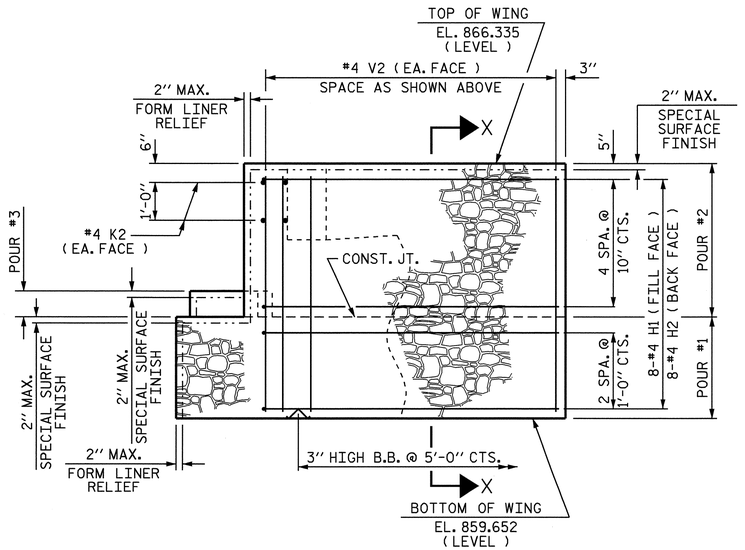
SECTION X-X



SECTION Y-Y



ELEVATION OF WING W1 (W1)



ELEVATION OF WING W2 (W2)

PROJECT NO. B-3019

POLK COUNTY

STATION: 13+27.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 2

NORTH CAROLINA PROFESSIONAL SEAL 11310 ENGINEER DOUGLAS E. PETREY

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

DRAWN BY : MIKE BRITT DATE : 11-26-07
CHECKED BY : N. PIERCE DATE : 11-29-07

18-JAN-2008 08:59
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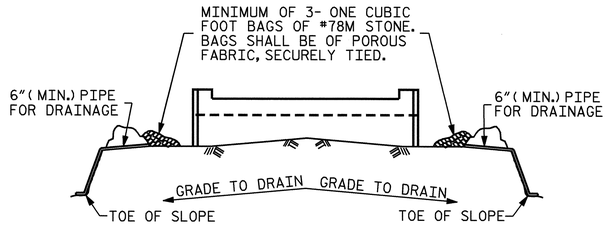

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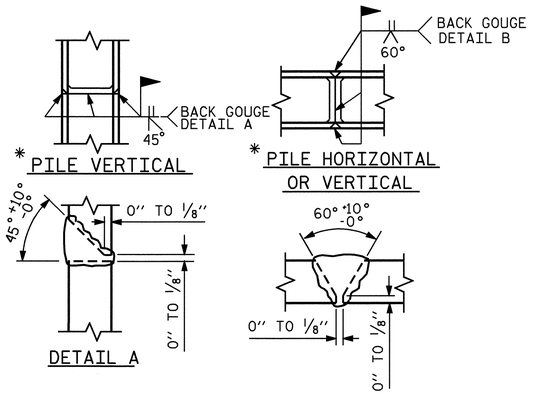
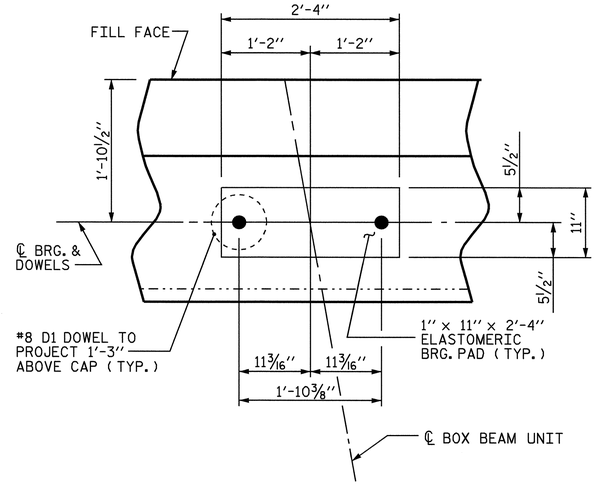
TEMPORARY DRAINAGE AT END BENT



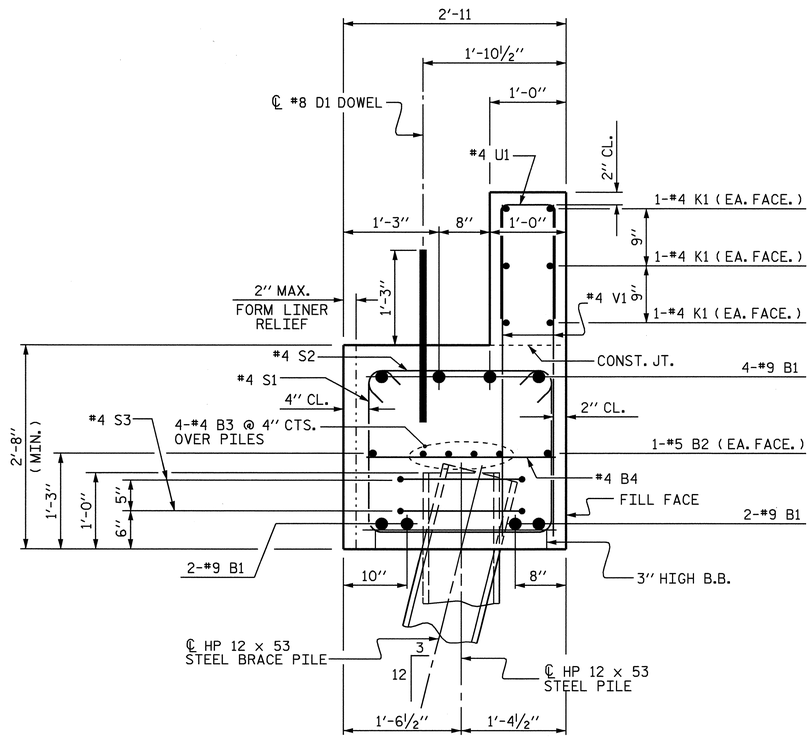
*POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS



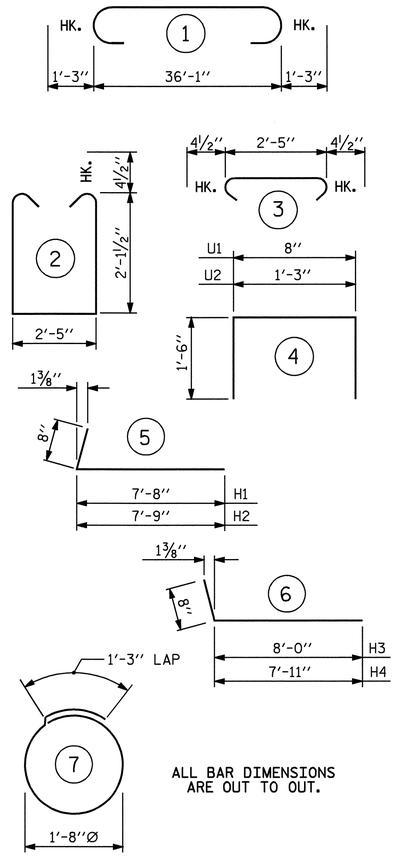
DETAIL "C"

(TYP. EA. BRG.)



SECTION A-A

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL
END BENT No. 2

BAR	No.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	38'-7"	1049
B2	2	#5	STR.	36'-3"	76
B3	8	#4	STR.	19'-4"	103
B4	9	#4	STR.	2'-5"	15
D1	20	#8	STR.	2'-3"	120
H1	8	#4	5	8'-4"	45
H2	8	#4	5	8'-5"	45
H3	8	#4	6	8'-8"	46
H4	8	#4	6	8'-7"	46
K1	12	#4	STR.	19'-4"	155
K2	8	#4	STR.	5'-0"	27
S1	36	#4	2	7'-5"	178
S2	36	#4	3	3'-2"	76
S3	18	#4	7	6'-6"	78
U1	26	#4	4	3'-8"	64
U2	4	#4	4	4'-3"	11
V1	52	#4	STR.	4'-4"	150
V2	60	#4	STR.	6'-2"	247

REINFORCING STEEL 2,531 LBS.

CLASS A CONCRETE BREAKDOWN
POUR #1
CAP & LOWER PART OF WINGS = 12.4 C.Y.
POUR #2
BACKWALL & UPPER PART OF WINGS = 6.2 C.Y.
POUR #3
LATERAL GUIDES = 0.1 C.Y.
TOTAL CLASS A CONCRETE = 18.7 C.Y.

HP 12 x 53 STEEL PILES
No. 9 LIN. FT. 250

PROJECT NO. B-3019
POLK COUNTY
STATION: 13+27.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 2

NORTH CAROLINA PROFESSIONAL SEAL 11310 ENGINEER DOUGLAS E. PETREY 2/5/08

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

DRAWN BY : MIKE BRITT DATE : 11-26-07
CHECKED BY : N. PIERCE DATE : 11-29-07

18-JAN-2008 08:59
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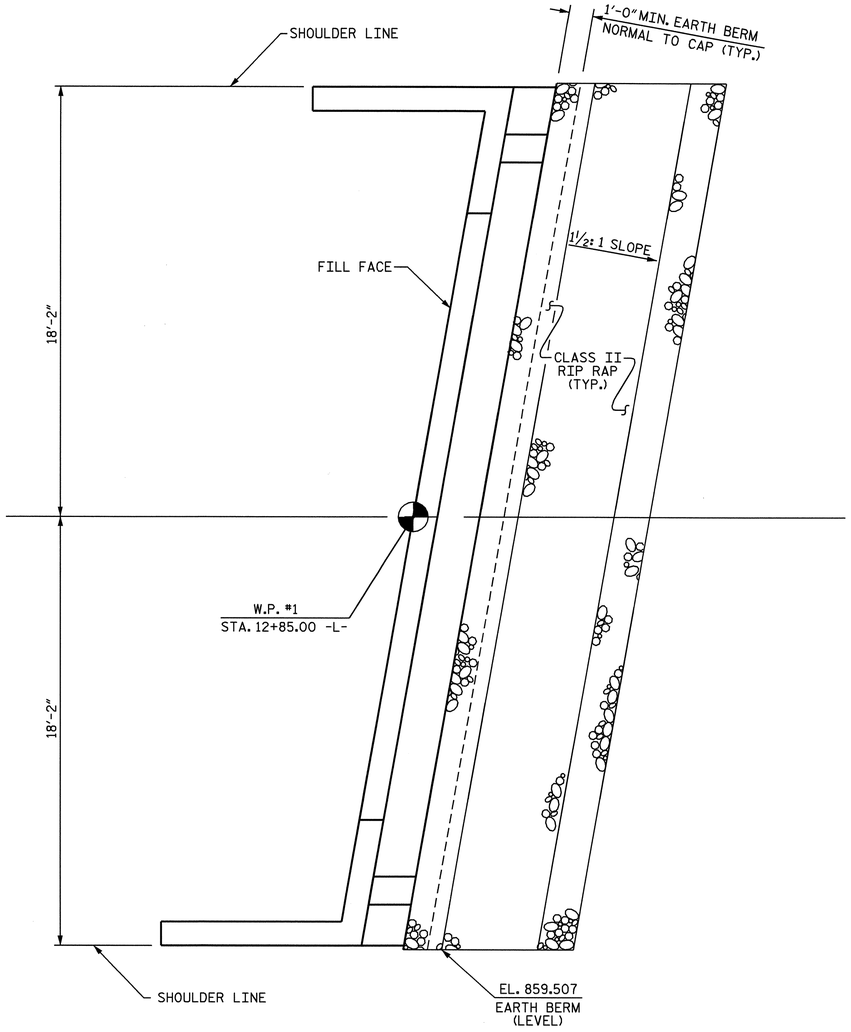
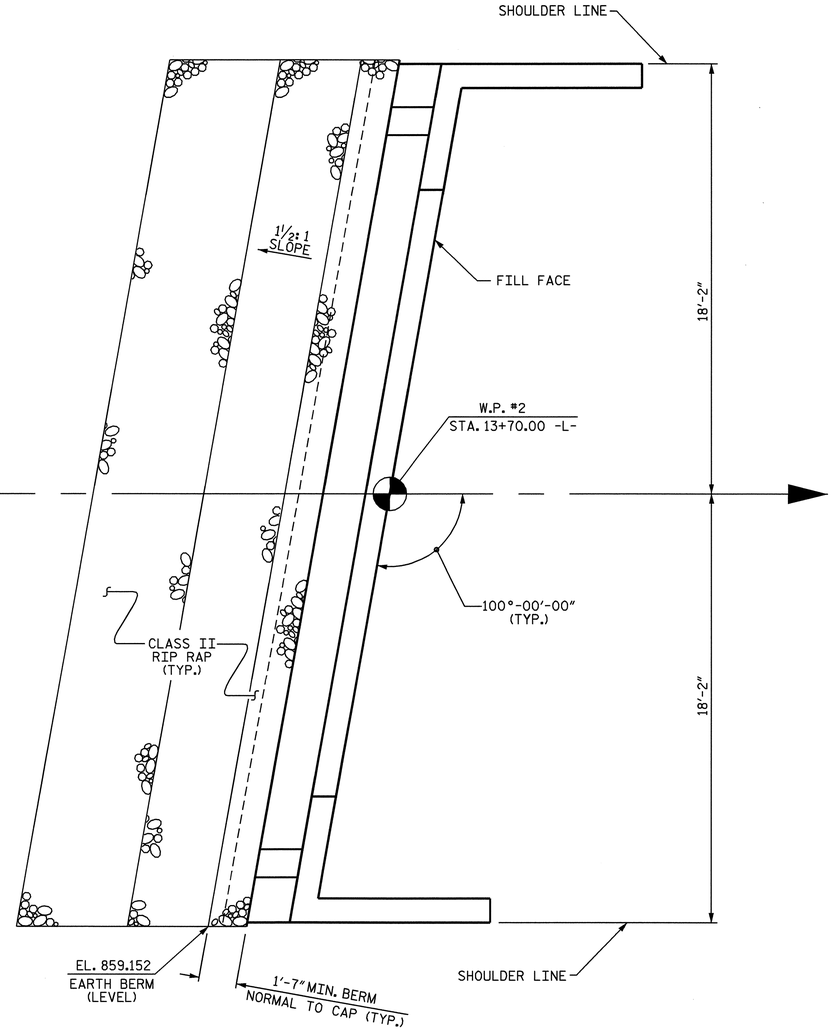


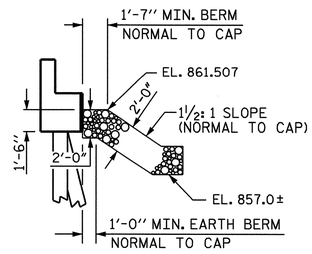
END BENT No. 1



END BENT No. 2

PLAN

ESTIMATED QUANTITIES	
BRIDGE @ STA. 13+27.50 -L-	RIP RAP CLASS II
	TONS
END BENT 1	35
END BENT 2	40

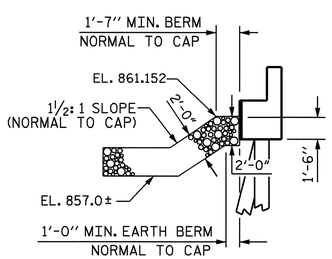


℄ SECTION @ END BENT No. 1

BERM RIP RAPPING

NOTE:

CONTRACTOR SHALL PROVIDE STONE FOR RIP RAP IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AND SHALL PROVIDE RIP RAP WITH COLORATION TO BLEND WITH THE ARCHITECTURAL CONCRETE SURFACE TREATMENT COLORATION USED ON THE VARIOUS STRUCTURE MEMBERS AS APPROVED BY THE ENGINEER.



℄ SECTION @ END BENT No. 2

BERM RIP RAPPING

PROJECT NO. B-3019

POLK COUNTY

STATION: 13+27.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

RIP RAP DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 11310 ENGINEER DOUGLAS E. PETREY 2/5/08

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

DRAWN BY : A. V. ROYAL DATE : 12/07
CHECKED BY : D. E. PETREY DATE : 12/07

18-JAN-2008 08:58
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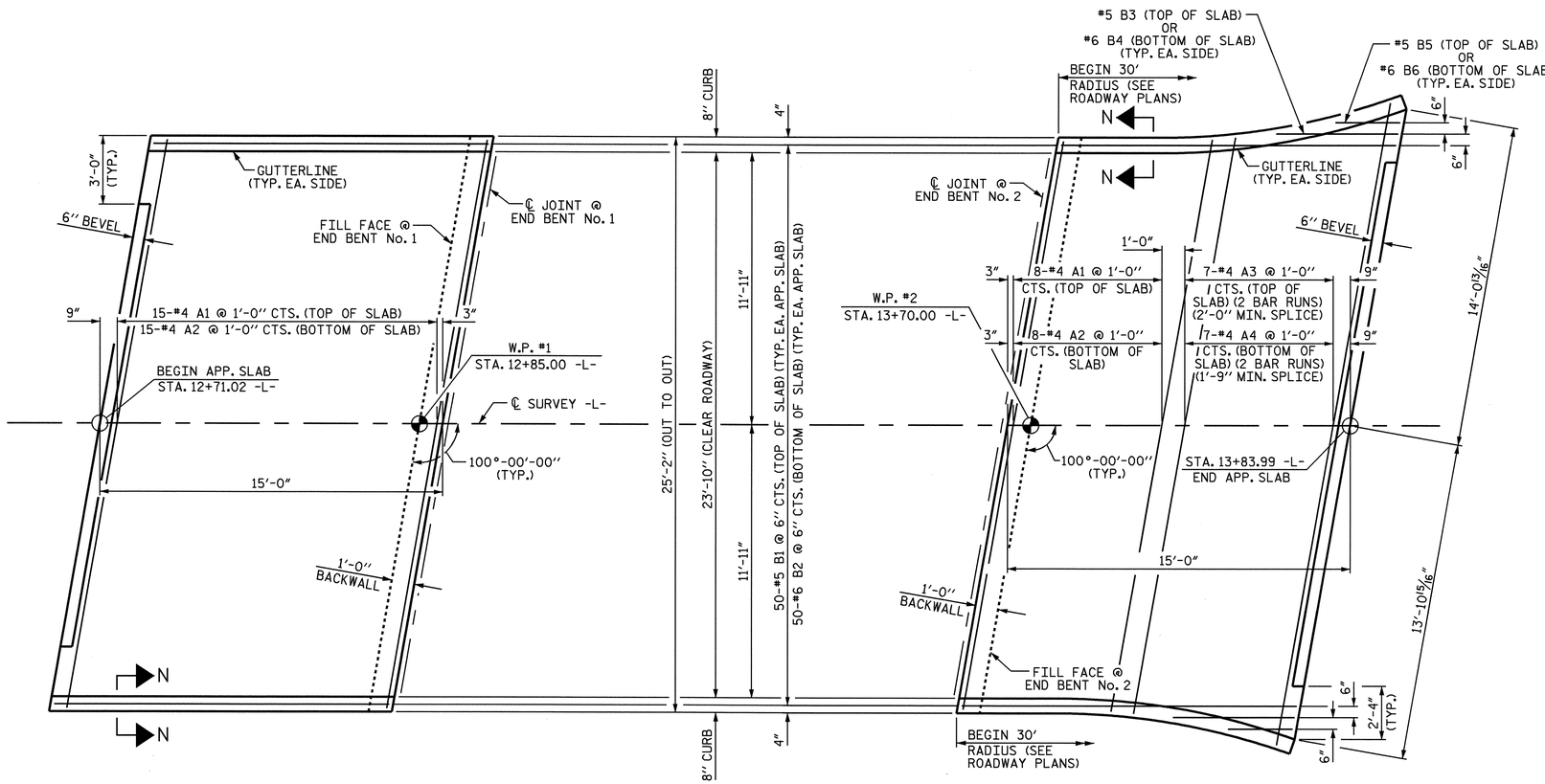
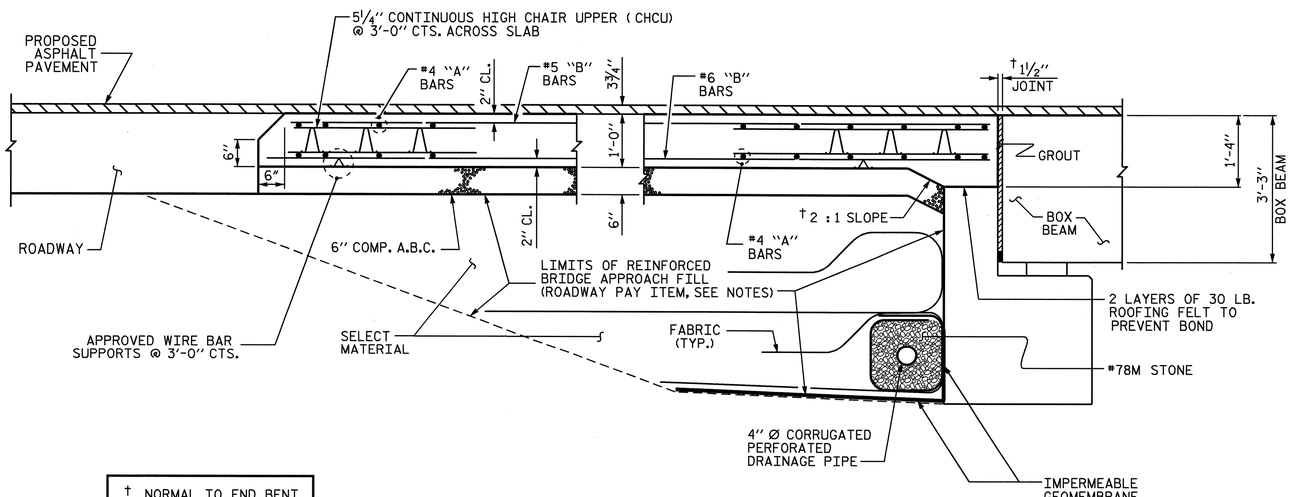


@ END BENT No. 1

@ END BENT No. 2

PLAN OF APPROACH SLABS



† NORMAL TO END BENT

SECTION THRU SLAB

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 EACH EDGE OF THE APPROACH SLAB.

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

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

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

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

APPROACH SLAB GROOVING IS NOT REQUIRED.

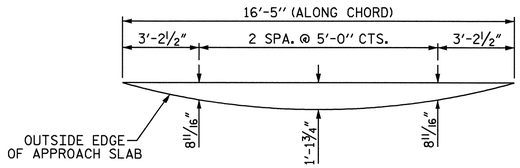
BILL OF MATERIAL

APPROACH SLAB AT EB #1

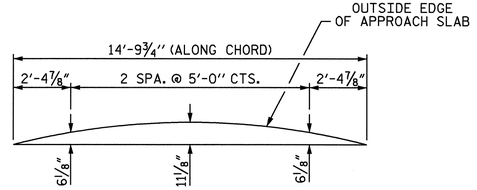
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳A1	15	#4	STR	25'-2"	252
A2	15	#4	STR	25'-2"	252
✳B1	50	#5	STR	14'-2"	739
B2	50	#6	STR	14'-8"	1101
REINFORCING STEEL				LBS.	1353
✳EPOXY COATED REINFORCING STEEL				LBS.	991
CLASS AA CONCRETE				C. Y.	14.7

APPROACH SLAB AT EB #2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳A1	8	#4	STR	25'-2"	134
A2	8	#4	STR	25'-2"	134
✳A3	14	#4	STR	15'-5"	144
A4	14	#4	STR	15'-5"	144
✳B1	50	#5	STR	14'-2"	739
B2	50	#6	STR	14'-8"	1101
✳B3	2	#5	STR	5'-4"	11
B4	2	#6	STR	5'-4"	16
✳B5	2	#5	STR	2'-10"	6
B6	2	#6	STR	2'-10"	9
REINFORCING STEEL				LBS.	1404
✳EPOXY COATED REINFORCING STEEL				LBS.	1034
CLASS AA CONCRETE				C. Y.	15.1

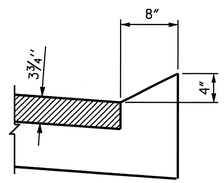


LEFT SIDE

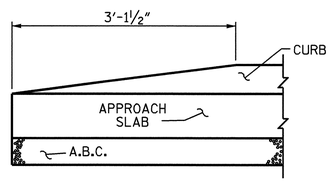


RIGHT SIDE

ARC OFFSETS @ END BENT NO. 2



SECTION N-N



END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS

PROJECT NO. B-3019

POLK COUNTY

STATION: 13+27.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE BOX BEAM

NORTH CAROLINA PROFESSIONAL SEAL 11310 ENGINEER DOUGLAS E. PETREY

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

DRAWN BY : B. L. GREEN DATE : 12/07
CHECKED BY : D. E. PETREY DATE : 1/3/08

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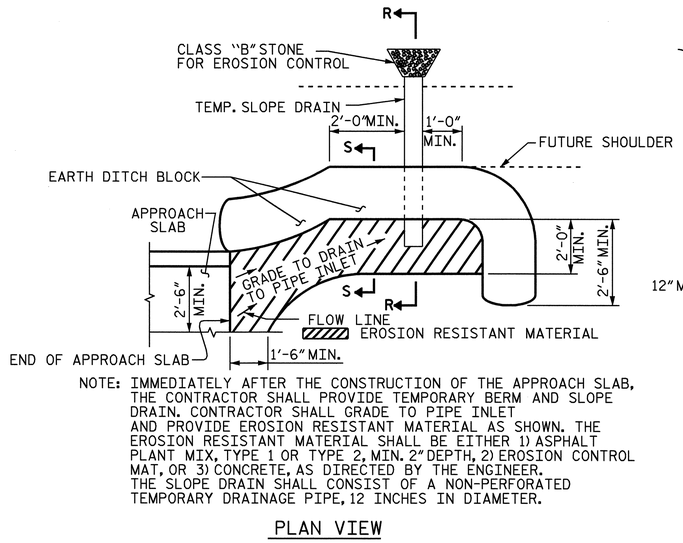
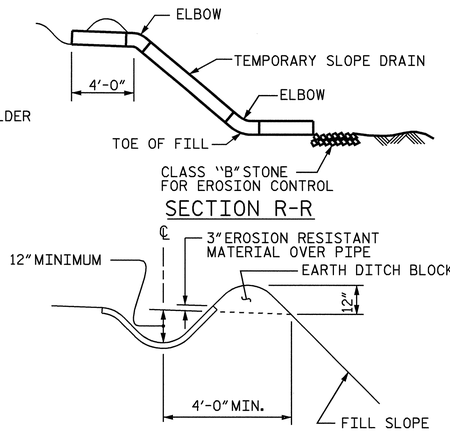


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

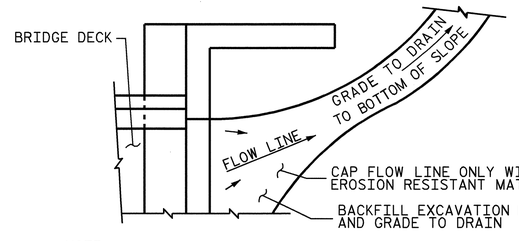


SECTION R-R

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 : B. L. GREEN	DATE : 12/07		
CHECKED BY : D. E. PETREY	DATE : 1/3/08		
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	

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NORTH CAROLINA PROFESSIONAL SEAL 11310 ENGINEER DOUGLAS E. PETREY 5/15/08

PROJECT NO. B-3019

POLK COUNTY

STATION: 13+27.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB DETAILS

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

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

REV. 6-16-95 EEM 60 RGW REV. 6-27-02 RWW 60 JTE
REV. 8-16-99 RWW 60 JTE