STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4218		

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
33563.1.1	BRZ-1730(5)	P.E.
33563.2.1	BRZ-1730(5)	RW & UTIL.
33563.3.1	BRZ-1730(5)	CONSTRUCTION

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ORANGE COUNTY

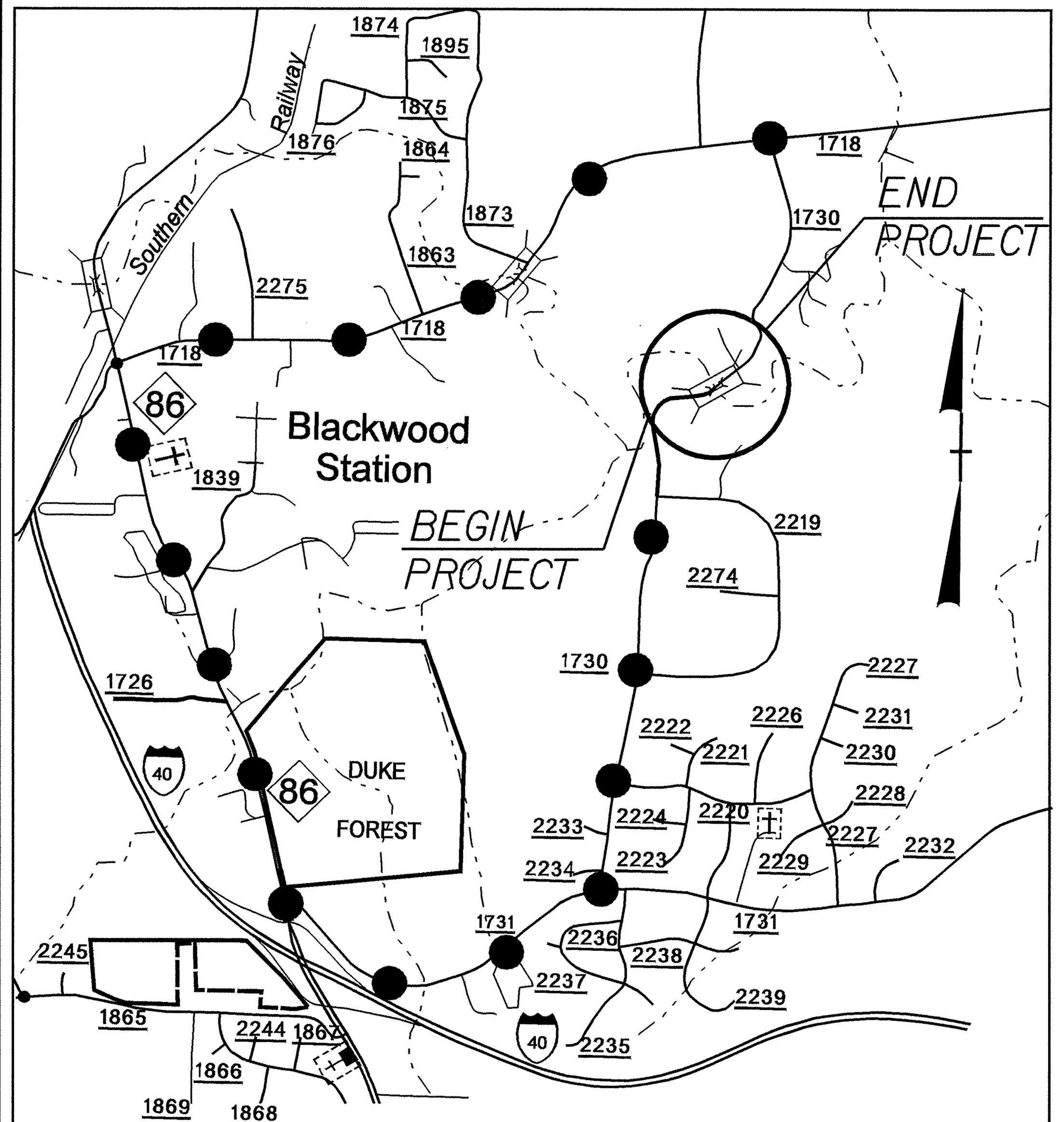
LOCATION: BRIDGE NO. 108 OVER NEW HOPE CREEK ON SR 1730 (TURKEY FARM ROAD)

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

TIP PROJECT: B-4218

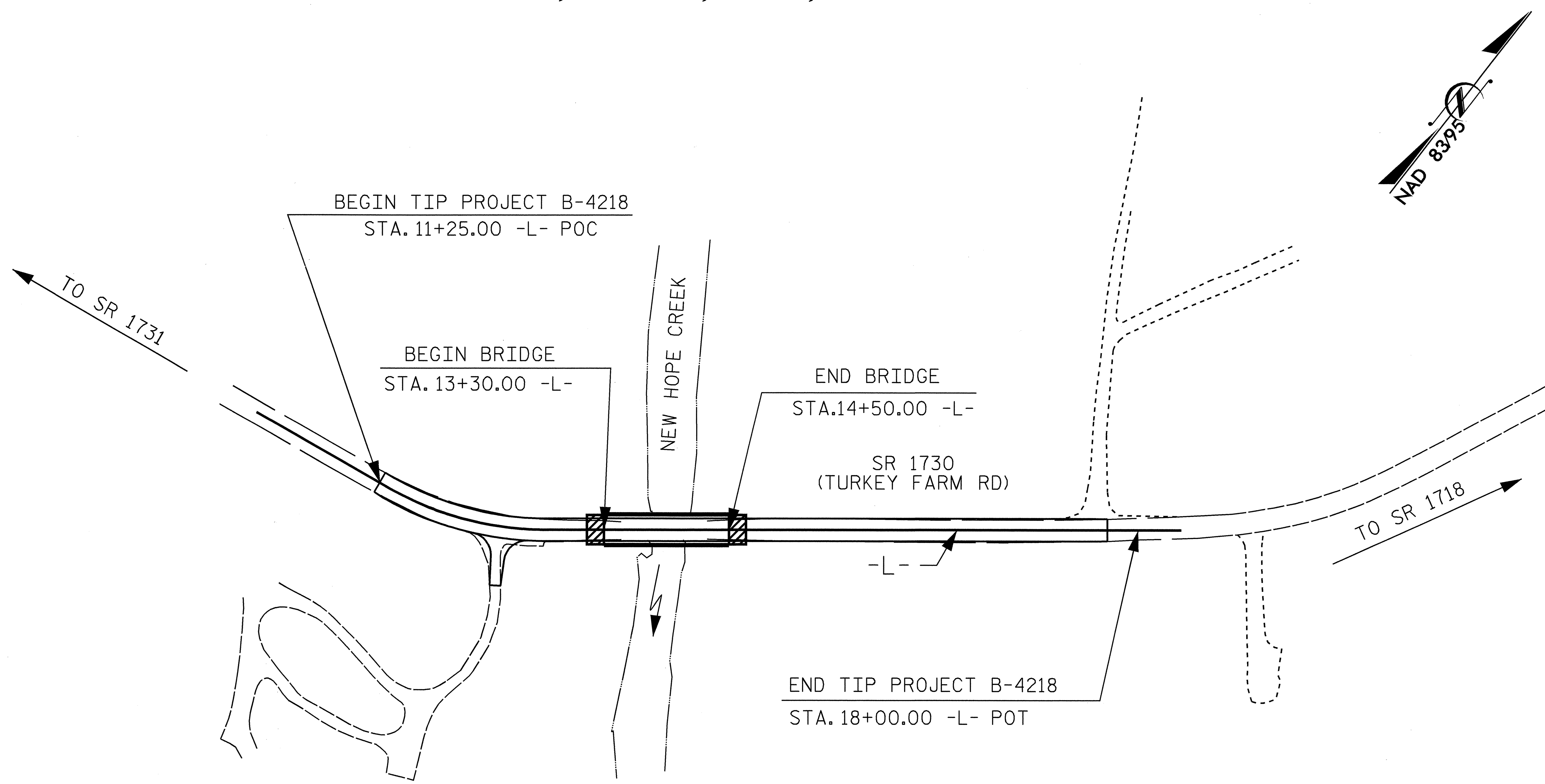
PROJECT: C201872

STRUCTURE



VICINITY MAP
DETOUR ROUTE

NEAREST SHIPPING POINT:
BLACKWOOD ON SOUTHERN R.R.,
2.4MILES FROM BRIDGE



DESIGN DATA

ADT 2006 = 681
ADT 2026 = 1,291
DHV = 10 %
D ≐ 60 %
T = 4 % *
V = 40 MPH
* TTST 1 DUAL 3

FUNC CLASS = LOCAL

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4218 = 0.105 mi
LENGTH STRUCTURE TIP PROJECT B-4218 = 0.023 mi
TOTAL LENGTH OF TIP PROJECT B-4218 = 0.128 mi

PREPARED IN THE OFFICE OF :
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr. Raleigh, NC 27610

2006 STANDARD SPECIFICATIONS

LETTING DATE:
JULY 15, 2008

J.M. BAILEY, PE
PROJECT ENGINEER

D.A. DAVENPORT,JR., PE
PROJECT DESIGN ENGINEER

STRUCTURE DESIGN UNIT
1000 Birch Ridge Dr.
Raleigh, NC 27610

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

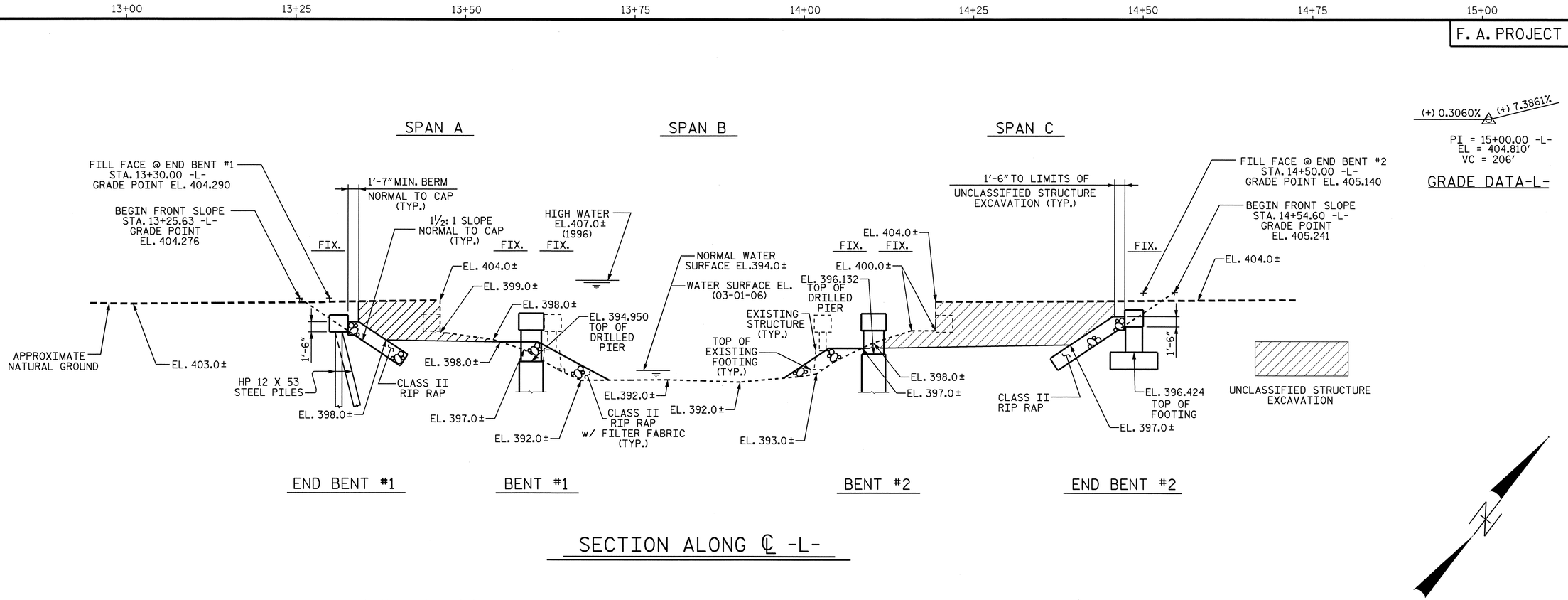
STATE DESIGN ENGINEER: P.E.

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

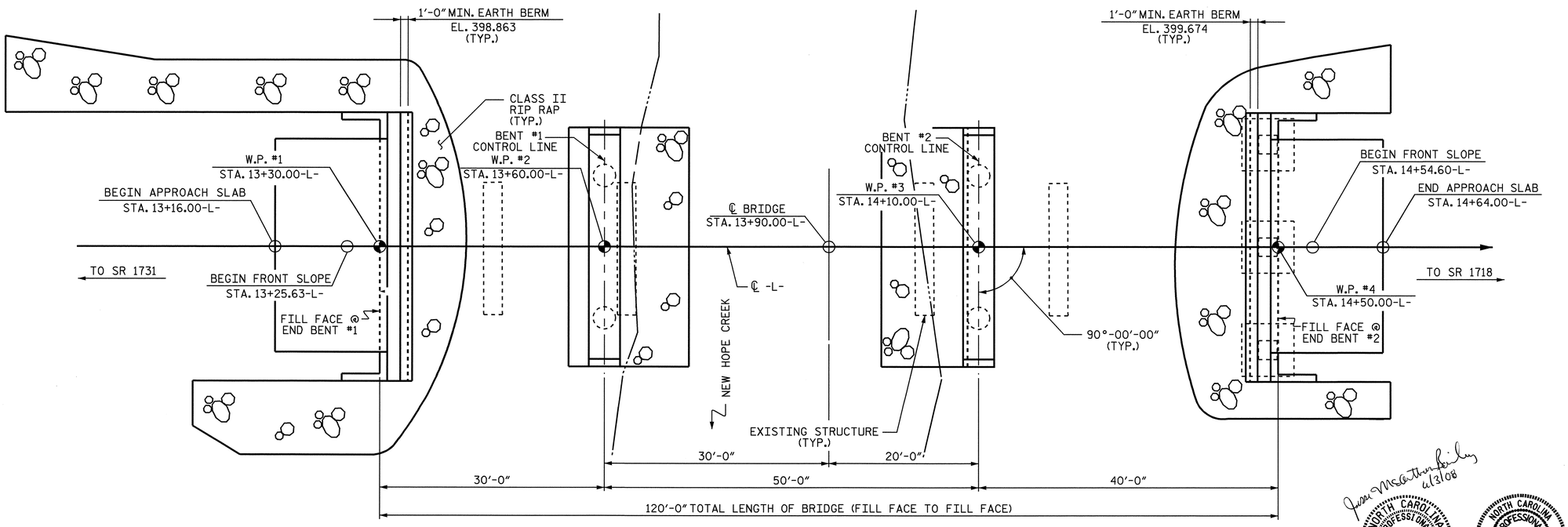
APPROVED P.E.
DIVISION ADMINISTRATOR

18-APR-2008 08:28
$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
adavenport
09/08/99

F. A. PROJECT NO.: BRZ-1730(5)



SECTION ALONG ℄ -L-



PLAN
(PILES NOT SHOWN FOR CLARITY)

PROJECT NO. B-4218
ORANGE COUNTY
STATION: 13+90.00-L-

SHEET 1 OF 3 REPLACES BRIDGE NO. 108

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING FOR BRIDGE OVER NEW HOPE CREEK ON SR 1730 BETWEEN SR 1731 AND SR 1718

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			26

NORTH CAROLINA PROFESSIONAL SEAL 022506 ENGINEER JESSE McARTHUR BAILEY
4/3/08

NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER D. ANDREW DAVENPORT, JR
6-3-08

DRAWN BY : D.A. DAVENPORT DATE : 03-08
CHECKED BY : A. SORSENGINH DATE : 03-08

03-JUN-2008 08:37
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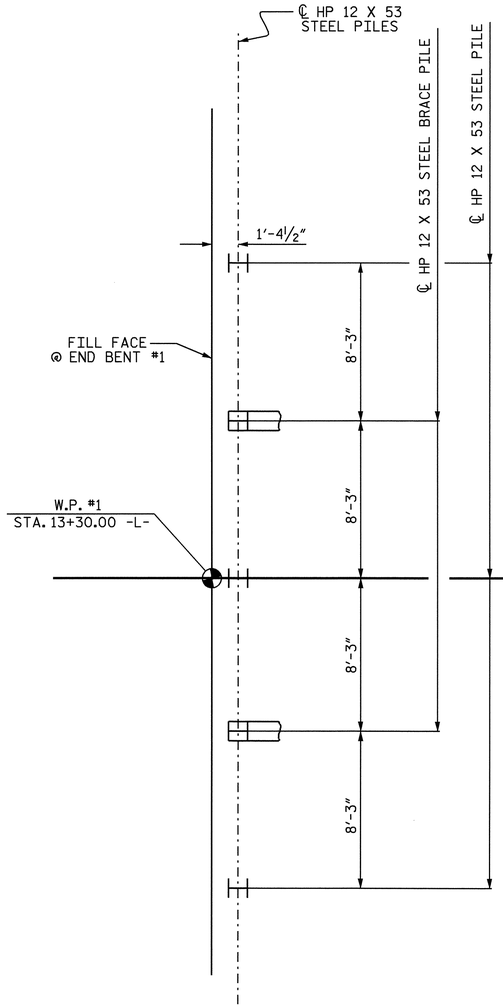
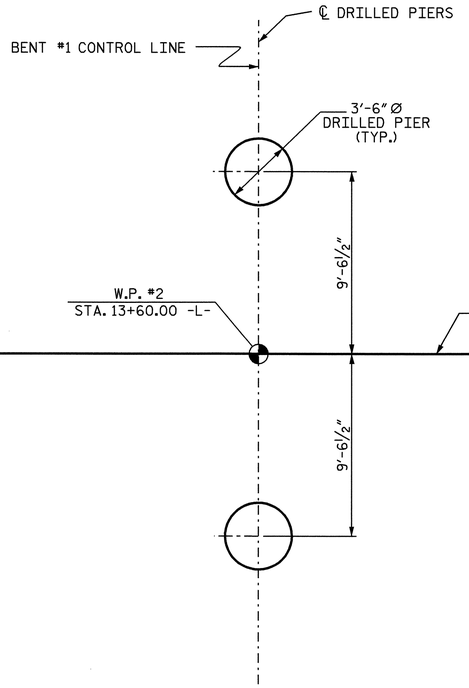
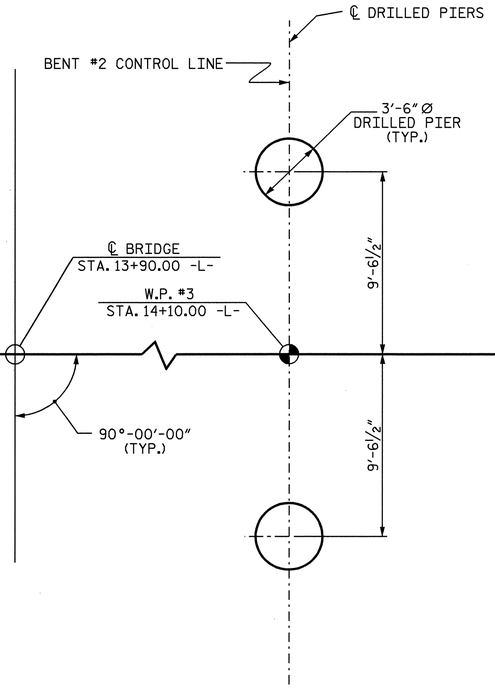
addavenport



END BENT #1



BENT #1



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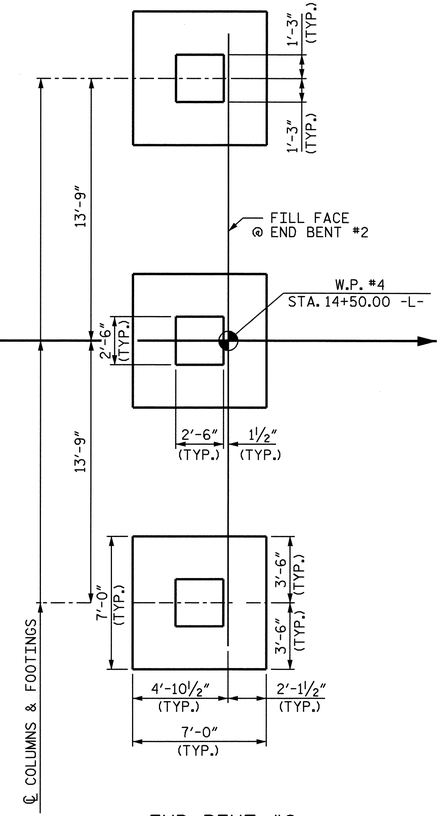

END BENT #2

FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO PILE CENTERLINE.
BRACE PILES AT END BENT #1 ARE BATTERED 3 : 12.

PROJECT NO. B-4218

ORANGE COUNTY

STATION: 13+90.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING FOR BRIDGE OVER NEW HOPE CREEK ON SR 1730 BETWEEN SR 1731 AND SR 1718

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
1			3			TOTAL SHEETS
2			4			26

DRAWN BY : D.A. DAVENPORT DATE : 03-08
CHECKED BY : A. SORSENGINH DATE : 03-08

15-MAY-2008 15:24
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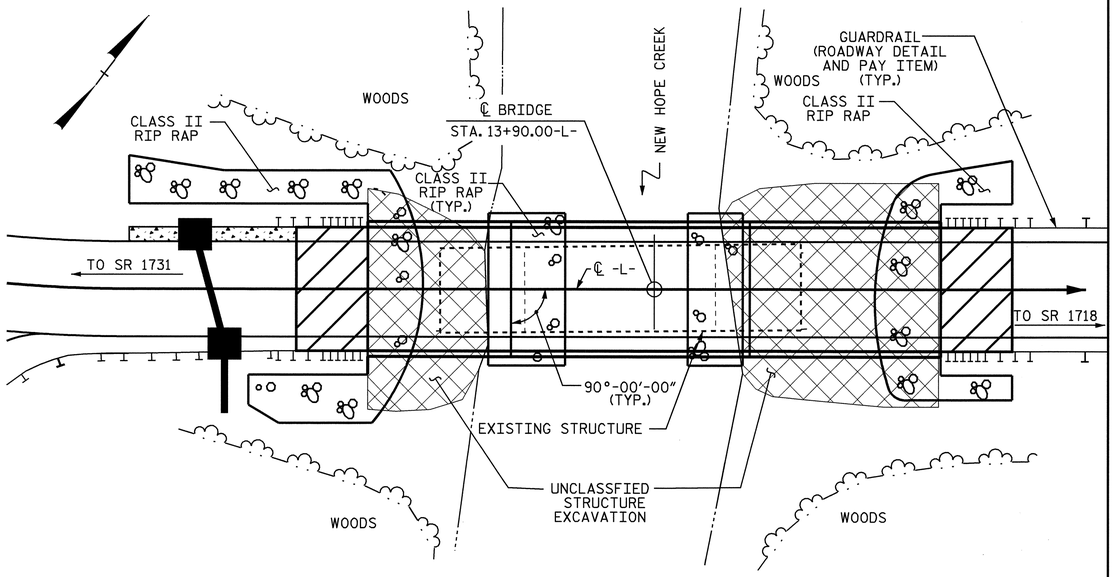
dgladden

BENCH MARK No. 1: RAILROAD SPIKE SET IN 18"Ø POPLAR TREE
AT STA. 8+12.00 -BL-, 275' LEFT, EL. 401.170



FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS

LOCATION SKETCH

HYDRAULIC DATA

DESIGN DISCHARGE	=	3500 C.F.S.
FREQUENCY OF DESIGN FLOOD	=	25 YRS.
DESIGN HIGH WATER ELEVATION	=	404.300
DRAINAGE AREA	=	22.4 SQ. MI.
BASIC DISCHARGE (Q100)	=	5200 C.F.S.
BASIC HIGH WATER ELEVATION	=	406.200

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	=	3200 C.F.S.
FREQUENCY OF OVERTOPPING FLOOD	=	25 YRS.±
OVERTOPPING FLOOD ELEVATION	=	404.200

NOTES

ASSUMED LIVE LOAD = HS20 OR ALTERNATE LOADING, EXCEPT THAT CORED SLAB UNITS HAVE BEEN DESIGNED FOR HS25.

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

FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.

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

THE EXISTING STRUCTURE CONSISTING OF 3 SIMPLE SPANS, 1 @ 17'-9", 1 @ 40'-0" AND 1 @ 17'-11", TIMBER DECK WITH 1½" ASPHALT WEARING SURFACE ON I-BEAMS ON TIMBER CAPS AND PILES WITH INTERIOR BENT PILES ENCASED WITH CONCRETE, WITH A CLEAR ROADWAY WIDTH OF 17'-2" AND LOCATED AT THE PROPOSED SITE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT.

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

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON SHEET S-1 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.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

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

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

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

DRILLED PIERS AT BENT NO. 1 AND NO. 2 ARE DESIGNED FOR BOTH SKIN FRICTION AND END BEARING. CHECK FIELD CONDITIONS FOR THE REQUIRED END BEARING CAPACITY OF 50 TSF.

DRILLED PIERS AT BENT NO. 1 AND NO. 2 ARE DESIGNED FOR AN APPLIED LOAD OF 150 TONS EACH AT THE TOP OF THE COLUMNS.

INSTALL DRILLED PIERS AT BENT NO. 1 AND NO. 2 THAT EXTEND TO AN ELEVATION NO HIGHER THAN EL. 383.000 AND SATISFY THE REQUIRED END BEARING CAPACITY AND HAVE A MINIMUM PENETRATION OF 6 FEET INTO ROCK AS DEFINED BY THE DRILLED PIER SPECIAL PROVISION.

PERMANENT STEEL CASING IS REQUIRED FOR DRILLED PIERS AT BENT NO. 1 AND NO. 2. DO NOT EXTEND CASING BELOW EL. 388.000 WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

THE EXISTING CONCRETE PILE ENCASEMENT FOR BENTS SHALL BE REMOVED DOWN TO THE TOP OF THE EXISTING FOOTING.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

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

THE REQUIRED BEARING CAPACITY FOR SPREAD FOOTINGS AT END BENT NO. 2 IS 15 TONS PER SQUARE FOOT. CHECK FIELD CONDITIONS FOR THE REQUIRED BEARING CAPACITY JUST PRIOR TO PLACING CONCRETE.

THE ALLOWABLE BEARING CAPACITY FOR SPREAD FOOTINGS AT END BENT NO. 2 IS 5 TONS PER SQUARE FOOT.

DRIVE PILES AT END BENT NO. 1 TO A REQUIRED 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 IS 60 TONS PER PILE.

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 1 AND BENT NO. 2 IS EL. 385.000. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

CARRY SPREAD FOOTINGS AT END BENT NO. 2 AT LEAST 12 INCHES INTO WEATHERED ROCK WITH MINIMUM THICKNESS SHOWN ON THE PLANS.

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+90.00-L-."

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

DO NOT USE SLURRY CONSTRUCTION FOR DRILLED PIERS AT BENT NO. 1 AND BENT NO. 2.

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

INTEGRITY TESTING MAY BE REQUIRED FOR DRILLED PIERS. IF REQUIRED AND AFTER DRILLED PIER CONCRETE ACHIEVES 3000 PSI COMPRESSIVE STRENGTH, PROVIDE ACCESS TO AND PREPARE TOP OF PIERS AS DIRECTED BY THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR AND PERFORM INTEGRITY TESTING. DO NOT CONSTRUCT COLUMNS OR FOOTINGS ON TOP OF PIERS THAT ARE TESTED UNTIL TEST RESULTS ARE ACCEPTABLE. PAYMENT FOR COSTS ASSOCIATED WITH INTEGRITY TESTING WILL BE CONSIDERED INCIDENTAL TO THE UNIT PRICE FOR THE DRILLED PIERS.

FOR DRILLED PIERS, SEE DRILLED PIERS SPECIAL PROVISION.

THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT ONE FOOT BELOW THE GROUND LINE.

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

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	FOUNDATION EXCAVATION	3'-6"Ø DRILLED PIERS IN SOIL	3'-6"Ø DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 3'-6"Ø DRILLED PIER	SID INSPECTION	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	HP 12 X 53 STEEL PILES		2 BAR METAL RAIL	1'-2"X 2'-10" CONCRETE PARAPET	RIP RAP CLASS II (2-0" THICK)	FILTER FABRIC FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0"X 1'-9" PRESTRESSED CONCRETE CORED SLABS
	LUMP SUM	CU. YDS.	LIN. FT.	LIN. FT.	LIN. FT.	EACH	LUMP SUM	CU. YD.	LUMP SUM	LBS.	LBS.	NO.	LIN.FT.	LIN. FT.	LIN. FT.	TONS	SQ. YD.	LUMP SUM	LIN. FT.
SUPERSTRUCTURE														220.00	235.50				1175.00
END BENT NO. 1								11.6		1,834		5	50			225	250		
BENT NO. 1			13.00	13.00	13.90	1		18.2		4,300	798					40	45		
BENT NO. 2			15.00	13.00	16.26	1		17.4		4,300	796					25	30		
END BENT NO. 2		110						27.8		3,856						165	180		
TOTAL	LUMP SUM	110	28.00	26.00	30.16	2	LUMP SUM	75.0	LUMP SUM	14,290	1,594	5	50	220.00	235.50	455	505	LUMP SUM	1,175.00

PROJECT NO. B-4218
ORANGE COUNTY
STATION: 13+90.00-L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING FOR BRIDGE OVER NEW HOPE CREEK ON SR 1730 BETWEEN SR 1731 AND SR 1718

NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER D. ANDREW DAVENPORT, JR.
5-2-08

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS
2			4			26

DRAWN BY : D.A. DAVENPORT DATE : 02-08
CHECKED BY : A. SORSENGINH DATE : 03-08

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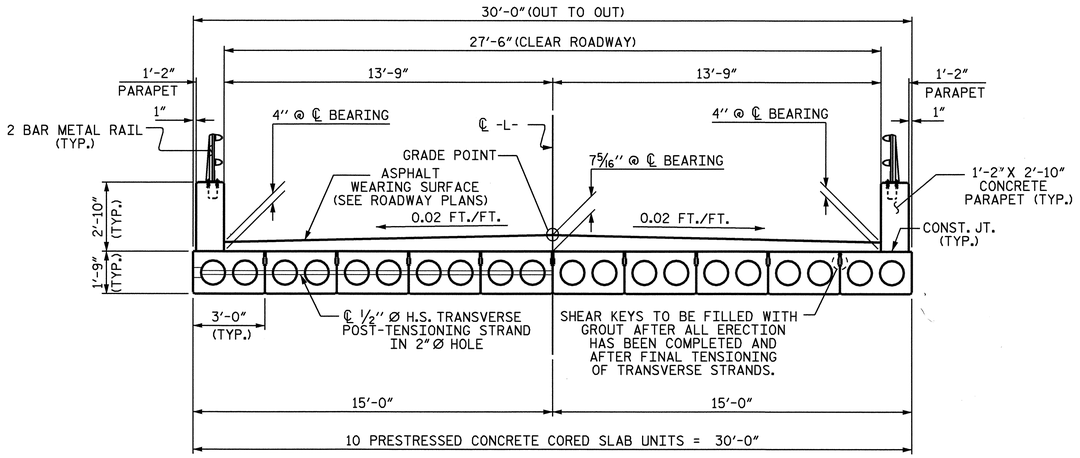
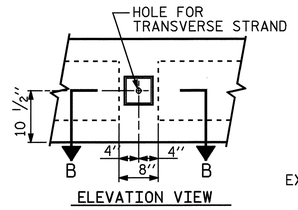
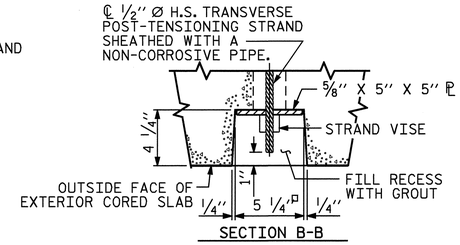


TYPICAL SECTION

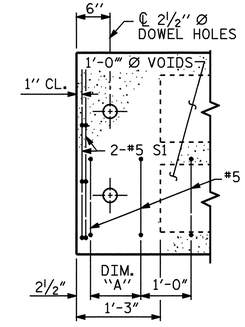


ELEVATION VIEW



SECTION B-B

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

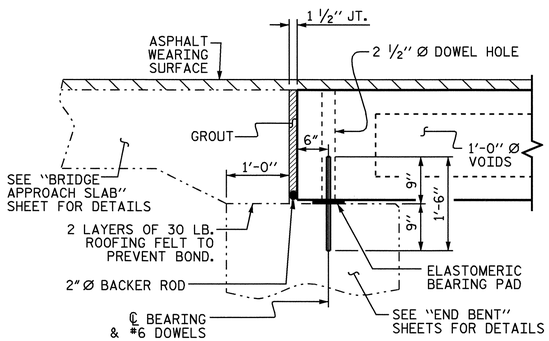


90° SKEW

PART PLAN-EXTERIOR SECTION

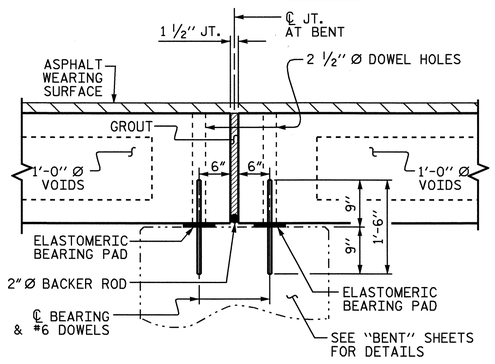
NOTE: EXTERIOR SECTION SHOWN-INTERIOR SECTION SIMILAR EXCEPT OMIT S3 BARS.

FIXED END

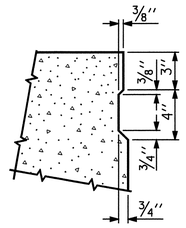


SECTION AT END BENT

FIXED END FIXED END

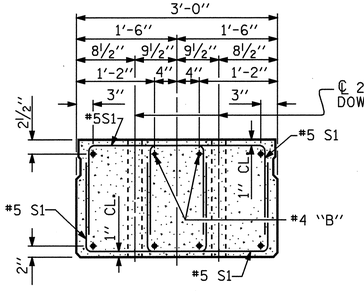


SECTION AT BENT



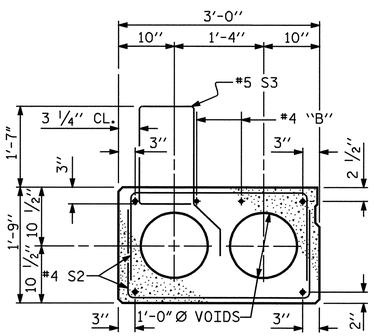
SHEAR KEY DETAIL

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



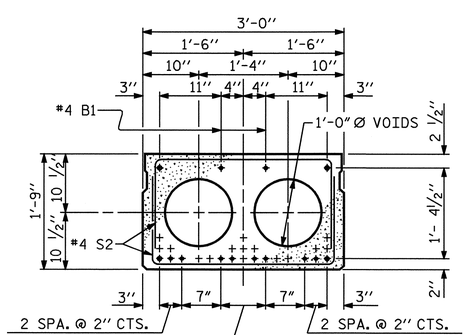
END ELEVATION

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

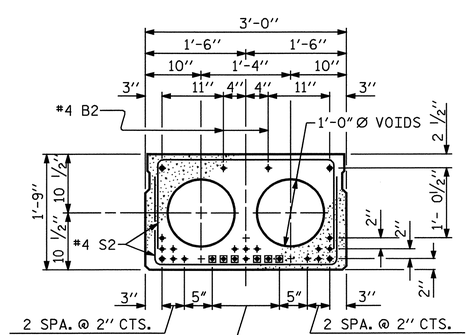


EXTERIOR SLAB SECTION

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

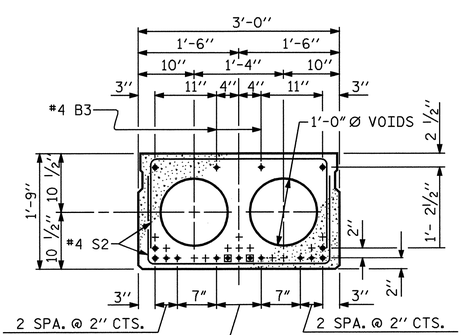


INTERIOR SLAB SECTION 1/2" Ø LOW RELAXATION STRAND LAYOUT (SPAN "A")



INTERIOR SLAB SECTION 1/2" Ø LOW RELAXATION STRAND LAYOUT (SPAN "B")

⊞ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 4'-8" FROM END OF CORED SLAB UNIT, SEE STANDARD SPECIFICATIONS ARTICLE 1078-7.



INTERIOR SLAB SECTION 1/2" Ø LOW RELAXATION STRAND LAYOUT (SPAN "C")

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

NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER D. ANDREW DAVENPORT, JR. 4-18-08

PROJECT NO. B-4218

ORANGE COUNTY

STATION: 13+90.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS
2			4			26

ASSEMBLED BY : M. G. SHAIKH	DATE : 02-22-07	
CHECKED BY : D. A. GLADDEN	DATE : 03-08-07	
DRAWN BY : WJH 4/89	REV. 8/16/99	RWW/LES
CHECKED BY : FCJ 5/89	REV. 7/10/01RR	RWW/LES
	REV. 5/1/06	TLA/GM

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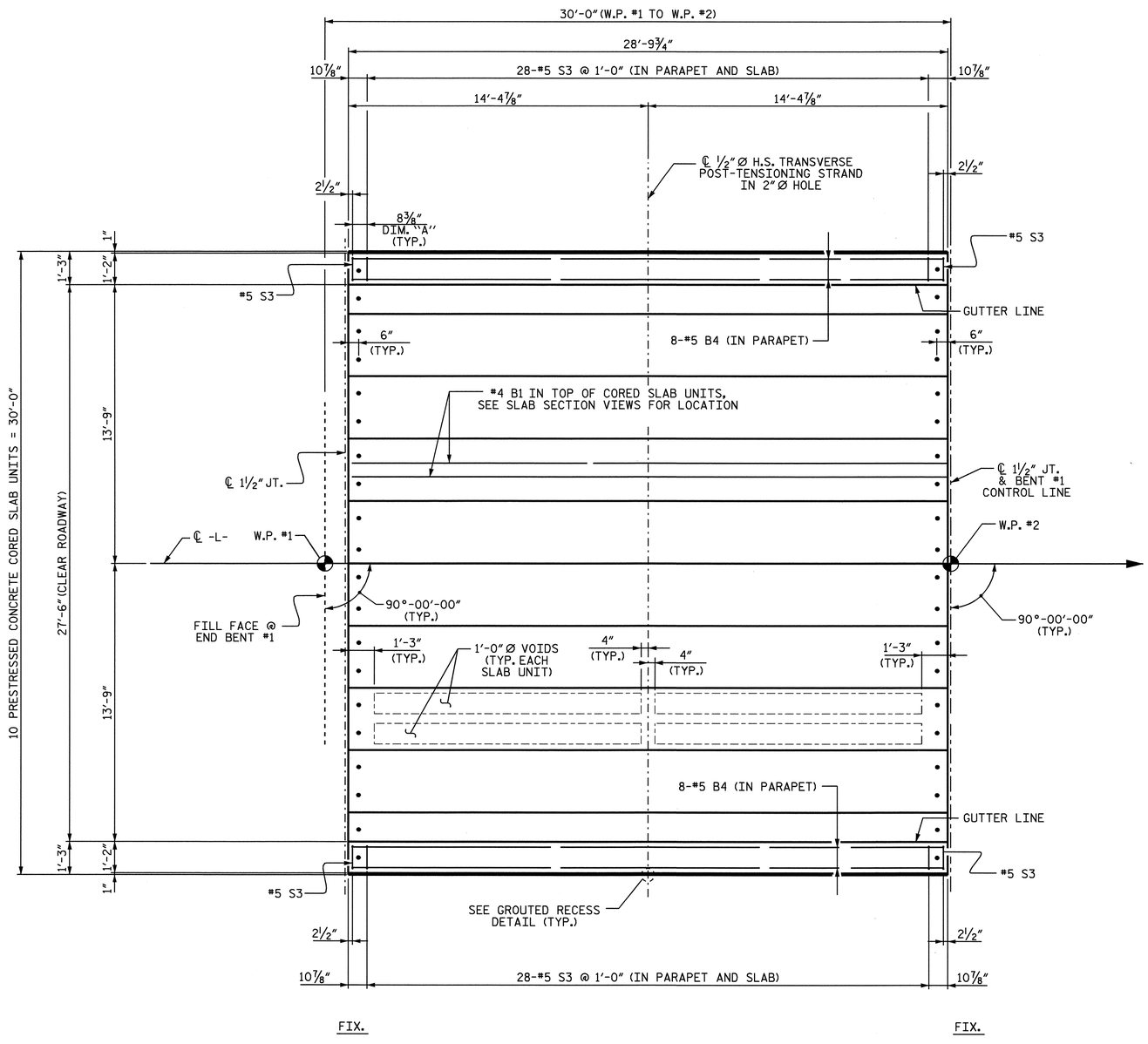
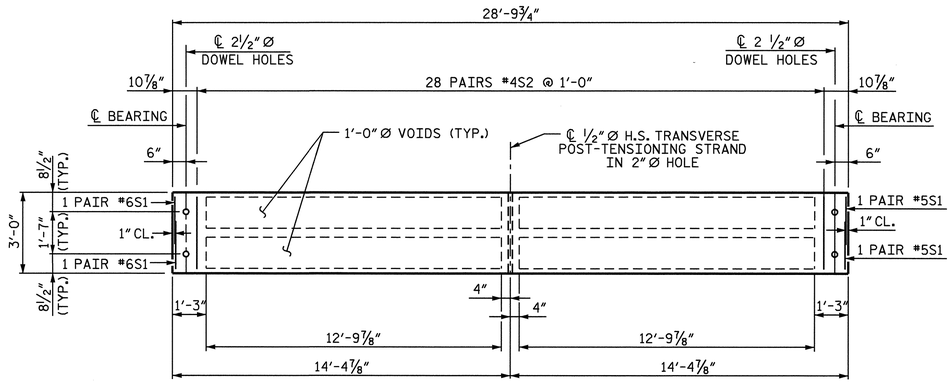
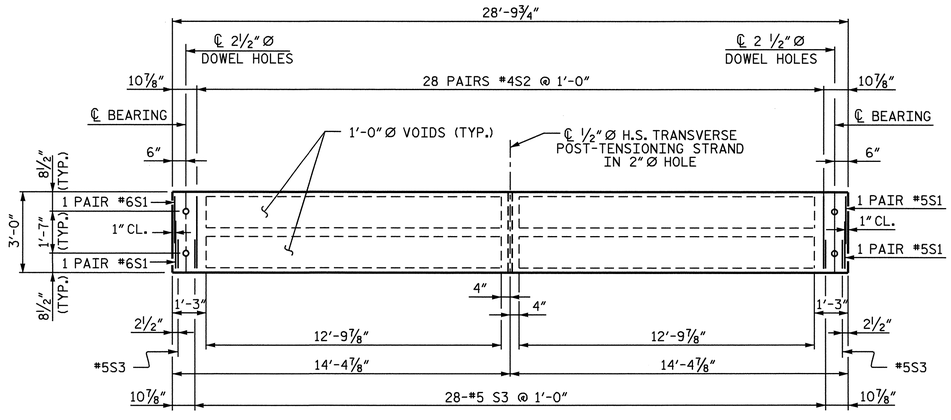
STD. NO. PCS2



PLAN OF SPAN A



PLAN OF INTERIOR CORED SLAB UNIT



PLAN OF EXTERIOR CORED SLAB UNIT

PROJECT NO. B-4218

ORANGE COUNTY

STATION: 13+90.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" X 1'-9" PRESTESSED CONCRETE CORED SLAB UNIT
SPAN A

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			26

NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER ANDREW DAVENPORT, JR
5-30-08

DRAWN BY : M. G. SHAIKH DATE : 02-23-07
CHECKED BY : D. A. GLADDEN DATE : 03-08-07

30-MAY-2008 14:26
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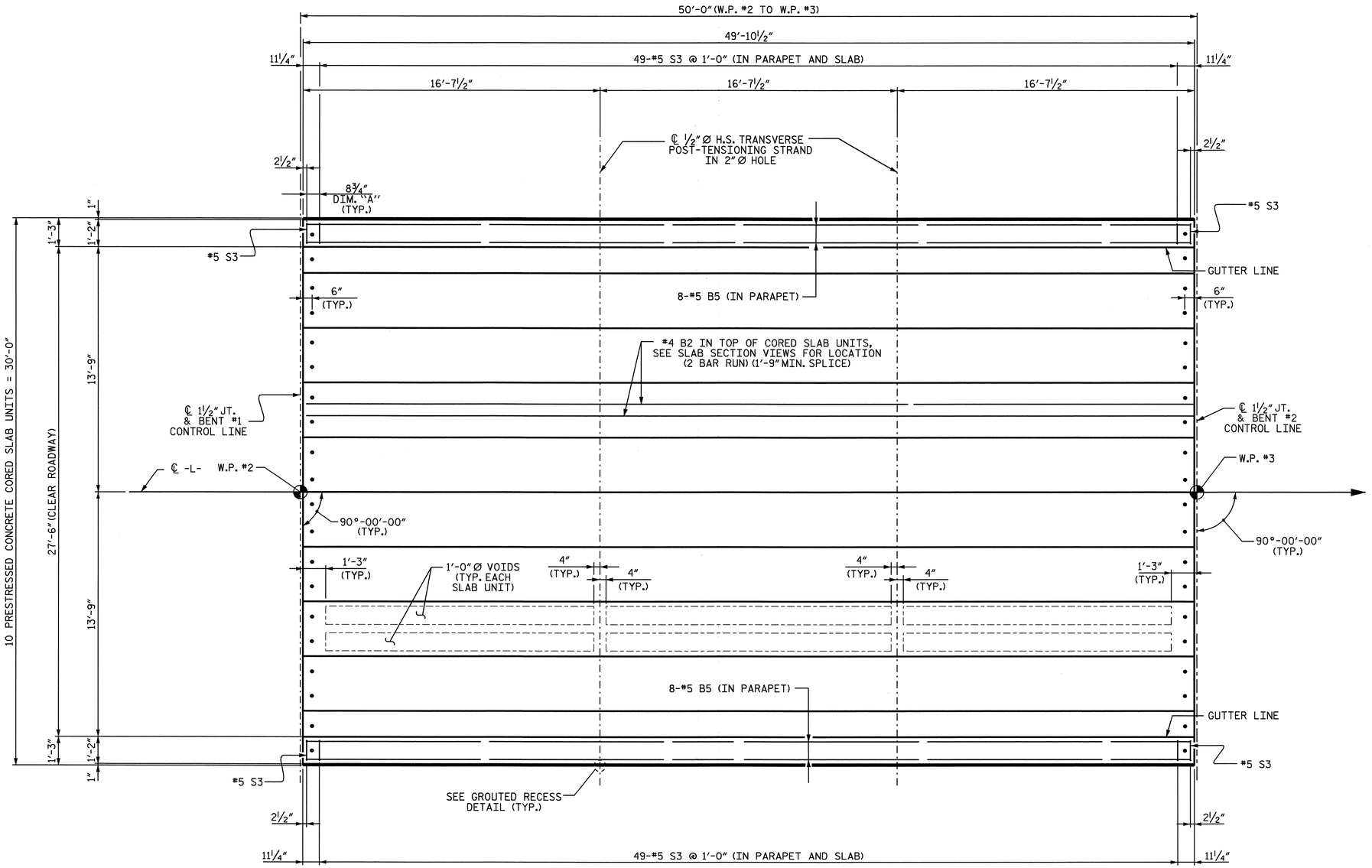
ADAVENPORT



FIX. FIX.

PLAN OF SPAN B

PROJECT NO. B-4218

ORANGE COUNTY

STATION: 13+90.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" X 1'-9" PRESTESSED CONCRETE CORED SLAB UNIT SPAN B

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			26

NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER D. ANDRE DAVENPORT, JR
5-30-08

DRAWN BY : M. G. SHAIKH DATE : 02-23-07
CHECKED BY : D. A. GLADDEN DATE : 03-08-07

30-MAY-2008 14:26
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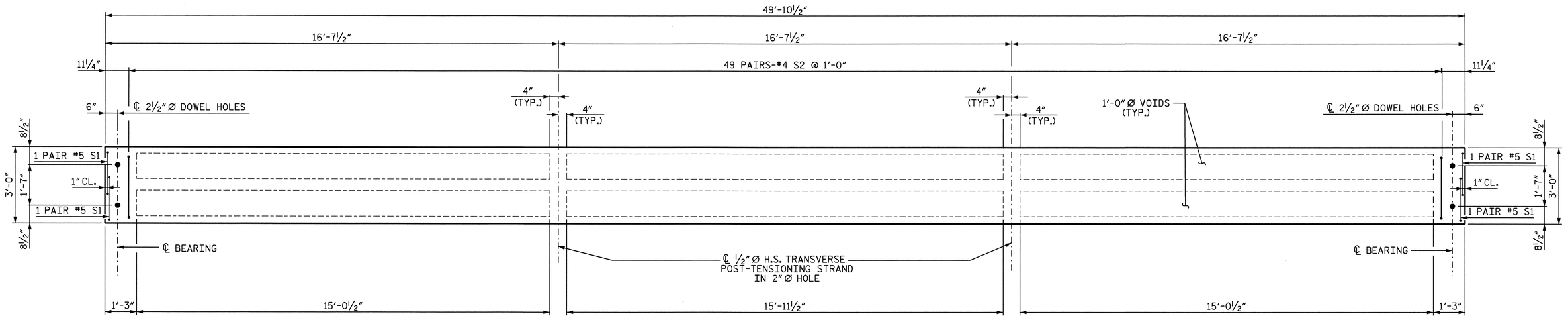
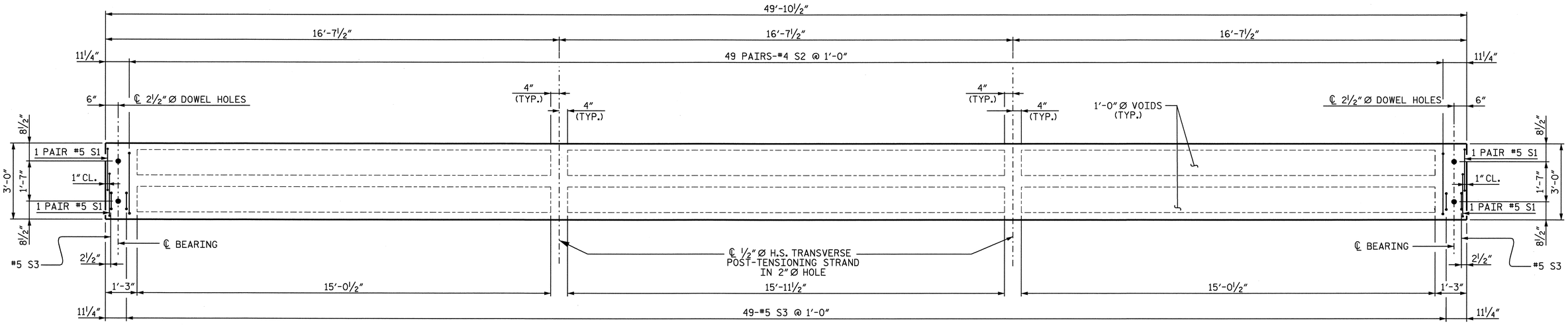


PLAN OF INTERIOR CORED SLAB UNIT



PLAN OF EXTERIOR CORED SLAB UNIT

PROJECT NO. B-4218

ORANGE COUNTY

STATION: 13+90.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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

NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER D. ANDREW DAVENPORT, JR.
4-18-08

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			26

DRAWN BY : M. G. SHAIKH DATE : 02-23-07
CHECKED BY : D. A. GLADDEN DATE : 03-08-07

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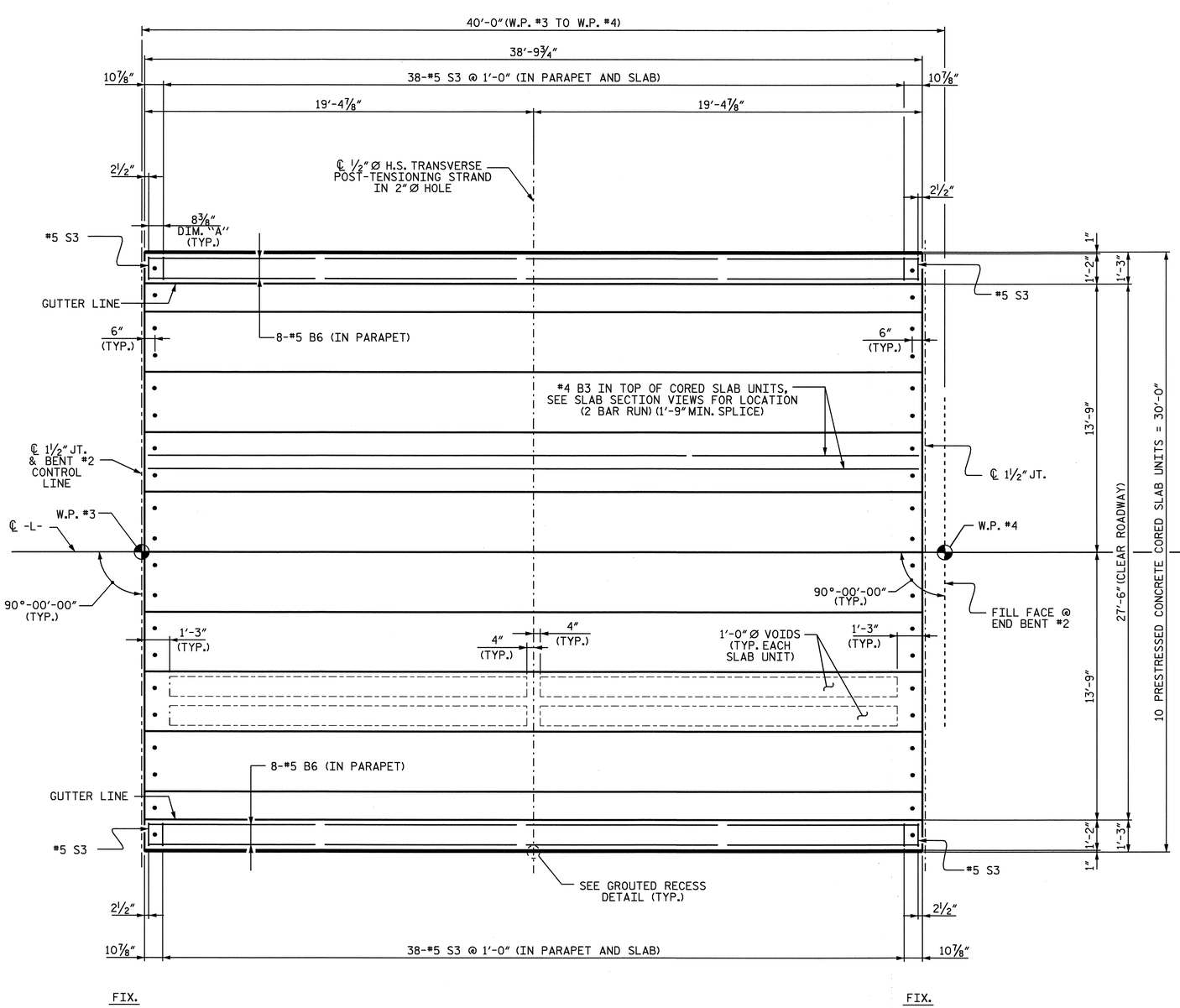
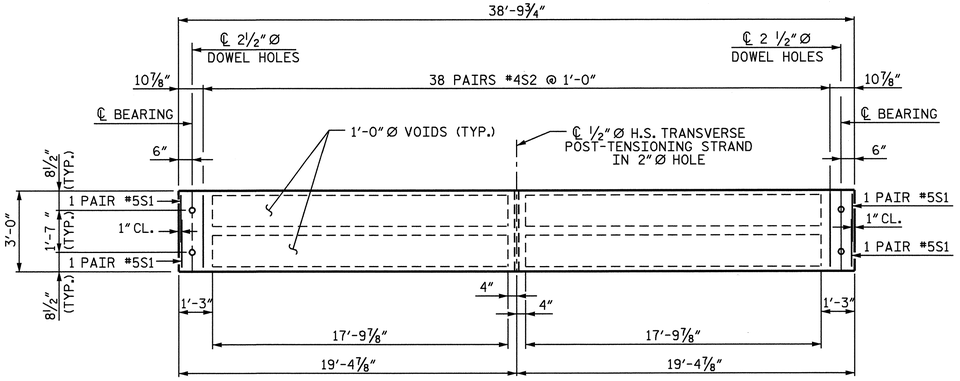
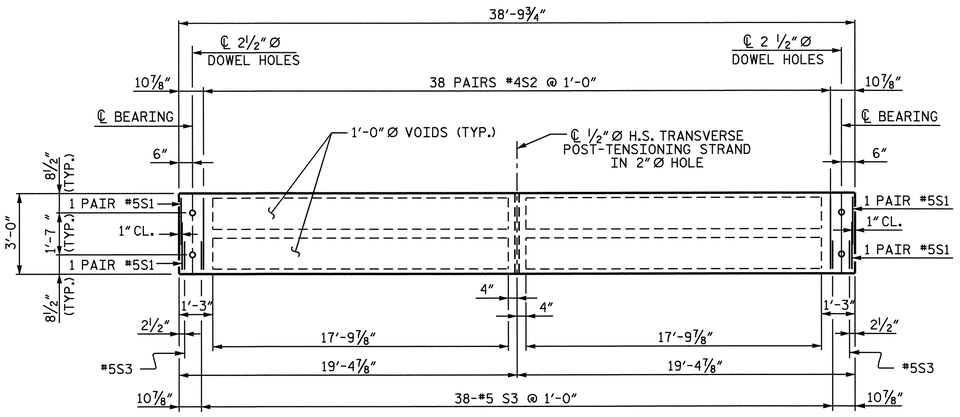


PLAN OF SPAN C



PLAN OF INTERIOR CORED SLAB UNIT



PLAN OF EXTERIOR CORED SLAB UNIT

PROJECT NO. B-4218

ORANGE COUNTY

STATION: 13+90.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" X 1'-9" PRESTESSED CONCRETE CORED SLAB UNIT
SPAN C

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			26

NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER D. ANDREW DAVENPORT JR.
5-30-08

DRAWN BY : M. G. SHAIKH DATE : 02-23-07
CHECKED BY : D. A. GLADDEN DATE : 03-08-07

30-MAY-2008 14:27
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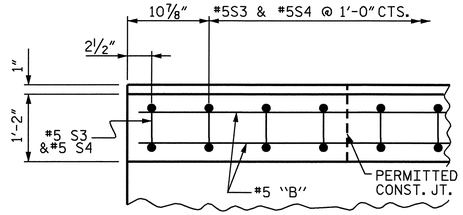
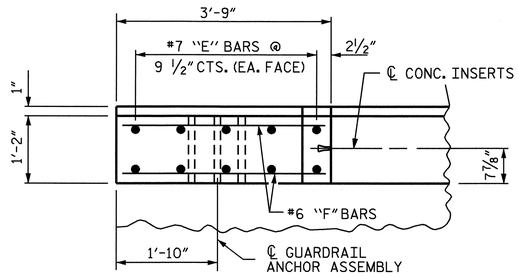
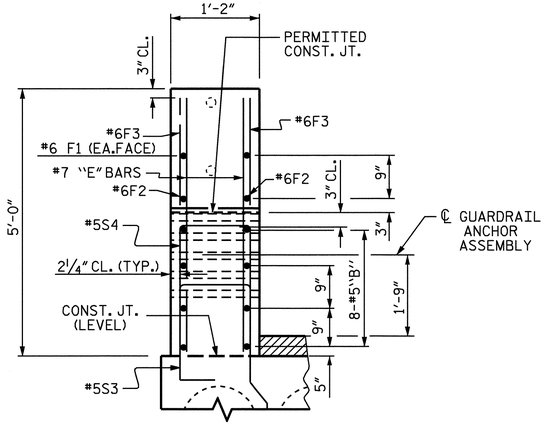
ADAVENPORT



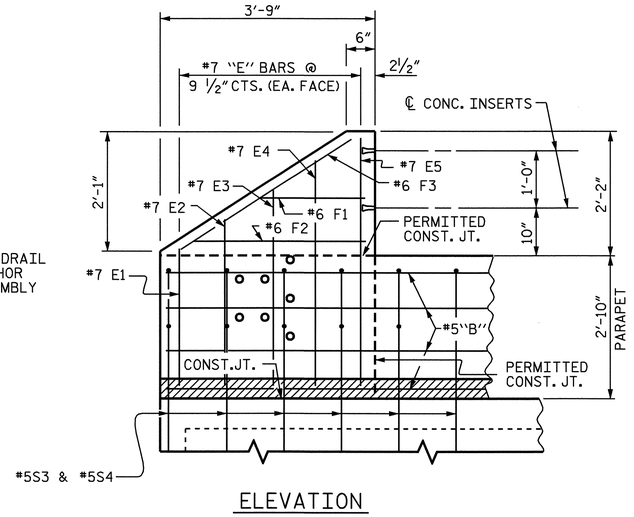
PLAN OF PARAPET



PLAN OF END POST

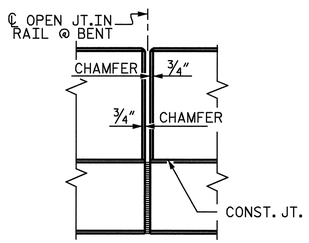


END VIEW

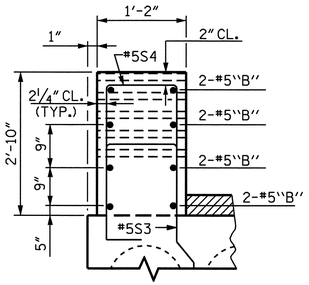


ELEVATION

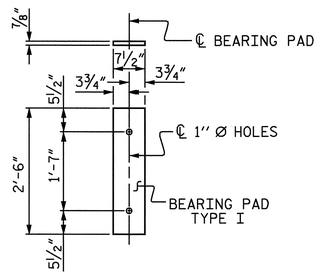
PARAPET AND END POST FOR TWO BAR RAIL



ELEVATION AT GROUT JOINT



SECTION THRU PARAPET



FIXED END
(TYPE I - 60 REQ'D)

PARAPET DETAILS

GRADE 270 STRANDS	½″ Ø L.R.
AREA (SQUARE INCHES)	0.153
ULTIMATE STRENGTH (LBS. PER STRAND)	41,300
APPLIED PRESTRESS (LBS. PER STRAND)	30,980

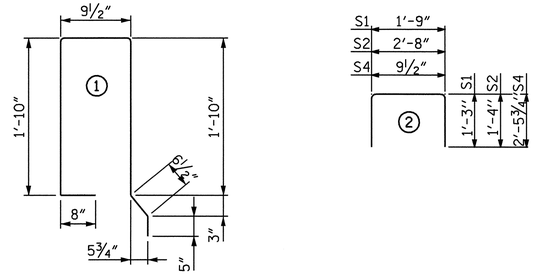
ELASTOMERIC BEARING DETAILS

CORED SLABS REQUIRED

	SPAN A		SPAN B		SPAN C			TOTAL LENGTH
	NUMBER	LENGTH	NUMBER	LENGTH	NUMBER	LENGTH	NUMBER	
EXTERIOR C.S.	2	28′-9¾″	2	49′-10½″	2	38′-9¾″	6	235′-0″
INTERIOR C.S.	8	28′-9¾″	8	49′-10½″	8	38′-9¾″	24	940′-0″
TOTAL	10	288′-1½″	10	498′-9″	10	388′-1½″	30	1175′-0″

ASSEMBLED BY : M. G. SHAIKH	DATE : 02-26-07
CHECKED BY : D. A. GLADDEN	DATE : 03-08-07
DRAWN BY : WJH 4/89	REV. 7/10/01 RWW/LES
CHECKED BY : FCJ 5/89	REV. 5/7/03RRR RWW/JTE
	REV. 5/1/06 TLA/GM

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR ONE CORED SLAB SECTION

SPAN A

BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT LENGTH	EXTERIOR UNIT WEIGHT	INTERIOR UNIT LENGTH	INTERIOR UNIT WEIGHT
B1	2	# 4	STR	28′-5″	38	28′-5″	38
S1	8	# 5	2	4′-3″	35	4′-3″	35
S2	56	# 4	2	5′-4″	200	5′-4″	200
✳ S3	30	# 5	1	6′-1″	190		
REINFORCING STEEL					273 LBS.		273 LBS.
✳EPOXY COATED REINFORCING STEEL					190 LBS.		
5,000 P.S.I. CONCRETE				4.1	CU. YDS.	4.1	CU. YDS.
½″ Ø L.R. STRANDS	No.				12		12

BILL OF MATERIAL FOR ONE CORED SLAB SECTION

SPAN B

BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT LENGTH	EXTERIOR UNIT WEIGHT	INTERIOR UNIT LENGTH	INTERIOR UNIT WEIGHT
B2	4	# 4	STR	25′-8″	69	25′-8″	69
S1	8	# 5	2	4′-3″	35	4′-3″	35
S2	98	# 4	2	5′-4″	349	5′-4″	349
✳ S3	51	# 5	1	6′-1″	324		
REINFORCING STEEL					453 LBS.		453 LBS.
✳EPOXY COATED REINFORCING STEEL					324 LBS.		
5,000 P.S.I. CONCRETE				7.1	CU. YDS.	7.0	CU. YDS.
½″ Ø L.R. STRANDS	No.				24		24

BILL OF MATERIAL FOR ONE CORED SLAB SECTION

SPAN C

BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT LENGTH	EXTERIOR UNIT WEIGHT	INTERIOR UNIT LENGTH	INTERIOR UNIT WEIGHT
B3	4	# 4	STR	20′-2″	54	20′-2″	54
S1	8	# 5	2	4′-3″	35	4′-3″	35
S2	76	# 4	2	5′-4″	271	5′-4″	271
✳ S3	40	# 5	1	6′-1″	254		
REINFORCING STEEL					360 LBS.		360 LBS.
✳EPOXY COATED REINFORCING STEEL					254 LBS.		
5,000 P.S.I. CONCRETE				5.5	CU. YDS.	5.5	CU. YDS.
½″ Ø L.R. STRANDS	No.				15		15

DEAD LOAD DEFLECTION AND CAMBER

	SPAN A	SPAN B	SPAN C
	3′-0″ × 1′-9″	3′-0″ × 1′-9″	3′-0″ × 1′-9″
	½″ Ø L.R. STRAND	½″ Ø L.R. STRAND	½″ Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	↑ 7/16″	↑ 2⅜″	↑ 15/16″
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD ✳✳	↓ 1/16″	↓ ⅜″	↓ ⅛″
FINAL CAMBER	↑ ⅜″	↑ 2″	↑ 13/16″

✳✳ INCLUDES FUTURE WEARING SURFACE

NOTES

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

ALL REINFORCING STEEL CAST WITH THE CORED SLAB SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE CORED SLABS.

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

THE 2½″Ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

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

WHEN CORED SLABS ARE CAST, A POSITIVE HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDEWAYS. THIS SYSTEM SHALL BE DESIGNED TO BE LEFT IN PLACE UNTIL THE CONCRETE HAS REACHED RELEASE STRENGTH. AT LEAST THREE WEEKS PRIOR TO CASTING CORED SLABS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL DETAILS, LOCATION AND SPACING OF THE HOLD-DOWNS SHALL BE INDICATED.

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

ALL REINFORCING STEEL IN PARAPET AND END BLOCK SHALL BE EPOXY COATED.

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

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

BILL OF MATERIAL FOR CONCRETE PARAPET AND END POSTS

BAR	BARS PER SPAN SPAN A	SPAN B	SPAN C	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ B4	16			16	#5	STR	28′-5″	474
✳ B5		16		16	#5	STR	49′-6″	826
✳ B6			16	16	#5	STR	38′-5″	641
✳ E1	4		4	8	#7	STR	2′-10″	46
✳ E2	4		4	8	#7	STR	3′-4″	55
✳ E3	4		4	8	#7	STR	3′-10″	63
✳ E4	4		4	8	#7	STR	4′-4″	71
✳ E5	4		4	8	#7	STR	4′-8″	76
✳ F1	4		4	8	#6	STR	1′-10″	22
✳ F2	4		4	8	#6	STR	3′-0″	36
✳ F3	4		4	8	#6	STR	3′-8″	44
✳ S4	60	102	80	242	#5	2	5′-9″	1451
✳EPOXY COATED REINFORCING STEEL							LBS.	3805
CLASS AA CONCRETE							CU.YDS.	29.7
1′-2″ X 2′-10″ CONCRETE PARAPET							LIN. FT.	235.50

PROJECT NO. B-4218

ORANGE COUNTY

STATION: 13+90.00 -L-

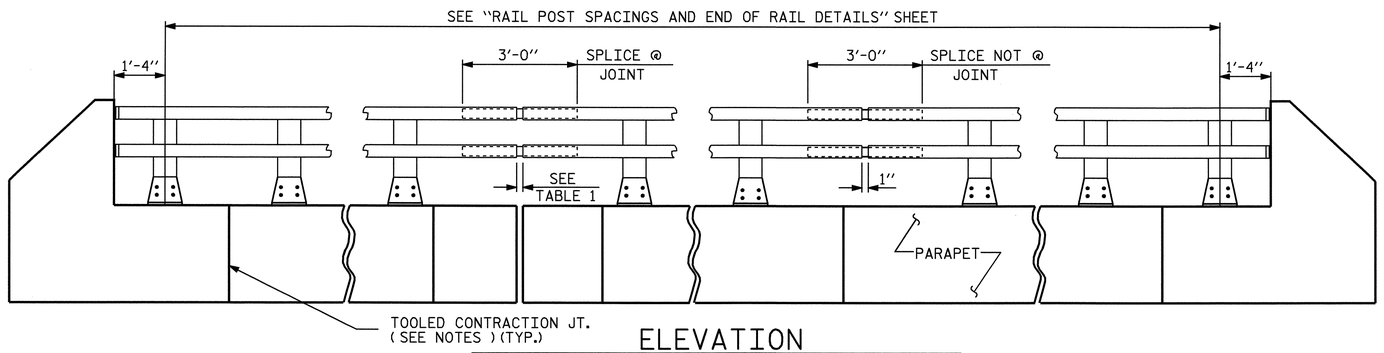
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3′-0″ X 1′-9″ PRESTRESSED CONCRETE CORED SLAB UNIT

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

REVISIONS NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S-9
2			4			TOTAL SHEETS 26

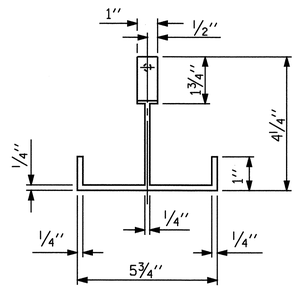
STD. NO. PCS3



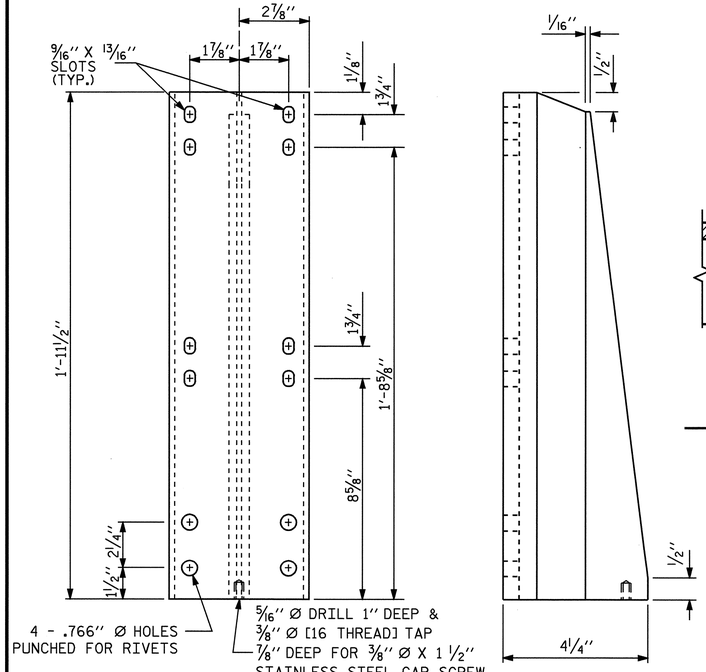
ELEVATION

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

TABLE 1	
℄ JOINT @	RAIL OPENING
BENT No. 1	1½"
BENT No. 2	1½"

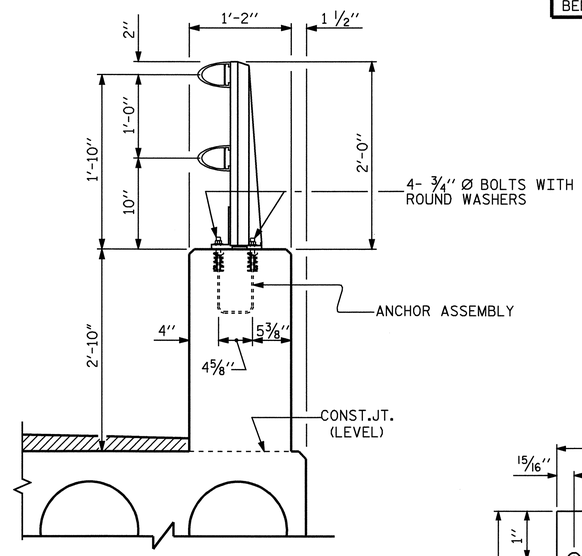


PLAN

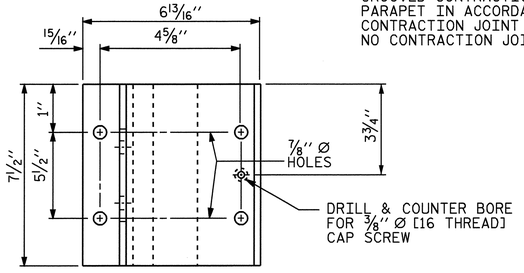


FRONT ELEVATION SIDE ELEVATION

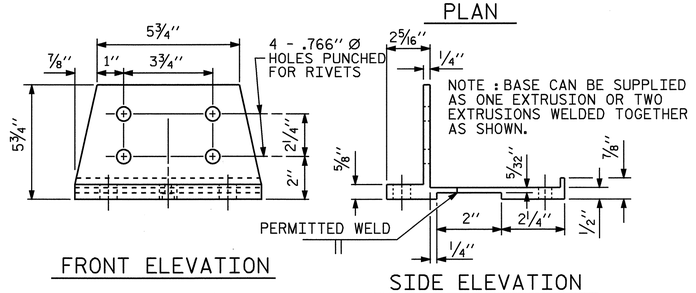
DETAILS OF POST



SECTION THRU PARAPET AND RAIL

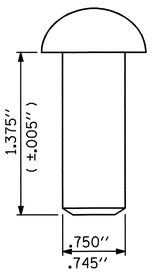


PLAN



FRONT ELEVATION SIDE ELEVATION

POST BASE DETAILS



RIVET DETAIL

NOTES

AT THE CONTRACTOR'S OPTION, METAL RAIL MAY BE EITHER ALUMINUM OR GALVANIZED STEEL IN ACCORDANCE WITH THE REQUIREMENTS OF THE GENERAL NOTES AND THE FOLLOWING SPECIFICATIONS FOR THE ALTERNATE MATERIALS; HOWEVER, THE CONTRACTOR WILL BE REQUIRED TO USE THE SAME RAIL MATERIAL ON ALL STRUCTURES ON THE PROJECT FOR WHICH METAL RAIL IS DESIGNATED.

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.

GALVANIZED STEEL RAILS

MATERIAL AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:

POST, POST BASES, RAILS, EXPANSION BARS AND CLAMP BARS: AASHTO M270 GRADE 36 STRUCTURAL STEEL - GALVANIZED TO AASHTO M111.

RIVETS: RIVETS SHALL MEET THE REQUIREMENTS OF ASTM A502 FOR GRADE 1 RIVETS.

THE CUT ENDS OF GALVANIZED STEEL RAILING, AFTER GRINDING SMOOTH SHALL BE GIVEN TWO COATS OF ZINC RICH PAINT MEETING THE REQUIREMENTS OF FEDERAL SPECIFICATION MIL-P-26915 USAF TYPE 1, OR OF FEDERAL SPECIFICATIONS TT-P-641.

SHIMS: SHIMS SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.

RAIL CAPS: RAIL CAPS SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.

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.

GROOVED CONTRACTION JOINTS, ½" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT A SPACING OF 8FT. TO 10FT. BETWEEN JOINTS. NO CONTRACTION JOINTS WILL BE REQUIRED FOR SEGMENTS LESS THAN 10 FEET IN LENGTH.

PAY LENGTH = 220.00 LIN. FT.

PROJECT NO. B-4218

ORANGE COUNTY

STATION: 13+90.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

2 BAR METAL RAIL

ASSEMBLED BY :	M. G. SHAIKH DATE : 02-26-07
CHECKED BY :	D.A. DAVENPORT DATE : 02-08
DRAWN BY : EEM 6/94	REV. 10/17/00 LES/RDR
CHECKED BY : RGW 6/94	REV. 5/1/03R RWW/JTE
	REV. 5/1/06 TLA/GM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			26

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

18-APR-2008 08:31
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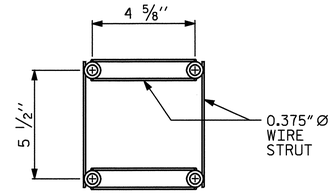
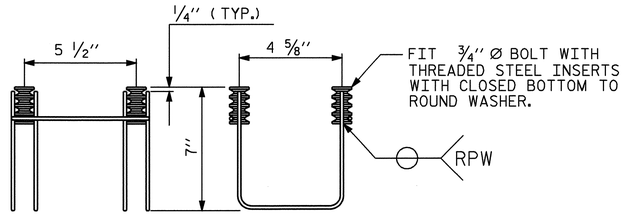
adavenport

STD. NO. BMR3



PLAN



SIDE VIEW ELEVATION

MINIMUM LENGTH OF THREADS IN INSERT (FERRULE): 1 3/4''

4-BOLT METAL RAIL ANCHOR ASSEMBLY

(36 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 3/4'' FERRULES.

B. 4 - 3/4'' Ø X 2 1/2'' 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 3/4'' Ø X 2 1/2'' 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.

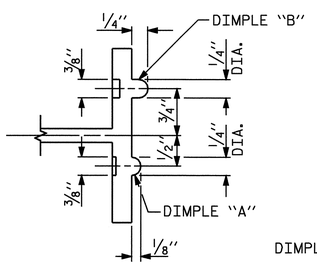
D. THE METAL RAIL ANCHOR ASSEMBLIES TO BE HOT DIPPED GALVANIZED TO CONFORM TO REQUIREMENTS OF AASHTO M111.

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.

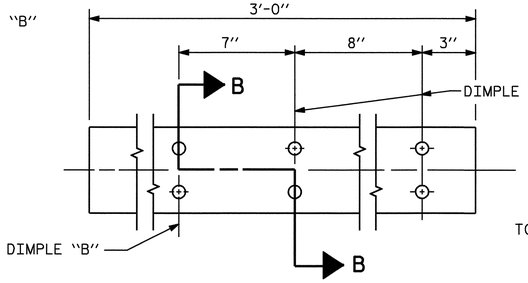
F. BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.

THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF THE METAL RAIL ANCHOR ASSEMBLY. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4'' Ø BOLT IS 10 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS.

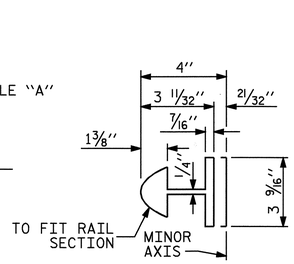
WHEN ADHESIVELY ANCHORED ANCHOR BOLTS ARE USED, BOLTS SHALL MEET THE REQUIREMENTS OF ASTM F593 ALLOY 304 STAINLESS STEEL WITH MINIMUM 75,000 PSI ULTIMATE STRENGTH. NUTS SHALL MEET THE REQUIREMENTS OF ASTM F594 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY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



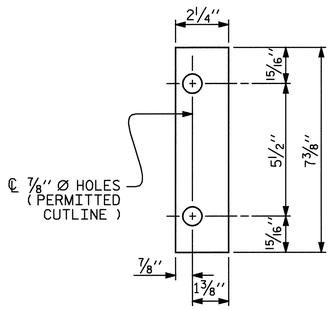
SECTION B - B



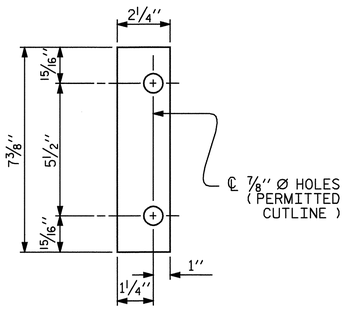
EXPANSION BAR DETAILS



BAR SECTION



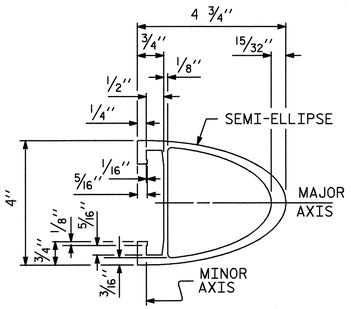
FRONT PLATE



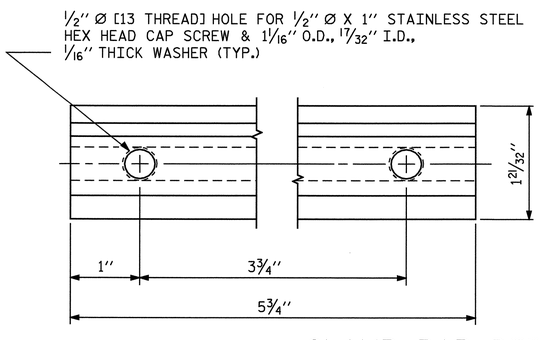
REAR PLATE

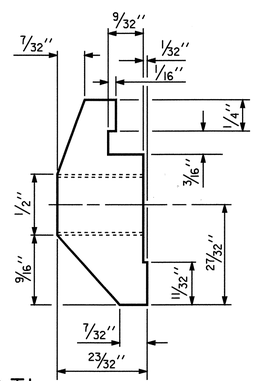
SHIM DETAILS

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



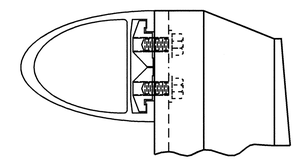
RAIL SECTION



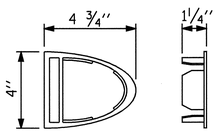


CLAMP BAR DETAIL

(4 REQUIRED PER POST)



CLAMP ASSEMBLY



RAIL CAP

PROJECT NO. B-4218
ORANGE COUNTY
STATION: 13+90.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

2 BAR METAL RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			26

ASSEMBLED BY : M. G. SHAIKH DATE : 9-27-05
CHECKED BY : D. A. GLADDEN DATE : 10-10-20

DRAWN BY : EEM 6/94
CHECKED BY : RGW 6/94

REV. 2/6/97 EEM/RGW
REV. 8/16/99 MAB/LES
REV. 5/7/03 RWW/JTE

NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER D. ANDREW DAVENPORT, JR.
4-18-08

18-APR-2008 08:32
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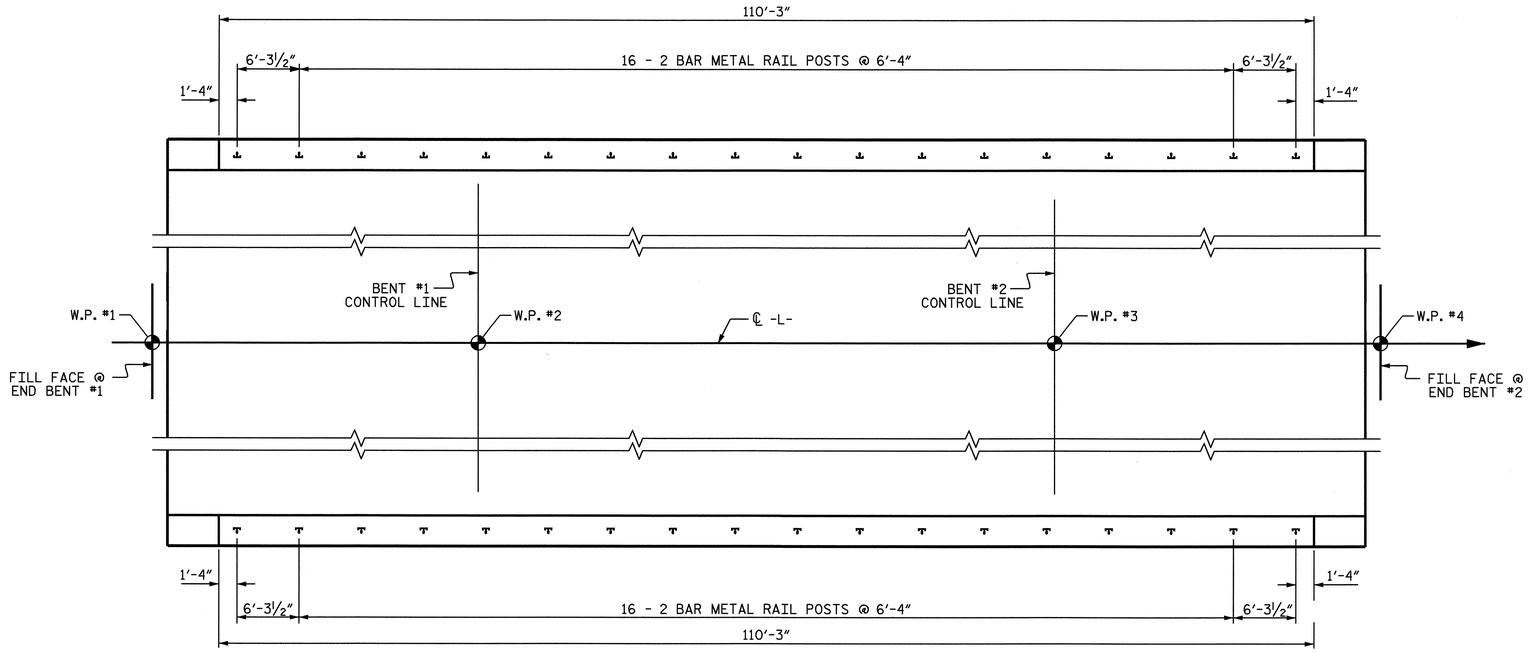
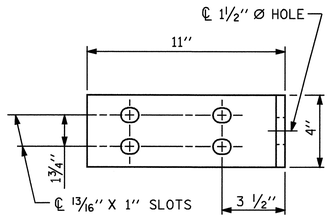
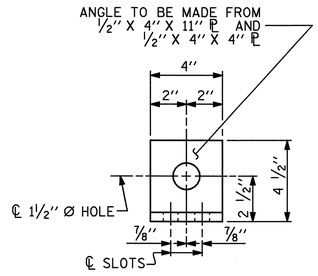
STD. NO. BMR4



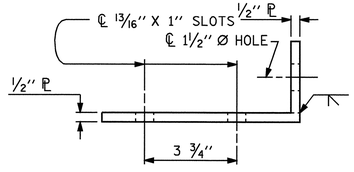
PLAN OF RAIL POST SPACINGS



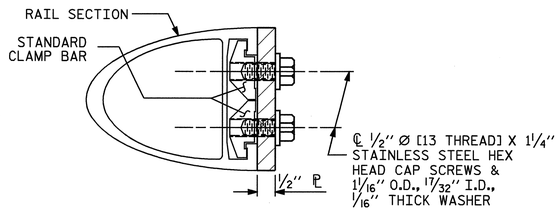
ELEVATION



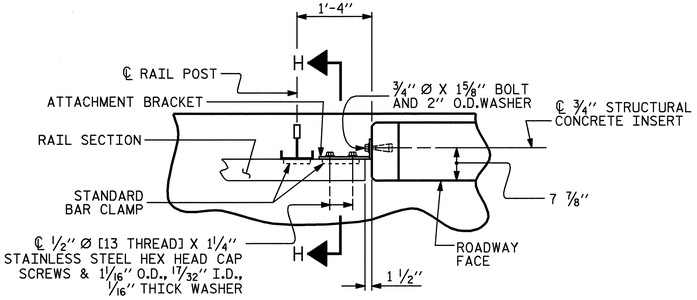
END VIEW



TOP VIEW



SECTION H-H (FIX)



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 1/16" 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).

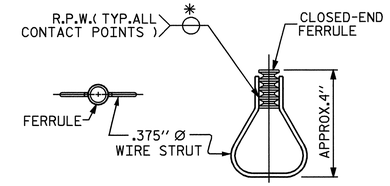
E. ½" Ø PIPE SLEEVES (IF REQUIRED) TO BE GALVANIZED.

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 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.



STRUCTURAL CONCRETE INSERT

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

PROJECT NO. B-4218

ORANGE COUNTY

STATION: 13+90.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

RAIL POST SPACINGS AND END OF RAIL DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			26

ASSEMBLED BY :	M. G. SHAIKH	DATE : 02-26-07
CHECKED BY :	D. A. GLADDEN	DATE : 03-08-07
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

NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER D. ANDREW DAVENPORT, JR.
4-18-08

18-APR-2008 08:32
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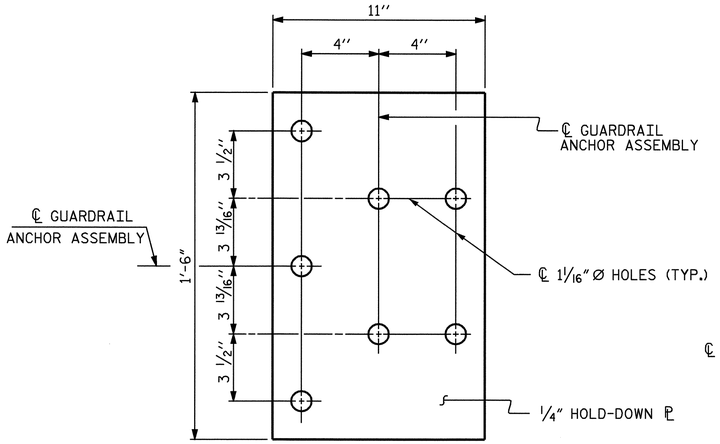
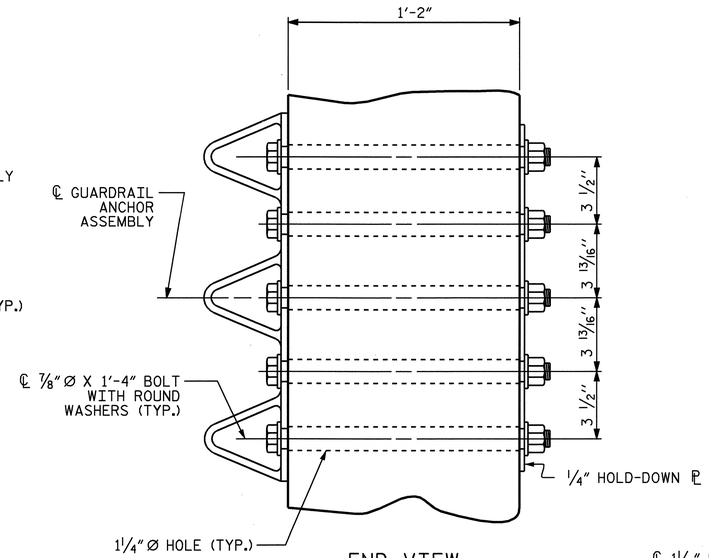
STD. NO. BMR2



PLAN



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.

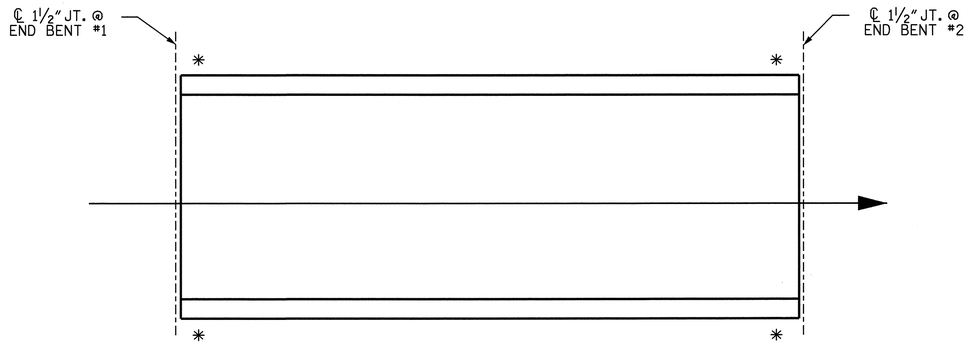
BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8'' Ø GALVANIZED BOLTS, NUTS AND WASHERS. 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.

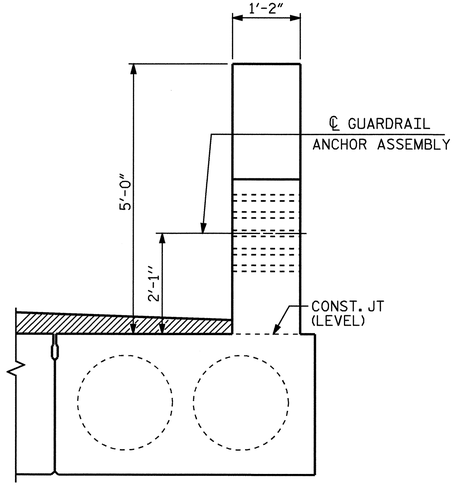
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE END POST TO CLEAR ASSEMBLY BOLTS.

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.

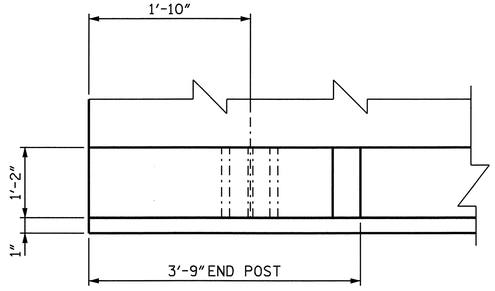


SKETCH SHOWING POINTS OF ATTACHMENT

*LOCATION OF GUARDRAIL ATTACHMENT



END VIEW



PLAN

LOCATION OF GUARDRAIL ANCHOR AT END POST

PROJECT NO. B-4218

ORANGE COUNTY

STATION: 13+90.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS

NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER D. ANDREW DAVENPORT, JR.
4-18-08

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			26

ASSEMBLED BY : M. G. SHAIKH DATE : 02-27-07		
CHECKED BY : D.A. DAVENPORT DATE : 02-08		
DRAWN BY : EEM 6/94	REV. 10/17/00	RWW/LES
CHECKED BY : RGW 6/94	REV. 5/1/03	RWW/JTE
	REV. 5/1/06	TLA/GM

STD. NO. BMR8

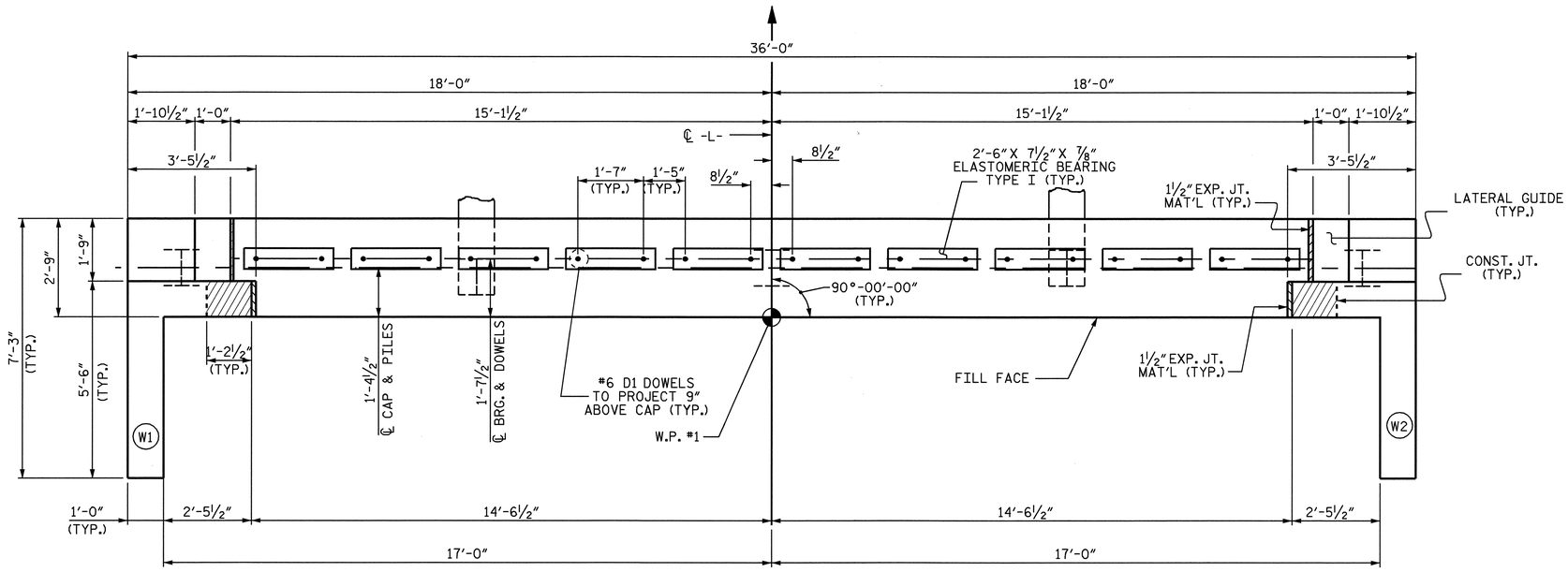
NOTES

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

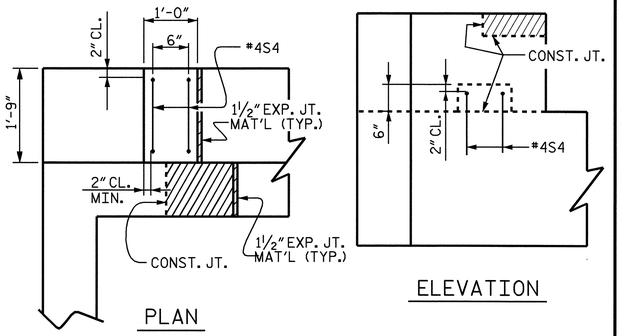
THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4"DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

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

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



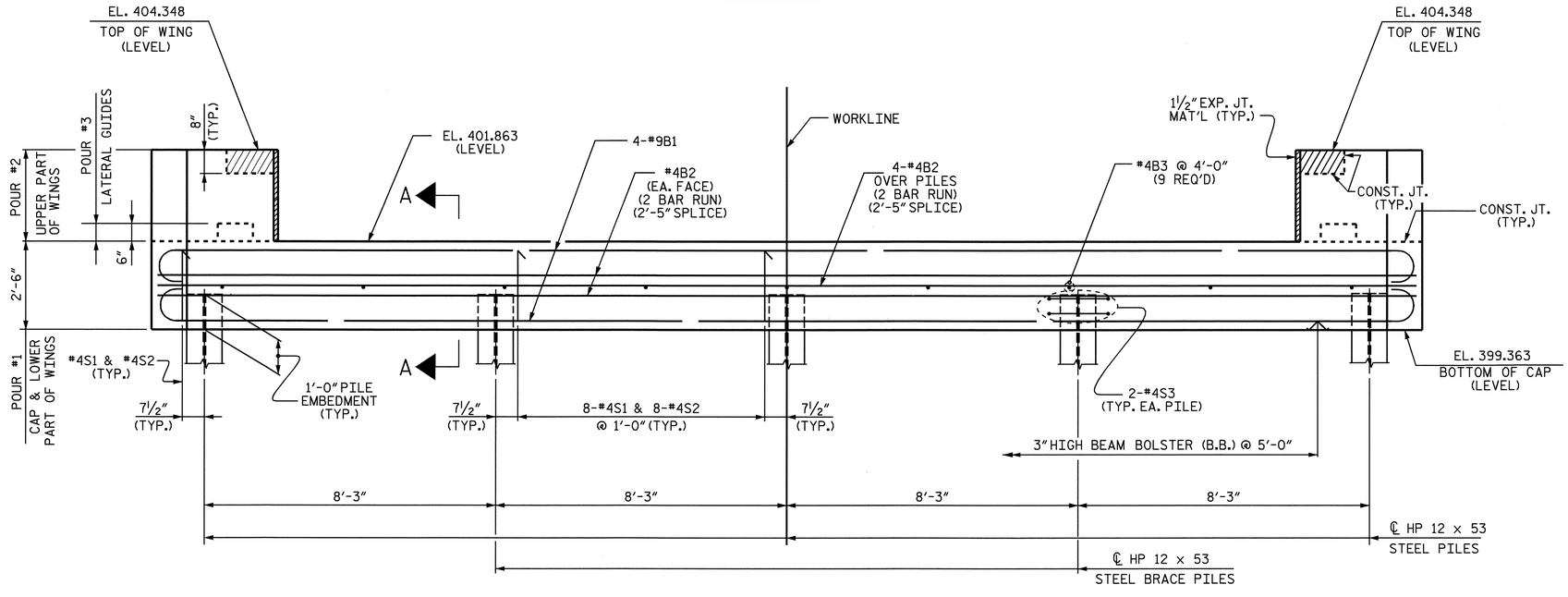
PLAN



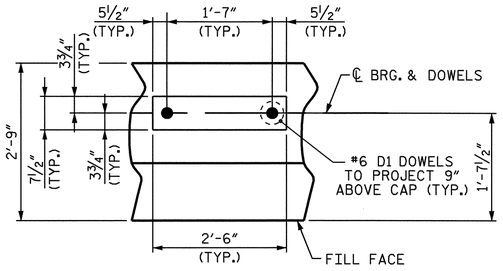
PLAN ELEVATION

LATERAL GUIDE

(EACH END SIMILAR)



ELEVATION



BEARING DETAIL

PROJECT NO. B-4218

ORANGE COUNTY

STATION: 13+90.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE END BENT #1

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			26

STR #1

DRAWN BY : D.A. DAVENPORT DATE : 02-08
CHECKED BY : D.A. GLADDEN DATE : 02-08

30-MAY-2008 14:40
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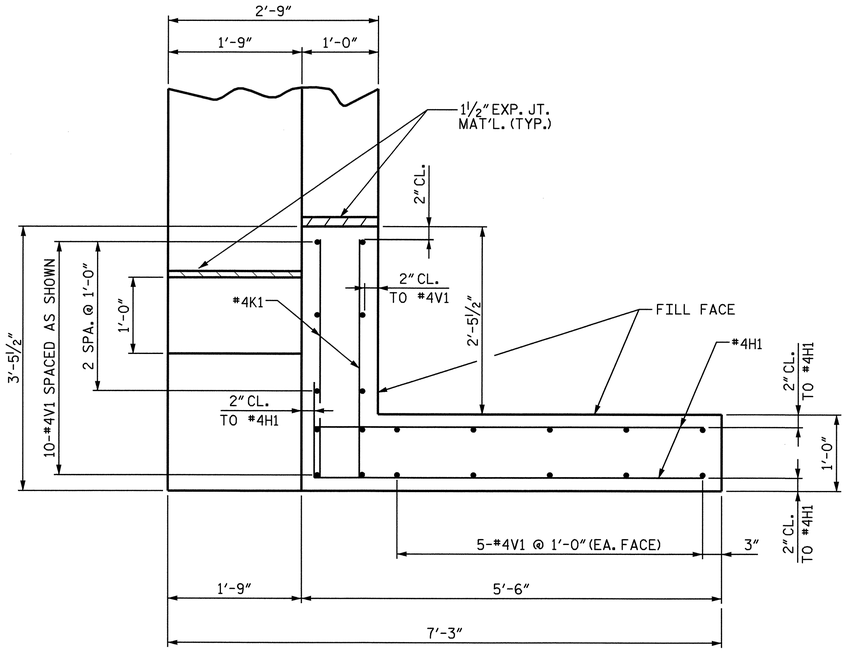
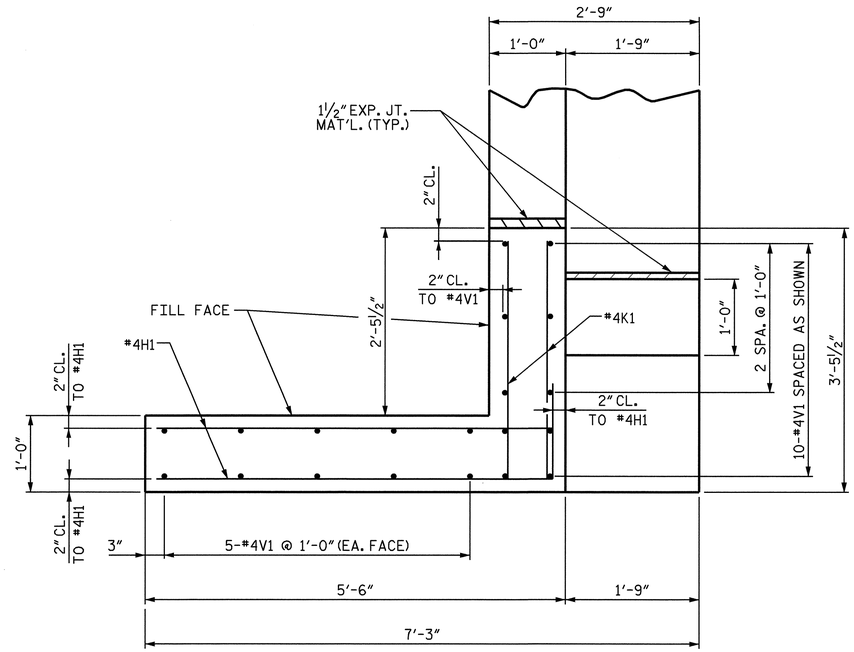
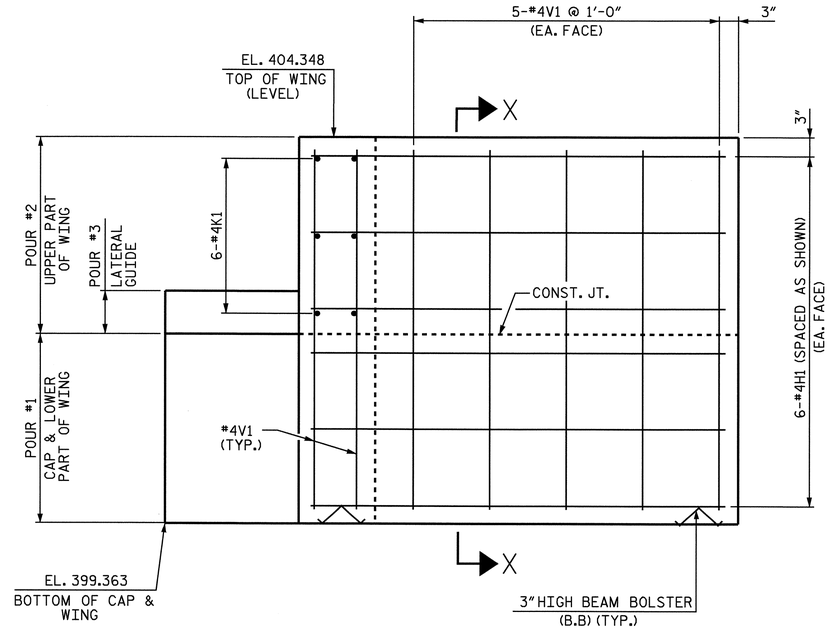


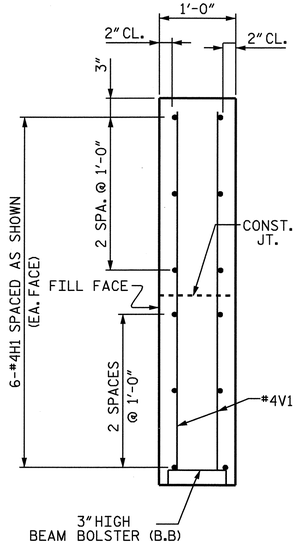
PLAN OF LEFT WING (W1)



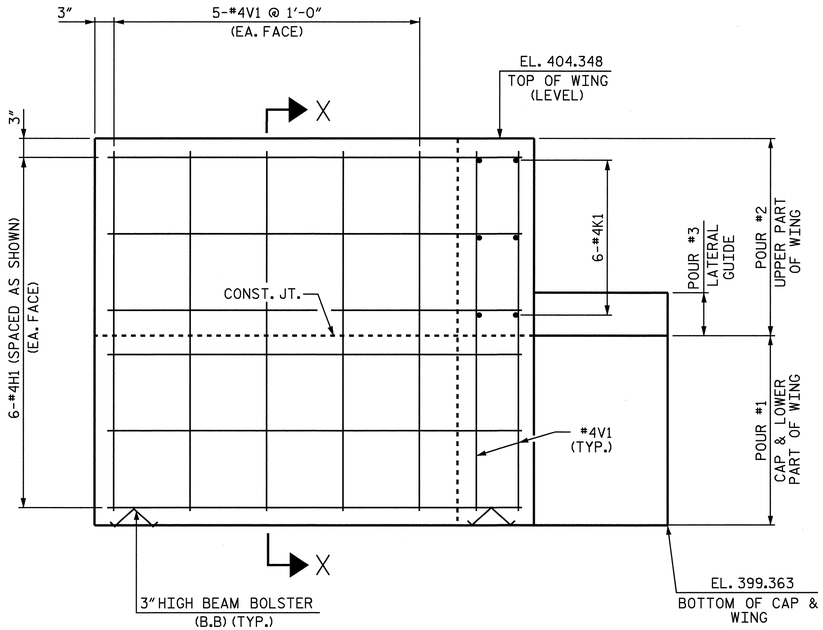
PLAN OF RIGHT WING (W2)



ELEVATION OF LEFT WING (W1)



SECTION X-X



ELEVATION OF RIGHT WING (W2)

DRAWN BY : D.A. DAVENPORT DATE : 02-08
CHECKED BY : D.A. GLADDEN DATE : 02-08

18-APR-2008 08:33
f:\structures\addavenport\B-4218_sd_E*.dgn
addavenport

PROJECT NO. B-4218
ORANGE COUNTY
STATION: 13+90.00 -L-

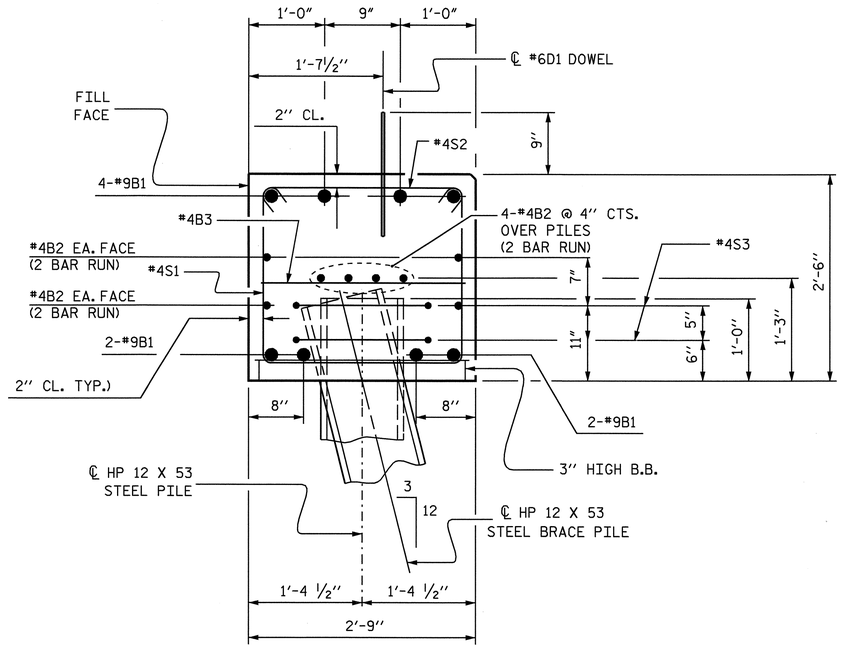
SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

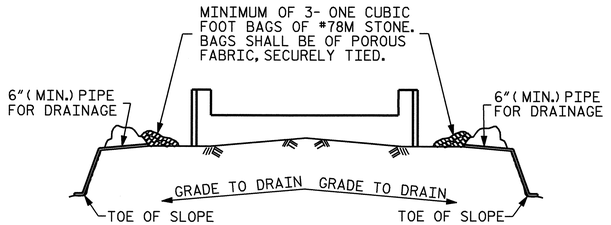
SUBSTRUCTURE END BENT#1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			26

STR #1



SECTION A-A



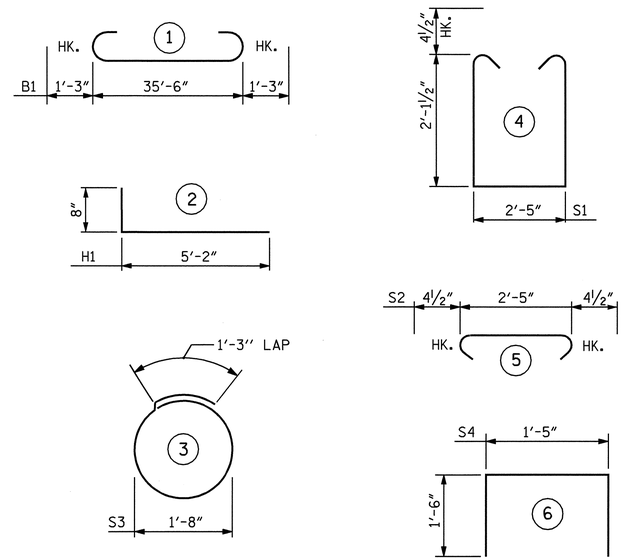
BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	38'-0"	1034
B2	16	#4	STR	19'-1"	204
B3	9	#4	STR	2'-5"	15
D1	20	#6	STR	1'-6"	45
H1	24	#4	2	5'-10"	94
K1	12	#4	STR.	3'-1"	25
S1	34	#4	4	7'-5"	168
S2	34	#4	5	3'-2"	72
S3	10	#4	3	6'-6"	43
S4	4	#4	6	4'-5"	12
V1	40	#4	STR	4'-7"	122

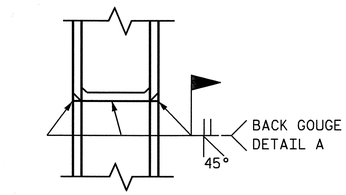
REINFORCING STEEL LBS = 1834

CLASS A CONCRETE BREAKDOWN

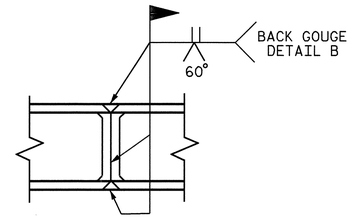
POUR #1 CAP & LOWER PART OF WINGS (C.Y.)	10.0
POUR #2 UPPER PART OF WINGS (C.Y.)	1.5
POUR #3 LATERAL GUIDES (C.Y.)	0.1
TOTAL CLASS A CONCRETE (C.Y.)	11.6

HP 12 X 53 STEEL PILES

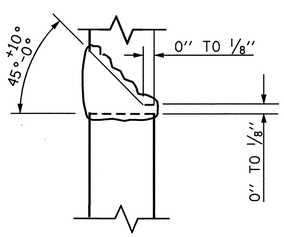
NO. 5 (LIN FT.) 50



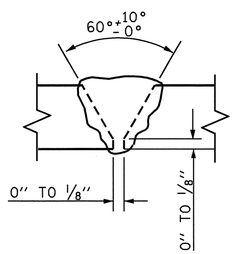
*PILE VERTICAL



*PILE HORIZONTAL OR VERTICAL



DETAIL A



DETAIL B

PILE SPLICE DETAILS

*POSITION OF PILE DURING WELDING.

PROJECT NO. B-4218

ORANGE COUNTY

STATION: 13+90.00-L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

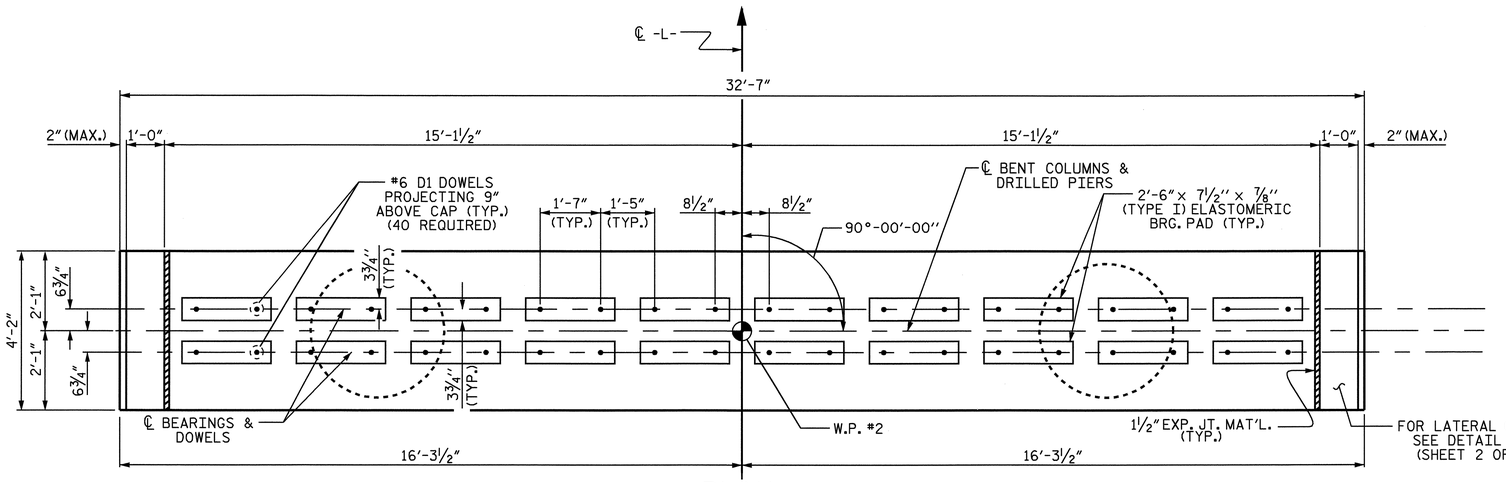
SUBSTRUCTURE
END BENT #1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			26

STR #1 NC0DS

DRAWN BY : D.A. DAVENPORT DATE : 02-08
CHECKED BY : D.A. GLADDEN DATE : 02-08

18-APR-2008 08:33
f:\structures\addavenport\B-4218_sd_E*.dgn
addavenport



SPAN B

NOTES

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

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

HOOKS ON V1 BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

THE LOCATION OF THE CONSTRUCTION JOINT IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FOOT BELOW THE GROUND LINE.

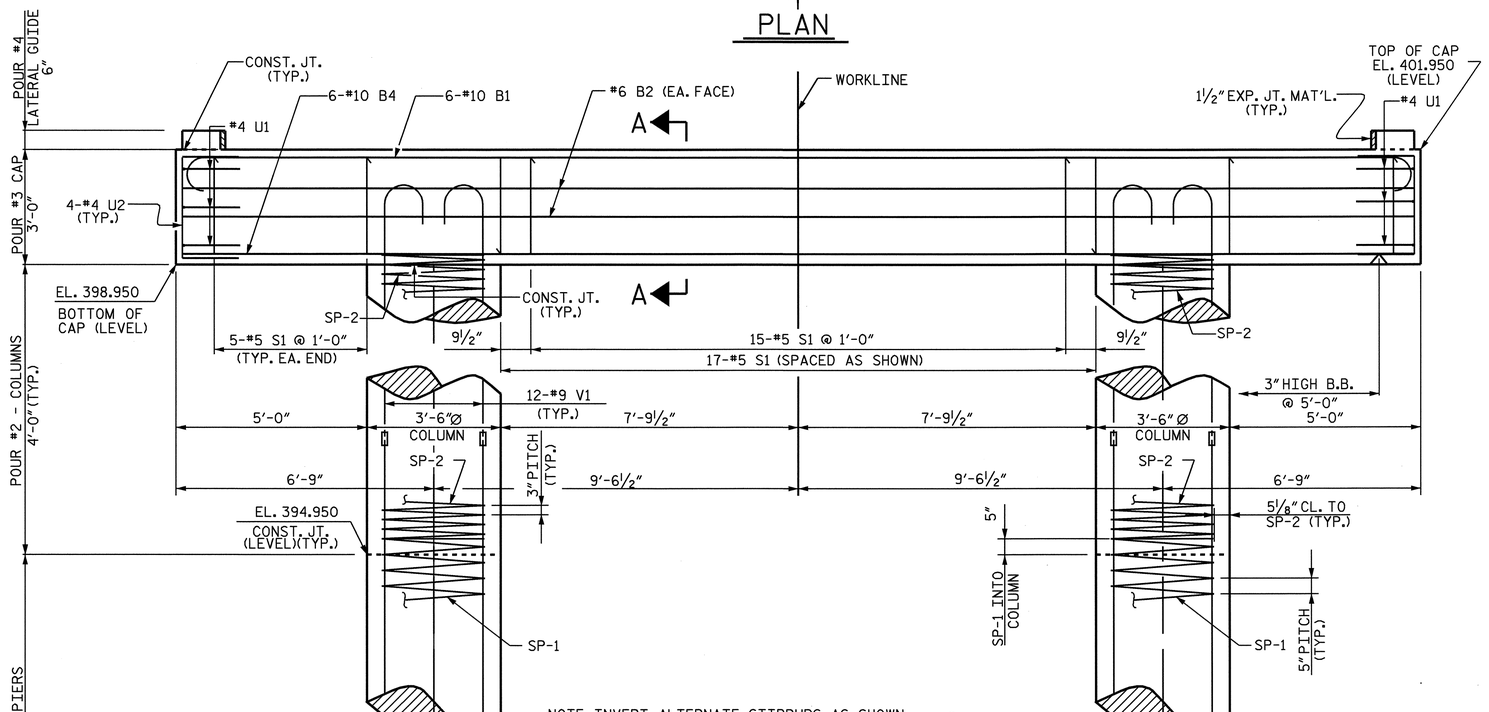
ALL STEEL IN THE DRILLED PIER IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINGFORCING STEEL".

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

FOR PERMANENT STEEL CASING, SEE SPECIAL PROVISIONS.

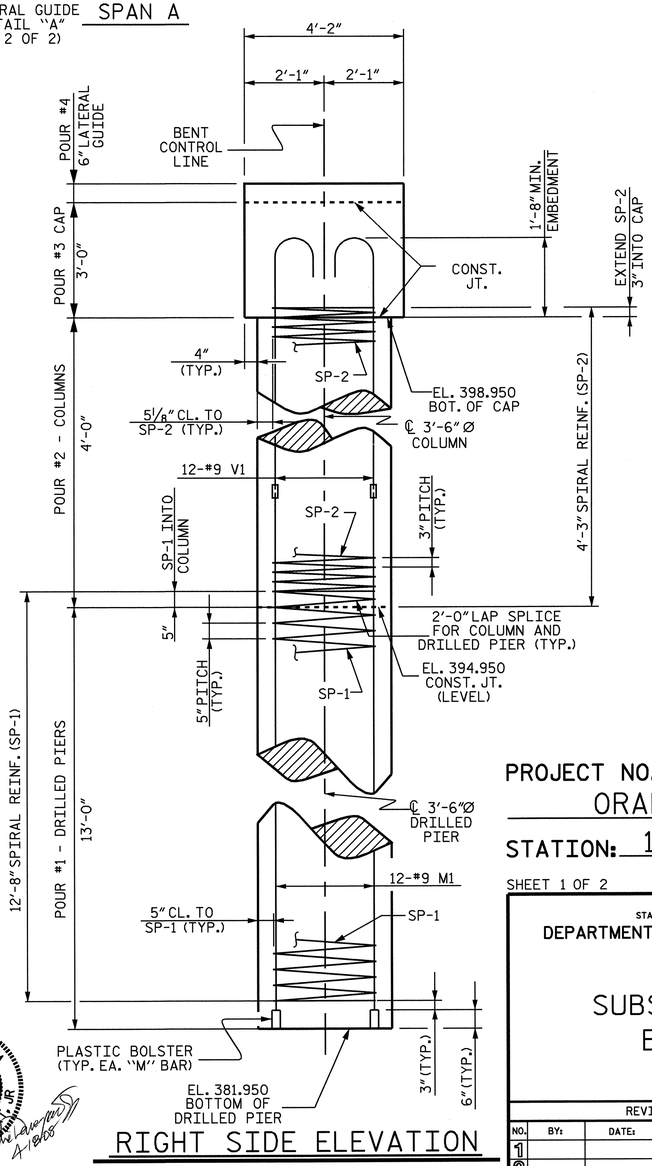
FOR DRILLED PIER, SEE SPECIAL PROVISIONS.

PLAN



ELEVATION

SPAN A



RIGHT SIDE ELEVATION

PROJECT NO. B-4218

ORANGE COUNTY

STATION: 13+90.00 -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-17
1			3			TOTAL SHEETS
2			4			26

DRAWN BY : D.A. DAVENPORT DATE : 02-08
CHECKED BY : D.A. GLADDEN DATE : 03-08

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

18-APR-2008 08:35
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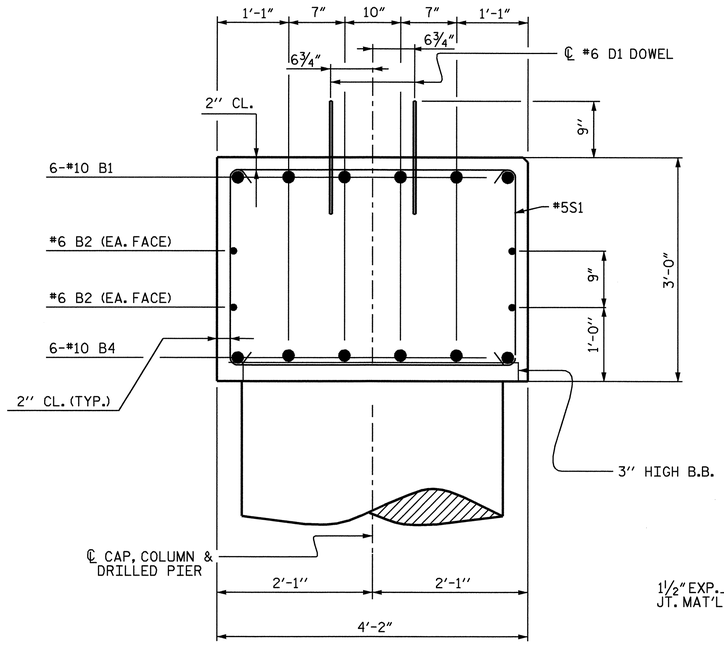
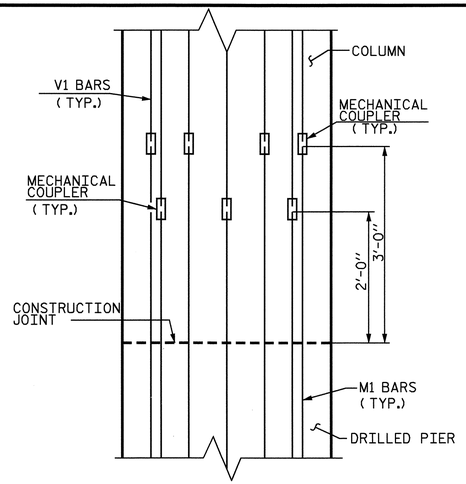
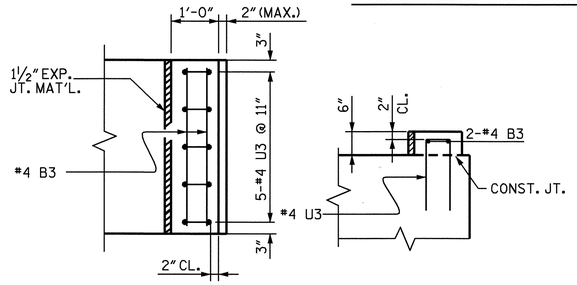


SECTION A-A

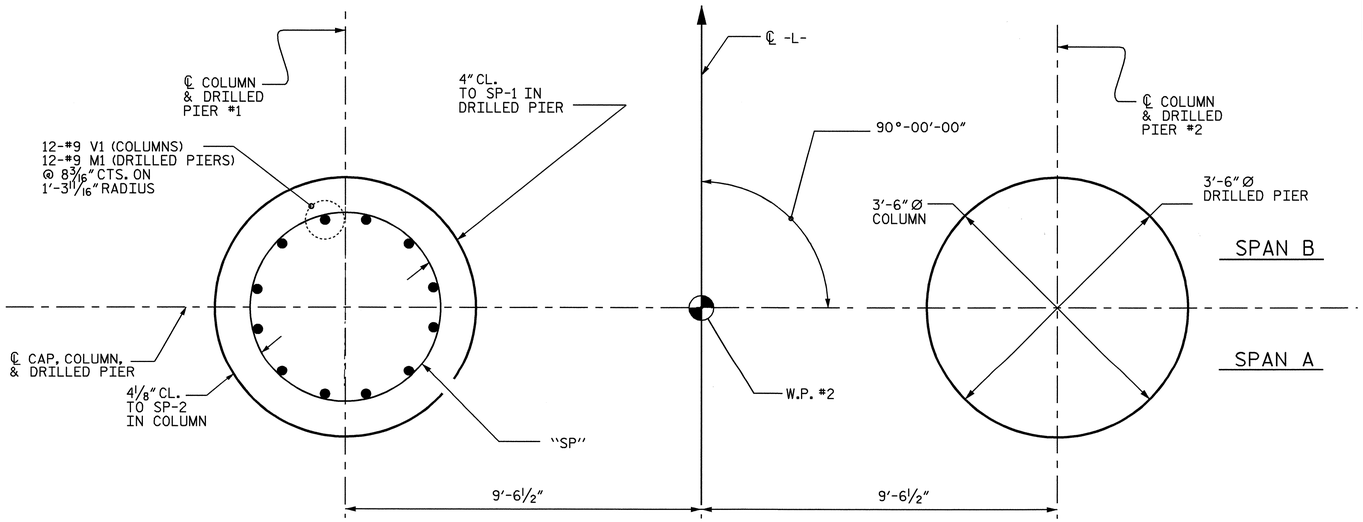


MECHANICAL COUPLER STAGGER DETAIL



PLAN ELEVATION

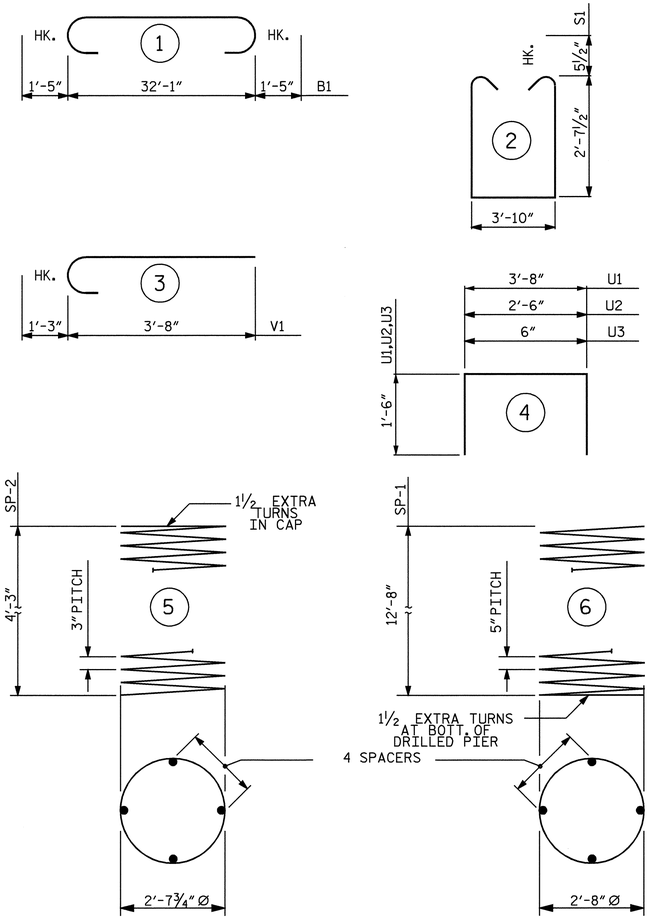
DETAIL "A"



PLAN OF DRILLED PIERS & COLUMNS

(COLUMNS & DRILLED PIERS ARE IDENTICAL)

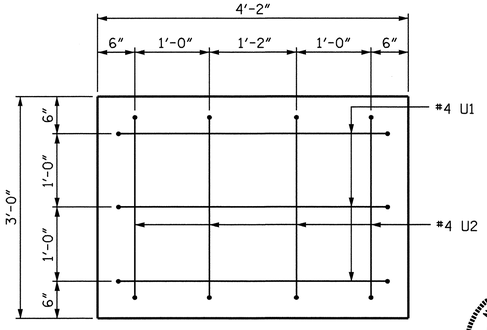
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

** THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

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



END VIEW OF CAP

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

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

BILL OF MATERIAL

BENT #1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#10	1	34'-11"	901
B2	4	#6	STR	32'-3"	194
B3	4	#4	STR	3'-10"	10
B4	6	#10	STR	32-3"	833
D1	40	#6	STR	1'-6"	90
S1	27	#5	2	10'-0"	282
M1	24	#9	STR.	18'-6"	1510
V1	24	#9	3	4'-11"	401
U1	6	#4	4	6'-8"	27
U2	8	#4	4	5'-6"	29
U3	10	#4	4	3'-6"	23
REINFORCING STEEL				=	4300 LBS
SP-1	2	*	6	279'-5"	583
SP-2	2	**	5	160'-10"	215

SPIRAL COLUMN REINFORCING STEEL LBS. 798

CLASS A CONCRETE BREAKDOWN

POUR #2 (COLUMNS)	2.9 C.Y.
POUR #3 (CAP)	15.1 C.Y.
POUR #4 (LATERAL GUIDES)	0.2 C.Y.
TOTAL	18.2 C.Y.

DRILLED PIERS

DRILLED PIER CONCRETE

POUR #1 (DRILLED PIERS)	9.3 C.Y.
3'-6"Ø DRILLED PIERS NOT IN SOIL	13.00 LIN. FT.
3'-6"Ø DRILLED PIERS IN SOIL	13.00 LIN. FT.
PERMANENT STEEL CASING FOR 3'-6"Ø DRILLED PIER	13.90 LIN. FT.
SID INSPECTION	1 EACH

PROJECT NO. B-4218

ORANGE COUNTY

STATION: 13+90.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT #1

NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER D. ANDREW DAVENPORT, JR.
5-19-08

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			26

DRAWN BY : D.A. DAVENPORT DATE : 02-08
CHECKED BY : D.A. GLADDEN DATE : 03-08

NOTES

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

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

HOOKS ON V1 BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

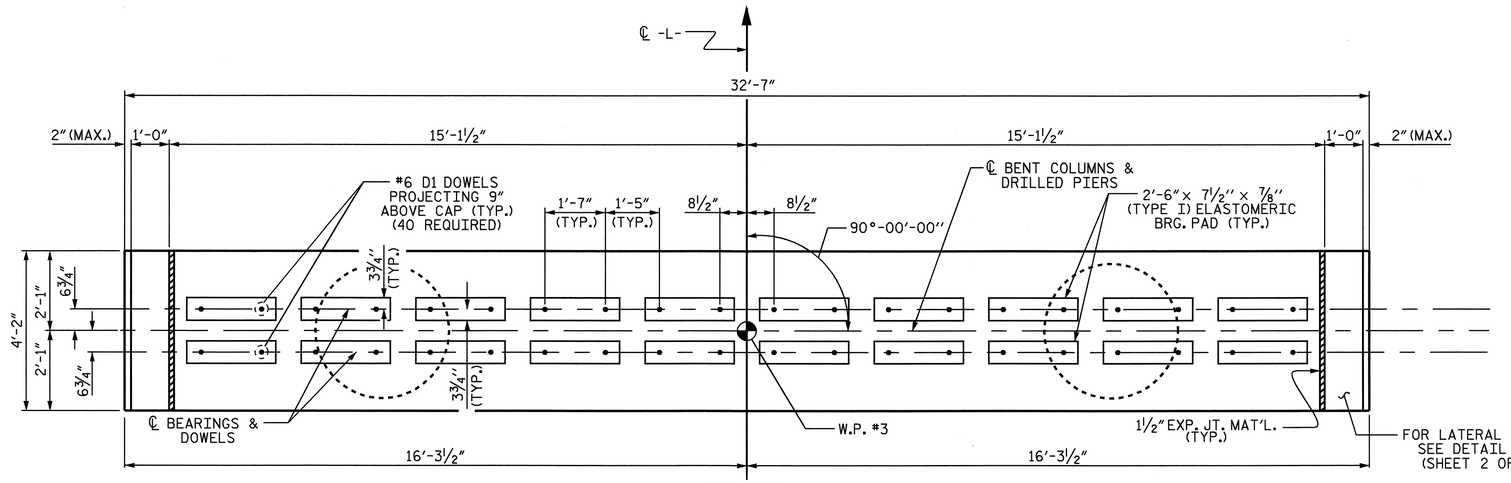
THE LOCATION OF THE CONSTRUCTION JOINT IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FOOT BELOW THE GROUND LINE.

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

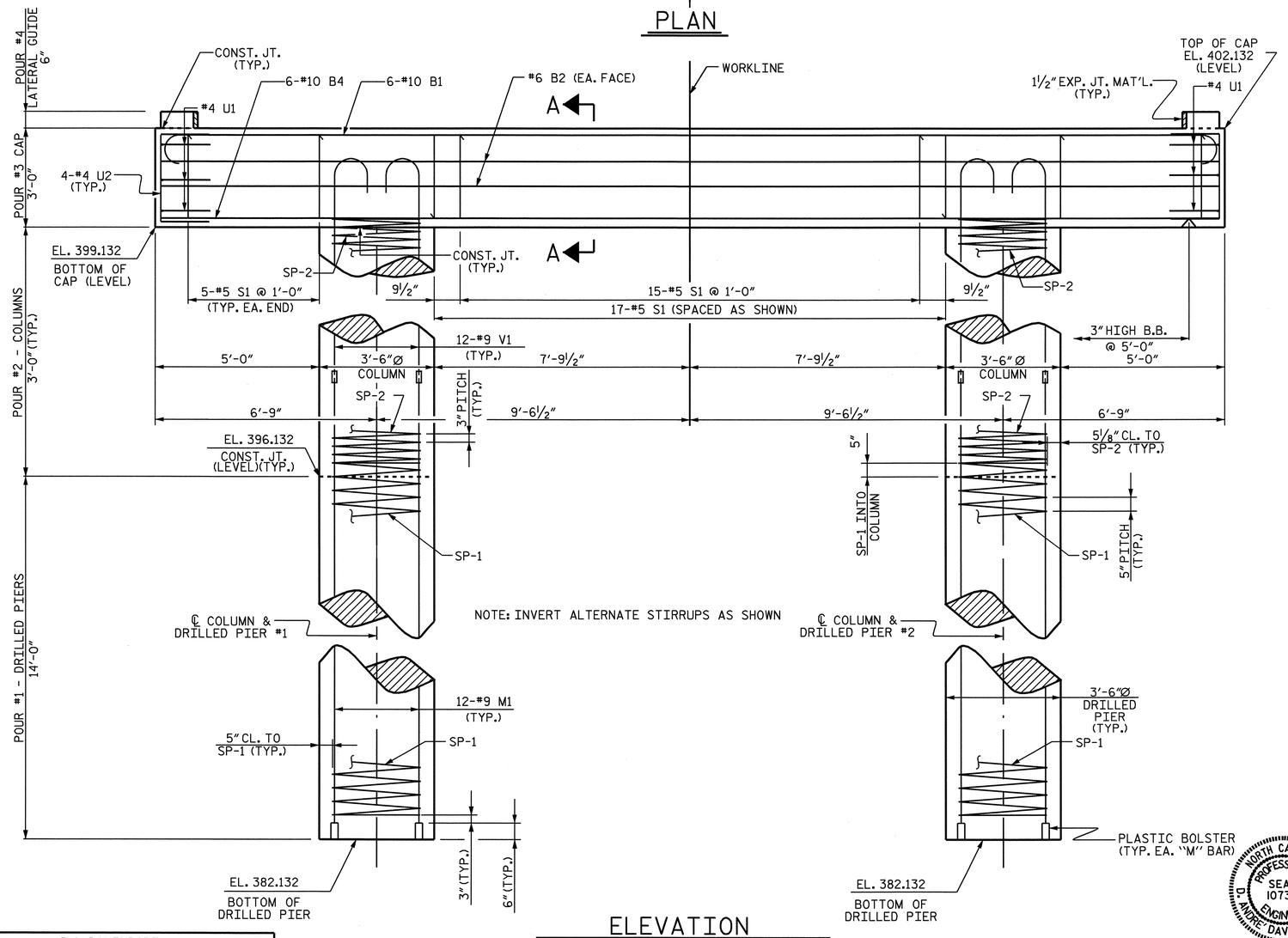
THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIER IS DETAILED WITH 3 FEET OF EXTRA LENGTH.

FOR PERMANENT STEEL CASING, SEE SPECIAL PROVISIONS.

FOR DRILLED PIER, SEE SPECIAL PROVISIONS.



PLAN

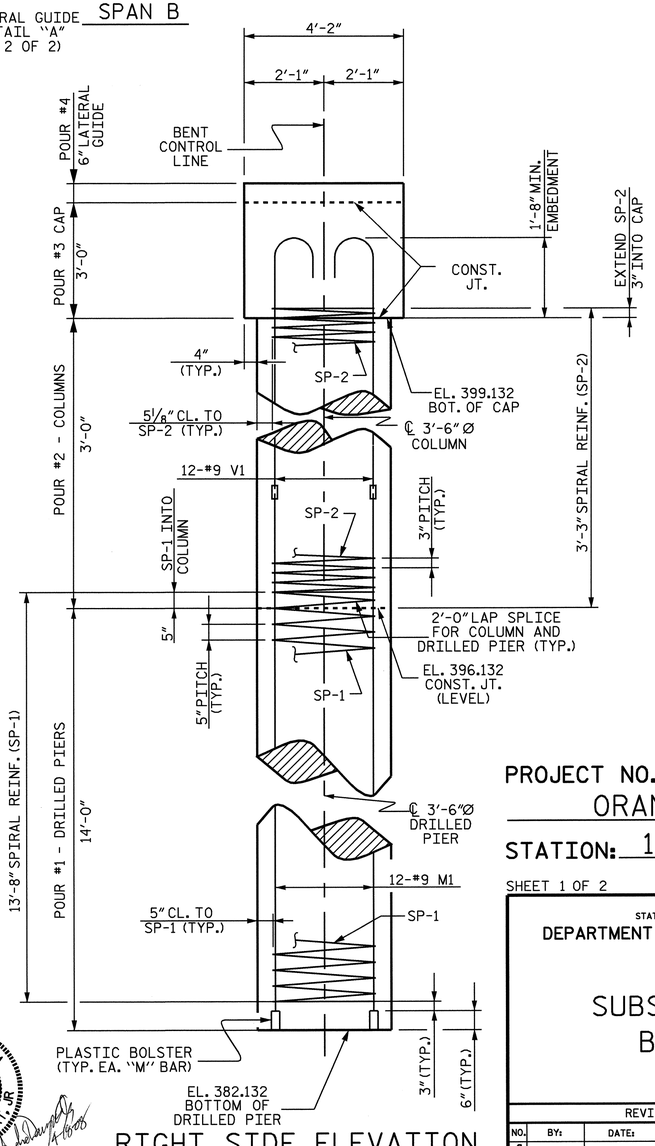


NOTE: INVERT ALTERNATE STIRRUPS AS SHOWN

ELEVATION

SPAN C

SPAN B



RIGHT SIDE ELEVATION

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

PROJECT NO. B-4218

ORANGE COUNTY

STATION: 13+90.00 -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-19
1			3			TOTAL SHEETS
2			4			26

DRAWN BY : D.A. DAVENPORT DATE : 02-08
CHECKED BY : D.A. GLADDEN DATE : 03-08

18-APR-2008 08:36
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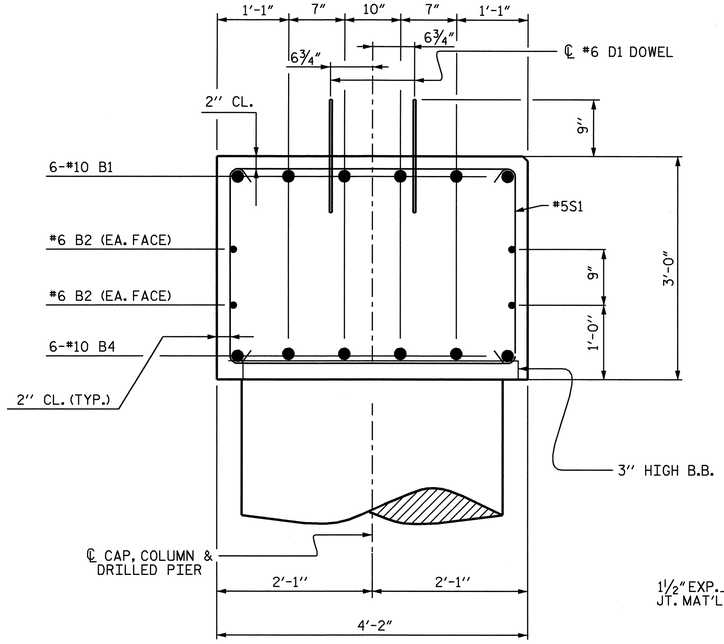
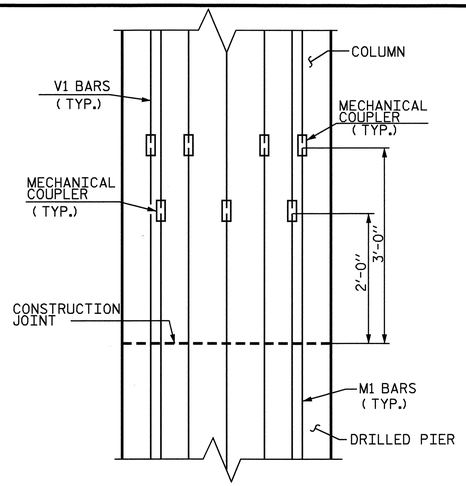
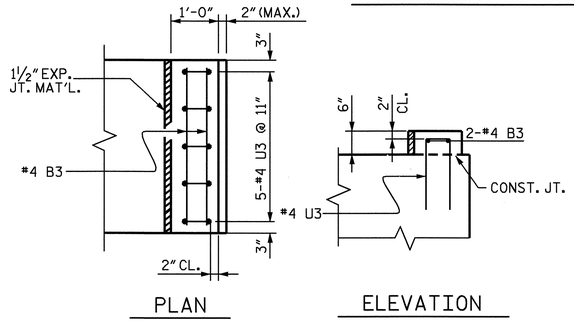
ddavenport



SECTION A-A

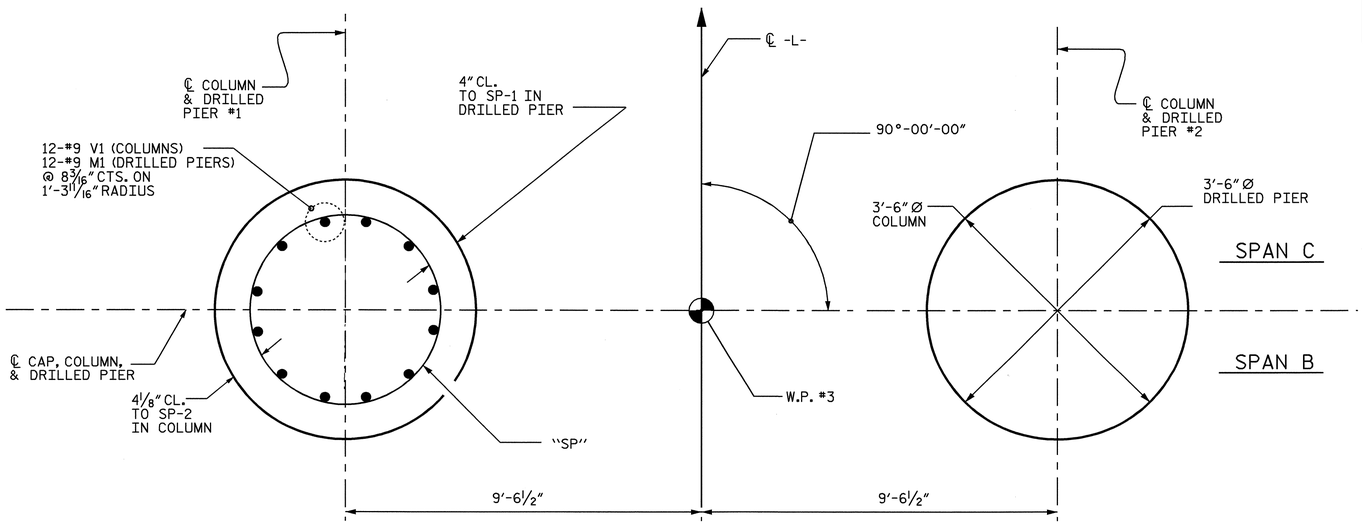


MECHANICAL COUPLER STAGGER DETAIL



PLAN ELEVATION

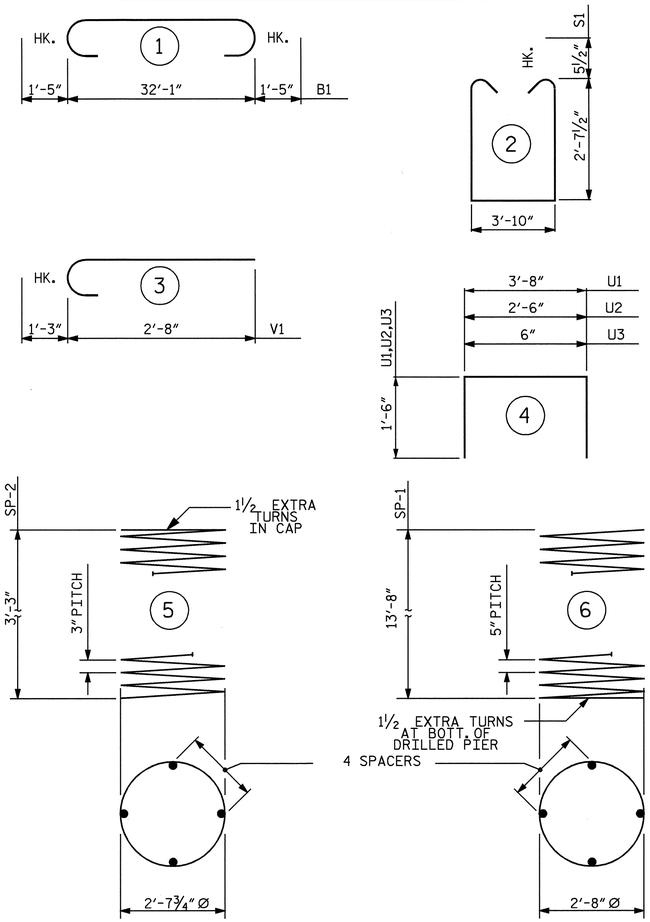
DETAIL "A"



PLAN OF DRILLED PIERS & COLUMNS

(COLUMNS & DRILLED PIERS ARE IDENTICAL)

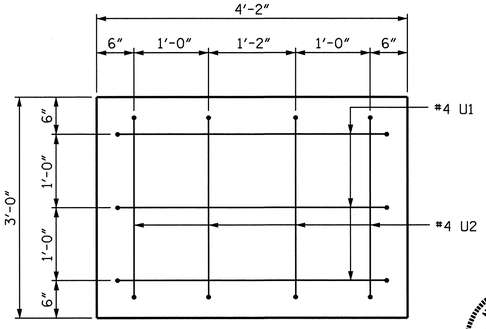
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

** THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

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



END VIEW OF CAP

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

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

BILL OF MATERIAL

BENT #2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#10	1	34'-11"	901
B2	4	#6	STR	32'-3"	194
B3	4	#4	STR	3'-10"	10
B4	6	#10	STR	32'-3"	833
D1	40	#6	STR	1'-6"	90
S1	27	#5	2	10'-0"	282
M1	24	#9	STR.	19'-6"	1591
V1	24	#9	3	3'-11"	320
U1	6	#4	4	6'-8"	27
U2	8	#4	4	5'-6"	29
U3	10	#4	4	3'-6"	23
REINFORCING STEEL				= 4300 LBS	
SP-1	2	*	6	301'-3"	628
SP-2	2	**	5	126'-1"	168

SPIRAL COLUMN REINFORCING STEEL LBS. 796

CLASS A CONCRETE BREAKDOWN

POUR #2 (COLUMNS)	2.1 C.Y.
POUR #3 (CAP)	15.1 C.Y.
POUR #4 (LATERAL GUIDES)	0.2 C.Y.
TOTAL	17.4 C.Y.

DRILLED PIERS

DRILLED PIER CONCRETE

POUR #1 (DRILLED PIERS)	10.0 C.Y.
3'-6"Ø DRILLED PIERS NOT IN SOIL	13.00 LIN. FT.
3'-6"Ø DRILLED PIERS IN SOIL	15.00 LIN. FT.
PERMANENT STEEL CASING FOR 3'-6"Ø DRILLED PIER	16.26 LIN. FT.
SID INSPECTION	1 EACH

PROJECT NO. B-4218

ORANGE COUNTY

STATION: 13+90.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT #2

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS
2			4			26

DRAWN BY : D.A. DAVENPORT DATE : 02-08
CHECKED BY : D.A. GLADDEN DATE : 03-08

NOTES

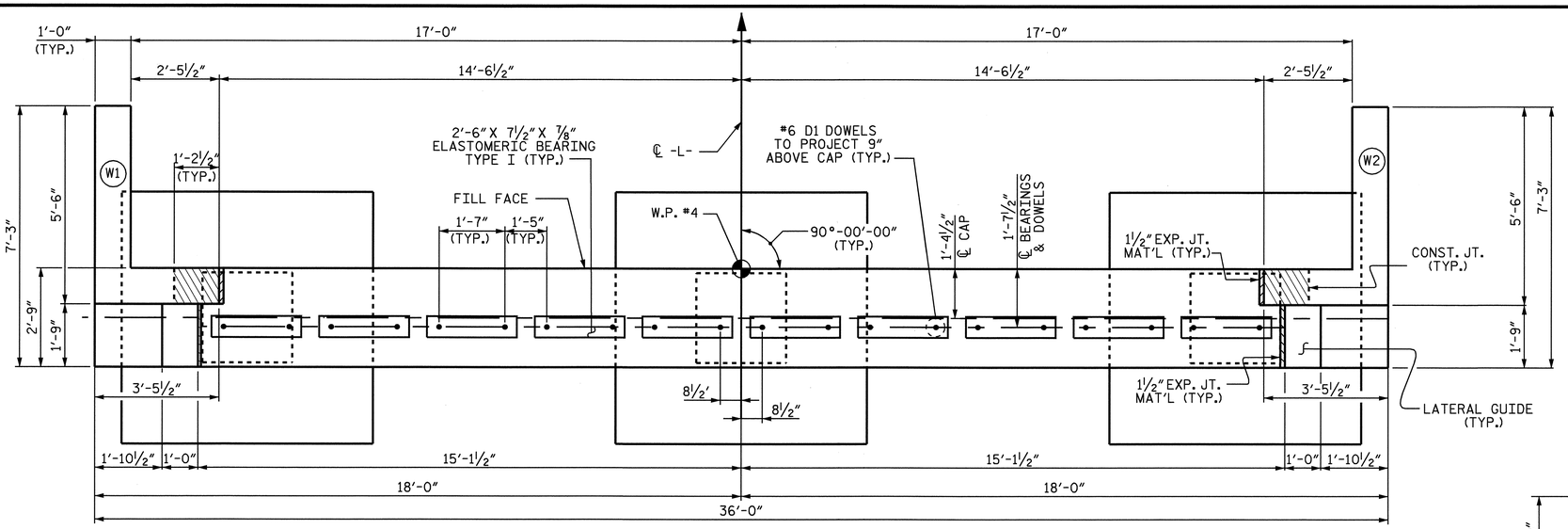
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #6D1 DOWELS.

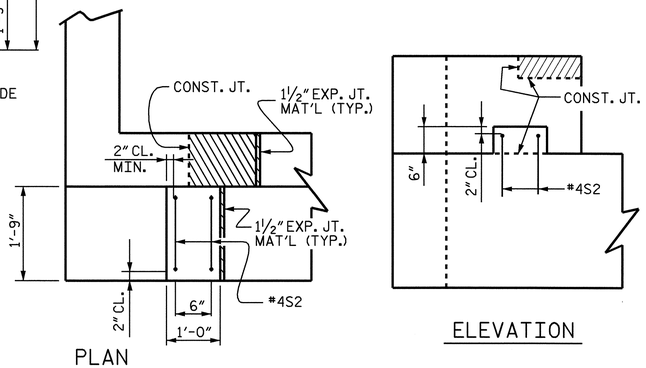
THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4"DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

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

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

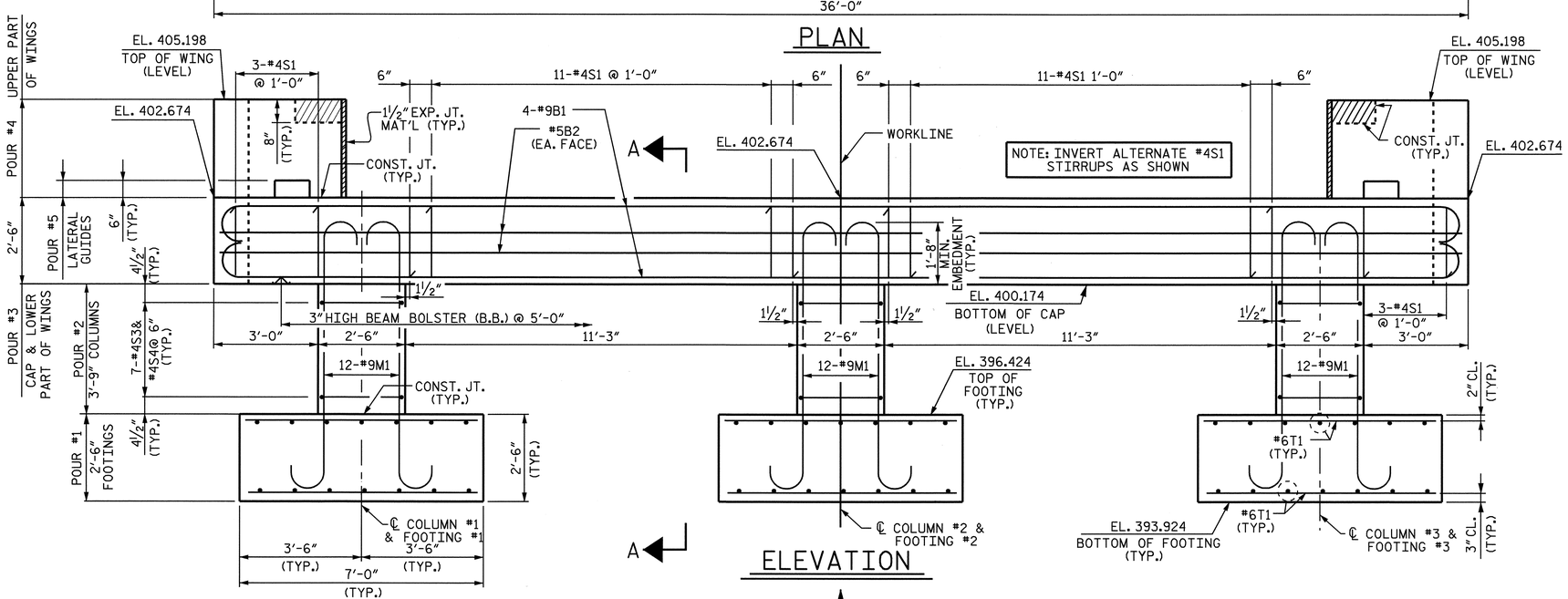
PLAN



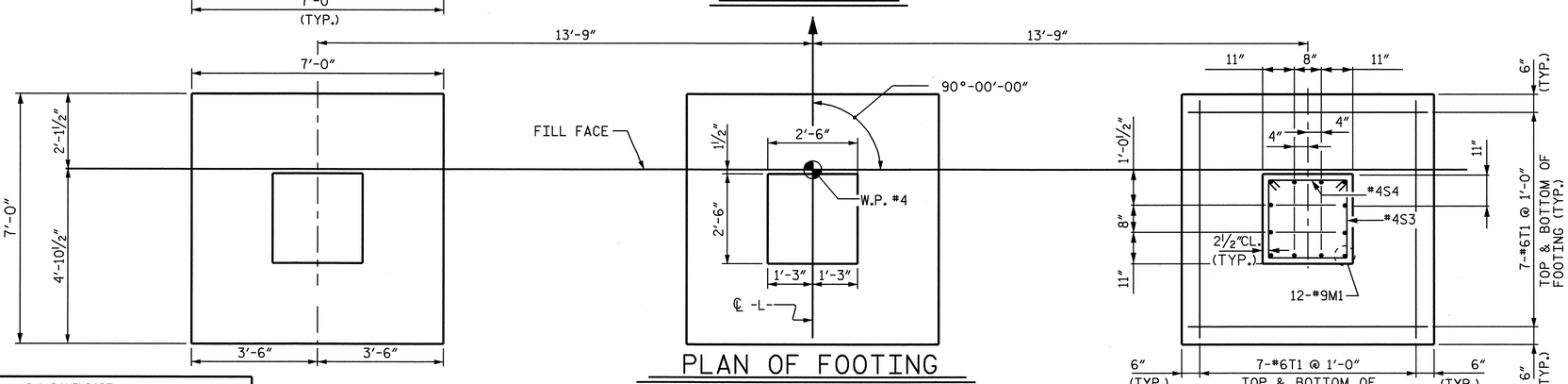


LATERAL GUIDE

(EACH END SIMILAR)

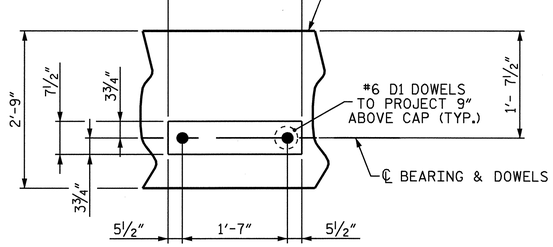


ELEVATION



PLAN OF FOOTING

ALL FOOTINGS AND COLUMNS ARE IDENTICAL



BEARING DETAIL

PROJECT NO. B-4218

ORANGE COUNTY

STATION: 13+90.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

Ssubstructure
END BENT #2

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS
2			4			26

DRAWN BY : D.A. DAVENPORT DATE : 03-08
CHECKED BY : H.T. BARBOUR DATE : 03-08

30-MAY-2008 14:40
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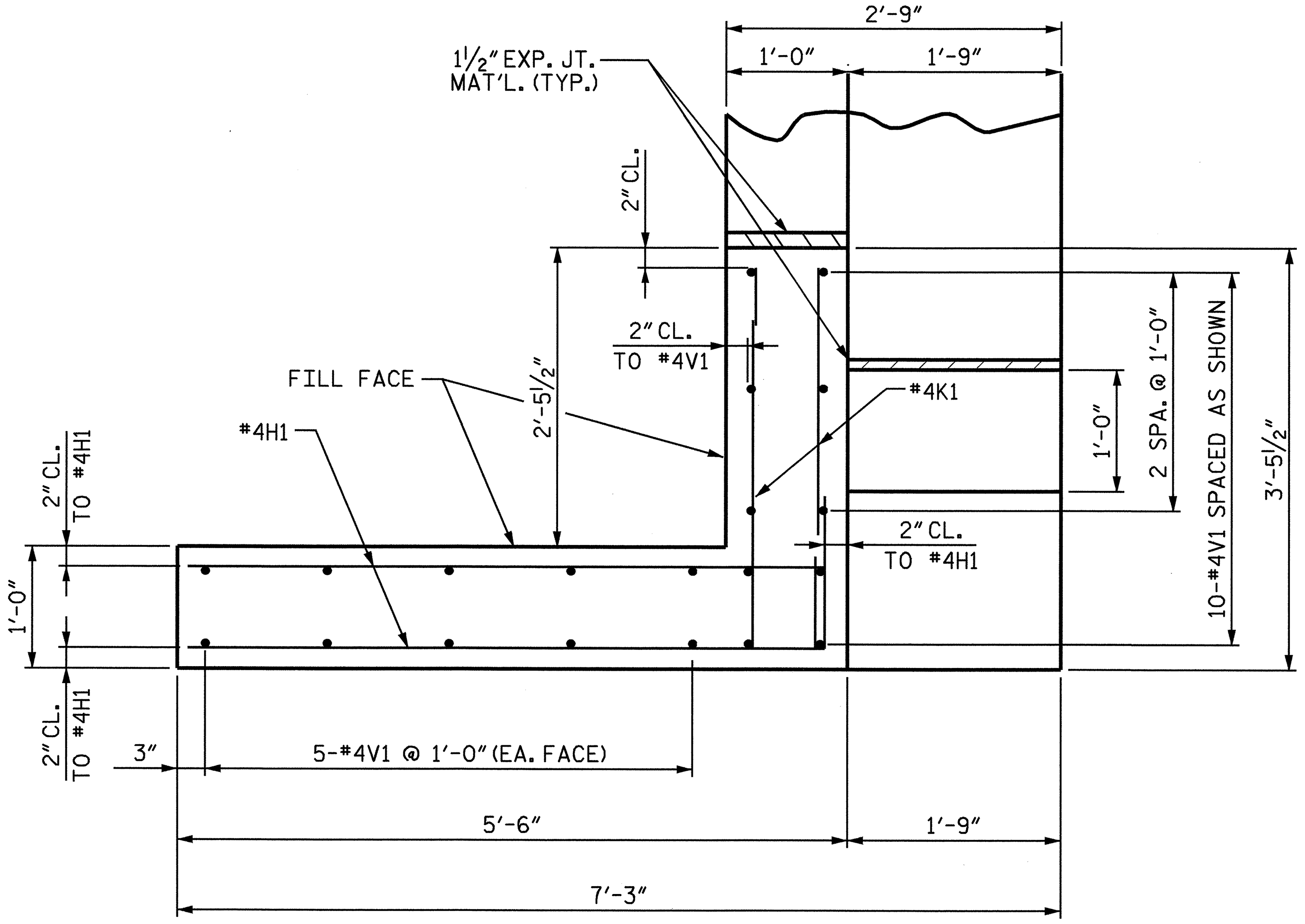
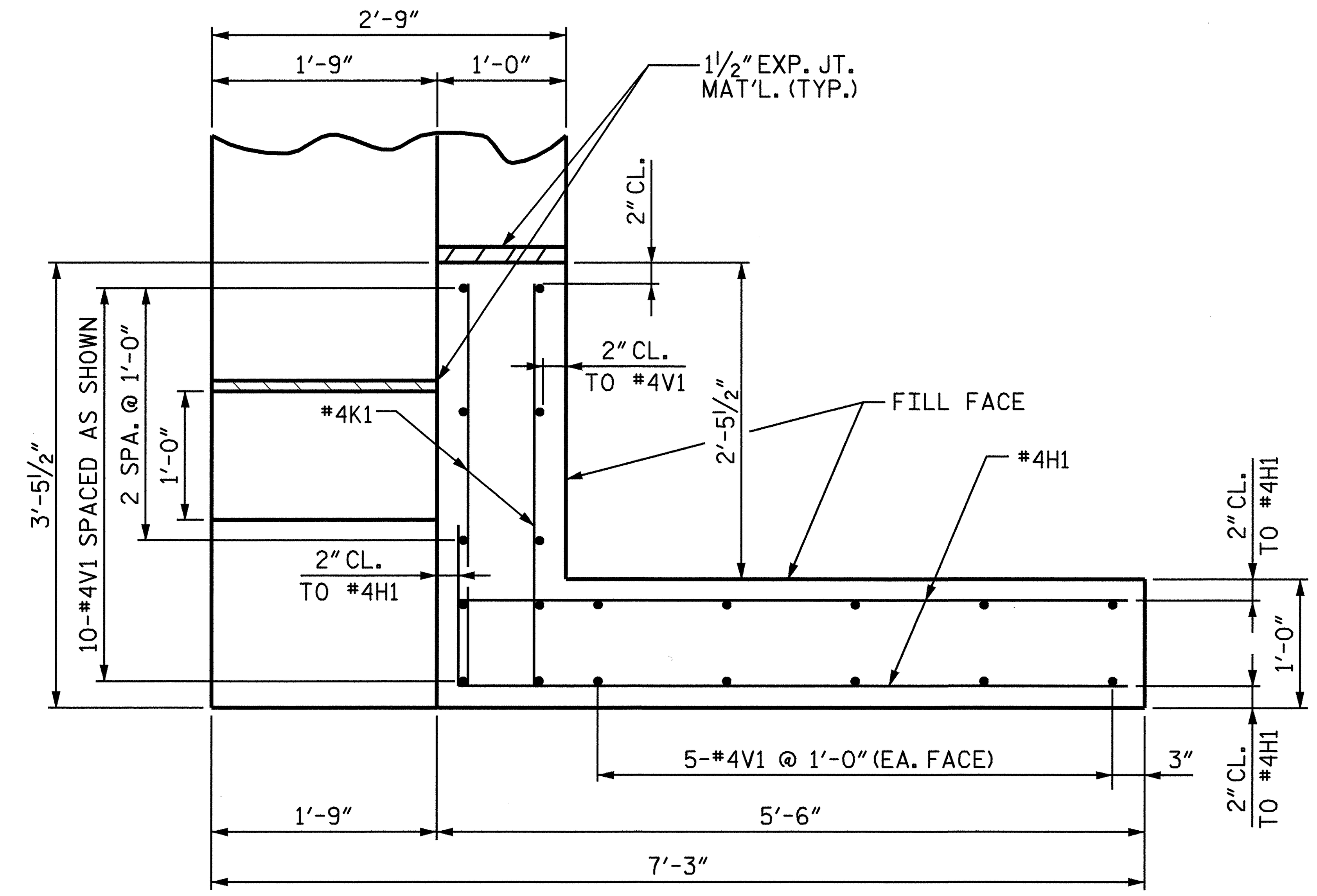
ADAVENPORT



PLAN OF LEFT WING (W1)



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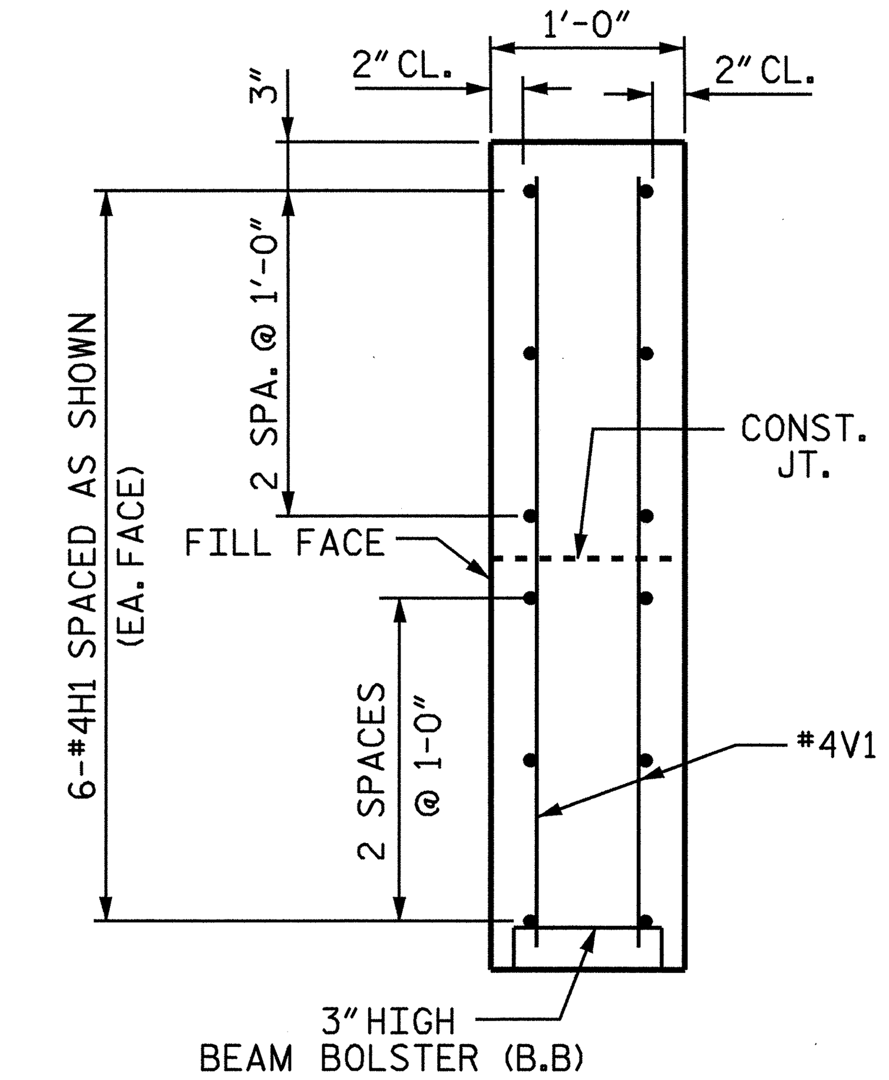
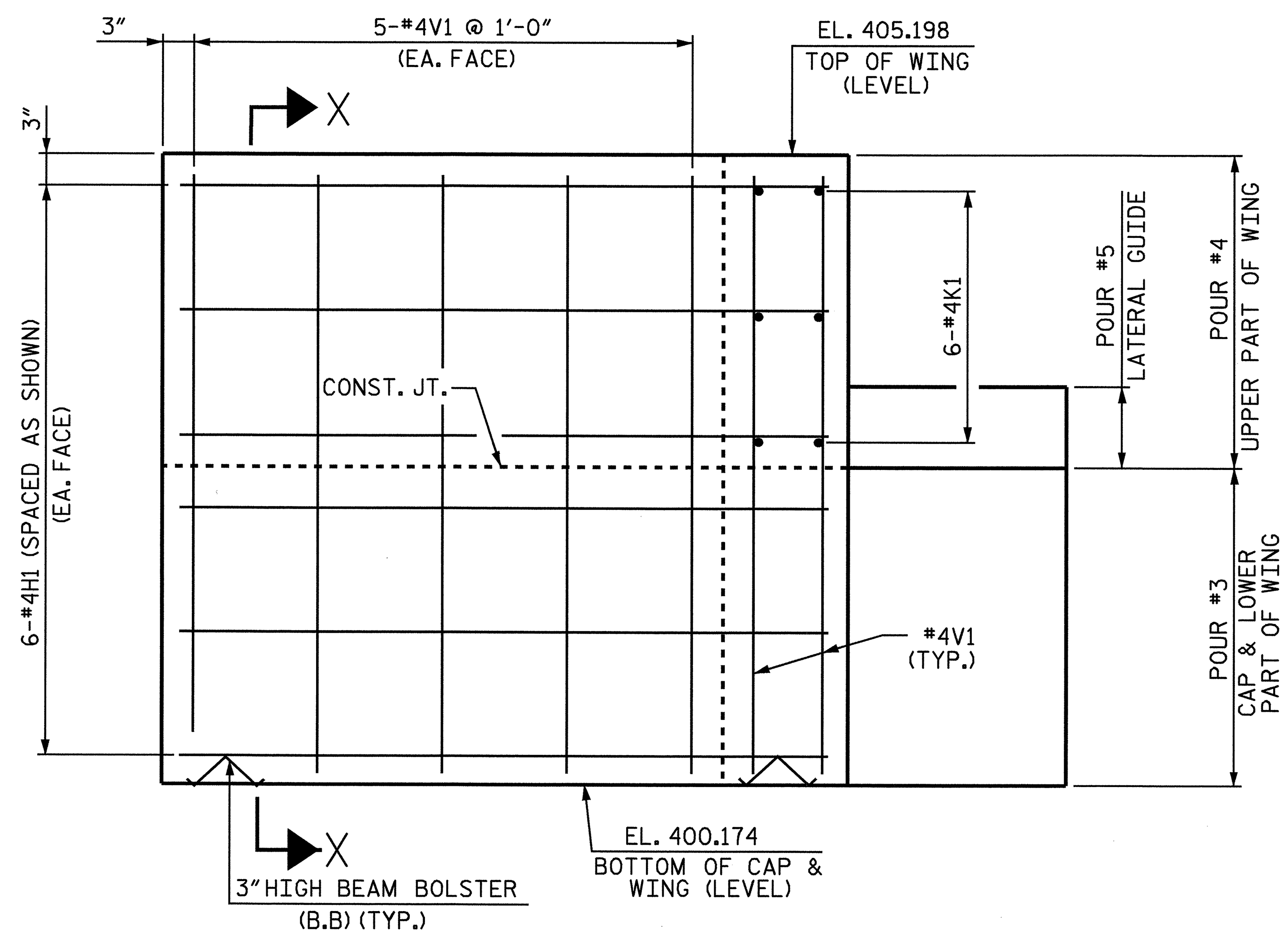
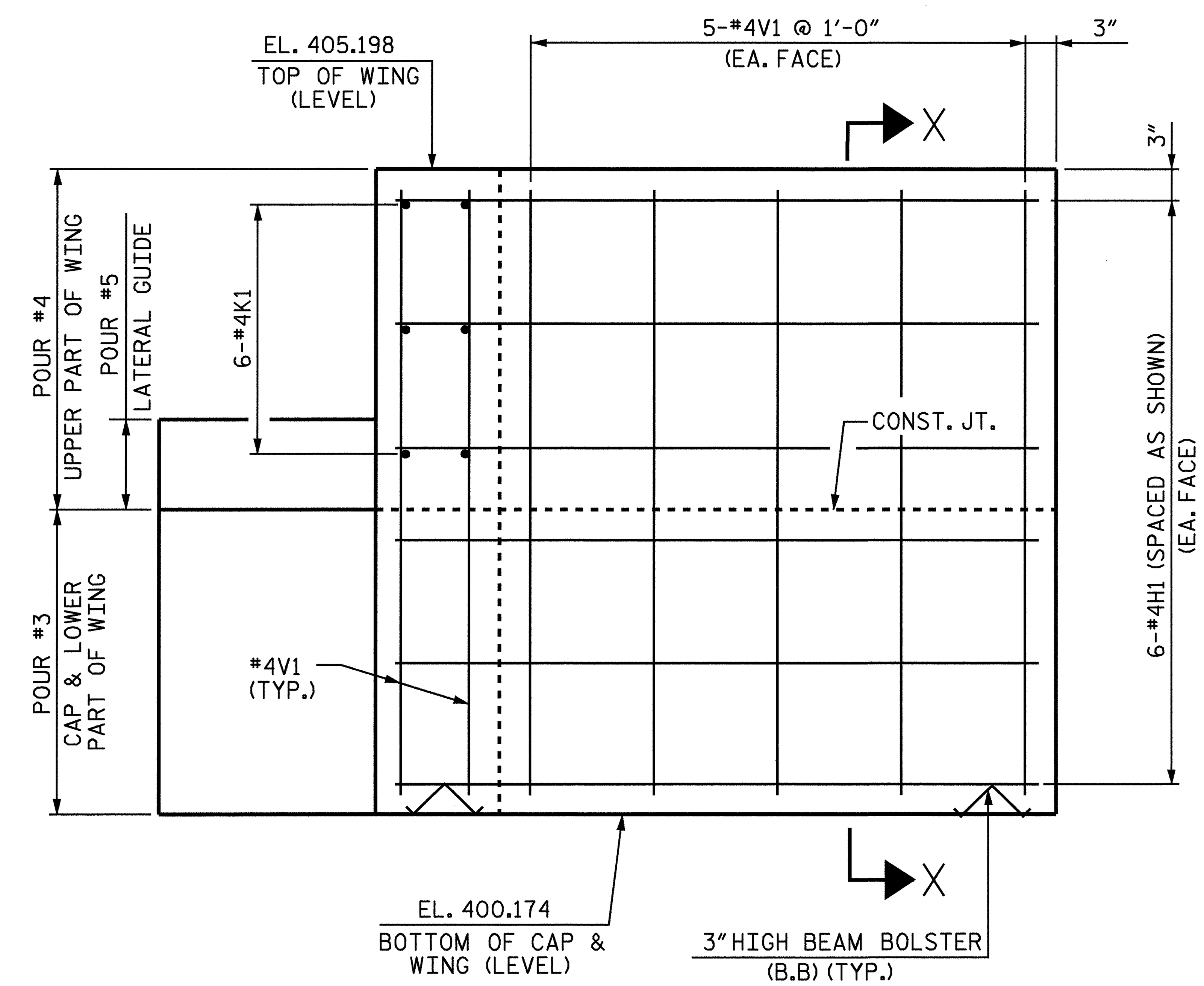


SECTION X-X



ELEVATION OF LEFT WING (W1)



ELEVATION OF RIGHT WING (W2)

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

[illegible] 4-18-08

PROJECT NO. B-4218

ORANGE COUNTY

STATION: 13+90.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT #2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
1			3			TOTAL SHEETS 26
2			4			

DRAWN BY : D.A. DAVENPORT DATE : 03-08
CHECKED BY : H.T. BARBOUR DATE : 03-08

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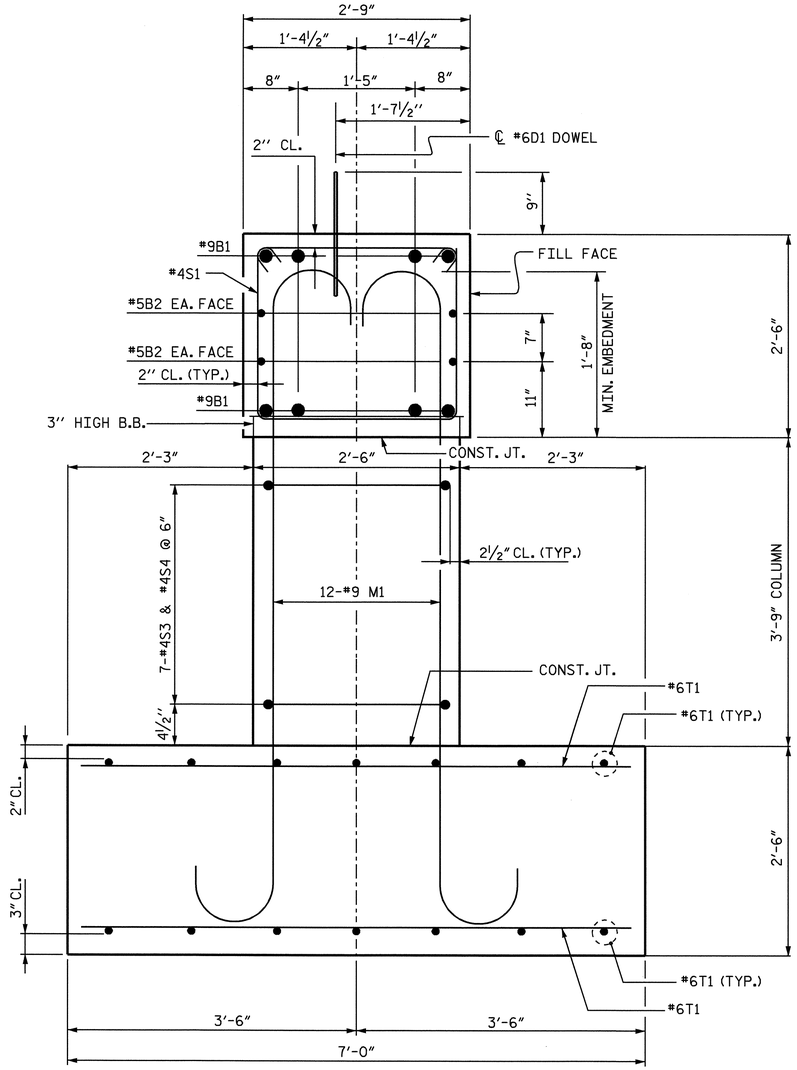
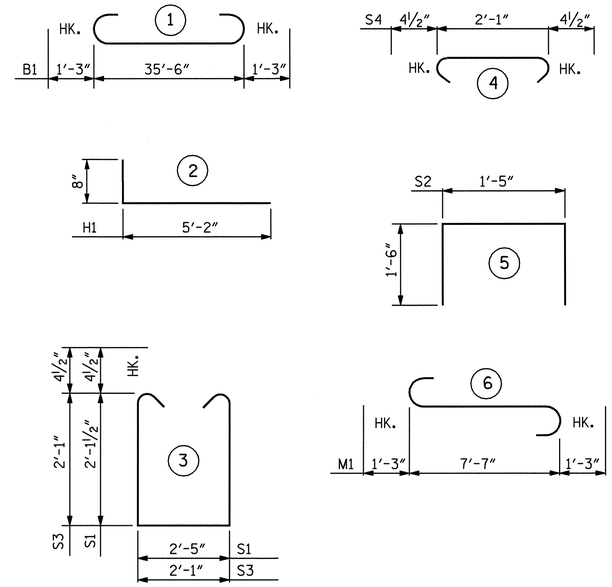


SECTION A-A

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

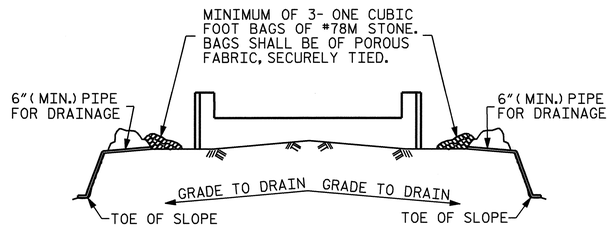
BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	38'-0"	1034
B2	4	#5	STR	35'-8"	149
D1	20	#6	STR	1'-6"	45
H1	24	#4	2	5'-10"	94
K1	12	#4	STR	3'-1"	25
M1	36	#9	6	10'-1"	1234
S1	32	#4	3	7'-5"	159
S2	4	#4	5	4'-5"	12
S3	21	#4	3	7'-0"	98
S4	21	#4	4	2'-10"	40
T1	84	#6	STR	6'-8"	841
V1	40	#4	STR	4'-8"	125

REINFORCING STEEL LBS = 3856

CLASS A CONCRETE BREAKDOWN

POUR #1 FOOTINGS (C.Y.)	13.6
POUR #2 COLUMNS (C.Y.)	2.6
POUR #3 CAP & LOWER PART OF WINGS (C.Y.)	10.0
POUR #4 UPPER PART OF WINGS (C.Y.)	1.5
POUR #5 LATERAL GUIDES (C.Y.)	0.1
TOTAL CLASS A CONCRETE (C.Y.)	27.8



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

BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

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

TEMPORARY DRAINAGE AT END BENT

PROJECT NO. B-4218

ORANGE COUNTY

STATION: 13+90.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE END BENT#2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-23
1			3			TOTAL SHEETS
2			4			26

NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER D. ANDREW DAVENPORT
4-18-08

DRAWN BY : D.A. DAVENPORT DATE : 03-08
CHECKED BY : H.T. BARBOUR DATE : 03-08

18-APR-2008 08:34
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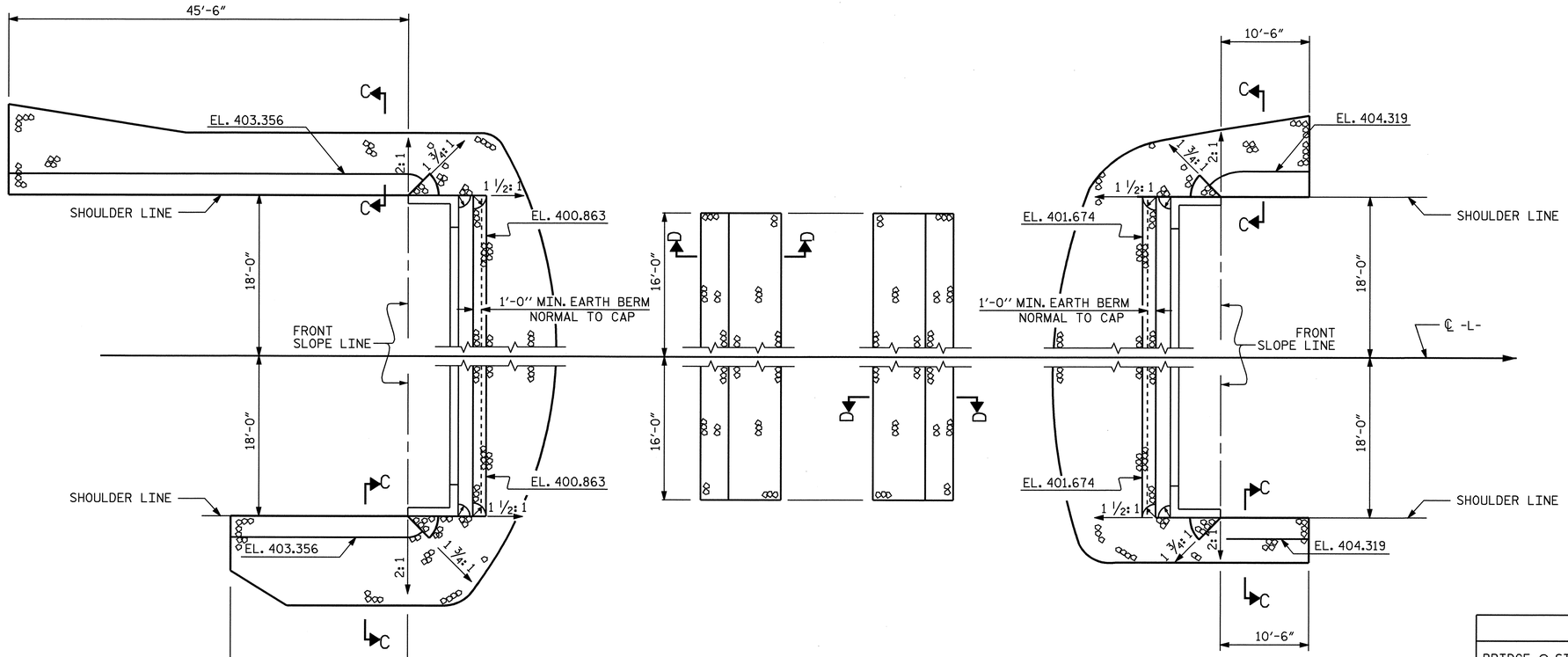
NCDOT

NOTES :

FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.

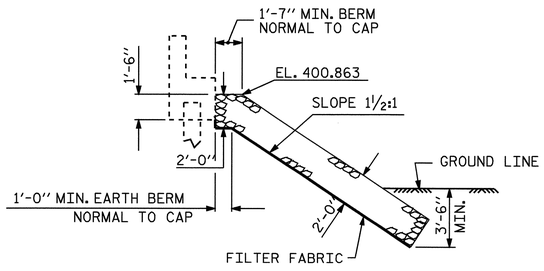


END BENT #1

END BENT #2

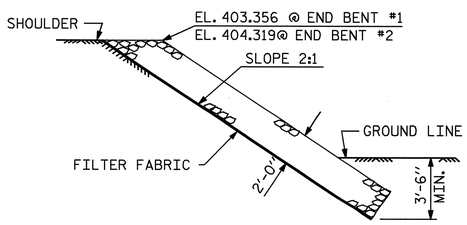
PLAN

ESTIMATED QUANTITIES		
BRIDGE @ STA. 13+90.00 -L-	RIP RAP CLASS II	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	225	250
BENT 1	40	45
BENT 2	25	30
END BENT 2	165	180
TOTAL	455	505

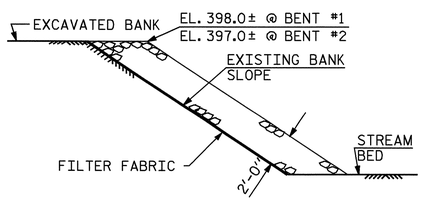


℄ SECTION @ END BENT #1

BERM RIP RAPPED



SECTION C-C



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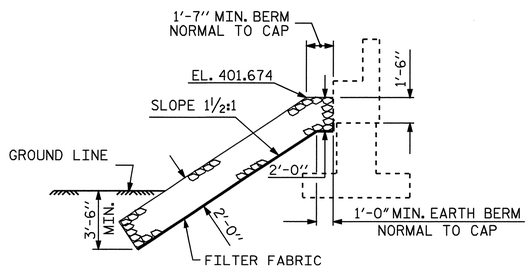

℄ SECTION @ END BENT #2

BERM RIP RAPPED

PROJECT NO. B-4218

ORANGE COUNTY

STATION: 13+90.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

RIP RAP DETAILS

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

6-2-08

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-24
1			3			TOTAL SHEETS
2			4			26

SKEW 90°

STD. NO. RR2

ASSEMBLED BY : M. K. TOM	DATE : 2-22-08	
CHECKED BY : D. A. DAVENPORT	DATE : 2-22-08	
DRAWN BY : FCJ 2/88	REV. 8/16/99	RWW/LES
CHECKED BY : ARB 8/88	REV. 10/17/00	RWW/LES
	REV. 5/1/06	TLA/GM

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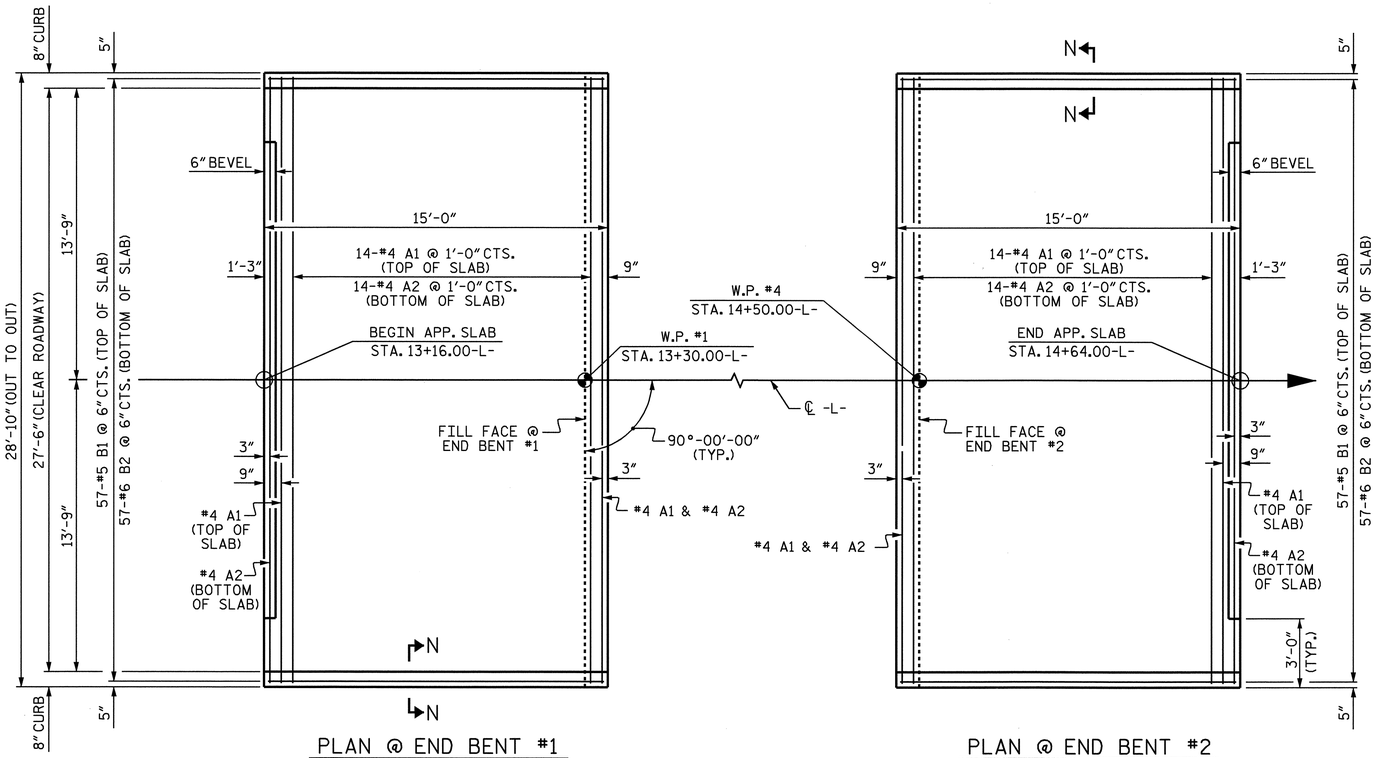


DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

NOTES

APPROACH SLAB SHALL BOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.

FABRIC SHALL BE TYPE 1 ENGINEERING FABRIC IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

#78m STONE BACKFILL (CLASS V SECLECT MATERIAL) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

#78M STONE BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

THE 4"Ø DRAINIAGE PIPE SHALL HAVE OUTLETS SIMILAR TO ROADWAY STANDARD DRAWING 422.10.

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

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

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

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

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

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

APPROACH SLAB GROOVING IS NOT REQUIRED.

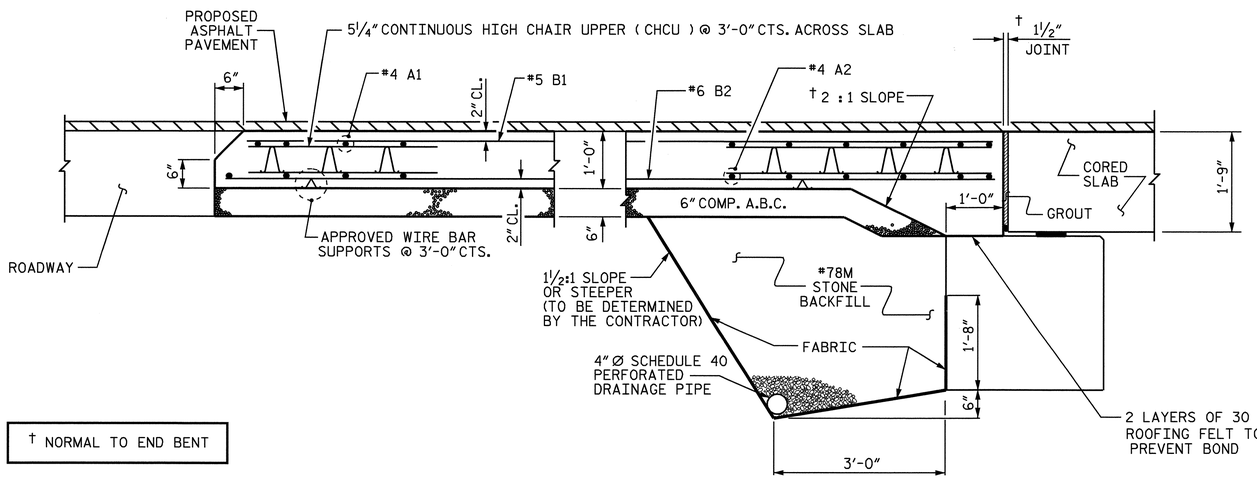
BILL OF MATERIAL

APPROACH SLAB AT EB #1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ A1	16	#4	STR	28'-6"	305
A2	16	#4	STR	28'-6"	305
✳ B1	57	#5	STR	14'-3"	847
B2	57	#6	STR	14'-8"	1256
REINFORCING STEEL				LBS.	1561
✳ EPOXY COATED REINFORCING STEEL				LBS.	1152
CLASS AA CONCRETE				C. Y.	17.5

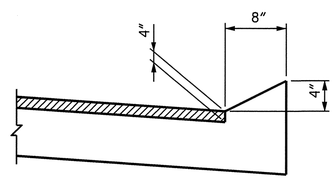
APPROACH SLAB AT EB #2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ A1	16	#4	STR	28'-6"	305
A2	16	#4	STR	28'-6"	305
✳ B1	57	#5	STR	14'-3"	847
B2	57	#6	STR	14'-8"	1256
REINFORCING STEEL				LBS.	1561
✳ EPOXY COATED REINFORCING STEEL				LBS.	1152
CLASS AA CONCRETE				C. Y.	17.5

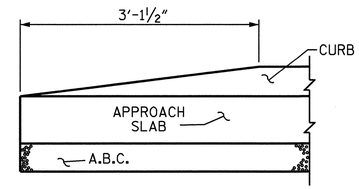


† NORMAL TO END BENT

SECTION THRU SLAB



SECTION N-N



END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS

PROJECT NO. B-4218

ORANGE COUNTY

STATION: 13+90.00-L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE CORED SLAB

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-25
1			3			TOTAL SHEETS
2			4			26

NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER D. ANDREW DAVENPORT 5-16-08

ASSEMBLED BY :	W. B. HILL	DATE :	3-28-07
CHECKED BY :	D.A. GLADDEN	DATE :	4-9-07
DRAWN BY : FCJ 6/87	REV. 7/10/01		LES/RDR
CHECKED BY : EGA 6/87	REV. 5/7/03R		RWW/JTE
	REV. 5/1/06		TLA/GM

15-MAY-2008 15:00
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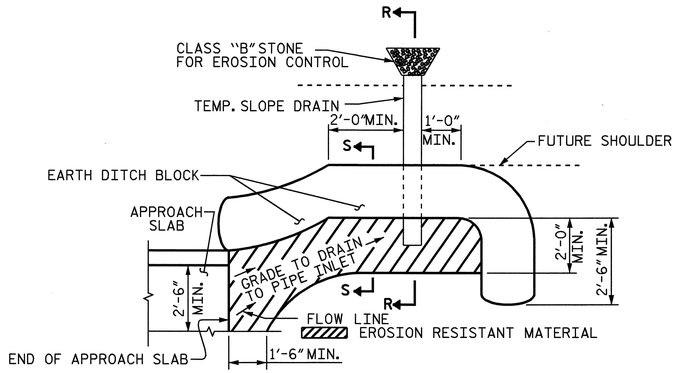
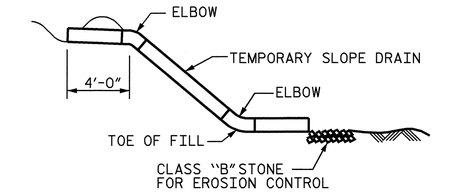
STD. NO. BAS7 (SHT 1)

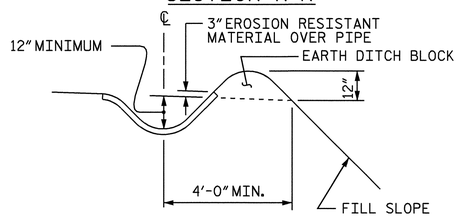


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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



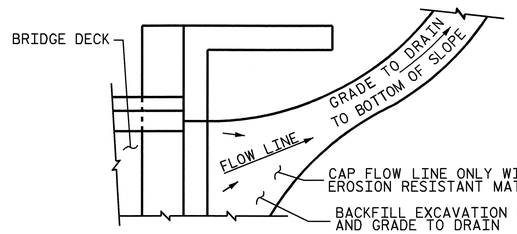
SECTION R-R



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 :	W. B. HILL	DATE :	3-28-07
CHECKED BY :	D.A. GLADDEN	DATE :	4-9-07
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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NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER D. ANDREW DAVENPORT, JR.
4/18/08

PROJECT NO. B-4218
ORANGE COUNTY
STATION: 13+90.00-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-26
1			3			TOTAL SHEETS
2			4			26

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.