

05/08/09

TIP PROJECT: B-4646

CONTRACT: C202113

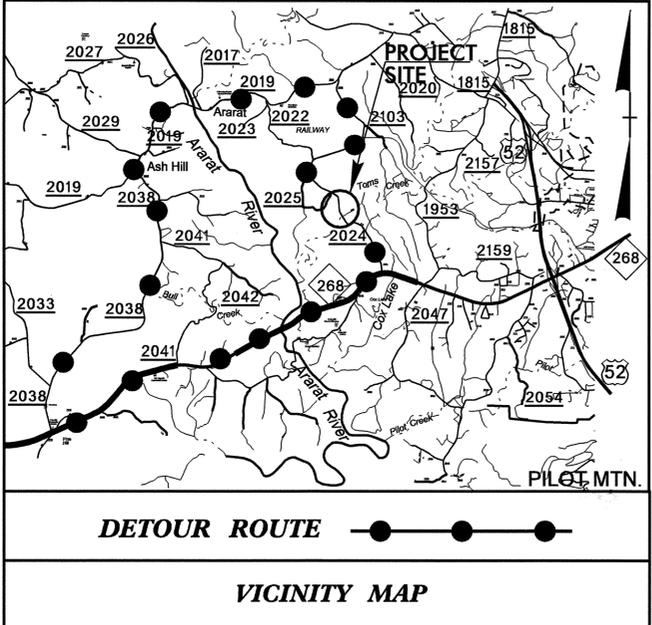
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SURRY COUNTY

LOCATION: BRIDGE 132 ON SR 2024 OVER TOM'S CREEK

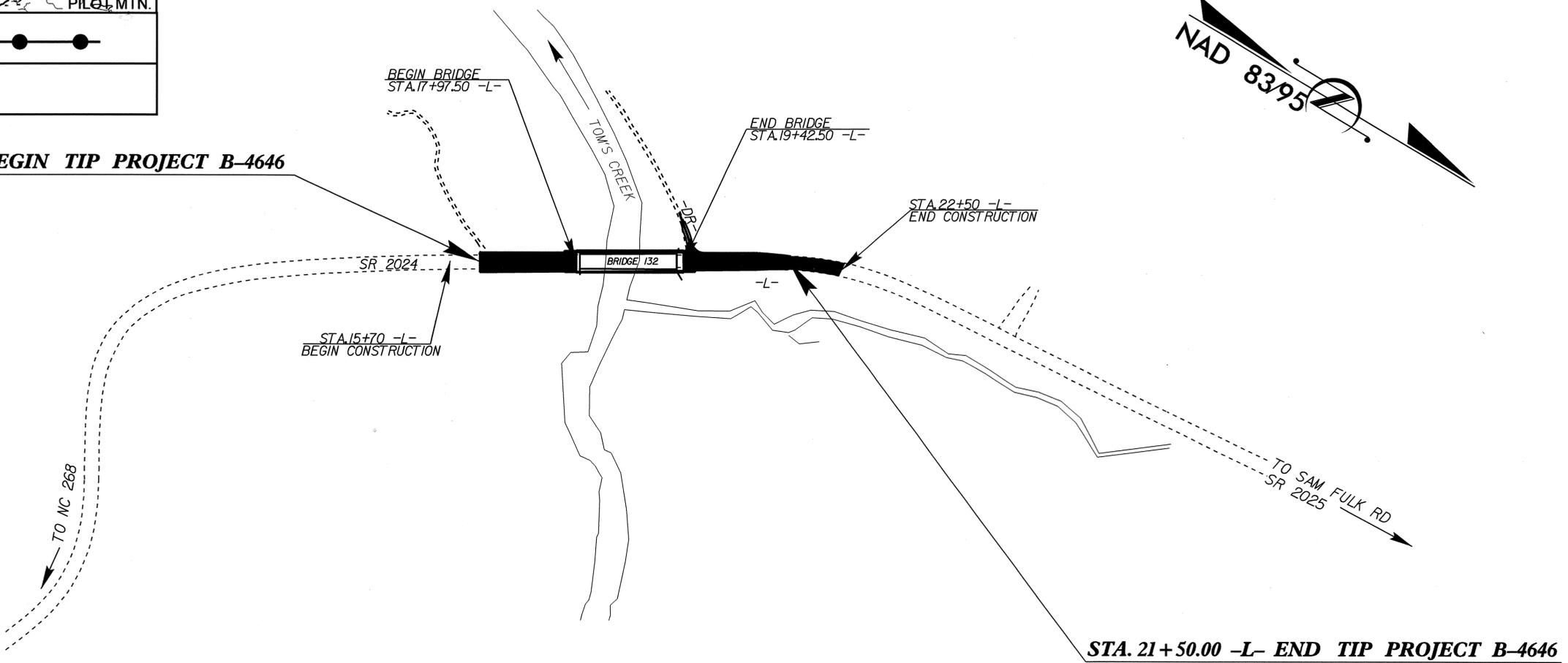
TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	
N.C.	B-4646	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
33812.1.1	BRZ-2024(2)	P.E.
33812.2.1	BRZ-2024(2)	R/W & UTIL
33812.3.1	BRZ-2024(2)	CONST.

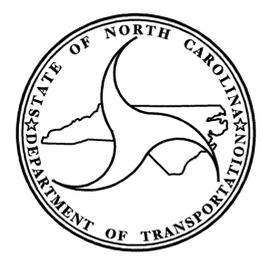


Structure

STA. 16+00.00 -L- BEGIN TIP PROJECT B-4646



** DESIGN EXCEPTION FOR DESIGN SPEED REQUIRED



DESIGN DATA

ADT 2009 = 380
ADT 2030 = 800
DHV = 12 %
D = 60 %
* T = 3 %
** V = 20 MPH
* TTST 1% DUAL 2%

FUNCTIONAL CLASSIFICATION
RURAL LOCAL

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4646 = 0.077 MILES
LENGTH STRUCTURE TIP PROJECT B-4646 = 0.027 MILES
TOTAL LENGTH TIP PROJECT B-4646 = 0.104 MILES

PLANS PREPARED IN THE OFFICE OF:
DIVISION OF HIGHWAYS

2006 STANDARD SPECIFICATIONS

LETTING DATE:
MAY 19, 2009

Q. H. NGUYEN, P.E.
PROJECT ENGINEER

MARC G. CHEEK, P.E.
PROJECT DESIGN ENGINEER

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

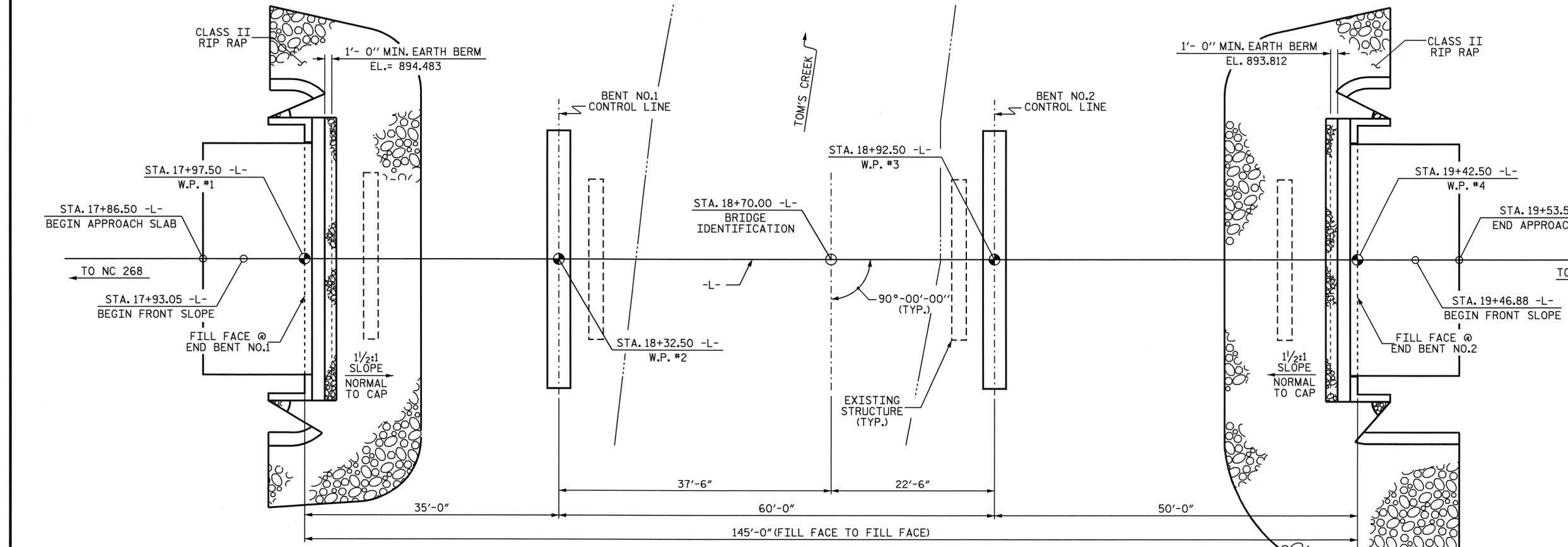
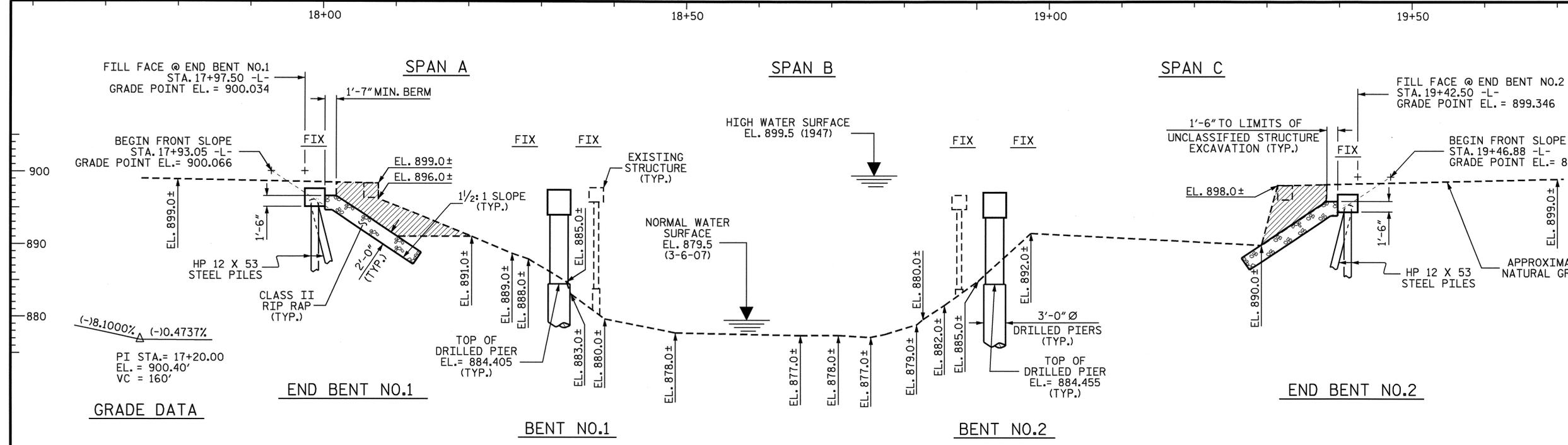
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER
DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR

P.E.
DATE

04-FEB-2009 11:39
\$\$\$\$\$DGN\$\$\$\$\$
afigueroa



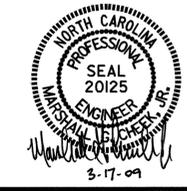
PROJECT NO. B-4646
 SURRY COUNTY
 STATION: 18+70.00 -L-
 SHEET 1 OF 3 REPLACES BRIDGE #132

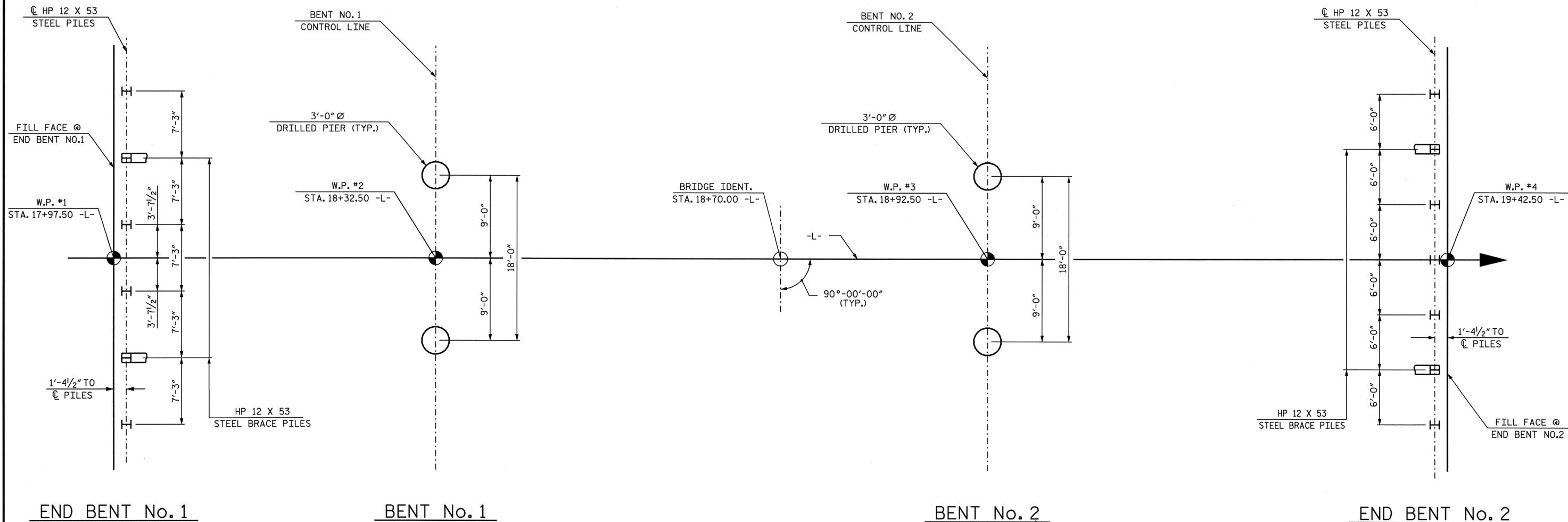
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE ON SR 2024
 OVER TOM'S CREEK BETWEEN
 NC 268 AND SR 2025

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

DRAWN BY : A.L. FIGUEROA DATE : 12/10/08
 CHECKED BY : M.G. CHEEK DATE : 01-26-09





FOUNDATION LAYOUT

ALL END BENT PILES ARE HP 12 X 53
 DIMENSIONS LOCATING PILES ARE SHOWN TO THE
 PILE CENTERLINE AT THE BOTTOM OF THE CAP.
 END BENT BRACE PILES ARE BATTERED 3:12.

NOTES

DRIVE PILES AT END BENT NO.1 AND END BENT NO.2 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 END BENT NO.1 AND
 END BENT NO.2 IS 60 TONS PER PILE.

FOR DRILLED PIERS, SEE DRILLED PIERS SPECIAL PROVISION.

DRILLED PIERS AT BENT NO.1 ARE DESIGNED FOR BOTH SKIN
 FRICTION AND END BEARING. CHECK FIELD CONDITIONS FOR
 THE REQUIRED END BEARING CAPACITY OF 25 TONS PER SQ. FOOT.

DRILLED PIERS AT BENT NO.1 ARE DESIGNED FOR AN APPLIED
 LOAD OF 259 TONS EACH AT THE TOP OF THE COLUMN.

PERMANENT STEEL CASING MAY BE REQUIRED FOR DRILLED PIERS
 AT BENT NO.1. IF REQUIRED, DO NOT EXTEND THE CASING BELOW
 ELEVATION 878.0 WITHOUT PRIOR APPROVAL FROM THE ENGINEER.
 THE ENGINEER WILL DETERMINE THE NEED FOR PERMANENT STEEL
 CASING.

DRILLED PIERS AT BENT NO.1 SHALL EXTEND TO AN ELEVATION NO
 HIGHER THAN 868.0 AND SATISFY THE REQUIRED END BEARING
 CAPACITY.

THE SCOUR CRITICAL ELEVATION FOR BENT NO.1 IS ELEVATION 876.5.
 THE SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE
 SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

DRILLED PIERS AT BENT NO.2 ARE DESIGNED FOR BOTH SKIN
 FRICTION AND END BEARING. CHECK FIELD CONDITIONS FOR
 THE REQUIRED END BEARING CAPACITY OF 90 TONS PER SQ. FOOT (LT.)
 AND 65 TONS PER SQ. FOOT (RT.)

DRILLED PIERS AT BENT NO.2 ARE DESIGNED FOR AN APPLIED
 LOAD OF 280 TONS EACH AT THE TOP OF THE COLUMN.

PERMANENT STEEL CASING MAY BE REQUIRED FOR DRILLED PIERS
 AT BENT NO.2. IF REQUIRED, DO NOT EXTEND THE CASING BELOW
 ELEVATION 870.0 WITHOUT PRIOR APPROVAL FROM THE ENGINEER.
 THE ENGINEER WILL DETERMINE THE NEED FOR PERMANENT STEEL
 CASING.

DRILLED PIERS AT BENT NO.2 SHALL EXTEND TO AN ELEVATION NO
 HIGHER THAN 862.0 AND SATISFY THE REQUIRED END BEARING
 CAPACITY.

THE SCOUR CRITICAL ELEVATION FOR BENT NO.2 IS ELEVATION 867.5.
 THE SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE
 SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

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

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

PROJECT NO. B-4646
SURRY COUNTY
 STATION: 18+70.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

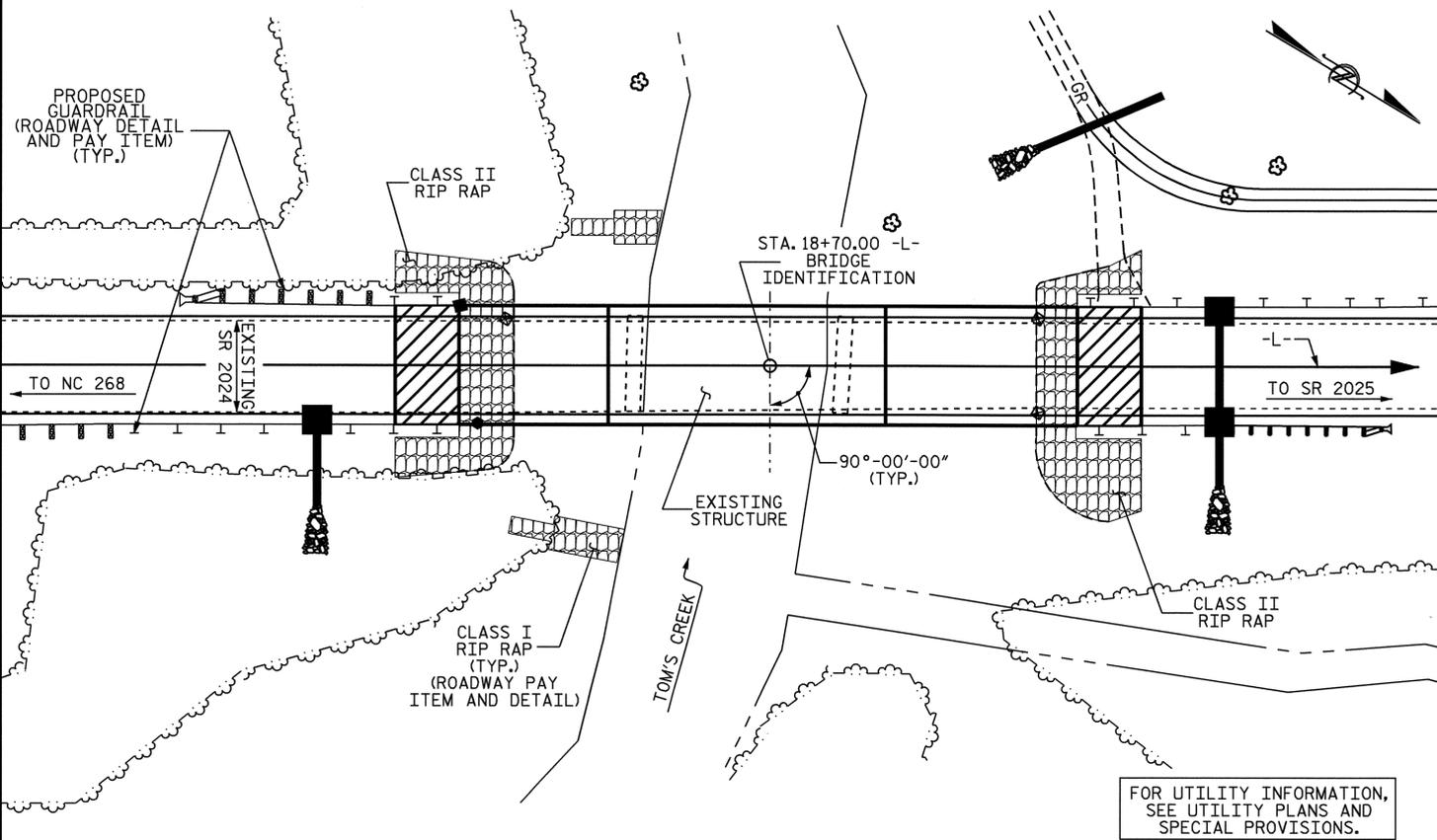
GENERAL DRAWING
 FOR BRIDGE ON SR 224
 OVER TOM'S CREEK BETWEEN
 NC 268 AND SR 2025



DRAWN BY : A.L. FIGUEROA DATE : 12-10-08
 CHECKED BY : M.G. CHEEK DATE : 01-26-09

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

BENCH MARK #1: 8" SPIKE IN ROOT OF 12" CHERRY TREE AT STA. 20+67.95 -L-, EL. 891.660



LOCATION SKETCH

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

NOTES

ASSUMED LIVE LOAD = HS20 OR ALTERNATE LOADING, EXCEPT THAT THE 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.

THE EXISTING 3 SPAN STRUCTURE (1 @ 30'-4", 1 @ 50', AND 1 @ 45'-3") CONSISTING OF A TIMBER FLOOR ON 8 LINES OF I-BEAMS WITH A 2" ASPHALT WEARING SURFACE AND A SUBSTRUCTURE CONSISTING OF TIMBER POST & CAP ABUTMENTS AND TIMBER POST AND CAP BENTS AND LOCATED AT THE SITE OF THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE FURTHER DETERIORATE, THIS LOAD LIMIT MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

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 (SEE SHEET 1 OF 3) SHALL BE EXCAVATED FOR A DISTANCE OF 25 FEET TO EACH SIDE OF CENTERLINE AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS

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

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

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 COST 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".

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

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

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

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

HYDRAULIC DATA

DESIGN DISCHARGE	=	4,900 C.F.S.
FREQUENCY OF DESIGN FLOOD	=	25 YRS.
DESIGN HIGH WATER ELEVATION	=	893.00 FT.
DRAINAGE AREA	=	37.7 SQ. MI.
BASIC DISCHARGE (Q100)	=	7,200 C.F.S.
BASIC HIGH WATER ELEVATION	=	895.60 FT.

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	=	10,900 C.F.S.
FREQUENCY OF OVERTOPPING FLOOD	=	500+ YRS.
OVERTOPPING FLOOD ELEVATION	=	898.80 FT.

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	3'-0" Ø DRILLED PIERS IN SOIL	3'-0" Ø DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 3'-0" Ø DRILLED PIERS	SID INSPECTION	CROSSHOLE SONIC LOGGING	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'-7 3/4" 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	LIN. FT.	LIN. FT.	LIN. FT.	EACH	EACH	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	LBS.	NO.	LIN. FT.	LIN. FT.	LIN. FT.	TONS	SQ. YARDS	LUMP SUM	NO.	LIN. FT.
SUPERSTRUCTURE									LUMP SUM				270.50	285.50				LUMP SUM	33	1567.50
END BENT NO. 1								12.6		1928		6	90		124	137				
BENT NO. 1		9.84	23.00	12.81				19.0		5762	902									
BENT NO. 2		29.00	16.00	28.91				18.9		6256	1096									
END BENT NO. 2								12.5		1890		7	210		159	177				
TOTAL	LUMP SUM	38.84	39.00	41.72	2	2	LUMP SUM	63.0	LUMP SUM	15836	1998	13	300	270.50	285.50	283	314	LUMP SUM	33	1567.50

PROJECT NO. B-4646
SURRY COUNTY
 STATION: 18+70.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE ON SR 2024
 OVER TOM'S CREEK BETWEEN
 NC 268 AND SR 2025

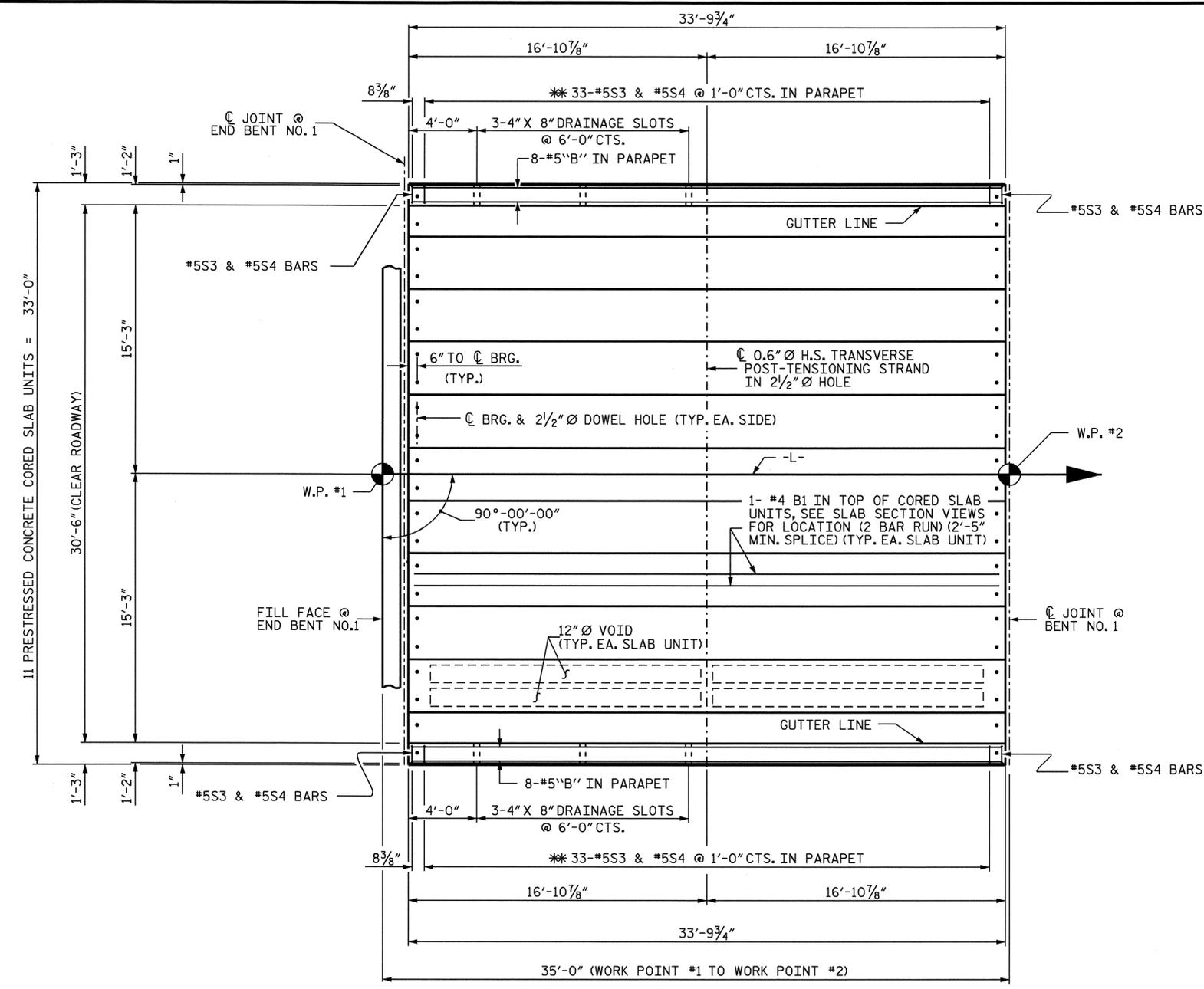


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS
2			4			24

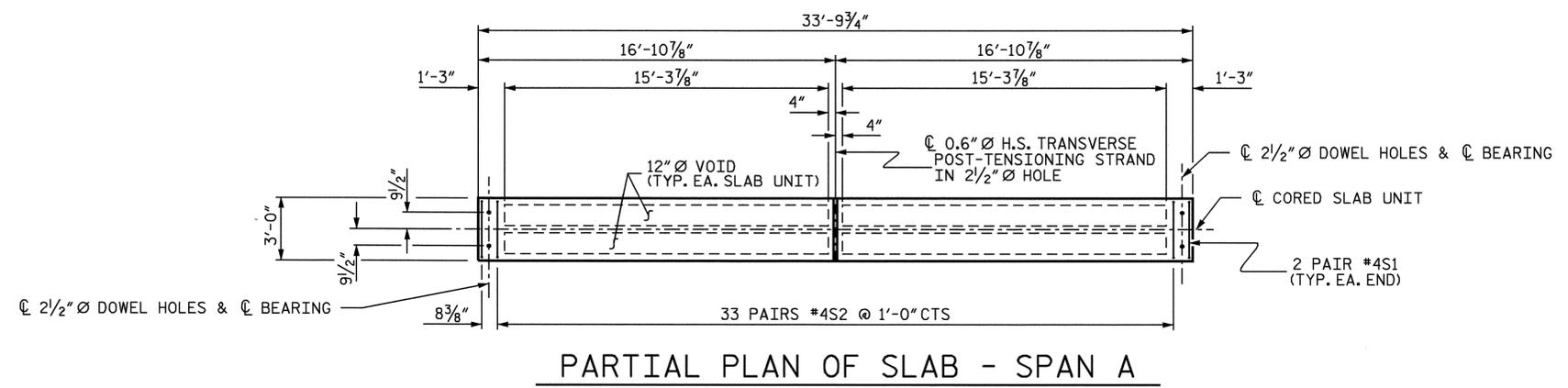
DRAWN BY: A.L. FIGUEROA DATE: 12-10-08
 CHECKED BY: M.G. CHEEK DATE: 02-06-09

NOTES

** FOR PLACEMENT OF #5S3 BARS, SEE "EXTERIOR SLAB SECTION", SHEET 1 OF 5.
 FOR PLACEMENT OF #5S4 BARS, SEE "1'-2" X 2'-7 3/4" CONCRETE PARAPET" SHEETS.
 THE #5 'B' BARS IN THE PARAPET IN THE VICINITY OF THE 4" X 8" DRAINAGE SLOTS SHALL BE FIELD CUT TO PROVIDE A MINIMUM 2" CLEARANCE.
 THE OUTSIDE CORED SLAB UNITS SHALL BE EPOXY COATED IN THE VICINITY OF THE 4" X 8" DRAINAGE SLOTS.



SPAN A



PARTIAL PLAN OF SLAB - SPAN A

INTERIOR SLAB UNIT SHOWN, EXTERIOR SLAB UNIT SIMILAR. SEE "PLAN OF SPAN A" FOR ADDITIONAL REINFORCEMENT IN EXTERIOR UNITS DUE TO PARAPET.

PROJECT NO. B-4646
SURRY COUNTY
 STATION: 18+70.00-L-

SHEET 2 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPAN A

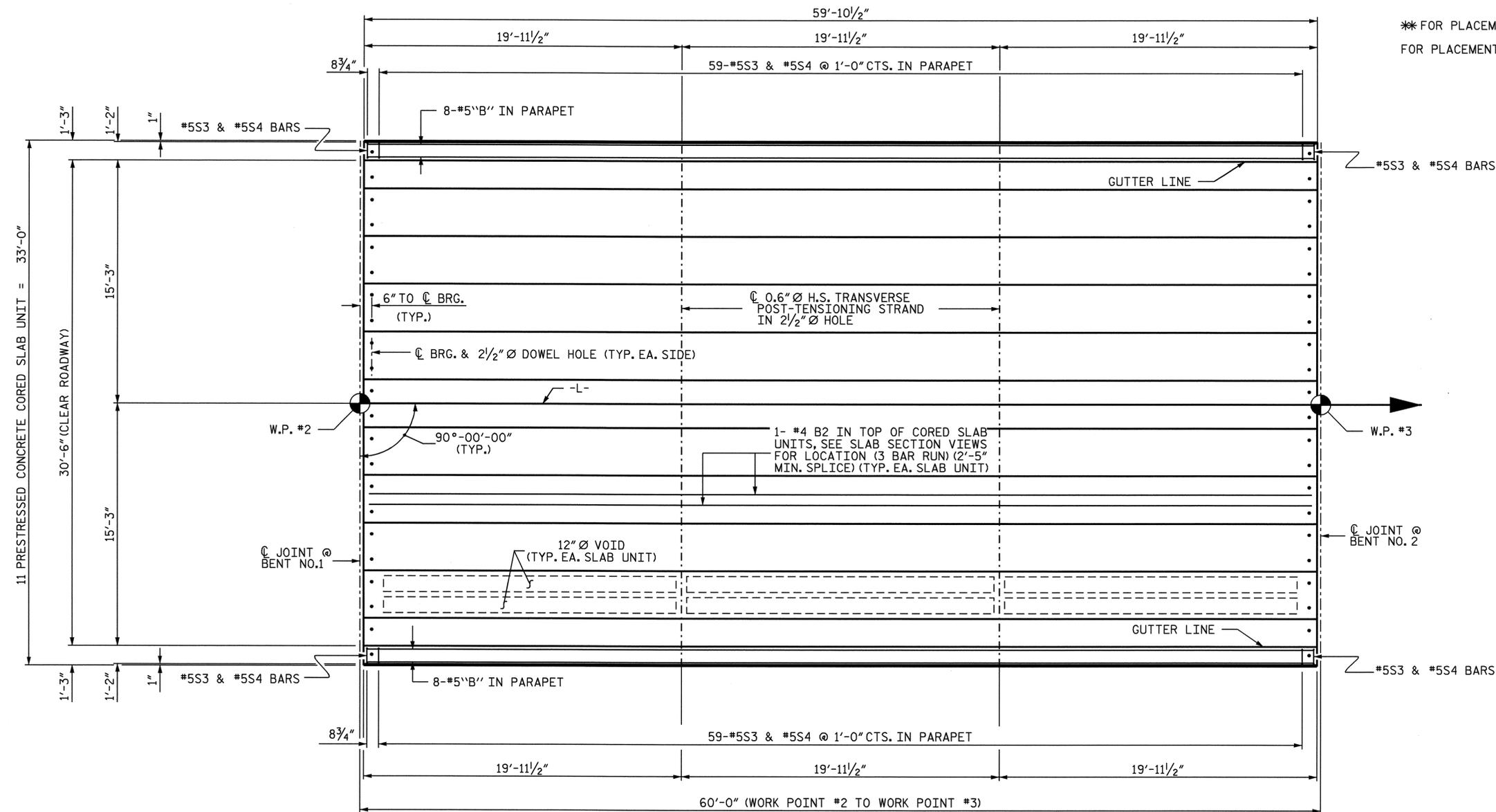


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS 24
2			4			

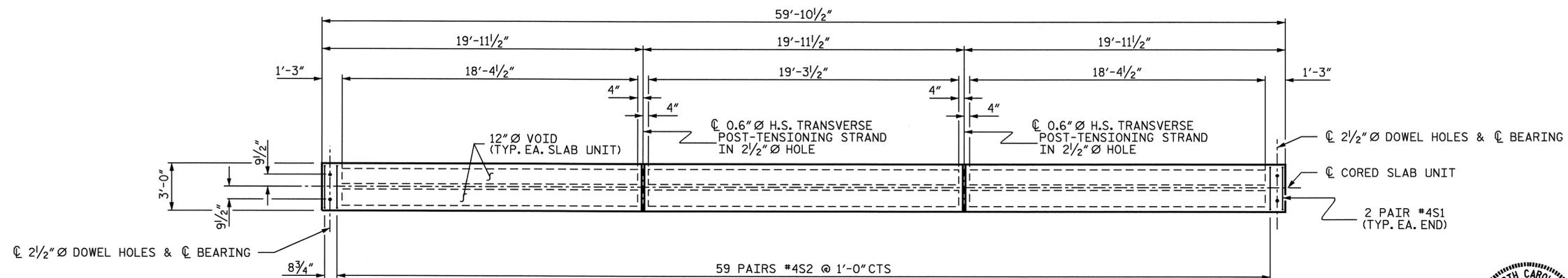
DRAWN BY: L.L. MURPHY DATE: 12-08
 CHECKED BY: M.G. CHEEK DATE: 01-09

NOTES

* FOR PLACEMENT OF #5S3 BARS, SEE "EXTERIOR SLAB SECTION", SHEET 1 OF 5.
 FOR PLACEMENT OF #5S4 BARS, SEE "1'-2" X 2'-7 3/4" CONCRETE PARAPET" SHEETS.



SPAN B



PARTIAL PLAN OF SLAB - SPAN B

INTERIOR SLAB UNIT SHOWN, EXTERIOR SLAB UNIT SIMILAR.
 SEE "PLAN OF SPAN B" FOR ADDITIONAL REINFORCEMENT IN EXTERIOR UNITS DUE TO PARAPET.

PROJECT NO. B-4646
SURRY COUNTY
 STATION: 18+70.00-L-

SHEET 3 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPAN B

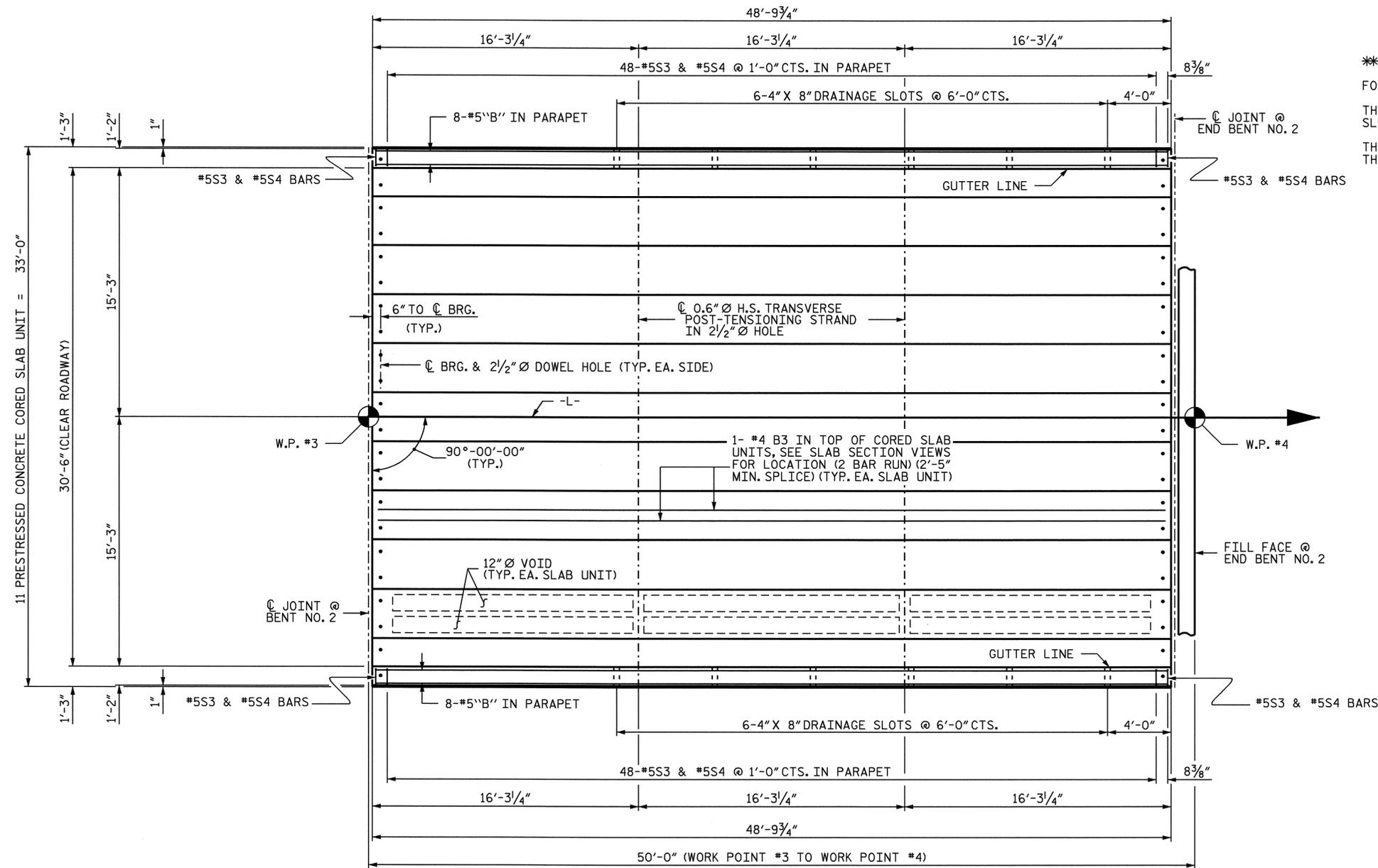


REVISIONS						SHEET NO. S-6
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 24
2			4			

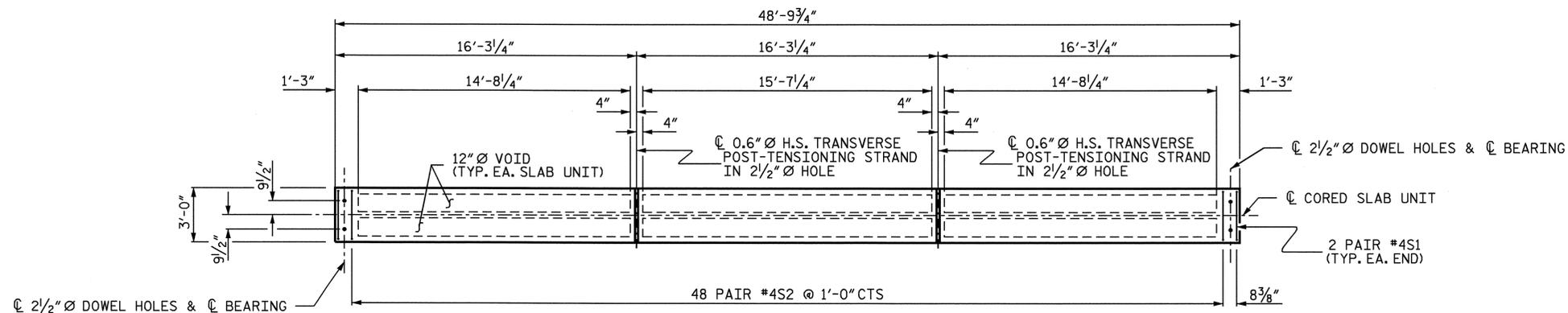
DRAWN BY: L.L. MURPHY DATE: 12-08
 CHECKED BY: M.G. CHEEK DATE: 01-09

NOTES

**FOR PLACEMENT OF #5S3 BARS, SEE "EXTERIOR SLAB SECTION", SHEET 1 OF 5.
 FOR PLACEMENT OF #5S4 BARS, SEE "1'-2" X 2'-7 3/4" CONCRETE PARAPET" SHEETS.
 THE #5 'B' BARS IN THE PARAPET IN THE VICINITY OF THE 4" X 8" DRAINAGE SLOTS SHALL BE FIELD CUT TO PROVIDE A MINIMUM 2" CLEARANCE.
 THE OUTSIDE CORED SLAB UNITS SHALL BE EPOXY COATED IN THE VICINITY OF THE 4" X 8" DRAINAGE SLOTS.



SPAN C



PARTIAL PLAN OF SLAB - SPAN C

INTERIOR SLAB UNIT SHOWN, EXTERIOR SLAB UNIT SIMILAR.
 SEE 'PLAN OF SPAN C' FOR ADDITIONAL REINFORCEMENT IN EXTERIOR UNITS DUE TO PARAPET.

PROJECT NO. B-4646
SURRY COUNTY
 STATION: 18+70.00-L-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPAN C



DRAWN BY : L.L. MURPHY DATE : 12-08
 CHECKED BY : M.G. CHEEK DATE : 01-09

26-MAR-2009 14:24
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 LMURPHY

REVISIONS						SHEET NO. S-7
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 24
2			4			

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 2 1/2" Ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

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

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

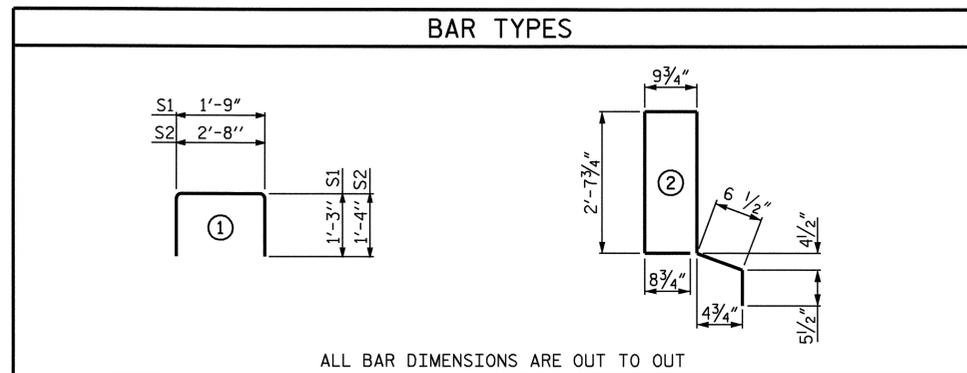
THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 4000 PSI FOR SPANS A AND C, OR 5800 PSI FOR SPAN B.

ALL REINFORCING STEEL IN PARAPET SHALL BE EPOXY COATED.

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

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

VERTICAL GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A VERTICAL CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN PARAPET EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF PARAPET SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR ONE CORED SLAB SECTION																							
SPAN A								SPAN B								SPAN C							
				EXTERIOR UNIT		INTERIOR UNIT						EXTERIOR UNIT		INTERIOR UNIT						EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT	BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT	BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B1	4	#4	STR	18'-0"	48	18'-0"	48	B2	6	#4	STR	21'-6"	86	21'-6"	86	B3	4	#4	STR	25'-6"	68	25'-6"	68
S1	8	#4	1	4'-3"	23	4'-3"	23	S1	8	#4	1	4'-3"	23	4'-3"	23	S1	8	#4	1	4'-3"	23	4'-3"	23
S2	66	#4	1	5'-4"	235	5'-4"	235	S2	118	#4	1	5'-4"	420	5'-4"	420	S2	96	#4	1	5'-4"	342	5'-4"	342
*S3	35	#5	2	7'-10"	286			*S3	61	#5	2	7'-10"	498			*S3	50	#5	2	7'-10"	409		
REINFORCING STEEL				306 LBS.		306 LBS.		REINFORCING STEEL				529 LBS.		529 LBS.		REINFORCING STEEL				433 LBS.		433 LBS.	
*EPOXY COATED REINFORCING STEEL				286 LBS.				*EPOXY COATED REINFORCING STEEL				498 LBS.				*EPOXY COATED REINFORCING STEEL				409 LBS.			
5000 P.S.I. CONCRETE				4.8 CU. YDS.		4.8 CU. YDS.		7600 P.S.I. CONCRETE				8.4 CU. YDS.		8.4 CU. YDS.		5000 P.S.I. CONCRETE				6.9 CU. YDS.		6.9 CU. YDS.	
0.6" Ø L.R. STRANDS				12		12		0.6" Ø L.R. STRANDS				24		24		0.6" Ø L.R. STRANDS				17		17	

* THESE BARS ARE EPOXY COATED.

DEAD LOAD DEFLECTION AND CAMBER	
SPAN A	3'-0" x 1'-9"
	0.6" Ø L.R. STRAND
	CAMBER (SLAB ALONE IN PLACE)
	DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**
FINAL CAMBER	13/16" ↑

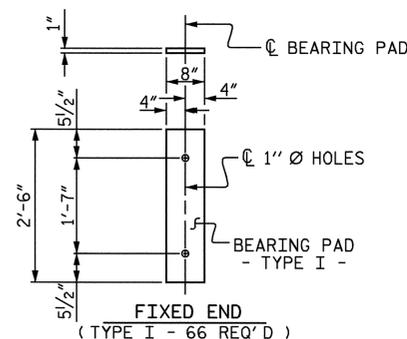
DEAD LOAD DEFLECTION AND CAMBER	
SPAN B	3'-0" x 1'-9"
	0.6" Ø L.R. STRAND
	CAMBER (SLAB ALONE IN PLACE)
	DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**
FINAL CAMBER	3 3/16" ↑

DEAD LOAD DEFLECTION AND CAMBER	
SPAN C	3'-0" x 1'-9"
	0.6" Ø L.R. STRAND
	CAMBER (SLAB ALONE IN PLACE)
	DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**
FINAL CAMBER	1 13/16" ↑

** INCLUDES FUTURE WEARING SURFACE

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

CORED SLABS REQUIRED			
SPAN A			
	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	33'-9 3/4"	67'-7 1/2"
INTERIOR C.S.	9	33'-9 3/4"	304'-3 3/4"
SPAN B			
	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	59'-10 1/2"	119'-9"
INTERIOR C.S.	9	59'-10 1/2"	538'-10 1/2"
SPAN C			
	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	48'-9 3/4"	97'-7 1/2"
INTERIOR C.S.	9	48'-9 3/4"	439'-3 3/4"
TOTAL	33		1567'-6"



ELASTOMERIC BEARING DETAILS

PROJECT NO. B-4646
SURRY COUNTY
 STATION: 18+70.00-L-

SHEET 5 OF 5



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 3'-0" X 1'-9"
 PRESTRESSED CONCRETE
 CORED SLAB UNIT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			24

ASSEMBLED BY :	L.L. MURPHY	DATE :	01-09
CHECKED BY :	M.G. CHEEK	DATE :	01-09
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

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 "RAIL POST SPACING AND END OF RAIL DETAILS" SHEET.

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.

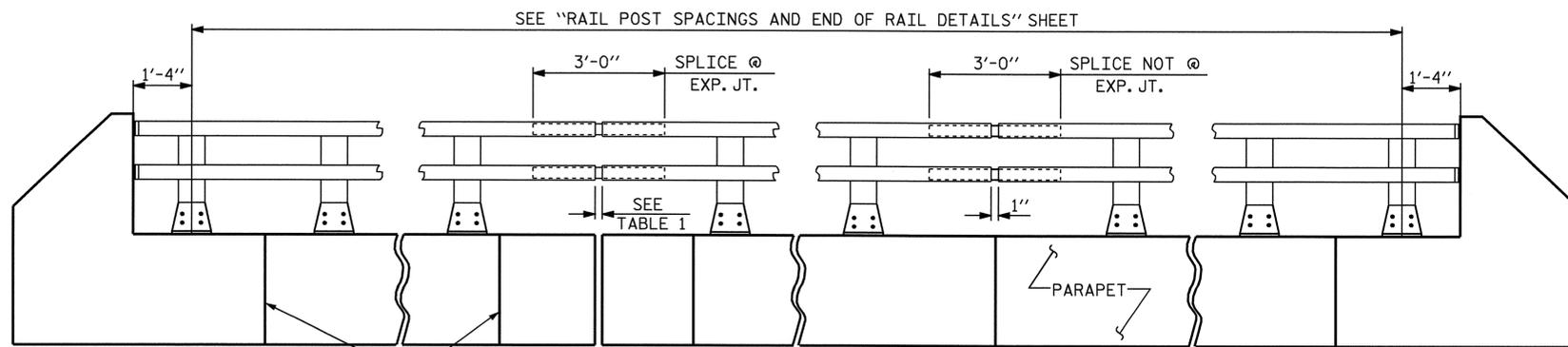
GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT A SPACING OF 8FT. TO 10FT. BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINTS WILL BE REQUIRED FOR SEGMENTS LESS THAN 10 FEET IN LENGTH.

PAY LENGTH = 270.50 LIN. FT.

PROJECT NO. B-4646
 SURRY COUNTY
 STATION: 18+70.00-L-

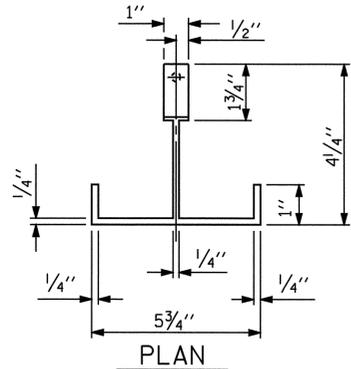
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 STANDARD
 2 BAR METAL RAIL

REVISIONS						SHEET NO. S-9
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 24
2			4			

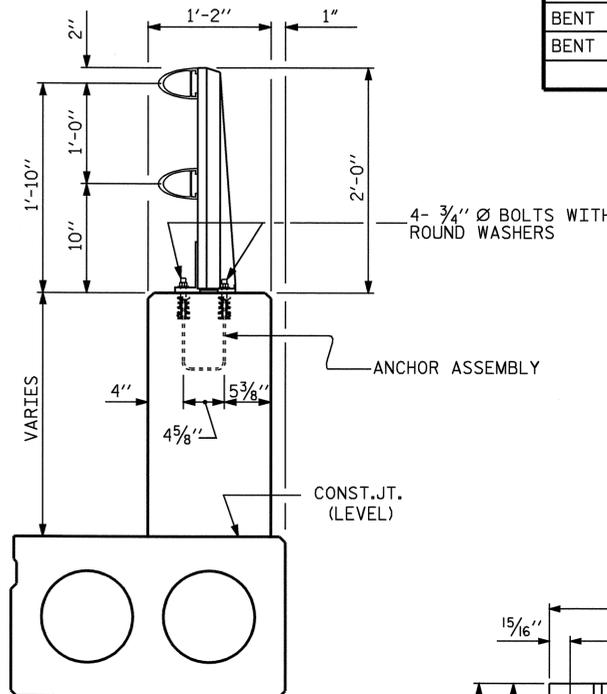


ELEVATION

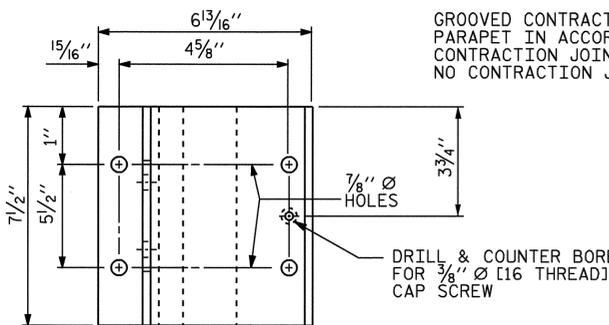
EXP. JT. @	RAIL OPENING
BENT No. 1	1 1/2"
BENT No. 2	1 1/2"



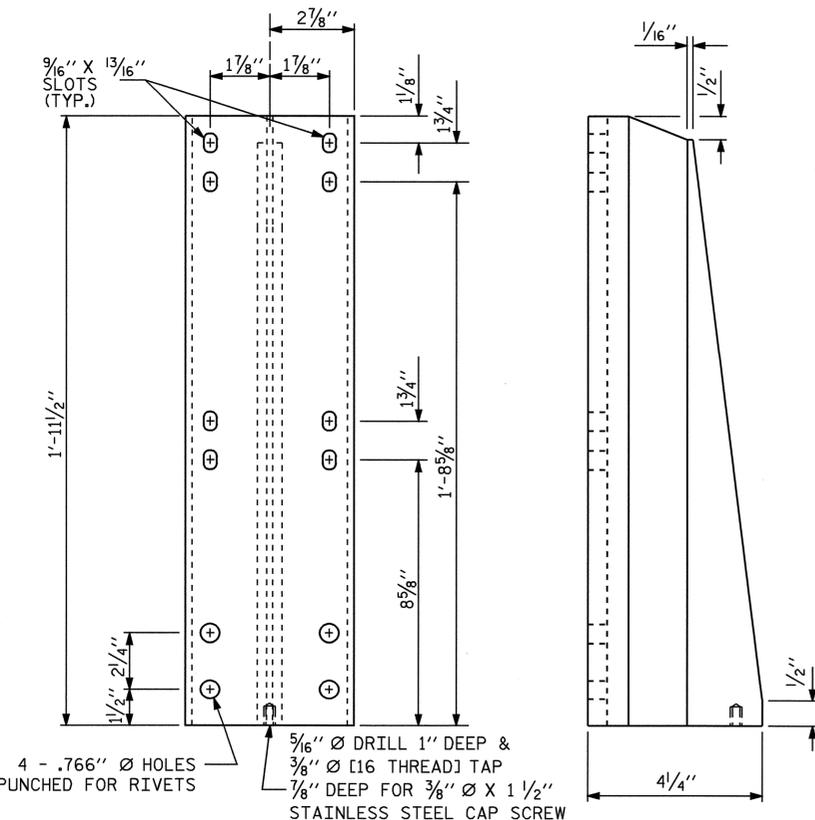
PLAN



SECTION THRU PARAPET AND RAIL



PLAN

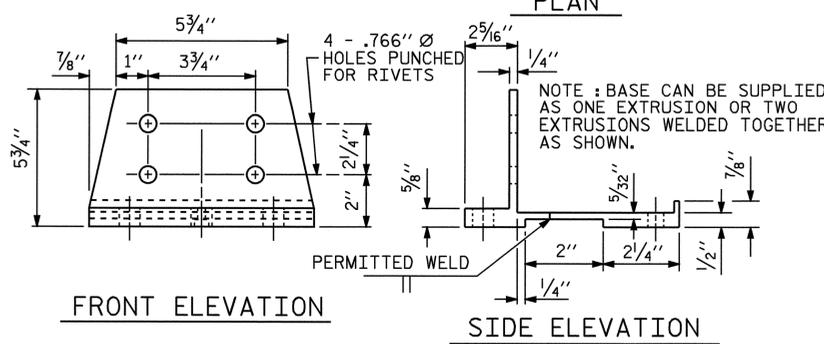


FRONT ELEVATION

SIDE ELEVATION

DETAILS OF POST

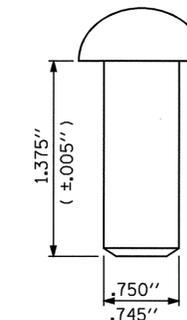
ASSEMBLED BY: L.L. MURPHY DATE: 01-09
 CHECKED BY: M.G. CHEEK DATE: 01-09
 DRAWN BY: EEM 6/94 LES/RDR
 CHECKED BY: RGW 6/94 REV. 5/1/03R RWW/JTE
 REV. 5/1/06 TLA/GM



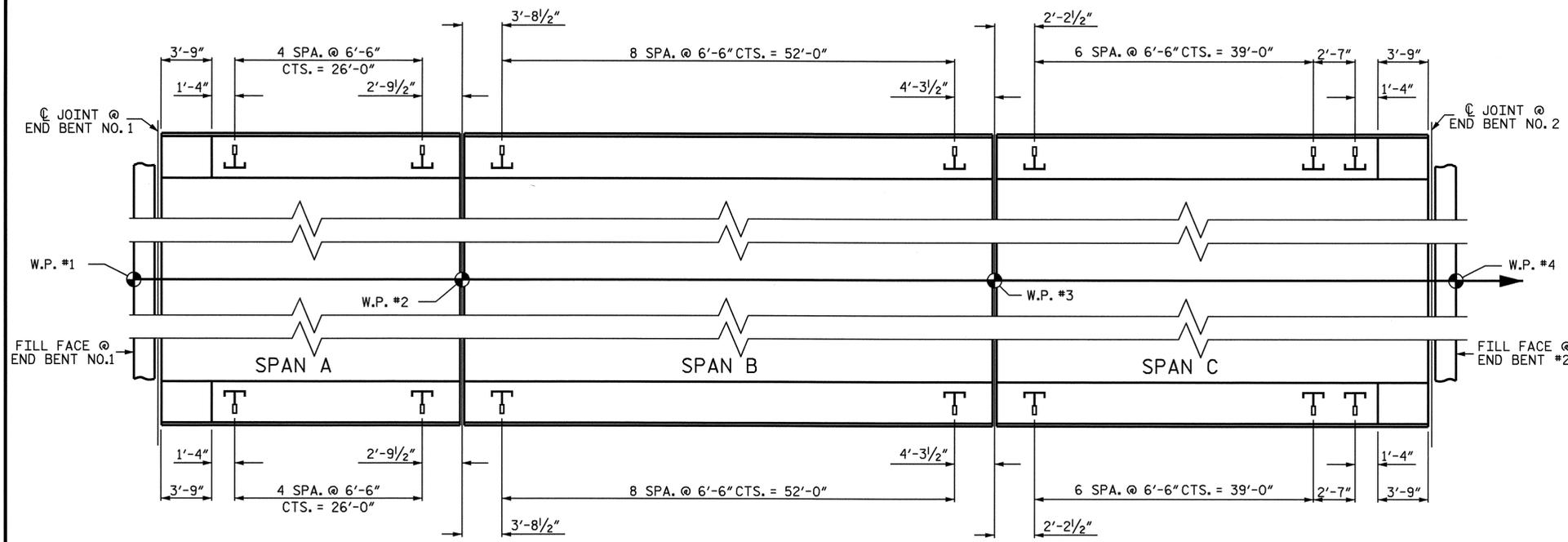
FRONT ELEVATION

SIDE ELEVATION

POST BASE DETAILS



RIVET DETAIL



PLAN OF RAIL POST SPACINGS

NOTES
 STRUCTURAL CONCRETE INSERT

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

- FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1 1/2".
- 1 - 3/4" Ø X 1 5/8" 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 3/4" Ø X 1 5/8" 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.)
- 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:

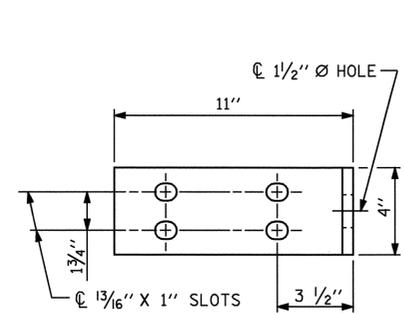
- 1/2" PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
- 3/4" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A 3/4" Ø X 1 5/8" BOLT WITH 2" O.D. WASHER IN PLACE. THE 3/4" Ø X 1 5/8" BOLT SHALL HAVE N.C. THREADS.
- 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.
- STANDARD CLAMP BARS (SEE METAL RAIL SHEET).
- 1/2" 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.

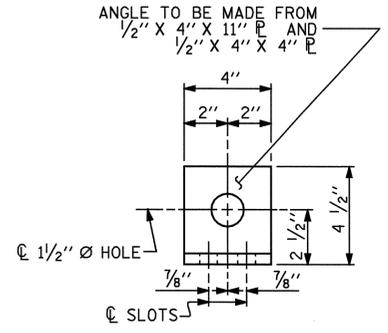
THE 3/4" STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.

THE COST OF THE 3/4" STRUCTURAL CONCRETE INSERT ASSEMBLY, AND THE 1/2" PLATES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

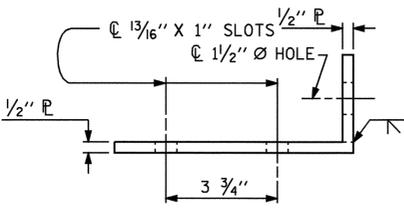
THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE 3/4" Ø X 1 5/8" BOLT WITH WASHER SHALL BE REPLACED WITH A 3/4" Ø X 6 1/2" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE 3/4" Ø X 1 5/8" BOLT SHALL APPLY TO THE 3/4" Ø X 6 1/2" BOLT. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.



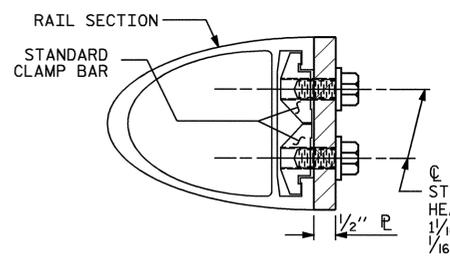
ELEVATION



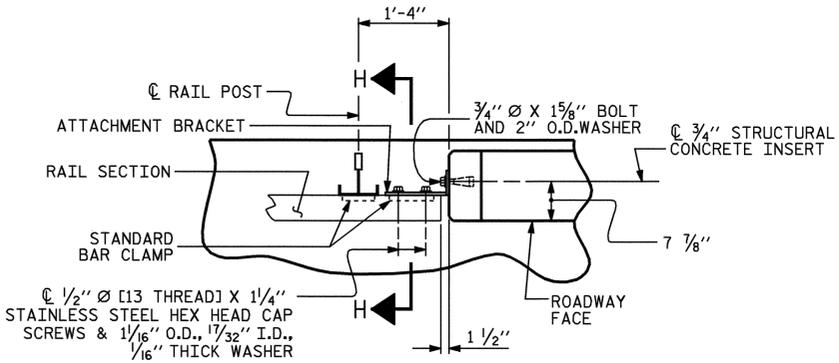
END VIEW



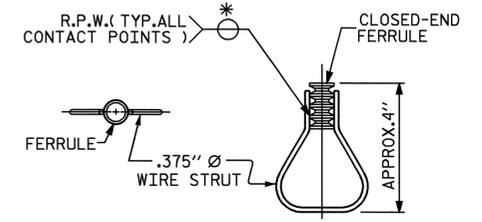
TOP VIEW



SECTION H-H (FIX)



PLAN - RAIL AND END POST



**PLAN ELEVATION
 STRUCTURAL CONCRETE INSERT**

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

PROJECT NO. B-4646
 SURRY COUNTY
 STATION: 18+70.00-L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 RAIL POST SPACINGS
 AND
 END OF RAIL DETAILS
 FOR ONE OR TWO BAR METAL RAILS

ASSEMBLED BY :	L.L. MURPHY	DATE :	12-08
CHECKED BY :	M.G. CHEEK	DATE :	01-09
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

REVISIONS						SHEET NO. S-10
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 24
2			4			

NOTES

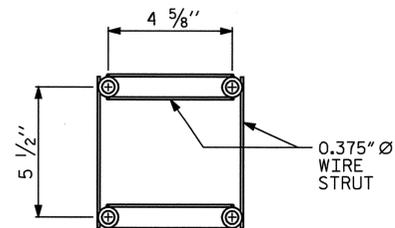
STRUCTURAL CONCRETE ANCHOR ASSEMBLY

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

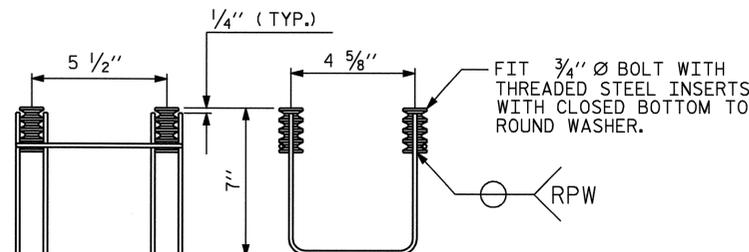
- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2" FOR 3/4" FERRULES.
- B. 4 - 3/4" Ø X 2 1/2" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT 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 1/16" 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.



PLAN



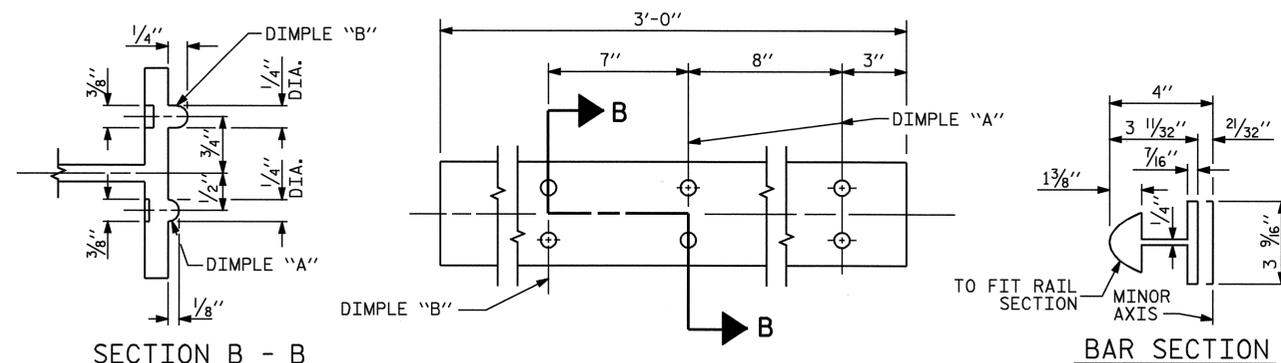
SIDE VIEW

ELEVATION

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

4-BOLT METAL RAIL ANCHOR ASSEMBLY

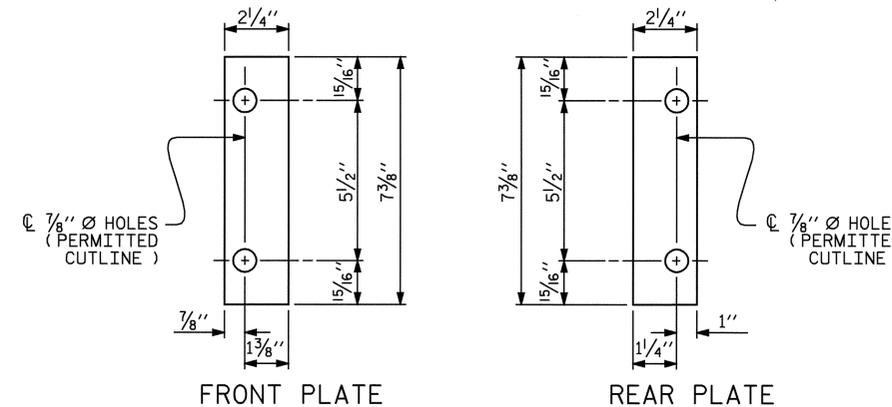
(44 ASSEMBLIES REQUIRED)



SECTION B - B

EXPANSION BAR DETAILS

BAR SECTION

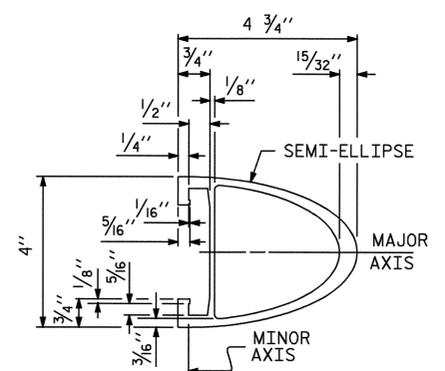


FRONT PLATE

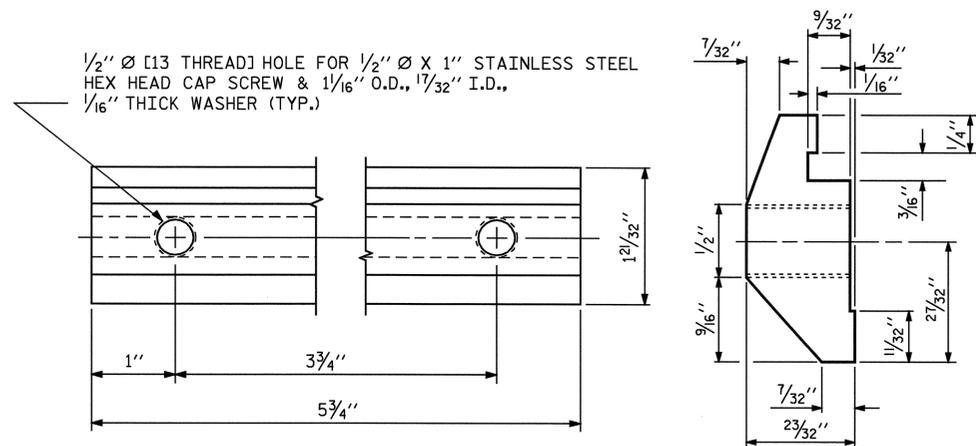
REAR PLATE

SHIM DETAILS

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

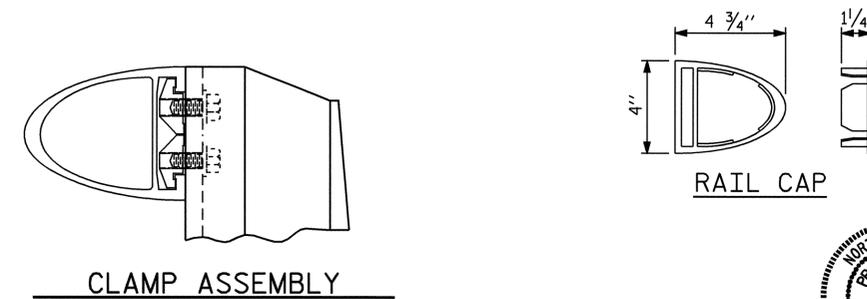


RAIL SECTION



CLAMP BAR DETAIL

(4 REQUIRED PER POST)



CLAMP ASSEMBLY

RAIL CAP

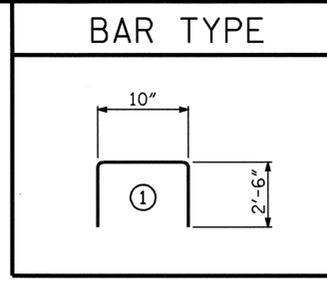
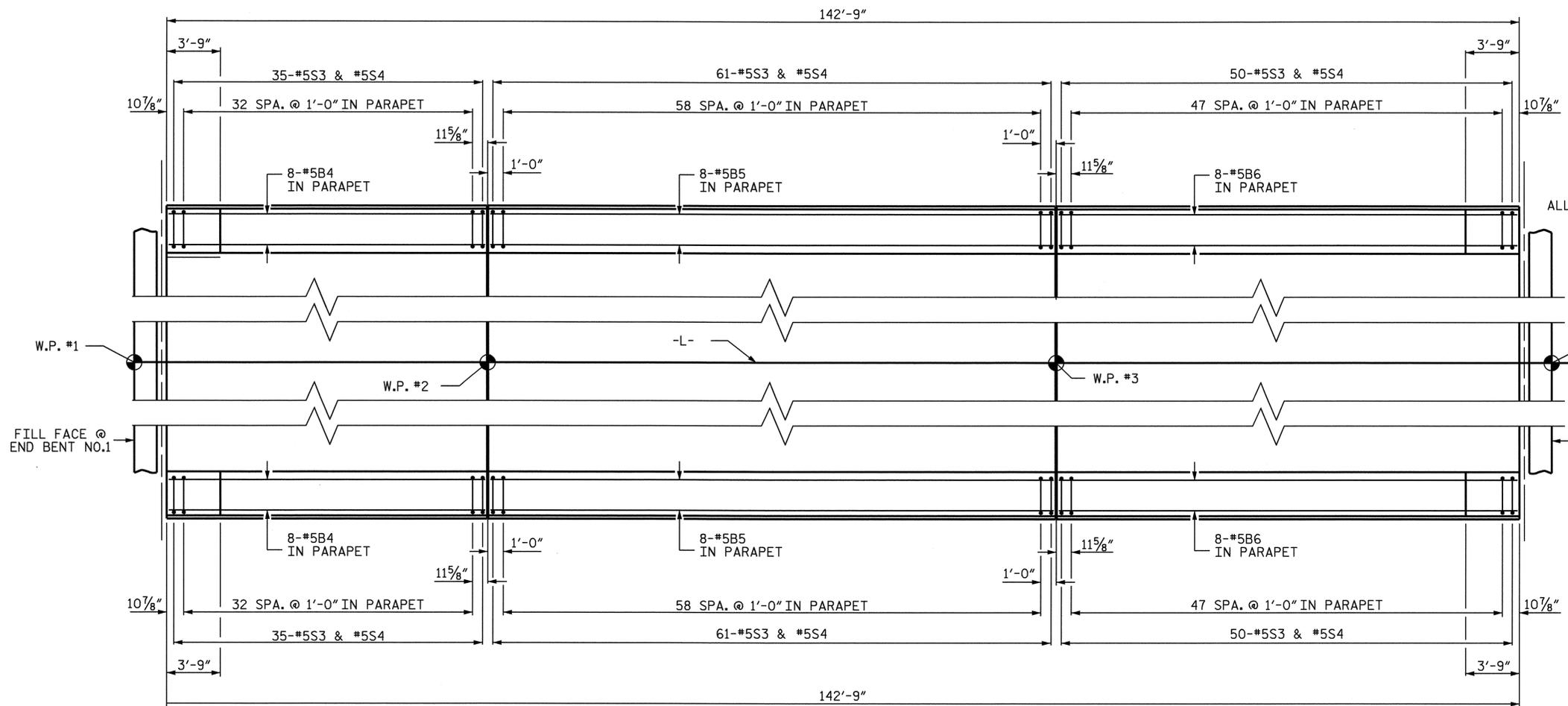


PROJECT NO. B-4646
SURRY COUNTY
 STATION: 18+70.00-L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 2 BAR METAL RAIL

ASSEMBLED BY : L.L. MURPHY	DATE : 01-09
CHECKED BY : M.G. CHEEK	DATE : 01-09
DRAWN BY : EEM 6/94	REV. 2/6/97 EEM/RGW
CHECKED BY : RGW 6/94	REV. 8/16/99 MAB/LES
	REV. 5/1/06R KMM/GM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS 24
2			4			



BILL OF MATERIAL FOR PARAPETS AND END POSTS					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*B4	16	#5	STR	33'-4"	556
*B5	16	#5	STR	59'-5"	992
*B6	16	#5	STR	48'-4"	807
*E1	8	#7	STR	2'-10"	46
*E2	8	#7	STR	3'-4"	55
*E3	8	#7	STR	3'-10"	63
*E4	8	#7	STR	4'-4"	71
*E5	8	#7	STR	4'-9"	78
*F1	8	#6	STR	1'-3"	15
*F2	8	#6	STR	2'-7"	31
*F3	8	#6	STR	3'-10"	46
*S4	292	#5	1	5'-10"	1777
* EPOXY COATED REINF. STEEL = 4537 LBS.					
CLASS AA CONCRETE = 36.7 CU. YDS.					
1'-2" X 2'-7 3/4" CONCRETE PARAPET = 285.50 LIN. FT.					

ALL BAR DIMENSIONS ARE OUT TO OUT.

* THESE BARS ARE EPOXY COATED.

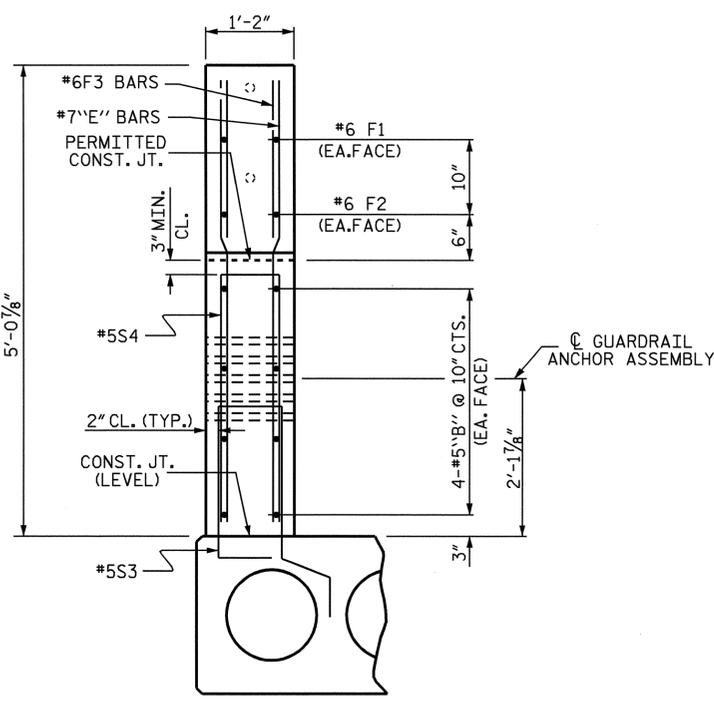
NOTES

FOR DETAILS OF CONCRETE INSERT AND GUARDRAIL ANCHOR ASSEMBLY, SEE "RAIL POST SPACINGS AND END OF RAIL DETAILS" SHEETS.

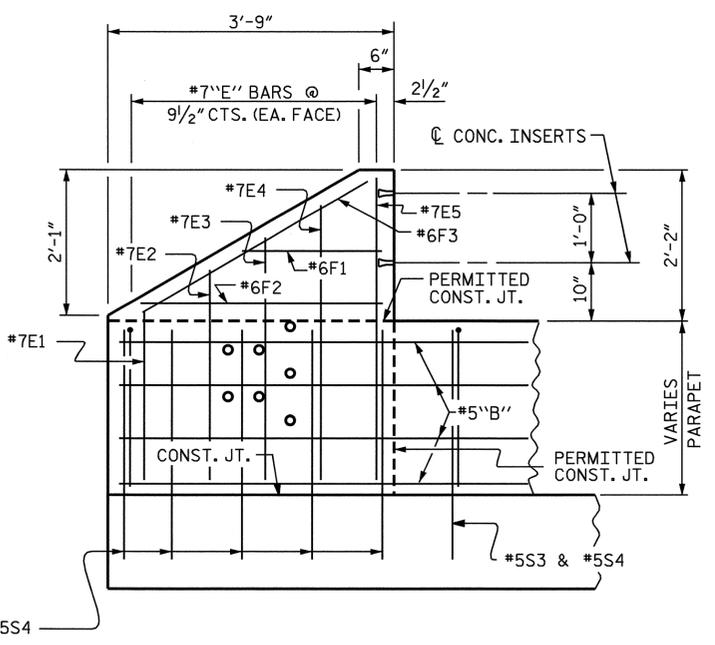
ALL DIMENSIONS ARE TAKEN ALONG OUTSIDE EDGE OF PARAPET. ALL REINFORCING STEEL IN CONCRETE PARAPET SHALL BE EPOXY COATED.

THE REINFORCING STEEL & CONCRETE IN THE END POSTS IS INCLUDED IN THE UNIT PRICE BID FOR THE "1'-2" X 2'-7 3/4" CONCRETE PARAPET".

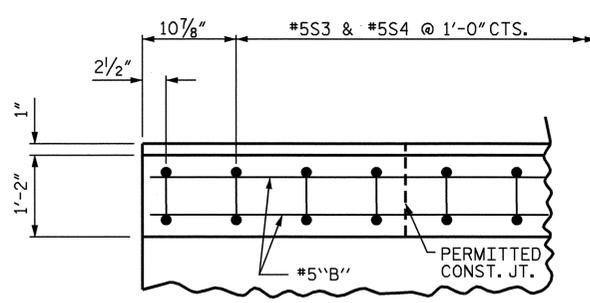
PLAN



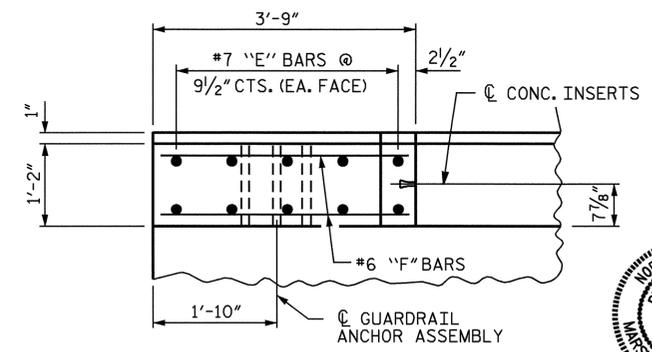
END VIEW



ELEVATION



PLAN OF PARAPET



PLAN OF END POST

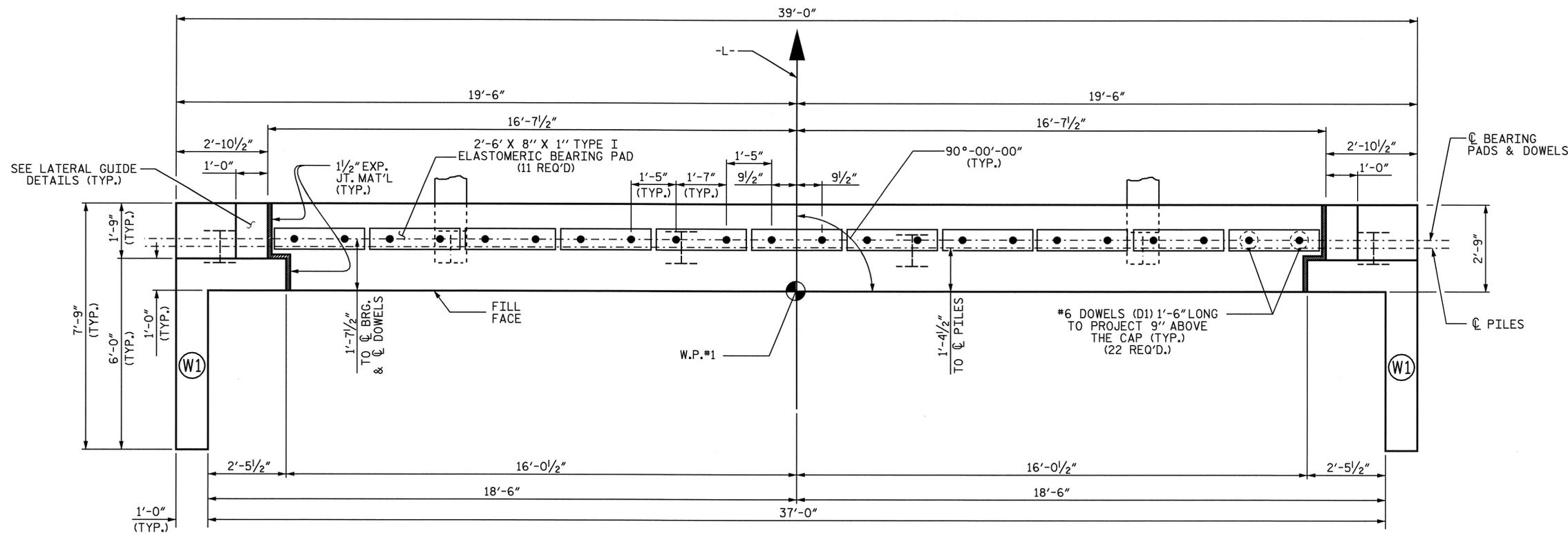
PROJECT NO. B-4646
 SURRY COUNTY
 STATION: 18+70.00-L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 1'-2" X 2'-7 3/4"
 CONCRETE PARAPET

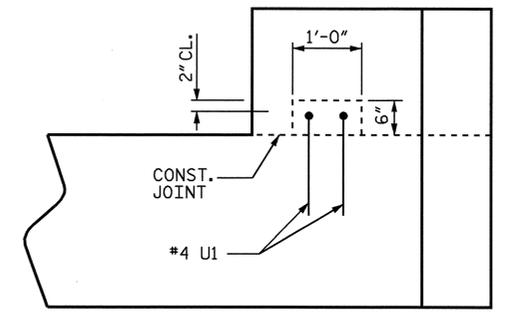
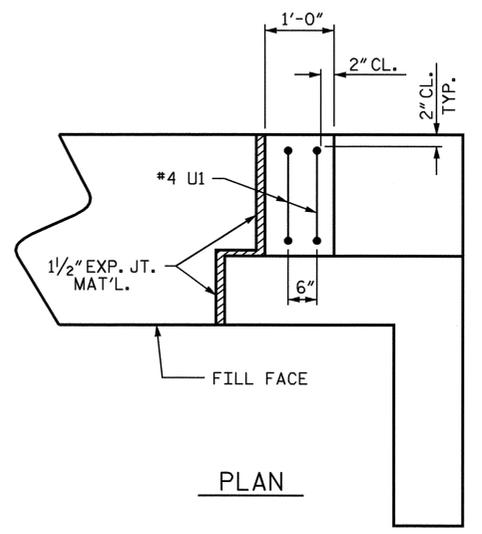


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			24

DRAWN BY: L.L. MURPHY DATE: 01-09
 CHECKED BY: M.G. CHEEK DATE: 01-09

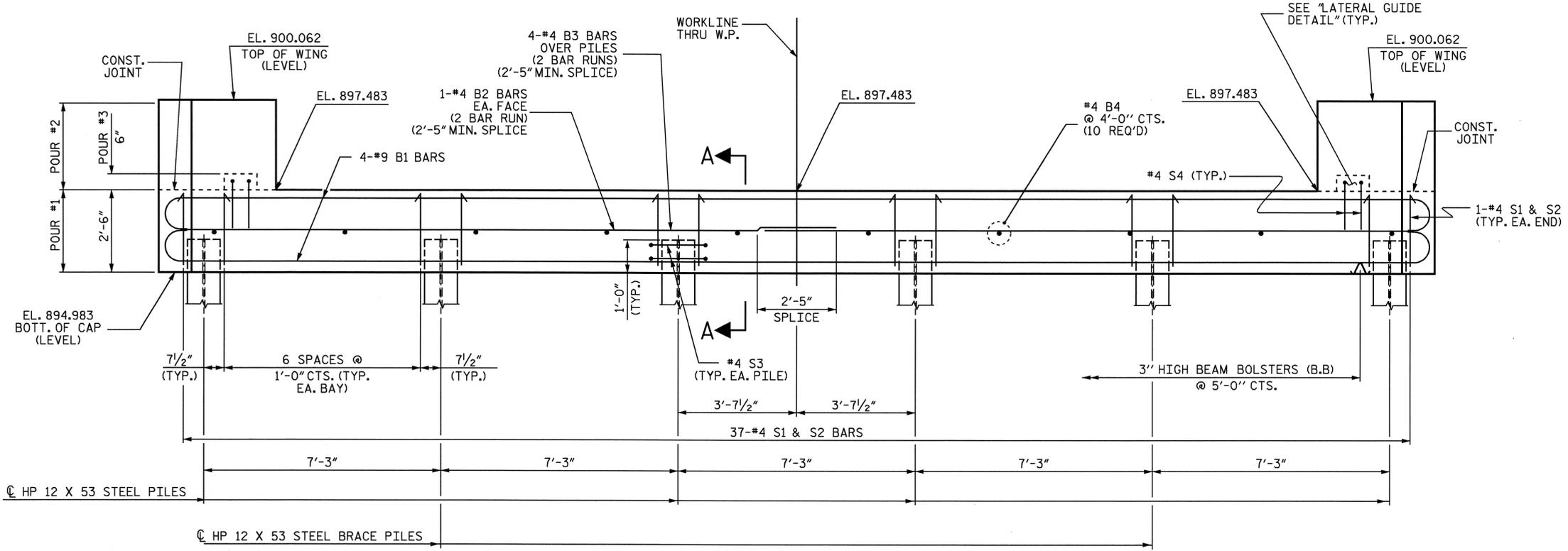


PLAN



LATERAL GUIDE DETAILS

RIGHT LATERAL GUIDE SHOWN, LEFT LATERAL GUIDE SIMILAR



ELEVATION

NOTES

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
- FOR SECTION A-A, SEE SHEET 2 OF 2.
- FOR PILE SPLICE DETAILS SEE SHEET 2 OF 2.
- THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER CORED SLAB UNITS ARE IN PLACE.

DRAWN BY: A.L. FIGUEROA DATE: 01-21-09
 CHECKED BY: L.L. MURPHY DATE: 01-30-09

17-MAR-2009 09:30
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 afigueroa

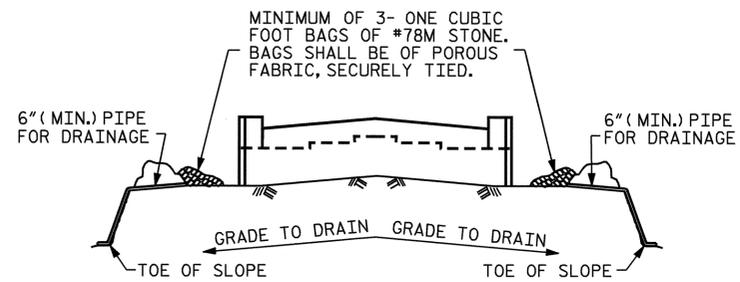


PROJECT NO. B-4646
 SURRY COUNTY
 STATION: 18+70.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S-14
SUBSTRUCTURE END BENT NO.1						
REVISIONS						TOTAL SHEETS 24
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

NC005

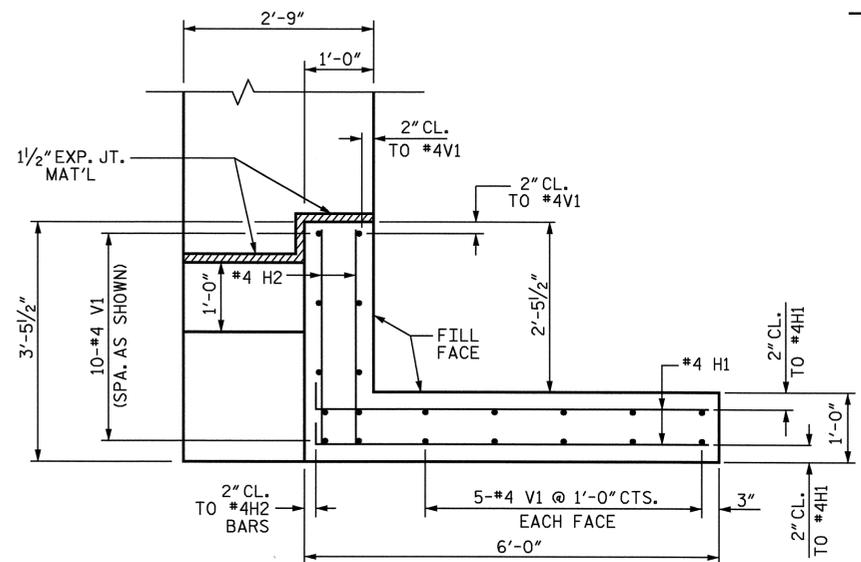


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

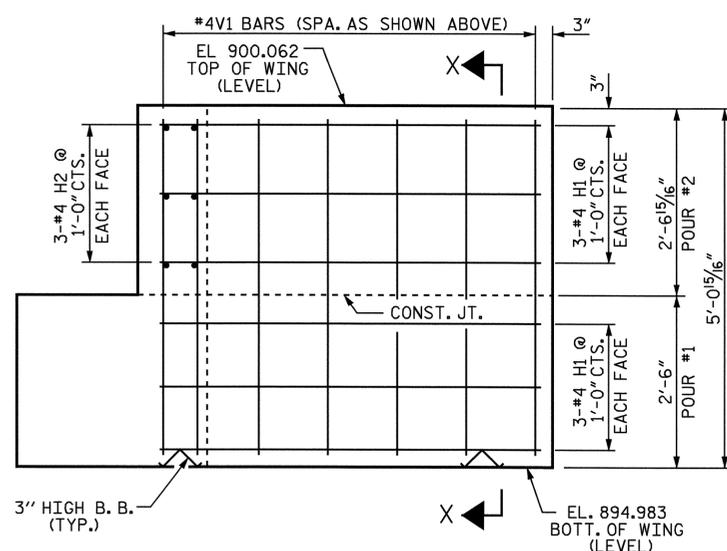
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

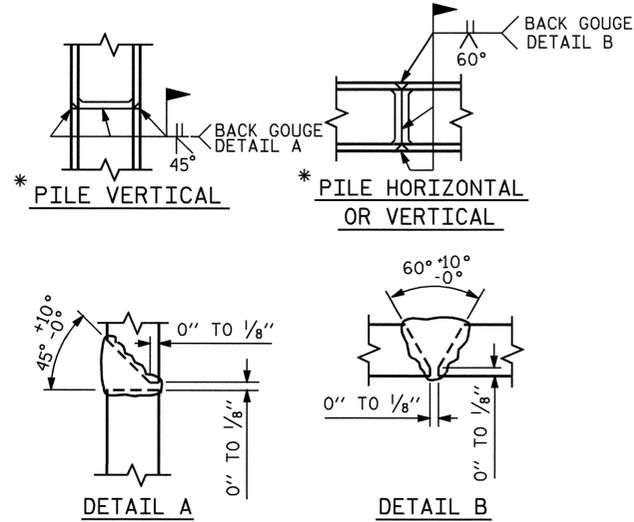
TEMPORARY DRAINAGE AT END BENT



PLAN OF WING W1

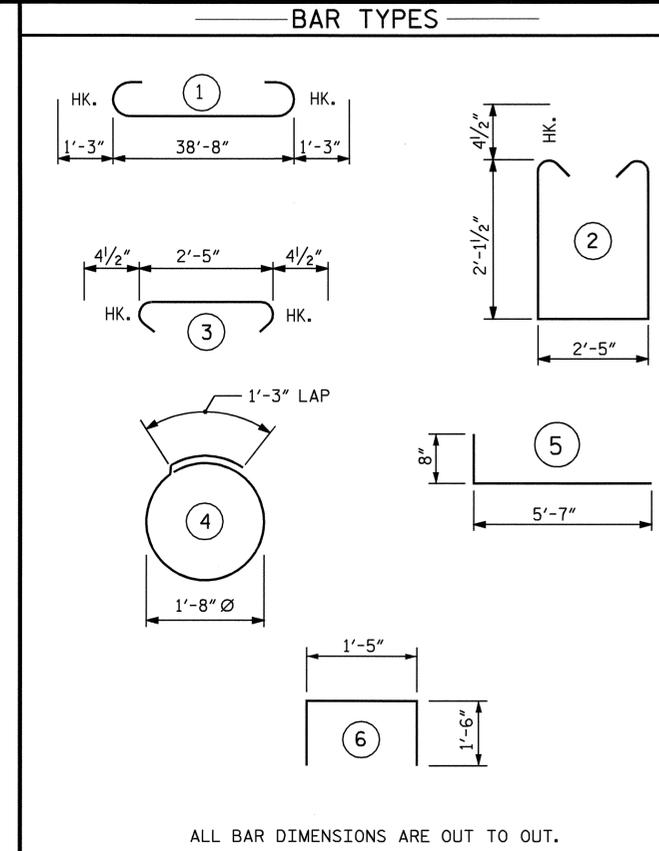


ELEVATION OF WING W1



* POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT NO.1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9		41'-2"	1120
B2	4	#4	STR	20'-7"	55
B3	8	#4	STR	20'-7"	110
B4	10	#4	STR	2'-5"	16
D1	22	#6	STR	1'-6"	50
H1	24	#4	5	6'-3"	100
H2	12	#4	STR	3'-1"	25
S1	37	#4	2	7'-5"	183
S2	37	#4	3	3'-2"	78
S3	12	#4	4	6'-6"	52
U1	4	#4	6	4'-5"	12
V1	40	#4	STR	4'-9"	127
REINFORCING STEEL				=	1928 LBS.

CLASS A CONCRETE

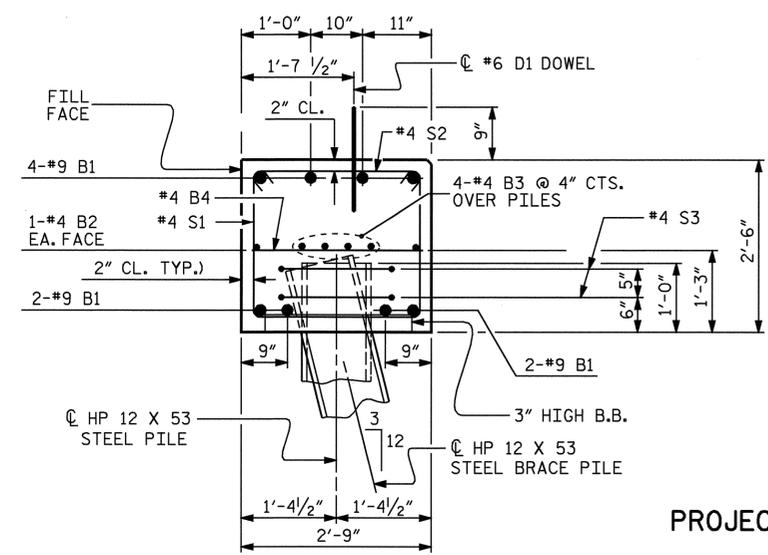
POUR #1: CAP & BOTTOM OF WINGS 10.9 C.Y.

POUR #2: TOP OF WINGS 1.6 C.Y.

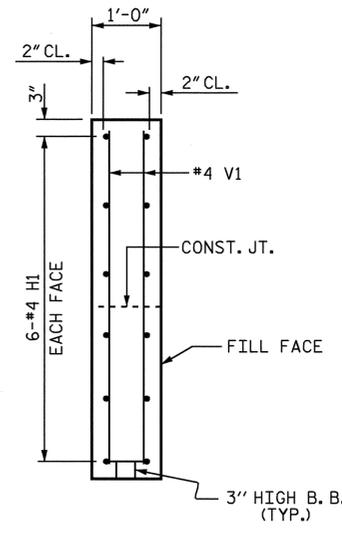
POUR #3: LATERAL GUIDE 0.1 C.Y.

TOTAL CLASS A CONCRETE 12.6 C.Y.

HP 12 X 53 STEEL PILES NO. 6 LIN. FT. 90



SECTION A-A



SECTION X-X

PROJECT NO. B-4646

SURRY COUNTY

STATION: 18+70.00 -L-

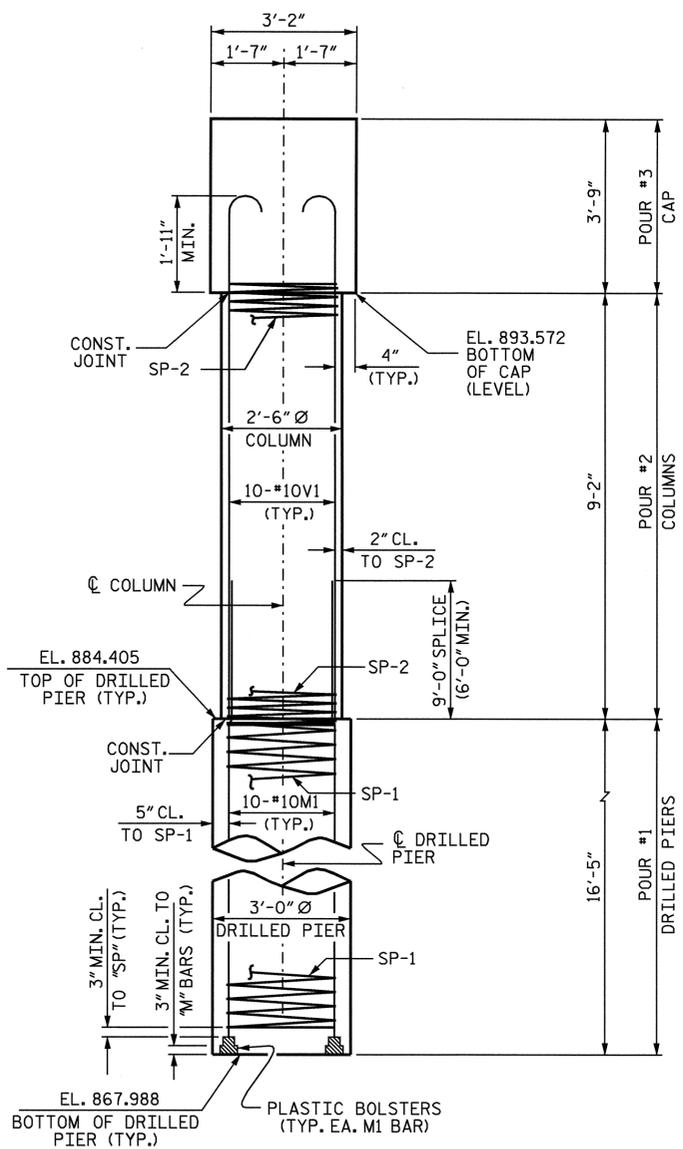
SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT NO.1					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-15
					TOTAL SHEETS 24

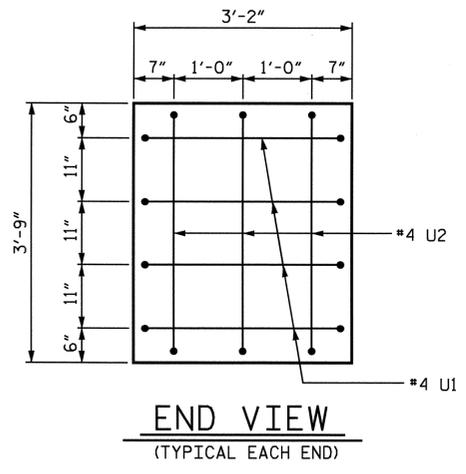


DRAWN BY: A. L. FIGUEROA DATE: 01-21-09

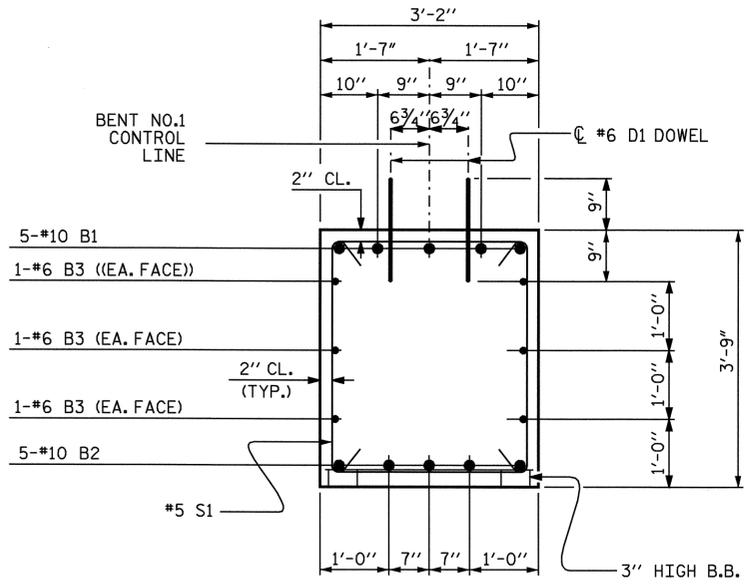
CHECKED BY: L. L. MURPHY DATE: 01-30-09



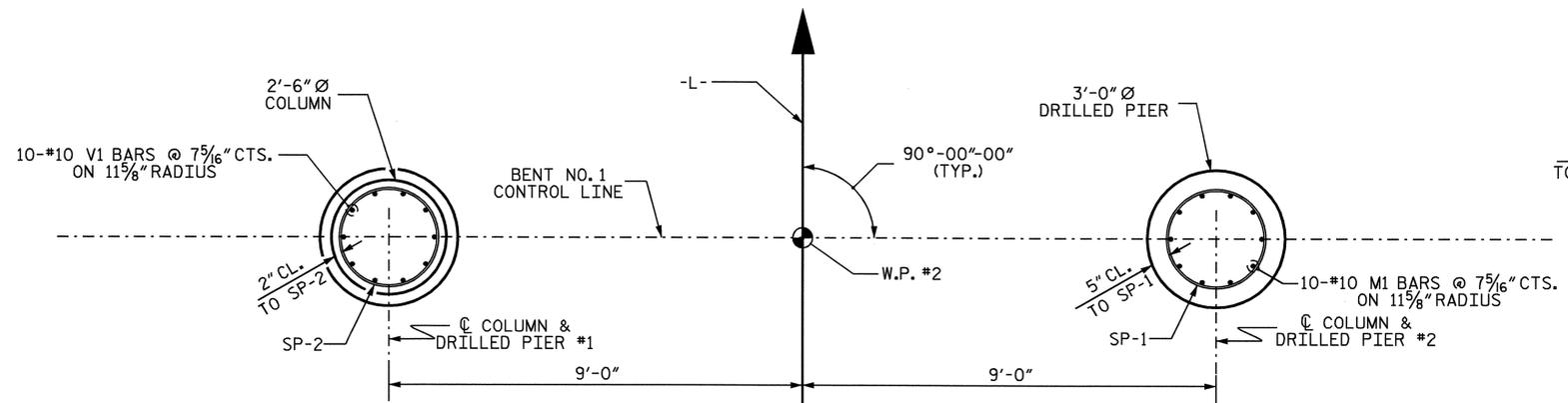
END ELEVATION



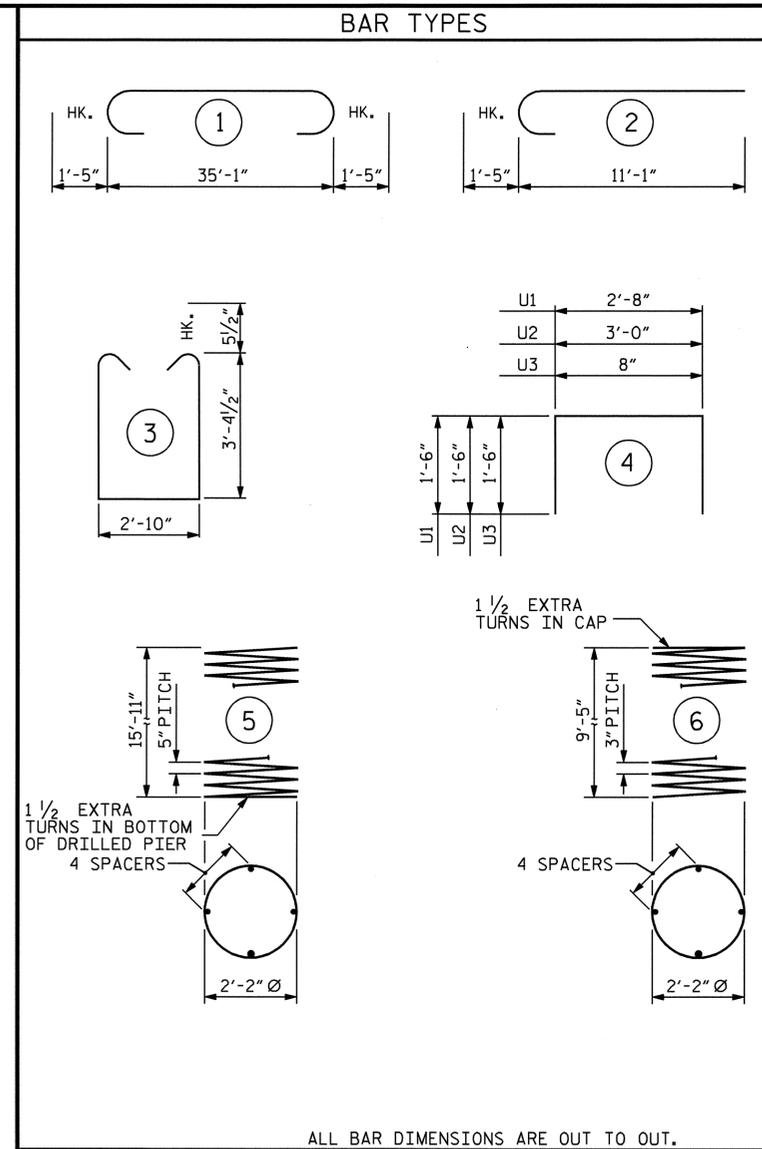
END VIEW
(TYPICAL EACH END)



SECTION A-A

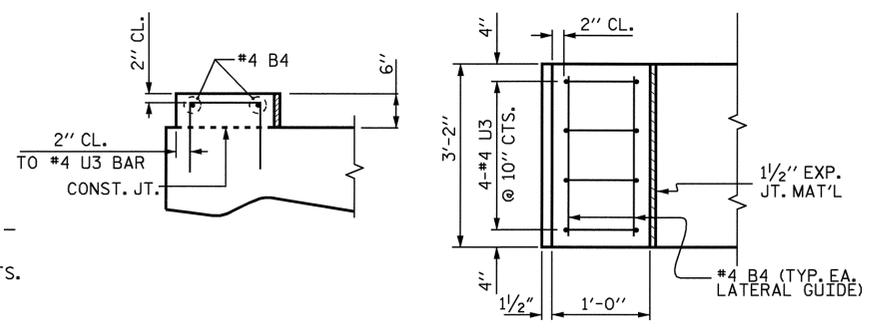


PLAN OF COLUMNS & DRILLED PIERS
(DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & DRILLED PIER)



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



ELEVATION
PLAN
LATERAL GUIDE DETAILS
(TYPICAL EACH END)

BILL OF MATERIAL

BENT NO.1					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	5	#10	1	37'-11"	816
B2	5	#10	STR	35'-2"	757
B3	6	#6	STR	35'-2"	317
B4	4	#4	STR	2'-10"	8
D1	44	#6	STR	1'-6"	99
M1	20	#10	STR	25'-2"	2166
S1	41	#5	3	10'-6"	449
U1	8	#4	4	5'-8"	30
U2	6	#4	4	6'-0"	24
U3	8	#4	4	3'-8"	20
V1	20	#10	2	12'-6"	1076
SP-1	2	**	5	264'-8"	552
SP-2	2	*	6	262'-3"	350

REINFORCING STEEL = 5762 LBS.
 SPIRAL COLUMN REINFORCING STEEL = 902 LBS.
 CLASS "A" CONCRETE BREAKDOWN
 POUR #2 (COLUMNS) C.Y. = 3.3
 POUR #3 (CAP) C.Y. = 15.6
 POUR #4 (LATERAL GUIDES) C.Y. = 0.1
 TOTAL C.Y. = 19.0

DRILLED PIERS

DRILLED PIER CONCRETE
 POUR # 1 (DRILLED PIERS) C.Y. = 8.6
 3'-0" Ø DRILLED PIERS
 NOT IN SOIL LIN. FT. = 23.00
 IN SOIL LIN. FT. = 9.84
 3'-0" Ø PERMANENT STEEL CASING FOR 3'-0" Ø DRILLED PIER LIN. FT. = 12.81
 ▲ CSL TUBES LIN. FT. = 151.33

PROJECT NO. B-4646
 SURRY COUNTY
 STATION: 18+70.00 -L-
 SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE BENT NO. 1



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS 24
2			4			

DRAWN BY: A.L. FIGUEROA DATE: 12-30-08
 CHECKED BY: M.G. CHEEK DATE: 01-26-09

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

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

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

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

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

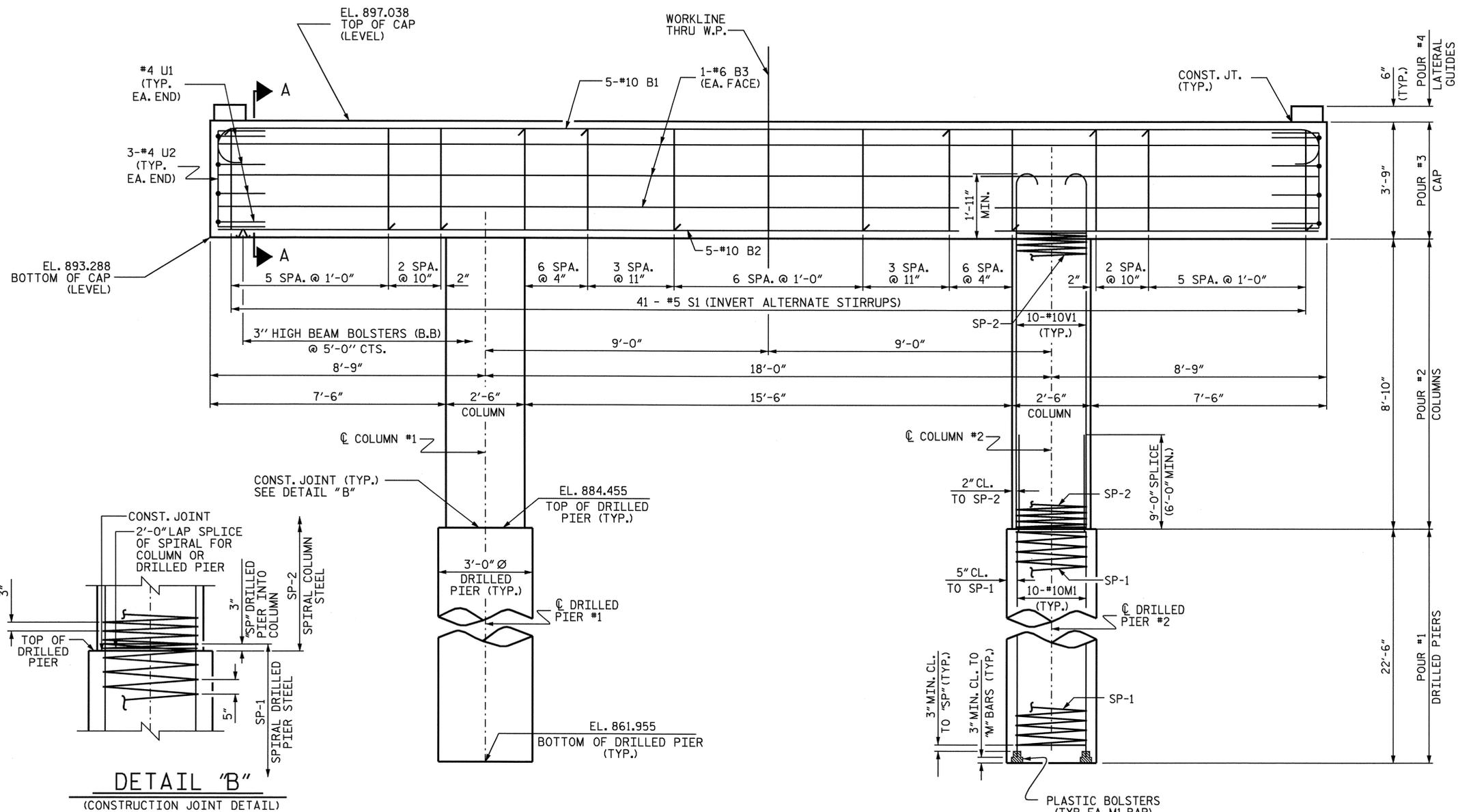
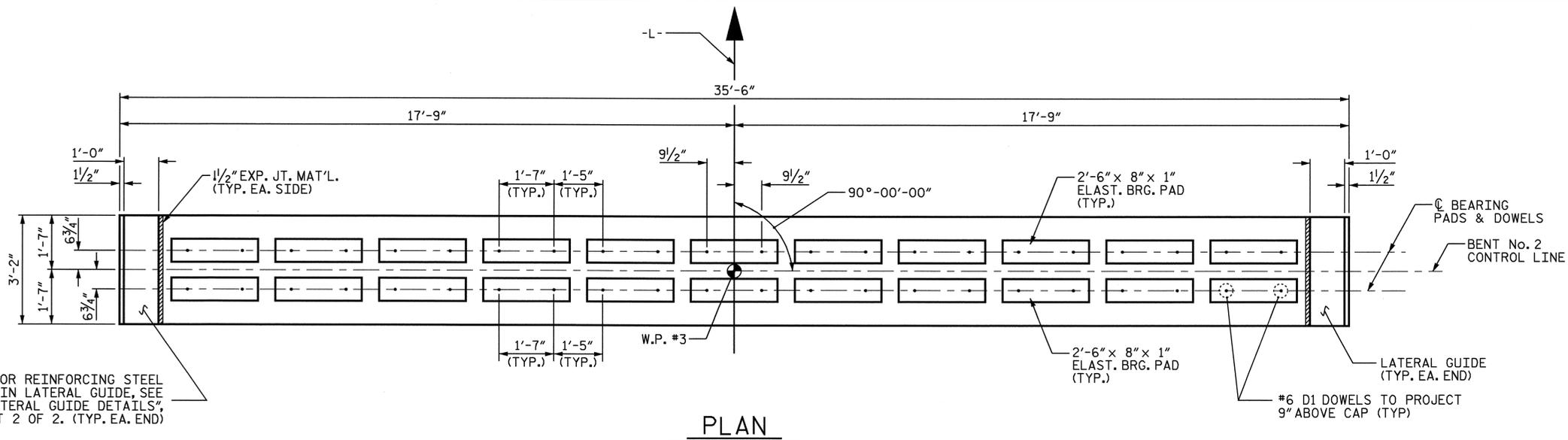
THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.

NO SEPARATE PAYMENT SHALL BE MADE FOR ANY ADDITIONAL STEEL REQUIRED IN CONSTRUCTION OF DRILLED PIERS AS THIS IS CONSIDERED INCIDENTAL TO THE LINEAR FOOT PRICE FOR DRILLED PIERS.

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

FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.

FOR REINFORCING STEEL IN LATERAL GUIDE, SEE "LATERAL GUIDE DETAILS", SHEET 2 OF 2. (TYP. EA. END)



PROJECT NO. B-4646
SURRY COUNTY
 STATION: 18+70.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

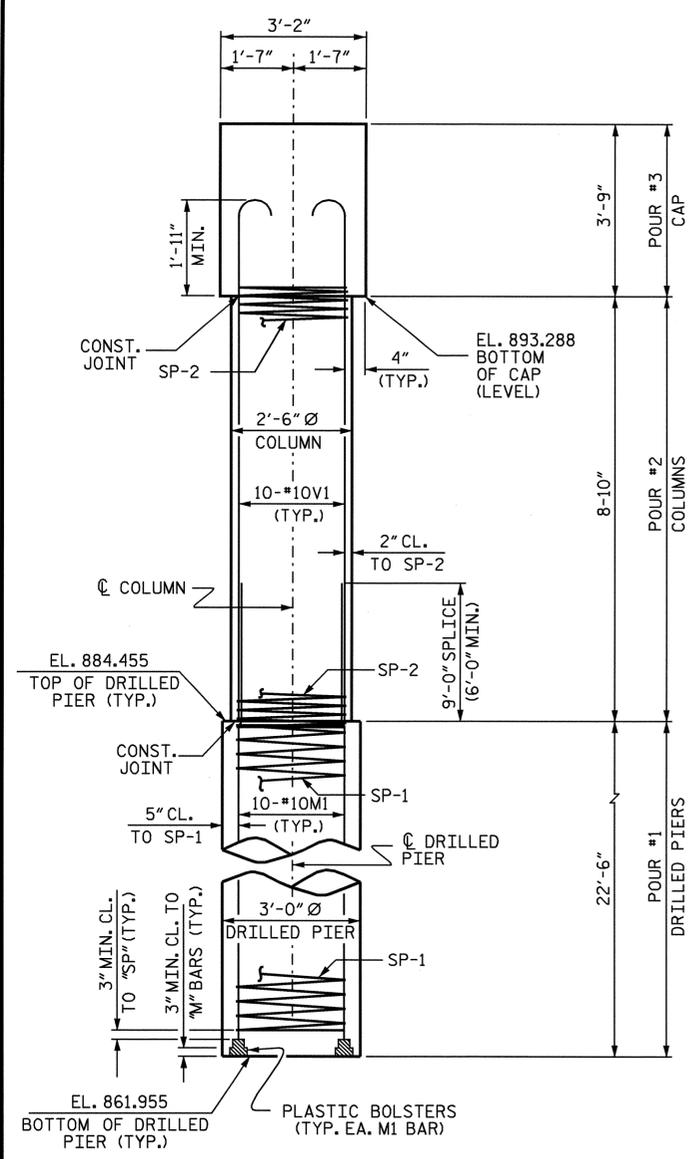
SUBSTRUCTURE
 BENT NO. 2



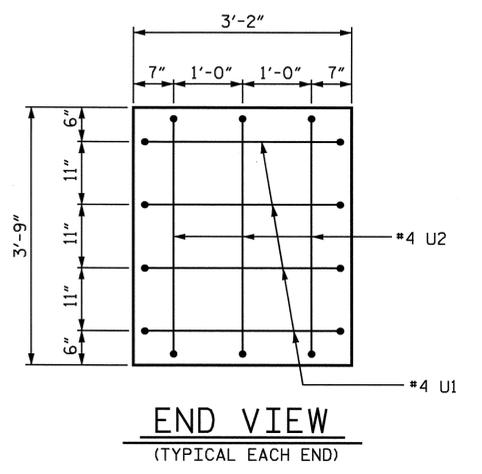
REVISIONS				SHEET NO.
BY:	DATE:	NO.	DATE:	S-18
		3		TOTAL SHEETS
		4		24

DRAWN BY: A.L. FIGUEROA DATE: 12-30-08
 CHECKED BY: M.G. CHEEK DATE: 01-26-09

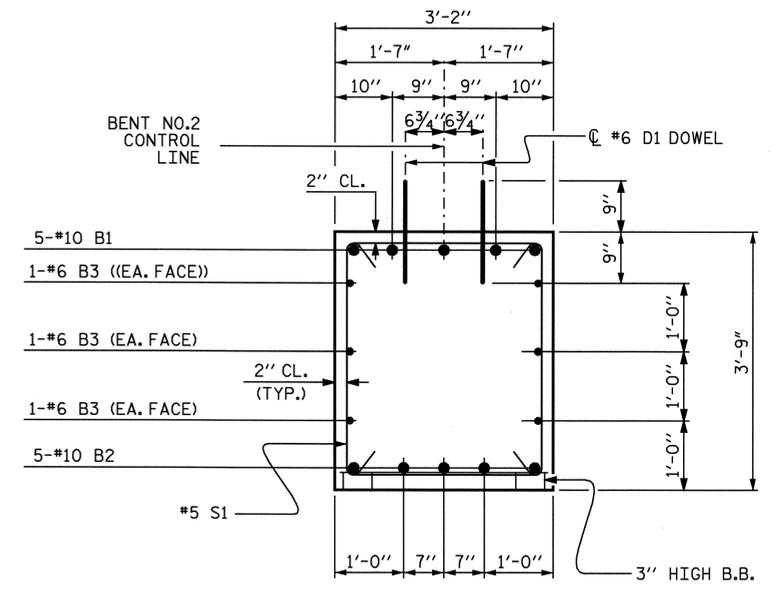
(DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN AND DRILLED PIER)



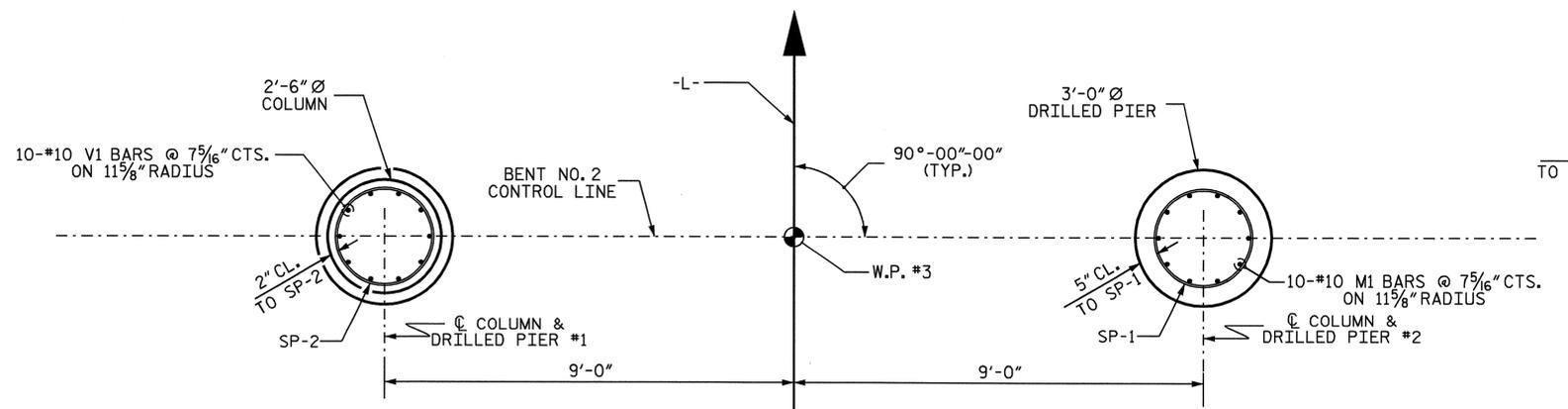
END ELEVATION



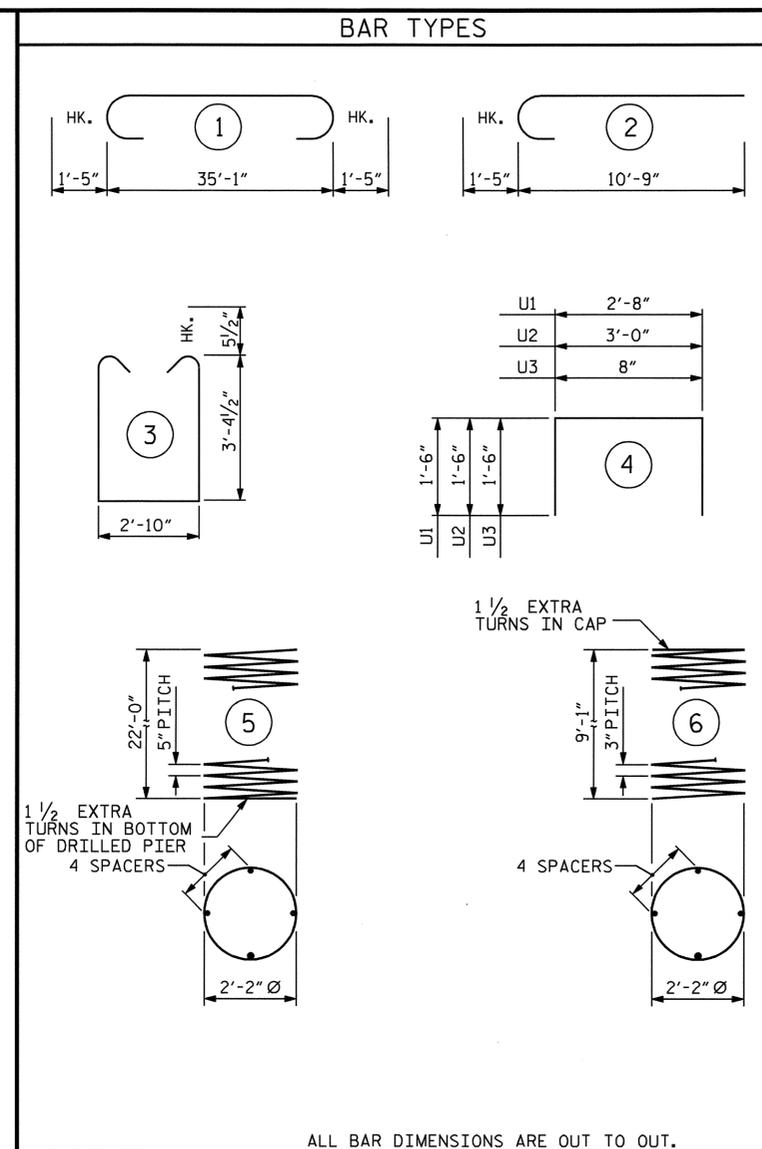
END VIEW
(TYPICAL EACH END)



SECTION A-A



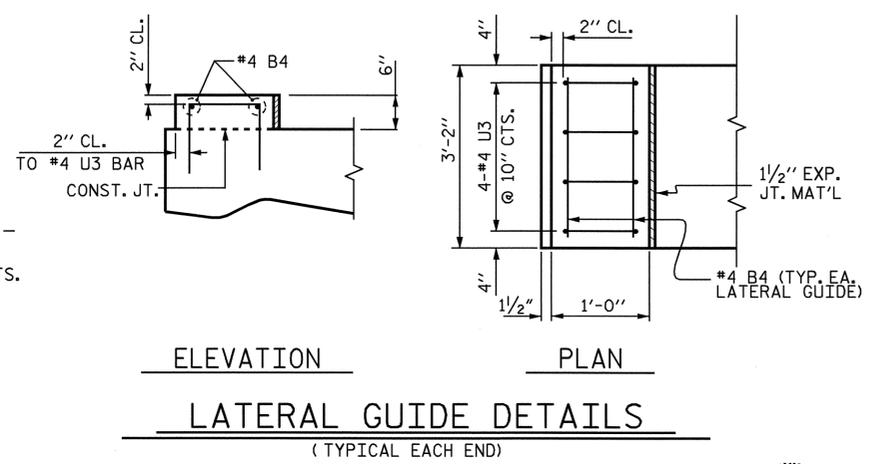
PLAN OF COLUMNS & DRILLED PIERS
(DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & DRILLED PIER)



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

BILL OF MATERIAL					
BENT NO.2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	5	#10	1	37'-11"	816
B2	5	#10	STR	35'-2"	757
B3	6	#6	STR	35'-2"	317
B4	4	#4	STR	2'-10"	8
D1	44	#6	STR	1'-6"	99
M1	20	#10	STR	31'-3"	2689
S1	41	#5	3	10'-6"	449
U1	8	#4	4	5'-8"	30
U2	6	#4	4	6'-0"	24
U3	8	#4	4	3'-8"	20
V1	20	#10	2	12'-2"	1047
SP-1	2	**	5	362'-10"	757
SP-2	2	*	6	253'-11"	339
REINFORCING STEEL					= 6256 LBS.
SPIRAL COLUMN REINFORCING STEEL					= 1096 LBS.
CLASS "A" CONCRETE BREAKDOWN					
POUR #2 (COLUMNS)					C.Y. = 3.2
POUR #3 (CAP)					C.Y. = 15.6
POUR #4 (LATERAL GUIDES)					C.Y. = 0.1
TOTAL					C.Y. = 18.9
DRILLED PIERS					
DRILLED PIER CONCRETE					
POUR # 1 (DRILLED PIERS)					C.Y. = 11.8
3'-0" Ø DRILLED PIERS					
NOT IN SOIL					LIN. FT. = 16.00
IN SOIL					LIN. FT. = 29.00
3'-0" Ø PERMANENT STEEL CASING FOR 3'-0" Ø DRILLED PIER					LIN. FT. = 28.91
▲ CSL TUBES					LIN. FT. = 200.00



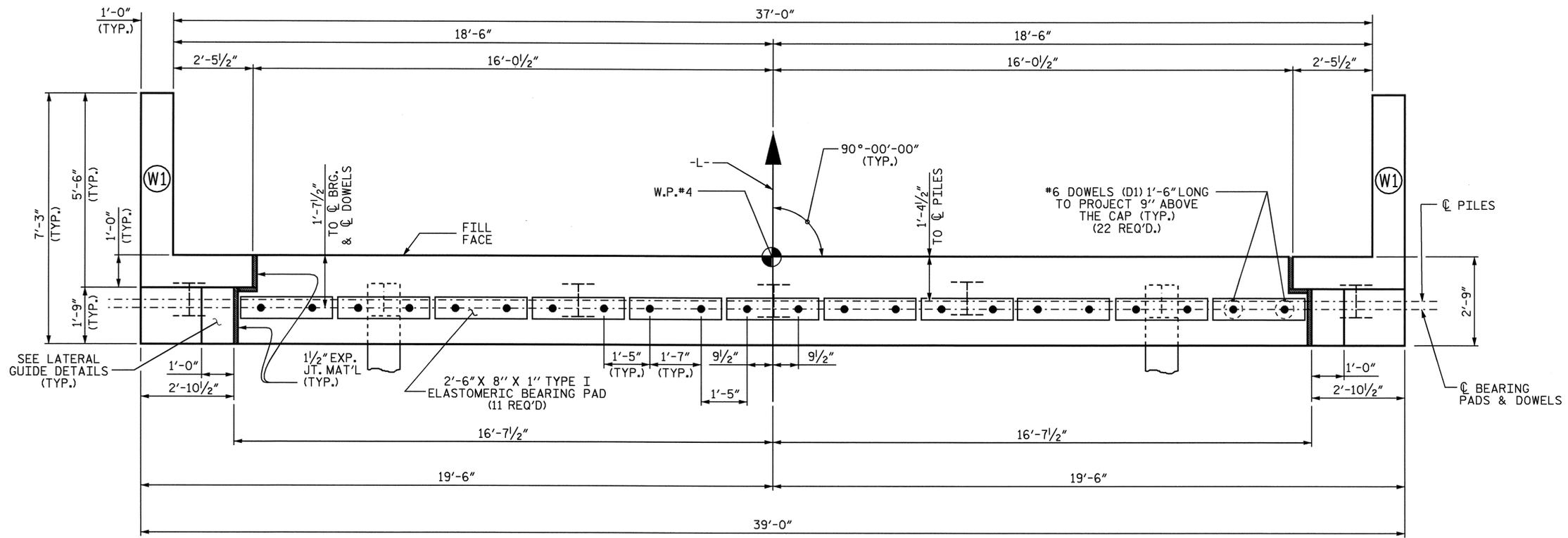
LATERAL GUIDE DETAILS
(TYPICAL EACH END)

PROJECT NO. B-4646
 SURRY COUNTY
 STATION: 18+70.00 -L-
 SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENT NO. 2					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S-19
TOTAL SHEETS					24

DRAWN BY: A.L. FIGUEROA DATE: 12-30-08
 CHECKED BY: M.G. CHEEK DATE: 01-26-09
 17-MAR-2009 09:31
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PLAN

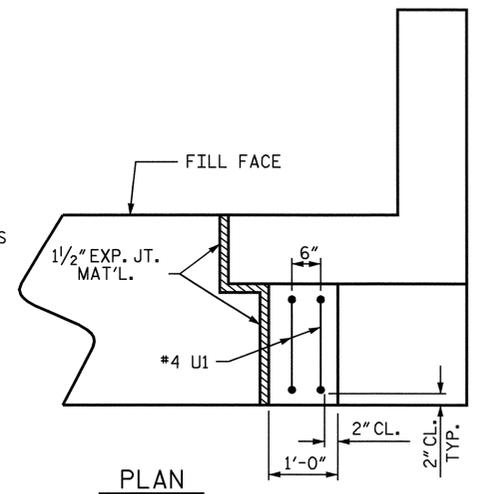
NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

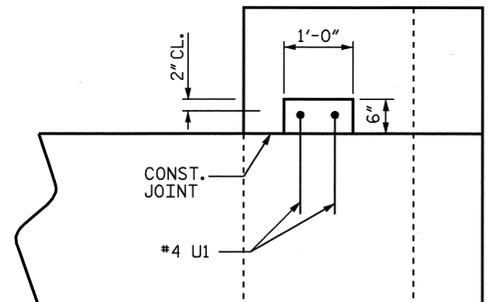
FOR SECTION A-A, SEE SHEET 2 OF 2.

FOR PILE SPLICE DETAILS SEE SHEET 2 OF 2.

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



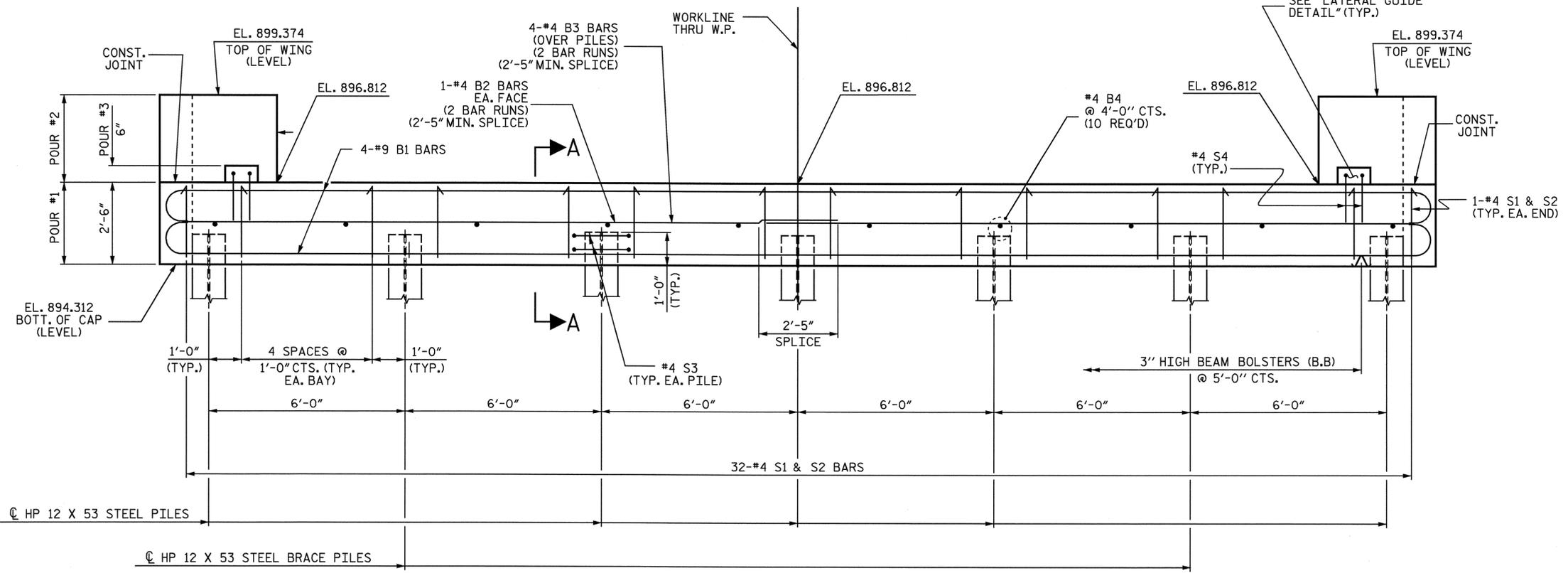
PLAN



ELEVATION

LATERAL GUIDE DETAILS

RIGHT LATERAL GUIDE SHOWN, LEFT LATERAL GUIDE SIMILAR



ELEVATION

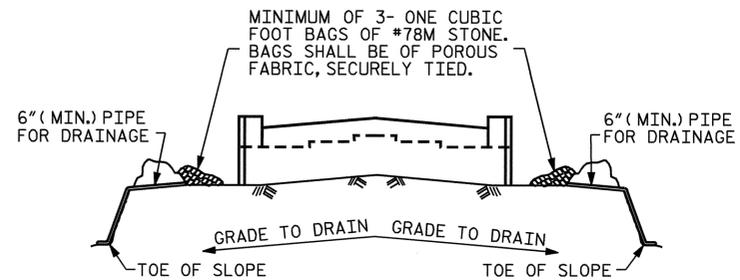
PROJECT NO. B-4646
SURRY COUNTY
 STATION: 18+70.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT NO.2					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-20
					TOTAL SHEETS 24



DRAWN BY: A.L. FIGUEROA DATE: 01-21-09
 CHECKED BY: L.L. MURPHY DATE: 01-30-09

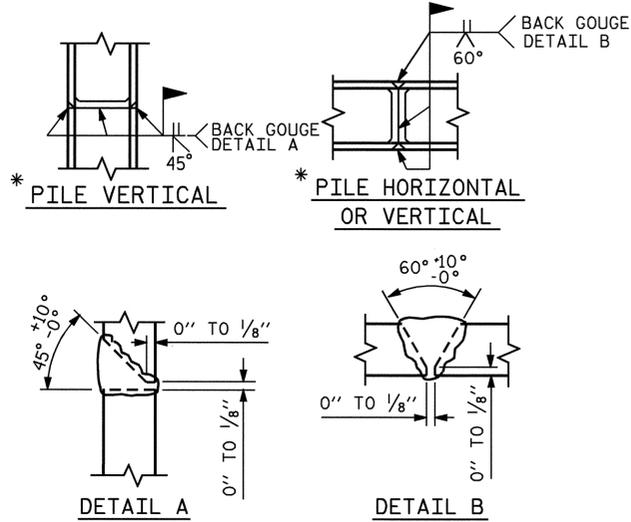


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

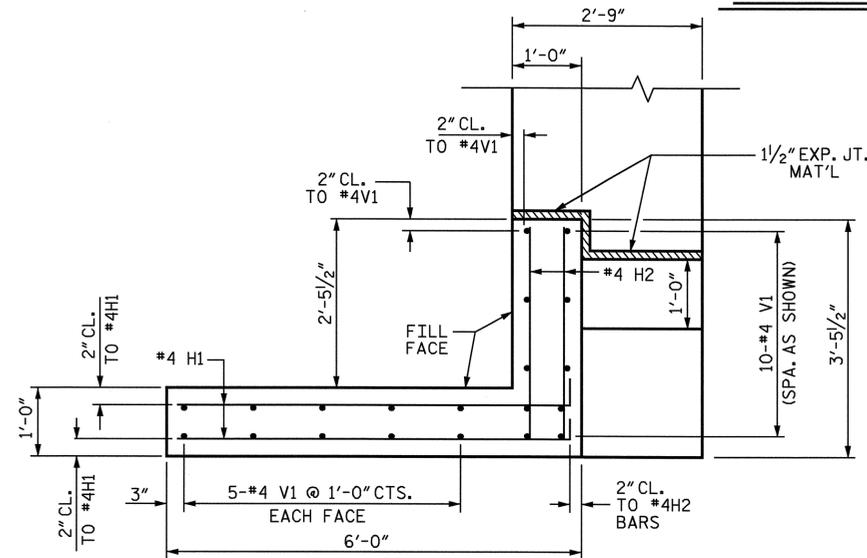
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

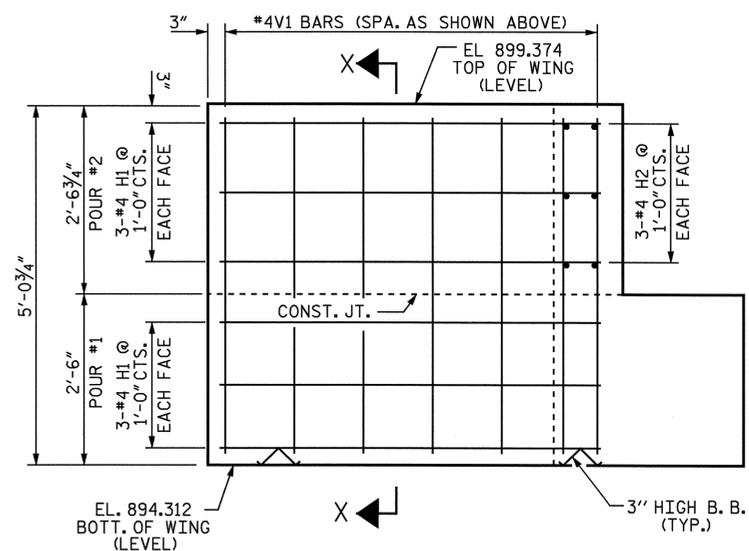


* POSITION OF PILE DURING WELDING.

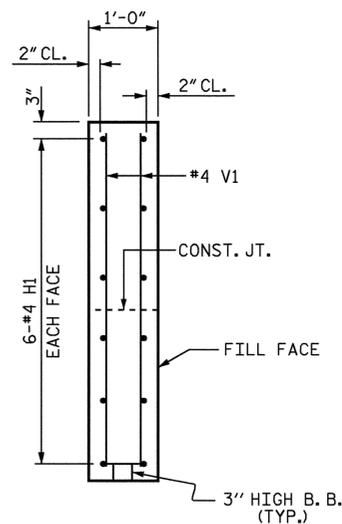
PILE SPLICE DETAILS



PLAN OF WING W1



ELEVATION OF WING W1



SECTION X-X

BAR TYPES

1: HK. 1'-3" 38'-8" 1'-3"

2: HK. 4 1/2" 2'-5" 4 1/2" 2'-1 1/2" 2'-5"

3: HK. 4 1/2" 2'-5" 4 1/2"

4: 1'-3" LAP 1'-8" Ø

5: 8" 5'-7"

6: 1'-5" 1'-6"

BILL OF MATERIAL					
END BENT NO.2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	41'-2"	1120
B2	4	#4	STR	20'-7"	55
B3	8	#4	STR	20'-7"	110
B4	10	#4	STR	2'-5"	16
D1	22	#6	STR	1'-6"	50
H1	24	#4	5	5'-9"	92
H2	12	#4	STR	3'-1"	25
S1	32	#4	2	7'-5"	159
S2	32	#4	3	3'-2"	68
S3	12	#4	4	6'-6"	52
U1	4	#4	6	4'-5"	12
V1	40	#4	STR	4'-7"	122
REINFORCING STEEL				=	1890 LBS.

CLASS A CONCRETE

POUR #1: CAP & BOTTOM OF WINGS 10.8 C.Y.

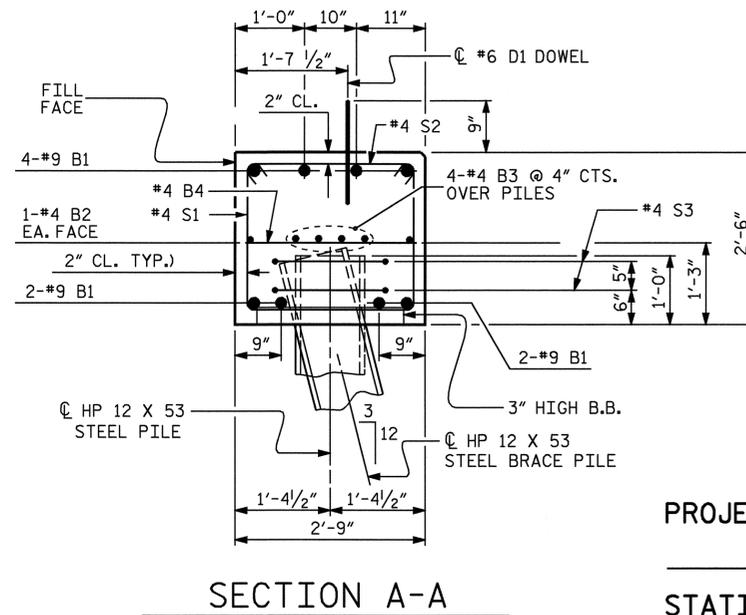
POUR #2: TOP OF WINGS 1.6 C.Y.

POUR #3: LATERAL GUIDE 0.1 C.Y.

TOTAL CLASS A CONCRETE 12.5 C.Y.

HP 12 X 53 STEEL PILES NO. 7 LIN. FT. 210

ALL BAR DIMENSIONS ARE OUT TO OUT.



PROJECT NO. B-4646
 SURRY COUNTY
 STATION: 18+70.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT NO.2

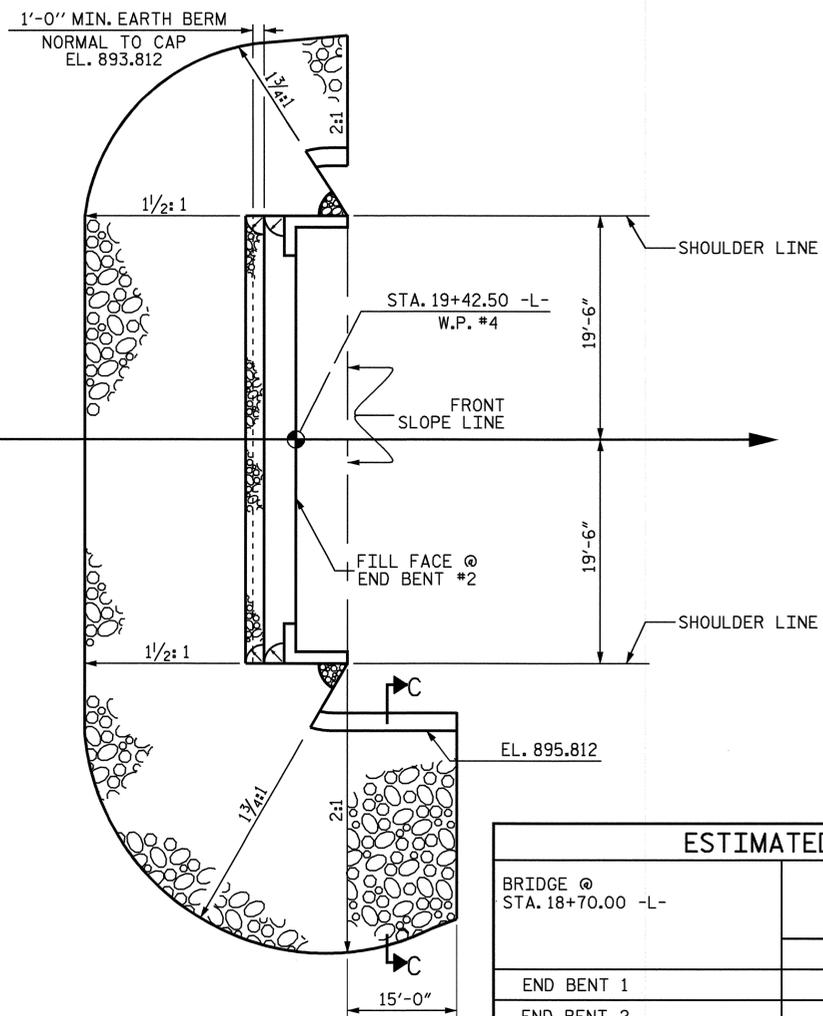
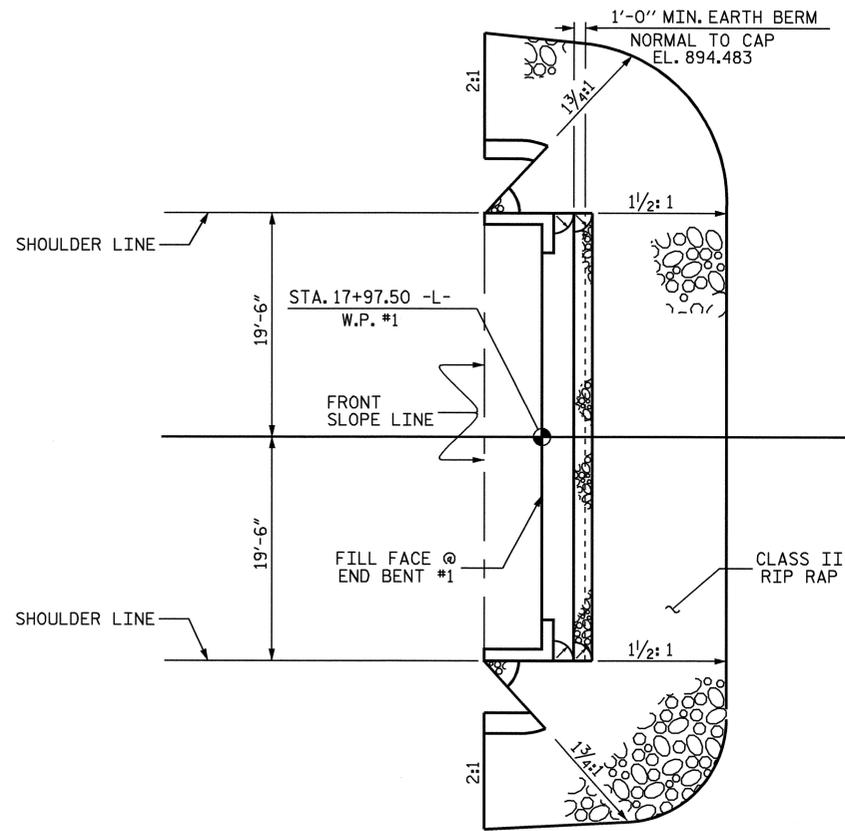
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S-21

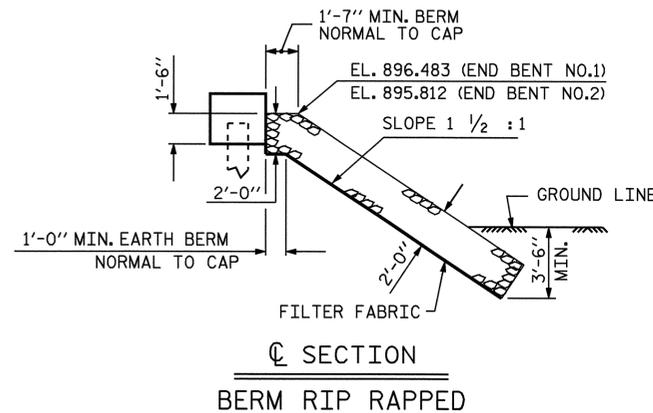
TOTAL SHEETS 24

DRAWN BY: A. L. FIGUEROA DATE: 01-21-09
 CHECKED BY: L. L. MURPHY DATE: 01-30-09

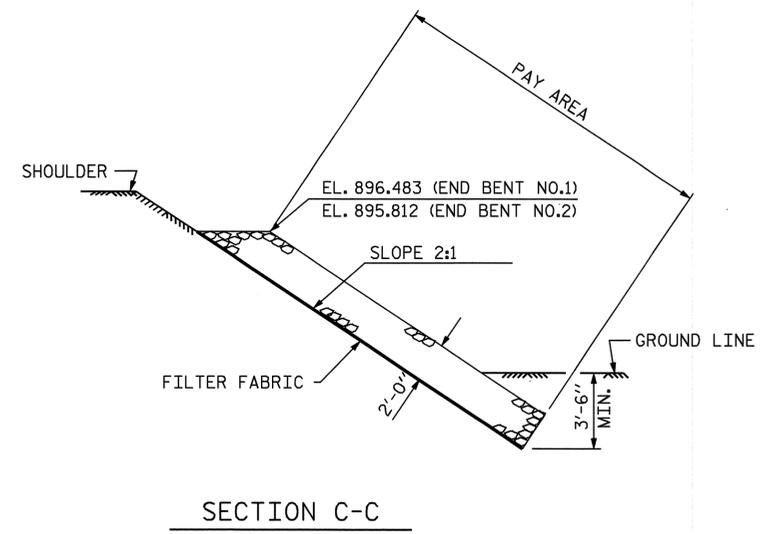




ESTIMATED QUANTITIES		
BRIDGE @ STA. 18+70.00 -L-	RIP RAP CLASS II	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	124	137
END BENT 2	159	177



SECTION Q-Q
BERM RIP RAPPED



SECTION C-C

PROJECT NO. B-4646
SURRY COUNTY
 STATION: 18+70.00 -L-

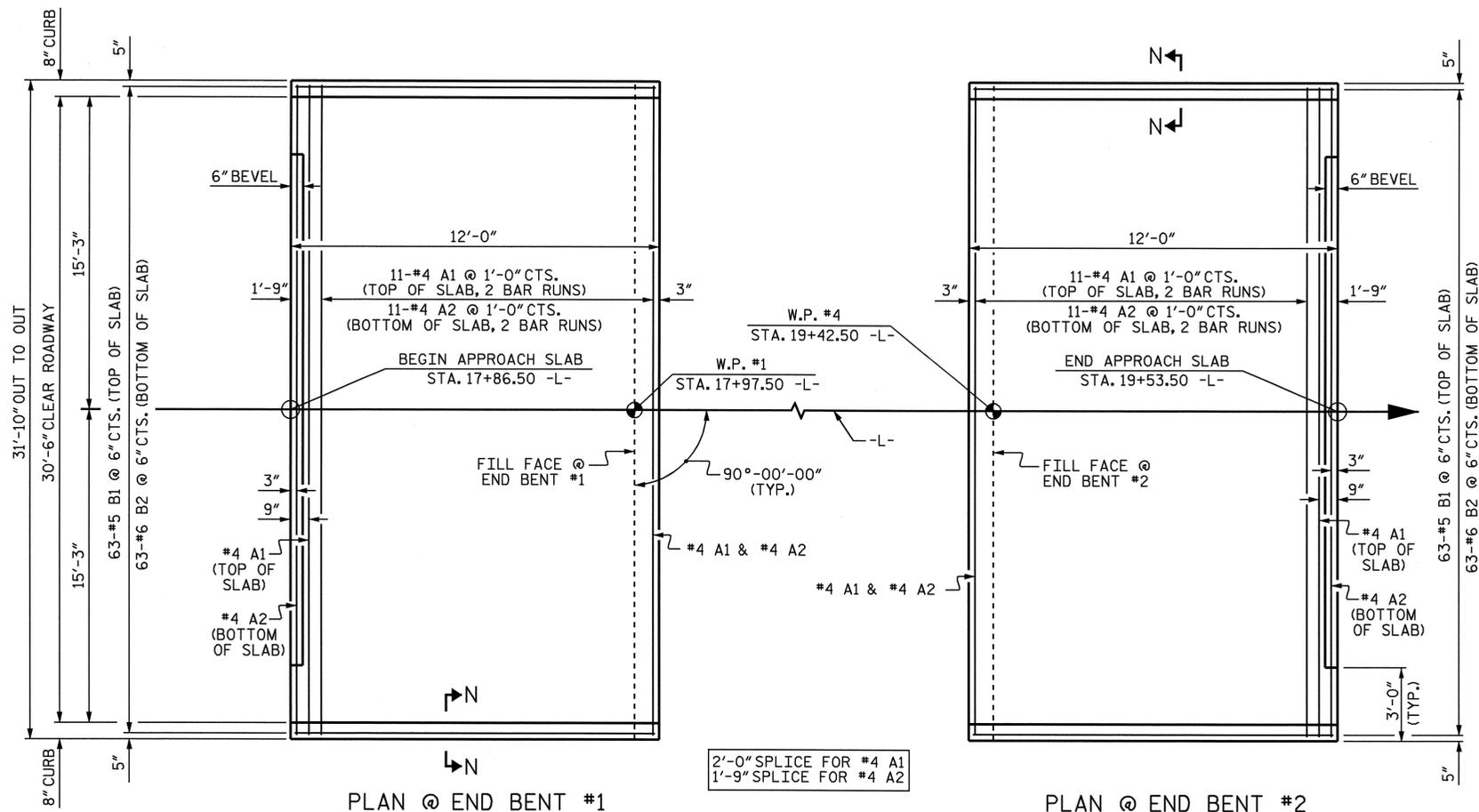
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
 RIP RAP DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
1			3			TOTAL SHEETS 24
2			4			



DRAWN BY : A.L. FIGUEROA DATE : 12/10/08
 CHECKED BY : D. HODGE DATE : 01-30-09
 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 TLG/GM



NOTES

FOR BRIDGE APPROACH FILL INCLUDING FABRIC, 4" Ø DRAINAGE PIPE, AND #78M STONE BACKFILL, SEE ROADWAY PLANS.

APPROACH SLAB SHALL NOT 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 SELECT 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.

FOR THE 4" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

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.

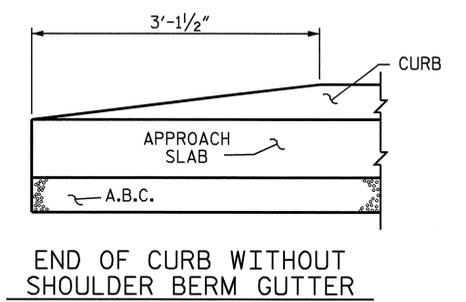
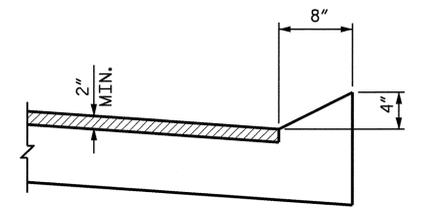
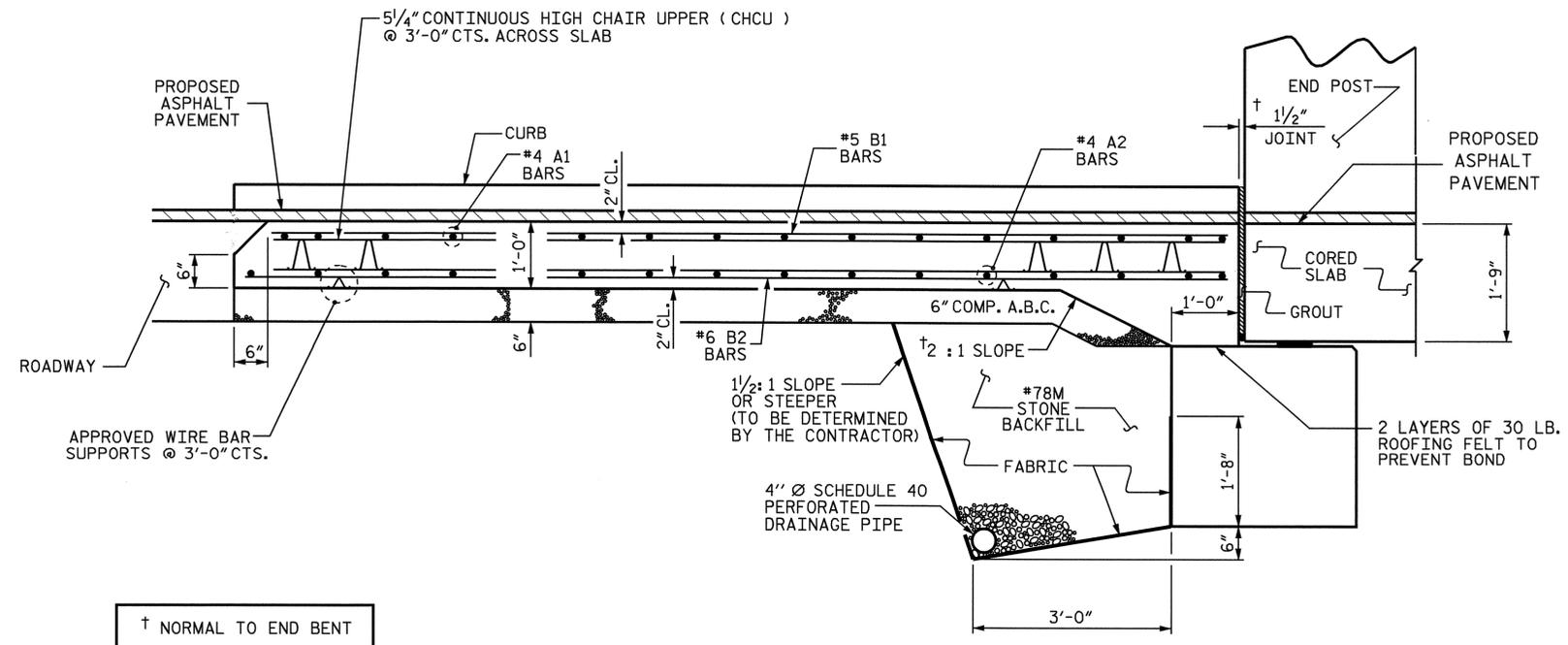
FOR JOINT DETAILS, SEE "PRESTRESSED CONCRETE CORED SLAB UNIT" SHEETS.

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	24	#4	STR	16'-9"	269
A2	24	#4	STR	16'-8"	267
*B1	63	#5	STR	11'-2"	734
B2	63	#6	STR	11'-8"	1104
REINFORCING STEEL				LBS.	1371
*EPOXY COATED REINFORCING STEEL				LBS.	1003
CLASS AA CONCRETE				C.Y.	15.6
APPROACH SLAB AT EB #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	24	#4	STR	16'-9"	269
A2	24	#4	STR	16'-8"	267
*B1	63	#5	STR	11'-2"	734
B2	63	#6	STR	11'-8"	1104
REINFORCING STEEL				LBS.	1371
*EPOXY COATED REINFORCING STEEL				LBS.	1003
CLASS AA CONCRETE				C.Y.	15.6

* THESE BARS ARE EPOXY COATED



PROJECT NO. B-4646

SURRY COUNTY

STATION: 18+70.00 -L-

SHEET 1 OF 2

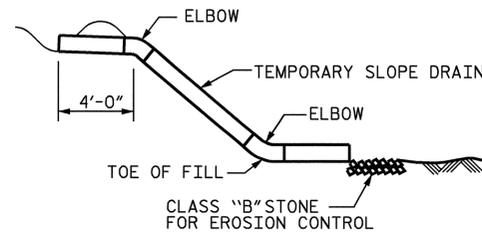
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
BRIDGE APPROACH SLAB
FOR PRESTRESSED CONCRETE
CORED SLAB UNIT
(SUB-REGIONAL TIER)

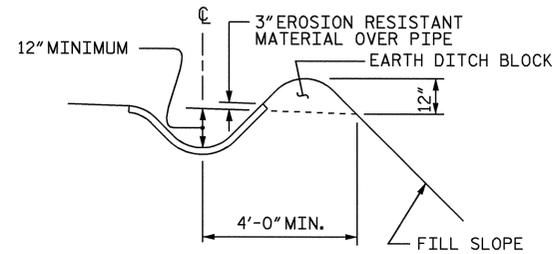


ASSEMBLED BY : A.L.FIGUEROA	DATE : 8/28/08
CHECKED BY : M.G. CHEEK	DATE : 11/20/08
DRAWN BY : FCJ 6/87	REV. 7/10/01 LES/RDR
CHECKED BY : EGA 6/87	REV. 5/7/03R RWW/JTE
	REV. 5/1/06R KMM/GM

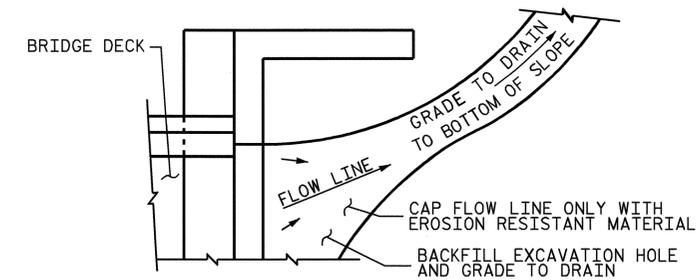
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-23
1			3			TOTAL SHEETS 24
2			4			



SECTION R-R

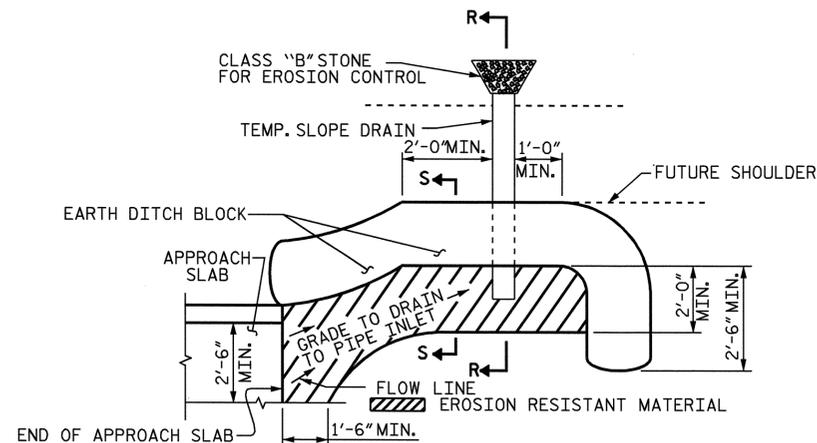


SECTION S-S



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



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

TEMPORARY BERM AND SLOPE DRAIN DETAILS

PROJECT NO. B-4646
SURRY COUNTY
 STATION: 18+70.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
BRIDGE APPROACH SLAB DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S-24
TOTAL SHEETS					24



ASSEMBLED BY : A.L.FIGUEROA	DATE : 8/28/08
CHECKED BY : M.G.CHEEK	DATE : 11/20/08
DRAWN BY : FCJ 6/87	REV. 7/10/01 LES/RDR
CHECKED BY : EGA 6/87	REV. 5/7/03R RWW/JTE
	REV. 5/1/06R KMM/GM

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 2006 "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; AND CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP.

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. 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.
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. FINIS 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