# 81

BEGIN PROJECT

VICINITY MAP

(NOT TO SCALE)

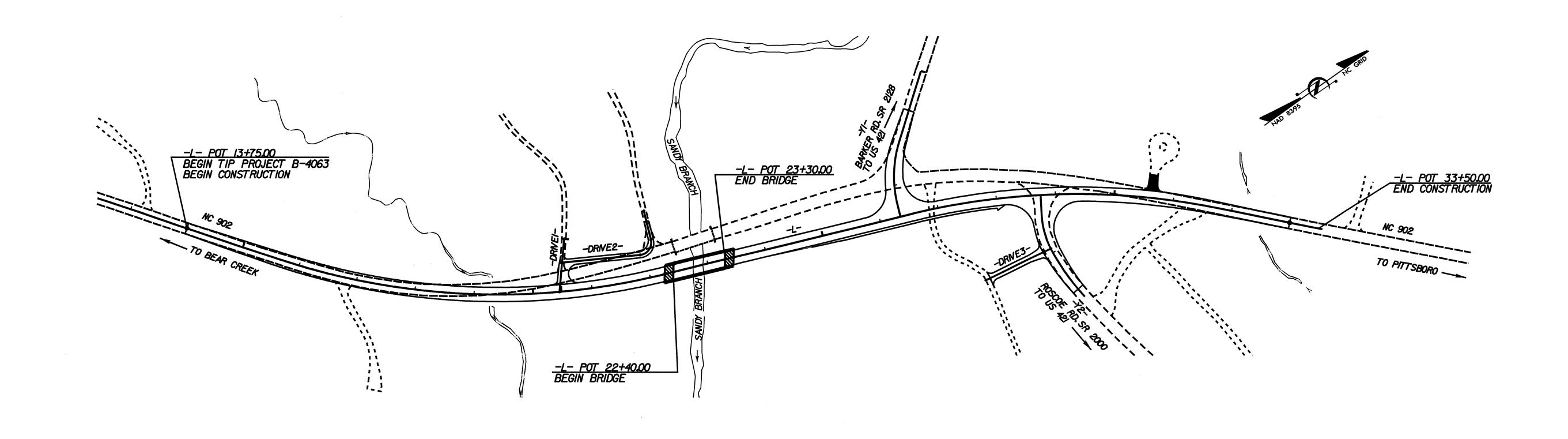
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

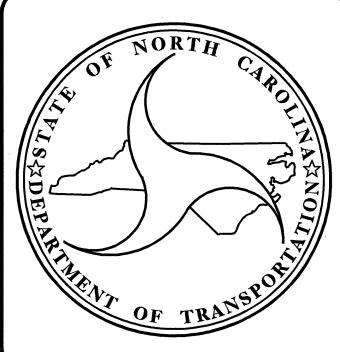
# CHATHAM COUNTY

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE

LOCATION: BRIDGE NO. 20 OVER SANDY BRANCH ON NC 902

STATE	STATE	PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	E	3–4063		
STATE PRO	J.NO.	F. A. PROJ. NO.	DESCRIPT	NOF
33427	.1.1	BRZ-902(3)	P.E	
33427	.2.1	BRZ-902(3)	UTIL. &	R/W
33427	.3.1	BRZ-902(3)	CONS	Т.
			-	





# DESIGN DATA

GOLDSTON /

ADT 2007 = 1725 ADT 2030 = 3350 DHV = 10 % D = 60 % T = 7 % \* V = 60 MPH

FUNCTION. = RURAL MAJOR CLASS. COLLECTOR

\* (TTST 4% + DUALS 3%)

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4063 = 0.357 MI

LENGTH STRUCTURE TIP PROJECT B-4063 = 0.017 MI

TOTAL LENGTH TIP PROJECT B-4063 = 0.374 MI

# DIVISION OF HIGHWAYS 2006 STANDARD SPECIFICATIONS J. C. FRYE, P.E. PROJECT ENGINEER T. H. FANG, P.E. PROJECT DESIGN ENGINEER

STRUCTURE DESIGN UNIT
1000 BIRCH RIDGE DR.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

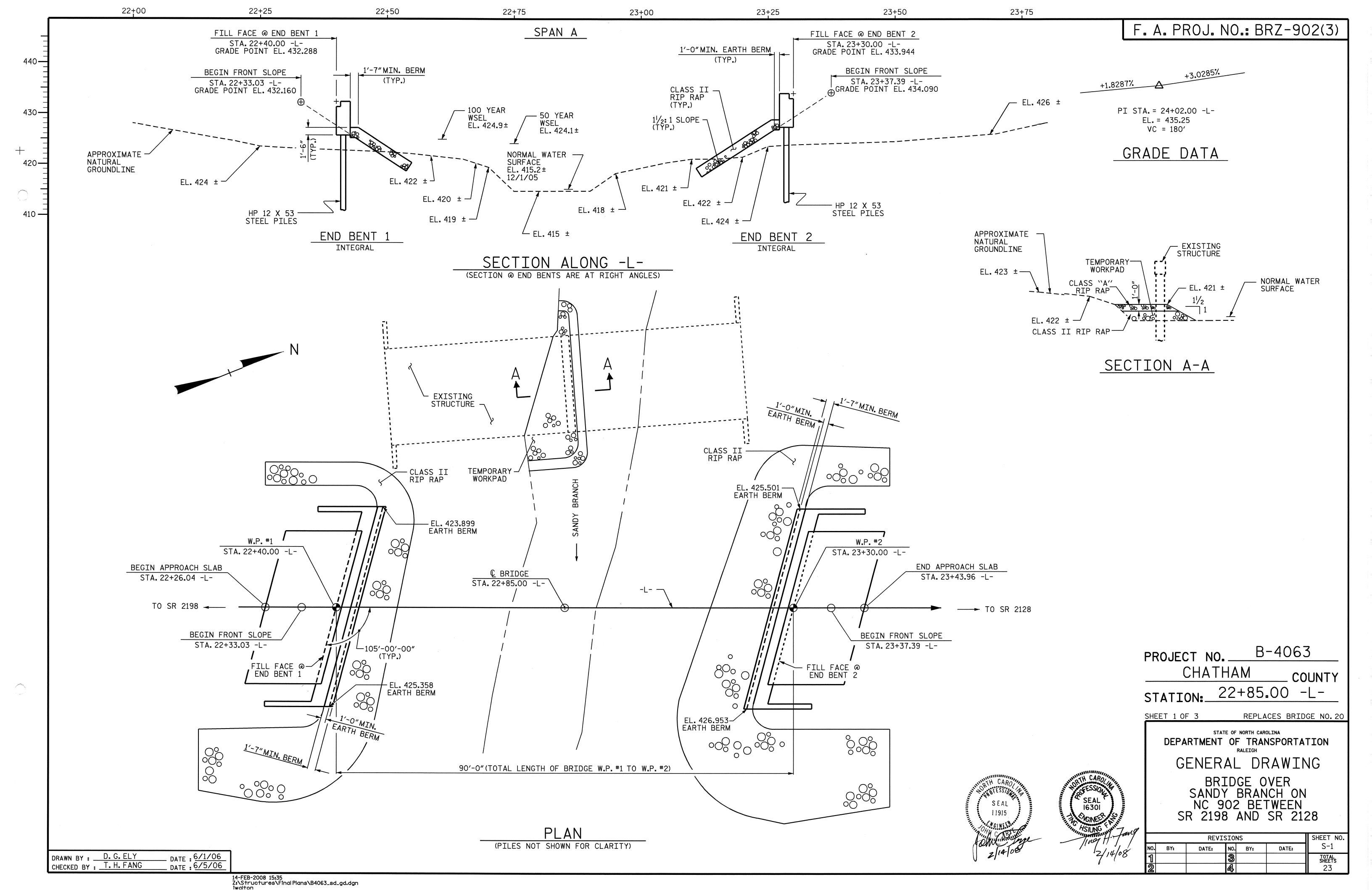
RALEIGH, N.C. 27610

STATE DESIGN ENGINEER

DED A DEL A DESIGN OF TO A NESDODE

DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR DATE



1'-6" FILL FACE — @ END BENT 1 - FILL FACE @ END BENT 2 W.P. #1 2'-3¾" -W.P. #2 STA. 22+40.00 -L-STA. 23+30.00 -L---- 2'-3¾" 105°-00'-00" (TYP.) — © HP 12 X 53 STEEL VERTICAL PILES —— © HP 12 X 53 STEEL VERTICAL PILES END BENT 2 END BENT 1

NOTES:

DRIVE PILES AT END BENT 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 1 IS 60 TONS PER PILE.

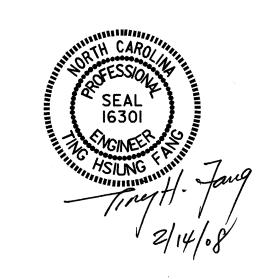
DRIVE PILES AT END BENT 2 TO A REQUIRED BEARING CAPACITY OF 120 TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO. THE ALLOWABLE BEARING CAPACITY FOR PILES AT END BENT 2 IS 60 TONS PER PILE.

# CONSTRUCTION SEQUENCE:

- 1. DRIVE STEEL PILES FOR END BENT 1 AND END BENT 2. COMPLETE POUR 1 OF END BENTS.
- 2. ONCE CONCRETE HAS ATTAINED THE REQUIRED STRENGTH, INSTALL NUT, WASHER AND SOLE PLATE ON ANCHOR BOLTS. ERECT GIRDERS AND ALIGN SOLE PLATES WITH HOLES IN FLANGES REGARDLESS OF TEMPERATURE AT TIME OF SETTING. SOLE PLATE SHOULD BE WELDED TO THE GIRDER FLANGE BEFORE FALSEWORK IS PLACED. ADJUST LOWER NUT TO SET GIRDER BEARING AT THE PROPER ELEVATION. INSTALL WASHER AND NUT ON TOP OF FLANGES. LEAVE TOP NUT LOOSE TO ALLOW FOR GIRDER END ROTATION AND TRANSLATION DURING DECK POURING SEQUENCE.
- 3. POUR BRIDGE DECK IN ACCORDANCE WITH THE POURING SEQUENCE OUTLINED ON THE "SUPERSTRUCTURE BILL OF MATERIAL" SHEET EXCEPT THE FINAL TWO POURS CONTAINING THE ABUTMENT. NOTE THAT THE FINAL TWO POURS CONTAINING THE WING WALLS AND ABUTMENT ARE PLACED WITH THE FINAL POURS OF THE BRIDGE DECK.
- 4. TIGHTEN TOP NUTS 1/4 TURN PAST FINGER TIGHT. COMPLETE FINAL TWO DECK POURS WHICH INCLUDES THE ABUTMENT, DECK AND THE WING WALLS.
- 5. PLACE THE REINFORCED BRIDGE APPROACH FILL AND BACKFILL IN LIFTS UNTIL THE DESIRED SUBGRADE ELEVATION IS REACHED. CONSTRUCT SLEEPER SLABS.
- 6. POUR THE APPROACH SLABS STARTING AT THE END FURTHEST FROM THE BACK WALL AND PROGRESSING TOWARDS THE END BENT. POURS SHALL BE PERFORMED DURING THE MORNING HOURS TO MINIMIZE PLACING THE APPROACH SLAB IN TENSION FROM BRIDGE THERMAL MOVEMENTS.

FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO PILE CENTERLINE ORIENT PILES AS SHOWN, ALL PILES ARE VERTICAL.



PROJECT NO. B-4063

CHATHAM COUNTY

STATION: 22+85.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

RALEIGH

GENERAL DRAWING

BRIDGE OVER
SANDY BRANCH ON
NC 902 BETWEEN
SR 2198 AND SR 2128

 REVISIONS
 SHEET NO.

 NO.
 BY:
 DATE:
 S-2

 1
 3
 TOTAL SHEETS SHEETS 23

DRAWN BY: HARISH SHAH DATE: 09/07
CHECKED BY: T.H. FANG DATE: 12/07/07

# NOTES

ASSUMED LIVE LOAD = HS20 OR ALTERNATE LOADING. EXCEPT THE GIRDERS HAVE BEEN DESIGNED FOR HS25.

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 OTHER DESIGN DATA AND GENERAL NOTES. SEE SHEET SN.

FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.

REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.

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

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

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

ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 50W.

AFTER SERVING AS A TEMPORARY STRUCTURE, THE EXISTING STRUCTURE CONSISTING OF 2 SPANS AT 35'-3"; 20'-0" CLEAR ROADWAY WIDTH AND CONCRETE DECK ON STEEL I-BEAMS; END BENTS: RC CAP ON TIMBER PILES, INT. BENT: RC POST & BEAM AND LOCATED 45 FEET UPSTREAM OF 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 LIMITATION MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

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

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 22+85.00 -L-."

NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISION.

FOR SUBMITTAL OF WORKING DRAWINGS. SEE SPECIAL PROVISIONS.

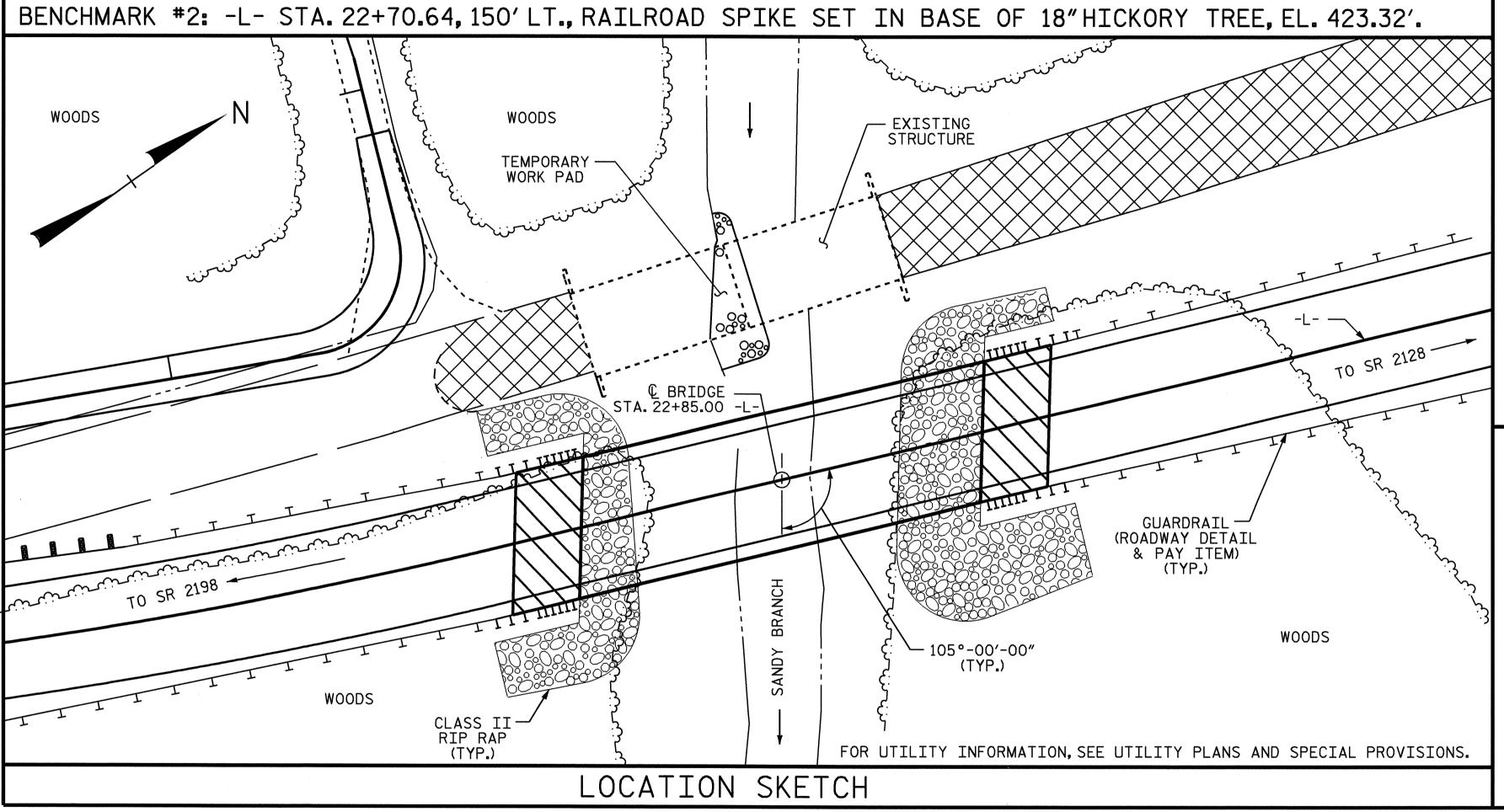
FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR SHIPPING STEEL STRUCTURAL MEMBERS, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

THE CLASS AA CONCRETE IN THE BRIDGE DECK SHALL CONTAIN FLY ASH OR GROUND GRANULATED BLAST FURNACE SLAG AT THE SUBSTITUTION RATE SPECIFIED IN ARTICLE 1024-1 AND IN ACCORDANCE WITH ARTICLES 1024-5 AND 1024-6 OF THE STANDARD SPECIFICATIONS. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE COST OF THE REINFORCED CONCRETE DECK SLAB.

AT THE CONTRACTOR'S OPTION, AND UPON REMOVAL OF THE CAUSEWAY, THE CLASS II RIP RAP USED IN THE CAUSEWAY MAY BE PLACED AS RIP RAP SLOPE PROTECTION. SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS AT STATION 22+85.00 -L-

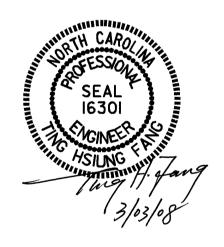


### HYDRAULIC DATA

	DESIGN DISCHARGE	=	1400 CFS
	FREQUENCY OF DESIGN FLOOD	=	50 YRS.
	DESIGN HIGH WATER ELEVATION	=	424.1
	DRAINAGE AREA	=	3.7 SQ. MI.
	BASIC DISCHARGE (Q100)	=	1700 CFS
5	BASIC HIGH WATER ELEVATION	=	424.9

# OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE = 4700+ CFS FREQUENCY OF OVERTOPPING FLOOD = 500 YRS.+ OVERTOPPING FLOOD ELEVATION = 430.0



				- TOTA	L BIL	_ OF M	ATERIAL						· · · · · · · · · · · · · · · · · · ·	
	CONST., MAINT. & REMOVAL OF TEMP. ACCESS	REMOVAL OF EXISTING STRUCTURE	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	STRUCTURAL STEEL	HP STEE	12 X 53 L PILES	CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0"THICK)	FILTER FABRIC FOR DRAINAGE	EVAZOTE JOINT SEALS
	LUMP SUM	LUMP SUM	SQ.FT.	SQ.FT.	CU. YDS.	LUMP SUM	LBS.	APPROX. LBS.	NO.	LIN.FT.	LIN.FT.	TON	SQ. YDS.	LUMP SUM
SUPERSTRUCTURE			2,935	3,112		LUMP SUM		78,100			176.55			LUMP SUM
END BENT 1					15.6		2,289		8	120		100	110	
END BENT 2					15.6		2,289		8	160		162	180	-
TOTAL	LUMP SUM	LUMP SUM	2,935	3,112	31.2	LUMP SUM	4,578	78,100	16	280	176.55	262	290	LUMP SUM

PROJECT NO. B-4063

CHATHAM COUNTY

STATION: 22+85.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

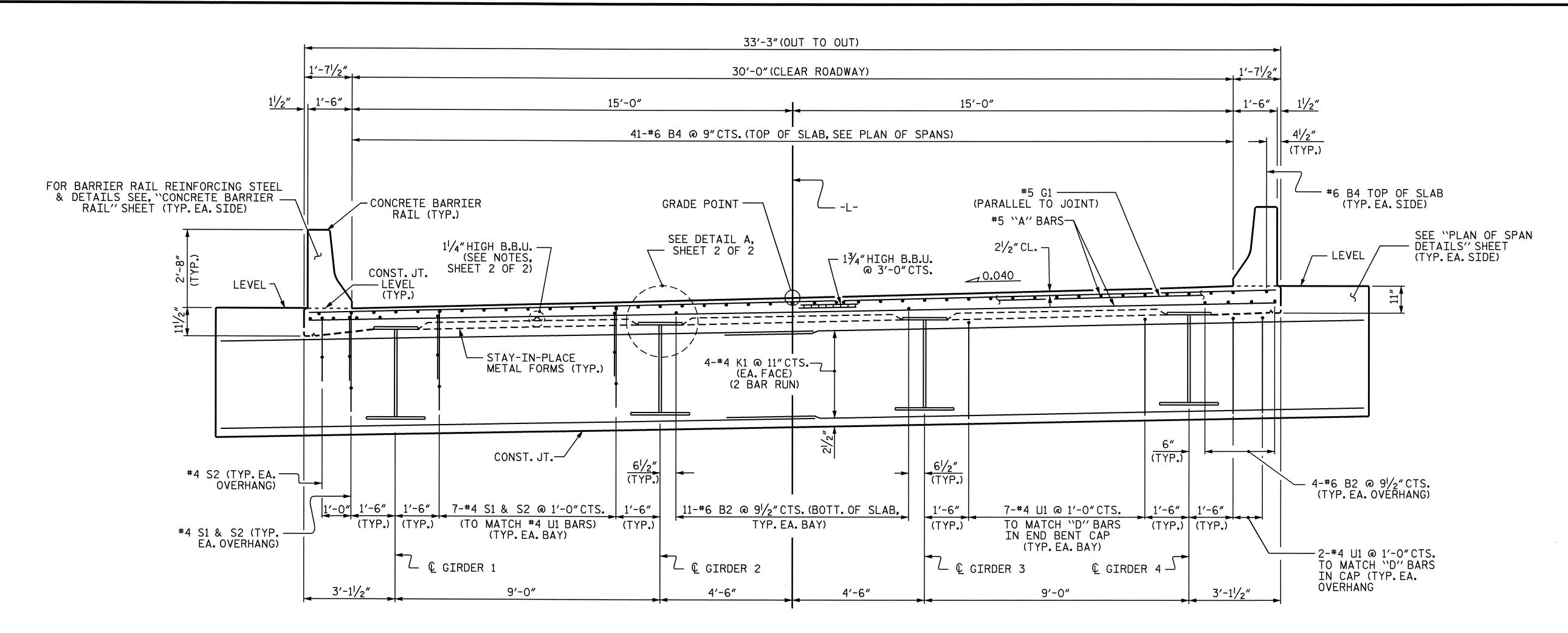
RALEIGH

GENERAL DRAWING

BRIDGE OVER SANDY BRANCH ON NC 902 BETWEEN SR 2198 AND SR 2128

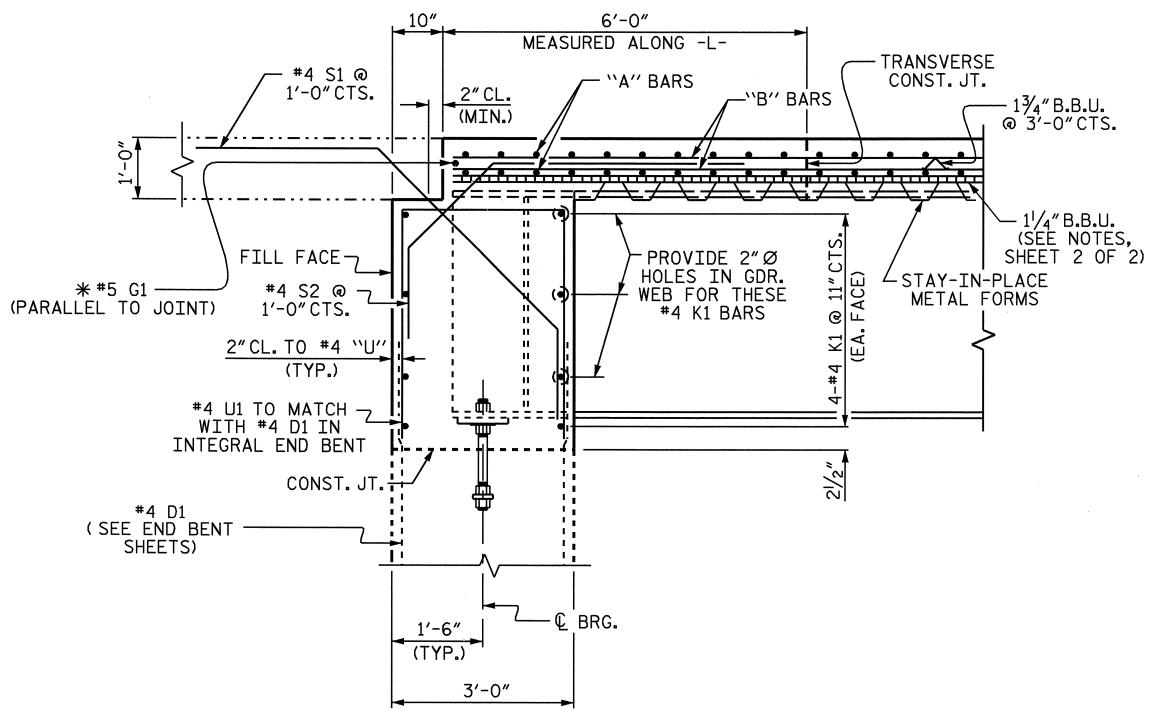
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1			3			TOTAL SHEETS
2			4			25

DRAWN BY : \_\_\_\_\_\_ D. G. ELY \_\_\_\_\_ DATE : 5/31/06
CHECKED BY : \_\_\_\_\_ T. H. FANG \_\_\_\_\_ DATE : 6/5/06



# TYPICAL SECTION SHOWING ABUTMENT WALL AT END BENT.

SHOWING ABUTMENT WALL AT END BENT. APPROACH SLAB BLOCKOUT & WINGS NOT SHOWN FOR CLARITY.

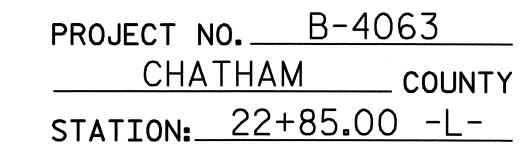


\*\*\*5 GI BAR MAY BE SHIFTED SLIGHTLY, AS NECESSARY TO CLEAR REINFORCING STEEL.

- DATE: 7/07

SECTION THROUGH ABUTMENT @ END BENT

\* \*5 G1 BAR MAY BE SHIFTED SLIGHTLY, AS NECESSARY TO CLEAR REINFORCING STEEL.



SHEET 1 OF 2

DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION

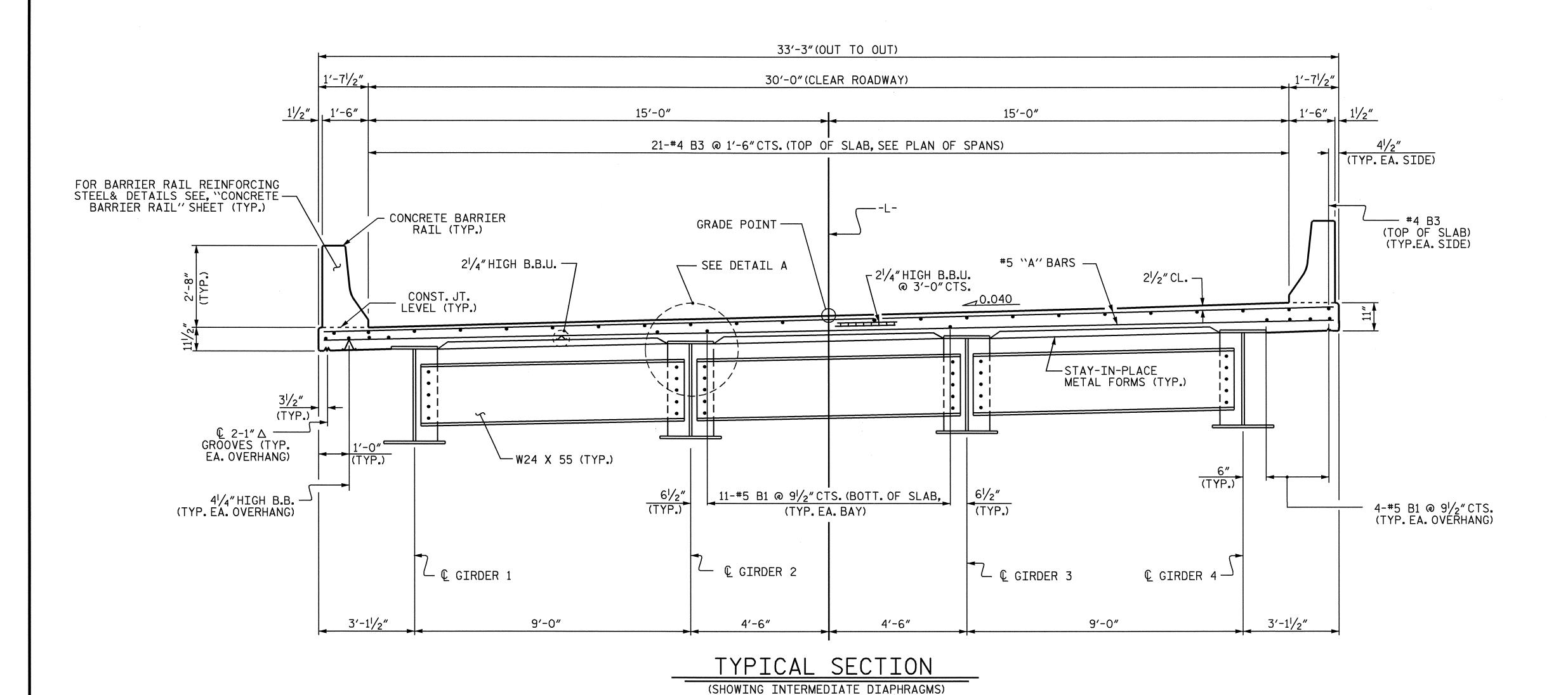
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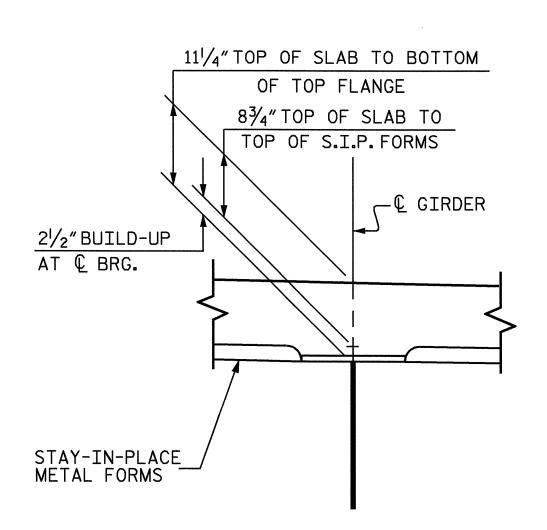
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jwalton

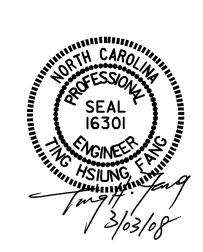
J.L. WALTON

DRAWN BY : \_\_\_





DETAIL A\_\_



# NOTES:

PROVIDE 11/4" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF 'A' BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF 'A' BARS A CLEAR DISTANCE OF 21/2" ABOVE THE TOP OF THE REMOVABLE FORM.

THE CONTRACTOR MAY, WHEN NECESSARY, PROPOSE A SCHEME FOR AVOIDING INTERFERENCE BETWEEN METAL STAY-IN-PLACE FORM SUPPORTS OR FORMS AND GIRDER STIFFENERS OR CONNECTOR PLATES. THE PROPOSAL SHALL BE INDICATED, AS APPROPRIATE, ON EITHER THE STEEL WORKING DRAWINGS OR THE METAL STAY-IN-PLACE FORM WORKING DRAWINGS.

BARRIER RAIL SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

PROJECT NO. B-4063

CHATHAM COUNTY

STATION: 22+85.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

RALEIGH

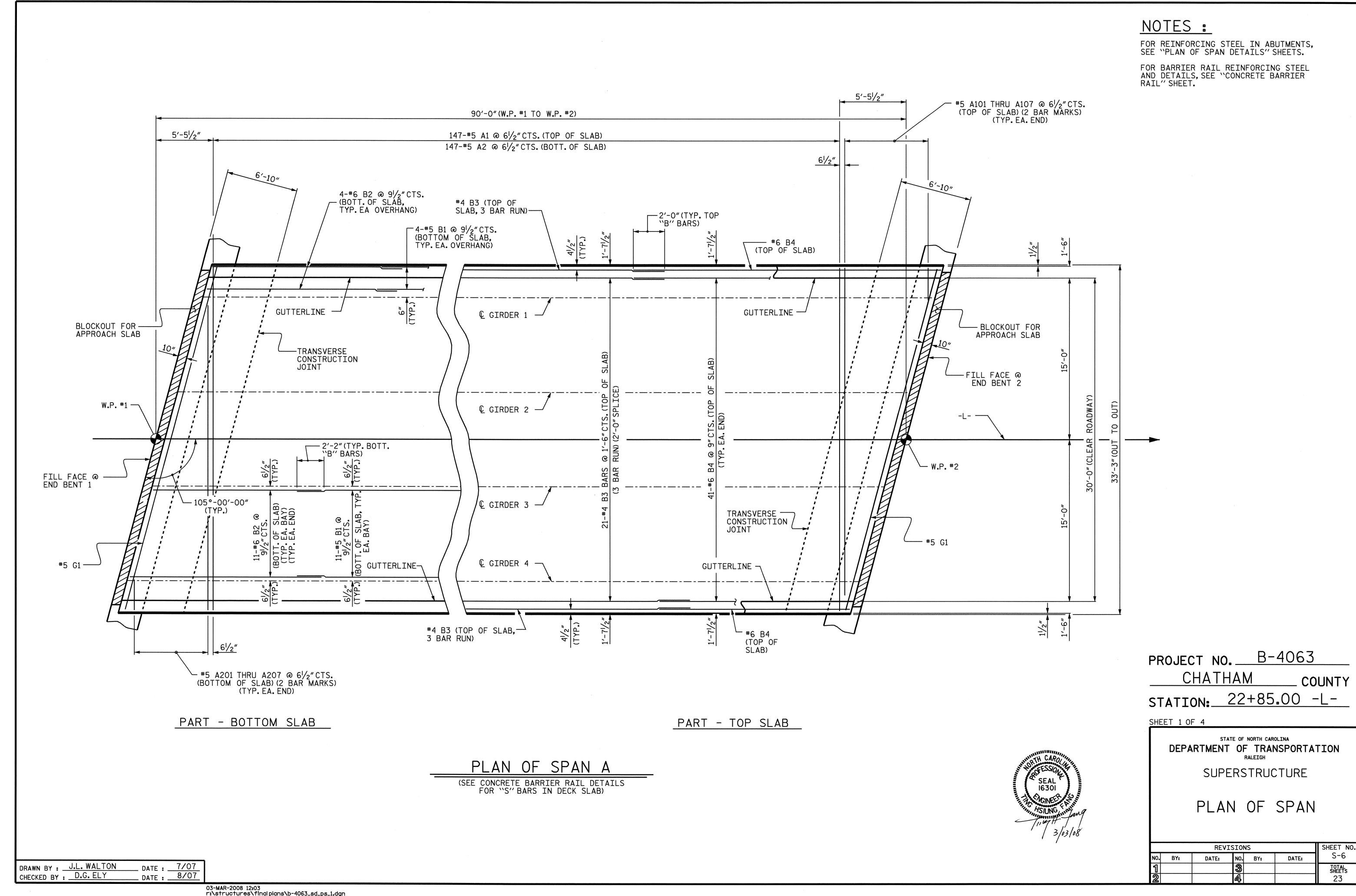
SUPERSTRUCTURE

TYPICAL SECTION

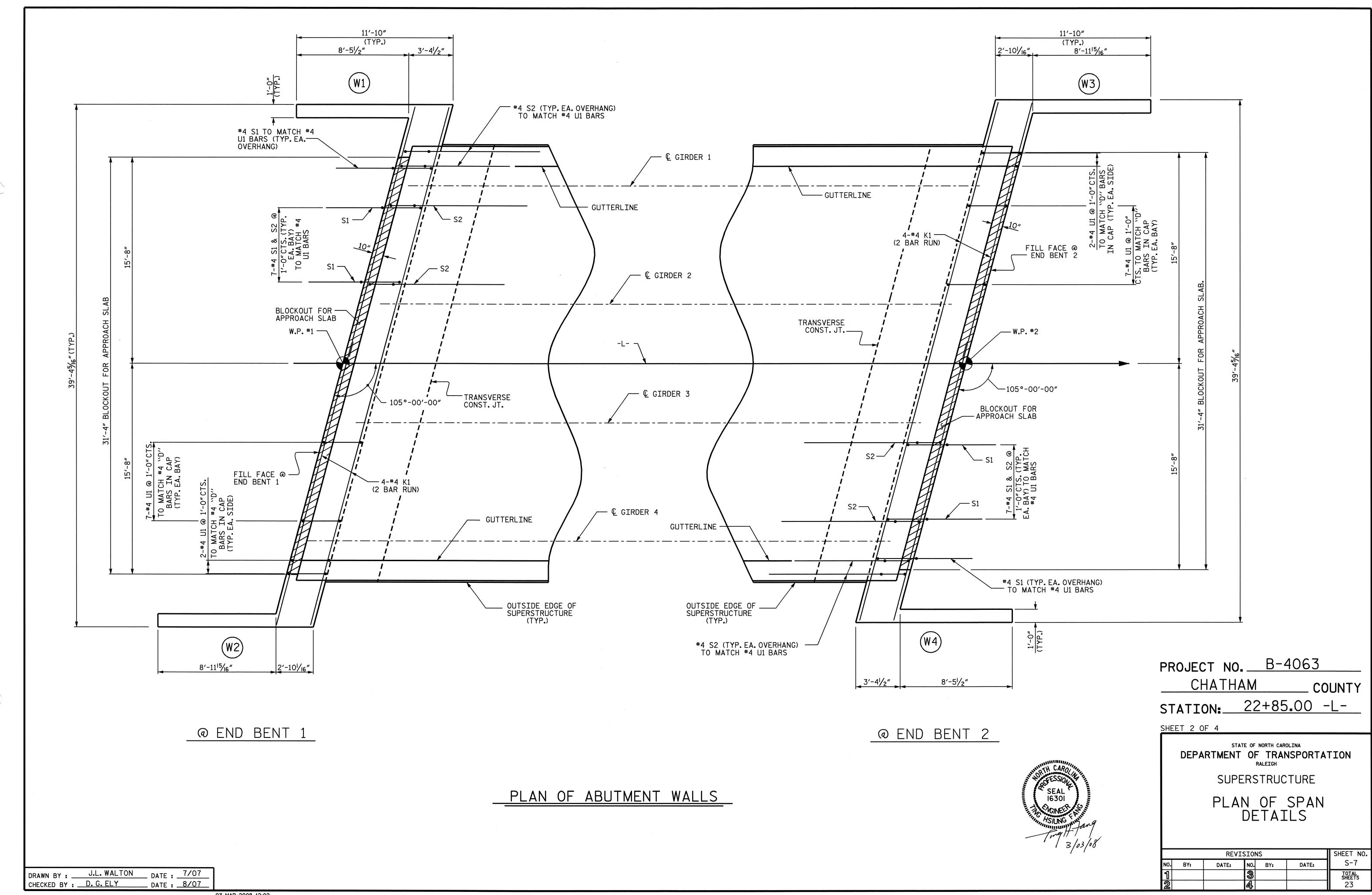
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3	_		TOTAL SHEETS
2			4			23

DRAWN BY: J.L. WALTON DATE: 7/07
CHECKED BY: D.G. ELY DATE: 8/07

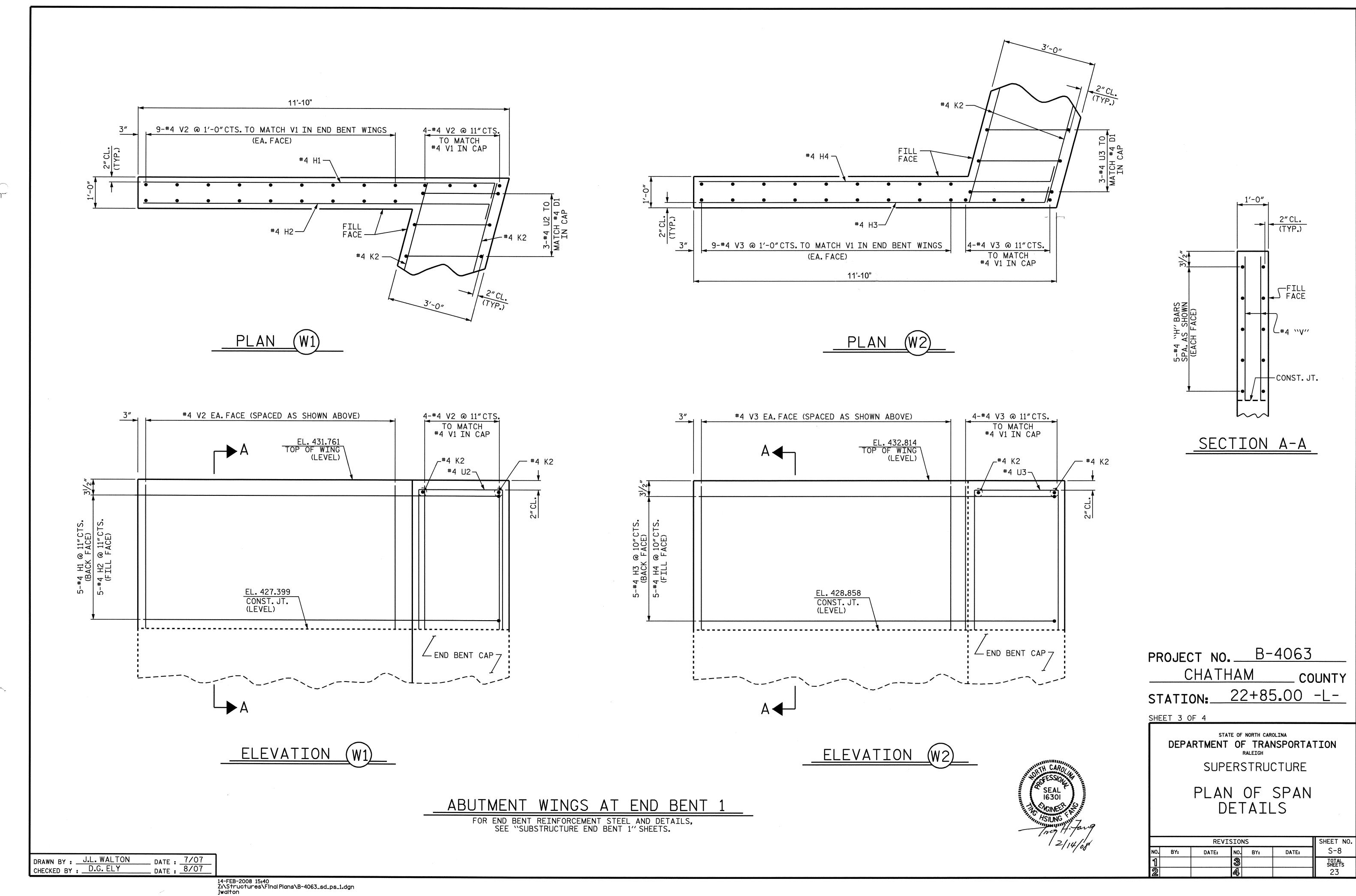
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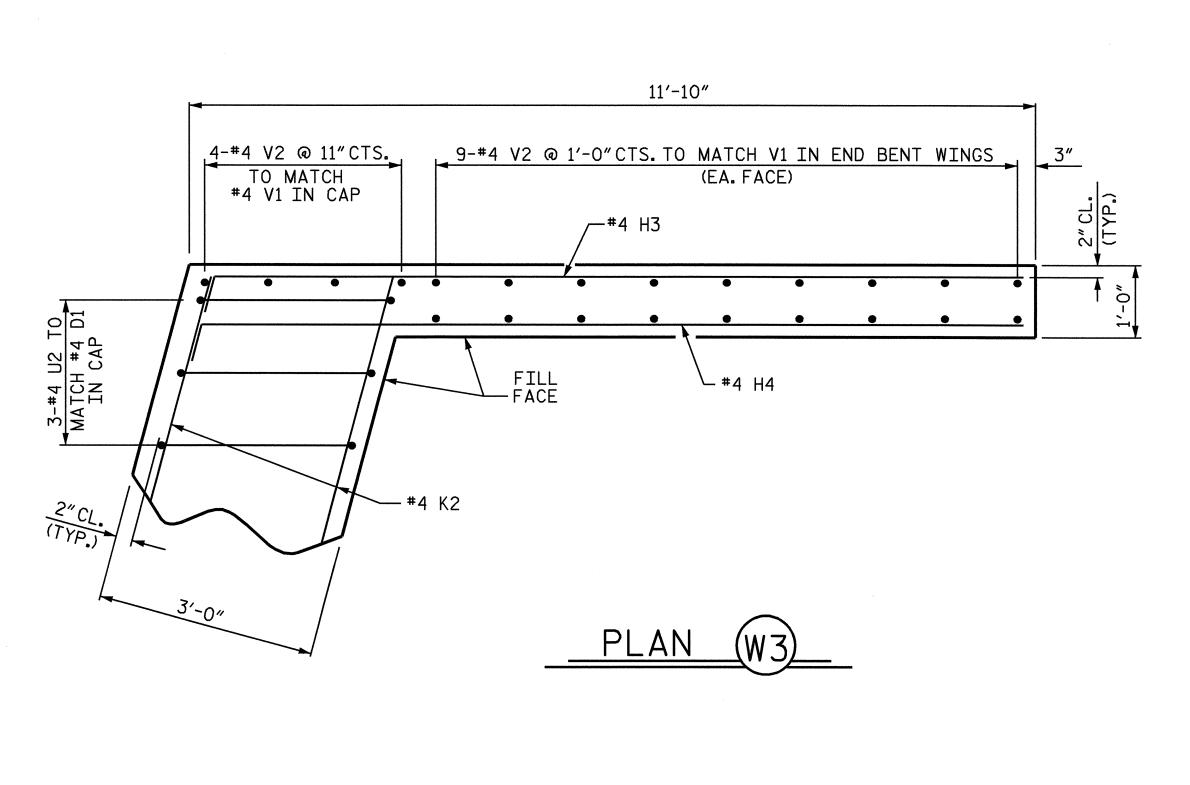


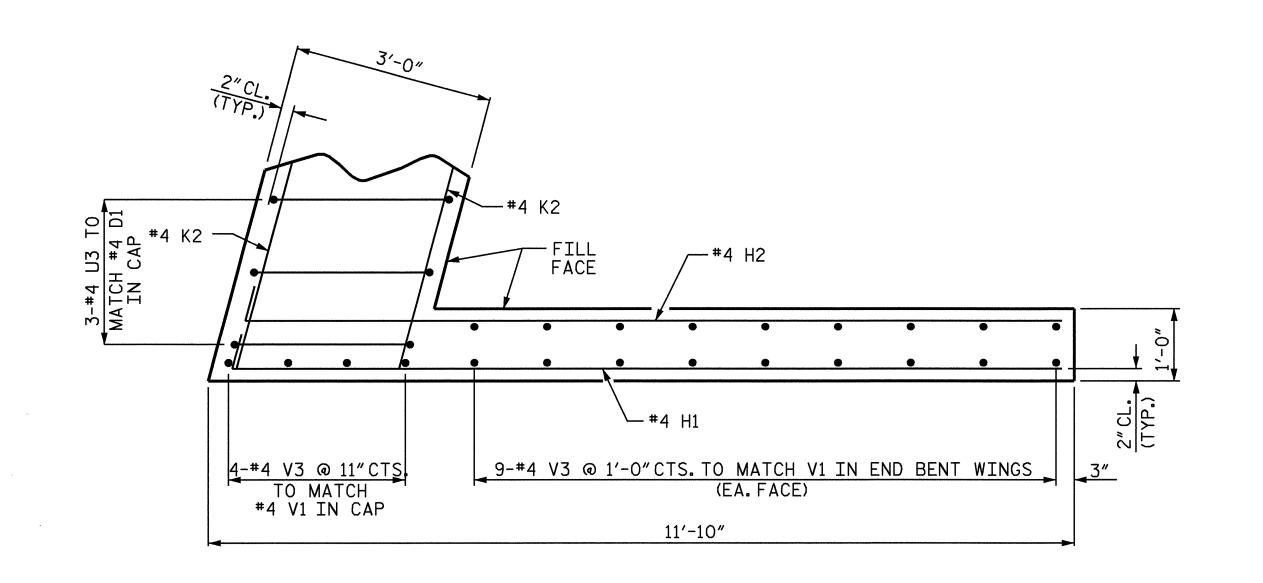
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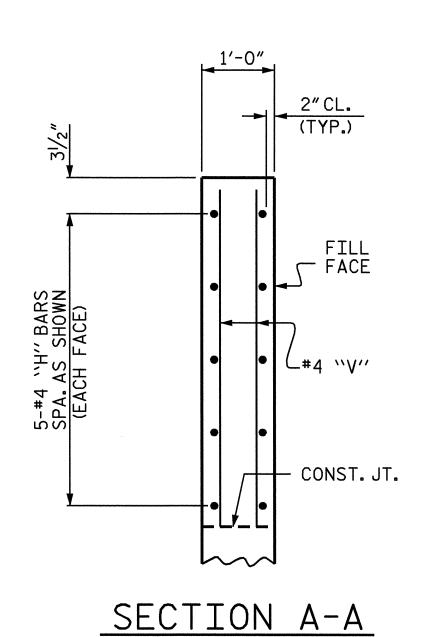


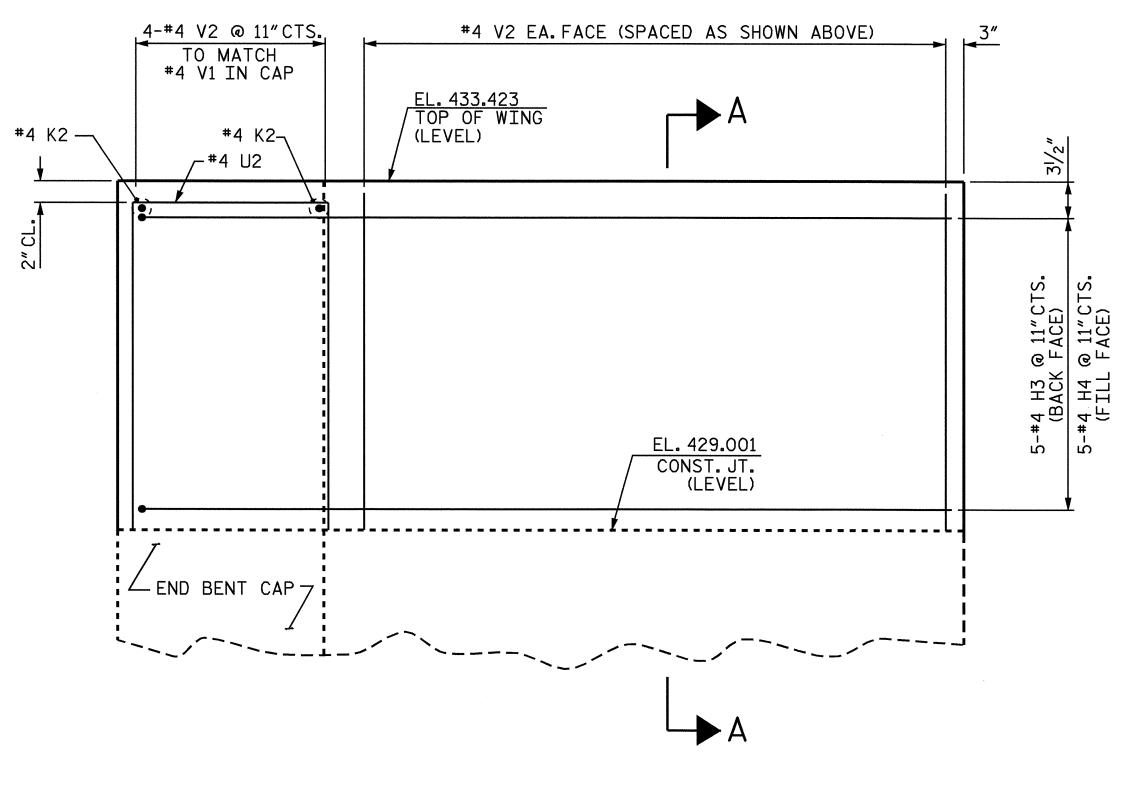
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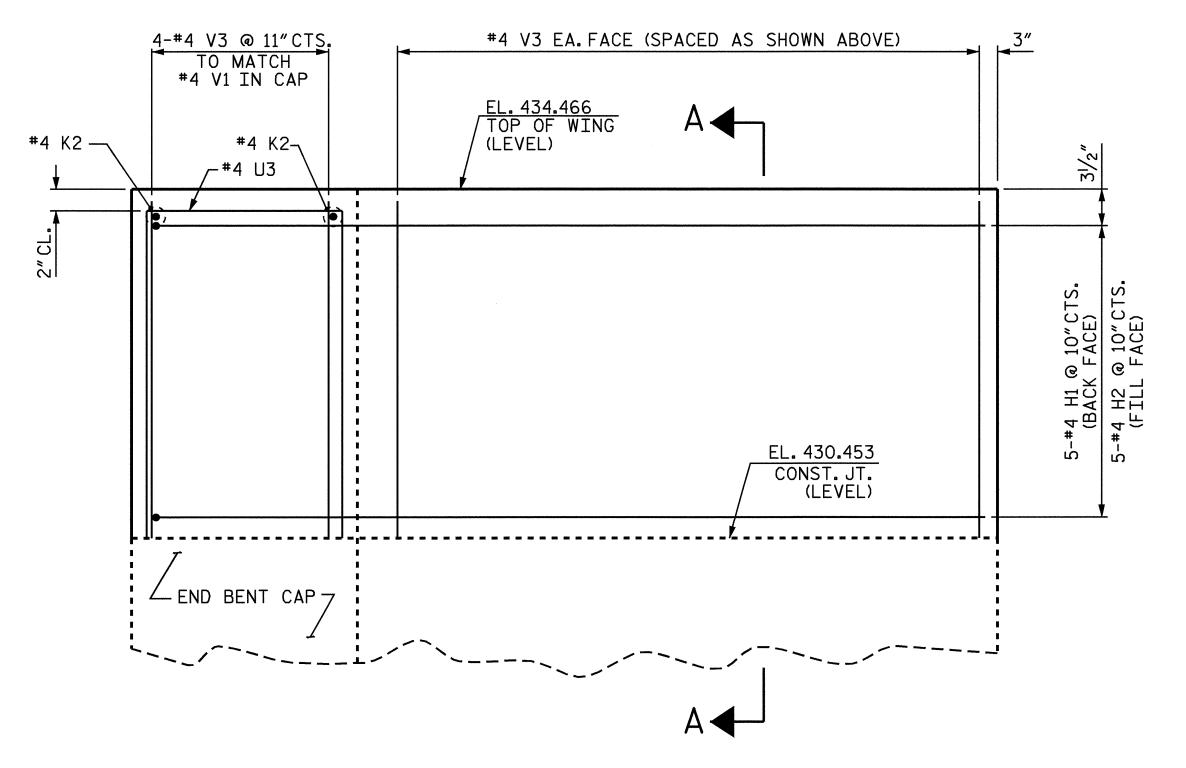








ELEVATION



ELEVATION (W4)

PROJECT NO. B-4063 CHATHAM \_ COUNTY 22+85.00 -L-STATION:\_

SHEET 4 OF 4

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

DETAILS

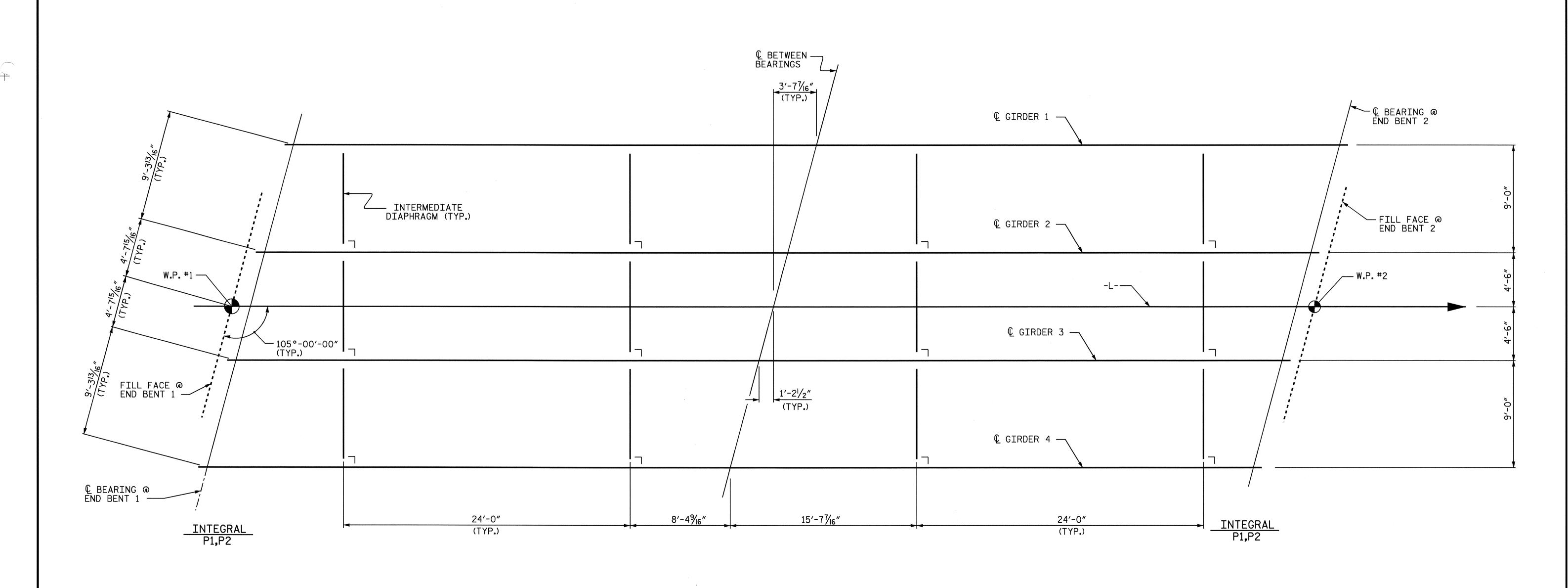
REVISIONS SHEET NO. S-9 NO. BY: DATE: DATE: TOTAL SHEETS 23

ABUTMENT WINGS AT END BENT 2

FOR END BENT REINFORCEMENT STEEL AND DETAILS, SEE "SUBSTRUCTURE END BENT #2" SHEETS.

DRAWN BY : J.L. WALTON \_\_ DATE : 7/07 \_\_ DATE : 8/07 CHECKED BY : D.G. ELY

03-MAR-2008 12:02 r:\structures\finalplans\b-4063\_sd\_ps\_1.dgn



FRAMING PLAN

PROJECT NO. B-4063

CHATHAM COUNTY

STATION: 22+85.00 -L-



STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

FRAMING PLAN

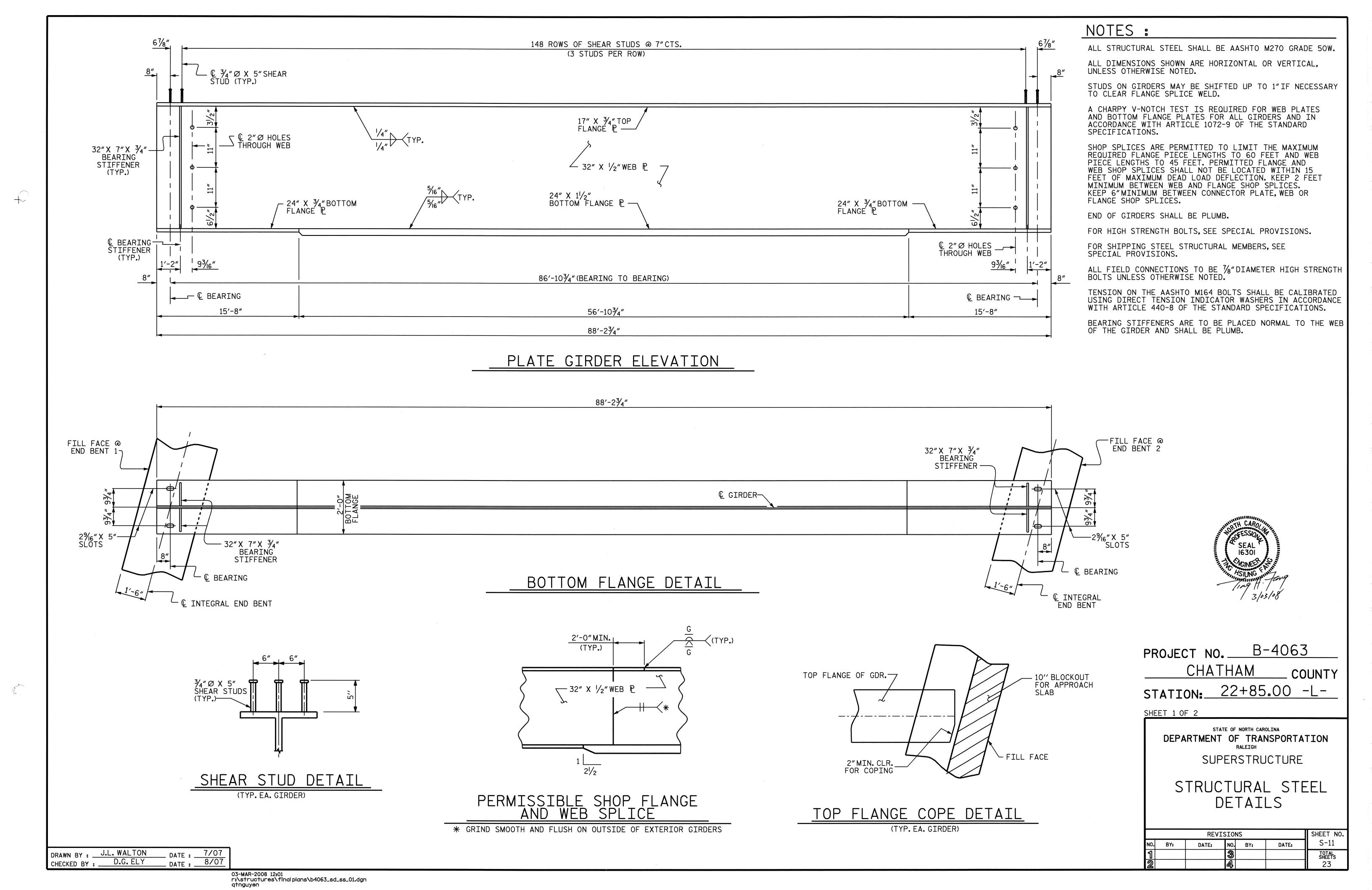
REVISIONS

NO. BY: DATE: NO. BY: DATE: S-10

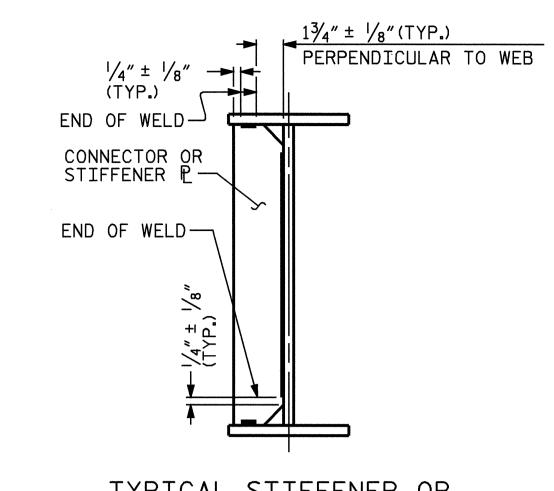
1 3 TOTAL SHEETS
23
23

DRAWN BY: J.L. WALTON DATE: 7/07
CHECKED BY: D.G. ELY DATE: 8/07

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jwalton



		DEAD LOAD DEFLECTION TABLE FO							FOF	OR GIRDERS												
	,				G	IRDER	1					GIRDER 2										
TENTH POINTS	0	.1	.2	<b>.</b> 3	.4	<b>.</b> 5	.6	.7	.8	.9	0	0	.1	.2	<b>.</b> 3	.4	<b>.</b> 5	.6	.7	.8	.9	0
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	0.021	0.040	0.054	0.063	0.066	0.063	0.054	0.040	0.021	0.000	0.000	0.021	0.040	0.054	0.063	0.066	0.063	0.054	0.040	0.021	0.000
* DEFLECTION DUE TO WEIGHT OF SLAB	0.000	0.080	0.176	0.250	0.297	0.313	0.297	0.250	0.176	0.080	0.000	0.000	0.080	0.176	0.249	0.296	0.312	0.296	0.249	0.176	0.080	0.000
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0.000	0.009	0.016	0.022	0.025	0.026	0.025	0.022	0.016	0.009	0.000	0.000	0.008	0.015	0.020	0.024	0.025	0.024	0.020	0.015	0.008	0.000
TOTAL DEAD LOAD DEFLECTION	0.000	0.110	0.232	0.326	0.385	0.405	0.385	0.326	0.232	0.110	0.000	0.000	0.109	0.231	0.323	0.383	0.403	0.383	0.323	0.231	0.109	0.000
VERTICAL CURVE ORDINATE (SAG)	0.000	0.001	0.003	0.004	0.005	0.007	0.008	0.009	0.011	0.008	0.000	0.000	0.001	0.002	0.003	0.004	0.005	0.006	0.007	0.008	0.007	0.000
REQUIRED CAMBER	0	15/ <sub>16</sub> "	23/4"	37/8"	4%6"	43/4"	41/2"	3 <sup>13</sup> / <sub>16</sub> "	25/8"	11/4"	0	0	1 <sup>5</sup> / <sub>16</sub> "	23/4"	3³/ <sub>16</sub> "	4%6"	43/4"	41/2"	3 <sup>13</sup> / <sub>16</sub> "	211/16"	11/4"	0
					G:	IRDER	3		,							GIRD	ER 4					
TENTH POINTS	0	.1	.2	.3	.4	<b>.</b> 5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	<b>.</b> 5	.6	.7	.8	.9	0
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	0.021	0.040	0.054	0.063	0.066	0.063	0.054	0.040	0.021	0.000	0.000	0.021	0.040	0.054	0.063	0.066	0.063	0.054	0.040	0.021	0.000
*DEFLECTION DUE TO WEIGHT OF SLAB							***************************************													0.176		
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL																	<del> </del>			0.016		
TOTAL DEAD LOAD DEFLECTION	0.000	0.109	0.231	0.323	0.383	0.403	0.383	0.323	0.231	0.109	0.000	0.000	0.110	0.232	0.326	0.385	0.405	0.385	0.326	0.232	0.110	0.000
VERTICAL CURVE ORDINATE (SAG)	0.000	0.001	0.002	0.002	0.003	0.004	0.005	0.005	0.006	0.005	0.000	0.000	0.001	0.001	0.002	0.002	0.003	0.003	0.004	0.004	0.004	0.000
REQUIRED CAMBER	0	1 <sup>5</sup> / <sub>16</sub> "	23/4"	31/8"	49/16"	413/16"	49/16"	3 <sup>13</sup> /16"	211/16"	11/4"	0	0	1 <sup>5</sup> / <sub>16</sub> "	23/4"	37/8″	45/8"	413/16"	49/16"	37/8"	23/4"	11/4"	0

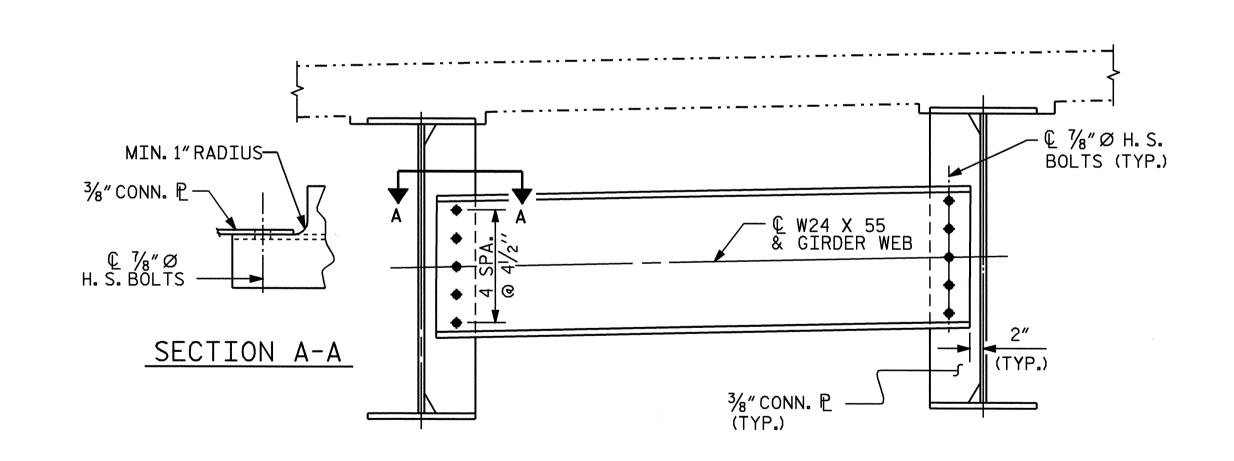


TYPICAL STIFFENER OR CONNECTIONS

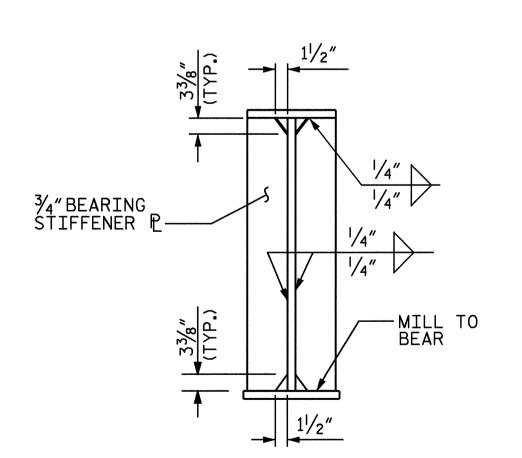
WELD TERMINATION DETAILS

\* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.

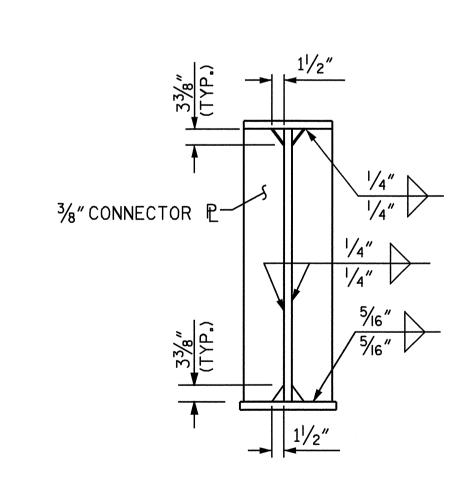
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "REQUIRED CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).



TYPICAL INTERMEDIATE DIAPHRAGM



BEARING STIFFENER



CONNECTOR PLATE DETAILS



PROJECT NO. B-4063

CHATHAM COUNTY

STATION: 22+85.00 -L-

SHEET 2 OF 2

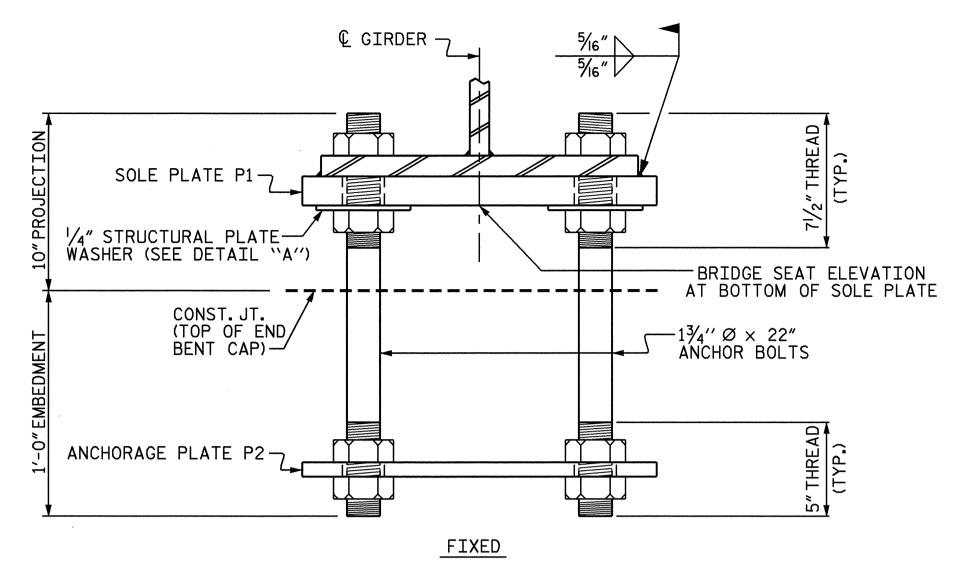
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

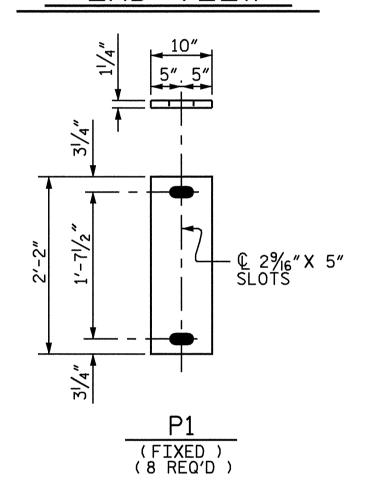
STRUCTURAL STEEL DETAILS

		SHEET NO.				
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			23

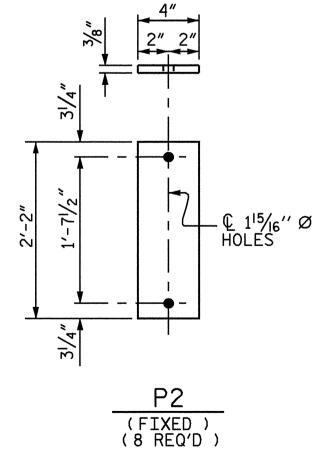
DRAWN BY: J.L. WALTON DATE: 7/07
CHECKED BY: D.G. ELY DATE: 8/07



# END VIEW



# SOLE PLATE DETAILS



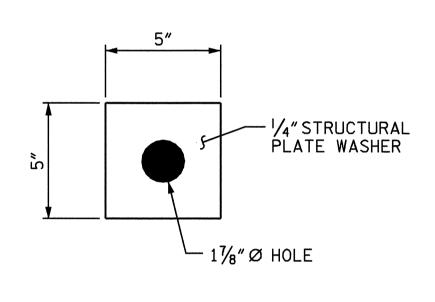
ANCHORAGE PLATE DETAILS

# NOTES

FOR AASHTO M270 GRADE 50W STRUCTURAL STEEL, SOLE PLATE SHALL BE AASHTO M270 GRADE 50W AND SHALL NOT BE GALVANIZED. ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. SHOP DRAWINGS ARE NOT REQUIRED FOR ANCHOR BOLTS, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.



\_\_DETAIL A

PROJECT NO. B-4063 CHATHAM \_\_\_ COUNTY STATION: 22+85.00 -L-

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION
RALEIGH

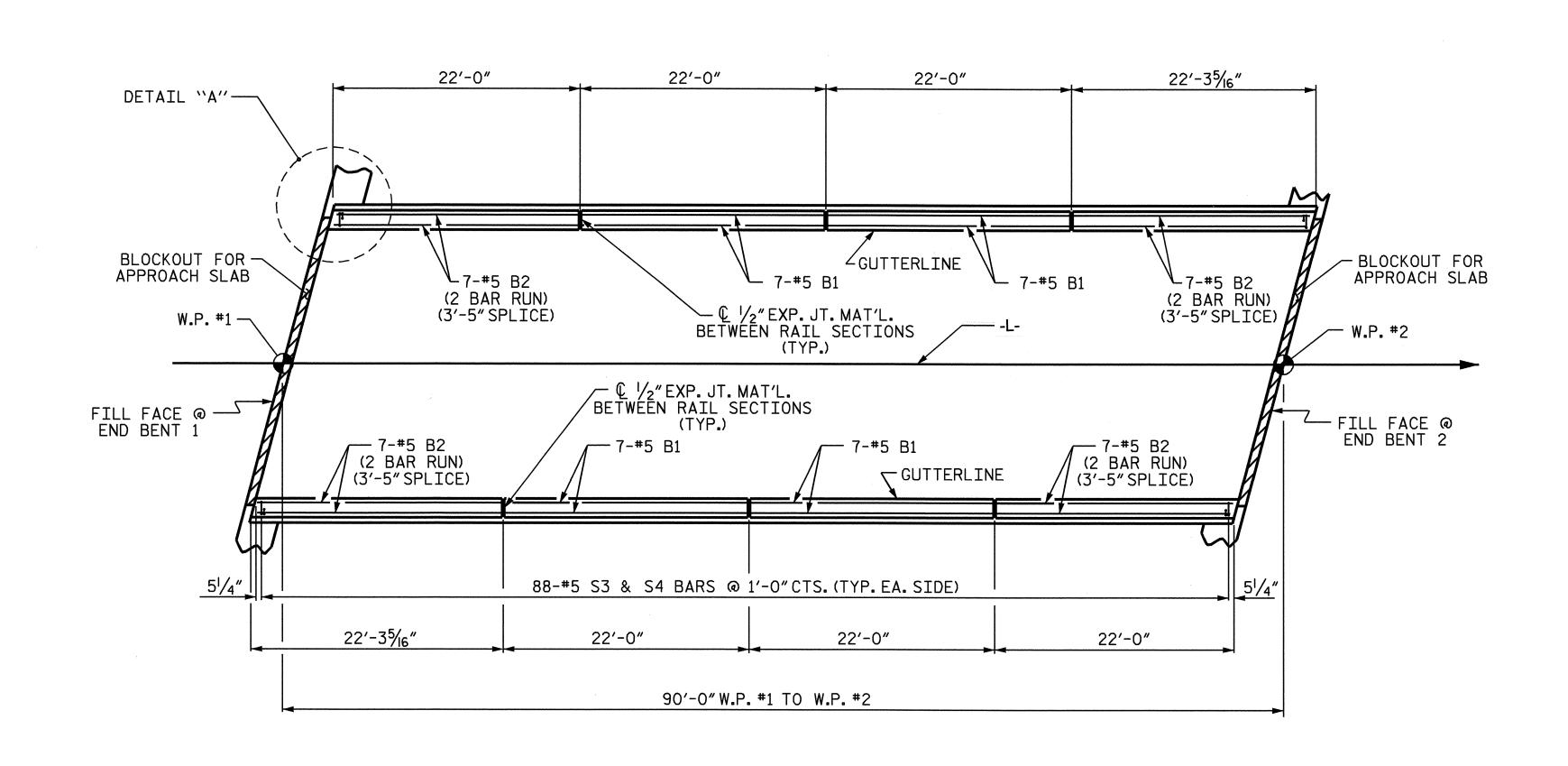
SUPERSTRUCTURE BEARING DETAILS



		REV:	ISION	S		SHEET NO.
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1			3		,	TOTAL SHEETS
2			4		·	23

DRAWN BY: J.L. WALTON DATE: 7/07
CHECKED BY: D.G. ELY DATE: 8/07

14-FEB-2008 15:42 Z:\Structures\FinalPlans\b4063\_sd\_brg\_01.dgn jwalton

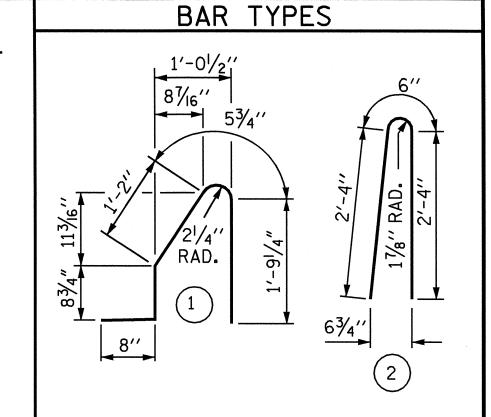


# NOTES

THE BARRIER RAIL SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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



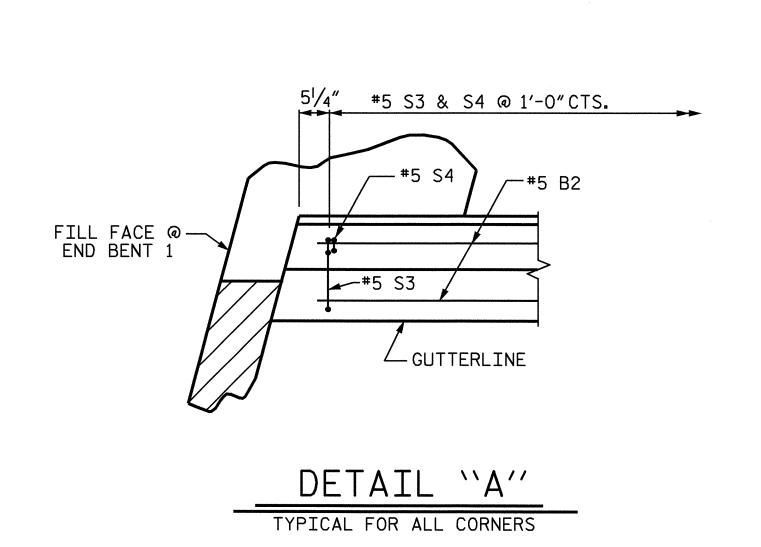
ALL BAR DIMENSIONS ARE OUT TO OUT

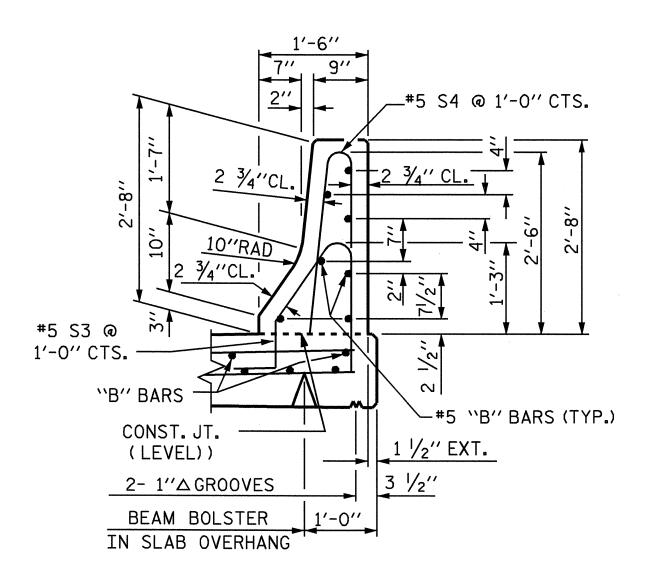
7LL L	MI DI	INITIAOT	ONS AI	(L OUT T	וטט כ
	BIL	L OF	MA	TERIAL	
FOF	CONC	RETE E	3ARRIE	ER RAIL C	NLY
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
<b>∗</b> B1	28	#5	STR	21'-7"	630
<b>∗</b> B2	56	#5	STR	12'-8"	740
* S3	176	#5	1	4'-10''	887
* S4	176	#5	2	5′-2′′	948

**★** EPOXY COATED 3,205 LBS. REINFORCING STEEL CLASS AA CONCRETE 17.7 CU. YDS.

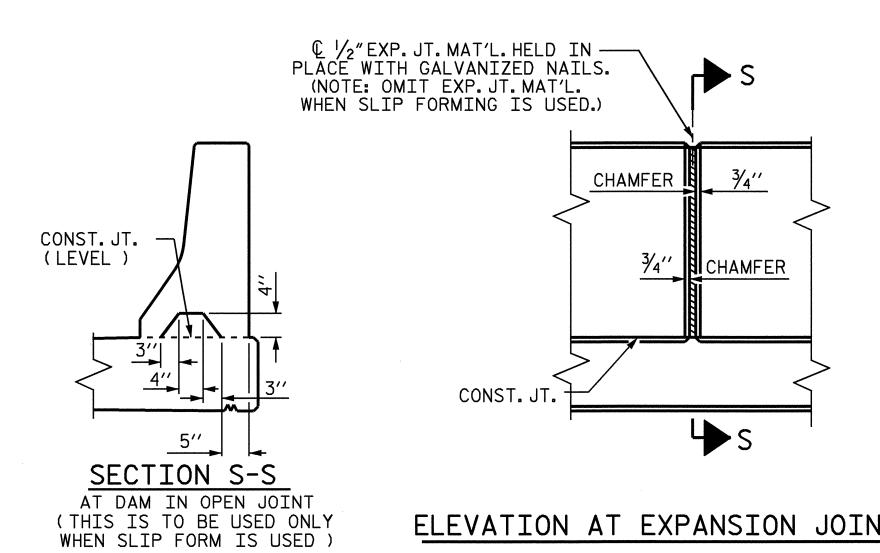
CONCRETE BARRIER RAIL 176.55 LIN. FT.

# PLAN OF BARRIER RAIL

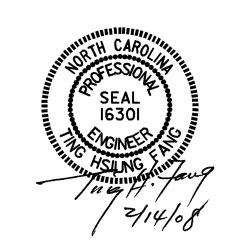




SECTION THRU RAIL



ELEVATION AT EXPANSION JOINTS BARRIER RAIL DETAILS



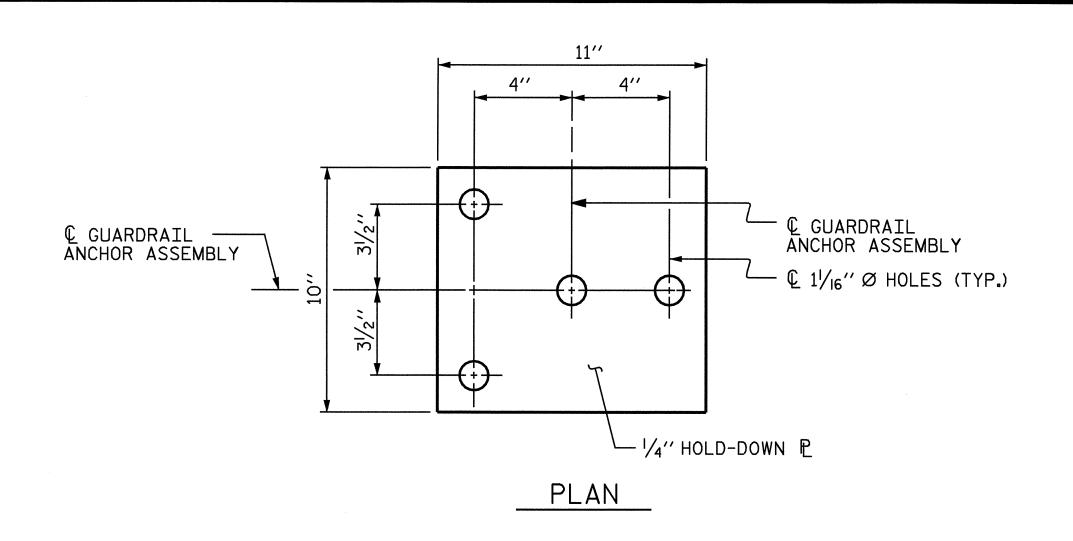
PROJECT NO. B-4063 CHATHAM \_ COUNTY STATION: 22+85.00 -L-

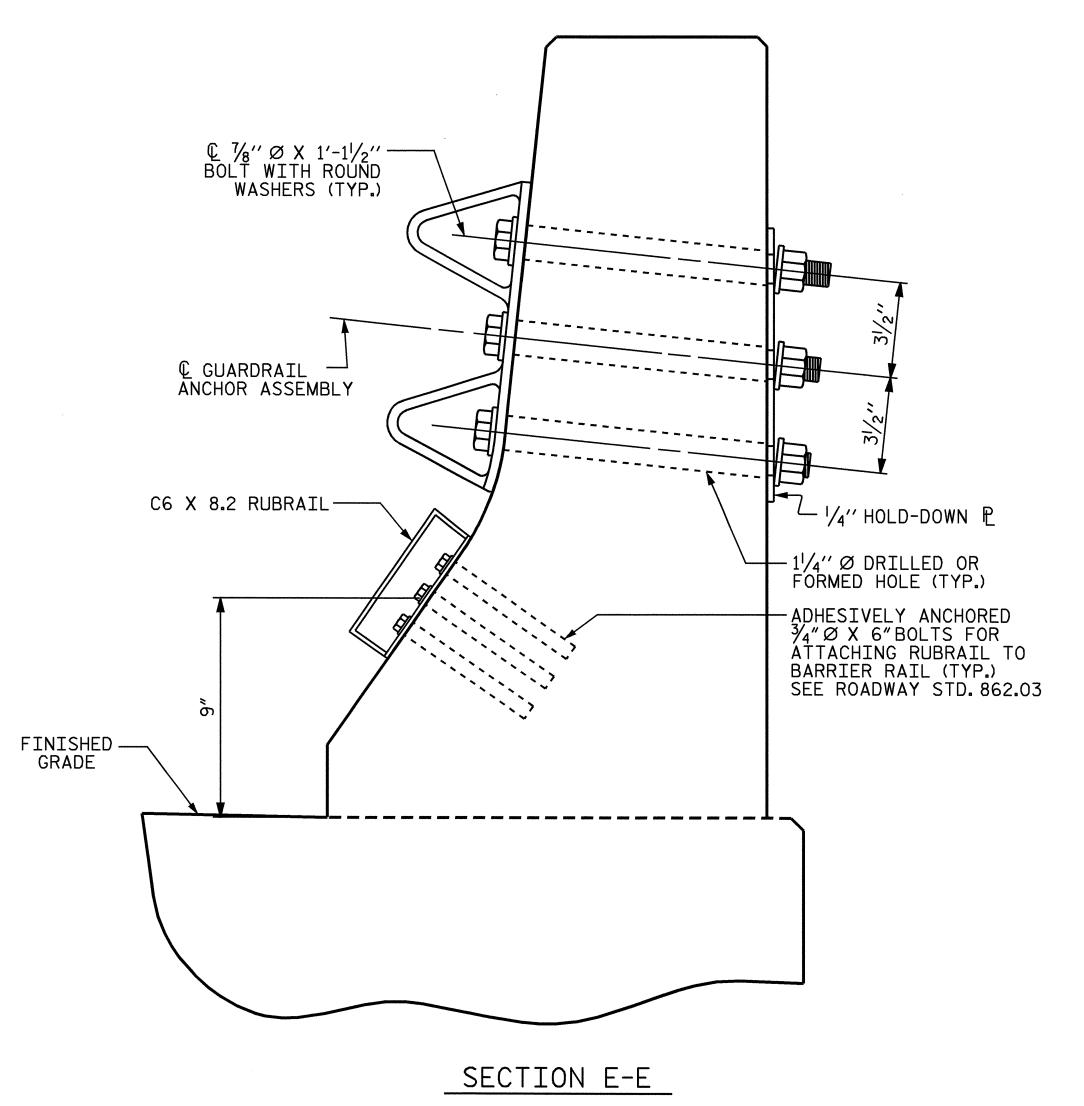
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIER RAIL

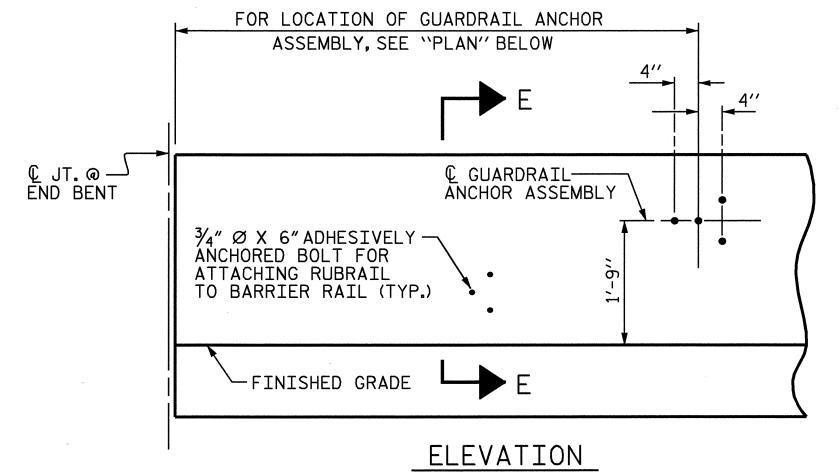
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10.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			23

ASSEMBLED BY: J.L. WALTON DATE: 7/07 CHECKED BY: D.G. ELY DATE: 8/07 DRAWN BY: ARB 5/87 REV. 8/16/99 RWW/LES REV. 10/17/00 REV. 5/7/03R RWW/JTE

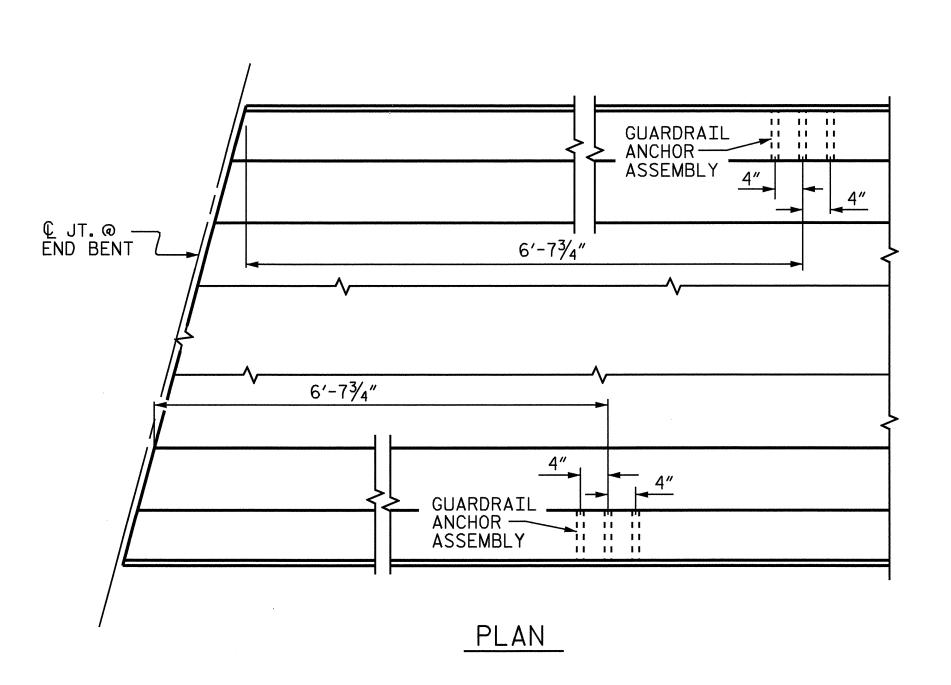




GUARDRAIL ANCHOR ASSEMBLY DETAILS



FOR LOCATION OF RUBRAIL. SEE ROADWAY STD. 862.03



LOCATION OF ANCHORS FOR GUARDRAIL

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

# NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A  $1/4^{\prime\prime}$  HOLD DOWN PLATE AND 4 -  $1/8^{\prime\prime}$  Ø BOLTS WITH NUTS AND WASHERS, RUBRAIL, AND ADHESIVELY ANCHORED BOLTS.

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

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 1/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

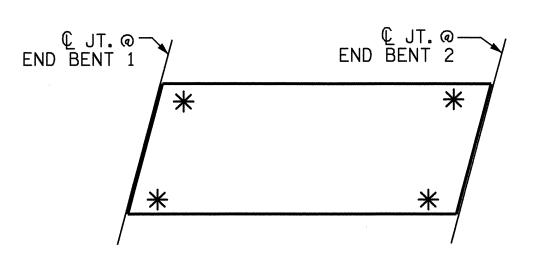
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

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

THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 3/4" Ø X 6"BOLTS WITH WASHERS.LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE3/4" Ø BOLT IS 12 KPI.FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS. SEE ROADWAY STANDARD 862.03 FOR DETAILS AND LOCATION OF THE RUBRAIL.



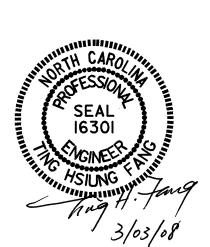
SKETCH SHOWING POINTS OF ATTACHMENTS

\* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. B-4063

CHATHAM COUNTY

STATION: 22+85.00 -L-



DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

GUARDRAIL ANCHORAGE FOR BARRIER RAIL

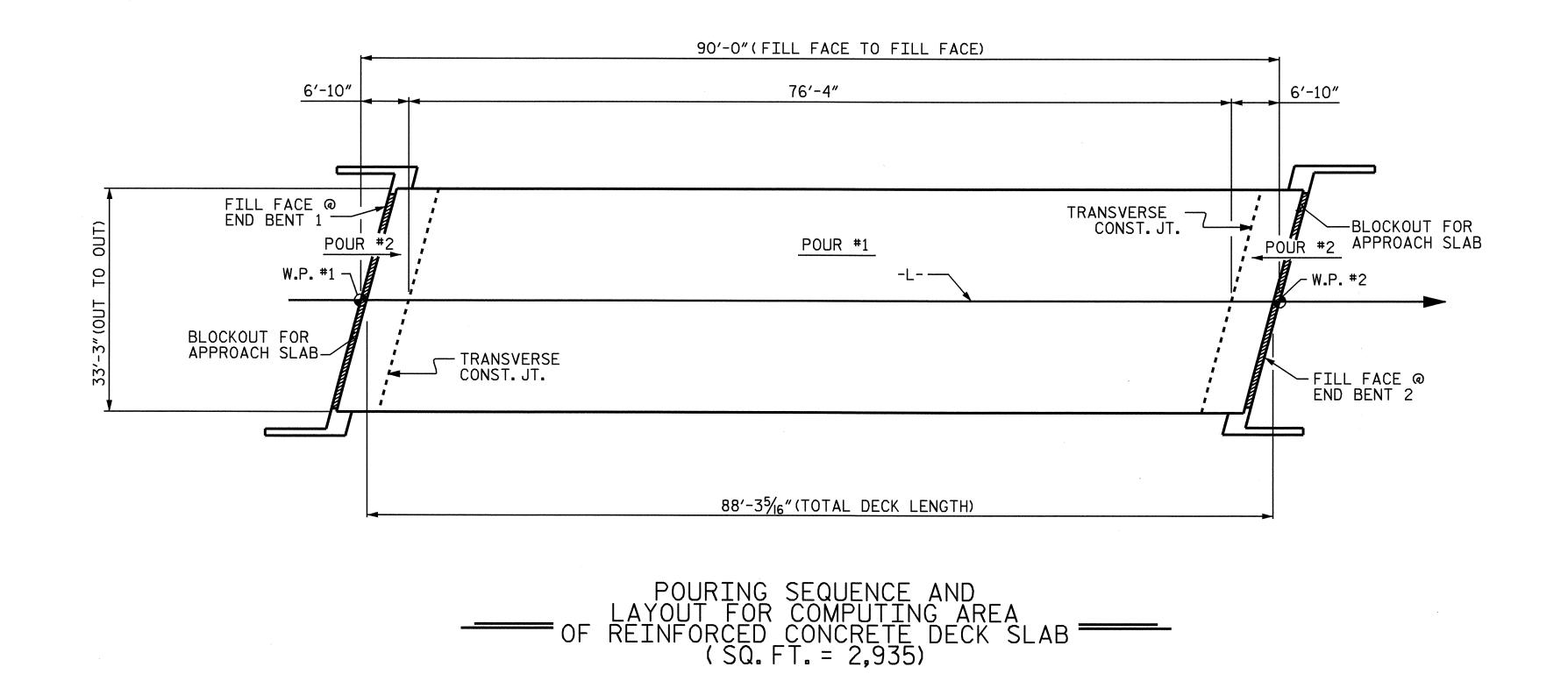
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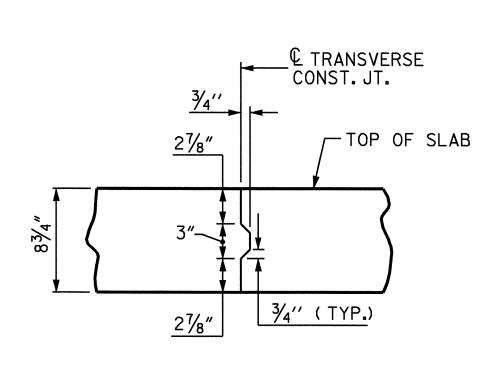
ASSEMBLED BY: J.L. WALTON DATE: 7/07 CHECKED BY: D.G. ELY DATE: 8/07

DRAWN BY: TLA 5/06 ADDED 5/1/06

CHECKED BY: GM 5/06

03-MAR-2008 12:00
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qtnguyen





# TRANSVERSE CONSTRUCTION JOINT DETAIL

NOTE: REINFORCING STEEL IN SLAB NOT SHOWN. LONGITUDINAL REINFORCING STEEL SHALL BE CONTINUOUS THRU JOINT

SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS									
BAR SIZE	SUPERSTF EXCEPT A SLABS, PA AND BARR	RUCTURE PPROACH ARAPET,	APPROAC	PARAPET AND BARRIER					
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	RAIL				
#4	2'-0"	1'-9"	2'-0"	1'-9"	2'-9"				
#5	2'-6"	2'-2"	2'-6"	2'-2"	3′-5″				
#6	3′-0″	2'-7"	3′-10″	2'-7"	4'-4"				
#7	5′-3″	3′-6″							
#8	6'-10"	4'-7"							

	BILL	. OF	MA	ΓERIAL					
SPAN A									
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT				
<b>∗</b> A1	147	#5	STR	32′-11″	5047				
A2	147	#5	STR	32′-11″	5047				
* A101	4	#5	STR	28'-11"	121				
* A102	4	#5	STR	24'-11"	104				
* A103	4	#5	STR	20'-10"	87				
* A104	4	#5	STR	16'-9"	70				
<b>★</b> A105	4	#5	STR	12'-9"	53				
<b>∗</b> A106		#5	STR	8′-8″	36				
* A107	4	#5	STR	4′-8″	19				
A201	4	#5	STR	28′-11″	121				
A202	4	#5	STR	24'-11"	104				
A203	4	#5	STR	20'-10"	87				
A203	4	#5	STR	16'-9"	70				
A205	4	#5	STR	12'-9"	53				
A206	4	#5	STR	8'-8"	36				
A207	4	#5	STR	4'-8"	19				
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,									
B1	41	#5	STR	56′-8″	2423				
B2	82	#6	STR	17′-10″	2196				
<b>∗</b> B3	69	#4	STR	20'-10"	960				
<b>∗</b> B4	86	#6	STR	17′-10″	2304				
<b>₩</b> G1	2	#5	STR	34'-1"	71				
H1	10	#4	1	12'-1"	81				
H2	10	#4	1	11'-11"	80				
H3	10	#4	2	12'-2"	81				
H4	10	#4	2	12'-4"	82				
	10	· · · · · · · · · · · · · · · · · · ·			02				
K1	32	#4	STR	21'-0"	449				
K2	8	#4	STR	3′-9″	20				
<b>∗</b> S1	46	#4	3	9′-6″	292				
* S2	50	#4	3	11'-8"	390				
1 11	ΕΛ	# /	Λ	0/.0//	202				
U1 U2	50 6	#4	4	8'-9" 11'-1"	292				
U2 U3	6 6	#4	4	10'-3"	44				
UJ	U U	4	7	10 -2	1 41				
V2	44	#4	STR	4′-2″	122				
V3	44	#4	STR	3'-9"	110				
REIN	FORCING	STEE	L		558 LBS				
* EPOX	Y COATE	ED REI	NF. ST	EEL = 9,	554 LBS				

GE FLOORS		CLASS AA CONCRETE
OL I LOUNS		(CU.YDS.)
738 SQ.FT.	SPAN A	
2,374 SQ.FT.	POUR #1	73.1
3,112 <b>SQ.FT.</b>	POUR #2	55.1
	TOTALS	128.2

11'-5" 11'-3" 21/16" 11'-6" 11'-8" 2 21/16" 4'-0" 8'-0" 1'-63/8" U1, U2 & U3 2'-9" ALL BAR DIMENSIONS ARE OUT TO OUT

BAR TYPES

128.2	11,558		9,554
PR	DJECT N	<b>1</b>	B-4063
1 111	JULUI 14	J	
	CHATI	MAH	COUNTY

STATION: 22+85.00 -L-

DEPARTMENT OF TRANSPORTATION

STATE OF NORTH CAROLINA

REINFORCING

STEEL

(LBS.)

11,558

EPOXY COATED REINFORCING STEEL

(LBS.)

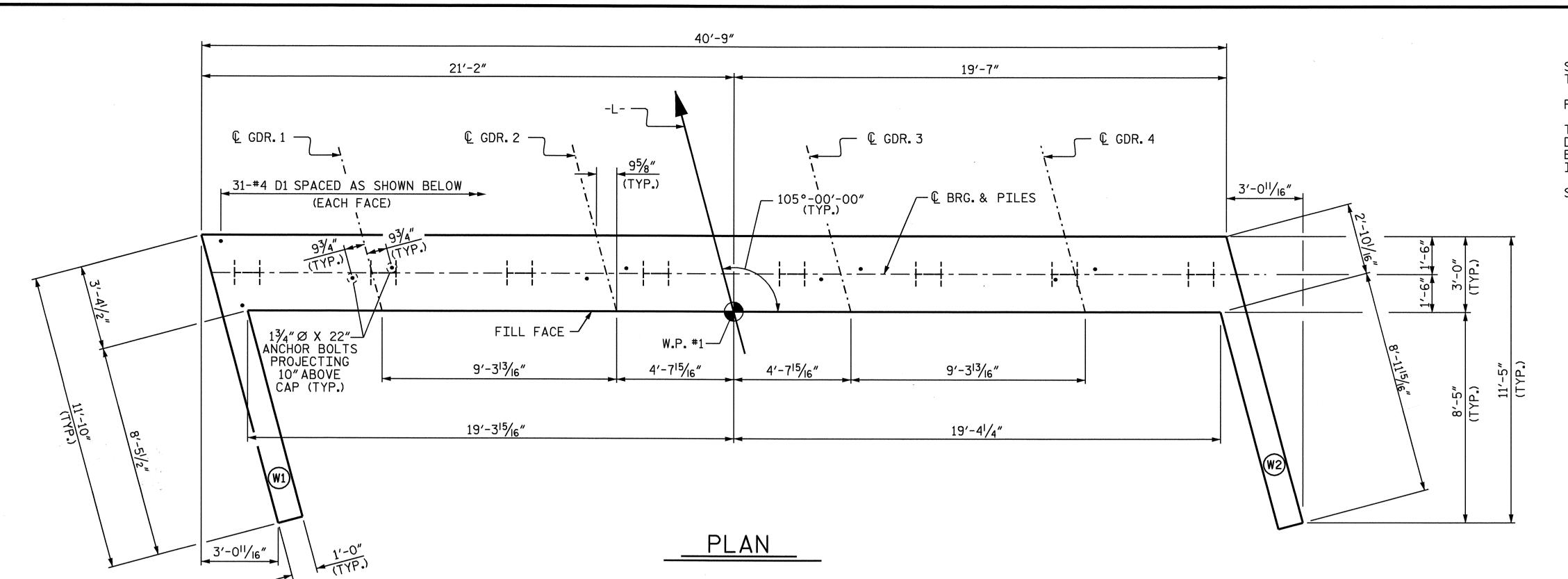
9,554

STANDARD SUPERSTRUCTURE BILL OF MATERIAL

SHEET NO. REVISIONS S-16 NO. BY: DATE: DATE: BY: TOTAL SHEETS 23

	RAPET, ER RAIL	APPROAC	H SLABS	AND BARRIER	*EPOXY COATED REINF.STEEL = 9
U	NCOATED	EPOXY COATED	UNCOATED	RAIL	
1'-9	}"	2'-0"	1'-9"	2'-9"	GROOVING BRIDGE FLO
2'-2		2'-6"	2'-2"	3′-5″	APPROACH SLABS 738 S
2'-	<u>'                                    </u>	3′-10″	2'-7"	4'-4"	BRIDGE DECK 2,374 S
	'-6" '-7"				TOTAL 3,112 S

ASSEMBLED BY : J.L. WALTON CHECKED BY : D.G. ELY DATE: 7/07 DATE: 8/07 EEM/GRP RWW/LES TLA/GM REV. 6/1/94 REV. 8/16/99 REV. 5/1/06 DRAWN BY: JMB 5/87 CHECKED BY: SJD 9/87



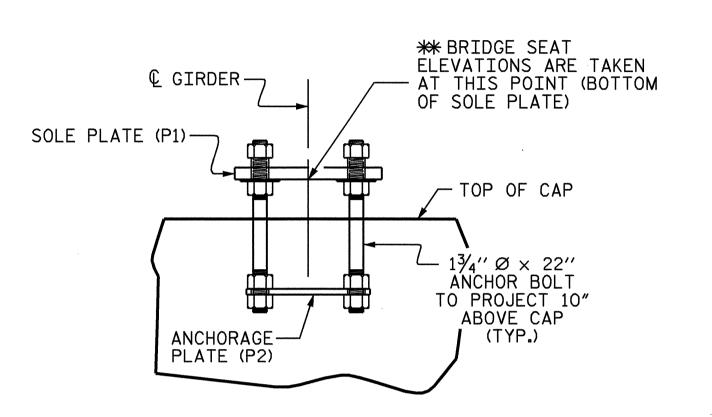
<u>NOTES</u>

STIRRUPS AND #4 B2 BARS OVER PILES IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

FOR PILE SPLICE DETAILS, SEE SHEET 2 OF 2.

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 MY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

SEE SUPERSTRUCTURE SHEETS FOR ABUTMENT DETAILS.



DETAIL "A"

TOP OF PILE ELEVATIONS

PILE ELEVATION

P) 426.426

P2 426.620

P3 426.814

P4 427.008

P5 427.202

P6 427.396

P7 427.590

P8 427.784

PROJECT NO. B-4063

CHATHAM COUNTY

STATION: 22+85.00 -L
SHEET 1 OF 2

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

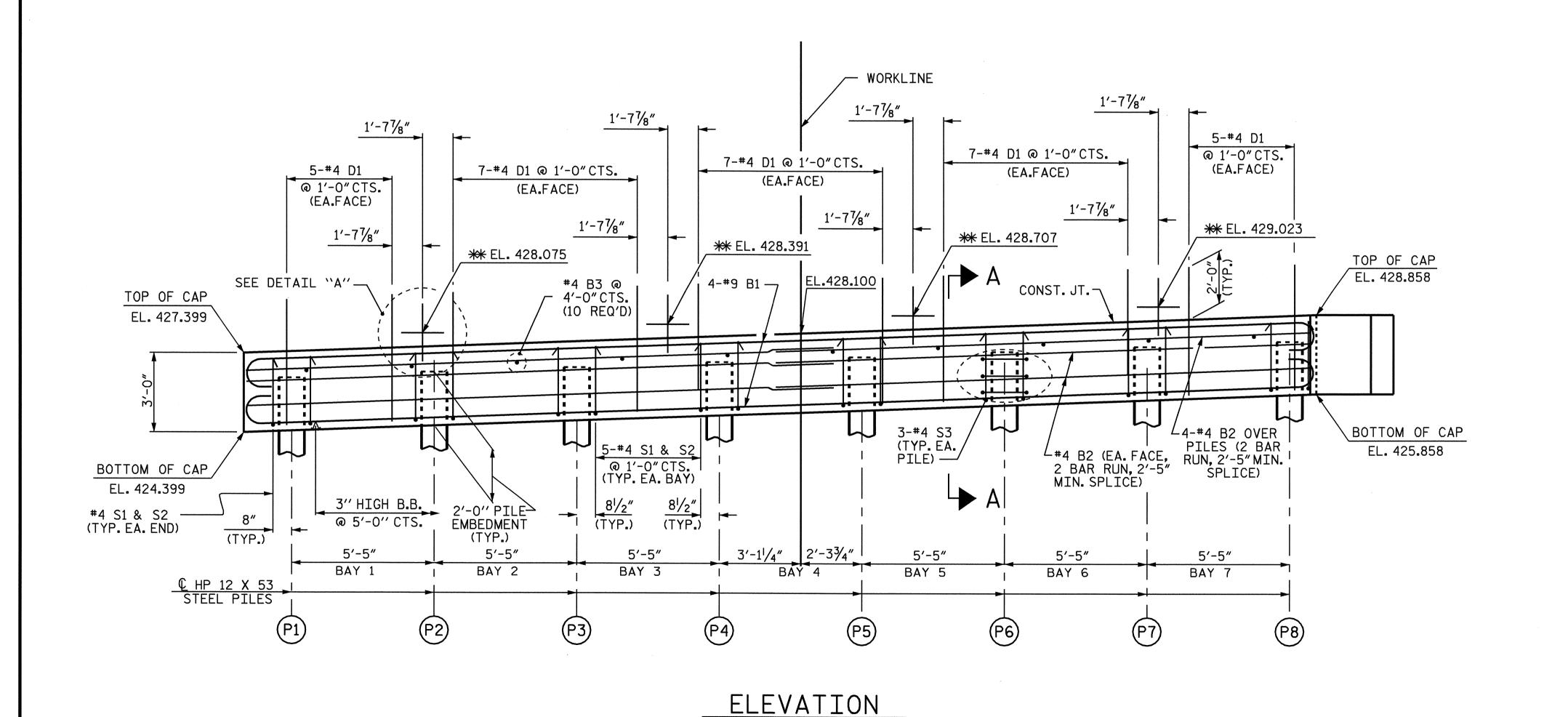
END BENT 1

INTEGRAL

REVISIONS

DATE: NO. BY: DATE: SHEET NO. S-17

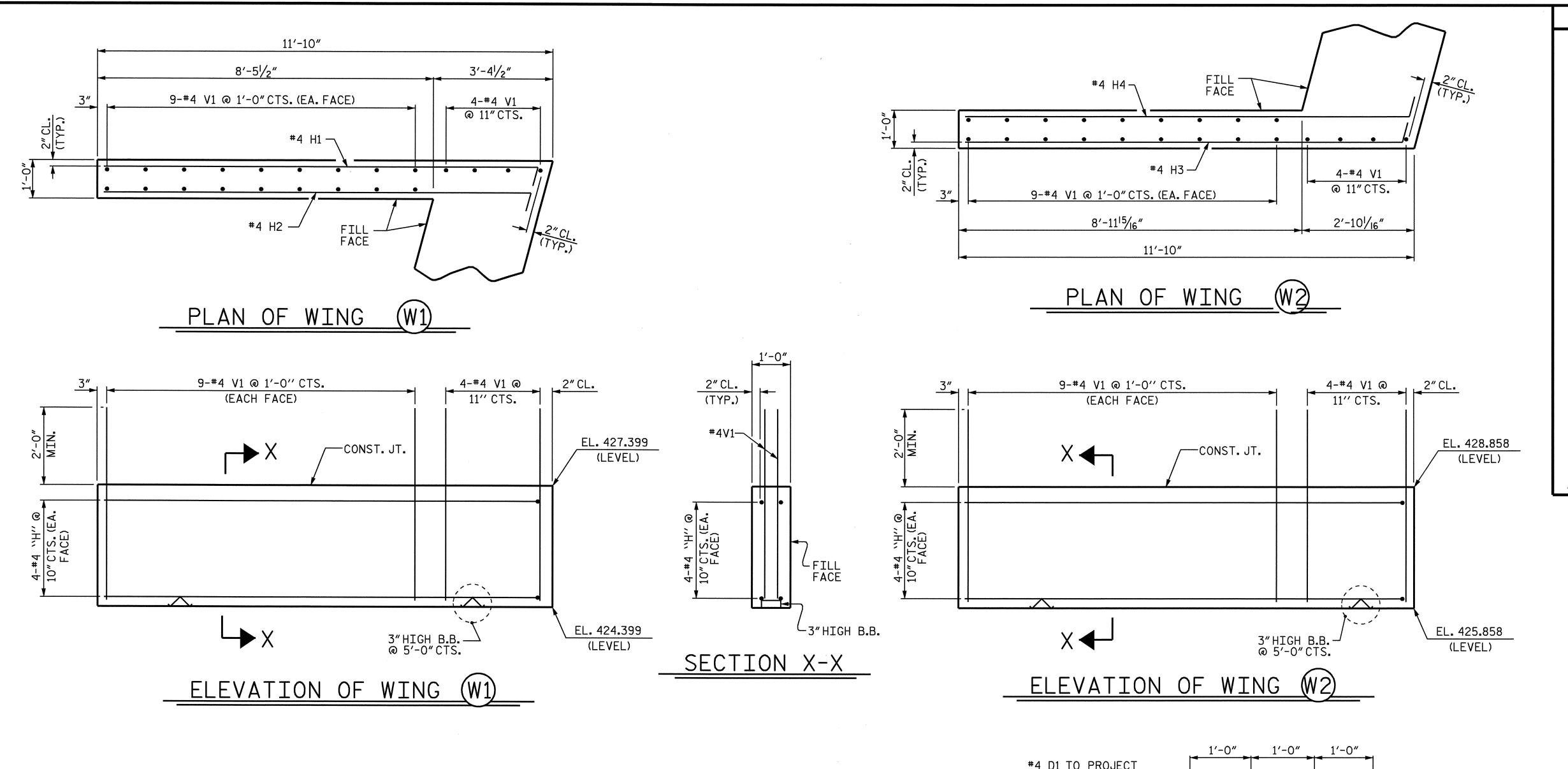
TOTAL SHEETS
23

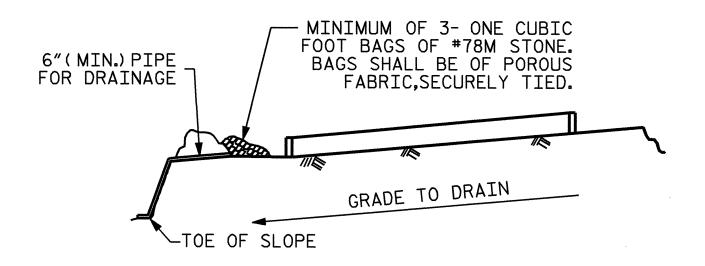


(LEFT WING NOT SHOWN FOR CLARITY)

DRAWN BY: J.L. WALTON DATE: 8/07
CHECKED BY: D.G. ELY DATE: 8/07

14-FEB-2008 15:45
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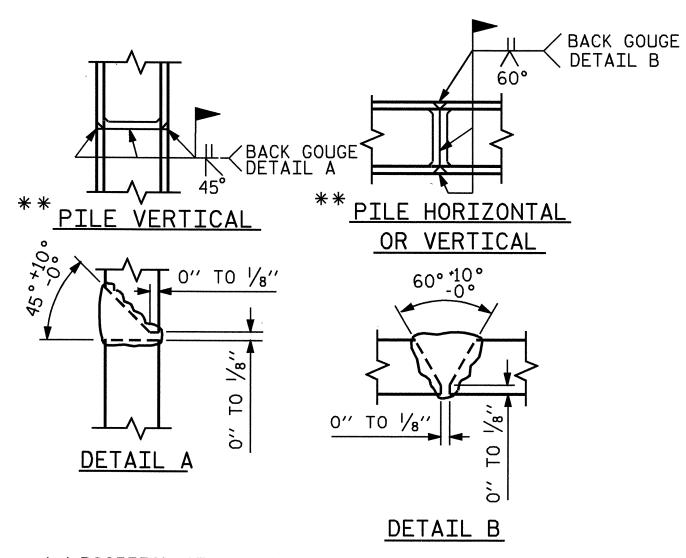


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

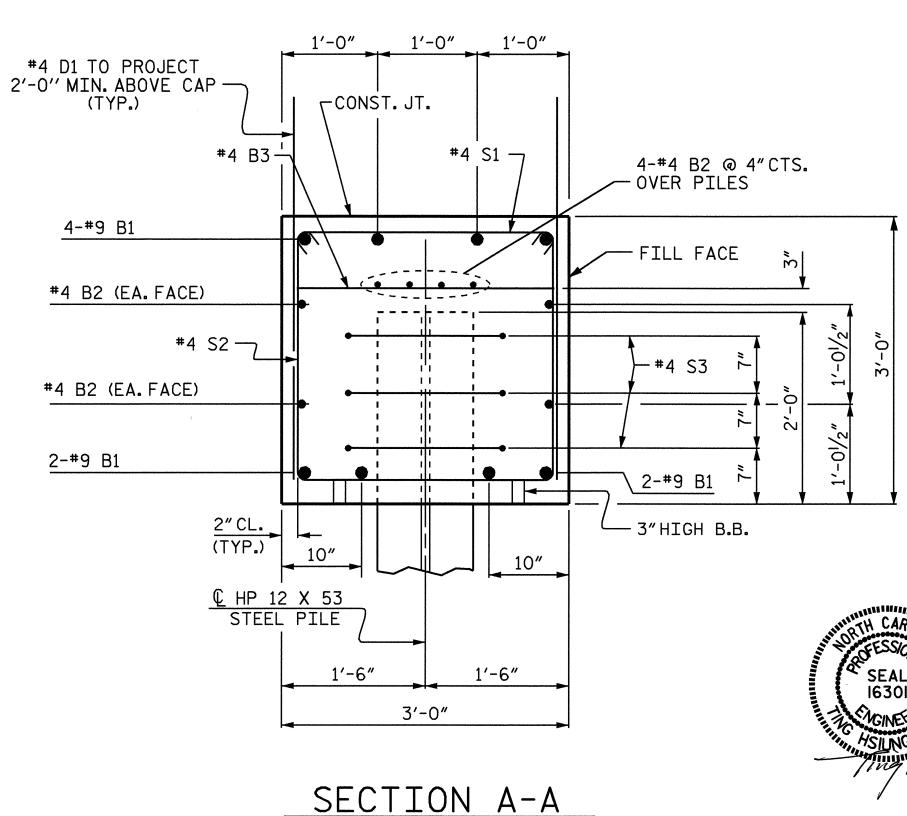
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

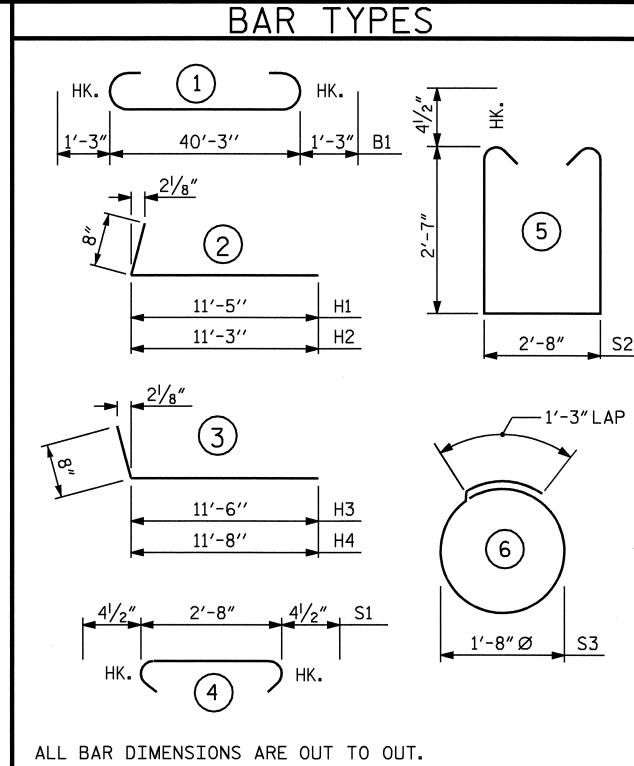
TEMPORARY DRAINAGE AT END BENT



\*\* POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS





В	ILL	OF	MA	ATERI	AL					
	END BENT 1									
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT					
B1	8	#9	1	42'-9"	1163					
B2	16	#4	STR	21′-5″	236					
B3	10	#4	STR	2'-8"	18					
D1	62	#4	STR	4'-10"	200					
H1	4	#4	2	12'-1"	32					
H2	4	#4	2	11'-11"	32					
Н3	4	#4	3	12'-2"	33					
H4	4	#4	3	12'-4"	33					
S1	37	#4	4	3′-5″	84					
S2	37	#4	5	8′-7″	212					
S3	24	#4	6	6'-6"	104					
V1	44	#4	STR	4'-10''	142					
REINF	ORCING	STEEL		= 228	9 LBS					

CLASS A CONCRETE QUANTITIES: CAP & WINGS 15.6 C.Y.

HP 12 X 53 STEEL PILES:

No. 8 120 LIN. FT.

<u>B-4063</u>

PROJECT NO. \_\_\_ CHATHAM COUNTY

22+85.00 -L-STATION:

SHEET 2 OF 2

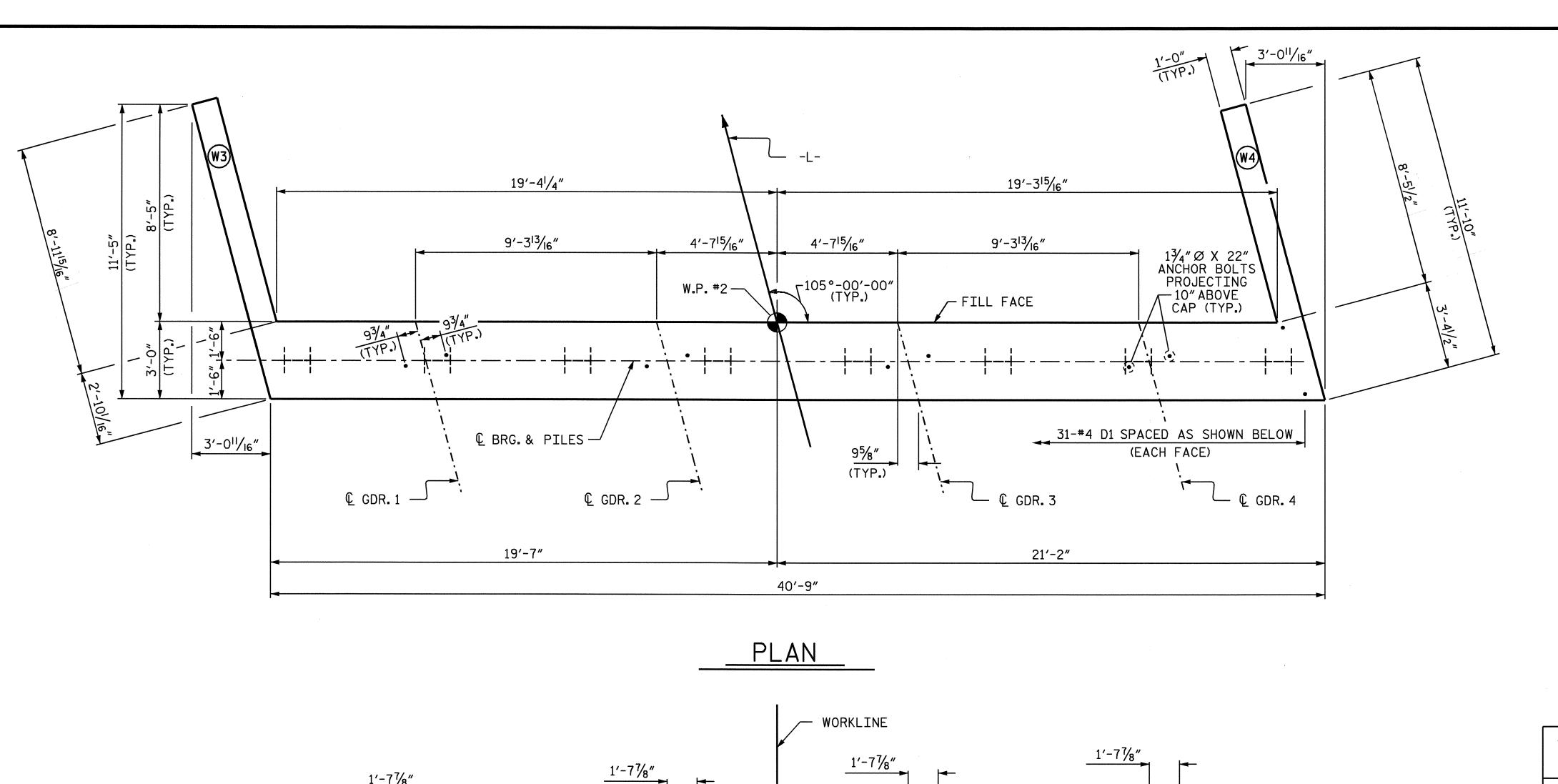
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

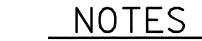
SUBSTRUCTURE

END BENT 1 INTEGRAL

		SHEET NO.		
NO.	BY:	S-18		
1		3		TOTAL SHEETS
2		4		23

DRAWN BY : J.L. WALTON \_ DATE : 8/07 \_ DATE : 8/07 CHECKED BY . D.G. ELY



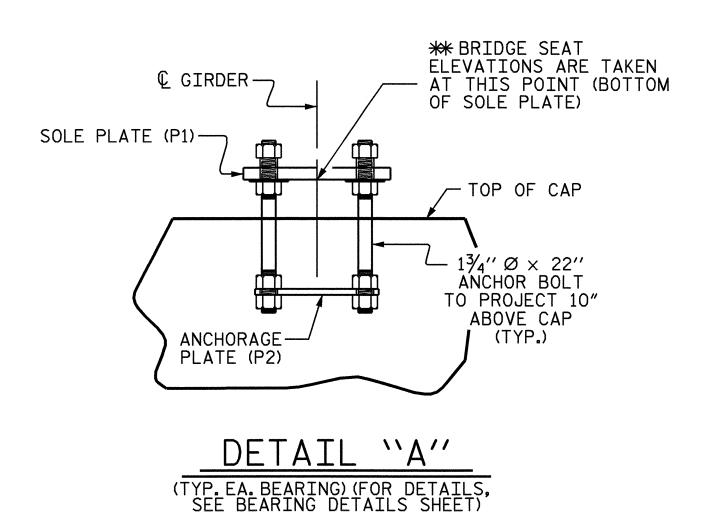


STIRRUPS AND #4 B2 BARS OVER PILES IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

FOR PILE SPLICE DETAILS, SEE SHEET 2 OF 2.

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 MY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

SEE SUPERSTRUCTURE SHEETS FOR ABUTMENT DETAILS.



TOP OF PILE ELEVATIONS						
PILE	ELEVATION					
<u>(P1)</u>	428.025					
P2	428.219					
P3	428.413					
P4)	428.607					
P5	428.801					
<b>P</b>	428.996					
P7	429.190					
P8	429.384					

SEAL 16301

PROJECT NO. B-4063

CHATHAM COUNTY

STATION: 22+85.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION
RALEIGH

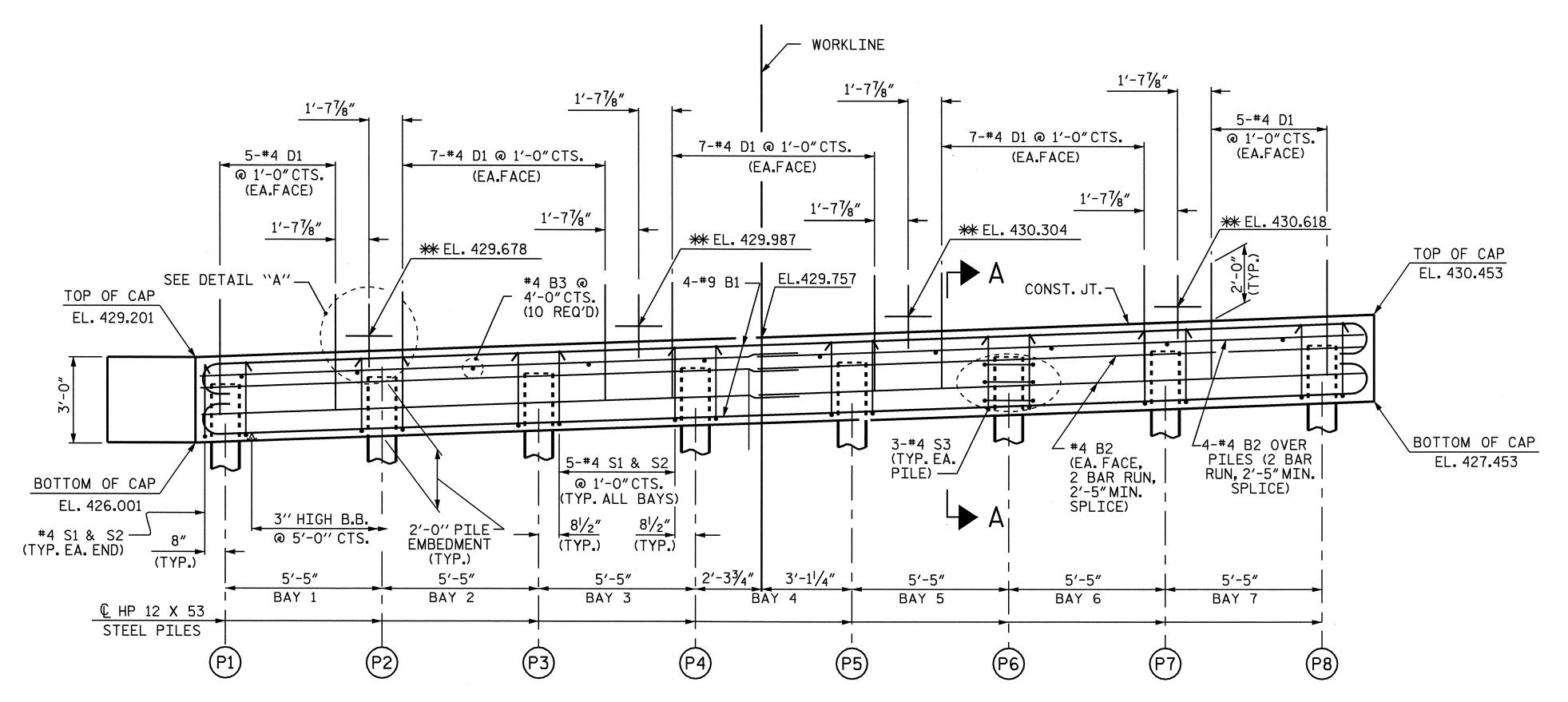
SUBSTRUCTURE

END BENT 2
INTEGRAL

REVISIONS

NO. BY: DATE: NO. BY: DATE: S-19

1 3 TOTAL SHEETS
23
23

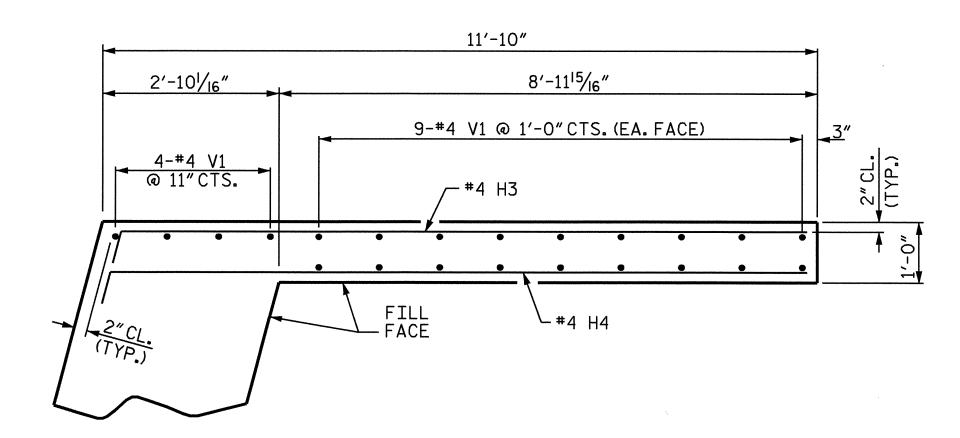


ELEVATION

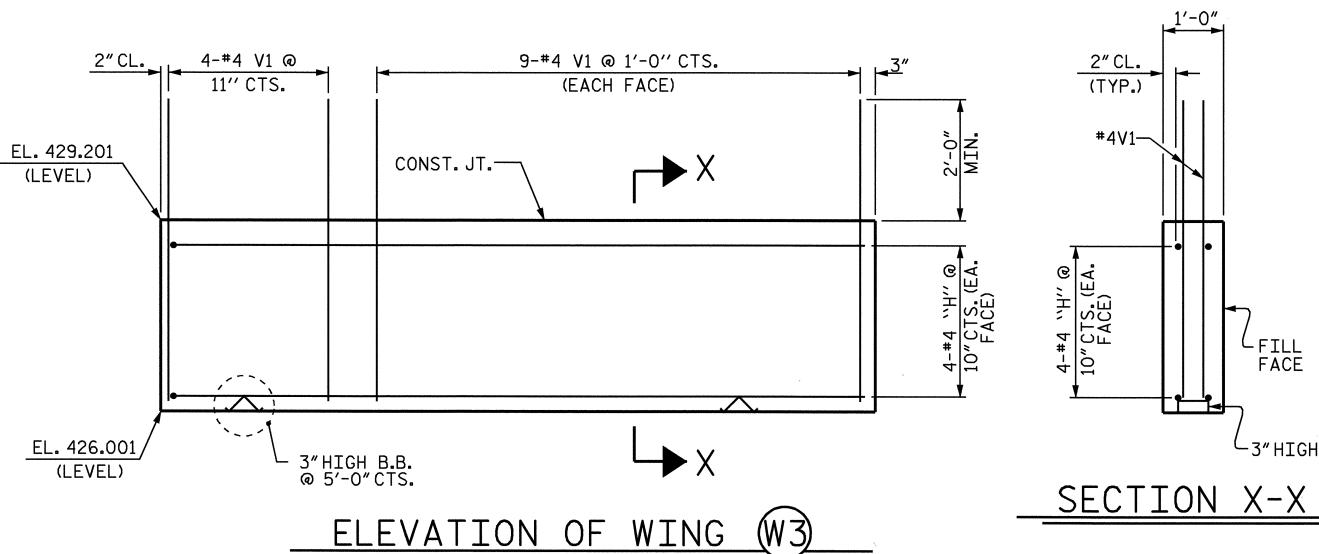
(RIGHT WING NOT SHOWN FOR CLARITY)

DRAWN BY: J.L. WALTON DATE: 8/07
CHECKED BY: D.G. ELY DATE: 8/07

14-FEB-2008 15:46
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jwalton



# PLAN OF WING (W3)



# 

EL. 427.453

(LEVEL)

4-#4 V1 @ 11"CTS.

3'-41/2"

(TYP.)

# ELEVATION OF WING (W4)

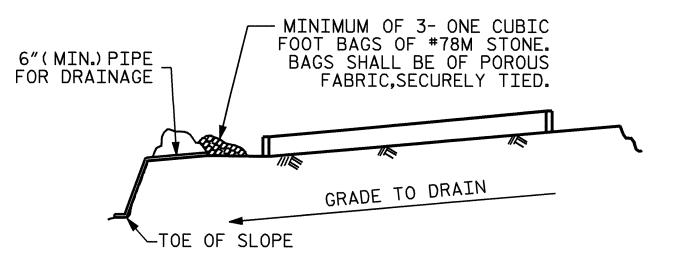
- 3"HIGH B.B. @ 5'-0"CTS.

FILL FACE

9-#4 V1 @ 1'-0" CTS. (EA. FACE)

8'-51/2"

11'-10"

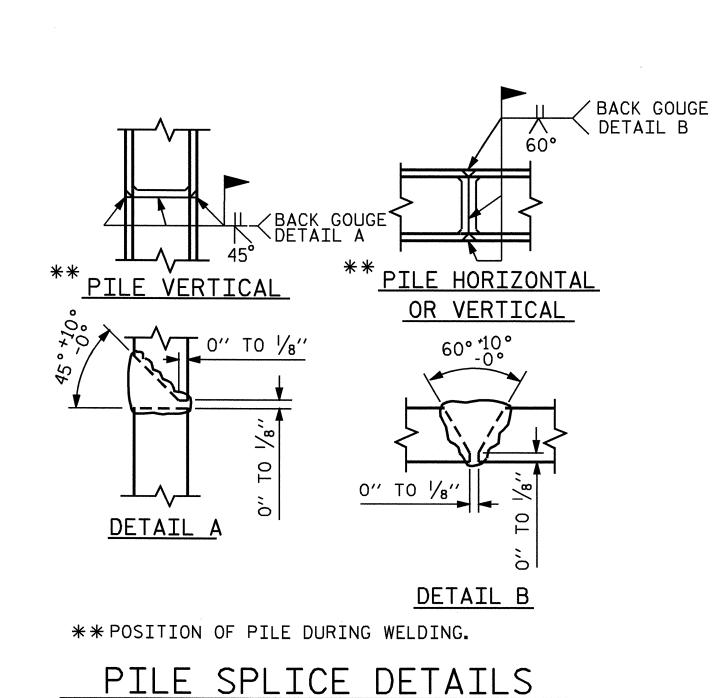


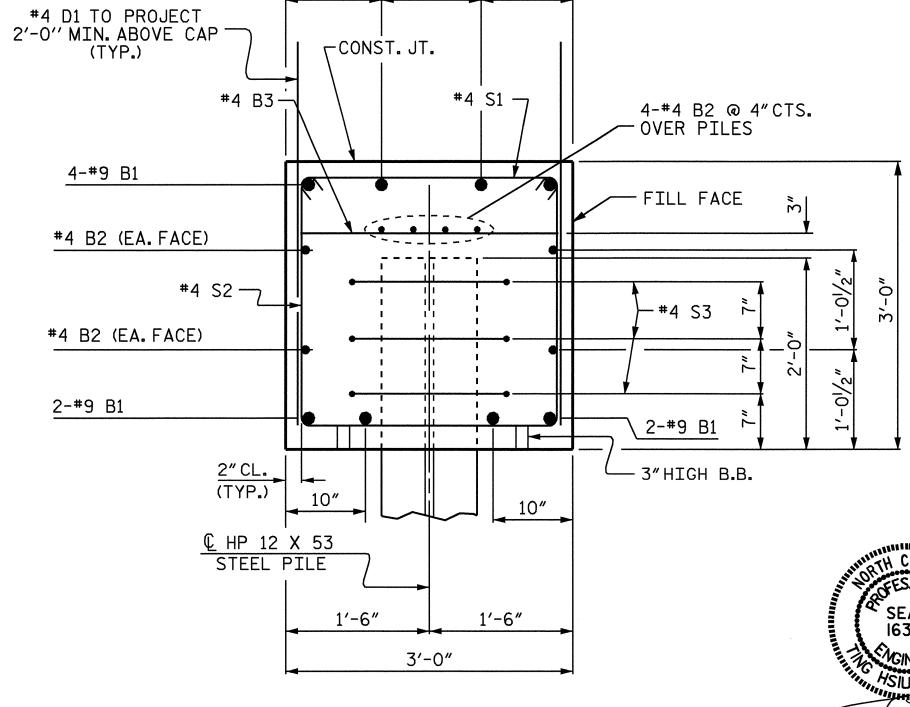
BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

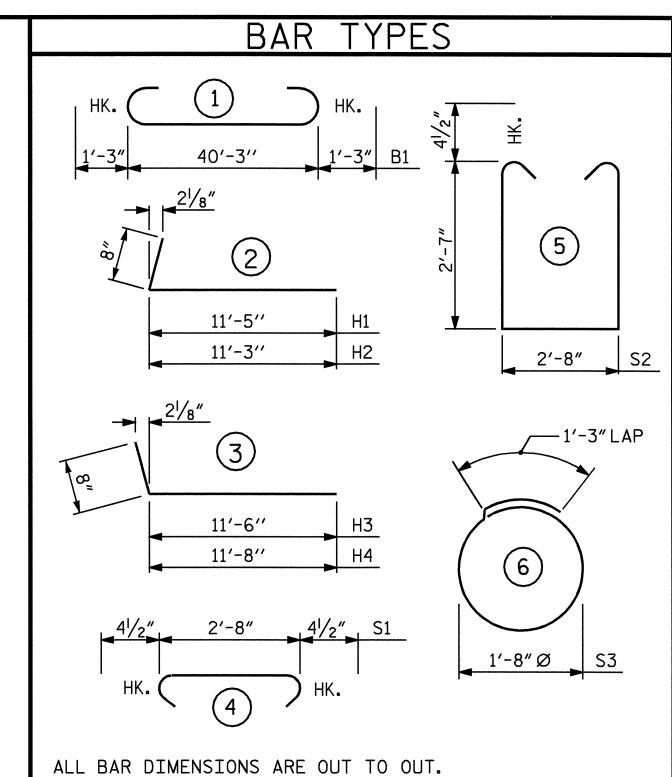




X◀┘

1'-0" 1'-0" 1'-0"

SECTION A-A



			_		
В	ILL	OF	MA	ATER]	AL
		END	BEN	IT 2	
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	42'-9"	1163
B2	16	#4	STR	21′-5″	236
B3	10	#4	STR	2'-8"	18
D1	62	#4	STR	4'-10"	200
H1	4	#4	2	12'-1"	32
H2	4	#4	2	11'-11"	32
Н3	4	#4	3	12'-2"	33
H4	4	#4	3	12'-4"	33
				:	
S1	37	#4	4	3′-5″	84
S2	37	#4	5	8′-7″	212
S3	24	#4	6	6′-6″	104
V1	44	#4	STR	4'-10''	142
REINFO	ORCING	STEEL		= 228	9 LBS
CL.	ASS A	CONCRE	TE QU	ANTITIES	

CLASS A CONCRETE QUANTITIES:

CAP & WINGS 15.6 C.Y.

HP 12 X 53 STEEL PILES :

No. 8 160 LIN. FT.

PROJECT NO. B-4063

CHATHAM COUNTY

STATION: 22+85.00 -L-

SHEET 2 OF 2

/3/03/08

DEPARTMENT OF TRANSPORTATION

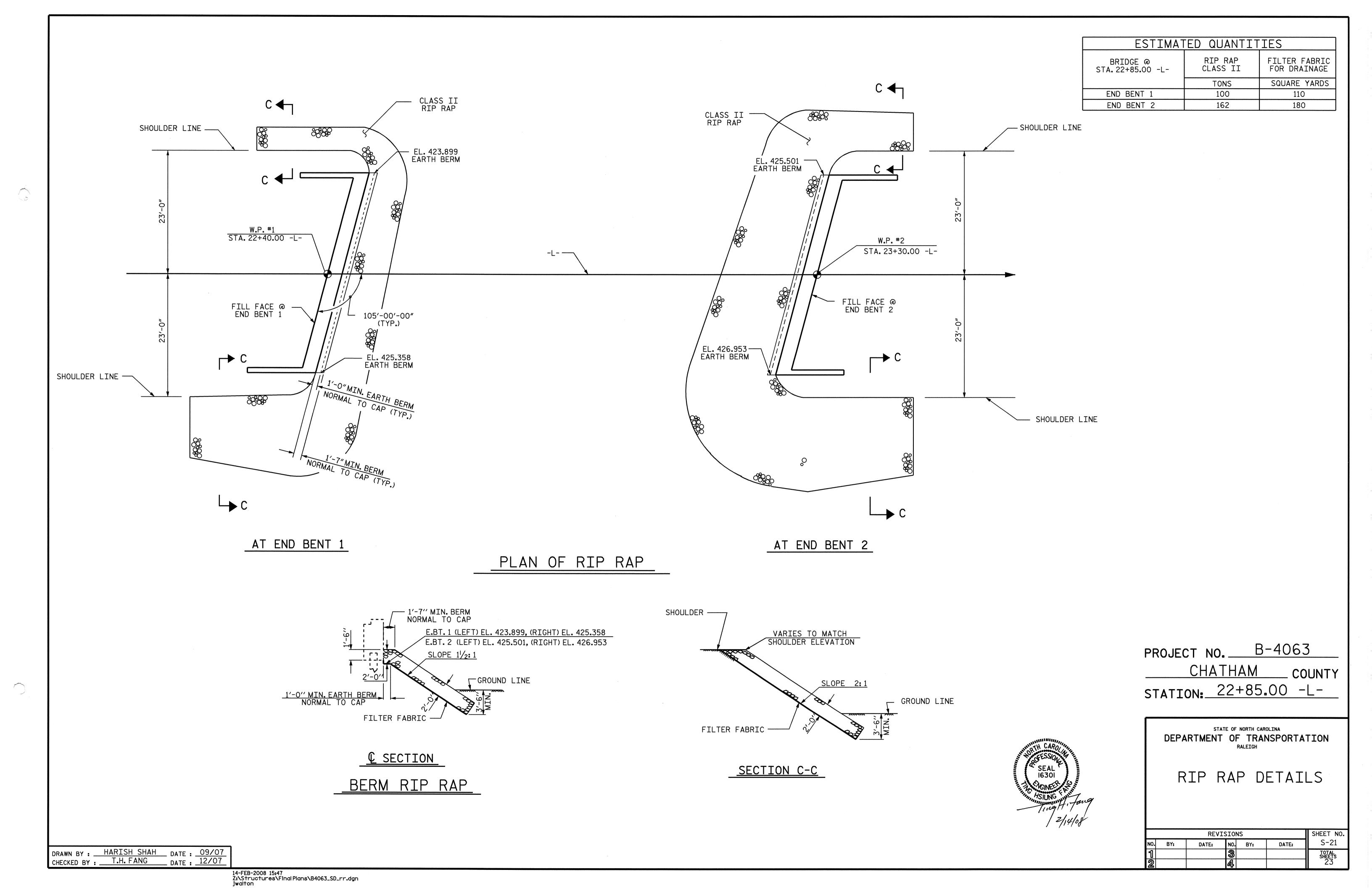
SUBSTRUCTURE

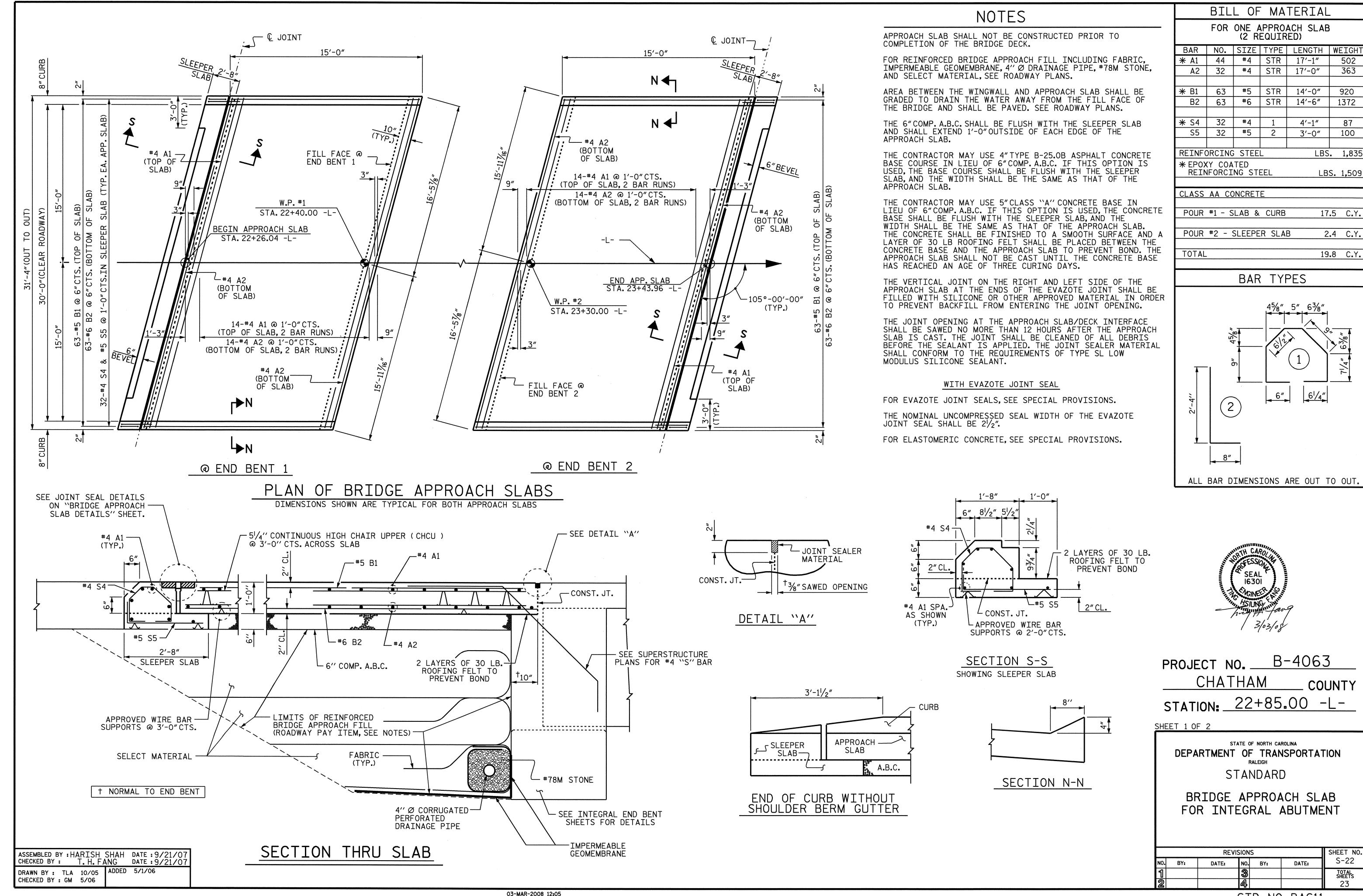
END BENT 2
INTEGRAL

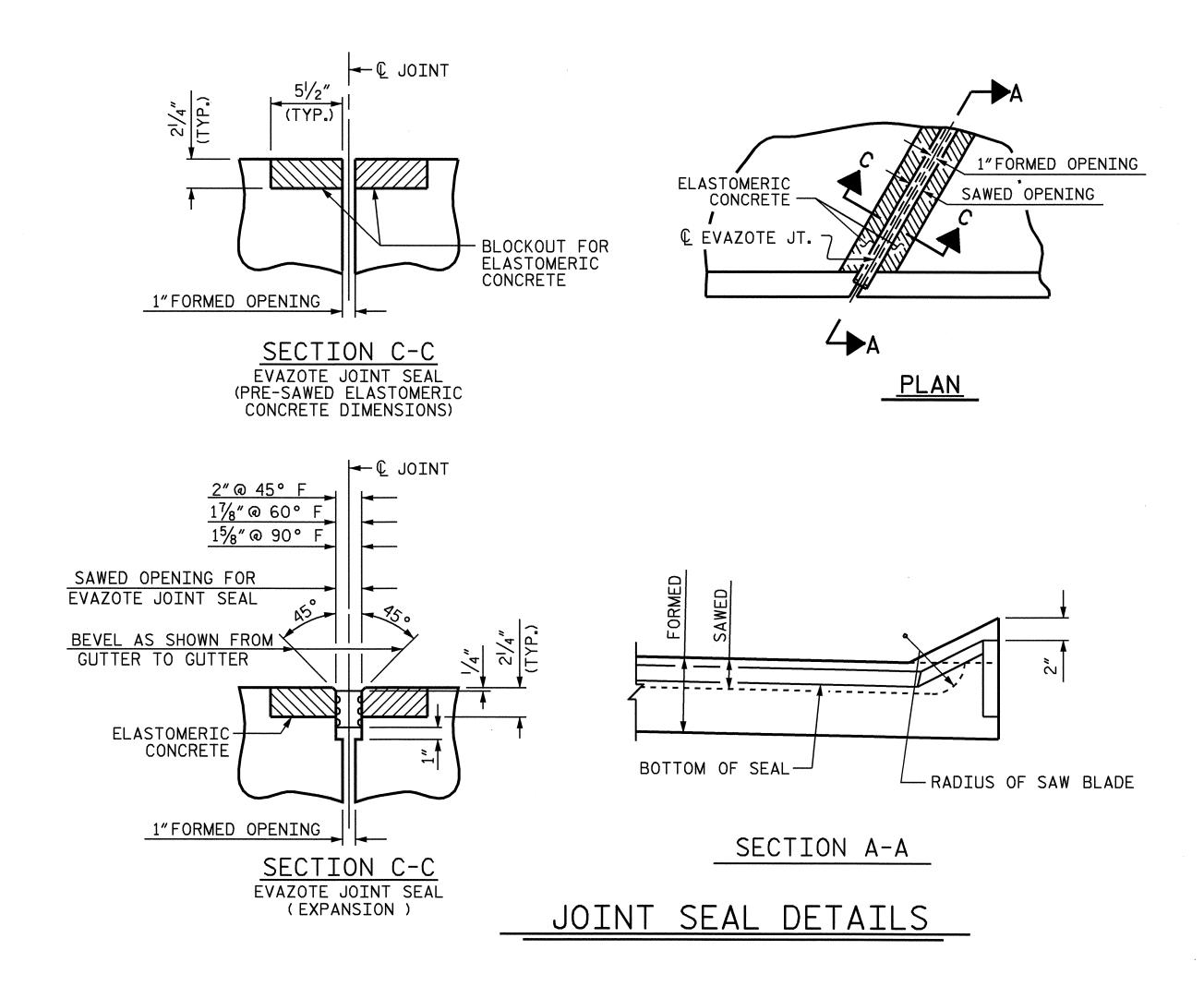
		SHEET NO.		
NO.	BY:	S-20		
1		3		TOTAL SHEETS
2		4		23

DRAWN BY: J.L. WALTON DATE: 8/07
CHECKED BY: D.G. ELY DATE: 8/07

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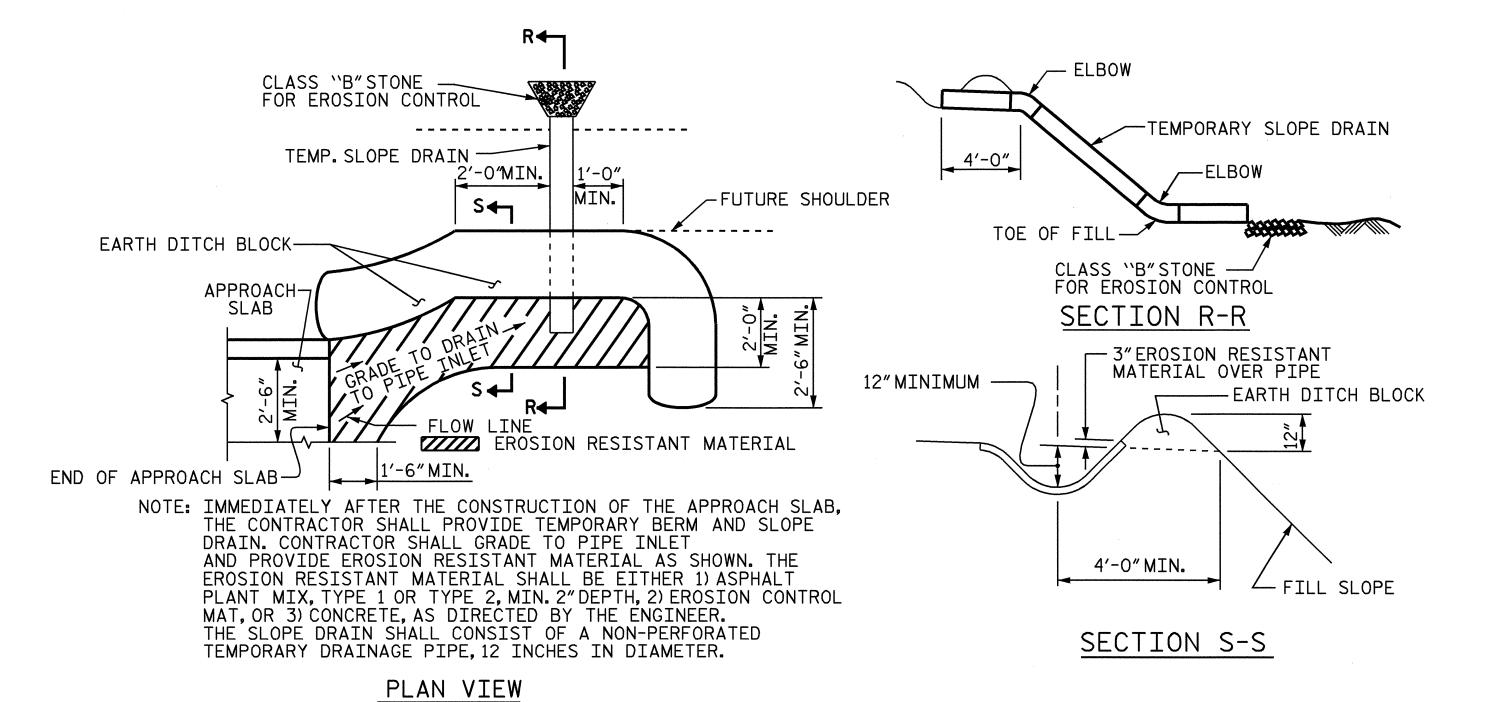






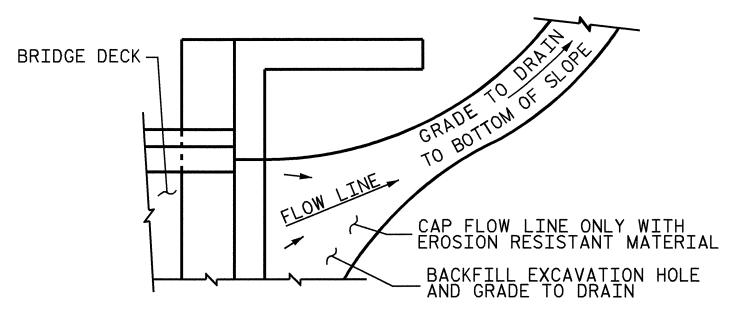
ELASTOMERIC CONCRETE						
APPROACH SLAB NO.	ELASTOMERIC CONCRETE * (CU.FT.)					
1	5.3					
2	5.3					
TOTAL	10.6					

\* BASED ON THE MINIMUM BLOCKOUT SHOWN.



# 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

PROJECT NO. B-4063

CHATHAM COUNTY

STATION: 22+85.00 -L-

SHEET 2 OF 2

DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

BRIDGE APPROACH SLAB DETAILS

					1988
	REV	ISIONS	1		SHEET NO.
BY:	DATE:	NO.	BY:	DATE:	S-23
		3			TOTAL SHEETS
		14			23

SEAL 16301

WEING HSIUNG

WE THE TONG

12/14/08

ASSEMBLED BY: H. B. SHAH DATE: 9-07
CHECKED BY: T. H. FANG DATE: 9-07

DRAWN BY: FCJ 11/88
CHECKED BY: ARB 11/88
REV. 10/17/00
RWW/LES
RWW/JTE
TLA/GM

STD. NO. BAS10

# STANDARD NOTES

# DESIGN DATA:

---- A.A.S.H.T.O. (CURRENT) SPECIFICATIONS ----- SEE PLANS LIVE LOAD IMPACT ALLOWANCE ---- SEE A.A.S.H.T.O. STRESS IN EXTREME FIBER OF 20.000 LBS. PER SQ. IN. STRUCTURAL STEEL - AASHTO M270 GRADE 36 - 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. 1.200 LBS. PER SQ. IN. CONCRETE IN COMPRESSION ---- SEE A.A.S.H.T.O. CONCRETE IN SHEAR

STRUCTURAL TIMBER - TREATED OR

UNTREATED - EXTREME FIBER STRESS ---- 1,800 LBS. PER SQ. IN.

AND 1000 1000 4000

COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER

EQUIVALENT FLUID PRESSURE OF EARTH

30 LBS. PER CU. FT.

375 LBS. PER SQ. IN.

(MINIMUM)

# MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2002 STANDARD SPECIFICATIONS "FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

STEEL SHEET PILING FOR PERMANENT OR TEMPORARY APPLICATIONS SHALL BE HOT ROLLED.

### CONCRETE:

UNLESS OTHERWISE REQUIRED ON PLANS, CLASS A CONCRETE SHALL BE USED FOR ALL PORTIONS OF ALL STRUCTURES WITH THE EXCEPTION THAT: CLASS AA CONCRETE SHALL BE USED IN BRIDGE SUPERSTRUCTURES, ABUTMENT BACKWALLS, AND APPROACH SLABS; CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP; AND CLASS S SHALL BE USED FOR UNDERWATER FOOTING SEALS.

### CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED 3/4"WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1-1/2"RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 1/4"FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A 1/4"RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

# DOWELS:

DOWELS WHEN INDICATED ON PLANS AS FOR CULVERT EXTENSIONS, SHALL BE EMBEDDED AT LEAST 12" INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

# ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT, ETC. IN CASTING SUPERSTRUCTURES:

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.

ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

### REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED WITH THE EXCEPTION OF #2
BARS WHICH MAY BE FABRICATED FROM COLD DRAWN STEEL WIRE. DIMENSIONS
RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE
INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS
OR ARE OUT TO OUT AS INDICATED ON PLANS.
WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE
INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS
LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL
BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

# STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8" Ø SHEAR STUDS FOR THE 3/4" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 5/16"IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2"OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

PLACEMENT OF BEAM OR GIRDER MEMBERS ON TRUCKS FOR HAULING SHALL
BE DONE IN COMPLIANCE WITH LIMITS SHOWN ON SKETCHES PROVIDED TO THE MATERIALS
AND TEST UNIT APPROVED BY THE STRUCTURE DESIGN UNIT DATED MAY 8, 1991.
THESE SKETCHES PRIMARILY LIMIT THE UNSUPPORTED CANTILEVER LENGTH OF MEMBERS.
WHEN THE CONTRACTOR WISHES TO PLACE MEMBERS ON TRUCKS NOT IN ACCORDANCE
WITH THESE LIMITS, TO SHIP BY RAIL, TO ATTACH SHIPPING RESTRAINTS TO THE
MEMBERS OR TO INVERT MEMBERS, HE SHALL SUBMIT A SKETCH FOR APPROVAL
PRIOR TO SHIPPING. SEE ALSO ARTICLE 1072-11.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16 INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

# HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

# SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105-4.

ENGLISH

JANUARY, 1990