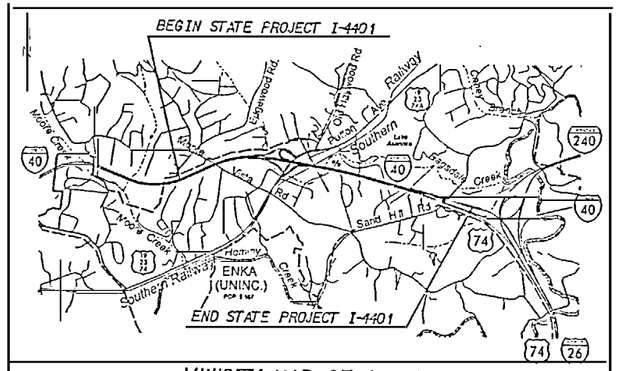
TIP PROJECT: I-4401

STRUCTURES

CONTRACT: C201277



VINICITY MAP OF I-4401

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

BUNCOMBE COUNTY

LOCATION: I-40 AUXILIARY LANES FROM WEST OF US 19-23 (SMOKY PARK HIGHWAY) TO THE I-240 /I-26 INTERCHANGE

TYPE OF WORK: GRADING, DRAINAGE, STRUCTURES, PAVING GUARDRAIL, SIGNALS AND SIGNING

RFC-S2-6A

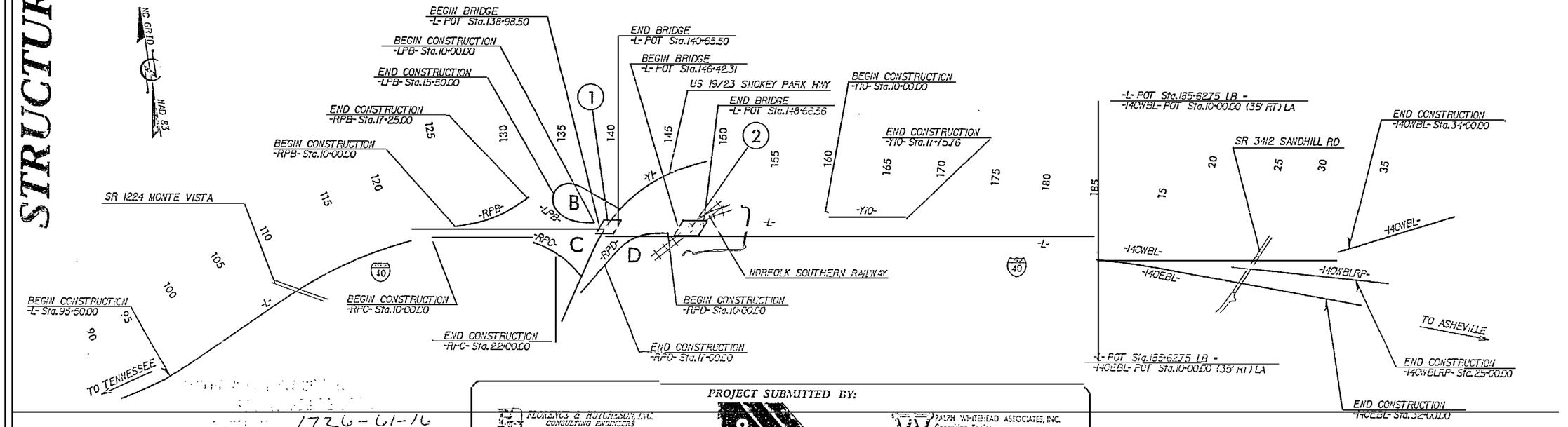
DATE: 2-15-06

BRIDGE ON I-40 OVER NSC RAILROAD
COMPLETE BRIDGE CONSTRUCTION PLANS
STRUCTURE 2 313

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-4401		
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
8.1845801	NHIMF-40-1(142)46		

RFC INDEX

RFC	DESCRIPTION	DATE
RFC-S2-1A	SUBSTRUCTURE PLANS (17 SHEETS)	9-13-05
RFC-S2-2A	CONCRETE GIRDERS (4 SHEETS)	9-13-05
	BEARINGS (1 SHEET)	
RFC-S2-3A	GIRDER DIAPHRAGM DETAILS (1 SHEET)	11-16-05
RFC-S2-4A	FRAMING PLAN (1 SHEET)	1-10-06
RFC-S2-5A	SUPERSTRUCTURE PLANS (21 SHEET)	1-10-06
RFC-S2-5B	GENERAL NOTES, DRAWING INDEX &	1-18-06
	STAGED CONSTRUCTION (3 SHEET)	
RFC-S2-6A	COMPLETE BRIDGE CONSTRUCTION PLANS	2-15-06



1726-61-16

PROJECT SUBMITTED BY:

FLORENCE & HUTCHESON, INC. CONSULTING ENGINEERS 4130 PARKLAKE BLVD. SUITE 415 RALEIGH, NC 27612

TAYLOR & MURPHY

RALPH WHITEHEAD ASSOCIATES, INC. Consulting Engineers 1000 W. Morehead, Suite 200 • Charlotte, N.C. 28208

Prepared for:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610

2012 STANDARD SPECIFICATIONS

ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18165 ENGINEER MARK F. ROBBINS 2-15-06

NORTH CAROLINA PROFESSIONAL SEAL 29479 ENGINEER KEVIN G. BAILEY 2-15-06

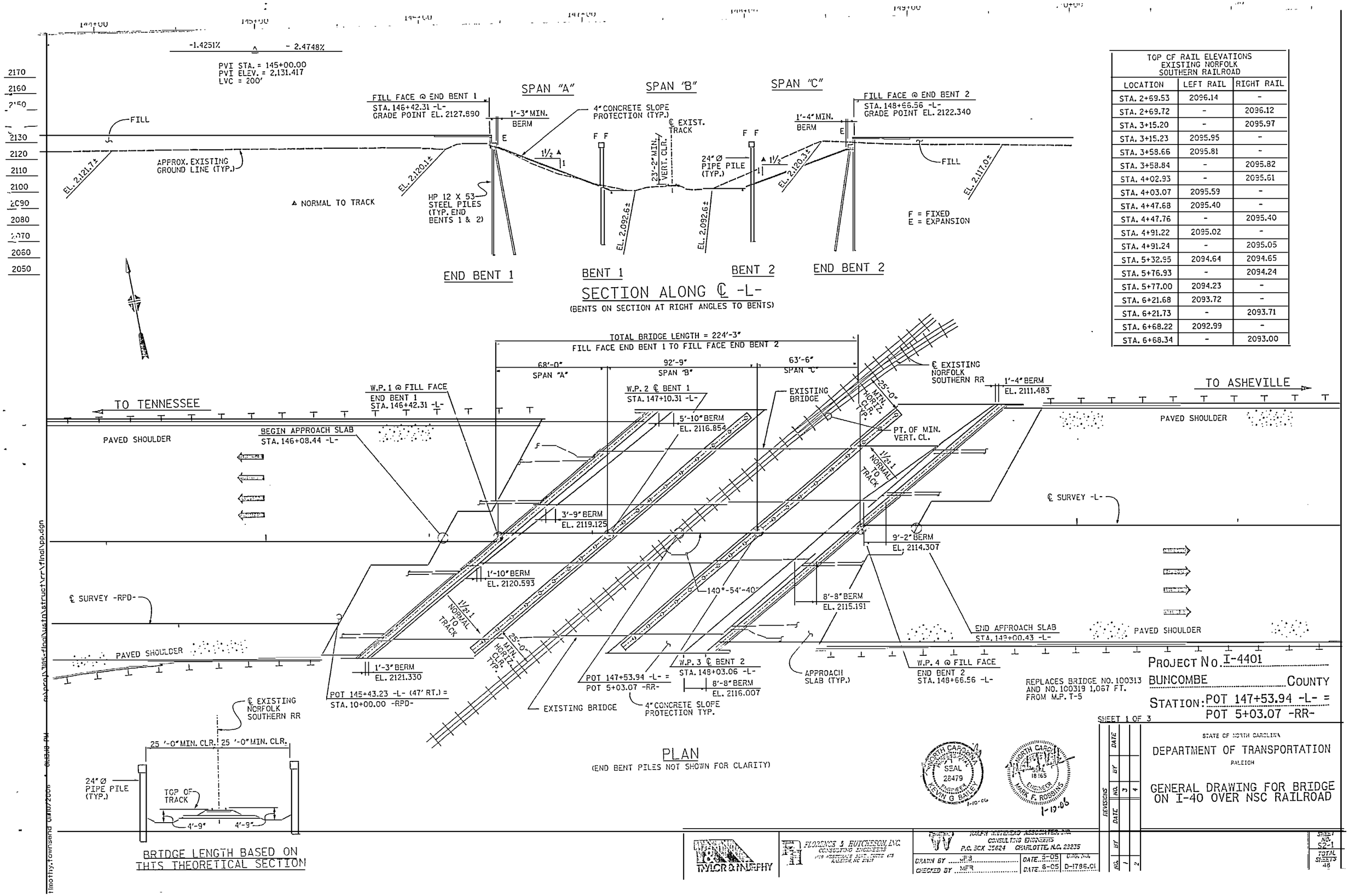
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE DESIGN ENGINEER

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR DATE

2-20-06



SECTION ALONG ℄ -L-

(BENTS ON SECTION AT RIGHT ANGLES TO BENTS)

TOP OF RAIL ELEVATIONS EXISTING NORFOLK SOUTHERN RAILROAD		
LOCATION	LEFT RAIL	RIGHT RAIL
STA. 2+69.53	2096.14	-
STA. 2+69.72	-	2096.12
STA. 3+15.20	-	2095.97
STA. 3+15.23	2095.95	-
STA. 3+58.66	2095.81	-
STA. 3+58.84	-	2095.82
STA. 4+02.93	-	2095.61
STA. 4+03.07	2095.59	-
STA. 4+47.68	2095.40	-
STA. 4+47.76	-	2095.40
STA. 4+91.22	2095.02	-
STA. 4+91.24	-	2095.05
STA. 5+32.95	2094.64	2094.65
STA. 5+76.93	-	2094.24
STA. 5+77.00	2094.23	-
STA. 6+21.68	2093.72	-
STA. 6+21.73	-	2093.71
STA. 6+68.22	2092.99	-
STA. 6+68.34	-	2093.00

PLAN

(END BENT PILES NOT SHOWN FOR CLARITY)

BRIDGE LENGTH BASED ON THIS THEORETICAL SECTION

PROJECT NO. I-4401

REPLACES BRIDGE NO. 100313 AND NO. 100319 1,067 FT. FROM M.P. T-5

BUNCOMBE COUNTY

STATION: POT 147+53.94 -L- = POT 5+03.07 -RR-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING FOR BRIDGE ON I-40 OVER NSC RAILROAD

SEAL 28479 ENGINEER KEVIN G BAILEY 1-10-06

SEAL 18165 ENGINEER MARK F. ROBBINS 1-17-06

REVISIONS

NO.	BY	DATE
1		
2		
3		
4		

TAYLOR & MURPHY

FLORENCE & HUTCHESON INC. CONSULTING ENGINEERS 1918 RIDGEFIELD BLVD., SUITE 410 RALEIGH, NC 27607

RALPH WHITEHEAD ASSOCIATES, INC. CONSULTING ENGINEERS P.O. BOX 35624 CHARLOTTE, N.C. 28235

DRAWN BY MFR DATE 5-05
CHECKED BY MFR DATE 6-05
DRG. NO. D-1796.01

SHEET NO. S2-1
TOTAL SHEETS 48

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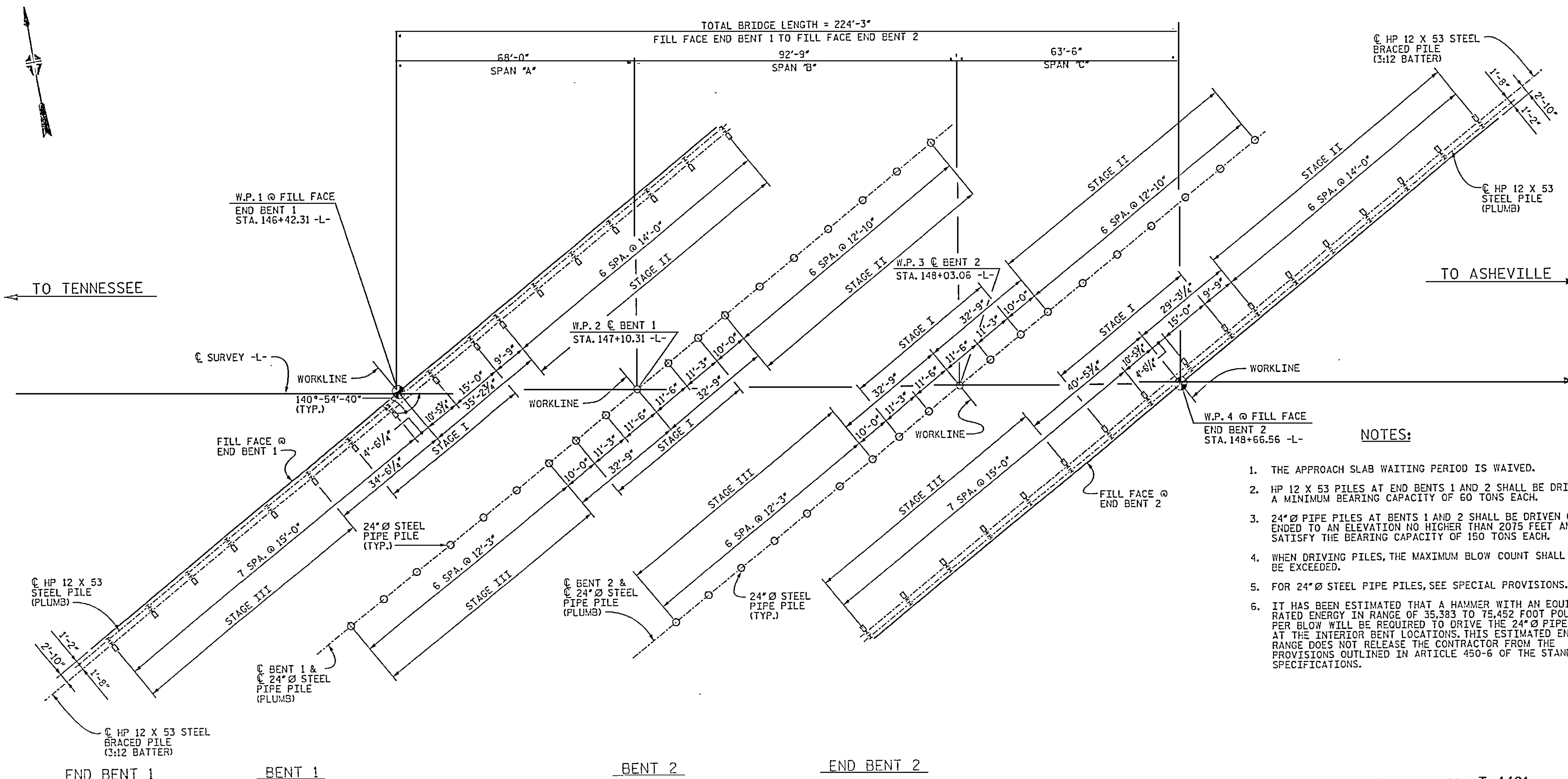

NOTES:

1. THE APPROACH SLAB WAITING PERIOD IS WAIVED.
2. HP 12 X 53 PILES AT END BENTS 1 AND 2 SHALL BE DRIVEN TO A MINIMUM BEARING CAPACITY OF 60 TONS EACH.
3. 24"Ø PIPE PILES AT BENTS 1 AND 2 SHALL BE DRIVEN OPEN ENDED TO AN ELEVATION NO HIGHER THAN 2075 FEET AND SATISFY THE BEARING CAPACITY OF 150 TONS EACH.
4. WHEN DRIVING PILES, THE MAXIMUM BLOW COUNT SHALL NOT BE EXCEEDED.
5. FOR 24"Ø STEEL PIPE PILES, SEE SPECIAL PROVISIONS.
6. IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN RANGE OF 35,383 TO 75,452 FOOT POUNDS PER BLOW WILL BE REQUIRED TO DRIVE THE 24"Ø PIPE PILES AT THE INTERIOR BENT LOCATIONS. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM THE PROVISIONS OUTLINED IN ARTICLE 450-6 OF THE STANDARD SPECIFICATIONS.

FOUNDATION LAYOUT

ALL END BENT PILES SHALL BE HP 12 X 53 STEEL PILES.

ALL BENT PILES SHALL BE 24"Ø X 1/2" STEEL PIPE PILES.

DIMENSIONS TO PILES ARE MEASURED TO ℄ OF PILE.

PROJECT NO. I-4401

BUNCOMBE COUNTY

STATION: POT 147+53.94 -L-
POT 5+03.07 -RR-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOUNDATION LAYOUT

NORTH CAROLINA PROFESSIONAL SEAL 28479 ENGINEER KEVIN G BAILEY 9-7-05

NORTH CAROLINA PROFESSIONAL SEAL 18165 ENGINEER MARK F. ROBBINS 9-7-05

TAYLOR & MURPHY

FLORENCE & HUTCHESON, INC. CONSULTING ENGINEERS

RALPH WHITEHEAD ASSOCIATES, INC. CONSULTING ENGINEERS
P.O. BOX 35524 CHARLOTTE, N.C. 28235

DRAWN BY TLS DATE 7-05
CHECKED BY HFW DATE 7-05
DWG. NO. 0-1786.02

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

REVISIONS

SHEET NO. S2-2
TOTAL SHEETS 43

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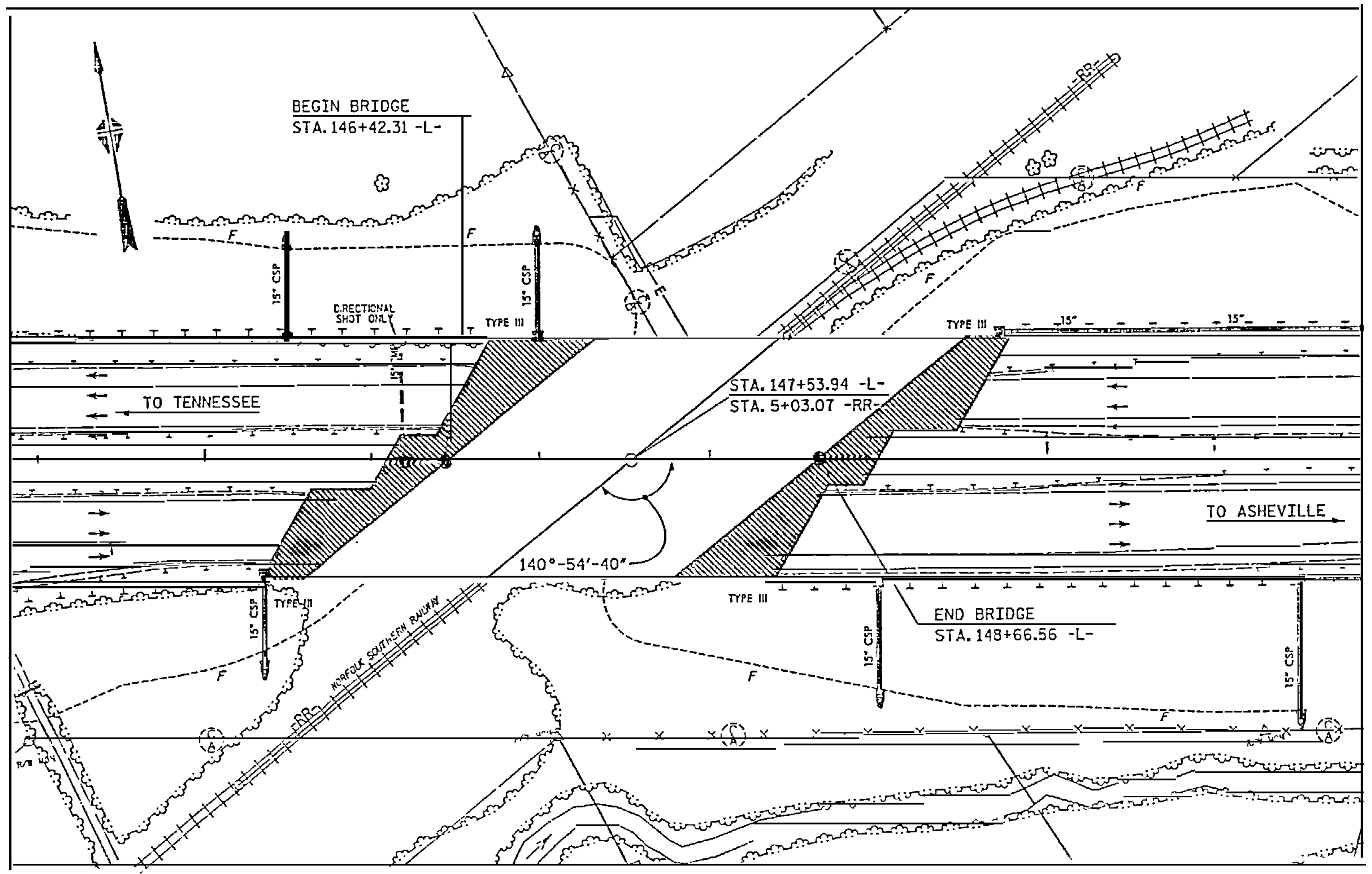
TOTAL BILL OF MATERIAL

	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	REINFORCING STEEL	45" PREST. CONCRETE GIRDERS	HP 12 X 53 STEEL PILES		24" Ø STEEL PIPE PILES		CONCRETE BARRIER RAIL	CONCRETE MEDIAN RAIL	4" SLOPE PROTECTION
	SQ. FT.	SQ. FT.	CU. YDS.	LBS.	LIN. FT.	NO.	LIN. FT.	NO.	LIN. FT.	LIN. FT.	LIN. FT.	SQ. YDS.
SUPERSTRUCTURE	31,632	29,088			4,109					441.89	220.95	
END BENT 1			185.3	25,377		34	2,556					1,515
BENT 1			162.4	17,063				19	1,250			
BENT 2			162.4	17,063				19	1,250			
END BENT 2			183.2	25,158		34	2,165					1,502
TOTAL	31,632	29,088	693.3	84,661	4,109	68	4,721	38	2,500	441.89	220.95	3,017



LOCATION SKETCH

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

FOR BENCHMARK DATA, SEE ROADWAY PLANS.

⚠ GENERAL NOTES:

ASSUMED LIVE LOAD = HS20 OR ALTERNATE LOADING.

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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

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

FOR REINFORCED CONCRETE DECK SLAB, SEE SPECIAL PROVISIONS

STRUCTURAL STEEL FOR DIAPHRAGMS SHALL BE AASHTO M270 GRADE 50 GALVANIZED IN ACCORDANCE WITH ARTICLE 1076 OF THE STANDARD SPECIFICATIONS.

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: ONE 30" SAMPLE OF EACH SIZE BAR USED. THE BARS FROM WHICH THE SAMPLES ARE TAKEN MUST THEN BE SPLICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE PLUS A MINIMUM LAP SPLICE OF THIRTY BAR DIAMETERS FOR BAR SIZE UP TO #8. FOR #9, #10 AND #11 BARS, THE FABRICATOR SHALL DESIGNATE THE BARS WHERE SAMPLES ARE GOING TO BE TAKEN. FOR DESIGNATED BARS, THE FABRICATOR SHALL PROVIDE ADDITIONAL 30" LENGTH AND THE SAMPLES SHALL BE TAKEN AT END OF BARS.

FOR MAINTENANCE AND PROTECTION OF TRAFFIC BENEATH PROPOSED BRIDGE, SEE SPECIAL PROVISIONS.

ALL FALSEWORK AND FORMS FOR THE CAST-IN-PLACE DECK SLAB CONTINUOUS UNIT SHALL REMAIN IN PLACE UNTIL THE ENTIRE UNIT IS CAST AND CURED.

FOR FALSEWORK AND FORMS OVER OR ADJACENT TO TRAFFIC, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

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

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 ADDITIONAL PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL.

THE EXISTING STRUCTURES CONSISTING OF A THREE SPAN CONCRETE GIRDER BRIDGE SHALL BE REMOVED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

IN AS MUCH 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 MATERIAL CONTAINING LEAD BASED PAINT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

⚠ REVISED GENERAL NOTES AND DRAWING INDEX.

⚠ DRAWING INDEX:

PROJECT NO. I-4401

BUNCOMBE COUNTY

STATION: POT 147+53.94 -L-= POT 5+03.07 -RR-

NORTH CAROLINA PROFESSIONAL SEAL 26479 ENGINEER KEVIN G BAILEY 1-18-06

NORTH CAROLINA PROFESSIONAL SEAL 19165 ENGINEER MARK F. ROBBINS 1-18-06

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
LOCATION SKETCH, GENERAL NOTES, DRAWING INDEX, & TOTAL BILL OF MATERIAL

REVISIONS						
NO.	BY	DATE		NO.	BY	DATE
1	RWA	1-06		3		
2				4		

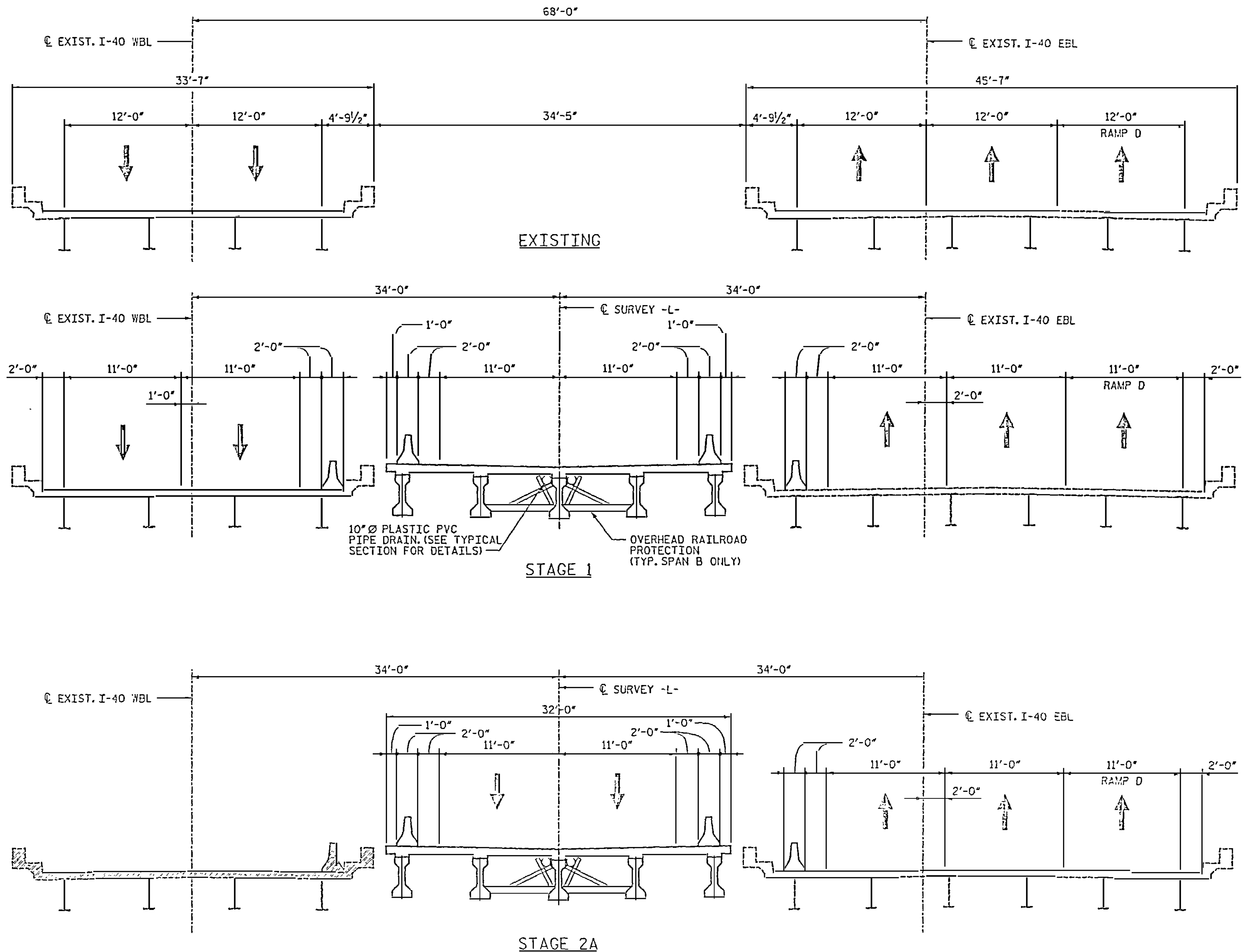
TAYLOR & MURPHY

FLORENCE & HUTCHESON, INC. CONSULTING ENGINEERS

RALPH WHITEHEAD ASSOCIATES, INC. CONSULTING ENGINEERS P.O. BOX 35624 CHARLOTTE, N.C. 28235

DRAWN BY TLS DATE 9-05
CHECKED BY PEK DATE 12-05
DWG. NO. D-I786.03

SHEET NO. S2-3
TOTAL SHEETS 48



PROJECT NO. I-4401

BUNCOMBE COUNTY

STATION: POT 147+53.94 -L-
POT 5+03.07 -RR-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONSTRUCTION STAGING

NORTH CAROLINA PROFESSIONAL SEAL 28479 ENGINEER KEVIN G BAILEY 1-10-06

NORTH CAROLINA PROFESSIONAL SEAL 18165 ENGINEER MARK F. ROBBINS 1-10-06

TAYLOR & MURPHY

FLORENCE & HUTCHESON, INC. CONSULTING ENGINEERS

RALPH WHITEHEAD ASSOCIATES, INC. CONSULTING ENGINEERS P.O. BOX 35624 CHARLOTTE, N.C. 28235

DRAWN BY JRB DATE 5-05
CHECKED BY MFR DATE 6-05
DWG. NO. 0-1736.04

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

SHEET NO. S2-4
TOTAL SHEETS 43

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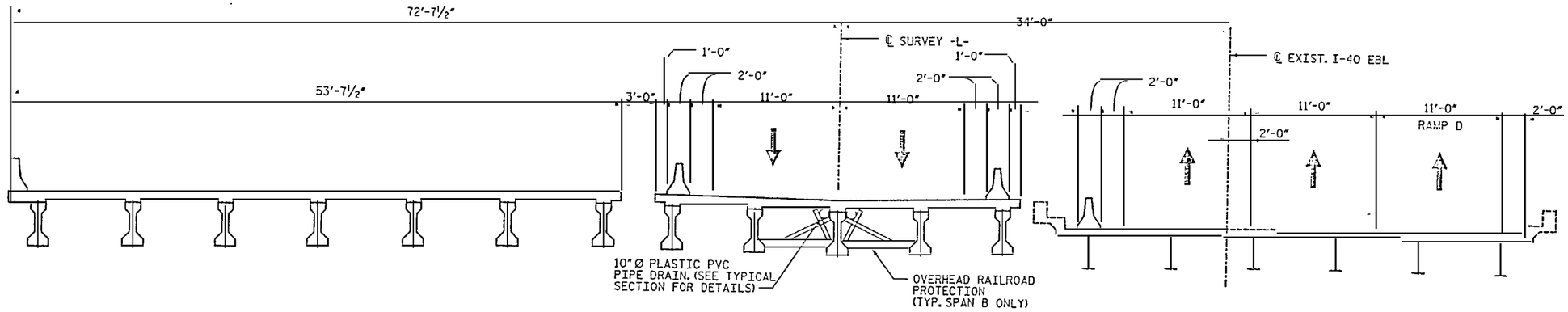
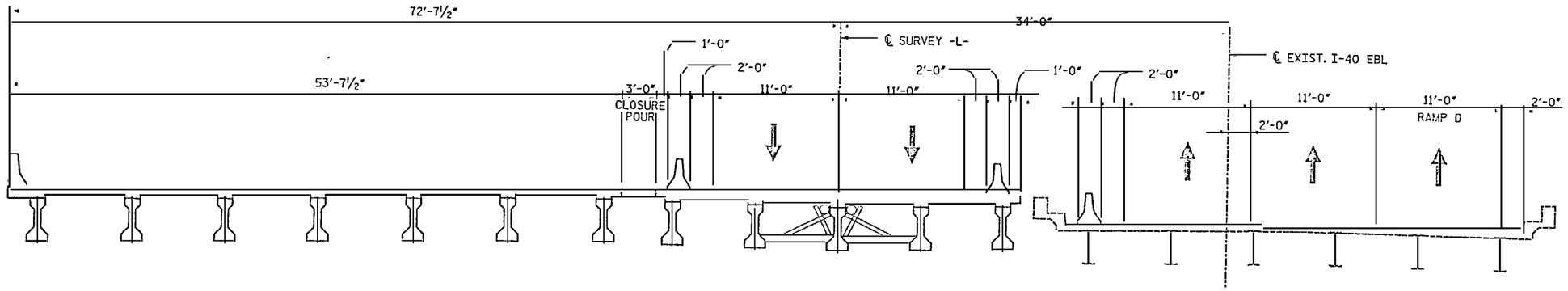


⚠ STAGE 2B



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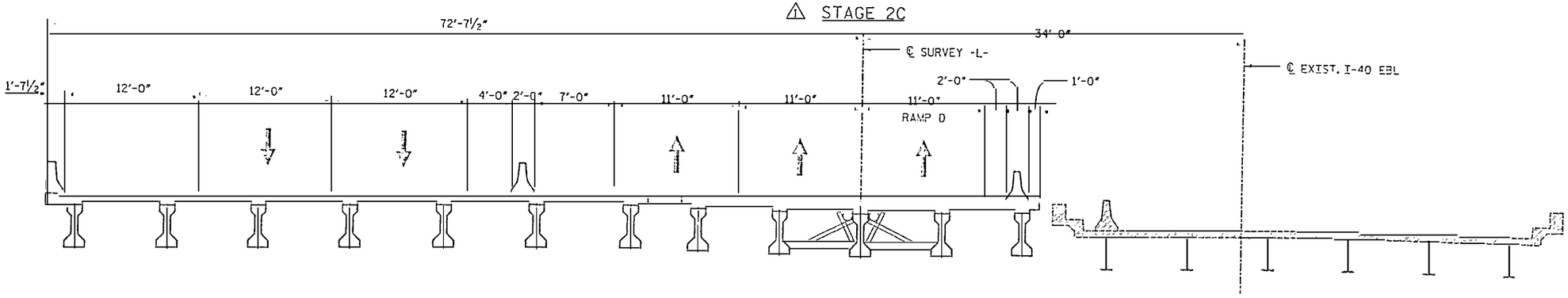

⚠ STAGE 3A

⚠ REVISED STAGE II SECTION

PROJECT NO. I-4401
BUNCOMBE COUNTY
STATION: POT 147+53.94 -L-
POT 5+03.07 -RR-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONSTRUCTION STAGING

REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1	BMA	1-06	3		
2			4		

SHEET NO. S-5
TOTAL SHEETS 43

TAYLOR & MURPHY

FLORENCE & HUTCHESON INC
CONSULTING ENGINEERS

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

DRAWN BY JRB DATE 5-05
CHECKED BY MFR DATE 6-05
DRG. NO. D-1736.05

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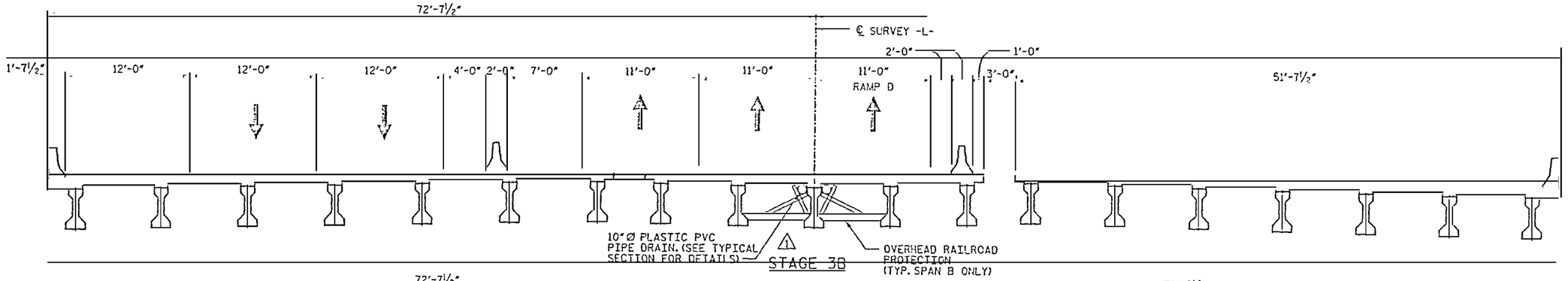
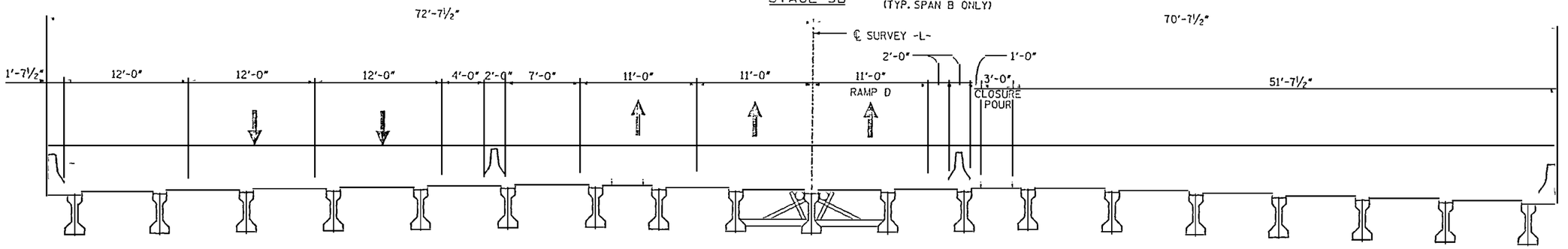


⚠1 STAGE 3B



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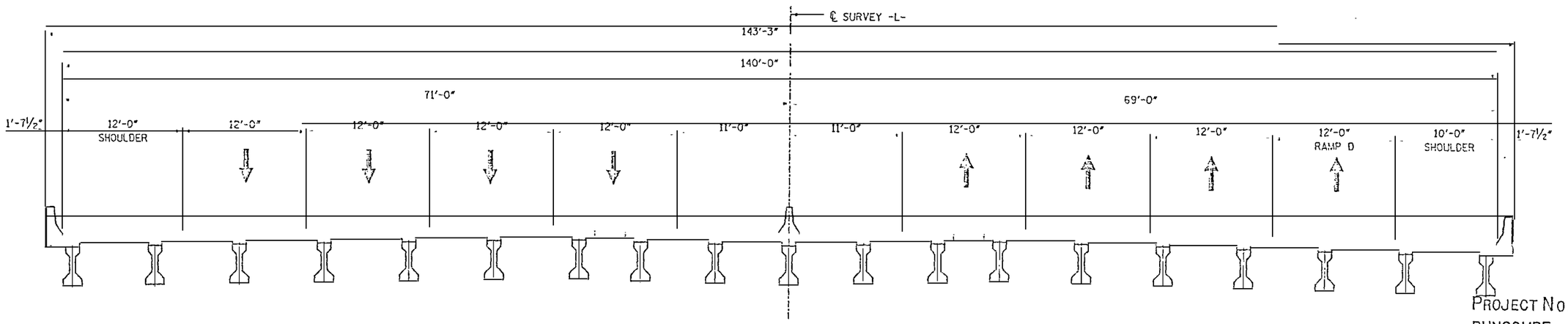

⚠1 COMPLETE

PROJECT No. I-4401
BUNCOMBE COUNTY
STATION: POT 147+53.94 -L-
POT 5+03.07 -RR-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONSTRUCTION STAGING

REVISIONS				
BY	DATE	NO.	BY	DATE
HAA	1-06	3		
		4		

SHEET NO. S2-5
TOTAL SHEETS 12

NORTH CAROLINA PROFESSIONAL SEAL 28479 ENGINEER KEVIN G BAILEY 1-18-06

NORTH CAROLINA PROFESSIONAL SEAL 18163 ENGINEER MARK F. ROBBINS 1-18-06

FLORENCE & HUTCHESON, INC. CONSULTING ENGINEERS

RALPH WHITEHEAD ASSOCIATES, INC. CONSULTING ENGINEERS P.O. BOX 35524 CHARLOTTE, N.C. 28235

DWG. NO.

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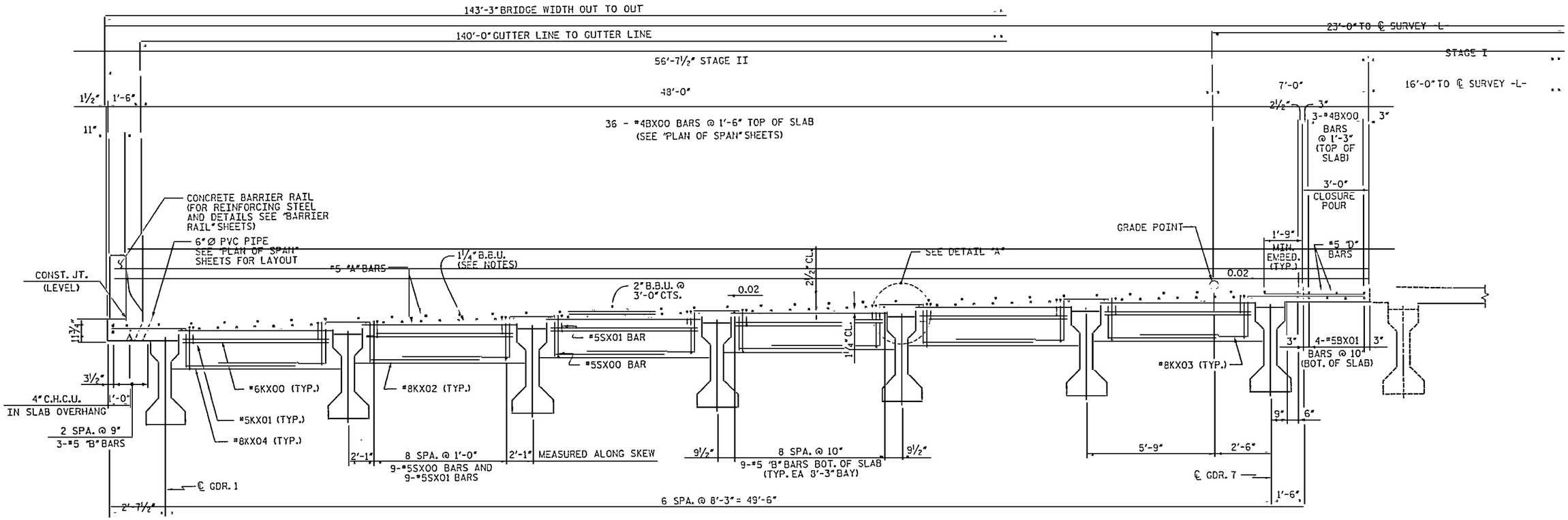
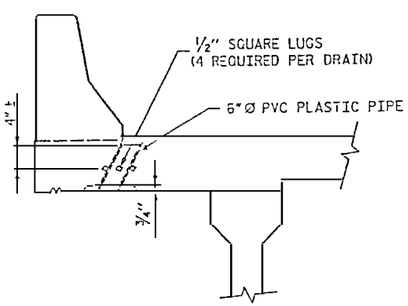


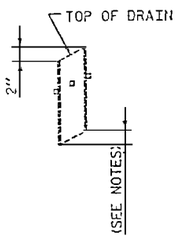
TYPICAL SECTION AT END BENT

NOTES:

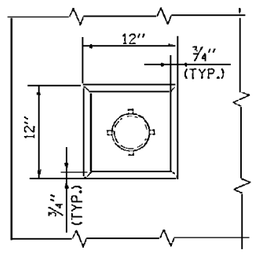
SEE SHEET 2 OF 3 FOR NOTES.



ELEVATION



PIPE DETAIL
(12 DRAINS REQUIRED)
(72 TEMPORARY DRAINS REQUIRED FOR STAGE I ONLY)



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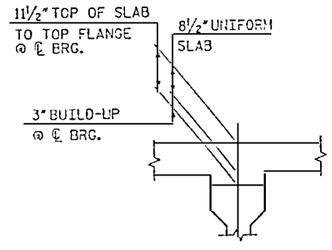
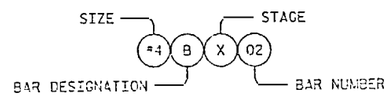


DETAIL "A"
(STAGE II)



REINFORCING BAR CALLOUT
(TYPICAL EXAMPLE)

1. TOP OF FLOOR DRAINS TO BE SET ⅜" BELOW SURFACE OF SLAB.
2. 4 - ½" SQUARE LUGS TO BE GLUED TO THE PVC PLASTIC PIPE AT EQUAL SPACES AROUND THE PIPE DRAIN APPROXIMATELY 4" FROM THE TOP OF THE PIPE.
3. DRAIN TO BE SET TO MATCH SLOPE OF BOTTOM OF OVERHANG
4. THE 6" Ø PVC PLASTIC PIPE AND FITTINGS SHALL BE SCHEDULE 40 AND CONFORM TO ASTM D1785.

DRAIN DETAILS

(EXTERIOR OVERHANG DETAILS SHOWN, STAGE I DETAILS SIMILAR)

PROJECT NO. I-4401

BUNCOMBE COUNTY

STATION: POT 147+53.94 -L-
POT 5+03.07 -RR-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION
STAGE II

REVISIONS	NO.	BY	DATE
	1		
	2		
	3		
	4		

SEAL 29479 KEVIN G. BAILEY ENGINEER 1-10-06

SEAL 18165 MARK F. ROBBINS ENGINEER 1-10-06

TAYLOR & MURPHY

FLORENCE & HUTCHESON, INC. CONSULTING ENGINEERS

RALPH WHITEHEAD ASSOCIATES, P.C. CONSULTING ENGINEERS P.O. BOX 35624 CHARLOTTE, N.C. 28235

DRAWN BY AJP DATE 9-05 PROJ. NO. D-1795.07

CHECKED BY KGB DATE 9-05

SHEET NO. S2-7

TOTAL SHEETS 43

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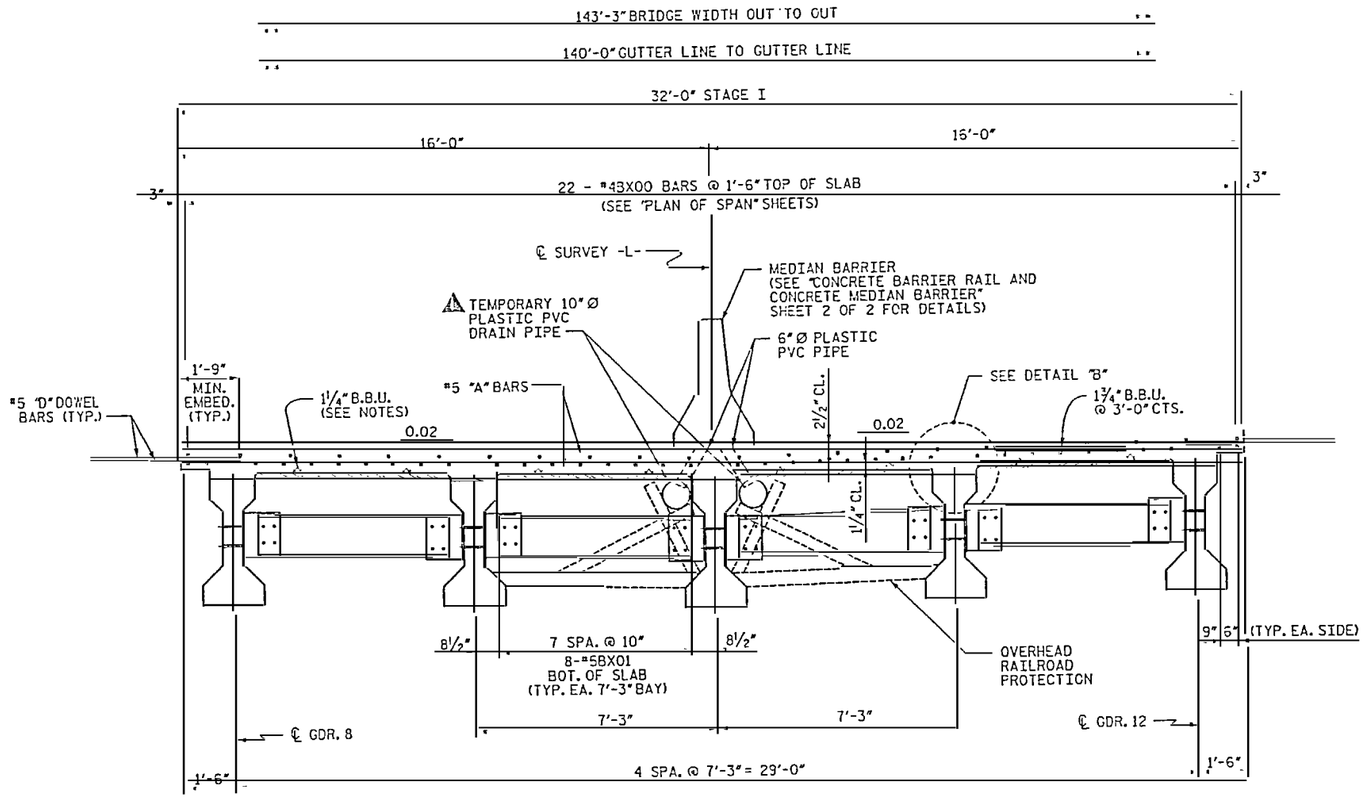


NOTES:

BARRIER RAIL IN A CONTINUOUS SPAN SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI.

PREVIOUSLY CAST CONCRETE IN A CONTINUOUS UNIT SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE UNIT.

PROVIDE 1¼" HIGH BEAM BOLSTERS UPPER B.B.U. AT 4'-0" CENTERS ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF "A" BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS AT 4'-0" CENTERS WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF "A" BARS A CLEAR DISTANCE OF 2½" ABOVE THE TOP OF THE REMOVABLE FORM.

HEIGHT OF CONTINUOUS HIGH CHAIR IN OVERHANGS IS CALCULATED AT ℄ BENT. CONTRACTOR MAY VARY HEIGHTS, AS NECESSARY, DUE TO GIRDER CAMBER.

LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED GIRDERS.

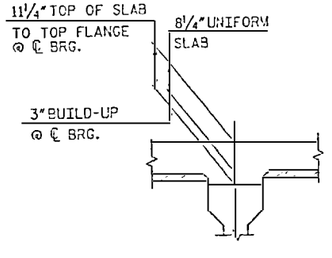
#5 "C" BARS MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO CLEAR DECK REINFORCING STEEL AND GIRDER STIRRUPS. SEE PLAN OF SPANS FOR "C" BAR LOCATIONS.

SEE CONSTRUCTION SEQUENCE SHEETS AND TRAFFIC CONTROL PLANS FOR LOCATION AND PAY LIMITS OF THE ANCHORED PORTABLE CONCRETE BARRIER.

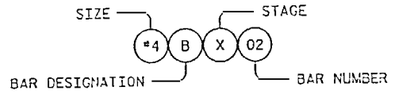
DOWELS SHALL BE PLACED IN THE SAME HORIZONTAL PLANE AS THE TOP SLAB REINFORCING STEEL.

⚠ TEMPORARY 10" Ø PLASTIC PVC DRAIN PIPES TO RUN CONTINUOUSLY FROM BENT 1 TO BENT 2. DRAIN PIPES TO BE HELD IN PLACE USING BRACING AND BLOCKING SUPPORTED BY THE OVERHEAD RAILROAD PROTECTION. TEMPORARY DRAIN PIPES TO REMAIN IN PLACE UNTIL MEDIAN BARRIER IS POURED. THE DRAIN PIPE ENDS WILL BE CAPPED AT BENT 1. AT BENT 2 THE 10" Ø DRAIN PIPES WILL FLOW INTO 12" Ø CORRIGATED PLASTIC PIPE AND RUN AWAY FROM BRIDGE AND RAILWAY DITCH, AT THE APPROVAL OF THE ENGINEER.

TYPICAL SECTION AT INTERMEDIATE DIAPHRAGM



DETAIL "B"
(STAGE I)



REINFORCING BAR CALLOUT
(TYPICAL EXAMPLE)

PROJECT No. I-4401
BUNCOMBE COUNTY
STATION: POT 147+53.94 -L-
POT 5+03.07 -RR-

SHEET 2 OF 3

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 23479 KEVIN G BAILEY 1-10-06

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT SEAL 1965 MARK F. ROBBINS 1-10-06

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION
STAGE I

SHEET NO. S2-T3
TOTAL SHEETS 18

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FLORENCE & HUTCHESON, INC.
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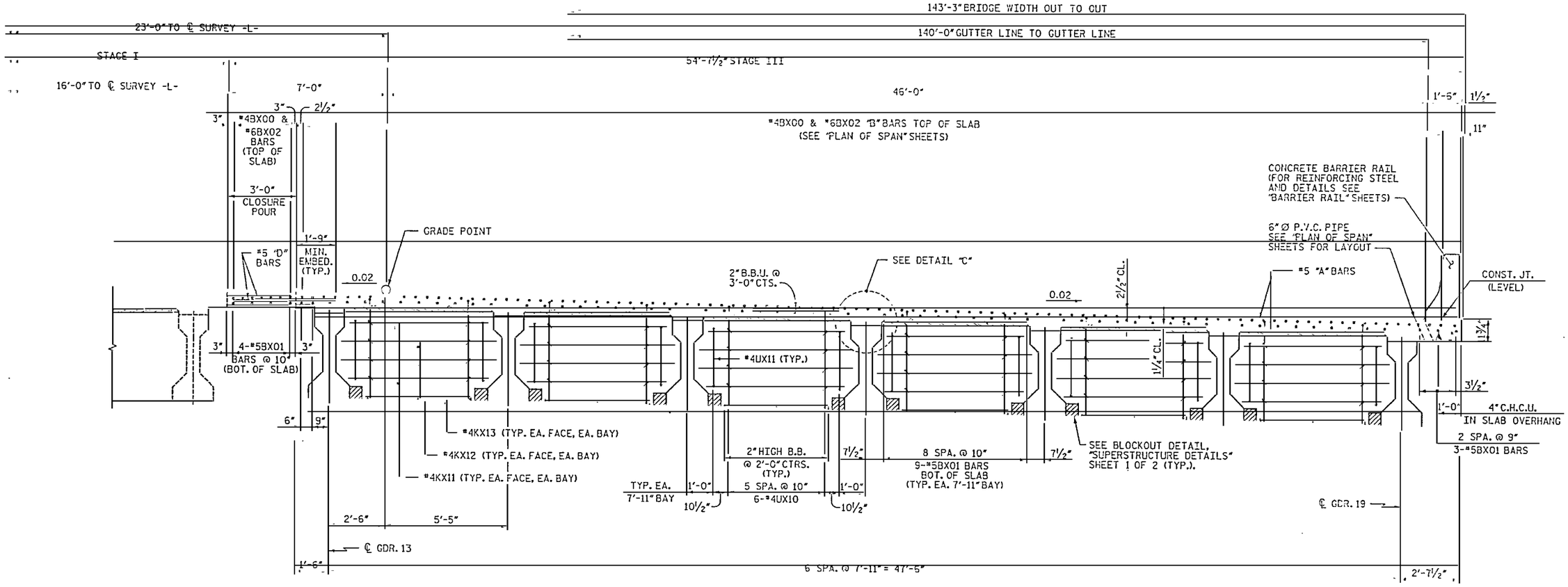
RALEIGH, N.C. 27615

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

DRAWN BY AJP DATE 9-05
CHECKED BY KGB DATE 9-05
D-1736.07

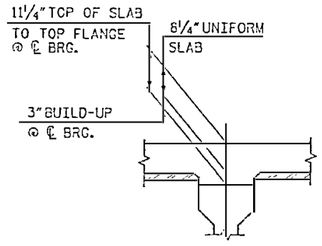


TYPICAL SECTION AT BENT DIAPHRAGM

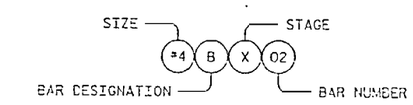
NOTES:

FOR ADDITIONAL NOTES SEE SHEET 2 OF 3 FOR NOTES.

SEE SHEET 1 OF 3 FOR DRAIN DETAILS.



DETAIL "C"
(STAGE III)



REINFORCING BAR CALLOUT
(TYPICAL EXAMPLE)

PROJECT NO. I-4401
BUNCOMBE COUNTY
STATION: POT 147+53.94 -L-
POT 5+03.07 -RR-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION STAGE III

REVISIONS	NO.	BY	DATE
	3		
	4		
	1		
	2		

SHEET NO. S2-T3
TOTAL SHEETS 13

TAYLOR & MURPHY

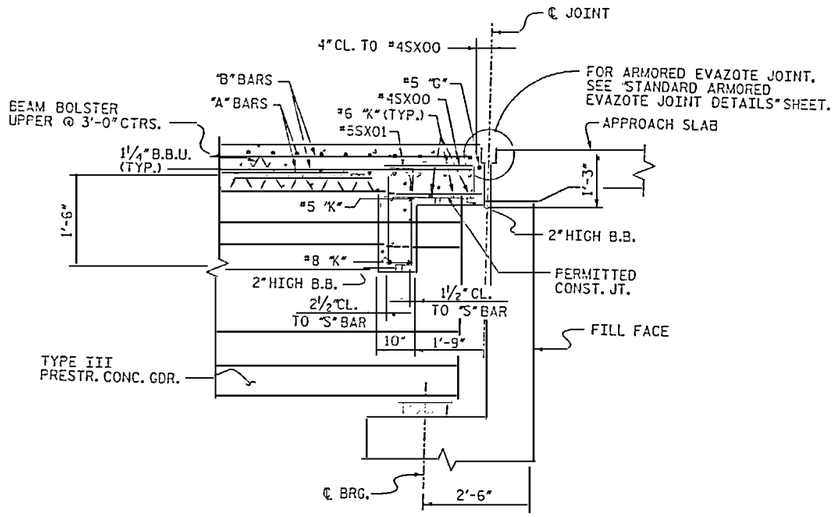
FLORENCE & HUTCHESON, INC. CONSULTING ENGINEERS

RALPH WHITEHEAD ASSOCIATES, INC. CONSULTING ENGINEERS P.O. BOX 35624 CHARLOTTE, N.C. 28235

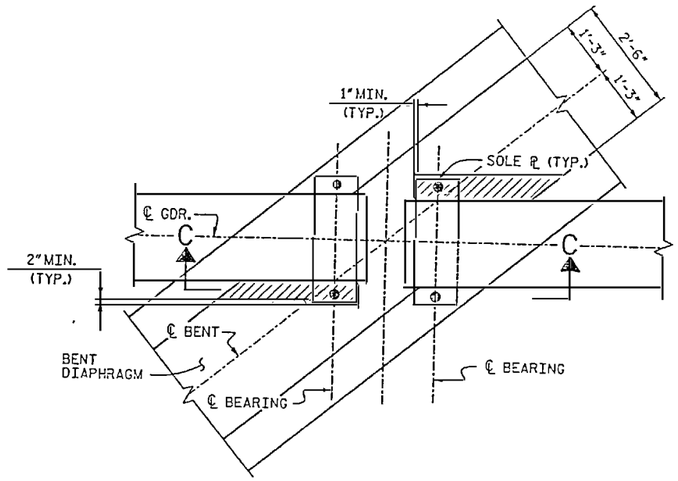
DRAWN BY AJP DATE 9-05 PROJ. NO. B-1798.07b
CHECKED BY KGB DATE 10-05

NORTH CAROLINA SEAL 23479 ENGINEER KEVIN G BAILEY 1-10-06

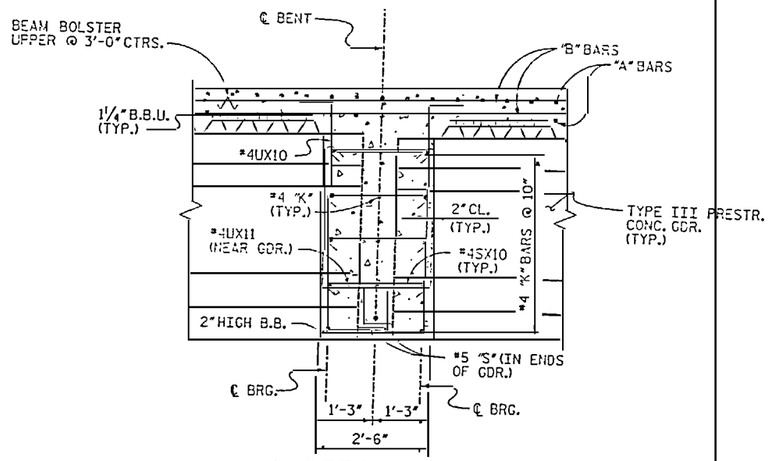
NORTH CAROLINA SEAL 19155 ENGINEER MARK R ROBBINS 1-13-06



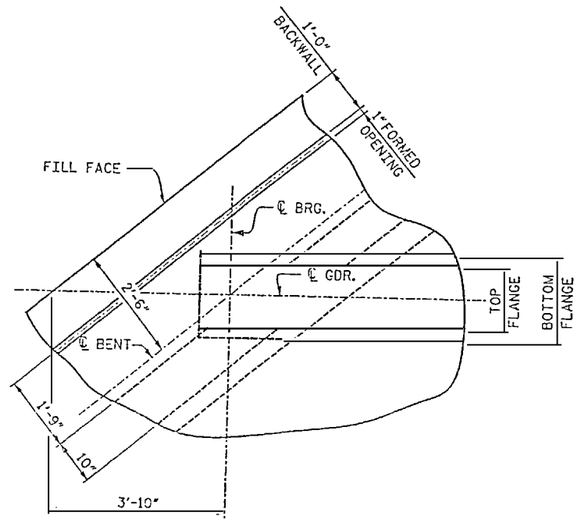
SECTION A-A
(EXPANSION DIAPHRAGM)



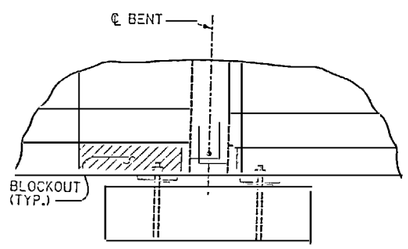
PLAN VIEW



SECTION B-B
(BENT DIAPHRAGM)

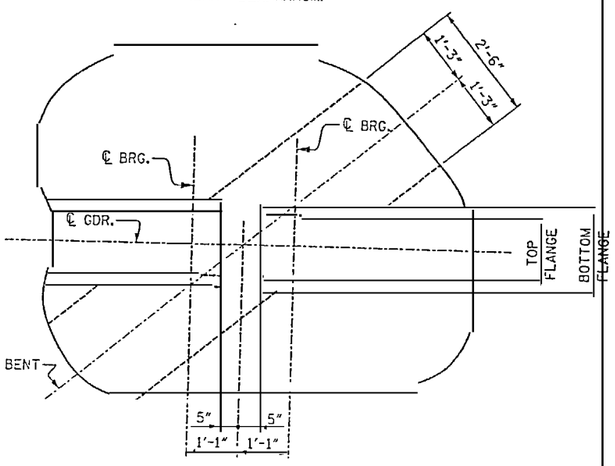


PLAN
(SECTION A-A)



SECTION C-C

BENT DIAPHRAGM BLOCKOUT DETAIL



PLAN
(SECTION B-B)

PROJECT NO. I-4401
BUNCOMBE COUNTY
STATION: POT 147+53.94 -L-
POT 5+03.07 -RR-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE DETAILS

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 28479 KEVIN G. BAILEY 1-10-05

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18155 MARK F. ROBBINS 1-10-05

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

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DRAWN BY AJP DATE 9-05
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PROJ. NO. D-1736.03

SHEET NO. S-3
TOTAL SHEETS 45

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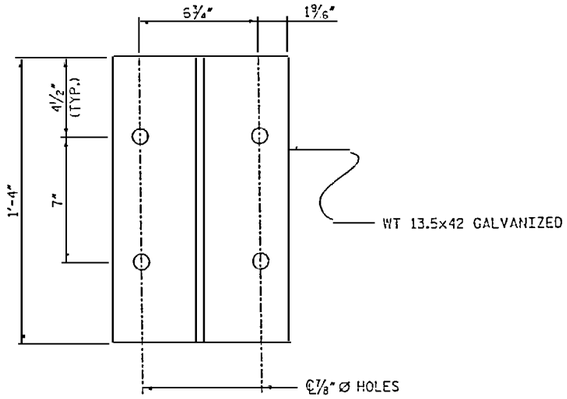
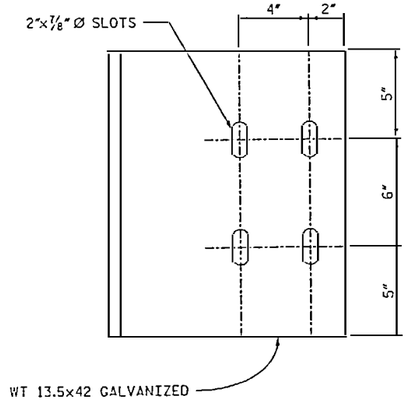


DETAIL "B"



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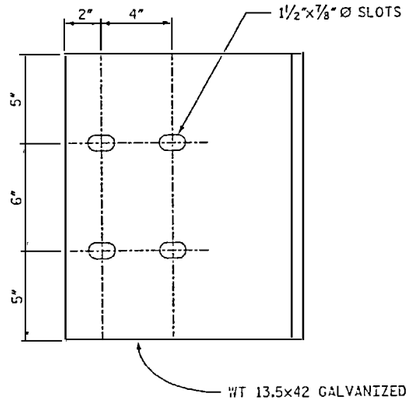
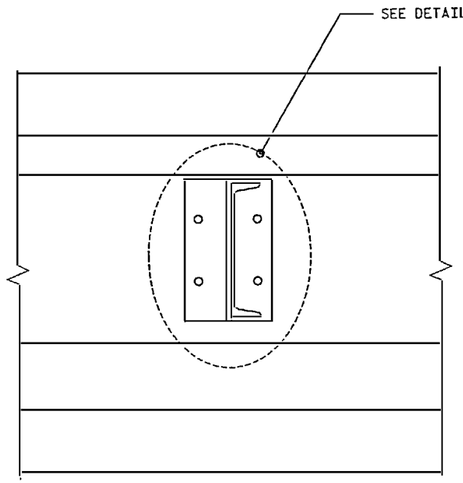
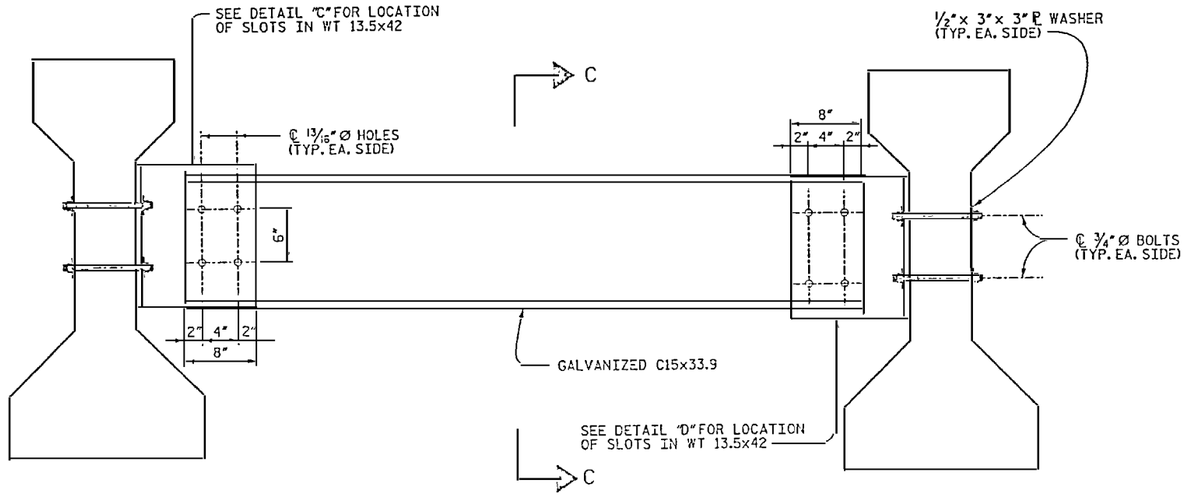


DETAIL "D"



SECTION C-C



ELEVATION

INTERMEDIATE DIAPHRAGM DETAILS

NOTE: STEEL BOLTS, NUTS AND WASHERS SHALL BE ASTM A325 GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

(48 INTERMEDIATE DIAPHRAGMS REQUIRED)

STRUCTURAL STEEL (LBS.)
15,784

PROJECT NO. I-4401
BUNCOMBE COUNTY
STATION: POT 147+53.94 -L-
POT 5+03.07 -RR-

SHEET 2 OF 2

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 28479 KEVIN G BAILEY 11-16-05

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT SEAL 13155 MARK F. ROBBINS 11-16-05

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE DETAILS

SHEET NO. S2-63
TOTAL SHEETS 48

TAYLOR & MURPHY

FLORENCE & HUTCHESON INC
CONSULTING ENGINEERS
400 WESTBOURNE BLVD. SUITE 415
RICHMOND VA 23226

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

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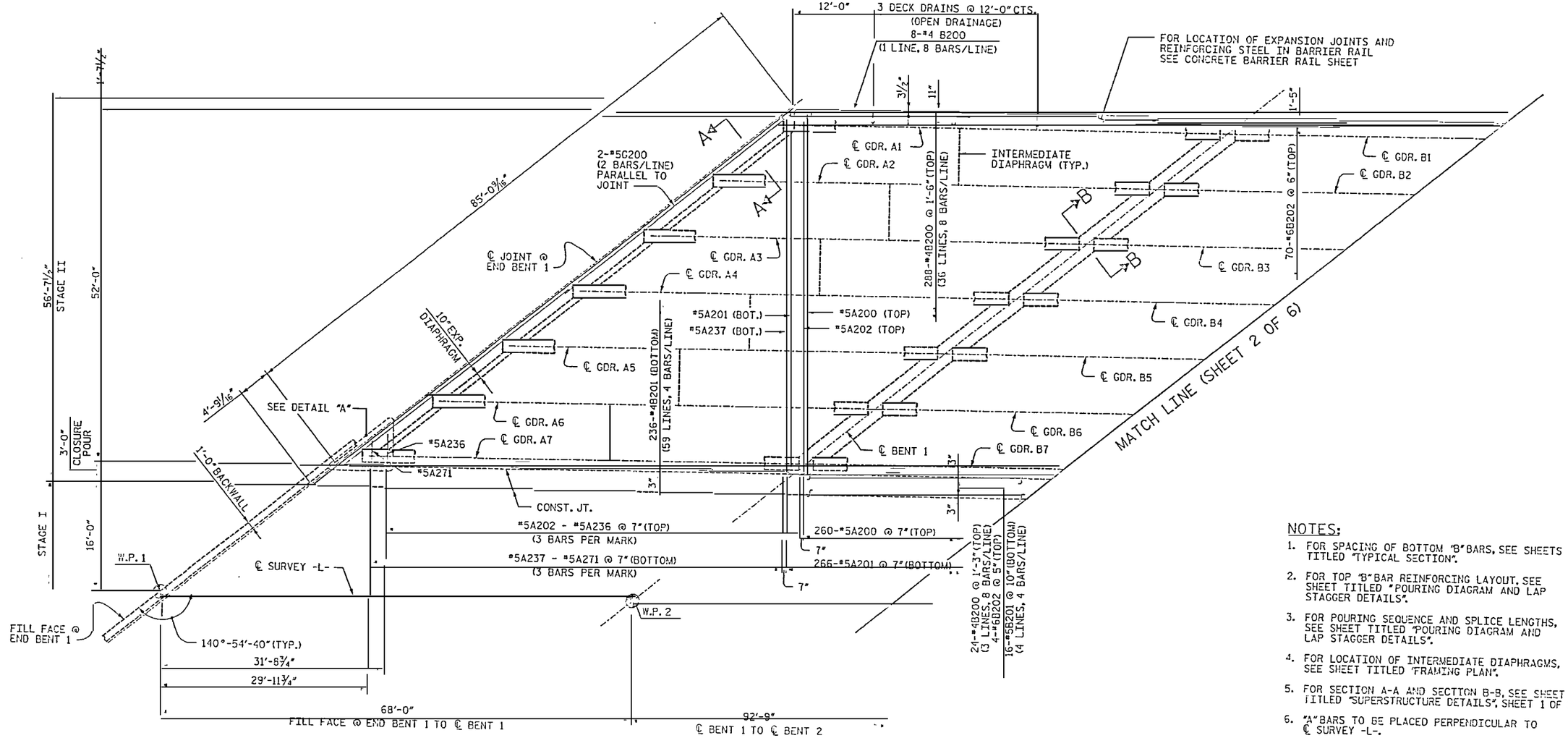
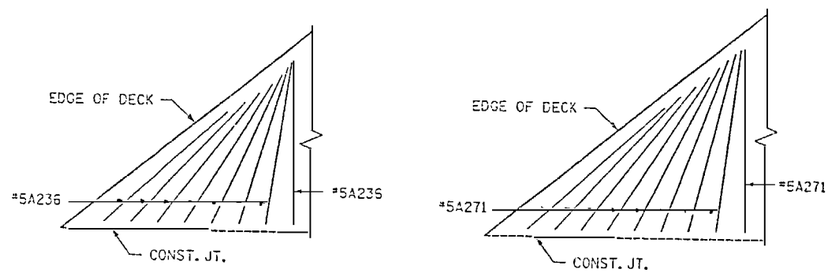


SPAN A

SPAN B



TOP BARS

BOTTOM BARS

DETAIL "A"

(SPLAY BARS @ END BENT 1 SHOWN, END BENT 2 DETAILS SIMILAR)

NOTES:

1. FOR SPACING OF BOTTOM "B" BARS, SEE SHEETS TITLED "TYPICAL SECTION".
2. FOR TOP "B" BAR REINFORCING LAYOUT, SEE SHEET TITLED "POURING DIAGRAM AND LAP STAGGER DETAILS".
3. FOR POURING SEQUENCE AND SPLICE LENGTHS, SEE SHEET TITLED "POURING DIAGRAM AND LAP STAGGER DETAILS".
4. FOR LOCATION OF INTERMEDIATE DIAPHRAGMS, SEE SHEET TITLED "FRAMING PLAN".
5. FOR SECTION A-A AND SECTION B-B, SEE SHEET TITLED "SUPERSTRUCTURE DETAILS", SHEET 1 OF 2.
6. "A" BARS TO BE PLACED PERPENDICULAR TO ℄ SURVEY -L-.
7. FOR STAGE I-II DOWEL BAR LAYOUT, SEE SHEET 3 OF 6.
8. FOR EXPANSION DIAPHRAGM DETAILS, SEE SHEET 5 OF 6.
9. FOR BENT DIAPHRAGM DETAILS, SEE SHEET 6 OF 6.
10. FOR DECK DRAIN DETAILS, SEE SHEET TITLE "TYPICAL SECTION STAGE II".

PROJECT NO. I-4401

BUNCOMBE COUNTY

STATION: POT 147+53.94 -L-
POT 5+03.07 -RR-

SHEET 1 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF SPAN A & B
STAGE II

NORTH CAROLINA SEAL 28479 ENGINEER KEVIN G BAILEY 1-10-06

NORTH CAROLINA SEAL 13165 ENGINEER MARK F. ROSSINI 1-10-06

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

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FLORENCE & HUTCHESON INC. CONSULTING ENGINEERS

RALPH WHITEHEAD ASSOCIATES, INC. CONSULTING ENGINEERS P.O. BOX 35621 CHARLOTTE, N.C. 28235

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CHECKED BY	KGB	DATE 10-05	D-1706.09

SHEET NO. S2-2
TOTAL SHEETS 48

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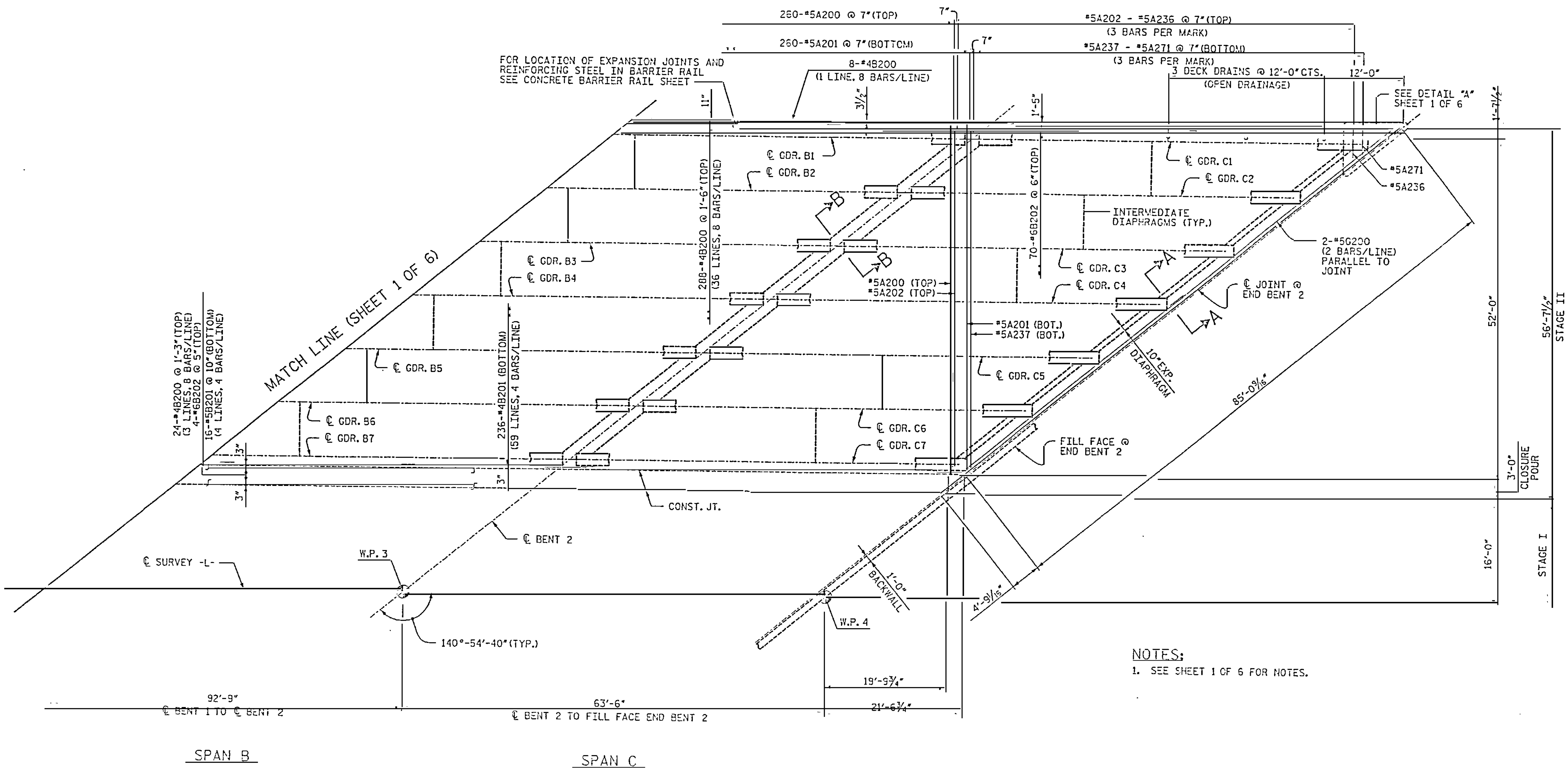

NOTES:

1. SEE SHEET 1 OF 6 FOR NOTES.

PROJECT NO. I-4401

BUNCOMBE COUNTY

STATION: POT 147+53.94 -L-
POT 5+03.07 -RR-

SHEET 2 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF SPAN B & C
STAGE II

NORTH CAROLINA PROFESSIONAL SEAL 22479 ENGINEER KEVIN G. BAILEY 1-10-06

NORTH CAROLINA SEAL 13165 ENGINEER MARK F. ROBBINS 1-10-06

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CONSULTING ENGINEERS
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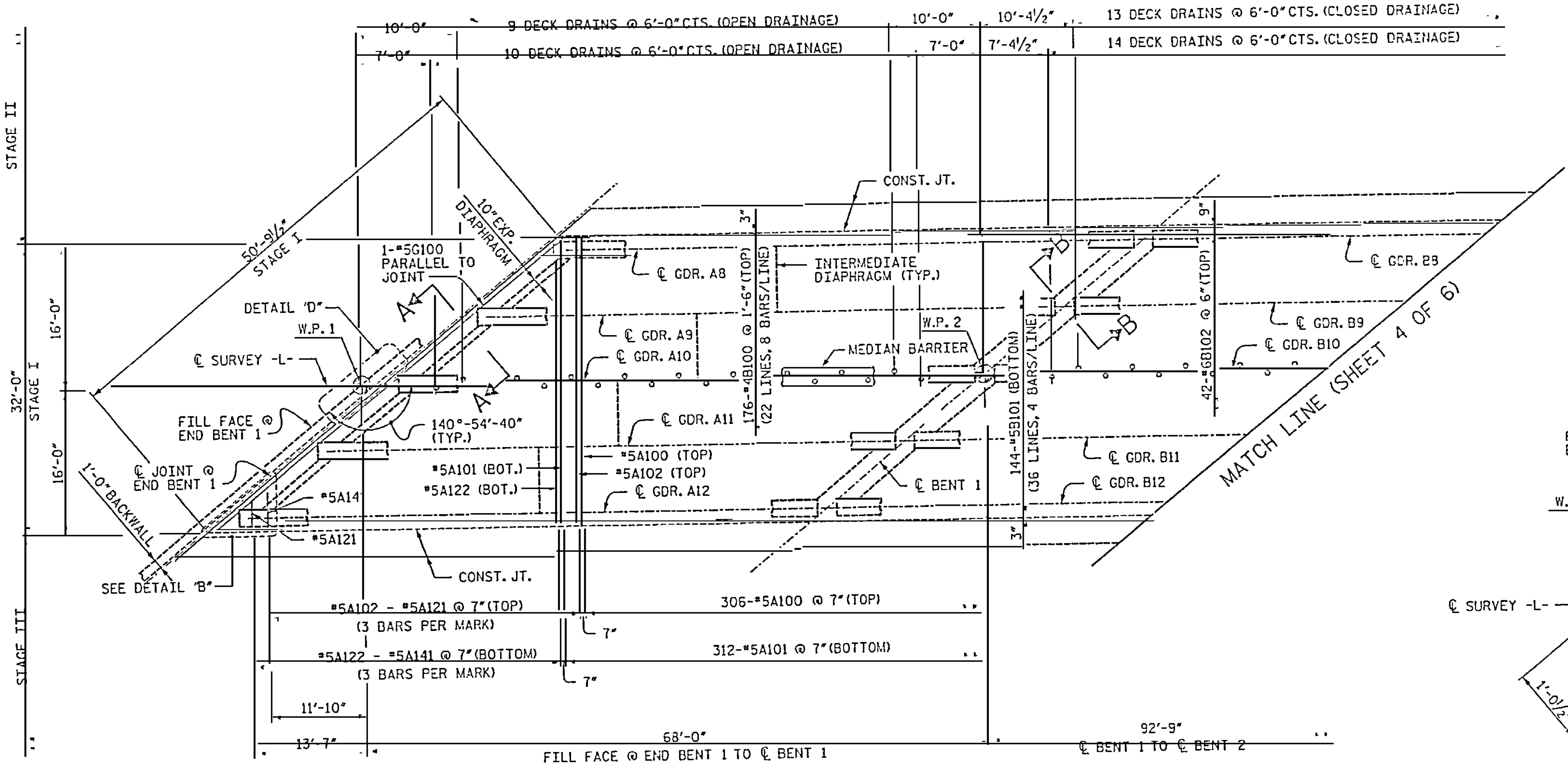
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

SHEET NO. S2-10
TOTAL SHEETS 46

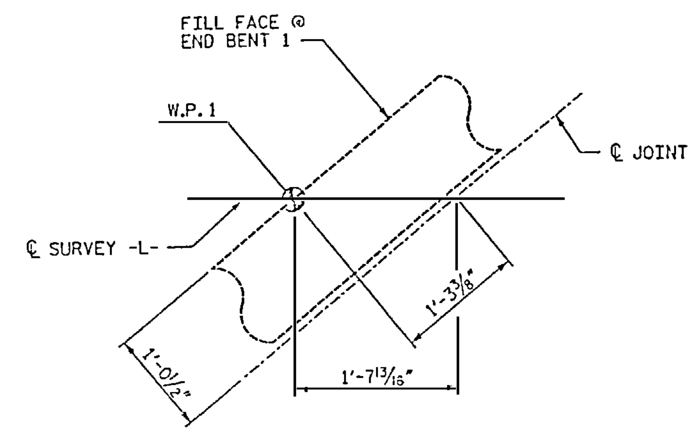
NOTES:

1. FOR STAGE I-III DOWEL BARS LAYOUT, SEE SHEET 4 OF 6.
2. FOR ADDITIONAL NOTES, SEE SHEET 1 OF 6.

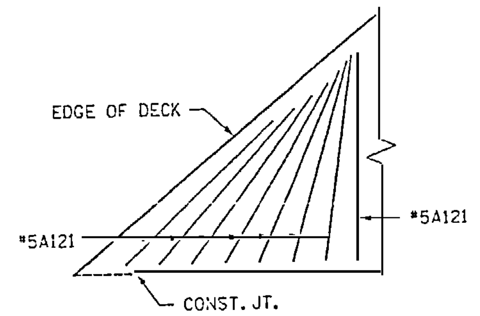


SPAN A

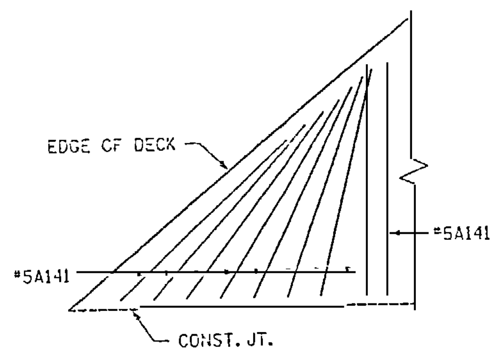
SPAN B



DETAIL "D"



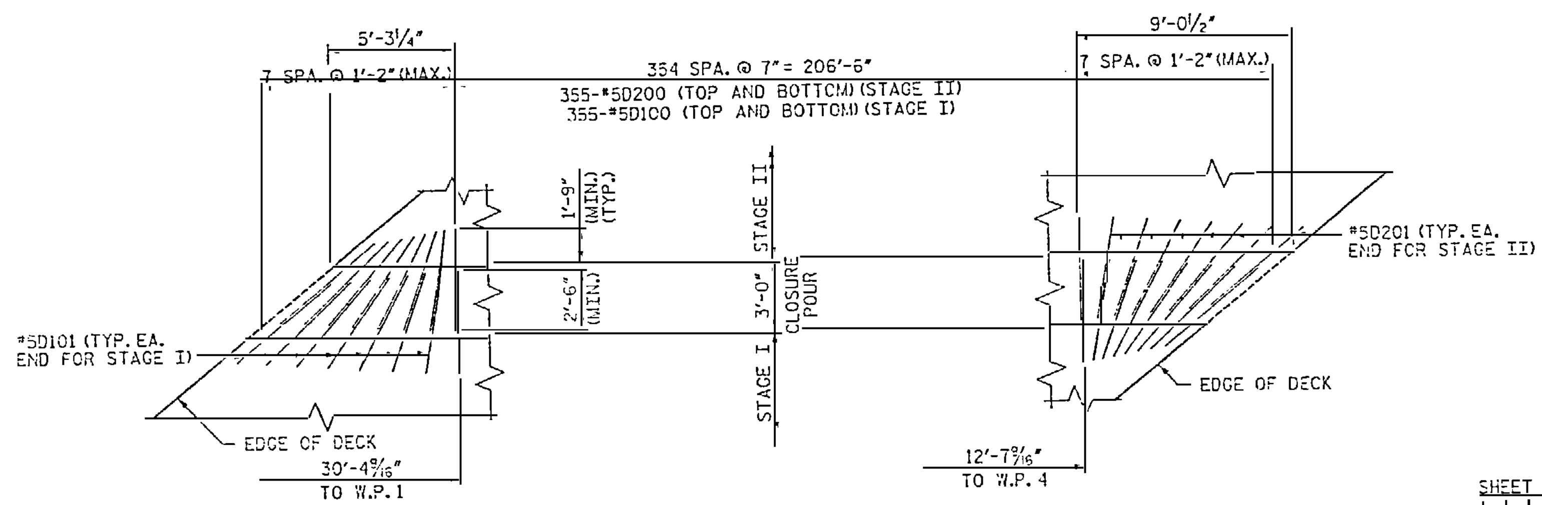
TOP BARS



BOTTOM BARS

DETAIL "B"

(SPLAY BARS @ END BENT 1 SHOWN, END BENT 2 DETAILS SIMILAR)



DOWEL BAR LAYOUT

STAGE I-II

PROJECT NO. I-4401

BUNCOMBE COUNTY

STATION: POT 147+53.94 -L-
POT 5+03.07 -RR-

SHEET 3 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF SPAN A & B
STAGE I

NORTH CAROLINA PROFESSIONAL SEAL 28479 ENGINEER KEVIN G. BAILEY

NORTH CAROLINA SEAL 15165 ENGINEER MARK F. ROBBINS

REVISIONS: NO. | BY | DATE

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FLORENCE & HUTCHESON, INC. CONSULTING ENGINEERS

RALPH WHITEHEAD ASSOCIATES, INC. CONSULTING ENGINEERS P.O. BOX 35624 CHARLOTTE, N.C. 28235

DRAWN BY CGL DATE 8-05 DWG. NO. D-1786.11
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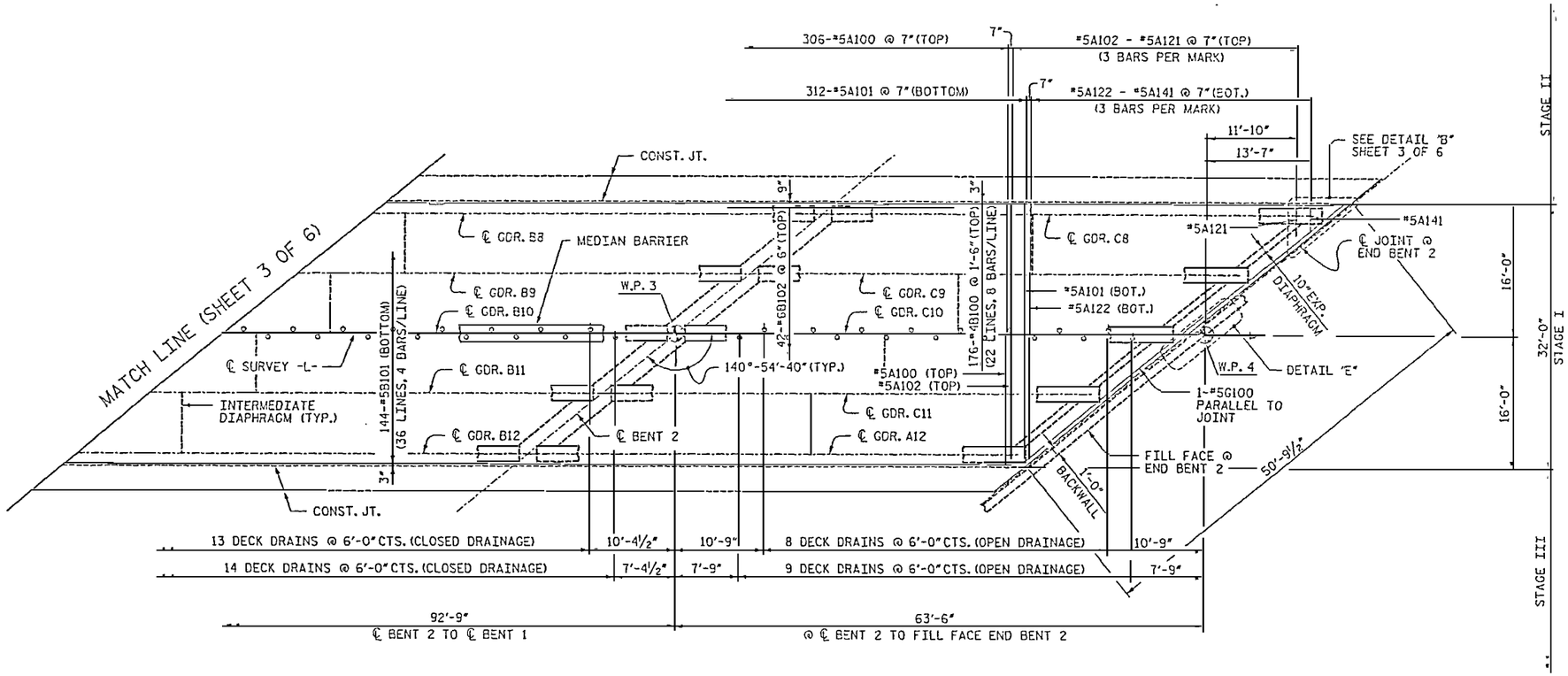
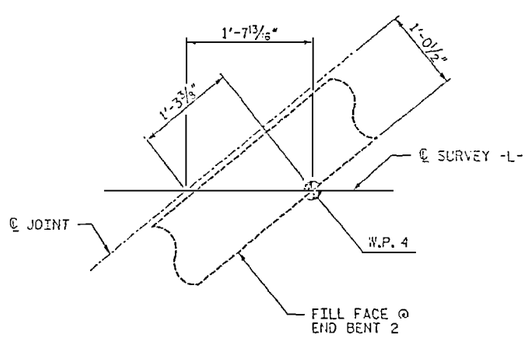
SHEET NO. S2-11
TOTAL SHEETS 53

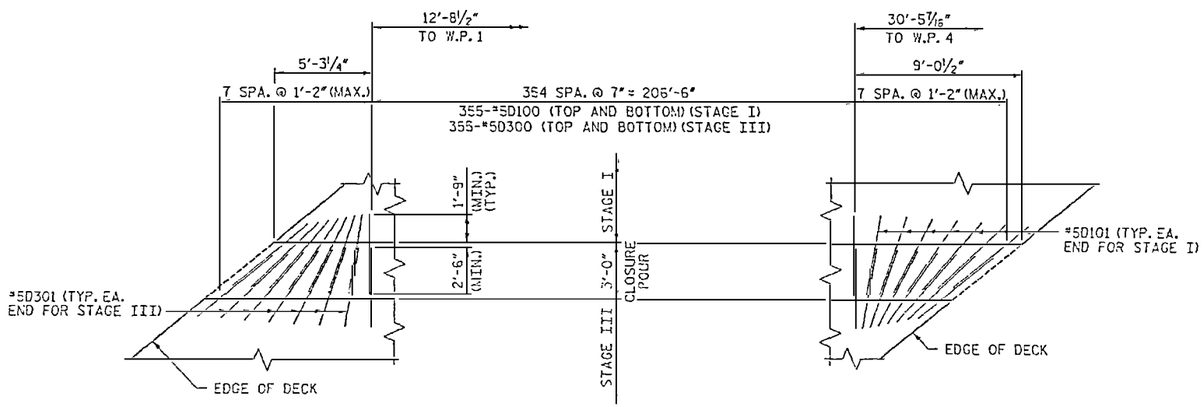


SPAN B

SPAN C



DETAIL "E"



DOWEL BAR LAYOUT

STAGE I-III

NOTES:

1. SEE SHEET 1 OF 6 FOR NOTES.

PROJECT NO. I-4401

BUNCOMBE COUNTY

STATION: POT 147+53.94 -L-

POT 5+03.07 -RR-

SHEET 4 OF 6

NORTH CAROLINA PROFESSIONAL SEAL 22479 ENGINEER KEVIN G BAILEY 1-10-06

NORTH CAROLINA PROFESSIONAL SEAL 18165 ENGINEER MARK F. ROBBINS 1-10-06

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

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

RALEIGH

PLAN OF SPAN B & C

STAGE I

SHEET NO. S2-12

TOTAL SHEETS 43

TAYLOR & MURPHY

FLORENCE & HUTCHESON, INC. CONSULTING ENGINEERS 4020 WESTCHASE BLVD. SUITE 175 RALEIGH, NC 27607

RALPH WHITEHEAD ASSOCIATES, INC. CONSULTING ENGINEERS P.O. BOX 35624 CHARLOTTE, N.C. 28235

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CHECKED BY KGB DATE 12-05

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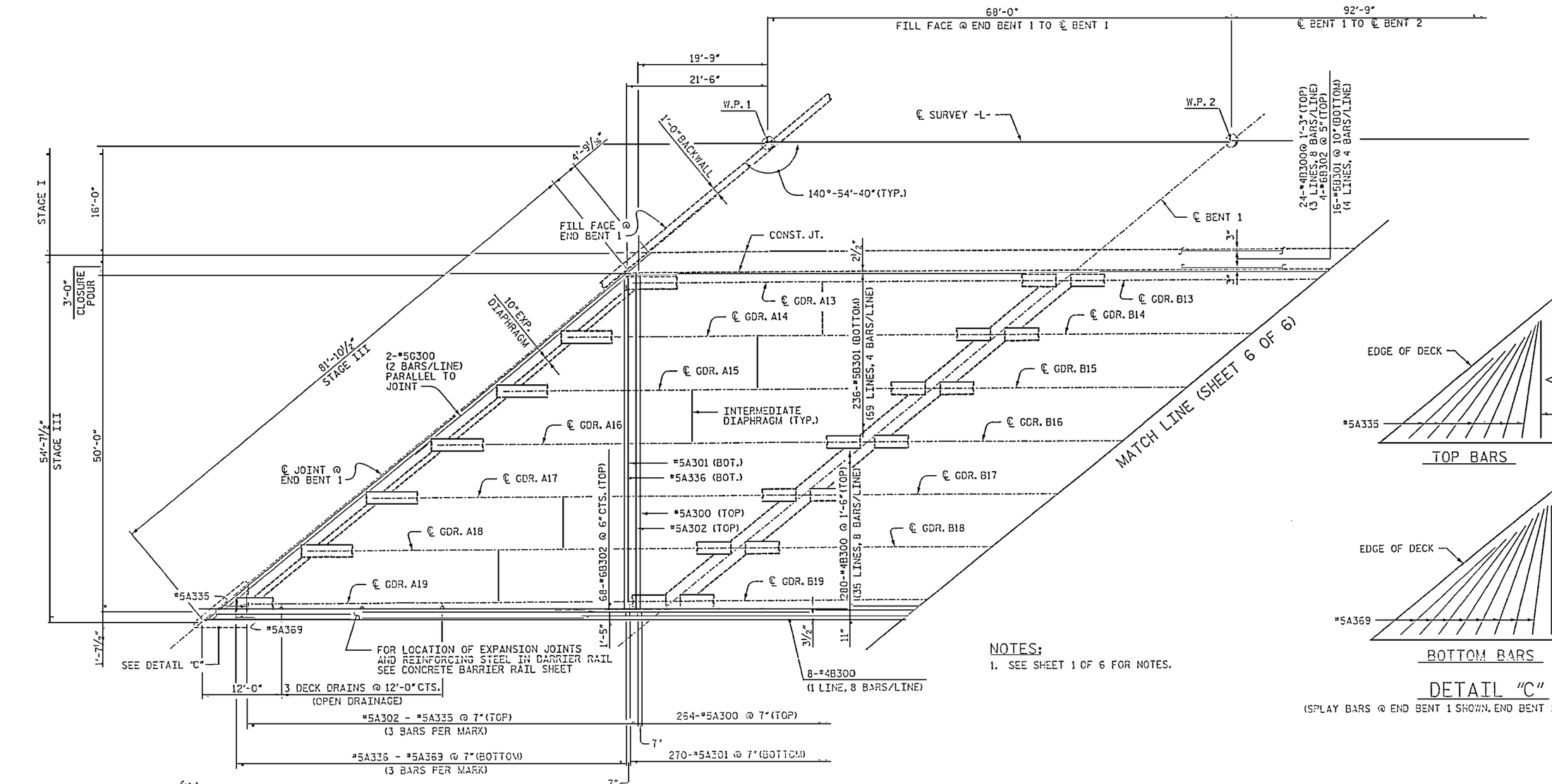


TOP BARS

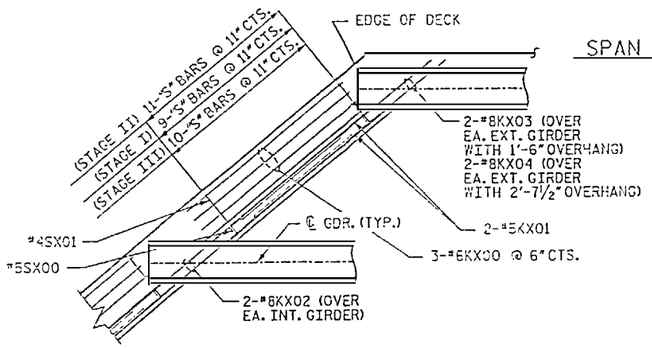
BOTTOM BARS

DETAIL "C"

(SPLAY BARS @ END BENT 1 SHOWN. END BENT 2 DETAILS SIMILAR)

NOTES;

1. SEE SHEET 1 OF 6 FOR NOTES.



EXPANSION DIAPHRAGM DETAIL

PROJECT NO. I-4401

BUNCOMBE COUNTY

STATION: POT 147+53.94 -L-
POT 5+03.07 -RR-

SHEET 5 OF 6

NORTH CAROLINA SEAL 28479 ENGINEER KEVIN G. BAILEY 1-10-06

NORTH CAROLINA SEAL 18165 ENGINEER MARK F. ROSSINI 1-10-06

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF SPAN A & B
STAGE III

INVICR & INLIGHT

FLORENCE & HUTCHESON INC. CONSULTING ENGINEERS 4130 WESTERGATE DRIVE, SUITE 415 RALEIGH, NC 27609

RALPH WHITEHEAD ASSOCIATES, INC. CONSULTING ENGINEERS P.O. BOX 35624 CHARLOTTE, N.C. 28235

DRAWN BY CDL DATE 8-05
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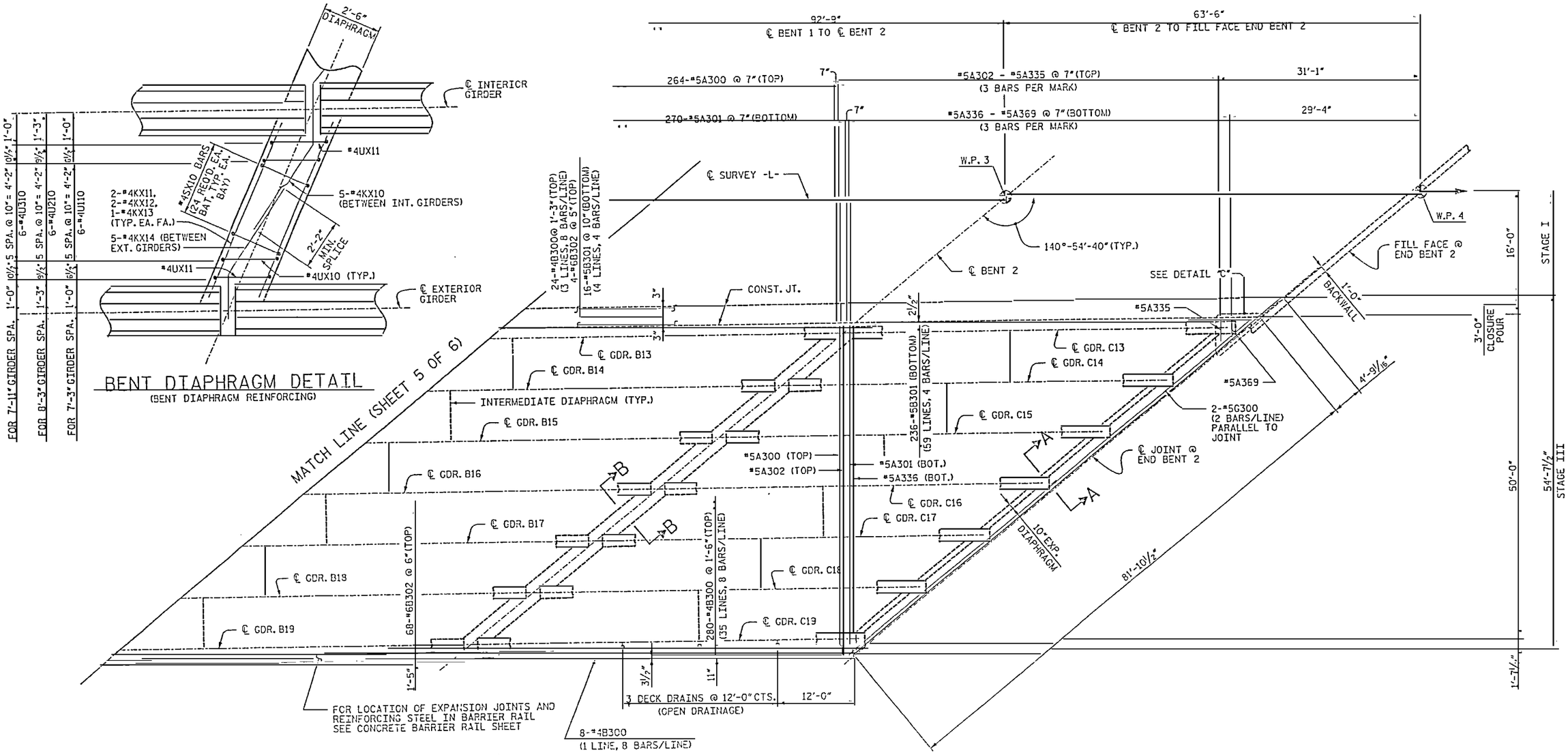
CAD NO. D-1736.13

SHEET NO. S2-13

TOTAL SHEETS 48



NOTES:

1. FOR STAGE I-III DOWEL BAR LAYOUT, SEE SHEET 4 OF 6.
2. FOR ADDITIONAL NOTES, SEE SHEET 1 OF 6.

PROJECT No. I-4401
BUNCOMBE COUNTY
STATION: POT 147+53.94 -L-
POT 5+03.07 -RR-

SHEET 6 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF SPAN B & C
STAGE III

REVISIONS

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

SEAL 28479 ENGINEER KEVIN G BAILEY 1-10-06

SEAL 18165 ENGINEER MARK F. ROBBINS 1-10-06

TAYLOR & MURPHY

FLORENCE & HUTCHESON, INC. CONSULTING ENGINEERS

RALPH WHITEHEAD ASSOCIATES, INC. CONSULTING ENGINEERS P.O. BOX 35624 CHARLOTTE, N.C. 28235

DRAWN BY DDL DATE 8-05
CHECKED BY KGB DATE 12-05
W.O. NO. D-1766J4

SHEET NO. S2-14
TOTAL SHEETS 19

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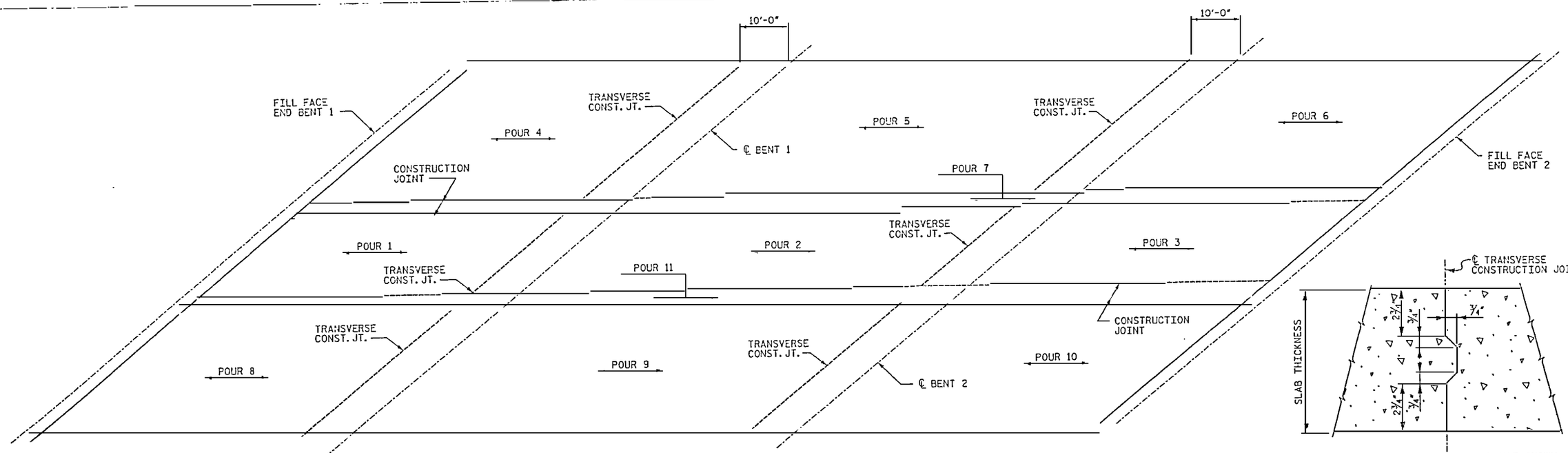
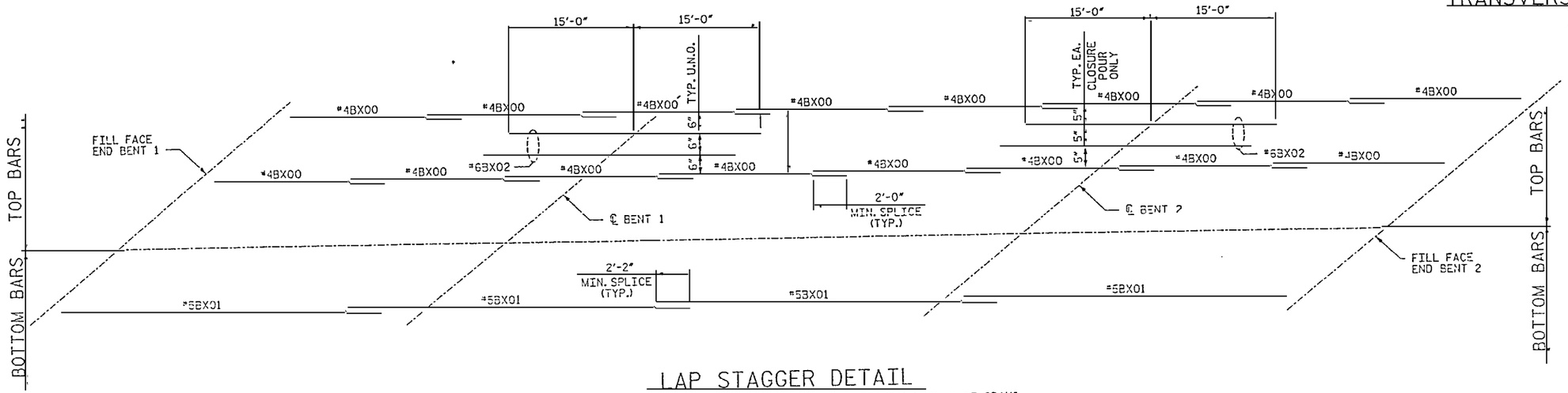


POURING DIAGRAM

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

TRANSVERSE CONSTRUCTION JOINT IN DECK SLAB



LAP STAGGER DETAIL

FOR BAR MARKS, SEE SHEETS TITLED "TYPICAL SECTION" AND "PLAN OF SPAN".

PROJECT NO. I-4401

BUNCOMBE COUNTY

STATION: POT 147+53.94 -L-
POT 5+03.07 -RR-

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 28479 KEVIN G. BAILEY 1-10-06

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18165 MARK F. ROSBINS 1-10-06

REVISIONS			
NO.	BY	DATE	
1			
2			
3			
4			

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

POURING DIAGRAM AND LAP STAGGER DETAILS

TAYLOR & MURPHY

FLORENCE & HUTCHESON, INC. CONSULTING ENGINEERS 1600 WESTRIDGE BLVD. SUITE 175 GREENSBORO, NC 27407

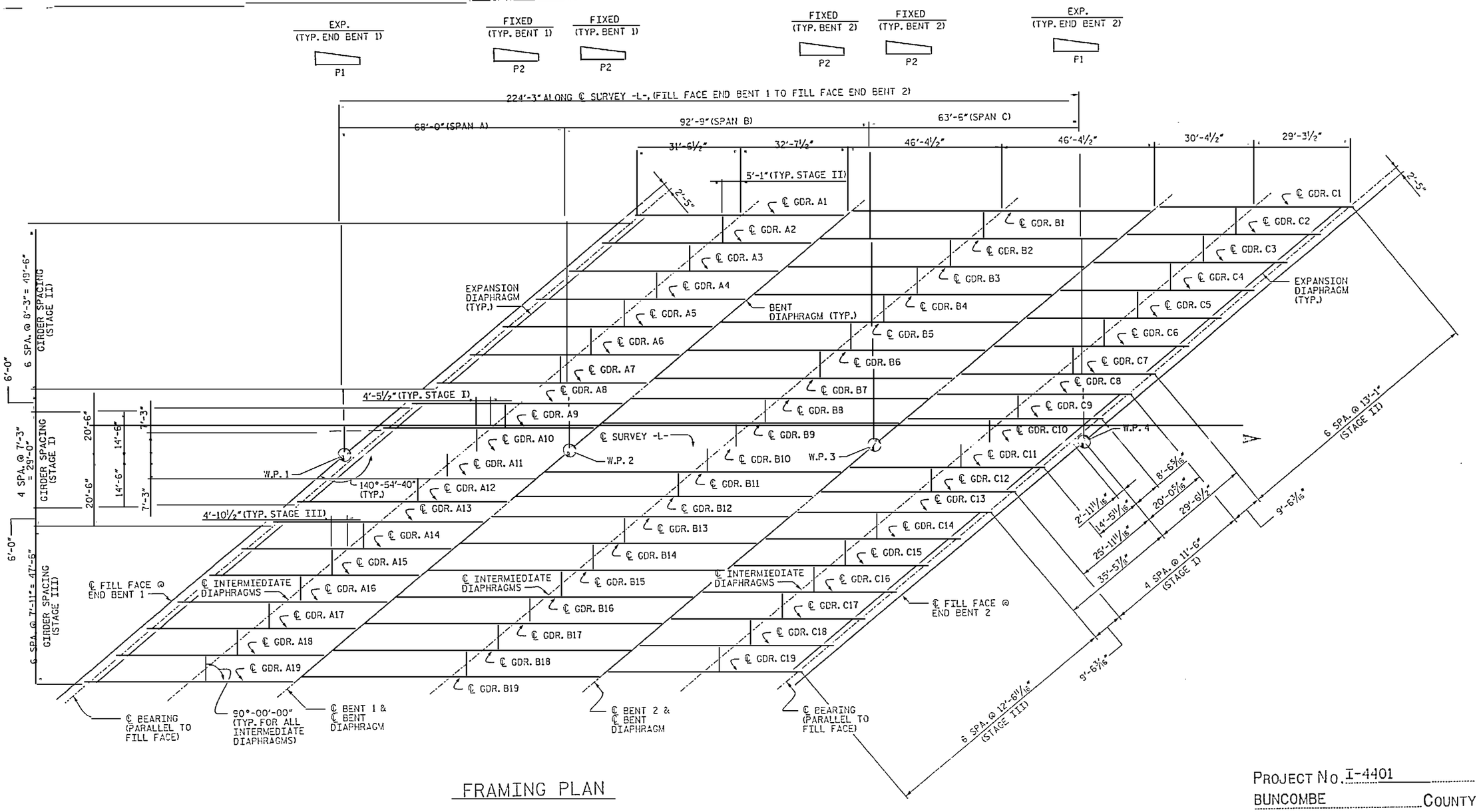
RALPH WHITEHEAD ASSOCIATES, INC. CONSULTING ENGINEERS P.O. BOX 35624 CHARLOTTE, N.C. 28235

DRAWN BY	TJT	DATE	09-05
DESIGNED BY	KGB	DATE	10-05

DWG. NO. 0-1786.15

SHEET NO. S2-15

TOTAL SHEETS 38



FRAMING PLAN

PROJECT No. I-4401
BUNCOMBE COUNTY
STATION: POT 147+53.94 -L-
POT 5+03.07 -RR-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FRAMING PLAN

NORTH CAROLINA PROFESSIONAL SEAL 28479 ENGINEER KEVIN G BAILEY 1-10-06

NORTH CAROLINA PROFESSIONAL SEAL 18165 ENGINEER MARK F. ROBBINS 1-10-06

REVISIONS	NO.	BY	DATE
	1		
	2		
	3		
	4		

TAYLOR & MURPHY

FLORENCE & HUTCHESON, INC
CONSULTING ENGINEERS
400 WESTCHASE BLVD, SUITE 410
RALEIGH, NC 27607

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

DRAWN BY	TJT	DATE	9-05	DWG. NO.
CHECKED BY	KGB	DATE	10-05	D1786.16

SHEET NO. S2-15
TOTAL SHEETS 49

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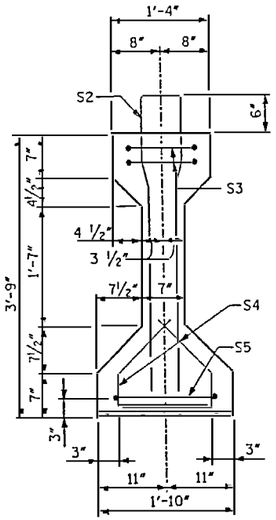
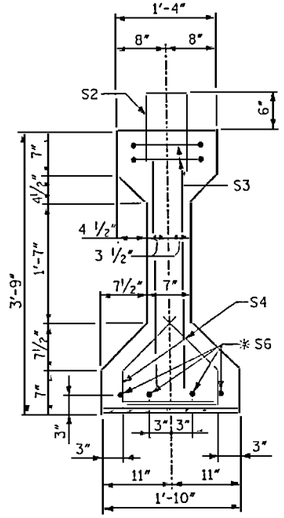
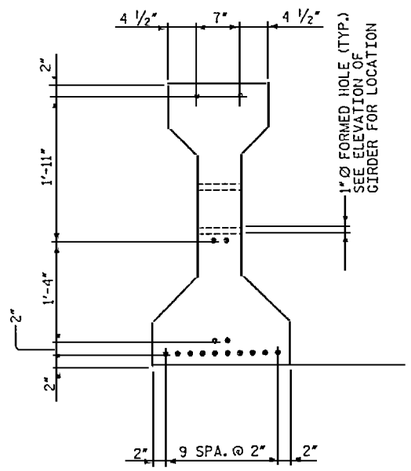


SECTION A-A



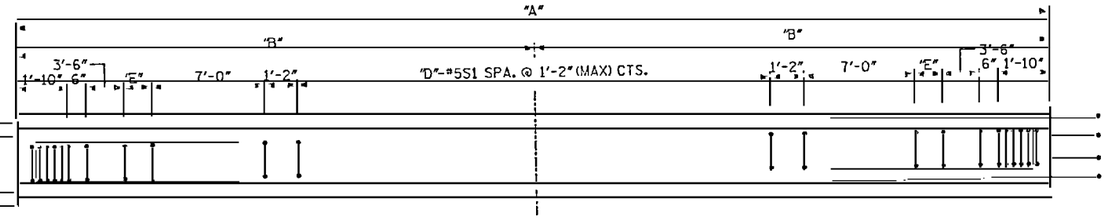
SECTION B-B



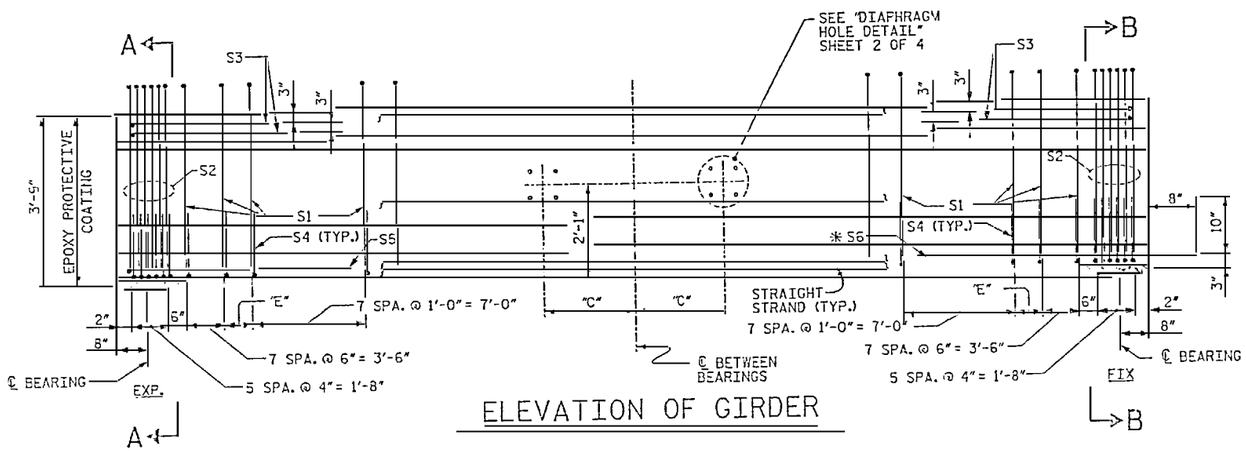
0.6" Ø LOW RELAXATION STRAND LAYOUT

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6400 PSI.

DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.



PLAN OF GIRDER



ELEVATION OF GIRDER

GIRDER DIMENSIONS			
DIMENSION	GIRDER	SPAN A	SPAN C
"A"	1-19	64'-5"	59'-11"
"B"	1-19	32'-2½"	29'-11½"
"C"	1-7	5'-1"	5'-1"
	8-12	4'-5½"	4'-5½"
	13-19	4'-10½"	4'-10½"
"D"	1-19	34	30
"E"	1-19	8½"	9½"

NOTES:

1. FABRICATOR SHALL LAYOUT 1" Ø HOLES AND ADJUST #5S1 SPACING TO PROVIDE 2" MINIMUM CLEAR TO HOLE. ADJUSTMENT SHALL NOT EXCEED SPACING SHOWN.
2. USE 1" Ø PVC PIPE TO FORM HOLES FOR DIAPHRAGM BOLTS. PVC PIPE TO REMAIN IN PLACE.

0.6" Ø L. R. GRADE 270 STRANDS

AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,590	43,943

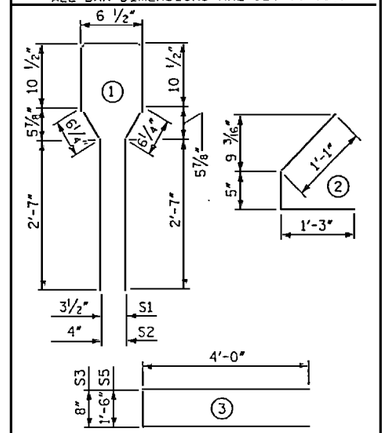
REINFORCING STEEL FOR ONE GIRDER

	BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
SPAN A	S1	66	#5	(1)	8'-6"	585
SPAN C	S1	62	#5	(1)	8'-6"	550
	S2	12	#6	(1)	8'-6"	153
	S3	4	#4	(3)	8'-8"	23
SPAN A	S4	88	#4	(2)	2'-9"	161
SPAN C	S4	88	#4	(2)	2'-9"	161
	S5	1	#4	(3)	9'-6"	6
	* S6	4	#5	STR.	3'-8"	15

* NOTE: S6 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT.



QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL LB.	8,000 PSI CONCRETE C.Y.	0.6" Ø L.R. STRANDS No.
SPAN A	943	9.3	16
SPAN C	908	8.6	16

GIRDERS REQUIRED

	NUMBER	LENGTH	TOTAL LENGTH
SPAN A	19	64'-5"	1,223'-11"
SPAN C	19	59'-11"	1,138'-5"

PROJECT NO. I-4401

BUNCOMBE COUNTY

STATION: POT 147+53.94 -L-
POT 5+03.07 -RR-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

AASHTO TYPE III PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD SPANS A & C

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 25479 KEVIN G BAILEY 9-13-05

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18165 MARK F. ROSSING 9-13-05

REVISIONS	NO.	BY	DATE
	1		
	2		
	3		
	4		

TAYLOR & MURPHY

FLORENCE & HUTCHESON, INC. CONSULTING ENGINEERS 4700 WESTCHASE BLVD. SUITE 115 RALEIGH, NC 27607

RALPH WHITEHEAD ASSOCIATES, INC. CONSULTING ENGINEERS P.O. BOX 35624 CHARLOTTE, N.C. 28235

DRAWN BY TJT DATE 7-05
CHECKED BY MFR DATE 8-05
D-1786.17

SHEET NO. S2-17
TOTAL SHEETS 33

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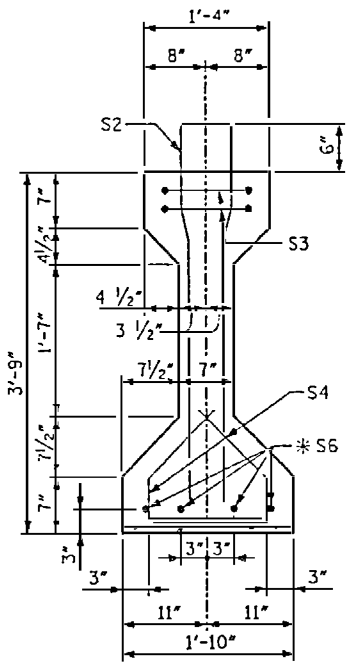
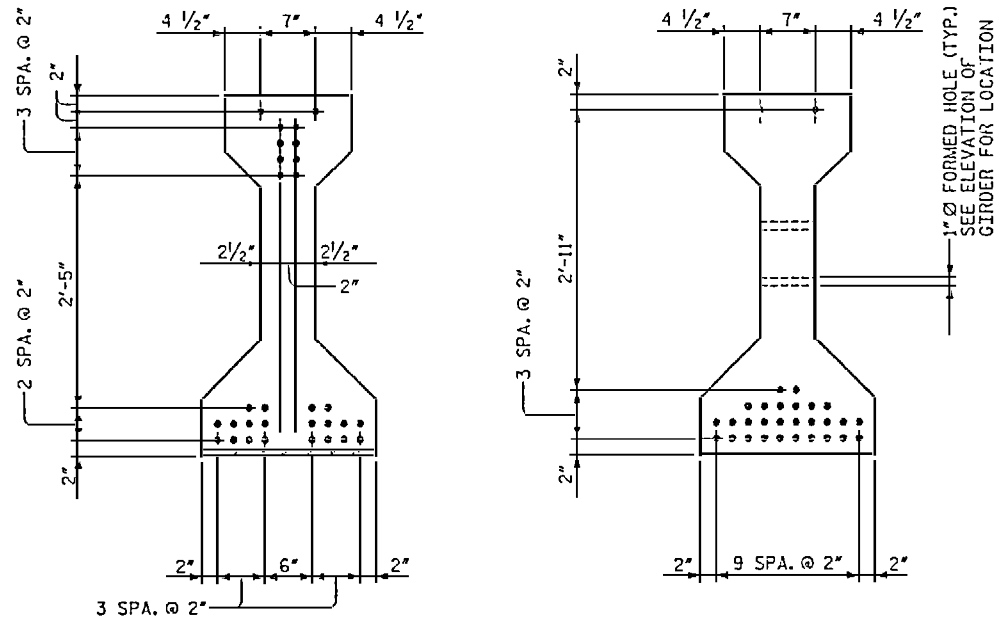


SECTION A-A



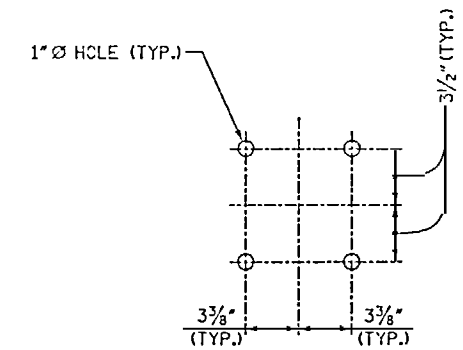
AT END OF GIRDER

AT ℄ OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

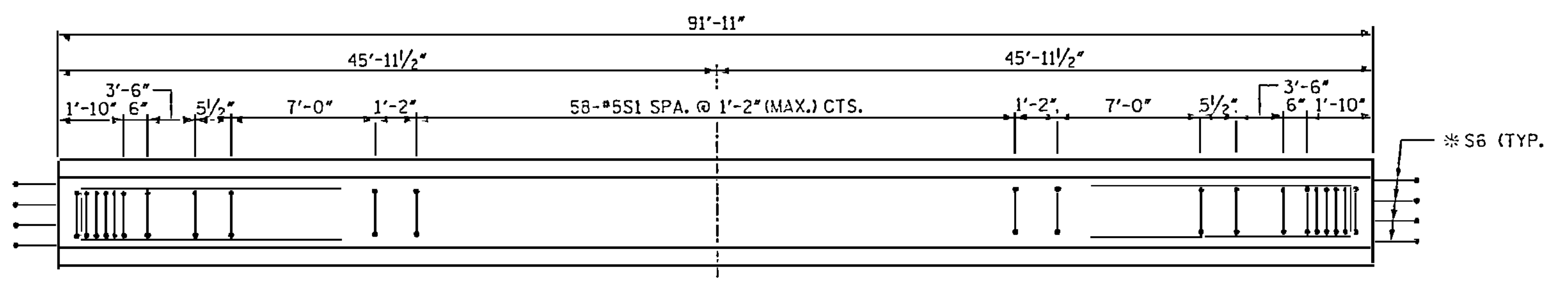
THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6400 PSI.

DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

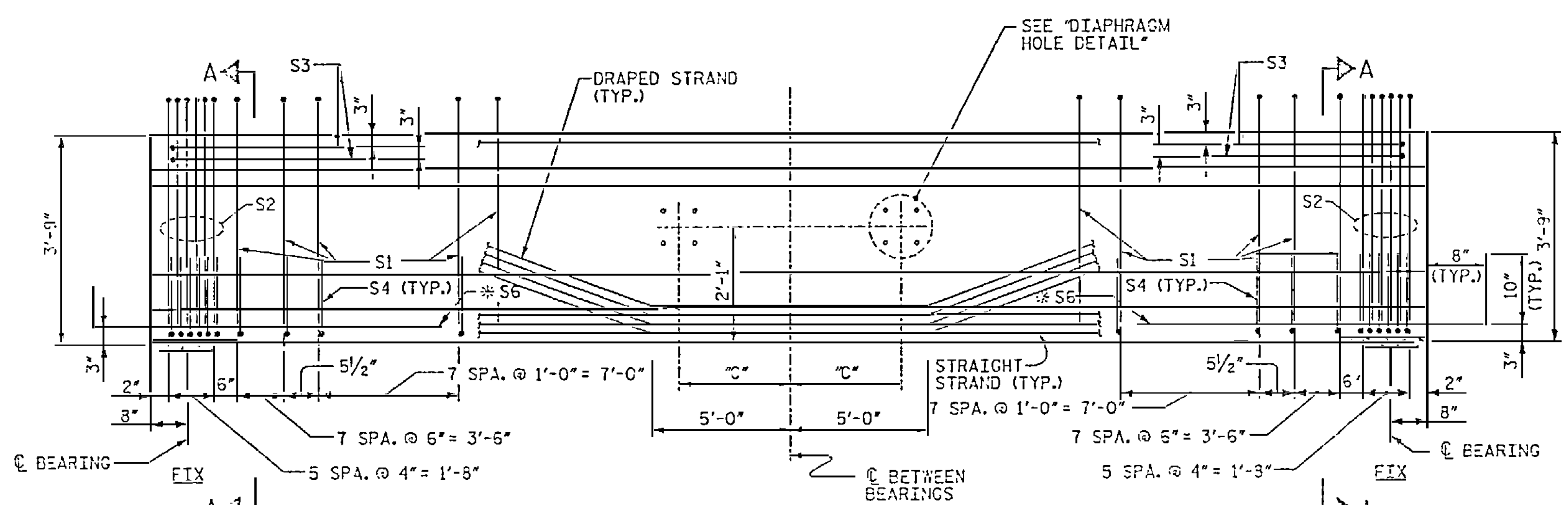


DIAPHRAGM HOLE DETAIL

DIMENSION "C"	
GDR. 1-7	5'-1"
GDR. 8-12	4'-5 1/2"
GDR. 13-19	4'-10 1/2"



PLAN OF GIRDER



ELEVATION OF GIRDER

NOTES:

1. FABRICATOR SHALL LAYOUT 1" Ø HOLES AND ADJUST #5S1 SPACING TO PROVIDE 2" MINIMUM CLEAR TO HOLE. ADJUSTMENT SHALL NOT EXCEED SPACING SHOWN.
2. USE 1" Ø PVC PIPE TO FORM HOLES FOR DIAPHRAGM BOLTS. PVC PIPE TO REMAIN IN PLACE.

0.6" Ø L. R. GRADE 270 STRANDS

AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,590	43,943

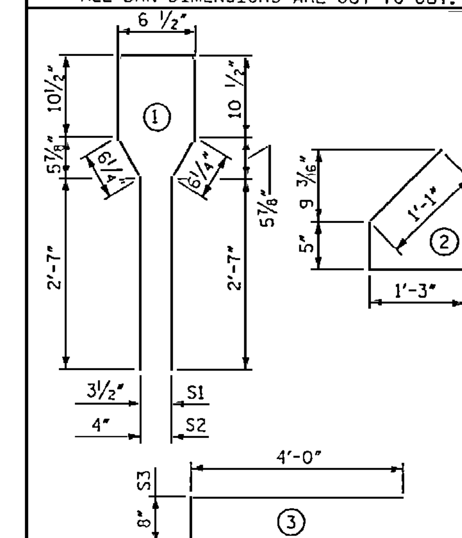
REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	90	#5	(1)	8'-6"	799
S2	12	#6	(1)	8'-6"	153
S3	4	#4	(3)	8'-8"	23
S4	88	#4	(2)	2'-9"	162
S6	8	#5	STR.	3'-8"	31

※ NOTE: S6 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT.



QUANTITIES FOR ONE GIRDER

REINFORCING STEEL LB.	8,000 PSI CONCRETE C.Y.	0.6" Ø L.R. STRANDS No.
1,167	13.2	30

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
19	91'-11"	1,746'-5"

PROJECT NO. I-4401

BUNCOMBE COUNTY

STATION: POT 147+53.94 -L-
POT 5+03.07 -RR-

SHEET 2 OF 4

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

RALEIGH

AASHTO TYPE III
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
SPAN B

REVISIONS			
NO.	BY	DATE	
1			
2			
3			
4			

SEAL 28479 KEVIN G SAILEY 9-13-05

SEAL 16165 MARK F. ROBBINS 9-13-05

TAYLOR & MURPHY

FLORENCE & HUTCHESON, INC. CONSULTING ENGINEERS

RALPH WHITEHEAD ASSOCIATES, INC. CONSULTING ENGINEERS P.O. BOX 35624 CHARLOTTE, N.C. 28235

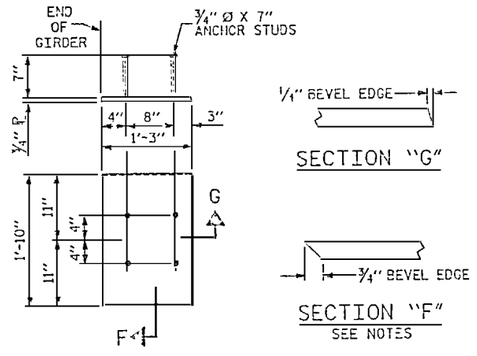
DRAWN BY TJT DATE 1-05
CHECKED BY MFR DATE 3-05
DWG. NO. D-1786.18

SHEET NO. S2-18

TOTAL SHEETS 49

SPAN A CAMBER AND DEFLECTIONS

		0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
GIRDER 1	CAMBER (GIRDER ALONE IN PLACE) (FT.)	0.000	0.029	0.050	0.064	0.071	0.074	0.071	0.064	0.050	0.029	0.000
	DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.)	0.000	-0.011	-0.022	-0.030	-0.035	-0.037	-0.035	-0.030	-0.021	-0.011	0.000
	FINAL CAMBER (IN.)	0"	3/16"	5/16"	3/8"	7/16"	7/16"	7/16"	3/8"	5/16"	3/16"	0"
GIRDERS 2-6	CAMBER (GIRDER ALONE IN PLACE) (FT.)	0.000	0.029	0.050	0.064	0.071	0.074	0.071	0.064	0.050	0.029	0.000
	DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.)	0.000	-0.014	-0.028	-0.039	-0.046	-0.048	-0.046	-0.038	-0.028	-0.014	0.000
	FINAL CAMBER (IN.)	0"	3/16"	1/4"	5/16"	5/16"	5/16"	5/16"	5/16"	1/4"	3/16"	0"
GIRDER 7	CAMBER (GIRDER ALONE IN PLACE) (FT.)	0.000	0.029	0.050	0.064	0.071	0.074	0.071	0.064	0.050	0.029	0.000
	DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.)	0.000	-0.009	-0.019	-0.026	-0.030	-0.032	-0.030	-0.026	-0.019	-0.009	0.000
	FINAL CAMBER (IN.)	0"	1/4"	3/8"	7/16"	1/2"	1/2"	1/2"	7/16"	3/8"	1/4"	0"
GIRDERS 8 & 12	CAMBER (GIRDER ALONE IN PLACE) (FT.)	0.000	0.029	0.050	0.064	0.071	0.074	0.071	0.064	0.050	0.029	0.000
	DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.)	0.000	-0.008	-0.016	-0.023	-0.027	-0.028	-0.027	-0.023	-0.016	-0.008	0.000
	FINAL CAMBER (IN.)	0"	1/4"	3/8"	1/2"	9/16"	9/16"	9/16"	1/2"	3/8"	1/4"	0"
GIRDERS 9-11	CAMBER (GIRDER ALONE IN PLACE) (FT.)	0.000	0.029	0.050	0.064	0.071	0.074	0.071	0.064	0.050	0.029	0.000
	DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.)	0.000	-0.012	-0.024	-0.033	-0.039	-0.041	-0.039	-0.033	-0.024	-0.012	0.000
	FINAL CAMBER (IN.)	0"	3/16"	5/16"	3/8"	3/8"	3/8"	3/8"	3/8"	5/16"	3/16"	0"
GIRDER 13	CAMBER (GIRDER ALONE IN PLACE) (FT.)	0.000	0.029	0.050	0.064	0.071	0.074	0.071	0.064	0.050	0.029	0.000
	DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.)	0.000	-0.009	-0.017	-0.024	-0.028	-0.030	-0.028	-0.024	-0.017	-0.008	0.000
	FINAL CAMBER (IN.)	0"	1/4"	3/8"	1/2"	1/2"	1/2"	1/2"	1/2"	3/8"	1/4"	0"
GIRDERS 14-18	CAMBER (GIRDER ALONE IN PLACE) (FT.)	0.000	0.029	0.050	0.064	0.071	0.074	0.071	0.064	0.050	0.029	0.000
	DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.)	0.000	-0.013	-0.026	-0.036	-0.043	-0.045	-0.043	-0.036	-0.026	-0.013	0.000
	FINAL CAMBER (IN.)	0"	3/16"	5/16"	5/16"	3/8"	3/8"	3/8"	5/16"	5/16"	3/16"	0"
GIRDER 19	CAMBER (GIRDER ALONE IN PLACE) (FT.)	0.000	0.029	0.050	0.064	0.071	0.074	0.071	0.064	0.050	0.029	0.000
	DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.)	0.000	-0.010	-0.021	-0.029	-0.034	-0.035	-0.034	-0.028	-0.020	-0.010	0.000
	FINAL CAMBER (IN.)	0"	1/4"	3/8"	7/16"	7/16"	7/16"	7/16"	7/16"	3/8"	1/4"	0"



EMBEDDED PLATE "B-1" DETAILS

TWO EMBEDDED PLATES "B-1" ARE REQUIRED FOR EACH GIRDER.

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.

TIE ROD ASSEMBLY SHALL BE AASHTO M270 GRADE 36 STRUCTURAL STEEL.

ALL REINFORCING STEEL SHALL BE GRADE 60.

APPLY EPOXY PROTECTIVE COATING TO END OF GIRDER SURFACES INDICATED IN ELEVATION VIEW. FOR EPOXY PROTECTIVE COATING, SEE SPECIAL PROVISIONS.

EMBEDDED PLATE "B-1" SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. BEVEL EDGES OF PLATE "B-1" TO GIVE CLOSE FIT BUT NOT TIGHT FIT TO STEEL CASTING FORM.

ANCHOR STUDS SHALL CONFORM TO AASHTO M169 GRADES 1010 THROUGH 1020 OR APPROVED EQUAL, AND SHALL MEET THE TYPE "B" REQUIREMENTS OF SUBSECTION 7.3 OF THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE.

AT ENDS OF GIRDERS TO BE EMBEDDED IN CONCRETE DIAPHRAGMS OR END WALLS, PRESTRESSING STRANDS MAY EXTEND A MAXIMUM OF 2" BEYOND THE GIRDER ENDS. OTHERWISE, PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE GIRDER ENDS.

DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4", SHALL BE RAKED TO A DEPTH OF 1/4".

WHEN DRAPED STRANDS ARE DETAILED, THE LONGITUDINAL LOCATION OF THE HOLD DOWN DEVICES SHALL BE WITHIN 6" OF THE LOCATION SHOWN AND THE CENTER OF GRAVITY OF THE GROUP OF DRAPED STRANDS SHALL BE LOCATED WITHIN 1/2" OF THE THEORETICAL LOCATION SHOWN.

FOR VERTICAL CRACKS IN PRESTRESSED CONCRETE GIRDERS PRIOR TO DETENSIONING, SEE SPECIAL PROVISIONS.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

NORTH CAROLINA PROFESSIONAL SEAL 28479 ENGINEER KEVIN G BAILEY 9-13-05

NORTH CAROLINA PROFESSIONAL SEAL 18155 ENGINEER MARK F. ROBBINS 9-13-05

PROJECT NO. I-4401
BUNCOMBE COUNTY
STATION: POT 147+53.94 -L-
POT 5+03.07 -RR-

SHEET 3 OF 4

REVISIONS	NO.	BY	DATE
	1		
	2		
	3		
	4		

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS & CAMBER

SHEET NO. S2-19
TOTAL SHEETS 48

TAYLOR & MURPHY

FLORENCE & HUTCHESON, INC. CONSULTING ENGINEERS 4700 WESTCHASE BLVD., SUITE 475 RALEIGH, NC 27607

RALPH WHITEHEAD ASSOCIATES, P.C. CONSULTING ENGINEERS P.O. BOX 35524 CHARLOTTE, N.C. 28235

DRAWN BY TJT DATE 7-05
CHECKED BY MFR DATE 8-05
DESIGN NO. D-1736.19

SPAN B CAMBER AND DEFLECTIONS

		0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
GIRDER 1	CAMBER (GIRDER ALONE IN PLACE) (FT.)	0.000	0.098	0.179	0.240	0.279	0.293	0.279	0.240	0.179	0.098	0.000
	DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.)	0.000	-0.046	-0.092	-0.127	-0.150	-0.157	-0.150	-0.127	-0.092	-0.046	0.000
	FINAL CAMBER (IN.)	0"	5/8"	1 1/16"	1 3/8"	1 5/8"	1 5/8"	1 3/16"	1 3/8"	1 1/16"	5/8"	0"
GIRDERS 2-6	CAMBER (GIRDER ALONE IN PLACE) (FT.)	0.000	0.098	0.179	0.240	0.279	0.293	0.279	0.240	0.179	0.098	0.000
	DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.)	0.000	-0.059	-0.117	-0.163	-0.192	-0.202	-0.192	-0.163	-0.117	-0.059	0.000
	FINAL CAMBER (IN.)	0"	7/16"	3/4"	15/16"	1 1/16"	1 1/16"	1 1/16"	15/16"	3/4"	7/16"	0"
GIRDER 7	CAMBER (GIRDER ALONE IN PLACE) (FT.)	0.000	0.098	0.179	0.240	0.279	0.293	0.279	0.240	0.179	0.098	0.000
	DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.)	0.000	-0.040	-0.078	-0.108	-0.128	-0.134	-0.128	-0.108	-0.078	-0.040	0.000
	FINAL CAMBER (IN.)	0"	11/16"	1 3/16"	1 5/16"	1 13/16"	1 7/8"	1 13/16"	1 5/16"	1 3/16"	11/16"	0"
GIRDERS 8 & 12	CAMBER (GIRDER ALONE IN PLACE) (FT.)	0.000	0.098	0.179	0.240	0.279	0.293	0.279	0.240	0.179	0.098	0.000
	DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.)	0.000	-0.035	-0.069	-0.096	-0.113	-0.118	-0.113	-0.096	-0.069	-0.035	0.000
	FINAL CAMBER (IN.)	0"	3/4"	1 5/16"	1 3/4"	2"	2 1/16"	2"	1 3/4"	1 5/16"	3/4"	0"
GIRDERS 9-11	CAMBER (GIRDER ALONE IN PLACE) (FT.)	0.000	0.098	0.179	0.240	0.279	0.293	0.279	0.240	0.179	0.098	0.000
	DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.)	0.000	-0.051	-0.100	-0.139	-0.164	-0.172	-0.164	-0.139	-0.100	-0.051	0.000
	FINAL CAMBER (IN.)	0"	9/16"	15/16"	1 3/16"	1 3/8"	1 7/16"	1 3/8"	1 3/16"	15/16"	9/16"	0"
GIRDER 13	CAMBER (GIRDER ALONE IN PLACE) (FT.)	0.000	0.098	0.179	0.240	0.279	0.293	0.279	0.240	0.179	0.098	0.000
	DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.)	0.000	-0.037	-0.073	-0.101	-0.119	-0.124	-0.119	-0.101	-0.073	-0.037	0.000
	FINAL CAMBER (IN.)	0"	3/4"	1 1/4"	1 1/16"	1 15/16"	2"	1 15/16"	1 1/16"	1 1/4"	3/4"	0"
GIRDERS 14-18	CAMBER (GIRDER ALONE IN PLACE) (FT.)	0.000	0.098	0.179	0.240	0.279	0.293	0.279	0.240	0.179	0.098	0.000
	DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.)	0.000	-0.055	-0.109	-0.151	-0.178	-0.188	-0.178	-0.151	-0.109	-0.055	0.000
	FINAL CAMBER (IN.)	0"	1/2"	13/16"	1 1/16"	1 3/16"	1 1/4"	1 3/16"	1 1/16"	13/16"	1/2"	0"
GIRDER 19	CAMBER (GIRDER ALONE IN PLACE) (FT.)	0.000	0.098	0.179	0.240	0.279	0.293	0.279	0.240	0.179	0.098	0.000
	DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.)	0.000	-0.044	-0.087	-0.121	-0.142	-0.149	-0.142	-0.121	-0.087	-0.044	0.000
	FINAL CAMBER (IN.)	0"	5/8"	1 1/8"	1 7/16"	1 5/8"	1 11/16"	1 5/8"	1 7/16"	1 1/8"	5/8"	0"

SPAN C CAMBER AND DEFLECTI

		0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
GIRDER 1	CAMBER (GIRDER ALONE IN PLACE) (FT.)	0.000	0.027	0.047	0.060	0.068	0.070	0.068	0.060	0.047	0.027	0.000
	DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.)	0.000	-0.008	-0.016	-0.022	-0.026	-0.028	-0.027	-0.023	-0.016	-0.008	0.000
	FINAL CAMBER (IN.)	0"	1/4"	3/8"	7/16"	1/2"	1/2"	1/2"	7/16"	3/8"	1/4"	0"
GIRDERS 2-6	CAMBER (GIRDER ALONE IN PLACE) (FT.)	0.000	0.027	0.047	0.060	0.068	0.070	0.068	0.060	0.047	0.027	0.000
	DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.)	0.000	-0.010	-0.020	-0.029	-0.034	-0.036	-0.034	-0.029	-0.021	-0.010	0.000
	FINAL CAMBER (IN.)	0"	3/16"	5/16"	3/8"	7/16"	7/16"	3/8"	3/8"	5/16"	3/16"	0"
GIRDER 7	CAMBER (GIRDER ALONE IN PLACE) (FT.)	0.000	0.027	0.047	0.060	0.068	0.070	0.068	0.060	0.047	0.027	0.000
	DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.)	0.000	-0.007	-0.014	-0.019	-0.023	-0.024	-0.023	-0.019	-0.014	-0.007	0.000
	FINAL CAMBER (IN.)	0"	1/4"	3/8"	1/2"	9/16"	9/16"	9/16"	1/2"	3/8"	1/4"	0"
GIRDERS 8 & 12	CAMBER (GIRDER ALONE IN PLACE) (FT.)	0.000	0.027	0.047	0.060	0.068	0.070	0.068	0.060	0.047	0.027	0.000
	DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.)	0.000	-0.006	-0.012	-0.017	-0.020	-0.021	-0.020	-0.017	-0.012	-0.006	0.000
	FINAL CAMBER (IN.)	0"	1/4"	7/16"	1/2"	9/16"	9/16"	9/16"	1/2"	7/16"	1/4"	0"
GIRDERS 9-11	CAMBER (GIRDER ALONE IN PLACE) (FT.)	0.000	0.027	0.047	0.060	0.068	0.070	0.068	0.060	0.047	0.027	0.000
	DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.)	0.000	-0.009	-0.018	-0.025	-0.029	-0.031	-0.029	-0.025	-0.018	-0.009	0.000
	FINAL CAMBER (IN.)	0"	1/4"	3/8"	7/16"	7/16"	1/2"	7/16"	7/16"	3/8"	1/4"	0"
GIRDER 13	CAMBER (GIRDER ALONE IN PLACE) (FT.)	0.000	0.027	0.047	0.060	0.068	0.070	0.068	0.060	0.047	0.027	0.000
	DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.)	0.000	-0.006	-0.013	-0.018	-0.021	-0.022	-0.021	-0.018	-0.013	-0.006	0.000
	FINAL CAMBER (IN.)	0"	1/4"	3/8"	1/2"	9/16"	9/16"	9/16"	1/2"	3/8"	1/4"	0"
GIRDERS 14-18	CAMBER (GIRDER ALONE IN PLACE) (FT.)	0.000	0.027	0.047	0.060	0.068	0.070	0.068	0.060	0.047	0.027	0.000
	DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.)	0.000	-0.010	-0.019	-0.027	-0.032	-0.034	-0.032	-0.027	-0.019	-0.010	0.000
	FINAL CAMBER (IN.)	0"	3/16"	5/16"	3/8"	7/16"	7/16"	7/16"	3/8"	5/16"	3/16"	0"
GIRDER 19	CAMBER (GIRDER ALONE IN PLACE) (FT.)	0.000	0.027	0.047	0.060	0.068	0.070	0.068	0.060	0.047	0.027	0.000
	DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.)	0.000	-0.007	-0.015	-0.021	-0.025	-0.027	-0.025	-0.021	-0.016	-0.007	0.000
	FINAL CAMBER (IN.)	0"	1/4"	3/8"	1/2"	1/2"	1/2"	1/2"	7/16"	3/8"	1/4"	0"

PROJECT NO. I-4401

BUNCOMBE COUNTY

STATION: POT 147+53.94 -L-
POT 5+03.07 -RR-

SHEET 4 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 28479 ENGINEER KEVIN G BAILEY 9-13-05

NORTH CAROLINA PROFESSIONAL SEAL 18165 ENGINEER MARK F. ROBBINS 9-13-05

REVISIONS

NO.	BY	DATE
1		
2		
3		
4		

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

RALEIGH

PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD CAMBER

SHEET NO. S2-20

TOTAL SHEETS 48

FLORENCE & HUTCHESON, INC. CONSULTING ENGINEERS

RALPH WHITEHEAD ASSOCIATES, INC. CONSULTING ENGINEERS P.O. BOX 35624 CHARLOTTE, N.C. 28235

DRAWN BY TJT DATE 7-05 DRG. NO.

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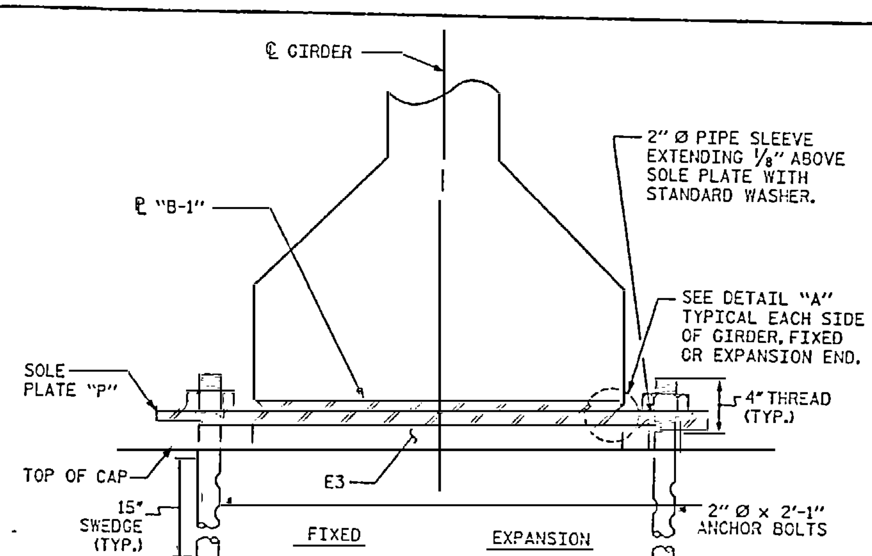
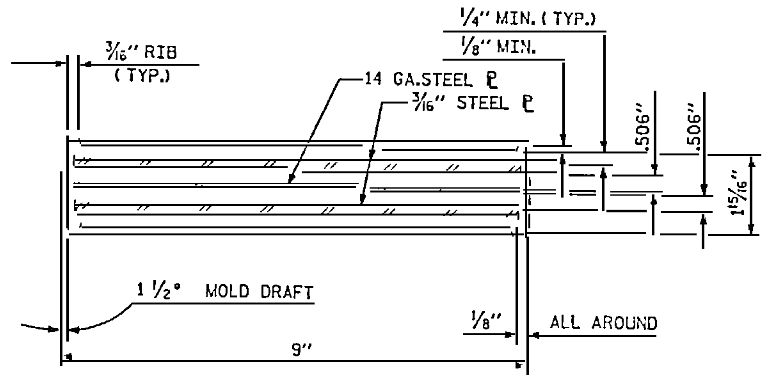
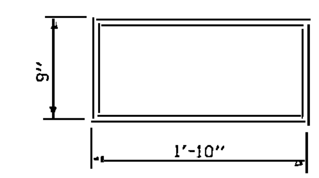


SECTION E-E



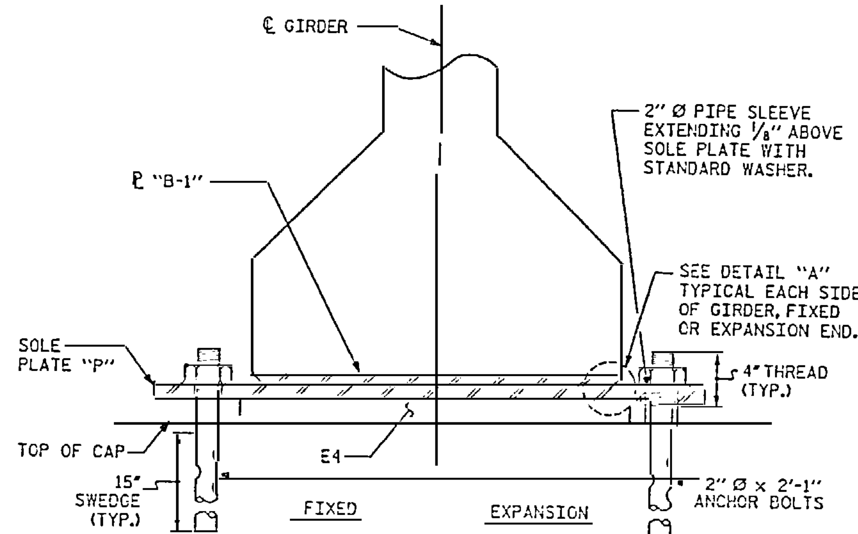
TYPICAL SECTION OF ELASTOMERIC BEARINGS



E3 (76 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING

TYPE IV



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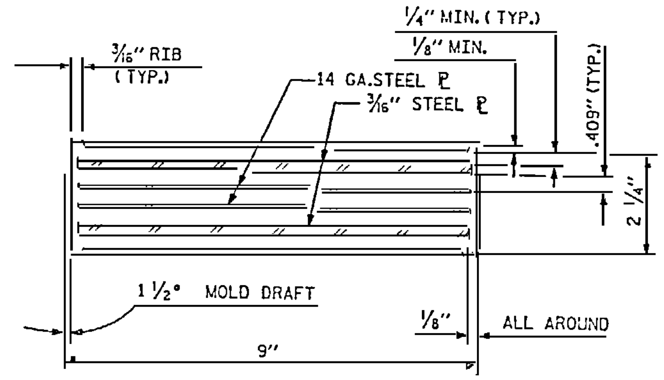
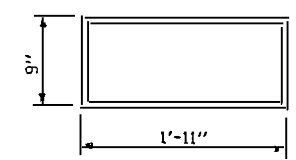


TYPICAL SECTION OF ELASTOMERIC BEARINGS



E4 (38 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING

TYPE V

NOTES

FOR ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

AT ALL FIXED POINTS OF SUPPORT, NUTS FOR ANCHOR BOLTS ARE TO BE TIGHTENED FINGER TIGHT AND THEN BACKED OFF 1/2 TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

THE 2" Ø PIPE SLEEVE SHALL BE CUT FROM SCHEDULE 40 PVC PLASTIC PIPE. THE PVC PLASTIC PIPE SHALL MEET THE REQUIREMENTS OF ASTM D1785.

STEEL SOLE PLATES, ANCHOR BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

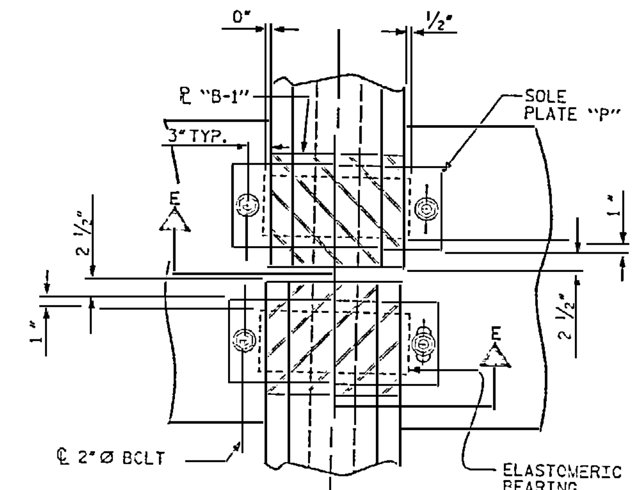
PRIOR TO WELDING, GRIND THE GALVANIZED SURFACE OF THE PORTION OF THE EMBEDDED PLATE AND SOLE PLATE THAT ARE TO BE WELDED. AFTER WELDING, DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

WHEN WELDING THE SOLE PLATE TO THE EMBEDDED PLATE IN THE GIRDER, USE TEMPERATURE INDICATING WAX PENS, OR OTHER SUITABLE MEANS, TO ENSURE THAT THE TEMPERATURE OF THE SOLE PLATE DOES NOT EXCEED 300°F. TEMPERATURES ABOVE THIS MAY DAMAGE THE ELASTOMER.

SOLE PLATE "P", BOLTS, NUTS, WASHERS, AND PIPE SLEEVE SHALL BE INCLUDED IN THE PAY ITEM FOR PRESTRESSED CONCRETE GIRDERS.

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. NO SHOP DRAWINGS ARE REQUIRED FOR ANCHOR BOLTS, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

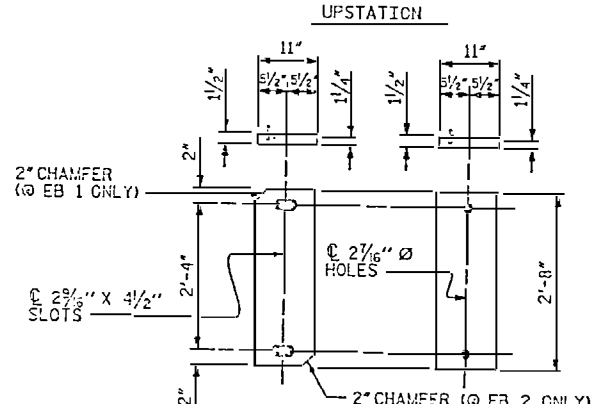
ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.



TYPICAL HALF-PLAN (SHOWING BENTS 1 & 2)

TYPICAL HALF-PLAN (SHOWING END BENTS)

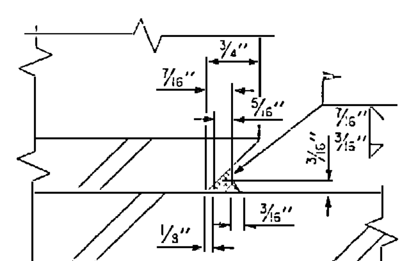
— LOAD RATINGS —	
	MAX.D.L.+ L.L.
TYPE IV	137 K
TYPE V	180 K



P1 (EXPANSION) (33 REQ'D)

P2 (FIXED) (76 REQ'D)

SOLE PLATE DETAILS ("P")



DETAIL "A"

PROJECT NO. I-4401

BUNCOMBE COUNTY

STATION: POT 147+53.94 -L-
POT 5+03.07 -RR-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
ELASTOMERIC BEARING
DETAILS
PRESTRESSED CONCRETE GIRDER
SUPERSTRUCTURE

JULY 1996

SHEET NO. S2-21
TOTAL SHEETS 43

STD.NO.EB3/EB4

NORTH CAROLINA PROFESSIONAL SEAL 25479 ENGINEER KEVIN G BAILEY 9-13-05

NORTH CAROLINA PROFESSIONAL SEAL 18165 ENGINEER MARK F. ROBBINS 9-13-05

TAYLOR & MURPHY

FLORENCE & HUTCHESON, INC. CONSULTING ENGINEERS

D-1785.21

ASSEMBLED BY : MFR	DATE : 8-05		
CHECKED BY : KGB	DATE : 8-05		
DRAWN BY : EEM 2/97	ADDED 2/6/97		
CHECKED BY : VAP 2/97	REV. 8/16/99	RWW/LES	
	REV. 10/17/00	RWW/LES	

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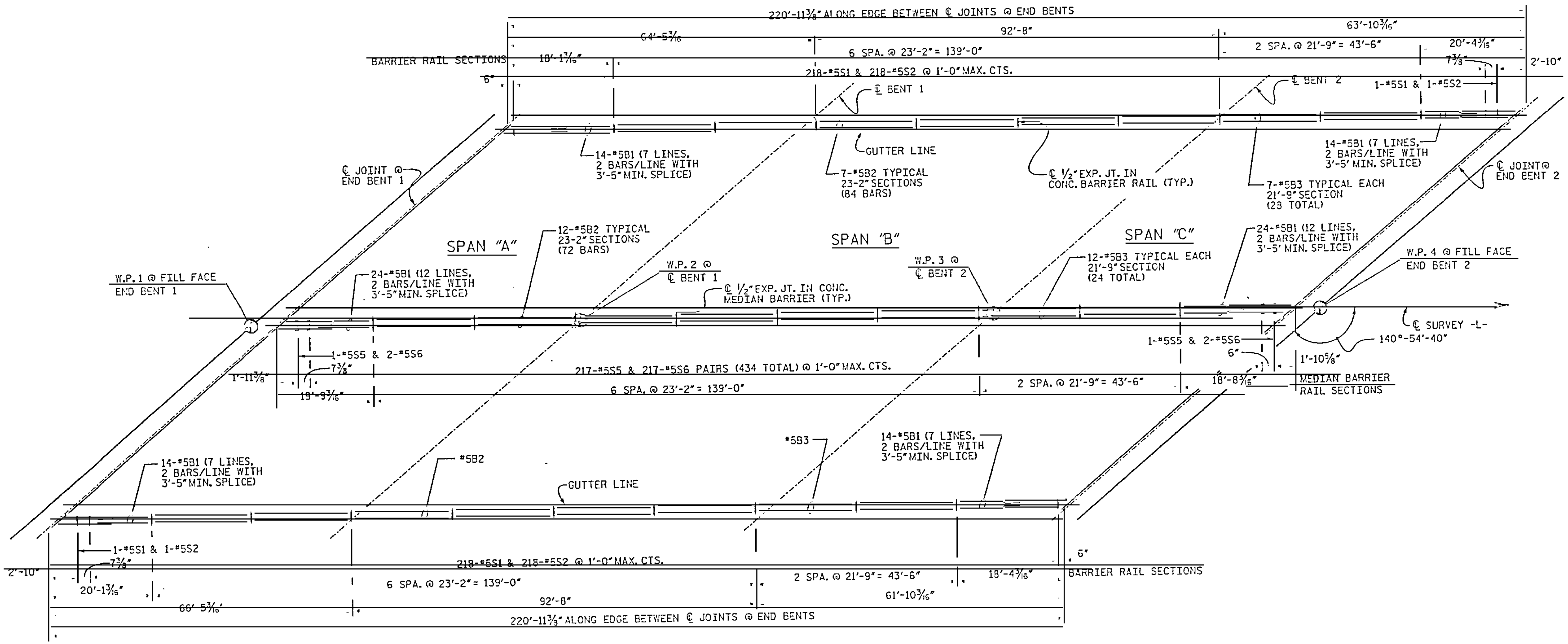
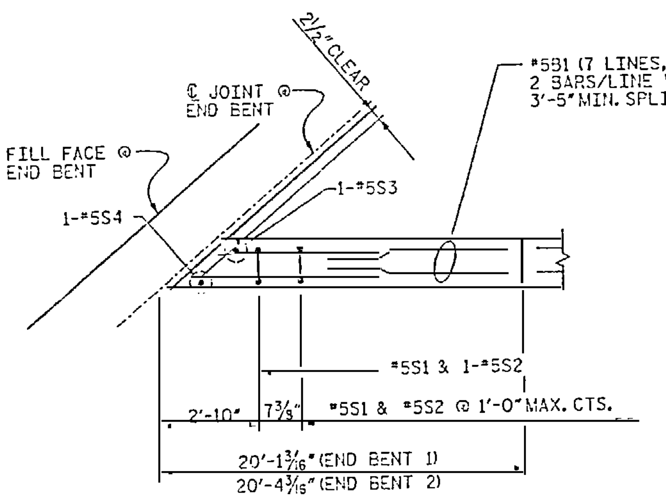


PLAN

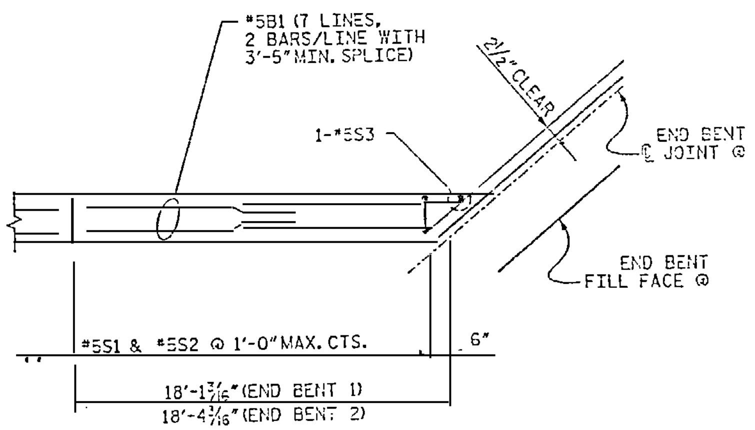
NOTES:

ADHESIVELY ANCHOR #5S3 AND #5S4 AFTER DECK HAS CURED. SEE NOTES SHEET 2 OF 2.

THE FORMED OPENING IN THE BARRIER RAILS AND MEDIAN SHALL MATCH THE FORMED JOINT OPENINGS FOR END BENT 1 AND 2. FOR OPENING WIDTHS SEE THE "STANDARD ARMORED EVAZOTE JOINT DETAILS" SHEET.



ACUTE CORNER



OBTUSE CORNER

BARRIER CORNER DETAILS

PROJECT NO. I-4401

BUNCOMBE COUNTY

STATION: POT 147+53.94 -L-
POT 5+03.07 -RR-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONCRETE BARRIER RAIL

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

SHEET NO. S2-22
TOTAL SHEETS 49

NORTH CAROLINA PROFESSIONAL SEAL 28479 ENGINEER KEVIN G BAILEY 1-10-06

NORTH CAROLINA SEAL 18183 ENGINEER MARK F. ROBBINS 1-10-06

TAYLOR & MURPHY

FLORENCE & HUTCHESON, INC. CONSULTING ENGINEERS

RALPH WHITEHEAD ASSOCIATES, INC. CONSULTING ENGINEERS P.O. BOX 35624 CHARLOTTE, N.C. 28235

DRAWN BY MFR DATE 08-05
CHECKED BY BAC DATE 08-05
DWG. NO. 0-1736.22

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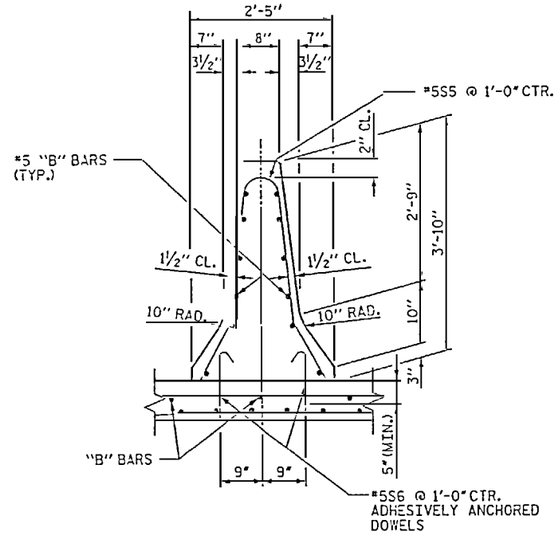
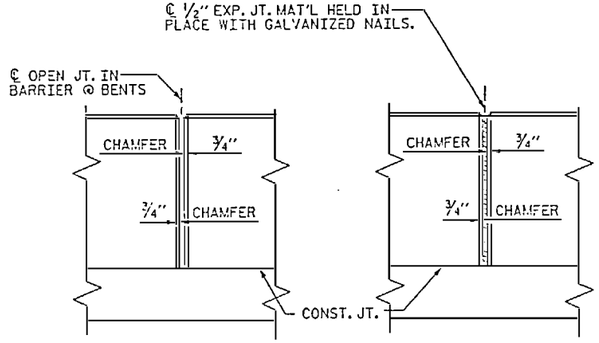


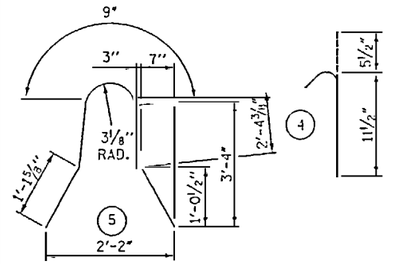
SECTION THRU MEDIAN BARRIER



ELEVATION AT EXPANSION JOINTS

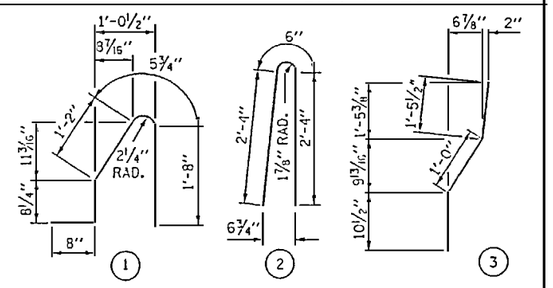
MEDIAN BARRIER DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO CUT

BILL OF MATERIAL

FOR CONCRETE MEDIAN BARRIER ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	48	#5	STR	11'-9"	588
* B2	72	#5	STR	22'-7"	1,696
* B3	24	#5	STR	21'-2"	530
* S5	219	#5	5	7'-9"	1,770
* S6	438	#5	4	1'-5"	647

* EPOXY COATED REINFORCING STEEL	5,231 LBS.
CLASS AA CONCRETE	38.8 CU. YDS.
CONCRETE MEDIAN BARRIER	220.95 LIN. FT.

BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	56	#5	STR	11'-9"	686
* B2	84	#5	STR	22'-7"	1,979
* B3	23	#5	STR	21'-2"	618
* S1	438	#5	1	4'-8"	2,132
* S2	438	#5	2	5'-2"	2,360
* S3	4	#5	3	3'-4"	14
* S4	2	#5	STR	3'-2"	7

* EPOXY COATED REINFORCING STEEL	7,796 LBS.
CLASS AA CONCRETE	44.2 CU. YDS.
CONCRETE BARRIER RAIL	441.89 LIN. FT.

NOTES

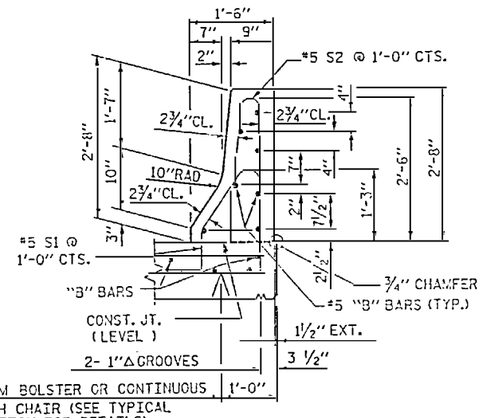
THE BARRIER RAIL AND MEDIAN BARRIER IN EACH SPAN SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT SPAN HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL REINFORCING STEEL IN BARRIER RAILS AND MEDIAN BARRIER SHALL BE EPOXY COATED.

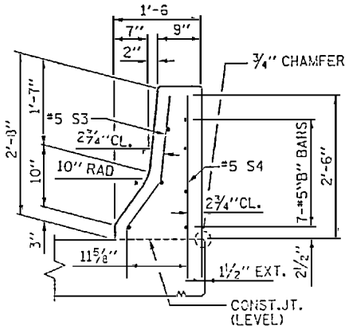
VERTICAL GROOVED CONTRACTION JOINTS, ½" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(6) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT 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.

THE #5 S3 AND #5 S4 BARS SHALL BE INSTALLED, USING AN ADHESIVE ANCHORING SYSTEM. AFTER SAWING THE JOINT, FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS. THE YIELD LOAD FOR THE #5 S3 AND #5 S4 BARS IS 18.6 KIPS. FIELD TESTING FOR THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

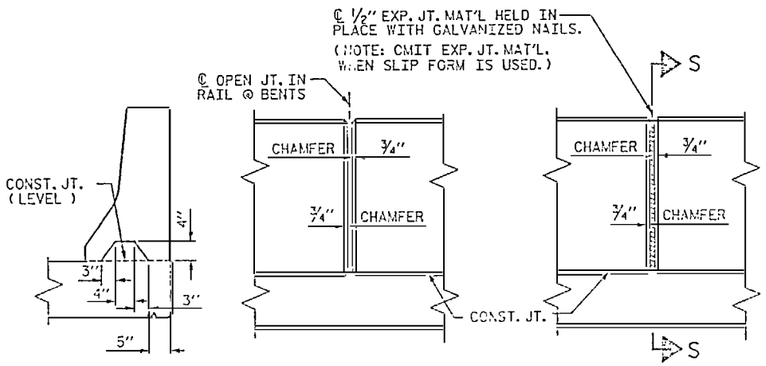
THE FORMED OPENING IN THE BARRIER RAILS AND MEDIAN SHALL MATCH THE FORMED JOINT OPENINGS FOR END BENT 1 AND 2. FOR OPENING WIDTHS SEE THE "STANDARD ARMORED EVAZOTE JOINT DETAILS" SHEET.



SECTION THRU RAIL



END VIEW



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

ELEVATION AT EXPANSION JOINTS

BARRIER RAIL DETAILS

ASSEMBLED BY : MFR	DATE : 8-05		
CHECKED BY : BAC	DATE : 9-05		
DRAWN BY : AFB 5/87	REV. 3/15/89	RWW/LES	
CHECKED BY : SJD 9/87	REV. 10/17/03	RWW/LES	
	REV. 5/7/03	RWW/JTE	

D-1736.22a

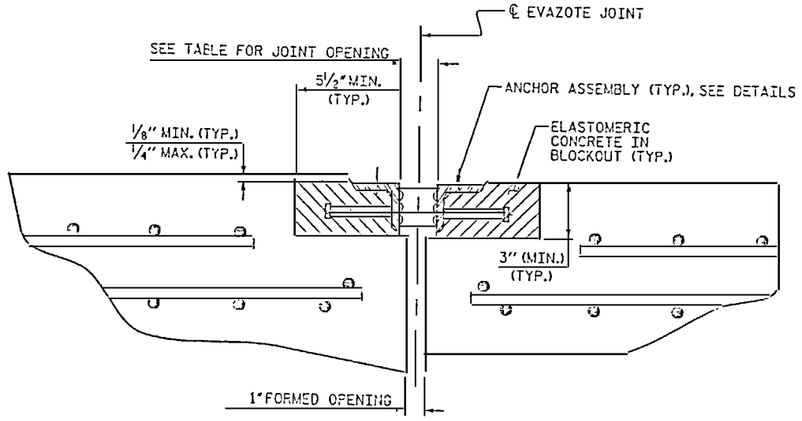
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONCRETE
BARRIER RAIL AND
CONCRETE MEDIAN BARRIER

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-22a
1			3			TOTAL SHEETS
2			4			48

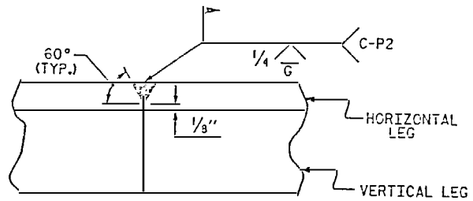
STD. NO. CBRI

PROJECT NO. I-4401
BUNCOMBE COUNTY
STATION: POT 147+53.94 -L- =
POT 5+03.07 -RR-
SHEET 2 OF 2



ARMORED JOINT DETAILS

SECTION NORMAL TO JOINT AT BENT



DETAIL- FIELD WELD SPLICE OF ANGLE

NOTES

ANGLES SHALL CONFORM TO AASHTO M270 GRADE 36 STEEL OR APPROVED EQUAL. ALL STUD ANCHORS SHALL CONFORM TO AASHTO M169 GRADES 1010 THRU 1020 OR APPROVED EQUAL.

STUD ANCHORS SHALL BE SHOP WELDED AND ALL HOLES SHALL BE SHOP DRILLED AS SHOWN ON THE PLANS. STUD ANCHORS SHALL BE ELECTRIC ARC END WELDED WITH COMPLETE FUSION.

UPON COMPLETION OF SHOP FABRICATION, THE ENTIRE ANCHOR ASSEMBLY SHALL BE METALLIZED. THE ½" Ø STUD ANCHORS AND ANCHOR TABS NEED NOT BE METALLIZED. SEE SPECIAL PROVISION FOR THERMAL SPRAYED COATINGS (METALLIZATION).

ANCHOR ASSEMBLY SHALL BE MADE CONTINUOUS THE LENGTH OF THE JOINT FROM GUTTER TO GUTTER. FOR FIELD SPLICES AT ALL CROWN BREAK POINTS, THE ENDS OF THE STEEL ANGLES SHALL BE CUT PARALLEL TO THE BRIDGE CENTERLINE. FINISHED FIELD WELDS SHALL BE GROUND SMOOTH AND COATED WITH A MINIMUM THICKNESS OF 4 DRY MILS OF ZINC-RICH PAINT IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

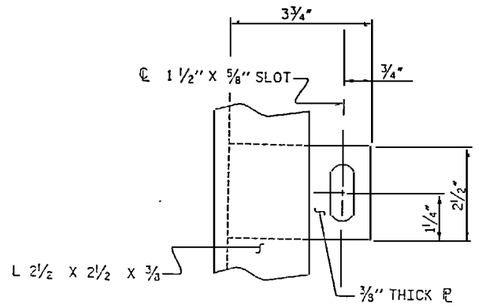
ANCHOR ASSEMBLY SEGMENTS SHALL NOT BE LESS THAN 12 FEET NOR MORE THAN 20 FEET IN LENGTH. SHORTER SEGMENTS MAY BE USED AT THE EDGE OF ROADWAY OR AT POINTS OF STAGED CONSTRUCTION.

THE ANCHOR ASSEMBLY SHALL BE SECURED AND LEVELED AS SHOWN IN THE "ARMORED JOINT ANCHOR ASSEMBLY DETAILS". NO SUBMITTALS ARE REQUIRED FOR ⅜" Ø EXPANSION ANCHORS, NUTS OR WASHERS. THE CONTRACTOR MAY SUBMIT FOR APPROVAL AN ALTERNATE METHOD OF ALIGNING AND LEVELING THE ANGLES. THE ALTERNATE METHOD SHALL NOT INCLUDE ANY WELDING TO THE OUTSIDE FACE OF THE ANGLES.

AFTER THE ELASTOMERIC CONCRETE HAS BEEN CAST ON BOTH SIDES OF THE JOINT, REMOVE ANY EXCESS CONCRETE THAT COMES THROUGH THE WEEP HOLES AND THOROUGHLY CLEAN THE ANGLES. ANY DAMAGED STEEL SHALL BE COATED WITH A MINIMUM OF 4 MILS OF ZINC-RICH PAINT IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

SEE SPECIAL PROVISIONS FOR EVAZOTE JOINT SEALS.

SEE SPECIAL PROVISIONS FOR ELASTOMERIC CONCRETE.



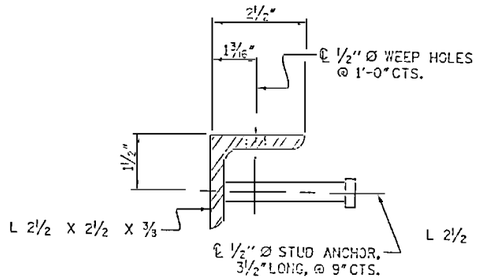
PLAN VIEW OF TAB

MOVEMENT AND SETTING AT EVAZOTE JOINT						
END BENT NO.	SKEW ANGLE	NOMINAL UNCOMPRESSED SEAL WIDTH	TOTAL MOVEMENT (ALONG ℄ RDWY)	PERPENDICULAR JOINT OPENING AT 45° F	PERPENDICULAR JOINT OPENING AT 60° F	PERPENDICULAR JOINT OPENING AT 90° F
1	140°54'40"	2½"	1 5/16"	2⅛"	2"	1 13/16"
2	140°54'40"	2½"	1 5/16"	2⅛"	2"	1 13/16"

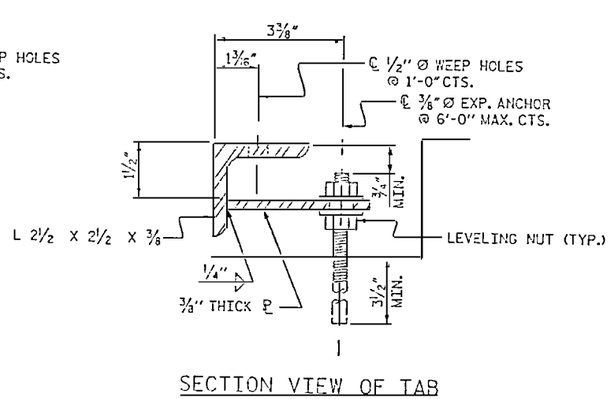
TOTAL MOVEMENT IS CALCULATED ALONG THE CENTERLINE OF ROADWAY.
JOINT OPENINGS ARE MEASURED PERPENDICULAR TO THE JOINT.

BILL OF MATERIAL		
END BENT NO.	ELASTOMERIC CONCRETE * (CU. FT.)	TOTAL LENGTH OF ANGLE (FT)
1	51.1	445'-5"
2	51.1	445'-5"

* BASED ON THE MINIMUM BLOCKOUT SHOWN.

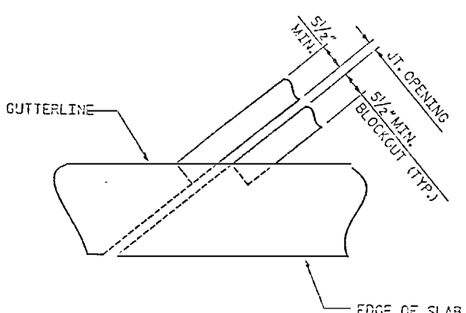


SECTION VIEW OF STUD



SECTION VIEW OF TAB

ARMORED JOINT ANCHOR ASSEMBLY DETAILS



PLAN DETAIL OF BLOCKOUT

PROJECT NO. I-4401
BUNCOMBE COUNTY
STATION: POT 147+53.94 -L-
POT 5+03.07 -RR-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD ARMORED EVAZOTE JOINT DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-23
1			3			TOTAL SHEETS
2			4			48

STD. NO. AEJ1

D-1786.23

ASSEMBLED BY : MFR		DATE : 8-05	
CHECKED BY : PEK		DATE : 12-05	
DRAWN BY : EEM 1/96	REV. 10/17/00	RWW/LES	
CHECKED BY : RDW 1/96	REV. 7/10/01	LES/RDR	
	REV. 5/7/03	HR RWW/JTE	

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 29479 KEVIN G. BAILEY 1-10-06

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19165 MARK F. ROBBINS 1-10-06

timothy.townse 10/2006 08:30 PM n:\proj\3165-final\ais\struct\rr\final\aejl.dgn

REINFORCING BAR SCHEDULE STAGE I

MARK	NO.	SIZE	TYPE	LENGTH	WEIGHT (lb)
* A100	306	#5	STR.	31'-8"	10,107
A101	312	#5	STR.	31'-8"	10,305
* A102	6	#5	STR.	30'-11"	193
* A103	6	#5	STR.	29'-6"	185
* A104	6	#5	STR.	28'-1"	176
* A105	6	#5	STR.	26'-8"	167
* A106	6	#5	STR.	25'-3"	158
* A107	6	#5	STR.	23'-10"	149
* A108	6	#5	STR.	22'-5"	140
* A109	6	#5	STR.	21'-0"	131
* A110	6	#5	STR.	19'-7"	123
* A111	6	#5	STR.	18'-2"	114
* A112	6	#5	STR.	16'-9"	105
* A113	6	#5	STR.	15'-4"	96
* A114	6	#5	STR.	13'-11"	87
* A115	6	#5	STR.	12'-5"	78
* A116	6	#5	STR.	11'-0"	69
* A117	6	#5	STR.	9'-7"	60
* A118	6	#5	STR.	8'-2"	51
* A119	6	#5	STR.	6'-9"	42
* A120	6	#5	STR.	5'-4"	33
* A121	22	#5	STR.	3'-11"	90
A122	6	#5	STR.	30'-2"	189
A123	6	#5	STR.	28'-9"	180
A124	6	#5	STR.	27'-4"	171
A125	6	#5	STR.	25'-11"	162
A126	6	#5	STR.	24'-6"	153
A127	6	#5	STR.	23'-1"	144
A128	6	#5	STR.	21'-8"	136
A129	6	#5	STR.	20'-2"	126
A130	6	#5	STR.	18'-9"	117
A131	6	#5	STR.	17'-4"	108
A132	6	#5	STR.	15'-11"	100
A133	6	#5	STR.	14'-6"	91
A134	6	#5	STR.	13'-1"	82
A135	6	#5	STR.	11'-8"	73
A136	6	#5	STR.	10'-3"	64
A137	6	#5	STR.	8'-10"	55
A138	6	#5	STR.	7'-5"	46
A139	6	#5	STR.	6'-0"	38
A140	6	#5	STR.	4'-7"	29
A141	20	#5	STR.	3'-2"	66
* B100	176	#4	STR.	29'-5"	3,458
B101	144	#5	STR.	56'-9"	8,523
* B102	84	#6	STR.	30'-0"	3,785
* D100	1420	#5	STR.	4'-6"	6,665
* D101	56	#5	STR.	5'-5"	316
* G100	2	#5	STR.	50'-3"	105
* S100	72	#5	(1)	5'-1"	382
* S101	72	#4	(2)	4'-11"	236
K100	24	#6	STR.	8'-6"	306
K101	16	#5	STR.	8'-6"	142
* K102	12	#8	(3)	20'-5"	654
* K103	8	#8	(4)	12'-2"	260
S110	192	#4	(6)	2'-11"	374
* U110	48	#4	(5)	12'-4"	395
U111	16	#4	(9)	9'-6"	102
K110	30	#4	(7)	14'-8"	294
K111	32	#4	STR.	8'-7"	183
K112	32	#4	STR.	9'-9"	208
K113	16	#4	STR.	6'-3"	67
K114	20	#4	(8)	8'-0"	107

REINFORCING BAR SCHEDULE STAGE II

MARK	NO.	SIZE	TYPE	LENGTH	WEIGHT (lb)
* A200	260	#5	STR.	53'-3"	14,440
A201	265	#5	STR.	53'-3"	14,774
* A202	6	#5	STR.	52'-3"	330
* A203	6	#5	STR.	51'-3"	321
* A204	6	#5	STR.	49'-10"	312
* A205	6	#5	STR.	48'-5"	303
* A206	6	#5	STR.	47'-0"	294
* A207	6	#5	STR.	45'-6"	285
* A208	6	#5	STR.	44'-1"	276
* A209	6	#5	STR.	42'-8"	267
* A210	6	#5	STR.	41'-3"	258
* A211	6	#5	STR.	39'-10"	249
* A212	6	#5	STR.	38'-5"	240
* A213	6	#5	STR.	37'-0"	232
* A214	6	#5	STR.	35'-7"	223
* A215	6	#5	STR.	34'-2"	214
* A216	6	#5	STR.	32'-9"	205
* A217	6	#5	STR.	31'-4"	196
* A218	6	#5	STR.	29'-11"	187
* A219	6	#5	STR.	28'-6"	178
* A220	6	#5	STR.	27'-1"	169
* A221	6	#5	STR.	25'-8"	161
* A222	6	#5	STR.	24'-3"	152
* A223	6	#5	STR.	22'-10"	143
* A224	6	#5	STR.	21'-4"	134
* A225	6	#5	STR.	19'-11"	125
* A226	6	#5	STR.	18'-6"	116
* A227	6	#5	STR.	17'-1"	107
* A228	6	#5	STR.	15'-8"	98
* A229	6	#5	STR.	14'-3"	89
* A230	6	#5	STR.	12'-10"	80
* A231	6	#5	STR.	11'-5"	71
* A232	6	#5	STR.	10'-0"	63
* A233	6	#5	STR.	8'-7"	54
* A234	6	#5	STR.	7'-2"	45
* A235	6	#5	STR.	5'-9"	36
* A236	22	#5	STR.	4'-4"	99
A237	6	#5	STR.	51'-10"	324
A238	6	#5	STR.	50'-5"	316
A239	6	#5	STR.	49'-0"	307
A240	6	#5	STR.	47'-7"	298
A241	6	#5	STR.	46'-2"	289
A242	6	#5	STR.	44'-9"	280
A243	6	#5	STR.	43'-4"	271
A244	6	#5	STR.	41'-11"	262
A245	6	#5	STR.	40'-6"	253
A246	6	#5	STR.	39'-1"	245
A247	6	#5	STR.	37'-8"	236
A248	6	#5	STR.	36'-3"	227
A249	6	#5	STR.	34'-10"	218
A250	6	#5	STR.	33'-5"	209
A251	6	#5	STR.	32'-0"	200
A252	6	#5	STR.	30'-7"	191
A253	6	#5	STR.	29'-1"	182
A254	6	#5	STR.	27'-8"	173
A255	6	#5	STR.	26'-3"	164
A256	6	#5	STR.	24'-10"	155
A257	6	#5	STR.	23'-5"	147
A258	6	#5	STR.	22'-0"	138
A259	6	#5	STR.	20'-7"	129
A260	6	#5	STR.	19'-2"	120
A261	6	#5	STR.	17'-9"	111
A262	6	#5	STR.	16'-4"	102
A263	6	#5	STR.	14'-11"	93
A264	6	#5	STR.	13'-6"	84
A265	6	#5	STR.	12'-1"	76
A266	6	#5	STR.	10'-8"	67
A267	6	#5	STR.	9'-3"	58
A268	6	#5	STR.	7'-10"	49
A269	6	#5	STR.	6'-5"	40
A270	6	#5	STR.	4'-11"	31
A271	20	#5	STR.	3'-6"	73

REINFORCING BAR SCHEDULE STAGE II

MARK	NO.	SIZE	TYPE	LENGTH	WEIGHT (lb)
* B200	320	#4	STR.	29'-5"	6,288
B201	252	#5	STR.	56'-9"	14,916
* B202	148	#6	STR.	30'-0"	6,669
* D200	710	#5	STR.	4'-6"	3,332
* D201	28	#5	STR.	5'-5"	158
* G200	4	#5	STR.	43'-7"	182
* S200	132	#5	(1)	5'-1"	700
* S201	132	#4	(2)	4'-11"	434
K200	36	#6	STR.	10'-2"	550
K201	24	#5	STR.	10'-2"	254
* K202	20	#8	(3)	22'-5"	1,197
* K203	4	#8	(4)	13'-2"	141
* K204	4	#8	(4)	14'-11"	159
S210	288	#4	(6)	2'-11"	561
* U210	72	#4	(5)	12'-4"	593
U211	24	#4	(9)	9'-6"	152
K210	50	#4	(7)	16'-4"	546
K211	48	#4	STR.	10'-2"	326
K212	48	#4	STR.	11'-4"	363
K213	24	#4	STR.	7'-10"	126
K214	20	#4	(8)	8'-10"	118

REINFORCING BAR SCHEDULE STAGE III

MARK	NO.	SIZE	TYPE	LENGTH	WEIGHT (lb)
* B300	312	#4	STR.	29'-5"	6,131
B301	252	#5	STR.	56'-9"	14,916
* B302	142	#6	STR.	30'-0"	6,399
* D300	710	#5	STR.	4'-6"	3,332
* D301	28	#5	STR.	5'-5"	158
* G300	4	#5	STR.	42'-0"	175
* S300	120	#5	(1)	5'-1"	636
* S301	120	#4	(2)	4'-11"	394
K300	36	#6	STR.	9'-7"	518
K301	24	#5	STR.	9'-7"	240
* K302	20	#8	(3)	21'-9"	1,161
* K303	4	#8	(4)	12'-10"	137
* K304	4	#8	(4)	14'-7"	156
S310	288	#4	(6)	2'-11"	561
* U310	72	#4	(5)	12'-4"	593
U311	24	#4	(9)	9'-6"	152
K310	50	#4	(7)	15'-8"	523
K311	48	#4	STR.	9'-7"	307
K312	48	#4	STR.	10'-10"	347
K313	24	#4	STR.	7'-3"	116
K314	20	#4	(8)	5'-6"	114

* DENOTES EPOXY COATED REINFORCING STEEL

NOTE: FOR DECK POUR DESIGNATIONS AND CONSTRUCTION JOINT LOCATIONS, SEE "POURING DIAGRAM AND LAP STAGGER DETAILS" SHEET.

REINFORCING BAR SCHEDULE STAGE III

MARK	NO.	SIZE	TYPE	LENGTH	WEIGHT (lb)
* A300	264	#5	STR.	51'-3"	14,112
A301	270	#5	STR.	51'-3"	14,433
* A302	6	#5	STR.	50'-8"	317
* A303	6	#5	STR.	49'-3"	308
* A304	6	#5	STR.	47'-10"	299
* A305	6	#5	STR.	46'-5"	290
* A306	6	#5	STR.	45'-0"	282
* A307	6	#5	STR.	43'-7"	273
* A308	6	#5	STR.	42'-2"	264
* A309	6	#5	STR.	40'-8"	254
* A310	6	#5	STR.	39'-3"	246
* A311	6	#5	STR.	37'-10"	237
* A312	6	#5	STR.	36'-5"	228
* A313	6	#5	STR.	35'-0"	219
* A314	6	#5	STR.	33'-7"	210
* A315	6	#5	STR.	32'-2"	201
* A316	6	#5	STR.	30'-9"	192
* A317	6	#5	STR.	29'-4"	184
* A318	6	#5	STR.	27'-11"	175
* A319	6	#5	STR.	26'-6"	166
* A320	6	#5	STR.	25'-1"	157
* A321	6	#5	STR.	23'-8"	148
* A322	6	#5	STR.	22'-3"	139
* A323	6	#5	STR.	20'-10"	130
* A324	6	#5	STR.	19'-5"	122
* A325	6	#5	STR.	17'-11"	112
* A326	6	#5	STR.	16'-6"	103
* A327	6	#5	STR.	15'-1"	94
* A328	6	#5	STR.	13'-8"	86
* A329	6	#5	STR.	12'-3"	77
* A330	6	#5	STR.	10'-10"	68
* A331	6	#5	STR.	9'-5"	59
* A332	6	#5	STR.	8'-0"	50
* A333	6	#5	STR.	6'-7"	41
* A334	6	#5	STR.	5'-2"	32
* A335	22	#5	STR.	3'-9"	86
A336	6	#5	STR.	49'-11"	312
A337	6	#5	STR.	48'-6"	304
A338	6	#5	STR.	47'-1"	295
A339	6	#5	STR.	45'-8"	286
A340	6	#5	STR.	44'-3"	277
A341	6	#5	STR.	42'-10"	268
A342	6	#5	STR.	41'-5"	259
A343	6	#5	STR.	40'-0"	250
A344	6	#5	STR.	38'-7"	241
A345	6	#5	STR.	37'-2"	233
A346	6	#5	STR.	35'-8"	223
A347	6	#5	STR.	34'-3"	214
A348	6	#5	STR.	32'-10"	205
A349	6	#5	STR.	31'-5"	197
A350	6	#5	STR.	30'-0"	188
A351	6	#5	STR.	28'-7"	179
A352	6	#5	STR.	27'-2"	170
A353	6	#5	STR.	25'-9"	161
A354	6	#5	STR.	24'-4"	152
A355	6	#5	STR.	22'-11"	143
A356	6	#5	STR.	21'-6"	135
A357	6	#5	STR.	20'-1"	126
A358	6	#5	STR.	18'-8"	117
A359	6	#5	STR.	17'-3"	108
A360	6	#5	STR.	15'-10"	99
A361	6	#5	STR.	14'-5"	90
A362	6	#5	STR.	13'-0"	81
A363	6	#5	STR.	11'-6"	72
A364	6	#5	STR.	10'-1"	63
A365	6	#5	STR.	8'-8"	54
A366	6	#5	STR.	7'-3"	45
A367	6	#5	STR.	5'-10"	37
A368	6	#5	STR.	4'-5"	28
A369	20	#5	STR.	3'-0"	63

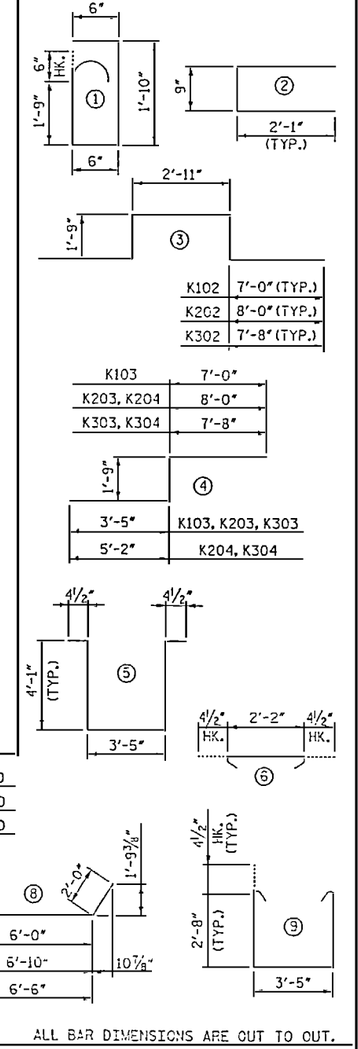
SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS

BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPET, AND BARRIER RAIL		APPROACH SLABS		PARAPET AND BARRIER RAIL
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#4	2'-0"	1'-9"	2'-0"	1'-9"	2'-9"
#5	2'-5"	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"			

QUANTITIES

EPOXY COATED REINFORCING STEEL (lb)	STAGE I	23,510
	STAGE II	40,605
	STAGE III	39,233
REINFORCING STEEL (lb)	STAGE I	22,741
	STAGE II	38,804
	STAGE III	37,902
CONCRETE (CLASS AA) (CU. YD.)	POUR 1	52.3
	POUR 2	96.9
	POUR 3	81.4
	POUR 4	89.0
	POUR 5	165.6
	POUR 6	139.1
	POUR 7	16.9
	POUR 8	83.7
	POUR 9	156.6
	POUR 10	131.3
	POUR 11	16.9
	TOTAL	1,029.1
GROOVING BRIDGE FLOORS (SQ. FT.)	29,088	
REINFORCED CONCRETE DECK SLAB (SQ. FT.)	31,632	

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. I-4401

BUNCOMBE COUNTY

STATION: POT 147+53.94 -L-
POT 5+03.07 -RR-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE BILL OF MATERIAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 28479 KEVIN G BAILEY 1-10-06

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19165 MARK P. ROBBINS 1-10-06

TAYLOR & MURPHY

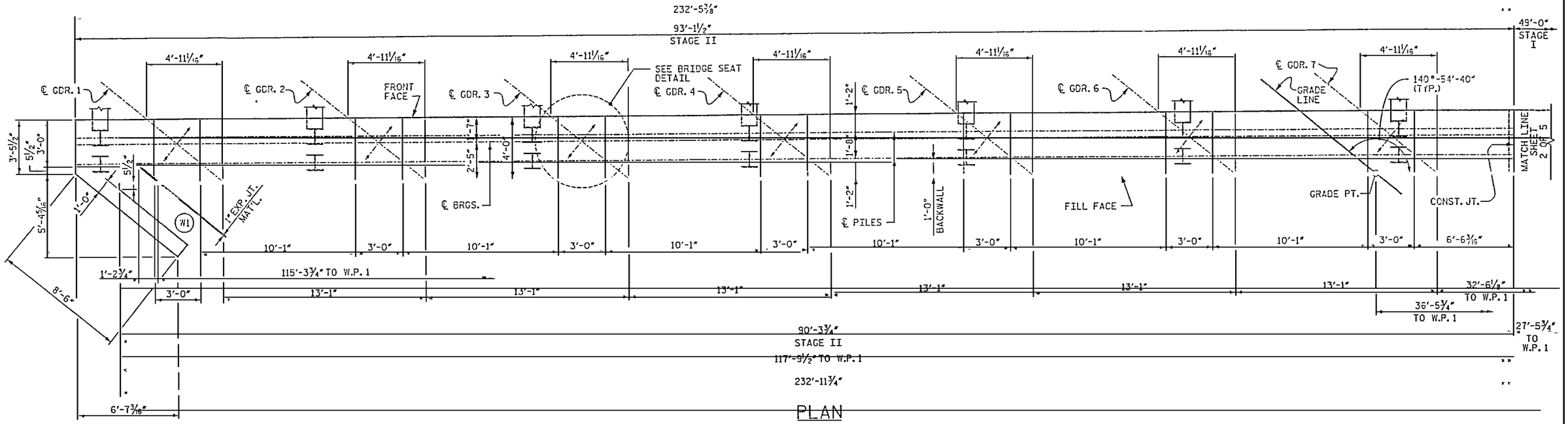
FLORENCE & HUTCHESON, INC. CONSULTING ENGINEERS

RALPH WHITEHEAD ASSOCIATES, INC. CONSULTING ENGINEERS P.O. BOX 35824 CHARLOTTE, N.C. 28235

DRAWN BY AJP/TJT DATE 9-05 DWG. NO.
CHECKED BY KGB DATE 10-05 D-1736.24

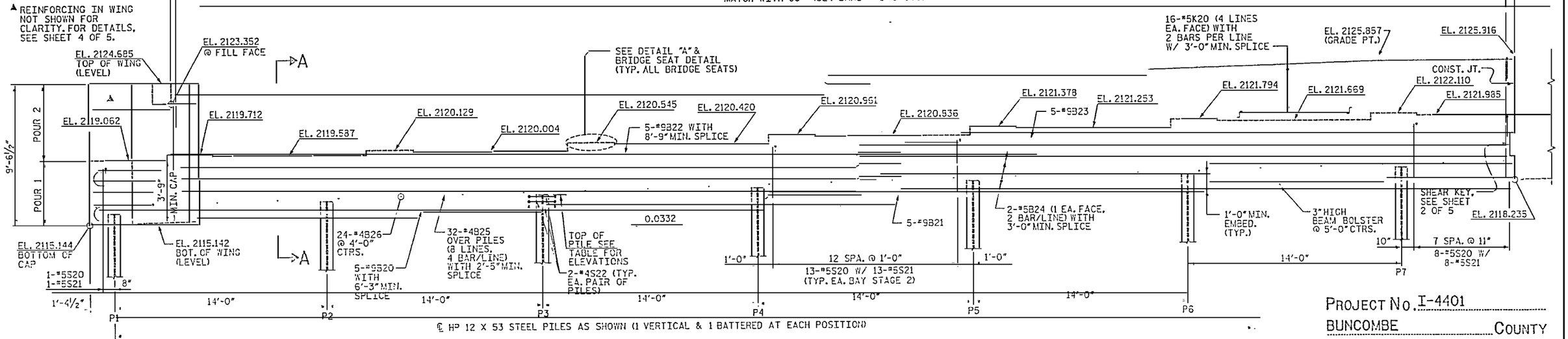
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

SHEET NO. S2-24
TOTAL SHEETS 48



PLAN

176-#5V20 @ 1'-0" CTS. (EA. FACE)
MATCH WITH 88-#4S24 BARS @ 1'-0" CTS.

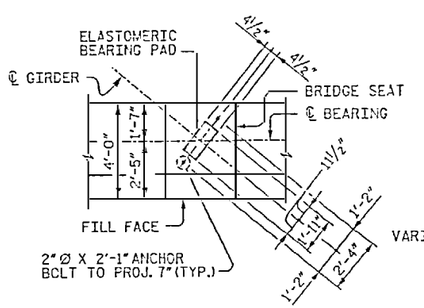


ELEVATION

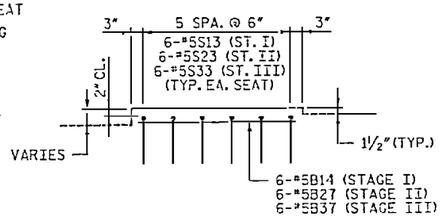
(LOOKING IN THE DIRECTION OF STATIONING)

TOP OF PILE ELEVATIONS	
PILE	ELEVATION
P1	2116.206
P2	2116.671
P3	2117.136
P4	2117.601
P5	2118.065
P6	2118.530
P7	2118.995

ELEVATIONS BASED ON 1'-0" MIN. EMBEDMENT



BRIDGE SEAT DETAIL



DETAIL "A"

NOTES:

SEE SHEET 5 OF 5 FOR SECTIONS A-A AND B-B.

SEE SHEET 5 OF 5 FOR NOTES.

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 28479 KEVIN G BAILEY 9-7-05

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19165 MARK F. ROBBINS 9-7-05

TAYLOR & MURPHY

FLORENCE & HUTCHESON, INC. CONSULTING ENGINEERS 4000 WESTERGATE DRIVE, SUITE 415 RALEIGH, NC 27607

RALPH WHITEHEAD ASSOCIATES, INC. CONSULTING ENGINEERS P.O. BOX 35624 CHARLOTTE, N.C. 28235

DRAWN BY ARH, DDL DATE 6-05
CHECKED BY HFW DATE 7-05
DARK NO. D-1786.25

PROJECT NO. I-4401
BUNCOMBE COUNTY
STATION: POT 147+53.94 -L- = POT 5+03.07 -RR-

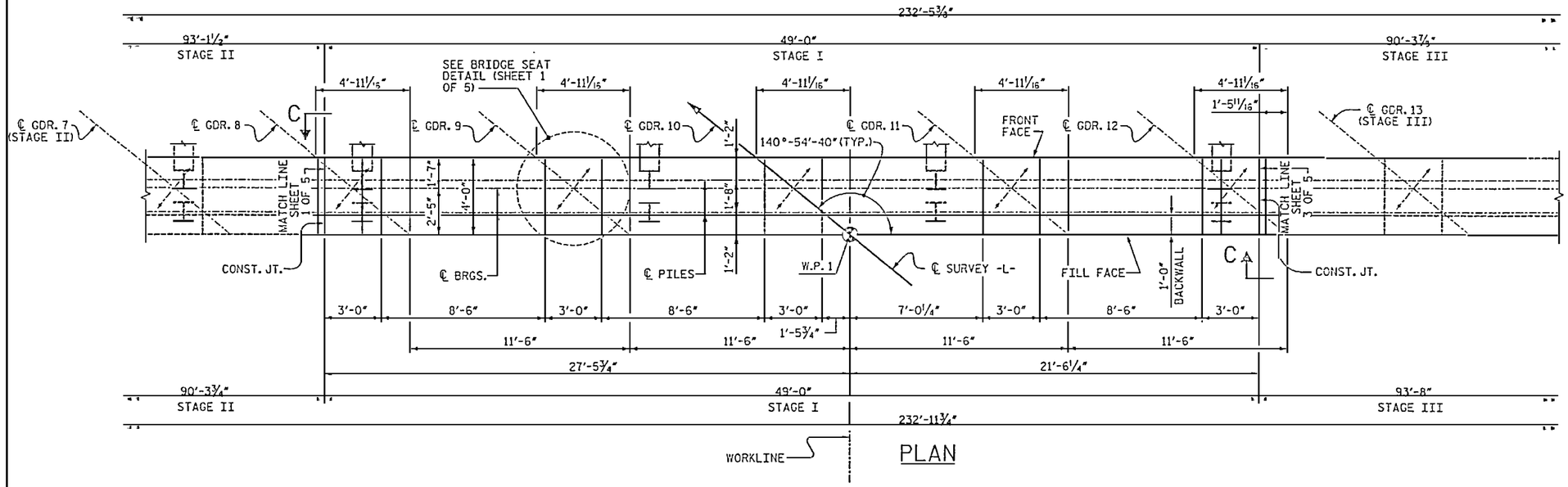
SHEET 1 OF 5

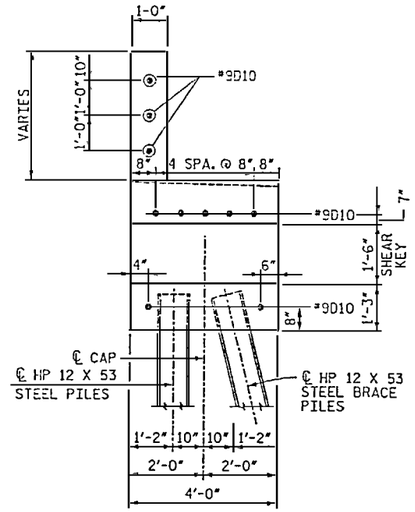
REVISIONS								
NO.	BY	DATE	NO.	BY	DATE	NO.	BY	DATE
1			3					
2			4					

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

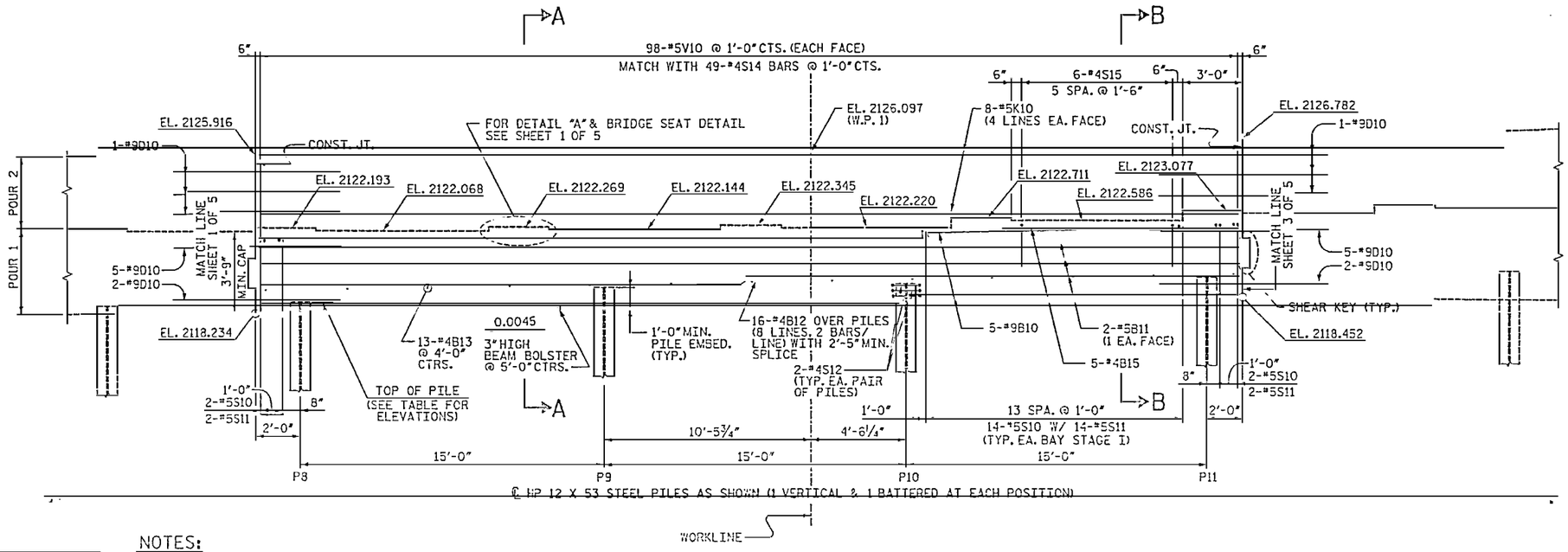
END BENT 1
STAGE II

SHEET NO. S2-25
TOTAL SHEETS 43

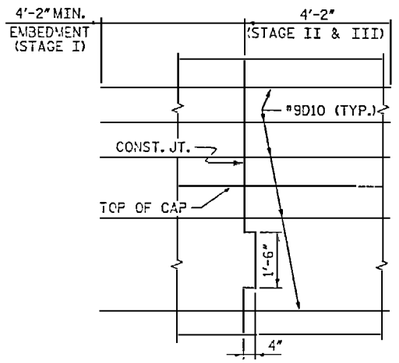




DOWEL DETAIL
(SEE NOTES FOR #9D10 DOWEL BARS)



ELEVATION
(LOOKING IN THE DIRECTION OF STATIONING)



ELEVATION C

TOP OF PILE ELEVATIONS	
PILE	ELEVATION
P8	2119.248
P9	2119.315
P10	2119.383
P11	2119.451

ELEVATIONS BASED ON 1'-0" MIN. EMBEDMENT

NOTES:

SEE SHEET 5 OF 5 FOR SECTION A-A.

SEE SHEET 5 OF 5 FOR NOTES.

CONTRACTOR SHALL INSTALL #9D10 DOWEL BARS AS DETAILED, PROVIDED THERE IS ENOUGH CLEARANCE IN THE FIELD. CONTRACTOR MAY USE ADHESIVELY ANCHORED #9 DOWEL BARS OR THE USE OF MECHANICAL SPLICED #9 DOWEL BARS IN LIEU OF DETAILS SHOWN IN THESE PLANS. ADHESIVELY ANCHORED OR MECHANICAL SPLICED DOWEL BARS SHALL HAVE PRIOR APPROVAL FROM THE ENGINEER.

PROJECT No. I-4401
BUNCOMBE COUNTY
STATION: POT 147+53.94 -L- =
POT 5+03.07 -RR-

SHEET 2 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

END BENT 1
STAGE I

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

SHEET NO. S2-26
TOTAL SHEETS 48

TAYLOR & MURPHY

FLORENCE & HUTCHESON, P.C. CONSULTING ENGINEERS 4101 WESTGROVE BLVD., SUITE 118 RALEIGH, N.C. 27609

RALPH WHITEHEAD ASSOCIATES, INC. CONSULTING ENGINEERS P.O. BOX 35624 CHARLOTTE, N.C. 28235

DRAWN BY ARH DATE 5-05 DGN. NO.
CHECKED BY HFW DATE 7-05 D-1186.26

NORTH CAROLINA PROFESSIONAL SEAL 28479 ENGINEER KEVIN G BAILEY 9-7-05

NORTH CAROLINA PROFESSIONAL SEAL 13165 ENGINEER MARK F. ROSSINI 9-7-05

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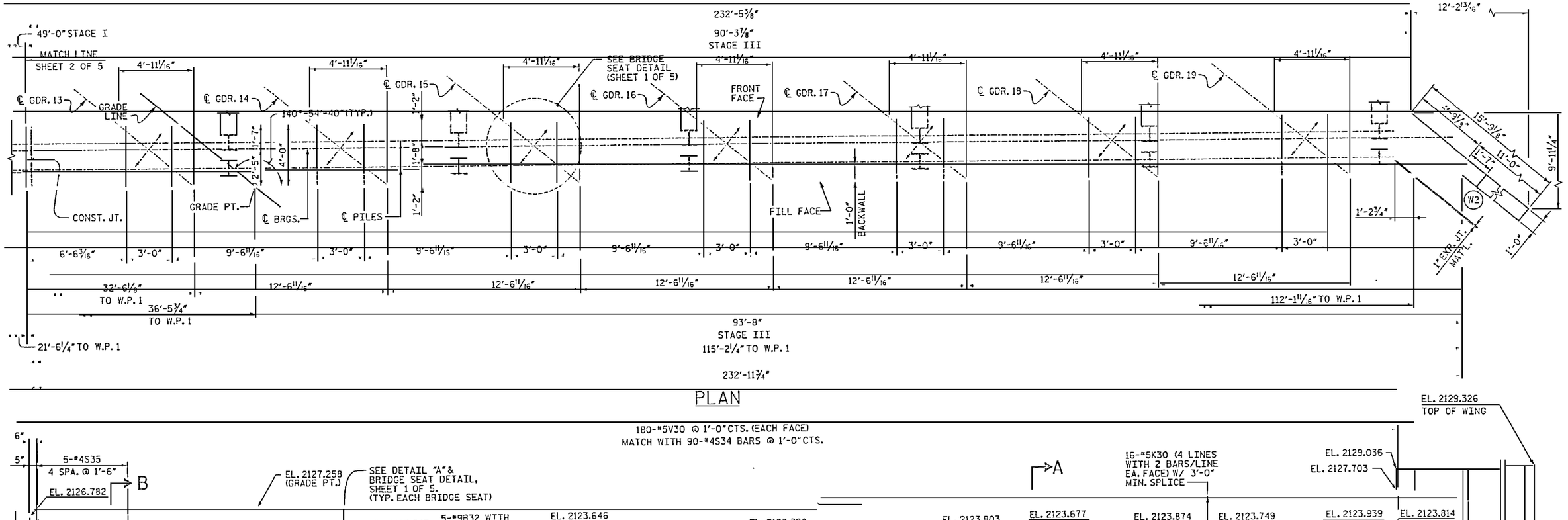
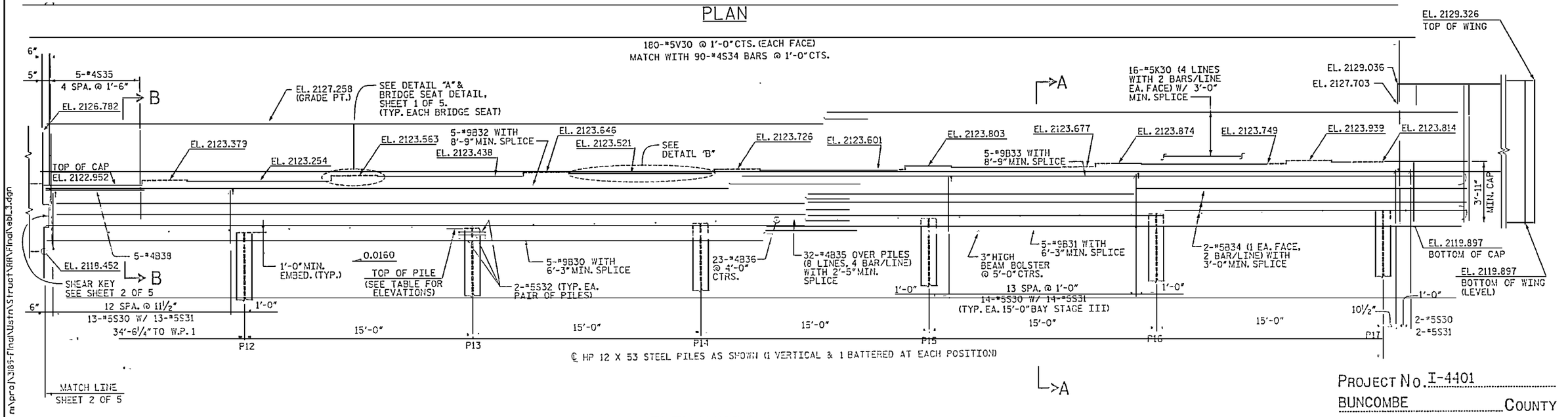


PLAN



ELEVATION

(LOOKING IN THE DIRECTION OF STATIONING)

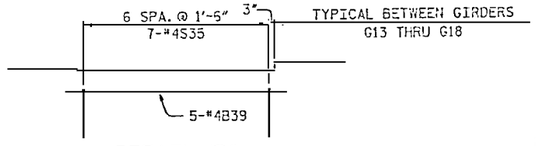
TOP OF PILE ELEVATIONS	
PILE	ELEVATION
P12	2119.671
P13	2119.911
P14	2120.151
P15	2120.391
P16	2120.631
P17	2120.871

ELEVATIONS BASED ON 1'-0" MIN. EMBEDMENT

NOTES:

SEE SHEET 5 OF 5 FOR SECTIONS A-A AND B-B.

SEE SHEET 5 OF 5 FOR NOTES.



DETAIL "B"

NORTH CAROLINA PROFESSIONAL SEAL 28479 ENGINEER KEVIN G BAILEY 9-7-05

NORTH CAROLINA PROFESSIONAL SEAL 19165 ENGINEER MARY F. ROBBINS 9-7-05

TAYLOR & MURPHY

FLORENCE & HUTCHESON, INC. CONSULTING ENGINEERS 420 WESTGATE BLVD. SUITE 415 RALEIGH, NC 27609

RALPH WHITEHEAD ASSOCIATES, INC. CONSULTING ENGINEERS P.O. BOX 35624 CHARLOTTE, N.C. 28235

DRAWN BY ARH DATE 5-05 DWG. NO.

CHECKED BY HFW DATE 7-05 D-1736.27

REVISIONS

NO.	BY	DATE
1		
2		
3		
4		

PROJECT NO. I-4401

BUNCOMBE COUNTY

STATION: POT 147+53.94 -L- =
POT 5+03.07 -RR-

SHEET 3 OF 5

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

RALEIGH

END BENT 1
STAGE III

SHEET NO. S2-27

TOTAL SHEETS 48

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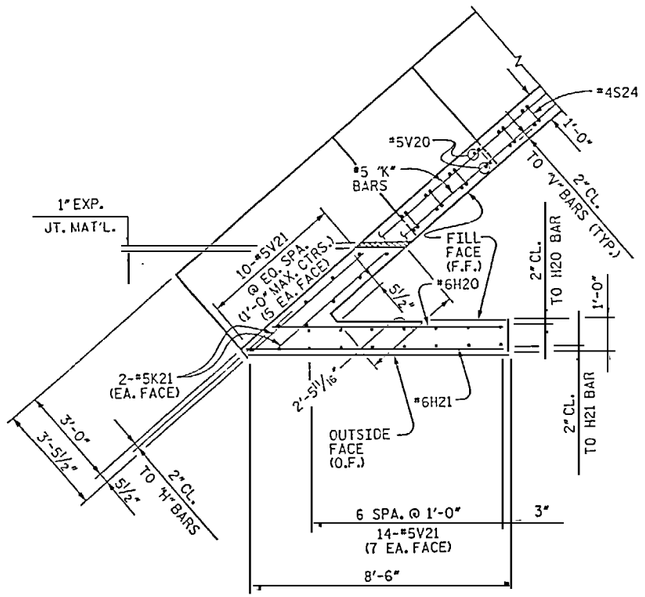
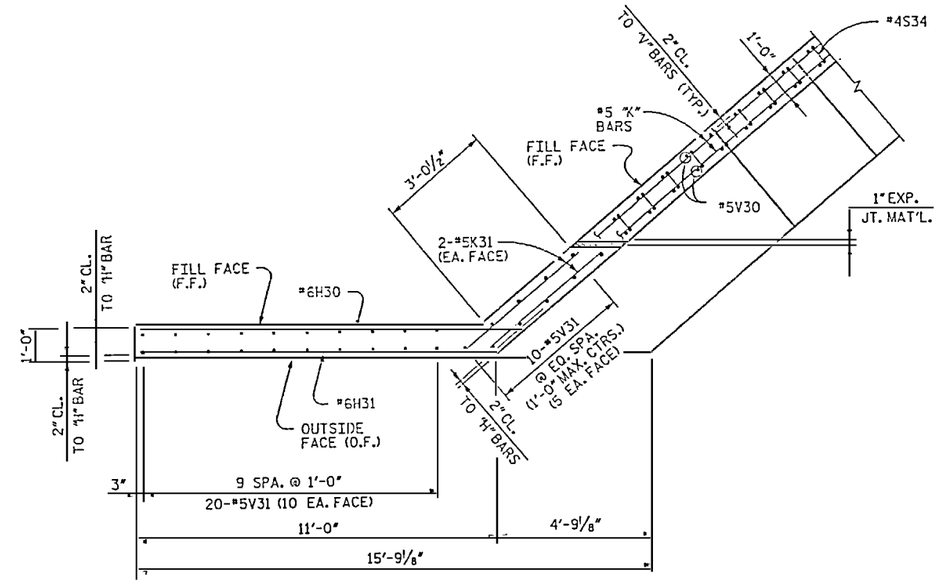
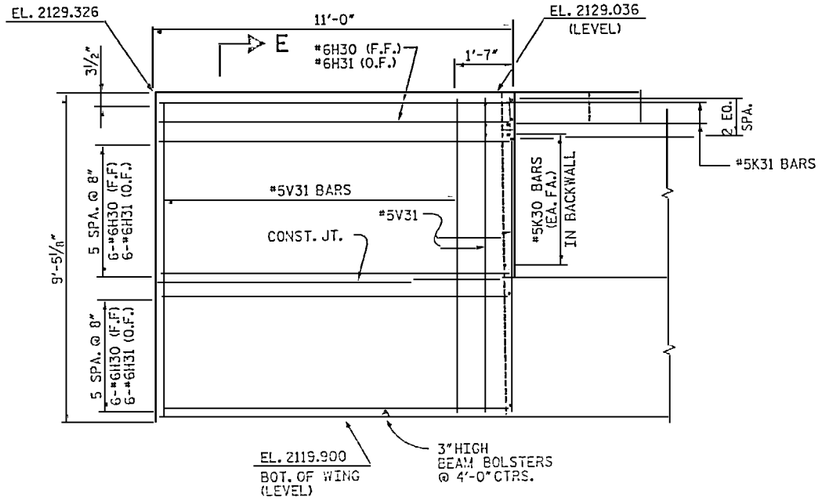


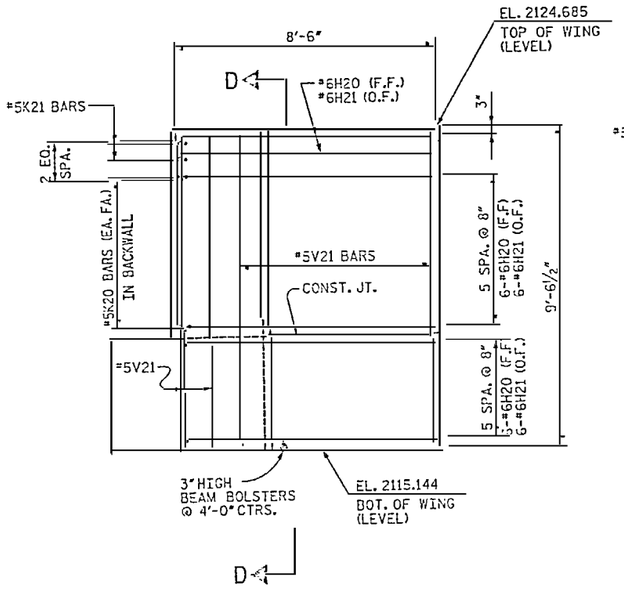
PLAN WING W1



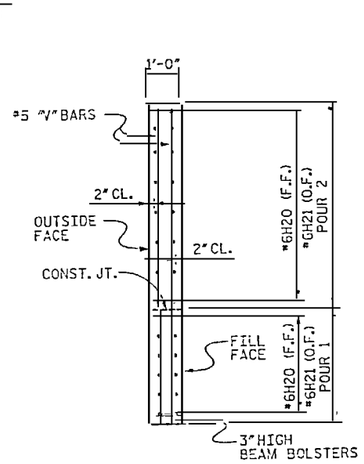
PLAN WING W2



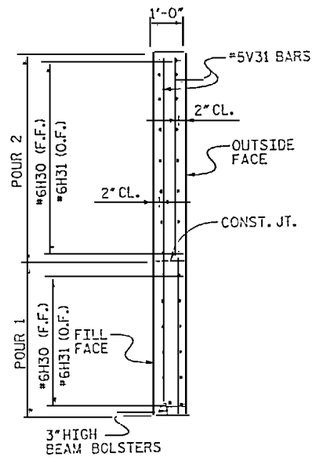
ELEVATION WING W2



ELEVATION WING W1



SECTION D-D



SECTION E-E

PROJECT No. I-4401

BUNCOMBE COUNTY

STATION: POT 147+53.94 -L-
POT 5+03.07 -RR-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

END BENT 1

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

SHEET NO. S2-29
TOTAL SHEETS 48

TAYLOR & MURPHY

FLORENCE & HUTCHESON INC
CONSULTING ENGINEERS
4128 WESTGATE BLVD. SUITE 475
RALEIGH, NC 27607

RALPH WHITEHEAD ASSOCIATES, P.A.
CONSULTING ENGINEERS
P.O. BOX 35824 CHARLOTTE, N.C. 28235

DRAWN BY AMP DATE 6-05 DWG. NO.
CHECKED BY MFW DATE 7-05 B-1799.28

NORTH CAROLINA PROFESSIONAL SEAL 28479 ENGINEER KEVIN G BAILEY 4-7-05

NORTH CAROLINA PROFESSIONAL SEAL 18155 ENGINEER MARK F. ROBBINS 4-7-05

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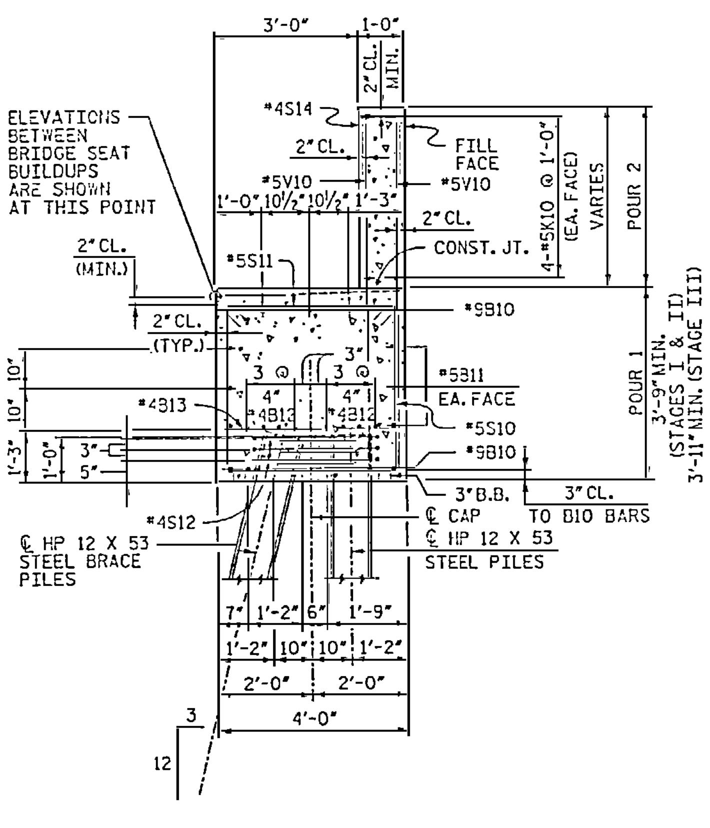
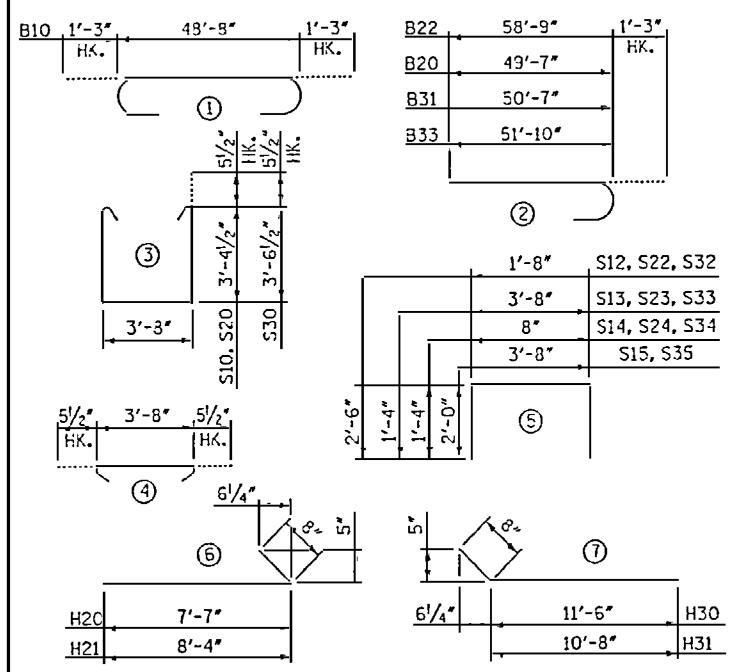


SECTION A-A

(STAGE I SHOWN, STAGES II AND III SIMILAR)

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

END BENT 1

BILL OF REINFORCING (STAGE I)

MARK	NO.	SIZE	TYPE	LENGTH	WEIGHT
B10	10	#9	(1)	51'-2"	1,740
B11	6	#5	STR.	48'-8"	305
B12	16	#4	STR.	25'-7"	273
B13	13	#4	STR.	3'-8"	32
B14	30	#5	STR.	2'-8"	83
B15	5	#4	STR.	9'-6"	32
D10	20	#9	STR.	8'-4"	567
K10	8	#5	STR.	48'-8"	406
S10	46	#5	(3)	11'-4"	544
S11	46	#5	(4)	4'-7"	220
S12	24	#4	(5)	6'-8"	107
S13	30	#5	(5)	6'-4"	198
S14	49	#4	(5)	3'-4"	109
S15	7	#4	(5)	7'-8"	36
V10	98	#5	STR.	7'-3"	741

TOTAL REINFORCING STEEL (STAGE I) = 5,393 LBS.

BILL OF REINFORCING (STAGE II)

MARK	NO.	SIZE	TYPE	LENGTH	WEIGHT
B20	5	#9	(2)	50'-10"	864
B21	5	#9	STR.	49'-6"	842
B22	5	#9	(2)	60'-0"	1,020
B23	5	#9	STR.	42'-10"	728
B24	12	#5	STR.	47'-11"	600
B25	32	#4	STR.	25'-1"	536
B26	24	#4	STR.	3'-8"	59
B27	42	#5	STR.	2'-8"	117
H20	14	#6	(6)	8'-3"	173
H21	14	#6	(6)	9'-0"	189
K20	16	#5	STR.	47'-11"	800
K21	4	#5	STR.	3'-8"	15
S20	87	#5	(3)	11'-4"	1,028
S21	87	#5	(4)	4'-7"	416
S22	42	#4	(5)	6'-8"	187
S23	42	#5	(5)	6'-4"	277
S24	88	#4	(5)	3'-4"	196
V20	176	#5	STR.	7'-3"	1,331
V21	24	#5	STR.	8'-10"	221

TOTAL REINFORCING STEEL (STAGE II) = 9,599 LBS.

BILL OF REINFORCING (STAGE III)

MARK	NO.	SIZE	TYPE	LENGTH	WEIGHT
B30	5	#9	STR.	50'-7"	860
B31	5	#9	(2)	51'-10"	881
B32	5	#9	STR.	51'-10"	881
B33	5	#9	(2)	53'-1"	902
B34	12	#5	STR.	48'-11"	612
B35	32	#4	STR.	25'-7"	547
B36	23	#4	STR.	3'-3"	56
B37	42	#5	STR.	2'-8"	117
B38	15	#5	STR.	6'-6"	102
B39	25	#4	STR.	10'-0"	167
H30	14	#6	(7)	12'-2"	256
H31	14	#6	(7)	11'-4"	238
K30	16	#5	STR.	48'-11"	816
K31	4	#5	STR.	3'-8"	15
S30	85	#5	(3)	11'-8"	1,034
S31	85	#5	(4)	4'-7"	405
S32	36	#4	(5)	6'-8"	160
S33	42	#5	(5)	6'-4"	277
S34	90	#4	(5)	3'-4"	200
S35	40	#4	(5)	7'-8"	205
V30	180	#5	STR.	7'-4"	1,377
V31	30	#5	STR.	8'-10"	276

TOTAL REINFORCING STEEL (STAGE III) = 10,385 LBS.

NOTES:

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

FOR EPOXY PROTECTIVE COATING, SEE SPECIAL PROVISIONS.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

THE TOP SURFACE AREAS OF THE END BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THAT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

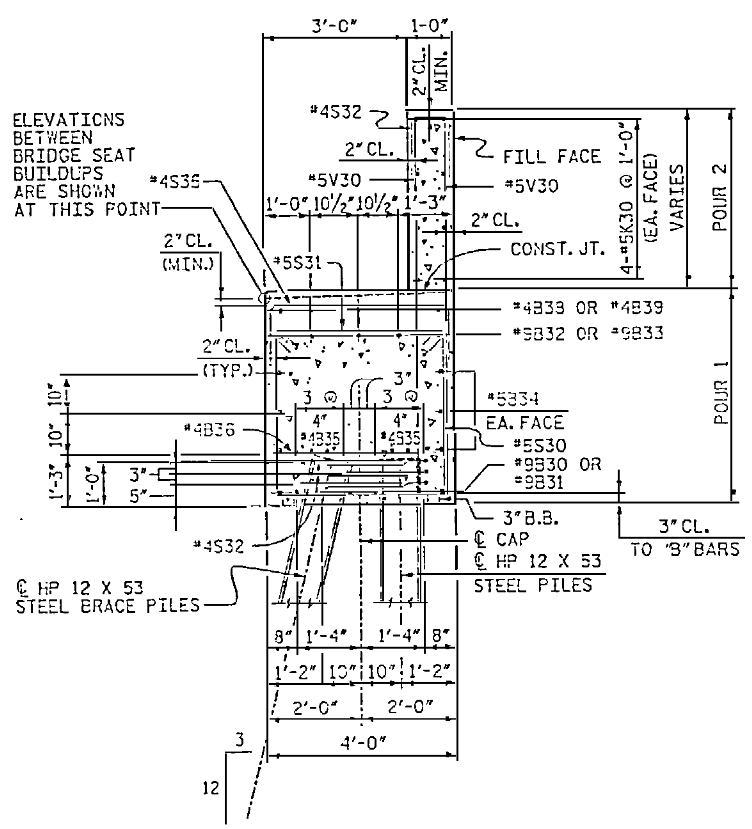
THE TOP SURFACE OF THE CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE FRONT FACE AT THE RATE OF 2%.

FOR OTHER NOTES, SEE "GENERAL DRAWING, FOUNDATION LAYOUT" SHEET.

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

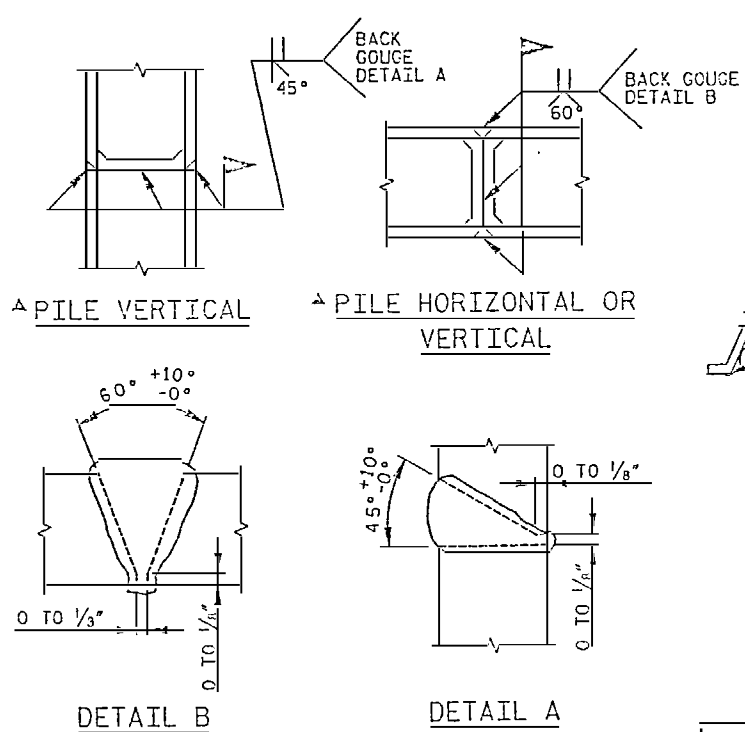
END BENT 1 QUANTITIES

		STAGE I	STAGE II	STAGE III	EB 1 (TOTAL)
REINFORCING STEEL	LBS.	5,393	9,599	10,385	25,377
CLASS A CONCRETE					
SUBSTRUCTURE POUR 1:	CU. YARDS	29.0	57.0	61.8	147.8
SUBSTRUCTURE POUR 2:	CU. YARDS	6.9	15.2	15.4	37.5
SUBSTRUCTURE TOTAL:	CU. YARDS	35.9	72.2	77.2	185.3
HP 12 X 53 STEEL PILES	(NO.)	8	14	12	34
	LIN. FEET	604.7	1033.3	918.2	2556.2



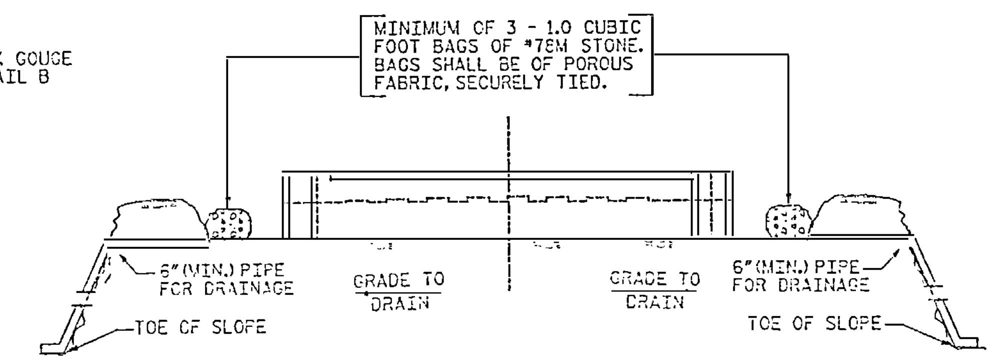
SECTION B-B

(STAGE III SHOWN, STAGE I SIMILAR)



▵POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

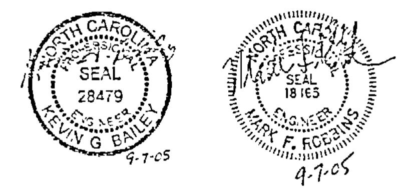


TEMPORARY DRAINAGE AT END BENT

DRAINAGE NOTES:

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.



PROJECT NO. I-4401

BUNCOMBE COUNTY

STATION: POT 147+53.94 -L-
POT 5+03.07 -RR-

SHEET 5 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

END BENT 1

REVISIONS: NO. | BY | DATE

TAYLOR & MURPHY

FLORENCE & HUTCHESON, INC. CONSULTING ENGINEERS

RALPH WHITEHEAD ASSOCIATES, INC. CONSULTING ENGINEERS P.O. BOX 35624 CHARLOTTE, N.C. 28235

DRAWN BY: A.P. DATE: 6-05
CHECKED BY: HFW DATE: 7-05
0-1786.29

SHEET NO. S2-29
TOTAL SHEETS 43

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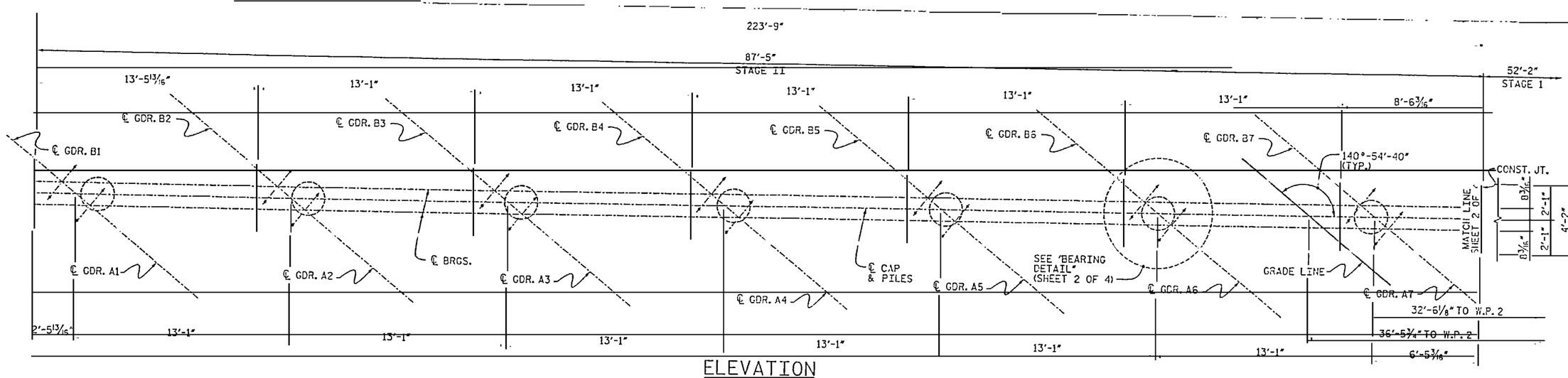
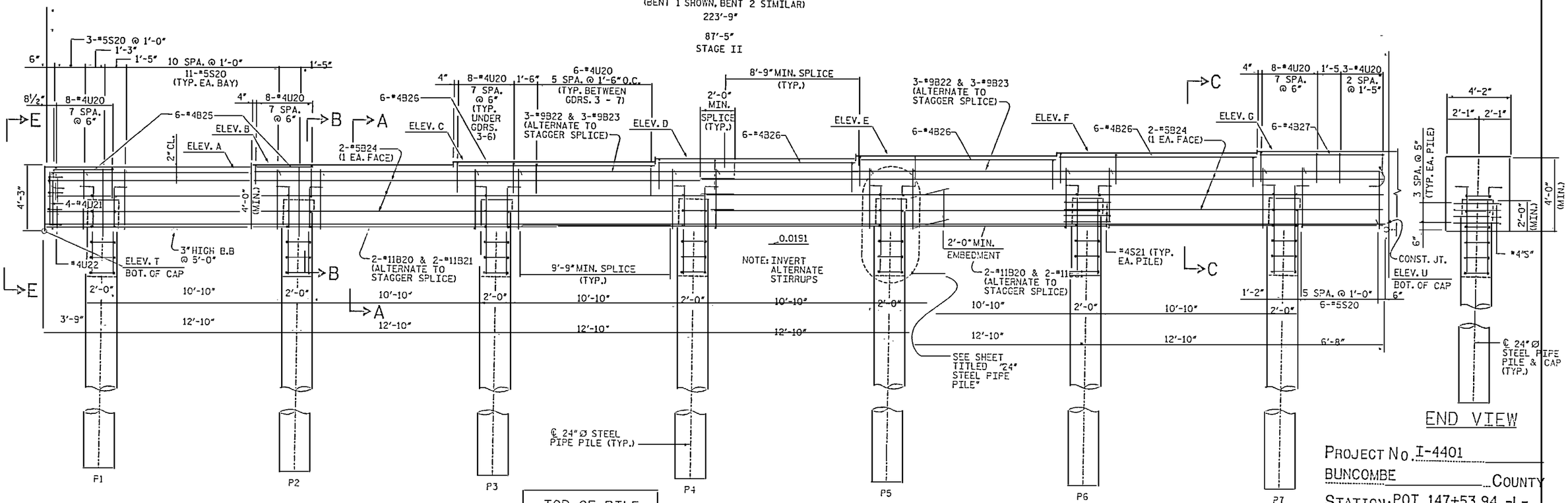


ELEVATION

(BENT 1 SHOWN, BENT 2 SIMILAR)



END VIEW

PLAN

(BENT 1 SHOWN, BENT 2 SIMILAR)

ELEVATIONS		
LOCATION	BENT 1	BENT 2
A	2119.124	2115.823
B	2118.540	2116.244
C	2118.956	2116.661
D	2119.373	2117.077
E	2119.789	2117.493
F	2120.205	2117.910
G	2120.522	2118.226
T	2113.874	2111.578
U	2115.544	2113.248

TOP OF PILE ELEVATIONS STAGE II		
PILE NO.	ELEVATION	
	BENT 1	BENT 2
P1	2115.965	2113.669
P2	2116.209	2113.913
P3	2116.454	2114.158
P4	2116.698	2114.402
P5	2116.943	2114.647
P6	2117.187	2114.891
P7	2117.432	2115.136

ELEVATIONS BASED ON 2'-0" MIN. EMBEDMENT

NOTES:

SEE SHEET 4 OF 4 FOR NOTES.

SEE SHEET 4 OF 4 FOR SECTIONS A-A, B-B, D-D, AND E-E.

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 28479 KEVIN G. BAILEY 7-7-05

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18165 MARK F. ROBBINS 9-7-05

TAYLOR & MURPHY

FLORENCE & HUTCHESON, INC. CONSULTING ENGINEERS 4210 WHITEHORSE BLVD. SUITE 105 RALEIGH, NC 27609

RALPH WHITEHEAD ASSOCIATES, INC. CONSULTING ENGINEERS P.O. BOX 35621 CHARLOTTE, N.C. 28235

DRAWN BY AJP DATE 6-05 DRG. NO.

CHECKED BY HFW DATE 7-05 D-1786.30

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

PROJECT NO. I-4401

BUNCOMBE COUNTY

STATION: POT 147+53.94 -L-

POT 5+03.07 -RR-

SHEET 1 OF 4

STATE OF NORTH CAROLINA

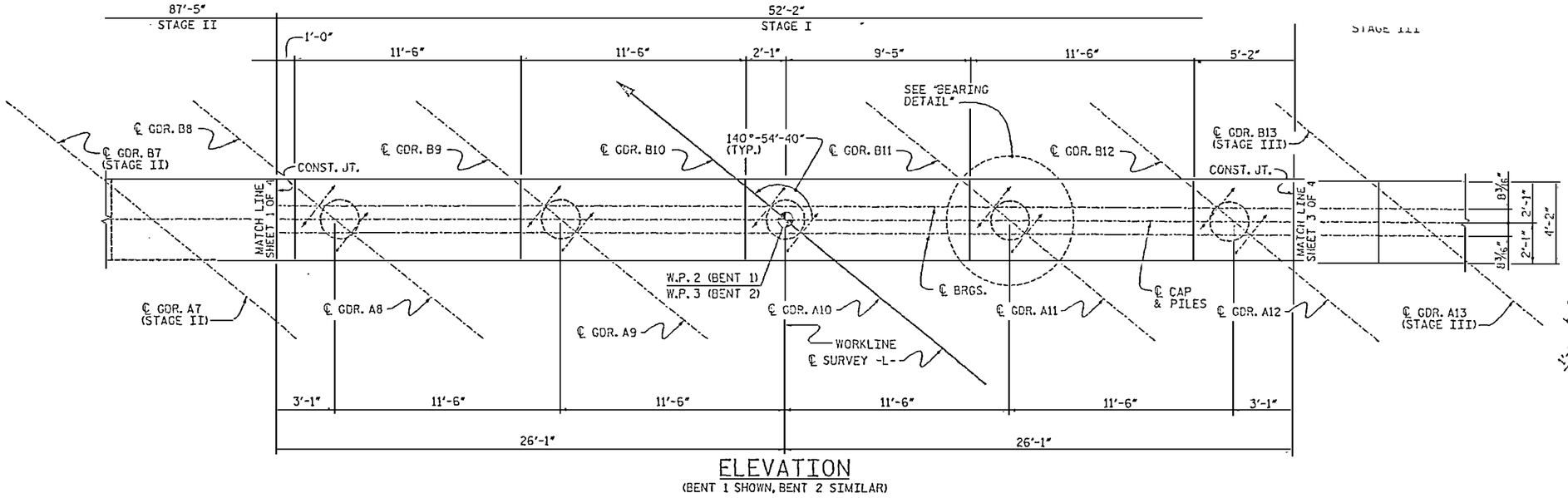
DEPARTMENT OF TRANSPORTATION

RALEIGH

INTERMEDIATE BENTS 1 & 2 STAGE II

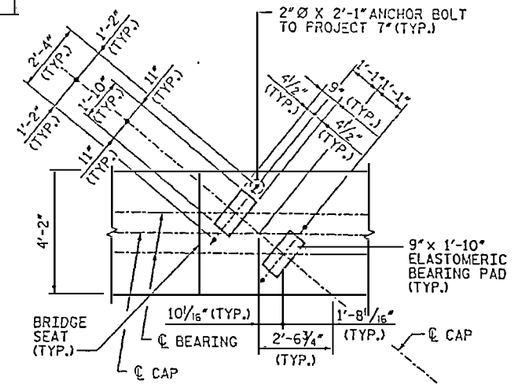
SHEET NO. S2-30

TOTAL SHEETS 48

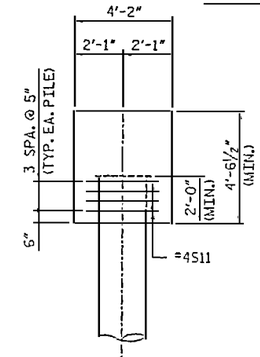


ELEVATION
(BENT 1 SHOWN, BENT 2 SIMILAR)

H	2120.604	2118.309
I	2120.680	2118.385
J	2120.756	2118.461
K	2121.122	2118.827
L	2121.468	2119.192
U	2115.544	2113.248
V	2116.530	2114.234

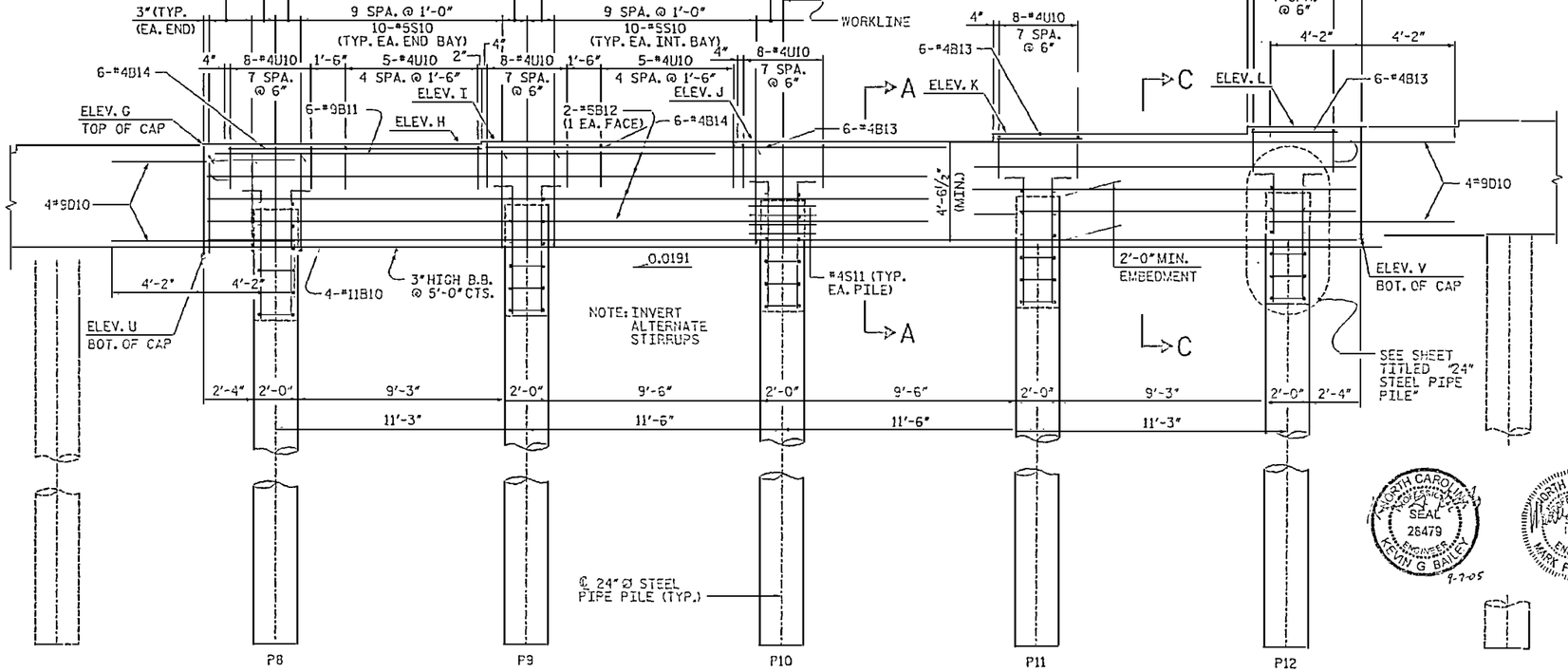


BEARING DETAIL



TOP OF PILE ELEVATIONS STAGE I		
PILE NO.	ELEVATION	
	BENT 1	BENT 2
P8	2117.622	2115.326
P9	2117.837	2115.541
P10	2118.056	2115.760
P11	2118.275	2115.979
P12	2118.490	2116.194

ELEVATIONS BASED ON 2'-0" MIN. EMBEDMENT



PLAN
(BENT 1 SHOWN, BENT 2 SIMILAR)

NOTES:

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 26479 ENGINEER KEVIN G BAILEY 9-7-05

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18165 ENGINEER MARK F. ROBBINS 9-7-05

END VIEW

PROJECT NO. I-4401
BUNCOMBE COUNTY
STATION: POT 147+53.94 -L-
POT 5+03.07 -RR-

SHEET 2 OF 4

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

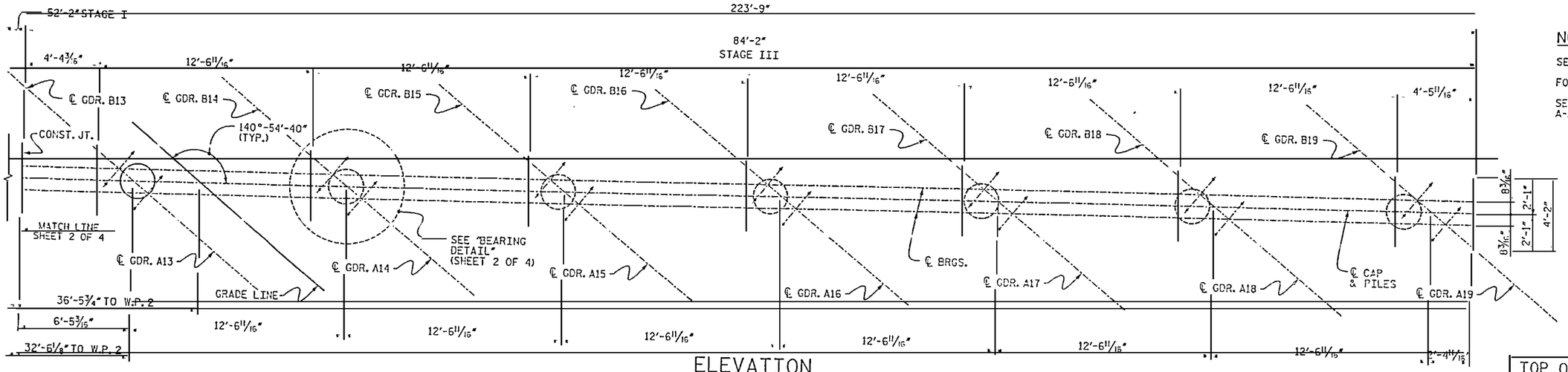
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

INTERMEDIATE BENTS 1 & 2 STAGE I

FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS

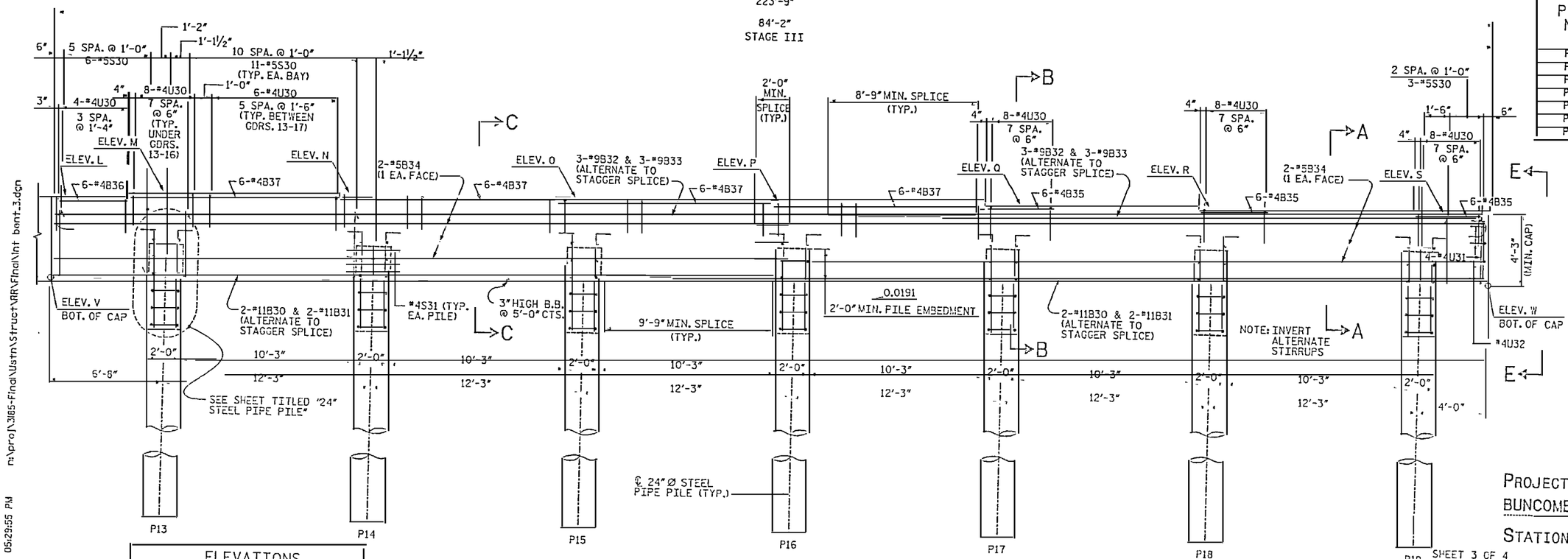
RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235
DRAWN BY AJP DATE 6-05 PROJ. NO.

SHEET NO. S2-31
TOTAL SHEETS 43



ELEVATION

(BENT 1 SHOWN, BENT 2 SIMILAR)



PLAN

(BENT 1 SHOWN, BENT 2 SIMILAR)

NOTES:

SEE SHEET 4 OF 4 FOR NOTES.

FOR "END VIEW" SEE SHEET 1 OF 4.

SEE SHEET 4 OF 4 FOR SECTIONS A-A, B-B, D-D, AND E-E.

TOP OF PILE ELEVATIONS		
PILE NO.	ELEAVATION	
	BENT 1	BENT 2
P13	2118.680	2116.384
P14	2118.914	2116.618
P15	2119.147	2116.851
P16	2119.380	2117.084
P17	2119.614	2117.318
P18	2119.847	2117.551
P19	2120.081	2117.785

ELEVATIONS		
LOCATION	BENT 1	BENT 2
M	2121.791	2119.495
N	2121.974	2119.678
O	2122.057	2119.762
P	2122.139	2119.844
Q	2122.222	2119.927
R	2122.305	2120.010
S	2122.388	2120.092
V	2116.530	2114.234
W	2118.138	2115.842

PROJECT No. I-4401

BUNCOMBE COUNTY

STATION: POT 147+53.94 -L-
POT 5+03.07 -RR-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

INTERMEDIATE BENTS 1 & 2 STAGE III

SHEET NO. S2-32
TOTAL SHEETS 48

REVISIONS

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

TAYLOR & MURPHY

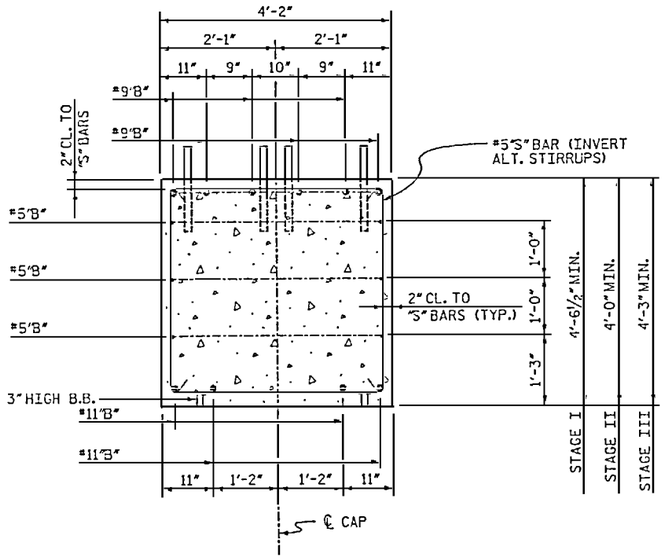
FLORENCE & HUTCHESON, INC. CONSULTING ENGINEERS 4020 WESTGROVE BLVD. SUITE 415 RALEIGH, N.C. 27609

RALPH WHITEHEAD ASSOCIATES, INC. CONSULTING ENGINEERS P.O. BOX 35524 CHARLOTTE, N.C. 28235

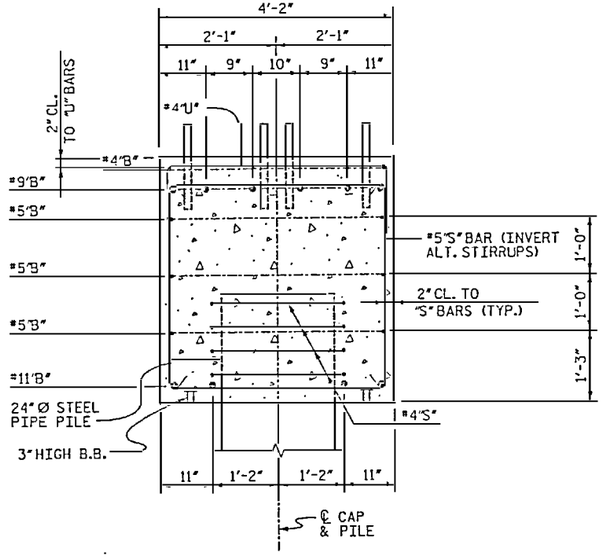
DRAWN BY AJP DATE 6-05
CHECKED BY HFW DATE 7-05
DWG. NO. D-1786.32

NORTH CAROLINA PROFESSIONAL SEAL 22479 ENGINEER KEVIN G BAILEY 9-7-05

NORTH CAROLINA PROFESSIONAL SEAL 13165 ENGINEER MARK F. ROBBINS 9-7-05



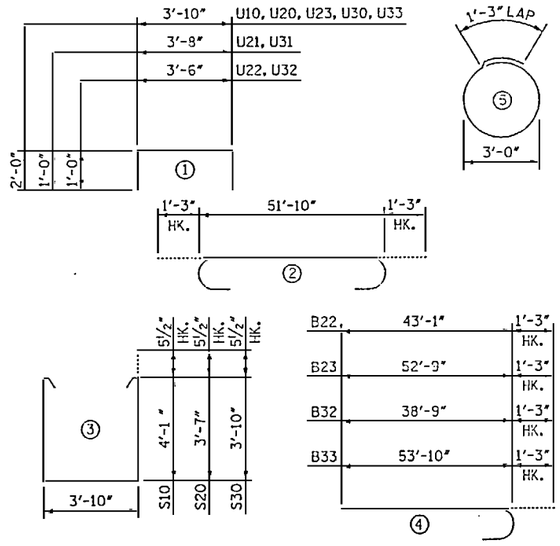
SECTION A-A



SECTION B-B

(BARS IN 24" Ø STEEL PIPE PILE NOT SHOWN FOR CLARITY)

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF REINFORCING (STAGE I) (FOR ONE BENT)

MARK	NO.	SIZE	TYPE	LENGTH	WEIGHT
B10	4	#11	STR.	51'-10"	1,102
B11	6	#9	(2)	54'-4"	1,108
B12	6	#5	STR.	51'-10"	324
B13	18	#4	STR.	3'-10"	46
B14	12	#4	STR.	11'-4"	91
D10	16	#9	STR.	8'-4"	453
S10	46	#5	(3)	12'-11"	620
S11	20	#4	(5)	10'-8"	143
U10	50	#4	(1)	7'-10"	262

TOTAL REINF. STEEL (STAGE I) = 4,149 LBS.

BILL OF REINFORCING (STAGE II) (FOR ONE BENT)

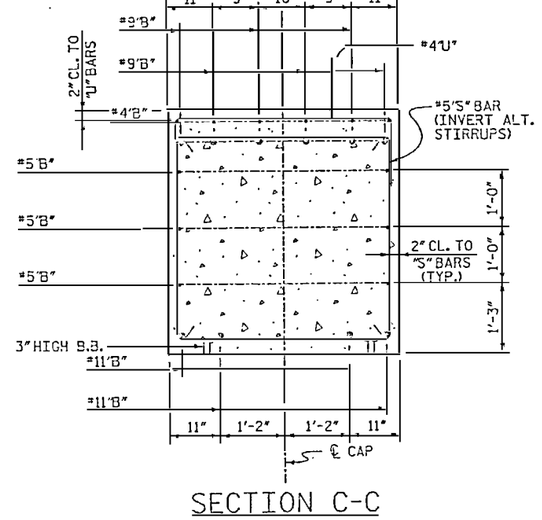
MARK	NO.	SIZE	TYPE	LENGTH	WEIGHT
B20	4	#11	STR.	40'-7"	862
B21	4	#11	STR.	56'-3"	1,195
B22	6	#9	(4)	44'-4"	904
B23	6	#9	(4)	54'-0"	1,102
B24	12	#5	STR.	44'-8"	559
B25	12	#4	STR.	3'-10"	31
B26	24	#4	STR.	12'-11"	207
B27	6	#4	STR.	8'-1"	32
S20	75	#5	(3)	11'-11"	932
S21	28	#4	(5)	10'-8"	200
U20	83	#4	(1)	7'-10"	434
U21	4	#4	(1)	5'-6"	15
U22	3	#4	(1)	5'-8"	11

TOTAL REINF. STEEL (STAGE II) = 6,484 LBS.

BILL OF REINFORCING (STAGE III) (FOR ONE BENT)

MARK	NO.	SIZE	TYPE	LENGTH	WEIGHT
B30	4	#11	STR.	42'-0"	893
B31	4	#11	STR.	51'-7"	1,096
B32	6	#9	(4)	40'-0"	816
B33	6	#9	(4)	55'-1"	1,124
B34	12	#5	STR.	43'-0"	538
B35	18	#4	STR.	3'-10"	46
B36	6	#4	STR.	4'-2"	17
B37	24	#4	STR.	12'-4"	198
S30	75	#5	(3)	11'-11"	932
S31	28	#4	(5)	10'-8"	200
U30	84	#4	(1)	7'-10"	440
U31	4	#4	(1)	5'-6"	15
U32	3	#4	(1)	5'-3"	11

TOTAL REINF. STEEL (STAGE III) = 6,430 LBS.



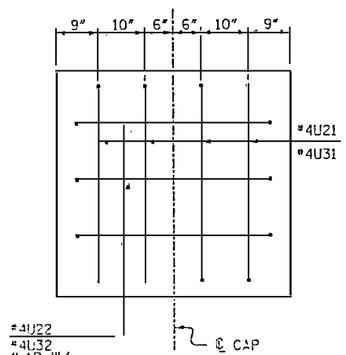
SECTION C-C

NOTES:

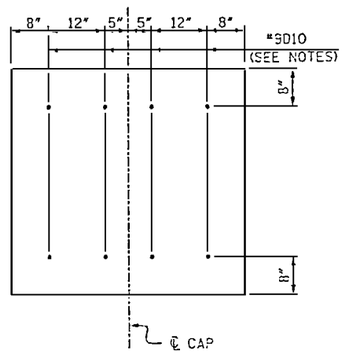
STIRRUPS IN CAP MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR ANCHOR BOLTS.

FOR OTHER NOTES, SEE SHEET TITLED "GENERAL DRAWING FOUNDATION LAYOUT".

CONTRACTOR SHALL INSTALL #SD10 DOWEL BARS AS DETAILED, PROVIDED THERE IS ENOUGH CLEARANCE IN THE FIELD. CONTRACTOR MAY USE ADHESIVELY ANCHORED #9 DOWEL BARS OR THE USE OF MECHANICAL SPLICED #9 DOWEL BARS IN LIEU OF DETAILS SHOWN IN THESE PLANS. ADHESIVELY ANCHORED OR MECHANICAL SPLICED DOWEL BARS SHALL HAVE PRIOR APPROVAL FROM THE ENGINEER.



VIEW E-E



DOWEL DETAIL

QUANTITIES

		STAGE I	STAGE II	STAGE III	BENT 1 (TOTAL)	BENT 2 (TOTAL)
REINFORCING STEEL	LBS. (BENT 1 & 2)	4,149	6,484	6,430	17,063	17,063
CLASS A CONCRETE	CU. YARDS (BENT 1 & 2)	38.9	62.0	61.5	162.4	162.4
24" Ø STEEL PIPE PILES	NO. (BENT 1 & 2)	5	7	7	19	19
	LIN. FEET (BENT 1)	340.5	467.0	486.0	1293.5	
	LIN. FEET (BENT 2)	329.0	451.0	470.0		1250.0

PROJECT NO. I-4401

BUNCOMBE COUNTY

STATION: POT 147+53.94 -L-
POT 5+03.07 -RR-

SHEET 4 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 28479 ENGINEER KEVIN G. BAILEY 9-7-05

NORTH CAROLINA PROFESSIONAL SEAL 18165 ENGINEER MARK F. ROBBINS 9-7-05

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

INTERMEDIATE BENTS 1 & 2 STAGES I, II, & III

SHEET NO. S2-33
TOTAL SHEETS 43

TAYLOR & MURPHY

FLORENCE & HUTCHESON, INC. CONSULTING ENGINEERS 400 PERIMETER PARK DRIVE, SUITE 100 MORRISVILLE, N.C. 27560

RALPH WHITEHEAD ASSOCIATES, INC. CONSULTING ENGINEERS P.O. BOX 35624 CHARLOTTE, N.C. 28235

DRAWN BY AJP DATE 6-05
CHECKED BY MFW DATE 7-05
D-NO. D-1796.33

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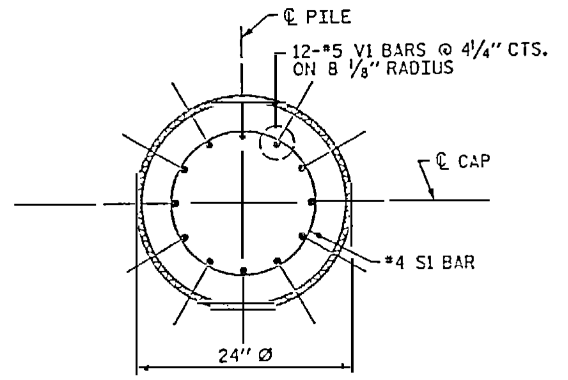
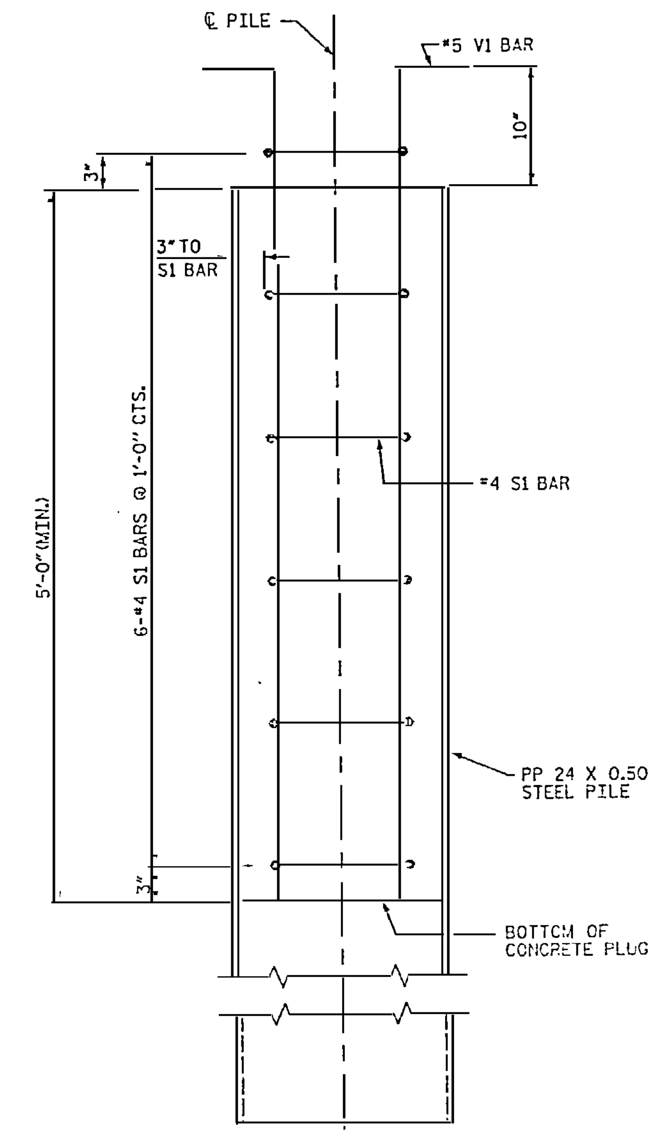


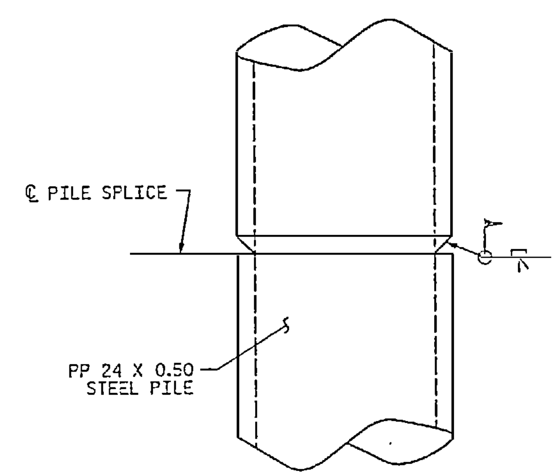
PLAN



ELEVATION

PP 24 X 0.50 STEEL PILE

(OPEN END)



PILE SPLICE DETAILS

NOTES

STEEL PILES SHALL MEET THE REQUIREMENTS OF ASTM A252 GRADE 2 AND SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. THE DRIVING PLATE, IF REQUIRED, MAY BE GALVANIZED.

THE CONCRETE IN THE PLUG SHALL BE CLASS A CONCRETE.

STEEL PILES SHALL BE EXAMINED FOR DAMAGE OR COLLAPSE AFTER BEING DRIVEN AND PRIOR TO PLACING REINFORCING STEEL AND CONCRETE IN THE TOP OF THE PILE. REJECTED PILES SHALL BE REMOVED OR THE CONTRACTOR SHALL SUBMIT A PROPOSAL TO REPAIR THE PILE.

PILE SPLICES SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AND AWS D1.1. A MAXIMUM OF 2 PILE SPLICES PER PILE IS ALLOWED.

THE CONTRACTOR WILL NOT BE REQUIRED TO REMOVE THE SOIL FROM WITHIN THE PILES AFTER DRIVING UNLESS IT IS NECESSARY TO OBTAIN THE MINIMUM CONCRETE PLUG.

THE PILES SHALL BE DEWATERED TO THE SATISFACTION OF THE ENGINEER TO THE EXTENT NECESSARY TO OBTAIN THE MINIMUM CONCRETE PLUG WITHOUT FOULING THE CONCRETE.

THE CONCRETE PLUG WITHIN THE PILES SHALL BE FORMED SUCH THAT NO MOVEMENT OF THE REINFORCING STEEL OR CONCRETE OCCURS EITHER DURING OR AFTER THE CONCRETE PLACEMENT. THE CONCRETE PLUG SHALL BE CAST AND SHALL OBTAIN A MINIMUM COMPRESSIVE STRENGTH OF 1500 PSI PRIOR TO PLACING THE CONCRETE IN THE BENT CAP.

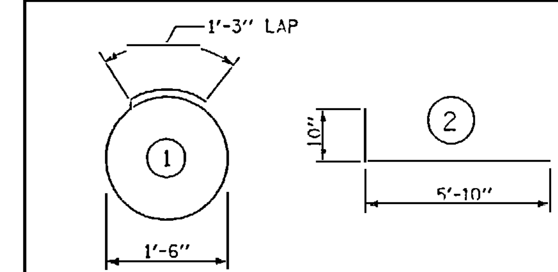
THE REINFORCING STEEL, CLASS A CONCRETE, AND DRIVING PLATE, IF REQUIRED, ARE CONSIDERED INCIDENTAL TO THE CONTRACT UNIT PRICE BID PER LINEAR FOOT FOR PP 24 X 0.50 STEEL PILES.

BILL OF MATERIAL FOR ONE PP 24 X 0.50 STEEL PILE

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
S1	6	#4	1	6'-0"	24
V1	12	#5	2	6'-8"	84
REINFORCING STEEL =				108	lbs

CLASS A CONCRETE	
5'-0" MINIMUM PLUG	0.6 CY

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. I-4401

BUNCOMBE COUNTY

STATION: POT 147+53.94 -L-
POT 5+03.07 -RR-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

24" STEEL PIPE PILE

NORTH CAROLINA PROFESSIONAL SEAL 28479 ENGINEER KEVIN G BAILEY 9-7-05

NORTH CAROLINA PROFESSIONAL SEAL 18165 ENGINEER MARK F. ROBBINS 9-7-05

REVISIONS								SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:			S2-34
1			3					TOTAL SHEETS 43
2			4					

STD. NO. SPP1

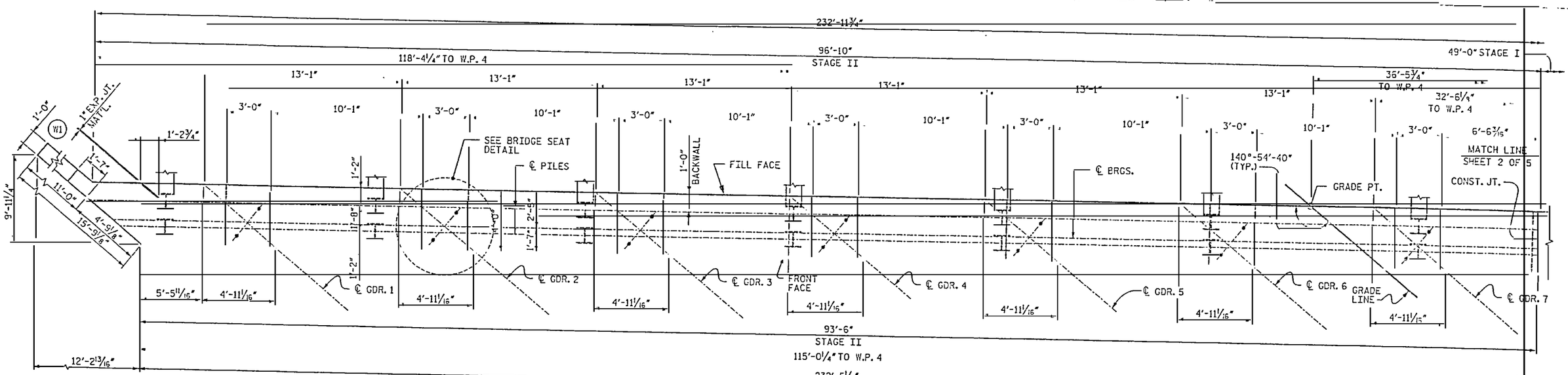
ASSEMBLED BY : AJP	DATE : 07-05		
CHECKED BY : KGB	DATE : 08-05		
DRAWN BY : RAW 1/01		REV. 7/10/01	RAW/LES
CHECKED BY : LES 1/01		REV. 5/7/03	RWW/JTE

D-1786.34

TAYLOR & MURPHY

FLORENCE & HUTCHESON, P.C. CONSULTING ENGINEERS

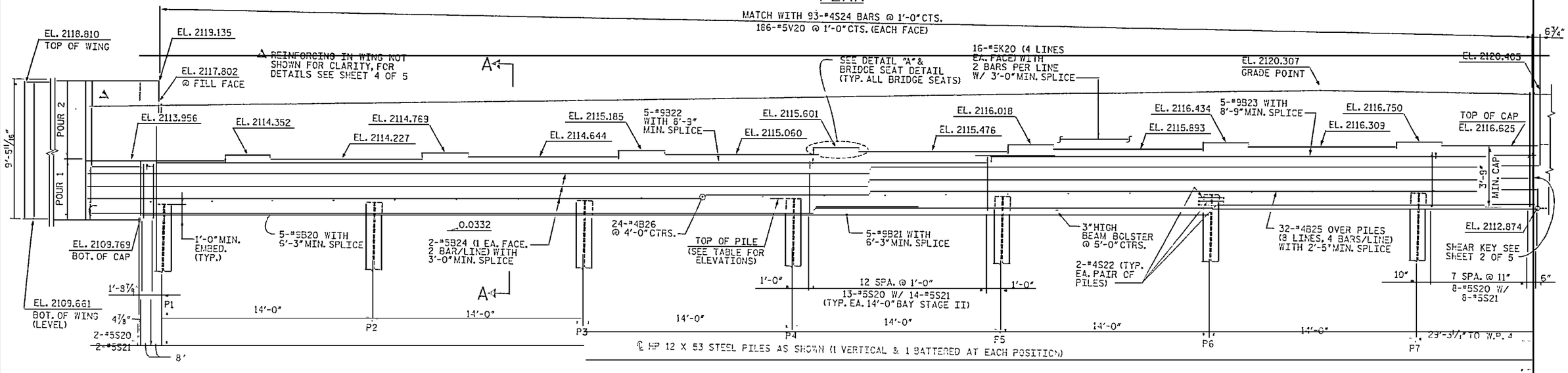
09/08/2005



PLAN

MATCH WITH 93-#4S24 BARS @ 1'-0" CTS.
186-#5V20 @ 1'-0" CTS. (EACH FACE)

6¾"

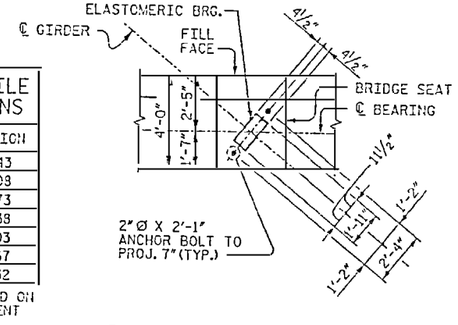


ELEVATION

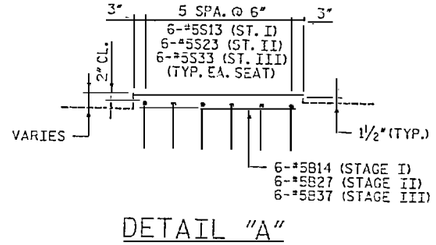
(LOOKING IN THE DIRECTION OF STATIONING)

TOP OF PILE ELEVATIONS	
PILE	ELEVATION
P1	2110.843
P2	2111.308
P3	2111.773
P4	2112.238
P5	2112.703
P6	2113.167
P7	2113.632

ELEVATIONS BASED ON 1'-0" MIN. EMBEDMENT



BRIDGE SEAT DETAIL



DETAIL "A"

NOTES:

SEE SHEET 5 OF 5 FOR SECTIONS A-A.

SEE SHEET 5 OF 5 FOR NOTES.

NORTH CAROLINA PROFESSIONAL SEAL 28479 ENGINEER KEVIN G BAILEY 7-7-05

NORTH CAROLINA REGISTERED SEAL 13155 ENGINEER MARK F. ROSSINI 4-7-05

TAYLOR & MURPHY

FLORENCE & HUTCHESON, INC. CONSULTING ENGINEERS 4120 WESTCHASE BLVD. SUITE 470 RALEIGH, NC 27607

RALPH WHITEHEAD ASSOCIATES, INC. CONSULTING ENGINEERS P.O. BOX 35824 CHARLOTTE, N.C. 28235

DRAWN BY AJP DATE 08-05 DRG. NO.
CHECKED BY MFW DATE 07-05 D-1786.35

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

PROJECT NO. I-4401
BUNCOMBE COUNTY
STATION: POT 147+53.94 -L-
POT 5+03.07 -RR-

SHEET 1 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

END BENT 2
STAGE II

SHEET NO. S2-65
TOTAL SHEETS 43

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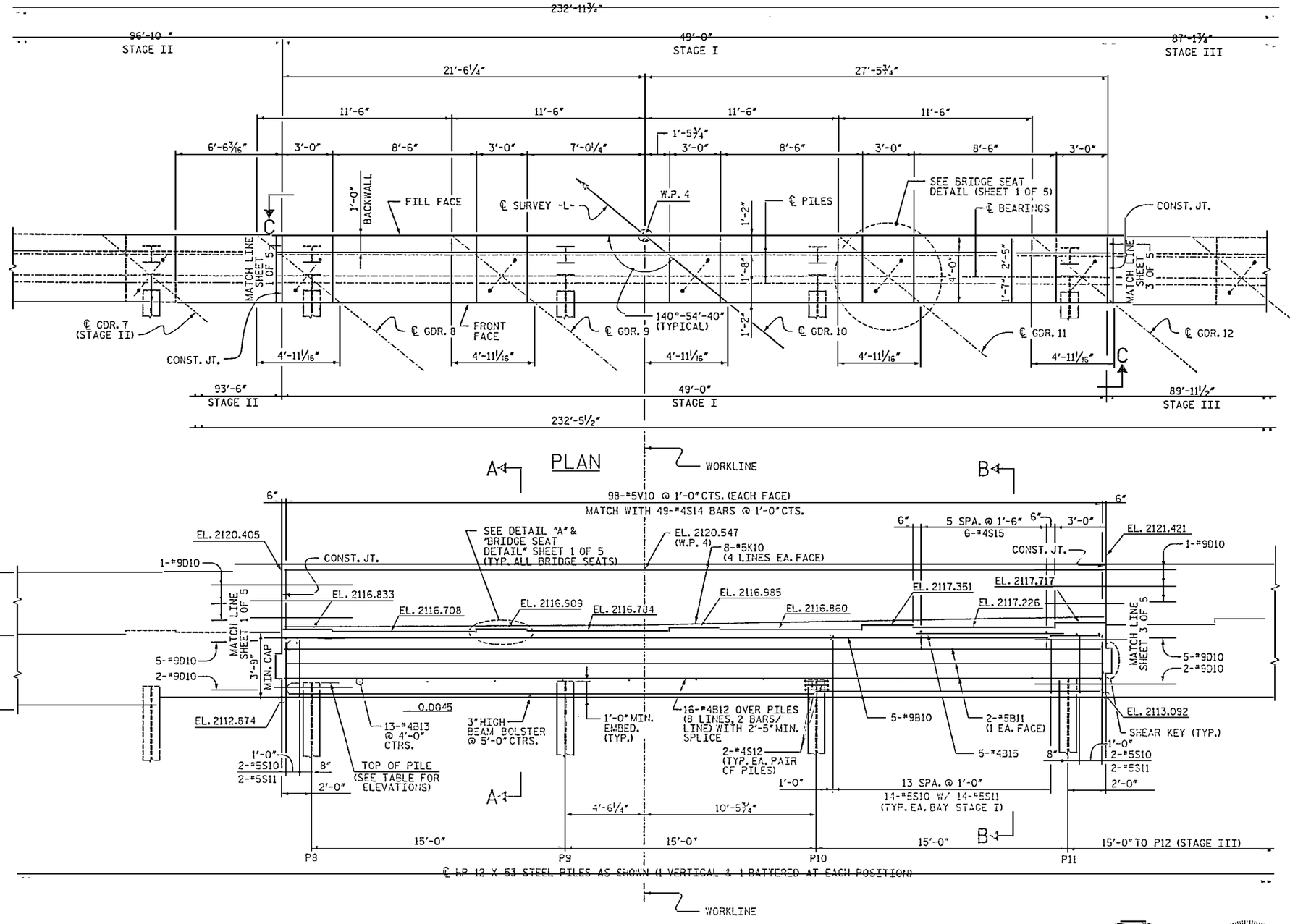
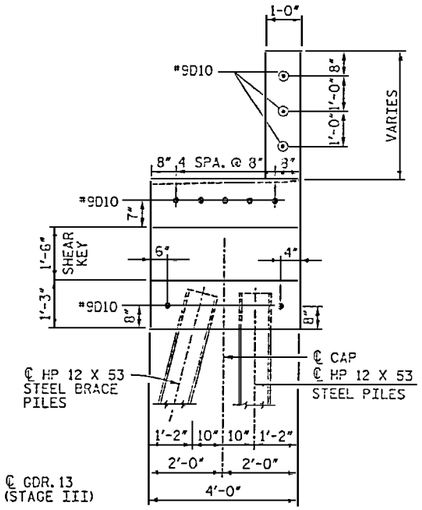




DOWEL DETAIL

(SEE NOTES FOR #9D10 DOWEL BARS)

ELEVATION C

ELEVATION

(LOOKING IN THE DIRECTION OF STATIONING)

TOP OF PILE ELEVATIONS	
PILE	ELEVATION
P8	2113.885
P9	2113.953
P10	2114.020
P11	2114.088

ELEVATIONS BASED ON 1'-0" MIN. EMBEDMENT

NOTES:

SEE SHEET 5 OF 5 FOR SECTION A-A.

SEE SHEET 5 OF 5 FOR NOTES.

CONTRACTOR SHALL INSTALL #9D10 DOWEL BARS AS DETAILED, PROVIDED THERE IS ENOUGH CLEARANCE IN THE FIELD. CONTRACTOR MAY USE ADHESIVELY ANCHORED #9 DOWEL BARS OR THE USE OF MECHANICAL SPLICED #9 DOWEL BARS IN LIEU OF DETAILS SHOWN IN THESE PLANS. ADHESIVELY ANCHORED OR MECHANICAL SPLICED DOWEL BARS SHALL HAVE PRIOR APPROVAL FROM THE ENGINEER.

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 28479 KEVIN G BAILEY 9-7-05

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18163 MARK F. ROBBINS 9-7-05

TAYLOR & MURPHY

FLORENCE & HUTCHESON, INC. CONSULTING ENGINEERS 4130 PARKLAKE BLVD. SUITE 470 RALEIGH, N.C. 27612

RALPH WHITEHEAD ASSOCIATES, INC. CONSULTING ENGINEERS P.O. BOX 35624 CHARLOTTE, N.C. 28235

DRAWN BY AJP DATE 08-05 DWG. NO.
CHECKED BY HFW DATE 07-05 D-1786.36

REVISIONS

NO.	BY	DATE
1		
2		
3		
4		

PROJECT NO. I-4401

BUNCOMBE COUNTY

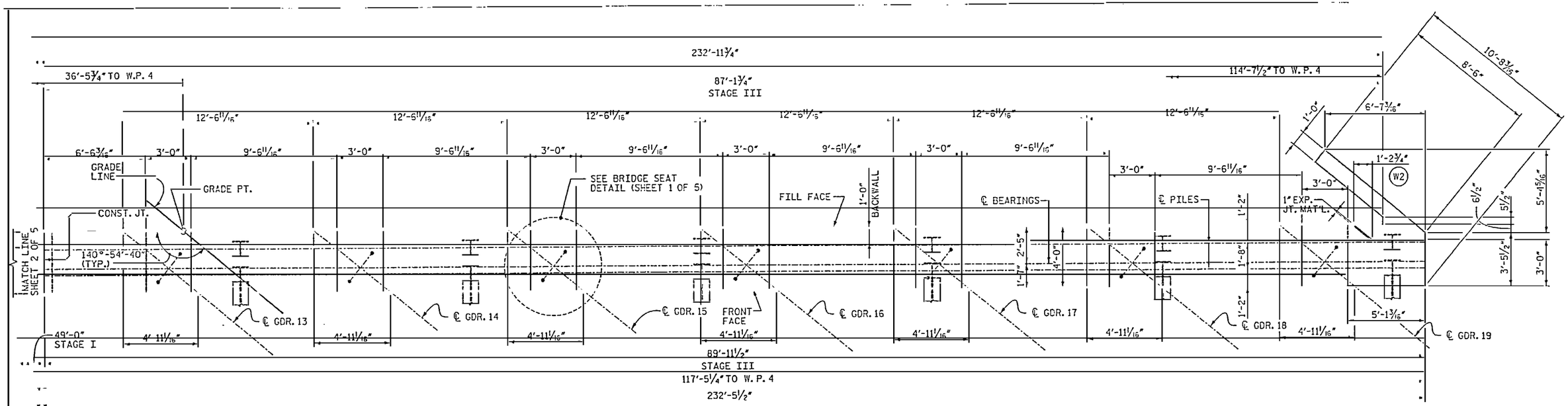
STATION: POT 147+53.94 -L-
POT 5+03.07 -RR-

SHEET 2 OF 5

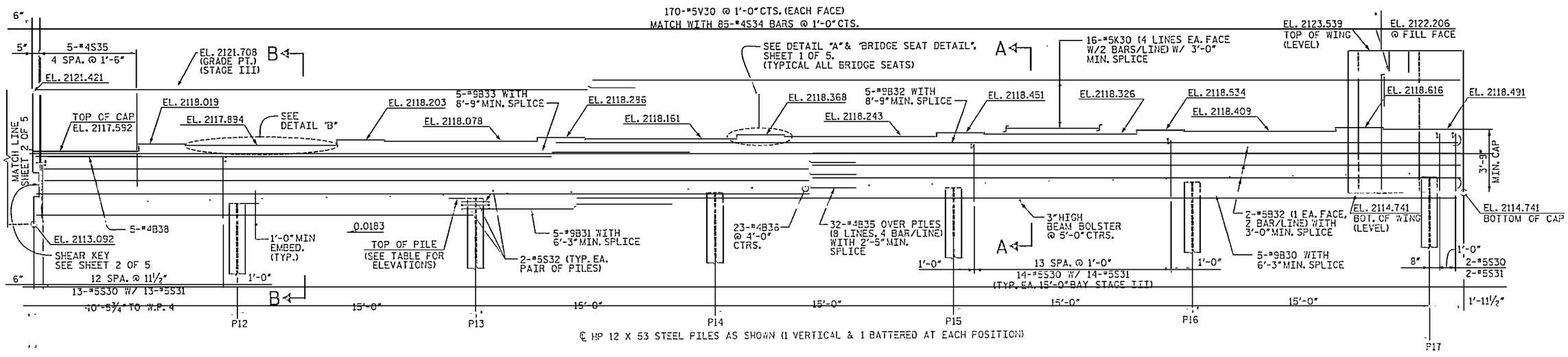
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

END BENT 2
STAGE I

SHEET NO. S2-36
TOTAL SHEETS 48



PLAN



ELEVATION

(LOOKING IN THE DIRECTION OF STATIONING)

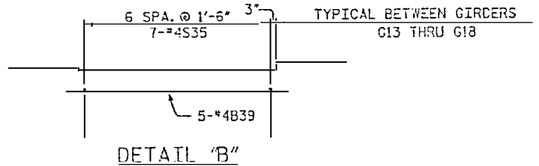
NOTES:

SEE SHEET 5 OF 5 FOR SECTIONS A-A AND B-B.

SEE SHEET 5 OF 5 FOR NOTES.

TOP OF PILE ELEVATIONS	
PILE	ELEVATION
P12	2114.339
P13	2114.614
P14	2114.888
P15	2115.163
P16	2115.437
P17	2115.712

ELEVATIONS BASED ON 1'-0" MIN. EMBEDMENT



DETAIL "B"

PROJECT NO. I-4401

BUNCOMBE COUNTY

STATION: POT 147+53.94 -L-
POT 5+03.07 -RR-

SHEET 3 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

END BENT 2
STAGE III

REVISIONS	NO.	BY	DATE
	1		
	2		
	3		
	4		

SHEET NO. S2-37
TOTAL SHEETS 48

TAYLOR & MURPHY

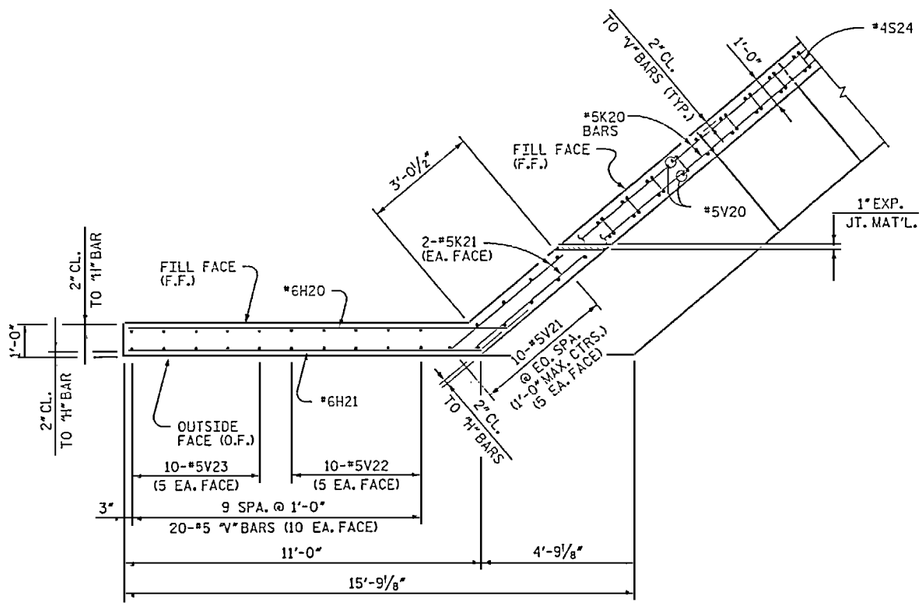
FLORENCE & HUTCHESON, INC. CONSULTING ENGINEERS 4109 WESTHAVEN BLVD. SUITE 4-B RALEIGH NC 27607

RALPH WHITEHEAD ASSOCIATES, INC. CONSULTING ENGINEERS P.O. BOX 35624 CHARLOTTE, N.C. 28235

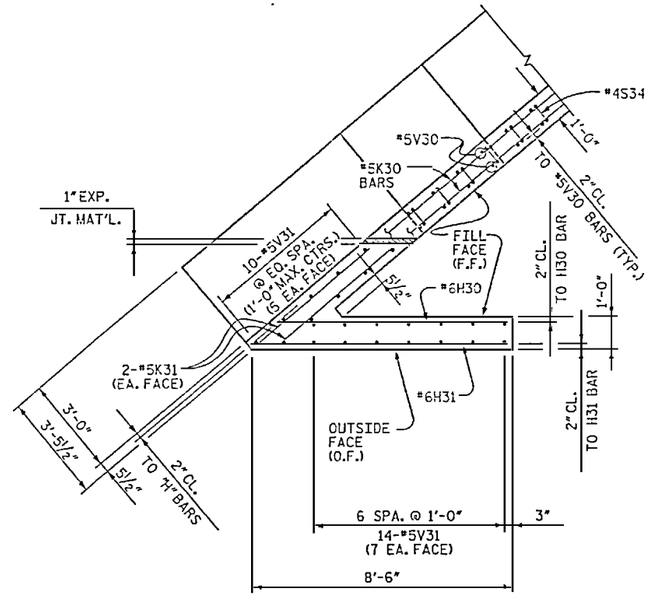
DRAWN BY A.P. DATE 08-05 D.W.G. NO.
CHECKED BY H.F.W. DATE 07-05 D-1766.37

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 28479 KEVIN G. BAILEY 9-7-05

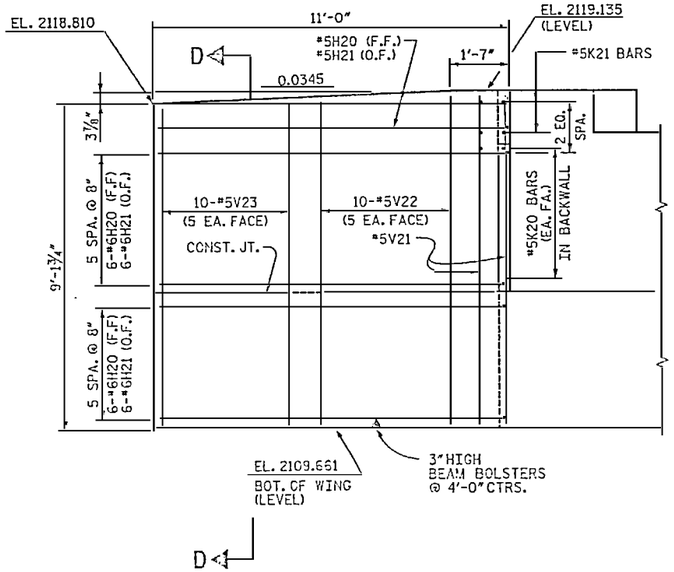
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18125 MARK F. ROBBINS 9-7-05



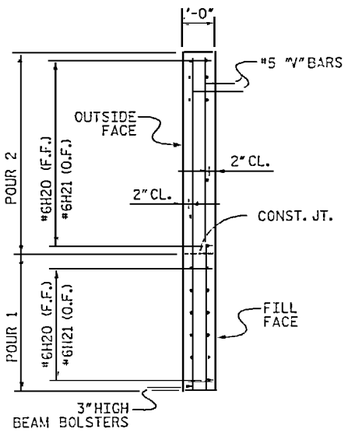
PLAN WING W1



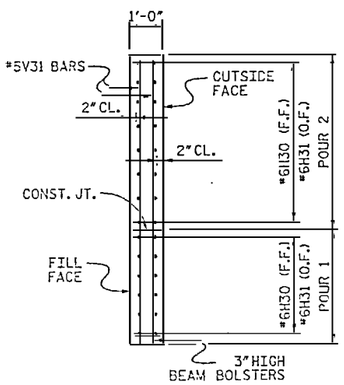
PLAN WING W2



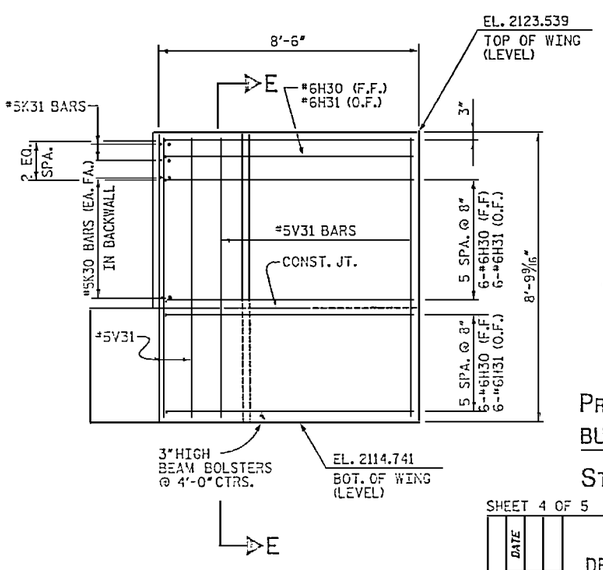
ELEVATION WING W1



SECTION D-D



SECTION E-E



ELEVATION WING W2

PROJECT NO. I-4401

BUNCOMBE COUNTY

STATION: POT 147+53.94 -L-
POT 5+03.07 -RR-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

END BENT 2

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

SHEET NO. S2-38
TOTAL SHEETS 48

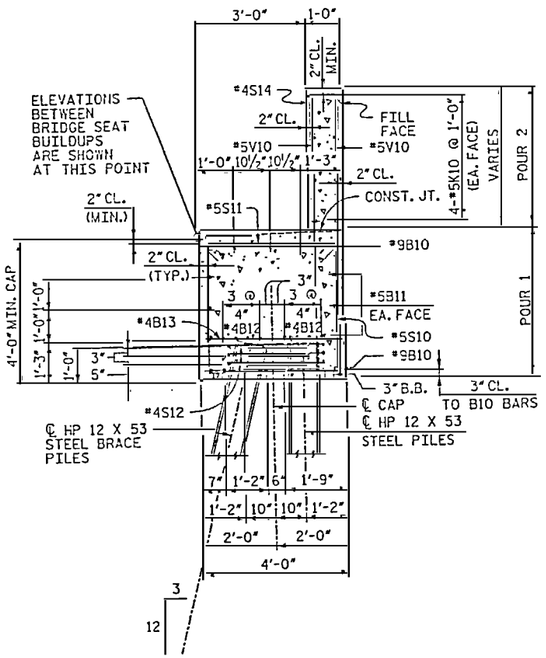
TAYLOR & MURPHY

FLORENCE & HUTCHESON INC. CONSULTING ENGINEERS 1520 WHITEHEAD BLVD. SUITE 105 RALEIGH, NC 27607

RALPH WHITEHEAD ASSOCIATES, INC. CONSULTING ENGINEERS P.O. BOX 35624 CHARLOTTE, N.C. 28235

DRAWN BY LGH DATE 7-05 DWG. NO. D-1735.33
CHECKED BY HFH DATE 7-05

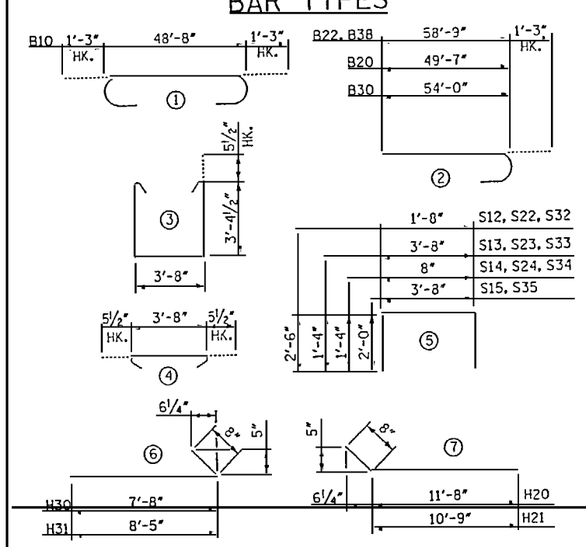
END BENT 2



SECTION A-A

(STAGE I SHOWN, STAGES II AND III SIMILAR)

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF REINFORCING (STAGE I)

MARK	NO.	SIZE	TYPE	LENGTH	WEIGHT
B10	10	#9	(1)	51'-2"	1,740
B11	6	#5	STR.	48'-8"	305
B12	16	#4	STR.	25'-7"	273
B13	13	#4	STR.	3'-8"	32
B14	30	#5	STR.	2'-8"	83
B15	5	#4	STR.	9'-6"	32
D10	20	#9	STR.	8'-4"	567
K10	8	#5	STR.	48'-8"	406
S10	46	#5	(3)	11'-4"	544
S11	46	#5	(4)	4'-7"	220
S12	24	#4	(5)	6'-8"	107
S13	30	#5	(5)	6'-4"	198
S14	49	#4	(5)	3'-4"	109
S15	6	#4	(5)	7'-8"	31
V10	98	#5	STR.	7'-1"	724

TOTAL REINFORCING STEEL (STAGE I) = 5,371 LBS.

BILL OF REINFORCING (STAGE II)

MARK	NO.	SIZE	TYPE	LENGTH	WEIGHT
B20	5	#9	(2)	50'-10"	864
B21	5	#9	STR.	54'-8"	929
B22	5	#9	(2)	60'-0"	1,020
B23	5	#9	STR.	47'-9"	812
B24	12	#5	STR.	50'-6"	632
B25	32	#4	STR.	26'-4"	563
B26	24	#4	STR.	3'-8"	59
B27	42	#5	STR.	2'-8"	117
H20	14	#5	(7)	12'-4"	259
H21	14	#6	(7)	11'-5"	240
K20	15	#5	STR.	50'-6"	843
K21	4	#5	STR.	3'-8"	15
S20	88	#5	(3)	11'-4"	1,040
S21	88	#5	(4)	4'-7"	421
S22	42	#4	(5)	6'-8"	187
S23	42	#5	(5)	5'-4"	277
S24	93	#4	(5)	3'-4"	207
V20	186	#5	STR.	7'-1"	1,374
V21	10	#5	STR.	8'-8"	90
V22	10	#5	STR.	8'-6"	89
V23	10	#5	STR.	8'-4"	87

TOTAL REINFORCING STEEL (STAGE II) = 10,125 LBS.

BILL OF REINFORCING (STAGE III)

MARK	NO.	SIZE	TYPE	LENGTH	WEIGHT
B30	5	#9	(2)	55'-3"	939
B31	5	#9	STR.	41'-11"	713
B32	5	#9	(2)	60'-0"	1,020
B33	5	#9	STR.	39'-8"	674
B34	12	#5	STR.	46'-4"	580
B35	32	#4	STR.	2'-3"	518
B36	23	#4	STR.	3'-8"	56
B37	42	#5	STR.	2'-8"	117
B38	5	#4	STR.	7'-6"	25
B39	25	#4	STR.	10'-6"	175
H30	14	#6	(6)	3'-4"	175
H31	14	#6	(6)	9'-1"	191
K30	16	#5	STR.	46'-4"	773
K31	4	#5	STR.	3'-8"	15
S30	84	#5	(3)	11'-4"	993
S31	84	#5	(4)	4'-7"	402
S32	36	#4	(5)	6'-8"	160
S33	42	#5	(5)	6'-4"	277
S34	85	#4	(5)	3'-4"	189
S35	40	#4	(5)	7'-8"	205
V30	170	#5	STR.	7'-1"	1,256
V31	24	#5	STR.	8'-4"	209

TOTAL REINFORCING STEEL (STAGE III) = 9,662 LBS.

NOTES:

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

FOR EPOXY PROTECTIVE COATING, SEE SPECIAL PROVISIONS.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

THE TOP SURFACE AREAS OF THE END BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THAT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

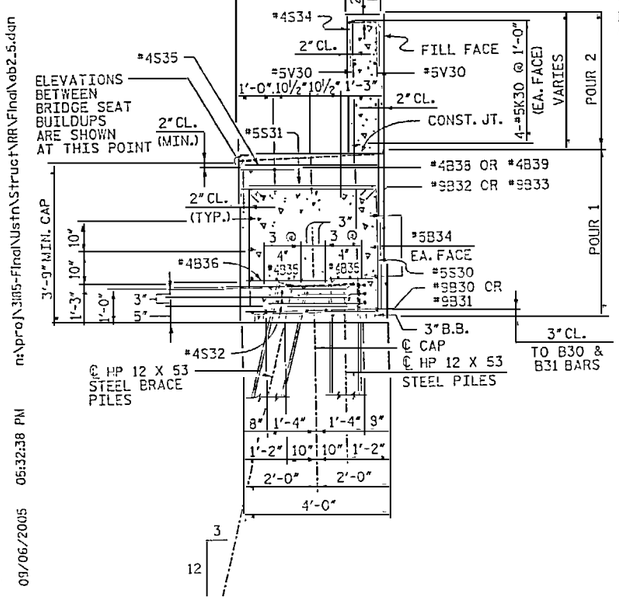
THE TOP SURFACE OF THE CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE FRONT FACE AT THE RATE OF 2%.

FOR OTHER NOTES, SEE "GENERAL DRAWING, FOUNDATION LAYOUT" SHEET.

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

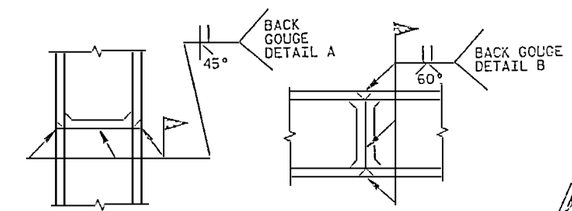
END BENT 2 QUANTITIES

		STAGE I	STAGE II	STAGE III	EB 2 (TOTAL)
REINFORCING STEEL	LBS.	5,371	10,125	9,662	25,158
CLASS A CONCRETE					
SUBSTRUCTURE POUR 1:	CU. YARDS	23.0	59.2	58.4	140.6
SUBSTRUCTURE POUR 2:	CU. YARDS	6.7	15.9	14.0	36.6
SUBSTRUCTURE TOTAL:	CU. YARDS	35.7	75.1	72.4	183.2
HP 12 X 53 STEEL PILES	(NO.)	8	14	12	34
	LIN. FEET	512.4	871.6	781.1	2165.1



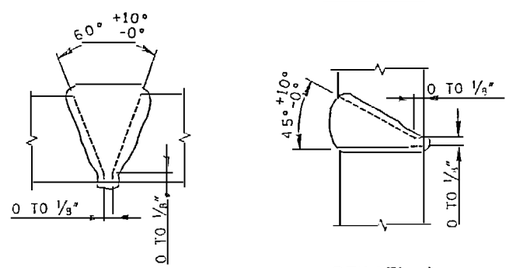
SECTION B-B

(STAGE III SHOWN, STAGE I SIMILAR)



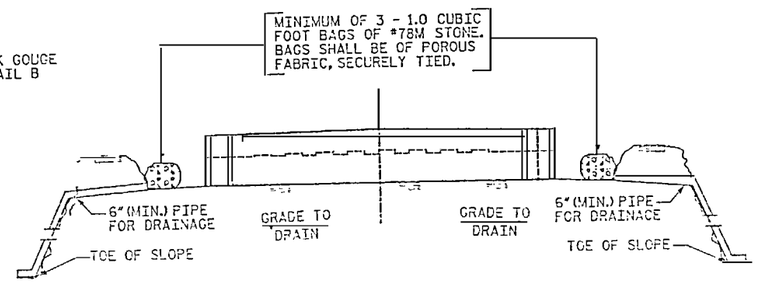
▲ PILE VERTICAL

▲ PILE HORIZONTAL OR VERTICAL



▲ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS



TEMPORARY DRAINAGE AT END BENT

DRAINAGE NOTES:

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.

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 28479 KEVIN G BAILEY 9-7-05

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19165 MARY F. ROSSINI 9-7-05

PROJECT NO. I-4401

BUNCOMBE COUNTY

STATION: POT 147+53.94 -L-
POT 5+03.07 -RR-

SHEET 5 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

END BENT 2

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

SHEET NO. S2-39
TOTAL SHEETS 48

TAYLOR & MURPHY

FLORENCE & HUTCHESON, INC. CONSULTING ENGINEERS 1128 HYDRAULIC ROAD SUITE 415 RALEIGH, NC 27607

RALPH WHITEHEAD ASSOCIATES, INC. CONSULTING ENGINEERS P.O. BOX 35624 CHARLOTTE, N.C. 28235

DRAWN BY AJP DATE 6-05
CHECKED BY HFH DATE 7-05
DW NO. D-1786.39

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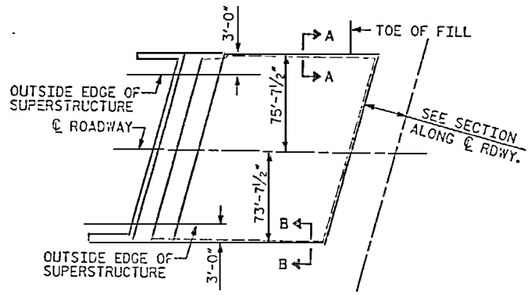
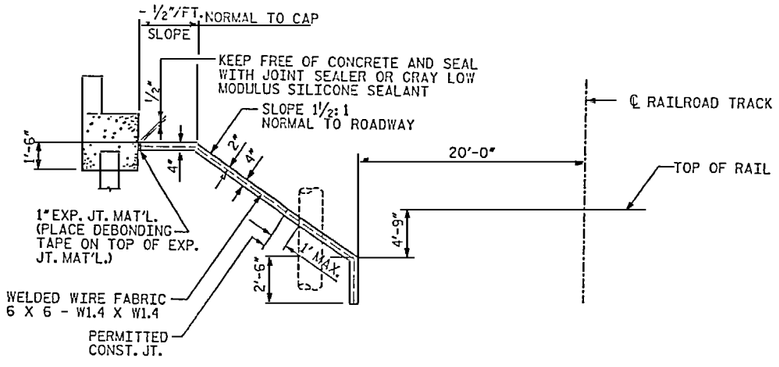
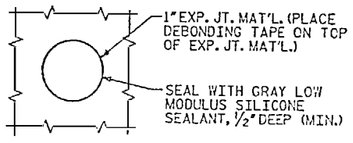


PLAN

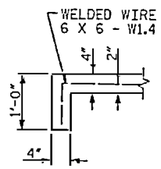
END BENT 1 SHOWN. END BENT 2 SIMILAR BY ROTATION



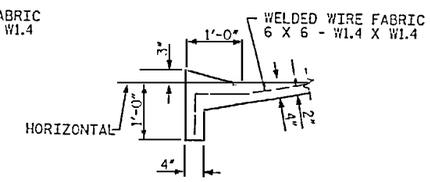
SECTION ALONG ℄ ROADWAY



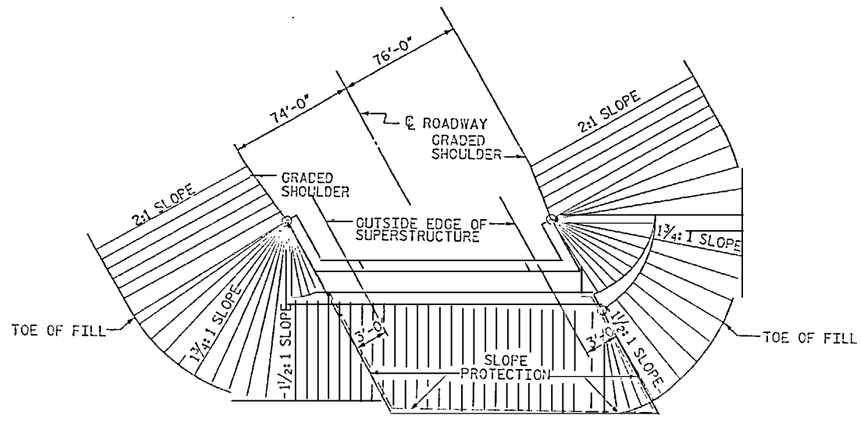
PLAN WHERE CONCRETE SLOPE PROTECTION MUST BE PLACED AROUND A BENT COLUMN



SECTION A-A



SECTION B-B



PLAN - END BENT WITH SWEPT BACK WINGS - SKEWED

GENERAL NOTES

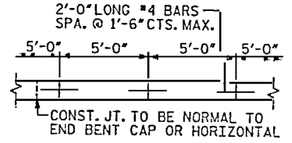
SLOPE PROTECTION SHALL BE PLACED UNDER THE ENDS OF THE BRIDGE AS SHOWN IN THE DETAILS. STRAIGHT EDGING WILL NOT BE REQUIRED UNLESS, IN THE OPINION OF THE ENGINEER, VISUAL INSPECTION INDICATES A NEED FOR IT. METHOD OF MEASUREMENT AND BASIS OF PAYMENT SHALL BE AS PRESCRIBED IN SECTION 462 OF THE STANDARD SPECIFICATIONS. FOR BERM WIDTH, SEE GENERAL DRAWING.

ALTERNATE "A"

ALTERNATE "A" SHALL CONSIST OF 4" POURED-IN-PLACE CONCRETE PAVING AS SHOWN IN THE DETAILS ON THIS SHEET. CONCRETE SHALL BE CLASS "B". THE CONCRETE SURFACE SHALL BE FLOATED WITH A WOODEN FLOAT AND FINISHED. WELDED WIRE FABRIC REINFORCING SHALL BE 6 X 6 - W1.4 X W1.4, 60" WIDE. SLOPE PROTECTION SHALL BE POURED IN 5' STRIPS AS SHOWN IN THE "POURING DETAIL" WITH 2'-0" LONG #4 BARS PLACED ALONG THE SLOPE BETWEEN STRIPS AT 1'-6" MAXIMUM SPACING. SLOPE PROTECTION MAY BE POURED IN ALTERNATE 4' AND 5' STRIPS AS SHOWN IN THE "OPTIONAL POURING DETAIL" WITH ADJACENT RUNS OF WELDED WIRE FABRIC LAPPING AT LEAST 6". THE COST OF THE WELDED WIRE FABRIC AND #4 BARS, IF USED, SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID PER SQUARE YARD FOR SLOPE PROTECTION.

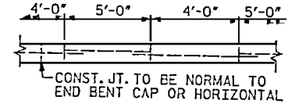
BRIDGE @ STA. 147+53.94 -L-	4 INCH SLOPE PROTECTION	* WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	1,515	2,778
END BENT 2	1,502	2,685

* QUANTITY SHOWN IS BASED ON 5' POURS.



STRIP WIDTHS MAY VARY IN CURVED PORTION.

POURING DETAIL



POUR A 4'-0" STRIP FIRST. STRIP WIDTHS MAY VARY IN CURVED PORTION.

OPTIONAL POURING DETAIL

PROJECT NO. I-4401

BUNCOMBE COUNTY

STATION: POT 147+53.94 -L-

POT 5+03.07-RR-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD SLOPE PROTECTION DETAILS

AUG. 1992

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

SHEET NO. S2-40

TOTAL SHEETS 48

STD. NO. SP1/SP2

D-1786.40

TAYLOR & MURPHY

ENGINEER & SURVEYOR, THE CERTIFICATE OF AUTHORIZATION NUMBER OF THIS FIRM IS P-0339

ASSEMBLED BY :	MFR	DATE : 8-05			
CHECKED BY :		DATE :			
DRAWN BY : ELR 5/92		REV. 10/17/00	LES/ROR		
CHECKED BY : GRP 6/92		REV. 7/20/01	LES/ROR		
		REV. 5/7/03	RWW/JTE		

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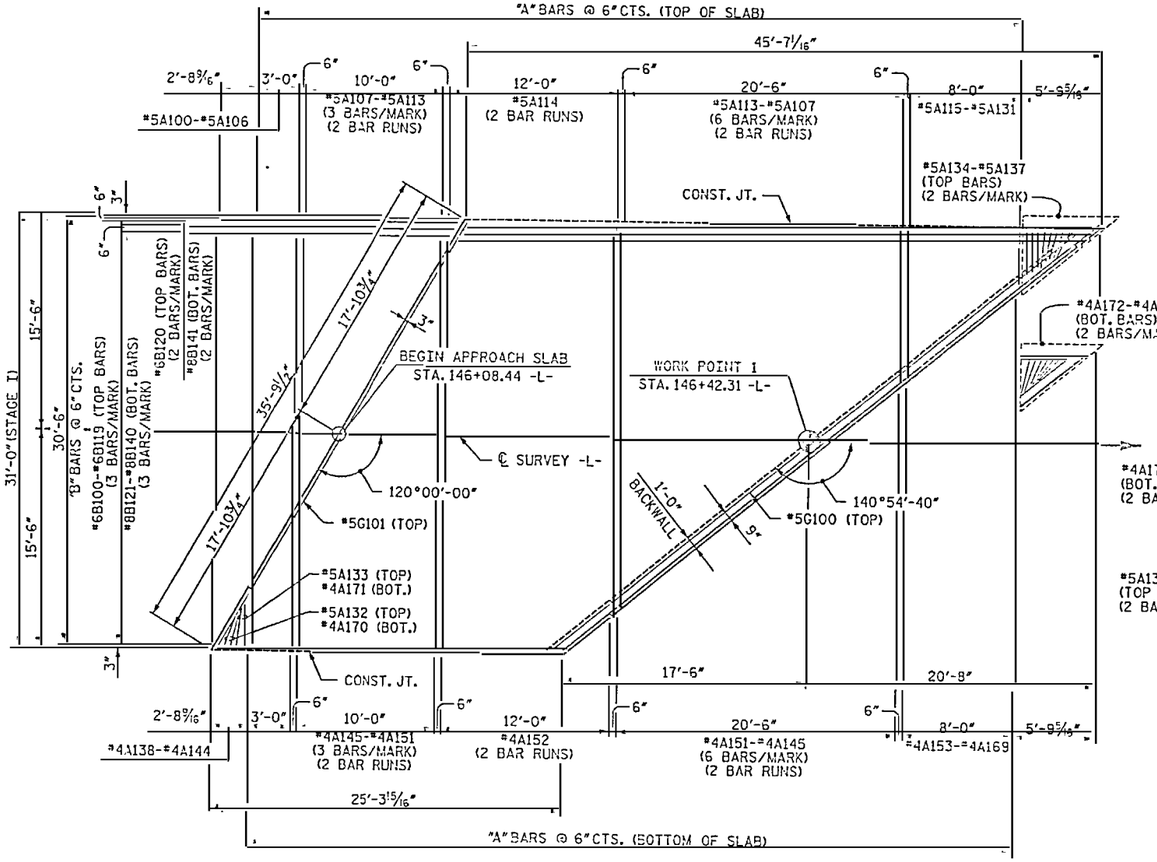
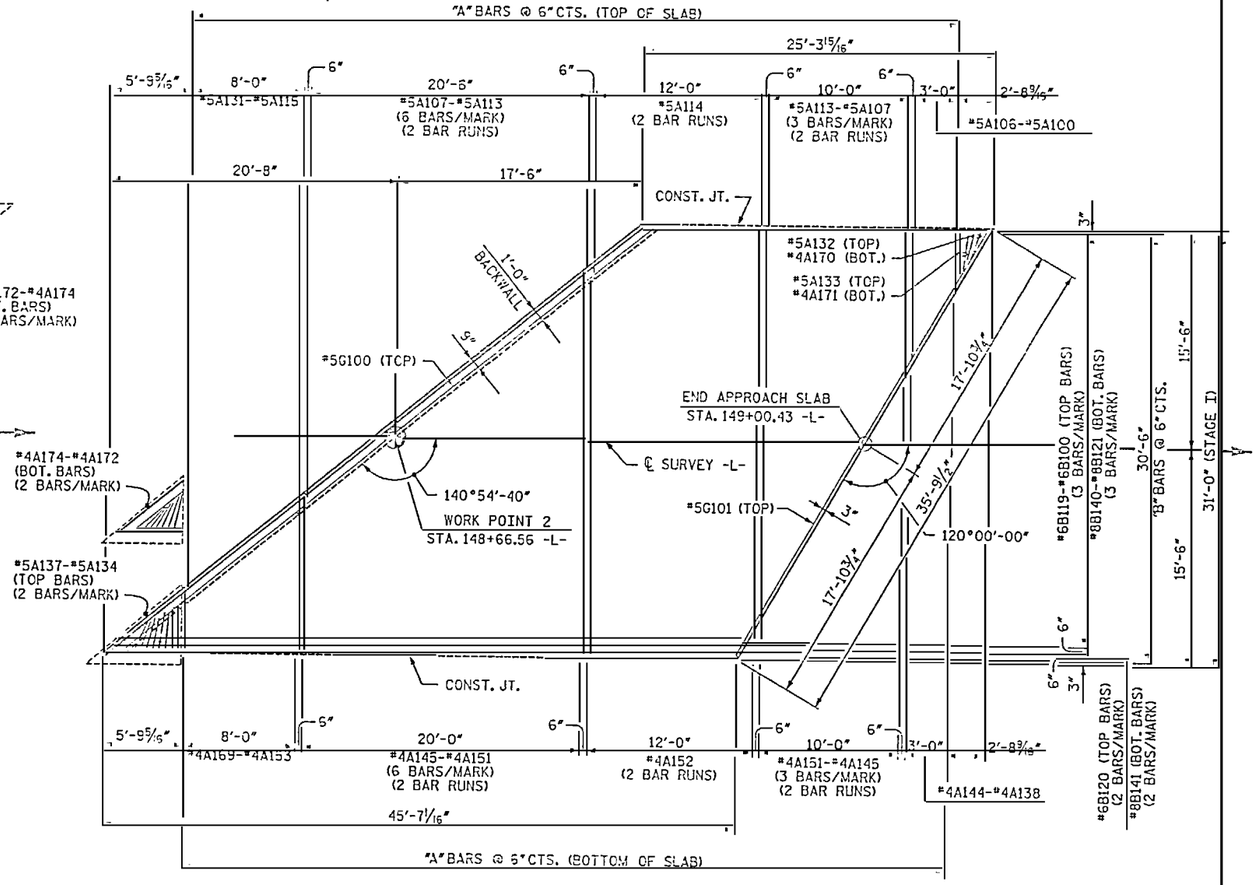
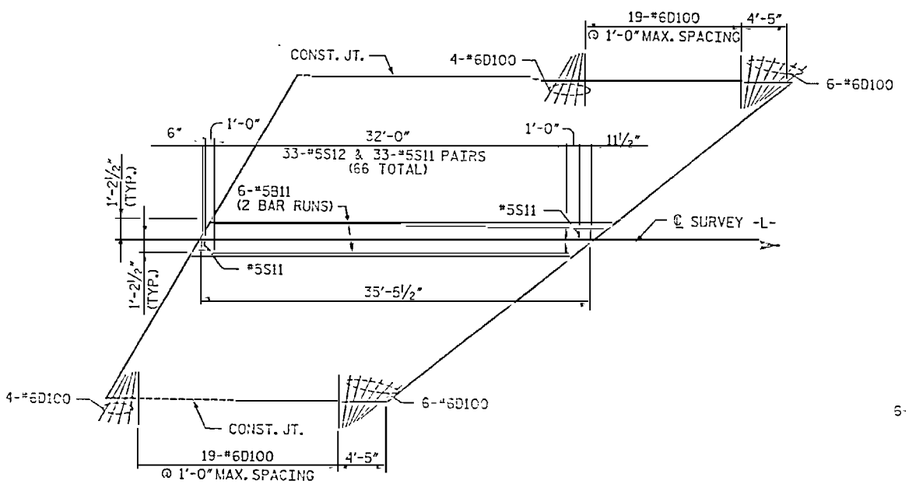




DOWEL AND MEDIAN BARRIER DETAILS

FOR MEDIAN BARRIER DETAILS, SEE "CONCRETE BARRIER RAIL AND CONCRETE MEDIAN BARRIER" SHEET 2 OF 2.



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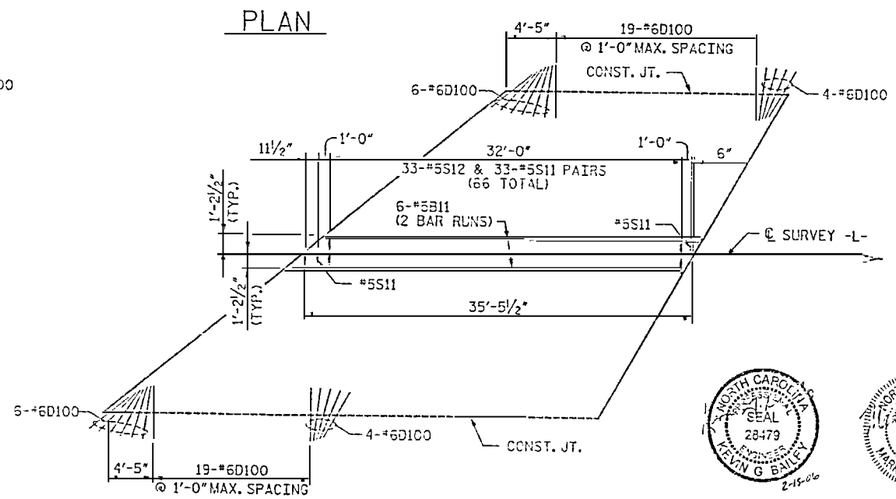

PROJECT NO. I-4401
BUNCOMBE COUNTY
STATION: POT 147+53.94 -L-
POT 5+03.07 -RR-

SHEET 1 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB PLAN
STAGE I

NORTH CAROLINA SEAL 28479 ENGINEER KEVIN G BAILEY 2-15-06

NORTH CAROLINA SEAL 18165 ENGINEER MARK F. ROBBINS 2-15-06

TAYLOR & MURPHY

FLORENCE & HUTCHESON, P.C. CONSULTING ENGINEERS

RALEIGH WHITEHEAD ASSOCIATES, P.A. CONSULTING ENGINEERS P.O. BOX 35824 CHARLOTTE, N.C. 28235

DRAWN BY LGH DATE 1-06 DWG. NO.
CHECKED BY PEK DATE 1-06 0-1786.41

REVISIONS

NO.	BY	DATE	NO.	BY	DATE
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SHEET NO. S2-4
TOTAL SHEETS 18

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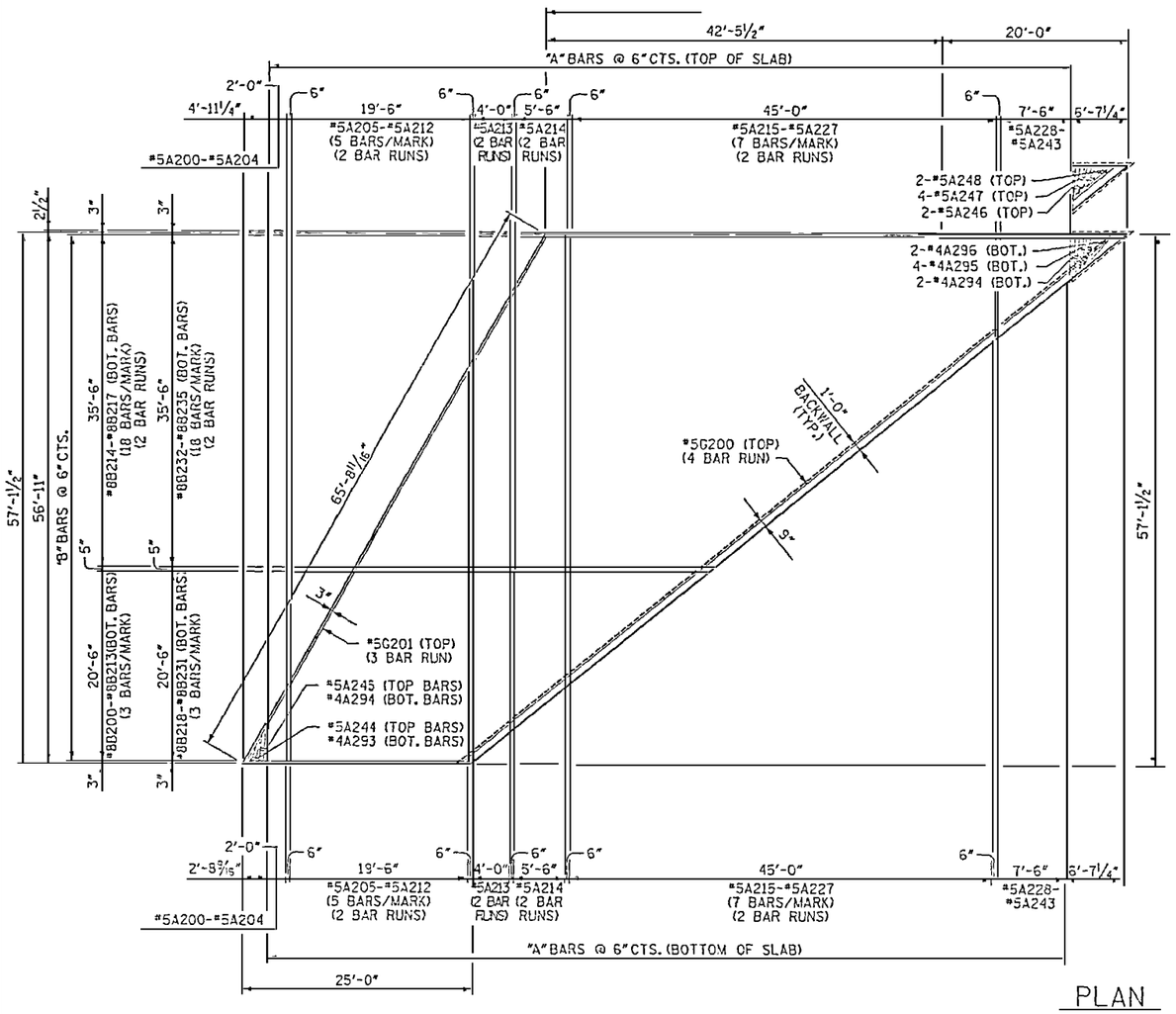

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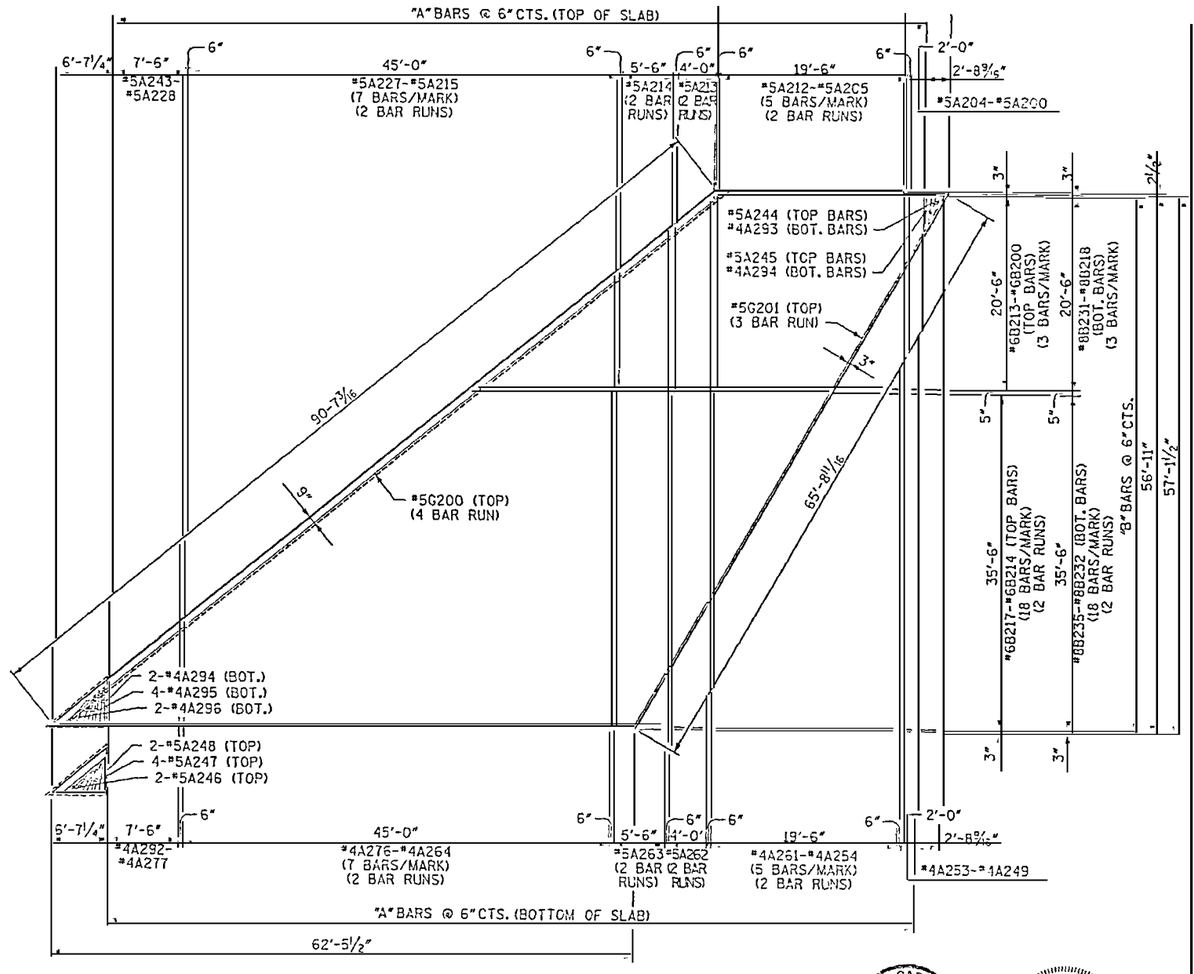

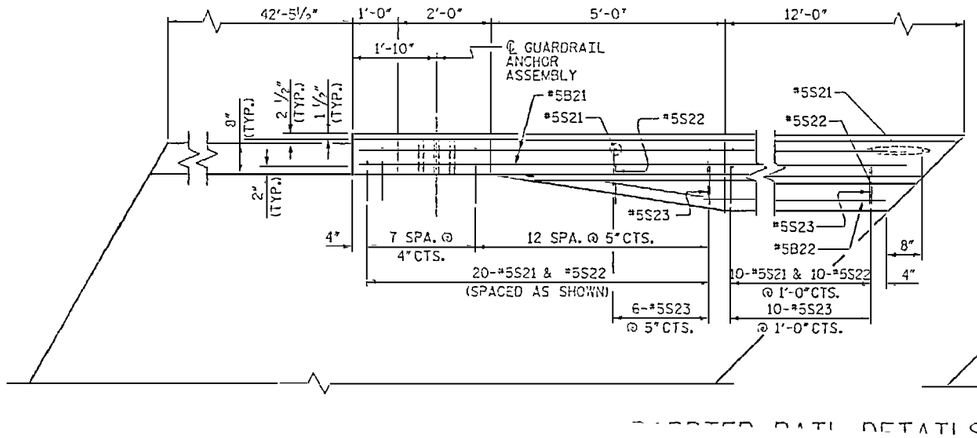

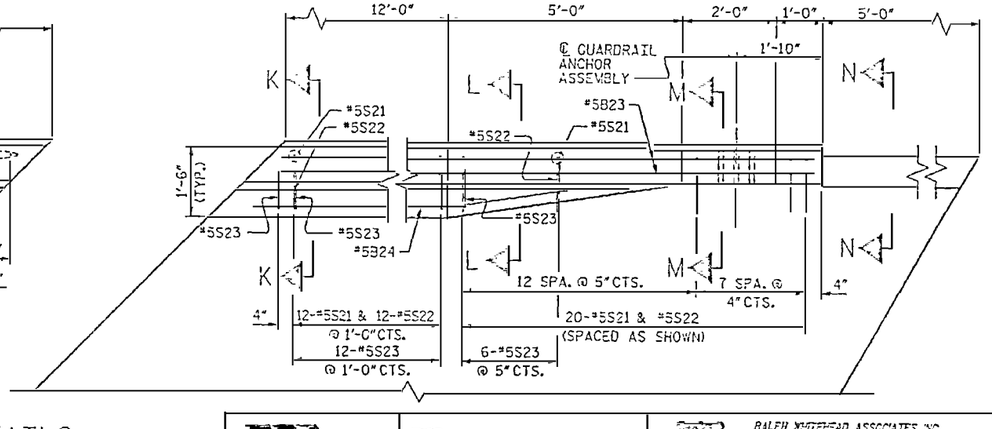

RAILROAD RAIL DETAILS

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 28479 KEVIN G BAILEY 2-15-06

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT SEAL 18163 MARK F. ROBBINS 2-15-06

PROJECT NO. I-4401

BUNCOMBE COUNTY

STATION: POT 147+53.94 -L-
POT 5+03.07 -RR-

SHEET 2 OF 7

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB PLAN STAGE II

SHEET NO. S2-42
TOTAL

FLORENCE & HUTCHESON, INC. CONSULTING ENGINEERS

RALPH WHITEHEAD ASSOCIATES, INC. CONSULTING ENGINEERS
P.O. BOX 35524 CHARLOTTE, N.C. 28235

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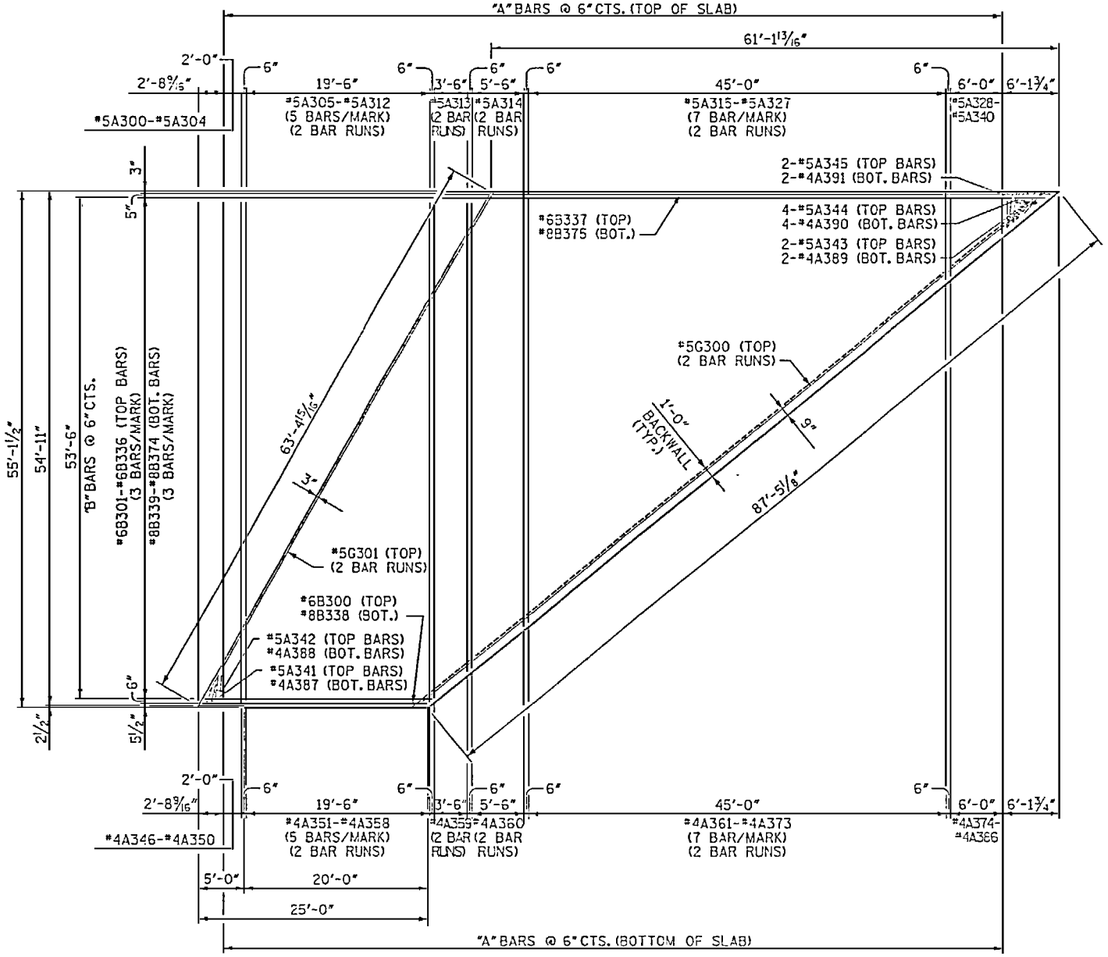

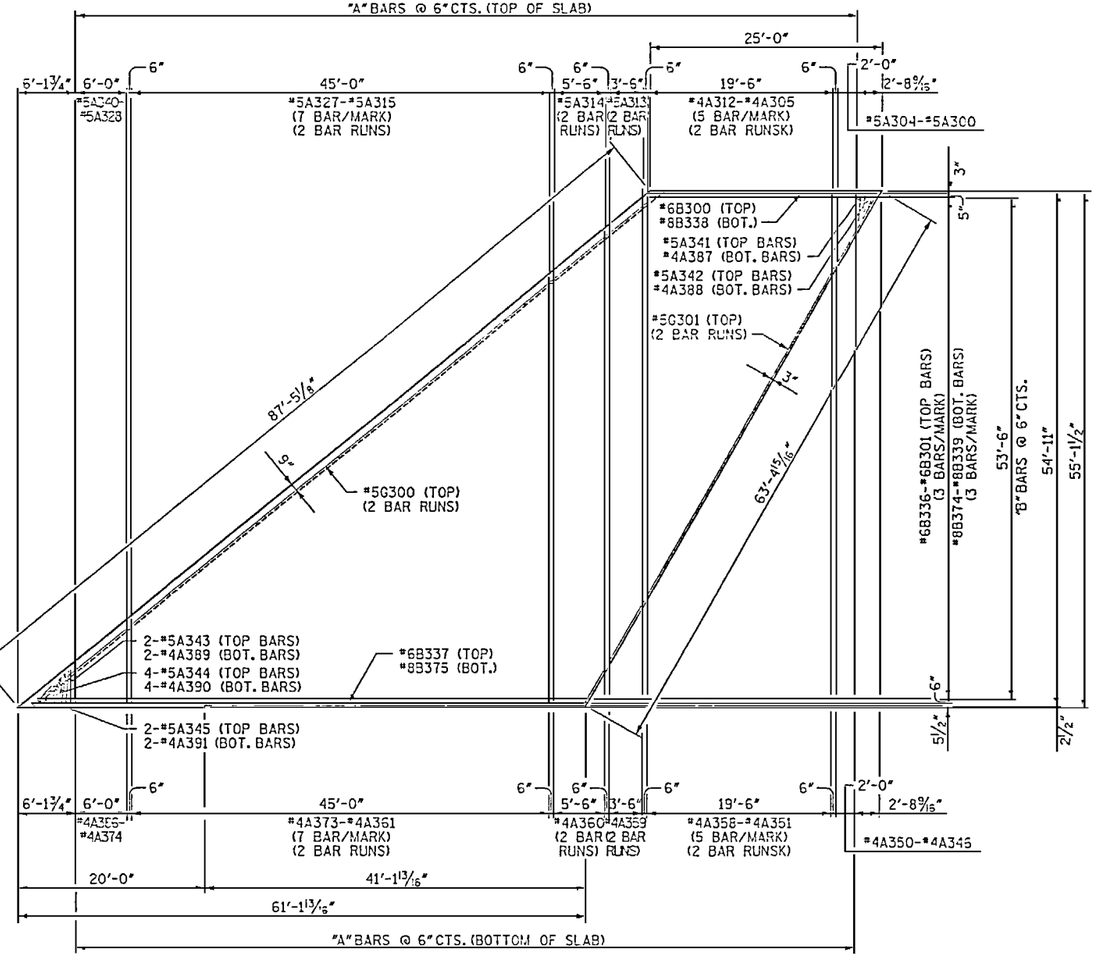

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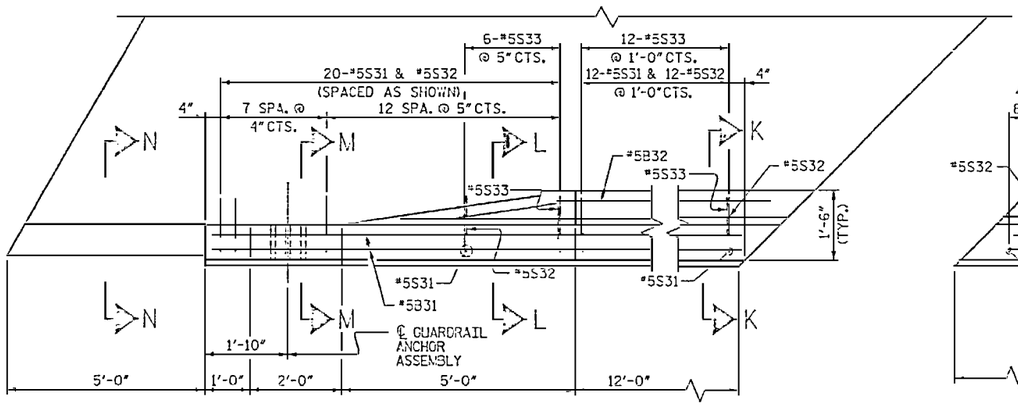

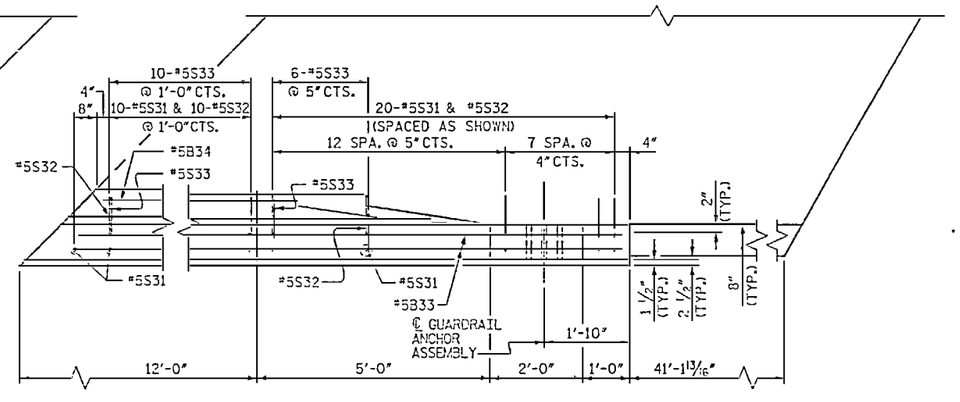

BARRIER RAIL DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 23473 ENGINEER KEVIN G BAILEY 2-15-06

NORTH CAROLINA PROFESSIONAL SEAL 19155 ENGINEER MARK F. ROBBINS 2-15-06

PROJECT NO. I-4401

BUNCOMBE COUNTY

STATION: POT 147+53.94 -L-
POT 5+03.07 -RR-

SHEET 3 OF 7

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REVISIONS

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB PLAN STAGE III

STATE PROJ. NO. 52-13

TOTAL SHEETS 39

TAYLOR & MURPHY

FLORENCE & HUTCHESON, INC. CONSULTING ENGINEERS 400 WESTBOURNE DRIVE, SUITE 4B KNOXVILLE, TN 37919

RALPH WHITEHEAD ASSOCIATES, INC. CONSULTING ENGINEERS P.O. BOX 35824 CHARLOTTE, N.C. 28235

DRAWN BY LGH DATE 1-06

CHECKED BY PEK DATE 1-06

ORIG. NO. D-17836.43

APPROACH SLAB BAR SCHEDULE STAGE I

MARK	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A100	2	#5	STR.	3'-11"	8
* A101	2	#5	STR.	4'-10"	10
* A102	2	#5	STR.	5'-8"	12
* A103	2	#5	STR.	6'-7"	14
* A104	2	#5	STR.	7'-5"	16
* A105	2	#5	STR.	8'-3"	18
* A106	2	#5	STR.	9'-2"	20
* A107	36	#5	STR.	7'-6"	282
* A108	36	#5	STR.	8'-9"	329
* A109	36	#5	STR.	9'-11"	372
* A110	36	#5	STR.	11'-2"	420
* A111	36	#5	STR.	12'-9"	478
* A112	36	#5	STR.	14'-0"	526
* A113	36	#5	STR.	15'-4"	576
* A114	100	#5	STR.	16'-8"	1738
* A115	2	#5	STR.	10'-0"	20
* A116	2	#5	STR.	9'-7"	20
* A117	2	#5	STR.	9'-2"	19
* A118	2	#5	STR.	9'-1"	19
* A119	2	#5	STR.	8'-4"	18
* A120	2	#5	STR.	7'-11"	16
* A121	2	#5	STR.	7'-6"	16
* A122	2	#5	STR.	7'-2"	14
* A123	2	#5	STR.	6'-9"	14
* A124	2	#5	STR.	6'-4"	14
* A125	2	#5	STR.	5'-11"	12
* A126	2	#5	STR.	5'-6"	12
* A127	2	#5	STR.	5'-1"	10
* A128	2	#5	STR.	4'-8"	10
* A129	2	#5	STR.	4'-3"	8
* A130	2	#5	STR.	3'-11"	8
* A131	2	#5	STR.	3'-6"	8
* A132	4	#5	STR.	2'-6"	10
* A133	4	#5	STR.	3'-6"	14
* A134	4	#5	STR.	3'-6"	14
* A135	4	#5	STR.	3'-0"	12
* A136	4	#5	STR.	2'-9"	12
* A137	4	#5	STR.	2'-6"	10
A138	2	#4	STR.	3'-11"	6
A139	2	#4	STR.	4'-10"	6
A140	2	#4	STR.	5'-8"	8
A141	2	#4	STR.	6'-7"	8
A142	2	#4	STR.	7'-5"	10
A143	2	#4	STR.	8'-3"	12
A144	2	#4	STR.	9'-2"	12
A145	36	#4	STR.	7'-0"	168
A146	36	#4	STR.	8'-3"	198
A147	36	#4	STR.	9'-7"	230
A148	36	#4	STR.	10'-11"	262
A149	36	#4	STR.	12'-3"	294
A150	36	#4	STR.	13'-6"	324
A151	36	#4	STR.	14'-11"	358
A152	100	#4	STR.	16'-3"	1086
A153	2	#4	STR.	10'-7"	14
A154	2	#4	STR.	10'-3"	14
A155	2	#4	STR.	9'-10"	14
A156	2	#4	STR.	9'-5"	12
A157	2	#4	STR.	9'-0"	12
A158	2	#4	STR.	8'-7"	12
A159	2	#4	STR.	8'-2"	10
A160	2	#4	STR.	7'-9"	10
A161	2	#4	STR.	7'-4"	10
A162	2	#4	STR.	7'-0"	10
A163	2	#4	STR.	6'-7"	8
A164	2	#4	STR.	6'-2"	8
A165	2	#4	STR.	5'-9"	8
A166	2	#4	STR.	5'-4"	8
A167	2	#4	STR.	4'-11"	6
A168	2	#4	STR.	4'-6"	6
A169	2	#4	STR.	4'-1"	6

APPROACH SLAB BAR SCHEDULE STAGE I

MARK	NO.	SIZE	TYPE	LENGTH	WEIGHT
A170	4	#4	STR.	2'-6"	6
A171	4	#4	STR.	3'-6"	10
A172	4	#4	STR.	3'-3"	8
A173	4	#4	STR.	2'-11"	8
A174	4	#4	STR.	2'-6"	7
* B100	6	#6	STR.	24'-0"	216
* B101	6	#6	STR.	25'-0"	226
* B102	6	#6	STR.	26'-0"	234
* B103	6	#6	STR.	26'-11"	242
* B104	6	#6	STR.	27'-11"	252
* B105	6	#6	STR.	28'-11"	260
* B106	6	#6	STR.	29'-11"	270
* B107	6	#6	STR.	30'-11"	278
* B108	6	#6	STR.	31'-10"	286
* B109	6	#6	STR.	32'-10"	296
* B110	6	#6	STR.	33'-10"	304
* B111	6	#6	STR.	34'-10"	314
* B112	6	#6	STR.	35'-9"	322
* B113	6	#6	STR.	36'-9"	332
* B114	6	#6	STR.	37'-9"	340
* B115	6	#6	STR.	38'-9"	350
* B116	6	#6	STR.	39'-8"	358
* B117	6	#6	STR.	40'-8"	366
* B118	6	#6	STR.	41'-8"	376
* B119	6	#6	STR.	42'-8"	384
* B120	4	#6	STR.	43'-7"	262
B121	6	#8	STR.	24'-10"	398
B122	6	#8	STR.	25'-9"	412
B123	6	#8	STR.	26'-9"	428
B124	6	#8	STR.	27'-9"	444
B125	6	#8	STR.	28'-9"	460
B126	6	#8	STR.	29'-8"	476
B127	6	#8	STR.	30'-8"	492
B128	6	#8	STR.	31'-8"	508
B129	6	#8	STR.	32'-8"	524
B130	6	#8	STR.	33'-8"	540
B131	6	#8	STR.	34'-7"	554
B132	6	#8	STR.	35'-7"	570
B133	6	#8	STR.	36'-7"	586
B134	6	#8	STR.	37'-7"	602
B135	6	#8	STR.	38'-6"	616
B136	6	#8	STR.	39'-6"	632
B137	6	#8	STR.	40'-6"	648
B138	6	#8	STR.	41'-6"	664
B139	6	#8	STR.	42'-5"	680
B140	6	#8	STR.	43'-5"	696
B141	4	#8	STR.	44'-5"	474
* D100	116	#6	STR.	5'-0"	871
* G100	2	#5	STR.	48'-6"	101
* G101	2	#5	STR.	35'-3"	74

APPROACH SLAB BAR SCHEDULE STAGE II

MARK	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A200	2	#5	STR.	3'-11"	8
* A201	2	#5	STR.	4'-10"	10
* A202	2	#5	STR.	5'-8"	12
* A203	2	#5	STR.	6'-7"	14
* A204	2	#5	STR.	7'-5"	16
* A205	20	#5	STR.	7'-2"	150
* A206	20	#5	STR.	9'-4"	195
* A207	20	#5	STR.	11'-6"	240
* A208	20	#5	STR.	13'-8"	285
* A209	20	#5	STR.	15'-10"	330
* A210	20	#5	STR.	18'-0"	375
* A211	20	#5	STR.	20'-2"	421
* A212	20	#5	STR.	22'-4"	466
* A213	36	#5	STR.	24'-1"	904
* A214	48	#5	STR.	25'-11"	1298
* A215	28	#5	STR.	24'-11"	728
* A216	28	#5	STR.	23'-6"	686
* A217	28	#5	STR.	22'-0"	642
* A218	28	#5	STR.	20'-7"	601
* A219	28	#5	STR.	19'-0"	555
* A220	28	#5	STR.	17'-7"	514
* A221	28	#5	STR.	16'-2"	472
* A222	28	#5	STR.	14'-9"	430
* A223	28	#5	STR.	13'-4"	390
* A224	28	#5	STR.	11'-11"	348
* A225	28	#5	STR.	10'-6"	306
* A226	28	#5	STR.	9'-3"	270
* A227	28	#5	STR.	7'-10"	228
* A228	2	#5	STR.	10'-5"	22
* A229	2	#5	STR.	10'-1"	22
* A230	2	#5	STR.	9'-8"	20
* A231	2	#5	STR.	9'-3"	20
* A232	2	#5	STR.	8'-10"	18
* A233	2	#5	STR.	8'-5"	18
* A234	2	#5	STR.	8'-0"	16
* A235	2	#5	STR.	7'-7"	16
* A236	2	#5	STR.	7'-2"	14
* A237	2	#5	STR.	6'-10"	14
* A238	2	#5	STR.	6'-5"	14
* A239	2	#5	STR.	6'-0"	12
* A240	2	#5	STR.	5'-7"	12
* A241	2	#5	STR.	5'-2"	10
* A242	2	#5	STR.	4'-9"	10
* A243	2	#5	STR.	4'-4"	10
* A244	4	#5	STR.	2'-6"	10
* A245	4	#5	STR.	3'-6"	14
* A246	4	#5	STR.	3'-0"	12
* A247	8	#5	STR.	2'-9"	22
* A248	4	#5	STR.	2'-6"	10
A249	2	#4	STR.	3'-11"	6
A250	2	#4	STR.	4'-10"	6
A251	2	#4	STR.	5'-8"	8
A252	2	#4	STR.	6'-7"	8
A253	2	#4	STR.	7'-5"	10
A254	20	#4	STR.	6'-9"	90
A255	20	#4	STR.	8'-11"	120
A256	20	#4	STR.	11'-1"	148
A257	20	#4	STR.	13'-3"	178
A258	20	#4	STR.	15'-5"	206
A259	20	#4	STR.	17'-7"	234
A260	20	#4	STR.	19'-9"	264
A261	20	#4	STR.	21'-11"	292
A262	36	#4	STR.	24'-1"	580
A263	48	#4	STR.	25'-10"	828
A264	28	#4	STR.	24'-11"	466
A265	28	#4	STR.	23'-6"	440
A266	28	#4	STR.	22'-0"	412
A267	28	#4	STR.	20'-7"	384
A268	28	#4	STR.	19'-0"	356
A269	28	#4	STR.	17'-7"	328

APPROACH SLAB BAR SCHEDULE STAGE II

MARK	NO.	SIZE	TYPE	LENGTH	WEIGHT
A270	28	#4	STR.	16'-2"	302
A271	28	#4	STR.	14'-9"	276
A272	28	#4	STR.	13'-4"	250
A273	28	#4	STR.	11'-11"	222
A274	28	#4	STR.	10'-6"	196
A275	28	#4	STR.	9'-0"	168
A276	28	#4	STR.	7'-7"	142
A277	2	#4	STR.	10'-6"	14
A278	2	#4	STR.	10'-1"	14
A279	2	#4	STR.	9'-8"	12
A280	2	#4	STR.	9'-3"	12
A281	2	#4	STR.	8'-10"	12
A282	2	#4	STR.	8'-5"	12
A283	2	#4	STR.	8'-1"	10
A284	2	#4	STR.	7'-8"	10
A285	2	#4	STR.	7'-3"	10
A286	2	#4	STR.	6'-10"	10
A287	2	#4	STR.	6'-5"	8
A288	2	#4	STR.	6'-0"	8
A289	2	#4	STR.	5'-7"	8
A290	2	#4	STR.	5'-2"	6
A291	2	#4	STR.	4'-10"	6
A292	2	#4	STR.	4'-5"	6
A293	4	#4	STR.	2'-6"	6
A294	8	#4	STR.	3'-6"	19
A295	8	#4	STR.	3'-0"	16
A296	4	#4	STR.	2'-6"	6
* B200	6	#6	STR.	23'-8"	214
* B201	6	#6	STR.	24'-8"	222
* B202	6	#6	STR.	25'-8"	232
* B203	6	#6	STR.	26'-8"	240
* B204	6	#6	STR.	27'-7"	248
* B205	6	#6	STR.	28'-7"	258
* B206	6	#6	STR.	29'-7"	266
* B207	6	#6	STR.	30'-7"	276
* B208	6	#6	STR.	31'-6"	284
* B209	6	#6	STR.	32'-6"	292
* B210	6	#6	STR.	33'-6"	302
* B211	6	#6	STR.	34'-6"	310
* B212	6	#6	STR.	35'-5"	320
* B213	6	#6	STR.	36'-5"	328
* B214	72	#6	STR.	23'-5"	2532
* B215	72	#6	STR.	26'-4"	2848
* B216	72	#6	STR.	29'-4"	3172
* B217	72	#6	STR.	32'-3"	3488
B218	6	#8	STR.	24'-6"	392
B219	6	#8	STR.	25'-6"	408
B220	6	#8	STR	26'-5"	424
B221	6	#8	STR.	27'-5"	440
B222	6	#8	STR.	28'-5"	456
B223	6	#8	STR.	29'-5"	472
B224	6	#8	STR.	30'-4"	486
B225	6	#8	STR.	31'-4"	502
B226	6	#8	STR.	32'-4"	518
B227	6	#8	STR.	33'-4"	534
B228	6	#8	STR.	34'-3"	548
B229	6	#8	STR.	35'-3"	564
B230	6	#8	STR.	36'-3"	580
B231	6	#8	STR.	37'-3"	596
B232	72	#8	STR.	24'-0"	4614
B233	72	#8	STR.	26'-11"	5174
B234	72	#8	STR.	29'-10"	5736
B235	72	#8	STR.	32'-10"	6312
* G200	8	#5	STR.	24'-2"	202
* G201	6	#5	STR.	23'-3"	146

* DENOTES EPOXY COATED REINFORCING STEEL

PROJECT NO. I-4401

BUNCOMBE COUNTY

STATION: POT 147+53.94 -L-
POT 5+03.07 -RR-

SHEET 4 OF 7

NORTH CAROLINA PROFESSIONAL SEAL 28479 ENGINEER KEVIN G BAILEY 2-15-06

NORTH CAROLINA PROFESSIONAL SEAL 18155 ENGINEER MARK F. ROBBINS 2-15-06

REVISIONS			
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB

TAYLOR & MURPHY

FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

DRAWN BY A.P. DATE 1-06 DWG. NO.
CHECKED BY PEK DATE 1-06 D-1726.44

SHEET NO. S2-44
TOTAL SHEETS 43

APPROACH SLAB BAR SCHEDULE STAGE III

MARK	NO.	SIZE	TYPE	LENGTH	WEIGHT
✱A300	2	#5	STR.	3'-11"	8
✱A301	2	#5	STR.	4'-10"	10
✱A302	2	#5	STR.	5'-8"	12
✱A303	2	#5	STR.	6'-7"	14
✱A304	2	#5	STR.	7'-5"	16
✱A305	20	#5	STR.	7'-2"	150
✱A306	20	#5	STR.	9'-4"	194
✱A307	20	#5	STR.	11'-6"	240
✱A308	20	#5	STR.	13'-3"	285
✱A309	20	#5	STR.	15'-11"	332
✱A310	20	#5	STR.	18'-0"	376
✱A311	20	#5	STR.	20'-2"	420
✱A312	20	#5	STR.	22'-1"	460
✱A313	32	#5	STR.	23'-11"	798
✱A314	48	#5	STR.	25'-6"	1276
✱A315	28	#5	STR.	23'-10"	696
✱A316	28	#5	STR.	22'-8"	662
✱A317	28	#5	STR.	21'-3"	620
✱A318	28	#5	STR.	19'-9"	576
✱A319	28	#5	STR.	18'-2"	530
✱A320	28	#5	STR.	16'-9"	490
✱A321	28	#5	STR.	15'-4"	448
✱A322	28	#5	STR.	13'-11"	406
✱A323	28	#5	STR.	12'-6"	366
✱A324	28	#5	STR.	11'-1"	324
✱A325	28	#5	STR.	9'-8"	282
✱A326	28	#5	STR.	8'-3"	240
✱A327	28	#5	STR.	6'-10"	200
✱A328	2	#5	STR.	8'-9"	18
✱A329	2	#5	STR.	8'-3"	18
✱A330	2	#5	STR.	7'-10"	16
✱A331	2	#5	STR.	7'-5"	16
✱A332	2	#5	STR.	7'-0"	14
✱A333	2	#5	STR.	6'-7"	14
✱A334	2	#5	STR.	6'-3"	14
✱A335	2	#5	STR.	5'-10"	12
✱A336	2	#5	STR.	5'-5"	12
✱A337	2	#5	STR.	5'-0"	10
✱A338	2	#5	STR.	4'-7"	10
✱A339	2	#5	STR.	4'-2"	8
✱A340	2	#5	STR.	3'-9"	8
✱A341	4	#5	STR.	2'-5"	10
✱A342	4	#5	STR.	3'-6"	14
✱A343	4	#5	STR.	3'-0"	12
✱A344	8	#5	STR.	2'-9"	22
✱A345	4	#5	STR.	2'-6"	10
A346	2	#4	STR.	3'-11"	6
A347	2	#4	STR.	4'-10"	6
A348	2	#4	STR.	5'-8"	8
A349	2	#4	STR.	6'-7"	8
A350	2	#4	STR.	7'-5"	10
A351	20	#4	STR.	6'-9"	90
A352	20	#4	STR.	8'-11"	120
A353	20	#4	STR.	11'-1"	148
A354	20	#4	STR.	13'-3"	178
A355	20	#4	STR.	15'-5"	205
A356	20	#4	STR.	17'-7"	234
A357	20	#4	STR.	19'-9"	264
A358	20	#4	STR.	21'-11"	292
A359	32	#4	STR.	24'-1"	514
A360	48	#4	STR.	25'-4"	812
A361	28	#4	STR.	23'-10"	446
A362	28	#4	STR.	22'-5"	420
A363	28	#4	STR.	21'-0"	392
A364	28	#4	STR.	19'-7"	366
A365	28	#4	STR.	18'-2"	340
A366	28	#4	STR.	16'-9"	314
A367	28	#4	STR.	15'-4"	286
A368	28	#4	STR.	13'-10"	258
A369	28	#4	STR.	12'-5"	232

APPROACH SLAB BAR SCHEDULE STAGE III

MARK	NO.	SIZE	TYPE	LENGTH	WEIGHT
A370	28	#4	STR.	11'-0"	206
A371	28	#4	STR.	9'-7"	180
A372	28	#4	STR.	8'-2"	152
A373	28	#4	STR.	6'-9"	126
A374	2	#4	STR.	9'-4"	12
A375	2	#4	STR.	8'-11"	12
A376	2	#4	STR.	8'-6"	12
A377	2	#4	STR.	8'-1"	10
A378	2	#4	STR.	7'-8"	10
A379	2	#4	STR.	7'-3"	10
A380	2	#4	STR.	6'-10"	10
A381	2	#4	STR.	6'-5"	8
A382	2	#4	STR.	6'-1"	8
A383	2	#4	STR.	5'-8"	8
A384	2	#4	STR.	5'-3"	8
A385	2	#4	STR.	4'-10"	6
A386	2	#4	STR.	4'-5"	6
A387	4	#4	STR.	2'-6"	6
A388	4	#4	STR.	3'-6"	10
A389	4	#4	STR	3'-0"	8
A390	8	#4	STR.	2'-9"	14
A391	4	#4	STR.	2'-6"	6
✱B300	2	#6	STR.	23'-11"	72
✱B301	6	#6	STR.	24'-0"	216
✱B302	6	#6	STR.	25'-0"	226
✱B303	6	#6	STR.	26'-0"	234
✱B304	6	#6	STR.	26'-11"	242
✱B305	6	#6	STR.	27'-11"	252
✱B306	6	#6	STR.	28'-11"	260
✱B307	6	#6	STR.	29'-11"	270
✱B308	6	#6	STR.	30'-11"	278
✱B309	6	#6	STR.	31'-10"	286
✱B310	6	#6	STR.	32'-10"	296
✱B311	6	#6	STR.	33'-10"	304
✱B312	6	#6	STR.	34'-10"	314
✱B313	6	#6	STR.	35'-9"	322
✱B314	6	#6	STR.	36'-9"	332
✱B315	6	#6	STR.	37'-9"	340
✱B316	6	#6	STR.	38'-9"	350
✱B317	6	#6	STR.	39'-8"	358
✱B318	6	#6	STR.	40'-8"	366
✱B319	6	#6	STR.	41'-8"	375
✱B320	6	#6	STR.	42'-8"	384
✱B321	6	#6	STR.	43'-7"	392
✱B322	6	#6	STR.	44'-7"	402
✱B323	6	#6	STR.	45'-7"	410
✱B324	6	#6	STR.	46'-7"	420
✱B325	6	#6	STR.	47'-7"	428
✱B326	6	#6	STR.	48'-6"	438
✱B327	6	#6	STR.	49'-6"	446
✱B328	6	#6	STR.	50'-6"	456
✱B329	6	#6	STR.	51'-6"	464
✱B330	6	#6	STR.	52'-5"	472
✱B331	6	#6	STR.	53'-5"	482
✱B332	6	#6	STR.	54'-5"	490
✱B333	6	#6	STR.	55'-5"	500
✱B334	6	#6	STR.	56'-4"	508
✱B335	6	#6	STR.	57'-4"	516
✱B336	6	#6	STR.	58'-4"	526
✱B337	2	#6	STR.	59'-4"	178
B338	2	#8	STR.	24'-7"	132
B339	6	#8	STR.	24'-10"	398
B340	6	#8	STR.	25'-9"	412
B341	6	#8	STR.	26'-9"	428
B342	6	#8	STR.	27'-9"	444
B343	6	#8	STR.	28'-9"	460
B344	6	#8	STR.	29'-8"	476
B345	6	#8	STR.	30'-8"	492
B346	6	#8	STR.	31'-8"	508

APPROACH SLAB BAR SCHEDULE STAGE III

MARK	NO.	SIZE	TYPE	LENGTH	WEIGHT
B347	6	#8	STR.	32'-8"	524
B348	6	#8	STR.	33'-8"	540
B349	6	#8	STR.	34'-7"	554
B350	6	#8	STR.	35'-7"	570
B351	6	#8	STR.	36'-7"	586
B352	6	#8	STR.	37'-7"	602
B353	6	#8	STR.	38'-6"	616
B354	6	#8	STR.	39'-6"	632
B355	6	#8	STR.	40'-6"	648
B356	6	#8	STR.	41'-6"	664
B357	6	#8	STR.	42'-5"	680
B358	6	#8	STR.	43'-5"	696
B359	6	#8	STR.	44'-5"	712
B360	6	#8	STR.	45'-5"	728
B361	6	#8	STR.	46'-5"	744
B362	6	#8	STR.	47'-4"	758
B363	6	#8	STR.	48'-4"	774
B364	6	#8	STR.	49'-4"	790
B365	6	#8	STR.	50'-4"	806
B366	6	#8	STR.	51'-3"	822
B367	6	#8	STR.	52'-3"	838
B368	6	#8	STR.	53'-3"	854
B369	6	#8	STR.	54'-3"	870
B370	6	#8	STR.	55'-2"	884
B371	6	#8	STR.	56'-2"	900
B372	6	#8	STR.	57'-2"	916
B373	6	#8	STR.	58'-2"	932
B374	6	#8	STR.	59'-1"	946
B375	2	#8	STR.	60'-0"	320
✱G300	4	#5	STR.	44'-1"	184
✱G301	4	#5	STR.	32'-8"	136

SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS

BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPET, AND BARRIER RAIL		APPROACH SLABS		PARAPET AND BARRIER RAIL
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#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'-1"	4'-4"
#7	5'-3"	3'-6"			
#8	6'-10"	4'-7"		4'-7"	

APPROACH SLAB QUANTITIES

EPOXY COATED REINFORCING STEEL (LBS.)	STAGE I	12,442
	STAGE II	27,390
	STAGE III	24,596
	TOTAL	64,428
REINFORCING STEEL (LBS.)	STAGE I	14,593
	STAGE II	35,881
	STAGE III	31,434
	TOTAL	81,908
CONCRETE (CLASS AA) (CU. YD.)	STAGE I	83.0
	STAGE II	187.7
	STAGE III	178.7
	TOTAL	449.4

✱ DENOTES EPOXY COATED REINFORCING STEEL

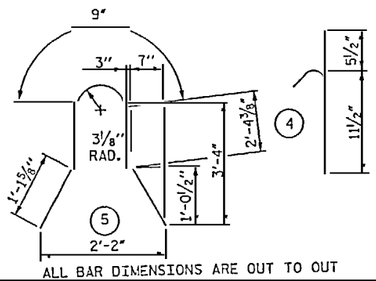
BILL OF MATERIAL

FOR CONCRETE MEDIAN BARRIER (STAGE I ONLY)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✱B11	24	#5	STR	35'-7"	891
✱S11	136	#5	4	1'-5"	201
✱S12	66	#5	5	7'-9"	533

✱ EPOXY COATED REINFORCING STEEL	1,625 LBS.
CLASS AA CONCRETE	12.5 CU. YDS.
CONCRETE MEDIAN BARRIER	70.9 LIN. FT.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL (STAGE II)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✱B21	7	#5	STR	18'-6"	135
✱B22	1	#5	(3)	12'-6"	13
✱B23	7	#5	STR	19'-10"	145
✱B24	1	#5	(3)	15'-10"	17
✱S21	63	#5	STR	3'-3"	214
✱S22	62	#5	(1)	4'-1"	264
✱S23	35	#5	(2)	2'-3"	82

✱ EPOXY COATED REINFORCING STEEL	870 LBS.
CLASS AA CONCRETE	3.9 CU. YDS.
CONCRETE BARRIER RAIL	40.0 LIN. FT.

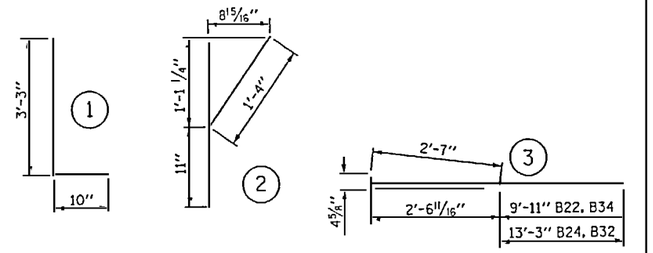
BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL (STAGE III)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✱B31	7	#5	STR	19'-10"	145
✱B32	1	#5	(3)	15'-10"	17
✱B33	7	#5	STR	18'-6"	135
✱B34	1	#5	(3)	12'-6"	13
✱S31	63	#5	STR	3'-3"	214
✱S32	62	#5	(1)	4'-1"	264
✱S33	34	#5	(2)	2'-3"	82

✱ EPOXY COATED REINFORCING STEEL	870 LBS.
CLASS AA CONCRETE	3.9 CU. YDS.
CONCRETE BARRIER RAIL	40.0 LIN. FT.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

PROJECT NO. I-4401

BUNCOMBE COUNTY

STATION: POT 147+53.94 -L-
POT 5+03.07 -RR-

SHEET 5 OF 7

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 23479 KEVIN G BAILEY 2-15-06

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT SEAL 1965 MARK F. ROBBINS 2-15-06

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB

SHEET NO. S2-45
TOTAL SHEETS 49

TAYLOR & MURPHY

FLORENCE & HUTCHESON, INC. CONSULTING ENGINEERS 4120 WESTERGATE BLVD. SUITE 115 RALEIGH, NC 27609

RALPH WHITEHEAD ASSOCIATES, INC. CONSULTING ENGINEERS P.O. BOX 35524 CHARLOTTE, N.C. 28235

DRAWN BY AJP DATE 1-06
CHECKED BY PEK DATE 1-06
DESIGN NO. D-1785.45

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NOTES

THE COST OF THE BARRIER RAIL ON THE APPROACH SLAB SHALL BE INCLUDED IN THE LUMP SUM CONTRACT PRICE BID FOR BRIDGE APPROACH SLABS.

APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.

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

TEMPORARY DRAINAGE AND TEMPORARY BERM AND SLOPE DRAINS WILL BE PAID FOR UNDER THE LUMP SUM PRICE FOR BRIDGE APPROACH SLAB.

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

THE 6" COMP. A.B.C. SHALL EXTEND 10'-0" BEYOND THE END OF THE APPROACH SLAB AND 1'-0" OUTSIDE OF EACH EDGE OF THE SLAB.

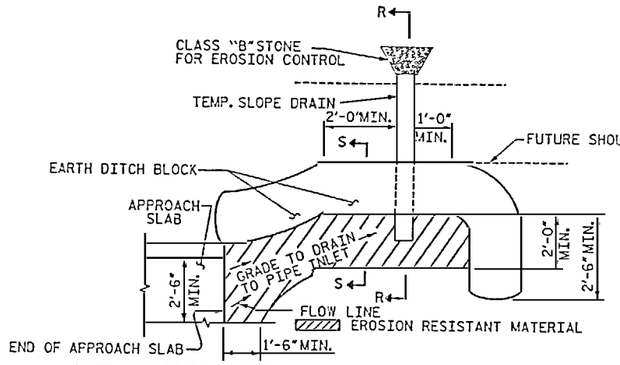
THE CONTRACTOR MAY USE 4" TYPE B-25.0B ASPHALT CONCRETE BASE COURSE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE BASE COURSE SHALL EXTEND 1'-0" BEYOND THE END OF THE APPROACH SLAB AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB.

THE CONTRACTOR MAY USE 5" CLASS "A" CONCRETE BASE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE CONCRETE BASE SHALL EXTEND 1'-0" BEYOND THE END OF THE APPROACH SLAB AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB. THE CONCRETE SHALL BE FINISHED TO A SMOOTH SURFACE AND A LAYER OF 30 LB ROOFING FELT SHALL BE PLACED BETWEEN THE CONCRETE BASE AND THE APPROACH SLAB TO PREVENT BOND. THE APPROACH SLAB SHALL NOT BE CAST UNTIL THE CONCRETE BASE HAS REACHED AN AGE OF THREE CURING DAYS.

WITH EVAZOTE JOINT SEAL

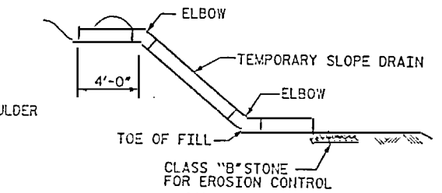
FOR EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS.

THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE EVAZOTE JOINT SEAL SHALL BE 2 ½".

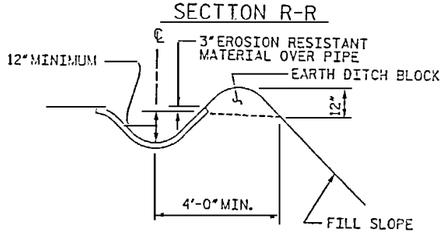


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

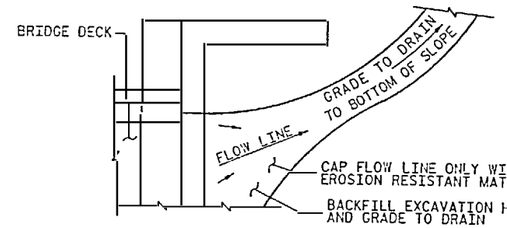
PLAN VIEW



SECTION R-R



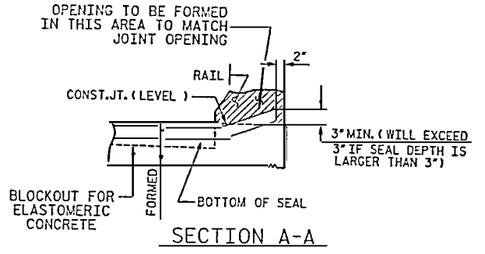
SECTION S-S



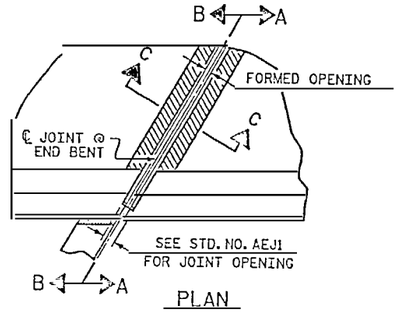
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL

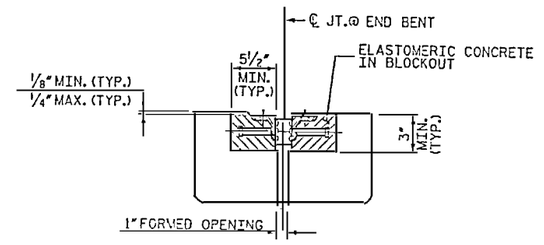
TEMPORARY BERM AND SLOPE DRAIN DETAILS



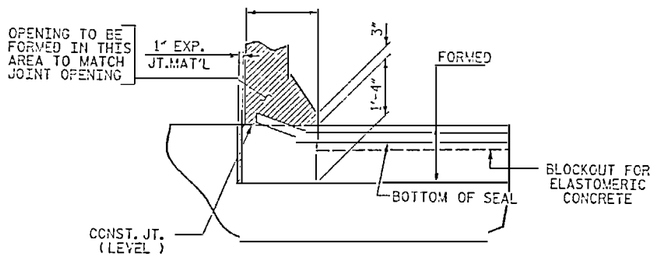
SECTION A-A



PLAN

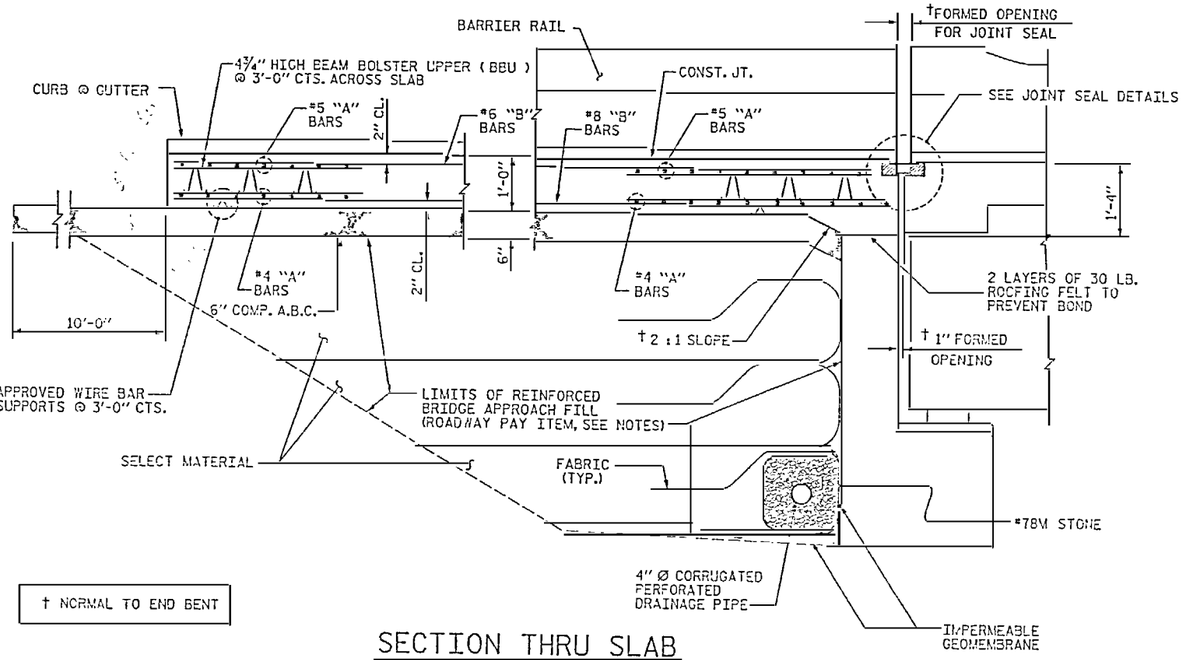


SECTION C-C
FOR DETAILS, SEE "STANDARD ARMORED EVAZOTE JOINT DETAILS"



SECTION B-B

JOINT SEAL DETAILS @ END BENT
(FOR BARRIER RAIL)



† NORMAL TO END BENT

SECTION THRU SLAB

ASSEMBLED BY : A.P		DATE : 1/06	
CHECKED BY : PEK		DATE : 1/06	
DRAWN BY : LES	8/01	REV. 5/7/02R REVISED	
CHECKED BY : RDR	8/01		

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TAYLOR & MURPHY

FLORENCE & HUTCHESON, INC. CONSULTING ENGINEERS 4000 WESTERN BLVD. SUITE 415 RALEIGH, NC 27609

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 28479 KEVIN G. BAILEY 2-15-06

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT SEAL 19165 MARK F. ROBBINS 2-15-06

PROJECT NO. I-4401
BUNCOMBE COUNTY
STATION: POT 147+53.94 -L-
POT 5+03.07 -RR-

SHEET 6 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
BRIDGE APPROACH SLAB DETAILS FOR RIGID PAVEMENT WITH BARRIER RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-46
1			3			TOTAL SHEETS
2			4			49

STD. NO. BAS2

NOTES

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

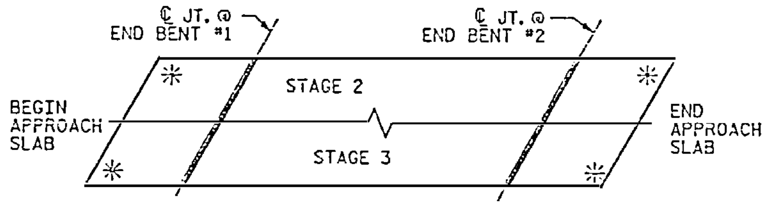
THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.

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

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

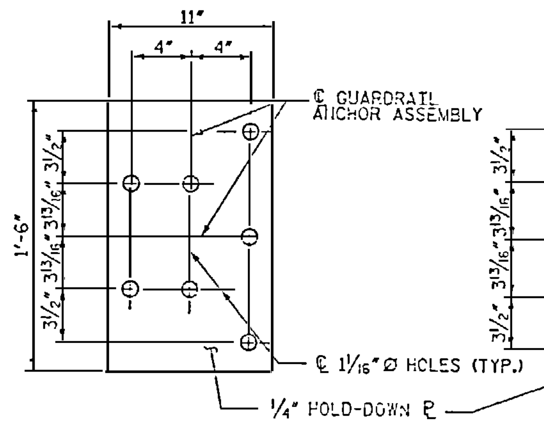
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE LUMP SUM CONTRACT PRICE BID FOR BRIDGE APPROACH SLABS.

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

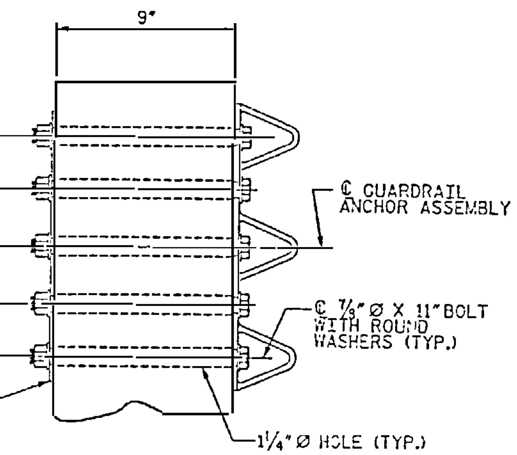


SKETCH SHOWING POINTS OF ATTACHMENT

✻ INDICATES POINTS OF ATTACHMENT

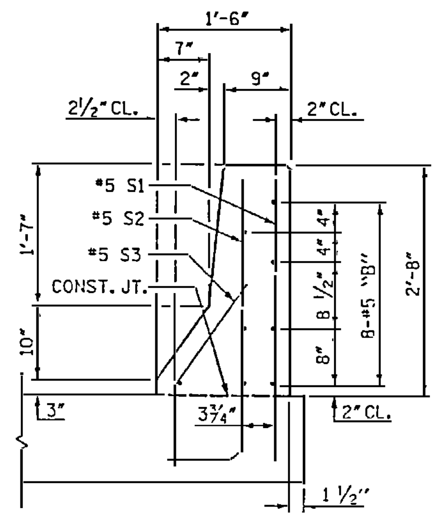


PLAN

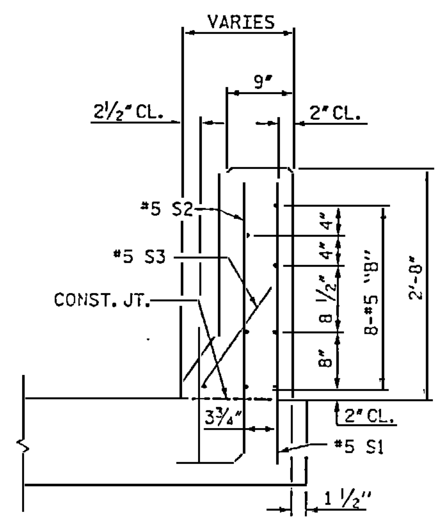


SECTION E-E

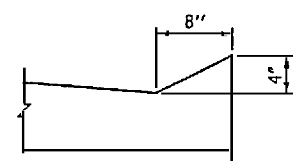
GUARDRAIL ANCHOR ASSEMBLY DETAILS



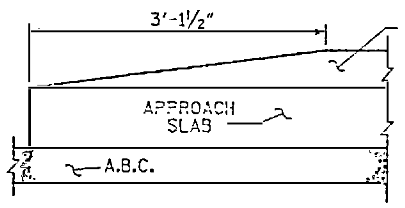
SECTION K-K



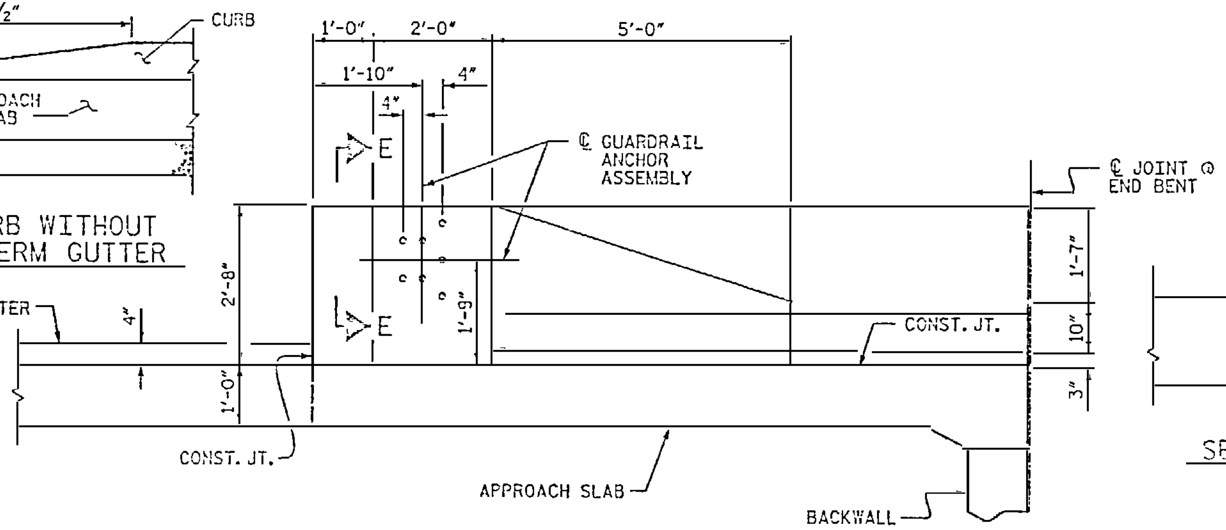
SECTION L-L



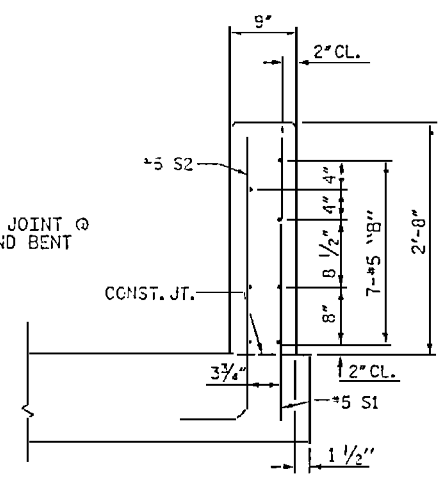
SECTION N-N



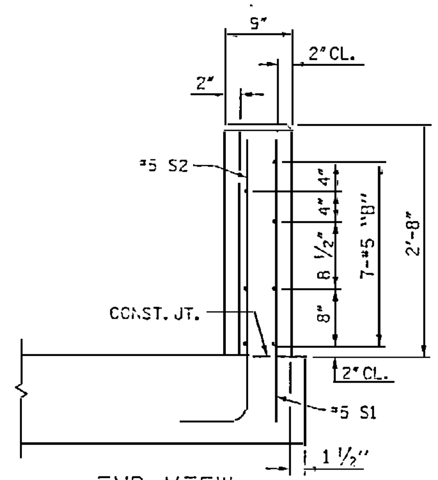
END OF CURB WITHOUT SHOULDER BERM GUTTER



ELEVATION



SECTION M-M



END VIEW

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 28479 KEVIN G. BAILEY 2-15-06

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18185 MARK F. ROBBINS 2-15-06

PROJECT NO. I-4401

BUNCOMBE COUNTY

STATION: POT 147+53.94 -L-
POT 5+03.07 -RR-

SHEET 7 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB DETAILS FOR RIGID PAVEMENT WITH BARRIER RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-47
1			3			TOTAL SHEETS
2			4			48

STD. NO. BAS3

ASSEMBLED BY : A.P. DATE : 1/06
CHECKED BY : PEK DATE : 1/06
DRAWN BY : LES 8/01
CHECKED BY : RDR 8/01
REV. 5/7/03R RWW/JTE

D-1796.47

TAYLOR & MURPHY

FLORENCE & HUTCHESON, INC. CONSULTING ENGINEERS

timothy.townsend /2006 08:05:43 AM n:\proj\3185-FINAL\Ustn\Struct\RR\Final\as7.dgn

STANDARD NOTES

DESIGN DATA:

SPECIFICATIONS	A.A.S.H.T.O. (CURRENT)
LIVE LOAD	SEE PLANS
IMPACT ALLOWANCE	SEE A.A.S.H.T.O.
STRESS IN EXTREME FIBER OF	
STRUCTURAL STEEL - AASHTO M270 GRADE 36	20,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50W	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION	
GRADE 60	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR	SEE A.A.S.H.T.O.
STRUCTURAL TIMBER - TREATED OR	
UNTREATED - EXTREME FIBER STRESS	1,800 LBS. PER SQ. IN.
COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER	375 LBS. PER SQ. IN.
EQUIVALENT FLUID PRESSURE OF EARTH	30 LBS. PER CU. FT. (MINIMUM)

MATERIAL AND WORKMANSHIP:

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

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

CONCRETE:

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

CONCRETE CHAMFERS:

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

DOWELS:

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

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

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

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

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

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

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED WITH THE EXCEPTION OF #2 BARS WHICH MAY BE FABRICATED FROM COLD DRAWN STEEL WIRE. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8"Ø SHEAR STUDS FOR THE ¾"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.

REV. 6-16-95 EEM (M ROW REV. 5-7-03 RWW (M UTE
REV. 8-16-99 RWW (M LES

ENGLISH

JANUARY, 1990

STD. NO. SN