STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-5018A		

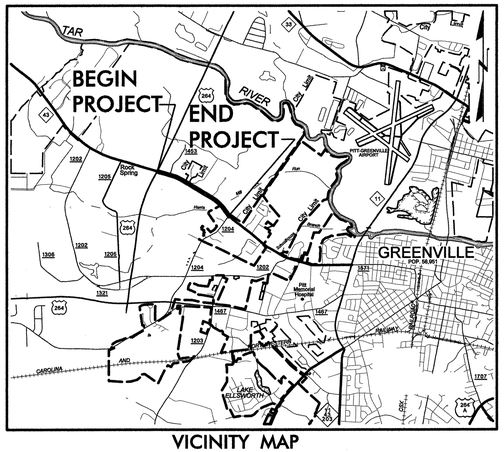
WBS NO.	F.A. PROJ. NO.	DESCRIPTION
41431.1.2		P.E.
41431.2.1		R/W
41431.3.3		CONST.

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PITT COUNTY

LOCATION: GREENVILLE – NC 43 FROM US 264 TO WEST OF SR 1204 (B'S BARBEQUE ROAD)

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

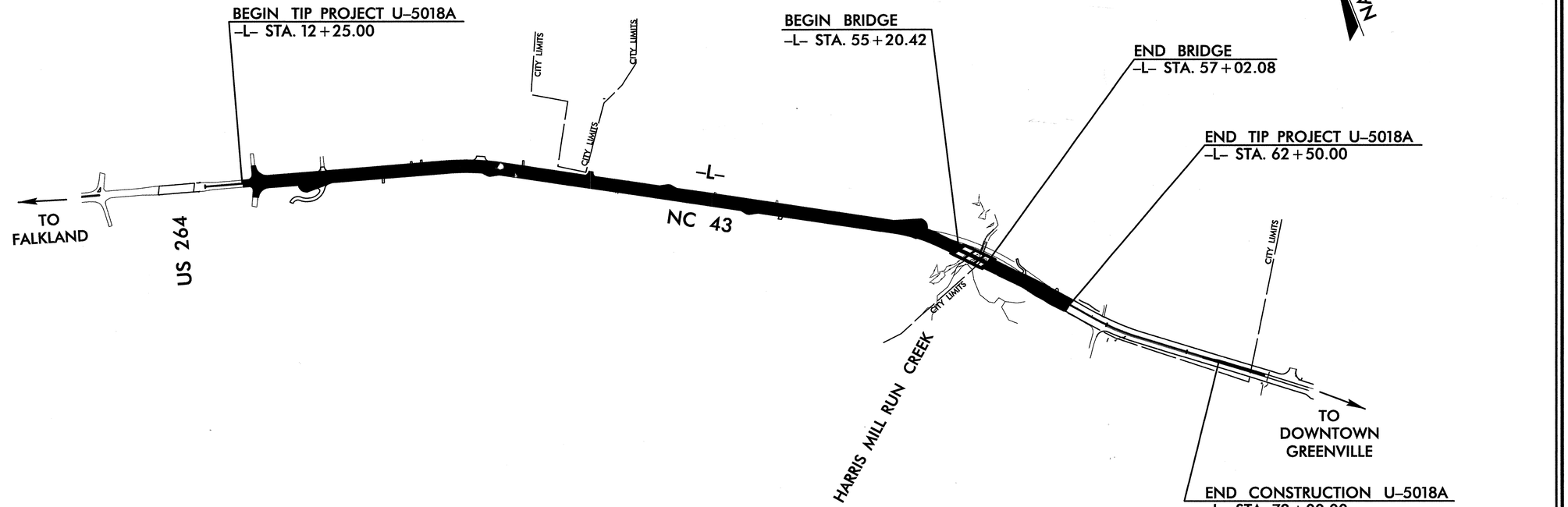


VICINITY MAP

TIP PROJECT: U-5018A

STRUCTURE

CONTRACT: C202636



DESIGN DATA

ADT 2007 = 19,700
ADT 2029 = 40,600
DHV = 10 %
D = 50 %
T = 6 % *
V = 50 MPH
(* TTST 2 % + DUAL 4 %)

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-5018A = 0.918 MILES
LENGTH STRUCTURE TIP PROJECT U-5018A = 0.034 MILES
TOTAL LENGTH TIP PROJECT U-5018A = 0.952 MILES

Prepared In the Office of:
MULKEY
ENGINEERS & CONSULTANTS
FOR
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2006 STANDARD SPECIFICATIONS

LETTING DATE:
NOVEMBER 16, 2010

L. KEVIN AUSTIN, PE
PROJECT ENGINEER

NCDOT CONTACT: JOHN ROUSE, PE

STRUCTURE DESIGN

NORTH CAROLINA PROFESSIONAL SEAL 19661 ENGINEER L. KEVIN AUSTIN 5/27/10

L. Kevin Austin P.E.
SIGNATURE:

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

P.E.
STATE HIGHWAY DESIGN ENGINEER

6/3/2010
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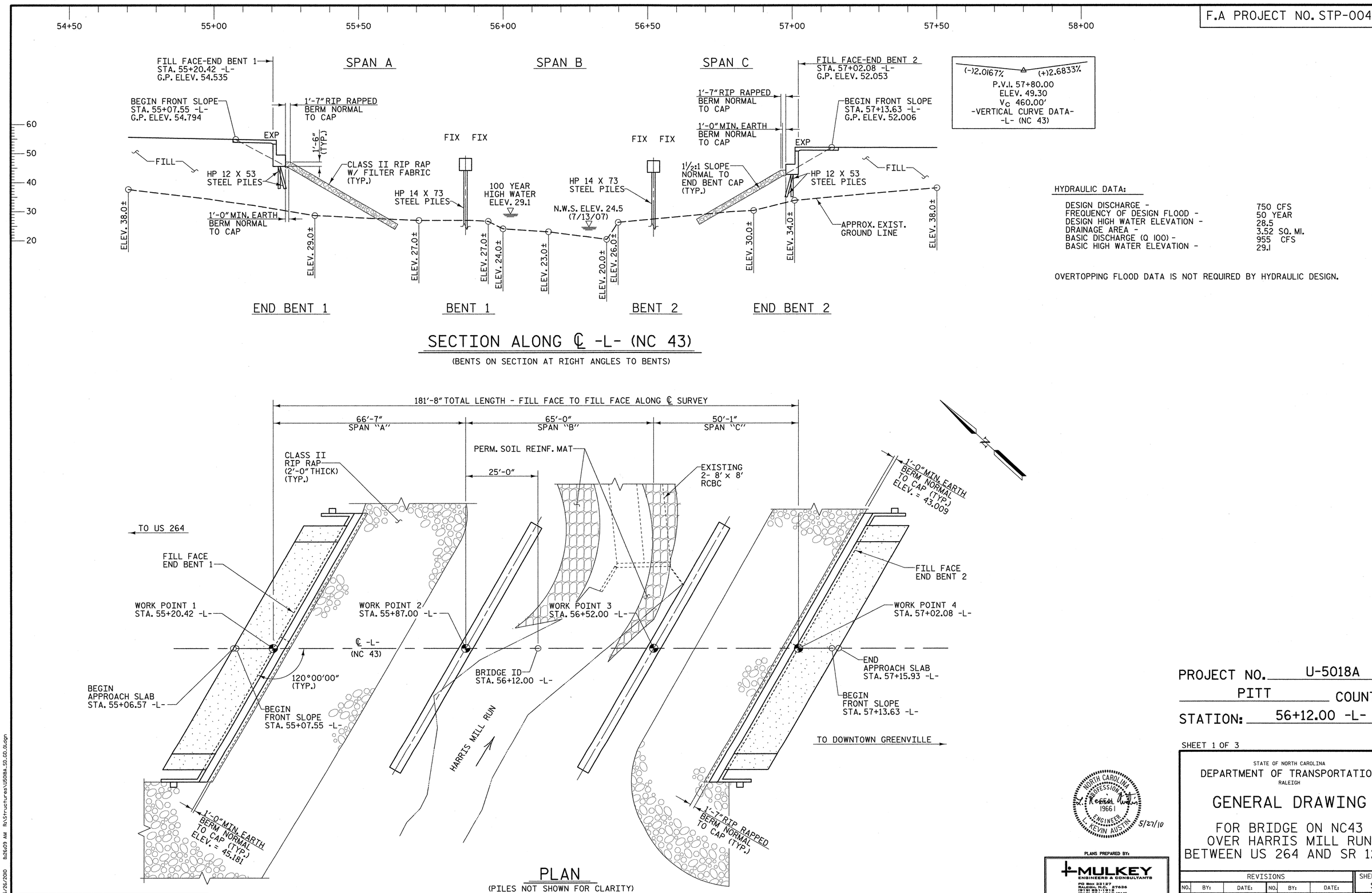
F.A PROJECT NO. STP-0043(9)



SECTION ALONG ℄ -L- (NC 43)

(BENTS ON SECTION AT RIGHT ANGLES TO BENTS)

HYDRAULIC DATA:

DESIGN DISCHARGE -	750 CFS
FREQUENCY OF DESIGN FLOOD -	50 YEAR
DESIGN HIGH WATER ELEVATION -	28.5
DRAINAGE AREA -	3.52 SQ. MI.
BASIC DISCHARGE (Q 100) -	955 CFS
BASIC HIGH WATER ELEVATION -	29.1

OVERTOPPING FLOOD DATA IS NOT REQUIRED BY HYDRAULIC DESIGN.

PLAN

(PILES NOT SHOWN FOR CLARITY)

PROJECT NO. U-5018A

PITT COUNTY

STATION: 56+12.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON NC43
OVER HARRIS MILL RUN
BETWEEN US 264 AND SR 1204

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19661 KEVIN AUSTIN 5/27/10

PLANS PREPARED BY:

MULKEY
ENGINEERS & CONSULTANTS
PO Box 33127
Raleigh, N.C. 27636
(919) 851-1818
(919) 851-1918 (FAX)
WWW.MULKEYINC.COM

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

DRAWN BY : W. B. ALLEN DATE : 5/08
CHECKED BY : R. V. KEITH DATE : 5/08

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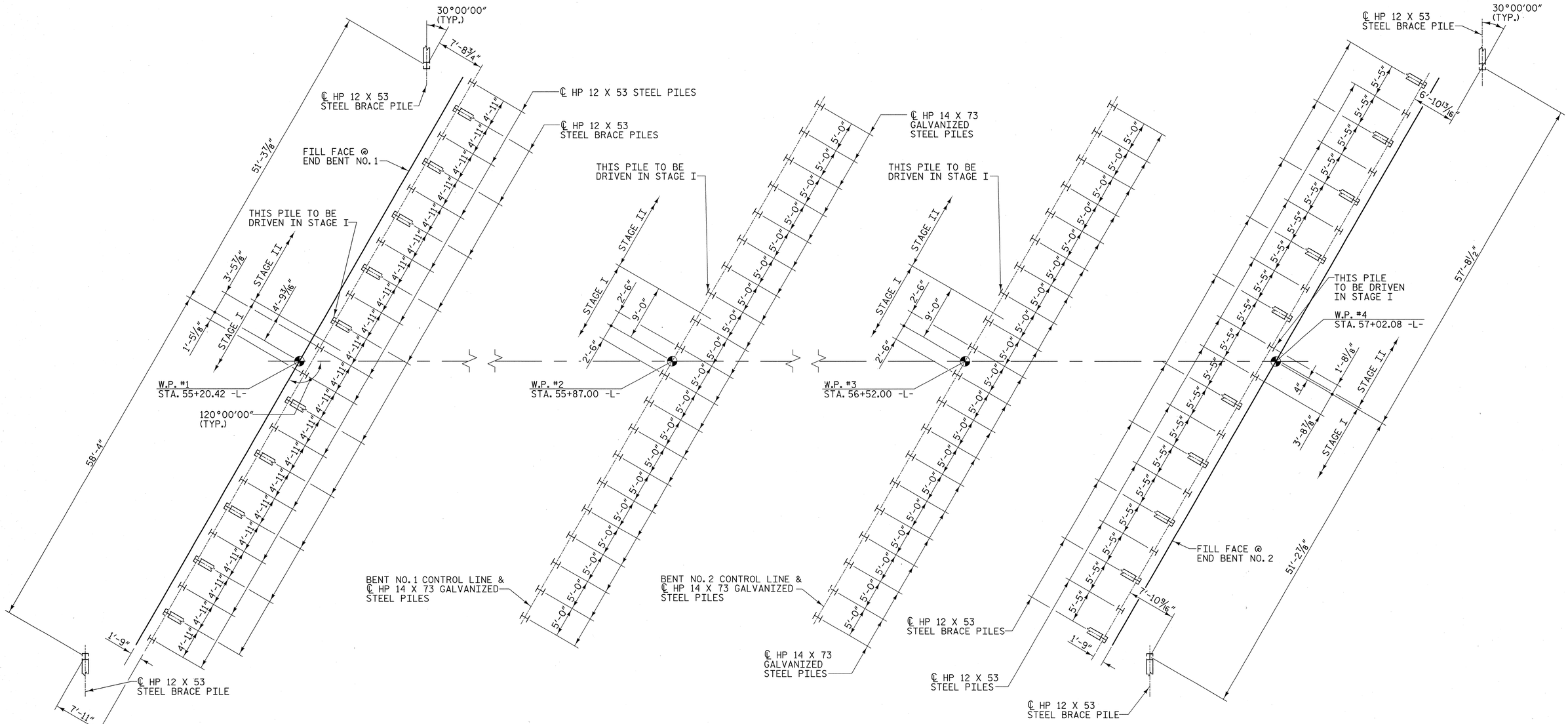

END BENT NO. 1 | BENT NO. 1 | BENT NO. 2 | END BENT NO. 2

FOUNDATION LAYOUT

NOTES

ALL END BENT PILES ARE HP 12 x 53.

ALL END BENT BRACE PILES ARE BATTERED AT 3:12.

ALL BENT PILES ARE HP 14 x 73.

DIMENSIONS LOCATING PILES ARE SHOWN TO THE PILE CENTERLINE AT THE BOTTOM OF THE CAP.

FOR PILES, SEE SPECIAL PROVISIONS.

PILES AT END BENT NO. 1 AND END BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 75 TONS PER PILE. DRIVE PILES TO A REQUIRED DRIVING RESISTANCE OF 125 TONS PER PILE.

PILES AT BENT NO. 1 AND BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 120 TONS PER PILE. DRIVE PILES TO A REQUIRED DRIVING RESISTANCE OF 210 TONS PER PILE. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR DOWNDRAG OR SCOUR.

INSTALL PILES AT BENT NO. 1 AND BENT NO. 2 TO A TIP ELEVATION NO HIGHER THAN 4 FT.

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 1 AND BENT NO. 2 IS ELEVATION 23 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALEND RATED ENERGY IN THE RANGE OF 40,000 FT-LBS TO 50,000 FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT BENT NO. 1 AND BENT NO. 2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH THE PILES PROVISION.

TESTING THE FIRST PRODUCTION PILES WITH THE PILE DRIVING ANALYZER (PDA) DURING DRIVING, RESTRIKING OR REDRIVING IS REQUIRED AT END BENT NO. 1, END BENT NO. 2, BENT NO. 1 OR BENT NO. 2.

NORTH CAROLINA PROFESSIONAL SEAL 10966 ENGINEER RICKY K KEITH
6/11/09

PLANS PREPARED BY:

MULKEY ENGINEERS & CONSULTANTS
PO Box 33127
Raleigh, N.C. 27636
(919) 851-1912
(919) 851-1918 (FAX)
www.mulkeync.com

PROJECT NO. U-5018A

PITT COUNTY

STATION: 56+12.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON NC43
OVER HARRIS MILL RUN
BETWEEN US 264 AND SR 1204

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

DRAWN BY : W. B. ALLEN DATE : 4/09
CHECKED BY : R. V. KEITH DATE : 4/09

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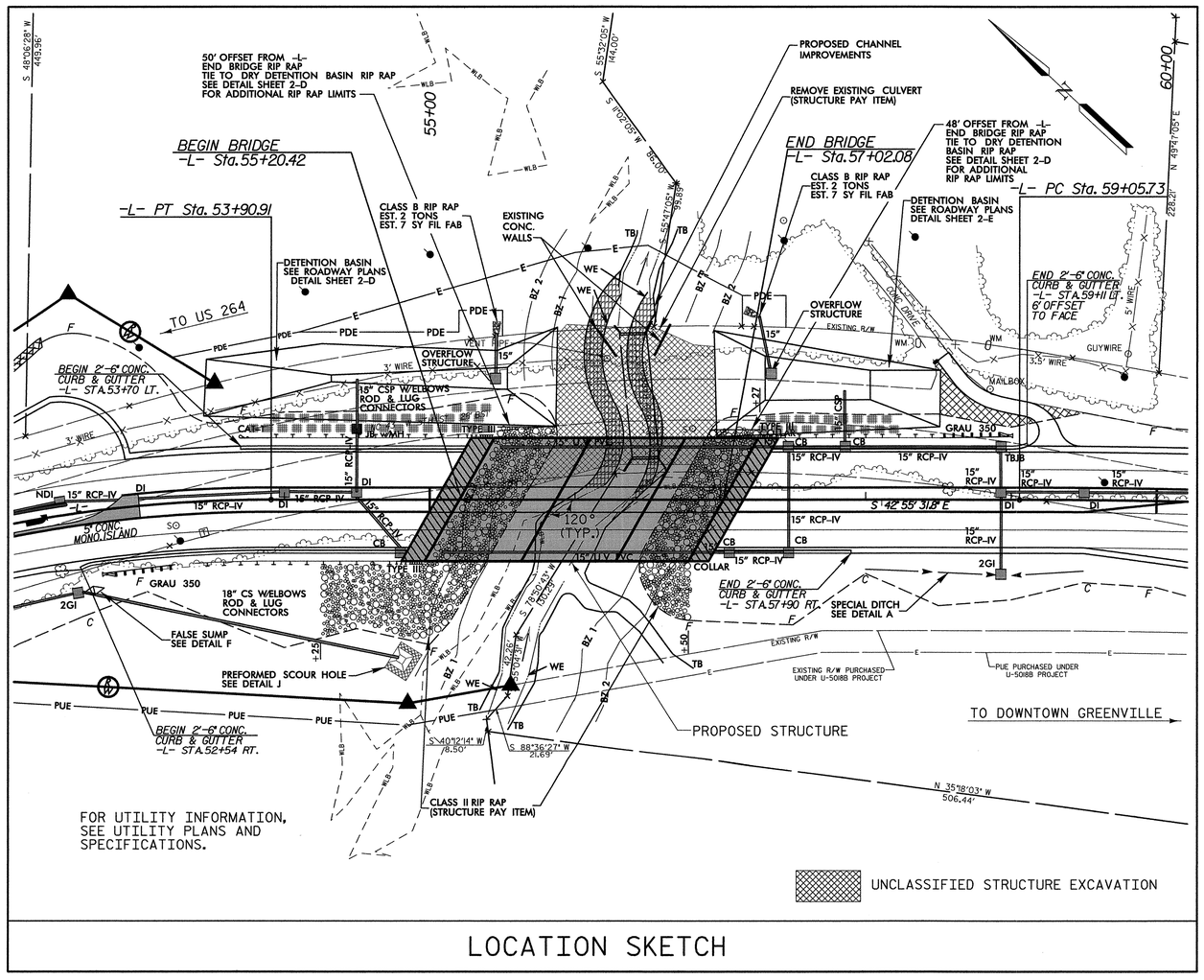
TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	PDA TESTING	PDA ASSISTANCE	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS "A" CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	45" PRESTESSED CONCRETE GIRDERS		HP 12 X 53 STEEL PILES		HP 14 X 73 GALVANIZED STEEL PILES		TWO BAR METAL RAIL	PILE REDRIVES	1'-2" X 3'-2¾" CONCRETE PARAPET	RIP RAP CLASS II (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE	ELASTOMERIC BEARINGS	EVAZOTE JOINT SEALS	STRUCTURE DRAINAGE SYSTEM
	LUMP SUM	EACH	EACH	CU. YARDS	SQ. FEET	SQ. FEET	CU. YARDS	LUMP SUM	LBS.	NO.	FEET	NO.	LIN. FT.	NO.	LIN. FT.	LIN. FT.	EACH	LIN. FT.	TONS	SQ. YARDS	LUMP SUM	LUMP SUM	LUMP SUM
SUPERSTRUCTURE	LUMP SUM			3870	15,610	10,228		LUMP SUM		30	1760.00					341.98		358.32			LUMP SUM	LUMP SUM	LUMP SUM
END BENT 1							69.3		10,369			24	1958				11		1055	1175			
BENT 1							57.1		7876					20	1621		10						
BENT 2							54.7		7795					20	1908		10						
END BENT 2							64.1		9555			22	1683				10		520	580			
TOTAL	LUMP SUM	2	2	3870	15,610	10,228	245.2	LUMP SUM	35,595	30	1760.00	46	3641	40	3529	341.98	41	358.32	1575	1755	LUMP SUM	LUMP SUM	LUMP SUM

BENCHMARK: BM#5 -L- STA. 53+62.22
64.66' LT.
ELEV. 55.51



LOCATION SKETCH

GENERAL NOTES

ASSUMED LIVE LOAD = HL-93 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 IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

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

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

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

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR SEISMIC PERFORMANCE ZONE 1.

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

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

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED AS INDICATED ON THE LOCATION SKETCH AND AS DIRECTED BY THE ENGINEER. THIS WORK SHALL BE MEASURED AND PAID FOR AT THE CONTRACT UNIT PRICE PER CUBIC YARD FOR UNCLASSIFIED STRUCTURE EXCAVATION.

AFTER SERVING AS A TEMPORARY STRUCTURE, THE EXISTING DOUBLE 8' X 8' X 86'-6" LONG REINFORCED CONCRETE BOX CULVERT, WINGS AND WALLS LOCATED 68'± DOWNSTREAM FROM THE PROPOSED STRUCTURE SHALL BE REMOVED.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

PROJECT NO. U-5018A

PITT COUNTY

STATION: 56+12.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON NC43
OVER HARRIS MILL RUN
BETWEEN US 264 AND SR 1204

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 1966 — KEVIN AUSTIN — 5/27/10

PLANS PREPARED BY:

MULKEY
ENGINEERS & CONSULTANTS
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(919) 851-1918 (FAX)
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REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			

DRAWN BY : W.B. ALLEN DATE : 12/08
CHECKED BY : R. V. KEITH DATE : 1/09

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LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING (#)	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE									SERVICE III LIMIT STATE					COMMENT NUMBER
							MOMENT				SHEAR					MOMENT				
						LIVE-LOAD FACTORS (γ_L)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN NUMBER	DISTANCE FROM LEFT END OF SPAN (FT)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN NUMBER	DISTANCE FROM LEFT END OF SPAN (FT)	LIVE-LOAD FACTORS (γ_L)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN NUMBER	DISTANCE FROM LEFT END OF SPAN (FT)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	1	1.21	--	1.75	0.62	1.44	1	25.0	1.26	1.60	1	44.2	0.80	0.62	1.21	1	31.4	
	HL-93 (OPERATING)	N/A		1.87	--	1.35	0.62	1.87	1	25.0	1.26	2.08	1	44.2	N/A	--	--	--	--	
	HS-20 (INVENTORY)	36.00	2	1.55	55.8	1.80	0.62	1.84	1	25.0	1.26	2.33	1	50.7	1.00	0.62	1.55	1	31.4	
	HS-20 (OPERATING)	36.00		2.39	86.04	1.35	0.62	2.39	1	25.0	1.26	3.02	1	50.7	N/A	--	--	--	--	
LEGAL LOAD RATING	SNSH	13.50	3	3.86	52.11	1.80	0.62	3.86	1	25.0	1.26	6.03	3	0.0	1.00	0.62	2.66	1	25.0	
	SNGAR BS2	20.00		2.93	58.60	1.80	0.62	2.93	1	25.0	1.26	4.27	3	0.0	1.00	0.62	2.03	1	31.4	
	SNCOT TS3	25.50		2.12	54.06	1.80	0.62	2.12	1	25.0	1.26	2.99	1	50.7	1.00	0.62	1.46	1	31.4	
	SNS3A	27.03		2.03	54.87	1.80	0.62	2.03	1	25.0	1.26	2.82	1	50.7	1.00	0.62	1.40	1	31.4	
	SNAG GRS4	34.93		1.65	57.63	1.80	0.62	1.65	1	25.0	1.26	2.05	1	44.2	1.00	0.62	1.14	1	31.4	
	SNS5A	35.55		1.63	57.95	1.80	0.62	1.63	1	25.0	1.26	2.0	1	44.2	1.00	0.62	1.12	1	31.4	
	SNS6A	39.95		1.50	59.93	1.80	0.62	1.50	1	25.0	1.26	1.68	1	44.2	1.00	0.62	1.03	1	31.4	
	SNS7B	42.00		1.43	60.06	1.80	0.62	1.43	1	25.0	1.26	1.70	1	44.2	1.00	0.62	0.99	1	31.4	
	TNT4A	33.08	3	1.82	60.21	1.80	0.62	1.82	1	25.0	1.26	2.38	1	50.7	1.00	0.62	1.26	1	31.4	
	TNT5B	37.20		1.64	61.01	1.80	0.62	1.64	1	25.0	1.26	2.26	1	37.8	1.00	0.62	1.13	1	31.4	
	TNAG RIT4	38.00		2.27	86.26	1.80	0.62	2.27	1	25.0	1.26	2.75	1	50.7	1.00	0.62	1.61	1	31.4	
	TNT6A	41.60		1.52	63.23	1.80	0.62	1.52	1	25.0	1.26	2.18	1	50.7	1.00	0.62	1.05	1	31.4	
	TNT7A	42.00		1.53	64.26	1.80	0.62	1.53	1	25.0	1.26	1.96	1	44.2	1.00	0.62	1.06	1	31.4	
	TNT7B	42.00		1.52	63.84	1.80	0.62	1.55	1	25.0	1.26	1.52	1	44.2	1.00	0.62	1.09	1	31.4	
	TNAG T5A	45.00		1.90	85.50	1.80	0.62	1.90	1	25.0	1.26	2.29	1	50.7	1.00	0.62	1.32	1	31.4	
	TNAG T5B	45.00		2.05	92.25	1.80	0.62	2.05	1	25.0	1.26	2.32	1	50.7	1.00	0.62	1.49	1	31.4	

LOAD FACTORS:

LIMIT STATE	γ_{DC}	γ_{DW}
STRENGTH I	1.25	1.50
SERVICE III	1.00	1.00

NOTES:

MINIMUM RATING FACTORS FOR DESIGN LOAD RATING ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

MINIMUM RATING FACTORS FOR LEGAL LOAD RATING ARE BASED ON THE STRENGTH I LIMIT STATE.

ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

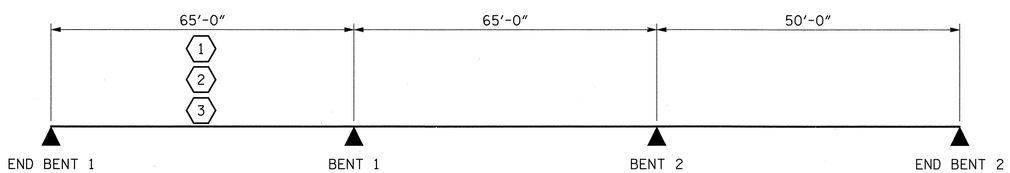
(#) CONTROLLING LOAD RATING

(1) DESIGN LOAD RATING (HL-93) **

(2) DESIGN LOAD RATING (HS-20) **

(3) LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE



LRFR SUMMARY

PROJECT NO. U-5018A

PITT COUNTY

STATION: 56+12.00 -L-

PLANS PREPARED BY:

MULKEY
ENGINEERS & CONSULTANTS
PO Box 33127
Raleigh, N.C. 27636
(919) 851-1912
(919) 851-1918 (FAX)
www.mulkeyinc.com

THIS STANDARD DRAWING REVIEWED & ADOPTED FOR USE AT THE REFERENCED LOCATION BY THE UNDERSIGNED:

NORTH CAROLINA PROFESSIONAL SEAL 10966 ENGINEER RICKY V. KEITH

6/11/09

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

LRFR SUMMARY FOR PRESTRESSED CONCRETE GIRDERS (NON-INTERSTATE TRAFFIC)

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

STD. NO. LRFR1

ASSEMBLED BY :	W. B. ALLEN	DATE : 4/09
CHECKED BY :	R. V. KEITH	DATE : 4/09
DRAWN BY :	MAA 1/08	
CHECKED BY :	GM/DI 2/08	

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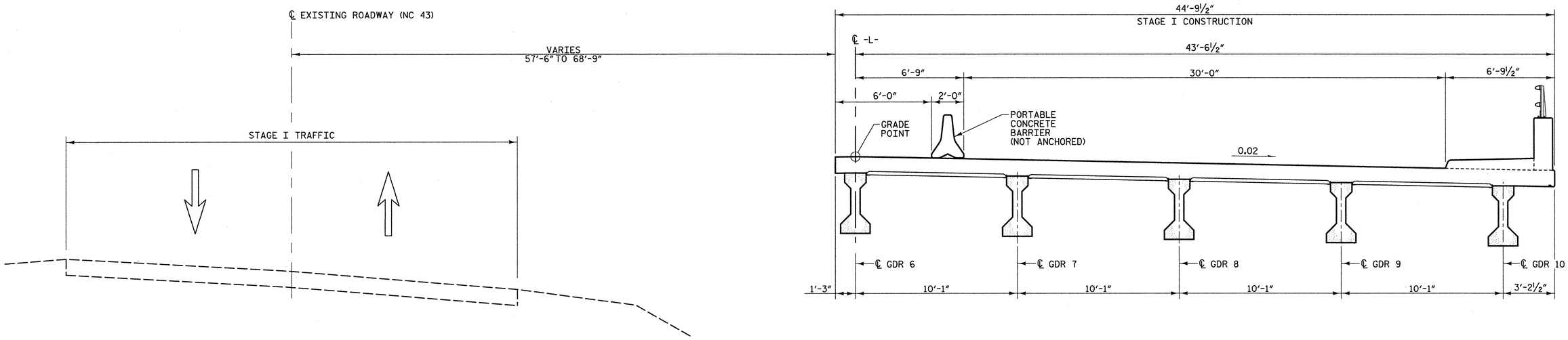
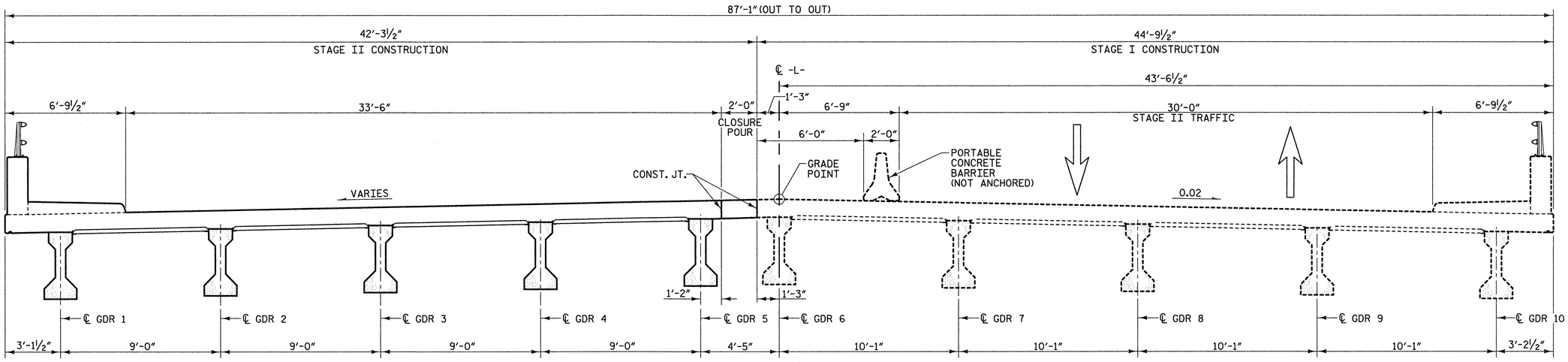


STAGE I CONSTRUCTION



STAGE II CONSTRUCTION

NOTES:

FOR TRAFFIC PHASING, SEE TRAFFIC CONTROL PLANS.

THE PORTABLE CONCRETE BARRIER IS A TRAFFIC CONTROL PAY ITEM.

SEE TRAFFIC CONTROL PLANS FOR LOCATION AND PAY LIMITS OF THE PORTABLE CONCRETE BARRIER.

FOR SUPERELEVATION TRANSITION, SEE ROADWAY PLANS.

PROJECT NO. U-5018A

PITT COUNTY

STATION: 56+12.00 -L-

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19661 L. KEVIN AUSTIN 5/27/10

PLANS PREPARED BY:

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONSTRUCTION STAGING SEQUENCE

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

DRAWN BY : W. B. ALLEN DATE : 1/09
CHECKED BY : R. V. KEITH DATE : 1/09

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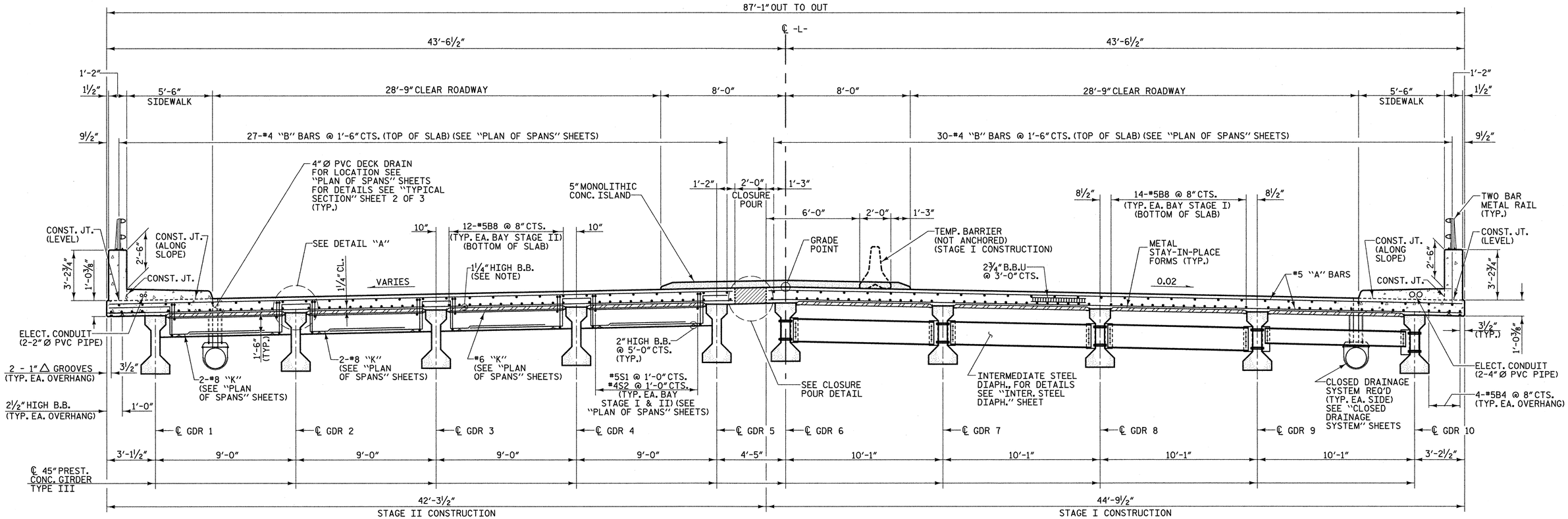
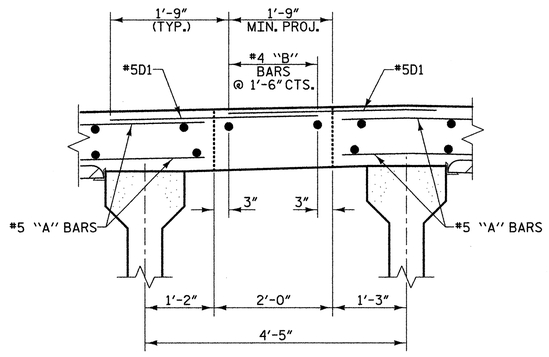
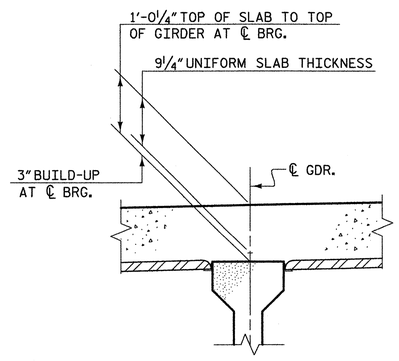


TYPICAL HALF SECTION
(SHOWING END BENT DIAPHRAGMS)

TYPICAL HALF SECTION
(SHOWING INTERMEDIATE STEEL DIAPHRAGMS)



CLOSURE POUR DETAIL



DETAIL "A"

NOTES:

PROVIDE 1¼" HIGH BEAM BOLSTERS UPPER (BBU) 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 FOR METAL DECK (C.H.C.M.) @ 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF "A" BARS A CLEAR DISTANCE OF 2½" ABOVE THE TOP OF THE REMOVABLE FORM.

LONGITUDINAL STEEL MAY BE SHIFTED AS NECESSARY TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS AND DRAIN PIPES IN THE DECK.

PREVIOUSLY CAST CONCRETE IN A CONTINUOUS UNIT SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI BEFORE ADDTIONAL CONCRETE IS CAST IN THE UNIT.

#5G1 BAR MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO CLEAR REINFORCING STEEL AND STIRRUPS.

NORTH CAROLINA PROFESSION SEAL 19661 ENGINEER KEVIN AUSTIN 5/27/10

PLANS PREPARED BY:
MULKEY
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PROJECT NO. U-5018A
PITT COUNTY
STATION: 56+12.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION

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

DRAWN BY : W. B. ALLEN DATE : 11/08
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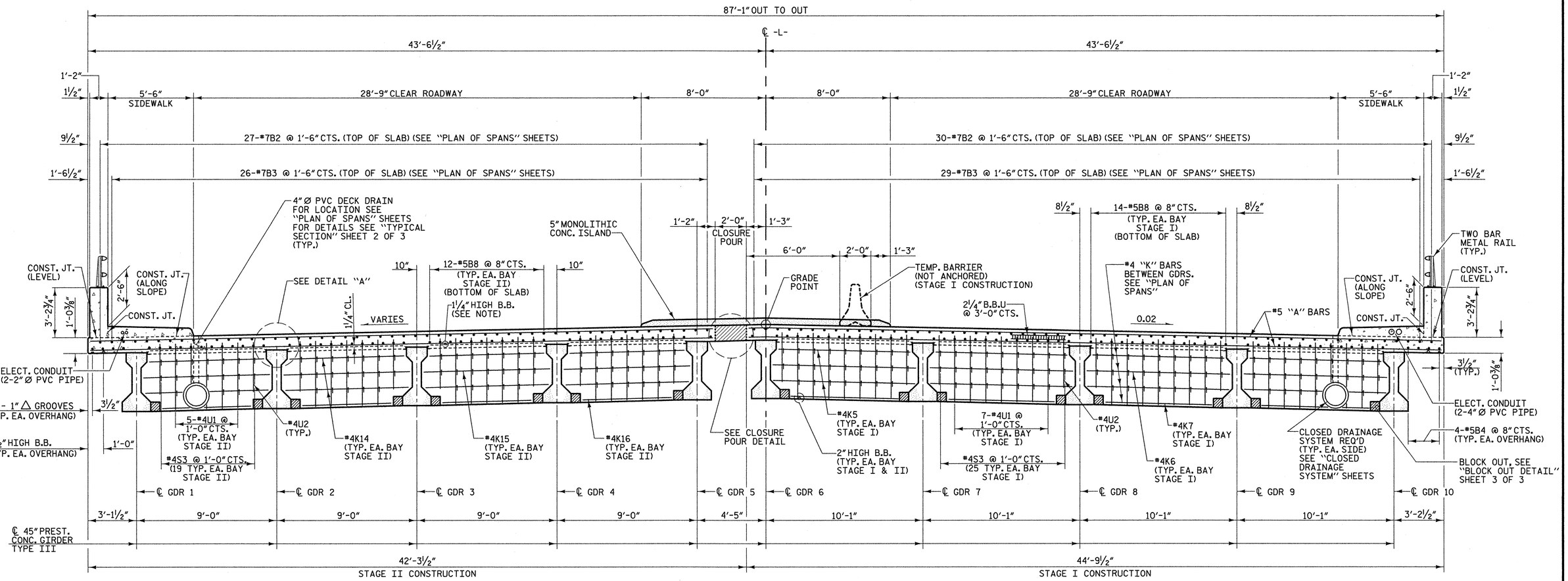
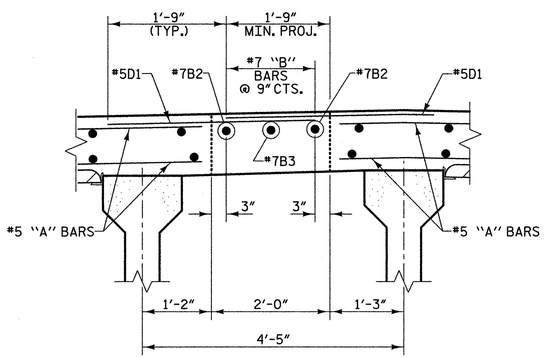
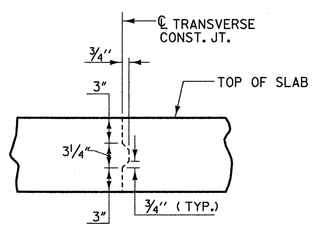


TYPICAL SECTION

(SHOWING CONTINUOUS BENT DIAPHRAGMS)



CLOSURE POUR DETAIL



TRANSVERSE CONSTRUCTION JOINT DETAIL

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

PROJECT NO. U-5018A

PITT COUNTY

STATION: 56+12.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION

NORTH CAROLINA PROFESSIONAL SEAL 1966 ENGINEER L. KEVIN AUSTIN 5/27/10

PLANS PREPARED BY:

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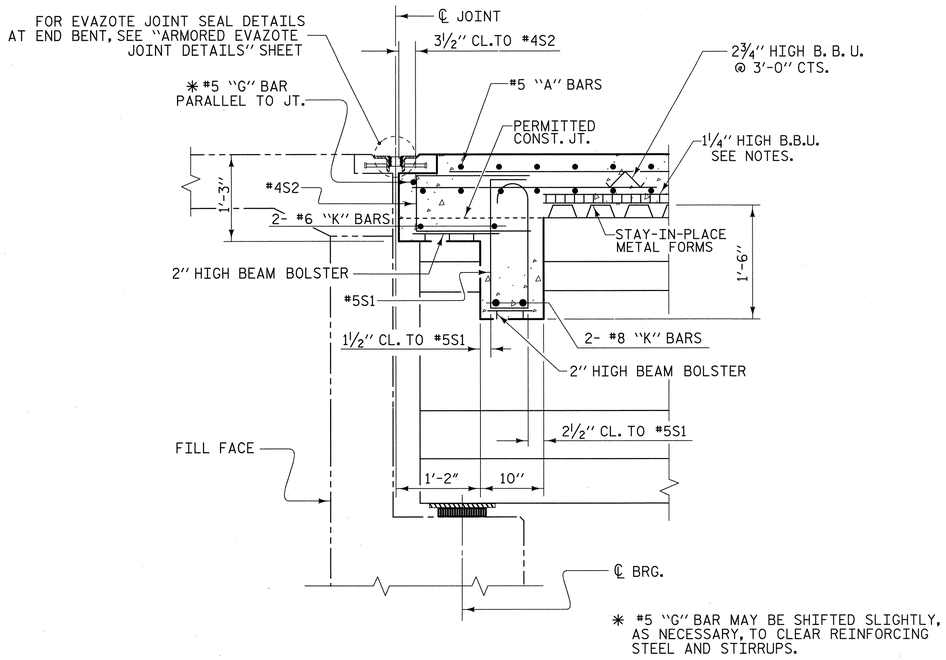
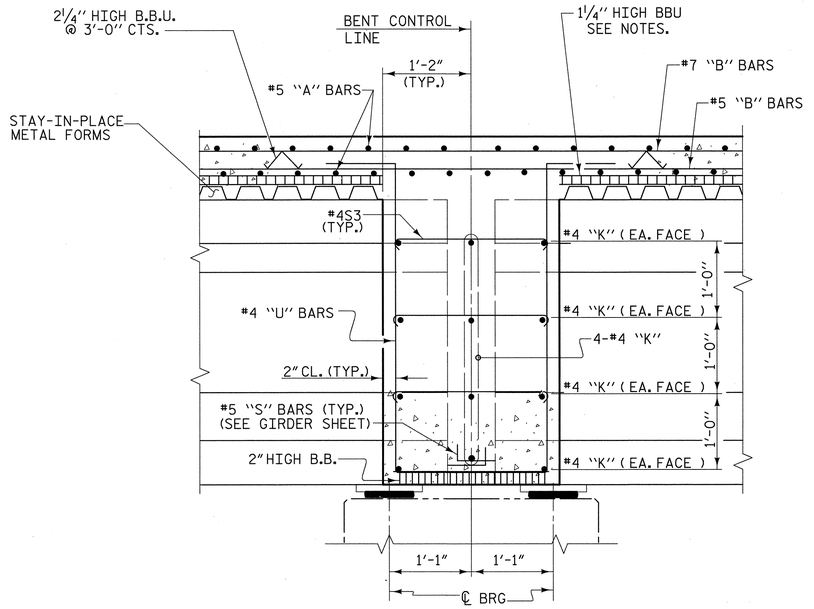


SECTION THRU END BENT DIAPHRAGM



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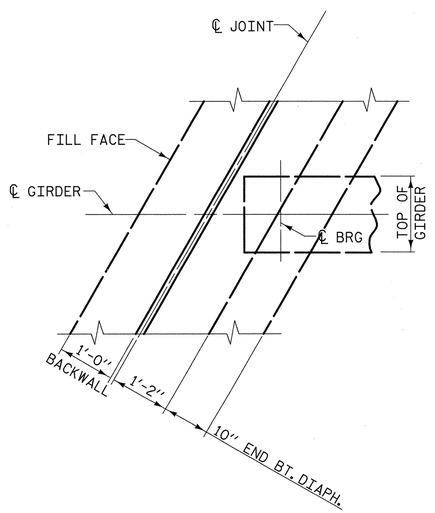
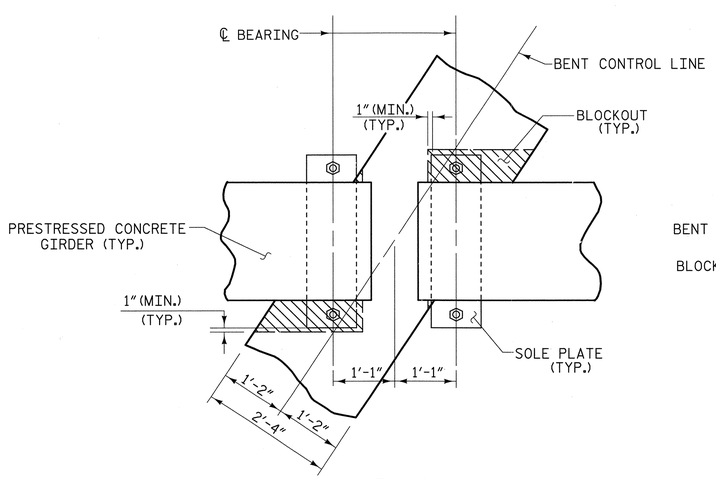
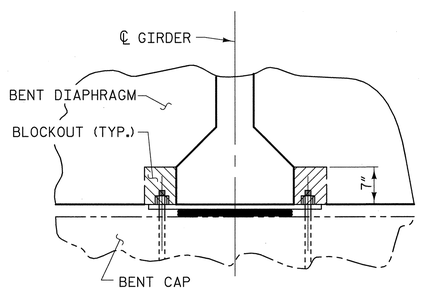


PLAN OF END BENT DIAPHRAGM





BENT DIAPHRAGM BLOCK-OUT DETAIL

PROJECT NO. U-5018A

PITT COUNTY

STATION: 56+12.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 10966 ENGINEER RICKY V. KEITH 10/11/08

PLANS PREPARED BY:

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1			3			TOTAL SHEETS
2			4			

DRAWN BY : W. B. ALLEN DATE : 8/08
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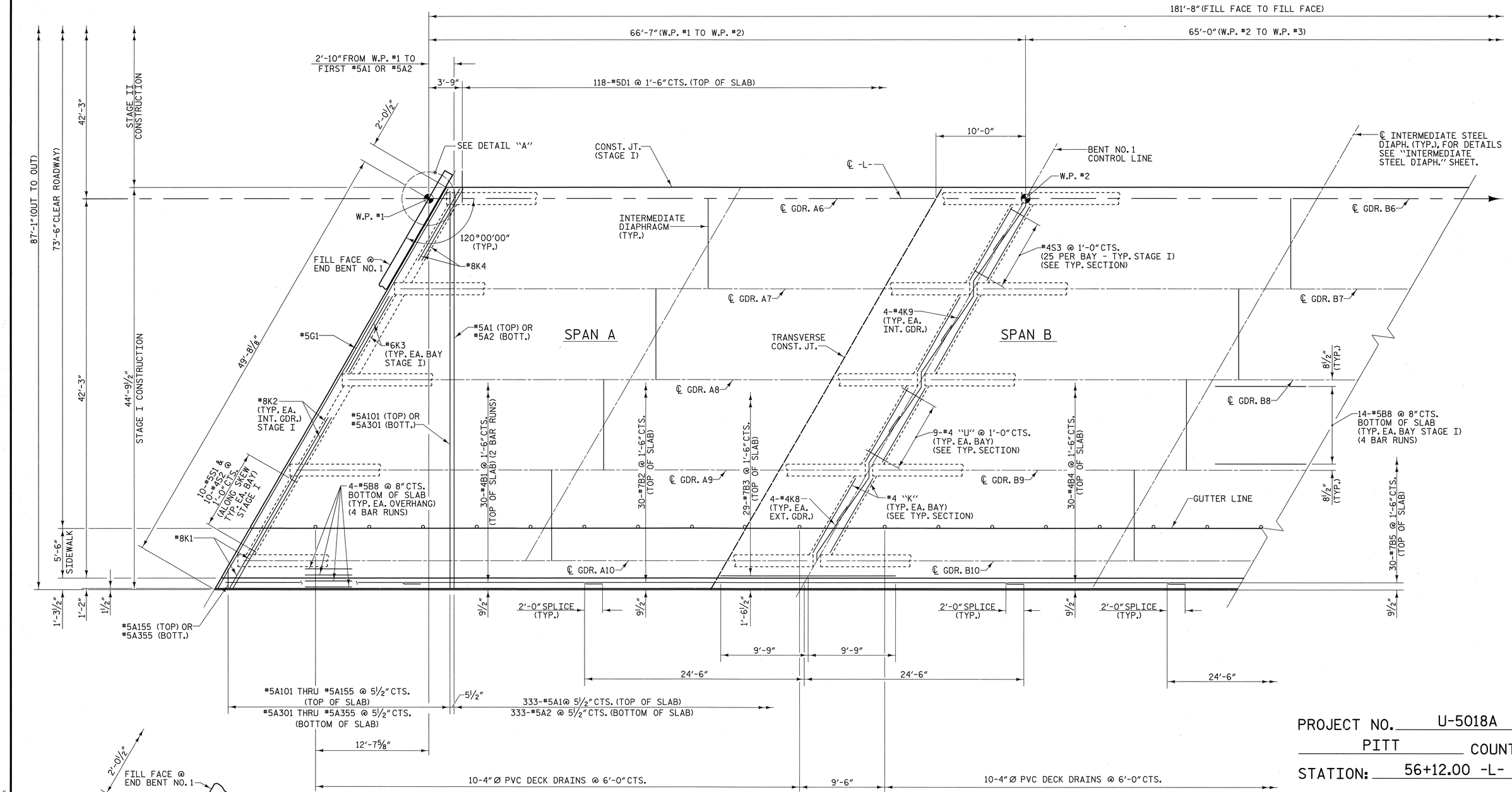

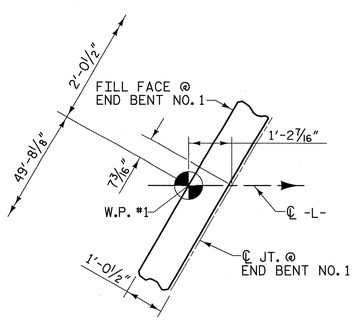

DETAIL "A"

PLAN OF SPANS A & B

STAGE I CONSTRUCTION

PROJECT NO. U-5018A

PITT COUNTY

STATION: 56+12.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPANS A & B

STAGE I

NORTH CAROLINA PROFESSIONAL SEAL 10966 ENGINEER RICKY V. KEITH
6/11/09

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

DRAWN BY : W. B. ALLEN DATE : 12/08
CHECKED BY : R. V. KEITH DATE : 1/09

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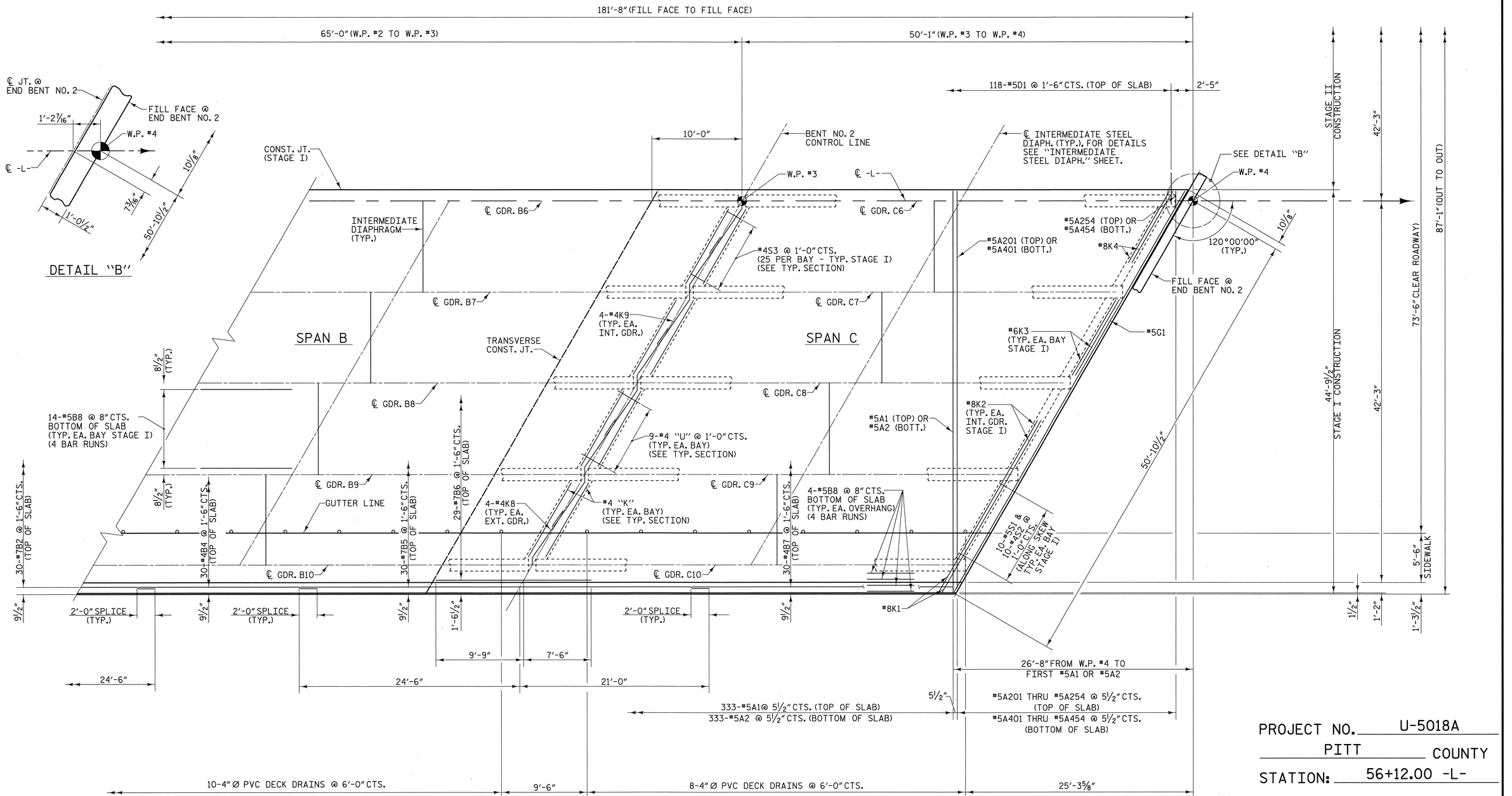

PLAN OF SPANS B & C

STAGE I CONSTRUCTION

PROJECT NO. U-5018A

PITT COUNTY

STATION: 56+12.00 -L-

NORTH CAROLINA PROFESSIONAL SEAL 10966 ENGINEER RICKY V. KEITH

6/11/09

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SUPERSTRUCTURE

PLAN OF SPANS B & C

STAGE I

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

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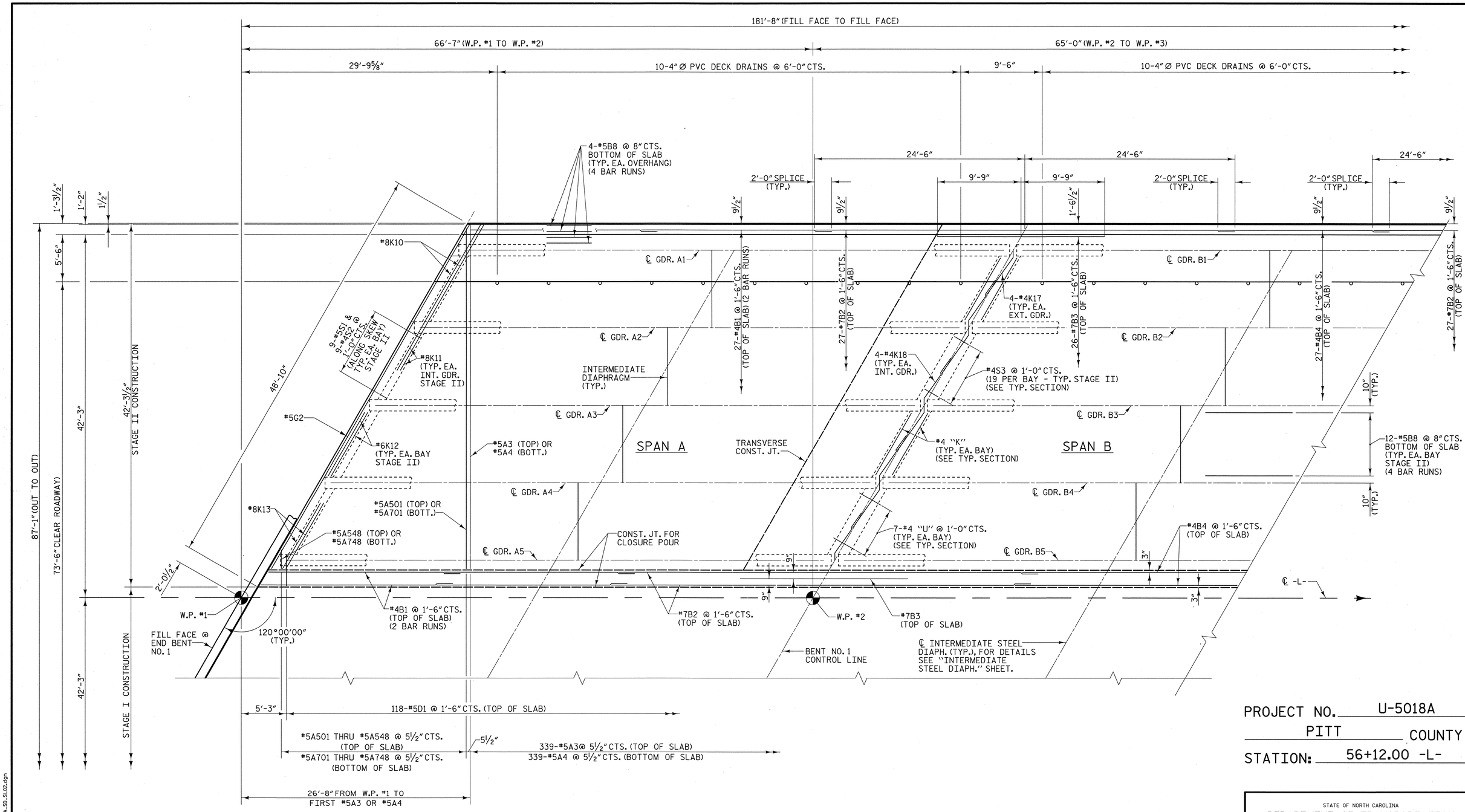

PLAN OF SPANS A & B
STAGE II CONSTRUCTION

PROJECT NO. U-5018A
PITT COUNTY
STATION: 56+12.00 -L-

NORTH CAROLINA PROFESSIONAL SEAL 10966 ENGINEER RICKY V KEITH
6/11/09

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RALEIGH

SUPERSTRUCTURE
PLAN OF SPANS A & B
STAGE II

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

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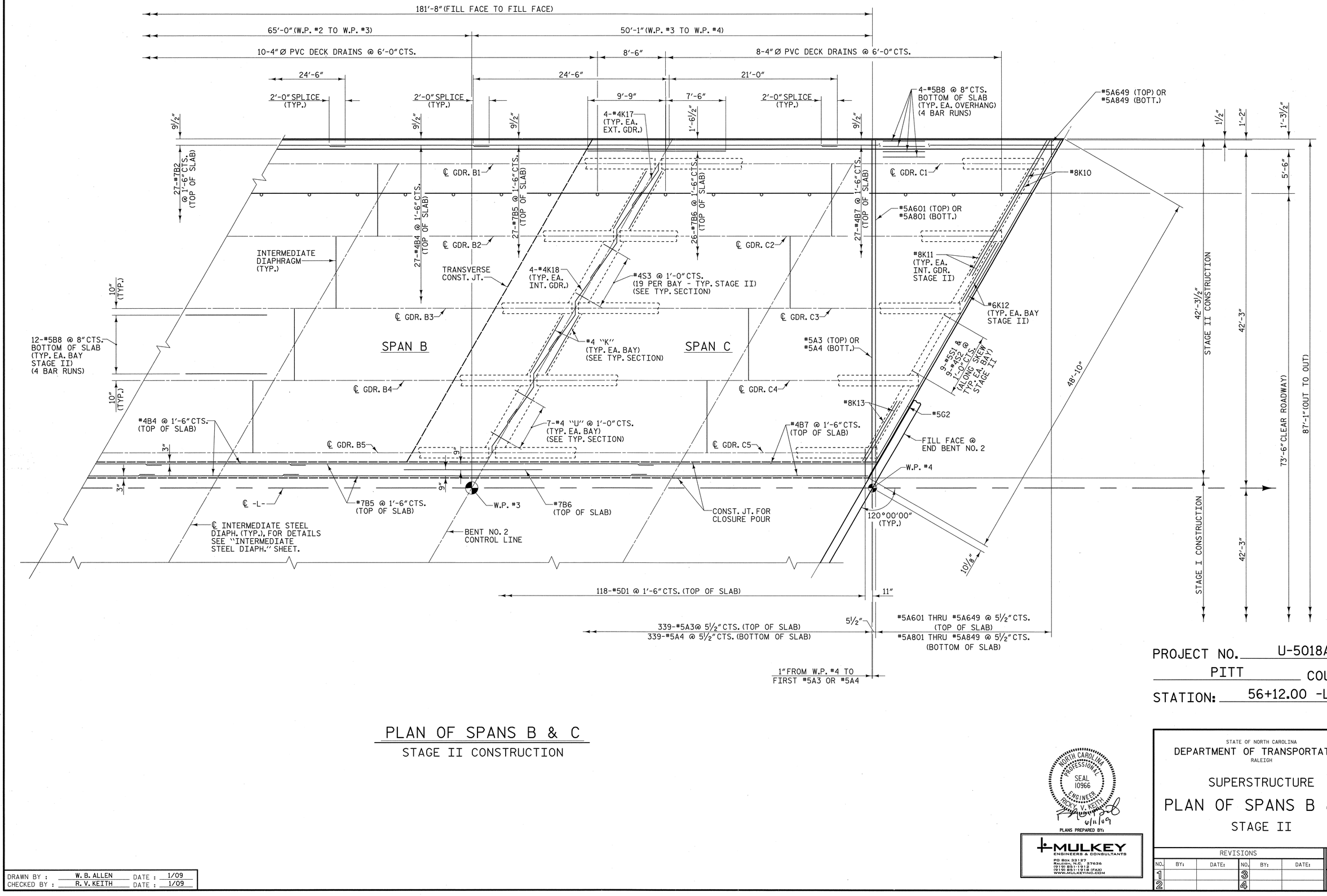

PLAN OF SPANS B & C
STAGE II CONSTRUCTION

PROJECT NO. U-5018A
PITT COUNTY
STATION: 56+12.00 -L-

NORTH CAROLINA PROFESSIONAL SEAL 10966 ENGINEER RICKY V. KEITH
6/11/09

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SUPERSTRUCTURE

PLAN OF SPANS B & C
STAGE II

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

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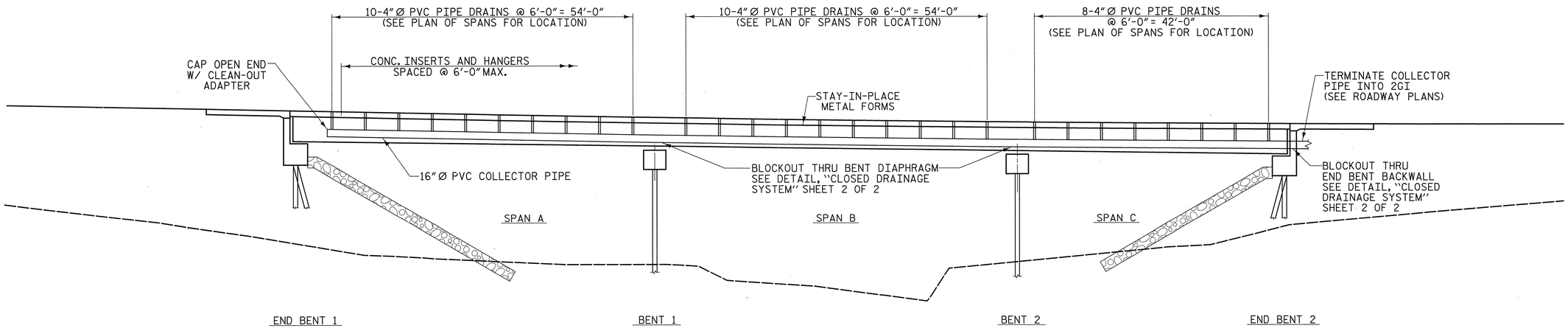
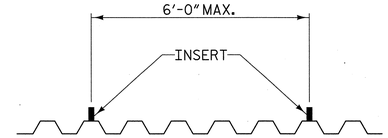


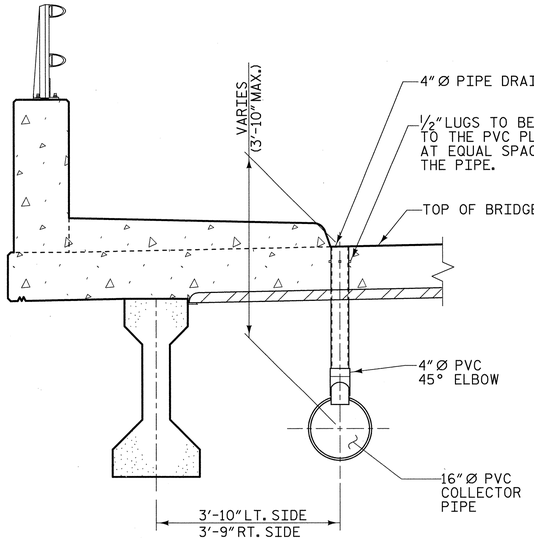
LEFT & RIGHT SIDE

ELEVATION



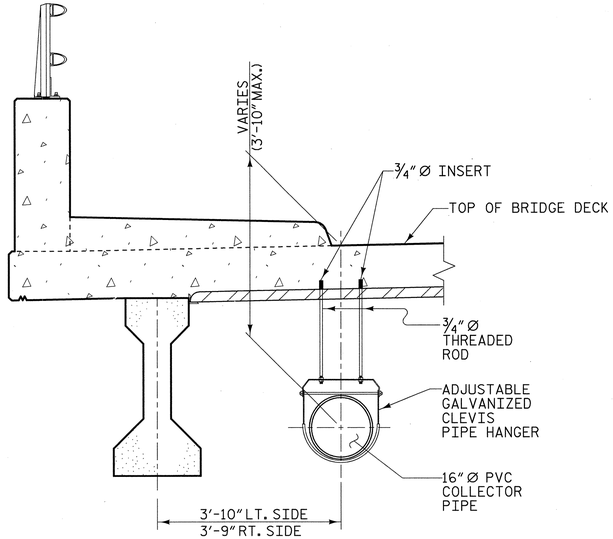
LOCATION OF INSERTS IN STAY-IN-PLACE FORMS

EXACT SPACING MAY VARY SLIGHTLY TO ENSURE
THAT INSERTS ARE LOCATED ON PEAKS OF FORMS



PART SECTION @ PIPE DRAIN

(LOOKING UPSTATION-LEFT SIDE SHOWN, RIGHT SIDE SIMILAR)



PART SECTION SHOWING PIPE HANGER

(LOOKING UPSTATION-LEFT SIDE SHOWN, RIGHT SIDE SIMILAR)

NORTH CAROLINA PROFESSIONAL SEAL 10966 ENGINEER RICKY V. KEITH
6/11/09

PLANS PREPARED BY:

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PROJECT NO. U-5018A

PITT COUNTY

STATION: 56+12.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

CLOSED STRUCTURE DRAINAGE SYSTEM

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

DRAWN BY : W. B. ALLEN DATE : 1/09
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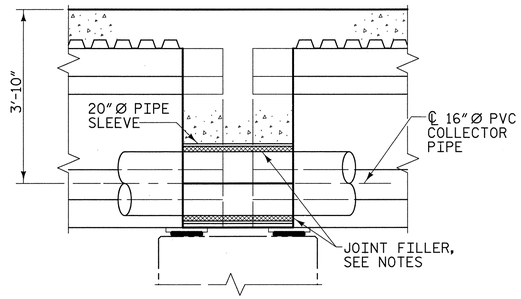
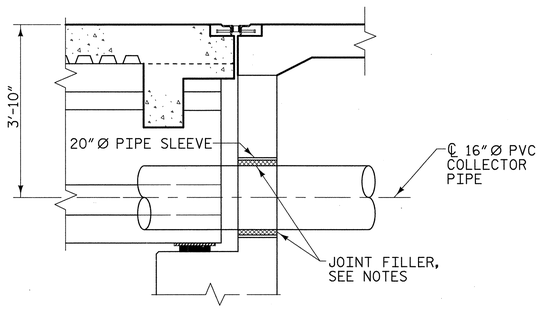
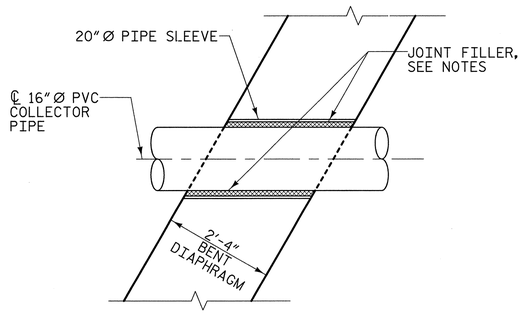


SECTION

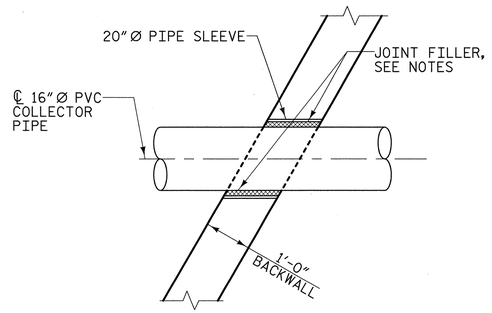


SECTION



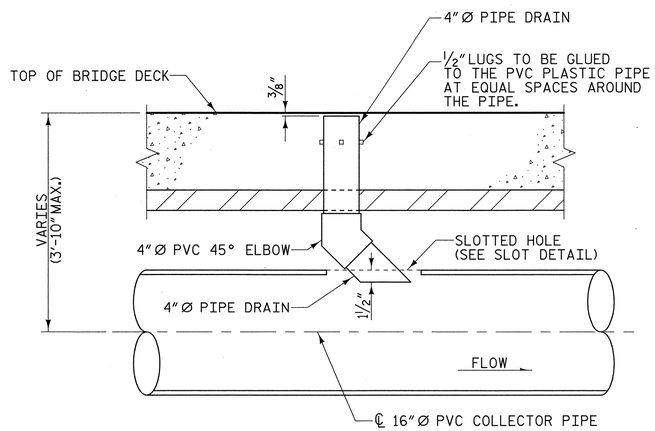
PLAN

PIPE SLEEVE @ BENT DIAPHRAGM

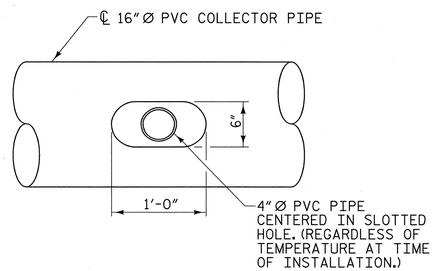


PLAN

PIPE SLEEVE @ END BENT 2



PIPE DRAIN & PVC COLLECTOR PIPE CONNECTION



SLOT DETAIL

NOTES:

THE CONTRACTOR SHALL SUBMIT A PLAN FOR THE DRAINAGE SYSTEM, INCLUDING, BUT NOT LIMITED TO ATTACHMENTS TO THE BRIDGE, PIPE ALIGNMENT AND PIPE LENGTHS, AND ALL NECESSARY FITTINGS, ELBOWS, WYES, ADAPTERS, GUIDES AND JOINTS.

THE DRAINAGE SYSTEM SUPPORT SHALL BE DESIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NORTH CAROLINA AND SUBMITTED FOR APPROVAL PRIOR TO ORDERING MATERIALS.

THE DRAINAGE SYSTEM DETAILS ARE SCHEMATIC DRAWINGS ONLY. THE CONTRACTOR SHALL DETERMINE THE PROPER QUANTITY OF FITTINGS, PIPE LENGTHS, GUIDES AND ATTACHMENTS TO CARRY THE WATER FROM THE DECK DRAINS TO THE OUTLETS.

DRAINAGE SYSTEM WILL BE PAID FOR UNDER THE PAY ITEM "STRUCTURE DRAINAGE SYSTEM - LUMP SUM".

FOR "STRUCTURE DRAINAGE SYSTEM", SEE SPECIAL PROVISIONS.

CLEVIS HANGERS, RODS, INSERTS, PIPE SUPPORT BRACKETS, CLAMPS, GUIDES, BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

DRAINAGE SYSTEM SHALL BE PLACED TO PROVIDE A MINIMUM SLOPE OF -.5% TOWARDS OUTLET.

FITTING JOINTS SHALL BE SOLVENT CEMENT TYPE.

PIPE JOINTS SHALL BE ELASTOMERIC TYPE.

DRAINS, COLLECTOR PIPE AND FITTINGS SHALL BE SCHEDULE 40 PVC AND CONFORM TO ASTM D1785.

THE CONTRACTOR SHALL PROVIDE PVC COUPLINGS CAPABLE OF HANDLING THE ANTICPATED MOVEMENTS. EXPANSION JOINTS IN THE DRAIN PIPES SHALL NOT EXCEED A MAXIMUM SPACING OF 25 FEET.

COLLECTOR PIPE SHALL BE SUPPORTED FROM THE CONCRETE DECK SLAB. NO ATTACHMENT TO THE PRESTRESSED GIRDERS IS ALLOWED.

SEE "PLAN OF SPANS" SHEETS FOR LOCATION OF 4"Ø DECK DRAINS.

TOP OF FLOOR DRAIN TO BE SET 3/8" BELOW SURFACE OF SLAB.

ONE WYE WITH CLEANOUT SHALL BE LOCATED AT APPROXIMATELY MID-SPAN IN SPAN B FOR BOTH LEFT AND RIGHT SIDES OF STRUCTURE. LOCATE WYES TO AVOID INTERFERENCE WITH HANGERS AND DRAINS.

CENTER PIPES FOR STRUCTURE DRAINAGE SYSTEM IN BLOCKOUT AND FILL ANNULAR SPACE AROUND PIPE WITH JOINT FILLER IN ACCORDANCE WITH STANDARD SPECIFICATION ARTICLE 1028-1.

PVC PIPES FOR DECK DRAINS AND DRAINAGE SYSTEM SHALL BE PAINTED WITH TWO COATS OF GRAY PRIMER MEETING THE REQUIREMENTS OF ARTICLE 1080-12 OF THE STANDARD SPECIFICATIONS. EACH COAT SHALL BE 2 DRY MILS THICK. PIPES SHALL BE ROUGHENED PRIOR TO PAINTING. NO SEPARATE PAYMENT SHALL BE MADE FOR PAINTING PVC PIPES AS THIS IS CONSIDERED INCIDENTAL TO THE PAY ITEM FOR STRUCTURAL DRAINAGE SYSTEM.

PROJECT NO. U-5018A

PITT COUNTY

STATION: 56+12.00 -L-

SHEET 2 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 10966 ENGINEER RICKY V. KEITH 6/11/09

PLANS PREPARED BY:

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

CLOSED STRUCTURE DRAINAGE SYSTEM

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

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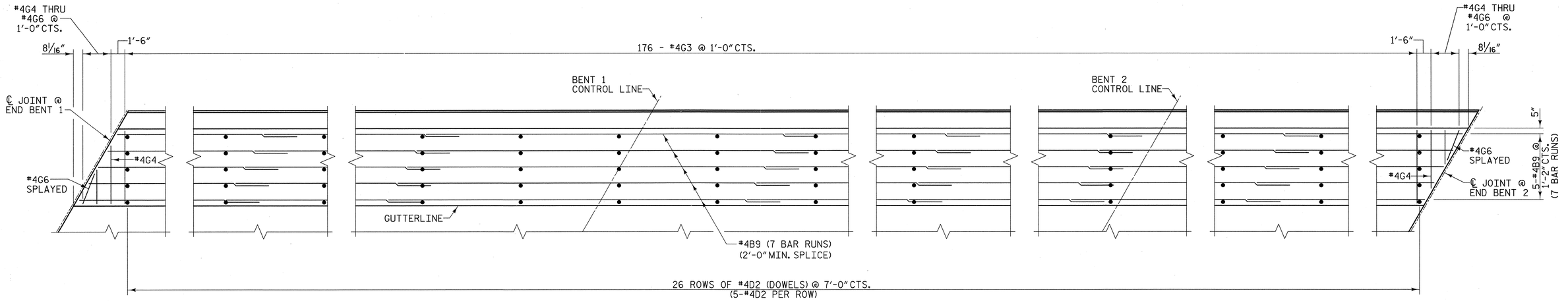
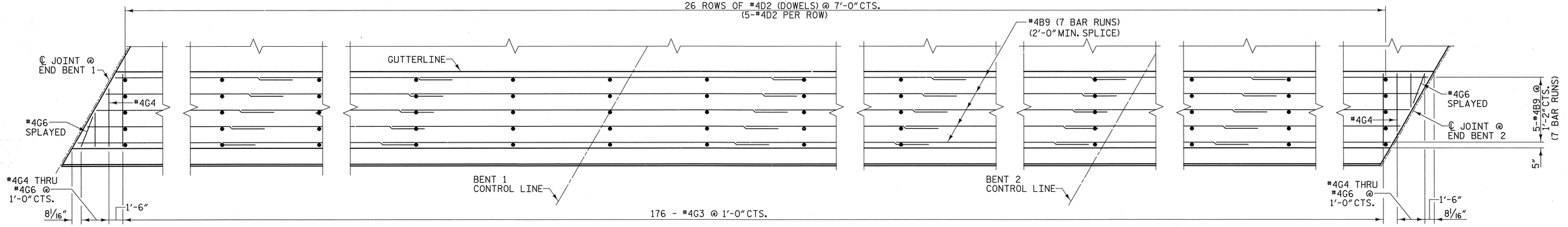
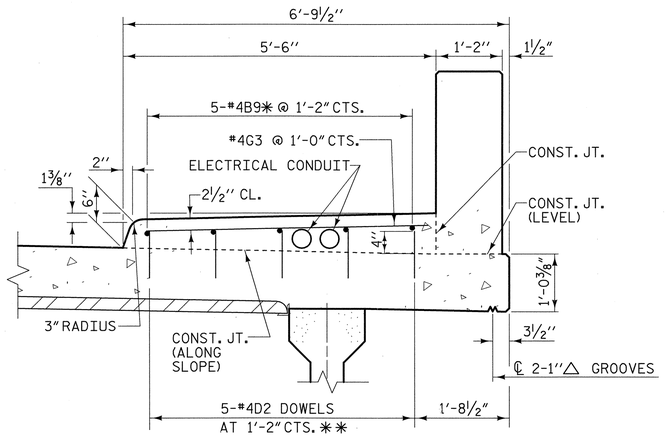


STAGE II



STAGE I



SECTION THRU SIDEWALK

✱✱ DOWELS MAY BE PUSHED INTO GREEN CONCRETE AFTER SPAN HAS BEEN SCREEDED OFF.

BILL OF MATERIAL

STAGE I						STAGE II					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✱B9	35	#4	STR	27'-4"	639	✱B9	35	#4	STR	27'-4"	639
✱D2	130	#4	STR	0'-10"	72	✱D2	130	#4	STR	0'-10"	72
✱G3	176	#4	STR	5'-2"	607	✱G3	176	#4	STR	5'-2"	607
✱G4	2	#4	STR	4'-1"	5	✱G4	2	#4	STR	4'-1"	5
✱G5	2	#4	STR	2'-4"	3	✱G5	2	#4	STR	2'-4"	3
✱G6	2	#4	STR	2'-3"	3	✱G6	2	#4	STR	2'-3"	3
✱EPOXY COATED REINF. STEEL					1329 LBS.	✱EPOXY COATED REINF. STEEL					1329 LBS.
CLASS AA CONCRETE					22.3 CU. YDS.	CLASS AA CONCRETE					22.3 CU. YDS.

✱ INDICTATES EPOXY COATED REINF. STEEL

NOTES:

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

ALL REINFORCING STEEL IN THE SIDEWALK SHALL BE EPOXY COATED.

NO SEPARATE PAYMENT SHALL BE MADE FOR MATERIALS, LABOR AND INCIDENTALS REQUIRED FOR THIS CONSTRUCTION OF CONCRETE SIDEWALK AND CONCRETE MEDIAN AS DETAILED ON BRIDGE SPANS AND APPROACH SLABS. ALL COSTS FOR THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR REINFORCED CONCRETE DECK SLAB.

PROVIDE 2 - 4" Ø PVC PIPES IN THE SIDEWALK ON THE RIGHT SIDE (STAGE I) AND 2 - 2" Ø PVC PIPES IN THE SIDEWALK ON THE LEFT SIDE (STAGE II) TO SERVE AS ELECTRICAL CONDUIT. TERMINATE BEYOND THE BEGIN AND END OF THE APPROACH SLABS. THE PVC PIPES AND FITTINGS SHALL BE SCHEDULE 40 PVC.

GROOVED CONTRACTION JOINTS 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF SIDEWALK IN ACCORDANCE WITH ARTICLE 925-10(B) OF THE STANDARD SPECIFICATIONS, THE CONTRACTION JOINTS SHALL BE LOCATED AT A SPACING OF 8 FEET TO 10 FEET BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINTS WILL BE REQUIRED FOR SEGMENTS LESS THAN 10 FEET IN LENGTH.

PROJECT NO. U-5018A

PITT COUNTY

STATION: 56+12.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

SIDEWALK PLAN AND DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 10966 ENGINEER RICKY V. KEITH 6/11/09

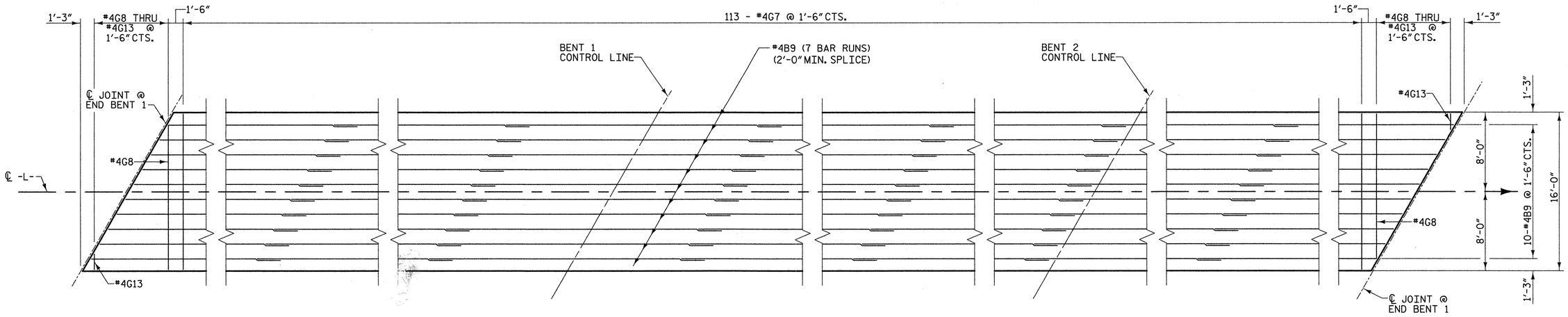
PLANS PREPARED BY:

MULKEY ENGINEERS & CONSULTANTS
PO Box 33127
RALEIGH, N.C. 27636
(919) 851-1912
(919) 851-1918 (FAX)
WWW.MULKEYINC.COM

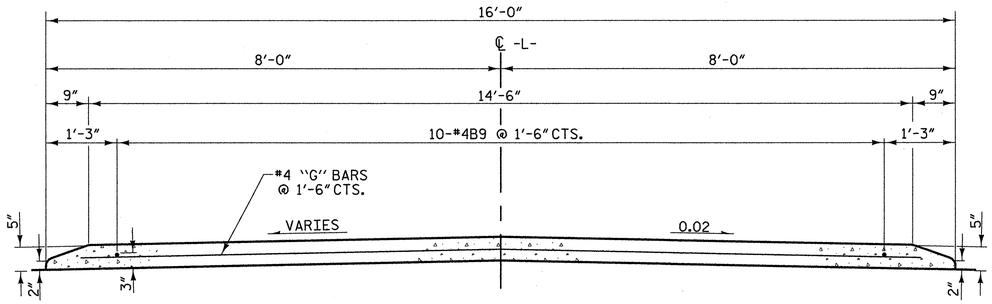
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			

DRAWN BY : W. B. ALLEN DATE : 1/09
CHECKED BY : R. V. KEITH DATE : 1/09

6/11/2009 10:20:21 AM R:\Structures\U5018A_SD_SW_04.dgn



PLAN OF MONOLITHIC CONCRETE ISLAND



SECTION THRU MONOLITHIC CONCRETE ISLAND

BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳B9	70	#4	STR	27'-4"	1278
✳G7	113	#4	STR	14'-8"	1107
✳G8	2	#4	STR	14'-1"	19
✳G9	2	#4	STR	11'-6"	15
✳G10	2	#4	STR	8'-10"	12
✳G11	2	#4	STR	6'-3"	8
✳G12	2	#4	STR	3'-8"	5
✳G13	2	#4	STR	1'-1"	1
✳EPOXY COATED REINF. STEEL					2445 LBS.
CLASS AA CONCRETE					43.0 CU. YDS.

✳INDICATES EPOXY COATED REINF. STEEL

NOTES

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

PAYMENT FOR THE MONOLITHIC CONCRETE ISLAND SHALL BE INCLUDED IN UNIT PRICE FOR "REINFORCED CONCRETE DECK SLAB"

ALL REINFORCING STEEL IN THE MONOLITHIC CONCRETE ISLAND SHALL BE EPOXY COATED.

FOR SUPERELEVATION TRANSITION, SEE ROADWAY PLANS.

PROJECT NO. U-5018A

PITT COUNTY

STATION: 56+12.00 -L-

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 1966 KEVIN AUSTIN 5/27/10

PLANS PREPARED BY:

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

MONOLITHIC CONCRETE ISLAND PLAN AND DETAILS

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

DRAWN BY : W. B. ALLEN DATE : 1/09
CHECKED BY : R. V. KEITH DATE : 1/09

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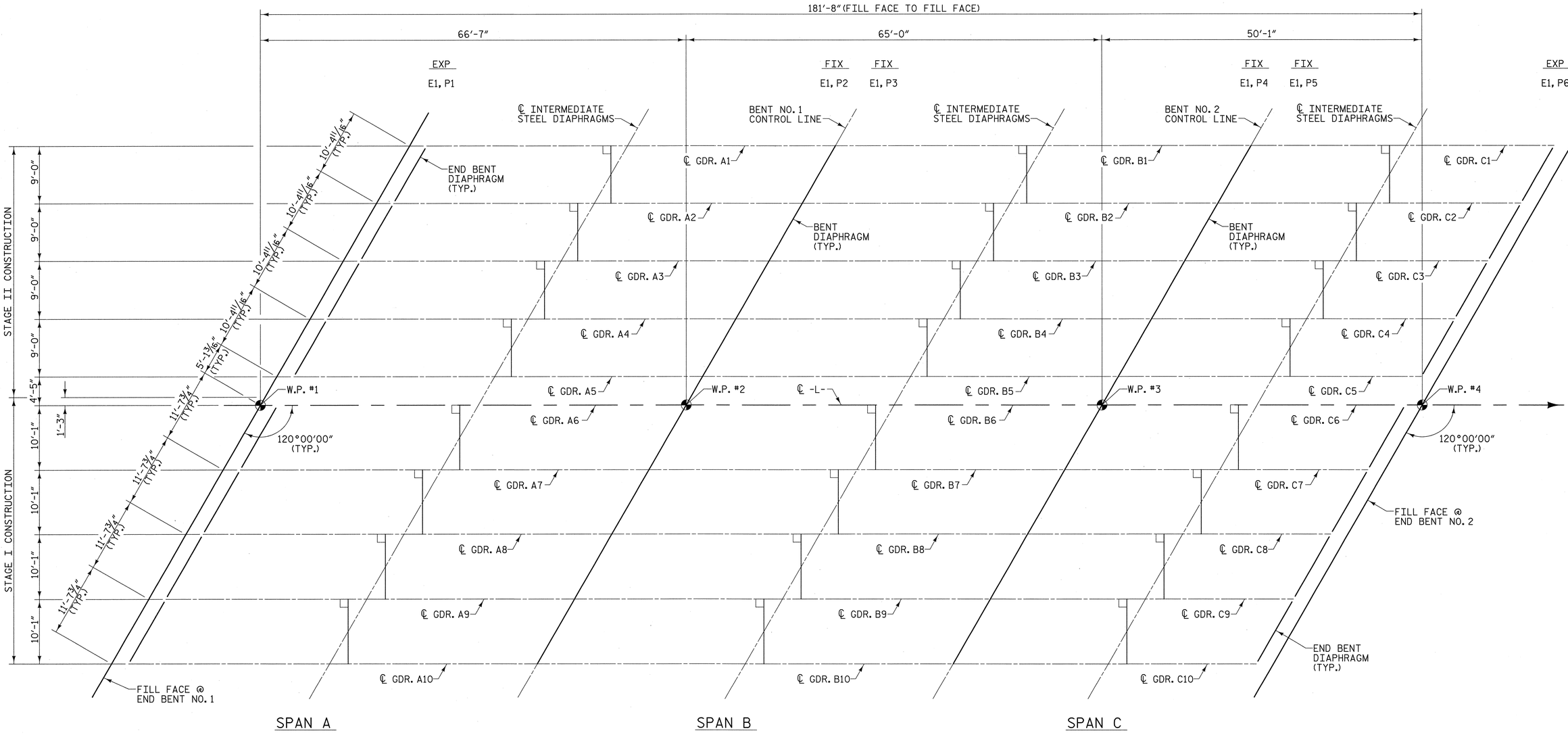

FRAMING PLAN

PROJECT NO. U-5018A

PITT COUNTY

STATION: 56+12.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

FRAMING PLAN

NORTH CAROLINA PROFESSIONAL SEAL 10966 ENGINEER RICKY V. KEITH
6/4/09

PLANS PREPARED BY:

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

DRAWN BY : W. B. ALLEN DATE : 1/09
CHECKED BY : R. V. KEITH DATE : 1/09

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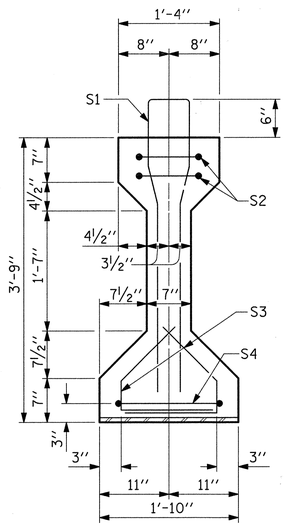
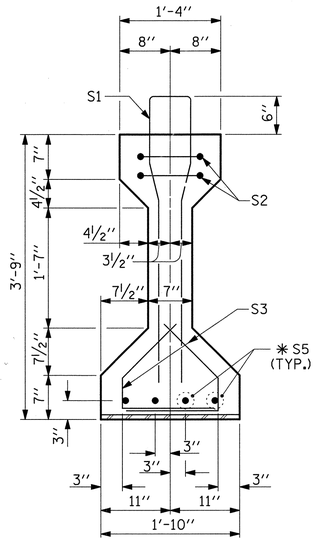
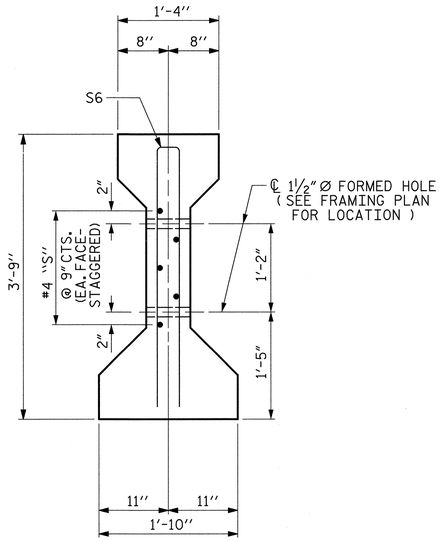


SECTION A-A

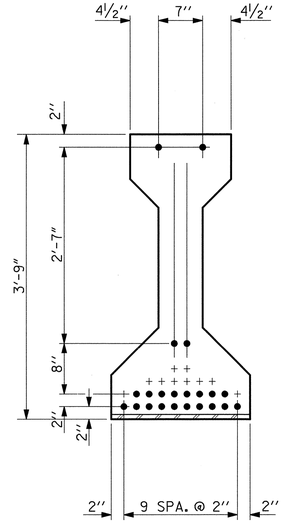


SECTION B-B

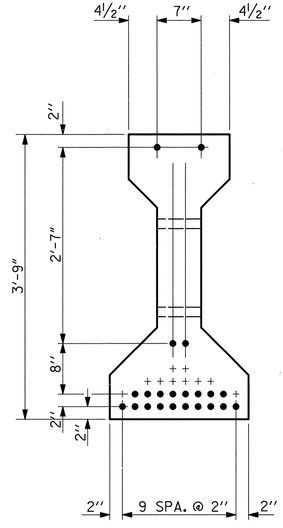


SECTION C-C

(S1 BARS NOT SHOWN)

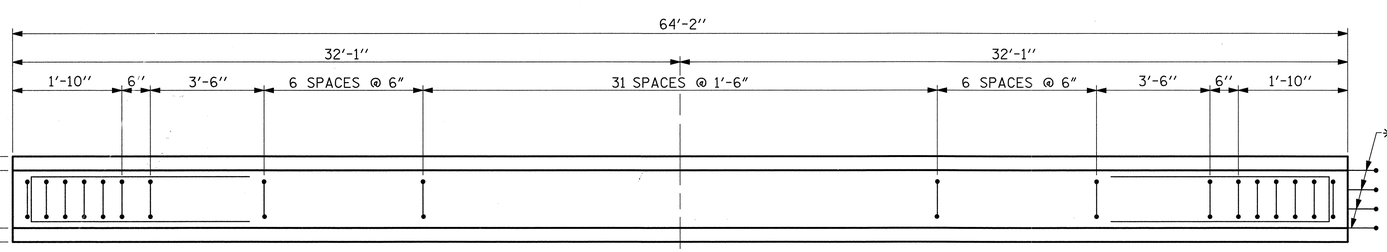


AT END OF GIRDER

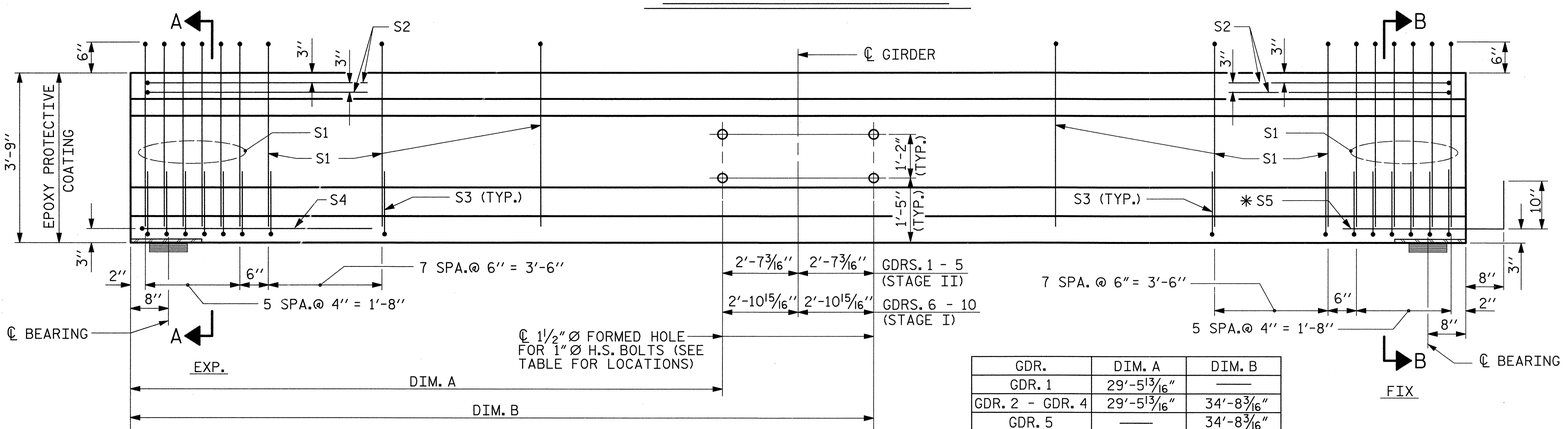


AT ℄ OF GIRDER

½" Ø LOW RELAXATION STRAND LAYOUT



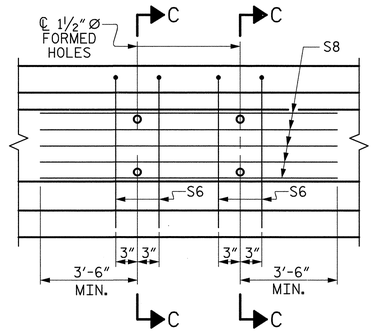
PLAN OF GIRDER



GDR.	DIM. A	DIM. B
GDR. 1	29'-5 13/16"	——
GDR. 2 - GDR. 4	29'-5 13/16"	34'-8 3/16"
GDR. 5	——	34'-8 3/16"
GDR. 6	29'-2"	——
GDR. 7 - GDR. 9	29'-2"	35'-0"
GDR. 10	——	35'-0"

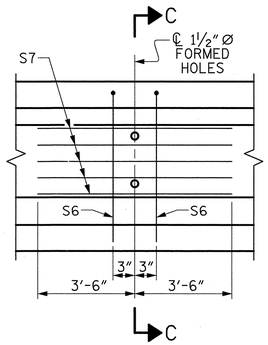
ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM
REINFORCING STEEL FOR GIRDER Nos. 2 -4, 7 - 9



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM
REINFORCING STEEL FOR GIRDER Nos. 1, 5, 6, & 10

GIRDERS 1, 5, 6 & 10	
GIRDERS 2 - 4, 7 - 9	
GIRDERS 1, 5, 6 & 10	
GIRDERS 2 - 4, 7 - 9	

½" Ø L. R. GRADE 270 STRANDS

AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.153	41,300	30,980

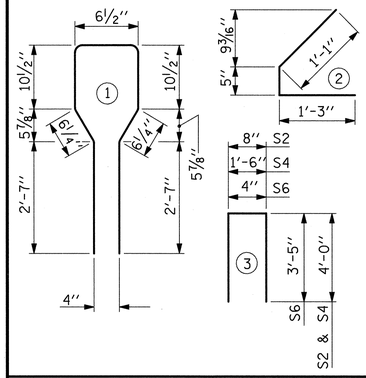
REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	70	#6	1	8'-6"	894
S2	4	#4	3	8'-8"	23
S3	56	#4	2	2'-9"	103
S4	1	#4	3	9'-6"	6
✱S5	4	#5	STR	3'-8"	15
S6	2	#5	3	7'-2"	15
S6	4	#5	3	7'-2"	30
S7	5	#4	STR	7'-0"	23
S8	5	#4	STR	12'-10"	43

✱NOTE: S5 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	8000 PSI CONCRETE	½" Ø L.R. STRANDS
	LB.	C.Y.	No.
GIRDERS 1, 5, 6 & 10	1079	9.2	22
GIRDERS 2 - 4, 7 - 9	1114	9.2	22

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
10	64'-2"	641.67'

PROJECT NO. U-5018A

PITT COUNTY

STATION: 56+12.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
AASHTO TYPE III PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD SPAN A

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

STD. NO. PCG5

ASSEMBLED BY : W. B. ALLEN	DATE : 11/08
CHECKED BY : R. V. KEITH	DATE : 1/09
DRAWN BY : ELR 8/91	REV. 7/17/98 RWW/LES
CHECKED BY : GRP 8/91	REV. 10/17/00R RWW/LES
	REV. 5/1/06 TLA/GM

PLANS PREPARED BY:

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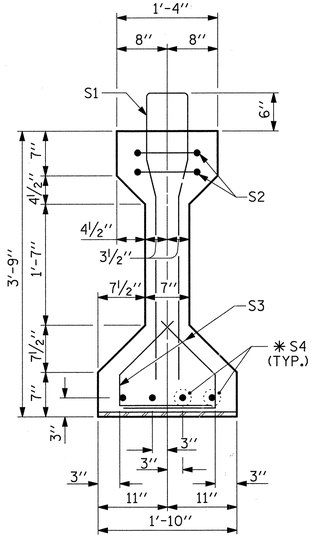
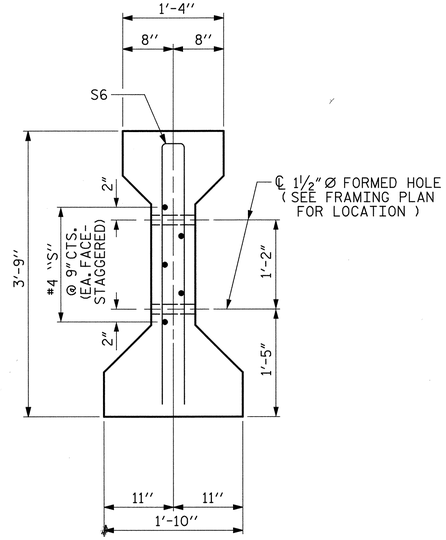
NORTH CAROLINA PROFESSIONAL SEAL 10966 ENGINEER RICKY R. KEITH 6/11/09

6/23/2009 6:46:41 AM R:\Structures\U5018A_SD_GL_01.dgn

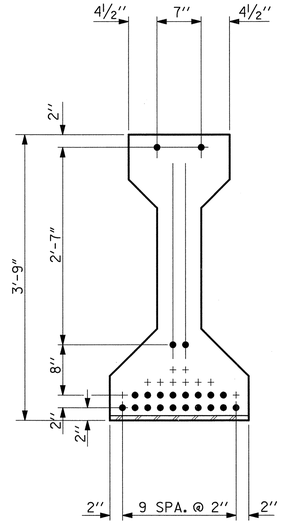


SECTION A-A

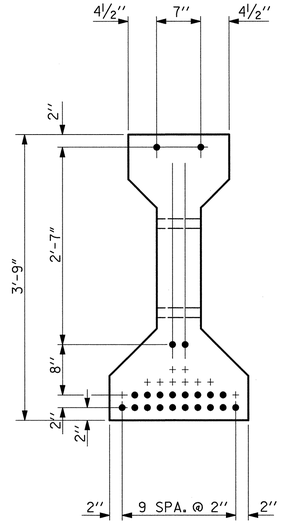


SECTION B-B

(S1 BARS NOT SHOWN)

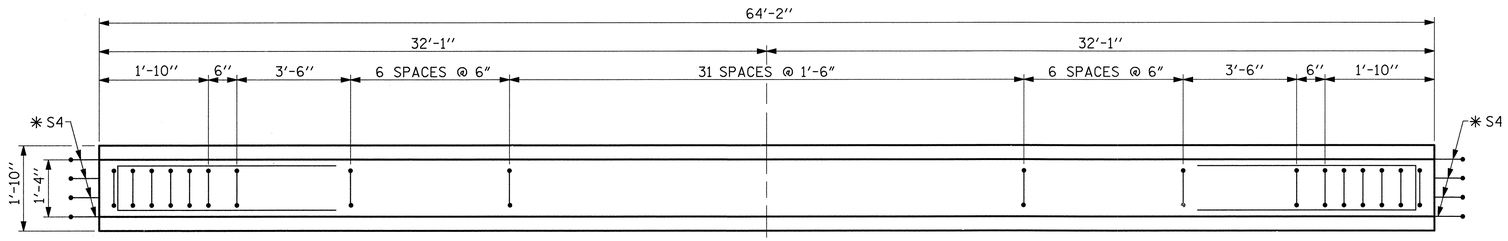


AT END OF GIRDER

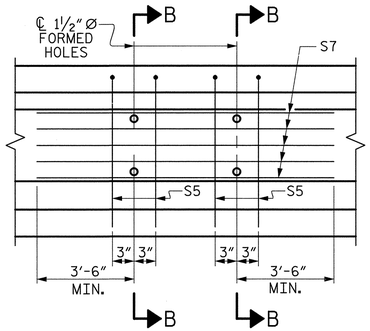


AT ℄ OF GIRDER

½" Ø LOW RELAXATION STRAND LAYOUT

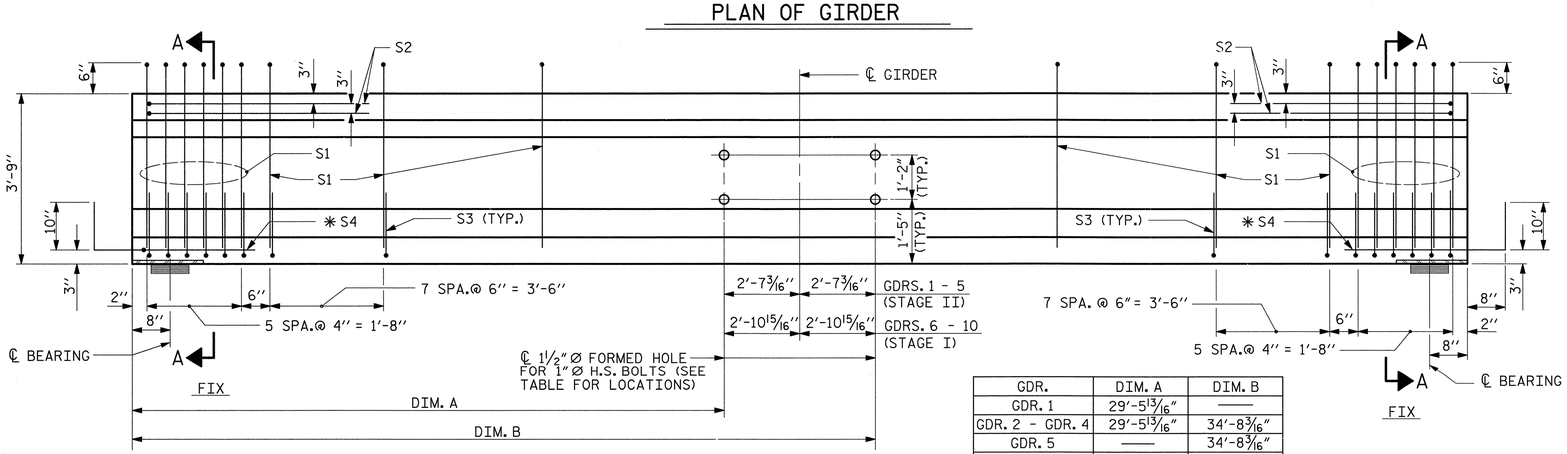


PLAN OF GIRDER



PARTIAL ELEVATION

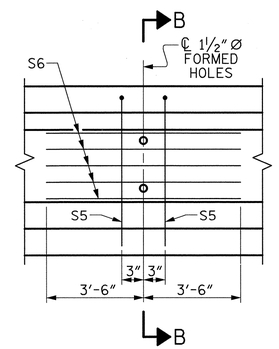
SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. 2 -4, 7 - 9



GDR.	DIM. A	DIM. B
GDR. 1	29'-5 13/16"	——
GDR. 2 - GDR. 4	29'-5 13/16"	34'-8 3/16"
GDR. 5	——	34'-8 3/16"
GDR. 6	29'-2"	——
GDR. 7 - GDR. 9	29'-2"	35'-0"
GDR. 10	——	35'-0"

ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. 1, 5, 6, & 10

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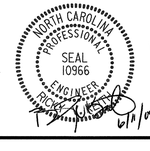

ASSEMBLED BY : W. B. ALLEN	DATE : 11/08
CHECKED BY : R. V. KEITH	DATE : 1/09
DRAWN BY : ELR 8/91	REV. 7/17/98 RWW/LES
CHECKED BY : GRP 8/91	REV. 10/17/00R RWW/LES
	REV. 5/1/06 TLA/GM

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½" Ø L. R. GRADE 270 STRANDS

AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.153	41,300	30,980

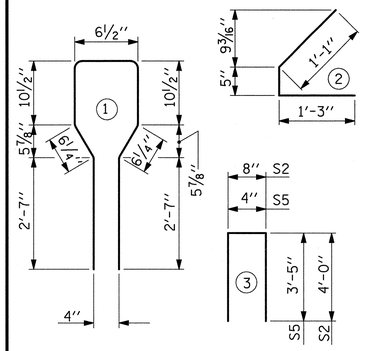
REINFORCING STEEL FOR ONE GIRDER

	BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
	S1	70	#6	1	8'-6"	894
	S2	4	#4	3	8'-8"	23
	S3	56	#4	2	2'-9"	103
	✱S4	8	#5	STR	3'-8"	31
GIRDERS 1, 5, 6 & 10	S5	2	#5	3	7'-2"	15
GIRDERS 2 - 4, 7 - 9	S5	4	#5	3	7'-2"	30
GIRDERS 1, 5, 6 & 10	S6	5	#4	STR	7'-0"	23
GIRDERS 2 - 4, 7 - 9	S7	5	#4	STR	12'-10"	43

✱NOTE: S4 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.	8000 PSI CONCRETE C.Y.	½" Ø L.R. STRANDS No.
GIRDERS 1, 5, 6 & 10	1089	9.2	22
GIRDERS 2 - 4, 7 - 9	1124	9.2	22

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
10	64'-2"	641.67'

PROJECT NO. U-5018A

PITT COUNTY

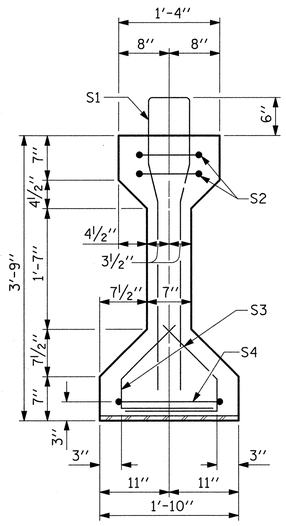
STATION: 56+12.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

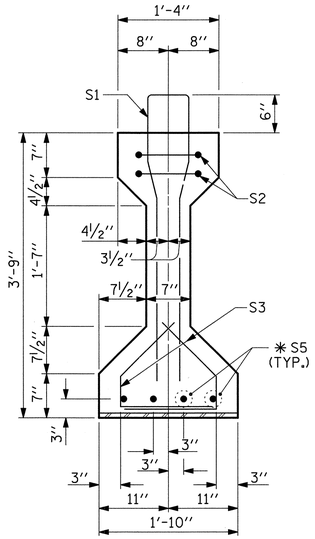
STANDARD
AASHTO TYPE III PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD SPAN B

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

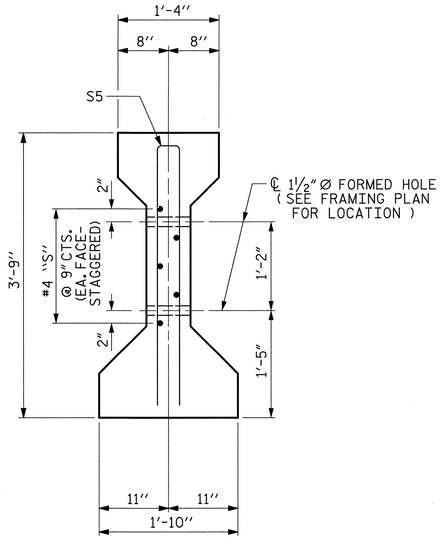
STD. NO. PCG5



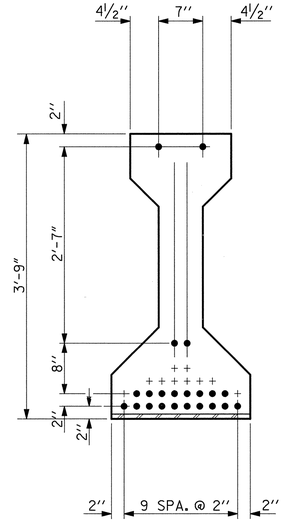
SECTION A-A



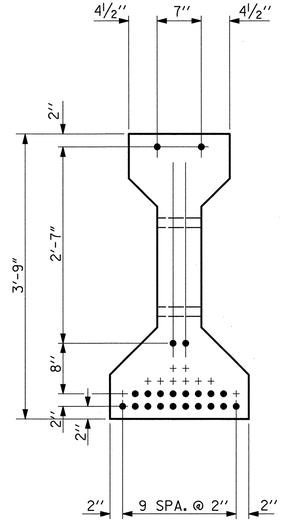
SECTION B-B



SECTION C-C
(S1 BARS NOT SHOWN)

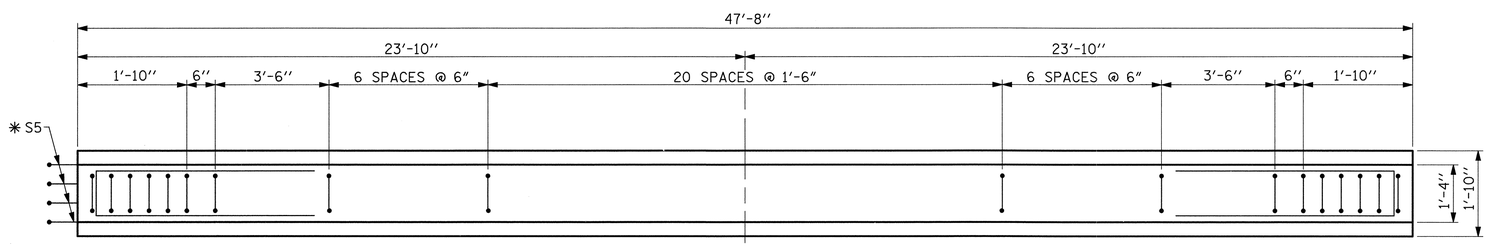


AT END OF GIRDER

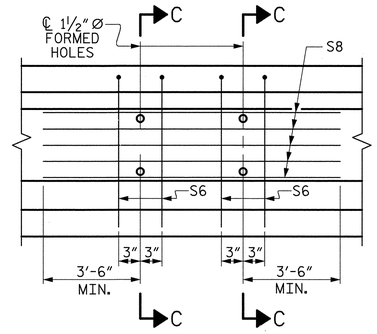


AT ℄ OF GIRDER

½" Ø LOW RELAXATION STRAND LAYOUT

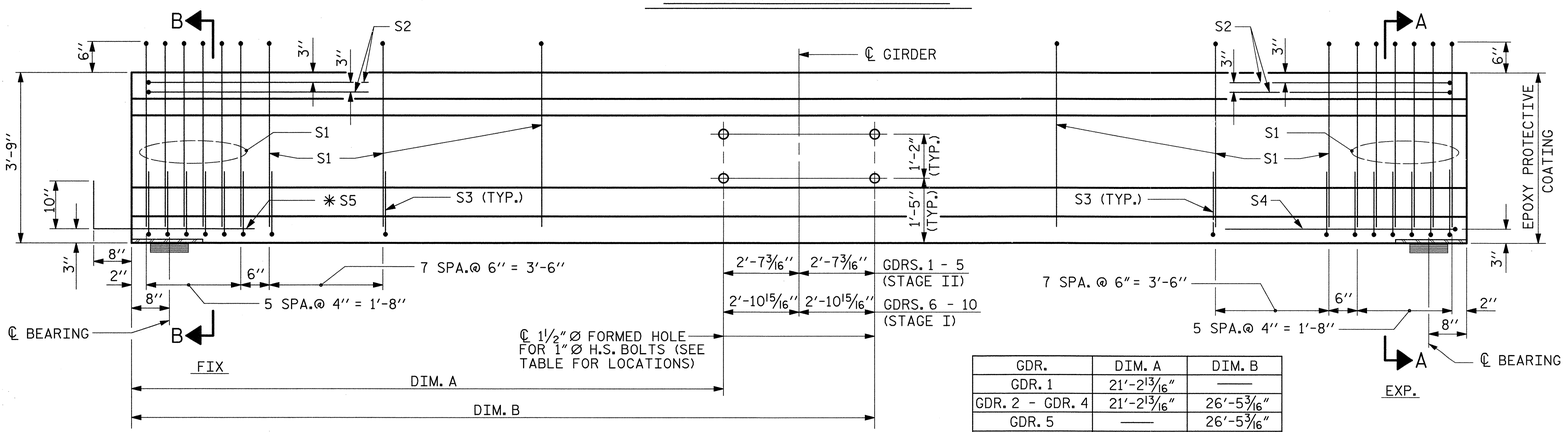


PLAN OF GIRDER



PARTIAL ELEVATION

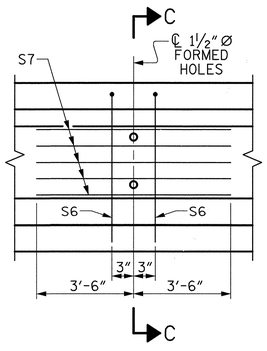
SHOWING INTERMEDIATE DIAPHRAGM
REINFORCING STEEL FOR GIRDER Nos. 2 -4, 7 - 9



GDR.	DIM. A	DIM. B
GDR. 1	21'-2 13/16"	——
GDR. 2 - GDR. 4	21'-2 13/16"	26'-5 3/16"
GDR. 5	——	26'-5 3/16"
GDR. 6	20'-11 1/16"	——
GDR. 7 - GDR. 9	20'-11 1/16"	26'-8 15/16"
GDR. 10	——	26'-8 15/16"

ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM
REINFORCING STEEL FOR GIRDER Nos. 1, 5, 6, & 10

½" Ø L. R. GRADE 270 STRANDS

AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.153	41,300	30,980

REINFORCING STEEL FOR ONE GIRDER

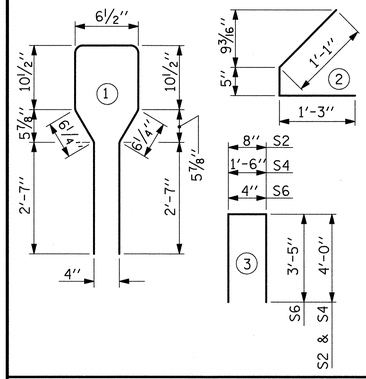
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	59	#6	1	8'-6"	753
S2	4	#4	3	8'-8"	23
S3	56	#4	2	2'-9"	103
S4	1	#4	3	9'-6"	6
✱S5	4	#5	STR	3'-8"	15
S6	2	#5	3	7'-2"	15
S6	4	#5	3	7'-2"	30
S7	5	#4	STR	7'-0"	23
S8	5	#4	STR	12'-10"	43

GIRDERS 1, 5, 6 & 10	
GIRDERS 2 - 4, 7 - 9	
GIRDERS 1, 5, 6 & 10	
GIRDERS 2 - 4, 7 - 9	

✱NOTE: S5 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.	7000 PSI CONCRETE C.Y.	½" Ø L.R. STRANDS No.
GIRDERS 1, 5, 6 & 10	938	6.9	22
GIRDERS 2 - 4, 7 - 9	973	6.9	22

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
10	47'-8"	476.67'

PROJECT NO. U-5018A

PITT COUNTY

STATION: 56+12.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
AASHTO TYPE III
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
SPAN C

PLANS PREPARED BY:

MULKEY
ENGINEERS & CONSULTANTS
PO Box 33127
Raleigh, NC 27636
(919) 851-1912
(919) 851-1918 (FAX)
WWW.MULKEYINC.COM

NORTH CAROLINA PROFESSIONAL SEAL 10966 ENGINEER RICKY W. KEITH 6/11/09

ASSEMBLED BY : W. B. ALLEN	DATE : 11/08
CHECKED BY : R. V. KEITH	DATE : 1/09
DRAWN BY : ELR 8/91	REV. 7/17/98 RWW/LES
CHECKED BY : GRP 8/91	REV. 10/17/00R RWW/LES
	REV. 5/1/06 TLA/GM

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

STD. NO. PCG5

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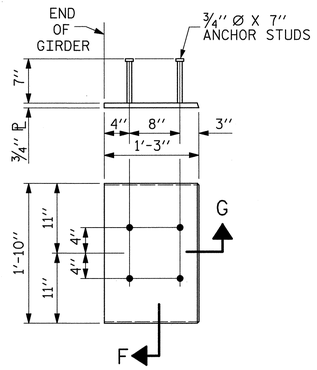
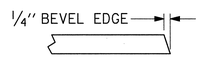
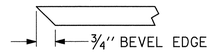


EMBEDDED PLATE "B-1" DETAILS FOR AASHTO TYPE III GIRDER

(2 REQ'D PER GIRDER)



SECTION "G"



SECTION "F"

(SEE NOTES)

NOTES

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

ALL REINFORCING STEEL SHALL BE GRADE 60.

APPLY EPOXY PROTECTIVE COATING TO END OF GIRDER SURFACES INDICATED IN ELEVATION VIEW.

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.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDERS IN SPAN C SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 5000 PSI.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDERS IN SPANS A AND B SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6000 PSI.

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".

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

	SPAN A & SPAN B											SPAN C										
GIRDER 1 - GIRDER 10	℄ BRG.	.10	.20	.30	.40	.50	.60	.70	.80	.90	℄ BRG.	℄ BRG.	.10	.20	.30	.40	.50	.60	.70	.80	.90	℄ BRG.
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.057	0.101	0.133	0.152	0.158	0.152	0.133	0.101	0.057	0.000	0.000	0.034	0.060	0.079	0.091	0.094	0.091	0.079	0.060	0.034	0.000
DEFLEC. DUE TO SUPERIMPOSED DEAD LOAD * ↓	0.000	0.035	0.069	0.095	0.113	0.119	0.113	0.095	0.069	0.035	0.000	0.000	0.012	0.023	0.032	0.038	0.040	0.038	0.032	0.023	0.012	0.000
FINAL CAMBER ↑	0	1/4"	3/8"	7/16"	7/16"	1/2"	7/16"	7/16"	3/8"	1/4"	0	0	1/4"	7/16"	9/16"	5/8"	5/8"	5/8"	9/16"	7/16"	1/4"	0

DEFLECTION AND GIRDER CAMBER ARE IN FEET.

FINAL CAMBER IS IN INCHES.

VALUES ARE SHOWN AT TENTH POINTS BETWEEN BEARINGS.

* FUTURE WEARING SURFACE INCLUDED.

PROJECT NO. U-5018A

PITT COUNTY

STATION: 56+12.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS

NOVEMBER 1991

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

STD. NO. PCG11

PLANS PREPARED BY:

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THIS STANDARD DRAWING REVIEWED & ADOPTED FOR USE AT THE REFERENCED LOCATION BY THE UNDERSIGNED:

NORTH CAROLINA PROFESSIONAL SEAL 10966 ENGINEER RICHARD V. KEITH
6/11/09

ASSEMBLED BY : W. B. ALLEN		DATE : 11/08	
CHECKED BY : R. V. KEITH		DATE : 1/09	
DRAWN BY : ELR 11/91	REV. 10/17/00 RWW/LES		
CHECKED BY : GRP 11/91	REV. 7/10/01RR LES/RDR		
	REV. 5/1/06 TLA/GM		

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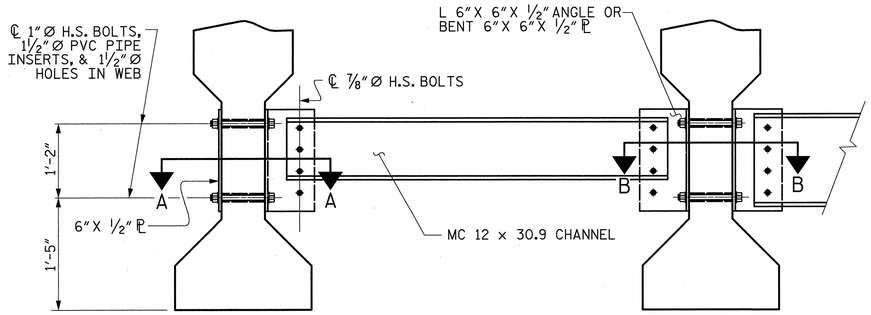
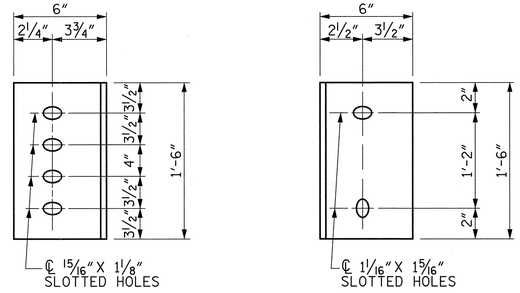


EXTERIOR GIRDER

INTERIOR GIRDER

PART SECTION AT INTERMEDIATE DIAPHRAGM

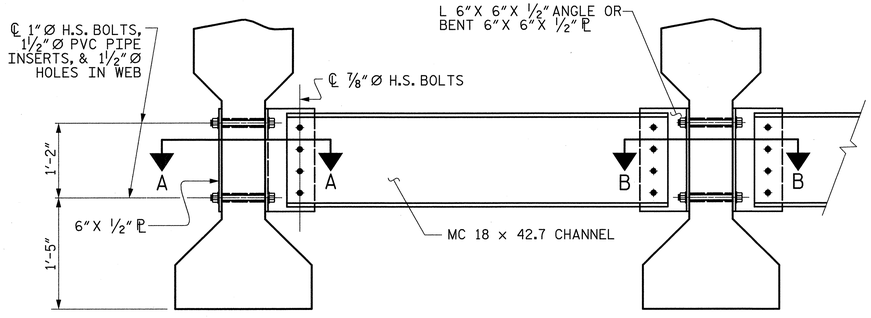
(STAGE I & STAGE II EXTERIOR BAYS)



DIAPHRAGM FACE

WEB FACE

CONNECTOR PLATE DETAILS



INTERIOR GIRDER

INTERIOR GIRDER

PART SECTION AT INTERMEDIATE DIAPHRAGM

(STAGE I & STAGE II INTERIOR BAYS)

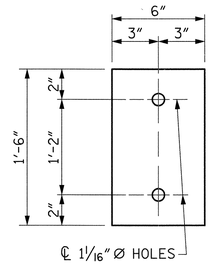
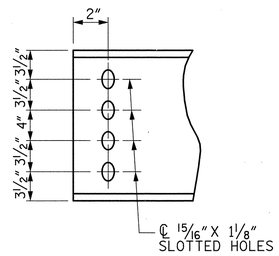
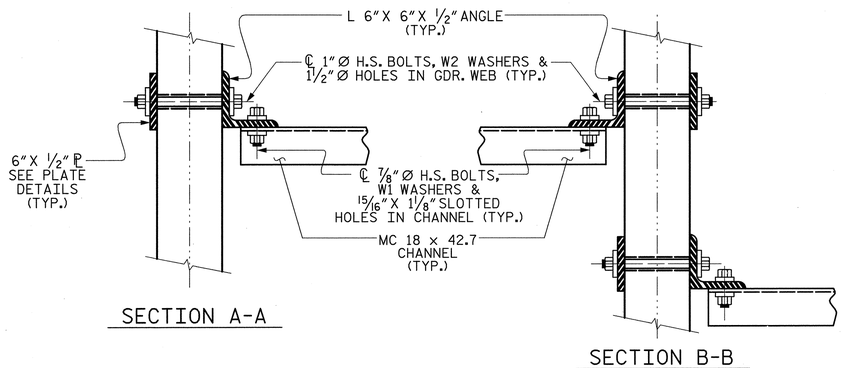


PLATE DETAILS



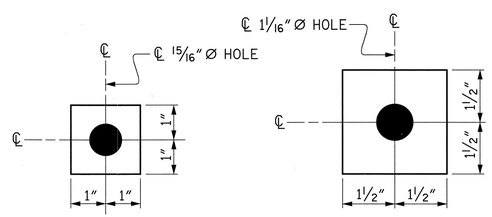
CHANNEL END



SECTION A-A

SECTION B-B

CONNECTION DETAILS



ℙ 7/16" X 2" X 2"

USE WITH ⅞" Ø HVY. HEX NUTS & DIRECT TENSION INDICATOR WASHERS AT DIAPHRAGM CHANNEL TO CONNECTOR PLATE CONNECTIONS

ℙ 7/16" X 3" X 3"

USE WITH 1" Ø HVY. HEX NUTS AT CONNECTOR PLATE TO GIRDER CONNECTIONS

WASHER DETAILS

STRUCTURAL STEEL NOTES

ALL INTERMEDIATE DIAPHRAGM STEEL, CONNECTOR PLATES AND PLATE WASHERS SHALL BE AASHTO M270 GRADE 50 OR APPROVED EQUAL.

TENSION ON THE AASHTO M164 BOLTS THROUGH THE CHANNEL MEMBER SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH ARTICLE 440-8 OF THE STANDARD SPECIFICATIONS.

TENSION ON THE AASHTO M164 BOLTS THROUGH THE GIRDER WEB SHALL BE SNUG TIGHTENED FOLLOWED BY AN ADDITIONAL ¼ TURN.

THE CHANNELS, ANGLES, WASHERS, PLATE WASHERS, AND DIRECT TENSION INDICATORS SHALL BE GALVANIZED OR METALLIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

FOR METALLIZATION, APPLY AN 8 MIL THICK 99.99 PERCENT ZINC (W-Zn-1) THERMAL SPRAYED COATING WITH A 0.5 MIL THICK SEAL COAT TO ALL STEEL DIAPHRAGM SURFACES IN ACCORDANCE WITH THE THERMAL SPRAYED COATINGS SPECIAL PROVISIONS AND SECTION 442 OF THE STANDARD SPECIFICATIONS.

GALVANIZE THE HIGH STRENGTH BOLTS, NUTS, AND WASHERS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR HIGH STRENGTH BOLTS, SEE SPECIAL PROVISIONS.

USE A MINIMUM 7/16" THICK PLATE WASHER WITH STANDARD HOLES UNDER EACH BOLT HEAD AND NUT. THE PLATE WASHERS SHALL HAVE SUFFICIENT SIZE TO COVER THE HOLES AFTER INSTALLATION. DIRECT TENSION INDICATORS ARE TO BE USED IN CONJUNCTION WITH THE PLATE WASHERS.

PROVIDE SUFFICIENT LENGTH OF ALL BOLTS TO ACCOMMODATE WASHERS, DIRECT TENSION INDICATORS, THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST ¼" PROJECTION BEYOND THE NUT.

INTERMEDIATE DIAPHRAGM ASSEMBLY SHALL COMPLY WITH SECTION 1072 OF THE STANDARD SPECIFICATIONS.

CONTRACTOR SHALL SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

IN THE EXTERIOR BAYS, TEMPORARY STRUTS SHALL BE PLACED BETWEEN PRESTRESSED GIRDERS ADJACENT TO THE STEEL DIAPHRAGMS. STRUTS SHALL REMAIN IN PLACE 3 DAYS AFTER CONCRETE IS PLACED. ALL AASHTO M164 H.S. BOLTS SHALL BE FULLY TIGHTENED AFTER THE STRUTS HAVE BEEN REMOVED.

THE COST OF THE STEEL DIAPHRAGMS AND ASSEMBLIES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE GIRDERS.

PLANS PREPARED BY:

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PO Box 33127
Raleigh, NC 27636
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(919) 851-1918 (FAX)
www.mulkeyinc.com

THIS STANDARD DRAWING REVIEWED & ADOPTED FOR USE AT THE REFERENCED LOCATION BY THE UNDERSIGNED:

NORTH CAROLINA PROFESSIONAL SEAL 10966 ENGINEER RICKEY V. KEITH

6/11/09

PROJECT NO. U-5018A

PITT COUNTY

STATION: 56+12.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE II, III, & IV PRESTRESSED CONCRETE GIRDERS

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

STD. NO. PCG12

ASSEMBLED BY :	W. B. ALLEN	DATE :	11/08
CHECKED BY :	R. V. KEITH	DATE :	1/09
DRAWN BY : TLA 6/05	ADDED 10/21/05		
CHECKED BY : VC 6/05	REV. 5/1/06R		KMM/GM

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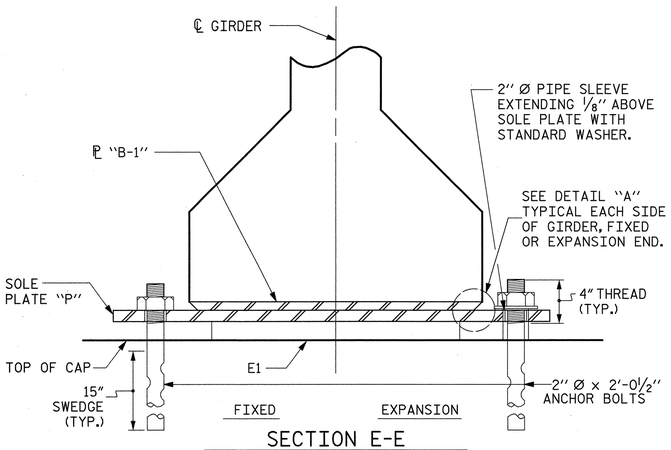
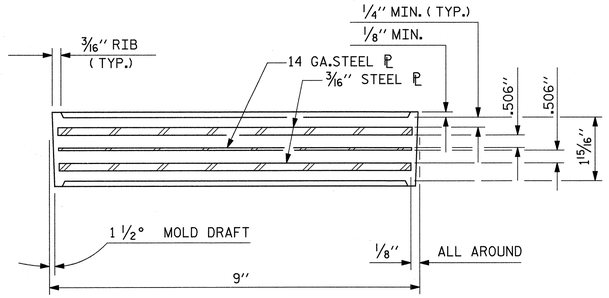
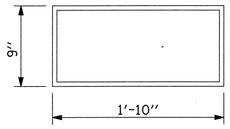


SECTION E-E



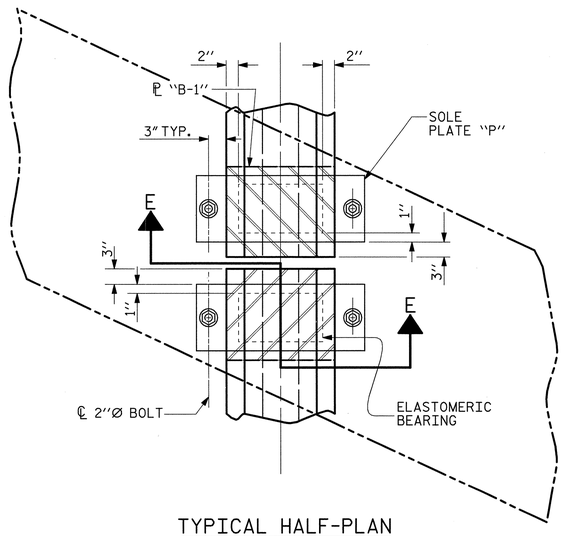
TYPICAL SECTION OF ELASTOMERIC BEARINGS



E1 (60 REQ'D)

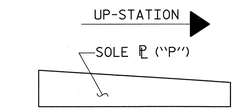
PLAN VIEW OF ELASTOMERIC BEARING

TYPE IV



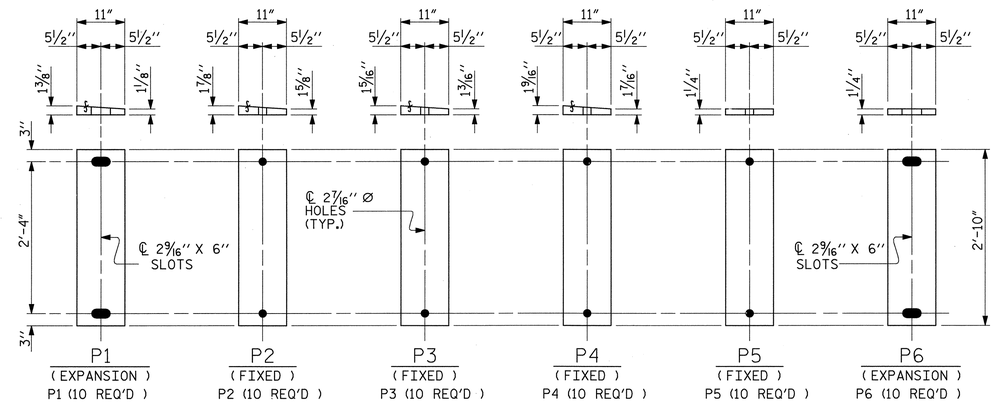
TYPICAL HALF-PLAN

(SHOWING CONTINUOUS BENT)



SOLE ℄ PLACEMENT DETAIL

LOAD RATINGS	
	MAX.D.L.+L.L.
45" PCG -TYPE IV	137 K



SOLE PLATE DETAILS ("P")

NOTES

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.

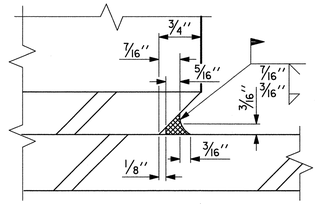
WHEN WELDING THE SOLE PLATE TO THE EMBEDDED PLATE IN THE GIRDER, USE TEMPERATURE INDICATING WAX PENS, OR OTHER SUITABLE MEANS, TO ENSURE THAT THE TEMPERATURE OF THE SOLE PLATE DOES NOT EXCEED 300°F. TEMPERATURES ABOVE THIS MAY DAMAGE THE ELASTOMER.

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. SHOP DRAWINGS ARE NOT REQUIRED FOR ANCHOR BOLT, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.



DETAIL "A"

PLANS PREPARED BY:

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6/1/09

PROJECT NO. U-5018A

PITT COUNTY

STATION: 56+12.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

ELASTOMERIC BEARING DETAILS

PRESTRESSED CONCRETE GIRDER SUPERSTRUCTURE

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

STD. NO. EB3

ASSEMBLED BY : W. B. ALLEN		DATE : 11/08	
CHECKED BY : R. V. KEITH		DATE : 1/09	
DRAWN BY : WJH 8/89	REV. 10/17/00	RWW/LES	
CHECKED BY : CRK 8/89	REV. 7/10/01	RWW/LES	
	REV. 5/1/06	TLA/GM	

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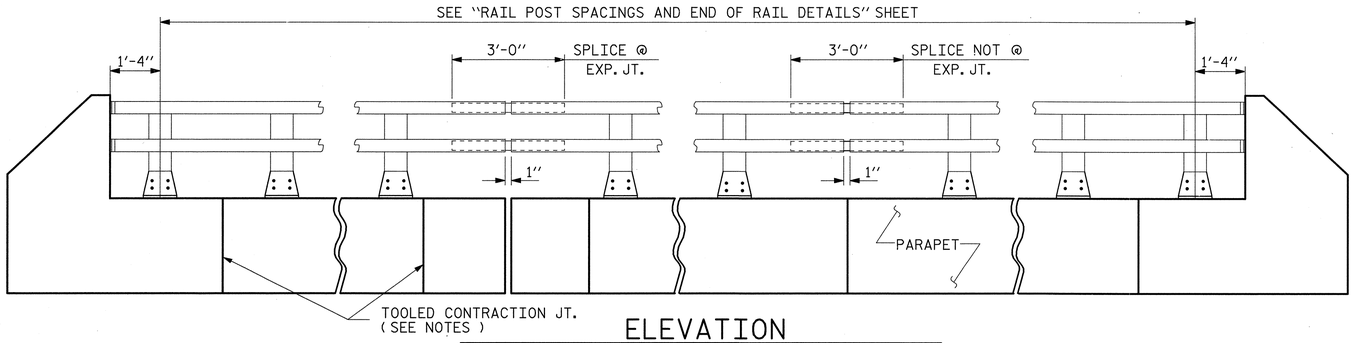
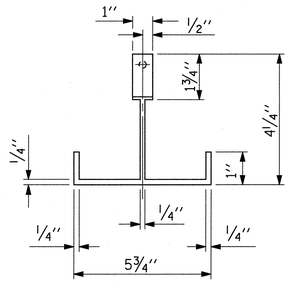
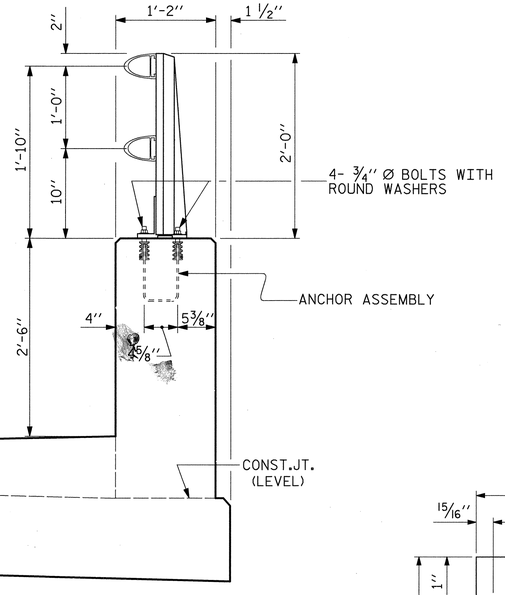


ELEVATION

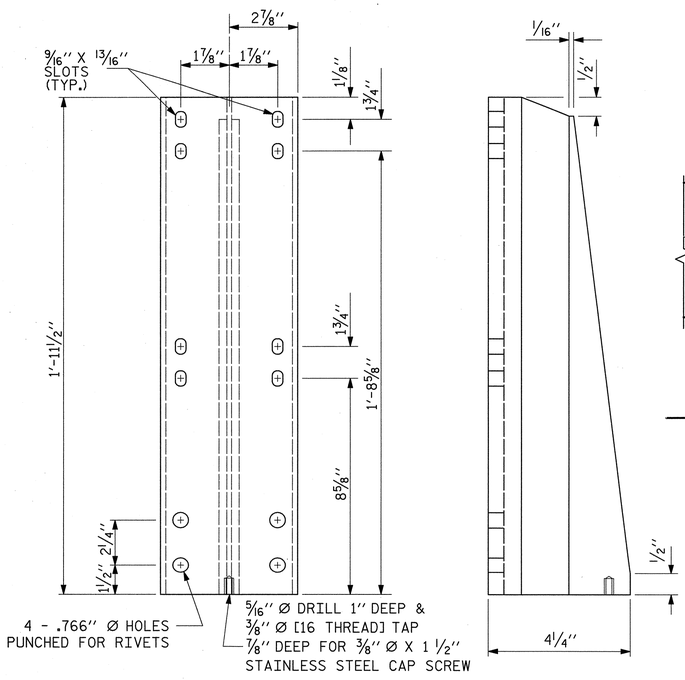
NOTE : FOR ATTACHMENT OF METAL RAIL TO END POST, SEE STANDARD NO. BMR2.



PLAN

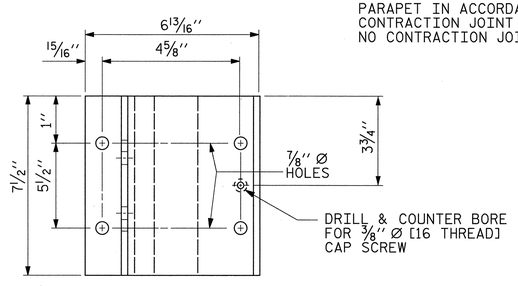


SECTION THRU PARAPET AND RAIL

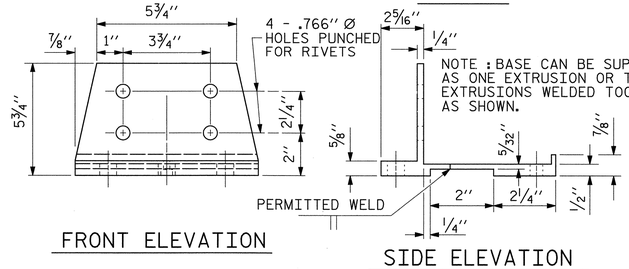


FRONT ELEVATION SIDE ELEVATION

DETAILS OF POST



PLAN



FRONT ELEVATION SIDE ELEVATION

POST BASE DETAILS

NOTES

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

ALUMINUM RAILS

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

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

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

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

GALVANIZED STEEL RAILS

MATERIAL AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:

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

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

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

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

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

GENERAL NOTES

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

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

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

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

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

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

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

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

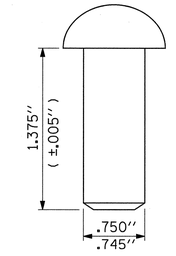
SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

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

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

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

PAY LENGTH = 341'-11 3/4" LIN. FT.



RIVET DETAIL

PROJECT NO. U-5018A

PITT COUNTY

STATION: 56+12.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

2 BAR METAL RAIL

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

STD. NO. BMR3

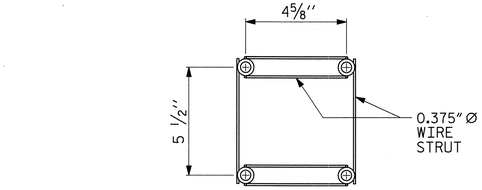
THIS STANDARD DRAWING REVIEWED & ADOPTED FOR USE AT THE REFERENCED LOCATION BY THE UNDERSIGNED:

NORTH CAROLINA PROFESSIONAL SEAL 10966 ENGINEER R. V. KEITH
6/11/09

PLANS PREPARED BY:
MULKEY
ENGINEERS & CONSULTANTS
PO Box 33127
Raleigh, NC 27636
(919) 851-1912
(919) 851-1918 (FAX)
WWW.MULKEYINC.COM

ASSEMBLED BY : W. B. ALLEN		DATE : 11/08	
CHECKED BY : R. V. KEITH		DATE : 1/09	
DRAWN BY : EEM 6/94	REV. 10/17/00	LES/RDR	
CHECKED BY : RGW 6/94	REV. 5/7/03R	RWW/JTE	
	REV. 5/1/06	TLA/GM	

6/9/2009 9:46:9 AM R:\Structures\U5018A_SD_2MR_04.dgn



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

4-BOLT METAL RAIL ANCHOR ASSEMBLY

(58 ASSEMBLIES REQUIRED)

NOTES

STRUCTURAL CONCRETE ANCHOR ASSEMBLY

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

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

B. 4 - ¾'' Ø X 2½'' BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE ¾'' Ø X 2½'' GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.

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

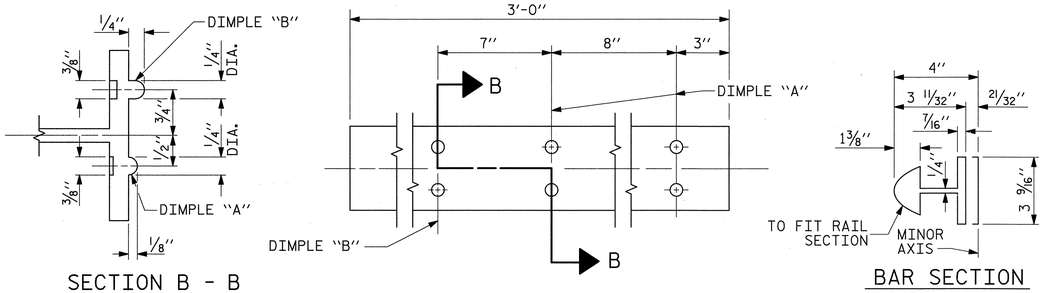
D. THE METAL RAIL ANCHOR ASSEMBLIES TO BE HOT DIPPED GALVANIZED TO CONFORM TO REQUIREMENTS OF AASHTO M111.

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

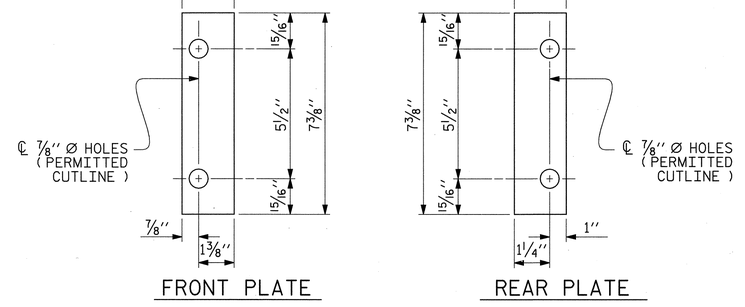
F. BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.

THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF THE METAL RAIL ANCHOR ASSEMBLY. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE ¾''Ø BOLT IS 10 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS.

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

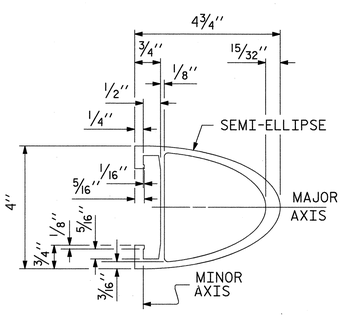


EXPANSION BAR DETAILS

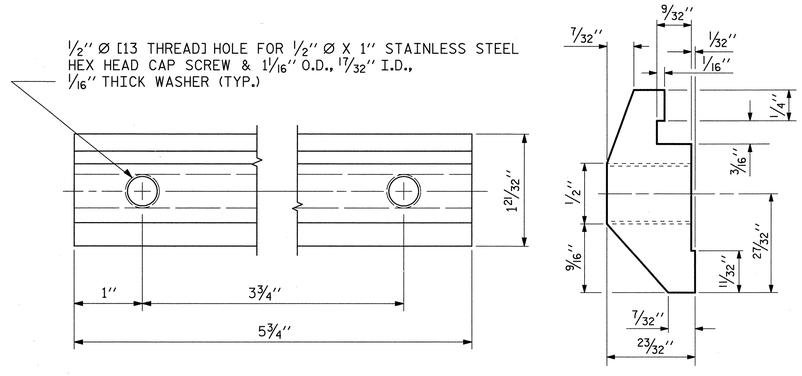


SHIM DETAILS

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

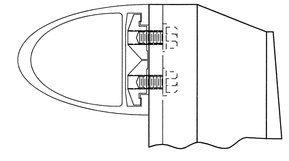


RAIL SECTION

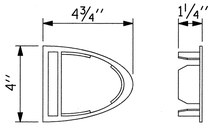


CLAMP BAR DETAIL

(4 REQUIRED PER POST)



CLAMP ASSEMBLY



RAIL CAP

PROJECT NO. U-5018A

PITT COUNTY

STATION: 56+12.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

2 BAR METAL RAIL

ASSEMBLED BY : W. B. ALLEN	DATE : 11/08		
CHECKED BY : R. V. KEITH	DATE : 1/09		
DRAWN BY : EEM 6/94	REV. 2/6/97	EEM/RGW	
CHECKED BY : RGW 6/94	REV. 8/16/99	MAB/LES	
	REV. 5/1/06R	KMM/GM	

PLANS PREPARED BY:

MULKEY
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(919) 851-1912
(919) 851-1918 (FAX)
WWW.MULKEYINC.COM

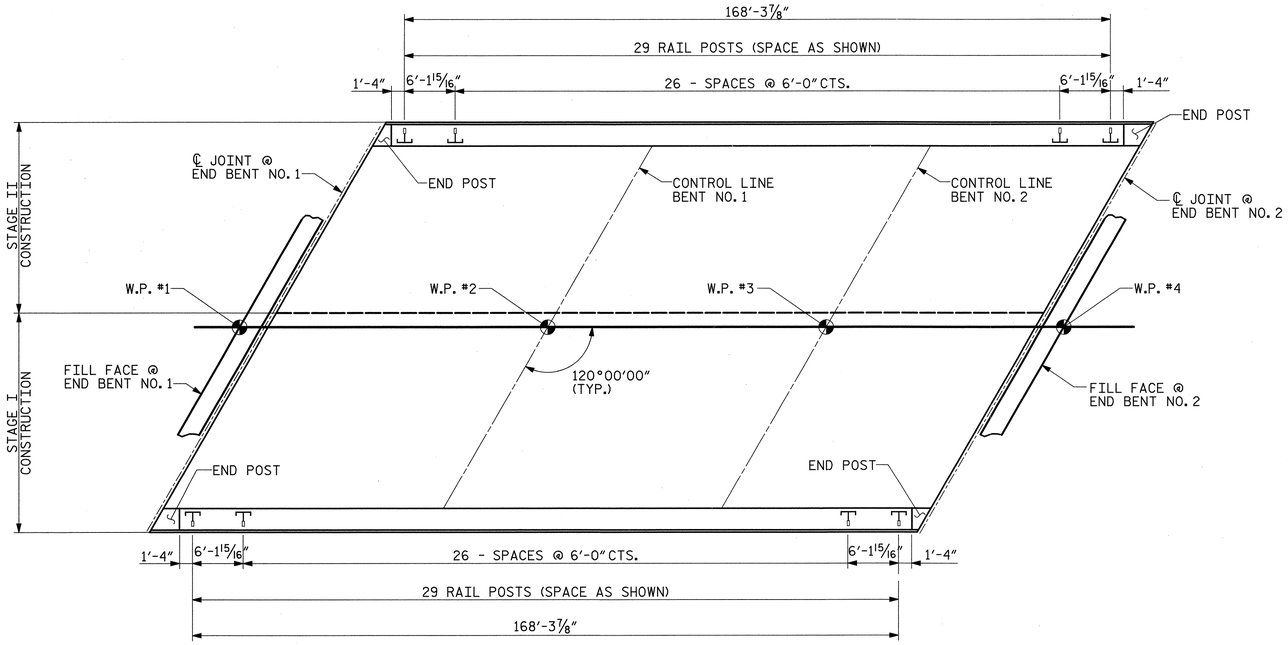
THIS STANDARD DRAWING REVIEWED & ADOPTED FOR USE AT THE REFERENCED LOCATION BY THE UNDERSIGNED:

NORTH CAROLINA PROFESSIONAL SEAL 10966 ENGINEER RICKY V. KEITH

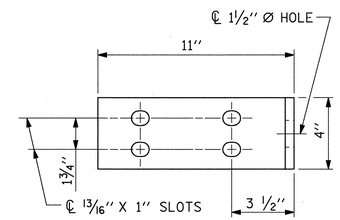
6/11/09

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

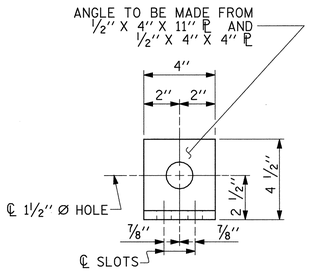
STD. NO. BMR4



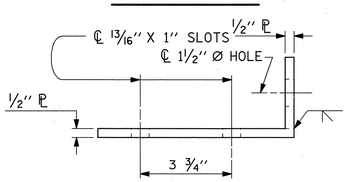
PLAN OF RAIL POST SPACINGS



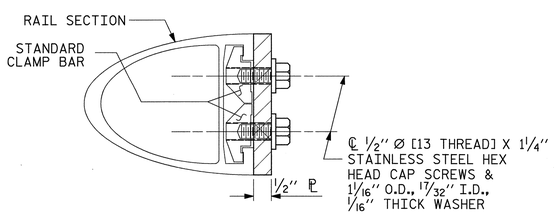
ELEVATION



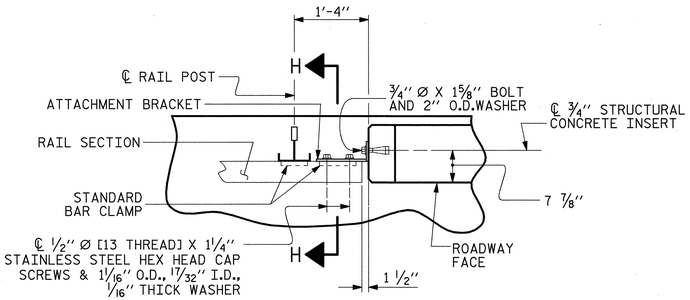
END VIEW (FIX AND EXP.)



TOP VIEW



SECTION H-H



PLAN - RAIL AND END POST

DETAILS FOR ATTACHING METAL RAIL TO END POST

NOTES

STRUCTURAL CONCRETE INSERT

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

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

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

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

NOTES

METAL RAIL TO END POST CONNECTION

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

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

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

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

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

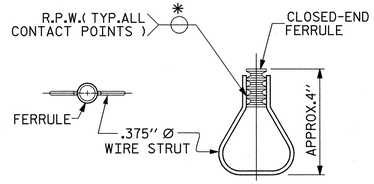
E. ½" Ø PIPE SLEEVES (IF REQUIRED) TO BE GALVANIZED.

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

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

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

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



PLAN ELEVATION

STRUCTURAL CONCRETE INSERT

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

PROJECT NO. U-5018A

PITT COUNTY

STATION: 56+12.00 -L-

ASSEMBLED BY : W. B. ALLEN	DATE : 1/09		
CHECKED BY : R. V. KEITH	DATE : 1/09		
DRAWN BY : FCJ 1/88	REV. 10/17/00	LES/RDR	
CHECKED BY : CRK 3/89	REV. 5/7/03	RWW/JTE	
	REV. 5/1/06	TLA/GM	

PLANS PREPARED BY:

MULKEY
ENGINEERS & CONSULTANTS
PO Box 33127
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(919) 851-1912
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THIS STANDARD DRAWING REVIEWED & ADOPTED FOR USE AT THE REFERENCED LOCATION BY THE UNDERSIGNED:

NORTH CAROLINA PROFESSIONAL SEAL 10966 ENGINEER FRANK V. KEITH
6/11/09

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
RAIL POST SPACINGS
AND
END OF RAIL DETAILS
FOR ONE OR TWO BAR METAL RAILS

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

STD. NO. BMR2

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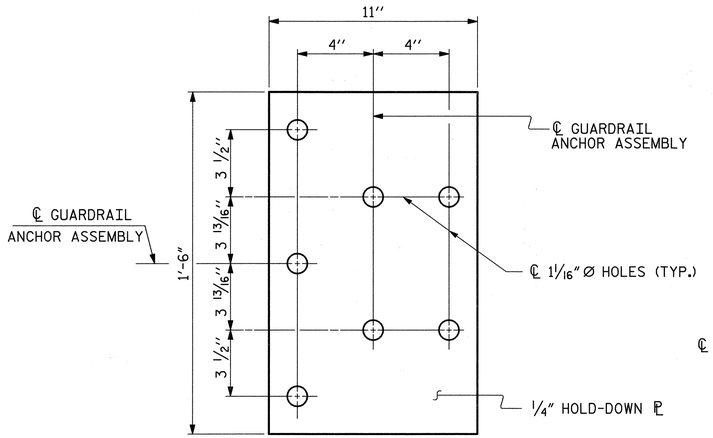
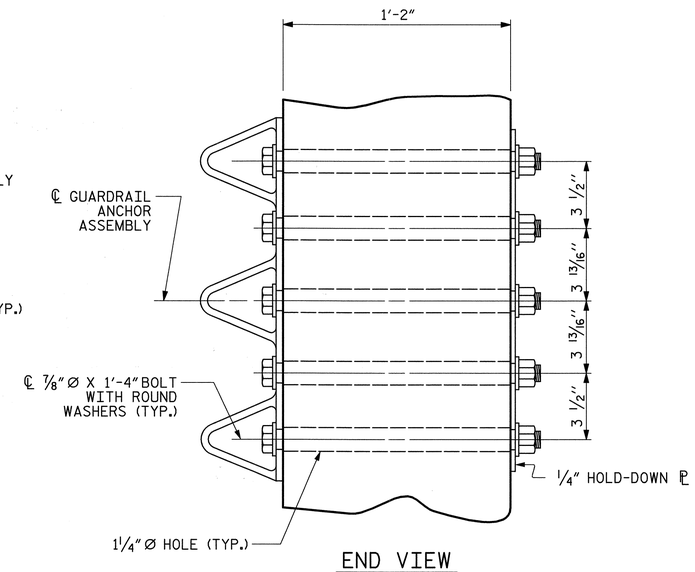


PLAN



END VIEW

GUARDRAIL ANCHOR ASSEMBLY DETAILS

NOTES

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

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

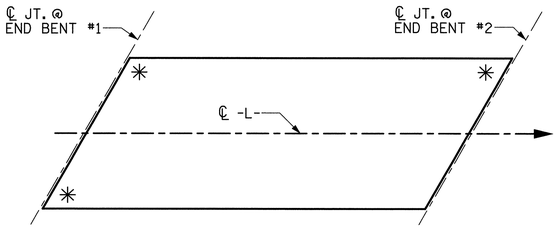
BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8'' Ø GALVANIZED BOLTS, NUTS AND WASHERS.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

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

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

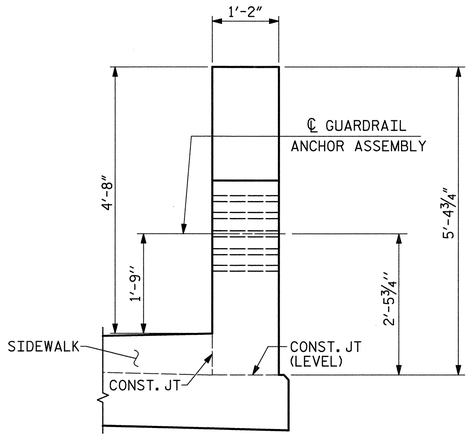
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE END POST TO CLEAR ASSEMBLY BOLTS.

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

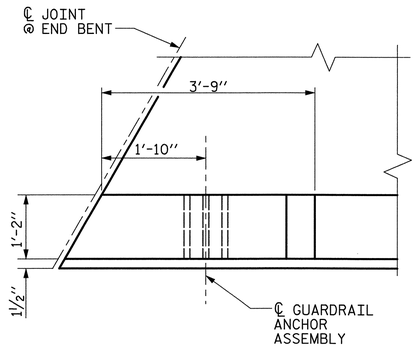


SKETCH SHOWING POINTS OF ATTACHMENT

✳ LOCATION OF GUARDRAIL ATTACHMENT



END VIEW
(TWO BAR METAL RAIL)



PLAN

LOCATION OF GUARDRAIL ANCHOR AT END POST

PROJECT NO. U-5018A

PITT COUNTY

STATION: 56+12.00 -L-

PLANS PREPARED BY:

MULKEY
ENGINEERS & CONSULTANTS
PO Box 33127
Raleigh, N.C. 27636
(919) 851-1918
(919) 851-1918 (FAX)
www.mulkeyinc.com

THIS STANDARD DRAWING REVIEWED & ADOPTED FOR USE AT THE REFERENCED LOCATION BY THE UNDERSIGNED:

NORTH CAROLINA PROFESSIONAL SEAL 1966 ENGINEER L. KEVIN AUSTIN

5/6/10

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
GUARDRAIL ANCHORAGE DETAILS
FOR METAL RAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-27
1			3			TOTAL SHEETS
2			4			

STD. NO. BMR8

ASSEMBLED BY : W. B. ALLEN		DATE : 11/08	
CHECKED BY : R. V. KEITH		DATE : 1/09	
DRAWN BY : EEM 6/94	REV. 10/17/00	RWW/LES	
CHECKED BY : RGW 6/94	REV. 5/7/03	RWW/JTE	
	REV. 5/1/06	TLA/GM	

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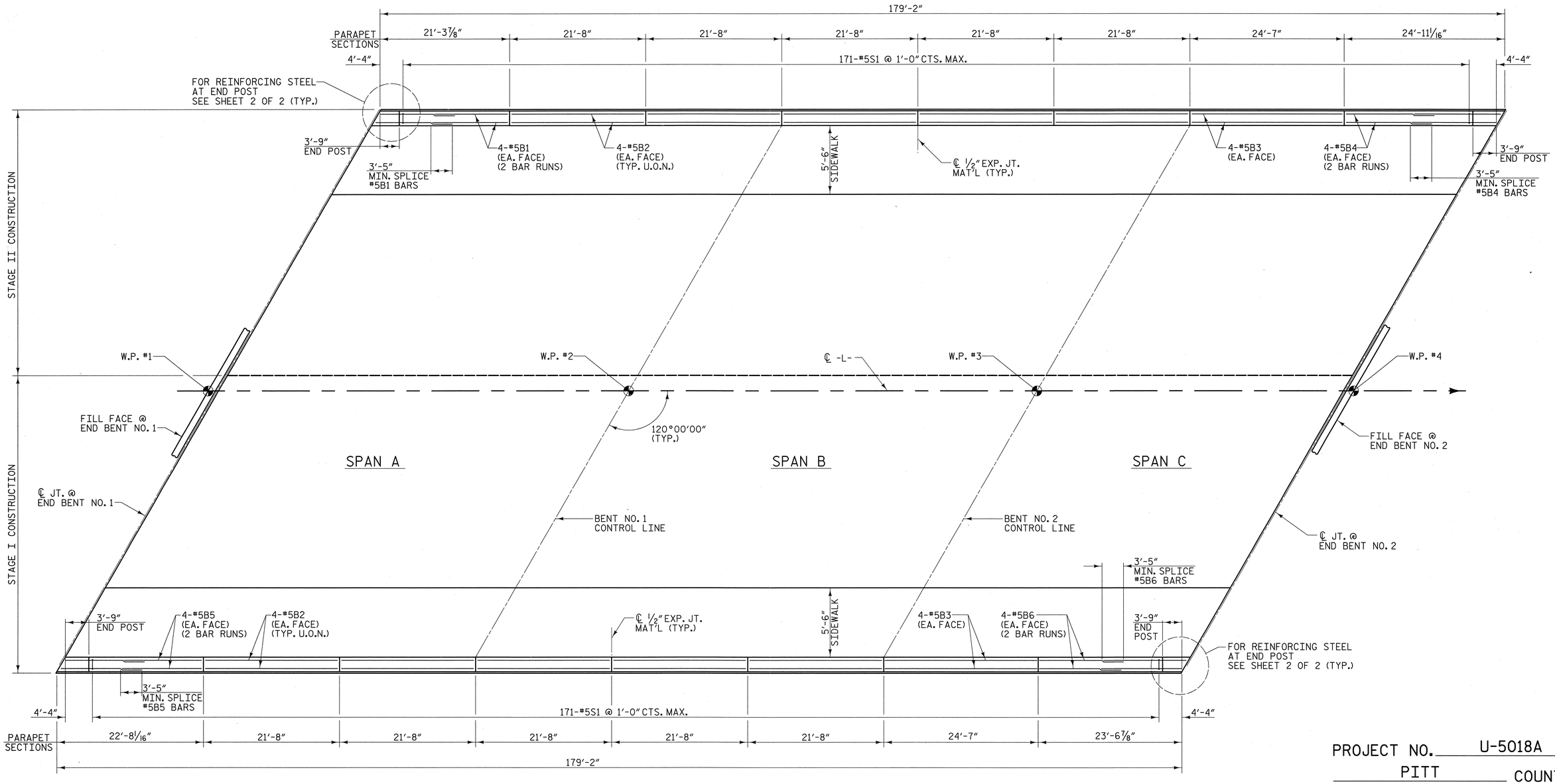

PLAN OF PARAPET

ALL DIMENSIONS ARE MEASURED ALONG OUTSIDE FACE OF PARAPET

U.O.N. = UNLESS OTHERWISE NOTED

PROJECT NO. U-5018A

PITT COUNTY

STATION: 56+12.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

1'-2" x 3'-2 3/4" CONCRETE PARAPET AND END POST

NORTH CAROLINA PROFESSIONAL SEAL 10966 ENGINEER RICKY M. KEITH 6/11/09

PLANS PREPARED BY:

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Raleigh N.C. 27636
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2			4			

DRAWN BY : W. B. ALLEN DATE : 1/09
CHECKED BY : R. V. KEITH DATE : 1/09

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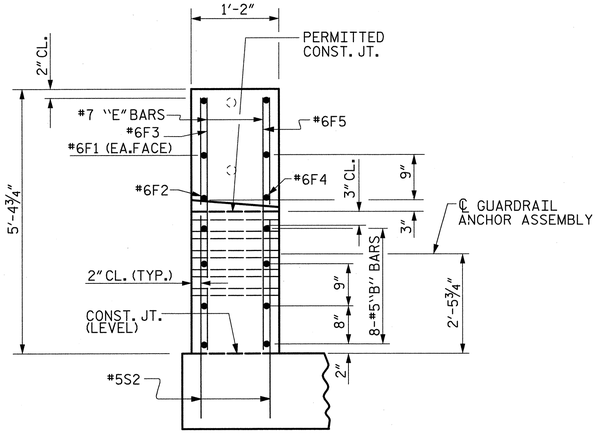
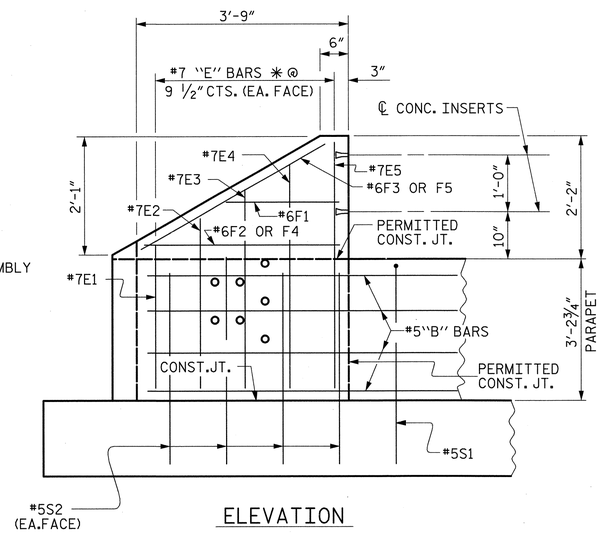
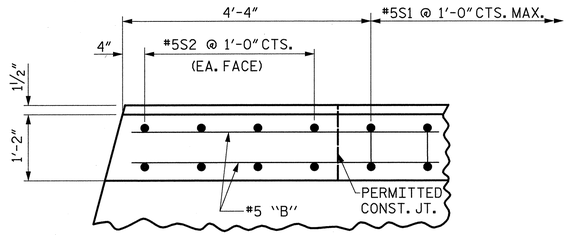


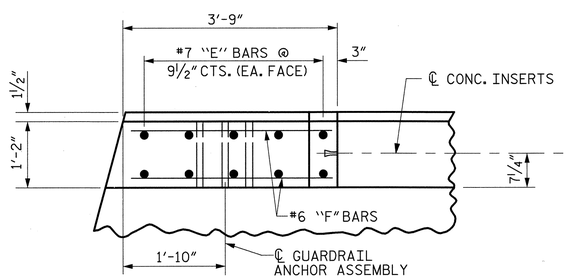
END VIEW



ELEVATION



PLAN OF PARAPET



PLAN OF END POST

PARAPET AND END POST FOR TWO BAR RAIL

NOTES

THE PARAPET IN THE CONTINUOUS UNIT 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.

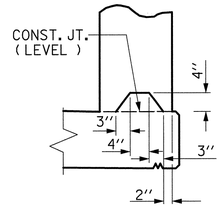
ALL REINFORCING STEEL IN PARAPET SHALL BE EPOXY COATED.

THE #5S1 BARS MAY BE SHIFTED SLIGHTLY IN ORDER TO MAINTAIN A 2"MIMIMUM CLEARANCE TO THE ½"EXPANSION JOINT MATERIAL IN PARAPET.

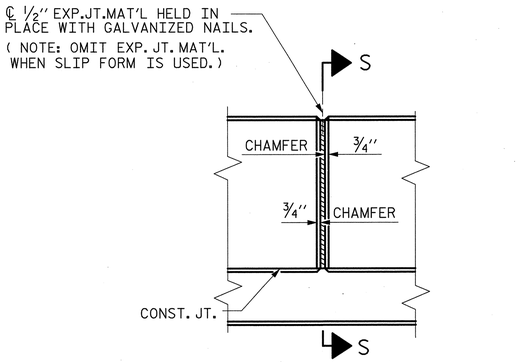
FOR DETAILS OF CONCRETE INSERTS IN END POSTS. SEE "RAIL POST SPACINGS AND END OF RAIL DETAILS" SHEET.

FOR DETAILS OF GUARDRAIL ANCHOR ASSEMBLIES. SEE "GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS" SHEET.

VERTICAL GROOVED CONTRACTION JOINTS, ½" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN PARAPET EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF PARAPET SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

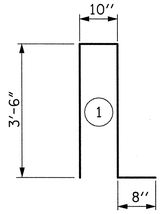


SECTION S-S
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)



ELEVATION AT EXPANSION JOINTS

BAR TYPE



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR CONCRETE PARAPET & END POST ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✱B1	8	#5	STR	12'-6"	104
✱B2	40	#5	STR	21'-3"	887
✱B3	16	#5	STR	24'-2"	403
✱B4	8	#5	STR	13'-11"	116
✱B5	8	#5	STR	12'-10"	107
✱B6	8	#5	STR	13'-7"	113
✱E1	8	#7	STR	3'-2"	52
✱E2	8	#7	STR	3'-8"	60
✱E3	8	#7	STR	4'-2"	68
✱E4	8	#7	STR	4'-8"	76
✱E5	8	#7	STR	5'-0"	82
✱F1	8	#6	STR	2'-0"	24
✱F2	4	#6	STR	3'-5"	21
✱F3	4	#6	STR	3'-7"	22
✱F4	4	#6	STR	3'-11"	24
✱F5	4	#6	STR	4'-2"	25
✱S1	342	#5	1	8'-6"	3032
✱S2	32	#5	STR	3'-9"	125

✱EPOXY COATED REINFORCING STEEL	5341 LBS.
CLASS AA CONCRETE	100.9 CU. YDS.
CONCRETE PARAPET	358.32 LIN. FT.

PROJECT NO. U-5018A

PITT COUNTY

STATION: 56+12.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

1'-2" × 3'-2¾" CONCRETE PARAPET AND END POST

NORTH CAROLINA PROFESSIONAL SEAL 10966 ENGINEER RICHARD V. KEITH
01/09

PLANS PREPARED BY:

MULKEY
ENGINEERS & CONSULTANTS
PO Box 33127
Raleigh, NC 27636
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DRAWN BY : W. B. ALLEN DATE : 1/09
CHECKED BY : R. V. KEITH DATE : 1/09

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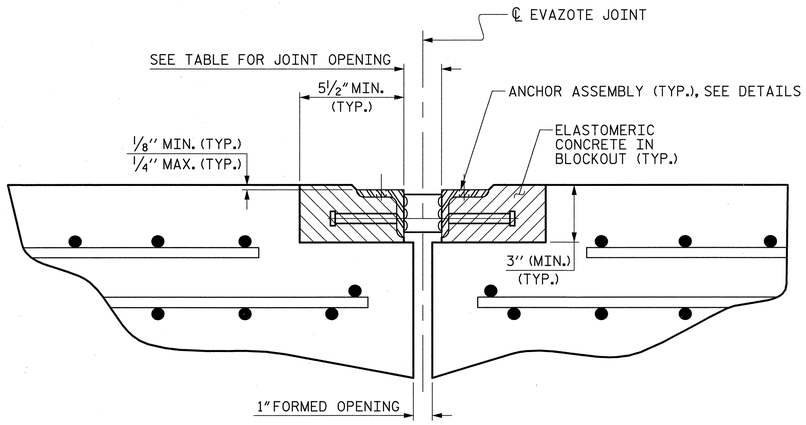
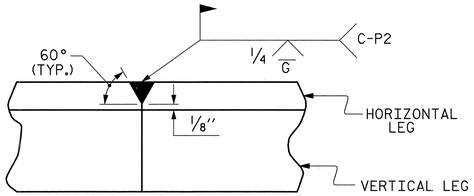


ARMORED JOINT DETAILS

SECTION NORMAL TO JOINT AT END 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.

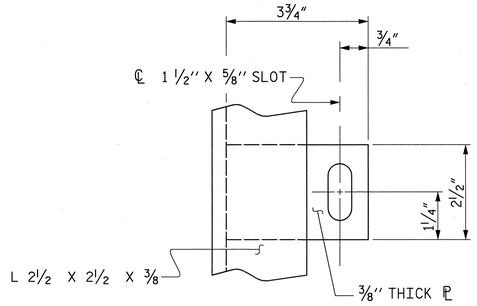
ANCHOR ASSEMBLY SEGMENTS SHALL NOT BE LESS THAN 12 FEET NOR MORE THAN 20 FEET IN LENGTH. SHORTER SEGMENTS MAY BE USED AT THE EDGE OF ROADWAY OR AT POINTS OF STAGED CONSTRUCTION.

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.

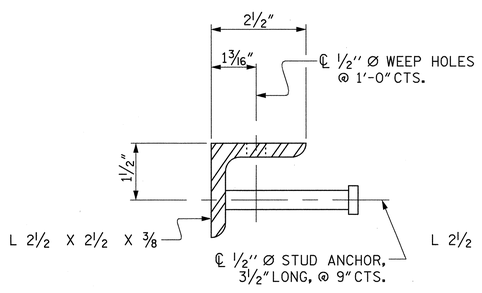
AFTER THE ELASTOMERIC CONCRETE HAS BEEN CAST ON BOTH SIDES OF THE JOINT, REMOVE ANY EXCESS CONCRETE THAT COMES THROUGH THE WEEP HOLES AND THOROUGHLY CLEAN THE ANGLES. ANY DAMAGED STEEL SHALL BE COATED WITH A MINIMUM OF 4 MILS OF ZINC-RICH PAINT IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

SEE SPECIAL PROVISIONS FOR EVAZOTE JOINT SEALS.

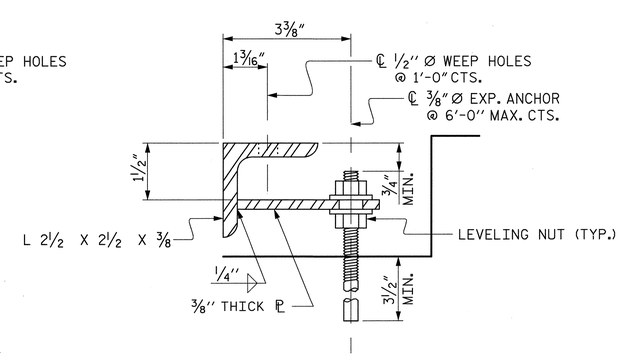
SEE SPECIAL PROVISIONS FOR ELASTOMERIC CONCRETE.



PLAN VIEW OF TAB



SECTION VIEW OF STUD



SECTION VIEW OF TAB

ARMORED JOINT ANCHOR ASSEMBLY DETAILS

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	120°00'00"	2½"	¾"	2⅛"	2"	1¾"
2	120°00'00"	2½"	¾"	2⅛"	2"	1¾"

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	19.4	169'-8⅞"
2	19.4	169'-8⅞"

* BASED ON THE MINIMUM BLOCKOUT SHOWN.

PROJECT NO. U-5018A

PITT COUNTY

STATION: 56+12.00 -L-

PLANS PREPARED BY:

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ENGINEERS & CONSULTANTS
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RALEIGH, N.C. 27636
(919) 851-1912
(919) 851-1918 (FAX)
WWW.MULKEYINC.COM

THIS STANDARD DRAWING REVIEWED & ADOPTED FOR USE AT THE REFERENCED LOCATION BY THE UNDERSIGNED:

NORTH CAROLINA PROFESSIONAL SEAL 10966 ENGINEER RICKY W. KEITH

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

ARMORED EVAZOTE JOINT DETAILS

REVISIONS						SHEET NO.
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STD. NO. AEJ1

ASSEMBLED BY : W. B. ALLEN		DATE : 11/08	
CHECKED BY : R. V. KEITH		DATE : 1/09	
DRAWN BY : EEM 1/96	REV. 7/10/01	LES/RDR	
CHECKED BY : RGW 1/96	REV. 5/7/03	RRR RWW/JTE	
	REV. 5/1/06	TLA/GM	

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BAR SCHEDULE

SPANS A, B & C - STAGE I						SPANS A, B & C - STAGE I						SPANS A, B & C - STAGE I						SPANS A, B & C - STAGE I					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ A1	333	#5	STR	44′-5″	15427	✳ A215	1	#5	STR	31′-10″	33	A333	1	#5	STR	19′-7″	20	A450	1	#5	STR	5′-0″	5
A2	333	#5	STR	44′-5″	15427	✳ A216	1	#5	STR	31′-0″	32	A334	1	#5	STR	18′-9″	20	A451	1	#5	STR	4′-3″	4
						✳ A217	1	#5	STR	30′-3″	32	A335	1	#5	STR	17′-11″	19	A452	1	#5	STR	3′-5″	4
✳ A101	1	#5	STR	43′-11″	46	✳ A218	1	#5	STR	29′-5″	31	A336	1	#5	STR	17′-2″	18	A453	1	#5	STR	2′-8″	3
✳ A102	1	#5	STR	43′-2″	45	✳ A219	1	#5	STR	28′-8″	30	A337	1	#5	STR	16′-4″	17	A454	1	#5	STR	1′-10″	2
✳ A103	1	#5	STR	42′-4″	44	✳ A220	1	#5	STR	27′-10″	29	A338	1	#5	STR	15′-7″	16						
✳ A104	1	#5	STR	41′-7″	43	✳ A221	1	#5	STR	27′-1″	28	A339	1	#5	STR	14′-9″	15	✳ B1	60	#4	STR	22′-1″	885
✳ A105	1	#5	STR	40′-9″	43	✳ A222	1	#5	STR	26′-3″	27	A340	1	#5	STR	14′-0″	15	✳ B2	30	#7	STR	49′-0″	3005
✳ A106	1	#5	STR	40′-0″	42	✳ A223	1	#5	STR	25′-6″	27	A341	1	#5	STR	13′-2″	14	✳ B3	29	#7	STR	19′-6″	1156
✳ A107	1	#5	STR	39′-2″	41	✳ A224	1	#5	STR	24′-8″	26	A342	1	#5	STR	12′-5″	13	✳ B4	30	#4	STR	20′-0″	401
✳ A108	1	#5	STR	38′-5″	40	✳ A225	1	#5	STR	23′-11″	25	A343	1	#5	STR	11′-7″	12	✳ B5	30	#7	STR	45′-6″	2790
✳ A109	1	#5	STR	37′-7″	39	✳ A226	1	#5	STR	23′-1″	24	A344	1	#5	STR	10′-10″	11	✳ B6	29	#7	STR	17′-3″	1023
✳ A110	1	#5	STR	36′-10″	38	✳ A227	1	#5	STR	22′-3″	23	A345	1	#5	STR	10′-0″	10	✳ B7	30	#4	STR	29′-1″	583
✳ A111	1	#5	STR	36′-0″	38	✳ A228	1	#5	STR	21′-6″	22	A346	1	#5	STR	9′-3″	10	B8	240	#5	STR	46′-4″	11598
✳ A112	1	#5	STR	35′-3″	37	✳ A229	1	#5	STR	20′-8″	22	A347	1	#5	STR	8′-5″	9						
✳ A113	1	#5	STR	34′-5″	36	✳ A230	1	#5	STR	19′-11″	21	A348	1	#5	STR	7′-8″	8	✳ D1	118	#5	STR	3′-6″	431
✳ A114	1	#5	STR	33′-7″	35	✳ A231	1	#5	STR	19′-1″	20	A349	1	#5	STR	6′-10″	7						
✳ A115	1	#5	STR	32′-10″	34	✳ A232	1	#5	STR	18′-4″	19	A350	1	#5	STR	6′-1″	6	✳ G1	2	#5	STR	51′-4″	107
✳ A116	1	#5	STR	32′-0″	33	✳ A233	1	#5	STR	17′-6″	18	A351	1	#5	STR	5′-3″	5						
✳ A117	1	#5	STR	31′-3″	33	✳ A234	1	#5	STR	16′-9″	17	A352	1	#5	STR	4′-6″	5	✳ K1	4	#8	1	13′-6″	144
✳ A118	1	#5	STR	30′-5″	32	✳ A235	1	#5	STR	15′-11″	17	A353	1	#5	STR	3′-8″	4	✳ K2	12	#8	2	20′-5″	654
✳ A119	1	#5	STR	29′-8″	31	✳ A236	1	#5	STR	15′-2″	16	A354	1	#5	STR	2′-10″	3	K3	16	#6	STR	9′-8″	232
✳ A120	1	#5	STR	28′-10″	30	✳ A237	1	#5	STR	14′-4″	15	A355	1	#5	STR	2′-1″	2	✳ K4	4	#8	1	11′-4″	121
✳ A121	1	#5	STR	28′-1″	29	✳ A238	1	#5	STR	13′-7″	14							K5	16	#4	STR	9′-9″	104
✳ A122	1	#5	STR	27′-3″	28	✳ A239	1	#5	STR	12′-9″	13	A401	1	#5	STR	43′-11″	46	K6	8	#4	STR	10′-7″	57
✳ A123	1	#5	STR	26′-6″	28	✳ A240	1	#5	STR	12′-0″	13	A402	1	#5	STR	43′-2″	45	K7	8	#4	STR	7′-9″	41
✳ A124	1	#5	STR	25′-8″	27	✳ A241	1	#5	STR	11′-2″	12	A403	1	#5	STR	42′-4″	44	K8	16	#4	5	7′-1″	76
✳ A125	1	#5	STR	24′-11″	26	✳ A242	1	#5	STR	10′-5″	11	A404	1	#5	STR	41′-7″	43	K9	24	#4	6	13′-10″	222
✳ A126	1	#5	STR	24′-1″	25	✳ A243	1	#5	STR	9′-7″	10	A405	1	#5	STR	40′-9″	43						
✳ A127	1	#5	STR	23′-4″	24	✳ A244	1	#5	STR	8′-10″	9	A406	1	#5	STR	40′-0″	42	✳ S1	80	#5	3	4′-10″	403
✳ A128	1	#5	STR	22′-6″	23	✳ A245	1	#5	STR	8′-0″	8	A407	1	#5	STR	39′-2″	41	✳ S2	80	#4	4	3′-8″	196
✳ A129	1	#5	STR	21′-9″	23	✳ A246	1	#5	STR	7′-2″	7	A408	1	#5	STR	38′-5″	40	S3	200	#4	7	2′-9″	367
✳ A130	1	#5	STR	20′-11″	22	✳ A247	1	#5	STR	6′-5″	7	A409	1	#5	STR	37′-7″	39						
✳ A131	1	#5	STR	20′-2″	21	✳ A248	1	#5	STR	5′-7″	6	A410	1	#5	STR	36′-10″	38	✳ U1	56	#4	8	13′-8″	511
✳ A132	1	#5	STR	19′-4″	20	✳ A249	1	#5	STR	4′-10″	5	A411	1	#5	STR	36′-0″	38	✳ U2	16	#4	8	11′-8″	125
✳ A133	1	#5	STR	18′-6″	19	✳ A250	1	#5	STR	4′-0″	4	A412	1	#5	STR	35′-2″	37						
✳ A134	1	#5	STR	17′-9″	19	✳ A251	1	#5	STR	3′-3″	3	A413	1	#5	STR	34′-5″	36						
✳ A135	1	#5	STR	16′-11″	18	✳ A252	1	#5	STR	2′-5″	3	A414	1	#5	STR	33′-7″	35						
✳ A136	1	#5	STR	16′-2″	17	✳ A253	1	#5	STR	1′-8″	2	A415	1	#5	STR	32′-10″	34						
✳ A137	1	#5	STR	15′-4″	16	✳ A254	1	#5	STR	0′-10″	1	A416	1	#5	STR	32′-0″	33						
✳ A138	1	#5	STR	14′-7″	15							A417	1	#5	STR	31′-3″	33						
✳ A139	1	#5	STR	13′-9″	14	A301	1	#5	STR	44′-5″	46	A418	1	#5	STR	30′-5″	32						
✳ A140	1	#5	STR	13′-0″	14	A302	1	#5	STR	44′-2″	46	A419	1	#5	STR	29′-8″	31						
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✳ A142	1	#5	STR	11′-5″	12	A304	1	#5	STR	42′-7″	44	A421	1	#5	STR	28′-1″	29						
✳ A143	1	#5	STR	10′-7″	11	A305	1	#5	STR	41′-9″	44	A422	1	#5	STR	27′-3″	28						
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✳ A145	1	#5	STR	9′-0″	9	A307	1	#5	STR	40′-2″	42	A424	1	#5	STR	25′-8″	27						
✳ A146	1	#5	STR	8′-3″	9	A308	1	#5	STR	39′-5″	41	A425	1	#5	STR	24′-11″	26						
✳ A147	1	#5	STR	7′-5″	8	A309	1	#5	STR	38′-7″	40	A426	1	#5	STR	24′-1″	25						
✳ A148	1	#5	STR	6′-8″	7	A310	1	#5	STR	37′-10″	39	A427	1	#5	STR	23′-4″	24						
✳ A149	1	#5	STR	5′-10″	6	A311	1	#5	STR	37′-0″	39	A428	1	#5	STR	22′-6″	23						
✳ A150	1	#5	STR	6′-1″	6	A312	1	#5	STR	36′-3″	38	A429	1	#5	STR	21′-9″	23						
✳ A151	1	#5	STR	5′-3″	5	A313	1	#5	STR	35′-5″	37	A430	1	#5	STR	20′-11″	22						
✳ A152	1	#5	STR	4′-6″	5	A314	1	#5	STR	34′-8″	36	A431	1	#5	STR	20′-1″	21						
✳ A153	1	#5	STR	3′-8″	4	A315	1	#5	STR	33′-10″	35	A432	1	#5	STR	19′-4″	20						
✳ A154	1	#5	STR	2′-10″	3	A316	1	#5	STR	33′-0″	34	A433	1	#5	STR	18′-6″	19						
✳ A155	1	#5	STR	2′-1″	2	A317	1	#5	STR	32′-3″	34	A434	1	#5	STR	17′-9″	19						
						A318	1	#5	STR	31′-5″	33	A435	1	#5	STR	16′-11″	18						
✳ A201	1	#5	STR	43′-11″	46	A319	1	#5	STR	30′-8″	32	A436	1	#5	STR	16′-2″	17						
✳ A202	1	#5	STR	43′-2″	45	A320	1	#5	STR	29′-10″	31	A437	1	#5	STR	15′-4″	16						
✳ A203	1	#5	STR	42′-4″	44	A321	1	#5	STR	29′-1″	30	A438	1	#5	STR	14′-7″	15						
✳ A204	1	#5	STR	41′-7″	43	A322	1	#5	STR	28′-3″	29	A439	1	#5	STR	13′-9″	14						
✳ A205	1	#5	STR	40′-9″	43	A323	1	#5	STR	27′-6″	29	A440	1	#5	STR	13′-0″	14						
✳ A206	1	#5	STR	40′-0″	42	A324	1	#5	STR	26′-8″	28	A441	1	#5	STR	12′-2″	13						
✳ A207	1	#5	STR	39′-2″	41	A325	1	#5	STR	25′-11″	27	A442	1	#5	STR	11′-5″	12						
✳ A208	1	#5	STR	37′-4″	39	A326	1	#5	STR	25′-1″	26	A443	1	#5	STR	10′-7″	11						
✳ A209	1	#5	STR	36′-7″	38	A327	1	#5	STR	24′-4″	25	A444	1	#5	STR	9′-10″	10						
✳ A210	1	#5	STR	35′-9″	37	A328	1	#5	STR	23′-6″	25	A445	1	#5	STR	9′-0″	9						
✳ A211	1	#5	STR	35′-0″	37	A329	1	#5	STR	22′-9″	24	A446	1	#5	STR	8′-3″	9						
✳ A212	1	#5	STR	34′-2″	36	A330	1	#5	STR	21′-11″	23	A447	1	#5	STR	7′-5″	8						
✳ A213	1	#5	STR	33′-5″	35	A331	1	#5	STR	21′-2″	22	A448	1	#5	STR	6′-8″	7						
✳ A214	1	#5	STR	32′-7″	34	A332	1	#5	STR	20′-4″	21	A449	1	#5	STR	5′-10″	6						

REINFORCING STEEL	LBS.	30762
EPOXY COATED REINFORCING STEEL	LBS.	30502

✳ INDICATES EPOXY COATED REINFORCING STEEL

DRAWN BY : W. B. ALLEN DATE : 1/09
CHECKED BY : R. V. KEITH DATE : 2/09

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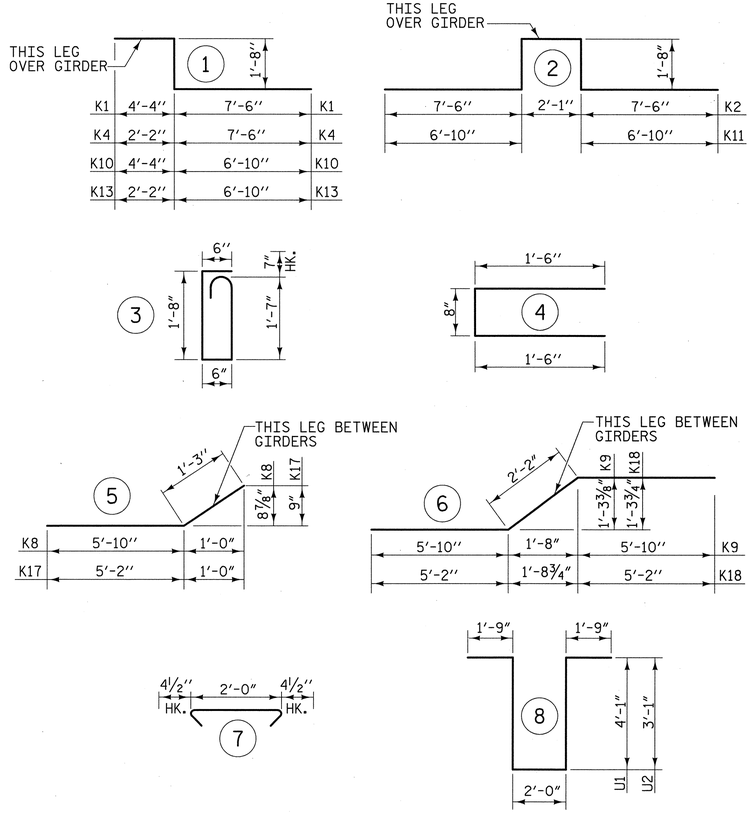
SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS

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′-7″	4′-4″
#7	5′-3″	3′-6″			
#8	6′-10″	4′-7″			

BAR TYPES - STAGE I & II



ALL BAR DIMENSIONS ARE OUT TO OUT

SUPERSTRUCTURE BILL OF MATERIAL

	CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	(CU. YDS.)	(LBS.)	(LBS.)
STAGE I	296.4	30762	30502
STAGE II	280.1	27216	28001
SIDEWALK	44.6		2658
MONO. CONC. ISLAND	43.0		2445
✳✳ TOTALS	664.1	57978	63606

✳✳ QUANTITIES FOR PARAPET ARE NOT INCLUDED.

PROJECT NO. U-5018A
PITT COUNTY
STATION: 56+12.00 -L-

SHEET 1 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 10966 ENGINEER RICKY V. KEITH 6/11/09

PLANS PREPARED BY:

MULKEY
ENGINEERS & CONSULTANTS
PO Box 33127
Raleigh, N.C. 27636
(919) 851-1912
(919) 851-1916 (FAX)
WWW.MULKEYINC.COM

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
BILL OF MATERIAL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-31
1			3			TOTAL SHEETS
2			4			

BAR SCHEDULE

SPANS A, B & C - STAGE II

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ A3	339	#5	STR	39′-11″	14114
A4	339	#5	STR	39′-11″	14114
✳ A501	1	#5	STR	39′-5″	41
✳ A502	1	#5	STR	38′-8″	40
✳ A503	1	#5	STR	37′-10″	39
✳ A504	1	#5	STR	37′-1″	39
✳ A505	1	#5	STR	36′-3″	38
✳ A506	1	#5	STR	35′-6″	37
✳ A507	1	#5	STR	34′-8″	36
✳ A508	1	#5	STR	32′-10″	34
✳ A509	1	#5	STR	32′-1″	33
✳ A510	1	#5	STR	31′-3″	33
✳ A511	1	#5	STR	30′-6″	32
✳ A512	1	#5	STR	29′-8″	31
✳ A513	1	#5	STR	28′-11″	30
✳ A514	1	#5	STR	28′-1″	29
✳ A515	1	#5	STR	27′-4″	29
✳ A516	1	#5	STR	26′-6″	28
✳ A517	1	#5	STR	25′-9″	27
✳ A518	1	#5	STR	24′-11″	26
✳ A519	1	#5	STR	24′-2″	25
✳ A520	1	#5	STR	23′-4″	24
✳ A521	1	#5	STR	22′-7″	24
✳ A522	1	#5	STR	21′-9″	23
✳ A523	1	#5	STR	21′-0″	22
✳ A524	1	#5	STR	20′-2″	21
✳ A525	1	#5	STR	19′-5″	20
✳ A526	1	#5	STR	18′-7″	19
✳ A527	1	#5	STR	17′-9″	19
✳ A528	1	#5	STR	17′-0″	18
✳ A529	1	#5	STR	16′-2″	17
✳ A530	1	#5	STR	15′-5″	16
✳ A531	1	#5	STR	14′-7″	15
✳ A532	1	#5	STR	13′-10″	14
✳ A533	1	#5	STR	13′-0″	14
✳ A534	1	#5	STR	12′-3″	13
✳ A535	1	#5	STR	11′-5″	12
✳ A536	1	#5	STR	10′-8″	11
✳ A537	1	#5	STR	9′-10″	10
✳ A538	1	#5	STR	9′-1″	9
✳ A539	1	#5	STR	8′-3″	9
✳ A540	1	#5	STR	7′-6″	8
✳ A541	1	#5	STR	6′-8″	7
✳ A542	1	#5	STR	5′-11″	6
✳ A543	1	#5	STR	5′-1″	5
✳ A544	1	#5	STR	4′-4″	5
✳ A545	1	#5	STR	3′-6″	4
✳ A546	1	#5	STR	2′-8″	3
✳ A547	1	#5	STR	1′-11″	2
✳ A548	1	#5	STR	1′-1″	1
✳ A601	1	#5	STR	39′-2″	41
✳ A602	1	#5	STR	38′-5″	40
✳ A603	1	#5	STR	37′-7″	39
✳ A604	1	#5	STR	36′-10″	38
✳ A605	1	#5	STR	36′-0″	38
✳ A606	1	#5	STR	35′-3″	37
✳ A607	1	#5	STR	34′-5″	36
✳ A608	1	#5	STR	33′-7″	35
✳ A609	1	#5	STR	32′-10″	34
✳ A610	1	#5	STR	32′-0″	33
✳ A611	1	#5	STR	31′-3″	33
✳ A612	1	#5	STR	30′-5″	32
✳ A613	1	#5	STR	29′-8″	31
✳ A614	1	#5	STR	28′-10″	30
✳ A615	1	#5	STR	28′-1″	29
✳ A616	1	#5	STR	27′-3″	28
✳ A617	1	#5	STR	26′-6″	28
✳ A618	1	#5	STR	25′-8″	27
✳ A619	1	#5	STR	24′-11″	26
✳ A620	1	#5	STR	24′-1′	25
✳ A621	1	#5	STR	23′-4″	24

SPANS A, B & C - STAGE II

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ A622	1	#5	STR	22′-6″	23
✳ A623	1	#5	STR	21′-9″	23
✳ A624	1	#5	STR	20′-11″	22
✳ A625	1	#5	STR	20′-2″	21
✳ A626	1	#5	STR	19′-4″	20
✳ A627	1	#5	STR	18′-6″	19
✳ A628	1	#5	STR	17′-9″	19
✳ A629	1	#5	STR	16′-11″	18
✳ A630	1	#5	STR	16′-2″	17
✳ A631	1	#5	STR	15′-4″	16
✳ A632	1	#5	STR	14′-7″	15
✳ A633	1	#5	STR	13′-9″	14
✳ A634	1	#5	STR	13′-0″	14
✳ A635	1	#5	STR	12′-2″	13
✳ A636	1	#5	STR	11′-5″	12
✳ A637	1	#5	STR	10′-7″	11
✳ A638	1	#5	STR	9′-10″	10
✳ A639	1	#5	STR	9′-0″	9
✳ A640	1	#5	STR	8′-3″	9
✳ A641	1	#5	STR	7′-5″	8
✳ A642	1	#5	STR	6′-8″	7
✳ A643	1	#5	STR	5′-10″	6
✳ A644	1	#5	STR	6′-1″	6
✳ A645	1	#5	STR	5′-3″	5
✳ A646	1	#5	STR	4′-6″	5
✳ A647	1	#5	STR	3′-8″	4
✳ A648	1	#5	STR	2′-10″	3
✳ A649	1	#5	STR	2′-1″	2
A701	1	#5	STR	39′-5″	41
A702	1	#5	STR	38′-8″	40
A703	1	#5	STR	37′-10″	39
A704	1	#5	STR	37′-1″	39
A705	1	#5	STR	36′-3″	38
A706	1	#5	STR	35′-6″	37
A707	1	#5	STR	34′-8″	36
A708	1	#5	STR	33′-11″	35
A709	1	#5	STR	33′-1″	35
A710	1	#5	STR	32′-4″	34
A711	1	#5	STR	31′-6″	33
A712	1	#5	STR	30′-8″	32
A713	1	#5	STR	29′-11″	31
A714	1	#5	STR	29′-1″	30
A715	1	#5	STR	28′-4″	30
A716	1	#5	STR	27′-6″	29
A717	1	#5	STR	26′-9″	28
A718	1	#5	STR	25′-11″	27
A719	1	#5	STR	25′-2″	26
A720	1	#5	STR	24′-4″	25
A721	1	#5	STR	23′-7″	25
A722	1	#5	STR	22′-9″	24
A723	1	#5	STR	22′-0″	23
A724	1	#5	STR	21′-2″	22
A725	1	#5	STR	20′-5″	21
A726	1	#5	STR	19′-7″	20
A727	1	#5	STR	18′-10″	20
A728	1	#5	STR	18′-0″	19
A729	1	#5	STR	17′-3″	18
A730	1	#5	STR	16′-5″	17
A731	1	#5	STR	15′-7″	16
A732	1	#5	STR	14′-10″	15
A733	1	#5	STR	14′-0″	15
A734	1	#5	STR	13′-3″	14
A735	1	#5	STR	12′-5″	13
A736	1	#5	STR	11′-8″	12
A737	1	#5	STR	10′-10″	11
A738	1	#5	STR	10′-1″	11
A739	1	#5	STR	9′-3″	10
A740	1	#5	STR	8′-6″	9
A741	1	#5	STR	7′-8″	8
A742	1	#5	STR	6′-11″	7
A743	1	#5	STR	6′-1″	6
A744	1	#5	STR	5′-4″	6

SPANS A, B & C - STAGE II

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A745	1	#5	STR	4′-6″	5
A746	1	#5	STR	3′-9″	4
A747	1	#5	STR	2′-11″	3
A748	1	#5	STR	2′-2″	2
A801	1	#5	STR	39′-11″	42
A802	1	#5	STR	39′-5″	41
A803	1	#5	STR	38′-7″	40
A804	1	#5	STR	37′-10″	39
A805	1	#5	STR	37′-0″	39
A806	1	#5	STR	36′-3″	38
A807	1	#5	STR	35′-5″	37
A808	1	#5	STR	34′-8″	36
A809	1	#5	STR	33′-10″	35
A810	1	#5	STR	33′-0″	34
A811	1	#5	STR	32′-3″	34
A812	1	#5	STR	31′-5″	33
A813	1	#5	STR	30′-8″	32
A814	1	#5	STR	29′-10″	31
A815	1	#5	STR	29′-1″	30
A816	1	#5	STR	28′-3″	29
A817	1	#5	STR	27′-6″	29
A818	1	#5	STR	26′-8″	28
A819	1	#5	STR	25′-11″	27
A820	1	#5	STR	25′-1″	26
A821	1	#5	STR	24′-4″	25
A822	1	#5	STR	23′-6″	25
A823	1	#5	STR	22′-9″	24
A824	1	#5	STR	21′-11″	23
A825	1	#5	STR	21′-2″	22
A826	1	#5	STR	20′-4″	21
A827	1	#5	STR	19′-7″	20
A828	1	#5	STR	18′-9″	20
A829	1	#5	STR	17′-11″	19
A830	1	#5	STR	17′-2″	18
A831	1	#5	STR	16′-4″	17
A832	1	#5	STR	15′-7″	16
A833	1	#5	STR	14′-9″	15
A834	1	#5	STR	14′-0″	15
A835	1	#5	STR	13′-2″	14
A836	1	#5	STR	12′-5″	13
A837	1	#5	STR	11′-7″	12
A838	1	#5	STR	10′-10″	11
A839	1	#5	STR	10′-0″	10
A840	1	#5	STR	9′-3″	10
A841	1	#5	STR	8′-5″	9
A842	1	#5	STR	7′-8″	8
A843	1	#5	STR	6′-10″	7
A844	1	#5	STR	6′-1″	6
A845	1	#5	STR	5′-3″	5
A846	1	#5	STR	4′-6″	5
A847	1	#5	STR	3′-8″	4
A848	1	#5	STR	2′-10″	3
A849	1	#5	STR	2′-1″	2
B1	58	#4	STR	22′-1″	856
B2	29	#7	STR	49′-0″	2905
B3	27	#7	STR	19′-6″	1076
B4	29	#4	STR	20′-0″	387
B5	29	#7	STR	45′-6′	2697
B6	27	#7	STR	17′-3″	952
B7	29	#4	STR	29′-1″	563
B8	208	#5	STR	46′-4″	10052
D1	118	#5	STR	3′-6″	431
G2	2	#5	STR	46′-1″	96
K10	4	#8	1	12′-10″	137
K11	12	#8	2	19′-1″	611
K12	16	#6	STR	8′-6″	204
K13	4	#8	1	10′-8″	114
K14	16	#4	STR	8′-6″	91

SPANS A, B & C - STAGE II

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
K15	8	#4	STR	9′-4″	50
K16	8	#4	STR	6′-11″	37
K17	16	#4	5	6′-5″	69
K18	24	#4	6	12′-6″	200
✳ S1	72	#5	3	4′-10″	363
✳ S2	72	#4	4	3′-8″	176
S3	152	#4	7	2′-9″	279
✳ U1	40	#4	8	13′-8″	365
✳ U2	16	#4	8	11′-8″	125
REINFORCING STEEL				LBS.	27216
EPOXY COATED REINFORCING STEEL				LBS.	28001

✳ INDICATES EPOXY COATED REINFORCING STEEL

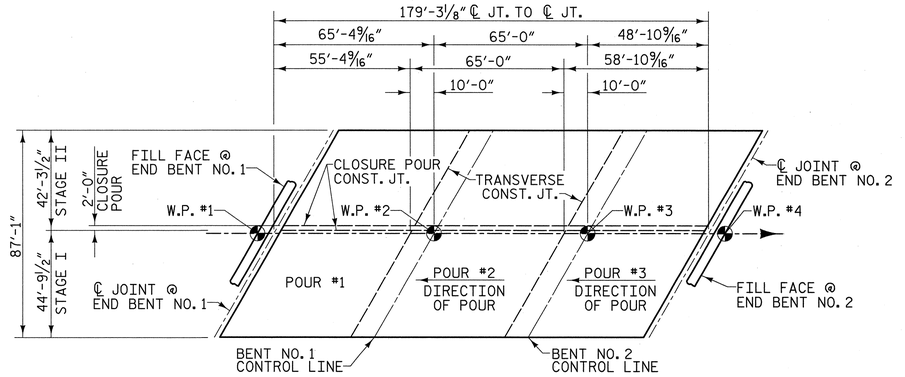
GROOVING BRIDGE FLOORS

APPROACH SLABS (STAGE I)	673	SQ. FT.
APPROACH SLABS (STAGE II)	673	SQ. FT.
TOTAL	1346	SQ. FT.
BRIDGE DECK (STAGE I)	4441	SQ. FT.
BRIDGE DECK (STAGE II)	4441	SQ. FT.
TOTAL	8882	SQ. FT.

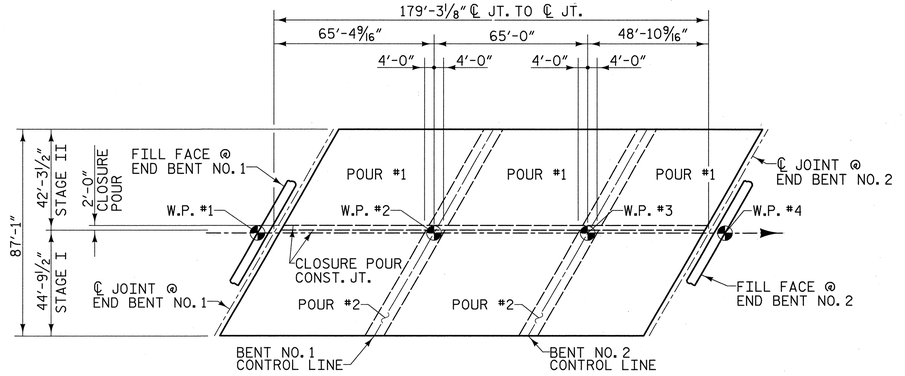
POUR SEQUENCE BREAKDOWN

SPANS A, B & C	CLASS AA CONCRETE (CU. YDS.)	
	STAGE I	STAGE II
POUR #1	84.4	76.2
POUR #2	109.2	98.3
POUR #3	102.8	92.2
CLOSURE POUR		13.4
SIDEWALK	22.3	22.3
MONO. CONC. ISLAND		43.0
✳✳ TOTALS	318.7	345.4

✳✳ QUANTITIES FOR PARAPET ARE NOT INCLUDED.

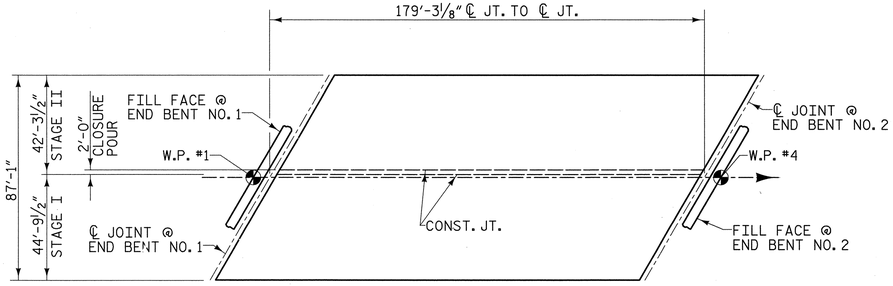


POURING SEQUENCE SKETCH



OPTIONAL POURING SEQUENCE SKETCH

NOTE: POUR 2 CANNOT BE STARTED UNTIL BOTH ADJACENT POURS REACH MINIMUM OF 3000 PSI



LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB

(TOTAL SQ. FT. = 15,610)
(STAGE I = 8029 SQ. FT.)
(STAGE II = 7581 SQ. FT.)

PLANS PREPARED BY:
MULKEY ENGINEERS & CONSULTANTS
PO Box 33127
RALEIGH, N.C. 27636
(919) 851-1912
(919) 851-1918 (FAX)
WWW.MULKEYINC.COM

NORTH CAROLINA PROFESSIONAL SEAL 10966 ENGINEER R. V. KEITH
6/11/09

PROJECT NO. U-5018A
PITT COUNTY
STATION: 56+12.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

BILL OF MATERIAL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-32
1			3			TOTAL SHEETS
2			4			

DRAWN BY : W. B. ALLEN DATE : 1/09
CHECKED BY : R. V. KEITH DATE : 2/09

NOTES:

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

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR BLOCKOUT IN WING WALL DETAILS, SEE SHEET 2 OF 4.

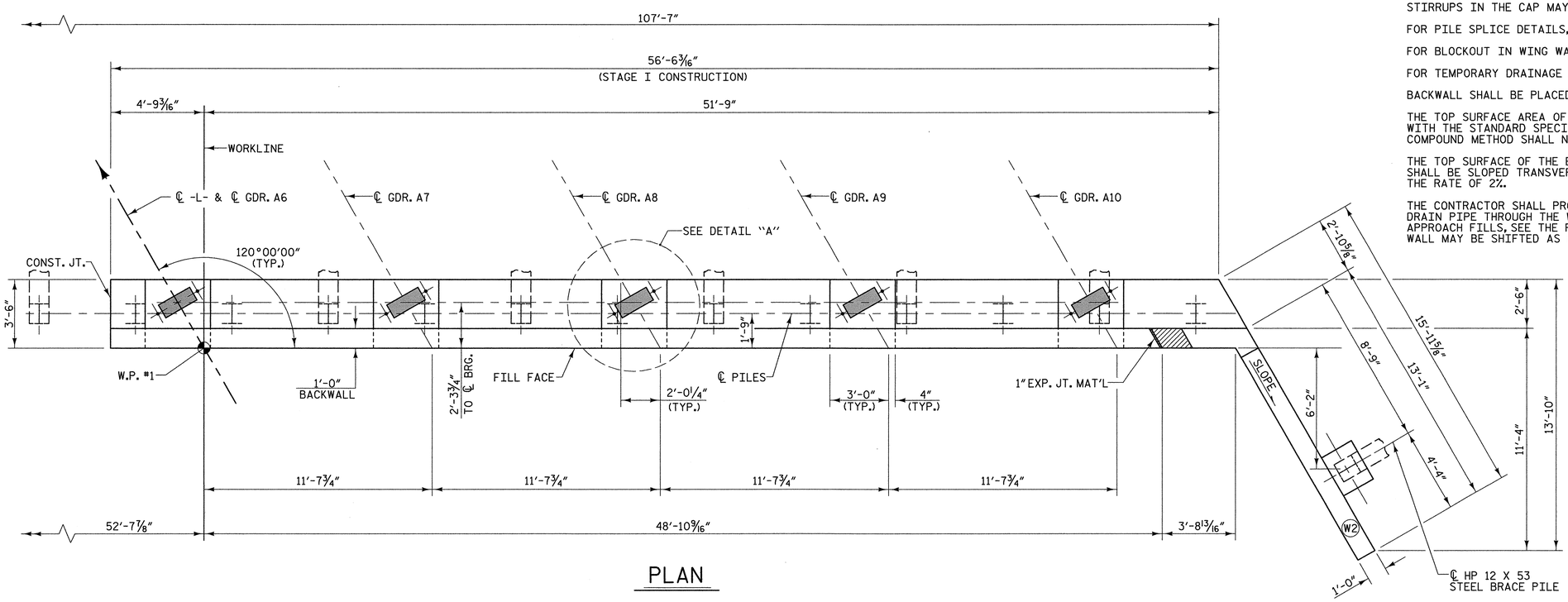
FOR TEMPORARY DRAINAGE AT END BENTS, SEE SHEET 4 OF 4.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

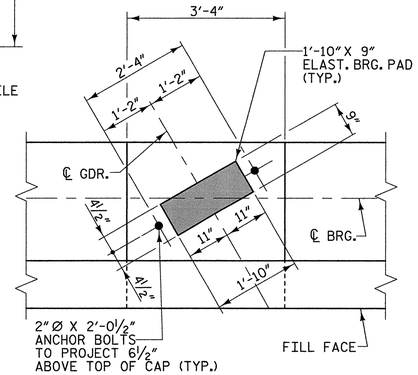
THE TOP SURFACE AREA OF THE END BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THAT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

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

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

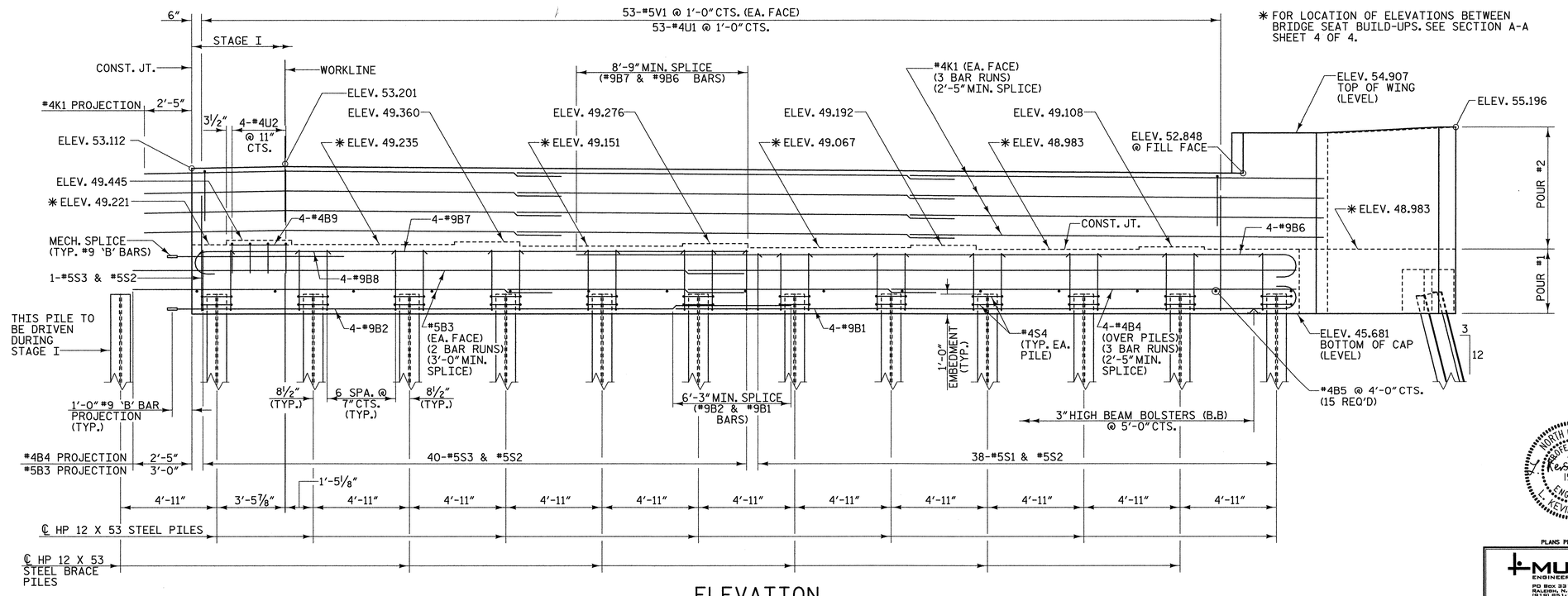


PLAN



DETAIL "A"

(TYPICAL EACH GIRDER)



ELEVATION

DRAWN BY : W. B. ALLEN DATE : 3/09
CHECKED BY : R. V. KEITH DATE : 4/09

PLANS PREPARED BY:

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(919) 851-1916 (FAX)
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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19661 KEVIN AUSTIN 5/27/10

PROJECT NO. U-5018A
PITT COUNTY
STATION: 56+12.00 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 1
STAGE I

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-33
1			3			TOTAL SHEETS
2			4			

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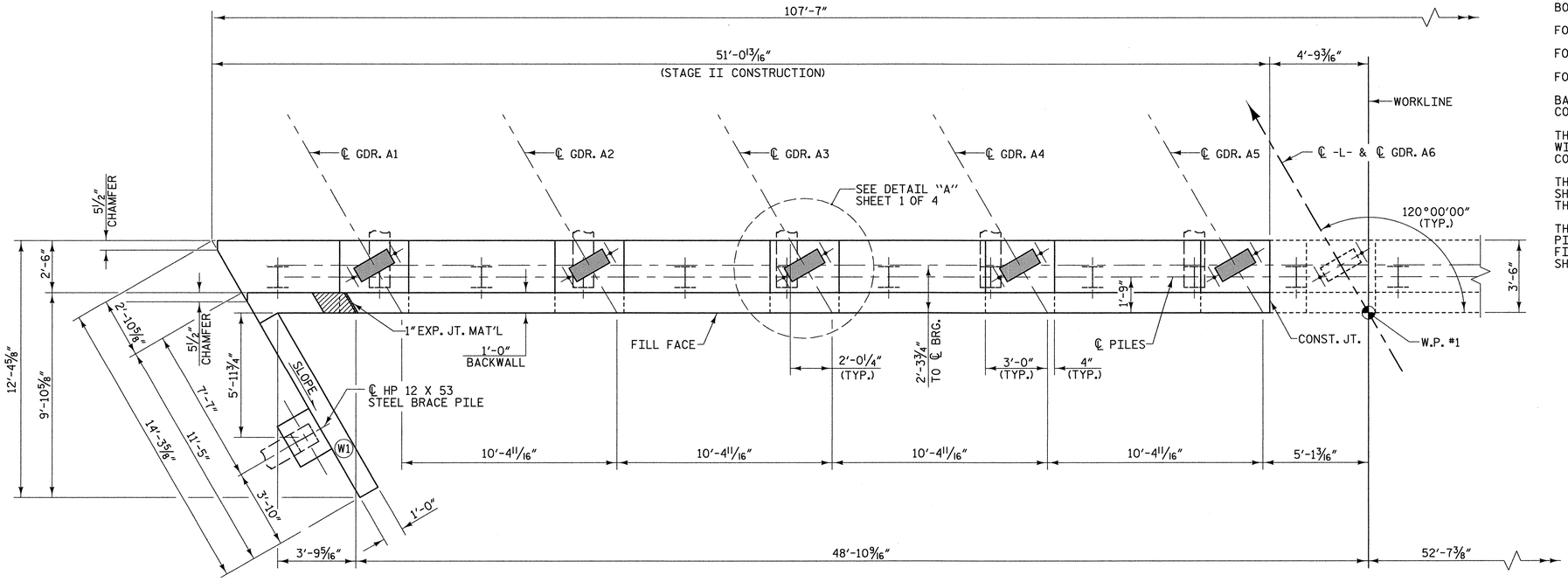
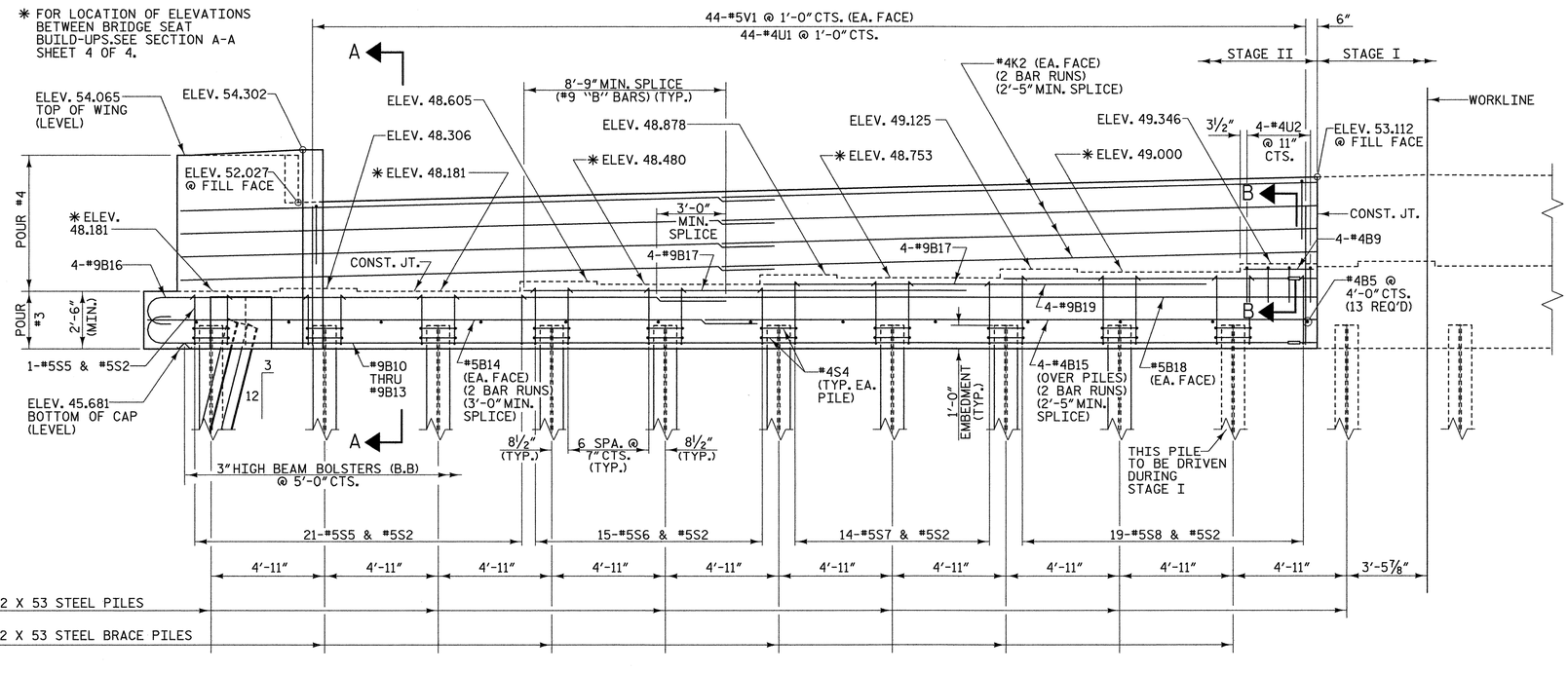


PLAN



ELEVATION

NOTES:

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

FOR SECTION A-A & SECTION B-B, SEE SHEET 4 OF 4.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

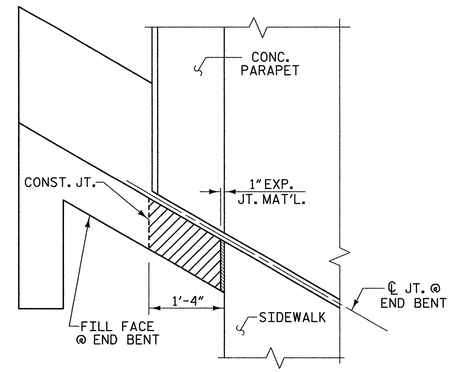
FOR TEMPORARY DRAINAGE AT END BENTS, SEE SHEET 4 OF 4.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

THE TOP SURFACE AREA 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.

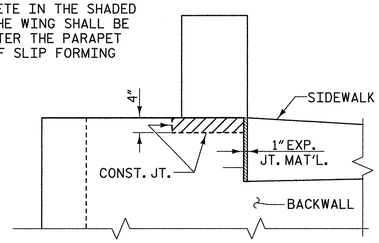
THE TOP SURFACE OF THE END BENT CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.

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



PLAN

NOTE:
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE PARAPET IS CAST IF SLIP FORMING IS USED.



ELEVATION

BLOCKOUT IN WING WALL

LEFT WING SHOWN, RIGHT WING SIMILAR

PROJECT NO. U-5018A

PITT COUNTY

STATION: 56+12.00 -L-

SHEET 2 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 19661 ENGINEER KEVIN AUSTIN 5/27/10

PLANS PREPARED BY:

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 1 STAGE II

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

DRAWN BY : W. B. ALLEN DATE : 3/09
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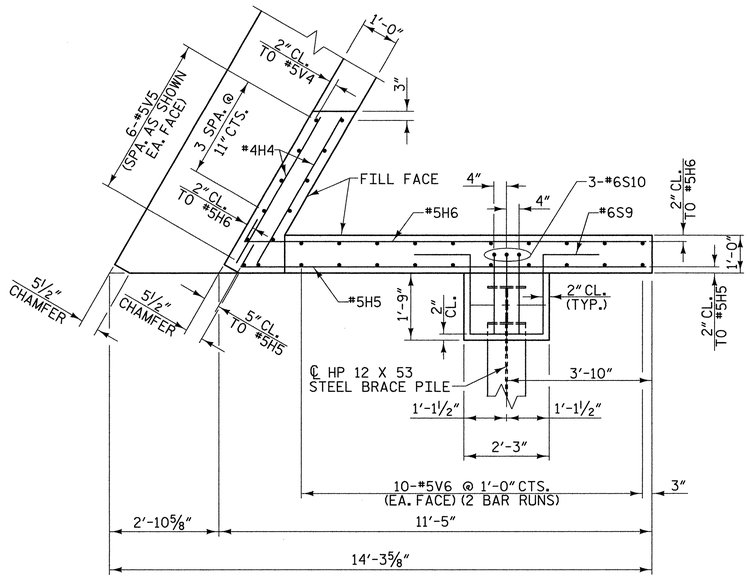
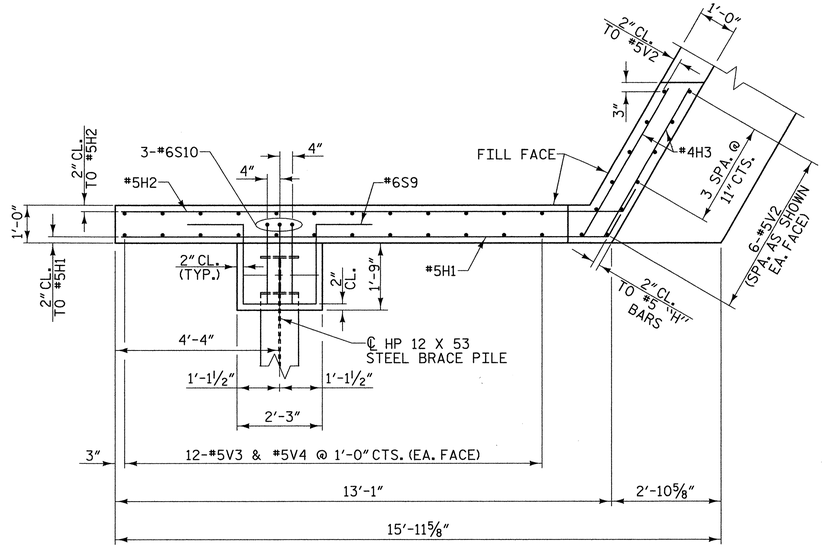
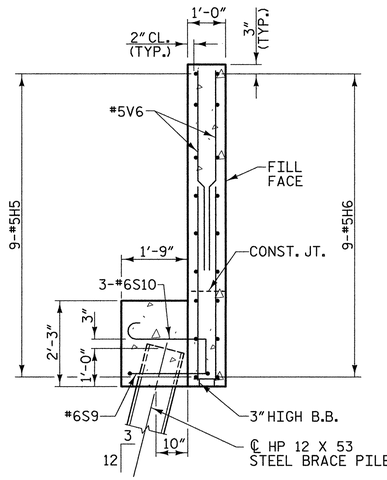


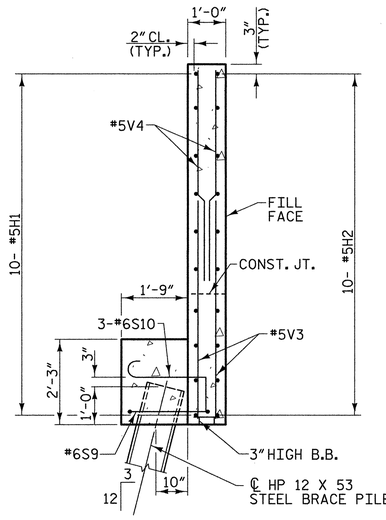
PLAN OF LEFT WING - W1



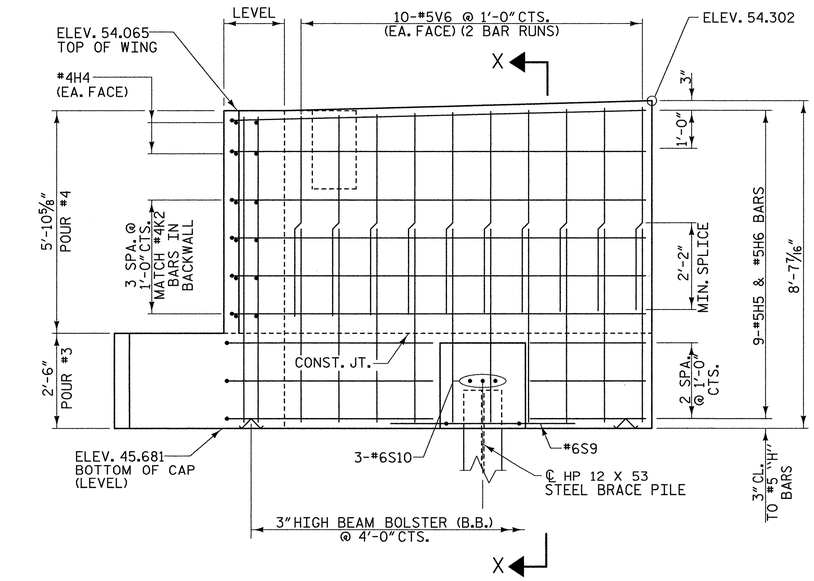
PLAN OF RIGHT WING - W2



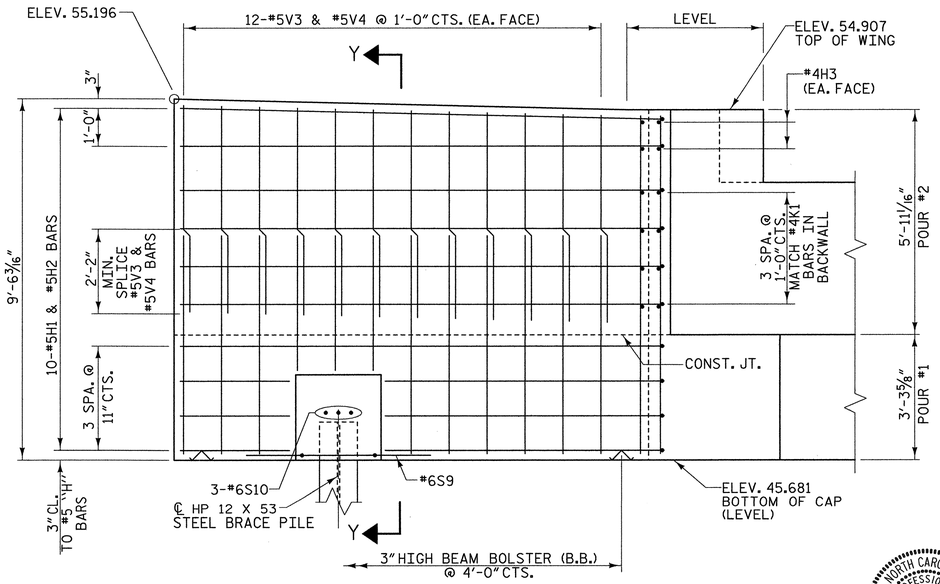
SECTION X-X



SECTION Y-Y



ELEVATION OF LEFT WING - W1



ELEVATION OF RIGHT WING - W2

PROJECT NO. U-5018A

PITT COUNTY

STATION: 56+12.00 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT NO. 1

PLANS PREPARED BY:

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NORTH CAROLINA PROFESSIONAL SEAL 1966 ENGINEER KEVIN AUSTIN 5/21/10

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-35
1			3			TOTAL SHEETS
2			4			

DRAWN BY : W. B. ALLEN DATE : 4/09
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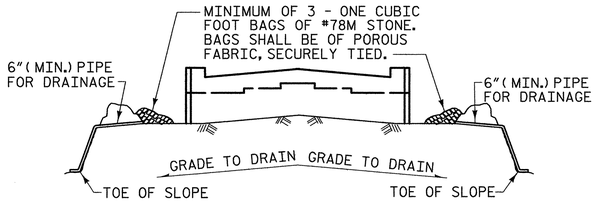
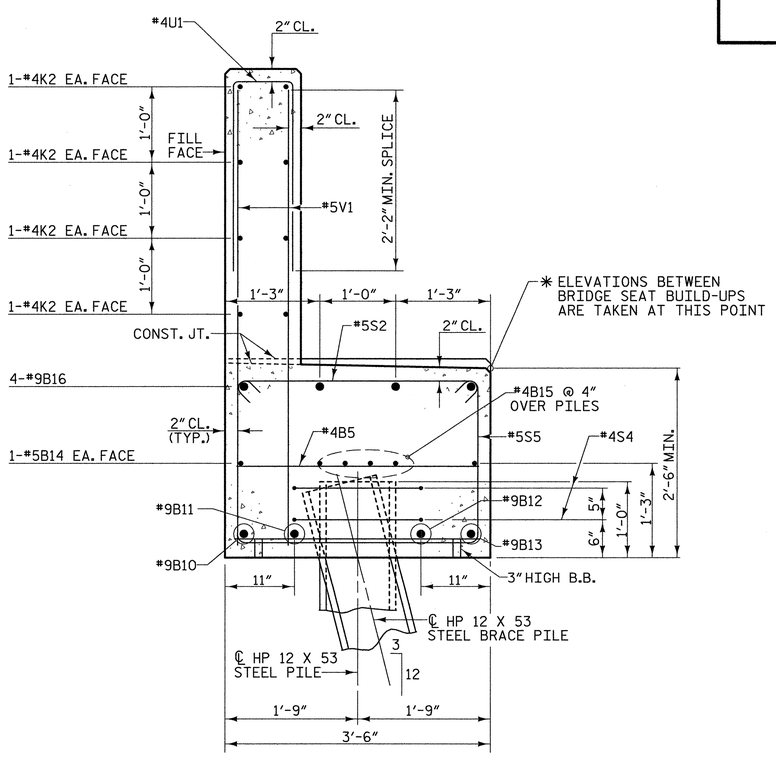


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

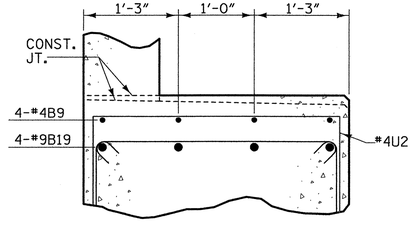
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE LUMP SUM BID PRICE FOR PLACEMENT OF SUBSTRUCTURE.

TEMPORARY DRAINAGE AT END BENT

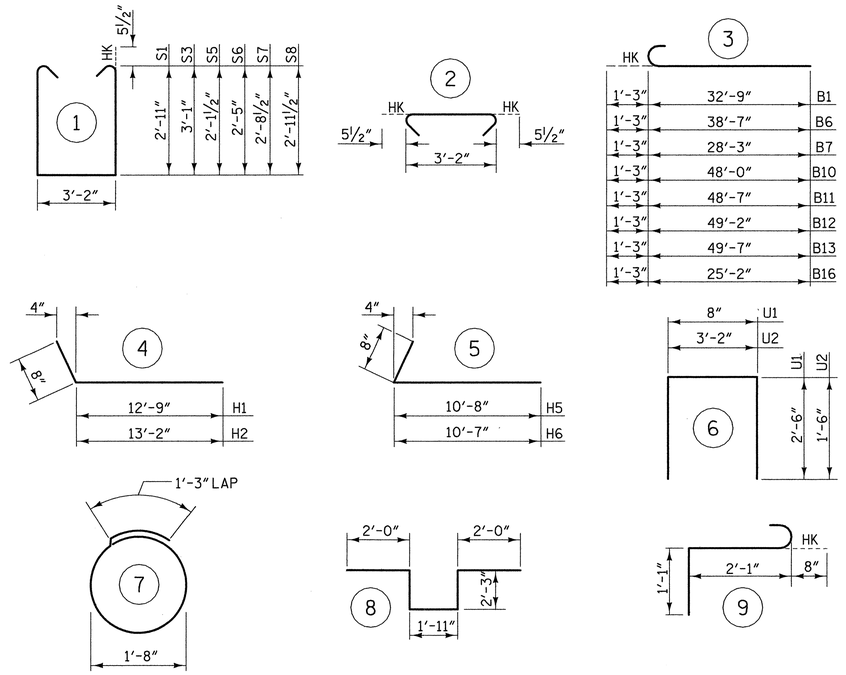


SECTION A-A



SECTION B-B

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR END BENT 1 - STAGE I

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#9	3	34'-0"	462
B2	4	#9	STR	32'-9"	445
B3	8	#5	STR	32'-0"	267
B4	12	#4	STR	21'-8"	174
B5	15	#4	STR	3'-2"	32
B6	4	#9	3	39'-10"	542
B7	4	#9	3	29'-6"	401
B8	4	#9	STR	8'-9"	119
B9	4	#4	STR	3'-0"	8
H1	10	#5	4	13'-5"	140
H2	10	#5	4	13'-10"	144
H3	4	#4	STR	4'-6"	12
K1	24	#4	STR	21'-10"	350
S1	38	#5	1	9'-11"	393
S2	78	#5	2	4'-1"	332
S3	40	#5	1	10'-3"	428
S4	24	#4	7	6'-6"	104
S9	1	#6	8	10'-5"	16
S10	3	#6	9	3'-10"	17
U1	53	#4	6	5'-8"	201
U2	4	#4	6	6'-2"	16
V1	106	#5	STR	6'-0"	663
V2	12	#5	STR	8'-10"	111
V3	24	#5	STR	5'-10"	146
V4	24	#5	STR	5'-7"	140

REINFORCING STEEL = 5663 lbs.

CLASS "A" CONCRETE - CU. YARDS

POUR 1 27.7 cu. yds.

POUR 2 11.5 cu. yds.

TOTAL 39.2 cu. yds.

HP 12 X 53 STEEL PILES

14 PILES REQUIRED - LIN. FEET 1142

FOR END BENT 1 - STAGE II

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B5	13	#4	STR	3'-2"	27
B9	4	#4	STR	3'-0"	8
B10	1	#9	3	49'-3"	167
B11	1	#9	3	49'-10"	169
B12	1	#9	3	50'-5"	171
B13	1	#9	3	50'-10"	173
B14	4	#5	STR	26'-7"	111
B15	8	#4	STR	26'-10"	143
B16	4	#9	3	26'-5"	359
B17	8	#9	STR	19'-2"	521
B18	2	#5	STR	28'-7"	60
B19	4	#9	STR	12'-6"	170
H4	4	#4	STR	4'-5"	12
H5	9	#5	5	11'-4"	106
H6	9	#5	5	11'-3"	106
K2	16	#4	STR	25'-10"	276
S2	69	#5	2	4'-1"	294
S4	20	#4	7	6'-6"	87
S5	21	#5	1	8'-4"	183
S6	15	#5	1	8'-11"	140
S7	14	#5	1	9'-6"	139
S8	19	#5	1	10'-0"	198
S9	1	#6	8	10'-5"	16
S10	3	#6	9	3'-10"	17
U1	44	#4	6	5'-8"	167
U2	4	#4	6	6'-2"	16
V1	88	#5	STR	6'-0"	551
V5	12	#5	STR	8'-0"	100
V6	40	#5	STR	5'-3"	219

REINFORCING STEEL = 4706 lbs.

CLASS "A" CONCRETE - CU. YARDS

POUR 3 20.5 cu. yds.

POUR 4 9.6 cu. yds.

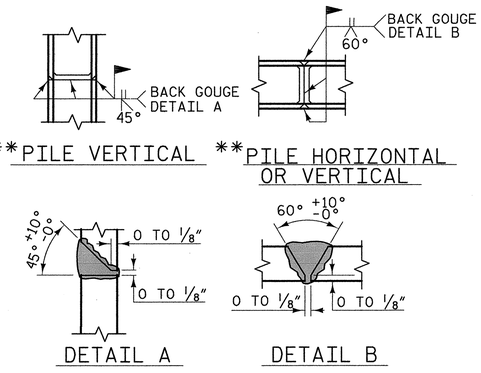
TOTAL 30.1 cu. yds.

HP 12 X 53 STEEL PILES

10 PILES REQUIRED - LIN. FEET 816

TOTAL QUANTITIES

TOTAL REINFORCING STEEL =	10,369 lbs.
CLASS "A" CONCRETE - CU. YARDS	69.3 cu. yds.
HP 12 X 53 STEEL PILES	
24 PILES REQUIRED - LIN. FEET	1958
PILE REDRIVES	11 EA.



PILE SPLICE DETAILS

**POSITION OF PILE DURING WELDING.

PLANS PREPARED BY:

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PROJECT NO. U-5018A

PITT COUNTY

STATION: 56+12.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT NO. 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-36
1			3			TOTAL SHEETS
2			4			

DRAWN BY : W. B. ALLEN DATE : 4/09

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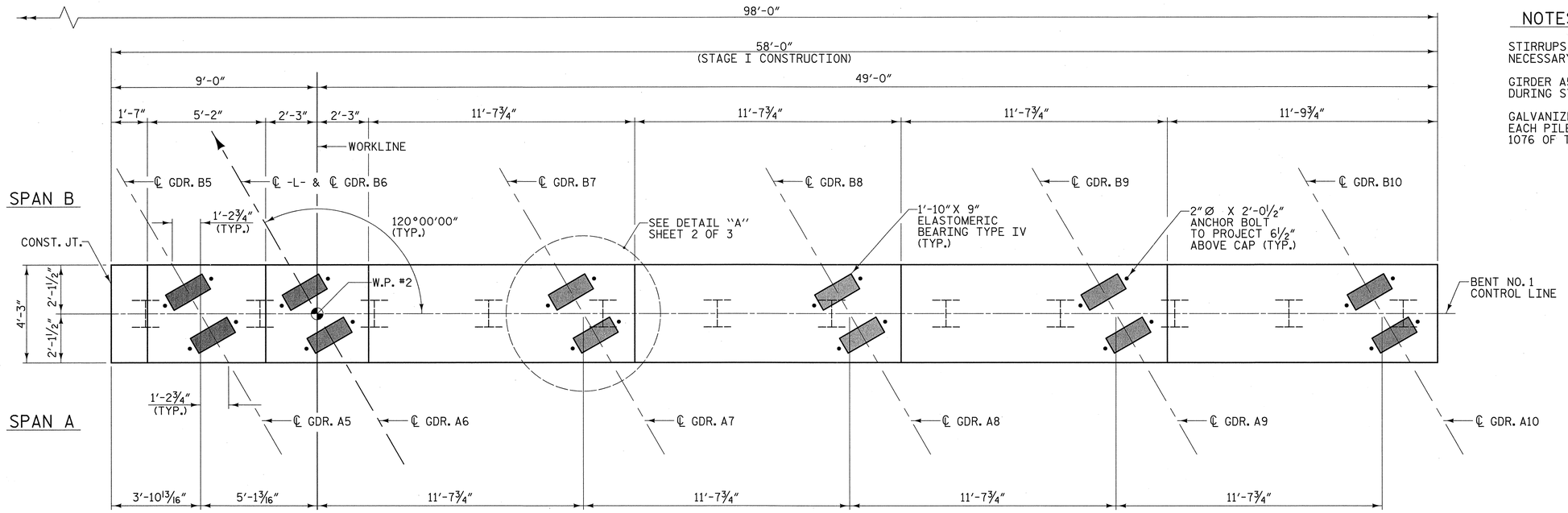
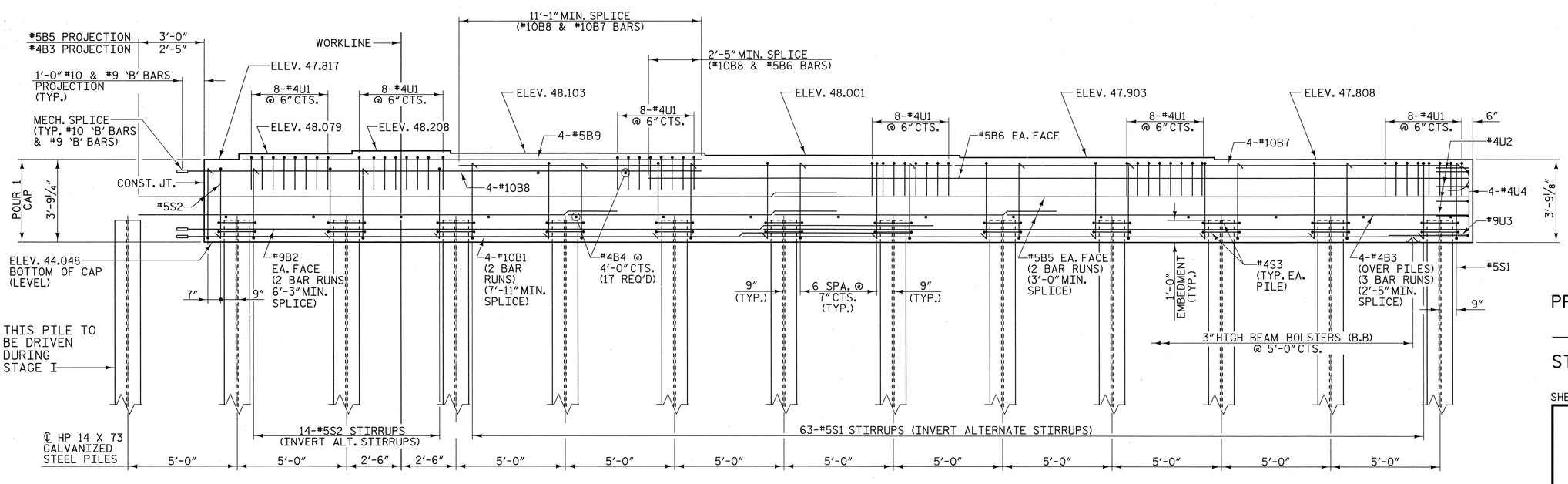


PLAN



ELEVATION

NOTES:

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

GIRDER A5 AND GIRDER B5 TO BE PLACED DURING STAGE II CONSTRUCTION.

GALVANIZE THE TOP 40 FEET MINIMUM OF EACH PILE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.

PROJECT NO. U-5018A

PITT COUNTY

STATION: 56+12.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT NO. 1 STAGE I

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-37
1			3			TOTAL SHEETS
2			4			

DRAWN BY : W. B. ALLEN DATE : 4/09
CHECKED BY : R. V. KEITH DATE : 4/09

NORTH CAROLINA PROFESSIONAL SEAL 10966 ENGINEER R. V. KEITH 6/4/09

PLANS PREPARED BY:

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NOTES:

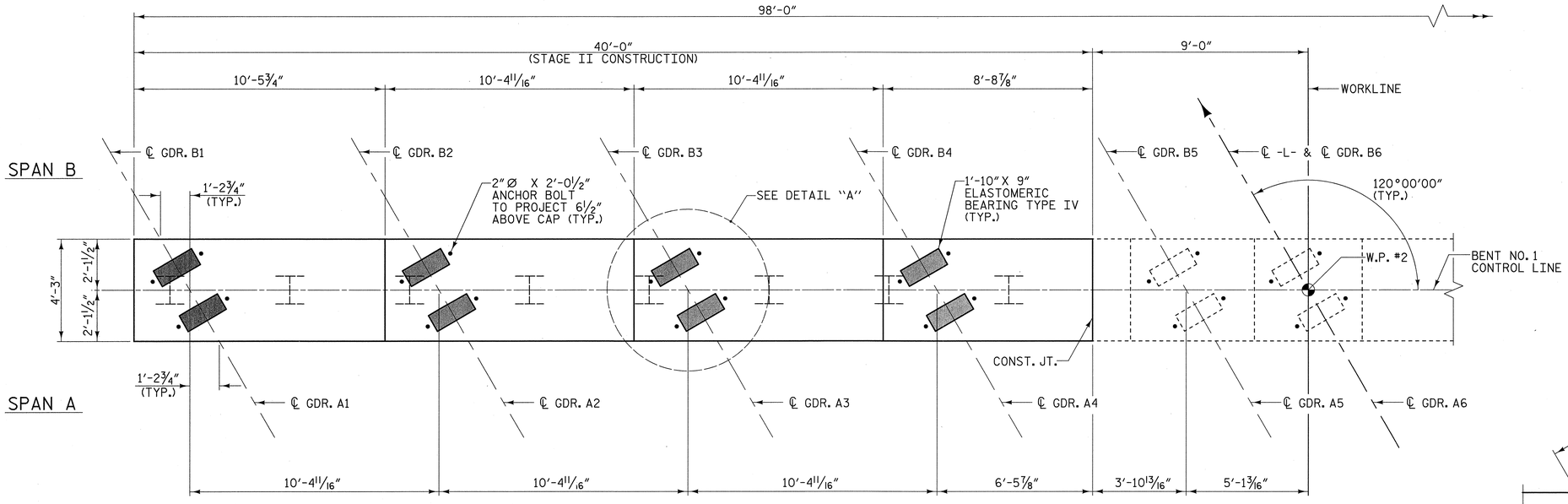
STIRRUPS IN THE CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

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

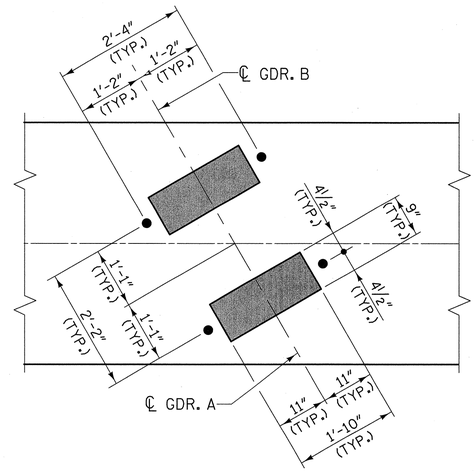
FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.

GIRDER A5 AND GIRDER B5 TO BE PLACED DURING STAGE II CONSTRUCTION.

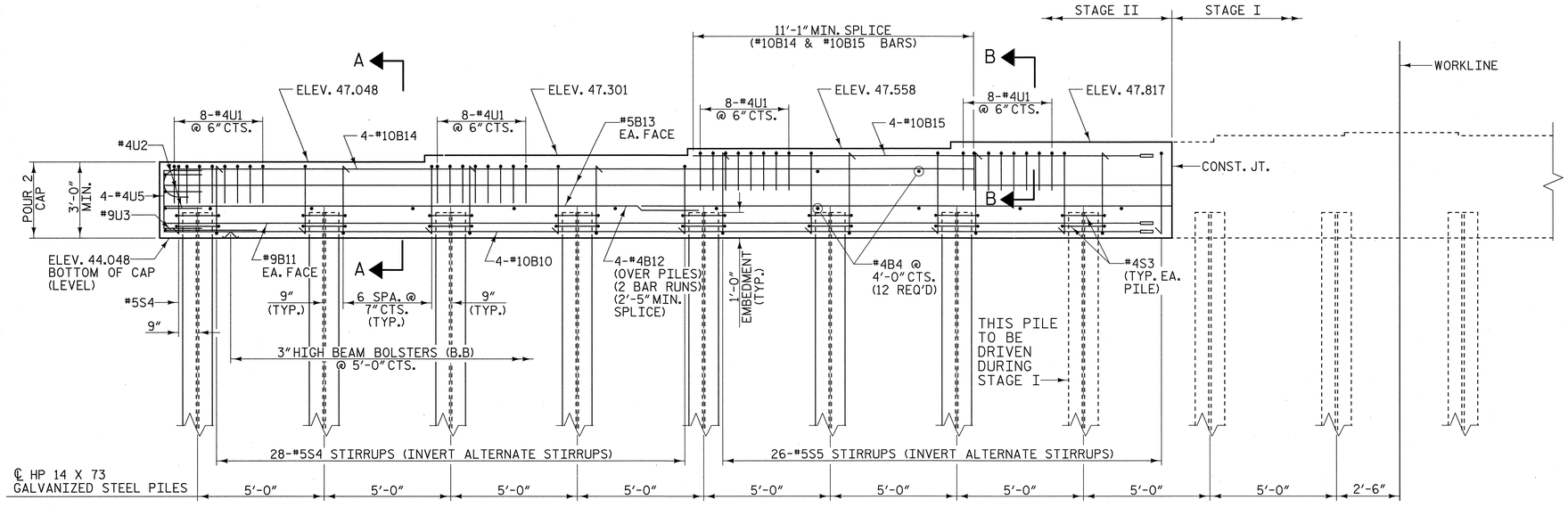
GALVANIZE THE TOP 40 FEET MINIMUM OF EACH PILE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.



PLAN



DETAIL "A"
(TYPICAL EACH GIRDER)



ELEVATION

PROJECT NO. U-5018A

PITT COUNTY

STATION: 56+12.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT NO. 1
STAGE II

NORTH CAROLINA PROFESSIONAL SEAL 10966 ENGINEER RICKY V. KEITH
6/11/09

PLANS PREPARED BY:

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-38
1			3			TOTAL SHEETS
2			4			

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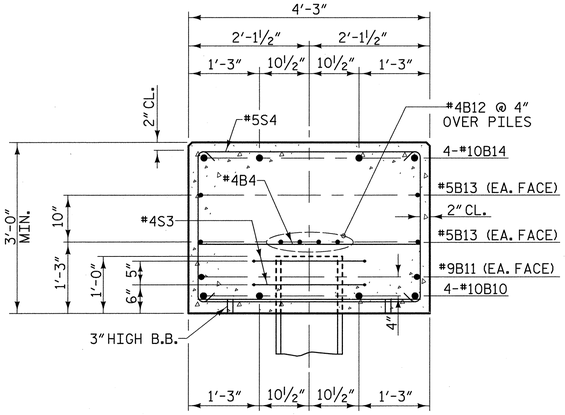
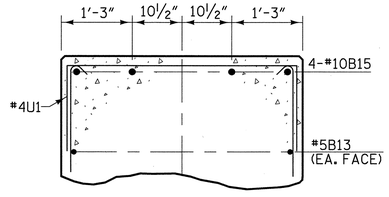


SECTION A-A



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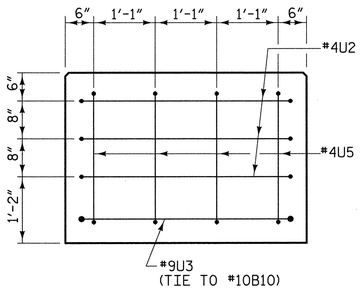
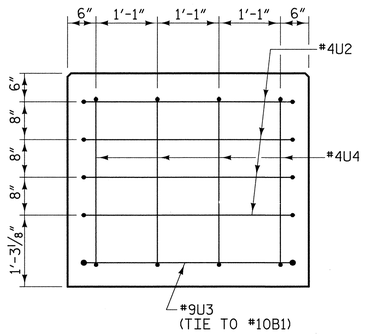


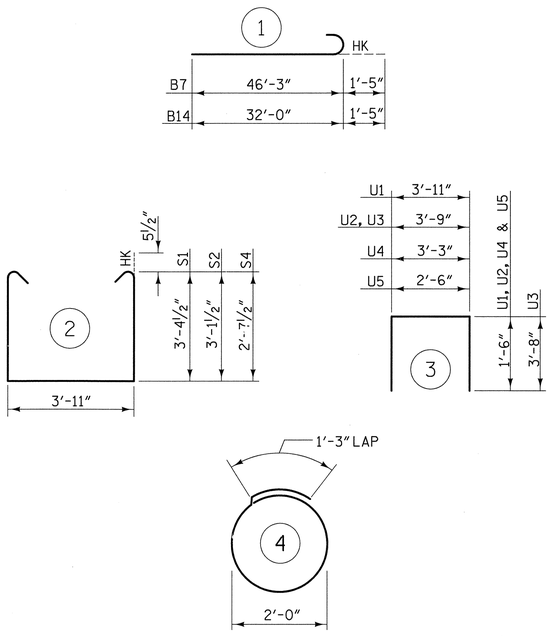
LEFT SIDE
(STAGE II CONSTRUCTION)



RIGHT SIDE
(STAGE I CONSTRUCTION)

END VIEW

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR BENT 1 - STAGE I

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#10	STR	33'-5"	1150
B2	4	#9	STR	32'-7"	443
B3	12	#4	STR	21'-9"	174
B4	17	#4	STR	3'-11"	44
B5	8	#5	STR	31'-11"	266
B6	2	#5	STR	37'-6"	78
B7	4	#10	1	47'-8"	820
B8	4	#10	STR	23'-11"	412
B9	4	#5	STR	20'-11"	87
S1	64	#5	2	11'-7"	773
S2	16	#5	2	11'-1"	185
S3	24	#4	4	7'-7"	122
U1	48	#4	3	6'-11"	222
U2	4	#4	3	6'-9"	18
U3	1	#9	3	11'-1"	38
U4	4	#4	3	6'-3"	17

REINFORCING STEEL = 4849 lbs.

CLASS "A" CONCRETE - CU. YARDS
POUR 1 35.9 cu. yds.

HP 14 X 73 GALVANIZED STEEL PILES
12 PILES REQUIRED - LIN. FEET 973

FOR BENT 1 - STAGE II

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B4	12	#4	STR	3'-11"	31
B10	4	#10	STR	38'-10"	668
B11	2	#9	STR	38'-10"	264
B12	8	#4	STR	21'-2"	113
B13	4	#5	STR	39'-10"	166
B14	4	#10	1	33'-5"	575
B15	4	#10	STR	17'-11"	308
S2	26	#5	2	11'-1"	301
S3	16	#4	4	7'-7"	81
S4	29	#5	2	10'-1"	305
U1	32	#4	3	6'-11"	148
U2	3	#4	3	6'-9"	14
U3	1	#9	3	11'-1"	38
U5	4	#4	3	5'-6"	15

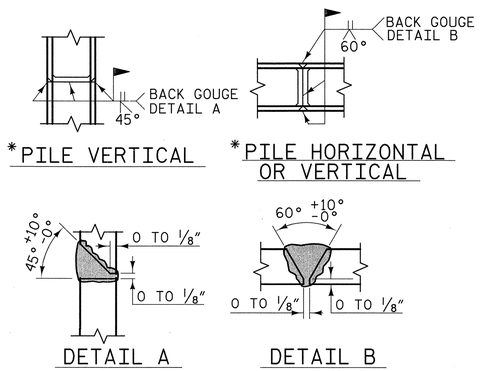
REINFORCING STEEL = 3027 lbs.

CLASS "A" CONCRETE - CU. YARDS
POUR 2 21.2 cu. yds.

HP 14 X 73 GALVANIZED STEEL PILES
8 PILES REQUIRED - LIN. FEET 648

TOTAL QUANTITIES

TOTAL REINFORCING STEEL =	7876 lbs.
CLASS "A" CONCRETE - CU. YARDS	57.1 cu. yds.
HP 14 X 73 GALVANIZED STEEL PILES	
20 PILES REQUIRED - LIN. FEET	1621
PILE REDRIVES	10 EA.



*PILE VERTICAL

*PILE HORIZONTAL OR VERTICAL

DETAIL A

DETAIL B

PILE SPLICE DETAILS

*POSITION OF PILE DURING WELDING.

PROJECT NO. U-5018A

PITT COUNTY

STATION: 56+12.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT NO. 1

NORTH CAROLINA PROFESSIONAL SEAL 10966 ENGINEER RICKY V. KEITH
6/11/09

PLANS PREPARED BY:

MULKEY
ENGINEERS & CONSULTANTS
PO Box 33127
Raleigh, N.C. 27636
(919) 851-1918
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www.mulkeyinc.com

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-39
1			3			TOTAL SHEETS
2			4			

DRAWN BY : W. B. ALLEN DATE : 4/09
CHECKED BY : R. V. KEITH DATE : 4/09

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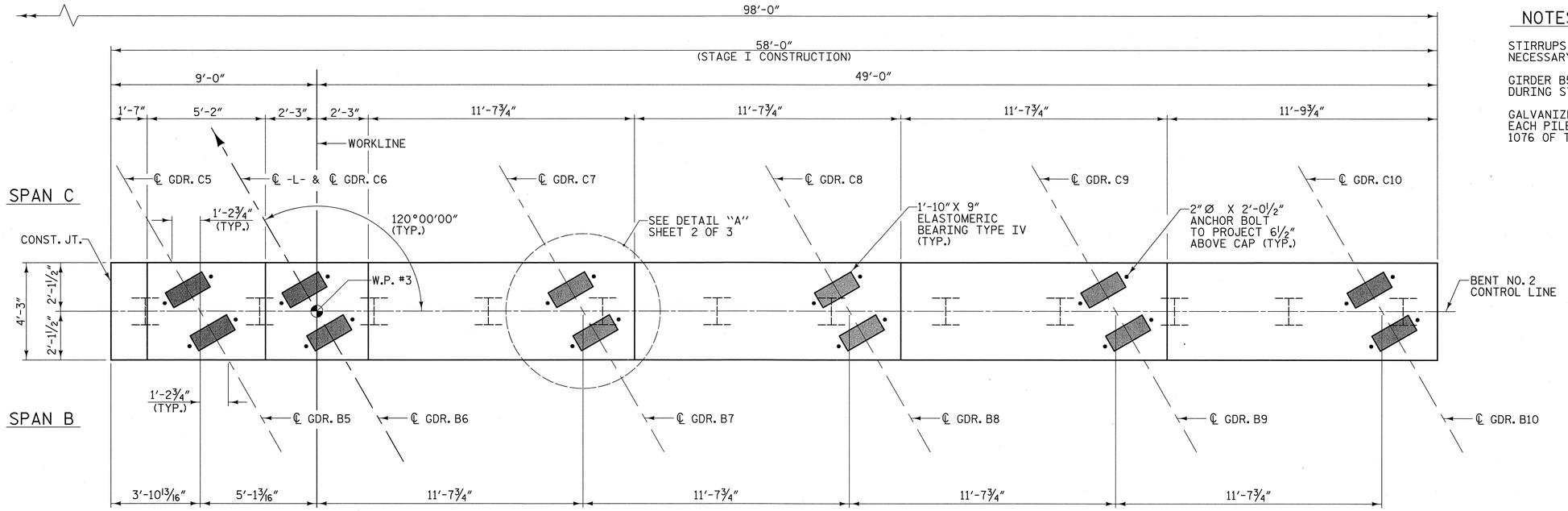


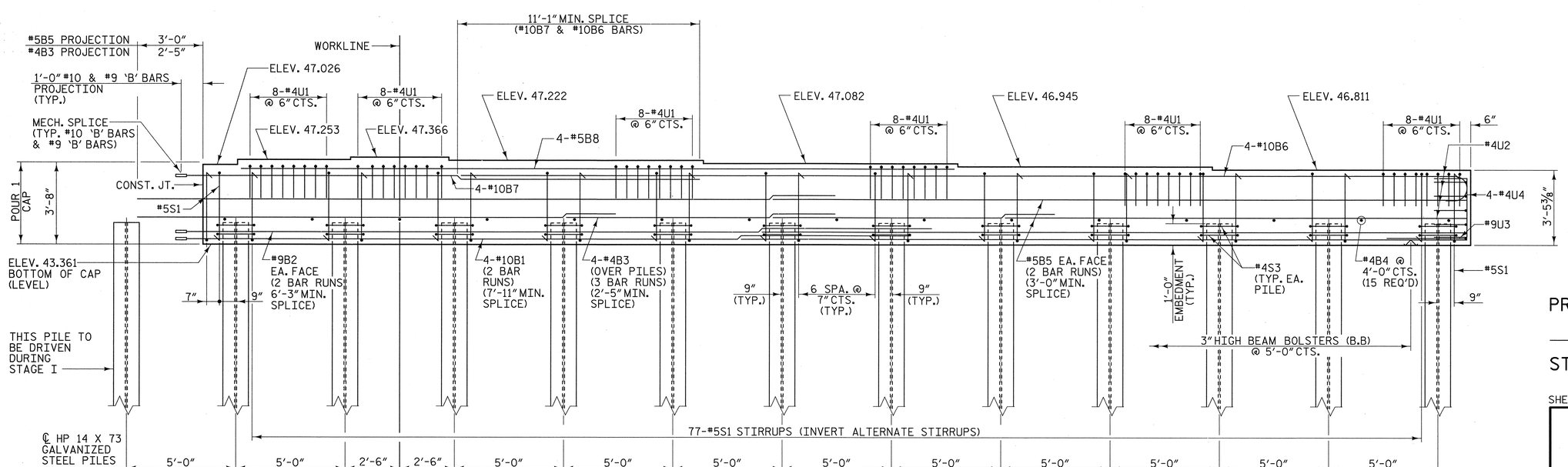
PLAN

NOTES:

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

GIRDER B5 AND GIRDER C5 TO BE PLACED DURING STAGE II CONSTRUCTION.

GALVANIZE THE TOP 40 FEET MINIMUM OF EACH PILE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.



ELEVATION

PROJECT NO. U-5018A

PITT COUNTY

STATION: 56+12.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT NO. 2
STAGE I

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-40
1			3			TOTAL SHEETS
2			4			

PLANS PREPARED BY:

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NORTH CAROLINA PROFESSIONAL SEAL 10966 ENGINEER R. V. KEITH

DRAWN BY : W. B. ALLEN DATE : 4/09
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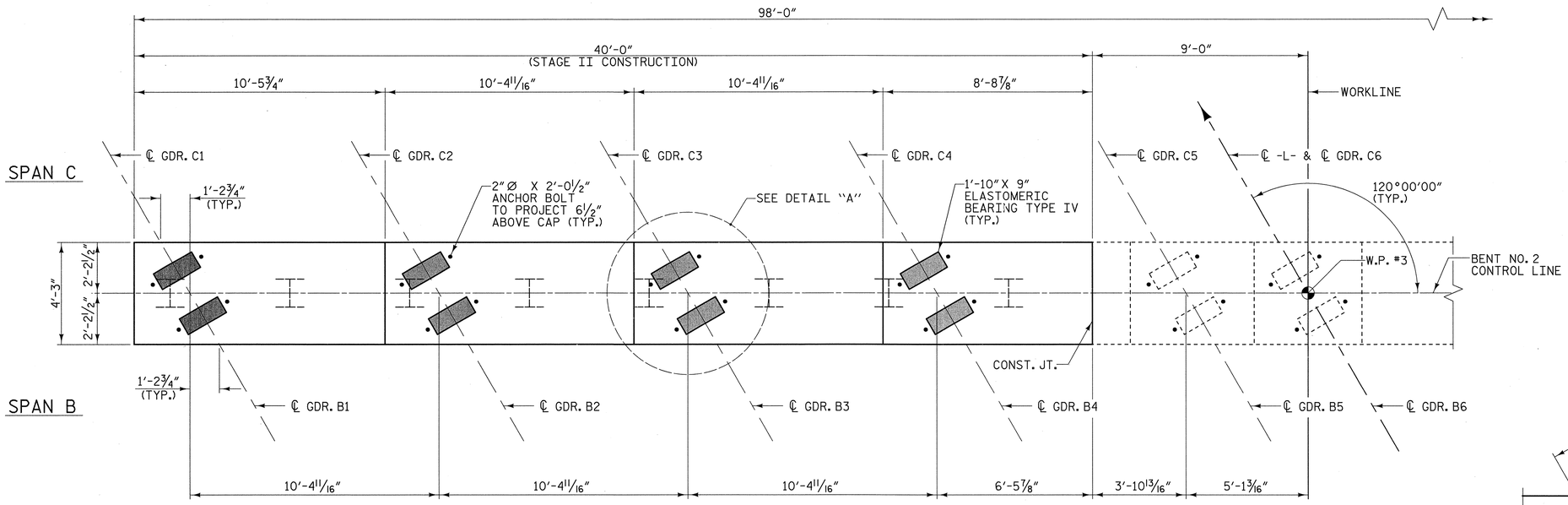
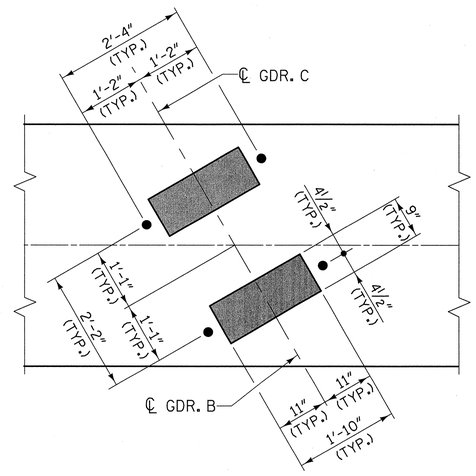
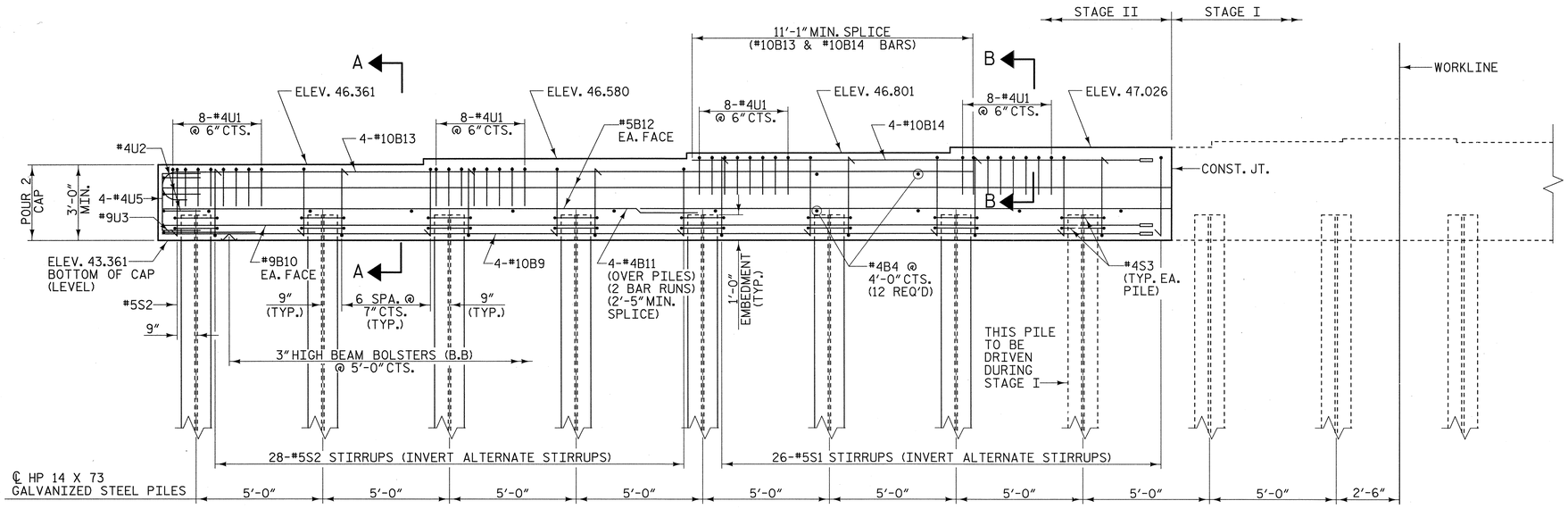


PLAN



DETAIL "A"
(TYPICAL EACH GIRDER)



ELEVATION

NOTES:

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

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

FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.

GIRDER B5 AND GIRDER C5 TO BE PLACED DURING STAGE II CONSTRUCTION.

GALVANIZE THE TOP 40 FEET MINIMUM OF EACH PILE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.

PROJECT NO. U-5018A

PITT COUNTY

STATION: 56+12.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT NO. 2
STAGE II

NORTH CAROLINA PROFESSIONAL SEAL 10966 ENGINEER RICKY V. KEITH
6/11/09

PLANS PREPARED BY:

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-41
1			3			TOTAL SHEETS
2			4			

DRAWN BY : W. B. ALLEN DATE : 4/09
CHECKED BY : R. V. KEITH DATE : 4/09

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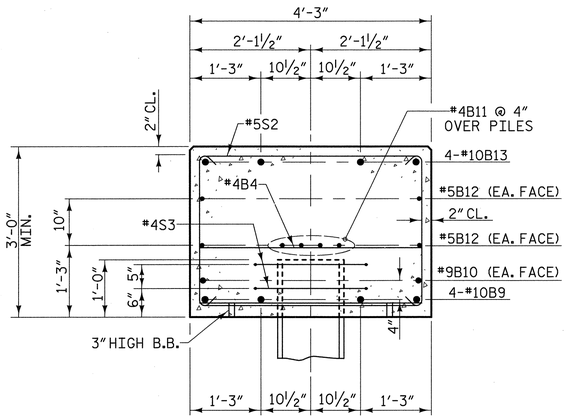
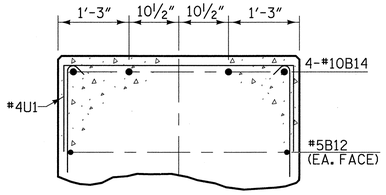
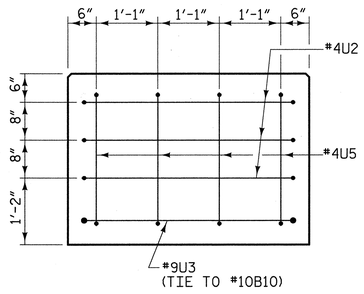


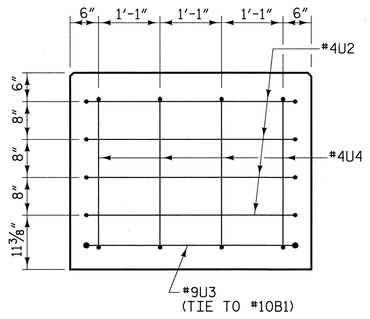
SECTION A-A



SECTION B-B



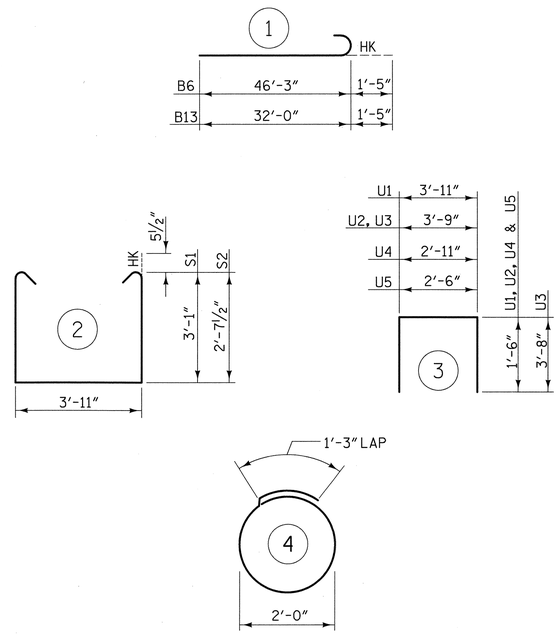
LEFT SIDE
(STAGE II CONSTRUCTION)



RIGHT SIDE
(STAGE I CONSTRUCTION)

END VIEW

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR BENT 2 - STAGE I

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#10	STR	33'-5"	1150
B2	4	#9	STR	32'-7"	443
B3	12	#4	STR	21'-9"	174
B4	15	#4	STR	3'-11"	39
B5	8	#5	STR	31'-11"	266
B6	4	#10	1	47'-8"	820
B7	4	#10	STR	23'-9"	409
B8	4	#5	STR	32'-7"	136
S1	80	#5	2	11'-0"	918
S3	24	#4	4	7'-7"	122
U1	48	#4	3	6'-11"	222
U2	4	#4	3	6'-9"	18
U3	1	#9	3	11'-1"	38
U4	4	#4	3	5'-11"	16

REINFORCING STEEL = 4771 lbs.

CLASS "A" CONCRETE - CU. YARDS

POUR 1 33.8 cu. yds.

HP 14 X 73 GALVANIZED STEEL PILES

13 PILES REQUIRED - LIN. FEET 1240

FOR BENT 2 - STAGE II

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B4	12	#4	STR	3'-11"	31
B9	4	#10	STR	38'-10"	668
B10	2	#9	STR	38'-10"	264
B11	8	#4	STR	21'-2"	113
B12	4	#5	STR	39'-10"	166
B13	4	#10	1	33'-5"	575
B14	4	#10	STR	17'-11"	308
S1	26	#5	2	11'-0"	298
S2	29	#5	2	10'-1"	305
S3	16	#4	4	7'-7"	81
U1	32	#4	3	6'-11"	148
U2	3	#4	3	6'-9"	14
U3	1	#9	3	11'-1"	38
U5	4	#4	3	5'-6"	15

REINFORCING STEEL = 3024 lbs.

CLASS "A" CONCRETE - CU. YARDS

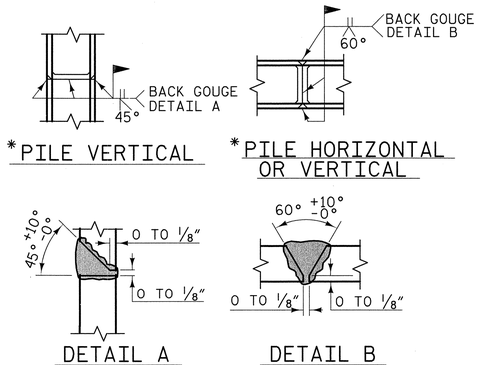
POUR 2 20.9 cu. yds.

HP 14 X 73 GALVANIZED STEEL PILES

7 PILES REQUIRED - LIN. FEET 668

TOTAL QUANTITIES

TOTAL REINFORCING STEEL =	7795 lbs.
CLASS "A" CONCRETE - CU. YARDS	54.7 cu. yds.
HP 14 X 73 GALVANIZED STEEL PILES	
20 PILES REQUIRED - LIN. FEET	1908
PILE REDRIVES	10 EA.



*PILE VERTICAL

*PILE HORIZONTAL OR VERTICAL

DETAIL A

DETAIL B

PILE SPLICE DETAILS

*POSITION OF PILE DURING WELDING.

PLANS PREPARED BY:

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WWW.MULKEYINC.COM

PROJECT NO. U-5018A

PITT COUNTY

STATION: 56+12.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT NO. 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-42
1			3			TOTAL SHEETS
2			4			

DRAWN BY : W. B. ALLEN DATE : 4/09
CHECKED BY : R. V. KEITH DATE : 4/09

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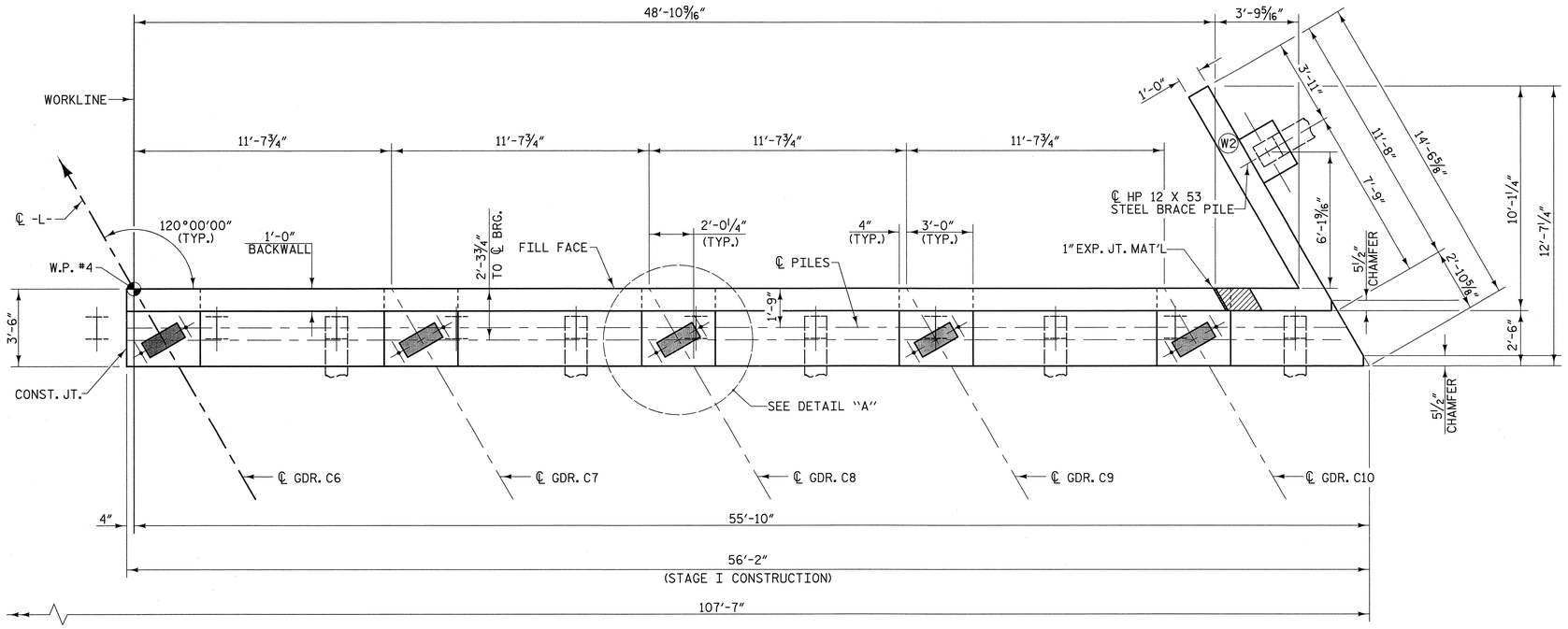


PLAN

NOTES:

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

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR BLOCKOUT IN WING WALL DETAILS, SEE SHEET 2 OF 4.

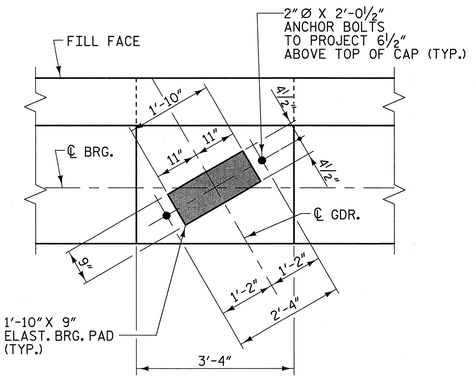
FOR TEMPORARY DRAINAGE AT END BENTS, SEE SHEET 4 OF 4.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

THE TOP SURFACE AREA 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.

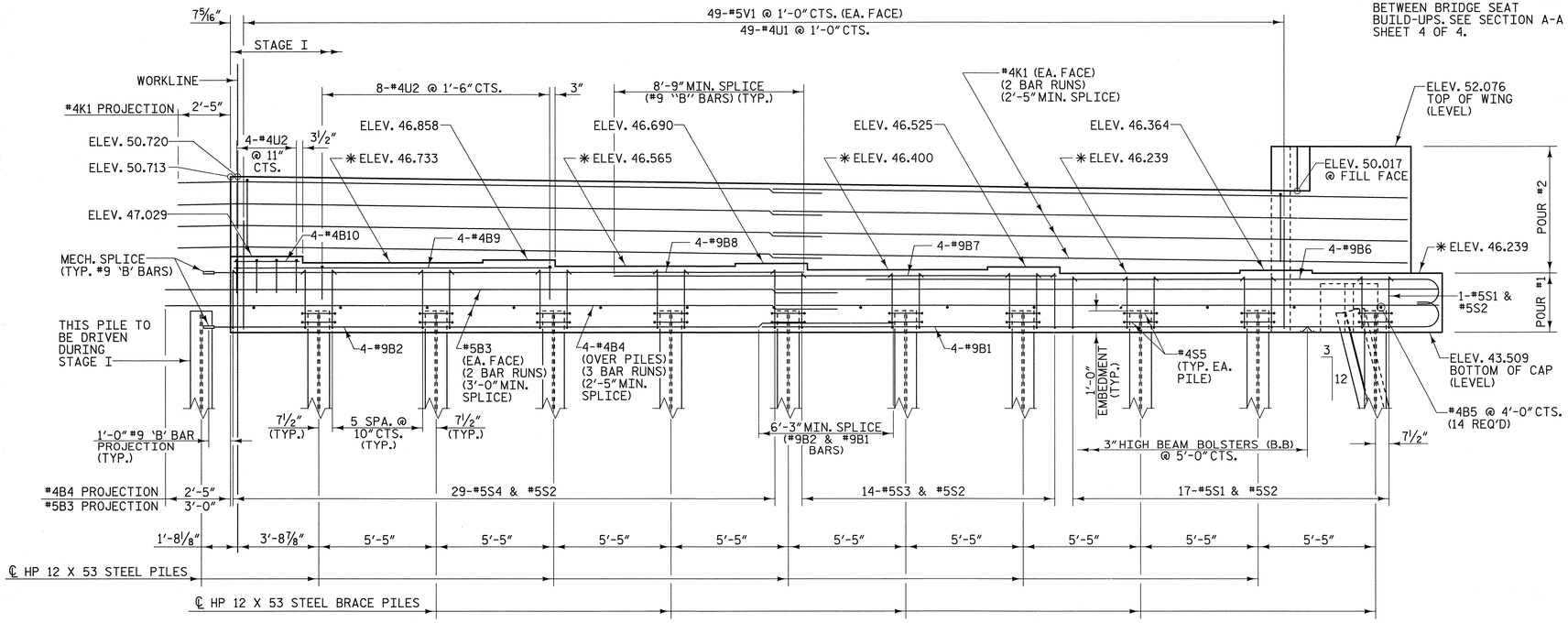
THE TOP SURFACE OF THE END BENT CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.

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



DETAIL "A"
(TYPICAL EACH GIRDER)

✳ FOR LOCATION OF ELEVATION BETWEEN BRIDGE SEAT BUILD-UPS. SEE SECTION A-A SHEET 4 OF 4.



ELEVATION

PROJECT NO. U-5018A

PITT COUNTY

STATION: 56+12.00 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 2
STAGE I

NORTH CAROLINA PROFESSIONAL SEAL 10966 ENGINEER RICKY V. KEITH 6/4/09

PLANS PREPARED BY:

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PO Box 33127
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(919) 851-1918 FAX
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-43
1			3			TOTAL SHEETS
2			4			

DRAWN BY : W. B. ALLEN DATE : 4/09
CHECKED BY : R. V. KEITH DATE : 4/09

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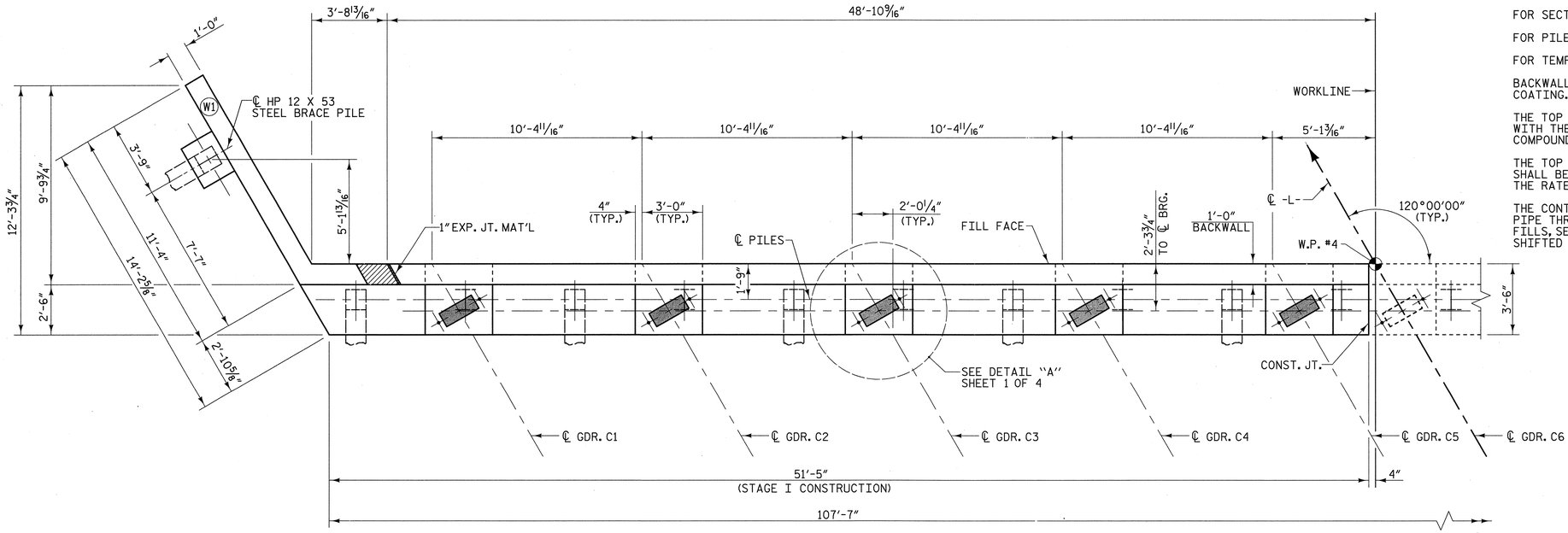


PLAN

NOTES:

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

FOR SECTION A-A & SECTION B-B, SEE SHEET 4 OF 4.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

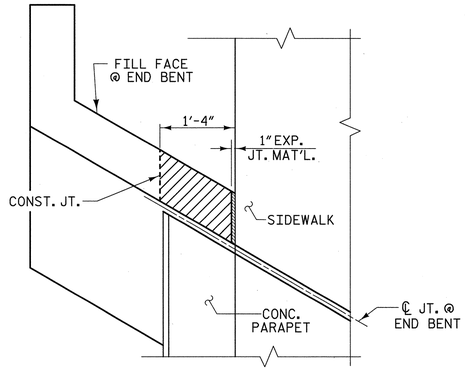
FOR TEMPORARY DRAINAGE AT END BENTS, SEE SHEET 4 OF 4.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

THE TOP SURFACE AREA 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.

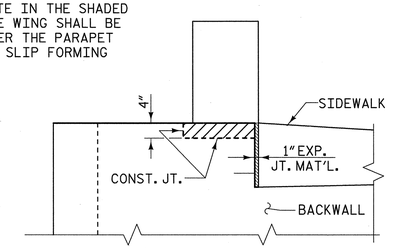
THE TOP SURFACE OF THE END BENT CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.

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



PLAN

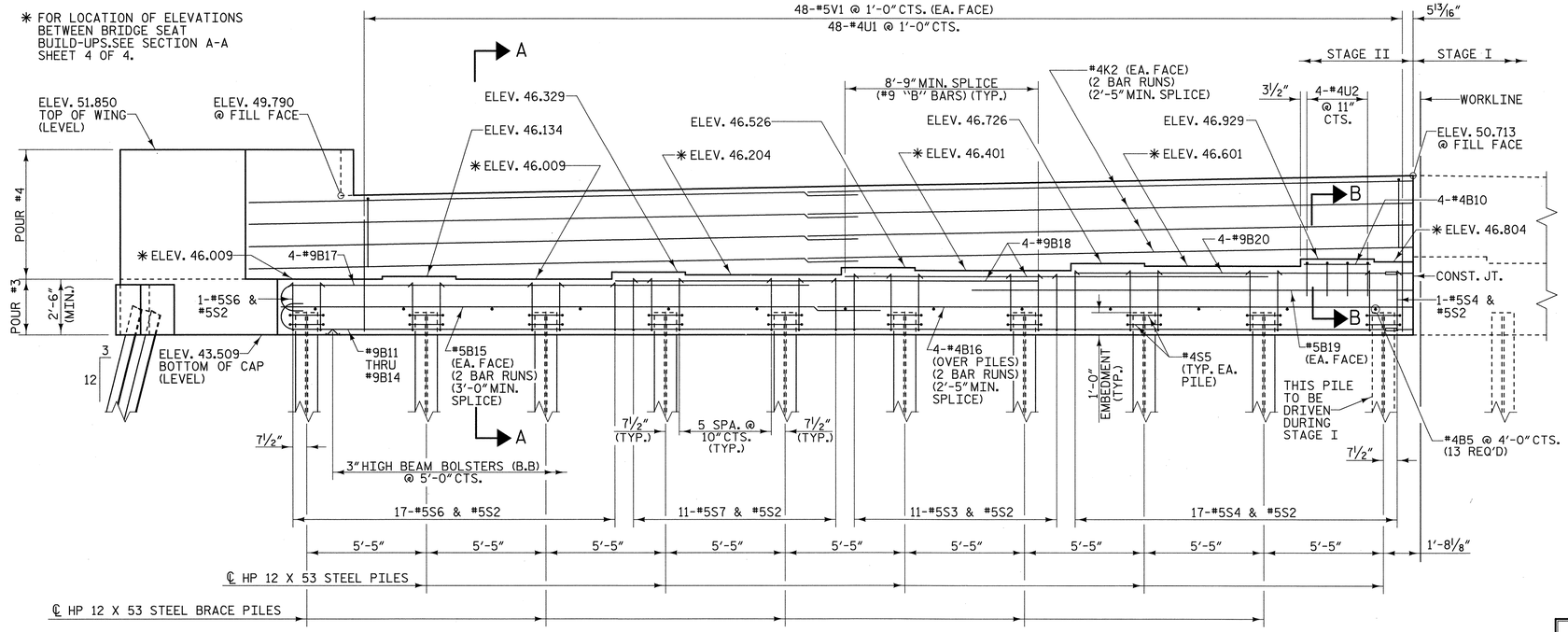
NOTE:
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE PARAPET IS CAST IF SLIP FORMING IS USED.



ELEVATION

BLOCKOUT IN WING WALL

LEFT WING SHOWN, RIGHT WING SIMILAR



ELEVATION

PROJECT NO. U-5018A

PITT COUNTY

STATION: 56+12.00 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 2 STAGE II

NORTH CAROLINA PROFESSIONAL SEAL 10966 ENGINEER RICKY V. KEITH 6/11/09

PLANS PREPARED BY:

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-44
1			3			TOTAL SHEETS
2			4			

DRAWN BY : W. B. ALLEN DATE : 4/09
CHECKED BY : R. V. KEITH DATE : 4/09

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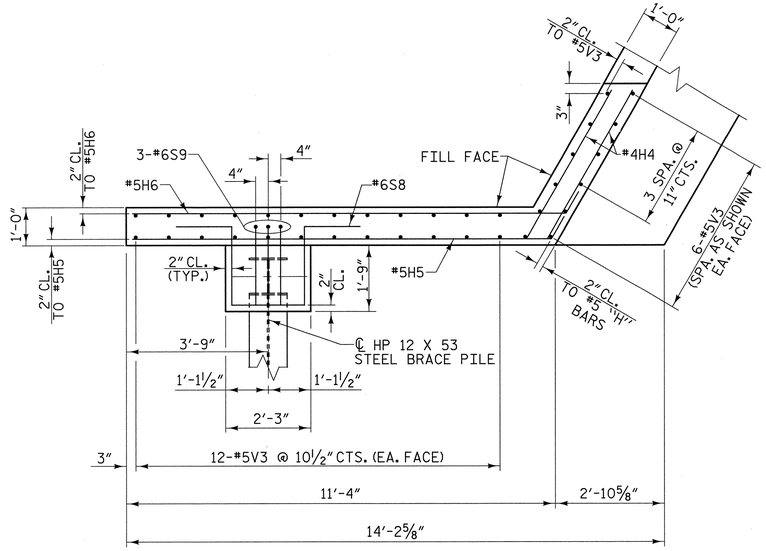
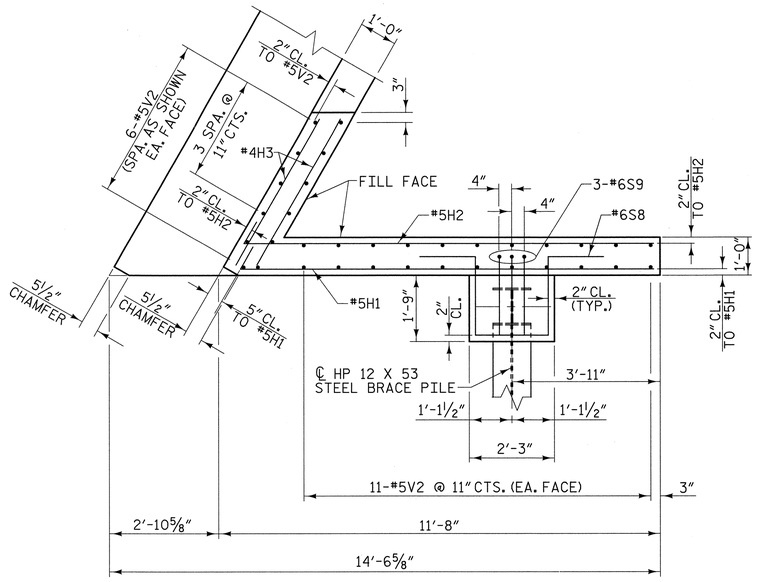
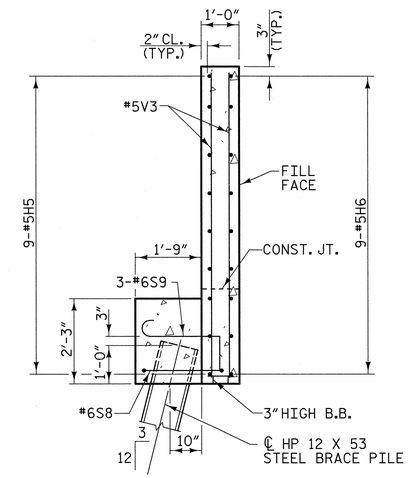


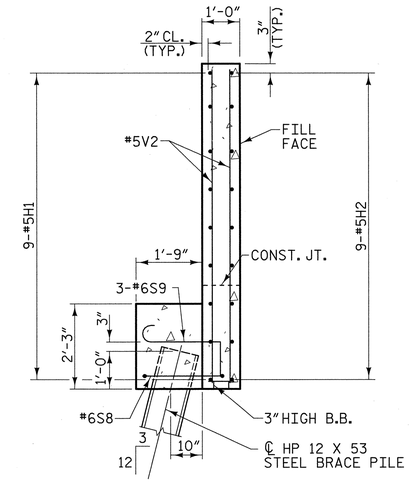
PLAN OF LEFT WING - W1



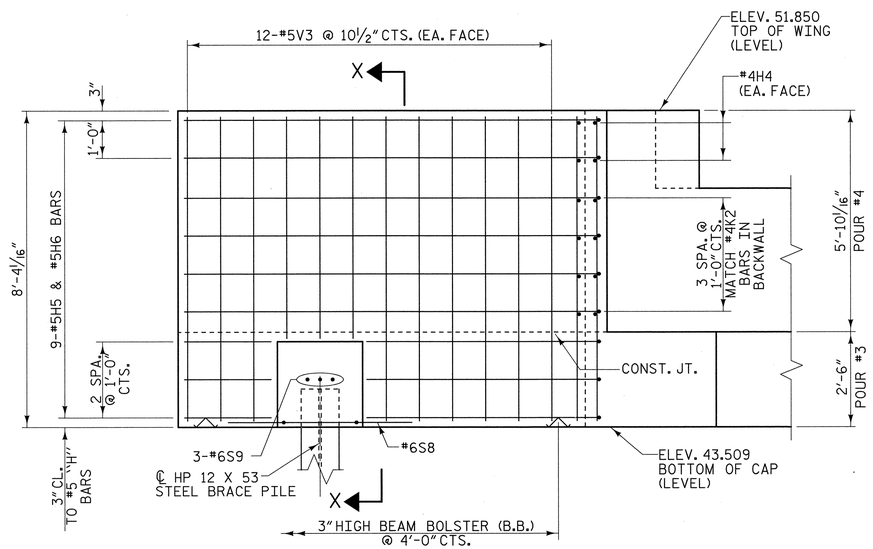
PLAN OF RIGHT WING - W2



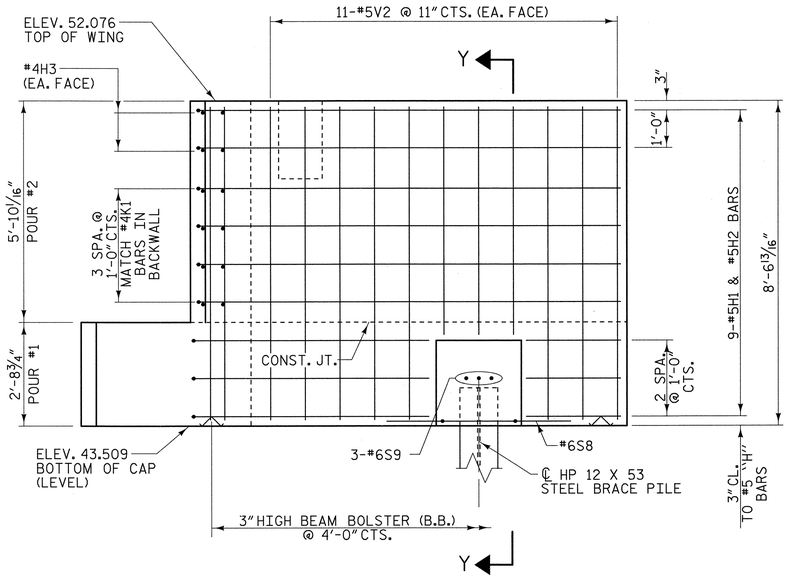
SECTION X-X



SECTION Y-Y



ELEVATION OF LEFT WING - W1



ELEVATION OF RIGHT WING - W2

NORTH CAROLINA PROFESSIONAL SEAL 10966 ENGINEER RICKY V. KEITH

PLANS PREPARED BY:

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PROJECT NO. U-5018A

PITT COUNTY

STATION: 56+12.00 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

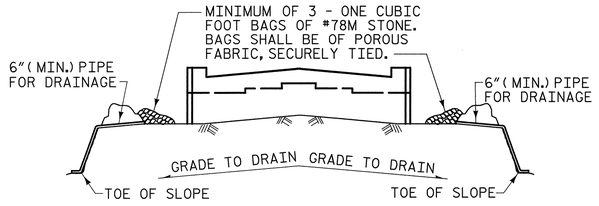
SUBSTRUCTURE

END BENT NO. 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-45
1			3			TOTAL SHEETS
2			4			

DRAWN BY : W. B. ALLEN DATE : 4/09
CHECKED BY : R. V. KEITH DATE : 4/09

7/7/2009 8:07:46 AM R:\Structures\U5018A_SD_E2_03.dgn



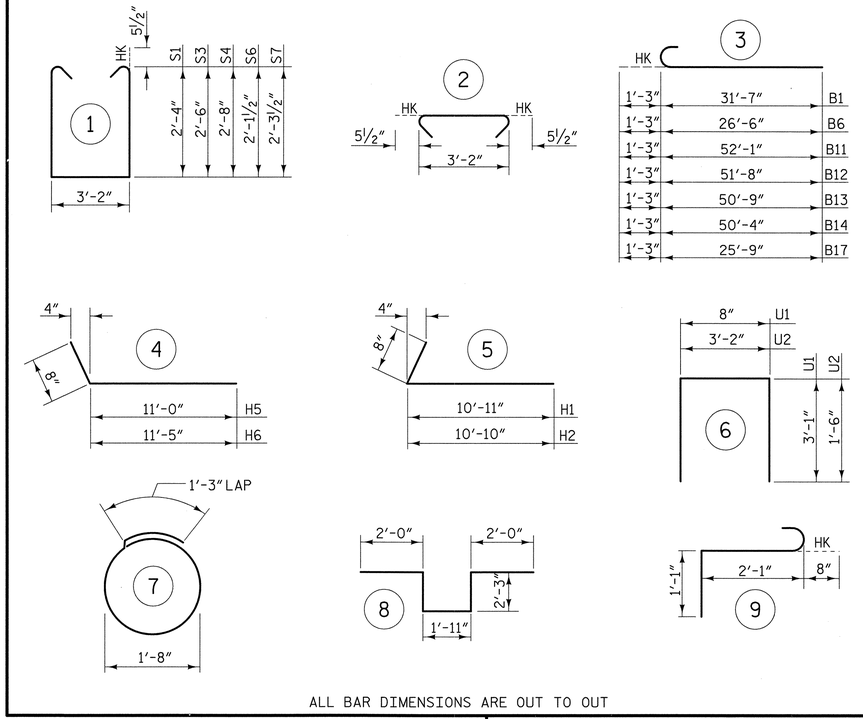
BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE LUMP SUM BID PRICE FOR PLACEMENT OF SUBSTRUCTURE.

TEMPORARY DRAINAGE AT END BENT

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR END BENT 2 - STAGE I

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#9	3	32'-10"	447
B2	4	#9	STR	31'-7"	430
B3	8	#5	STR	30'-11"	258
B4	12	#4	STR	20'-10"	167
B5	14	#4	STR	3'-2"	30
B6	4	#9	3	27'-9"	377
B7	4	#9	STR	20'-5"	278
B8	4	#9	STR	27'-6"	374
B9	4	#4	STR	14'-8"	39
B10	4	#4	STR	3'-0"	8
H1	9	#5	5	11'-7"	109
H2	9	#5	5	11'-6"	108
H3	4	#4	STR	4'-5"	12
K1	16	#4	STR	29'-6"	315
S1	17	#5	1	8'-9"	155
S2	60	#5	2	4'-1"	256
S3	14	#5	1	9'-1"	133
S4	29	#5	1	9'-5"	285
S5	20	#4	7	6'-6"	87
S8	1	#6	8	10'-5"	16
S9	3	#6	9	3'-10"	17
U1	49	#4	6	6'-10"	224
U2	12	#4	6	6'-2"	49
V1	98	#5	STR	5'-0"	511
V2	34	#5	STR	8'-2"	290

REINFORCING STEEL = 4975 lbs.

CLASS "A" CONCRETE - CU. YARDS

POUR 1	22.9 cu. yds.
POUR 2	10.3 cu. yds.
TOTAL	33.2 cu. yds.

HP 12 X 53 STEEL PILES

12 PILES REQUIRED - LIN. FEET 918

FOR END BENT 2 - STAGE II

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B5	13	#4	STR	3'-2"	27
B10	4	#4	STR	3'-0"	8
B11	1	#9	3	53'-4"	181
B12	1	#9	3	52'-11"	180
B13	1	#9	3	52'-0"	177
B14	1	#9	3	51'-7"	175
B15	4	#5	STR	28'-1"	117
B16	8	#4	STR	27'-6"	147
B17	4	#9	3	27'-0"	367
B18	8	#9	STR	19'-2"	521
B19	2	#5	STR	20'-0"	42
B20	4	#9	STR	14'-4"	195
H4	4	#4	STR	4'-6"	12
H5	9	#5	4	11'-8"	110
H6	9	#5	4	12'-1"	113
K2	16	#4	STR	27'-8"	296
S2	56	#5	2	4'-1"	238
S3	11	#5	1	9'-1"	104
S4	17	#5	1	9'-5"	167
S5	20	#4	7	6'-6"	87
S6	17	#5	1	8'-4"	148
S7	11	#5	1	8'-8"	99
S8	1	#6	8	10'-5"	16
S9	3	#6	9	3'-10"	17
U1	48	#4	6	6'-10"	219
U2	4	#4	6	6'-2"	16
V1	96	#5	STR	5'-0"	501
V3	36	#5	STR	8'-0"	300

REINFORCING STEEL = 4580 lbs.

CLASS "A" CONCRETE - CU. YARDS

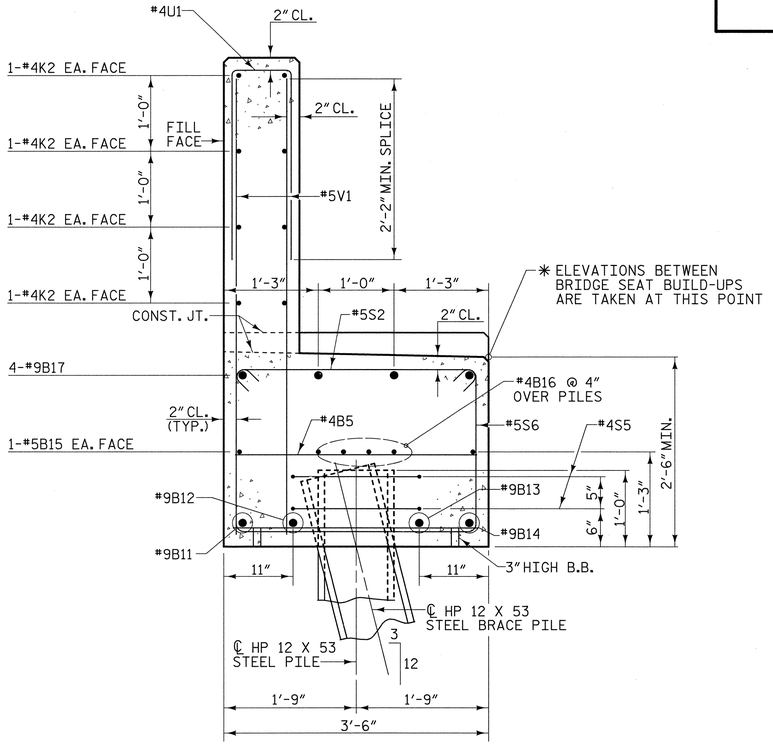
POUR 3	20.7 cu. yds.
POUR 4	10.2 cu. yds.
TOTAL	30.9 cu. yds.

HP 12 X 53 STEEL PILES

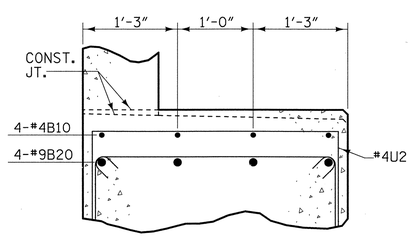
10 PILES REQUIRED - LIN. FEET 765

TOTAL QUANTITIES

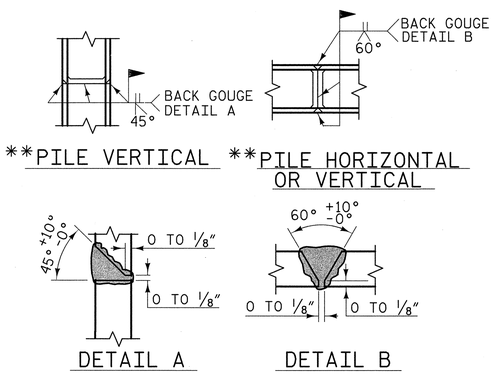
TOTAL REINFORCING STEEL =	9555 lbs.
CLASS "A" CONCRETE - CU. YARDS	64.1 cu. yds.
HP 12 X 53 STEEL PILES	
22 PILES REQUIRED - LIN. FEET	1683
PILE REDRIVES	10 EA.



SECTION A-A



SECTION B-B



PILE SPLICE DETAILS

**POSITION OF PILE DURING WELDING.

PLANS PREPARED BY:

MULKEY
ENGINEERS & CONSULTANTS
PO Box 33127
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(919) 851-1912
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WWW.MULKEYINC.COM

PROJECT NO. U-5018A

PITT COUNTY

STATION: 56+12.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

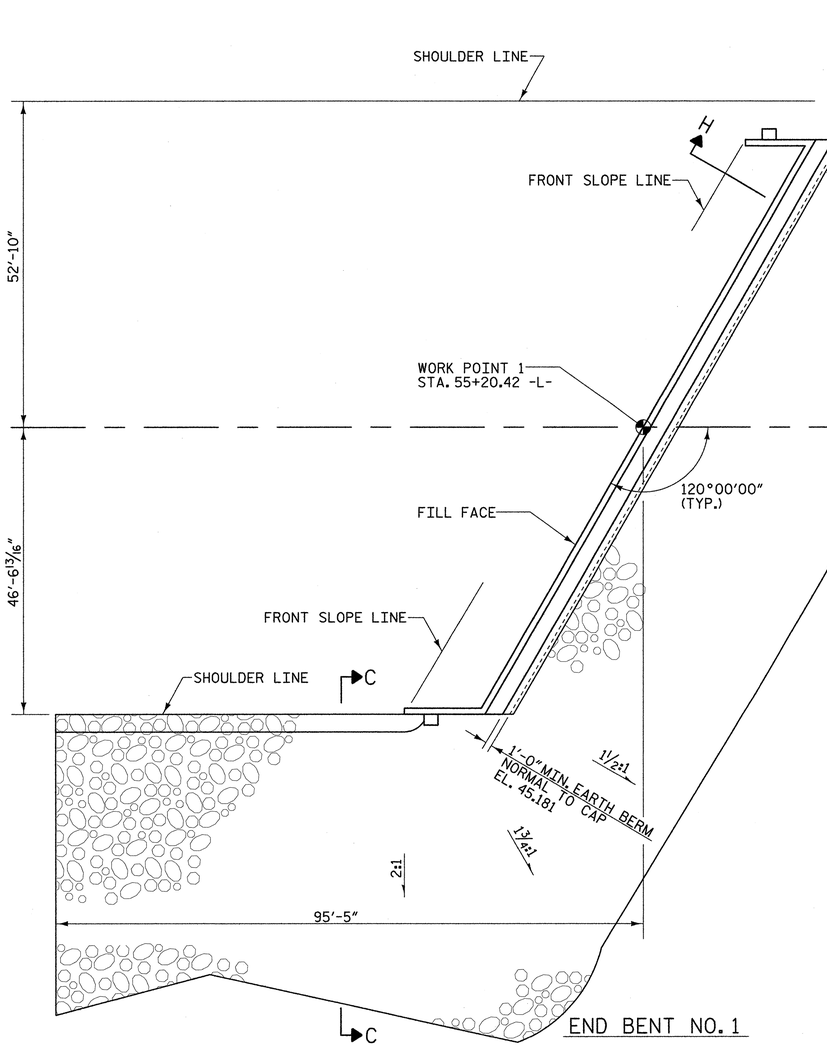
END BENT NO. 2

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

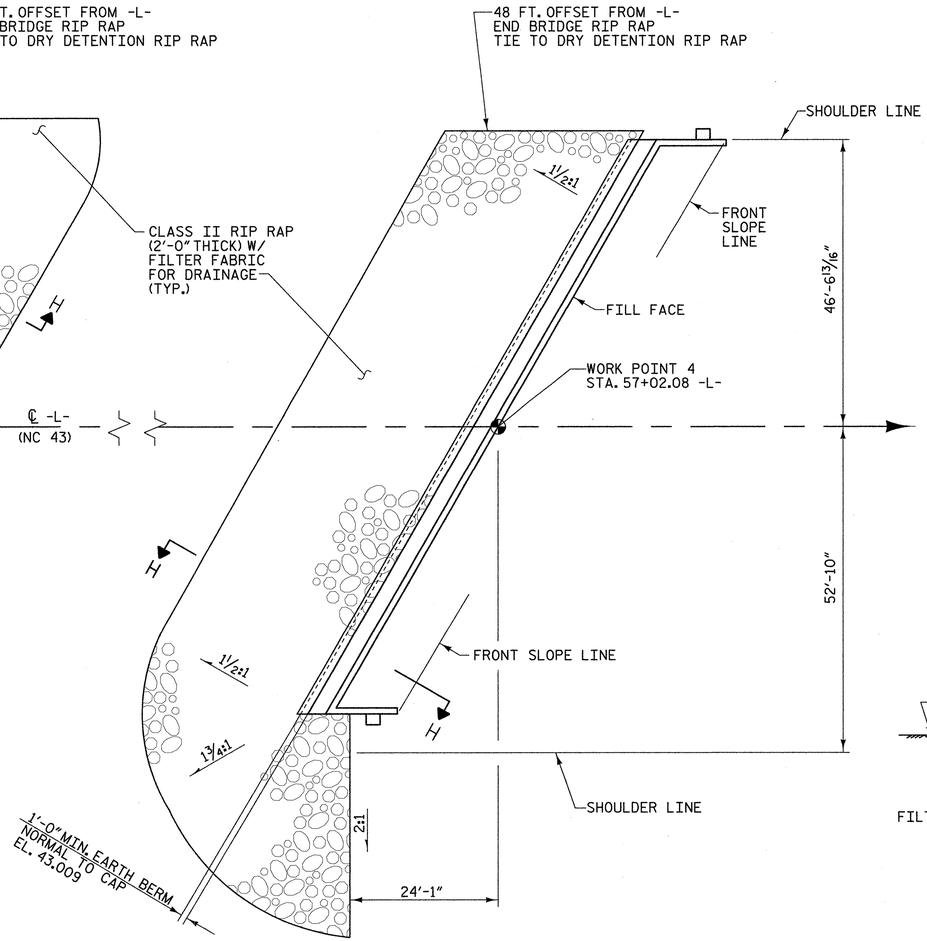
DRAWN BY : W. B. ALLEN DATE : 4/09

CHECKED BY : R. V. KEITH DATE : 4/09

7/7/2009 8:06:50 AM R:\Structures\U5018A_SD_E2_04.dgn

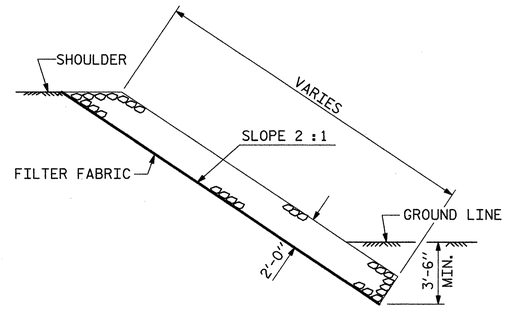


END BENT NO. 1



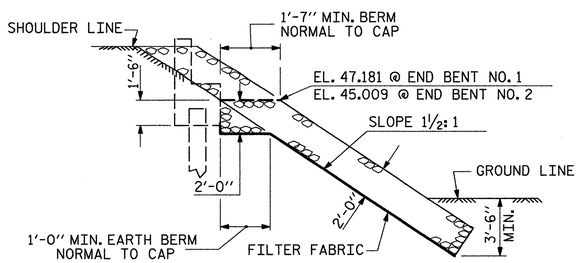
END BENT NO. 2

ESTIMATED QUANTITIES		
BRIDGE @ STA. 56+12.00 -L-	RIP RAP CLASS II	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	1055	1175
END BENT 2	520	580
TOTAL	1575	1755

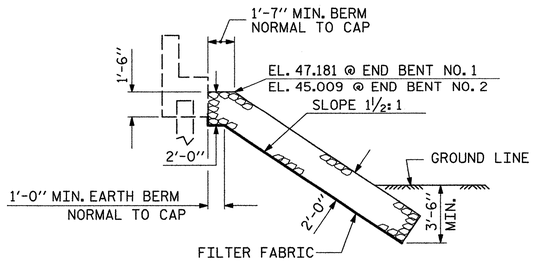


SECTION C-C

PLAN



SECTION H-H



℄ SECTION
BERM RIP RAPPED

PLANS PREPARED BY:
MULKEY
ENGINEERS & CONSULTANTS
PO Box 33127
Raleigh, NC 27636
(919) 851-1212
(919) 851-1218 (FAX)
WWW.MULKEYINC.COM

THIS STANDARD DRAWING REVIEWED & ADOPTED FOR USE AT THE REFERENCED LOCATION BY THE UNDERSIGNED:

NORTH CAROLINA PROFESSIONAL SEAL 19661 ENGINEER L. KEVIN AUSTIN
5/27/10

PROJECT NO. U-5018A
PITT COUNTY
STATION: 56+12.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
RIP RAP DETAILS

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

ASSEMBLED BY :	W. B. ALLEN	DATE :	9/08
CHECKED BY :	R. V. KEITH	DATE :	10/08
DRAWN BY : REK 1/84	REV. 8/16/99		RWW/LES
CHECKED BY : RDU 1/84	REV. 10/17/00		RWW/LES
	REV. 5/1/06		TLA/GM

STD. NO. RR1

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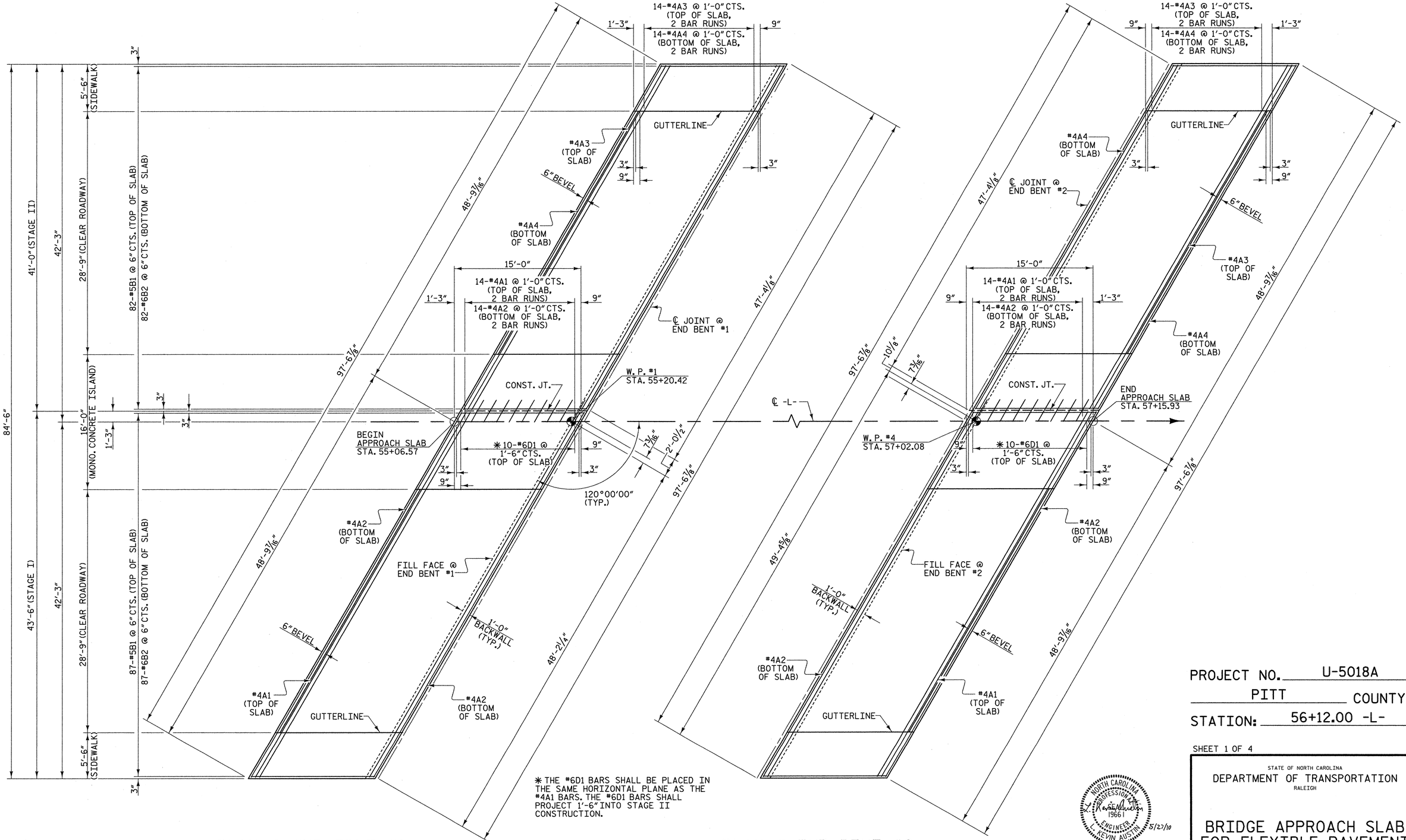

✳ THE #6D1 BARS SHALL BE PLACED IN THE SAME HORIZONTAL PLANE AS THE #4A1 BARS. THE #6D1 BARS SHALL PROJECT 1'-6" INTO STAGE II CONSTRUCTION.

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS.

FOR SUPERELEVATION TRANSITION, SEE ROADWAY PLANS.

DRAWN BY : W. B. ALLEN DATE : 1/09
CHECKED BY : R. V. KEITH DATE : 1/09

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19661 L. KEVIN AUSTIN 5/27/10

PROJECT NO. U-5018A
PITT COUNTY
STATION: 56+12.00 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT

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

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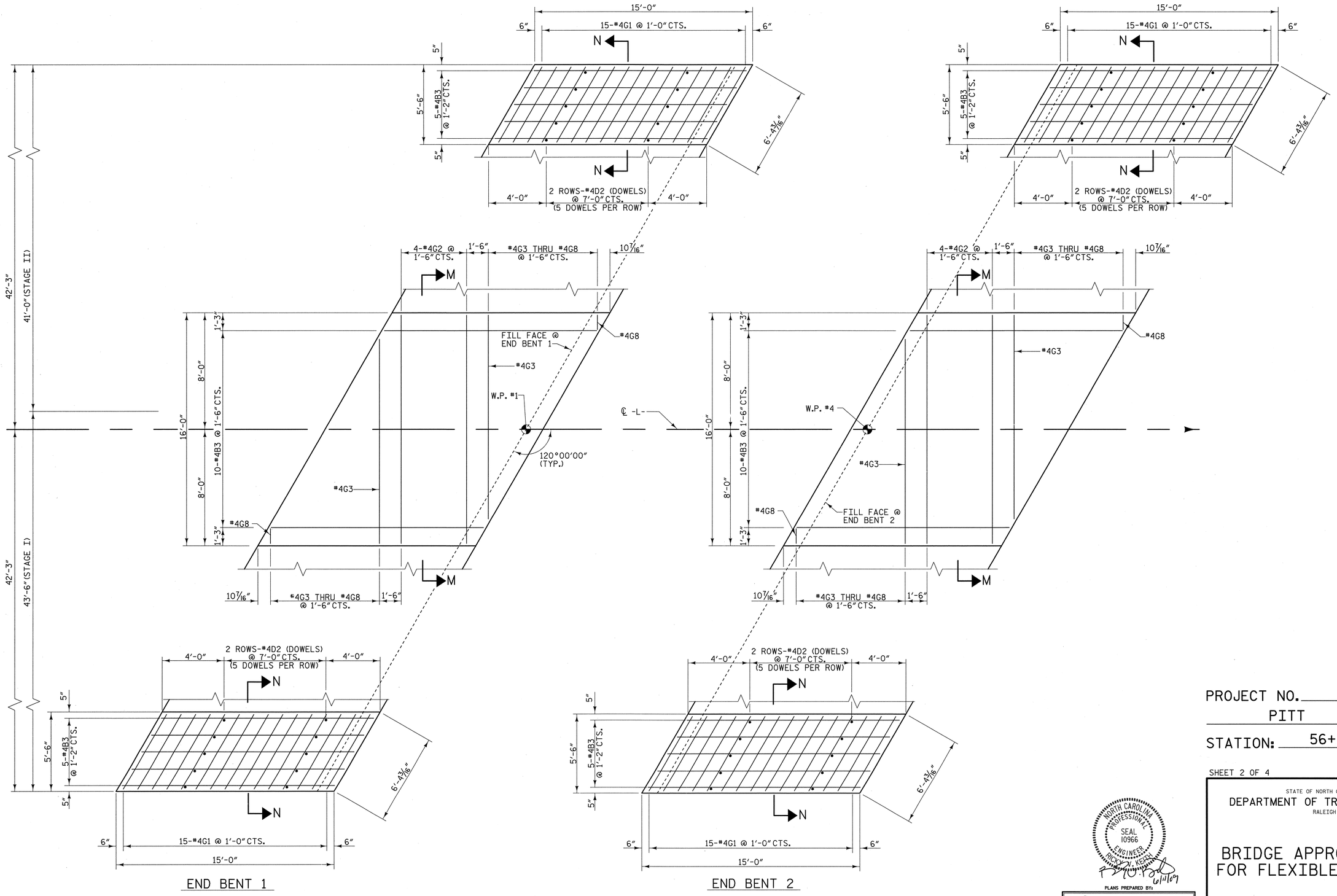

PLAN OF SIDEWALK & MONOLITHIC CONCRETE ISLAND ON APPROACH SLABS

PROJECT NO. U-5018A

PITT COUNTY

STATION: 56+12.00 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT

NORTH CAROLINA PROFESSIONAL SEAL 10966 ENGINEER RICKY V. KEITH 6/11/09

PLANS PREPARED BY:

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2			4		

SHEET NO. S-49

TOTAL SHEETS

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6/11/2009 8:33:22 AM R:\Structure\U5018A_SD_AS_02.dgn

APPROACH SLAB BILL OF MATERIAL

FOR ONE APPROACH SLAB (2 REQ') STAGE I

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✱A1	29	#4	STR	26'-0"	504
A2	30	#4	STR	25'-10"	518
✱B1	87	#5	STR	13'-8"	1240
B2	87	#6	STR	14'-8"	1917
✱D1	10	#6	STR	3'-0"	45
REINFORCING STEEL				LBS.	2435
✱EPOXY COATED REINFORCING STEEL				LBS.	1789
CLASS AA CONCRETE				C.Y.	24.7

FOR ONE APPROACH SLAB (2 REQ') STAGE II

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✱A3	29	#4	STR	24'-6"	475
A4	30	#4	STR	24'-5"	489
✱B1	82	#5	STR	13'-8"	1169
B2	82	#6	STR	14'-8"	1806
REINFORCING STEEL				LBS.	2295
✱EPOXY COATED REINFORCING STEEL				LBS.	1644
CLASS AA CONCRETE				C.Y.	23.3

SIDEWALK BILL OF MATERIAL

FOR ONE APPROACH SLAB (2 REQ') STAGE I

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✱B3	5	#4	STR	14'-7"	49
✱G1	15	#4	STR	5'-11"	59
✱D2	10	#4	STR	0'-10"	6
✱EPOXY COATED REINFORCING STEEL				LBS.	114
CLASS AA CONCRETE				C.Y.	1.8

FOR ONE APPROACH SLAB (2 REQ') STAGE II

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✱B3	5	#4	STR	14'-7"	49
✱G1	15	#4	STR	5'-11"	59
✱D2	10	#4	STR	0'-10"	6
✱EPOXY COATED REINFORCING STEEL				LBS.	114
CLASS AA CONCRETE				C.Y.	1.8

MONOLITHIC CONCRETE ISLAND BILL OF MATERIAL

FOR ONE APPROACH SLAB (2 REQ')

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✱B3	10	#4	STR	14'-7"	97
✱G2	4	#4	STR	14'-8"	39
✱G3	2	#4	STR	13'-6"	18
✱G4	2	#4	STR	10'-11"	15
✱G5	2	#4	STR	8'-3"	11
✱G6	2	#4	STR	5'-8"	8
✱G7	2	#4	STR	3'-1"	4
✱G8	2	#4	STR	6"	1
✱EPOXY COATED REINFORCING STEEL				LBS.	193
CLASS AA CONCRETE				C.Y.	3.6

NOTES

STAGE I APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE OF STAGE I OF BRIDGE DECK. STAGE II APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF STAGE II AND CLOSURE POUR OF BRIDGE DECK.

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

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

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

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

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

FOR EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS.

THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE EVAZOTE JOINT SEAL SHALL BE 2½".

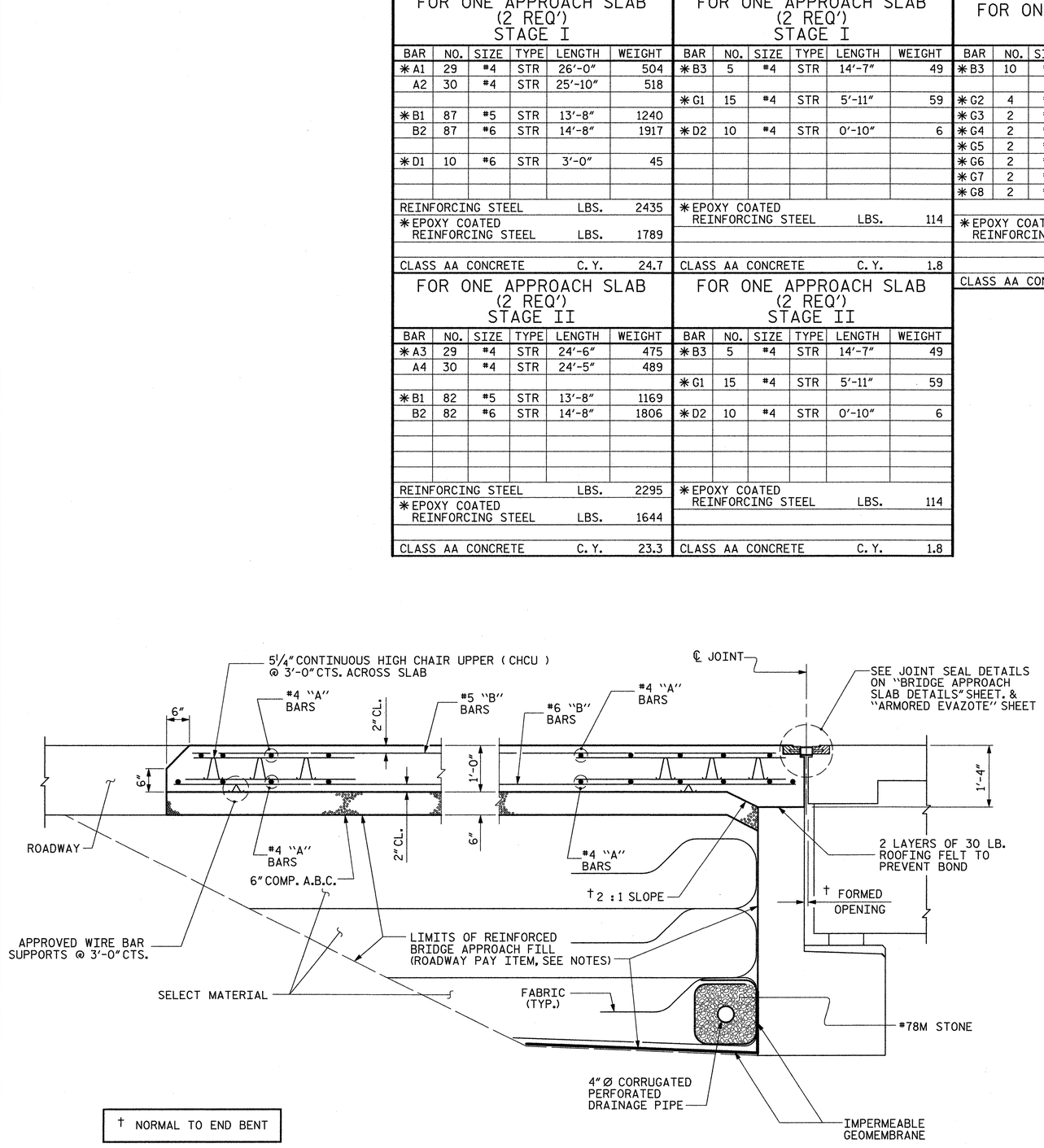
FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

PAYMENT FOR ARMORED EVAZOTE JOINT SEALS SHALL BE INCLUDED IN THE LUMP SUM PRICE FOR EVAZOTE JOINT SEALS.

PAYMENT FOR SIDEWALK & MONOLITHIC CONCRETE ISLAND SHALL BE INCLUDED IN THE LUMP SUM PRICE FOR BRIDGE APPROACH SLAB.

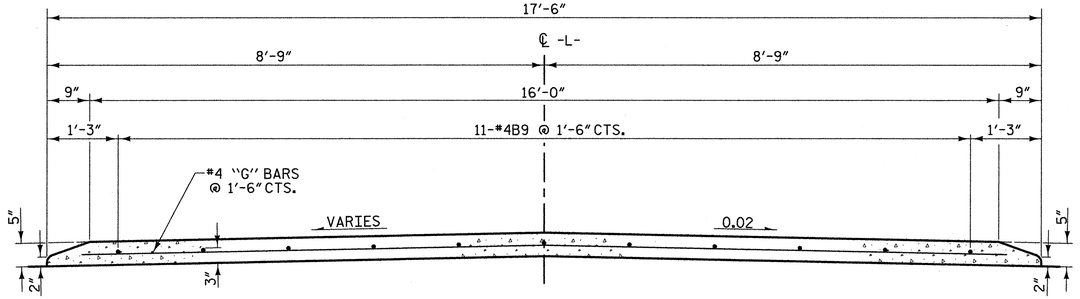
ALL BARS IN THE SIDEWALK & MONOLITHIC CONCRETE ISLAND SHALL BE EPOXY COATED.

FOR SUPERELEVATION TRANSITIITON, SEE ROADWAY PLANS.



† NORMAL TO END BENT

SECTION THRU SLAB



SECTION M-M

PROJECT NO. U-5018A

PITT COUNTY

STATION: 56+12.00 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT

NORTH CAROLINA PROFESSIONAL SEAL 1966 ENGINEER R. KEVIN AUSTIN 5/27/10

PLANS PREPARED BY:

MULKEY ENGINEERS & CONSULTANTS
PO Box 33127
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2			4		

SHEET NO. S-50

TOTAL SHEETS

DRAWN BY : W. B. ALLEN DATE : 1/09
CHECKED BY : R. V. KEITH DATE : 1/09

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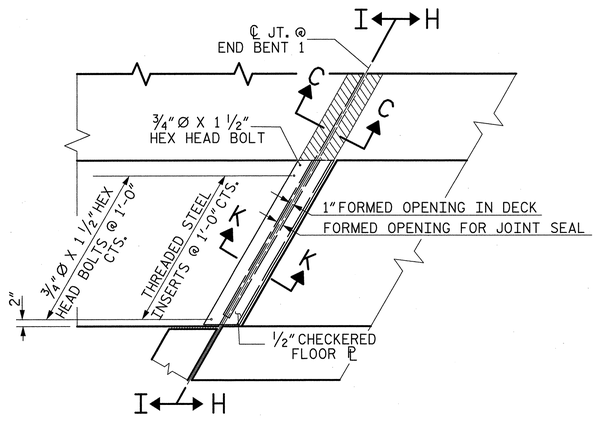
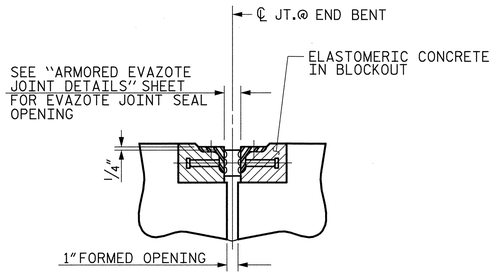


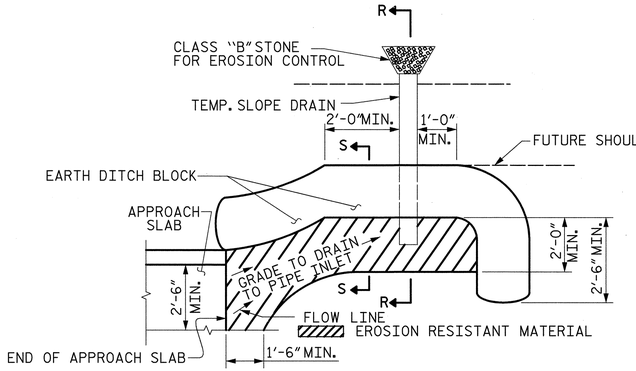
PLAN VIEW OF EVAZOTE

JOINT SEAL @ END BENT FOR SIDEWALK



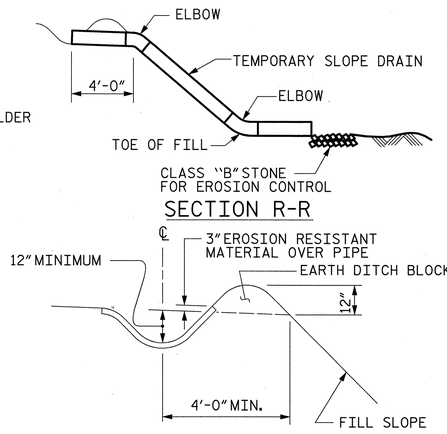
SECTION C-C

ARMORED EVAZOTE JOINT SEAL



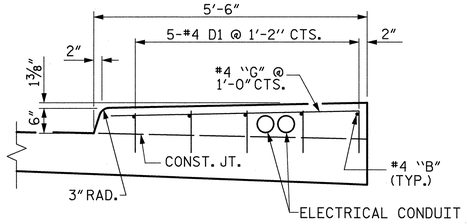
NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

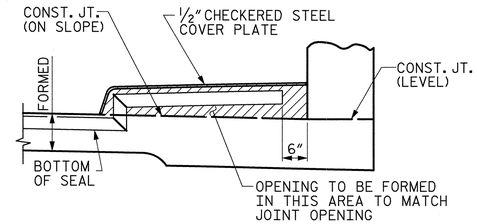
TEMPORARY BERM AND SLOPE DRAIN DETAILS



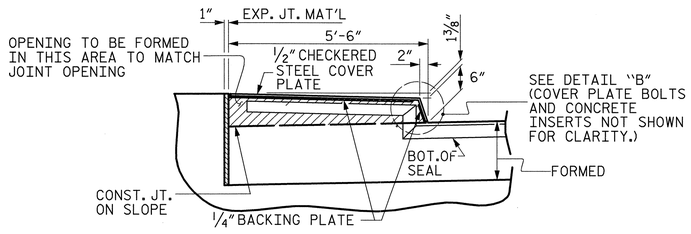
SECTION N-N

SIDEWALK DETAILS

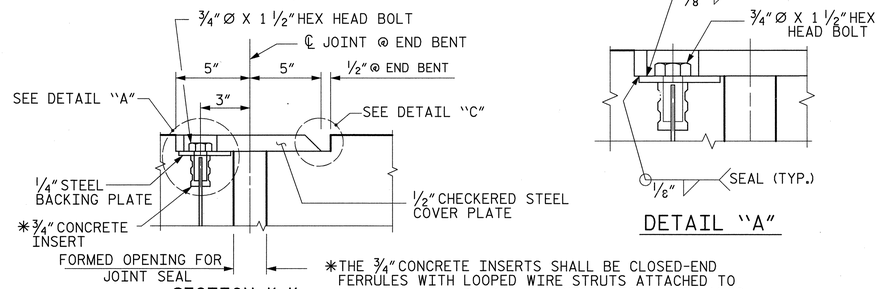
PROVIDE 2 - 4" Ø PVC PIPES IN THE SIDEWALK ON THE RIGHT SIDE (STAGE I) AND 2 - 2" Ø PVC PIPES IN THE SIDEWALK ON THE LEFT SIDE (STAGE II) TO SERVE AS ELECTRICAL CONDUIT. TERMINATE BEYOND THE BEGIN AND END OF THE APPROACH SLABS. THE PVC PIPES AND FITTINGS SHALL BE SHEDULE 40 PVC.



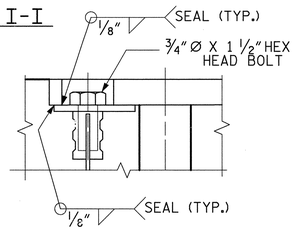
SECTION H-H



SECTION I-I

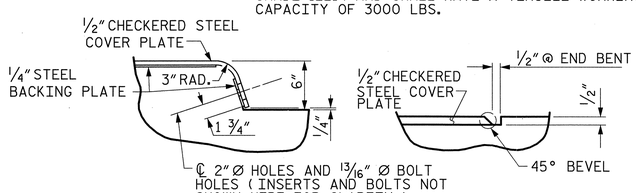


SECTION K-K



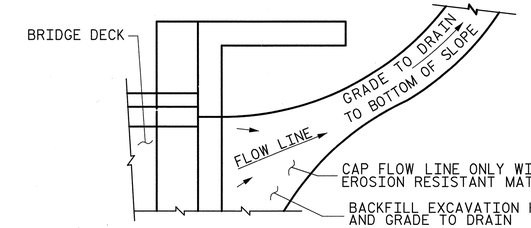
DETAIL "A"

*THE ¾" CONCRETE INSERTS SHALL BE CLOSED-END FERRULES WITH LOOPED WIRE STRUTS ATTACHED TO THEM. THE INSERTS SHALL CONFORM TO AASHTO M169, GRADE 12L14 AND SHALL HAVE A TENSILE WORKING LOAD CAPACITY OF 3000 LBS.



DETAIL "B" DETAIL "C"

JOINT SEAL DETAILS @ END BENT



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

TEMPORARY DRAINAGE DETAIL

PROJECT NO. U-5018A

PITT COUNTY

STATION: 56+12.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH
SLAB DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-51
1			3			TOTAL SHEETS
2			4			

STD. NO. BAS10

ASSEMBLED BY :	W. B. ALLEN	DATE : 1/09		
CHECKED BY :	R. V. KEITH	DATE : 1/09		
DRAWN BY :	FCJ	11/88	REV. 10/17/00	RWW/LES
CHECKED BY :	ARB	11/88	REV. 5/1/03	RWW/JTE
			REV. 5/1/06R	MAA/KMM

PLANS PREPARED BY:

MULKEY
ENGINEERS & CONSULTANTS
PO Box 33127
Raleigh, N.C. 27636
(919) 851-1912
(919) 851-1918 (FAX)
www.mulkeyinc.com

THIS STANDARD DRAWING REVIEWED & ADOPTED FOR USE AT THE REFERENCED LOCATION BY THE UNDERSIGNED:

NORTH CAROLINA PROFESSIONAL SEAL 10966 ENGINEER RICKY V. KEITH

6/14/09

6/11/2009 8:29:36 AM R:\Structures\U5018A_SD_AS_04.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 2006 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

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

CONCRETE:

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

CONCRETE CHAMFERS:

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

DOWELS:

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

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

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

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

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

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

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

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

STRUCTURAL STEEL:

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

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

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

HANDRAILS AND POSTS:

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

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. 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.

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REV. 6-16-95 EEM (W) RGW REV. 5-7-03 RWW (W) JTE
REV. 8-16-99 RWW (W) LES REV. 5-1-06 TLA (W) GM

ENGLISH

JANUARY, 1990

SHEET NO. S-52

STD. NO. SN

STANDARD NOTES

DESIGN DATA:

SPECIFICATIONS	A.A.S.H.T.O. (CURRENT)
LIVE LOAD	SEE PLANS
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STRESS IN EXTREME FIBER OF	
STRUCTURAL STEEL - AASHTO M270 GRADE 36	20,000 LBS. PER SQ. IN.
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CONCRETE IN SHEAR	SEE A.A.S.H.T.O.
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ENGLISH

JANUARY, 1990

STD. NO. SN

REV. 6-16-95 EEM @ RGW REV. 5-7-03 RWW @ JTE
REV. 8-16-99 RWW @ LES REV. 5-1-06 TLA @ GM

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