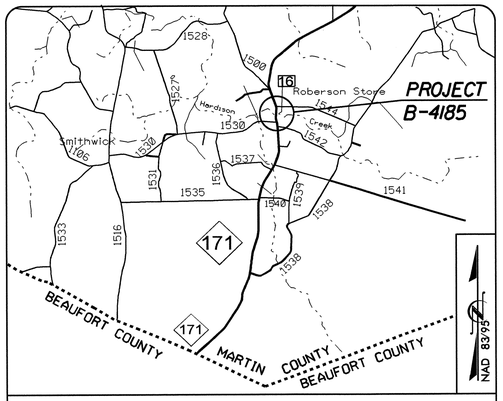
09/08/99

TIP PROJECT: B-4185

CONTRACT: C203081



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

MARTIN COUNTY

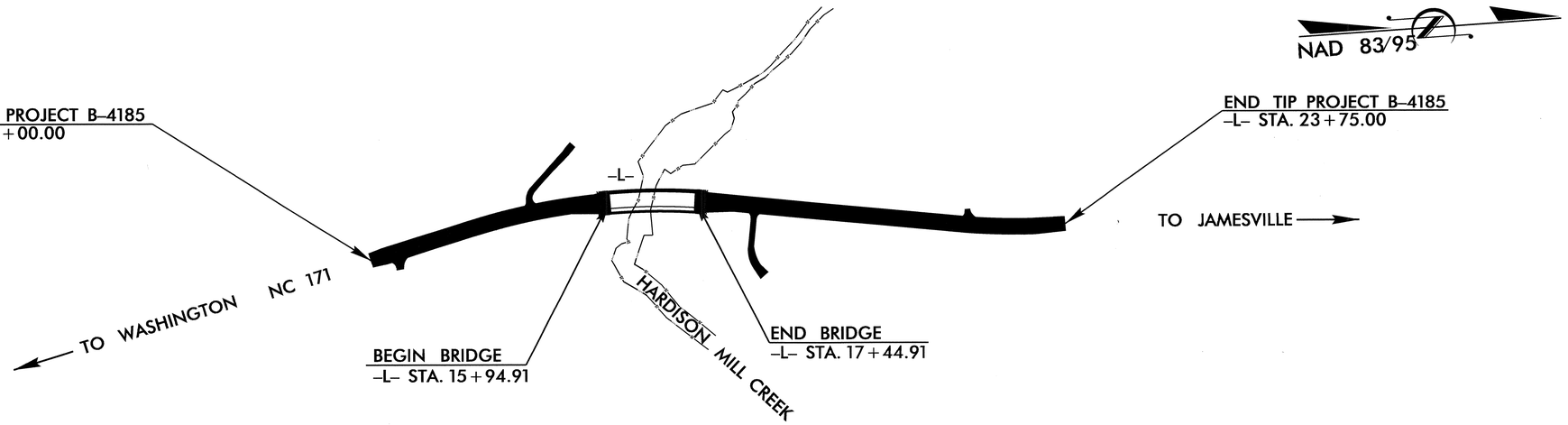
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4185		

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33532.1.1	BRSTP-171(14)	PE
33532.2.1	BRSTP-171(14)	R/W & UTIL
33532.3.1	BRSTP-171(14)	CONST.

LOCATION: BRIDGE NO. 16 OVER HARDISON MILL CREEK ON NC 171

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE

STRUCTURE



DESIGN DATA

ADT 2013 = 2692
ADT 2035 = 3700
DHV = 12 %
D = 55 %
T = 14 % *
V = 50 MPH
FUNC = COLLECTOR
* TTST 9 DUAL 5

STATEWIDE TIER DESIGN GUIDELINES WERE USED ON THIS PROJECT.

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4185 = 0.195 mi.
LENGTH STRUCTURE TIP PROJECT B-4185 = 0.028 mi.
TOTAL LENGTH TIP PROJECT B-4185 = 0.223 mi.

Prepared In the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610

2012 STANDARD SPECIFICATIONS

LETTING DATE:
JUNE 18, 2013

OMAR R. AZIZI, PE
PROJECT ENGINEER

EMILY E. MURRAY, PE
PROJECT DESIGN ENGINEER

STRUCTURES MANAGEMENT UNIT

18-APR-2013 11:43
$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
padkins

F.A. PROJECT No. BRSTP-171(14)

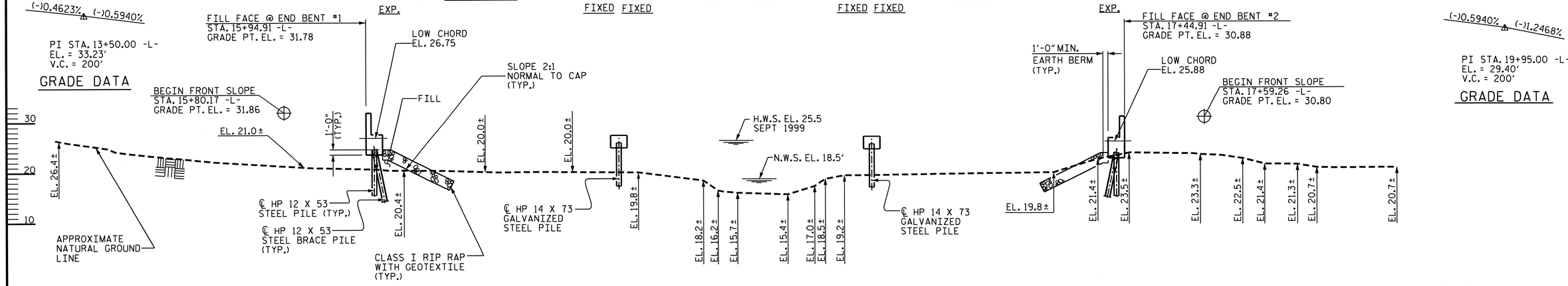
15+50 16+00 16+50 17+00 17+50

GRADE DATA

PI STA. 13+50.00 -L-
EL. = 33.23'
V.C. = 200'

(-)0.4623% (-)0.5940%

SPAN A — FIXED FIXED — SPAN B — FIXED FIXED — SPAN C



(-)0.5940% (-)1.2468%

PI STA. 19+95.00 -L-
EL. = 29.40'
V.C. = 200'

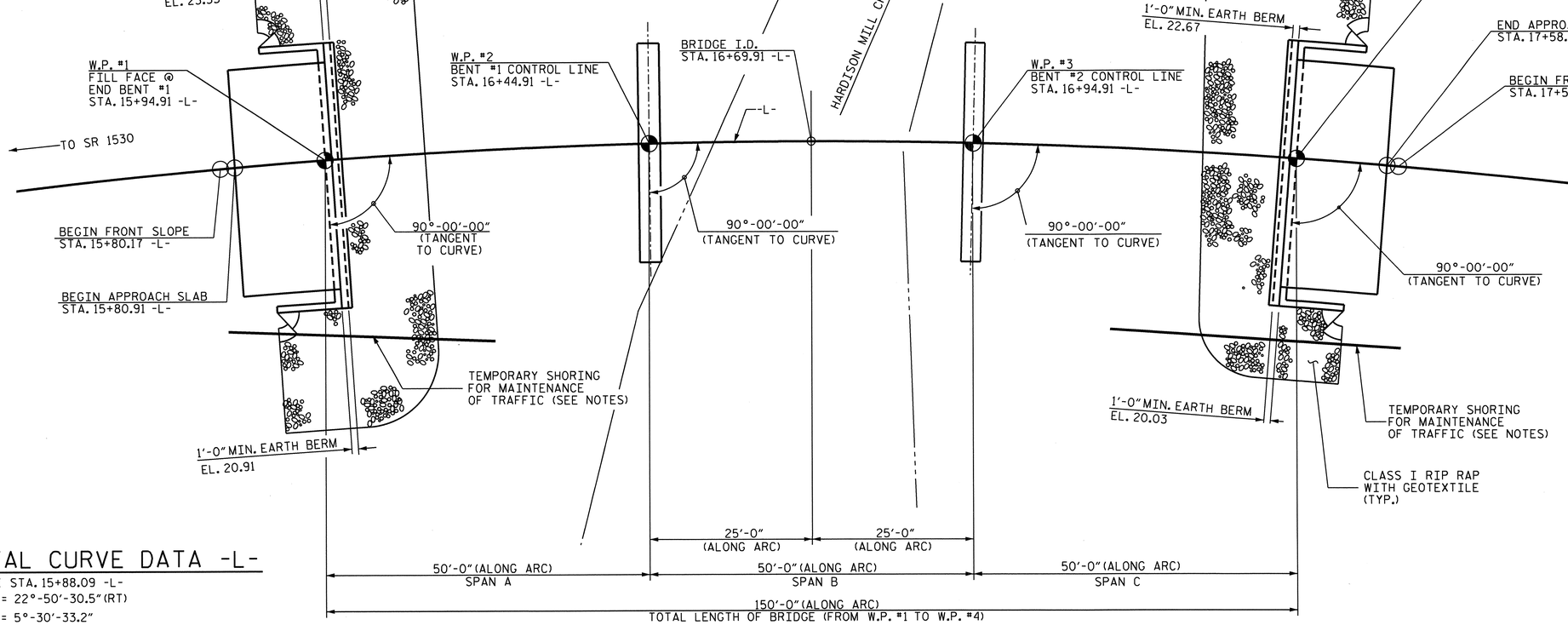
GRADE DATA

END BENT #1 — BENT #1 — BENT #2 — END BENT #2

NAD 27

SECTION ALONG -L-

(SECTIONS AT THE END BENTS & BENTS ARE AT RIGHT ANGLES.)



HORIZONTAL CURVE DATA -L-

PI STA. 15+88.09 -L-
△ = 22°-50'-30.5"(RT)
D = 5°-30'-33.2"
L = 414.61'
T = 210.10'
R = 1,040.00'
SE = 06

PLAN

(PILES NOT SHOWN FOR CLARITY)

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS.

PROJECT NO. B-4185

MARTIN COUNTY

STATION: 16+69.91 -L-

SHEET 1 OF 4 REPLACES BRIDGE #16

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE OVER
HARDISON MILL CREEK
ON NC 171 BETWEEN
SR 1530 & SR 1544

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

NORTH CAROLINA PROFESSIONAL SEAL 17227 ENGINEER OMAR R. AZIA 4/19/13

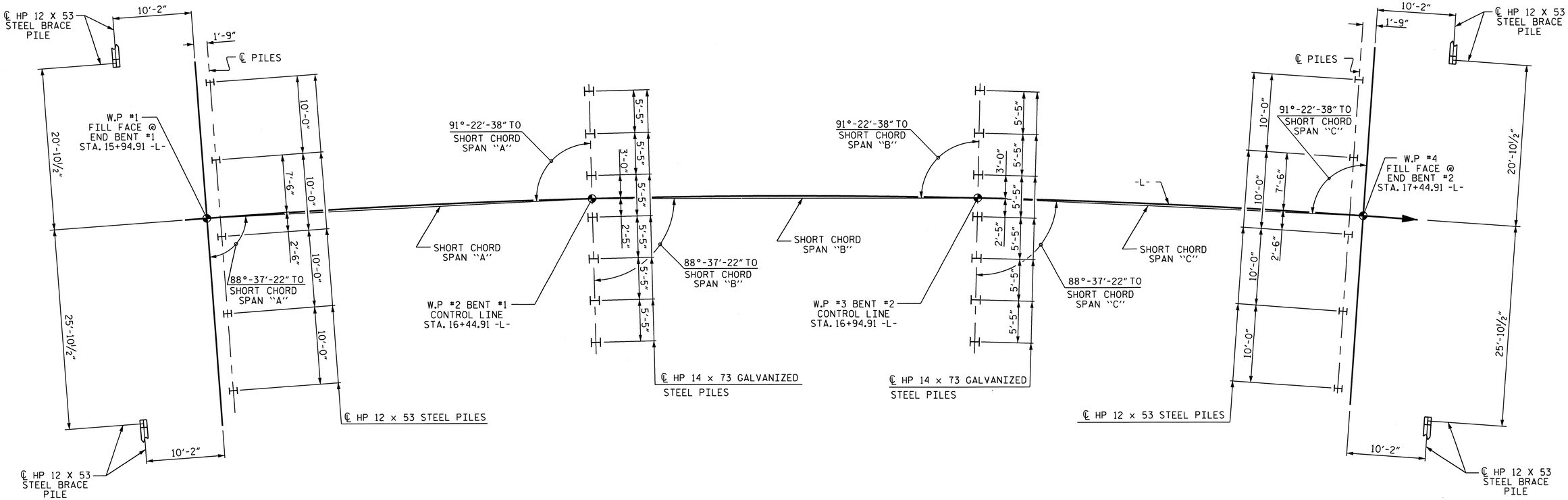
NORTH CAROLINA PROFESSIONAL SEAL 025516 ENGINEER CLAIRE E. MURRAY 4/19/13

DESIGN ENGINEER OF RECORD: MOHAMMED AHMED DATE : 3-1-13

DRAWN BY : M.D.PISO DATE : 01-31-13

CHECKED BY : P.ADKINS DATE : 02-07-13

18-APR-2013 11:02



FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO THE PILE CENTERLINE.
BRACE PILES @ END BENTS ARE TO BE BATTERED @ 3:12.

FOUNDATION NOTES

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT NO. 1 AND END BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 95 TONS PER PILE.

DRIVE PILES AT END BENT NO. 1 AND END BENT NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 160 TONS PER PILE.

PILES AT BENT NO. 1 AND BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 125 TONS PER PILE.

DRIVE PILES AT BENT NO. 1 AND BENT NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 220 TONS PER PILE. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR DOWNDRAG OR SCOUR.

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 1 AND BENT NO. 2 IS ELEVATION 4.0 FEET. SCOUR CRICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 45-95 FT-KIPS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT BENT NO. 1. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

TESTING PILES WITH THE PILE DRIVING ANALYZER (PDA) DURING DRIVING, RESTRIKING OR REDRIVING MAY BE REQUIRED. THE ENGINEER WILL DETERMINE THE NEED FOR PDA TESING. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS AND FOR PILE DRIVING CRITRIA, SEE PILE DRIVING CRITERIA PROVISION.

OBSERVE A 1 MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT TO WITHIN 2 FT. OF FINISHING GRADE BEFORE BEGINNING END BENT CONSTRUCTION AT END BENT NO. 1 AND END BENT NO. 2.

DRAWN BY : M.D.PISO DATE : 02-01-13
CHECKED BY : P.ADKINS DATE : 02-07-13
DESIGN ENGINEER OF RECORD: MOHAMMED AHMED DATE : 3-1-13

18-APR-2013 12:28

NORTH CAROLINA PROFESSIONAL SEAL 025516 ENGINEER EMILY E. MURRAY
4/19/13

PROJECT NO. B-4185
MARTIN COUNTY
STATION: 16+69.91 -L-

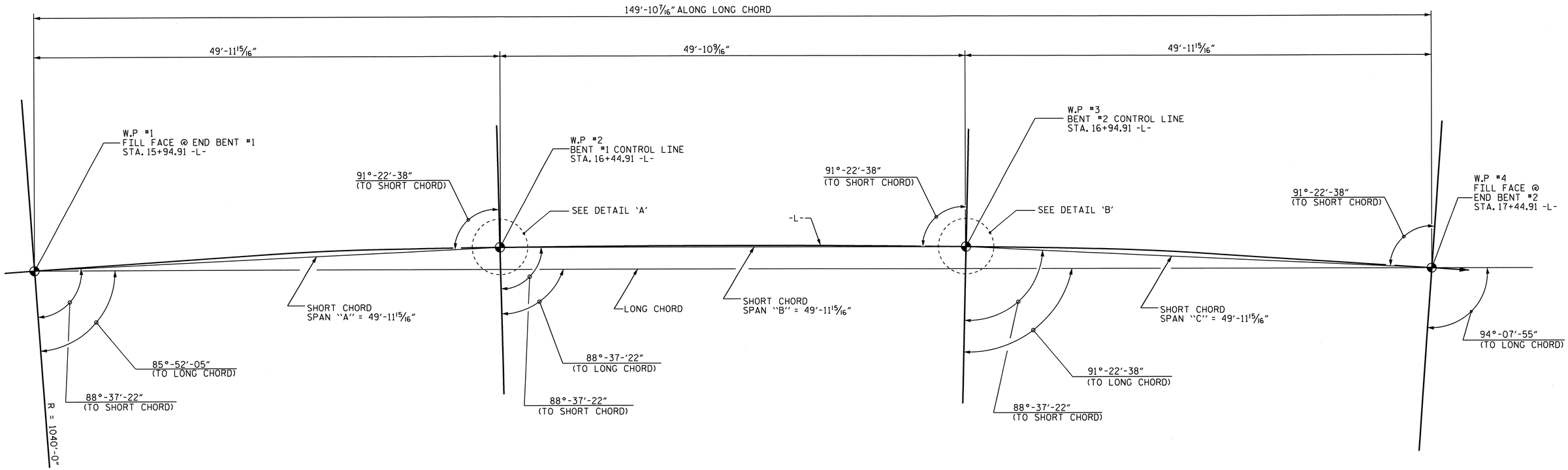
SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE OVER
HARDISON MILL CREEK
ON NC 171 BETWEEN
SR 1530 & SR 1544

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

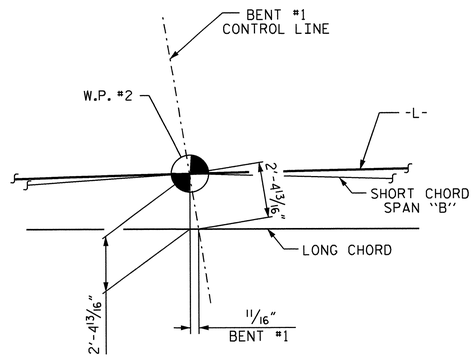


LONG CHORD LAYOUT

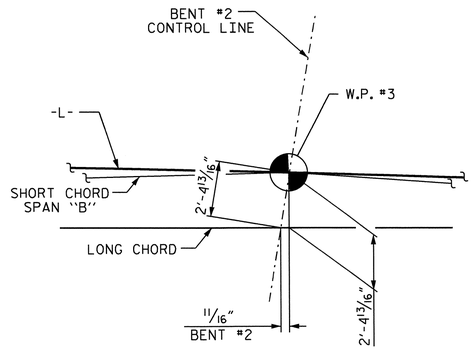
(END BENTS AND BENTS ARE NOT PARALLEL)

HORIZONTAL CURVE DATA -L-

PI STA. 15+88.09 -L-
△ = 22°-50'-30.5" (RT)
D = 5°-30'-33.2"
L = 414.61'
T = 210.10'
R = 1,040.00'
SE = 06



DETAIL "A"



DETAIL "B"

PROJECT NO. B-4185
MARTIN COUNTY
STATION: 16+69.91 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE OVER
HARDISON MILL CREEK
ON NC 171 BETWEEN
SR 1530 & SR 1544

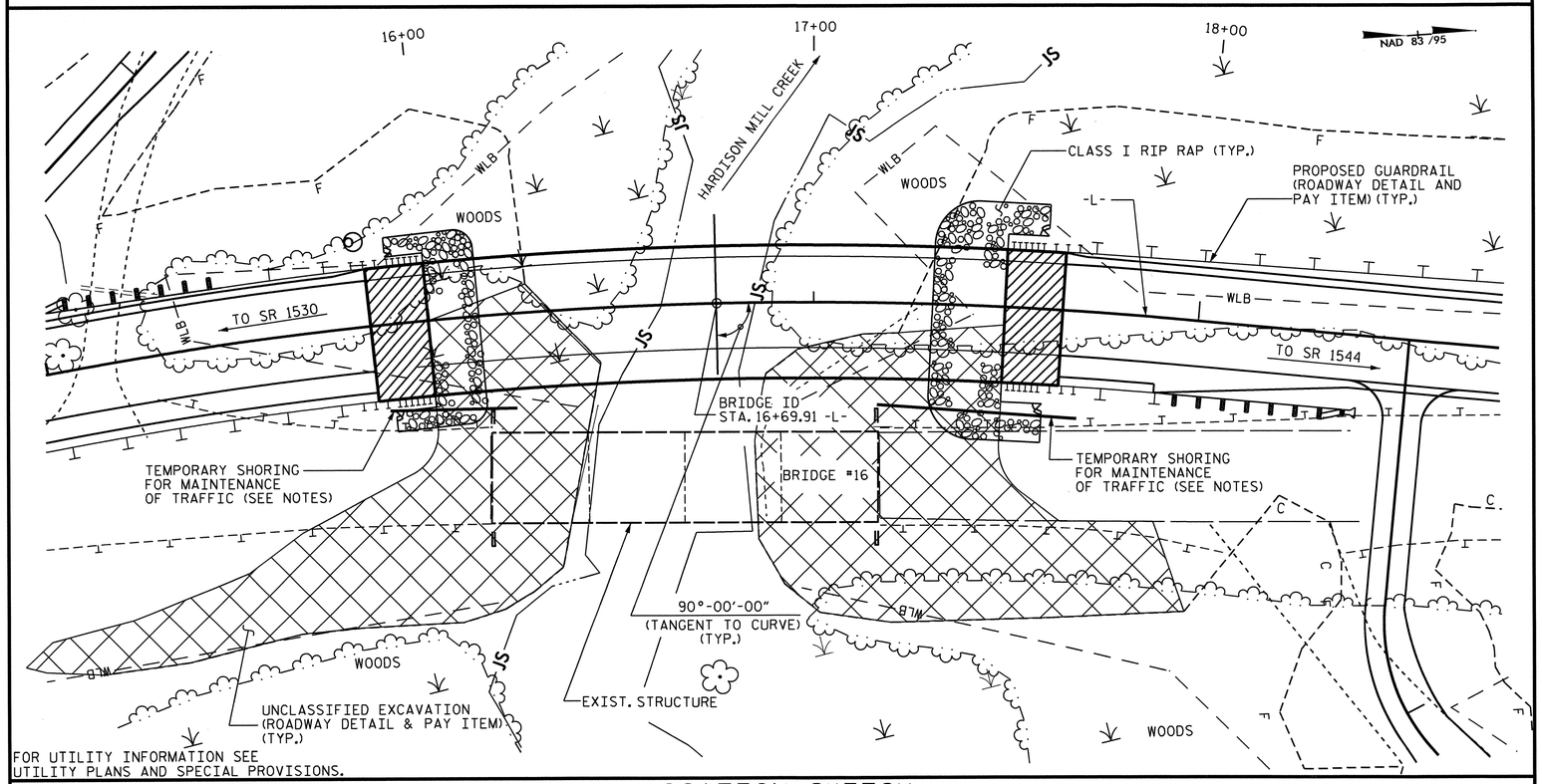
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS
2			4			32

NORTH CAROLINA PROFESSIONAL SEAL 025516 ENGINEER EMILY E. MURRAY
4/18/13

DRAWN BY : M.D.PISO DATE : 01-31-13
CHECKED BY : P.ADKINS DATE : 02-07-13
DESIGN ENGINEER OF RECORD: MOHAMMED AHMED DATE : 3-1-13

18-APR-2013 11:02

BM #10 : NCGS BENCH MARK "J221" DISC IN CONCRETE, SET FLUSH WITH GROUND, 172' LEFT OF -BL- STA 17+66, EL. 27.44'



LOCATION SKETCH

NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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

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

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

FOR LIMITS OF TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS. FOR PAY ITEM FOR TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE ROADWAY PLANS.

FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS.

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

AFTER SERVING AS A TEMPORARY STRUCTURE THE EXISTING STRUCTURE CONSISTING OF 4 SPANS @ 25'-0", A REINFORCED CONCRETE DECK ON CONTINUOUS I-BEAMS WITH A CLEAR ROADWAY WIDTH OF 24.2 FT. ON REINFORCED CONCRETE CAPS ON TIMBER PILES AND LOCATED UPSTREAM FROM PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. SHOULD THE STRUCTRAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT. SEE SPECIAL PROVISIONS.

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

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 16+69.91."

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

FOR PLACING LOAD ON STRUCTURE MEMBERS, SEE SPECIAL PROVISIONS.

FOR INTERIOR BENTS NO. 1 AND NO. 2, ONLY PARTIAL GALVANIZING OF THE PILES IS REQUIRED. SEE INTERIOR BENT SHEETS FOR REQUIRED GALVANIZED LENGTHS. PAYMENT FOR PARTIALLY GALVANIZED PILES WILL BE MADE UNDER THE CONTRACT UNIT PRICE FOR GALVANIZED STEEL PILES.

HYDRAULIC DATA

DESIGN DISCHARGE	=	2690 C.F.S.
FREQUENCY OF DESIGN FLOOD	=	50 YEARS *
DESIGN HIGH WATER ELEVATION	=	25.6'
DRAINAGE AREA	=	31.0 SQ. MI.
BASE DISCHARGE (Q100)	=	3280 C.F.S.
BASE HIGH WATER ELEVATION	=	26.5'

OVERTOPPING DATA

OVERTOPPING DISCHARGE	=	1600 C.F.S.
FREQUENCY OF OVERTOPPING FLOOD	=	25 YEARS
OVERTOPPING FLOOD ELEVATION	=	24.6'

* 50 YR. DESIGN WITHIN THE PROJECT LIMITS. OVERTOPPING OCCURS 800' NORTH OF THE BRIDGE.

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	PDA TESTING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	36" PRESTRESSED CONCRETE GIRDERS		HP 12 X 53 STEEL PILES		HP 14 X 73 GALVANIZED STEEL PILES		PILE REDRIVES	ONE BAR METAL RAIL	1'-2" X 2'-6" CONCRETE PARAPET	RIP-RAP, CLASS I	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	FOAM JOINT SEALS
	LUMP SUM	EA.	SQ. FEET	SQ. FEET	CU. YDS.	LUMP SUM	LBS.	NO.	LIN. FEET	NO.	LIN. FEET	NO.	LIN. FEET	EA.	LIN. FEET	LIN. FEET	TONS	SQ. YDS.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE			5,543	5,567		LUMP SUM		15	726.53						279.95	295.11			LUMP SUM	LUMP SUM
END BENT #1					39.2		4,329			7	455			3			164	182		
BENT #1					14.3		1,824					7	525	4						
BENT #2					14.3		1,824					7	525	4						
END BENT #2					39.2		4,329			7	420			3			146	162		
TOTAL	LUMP SUM	1	5,543	5,567	107.0	LUMP SUM	12,306	15	726.53	14	875	14	1050	14	279.95	295.11	310	344	LUMP SUM	LUMP SUM

PROJECT NO. B-4185

MARTIN COUNTY

STATION: 16+69.91 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE OVER HARDISON MILL CREEK ON NC 171 BETWEEN SR 1530 & SR 1544

NORTH CAROLINA PROFESSIONAL SEAL 025516 ENGINEER EMILY E. CLOUTIER
5/7/13

DESIGN ENGINEER OF RECORD: MOHAMMED AHMED DATE : 3-1-13

DRAWN BY : M.D.PISO DATE : 01-31-13

CHECKED BY : P.ADKINS DATE : 02-07-13

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

SHEET NO. S-4

TOTAL SHEETS 32

07-MAY-2013 08:41

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_{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVE-LOAD FACTORS (γ_{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING		HL-93 (INVENTORY)	N/A	1	1.10	--	1.75	0.722	1.35	B	EL	24.238	0.809	1.91	B	I	24.047	0.80	0.809	1.10	B	I	24.047	
		HL-93 (OPERATING)	N/A		1.75	--	1.35	0.722	1.75	B	EL	24.238	0.809	2.47	B	I	24.047	N/A	--	--	--	--	--	
		HS-20 (INVENTORY)	36.000	2	1.35	48.689	1.75	0.722	1.66	B	EL	24.238	0.809	2.19	B	I	24.047	0.80	0.722	1.35	B	EL	24.238	
		HS-20 (OPERATING)	36.000		2.15	77.277	1.35	0.722	2.15	B	EL	24.238	0.809	2.84	B	I	24.047	N/A	--	--	--	--	--	
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		2.74	37.026	1.40	0.722	4.20	B	EL	24.238	0.809	5.15	B	I	24.047	0.80	0.722	2.74	B	EL	24.238	
		SNGARBS2	20.000		2.17	43.408	1.40	0.722	3.32	B	EL	24.238	0.809	4.08	B	I	24.047	0.80	0.722	2.17	B	EL	24.238	
		SNAGRIS2	22.000		2.11	46.493	1.40	0.722	3.21	B	EL	29.085	0.809	3.98	B	I	24.047	0.80	0.722	2.11	B	EL	24.238	
		SNCOTTS3	27.250		1.37	37.285	1.40	0.722	2.09	B	EL	24.238	0.809	2.61	B	I	24.047	0.80	0.722	1.37	B	EL	24.238	
		SNAGGRS4	34.925		1.19	41.602	1.40	0.722	1.82	B	EL	24.238	0.809	2.48	B	I	24.047	0.80	0.722	1.19	B	EL	24.238	
		SNS5A	35.550		1.16	41.291	1.40	0.722	1.78	B	EL	24.238	0.809	2.71	B	I	24.047	0.80	0.722	1.16	B	EL	24.238	
		SNS6A	39.950		1.09	43.416	1.40	0.722	1.66	B	EL	24.238	0.809	2.62	B	I	24.047	0.80	0.722	1.09	B	EL	24.238	
		SNS7B	42.000		1.04	43.500	1.40	0.722	1.59	B	EL	24.238	0.809	2.78	B	I	24.047	0.80	0.722	1.04	B	EL	24.238	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.33	43.943	1.40	0.722	2.04	B	EL	24.238	0.809	3.00	B	I	24.047	0.80	0.722	1.33	B	EL	24.238	
		TNT4A	33.075		1.34	44.435	1.40	0.722	2.06	B	EL	24.238	0.809	2.75	B	I	24.047	0.80	0.722	1.34	B	EL	24.238	
		TNT6A	41.600		1.12	46.584	1.40	0.722	1.71	B	EL	24.238	0.809	3.16	B	I	2.405	0.80	0.722	1.12	B	EL	24.238	
		TNT7A	42.000		1.14	47.759	1.40	0.722	1.74	B	EL	24.238	0.809	2.87	B	I	24.047	0.80	0.722	1.14	B	EL	24.238	
		TNT7B	42.000		1.19	49.786	1.40	0.722	1.81	B	EL	24.238	0.809	2.50	B	I	24.047	0.80	0.722	1.19	B	EL	24.238	
		TNAGRIT4	43.000		1.13	48.386	1.40	0.722	1.72	B	EL	24.238	0.809	2.46	B	I	24.047	0.80	0.722	1.13	B	EL	24.238	
		TNAGT5A	45.000		1.05	47.285	1.40	0.722	1.61	B	EL	24.238	0.809	2.70	B	I	24.047	0.80	0.722	1.05	B	EL	24.238	
		TNAGT5B	45.000	3	1.03	46.313	1.40	0.722	1.58	B	EL	24.238	0.809	2.28	B	I	24.047	0.80	0.722	1.03	B	EL	24.238	

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ_{DC}	γ_{DW}
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

NOTES:

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

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

COMMENTS:

1.
2.
3.
4.

(#) CONTROLLING LOAD RATING

(1) DESIGN LOAD RATING (HL-93)

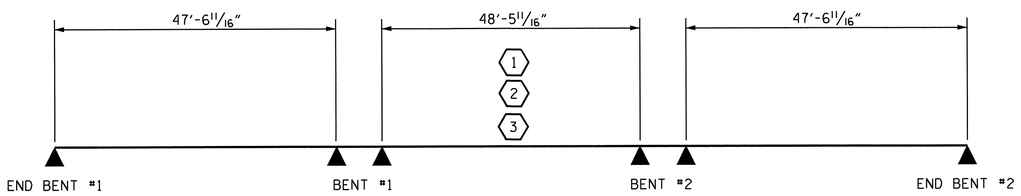
(2) DESIGN LOAD RATING (HS-20)

(3) LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER
EL - EXTERIOR LEFT GIRDER
ER - EXTERIOR RIGHT GIRDER



LRFR SUMMARY

PROJECT NO. B-4185

MARTIN COUNTY

STATION: 16+69.91 -L-

NORTH CAROLINA PROFESSIONAL SEAL 025516 ENGINEER DARYL E. MURRAY

4/19/13

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-5
1			3			TOTAL SHEETS
2			4			32

DESIGN ENGINEER OF RECORD: MOHAMMED AHMED DATE : 3-1-13

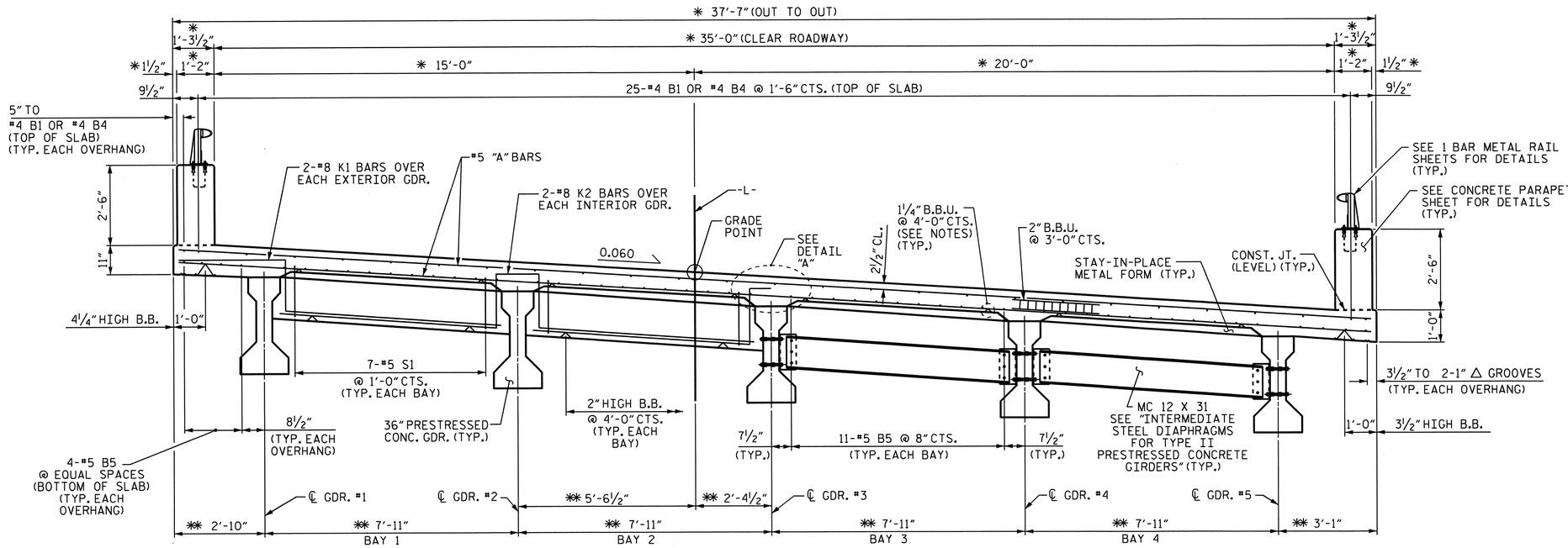
ASSEMBLED BY : PEGGY ADKINS DATE : 2-28-13
CHECKED BY : T.L. AVERETTE DATE : 3-1-13

DRAWN BY : MAA 1/08
CHECKED BY : GM/DI 2/08

REV. 11/12/08RR MAA/GM
REV. 10/1/11 MAA/GM

18-APR-2013 11:01

STD NO. LRFR1

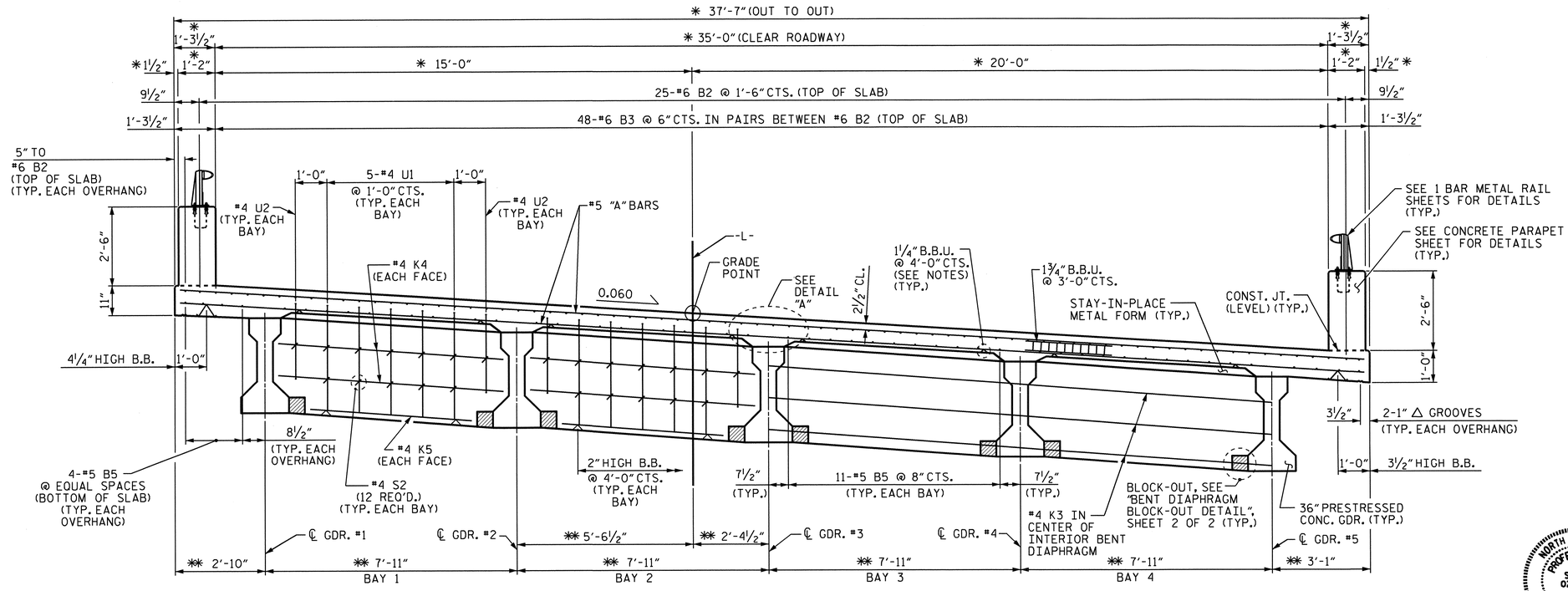


TYPICAL HALF SECTION

SHOWING END BENT DIAPHRAGMS

TYPICAL HALF SECTION

SHOWING INTERMEDIATE DIAPHRAGMS



TYPICAL SECTION

SHOWING BENT DIAPHRAGMS

NOTES:

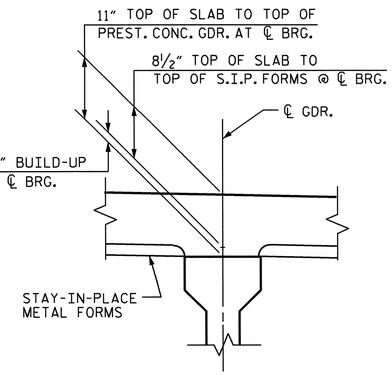
PROVIDE 1¼" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF 'A' BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF 'A' BARS A CLEAR DISTANCE OF 2½" ABOVE THE TOP OF THE REMOVABLE FORM.

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

PARAPET 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 3,000 PSI.

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

* DIMENSIONS ARE RADIAL
** DIMENSIONS ARE RADIAL THRU WORKPOINT



DETAIL "A"

PROJECT NO. B-4185

MARTIN COUNTY

STATION: 16+69.91 -L-

SHEET 1 OF 2

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			32

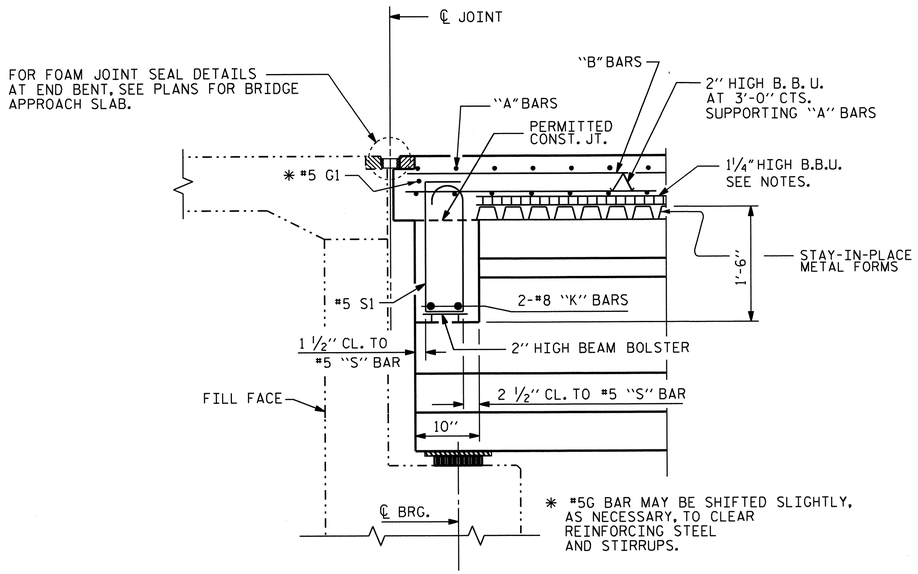
DESIGN ENGINEER OF RECORD: MOHAMMED AHMED DATE: 3-1-13

DRAWN BY: PEGGY ADKINS DATE: 8-9-12

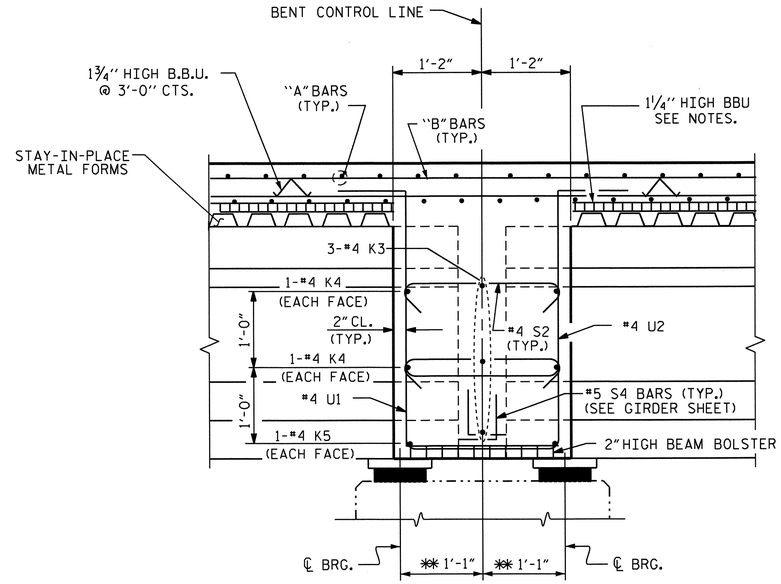
CHECKED BY: B. GREEN DATE: 10-22-12

NORTH CAROLINA PROFESSIONAL SEAL 025516 ENGINEER EMILY E. MURRAY
4/19/13

18-APR-2013 11:10

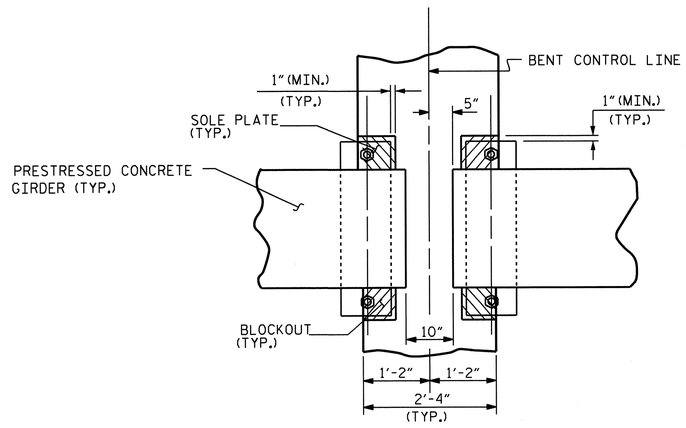


SECTION THRU END BENT DIAPHRAGM



SECTION THRU CONTINUOUS BENT DIAPHRAGM

** MEASURED ALONG GIRDER LINE



BENT DIAPHRAGM BLOCKOUT DETAIL

PROJECT NO. B-4185

MARTIN COUNTY

STATION: 16+69.91 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 025516 ENGINEER ERIC E. MURRAY
4/19/13

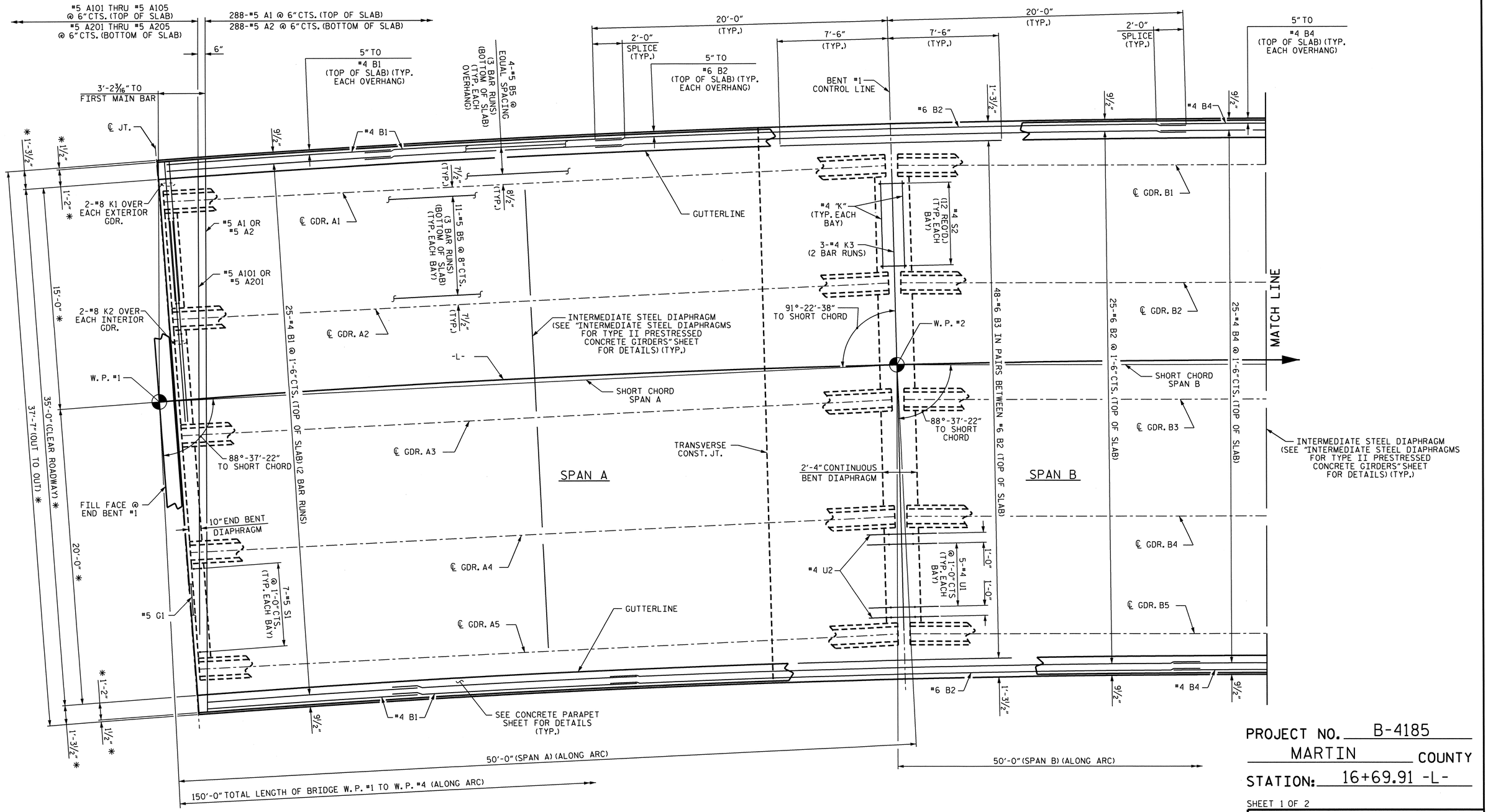
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			32

DESIGN ENGINEER OF RECORD: MOHAMMED AHMED DATE : 3-1-13

DRAWN BY : PEGGY ADKINS DATE : 8-9-12

CHECKED BY : B. GREEN DATE : 10-22-12

18 APR 2017 11:10



* RADIAL DIMENSIONS

PLAN OF SPANS

"A" BARS ARE SPACED PERPENDICULAR TO THE LONG CHORD.

PROJECT NO. B-4185

MARTIN COUNTY

STATION: 16+69.91 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPANS

NORTH CAROLINA PROFESSIONAL SEAL 025516 ENGINEER TIMOTHY E. MURRAY
4/19/13

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			32

DESIGN ENGINEER OF RECORD: MOHAMMED AHMED DATE: 3-1-13
DRAWN BY: PEGGY ADKINS DATE: 8-13-12
CHECKED BY: B. GREEN DATE: 10-22-12

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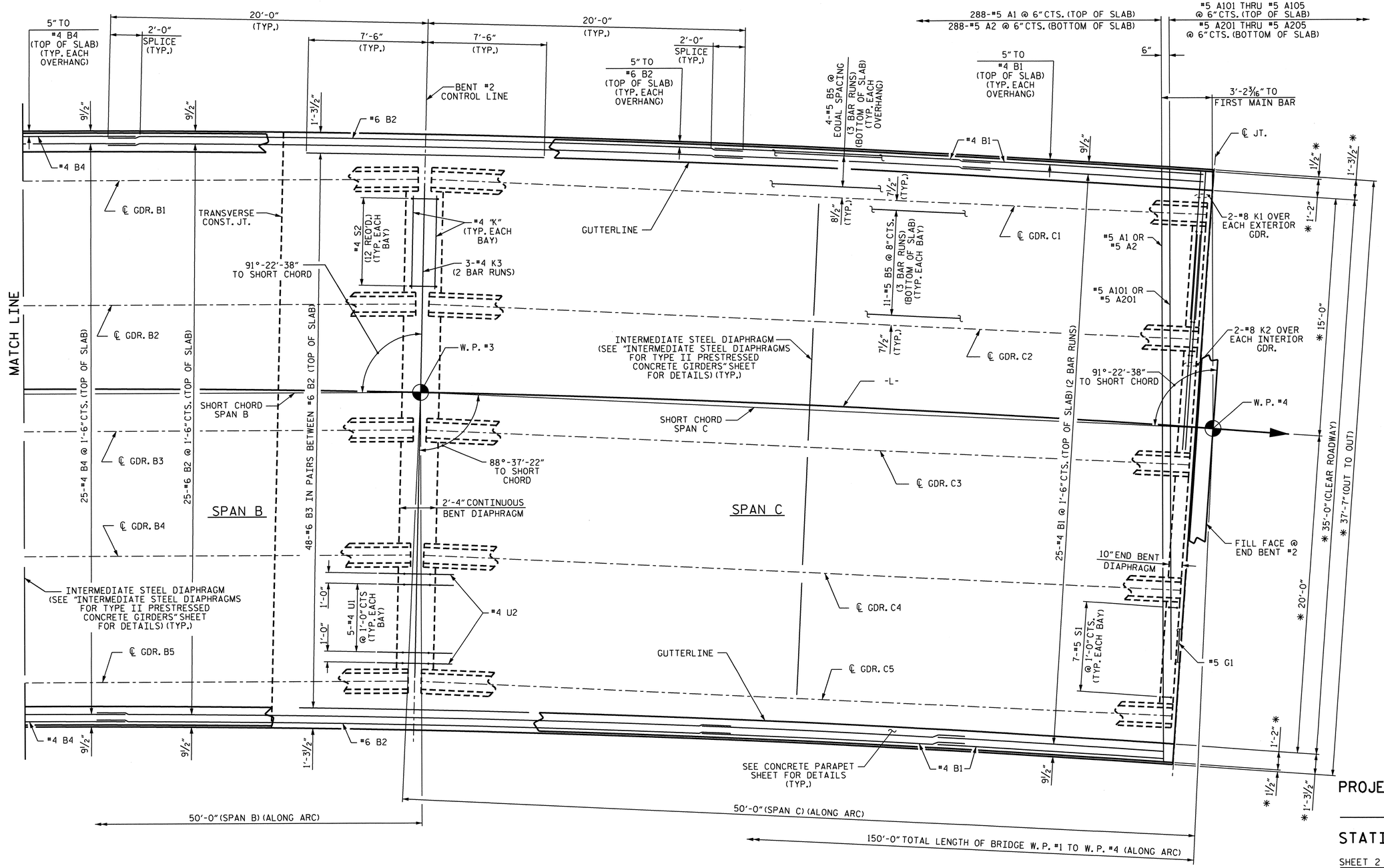


* RADIAL DIMENSIONS

PLAN OF SPANS

"A" BARS ARE SPACED PERPENDICULAR TO THE LONG CHORD.

PROJECT NO. B-4185

MARTIN COUNTY

STATION: 16+69.91 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

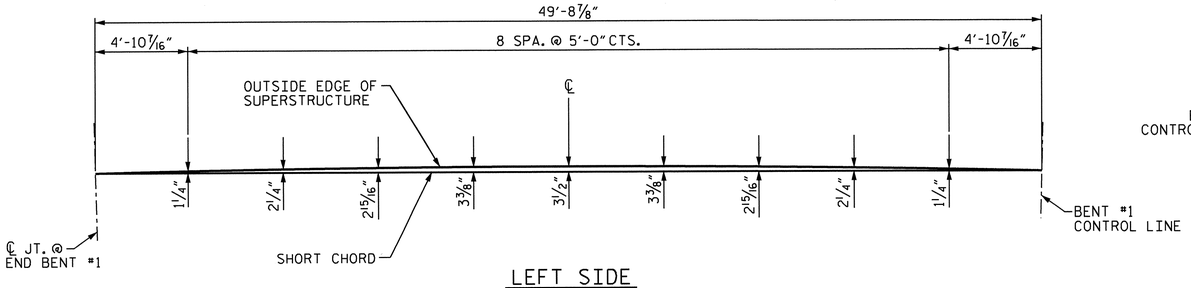
PLAN OF SPANS

NORTH CAROLINA PROFESSIONAL SEAL 025516 ENGINEER EMILY E. MURRAY
4/19/13

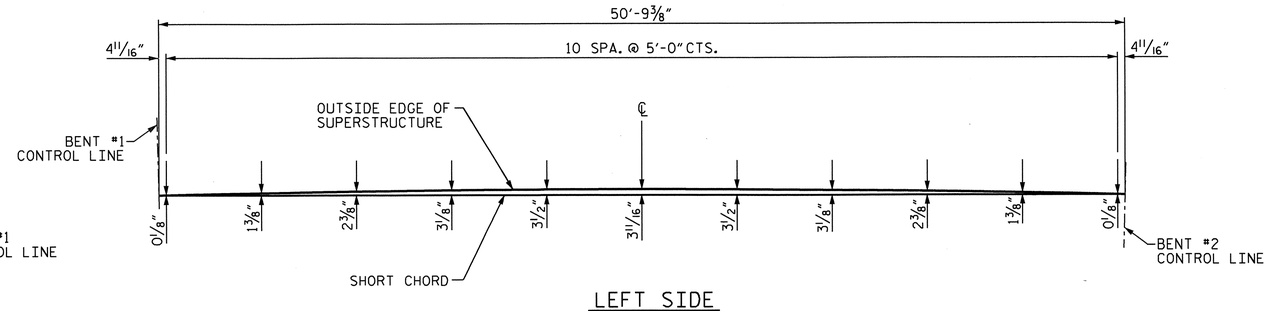
DESIGN ENGINEER OF RECORD: MOHAMMED AHMED	DATE : 3-1-13
DRAWN BY : PEGGY ADKINS	DATE : 8-13-12
CHECKED BY : B. GREEN	DATE : 10-22-12

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			32

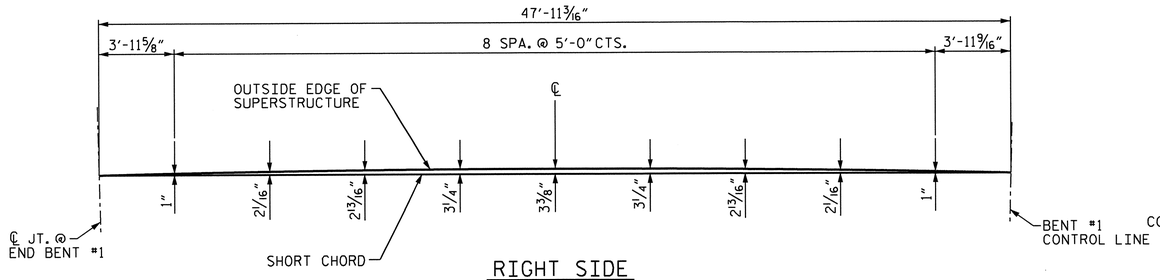
18-APR-2013 11:10



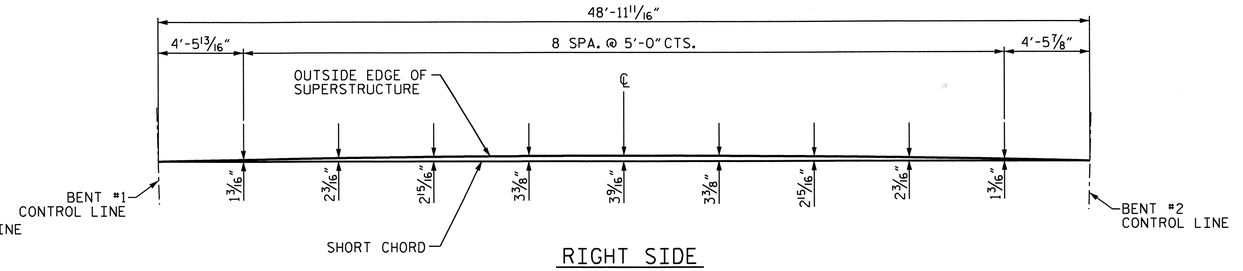
LEFT SIDE



LEFT SIDE



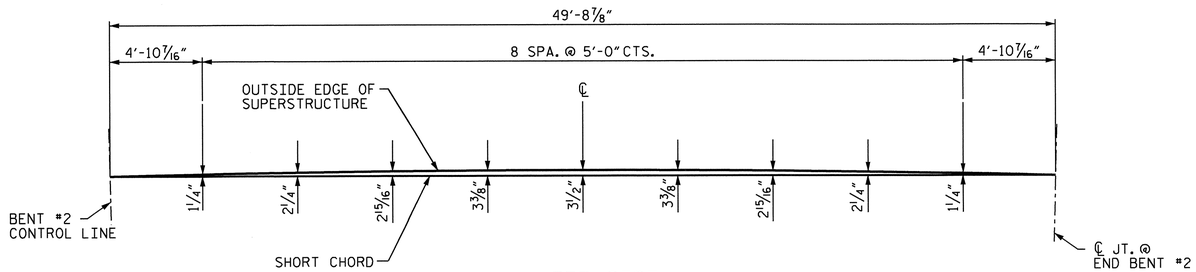
RIGHT SIDE



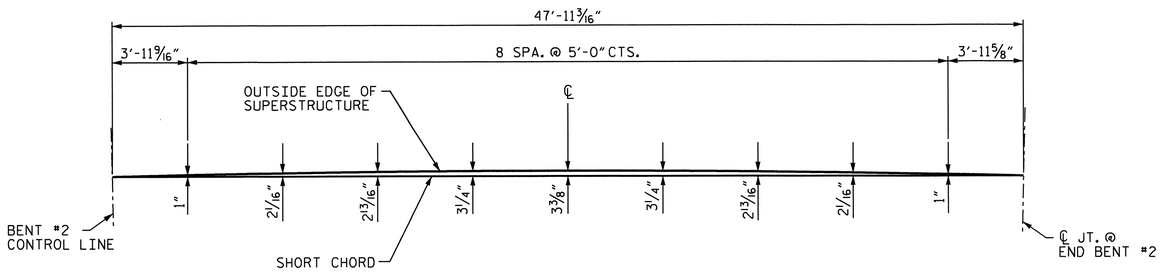
RIGHT SIDE

ARC OFFSETS - SPAN "A"

ARC OFFSETS - SPAN "B"



LEFT SIDE



RIGHT SIDE

ARC OFFSETS - SPAN "C"

PROJECT NO. B-4185

MARTIN COUNTY

STATION: 16+69.91 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

ARC OFFSETS

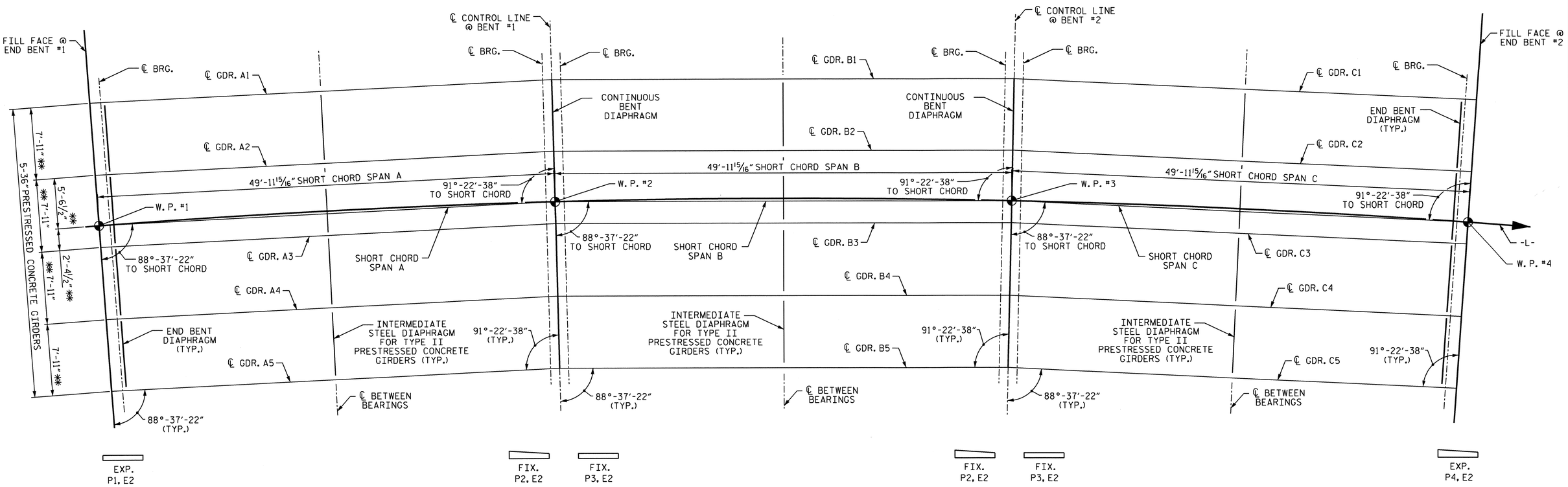
NORTH CAROLINA PROFESSIONAL SEAL 025516 ENGINEER EMILY E. MURRAY

4/19/13

DESIGN ENGINEER OF RECORD: MOHAMMED AHMED	DATE : 3-1-13
DRAWN BY : PEGGY ADKINS	DATE : 8-14-12
CHECKED BY : B. GREEN	DATE : 10-22-12

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			32

18-APR-2013 11:09



SPAN A

SPAN B

SPAN C

GIRDER LAYOUT

** DIMENSIONS ARE RADIAL THRU WORKPOINT

PROJECT NO. B-4185

MARTIN COUNTY

STATION: 16+69.91 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

GIRDER LAYOUT

NORTH CAROLINA PROFESSIONAL SEAL 025516 ENGINEER EMILY E. MURRAY
4/19/13

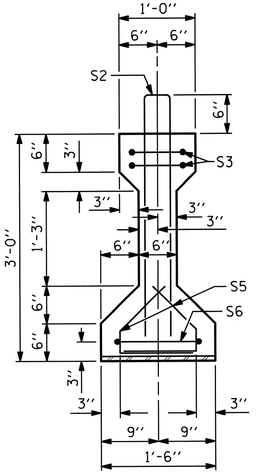
DESIGN ENGINEER OF RECORD: MOHAMMED AHMED DATE : 3-1-13

DRAWN BY : PEGGY ADKINS DATE : 8-13-12

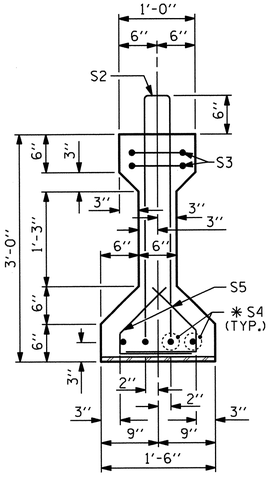
CHECKED BY : B. GREEN DATE : 10-22-12

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			32

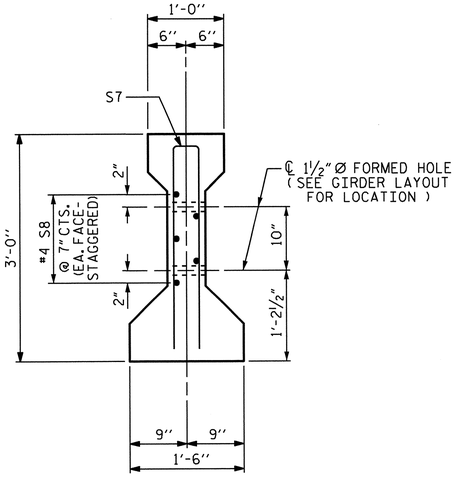
18-APR-2013 11:10



SECTION A-A

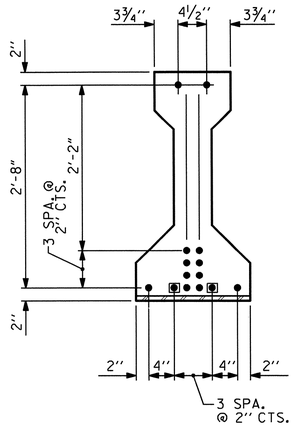


SECTION B-B

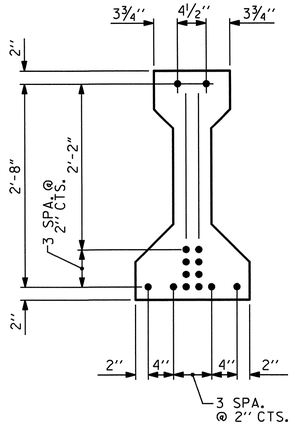


SECTION C-C

(S1 BARS NOT SHOWN)



AT END OF GIRDER

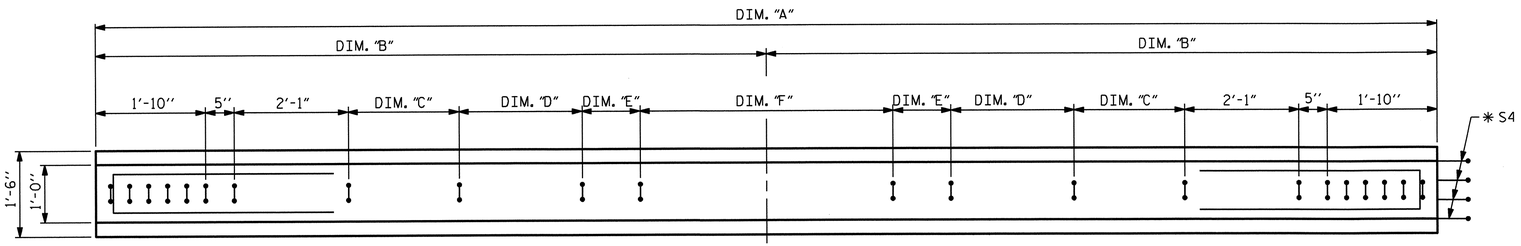


AT ℄ OF GIRDER

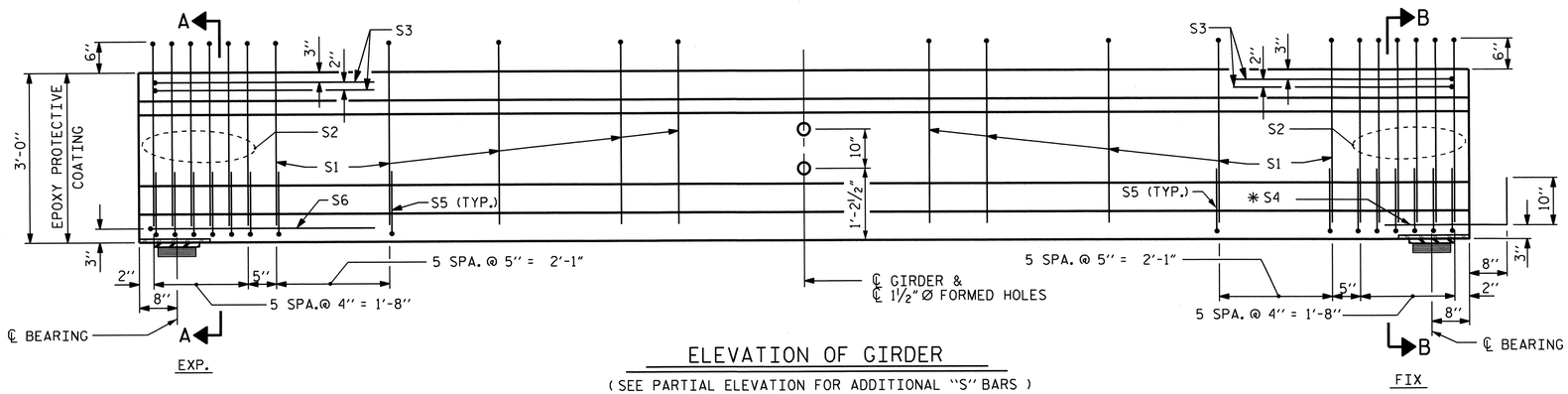
0.6" Ø LOW RELAXATION STRAND LAYOUT

DEBONDING LEGEND

- ● FULLY BONDED STRANDS
- ⊙ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER



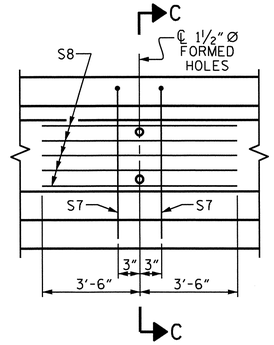
PLAN OF GIRDER



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

GIRDER	DIM. "A"	DIM. "B"	DIM. "C"	DIM. "D"	DIM. "E"	DIM. "F"
1	48'-10¾"	24'-5⅜"	15 SPA. @ 5"	14 SPA. @ 8"	4⅜"	5 SPA. @ 1'-8"
2	48'-6⅛"	24'-3 1/16"	14 SPA. @ 5"	14 SPA. @ 8"	7 1/16"	5 SPA. @ 1'-8"
3	48'-1½"	24'-0¾"	14 SPA. @ 5"	14 SPA. @ 8"	4¾"	5 SPA. @ 1'-8"
4	47'-9"	23'-10½"	14 SPA. @ 5"	13 SPA. @ 8"	10½"	5 SPA. @ 1'-8"
5	47'-4⅜"	23'-8 13/16"	14 SPA. @ 5"	13 SPA. @ 8"	8 13/16"	5 SPA. @ 1'-8"



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM
REINFORCING STEEL FOR GIRDER Nos. 1 THRU 5

0.6" Ø L. R. GRADE 270 STRANDS

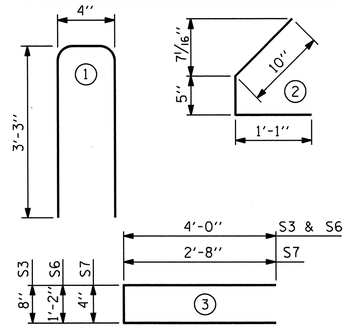
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER

	BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
GDR. 1	S1	76	#4	1	6'-10"	347
GDRS. 2 & 3	S1	74	#4	1	6'-10"	338
GDRS. 4 & 5	S1	72	#4	1	6'-10"	329
	S2	12	#5	1	6'-10"	86
	S3	4	#4	3	8'-8"	23
	✱S4	4	#5	STR	3'-8"	15
	S5	48	#4	2	2'-4"	75
	S6	1	#4	3	9'-2"	6
	S7	2	#5	3	5'-8"	12
	S8	5	#4	STR	7'-0"	23

✱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.	5000 PSI CONCRETE C.Y.	0.6" Ø L. R. STRANDS No.
GDR. 1	587	4.6	14
GDR. 2	578	4.6	14
GDR. 3	578	4.6	14
GDR. 4	569	4.5	14
GDR. 5	569	4.5	14

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
10	VARIES	481'-3½"

PROJECT NO. B-4185

MARTIN COUNTY

STATION: 16+69.91 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

AASHTO TYPE II
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD

SPANS A & C

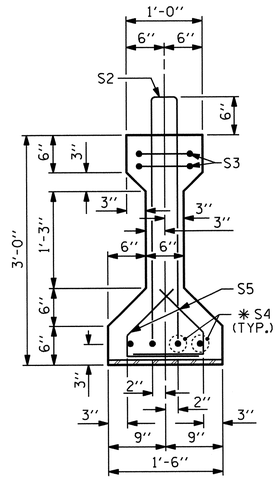
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			32

NORTH CAROLINA PROFESSIONAL SEAL 025516 ENGINEER EMILY E. MURRAY
4/19/13

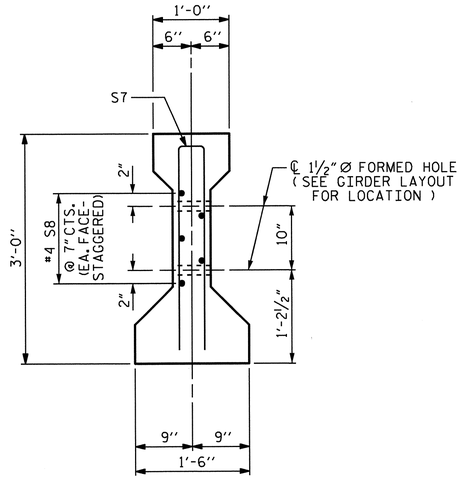
DESIGN ENGINEER OF RECORD: MOHAMMED AHMED	DATE : 3-1-13
ASSEMBLED BY : PEGGY ADKINS	DATE : 8-14-12
CHECKED BY : B. GREEN	DATE : 10-22-12
DRAWN BY : ELR 8/91	REV. 10/17/00R RWW/LES
CHECKED BY : GRP 8/91	REV. 5/1/06R TLA/GM
	REV. 10/1/11 MAA/GM

18-APR-2013 11:09

SID NO. PCG4 (Sht. 1)

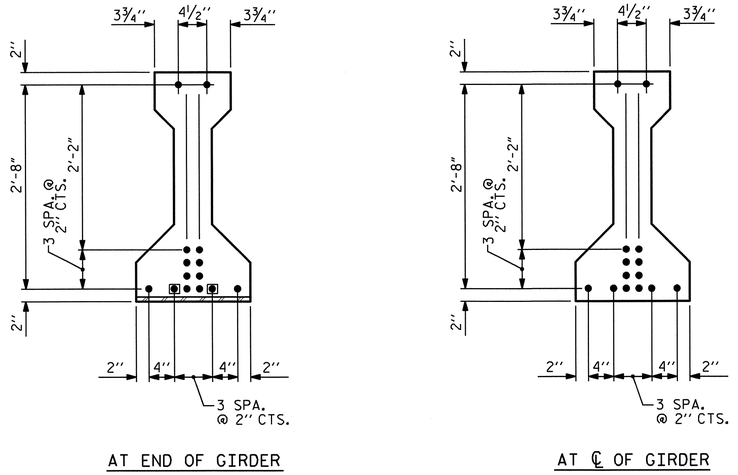


SECTION B-B



SECTION C-C

(S1 BARS NOT SHOWN)

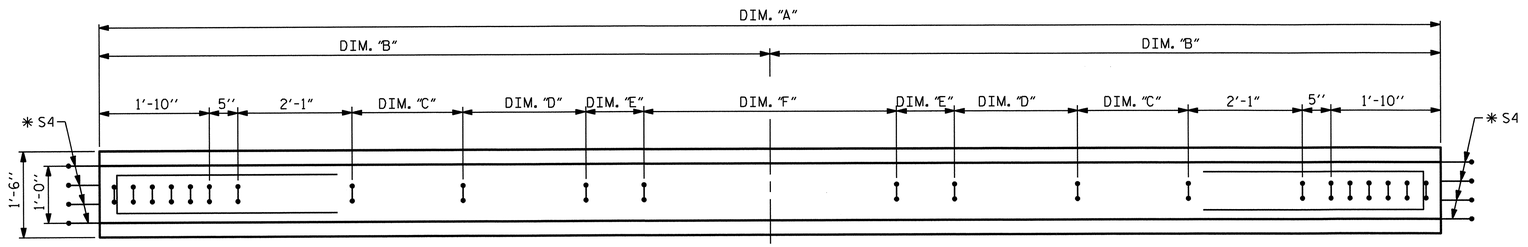


0.6" Ø LOW RELAXATION STRAND LAYOUT

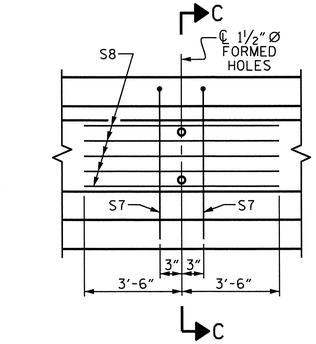
DEBONDING LEGEND

● FULLY BONDED STRANDS

◉ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER

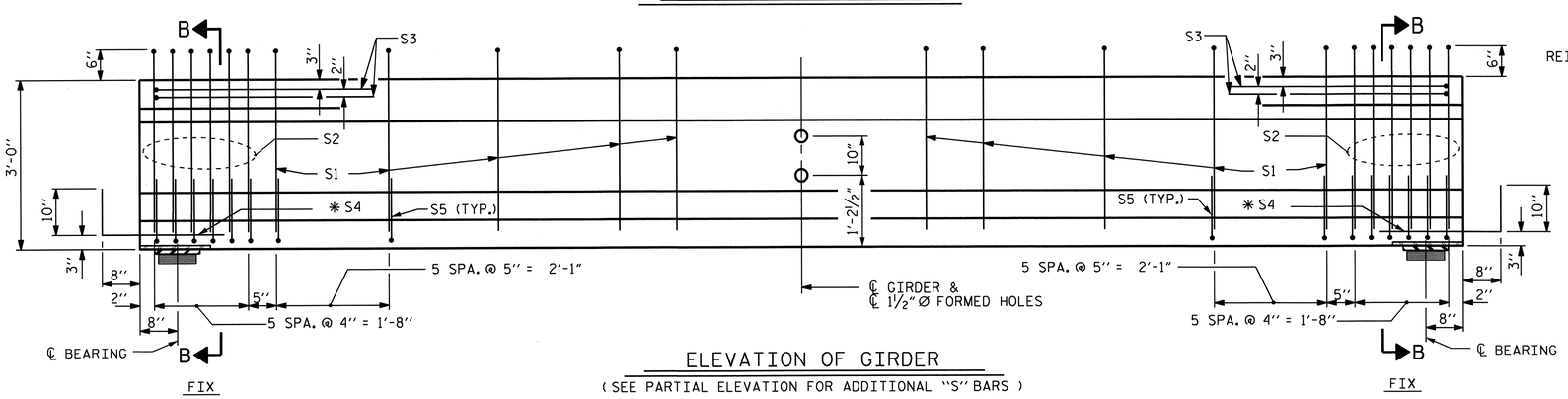


PLAN OF GIRDER



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. 1 THRU 5



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

GIRDER	DIM. "A"	DIM. "B"	DIM. "C"	DIM. "D"	DIM. "E"	DIM. "F"
1	49'-9¾"	24'-10⅞"	15 SPA. @ 5"	14 SPA. @ 8"	9⅞"	5 SPA. @ 1'-8"
2	49'-5⅛"	24'-8⅝"	15 SPA. @ 5"	14 SPA. @ 8"	7⅝"	5 SPA. @ 1'-8"
3	49'-0½"	24'-6¼"	14 SPA. @ 5"	14 SPA. @ 8"	10¼"	5 SPA. @ 1'-8"
4	48'-8"	24'-4"	14 SPA. @ 5"	14 SPA. @ 8"	8"	5 SPA. @ 1'-8"
5	48'-3½"	24'-1¾"	14 SPA. @ 5"	14 SPA. @ 8"	5¾"	5 SPA. @ 1'-8"

0.6" Ø L. R. GRADE 270 STRANDS

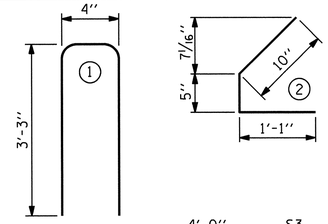
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER

	BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
GDRS. 1 & 2	S1	76	#4	1	6'-10"	347
GDRS. 3, 4 & 5	S1	74	#4	1	6'-10"	338
	S2	12	#5	1	6'-10"	86
	S3	4	#4	3	8'-8"	23
	✱S4	8	#5	STR	3'-8"	31
	S5	48	#4	2	2'-4"	75
	S7	2	#5	3	5'-8"	12
	S8	5	#4	STR	7'-0"	23

✱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.	5000 PSI CONCRETE C.Y.	0.6" Ø L. R. STRANDS No.
GDR. 1	597	4.7	14
GDR. 2	597	4.7	14
GDR. 3	588	4.7	14
GDR. 4	588	4.6	14
GDR. 5	588	4.6	14

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
5	VARIES	245'-2⅞"

DESIGN ENGINEER OF RECORD: MOHAMMED AHMED DATE : 3-1-13

ASSEMBLED BY : PEGGY ADKINS DATE : 8-14-12
CHECKED BY : B. GREEN DATE : 10-22-12

DRAWN BY : ELR 8/91
CHECKED BY : GRP 8/91

REV. 10/17/00R RWW/LES
REV. 5/1/06R TLA/GM
REV. 10/1/11 MAA/GM

NORTH CAROLINA PROFESSIONAL SEAL 025516 ENGINEER EMILY F. MURRAY
4/19/13

PROJECT NO. B-4185

MARTIN COUNTY

STATION: 16+69.91 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

AASHTO TYPE II
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD

SPAN B

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

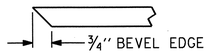
SHEET NO. S-13

TOTAL SHEETS 32

18-APR-2013 11:09

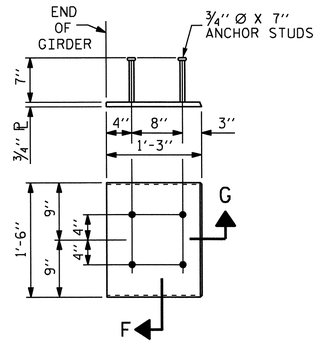
SID NO. RCC4 (Sht 1)

SECTION "G"



SECTION "F"

(SEE NOTES)



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

(2 REQ'D PER GIRDER)

NOTES

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

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 GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 4500 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

0.6" Ø LOW RELAXATION	SPANS A & C											SPAN B										
	ALL GIRDERS											ALL GIRDERS										
TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.036	0.068	0.093	0.108	0.114	0.108	0.093	0.068	0.036	0	0	0.037	0.069	0.095	0.111	0.117	0.111	0.095	0.069	0.037	0
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.015	0.029	0.039	0.046	0.048	0.046	0.039	0.029	0.015	0	0	0.016	0.031	0.043	0.050	0.052	0.050	0.043	0.031	0.016	0
FINAL CAMBER ↑	0	1/4"	7/16"	5/8"	3/4"	13/16"	3/4"	5/8"	7/16"	1/4"	0	0	1/4"	7/16"	5/8"	3/4"	3/4"	3/4"	5/8"	7/16"	1/4"	0

* INCLUDES FUTURE WEARING SURFACE
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "FINAL CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).

PROJECT NO. B-4185

MARTIN COUNTY

STATION: 16+69.91 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 025516 ENGINEER EMILY E. MURRAY
4/19/13

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			32

DESIGN ENGINEER OF RECORD: MOHAMMED AHMED DATE: 3-1-13

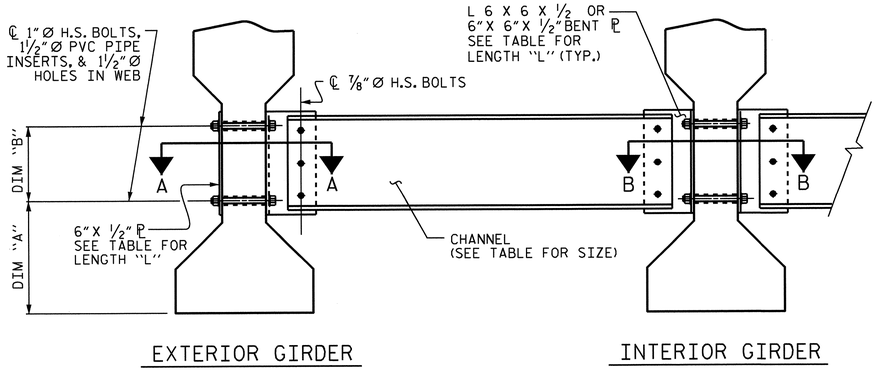
ASSEMBLED BY: PEGGY ADKINS DATE: 8-14-12
CHECKED BY: B. GREEN DATE: 10-22-12

DRAWN BY: ELR 11/91
CHECKED BY: GRP 11/91

REV. 7/10/01RR LES/RDR
REV. 5/1/06 TLA/GM
REV. 10/1/11 MAA/GM

18-APR-2013 11:09

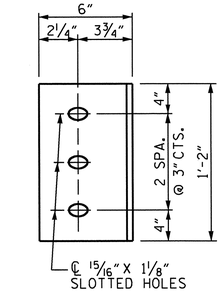
STD. NO. PCG9 (Sht. 1)



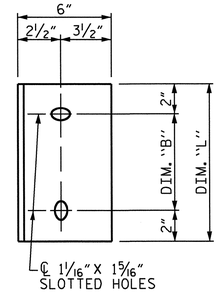
EXTERIOR GIRDER

INTERIOR GIRDER

PART SECTION AT INTERMEDIATE DIAPHRAGM



DIAPHRAGM FACE



WEB FACE

CONNECTOR PLATE DETAILS

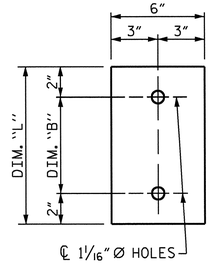
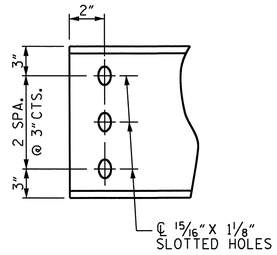


PLATE DETAILS



CHANNEL END

STRUCTURAL STEEL NOTES

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

TENSION ON THE ASTM A325 BOLTS THROUGH THE CHANNEL MEMBER SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

TENSION ON THE ASTM A449 BOLTS THROUGH THE GIRDER WEB SHALL BE SNUG TIGHTENED FOLLOWED BY AN ADDITIONAL ¼ TURN.

THE PLATES, BENT PLATES, CHANNELS, AND ANGLES 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 PROVISION AND SECTION 442 OF THE STANDARD SPECIFICATIONS.

GALVANIZE THE HIGH STRENGTH BOLTS, NUTS, WASHERS AND DIRECT TENSION INDICATORS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

USE AN ASTM F436 HARDENED WASHER WITH STANDARD AND SLOTTED HOLES UNDER EACH BOLT HEAD AND NUT.

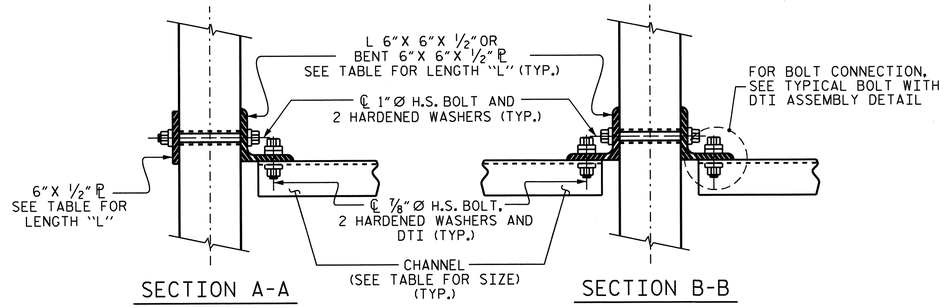
FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST ¼" PROJECTION BEYOND THE NUT.

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

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, PLACE TEMPORARY STRUTS BETWEEN PRESTRESSED GIRDERS ADJACENT TO THE STEEL DIAPHRAGMS. STRUTS SHALL REMAIN IN PLACE 3 DAYS AFTER CONCRETE IS PLACED.

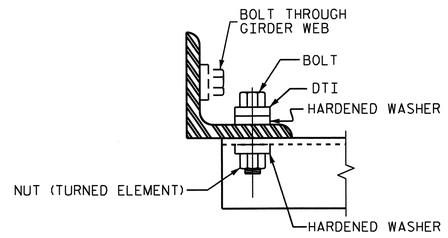
THE COST OF THE STEEL DIAPHRAGMS AND ASSEMBLIES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE GIRDERS.



SECTION A-A

SECTION B-B

CONNECTION DETAILS



BOLT WITH DTI ASSEMBLY DETAIL

TABLE

GIRDER TYPE	CHANNEL SIZE	DIM "A"	DIM "B"	DIM "L"
II	MC 12 x 31	1'-2½"	10"	1'-2"

PROJECT NO. B-4185

MARTIN COUNTY

STATION: 16+69.91 -L-

DESIGN ENGINEER OF RECORD: MOHAMMED AHMED DATE : 3-1-13						
ASSEMBLED BY : PEGGY ADKINS DATE : 8-9-12 CHECKED BY : B. GREEN DATE : 10-22-12						
DRAWN BY : TLA 6/05 CHECKED BY : VC 6/05	ADDED 10/21/05 REV. 5/1/06RRR KMM/GM REV. 10/1/11 MAA/GM					

NORTH CAROLINA PROFESSIONAL SEAL 025516 ENGINEER EMILY E. MURRAY
4/19/13

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

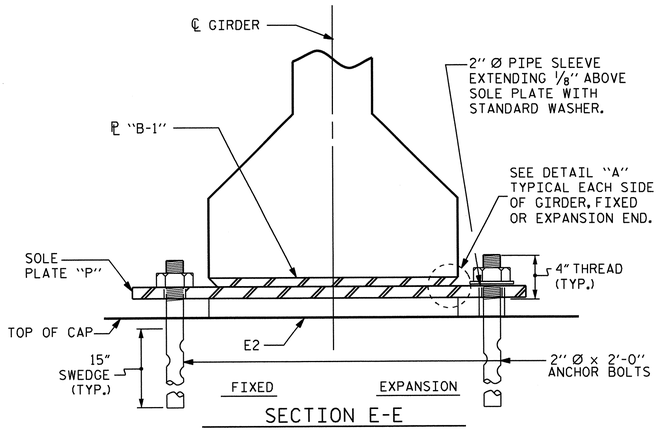
STANDARD

INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE II PRESTRESSED CONCRETE GIRDERS

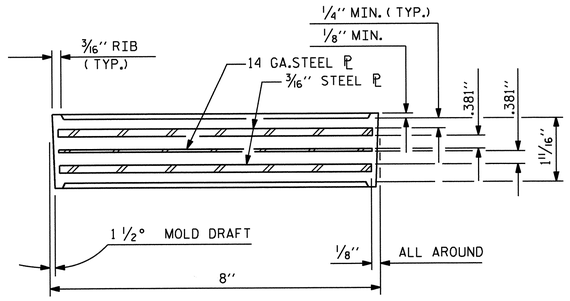
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			32

18-APR-2013 11:09

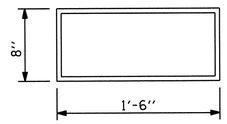
SID NO. RCC10 (SHT 3)



SECTION E-E



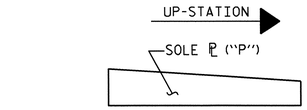
TYPICAL SECTION OF ELASTOMERIC BEARINGS



E2 (30 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING

TYPE III



SOLE ℄ PLACEMENT DETAIL

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.

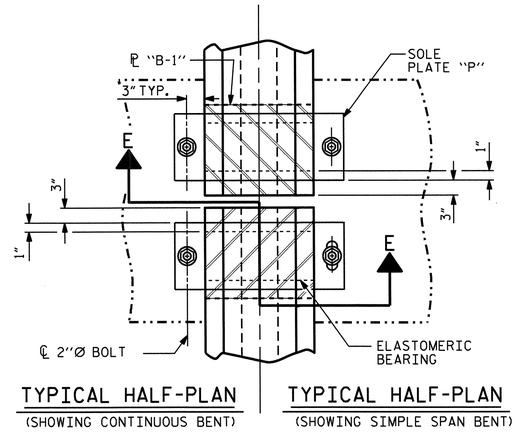
SOLE PLATE "P", BOLTS, NUTS, WASHERS, AND PIPE SLEEVE SHALL BE INCLUDED IN THE PAY ITEM FOR PRESTRESSED CONCRETE GIRDERS.

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.

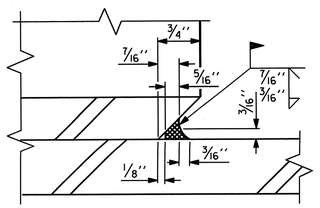
THE ELASTOMER IN THE STEEL REINFORCED BEARINGS SHALL HAVE A SHEAR MODULUS OF 0.160 KSI. IN ACCORDANCE WITH AASHTO M251.

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

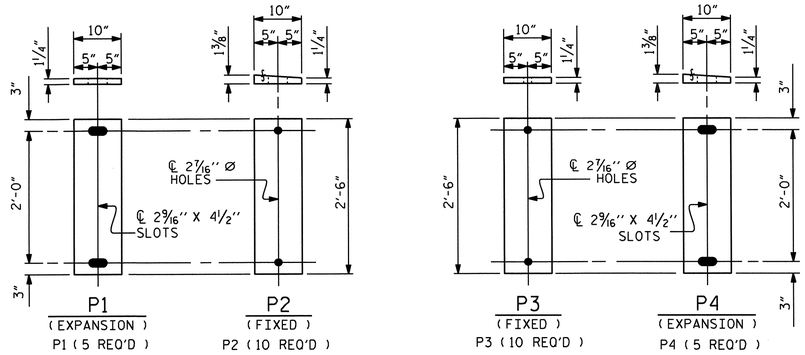


TYPICAL HALF-PLAN (SHOWING CONTINUOUS BENT)

TYPICAL HALF-PLAN (SHOWING SIMPLE SPAN BENT)



DETAIL "A"



SOLE PLATE DETAILS ("P")

MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE III	160 k

PROJECT NO. B-4185

MARTIN COUNTY

STATION: 16+69.91 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

ELASTOMERIC BEARING DETAILS

PRESTRESSED CONCRETE GIRDER SUPERSTRUCTURE

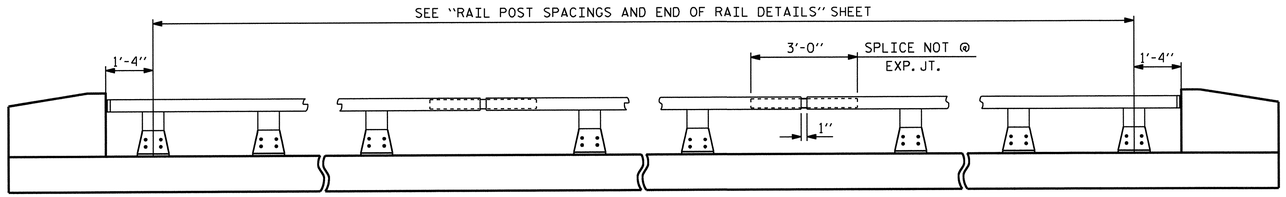
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			32

DESIGN ENGINEER OF RECORD: MOHAMMED AHMED	DATE : 3-1-13	
ASSEMBLED BY : PEGGY ADKINS	DATE : 8-9-12	
CHECKED BY : B. GREEN	DATE : 10-22-12	
DRAWN BY : WJH 8/89	REV. 5/1/06	TLA/GM
CHECKED BY : CRK 8/89	REV. 10/1/11	MAA/GM
	REV. 10/24/12	AAC/MAA

NORTH CAROLINA PROFESSIONAL SEAL 025516 ENGINEER EMILY E. MARRIOTT
4/19/13

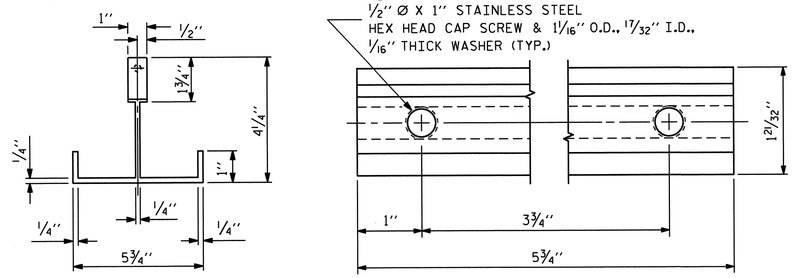
18-APR-2013 11:08

STD. NO. ER3 (SHT 2)



ELEVATION

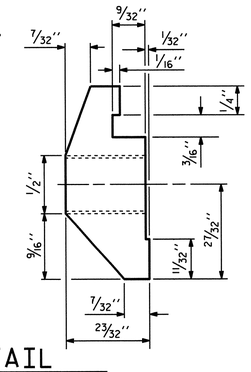
NOTE:
FOR ATTACHMENT OF METAL RAIL TO END POST, SEE STANDARD NO. BMR2.

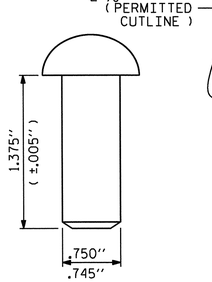


PLAN

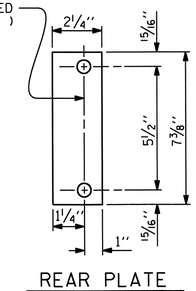
CLAMP BAR DETAIL

(2 REQUIRED PER POST)

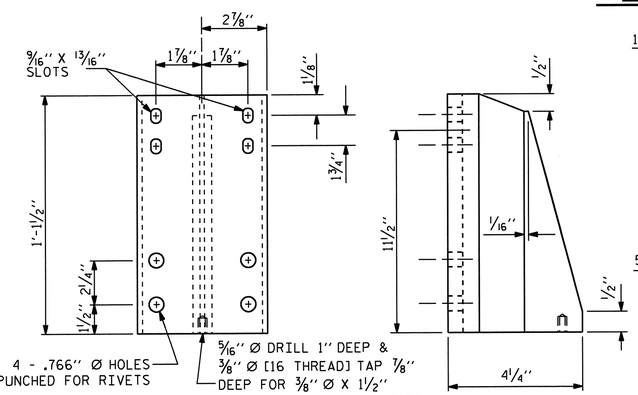




RIVET DETAIL



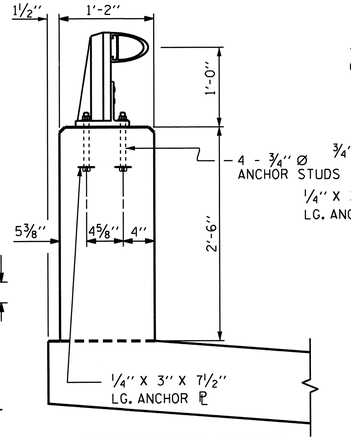
REAR PLATE



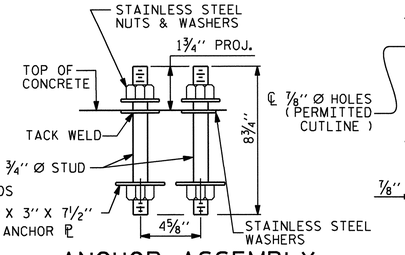
FRONT ELEVATION

SIDE ELEVATION

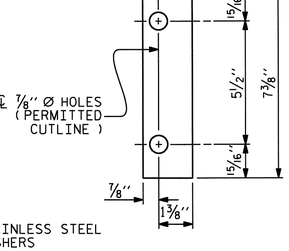
DETAILS OF POST



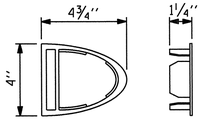
SECTION THRU PARAPET AND RAIL



ANCHOR ASSEMBLY



FRONT PLATE

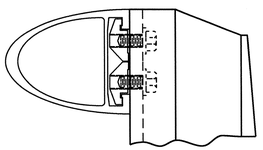


RAIL CAP

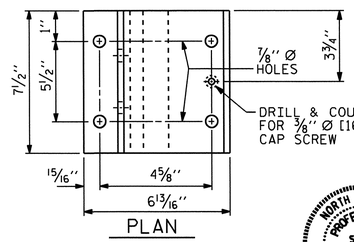
NOTE : BASE CAN BE SUPPLIED AS ONE EXTRUSION OR TWO EXTRUSIONS WELDED TOGETHER AS SHOWN.

SHIM DETAILS

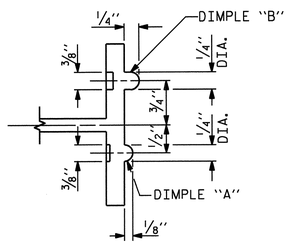
NOTE : SHIMS MAY BE CUT ALONG PERMITTED CUTLINE OR SLOTTED TO EDGE OF PLATE TO FACILITATE PLACEMENT.



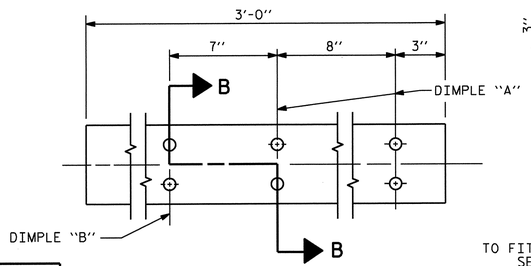
CLAMP & RAIL ASSEMBLY



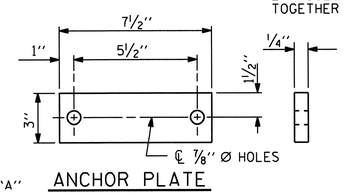
PLAN



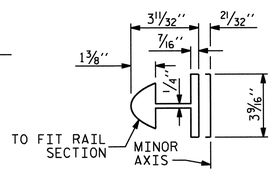
SECTION B - B



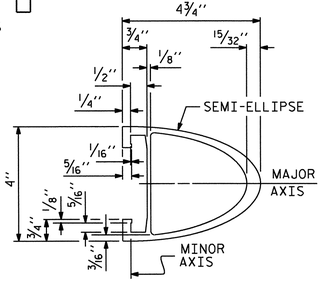
EXPANSION BAR DETAILS



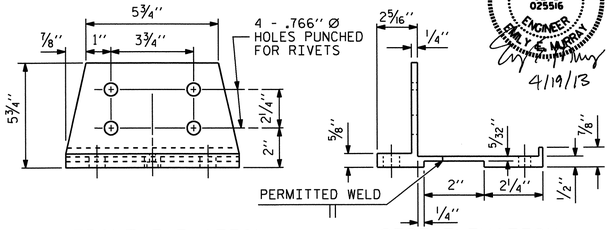
ANCHOR PLATE



BAR SECTION



RAIL SECTION



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 B221 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

MATERIALS 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.

CLOSURE PLATES: CLOSURE PLATES 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.

MATERIAL FOR ANCHOR STUDS SHALL BE ASTM F593 ALLOY 304 STAINLESS STEEL WITH MINIMUM 75,000 PSI ULTIMATE STRENGTH. STUDS TO BE EMBEDDED 7" IN CONCRETE. NUTS SHALL BE AMERICAN STANDARD FINISHED HEXAGON THICK, CLASS 2B THREAD, AND MEET THE REQUIREMENTS OF ASTM F594 ALLOY 304 STAINLESS STEEL. WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL. ANCHOR ℄ SHALL BE AASHTO M270 GRADE 36.

CAP SCREWS SHALL BE ASTM F593 ALLOY 305 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 KINKINGTO 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.

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.

THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF THE ANCHOR ASSEMBLY. LEVEL TWO FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4"Ø BOLT IS 10 KIPS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

WHEN ADHESIVELY ANCHORED ANCHOR BOLTS ARE USED, BOLTS, NUTS AND WASHERS SHALL MEET THE SAME REQUIREMENTS AS THE ANCHOR STUDS. NUTS AND WASHERS FOR USE WITH THE ANCHOR ASSEMBLY.

PAY LENGTH = 279.95 LIN. FT.

PROJECT NO. B-4185

MARTIN COUNTY

STATION: 16+69.91 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

1 BAR METAL RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			32

DESIGN ENGINEER OF RECORD: MOHAMMED AHMED DATE : 3-1-13

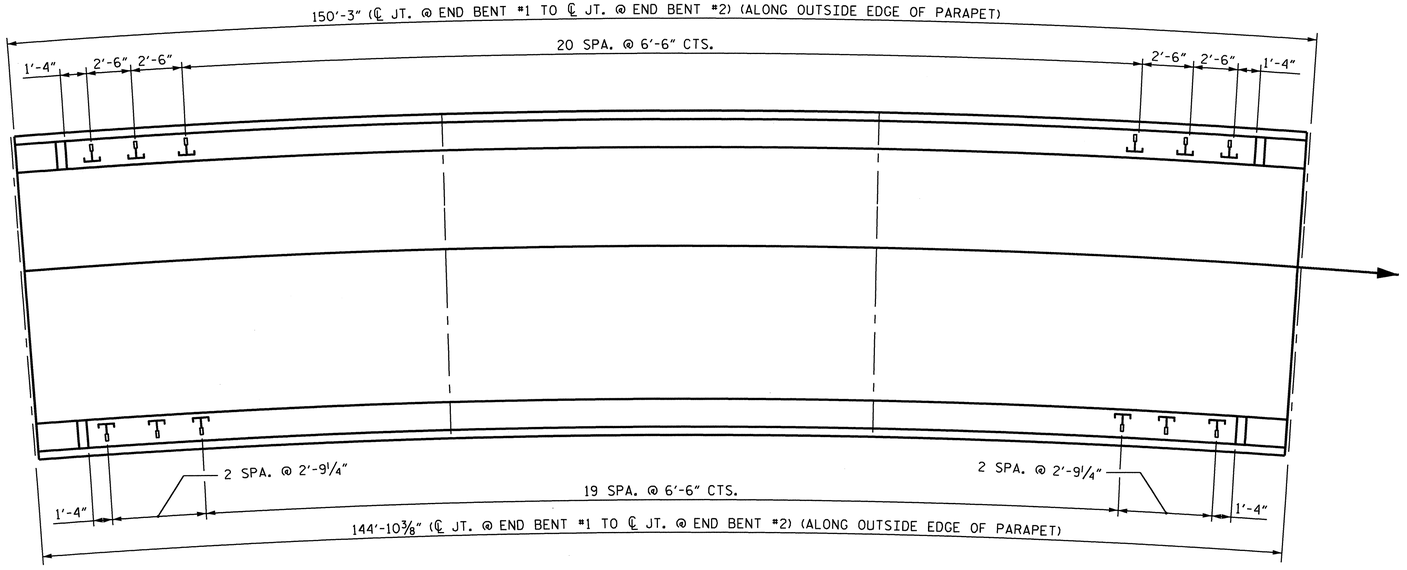
ASSEMBLED BY : PEGGY ADKINS DATE : 8-21-12
CHECKED BY : B. GREEN DATE : 10-22-12

DRAWN BY : FCJ 1/88
CHECKED BY : CRK 3/89

REV. 5/7/03R RWW/JTE
REV. 5/1/06R KMM/GM
REV. 10/1/11 MAA/GM

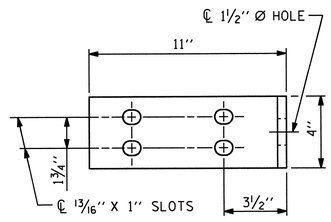
NORTH CAROLINA PROFESSIONAL SEAL 025516 ENGINEER MARY S. MURRAY 4/19/13

18-APR-2013 11:08

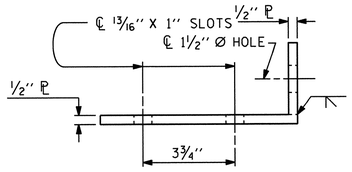


PLAN OF RAIL POST SPACINGS

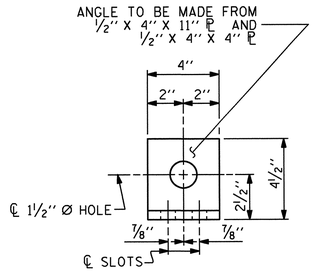
(49 TOTAL ASSEMBLIES REQUIRED)



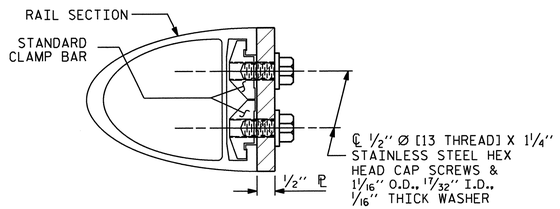
ELEVATION



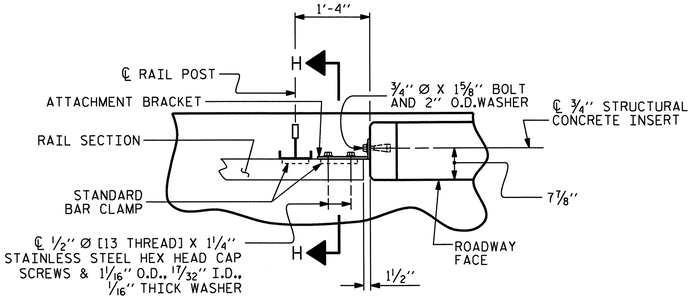
TOP VIEW



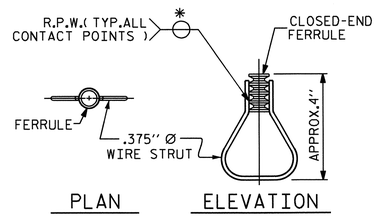
END VIEW



SECTION H-H



PLAN - RAIL AND END POST



PLAN ELEVATION

STRUCTURAL CONCRETE INSERT

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

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.

DETAILS FOR ATTACHING METAL RAIL TO END POST

DESIGN ENGINEER OF RECORD: MOHAMMED AHMED DATE : 3-1-13			
ASSEMBLED BY : PEGGY ADKINS DATE : 8-21-12			
CHECKED BY : B. GREEN DATE : 10-22-12			
DRAWN BY : FCJ 1/88	REV. 5/7/03	RWW/JTE	
CHECKED BY : CRK 3/89	REV. 5/1/06	TLA/GM	
	REV. 10/1/11	MAA/GM	

NORTH CAROLINA PROFESSIONAL SEAL 025516 ENGINEER EMILY E. MURRAY 4/19/13

PROJECT NO. B-4185

MARTIN COUNTY

STATION: 16+69.91 -L-

SHEET 2 OF 2

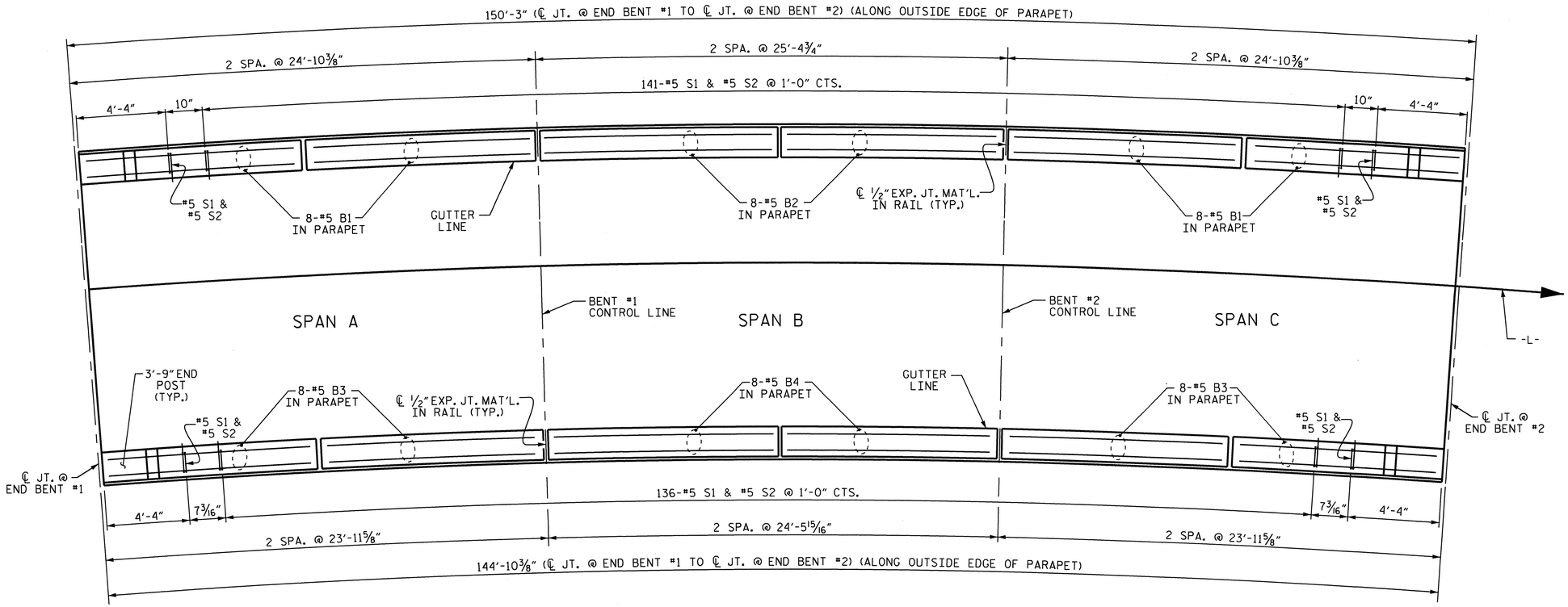
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

RAIL POST SPACINGS AND END OF RAIL DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			32

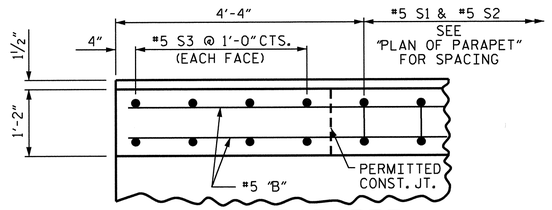
18-APR-2013 11:08

SID NO. RMP2

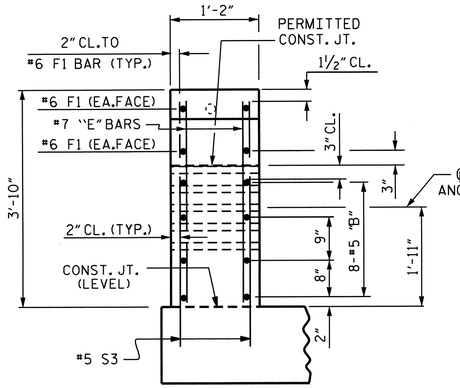


PLAN OF PARAPET

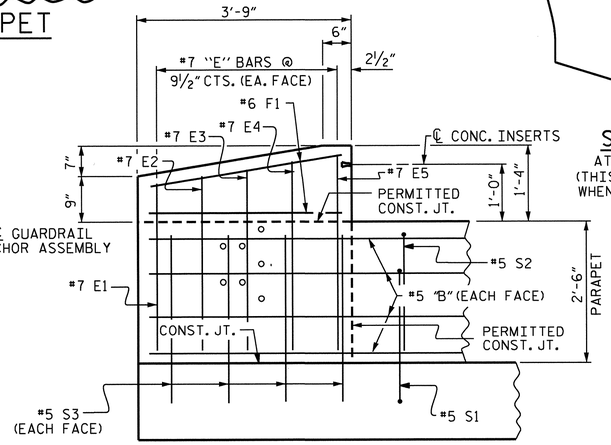
(DIMENSIONS ARE ALONG ARC ALONG OUTSIDE EDGE OF PARAPET)



PLAN OF PARAPET

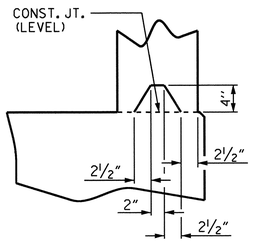


END VIEW



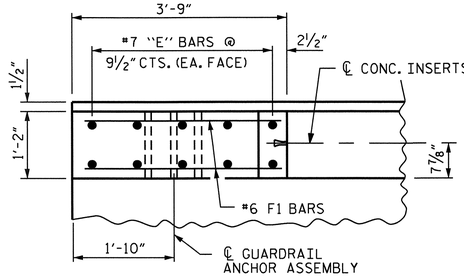
ELEVATION

PARAPET AND END POST FOR ONE BAR RAIL

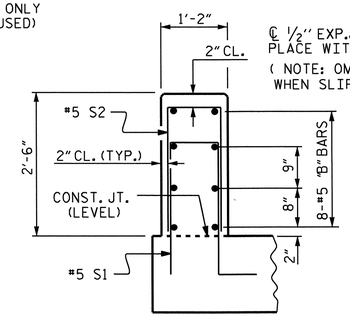


SECTION S-S

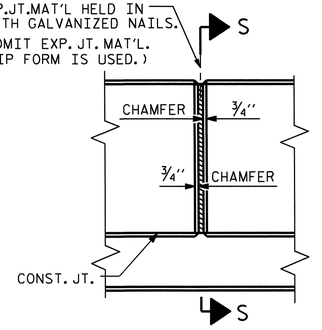
AT DAM IN OPEN JOINT (THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)



PLAN OF END POST



SECTION THRU PARAPET



ELEVATION AT EXPANSION JOINTS

PARAPET DETAILS

NOTES

PARAPET 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 3,000 PSI.

ALL REINFORCING STEEL IN PARAPETS AND END POSTS SHALL BE EPOXY COATED.

FOR DETAILS OF CONCRETE INSERT, SEE "RAIL POST SPACINGS AND END OF RAIL DETAIL" SHEETS.

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. A 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.

THE #5 S3 BARS SHALL BE INSTALLED USING AN ADHESIVE ANCHORING SYSTEM AFTER SAWING THE JOINT. THE YIELD LOAD FOR THE #5 S3 BARS IS 18.6 KIPS. FIELD TESTING FOR THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

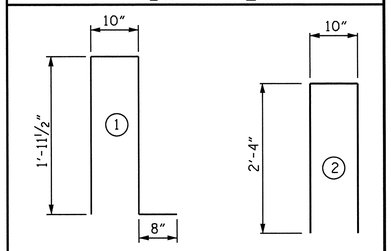
BILL OF MATERIAL

FOR CONCRETE PARAPET AND FOUR END POSTS ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳B1	32	5	STR	24'-6"	818
✳B2	16	5	STR	25'-0"	417
✳B3	32	5	STR	23'-7"	787
✳B4	16	5	STR	24'-1"	402
✳S1	281	5	1	5'-5"	1588
✳S2	281	5	2	5'-6"	1612
✳S3	32	5	STR	3'-0"	100
✳E1	8	7	STR	3'-0"	49
✳E2	8	7	STR	3'-2"	52
✳E3	8	7	STR	3'-4"	55
✳E4	8	7	STR	3'-6"	57
✳E5	8	7	STR	3'-7"	59
✳F1	16	6	STR	3'-5"	82

✳EPOXY COATED REINFORCING STEEL	LBS.	6078
CLASS AA CONCRETE	C.Y.	31.9
1'-2" X 2'-6" CONCRETE PARAPET	L.F.	295.11

BAR TYPE



ALL BAR DIMENSIONS ARE OUT TO OUT

PROJECT NO. B-4185

MARTIN COUNTY

STATION: 16+69.91 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

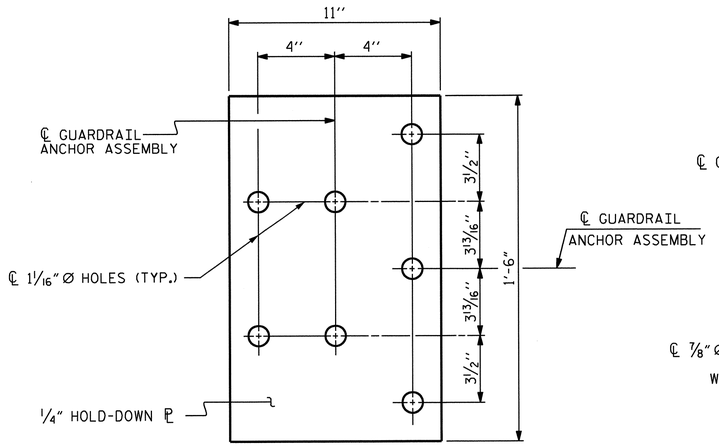
1'-2" X 2'-6" CONCRETE PARAPET & END POST DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			32

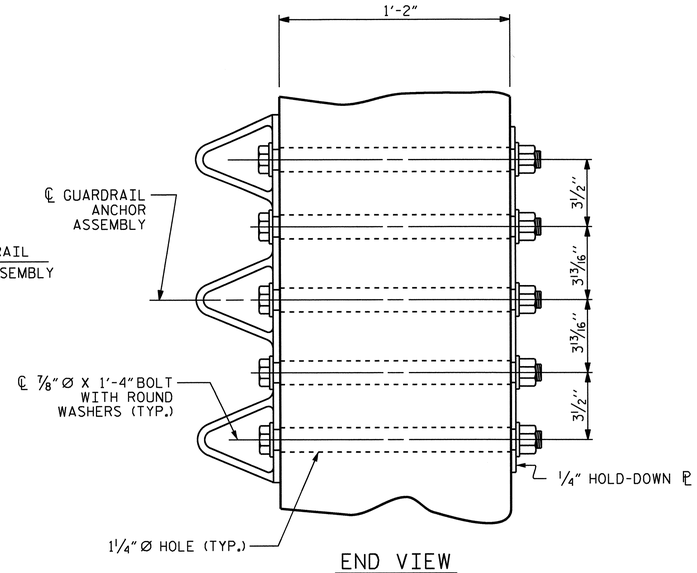
DESIGN ENGINEER OF RECORD: MOHAMMED AHMED DATE : 3-1-13

ASSEMBLED BY : PEGGY ADKINS DATE : 8-16-12
CHECKED BY : B. GREEN DATE : 10-22-12

18-APR-2013 11:08



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.

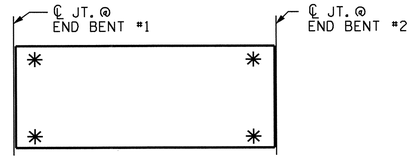
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

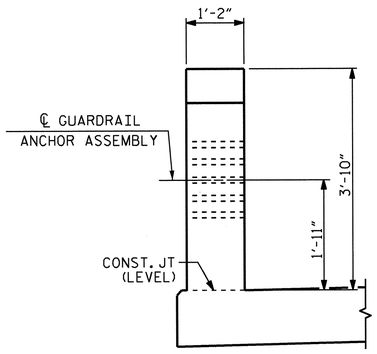
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE END POST TO CLEAR ASSEMBLY BOLTS.

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

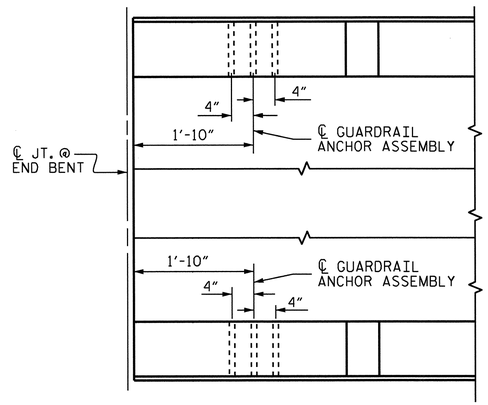


SKETCH SHOWING POINTS OF ATTACHMENT

*LOCATION OF GUARDRAIL ATTACHMENT



END VIEW



PLAN

LOCATION OF GUARDRAIL ANCHOR AT END POST

PROJECT NO. B-4185

MARTIN COUNTY

STATION: 16+69.91 -L-

NORTH CAROLINA PROFESSIONAL SEAL 025516 ENGINEER GARY E. MURRAY

4/19/13

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS

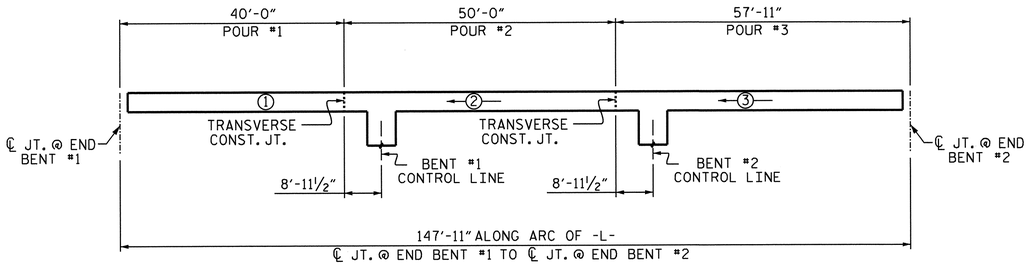
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S-20

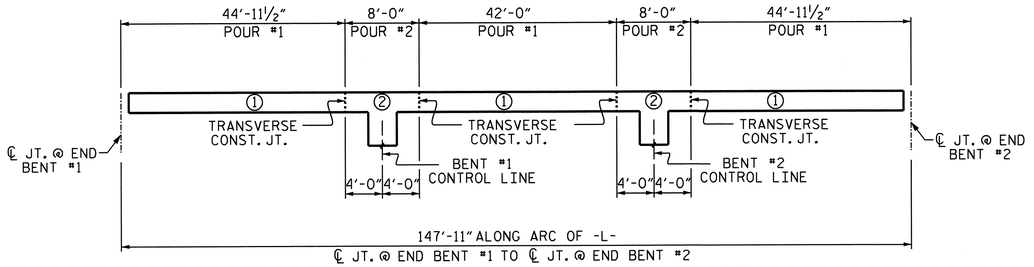
TOTAL SHEETS 32

DESIGN ENGINEER OF RECORD: MOHAMMED AHMED DATE : 3-1-13	
ASSEMBLED BY : PEGGY ADKINS DATE : 8-21-12 CHECKED BY : B. GREEN DATE : 10-22-12	
DRAWN BY : MAA 5/10 CHECKED BY : GM 5/10	ADDED 5/6/10 REV. 10/1/11 MAA/GM REV. 12/5/11 MAA/GM

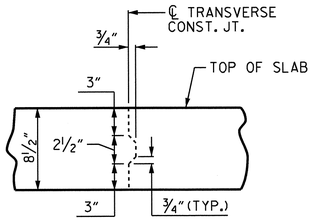
18-APR-2013 11:08



POURING SEQUENCE

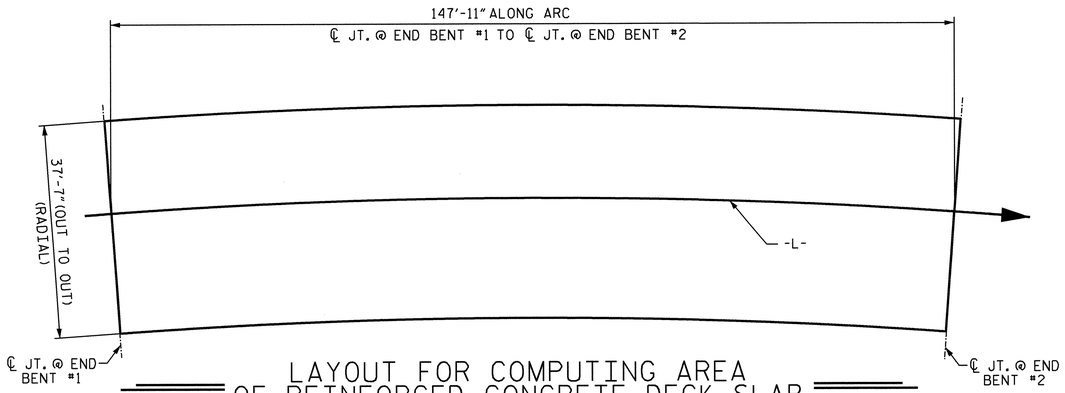


OPTIONAL POURING SEQUENCE



TRANSVERSE CONSTRUCTION JOINT DETAIL

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



LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB (SQ. FT. = 5543)

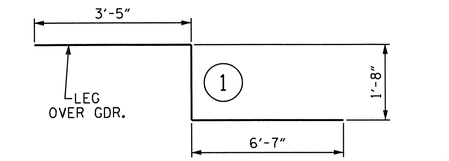
GROOVING BRIDGE FLOORS		
APPROACH SLABS	888	SQ.FT.
BRIDGE DECK	4679	SQ.FT.
TOTAL	5567	SQ.FT.

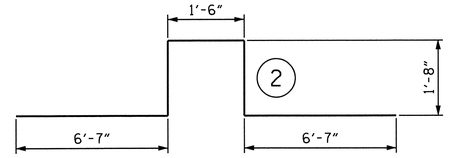
BILL OF MATERIAL

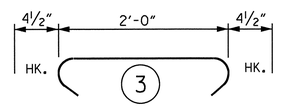
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✱ A1	288	#5	STR	37'-3"	11189
A2	288	#5	STR	37'-3"	11189
✱ A101	2	#5	STR	29'-9"	62
✱ A102	2	#5	STR	22'-10"	48
✱ A103	2	#5	STR	15'-10"	33
✱ A104	2	#5	STR	8'-11"	19
✱ A105	2	#5	STR	2'-0"	4
A201	2	#5	STR	35'-0"	73
A202	2	#5	STR	28'-0"	58
A203	2	#5	STR	21'-1"	44
A204	2	#5	STR	14'-1"	29
A205	2	#5	STR	7'-2"	15
✱ B1	108	#4	STR	16'-5"	1184
✱ B2	54	#6	STR	40'-0"	3244
✱ B3	96	#6	STR	15'-0"	2163
✱ B4	27	#4	STR	14'-9"	266
B5	156	#5	STR	51'-5"	8366
✱ G1	2	#5	STR	37'-3"	78
✱ K1	8	#8	1	11'-8"	249
✱ K2	12	#8	2	18'-0"	577
K3	12	#4	STR	16'-9"	134
K4	32	#4	STR	7'-1"	151
K5	16	#4	STR	4'-11"	53
✱ S1	56	#5	5	4'-11"	287
S2	96	#4	3	2'-9"	176
✱ U1	40	#4	4	11'-8"	312
✱ U2	16	#4	4	9'-8"	103

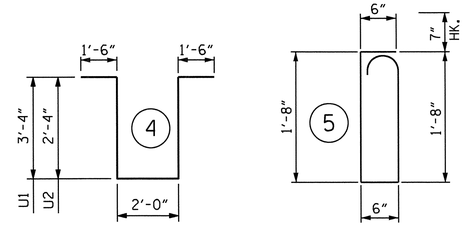
REINFORCING STEEL	20288 LBS.
✱ EPOXY COATED REINFORCING STEEL	19818 LBS.

BAR TYPES









ALL BAR DIMENSIONS ARE OUT TO OUT

SUPERSTRUCTURE BILL OF MATERIAL

	CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	(CU.YDS.)	(LBS.)	(LBS.)
POUR #1	47.8	20288	19818
POUR #2	66.2		
POUR #3	76.7		
TOTALS ✱✱	190.7	20288	19818

✱✱ QUANTITIES FOR PARAPET ARE NOT INCLUDED.

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"			

NORTH CAROLINA PROFESSIONAL SEAL 025516 ENGINEER EMILY E. MURRAY
4/19/13

PROJECT NO. B-4185
MARTIN COUNTY
STATION: 16+69.91 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

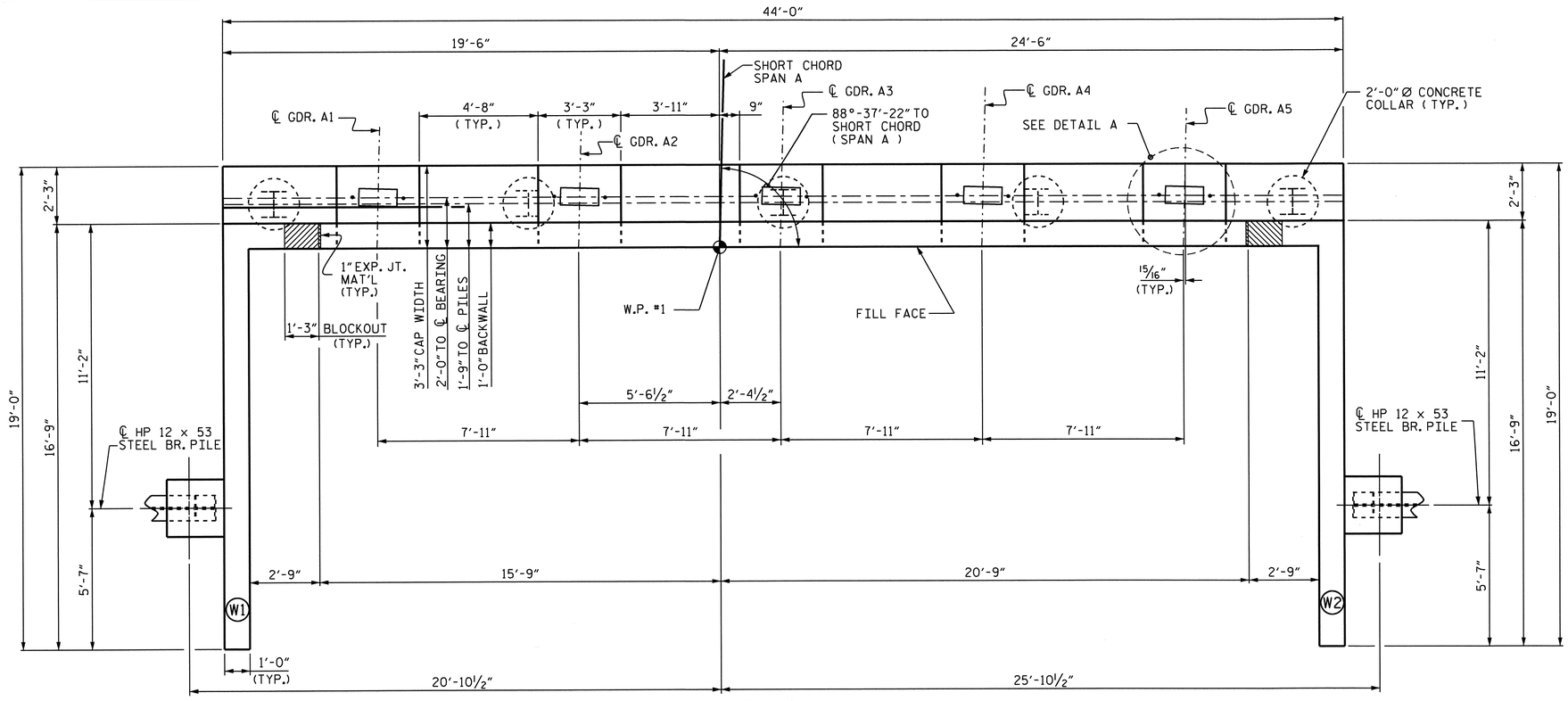
SUPERSTRUCTURE BILL OF MATERIAL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS
2			4			32

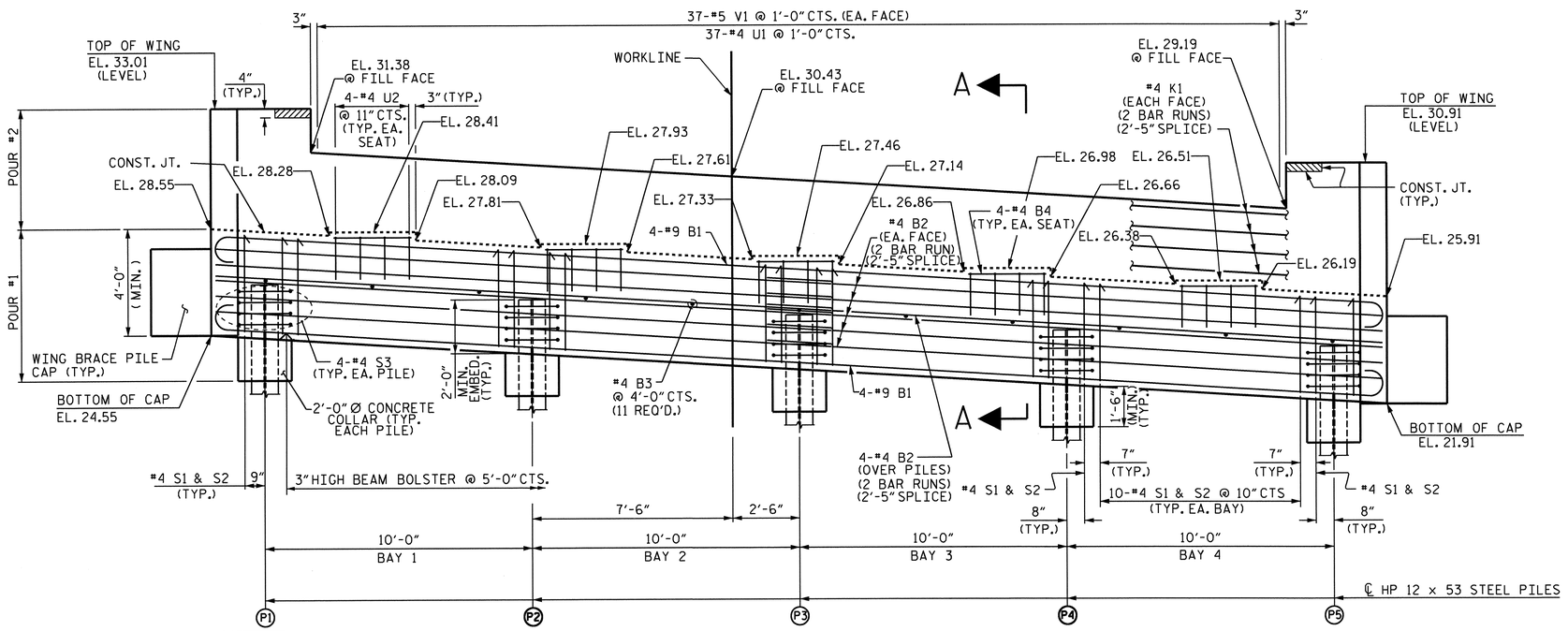
DESIGN ENGINEER OF RECORD: MOHAMMED AHMED	DATE : 3-1-13
ASSEMBLED BY : PEGGY ADKINS	DATE : 8-14-12
CHECKED BY : B. GREEN	DATE : 10-22-12
DRAWN BY : JMB 5/87	REV. 8/16/99 RWW/LES
CHECKED BY : SJD 9/87	REV. 5/1/06 TLA/GM
	REV. 10/1/11 MAA/GM

18-APR-2013 11:07

SID NO. ROM1



PLAN



ELEVATION

PILES AND REINFORCING STEEL NOT SHOWN IN WING BRACE PILE CAP FOR CLARITY, SEE WING DETAILS, SHEET 2 OF 3.

NOTES

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

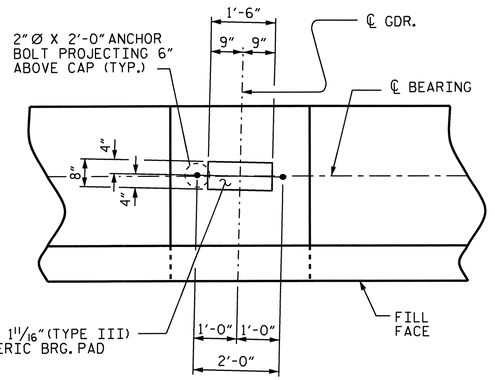
BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

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

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

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE JOINT BETWEEN THE DECK AND THE APPROACH SLAB HAS BEEN SAWED AND THE PARAPET AND END POST ARE CAST IF SLIP FORMING IS USED.

INSTALL THE 4" DIA. 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

(TYP. EA. BRG.)

TOP OF PILE ELEVATION CHART	
PILE	ELEVATION
#1	26.45
#2	25.85
#3	25.25
#4	24.65
#5	24.05

PROJECT NO. B-4185

MARTIN COUNTY

STATION: 16+69.91 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT #1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
1			3			TOTAL SHEETS
2			4			32

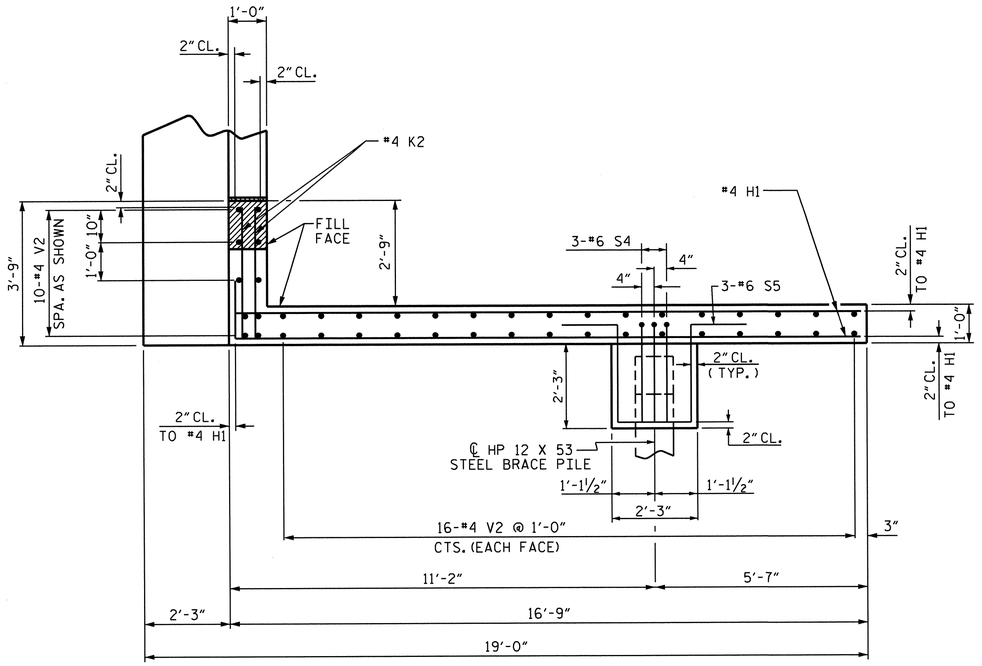
NORTH CAROLINA PROFESSIONAL SEAL 025516 ENGINEER EMILY E. MARRAY
4/19/13

DESIGN ENGINEER OF RECORD: MOHAMMED AHMED DATE: 3-1-13

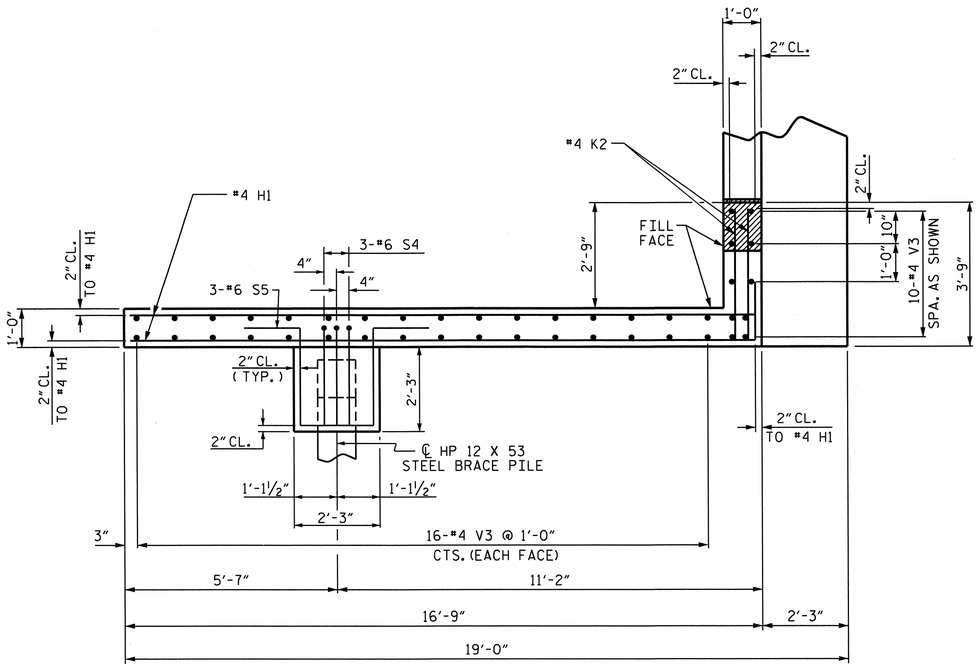
DRAWN BY: MOHAMMED AHMED DATE: 9/6/12

CHECKED BY: M.L. RORIE DATE: 1/4/13

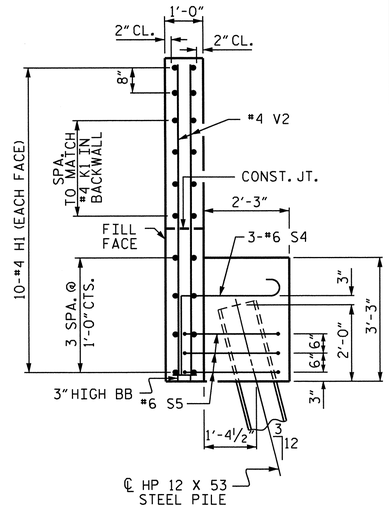
18-APR-2013 11:52



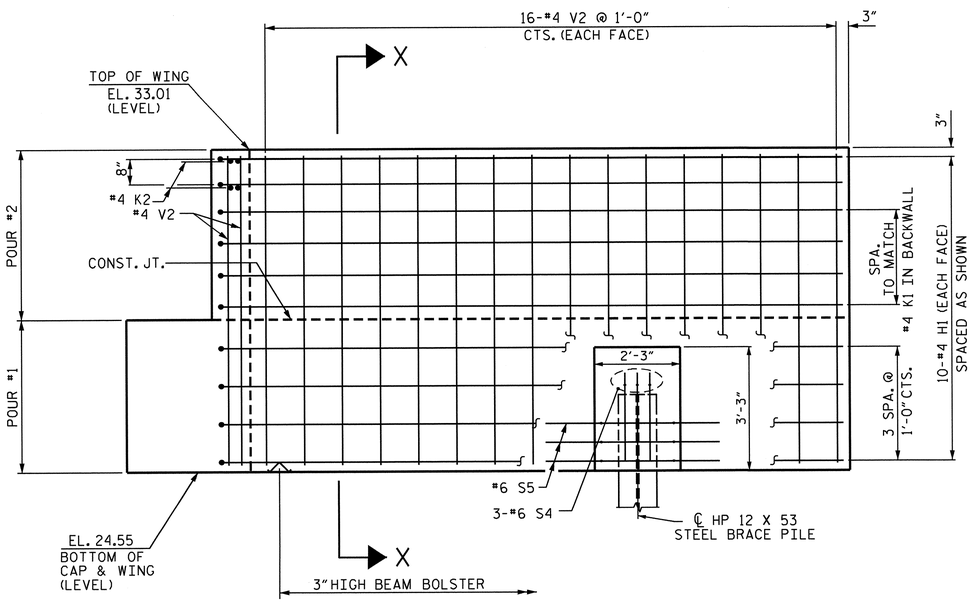
PLAN OF WING W1



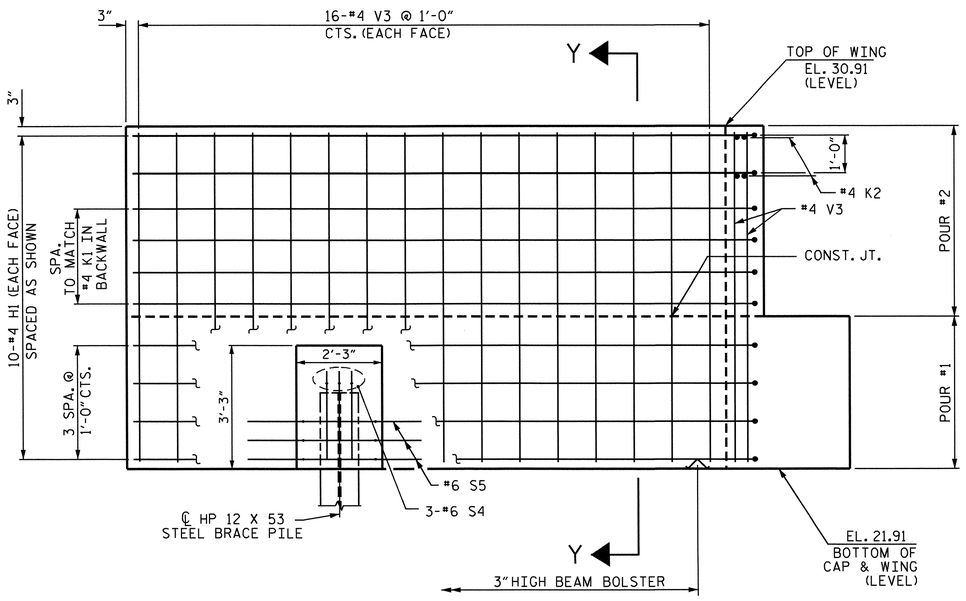
PLAN OF WING W2



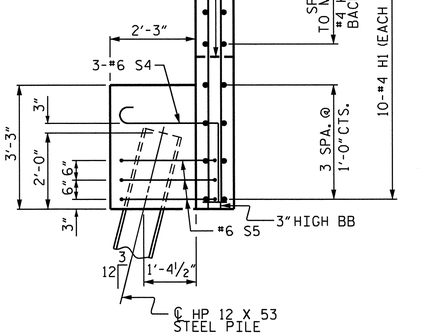
SECTION X-X



ELEVATION OF WING W1



ELEVATION OF WING W2



SECTION Y-Y

PROJECT NO. B-4185

MARTIN COUNTY

STATION: 16+69.91 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT #1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-23
1			3			TOTAL SHEETS
2			4			32

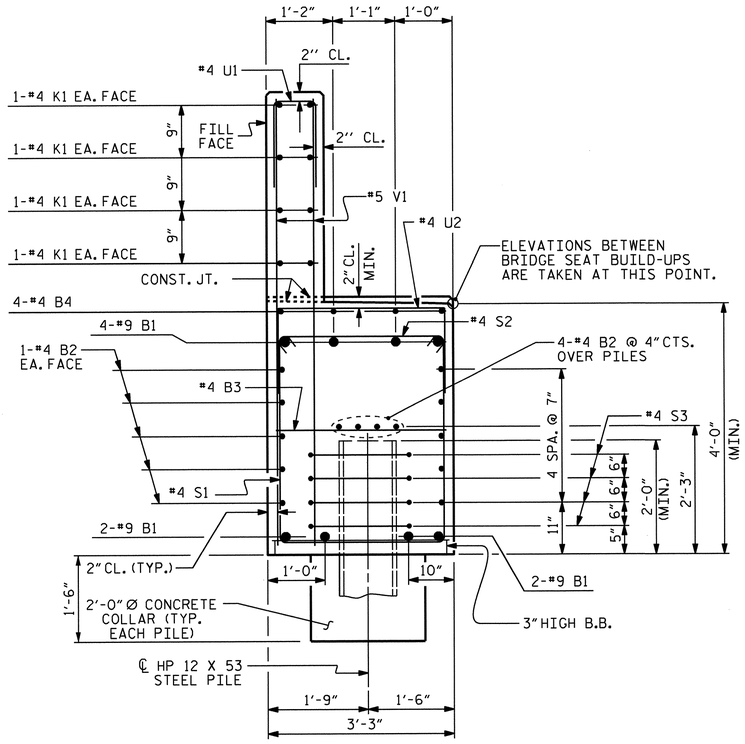
DESIGN ENGINEER OF RECORD: MOHAMMED AHMED DATE : 3-1-13

DRAWN BY : MOHAMMED AHMED DATE : 9-6-12

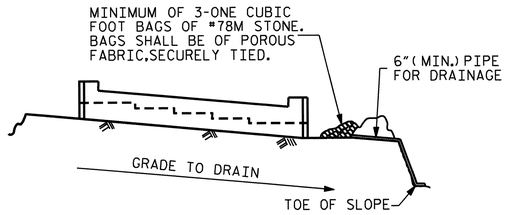
CHECKED BY : M.L. RORIE DATE : 1-7-13

NORTH CAROLINA PROFESSIONAL SEAL 025516 ENGINEER EMILY E. MURRAY
4/19/13

18-APR-2013 11:52



SECTION A-A

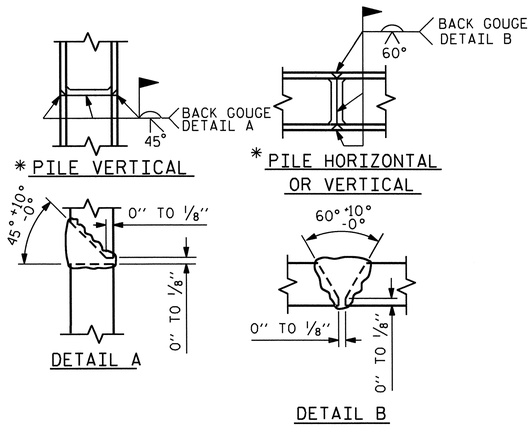


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

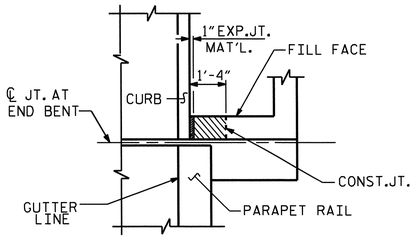
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

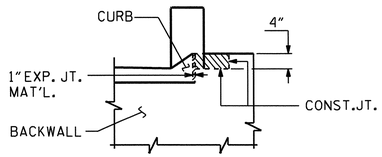


PILE SPLICE DETAILS

* POSITION OF PILE DURING WELDING.



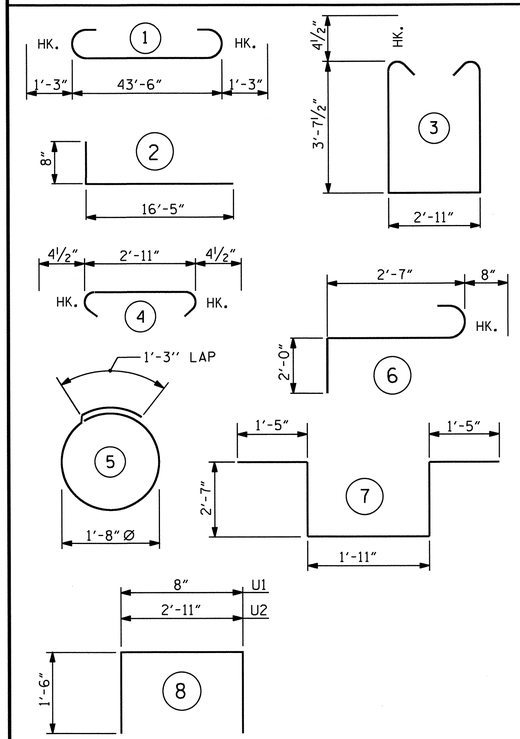
PLAN



ELEVATION

BLOCKOUT IN WING WALL

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL
END BENT #1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	46'-0"	1251
B2	28	#4	STR	23'-1"	432
B3	11	#4	STR	2'-11"	21
B4	20	#4	STR	2'-11"	39
H1	40	#4	2	17'-1"	456
K1	16	#4	STR	23'-1"	247
K2	8	#4	STR	3'-5"	18
S1	50	#4	3	10'-11"	365
S2	50	#4	4	3'-8"	122
S3	20	#4	5	6'-6"	87
S4	6	#6	6	5'-3"	47
S5	6	#6	7	9'-11"	89
U1	37	#4	8	3'-8"	91
U2	20	#4	8	5'-11"	79
V1	74	#5	STR	6'-8"	515
V2	42	#4	STR	8'-1"	227
V3	42	#4	STR	8'-8"	243

TOTAL REINFORCING STEEL	4329 LBS.
CLASS A CONCRETE BREAKDOWN	
POUR #1 (CAP, LOWER PART OF WINGS, PILE COLLARS & WING BRACE PILE CAPS)	28.2 CU. YDS.
POUR #2 (BACKWALL & UPPER PART OF WINGS)	11.0 CU. YDS.
TOTAL CLASS A CONCRETE	39.2 CU. YDS.
HP 12 X 53 STEEL PILES NO. 7	455 LIN. FT.
PILE REDRIVES	3 EACH

PROJECT NO. B-4185

MARTIN COUNTY

STATION: 16+69.91 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT #1

NORTH CAROLINA PROFESSIONAL SEAL 025516 ENGINEER EMILY E. MURRAY
4/19/13

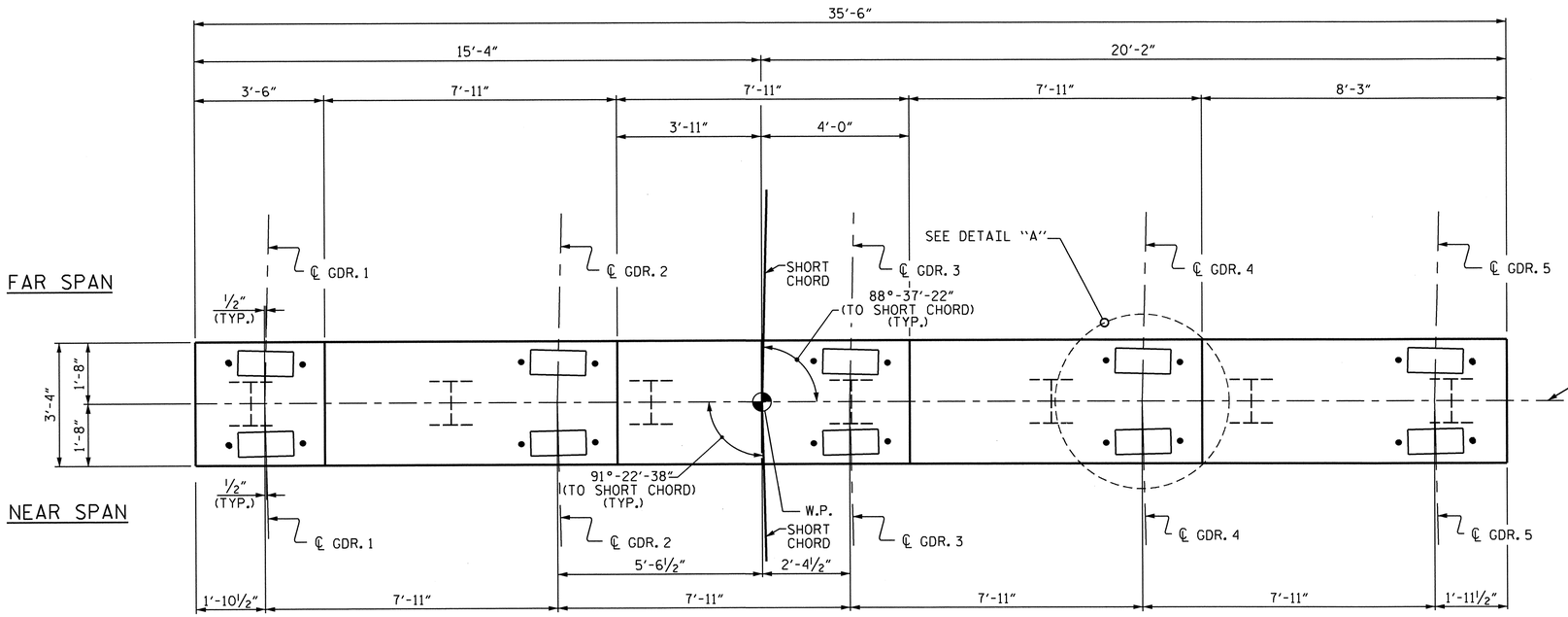
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-24
1			3			TOTAL SHEETS
2			4			32

DESIGN ENGINEER OF RECORD: MOHAMMED AHMED	DATE :	3-1-13
DRAWN BY : MOHAMMED AHMED	DATE :	9-6-12
CHECKED BY : M.L. RORIE	DATE :	1-7-13

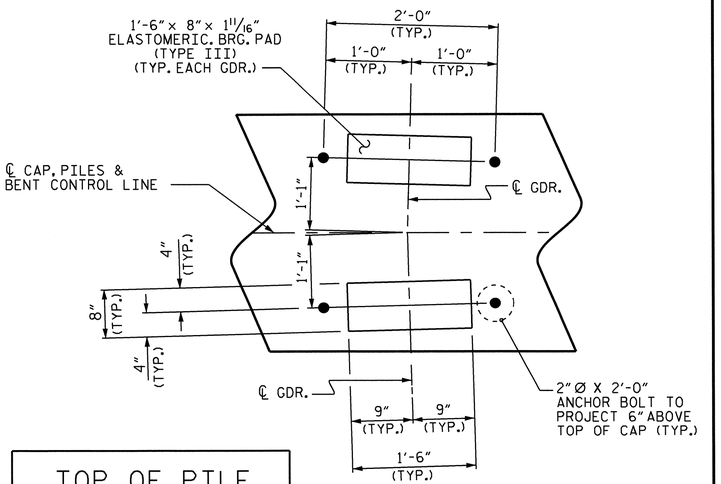
NOTES:

STIRRUPS AND U1 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

GALVANIZE THE TOP OF EACH INTERIOR BENT PILE A MINIMUM OF 25 FEET. GALVANIZE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.

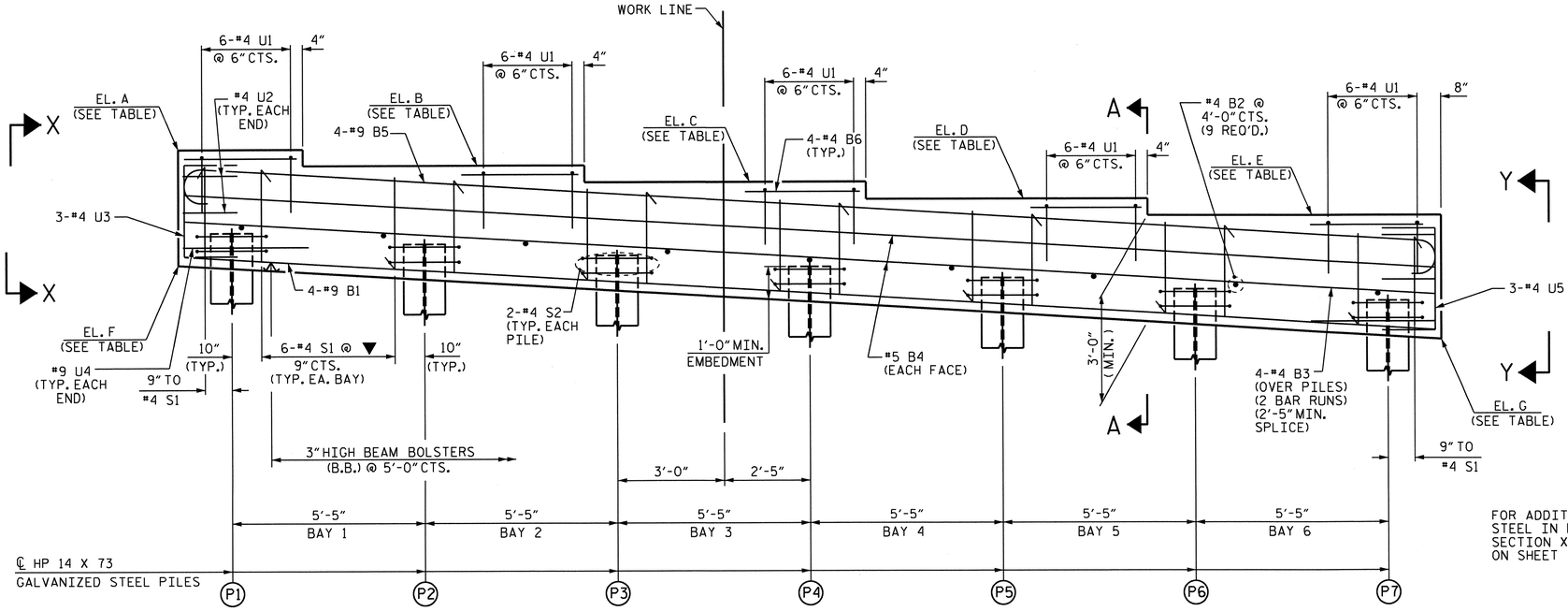


PLAN



DETAIL "A"
(TYP. EA. GDR.)

TOP OF PILE ELEVATION CHART		
PILE	ELEVATION	
	BENT 1	BENT 2
#1	25.80	25.50
#2	25.47	25.17
#3	25.15	24.85
#4	24.82	24.53
#5	24.50	24.20
#6	24.17	23.88
#7	23.85	23.55



ELEVATION

▼ INVERT ALTERNATE STIRRUPS

ELEVATION	A	B	C	D	E	F	G
BENT 1	28.12	27.64	27.17	26.69	26.22	24.85	22.72
BENT 2	27.82	27.34	26.87	26.39	25.92	24.55	22.42

FOR ADDITIONAL REINFORCING STEEL IN ENDS OF CAP, SEE SECTION X-X AND SECTION Y-Y ON SHEET 2 OF 2.

NORTH CAROLINA PROFESSIONAL SEAL 025516 ENGINEER EMILY E. MURRAY
4/19/13

PROJECT NO. B-4185
MARTIN COUNTY
STATION: 16+69.91 -L-

SHEET 1 OF 2

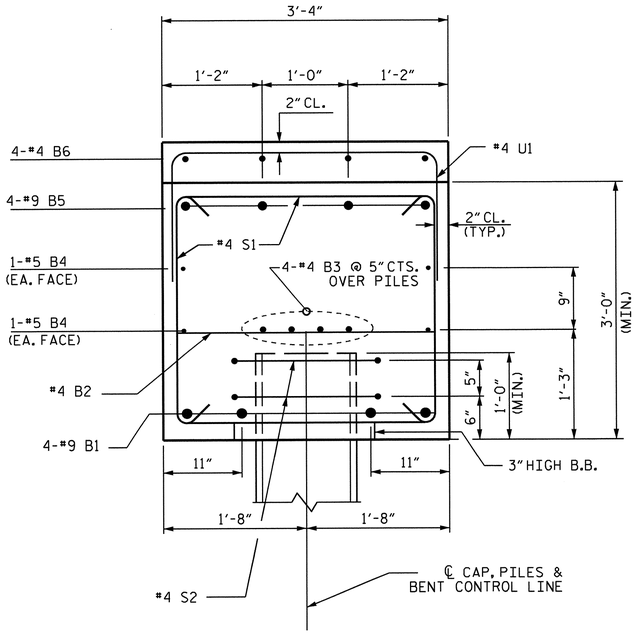
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT #1 & #2

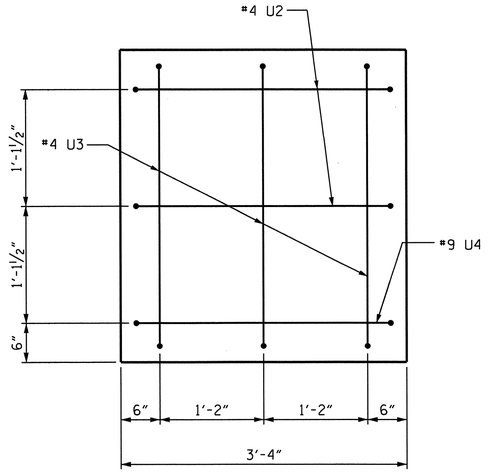
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-25
1			3			TOTAL SHEETS
2			4			32

DESIGN ENGINEER OF RECORD: MOHAMMED AHMED DATE : 3-1-13
DRAWN BY : M.M. AHMED DATE : 8-28-12
CHECKED BY : M. PISO DATE : 9-28-12

18-APR-2013 11:41

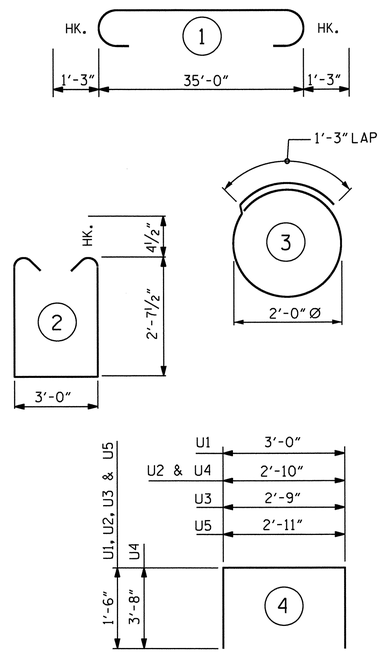


SECTION A-A



SECTION X-X

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL FOR EACH BENT (2 REQUIRED)

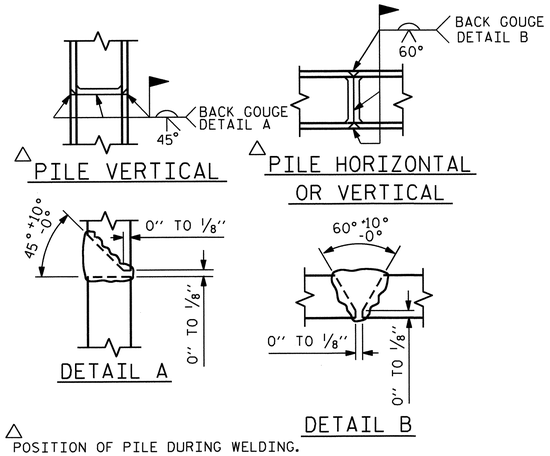
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#9	STR	35'-2"	478
B2	9	#4	STR	3'-0"	18
B3	8	#4	STR	18'-10"	101
B4	4	#5	STR	35'-2"	147
B5	4	#9	1	37'-6"	510
B6	20	#4	STR	3'-2"	42
S1	38	#4	2	9'-0"	228
S2	14	#4	3	7'-7"	71
U1	30	#4	4	6'-0"	120
U2	4	#4	4	5'-10"	16
U3	3	#4	4	5'-9"	12
U4	2	#9	4	10'-2"	69
U5	3	#4	4	5'-11"	12

TOTAL REINFORCING STEEL 1824 LBS.

CLASS "A" CONCRETE
BENT CAP 14.3 C.Y.

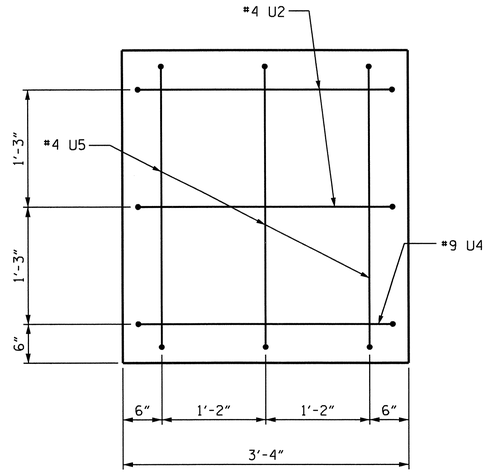
HP 14 X 73 GALVANIZED STEEL PILES
EACH BENT NO. 7 525 LIN.FT.

PILE REDRIVES EA. 4 EACH BENT



△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS



SECTION Y-Y

PROJECT NO. B-4185
MARTIN COUNTY
STATION: 16+69.91 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

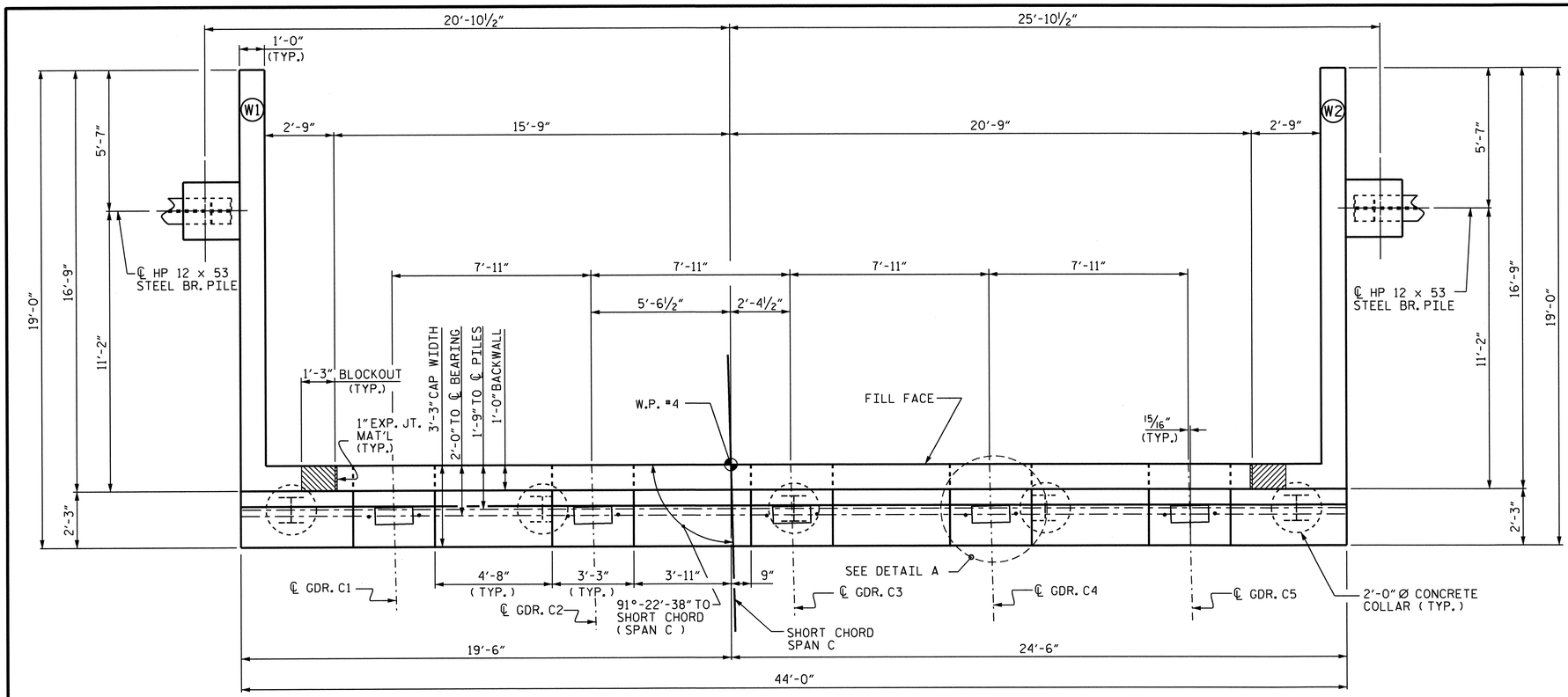
BENT #1 & #2

NORTH CAROLINA PROFESSIONAL SEAL 025516 ENGINEER EMERY E. MURRAY
4/19/13

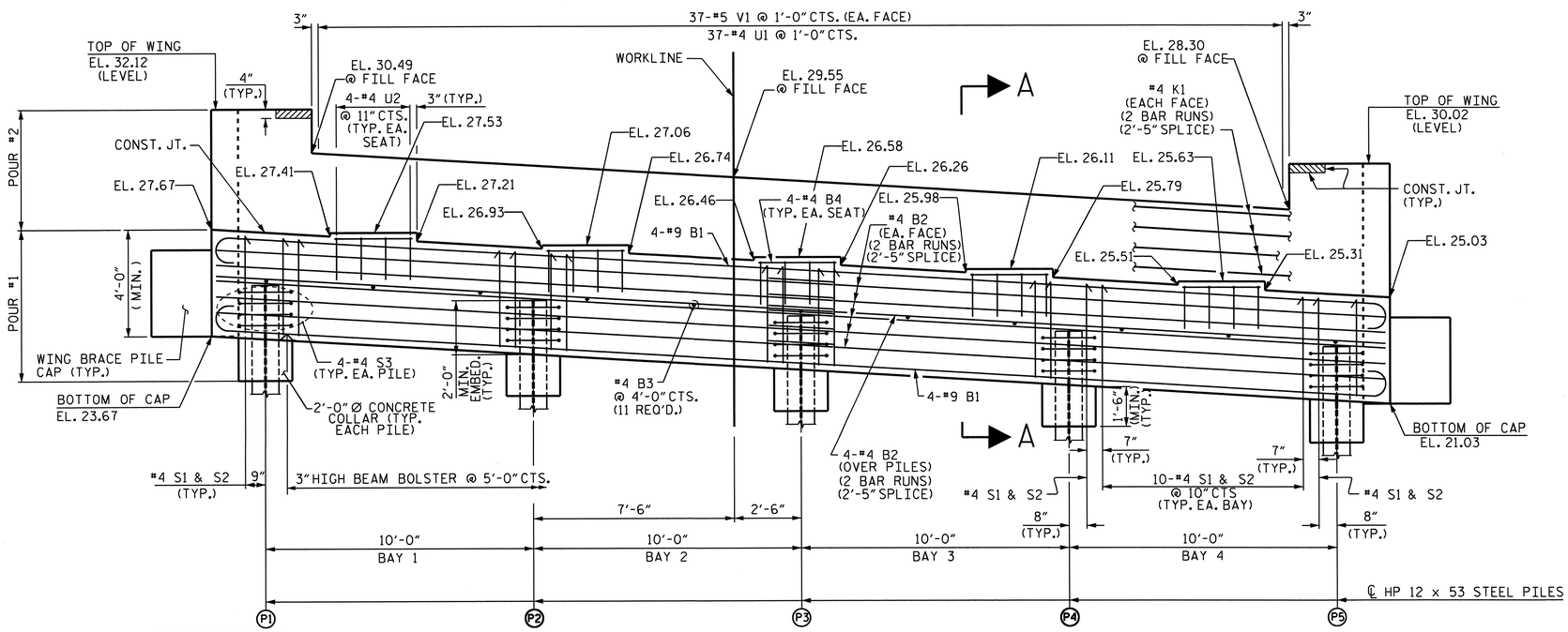
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-26
1			3			TOTAL SHEETS
2			4			32

DESIGN ENGINEER OF RECORD: MOHAMMED AHMED DATE : 3-1-13
DRAWN BY : M.M. AHMED DATE : 8-28-12
CHECKED BY : M. PISO DATE : 9-28-12

18-APR-2013 11:41



PLAN



ELEVATION

PILES AND REINFORCING STEEL NOT SHOWN IN WING BRACE PILE CAP FOR CLARITY, SEE WING DETAILS, SHEET 2 OF 3.

NOTES

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

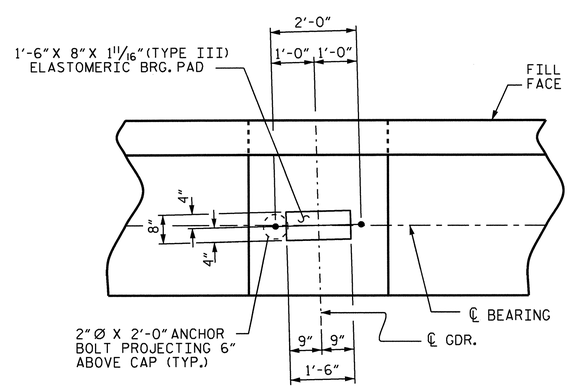
BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

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

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

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE JOINT BETWEEN THE DECK AND THE APPROACH SLAB HAS BEEN SAWED AND THE PARAPET AND END POST ARE CAST IF SLIP FORMING IS USED.

INSTALL THE 4" DIA. 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

(TYP. EA. BRG.)

TOP OF PILE ELEVATION CHART

PILE	ELEVATION
#1	25.58
#2	24.98
#3	24.38
#4	23.78
#5	23.18

PROJECT NO. B-4185

MARTIN COUNTY

STATION: 16+69.91 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT #2

DESIGN ENGINEER OF RECORD: MOHAMMED AHMED DATE : 3-1-13

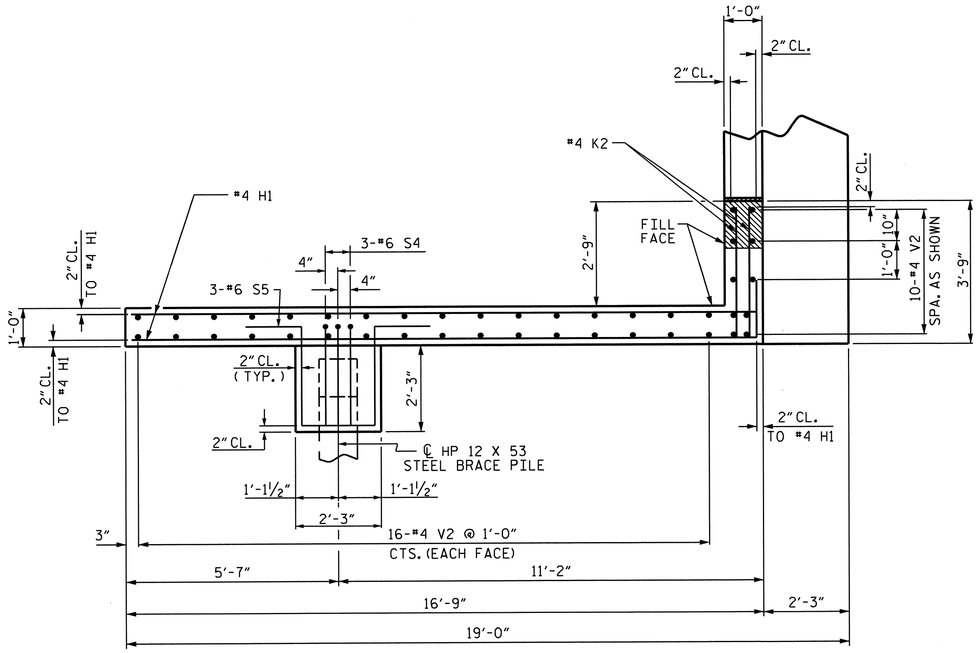
DRAWN BY : MOHAMMED AHMED DATE : 9/7/12

CHECKED BY : M.L. RORIE DATE : 1/7/13

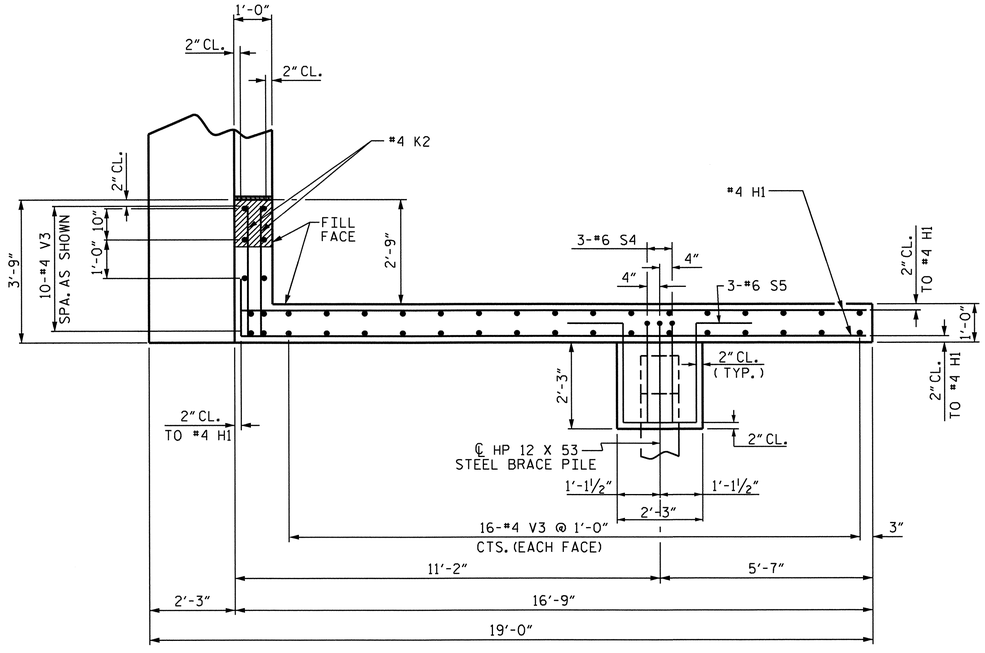
NORTH CAROLINA PROFESSIONAL SEAL 025516 ENGINEER M. L. MORRIS 4/19/13

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-27
1			3			TOTAL SHEETS
2			4			32

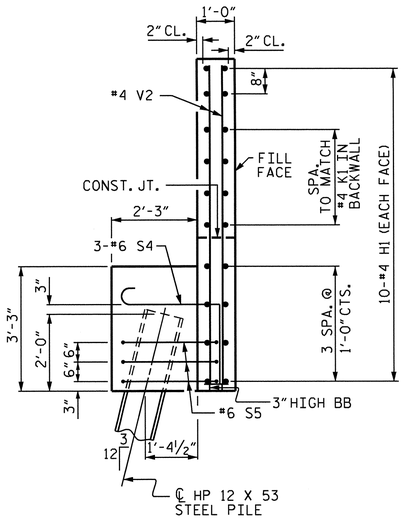
18 APR 2013 11:52



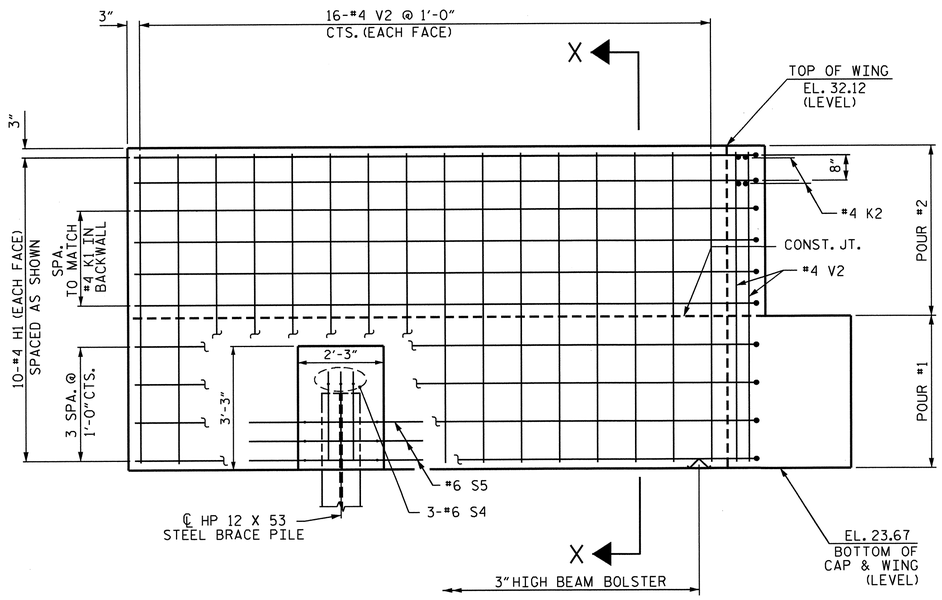
PLAN OF WING W1



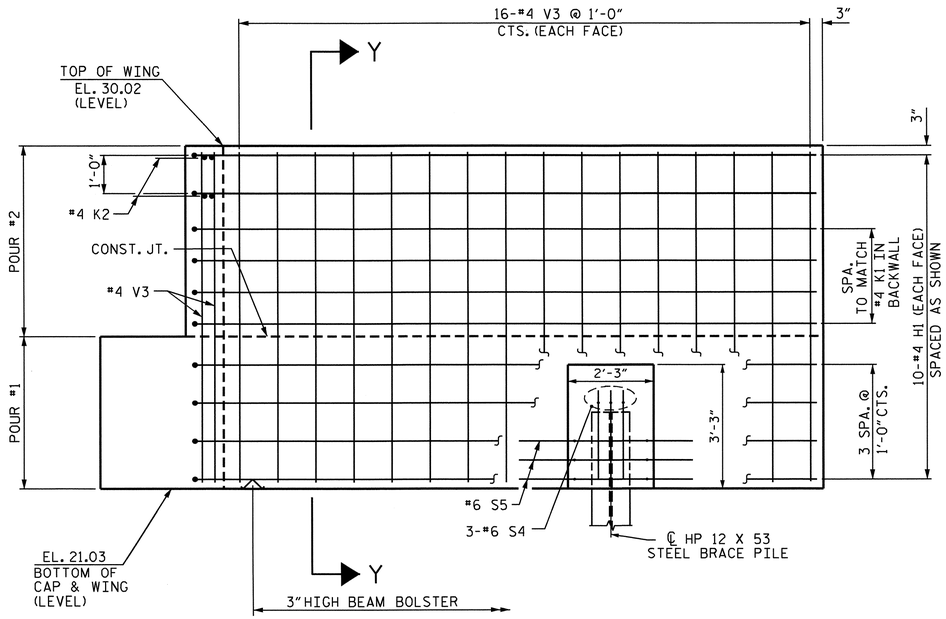
PLAN OF WING W2



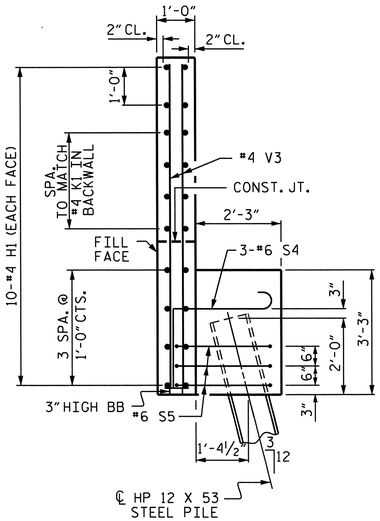
SECTION X-X



ELEVATION OF WING W1



ELEVATION OF WING W2



SECTION Y-Y

PROJECT NO. B-4185

MARTIN COUNTY

STATION: 16+69.91 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT #2

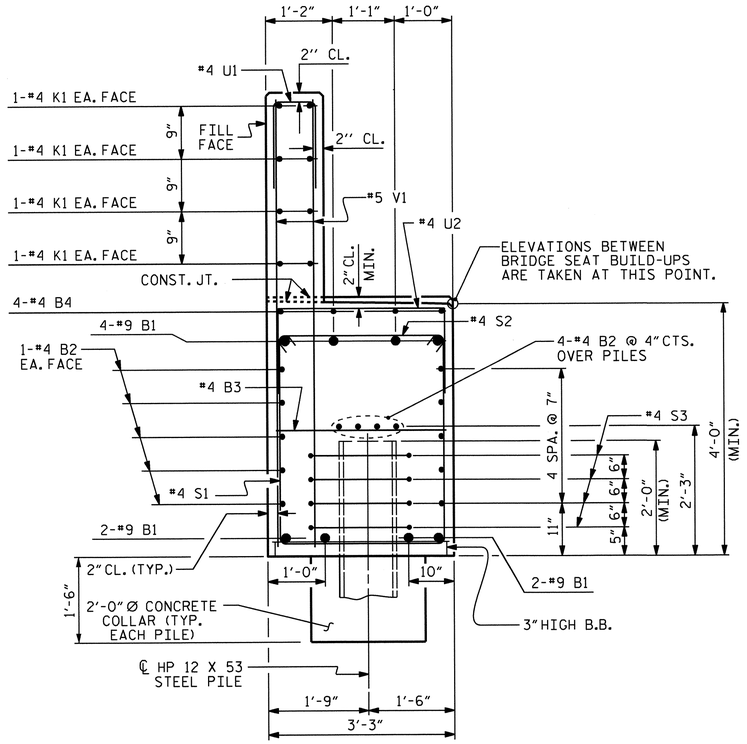
NORTH CAROLINA PROFESSIONAL SEAL 025516 ENGINEER EMILY E. MURRAY
4/19/13

DESIGN ENGINEER OF RECORD: MOHAMMED AHMED DATE : 3-1-13

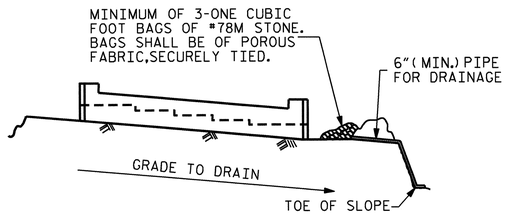
DRAWN BY : MOHAMMED AHMED DATE : 9-7-12

CHECKED BY : M.L. RORIE DATE : 1-7-13

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-28
1			3			TOTAL SHEETS
2			4			32



SECTION A-A

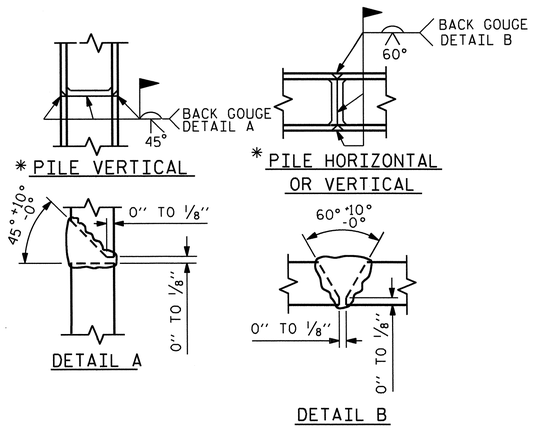


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

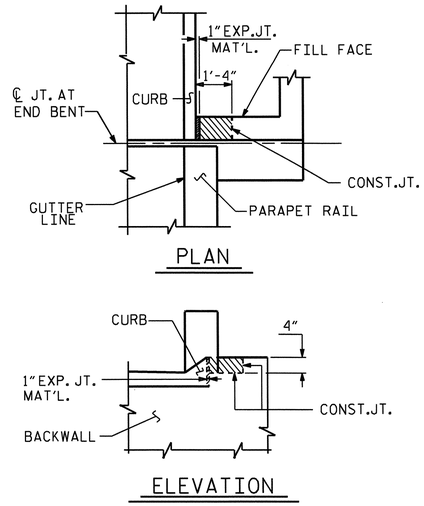
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



PILE SPLICE DETAILS

* POSITION OF PILE DURING WELDING.

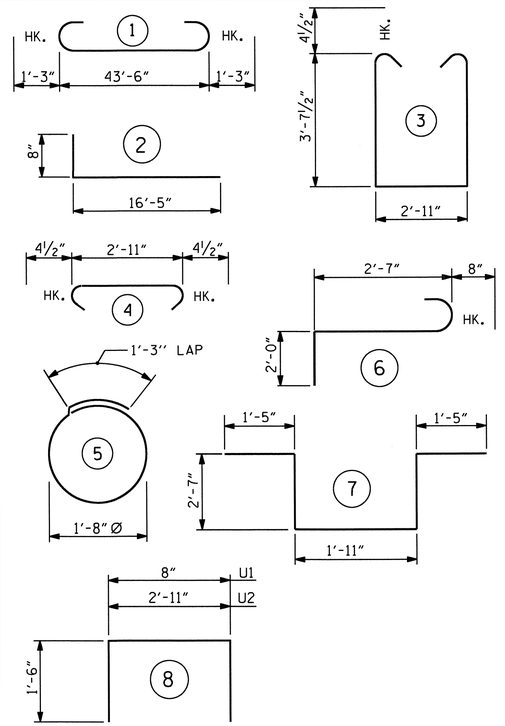


PLAN

ELEVATION

BLOCKOUT IN WING WALL

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL
END BENT #2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	46'-0"	1251
B2	28	#4	STR	23'-1"	432
B3	11	#4	STR	2'-11"	21
B4	20	#4	STR	2'-11"	39
H1	40	#4	2	17'-1"	456
K1	16	#4	STR	23'-1"	247
K2	8	#4	STR	3'-5"	18
S1	50	#4	3	10'-11"	365
S2	50	#4	4	3'-8"	122
S3	20	#4	5	6'-6"	87
S4	6	#6	6	5'-3"	47
S5	6	#6	7	9'-11"	89
U1	37	#4	8	3'-8"	91
U2	20	#4	8	5'-11"	79
V1	74	#5	STR	6'-8"	515
V2	42	#4	STR	8'-1"	227
V3	42	#4	STR	8'-8"	243

TOTAL REINFORCING STEEL 4329 LBS.

CLASS A CONCRETE BREAKDOWN

POUR #1 (CAP, LOWER PART OF WINGS, PILE COLLARS & WING BRACE PILE CAPS) 28.2 CU. YDS.

POUR #2 (BACKWALL & UPPER PART OF WINGS) 11.0 CU. YDS.

TOTAL CLASS A CONCRETE 39.2 CU. YDS.

HP 12 X 53 STEEL PILES

NO. 7 420 LIN. FT.

PILE REDRIVES 3 EACH

PROJECT NO. B-4185

MARTIN COUNTY

STATION: 16+69.91 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT #2

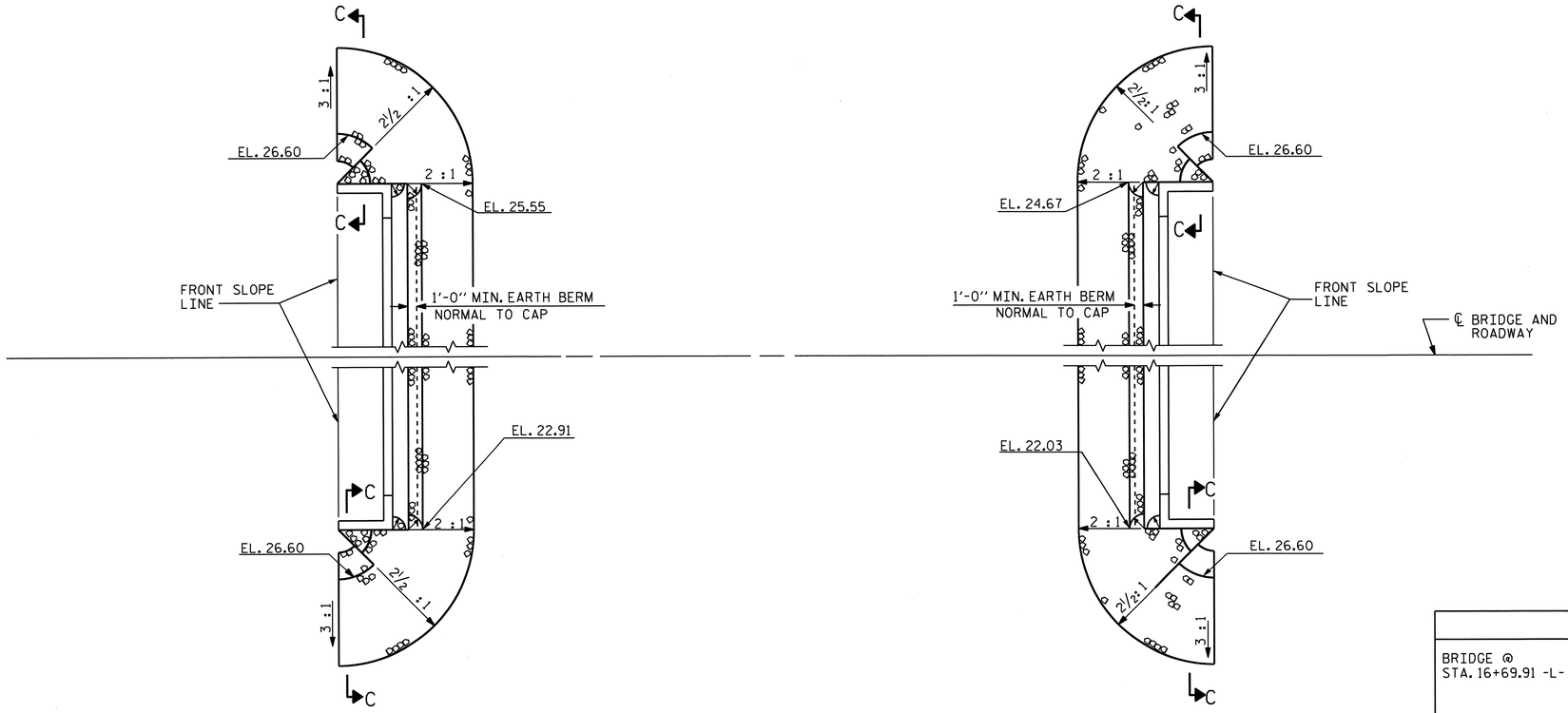
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-29
1			3			TOTAL SHEETS
2			4			32

DESIGN ENGINEER OF RECORD: MOHAMMED AHMED DATE : 3-1-13

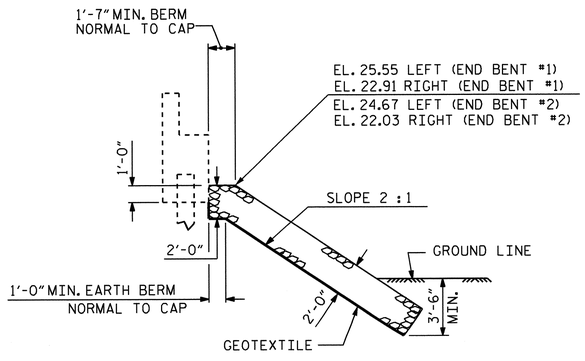
DRAWN BY : MOHAMMED AHMED DATE : 9-7-12

CHECKED BY : M.L. RORIE DATE : 1-7-13

18-APR-2013 11:53

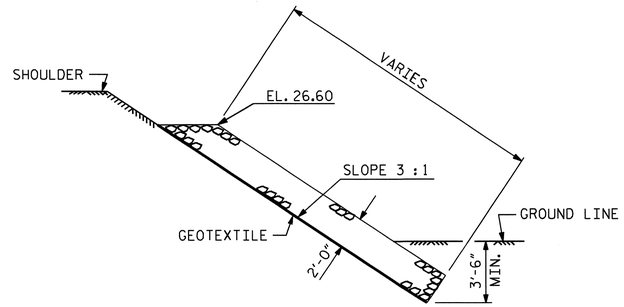


END BENT #1



℄ SECTION
BERM RIP RAPPED

END BENT #2



SECTION C-C

ESTIMATED QUANTITIES

BRIDGE @ STA. 16+69.91 -L-	RIP RAP CLASS I (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	164	182
END BENT 2	146	162

PROJECT NO. B-4185

MARTIN COUNTY

STATION: 16+69.91 -L-

NORTH CAROLINA PROFESSIONAL SEAL 025516 ENGINEER EMILY E. MURRAY

4/19/13

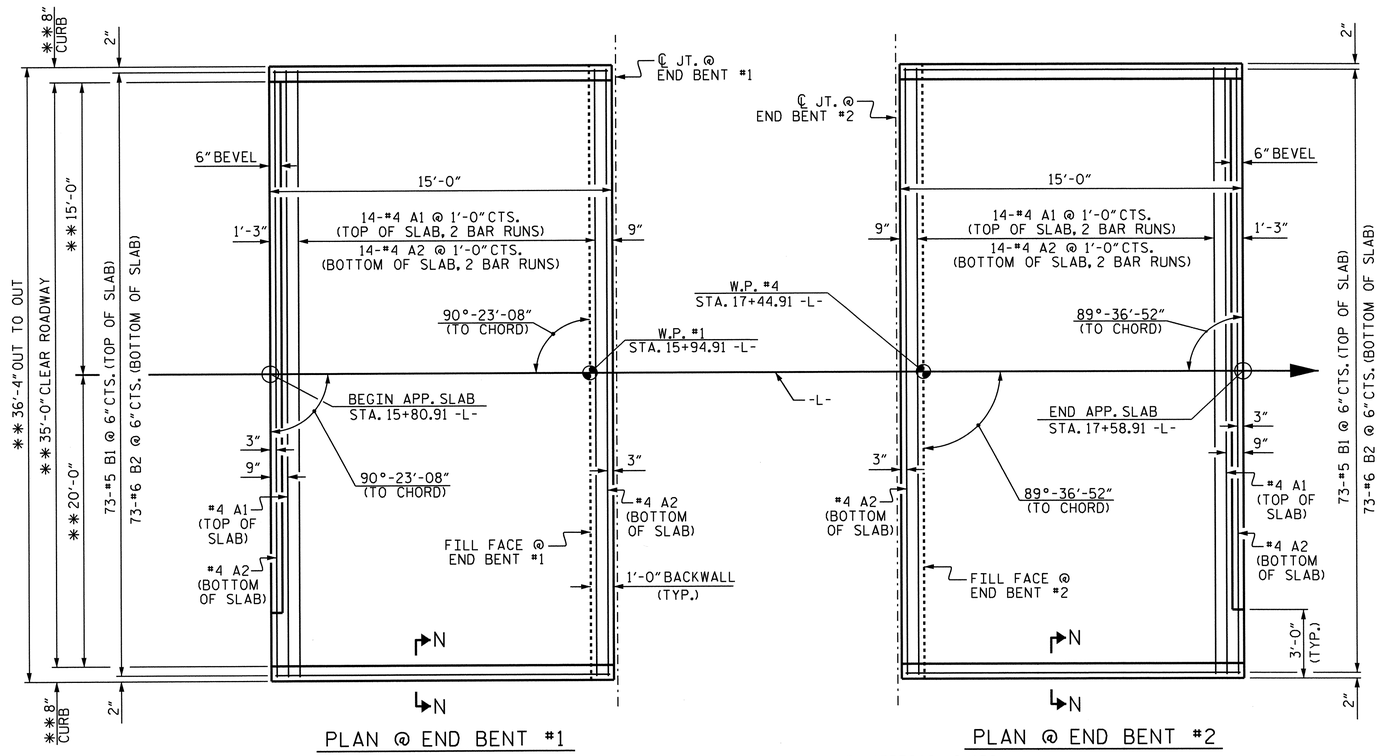
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

RIP RAP DETAILS

ASSEMBLED BY :	M.D.PISO	DATE : 02-04-13
CHECKED BY :	P.ADKINS	DATE : 02-13-13
DRAWN BY : REK 1/84	REV. 5/1/06R	TLA/GM
CHECKED BY : RDU 1/84	REV. 10/1/11	MAA/GM
	REV. 12/21/11	MAA/GM

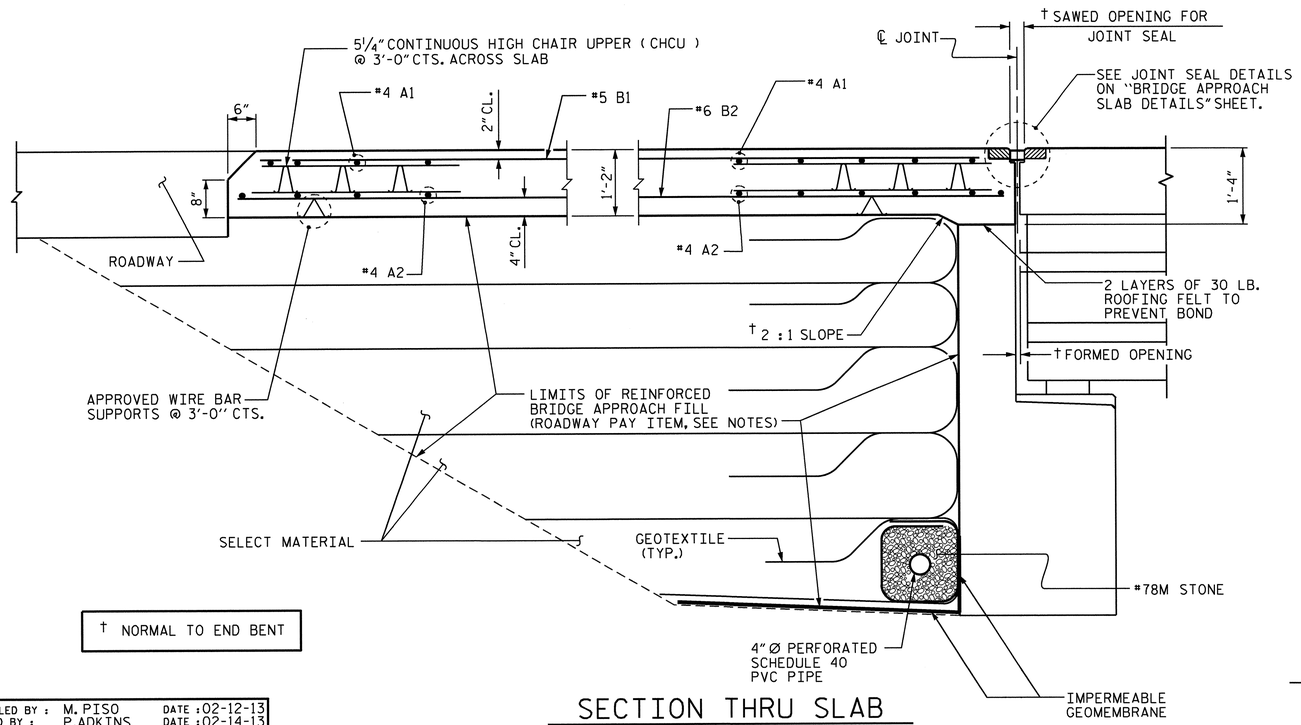
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-30
1			3			TOTAL SHEETS
2			4			32



PLAN @ END BENT #1

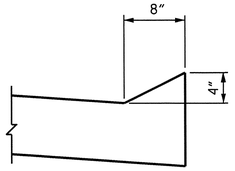
PLAN @ END BENT #2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS
** RADIAL DIMENSIONS

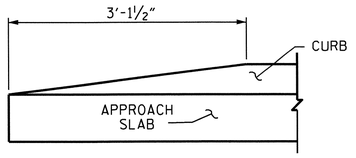


† NORMAL TO END BENT

SECTION THRU SLAB



SECTION N-N



END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS

NOTES

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

FOR REINFORCED BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 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 JOINT SHALL BE SAWED PRIOR TO THE CASTING OF THE BARRIER RAIL OR PARAPET AND END POST.

WITH FOAM JOINT SEAL

FOR FOAM JOINT SEALS, SEE SPECIAL PROVISIONS.

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

FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

BILL OF MATERIAL

APPROACH SLAB AT EB #1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	30	#4	STR	19'-0"	381
A2	32	#4	STR	18'-11"	404
* B1	73	#5	STR	13'-9"	1047
B2	73	#6	STR	14'-8"	1608
REINFORCING STEEL				LBS.	2012
* EPOXY COATED REINFORCING STEEL				LBS.	1428
CLASS AA CONCRETE				C. Y.	23.8

APPROACH SLAB AT EB #2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	30	#4	STR	19'-0"	381
A2	32	#4	STR	18'-11"	404
* B1	73	#5	STR	13'-9"	1047
B2	73	#6	STR	14'-8"	1608
REINFORCING STEEL				LBS.	2012
* EPOXY COATED REINFORCING STEEL				LBS.	1428
CLASS AA CONCRETE				C. Y.	23.8

SPLICE LENGTHS

BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	1'-9"
#5	2'-6"	2'-2"
#6	3'-10"	2'-7"

PROJECT NO. B-4185

MARTIN COUNTY

STATION: 16+69.91 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT

NORTH CAROLINA PROFESSIONAL SEAL 025516 ENGINEER EMILY E. MURRAY

4/19/13

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

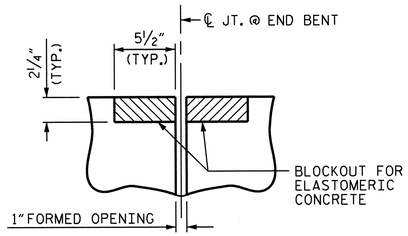
SHEET NO. S-31

TOTAL SHEETS 32

ASSEMBLED BY :	M. PISO	DATE :	02-12-13
CHECKED BY :	P.ADKINS	DATE :	02-14-13
DRAWN BY :	EEM 3/95	REV. 5/1/06RR	KMM/GM
CHECKED BY :	VAP 3/95	REV. 10/1/11	MAA/GM
		REV. 12/21/11	MAA/GM

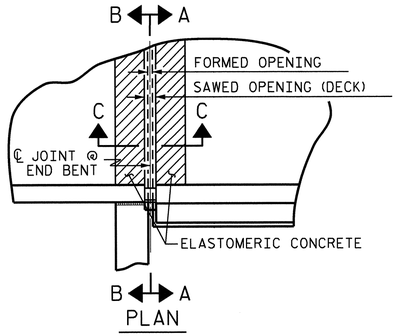
18-APR-2013 11:42

STD. NO. BAS2 (SHT. 1)

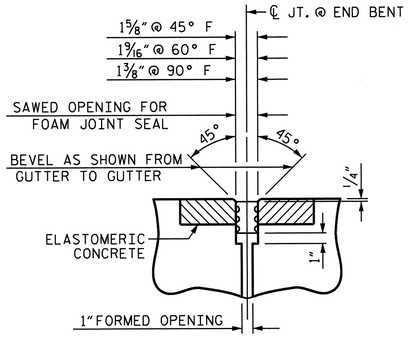


SECTION C-C

FOAM JOINT SEAL
(PRE-SAWED ELASTOMERIC
CONCRETE DIMENSIONS)

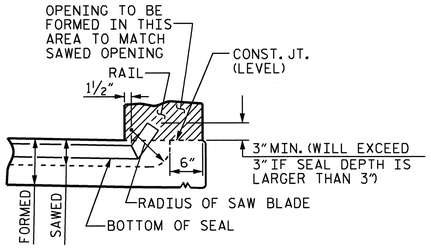


PLAN

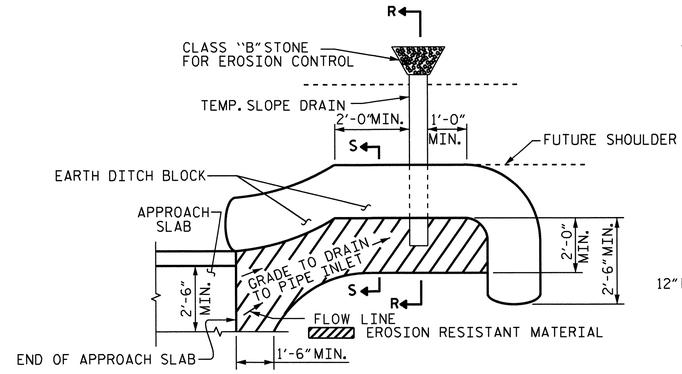


SECTION C-C

FOAM JOINT SEAL
(EXPANSION)

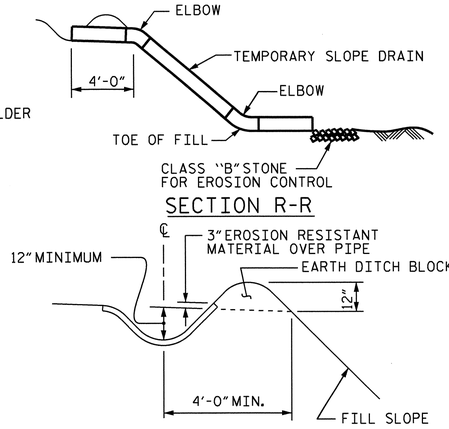


SECTION A-A



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

PLAN VIEW

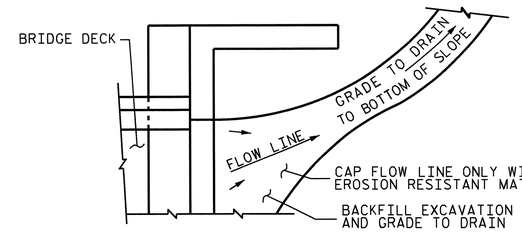


SECTION R-R

SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

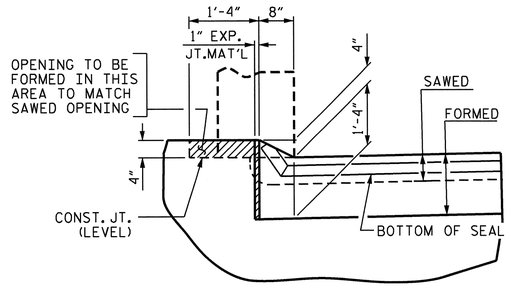


NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL

ELASTOMERIC CONCRETE	
END BENT NO.	ELASTOMERIC CONCRETE * (CU. FT.)
1	6.0
2	6.0
TOTAL	12.0

* BASED ON THE MINIMUM BLOCKOUT SHOWN.



SECTION B-B

JOINT SEAL DETAILS @ END BENT

FOAM JOINT SEAL TO BE CUT, HEAT WELDED AND TURNED UP PARALLEL TO SLOPED FACE OF THE CURB.

THE JOINT SHALL BE SAWED PRIOR TO THE CASTING OF THE PARAPET AND END POST.

PROJECT NO. B-4185

MARTIN COUNTY

STATION: 16+69.91 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH
SLAB DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 025516 ENGINEER EMILY E. MURRAY
4/19/13

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

ASSEMBLED BY : M.D.PISO		DATE : 02-12-13	
CHECKED BY : P.ADKINS		DATE : 02-14-13	
DRAWN BY : FCJ	11/88	REV. 10/1/11	MAA/GM
CHECKED BY : ARB	11/88	REV. 7/12	MAA/GM
		REV. 10/12	MAA/GM

18-APR-2013 11:42

STD. NO. BAS4 (SHT. 1)

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 2012 "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.

ENGLISH

JANUARY, 1990

STD. NO. SN

REV. 6-16-95 EEM (W) RGW REV. 5-7-03 RWW (W) JTE REV. 10-1-11 MAA (W) GM
REV. 8-16-99 RWW (W) LES REV. 5-1-06 TLA (W) GM