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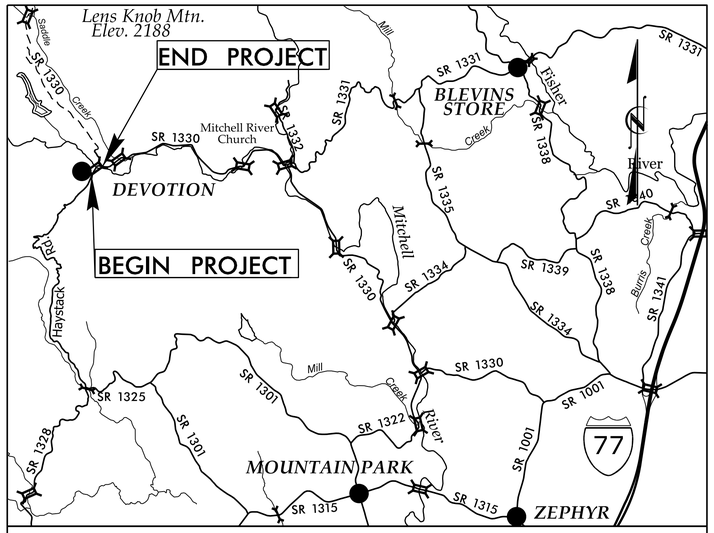
TIP PROJECT: B-5173

CONTRACT: C203668



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

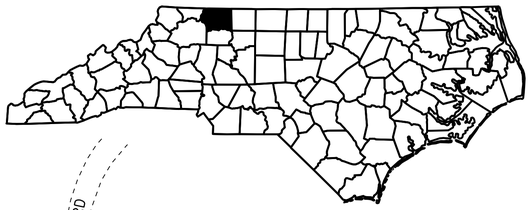
SURRY COUNTY

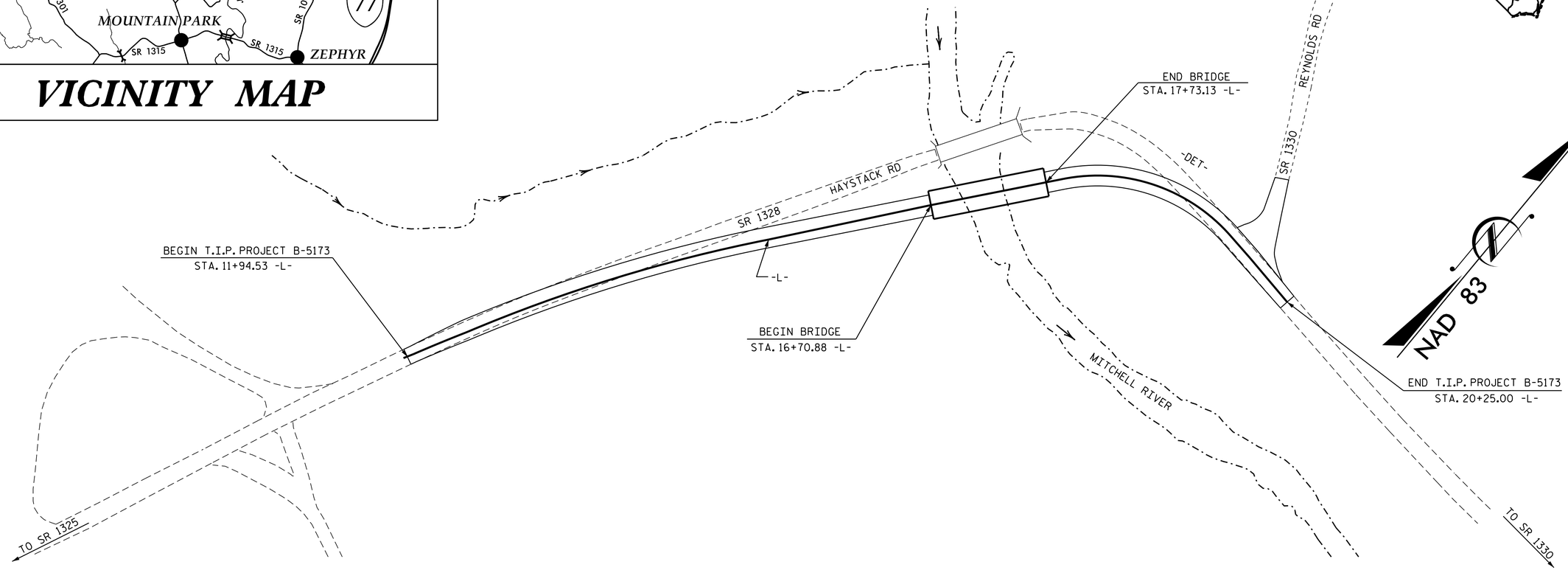
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5173		

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
42330.1.1	BRZ-1328(6)	P.E.
42330.2.FD1	BRZ-1328(6)	R/W
42330.2.FDU1	BRZ-1328(6)	UTIL
42330.3.FD1	BRZ-1328(6)	CONST.

LOCATION: BRIDGE No. 39 ON SR 1328 (HAYSTACK RD) OVER MITCHELL RIVER

TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURE





STRUCTURE

DESIGN DATA

ADT 2016 = 174
ADT 2036 = 254
DHV = 10 %
D = 60 %
T = 5 % *
** V = 55 MPH
* TTST = 2% DUAL 3%

FUNC CLASS = RURAL LOCAL

SUB REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY T.I.P. PROJECT B-5173 = 0.138 MI
LENGTH STRUCTURE T.I.P. PROJECT B-5173 = 0.019 MI

TOTAL LENGTH OF T.I.P. PROJECT B-5173 = 0.157 MI

Prepared in the Office of:
DIVISION OF HIGHWAYS
STRUCTURES MANAGEMENT UNIT
1000 BIRCH RIDGE DR.
RALEIGH, N.C. 27610

2012 STANDARD SPECIFICATIONS

LETTING DATE :

FEBRUARY 16, 2016

D. R. CALHOUN, P.E.
PROJECT ENGINEER

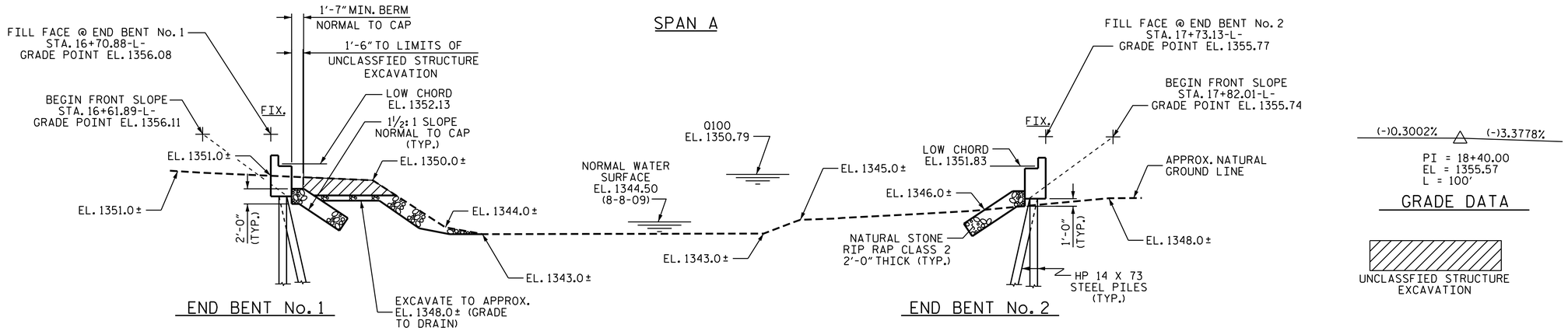
W. S. ARAFAT, P.E.
PROJECT DESIGN ENGINEER

F. A. PROJ. NO. BRZ-1328(6)

16+50 17+00 17+50

1370 1365 1360 1355 1350 1345 1340 1335

SPAN A



END BENT No. 1 END BENT No. 2

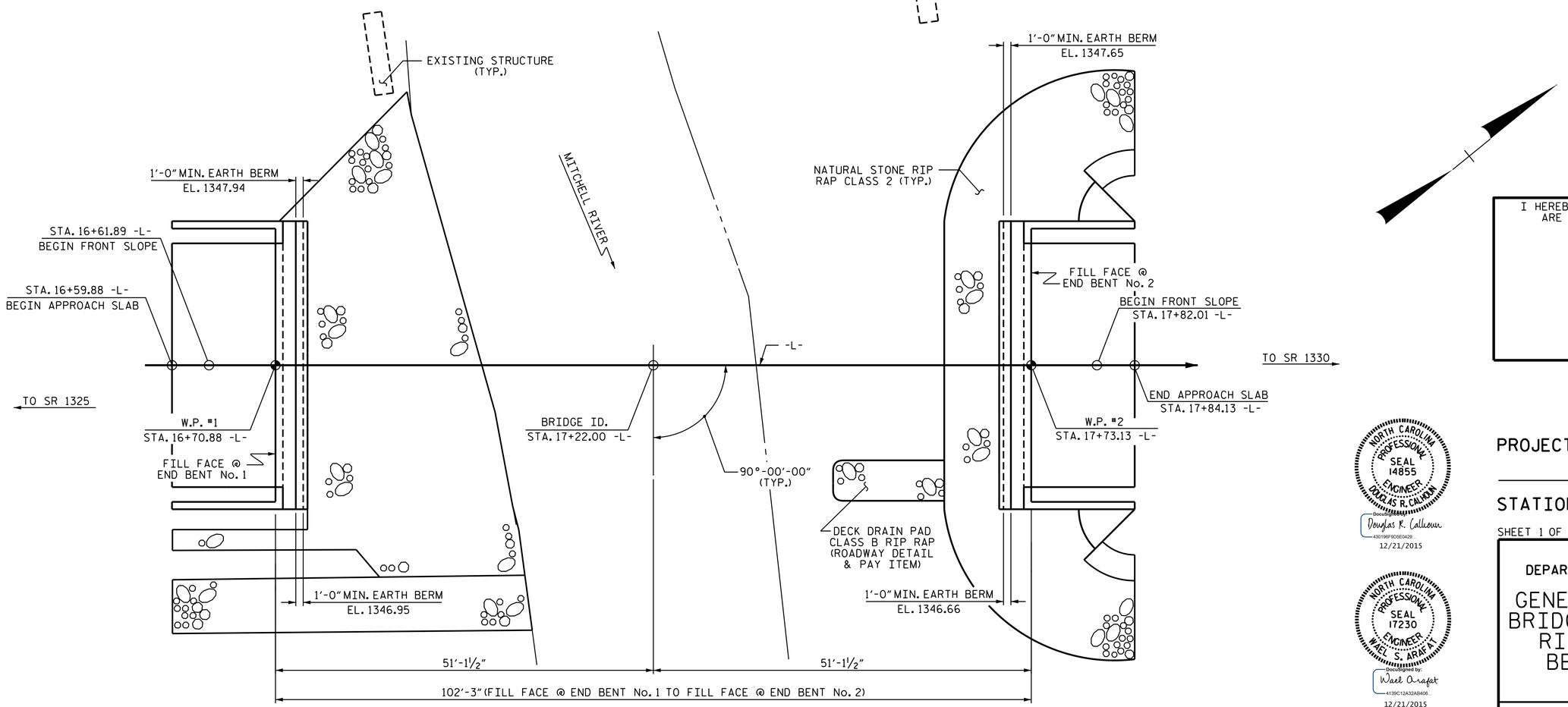
SECTION ALONG -L-

(-)0.3002% (-)3.3778%

PI = 18+40.00
EL = 1355.57
L = 100'

GRADE DATA

UNCLASSFIED STRUCTURE EXCAVATION



PLAN

(PILES NOT SHOWN FOR CLARITY)

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

NORTH CAROLINA PROFESSIONAL SEAL 14855 ENGINEER DOUGLAS R. CALHOUN
Douglas R. Calhoun
12/21/2015

NORTH CAROLINA PROFESSIONAL SEAL 17230 ENGINEER WAEL S. ARAFAT
Wael Arafat
12/21/2015

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. B-5173
SURRY COUNTY
STATION: 17+22.00 -L-

SHEET 1 OF 3 REPLACES BRIDGE No. 39

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING FOR BRIDGE OVER MITCHELL RIVER ON SR 1328 BETWEEN SR 1325 AND SR 1330

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

DRAWN BY : H. T. BARBOUR DATE : 8-20-15
CHECKED BY : V. X. NGUYEN DATE : 9-15
DESIGN ENGINEER OF RECORD: A. M. LEE DATE : 9-15

21-DEC-2015 08:58
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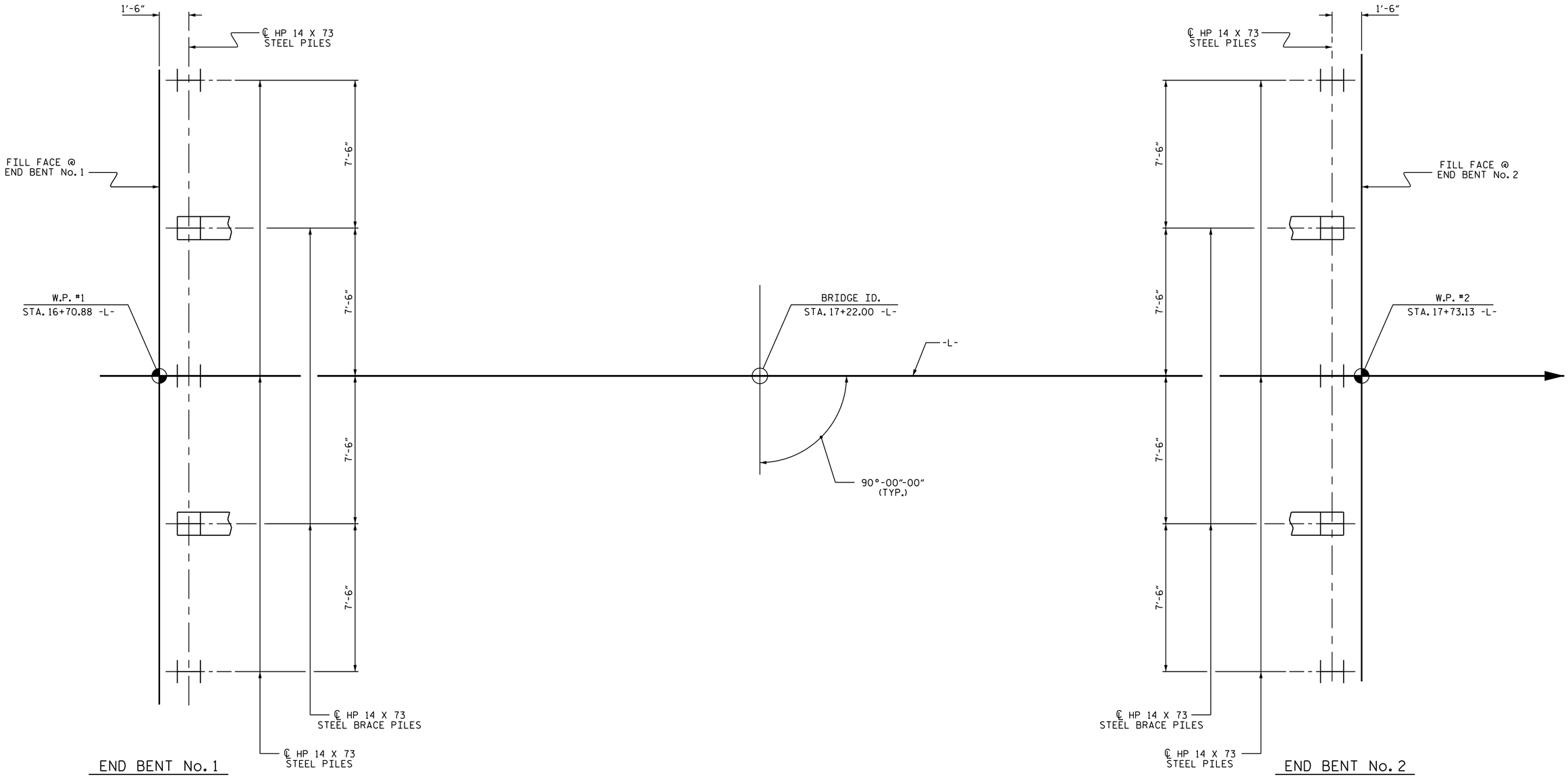
warafat



FOUNDATION LAYOUT

NOTES

FOR PILES, SEE SPECIAL PROVISIONS.

PILES AT END BENT NO. 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 135 TONS PER PILE.

DRIVE PILES AT END BENT NO. 1 TO A REQUIRED DRIVING RESISTANCE OF 225 TONS PER PILE.

PILES AT END BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 135 TONS PER PILE.

DRIVE PILES AT END BENT NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 225 TONS PER PILE.

PROJECT NO. B-5173

SURRY COUNTY

STATION: 17+22.00 -L-

SHEET 2 OF 3

NORTH CAROLINA PROFESSIONAL SEAL 17230 ENGINEER WAEL S. ARAFAT

DocuSigned by: Wael Arafat 4139C12A32AB406...

12/21/2015

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING FOR BRIDGE OVER MITCHELL RIVER ON SR 1328 BETWEEN SR 1325 AND SR 1330

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

DRAWN BY : H. T. BARBOUR DATE : 8-20-15
CHECKED BY : V. X. NGUYEN DATE : 9-15
DESIGN ENGINEER OF RECORD: A. M. LEE DATE : 9-15

21-DEC-2015 09:38
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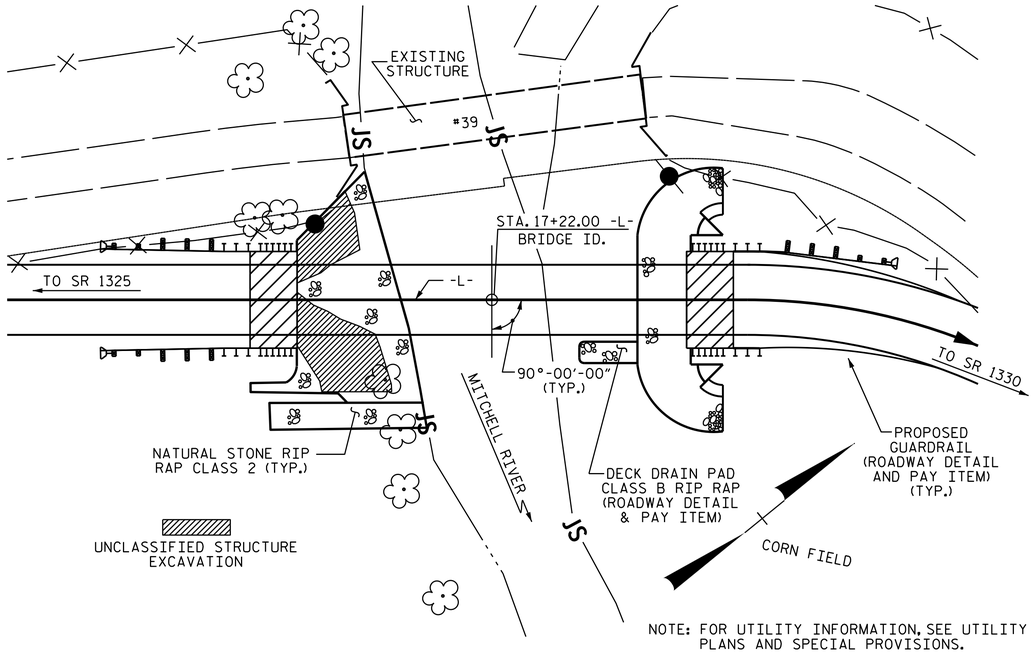
BENCH MARK: #1 DISK IN HEADWALL STA. 16+85.00 -L-,
50' LEFT, 145 HLZ 1969 N 982359 E 1436167 EL. 1355.13



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.

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."

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 24 FT. RIGHT AND 28 FT. LEFT OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

AFTER SERVING AS A TEMPORARY STRUCTURE THE EXISTING STRUCTURE CONSISTING OF 1 SPAN @ 77'-6" WITH 1½" ASPHALT WEARING SURFACE ON 4"X 8" TIMBERS ON LOW STEEL PONY TRUSS AND A CLEAR ROADWAY WIDTH OF 11.2 FT., ON REINFORCED CONCRETE ABUTMENTS AT THE END BENTS AND LOCATED 45' UPSTREAM FROM THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, THE LOAD LIMIT MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

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.

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE BRIDGE 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.

ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.

FOR APPLICATION OF BRIDGE COATING, SEE SPECIAL PROVISIONS.

FOR NATURAL STONE RIP RAP, CLASS 2, SEE SPECIAL PROVISIONS.

FOR 32" ALASKA RAIL, SEE SPECIAL PROVISIONS.

FOR ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.

HYDRAULIC DATA

DESIGN DISCHARGE	= 2400 CFS.
FREQUENCY OF DESIGN FLOOD	= 25 YR.
DESIGN HIGH WATER ELEVATION	= 1349.70
DRAINAGE AREA	= 11.8 SQ. MI.
BASE DISCHARGE (Q100)	= 3479 CFS.
BASE HIGH WATER ELEVATION	= 1350.79

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	= 4200 CFS.
FREQUENCY OF OVERTOPPING FLOOD	= 500 YR. -
OVERTOPPING FLOOD ELEVATION	= 1351.10

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	HP 14 X 73 STEEL PILES		NATURAL STONE RIP RAP CLASS 2 (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 3'-3" PRESTRESSED CONCRETE BOX BEAMS		APPLICATION OF BRIDGE COATING	1'-7" X 1'-0" CONCRETE CURB	32" ALASKA RAIL	ASBESTOS ASSESSMENT
	LUMP SUM	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	NO.	LIN. FT.	TONS	SQ. YARDS	LUMP SUM	NO.	LIN. FT.	LUMP SUM	LIN. FT.	LIN. FT.	LUMP SUM
SUPERSTRUCTURE				LUMP SUM						LUMP SUM	9	900.00	LUMP SUM	200.0	184.33	
END BENT NO. 1		LUMP SUM	27.1		4197	5	205	218	242				LUMP SUM			
END BENT NO. 2			27.1		4197	5	135	136	152				LUMP SUM			
TOTAL	LUMP SUM	LUMP SUM	54.2	LUMP SUM	8394	10	340	354	394	LUMP SUM	9	900.00	LUMP SUM	200.0	184.33	LUMP SUM

NORTH CAROLINA PROFESSIONAL SEAL 17230 ENGINEER WAEL S. ARAFAT

DocuSigned by: Wael Arafat 4139C12A32AB406...

12/28/2015

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PROJECT NO. B-5173

SURRY COUNTY

STATION: 17+22.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING FOR BRIDGE OVER MITCHELL RIVER ON SR 1328 BETWEEN SR 1325 AND SR 1330

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

DRAWN BY : H. T. BARBOUR DATE : 8-20-15
CHECKED BY : V. X. NGUYEN DATE : 9-15

28-DEC-2015 13:05
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LOAD AND RESISTANCE FACTOR RATING (LRFD) 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						
							LIVELOAD FACTORS	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)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING		HL-93(Inv)	N/A	1	1.01	--	1.75	0.268	1.25	A	EL	49.25	0.478	1.36	A	EL	4.925	0.80	0.268	1.01	A	EL	49.250	
		HL-93(Opr)	N/A	--	1.63	--	1.35	0.268	1.62	A	EL	49.25	0.478	1.77	A	EL	4.925	N/A	--	--	--	--	--	
		HS-20(Inv)	36.000	2	1.41	50.564	1.75	0.268	1.74	A	EL	49.25	0.478	1.84	A	EL	4.925	0.80	0.268	1.40	A	EL	49.250	
		HS-20(Opr)	36.000	--	2.26	81.359	1.35	0.268	2.26	A	EL	49.25	0.478	2.39	A	EL	4.925	N/A	--	--	--	--	--	
LEGAL LOAD RATING	SV	SNSH	13.500	--	3.33	44.945	1.4	0.268	5.17	A	EL	49.25	0.478	5.69	A	EL	4.925	0.80	0.268	3.33	A	EL	49.250	
		SNGARBS2	20.000	--	2.41	48.235	1.4	0.268	3.74	A	EL	49.25	0.478	3.98	A	EL	4.925	0.80	0.268	2.41	A	EL	49.250	
		SNAGRIS2	22.000	--	2.26	49.633	1.4	0.268	3.50	A	EL	49.25	0.478	3.67	A	EL	4.925	0.80	0.268	2.26	A	EL	49.250	
		SNCOTTS3	27.250	--	1.66	45.090	1.4	0.268	2.57	A	EL	49.25	0.478	2.84	A	EL	4.925	0.80	0.268	1.65	A	EL	49.250	
		SNAGGRS4	34.925	--	1.36	47.362	1.4	0.268	2.10	A	EL	49.25	0.478	2.31	A	EL	4.925	0.80	0.268	1.36	A	EL	49.250	
		SNS5A	35.550	--	1.33	47.207	1.4	0.268	2.06	A	EL	49.25	0.478	2.31	A	EL	4.925	0.80	0.268	1.33	A	EL	49.250	
		SNS6A	39.950	--	1.21	48.239	1.4	0.268	1.87	A	EL	49.25	0.478	2.09	A	EL	4.925	0.80	0.268	1.21	A	EL	49.250	
		SNS7B	42.000	--	1.15	48.278	1.4	0.268	1.78	A	EL	49.25	0.478	2.03	A	EL	4.925	0.80	0.268	1.15	A	EL	49.250	
	TTST	TNAGRIT3	33.000	--	1.47	48.486	1.4	0.268	2.28	A	EL	49.25	0.478	2.51	A	EL	4.925	0.80	0.268	1.47	A	EL	49.250	
		TNT4A	33.075	--	1.47	48.713	1.4	0.268	2.29	A	EL	49.25	0.478	2.46	A	EL	4.925	0.80	0.268	1.47	A	EL	49.250	
		TNT6A	41.600	--	1.19	49.673	1.4	0.268	1.85	A	EL	49.25	0.478	2.13	A	EL	4.925	0.80	0.268	1.19	A	EL	49.250	
		TNT7A	42.000	--	1.20	50.176	1.4	0.268	1.85	A	EL	49.25	0.478	2.09	A	EL	4.925	0.80	0.268	1.19	A	EL	49.250	
		TNT7B	42.000	--	1.22	51.361	1.4	0.268	1.90	A	EL	49.25	0.478	2.00	A	EL	4.925	0.80	0.268	1.22	A	EL	49.250	
		TNAGRIT4	43.000	--	1.17	50.439	1.4	0.268	1.82	A	EL	49.25	0.478	1.94	A	EL	4.925	0.80	0.268	1.17	A	EL	49.250	
		TNAGT5A	45.000	--	1.11	49.975	1.4	0.268	1.72	A	EL	49.25	0.478	1.91	A	EL	4.925	0.80	0.268	1.11	A	EL	49.250	
		TNAGT5B	45.000	3	1.10	49.555	1.4	0.268	1.71	A	EL	49.25	0.478	1.85	A	EL	4.925	0.80	0.268	1.10	A	EL	49.250	

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.

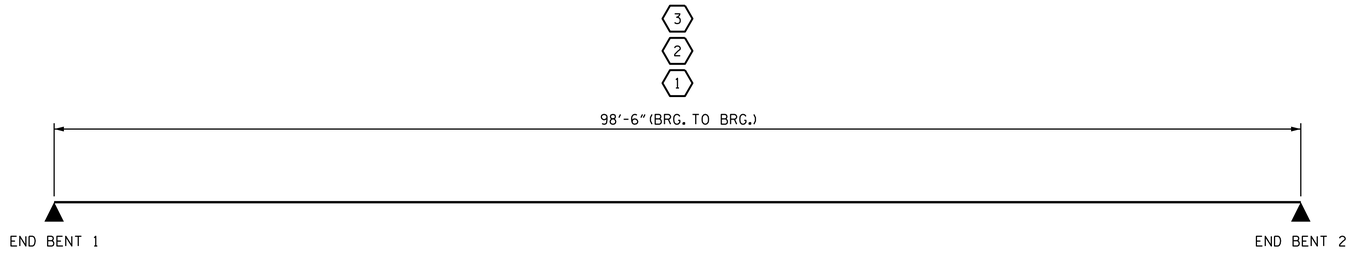
ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

(#) 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-5173

SURRY COUNTY

STATION: 17+22.00 -L-

NORTH CAROLINA PROFESSIONAL SEAL 17230 ENGINEER WAEL S. ARAFAT

Docusigned by: Wael Arafat 4139C12A32AB406...

12/21/2015

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

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

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

STD. NO. LRFR1

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ASSEMBLED BY : H. T. BARBOUR DATE : 8-20-15
CHECKED BY : V. X. NGUYEN DATE : 9-15

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

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

DESIGN ENGINEER OF RECORD:
A. M. LEE DATE : 9-15

21-DEC-2015 09:45
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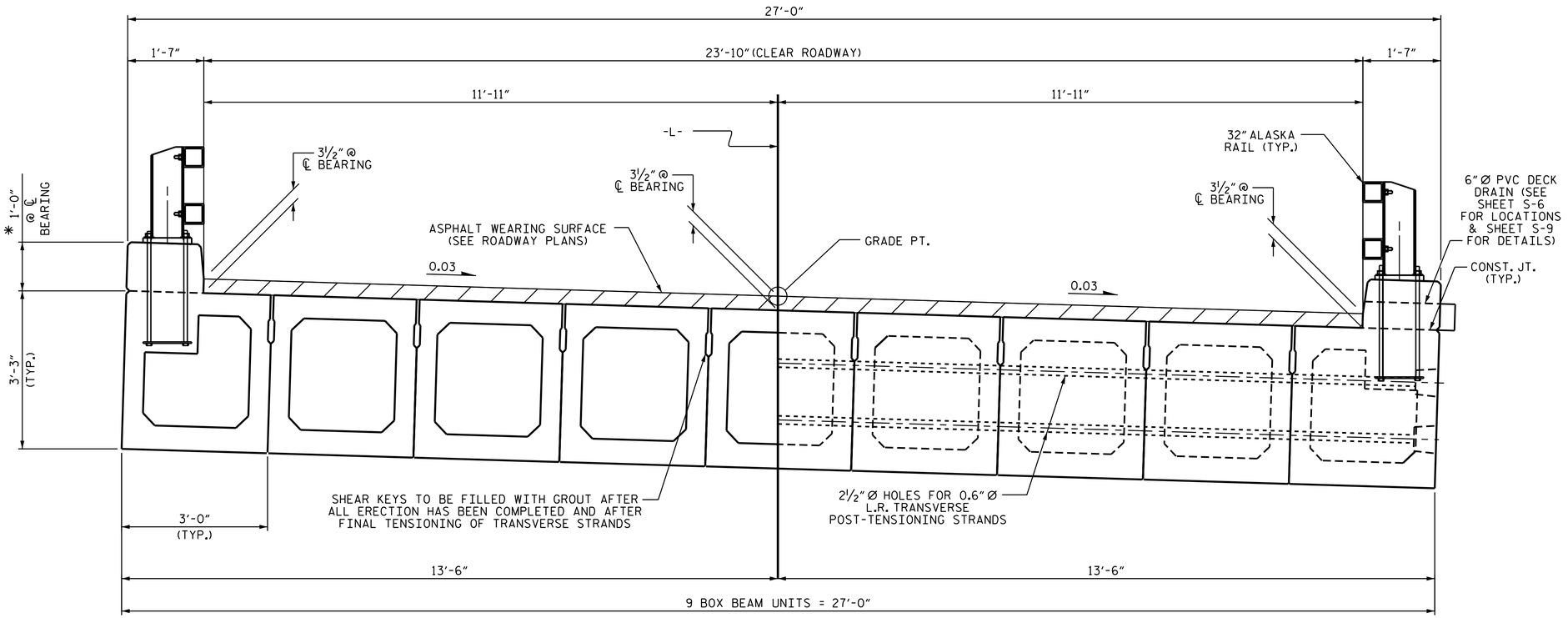
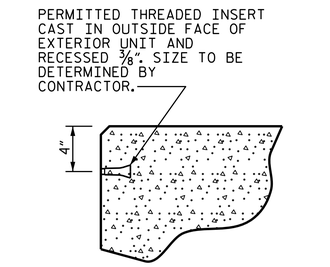


HALF SECTION
THROUGH VOIDS

HALF SECTION
AT INTERMEDIATE DIAPHRAGMS

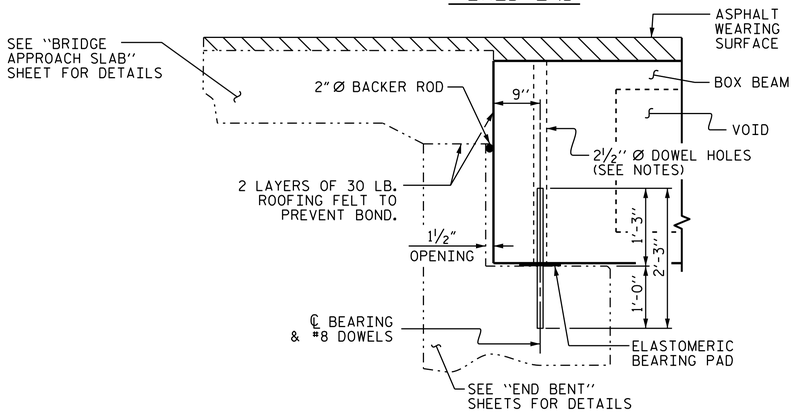
TYPICAL SECTION

* THE MAXIMUM CURB HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE CURB AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE CURB FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR CURB HEIGHT DETAILS AND ASPHALT THICKNESS, SEE "GUTTERLINE ASPHALT THICKNESS & CURB HEIGHT" CHART.



THREADED INSERT DETAIL

FIXED END



SECTION AT END BENT

NOTES

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

ALL REINFORCING STEEL CAST WITH THE BOX BEAM SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE BOX BEAMS.

FLAME CUTTING OF THE TRANSVERSE POST-TENSIONING STRAND IS NOT ALLOWED.

RECESSES FOR TRANSVERSE STRANDS SHALL BE GROUTED AFTER THE TENSIONING OF THE STRANDS.

THE 2½" Ø DOWEL HOLES AT FIXED ENDS OF BOX BEAM SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

THE BACKER RODS SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE BOX BEAM UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 5500 PSI.

ALL REINFORCING STEEL IN THE CONCRETE CURB SHALL BE EPOXY COATED.

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE BOX BEAM UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO BOX BEAM UNIT ENDS.

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

THE LOCATION OF THE VOID DRAINS MAY BE SHIFTED SLIGHTLY WHERE NECESSARY TO CLEAR PRESTRESSING STRANDS OR TRANSVERSE REINFORCING STEEL.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THE PERMITTED THREADED INSERTS ARE DETAILED AS AN OPTION FOR THE CONTRACTOR TO ATTACH FALSEWORK AND FORMWORK DURING CONSTRUCTION.

THE PERMITTED THREADED INSERTS IN THE EXTERIOR UNITS SHALL BE SIZED BY THE CONTRACTOR, SPACED AT 4'-0" CENTERS AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS. STAINLESS STEEL THREADED INSERTS MAY BE USED AS AN ALTERNATE.

THE PERMITTED THREADED INSERTS SHALL BE GROUTED BY THE CONTRACTOR IMMEDIATELY FOLLOWING REMOVAL OF THE FALSEWORK.

THE COST OF THE PERMITTED THREADED INSERTS SHALL BE INCLUDED IN THE PRICE BID FOR THE PRECAST UNITS.

THE OUTSIDE FACES OF EXTERIOR BOX BEAM UNITS AND CONCRETE CURBS SHALL BE STAINED LIGHT BROWN OR TAN AS DIRECTED BY THE ENGINEER, SEE SPECIAL PROVISIONS FOR APPLICATION OF BRIDGE COATING.

THE 6" Ø PVC DECK DRAIN SHALL BE PAINTED LIGHT BROWN OR TAN. SEE SPECIAL PROVISIONS FOR APPLICATION OF BRIDGE COATING.

APPLY EPOXY PROTECTIVE COATING TO EXTERIOR FACE OF RIGHT EXTERIOR BOX BEAM UNIT. EPOXY PROTECTIVE COATING SHALL BE APPLIED AFTER APPLICATION OF BRIDGE COATING.

PROJECT NO. B-5173

SURRY COUNTY

STATION: 17+22.00 -L-

SHEET 1 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" X 3'-3" PRESTRESSED CONCRETE BOX BEAM UNIT

NORTH CAROLINA PROFESSIONAL SEAL 17230 ENGINEER WAEL S. ARAFAT

DocuSigned by: Wael Arafat 4139C12A32AB406...
12/21/2015

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NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			18

ASSEMBLED BY :	H. T. BARBOUR	DATE :	8-15-15
CHECKED BY :	V. X. NGUYEN	DATE :	9-15
DRAWN BY : DGE 8/11	REV. 10/15 MAA/TMG		
CHECKED BY : TMG 11/11			

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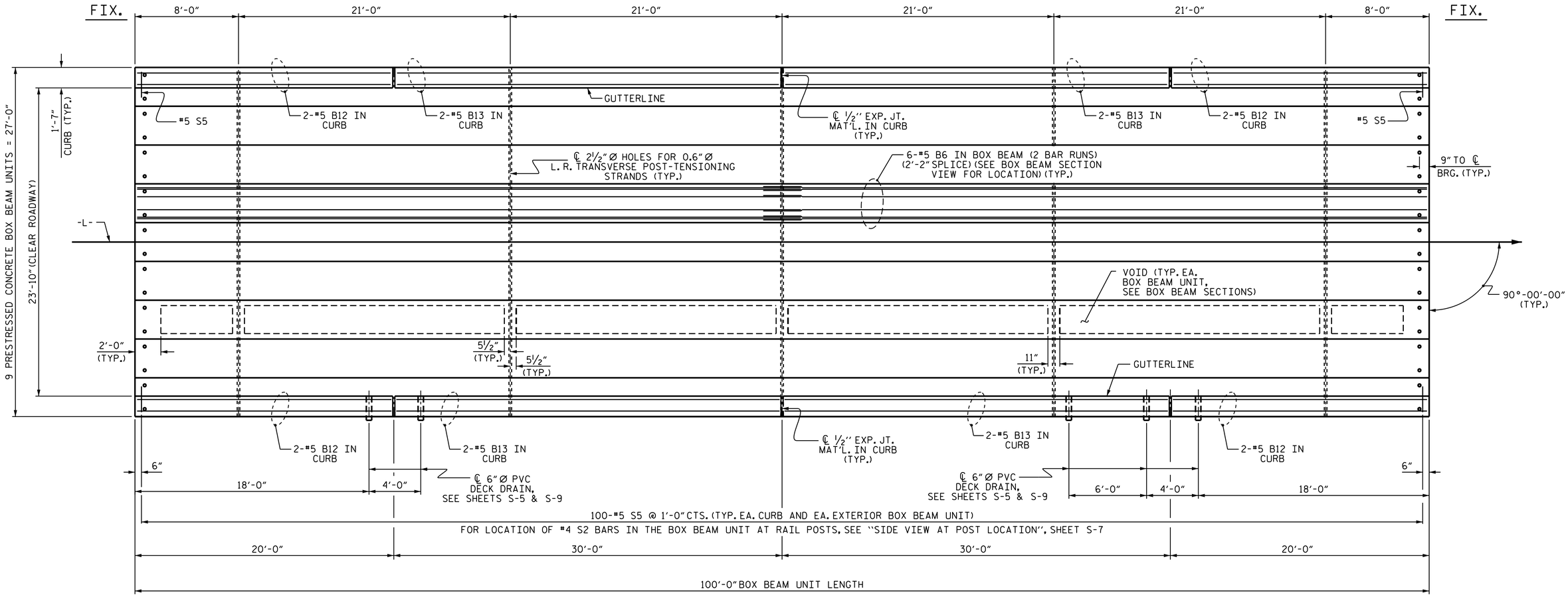
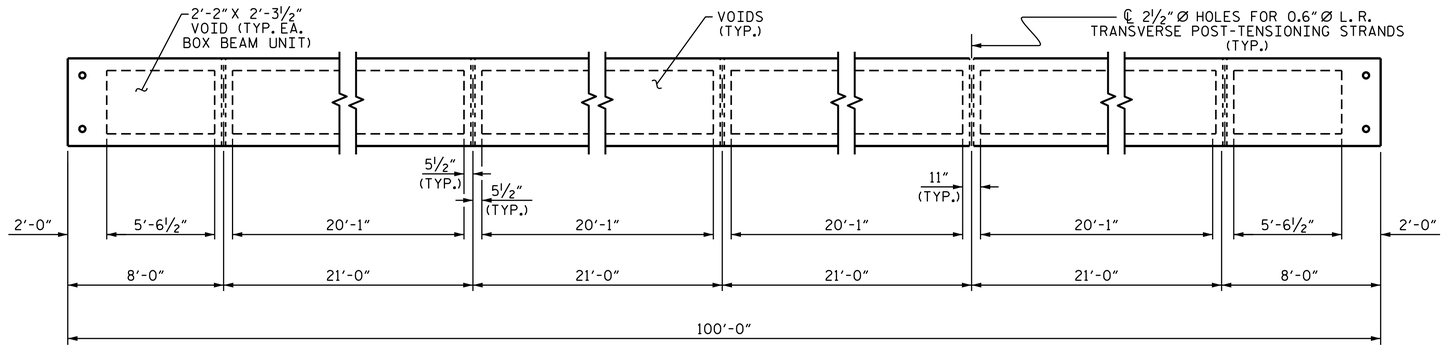


PLAN OF UNIT



DIAPHRAGM AND VOID LAYOUT

PROJECT NO. B-5173

SURRY COUNTY

STATION: 17+22.00 -L-

SHEET 2 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 100' UNIT 23'-10" CLEAR ROADWAY 90° SKEW

NORTH CAROLINA PROFESSIONAL SEAL 17230 ENGINEER WAEL S. ARAFAT

DocuSigned by: Wael Arafat 4139C12A32AB406...
12/21/2015

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2			4		

SHEET NO. S-6

TOTAL SHEETS 18

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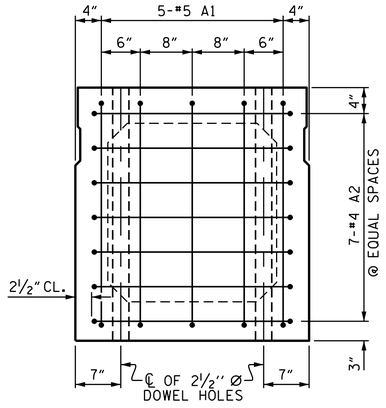
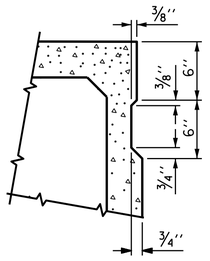


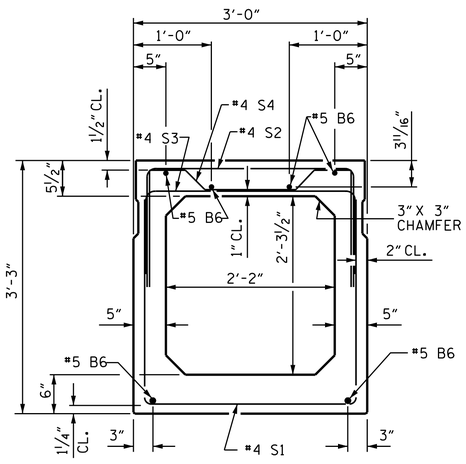
END ELEVATION

SHOWING PLACEMENT OF #5 & #4 "A" BARS AND LOCATION OF DOWEL HOLES.
(INTERIOR BOX BEAM SECTION SHOWN-EXTERIOR SECTION SIMILAR EXCEPT SHEAR KEY LOCATION. STRAND LAYOUT NOT SHOWN.)



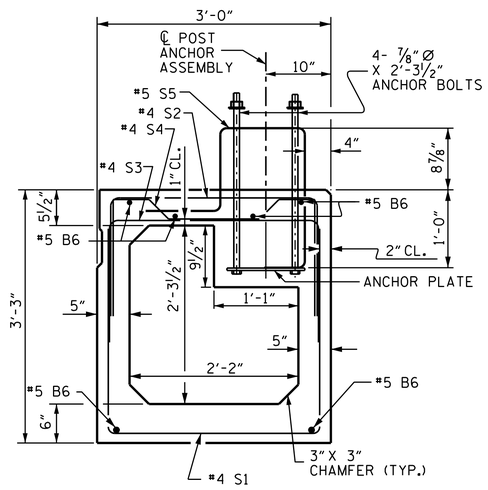
SHEAR KEY DETAIL

NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR BOX BEAMS.



INTERIOR BOX BEAM SECTION

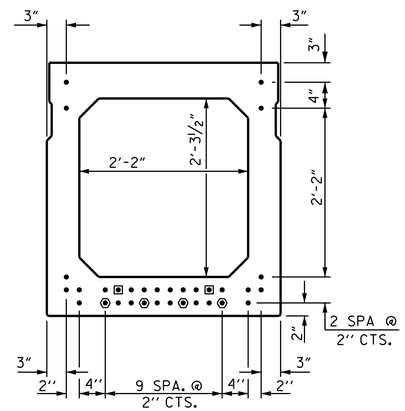
(STRAND LAYOUT NOT SHOWN)



EXTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)

0.6" Ø LOW RELAXATION STRAND LAYOUT



TYPICAL STRAND LOCATION

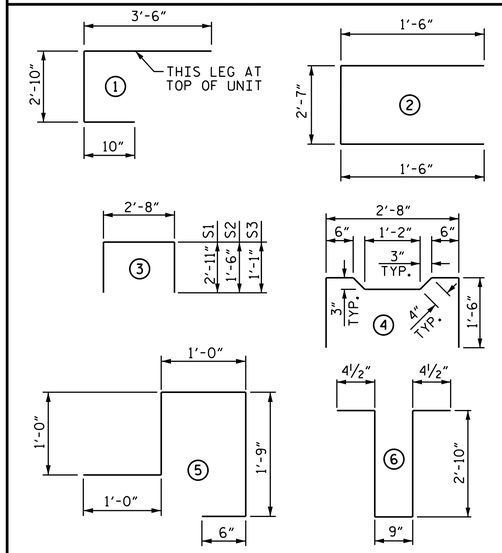
(32 STRANDS REQUIRED)

DEBONDING LEGEND

- ● FULLY BONDED STRANDS
- ◉ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- ⬢ STRANDS DEBONDED FOR 12'-0" FROM END OF GIRDER

BOND SHALL BE BROKEN ON STRANDS AS SHOWN FOR THE SPECIFIED LENGTH FROM EACH END OF THE BOX BEAM. SEE STANDARD SPECIFICATIONS ARTICLE 1078-7.

BAR TYPES

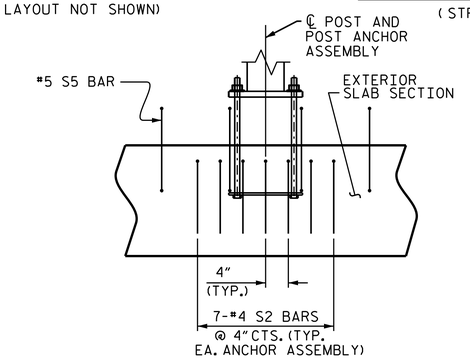


ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR ONE BOX BEAM SECTION

				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
A1	10	#5	1	7'-2"	75	7'-2"	75
A2	44	#4	2	5'-7"	164	5'-7"	164
B6	12	#5	STR	50'-11"	637	50'-11"	637
K1	15	#4	6	7'-2"	72	7'-2"	72
K2	10	#4	STR	2'-7"	17	2'-7"	17
S1	78	#4	3	8'-6"	443	8'-6"	443
S2	162	#4	3	5'-8"	613	--	--
S2	78	#4	3	--	--	5'-8"	295
S3	139	#4	3	4'-10"	449	4'-10"	449
S4	61	#4	4	5'-10"	238	5'-10"	238
✳ S5	100	#5	5	5'-3"	548	--	--
REINFORCING STEEL				LBS.	2708	LBS.	2390
✳ EPOXY COATED REINF. STEEL				LBS.	548		
7500 P.S.I. CONCRETE				22.3 CU. YDS.		19.4 CU. YDS.	
0.6" Ø L.R. STRANDS				No. 32		No. 32	

NOTE: THE VOID IN THE EXTERIOR UNIT IS TO BE MODIFIED THE FULL LENGTH OF THE VOID TO ALLOW THE POST ANCHOR ASSEMBLIES TO BE PLACED. SEE THE EXTERIOR BOX BEAM SECTION FOR DETAILS OF THE MODIFICATION.

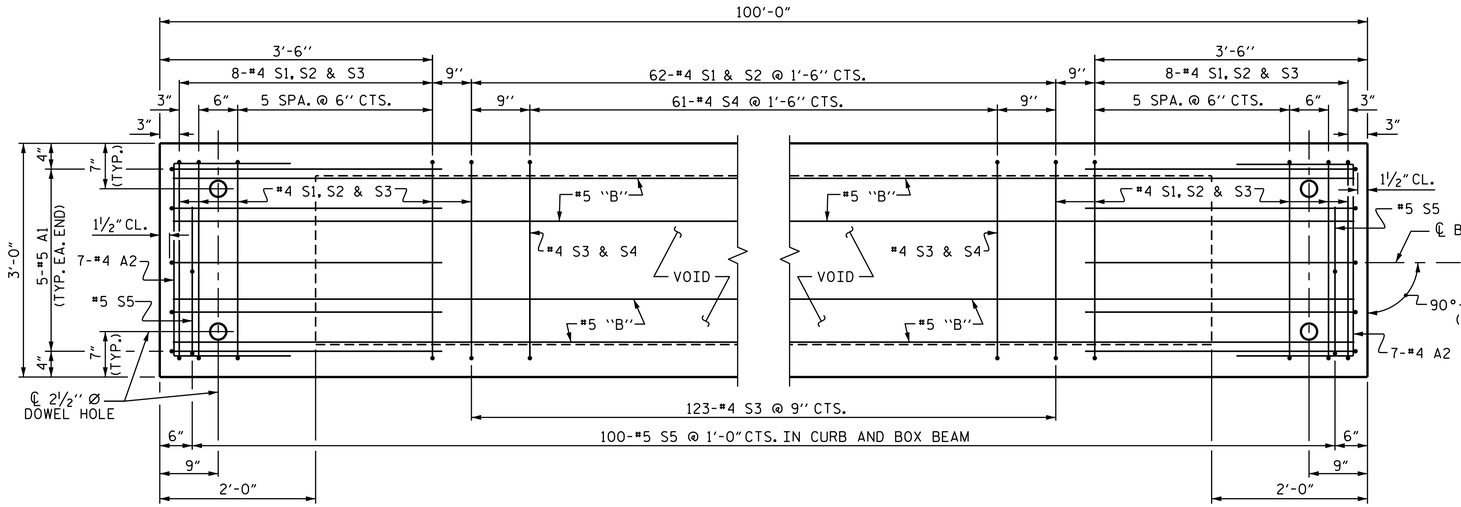


SIDE VIEW AT POST LOCATION

(SHOWING ADDITIONAL S2 BARS AT EACH POST ASSEMBLY)

GRADE 270 STRANDS

	0.6" Ø L.R.
AREA (SQUARE INCHES)	0.217
ULTIMATE STRENGTH (LBS. PER STRAND)	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	43,950



PLAN OF BOX BEAM

EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S5 BARS.
FOR LOCATION OF DIAPHRAGMS, SEE PLAN OF SPANS.
FOR REINFORCING STEEL IN DIAPHRAGMS, SEE DIAPHRAGM DETAILS.

NORTH CAROLINA PROFESSIONAL SEAL 17230 ENGINEER WAEL S. ARAFAT

DocuSigned by: Wael Arafat 4139C12A32AB406...
12/21/2015

PROJECT NO. B-5173
SURRY COUNTY
STATION: 17+22.00 -L-

SHEET 3 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
3'-0" X 3'-3"
PRESTRESSED CONCRETE
BOX BEAM UNIT
SPAN "A"

ASSEMBLED BY : H. T. BARBOUR	DATE : 8-20-15
CHECKED BY : V. X. NGUYEN	DATE : 9-15

DRAWN BY : TLA 5/05	REV. 5/1/06 TLA/GM
CHECKED BY : GM 6/05	REV. 10/1/11 MAA/GM
	REV. 1/15 RWW/TMG

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SHEET NO. S-7
TOTAL SHEETS 18

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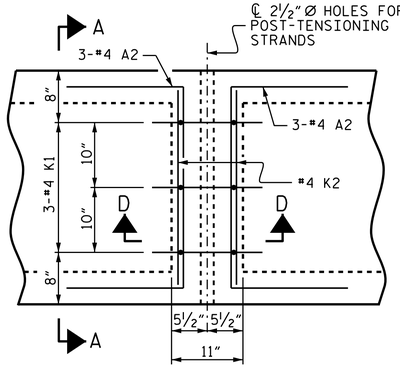
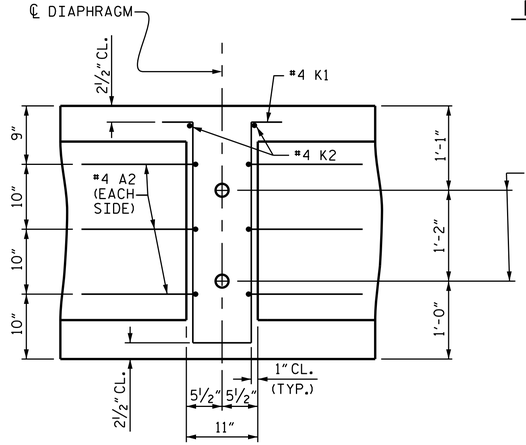
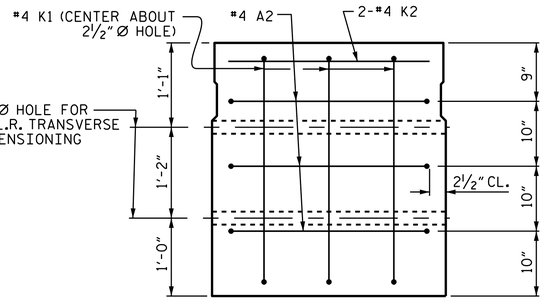


PLAN



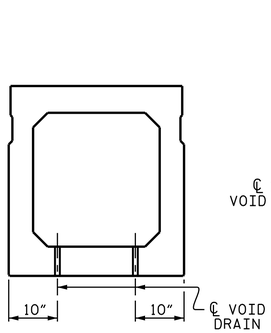
SECTION D-D



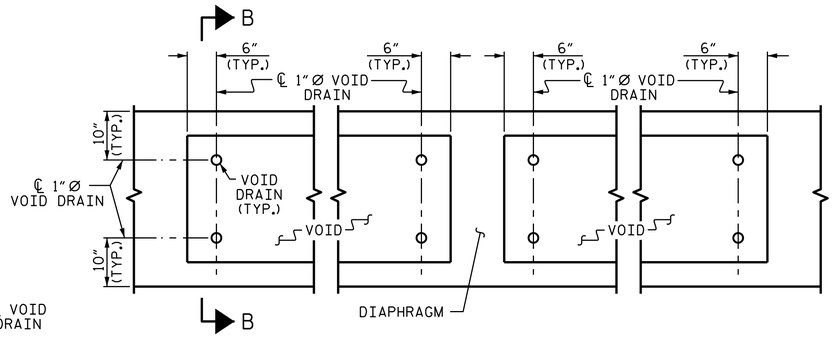
SECTION A-A
VOIDS NOT SHOWN

DOUBLE DIAPHRAGM DETAILS

#4 "S" BARS NOT SHOWN. #4 "S" BARS MAY BE SHIFTED SLIGHTLY TO CLEAR 2½" Ø HOLE.



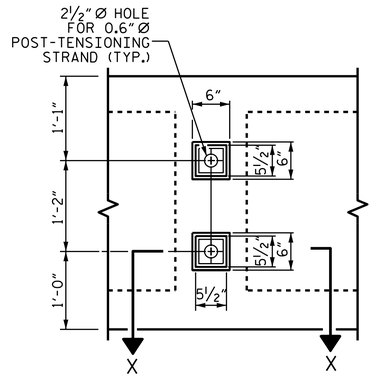
SECTION B-B



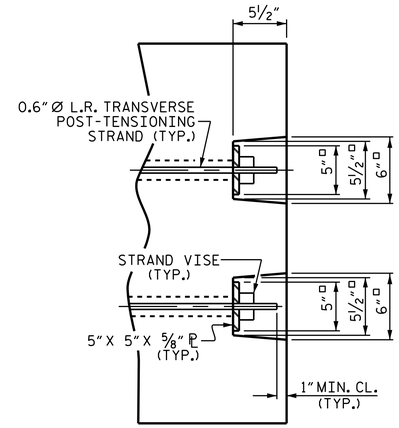
PART PLAN

VOID DRAIN DETAILS

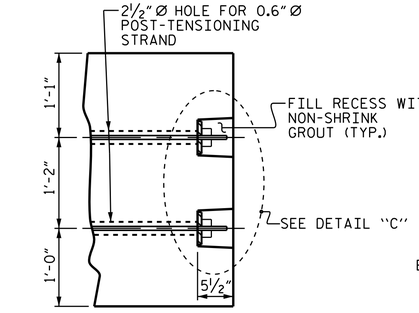
(DIMENSIONS SHOWN ARE TYPICAL FOR EACH VOID)



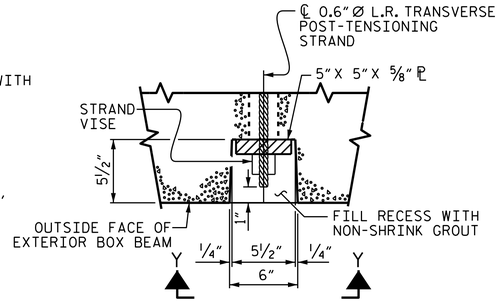
VIEW Y-Y
SHOWING ELEVATION VIEW OF GROUTED RECESS



DETAIL "C"



PART SECTION AT RECESS



SECTION X-X
SHOWING PLAN VIEW OF GROUTED RECESS

GROUTED RECESS DETAIL AT END OF POST-TENSIONED STRANDS OF EXTERIOR BOX BEAM

DEAD LOAD DEFLECTION AND CAMBER	
3'-0" x 3'-3"	
100' BOX BEAM UNIT	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	1⅞"
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	¾"
FINAL CAMBER	1⅛"

** INCLUDES FUTURE WEARING SURFACE

PROJECT NO. B-5173

SURRY COUNTY

STATION: 17+22.00 -L-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" X 3'-3" PRESTRESSED CONCRETE BOX BEAM UNIT

NORTH CAROLINA PROFESSIONAL SEAL 17230 ENGINEER WAEL S. ARAFAT

DocuSigned by: Wael Arafat 4139C12A32AB406...
12/21/2015

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ASSEMBLED BY :	H. T. BARBOUR	DATE : 8-20-15
CHECKED BY :	V. X. NGUYEN	DATE : 9-15
DESIGN ENGINEER OF RECORD :	A.M. LEE	DATE : 10-15
DRAWN BY : DGE 11/11	REV. 8/14	MAA/TMG
CHECKED BY : TMG 11/11		

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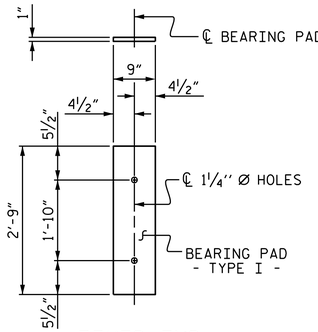
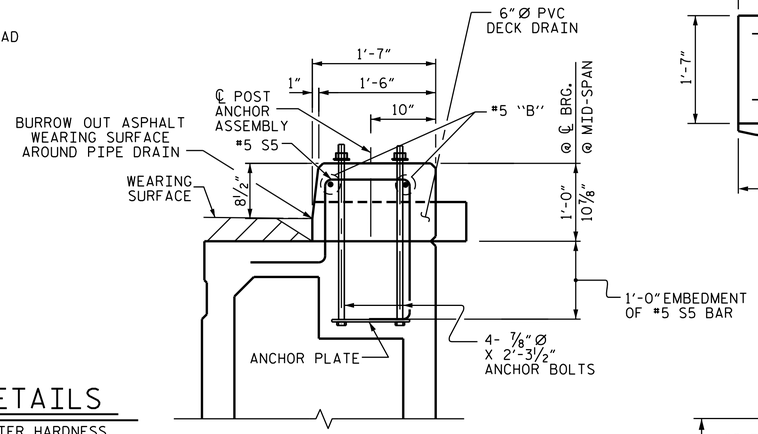


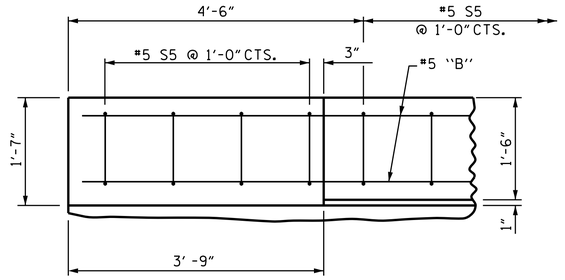
FIXED END

(TYPE I - 18 REQ'D)

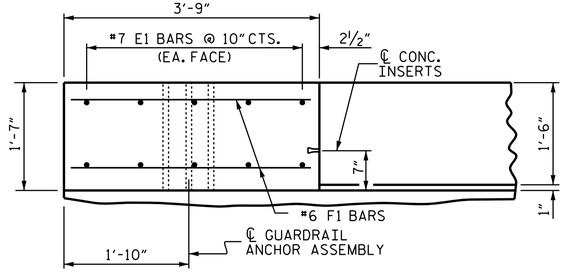


ELASTOMERIC BEARING DETAILS

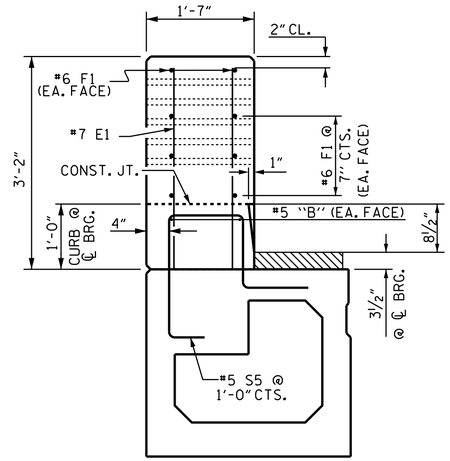
ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.



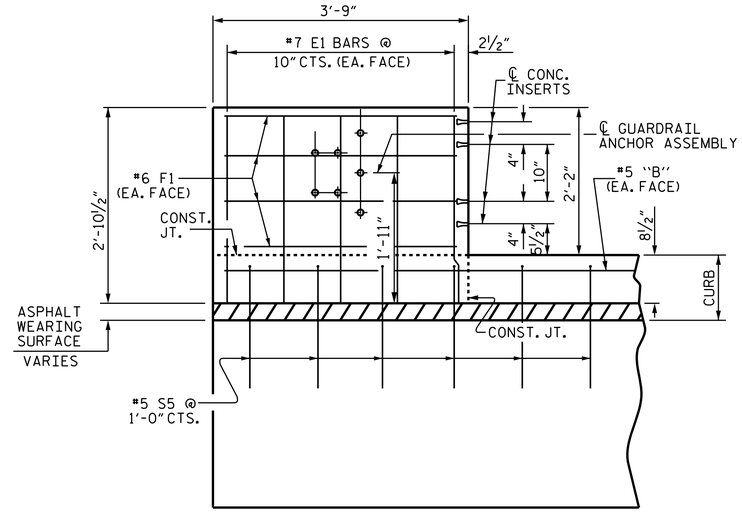
PLAN OF CURB



PLAN OF END POST

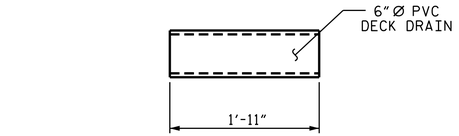


END VIEW



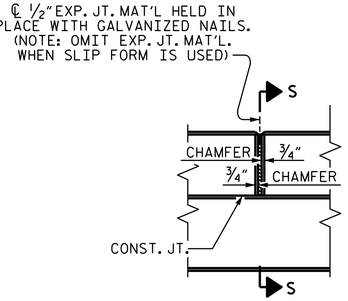
ELEVATION

CURB AND END POST DETAIL FOR 32" ALASKA RAIL

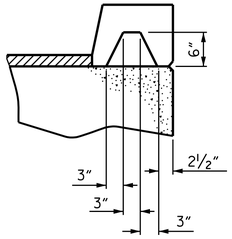


DRAIN DETAIL

(5 DRAINS REQ'D)



ELEVATION AT EXPANSION JOINTS



SECTION S-S

AT DAM IN OPEN JOINT

(THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)

BOX BEAM UNITS REQUIRED

	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR B.B.	2	100'-0"	200'-0"
INTERIOR B.B.	7	100'-0"	700'-0"
TOTAL	9	———	900'-0"

GUTTERLINE ASPHALT THICKNESS & CURB HEIGHT

	ASPHALT OVERLAY THICKNESS @ MID-SPAN	CURB HEIGHT @ MID-SPAN
100' UNITS	2⅜"	10⅞"

** BILL OF MATERIAL FOR FOUR END POSTS

BAR	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
*E1	40	#7	STR	2'-9"	225
*F1	32	#6	STR	3'-5"	164
*EPOXY COATED REINFORCING STEEL				LBS.	389
CLASS AA CONCRETE				CU.YDS.	2.0

BILL OF MATERIAL FOR CURB

BAR	BARS PER PAIR OF EXTERIOR UNITS 100' UNIT	SIZE	TYPE	LENGTH	WEIGHT
*B12	8	#5	STR	19'-7"	163
*B13	8	#5	STR	29'-7"	247
*EPOXY COATED REINFORCING STEEL			LBS.		410
CLASS AA CONCRETE			CU.YDS.		11.0
1'-7"X 1'-0" CONCRETE CURB			LN. FT.		200.0

**NOTE

THE COST OF END POSTS SHALL BE INCLUDED IN THE PRICE BID FOR LINEAR FEET OF CONCRETE CURB.

ASSEMBLED BY :	H. T. BARBOUR	DATE :	8-21-15
CHECKED BY :	V. X. NGUYEN	DATE :	9-15
DESIGN ENGINEER OF RECORD :	A.M. LEE	DATE :	10-15
DRAWN BY : TLA 5/05	REV. 10/12		MAA/GM
CHECKED BY : GM 6/05	REV. 6/13		MAA/GM
	REV. 1/15		RWW/TMG

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NORTH CAROLINA PROFESSIONAL SEAL 17230 ENGINEER WAEL S. ARAFAT

DocuSigned by: Wael Arafat 413BC12A32AB406... 12/21/2015

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PROJECT NO. B-5173

SURRY COUNTY

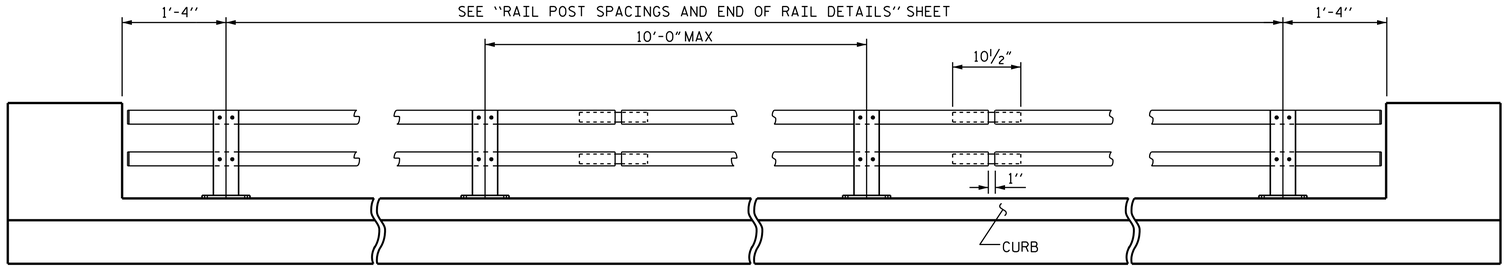
STATION: 17+22.00 -L-

SHEET 5 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

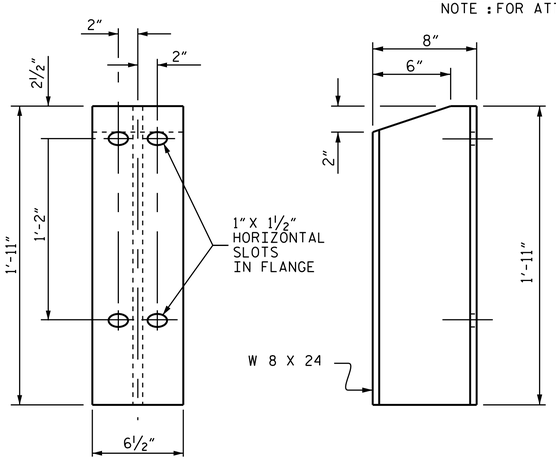
3'-0" X 3'-3" PRESTRESSED CONCRETE BOX BEAM UNIT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			18



ELEVATION

NOTE : FOR ATTACHMENT OF METAL RAIL TO END POST, SEE SHEET No. S-11.



FRONT ELEVATION SIDE ELEVATION

DETAILS OF POST

(24 RAIL POSTS REQUIRED)

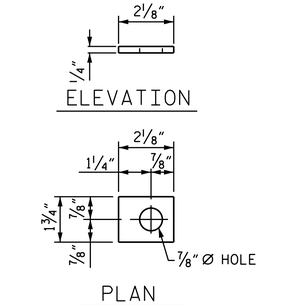
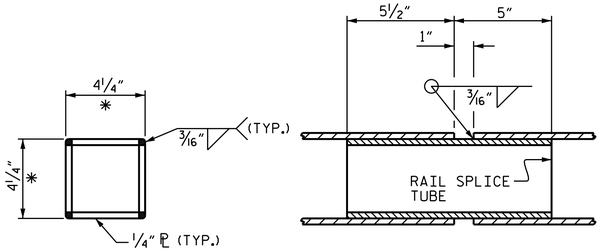


PLATE WASHER



RAIL SPLICE DETAILS

* - DIMENSION AFTER GRINDING RADIUS ON CORNERS TO MATCH INSIDE OF METAL RAIL. GRIND ALL EDGES PRIOR TO GALVANIZING TO ASSURE FIT.

NOTES

METAL RAIL SHALL BE GALVANIZED STEEL IN ACCORDANCE WITH THE REQUIREMENTS OF THE GENERAL NOTES AND THE FOLLOWING SPECIFICATIONS. ALUMINUM RAIL WILL NOT BE AN OPTION.

GALVANIZED STEEL RAILS

MATERIAL AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:

POST, POST BASES, ANCHOR PLATES AND RAIL SPLICE TUBES: AASHTO M270 GRADE 36 STRUCTURAL STEEL-GALVANIZED TO AASHTO M111.

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.

RAILS: ASTM A500 GRADE B - GALVANIZED TO AASHTO M111.

WELDED RAIL STUDS: ASTM A108-GALVANIZED TO AASHTO M111.

HIGH STRENGTH ANCHOR BOLTS SHALL CONFORM TO ASTM F1554 GRADE 105. HEAVY HEX NUTS SHALL CONFORM TO ASTM A563 DH, AND WASHERS TO ASTM F436, TYPE 1. NUTS AND WASHERS SHALL BE GALVANIZED TO 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 SHEET S-11.

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

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

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

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

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

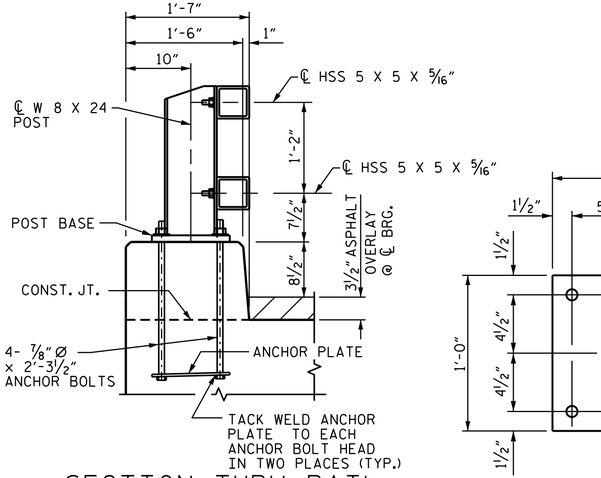
GROOVED CONTRACTION JOINTS, ½" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE CURB AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN CURB EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT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

THE RAIL SECTIONS SHALL BE ATTACHED TO THE POSTS BY TWO THREADED ¾" Ø WELDED STUDS, PLATE WASHERS, LOCKWASHERS, AND NUTS.

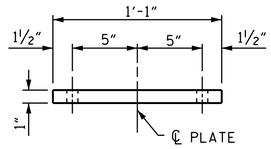
FOR 32" ALASKA RAIL, SEE THE SPECIAL PROVISIONS.

ALL METAL SURFACES INCLUDING PROJECTING BOLTS, NUTS, AND WASHERS SHALL BE PAINTED DARK BROWN. SEE SPECIAL PROVISIONS FOR APPLICATION OF BRIDGE COATING.

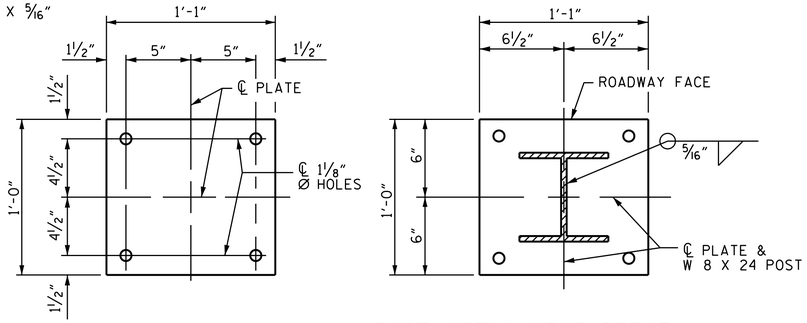
ALL SURFACES OF THE CURB AND END POSTS SHALL BE STAINED LIGHT BROWN OR TAN. SEE SPECIAL PROVISIONS FOR APPLICATION OF BRIDGE COATING.



SECTION THRU RAIL

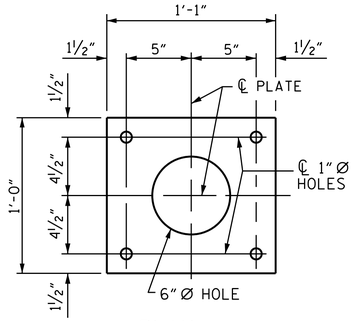


FRONT ELEVATION

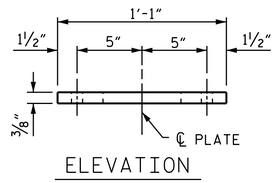


PLAN POST ATTACHMENT DETAIL

POST BASE DETAILS



PLAN



ELEVATION

ANCHOR PLATE DETAILS

PAY LENGTH 184.33 LIN. FT.

PROJECT NO. B-5173

SURRY COUNTY

STATION: 17+22.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

32" ALASKA RAIL

NORTH CAROLINA PROFESSIONAL SEAL 17230 ENGINEER WAEL S. ARAFAT

DocuSigned by: Wael Arafat 4139C12A32AB406... 12/21/2015

ASSEMBLED BY : H. T. BARBOUR	DATE : 8-21-15
CHECKED BY : V. X. NGUYEN	DATE : 9-15
DRAWN BY : RWW 7/14	ADDED 1/15
CHECKED BY : TMG 7/14	

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2			4		

SHEET NO. S-10

TOTAL SHEETS 18

STD. NO. BMR8

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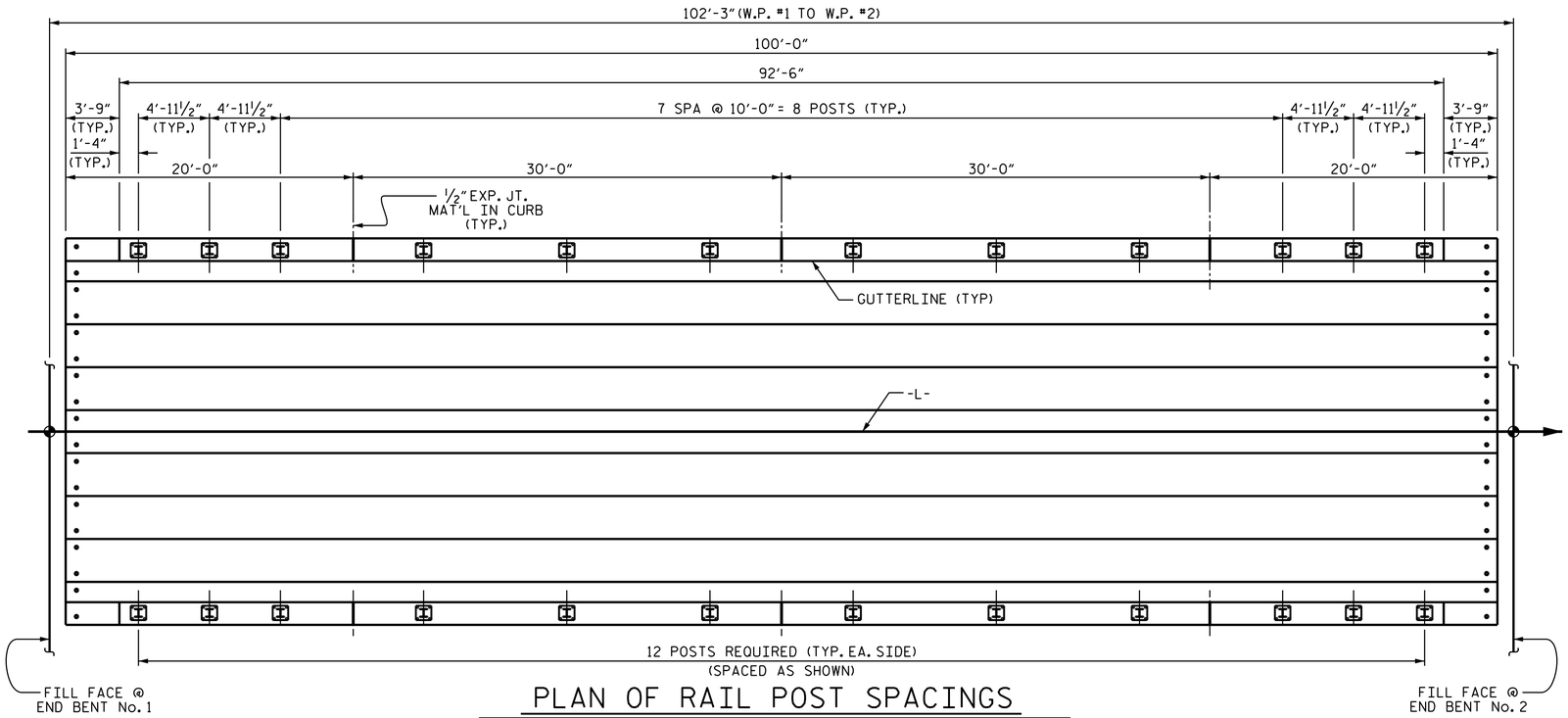


PLAN OF RAIL POST SPACINGS

NOTES

STRUCTURAL CONCRETE INSERT

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

A. FERRULE 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 STRUCTURAL CONCRETE INSERT 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

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

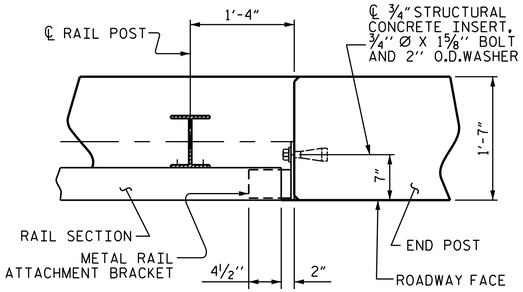
A. ½" METAL BRACKET PLATE AND ¼" METAL RAIL INSERT TUBE SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION TO AASHTO M111.

B. ¾" STRUCTURAL CONCRETE INSERTS 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.

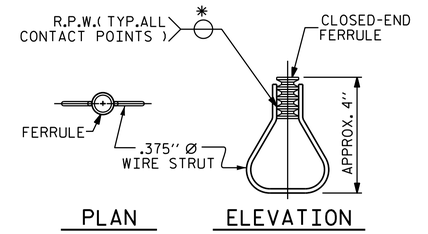
THE ¾" STRUCTURAL CONCRETE INSERTS WITH BOLTS SHALL BE ASSEMBLED IN THE SHOP.

THE COST OF THE ¾" STRUCTURAL CONCRETE INSERT, THE ½" BRACKET PLATES, AND THE RAIL INSERT TUBES 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" BOLTS WITH WASHERS SHALL BE REPLACED WITH ¾" Ø X 6½" BOLTS AND 2" O.D. WASHERS. ALL SPECIFICATIONS THAT APPLY TO THE ¾" Ø X 1⅝" BOLTS SHALL APPLY TO THE ¾" Ø X 6½" BOLTS. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

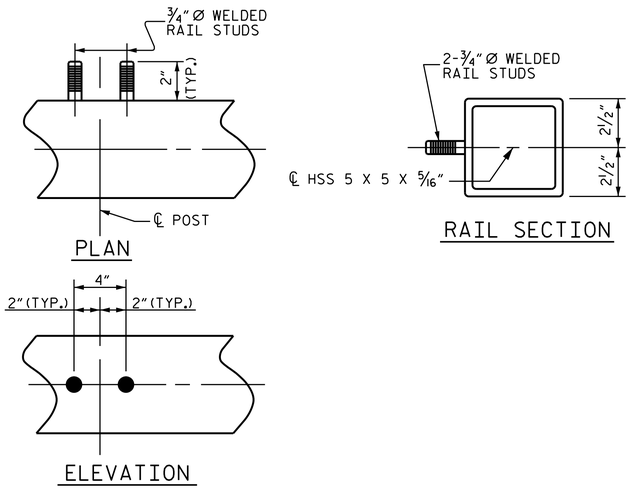


PLAN - RAILS AND END POST

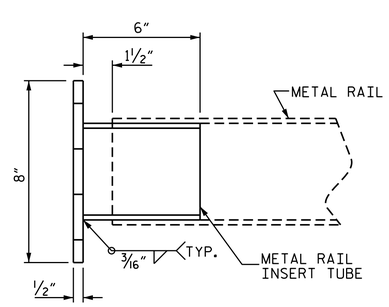


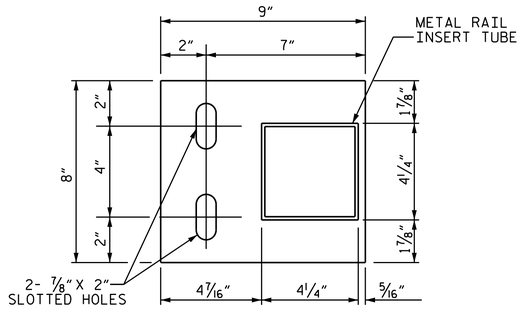
STRUCTURAL CONCRETE INSERT

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



RAIL STUD DETAILS





METAL RAIL ATTACHMENT BRACKET

THE METAL RAIL INSERT TUBE SHALL BE FABRICATED FROM ¼" PLATES.

NORTH CAROLINA PROFESSIONAL SEAL 17230 ENGINEER WAEL S. ARAFAT

DocuSigned by: Wael Arafat 4139C12A32AB406...

12/21/2015

PROJECT NO. B-5173

SURRY COUNTY

STATION: 17+22.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

RAIL POST SPACINGS AND END OF RAIL DETAILS

FOR 32" ALASKA RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			18

DRAWN BY : H. T. BARBOUR DATE : 8-21-15

CHECKED BY : V. X. NGUYEN DATE : 9-15

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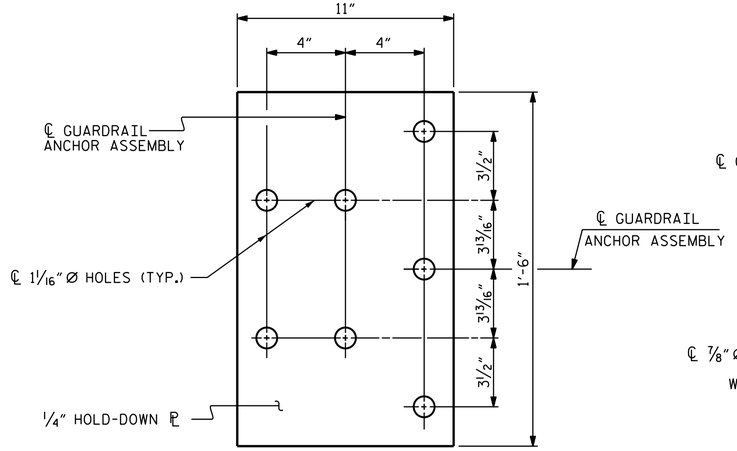
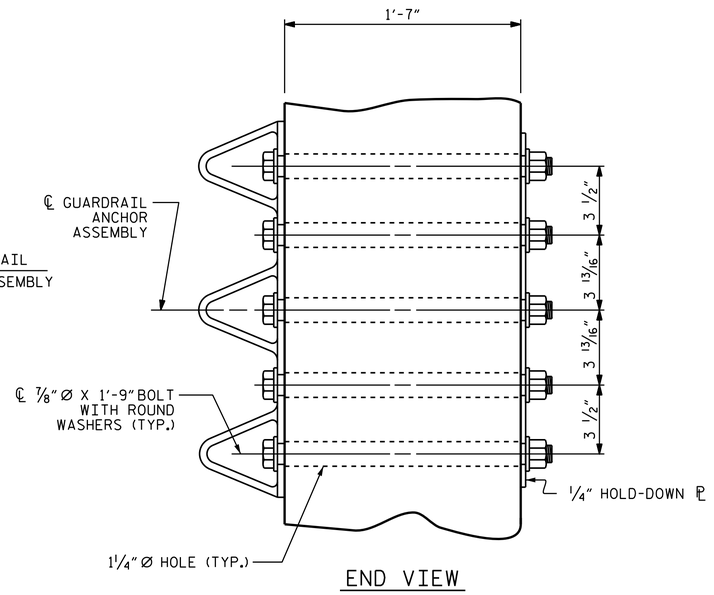


PLAN



END VIEW

GUARDRAIL ANCHOR ASSEMBLY DETAILS

NOTES

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

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

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

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.

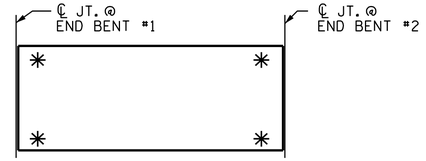
AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.

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.

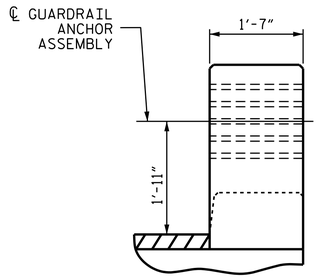
THE 1 1/4'' Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

ALL METAL SURFACES INCLUDING PLATES, BOLTS, NUTS, AND WASHERS SHALL BE PAINTED BROWN. SEE SPECIAL PROVISIONS FOR APPLICATION OF BRIDGE COATING.

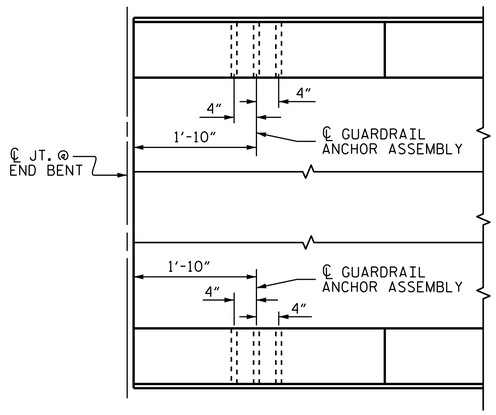


SKETCH SHOWING POINTS OF ATTACHMENT

* LOCATION OF GUARDRAIL ATTACHMENT



END VIEW
(32" ALASKA RAIL)



PLAN

LOCATION OF GUARDRAIL ANCHOR AT END POST

PROJECT NO. B-5173
SURRY COUNTY
STATION: 17+22.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
GUARDRAIL ANCHORAGE DETAILS FOR METAL TUBE RAILS

NORTH CAROLINA PROFESSIONAL SEAL 17230 ENGINEER WAEL S. ARAFAT
DocuSigned by: Wael Arafat 413BC12A32AB406...
12/21/2015

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2			4			18

ASSEMBLED BY : H. T. BARBOUR	DATE : 8-21-15		
CHECKED BY : V. X. NGUYEN	DATE : 9-15		
DRAWN BY : MAA 5/10	REV. 12/5/11	MAA/GM	
CHECKED BY : GM 5/10	REV. 6/13	MAA/GM	
	REV. 1/15	MAA/TMG	

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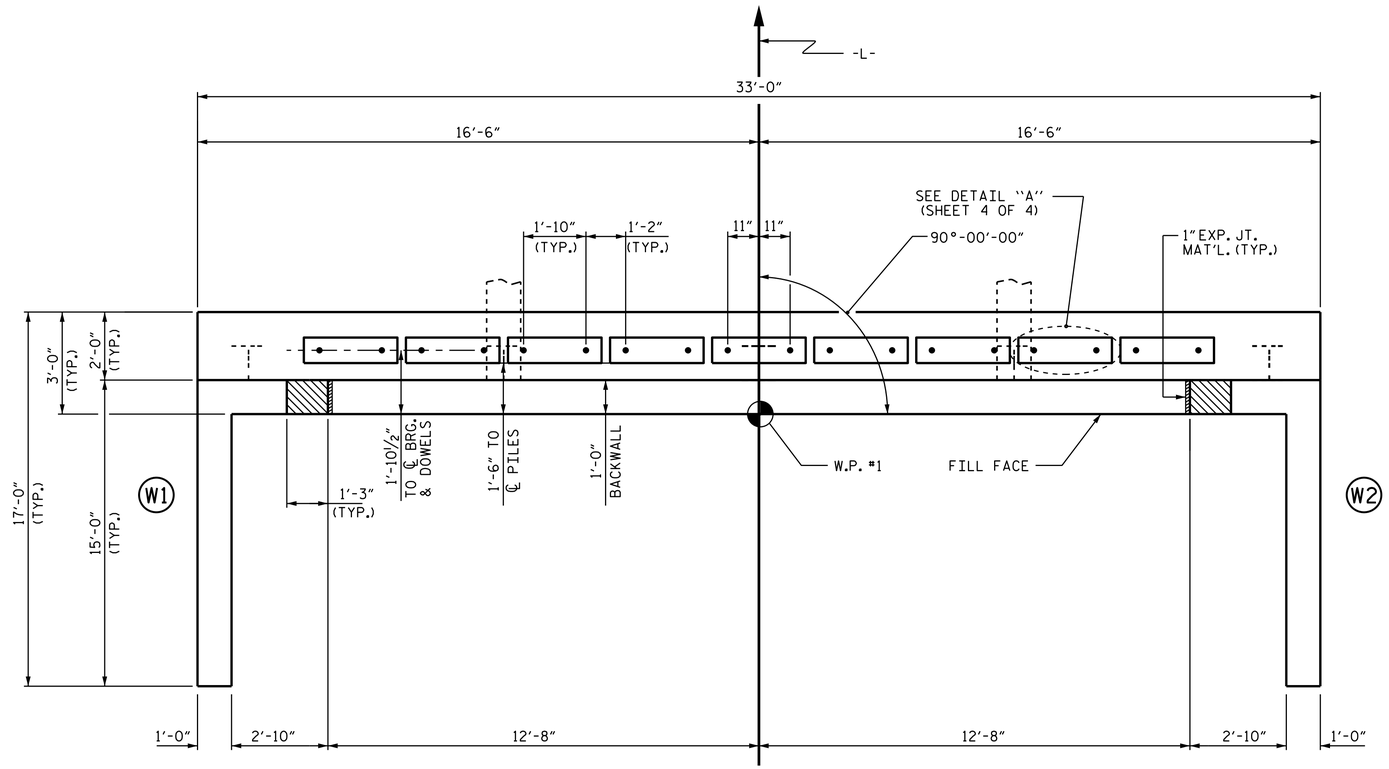

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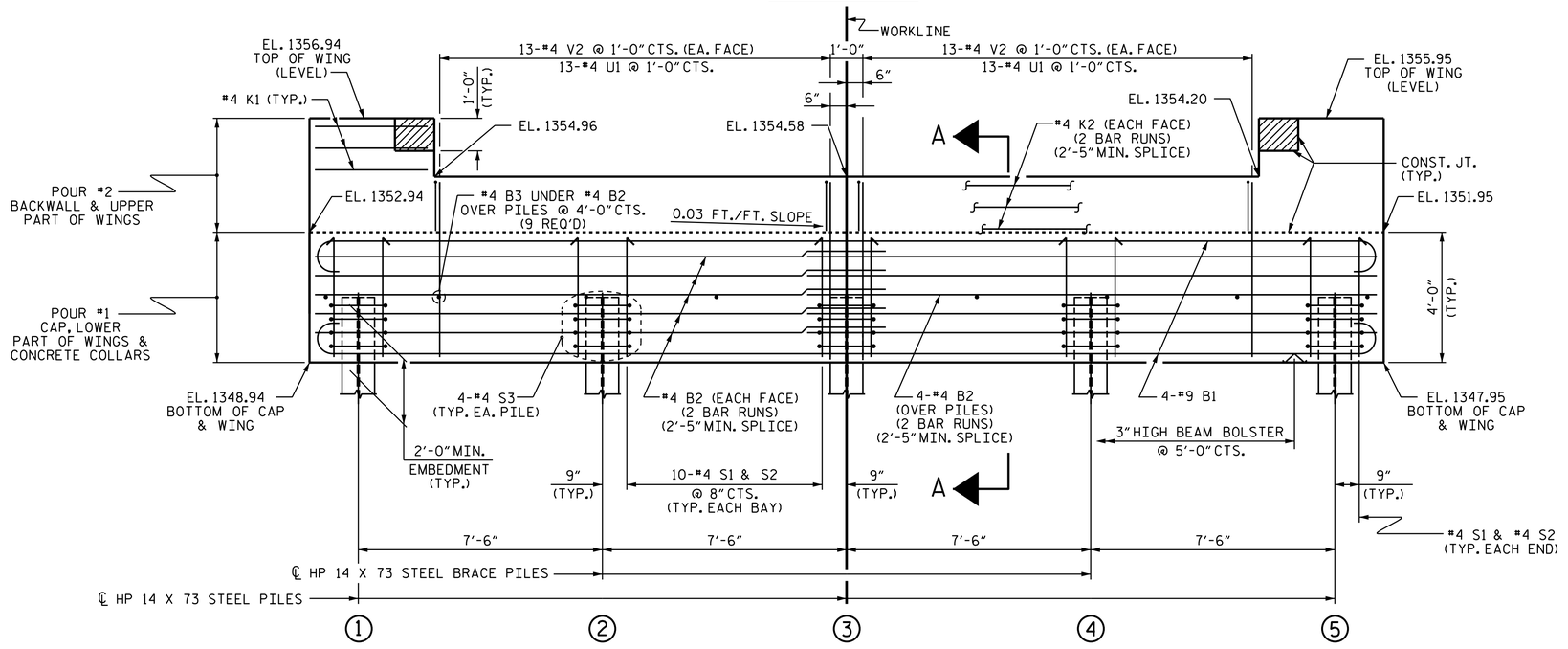

ELEVATION

WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 4 OF 4.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

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

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.

STREAM FACE OF END BENT CAP, ENDS OF CAP, AND EXPOSED FACES & TOPS OF BACKWALL AND WINGS SHALL BE STAINED LIGHT BROWN OR TAN. SEE SPECIAL PROVISIONS FOR APPLICATION OF BRIDGE COATING.

TOP OF PILE ELEVATIONS	
①	1350.91
②	1350.69
③	1350.46
④	1350.24
⑤	1350.01

PROJECT NO. B-5173
SURRY COUNTY
STATION: 17+22.00 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 1

NORTH CAROLINA PROFESSIONAL SEAL 17230 ENGINEER WAEL S. ARAFAT
DocuSigned by: Wael Arafat 413C12A32AB406...
12/21/2015

DRAWN BY : H. T. BARBOUR DATE : 5-22-15
CHECKED BY : V. X. NGUYEN DATE : 8-15
DESIGN ENGINEER OF RECORD: A. M. LEE DATE : 10-15

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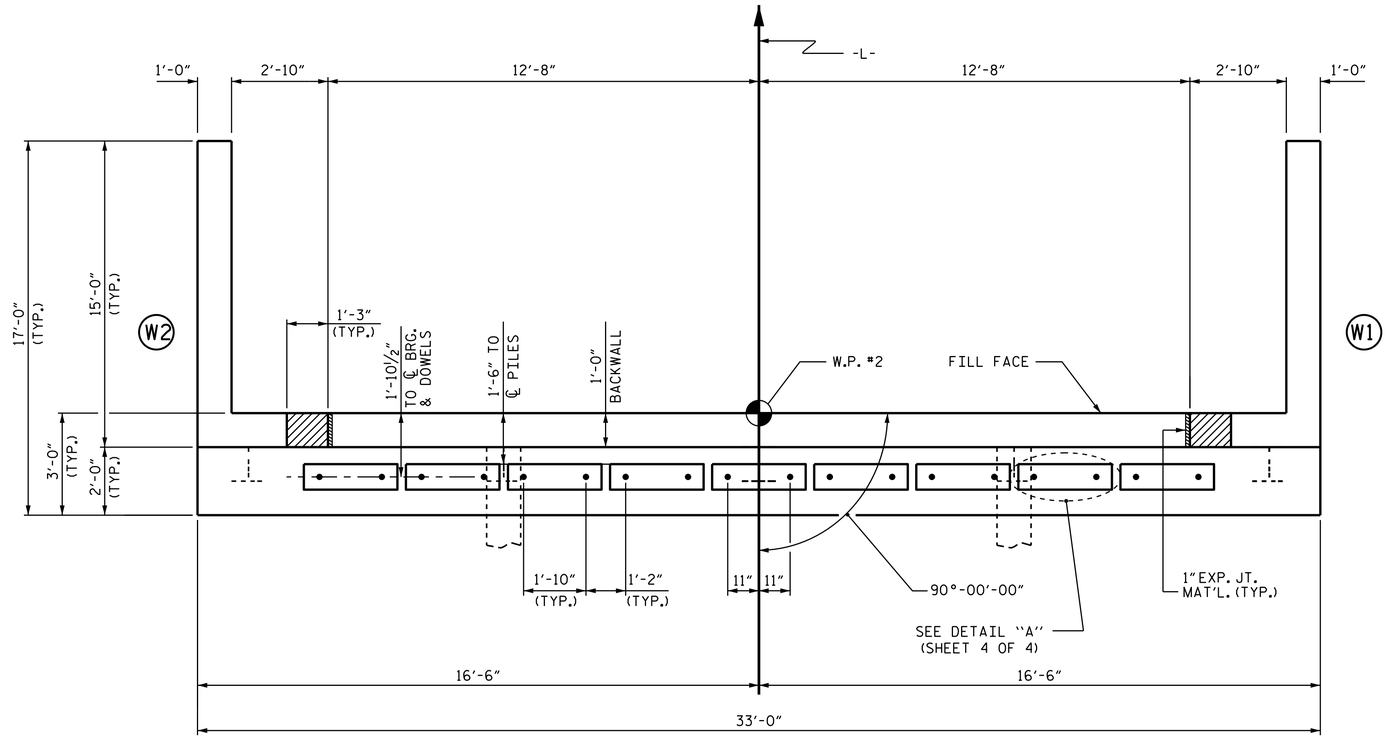

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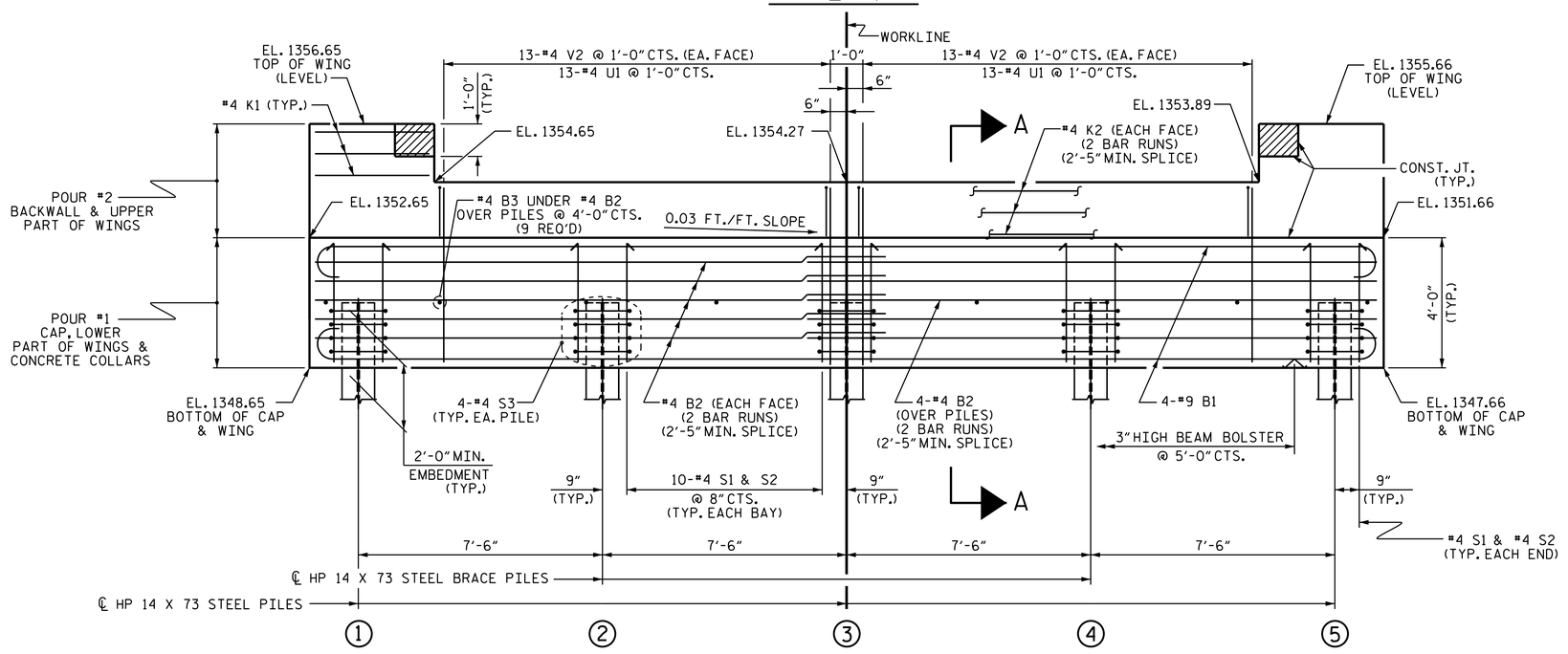

ELEVATION

WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 4 OF 4.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

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

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.

STREAM FACE OF END BENT CAP, ENDS OF CAP, AND EXPOSED FACES & TOPS OF BACKWALL AND WINGS SHALL BE STAINED LIGHT BROWN OR TAN. SEE SPECIAL PROVISIONS FOR APPLICATION OF BRIDGE COATING.

TOP OF PILE ELEVATIONS	
①	1350.62
②	1350.40
③	1350.17
④	1349.95
⑤	1349.72

PROJECT NO. B-5173

SURRY COUNTY

STATION: 17+22.00 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 2

NORTH CAROLINA PROFESSIONAL SEAL 17230 ENGINEER WAEL S. ARAFAT

DocuSigned by: Wael Arafat 4139C12A32AB406...
12/21/2015

DRAWN BY : H. T. BARBOUR DATE : 5-22-15
CHECKED BY : V. X. NGUYEN DATE : 8-15
DESIGN ENGINEER OF RECORD: A. M. LEE DATE : 10-15

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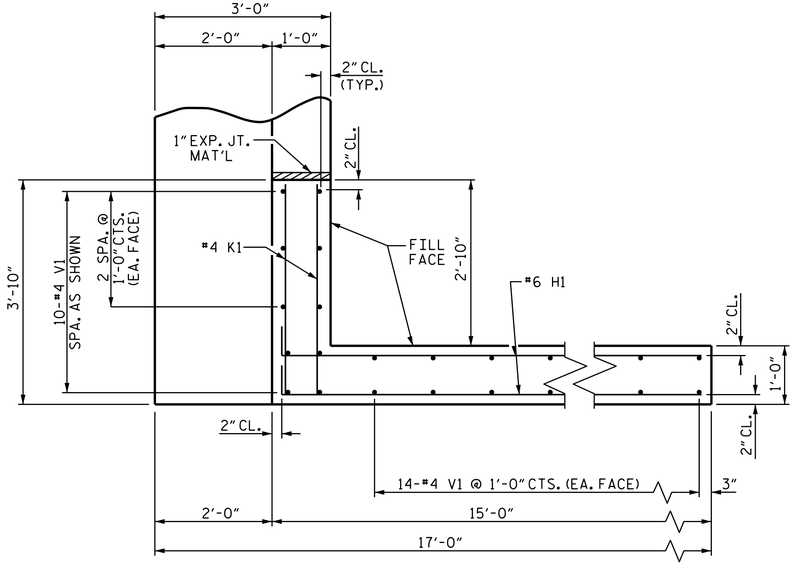
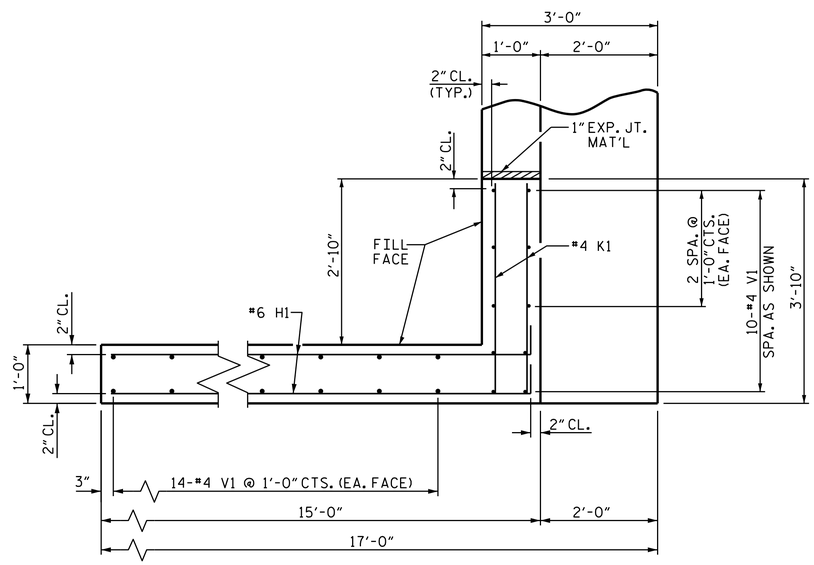


PLAN OF WING (W1)



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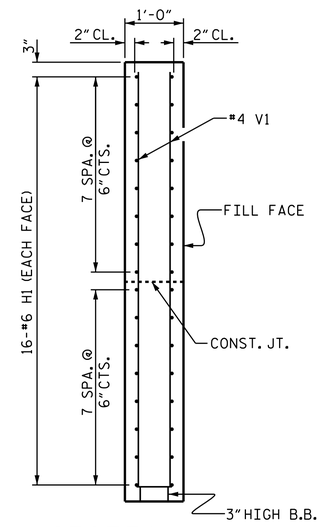
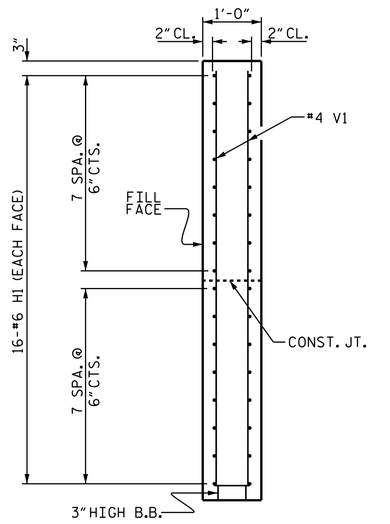


SECTION X-X

ELEVATION OF WING (W1)

ELEVATION OF WING (W2)



SECTION Y-Y

WING DETAILS

PROJECT NO. B-5173

SURRY COUNTY

STATION: 17+22.00 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT
WING DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 17230 ENGINEER WAEL S. ARAFAT

DocuSigned by: Wael Arafat 4139C12A32AB406...
12/21/2015

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2			4			18

DRAWN BY : H. T. BARBOUR DATE : 5-22-15
CHECKED BY : V. X. NGUYEN DATE : 8-15
DESIGN ENGINEER OF RECORD: A. M. LEE DATE : 10-15

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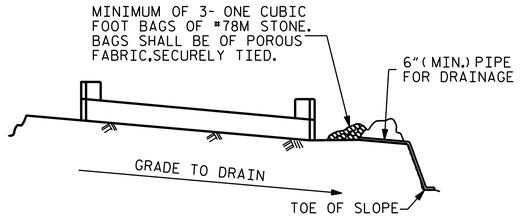
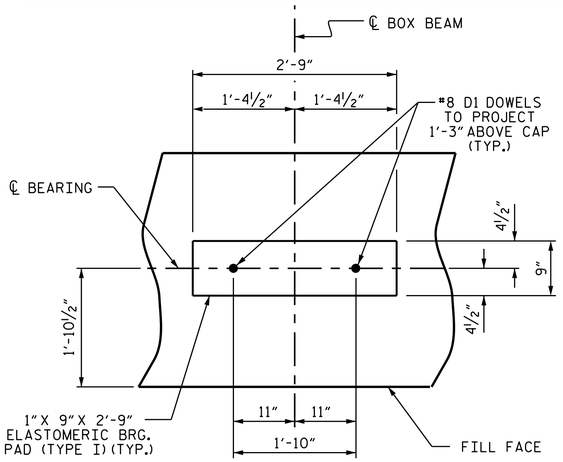


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

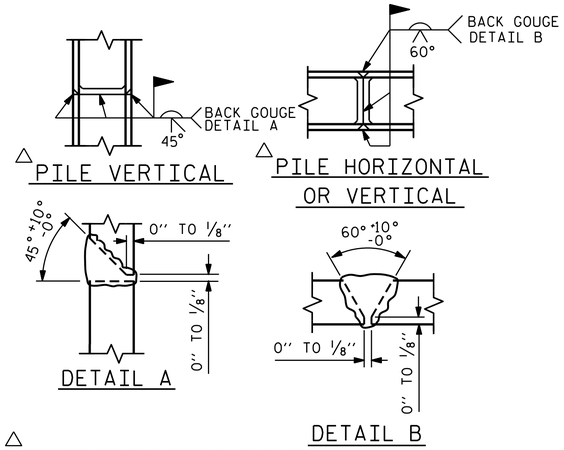
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

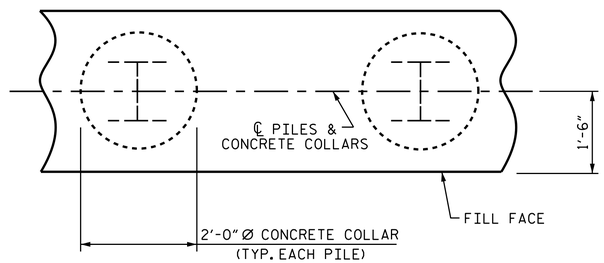


DETAIL "A"

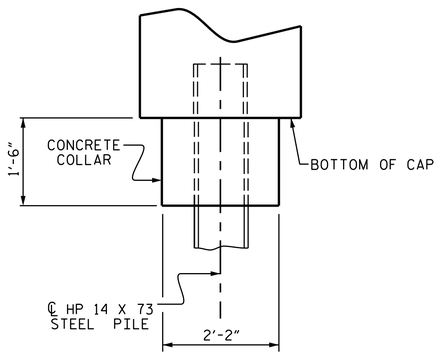
(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)



PILE SPLICE DETAILS



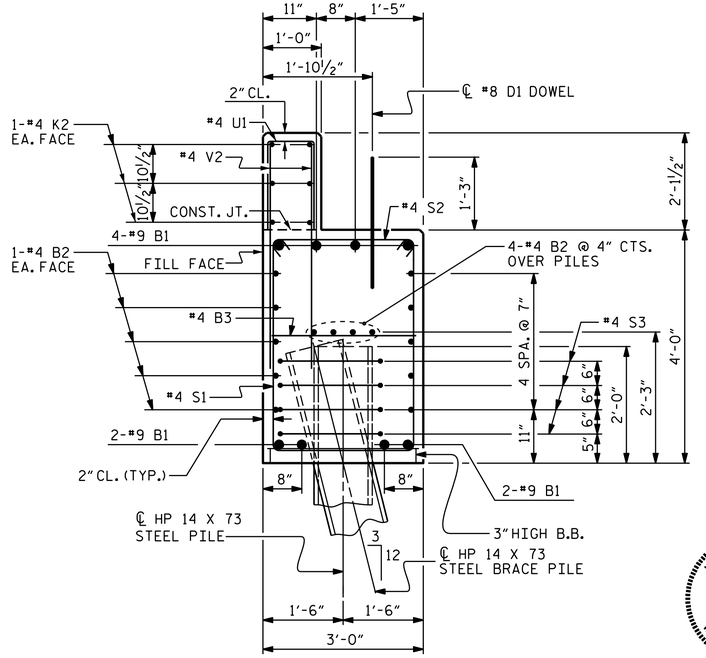
PLAN



ELEVATION

CORROSION PROTECTION FOR STEEL PILES DETAIL

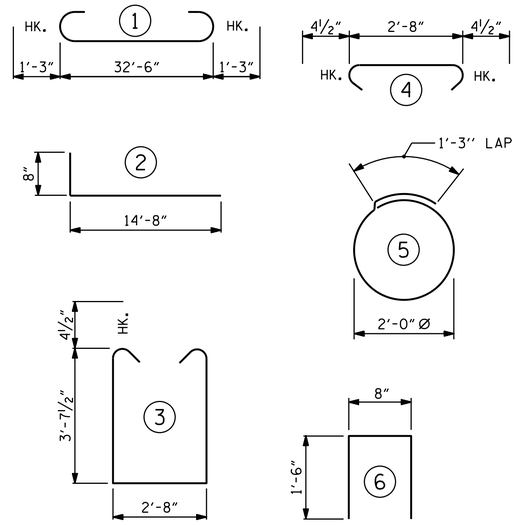
(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)



SECTION A-A

(CONCRETE COLLAR NOT SHOWN FOR CLARITY. SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL.")

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

END BENT No. 1	END BENT No. 2
HP 14 X 73 STEEL PILES	HP 14 X 73 STEEL PILES
NO: 5 LIN. FT.= 205	NO: 5 LIN. FT.= 135

BILL OF MATERIAL FOR ONE END BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	35'-0"	952
B2	28	#4	STR	17'-7"	329
B3	9	#4	STR	2'-8"	16
D1	18	#8	STR	2'-3"	108
H1	64	#6	2	15'-4"	1474
K1	12	#4	STR	3'-6"	28
K2	12	#4	STR	17'-7"	141
S1	42	#4	3	10'-8"	299
S2	42	#4	4	3'-5"	96
S3	20	#4	5	7'-7"	101
U1	26	#4	6	3'-8"	64
V1	76	#4	STR	7'-8"	389
V2	52	#4	STR	5'-9"	200

REINFORCING STEEL (FOR ONE END BENT) 4197 LBS.

CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)

POUR #1	CAP, LOWER PART OF WINGS & COLLARS	19.8 C.Y.
POUR #2	BACKWALL & UPPER PART OF WINGS	7.3 C.Y.
	TOTAL CLASS A CONCRETE	27.1

PROJECT NO. B-5173

SURRY COUNTY

STATION: 17+22.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 1 & 2 DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 17230 ENGINEER WAEL S. ARAFAT

DocuSigned by: Wael Arafat 4139C12A32AB406...
12/21/2015

DRAWN BY : H. T. BARBOUR DATE : 5-22-15
CHECKED BY : V. X. NGUYEN DATE : 8-15
DESIGN ENGINEER OF RECORD: A. M. LEE DATE : 10-15

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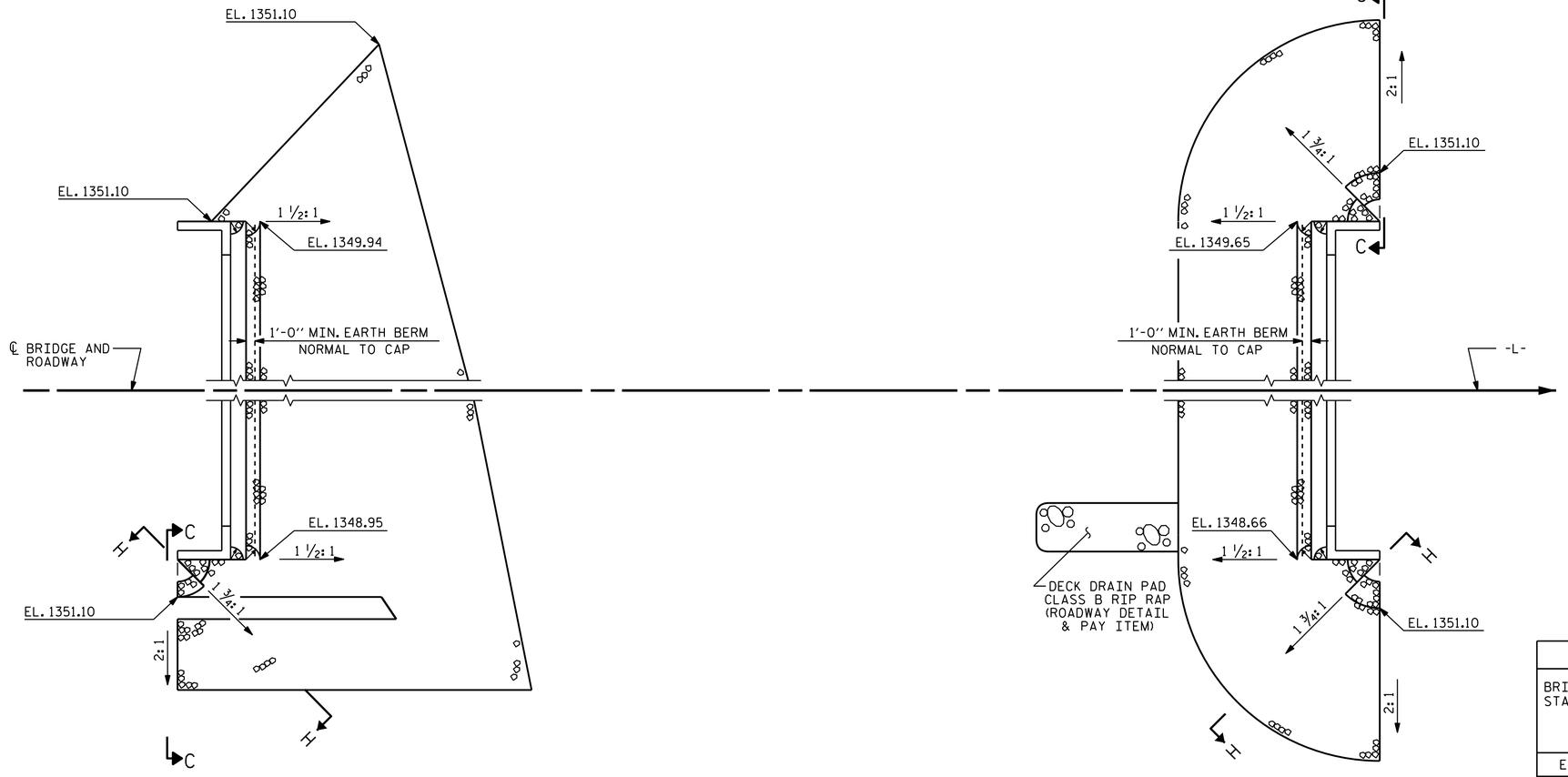
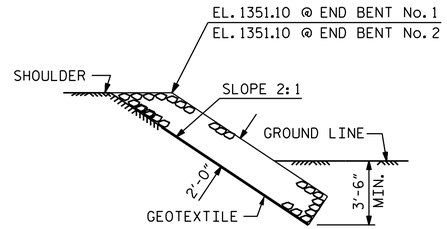


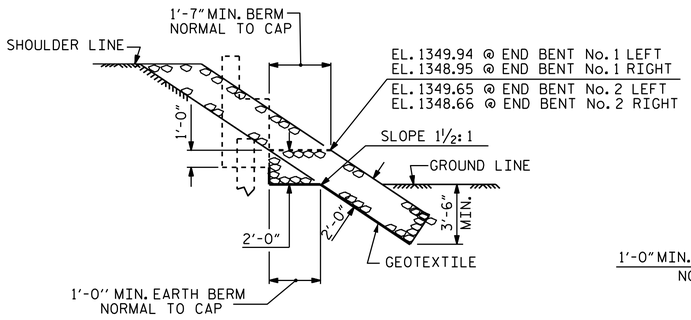
END BENT No. 1

END BENT No. 2

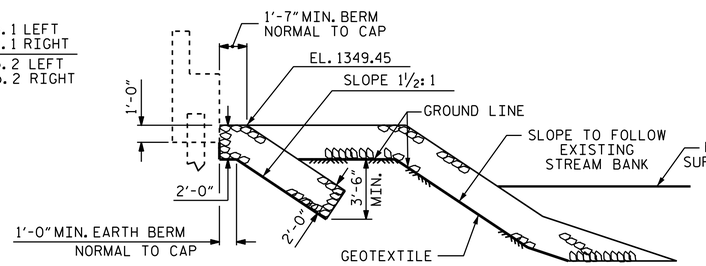
PLAN



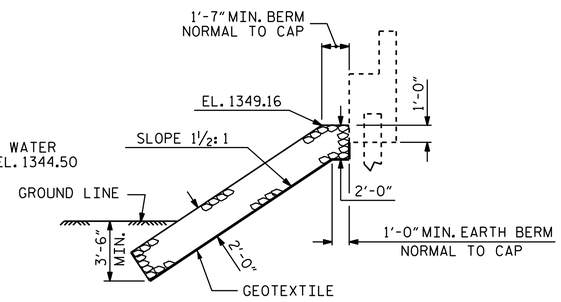
SECTION C-C



SECTION H-H



℄ SECTION
BERM RIP RAPPED
END BENT No. 1



℄ SECTION
BERM RIP RAPPED
END BENT No. 2

ESTIMATED QUANTITIES

BRIDGE @ STA. 17+22.00-L-	NATURAL STONE RIP RAP CLASS 2 (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	218	242
END BENT 2	136	152
TOTAL	354	394

PROJECT NO. B-5173

SURRY COUNTY

STATION: 17+22.00-L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

RIP RAP DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 17230 ENGINEER WAEL S. ARAFAT

DocuSigned by: Wael Arafat 4139C12A32AB406...
12/21/2015

ASSEMBLED BY : H. T. BARBOUR	DATE : 8-12-15
CHECKED BY : V. X. NGUYEN	DATE : 9-15
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

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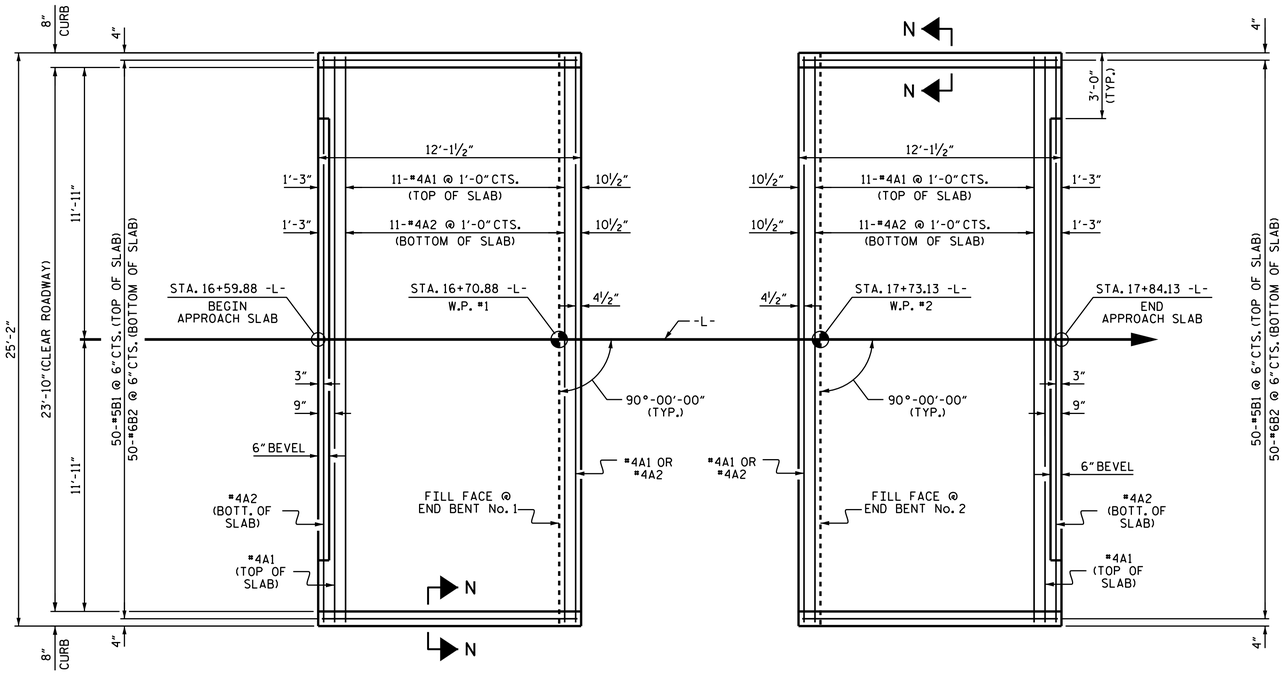
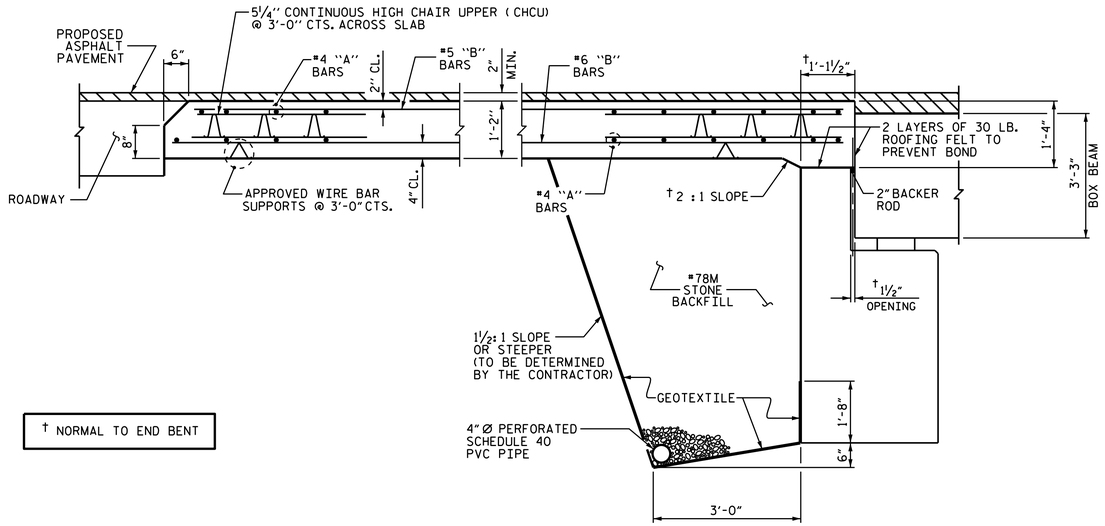


PLAN @ END BENT No. 1 PLAN @ END BENT No. 2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



† NORMAL TO END BENT

SECTION THRU SLAB

NOTES

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

GEOTEXTILE SHALL BE TYPE 1 IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

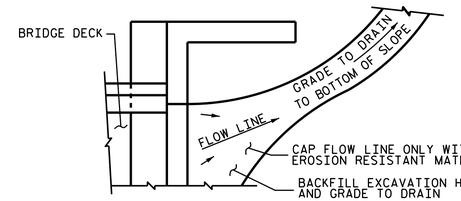
#78M STONE BACKFILL (CLASS V SELECT MATERIAL) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

#78M STONE BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

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

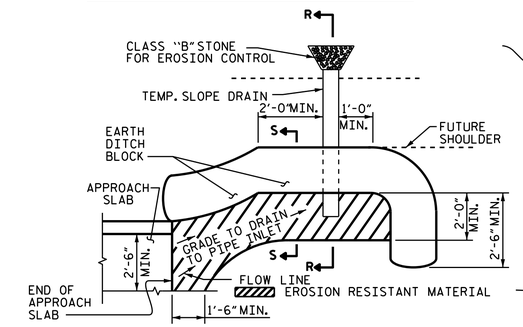
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

APPROACH SLAB GROOVING IS NOT REQUIRED.

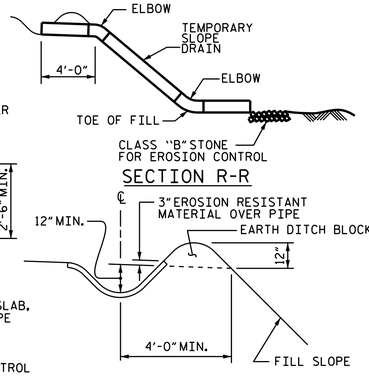


NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL



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

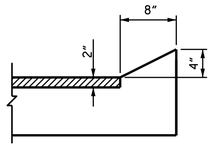


PLAN VIEW

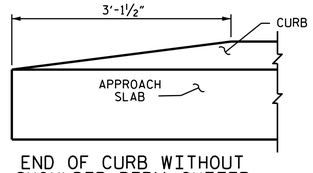
SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



SECTION N-N



END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS

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

BILL OF MATERIAL

APPROACH SLAB AT EB No. 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	13	#4	STR	24'-10"	216
A2	13	#4	STR	24'-10"	216
* B1	50	#5	STR	11'-4"	591
B2	50	#6	STR	11'-9"	882
REINFORCING STEEL				LBS.	1098
* EPOXY COATED REINFORCING STEEL				LBS.	807
CLASS AA CONCRETE				C. Y.	13.5

APPROACH SLAB AT EB No. 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	13	#4	STR	24'-10"	216
A2	13	#4	STR	24'-10"	216
* B1	50	#5	STR	11'-4"	591
B2	50	#6	STR	11'-9"	882
REINFORCING STEEL				LBS.	1098
* EPOXY COATED REINFORCING STEEL				LBS.	807
CLASS AA CONCRETE				C. Y.	13.5

PROJECT NO. B-5173

SURRY COUNTY

STATION: 17+22.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE BOX BEAM UNIT (SUB-REGIONAL TIER) 90° SKEW

NORTH CAROLINA PROFESSIONAL SEAL 17230 ENGINEER WAEL S. ARAFAT

DocuSigned by: Wael Arafat 4139C12A32AB406... 12/21/2015

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DRAWN BY : H. T. BARBOUR DATE : 8-21-15
CHECKED BY : V. X. NGUYEN DATE : 8-15
DESIGN ENGINEER OF RECORD: A. M. LEE DATE : 8-15

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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

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
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