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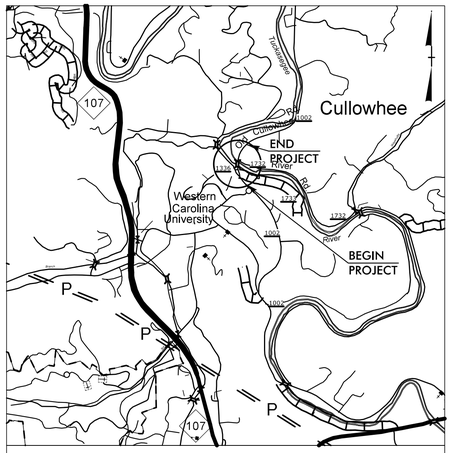
09/08/99

TIP PROJECT: B–4159

CONTRACT: C203498

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B–4159		64

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33507.1.1	BRZ–1002(13)	PE
33507.3.1	BRZ–1002(13)	ROW & UTIL.
33507.2.FD1	BRZ–1002(13)	CONST.



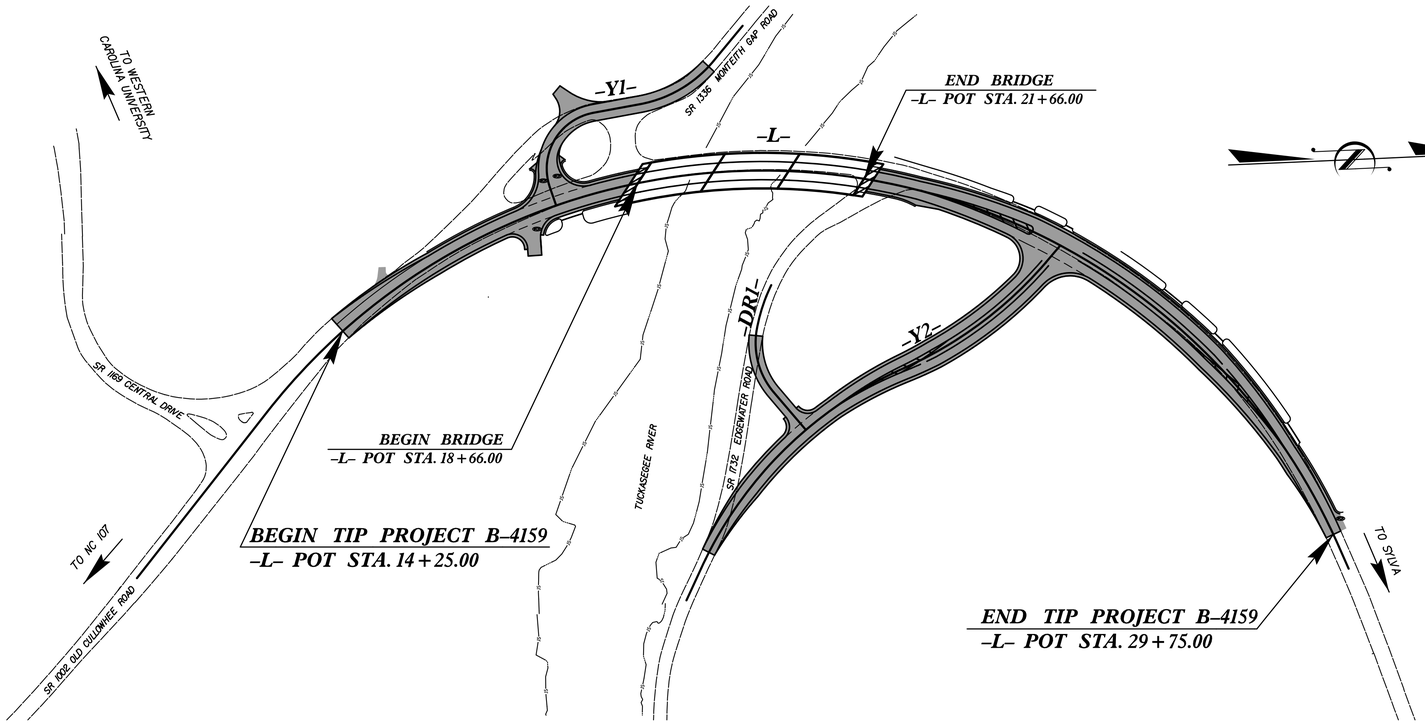
VICINITY MAP SHOWING LOCATION OF PROJECT B–4159

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

JACKSON COUNTY

LOCATION: BRIDGE NO. 108 OVER THE TUCKASEGEE RIVER ON SR 1002 (OLD CULLOWHEE RD.)

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



THIS PROJECT WAS DESIGNED USING THE SUB REGIONAL TIER GUIDELINES FOR BRIDGE PROJECTS

STRUCTURES

THERE IS NO CONTROL OF ACCESS ON THIS PROJECT
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD

DESIGN DATA

ADT 2012 = 9,800
ADT 2032 = 15,400
DHV = 10 %
D = 60 %
T = 5 % *
V = 40 MPH
* TTST 2% DUAL 3%
FUNC CLASS =
RURAL COLLECTOR

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B–4159 = 0.237 MILES
LENGTH OF STRUCTURE TIP PROJECT B–4159 = 0.057 MILES
TOTAL LENGTH OF TIP PROJECT B–4159 = 0.294 MILES

Prepared In the Office of:
ICA Engineering
5121 Kingdom Way, Suite 100 Raleigh, NC 27607
NC License No: P-0258
for the
NCDOT STRUCTURES MANAGEMENT UNIT

2012 STANDARD SPECIFICATIONS

LETTING DATE:
DECEMBER 15, 2015

NORTH CAROLINA PROFESSIONAL SEAL 14408 ENGINEER THOMAS E. TALLMAN

DocuSigned by: Thomas E. Tallman 10/15/2015
E9B789620EE24D5...

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

10/14/2015
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ICA Engineering

F.A. PROJECT NO.: BRZ-1002(13)

HORIZONTAL CURVE DATA -L-

P.I. = 26+65.65 -L-
△ = 118°08'55.9" (RT)
D = 6°53'41.3"
L = 1,713.59'
T = 1,387.09'
R = 831.00'

PLAN

PILES NOT SHOWN FOR CLARITY
ALL BENTS ARE PARALLEL

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

SHEET 1 OF 5 REPLACES BRIDGE NO. 108

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE OVER
TUCKASEGEE RIVER ON SR 1002
BETWEEN SR 1336 AND SR 1732

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			64

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5121 Kingston Way, Suite 100 Raleigh, NC 27607
NC License No: F-0258

NORTH CAROLINA PROFESSIONAL SEAL 14408 ENGINEER THOMAS E. TALLMAN
Thomas E. Tallman 10/15/2015

DRAWN BY: D. H. CARTER DATE: SEP 2015
CHECKED BY: K. M. MOBLEY DATE: SEP 2015
DESIGN ENGINEER OF RECORD: T. E. TALLMAN DATE: OCT 2015

10/14/2015
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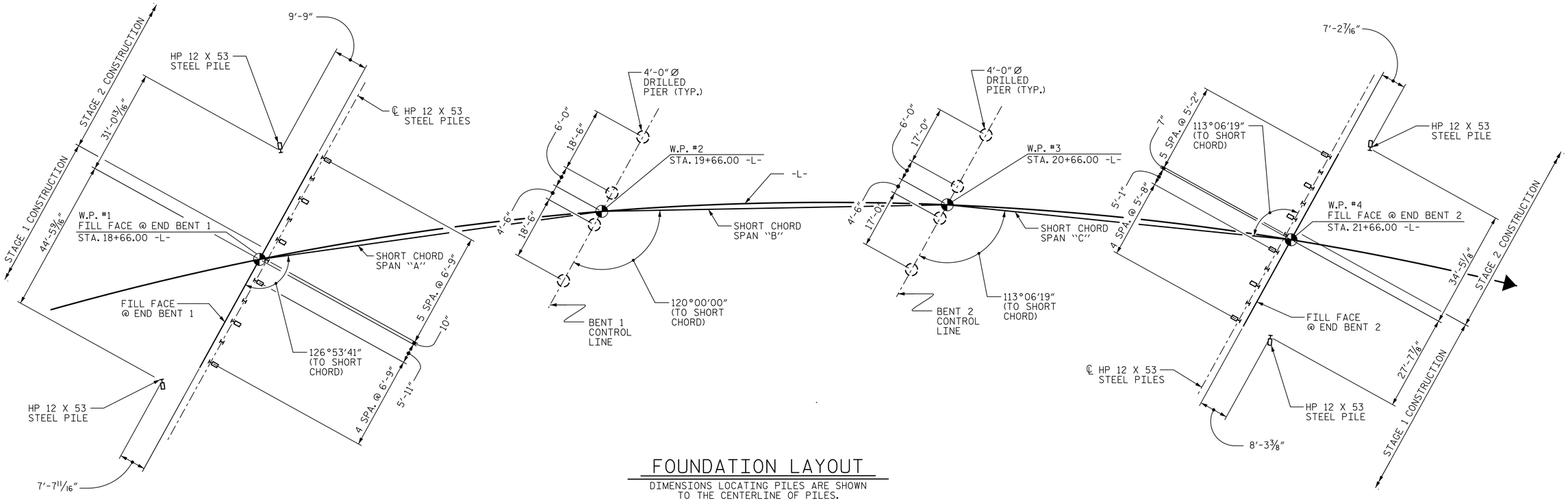
ICA Engineering



FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO THE CENTERLINE OF PILES.

LEGEND:

- HP 12 X 53 STEEL PILE (VERTICAL)
- HP 12 X 53 STEEL PILE (BATTERED 3:12)

NOTES

FOR PILES, SEE GEOTECHNICAL SPECIAL PROVISIONS AND SECTION 450 OF THE STANDARD SPECIFICATIONS.

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

DRIVE PILES AT END BENT NO. 1 TO A REQUIRED DRIVING RESISTANCE OF 158 TONS PER PILE.

FOR DRILLED PIERS, SEE GEOTECHNICAL SPECIAL PROVISIONS AND SECTION 411 OF THE STANDARD SPECIFICATIONS.

INSTALL DRILLED PIERS AT BENT NO. 1 TO A TIP ELEVATION NO HIGHER THAN 2034.0 FT (LT), 2024.0 FT (LT/CT, CT/RT AND RT), AND WITH THE REQUIRED TIP RESISTANCE.

DRILLED PIERS AT BENT NO. 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 524.0 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 65.0 TSF.

PERMANENT STEEL CASING MAY BE REQUIRED FOR DRILLED PIERS AT BENT NO. 1. IF REQUIRED, DO NOT EXTEND PERMANENT CASINGS BELOW ELEVATION 2041.0 FT (LT), 2036.0 FT (LT/CT), 2034.0 FT (CT/RT), AND 2031.0 FT (RT), WITHOUT PRIOR APPROVAL FROM THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR PERMANENT STEEL CASING.

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 1 IS ELEVATION 2034.0 FT (LT), 2035.0 FT (LT/CT), 2033.0 FT (CT/RT), AND 2030 FT (RT). THE SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

DRILLED PIERS AT BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 475.0 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 65.0 TSF.

INSTALL DRILLED PIERS AT BENT NO. 2 TO A TIP ELEVATION NO HIGHER THAN 2035.0 FT (LT), 2031.0 FT (LT/CT, CT/RT AND RT), AND WITH THE REQUIRED TIP RESISTANCE.

PERMANENT STEEL CASING MAY BE REQUIRED FOR DRILLED PIERS AT BENT NO. 2. IF REQUIRED, DO NOT EXTEND PERMANENT CASINGS BELOW ELEVATION 2043.0 FT (LT), 2042.0 FT (LT/CT), 2040.0 FT (CT/RT), AND 2039.0 FT (RT), WITHOUT PRIOR APPROVAL FROM THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR PERMANENT STEEL CASING.

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 2 IS ELEVATION 2042.0 FT (LT), 2041.0 FT (LT/CT), 2039.0 FT (CT/RT), AND 2038.0 FT (RT). THE SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

CSL TUBES ARE REQUIRED AND CSL TESTING MAY BE REQUIRED FOR THE DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR CSL TESTING. FOR CSL TESTING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 90 TONS PER PILE.

DRIVE PILES AT END BENT NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 150 TONS PER PILE.

STEEL H-PILE POINTS ARE REQUIRED FOR STEEL H-PILES AT END BENT NOS. 1 AND 2. FOR STEEL PILE POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

IF NECESSARY, PREDRILL PILE LOCATIONS AT END BENT NOS. 1 AND 2 TO AN ELEVATION NO LOWER THAN 2050 FT WITH EQUIPMENT THAT WILL RESULT IN A MAXIMUM PREDRILLING DIAMETER OF 18". FOR PREDRILLING FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

10/14/2015
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DRAWN BY : D. H. CARTER DATE : OCT 2015
CHECKED BY : K. M. MOBLEY/M. T. NEIHEISEL DATE : OCT 2015
DESIGN ENGINEER OF RECORD: T. E. TALLMAN DATE : OCT 2015

ICA Engineering
5121 Kingdom Way, Suite 100 Raleigh, NC 27607
NC License No: F-0258

NORTH CAROLINA PROFESSIONAL SEAL 14408 ENGINEER THOMAS E. TALLMAN
Thomas E. Tallman
E9B789620EE2405... 10/15/2015

PROJECT NO. B-4159
JACKSON COUNTY
STATION: 20+16.00 -L-

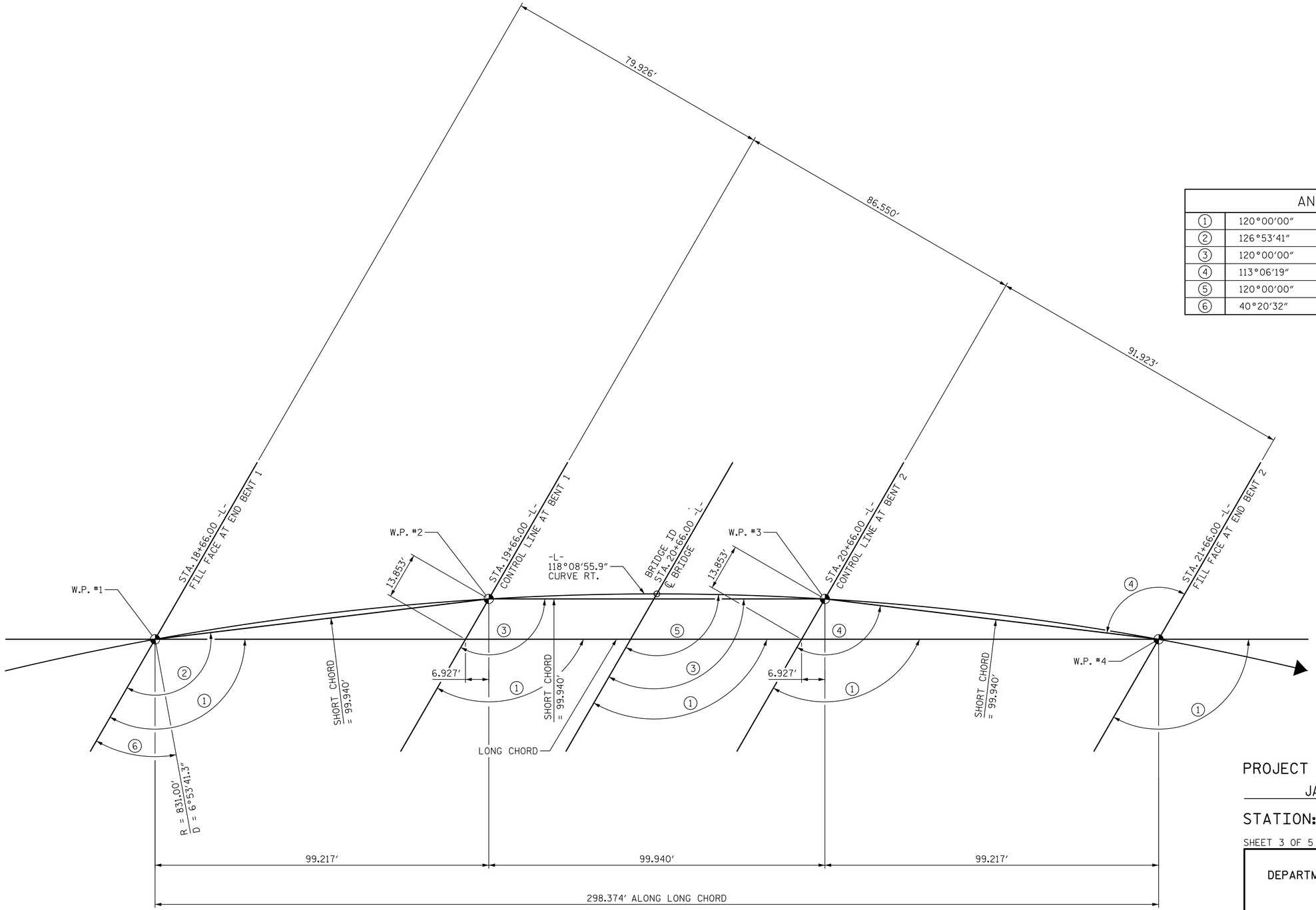
SHEET 2 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE OVER TUCKASEGEE RIVER ON SR 1002 BETWEEN SR 1336 AND SR 1732

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
1			3			TOTAL SHEETS
2			4			64



ANGLES		
①	120°00'00"	(TO LONG CHORD)
②	126°53'41"	(TO SHORT CHORD)
③	120°00'00"	(TO SHORT CHORD)
④	113°06'19"	(TO SHORT CHORD)
⑤	120°00'00"	(TANGENT TO CURVE)
⑥	40°20'32"	

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

SHEET 3 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

LONG CHORD LAYOUT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS
2			4			64

DRAWN BY : D. H. CARTER DATE : SEP 2015
CHECKED BY : K. M. MOBLEY DATE : SEP 2015
DESIGN ENGINEER OF RECORD: T. E. TALLMAN DATE : OCT 2015

LONG CHORD LAYOUT

NOTE: ALL BENTS ARE PARALLEL

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NORTH CAROLINA PROFESSIONAL SEAL 14408 ENGINEER THOMAS E. TALLMAN

Thomas E. Tallman
E9B789620EE24D5... 10/15/2015

10/14/2015
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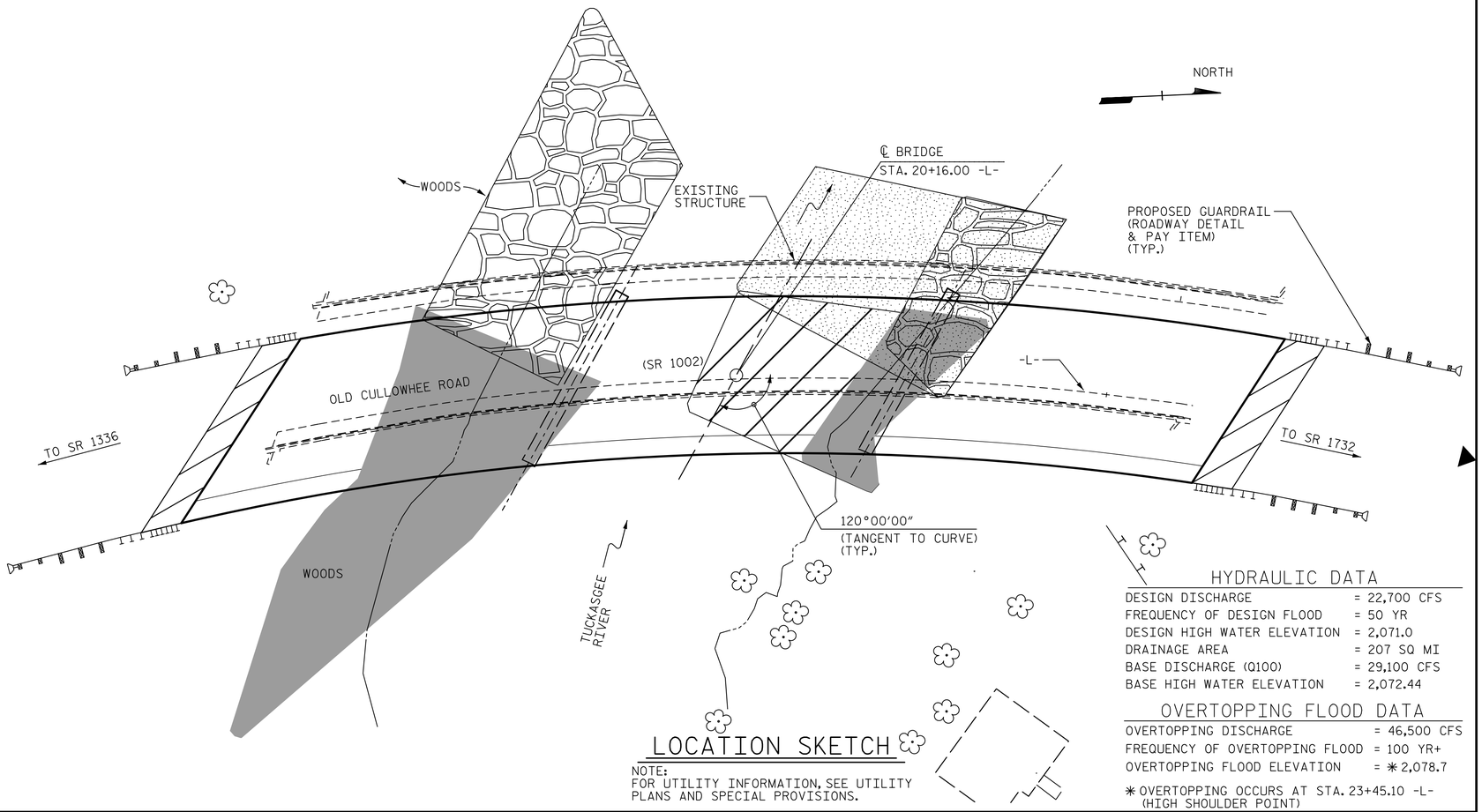
ICA Engineering

B.M.#2 : TVA MONUMENT "BAR 4" ON WINGWALL AT NE END OF BRIDGE, 5.78' RIGHT OF STA. 21+50.00 -L-, EL. 2125.37



LOCATION SKETCH

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

HYDRAULIC DATA

DESIGN DISCHARGE	= 22,700 CFS
FREQUENCY OF DESIGN FLOOD	= 50 YR
DESIGN HIGH WATER ELEVATION	= 2,071.0
DRAINAGE AREA	= 207 SQ MI
BASE DISCHARGE (Q100)	= 29,100 CFS
BASE HIGH WATER ELEVATION	= 2,072.44

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	= 46,500 CFS
FREQUENCY OF OVERTOPPING FLOOD	= 100 YR+
OVERTOPPING FLOOD ELEVATION	= ✳ 2,078.7

✳ OVERTOPPING OCCURS AT STA. 23+45.10 -L- (HIGH SHOULDER POINT)

TEMP. WORK PAD PHASE 1A

TEMP. WORK PAD PHASE 1B

TEMP. WORK PAD PHASE 2A

TEMP. WORK PAD PHASE 2B

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE OVER
TUCKASEGEE RIVER ON SR 1002
BETWEEN SR 1336 AND SR 1732

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS
2			4			64

DRAWN BY : D. H. CARTER DATE : SEP 2015
CHECKED BY : K. M. MOBLEY DATE : SEP 2015
DESIGN ENGINEER OF RECORD: T. E. TALLMAN DATE : OCT 2015

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NORTH CAROLINA PROFESSIONAL SEAL 14408 ENGINEER THOMAS E. TALLMAN
Thomas E. Tallman 10/15/2015

10/14/2015
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NOTES:

ASSUMED LIVE LOAD= HL-93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

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

AFTER SERVING AS A TEMPORARY STRUCTURE, THE EXISTING STRUCTURE CONSISTING OF 4 SPANS @ 70'-0" WITH REINFORCED CONCRETE DECK AND 3" ASPHALT WEARING SURFACE; ON STEEL-I BEAMS WITH A CLEAR ROADWAY WIDTH OF 30.0 FT; ON REINFORCED CONCRETE SPILL THROUGH ABUTMENTS AND REINFORCED CONCRETE POST AND WEB BENTS LOCATED AT THE PROPOSED STRUCTURE SITE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

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.

THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THE 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.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON SHEET S-1 SHALL BE EXCAVATED FOR A DISTANCE OF 70 FT AT END BENT 1 AND 60 FT AT END BENT 2 EACH SIDE OF CENTERLINE OF 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.

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.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR PLACING LOAD ON STRUCTURE MEMBERS, SEE SPECIAL PROVISIONS.

FOR VERTICAL ARCHITECTURAL CONCRETE SURFACE TREATMENT OF THE CONCRETE PARAPET AND END BENTS, SEE SPECIAL PROVISIONS.

FOR ELECTRICAL CONDUIT SYSTEM, SEE SPECIAL PROVISIONS.

FOR APPLICATION OF BRIDGE COATING, SEE SPECIAL PROVISIONS.

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

AT THE CONTRACTOR'S OPTION, AND UPON REMOVAL OF THE CAUSEWAY, THE CLASS II RIP RAP USED IN THE CAUSEWAY MAY BE PLACED AS RIP RAP SLOPE PROTECTION. SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS AT STATION 20+16.00 -L-.

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.

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

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

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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 20+16.00."

FOR INSTALLATION AND ATTACHMENT OF 16" WATER MAIN, SEE SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL

	CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS	UNCLASSIFIED STRUCTURE EXCAVATION	REMOVAL OF EXISTING STRUCTURE AT STATION 20+16.00 -L-	4'-0" DIA. DRILLED PIER IN SOIL	4'-0" DIA. DRILLED PIER NOT IN SOIL	PERMANENT STEEL CASING FOR 4'-0" DIA. DRILLED PIER	CSL TESTING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	54" PRESTRESSED CONCRETE GIRDERS		HP 12 X 53 STEEL PILES		STEEL PILE POINTS	PREDRILLING FOR PILES	RESTRAINED JOINT WATER PIPE INSTALLED ON BRIDGE
	LUMP SUM	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	EA.	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	LBS.	NO.	LIN. FT.	NO.	LIN. FT.	NO.	LIN. FT.	LUMP SUM
SUPERSTRUCTURE								14,751	11,427					18	1,756.40					
END BENT 1										74.3		8,185				13	911	13	249	
BENT 1				59.0	53.0	76.0				67.8		27,147	4,291							
BENT 2				53.0	37.0	54.0				64.7		20,369	3,711							
END BENT 2										60.4		6,354				13	511	13	234	
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	112.0	90.0	130.0	1	14,751	11,427	267.2	LUMP SUM	62,055	8,002	18	1,756.40	26	1,422	26	483	LUMP SUM

TOTAL BILL OF MATERIAL

	2 BAR METAL RAIL	1'-3½" X 2'-6" CONCRETE PARAPET	ARCHITECTURAL CONCRETE SURFACE TREATMENT	APPLICATION OF BRIDGE COATING	ELECTRICAL CONDUIT SYSTEM AT STATION 20+16.00 -L-	RIP RAP CLASS II	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	FOAM JOINT SEALS
	LIN. FT.	LIN. FT.	SQ. FT.	LUMP SUM	LUMP SUM	TONS	SQ. YDS.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE	562.70	595.27	2,129.4						
END BENT 1			593.7			183	204		
BENT 1									
BENT 2									
END BENT 2			477.4			117	130		
TOTAL	562.70	595.27	3,200.5	LUMP SUM	LUMP SUM	300	334	LUMP SUM	LUMP SUM

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

SHEET 5 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE OVER
TUCKASEGEE RIVER ON SR 1002
BETWEEN SR 1336 AND SR 1732

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			64

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NORTH CAROLINA PROFESSIONAL SEAL 14408 ENGINEER THOMAS E. TALLMAN

Thomas E. Tallman 10/15/2015

DRAWN BY : D. H. CARTER DATE : SEP 2015
CHECKED BY : K. M. MOBLEY/T. E. TALLMAN DATE : SEP 2015
DESIGN ENGINEER OF RECORD: T. E. TALLMAN DATE : OCT 2015

10/14/2015
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ICA Engineering

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 × RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE						COMMENT NUMBER
							LIVE-LOAD FACTORS (γ_{LL})	MOMENT					SHEAR						MOMENT						
								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)	36.000	⟨1⟩	**1.24**	---	1.75	0.783	1.75	B	I	49.661	1.115	1.27	A	I	10.321	0.80	0.783	**1.24**	B	I	**49.661**	
		HL-93 (OPERATING)	36.000		1.68	---	1.35	0.783	2.27	B	I	49.661	1.115	1.68	A	I	10.321	---	---	---	---	---	---	
		HS-20 (INVENTORY)	36.000	⟨2⟩	**1.73**	62.280	1.75	0.783	2.44	B	I	49.661	1.115	1.73	A	I	10.321	0.80	0.783	**1.73**	B	I	**49.661**	
		HS-20 (OPERATING)	36.000		2.27	81.720	1.35	0.783	3.17	B	I	49.661	1.115	2.27	A	I	10.321	---	---	---	---	---	---	
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		4.12	55.620	1.40	0.783	7.26	B	I	49.661	1.115	5.51	A	I	10.321	0.80	0.783	4.12	B	I	49.661	
		SNGARBS2	20.000		2.98	59.600	1.40	0.783	5.25	B	I	49.661	1.115	3.83	A	I	10.321	0.80	0.783	2.98	B	I	49.661	
		SNAGRIS2	22.000		2.79	61.380	1.40	0.783	4.91	B	I	49.661	1.115	3.53	A	I	10.321	0.80	0.783	2.79	B	I	49.661	
		SNCOTTS3	27.250		2.05	55.863	1.40	0.783	3.61	B	I	49.661	1.115	2.69	A	I	10.321	0.80	0.783	2.05	B	I	49.661	
		SNAGGRS4	34.925		1.68	58.674	1.40	0.783	2.95	B	I	49.661	1.115	2.18	A	I	10.321	0.80	0.783	1.68	B	I	49.661	
		SNS5A	35.550		1.64	58.302	1.40	0.783	2.89	B	I	49.661	1.115	2.19	A	I	10.321	0.80	0.783	1.64	B	I	49.661	
		SNS6A	39.950		1.49	59.526	1.40	0.783	2.63	B	I	49.661	1.115	1.97	A	I	10.321	0.80	0.783	1.49	B	I	49.661	
		SNS7B	42.000		1.42	59.640	1.40	0.783	2.50	B	I	49.661	1.115	1.92	A	I	10.321	0.80	0.783	1.42	B	I	49.661	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.81	59.730	1.40	0.783	3.20	B	I	49.661	1.115	2.38	A	I	10.321	0.80	0.783	1.81	B	I	49.661	
		TNT4A	33.075		1.82	60.197	1.40	0.783	3.21	B	I	49.661	1.115	2.33	A	I	10.321	0.80	0.783	1.82	B	I	49.661	
		TNT6A	41.600		1.47	61.152	1.40	0.783	2.60	B	I	49.661	1.115	2.02	A	I	10.321	0.80	0.783	1.47	B	I	49.661	
		TNT7A	42.000		1.47	61.740	1.40	0.783	2.60	B	I	49.661	1.115	1.98	A	I	10.321	0.80	0.783	1.47	B	I	49.661	
		TNT7B	42.000		1.51	63.420	1.40	0.783	2.66	B	I	49.661	1.115	1.88	A	I	10.321	0.80	0.783	1.51	B	I	49.661	
		TNAGRIT4	43.000		1.45	62.350	1.40	0.783	2.55	B	I	49.661	1.115	1.83	A	I	10.321	0.80	0.783	1.45	B	I	49.661	
		TNAGT5A	45.000		1.37	61.650	1.40	0.783	2.42	B	I	49.661	1.115	1.79	A	I	10.321	0.80	0.783	1.37	B	I	49.661	
		TNAGT5B	45.000	⟨3⟩	**1.36**	61.200	1.40	0.783	2.40	B	I	49.661	1.115	1.73	A	I	10.321	0.80	0.783	**1.36**	B	I	**49.661**	

LOAD FACTORS:

	LIMIT STATE	γ_{DC}	γ_{DW}
DESIGN LOAD RATING FACTORS	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)

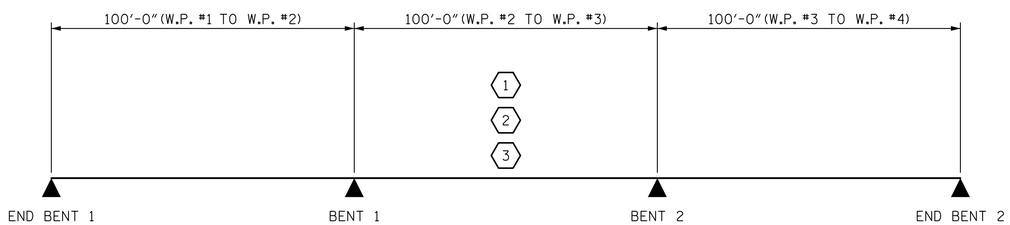
⟨2⟩ DESIGN LOAD RATING (HS-20)

⟨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-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

SHEET 1 OF 1

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

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

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

SHEET NO. S-6

TOTAL SHEETS 64

STD. NO. LRFR1

ASSEMBLED BY : D. H. CARTER DATE : SEP 2015
CHECKED BY : M. T. NEIHEISEL DATE : SEP 2015
DRAWN BY : MAA 1/08
CHECKED BY : GM/DI 2/08
REV. 11/12/08RR MAA/GM
REV. 10/1/11 MAA/GM

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5121 Kingdom Way, Suite 100 Raleigh, NC 27607
NC License No: F-0258

NORTH CAROLINA PROFESSIONAL SEAL 14408 ENGINEER THOMAS E. TALLMAN
Thomas E. Tallman 10/15/2015

10/14/2015
ICA Engineering
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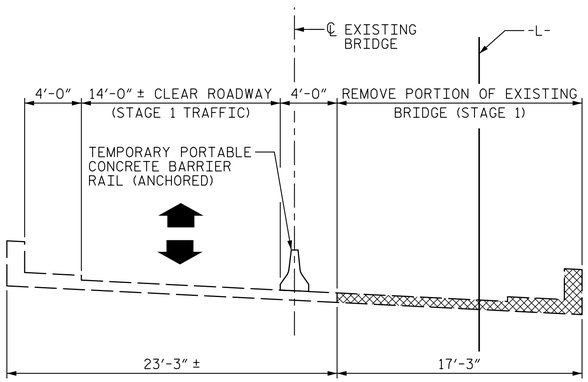
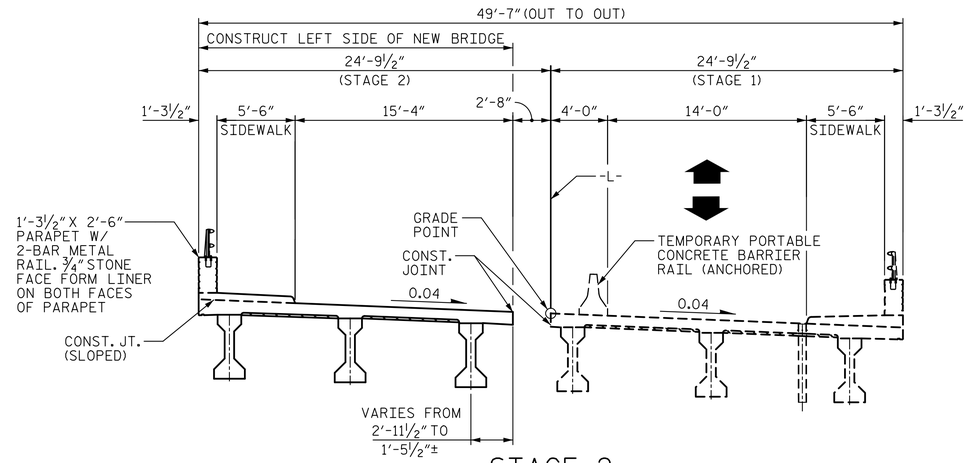
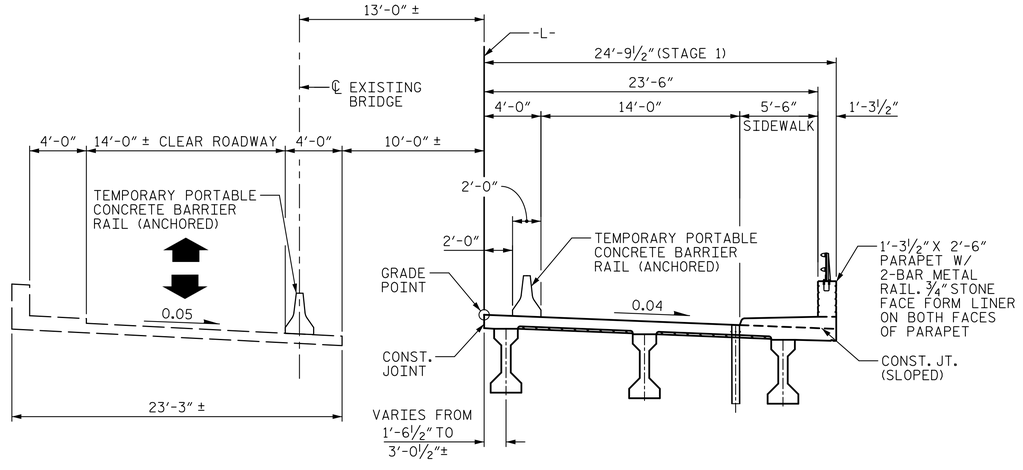


EXISTING BRIDGE SECTION



STAGE 2

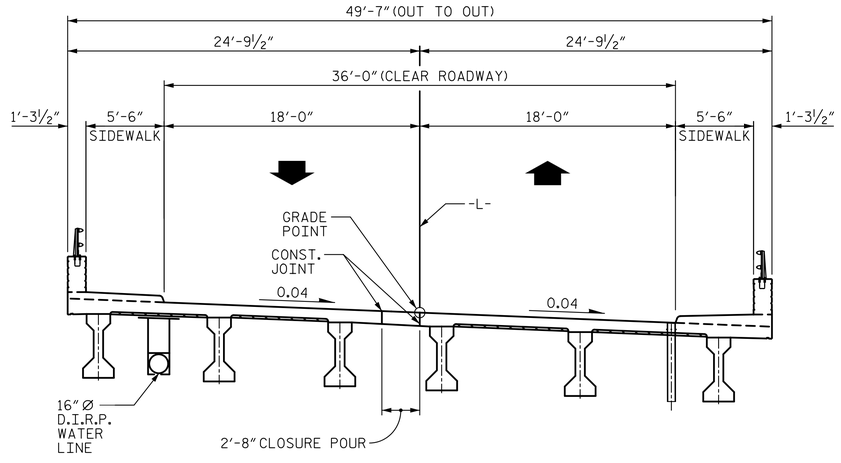
SHIFT TRAFFIC TO NEW BRIDGE
REMOVE REMAINDER OF EXISTING BRIDGE
COMPLETE LEFT SIDE OF NEW BRIDGE



STAGE 1

REMOVE 17′-3″ OF EXISTING BRIDGE
CONSTRUCT RIGHT SIDE OF PROPOSED BRIDGE

NOTE: ALL DIMENSIONS ARE RADIAL



FINAL STAGE

CONSTRUCT CLOSURE POUR
AND OPEN TO TRAFFIC

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

CONSTRUCTION SEQUENCE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			64

DRAWN BY : D. H. CARTER DATE : SEP 2015
CHECKED BY : K. M. MOBLEY/T. E. TALLMAN DATE : SEP 2015
DESIGN ENGINEER OF RECORD: T. E. TALLMAN DATE : OCT 2015

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NORTH CAROLINA PROFESSIONAL SEAL 14408 ENGINEER THOMAS E TALLMAN
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10/14/2015
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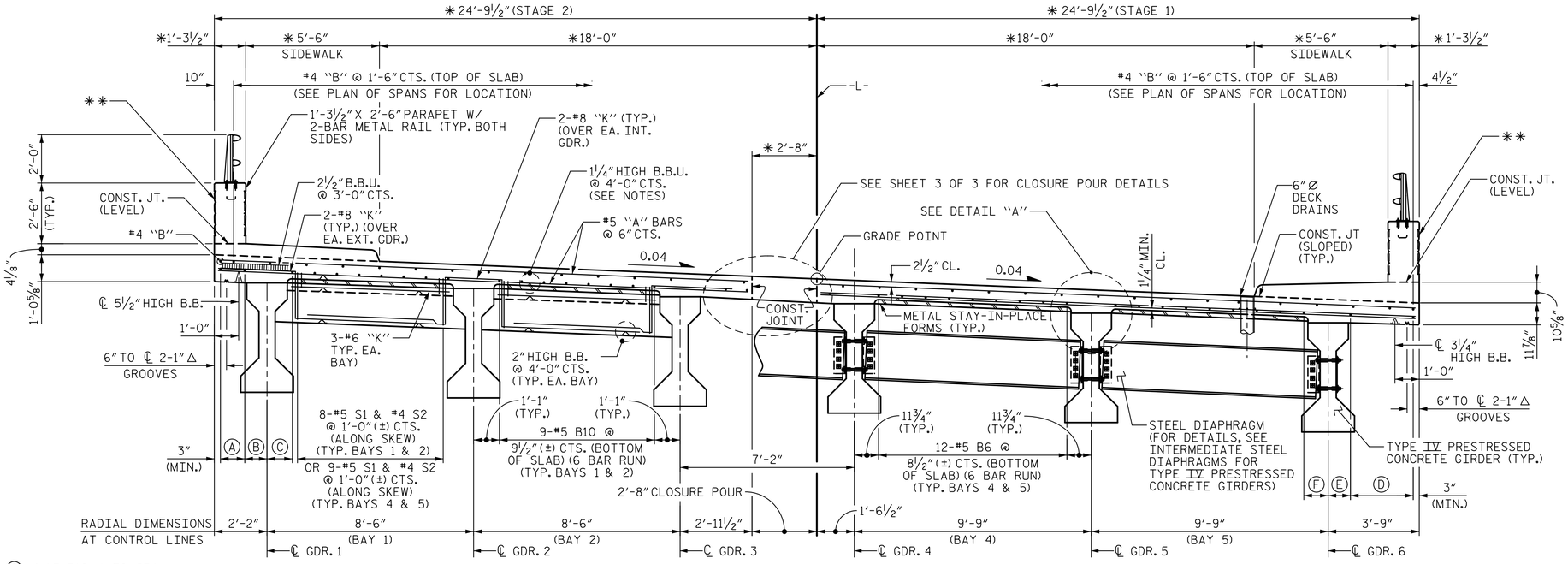


Ⓐ 4-#5 B10 @ EQ. SPA. (6 BAR RUN)
Ⓑ 11″
Ⓒ 1′-1″ (TYP.)

HALF SECTION - END BENT DIAPHRAGM

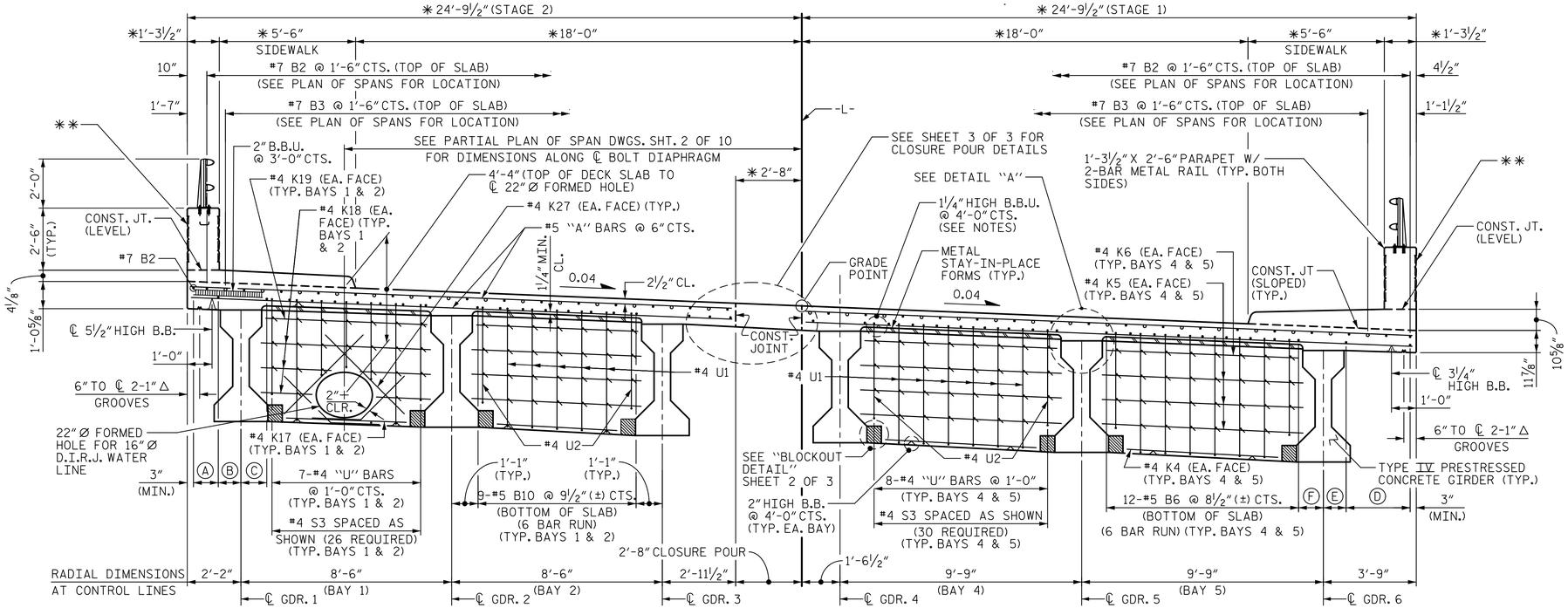
HALF SECTION - INTERMEDIATE DIAPHRAGM

Ⓓ 4-#5 B6 @ EQ. SPA. (6 BAR RUN)
Ⓔ 11″
Ⓕ 11¾″ (TYP.)

✱ RADIAL DIMENSION

TYPICAL SECTION

NOTE: PERMANENT AND TEMPORARY (CLOSURE POUR) OVERHANG DIMENSIONS WILL VARY THROUGH LENGTH OF SPAN. DIMENSIONS SHOWN OCCUR AT BENT CONTROL LINES.



BENT DIAPHRAGM TYPICAL SECTION

✱ RADIAL DIMENSION

NOTE: PERMANENT AND TEMPORARY (CLOSURE POUR) OVERHANG DIMENSIONS WILL VARY THROUGH LENGTH OF SPAN. DIMENSIONS SHOWN OCCUR AT BENT CONTROL LINES.

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 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.

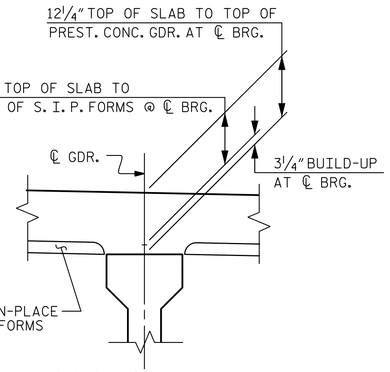
PREVIOUSLY CAST CONCRETE IN A CONTINUOUS UNIT SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE UNIT.

CONCRETE PARAPET IN EACH 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.

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

"U" BARS AND "K" BARS IN THE BENT DIAPHRAGM SHALL BE FIELD BENT OR CUT IN THE AREA OF THE 22″ Ø FORMED HOLE.

✱✱ FOR STONE FACE FORM LINER AND STAINING OF PARAPET, BOTTOM OF DECK OVERHANGS, EXTERIOR FACE OF EXTERIOR GIRDERS, AND BOTTOM OF ALL GIRDERS, SEE 2 BAR METAL RAIL SHEET 1 OF 8.



DETAIL "A"

(TYPICAL EACH GIRDER @ EACH BENT)

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			64

DRAWN BY : D. H. CARTER DATE : SEP 2015
CHECKED BY : K. M. MOBLEY/T. E. TALLMAN DATE : SEP 2015
DESIGN ENGINEER OF RECORD: T. E. TALLMAN DATE : OCT 2015

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 14408 THOMAS E. TALLMAN
Thomas E. Tallman 10/15/2015
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10/14/2015
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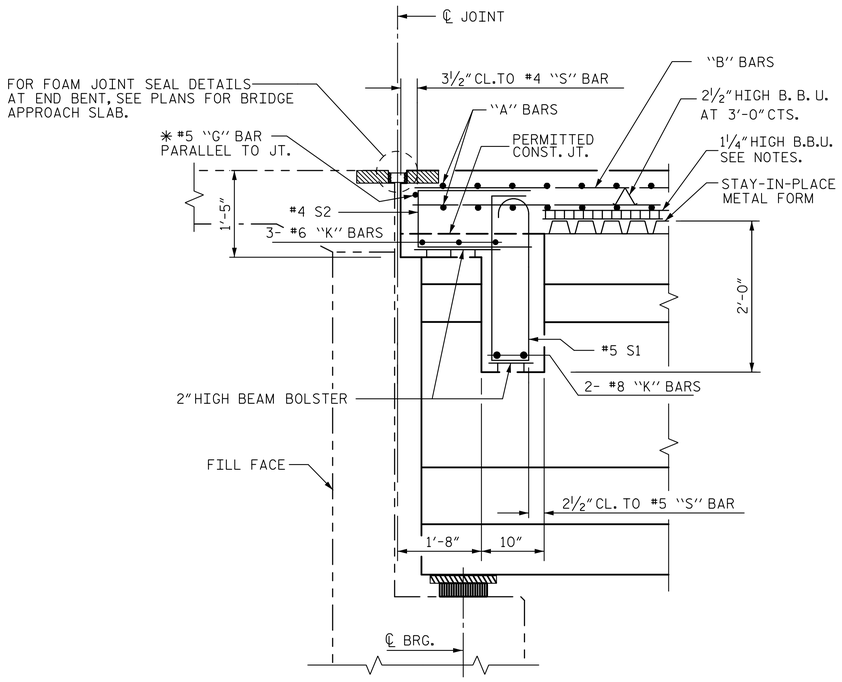
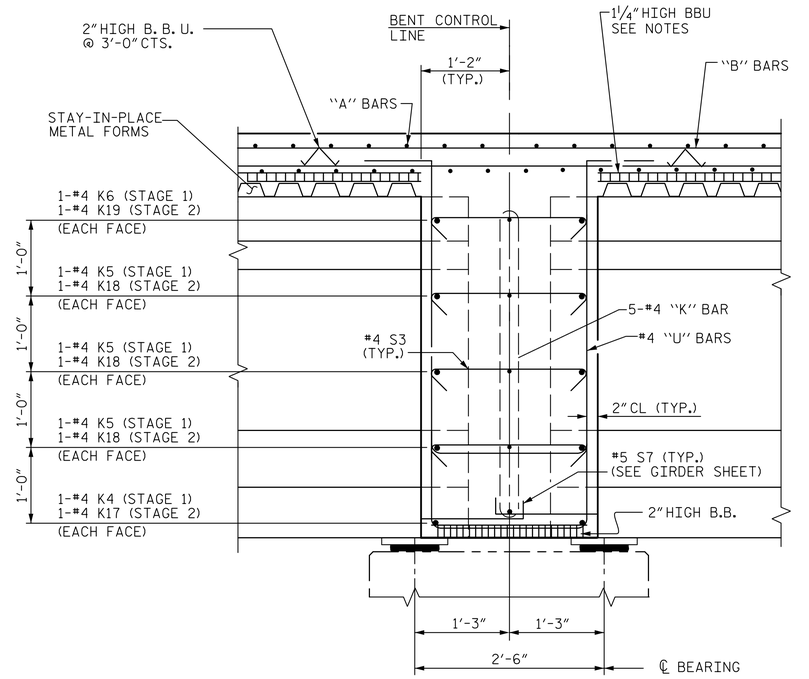


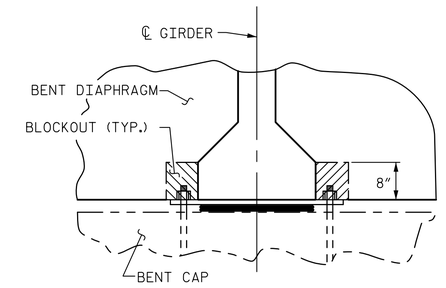
SECTION THRU END BENT DIAPHRAGM

NO END BENT DIAPHRAGM REQUIRED IN THE CLOSURE POUR BAY.
✳ #5 "G" BAR MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO CLEAR STEEL REINFORCING AND STIRRUPS.

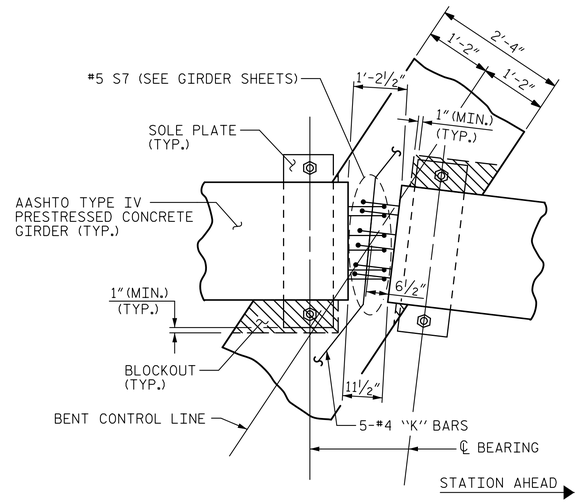


SECTION THRU BENT DIAPHRAGM

NO BENT DIAPHRAGM REQUIRED IN THE CLOSURE POUR BAY.

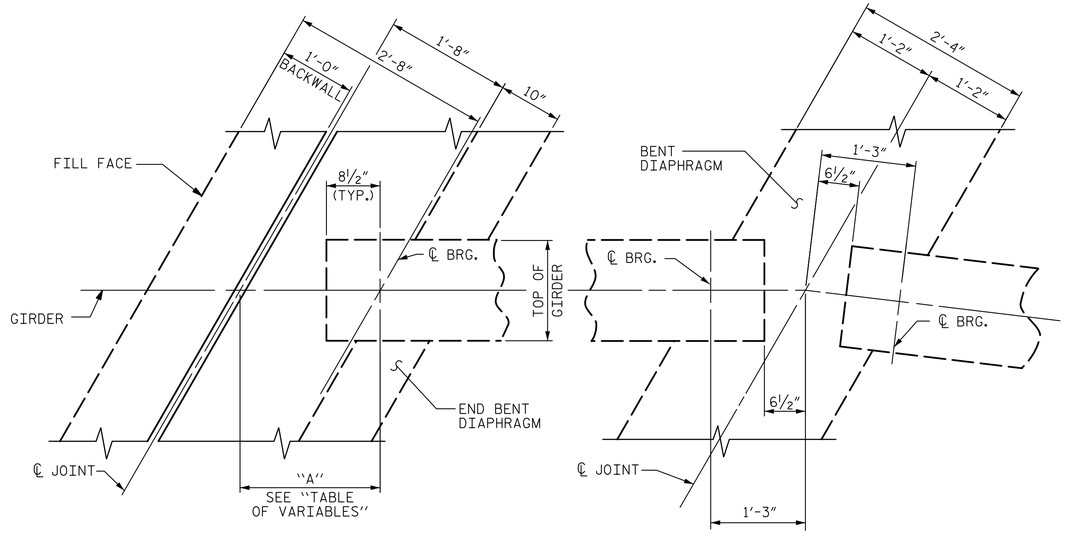


SECTION



PLAN

BENT DIAPHRAGM BLOCK-OUT DETAIL



END BENT DIAPHRAGM

BENT DIAPHRAGM

PLAN

TABLE OF VARIABLES	
GIRDER	"A"
1A	2'-0"
2A	2'-0 3/16"
3A	2'-0 5/16"
4A	2'-0 7/16"
5A	2'-0 9/16"
6A	2'-0 3/4"
1C	1'-9 1/8"
2C	1'-9 1/8"
3C	1'-9 3/16"
4C	1'-9 3/16"
5C	1'-9 1/4"
6C	1'-9 5/16"

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

TYPICAL SECTION DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			64

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NC License No: F-0258

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Thomas E. Tallman 10/15/2015
E9B789620EE24D5...

DRAWN BY : D. H. CARTER DATE : SEP 2015
CHECKED BY : K. M. MOBLEY DATE : SEP 2015
DESIGN ENGINEER OF RECORD: T. E. TALLMAN DATE : OCT 2015

10/14/2015
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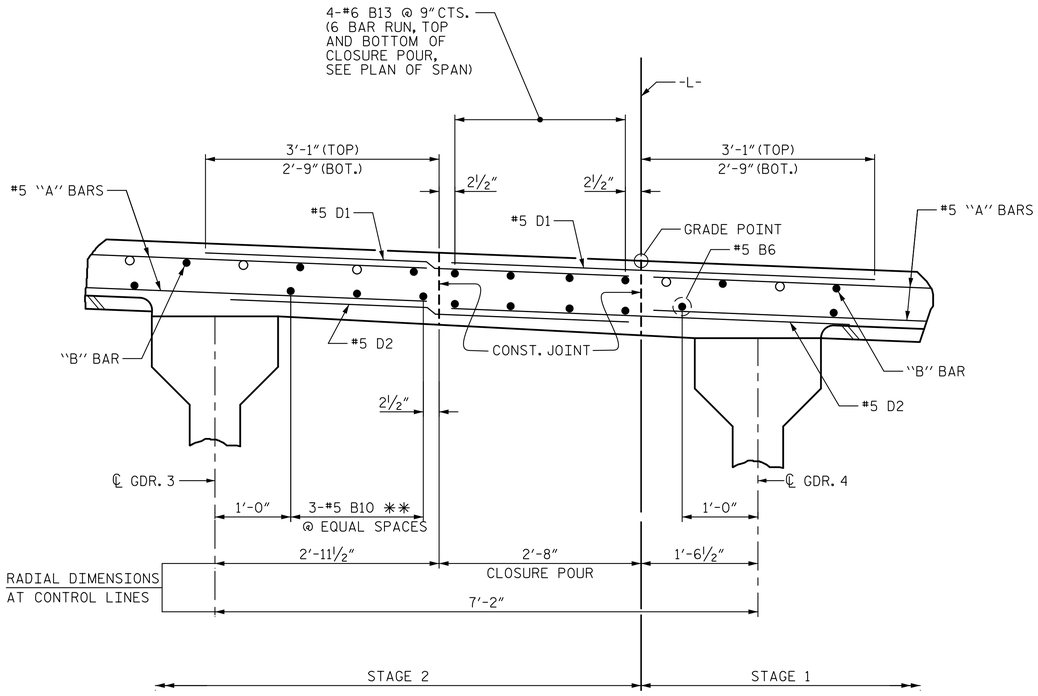
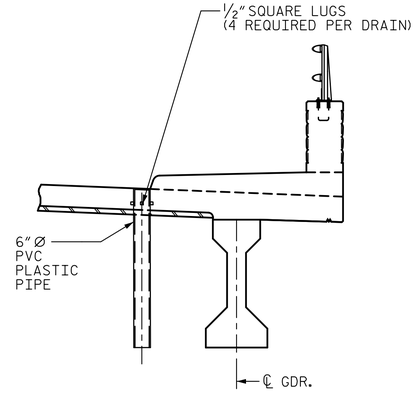


** SPACE TO MAINTAIN CLEARANCES

DECK CLOSURE POUR DETAIL

#5 "D" DOWELS SHALL BE PLACED IN THE SAME HORIZONTAL PLANE AS THE TOP AND BOTTOM REINFORCING STEEL AND EXTEND 2'-6" INTO CLOSURE POUR.



DECK DRAINS

TOP OF FLOOR DRAINS TO BE SET ⅜" BELOW SURFACE OF SLAB.

4 - ½" SQUARE LUGS TO BE GLUED TO THE P.V.C. PLASTIC PIPE AT EQUAL SPACES AROUND THE PIPE DRAIN APPROXIMATELY 4" FROM THE TOP OF THE PIPE.

THE 6" Ø PVC PLASTIC PIPE AND FITTINGS SHALL BE SCHEDULE 40 AND CONFORM TO ASTM D1785.

SEE PLAN OF SPANS FOR LOCATION OF 6" Ø PVC PIPE DRAINS.

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			64

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NORTH CAROLINA PROFESSIONAL SEAL 14408 ENGINEER THOMAS E. TALLMAN

Thomas E. Tallman 10/15/2015
E9B789620EE24D5...

DRAWN BY : D. H. CARTER DATE : SEP 2015
CHECKED BY : K. M. MOBLEY DATE : SEP 2015
DESIGN ENGINEER OF RECORD: T. E. TALLMAN DATE : OCT 2015

10/14/2015
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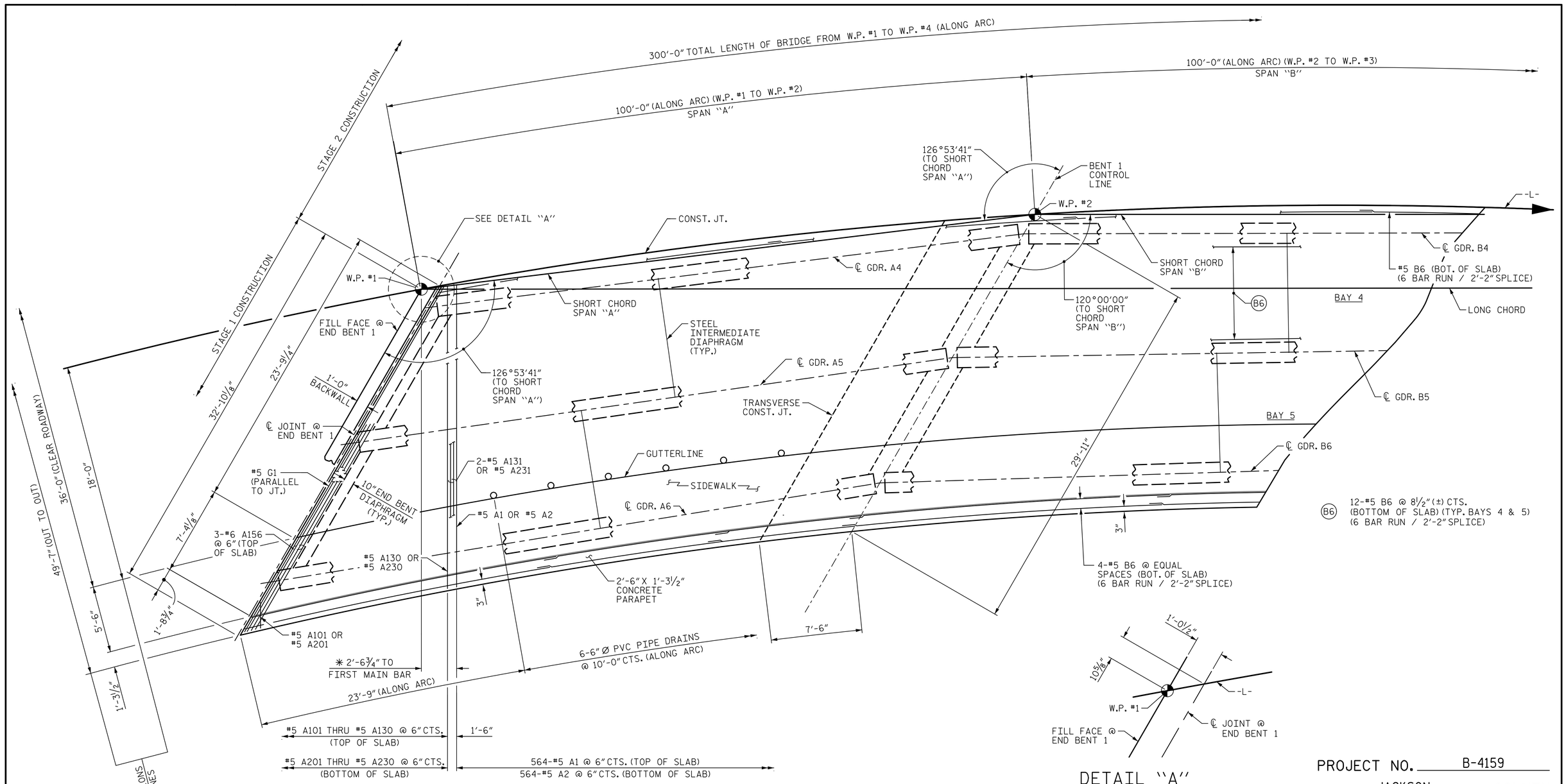

✳ MEASURED ALONG LONG CHORD

DETAIL "A"

PARTIAL PLAN OF SPANS "A" AND "B"

"A" BARS ARE SPACED PERPENDICULAR TO THE LONG CHORD.
FOR REINFORCING STEEL IN END BENT AND INTERIOR BENT DIAPHRAGMS, SEE "PLAN OF SPAN DETAILS" SHEET.
FOR LONGITITUDINAL BARS IN TOP OF SLAB, SEE "B" BAR LAYOUT SHEET.
FORM LINER ON PARAPET NOT SHOWN FOR CLARITY.
STEEL INTERMEDIATE DIAPHRAGMS IN CLOSURE POUR BAY NOT SHOWN FOR CLARITY.

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

SHEET 1 OF 10

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PARTIAL PLAN OF SPANS "A" AND "B"

STAGE 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			64

DRAWN BY : D. H. CARTER DATE : SEP 2015
CHECKED BY : K. M. MOBLEY DATE : SEP 2015
DESIGN ENGINEER OF RECORD: T. E. TALLMAN DATE : OCT 2015

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NC License No: F-0258

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Thomas E. Tallman
E9D789620EE24D5... 10/15/2015

10/14/2015
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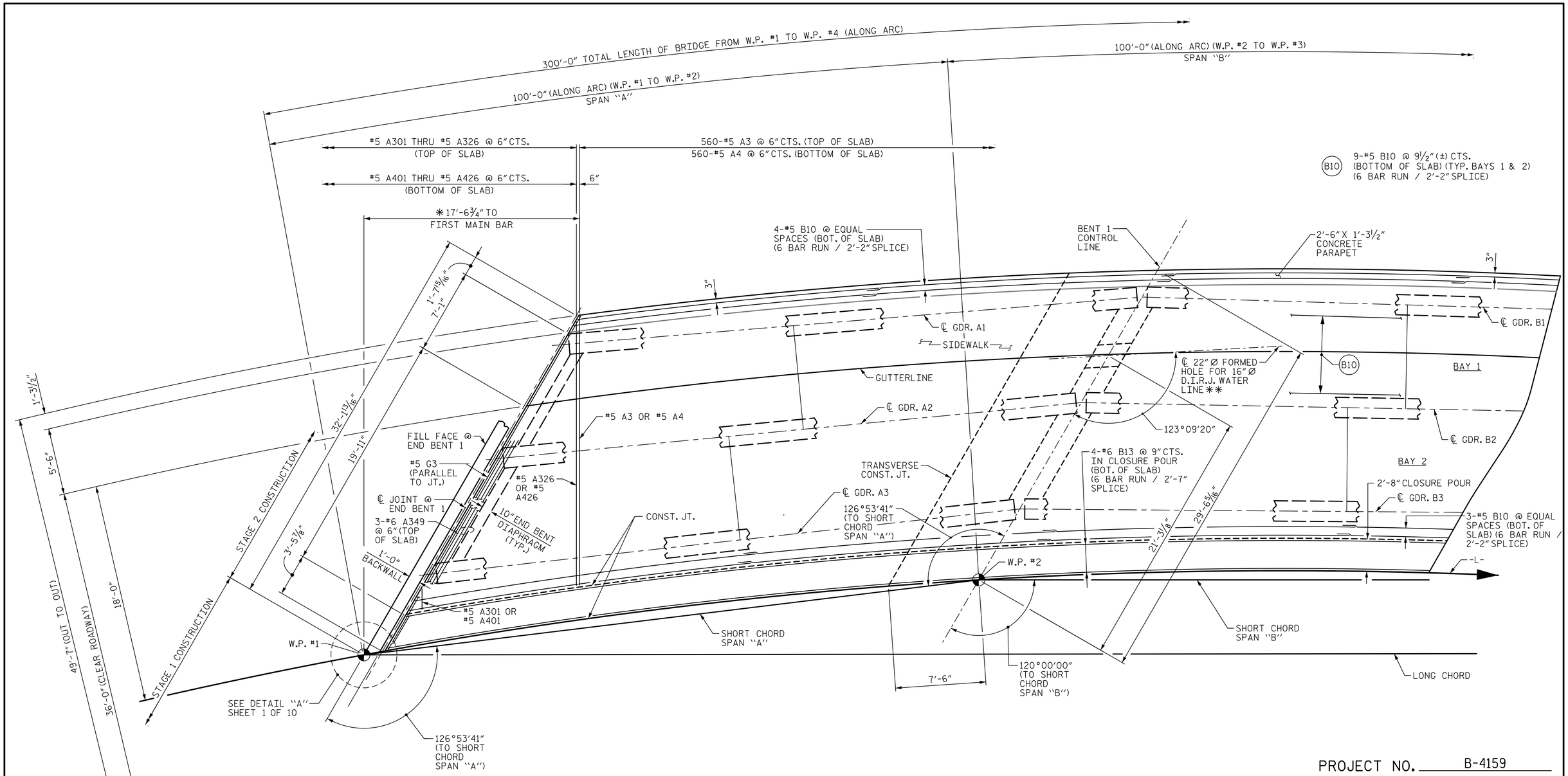

* MEASURED ALONG LONG CHORD

** SEE TYPICAL SECTION SHT. 1 OF 3 FOR VERTICAL LOCATION OF FORMED HOLE.

PARTIAL PLAN OF SPANS "A" AND "B"

"A" BARS ARE SPACED PERPENDICULAR TO THE LONG CHORD.
FOR REINFORCING STEEL IN END BENT AND INTERIOR BENT DIAPHRAGMS, SEE "PLAN OF SPAN DETAILS" SHEET.
FOR LONGITITUDINAL BARS IN TOP OF SLAB, SEE "B" BAR LAYOUT SHEET.
FORM LINER ON PARAPET NOT SHOWN FOR CLARITY.
STEEL INTERMEDIATE DIAPHRAGMS IN CLOSURE POUR BAY NOT SHOWN FOR CLARITY.

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

SHEET 2 OF 10

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PARTIAL PLAN OF SPANS "A" AND "B"

STAGE 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			64

DRAWN BY : D. H. CARTER DATE : SEP 2015
CHECKED BY : K. M. MOBLEY/T. E. TALLMAN DATE : SEP 2015
DESIGN ENGINEER OF RECORD: T. E. TALLMAN DATE : OCT 2015

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NC License No: F-0258

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Thomas E. Tallman 10/15/2015
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10/14/2015
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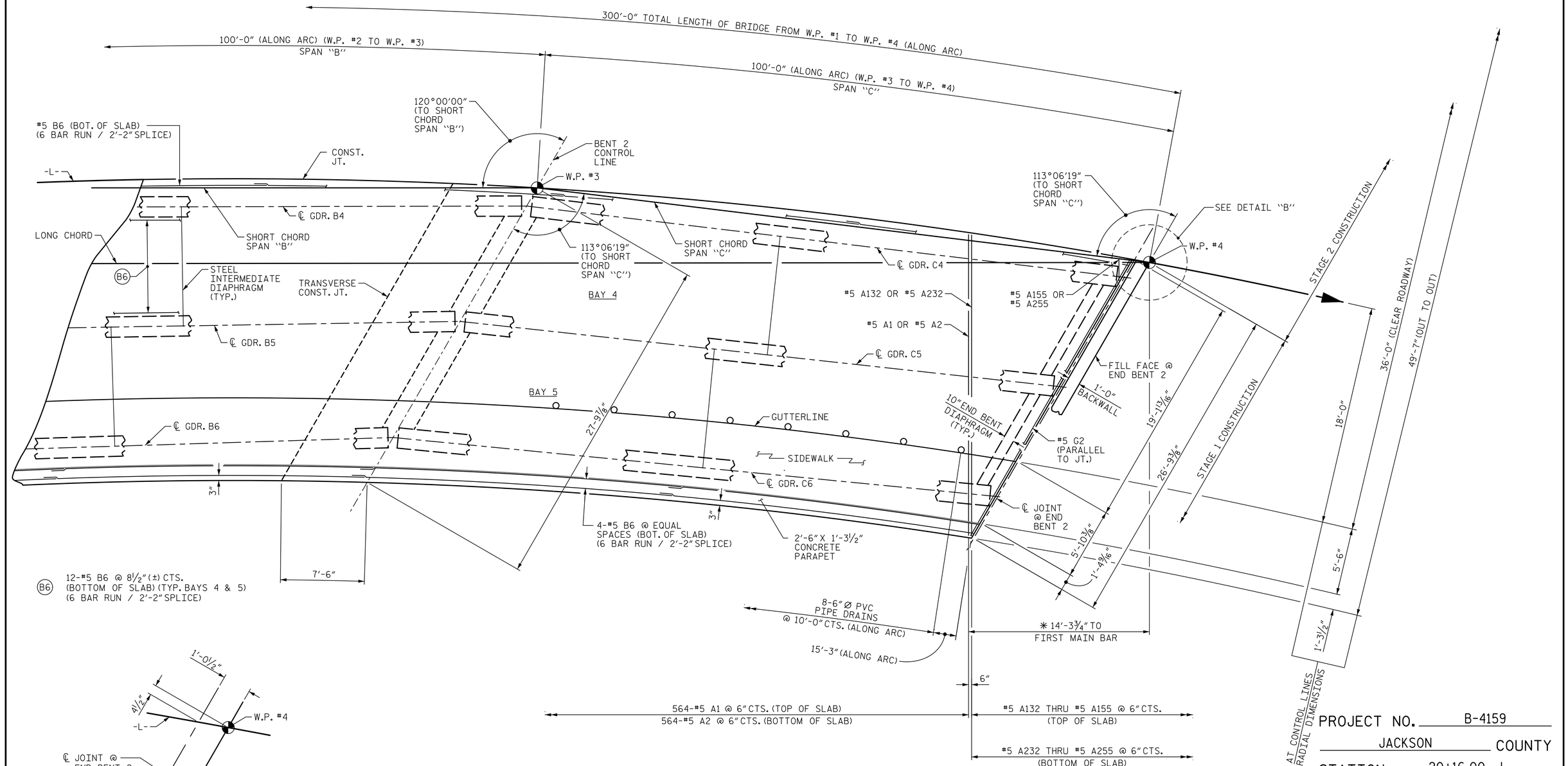
ICA Engineering



DETAIL "B"

PARTIAL PLAN OF SPANS "B" AND "C"

"A" BARS ARE SPACED PERPENDICULAR TO THE LONG CHORD.
FOR REINFORCING STEEL IN END BENT AND INTERIOR BENT DIAPHRAGMS, SEE "PLAN OF SPAN DETAILS" SHEET.
FOR LONGITITUDINAL BARS IN TOP OF SLAB, SEE "B" BAR LAYOUT SHEET.
FORM LINER ON PARAPET NOT SHOWN FOR CLARITY.
STEEL INTERMEDIATE DIAPHRAGMS IN CLOSURE POUR BAY NOT SHOWN FOR CLARITY.

✳ MEASURED ALONG LONG CHORD

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

SHEET 3 OF 10

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PARTIAL PLAN OF SPANS "B" AND "C"

STAGE 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			64

DRAWN BY : D. H. CARTER DATE : SEP 2015
CHECKED BY : K. M. MOBLEY DATE : SEP 2015
DESIGN ENGINEER OF RECORD: T. E. TALLMAN DATE : OCT 2015

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NC License No: F-0258

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Documents
Thomas E. Tallman
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10/14/2015
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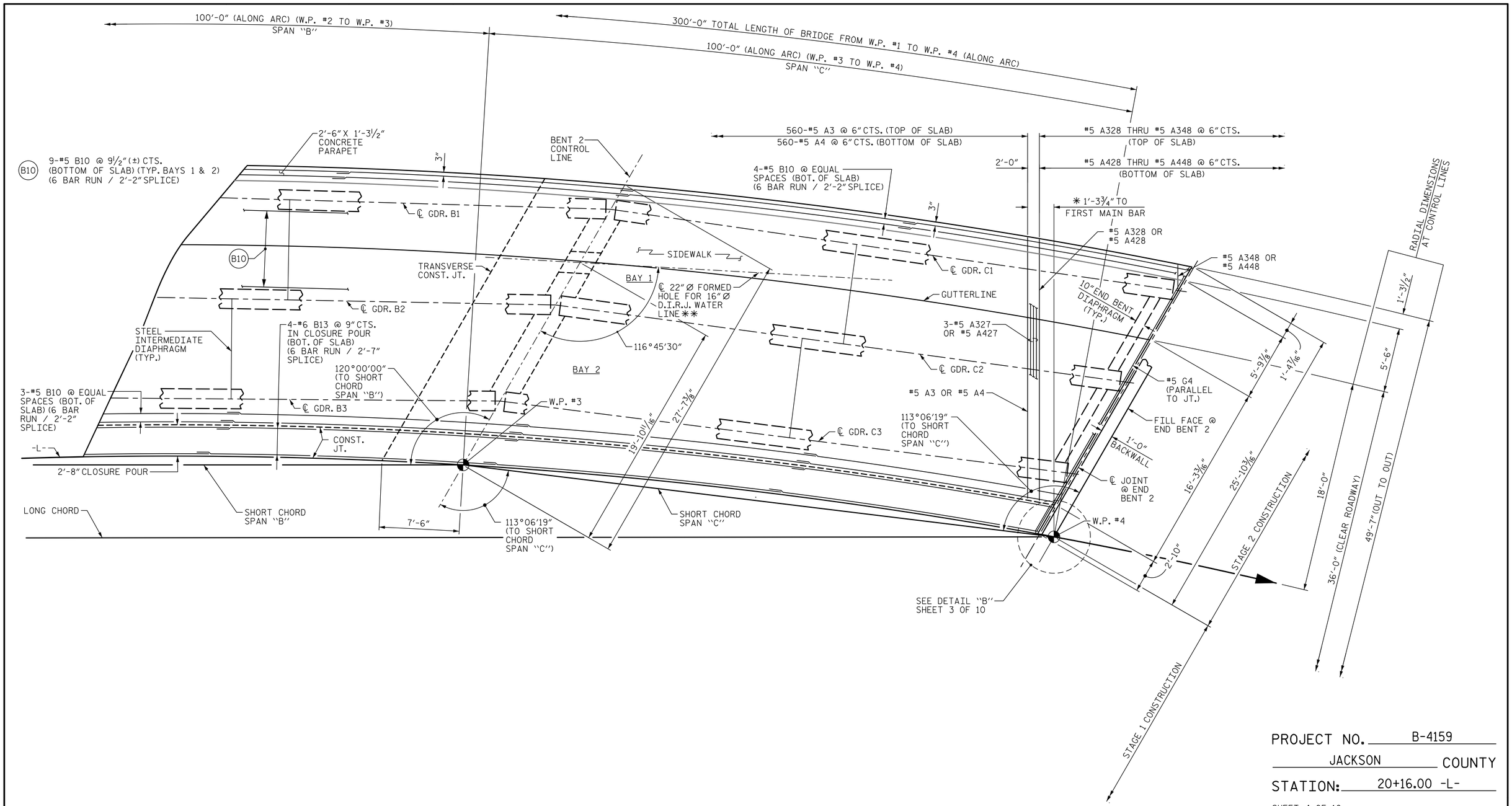

PARTIAL PLAN OF SPANS "B" AND "C"

"A" BARS ARE SPACED PERPENDICULAR TO THE LONG CHORD.
FOR REINFORCING STEEL IN END BENT AND INTERIOR BENT DIAPHRAGMS, SEE "PLAN OF SPAN DETAILS" SHEET.
FOR LONGITITUDINAL BARS IN TOP OF SLAB, SEE "B" BAR LAYOUT SHEET.
FORM LINER ON PARAPET NOT SHOWN FOR CLARITY.
STEEL INTERMEDIATE DIAPHRAGMS IN CLOSURE POUR BAY NOT SHOWN FOR CLARITY.

✳ MEASURED ALONG LONG CHORD

✳✳ SEE TYPICAL SEECTION SHT. 1 OF 3 FOR VERTICAL LOCATION OF FORMED HOLE.

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

SHEET 4 OF 10

STATE OF NORTH CAROLINA
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SUPERSTRUCTURE
PARTIAL PLAN OF SPANS "B" AND "C"
STAGE 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			64

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NORTH CAROLINA PROFESSIONAL SEAL 14408 ENGINEER THOMAS E. TALLMAN

Thomas E. Tallman 10/15/2015
E9878962DE82AD5

DRAWN BY : D. H. CARTER DATE : SEP 2015
CHECKED BY : K. M. MOBLEY/T. E. TALLMAN DATE : SEP 2015
DESIGN ENGINEER OF RECORD: T. E. TALLMAN DATE : OCT 2015

10/14/2015
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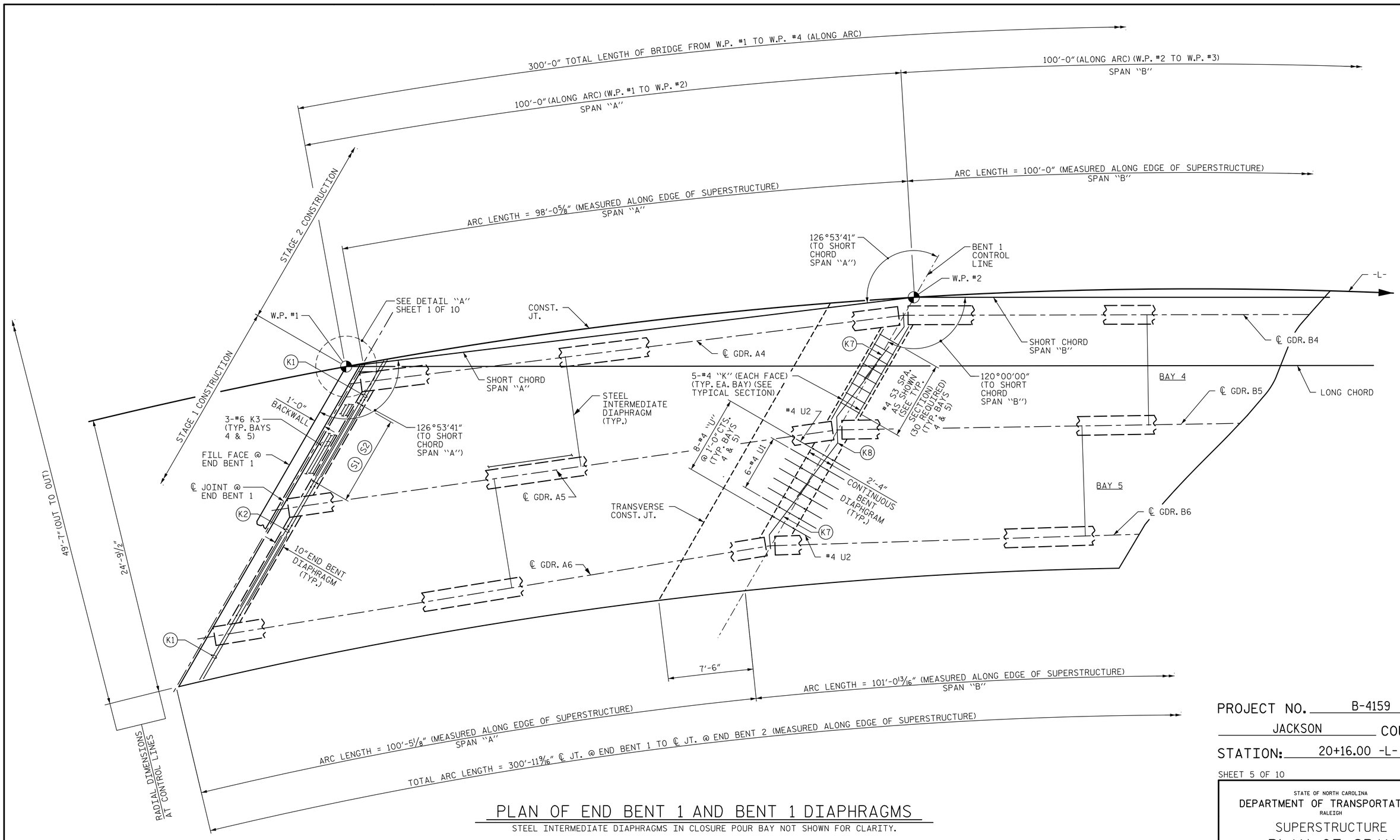

PLAN OF END BENT 1 AND BENT 1 DIAPHRAGMS

STEEL INTERMEDIATE DIAPHRAGMS IN CLOSURE POUR BAY NOT SHOWN FOR CLARITY.

(K1) 2-#8 K1 OVER GIRDERS A4 & A6

(K2) 2-#8 K2 OVER GIRDER A5

(K7) 5-#4 K7

(K8) 5-#4 K8

(S1) (S2) 9-#5 S1 & #4 S2 @ 1'-0" CTS. (TYP. BAYS 4 & 5)

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

SHEET 5 OF 10

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPAN DETAILS
SPANS "A" AND "B"
STAGE 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			64

DRAWN BY : D. H. CARTER DATE : SEP 2015
CHECKED BY : K. M. MOBLEY DATE : SEP 2015
DESIGN ENGINEER OF RECORD: T. E. TALLMAN DATE : OCT 2015

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Thomas E. Tallman 10/15/2015

10/14/2015
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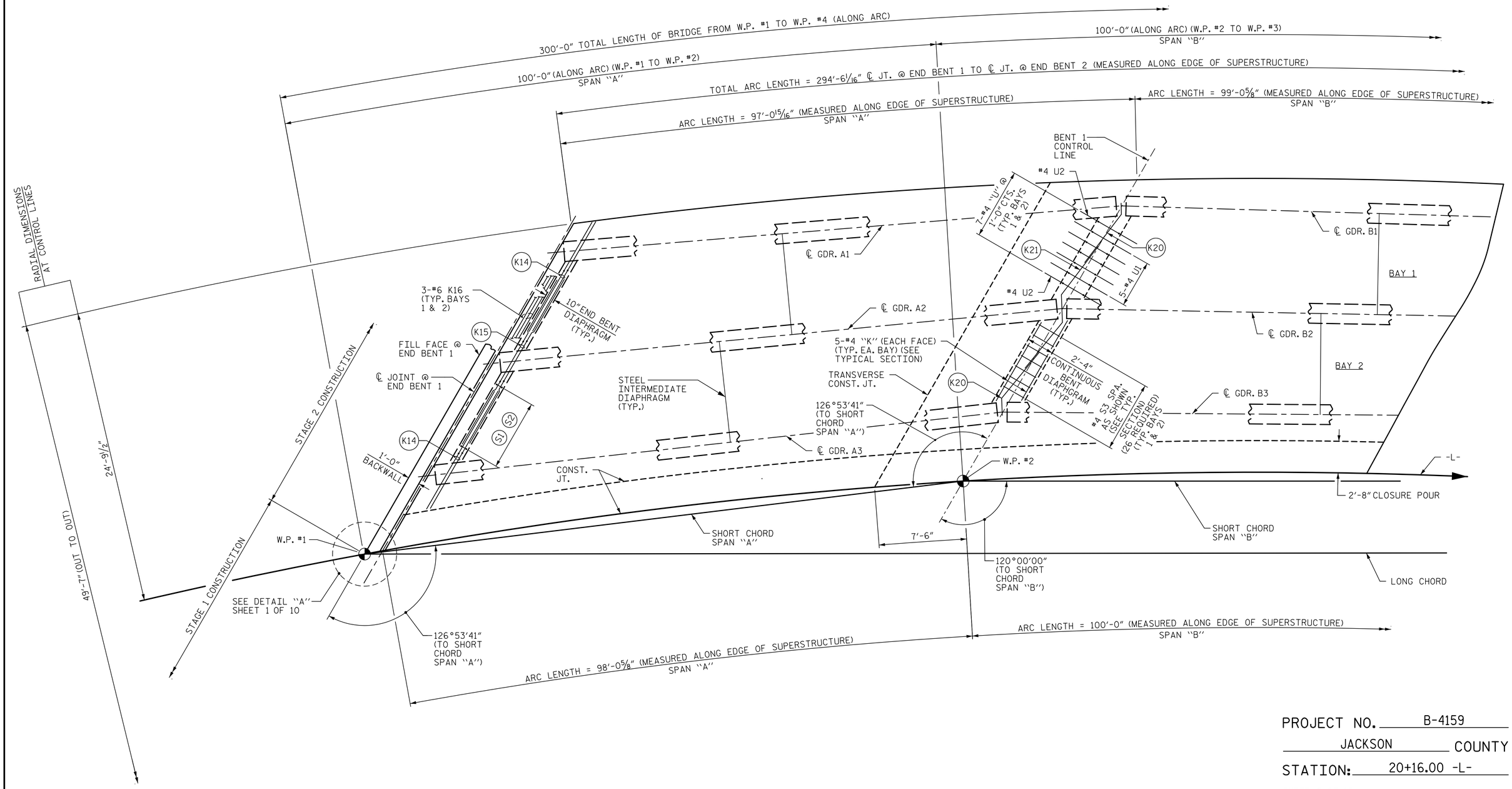

PLAN OF END BENT 1 AND BENT 1 DIAPHRAGMS

STEEL INTERMEDIATE DIAPHRAGMS IN CLOSURE POUR BAY NOT SHOWN FOR CLARITY.

(K14) 2-#8 K14 OVER GIRDERS A1 & A3

(K15) 2-#8 K15 OVER GIRDER A2

(K20) 5-#4 K20

(K21) 5-#4 K21

(S1) (S2) 8-#5 S1 & #4 S2 @ 1'-0" CTS. (TYP. BAYS 1 & 2)

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

SHEET 6 OF 10

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPAN DETAILS
SPANS "A" AND "B"
STAGE 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			64

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DESIGN ENGINEER OF RECORD: T. E. TALLMAN DATE : OCT 2015

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Documents Signed by: Thomas E. Tallman E9B7896E20EE24D5 10/15/2015

10/14/2015
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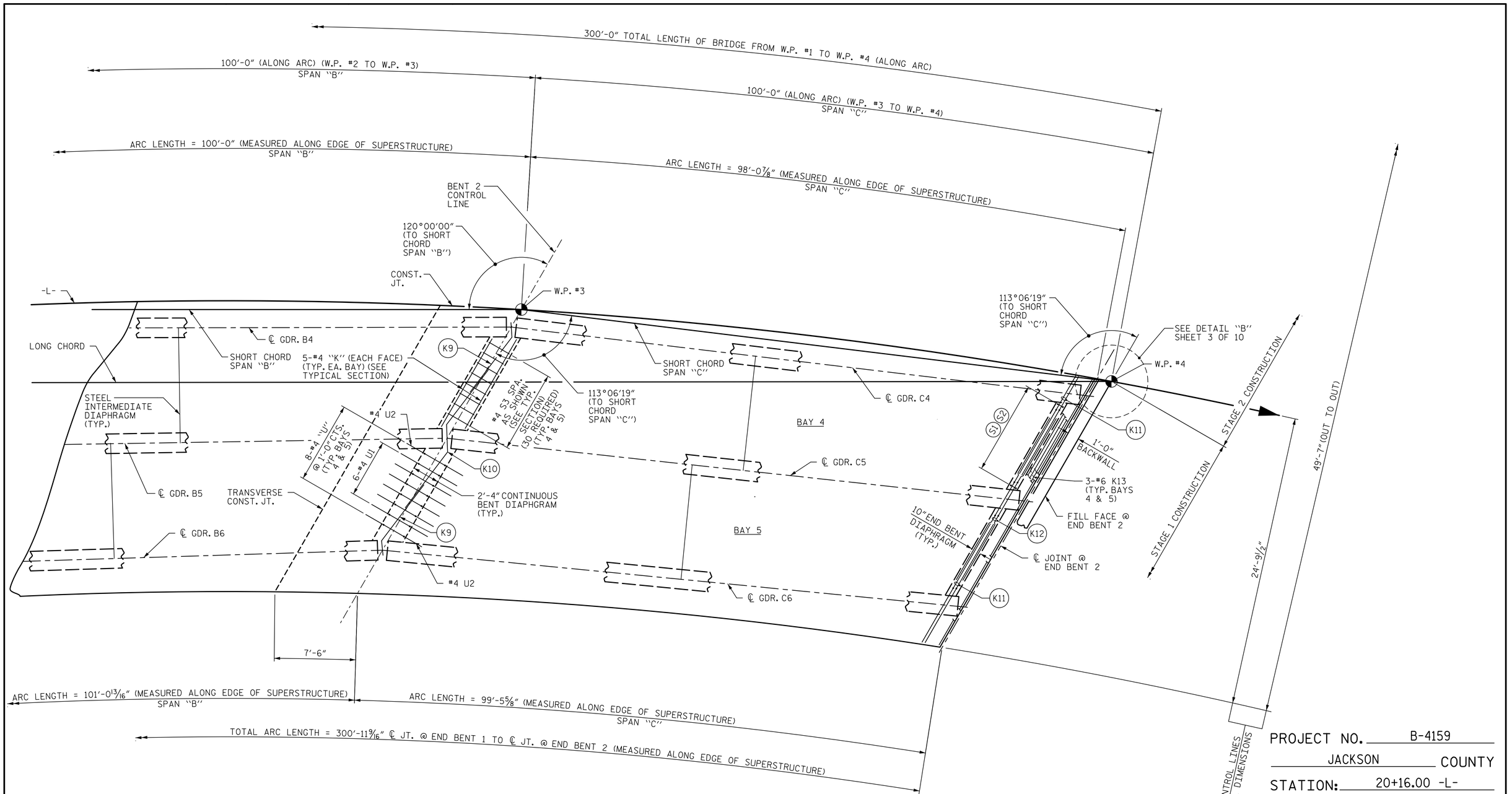

PLAN OF BENT 2 AND END BENT 2 DIAPHRAGMS

STEEL INTERMEDIATE DIAPHRAGMS IN CLOSURE POUR BAY NOT SHOWN FOR CLARITY.

- (K9) 5-#4 K9
- (K10) 5-#4 K10
- (K11) 2-#8 K11 OVER GIRDERS C4 & C6
- (K12) 2-#8 K12 OVER GIRDER C5
- (S1) (S2) 9-#5 S1 & #4 S2 @ 1'-0" CTS. (TYP. BAYS 4 & 5)

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

SHEET 7 OF 10

STATE OF NORTH CAROLINA
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RALEIGH

SUPERSTRUCTURE
PLAN OF SPAN DETAILS
SPANS "B" AND "C"
STAGE 1

REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			64

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Documents Thomas E. Tallman E9B789620EE24D5... 10/15/2015

DRAWN BY : D. H. CARTER DATE : SEP 2015
CHECKED BY : K. M. MOBLEY DATE : SEP 2015
DESIGN ENGINEER OF RECORD: T. E. TALLMAN DATE : OCT 2015

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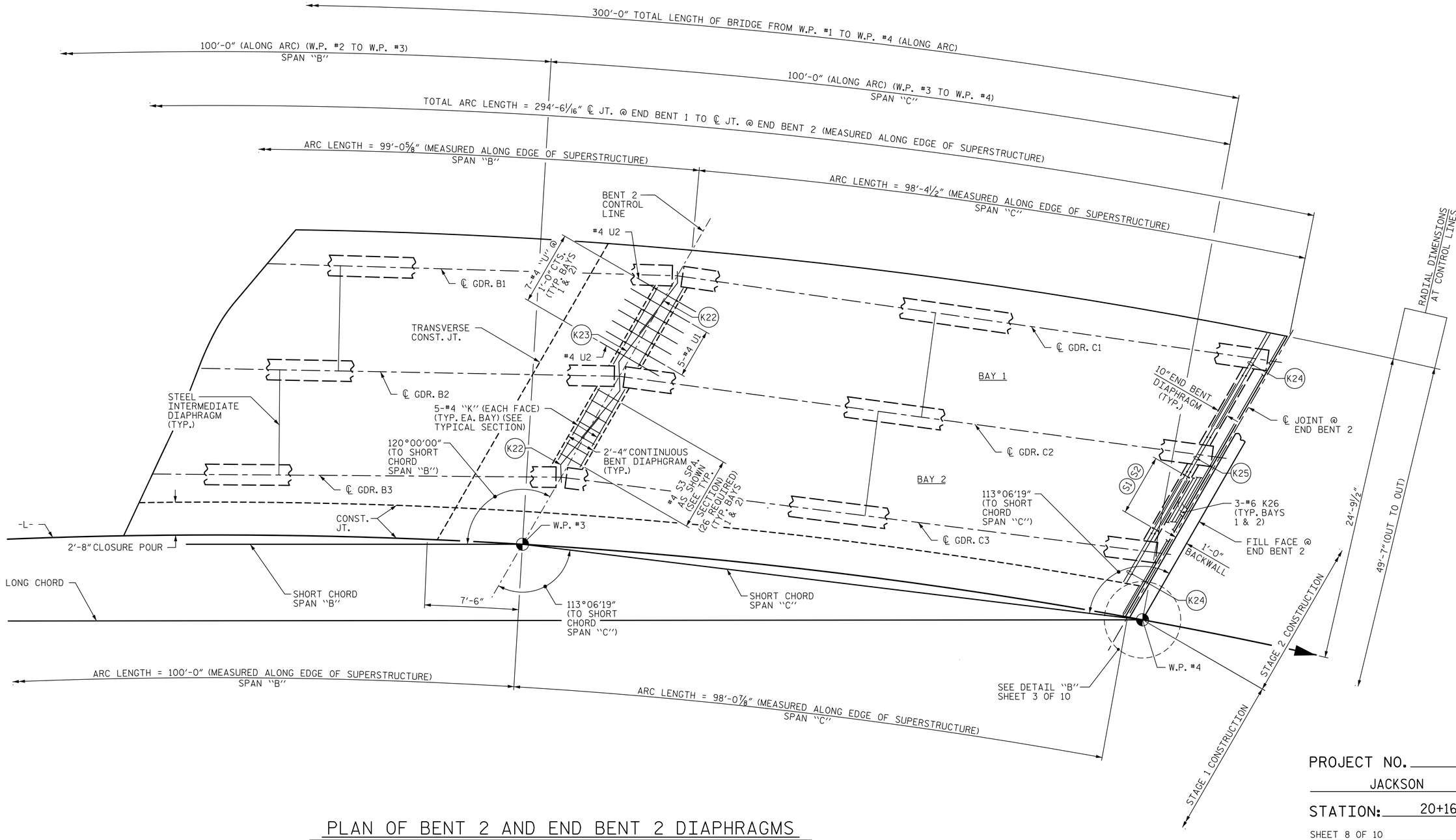

PLAN OF BENT 2 AND END BENT 2 DIAPHRAGMS

STEEL INTERMEDIATE DIAPHRAGMS IN CLOSURE POUR BAY NOT SHOWN FOR CLARITY.

- (K22) 5-#4 K22
- (K23) 5-#4 K23
- (K24) 2-#8 K24 OVER GIRDERS C1 & C3
- (K25) 2-#8 K25 OVER GIRDER C2
- (S1) (S2) 8-#5 S1 & #4 S2 @ 1'-0" CTS. (TYP. BAYS 1 & 2)

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

SHEET 8 OF 10

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
PLAN OF SPAN DETAILS
SPANS "B" AND "C"
STAGE 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			64

DRAWN BY : D. H. CARTER DATE : SEP 2015
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DESIGN ENGINEER OF RECORD: T. E. TALLMAN DATE : OCT 2015

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10/15/2015

10/14/2015
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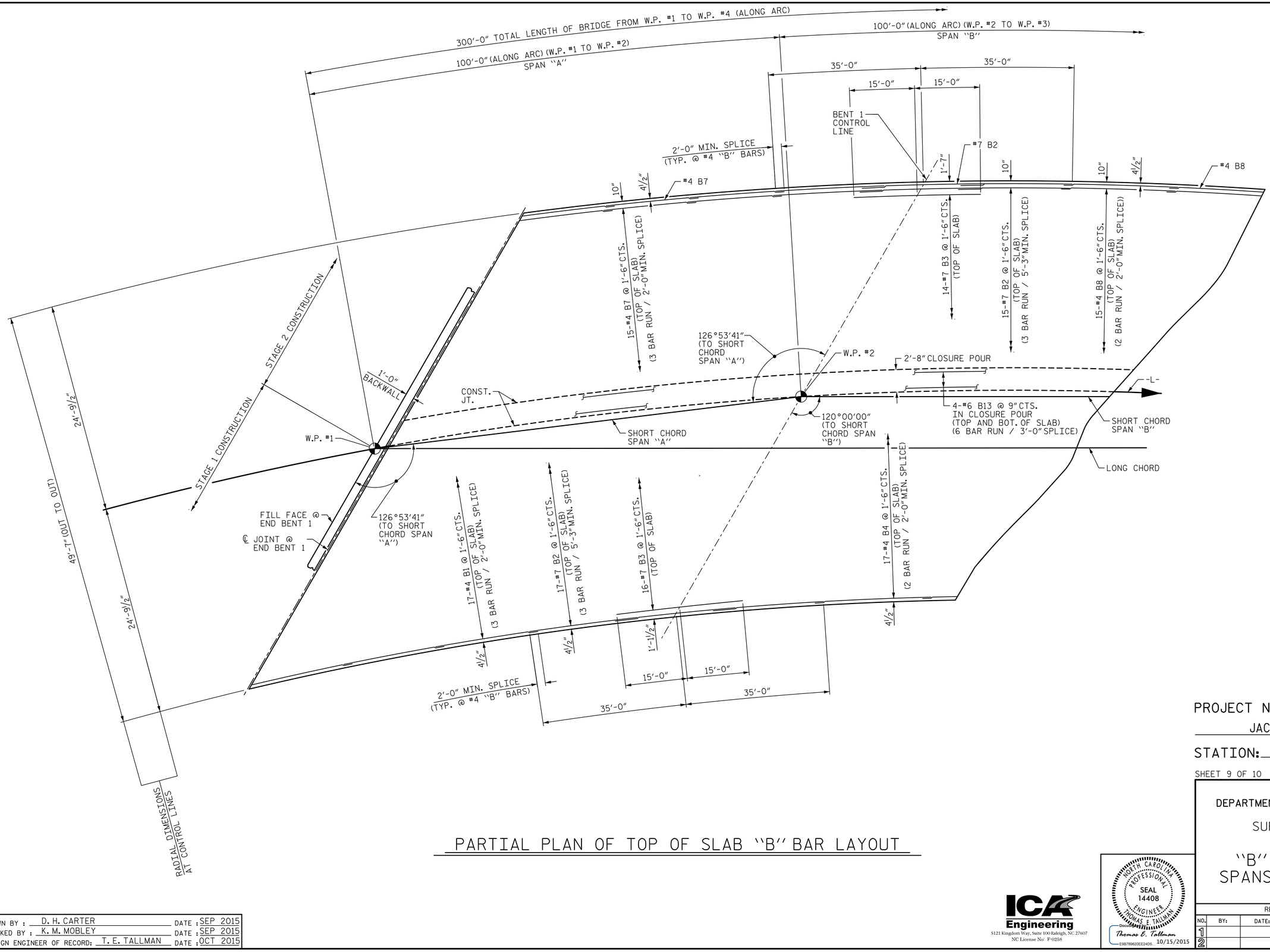

PARTIAL PLAN OF TOP OF SLAB "B" BAR LAYOUT

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

SHEET 9 OF 10

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

"B" BAR LAYOUT
SPANS "A" AND "B"

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			64

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CHECKED BY : K. M. MOBLEY DATE : SEP 2015
DESIGN ENGINEER OF RECORD: T. E. TALLMAN DATE : OCT 2015

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NORTH CAROLINA PROFESSIONAL SEAL 14408 ENGINEER THOMAS E. TALLMAN

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E9B789620EE2405 10/15/2015

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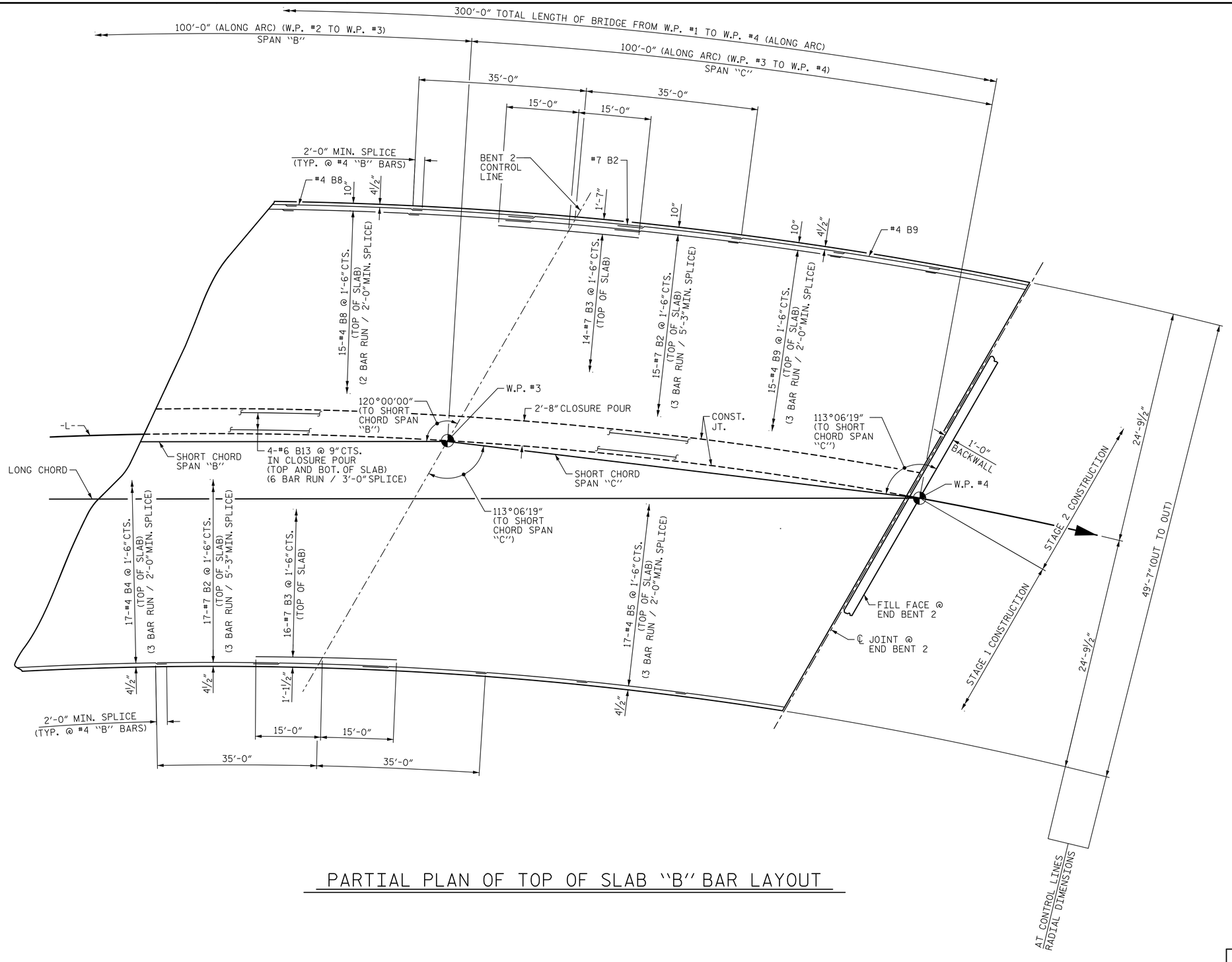

PARTIAL PLAN OF TOP OF SLAB "B" BAR LAYOUT

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

SHEET 10 OF 10

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

"B" BAR LAYOUT
SPANS "B" AND "C"

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS
2			4			64

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DESIGN ENGINEER OF RECORD: T. E. TALLMAN DATE : OCT 2015

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Documents Thomas E. Tallman E9B789620EE24D5 10/15/2015

10/14/2015
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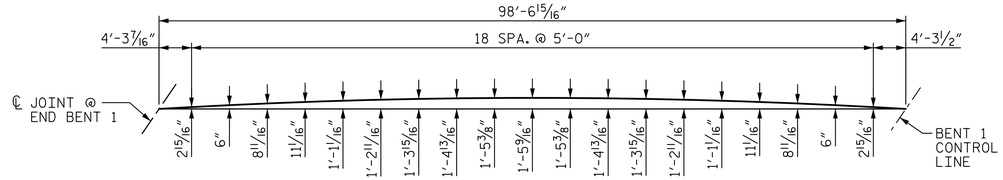

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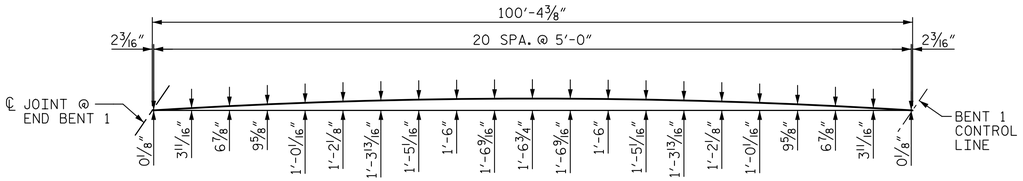

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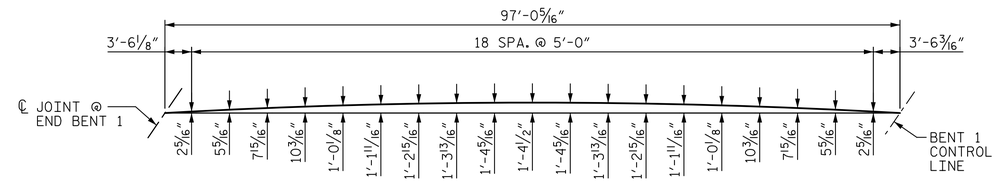

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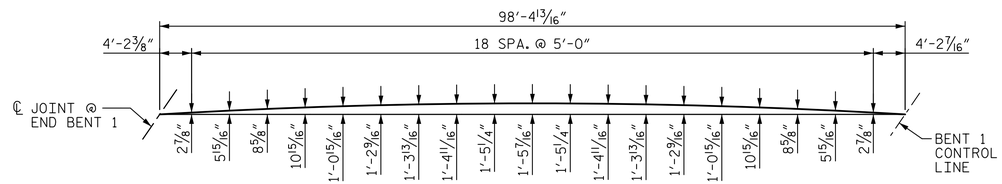
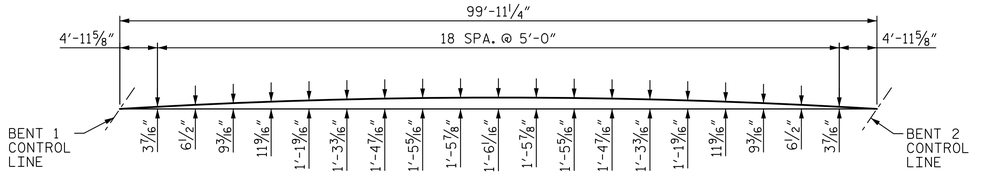


RIGHT SIDE (STAGE 2)

ARC OFFSETS - SPAN ''A''



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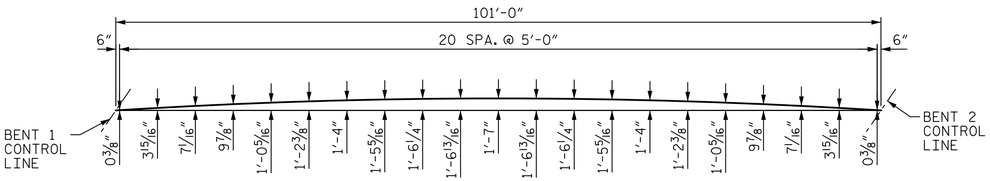

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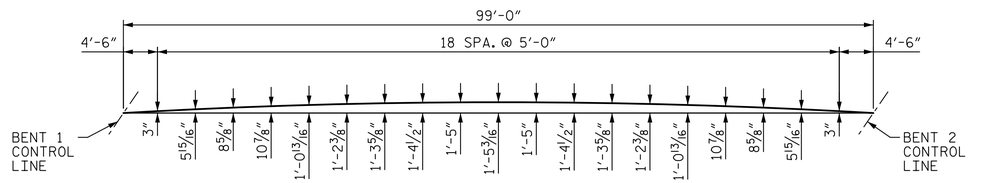

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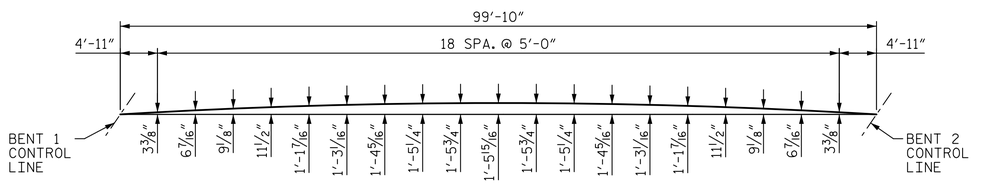

RIGHT SIDE (STAGE 2)

ARC OFFSETS - SPAN ''B''

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

ARC OFFSETS SPANS ''A'' & ''B''

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS
2			4			64

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DESIGN ENGINEER OF RECORD: T. E. TALLMAN DATE : OCT 2015

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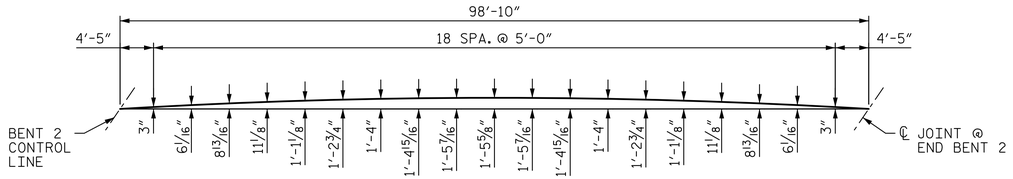

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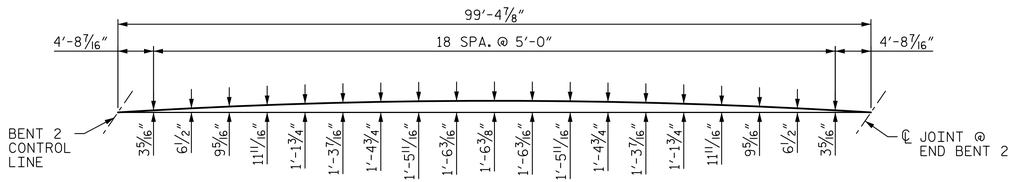

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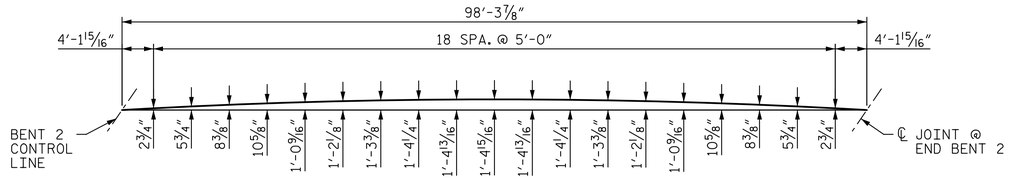

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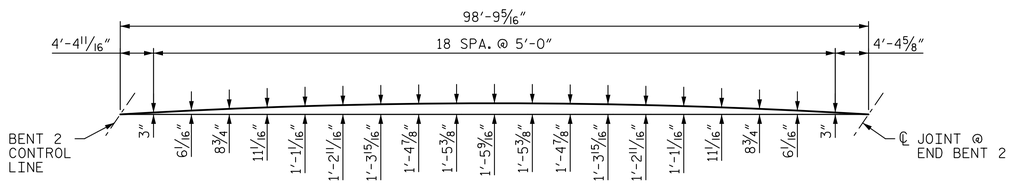

RIGHT SIDE (STAGE 2)

ARC OFFSETS - SPAN ''C''

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

ARC OFFSETS
SPAN ''C''

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
1			3			TOTAL SHEETS
2			4			64

DRAWN BY : D. H. CARTER DATE : SEP 2015
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DESIGN ENGINEER OF RECORD: T. E. TALLMAN DATE : OCT 2015

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Thomas E. Tallman 10/15/2015

10/14/2015
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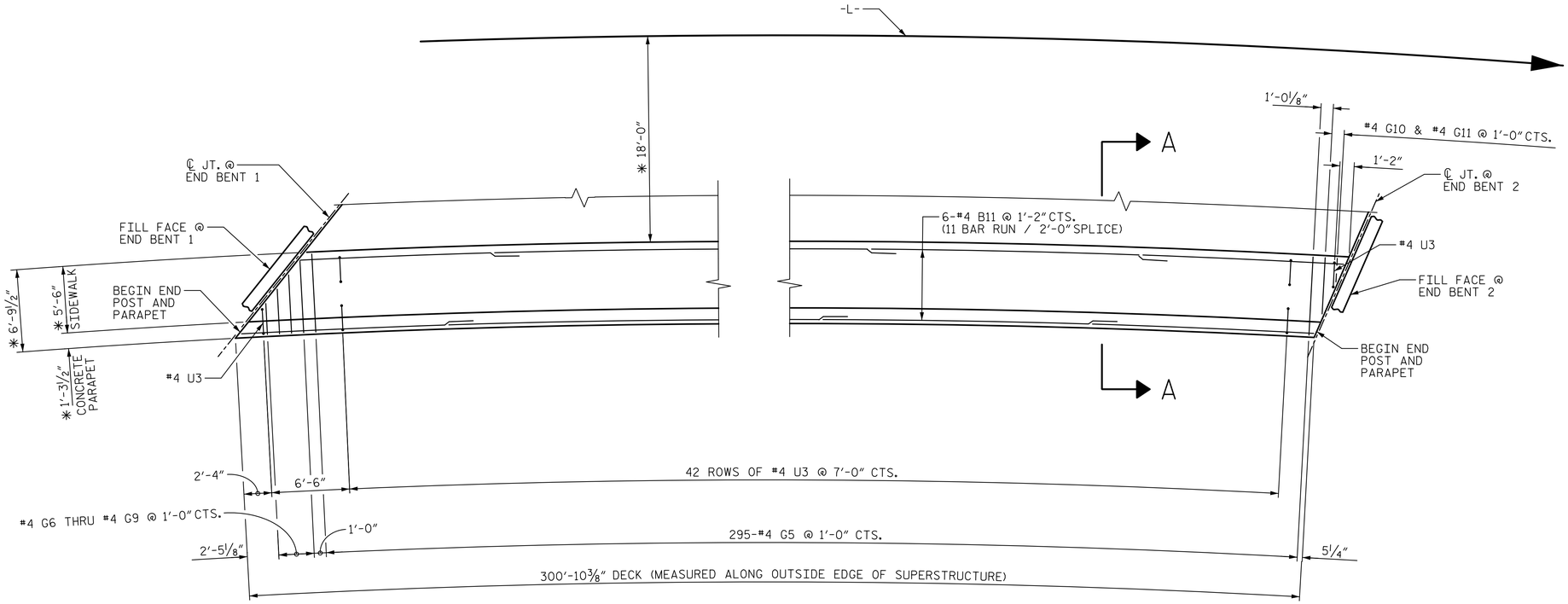
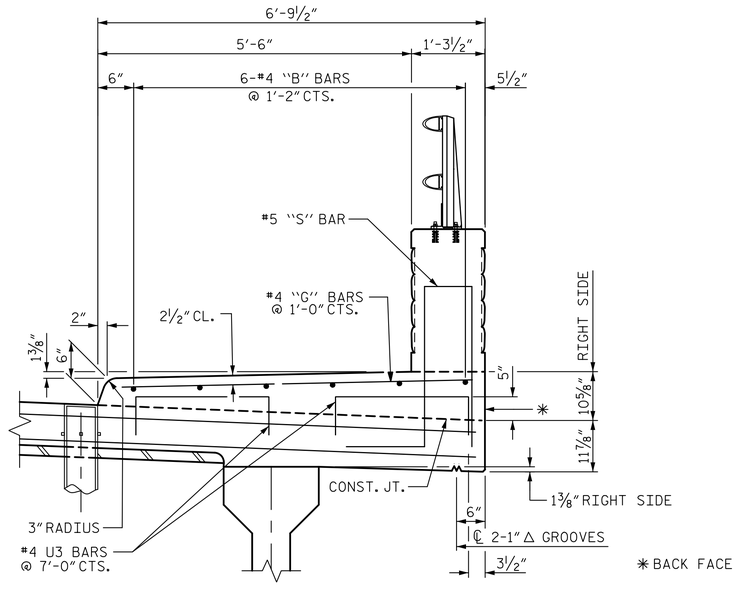


PLAN OF SIDEWALK

* RADIAL DIMENSION



SECTION A-A

NOTES FOR SIDEWALK

THE SIDEWALK ON A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL CONCRETE IN THE UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL REINFORCING IN THE SIDEWALK, CONCRETE PARAPET AND END POSTS SHALL BE EPOXY COATED.

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

FOR REINFORCING IN CONCRETE PARAPET, SEE "PLAN OF PARAPET" & "END OF RAIL DETAILS" SHEETS.

SIDEWALKS ON THE BRIDGE EXTENDING TO THE END OF THE APPROACH SLABS ARE INCLUDED IN THE SUPERSTRUCTURE BILL OF MATERIAL AND PAID FOR AS PART OF THE REINFORCED CONCRETE DECK PAY ITEM.

THE #4 U3 DOWELS MAY BE PUSHED INTO GREEN CONCRETE AFTER DECK OR APPROACH SLAB HAS BEEN SCREEDED OFF, EXCEPT AS NOTED.

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Thomas E. Tallman 10/15/2015
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PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
SIDEWALK DETAILS
STAGE 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-23
1			3			TOTAL SHEETS
2			4			64

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DESIGN ENGINEER OF RECORD: T. E. TALLMAN DATE : OCT 2015

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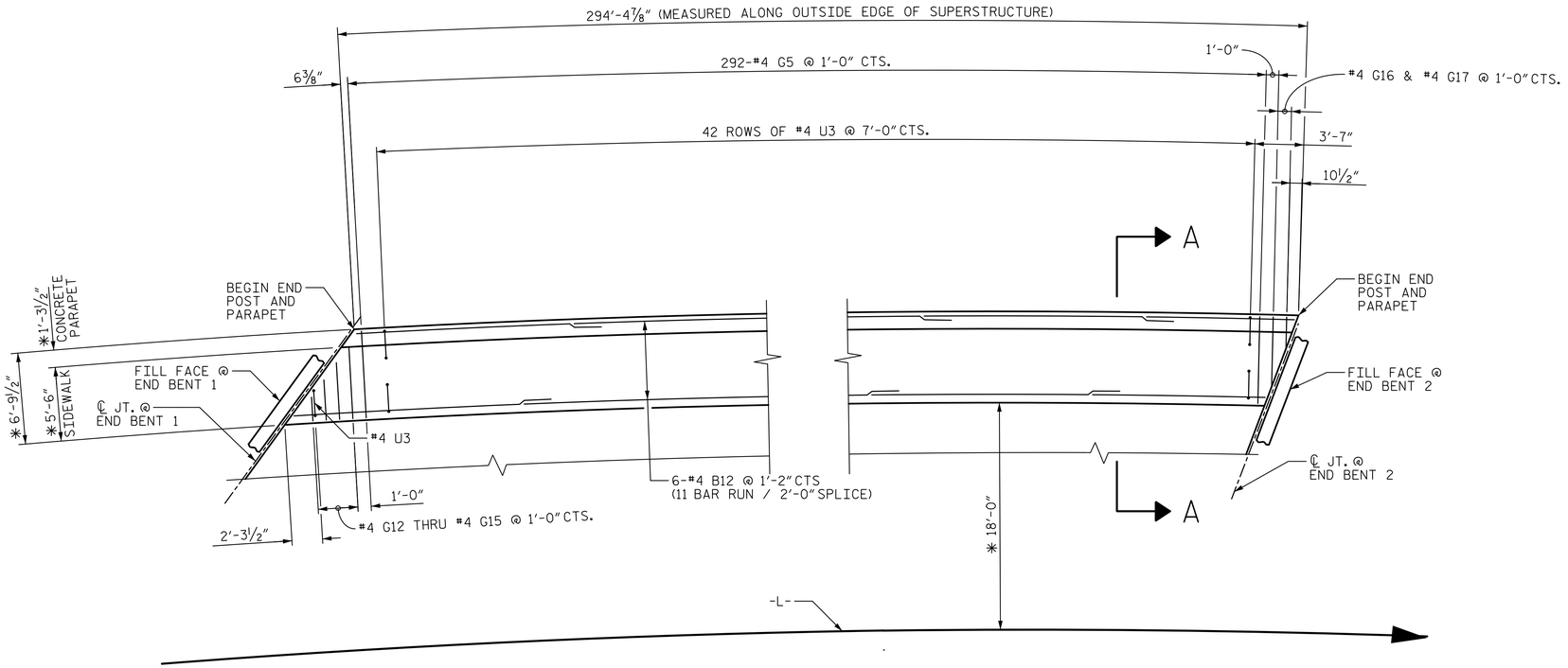
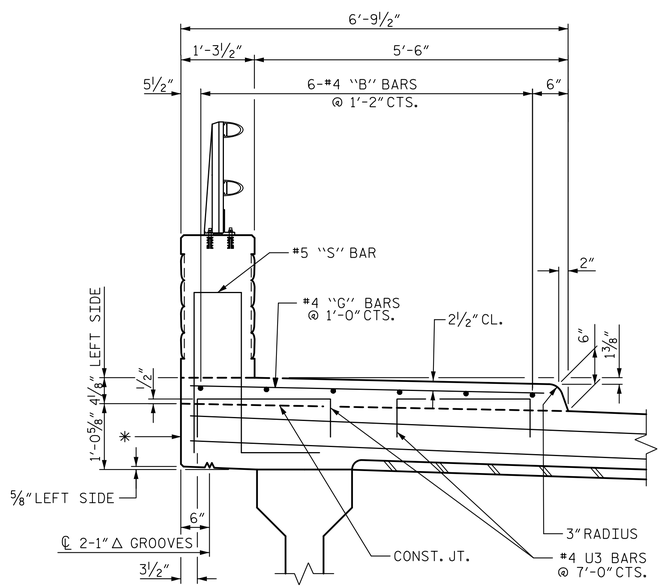


PLAN OF SIDEWALK

* RADIAL DIMENSION



SECTION A-A

NOTES FOR SIDEWALK

THE SIDEWALK ON A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL CONCRETE IN THE UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL REINFORCING IN THE SIDEWALK, CONCRETE PARAPET AND END POSTS SHALL BE EPOXY COATED.

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

FOR REINFORCING IN CONCRETE PARAPET, SEE "PLAN OF PARAPET" & "END OF RAIL DETAILS" SHEETS.

SIDEWALKS ON THE BRIDGE EXTENDING TO THE END OF THE APPROACH SLABS ARE INCLUDED IN THE SUPERSTRUCTURE BILL OF MATERIAL AND PAID FOR AS PART OF THE REINFORCED CONCRETE DECK PAY ITEM.

THE #4 U3 DOWELS MAY BE PUSHED INTO GREEN CONCRETE AFTER DECK OR APPROACH SLAB HAS BEEN SCREEDED OFF, EXCEPT AS NOTED.

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
SIDEWALK DETAILS
STAGE 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-24
1			3			TOTAL SHEETS
2			4			64

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Thomas E. Tallman 10/15/2015
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DRAWN BY : D. H. CARTER DATE : SEP 2015
CHECKED BY : K. M. MOBLEY DATE : SEP 2015
DESIGN ENGINEER OF RECORD: T. E. TALLMAN DATE : OCT 2015

10/14/2015
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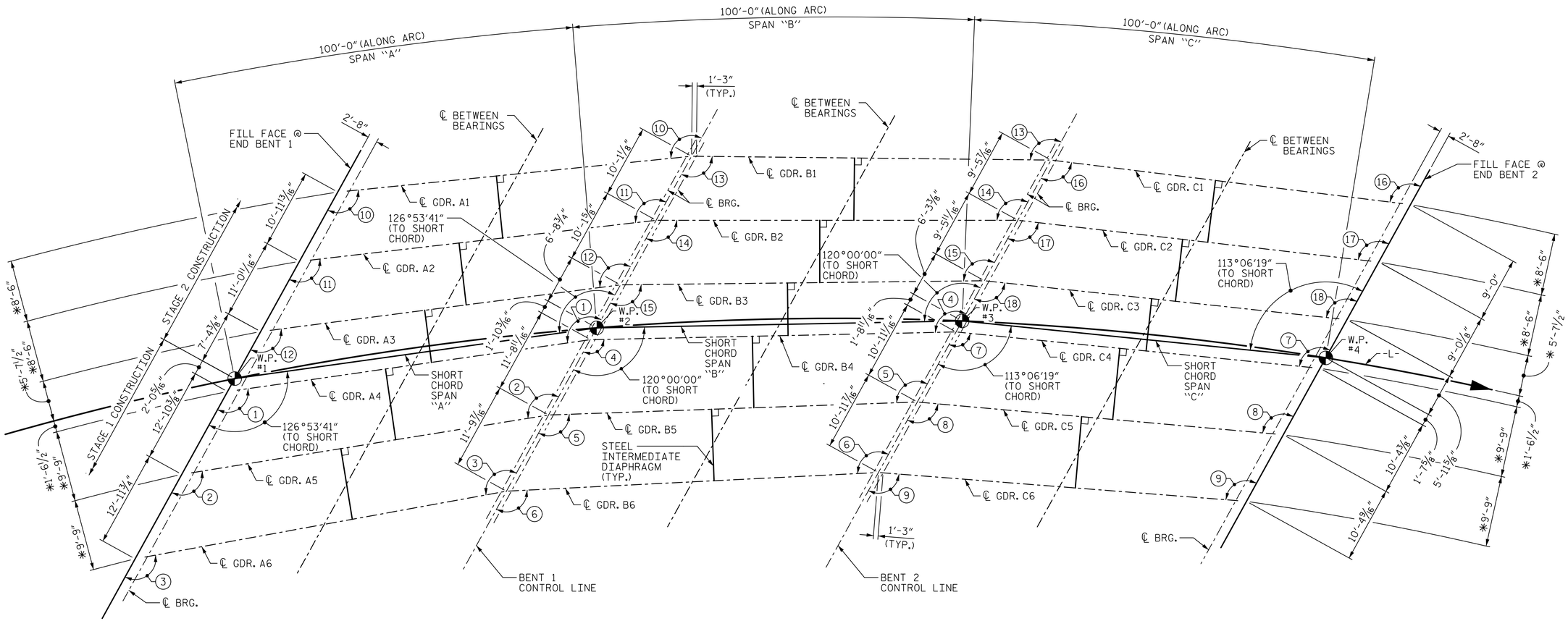
ICA Engineering



FRAMING PLAN

END BENT 1, BENT 1, BENT 2 AND END BENT 2 ARE PARALLEL
*RADIAL DIMENSION

ANGLES (STAGE 1)						ANGLES (STAGE 2)					
①	126°58'31"	④	120°03'42"	⑦	113°09'03"	⑩	125°45'26"	⑬	119°07'23"	⑯	112°27'22"
②	127°29'35"	⑤	120°27'32"	⑧	113°26'38"	⑪	126°10'31"	⑭	119°26'46"	⑰	112°41'44"
③	128°01'39"	⑥	120°52'03"	⑨	113°44'41"	⑫	126°36'16"	⑮	119°46'36"	⑱	112°56'25"

PROJECT NO. B-4159
JACKSON COUNTY
STATION: 20+16.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

FRAMING PLAN

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-25
1			3			TOTAL SHEETS
2			4			64

DRAWN BY : D. H. CARTER DATE : SEP 2015
CHECKED BY : K. M. MOBLEY DATE : SEP 2015
DESIGN ENGINEER OF RECORD: T. E. TALLMAN DATE : OCT 2015

ICA Engineering
5121 Kingdom Way, Suite 100 Raleigh, NC 27607
NC License No: F-0258

NORTH CAROLINA PROFESSIONAL SEAL 14408 ENGINEER THOMAS E. TALLMAN
Thomas E. Tallman
E9B789620EE24D5... 10/15/2015

10/14/2015
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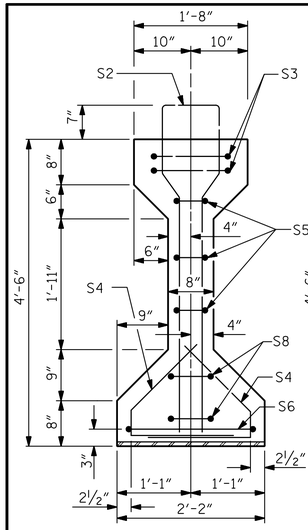
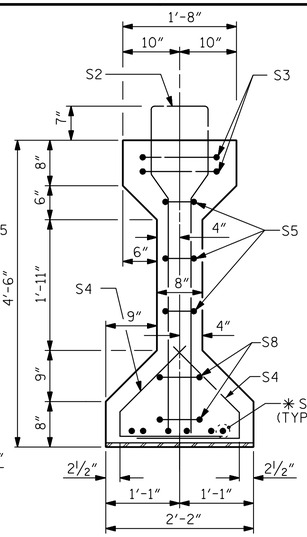
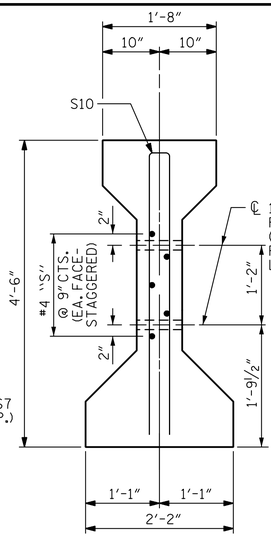
ICA Engineering



SECTION A-A



SECTION B-B

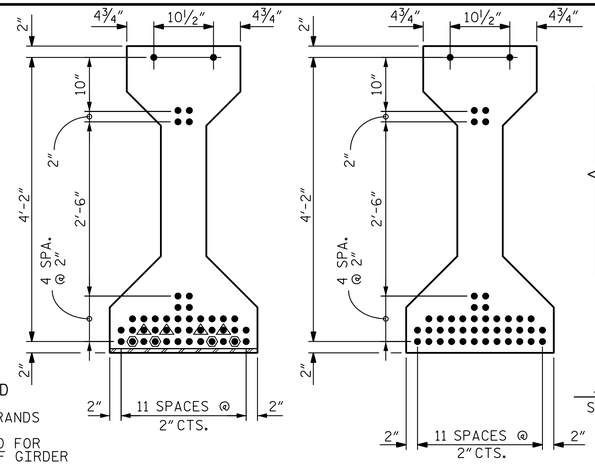


SECTION C-C

(S1 BARS NOT SHOWN)

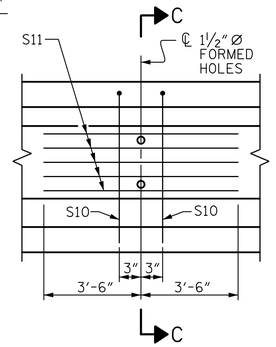
DEBONDING LEGEND

- FULLY BONDED STRANDS
- STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 12'-0" FROM END OF GIRDER



AT END OF GIRDER AT ℄ OF GIRDER

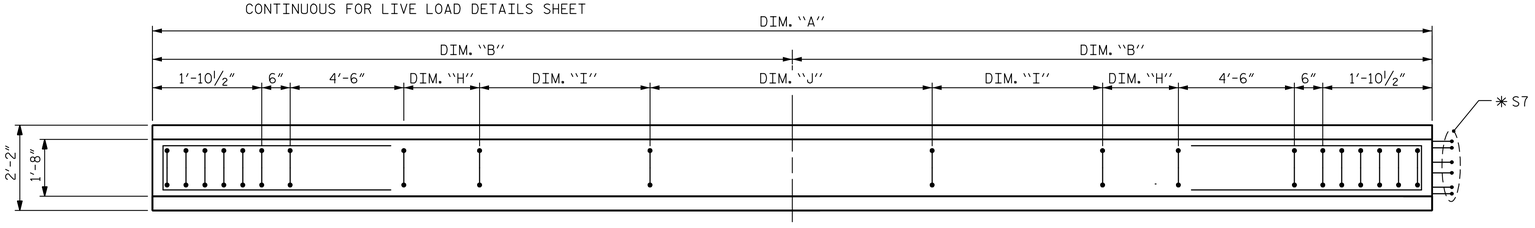
0.6" Ø LOW RELAXATION STRAND LAYOUT



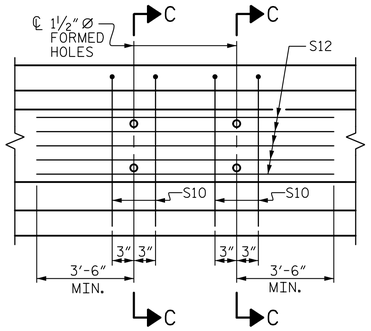
PARTIAL ELEVATION

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

✱FOR S7 BARS, SEE DETAIL "A" OF PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS SHEET

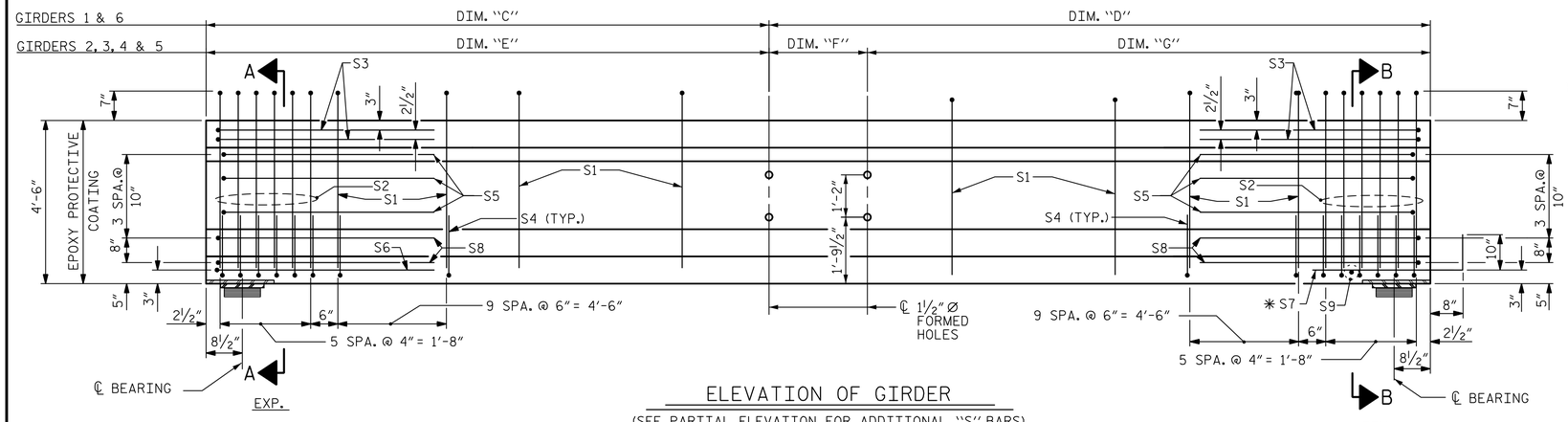


PLAN OF GIRDER



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM
REINFORCING STEEL FOR GIRDER Nos. 2, 3, 4 & 5



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

GIRDER	DIM. "A"	DIM. "B"	DIM. "C"	DIM. "D"	DIM. "E"	DIM. "F"	DIM. "G"	DIM. "H"	DIM. "I"	DIM. "J"
1	95'-4½"	47'-8¼"	44'-7⅜"	50'-9⅛"				9¾"	21 SPA. @ 1'-0"	19 SPA. @ 2'-0"
2	95'-10½"	47'-11¼"			44'-9¾"	6'-2⅜"	44'-10⅜"	1'-0¾"	21 SPA. @ 1'-0"	19 SPA. @ 2'-0"
3	96'-4⅞"	48'-2⅞"	51'-3¹⁵⁄₁₆"	45'-0¹⁵⁄₁₆"	45'-6⅜"	5'-9⅝"	45'-0⅞"	3¹⁵⁄₁₆"	22 SPA. @ 1'-0"	19 SPA. @ 2'-0"
4	96'-10½"	48'-5¼"	44'-8¹⁵⁄₁₆"	52'-1⅜"	44'-9"	6'-4⅜"	45'-9⅛"	6¾"	22 SPA. @ 1'-0"	19 SPA. @ 2'-0"
5	97'-6½"	48'-9¼"			45'-0⅛"	7'-5⅞"	45'-0¹⁵⁄₁₆"	10¾"	22 SPA. @ 1'-0"	19 SPA. @ 2'-0"
6	98'-3"	49'-1½"	52'-10⅝"	45'-4⅜"				3"	23 SPA. @ 1'-0"	19 SPA. @ 2'-0"

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

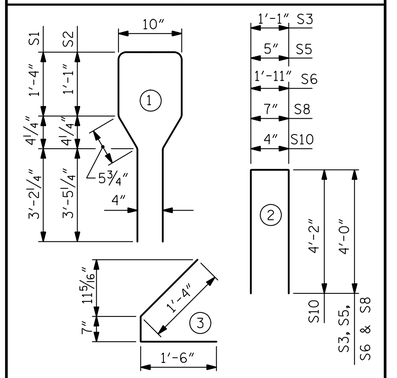
REINFORCING STEEL FOR ONE GIRDER

	BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
GDR. 1 & 2	S1	82	#4	1	10'-10"	593
GDR. 3, 4 & 5	S1	84	#4	1	10'-10"	608
GDR. 6	S1	86	#4	1	10'-10"	622
	S2	12	#6	1	10'-10"	195
	S3	4	#4	2	9'-1"	24
	S4	64	#4	3	3'-5"	146
	S5	6	#4	2	8'-5"	34
	S6	1	#4	2	9'-11"	7
	✱S7	6	#5	STR	3'-8"	23
	S8	4	#4	2	8'-7"	23
	S9	1	#3	STR	1'-10"	1
GDR. 1 & 6	S10	2	#5	2	8'-8"	18
GDR. 2, 3, 4 & 5	S10	4	#5	2	8'-8"	36
GDR. 1 & 6	S11	5	#4	STR	7'-0"	23
GDR. 2, 3, 4 & 5	S12	5	#4	STR	14'-6"	48

✱NOTE: S7 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	8500 PSI CONCRETE	0.6" Ø L. R. STRANDS
	LB.	C.Y.	No.
GDR. 1	1087	19.4	44
GDR. 2	1130	19.5	44
GDR. 3	1145	19.6	44
GDR. 4	1145	19.7	44
GDR. 5	1145	19.8	44
GDR. 6	1116	19.9	44

GIRDERS REQUIRED

	NUMBER	LENGTH	TOTAL LENGTH
STAGE 1	3	VARIES	292'-8"
STAGE 2	3	VARIES	287'-7⅞"
TOTAL	6	-	580'-3⅞"

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

AASHTO TYPE IV
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
SPAN "A"

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-26
1			3			TOTAL SHEETS
2			4			64

ASSEMBLED BY : D. H. CARTER DATE : SEP 2015
CHECKED BY : M. T. NEITHEISEL DATE : SEP 2015

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

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NC License No. F-0258

NORTH CAROLINA PROFESSIONAL SEAL 14408 ENGINEER THOMAS E. TALLMAN
Thomas E. Tallman 10/15/2015
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10/14/2015
ICA Engineering
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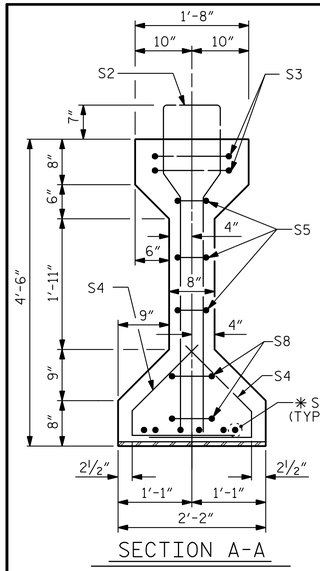
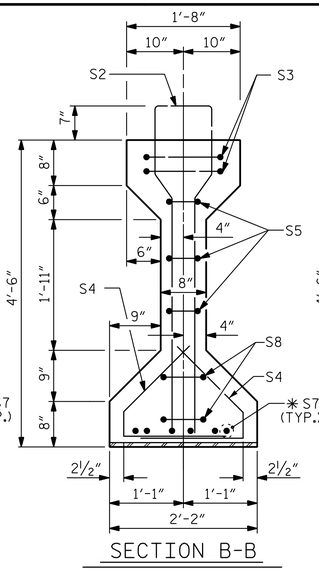
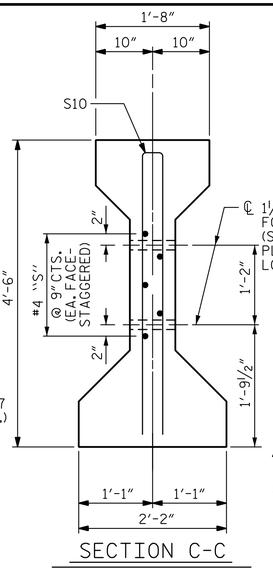
STD. NO. PCG6 (Sht. 1)



SECTION A-A



SECTION B-B

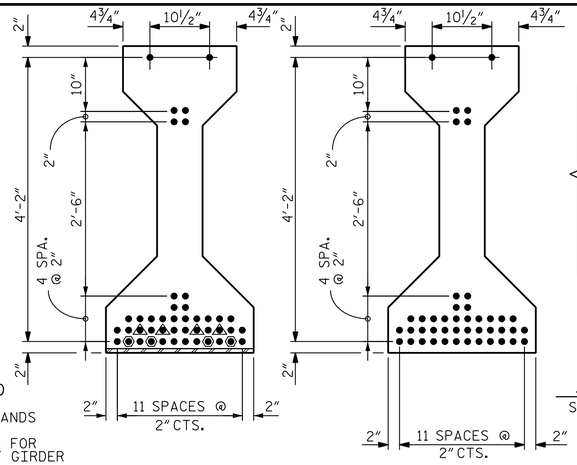


SECTION C-C

(S1 BARS NOT SHOWN)

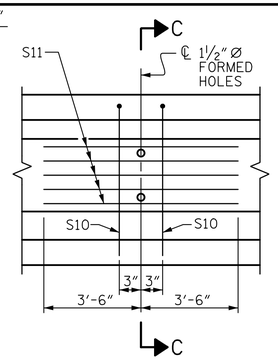
DEBONDING LEGEND

- ● FULLY BONDED STRANDS
- △ STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER
- ⬡ STRANDS DEBONDED FOR 12'-0" FROM END OF GIRDER



AT END OF GIRDER AT ℄ OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

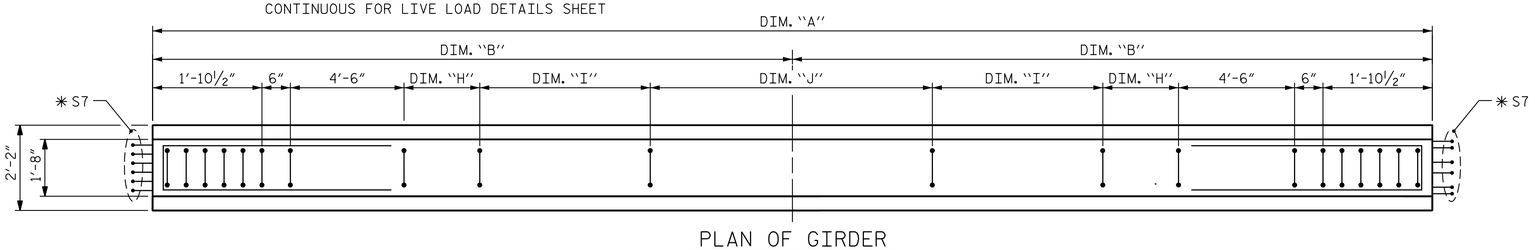


PARTIAL ELEVATION

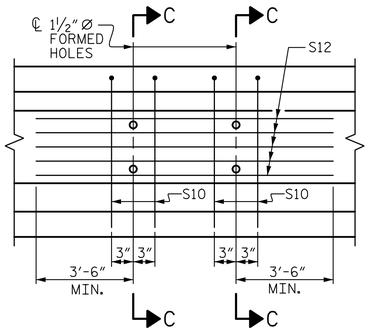
SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. 1 & 6

GDR. 1 & 6	S10	2
GDR. 2, 3, 4 & 5	S10	4
GDR. 1 & 6	S11	5
GDR. 2, 3, 4 & 5	S12	5

✱FOR S7 BARS, SEE DETAIL "A" OF PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS SHEET

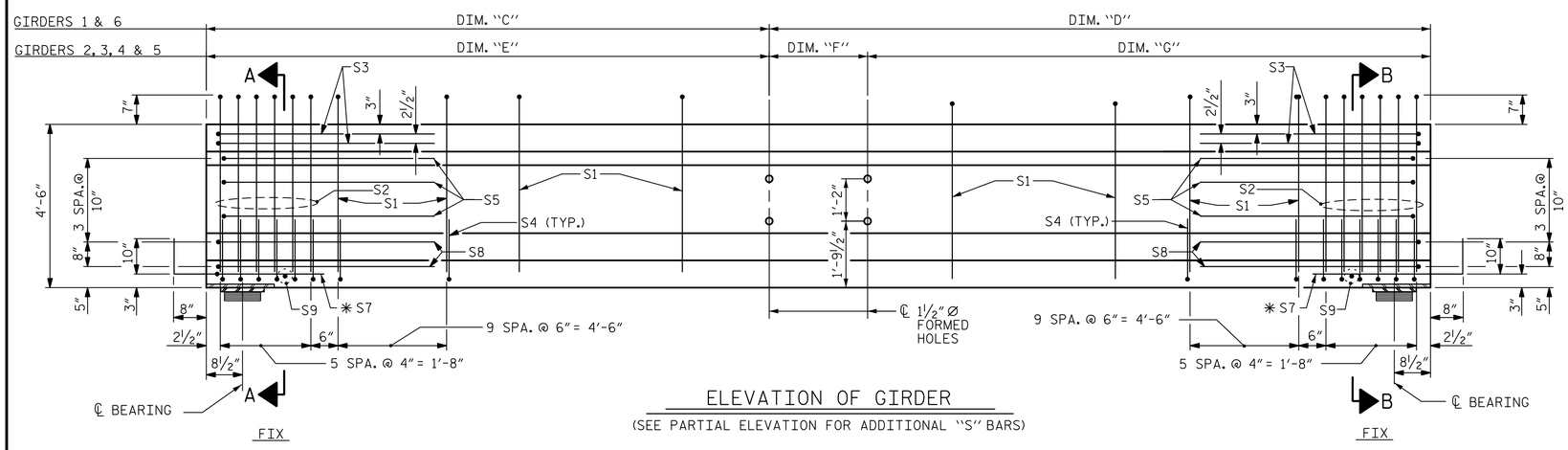


PLAN OF GIRDER



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. 2, 3, 4 & 5



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

GIRDER	DIM. "A"	DIM. "B"	DIM. "C"	DIM. "D"	DIM. "E"	DIM. "F"	DIM. "G"	DIM. "H"	DIM. "I"	DIM. "J"
1	98'-0"	49'-0"	46'-7½"	51'-4½"				1½"	23 SPA. @ 1'-0"	19 SPA. @ 2'-0"
2	98'-3¾"	49'-1⅞"			46'-9"	4'-9⅞"	46'-9⅝"	3⅜"	23 SPA. @ 1'-0"	19 SPA. @ 2'-0"
3	98'-7⅝"	49'-3 13/16"	51'-8¾"	46'-10⅞"	47'-3⅛"	4'-5⅝"	46'-10⅞"	5⅝"	23 SPA. @ 1'-0"	19 SPA. @ 2'-0"
4	98'-11"	49'-5½"	47'-7 1/16"	52'-3 3/16"	46'-7½"	4'-10¾"	47'-4¾"	7"	23 SPA. @ 1'-0"	19 SPA. @ 2'-0"
5	99'-3⅞"	49'-7 5/16"			46'-9⅜"	5'-8⅝"	46'-9⅞"	9⅞"	23 SPA. @ 1'-0"	19 SPA. @ 2'-0"
6	99'-9"	49'-10½"	52'-9 1/16"	46'-11 15/16"				1'-0"	23 SPA. @ 1'-0"	19 SPA. @ 2'-0"

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

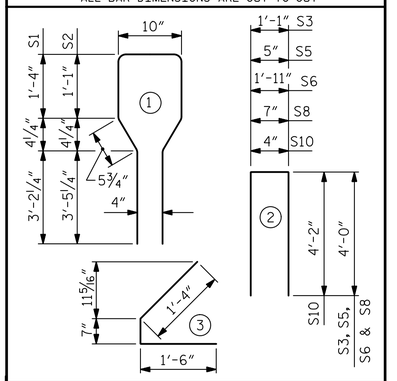
REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	86	#4	1	10'-10"	622
S2	12	#6	1	10'-10"	195
S3	4	#4	2	9'-1"	24
S4	64	#4	3	3'-5"	146
S5	6	#4	2	8'-5"	34
✱S7	12	#5	STR	3'-8"	46
S8	4	#4	2	8'-7"	23
S9	2	#3	STR	1'-10"	1
S10	2	#5	2	8'-8"	18
S10	4	#5	2	8'-8"	36
S11	5	#4	STR	7'-0"	23
S12	5	#4	STR	12'-9"	43

✱NOTE: S7 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.	8500 PSI CONCRETE C.Y.	0.6" Ø L.R. STRANDS No.
GDR. 1	1132	19.9	44
GDR. 2	1170	20.0	44
GDR. 3	1170	20.0	44
GDR. 4	1170	20.1	44
GDR. 5	1170	20.2	44
GDR. 6	1132	20.2	44

GIRDERS REQUIRED

	NUMBER	LENGTH	TOTAL LENGTH
STAGE 1	3	VARIES	297'-11⅞"
STAGE 2	3	VARIES	294'-11⅜"
TOTAL	6	-	592'-11¼"

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

AASHTO TYPE IV
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
SPAN "B"

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-27
1			3			TOTAL SHEETS
2			4			64

ASSEMBLED BY : D. H. CARTER DATE : SEP 2015
CHECKED BY : M. T. NEITHEISEL DATE : SEP 2015

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

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NORTH CAROLINA PROFESSIONAL SEAL 14408 ENGINEER THOMAS E. TALLMAN

Documents Thomas E. Tallman 10/15/2015
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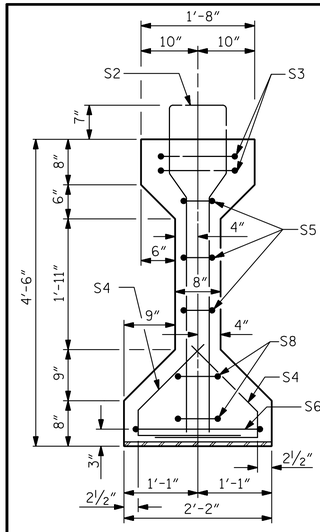
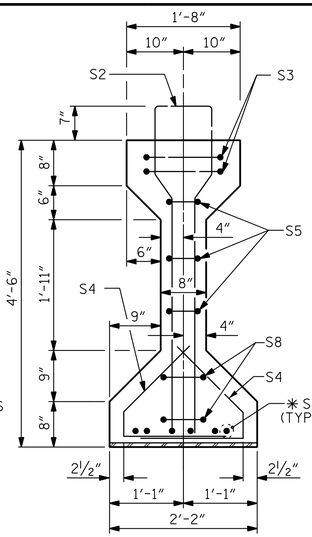
10/14/2015
ICA Engineering

R:\Plans\Final\s27_ b4159_sd_cg_02.dgn

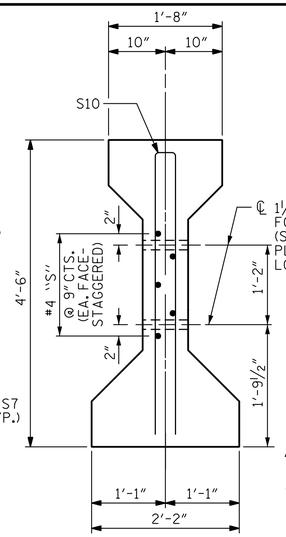
STD. NO. PCG6 (Sht. 1)



SECTION A-A



SECTION B-B

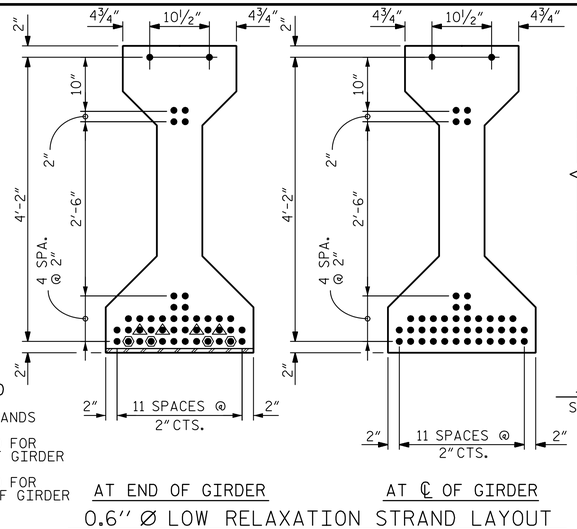


SECTION C-C

(S1 BARS NOT SHOWN)

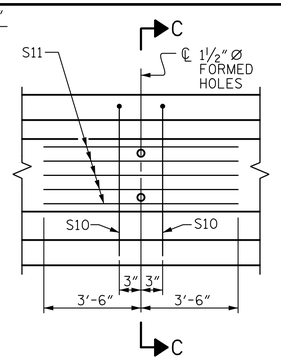
DEBONDING LEGEND

- ● FULLY BONDED STRANDS
- ▲ STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER
- ⬢ STRANDS DEBONDED FOR 12'-0" FROM END OF GIRDER



AT END OF GIRDER AT ℄ OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

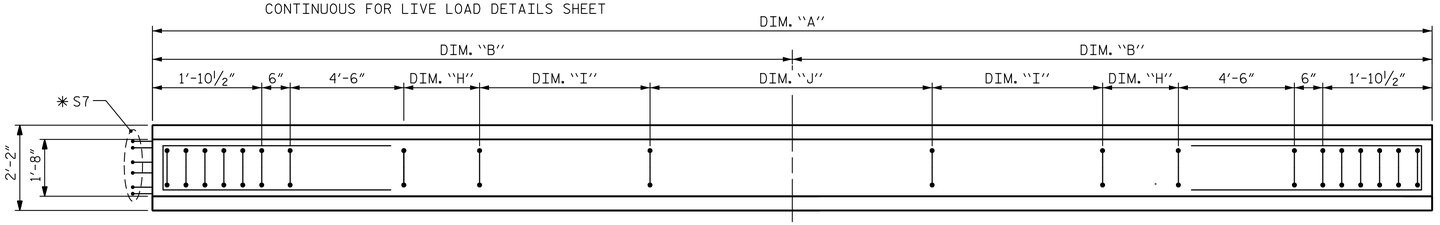


PARTIAL ELEVATION

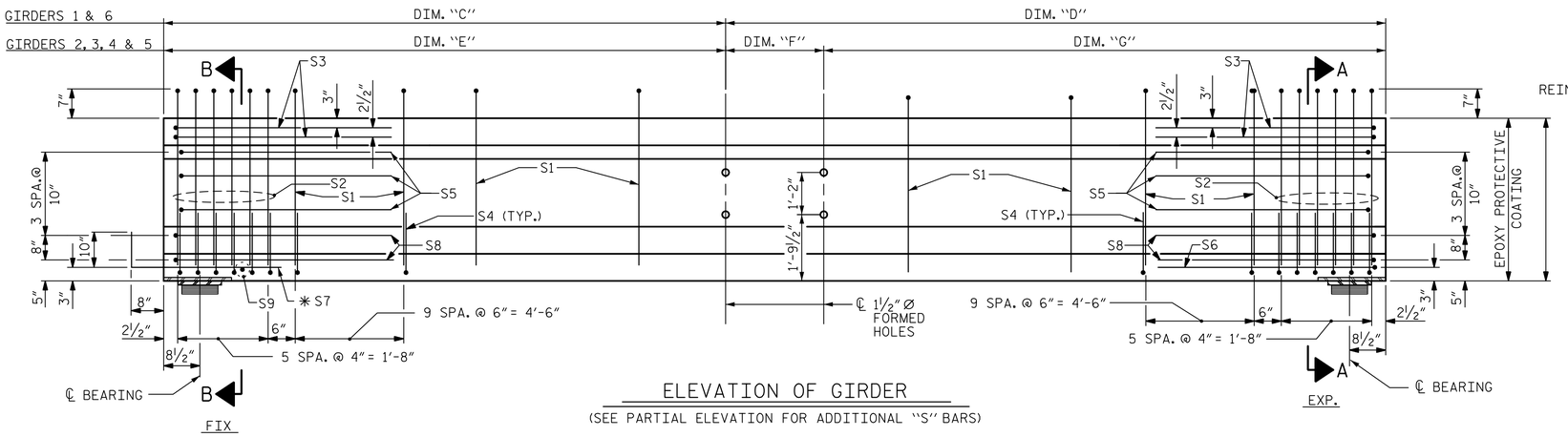
SHOWING INTERMEDIATE DIAPHRAGM
REINFORCING STEEL FOR GIRDER
Nos. 1 & 6

GDR. 1 & 6	S10	2	#5	2	8'-8"	18
GDR. 2, 3, 4 & 5	S10	4	#5	2	8'-8"	36
GDR. 1 & 6	S11	5	#4	STR	7'-0"	23
GDR. 2, 3, 4 & 5	S12	5	#4	STR	11'-3"	38

✳FOR S7 BARS, SEE DETAIL "A" OF PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS SHEET

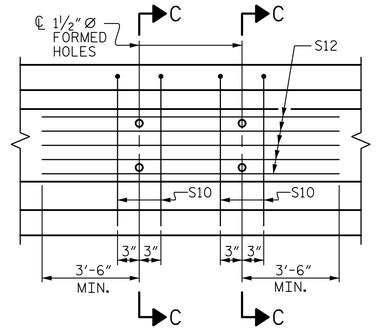


PLAN OF GIRDER



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM
REINFORCING STEEL FOR GIRDER Nos. 2, 3, 4 & 5

GIRDERS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
STAGE 1	3	VARIES	292'-4½"
STAGE 2	3	VARIES	290'-9⅛"
TOTAL	6	-	583'-1⅝"

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

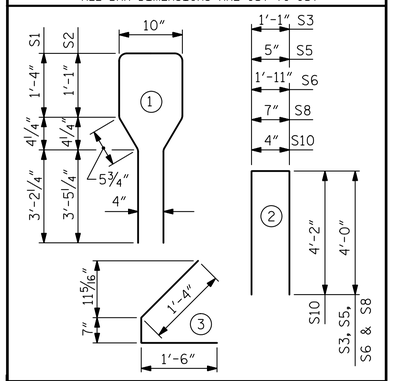
REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	84	#4	1	10'-10"	608
S2	12	#6	1	10'-10"	195
S3	4	#4	2	9'-1"	24
S4	64	#4	3	3'-5"	146
S5	6	#4	2	8'-5"	34
S6	1	#4	2	9'-11"	7
✳S7	6	#5	STR	3'-8"	23
S8	4	#4	2	8'-7"	23
S9	1	#3	STR	1'-10"	1
S10	2	#5	2	8'-8"	18
S10	4	#5	2	8'-8"	36
S11	5	#4	STR	7'-0"	23
S12	5	#4	STR	11'-3"	38

✳NOTE: S7 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.	8500 PSI CONCRETE C.Y.	0.6" Ø L.R. STRANDS No.
GDR. 1	1102	19.6	44
GDR. 2	1135	19.7	44
GDR. 3	1135	19.7	44
GDR. 4	1135	19.7	44
GDR. 5	1135	19.8	44
GDR. 6	1102	19.8	44

GIRDER	DIM. "A"	DIM. "B"	DIM. "C"	DIM. "D"	DIM. "E"	DIM. "F"	DIM. "G"	DIM. "H"	DIM. "I"	DIM. "J"
1	96'-9"	48'-4½"	47'-7⅜"	50'-1⅝"				6"	22 SPA. @ 1'-0"	19 SPA. @ 2'-0"
2	96'-11"	48'-5½"			46'-8 1/16"	3'-6 9/16"	46'-8 5/16"	7"	22 SPA. @ 1'-0"	19 SPA. @ 2'-0"
3	97'-1⅛"	48'-6 9/16"	50'-4"	46'-9⅛"	47'-0¼"	3'-3¾"	46'-9⅛"	8 1/16"	22 SPA. @ 1'-0"	19 SPA. @ 2'-0"
4	97'-2⅞"	48'-7 1/16"	46'-6 5/16"	50'-8 9/16"	46'-6 5/16"	3'-7⅜"	47'-1 3/16"	8 5/16"	22 SPA. @ 1'-0"	19 SPA. @ 2'-0"
5	97'-5½"	48'-8¾"			46'-7¼"	4'-2 5/8"	46'-7 5/8"	10¼"	22 SPA. @ 1'-0"	19 SPA. @ 2'-0"
6	97'-8⅛"	48'-10 1/16"	50'-11 9/16"	46'-8 9/16"				11 9/16"	22 SPA. @ 1'-0"	19 SPA. @ 2'-0"

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

AASHTO TYPE IV
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
SPAN "C"

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-28
1			3			TOTAL SHEETS
2			4			64

ICA Engineering
5121 Kingdom Way, Suite 100 Raleigh, NC 27~~609~~
NC License No: F-0258

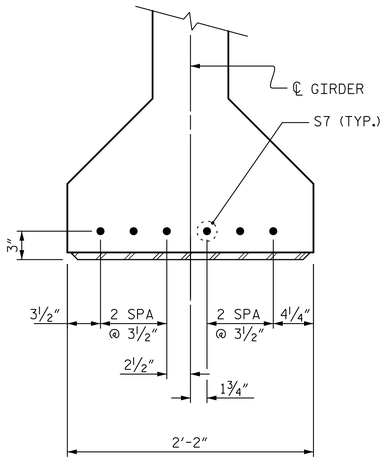
NORTH CAROLINA PROFESSIONAL SEAL 14408 ENGINEER THOMAS E. TALLMAN

Documents Thomas E. Tallman 10/15/2015
E9B789620EE24D5...

ASSEMBLED BY : D. H. CARTER	DATE : SEP 2015		
CHECKED BY : M. T. NEIHEISEL	DATE : SEP 2015		
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	

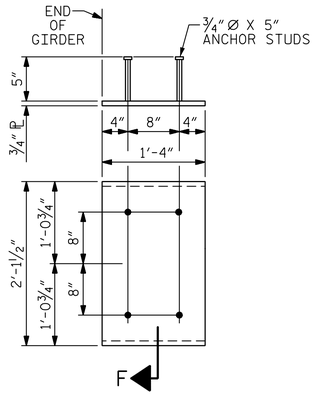
10/14/2015 R:\Plans\Final\s28_ b4159_sd_cg_03.dgn
ICA Engineering

STD. NO. PCG6 (Sht. 1)



DETAIL "A"

(FOR AASHTO TYPE IV GIRDERS)



EMBEDDED PLATE "B-1" DETAILS FOR AASHTO TYPE IV GIRDER AND 63" & 72" MODIFIED BULB TEES

(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.

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.

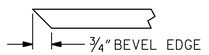
THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6800 PSI.

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 ¼".

WHEN DRAPED STRANDS ARE DETAILED, THE LONGITUDINAL LOCATION OF THE HOLD DOWN DEVICES SHALL BE WITHIN 6" OF THE LOCATION SHOWN AND THE CENTER OF GRAVITY OF THE GROUP OF DRAPED STRANDS SHALL BE LOCATED WITHIN ½" OF THE THEORETICAL LOCATION SHOWN.

THE CONTRACTOR HAS THE OPTION TO PROVIDE, AT NO ADDITIONAL COST TO THE DEPARTMENT, 2 ADDITIONAL STRANDS AT THE TOP OF THE GIRDER TO FACILITATE TYING OF THE REINFORCING STEEL. THESE STRANDS SHALL BE PULLED TO A LOAD OF 4500 lbs.



SECTION "F"

(SEE NOTES)

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-29
1			3			TOTAL SHEETS
2			4			64

ASSEMBLED BY : D. H. CARTER DATE : SEP 2015
CHECKED BY : M. T. NEIHEISEL DATE : SEP 2015

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

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

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NC License No: F-0258

NORTH CAROLINA PROFESSIONAL SEAL 14408 ENGINEER THOMAS E TALLMAN

Thomas E. Tallman 10/15/2015

10/14/2015
ICA Engineering
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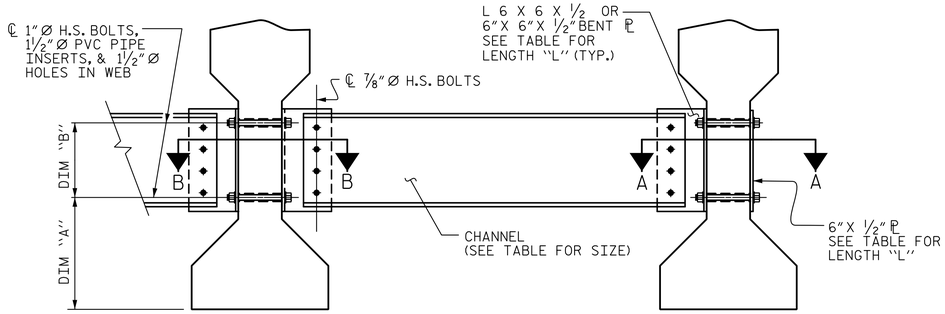
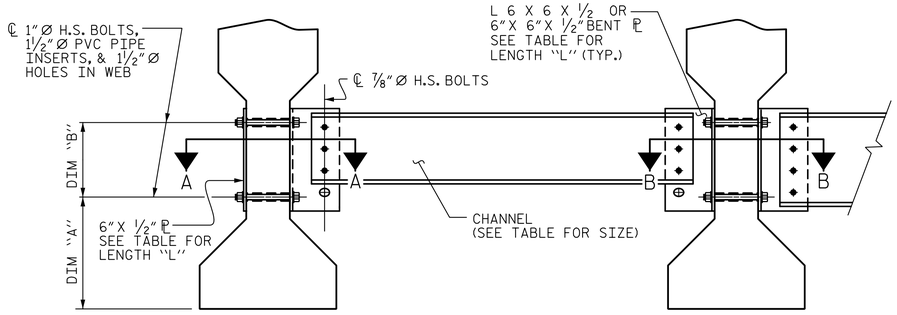
STD. NO. PCG9 (Sht. 3)



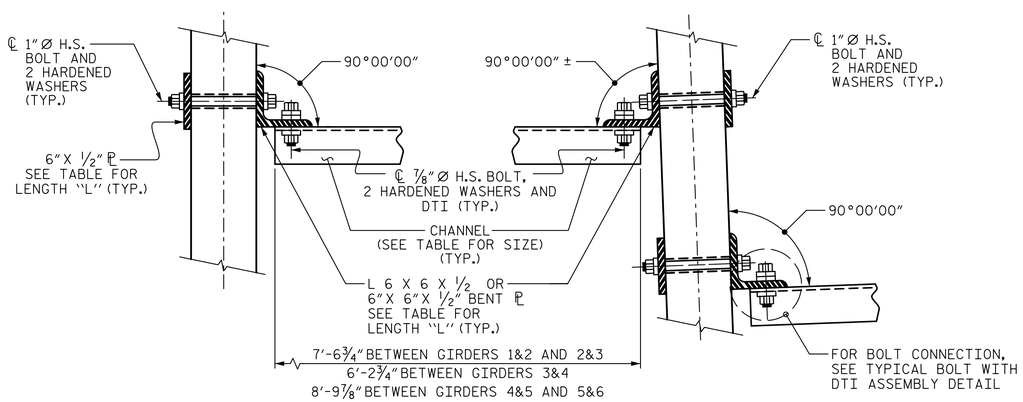
INTERIOR GIRDER EXTERIOR GIRDER

PART SECTION AT INTERMEDIATE DIAPHRAGM - BETWEEN GDRS. 2 THRU 6



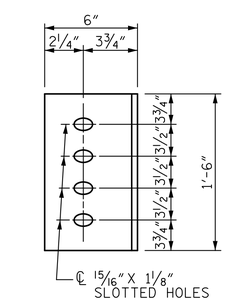
EXTERIOR GIRDER INTERIOR GIRDER

SECTION AT INTERMEDIATE DIAPHRAGM - BETWEEN GDRS. 1 & 2

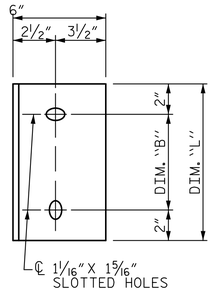


SECTION A-A SECTION B-B

CONNECTION DETAILS



DIAPHRAGM FACE



WEB FACE

CONNECTION PLATE DETAILS

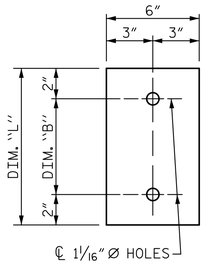
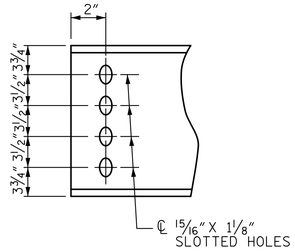
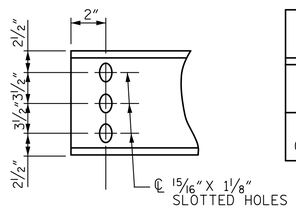


PLATE DETAILS



CHANNEL END - MC 18 x 42.7



CHANNEL END - MC 12 x 31

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.

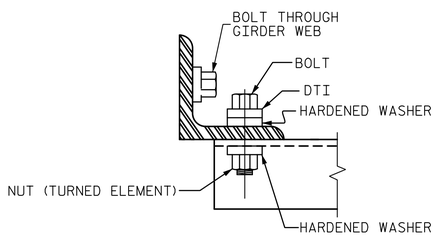
SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

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.

TABLE

LOCATION	GIRDER TYPE	CHANNEL SIZE	DIM "A"	DIM "B"	DIM "L"
BETWEEN GDRS. 1 & 2	IV	MC 12 x 31	1'-9½"	1'-2"	1'-6"
BETWEEN GDRS. 2 THRU 6	IV	MC 18 x 42.7	1'-9½"	1'-2"	1'-6"



BOLT WITH DTI ASSEMBLY DETAIL

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE IV PRESTRESSED CONCRETE GIRDERS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-30
1			3			TOTAL SHEETS
2			4			64

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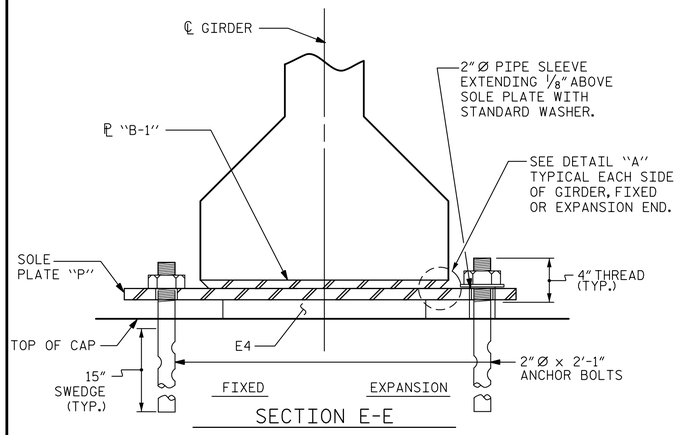
NC License No: F-0258

NORTH CAROLINA PROFESSIONAL SEAL 14408 ENGINEER THOMAS E. TALLMAN
Digitally signed by Thomas E. Tallman E98789620EE2405... 10/15/2015

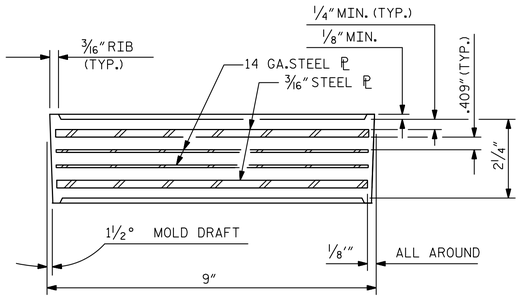
ASSEMBLED BY : D. H. CARTER	DATE : SEP 2015	ADDED 10/21/05	
CHECKED BY : T.E. TALLMAN	DATE : SEP 2015	REV. 5/1/06RRR	KMM/GM
DRAWN BY : TLA 6/05		REV. 10/1/11	MAA/GM
CHECKED BY : VC 6/05			

10/14/2015 ICA Engineering R:\Plans\Final\s30_ b4159_sd_dp_01.dgn

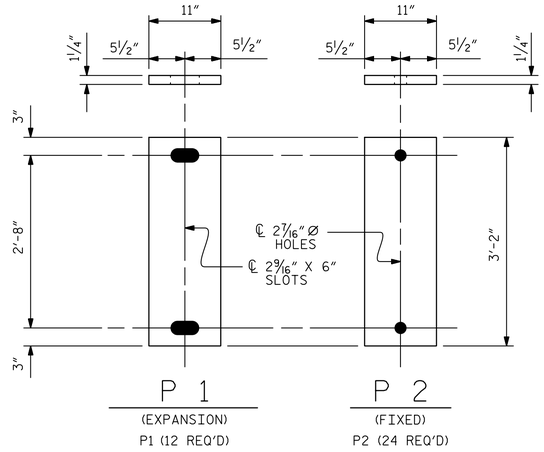
STD. NO. PCG10 (SHT 5)



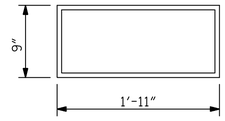
SECTION E-E



TYPICAL SECTION OF ELASTOMERIC BEARINGS



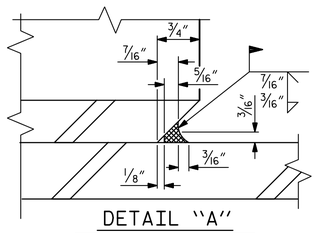
SOLE PLATE DETAILS ("P")



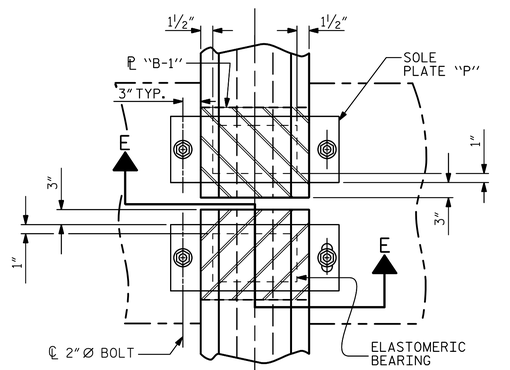
E4 (36 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING

TYPE V



DETAIL "A"



TYPICAL HALF-PLAN (SHOWING CONTINUOUS BENT)

TYPICAL HALF-PLAN (SHOWING SIMPLE SPAN BENT)

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

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

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.

MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE V	365 k

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

ASSEMBLED BY : D. H. CARTER	DATE : SEP 2015				
CHECKED BY : K. M. MOBLEY	DATE : SEP 2015				
DRAWN BY : EEM 2/97	REV. 5/1/06	TLA/GM			
CHECKED BY : VAP 2/97	REV. 10/1/11	MAA/GM			
	REV. 6/13	AAC/MAA			

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NORTH CAROLINA PROFESSIONAL SEAL 14408 ENGINEER THOMAS E. TALLMAN
DocuSigned by: Thomas E. Tallman E9B7B9620EE24D5 10/15/2015

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-31
1			3			TOTAL SHEETS
2			4			64

STD. NO. EB4

10/14/2015
ICA Engineering

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DEAD LOAD DEFLECTION TABLE FOR GIRDERS

0.6"Ø LOW RELAXATION	SPANS "A", "B" AND "C"																						
	GIRDER A1, A4, AND C4											GIRDERS A2, B3, C1 AND C2											
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) ↑	0.000	0.069	0.131	0.180	0.210	0.221	0.210	0.180	0.131	0.069	0.000	0.000	0.070	0.133	0.182	0.213	0.224	0.213	0.182	0.133	0.070	0.000
✳DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.044	0.084	0.115	0.135	0.141	0.135	0.116	0.085	0.045	0.000	0.000	0.048	0.090	0.123	0.143	0.150	0.143	0.122	0.089	0.047	0.000
FINAL CAMBER ↑	0.000	5/16"	9/16"	13/16"	7/8"	15/16"	7/8"	3/4"	9/16"	5/16"	0.000	0.000	1/4"	1/2"	11/16"	13/16"	7/8"	13/16"	11/16"	1/2"	1/4"	0.000
	GIRDERS A3, AND C3											GIRDERS A5, B6, AND C5										
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) ↑	0.000	0.070	0.132	0.181	0.212	0.223	0.212	0.181	0.132	0.070	0.000	0.000	0.071	0.134	0.183	0.214	0.225	0.214	0.183	0.134	0.071	0.000
✳DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.041	0.078	0.107	0.125	0.132	0.125	0.107	0.078	0.041	0.000	0.000	0.054	0.104	0.143	0.167	0.176	0.168	0.143	0.105	0.055	0.000
FINAL CAMBER ↑	0.000	3/8"	5/8"	7/8"	1 1/16"	1 1/8"	1 1/16"	7/8"	5/8"	5/16"	0.000	0.000	3/16"	3/8"	1/2"	9/16"	9/16"	9/16"	1/2"	3/8"	3/16"	0.000
	GIRDERS A6, B4, AND C6											GIRDERS B1 AND B2										
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) ↑	0.000	0.071	0.134	0.184	0.215	0.226	0.215	0.184	0.134	0.071	0.000	0.000	0.071	0.134	0.184	0.215	0.226	0.215	0.184	0.134	0.071	0.000
✳DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.049	0.094	0.129	0.152	0.160	0.152	0.130	0.095	0.050	0.000	0.000	0.056	0.103	0.140	0.163	0.171	0.163	0.140	0.103	0.056	0.000
FINAL CAMBER ↑	0.000	1/4"	1/2"	11/16"	3/4"	13/16"	3/4"	5/8"	1/2"	1/4"	0.000	0.000	3/16"	3/8"	9/16"	5/8"	11/16"	5/8"	9/16"	3/8"	3/16"	0.000
	GIRDER B5																						
TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0												
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.072	0.135	0.185	0.217	0.228	0.217	0.185	0.135	0.072	0.000												
✳DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.065	0.120	0.163	0.190	0.199	0.189	0.163	0.120	0.065	0.000												
FINAL CAMBER ↑	0.000	1/16"	3/16"	1/4"	5/16"	3/8"	5/16"	1/4"	3/16"	1/16"	0.000												

✳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-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

GIRDER DEAD LOAD AND DEFLECTION

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-32
1			3			TOTAL SHEETS
2			4			64

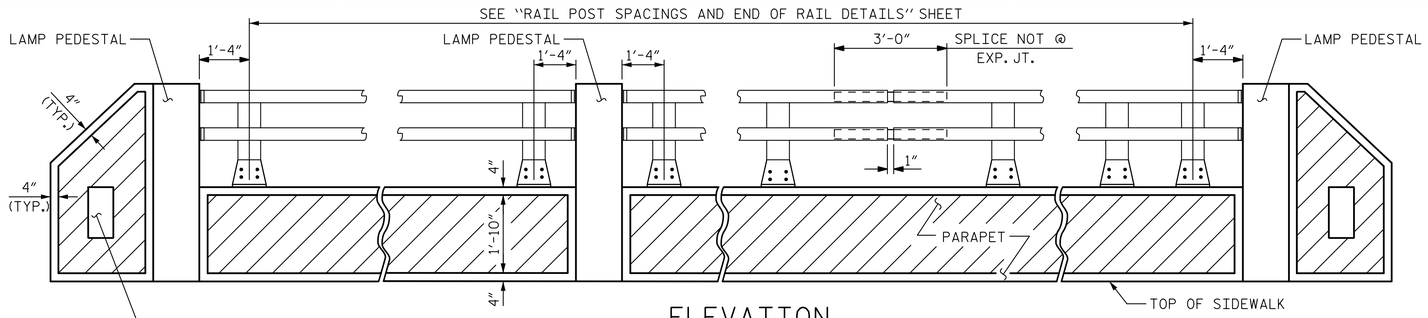
DRAWN BY : D. H. CARTER DATE : SEP 2015
CHECKED BY : M. T. NEIHEISEL DATE : SEP 2015
DESIGN ENGINEER OF RECORD: T. E. TALLMAN DATE : OCT 2015

ICA Engineering
5121 Kingdom Way, Suite 100 Raleigh, NC 27607
NC License No: F-0258

NORTH CAROLINA PROFESSIONAL SEAL 14408 ENGINEER THOMAS E. TALLMAN

Thomas E. Tallman 10/15/2015

10/14/2015
R:\Proj\Final\s32_ b4159_sd_co_01.dgn
ICA Engineering

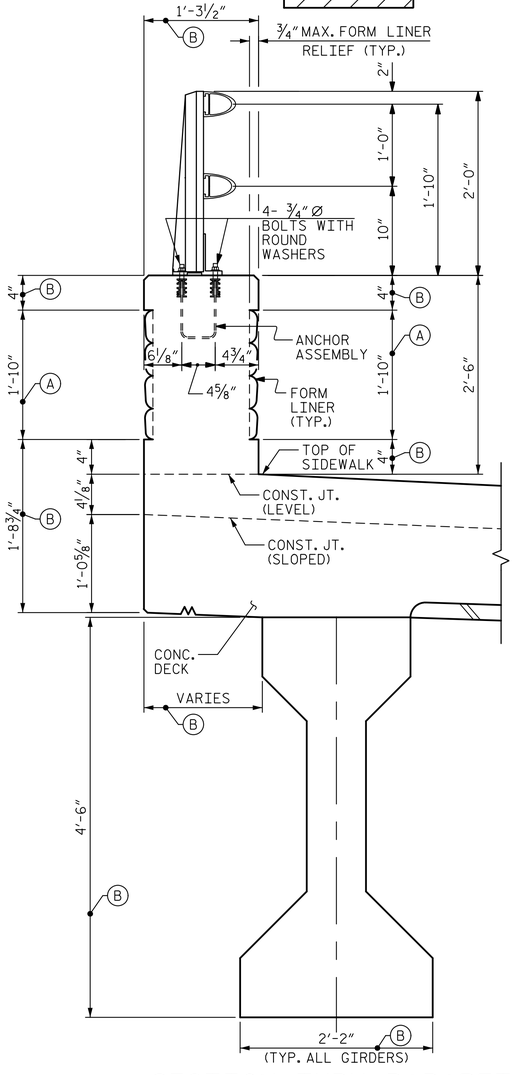


ELEVATION

NOTE: FOR ATTACHMENT OF METAL RAIL TO END POST, SEE SHT. 3 OF 8.

- FORM LINED ARCHITECTURAL SURFACE TREATMENT. SEE SPECIAL PROVISIONS.

THE 2 BAR RAIL SHALL BE ANODIZED DARK BROWN, PRIOR TO ANODIZING, THE CONTRACTOR SHALL PROVIDE A SAMPLE TO THE ENGINEER FOR COORDINATION WITH THE TOWN OF CULLOWHEE.



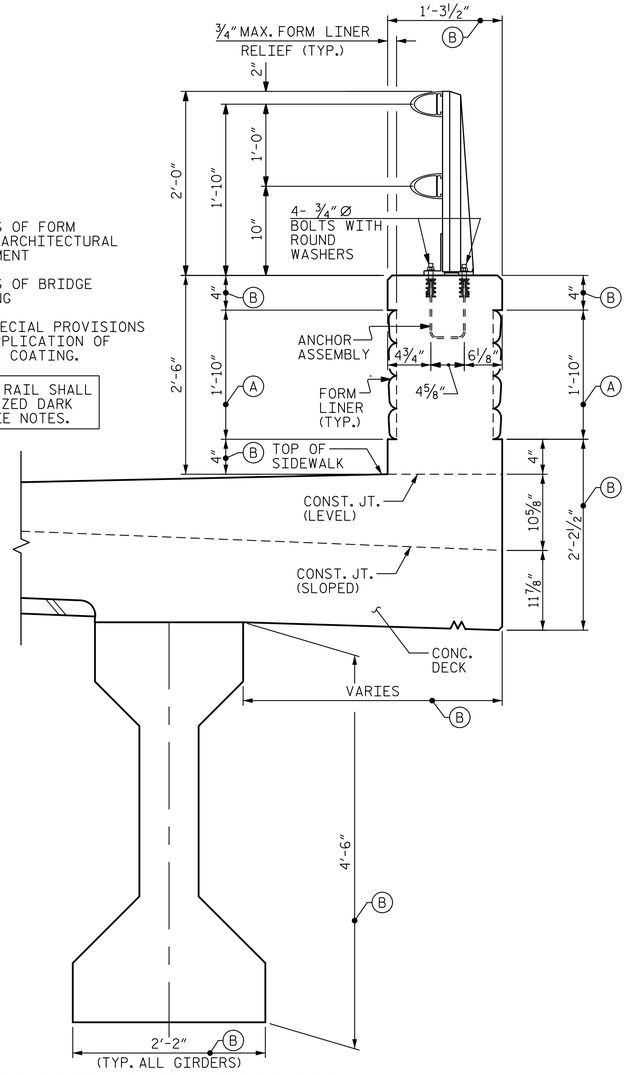
SECTION THRU PARAPET, RAIL AND SIDEWALK (STAGE 2)

Ⓐ LIMITS OF FORM LINED ARCHITECTURAL TREATMENT

Ⓑ LIMITS OF BRIDGE COATING

SEE SPECIAL PROVISIONS FOR APPLICATION OF BRIDGE COATING.

TWO BAR RAIL SHALL BE ANODIZED DARK BROWN. SEE NOTES.



SECTION THRU PARAPET, RAIL AND SIDEWALK (STAGE 1)

NOTES

METAL RAIL SHALL BE ALUMINUM IN ACCORDANCE WITH THE REQUIREMENTS OF THE GENERAL NOTES AND THE FOLLOWING SPECIFICATIONS.

ALUMINUM RAILS

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

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

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

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

ANODIZING

ALUMINUM FOR POSTS, BASES RAILS, EXPANSION BARS, CLAMP BARS, RIVETS, CAPS, SHIMS, ATTACHMENT BRACKETS AND HOLD-DOWN PLATES SHALL BE ANODIZED DARK BROWN.

ANY DAMAGE TO THE ANODIZED SURFACE OF THE RAIL OR COMPONENTS DURING CONSTRUCTION SHALL BE REPAIRED ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS AT THE DIRECTION OF THE ENGINEER AND AT THE CONTRACTOR'S EXPENSE.

THE CONTRACTOR SHALL SUBMIT A SAMPLE OF COMPATIBLE DARK BROWN EXTERIOR ACRYLIC PAINT TO THE ENGINEER. THIS PAINT SHALL MATCH THE ANODIZED RAIL COLOR AS CLOSELY AS POSSIBLE. AFTER ERECTION OF THE ANODIZED ALUMINUM RAILING, ALL EXPOSED ANCHOR BOLTS, NUTS, WASHERS, MACHINE SCREWS, CAP SCREWS, BOLTS, ATTACHMENT BRACKETS, AND BUILT UP ANGLES SHALL BE COATED WITH TWO COATS OF THIS PAINT.

GENERAL NOTES

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

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

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

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

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

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

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

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

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

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

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

GROOVED CONTRACTION JOINTS, 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.

PAY LENGTH FOR 2-BAR METAL RAIL (STAGE 1) = 284.48 LIN. FT.

ARCHITECTURAL CONCRETE SURFACE TREATMENT AREA (STAGE 1) = 1075.4 SQ. FT.

PAY LENGTH FOR 2-BAR METAL RAIL (STAGE 2) = 278.22 LIN. FT.

ARCHITECTURAL CONCRETE SURFACE TREATMENT AREA (STAGE 2) = 1054.0 SQ. FT.

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

SHEET 1 OF 8

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

2 BAR METAL RAIL

ASSEMBLED BY : D. H. CARTER	DATE : SEP 2015
CHECKED BY : M. NEIHEISEL	DATE : SEP 2015

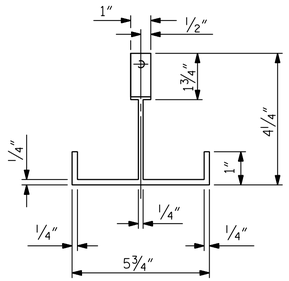
DRAWN BY : EEM 6/94	REV. 5/1/06	TLA/GM
CHECKED BY : RGW 6/94	REV. 10/1/11	MAA/GM
	REV. 6/13	MAA/GM

ICA Engineering
5121 Kingdom Way, Suite 100 Raleigh, NC 27607
NC License No: F-0258

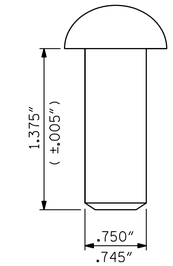
NORTH CAROLINA PROFESSIONAL SEAL 14408 ENGINEER THOMAS E. TALLMAN
Thomas E. Tallman 10/15/2015
E9878962DEE24D5...

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-33
1			3			TOTAL SHEETS
2			4			64

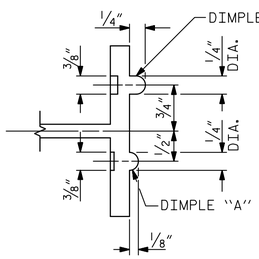
STD. NO. BMR3



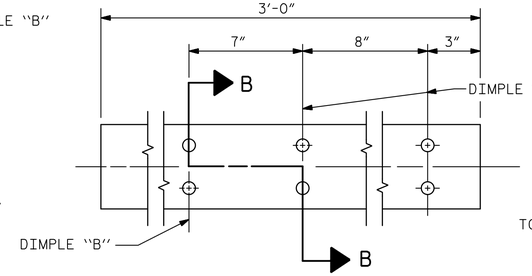
PLAN

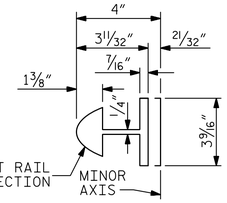


RIVET DETAIL



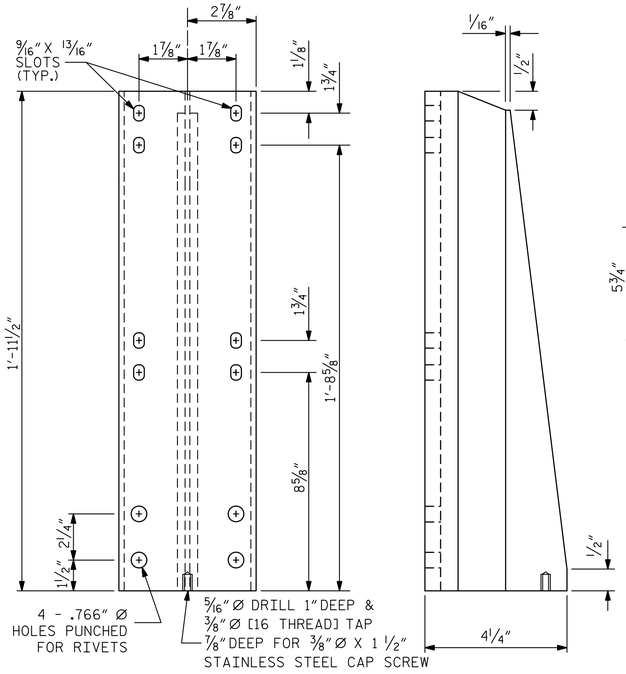
SECTION B - B





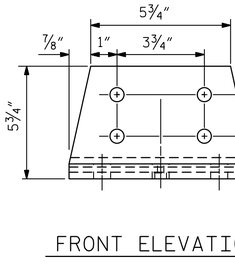
BAR SECTION

EXPANSION BAR DETAILS

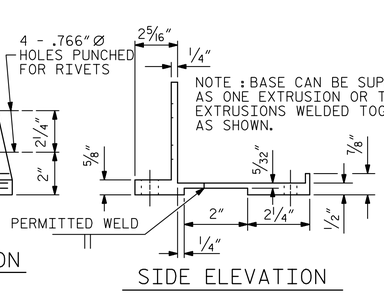


FRONT ELEVATION SIDE ELEVATION

DETAILS OF POST

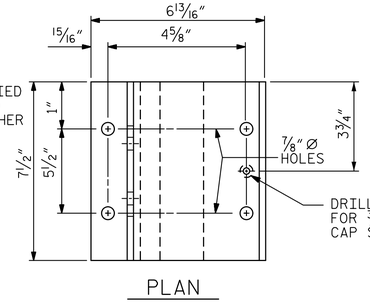


FRONT ELEVATION

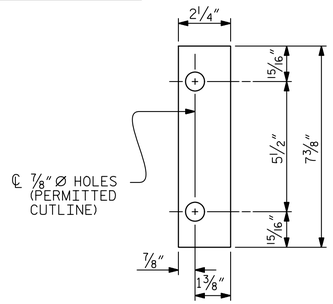


SIDE ELEVATION

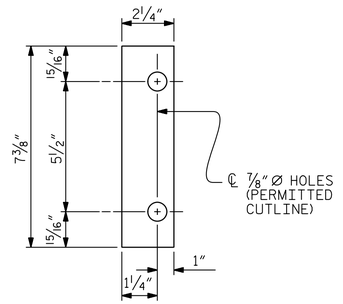
POST BASE DETAILS



PLAN



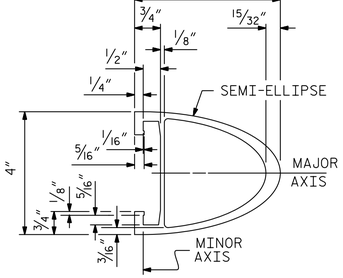
FRONT PLATE



REAR PLATE

SHIM DETAILS

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



RAIL SECTION

NOTES

STRUCTURAL CONCRETE ANCHOR ASSEMBLY

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

A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2" FOR 3/4" FERRULES.

B. 4 - 3/4" Ø X 2 1/2" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø X 2 1/2" GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.

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

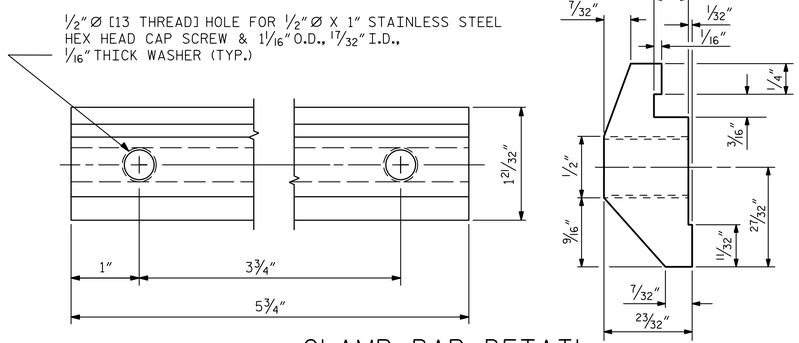
D. THE METAL RAIL ANCHOR ASSEMBLIES TO BE HOT DIPPED GALVANIZED TO CONFORM TO REQUIREMENTS OF AASHTO M111.

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

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

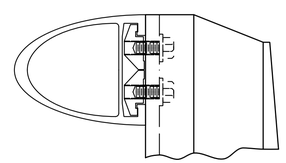
THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF THE METAL RAIL ANCHOR ASSEMBLY. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 10 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE THE STANDARD SPECIFICATIONS.

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

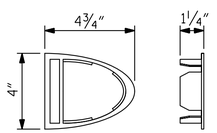


CLAMP BAR DETAIL

(4 REQUIRED PER POST)



CLAMP ASSEMBLY



RAIL CAP

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

SHEET 2 OF 8

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

2 BAR METAL RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-34
1			3			TOTAL SHEETS
2			4			64

ASSEMBLED BY : D. H. CARTER DATE : SEP 2015
CHECKED BY : M. NEIHEISEL DATE : SEP 2015

DRAWN BY : EEM 6/94
CHECKED BY : RGW 6/94

REV. 8/16/99 MAB/LES
REV. 5/1/06R KMM/GM
REV. 10/1/11 MAA/GM

ICA Engineering
5121 Kingdom Way, Suite 100 Raleigh, NC 27607
NC License No: F-0258

NORTH CAROLINA PROFESSIONAL SEAL 14408 ENGINEER THOMAS E TALLMAN

Thomas E. Tallman 10/15/2015

STD. NO. BMR4

10/14/2015
ICA Engineering
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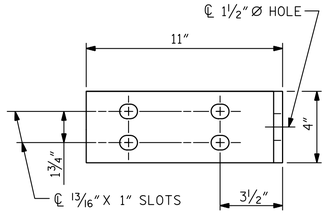
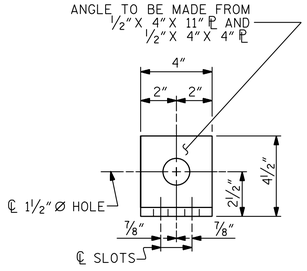
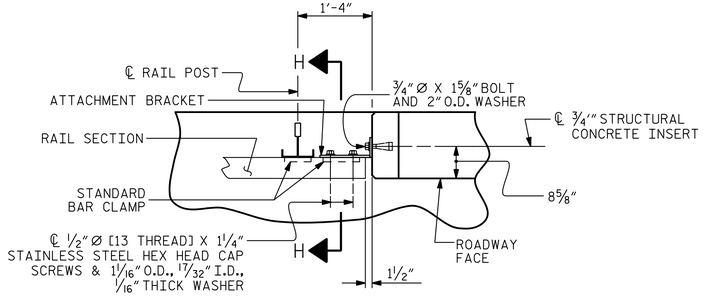


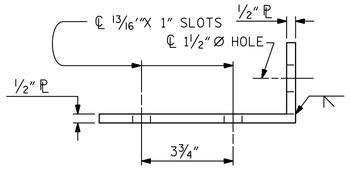
ELEVATION



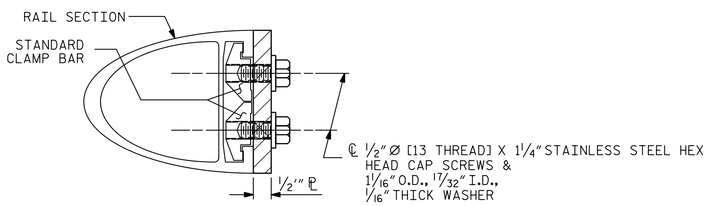
END VIEW (FIX AND EXP.)



PLAN - RAIL AND END POST



TOP VIEW



SECTION H-H (FIX)

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.

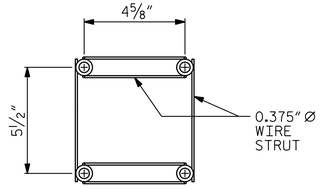
THE ¾"STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.

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

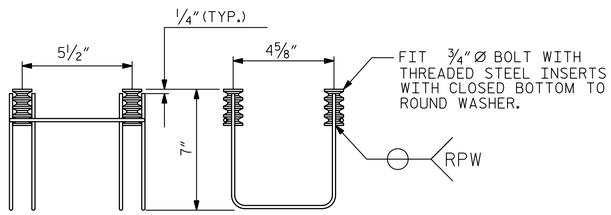
THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE ¾"Ø X 1⅝" BOLT WITH WASHER SHALL BE REPLACED WITH A ¾"Ø X 6½"BOLT AND 2"O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE ¾"Ø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

DETAILS FOR ATTACHING METAL RAIL TO END POST

NOTE:
FOR RAIL POST SPACINGS, SEE SHEET 5 OF 8



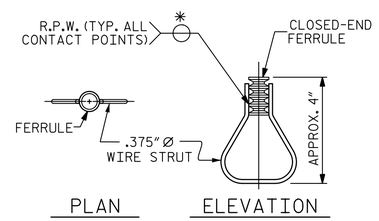
PLAN



SIDE VIEW ELEVATION

4-BOLT METAL RAIL ANCHOR ASSEMBLY

(55 ASSEMBLIES REQUIRED) (STAGE 1)
(53 ASSEMBLIES REQUIRED) (STAGE 2)



PLAN ELEVATION

STRUCTURAL CONCRETE INSERT

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

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

SHEET 3 OF 8

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

RAIL POST SPACINGS AND END OF RAIL DETAILS

FOR ONE OR TWO BAR METAL RAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-35
1			3			TOTAL SHEETS
2			4			64

ASSEMBLED BY : D. H. CARTER	DATE : SEP 2015	
CHECKED BY : M. NEIHEISEL	DATE : SEP 2015	
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

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NORTH CAROLINA PROFESSIONAL SEAL 14408 ENGINEER THOMAS E TALLMAN
Thomas E. Tallman 10/15/2015

STD. NO. BMR2

10/14/2015
ICA Engineering
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NOTE:
FOR PLAN OF PARAPET, SEE SHEET 7 OF 8

NOTES

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

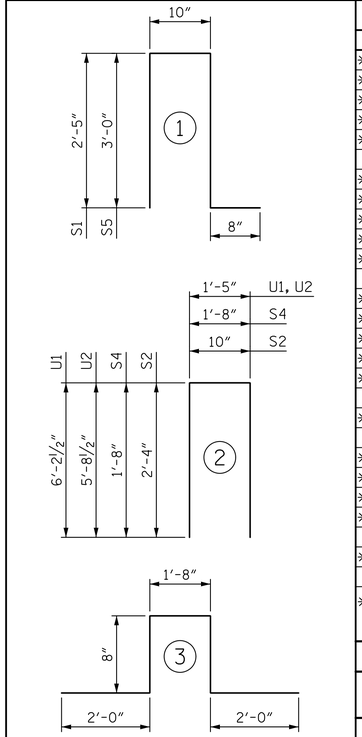
FOR DETAIL OF CONCRETE INSERT AND GUARDRAIL ANCHOR ASSEMBLY, SEE "RAIL POST SPACINGS AND END OF RAIL DETAIL" SHEETS.

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.

THE COST OF THE FORM LINERS AND SPECIAL SURFACE FINISH ARE INCLUDED IN THE SQ. FOOT PRICE BID FOR ARCHITECTURAL CONCRETE SURFACE TREATMENT.

FOR ARCHITECTURAL CONCRETE SURFACE TREATMENT, SEE SPECIAL PROVISIONS.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL — STAGE 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳B1	72	#5	STR	29-4"	2203
✳B2	4	#5	STR	17'-4"	72
✳B3	4	#5	STR	17'-11"	75
✳B4	4	#5	STR	14'-4"	60
✳B5	4	#5	STR	14'-1"	59
✳E1	4	#7	STR	2'-6"	20
✳E2	4	#7	STR	3'-0"	25
✳E3	4	#7	STR	3'-6"	29
✳E4	4	#7	STR	4'-0"	33
✳E5	4	#7	STR	4'-4"	35
✳F1	4	#6	STR	1'-10"	11
✳F2	2	#6	STR	3'-0"	9
✳F3	2	#6	STR	3'-7"	11
✳F4	2	#6	STR	3'-0"	9
✳F5	2	#6	STR	4'-1"	12
✳H1	16	#5	3	7'-0"	117
✳S1	295	#5	1	6'-4"	1949
✳S2	295	#5	2	5'-6"	1692
✳S3	18	#5	STR	3'-0"	56
✳S4	24	#5	2	5'-0"	125
✳U1	12	#5	2	13'-10"	173

✳EPOXY COATED REINFORCING STEEL (STAGE 1) 6775 LBS.

CLASS AA CONCRETE 38.7 CU. YDS.

1'-3½" X 2'-6" CONCRETE PARAPET 300.86 LIN. FT.

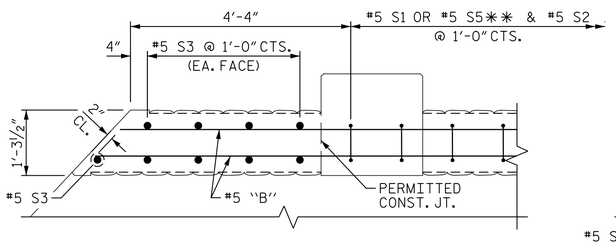
BILL OF MATERIAL — STAGE 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳B6	72	#5	STR	29'-7"	2222
✳B7	4	#5	STR	11'-9"	49
✳B8	4	#5	STR	12'-3"	51
✳B9	4	#5	STR	11'-11"	50
✳B10	4	#5	STR	11'-8"	49
✳E1	4	#7	STR	2'-6"	20
✳E2	4	#7	STR	3'-0"	25
✳E3	4	#7	STR	3'-6"	29
✳E4	4	#7	STR	4'-0"	33
✳E5	4	#7	STR	4'-4"	35
✳F1	4	#6	STR	1'-10"	11
✳F2	2	#6	STR	3'-0"	9
✳F3	2	#6	STR	3'-7"	11
✳F4	2	#6	STR	3'-0"	9
✳F5	2	#6	STR	4'-1"	12
✳H1	16	#5	3	7'-0"	117
✳S2	288	#5	2	5'-6"	1652
✳S3	18	#5	STR	3'-0"	56
✳S4	24	#5	2	5'-0"	125
✳S5	288	#5	1	7'-6"	2253
✳U2	12	#5	2	12'-10"	161

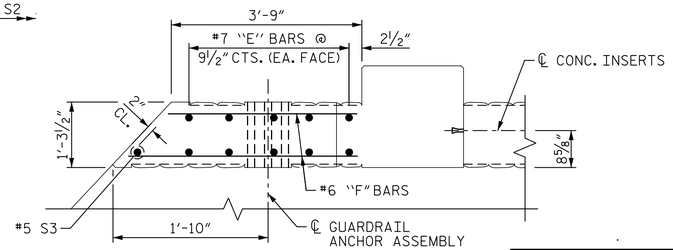
✳EPOXY COATED REINFORCING STEEL (STAGE 2) 6979 LBS.

CLASS AA CONCRETE 37.8 CU. YDS.

1'-3½" X 2'-6" CONCRETE PARAPET 294.41 LIN. FT.



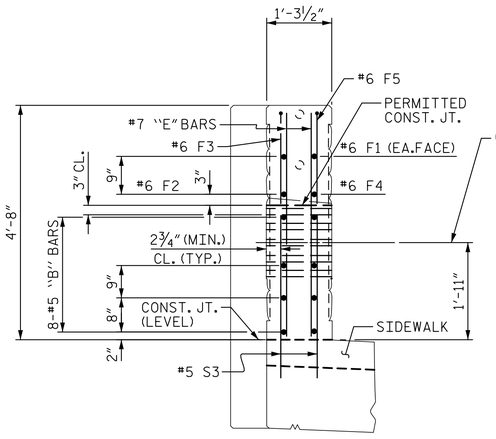
PLAN OF PARAPET



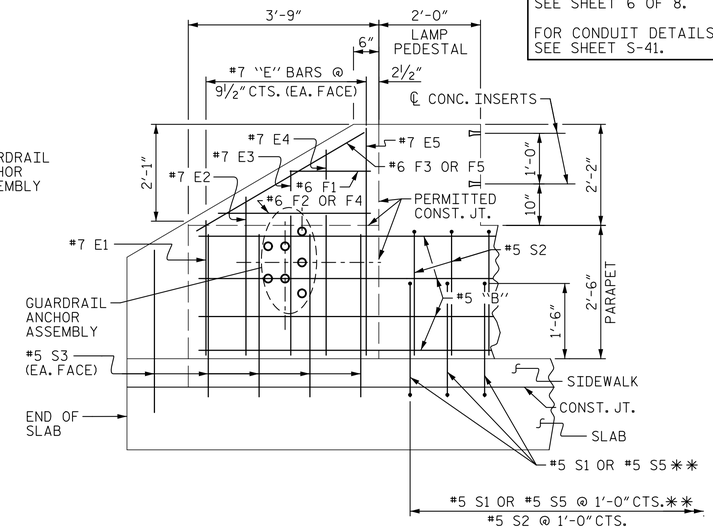
PLAN OF END POST

FOR REINFORCING DETAILS IN LAMP PEDESTAL SEE SHEET 6 OF 8.

FOR CONDUIT DETAILS, SEE SHEET S-41.



END VIEW

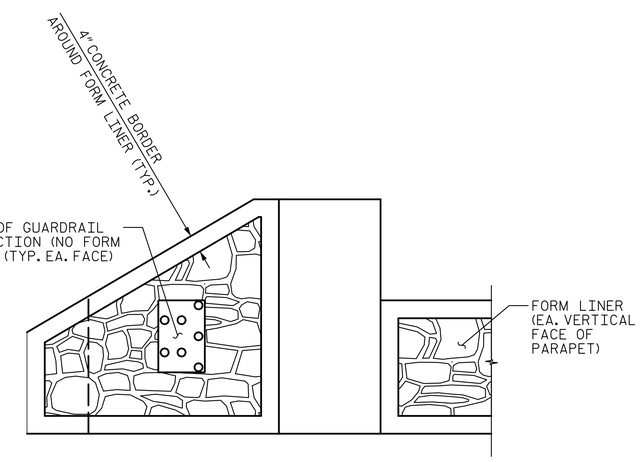


ELEVATION

PARAPET AND END POST FOR TWO BAR RAIL - LT. SIDE

(RIGHT SIDE SIMILAR)

✳✳ SEE SIDEWALK DETAILS



FORM LINER DETAIL

FOR LOCATION OF GUARDRAIL CONNECTION AND AREA WITH NO FORM LINER SEE "GUARDRAIL ANCHORAGE DETAILS" SHEET

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

SHEET 4 OF 8

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

END OF RAIL DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-36
1			3			TOTAL SHEETS
2			4			64

DRAWN BY : D. H. CARTER DATE : SEP 2015
CHECKED BY : M. NEIHEISEL DATE : SEP 2015
DESIGN ENGINEER OF RECORD: T. E. TALLMAN DATE : OCT 2015

ICA Engineering
5121 Kingdom Way, Suite 100 Raleigh, NC 27607
NC License No: F-0258

NORTH CAROLINA PROFESSIONAL SEAL 14408 ENGINEER THOMAS E. TALLMAN
DocuSigned by: Thomas E. Tallman 10/15/2015
E9B789620EE24D5...

10/14/2015
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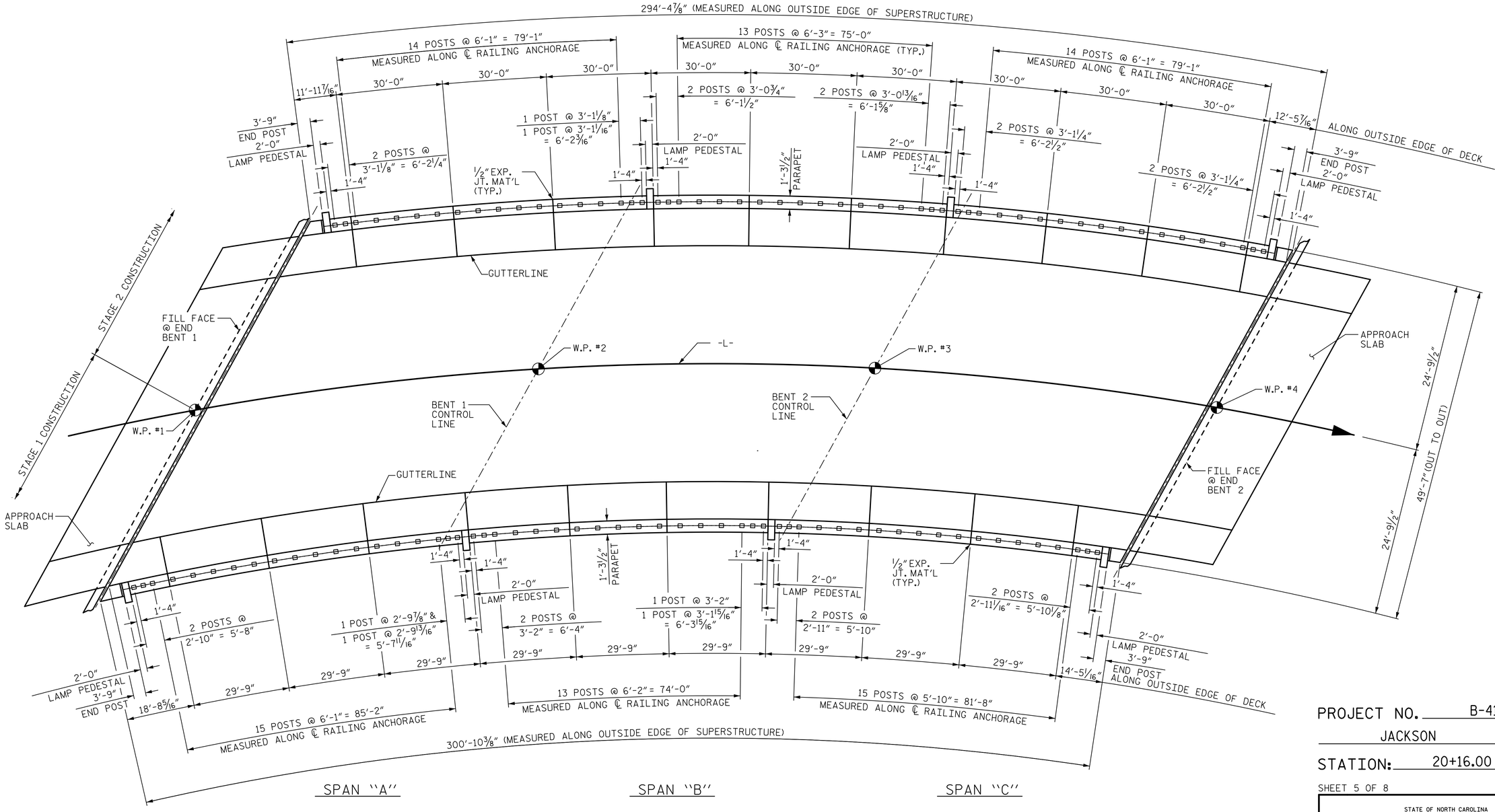

PLAN OF RAIL POST SPACINGS

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

SHEET 5 OF 8

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF RAIL POST SPACINGS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-37
1			3			TOTAL SHEETS
2			4			64

DRAWN BY : D. H. CARTER DATE : SEP 2015
CHECKED BY : M. NEIHEISEL DATE : SEP 2015
DESIGN ENGINEER OF RECORD: T. E. TALLMAN DATE : OCT 2015

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Thomas E. Tallman E9B789620EE24D5 10/15/2015

10/14/2015
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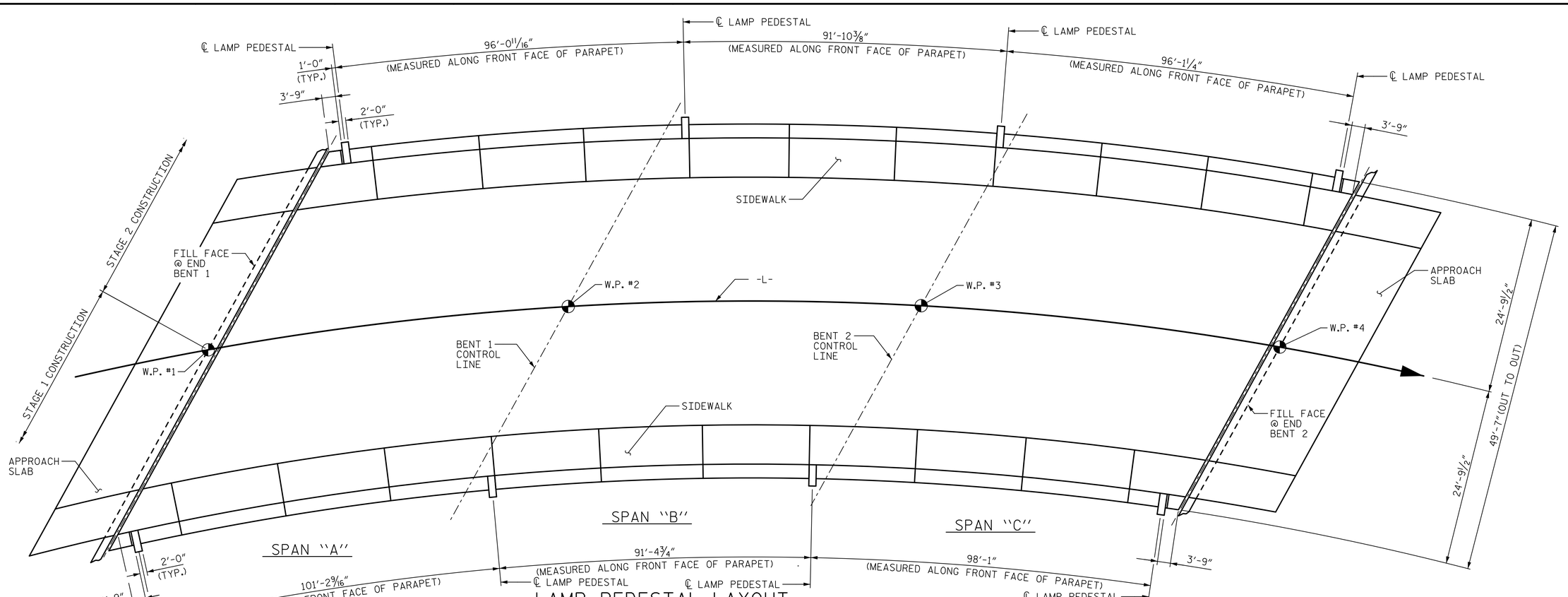
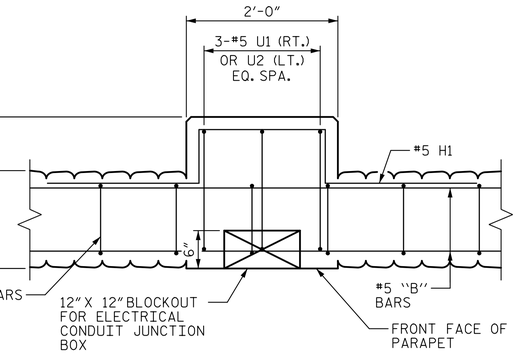
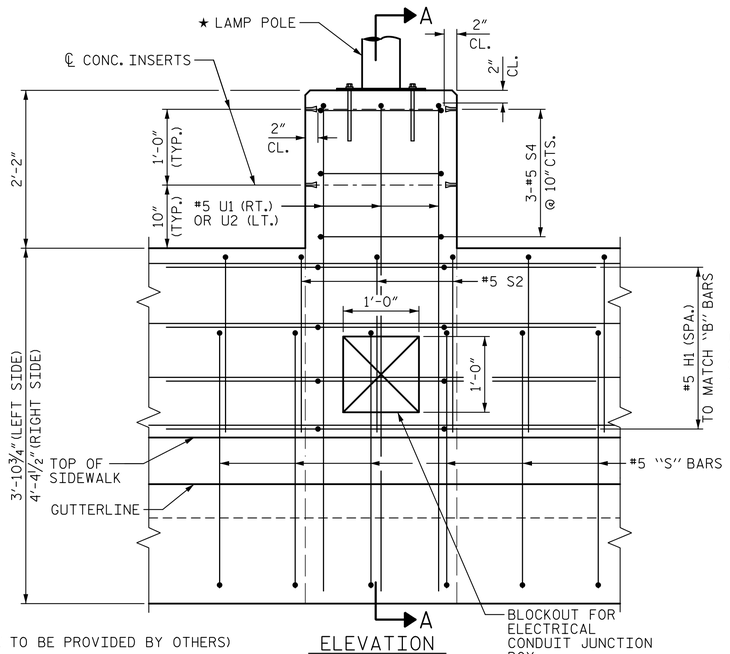


LAMP PEDESTAL LAYOUT

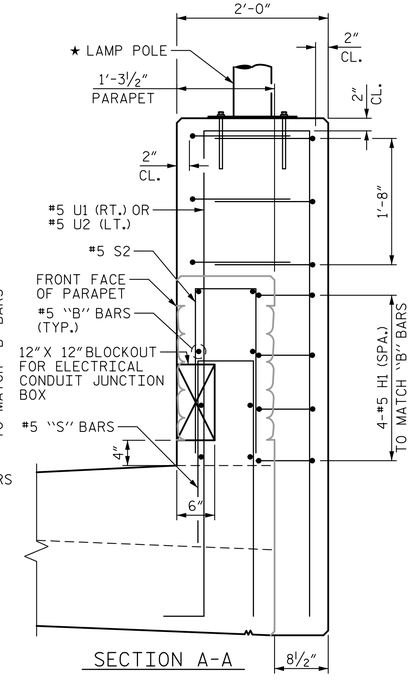


PLAN THRU PARAPET

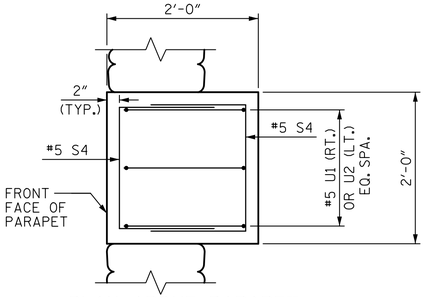


(★LAMP POLE & ANCHORAGE TO BE PROVIDED BY OTHERS)

ELEVATION
(FRONT VIEW)



SECTION A-A



PLAN ABOVE PARAPET

LAMP PEDESTAL DETAILS

(LEFT SIDE SHOWN, RIGHT SIDE SIMILAR EXCEPT AS NOTED)

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

SHEET 6 OF 8

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

LAMP PEDESTAL LAYOUT AND DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-38
1			3			TOTAL SHEETS
2			4			64

DRAWN BY : D. H. CARTER DATE : SEP 2015
CHECKED BY : M. NEIHEISEL DATE : SEP 2015
DESIGN ENGINEER OF RECORD: T. E. TALLMAN DATE : OCT 2015

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NC License No: F-0258

NORTH CAROLINA PROFESSIONAL SEAL 14408 ENGINEER THOMAS E. TALLMAN

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E9B789620EE24D5... 10/15/2015

10/14/2015
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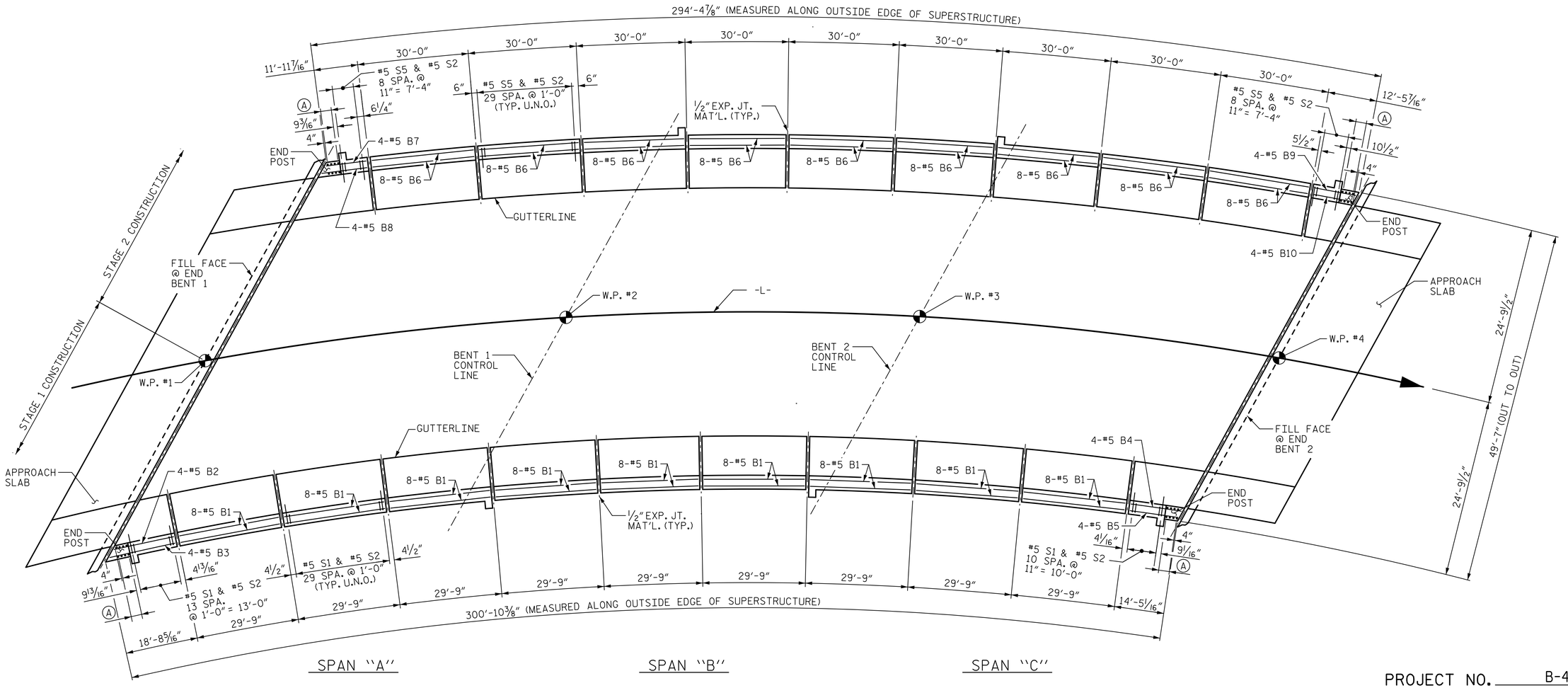

PLAN OF PARAPET

(A) 4-#5 "S" @
1'-0" CTS.
(EA. FACE)

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

SHEET 7 OF 8

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF PARAPET

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-39
1			3			TOTAL SHEETS
2			4			64

DRAWN BY : D. H. CARTER DATE : SEP 2015
CHECKED BY : M. NEIHEISEL DATE : SEP 2015
DESIGN ENGINEER OF RECORD: T. E. TALLMAN DATE : OCT 2015

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NC License No: F-0258

NORTH CAROLINA PROFESSIONAL SEAL 14408 ENGINEER THOMAS E. TALLMAN

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10/15/2015

10/14/2015
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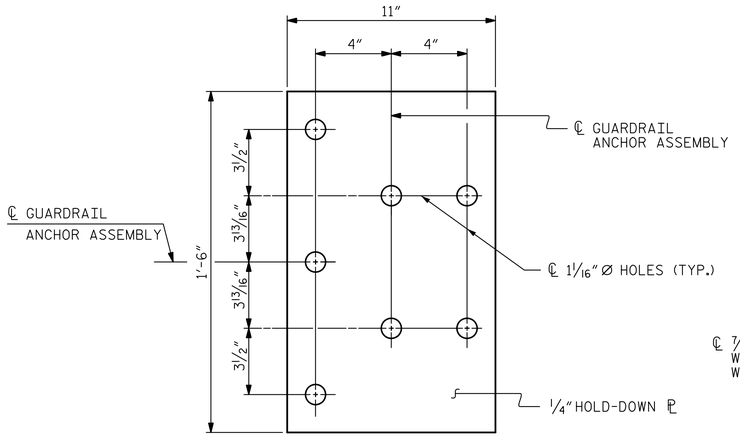
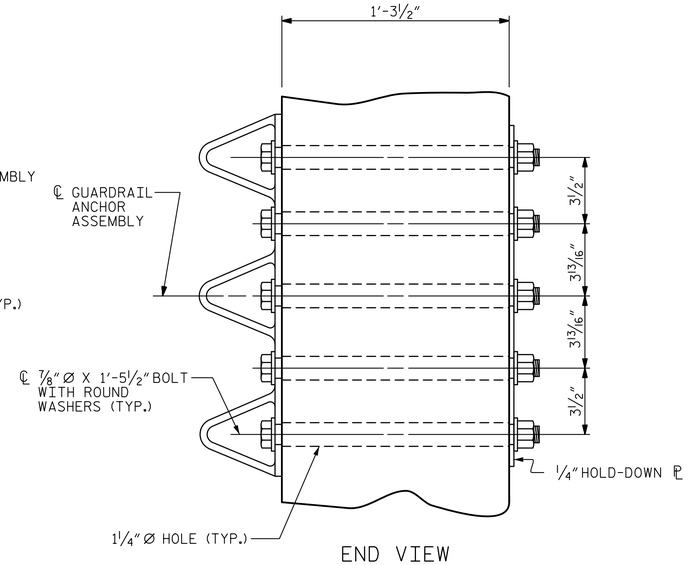


PLAN



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.

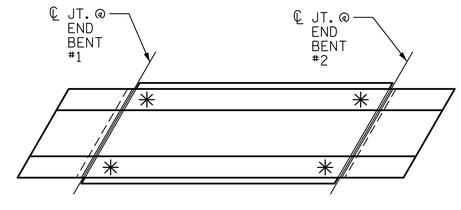
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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.

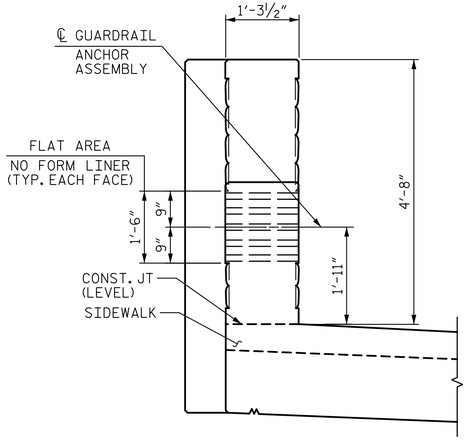
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE END POST TO CLEAR ASSEMBLY BOLTS.

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.

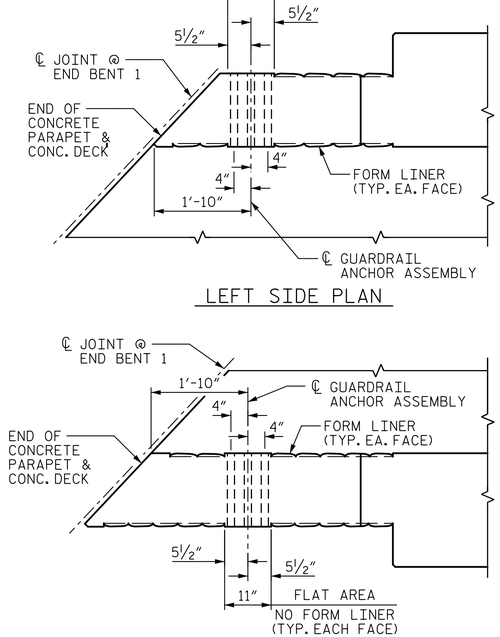


SKETCH SHOWING POINTS OF ATTACHMENT

✳ LOCATION OF GUARDRAIL ATTACHMENT

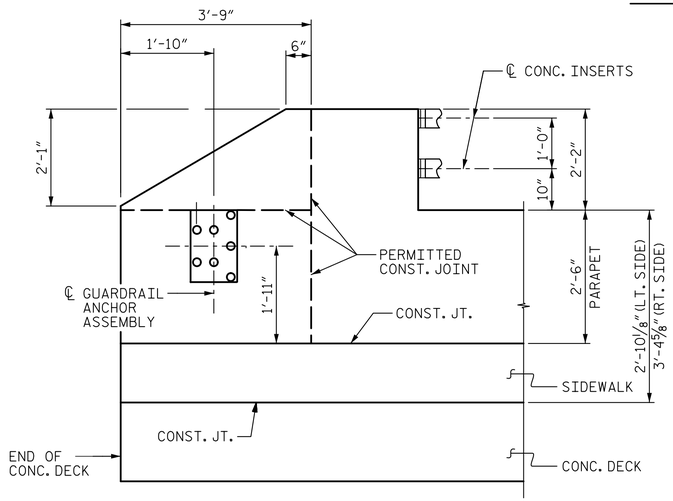


LEFT SIDE END VIEW
RIGHT SIDE SIMILAR



LEFT SIDE PLAN

RIGHT SIDE PLAN



LEFT SIDE ELEVATION
RIGHT SIDE SIMILAR

LOCATION OF GUARDRAIL ANCHOR AT END POST

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

SHEET 8 OF 8

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS

ASSEMBLED BY :	D. H. CARTER
CHECKED BY :	M. NEIHEISEL
DATE :	SEP 2015
DATE :	SEP 2015
DRAWN BY :	MAA 5/10
CHECKED BY :	GM 5/10
REV. 10/1/11	MAA/GM
REV. 12/5/11	MAA/GM
REV. 6/13	MAA/GM

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

SHEET NO. S-40

TOTAL SHEETS 64

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NC License No: F-0258

NORTH CAROLINA PROFESSIONAL SEAL 14408 ENGINEER THOMAS E. TALLMAN
Docusigned by: Thomas E. Tallman E9878962OEE24D5... 10/15/2015

10/14/2015
ICA Engineering
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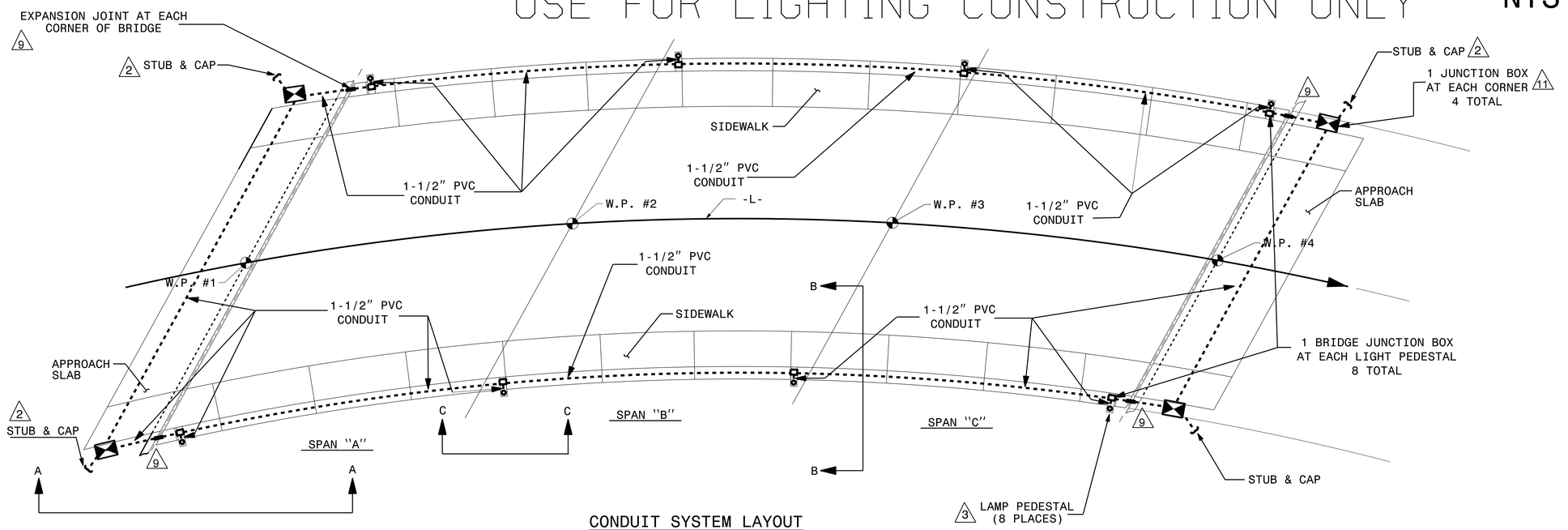
PROJECT REFERENCE NO.	SHEET NO.
B-4159	ECS-1

USE FOR LIGHTING CONSTRUCTION ONLY

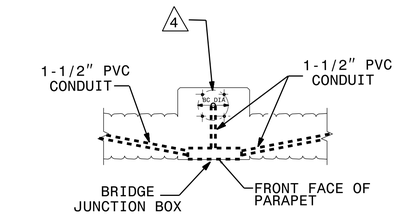
NTS



CONDUIT SYSTEM LAYOUT
NTS

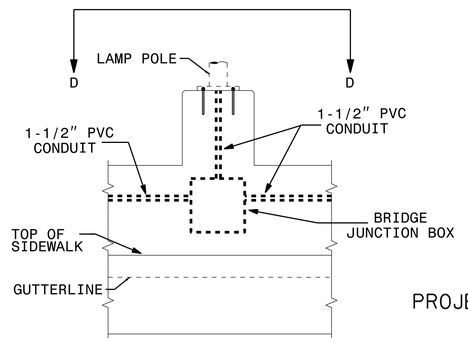
DETAIL "A"

VIEW A-A 6
(BRIDGE GIRDERS ARE NOT SHOWN FOR CLARITY)



VIEW D-D

VIEW B-B
(2 BAR METAL RAIL PEDESTAL IS NOT SHOWN FOR CLARITY)



VIEW C-C

NOTES

1. COORDINATE POWER SERVICE WITH WESTERN CAROLINA UNIVERSITY.
2. COORDINATE CONNECTION OF CONDUIT WITH OTHERS.
3. SEE STRUCTURE PLANS FOR LOCATION OF LAMP PEDESTALS.
4. CONTACT WESTERN CAROLINA UNIVERSITY FOR ANCHOR BOLT PATTERN FOR DECORATIVE POLE. LIGHT POLES WILL BE INSTALLED BY OTHERS.
5. BRIDGE JUNCTION BOX, SIZE 12"X12"X 6", CAST IRON, WATER TIGHT
6. MIRROR DESIGN AT FOUR CORNERS OF STRUCTURE
7. LIGHT PEDESTAL SHOWN ON THIS SHEET IS FOR SCHEMATIC PURPOSES ONLY. SEE STRUCTURES PLANS FOR LIGHT PEDESTAL DESIGN.
8. PROVIDE 3" DIAMETER PVC SLEEVE 6" FROM THE TOP OF END BENT WALL FOR BRIDGE CONDUIT ACCESS.
9. PROVIDE EXPANSION FITTINGS AT ALL BRIDGE EXPANSION JOINTS.
10. MAINTAIN A MINIMUM CONCRETE ENCASED COVER OF 2.5" FOR CONDUIT
11. POLYMER CONCRETE JUNCTION BOX,PC18, SIZE 18"L X 12"W X 18"H.
12. USE SWEEPS OR FIELD BENTS AS REQUIRED.

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

DRAWN BY : A. BROWN DATE : 3-12-15
CHECKED BY : P.K.CHAN DATE : 3-12-15

SEE PROJECT SPECIAL PROVISIONS TITLED "ELECTRICAL CONDUIT SYSTEM" FOR MATERIALS, COSTRUCTION METHOD AND PAYMENT.

NORTH CAROLINA PROFESSIONAL SEAL 022582 ENGINEER PAUL KI-BUN CHAN
DocuSigned by: Paul Chan 9/21/2015

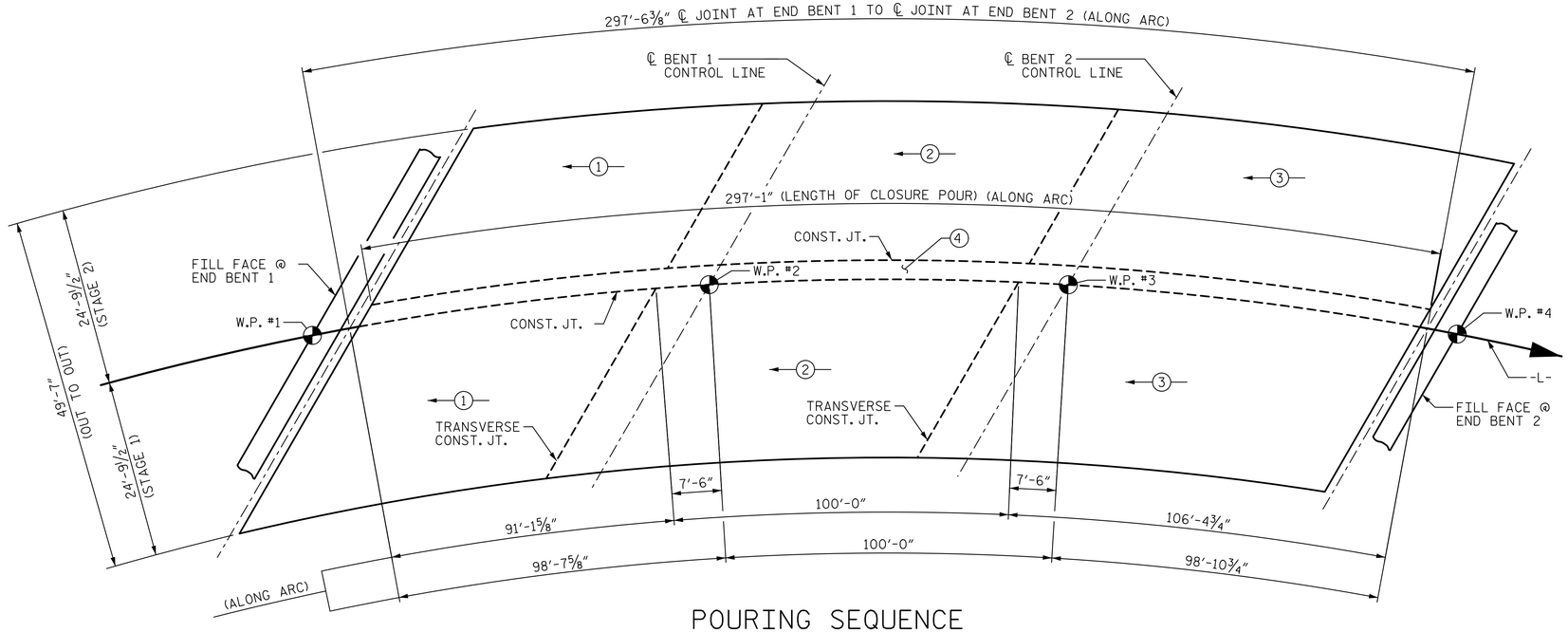
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
DESIGN SERVICES LIGHTING & ELECTRICAL

ELECTRICAL CONDUIT SYSTEM

BRIDGE OVER TUCKASEGEE RIVER ON SR 1002 (OLD CULLOWHEE RD.)

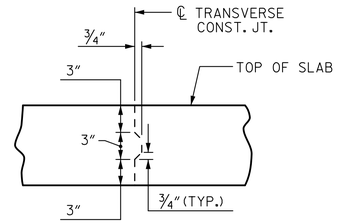
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S-41
TOTAL SHEETS 64



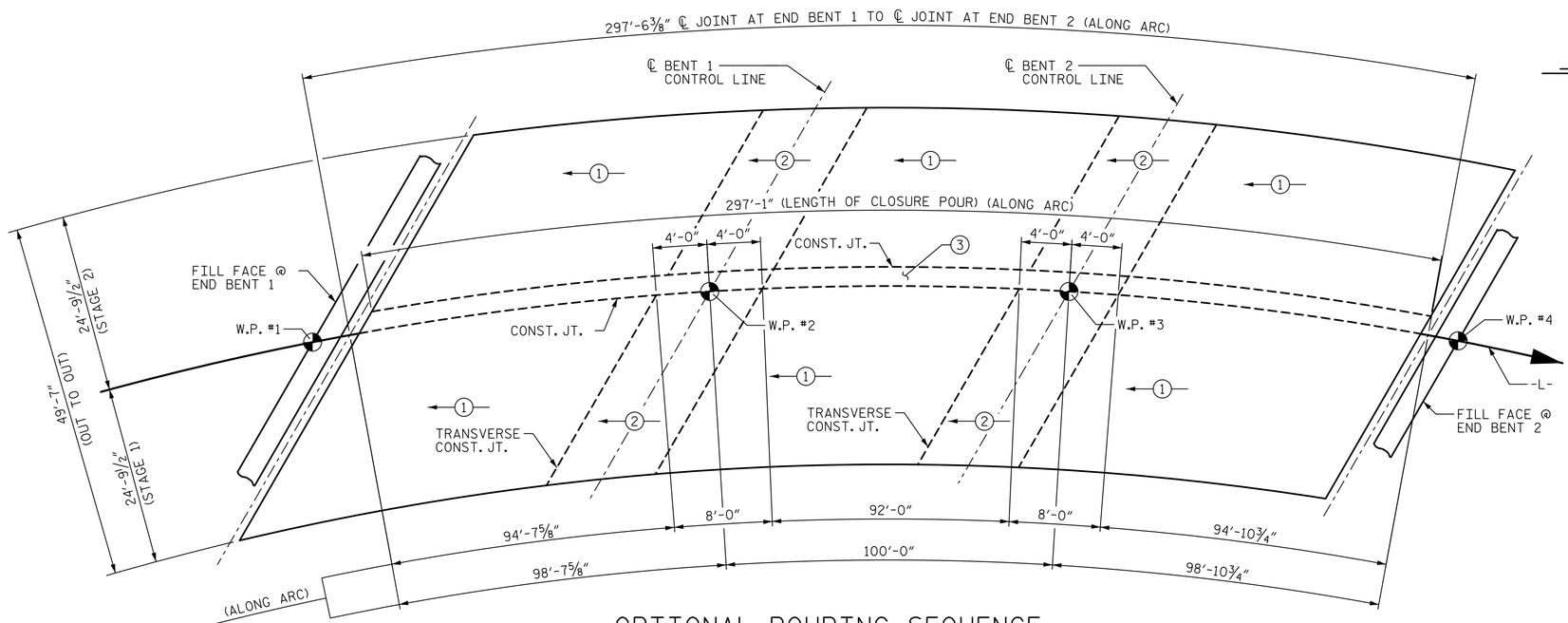
POURING SEQUENCE

← (#) — DENOTES POUR NUMBER AND DIRECTION



TRANSVERSE CONSTRUCTION JOINT DETAIL

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



OPTIONAL POURING SEQUENCE

← (#) — DENOTES POUR NUMBER AND DIRECTION

POUR ② CANNOT BE STARTED UNTIL BOTH ADJACENT ① POURS REACH A MINIMUM OF 3000 PSI.

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

POUR SEQUENCE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-42
1			3			TOTAL SHEETS
2			4			64

ICA Engineering
5121 Kingston Way, Suite 100 Raleigh, NC 27607
NC License No: F-0258

NORTH CAROLINA PROFESSIONAL SEAL 14408 ENGINEER THOMAS E. TALLMAN
Thomas E. Tallman 10/15/2015

DRAWN BY : D. H. CARTER DATE : SEP 2015
CHECKED BY : K. M. MOBLEY DATE : SEP 2015
DESIGN ENGINEER OF RECORD: T. E. TALLMAN DATE : OCT 2015

10/14/2015
R:\Plans\Final\s42_ b4159_sd_pm_01.dgn
ICA Engineering

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″			

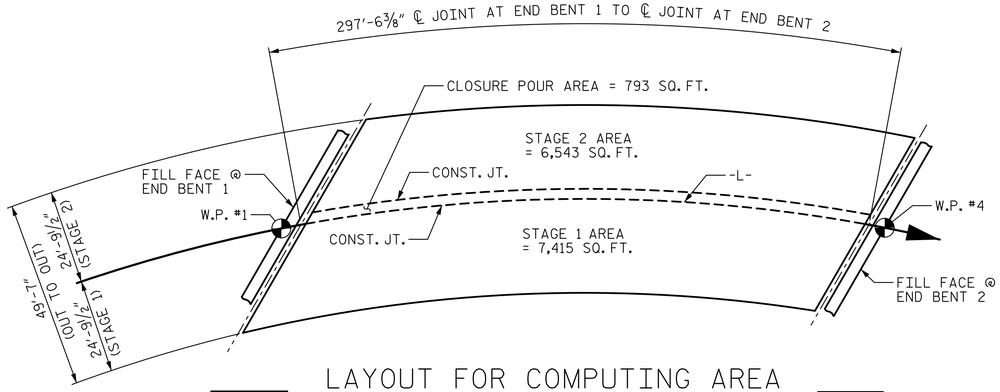
GROOVING BRIDGE FLOORS

STAGE 1	
APPROACH SLABS	816 SQ.FT.
BRIDGE DECK	4,919 SQ.FT.
TOTAL	5,735 SQ.FT.
STAGE 2	
APPROACH SLABS	808 SQ.FT.
BRIDGE DECK	4,884 SQ.FT.
TOTAL	5,692 SQ.FT.
TOTAL	
APPROACH SLABS	1,624 SQ.FT.
BRIDGE DECK	9,803 SQ.FT.
TOTAL	11,427 SQ.FT.

SUPERSTRUCTURE BILL OF MATERIAL

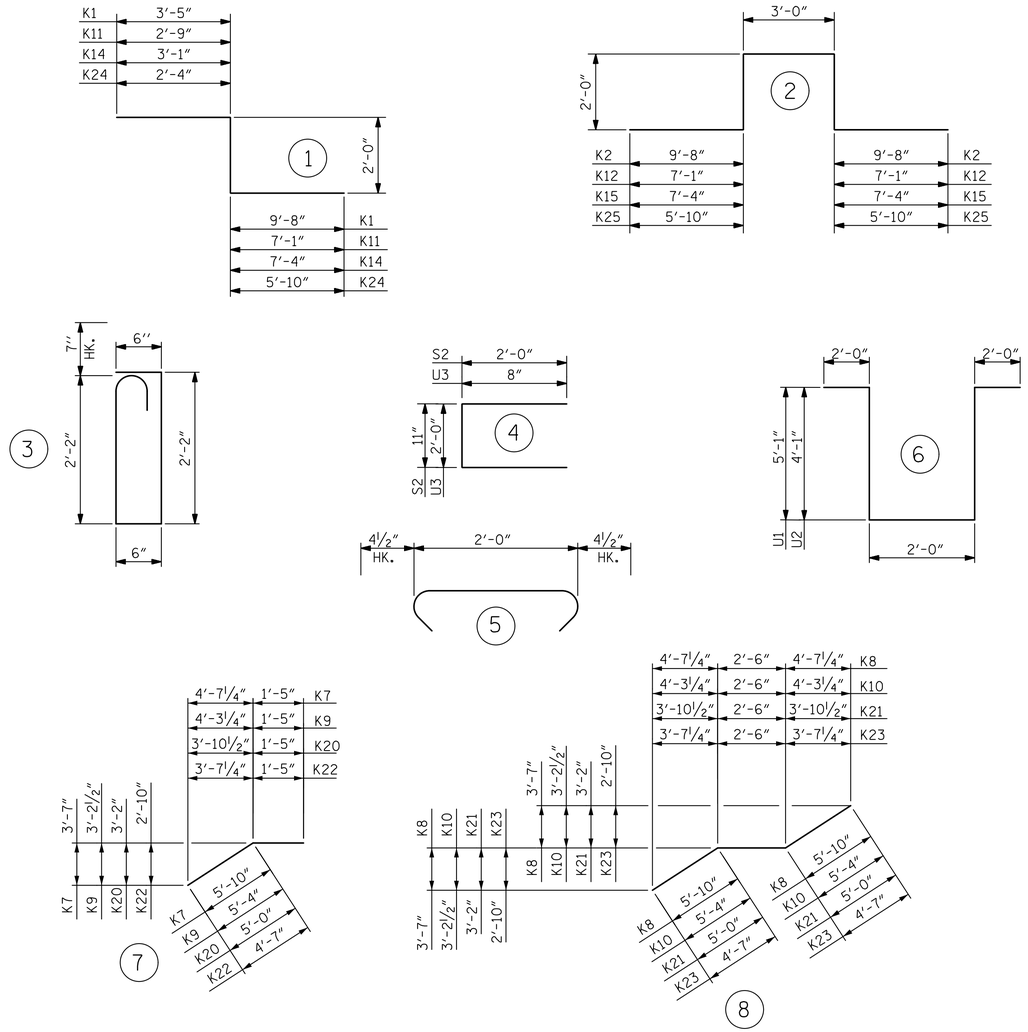
		CLASS AA CONCRETE				REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
						(LBS.)	(LBS.)
STAGE 1	POUR NO.	#1	#2	#3	TOTAL		
	DECK	75.1	89.7	95.2	260.0	28,832	32,117
	SIDEWALK				52.3		
STAGE 2	POUR NO.	#1	#2	#3	TOTAL		
	DECK	66.9	80.1	85.5	232.5	25,468	32,064
	SIDEWALK				31.3		
	CLOSURE POUR				24.5		
	TOTALS**				600.6	54,300	64,721

**QUANTITIES FOR CONCRETE PARAPET ARE NOT INCLUDED



LAYOUT FOR COMPUTING AREA REINFORCED CONCRETE DECK SLAB (SQ. FT. = 14,751)

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

SUPERSTRUCTURE BILL OF MATERIAL

ASSEMBLED BY : D. H. CARTER	DATE SEP 2015
CHECKED BY : K. M. MOBLEY	DATE SEP 2015

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

ICA Engineering
5121 Kingdom Way, Suite 100 Raleigh, NC 27607
NC License No: F-0258

NORTH CAROLINA PROFESSIONAL SEAL 14408 ENGINEER THOMAS E. TALLMAN
Thomas E. Tallman 10/15/2015
E9878902DEE24D5

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-43
1			3			TOTAL SHEETS
2			4			64

STD. NO. BOM2

REINFORCING BAR SCHEDULE

STAGE 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ A1	564	#5	STR	24′-6″	14,412	✳A152	1	#5	STR	4′-8″	5	A249	1	#5	STR	7′-6″	8
A2	564	#5	STR	24′-6″	14,412	✳A153	1	#5	STR	3′-8″	4	A250	1	#5	STR	6′-7″	7
						✳A154	1	#5	STR	2′-9″	3	A251	1	#5	STR	5′-7″	6
✳A101	1	#5	STR	1′-11″	2	✳A155	1	#5	STR	1′-9″	2	A252	1	#5	STR	4′-8″	5
✳A102	1	#5	STR	2′-8″	3	✳A156	3	#6	STR	18′-7″	84	A253	1	#5	STR	3′-8″	4
✳A103	1	#5	STR	3′-5″	4							A254	1	#5	STR	2′-9″	3
✳A104	1	#5	STR	4′-2″	4	A201	1	#5	STR	1′-11″	2	A255	1	#5	STR	1′-9″	2
✳A105	1	#5	STR	5′-0″	5	A202	1	#5	STR	2′-8″	3						
✳A106	1	#5	STR	5′-8″	6	A203	1	#5	STR	3′-5″	4	✳ B1	51	#4	STR	23′-10″	812
✳A107	1	#5	STR	6′-6″	7	A204	1	#5	STR	4′-2″	4	✳ B2	102	#7	STR	26′-10″	5,594
✳A108	1	#5	STR	7′-3″	8	A205	1	#5	STR	5′-0″	5	✳ B3	32	#7	STR	30′-0″	1,962
✳A109	1	#5	STR	8′-0″	8	A206	1	#5	STR	5′-8″	6	✳ B4	34	#4	STR	18′-7″	422
✳A110	1	#5	STR	8′-9″	9	A207	1	#5	STR	6′-6″	7	✳ B5	51	#4	STR	23′-6″	801
✳ A111	1	#5	STR	9′-6″	10	A208	1	#5	STR	7′-3″	8	B6	174	#5	STR	52′-0″	9,437
✳A112	1	#5	STR	10′-4″	11	A209	1	#5	STR	8′-0″	8	✳ B11	66	#4	STR	29′-2″	1,286
✳A113	1	#5	STR	11′-2″	12	A210	1	#5	STR	8′-9″	9						
✳A114	1	#5	STR	11′-10″	12	A211	1	#5	STR	9′-6″	10	✳ D1	587	#5	STR	5′-7″	3,418
✳A115	1	#5	STR	12′-8″	13	A212	1	#5	STR	10′-4″	11	D2	587	#5	STR	5′-3″	3,214
✳A116	1	#5	STR	13′-4″	14	A213	1	#5	STR	11′-2″	12						
✳A117	1	#5	STR	14′-2″	15	A214	1	#5	STR	11′-10″	12	✳ G1	1	#5	STR	35′-11″	37
✳A118	1	#5	STR	14′-11″	16	A215	1	#5	STR	12′-8″	13	✳ G2	1	#5	STR	28′-11″	30
✳A119	1	#5	STR	15′-9″	16	A216	1	#5	STR	13′-4″	14	✳ G5	295	#4	STR	6′-2″	1,215
✳A120	1	#5	STR	16′-5″	17	A217	1	#5	STR	14′-2″	15	✳ G6	1	#4	STR	2′-4″	2
✳A121	1	#5	STR	17′-3″	18	A218	1	#5	STR	14′-11″	16	✳ G7	1	#4	STR	3′-5″	2
✳A122	1	#5	STR	18′-0″	19	A219	1	#5	STR	15′-9″	16	✳ G8	1	#4	STR	4′-7″	3
✳A123	1	#5	STR	18′-9″	20	A220	1	#5	STR	16′-5″	17	✳ G9	1	#4	STR	5′-9″	4
✳A124	1	#5	STR	19′-6″	20	A221	1	#5	STR	17′-3″	18	✳ G10	1	#4	STR	4′-5″	3
✳A125	1	#5	STR	20′-4″	21	A222	1	#5	STR	18′-0″	19	✳ G11	1	#4	STR	1′-9″	1
✳A126	1	#5	STR	21′-1″	22	A223	1	#5	STR	18′-9″	20						
✳A127	1	#5	STR	21′-11″	23	A224	1	#5	STR	19′-6″	20	✳ K1	4	#8	1	15′-1″	161
✳A128	1	#5	STR	22′-7″	24	A225	1	#5	STR	20′-4″	21	✳ K2	2	#8	2	26′-4″	141
✳A129	1	#5	STR	23′-5″	24	A226	1	#5	STR	21′-1″	22	✳ K3	6	#6	STR	10′-8″	96
✳A130	1	#5	STR	24′-2″	25	A227	1	#5	STR	21′-11″	23	K4	8	#4	STR	7′-7″	41
✳A131	2	#5	STR	24′-11″	52	A228	1	#5	STR	22′-7″	24	K5	24	#4	STR	9′-10″	158
✳A132	1	#5	STR	23′-8″	25	A229	1	#5	STR	23′-5″	24	K6	8	#4	STR	8′-9″	47
✳A133	1	#5	STR	22′-9″	24	A230	1	#5	STR	24′-2″	25	K7	10	#4	7	7′-3″	48
✳A134	1	#5	STR	21′-9″	23	A231	2	#5	STR	24′-11″	52	K8	5	#4	8	14′-2″	47
✳A135	1	#5	STR	20′-10″	22	A232	1	#5	STR	23′-8″	25	K9	10	#4	7	6′-9″	45
✳A136	1	#5	STR	19′-10″	21	A233	1	#5	STR	22′-9″	24	K10	5	#4	8	13′-2″	44
✳A137	1	#5	STR	18′-11″	20	A234	1	#5	STR	21′-9″	23	✳ K11	4	#8	1	11′-10″	126
✳A138	1	#5	STR	18′-0″	19	A235	1	#5	STR	20′-10″	22	✳ K12	2	#8	2	21′-2″	113
✳A139	1	#5	STR	17′-0″	18	A236	1	#5	STR	19′-10″	21	✳ K13	6	#6	STR	8′-6″	77
✳A140	1	#5	STR	16′-1″	17	A237	1	#5	STR	18′-11″	20						
✳A141	1	#5	STR	15′-2″	16	A238	1	#5	STR	18′-0″	19	✳ S1	36	#5	3	5′-11″	222
✳A142	1	#5	STR	14′-2″	15	A239	1	#5	STR	17′-0″	18	✳ S2	36	#4	4	4′-11″	118
✳A143	1	#5	STR	13′-3″	14	A240	1	#5	STR	16′-1″	17	S3	120	#4	5	2′-9″	220
✳A144	1	#5	STR	12′-3″	13	A241	1	#5	STR	15′-2″	16						
✳A145	1	#5	STR	11′-4″	12	A242	1	#5	STR	14′-2″	15	U1	24	#4	6	16′-2″	259
✳A146	1	#5	STR	10′-5″	11	A243	1	#5	STR	13′-3″	14	U2	8	#4	7	14′-2″	76
✳A147	1	#5	STR	9′-5″	10	A244	1	#5	STR	12′-3″	13	✳ U3	86	#4	4	3′-4″	191
✳A148	1	#5	STR	8′-6″	9	A245	1	#5	STR	11′-4″	12						
✳A149	1	#5	STR	7′-6″	8	A246	1	#5	STR	10′-5″	11						
✳A150	1	#5	STR	6′-7″	7	A247	1	#5	STR	9′-5″	10						
✳A151	1	#5	STR	5′-7″	6	A248	1	#5	STR	8′-6″	9						

REINFORCING STEEL	LBS.	28,832
EPOXY COATED REINFORCING STEEL	LBS.	32,117

REINFORCING BAR SCHEDULE

STAGE 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ A3	560	#5	STR	21′-10″	12,752	A401	1	#5	STR	1′-9″	2	✳ B2	90	#7	STR	26′-10″	4,936
A4	560	#5	STR	21′-10″	12,752	A402	1	#5	STR	2′-6″	3	✳ B3	28	#7	STR	30′-0″	1,717
						A403	1	#5	STR	3′-4″	3	✳ B7	45	#4	STR	22′-8″	681
✳A301	1	#5	STR	1′-9″	2	A404	1	#5	STR	4′-1″	4	✳ B8	30	#4	STR	17′-7″	352
✳A302	1	#5	STR	2′-6″	3	A405	1	#5	STR	4′-10″	5	✳ B9	45	#4	STR	23′-1″	694
✳A303	1	#5	STR	3′-4″	3	A406	1	#5	STR	5′-8″	6	B10	150	#5	STR	51′-4″	8,031
✳A304	1	#5	STR	4′-1″	4	A407	1	#5	STR	6′-5″	7	✳ B12	66	#4	STR	28′-7″	1,260
✳A305	1	#5	STR	4′-10″	5	A408	1	#5	STR	7′-2″	7	✳ B13	48	#6	STR	51′-10″	3,737
✳A306	1	#5	STR	5′-8″	6	A409	1	#5	STR	8′-0″	8						
✳A307	1	#5	STR	6′-5″	7	A410	1	#5	STR	8′-9″	9	✳ D1	584	#5	STR	5′-7″	3,401
✳A308	1	#5	STR	7′-2″	7	A411	1	#5	STR	9′-7″	10	D2	584	#5	STR	5′-3″	3,198
✳A309	1	#5	STR	8′-0″	8	A412	1	#5	STR	10′-4″	11						
✳A310	1	#5	STR	8′-9″	9	A413	1	#5	STR	11′-1″	12	✳ G3	1	#5	STR	31′-8″	33
✳A311	1	#5	STR	9′-7″	10	A414	1	#5	STR	11′-11″	12	✳ G4	1	#5	STR	25′-11″	27
✳A312	1	#5	STR	10′-4″	11	A415	1	#5	STR	12′-8″	13	✳ G5	292	#4	STR	6′-2″	1,203
✳A313	1	#5	STR	11′-1″	12	A416	1	#5	STR	13′-5″	14	✳ G12	1	#4	STR	1′-9″	1
✳A314	1	#5	STR	11′-11″	12	A417	1	#5	STR	14′-3″	15	✳ G13	1	#4	STR	3′-0″	2
✳A315	1	#5	STR	12′-8″	13	A418	1	#5	STR	15′-0″	16	✳ G14	1	#4	STR	4′-3″	3
✳A316	1	#5	STR	13′-5″	14	A419	1	#5	STR	15′-10″	17	✳ G15	1	#4	STR	5′-6″	4
✳A317	1	#5	STR	14′-3″	15	A420	1	#5	STR	16′-7″	17	✳ G16	1	#4	STR	4′-8″	3
✳A318	1	#5	STR	15′-0″	16	A421	1	#5	STR	17′-4″	18	✳ G17	1	#4	STR	1′-10″	1
✳A319	1	#5	STR	15′-10″	17	A422	1	#5	STR	18′-2″	19						
✳A320	1	#5	STR	16′-7″	17	A423	1	#5	STR	18′-11″	20	✳ K14	4	#8	1	12′-5″	133
✳A321	1	#5	STR	17′-4″	18	A424	1	#5	STR	19′-9″	21	✳ K15	2	#8	2	21′-8″	116
✳A322	1	#5	STR	18′-2″	19	A425	1	#5	STR	20′-6″	21	✳ K16	6	#6	STR	8′-10″	80
✳A323	1	#5	STR	18′-11″	20	A426	1	#5	STR	21′-4″	22	K17	8	#4	STR	6′-2″	33
✳A324	1	#5	STR	19′-9″	21	A427	3	#5	STR	22′-2″	69	K18	24	#4	STR	8′-5″	135
✳A325	1	#5	STR	20′-6″	21	A428	1	#5	STR	21′-3″	22	K19	8	#4	STR	7′-4″	39
✳A326	1	#5	STR	21′-4″	22	A429	1	#5	STR	20′-3″	21	K20	10	#4	7	6′-5″	43
✳A327	3	#5	STR	22′-2″	69	A430	1	#5	STR	19′-4″	20	K21	5	#4	8	12′-6″	42
✳A328	1	#5	STR	21′-3″	22	A431	1	#5	STR	18′-4″	19	K22	10	#4	7	6′-0″	40
✳A329	1	#5	STR	20′-3″	21	A432	1	#5	STR	17′-5″	18	K23	5	#4	8	11′-8″	39
✳A330	1	#5	STR	19′-4″	20	A433	1	#5	STR	16′-6″	17	✳ K24	4	#8	1	10′-2″	109
✳A331	1	#5	STR	18′-4″	19	A434	1	#5	STR	15′-6″	16	✳ K25	2	#8	2	18′-8″	100
✳A332	1	#5	STR	17′-5″	18	A435	1	#5	STR	14′-7″	15	✳ K26	6	#6	STR	7′-2″	65
✳A333	1	#5	STR	16′-6″	17	A436	1	#5	STR	13′-7″	14	K27	16	#4	STR	4′-6″	48
✳A334	1	#5	STR	15′-6″	16	A437	1	#5	STR	12′-8″	13						
✳A335	1	#5	STR	14′-7″	15	A438	1	#5	STR	11′-8″	12	✳ S1	32	#5	3	5′-11″	197
✳A336	1	#5	STR	13′-7″	14	A439	1	#5	STR	10′-9″	11	✳ S2	32	#4	4	4′-11″	105
✳A337	1	#5	STR	12′-8″	13	A440	1	#5	STR	9′-9″	10	S3	104	#4	5	2′-9″	191
✳A338	1	#5	STR	11′-8″	12	A441	1	#5	STR	8′-10″	9						
✳A339	1	#5	STR	10′-9″	11	A442	1	#5	STR	7′-10″	8	U1	20	#4	6	16′-2″	216
✳A340	1	#5	STR	9′-9″	10	A443	1	#5	STR	6′-11″	7	U2	8	#4	7	14′-2″	76
✳A341	1	#5	STR	8′-10″	9	A444	1	#5	STR	5′-11″	6	✳ U3	85	#4	4	3′-4″	189
✳A342	1	#5	STR	7′-10″	8	A445	1	#5	STR	5′-0″	5						
✳A343	1	#5	STR	6′-11″	7	A446	1	#5	STR	4′-0″	4						
✳A344	1	#5	STR	5′-11″	6	A447	1	#5	STR	3′-0″	3						
✳A345	1	#5	STR	5′-0″	5	A448	1	#5	STR	2′-1″	2						
✳A346	1	#5	STR	4′-0″	4												
✳A347	1	#5	STR	3′-0″	3												
✳A348	1	#5	STR	2′-1″	2												
✳A349	3	#6	STR	15′-7″	70												

REINFORCING STEEL	LBS.	25,516
EPOXY COATED REINFORCING STEEL	LBS.	32,604

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

BILL OF MATERIAL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-44
1			3			TOTAL SHEETS
2			4			64

DRAWN BY : D. H. CARTER DATE : SEP 2015
CHECKED BY : K. M. MOBLEY DATE : SEP 2015
DESIGN ENGINEER OF RECORD: T. E. TALLMAN DATE : OCT 2015

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NC License No: F-0258

NORTH CAROLINA PROFESSIONAL SEAL 14408 ENGINEER THOMAS E TALLMAN
Thomas E. Tallman
E9B7B9620EE24D5 10/15/2015

10/14/2015
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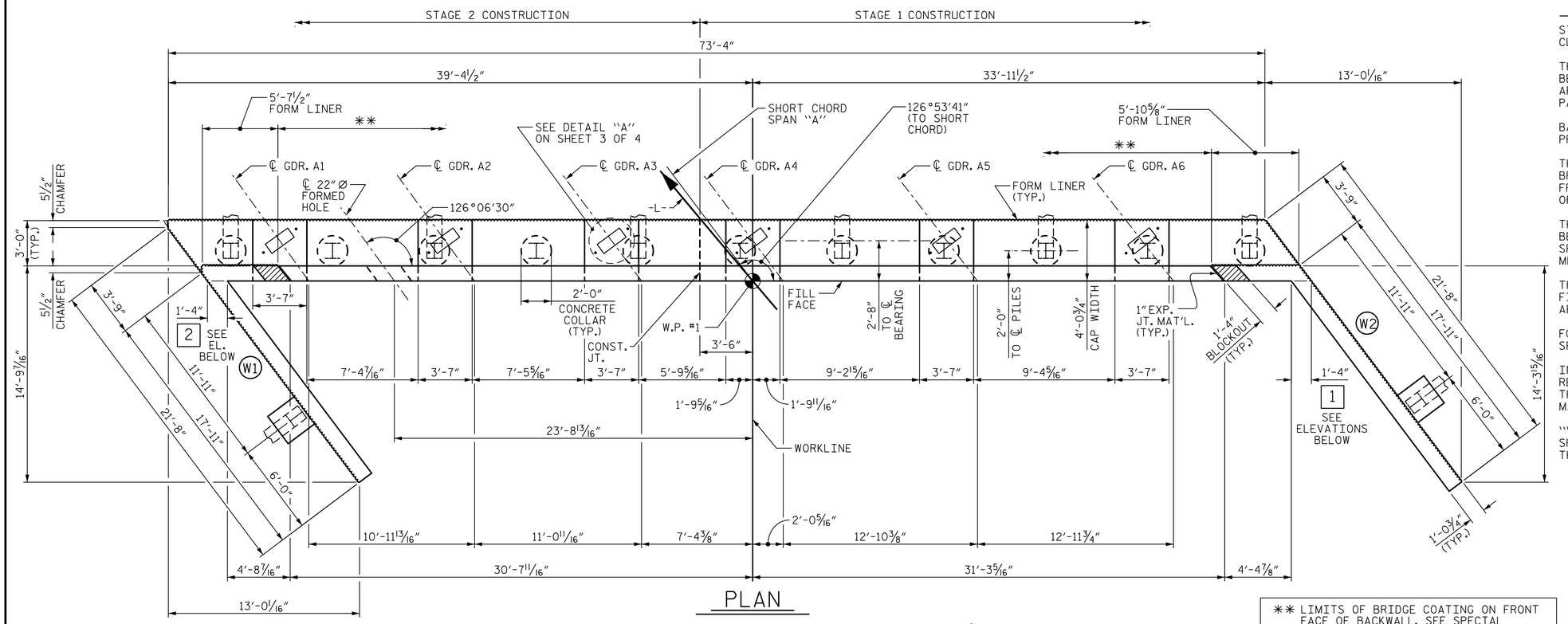


PLAN

** LIMITS OF BRIDGE COATING ON FRONT FACE OF BACKWALL. SEE SPECIAL PROVISIONS FOR APPLICATION OF BRIDGE COATING.

NOTES

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

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

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

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

THE 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 COST OF THE FORM LINERS AND SPECIAL SURFACE FINISH ARE INCLUDED IN THE SQ. FT. BID FOR ARCHITECTURAL CONCRETE SURFACE TREATMENT.

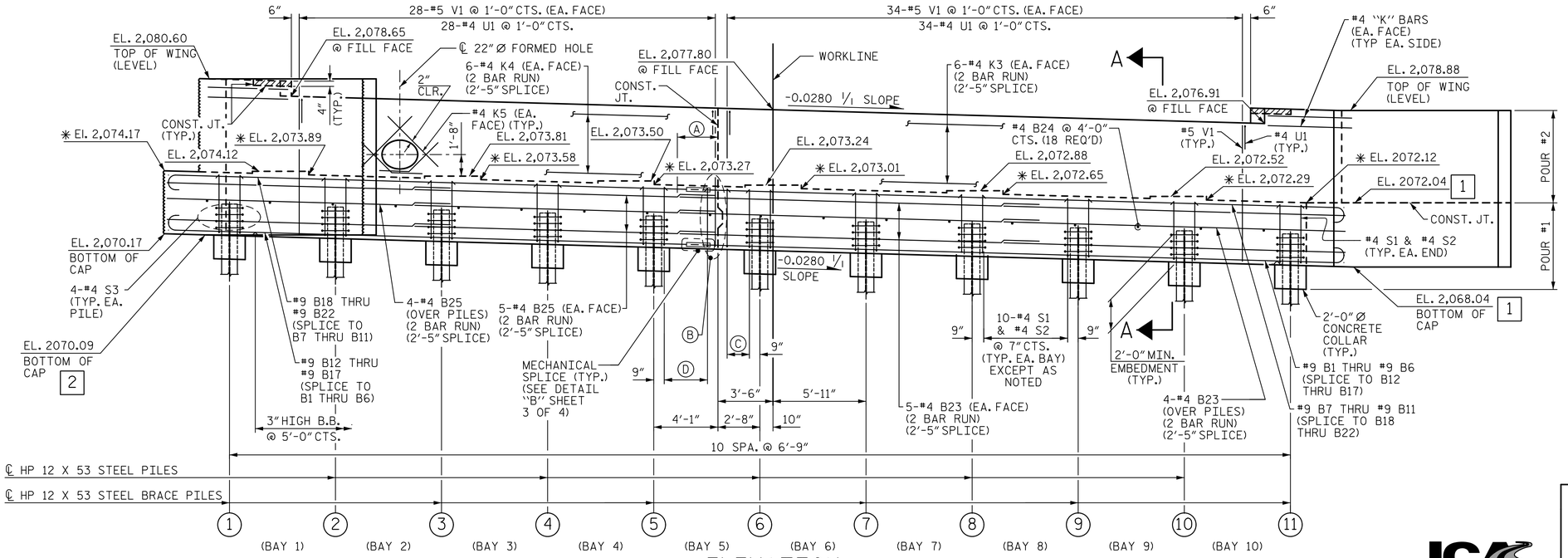
FOR ARCHITECTURAL CONCRETE SURFACE TREATMENT, SEE SPECIAL PROVISIONS.

INSTALL THE 4" Ø DRAIN PIPE THROUGH THE WINGWALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WINGWALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

"V" BARS AND "K" BARS IN THE BACKWALL SHALL BE FIELD BENT OR CUT IN THE AREA OF THE 22" Ø FORMED HOLE.

TOP OF PILE ELEVATIONS

①	2,072.04	⑦	2,070.90
②	2,071.85	⑧	2,070.71
③	2,071.66	⑨	2,070.52
④	2,071.47	⑩	2,070.33
⑤	2,071.28	⑪	2,070.14
⑥	2,071.09		



ELEVATION

* SEE SHEET 3 OF 4 FOR LOCATION OF ELEVATIONS BETWEEN BRIDGE SEAT BUILD-UPS.

(A) 2'-5" MIN. SPLICE (TYP. #4 "B" AND #4 "K" BARS)
(B) SEE "SHEAR KEY DETAIL" ON SHEET 3 OF 4
(C) 4-#4 S1 & #4 S2 @ 6" CTS.
(D) 6-#4 S1 & #4 S2 @ 7" CTS.

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-45
1			3			TOTAL SHEETS
2			4			64

DRAWN BY : D. H. CARTER DATE : SEP 2015
CHECKED BY : K. M. MOBLEY/M. T. NEIHEISEL DATE : SEP 2015
DESIGN ENGINEER OF RECORD: T. E. TALLMAN DATE : OCT 2015

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NORTH CAROLINA PROFESSIONAL SEAL 14408 ENGINEER THOMAS E. TALLMAN

Documents Thomas E. Tallman E9B780620EE2405... 10/15/2015

10/14/2015
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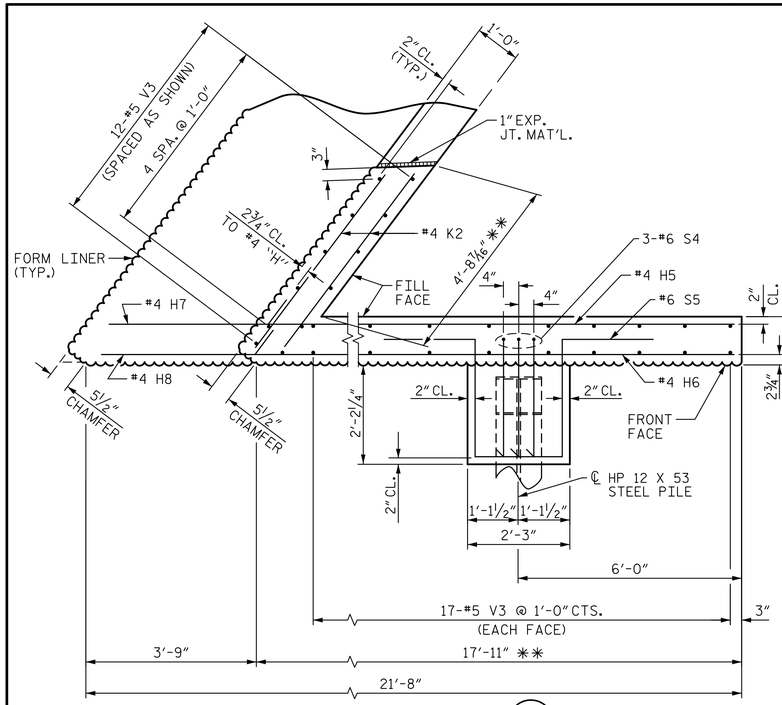
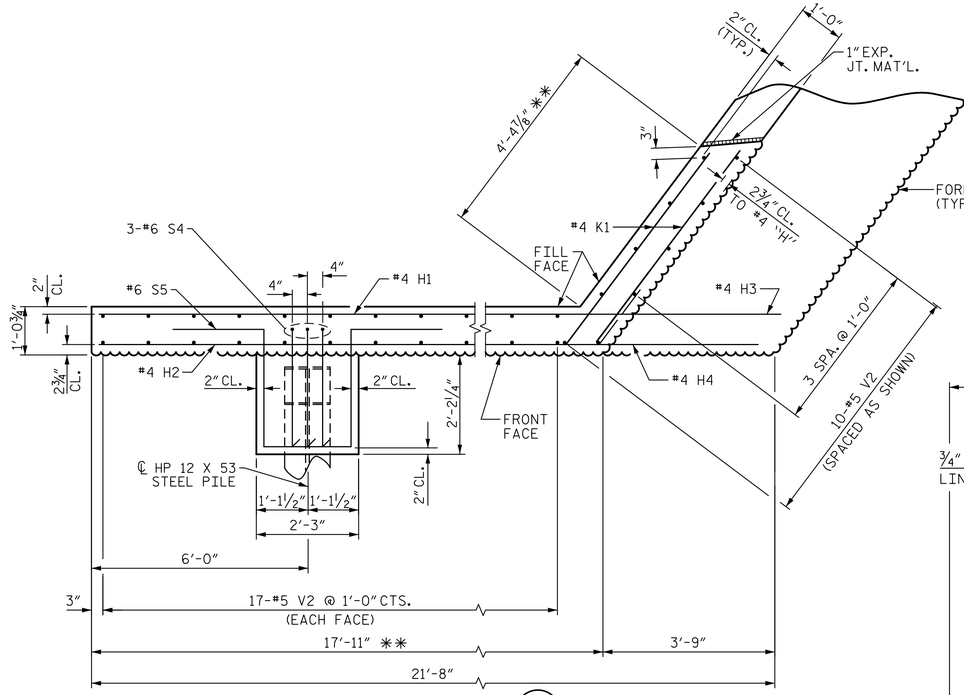


PLAN OF WING (W1)

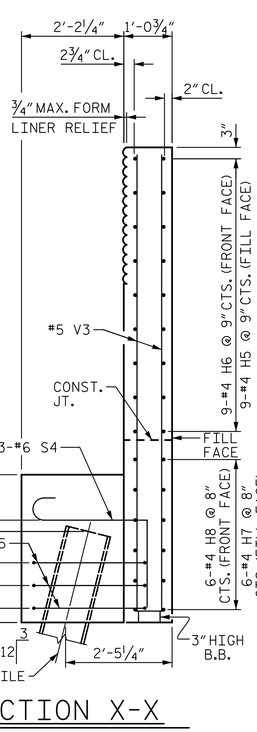
(STAGE 2)



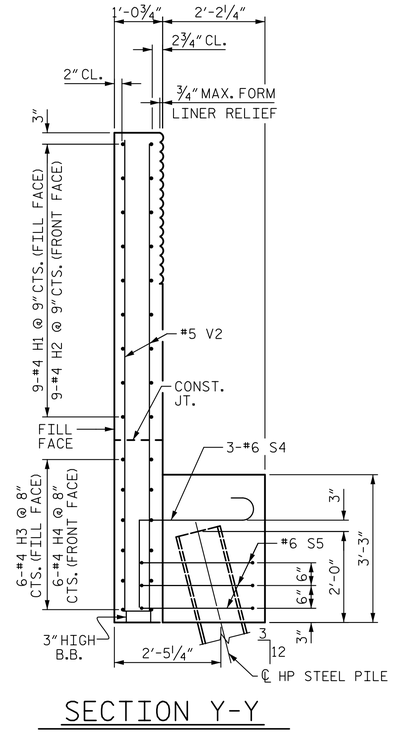
PLAN OF WING (W2)

(STAGE 1)

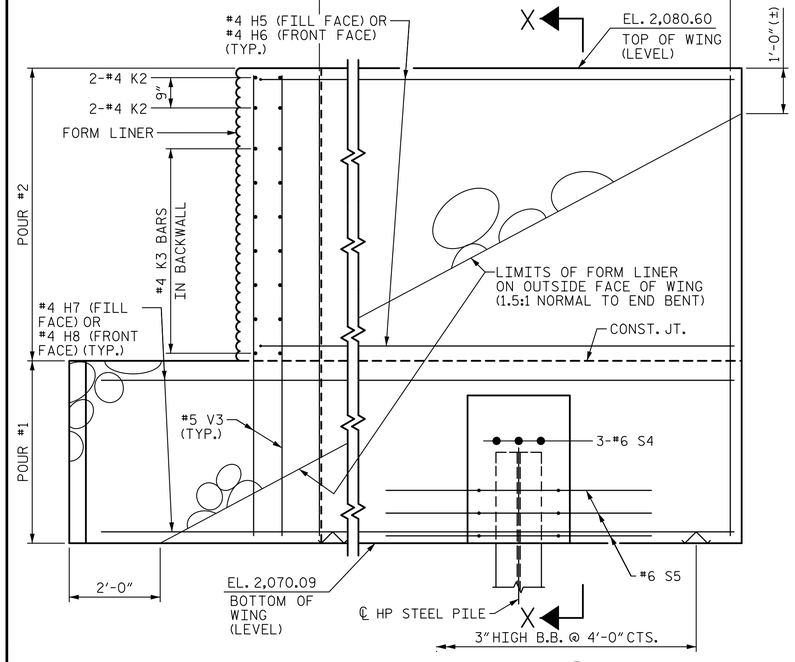
** STAIN TOP OF WING AND EXPOSED AREAS ABOVE FINISHED GRADE ON FILL FACE. SEE SPECIAL PROVISIONS FOR APPLICATION OF BRIDGE COATING.



SECTION X-X

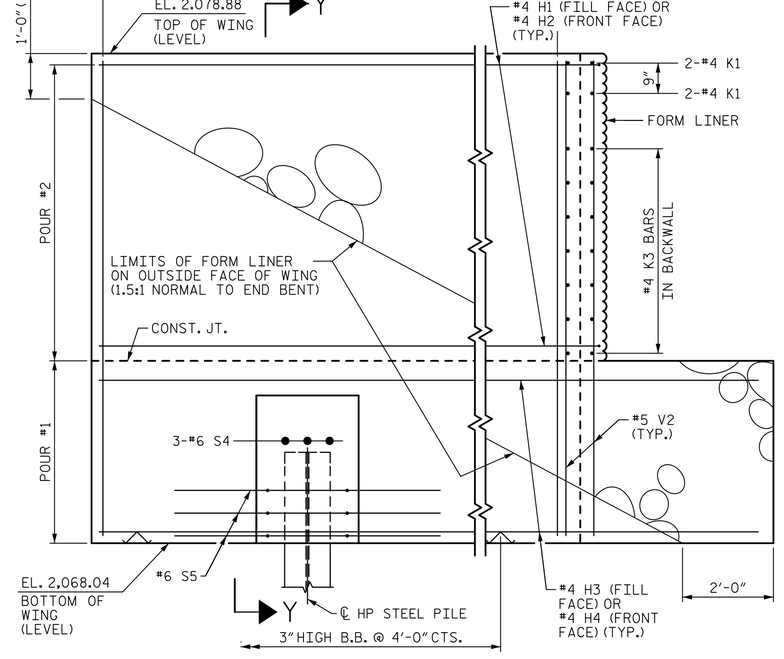


SECTION Y-Y



ELEVATION OF WING (W1)

(STAGE 2)



ELEVATION OF WING (W2)

(STAGE 1)

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-46
1			3			TOTAL SHEETS
2			4			64

DRAWN BY : D. H. CARTER DATE : SEP 2015
CHECKED BY : K. M. MOBLEY/T. E. TALLMAN DATE : SEP 2015
DESIGN ENGINEER OF RECORD: T. E. TALLMAN DATE : OCT 2015

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NORTH CAROLINA PROFESSIONAL SEAL 14408 ENGINEER THOMAS E. TALLMAN
Thomas E. Tallman 10/15/2015
Docusigned by: E9878962DEE2405...

10/14/2015
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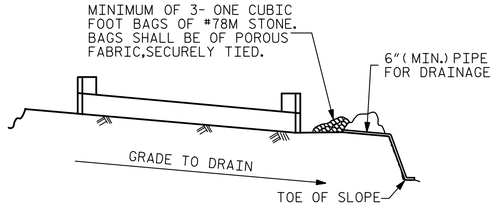
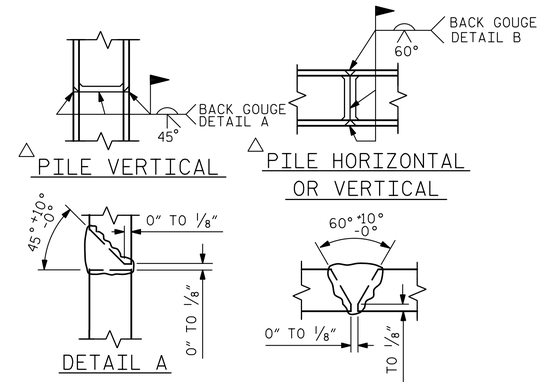


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

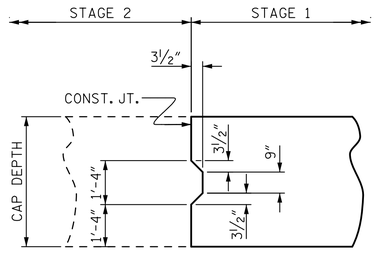
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

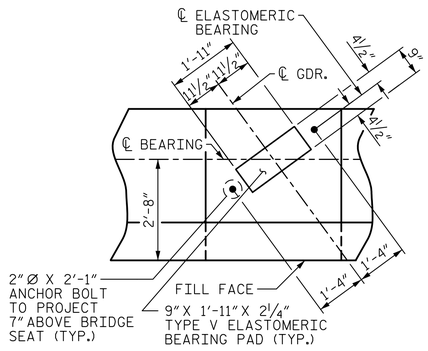


△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

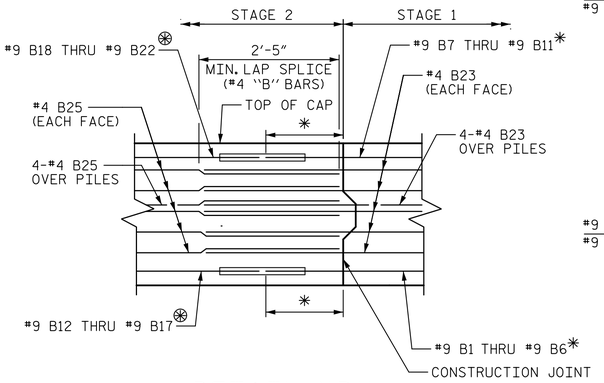


SHEAR KEY DETAIL



DETAIL "A"

(TYP. EA. GDR.)

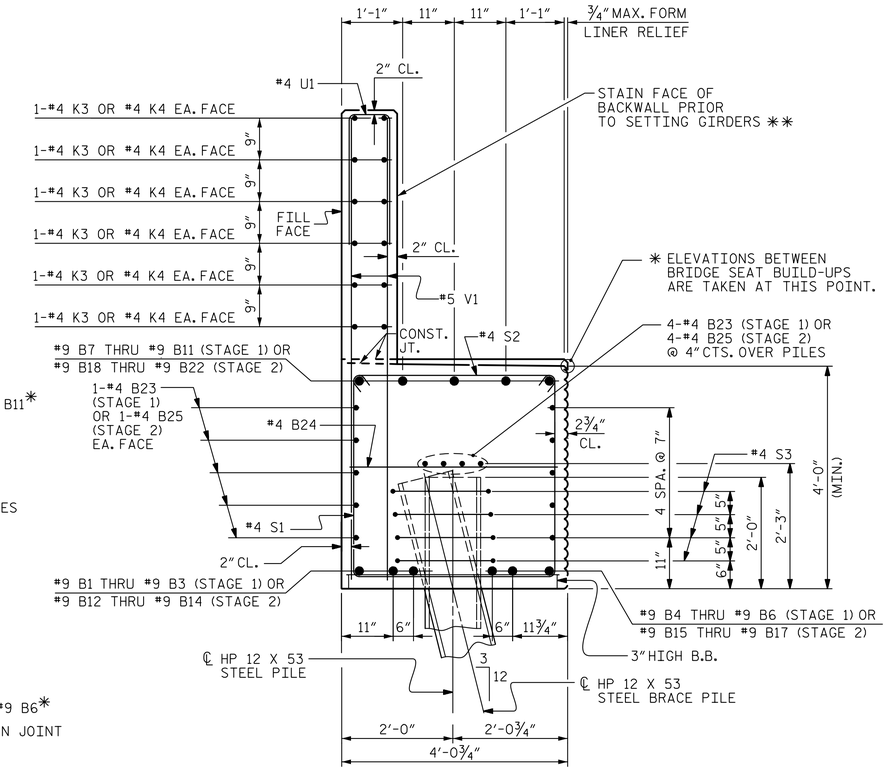


DETAIL "B"

✳ STAGE 1 TOP AND BOTTOM MAIN "B" BARS ARE DETAILED WITH STAGGERED 1'-0" AND 2'-0" EXTENSIONS BEYOND CONSTRUCTION JOINT.

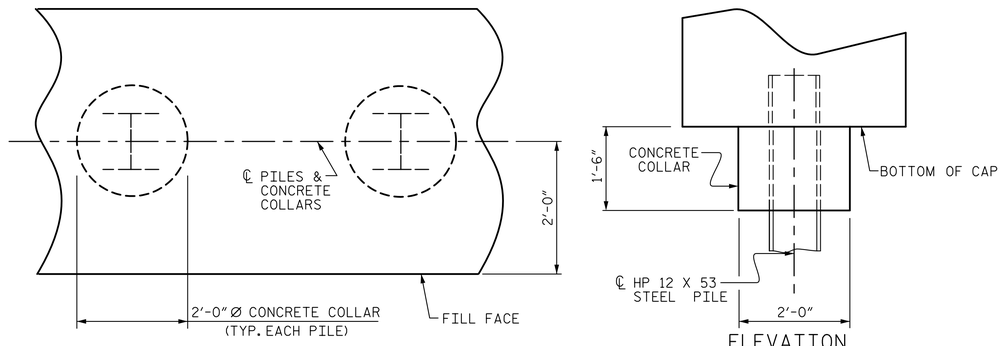
⊛ PLACE ALL BARS IN STAGE 2 AT OR NEAR THE END OF BARS EXTENDING FROM STAGE 1.

✳✳ SEE SPECIAL PROVISIONS FOR APPLICATION OF BRIDGE COATING.



SECTION A-A

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



CORROSION PROTECTION FOR STEEL PILES DETAIL

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 1 DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-47
1			3			TOTAL SHEETS
2			4			64

DRAWN BY : D. H. CARTER DATE : SEP 2015
CHECKED BY : K. M. MOBLEY DATE : SEP 2015
DESIGN ENGINEER OF RECORD: T. E. TALLMAN DATE : OCT 2015

ICA Engineering
5121 Kingdom Way, Suite 100 Raleigh, NC 27607
NC License No: F-0258

NORTH CAROLINA PROFESSIONAL SEAL 14408 ENGINEER THOMAS E. TALLMAN
Thomas E. Tallman 10/15/2015

10/14/2015
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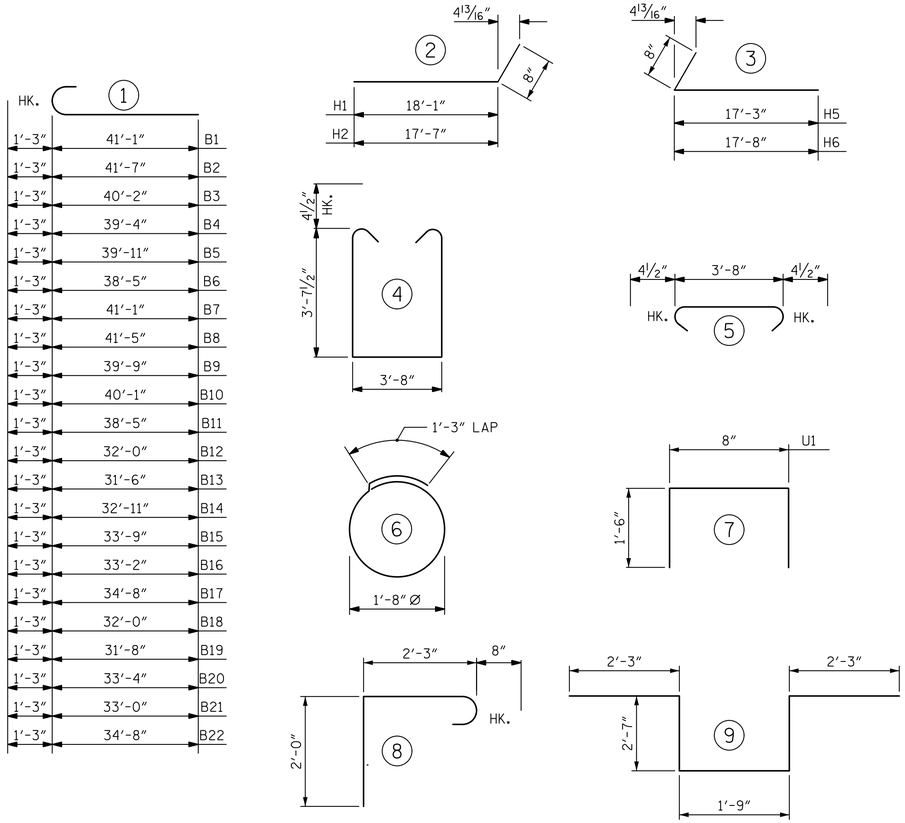
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

(STAGE 1)			
PREDRILLING FOR PILES		HP 12 X 53 STEEL PILES	
NO: 7	LIN. FT.= 130	NO: 7	LIN. FT.= 539

(STAGE 2)			
PREDRILLING FOR PILES		HP 12 X 53 STEEL PILES	
NO: 6	LIN. FT.= 119	NO: 6	LIN. FT.= 372

BILL OF MATERIAL
STAGE 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	1	#9	1	42'-4"	144
B2	1	#9	1	42'-10"	146
B3	1	#9	1	41'-5"	141
B4	1	#9	1	40'-7"	138
B5	1	#9	1	41'-2"	140
B6	1	#9	1	39'-8"	135
B7	1	#9	1	42'-4"	144
B8	1	#9	1	42'-8"	145
B9	1	#9	1	41'-0"	139
B10	1	#9	1	41'-4"	141
B11	1	#9	1	39'-8"	135
B23	28	#4	STR	22'-7"	422
B24	9	#4	STR	3'-8"	22
H1	9	#4	2	18'-9"	113
H2	9	#4	2	18'-3"	110
H3	6	#4	STR	20'-10"	83
H4	6	#4	STR	20'-4"	81
K1	4	#4	STR	5'-3"	14
K3	24	#4	STR	22'-7"	362
S1	55	#4	4	11'-8"	429
S2	55	#4	5	4'-5"	162
S3	24	#4	6	6'-6"	104
S4	3	#6	8	4'-11"	22
S5	3	#6	9	11'-5"	51
U1	34	#4	7	3'-8"	83
V1	34	#5	STR	8'-2"	290
V2	44	#5	STR	10'-5"	478

REINFORCING STEEL (STAGE 1) 4,374 LBS.

CLASS A CONCRETE BREAKDOWN (STAGE 1)

POUR #1	CAP, LOWER PART OF WINGS & COLLARS	27.6 C.Y.
POUR #2	BACKWALL AND UPPER PART OF WINGS	11.7 C.Y.
	TOTAL CLASS A CONCRETE	39.3 C.Y.

ARCHITECTURAL CONCRETE SURFACE TREATMENT
(STAGE 1) 299.9 SQ. FT.

BILL OF MATERIAL
STAGE 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B12	1	#9	1	33'-3"	113
B13	1	#9	1	32'-9"	111
B14	1	#9	1	34'-2"	116
B15	1	#9	1	35'-0"	119
B16	1	#9	1	34'-5"	117
B17	1	#9	1	35'-11"	122
B18	1	#9	1	33'-3"	113
B19	1	#9	1	32'-11"	112
B20	1	#9	1	34'-7"	118
B21	1	#9	1	34'-3"	116
B22	1	#9	1	35'-11"	122
B24	9	#4	STR	3'-8"	22
B25	28	#4	STR	18'-10"	352
H5	9	#4	3	17'-11"	108
H6	9	#4	3	18'-4"	110
H7	6	#4	STR	20'-0"	80
H8	6	#4	STR	20'-6"	82
K2	4	#4	STR	5'-4"	14
K4	24	#4	STR	17'-8"	283
K5	8	#4	STR	4'-6"	24
S1	47	#4	4	11'-8"	366
S2	47	#4	5	4'-5"	139
S3	20	#4	6	6'-6"	87
S4	3	#6	8	4'-11"	22
S5	3	#6	9	11'-5"	51
U1	28	#4	7	3'-8"	69
V1	28	#5	STR	8'-2"	239
V3	46	#5	STR	10'-1"	484

REINFORCING STEEL (STAGE 2) 3,811 LBS.

CLASS A CONCRETE BREAKDOWN (STAGE 2)

POUR #1	CAP, LOWER PART OF WINGS & COLLARS	24.9 C.Y.
POUR #2	BACKWALL AND UPPER PART OF WINGS	10.1 C.Y.
	TOTAL CLASS A CONCRETE	35.0 C.Y.

ARCHITECTURAL CONCRETE SURFACE TREATMENT
(STAGE 2) 293.8 SQ. FT.

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 1 DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-48
1			3			TOTAL SHEETS
2			4			64

DRAWN BY : D. H. CARTER DATE : OCT 2015
CHECKED BY : K. M. MOBLEY DATE : OCT 2015
DESIGN ENGINEER OF RECORD: T. E. TALLMAN DATE : OCT 2015

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NC License No: F-0258

NORTH CAROLINA PROFESSIONAL SEAL 14408 ENGINEER THOMAS E TALLMAN

Documents signed by: Thomas E. Tallman E9B789020EE24D5... 10/15/2015

10/14/2015
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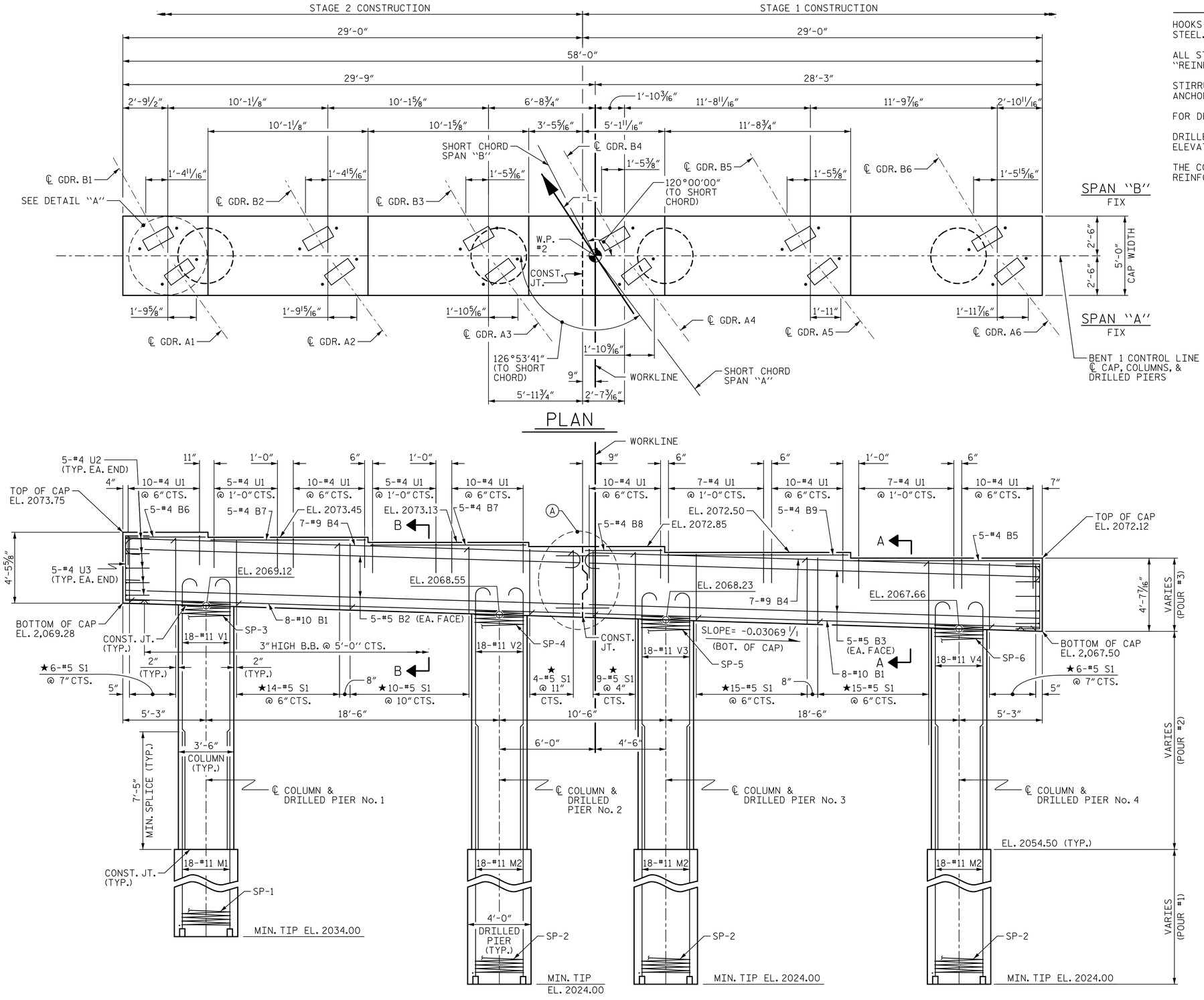


PLAN

★ INVERT ALTERNATE STIRRUPS

ELEVATION

Ⓐ SEE ″SHEAR KEY DETAIL″ ON SHEET 2 OF 2

NOTES

HOOKS ON ″V″ BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR ″REINFORCING STEEL″ AND ″SPIRAL COLUMN REINFORCING STEEL.″

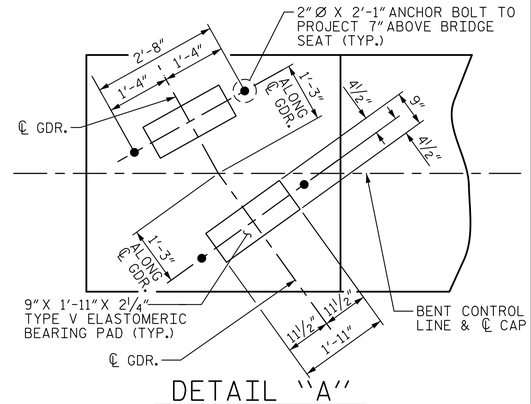
STIRRUPS AND ″U″ BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

DRILLED PIERS SHALL BE TERMINATED ONE FOOT ± ABOVE NORMAL WATER SURFACE ELEVATION FOR SHAFTS LOCATED IN WATER.

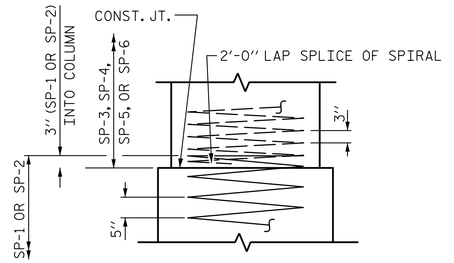
THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.

SEE SPECIAL PROVISIONS FOR APPLICATION OF BRIDGE COATING. SEE SHEET 2 OF 2 FOR LIMITS.



DETAIL ″A″

(TYP. EA. GDR.)



CONSTRUCTION JOINT DETAIL

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-49
1			3			TOTAL SHEETS
2			4			64

DRAWN BY : D. H. CARTER DATE : OCT 2015
CHECKED BY : K. M. MOBLEY/T. E. TALLMAN DATE : OCT 2015
DESIGN ENGINEER OF RECORD: T. E. TALLMAN DATE : OCT 2015

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5121 Kingsley Way, Suite 100 Raleigh, NC 27607
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NORTH CAROLINA PROFESSIONAL SEAL 14408 ENGINEER THOMAS E. TALLMAN
Thomas E. Tallman 10/15/2015
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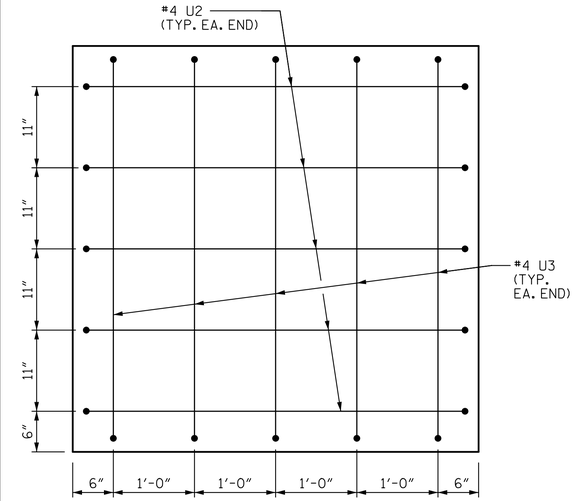
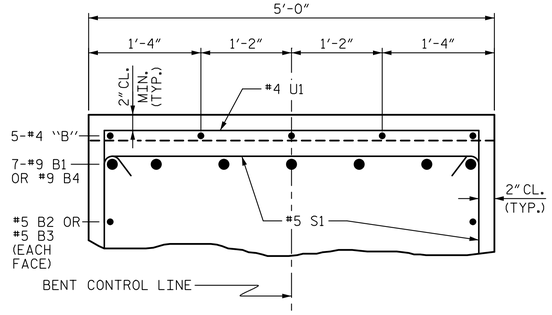
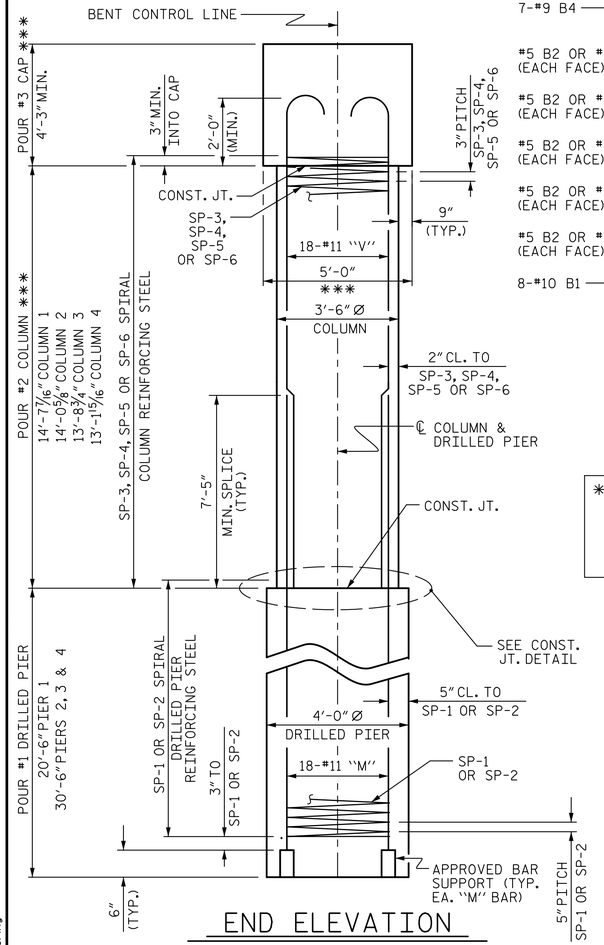


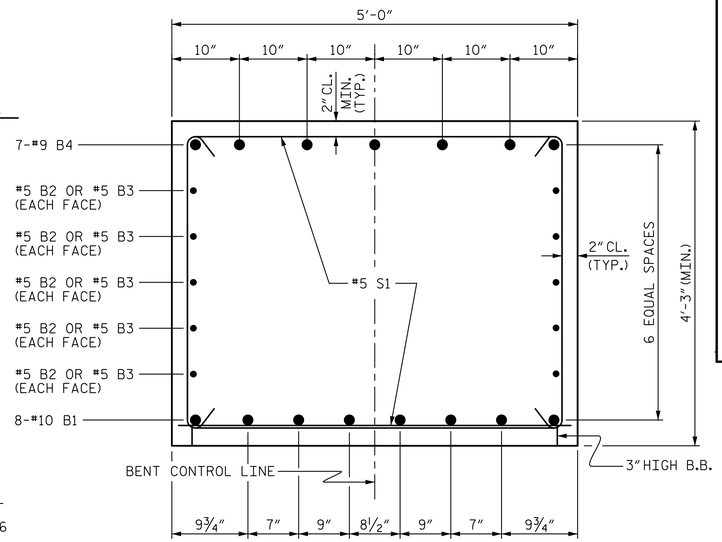
END OF CAP DETAIL (TYP.)



SECTION B-B



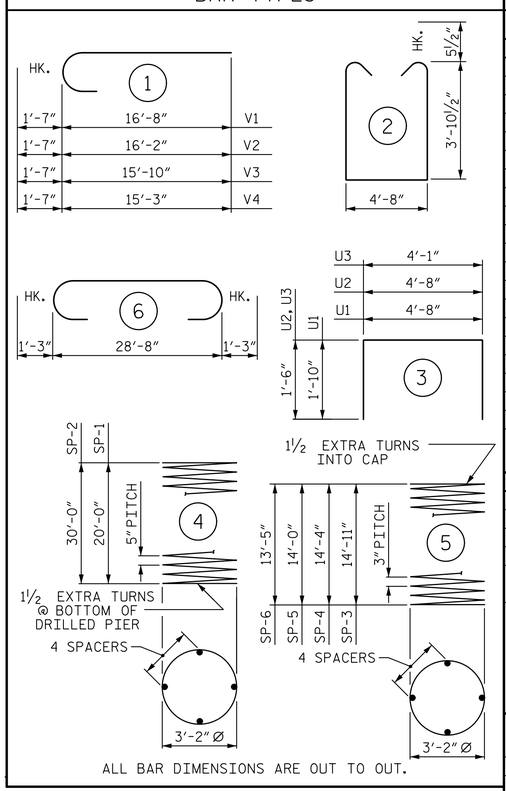
END ELEVATION



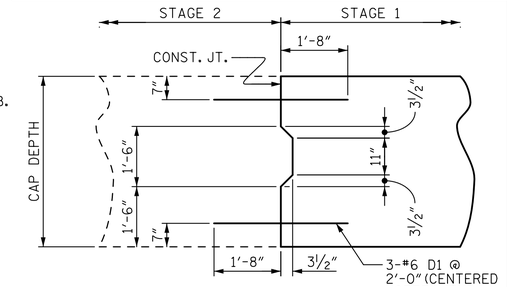
SECTION A-A

*** SEE SPECIAL PROVISIONS FOR APPLICATION OF BRIDGE COATING. LIMITS TO INCLUDE ENTIRE SURFACE OF COLUMNS AND BENT CAP EXCEPT FOR THE TOP OF THE CAP.

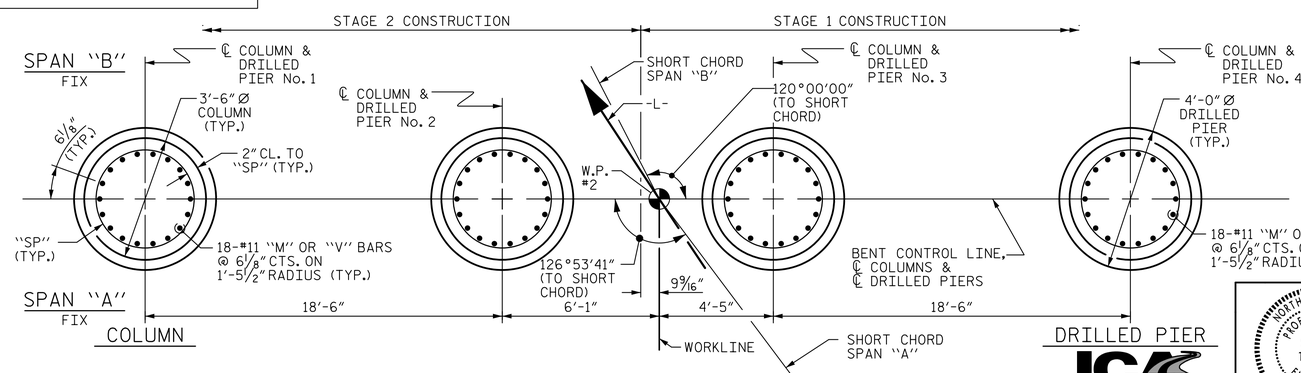
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.



SHEAR KEY DETAIL



PLAN OF DRILLED PIERS & COLUMNS

(DETAILS ARE TYPICAL EACH DRILLED PIER & COLUMN)

BILL OF MATERIAL — STAGE 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#10	STR	28'-8"	987
B3	10	#5	STR	28'-4"	296
B4	7	#9	6	31'-2"	742
B5	5	#4	STR	11'-9"	39
B8	5	#4	STR	4'-9"	16
B9	5	#4	STR	11'-4"	38
D1	6	#6	STR	3'-4"	30
M2	36	#11	STR	40'-5"	7730
S1	45	#5	2	13'-4"	626
U1	44	#4	3	8'-4"	245
U2	5	#4	3	7'-8"	26
U3	5	#4	3	7'-1"	24
V3	18	#11	1	17'-5"	1666
V4	18	#11	1	16'-10"	1610

REINFORCING STEEL (STAGE 1) 14,075 LBS.

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
SP-2	2	*	4	719'-10"	1502
SP-5	1	**	5	567'-2"	379
SP-6	1	**	5	545'-1"	364

SPIRAL COLUMN REINFORCING STEEL (STAGE 1) 2245 LBS.

* THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR

** THE SP-5 AND SP-6 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR

CLASS A CONCRETE BREAKDOWN (STAGE 1)

POUR #2 (COLUMNS)	9.6 C.Y.
POUR #3 (CAP)	24.0 C.Y.
TOTAL CLASS A CONCRETE	33.6 C.Y.

DRILLED PIERS: (STAGE 1)

DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)	28.4 C.Y.
4'-0" Ø DRILLED PIER NOT IN SOIL	26.5 LIN. FT.
4'-0" Ø DRILLED PIER IN SOIL	34.5 LIN. FT.
PERMANENT STEEL CASING FOR 4'-0" Ø DRILLED PIER	44.0 LIN. FT.
CSL TUBES	256.0 LIN. FT.

BILL OF MATERIAL — STAGE 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#10	STR	28'-8"	987
B2	10	#5	STR	28'-8"	299
B4	7	#9	6	31'-2"	742
B6	5	#4	STR	4'-11"	16
B7	10	#4	STR	9'-9"	65
M1	18	#11	STR	30'-5"	2909
M2	18	#11	STR	40'-5"	3865
S1	34	#5	2	13'-4"	473
U1	40	#4	3	8'-4"	223
U2	5	#4	3	7'-8"	26
U3	5	#4	3	7'-1"	24
V1	18	#11	1	18'-3"	1745
V2	18	#11	1	17'-9"	1698

REINFORCING STEEL (STAGE 2) 13,072 LBS.

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
SP-1	1	*	4	484'-10"	506
SP-2	1	*	4	719'-10"	751
SP-3	1	**	5	601'-6"	402
SP-4	1	**	5	579'-5"	387

SPIRAL COLUMN REINFORCING STEEL (STAGE 2) 2046 LBS.

* THE SP-1 AND SP-2 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR

** THE SP-3 AND SP-4 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR

CLASS A CONCRETE BREAKDOWN (STAGE 2)

POUR #2 (COLUMNS)	10.3 C.Y.
POUR #3 (CAP)	23.9 C.Y.
TOTAL CLASS A CONCRETE	34.2 C.Y.

DRILLED PIERS: (STAGE 2)

DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)	23.7 C.Y.
4'-0" Ø DRILLED PIER NOT IN SOIL	26.5 LIN. FT.
4'-0" Ø DRILLED PIER IN SOIL	24.5 LIN. FT.
PERMANENT STEEL CASING FOR 4'-0" Ø DRILLED PIER	32.0 LIN. FT.
CSL TUBES	216.0 LIN. FT.

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 1

DRAWN BY : D. H. CARTER DATE : OCT 2015
CHECKED BY : K. M. MOBLEY/T. E. TALLMAN DATE : OCT 2015
DESIGN ENGINEER OF RECORD: T. E. TALLMAN DATE : OCT 2015

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NC License No: F-0258

NORTH CAROLINA PROFESSIONAL SEAL 14408 ENGINEER THOMAS E. TALLMAN
Thomas E. Tallman
E9B7B9620EE24D5... 10/15/2015

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-50
1			3			TOTAL SHEETS
2			4			64

10/14/2015
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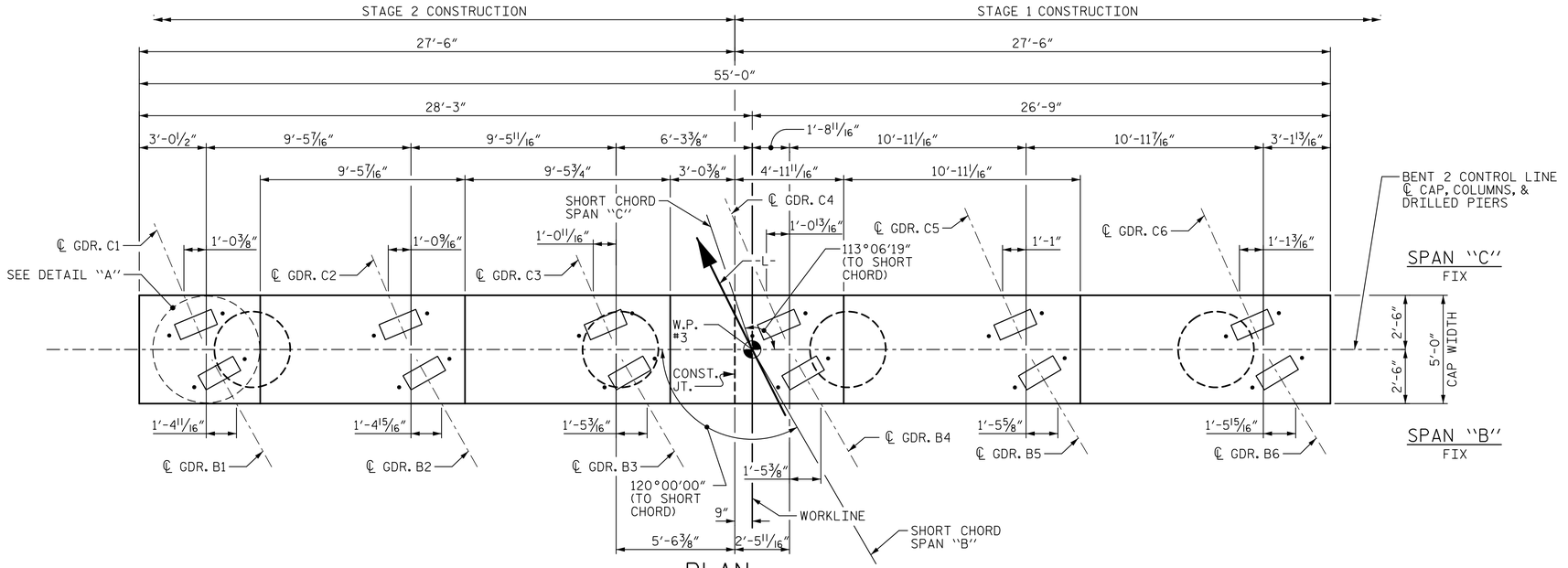
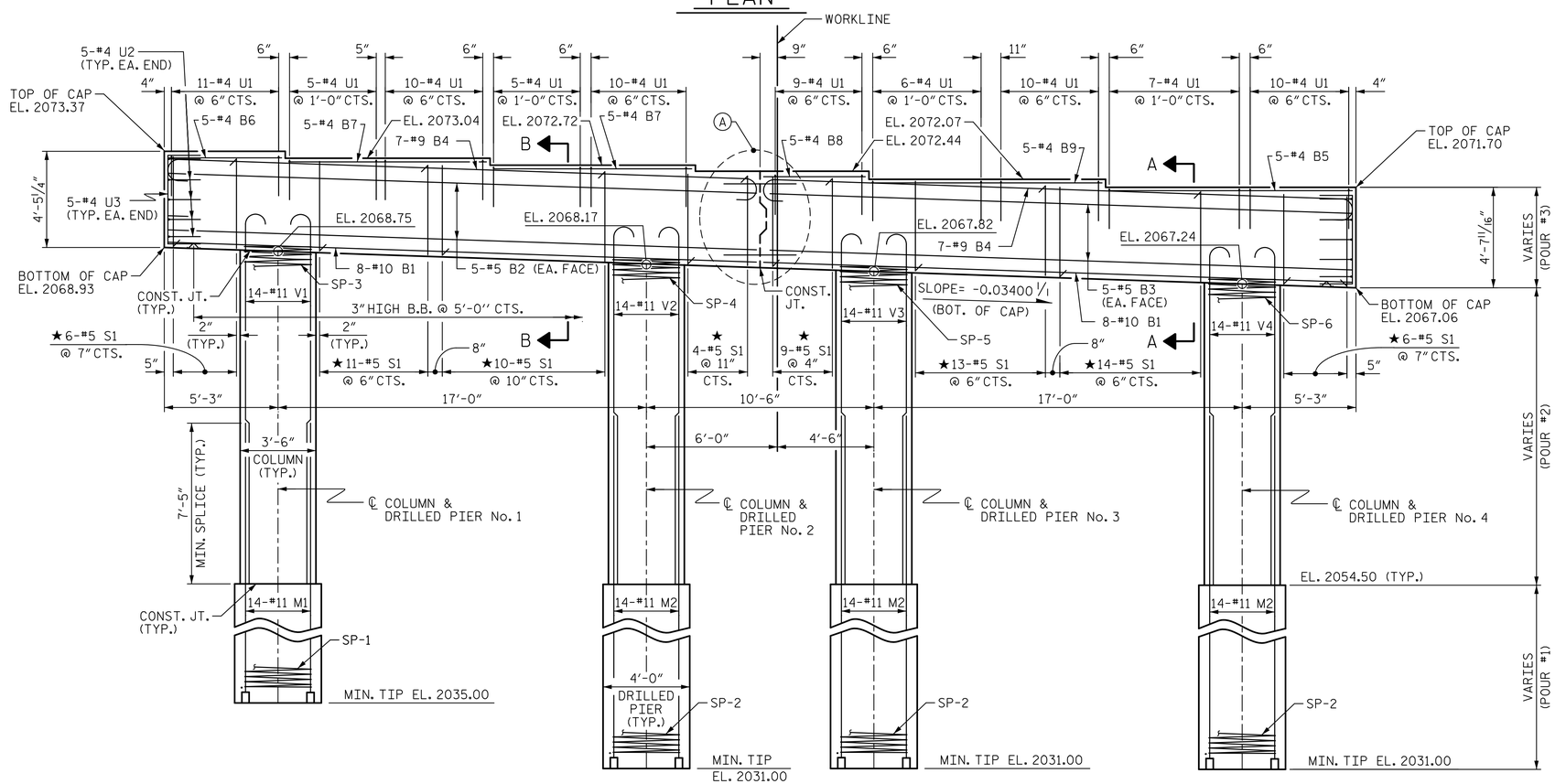


PLAN



★ INVERT ALTERNATE STIRRUPS

ELEVATION

Ⓐ SEE "SHEAR KEY DETAIL" ON SHEET 2 OF 2

NOTES

HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL."

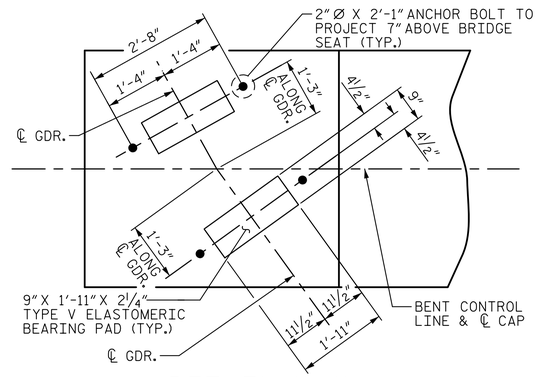
STIRRUPS AND "U" BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

DRILLED PIERS SHALL BE TERMINATED ONE FOOT ± ABOVE NORMAL WATER SURFACE ELEVATION FOR SHAFTS LOCATED IN WATER.

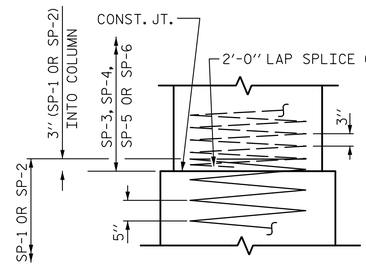
THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.

SEE SPECIAL PROVISIONS FOR APPLICATION OF BRIDGE COATING. SEE SHEET 2 OF 2 FOR LIMITS.



DETAIL "A"

(TYP. EA. GDR.)



CONSTRUCTION JOINT DETAIL

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-51
1			3			TOTAL SHEETS
2			4			64

DRAWN BY : D. H. CARTER DATE : OCT 2015
CHECKED BY : K. M. MOBLEY/T. E. TALLMAN DATE : OCT 2015
DESIGN ENGINEER OF RECORD: T. E. TALLMAN DATE : OCT 2015

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NORTH CAROLINA PROFESSIONAL SEAL 14408 ENGINEER THOMAS E. TALLMAN
Thomas E. Tallman 10/15/2015
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10/14/2015
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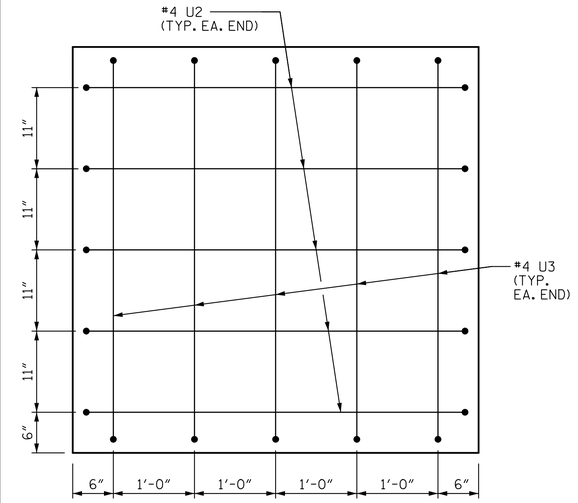

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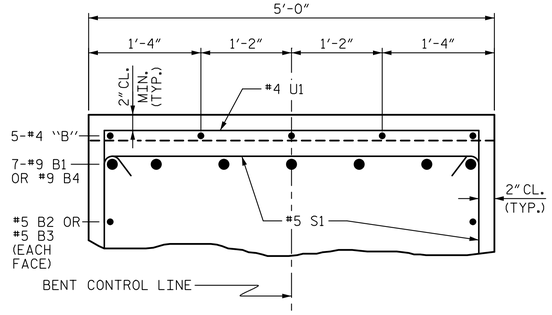
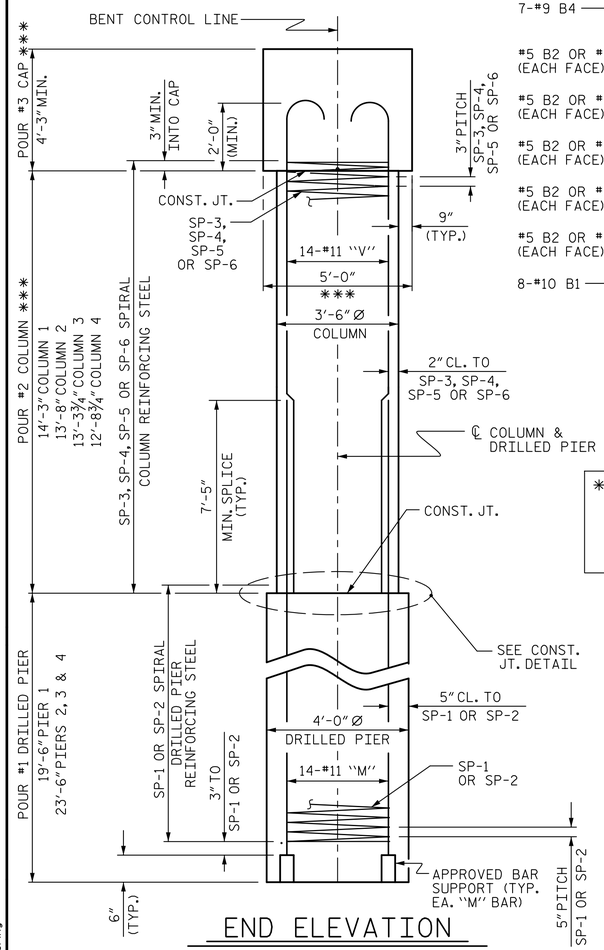
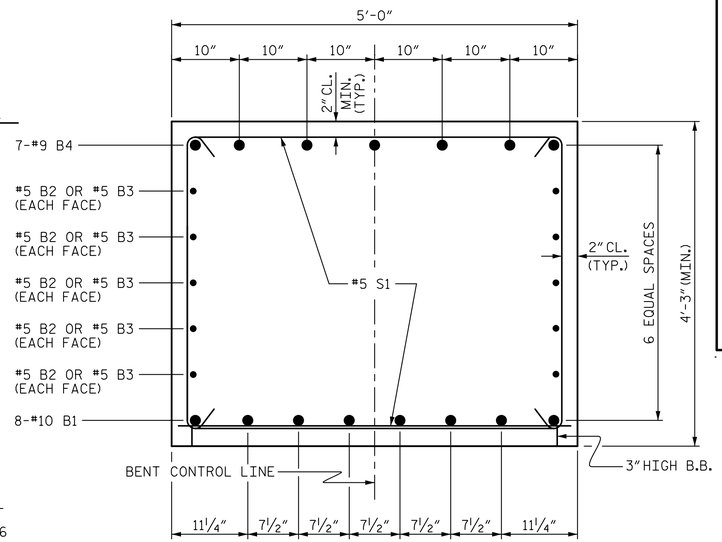


SECTION B-B



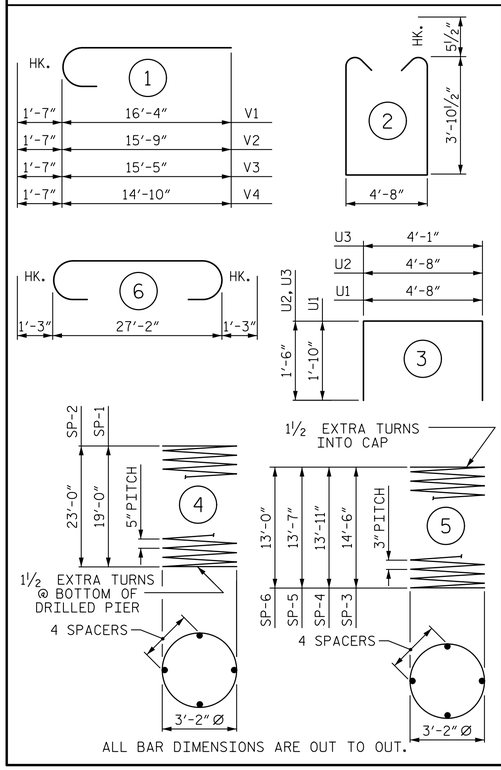
END ELEVATION



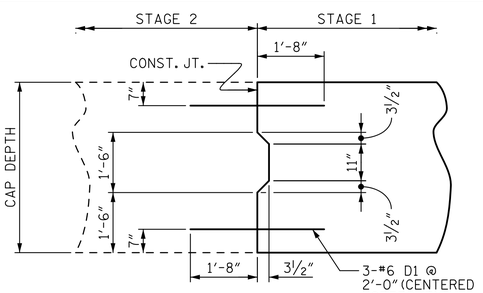
SECTION A-A

*** SEE SPECIAL PROVISIONS FOR APPLICATION OF BRIDGE COATING. LIMITS TO INCLUDE ENTIRE SURFACE OF COLUMNS AND BENT CAP EXCEPT FOR THE TOP OF THE CAP.

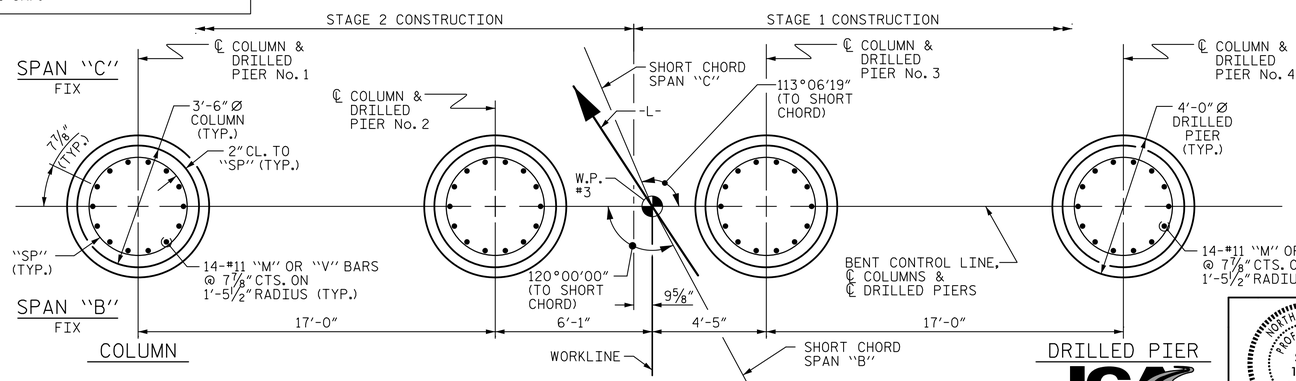
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.



SHEAR KEY DETAIL



PLAN OF DRILLED PIERS & COLUMNS

(DETAILS ARE TYPICAL EACH DRILLED PIER & COLUMN)

BILL OF MATERIAL — STAGE 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#10	STR	27'-2"	935
B3	10	#5	STR	26'-10"	280
B4	7	#9	6	29'-8"	706
B5	5	#4	STR	11'-2"	37
B8	5	#4	STR	4'-7"	15
B9	5	#4	STR	10'-7"	35
D1	6	#6	STR	3'-4"	30
M2	28	#11	STR	33'-5"	4971
S1	42	#5	2	13'-4"	584
U1	42	#4	3	8'-4"	234
U2	5	#4	3	7'-8"	26
U3	5	#4	3	7'-1"	24
V3	14	#11	1	17'-0"	1264
V4	14	#11	1	16'-5"	1221

REINFORCING STEEL (STAGE 1) 10,362 LBS.

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
SP-2	2	*	4	555'-10"	1159
SP-5	1	**	5	550'-0"	367
SP-6	1	**	5	527'-11"	353

SPIRAL COLUMN REINFORCING STEEL (STAGE 1) 1879 LBS.

* THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR

** THE SP-5 AND SP-6 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR

CLASS A CONCRETE BREAKDOWN (STAGE 1)

POUR #2 (COLUMNS)	9.2 C.Y.
POUR #3 (CAP)	22.8 C.Y.
TOTAL CLASS A CONCRETE	32.0 C.Y.

DRILLED PIERS: (STAGE 1)

DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)	21.9 C.Y.
4'-0" Ø DRILLED PIER NOT IN SOIL	18.5 LIN. FT.
4'-0" Ø DRILLED PIER IN SOIL	28.5 LIN. FT.
PERMANENT STEEL CASING FOR 4'-0" Ø DRILLED PIER	30.0 LIN. FT.
CSL TUBES	200.0 LIN. FT.

BILL OF MATERIAL — STAGE 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#10	STR	27'-2"	935
B2	10	#5	STR	27'-2"	283
B4	7	#9	6	29'-8"	706
B6	5	#4	STR	5'-2"	17
B7	10	#4	STR	9'-1"	61
M1	14	#11	STR	29'-5"	2188
M2	14	#11	STR	33'-5"	2486
S1	31	#5	2	13'-4"	431
U1	41	#4	3	8'-4"	228
U2	5	#4	3	7'-8"	26
U3	5	#4	3	7'-1"	24
V1	14	#11	1	17'-11"	1333
V2	14	#11	1	17'-4"	1289

REINFORCING STEEL (STAGE 2) 10,007 LBS.

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
SP-1	1	*	4	462'-9"	483
SP-2	1	*	4	555'-10"	580
SP-3	1	**	5	586'-10"	392
SP-4	1	**	5	564'-9"	377

SPIRAL COLUMN REINFORCING STEEL (STAGE 2) 1832 LBS.

* THE SP-1 AND SP-2 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR

** THE SP-3 AND SP-4 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR

CLASS A CONCRETE BREAKDOWN (STAGE 2)

POUR #2 (COLUMNS)	10.0 C.Y.
POUR #3 (CAP)	22.7 C.Y.
TOTAL CLASS A CONCRETE	32.7 C.Y.

DRILLED PIERS: (STAGE 2)

DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)	20.0 C.Y.
4'-0" Ø DRILLED PIER NOT IN SOIL	18.5 LIN. FT.
4'-0" Ø DRILLED PIER IN SOIL	24.5 LIN. FT.
PERMANENT STEEL CASING FOR 4'-0" Ø DRILLED PIER	24.0 LIN. FT.
CSL TUBES	184.0 LIN. FT.

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-52
1			3			TOTAL SHEETS
2			4			64

DRAWN BY : D. H. CARTER DATE : OCT 2015
CHECKED BY : K. M. MOBLEY/T. E. TALLMAN DATE : OCT 2015
DESIGN ENGINEER OF RECORD: T. E. TALLMAN DATE : OCT 2015

ICA Engineering
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NC License No: F-0258

NORTH CAROLINA PROFESSIONAL SEAL 14408 ENGINEER THOMAS E. TALLMAN
DocuSigned by: Thomas E. Tallman E9B78620EE24D5... 10/15/2015

10/14/2015
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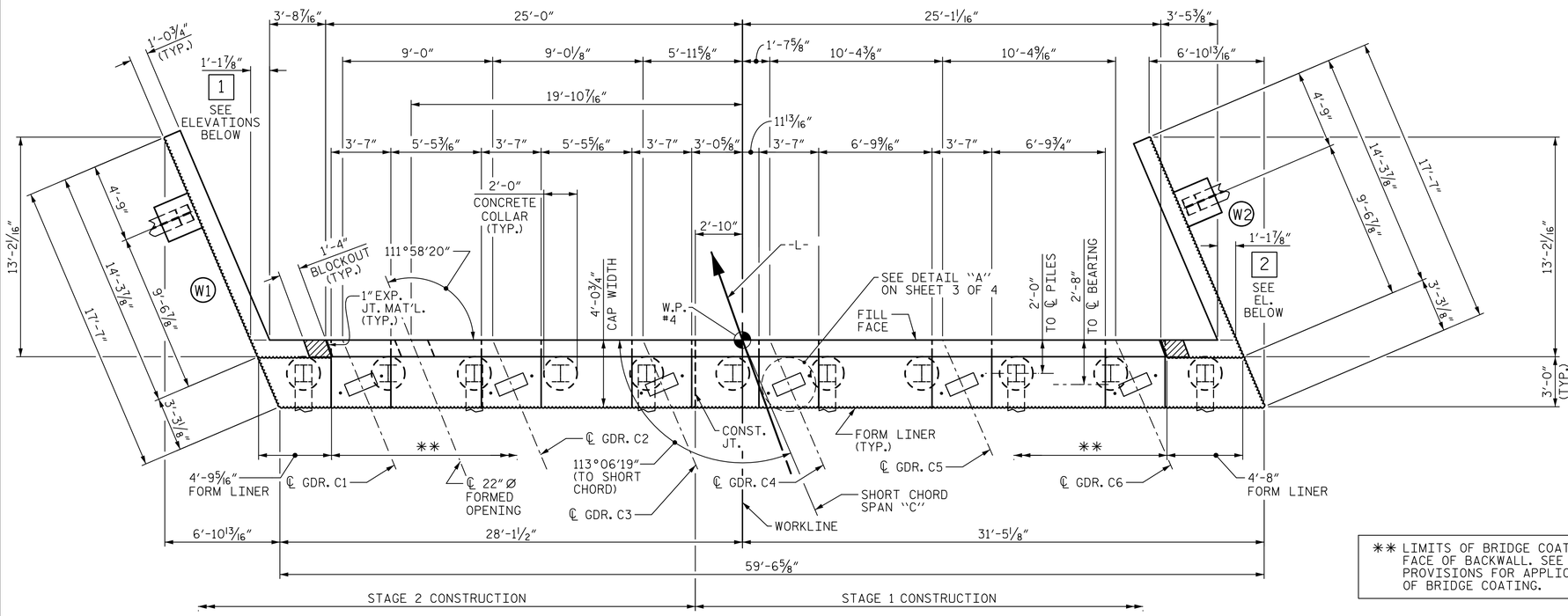
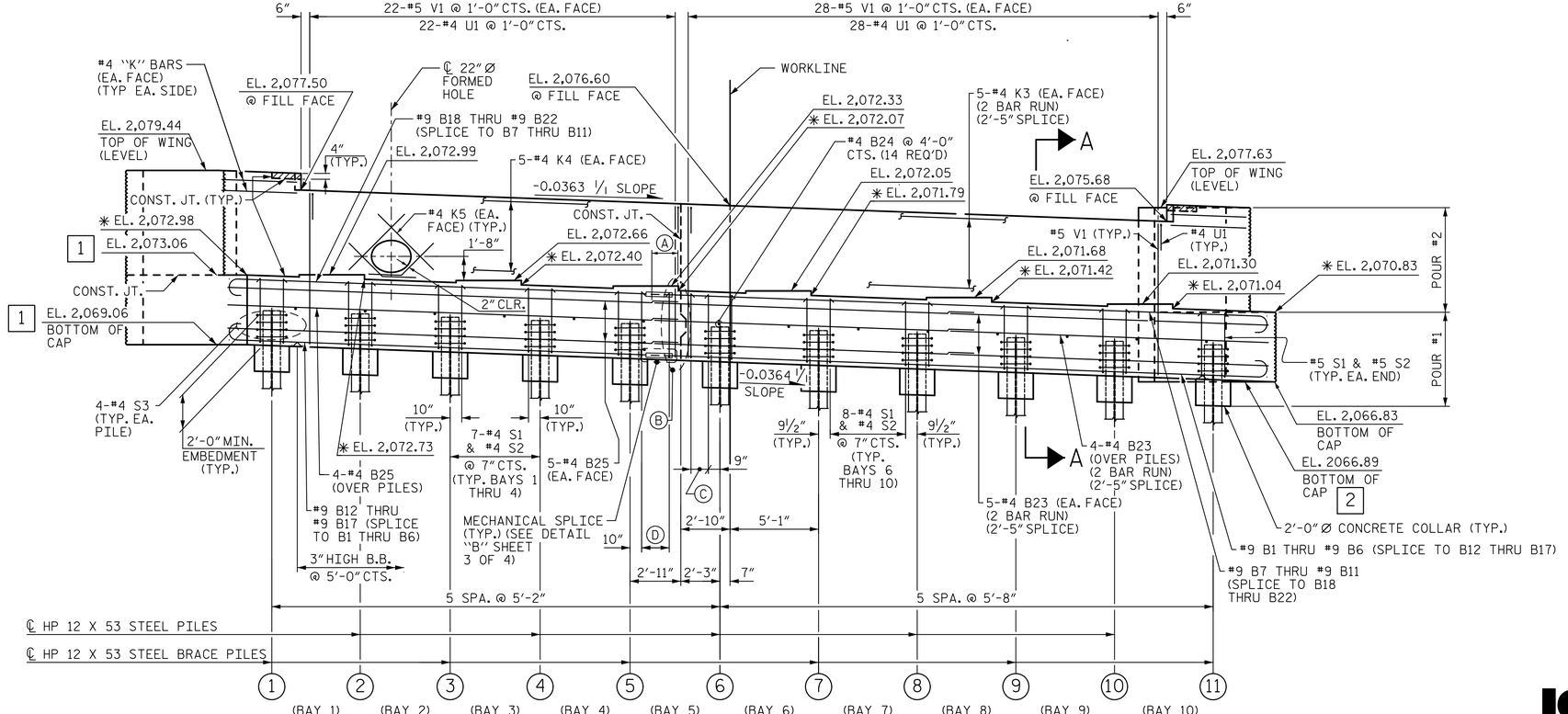


PLAN



ELEVATION

** LIMITS OF BRIDGE COATING ON FRONT FACE OF BACKWALL. SEE SPECIAL PROVISIONS FOR APPLICATION OF BRIDGE COATING.

* SEE SHEET 3 OF 4 FOR LOCATION OF ELEVATIONS BETWEEN BRIDGE SEAT BUILD-UPS.

NOTES

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

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

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

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

THE 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 COST OF THE FORM LINERS AND SPECIAL SURFACE FINISH ARE INCLUDED IN THE SQ. FT. BID FOR ARCHITECTURAL CONCRETE SURFACE TREATMENT.

FOR ARCHITECTURAL CONCRETE SURFACE TREATMENT, SEE SPECIAL PROVISIONS.

INSTALL THE 4"Ø DRAIN PIPE THROUGH THE WINGWALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WINGWALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

"V" BARS AND "K" BARS IN THE BACKWALL SHALL BE FIELD BENT OR CUT IN THE AREA OF THE 22"Ø FORMED HOLE.

TOP OF PILE ELEVATIONS

①	2,070.93	⑦	2,069.78
②	2,070.74	⑧	2,069.58
③	2,070.55	⑨	2,069.37
④	2,070.37	⑩	2,069.16
⑤	2,070.18	⑪	2,068.96
⑥	2,069.99		

Ⓐ 2'-5" MIN. SPLICE (TYP. #4 "B" AND #4 "K" BARS)
Ⓑ SEE "SHEAR KEY DETAIL" ON SHEET 3 OF 4
Ⓒ 3-#4 S1 & #4 S2 @ 6" CTS.
Ⓓ 4-#4 S1 & #4 S2 @ 7" CTS.

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-53
1			3			TOTAL SHEETS
2			4			64

DRAWN BY : D. H. CARTER DATE : SEP 2015
CHECKED BY : K. M. MOBLEY/M. T. NEIHEISEL DATE : SEP 2015
DESIGN ENGINEER OF RECORD: T. E. TALLMAN DATE : OCT 2015

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NORTH CAROLINA PROFESSIONAL SEAL 14408 ENGINEER THOMAS E. TALLMAN
Thomas E. Tallman 10/15/2015
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10/14/2015
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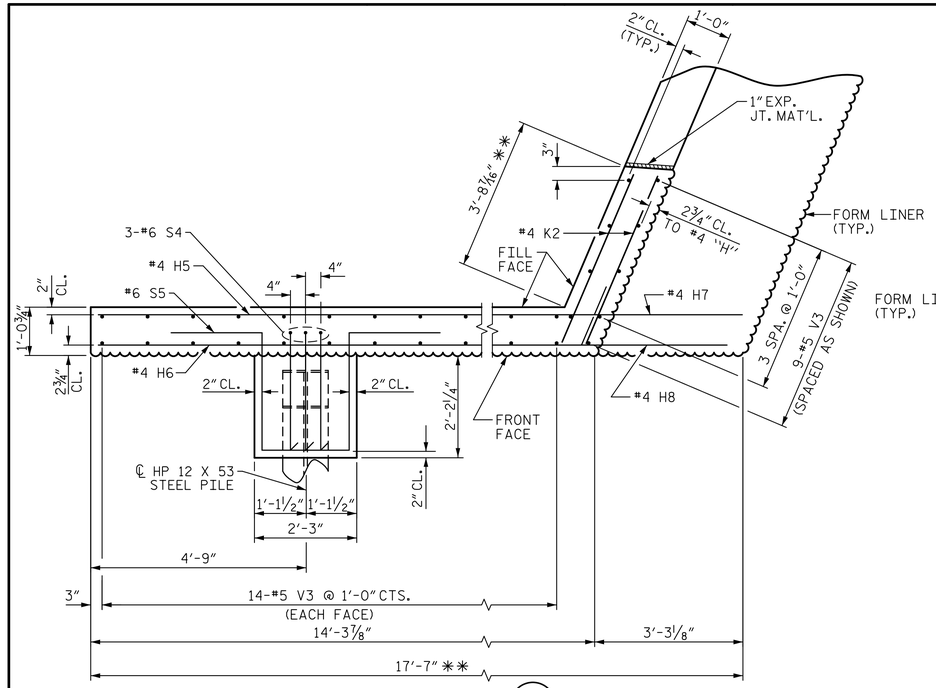
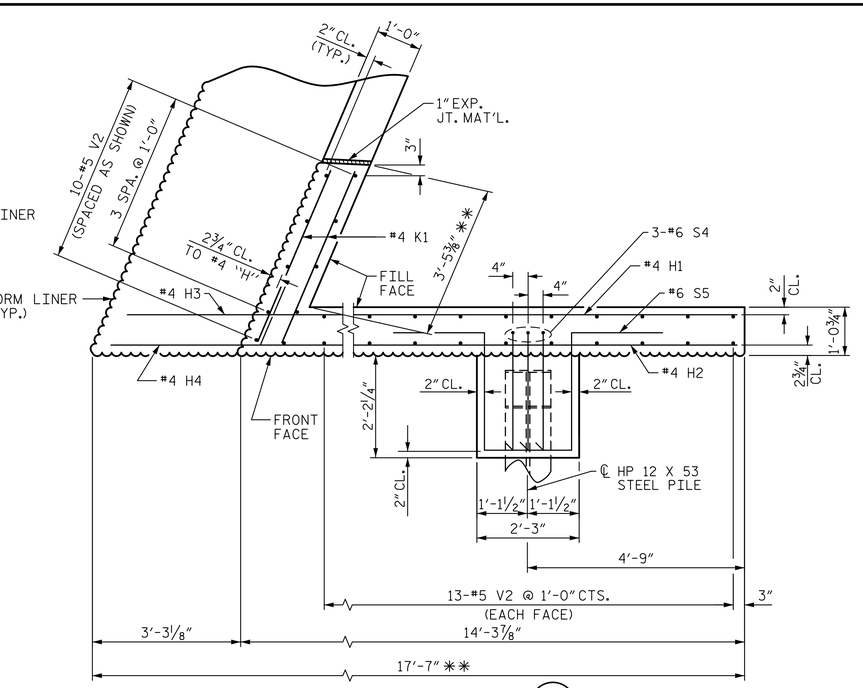


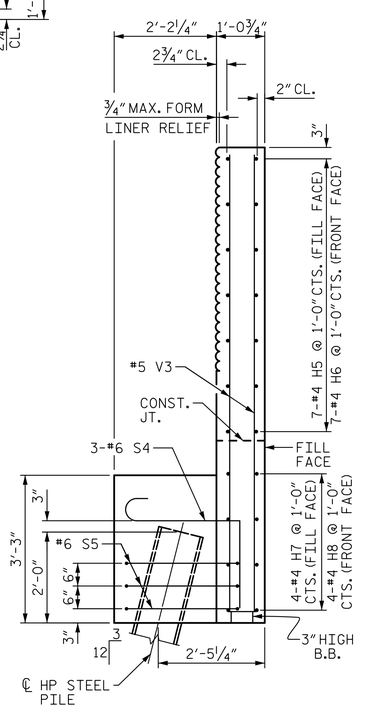
PLAN OF WING (W1)

(STAGE 2)

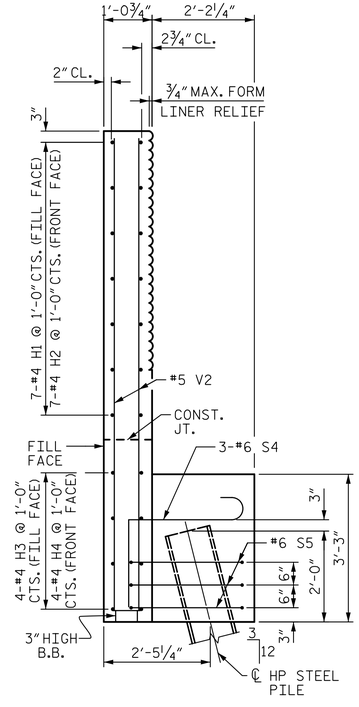


PLAN OF WING (W2)

(STAGE 1)



SECTION X-X



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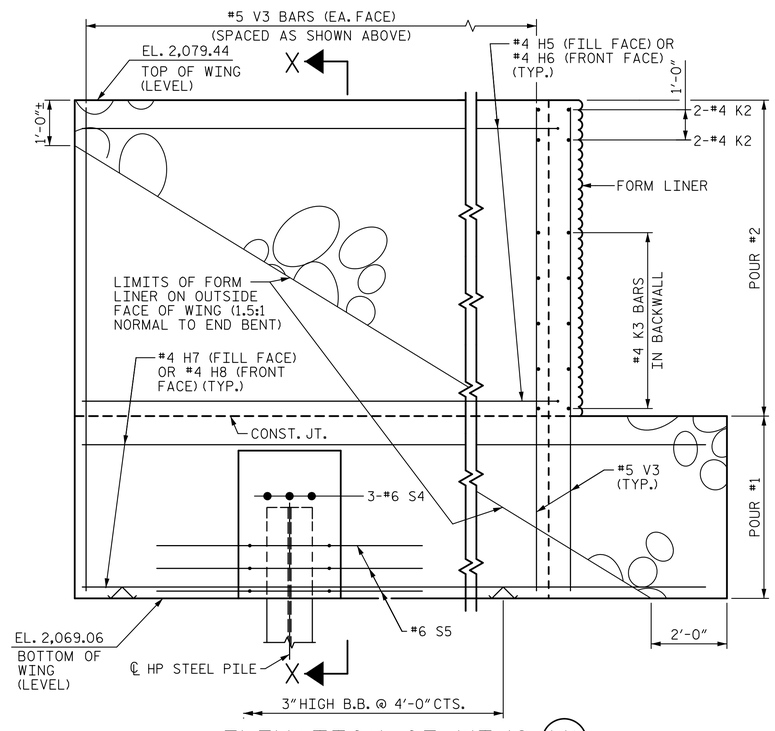
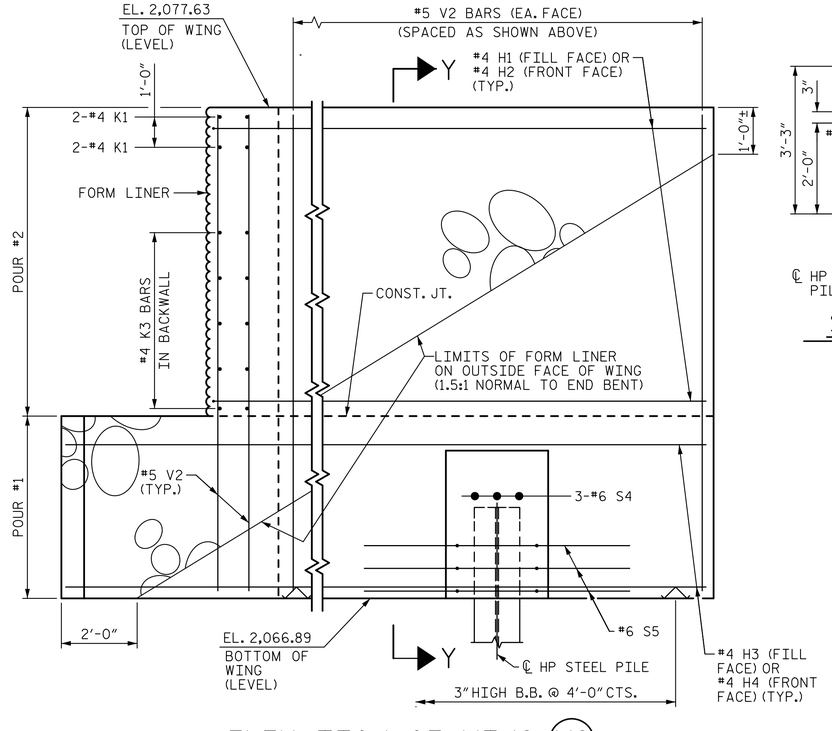


ELEVATION OF WING (W1)

(STAGE 2)



ELEVATION OF WING (W2)

(STAGE 1)

** STAIN TOP OF WING AND EXPOSED AREAS ABOVE FINISHED GRADE ON FILL FACE. SEE SPECIAL PROVISIONS FOR APPLICATION OF BRIDGE COATING.

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-54
1			3			TOTAL SHEETS
2			4			64

ICA Engineering
5121 Kingdom Way, Suite 100 Raleigh, NC 27607
NC License No: F-0258

NORTH CAROLINA PROFESSIONAL SEAL 14408 ENGINEER THOMAS E TALLMAN
Thomas E. Tallman
E9B789020EE24D5... 10/15/2015

DRAWN BY :	D. H. CARTER	DATE :	SEP 2015
CHECKED BY :	K. M. MOBLEY/T. E. TALLMAN	DATE :	SEP 2015
DESIGN ENGINEER OF RECORD:	T. E. TALLMAN	DATE :	OCT 2015

10/14/2015
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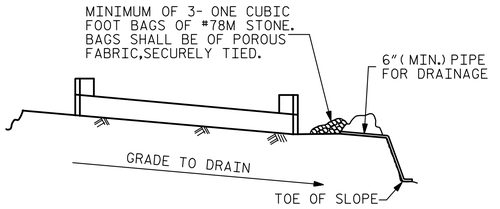
ICA Engineering

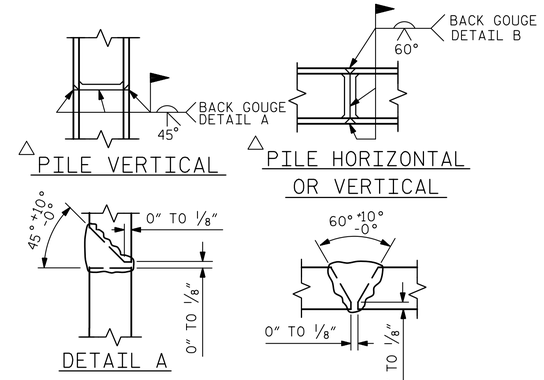


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

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

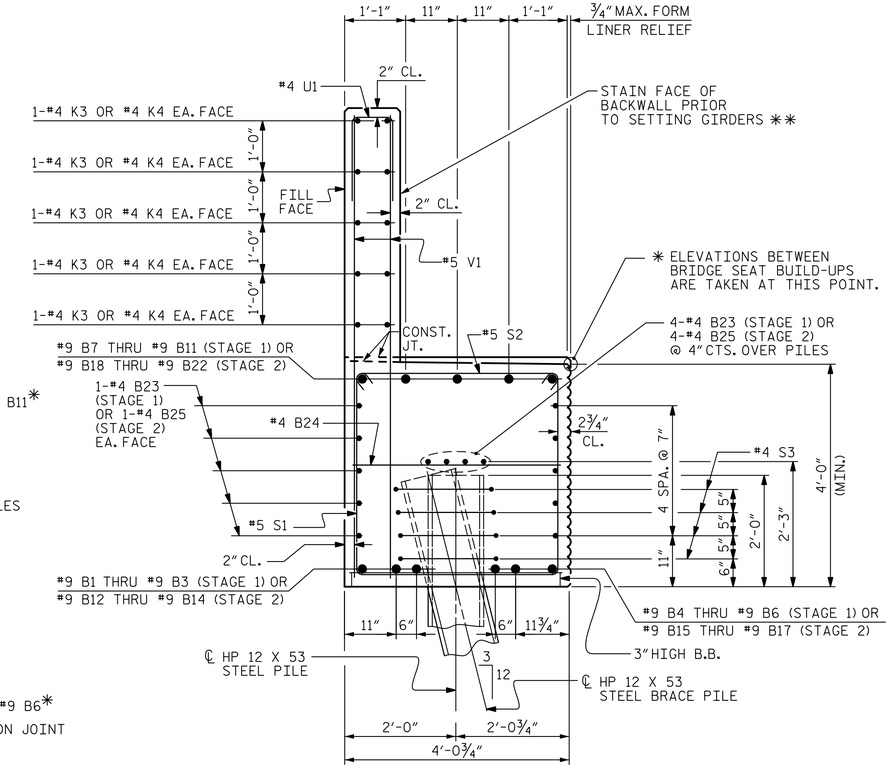
TEMPORARY DRAINAGE AT END BENT



△ POSITION OF PILE DURING WELDING.

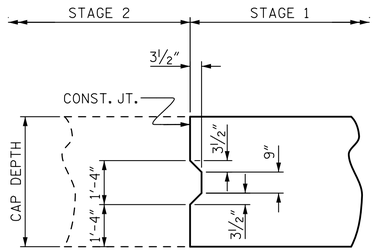
PILE SPLICE DETAILS

✱✱ SEE SPECIAL PROVISIONS FOR APPLICATION OF BRIDGE COATING.

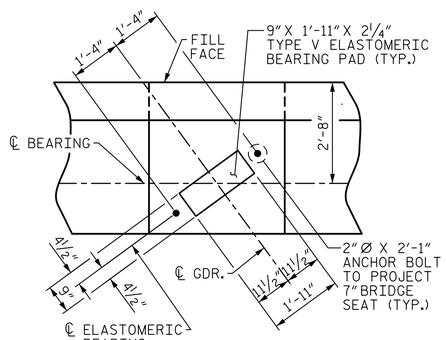


SECTION A-A

CONCRETE COLLAR NOT SHOWN FOR CLARITY.
SEE ''CORROSION PROTECTION FOR STEEL PILES DETAIL.''

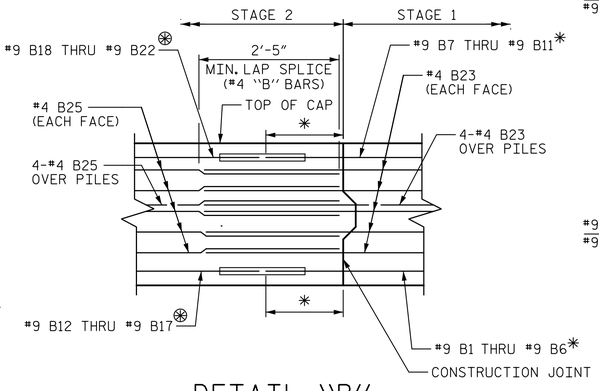


SHEAR KEY DETAIL



DETAIL ''A''

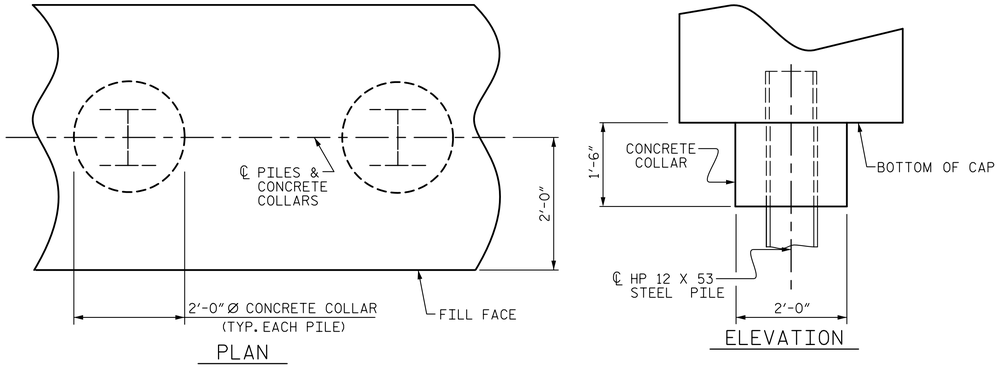
(TYP. EA. GDR.)



DETAIL ''B''

✱ STAGE 1 TOP AND BOTTOM MAIN ''B'' BARS ARE DETAILED WITH STAGGERED 1'-0" AND 2'-0" EXTENSIONS BEYOND CONSTRUCTION JOINT.

⊛ PLACE ALL BARS IN STAGE 2 AT OR NEAR THE END OF BARS EXTENDING FROM STAGE 1.



CORROSION PROTECTION FOR STEEL PILES DETAIL

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 2 DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-55
1			3			TOTAL SHEETS
2			4			64

DRAWN BY : D. H. CARTER DATE : SEP 2015
CHECKED BY : K. M. MOBLEY DATE : SEP 2015
DESIGN ENGINEER OF RECORD: T. E. TALLMAN DATE : OCT 2015

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5121 Kingdom Way, Suite 100 Raleigh, NC 27607
NC License No: F-0258

NORTH CAROLINA PROFESSIONAL SEAL 14408 ENGINEER THOMAS E. TALLMAN

Thomas E. Tallman 10/15/2015

10/14/2015
R:\Plans\Final\s55_ b4159_sd_e2_03.dgn
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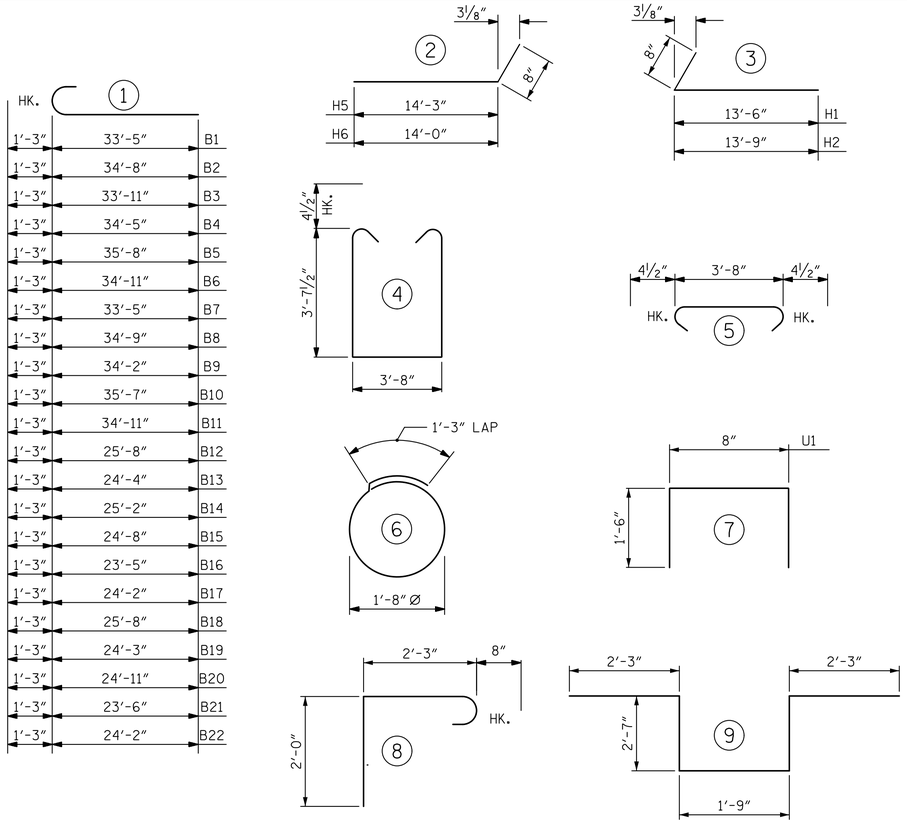
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

(STAGE 1)			
PREDRILLING FOR PILES		HP 12 X 53 STEEL PILES	
NO: 7	LIN. FT.= 122	NO: 7	LIN. FT.= 259

(STAGE 2)			
PREDRILLING FOR PILES		HP 12 X 53 STEEL PILES	
NO: 6	LIN. FT.= 112	NO: 6	LIN. FT.= 252

BILL OF MATERIAL — STAGE 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	1	#9	1	34'-8"	118
B2	1	#9	1	35'-11"	122
B3	1	#9	1	35'-2"	120
B4	1	#9	1	35'-8"	121
B5	1	#9	1	36'-11"	126
B6	1	#9	1	36'-2"	123
B7	1	#9	1	34'-8"	118
B8	1	#9	1	36'-0"	122
B9	1	#9	1	35'-5"	120
B10	1	#9	1	36'-10"	125
B11	1	#9	1	36'-2"	123
B23	28	#4	STR	19'-6"	365
B24	8	#4	STR	3'-8"	20
H1	7	#4	3	14'-2"	66
H2	7	#4	3	14'-5"	67
H3	4	#4	STR	15'-9"	42
H4	4	#4	STR	16'-0"	43
K1	4	#4	STR	4'-0"	11
K3	20	#4	STR	19'-6"	261
S1	44	#4	4	11'-8"	343
S2	44	#4	5	4'-5"	130
S3	24	#4	6	6'-6"	104
S4	3	#6	8	4'-11"	22
S5	3	#6	9	11'-5"	51
U1	28	#4	7	3'-8"	69
V1	28	#5	STR	8'-3"	241
V2	36	#5	STR	10'-5"	391

REINFORCING STEEL (STAGE 1) 3,564 LBS.

CLASS A CONCRETE BREAKDOWN (STAGE 1)

POUR #1	CAP, LOWER PART OF WINGS & COLLARS	23.8 C.Y.
POUR #2	BACKWALL AND UPPER PART OF WINGS	8.9 C.Y.
	TOTAL CLASS A CONCRETE	32.7 C.Y.

ARCHITECTURAL CONCRETE SURFACE TREATMENT

(STAGE 1) 257.2 SQ. FT.

BILL OF MATERIAL — STAGE 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B12	1	#9	1	26'-11"	92
B13	1	#9	1	25'-7"	87
B14	1	#9	1	26'-5"	90
B15	1	#9	1	25'-11"	88
B16	1	#9	1	24'-8"	84
B17	1	#9	1	25'-5"	86
B18	1	#9	1	26'-11"	92
B19	1	#9	1	25'-6"	87
B20	1	#9	1	26'-2"	89
B21	1	#9	1	24'-9"	84
B22	1	#9	1	25'-5"	86
B24	6	#4	STR	3'-8"	15
B25	14	#4	STR	25'-1"	235
H5	7	#4	2	14'-11"	70
H6	7	#4	2	14'-8"	69
H7	4	#4	STR	16'-6"	44
H8	4	#4	STR	16'-3"	43
K2	4	#4	STR	4'-0"	11
K4	10	#4	STR	25'-1"	168
K5	8	#4	STR	4'-6"	24
S1	33	#4	4	11'-8"	257
S2	33	#4	5	4'-5"	97
S3	20	#4	6	6'-6"	87
S4	3	#6	8	4'-11"	22
S5	3	#6	9	11'-5"	51
U1	22	#4	7	3'-8"	54
V1	22	#5	STR	8'-3"	189
V3	37	#5	STR	10'-1"	389

REINFORCING STEEL (STAGE 2) 2,790 LBS.

CLASS A CONCRETE BREAKDOWN (STAGE 2)

POUR #1	CAP, LOWER PART OF WINGS & COLLARS	19.4 C.Y.
POUR #2	BACKWALL AND UPPER PART OF WINGS	8.3 C.Y.
	TOTAL CLASS A CONCRETE	27.7 C.Y.

ARCHITECTURAL CONCRETE SURFACE TREATMENT

(STAGE 2) 220.2 SQ. FT.

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 2 DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-56
1			3			TOTAL SHEETS
2			4			64

DRAWN BY : D. H. CARTER DATE : OCT 2015
CHECKED BY : K. M. MOBLEY DATE : OCT 2015
DESIGN ENGINEER OF RECORD: T. E. TALLMAN DATE : OCT 2015

ICA Engineering
5121 Kingdom Way, Suite 100 Raleigh, NC 27607
NC License No: F-0258

NORTH CAROLINA PROFESSIONAL SEAL 14408 ENGINEER THOMAS E TALLMAN

Thomas E. Tallman 10/15/2015
E9B7B920EE24D5...

10/14/2015
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ICA Engineering

PROJECT REFERENCE NO.	SHEET NO.
B-4159	S-57
DESIGNED BY: VW	
DRAWN BY: VW	
CHECKED BY: MJW	
APPROVED BY:	
REVISED:	

McGill ASSOCIATES
ENGINEERING-PLANNING-FINANCE

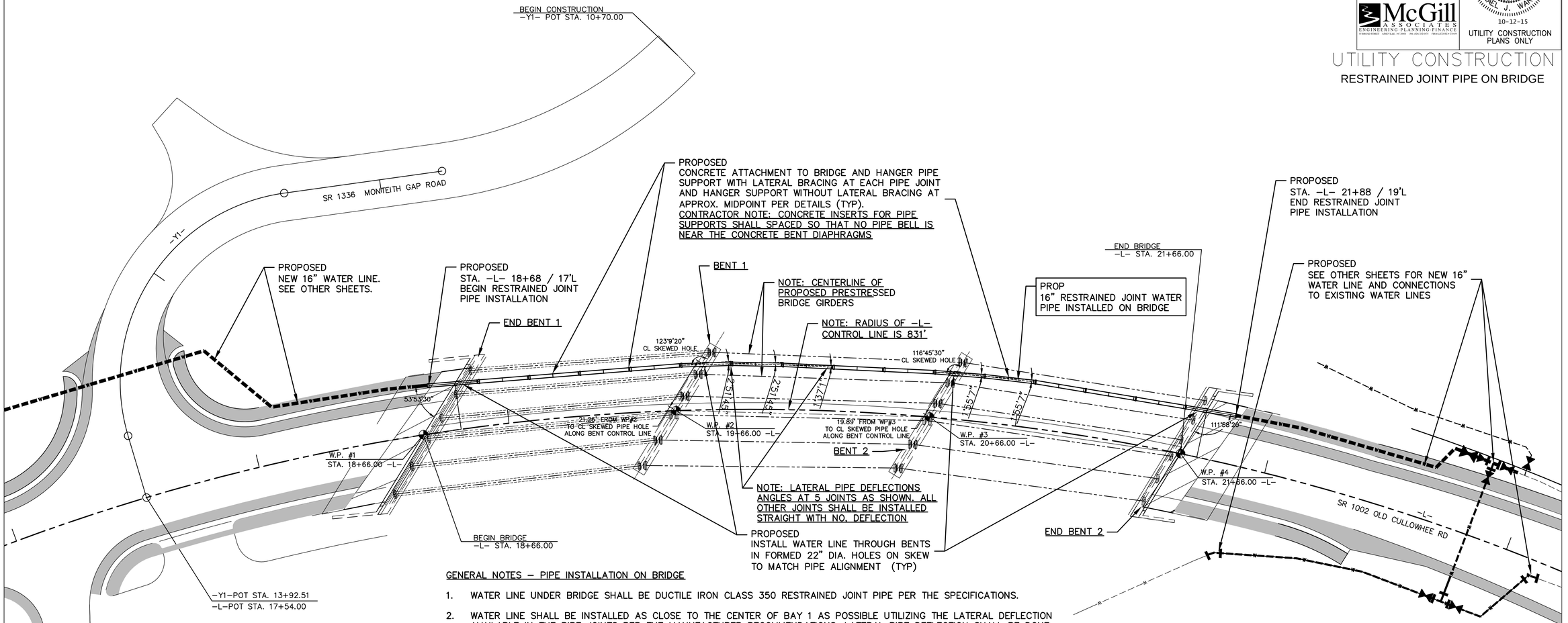
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 39420 Signed by MICHAEL J. WARREN 10-12-15

UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

RESTRAINED JOINT PIPE ON BRIDGE

REVISIONS



GENERAL NOTES – PIPE INSTALLATION ON BRIDGE

1. WATER LINE UNDER BRIDGE SHALL BE DUCTILE IRON CLASS 350 RESTRAINED JOINT PIPE PER THE SPECIFICATIONS.
2. WATER LINE SHALL BE INSTALLED AS CLOSE TO THE CENTER OF BAY 1 AS POSSIBLE UTILIZING THE LATERAL DEFLECTION AVAILABLE IN THE PIPE JOINTS PER THE MANUFACTURER RECOMMENDATIONS. LATERAL PIPE DEFLECTION SHALL BE DONE AT THE JOINTS SHOWN ON THE PLANS AND SHALL NOT EXCEED THE DEFLECTIONS SHOWN ON THE PLANS. ALL OTHER PIPE SECTIONS SHALL BE INSTALLED STRAIGHT. CONTRACTOR SHALL MAINTAIN A UNIFORM VERTICAL ALIGNMENT FOR THE ENTIRE WATER LINE ON THE BRIDGE BY ADJUSTING THE HEIGHT OF THE PIPE HANGER SYSTEM. NO VERTICAL JOINT DEFLECTION IS PERMITTED.
3. CONCRETE INSERTS FOR PIPE ANCHORS SHALL BE INSTALLED ON THE BRIDGE AT INTERVALS TO MATCH PIPE JOINTS AND MIDPOINTS FOR PIPE SUPPORTS PER DETAILS. CONTRACTOR IS RESPONSIBLE FOR PROPER INSTALLATION OF CONCRETE INSERTS FOR PROPER PIPE ALIGNMENT. INSERTS/PIPE ANCHORS SHALL BE INSTALLED PER JOINT AND SPACING SHOULD BE SUCH THAT NO PIPE BELLS ARE LOCATED AT THE CONCRETE BEND DIAPHRAGMS. NOTE: IF PIPE MIDPOINT IS LOCATED NEAR A CONCRETE BENT DIAPHRAGM, NO PIPE SUPPORT SHALL BE REQUIRED
4. PIPE SHALL BE INSTALLED THROUGH BENTS IN 22" DIAMETER HOLES FORMED ON A SKEW TO MATCH PIPE ALIGNMENT. PIPE SHALL BE INSTALLED AND SUPPORTED IN HOLES PER DETAILS. CONTRACTOR NOTE: LOCATIONS OF CONCRETE INSERTS FOR ANCHORS SHALL BE DETERMINED TO ALLOW THE PIPE TO LINE UP PROPERLY WITH THE FORMED HOLE.
5. CONTRACTOR NOTE: AFTER ENTIRE LENGTH OF RESTRAINED JOINT PIPE HAS BEEN INSTALLED ON THE BRIDGE, PIPE SHALL BE PLUGGED, SECURED WITH THRUST BLOCKS AND RODDING AND PRESSURIZED TO WORKING PRESSURE FOR TESTING PRIOR TO CONNECTION TO THE REMAINING WATER LINE.
6. IMPORTANT INSTALLATION NOTE: ALL HANGER AND LATERAL SUPPORT SYSTEMS FOR THE RESTRAINED JOINT PIPE INSTALLED ON THE BRIDGE SHALL BE COMPLETELY INSTALLED PRIOR TO PRESSURIZING THE PIPE, PIPE SHALL THAN BE PRESSURIZED TO 250 PSI TEST PRESSURE PRIOR TO MAKING PIPE CONNECTIONS AT EACH END OF THE BRIDGE TO ALLOW PIPE JOINTS TO FULLY EXTEND AND PREVENT LATERAL MOVEMENT OF THE PIPE.

PROJECT REFERENCE NO.	SHEET NO.
B-4159	S-58

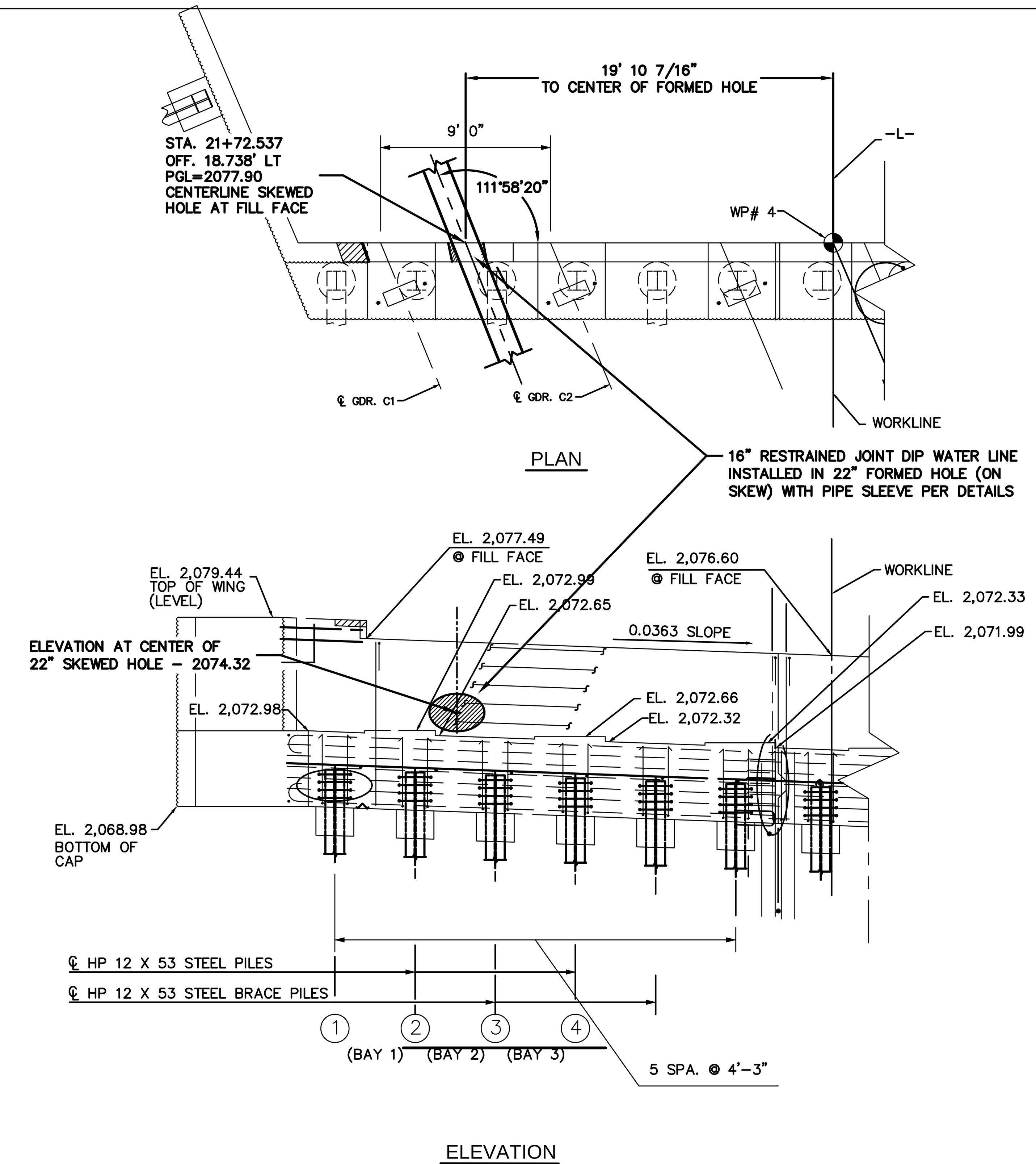
DESIGNED BY: VW
DRAWN BY: VW
CHECKED BY: MJW
APPROVED BY:
REVISED: 9/14/15

McGill ASSOCIATES
ENGINEERING·PLANNING·FINANCE

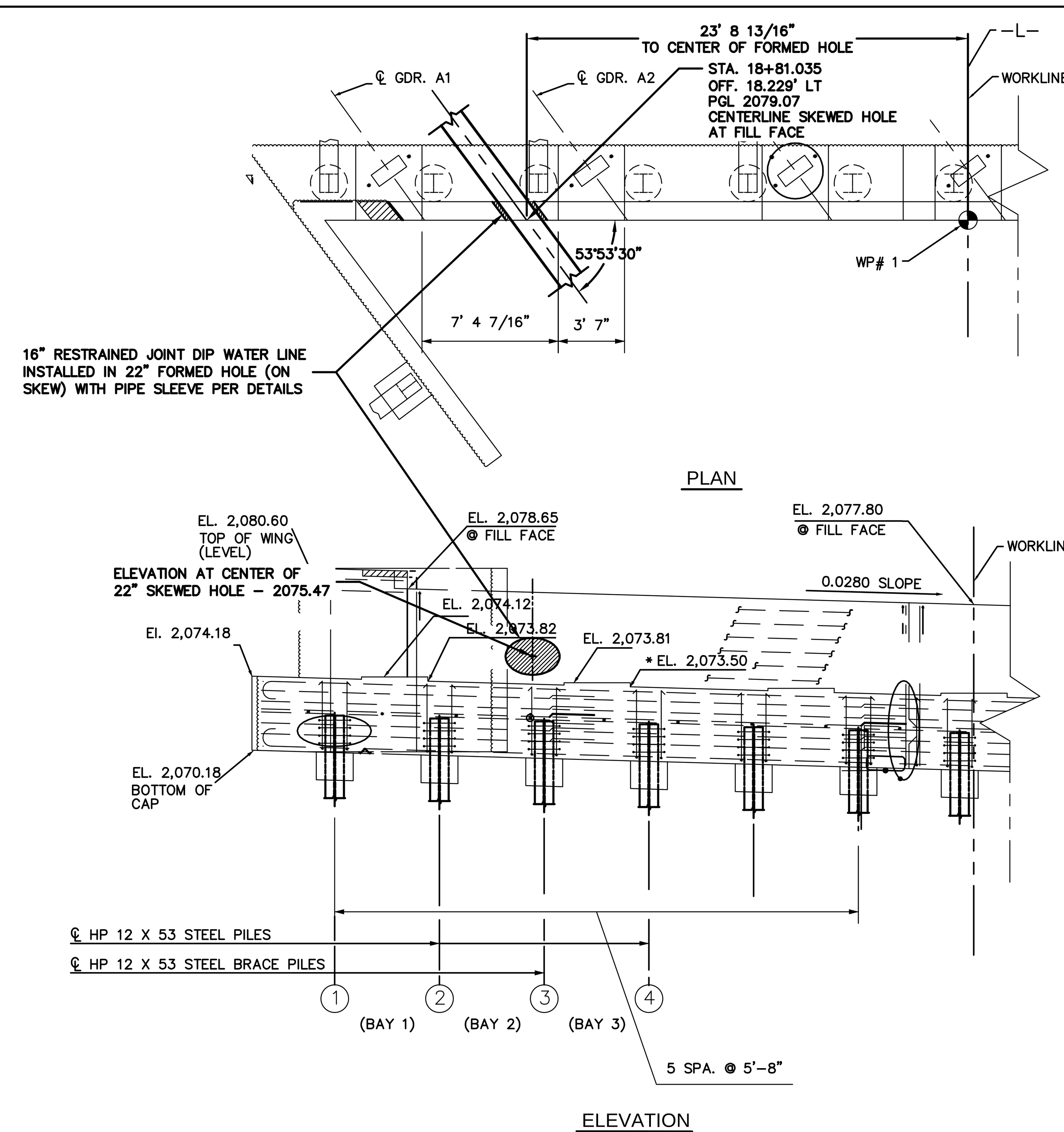
NORTH CAROLINA PROFESSIONAL SEAL ENGINEER MICHAEL J. WARE
10-12-15
UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION
RESTRAINED JOINT PIPE DETAILS

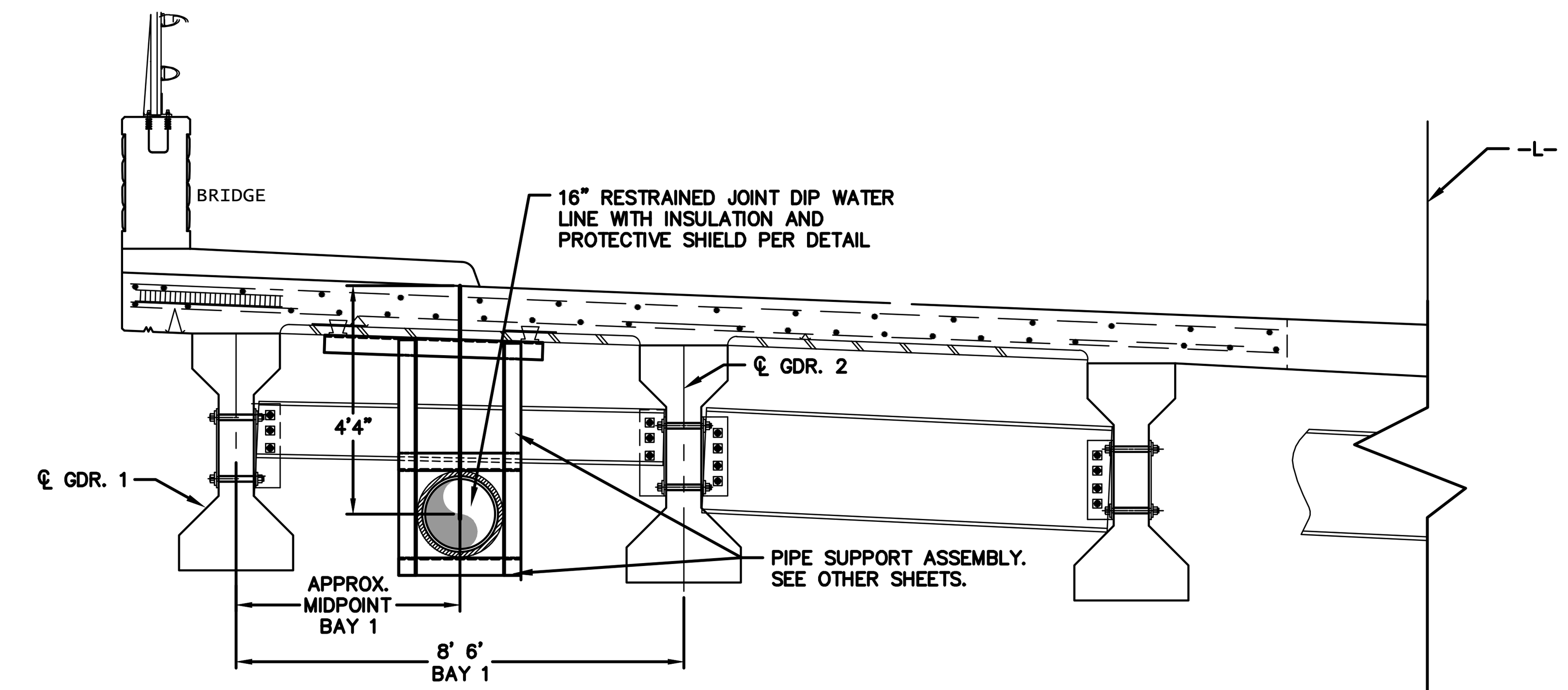
REVISIONS



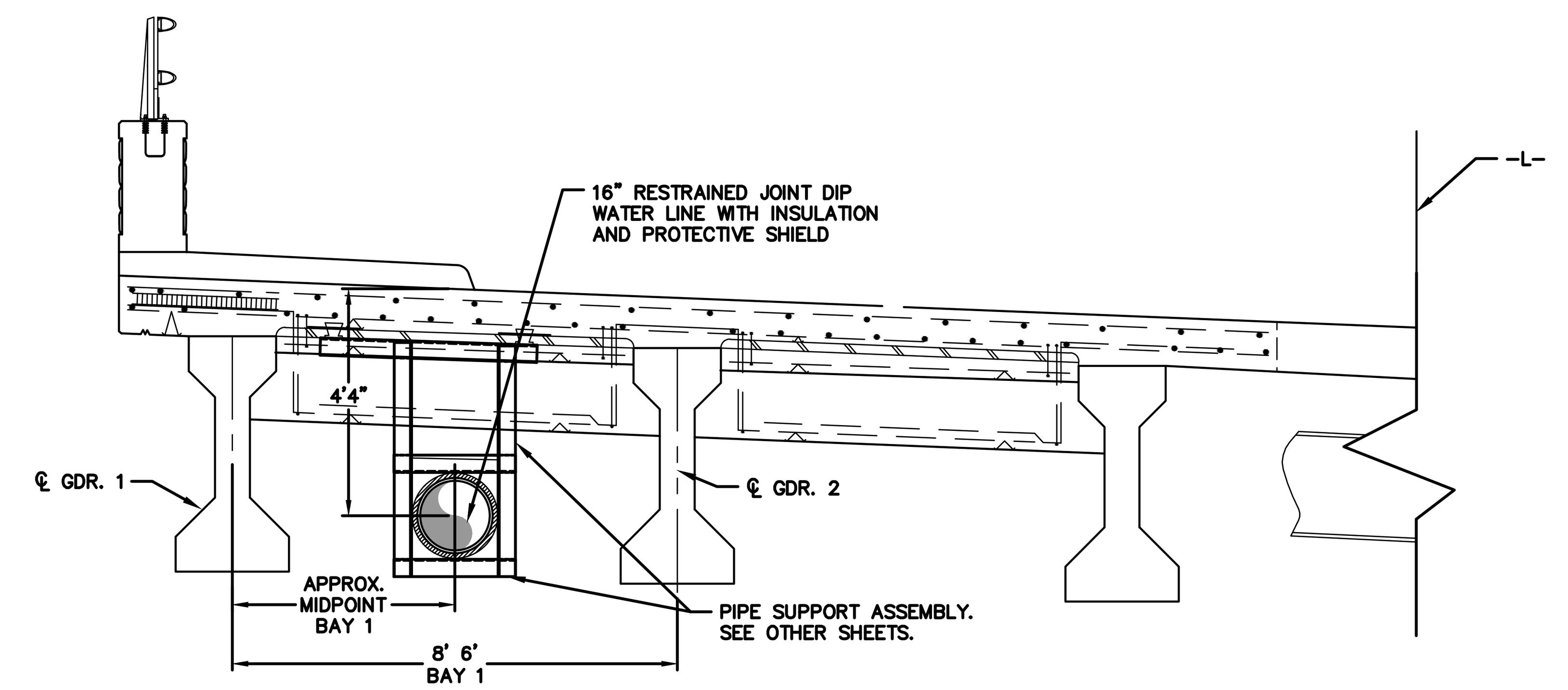
PIPE THROUGH END BENT 2



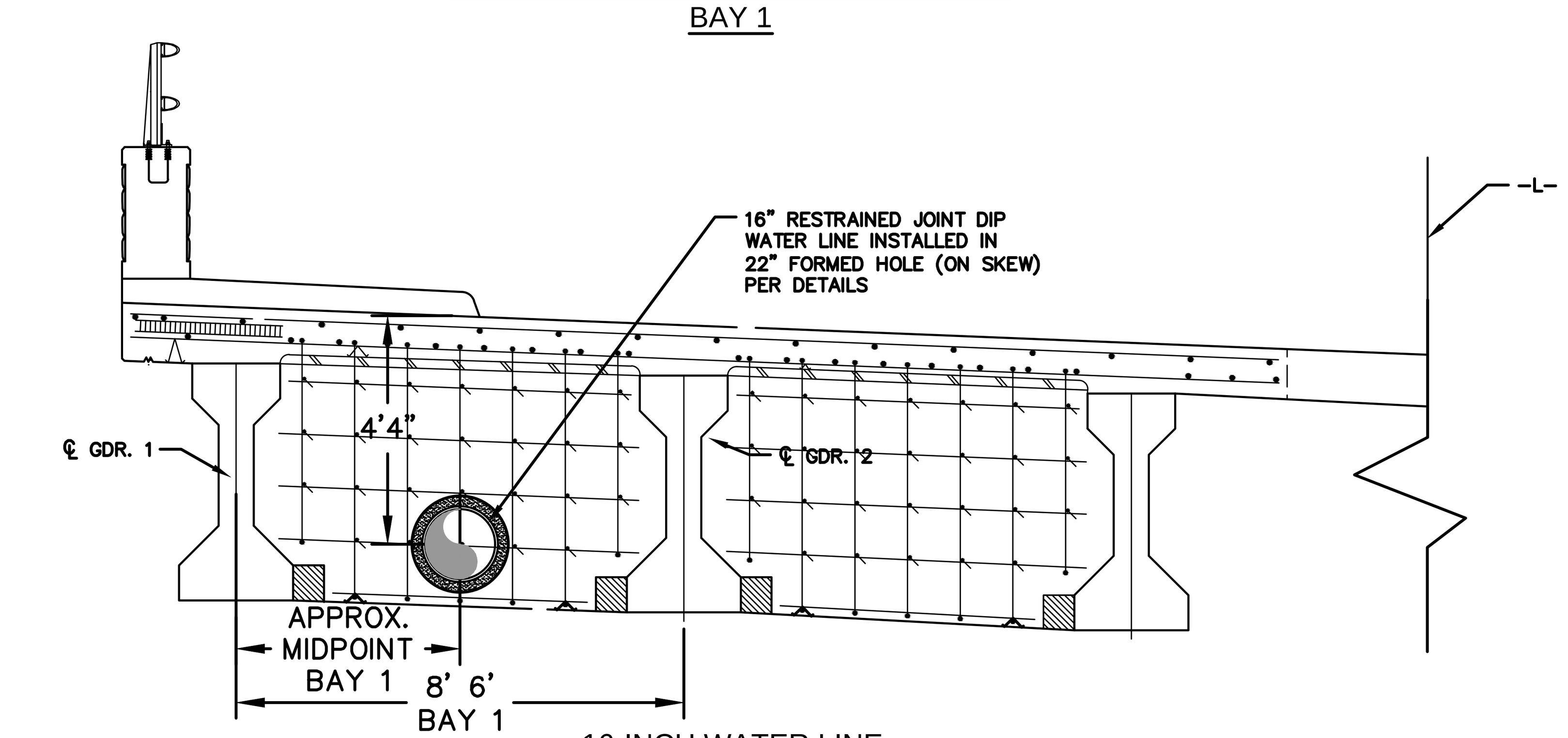
PIPE THROUGH END BENT 1



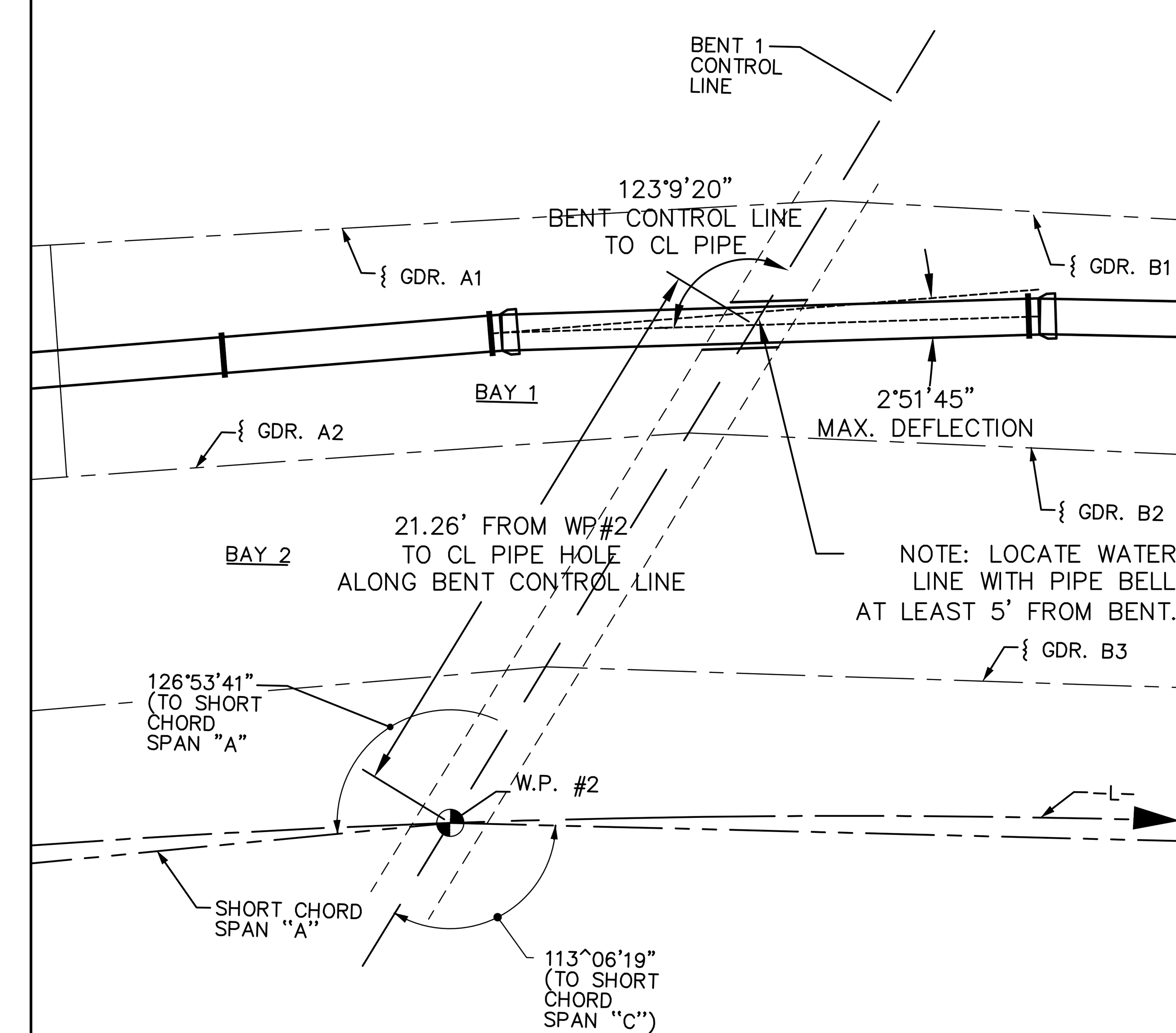
16-INCH WATER LINE
INTERMEDIATE DIAPHRAGM INSTALLATION
BAY 1



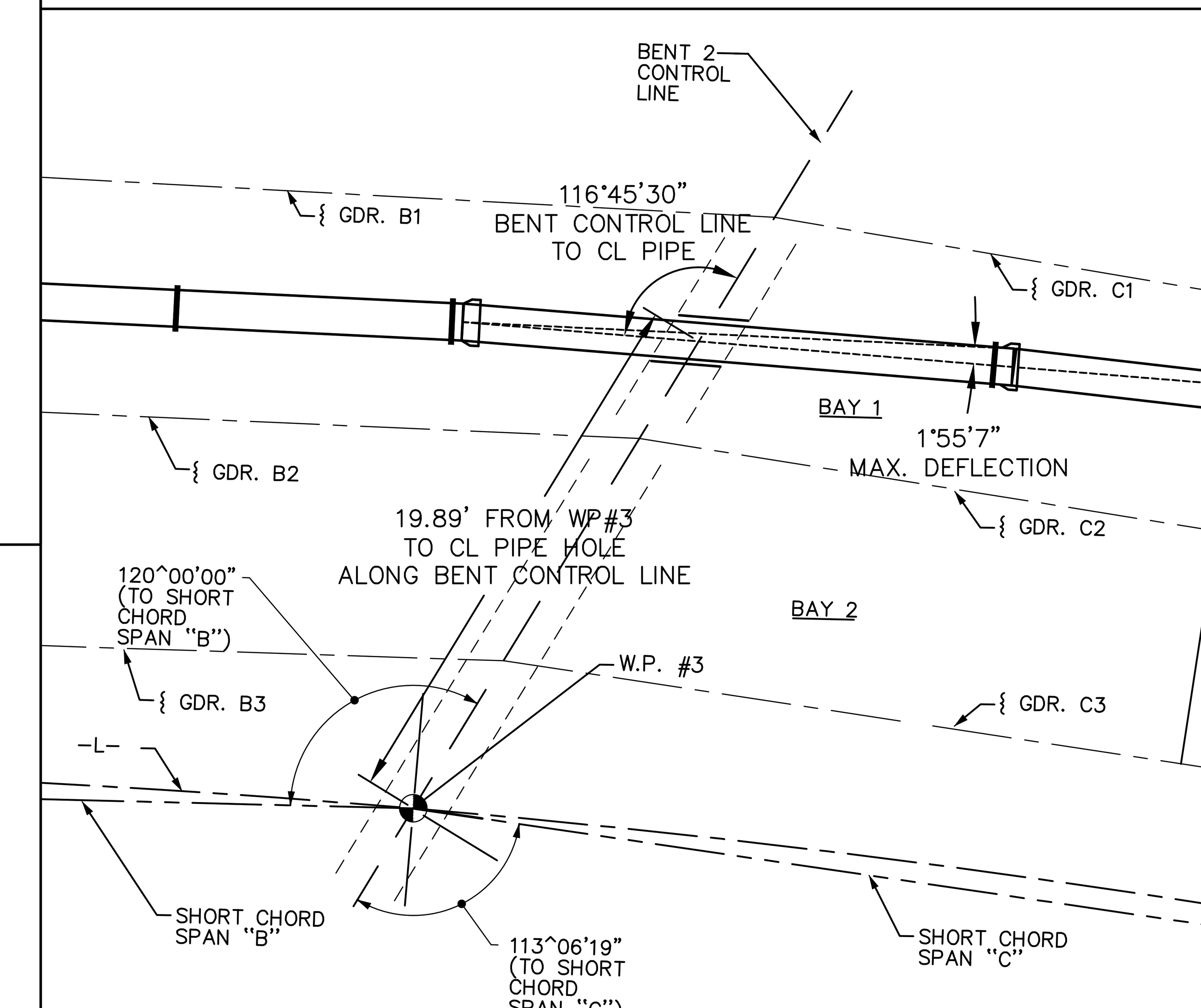
16-INCH WATER LINE
END BENT DIAPHRAGM INSTALLATION
BAY 1



16-INCH WATER LINE
BENT DIAPHRAGM INSTALLATION
BAY 1



PIPE THROUGH BENT 1



PIPE THROUGH BENT 2

PROJECT REFERENCE NO.	SHEET NO.
B-4159	S-59
DESIGNED BY: VW	
DRAWN BY: VW	
CHECKED BY: MJW	
APPROVED BY:	
REVISED: 9/14/15	

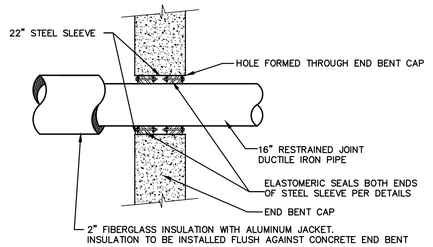
McGill ASSOCIATES
ENGINEERING·PLANNING·FINANCE

NORTH CAROLINA PROFESSIONAL SEAL 039501 ENGINEER MICHAEL J. WATERS
Signed by: Michael J. Waters
10-12-15

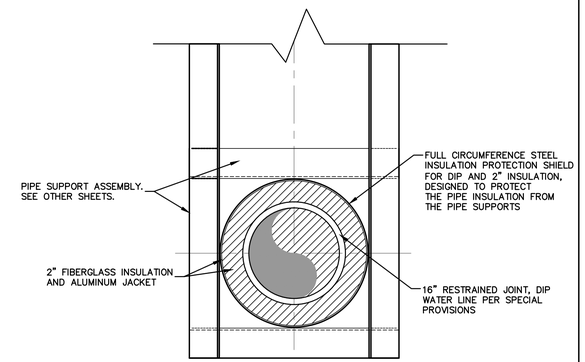
UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

RESTRAINED JOINT PIPE DETAILS



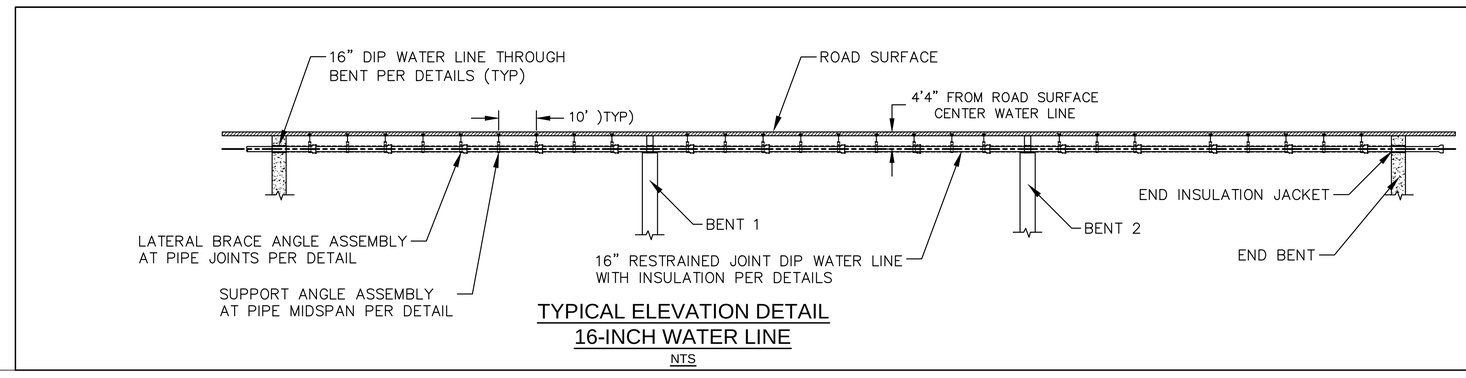
PIPE THROUGH END BENT CAP



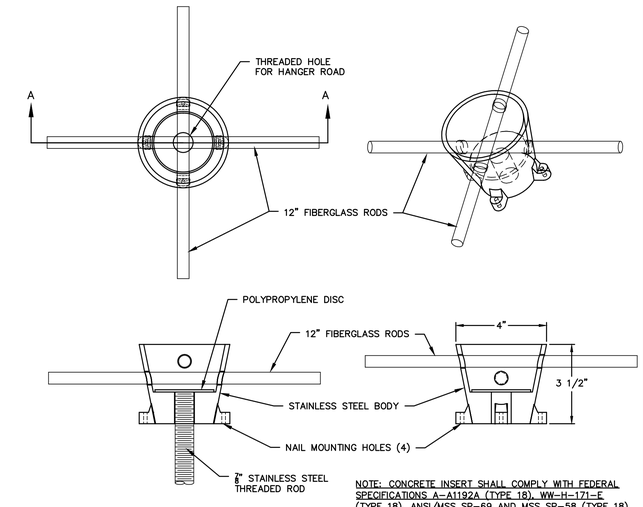
NOTE:

1. PIPE INSULATION SHALL BE FIBERGLASS PIPE INSULATION WITH DOUBLE ADHESIVE CLOSURE.

PIPE INSULATION DETAIL



TYPICAL ELEVATION DETAIL
16-INCH WATER LINE
NTS



SECTION A-A

NOTE: CONCRETE INSERT SHALL COMPLY WITH FEDERAL SPECIFICATIONS A-A1192A (TYPE 18), WW-H-171-E (TYPE 18), ANSI/MSS SP-69 AND MSS SP-58 (TYPE 18)

CONCRETE INSERT

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
B-4159	S-60

DESIGNED BY: ZWW
DRAWN BY: RJW
CHECKED BY: ZWW
APPROVED BY:
REVISED:

McGill ASSOCIATES
ENGINEERING·PLANNING·FINANCE
55 BROAD STREET ASHEVILLE, NC 28801 PH. (828) 252-0575 FIRM LICENSE # C-0459

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 14187 ZEBULON W. WELLS, JR.
DocuSigned by: Zebulon W. Wells, Jr. AF993DD4E00C4D6...
10/12/15

UTILITY CONSTRUCTION PLANS ONLY

SKA CONSULTING ENGINEERS, INC.
64 Peachtree Road Suite 30
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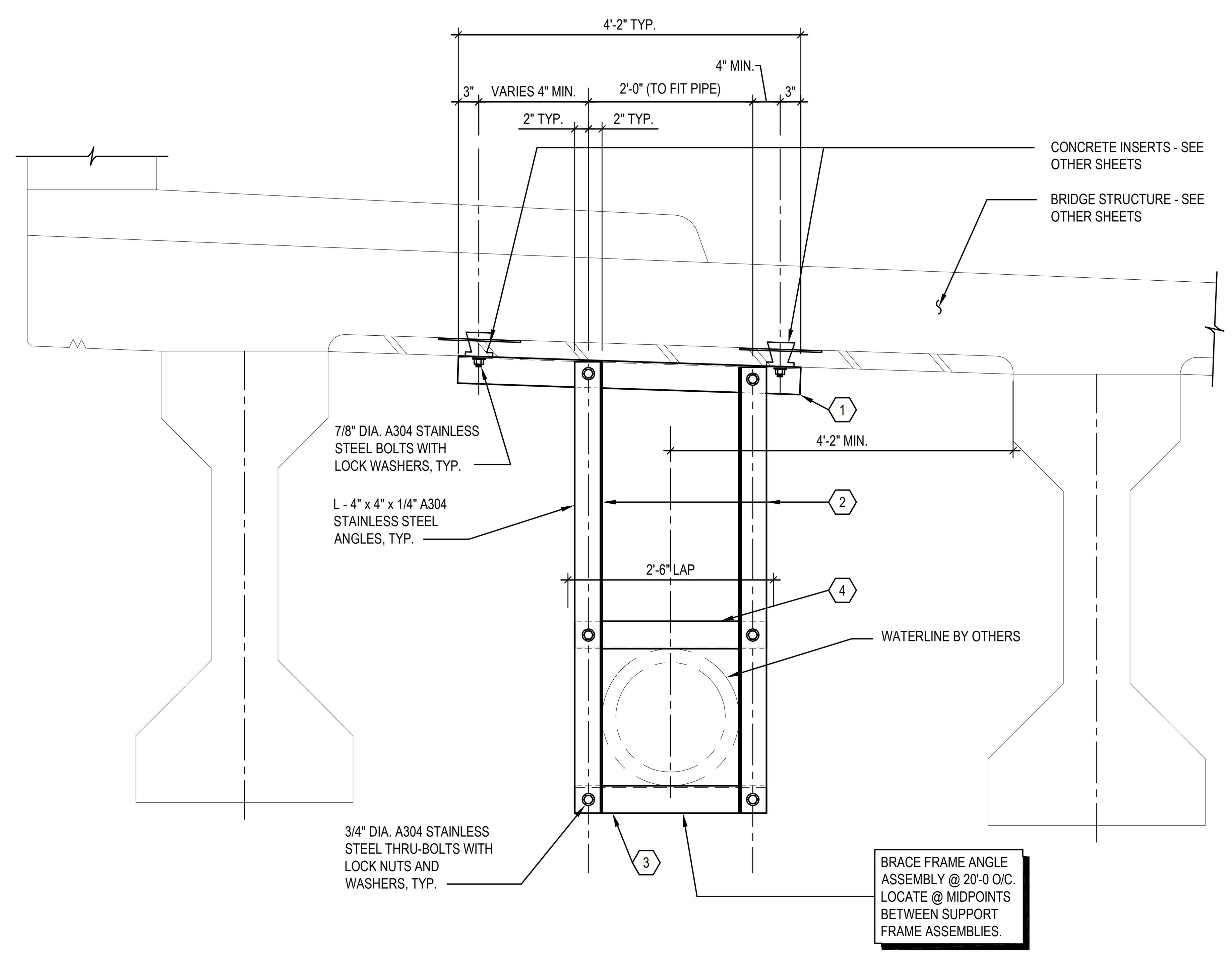
P: 828.274.4440 F: 828.274.4488
www.skaeng.com
NC License No. F-0508

Project Number:	150248
File Name:	150248-S0101
Plotted:	9/22/2015 9:06 AM

PIPE HANGER ASSEMBLY INSTALLATION PROCEDURE NOTES:

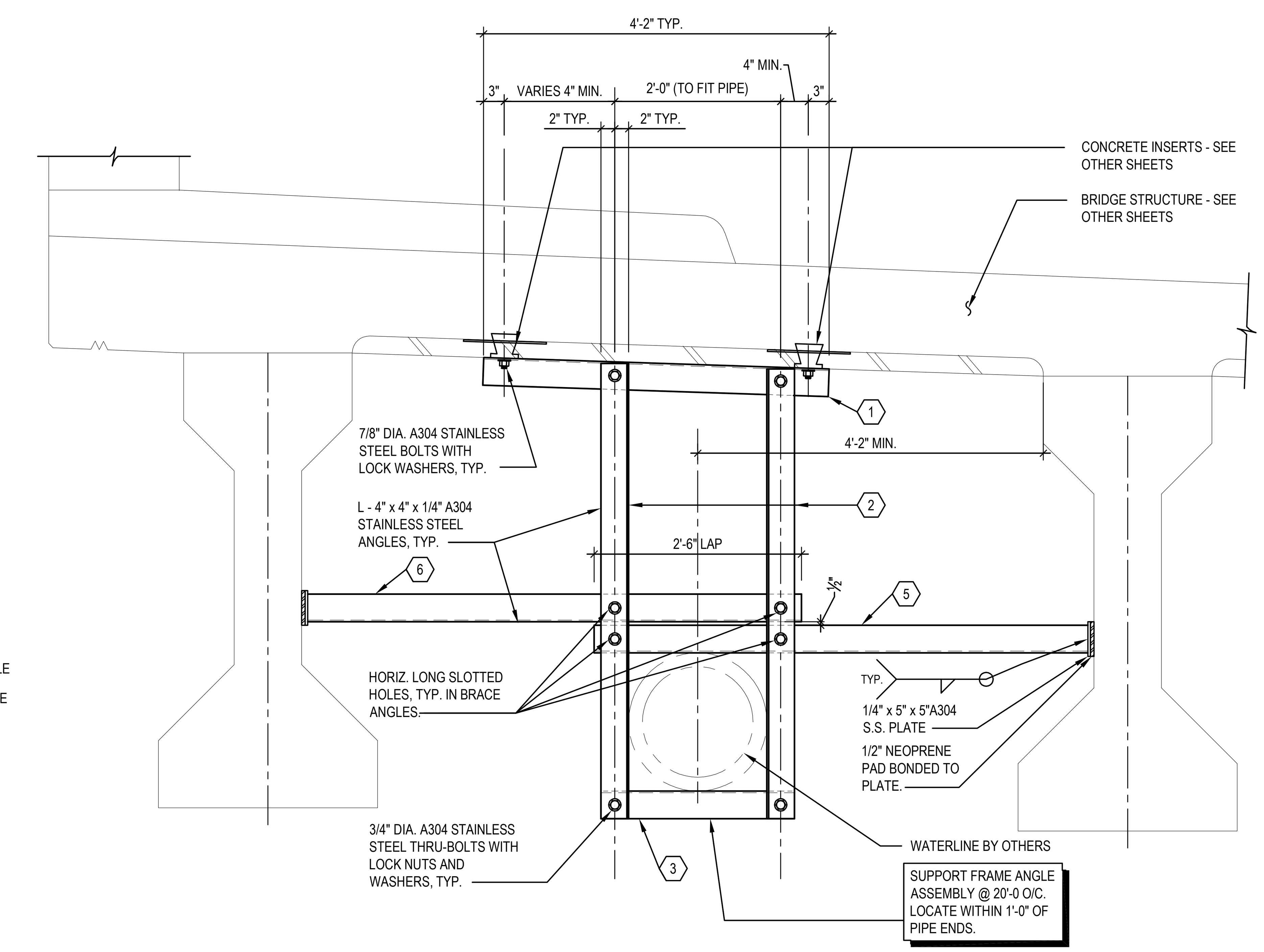
1. ALL PIPE HANGER ASSEMBLIES SHALL BE FIELD FABRICATED FROM STOCK LENGTH MATERIALS. ALL ANGLES, BOLTS, WASHERS, ETC. SHALL BE FABRICATED FROM A304 STAINLESS STEEL.
2. ALL CUTS SHALL BE MADE USING BAND SAWS OR SIMILAR CUTTING DEVICES. ALL HOLES SHALL BE DRILLED. FLAME CUTTING IS PROHIBITED.
3. EMBEDDED CONCRETE INSERTS SHALL BE INSTALLED AS INDICATED ON THE PIPING DRAWINGS. THE CONTRACTOR SHALL FIELD DRILL HOLES IN THE ATTACHMENT ANGLE TO MATCH THE ACTUAL LAYOUT AND POSITIONING OF THE EMBEDDED INSERTS. ATTACHMENT TO THE INSERTS SHALL BE MADE USING FLAT WASHERS AND LOCK WASHERS TO PREVENT LOOSENING OF THE NUTS.
4. LOCATIONS FOR BOLTING THE VERTICAL HANGER ANGLES TO THE ATTACHMENT ANGLE SHALL BE FIELD LOCATED BASED ON THE ARC OF THE PIPE AS INDICATED ON THE DRAWINGS. VERTICAL HANGER ANGLES SHALL BE POSITIONED TO BE SNUG AGAINST THE SIDES OF THE PIPE. ALLOW FOR INSTALLATION OF INSULATION PROTECTION AS INDICATED ON THE PIPING DRAWINGS.
5. VERTICAL HANGER ANGLES SHALL BE BOLTED TO THE ATTACHMENT ANGLE USING FLAT WASHERS AND LOCKING WASHERS TO PREVENT LOOSENING ON THE NUTS.
6. LOWER CROSS MEMBER SHALL BE BOLTED TO THE VERTICAL HANGER ANGLES TO SUPPORT THE PIPE VERTICALLY AT THE POSITION INDICATED ON THE PIPING DRAWINGS.
7. LOCATE UPPER CROSS MEMBER AT TYPICAL SUPPORT ANGLE ASSEMBLY TO FIT SNUGLY AGAINST THE TOP OF THE PIPE AND BOLT IN PLACE USING FLAT AND LOCK WASHERS TO PREVENT LOOSENING OF THE NUTS.
8. AT THE TYPICAL LATERAL BRACE ANGLE ASSEMBLIES, LOCATE THE LOWER LATERAL BRACING ANGLE TO FIT SNUGLY AGAINST THE TOP OF THE PIPE. LOCATE THE UPPER LATERAL BRACING ANGLE APPROXIMATELY ½" ABOVE THE TOP OF THE VERTICAL LEG OF THE LOWER LATERAL BRACING ANGLE. DETERMINE THE LOCATION OF THE SLOTTED HOLES IN THE LATERAL BRACING ANGLES TO FIT THE NEOPRENE BEARING PADS TIGHTLY AGAINST THE VERTICAL SIDES OF THE PRECAST CONCRETE GIRDERS. WHEN THE NEOPRENE PADS ARE TIGHT AGAINST THE SIDES OF THE GIRDERS, LOCK THE LATERAL BRACING ANGLES TO THE VERTICAL HANGER ANGLES USING LOCKING WASHERS ONLY TO PREVENT LOOSENING OF THE NUTS AND SLIPPING OF THE LATERAL BRACING ANGLES.



1 / S-60 TYPICAL SECTION @ SUPPORT ANGLE ASSEMBLY
3/4" = 1'-0"
Dwg.# 150248-S6001.DWG

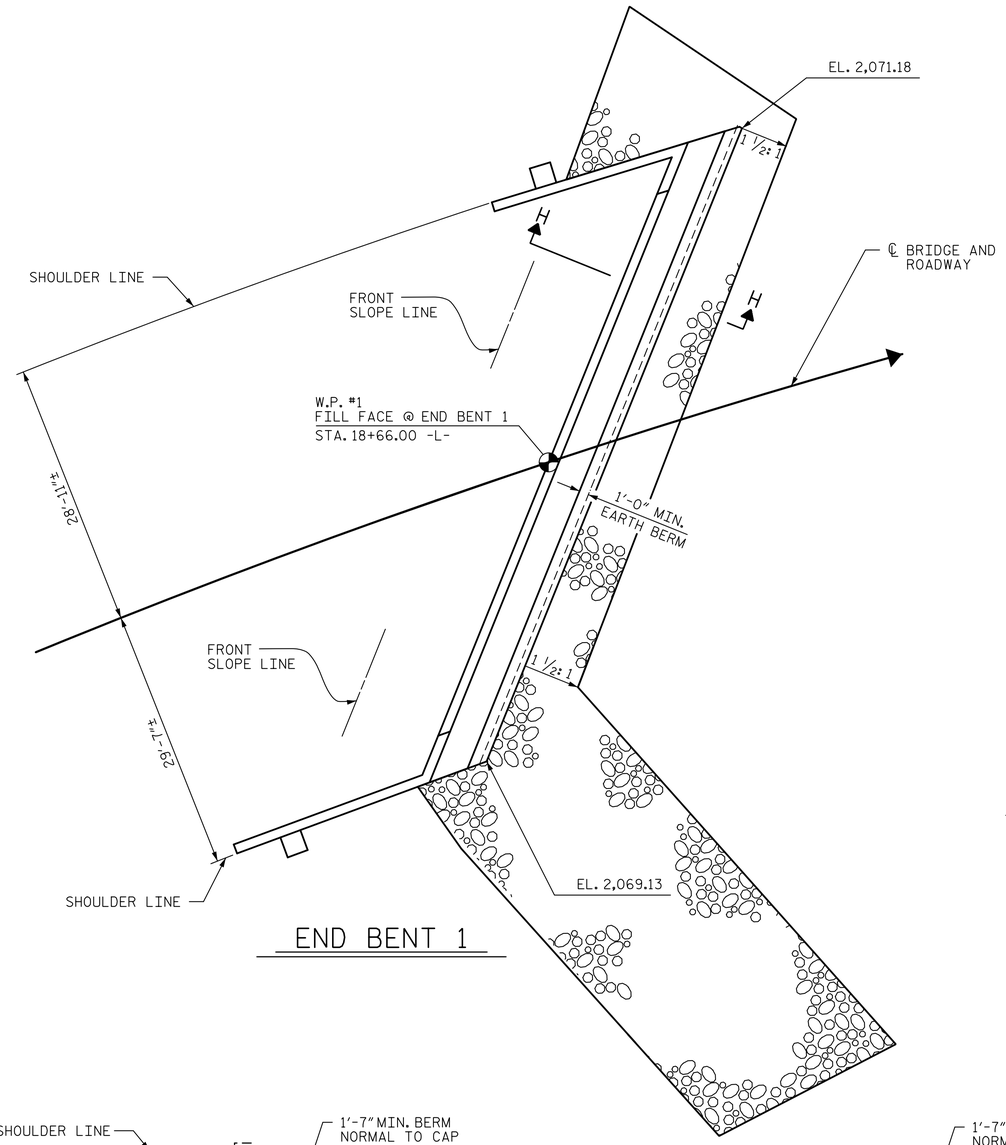
LEGEND

1. ATTACHMENT ANGLE
2. VERTICAL HANGER ANGLE
3. LOWER CROSS MEMBER
4. UPPER CROSS MEMBER
5. LOWER LATERAL BRACING ANGLE
6. UPPER LATERAL BRACING ANGLE



2 / S-60 TYPICAL SECTION @ LATERAL BRACE ANGLE ASSEMBLY
3/4" = 1'-0"
Dwg.# 150248-S6002.DWG

G:\2015 Projects\150248\SKA Drawings\150248-S0101.dwg 9/22/2015 9:06 AM R. JEROME WILKIE



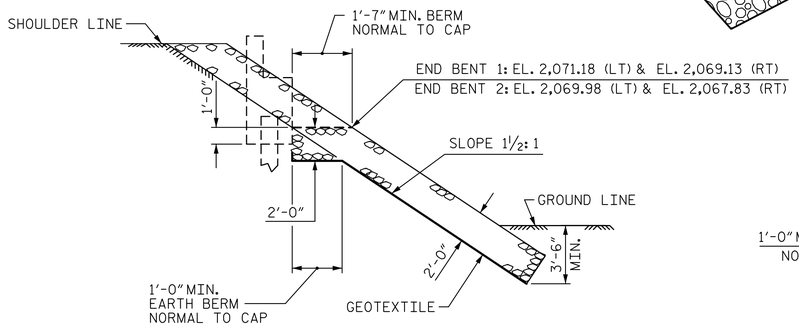
END BENT 1

END BENT 2

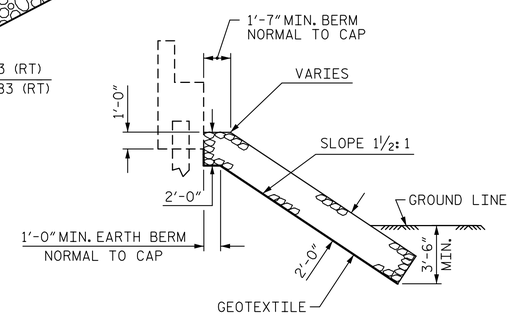
NOTES :

FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.

ESTIMATED QUANTITIES		
BRIDGE @ STA. 20+16.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	183	204
END BENT 2	117	130



SECTION H-H



℄ SECTION

BERM RIP RAPPED

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

RIP RAP DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-61
1			3			TOTAL SHEETS
2			4			64

DRAWN BY : D. H. CARTER DATE : SEP 2015
CHECKED BY : K. M. MOBLEY DATE : SEP 2015
DESIGN ENGINEER OF RECORD: T. E. TALLMAN DATE : OCT 2015

ICA Engineering
5121 Kingdom Way, Suite 100 Raleigh, NC 27607
NC License No: F-0238

NORTH CAROLINA PROFESSIONAL SEAL 14408 ENGINEER THOMAS E TALLMAN

Documents signed by: Thomas E. Tallman E9B789620EE24D5... 10/15/2015

10/14/2015
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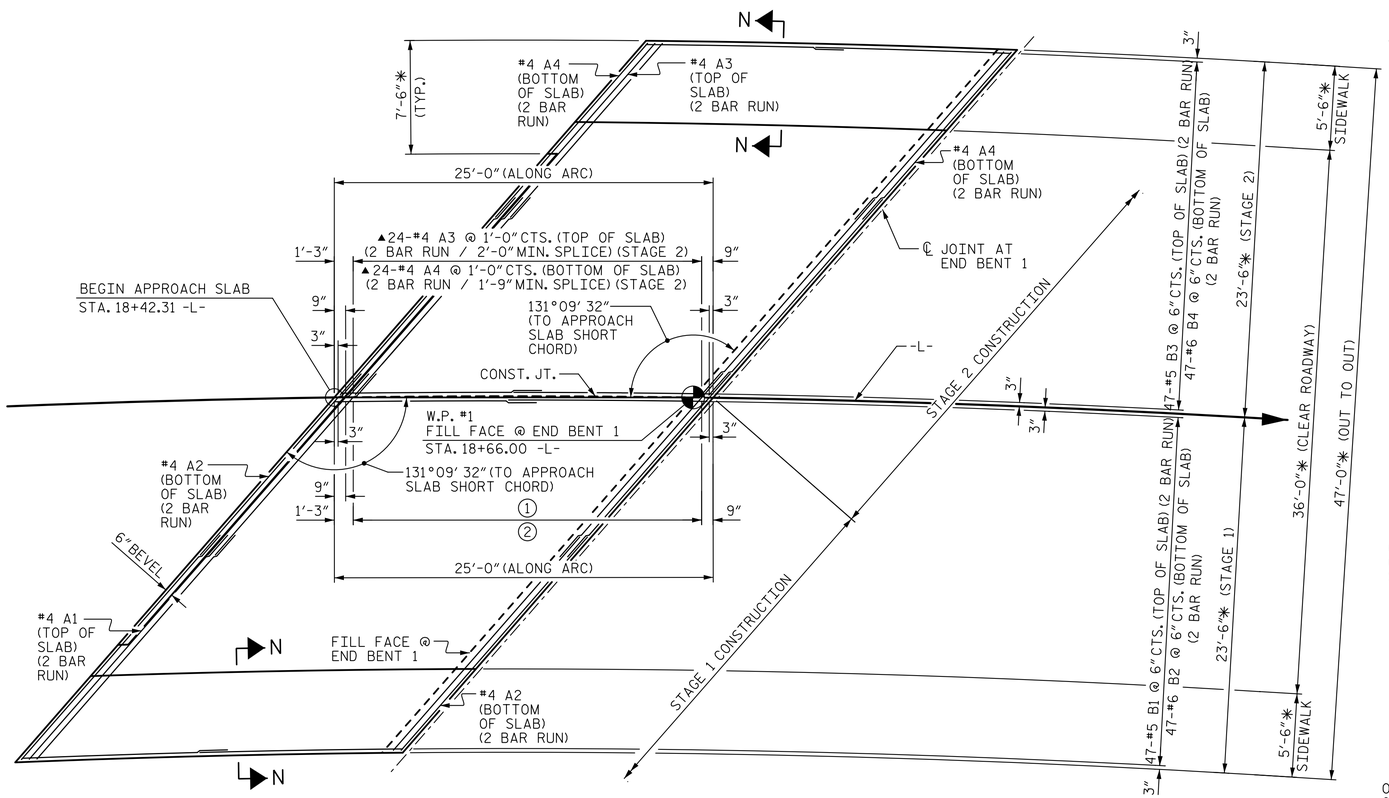
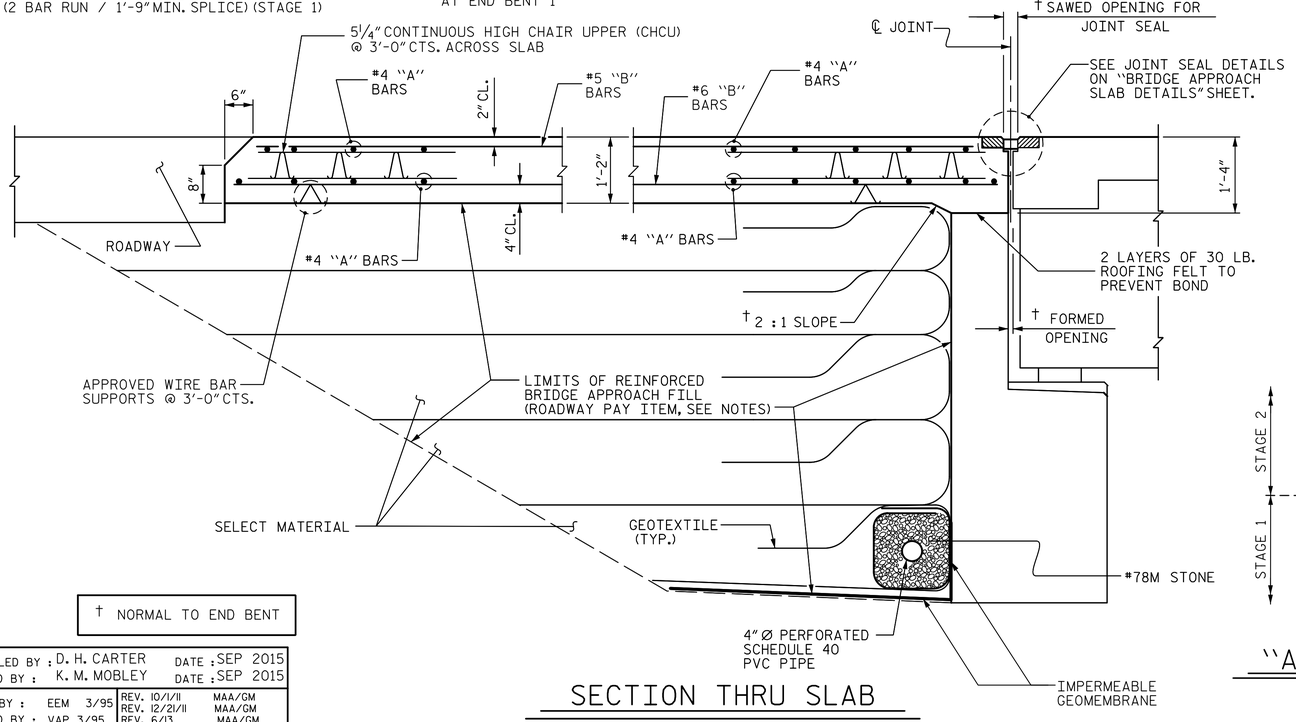
ICA Engineering



① ▲24-#4 A1 @ 1'-0" CTS. (TOP OF SLAB) (2 BAR RUN / 2'-0" MIN. SPLICE) (STAGE 1)

② ▲24-#4 A2 @ 1'-0" CTS. (BOTTOM OF SLAB) (2 BAR RUN / 1'-9" MIN. SPLICE) (STAGE 1)

PLAN
AT END BENT 1



SECTION THRU SLAB

† NORMAL TO END BENT

ASSEMBLED BY :	D. H. CARTER	DATE :	SEP 2015
CHECKED BY :	K. M. MOBLEY	DATE :	SEP 2015
DRAWN BY :	EEM 3/95	REV. 10/1/11	MAA/GM
CHECKED BY :	VAP 3/95	REV. 12/21/11	MAA/GM
		REV. 6/13	MAA/GM

10/14/2015 ICA Engineering R:\Plans\Final\s62_ b4159_sd_asl.dgn

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 SIDEWALK, PARAPET AND END POST.

FOR SIDEWALK DETAILS SEE STD. NO BAS4 (SHT 2B) "STANDARD BRIDGE APPROACH SLAB DETAILS". ALSO SEE "SIDEWALK DETAILS STAGE 1" AND "SIDEWALK DETAILS STAGE 2" SHEETS.

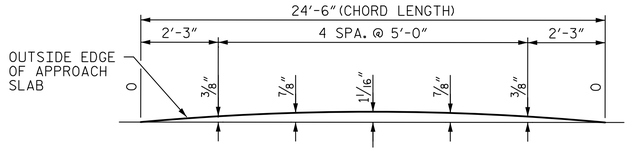
SEE "SUPERSTRUCTURE BILL OF MATERIAL" SHEETS FOR SIDEWALK QUANTITIES.

FOR FOAM JOINT SEALS, SEE SPECIAL PROVISIONS.

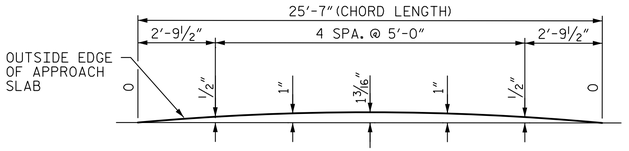
THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE FOAM JOINT SEAL SHALL BE 2".

FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

FOR SECTION N-N AND REINFORCING LAYOUT IN SIDEWALK, SEE SHEET 3 OF 3.



ARC OFFSETS-LEFT SIDE

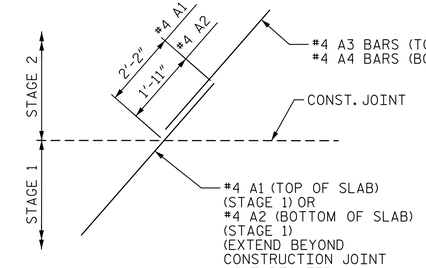


ARC OFFSETS-RIGHT SIDE

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

✱ MEASURED RADIALLY

▲ "A" BARS ARE SPACED ALONG APPROACH SLAB SHORT CHORD AND PLACED PARALLEL TO FILL FACE.



"A" BAR SPLICE DETAIL

ICA Engineering
5121 Kingdom Way, Suite 100 Raleigh, NC 27607
NC License No: F-0258

NORTH CAROLINA PROFESSIONAL SEAL 14408 ENGINEER THOMAS E. TALLMAN
Thomas E. Tallman 10/15/2015
E9B7B9620EE2405...

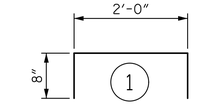
BILL OF MATERIAL

APPROACH SLAB AT END BENT 1 - STAGE 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✱ A1	50	#4	STR	18'-0"	601
A2	52	#4	STR	17'-9"	617
✱ B1	94	#5	STR	13'-6"	1324
B2	94	#6	STR	13'-10"	1953
✱ B5	10	#4	STR	13'-7"	91
✱ G1	25	#4	STR	6'-6"	109
✱ U1	8	#4	1	3'-4"	18
REINFORCING STEEL				LBS.	2570
✱ EPOXY COATED REINFORCING STEEL				LBS.	2143
CLASS AA CONCRETE				C. Y.	25.5

APPROACH SLAB AT END BENT 1 - STAGE 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✱ A3	50	#4	STR	16'-5"	548
A4	52	#4	STR	16'-3"	564
✱ B3	94	#5	STR	13'-3"	1299
B4	94	#6	STR	13'-7"	1918
✱ B5	10	#4	STR	13'-7"	91
✱ G2	25	#4	STR	6'-3"	104
✱ U1	8	#4	1	3'-4"	18
REINFORCING STEEL				LBS.	2482
✱ EPOXY COATED REINFORCING STEEL				LBS.	2060
CLASS AA CONCRETE				C. Y.	25.5



ALL BAR DIMENSIONS ARE OUT TO OUT

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

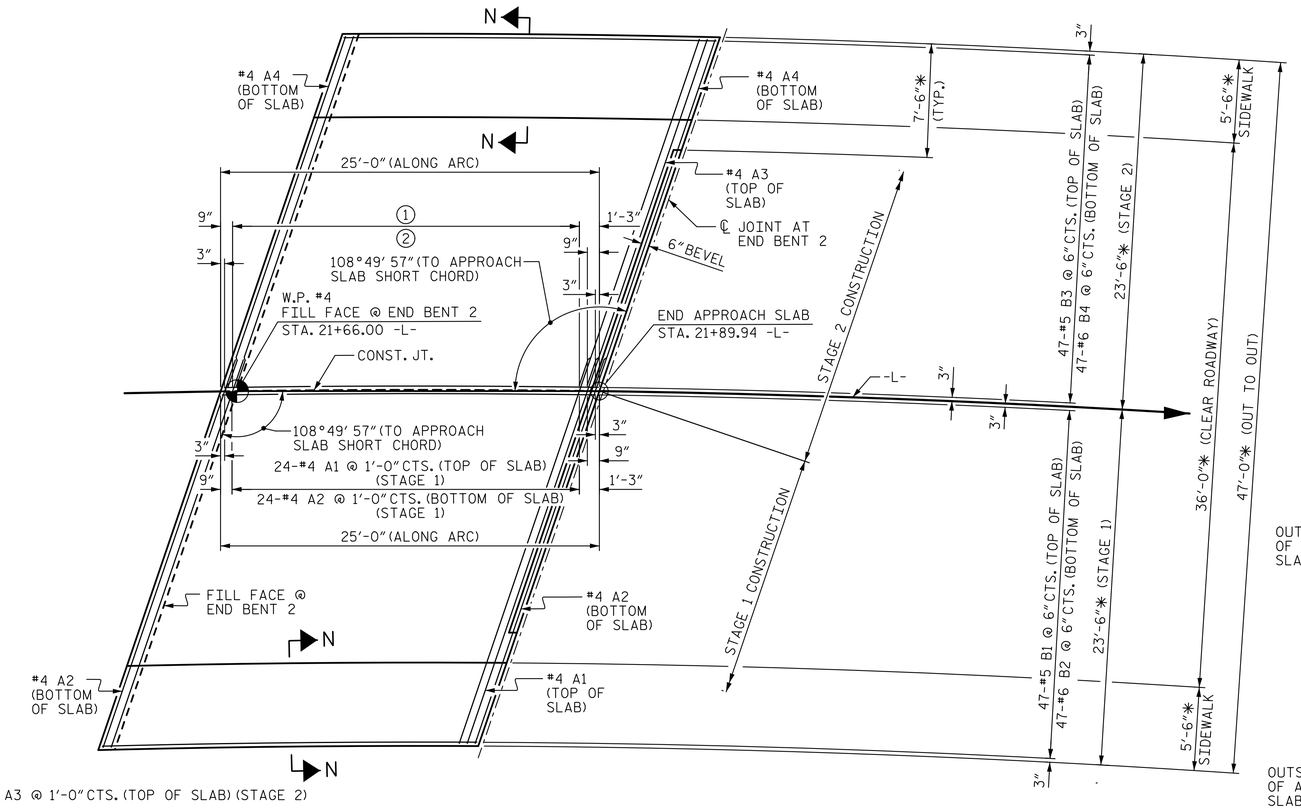
SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT AT END BENT 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-62
1			3			TOTAL SHEETS
2			4			64

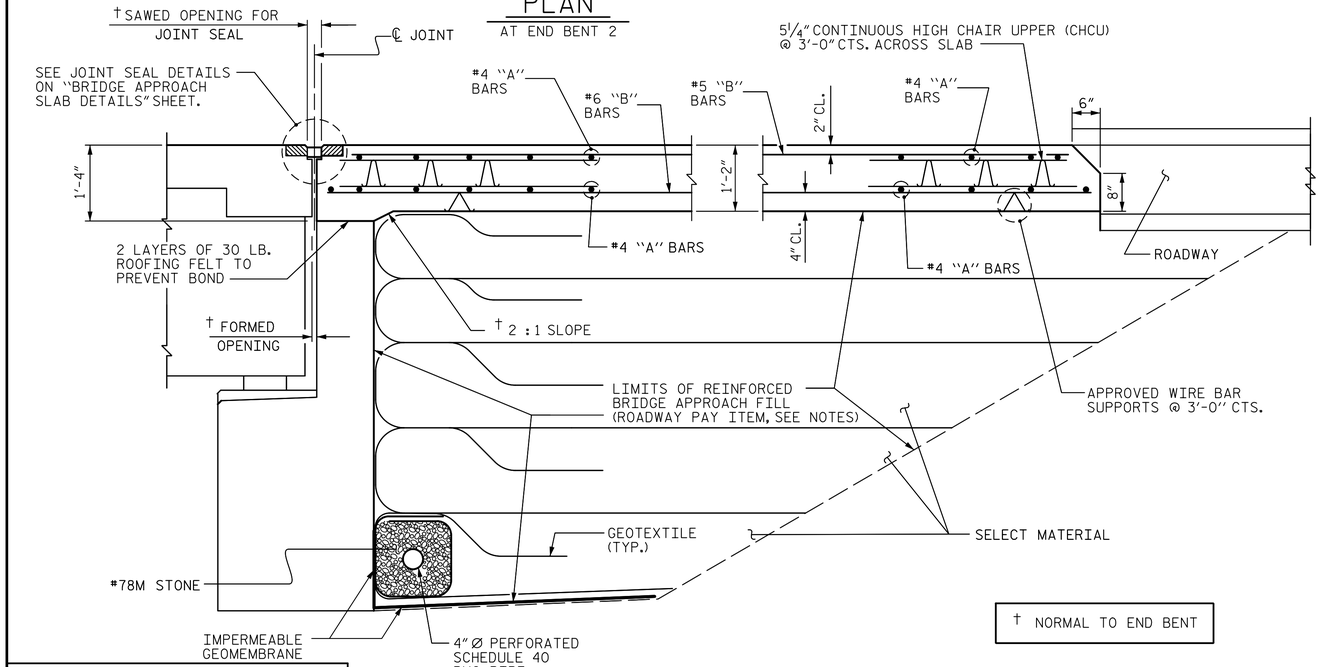
STD. NO. BAS2 (SHT 2a)



① ▲ 24-#4 A3 @ 1'-0"CTS.(TOP OF SLAB)(STAGE 2)

② ▲ 24-#4 A4 @ 1'-0"CTS.(BOTTOM OF SLAB)(STAGE 2)

PLAN
AT END BENT 2



† NORMAL TO END BENT

SECTION THRU SLAB

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 SIDEWALK, PARAPET AND END POST.

FOR SIDEWALK DETAILS SEE STD. NO BAS4 (SHT 2B) "STANDARD BRIDGE APPROACH SLAB DETAILS". ALSO SEE "SIDEWALK DETAILS STAGE 1" AND "SIDEWALK DETAILS STAGE 2" SHEETS.

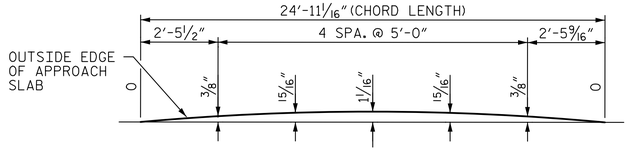
SEE "SUPERSTRUCTURE BILL OF MATERIAL" SHEETS FOR SIDEWALK QUANTITIES.

FOR FOAM JOINT SEALS, SEE SPECIAL PROVISIONS.

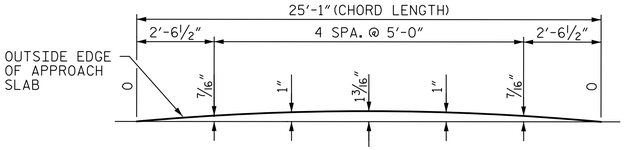
THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE FOAM JOINT SEAL SHALL BE 2".

FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

FOR SECTION N-N AND REINFORCING LAYOUT IN SIDEWALK, SEE SHEET 3 OF 3.



ARC OFFSETS-LEFT SIDE

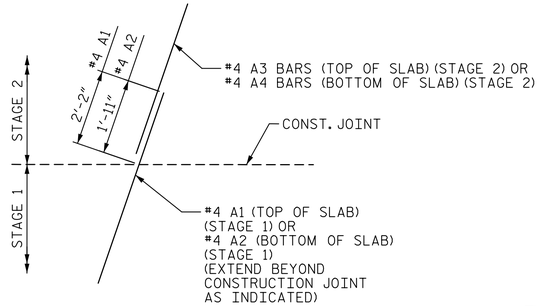


ARC OFFSETS-RIGHT SIDE

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

✳ MEASURED RADIALLY

▲ "A" BARS ARE SPACED ALONG APPROACH SLAB SHORT CHORD AND PLACED PARALLEL TO FILL FACE.



"A" BAR SPLICE DETAIL

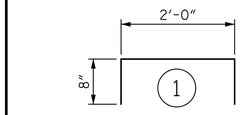
BILL OF MATERIAL

APPROACH SLAB AT END BENT 2 - STAGE 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ A1	25	#4	STR	27'-0"	451
A2	26	#4	STR	26'-9"	465
✳ B1	47	#5	STR	24'-2"	1185
B2	47	#6	STR	24'-8"	1741
✳ B5	10	#4	STR	13'-7"	91
✳ G1	25	#4	STR	5'-2"	86
✳ U1	8	#4	1	3'-4"	18
REINFORCING STEEL				LBS.	2206
✳ EPOXY COATED REINFORCING STEEL				LBS.	1831
CLASS AA CONCRETE				C. Y.	25.5

APPROACH SLAB AT END BENT 2 - STAGE 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ A3	25	#4	STR	24'-6"	409
A4	26	#4	STR	24'-6"	426
✳ B3	47	#5	STR	24'-1"	1181
B4	47	#6	STR	24'-7"	1735
✳ B5	10	#4	STR	13'-7"	91
✳ G2	25	#4	STR	5'-1"	85
✳ U1	8	#4	1	3'-4"	18
REINFORCING STEEL				LBS.	2161
✳ EPOXY COATED REINFORCING STEEL				LBS.	1784
CLASS AA CONCRETE				C. Y.	25.5



ALL BAR DIMENSIONS ARE OUT TO OUT

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT AT END BENT 2

ASSEMBLED BY : D. H. CARTER	DATE : SEP 2015
CHECKED BY : K. M. MOBLEY	DATE : SEP 2015

DRAWN BY : EEM 3/95	REV. 10/1/11 MAA/GM
CHECKED BY : VAP 3/95	REV. 12/21/11 MAA/GM
	REV. 6/13 MAA/GM

ICA Engineering
5121 Kingdom Way, Suite 100 Raleigh, NC 27607
NC License No: F-0258

NORTH CAROLINA PROFESSIONAL SEAL 14408 ENGINEER THOMAS E. TALLMAN
Documents Signed by: Thomas E. Tallman E9B789620EE24D5... 10/15/2015

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-63
1			3			TOTAL SHEETS
2			4			64

10/14/2015
ICA Engineering
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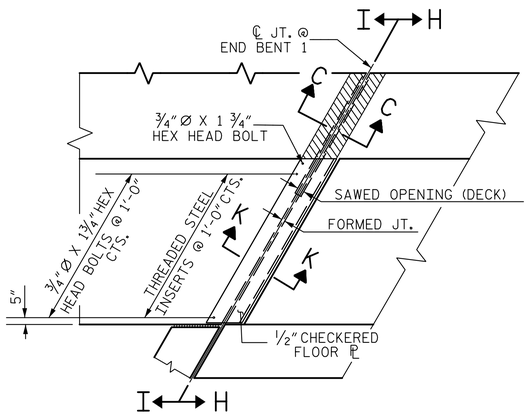
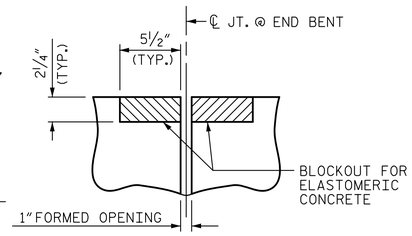
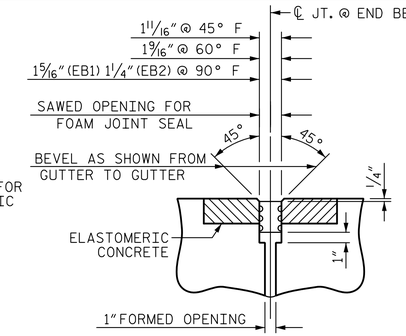
STD. NO. BAS2



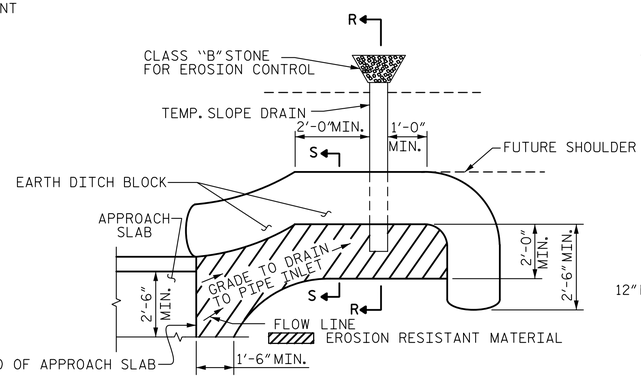
PLAN VIEW OF FOAM JOINT SEAL @ END BENT FOR SIDEWALK



SECTION C-C
FOAM JOINT SEAL
(PRE-SAWED ELASTOMERIC CONCRETE DIMENSIONS)

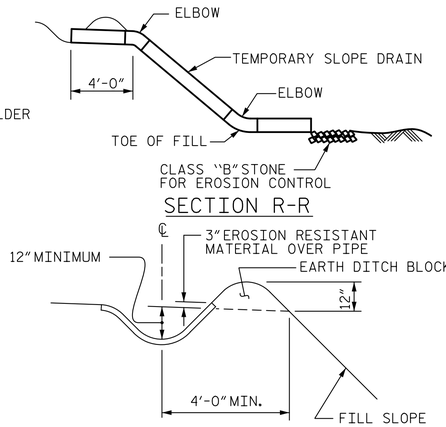


SECTION C-C
FOAM JOINT SEAL
(EXPANSION)



PLAN VIEW

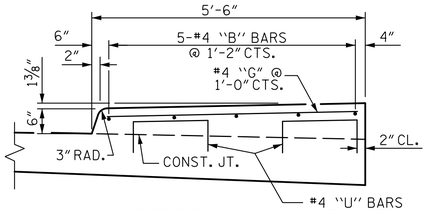
NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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



SECTION S-S

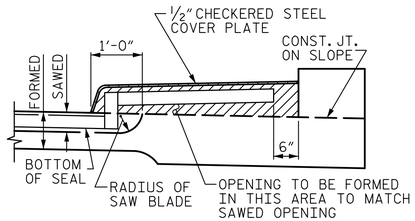
TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

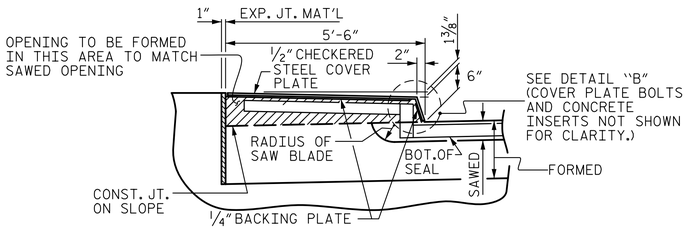


SECTION N-N

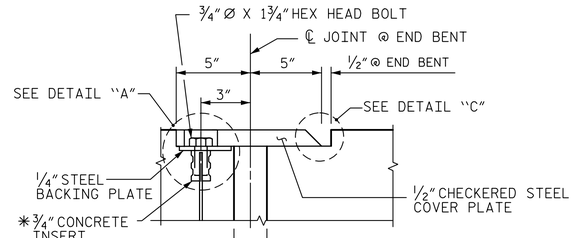
SIDEWALK DETAILS



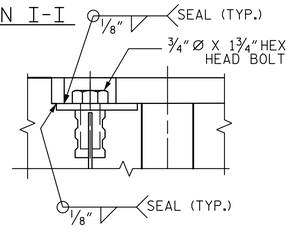
SECTION H-H



SECTION I-I

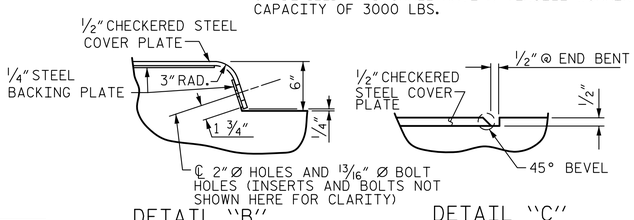


SECTION K-K



DETAIL "A"

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



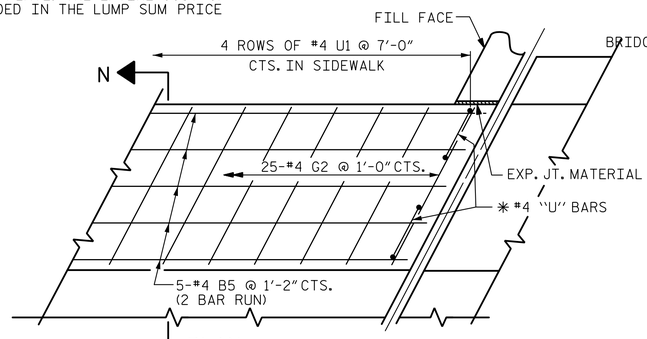
DETAIL "B" DETAIL "C"

JOINT SEAL DETAILS @ END BENT

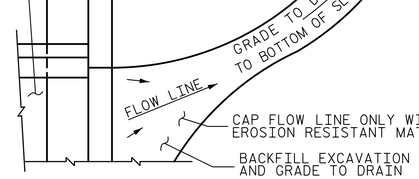
THE STEEL PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 OR APPROVED EQUAL. AFTER FABRICATION, THE PLATES SHALL BE COMMERCIALLY BLAST CLEANED AND EITHER COATED WITH A MINIMUM THICKNESS OF 4 MILS (DRY) OF ZINC-RICH PAINT, GALVANIZED OR METALLIZED TO A MINIMUM THICKNESS OF 6 MILS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

THE ¾" DIAMETER HEX HEAD BOLTS SHALL CONFORM TO ASTM F593 ALLOY 304 STAINLESS STEEL.

NO SEPARATE PAYMENT WILL BE MADE FOR FURNISHING AND INSTALLING THE COVER PLATE. THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE LUMP SUM PRICE FOR "FOAM JOINT SEALS".



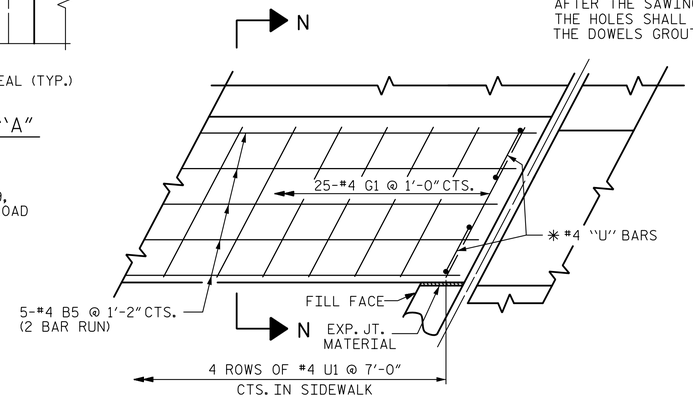
PLAN
(STAGE 2)



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

*THESE BARS ARE TO BE PLACED AFTER THE SAWING OF THE JOINT. THE HOLES SHALL BE DRILLED AND THE DOWELS GROUTED INTO PLACE.



PLAN
(STAGE 1)

DETAILS OF SIDEWALK ON APPROACH SLAB

(END BENT 1 SHOWN, END BENT 2 SIMILAR)

ELASTOMERIC CONCRETE	
END BENT NO.	ELASTOMERIC CONCRETE * (CU. FT.)
1	8.1
2	6.6
TOTAL	14.7

* BASED ON THE MINIMUM BLOCKOUT SHOWN.

PROJECT NO. B-4159

JACKSON COUNTY

STATION: 20+16.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB DETAILS

ASSEMBLED BY : D. H. CARTER	DATE SEP 2015		
CHECKED BY : K. M. MOBLEY	DATE SEP 2015		
DRAWN BY : FCJ 11/88	REV. 10/1/11	MAA/GM	
CHECKED BY : ARB 11/88	REV. 7/12	MAA/GM	
	REV. 6/13	MAA/GM	

ICA Engineering
5121 Kingdom Way, Suite 100 Raleigh, NC 27607
NC License No: F-0258

NORTH CAROLINA PROFESSIONAL SEAL 14408 ENGINEER THOMAS E. TALLMAN
Thomas E. Tallman 10/15/2015
E9878962OEE24D5...

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-64
1			3			TOTAL SHEETS
2			4			64

10/14/2015 ICA Engineering
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STD. NO. BAS4 (SHT 2b)

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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STD. NO. SN