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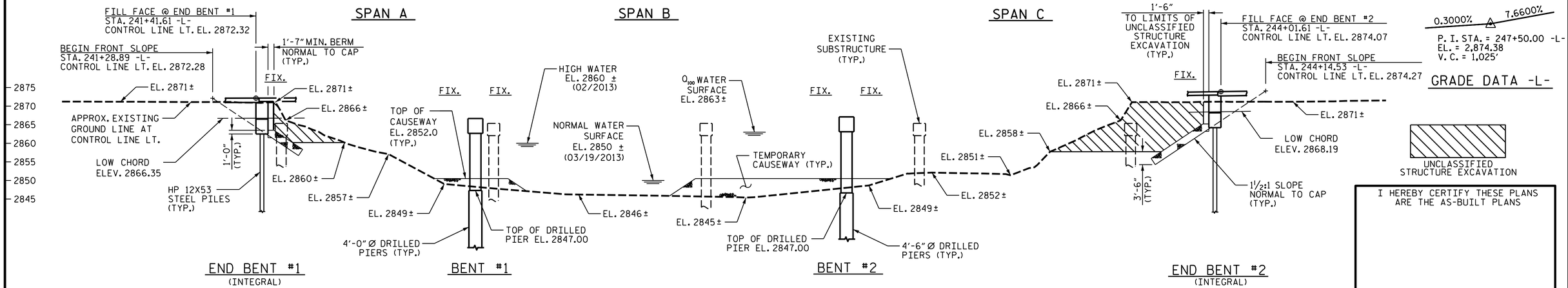
241+00 241+50 242+00 242+50 243+00 243+50 244+00 244+50

F.A. PROJECT NO. STP-0221(40)



0.3000% 7.6600%

P. I. STA. = 247+50.00 -L-
EL. = 2,874.38
V. C. = 1,025'

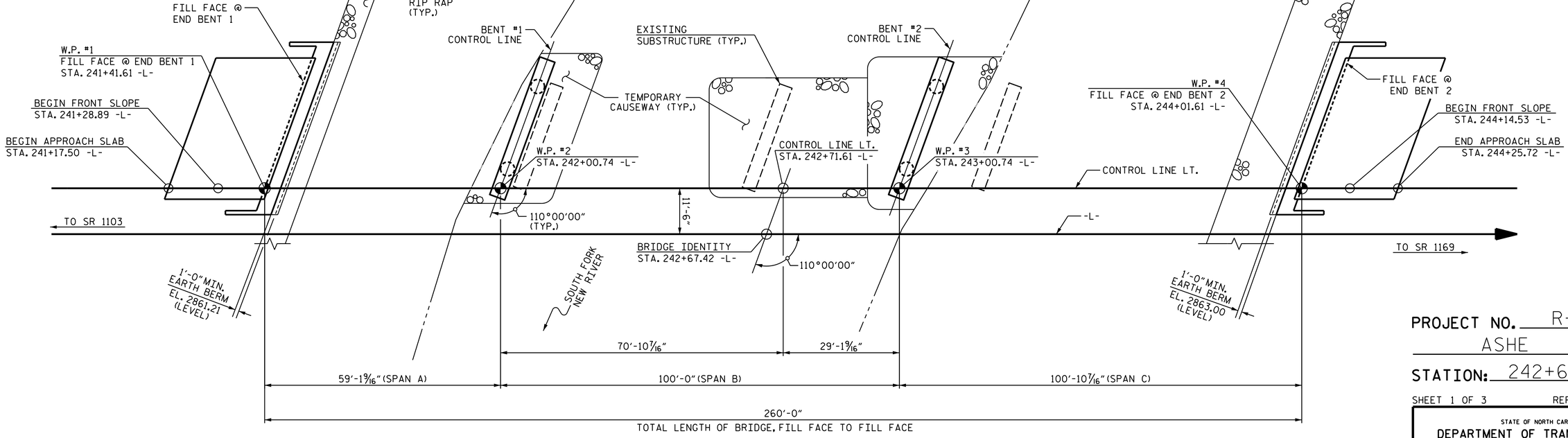
GRADE DATA -L-

UNCLASSIFIED STRUCTURE EXCAVATION

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

SECTION ALONG CONTROL LINE LT.

(SECTION AT BENTS & END BENTS ARE AT RIGHT ANGLES)



PLAN

(PILES NOT SHOWN IN PLAN VIEW)

PROJECT NO. R-2915B

ASHE COUNTY

STATION: 242+67.42 -L-

SHEET 1 OF 3 REPLACES BRIDGE #10

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

BRIDGE OVER SOUTH FORK NEW RIVER ON US 221 BETWEEN SR 1103 AND SR 1169 SBL

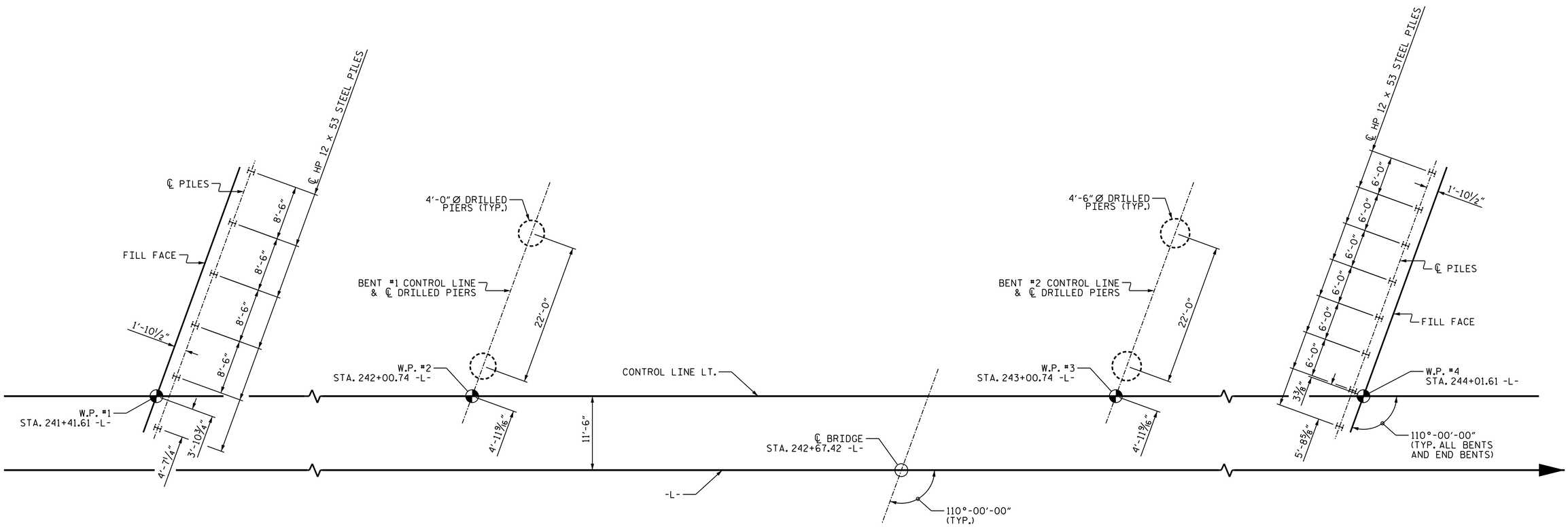
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-1
1			3			TOTAL SHEETS
2			4			35

DRAWN BY : T.J. KIRSCHBAUM DATE : 4/21/14
CHECKED BY : R.F. WERTMAN DATE : 7/31/14
DESIGN ENGINEER OF RECORD : R.F. WERTMAN DATE : 10/3/14

PLANS PREPARED BY:
Gannett Fleming
Excellence Delivered As Promised
1121 Situs Court
Suite 170
Raleigh NC 27606-4279
(919) 859-4880
NC Lic. No. F-0270

NORTH CAROLINA PROFESSIONAL SEAL 037180 ENGINEER RANDALL F. WERTMAN
2/20/2015

STR. NO. 4



END BENT #1 | BENT #1 | BENT #2 | END BENT #2

FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO PILE CENTERLINE.
DIMENSIONS LOCATING DRILLED PIERS ARE SHOWN TO DRILLED PIER CENTERLINE.

NOTES:

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT NO. 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 120 TONS PER PILE.

DRIVE PILES AT END BENT NO. 1 TO A REQUIRED DRIVING RESISTANCE OF 200 TONS PER PILE.

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

INSTALL DRILLED PIERS AT BENT NO. 1 TO A TIP ELEVATION NO HIGHER THAN 2825.0 FT AND WITH THE REQUIRED TIP RESISTANCE.

DRILLED PIERS AT BENT NO. 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 590 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 30.0 TSF.

PERMANENT STEEL CASING WILL BE REQUIRED FOR DRILLED PIERS AT BENT NO. 1. DO NOT EXTEND PERMANENT CASINGS BELOW ELEVATION 2839.0 FT. WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 1 IS ELEVATION 2836.0 FT. THE SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

INSTALL DRILLED PIERS AT BENT NO. 2 TO A TIP ELEVATION NO HIGHER THAN 2820.4 FT (LT) AND 2815.4 FT (RT) AND WITH THE REQUIRED TIP RESISTANCE.

DRILLED PIERS AT BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 680 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 30.0 TSF.

PERMANENT STEEL CASING WILL BE REQUIRED FOR DRILLED PIERS AT BENT NO. 2. DO NOT EXTEND CASING BELOW ELEVATION 2842.0 FT. WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 2 IS ELEVATION 2836.0 FT. 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 AT BENT NO. 1 AND BENT NO. 2. 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 120 TONS PER PILE.

DRIVE PILES AT END BENT NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 200 TONS PER PILE.

DRAWN BY : T.J. KIRSCHBAUM DATE : 10/28/14
CHECKED BY : R.F. WERTMAN DATE : 11/12/14
DESIGN ENGINEER OF RECORD : R.F. WERTMAN DATE : 11/12/14

PLANS PREPARED BY:
Gannett Fleming
Excellence Delivered As Promised
1121 Situs Court
Suite 170
Raleigh NC 27606-4279
(919) 859-4880
NC Lic. No. F-0270

NORTH CAROLINA PROFESSIONAL SEAL 037180 ENGINEER RICHARD F. WERTMAN
2/20/2015

PROJECT NO. R-2915B
ASHE COUNTY
STATION: 242+67.42 -L-

SHEET 2 OF 3

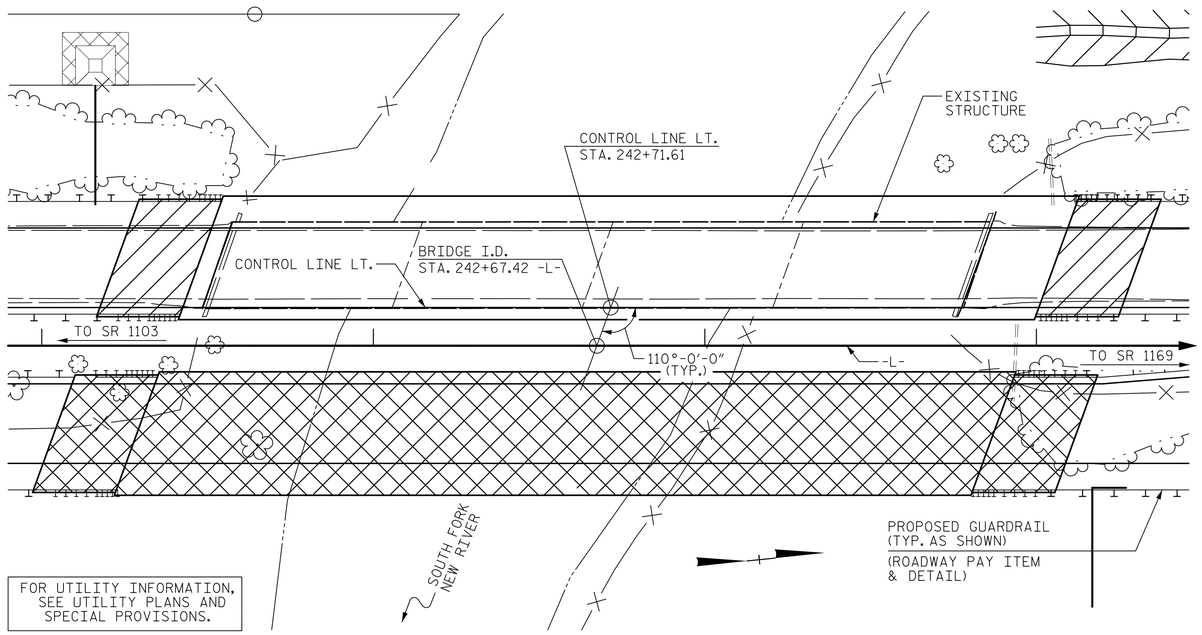
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
BRIDGE OVER SOUTH FORK NEW RIVER ON US 221 BETWEEN SR 1103 AND SR 1169
SBL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-2
1			3			TOTAL SHEETS
2			4			35

STR. NO. 4

BM #9 : RR SPIKE IN ROOT OF 24"FORKED CHERRY TREE, N 932968, E 1262584, 130' LEFT, -L- STA. 215+49.00, EL. 2871.28



LOCATION SKETCH

NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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

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 MAY BE PLACED AS RIP RAP SLOPE PROTECTION. SEE SPECIAL PROVISIONS FOR CONSTRUCTION MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS AT STATION 242+67.42 -L-.

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

THE CLASS AA CONCRETE IN THE BRIDGE DECK SHALL CONTAIN FLY ASH OR GROUND GRANULATED BLAST FURNACE SLAG AT THE SUBSTITUTION RATE SPECIFIED IN ARTICLE 1024-1 AND IN ACCORDANCE WITH ARTICLES 1024-5 AND 1024-5 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.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 40 FT. LEFT AND 12 FT. RIGHT OF BRIDGE WORK LINE AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

THE EXISTING STRUCTURE CONSISTING OF FOUR SPANS, 57'-6" FT. EACH, WITH A CLEAR ROADWAY OF 26' ON REINFORCED CONCRETE DECK GIRDERS ON END BENTS WITH REINFORCED CONCRETE CAPS ON TIMBER PILES & INTERIOR BENTS WITH REINFORCED CONCRETE POSTS AND BEAMS LOCATED AT THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED.

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

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

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

TOTAL BILL OF MATERIAL

	CONSTRUCTION, MAINTENANCE & REMOVAL OF TEMPEMPORARY ACCESS	REMOVAL OF EXISTING STRUCTURE	4'-0"Ø DRILLED PIERS IN SOIL	4'-0"Ø DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 4'-0"Ø DRILLED PIERS	4'-6"Ø DRILLED PIERS IN SOIL	4'-6"Ø DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 4'-6"Ø DRILLED PIERS	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION
	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	EACH	LUMP SUM
SUPERSTRUCTURE										
END BENT NO. 1										LUMP SUM
BENT NO. 1			12.0	32.0	16.0					
BENT NO. 2						19.2	39.0	10.0		
END BENT NO. 2										LUMP SUM
TOTAL	LUMP SUM	LUMP SUM	12.0	32.0	16.0	19.2	39.0	10.0	1	LUMP SUM

TOTAL BILL OF MATERIAL

	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		CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS
	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	LBS.	NO.	LIN.FT.	NO.	LIN.FT.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM
SUPERSTRUCTURE	9619	9555		LUMP SUM			12	1023			516.5			LUMP SUM
END BENT NO. 1			31.6		4341				6	165		100	110	
BENT NO. 1			35.0		9155	1943								
BENT NO. 2			42.8		9963	2672								
END BENT NO. 2			31.5		4289				8	280		176	195	
TOTAL	9619	9555	140.9	LUMP SUM	27748	4615	12	1023	14	445	516.5	276	305	LUMP SUM

HYDRAULIC DATA

DESIGN DISCHARGE	= 16,000 C.F.S.
FREQUENCY OF DESIGN FLOOD	= 50 YRS.
DESIGN HIGH WATER ELEVATION	= 2862.2
DRAINAGE AREA	= 130 SQ. MI.
BASE DISCHARGE (Q100)	= 19,000 C.F.S.
BASE HIGH WATER ELEVATION	= 2863.0

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	= 24,000+ C.F.S.
FREQUENCY OF OVERTOPPING FLOOD	= 500+ YRS.
OVERTOPPING FLOOD ELEVATION	= 2869.2

PROJECT NO. R-2915B

ASHE COUNTY

STATION: 242+67.42 -L-

SHEET 3 OF 3 REPLACES BRIDGE #10

DRAWN BY : T.J. KIRSCHBAUM DATE : 5/4/14
CHECKED BY : R.F. WERTMAN DATE : 7/31/14
DESIGN ENGINEER OF RECORD : R.F. WERTMAN DATE : 10/30/14

PLANS PREPARED BY:
Gannett Fleming
Excellence Delivered As Promised
1121 Situs Court
Suite 170
Raleigh NC 27606-4279
(919) 859-4880
NC Lic. No. F-0270

NORTH CAROLINA PROFESSIONAL SEAL 037180 ENGINEER RICHARD F. WERTMAN
7/30/2015

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

BRIDGE OVER SOUTH FORK NEW RIVER ON US 221 BETWEEN SR 1103 AND SR 1169 SBL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-3
1			3			TOTAL SHEETS
2			4			35

STR. NO. 4

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					LIVE-LOAD FACTORS (γ_{LL})	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)		DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING		HL-93 (INVENTORY)	N/A	(1)	1.08	--	1.75	0.899	1.08	A	I	28.0	1.014	1.37	A	I	45.2	0.80	0.775	1.41	B	I	48.9	1;2
		HL-93 (OPERATING)	N/A	--	1.40	--	1.35	0.899	1.40	A	I	28.0	1.022	2.24	C	I	78.6	N/A	--	--	--	--	--	1;2
		HS-20 (INVENTORY)	36.000	(2)	1.37	49:32	1.75	0.899	1.37	A	I	28.0	10:14	2.09	A	I	33.8	0.80	0.775	1.56	B	I	48.9	1;2
		HS-20 (OPERATING)	36.000	--	1.77	63:72	1.35	0.899	1.77	A	I	28.0	1.022	2.99	C	I	78.6	N/A	--	--	--	--	--	1;2
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500	--	3.67	49:55	1.40	0.899	3.67	A	I	28.0	1.022	7.65	C	I	78.6	0.80	0.775	3.70	B	I	48.9	1;2
		SNGARBS2	20.000	--	2.67	53:40	1.40	0.899	2.61	A	I	28.0	1.022	5.35	C	I	78.6	0.80	0.775	2.67	B	I	48.9	1;2
		SNAGRIS2	22.000	--	2.50	55:00	1.40	0.899	2.70	A	I	28.0	1.022	4.94	B	I	78.6	0.80	0.775	2.50	B	I	48.9	1;2
		SNCOTTS3	27.250	--	1.83	49:87	1.40	0.899	1.83	A	I	28.0	1.022	3.67	C	I	78.6	0.80	0.775	1.84	B	I	48.9	1;2
		SNAGGRS4	34.925	--	1.50	52:39	1.40	0.899	1.56	A	I	28.0	1.014	2.75	A	I	33.8	0.80	0.775	1.50	B	I	48.9	1;2
		SNS5A	35.550	--	1.47	52:26	1.40	0.899	1.52	A	I	28.0	1.022	2.88	B	I	19.1	0.80	0.775	1.47	B	I	48.9	1;2
		SNS6A	39.950	--	1.34	53:53	1.40	0.899	1.41	A	I	28.0	1.022	2.60	B	I	19.1	0.80	0.775	1.34	B	I	48.9	1;2
		SNS7B	42.000	--	1.27	53:34	1.40	0.899	1.34	A	I	28.0	1.022	2.49	C	I	78.6	0.80	0.775	1.27	B	I	48.9	1;2
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000	--	1.63	53:79	1.40	0.899	1.72	A	I	28.0	1.022	3.09	B	I	19.1	0.80	0.775	1.63	B	I	48.9	1;2
		TNT4A	33.075	--	1.63	53:91	1.40	0.899	1.73	A	I	28.0	1.022	3.26	B	I	78.6	0.80	0.775	1.63	B	I	48.9	1;2
		TNT6A	41.600	--	1.32	54:91	1.40	0.899	1.43	A	I	28.0	1.022	2.68	B	I	19.1	0.80	0.775	1.32	B	I	48.9	1;2
		TNT7A	42.000	--	1.32	55:44	1.40	0.899	1.44	A	I	28.0	1.022	2.63	B	I	19.1	0.80	0.775	1.32	B	I	48.9	1;2
		TNT7B	42.000	--	1.35	56:70	1.40	0.899	1.51	A	I	28.0	1.022	2.48	B	I	19.1	0.80	0.775	1.35	B	I	48.9	1;2
		TNAGRIT4	43.000	--	1.30	55:90	1.40	0.899	1.42	A	I	28.0	1.022	2.44	B	I	19.1	0.80	0.775	1.30	B	I	48.9	1;2
		TNAGT5A	45.000	--	1.23	55:35	1.40	0.899	1.34	A	I	28.0	1.022	2.33	B	I	19.1	0.80	0.775	1.23	B	I	48.9	1;2
		TNAGT5B	45.000	(3)	1.22	54:90	1.40	0.899	1.32	A	I	28.0	1.014	2.03	A	I	33.8	0.80	0.775	1.22	B	I	48.9	1;2

LOAD FACTORS:

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

NOTES:

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

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

COMMENTS:

1. SPANS B AND C LENGTHS AND RATING FACTORS ARE EQUAL.
2. THE REDUCTION OF LOAD DISTRIBUTION FACTOR FOR MOMENT IN LONGITUDINAL BEAMS ON SKEWED SUPPORTS (AASHTO TABLE 4.6.2.2.2E-1) WAS NOT APPLIED.

(#) CONTROLLING LOAD RATING

(1) DESIGN LOAD RATING (HL-93)

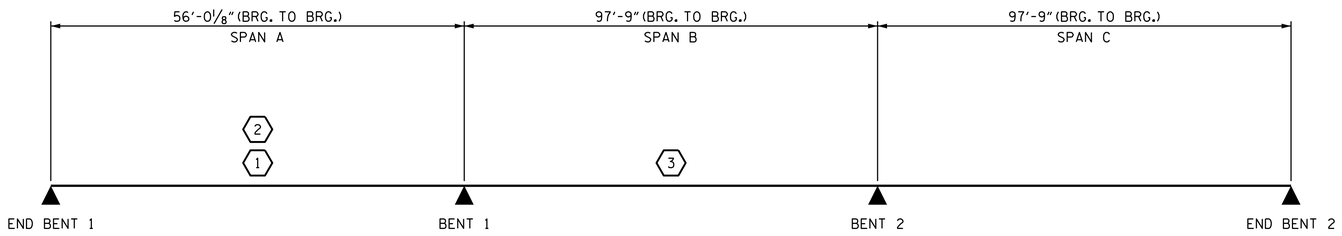
(2) DESIGN LOAD RATING (HS-20)

(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. R-2915B

ASHE COUNTY

STATION: 242+67.42 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
LRFR SUMMARY FOR PRESTRESSED CONCRETE GIRDERS
(NON-INTERSTATE TRAFFIC)
SBL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-4
1			3			TOTAL SHEETS
2			4			35

STR. NO. 4 STD. NO. LRFR1

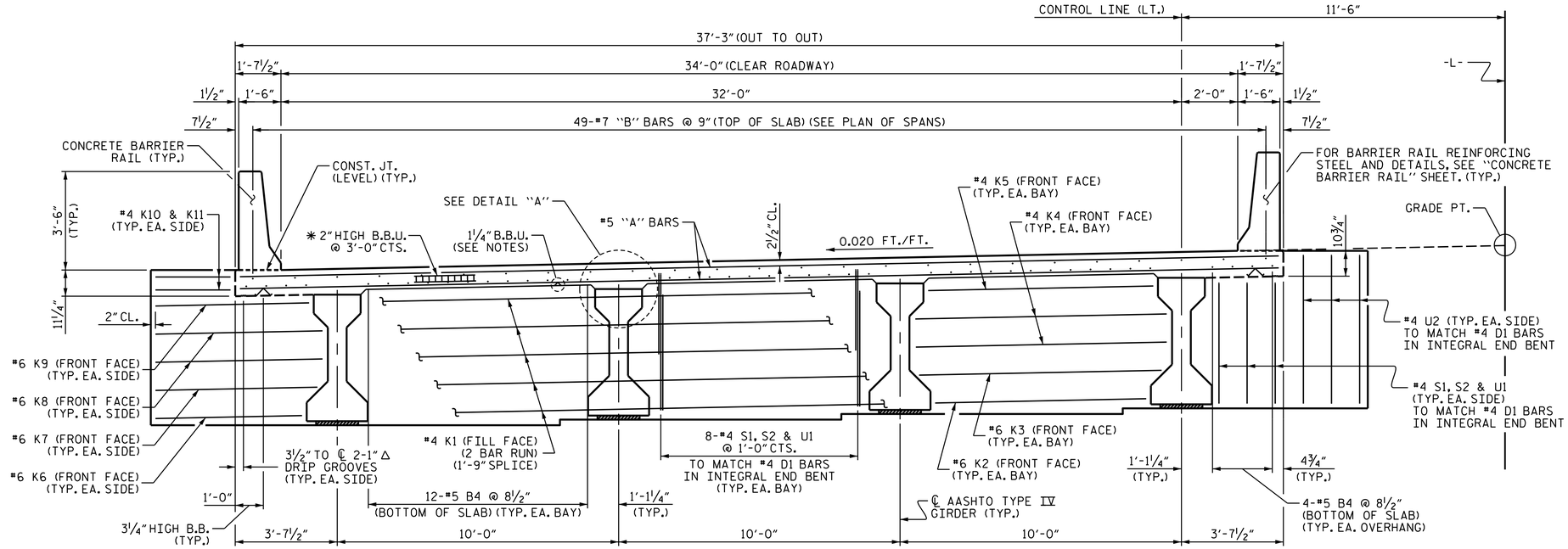
ASSEMBLED BY : T.J. KIRSCHBAUM DATE : 5/8/14
CHECKED BY : R.F. WERTMAN DATE : 7/31/14

DRAWN BY : MAA 1/08 REV. 11/12/08RR MAA/GM
CHECKED BY : GM/DI 2/08 REV. 10/1/11 MAA/GM

PLANS PREPARED BY:
Gannett Fleming
Excellence Delivered As Promised
1121 Situs Court
Suite 170
Raleigh NC 27606-4279
(919) 859-4880
NC Lic. No. F-0270

THESE PLANS HAVE BEEN PROPERLY EXAMINED BY THE UNDERSIGNED. I HAVE DETERMINED THAT THEY COMPLY WITH EXISTING NORTH CAROLINA CODES, AND HAVE BEEN PROPERLY ADAPTED FOR USE IN THIS AREA.

NORTH CAROLINA PROFESSIONAL SEAL 037180 ENGINEER
RICHARD F. WERTMAN
2/20/2014



TYPICAL SECTION @ INTEGRAL END BENT

FOR WING WALLS OF INTEGRAL END BENTS, SEE "TOP OF WINGS" SHEETS.

NOTES:

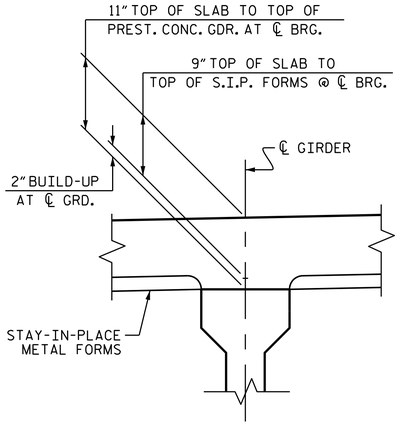
LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS.

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.

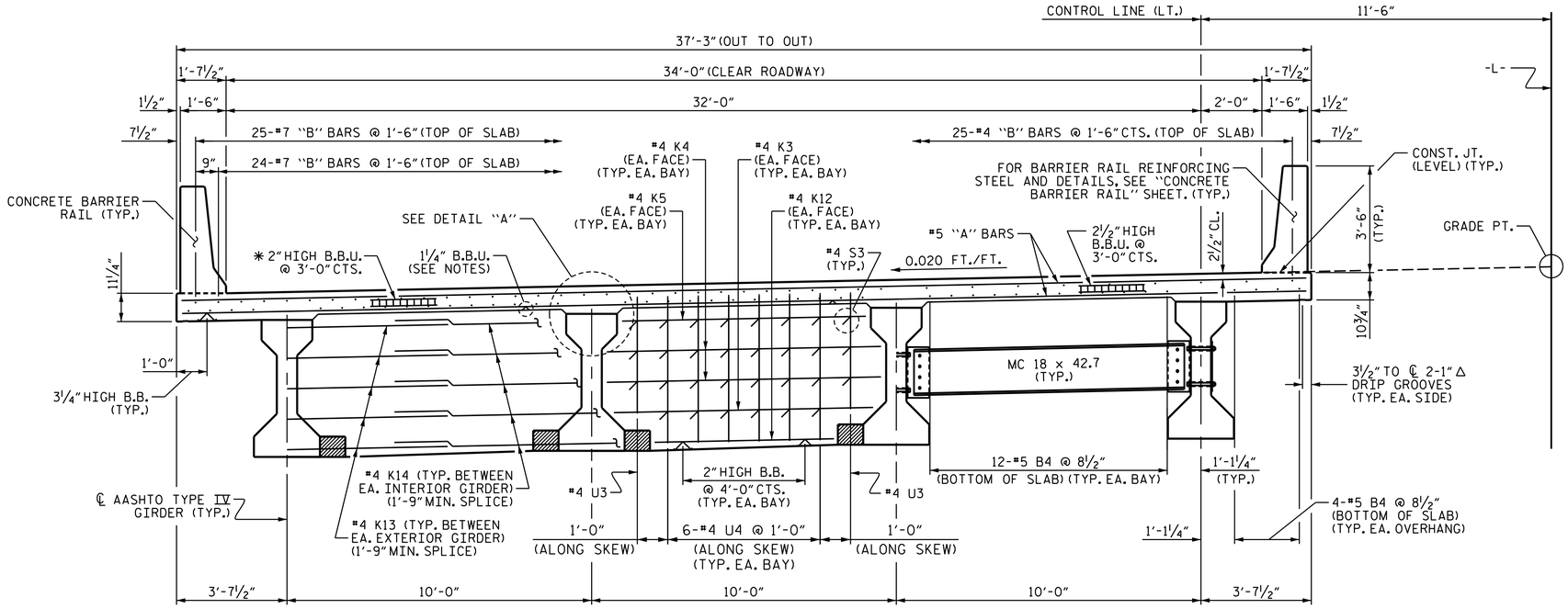
BARRIER RAIL IN A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

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

✱ USE THIS SIZE BAR SUPPORT IN THE AREAS WITH #7 "B" BARS. FOR OTHER AREAS WITH #4 "B" BARS, USE THE BAR SUPPORT AS SHOWN IN TYPICAL SECTION AT INTERMEDIATE DIAPHRAGM.



DETAIL "A"



AT BENT DIAPHRAGM — AT INTERMEDIATE DIAPHRAGM

TYPICAL SECTION

PROJECT NO. R-2915B

ASHE COUNTY

STATION: 242+67.42 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION

SBL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-5
1			3			TOTAL SHEETS
2			4			35

STR. NO. 4

DRAWN BY : T.J. KIRSCHBAUM DATE : 4/14/14
CHECKED BY : R.F. WERTMAN DATE : 8/12/14
DESIGN ENGINEER OF RECORD : R.F. WERTMAN DATE : 10/3/14

PLANS PREPARED BY:
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Excellence Delivered As Promised
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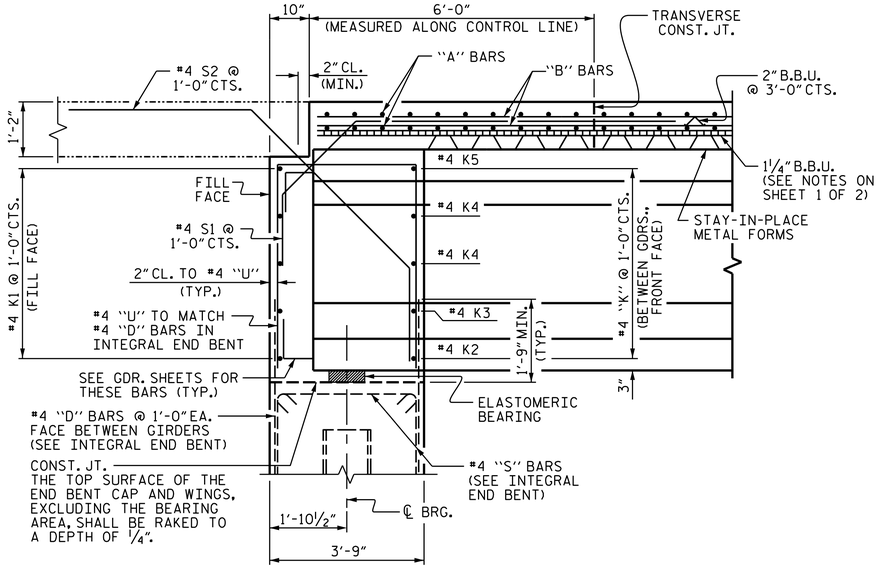
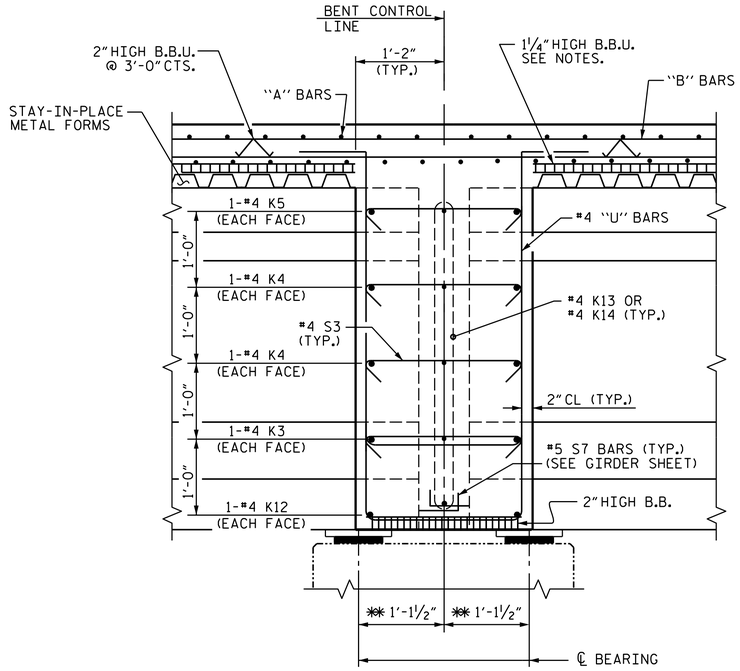
(919) 859-4880
NC Lic. No. F-0270

NORTH CAROLINA PROFESSIONAL SEAL 037180 ENGINEER RICHARD F. WERTMAN
2/20/2015

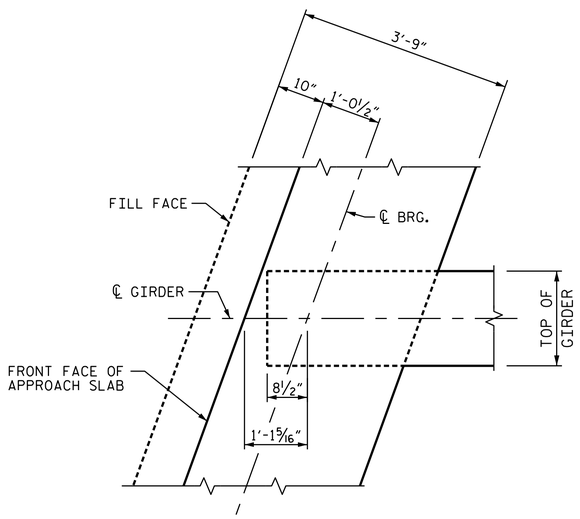


SECTION AT INTEGRAL END BENT



SECTION AT BENT DIAPHRAGM

✱✱ MEASURED ALONG ℄ GIRDER



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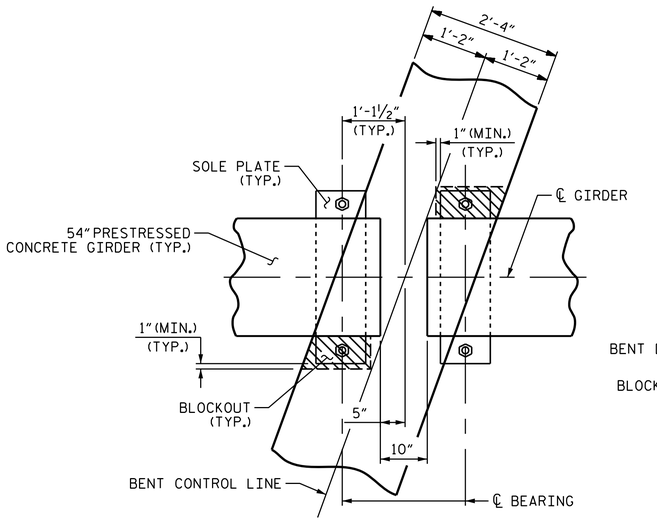
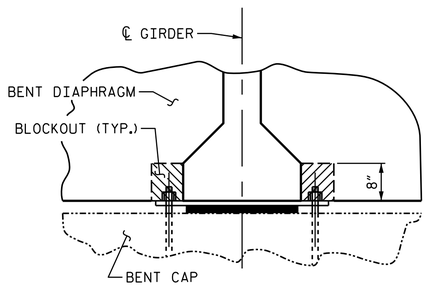


PLAN



SECTION

BENT DIAPHRAGM BLOCK-OUT DETAIL

DRAWN BY : T.J. KIRSCHBAUM DATE : 4/14/14
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NORTH CAROLINA PROFESSIONAL SEAL 037180 ENGINEER RICHARD F. WERTMAN
2/20/2015

PROJECT NO. R-2915B
ASHE COUNTY
STATION: 242+67.42 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

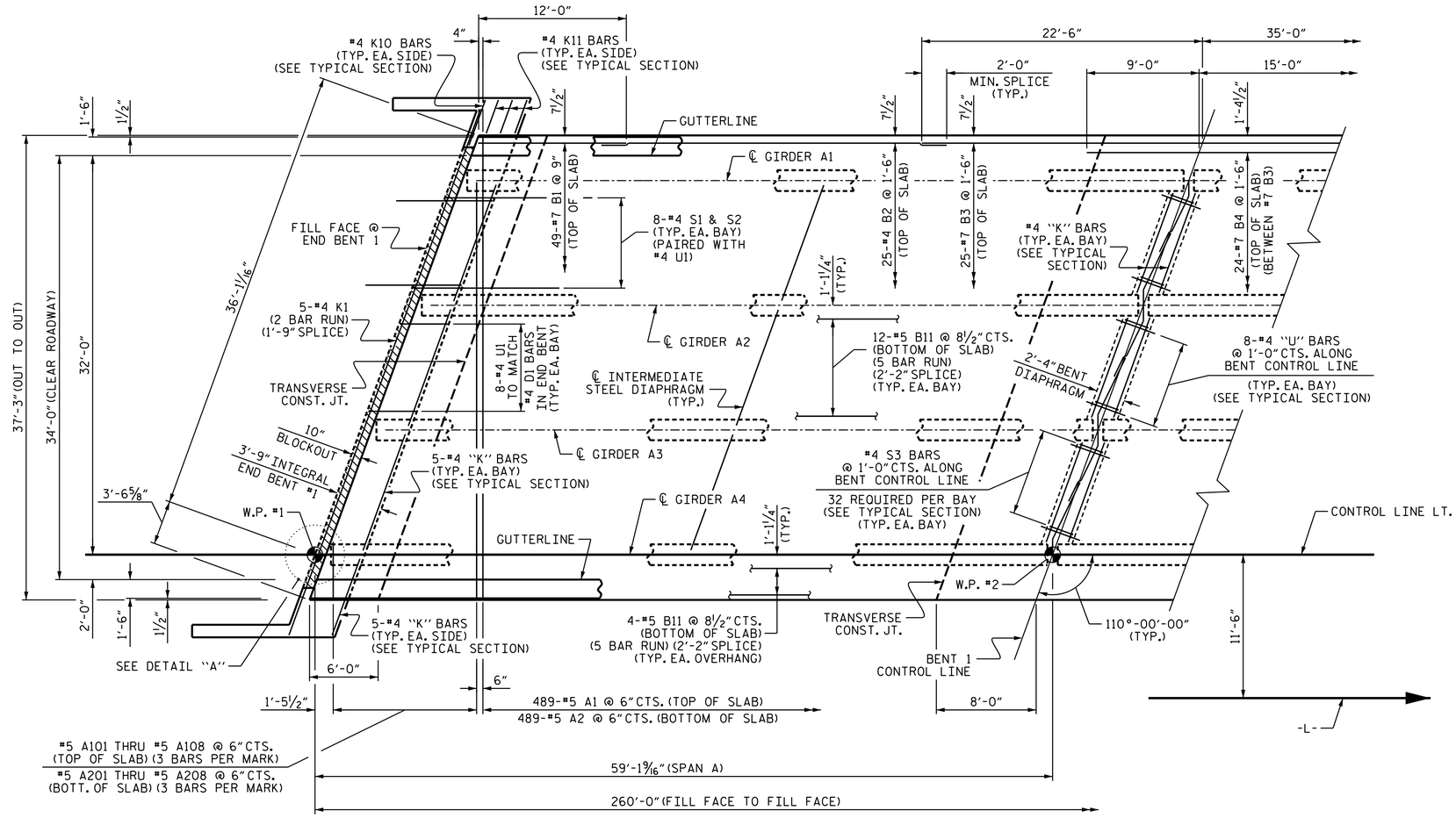
SUPERSTRUCTURE

TYPICAL SECTION DETAILS

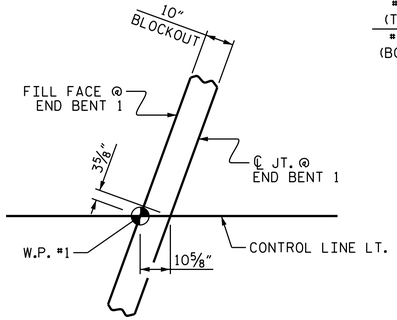
SBL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-6
1			3			TOTAL SHEETS
2			4			35

STR. NO. 4



PLAN OF SPAN A



DETAIL "A"

PROJECT NO. R-2915B

ASHE COUNTY

STATION: 242+67.42 -L-

SHEET 1 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPAN A

SBL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-7
1			3			TOTAL SHEETS
2			4			35

STR. NO. 4

DRAWN BY : T.J. KIRSCHBAUM DATE : 4/25/14
CHECKED BY : R.F. WERTMAN DATE : 8/15/14
DESIGN ENGINEER OF RECORD : R.F. WERTMAN DATE : 10/3/14

PLANS PREPARED BY:
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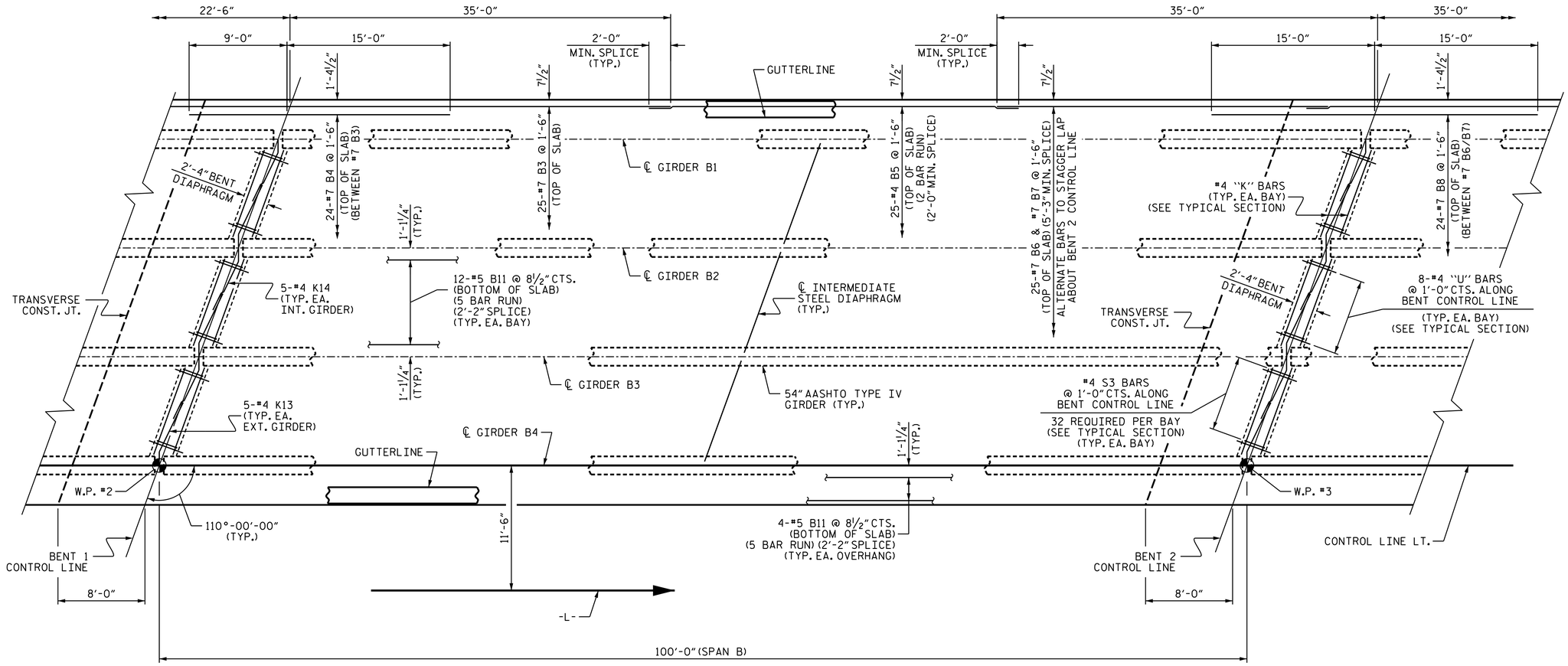
NORTH CAROLINA PROFESSIONAL SEAL 037180 ENGINEER Richard F. Wertman
2720/2014



PLAN OF SPAN B

PROJECT NO. R-2915B

ASHE **COUNTY**

STATION: 242+67.42 -L-

SHEET 2 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPAN B

SBL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-8
1			3			TOTAL SHEETS
2			4			35

STR. NO. 4

DRAWN BY : T.J. KIRSCHBAUM DATE : 4/25/14
CHECKED BY : R.F. WERTMAN DATE : 8/15/14
DESIGN ENGINEER OF RECORD : R.F. WERTMAN DATE : 10/3/14

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NORTH CAROLINA PROFESSIONAL SEAL 037180 ENGINEER RICHARD F. WERTMAN
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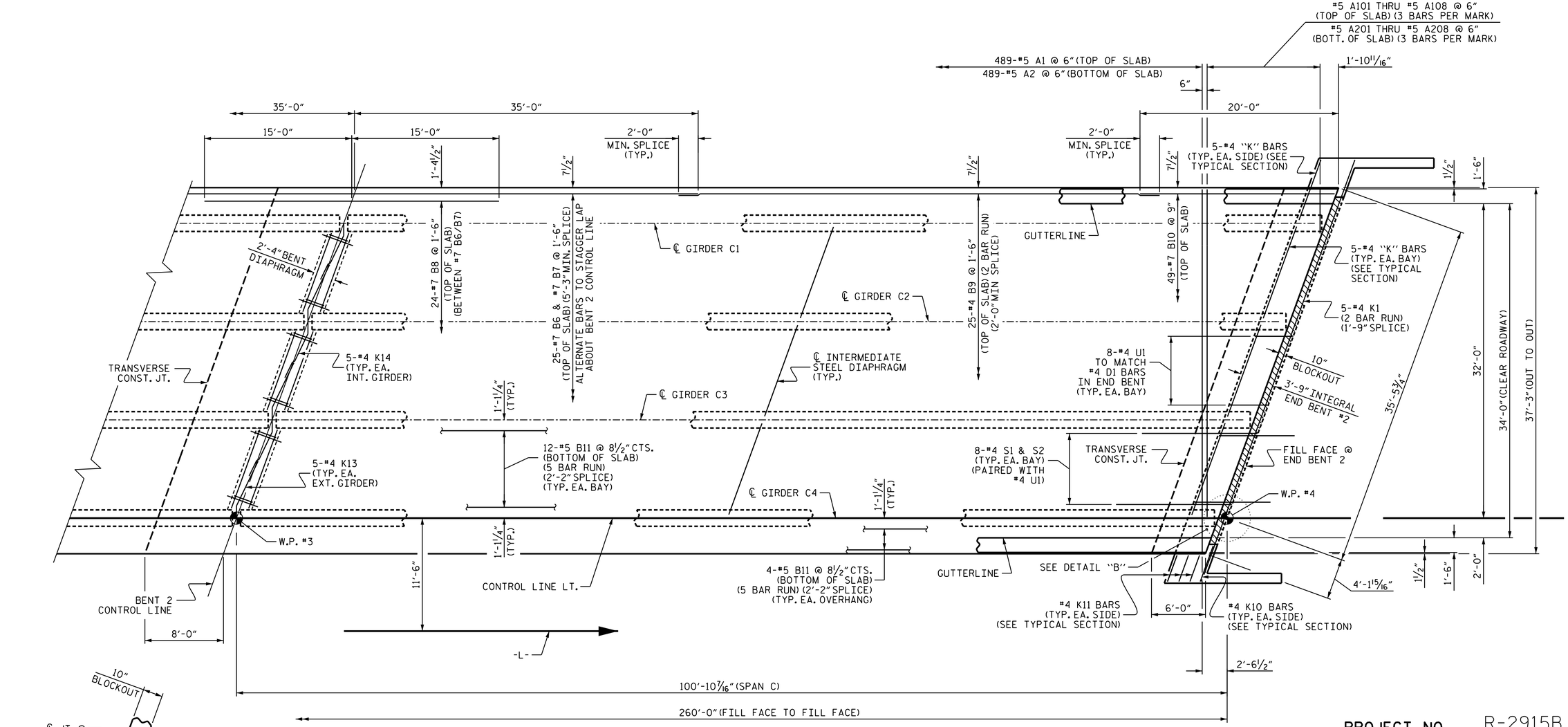
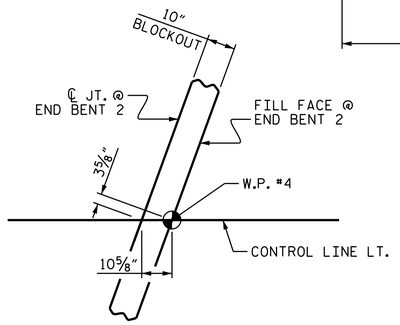


PLAN OF SPAN C



DETAIL "B"

PROJECT NO. R-2915B

ASHE COUNTY

STATION: 242+67.42 -L-

SHEET 3 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPAN C

SBL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-9
1			3			TOTAL SHEETS
2			4			35

STR. NO. 4

DRAWN BY : T.J. KIRSCHBAUM DATE : 4/25/14
CHECKED BY : R.F. WERTMAN DATE : 8/15/14
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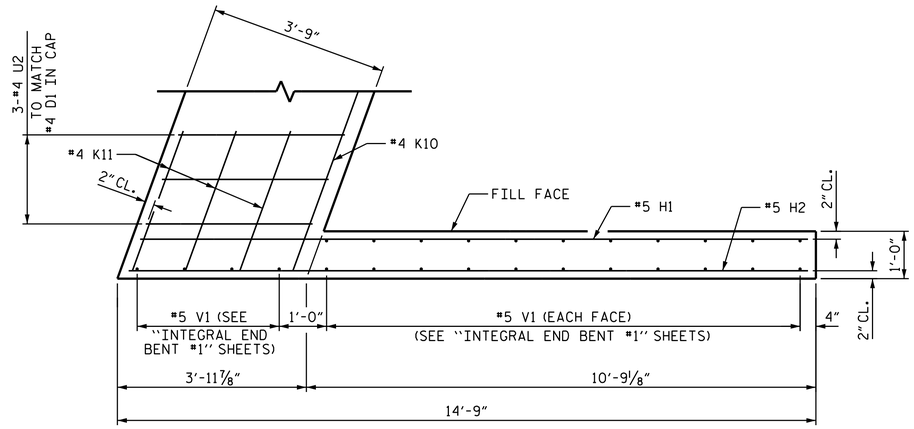
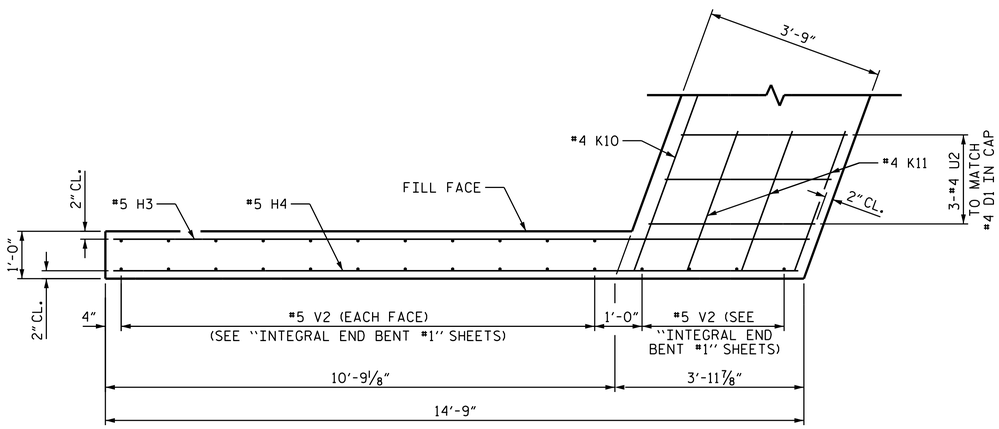
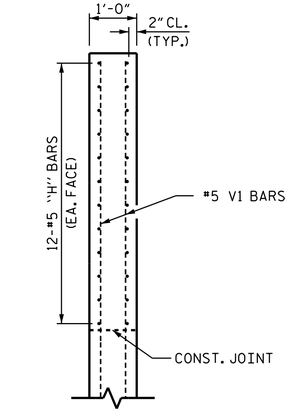
NORTH CAROLINA PROFESSIONAL SEAL 037180 ENGINEER Richard F. Wertman
2/20/2015



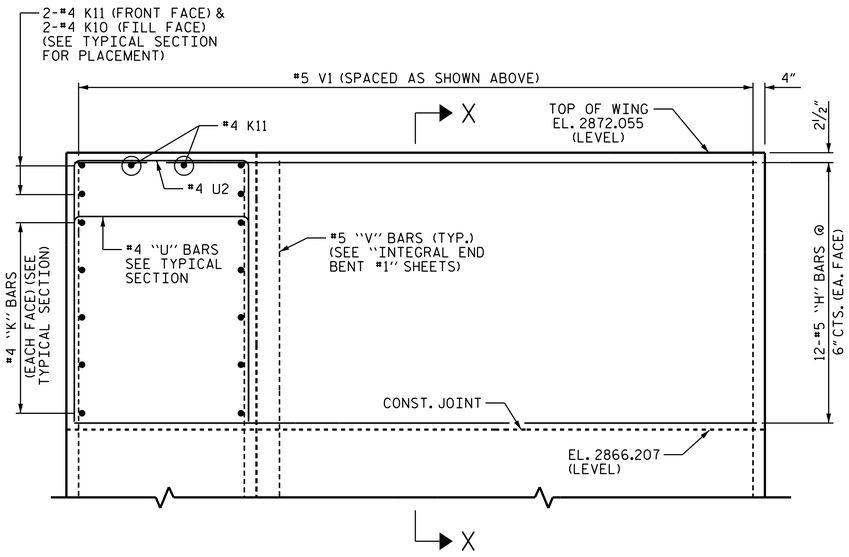
PLAN OF WING (W1)



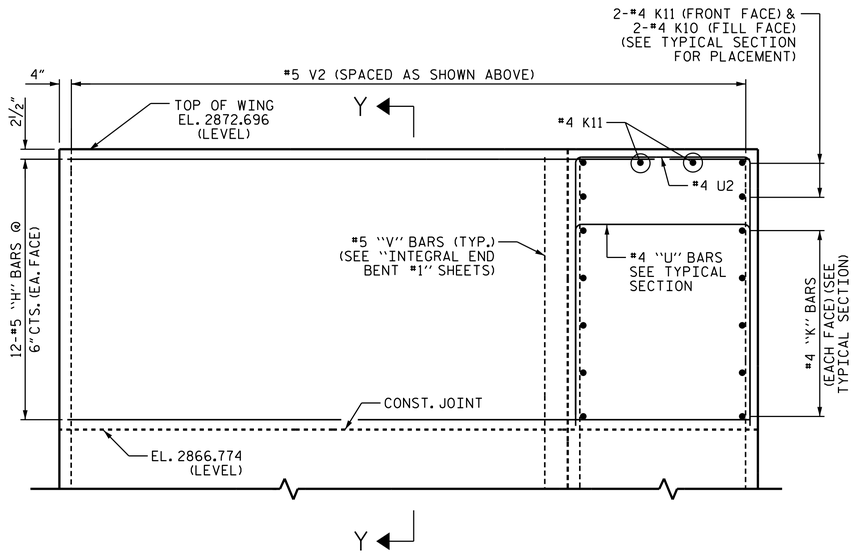
PLAN OF WING (W2)



SECTION X-X



ELEVATION OF WING (W1)



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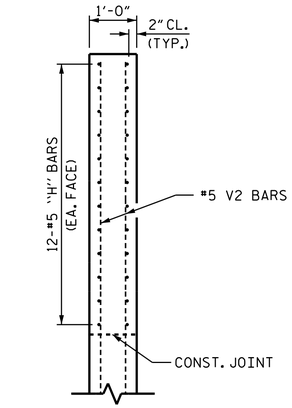

SECTION Y-Y

PROJECT NO. R-2915B

ASHE COUNTY

STATION: 242+67.42 -L-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TOP OF WINGS @ END BENT #1

SBL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-10
1			3			TOTAL SHEETS
2			4			35

DRAWN BY :	T.J. KIRSCHBAUM	DATE :	10/08/14
CHECKED BY :	E.E. DEETSCREEK	DATE :	11/10/14
DESIGN ENGINEER OF RECORD :	R.F. WERTMAN	DATE :	11/13/14

PLANS PREPARED BY:
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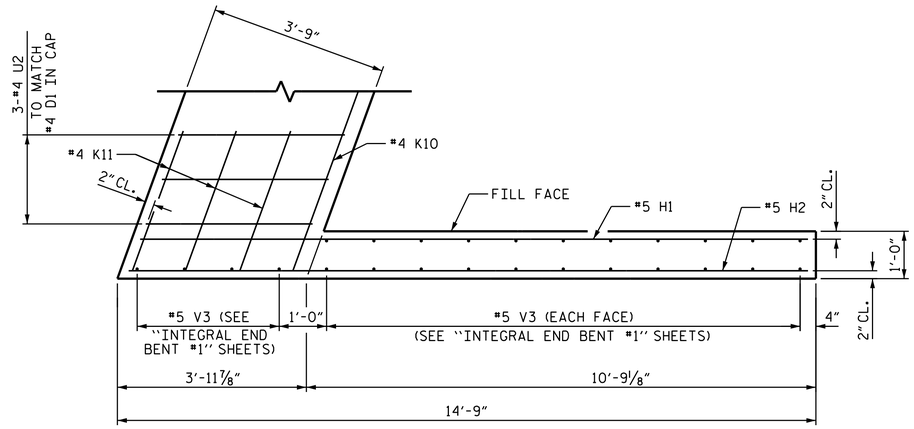
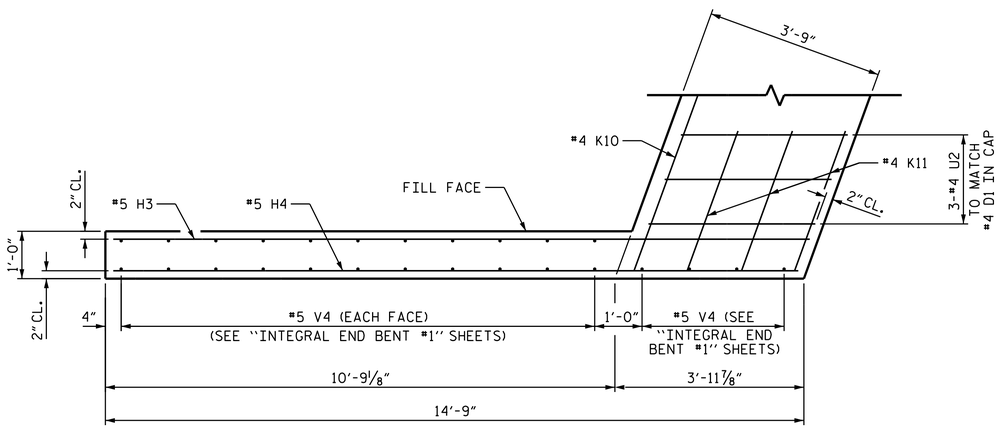
NORTH CAROLINA PROFESSIONAL SEAL 037180 ENGINEER Richard F. Wertman
2/20/2015

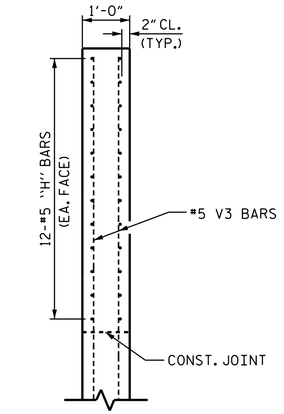
STR. NO. 4



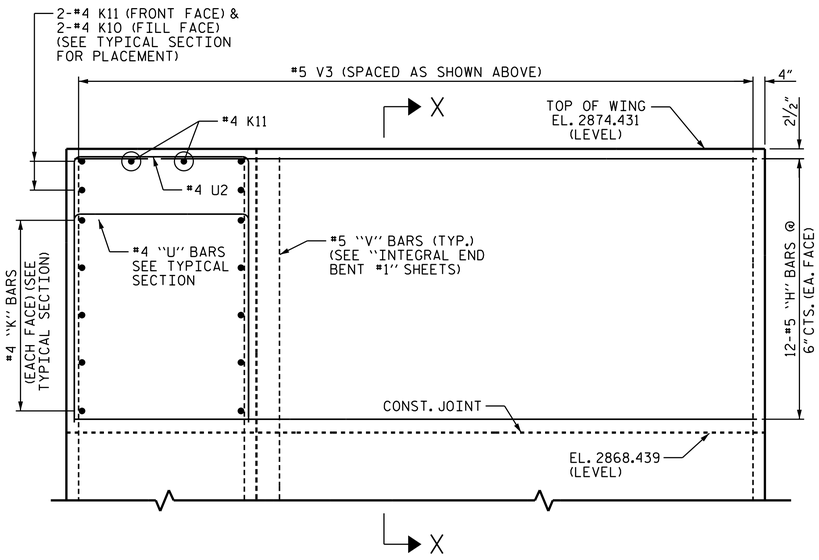
PLAN OF WING (W3)



PLAN OF WING (W4)



SECTION X-X



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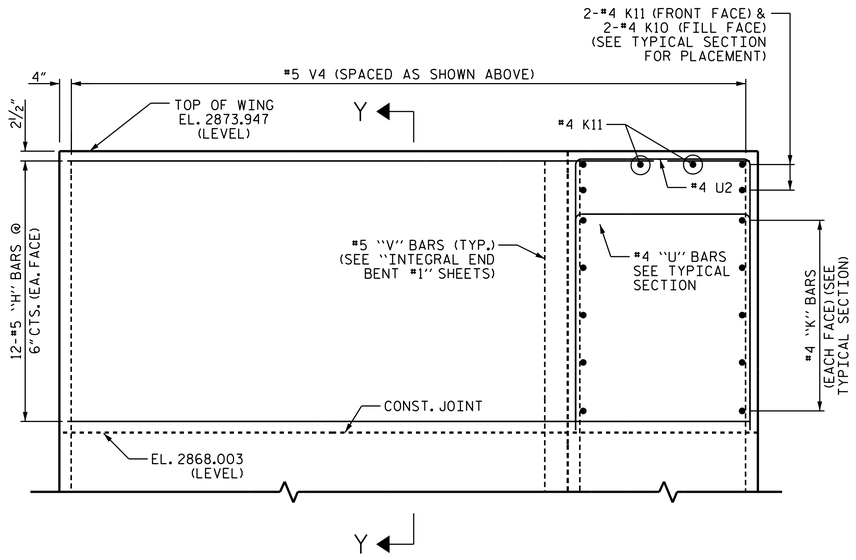
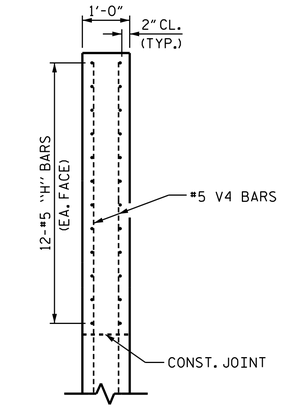


ELEVATION OF WING (W4)



SECTION Y-Y

PROJECT NO. R-2915B

ASHE COUNTY

STATION: 242+67.42 -L-

SHEET 5 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TOP OF WINGS @ END BENT #2

SBL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-11
1			3			TOTAL SHEETS
2			4			35

STR. NO. 4

DRAWN BY : T.J. KIRSCHBAUM DATE : 10/08/14
CHECKED BY : E.E. DEETSCREEK DATE : 11/10/14
DESIGN ENGINEER OF RECORD : R.F. WERTMAN DATE : 11/13/14

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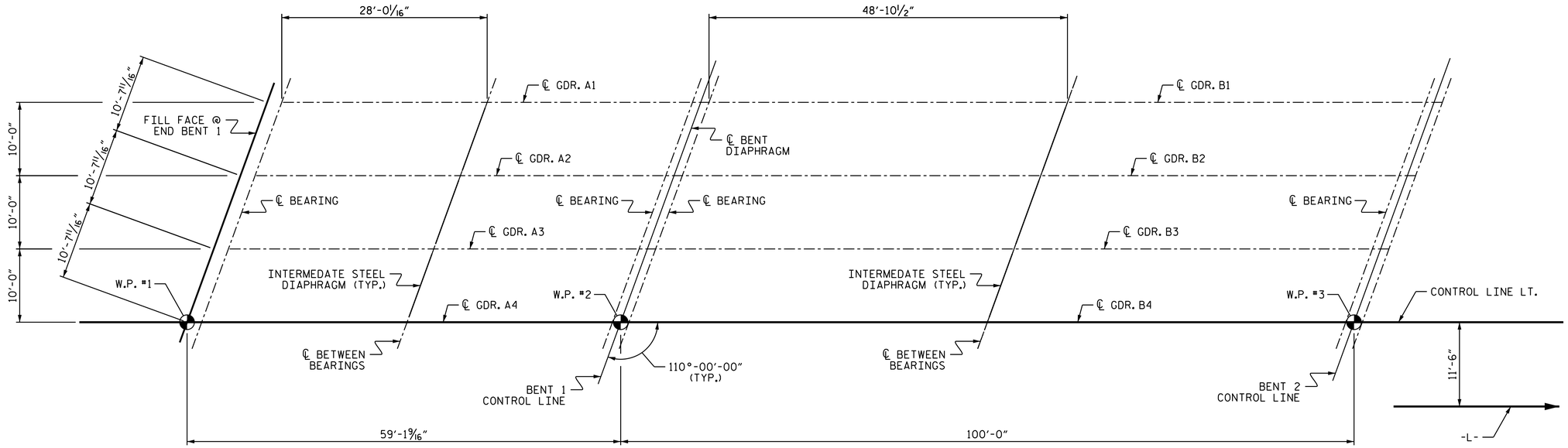
2/20/2014



FIX. E2

FIX. E2, P1 | FIX. E4, P2

FIX. E4, P3 | FIX. E4, P4

SPAN A

SPAN B

FRAMING PLAN

PROJECT NO. R-2915B

ASHE COUNTY

STATION: 242+67.42 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

FRAMING PLAN

SBL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-12
1			3			TOTAL SHEETS
2			4			35

STR. NO. 4

DRAWN BY : T.J. KIRSCHBAUM DATE : 4/28/14
CHECKED BY : R.F. WERTMAN DATE : 8/15/14
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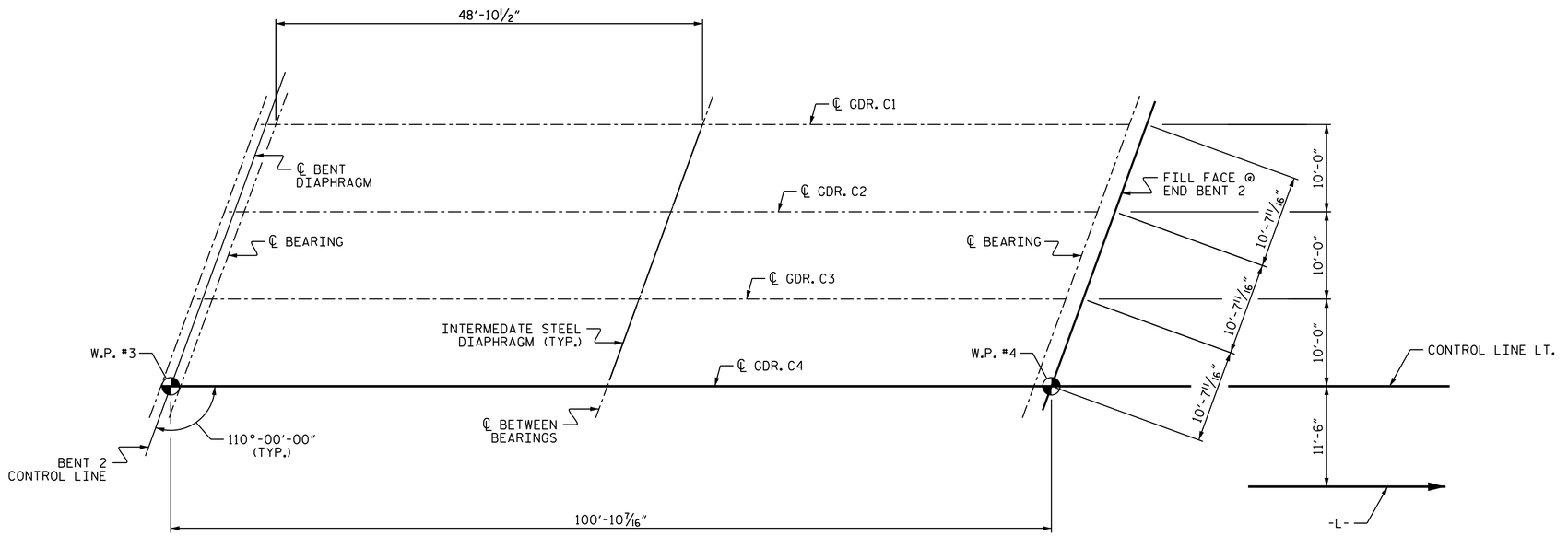
RICHARD F. WERTMAN
2/20/2014



FIX. E4, P3 FIX. E4, P4

FIX. E4

SPAN C

FRAMING PLAN

PROJECT NO. R-2915B

ASHE COUNTY

STATION: 242+67.42 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

FRAMING PLAN

SBL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-13
1			3			TOTAL SHEETS
2			4			35

DRAWN BY : T.J. KIRSCHBAUM DATE : 4/28/14
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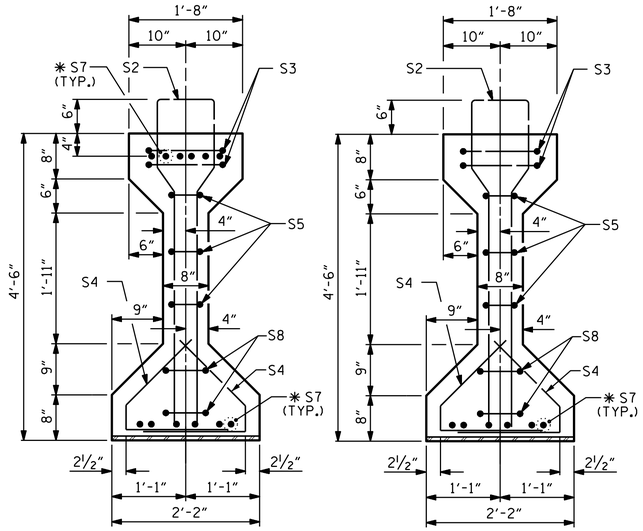
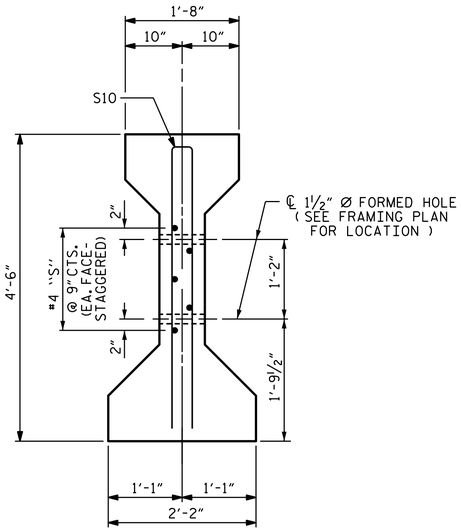
NORTH CAROLINA PROFESSIONAL SEAL 037180 ENGINEER RICHARD F. WERTMAN
2/20/2015

STR. NO. 4



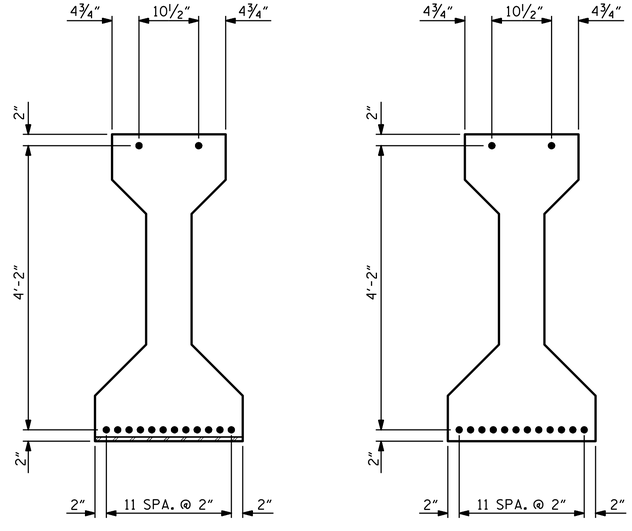
SECTION A-A

SECTION B-B



SECTION C-C

(S1 BARS NOT SHOWN)

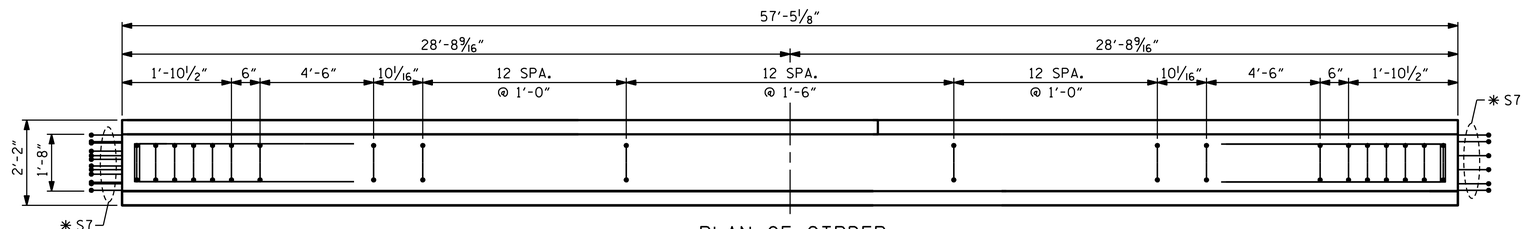


AT END OF GIRDER

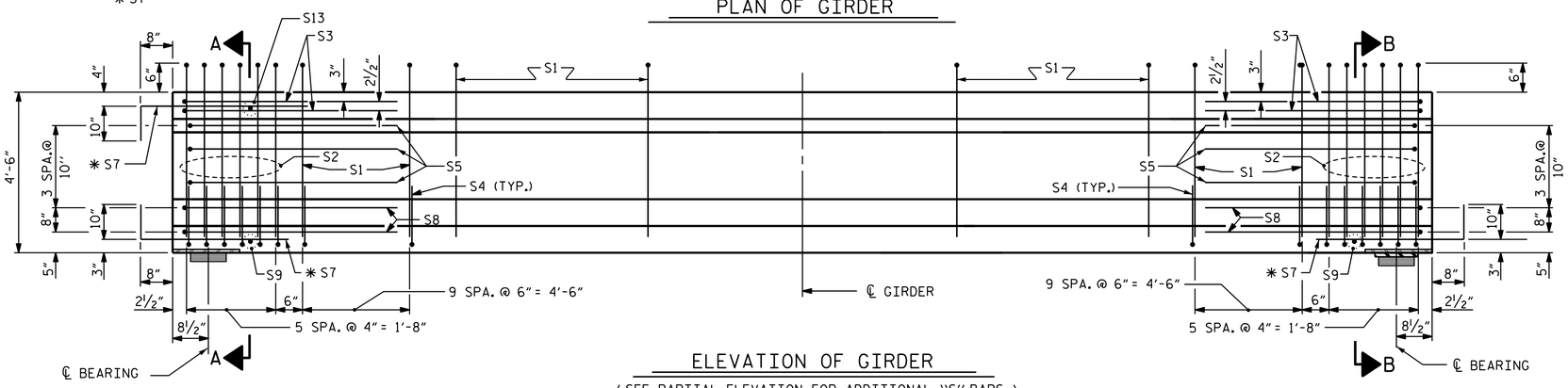
AT ℄ OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

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



PLAN OF GIRDER

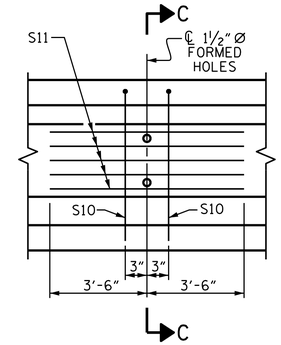


INTEGRAL END BENT

ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

FIX



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR ALL GIRDERS

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

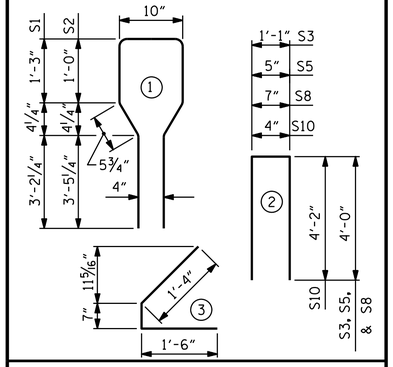
REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	57	#4	1	10'-8"	406
S2	12	#6	1	10'-8"	192
S3	4	#4	2	9'-1"	24
S4	64	#4	3	3'-5"	146
S5	6	#4	2	8'-5"	34
✱S7	18	#5	STR	3'-8"	69
S8	4	#4	2	8'-7"	23
S9	2	#3	STR	1'-10"	1
S10	2	#5	2	8'-8"	18
S11	5	#4	STR	7'-0"	23
S13	1	#3	STR	1'-4"	1

✱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.	8000 PSI CONCRETE C.Y.	0.6" Ø L.R. STRANDS No.
EXTERIOR GIRDER	937	11.7	14
INTERIOR GIRDER	937	11.7	14

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
4	57'-5⅛"	229'-8½"

PROJECT NO. R-2915B

ASHE COUNTY

STATION: 242+67.42 -L-

SHEET 1 OF 4

STR. NO. 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD AASHTO TYPE IV PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD SPANS A SBL

STD. NO. PCG6

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-14
1			3			TOTAL SHEETS
2			4			35

ASSEMBLED BY : T.J. KIRSCHBAUM	DATE : 4/26/14
CHECKED BY : R.F. WERTMAN	DATE : 8/15/14
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

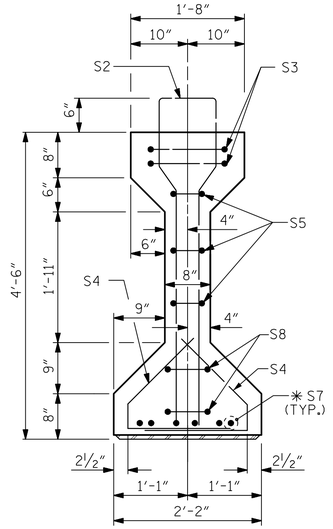
PLANS PREPARED BY:

Gannett Fleming
Excellence Delivered As Promised

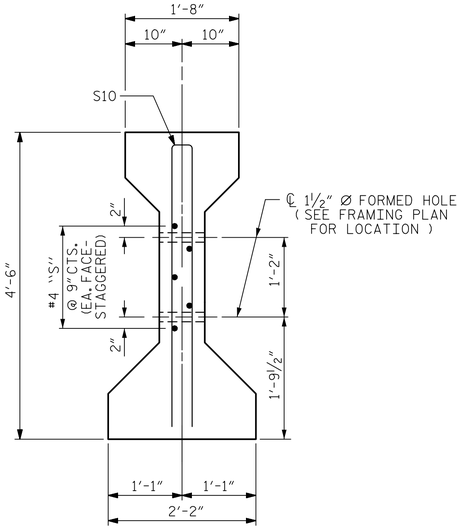
1121 Situs Court
Suite 170
Raleigh NC 27606-4279
(919) 859-4880
NC Lic. No. F-0270

THESE PLANS HAVE BEEN PROPERLY EXAMINED BY THE UNDERSIGNED. I HAVE DETERMINED THAT THEY COMPLY WITH EXISTING NORTH CAROLINA CODES, AND HAVE BEEN PROPERLY ADAPTED FOR USE IN THIS AREA.

NORTH CAROLINA PROFESSIONAL SEAL 037180 ENGINEER Richard F. Wertman
2/20/2014



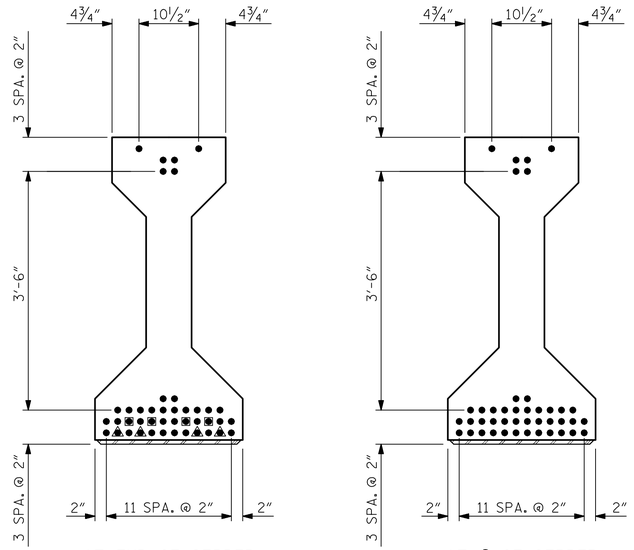
SECTION B-B



SECTION C-C

(S1 BARS NOT SHOWN)

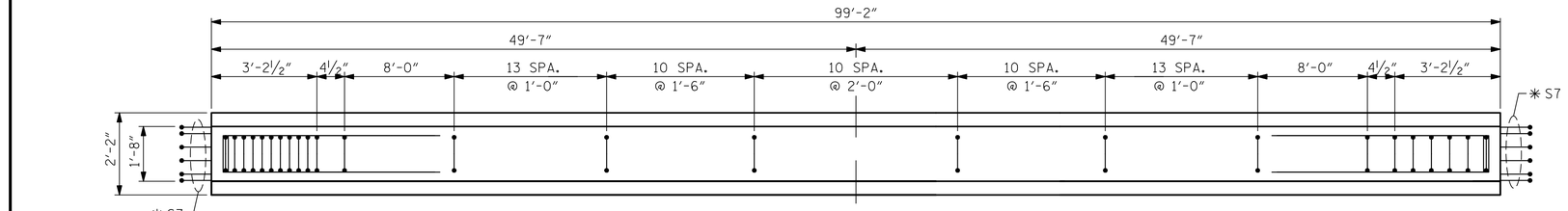
✳FOR S7 BARS, SEE DETAIL "A" OF PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS SHEET



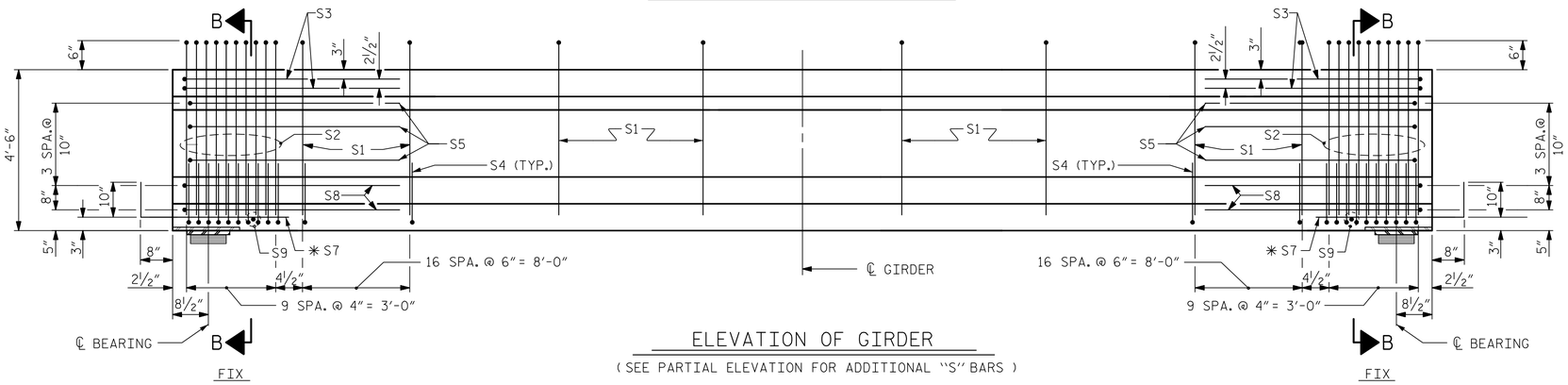
0.6″Ø LOW RELAXATION STRAND LAYOUT

DEBONDING LEGEND

- ● FULLY BONDED STRANDS
- ◙ STRANDS DEBONDED FOR 6′-0″ FROM ENDS OF GIRDER
- ▲ STRANDS DEBONDED FOR 12′-0″ FROM ENDS OF GIRDER

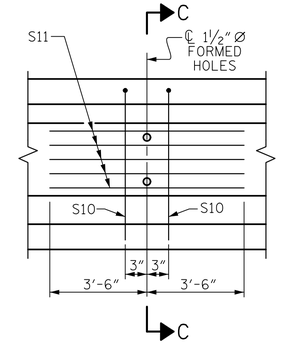


PLAN OF GIRDER



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR ALL GIRDERS

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

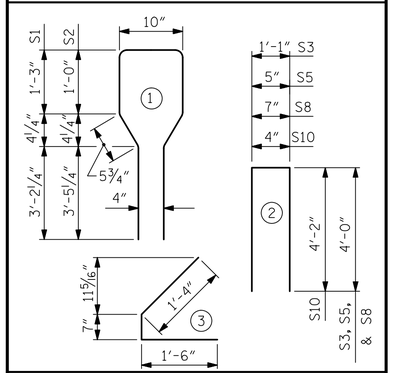
REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	89	#4	1	10′-8″	634
S2	20	#6	1	10′-8″	320
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
S11	5	#4	STR	7′-0″	23

✳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.	8000 PSI CONCRETE C.Y.	0.6″Ø L.R. STRANDS No.
EXTERIOR GIRDER	1269	20.1	42
INTERIOR GIRDER	1269	20.1	42

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
4	99′-2″	396′-8″

PROJECT NO. R-2915B

ASHE COUNTY

STATION: 242+67.42 -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
SBL

ASSEMBLED BY : T.J. KIRSCHBAUM	DATE : 4/26/14
CHECKED BY : R.F. WERTMAN	DATE : 8/15/14
DRAWN BY : ELR 8/91	REV. 10/17/00R RWW/LES
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PLANS PREPARED BY:
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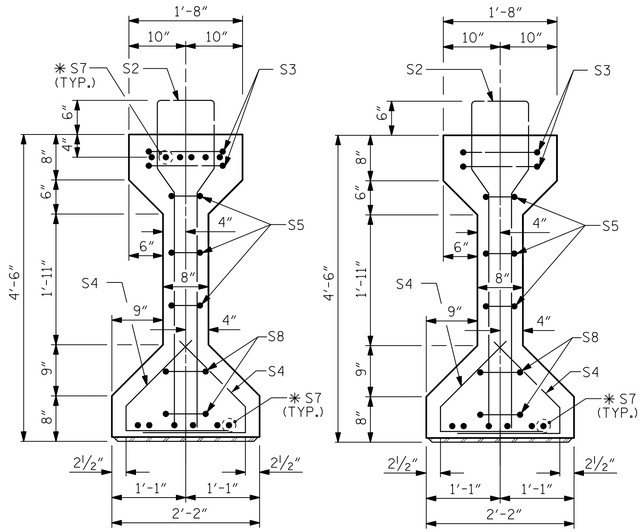
NORTH CAROLINA PROFESSIONAL SEAL 037180 ENGINEER RICHARD W. WERTMAN
6/2/2015

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-15
1	TJK	3/18/15	3			TOTAL SHEETS
2			4			35

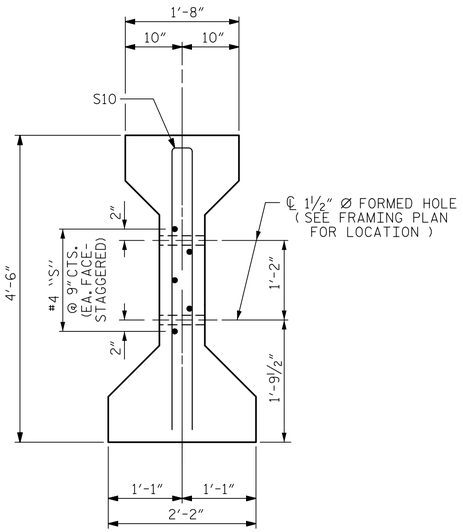
STR. NO. 4

STD. NO. PCG6



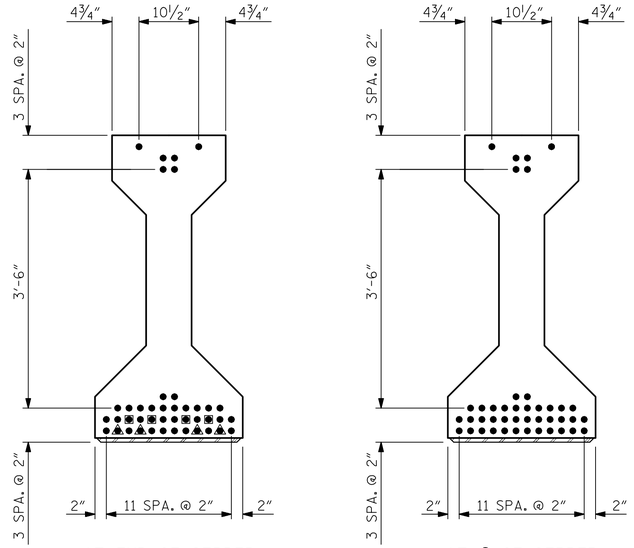
SECTION A-A

SECTION B-B



SECTION C-C

(S1 BARS NOT SHOWN)



0.6"Ø LOW RELAXATION STRAND LAYOUT

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

DEBONDING LEGEND

- ● FULLY BONDED STRANDS
- ◙ STRANDS DEBONDED FOR 6'-0" FROM ENDS OF GIRDER
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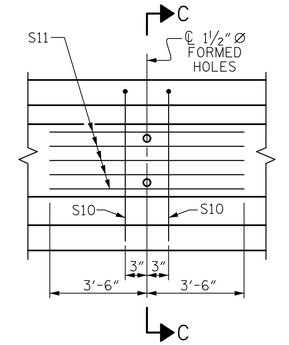
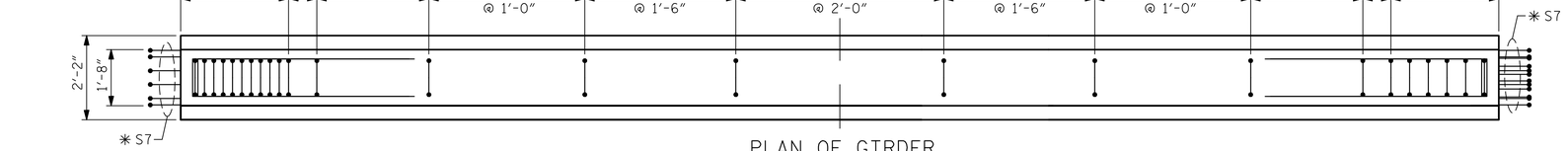
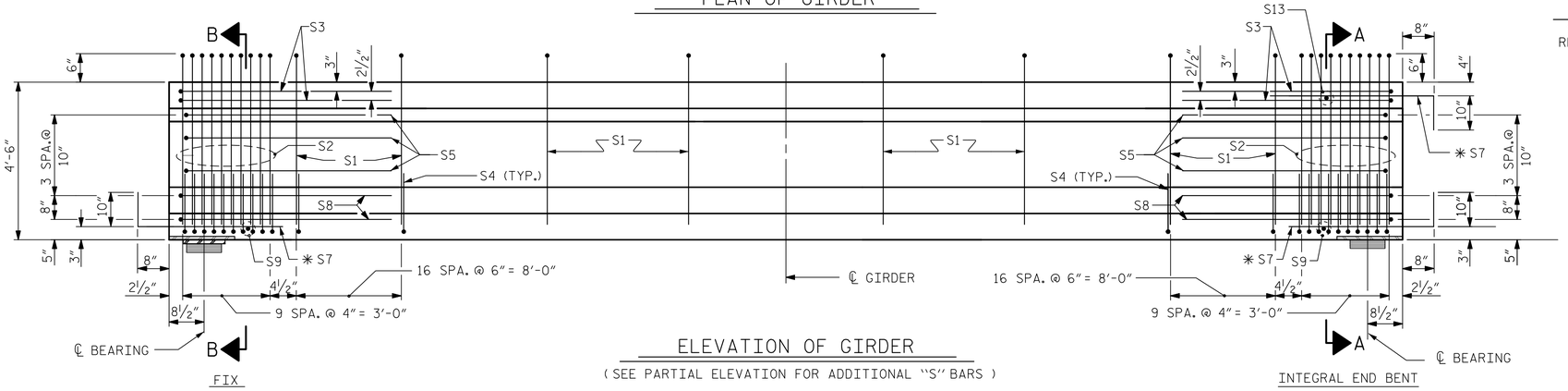


PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR ALL GIRDERS



PLAN OF GIRDER



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

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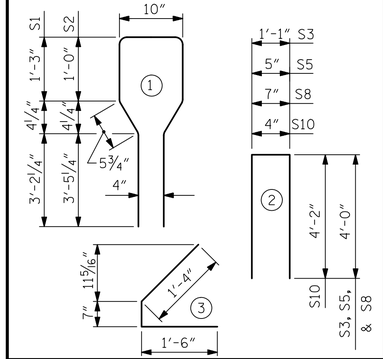
✳S7	18	#5	STR	3'-8"	69
S8	4	#4	2	8'-7"	23
S9	2	#3	STR	1'-10"	1
S10	2	#5	2	8'-8"	18
S11	5	#4	STR	7'-0"	23
S13	1	#3	STR	1'-4"	1

✳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.	8000 PSI CONCRETE C.Y.	0.6"Ø L.R. STRANDS No.
EXTERIOR GIRDER	1293	20.1	42
INTERIOR GIRDER	1293	20.1	42

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
4	99'-2"	396'-8"

PROJECT NO. R-2915B

ASHE COUNTY

STATION: 242+67.42 -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
SBL

ASSEMBLED BY : T.J. KIRSCHBAUM	DATE : 4/26/14
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DRAWN BY : ELR 8/91	REV. 10/17/00R RWW/LES
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PLANS PREPARED BY:
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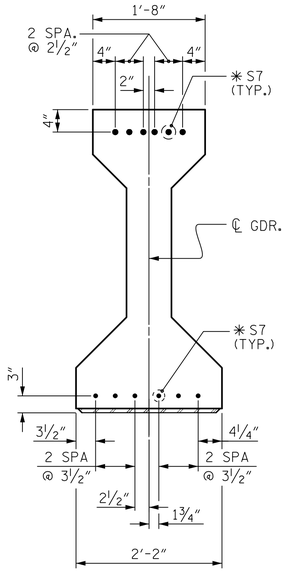
NORTH CAROLINA PROFESSIONAL SEAL 037180 ENGINEER RICHARD F. WERTMAN
6/2/2015

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-16
1	TJK	3/18/15	3			TOTAL SHEETS
2			4			35

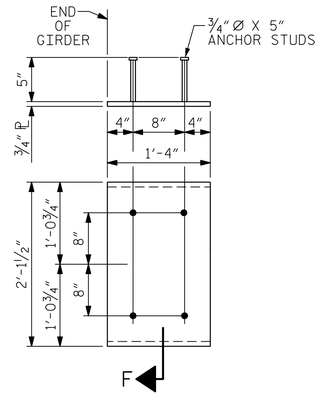
STR. NO. 4

STD. NO. PCG6



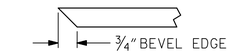
DETAIL "A"

(FOR AASHTO TYPE IV GIRDERS)



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

(2 REQ'D PER GIRDER)



SECTION "F"

(SEE NOTES)

NOTES

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

ALL REINFORCING STEEL SHALL BE GRADE 60.

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 6400 PSI.

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

THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4", SHALL BE RAKED TO A DEPTH OF ¼".

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

0.6"Ø LOW RELAXATION	SPAN A																					
	GIRDERS 1 & 4											GIRDERS 2 & 3										
TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.010	0.019	0.027	0.031	0.033	0.031	0.027	0.019	0.010	0	0	0.010	0.019	0.027	0.031	0.033	0.031	0.027	0.019	0.010	0
✳ DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.005	0.011	0.015	0.017	0.018	0.017	0.015	0.011	0.005	0	0	0.006	0.012	0.016	0.019	0.020	0.019	0.016	0.012	0.006	0
FINAL CAMBER ↑	0	1/16"	1/8"	1/8"	3/16"	3/16"	3/16"	1/8"	1/8"	1/16"	0	0	1/16"	1/16"	1/8"	1/8"	1/8"	1/8"	1/8"	1/16"	1/16"	0

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

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

0.6"Ø LOW RELAXATION	SPANS B & C																					
	GIRDERS 1 & 4											GIRDERS 2 & 3										
TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.062	0.118	0.162	0.189	0.199	0.189	0.162	0.118	0.062	0	0	0.062	0.118	0.162	0.189	0.199	0.189	0.162	0.118	0.062	0
✳ DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.050	0.098	0.135	0.159	0.167	0.159	0.135	0.098	0.050	0	0	0.055	0.108	0.149	0.175	0.184	0.175	0.149	0.108	0.055	0
FINAL CAMBER ↑	0	1/8"	1/4"	5/16"	3/8"	3/8"	3/8"	5/16"	1/4"	1/8"	0	0	1/16"	1/8"	3/16"	3/16"	3/16"	3/16"	3/16"	1/8"	1/16"	0

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

PROJECT NO. R-2915B

ASHE COUNTY

STATION: 242+67.42 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS

SBL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-17
1			3			TOTAL SHEETS
2			4			35

STR. NO. 4

STD. NO. PCG9

ASSEMBLED BY : T.J. KIRSCHBAUM DATE : 4/26/14
CHECKED BY : R.F. WERTMAN DATE : 8/16/14

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

REV. 5/1/06 TLA/GM
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PLANS PREPARED BY:
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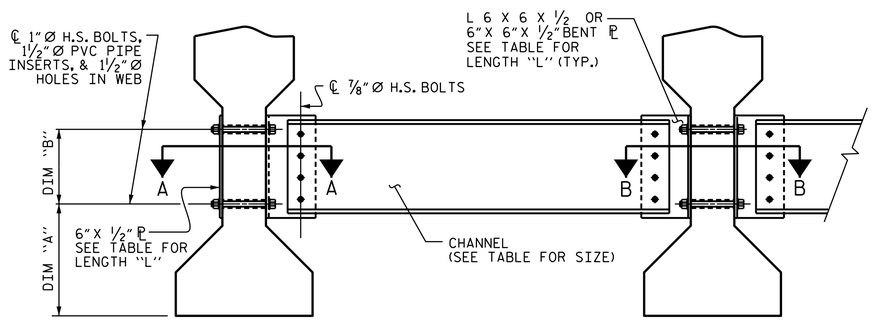
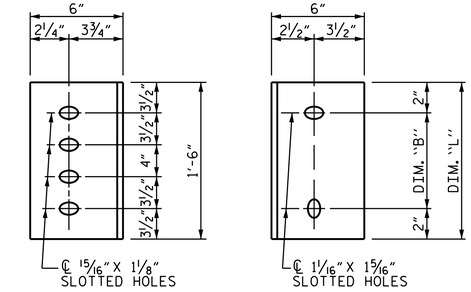
NORTH CAROLINA PROFESSIONAL SEAL 037180 ENGINEER RICHARD F. WERTMAN
3/20/2019



EXTERIOR GIRDER INTERIOR GIRDER

PART SECTION AT INTERMEDIATE DIAPHRAGM



DIAPHRAGM FACE WEB FACE

CONNECTOR PLATE DETAILS

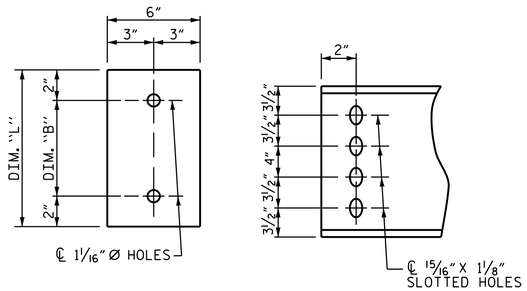


PLATE DETAILS CHANNEL END

STRUCTURAL STEEL NOTES

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

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

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

THE PLATES, BENT PLATES, CHANNELS, AND ANGLES SHALL BE GALVANIZED OR METALLIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

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

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

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

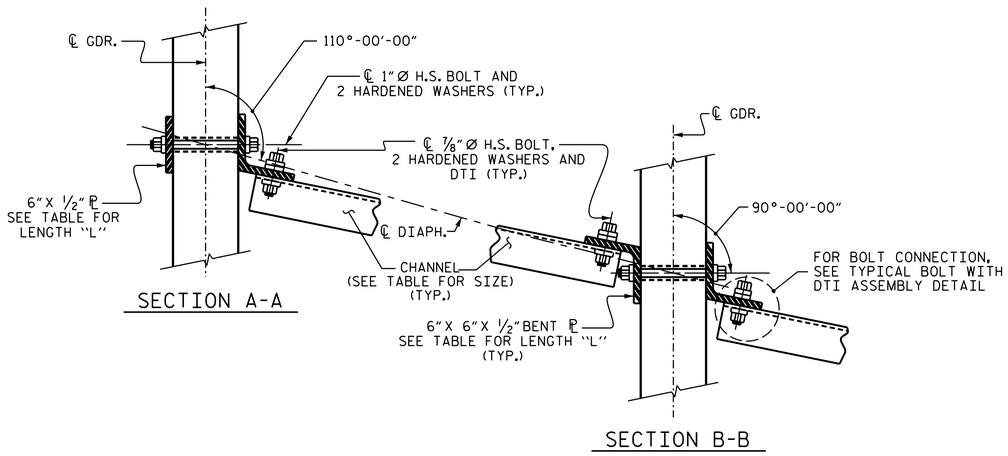
FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST ¼"PROJECTION BEYOND THE NUT.

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

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

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

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

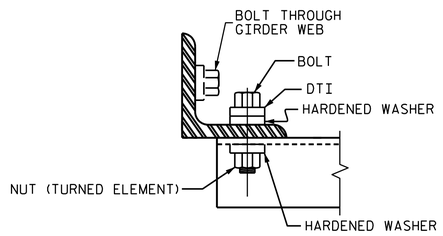


SECTION A-A SECTION B-B

CONNECTION DETAILS

TABLE

GIRDER TYPE	CHANNEL SIZE	DIM "A"	DIM "B"	DIM "L"
IV	MC 18 x 42.7	1'-9½"	1'-2"	1'-6"



BOLT WITH DTI ASSEMBLY DETAIL

PROJECT NO. R-2915B

ASHE COUNTY

STATION: 242+67.42 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE IV PRESTRESSED CONCRETE GIRDERS

SBL

ASSEMBLED BY : T.J. KIRSCHBAUM	DATE : 4/26/14
CHECKED BY : R.F. WERTMAN	DATE : 8/16/14
DRAWN BY : TLA 6/05	ADDED 10/21/05
CHECKED BY : VC 6/05	REV. 5/1/06RRR KMM/GM
	REV. 10/1/11 MAA/GM

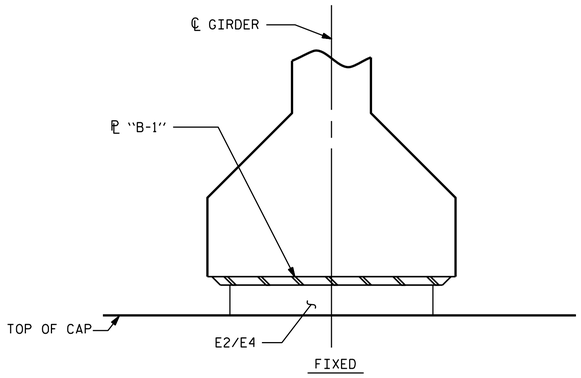
PLANS PREPARED BY:
Gannett Fleming
Excellence Delivered As Promised
1121 Situs Court
Suite 170
Raleigh NC 27606-4279
(919) 859-4880
NC Lic. No. F-0270

THESE PLANS HAVE BEEN PROPERLY EXAMINED BY THE UNDERSIGNED. I HAVE DETERMINED THAT THEY COMPLY WITH EXISTING NORTH CAROLINA CODES, AND HAVE BEEN PROPERLY ADAPTED FOR USE IN THIS AREA.

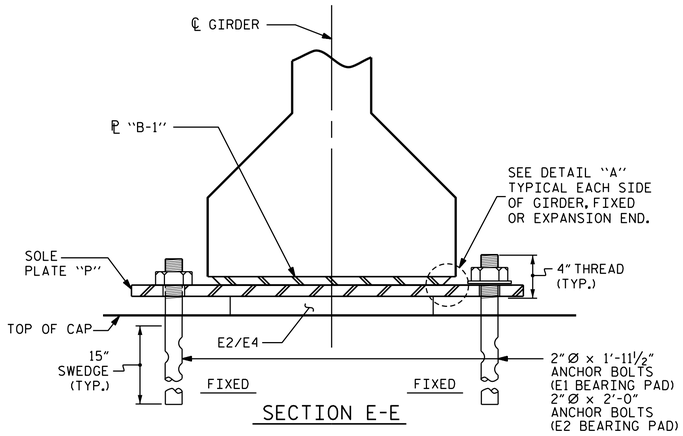
NORTH CAROLINA PROFESSIONAL SEAL 037180 ENGINEER R. F. WERTMAN
2/20/2015

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-18
1			3			TOTAL SHEETS
2			4			35

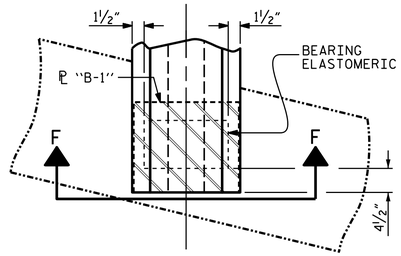
STR. NO. 4 STD. NO. PCG10



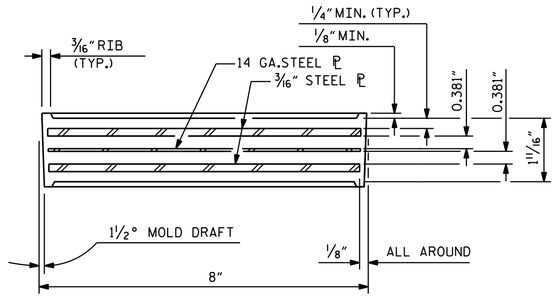
SECTION F-F



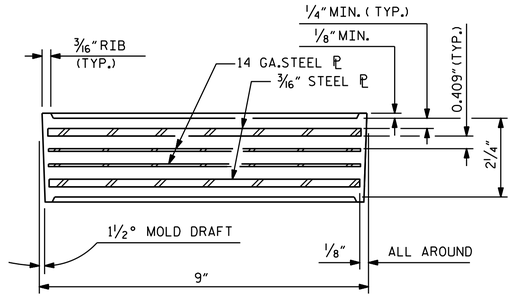
SECTION E-E



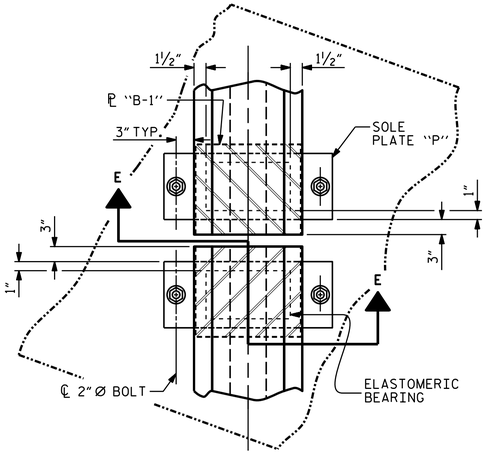
TYPICAL PLAN
(SHOWING INTEGRAL END BENT)



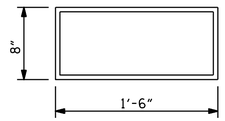
TYPICAL SECTION OF ELASTOMERIC BEARINGS



TYPICAL SECTION OF ELASTOMERIC BEARINGS



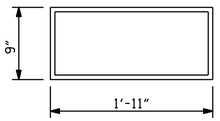
TYPICAL PLAN
(SHOWING CONTINUOUS BENT)



E2 (8 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING

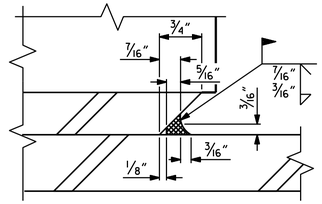
TYPE III



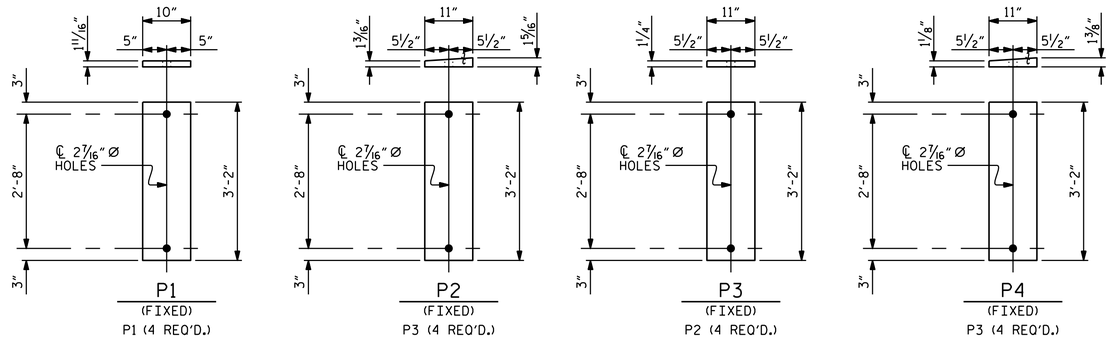
E4 (16 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING

TYPE V



DETAIL "A"



SOLE PLATE DETAILS ("P")

NOTES

AT ALL FIXED POINTS OF SUPPORT, NUTS FOR ANCHOR BOLTS ARE TO BE TIGHTENED FINGER TIGHT AND THEN BACKED OFF ½ TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

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

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

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

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

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

ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. SHOP DRAWINGS ARE NOT REQUIRED FOR ANCHOR BOLT, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

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

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

LOAD RATINGS	
	MAX. D.L. + L.L.
TYPE III	170 K
TYPE V	320 K

PROJECT NO. R-2915B

ASHE COUNTY

STATION: 242+67.42 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
ELASTOMERIC BEARING DETAILS
PRESTRESSED CONCRETE GIRDER
SUPERSTRUCTURE
SBL

ASSEMBLED BY : T.J. KIRSCHBAUM	DATE : 4/28/14
CHECKED BY : R.F. WERTMAN	DATE : 8/16/14
DRAWN BY : EEM 2/97	REV. 10/1/11 MAA/GM
CHECKED BY : VAP 2/97	REV. 6/13 AAC/MAA
	REV. 1/15 MAA/TMG

PLANS PREPARED BY:
Gannett Fleming
Excellence Delivered As Promised
1121 Situs Court
Suite 170
Raleigh NC 27606-4279
(919) 859-4880
NC Lic. No. F-0270

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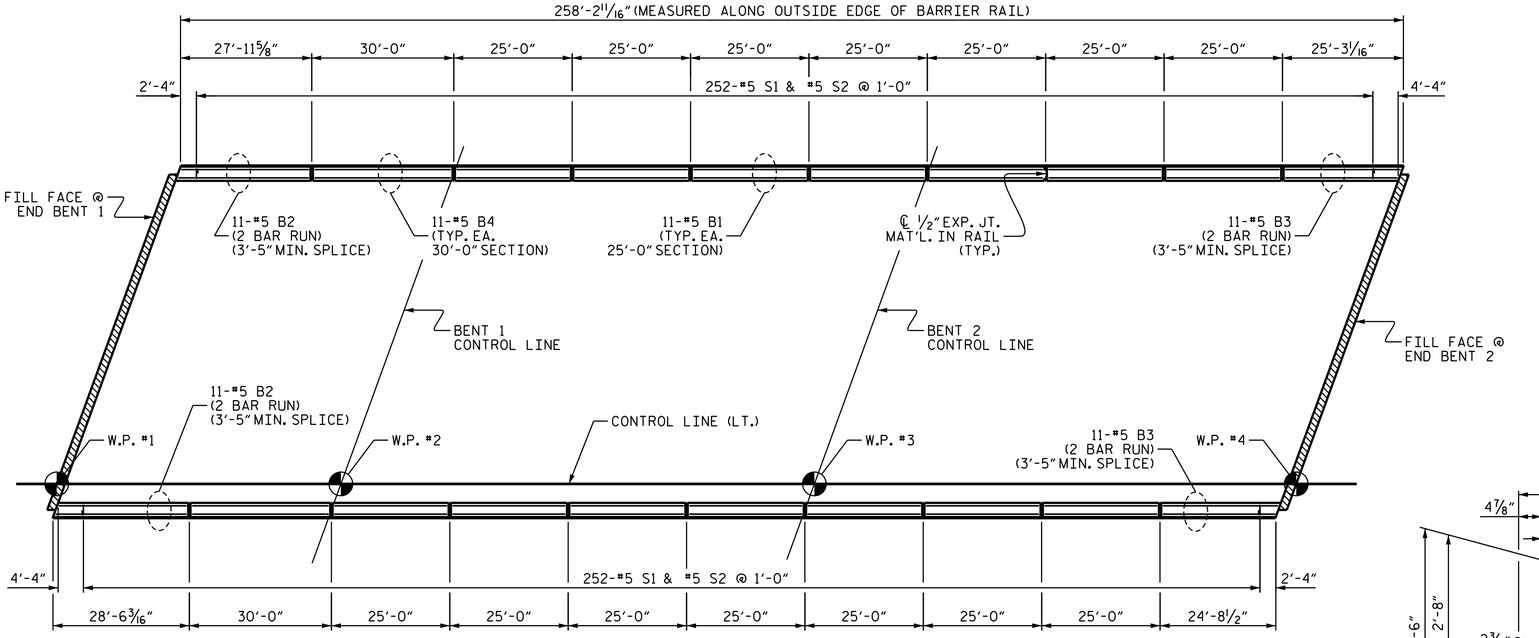
NORTH CAROLINA PROFESSIONAL SEAL 037180 ENGINEER Richard F. Wertman
2/20/2019

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-19
1			3			TOTAL SHEETS
2			4			35

STR. NO. 4

STD. NO. EB3
STD. NO. EB4



PLAN

NOTES

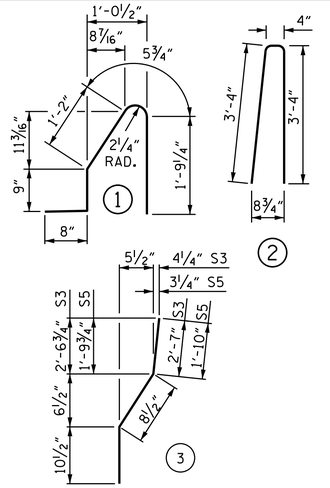
THE BARRIER RAIL IN A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

THE #5 S3, S4, S5 AND S6 BARS SHALL BE INSTALLED, USING AN ADHESIVE ANCHORING SYSTEM, AFTER SAWING THE JOINT. THE YIELD LOAD FOR THE #5 S3, S4, S5 AND S6 BARS IS 18.6 KIPS. FIELD TESTING FOR THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

BAR TYPES



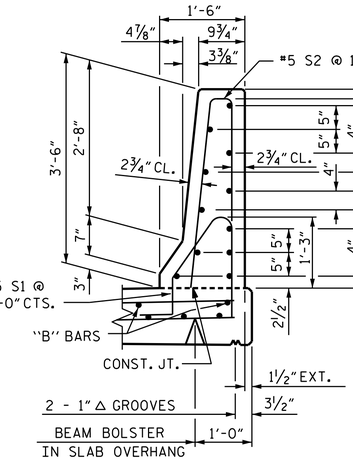
ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

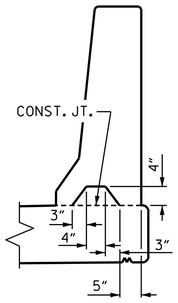
FOR CONCRETE BARRIER RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	154	#5	STR	24'-7"	3949
* B2	44	#5	STR	15'-10"	727
* B3	44	#5	STR	14'-2"	650
* B4	22	#5	STR	29'-6"	677
* S1	504	#5	1	4'-10"	2541
* S2	504	#5	2	7'-0"	3680
* S3	4	#5	3	4'-2"	17
* S4	4	#5	STR	4'-0"	17
* S5	8	#5	3	3'-5"	29
* S6	8	#5	STR	3'-3"	27

*EPOXY COATED REINFORCING STEEL	12,314 LBS.
CLASS AA CONCRETE	70.2 CU. YDS.
CONCRETE BARRIER RAIL	516.5 LIN. FT.

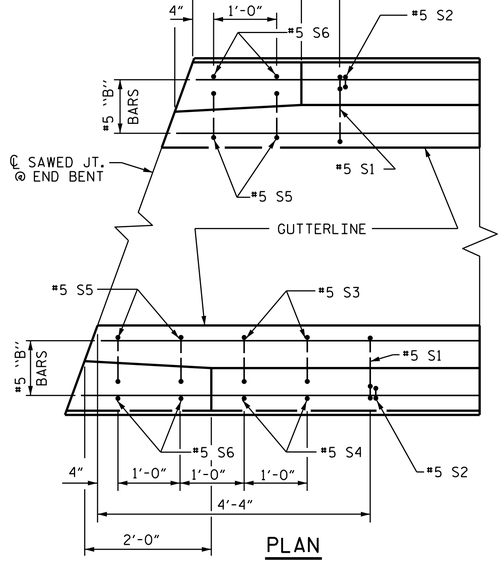


SECTION THRU RAIL

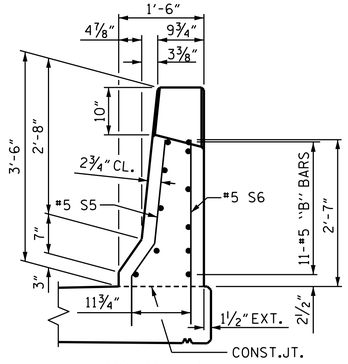


SECTION S-S

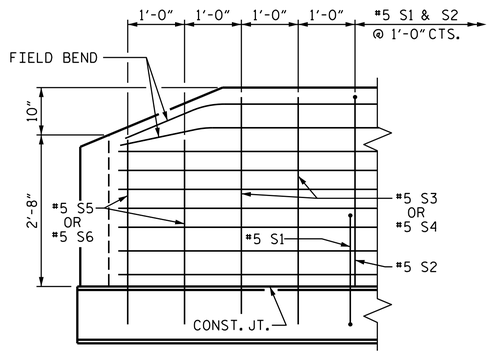
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)



PLAN



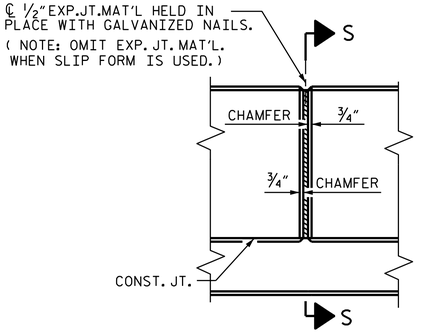
END VIEW



SIDE VIEW

END OF RAIL DETAILS

FOR ADHESIVE ANCHORING AT SAWED JOINTS



ELEVATION AT EXPANSION JOINTS

BARRIER RAIL DETAILS

PROJECT NO. R-2915B

ASHE COUNTY

STATION: 242+67.42 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

CONCRETE BARRIER RAIL

SBL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-20
1			3			TOTAL SHEETS
2			4			35

STR. NO. 4 STD. NO. CBR1

ASSEMBLED BY : T.J. KIRSCHBAUM	DATE : 4/25/14	
CHECKED BY : R.F. WERTMAN	DATE : 8/16/14	
DRAWN BY : ARB 5/87	REV. 10/1/11	MAA/GM
CHECKED BY : SJD 9/87	REV. 7/12	MAA/GM
	REV. 6/13	MAA/GM

PLANS PREPARED BY:
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Raleigh NC 27606-4279
(919) 859-4880
NC Lic. No. F-0270

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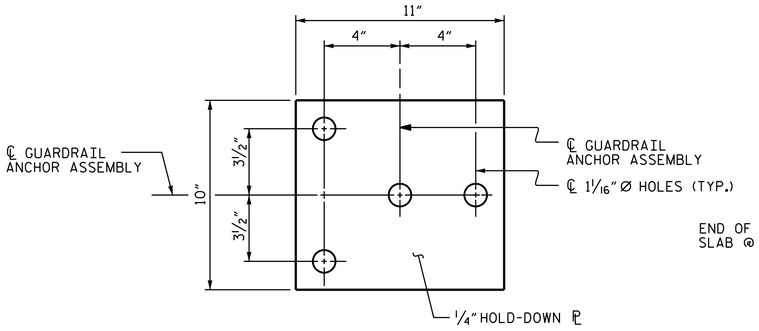
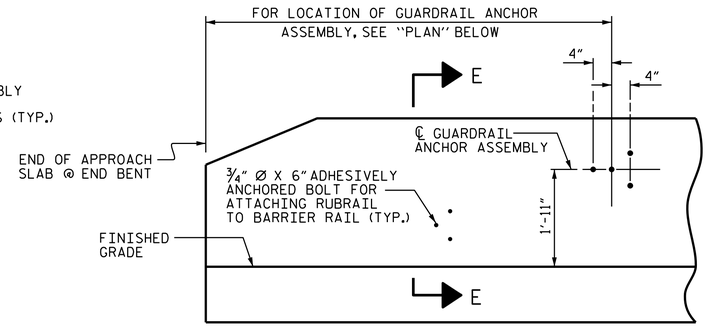
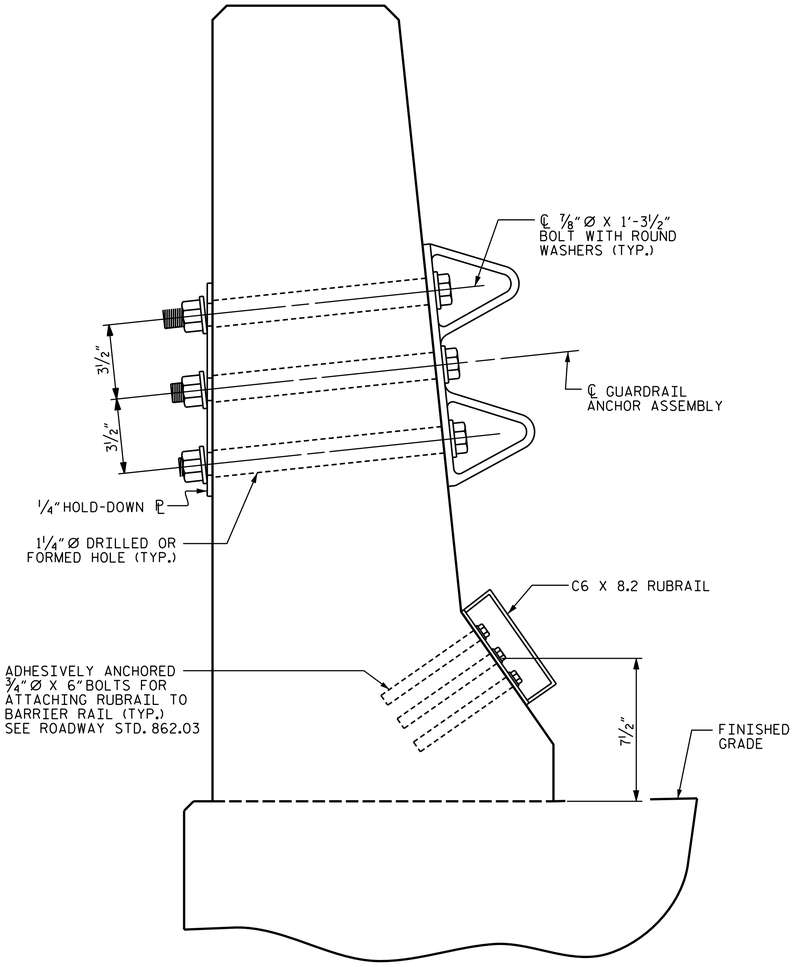


PLAN

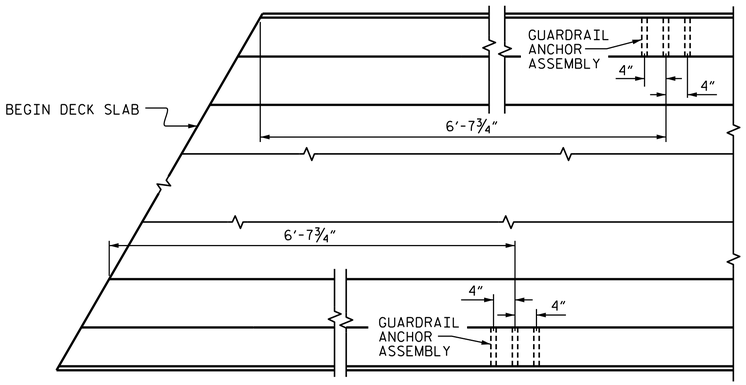


ELEVATION



SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

END BENT #1 SHOWN, END BENT #2 SIMILAR.

NOTES

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

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.)

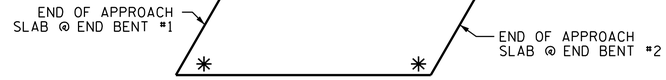
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.

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.

THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 3/4" Ø X 6" BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS. SEE ROADWAY STANDARD 862.03 FOR DETAILS AND LOCATION OF THE RUBRAIL.



SKETCH SHOWING POINTS OF ATTACHMENTS

✳ DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. R-2915B

ASHE COUNTY

STATION: 242+67.42 -L-

ASSEMBLED BY : T.J. KIRSCHBAUM	DATE : 4/24/14		
CHECKED BY : R.F. WERTMAN	DATE : 8/16/14		
DRAWN BY : TLA 5/06	REV. 10/1/11	MAA/GM	
CHECKED BY : GM 5/06	REV. 7/12	MAA/GM	
	REV. 6/13	MAA/GM	

PLANS PREPARED BY:
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Excellence Delivered As Promised
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NORTH CAROLINA PROFESSIONAL SEAL 037180 ENGINEER RICHARD F WERTMAN
2/20/2015

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

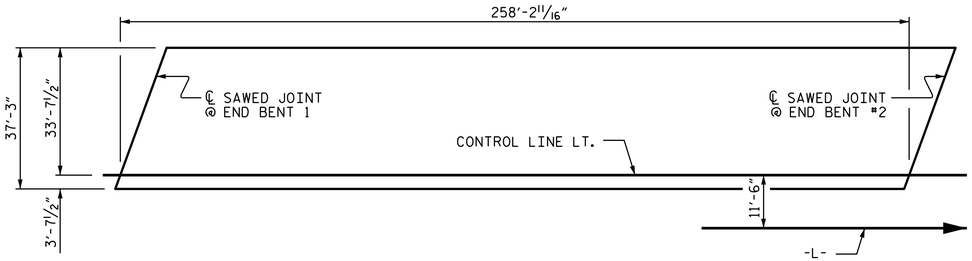
GUARDRAIL ANCHORAGE FOR BARRIER RAIL

SBL

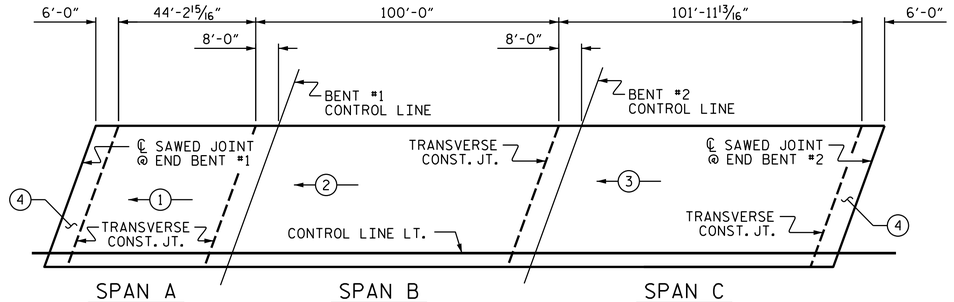
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-21
1			3			TOTAL SHEETS
2			4			35

STR. NO. 4

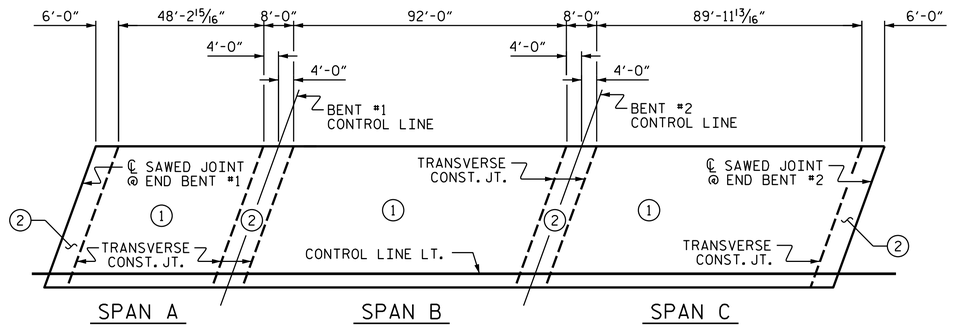
STD. NO. GRA2



LAYOUT FOR COMPUTING AREA REINFORCED CONCRETE DECK SLAB (SQ. FT. = 9619)



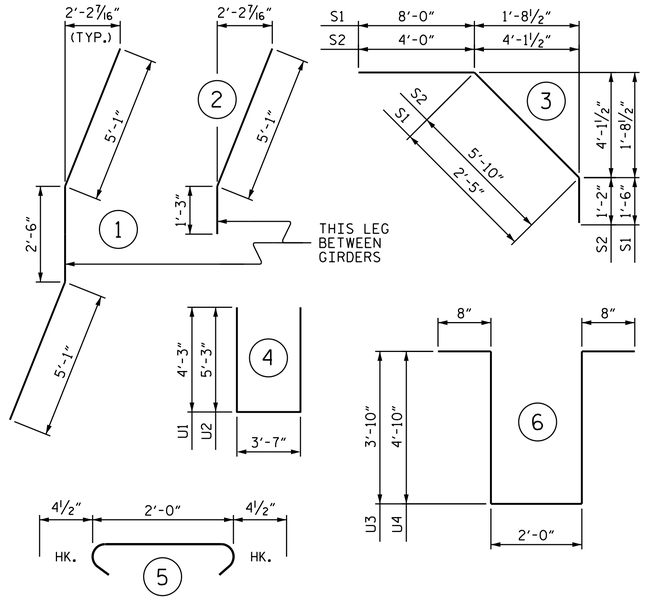
POURING SEQUENCE



OPTIONAL POURING SEQUENCE

POUR ② CAN NOT BE STARTED UNTIL BOTH ADJACENT ① POURS REACH A MINIMUM OF 3000 PSI

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ A1	489	#5	STR	36'-11"	18829	H1	8	#5	STR	9'-7"	80
A2	489	#5	STR	36'-11"	18829	H2	8	#5	STR	9'-4"	78
						H3	8	#5	STR	9'-11"	83
✳ A101	6	#5	STR	33'-4"	209	H4	8	#5	STR	9'-8"	81
✳ A102	6	#5	STR	29'-3"	183						
✳ A103	6	#5	STR	25'-1"	157	K1	20	#4	STR	23'-9"	317
✳ A104	6	#5	STR	21'-0"	131	K2	6	#4	STR	7'-11"	32
✳ A105	6	#5	STR	16'-10"	105	K3	18	#4	STR	9'-2"	110
✳ A106	6	#5	STR	12'-9"	80	K4	36	#4	STR	9'-7"	230
✳ A107	6	#5	STR	8'-7"	54	K5	18	#4	STR	8'-6"	102
✳ A108	6	#5	STR	4'-6"	28	K6	4	#4	STR	5'-5"	14
						K7	4	#4	STR	6'-1"	16
A201	6	#5	STR	33'-4"	209	K8	8	#4	STR	6'-4"	34
A202	6	#5	STR	29'-3"	183	K9	4	#4	STR	5'-9"	15
A203	6	#5	STR	25'-1"	157	K10	8	#4	STR	3'-10"	20
A204	6	#5	STR	21'-0"	131	K11	24	#4	STR	2'-10"	45
A205	6	#5	STR	16'-10"	105	K12	12	#4	STR	7'-4"	59
A206	6	#5	STR	12'-9"	80	K13	20	#4	2	6'-4"	85
A207	6	#5	STR	8'-7"	54	K14	20	#4	1	12'-8"	169
A208	6	#5	STR	4'-6"	28						
						✳ S1	60	#4	3	11'-11"	478
✳ B1	49	#7	STR	12'-0"	1202	✳ S2	60	#4	3	11'-0"	441
✳ B2	25	#4	STR	27'-9"	463	S3	192	#4	5	2'-9"	353
✳ B3	25	#7	STR	57'-6"	2938						
✳ B4	24	#7	STR	24'-0"	1177	U1	60	#4	4	12'-1"	484
✳ B5	50	#4	STR	18'-0"	601	U2	12	#4	4	14'-1"	113
✳ B6	25	#7	STR	25'-0"	1278	U3	12	#4	6	11'-0"	88
✳ B7	25	#7	STR	50'-3"	2568	U4	36	#4	6	13'-0"	313
✳ B8	24	#7	STR	30'-0"	1472						
✳ B9	50	#4	STR	25'-6"	852						
✳ B10	49	#7	STR	20'-0"	2003						
B11	220	#5	STR	53'-3"	12219						

REINFORCING STEEL = 34,916
✳ EPOXY COATED REINF. STEEL = 35,249

SUPERSTRUCTURE BILL OF MATERIAL

	CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	(CU. YDS.)	(LBS.)	(LBS.)
POUR #1	49.1		
POUR #2	122.9		
POUR #3	125.1		
POUR #4	80.2		
TOTALS ✳✳	377.3	34,916	35,249

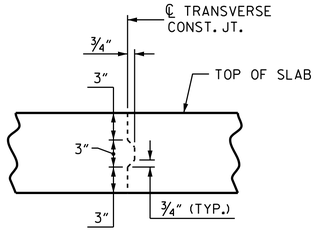
✳✳ QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED

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

BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPET, AND BARRIER RAIL		APPROACH SLABS		PARAPET AND BARRIER RAIL
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#4	2'-0"	1'-9"	2'-0"	1'-9"	2'-9"
#5	2'-6"	2'-2"	2'-6"	2'-2"	3'-5"
#6	3'-0"	2'-7"	3'-10"	2'-7"	4'-4"
#7	5'-3"	3'-6"			
#8	6'-10"	4'-7"			

GROOVING BRIDGE FLOORS

APPROACH SLABS	1550 SQ.FT.
BRIDGE DECK	8005 SQ.FT.
TOTAL	9555 SQ.FT.



TRANSVERSE CONSTRUCTION JOINT DETAIL

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

PROJECT NO. R-2915B
ASHE COUNTY
STATION: 242+67.42 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

BILL OF MATERIAL

SBL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-22
1			3			TOTAL SHEETS
2			4			35

ASSEMBLED BY : T.J. KIRSCHBUAM	DATE : 5/1/14
CHECKED BY : R.F. WERTMAN	DATE : 8/16/14
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

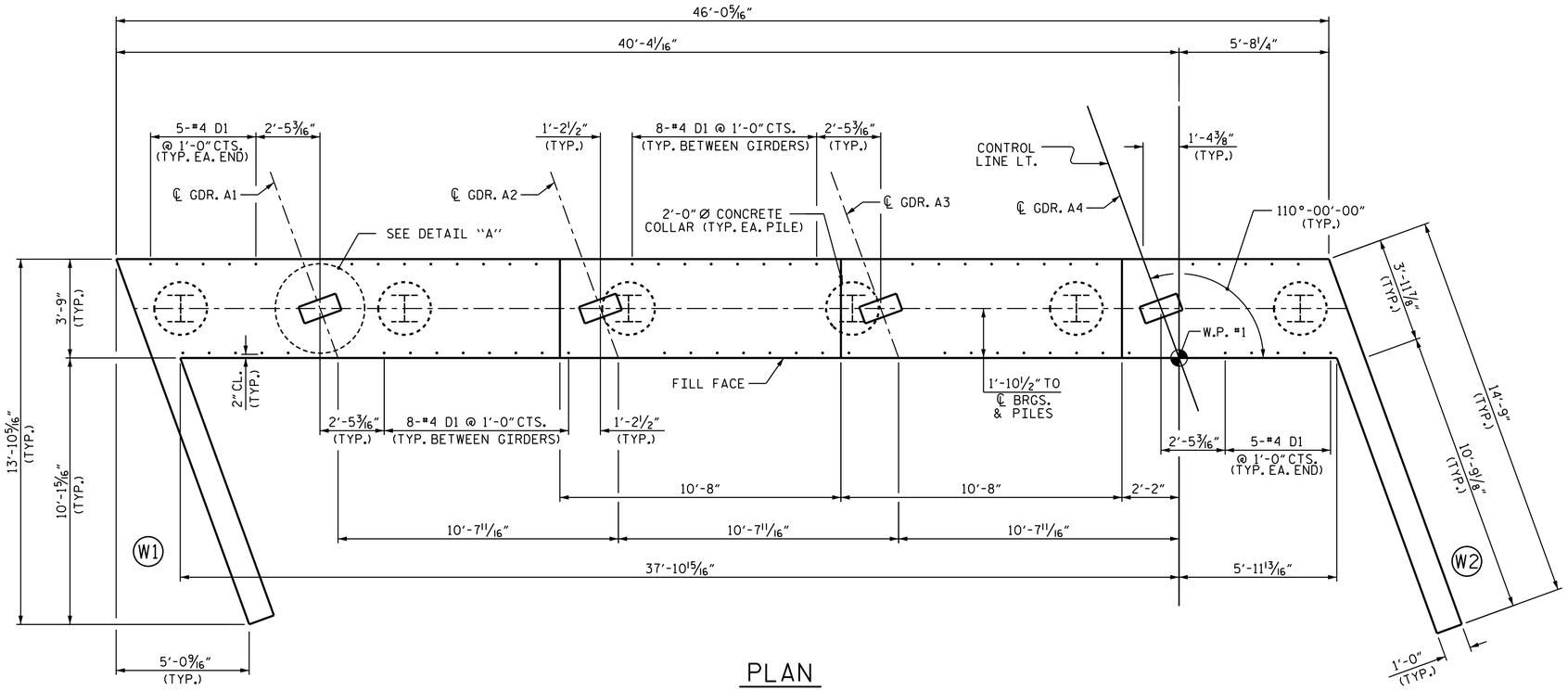
PLANS PREPARED BY:
Gannett Fleming
Excellence Delivered As Promised
1121 Situs Court
Suite 170
Raleigh NC 27606-4279
(919) 859-4880
NC Lic. No. F-0270

THESE PLANS HAVE BEEN PROPERLY EXAMINED BY THE UNDERSIGNED. I HAVE DETERMINED THAT THEY COMPLY WITH EXISTING NORTH CAROLINA CODES, AND HAVE BEEN PROPERLY ADAPTED FOR USE IN THIS AREA.

NORTH CAROLINA PROFESSIONAL SEAL 037180 ENGINEER RICHARD F. WERTMAN
2/20/2015

STR. NO. 4

STD. NO. BOM1



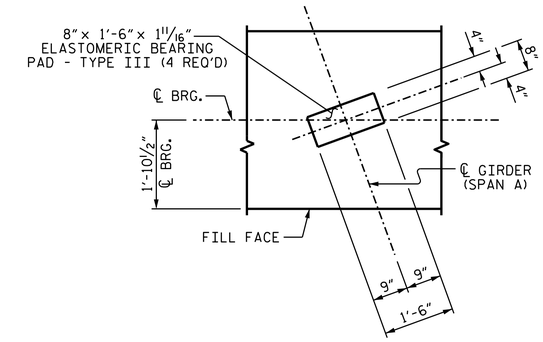
PLAN

NOTES:

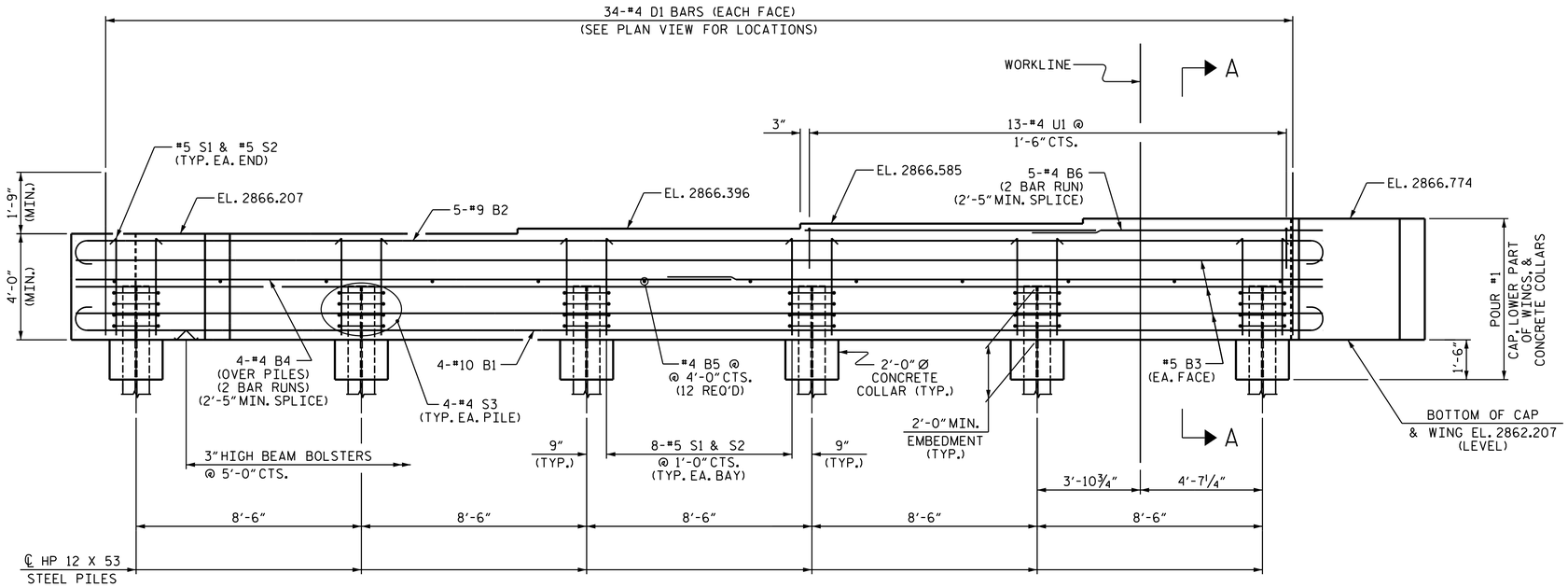
INSTALL THE 4" DIA. DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS. SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

#4 D1 BARS MAY BE SHIFTED SLIGHTLY TO AVOID STIRRUPS IN CAP.

SEE SUPERSTRUCTURE SHEETS FOR UPPER PART OF INTEGRAL END BENT DETAILS.



DETAIL "A"
(TYP. EA. GIRDER)



ELEVATION

PROJECT NO. R-2915B

ASHE COUNTY

STATION: 242+67.42 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT #1

SBL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-23
1			3			TOTAL SHEETS
2			4			35

STR. NO. 4

DRAWN BY : T.J. KIRSCHBAUM DATE : 10/08/14
CHECKED BY : E.E. DEETSCREEK DATE : 11/10/14
DESIGN ENGINEER OF RECORD : R.F. WERTMAN DATE : 11/13/14

PLANS PREPARED BY:
Gannett Fleming
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1121 Situs Court
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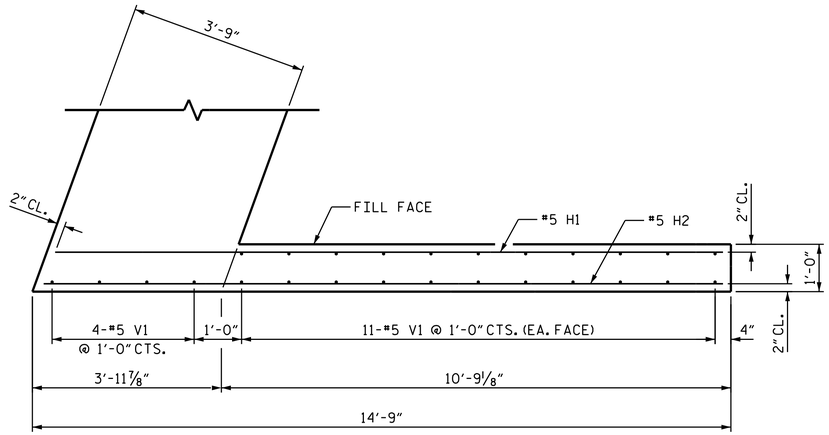
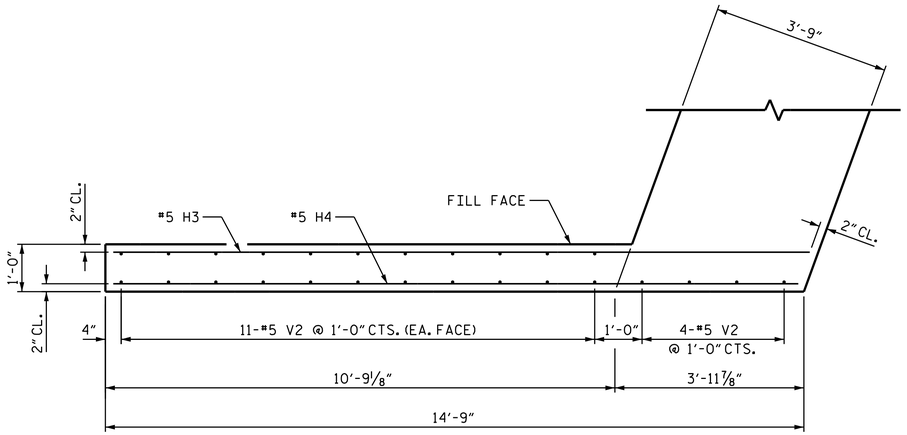
Raleigh NC 27606-4279
(919) 859-4880
NC Lic. No. F-0270

NORTH CAROLINA PROFESSIONAL SEAL 037180 ENGINEER RICHARD F. WERTMAN
2/20/2015



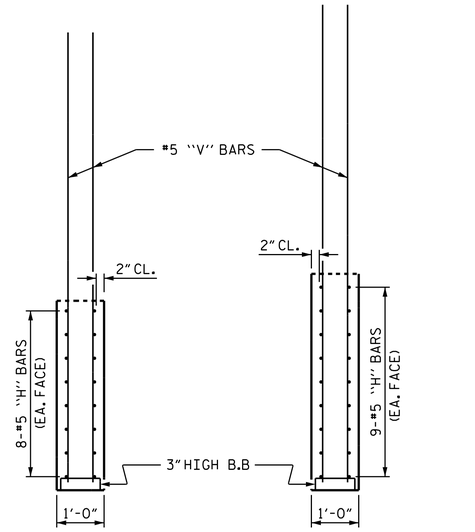
PLAN OF WING (W1)



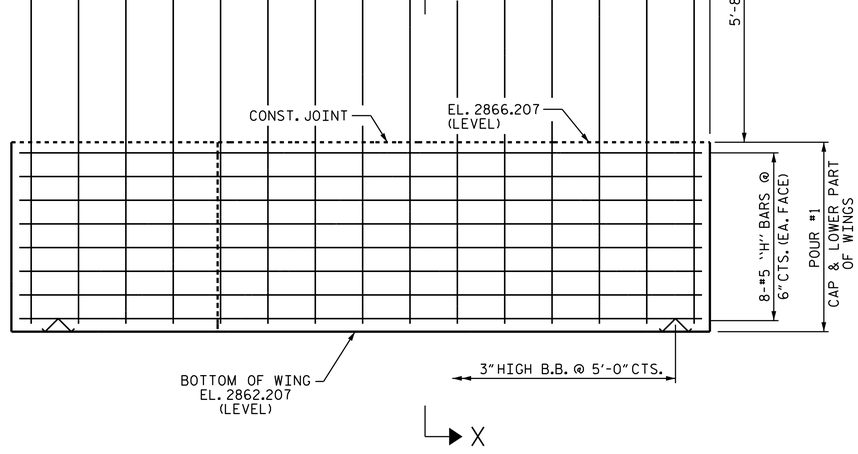
PLAN OF WING (W2)

NOTES:

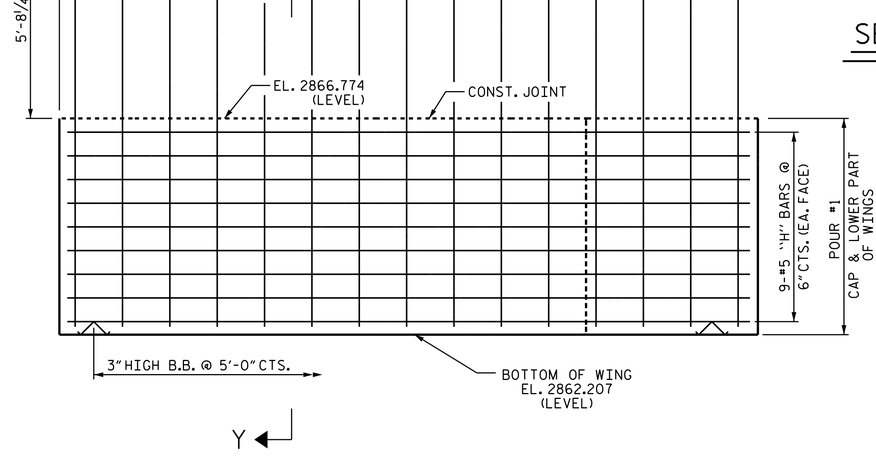
THE UPPER PORTION OF THE WINGS SHALL BE POURED WITH THE SUPERSTRUCTURE. FOR DETAILS AND REINFORCING STEEL, SEE SUPERSTRUCTURE DETAILS.



SECTION X-X SECTION Y-Y



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

PROJECT NO. R-2915B

ASHE COUNTY

STATION: 242+67.42 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL
END BENT #1

SBL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-24
1			3			TOTAL SHEETS
2			4			35

STR. NO. 4

DRAWN BY : T.J. KIRSCHBAUM DATE : 10/08/14
CHECKED BY : E.E. DEETSCREEK DATE : 11/10/14
DESIGN ENGINEER OF RECORD : R.F. WERTMAN DATE : 11/13/14

PLANS PREPARED BY:
Gannett Fleming
Excellence Delivered As Promised
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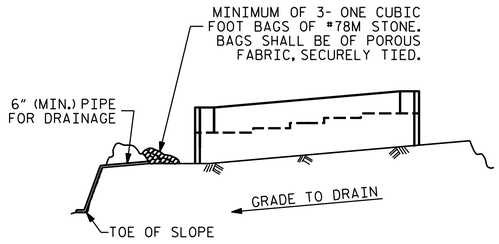
(919) 859-4880
NC Lic. No. F-0270

NORTH CAROLINA PROFESSIONAL SEAL 037180 ENGINEER
RICHARD F. WERTMAN
11/20/2014

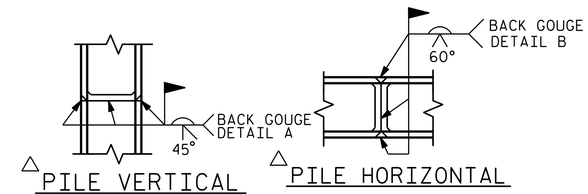


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

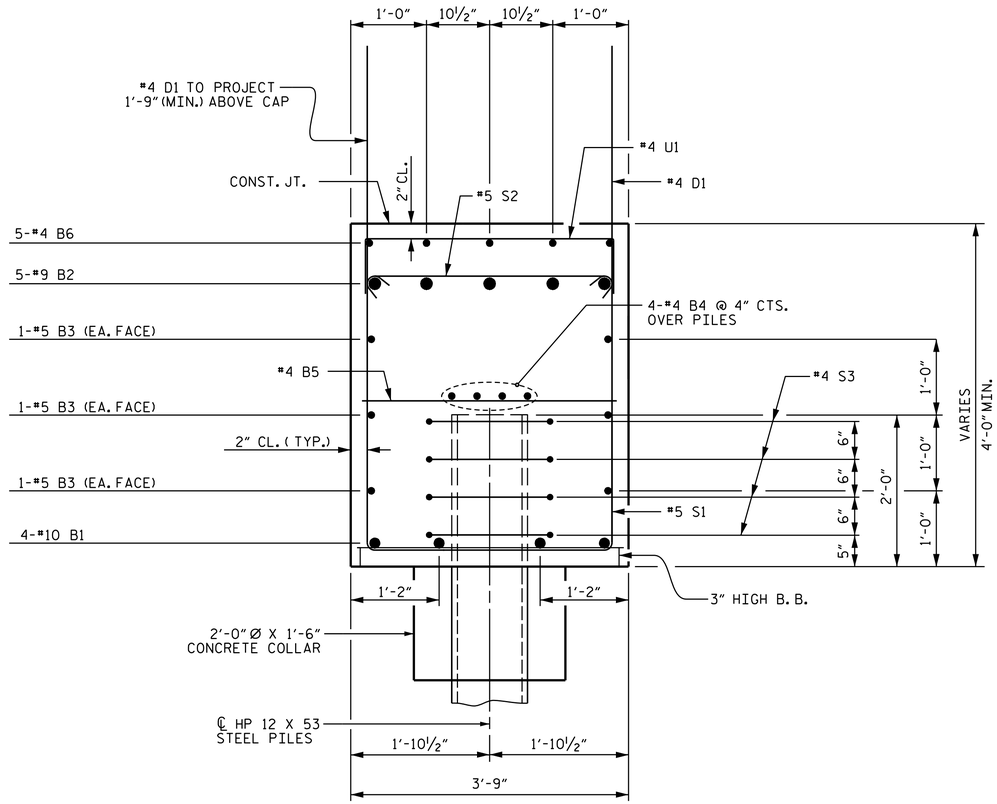
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



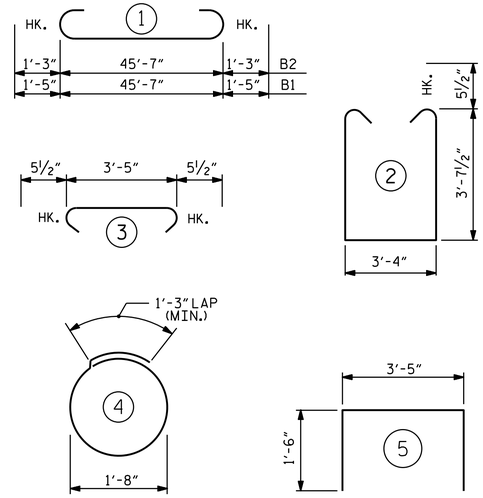
△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS



SECTION A-A

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT #1

BAR	No.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	1	48'-5"	833
B2	5	#9	1	48'-1"	817
B3	6	#5	STR	45'-8"	286
B4	8	#4	STR	24'-1"	129
B5	12	#4	STR	3'-5"	27
B6	10	#4	STR	11'-0"	73
D1	68	#4	STR	6'-2"	280
H1	8	#5	STR	14'-1"	118
H2	8	#5	STR	14'-4"	120
H3	9	#5	STR	14'-8"	138
H4	9	#5	STR	14'-5"	135
S1	42	#5	2	11'-6"	504
S2	42	#5	3	4'-4"	190
S3	24	#4	4	6'-6"	104
U1	13	#4	5	6'-5"	56
V1	26	#5	STR	9'-6"	258
V2	26	#5	STR	10'-1"	273

REINFORCING STEEL 4341 LBS.

CLASS A CONCRETE

POUR #1 (CAP, LOWER WINGS & COLLARS) 31.6 C.Y.

TOTAL 31.6 C.Y.

HP 12 X 53 STEEL PILES

No. = 6 165 LIN. FT.

DRAWN BY : T.J. KIRSCHBAUM DATE : 10/08/14
CHECKED BY : E.E. DEETSCREEK DATE : 11/10/14
DESIGN ENGINEER OF RECORD : R.F. WERTMAN DATE : 11/13/14

PLANS PREPARED BY:
Gannett Fleming
Excellence Delivered As Promised
1121 Situs Court
Suite 170
Raleigh NC 27606-4279
(919) 859-4880
NC Lic. No. F-0270

NORTH CAROLINA PROFESSIONAL SEAL 037180 ENGINEER RICHARD F. WERTMAN
2/20/2015

PROJECT NO. R-2915B
ASHE COUNTY
STATION: 242+67.42 -L-
SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

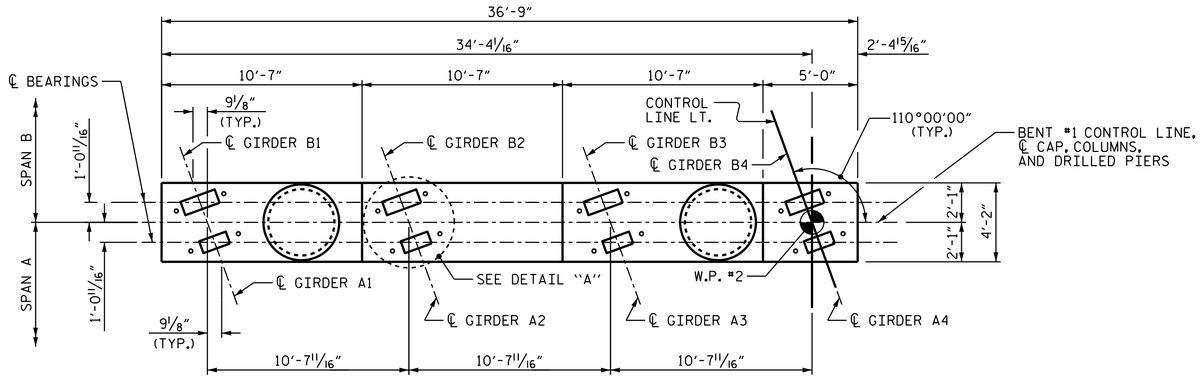
SUBSTRUCTURE

INTEGRAL END BENT #1

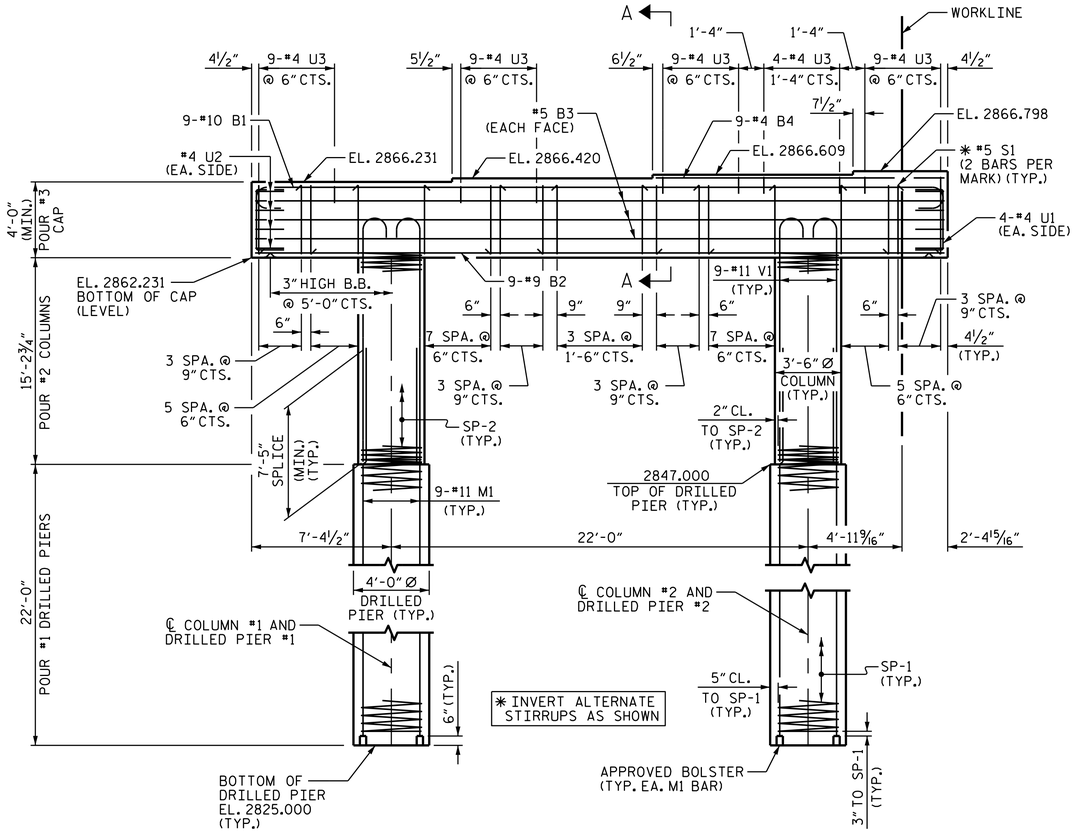
SBL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-25
1			3			TOTAL SHEETS
2			4			35

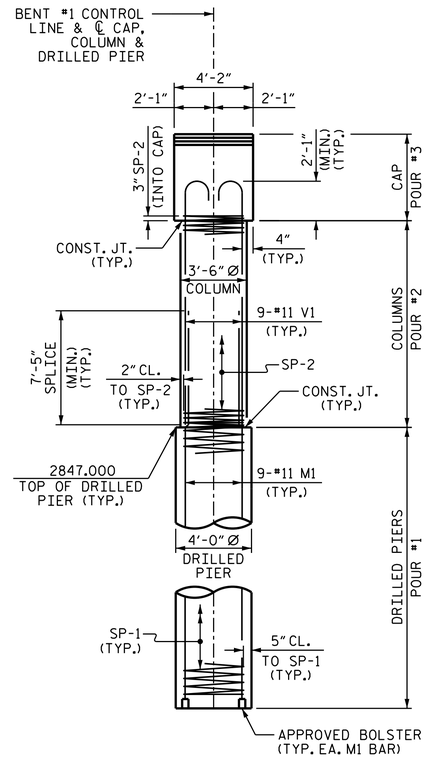
STR. NO. 4



PLAN



ELEVATION



END ELEVATION

NOTES

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

HOOKS ON V1 BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

FOR DRILLED PIERS, SEE SECTION 411 OF STANDARD SPECIFICATIONS.

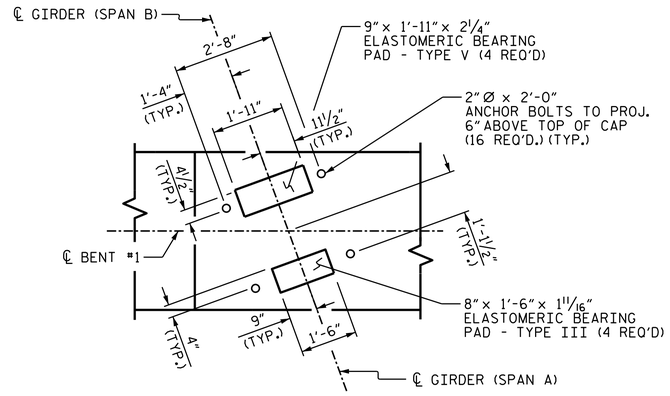
ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".

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

THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.

SPLICING OF THE LONGITUDINAL BARS IN THE DRILLED PIER WILL NOT BE PERMITTED.

FOR PERMANENT STEEL CASING, SEE SECTION 411 OF STANDARD SPECIFICATIONS.



DETAIL ″A″
(TYP. EA. GIRDER)

PROJECT NO. R-2915B

ASHE COUNTY

STATION: 242+67.42 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT #1

SBL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-26
1			3			TOTAL SHEETS
2			4			35

STR. NO. 4

DRAWN BY : T.J. KIRSCHBAUM DATE : 10/21/14
CHECKED BY : R.F. WERTMAN DATE : 11/7/14
DESIGN ENGINEER OF RECORD : R.F. WERTMAN DATE : 11/7/14

PLANS PREPARED BY:
Gannett Fleming
Excellence Delivered As Promised
1121 Situs Court
Suite 170
Raleigh NC 27606-4279
(919) 859-4880
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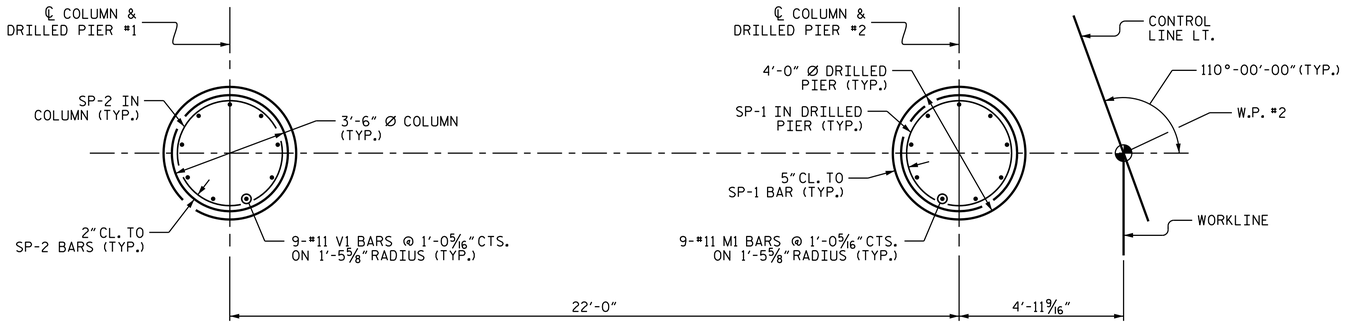
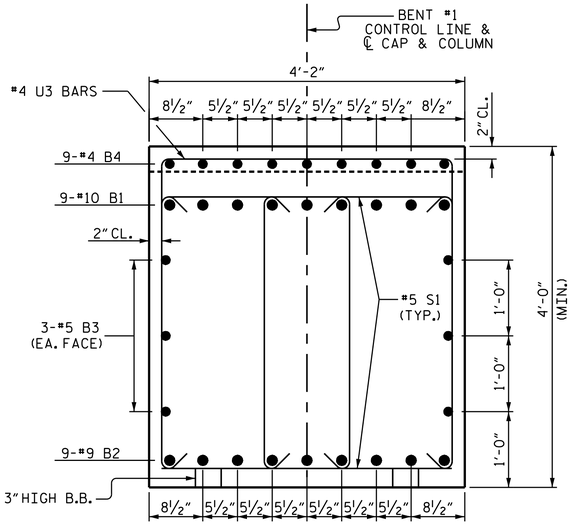
NORTH CAROLINA PROFESSIONAL SEAL 037180 ENGINEER
RICHARD F. WERTMAN
2/20/2015

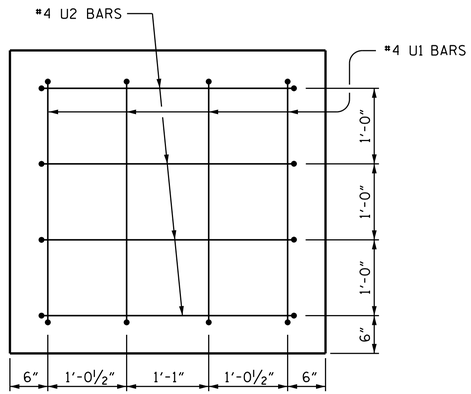


PLAN OF COLUMNS AND DRILLED PIERS

REINFORCING STEEL AND DIMENSIONS ARE TYPICAL FOR ALL COLUMNS AND DRILLED PIERS



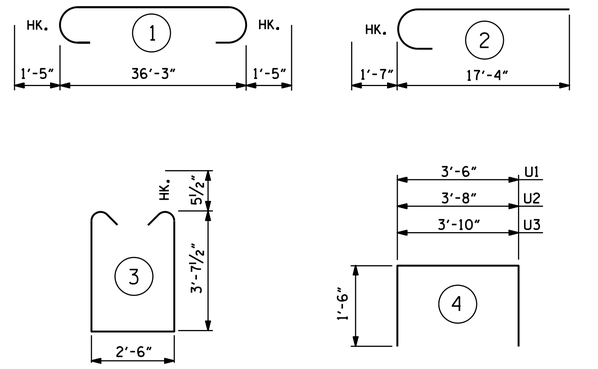
SECTION A-A



END VIEW

(TYP. EA. END)

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

BENT #1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	9	#10	1	39'-1"	1514
B2	9	#9	STR	36'-5"	1114
B3	6	#5	STR	36'-5"	228
B4	9	#4	STR	15'-3"	92
M1	18	#11	STR	32'-2"	3076
S1	96	#5	3	10'-8"	1068
U1	8	#4	4	6'-6"	35
U2	8	#4	4	6'-8"	36
U3	40	#4	4	6'-10"	183
V1	18	#11	2	18'-11"	1809

REINFORCING STEEL 9155 LBS.

SP-1	2	**	5	528'-11"	1103
SP-2	2	***	6	628'-7"	840

SPIRAL COLUMN REINFORCING STEEL 1943 LBS.

CLASS A CONCRETE BREAKDOWN

POUR 2 (COLUMNS) 10.9 C.Y.
POUR 3 (CAPS) 24.1 C.Y.

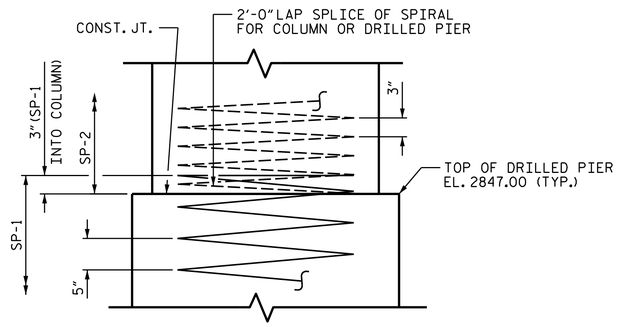
TOTAL CLASS A CONCRETE 35.0 C.Y.

DRILLED PIER CONCRETE BREAKDOWN
POUR 1 (DRILLED PIERS) 20.5 C.Y.

4'-0" Ø DRILLED PIER IN SOIL : LINEAR FEET 12.0 FT.
4'-0" Ø DRILLED PIER NOT IN SOIL : LINEAR FEET 32.0 FT.
PERMANENT STEEL CASING FOR 4'-0" Ø DRILLED PIERS: 16.0 FT.
CSL TUBES: 188.0 FT.

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

*** THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.



CONSTRUCTION JOINT DETAIL

PROJECT NO. R-2915B
ASHE COUNTY
STATION: 242+67.42 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT #1

SBL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-27
1			3			TOTAL SHEETS
2			4			35

DRAWN BY : T.J. KIRSCHBAUM DATE : 10/21/14
CHECKED BY : R.F. WERTMAN DATE : 11/7/14
DESIGN ENGINEER OF RECORD : R.F. WERTMAN DATE : 11/7/14

PLANS PREPARED BY:
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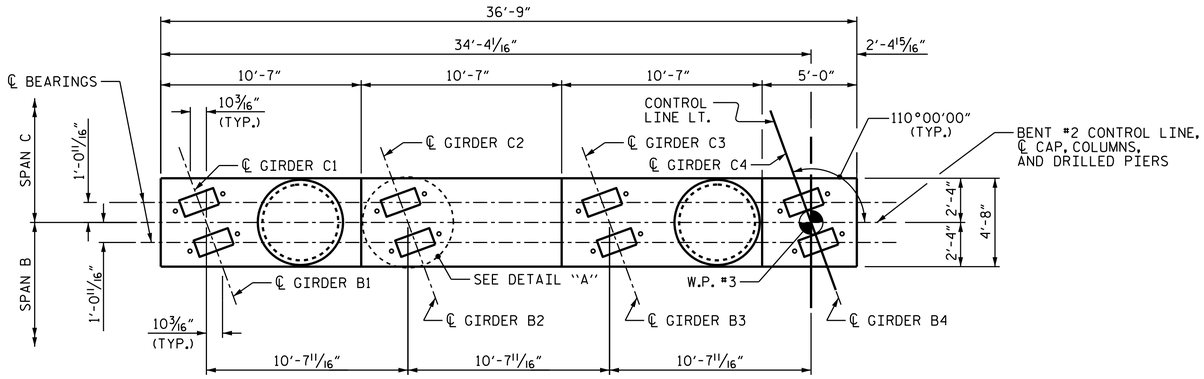
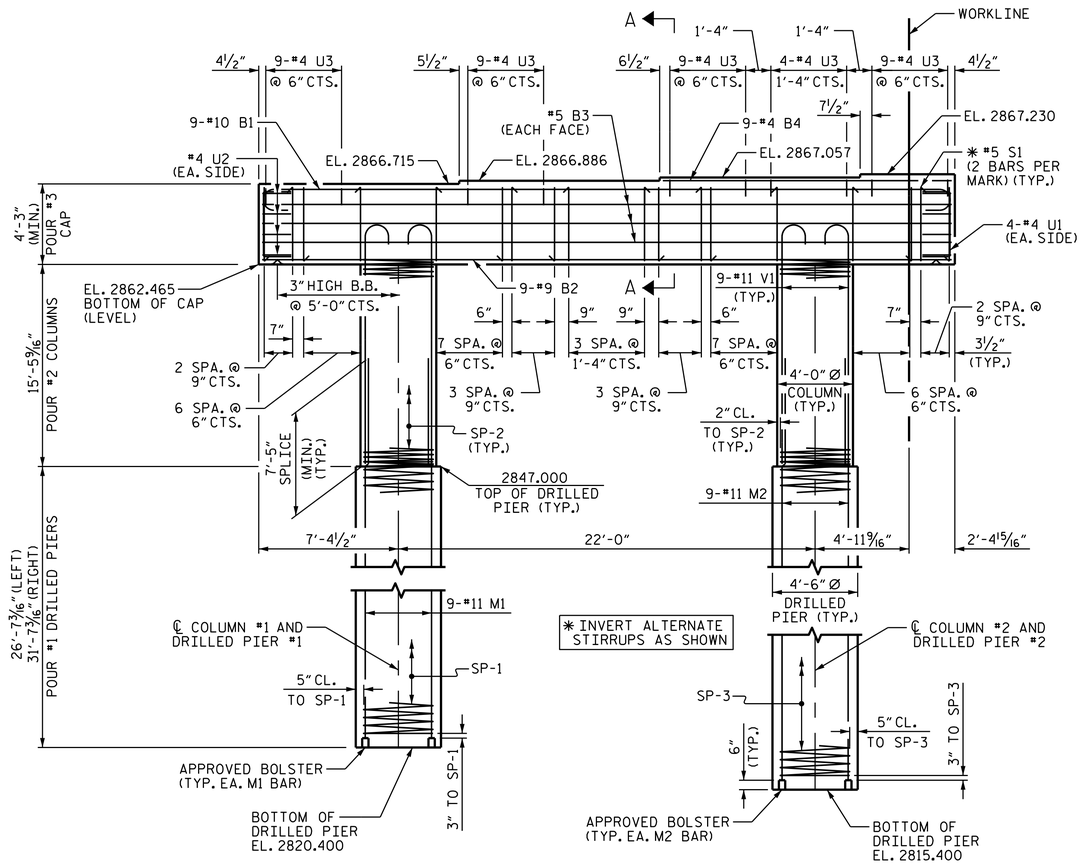
NORTH CAROLINA PROFESSIONAL SEAL 037180 ENGINEER RICHARD F. WERTMAN
2/20/2015

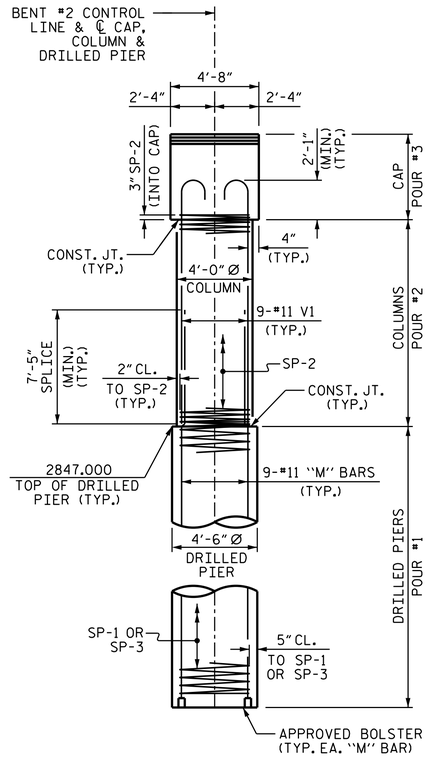
STR. NO. 4



PLAN



ELEVATION



END ELEVATION

NOTES

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

HOOKS ON V1 BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

FOR DRILLED PIERS, SEE SECTION 411 OF STANDARD SPECIFICATIONS.

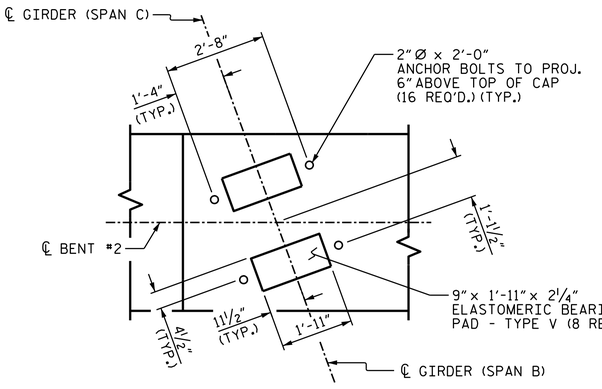
ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".

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

THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.

SPLICING OF THE LONGITUDINAL BARS IN THE DRILLED PIER WILL NOT BE PERMITTED.

FOR PERMANENT STEEL CASING, SEE SECTION 411 OF STANDARD SPECIFICATIONS.



DETAIL "A"
(TYP. EA. GIRDER)

PROJECT NO. R-2915B

ASHE COUNTY

STATION: 242+67.42 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT #2

SBL

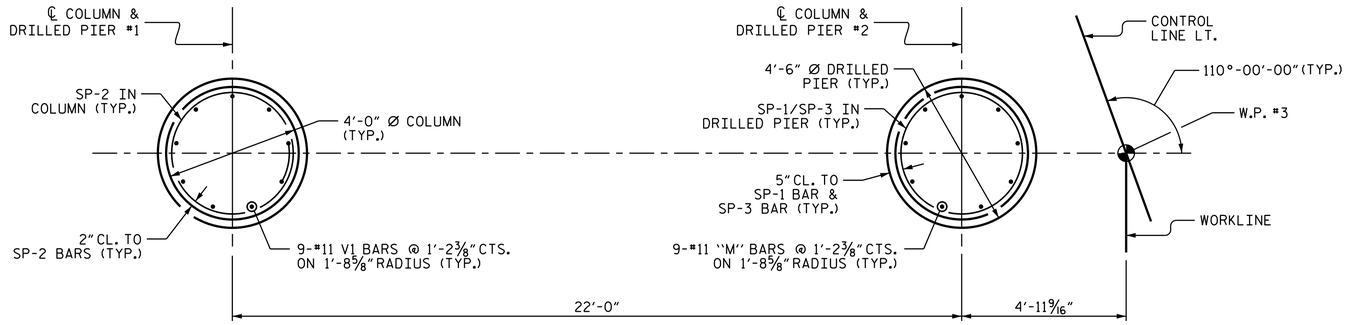
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-28
1			3			TOTAL SHEETS
2			4			35

DRAWN BY : T.J. KIRSCHBAUM DATE : 10/22/14
CHECKED BY : R.F. WERTMAN DATE : 11/7/14
DESIGN ENGINEER OF RECORD : R.F. WERTMAN DATE : 11/7/14

PLANS PREPARED BY:
Gannett Fleming
Excellence Delivered As Promised
1121 Situs Court
Suite 170
Raleigh NC 27606-4279
(919) 859-4880
NC Lic. No. F-0270

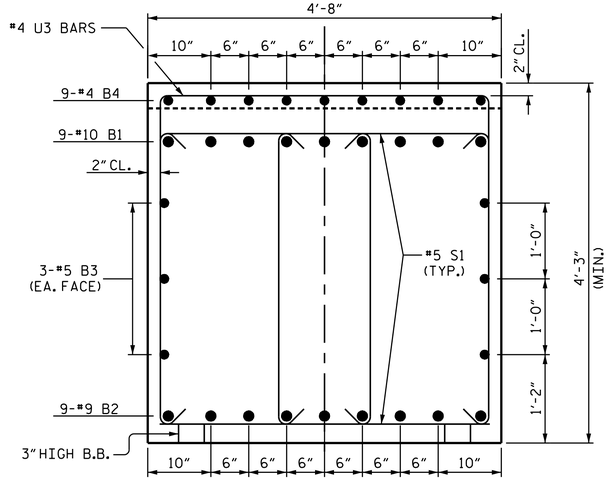
NORTH CAROLINA PROFESSIONAL SEAL 037180 ENGINEER Richard F. Wertman
2720/2014

STR. NO. 4

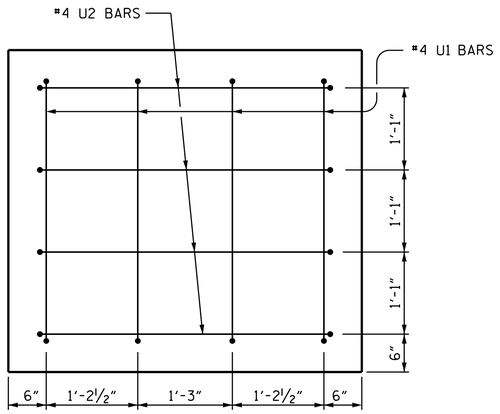


PLAN OF COLUMNS AND DRILLED PIERS

REINFORCING STEEL AND DIMENSIONS ARE TYPICAL FOR ALL COLUMNS AND DRILLED PIERS



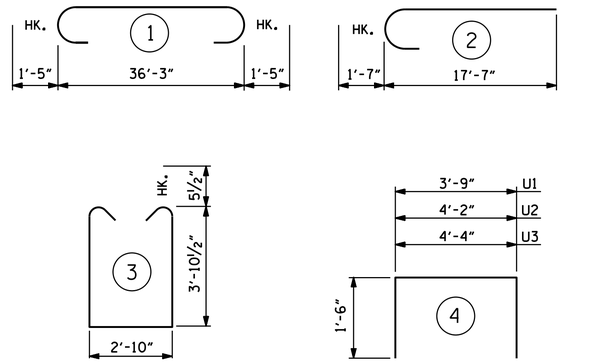
SECTION A-A

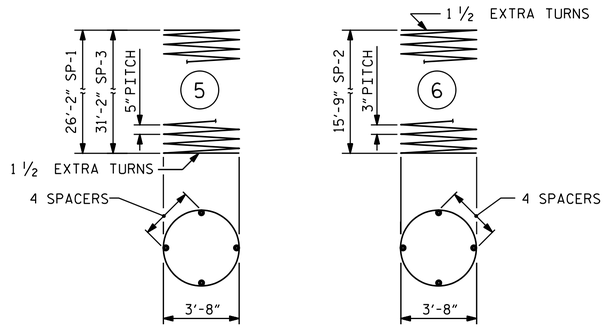


END VIEW

(TYP. EA. END)

BAR TYPES





ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

BENT #2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	9	#10	1	39'-1"	1514
B2	9	#9	STR	36'-5"	1114
B3	6	#5	STR	36'-5"	228
B4	9	#4	STR	15'-3"	92
M1	9	#11	STR	36'-10"	1761
M2	9	#11	STR	41'-10"	2000
S1	96	#5	3	11'-6"	1151
U1	8	#4	4	6'-9"	36
U2	8	#4	4	7'-2"	38
U3	40	#4	4	7'-4"	196
V1	18	#11	2	19'-2"	1833

REINFORCING STEEL	9963 LBS.

SP-1	1	**	5	738'-8"	770
SP-2	2	***	6	740'-5"	989
SP-3	1	**	5	875'-0"	913

SPIRAL COLUMN REINFORCING STEEL	2672 LBS.

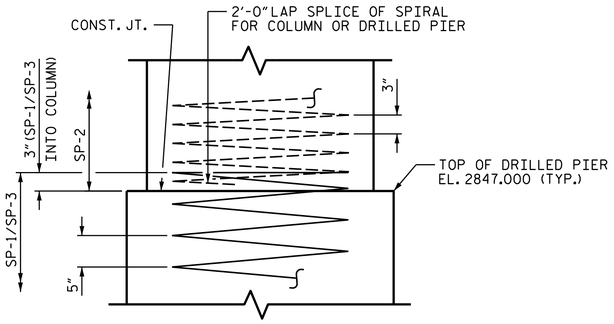
CLASS A CONCRETE BREAKDOWN

POUR 2 (COLUMNS)	14.4 C.Y.
POUR 3 (CAPS)	28.4 C.Y.
TOTAL CLASS A CONCRETE	42.8 C.Y.

DRILLED PIER CONCRETE BREAKDOWN POUR 1 (DRILLED PIERS)	34.3 C.Y.
4'-6" Ø DRILLED PIER IN SOIL : LINEAR FEET	19.2 FT.
4'-6" Ø DRILLED PIER NOT IN SOIL : LINEAR FEET	39.0 FT.
PERMANENT STEEL CASING FOR 4'-6" Ø DRILLED PIERS:	10.0 FT.
CSL TUBES:	244.8 FT.

** THE SP-1/SP-3 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.

*** THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.



CONSTRUCTION JOINT DETAIL

PROJECT NO. R-2915B

ASHE COUNTY

STATION: 242+67.42 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT #2

SBL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-29
1			3			TOTAL SHEETS
2			4			35

DRAWN BY : T.J. KIRSCHBAUM DATE : 10/22/14
CHECKED BY : R.F. WERTMAN DATE : 11/7/14
DESIGN ENGINEER OF RECORD : R.F. WERTMAN DATE : 11/7/14

PLANS PREPARED BY:
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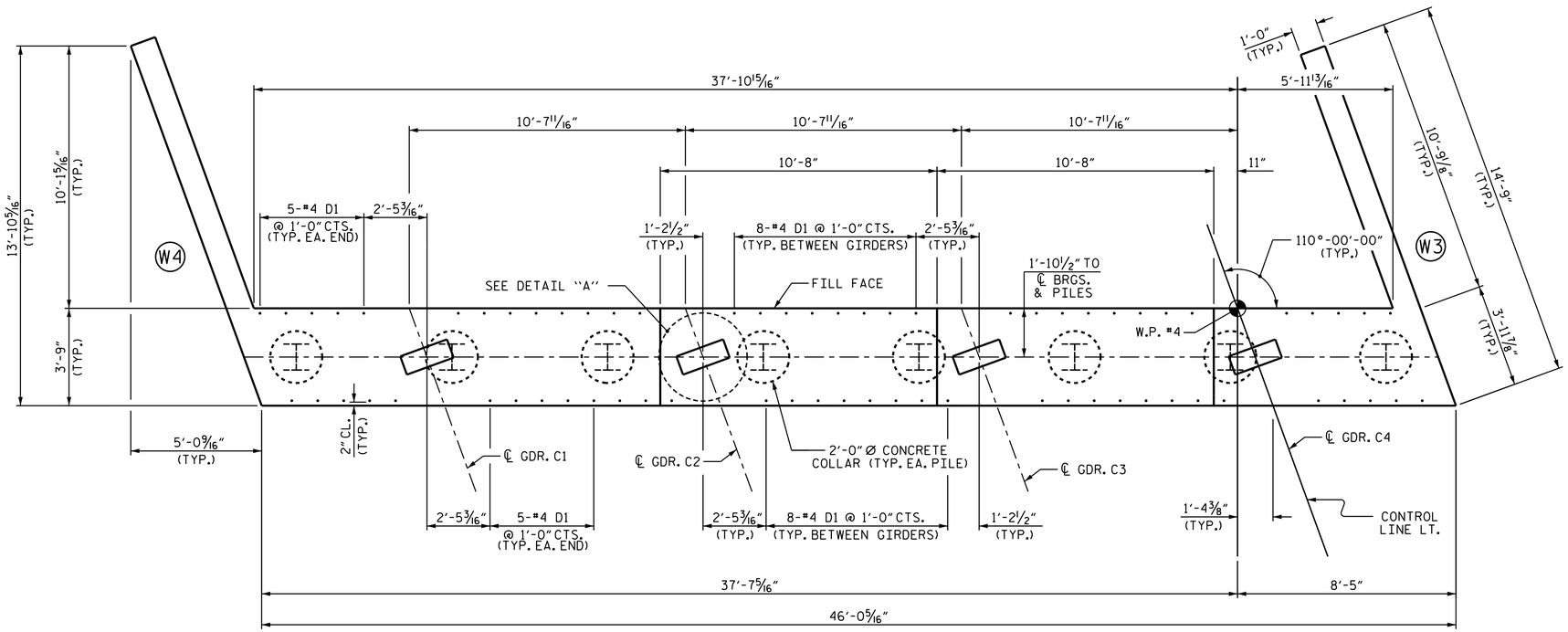
(919) 859-4880
NC Lic. No. F-0270

NORTH CAROLINA PROFESSIONAL SEAL 037180 ENGINEER RICHARD F. WERTMAN
2720/2015

STR. NO. 4



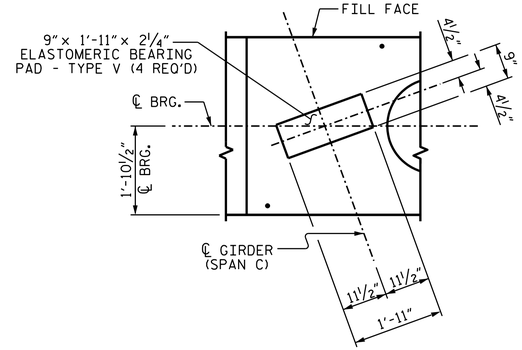
PLAN

NOTES:

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

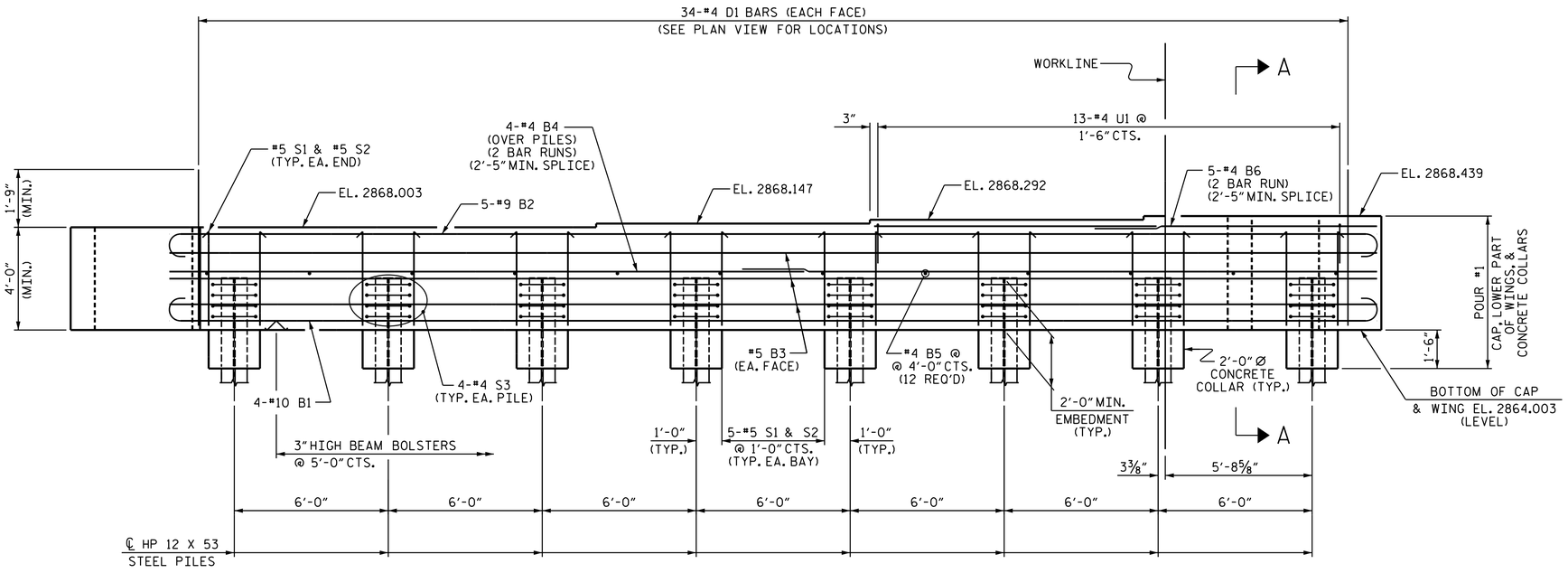
#4 D1 BARS MAY BE SHIFTED SLIGHTLY TO AVOID STIRRUPS IN CAP.

SEE SUPERSTRUCTURE SHEETS FOR UPPER PART OF INTEGRAL END BENT DETAILS.



DETAIL "A"

(TYP. EA. GIRDER)



ELEVATION

PROJECT NO. R-2915B

ASHE COUNTY

STATION: 242+67.42 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT #2

SBL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-30
1			3			TOTAL SHEETS
2			4			35

STR. NO. 4

DRAWN BY : T.J. KIRSCHBAUM DATE : 10/08/14
CHECKED BY : E.E. DEETSCREEK DATE : 11/10/14
DESIGN ENGINEER OF RECORD : R.F. WERTMAN DATE : 11/13/14

PLANS PREPARED BY:
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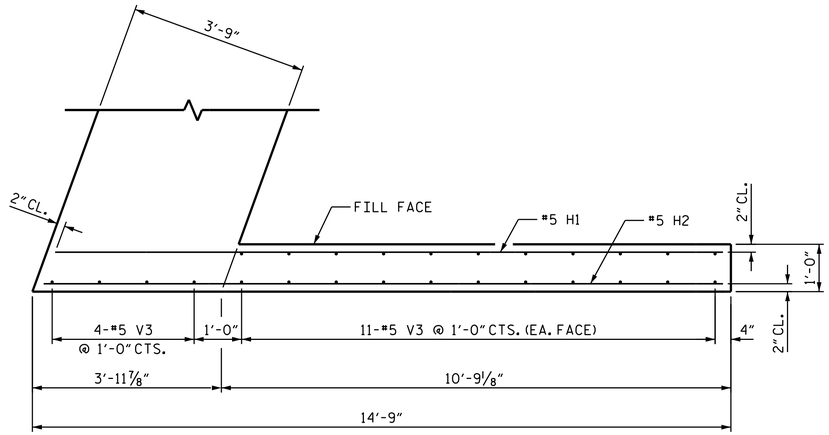
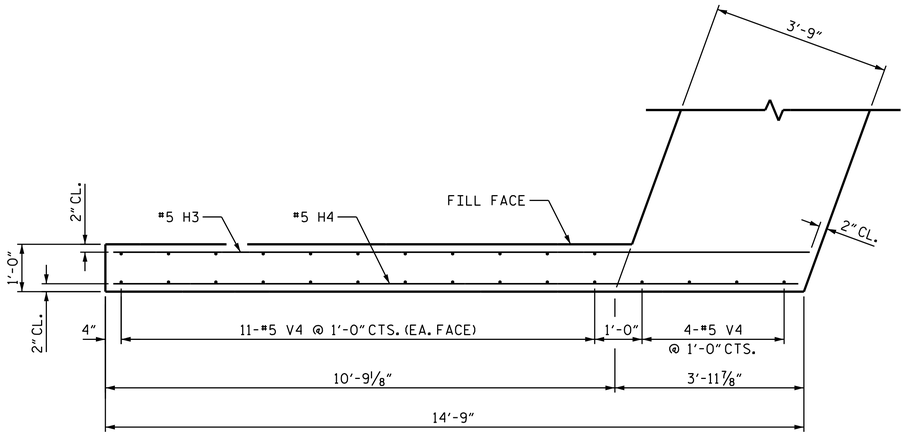
NORTH CAROLINA PROFESSIONAL SEAL 037180 ENGINEER RICHARD F. WERTMAN
2/20/2015



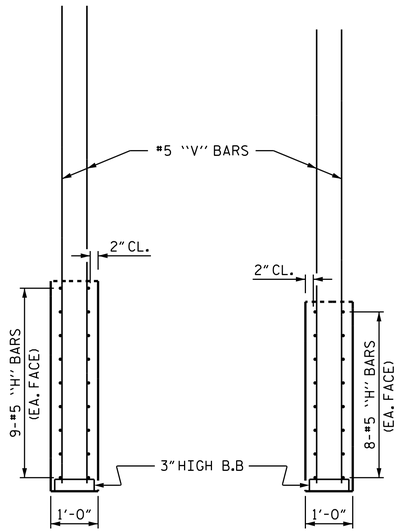
PLAN OF WING (W3)



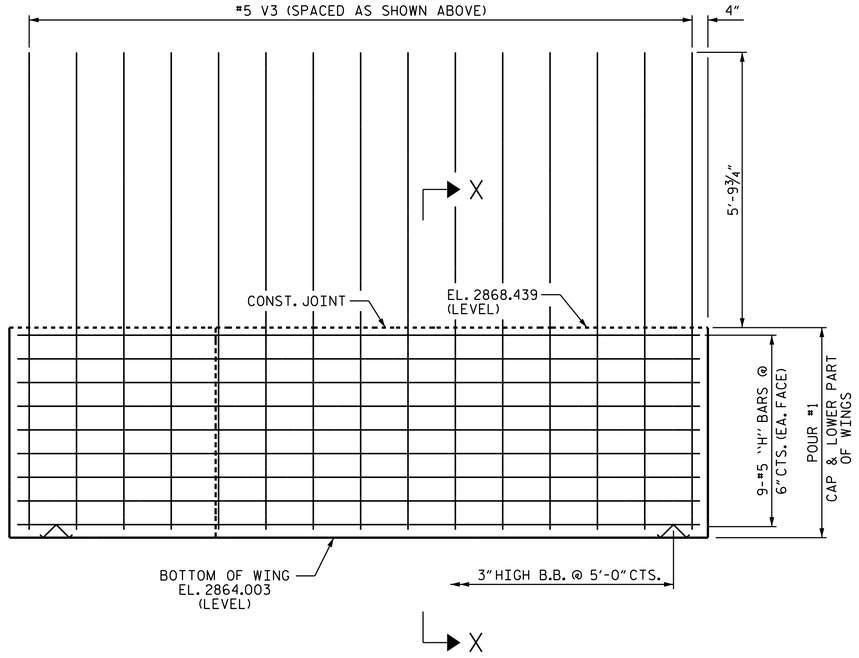
PLAN OF WING (W4)

NOTES:

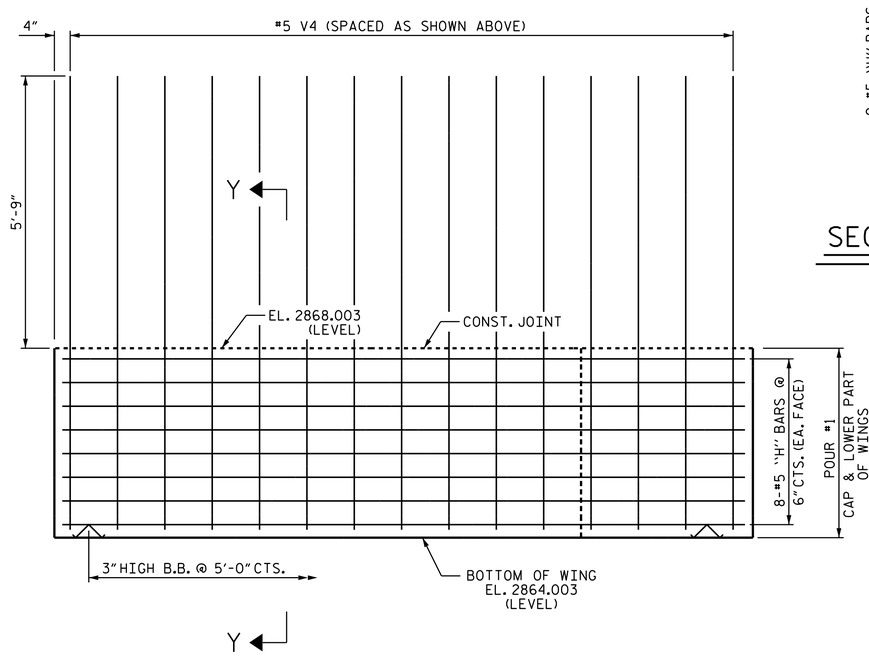
THE UPPER PORTION OF THE WINGS SHALL BE POURED WITH THE SUPERSTRUCTURE. FOR DETAILS AND REINFORCING STEEL, SEE SUPERSTRUCTURE DETAILS.



SECTION X-X SECTION Y-Y



ELEVATION OF WING (W3)



ELEVATION OF WING (W4)

PROJECT NO. R-2915B

ASHE COUNTY

STATION: 242+67.42 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL
END BENT #2

SBL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-31
1			3			TOTAL SHEETS
2			4			35

STR. NO. 4

DRAWN BY : T.J. KIRSCHBAUM DATE : 10/08/14
CHECKED BY : E.E. DEETSCREEK DATE : 11/10/14
DESIGN ENGINEER OF RECORD : R.F. WERTMAN DATE : 11/13/14

PLANS PREPARED BY:
Gannett Fleming
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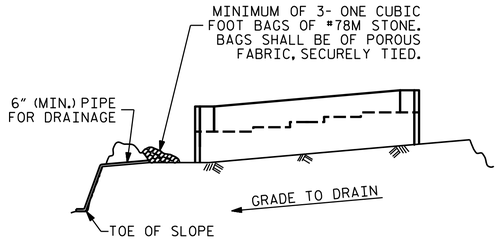
(919) 859-4880
NC Lic. No. F-0270

NORTH CAROLINA PROFESSIONAL SEAL 037180 ENGINEER RICHARD F. WERTMAN
2/20/2014

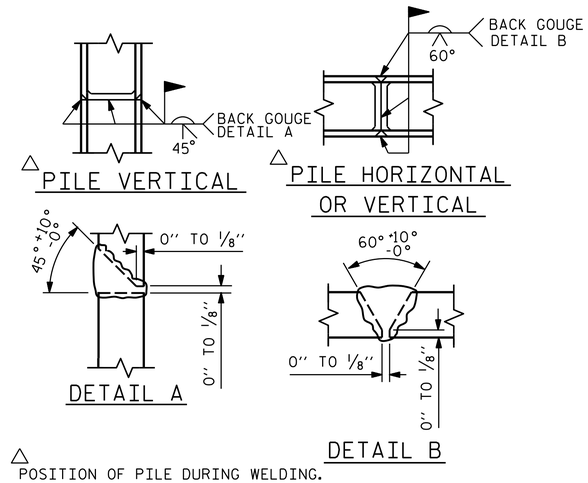


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

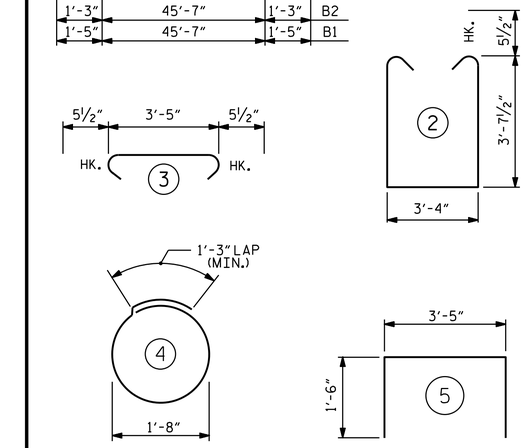
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS



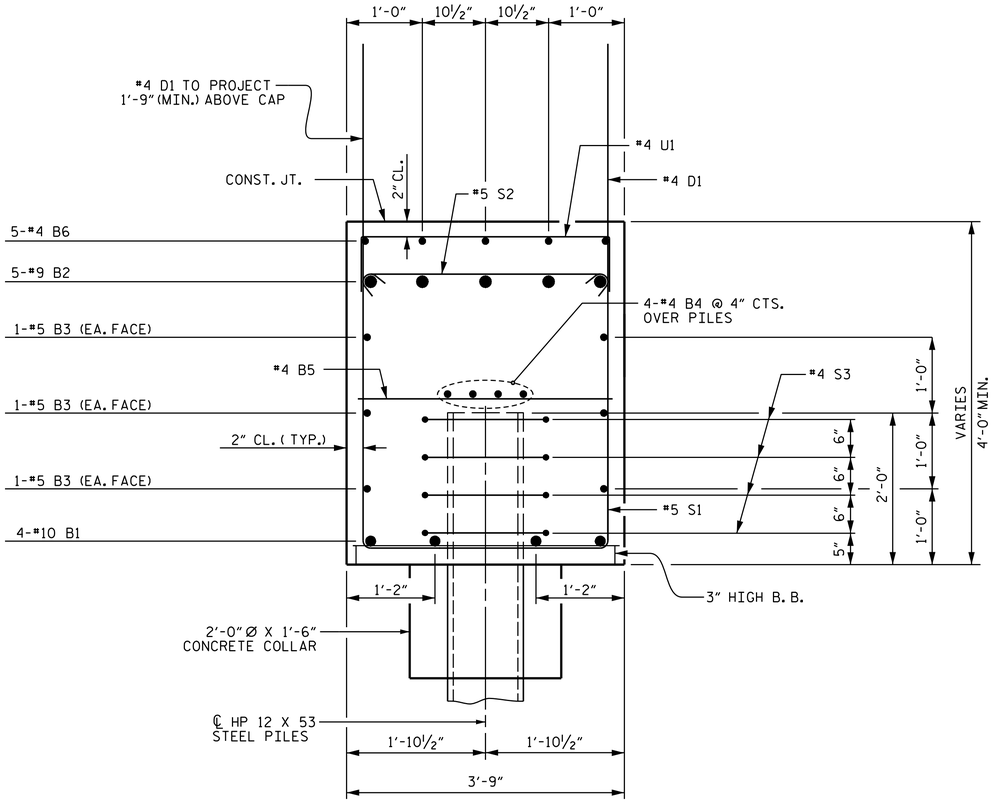
ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT #2

BAR	No.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	1	48'-5"	833
B2	5	#9	1	48'-1"	817
B3	6	#5	STR	45'-8"	286
B4	8	#4	STR	24'-1"	129
B5	12	#4	STR	3'-5"	27
B6	10	#4	STR	11'-0"	73
D1	68	#4	STR	6'-1"	276
H1	9	#5	STR	14'-1"	132
H2	9	#5	STR	14'-4"	135
H3	8	#5	STR	14'-8"	122
H4	8	#5	STR	14'-5"	120
S1	37	#5	2	11'-6"	444
S2	37	#5	3	4'-4"	167
S3	32	#4	4	6'-6"	139
U1	13	#4	5	6'-5"	56
V3	26	#5	STR	10'-1"	273
V4	26	#5	STR	9'-7"	260

REINFORCING STEEL	4289 LBS.
CLASS A CONCRETE	
POUR #1 (CAP, LOWER WINGS & COLLARS)	31.5 C.Y.
TOTAL	31.5 C.Y.
HP 12 X 53 STEEL PILES	
No. = 8	280 LIN. FT.



SECTION A-A

DRAWN BY : T.J. KIRSCHBAUM DATE : 10/08/14
CHECKED BY : E.E. DEETSCREEK DATE : 11/10/14
DESIGN ENGINEER OF RECORD : R.F. WERTMAN DATE : 11/13/14

PLANS PREPARED BY:
Gannett Fleming
Excellence Delivered As Promised
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Suite 170
Raleigh NC 27606-4279
(919) 859-4880
NC Lic. No. F-0270

NORTH CAROLINA PROFESSIONAL SEAL 037180 ENGINEER RICHARD F. WERTMAN
2/20/2014

PROJECT NO. R-2915B
ASHE COUNTY
STATION: 242+67.42 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

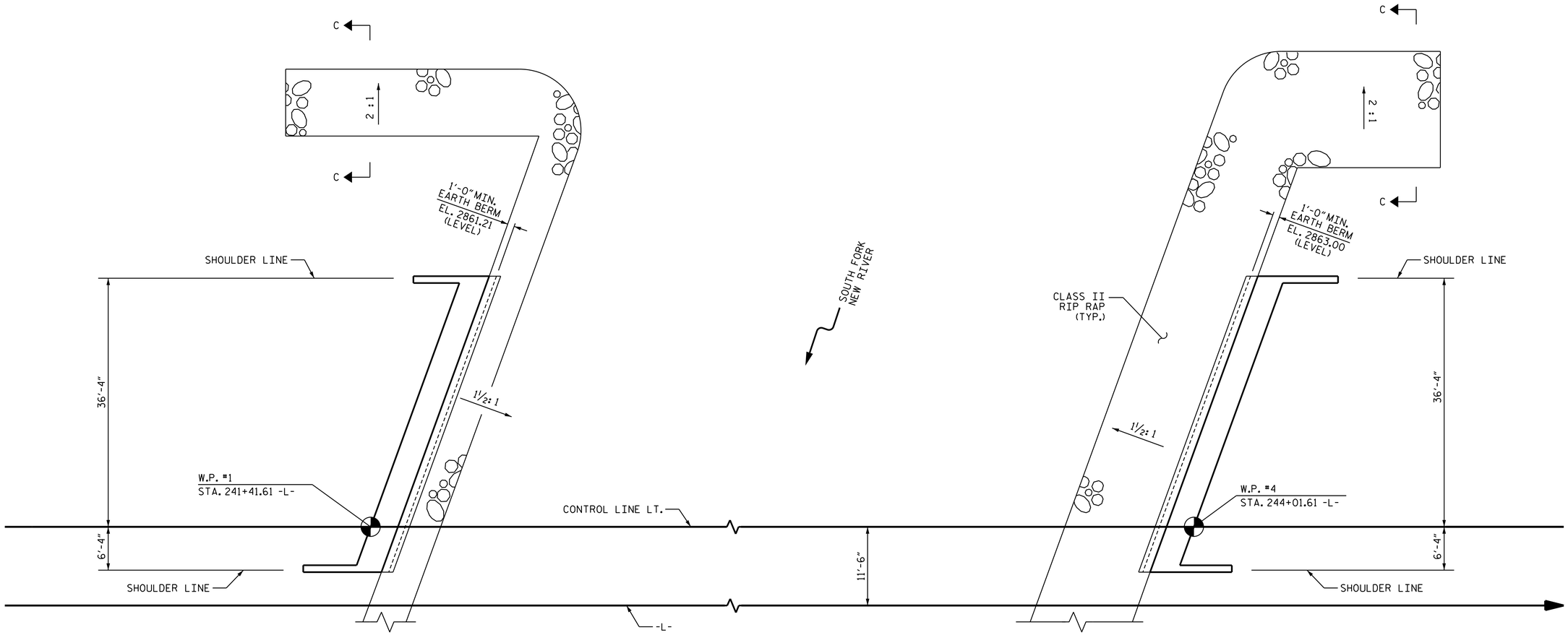
SUBSTRUCTURE

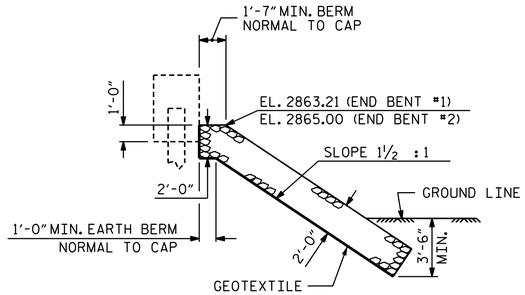
INTEGRAL END BENT #2

SBL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-32
1			3			TOTAL SHEETS
2			4			35

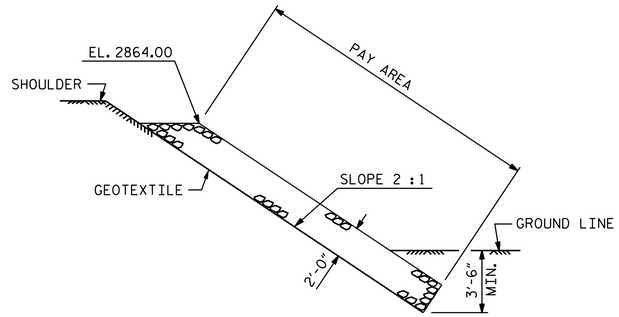
STR. NO. 4





℄ SECTION

BERM RIP RAPPED



SECTION C-C

ESTIMATED QUANTITIES		
BRIDGE @ STA. 242+67.42 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	100	110
END BENT 2	176	195

PROJECT NO. R-2915B

ASHE COUNTY

STATION: 242+67.42 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

RIP RAP DETAILS

SBL

ASSEMBLED BY : T.J. KIRSCHBAUM	DATE : 09/05/14
CHECKED BY : R.F. WERTMAN	DATE : 11/13/14

DRAWN BY : REK 1/84	REV. 5/1/06R	TLA/GM
CHECKED BY : RDU 1/84	REV. 10/1/11	MAA/GM
	REV. 12/21/11	MAA/GM

PLANS PREPARED BY:
Gannett Fleming
Excellence Delivered As Promised
1121 Situs Court
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(919) 859-4880
NC Lic. No. F-0270

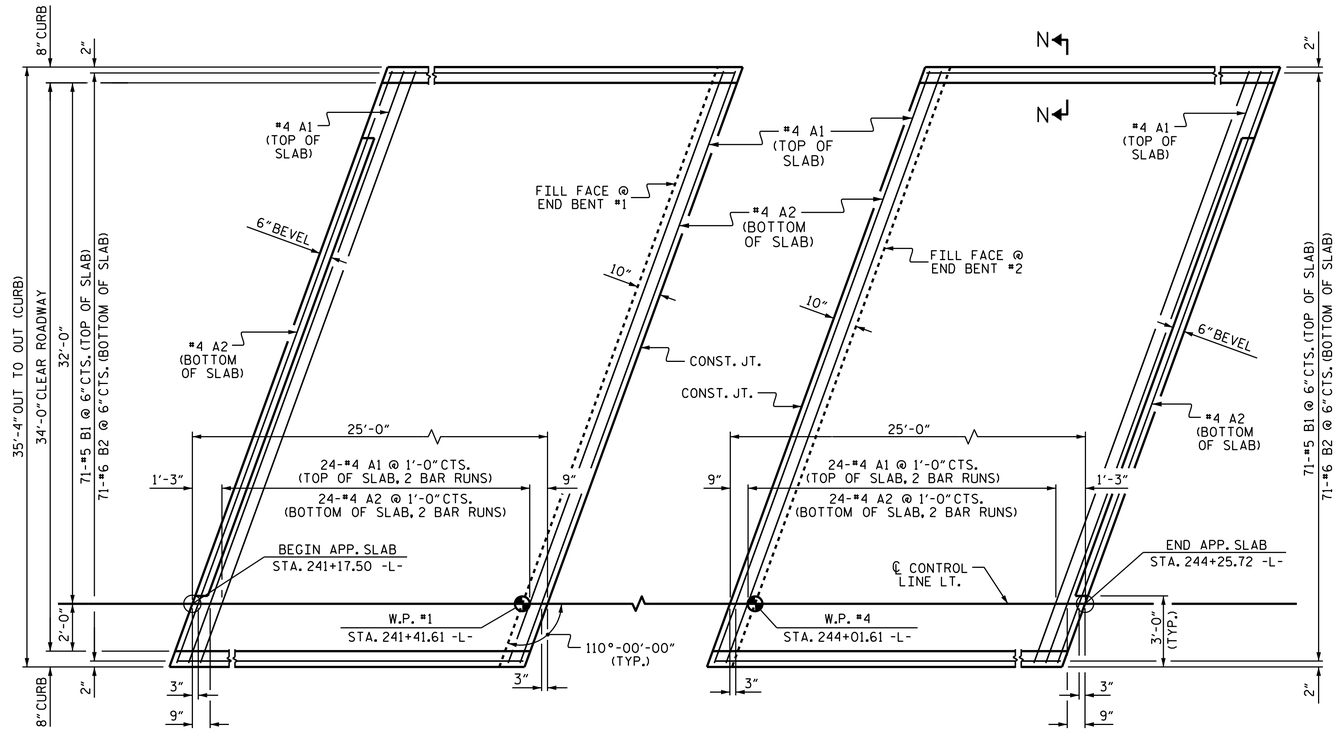
THESE PLANS HAVE BEEN PROPERLY EXAMINED BY THE UNDERSIGNED. I HAVE DETERMINED THAT THEY COMPLY WITH EXISTING NORTH CAROLINA CODES, AND HAVE BEEN PROPERLY ADAPTED FOR USE IN THIS AREA.

NORTH CAROLINA PROFESSIONAL SEAL 037180 ENGINEER RICHARD D. WERTMAN
2/20/2015

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-33
1			3			TOTAL SHEETS
2			4			35

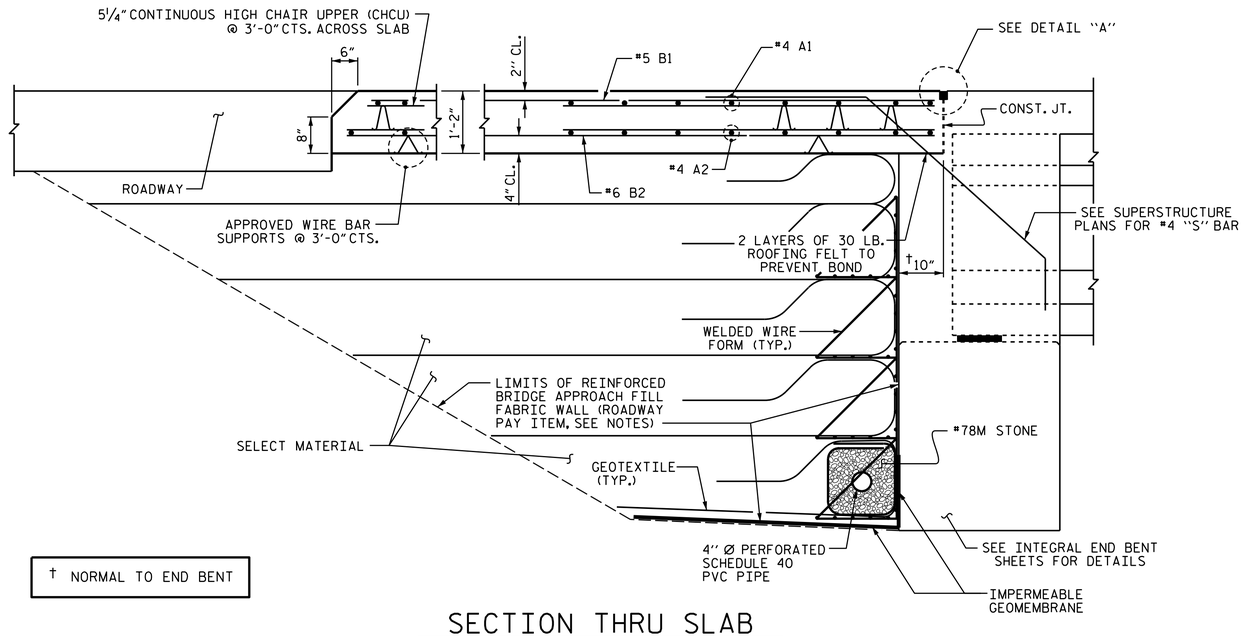
STR. NO. 4

STD. NO. RR1



PLAN @ END BENT #1 PLAN @ END BENT #2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



† 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.

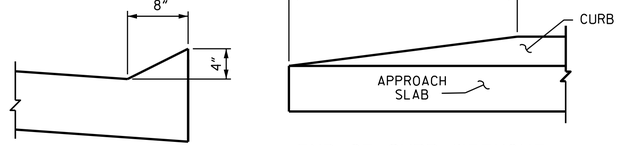
THE JOINT OPENING AT THE APPROACH SLAB/DECK INTERFACE SHALL BE SAWED NO MORE THAN 12 HOURS AFTER THE APPROACH SLAB IS CAST. THE JOINT SHALL BE CLEANED OF ALL DEBRIS BEFORE THE SEALANT IS APPLIED. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1028-3 OF THE STANDARD SPECIFICATIONS.

BILL OF MATERIAL

FOR ONE APPROACH SLAB (2 REQUIRED)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✱A1	52	#4	STR	19'-8"	683
A2	52	#4	STR	19'-6"	677
.	.	.	.	.	.
✱B1	71	#5	STR	24'-2"	1790
B2	71	#6	STR	24'-8"	2631
REINFORCING STEEL				LBS.	3308
✱EPOXY COATED REINFORCING STEEL				LBS.	2473
CLASS AA CONCRETE				C.Y.	40.7

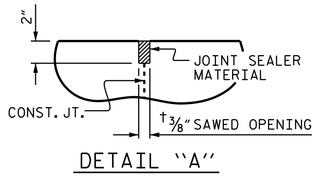
SPLICE LENGTHS CHART		
BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	1'-9"
#5	2'-6"	2'-2"
#6	3'-10"	2'-7"



SECTION N-N

END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS



DETAIL "A"

PROJECT NO. R-2915B

ASHE COUNTY

STATION: 242+67.42 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB FOR INTEGRAL ABUTENT

SBL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-34
1			3			TOTAL SHEETS
2			4			35

STR. NO. 4 STD. NO. BAS5

ASSEMBLED BY : T.J. KIRSCHBAUM DATE : 10/27/14
CHECKED BY : R.F. WERTMAN DATE : 11/13/14

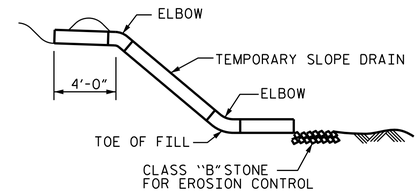
DRAWN BY : TLA 10/05
CHECKED BY : GM 5/06

REV. 10/1/11 MAA/GM
REV. 12/21/11 MAA/GM
REV. 6/13 MAA/GM

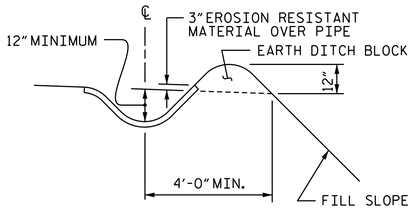
PLANS PREPARED BY:
Gannett Fleming
Excellence Delivered As Promised
1121 Situs Court
Suite 170
Raleigh NC 27606-4279
(919) 859-4880
NC Lic. No. F-0270

THESE PLANS HAVE BEEN PROPERLY EXAMINED BY THE UNDERSIGNED. I HAVE DETERMINED THAT THEY COMPLY WITH EXISTING NORTH CAROLINA CODES, AND HAVE BEEN PROPERLY ADAPTED FOR USE IN THIS AREA.

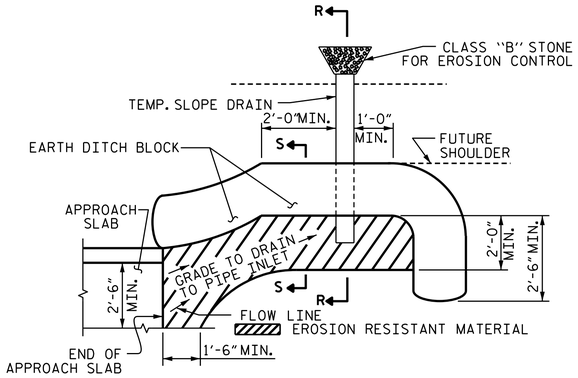
NORTH CAROLINA PROFESSIONAL SEAL 037180 ENGINEER
Richard F. Wertman
2/20/2014



SECTION R-R

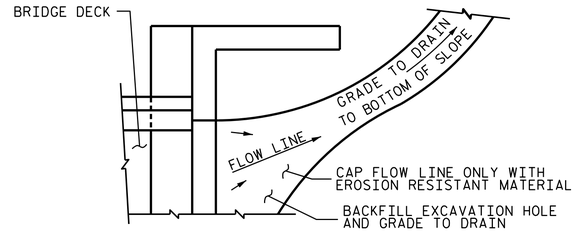


SECTION S-S



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

PLAN VIEW



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

TEMPORARY DRAINAGE DETAIL

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

PROJECT NO. R-2915B

ASHE COUNTY

STATION: 242+67.42 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB DETIALS

SBL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-35
1			3			TOTAL SHEETS
2			4			35

STR. NO. 4 STD. NO. BAS4

ASSEMBLED BY : T.J. KIRSCHBAUM	DATE : 10/27/14	
CHECKED BY : R.F. WERTMAN	DATE : 11/13/14	
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

PLANS PREPARED BY:
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NORTH CAROLINA PROFESSIONAL SEAL 037180 ENGINEER RICHARD F. WERTMAN
2/20/2014