F.A. PROJECT NOS. BRNHP-0023(32) & BRSTP-0019(49)

67+00 68+00 69+00 70+00

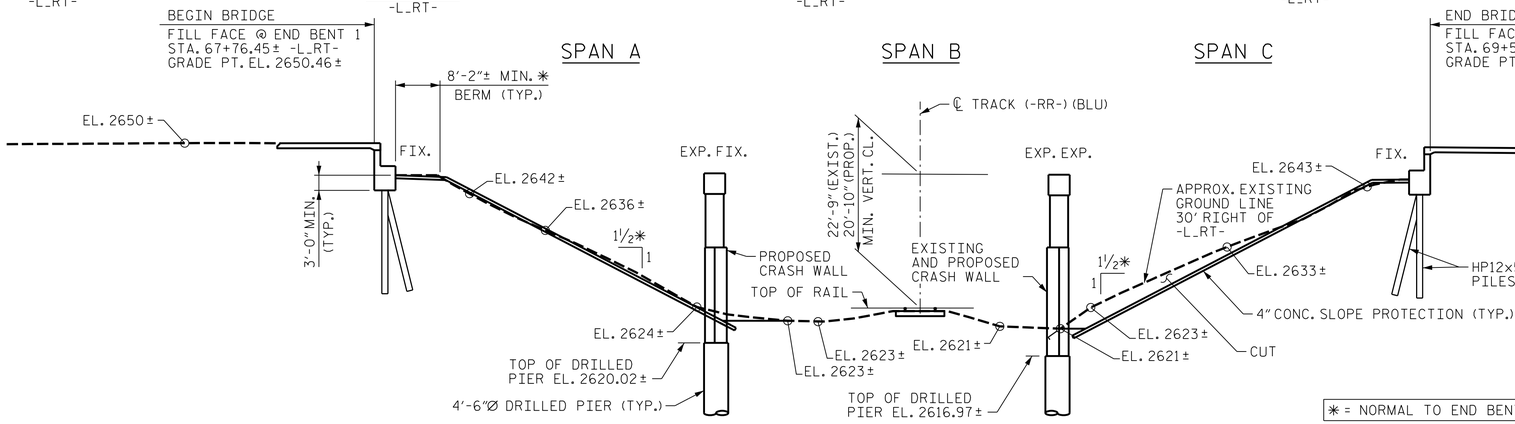
(+)5.6128% (+)0.3016%
PVI STA. = 59+75.00
PVI EL. = 2,648.04'
VC = 1,200'
GRADE DATA -L_RT-

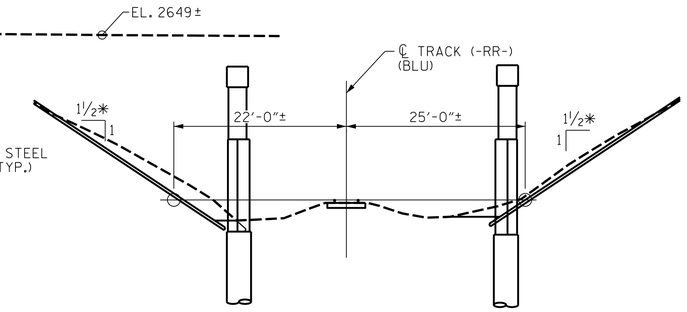
(+)0.3016% (+)0.1256%
PVI STA. = 67+76.45
PVI EL. = 2,650.46'
VC = 0'
GRADE DATA -L_RT-

(+)0.1256% (-)0.7085%
PVI STA. = 68+45.00
PVI EL. = 2,650.54'
VC = 130'
GRADE DATA -L_RT-

(-)0.7085% (-)0.3350%
PVI STA. = 69+50.70
PVI EL. = 2,649.80'
VC = 0'
GRADE DATA -L_RT-

(-)0.3350% (-)1.5924%
PVI STA. = 70+60.00
PVI EL. = 2,649.43'
VC = 200'
GRADE DATA -L_RT-



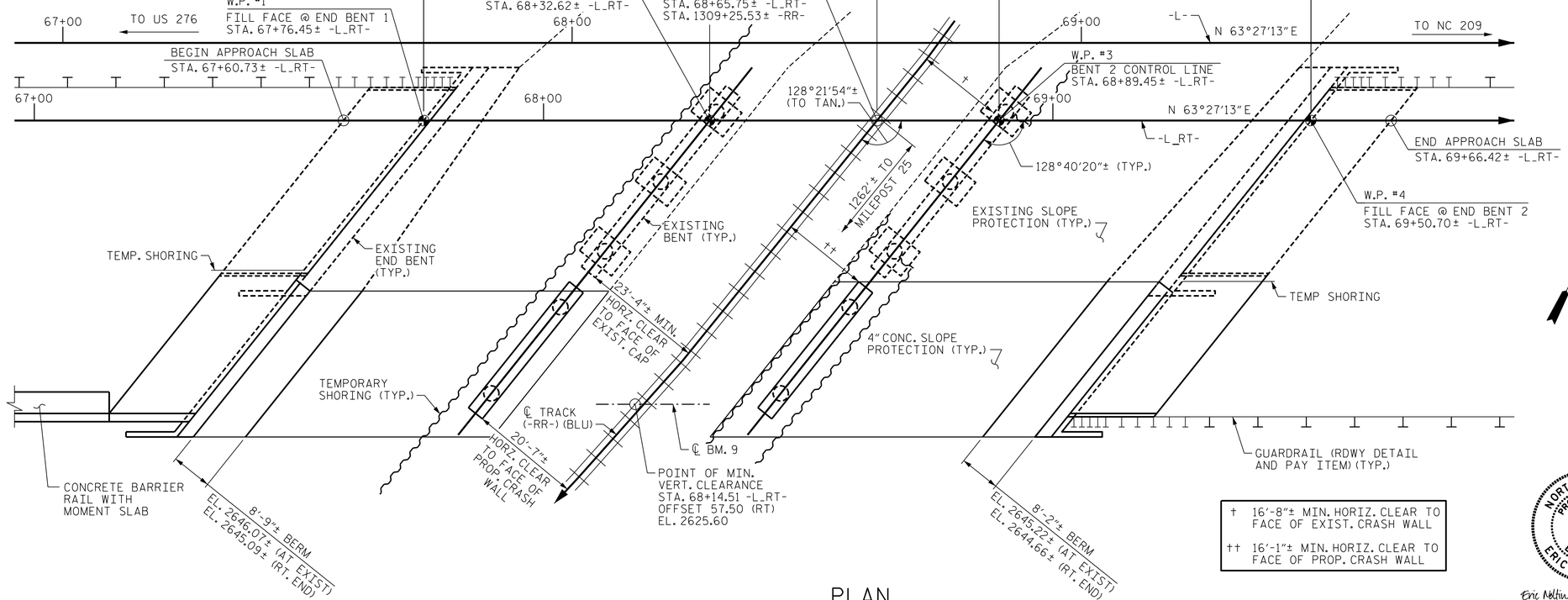


RAILROAD TYPICAL SECTION
(LOOKING IN DIRECTION OF INCREASING STATIONS ON RAILROAD)

NOTES
GRADE DATA, ELEVATIONS, DIMENSIONS, AND STATIONS WERE DETERMINED USING THE BEST INFORMATION AVAILABLE AND ARE PROVIDED FOR INFORMATION ONLY. THE CONTRACTOR SHALL SURVEY THE EXISTING STRUCTURE AND NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIALS.

SECTION ALONG -L_RT-
(SECTIONS AT END BENTS AND BENTS SHOWN 30' RIGHT OF -L_RT- AND AT RIGHT ANGLES TO BENTS)

TOTAL BRIDGE LENGTH = 174'-3"± (FILL FACE END BENT 1 TO FILL FACE END BENT 2)
56'-2"± (SPAN A)
56'-10"± (SPAN B)
61'-3"± (SPAN C)



PLAN
(PILES NOT SHOWN FOR CLARITY)

† 16'-8"± MIN. HORIZ. CLEAR TO FACE OF EXIST. CRASH WALL

†† 16'-1"± MIN. HORIZ. CLEAR TO FACE OF PROP. CRASH WALL

TOP OF RAIL ELEVATIONS
(STATIONS ALONG -RR-)

LEFT RAIL		RIGHT RAIL	
STATION	ELEVATION	STATION	ELEVATION
1309+08.50	2622.88	1309+08.47	2622.80
1309+33.12	2623.62	1309+33.05	2623.52
1309+55.84	2624.23	1309+55.83	2624.14
1309+80.49	2624.90	1309+80.47	2624.82
1310+04.11	2625.55	1310+04.10	2625.46
1310+27.04	2626.13	1310+27.12	2626.02

THE RAILROAD TRACK TOP OF RAIL ELEVATIONS SHOWN ON THE PLANS ARE FROM THE BEST INFORMATION AVAILABLE. PRIOR TO BEGINNING BRIDGE CONSTRUCTION, VERIFY THE TOP OF RAIL ELEVATIONS AND REPORT ANY VARIATIONS TO THE ENGINEER. ANY PLAN REVISIONS NECESSARY TO ACHIEVE THE REQUIRED MINIMUM VERTICAL CLEARANCE WILL BE PROVIDED BY THE DEPARTMENT.

PROJECT NO. B-3186/B-5898
HAYWOOD COUNTY
STATION: 68+65.75± -L_RT-
1309+25.53± -RR-
MILEPOST 24.77
SHEET 1 OF 5 WIDENING OF BRIDGE NO. 430107

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
BRIDGE ON -L_RT- (US 19/23/74 EB)
OVER THE BLUE RIDGE SOUTHERN RAILROAD
(BLU) BETWEEN US 276 AND NC 209

NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

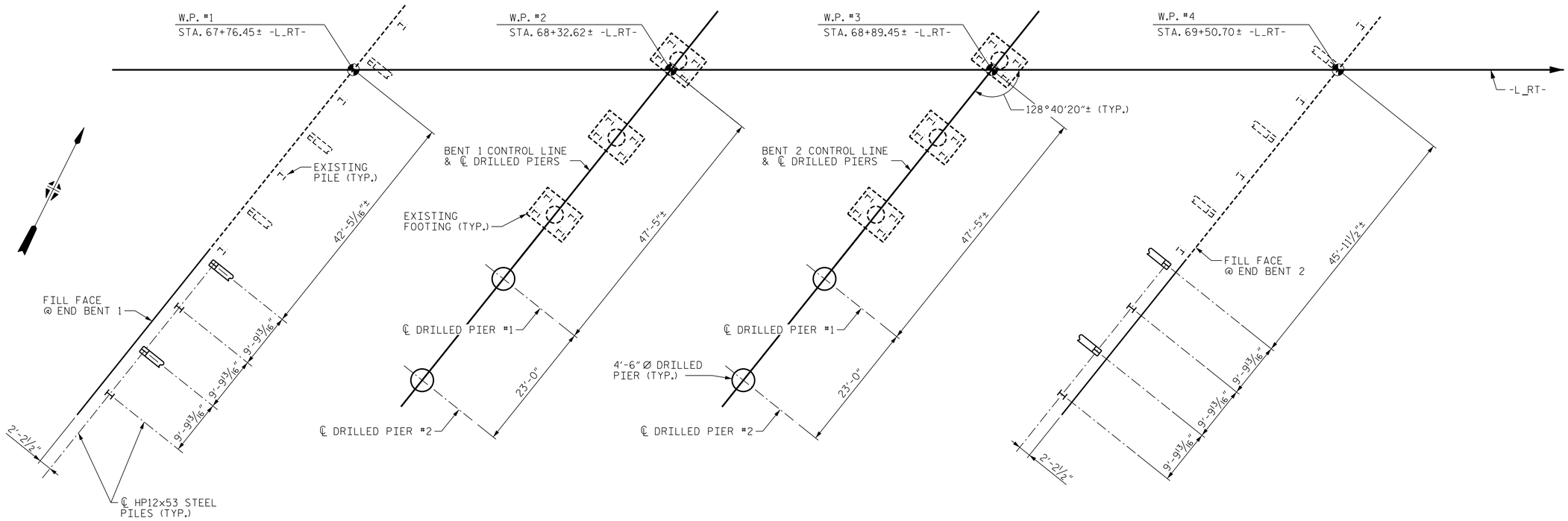
Eric Nolting 1/25/2022

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO. S03R-01
NO.	BY:	DATE:	NO.	BY:	DATE:	
1	--	--	3	--	--	TOTAL SHEETS 61
2	--	--	4	--	--	

DES BY:	E. NOLTING	DATE :	03/21
DES CHK:	B. ROGERS	DATE :	03/21
DWG BY:	B. PETERSON	DATE :	03/21
CHK BY:	B. ROGERS	DATE :	03/21



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

FOUNDATION LAYOUT

NOTES

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

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

DRIVE PILES AT END BENTS NO. 1 AND 2 TO A REQUIRED DRIVING RESISTANCE OF 210 TONS PER PILE.

STEEL H-PILE POINTS ARE REQUIRED FOR STEEL H-PILES AT END BENTS NO. 1 AND 2. FOR STEEL PILE POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

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

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

DRILLED PIERS AT BENTS NO. 1 AND 2 ARE DESIGNED FOR FACTORED RESISTANCE OF 420 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 20 TSF.

INSTALL DRILLED PIERS AT BENT NO. 1 AND 2 TO A TIP ELEVATION NO HIGHER THAN 2581 FT AND WITH THE REQUIRED TIP RESISTANCE AND PENETRATION OF AT LEAST 9 FT INTO WEATHERED ROCK/ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.

SID INSPECTIONS MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR SID INSPECTIONS. FOR SID INSPECTIONS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

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

WEATHERED ROCK ELEVATIONS ARE ANTICIPATED TO BE AT 2583 FEET AT BENTS NO. 1 AND 2. DRILLED PIER TIP ELEVATIONS ARE ANTICIPATED TO BE AT 2574 FEET AT BENTS NO. 1 AND 2. THE CONTRACTOR CAN RAISE DRILLED PIER TIP ELEVATIONS IF WEATHERED ROCK IS ENCOUNTERED HIGHER THAN 2583 FEET AS LONG AS DRILLED PIERS PENETRATES AT LEAST 9 FEET OF WEATHERED ROCK/ROCK.

LEGEND

H — HP12X53 VERTICAL PILE

HP12X53 BRACE PILE (BATTER 3H:12V)

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 2 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOUNDATION LAYOUT

NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

Eric Nolting 1/25/2022

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St. Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

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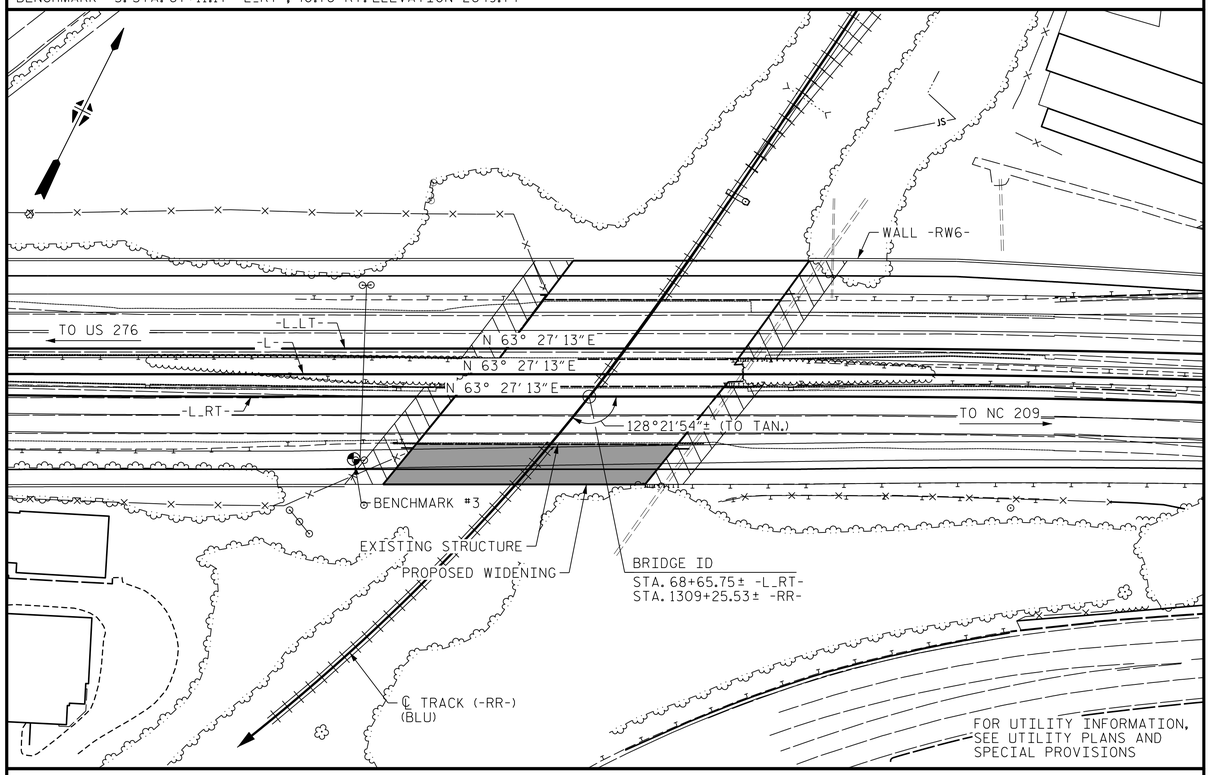
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S03R-02
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	61

DES BY:	M. NEIHEISEL	DATE :	07/21
DES CHK:	E. NOLTING	DATE :	07/21
DWG BY:	B. PETERSON	DATE :	06/21
CHK BY:	E. NOLTING	DATE :	07/21



LOCATION SKETCH

SAMPLE BAR REPLACEMENT	
SIZE	LENGTH
#3	6'-2"
#4	7'-4"
#5	8'-6"
#6	9'-8"
#7	10'-10"
#8	12'-0"
#9	13'-2"
#10	14'-6"
#11	15'-10"

NOTE:
SAMPLE BAR REPLACEMENT LENGTHS BASED ON 30"(SAMPLE LENGTH) PLUS TWO SPLICE LENGTHS AND fy = 60ksi.

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 "STANDARD NOTES" SHEET.

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 SAMPLE BARS SHOULD COME FROM STEEL ACTUALLY USED IN THE PROJECT AND THE SAMPLE BARS SHOULD BE REPLACED BY SPLICED BARS AS SPECIFIED IN THE SAMPLE BAR REPLACEMENT CHART. PAYMENT FOR THE SAMPLE BARS AND REPLACEMENT 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.

THE RAILROAD TRACK TOP OF RAIL ELEVATIONS ON THE PLANS ARE FROM THE BEST INFORMATION AVAILABLE. PRIOR TO BEGINNING BRIDGE CONSTRUCTION, VERIFY THE TOP OF RAIL ELEVATIONS AND REPORT ANY VARIATIONS TO THE ENGINEER. ANY PLAN REVISIONS NECESSARY TO ACHIEVE THE REQUIRED MINIMUM CLEARANCE WILL BE PROVIDED BY THE DEPARTMENT.

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

ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 50W AND PAINTED IN ACCORDANCE WITH SYSTEM 5 OR SYSTEM 6 OF THE STRUCTURAL STEEL SHOP COATINGS PROGRAM AND SECTION 442-8 OF THE STANDARD SPECIFICATIONS UNLESS OTHERWISE NOTED ON THE PLANS.

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 1024-6 OF THE STANDARD SPECIFICATIONS. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE COST OF THE REINFORCED CONCRETE DECK SLAB.

FOR TEMPORARY RAILROAD SHORING, SEE SPECIAL PROVISIONS.

STEEL SHEET PILING REQUIRED FOR SHORING SHALL BE HOT ROLLED.

TEMPORARY SHORING WILL BE REQUIRED IN THE AREA INDICATED IN THE PLAN VIEW.

FOR TEMPORARY SHORING, SEE SPECIAL PROVISIONS.

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

THE 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.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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 ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 4 FT. BELOW THE GROUND LINE.

FOR POURABLE SILICONE JOINT SEALANT, SEE SPECIAL PROVISIONS.

WORK ON THE BRIDGES SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL BELOW. THE CONTRACTOR SHALL SUBMIT PLANS FOR CONSTRUCTION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS AND THE PROJECT SPECIAL PROVISIONS.

ANY DAMAGE TO EXISTING REINFORCING STEEL, DURING CONTRACTOR'S OPERATIONS, SHALL BE REPAIRED AS DIRECTED BY THE ENGINEER AND PERFORMED AT NO ADDITIONAL COST TO THE DEPARTMENT.

FOR TRAFFIC CONTROL AND LIMITS OF PHASING OF CONSTRUCTION, SEE TRANSPORTATION MANAGEMENT PLANS.

FOR SCARIFYING BRIDGE DECK, HYDRO-DEMOLITION OF BRIDGE DECK, CLASS II AND CLASS III SURFACE PREPARATION, SEE SPECIAL PROVISIONS.

FOR LATEX MODIFIED CONCRETE OVERLAY, SEE SPECIAL PROVISIONS.

FOR PLACING AND FINISHING LATEX MODIFIED CONCRETE OVERLAY, SEE SPECIAL PROVISIONS.

THE CONTRACTOR MUST COLLECT, TREAT AND DISPOSE OF RUN-OFF WATER FROM THE HYDRO-DEMOLITION PROCESS, SEE SPECIAL PROVISIONS.

FOR BRIDGE JOINT DEMOLITION, SEE SPECIAL PROVISIONS.

FOR CONCRETE FOR DECK REPAIRS, SEE SPECIAL PROVISIONS.

FOR FOAM JOINT SEAL FOR PRESERVATION, SEE SPECIAL PROVISIONS.

FOR VOLUMETRIC MIXER, SEE SPECIAL PROVISIONS.

FOR ELASTOMERIC CONCRETE FOR PRESERVATION, SEE SPECIAL PROVISIONS.

FOR LMC OVERLAY SURFACE PREPARATION, SEE SPECIAL PROVISIONS.

AT THE TIME OF PREPARATION OF THESE PLANS, IT WAS NOT ANTICIPATED THAT ITEMS LISTED BELOW WOULD BE REQUIRED. HOWEVER, IT MAY BE DETERMINED IN THE FIELD THAT THE FOLLOWING ITEMS LISTED, OR OTHER WORK WILL BE NECESSARY TO PROPERLY COMPLETE THE INTENDED BRIDGE PRESERVATION/REHABILITATION WORK. THE CONTRACTOR SHALL BE PREPARED TO PERFORM SUCH WORK IN A TIMELY MANNER, AS DETERMINED IN THE FIELD. SUCH WORK SHALL BE CONSIDERED EXTRA WORK AND SHALL BE ADDRESSED AS PER ARTICLE 104-7 OF THE STANDARD SPECIFICATIONS. PROJECT SPECIAL PROVISIONS THAT OUTLINE REQUIREMENTS FOR THESE POTENTIAL ADDITIONAL WORK ITEMS HAVE BEEN PROVIDED IN THE PROJECT DOCUMENTS, BUT NO QUANTITIES HAVE BEEN LISTED. ACTUAL PAY ITEMS, QUANTITIES, AND COSTS WILL BE ESTABLISHED, AS REQUIRED, IF EXTRA WORK IS ENCOUNTERED. UNANTICIPATED ITEMS:

CLASS III SURFACE PREPARATION
CONCRETE FOR DECK REPAIR

FOR LIMITS OF PARTIAL REMOVAL OF EXISTING STRUCTURE, SEE APPLICABLE SUPERSTRUCTURE AND SUBSTRUCTURE PLAN SHEETS. "REMOVAL OF EXISTING STRUCTURE" INCLUDES THE EXISTING OVERHANG, RAIL, SLAB AND PARTIAL REMOVAL OF END BENTS.

FOR EPOXY COATING AND DEBRIS REMOVAL ON EXISTING STRUCTURE, SEE SPECIAL PROVISIONS.

DIMENSIONS AND ELEVATIONS SHOWN IN THESE PLANS HAVE BEEN DETERMINED FROM THE BEST INFORMATION AVAILABLE AND ARE PROVIDED FOR INFORMATION ONLY. THE CONTRACTOR SHALL INDEPENDENTLY SURVEY THE EXISTING STRUCTURE AND NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIALS. THE CONTRACTOR SHALL HAVE NO CLAIM AGAINST THE DEPARTMENT FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE INFORMATION SHOWN IN THESE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

CONTRACTOR SHALL MATCH EXISTING SPAN LENGTHS, SUBSTRUCTURE SKEWS, DECK ELEVATIONS AND SUPERELEVATION. CONTRACTOR SHALL SURVEY EXISTING BRIDGE AND NOTIFY ENGINEER IN WRITING OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIALS.

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 3 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING LOCATION SKETCH AND NOTES

NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

Eric Nolting 1/25/2022

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St. Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

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REVISIONS						SHEET NO. S03R-03
NO.	BY:	DATE:	NO.	BY:	DATE:	
1	--	--	3	--	--	TOTAL SHEETS 61
2	--	--	4	--	--	

DES BY: E. NOLTING DATE: 07/21
DES CHK: F. CORDOVA DATE: 07/21

DWG BY: B. PETERSON DATE: 07/21
CHK BY: F. CORDOVA DATE: 07/21

TOTAL BILL OF MATERIAL

	TEMPORARY SHORING	TEMPORARY RAILROAD SHORING FOR BENT NO. 2 @ STA. 68+65.75± -L_RT-	REMOVAL OF EXISTING STRUCTURE @ STA. 68+65.75± -L_RT-	FOUNDATION EXCAVATION FOR BENT @ STA. 68+65.75± -L_RT-	4'-6" DIA. DRILLED PIERS IN SOIL	4'-6" DIA. DRILLED PIERS NOT IN SOIL	PDA TESTING	SID INSPECTIONS	CSL TESTING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS @ STA. 68+65.75± -L_RT-
	SQ. FT.	LUMP SUM	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	EA.	EA.	EA.	SQ. FT.	SQ. FT.	CU. YDS	LUMP SUM
SUPERSTRUCTURE										5169	17509		LUMP SUM
END BENT NO. 1												26.1	
BENT NO. 1	1052			LUMP SUM	83.0	9.0						168.7	
BENT NO. 2	523	LUMP SUM		LUMP SUM	76.9	9.0						134.8	
END BENT NO. 2												26.2	
TOTAL	1575	LUMP SUM	LUMP SUM	LUMP SUM	159.9	18.0	1	1	1	5169	17509	355.8	LUMP SUM

	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	APPROX. 122,000 LBS STRUCTURAL STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP12x53 STEEL PILES	HP12x53 STEEL PILES		STEEL PILE POINTS	CONCRETE BARRIER RAIL	CONCRETE BARRIER RAIL WITH MOMENT SLAB	4" SLOPE PROTECTION	CLASS II SURFACE PREPARATION	LATEX MODIFIED CONCRETE OVERLAY	PLACING AND FINISHING LATEX MODIFIED CONCRETE OVERLAY	ELASTOMERIC BEARINGS
	LB.	LB.	LUMP SUM	EA.	NO.	LIN. FT.	EA.	LIN. FT.	LIN. FT.	SQ. YDS.	SQ. YDS.	CU. YDS.	SQ. YDS.	LUMP SUM
SUPERSTRUCTURE			LUMP SUM					188.6	43.7		10.0	75.1	1461.2	LUMP SUM
END BENT NO. 1	3983			4	4	240	4			211.9				
BENT NO. 1	30818	4153												
BENT NO. 2	28489	4108												
END BENT NO. 2	3921			4	4	220	4			225.8				
TOTAL	67211	8261	LUMP SUM	8	8	460	8	188.6	43.7	437.7	10.0	75.1	1461.2	LUMP SUM

	CONCRETE REPAIRS	STRUCTURE DRAINAGE SYSTEM @ STA. 68+65.75± -L_RT-	VOLUMETRIC MIXER	FOAM JOINT SEALS FOR PRESERVATION	POURABLE SILICONE JOINT SEALANT	ELASTOMERIC CONCRETE FOR PRESERVATION	BRIDGE JOINT DEMOLITION	EPOXY COATING	HYDRO-DEMOLITION OF BRIDGE DECK	SCARIFYING BRIDGE DECK			
	CU. FT.	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	CU. FT.	SQ. FT.	SQ. FT.	SQ. YDS.	SQ. YDS.			
SUPERSTRUCTURE		LUMP SUM	LUMP SUM	327.9	146.1	82.0	328.0		1461.2	1461.2			
END BENT NO. 1								143.8					
BENT NO. 1	5.0							159.3					
BENT NO. 2								159.3					
END BENT NO. 2								143.8					
TOTAL	5.0	LUMP SUM	LUMP SUM	327.9	146.1	82.0	328.0	606.2	1461.2	1461.2			

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
TOTAL BILL
OF MATERIAL

NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

Eric Nolting 1/25/2022

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

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REVISIONS						SHEET NO. S03R-04
NO.	BY:	DATE:	NO.	BY:	DATE:	
1	--	--	3	--	--	TOTAL SHEETS 61
2	--	--	4	--	--	

DES BY: E. NOLTING DATE: 09/21
DES CHK: G. MYERS DATE: 09/21

DWG BY: B. PETERSON DATE: 07/21
CHK BY: G. MYERS DATE: 09/21

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR STEEL GIRDERS

LEVEL		VEHICLE	WEIGHT (W) (TONS)	(#) CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W × RF	STRENGTH I LIMIT STATE											SERVICE II 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)	1.20	--	1.75	0.59	1.20	B	I	27.67	0.95	2.44	B	I	55.33	1.30	0.59	1.72	B	I	27.67	
		HL-93 (OPERATING)	N/A		1.56	--	1.35	0.59	1.56	B	I	27.67	0.95	3.16	B	I	55.33	1.00	0.59	2.24	B	I	27.67	
		HS-20 (INVENTORY)	36.00	(2)	1.52	54.72	1.75	0.59	1.52	B	I	27.67	0.95	2.98	B	I	55.33	1.30	0.59	1.74	B	I	27.67	
		HS-20 (OPERATING)	36.00		1.97	70.93	1.35	0.59	1.97	B	I	27.67	0.95	3.86	B	I	55.33	1.00	0.59	2.26	B	I	27.67	
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		4.03	54.41	1.40	0.59	4.03	B	I	27.67	0.95	8.74	B	I	55.33	1.30	0.59	4.61	B	I	27.67	
		SNGARBS2	20.000		3.11	62.20	1.40	0.59	3.11	B	I	27.67	0.95	6.25	B	I	55.33	1.30	0.59	3.56	B	I	27.67	
		SNAGRIS2	22.000		3.00	66.00	1.40	0.59	3.00	B	I	27.67	0.95	5.87	B	I	55.33	1.30	0.59	3.43	B	I	27.67	
		SNCOTTS3	27.250		2.00	54.50	1.40	0.59	2.00	B	I	27.67	0.95	4.32	B	I	55.33	1.30	0.59	2.29	B	I	27.67	
		SNAGGRS4	34.925		1.72	60.07	1.40	0.59	1.72	B	I	27.67	0.95	3.64	B	I	55.33	1.30	0.59	1.97	B	I	27.67	
		SNS5A	35.550		1.68	59.72	1.40	0.59	1.68	B	I	27.67	0.95	3.71	B	I	55.33	1.30	0.59	1.92	B	I	27.67	
		SNS6A	39.950		1.56	62.32	1.40	0.59	1.56	B	I	27.67	0.95	3.39	B	I	55.33	1.30	0.59	1.78	B	I	27.67	
		SNS7B	42.000		1.49	62.58	1.40	0.59	1.49	B	I	27.67	0.95	3.33	B	I	55.33	1.30	0.59	1.70	B	I	27.67	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.90	62.70	1.40	0.59	1.90	B	I	27.67	0.95	4.02	B	I	55.33	1.30	0.59	2.18	B	I	27.67	
		TNT4A	33.075		1.92	63.50	1.40	0.59	1.92	B	I	27.67	0.95	3.90	B	I	55.33	1.30	0.59	2.20	B	I	27.67	
		TNT6A	41.600		1.59	66.14	1.40	0.59	1.59	B	I	27.67	0.95	3.64	B	I	55.33	1.30	0.59	1.81	B	I	27.67	
		TNT7A	42.000		1.61	67.62	1.40	0.59	1.61	B	I	27.67	0.95	3.48	B	I	55.33	1.30	0.59	1.84	B	I	27.67	
		TNT7B	42.000		1.67	70.14	1.40	0.59	1.67	B	I	27.67	0.95	3.28	B	I	55.33	1.30	0.59	1.92	B	I	27.67	
		TNAGRIT4	43.000		1.58	67.94	1.40	0.59	1.58	B	I	27.67	0.95	3.15	B	I	55.33	1.30	0.59	1.81	B	I	27.67	
		TNAGT5A	45.000		1.49	67.05	1.40	0.59	1.49	B	I	27.67	0.95	3.15	B	I	55.33	1.30	0.59	1.70	B	I	27.67	
		TNAGT5B	45.000	(3)	1.46	65.70	1.40	0.59	1.46	B	I	27.67	0.95	2.98	B	I	55.33	1.30	0.59	1.67	B	I	27.67	
FATIGUE		HL-93 (INVENTORY)	γ_{LL}=0.75		--																			

LOAD FACTORS:

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

NOTES:

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

ALLOWABLE STRESS FOR SERVICE II LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

FATIGUE RATING IS NOT REQUIRED OR REPORTED SINCE GIRDER DESIGN DOES NOT INCLUDE FATIGUE-PRONE DETAILS.

RATING IS PROVIDED FOR BEAMS 6 THROUGH 9 OF THE WIDENING ONLY.

(#) CONTROLLING LOAD RATING

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

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

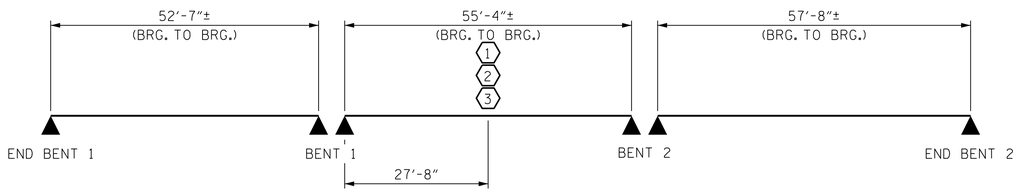
(3) LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER

E - EXTERIOR GIRDER



LRFR SUMMARY

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 5 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
LRFR SUMMARY FOR
STEEL GIRDERS
(NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO. S03R-05
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 61
1	--	--	3	--	--	
2	--	--	4	--	--	

NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

Eric Nolting 1/25/2022

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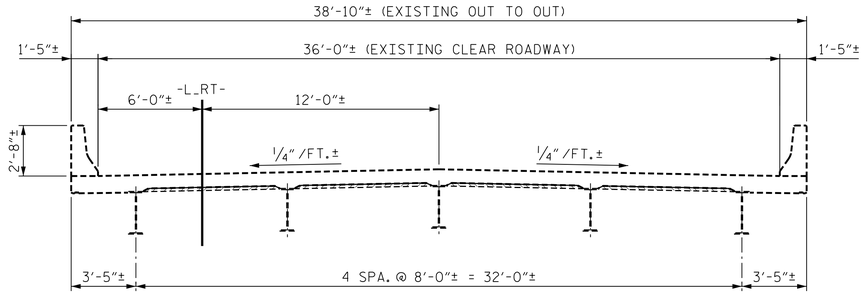
HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

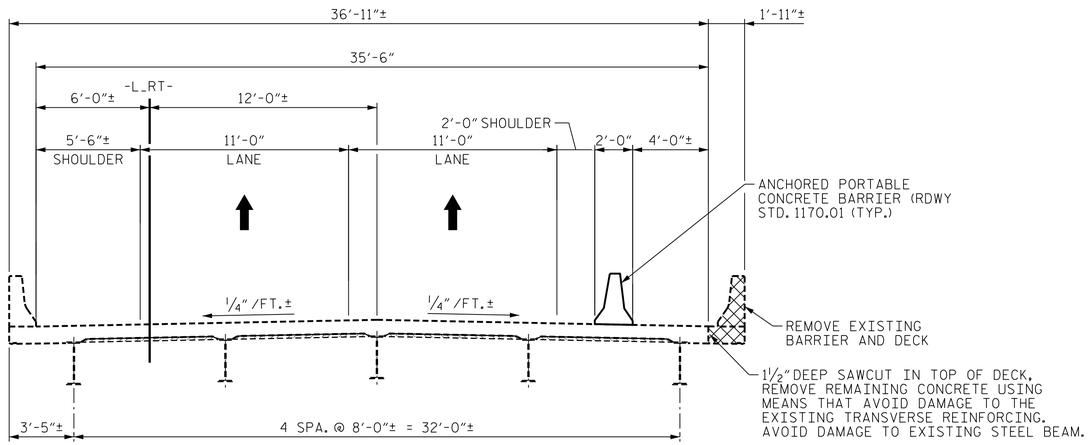
DES BY:	E. NOLTING	DATE:	07/21	DWG BY:	B. PETERSON	DATE:	07/21
DES CHK:	B. ROGERS	DATE:	07/21	CHK BY:	E. NOLTING	DATE:	07/21

NOTES

FOR MAINTENANCE OF TRAFFIC, SEE TRANSPORTATION MANAGEMENT PLAN (TMP.)

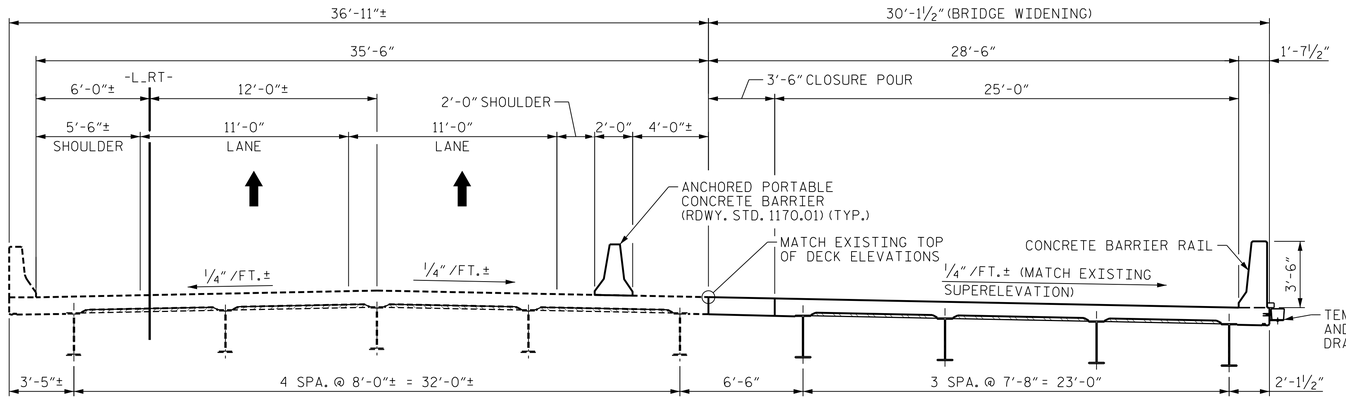


EXISTING TYPICAL SECTION



STAGE 1

REMOVE PORTION OF EXISTING EB BRIDGE
(EB TRAFFIC ON EB BRIDGE)



STAGE 2

CONSTRUCT SUBSTRUCTURE, ERECT BEAMS, PLACE DECK, PLACE CLOSURE POUR AND BARRIER, PLACE POURABLE JOINT
(EB TRAFFIC ON EB BRIDGE)

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE CONSTRUCTION SEQUENCE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S03R-06
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	61

NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

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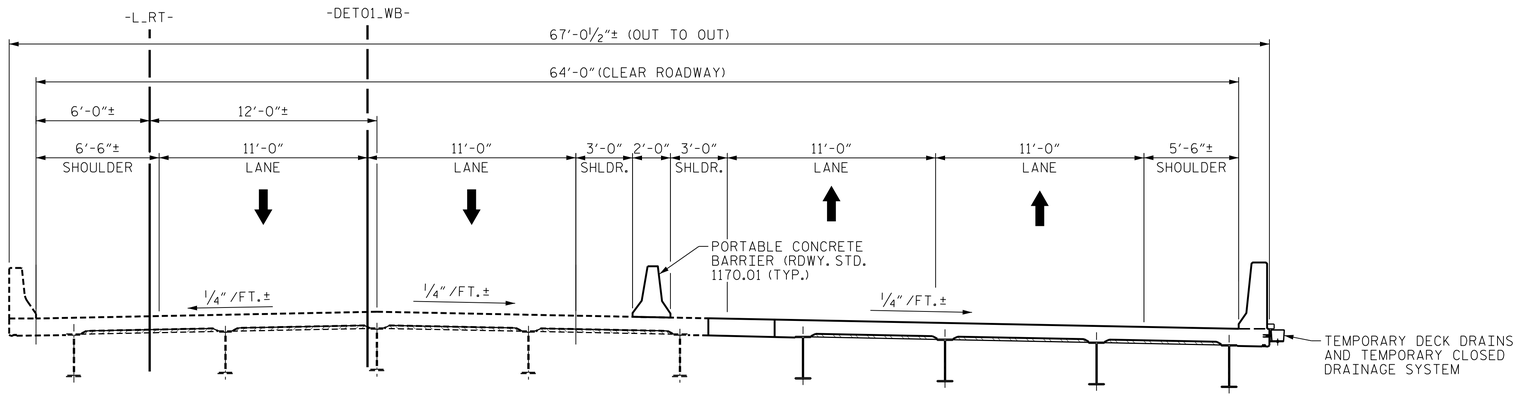
DES BY:	E. NOLTING	DATE :	03/21
DES CHK:	B. ROGERS	DATE :	03/21
DWG BY:	B. PETERSON	DATE :	03/21
CHK BY:	B. ROGERS	DATE :	03/21

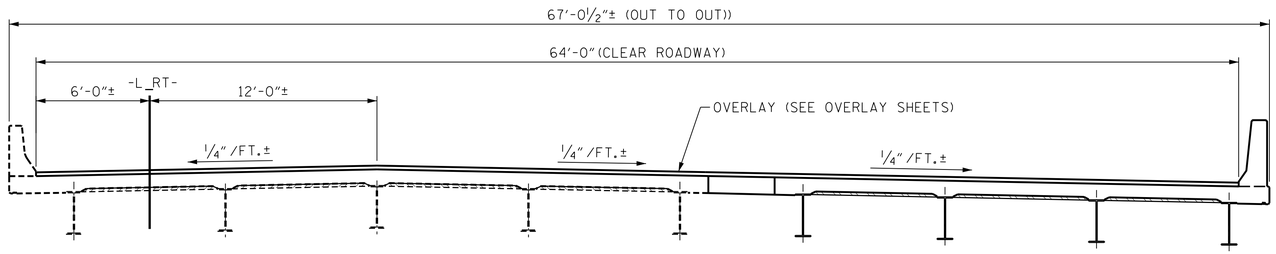
NOTES

FOR MAINTENANCE OF TRAFFIC, SEE TRANSPORTATION MANAGEMENT PLAN (TMP.)



STAGE 3

UNBOLT ANCHORED PORTABLE CONCRETE BARRIER, MOVE TO NEW LOCATION, SHIFT EB TRAFFIC ONTO BRIDGE
(EB AND WB TRAFFIC ON EB BRIDGE)



STAGE 4

REMOVE TEMPORARY CLOSED DRAINAGE SYSTEM, PLUG TEMPORARY DECK DRAINS, REMOVE EXISTING EVAZOTE JOINTS, EXPANSION JOINT SEALS AND POURABLE JOINTS, PERFORM DECK SCARIFICATION/SURFACE PREPARATION, REPAIR EXISTING DECK, PLACE OVERLAY, INSTALL NEW FOAM JOINT SEALS
(EB AND WB TRAFFIC SHIFTED TO WB BRIDGE)

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE CONSTRUCTION SEQUENCE

NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

Eric Nolting 1/25/2022

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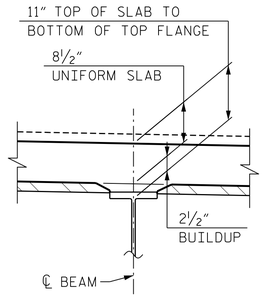
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S03R-07
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	61

DES BY:	E. NOLTING	DATE :	03/21
DES CHK:	B. ROGERS	DATE :	03/21
DWG BY:	B. PETERSON	DATE :	03/21
CHK BY:	B. ROGERS	DATE :	03/21



DETAIL "A"

NOTES

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

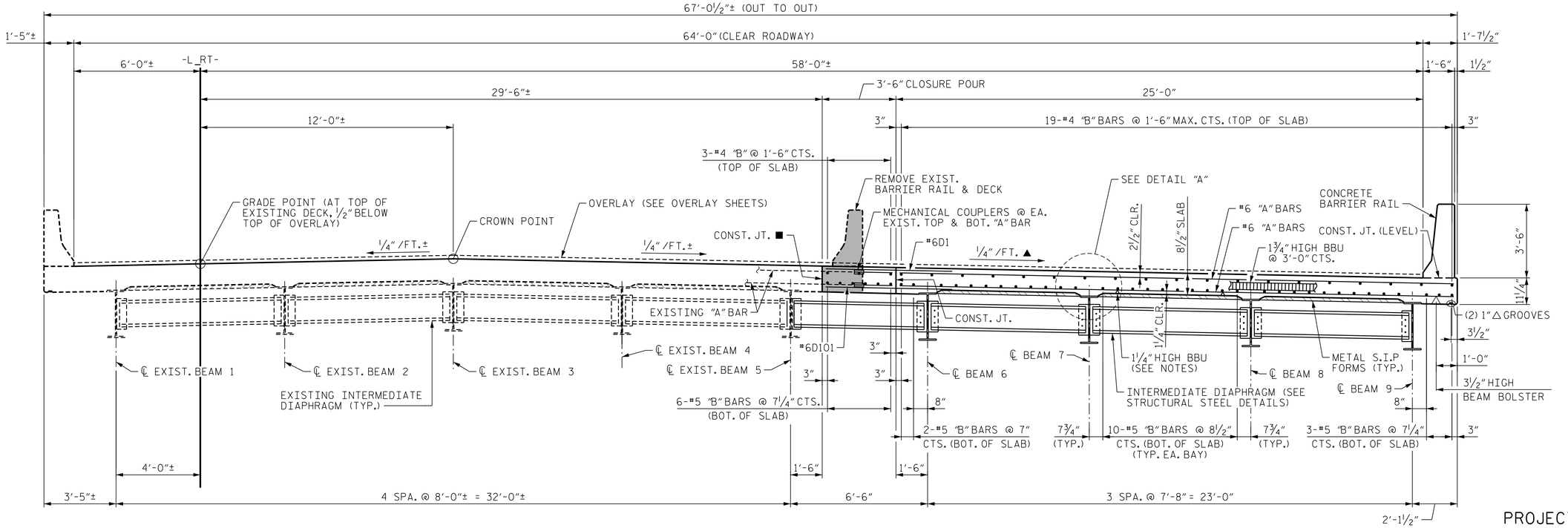
BARRIER RAIL IN EACH SPAN SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT SPAN HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

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

DOWELS SHALL BE PLACED IN THE SAME HORIZONTAL PLANE AS THE TOP AND BOTTOM SLAB REINFORCING STEEL.

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

THE CONTRACTOR MAY, WHEN NECESSARY, PROPOSE A SCHEME FOR AVOIDING INTERFERENCE BETWEEN METAL STAY-IN-PLACE FORM SUPPORTS OR FORMS AND BEAM/GIRDER STIFFENERS OR CONNECTOR PLATES. THE PROPOSAL SHALL BE INDICATED, AS APPROPRIATE, ON EITHER THE STEEL WORKING DRAWINGS OR THE METAL STAY-IN-PLACE FORM WORKING DRAWINGS.



TYPICAL SECTION

(SHOWING TYPICAL SLAB REINFORCEMENT & INTERMEDIATE DIAPHRAGMS)

■ 1½" DEEP SAWCUT IN TOP OF DECK, REMOVE REMAINING CONCRETE USING MEANS THAT AVOID DAMAGE TO THE EXISTING TRANSVERSE REINFORCING. AVOID DAMAGE TO THE EXISTING STEEL BEAM.

▲ MATCH EXISTING SUPERELEVATION.

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
TYPICAL SECTION

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S03R-08
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	61

DES BY: F. CORDOVA	DATE: 04/21	DWG BY: B. PETERSON	DATE: 03/21
DES CHK: B. ROGERS	DATE: 03/21	CHK BY: M. NEIHEISEL	DATE: 07/21

NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

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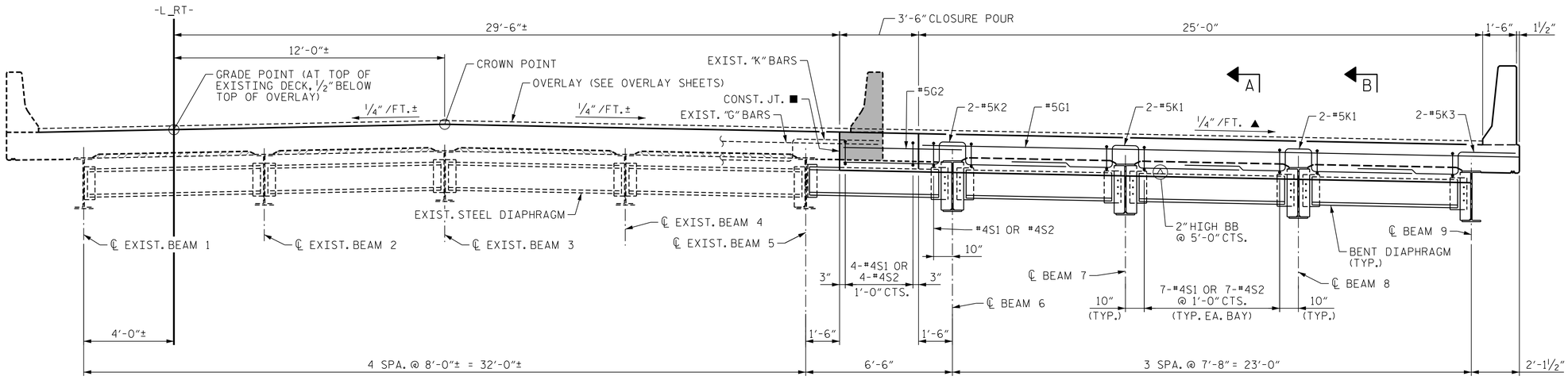
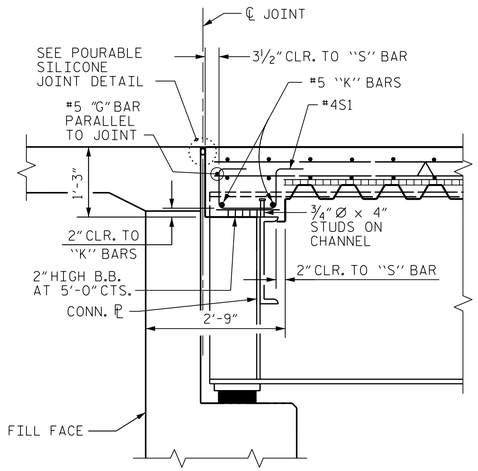


TYPICAL SECTION

(SPANS A AND B BENT DIAPHRAGMS SHOWN, SPAN C SIMILAR)
("A" AND "B" BARS NOT SHOWN FOR CLARITY)

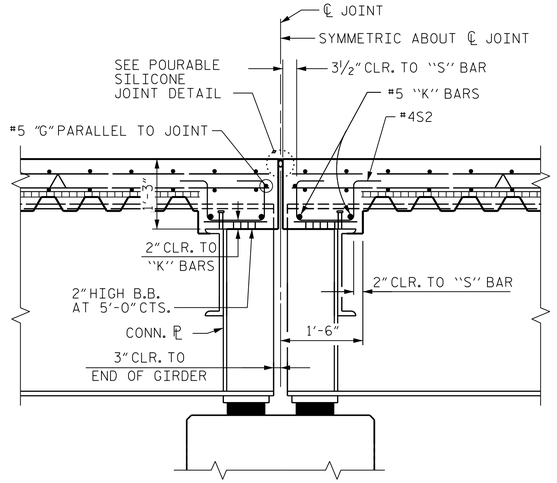
■ 1½" DEEP SAWCUT IN TOP OF DECK, REMOVE REMAINING CONCRETE USING MEANS THAT AVOID DAMAGE TO THE EXISTING TRANSVERSE REINFORCING. AVOID DAMAGE TO THE EXISTING STEEL BEAM.

▲ MATCH EXISTING SUPERELEVATION.



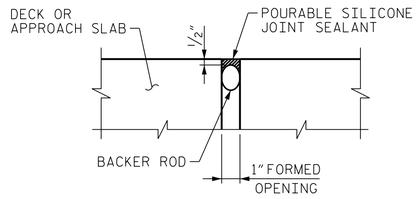
SECTION A-A

(AT END BENTS)



SECTION B-B

(SHOWN AT BENT 1 - SIMILAR AT BENT 2)



POURABLE SILICONE JOINT DETAIL

NOTES

FOR POURABLE SILICONE JOINT SEALANT, SEE SPECIAL PROVISIONS.

POURABLE SILICONE JOINT SHALL BE USED DURING CONSTRUCTION STAGE 3 AND SHALL BE REMOVED DURING CONSTRUCTION STAGE 4.

CONTRACTOR SHALL FIELD VERIFY THE JOINT OPENING PRIOR TO ORDERING THE BACKER ROD.

THE BACKER ROD SHALL MEET THE MANUFACTURER'S RECOMMENDATION FOR THE SIZE OF THE JOINT OPENING.

THE INSTALLED POURABLE SILICONE JOINT SHALL BE WATER TIGHT FOR THE DURATION OF CONSTRUCTION STAGE 3.

NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

Eric Nolting 1/25/2022

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555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

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DES BY:	F. CORDOVA	DATE :	04/21
DES CHK:	B. ROGERS	DATE :	03/21
DWG BY:	B. PETERSON	DATE :	03/21
CHK BY:	M. NEIHEISEL	DATE :	07/21

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

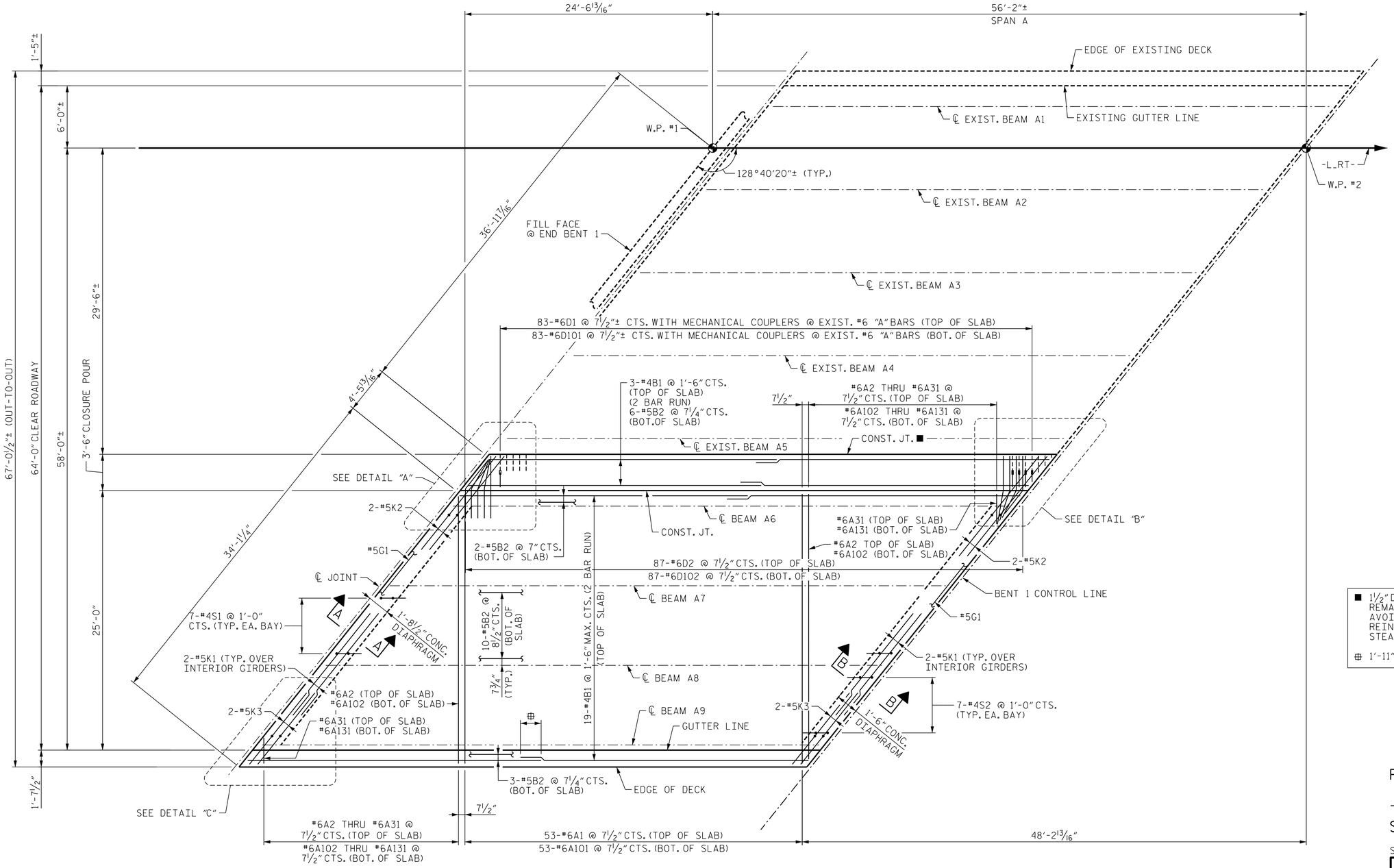
STATION: 68+65.75± -L_RT-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE TYPICAL SECTION

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S03R-09
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	61



PLAN OF SPAN A

NOTES

FOR SECTIONS A-A AND B-B, SEE SHEET "SUPERSTRUCTURE TYPICAL SECTION" SHEET 2 OF 2.

FOR DETAILS "A", "B", AND "C" SEE SHEET "SUPERSTRUCTURE PLAN OF SPANS DETAILS" SHEET 4 OF 4.

■ 1 1/2" DEEP SAWCUT IN TOP OF DECK, REMOVE REMAINING CONCRETE USING MEANS THAT AVOID DAMAGE TO THE EXISTING TRANSVERSE REINFORCING. AVOID DAMAGE TO THE EXISTING STEAL BEAM.

⊕ 1'-11" MIN. LAP SPLICE FOR #4 "B" BARS.

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
PLAN OF SPANS

REVISIONS						SHEET NO. S03R-10
NO.	BY:	DATE:	NO.	BY:	DATE:	
1	--	--	3	--	--	TOTAL SHEETS 61
2	--	--	4	--	--	

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DES BY:	F. CORDOVA	DATE :	04/21
DES CHK:	M. NEIHEISEL	DATE :	07/21
DWG BY:	B. PETERSON	DATE :	03/21
CHK BY:	M. NEIHEISEL	DATE :	07/21

PLOT DRIVER: NCDOT STRUCTURES DEFAULT PLOTTER.plt PENTABLE: NCDOT STRUCTURES DEFAULT PEN.tbl
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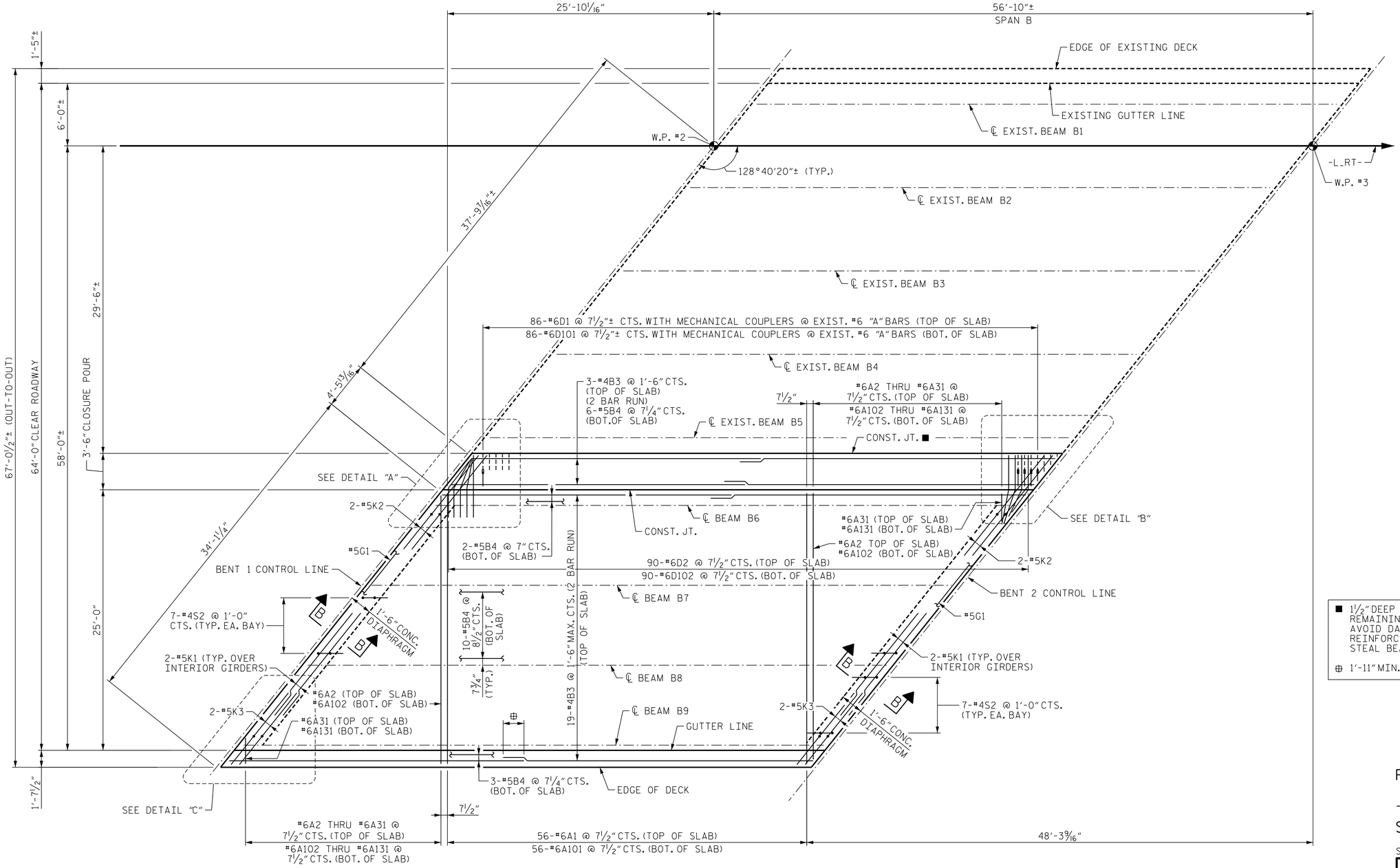

PLAN OF SPAN B

■ 1 1/2" DEEP SAWCUT IN TOP OF DECK, REMOVE REMAINING CONCRETE USING MEANS THAT AVOID DAMAGE TO THE EXISTING TRANSVERSE REINFORCING. AVOID DAMAGE TO THE EXISTING STEAL BEAM.

⊕ 1'-11" MIN. LAP SPLICE FOR #4 "B" BARS.

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE PLAN OF SPANS

NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

Eric Nolting 1/25/2022

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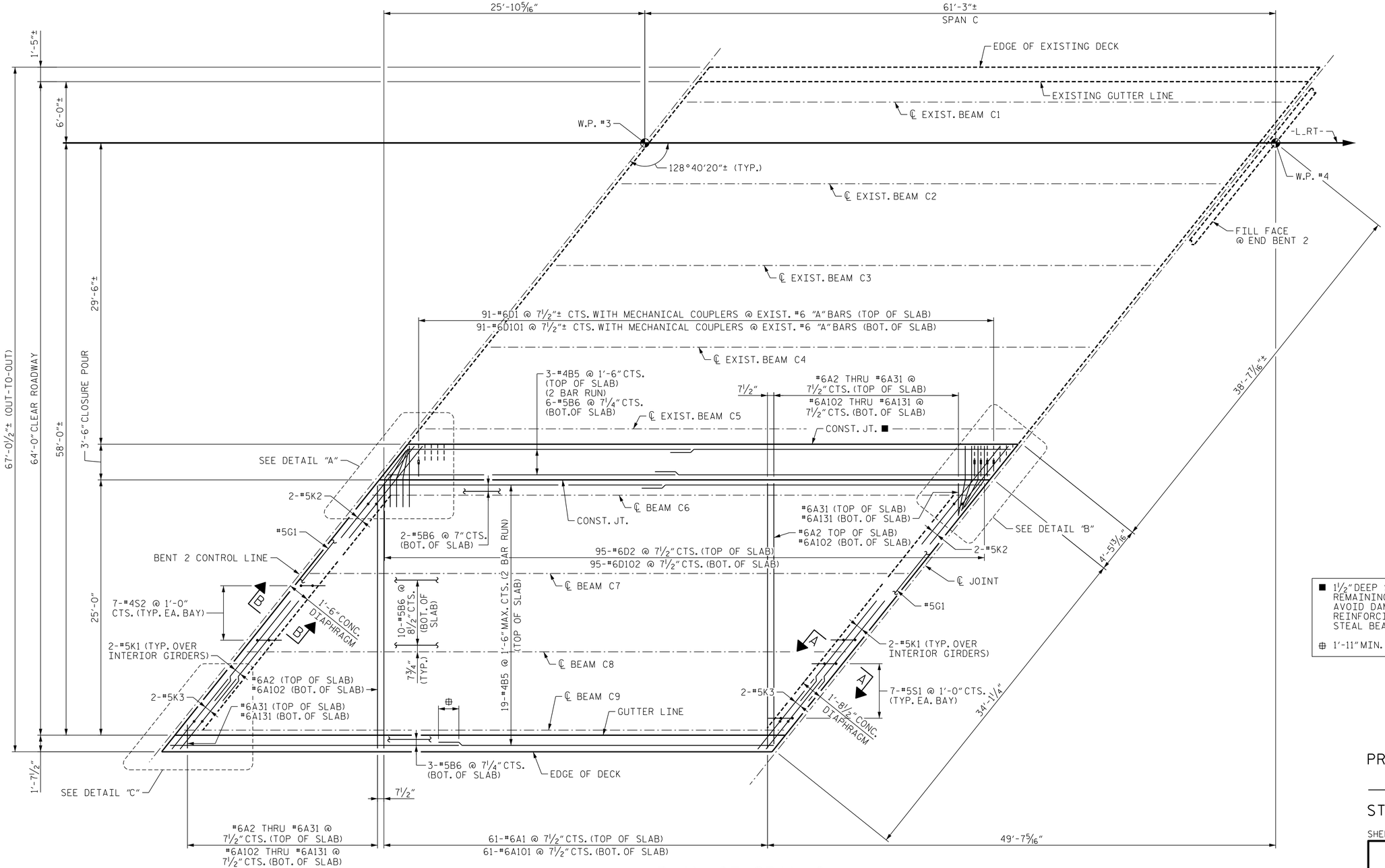
REVISIONS						SHEET NO. S03R-11
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 61
1	--	--	3	--	--	
2	--	--	4	--	--	

DES BY: F. CORDOVA	DATE: 04/21	DWG BY: B. PETERSON	DATE: 03/21
DES CHK: M. NEIHEISEL	DATE: 07/21	CHK BY: M. NEIHEISEL	DATE: 07/21



PLAN OF SPAN C

■ 1 1/2" DEEP SAWCUT IN TOP OF DECK, REMOVE REMAINING CONCRETE USING MEANS THAT AVOID DAMAGE TO THE EXISTING TRANSVERSE REINFORCING. AVOID DAMAGE TO THE EXISTING STEAL BEAM.

⊕ 1'-11" MIN. LAP SPLICE FOR #4 "B" BARS.

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE PLAN OF SPANS

NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

Eric Nolting 1/25/2022

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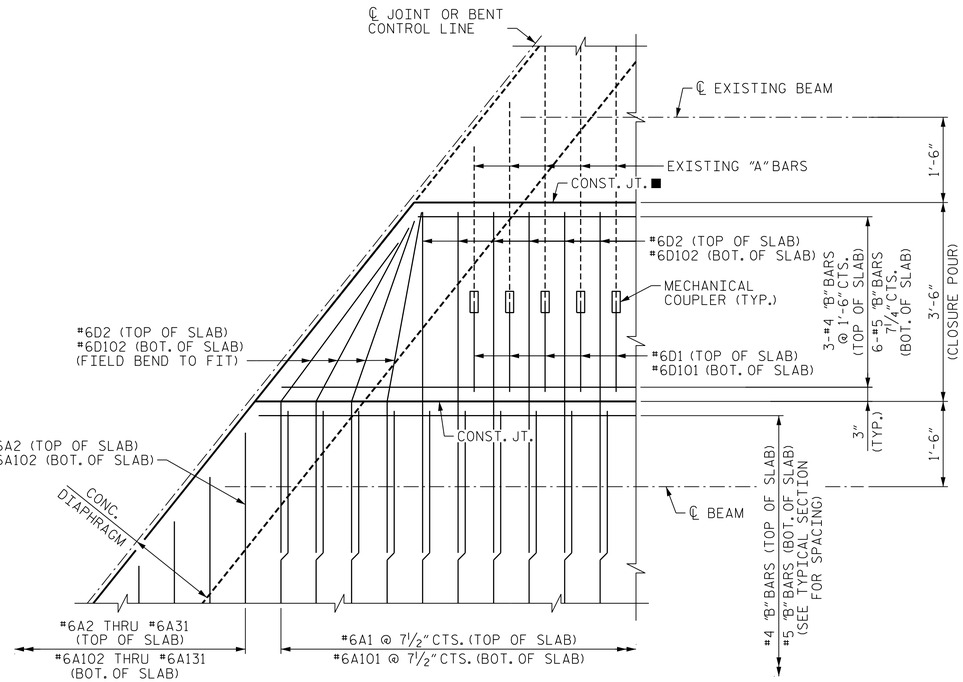
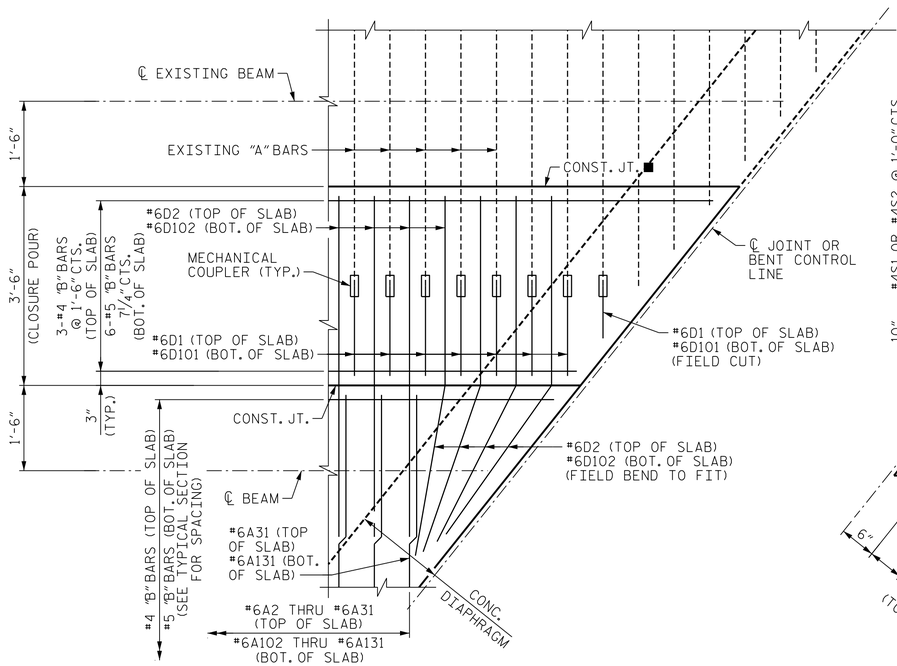
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S03R-12
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	61

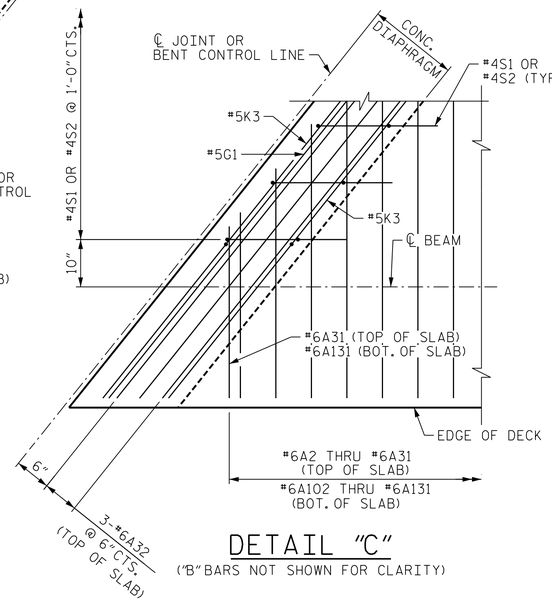
DES BY:	F. CORDOVA	DATE :	04/21
DES CHK:	M. NEIHEISEL	DATE :	07/21
DWG BY:	B. PETERSON	DATE :	03/21
CHK BY:	M. NEIHEISEL	DATE :	07/21



DETAIL SHOWING DECK SLAB REINFORCEMENT

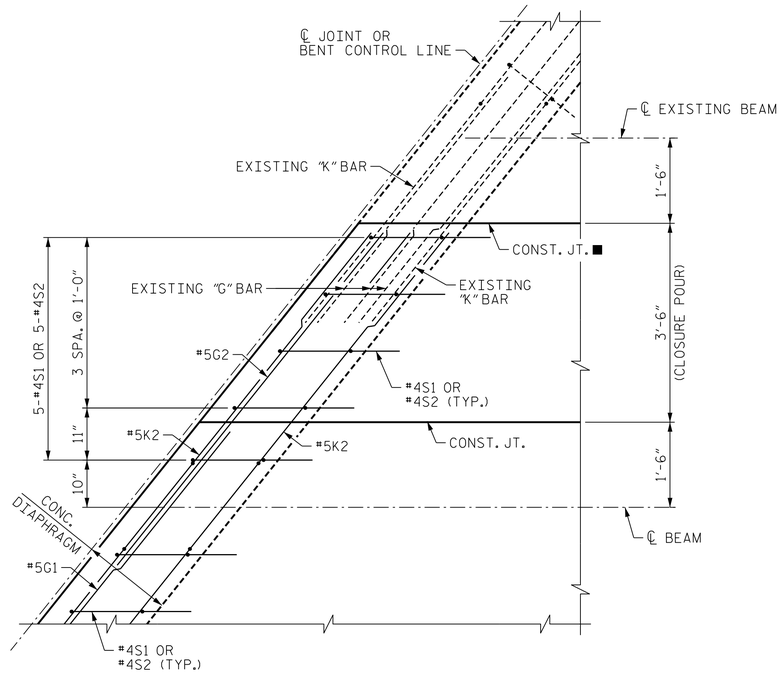


DETAIL SHOWING DECK SLAB REINFORCEMENT



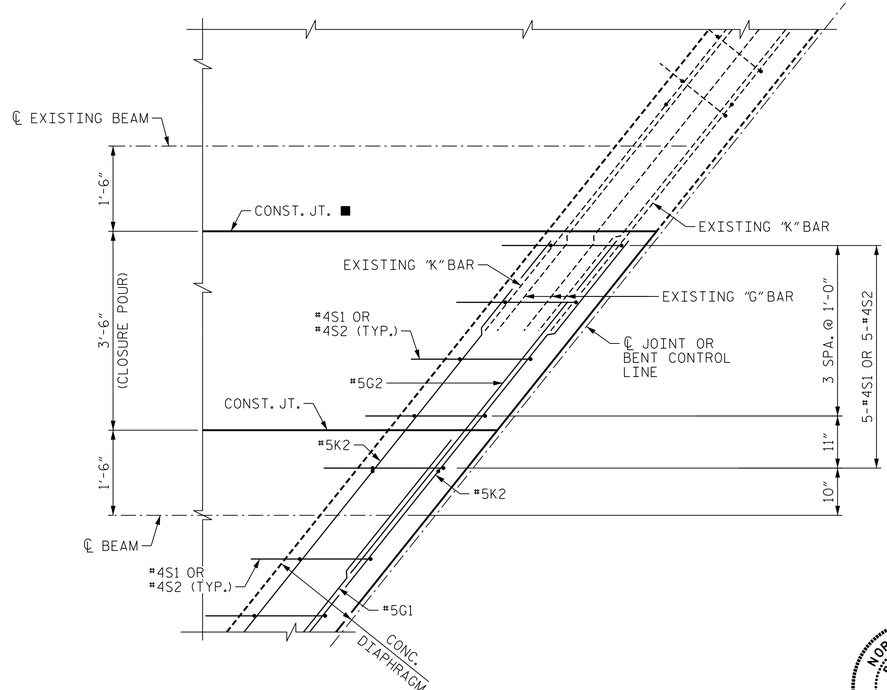
DETAIL "C"

("B" BARS NOT SHOWN FOR CLARITY)



DETAIL SHOWING DIAPHRAGM REINFORCEMENT

DETAIL "A"



DETAIL SHOWING DIAPHRAGM REINFORCEMENT

DETAIL "B"

■ 1 1/2" DEEP SAWCUT IN TOP OF DECK. REMOVE REMAINING CONCRETE USING MEANS THAT AVOID DAMAGE TO THE EXISTING TRANSVERSE REINFORCING. AVOID DAMAGE TO THE EXISTING STEAL BEAM.

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE PLAN OF SPANS

NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

Eric Nolting 1/25/2022

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO. S03R-13
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 61
1	--	--	3	--	--	
2	--	--	4	--	--	

DES BY: F. CORDOVA	DATE: 04/21	DWG BY: B. PETERSON	DATE: 03/21
DES CHK: M. NEIHEISEL	DATE: 07/21	CHK BY: M. NEIHEISEL	DATE: 07/21

PLOT DRIVER: NCDOT STRUCTURES DEFAULT PLOTTER.plt PENTABLE: NCDOT STRUCTURES DEFAULT PEN.tbl
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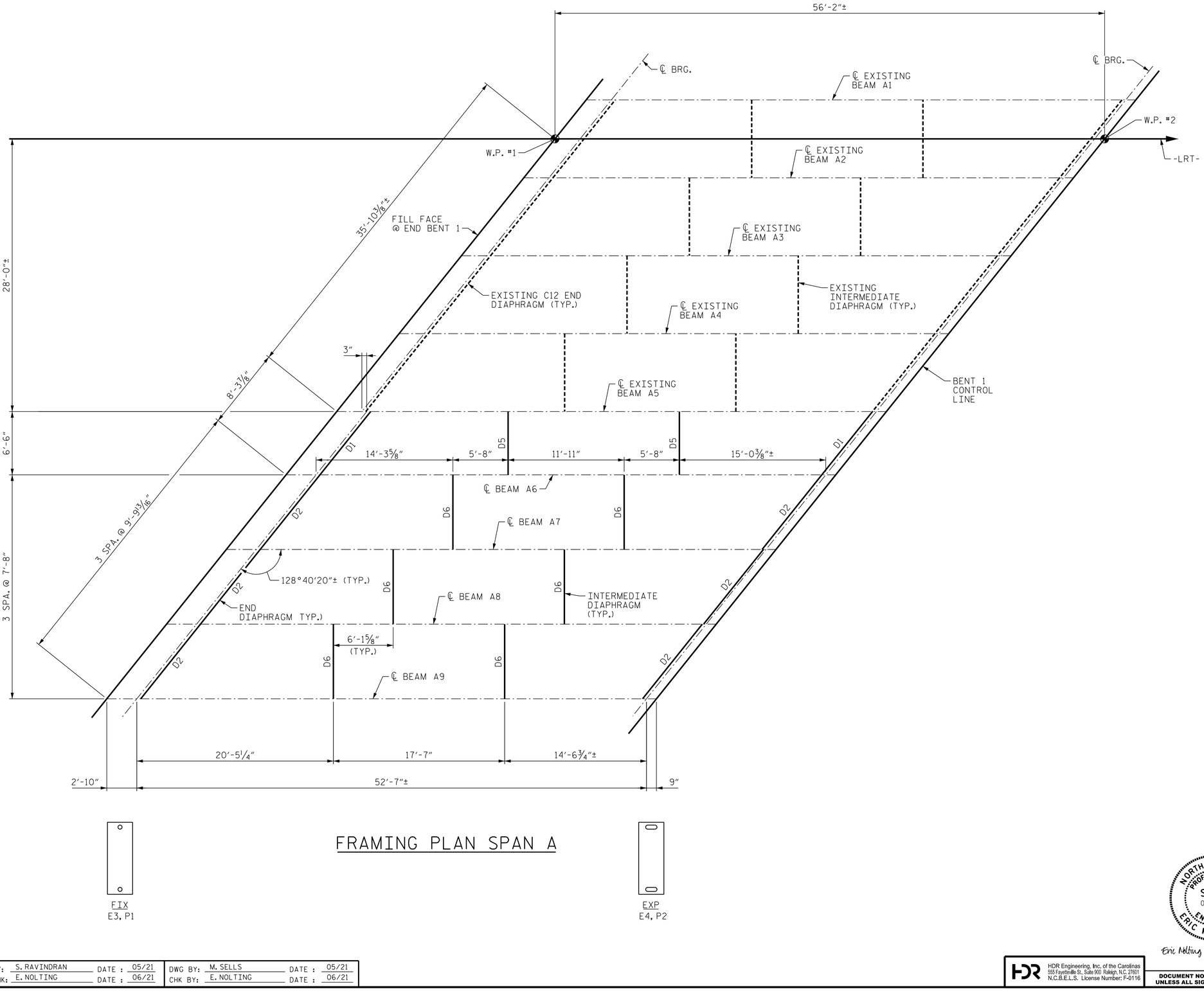

FRAMING PLAN SPAN A

FIX
E3, P1

EXP
E4, P2

NOTES

FOR STRUCTURAL STEEL NOTES AND DETAILS, SEE "SUPERSTRUCTURE STRUCTURAL STEEL DETAILS' SHEETS.

FOR ELASTOMERIC BEARING AND SOLE PLATE DETAILS, SEE "SUPERSTRUCTURE ELASTOMERIC BEARING DETAILS" SHEET.

PROPOSED BEARING TO BEARING LENGTH FOR SPAN A IS 3"LESS THAN EXISTING BEARING TO BEARING LENGTH. THE PROPOSED CENTERLINE OF BEARING AT END BENT 1 IS SET TOWARDS THE SPAN BY 3" ALONG THE CENTERLINE OF BEAM.

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE FRAMING PLAN SPAN A

NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

Eric Nolting 1/25/2022

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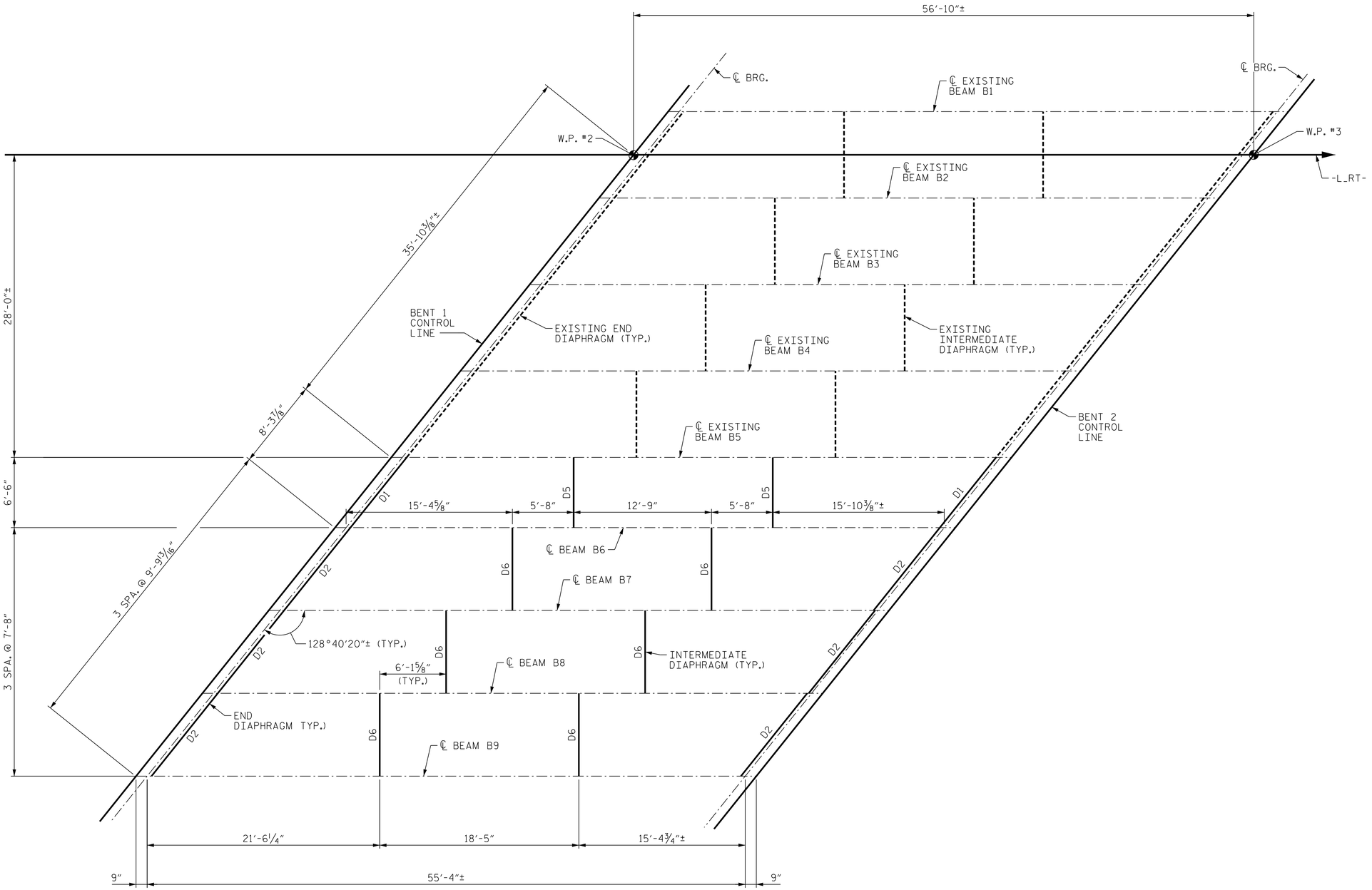
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S03R-14
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	61

DES BY:	S. RAVINDRAN	DATE :	05/21
DES CHK:	E. NOLTING	DATE :	06/21
DWG BY:	M. SELLS	DATE :	05/21
CHK BY:	E. NOLTING	DATE :	06/21

NOTES

FOR STRUCTURAL STEEL NOTES AND DETAILS, SEE "SUPERSTRUCTURE STRUCTURAL STEEL DETAILS" SHEETS.

FOR ELASTOMERIC BEARING AND SOLE PLATE DETAILS, SEE "SUPERSTRUCTURE ELASTOMERIC BEARING DETAILS" SHEET.



FRAMING PLAN SPAN B

FIX
E3, P1

EXP
E4, P2

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE FRAMING PLAN SPAN B

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S03R-15
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	61

NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

Eric Nolting 1/25/2022

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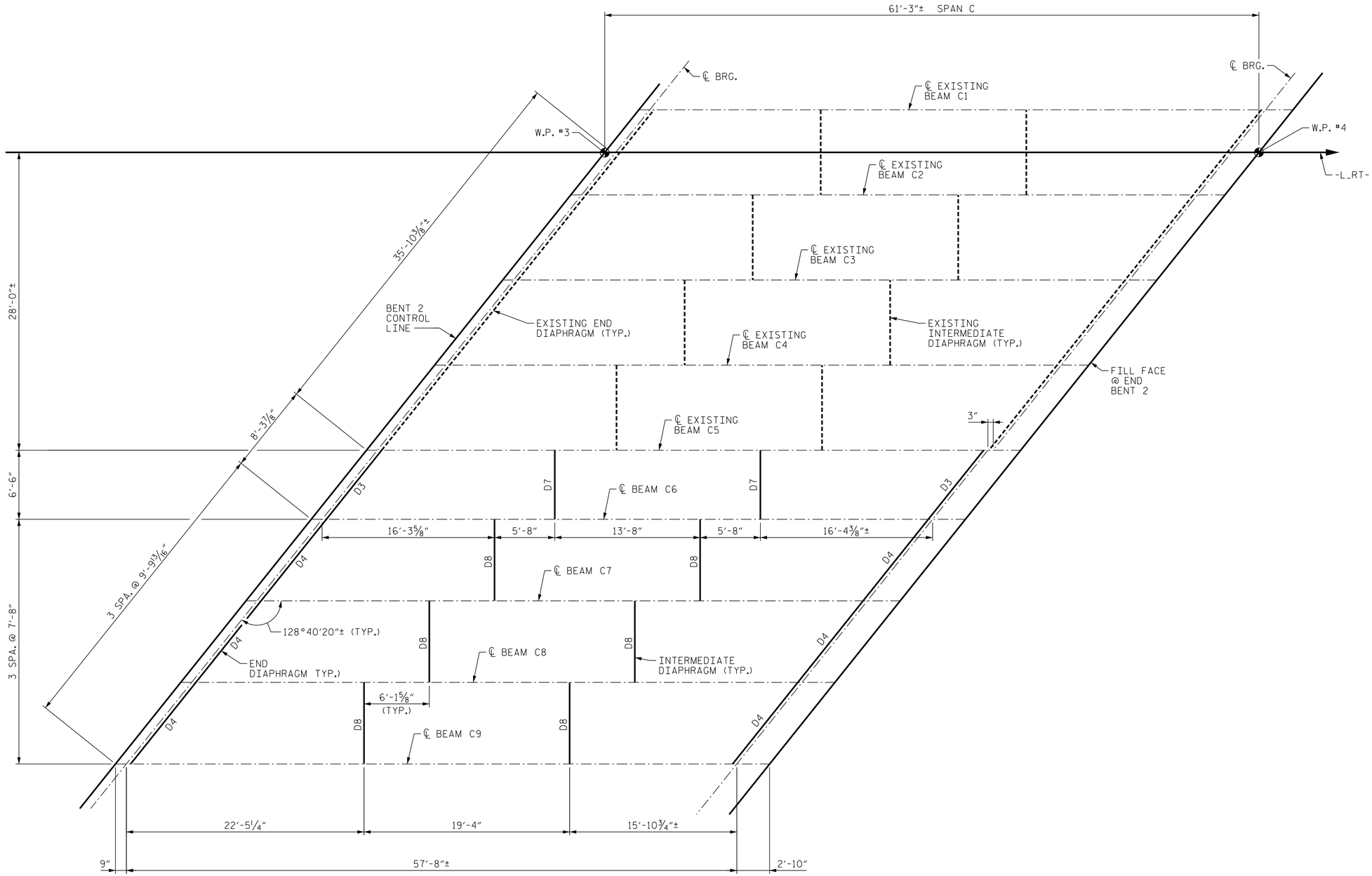
DES CHK:	E. NOLTING	DATE :	06/21
DWG BY:	M. SELLS	DATE :	05/21
CHK BY:	E. NOLTING	DATE :	06/21



EXP
E4, P2

FIX
E3, P1

FRAMING PLAN SPAN C

NOTES

FOR STRUCTURAL STEEL NOTES AND DETAILS, SEE "SUPERSTRUCTURE STRUCTURAL STEEL DETAILS' SHEETS.

FOR ELASTOMERIC BEARING AND SOLE PLATE DETAILS, SEE "SUPERSTRUCTURE ELASTOMERIC BEARING DETAILS" SHEET.

PROPOSED BEARING TO BEARING LENGTH FOR SPAN C IS 3" LESS THAN EXISTING BEARING TO BEARING LENGTH. THE PROPOSED CENTERLINE OF BEARING AT END BENT 2 IS SET TOWARDS THE SPAN BY 3" ALONG THE CENTERLINE OF BEAM.

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE FRAMING PLAN SPAN C

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S03R-16
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	61

NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

Eric Nolting 1/25/2022

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DES BY:	S. RAVINDRAN	DATE :	05/21
DES CHK:	E. NOLTING	DATE :	06/21
DWG BY:	M. SELLS	DATE :	05/21
CHK BY:	E. NOLTING	DATE :	06/21

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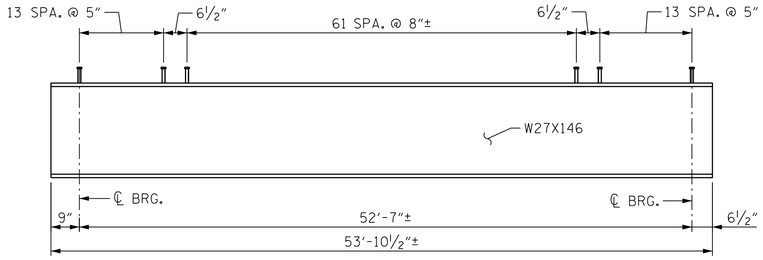
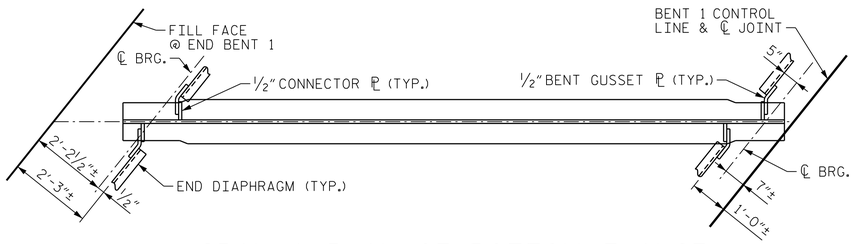


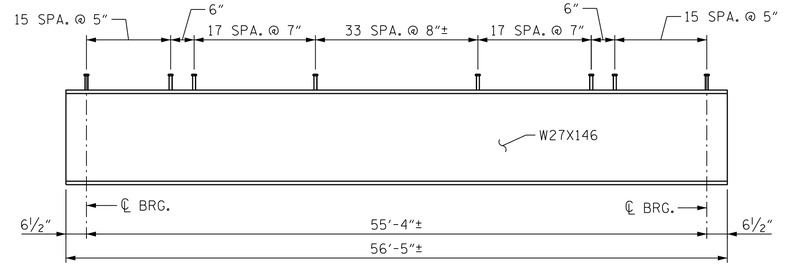
SPAN A ELEVATION

(DIAPHRAGM CONNECTOR PLATES NOT SHOWN FOR CLARITY)



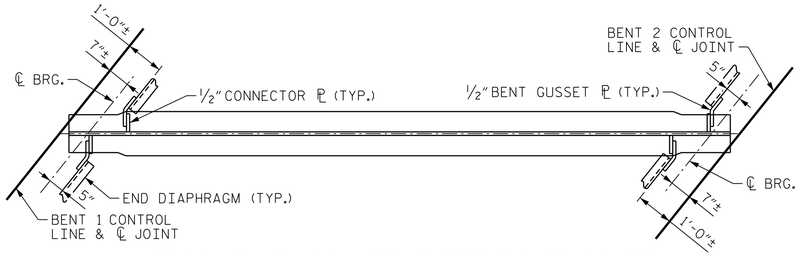
SPAN A PLAN OF BOTTOM FLANGE

(INTERMEDIATE DIAPHRAGM CONNECTOR PLATES NOT SHOWN FOR CLARITY)



SPAN B ELEVATION

(DIAPHRAGM CONNECTOR PLATES NOT SHOWN FOR CLARITY)



SPAN B PLAN OF BOTTOM FLANGE

(INTERMEDIATE DIAPHRAGM CONNECTOR PLATES NOT SHOWN FOR CLARITY)

NOTES

ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 50W AND PAINTED IN ACCORDANCE WITH SYSTEM 5 OR SYSTEM 6 OF THE STRUCTURAL STEEL SHOP COATINGS PROGRAM AND SECTION 442-8 OF THE STANDARD SPECIFICATIONS UNLESS OTHERWISE NOTED ON THE PLANS.

ALL DIMENSIONS SHOWN ARE HORIZONTAL OR VERTICAL, UNLESS OTHERWISE NOTED.

ALL FIELD CONNECTIONS TO BE 7/8″ DIA. HIGH STRENGTH BOLTS UNLESS OTHERWISE NOTED.

STIFFENERS ARE NOT REQUIRED ON THE OUTSIDE OF EXTERIOR BEAMS.

A CHARPY V-NOTCH TEST IS REQUIRED ON ALL BEAM SECTIONS AS SHOWN ON THE PLANS AND IN ACCORDANCE WITH ARTICLE 1072-7 OF THE STANDARD SPECIFICATIONS.

WHERE DIAPHRAGMS ARE TO BE BOLTED TO EXISTING STEEL BEAMS, DO NOT REMOVE PAINT FROM THE CONTACT SURFACE.

AT DIAPHRAGMS D1, D5, D3 & D7, CONNECTION BOLTS ARE TO BE LOCATED AT THE BOTTOM OF THE CONNECTION SLOTS AND TIGHTENED TO A SNUG FIT PRIOR TO FIELD WELDING OPPOSITE END OF DIAPHRAGM. AFTER WELDING DIAPHRAGM TO CONNECTION ANGLE AND PRIOR TO THE POURING OF THE SLAB, BACK OFF BOLTS 1/2 TURN TO ALLOW FOR VERTICAL DEFLECTION OF NEW BEAM. AFTER DEFLECTIONS HAVE OCCURRED, TIGHTEN BOLTS AS REQUIRED BY THE STANDARD SPECIFICATIONS.

TENSION ON THE ASTM A325 BOLTS SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH ARTICLE 440-8 OF THE STANDARD SPECIFICATIONS.

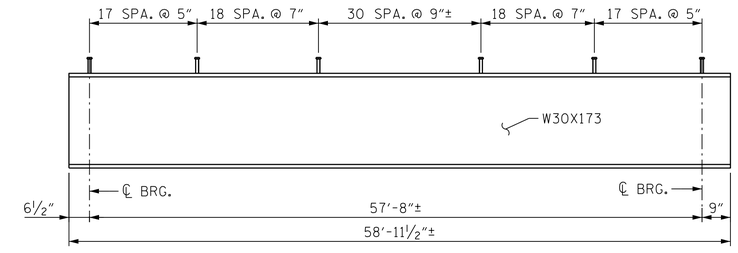
END OF BEAMS AND GIRDERS SHALL BE PLUMB.

END DIAPHRAGM CONNECTOR PLATES MAY REQUIRE COPING IF WIDER THAN BOTTOM FLANGE.

FABRICATORS SHALL DETAIL DIAPHRAGM MEMBERS AND CONNECTIONS FOR FULL DEAD LOAD FIT UP. GIRDERS SHALL BE PLUMB AFTER THE FULL AMOUNT OF DEAD LOAD IS APPLIED.

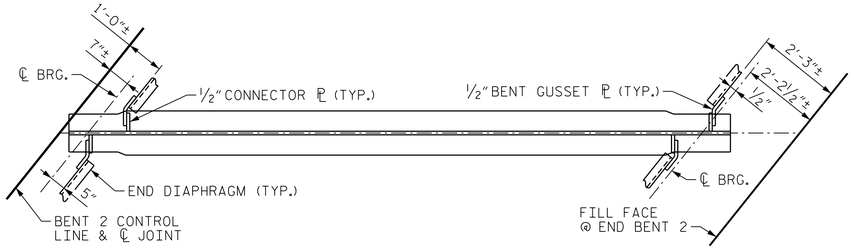
ERECTION NOTE

DURING BEAM ERECTION PROCEDURE, THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING TEMPORARY LATERAL BRACING AND OTHER MEANS OF SUPPORT, AS REQUIRED TO ENSURE STABILITY OF THE BEAMS AND TO ENSURE PLUMBNESS OF THE BEAMS IN THE FINAL POSITION.



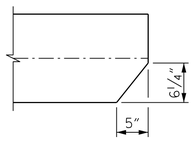
SPAN C ELEVATION

(DIAPHRAGM CONNECTOR PLATES NOT SHOWN FOR CLARITY)



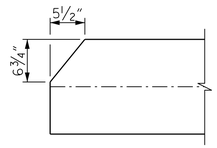
SPAN C PLAN OF BOTTOM FLANGE

(INTERMEDIATE DIAPHRAGM CONNECTOR PLATES NOT SHOWN FOR CLARITY)



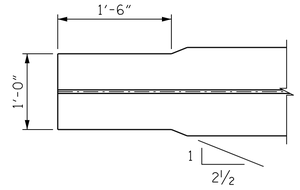
TOP FLANGE CLIP DETAIL

(TYP. SPAN A BEAMS AT BENT 1 AND SPAN B BEAMS AT BENTS 1 AND 2)



TOP FLANGE CLIP DETAIL

(TYP. SPAN C BEAMS AT BENT 2)



BOTTOM FLANGE COPE DETAIL

(TYP. AT EACH END OF EACH BEAM)

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE STRUCTURAL STEEL DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

Eric Nolting 1/25/2022

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

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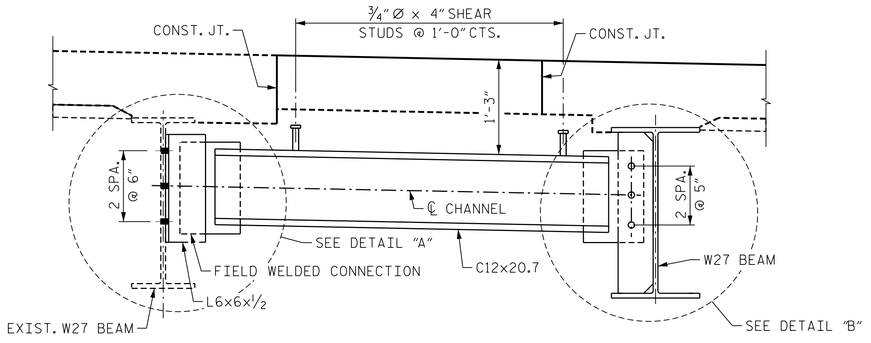
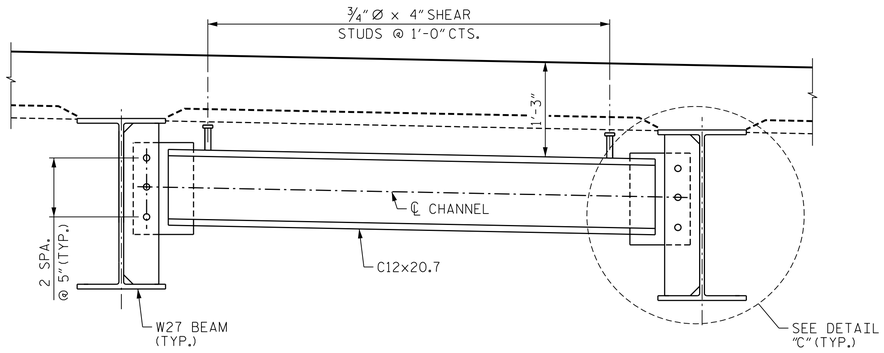
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S03R-17
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	61

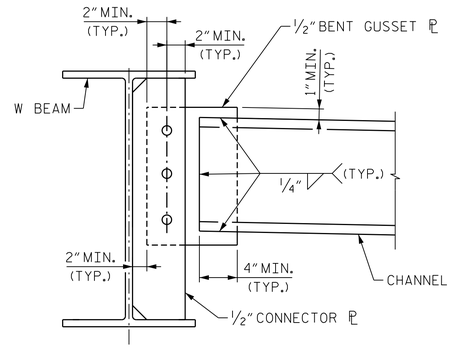
DES BY:	E. NOLTING	DATE :	04/21
DES CHK:	B. ROGERS	DATE :	05/21
DWG BY:	B. PETERSON	DATE :	05/21
CHK BY:	B. ROGERS	DATE :	06/21



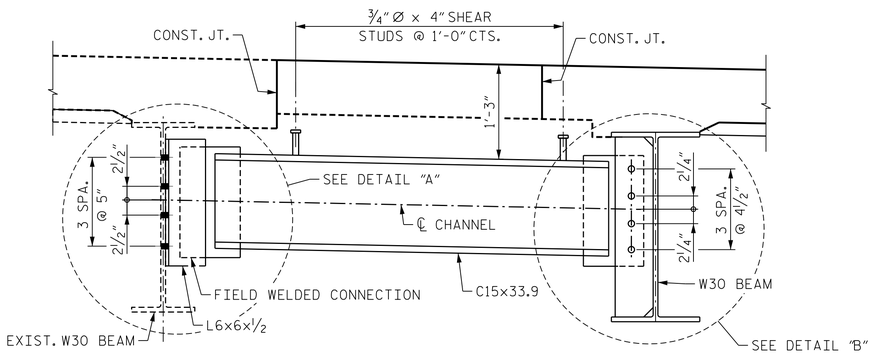
END DIAPHRAGM D1



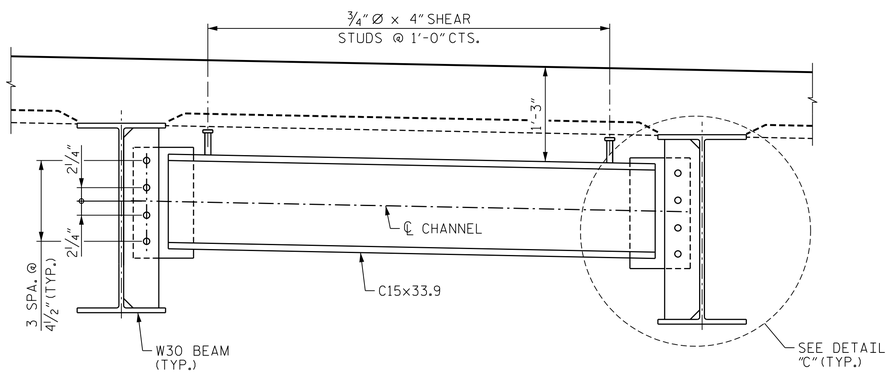
END DIAPHRAGM D2



DETAIL "C"



END DIAPHRAGM D3



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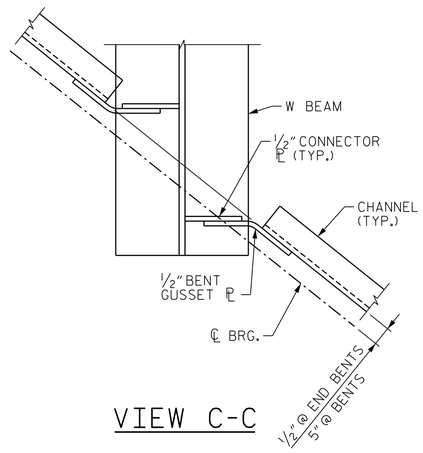
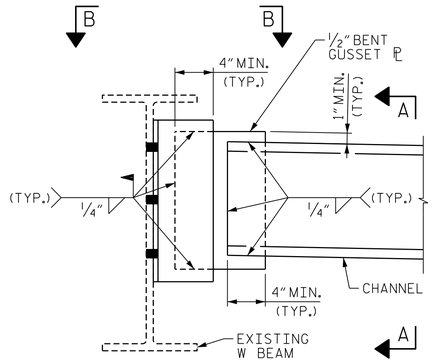
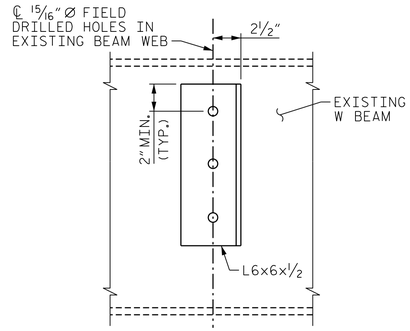


VIEW C-C

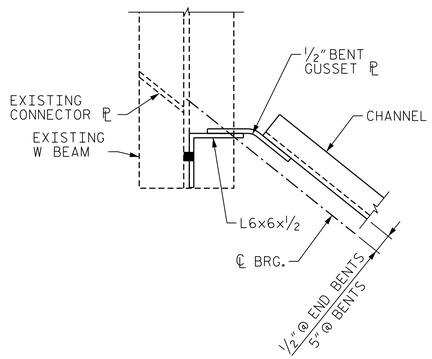


DETAIL "A"

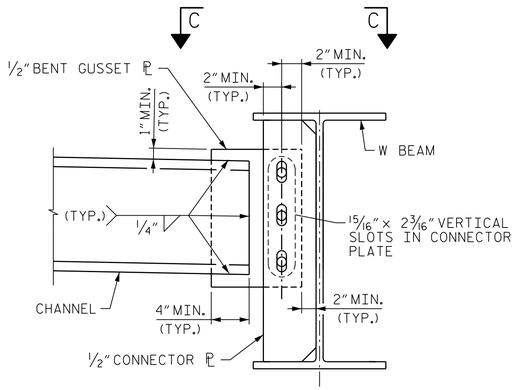
(DETAIL SHOWN AT END DIAPHRAGM D1: END DIAPHRAGM D3 SIMILAR)



VIEW A-A



VIEW B-B



DETAIL "B"

(DETAIL SHOWN AT END DIAPHRAGM D2: END DIAPHRAGM D4 SIMILAR)

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE STRUCTURAL STEEL DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S03R-18
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	61

NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

Eric Nolting 1/25/2022

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CHK BY:	B. ROGERS	DATE :	06/21

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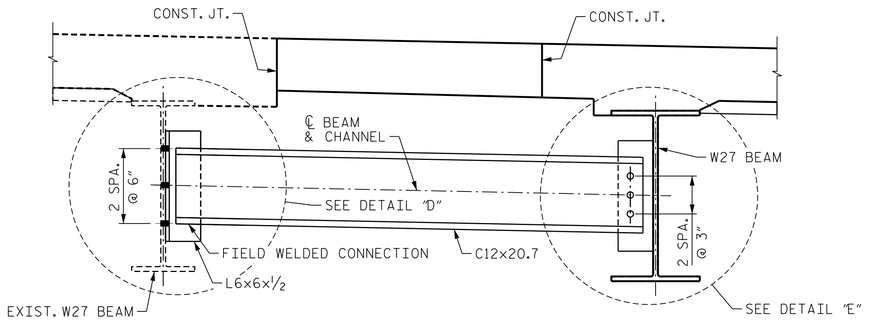
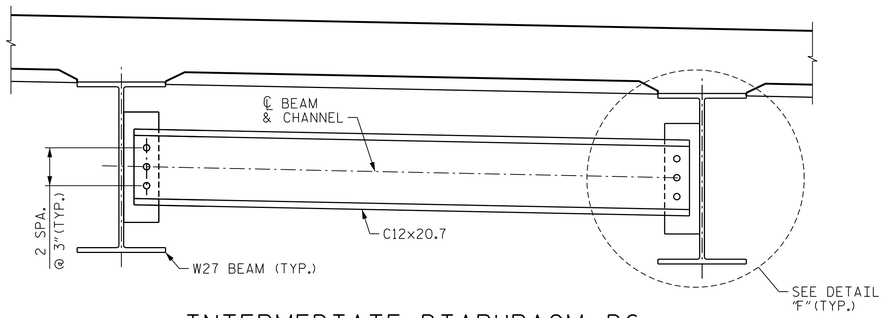
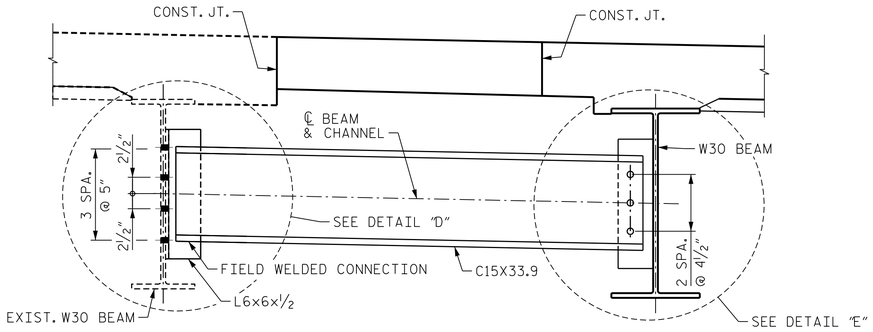


INTERMEDIATE DIAPHRAGM D5



INTERMEDIATE DIAPHRAGM D6



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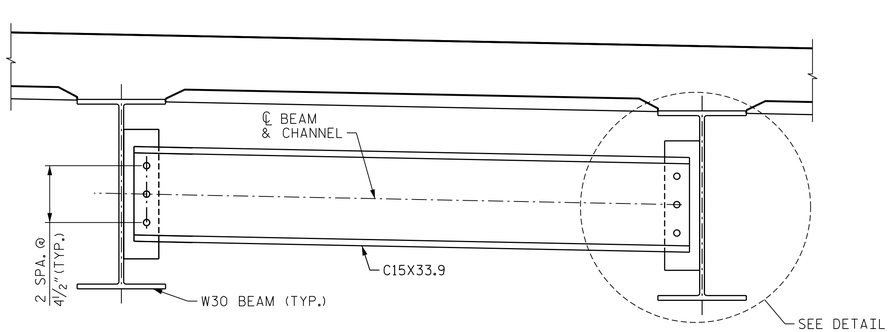

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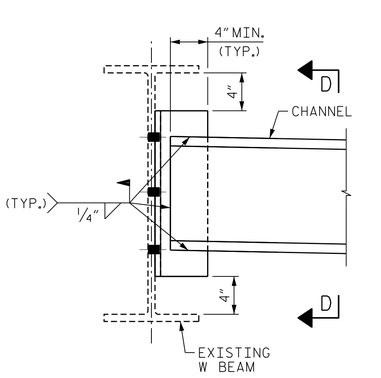
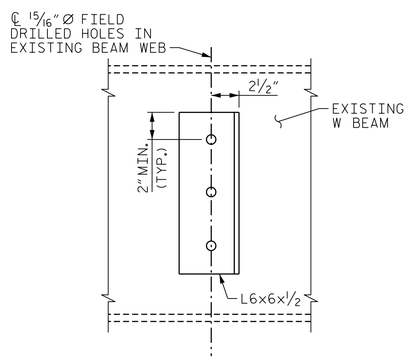
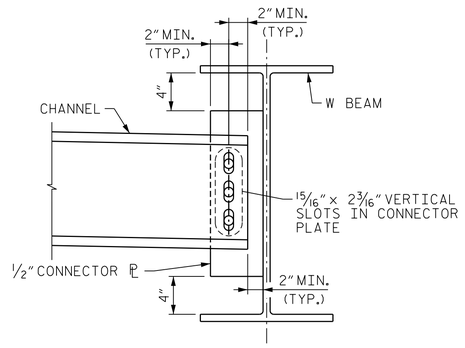


DETAIL "D"

(DETAIL SHOWN AT DIAPHRAGM D5; DIAPHRAGM D7 SIMILAR)



VIEW D-D



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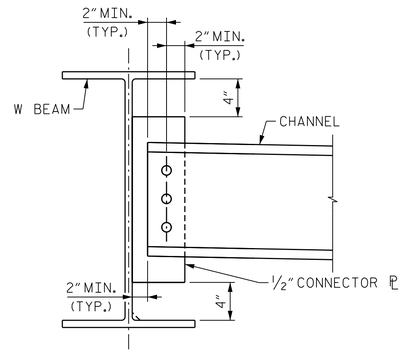


DETAIL "F"

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE STRUCTURAL STEEL DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

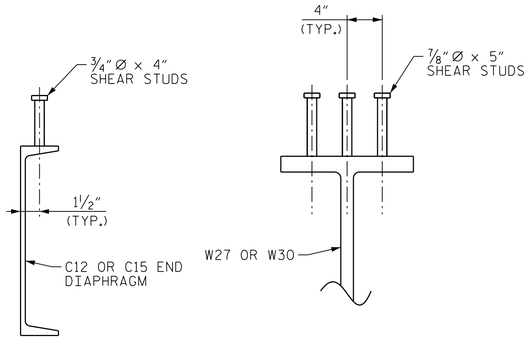
Eric Nolting 1/25/2022

REVISIONS						SHEET NO. S03R-19
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 61
1	--	--	3	--	--	
2	--	--	4	--	--	

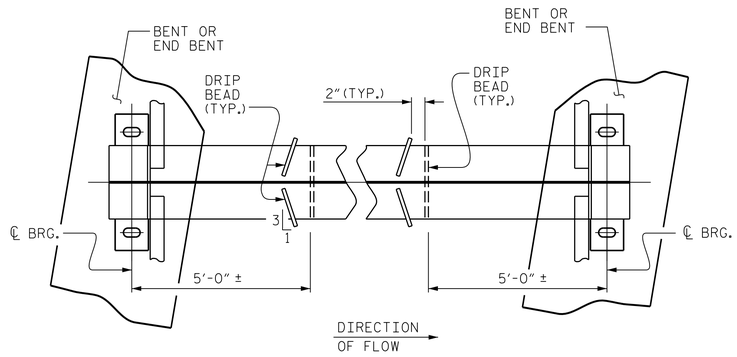
DES BY: E. NOLTING	DATE: 04/21	DWG BY: B. PETERSON	DATE: 05/21
DES CHK: B. ROGERS	DATE: 05/21	CHK BY: B. ROGERS	DATE: 06/21

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

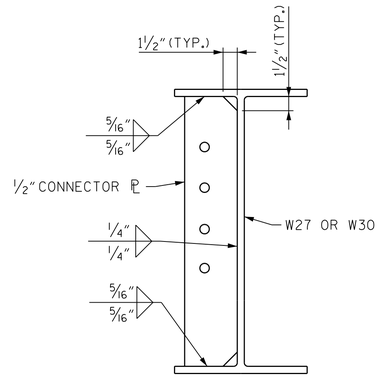
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



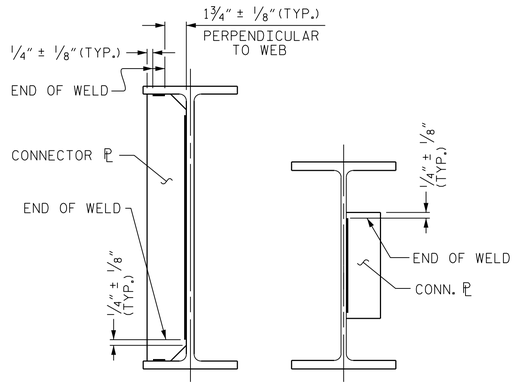
SHEAR STUD DETAILS



PART PLAN - BOTTOM FLANGE

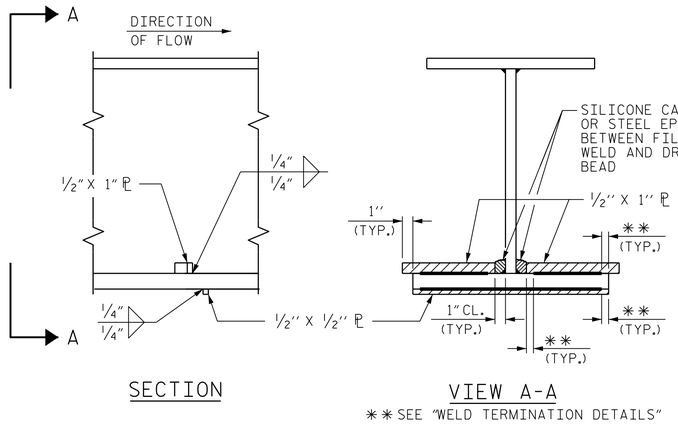


END DIAPHRAGM CONNECTOR PLATE



CONNECTOR PLATE CONNECTIONS

WELD TERMINATION DETAILS

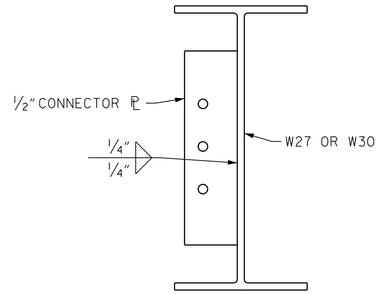


SECTION

VIEW A-A

** SEE "WELD TERMINATION DETAILS"

DRIP BEAD DETAILS



INTERMEDIATE DIAPHRAGM CONNECTOR PLATE

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE STRUCTURAL STEEL DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S03R-20
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	61

NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

Eric Nolting 1/25/2022

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

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DES BY:	E. NOLTING	DATE :	04/21
DES CHK:	B. ROGERS	DATE :	05/21
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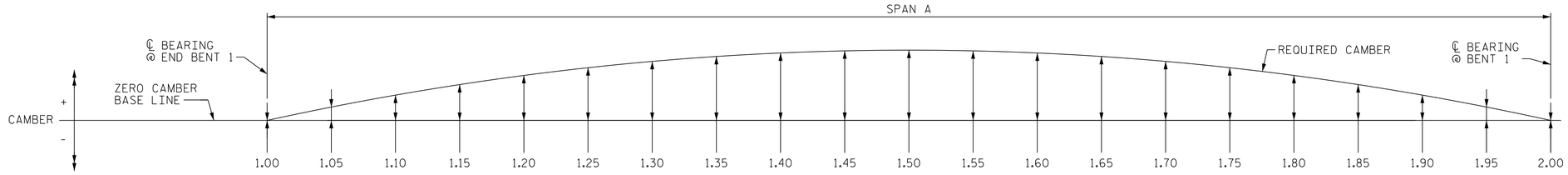
CHK BY:	B. ROGERS	DATE :	06/21



	SPAN A																				
	BEAM 6																				
20TH POINTS	1.00	1.05	1.10	1.15	1.20	1.25	1.30	1.35	1.40	1.45	1.50	1.55	1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	-0.002	-0.004	-0.007	-0.008	-0.010	-0.012	-0.013	-0.014	-0.014	-0.014	-0.014	-0.014	-0.013	-0.012	-0.010	-0.008	-0.007	-0.004	-0.002	0.000
DEFLECTION DUE TO WEIGHT OF SLAB ✳	0.000	-0.009	-0.018	-0.026	-0.034	-0.040	-0.046	-0.051	-0.054	-0.056	-0.057	-0.056	-0.054	-0.050	-0.046	-0.040	-0.034	-0.026	-0.018	-0.009	0.000
DEFLECTION DUE TO WT. OF BARRIER RAIL	0.000	-0.001	-0.003	-0.004	-0.005	-0.006	-0.007	-0.008	-0.008	-0.009	-0.009	-0.009	-0.008	-0.008	-0.007	-0.006	-0.005	-0.004	-0.003	-0.001	0.000
TOTAL DEAD LOAD DEFLECTION	0.000	-0.013	-0.025	-0.037	-0.047	-0.057	-0.065	-0.071	-0.076	-0.079	-0.080	-0.079	-0.076	-0.071	-0.065	-0.057	-0.047	-0.036	-0.025	-0.013	0.000
VERTICAL CURVE ORDINATE	0.000	0.003	0.007	0.010	0.013	0.017	0.020	0.023	0.027	0.030	0.031	0.029	0.028	0.026	0.024	0.021	0.018	0.014	0.010	0.005	0.000
REQUIRED CAMBER	0"	0 3/16"	0 3/8"	0 9/16"	0 3/4"	0 7/8"	1"	1 1/8"	1 1/4"	1 5/16"	1 5/16"	1 5/16"	1 1/4"	1 3/16"	1 1/16"	0 15/16"	0 3/4"	0 5/8"	0 7/16"	0 3/16"	0"

	SPAN A																				
	BEAM 7																				
20TH POINTS	1.00	1.05	1.10	1.15	1.20	1.25	1.30	1.35	1.40	1.45	1.50	1.55	1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	-0.002	-0.004	-0.007	-0.008	-0.010	-0.012	-0.013	-0.014	-0.014	-0.014	-0.014	-0.014	-0.013	-0.012	-0.010	-0.008	-0.007	-0.004	-0.002	0.000
DEFLECTION DUE TO WEIGHT OF SLAB ✳	0.000	-0.013	-0.026	-0.038	-0.049	-0.059	-0.068	-0.074	-0.079	-0.082	-0.083	-0.082	-0.079	-0.074	-0.068	-0.059	-0.049	-0.038	-0.026	-0.013	0.000
DEFLECTION DUE TO WT. OF BARRIER RAIL	0.000	-0.001	-0.002	-0.004	-0.005	-0.005	-0.006	-0.007	-0.007	-0.008	-0.008	-0.008	-0.007	-0.007	-0.006	-0.005	-0.005	-0.003	-0.002	-0.001	0.000
TOTAL DEAD LOAD DEFLECTION	0.000	-0.017	-0.033	-0.049	-0.062	-0.075	-0.085	-0.094	-0.100	-0.104	-0.105	-0.104	-0.100	-0.094	-0.085	-0.075	-0.062	-0.048	-0.033	-0.017	0.000
VERTICAL CURVE ORDINATE	0.000	0.002	0.005	0.007	0.010	0.012	0.014	0.017	0.019	0.021	0.024	0.026	0.027	0.025	0.023	0.020	0.017	0.014	0.009	0.005	0.000
REQUIRED CAMBER	0"	0 1/4"	0 7/16"	0 11/16"	0 7/8"	1 1/16"	1 3/16"	1 5/16"	1 7/16"	1 1/2"	1 9/16"	1 9/16"	1 1/2"	1 7/16"	1 5/16"	1 1/8"	0 15/16"	0 3/4"	0 1/2"	0 1/4"	0"

	SPAN A																				
	BEAM 8																				
20TH POINTS	1.00	1.05	1.10	1.15	1.20	1.25	1.30	1.35	1.40	1.45	1.50	1.55	1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	-0.002	-0.004	-0.007	-0.008	-0.010	-0.012	-0.013	-0.014	-0.014	-0.014	-0.014	-0.014	-0.013	-0.012	-0.010	-0.008	-0.007	-0.004	-0.002	0.000
DEFLECTION DUE TO WEIGHT OF SLAB ✳	0.000	-0.013	-0.026	-0.038	-0.049	-0.059	-0.068	-0.074	-0.079	-0.082	-0.083	-0.082	-0.079	-0.074	-0.068	-0.059	-0.049	-0.038	-0.026	-0.013	0.000
DEFLECTION DUE TO WT. OF BARRIER RAIL	0.000	-0.001	-0.002	-0.004	-0.005	-0.005	-0.006	-0.007	-0.007	-0.008	-0.008	-0.008	-0.007	-0.007	-0.006	-0.005	-0.005	-0.003	-0.002	-0.001	0.000
TOTAL DEAD LOAD DEFLECTION	0.000	-0.017	-0.033	-0.049	-0.062	-0.075	-0.085	-0.094	-0.100	-0.104	-0.105	-0.104	-0.100	-0.094	-0.085	-0.075	-0.062	-0.048	-0.033	-0.017	0.000
VERTICAL CURVE ORDINATE	0.000	0.002	0.003	0.005	0.006	0.008	0.009	0.011	0.012	0.014	0.016	0.017	0.019	0.020	0.022	0.019	0.016	0.013	0.009	0.005	0.000
REQUIRED CAMBER	0"	0 1/4"	0 7/16"	0 5/8"	0 13/16"	1"	1 1/8"	1 1/4"	1 3/8"	1 7/16"	1 7/16"	1 7/16"	1 7/16"	1 3/8"	1 5/16"	1 1/8"	0 15/16"	0 3/4"	0 1/2"	0 1/4"	0"

	SPAN A																				
	BEAM 9																				
20TH POINTS	1.00	1.05	1.10	1.15	1.20	1.25	1.30	1.35	1.40	1.45	1.50	1.55	1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	-0.002	-0.004	-0.007	-0.008	-0.010	-0.012	-0.013	-0.014	-0.014	-0.014	-0.014	-0.014	-0.013	-0.012	-0.010	-0.008	-0.007	-0.004	-0.002	0.000
DEFLECTION DUE TO WEIGHT OF SLAB ✳	0.000	-0.011	-0.021	-0.031	-0.040	-0.048	-0.055	-0.060	-0.064	-0.066	-0.067	-0.066	-0.064	-0.060	-0.055	-0.048	-0.040	-0.031	-0.021	-0.011	0.000
DEFLECTION DUE TO WT. OF BARRIER RAIL	0.000	-0.002	-0.003	-0.005	-0.006	-0.008	-0.009	-0.010	-0.010	-0.011	-0.011	-0.011	-0.010	-0.010	-0.009	-0.008	-0.006	-0.005	-0.003	-0.002	0.000
TOTAL DEAD LOAD DEFLECTION	0.000	-0.015	-0.029	-0.043	-0.055	-0.066	-0.075	-0.083	-0.088	-0.091	-0.092	-0.091	-0.088	-0.083	-0.075	-0.066	-0.055	-0.042	-0.029	-0.015	0.000
VERTICAL CURVE ORDINATE	0.000	0.001	0.002	0.003	0.003	0.004	0.005	0.006	0.007	0.008	0.009	0.009	0.010	0.011	0.012	0.013	0.014	0.012	0.008	0.004	0.000
REQUIRED CAMBER	0"	0 3/16"	0 3/8"	0 9/16"	0 11/16"	0 13/16"	0 15/16"	1 1/16"	1 1/8"	1 3/16"	1 3/16"	1 3/16"	1 3/16"	1 1/8"	1 1/16"	0 15/16"	0 13/16"	0 5/8"	0 7/16"	0 1/4"	0"

✳ = INCLUDES SLAB, BUILDUPS, AND STAY-IN-PLACE FORMS.

NOTES

VALUES GIVEN ARE AT TWENTIETH POINTS BETWEEN CENTERLINE OF BEARINGS.

DEFLECTIONS AND ORDINATES ARE IN FEET (DECIMAL FORM).

REQUIRED CAMBER VALUES ARE IN INCHES (FRACTION FORM).

VERTICAL CURVE ORDINATES WERE DETERMINED USING THE BEST INFORMATION AVAILABLE AND ARE PROVIDED FOR INFORMATION ONLY. THE CONTRACTOR SHALL SURVEY THE EXISTING STRUCTURE AND NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIALS.

DOWNWARD DEFLECTION IS INDICATED WITH A "-" SIGN.

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE DEAD LOAD DEFLECTION AND CAMBER ORDINATES SPAN A

NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

Eric Nolting 1/25/2022

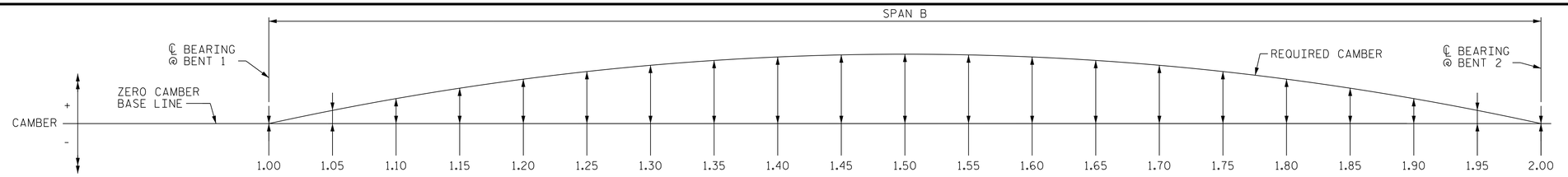
HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO. S03R-21
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 61
1	--	--	3	--	--	
2	--	--	4	--	--	

DES BY: E. NOLTING DATE: 05/21
DES CHK: B. ROGERS DATE: 06/21

DWG BY: B. PETERSON DATE: 06/21
CHK BY: B. ROGERS DATE: 06/21



SPAN B																						
	BEAM 6																					
20TH POINTS	1.00	1.05	1.10	1.15	1.20	1.25	1.30	1.35	1.40	1.45	1.50	1.55	1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	-0.003	-0.005	-0.008	-0.010	-0.012	-0.014	-0.015	-0.016	-0.017	-0.017	-0.017	-0.016	-0.015	-0.014	-0.012	-0.010	-0.008	-0.005	-0.003	0.000
DEFLECTION DUE TO WEIGHT OF SLAB ✳	0.000	-0.011	-0.021	-0.031	-0.040	-0.049	-0.055	-0.061	-0.065	-0.067	-0.068	-0.067	-0.065	-0.061	-0.055	-0.048	-0.040	-0.031	-0.021	-0.011	0.000
DEFLECTION DUE TO WT. OF BARRIER RAIL	0.000	-0.002	-0.003	-0.005	-0.006	-0.007	-0.008	-0.009	-0.010	-0.010	-0.010	-0.010	-0.010	-0.009	-0.008	-0.007	-0.006	-0.005	-0.003	-0.002	0.000
TOTAL DEAD LOAD DEFLECTION	0.000	-0.015	-0.030	-0.044	-0.057	-0.068	-0.078	-0.086	-0.091	-0.095	-0.096	-0.094	-0.091	-0.085	-0.078	-0.068	-0.057	-0.044	-0.030	-0.015	0.000
VERTICAL CURVE ORDINATE	0.000	0.005	0.009	0.013	0.016	0.019	0.021	0.023	0.024	0.025	0.025	0.025	0.024	0.023	0.021	0.019	0.016	0.013	0.009	0.005	0.000
REQUIRED CAMBER	0″	0 1/4″	0 7/16″	0 11/16″	0 7/8″	1 1/16″	1 3/16″	1 5/16″	1 3/8″	1 7/16″	1 7/16″	1 7/16″	1 3/8″	1 5/16″	1 3/16″	1 1/16″	0 7/8″	0 11/16″	0 7/16″	0 1/4″	0″

SPAN B																						
	BEAMS 7 AND 8																					
20TH POINTS	1.00	1.05	1.10	1.15	1.20	1.25	1.30	1.35	1.40	1.45	1.50	1.55	1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	-0.003	-0.005	-0.008	-0.010	-0.012	-0.014	-0.015	-0.016	-0.017	-0.017	-0.017	-0.016	-0.015	-0.014	-0.012	-0.010	-0.008	-0.005	-0.003	0.000
DEFLECTION DUE TO WEIGHT OF SLAB ✳	0.000	-0.016	-0.031	-0.046	-0.059	-0.071	-0.081	-0.090	-0.095	-0.099	-0.100	-0.099	-0.095	-0.089	-0.081	-0.071	-0.059	-0.046	-0.031	-0.016	0.000
DEFLECTION DUE TO WT. OF BARRIER RAIL	0.000	-0.001	-0.003	-0.004	-0.005	-0.007	-0.007	-0.008	-0.009	-0.009	-0.009	-0.009	-0.009	-0.008	-0.007	-0.007	-0.005	-0.004	-0.003	-0.001	0.000
TOTAL DEAD LOAD DEFLECTION	0.000	-0.020	-0.040	-0.058	-0.075	-0.090	-0.103	-0.113	-0.120	-0.125	-0.127	-0.125	-0.120	-0.113	-0.103	-0.090	-0.075	-0.058	-0.040	-0.020	0.000
VERTICAL CURVE ORDINATE	0.000	0.005	0.009	0.013	0.016	0.019	0.021	0.023	0.024	0.025	0.025	0.025	0.024	0.023	0.021	0.019	0.016	0.013	0.009	0.005	0.000
REQUIRED CAMBER	0″	0 5/16″	0 9/16″	0 7/8″	1 1/16″	1 5/16″	1 1/2″	1 5/8″	1 3/4″	1 13/16″	1 13/16″	1 13/16″	1 3/4″	1 5/8″	1 1/2″	1 5/16″	1 1/16″	0 7/8″	0 9/16″	0 5/16″	0″

SPAN B																						
	BEAM 9																					
20TH POINTS	1.00	1.05	1.10	1.15	1.20	1.25	1.30	1.35	1.40	1.45	1.50	1.55	1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	-0.003	-0.005	-0.008	-0.010	-0.012	-0.014	-0.015	-0.016	-0.017	-0.017	-0.017	-0.016	-0.015	-0.014	-0.012	-0.010	-0.008	-0.005	-0.003	0.000
DEFLECTION DUE TO WEIGHT OF SLAB ✳	0.000	-0.013	-0.025	-0.037	-0.048	-0.058	-0.066	-0.072	-0.077	-0.080	-0.081	-0.080	-0.077	-0.072	-0.066	-0.058	-0.048	-0.037	-0.025	-0.013	0.000
DEFLECTION DUE TO WT. OF BARRIER RAIL	0.000	-0.002	-0.004	-0.006	-0.008	-0.009	-0.011	-0.012	-0.012	-0.013	-0.013	-0.013	-0.012	-0.012	-0.011	-0.009	-0.008	-0.006	-0.004	-0.002	0.000
TOTAL DEAD LOAD DEFLECTION	0.000	-0.018	-0.035	-0.051	-0.066	-0.079	-0.090	-0.099	-0.106	-0.110	-0.111	-0.110	-0.106	-0.099	-0.090	-0.079	-0.066	-0.051	-0.035	-0.018	0.000
VERTICAL CURVE ORDINATE	0.000	0.005	0.009	0.013	0.016	0.019	0.021	0.023	0.024	0.025	0.025	0.025	0.024	0.023	0.021	0.019	0.016	0.013	0.009	0.005	0.000
REQUIRED CAMBER	0″	0 1/4″	0 1/2″	0 3/4″	1″	1 3/16″	1 5/16″	1 7/16″	1 9/16″	1 5/8″	1 5/8″	1 5/8″	1 9/16″	1 7/16″	1 5/16″	1 3/16″	1″	0 3/4″	0 1/2″	0 1/4″	0″

✳ = INCLUDES SLAB, BUILDUPS, AND STAY-IN-PLACE FORMS.

NOTES

VALUES GIVEN ARE AT TWENTIETH POINTS BETWEEN CENTERLINE OF BEARINGS.

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REQUIRED CAMBER VALUES ARE IN INCHES (FRACTION FORM).

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DOWNWARD DEFLECTION IS INDICATED WITH A "-" SIGN.

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE DEAD LOAD DEFLECTION AND CAMBER ORDINATES SPAN B

REVISIONS						SHEET NO. S03R-22
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 61
1	--	--	3	--	--	
2	--	--	4	--	--	

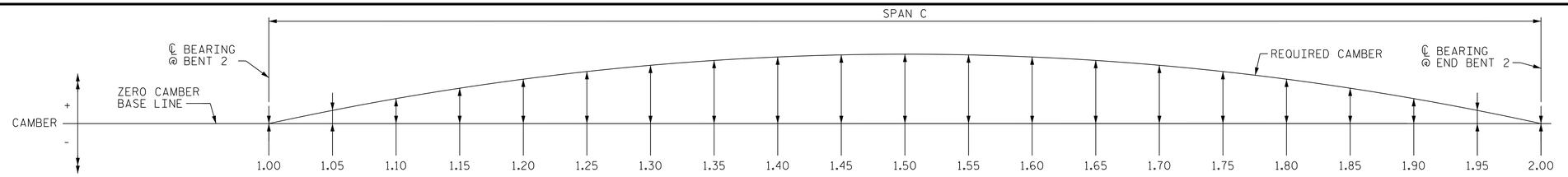
NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

Eric Nolting 1/25/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

DES BY:	E. NOLTING	DATE :	05/21
DES CHK:	B. ROGERS	DATE :	06/21
DWG BY:	B. PETERSON	DATE :	06/21
CHK BY:	B. ROGERS	DATE :	06/21



SPAN C																						
	BEAM 6																					
20TH POINTS	1.00	1.05	1.10	1.15	1.20	1.25	1.30	1.35	1.40	1.45	1.50	1.55	1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	-0.003	-0.005	-0.008	-0.010	-0.012	-0.014	-0.015	-0.016	-0.017	-0.017	-0.017	-0.016	-0.015	-0.014	-0.012	-0.010	-0.008	-0.005	-0.003	0.000
DEFLECTION DUE TO WEIGHT OF SLAB ✳	0.000	-0.009	-0.018	-0.026	-0.033	-0.040	-0.046	-0.050	-0.053	-0.055	-0.056	-0.055	-0.053	-0.050	-0.046	-0.040	-0.033	-0.026	-0.018	-0.009	0.000
DEFLECTION DUE TO WT. OF BARRIER RAIL	0.000	-0.001	-0.003	-0.004	-0.006	-0.007	-0.008	-0.008	-0.009	-0.009	-0.009	-0.009	-0.009	-0.008	-0.008	-0.007	-0.006	-0.004	-0.003	-0.001	0.000
TOTAL DEAD LOAD DEFLECTION	0.000	-0.013	-0.026	-0.038	-0.049	-0.059	-0.067	-0.073	-0.078	-0.081	-0.082	-0.081	-0.078	-0.073	-0.067	-0.058	-0.049	-0.038	-0.026	-0.013	0.000
VERTICAL CURVE ORDINATE	0.000	0.005	0.009	0.013	0.017	0.019	0.022	0.023	0.024	0.025	0.025	0.025	0.024	0.022	0.020	0.018	0.014	0.011	0.007	0.004	0.000
REQUIRED CAMBER	0″	0 3/16″	0 7/16″	0 5/8″	0 13/16″	0 15/16″	1 1/16″	1 3/16″	1 1/4″	1 1/4″	1 5/16″	1 1/4″	1 1/4″	1 1/8″	1 1/16″	0 15/16″	0 3/4″	0 9/16″	0 3/8″	0 3/16″	0″

SPAN C																						
	BEAMS 7 & 8																					
20TH POINTS	1.00	1.05	1.10	1.15	1.20	1.25	1.30	1.35	1.40	1.45	1.50	1.55	1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	-0.003	-0.005	-0.008	-0.010	-0.012	-0.014	-0.015	-0.016	-0.017	-0.017	-0.017	-0.016	-0.015	-0.014	-0.012	-0.010	-0.008	-0.005	-0.003	0.000
DEFLECTION DUE TO WEIGHT OF SLAB ✳	0.000	-0.013	-0.026	-0.038	-0.049	-0.059	-0.067	-0.074	-0.079	-0.082	-0.083	-0.082	-0.079	-0.074	-0.067	-0.059	-0.049	-0.038	-0.026	-0.013	0.000
DEFLECTION DUE TO WT. OF BARRIER RAIL	0.000	-0.001	-0.003	-0.004	-0.005	-0.006	-0.007	-0.007	-0.008	-0.008	-0.008	-0.008	-0.008	-0.007	-0.007	-0.006	-0.005	-0.004	-0.003	-0.001	0.000
TOTAL DEAD LOAD DEFLECTION	0.000	-0.017	-0.034	-0.050	-0.064	-0.077	-0.087	-0.096	-0.102	-0.106	-0.108	-0.106	-0.102	-0.096	-0.087	-0.076	-0.064	-0.049	-0.034	-0.017	0.000
VERTICAL CURVE ORDINATE	0.000	0.005	0.010	0.014	0.017	0.020	0.022	0.024	0.026	0.026	0.027	0.026	0.025	0.024	0.022	0.020	0.017	0.013	0.009	0.005	0.000
REQUIRED CAMBER	0″	0 1/4″	0 1/2″	0 3/4″	1″	1 3/16″	1 5/16″	1 7/16″	1 9/16″	1 9/16″	1 5/8″	1 9/16″	1 9/16″	1 7/16″	1 5/16″	1 1/8″	0 15/16″	0 3/4″	0 1/2″	0 1/4″	0″

SPAN C																						
	BEAM 9																					
20TH POINTS	1.00	1.05	1.10	1.15	1.20	1.25	1.30	1.35	1.40	1.45	1.50	1.55	1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	-0.003	-0.005	-0.008	-0.010	-0.012	-0.014	-0.015	-0.016	-0.017	-0.017	-0.017	-0.016	-0.015	-0.014	-0.012	-0.010	-0.008	-0.005	-0.003	0.000
DEFLECTION DUE TO WEIGHT OF SLAB ✳	0.000	-0.011	-0.021	-0.031	-0.040	-0.048	-0.054	-0.060	-0.063	-0.066	-0.067	-0.066	-0.063	-0.059	-0.054	-0.047	-0.040	-0.031	-0.021	-0.011	0.000
DEFLECTION DUE TO WT. OF BARRIER RAIL	0.000	-0.002	-0.004	-0.005	-0.007	-0.008	-0.010	-0.010	-0.011	-0.012	-0.012	-0.012	-0.011	-0.010	-0.010	-0.008	-0.007	-0.005	-0.004	-0.002	0.000
TOTAL DEAD LOAD DEFLECTION	0.000	-0.015	-0.030	-0.044	-0.056	-0.068	-0.077	-0.085	-0.091	-0.094	-0.095	-0.094	-0.091	-0.085	-0.077	-0.068	-0.056	-0.044	-0.030	-0.015	0.000
VERTICAL CURVE ORDINATE	0.000	0.005	0.010	0.014	0.017	0.020	0.023	0.024	0.026	0.027	0.027	0.027	0.026	0.024	0.023	0.020	0.017	0.014	0.010	0.005	0.000
REQUIRED CAMBER	0″	0 1/4″	0 1/2″	0 11/16″	0 7/8″	1 1/16″	1 3/16″	1 5/16″	1 3/8″	1 7/16″	1 7/16″	1 7/16″	1 3/8″	1 5/16″	1 3/16″	1 1/16″	0 7/8″	0 11/16″	0 1/2″	0 1/4″	0″

✳ = INCLUDES SLAB, BUILDUPS, AND STAY-IN-PLACE FORMS.

NOTES

VALUES GIVEN ARE AT TWENTIETH POINTS BETWEEN CENTERLINE OF BEARINGS.

DEFLECTIONS AND ORDINATES ARE IN FEET (DECIMAL FORM).

REQUIRED CAMBER VALUES ARE IN INCHES (FRACTION FORM).

VERTICAL CURVE ORDINATES WERE DETERMINED USING THE BEST INFORMATION AVAILABLE AND ARE PROVIDED FOR INFORMATION ONLY. THE CONTRACTOR SHALL SURVEY THE EXISTING STRUCTURE AND NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIALS.

DOWNWARD DEFLECTION IS INDICATED WITH A "-" SIGN.

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE DEAD LOAD DEFLECTION AND CAMBER ORDINATES SPAN C

NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

Eric Nolting 1/25/2022

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

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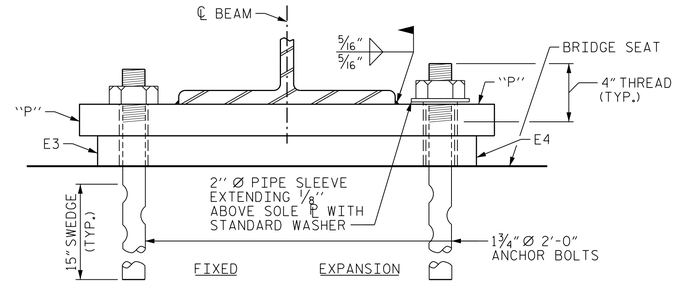
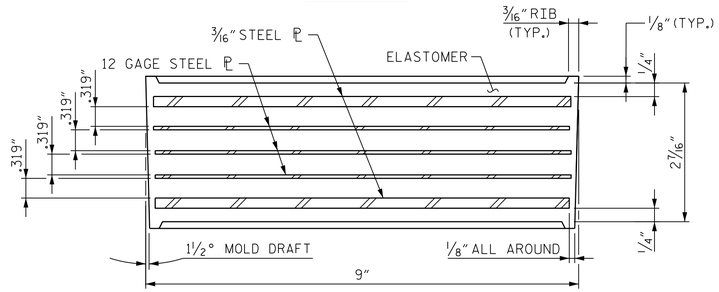
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S03R-23
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	61

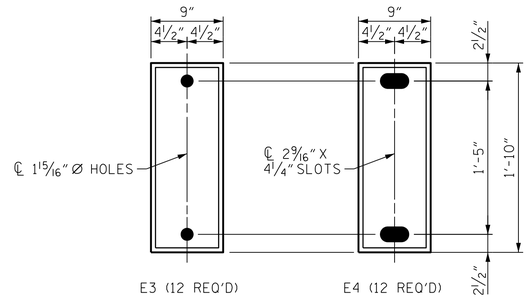
DES BY:	E. NOLTING	DATE :	05/21
DES CHK:	B. ROGERS	DATE :	06/21
DWG BY:	B. PETERSON	DATE :	06/21
CHK BY:	B. ROGERS	DATE :	06/21



END VIEW

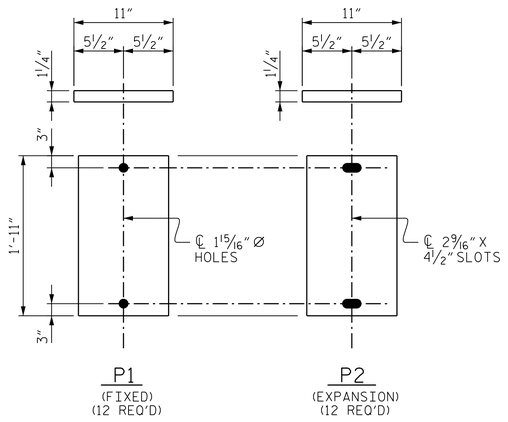


TYPICAL SECTION OF ELASTOMERIC BEARINGS



PLAN VIEW OF ELASTOMERIC BEARING

TYPE II



SOLE PLATE DETAILS ("P")

NOTES

AT ALL FIXED POINTS OF SUPPORT, NUTS FOR ANCHOR BOLTS ARE TO BE TIGHTENED FINGER TIGHT AND THEN BACKED OFF 1/2 TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

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

THE PAYMENT FOR THE PIPE SLEEVES SHALL BE INCLUDED IN THE SEVERAL PAY ITEMS.

FOR AASHTO M270 GRADE 50W STRUCTURAL STEEL, SOLE PLATE SHALL BE AASHTO M270 GRADE 50W AND SHALL NOT BE GALVANIZED. ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

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 BOLTS, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

WHEN FIELD WELDING THE SOLE PLATE TO THE GIRDER FLANGE, 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.

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.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FOLLOWING PROCEDURE, WHICH MAY BE REQUIRED BY THE ENGINEER, TO RESET ELASTOMERIC BEARINGS DUE TO GIRDER TRANSLATION AND END ROTATION:

1. ONCE THE DECK HAS CURED, THE GIRDERS SHALL BE JACKED AND THE ELASTOMERIC BEARING SLOTS CENTERED AS NEARLY AS PRACTICAL ABOUT THE BEARING STIFFENER. THIS OPERATION SHALL BE PERFORMED AT APPROXIMATELY 60° F.

THE CONTRACTOR MAY PROPOSE ALTERNATE METHODS, PROVIDED DETAILS ARE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL.

MAXIMUM ALLOWABLE SERVICE LOADS	
D.L. + L.L. (NO IMPACT)	
TYPE II	180 k

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75 -L_RT-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE ELASTOMERIC BEARING DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

Eric Nolting 1/25/2022

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NO.	BY:	DATE:	NO.	BY:	DATE:	S03R-24
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	61

DES BY: F. CORDOVA	DATE: 03/21	DWG BY: M. SELLS	DATE: 03/21
DES CHK: E. NOLTING	DATE: 04/21	CHK BY: E. NOLTING	DATE: 06/21

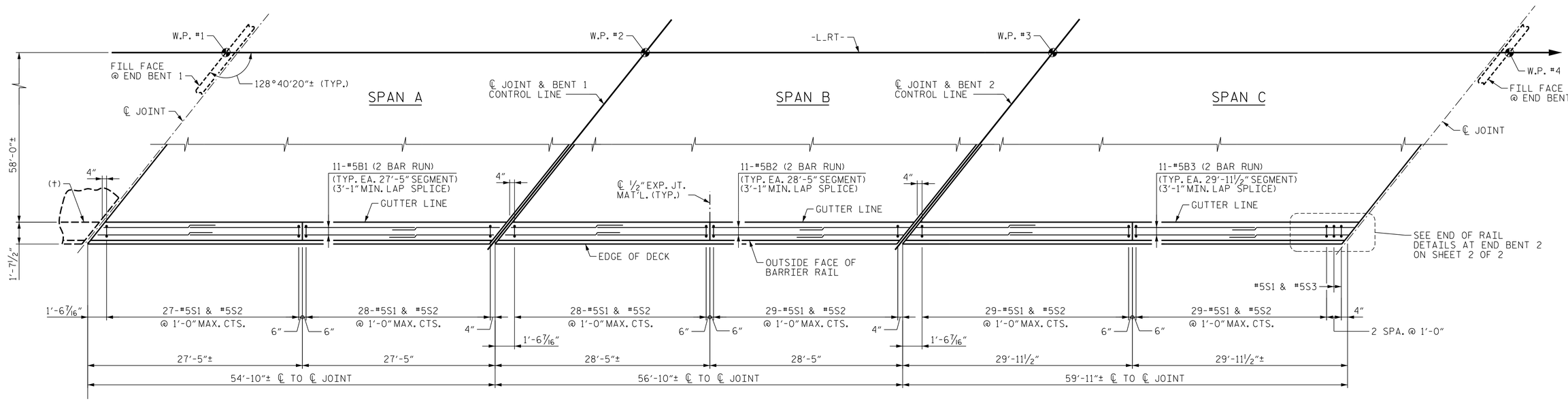
NOTES

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

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

GROOVED CONTRACTION JOINTS, ½" 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.

THE #5 "S" BARS MAY BE SHIFTED SLIGHTLY AS NECESSARY IN ORDER TO MAINTAIN A 2" MINIMUM CLEARANCE TO THE ½" EXPANSION JOINT MATERIAL IN THE BARRIER RAIL.



PLAN OF BARRIER RAIL

(ALL DIMENSIONS MEASURED ALONG BACK FACE OF BARRIER RAIL)

(†) SEE "BRIDGE APPROACH SLAB DETAILS" SHEET 2 OF 3 FOR DETAILS OF BARRIER RAIL TO BE BUILT ON APPROACH SLAB AT END BENT 1

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE CONCRETE BARRIER RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S03R-25
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	61

NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

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DES BY:	S. RAVINDRAN	DATE :	06/21
DES CHK:	G. MYERS	DATE :	07/21
DWG BY:	M. SELLS	DATE :	06/21
CHK BY:	G. MYERS	DATE :	07/21

PLOT DRIVER: NCDOT STRUCTURES DEFAULT PLOTTER.plt PENTABLE: NCDOT STRUCTURES DEFAULT PEN.tbl
USER: PPETERSO DATE: 1/24/2022 TIME: 2:39:02 PM
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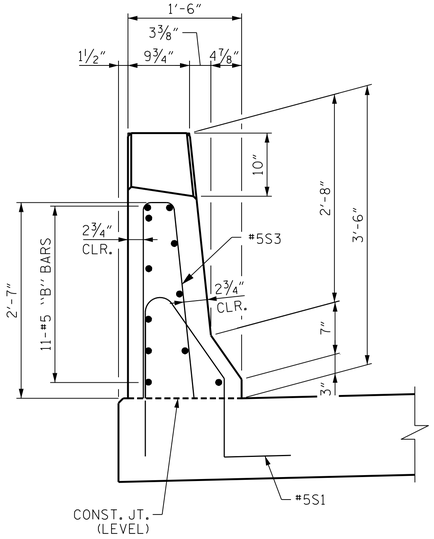
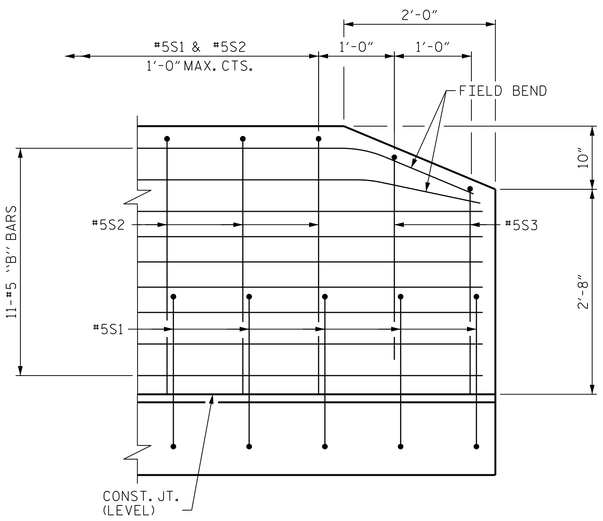
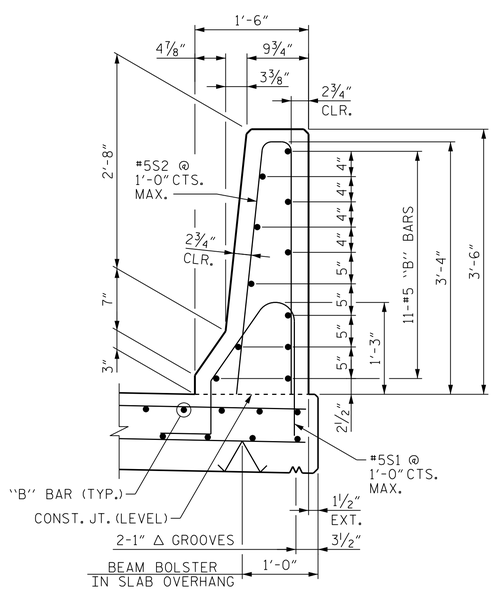


END VIEW



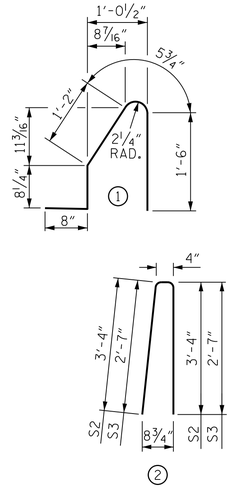
SIDE VIEW

END OF RAIL DETAILS AT END BENT 2



SECTION THRU RAIL

BAR TYPES



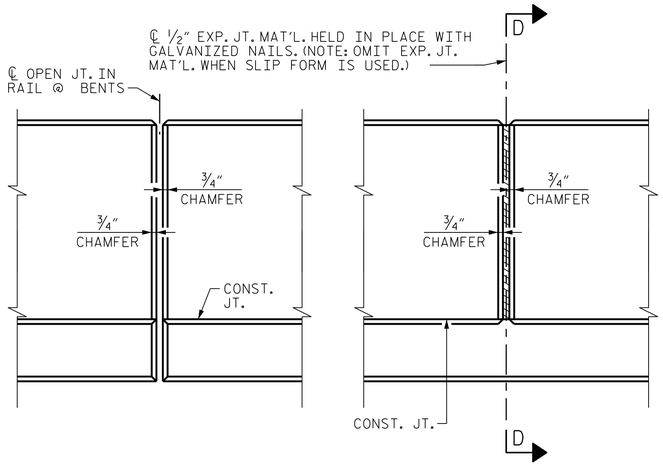
ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

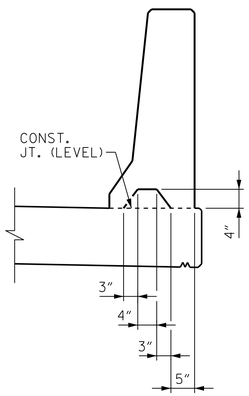
FOR CONCRETE BARRIER RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ B1	44	#5	STR	15'-8"	719
✳ B2	44	#5	STR	16'-2"	742
✳ B3	44	#5	STR	17'-0"	781
✳ S1	172	#5	1	4'-6"	808
✳ S2	170	#5	2	7'-0"	1242
✳ S3	2	#5	2	5'-6"	12

✳ EPOXY COATED REINFORCING STEEL	4,304 LBS.
CLASS AA CONCRETE	23.4 CU. YDS.
CONCRETE BARRIER RAIL	171.6 LIN. FT.



ELEVATION AT EXPANSION JOINTS



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

BARRIER RAIL DETAILS

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
CONCRETE BARRIER
RAIL DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S03R-26
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	61

NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

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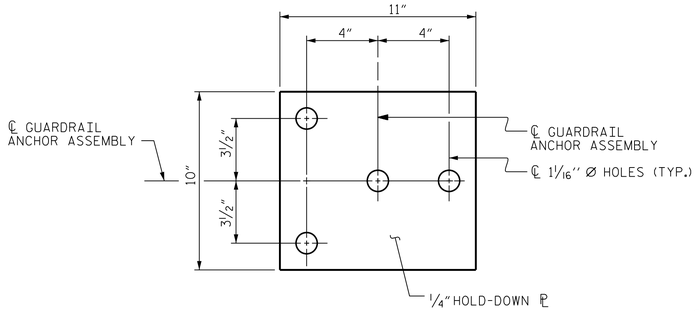
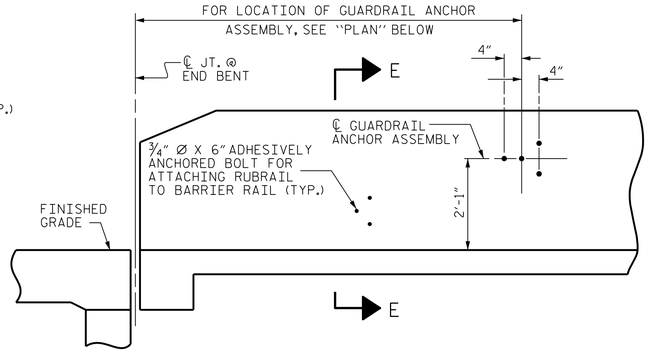
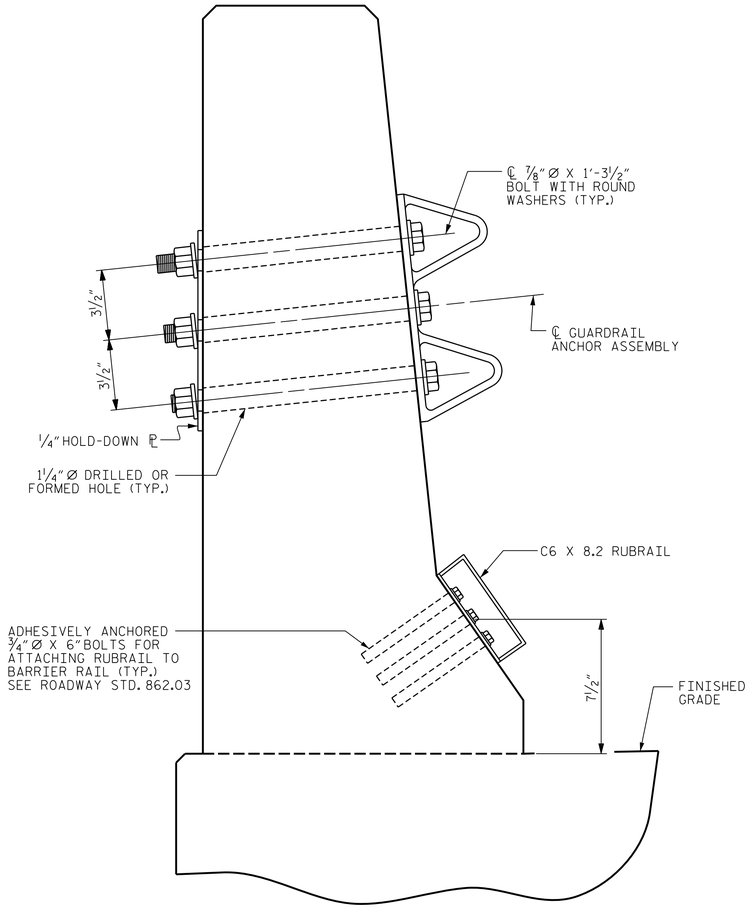


PLAN



ELEVATION



SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS

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.)

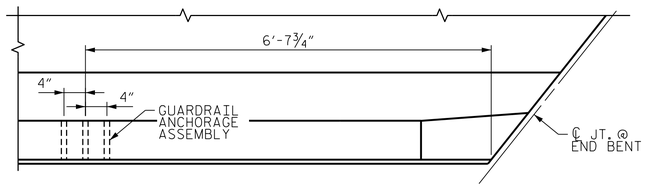
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

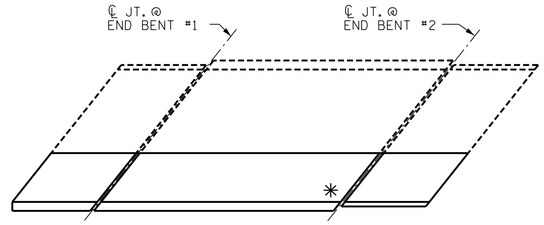
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.

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.



LOCATION OF ANCHORS FOR GUARDRAIL



SKETCH SHOWING POINTS OF ATTACHMENTS

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE GUARDRAIL ANCHORAGE DETAILS

REVISIONS						SHEET NO. S03R-27
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 61
1	--	--	3	--	--	
2	--	--	4	--	--	

NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

Eric Nolting 1/25/2022

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DES BY:	E. NOLTING	DATE :	06/21
DES CHK:	G. MYERS	DATE :	07/21
DWG BY:	B. PETERSON	DATE :	06/21
CHK BY:	G. MYERS	DATE :	07/21

PLOT DRIVER: NCDOT STRUCTURES DEFAULT PLOTTER.plt PENTABLE: NCDOT STRUCTURES DEFAULT PEN.tbl
USER: PPETERSO DATE: 1/24/2022 TIME: 2:39:19 PM
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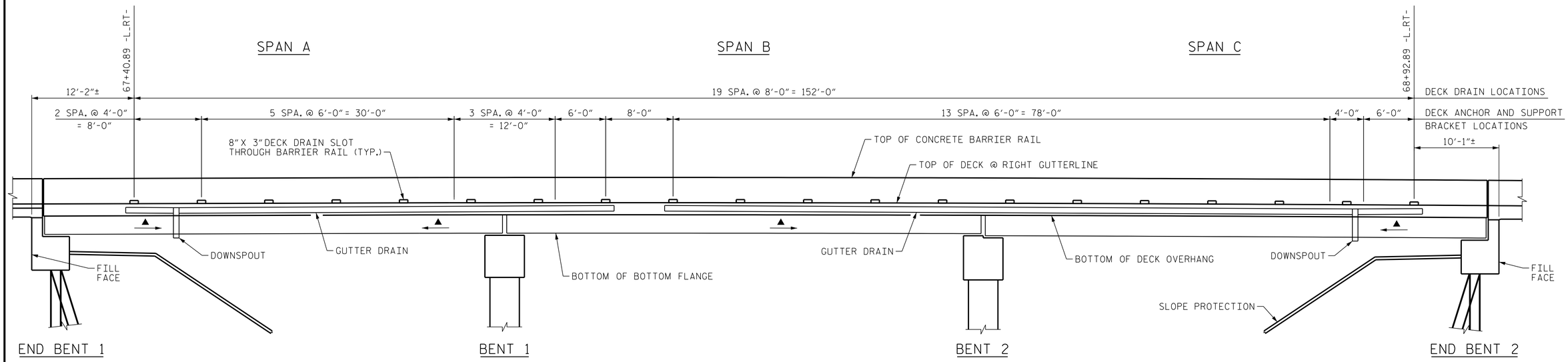
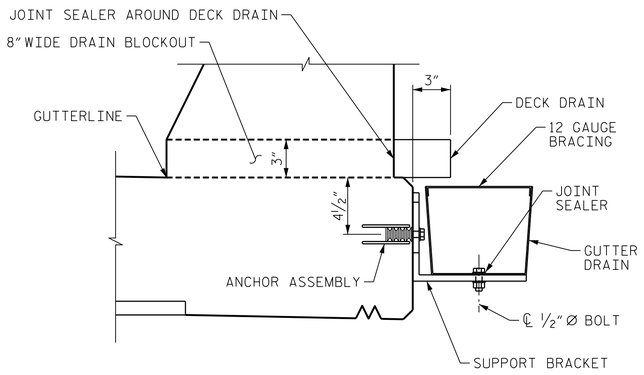


TEMPORARY DECK DRAIN AND DRAINAGE SYSTEM ELEVATION

(DIMENSIONS ALONG OUTSIDE EDGE OF DECK)

■ AT THE CONTRACTOR'S OPTION, GUTTER DRAIN MAY BE SUPPORTED USING BLOCKING ON TOP OF THE OVERHANG FALSEWORK OR OTHER MEANS PROPOSED BY THE CONTRACTOR, SUBJECT TO REVIEW BY THE ENGINEER.

▲ 0.5% GUTTER DRAIN SLOPE



DECK DRAIN DETAIL

NOTES

FOR STRUCTURE DRAINAGE SYSTEM, SEE SPECIAL PROVISIONS.

THE SUPPORT BRACKETS SHALL CONFORM TO AASHTO M270 GRADE 36 STEEL OR APPROVED EQUAL AND SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

GUTTER DRAIN AND DECK DRAINS SHALL BE SHOP FABRICATED FROM GALVANIZED STEEL SHEET CONFORMING TO ASTM A653 STRUCTURAL STEEL (SS) GRADE 33 WITH G165 COATING.

GUTTER DRAIN SHALL BE SPLICED, WHEN NECESSARY, ONLY AT SUPPORT BRACKETS. GUTTER DRAIN SPLICES SHALL BE SEALED WITH JOINT SEALER.

VERTICAL SLOTS ARE PROVIDED IN THE SUPPORT BRACKETS TO ALLOW ADJUSTMENT OF THE GUTTER DRAIN GRADE. THE GUTTER DRAIN GRADE SHALL BE 0.5%.

THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF TYPE B LOW MODULUS SILICONE SEALANT ACCORDING TO SECTION 1028 OF THE STANDARD SPECIFICATIONS.

THE ½" Ø 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. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.

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

A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1¼" FOR ½" Ø FERRULES.

B. 2 - ½" Ø X 1¾" BOLTS WITH WASHERS.

C. WIRE STRUT SHOWN IN THE CONCRETE ANCHOR ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI.

D. THE ANCHOR ASSEMBLY SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

THE CONTRACTOR SHALL SUBMIT WORKING DRAWINGS FOR THE DRAINAGE SYSTEM, INCLUDING, BUT NOT LIMITED TO, ATTACHMENTS TO THE BRIDGE, DECK DRAINS, GUTTER DRAIN, DOWNSPOUTS AND SUPPORT BRACKETS.

DRAINAGE SYSTEM INSTALLATION AND REMOVAL SHALL BE PAID FOR AS A LUMP SUM UNDER THE PAY ITEM "STRUCTURE DRAINAGE SYSTEM."

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE TEMPORARY DRAINAGE SYSTEM DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S03R-28
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	61

NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

Eric Nolting 1/25/2022

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555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

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DES BY:	E. NOLTING	DATE :	07/21
DES CHK:	F. CORDOVA	DATE :	07/21
DWG BY:	B. PETERSON	DATE :	07/21
CHK BY:	F. CORDOVA	DATE :	07/21

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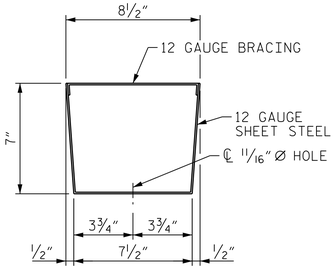

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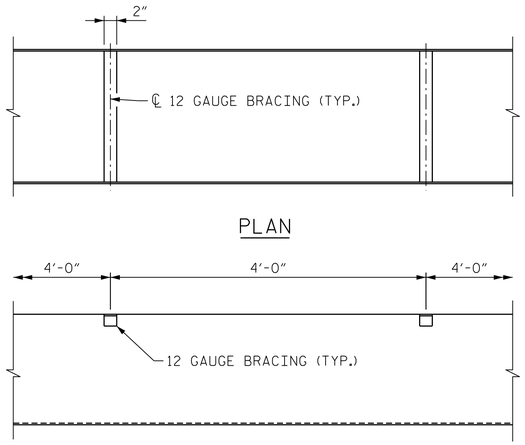
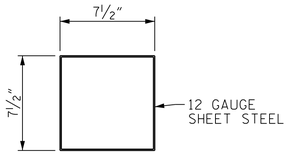


PLAN

ELEVATION

GUTTER DRAIN



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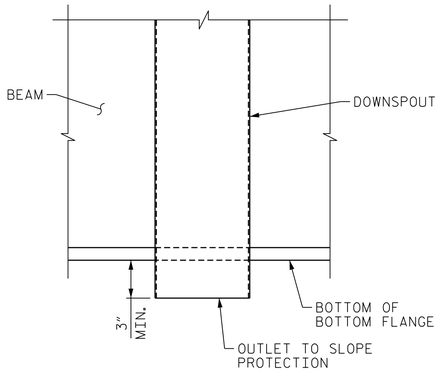
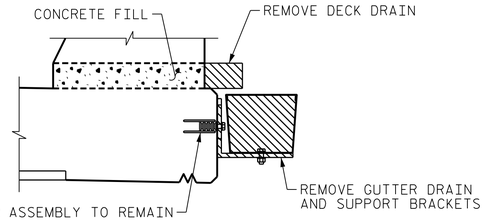


ELEVATION

DOWNSPOUT



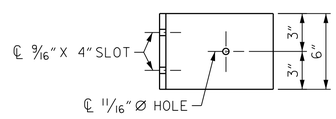
DRAINAGE SYSTEM REMOVAL DETAIL

DRAINAGE SYSTEM REMOVAL NOTES

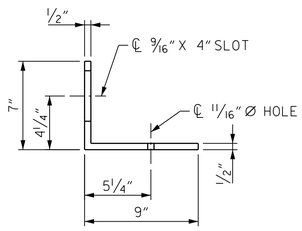
REMOVE DRAINAGE SYSTEM AFTER COMPLETION OF STAGE 3 (AFTER WB TRAFFIC HAS BEEN SHIFTED TO THE WB BRIDGE).

REMOVE DECK DRAINS, GUTTER DRAIN, SUPPORT BRACKETS AND ASSOCIATED DRAINAGE SYSTEM HARDWARE. CONCRETE INSERTS FOR SUPPORT BRACKETS SHALL REMAIN.

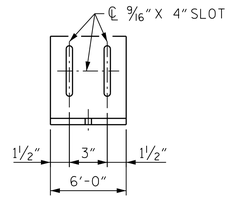
FILL THE CONCRETE DRAIN WITH CLASS AA CONCRETE THROUGH THE FULL WIDTH OF THE BARRIER RAIL. THE RESULTING CONCRETE PLUG SHAL BE FLUSH WITH THE BOTH FACES OF THE BARRIER RAIL.



PLAN



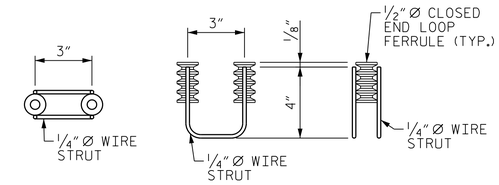
ELEVATION



SIDE ELEVATION

SUPPORT BRACKET

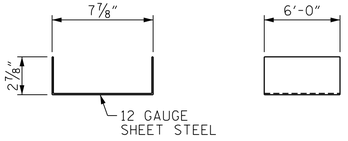
(28 REQUIRED)



SIDE VIEW PLAN ELEVATION

ANCHOR ASSEMBLY

(28 REQUIRED)



SECTION ELEVATION

DECK DRAIN

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE TEMPORARY DRAINAGE SYSTEM DETAILS

REVISIONS						SHEET NO. S03R-29
NO.	BY:	DATE:	NO.	BY:	DATE:	
1	--	--	3	--	--	TOTAL SHEETS 61
2	--	--	4	--	--	

NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

Eric Nolting 1/25/2022

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N.C.B.E.L.S. License Number: F-0116

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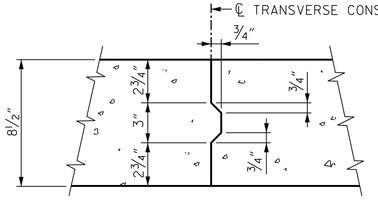
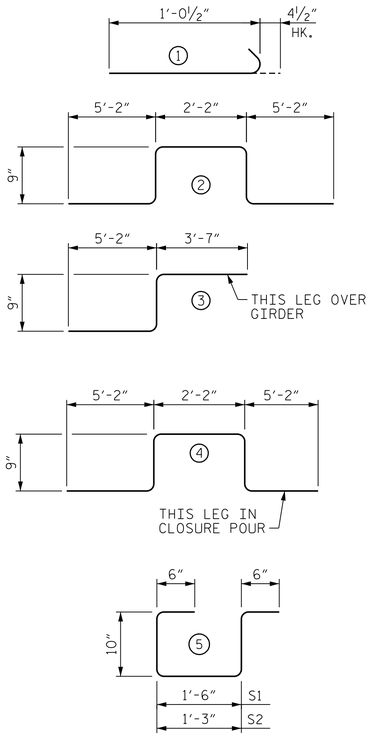
DES BY:	E. NOLTING	DATE :	07/21
DES CHK:	F. CORDOVA	DATE :	07/21
DWG BY:	B. PETERSON	DATE :	07/21
CHK BY:	F. CORDOVA	DATE :	07/21



TRANSVERSE CONSTRUCTION JOINT

(REINFORCING STEEL IN SLAB NOT SHOWN)
(LONGITUDINAL REINFORCING STEEL SHALL BE CONTINUOUS THROUGH JOINT)

BAR TYPES



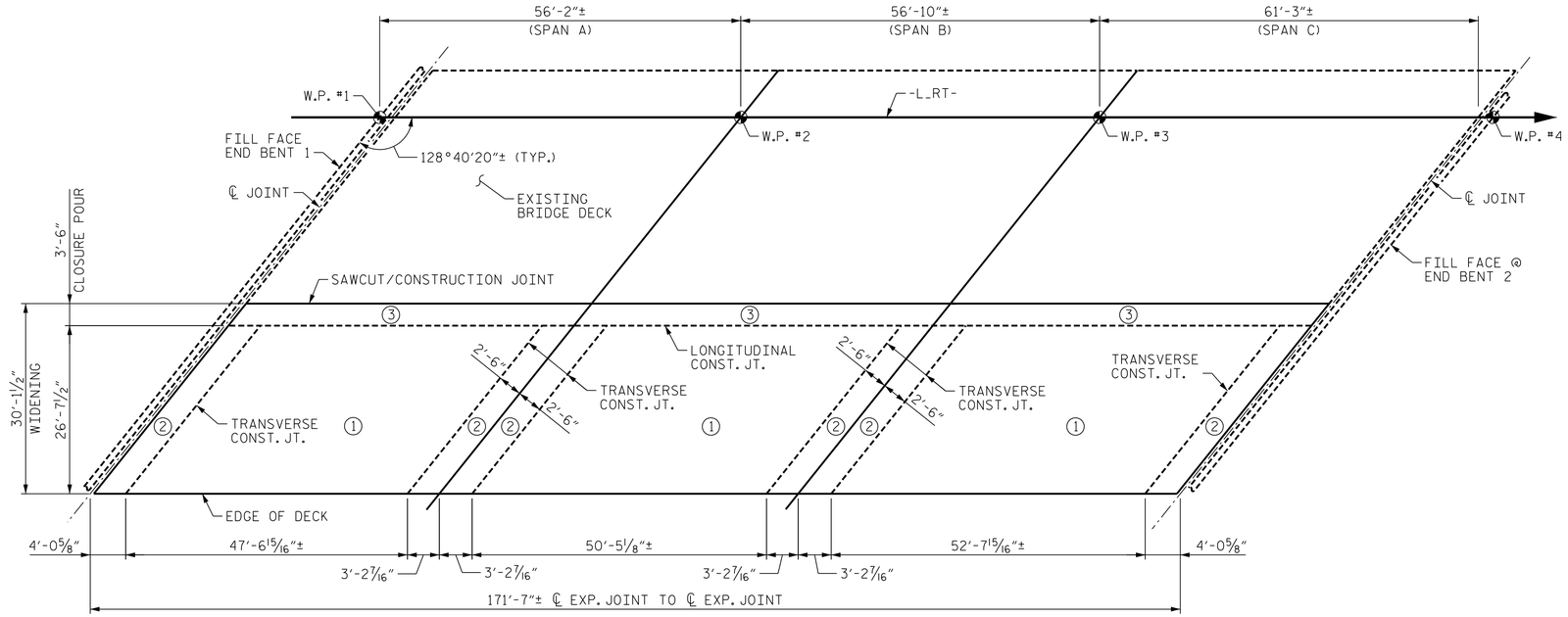
(ALL BAR DIMENSIONS ARE OUT TO OUT)

BILL OF MATERIAL

SPAN A

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ A1	53	#6	STR	26'-3''	2090	A110	2	#6	STR	19'-8''	60
✳ A2	2	#6	STR	25'-11''	78	A111	2	#6	STR	18'-11''	57
✳ A3	2	#6	STR	25'-2''	76	A112	2	#6	STR	18'-1''	55
✳ A4	2	#6	STR	24'-4''	74	A113	2	#6	STR	17'-4''	53
✳ A5	2	#6	STR	23'-7''	71	A114	2	#6	STR	16'-7''	50
✳ A6	2	#6	STR	22'-10''	69	A115	2	#6	STR	15'-9''	48
✳ A7	2	#6	STR	22'-0''	67	A116	2	#6	STR	15'-0''	46
✳ A8	2	#6	STR	21'-3''	64	A117	2	#6	STR	14'-2''	43
✳ A9	2	#6	STR	20'-5''	62	A118	2	#6	STR	13'-5''	41
✳ A10	2	#6	STR	19'-8''	60	A119	2	#6	STR	12'-8''	39
✳ A11	2	#6	STR	18'-11''	57	A120	2	#6	STR	11'-10''	36
✳ A12	2	#6	STR	18'-1''	55	A121	2	#6	STR	11'-1''	34
✳ A13	2	#6	STR	17'-4''	53	A122	2	#6	STR	10'-4''	32
✳ A14	2	#6	STR	16'-7''	50	A123	2	#6	STR	9'-6''	29
✳ A15	2	#6	STR	15'-9''	48	A124	2	#6	STR	8'-9''	27
✳ A16	2	#6	STR	15'-0''	46	A125	2	#6	STR	7'-11''	25
✳ A17	2	#6	STR	14'-2''	43	A126	2	#6	STR	7'-2''	22
✳ A18	2	#6	STR	13'-5''	41	A127	2	#6	STR	6'-5''	20
✳ A19	2	#6	STR	12'-8''	39	A128	2	#6	STR	5'-7''	18
✳ A20	2	#6	STR	11'-10''	36	A129	2	#6	STR	4'-10''	15
✳ A21	2	#6	STR	11'-1''	34	A130	2	#6	STR	4'-1''	13
✳ A22	2	#6	STR	10'-4''	32	A131	2	#6	STR	3'-4''	11
✳ A23	2	#6	STR	9'-6''	29						
✳ A24	2	#6	STR	8'-9''	27	✳ B1	44	#4	STR	28'-2''	828
✳ A25	2	#6	STR	7'-11''	25	B2	41	#5	STR	54'-3''	2320
✳ A26	2	#6	STR	7'-2''	22						
✳ A27	2	#6	STR	6'-5''	20	✳ D1	83	#6	STR	1'-7''	198
✳ A28	2	#6	STR	5'-7''	18	✳ D2	87	#6	STR	6'-4''	828
✳ A29	2	#6	STR	4'-10''	15	D101	83	#6	STR	1'-7''	198
✳ A30	2	#6	STR	4'-1''	13	D102	87	#6	STR	6'-0"	785
✳ A31	2	#6	STR	3'-4''	11						
✳ A32	3	#6	STR	12'-4"	56	✳ G1	2	#5	STR	33'-8''	71
						✳ G2	2	#5	STR	6'-11"	15
A101	53	#6	STR	26'- 3''	2090						
A102	2	#6	STR	25'- 11''	78	✳ J1	37	#4	1	1'-5''	36
A103	2	#6	STR	25'- 2''	76						
A104	2	#6	STR	24'- 4''	74	✳ K1	8	#5	2	14'-0"	117
A105	2	#6	STR	23'-7''	71	✳ K2	4	#5	4	14'-0"	59
A106	2	#6	STR	22'-10''	69	✳ K3	4	#5	3	9'-6"	40
A107	2	#6	STR	22'-0''	67						
A108	2	#6	STR	21'-3''	64	✳ S1	26	#4	5	4'-2"	73
A109	2	#6	STR	20'-5''	62	✳ S2	26	#4	5	3'-11"	69

✳ DENOTES EPOXY COATED REINFORCING STEEL



CONCRETE POURING SEQUENCE AND LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB

(SQ. FT. = 5,169)

DES BY: F. CORDOVA	DATE : 04/21	DWG BY: B. PETERSON	DATE : 03/21
DES CHK: M. NEIHEISEL	DATE : 07/21	CHK BY: M. NEIHEISEL	DATE : 07/21

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NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

Eric Nolting 1/25/2022

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

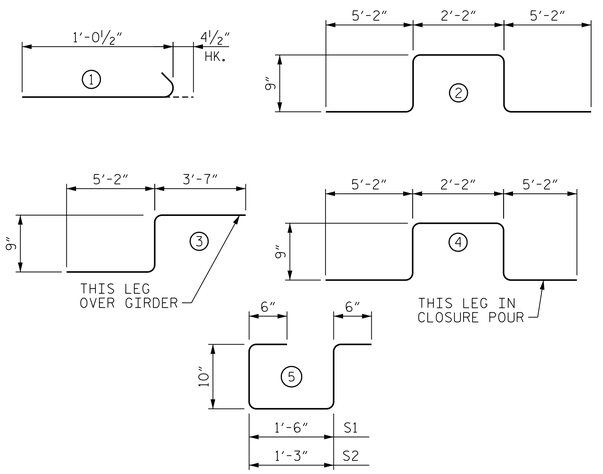
SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE BILL OF MATERIAL

REVISIONS						SHEET NO. S03R-30
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 61
1	--	--	3	--	--	
2	--	--	4	--	--	

BAR TYPES



(ALL BAR DIMENSIONS ARE OUT TO OUT)

SUPERSTRUCTURE BILL OF MATERIAL

	CLASS AA CONCRETE	REINFORCING STEEL	✳EPOXY COATED REINFORCING STEEL
	CY	LB	LB
SPAN A	52.6	6728	5815
SPAN B	54.5	6966	6029
SPAN C	57.4	7353	6300
TOTAL (⊕)	164.5	21047	18144

✳DENOTES EPOXY COATED REINFORCED STEEL

CLASS AA CONCRETE BREAKDOWN

POUR NO.	SPAN A	SPAN B	SPAN C
	CY	CY	CY
POUR 1	38.1	40.4	42.2
POUR 2	7.7	7.0	7.7
CLOSURE POUR	6.8	7.1	7.5
TOTAL (⊕)	52.6	54.5	57.4

(⊕) QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED

BILL OF MATERIAL

SPAN B

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳A1	56	#6	STR	26'-3"	2208	A110	2	#6	STR	19'-8"	60
✳A2	2	#6	STR	25'-11"	78	A111	2	#6	STR	18'-11"	57
✳A3	2	#6	STR	25'-2"	76	A112	2	#6	STR	18'-1"	55
✳A4	2	#6	STR	24'-4"	74	A113	2	#6	STR	17'-4"	53
✳A5	2	#6	STR	23'-7"	71	A114	2	#6	STR	16'-7"	50
✳A6	2	#6	STR	22'-10"	69	A115	2	#6	STR	15'-9"	48
✳A7	2	#6	STR	22'-0"	67	A116	2	#6	STR	15'-0"	46
✳A8	2	#6	STR	21'-3"	64	A117	2	#6	STR	14'-2"	43
✳A9	2	#6	STR	20'-5"	62	A118	2	#6	STR	13'-5"	41
✳A10	2	#6	STR	19'-8"	60	A119	2	#6	STR	12'-8"	39
✳A11	2	#6	STR	18'-11"	57	A120	2	#6	STR	11'-10"	36
✳A12	2	#6	STR	18'-1"	55	A121	2	#6	STR	11'-1"	34
✳A13	2	#6	STR	17'-4"	53	A122	2	#6	STR	10'-4"	32
✳A14	2	#6	STR	16'-7"	50	A123	2	#6	STR	9'-6"	29
✳A15	2	#6	STR	15'-9"	48	A124	2	#6	STR	8'-9"	27
✳A16	2	#6	STR	15'-0"	46	A125	2	#6	STR	7'-11"	25
✳A17	2	#6	STR	14'-2"	43	A126	2	#6	STR	7'-2"	22
✳A18	2	#6	STR	13'-5"	41	A127	2	#6	STR	6'-5"	20
✳A19	2	#6	STR	12'-8"	39	A128	2	#6	STR	5'-7"	18
✳A20	2	#6	STR	11'-10"	36	A129	2	#6	STR	4'-10"	15
✳A21	2	#6	STR	11'-1"	34	A130	2	#6	STR	4'-1"	13
✳A22	2	#6	STR	10'-4"	32	A131	2	#6	STR	3'-4"	11
✳A23	2	#6	STR	9'-6"	29						
✳A24	2	#6	STR	8'-9"	27	✳B3	44	#4	STR	29'-2"	858
✳A25	2	#6	STR	7'-11"	25	B4	41	#5	STR	56'-3"	2406
✳A26	2	#6	STR	7'-2"	22						
✳A27	2	#6	STR	6'-5"	20	✳D1	86	#6	STR	1'-7"	205
✳A28	2	#6	STR	5'-7"	18	✳D2	90	#6	STR	6'-4"	857
✳A29	2	#6	STR	4'-10"	15	D101	86	#6	STR	1'-7"	205
✳A30	2	#6	STR	4'-1"	13	D102	90	#6	STR	6'-0"	812
✳A31	2	#6	STR	3'-4"	11						
✳A32	3	#6	STR	12'-4"	56	✳G1	2	#5	STR	33'-8"	71
						✳G2	2	#5	STR	6'-11"	15
A101	56	#6	STR	26'-3"	2208						
A102	2	#6	STR	25'-11"	78	✳J1	74	#4	1	1'-5"	71
A103	2	#6	STR	25'-2"	76						
A104	2	#6	STR	24'-4"	74	✳K1	8	#5	2	14'-0"	117
A105	2	#6	STR	23'-7"	71	✳K2	4	#5	4	14'-0"	59
A106	2	#6	STR	22'-10"	69	✳K3	4	#5	3	9'-6"	40
A107	2	#6	STR	22'-0"	67						
A108	2	#6	STR	21'-3"	64	✳S1	52	#4	5	3'-11"	137
A109	2	#6	STR	20'-5"	62						

SPAN C

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳A1	61	#6	STR	26'-3"	2406	A110	2	#6	STR	19'-8"	60
✳A2	2	#6	STR	25'-11"	78	A111	2	#6	STR	18'-11"	57
✳A3	2	#6	STR	25'-2"	76	A112	2	#6	STR	18'-1"	55
✳A4	2	#6	STR	24'-4"	74	A113	2	#6	STR	17'-4"	53
✳A5	2	#6	STR	23'-7"	71	A114	2	#6	STR	16'-7"	50
✳A6	2	#6	STR	22'-10"	69	A115	2	#6	STR	15'-9"	48
✳A7	2	#6	STR	22'-0"	67	A116	2	#6	STR	15'-0"	46
✳A8	2	#6	STR	21'-3"	64	A117	2	#6	STR	14'-2"	43
✳A9	2	#6	STR	20'-5"	62	A118	2	#6	STR	13'-5"	41
✳A10	2	#6	STR	19'-8"	60	A119	2	#6	STR	12'-8"	39
✳A11	2	#6	STR	18'-11"	57	A120	2	#6	STR	11'-10"	36
✳A12	2	#6	STR	18'-1"	55	A121	2	#6	STR	11'-1"	34
✳A13	2	#6	STR	17'-4"	53	A122	2	#6	STR	10'-4"	32
✳A14	2	#6	STR	16'-7"	50	A123	2	#6	STR	9'-6"	29
✳A15	2	#6	STR	15'-9"	48	A124	2	#6	STR	8'-9"	27
✳A16	2	#6	STR	15'-0"	46	A125	2	#6	STR	7'-11"	25
✳A17	2	#6	STR	14'-2"	43	A126	2	#6	STR	7'-2"	22
✳A18	2	#6	STR	13'-5"	41	A127	2	#6	STR	6'-5"	20
✳A19	2	#6	STR	12'-8"	39	A128	2	#6	STR	5'-7"	18
✳A20	2	#6	STR	11'-10"	36	A129	2	#6	STR	4'-10"	15
✳A21	2	#6	STR	11'-1"	34	A130	2	#6	STR	4'-1"	13
✳A22	2	#6	STR	10'-4"	32	A131	2	#6	STR	3'-4"	11
✳A23	2	#6	STR	9'-6"	29						
✳A24	2	#6	STR	8'-9"	27	✳B5	44	#4	STR	30'-8"	902
✳A25	2	#6	STR	7'-11"	25	B6	41	#5	STR	59'-4"	2538
✳A26	2	#6	STR	7'-2"	22						
✳A27	2	#6	STR	6'-5"	20	✳D1	91	#6	STR	1'-7"	217
✳A28	2	#6	STR	5'-7"	18	✳D2	95	#6	STR	6'-4"	904
✳A29	2	#6	STR	4'-10"	15	D101	91	#6	STR	1'-7"	217
✳A30	2	#6	STR	4'-1"	13	D102	95	#6	STR	6'-0"	857
✳A31	2	#6	STR	3'-4"	11						
✳A32	3	#6	STR	12'-4"	56	✳G1	2	#5	STR	33'-8"	71
						✳G2	2	#5	STR	6'-11"	15
A101	61	#6	STR	26'-3"	2406						
A102	2	#6	STR	25'-11"	78	✳J1	37	#4	1	1'-5"	36
A103	2	#6	STR	25'-2"	76						
A104	2	#6	STR	24'-4"	74	✳K1	8	#5	2	14'-0"	117
A105	2	#6	STR	23'-7"	71	✳K2	4	#5	4	14'-0"	59
A106	2	#6	STR	22'-10"	69	✳K3	4	#5	3	9'-6"	40
A107	2	#6	STR	22'-0"	67						
A108	2	#6	STR	21'-3"	64	✳S1	26	#4	5	4'-2"	73
A109	2	#6	STR	20'-5"	62	✳S2	26	#4	5	3'-11"	69

GROOVING BRIDGE FLOORS

BRIDGE DECK	4538 SQ.FT.
APPROACH SLABS	861 SQ.FT.
TOTAL	5399 SQ.FT.

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	1'-11"	1'-7"	1'-11"	1'-7"	2'-6"
#5	2'-5"	2'-0"	2'-5"	2'-0"	3'-1"
#6	2'-10"	2'-5"	3'-7"	2'-5"	3'-8"
#7	4'-2"	2'-9"			
#8	4'-9"	3'-2"			

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE BILL OF MATERIAL

NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

Eric Nolting 1/25/2022

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

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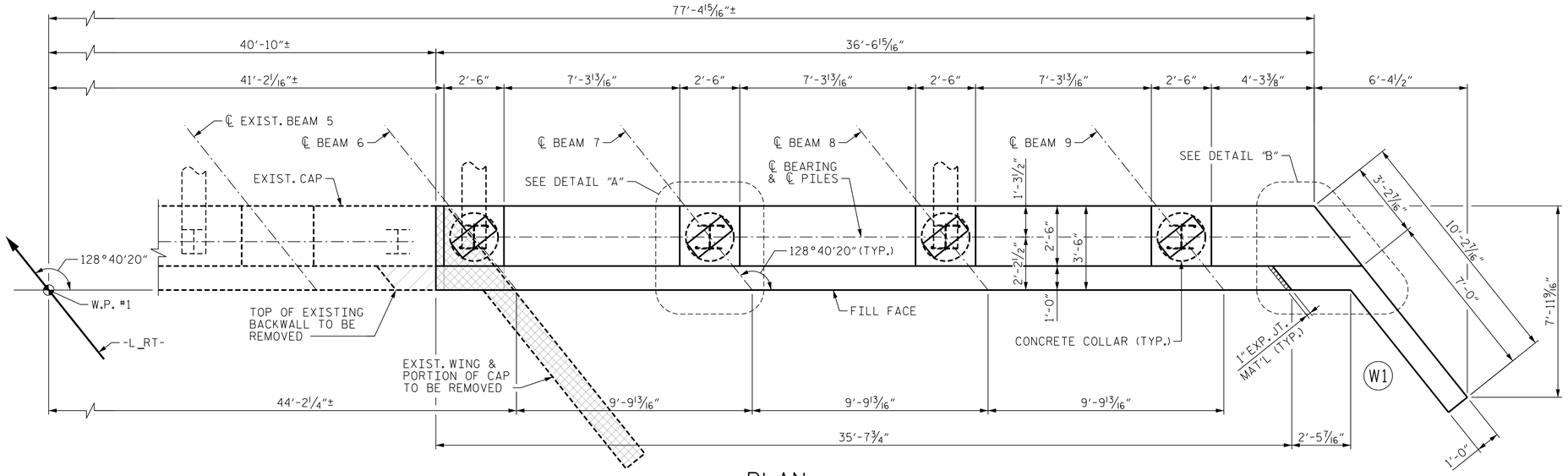
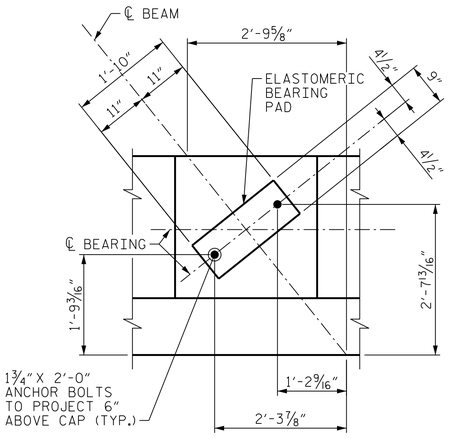
REVISIONS						SHEET NO. S03R-31
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 61
1	--	--	3	--	--	
2	--	--	4	--	--	

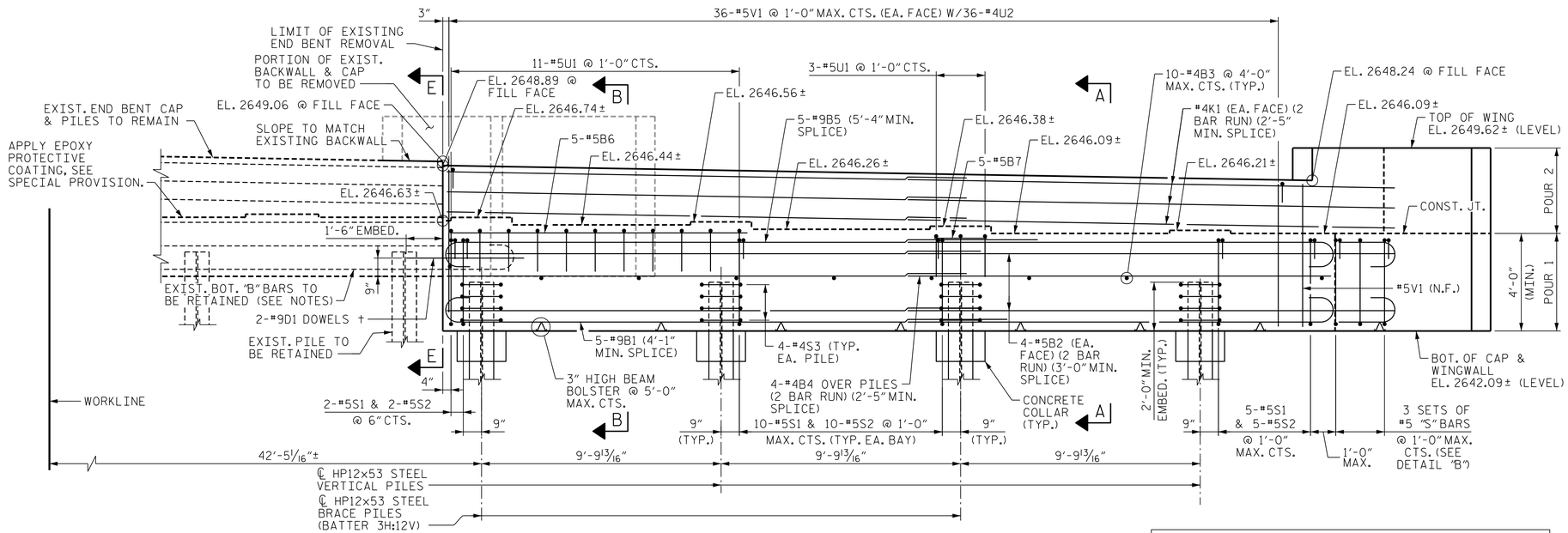
DES BY: F. CORDOVA	DATE: 04/21	DWG BY: B. PETERSON	DATE: 04/21
DES CHK: M. NEIHEISEL	DATE: 07/21	CHK BY: M. NEIHEISEL	DATE: 07/21



PLAN



DETAIL "A"



ELEVATION

† #9D1 DOWELS PLACED IN THE EXISTING CAP SHALL BE INSTALLED WITH FIELD-DRILLED HOLES AND AN EPOXY ADHESIVE ANCHORING SYSTEM. LEVEL ONE FIELD TESTING IS REQUIRED AND THE YIELD LOAD OF THE DOWEL IS 60.0 KIPS. EMBEDMENT LENGTH TO BE DETERMINED BY THE MANUFACTURER OF THE ADHESIVELY ANCHORED ANCHOR SYSTEM. #9D1 BAR LENGTH WAS BASED ON A 1'-6" EMBEDMENT LENGTH. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SECTION 420-13 OF THE STANDARD SPECIFICATIONS.

NOTES

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

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

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

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

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE EXISTING BOTTOM #9 BARS SHALL BE RETAINED PAST THE SAW CUT LINE AND WILL BECOME PART OF THE WIDENED END BENT. THE EXISTING REINFORCING STEEL MAY BE BENT AS REQUIRED FOR FITTING INTO THE PROPOSED END BENT CAP.

FOR SECTIONS A-A AND B-B, VIEW E-E, AND DETAIL "B", SEE "SUBTRUCTURE END BENT 1 SECTIONS AND DETAILS" SHEET.

COAT EXPOSED ENDS OF EXISTING REBAR WITH EPOXY AFTER EXISTING BACKWALL AND CAP ARE REMOVED.

GRADE DATA, ELEVATIONS, DIMENSIONS, AND STATIONS WERE DETERMINED USING THE BEST INFORMATION AVAILABLE AND ARE PROVIDED FOR INFORMATION ONLY. THE CONTRACTOR SHALL SURVEY THE EXISTING STRUCTURE AND NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIALS.

IN REMOVING EXISTING END BENT, MAKE A 1½" MIN. DEPTH SAWCUT AROUND PERIMETER OF THE CAP AND BACKWALL. REMOVE REMAINING CONCRETE USING MEANS THAT AVOID DAMAGE TO THE EXISTING BOTTOM "B" BARS.

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE END BENT 1 PLAN AND ELEVATION

REVISIONS						SHEET NO. S08R-32
NO.	BY:	DATE:	NO.	BY:	DATE:	
1	--	--	3	--	--	TOTAL SHEETS 61
2	--	--	4	--	--	

DES BY: B. ROGERS	DATE: 05/21	DWG BY: B. PETERSON	DATE: 05/21
DES CHK: F. CORDOVA	DATE: 06/21	CHK BY: F. CORDOVA	DATE: 06/21

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

Eric Nolting 1/25/2022

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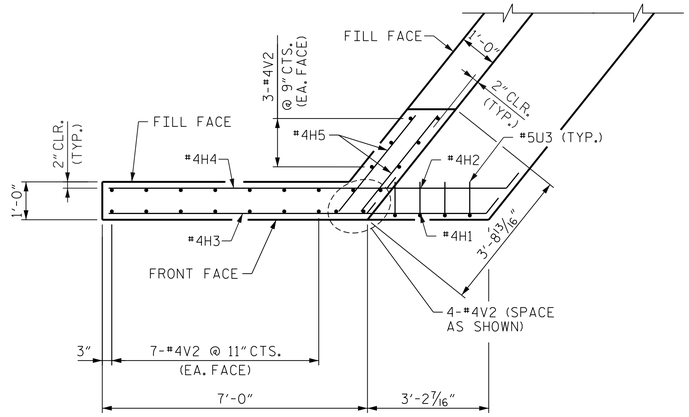
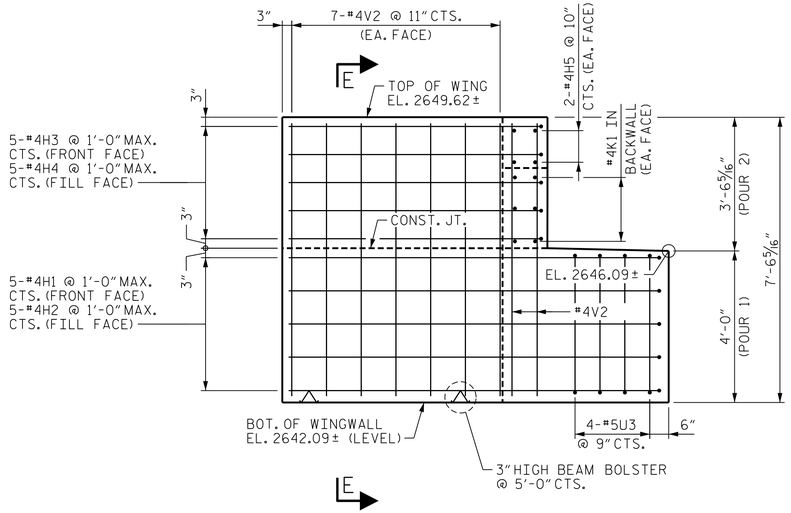
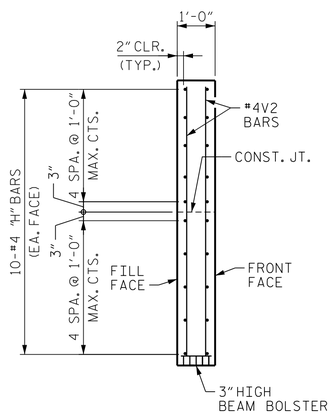


PLAN - WINGWALL (W1)



ELEVATION - WINGWALL (W1)



SECTION E-E

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE END BENT 1 WINGWALL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S03R-33
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	61

NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

Eric Nolting 1/25/2022

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St. Suite 900 Raleigh, N.C. 27601
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DES CHK:	F. CORDOVA	DATE :	06/21
DWG BY:	B. PETERSON	DATE :	05/21
CHK BY:	F. CORDOVA	DATE :	06/21

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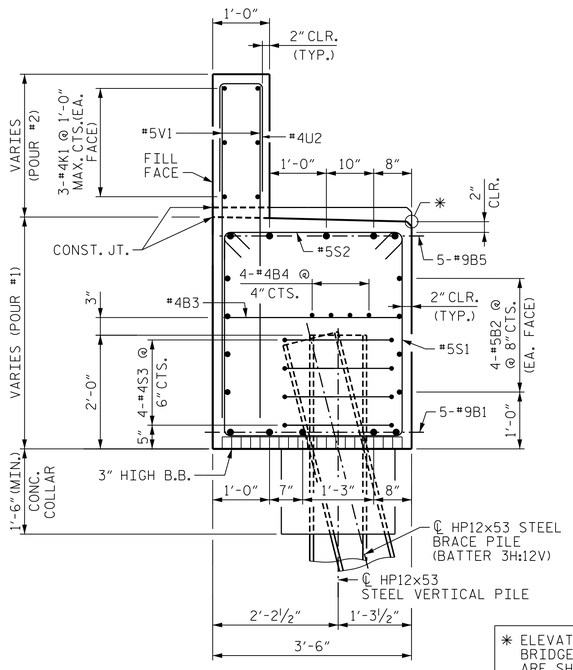
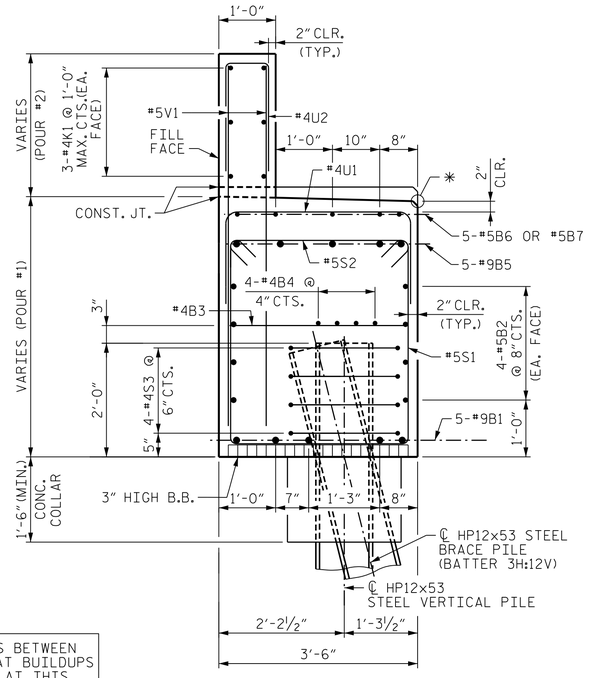
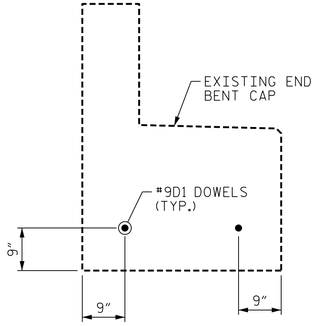


SECTION A-A

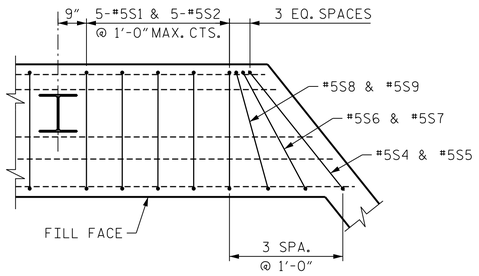


SECTION B-B

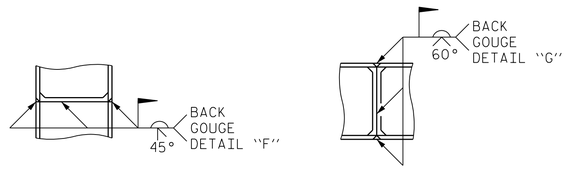
* ELEVATIONS BETWEEN BRIDGE SEAT BUILDUPS ARE SHOWN AT THIS POINT



VIEW E-E



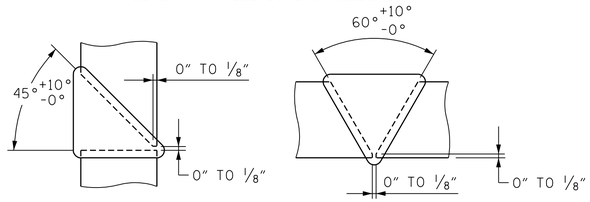
DETAIL "B"



* PILE VERTICAL

* PILE HORIZONTAL OR VERTICAL

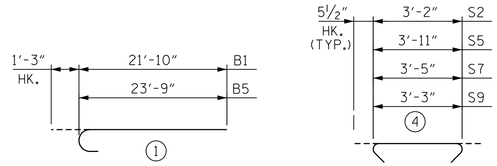
*POSITION OF PILE DURING WELDING



DETAIL "F" DETAIL "G"

PILE SPLICE DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

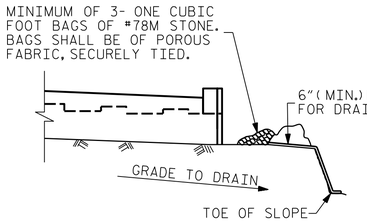
BILL OF MATERIAL

END BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#9	1	23'-1''	785
B2	16	#5	STR	21'-4''	356
B3	10	#4	STR	3'-2''	21
B4	8	#4	STR	21'-0''	112
B5	10	#9	1	23'-9''	808
B6	5	#5	STR	12'-3''	64
B7	5	#5	STR	2'-2''	11
K1	12	#4	STR	21'-0''	168
H1	5	#4	2	11'-6''	38
H2	5	#4	2	12'-0''	40
H3	5	#4	2	8'-4''	28
H4	5	#4	2	8'-11''	30
H5	4	#4	STR	3'-4''	9
V1	73	#5	STR	5'-10''	444
V2	24	#4	STR	7'-2''	115
S1	37	#5	3	11'-4''	437
S2	37	#5	4	4'-1''	158
S3	16	#4	5	6'-6''	69
S4	1	#5	3	12'-1''	13
S5	1	#5	4	4'-10''	5
S6	1	#5	3	11'-7''	12
S7	1	#5	4	4'-4''	5
S8	1	#5	3	11'-5''	12
S9	1	#5	4	4'-2''	4
U1	14	#5	6	6'-2''	90
U2	36	#4	6	3'-8''	88
U3	4	#5	6	6'-8''	28
D1	2	#9	STR.	4'-10''	33

REINFORCING STEEL	LBS.	3983
CLASS A CONCRETE		
POUR #1 (COLLARS, CAP, LOWER PART OF WING)	CU. YDS.	22.2
POUR #2 (BACKWALL & UPPER PART OF WING)	CU. YDS.	3.9
TOTAL	CU. YDS.	26.1
HP 12x53 STEEL PILES ⚠		
	NO.	4
	LIN. FT.	240
STEEL H-PILE POINTS		
	NO.	4

⚠ PILE LENGTHS ARE BASED ON ESTIMATED TIP ELEVATIONS



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

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE END BENT 1 SECTIONS AND DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S03R-34
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	61

NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

Eric Nolting 1/25/2022

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555 Fayetteville St. Suite 900 Raleigh, N.C. 27601
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DES CHK:	F. CORDOVA	DATE :	06/21
DWG BY:	B. PETERSON	DATE :	05/21
CHK BY:	F. CORDOVA	DATE :	06/21

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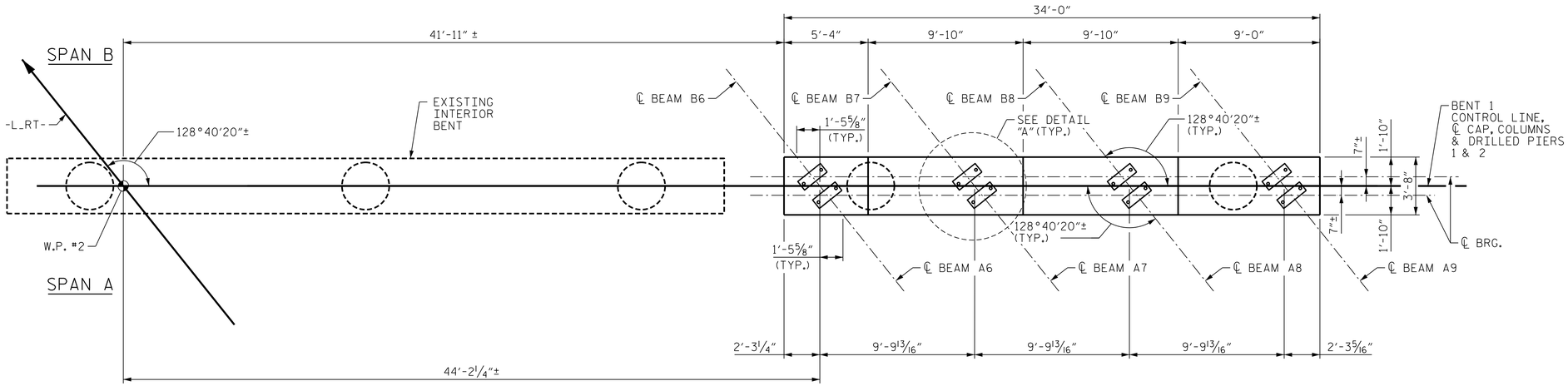
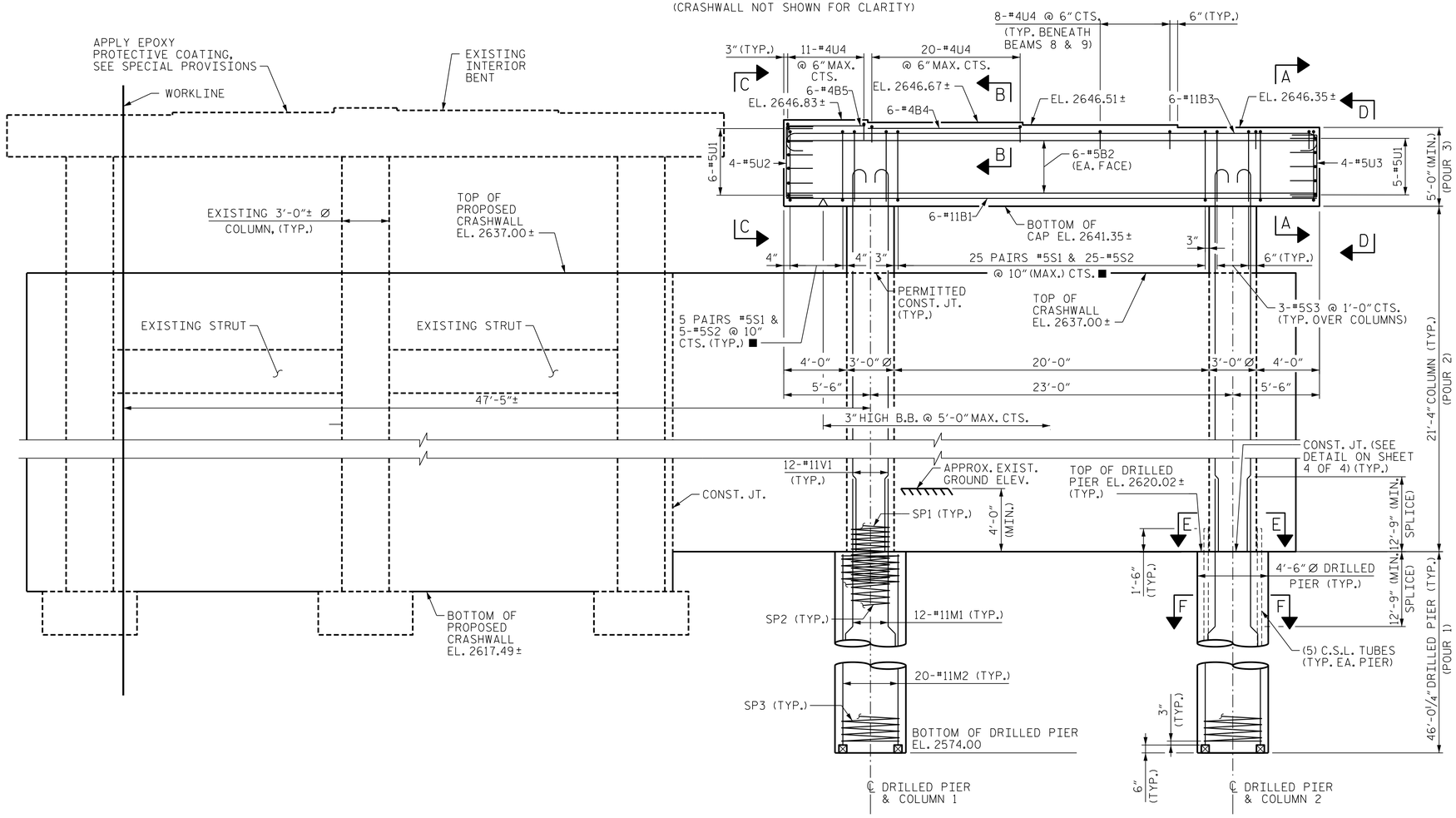


PLAN

(CRASHWALL NOT SHOWN FOR CLARITY)



ELEVATION

■ = INVERT ALTERNATE STIRRUPS

NOTES

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

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

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

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

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 ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 4 FOOT BELOW THE GROUND LINE.

FOR SECTION VIEWS, SEE "SUBSTRUCTURE BENT 1 SECTIONS AND DETAILS" SHEET.

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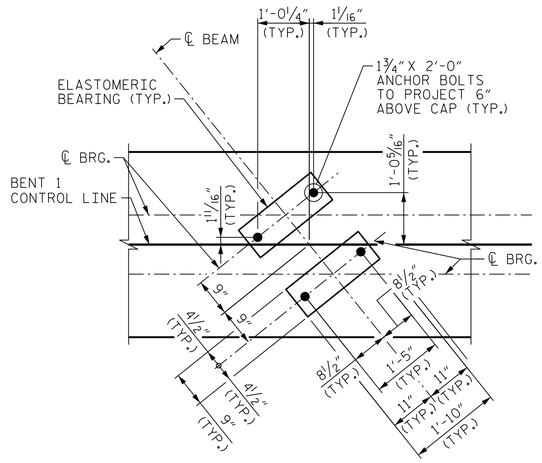
FOR CRASHWALL DETAILS, SEE "SUBSTRUCTURE BENT 1 CRASHWALL" SHEETS.

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

EPOXY COAT THE BENT CAP AFTER ADJUSTMENTS ARE MADE TO BEARINGS.



DETAIL "A"

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT 1 PLAN AND ELEVATION

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S03R-35
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	61

NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

Eric Nolting 1/25/2022

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St. Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

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DES BY:	D. MAST	DATE :	07/21
DES CHK:	M. NEIHEISEL	DATE :	07/21
DWG BY:	D. CARTER	DATE :	07/21
CHK BY:	E. NOLTING	DATE :	08/21

PLOT DRIVER: NCDOT STRUCTURES DEFAULT PLOTTER.plt PENTABLE: NCDOT STRUCTURES DEFAULT PEN.tbl
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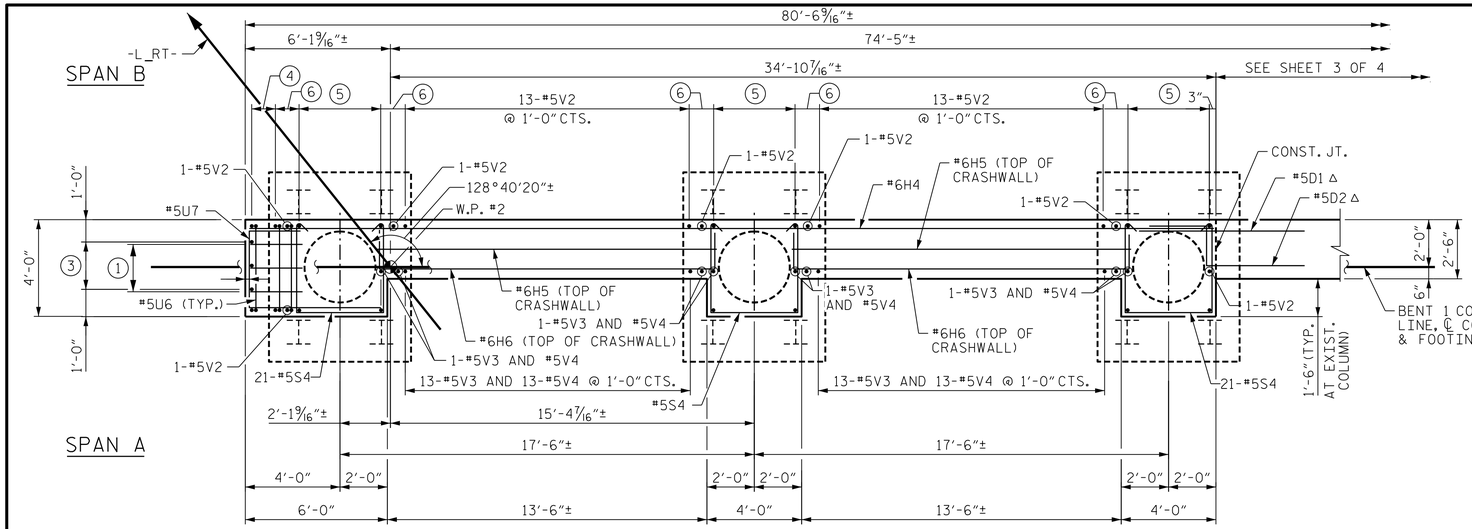
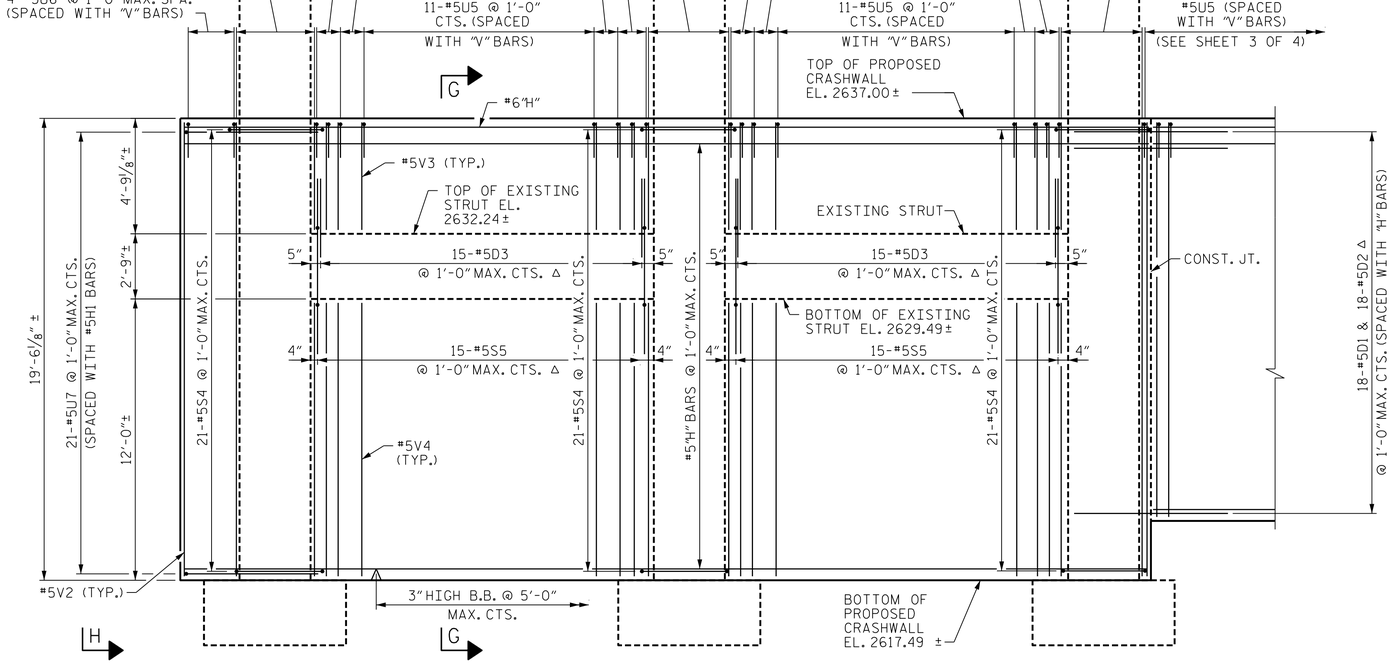
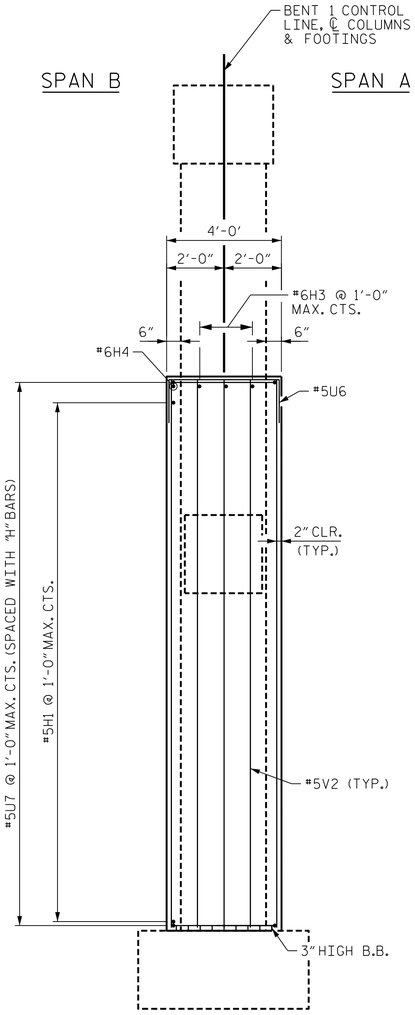


PLAN

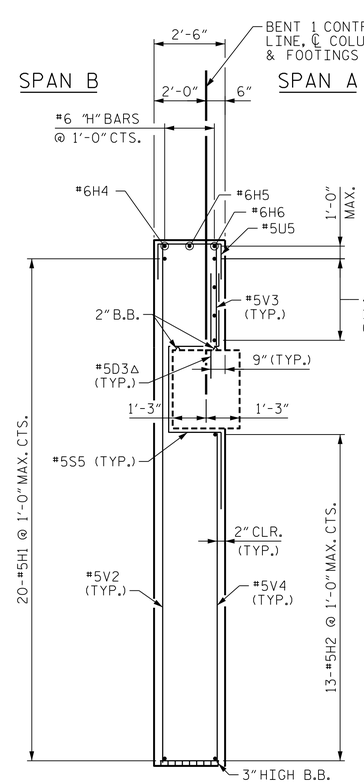
① = 3-#6H3 @ 1'-0" CTS. (SPA. WITH #5V2)
② = 3-#5U5 @ 6" CTS. (SPACED WTIH "V" BARS)
③ = 3-#5V2 @ 1'-0" CTS.
④ = 2-#5V2 @ 1'-0" CTS. (TYP. EA. FACE)
⑤ = 5-#5V2 @ 1'-0" CTS. (TYP. EA. FACE)
⑥ = 2 SPA. @ 6" (TYP. EA. FACE)



ELEVATION OF CRASHWALL



VIEW H-H



SECTION G-G

NOTES

#5D3 DOWELS PLACED IN THE EXISTING CONCRETE SHALL BE INSTALLED WITH FIELD-DRILLED HOLES AND AN EPOXY ADHESIVE ANCHORING SYSTEM. NO FIELD TESTING IS REQUIRED. EMBEDMENT LENGTH TO BE DETERMINED BY THE MANUFACTURER OF THE ADHESIVELY ANCHORED ANCHOR SYSTEM. #5D3 BAR LENGTH WAS BASED ON A 1'-0" EMBEDMENT LENGTH. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SECTION 420-13 OF THE STANDARD SPECIFICATIONS.

DOWELS SHALL BE LOCATED TO AVOID DAMAGE TO EXISTING REINFORCING.

Δ = 3'-0" MIN. SPLICE

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT 1 CRASHWALL

REVISIONS						SHEET NO. S03R-36
NO.	BY:	DATE:	NO.	BY:	DATE:	
1	--	--	3	--	--	TOTAL SHEETS 61
2	--	--	4	--	--	

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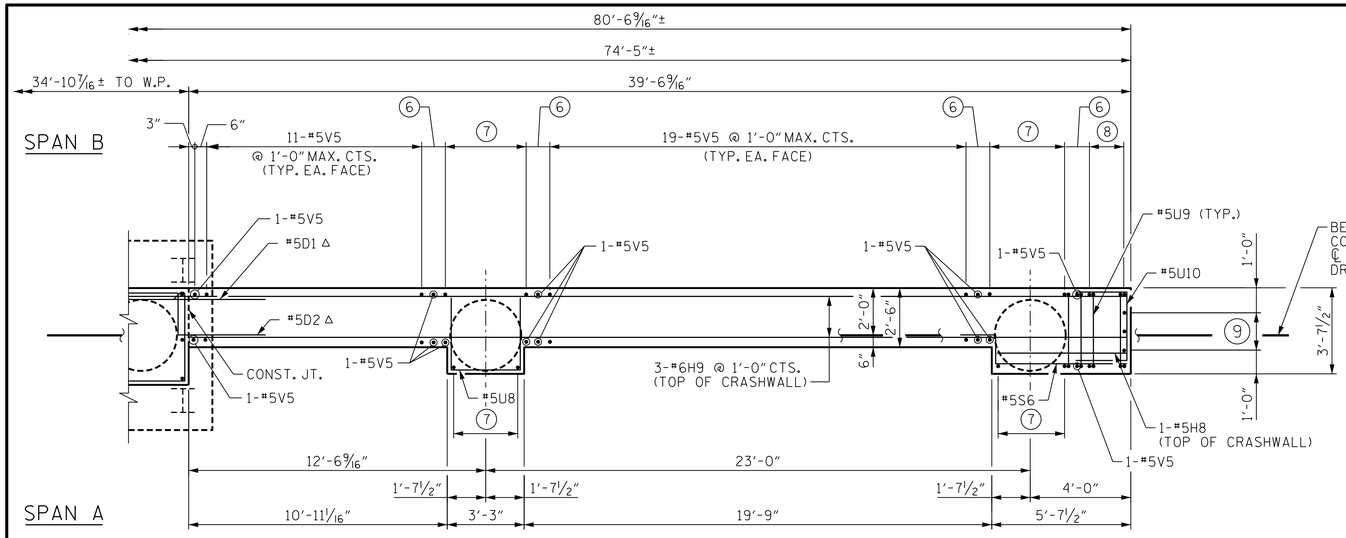


PLAN

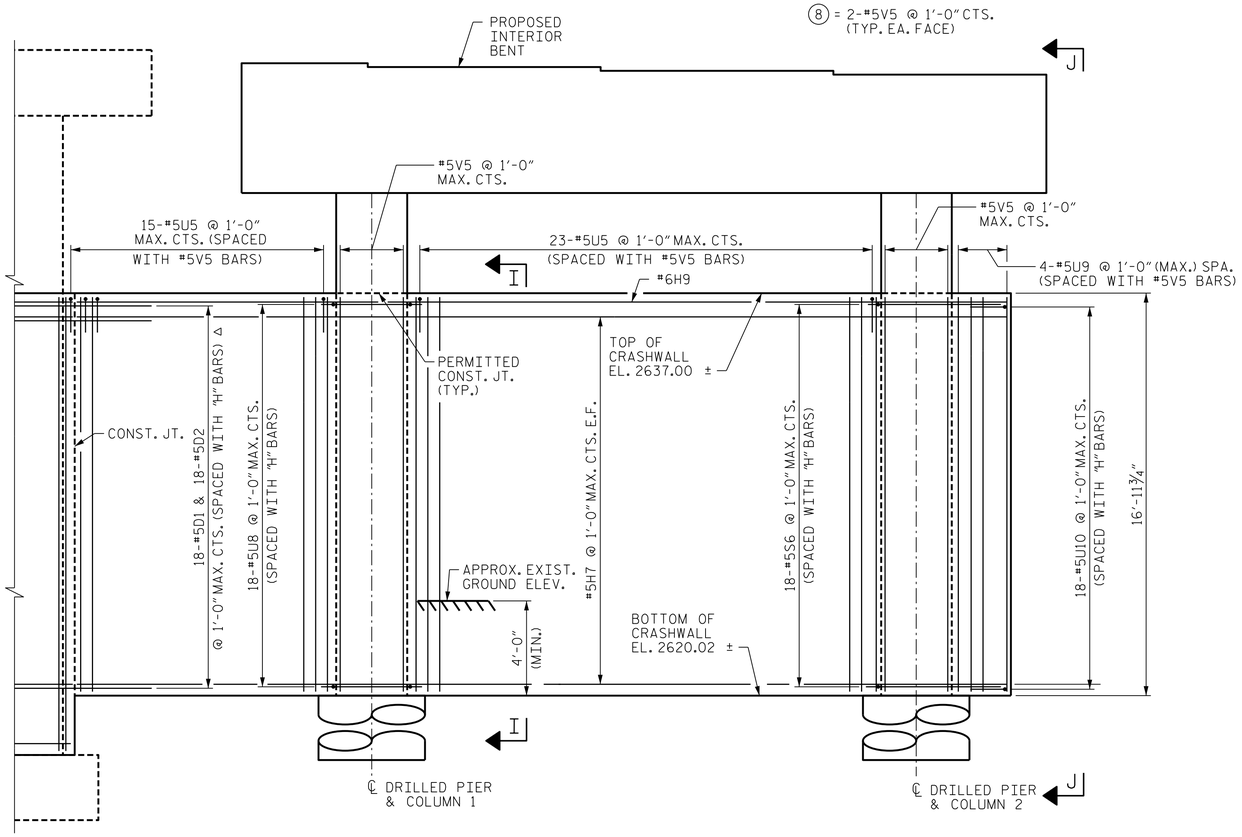
(COLUMN REINFORCING NOT SHOWN FOR CLARITY)

⑥ = 2 SPA. @ 6" (TYP. EA. FACE)

⑦ = 4-#5V5 @ 1'-0" MAX. CTS.

⑧ = 2-#5V5 @ 1'-0" CTS. (TYP. EA. FACE)

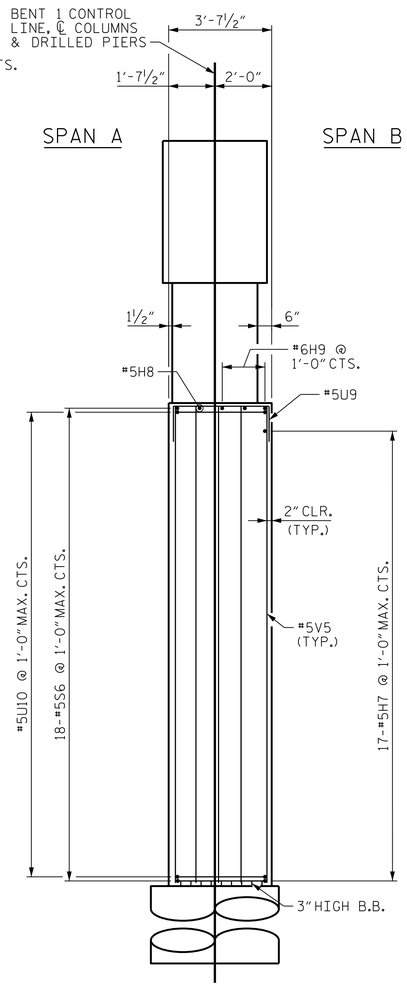
⑨ = 3-#5V5 @ 1'-0" MAX. CTS.



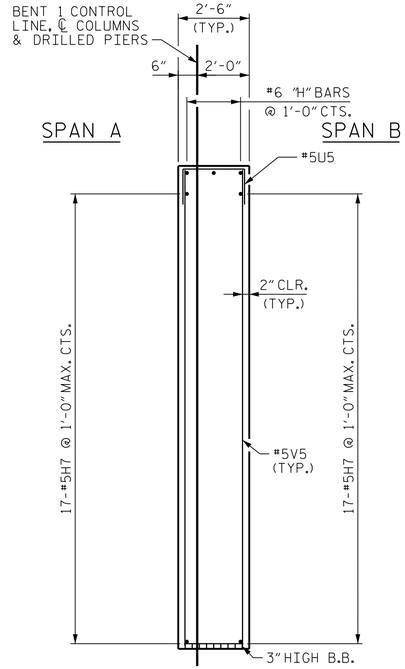
ELEVATION OF CRASHWALL

(COLUMN REINFORCING NOT SHOWN FOR CLARITY)

△ = 3'-0" MIN. SPLICE



VIEW J-J



SECTION I-I

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT 1 CRASHWALL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S03R-37
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	61

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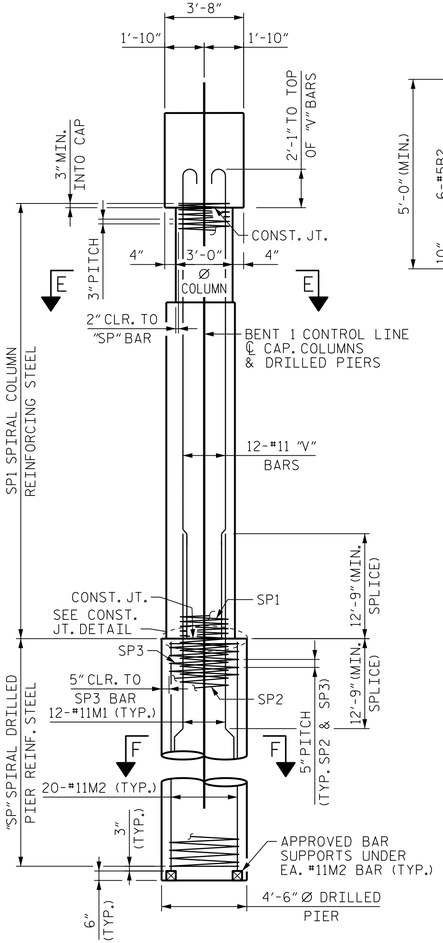
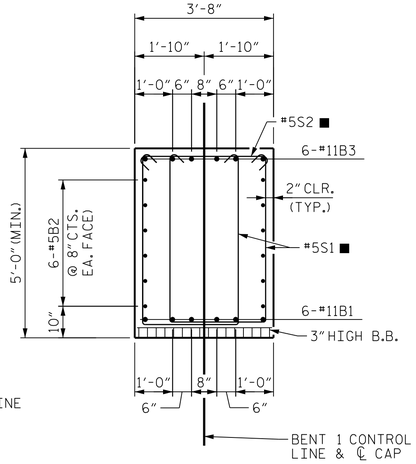
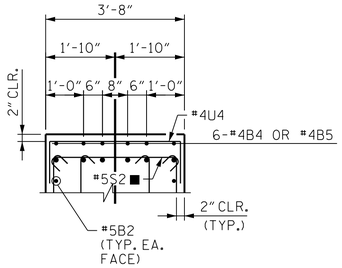
SPAN B SPAN A



END ELEVATION

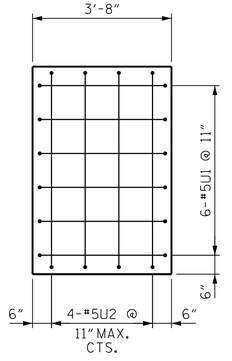


SECTION A-A

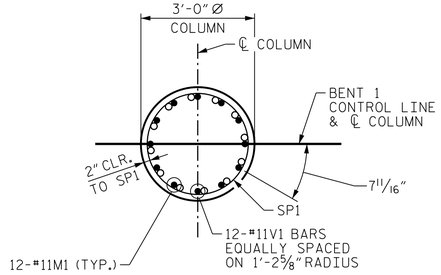


SECTION B-B

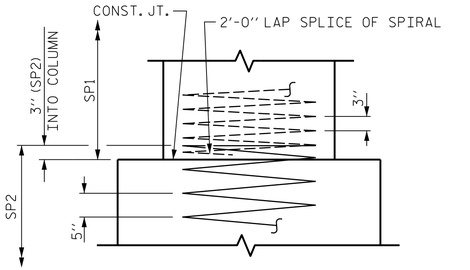
■ = INVERT ALTERNATE STIRRUPS



VIEW C-C

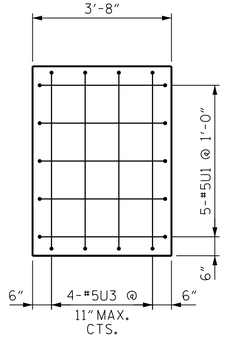


SECTION E-E

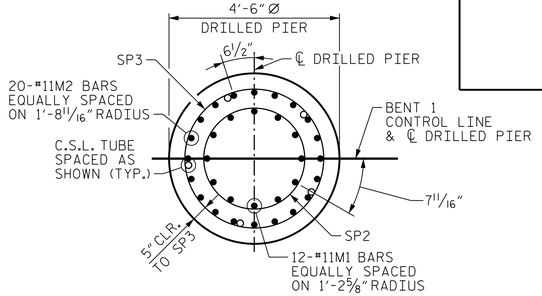


CONSTRUCTION JOINT DETAIL

(SP3 & LONGITUDINAL REINFORCING NOT SHOWN FOR CLARITY)

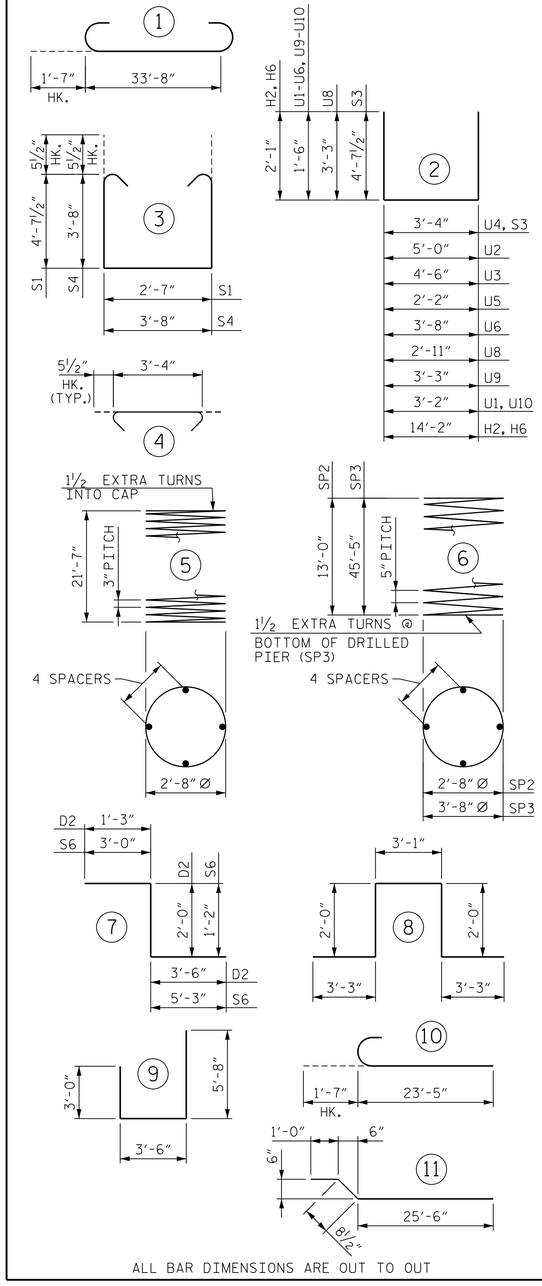


VIEW D-D



SECTION F-F

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#11	STR	33'-8"	1074
B2	12	#5	STR	33'-8"	422
B3	6	#11	1	36'-10"	1175
B4	6	#4	STR	12'-3"	50
B5	6	#4	STR	5'-0"	21
D1	18	#5	STR	6'-6"	123
D2	18	#5	7	6'-9"	127
D3	30	#5	STR	4'-3"	133
H1	20	#5	STR	40'-8"	849
H2	34	#5	2	18'-4"	651
H3	3	#6	STR	2'-2"	10
H4	1	#6	STR	40'-8"	62
H5	2	#6	STR	14'-2"	43
H6	2	#6	2	18'-4"	56
H7	34	#5	STR	39'-2"	1389
H8	1	#5	STR	5'-3"	6
H9	3	#6	STR	39'-2"	177
M1	24	#11	11	27'-3"	3475
M2	40	#11	STR	48'-4"	10272
S1	70	#5	3	12'-9"	931
S2	35	#5	4	4'-4"	159
S3	6	#5	2	12'-7"	79
S4	63	#5	3	11'-11"	784
S5	30	#5	8	13'-7"	426
S6	18	#5	7	9'-5"	177

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
U1	11	#5	2	6'-2"	71
U2	4	#5	2	8'-0"	34
U3	4	#5	2	7'-6"	32
U4	47	#4	2	6'-4"	199
U5	72	#5	2	5'-2"	388
U6	4	#5	2	6'-8"	28
U7	21	#5	9	12'-2"	267
U8	18	#5	2	9'-5"	177
U9	4	#5	2	6'-3"	27
U10	18	#5	2	6'-2"	116
V1	24	#11	10	25'-0"	3188
V2	70	#5	STR	19'-1"	1394
V3	34	#5	STR	4'-5"	157
V4	34	#5	STR	11'-6"	408
V5	96	#5	STR	16'-7"	1661

REINFORCING STEEL				LBS.	30818
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
SP1	2	*	5	726'-1"	971
SP2	2	**	6	263'-3"	550
SP3	2	**	6	1261'-4"	2632
SPIRAL REINF. STEEL				LBS.	4153

CLASS A CONCRETE	
POUR 2 (COLUMNS & CRASHWALL)	CU. YDS. 70.7
POUR 3 (CAP)	CU. YDS. 24.1
CRASHWALL AT EXISTING BENT	CU. YDS. 73.9
TOTAL CLASS A CONCRETE	CU. YDS. 168.7
DRILLED PIER CONCRETE	
POUR 1 (DRILLED PIERS)	CU. YDS. 54.2
CSL TUBES	LIN. FT. 480.0
4'-6" DIA. DRILLED PIERS IN SOIL	LIN. FT. 83.0
4'-6" DIA. DRILLED PIERS NOT IN SOIL	LIN. FT. 9.0

* THE SP1 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

** THE SP2 AND SP3 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT 1 SECTIONS AND DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

Eric Nolting 1/25/2022

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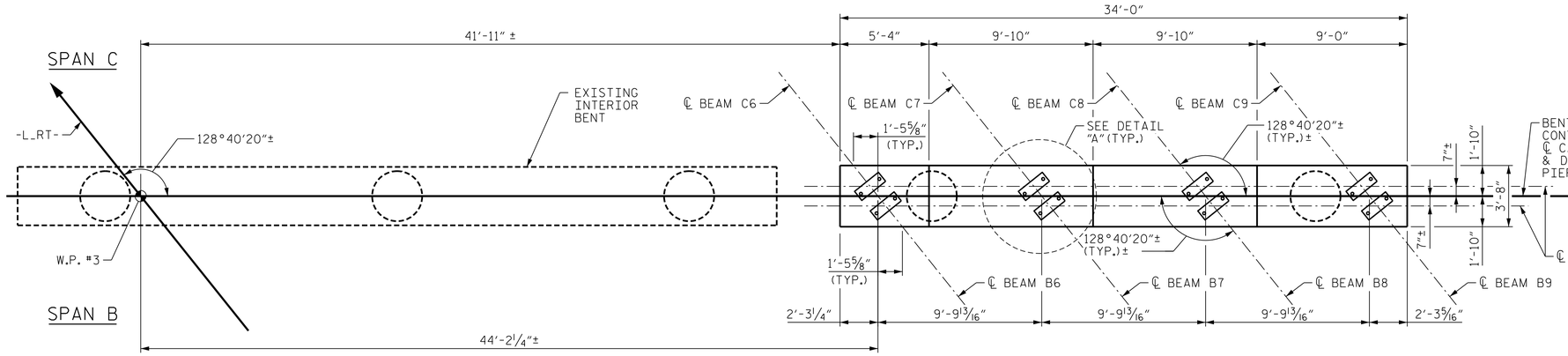
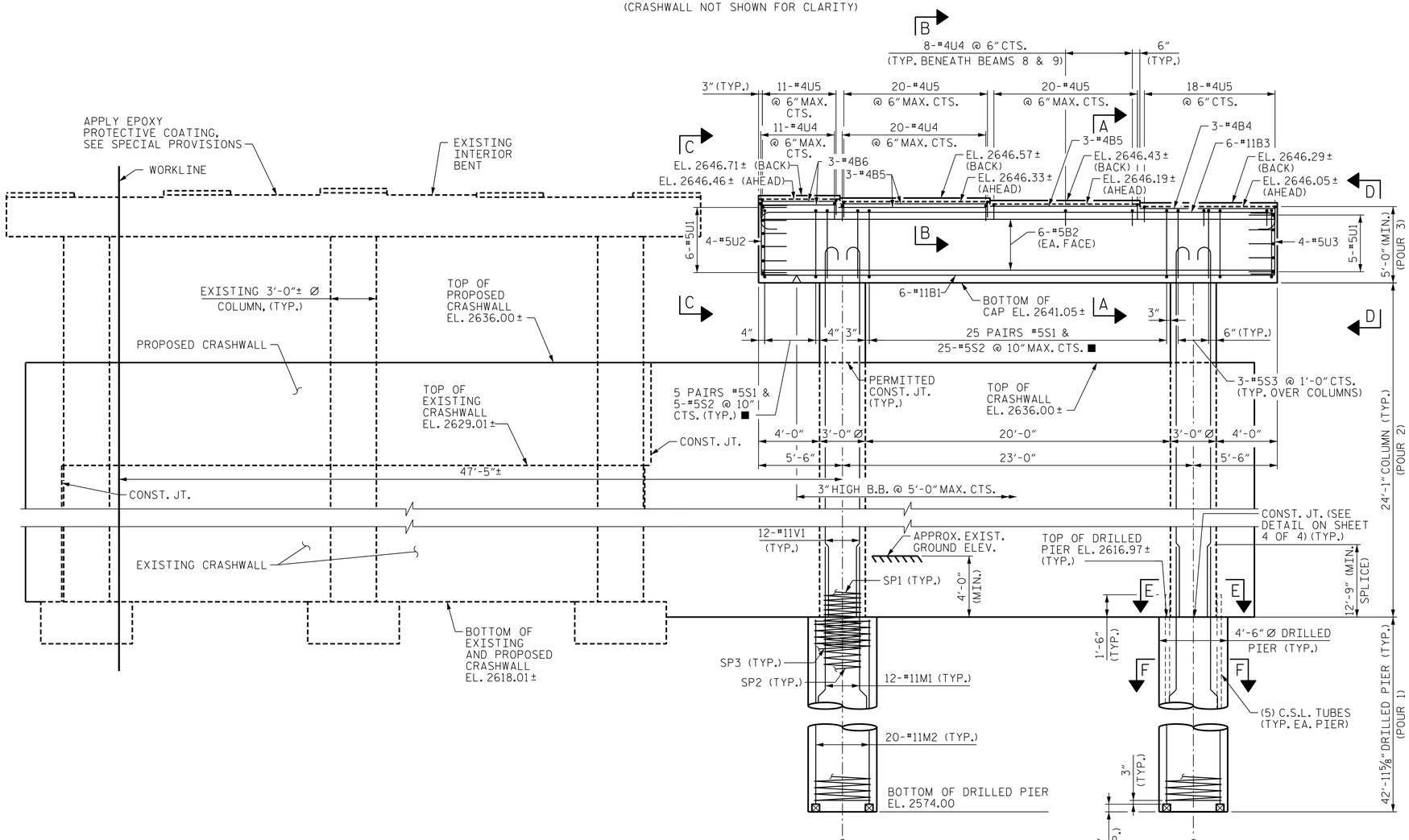


PLAN

(CRASHWALL NOT SHOWN FOR CLARITY)



ELEVATION

■ = INVERT ALTERNATE STIRRUPS

NOTES

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

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

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

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

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 ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 4 FOOT BELOW THE GROUND LINE.

FOR SECTION VIEWS, SEE "SUBSTRUCTURE BENT 2 SECTIONS AND DETAILS" SHEET.

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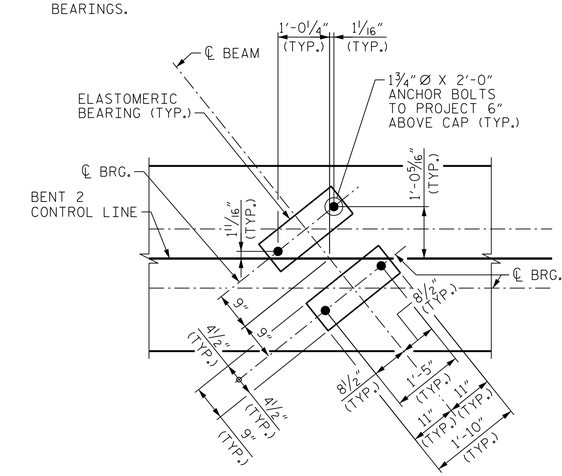
EPOXY COAT THE BENT CAP AFTER ADJUSTMENTS ARE MADE TO BEARINGS.



DETAIL "A"

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT 2 PLAN AND ELEVATION

REVISIONS						SHEET NO. S03R-39
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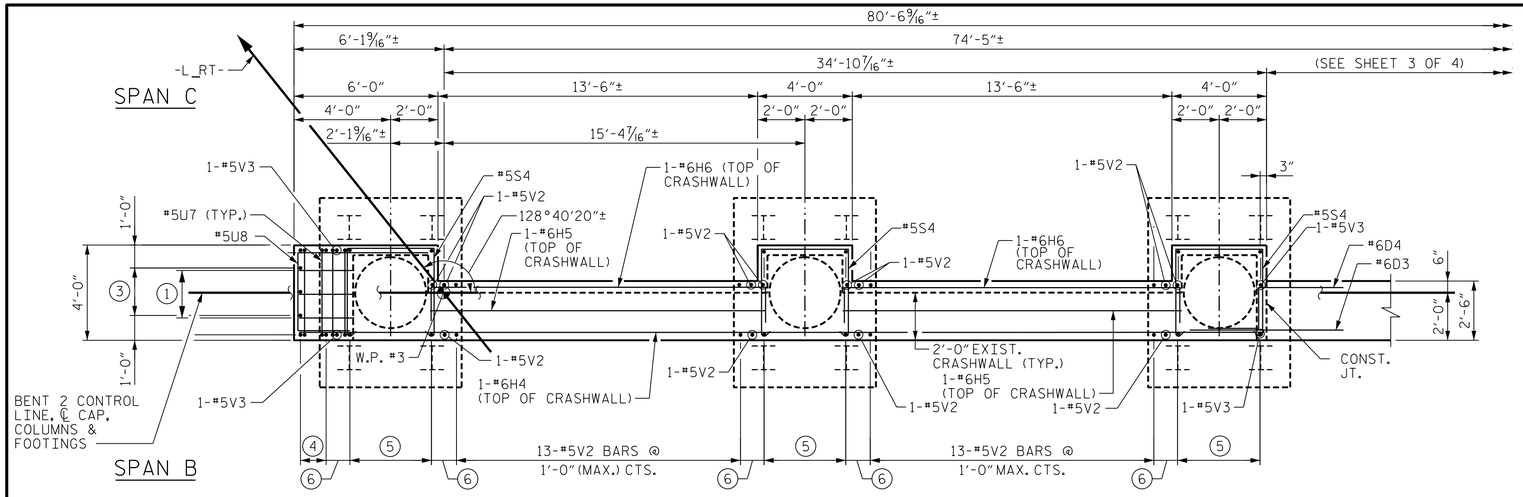


PLAN

① = 3-#6H3 @ 1'-0" CTS.

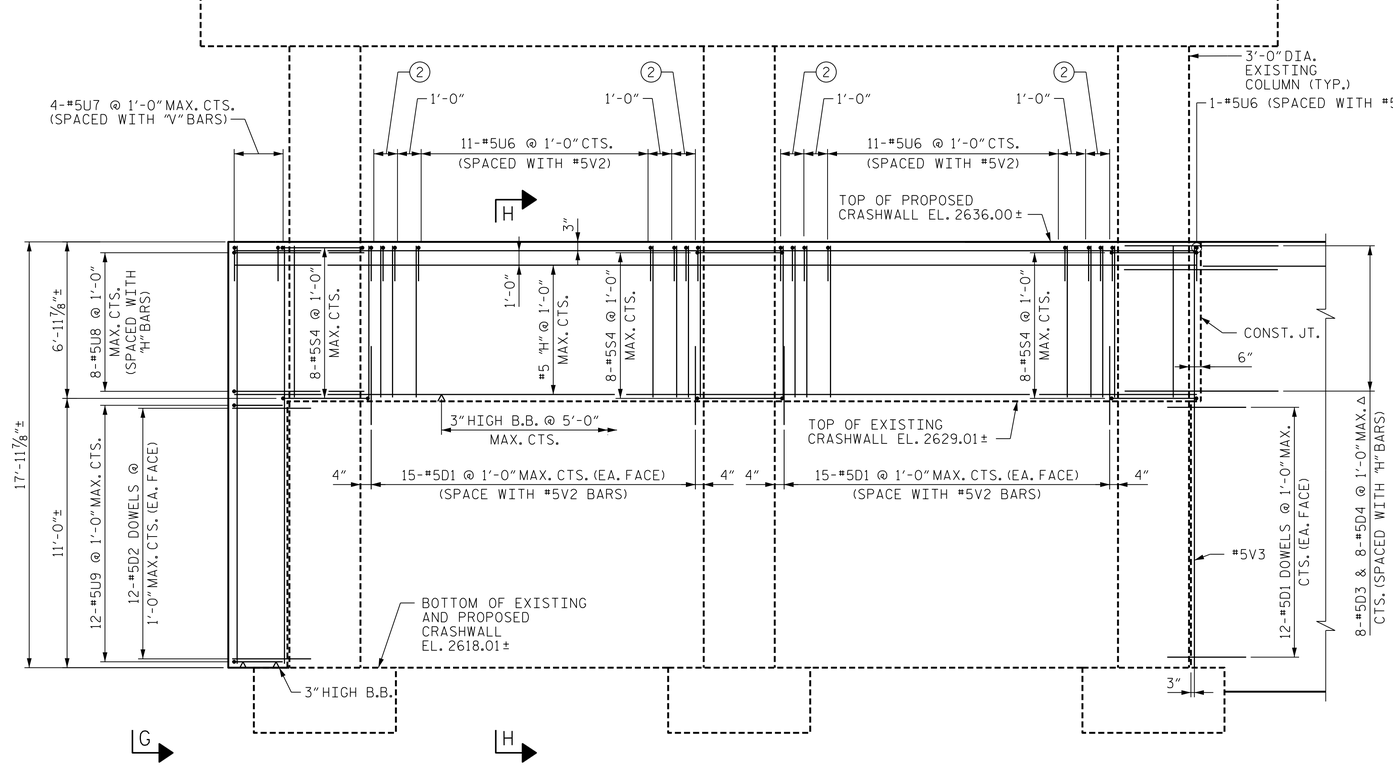
② = 3-#5U6 @ 6" CTS. (SPACED WTIH "V" BARS)

③ = 3-#5V3 @ 1'-0" MAX. CTS.

④ = 2-#5V3 @ 1'-0" CTS. (TYP. EA. FACE)

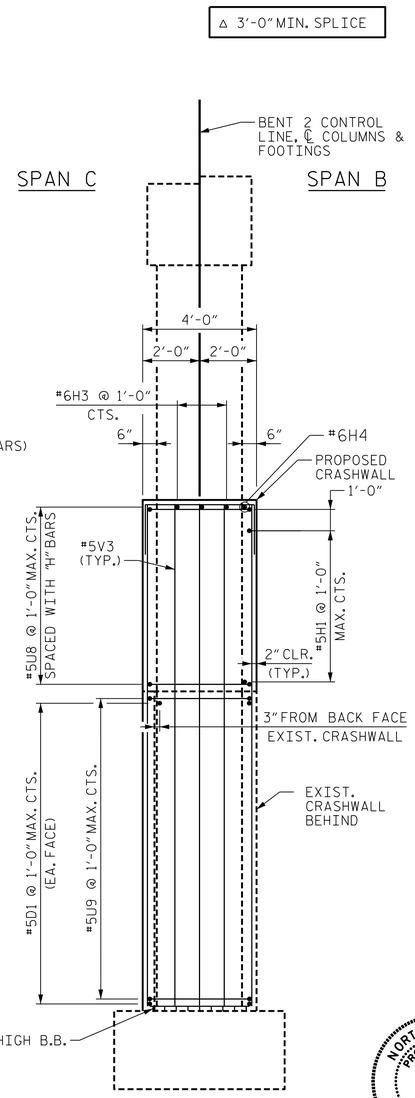
⑤ = 5-#5V2 @ 1'-0" MAX. CTS. (TYP. EA. FACE)

⑥ = 2 SPA. @ 6" (TYP. EA. FACE)

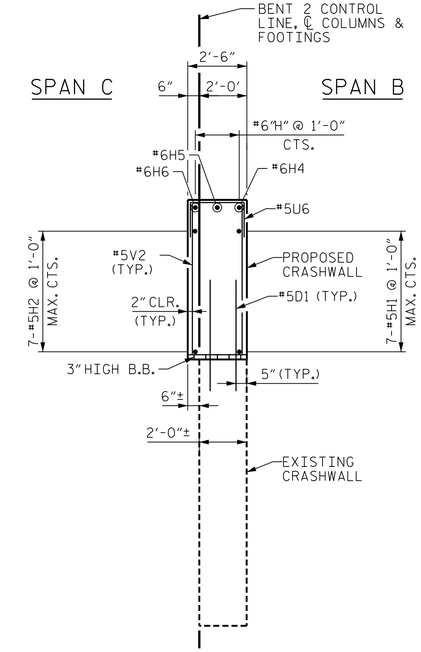


ELEVATION OF CRASHWALL

△ 3'-0" MIN. SPLICE



VIEW G-G



SECTION H-H

NOTES

#5D1 & #5D2 DOWELS PLACED IN THE EXISTING CONCRETE SHALL BE INSTALLED WITH FIELD-DRILLED HOLES AND AN EPOXY ADHESIVE ANCHORING SYSTEM. NO FIELD TESTING IS REQUIRED. EMBEDMENT LENGTH TO BE DETERMINED BY THE MANUFACTURER OF THE ADHESIVELY ANCHORED ANCHOR SYSTEM. #5D1 & #5D2 BAR LENGTH WAS BASED ON A 1'-0" EMBEDMENT LENGTH. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SECTION 420-13 OF THE STANDARD SPECIFICATIONS.

DOWELS SHALL BE LOCATED TO AVOID DAMAGE TO EXISTING REINFORCING.

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT 2 CRASHWALL

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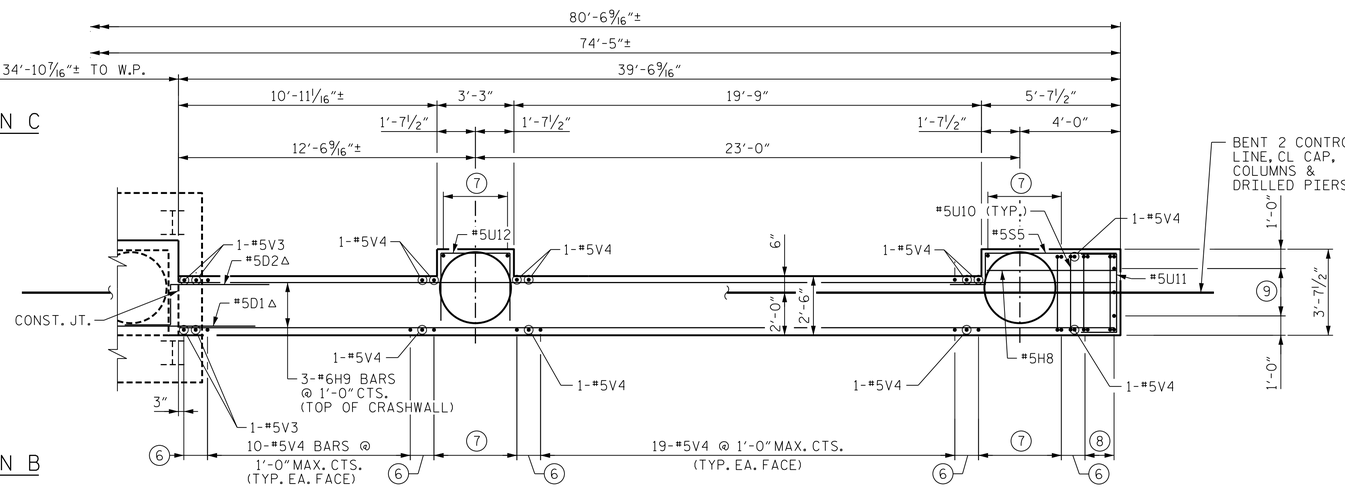
DES BY:	D. MAST	DATE :	07/21
DES CHK:	E. NOLTING	DATE :	08/21
DWG BY:	D. CARTER	DATE :	07/21
CHK BY:	E. NOLTING	DATE :	08/21



PLAN

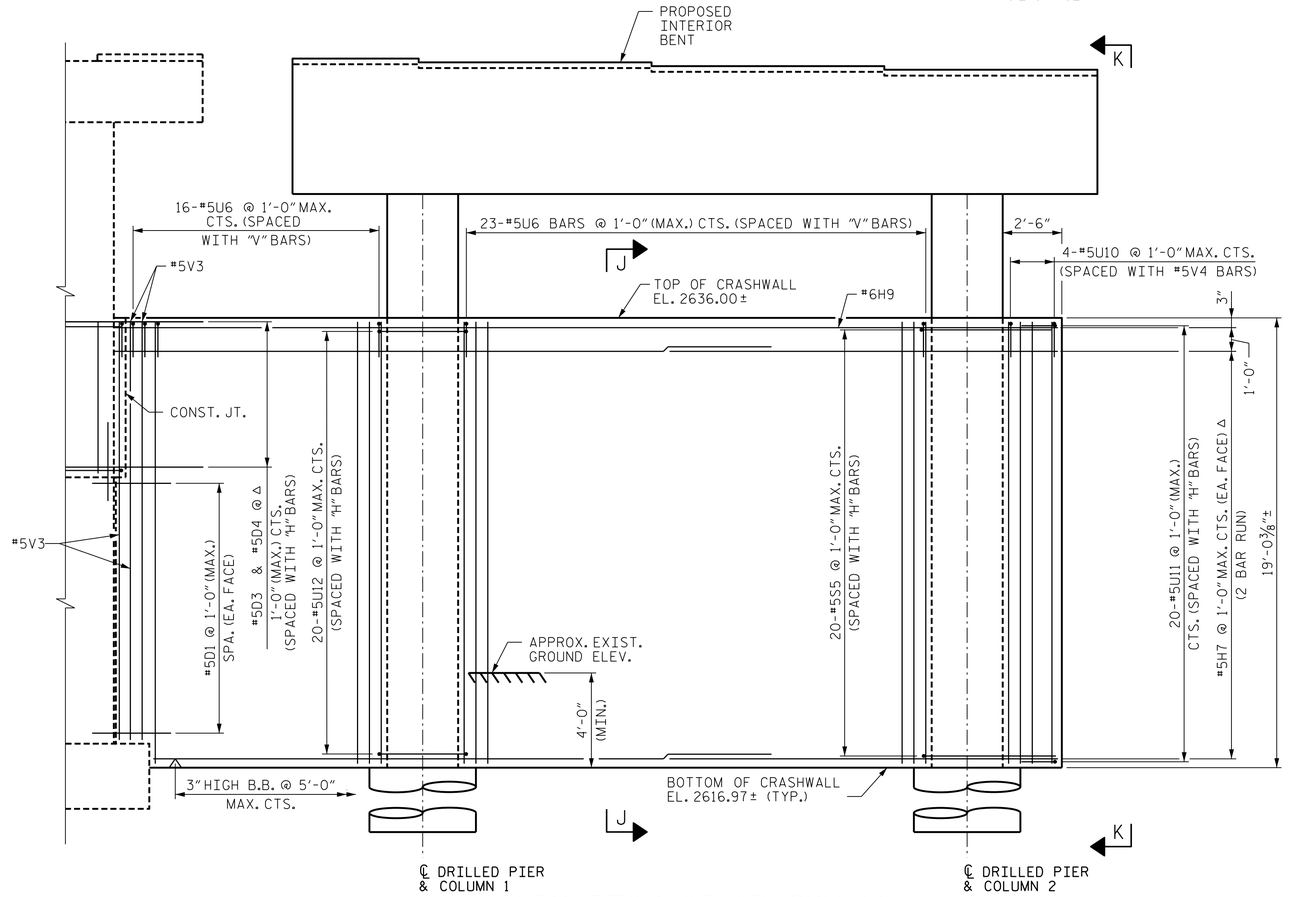
(COLUMN REINFORCING NOT SHOWN FOR CLARITY)

⑥ = 2 SPA. @ 6" (TYP. EA. FACE)

⑦ = 4-#5V4 @ 1'-0" MAX. CTS.

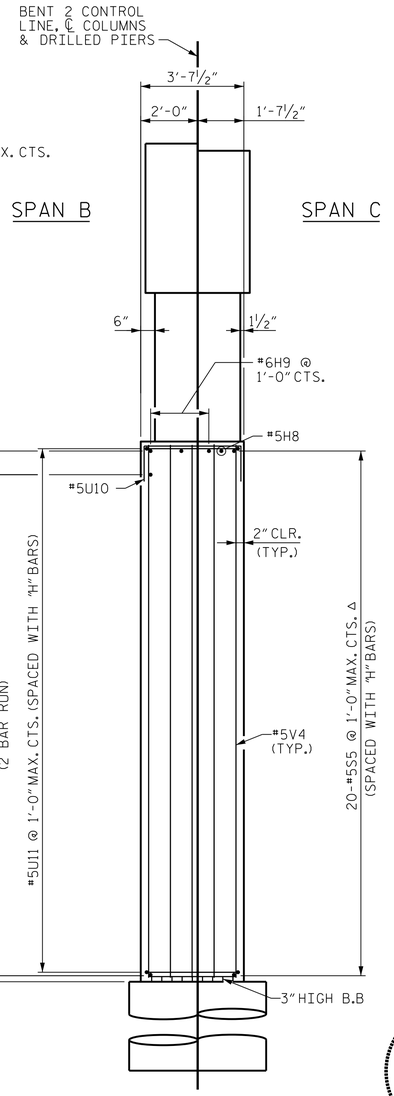
⑧ = 2-#5V4 @ 1'-0" CTS. (TYP. EA. FACE)

⑨ = 3-#5V4 @ 1'-0" MAX. CTS.

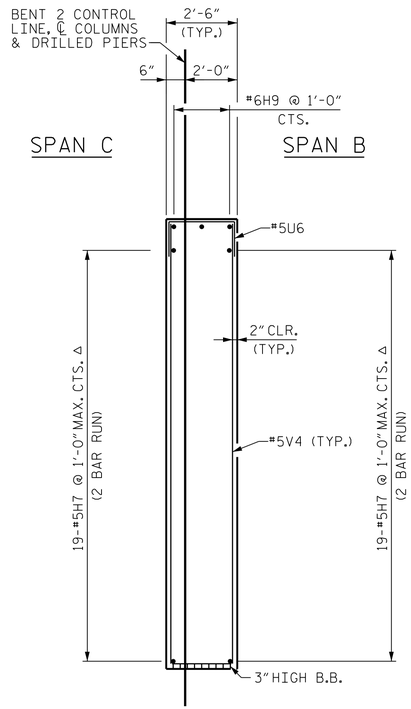


ELEVATION OF CRASHWALL

(COLUMN REINFORCING NOT SHOWN FOR CLARITY)



VIEW K-K



SECTION J-J

Δ = 3'-0" MIN. SPLICE

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT 2 CRASHWALL

NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

Eric Nolting 1/25/2022

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

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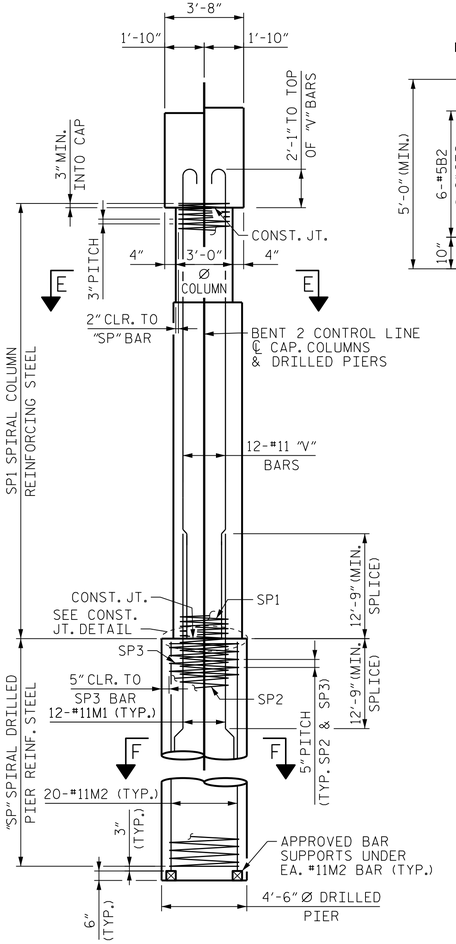
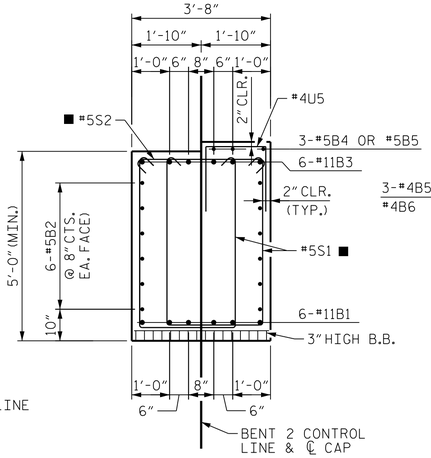
REVISIONS						SHEET NO. S03R-41
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 61
1	--	--	3	--	--	
2	--	--	4	--	--	

DES BY: D. MAST	DATE: 07/21	DWG BY: D. CARTER	DATE: 07/21
DES CHK: M. NEIHEISEL	DATE: 07/21	CHK BY: D. MAST	DATE: 07/21

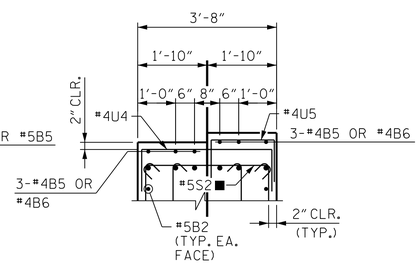
SPAN C SPAN B



END ELEVATION

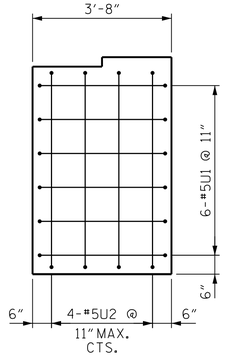


SECTION A-A

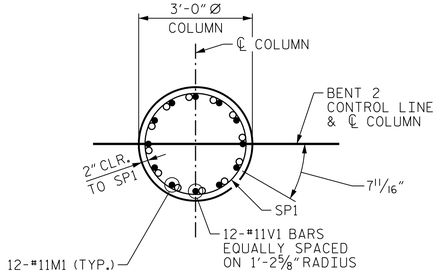


SECTION B-B

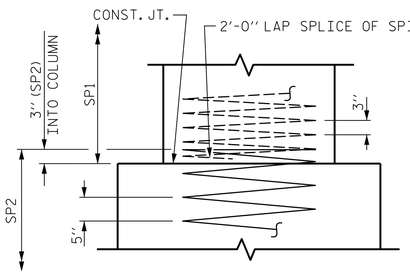
■ = INVERT ALTERNATE STIRRUPS



VIEW C-C

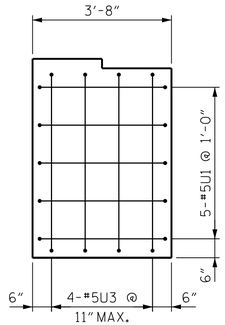


SECTION E-E

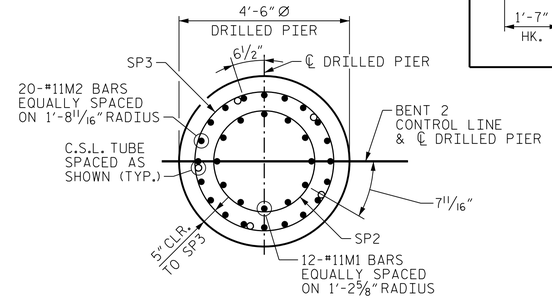


CONSTRUCTION JOINT DETAIL

(SP3 & LONGITUDINAL REINFORCING NOT SHOWN FOR CLARITY)

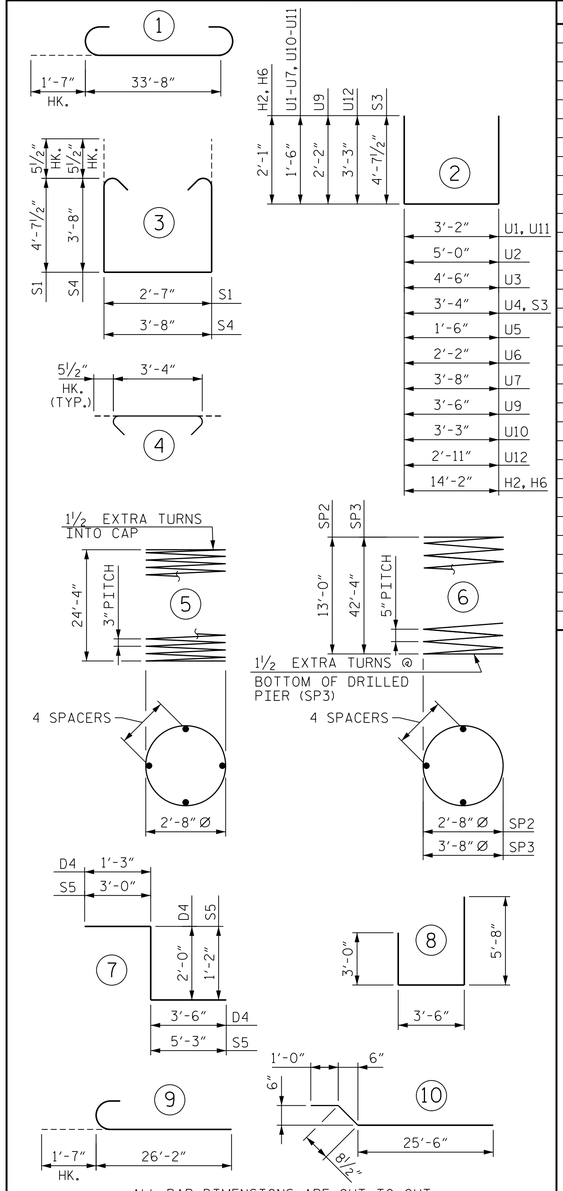


VIEW D-D



SECTION F-F

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#11	STR	33'-8"	1074
B2	12	#5	STR	33'-8"	422
B3	6	#11	1	36'-10"	1175
B4	3	#4	STR	11'-5"	23
B5	9	#4	STR	12'-1"	73
B6	6	#4	STR	5'-0"	21
D1	84	#5	STR	4'-3"	373
D2	24	#5	STR	3'-4"	84
D3	8	#5	STR	6'-6"	55
D4	8	#5	7	6'-9"	57
H1	7	#5	STR	40'-8"	297
H2	14	#5	2	18'-4"	268
H3	3	#6	STR	2'-2"	10
H4	1	#6	STR	40'-8"	62
H5	2	#6	STR	14'-2"	43
H6	2	#6	2	18'-4"	56
H7	76	#5	STR	21'-2"	1678
H8	1	#5	STR	5'-3"	6
H9	3	#6	STR	39'-2"	177
M1	24	#11	10	27'-3"	3475
M2	40	#11	STR	45'-3"	9617
S1	70	#5	3	12'-9"	931
S2	35	#5	4	4'-4"	159
S3	6	#5	2	12'-7"	79
S4	24	#5	3	11'-11"	299
S5	20	#5	7	9'-5"	197

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
U1	11	#5	2	6'-2"	71
U2	4	#5	2	8'-0"	34
U3	4	#5	2	7'-6"	32
U4	47	#4	2	6'-4"	199
U5	69	#4	2	4'-6"	208
U6	74	#5	2	5'-2"	399
U7	4	#5	2	6'-8"	28
U8	8	#5	8	12'-2"	102
U9	12	#5	2	7'-10"	99
U10	4	#5	2	6'-3"	27
U11	20	#5	2	6'-2"	129
U12	20	#5	2	9'-5"	197
V1	24	#11	9	27'-9"	3539
V2	94	#5	STR	6'-7"	646
V3	15	#5	STR	17'-7"	276
V4	92	#5	STR	18'-8"	1792

REINFORCING STEEL	LBS. 28489

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
SP1	2	*	5	816'-10"	1092
SP2	2	**	6	263'-3"	550
SP3	2	**	6	1181'-10"	2466

SPIRAL REINF. STEEL	LBS. 4108
CLASS A CONCRETE	
POUR 2 (COLUMNS & CRASHWALL)	CU. YDS. 79.4
POUR 3 (CAP)	CU. YDS. 24.6
CRASHWALL AT EXISTING BENT	CU. YDS. 30.8
TOTAL CLASS A CONCRETE	CU. YDS. 134.8
DRILLED PIER CONCRETE	
POUR 1 (DRILLED PIERS)	CU. YDS. 50.6
CSL TUBES	LIN. FT. 450.0
4'-6" DIA. DRILLED PIERS IN SOIL	LIN. FT. 76.9
4'-6" DIA. DRILLED PIERS NOT IN SOIL	LIN. FT. 9.0

* THE SP1 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

** THE SP2 AND SP3 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT 2 SECTIONS AND DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

Eric Nolting 1/25/2022

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

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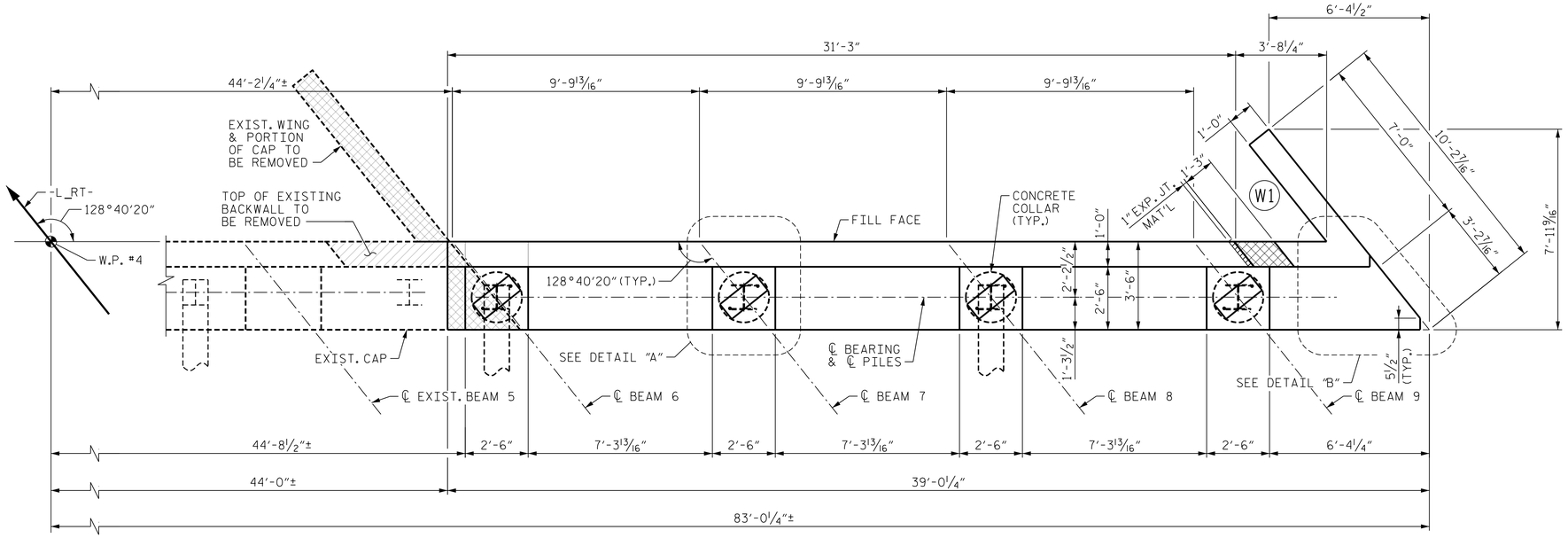
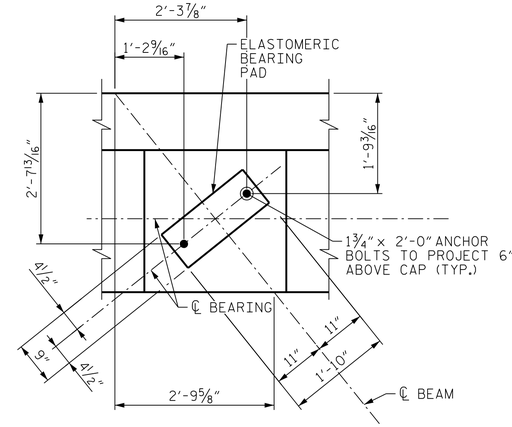
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S03R-42
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	61

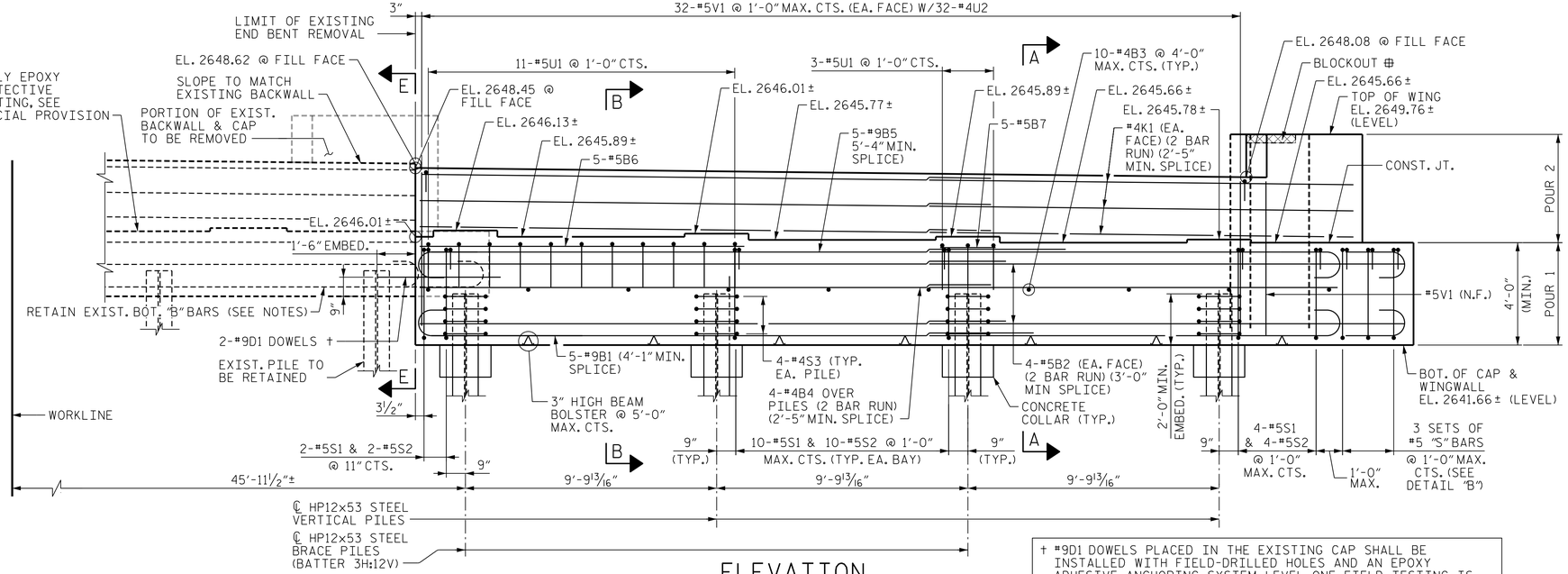
DES BY:	D. MAST	DATE :	07/21
DES CHK:	M. NEIHEISEL	DATE :	07/21
DWG BY:	D. CARTER	DATE :	07/21
CHK BY:	E. NOLTING	DATE :	08/21



PLAN



DETAIL "A"



ELEVATION

† #9D1 DOWELS PLACED IN THE EXISTING CAP SHALL BE INSTALLED WITH FIELD-DRILLED HOLES AND AN EPOXY ADHESIVE ANCHORING SYSTEM. LEVEL ONE FIELD TESTING IS REQUIRED AND THE YIELD LOAD OF THE DOWEL IS 60.0 KIPS. EMBEDMENT LENGTH TO BE DETERMINED BY THE MANUFACTURER OF THE ADHESIVELY ANCHORED ANCHOR SYSTEM. #9D1 BAR LENGTH WAS BASED ON A 1'-6" EMBEDMENT LENGTH. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SECTION 420-13 OF THE STANDARD SPECIFICATIONS.

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

NOTES

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

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

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

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

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE EXISTING BOTTOM #9 BARS SHALL BE RETAINED PAST THE SAW CUT LINE AND WILL BECOME PART OF THE WIDENED END BENT. THE EXISTING REINFORCING STEEL MAY BE BENT AS REQUIRED FOR FITTING INTO THE PROPOSED END BENT CAP.

FOR SECTIONS A-A AND B-B, VIEW E-E, AND DETAIL "B", SEE "SUBSTRUCTURE END BENT 2 SECTIONS AND DETAILS" SHEET.

COAT EXPOSED ENDS OF EXISTING REBAR WITH EPOXY AFTER BACKWALL AND CAP ARE REMOVED.

GRADE DATA, ELEVATIONS, DIMENSIONS, AND STATIONS WERE DETERMINED USING THE BEST INFORMATION AVAILABLE AND ARE PROVIDED FOR INFORMATION ONLY. THE CONTRACTOR SHALL SURVEY THE EXISTING STRUCTURE AND NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIALS.

IN REMOVING EXISTING END BENT, MAKE A 1½" MIN. DEPTH SAWCUT AROUND PERIMETER OF CAP AND BACKWALL. REMOVE REMAINING CONCRETE USING MEANS THAT AVOID DAMAGE TO THE EXISTING BOTTOM "B" BARS.

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE END BENT 2 PLAN AND ELEVATION

NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

Eric Nolting 1/25/2022

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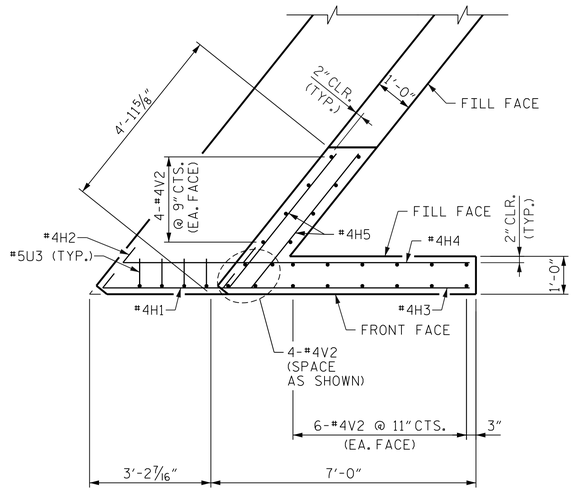
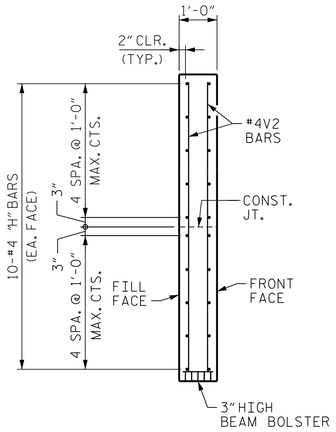
HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S03R-43
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	61

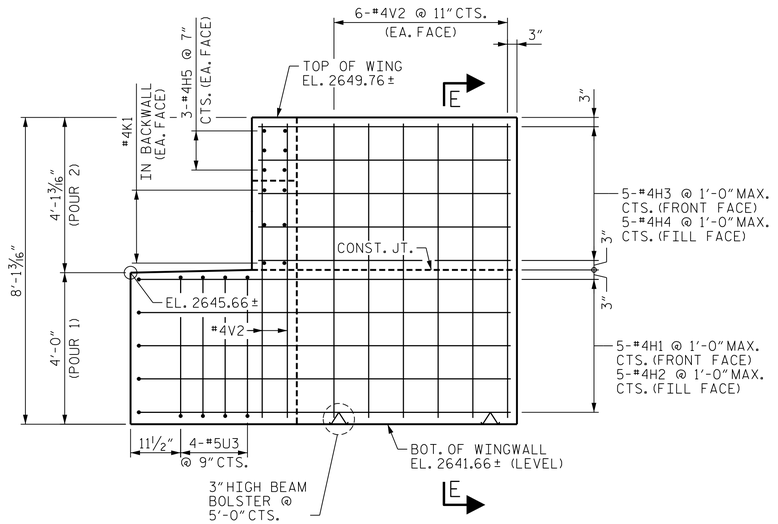
DES BY:	B. ROGERS	DATE :	05/21
DES CHK:	F. CORDOVA	DATE :	06/21
DWG BY:	B. PETERSON	DATE :	05/21
CHK BY:	F. CORDOVA	DATE :	06/21



PLAN - WINGWALL (W1)



SECTION E-E



ELEVATION - WINGWALL (W1)

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE END BENT 2 WINGWALL

REVISIONS						SHEET NO. S03R-44
NO.	BY:	DATE:	NO.	BY:	DATE:	
1	--	--	3	--	--	TOTAL SHEETS 61
2	--	--	4	--	--	

NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

Eric Nolting 1/25/2022

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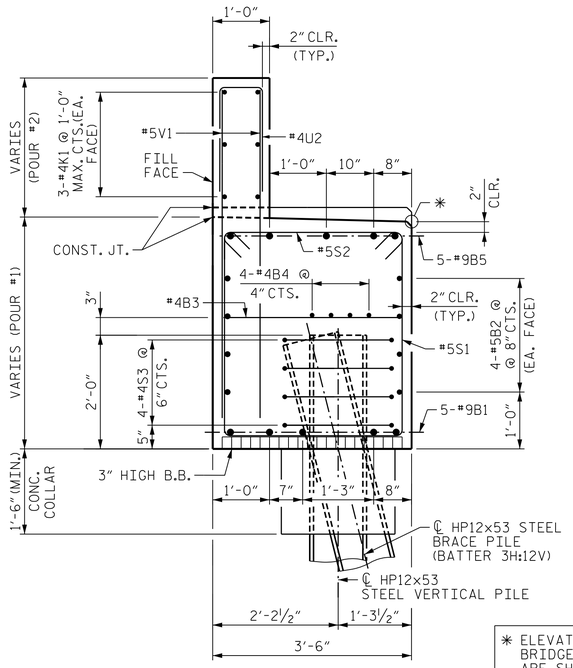
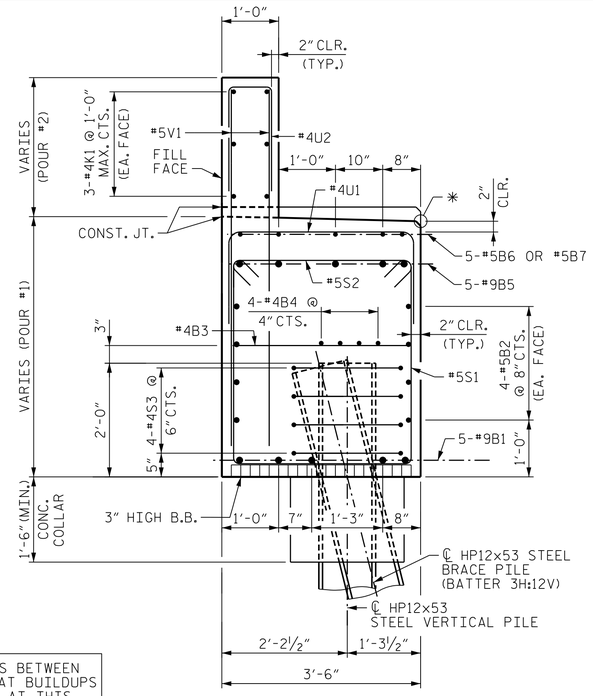
DES BY:	B. ROGERS	DATE :	05/21	DWG BY:	B. PETERSON	DATE :	05/21
DES CHK:	F. CORDOVA	DATE :	06/21	CHK BY:	F. CORDOVA	DATE :	06/21

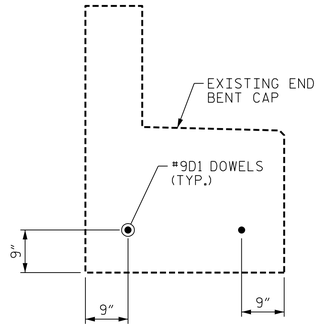


SECTION A-A

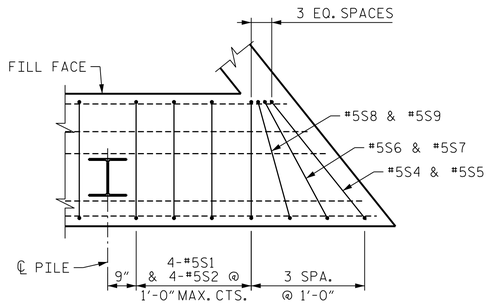


SECTION B-B

* ELEVATIONS BETWEEN BRIDGE SEAT BUILDUPS ARE SHOWN AT THIS POINT

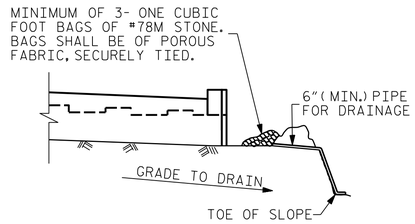


VIEW E-E



DETAIL "B"

EB2



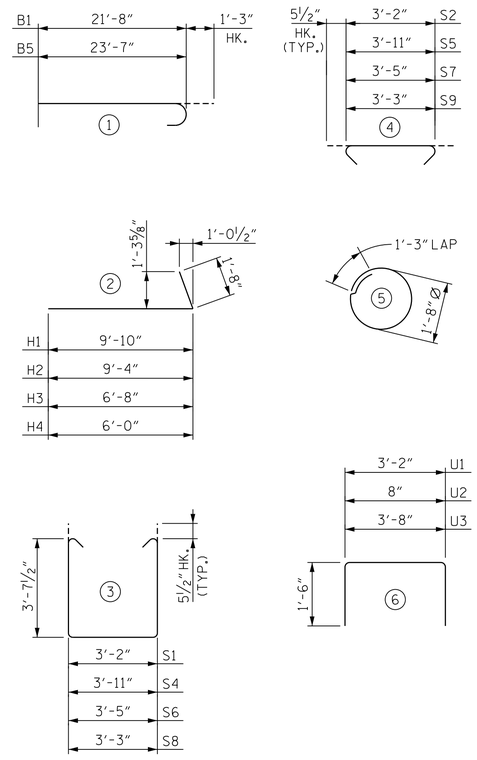
BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

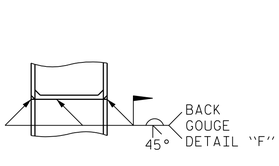
BILL OF MATERIAL

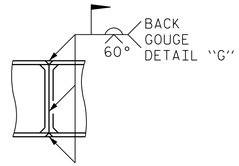
END BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#9	1	22'-11"	779
B2	16	#5	STR	21'-2"	353
B3	10	#4	STR	3'-2"	21
B4	8	#4	STR	20'-10"	111
B5	10	#9	1	23'-7"	802
B6	5	#5	STR	12'-8"	66
B7	5	#5	STR	2'-2"	11
K1	12	#4	STR	20'-10"	167
H1	5	#4	2	11'-6"	38
H2	5	#4	2	11'-0"	37
H3	5	#4	2	8'-4"	28
H4	5	#4	2	7'-8"	26
H5	6	#4	STR	4'-7"	18
V1	65	#5	STR	6'-1"	412
V2	24	#4	STR	7'-9"	124
S1	36	#5	3	11'-4"	426
S2	36	#5	4	4'-1"	153
S3	16	#4	5	6'-6"	69
S4	1	#5	3	12'-1"	13
S5	1	#5	4	4'-10"	5
S6	1	#5	3	11'-7"	12
S7	1	#5	4	4'-4"	5
S8	1	#5	3	11'-5"	12
S9	1	#5	4	4'-2"	4
U1	14	#5	6	6'-2"	90
U2	32	#4	6	3'-8"	78
U3	4	#5	6	6'-8"	28
D1	2	#9	STR.	4'-10"	33

REINFORCING STEEL	LBS.	3921
CLASS A CONCRETE		
POUR #1 (COLLARS, CAP, LOWER PART OF WINGS)	CU. YDS.	21.8
POUR #2 (BACKWALL & UPPER PART OF WINGS)	CU. YDS.	4.4
TOTAL	CU. YDS.	26.2
HP 12x53 STEEL PILES ◭		
	NO.	4
	LIN. FT.	220
STEEL H-PILE POINTS		
	NO.	4

◭ PILE LENGTHS ARE BASED ON ESTIMATED TIP ELEVATIONS

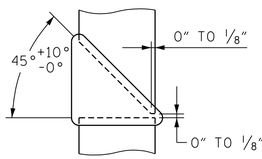




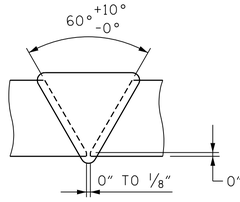
* PILE VERTICAL

* PILE HORIZONTAL OR VERTICAL

* POSITION OF PILE DURING WELDING



DETAIL "F"



DETAIL "G"

PILE SPLICE DETAILS

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE END BENT 2 SECTIONS AND DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

Eric Nolting 1/25/2022

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S03R-45
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	61

DES BY:	B. ROGERS	DATE :	05/21
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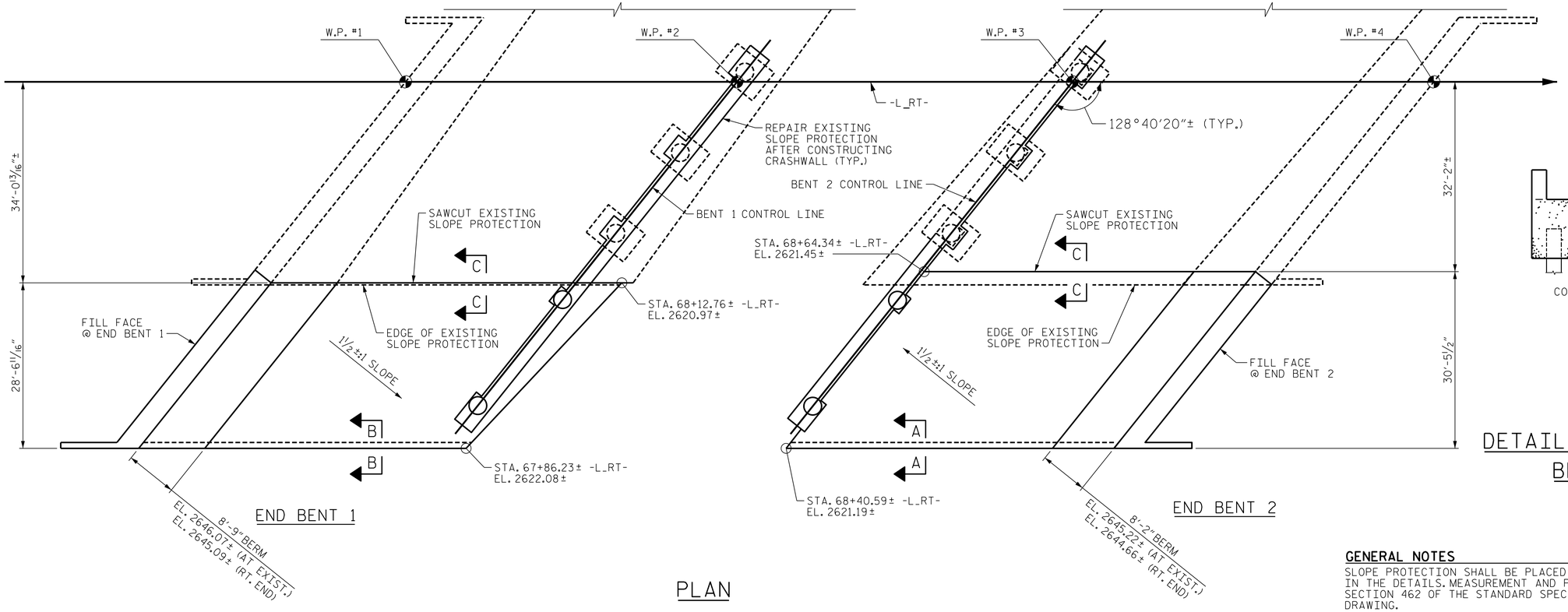
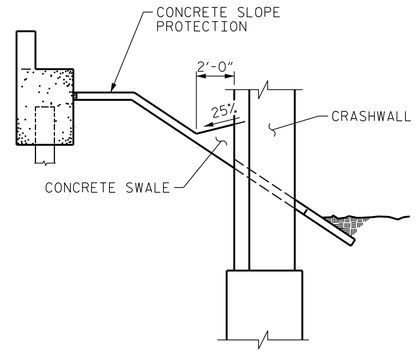
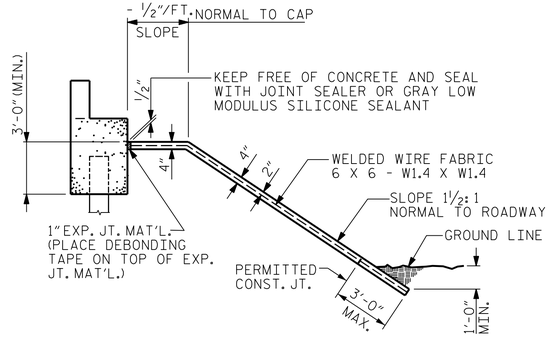
DWG BY:	B. PETERSON	DATE :	05/21
CHK BY:	F. CORDOVA	DATE :	06/21



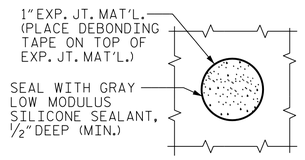
PLAN



DETAIL OF SLOPE PROTECTION BEHIND CRASHWALL



SECTION ALONG ℄ SURVEY WHEN DITCH IS NOT PROVIDED



PLAN WHERE CONCRETE SLOPE PROTECTION MUST BE PLACED AROUND A BENT COLUMN

BRIDGE @ STA. 68+65.75± -L_RT-	4" INCH SLOPE PROTECTION	✳ WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	211.9	382
END BENT 2	225.8	407

✳ QUANTITY SHOWN IS BASED ON 5' POURS.

GENERAL NOTES

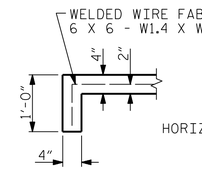
SLOPE PROTECTION SHALL BE PLACED UNDER THE ENDS OF THE BRIDGE AS SHOWN IN THE DETAILS. MEASUREMENT AND PAYMENT SHALL BE AS PRESCRIBED IN SECTION 462 OF THE STANDARD SPECIFICATIONS. FOR BERM WIDTH, SEE GENERAL DRAWING.

NO SEPARATE PAYMENT SHALL BE MADE FOR THE CONCRETE SWALE BEHIND THE CRASHWALL. PAYMENT IS INCLUDED IN THE PAY ITEM FOR 4" SLOPE PROTECTION.

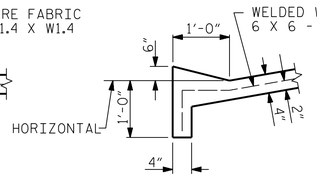
NO SEPARATE PAYMENT SHALL BE MADE FOR REPAIR AND REPLACEMENT OF EXISTING CONCRETE SLOPE PROTECTION AFTER CONSTRUCTING PROPOSED CRASHWALL. PAYMENT IS INCLUDED IN THE PAY ITEM FOR 4" SLOPE PROTECTION.

ALTERNATE "A"

ALTERNATE "A" SHALL CONSIST OF 4" POURED-IN-PLACE CONCRETE PAVING AS SHOWN IN THE DETAILS ON THIS SHEET. CONCRETE SHALL BE CLASS "B". THE CONCRETE SURFACE SHALL BE FLOATED WITH A WOODEN FLOAT AND FINISHED. WELDED WIRE FABRIC REINFORCING SHALL BE 6 X 6 - W1.4 X W1.4, 60" WIDE. SLOPE PROTECTION SHALL BE POURED IN 5' STRIPS AS SHOWN IN THE "POURING DETAIL" WITH 2'-0" LONG #4 BARS PLACED ALONG THE SLOPE BETWEEN STRIPS AT 1'-6" MAXIMUM SPACING. SLOPE PROTECTION MAY BE POURED IN ALTERNATE 4' AND 5' STRIPS AS SHOWN IN THE "OPTIONAL POURING DETAIL" WITH ADJACENT RUNS OF WELDED WIRE FABRIC LAPPING AT LEAST 6". THE COST OF THE WELDED WIRE FABRIC AND #4 BARS, IF USED, SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID PER SQUARE YARD FOR SLOPE PROTECTION.



SECTION A-A



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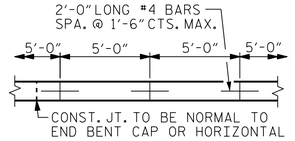
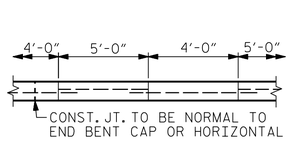
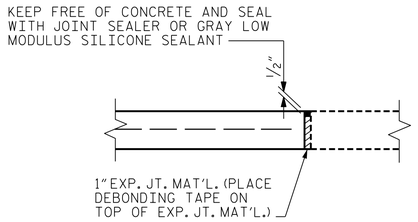


STRIP WIDTHS MAY VARY IN CURVED PORTION.

POURING DETAIL



OPTIONAL POURING DETAIL



SECTION C-C

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SLOPE PROTECTION DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

Eric Nolting 1/25/2022

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N.C.B.E.L.S. License Number: F-0116

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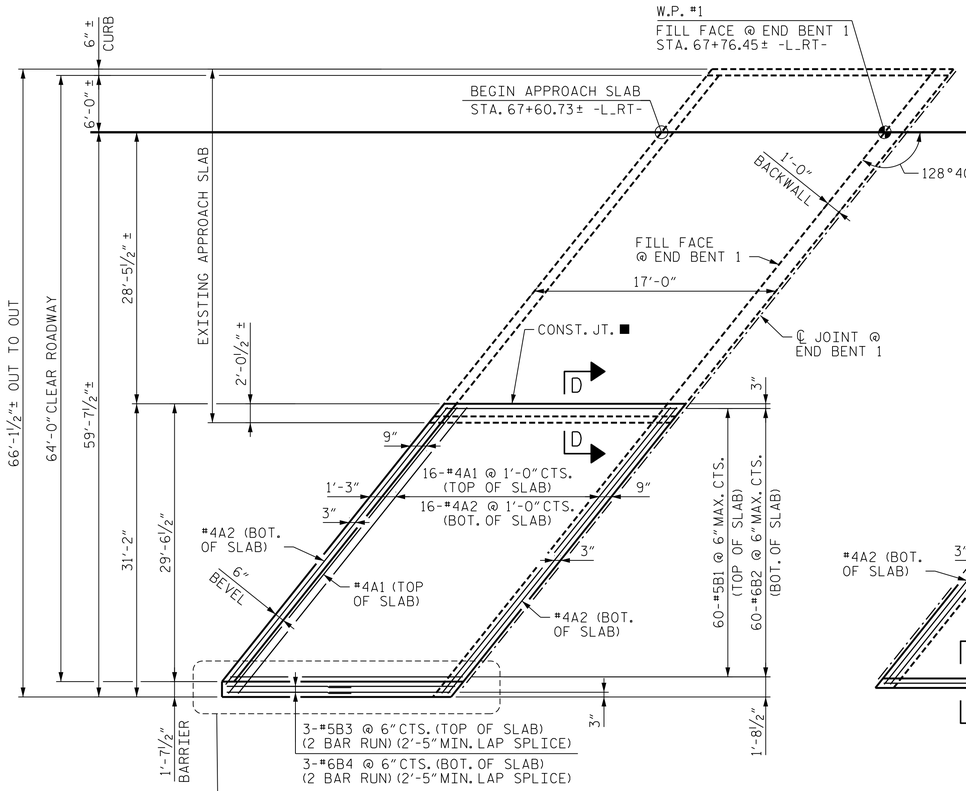
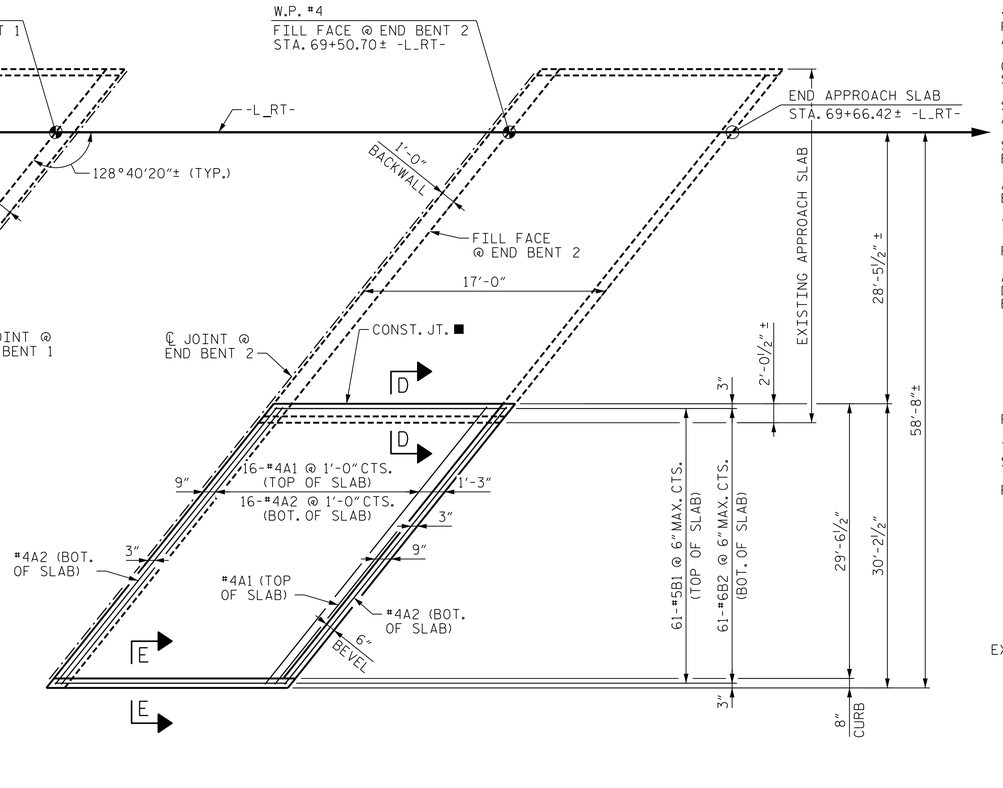
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S03R-46
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	61

DES BY:	F. CORDOVA	DATE :	07/21
DES CHK:	E. NOLTING	DATE :	07/21
DWG BY:	B. PETERSON	DATE :	07/21
CHK BY:	E. NOLTING	DATE :	07/21



PLAN AT END BENT 1



PLAN AT END BENT 2

NOTES

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 6"Ø DRAINAGE PIPE, AND SELECT MATERIAL BACKFILL, SEE ROADWAY PLANS.

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

SELECT MATERIAL BACKFILL (CLASS V OR CLASS VI) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

SELECT MATERIAL BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

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

THE JOINT SHALL BE SAWED PRIOR TO THE CASTING OF THE BARRIER RAIL.

FOR THE 6"Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

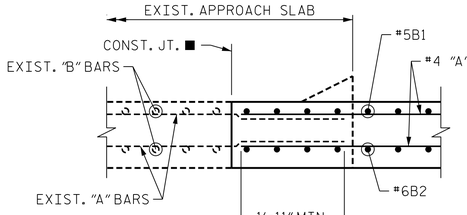
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

WITH FOAM JOINT SEAL

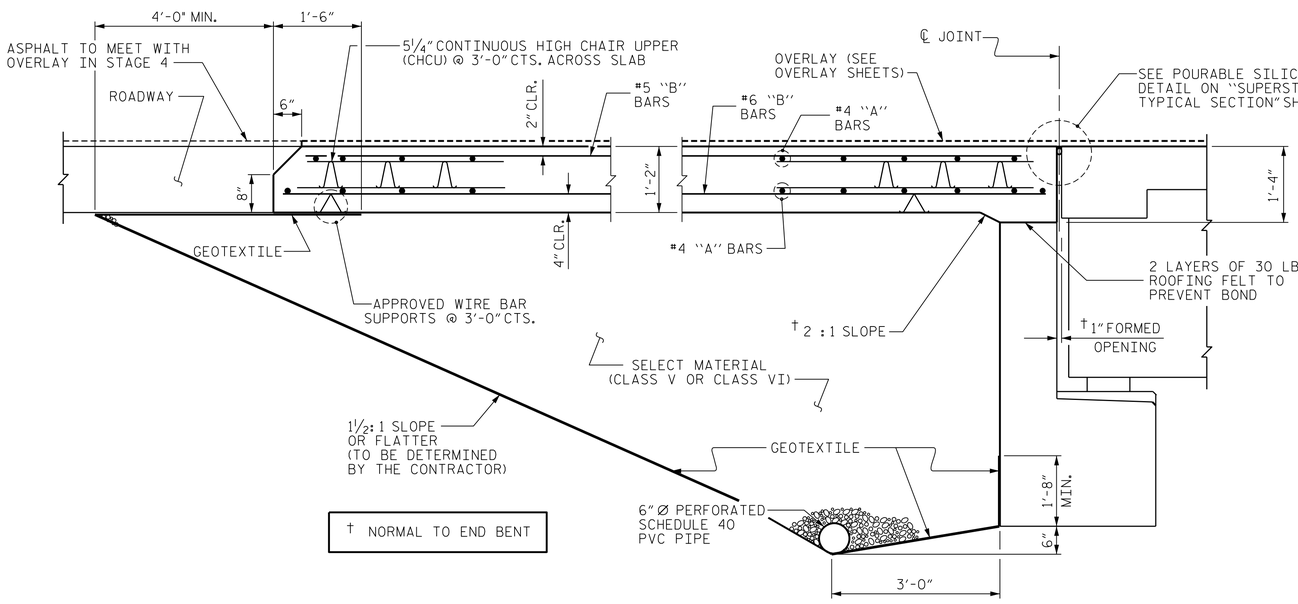
FOR FOAM JOINT SEALS, SEE SPECIAL PROVISIONS.

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

FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.



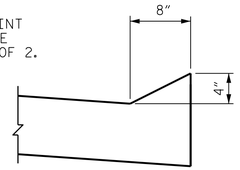
SECTION D-D



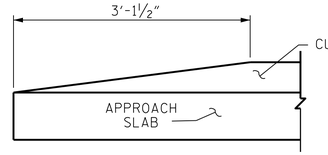
† NORMAL TO END BENT

SECTION THRU SLAB

(TYPE I - STANDARD APPROACH FILL)



SECTION E-E



END OF CURB WITHOUT SHOULDER BERM GUTTER

SPLICE LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	1'-11"	1'-7"
#5	2'-5"	2'-0"
#6	3'-7"	2'-5"

CURB DETAILS

■ 1½" DEEP SAWCUT IN TOP OF DECK. REMOVE REMAINING CONCRETE USING MEANS THAT AVOID DAMAGE TO THE EXISTING TRANSVERSE REINFORCING.

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB PLAN AND SECTION

NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

Eric Nolting 1/25/2022

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N.C.B.E.L.S. License Number: F-0116

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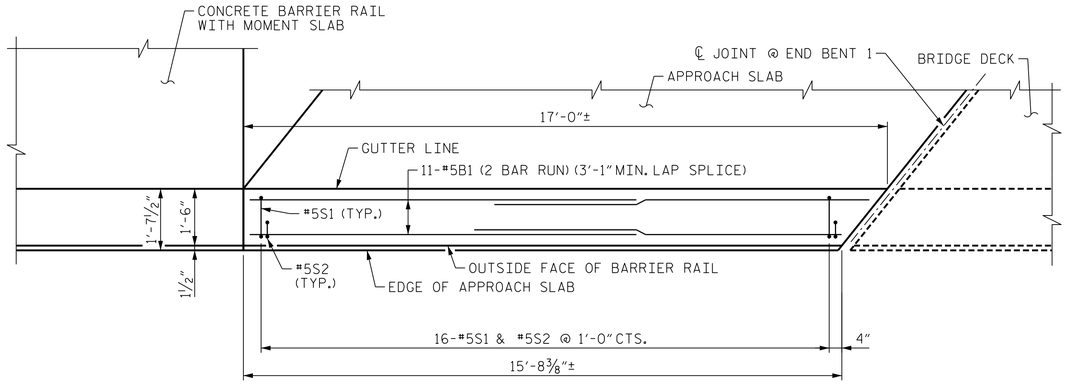
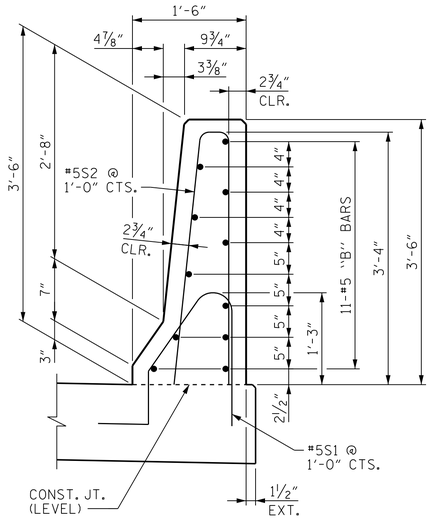
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S03R-47
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	61

DES BY: F. CORDOVA	DATE: 07/21	DWG BY: M. SELLS	DATE: 06/21
DES CHK: G. MYERS	DATE: 07/21	CHK BY: G. MYERS	DATE: 07/21



PLAN OF BARRIER RAIL



SECTION THRU RAIL

BARRIER RAIL DETAILS AT END BENT 1 APPROACH SLAB

NOTES

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

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

GROOVED CONTRACTION JOINTS, ½" 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.

THE COST OF THE BARRIER RAIL ON THE APPROACH SLAB SHALL BE INCLUDED IN THE LINEAR FOOT CONTRACT PRICE BID FOR "CONCRETE BARRIER RAIL".

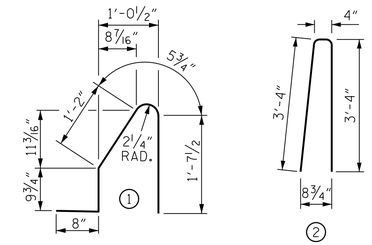
BILL OF MATERIAL

BARRIER RAIL AT END BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳B1	22	#5	STR	9'-11"	228
✳S1	16	#5	1	4'-9"	80
✳S2	16	#5	2	7'-0"	117

✳EPOXY COATED REINFORCING STEEL	LBS. 425
CLASS AA CONCRETE	C.Y. 2.4
CONCRETE BARRIER RAIL	LIN. FT. 17.0

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S03R-48
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	61

NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

Eric Nolting 1/25/2022

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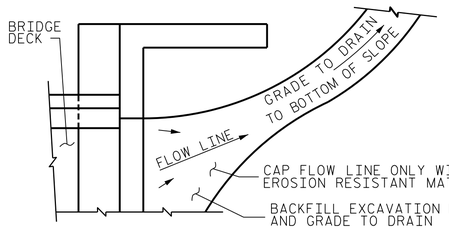
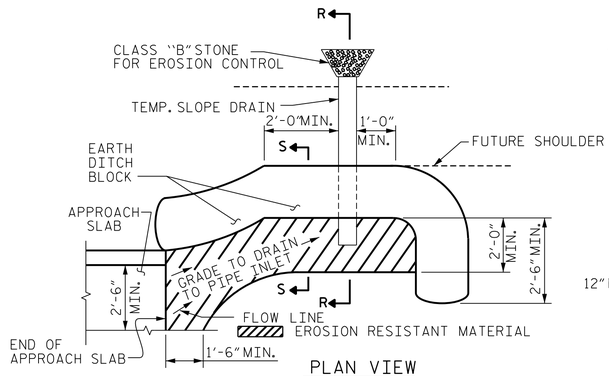
DES BY: S. RAVINDRAN	DATE: 06/21	DWG BY: M. SELLS	DATE: 06/21
DES CHK: G. MYERS	DATE: 07/21	CHK BY: G. MYERS	DATE: 07/21



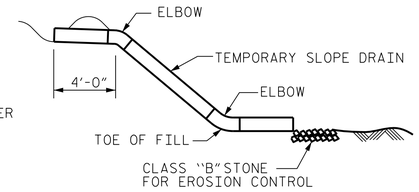
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL

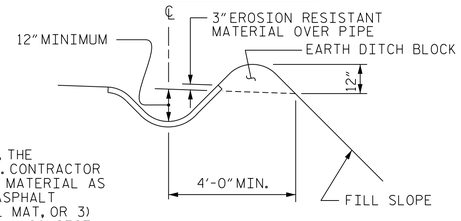


PLAN VIEW

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



SECTION R-R



SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

BILL OF MATERIAL

APPROACH SLAB AT END BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳A1	17	#4	STR	39'-5"	448
A2	18	#4	STR	39'-5"	474
✳B1	60	#5	STR	15'-3"	955
B2	60	#6	STR	16'-5"	1480
✳B3	6	#5	STR	9'-3"	58
B4	6	#6	STR	9'-7"	87
REINFORCING STEEL				LBS.	2,041
✳EPOXY COATED REINFORCING STEEL				LBS.	1,461
CLASS AA CONCRETE				C.Y.	29.4

APPROACH SLAB AT END BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳A1	17	#4	STR	38'-3"	435
A2	18	#4	STR	38'-3"	460
✳B1	61	#5	STR	15'-3"	971
B2	61	#6	STR	16'-5"	1505
REINFORCING STEEL				LBS.	1,965
✳EPOXY COATED REINFORCING STEEL				LBS.	1,406
CLASS AA CONCRETE				C.Y.	28.6

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB DETAILS

REVISIONS						SHEET NO. S03R-49
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 61
1	--	--	3	--	--	
2	--	--	4	--	--	

NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

Eric Nolting 1/25/2022

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DES CHK:	G. MYERS	DATE :	07/21
DWG BY:	M. SELLS	DATE :	07/21
CHK BY:	G. MYERS	DATE :	07/21

PLOT DRIVER: NCDOT STRUCTURES DEFAULT PLOTTER.pltPENTABLE: NCDOT STRUCTURES DEFAULT PEN.tbl
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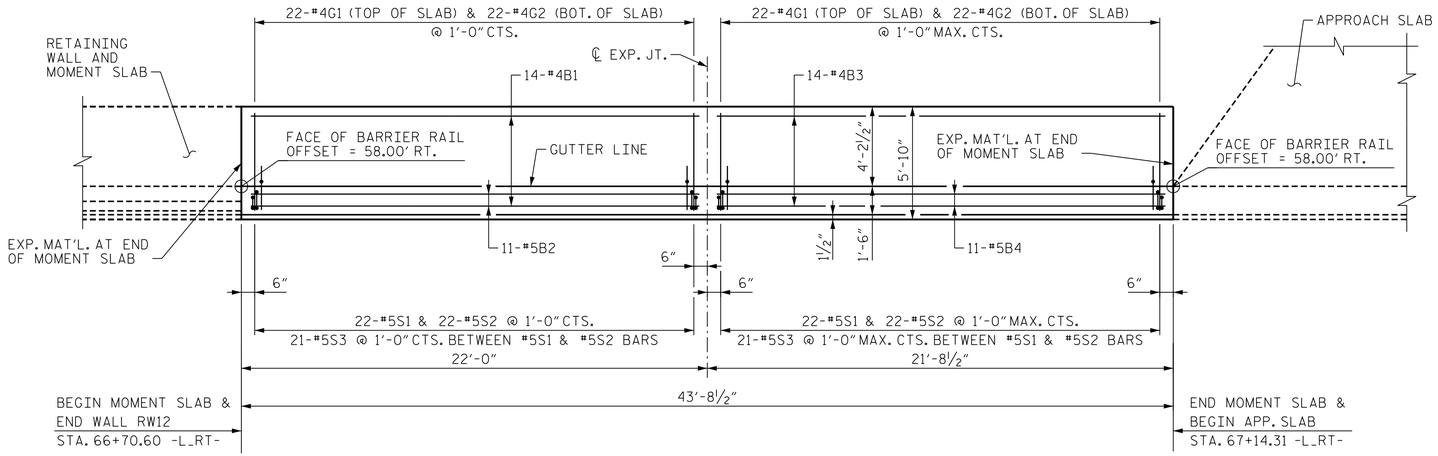
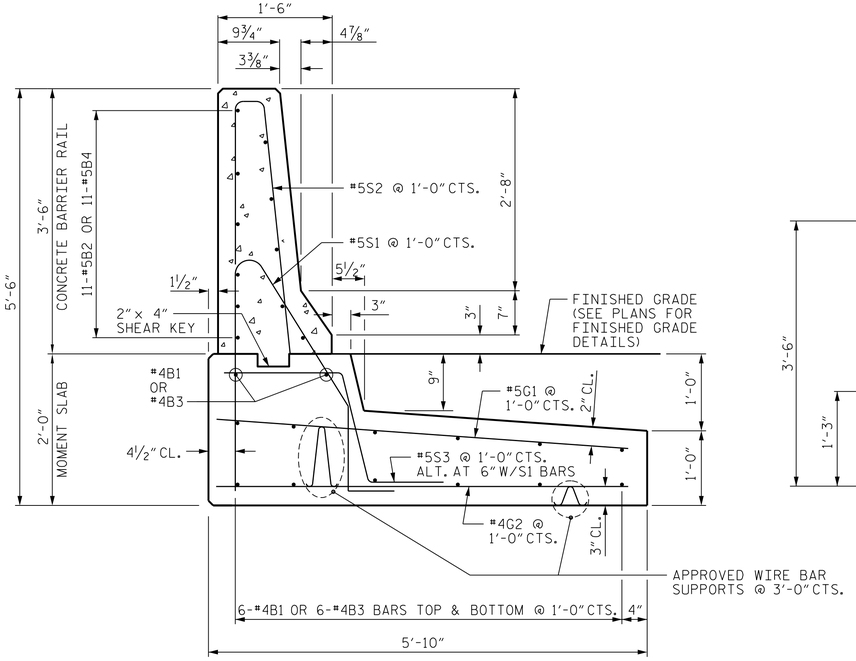
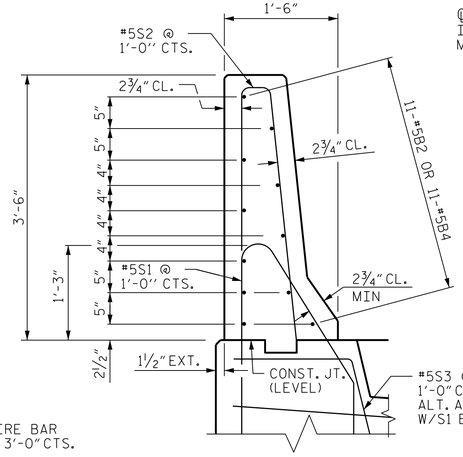


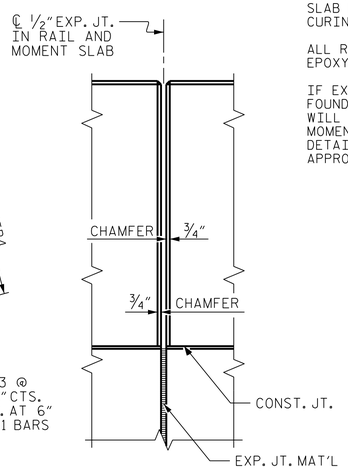
PLAN



CONCRETE BARRIER RAIL WITH MOMENT SLAB



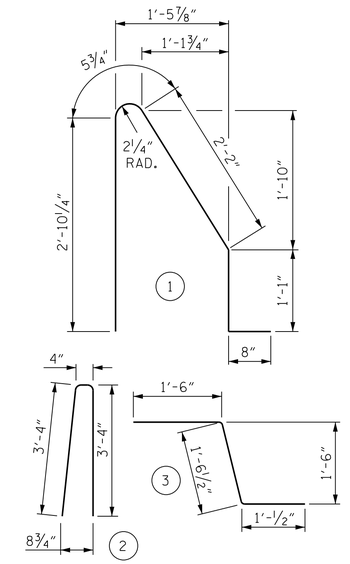
SECTION THRU RAIL



ELEV. @ EXP. JOINTS

BARRIER RAIL DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	14	#4	STR	21'-7"	202
✳ B2	11	#5	STR	21'-7"	248
B3	14	#4	STR	21'-4"	200
✳ B4	11	#5	STR	21'-4"	245
G1	44	#5	STR	5'-6"	253
G2	44	#4	STR	5'-6"	162
✳ S1	44	#5	1	7'-3"	333
✳ S2	44	#5	2	7'-0"	322
S3	42	#5	3	4'-1"	179
REINFORCING STEEL					996 LB
✳ EPOXY COATED REINFORCING STEEL					1148 LB
CLASS AA CONCRETE BARRIER RAIL					6.0 CY
CLASS A CONCRETE MOMENT SLAB					13.4 CY
CONCRETE BARRIER RAIL WITH MOMENT SLAB					43.7 LIN FT

NOTES:

FOR CONCRETE BARRIER RAIL WITH MOMENT SLAB, SEE SECTION 460 OF THE STANDARD SPECIFICATIONS.

CONCRETE BARRIER RAIL WITH MOMENT SLAB SHALL BE A MINIMUM OF 15' IN LENGTH.

EXPANSION JOINTS SHALL BE PLACED IN THE BARRIER RAIL AND MOMENT SLAB AT A MAXIMUM SPACING OF 30'.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED SURFACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MID-POINT OF BARRIER RAIL SEGMENTS LESS THAN 20' IN LENGTH.

THE BARRIER RAIL SHALL NOT BE CAST UNTIL THE MOMENT SLAB HAS ATTAINED AN AGE OF THREE CURING DAYS OR A MINIMUM COMPRESSIVE STRENGTH OF 2,000 PSI. IN ADDITION, NO FILL MATERIAL, ASPHALT, OR CONSTRUCTION EQUIPMENT IS ALLOWED ON THE MOMENT SLAB PRIOR TO SATISFYING THE MINIMUM CONCRETE CURING AND STRENGTH REQUIREMENTS.

ALL REINFORCING STEEL IN THE BARRIER RAIL SHALL BE EPOXY COATED.

IF EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, BARRIERS, PIPES, INLETS OR UTILITIES WILL INTERFERE WITH CONCRETE BARRIER RAIL WITH MOMENT SLAB, CONCRETE BARRIER RAIL WITH MOMENT SLAB DETAILS SHALL BE REVISED AND SUBMITTED FOR APPROVAL.

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONCRETE BARRIER RAIL WITH MOMENT SLAB DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

Eric Nolting 1/25/2022

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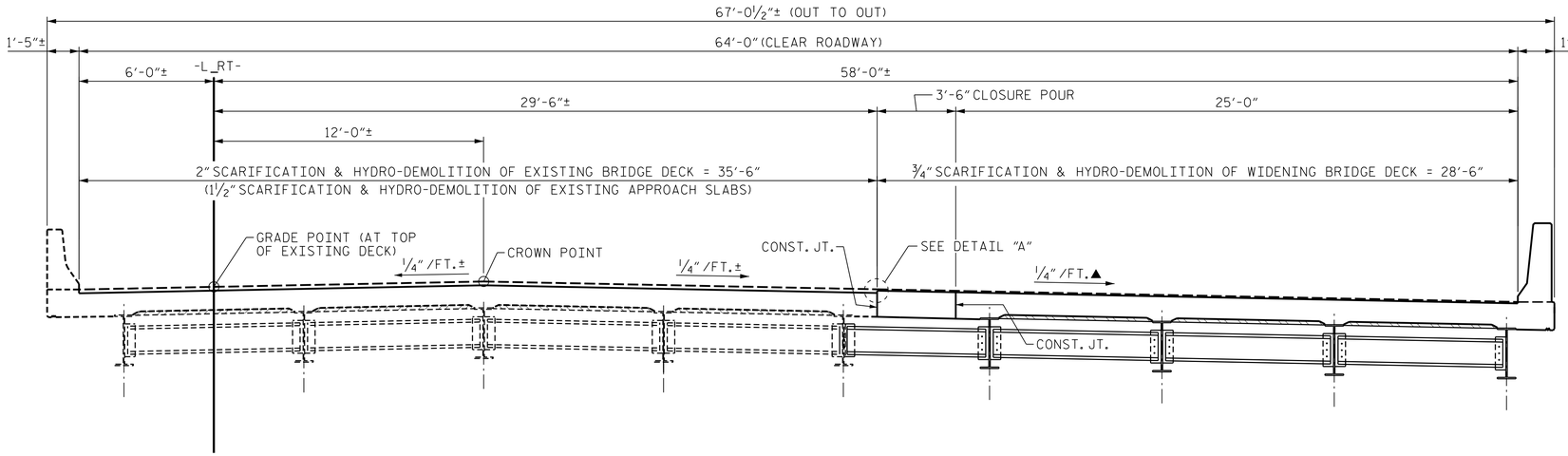
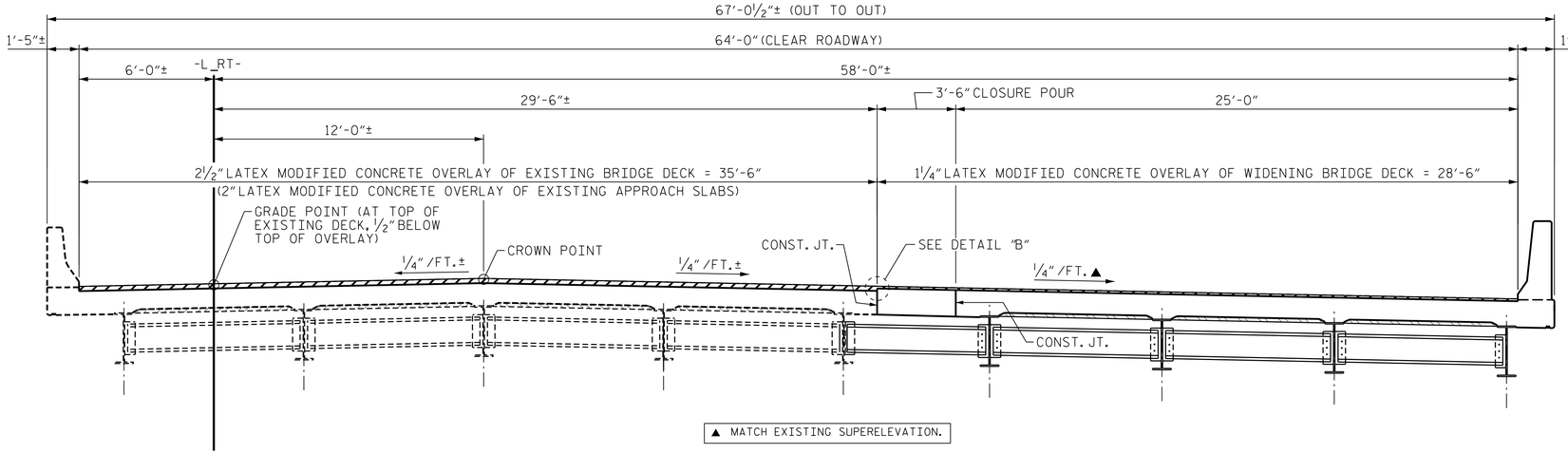
DES CHK:	H. ABU NIMEH	DATE :	08/21
DWG BY:	B. PETERSON	DATE :	07/21
CHK BY:	H. ABU NIMEH	DATE :	08/21



TYPICAL SECTION

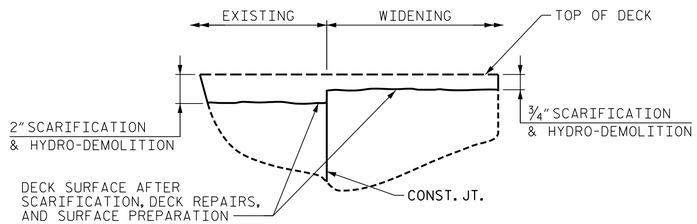
(DEMOLITION OF EXISTING)



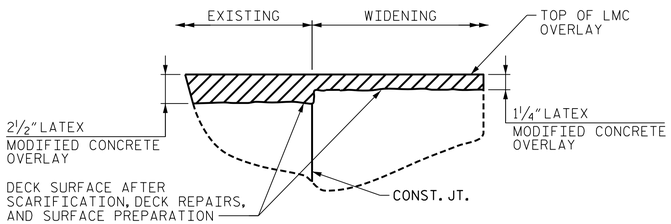
▲ MATCH EXISTING SUPERELEVATION.

TYPICAL SECTION

(PROPOSED LMC WEARING SURFACE)



DETAIL "A"



DETAIL "B"

NOTES

WORK ON THE BRIDGES SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL BELOW. THE CONTRACTOR SHALL SUBMIT PLANS FOR CONSTRUCTION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS AND THE PROJECT SPECIAL PROVISIONS.

ANY DAMAGE TO EXISTING REINFORCING STEEL, DURING CONTRACTOR'S OPERATIONS, SHALL BE REPAIRED AS DIRECTED BY THE ENGINEER AND PERFORMED AT NO ADDITIONAL COST TO THE DEPARTMENT.

FOR TRAFFIC CONTROL AND LIMITS OF PHASING OF CONSTRUCTION, SEE TRANSPORTATION MANAGEMENT PLANS.

EXISTING JOINTS AND DECK DRAINS SHALL BE SEALED PRIOR TO BEGINNING SURFACE PREPARATION OF BRIDGE DECK.

FOR SCARIFYING BRIDGE DECK, HYDRO-DEMOLITION OF BRIDGE DECK, CLASS II AND CLASS III SURFACE PREPARATION, SEE OVERLAY SURFACE PREPARATION SPECIAL PROVISIONS.

THE LMC CONTRACTOR SHALL PROVIDE A METHOD OF HANDLING UNEXPECTED BLOW THROUGH OF THE DECK DURING HYDRO-DEMOLITION.

FOR PLACING AND FINISHING LATEX MODIFIED CONCRETE OVERLAY, SEE LATEX MODIFIED CONCRETE SPECIAL PROVISIONS.

LONGITUDINAL CONSTRUCTION JOINTS SHALL BE LOCATED ALONG THE CENTERLINE OR EDGE OF TRAVEL LANES.

THE CONTRACTOR MUST COLLECT, TREAT AND DISPOSE OF RUN-OFF WATER FROM THE HYDRO-DEMOLITION PROCESS, SEE OVERLAY SURFACE PREPARATION SPECIAL PROVISIONS.

FOR BRIDGE JOINT DEMOLITION, SEE SPECIAL PROVISIONS.

FOR CONCRETE FOR DECK REPAIRS, SEE SPECIAL PROVISIONS.

FOR FOAM JOINT SEAL FOR PRESERVATION, SEE SPECIAL PROVISIONS.

FOR VOLUMETRIC MIXER, SEE SPECIAL PROVISIONS.

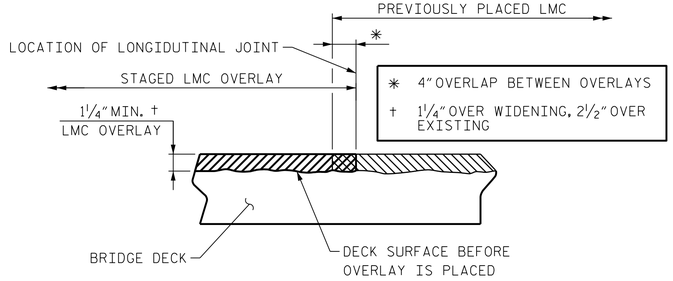
FOR ELASTOMERIC CONCRETE FOR PRESERVATION, SEE SPECIAL PROVISIONS.

PREVIOUSLY PLACED LMC OVERLAY AT STAGED EDGES SHALL BE DEMOLISHED BACK A MINIMUM OF 4 INCHES AND RECAST WITH LMC. SEE STAGED LMC OVERLAY JOINT DETAIL.

SEE TRAFFIC MANAGEMENT PLANS FOR LANE WIDTHS, SEQUENCING, AND OTHER TRAFFIC CONTROL MEASURES FOR STAGING OF OVERLAY, SURFACE PREPARATION AND LMC PLACEMENT.

PRIOR TO BEGINNING WORK, THE CONTRACTOR SHALL SUBMIT FOR REVIEW AND APPROVAL A COMPLETE SEQUENCE OF TASKS FOR EACH OPERATION AFFECTING THE BRIDGE SURFACE AND/OR TRAFFIC.

FOR LMC OVERLAY SURFACE PREPARATION, SEE SPECIAL PROVISIONS.



SECTION THRU DECK

STAGED LMC OVERLAY JOINT

(AS NEEDED)

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 1 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

OVERLAY TYPICAL SECTION

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NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

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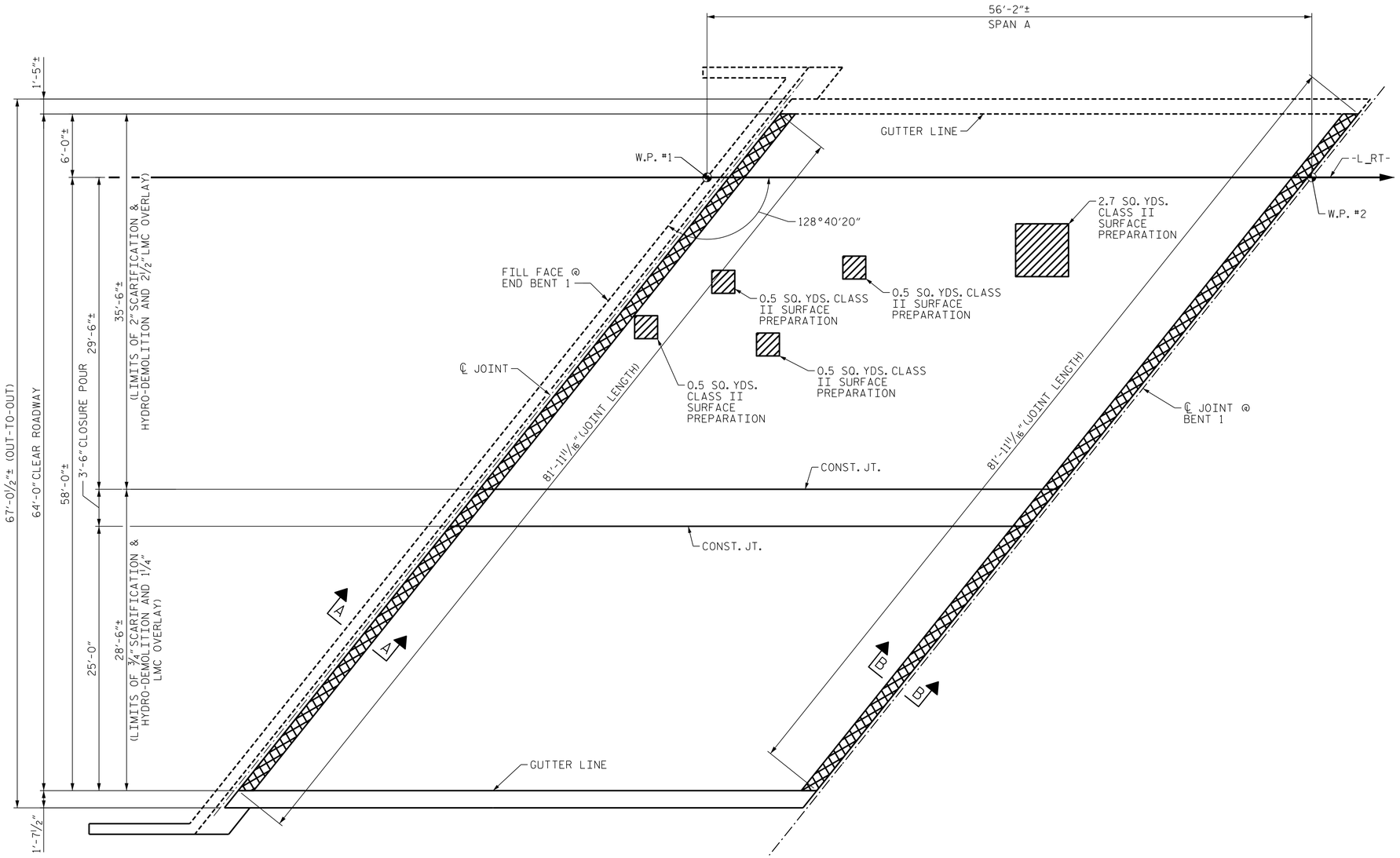
DES CHK:	E. NOLTING	DATE :	08/21
DWG BY:	G. MYERS	DATE :	08/21
CHK BY:	S. NIFONG	DATE :	08/21



PLAN OF SPAN A

AS-BUILT REPAIR QUANTITY TABLE

DECK SURFACE REPAIR SPAN A

	ESTIMATE	ACTUAL
CONCRETE FOR DECK REPAIR	0.0 CU. FT.	
CLASS II SURFACE PREPARATION	4.7 SQ. YDS.	
LMC MATERIALS	20.5 CU. YDS.	
PLACING & FINISHING LMC OVERLAY	389.5 SQ. YDS.	
SCARIFYING BRIDGE DECK	389.5 SQ. YDS.	
HYDRO-DEMOLITION OF BRIDGE DECK	389.5 SQ. YDS.	
GROOVING BRIDGE FLOORS	3255.1 SQ. FT.	
BRIDGE JOINT DEMOLITION	82.0 SQ. FT.	

PAYMENT FOR CLASS II SURFACE PREPARATION IS BASED ON THE SQUARE FEET OF ADDITIONAL DEMOLITION REQUIRED FOLLOWING INITIAL HYDRO-DEMOLITION OF THE BRIDGE DECK, SEE SPECIAL PROVISIONS

REPAIR LOCATIONS AND ESTIMATED QUANTITIES ARE BASED ON THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWING THE APPROXIMATE LOCATIONS AND DESCRIPTION OF REPAIR QUANTITIES INTO THE AS-BUILT REPAIR QUANTITY TABLE.

FOR SECTION A-A AND B-B, SEE "JOINT DETAILS" SHEET.

AFTER INITIAL HYDRO-DEMOLITION, BRIDGE DECK SHALL BE CLEANED WELL ENOUGH FOR IDENTIFICATION OF CLASS II SURFACE PREPARATION AREAS NOT SUFFICIENTLY REMOVED BY INTIAL HYDRO-DEMOLITION. A SECONDARY PASS WITH HYDRO-DEMOLITION SHALL BE USED IN THE CLASS II SURFACE PREPARATION AREAS TO REMOVE CONCRETE BRIDGE DECK TO THE REQUIRED CLASS II SURFACE PREPARATION DEPTH AND TO REMOVE DETERIORATED CONCRETE. IF THE SECONDARY HYDRO-DEMOLITION DOES NOT REMOVE PATCHES OR DETERIORATED MATERIAL TO THE REQUIRED DEPTH, COMPLETE REMOVAL IN CLASS II SURFACE PREPARATION AREAS WITH HAND TOOLS. ADDITIONAL HYDRO-DEMOLITION USED TO ACHIEVE CLASS II SURFACE PREPARATION DEPTH AND ADDITIONAL REMOVAL BY HAND TOOLS, IF NECESSARY, WILL BE PAID FOR AS CLASS II SURFACE PREPARATION.

SCARIFYING BRIDGE DECK

CLASS II SURFACE PREPARATION

BRIDGE JOINT DEMOLITION

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 2 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

OVERLAY DECK SURFACE REPAIR SPAN A

NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

Eric Nolting 1/25/2022

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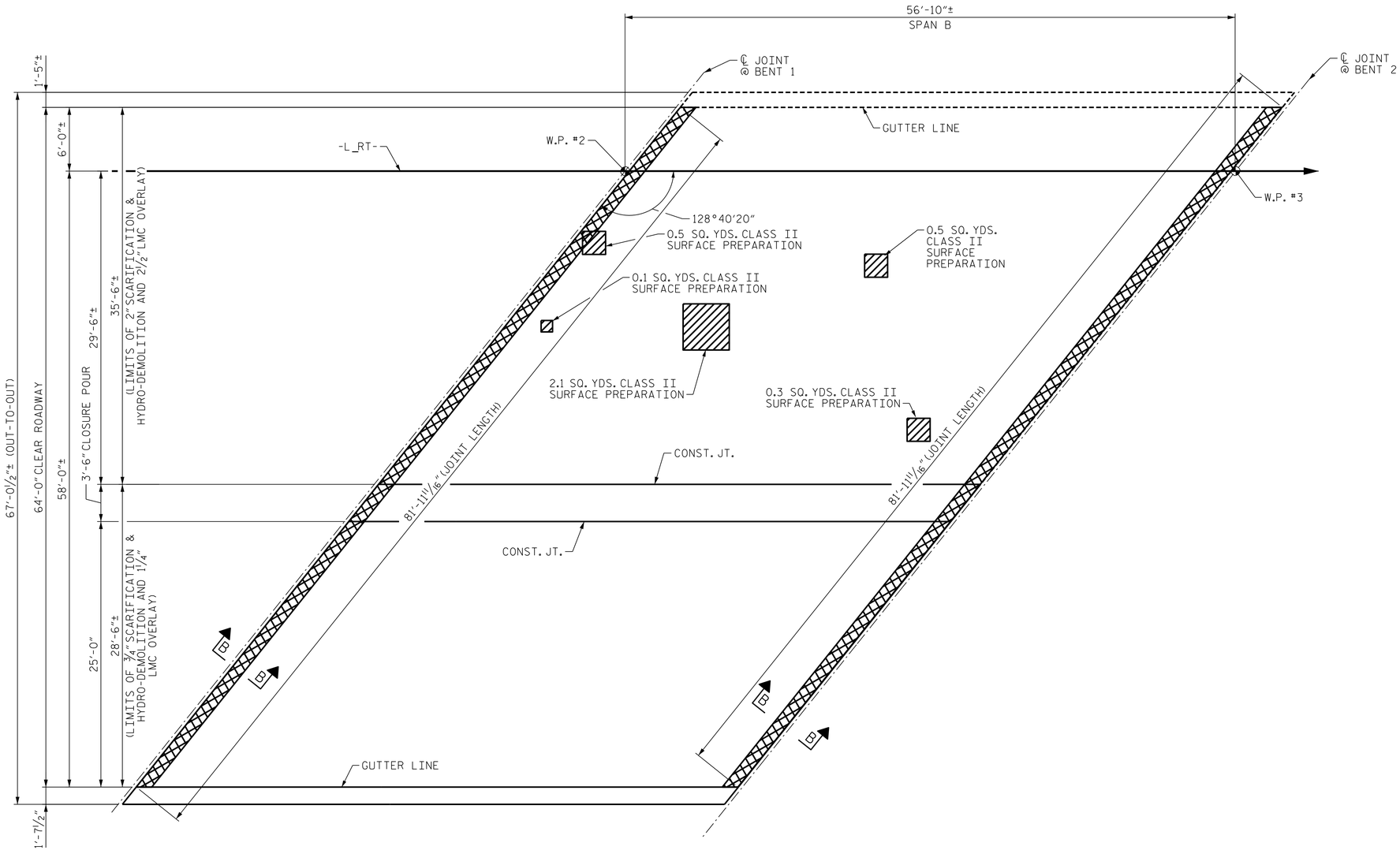

PLAN OF SPAN B

AS-BUILT REPAIR QUANTITY TABLE

DECK SURFACE REPAIR SPAN B

	ESTIMATE	ACTUAL
CONCRETE FOR DECK REPAIR	0.0 CU. FT.	
CLASS II SURFACE PREPARATION	3.5 SQ. YDS.	
LMC MATERIALS	21.3 CU. YDS.	
PLACING & FINISHING LMC OVERLAY	404.2 SQ. YDS.	
SCARIFYING BRIDGE DECK	404.2 SQ. YDS.	
HYDRO-DEMOLITION OF BRIDGE DECK	404.2 SQ. YDS.	
GROOVING BRIDGE FLOORS	3380.4 SQ. FT.	
BRIDGE JOINT DEMOLITION	82.0 SQ. FT.	

PAYMENT FOR CLASS II SURFACE PREPARATION IS BASED ON THE SQUARE FEET OF ADDITIONAL DEMOLITION REQUIRED FOLLOWING INITIAL HYDRO-DEMOLITION OF THE BRIDGE DECK, SEE SPECIAL PROVISIONS

REPAIR LOCATIONS AND ESTIMATED QUANTITIES ARE BASED ON THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWING THE APPROXIMATE LOCATIONS AND DESCRIPTION REPAIR QUANTITIES INTO THE AS-BUILT REPAIR QUANTITY TABLE.

FOR SECTION B-B, SEE "JOINT DETAILS" SHEET.

AFTER INITIAL HYDRO-DEMOLITION, BRIDGE DECK SHALL BE CLEANED WELL ENOUGH FOR IDENTIFICATION OF CLASS II SURFACE PREPARATION AREAS NOT SUFFICIENTLY REMOVED BY INTIAL HYDRO-DEMOLITION. A SECONDARY PASS WITH HYDRO-DEMOLITION SHALL BE USED IN THE CLASS II SURFACE PREPARATION AREAS TO REMOVE CONCRETE BRIDGE DECK TO THE REQUIRED CLASS II SURFACE PREPARATION DEPTH AND TO REMOVE DETERIORATED CONCRETE. IF THE SECONDARY HYDRO-DEMOLITION DOES NOT REMOVE PATCHES OR DETERIORATED MATERIAL TO THE REQUIRED DEPTH, COMPLETE REMOVAL IN CLASS II SURFACE PREPARATION AREAS WITH HAND TOOLS. ADDITIONAL HYDRO-DEMOLITION USED TO ACHIEVE CLASS II SURFACE PREPARATION DEPTH AND ADDITIONAL REMOVAL BY HAND TOOLS, IF NECESSARY, WILL BE PAID FOR AS CLASS II SURFACE PREPARATION.

SCARIFYING BRIDGE DECK

CLASS II SURFACE PREPARATION

BRIDGE JOINT DEMOLITION

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 3 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

OVERLAY DECK SURFACE REPAIR SPAN B

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NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

Eric Nolting 1/25/2022

DES BY: G. MYERS DATE: 08/21
DES CHK: S. NIFONG DATE: 08/21
DWG BY: F. CORDOVA DATE: 08/21
CHK BY: S. NIFONG DATE: 08/21

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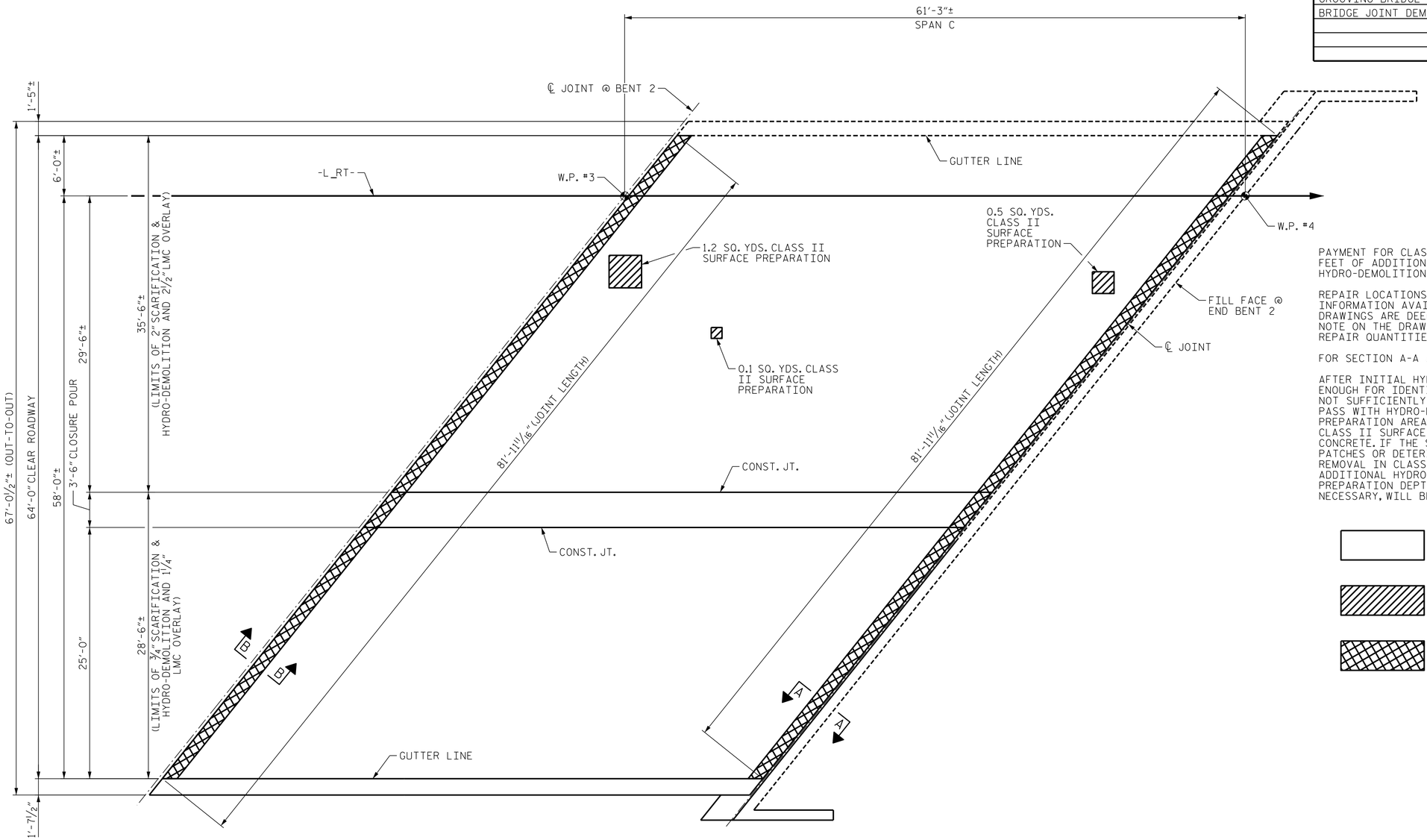
AS-BUILT REPAIR QUANTITY TABLE

DECK SURFACE REPAIR SPAN C

	ESTIMATE	ACTUAL
CONCRETE FOR DECK REPAIR	0.0 CU. FT.	
CLASS II SURFACE PREPARATION	1.8 SQ. YDS.	
LMC MATERIALS	22.5 CU. YDS.	
PLACING & FINISHING LMC OVERLAY	425.7 SQ. YDS.	
SCARIFYING BRIDGE DECK	425.7 SQ. YDS.	
HYDRO-DEMOLITION OF BRIDGE DECK	425.7 SQ. YDS.	
GROOVING BRIDGE FLOORS	3565.2 SQ. FT.	
BRIDGE JOINT DEMOLITION	82.0 SQ. FT.	



PLAN OF SPAN C

PAYMENT FOR CLASS II SURFACE PREPARATION IS BASED ON THE SQUARE FEET OF ADDITIONAL DEMOLITION REQUIRED FOLLOWING INITIAL HYDRO-DEMOLITION OF THE BRIDGE DECK, SEE SPECIAL PROVISIONS

REPAIR LOCATIONS AND ESTIMATED QUANTITIES ARE BASED ON THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWING THE APPROXIMATE LOCATIONS AND DESCRIPTION REPAIR QUANTITIES INTO THE AS-BUILT REPAIR QUANTITY TABLE.

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SCARIFYING BRIDGE DECK

CLASS II SURFACE PREPARATION

BRIDGE JOINT DEMOLITION

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 4 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

OVERLAY DECK SURFACE REPAIR SPAN C

NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

Eric Nolting 1/25/2022

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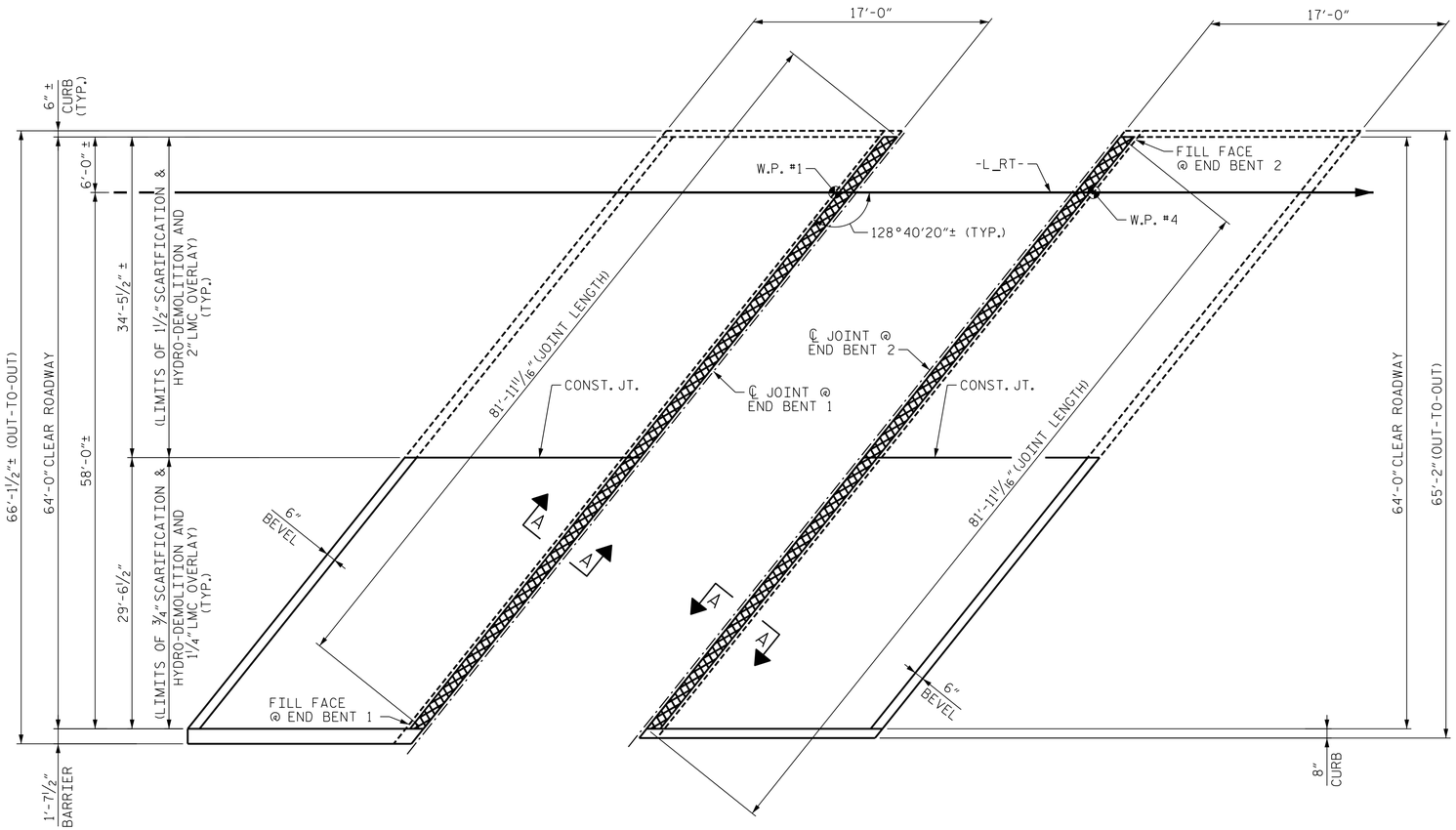

PLAN AT END BENT 1

PLAN AT END BENT 2

AS-BUILT REPAIR QUANTITY TABLE

DECK SURFACE REPAIR - APPROACH SLAB 1

	ESTIMATE	ACTUAL
CONCRETE FOR DECK REPAIR	0.0 CU. FT.	
CLASS II SURFACE PREPARATION	0.0 SQ. YDS.	
LMC MATERIALS	5.4 CU. YDS.	
PLACING & FINISHING LMC OVERLAY	120.9 SQ. YDS.	
SCARIFYING BRIDGE DECK	120.9 SQ. YDS.	
HYDRO-DEMOLITION OF BRIDGE DECK	120.9 SQ. YDS.	
GROOVING BRIDGE FLOORS	954.7 SQ. FT.	
BRIDGE JOINT DEMOLITION	41.0 SQ. FT.	

AS-BUILT REPAIR QUANTITY TABLE

DECK SURFACE REPAIR - APPROACH SLAB 2

	ESTIMATE	ACTUAL
CONCRETE FOR DECK REPAIR	0.0 CU. FT.	
CLASS II SURFACE PREPARATION	0.0 SQ. YDS.	
LMC MATERIALS	5.4 CU. YDS.	
PLACING & FINISHING LMC OVERLAY	120.9 SQ. YDS.	
SCARIFYING BRIDGE DECK	120.9 SQ. YDS.	
HYDRO-DEMOLITION OF BRIDGE DECK	120.9 SQ. YDS.	
GROOVING BRIDGE FLOORS	954.7 SQ. FT.	
BRIDGE JOINT DEMOLITION	41.0 SQ. FT.	

PAYMENT FOR CLASS II SURFACE PREPARATION IS BASED ON THE SQUARE FEET OF ADDITIONAL DEMOLITION REQUIRED FOLLOWING INITIAL HYDRO-DEMOLITION OF THE BRIDGE DECK, SEE SPECIAL PROVISIONS

REPAIR LOCATIONS AND ESTIMATED QUANTITIES ARE BASED ON THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWING THE APPROXIMATE LOCATIONS AND DESCRIPTION OF REPAIR QUANTITIES INTO THE AS-BUILT REPAIR QUANTITY TABLE.

FOR SECTION A-A, SEE "JOINT DETAILS" SHEET.

AFTER INITIAL HYDRO-DEMOLITION, BRIDGE DECK SHALL BE CLEANED WELL ENOUGH FOR IDENTIFICATION OF CLASS II SURFACE PREPARATION AREAS NOT SUFFICIENTLY REMOVED BY INTIAL HYDRO-DEMOLITION. A SECONDARY PASS WITH HYDRO-DEMOLITION SHALL BE USED IN THE CLASS II SURFACE PREPARATION AREAS TO REMOVE CONCRETE BRIDGE DECK TO THE REQUIRED CLASS II SURFACE PREPARATION DEPTH AND TO REMOVE DETERIORATED CONCRETE. IF THE SECONDARY HYDRO-DEMOLITION DOES NOT REMOVE PATCHES OR DETERIORATED MATERIAL TO THE REQUIRED DEPTH, COMPLETE REMOVAL IN CLASS II SURFACE PREPARATION AREAS WITH HAND TOOLS. ADDITIONAL HYDRO-DEMOLITION USED TO ACHIEVE CLASS II SURFACE PREPARATION DEPTH AND ADDITIONAL REMOVAL BY HAND TOOLS, IF NECESSARY, WILL BE PAID FOR AS CLASS II SURFACE PREPARATION.

SCARIFYING BRIDGE DECK

CLASS II SURFACE PREPARATION

BRIDGE JOINT DEMOLITION

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 5 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

OVERLAY
DECK SURFACE REPAIR
APPROACH SLABS

NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

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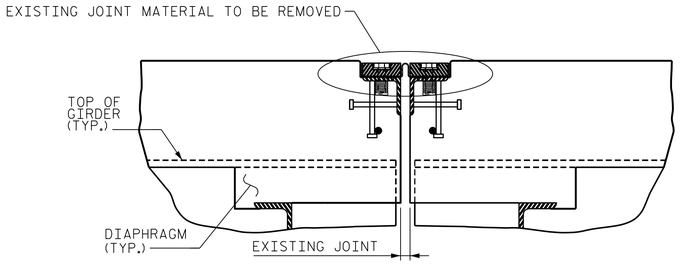
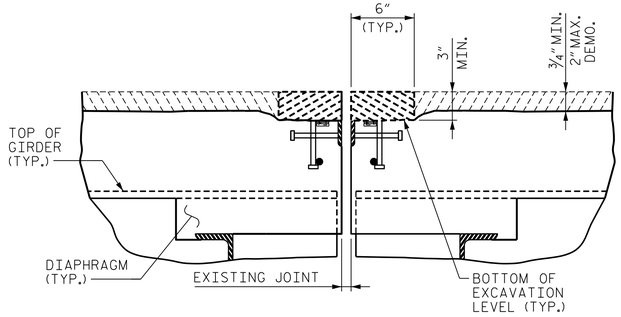


SECTION B-B
(EXISTING JOINT)



SECTION B-B
(MINIMUM EXISTING JOINT DEMOLITION)

NOTES

THE FOAM JOINTS SHALL MEET THE MANUFACTURER'S RECOMMENDATION.

THE UNCOMPRESSED FOAM JOINT SEAL WIDTH SHALL MEET THE MANUFACTURER'S RECOMMENDATION FOR THE SIZE OF OPENING ON THE PLANS, AND ACCOMMODATE THE MINIMUM EXPANSION SHOWN ON THE PLANS.

CONTRACTOR SHALL FIELD VERIFY THE EXISTING JOINT OPENING PRIOR TO ORDERING JOINT SEAL MATERIAL. IF ACTUAL JOINT OPENING VARIES FROM OPENING INDICATED IN DETAIL BY MORE THAN ¼", NOTIFY ENGINEER.

THE INSTALLED FOAM JOINTS SHALL BE WATER TIGHT.

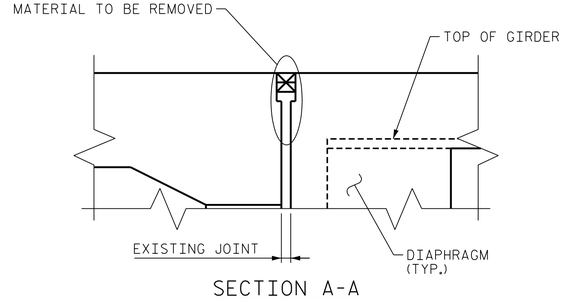
FOR FOAM JOINT SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.

THE CONTRACTOR WILL NOT BE PERMITTED TO FORM THE JOINTS IN LIEU OF SAWING THE JOINT.

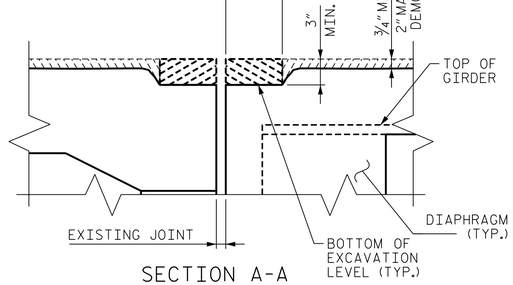
ELASTOMERIC CONCRETE FOR PRESERVATION		
LOCATION	ESTIMATED CU. FT.	ACTUAL CU. FT.
END BENT 1	20.5	
BENT 1	20.5	
BENT 2	20.5	
END BENT 2	20.5	
TOTAL	82.0	

DEMOLITION OF THE EXISTING EXPANSION JOINT SEAL SHOULD BE TO A MINIMUM DEPTH OF 3" AND INCLUDE THE REMOVAL OF THE HORIZONTAL LEG OF THE EMBEDDED ANGLE.

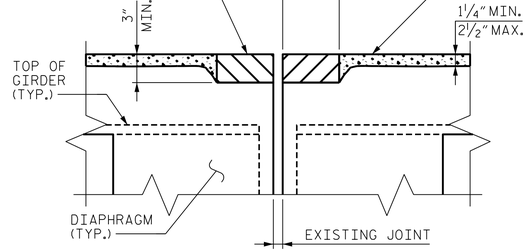
DEMOLISH BRIDGE JOINT AREA TO THE NECESSARY DEPTH, SUCH THAT ELASTOMERIC CONCRETE SHALL BE FOUNDED ON CONCRETE OR REPAIR CONCRETE SUBSTRATE, NOT LATEX MODIFIED CONCRETE. BOTTOM OF EXCAVATION SHALL BE REASONABLY FLAT AND LEVEL TO PROVIDE PROPER SUBSTRATE FOR ELASTOMERIC CONCRETE HEADER.



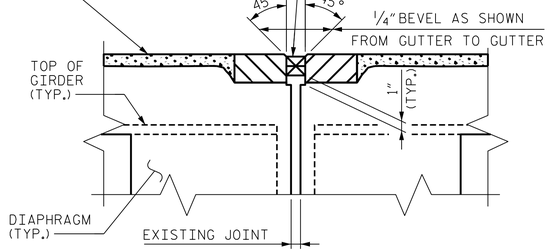
SECTION A-A
(EXISTING JOINT)



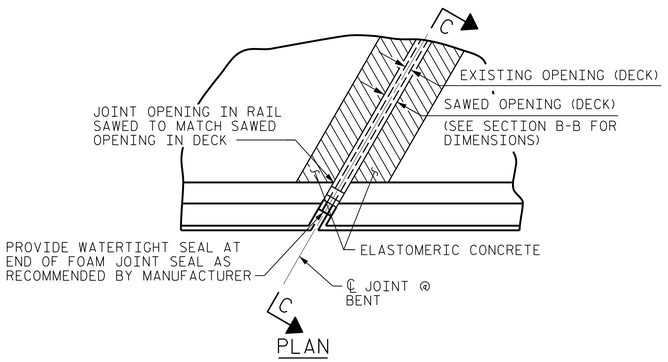
SECTION A-A
(MINIMUM EXISTING JOINT DEMOLITION)



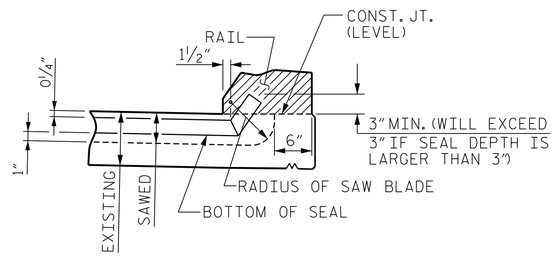
SECTION A-A OR B-B
(PROPOSED JOINT PRE-SAWED)
(CONDITION AT SECTION B-B SHOWN)



SECTION A-A OR B-B
(PROPOSED FOAM JOINT SEAL)
(CONDITION AT SECTION B-B SHOWN)



PLAN



SECTION C-C
FOAM JOINT SEAL SHALL BE CUT, HEAT WELDED AND TURNED UP PARALLEL TO FACE OF RAIL.

JOINT REPAIR QUANTITY TABLE		
	ESTIMATED LIN. FT.	ACTUAL LIN. FT.
FOAM JOINT SEALS FOR PRESERVATION	327.9	

SAWED JOINT OPENING TABLE			
	SAWED JT. OPENING (PERPENDICULAR TO JT.)		
LOCATION BRIDGE 107	AT 45°	AT 60°	AT 90°
END BENT 1	1 3/16"	1 3/16"	1½"
BENT 1	1⅝"	1 3/16"	1 1/16"
BENT 2	1⅝"	1 3/16"	1 1/16"
END BENT 2	1 3/16"	1 3/16"	1½"

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 6 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

OVERLAY JOINT DETAILS

JOINT SEAL DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

Eric Nolting 1/25/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DES BY: G. MYERS	DATE: 08/21	DWG BY: B. PETERSON	DATE: 08/21
DES CHK: E. NOLTING	DATE: 08/21	CHK BY: S. NIFONG	DATE: 08/21

HDR Engineering, Inc. of the Carolinas
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N.C.B.E.L.S. License Number: F-0116

REVISIONS						SHEET NO. S03R-56
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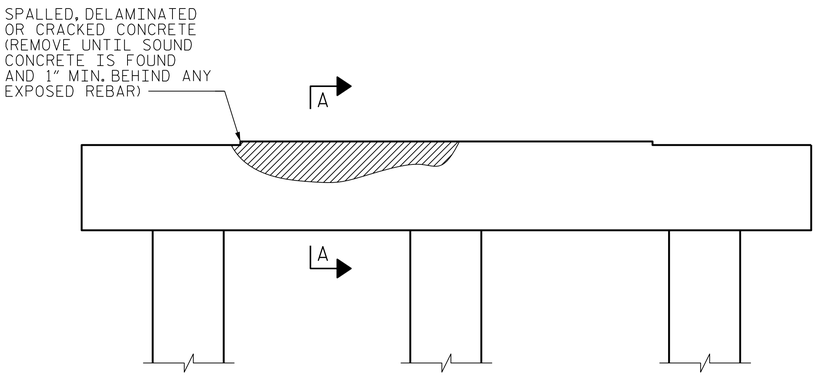
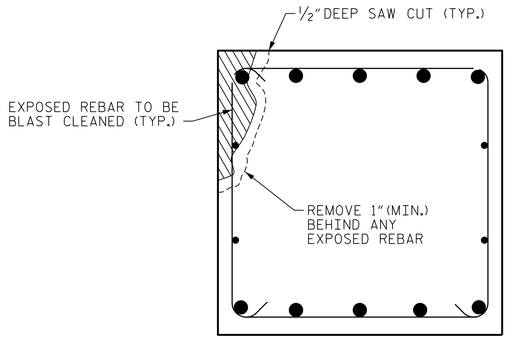
1	--	--	3	--	--	TOTAL SHEETS 61
2	--	--	4	--	--	

AS-BUILT REPAIR QUANTITY TABLE				
BENT 1 SPAN B FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	10.0	5.0		



BENT CAP REPAIR

BENT 1 SPAN B FACE



SECTION A-A

NOTES

THE METHOD USED TO DELINEATE THE AREAS OF UNSOUND CONCRETE TO BE REPAIRED SHALL NOT PERMANENTLY MARK THE CONCRETE, LEAVE ANY RESIDUE AFTER REMOVAL OR REQUIRE HARSH CHEMICALS TO REMOVE.

THE CONTRACTOR SHALL REMOVE THE DETERIORATED CONCRETE IN ACCORDANCE WITH THE GUIDELINES SET IN THESE NOTES, IN THE SPECIAL PROVISIONS AND THE STANDARD SPECIFICATIONS.

REMOVE UNSOUND CONCRETE TO THE EXTENT NECESSARY, MINIMUM OF 1" BEHIND REBAR AND MINIMUM OF 2" CLEARANCE TO SAWCUT.

NO MORE THAN ONE-THIRD OF THE CAP OR COLUMN CROSS SECTIONAL AREA SHALL BE REMOVED AT ONE TIME. SHOULD IT BECOME NECESSARY TO REMOVE MORE THAN 30% OF A CAP OR COLUMN CROSS SECTIONAL AREA, NOTIFY THE ENGINEER PRIOR TO PROCEEDING.

IF REMOVAL EXTENDS MORE THAN 1 1/2" BEHIND THE MAIN REINFORCING BARS, NOTIFY THE ENGINEER PRIOR TO PROCEEDING.

REINFORCING STEEL WHICH IS DETERMINED BY THE ENGINEER TO BE REPLACED, SHALL BE REMOVED TO A POINT WHERE IT IS SOUND. THE PATCH SHALL EXTEND A SUFFICIENT DISTANCE BEYOND THIS POINT TO DEVELOP A SPLICE LENGTH SPECIFIED IN THE TABLE ON THIS SHEET.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY PROTECTIVE COATING, SEE SPECIAL PROVISIONS.

CONCRETE REPAIR AREA (FORM AND POUR)

REPAIR KEY

SPLICE LENGTH TABLE	
BAR SIZE	MIN. SPLICE LENGTH
#4	2'-5"
#5	3'-0"
#6	3'-7"
#7	4'-2"
#8	4'-9"
#9	5'-4"
#10	6'-0"
#11	6'-8"

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

EXISTING BENT 1 CAP REPAIR DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

Eric Nolting 1/25/2022

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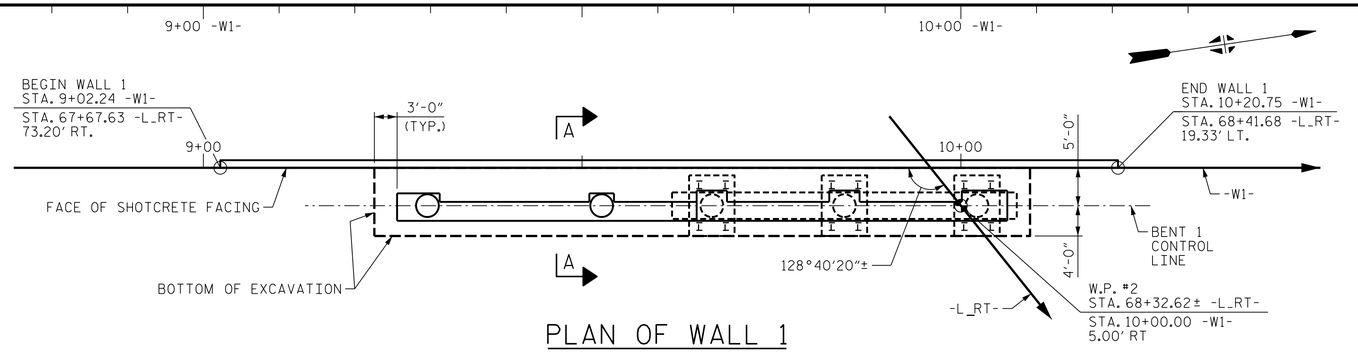
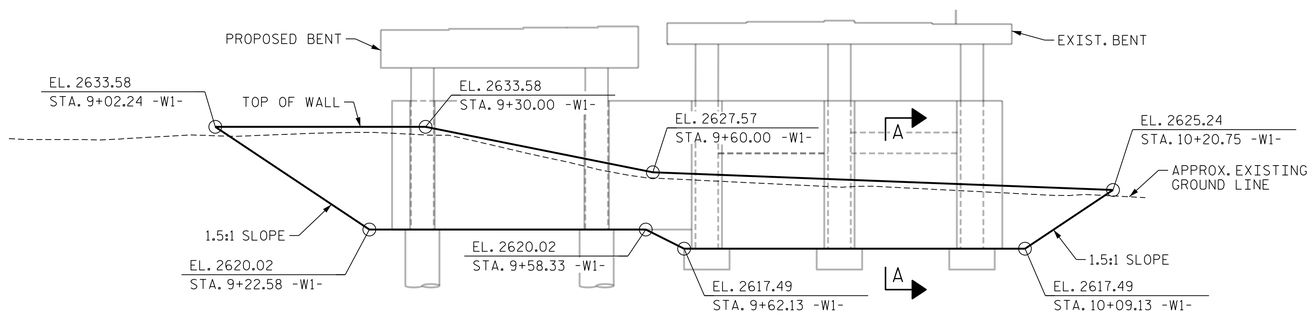
1	--	--	3	--	--	TOTAL SHEETS 61
2	--	--	4	--	--	

DES BY:	F. CORDOVA	DATE :	08/21
DES CHK:	E. NOLTING	DATE :	08/21
DWG BY:	B. PETERSON	DATE :	07/21
CHK BY:	E. NOLTING	DATE :	08/21

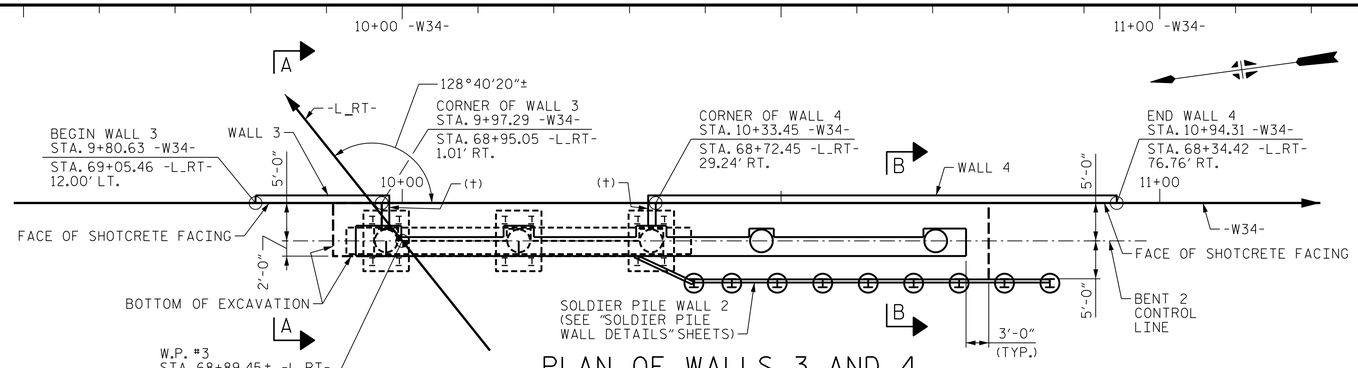


PLAN OF WALL 1



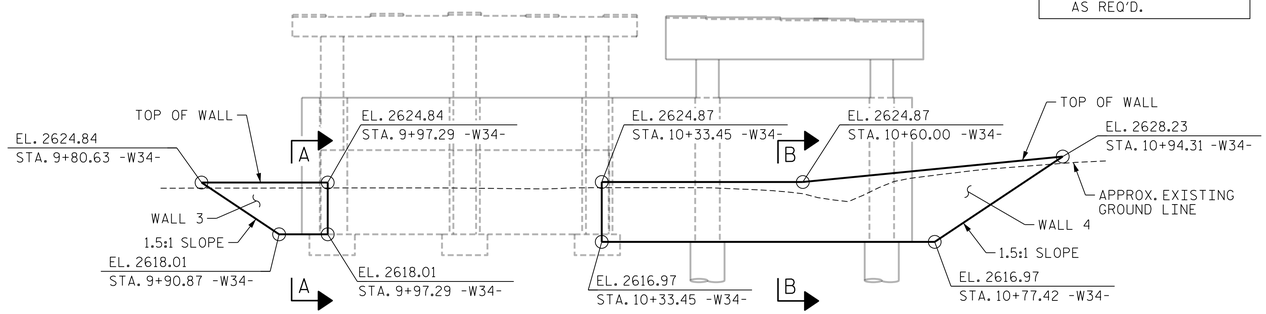
ELEVATION OF WALL 1

SURFACE AREA = 1052 SQ.FT



PLAN OF WALLS 3 AND 4

(†) EXTEND WALL TO FACE OF EXISTING COLUMN AS REQ'D.



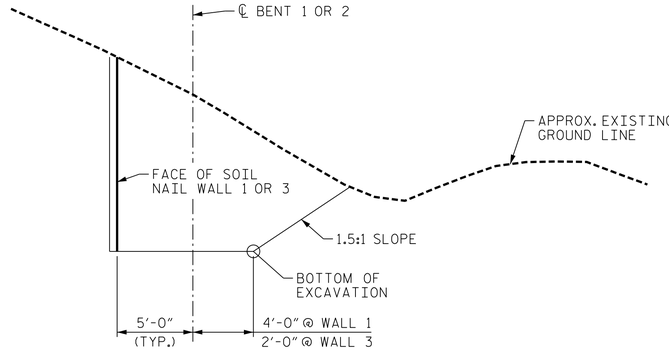
ELEVATION OF WALLS 3 AND 4

WALL 3 SURFACE AREA = 79 SQ.FT
WALL 4 SURFACE AREA = 444 SQ.FT

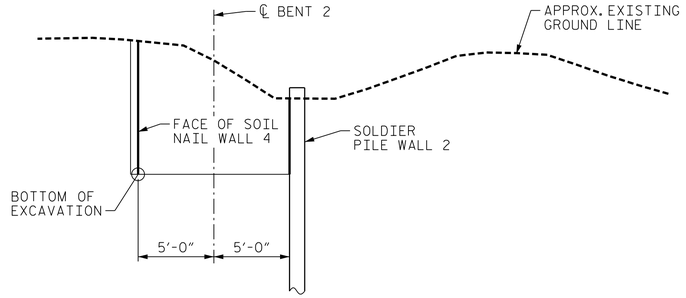
NOTES

GRADE DATA, ELEVATIONS, DIMENSIONS, AND STATIONS WERE DETERMINED USING THE BEST INFORMATION AVAILABLE AND ARE PROVIDED FOR INFORMATION ONLY. THE CONTRACTOR SHALL SURVEY THE EXISTING STRUCTURE AND NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIALS.

SEE "SOIL NAIL WALL DETAILS" SHEET 2 OF 2 FOR NOTES AND DETAILS.



SECTION A-A



SECTION B-B

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TEMPORARY SHORING SOIL NAIL WALL DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

Eric Nolting 1/25/2022

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

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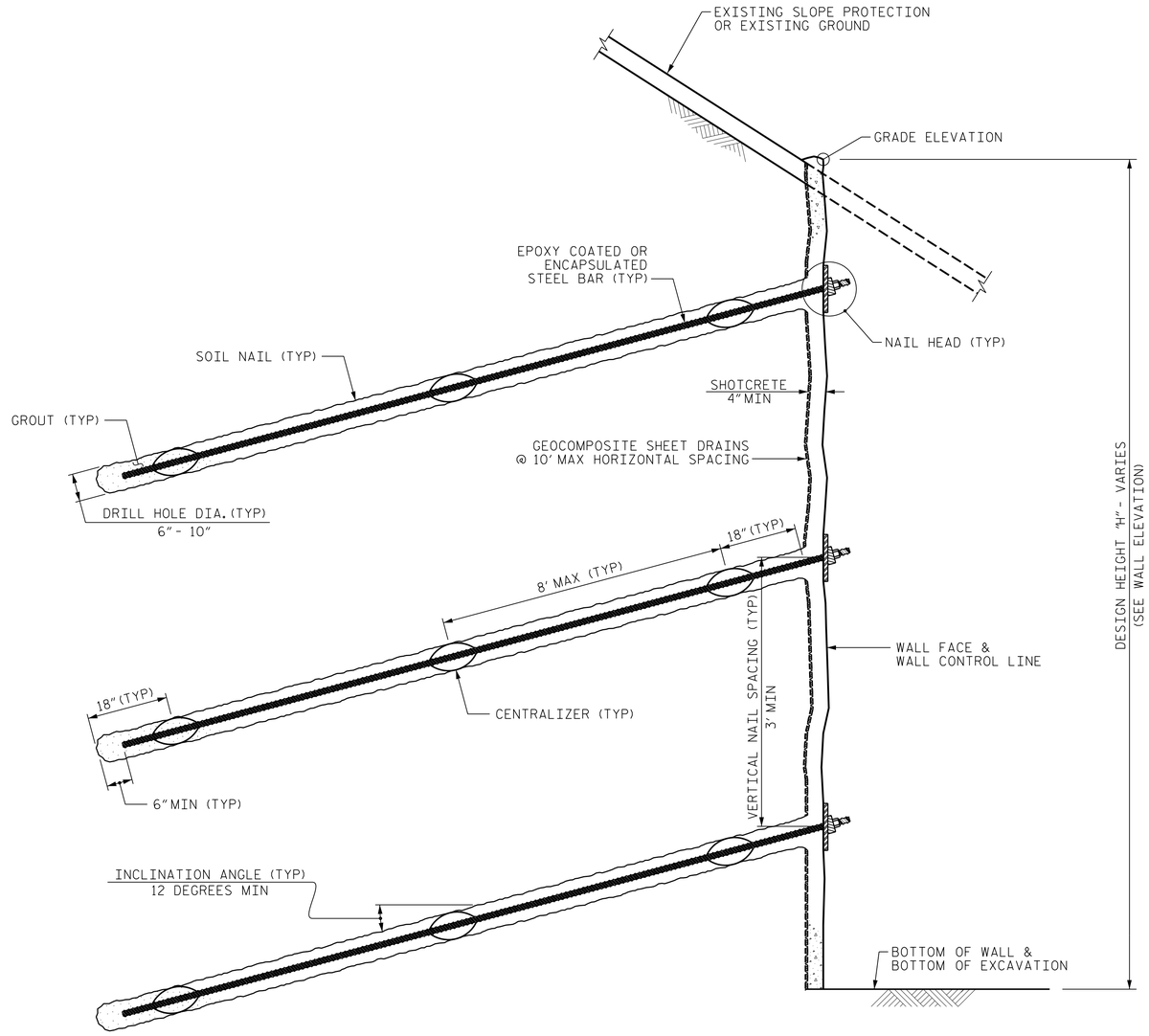
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S03R-58
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	61

DES BY:	E. NOLTING	DATE :	09/21
DES CHK:	F. CORDOVA	DATE :	09/21
DWG BY:	B. PETERSON	DATE :	09/21
CHK BY:	F. CORDOVA	DATE :	09/21



SOIL NAIL WALL - TYPICAL SECTION

NOTES:

FOR TEMPORARY SOIL NAIL WALLS, SEE SPECIAL PROVISIONS.

BEFORE BEGINNING SOIL NAIL WALL DESIGN FOR RETAINING WALL NOS. 1, 3, AND 4, SURVEY WALL LOCATION AND SUBMIT A REVISED WALL PROFILE VIEW (WALL ENVELOPE) FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THE REVISED WALL ENVELOPE IS ACCEPTED.

DESIGN RETAINING WALL NOS. 1, 3, AND 4 FOR THE FOLLOWING:

1. DESIGN HEIGHT (H) = WALL HEIGHT
2. IN-SITU ASSUMED MATERIAL PARAMETERS ABOVE ELEVATION 2600 FT:
   a. Unit Weight = 120 PCF
   b. Friction Angle = 28 DEGREES
   c. Cohesion = 0 PSF
3. IN-SITU ASSUMED MATERIAL PARAMETERS BELOW ELEVATION 2600 FT:
   a. Unit Weight = 125 PCF
   b. Friction Angle = 34 DEGREES
   c. Cohesion = 0 PSF
4. ASSUMED GROUNDWATER ELEVATION 2620 FT.

EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS MAY INTERFERE WITH SOIL NAILS FOR RETAINING WALL NOS. 1, 3, AND 4.

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TEMPORARY SHORING
SOIL NAIL
WALL DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S03R-59
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	61

NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

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DES CHK:	F. CORDOVA	DATE:	09/21
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CHK BY:	F. CORDOVA	DATE:	09/21

PLOT DRIVER: NCDOT STRUCTURES DEFAULT PLOTTER.plt PENTABLE: NCDOT STRUCTURES DEFAULT PEN.tbl
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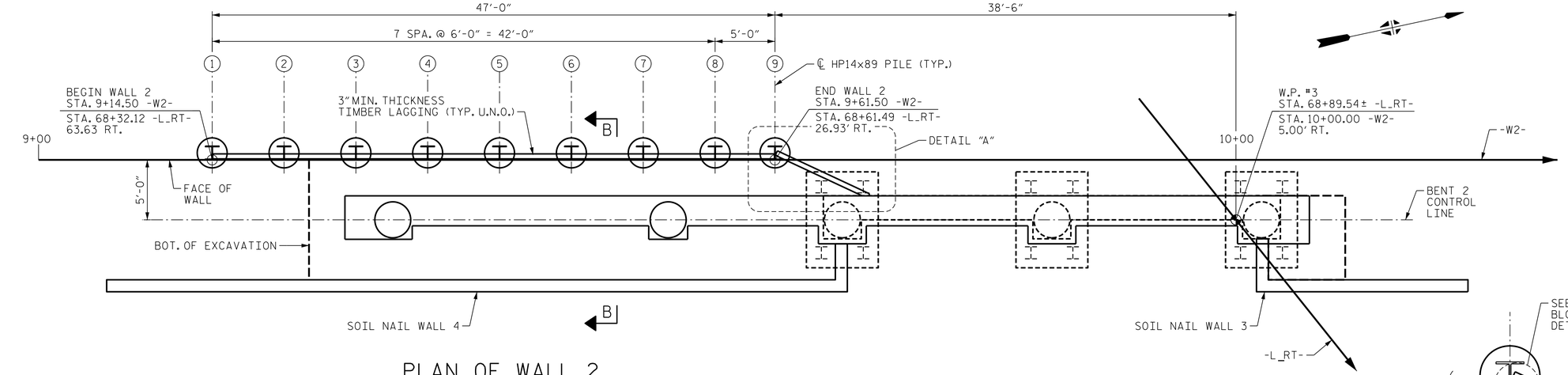
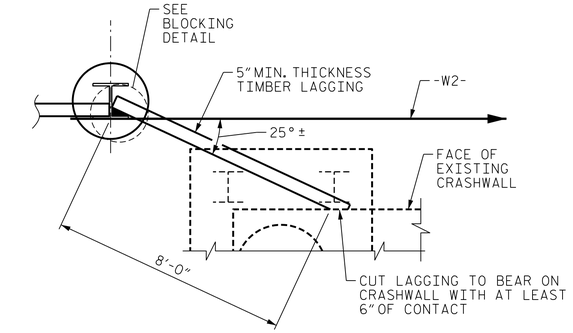
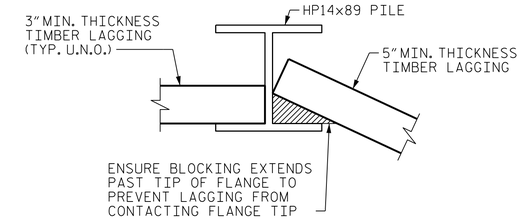


PLAN OF WALL 2

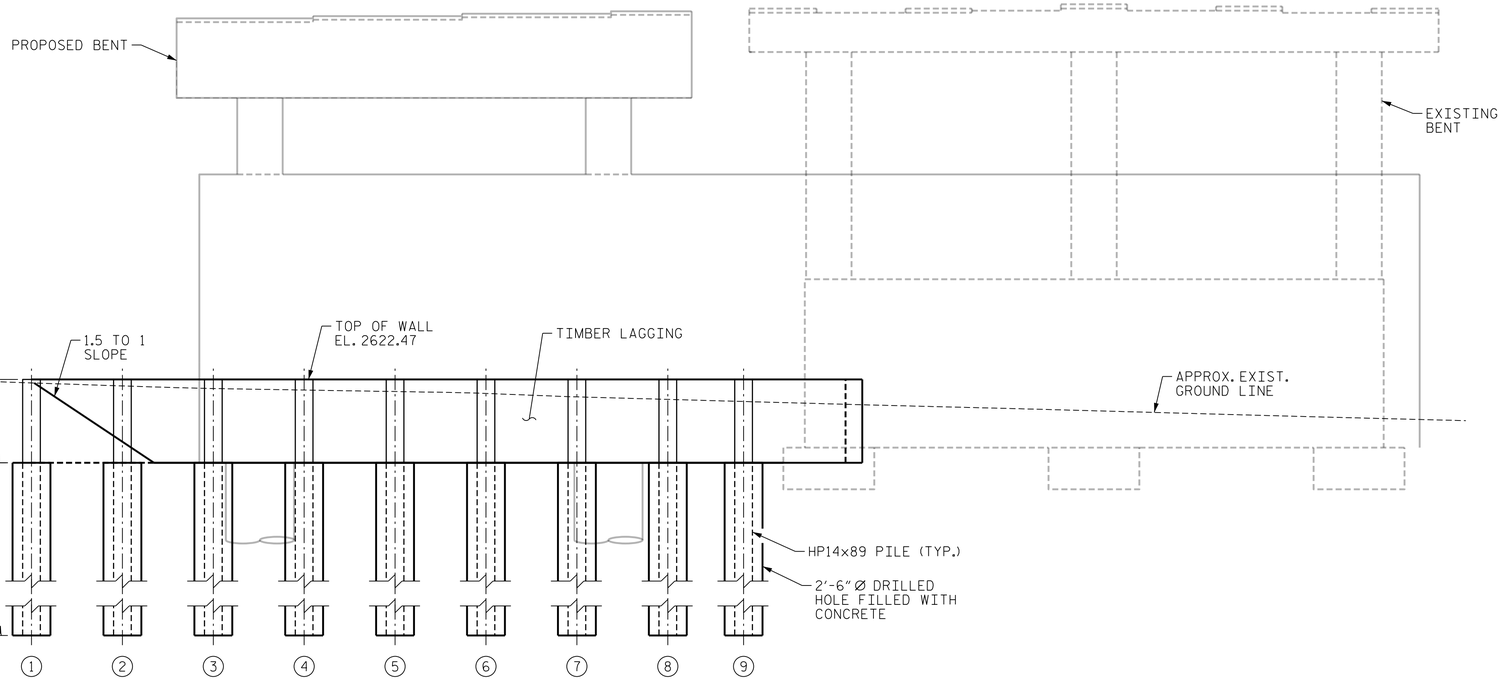


DETAIL "A"



BLOCKING DETAIL

SECURE BLOCKING TO PILE PRIOR TO INSTALLING EXCAVATABLE FLOWABLE FILL



ELEVATION OF WALL 2

NOTES

GRADE DATA, ELEVATIONS, DIMENSIONS, AND STATIONS WERE DETERMINED USING THE BEST INFORMATION AVAILABLE AND ARE PROVIDED FOR INFORMATION ONLY. THE CONTRACTOR SHALL SURVEY THE EXISTING STRUCTURE AND NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIALS.

SEE "SOIL NAIL WALL DETAILS" SHEET 1 OF 2 FOR SECTION B-B.

SEE "SOLDIER PILE WALL DETAILS" SHEET 2 OF 2 FOR ADDITIONAL DETAILS AND NOTES.

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TEMPORARY SHORING SOLDIER PILE WALL DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S03R-60
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	61

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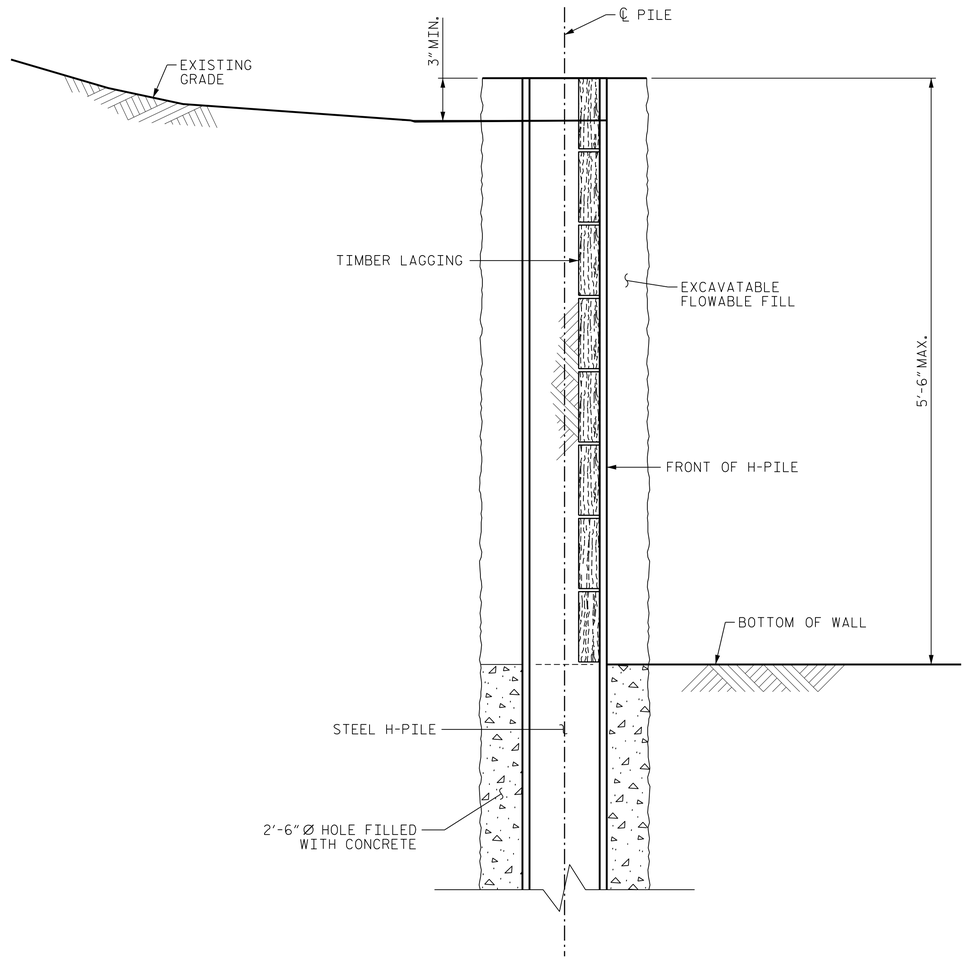

SOLDIER PILE WALL SECTION

NOTES:

FOR TEMPORARY RAILROAD SHORING, SEE SPECIAL PROVISIONS.

FOR SOLDIER PILE RETAINING WALLS, SEE SPECIAL PROVISIONS.

BEFORE BEGINNING SOLDIER PILE WALL DESIGN FOR RETAINING WALL NO. 2, SURVEY WALL LOCATION AND SUBMIT A REVISED WALL PROFILE VIEW (WALL ENVELOPE) FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THE REVISED WALL ENVELOPE IS ACCEPTED.

DESIGN RETAINING WALL NO. 2 FOR THE FOLLOWING:

1. DESIGN HEIGHT (H) = WALL HEIGHT
2. IN-SITU ASSUMED MATERIAL PARAMETERS ABOVE ELEVATION 2600 FT:
   a. Unit Weight = 120 PCF
   b. Friction Angle = 28 DEGREES
   c. Cohesion = 0 PSF
3. IN-SITU ASSUMED MATERIAL PARAMETERS BELOW ELEVATION 2600 FT:
   a. Unit Weight = 125 PCF
   b. Friction Angle = 34 DEGREES
   c. Cohesion = 0 PSF
4. ASSUMED GROUNDWATER ELEVATION 2620 FT.

DESIGN RETAINING WALL NO. 2 FOR A COOPER E80 RAILROAD LIVE LOAD.

DRILLED-IN H-PILES ARE REQUIRED FOR RETAINING WALL NO. 2.

NO SPLICES ARE PERMITTED IN H-PILES EXCEPT WHERE LOW VERICAL CLEARANCE IS AN ISSUE.

FOR PILE SPLICE DETAILS, SEE "SUBSTRUCTURE END BENT 1 SECTIONS AND DETAILS" SHEET.

CURE CONCRETE AND EXCAVATABLE FLOWABLE FILL AT LEAST 7 DAYS BEFORE EXCAVATING IN FRONT OF TEMPORARY SHORING.

EXCAVATE IN FRONT OF PILES FROM THE TOP DOWN AND IMMEDIATELY INSTALL TIMBER LAGGING BETWEEN PILES TO RETAIN THE SOIL AS EXCAVATION PROGRESSES.

POSITION LAGGING WITH AT LEAST 3" OF CONTACT IN THE HORIZONTAL DIRECTION BETWEEN LAGGING AND H-PILE FLANGES.

REMOVE TEMPORARY RAILROAD SHORING WHEN NO LONGER NEEDED TO A MINIMUM OF TWO FEET BELOW PROPOSED GROUND.

ESTIMATED PILE LENGTH			
TYPE	NO.	LENGTH/EA.	TOTAL
HP14x89	9	34'	306'

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 68+65.75± -L_RT-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TEMPORARY SHORING SOLDIER PILE WALL DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 043854 ENGINEER ERIC M. NOLTING

Eric Nolting 1/25/2022

HDR Engineering, Inc. of the Carolinas
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1	--	--	3	--	--	TOTAL SHEETS
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DES BY:	E. NOLTING	DATE :	09/21
DES CHK:	F. CORDOVA	DATE :	09/21
DWG BY:	B. PETERSON	DATE :	09/21
CHK BY:	F. CORDOVA	DATE :	09/21

STANDARD NOTES

DESIGN DATA:

SPECIFICATIONS	A.A.S.H.T.O. (CURRENT)
LIVE LOAD	SEE PLANS
IMPACT ALLOWANCE	SEE A.A.S.H.T.O.
STRESS IN EXTREME FIBER OF	20,000 LBS. PER SQ. IN.
STRUCTURAL STEEL - AASHTO M270 GRADE 36	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50W	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50	
REINFORCING STEEL IN TENSION GRADE 60	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR	SEE A.A.S.H.T.O
STRUCTURAL TIMBER - TREATED OR UNTREATED - EXTREME FIBER STRESS	1,800 LBS. PER SQ. IN.
COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER	375 LBS. PER SQ. IN.
EQUIVALENT FLUID PRESSURE OF EARTH	30 LBS. PER CU. FT. (MINIMUM)

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2018 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

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

CONCRETE:

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

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED ¾" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1½" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A ¼" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A ¼" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

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

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

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

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

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

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

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE ⅞" Ø SHEAR STUDS FOR THE ¾" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - ⅞" Ø STUDS FOR 4 - ¾" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF ⅞" Ø STUDS ALONG THE BEAM AS SHOWN FOR ¾" Ø STUDS BASED ON THE RATIO OF 3 - ⅞" Ø STUDS FOR 4 - ¾" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

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

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

HANDRAILS AND POSTS:

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

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105-4.

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: VARIOUS

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD NOTES

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

DES BY: E. NOLTING	DATE: 06/21	DWG BY: B. PETERSON	DATE: 06/21
DES CHK: K. DICKENS	DATE: 06/21	CHK BY: E. NOLTING	DATE: 06/21

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