09/08/99

TIP PROJECT: B-5666

CONTRACT: C204536

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5666	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
45621.1.1		P.E.
45621.2.1		ROW/UTIL
45621.3.1		CONST.

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WILSON COUNTY

LOCATION: REPLACE BRIDGE NO. 47 OVER SEABOARD COAST LINE RAILROAD ON US 117

TYPE OF WORK: DRAINAGE, GRADING, PAVING AND STRUCTURE

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols

VICINITY MAP (NTS)

●—●—● DETOUR ROUTE

90% PLANS

STRUCTURE

A DESIGN EXCEPTION WILL BE REQUIRED FOR SAG & CREST VERTICAL CURVES AND VERTICAL STOPPING SIGHT DISTANCE.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2020 = 5,070
ADT 2040 = 6,200
K = 8 %
D = 55 %
T = 4 % *
V = 55 MPH
* TTST =2% DUAL 2%
FUNCTIONAL CLASS = MINOR ARTERIAL
REGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B-5666 = .254 MILES
LENGTH OF STRUCTURE TIP PROJECT B-5666 = .036 MILES
TOTAL LENGTH OF TIP PROJECT B-5666 = .290 MILES

Prepared In the Office of:

KCI
http://www.kci.com
KCI Associates of N.C., P.A.
4505 Falls of Neuse Road, Suite 400
Raleigh, NC 27609
Phone (919) 783-9214
Fax (919) 783-9266

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
DECEMBER 20, 2019

LETTING DATE:
MAY 18, 2021

NCDOT CONTACT:

Plans Prepared For:

DIVISION OF HIGHWAYS
1000 Birch Ridge Dr.
Raleigh NC, 27610

ELIZABETH R. PHIPPS, P.E.
PROJECT ENGINEER

ROBERT C. LARSON, P.E.
PROJECT DESIGN ENGINEER

DAVID STUTTS, P.E.
STRUCTURES MANAGEMENT UNIT

SIGNATURE: P.E.

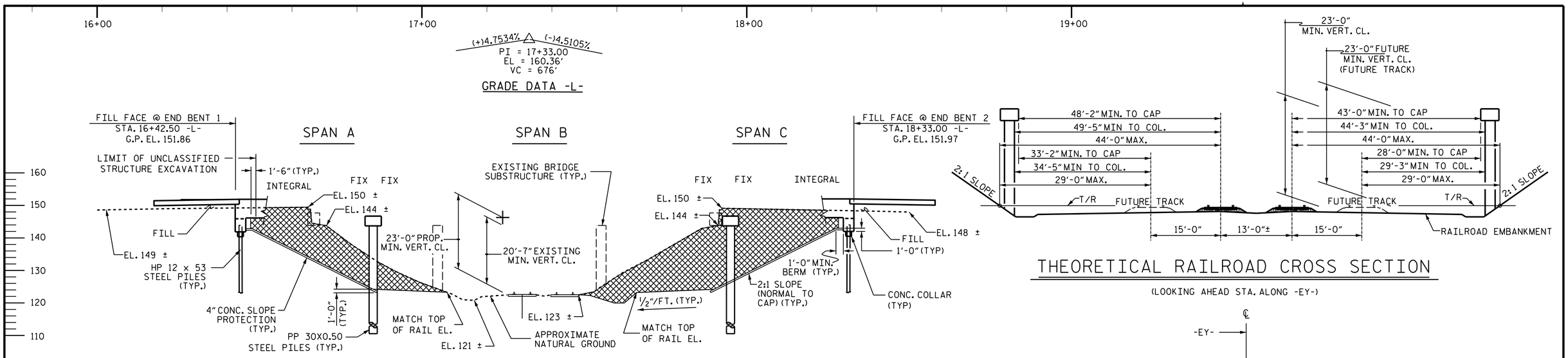
STRUCTURE DESIGN ENGINEER

DocuSigned by:
DB3C8E45B06D499...
SIGNATURE: P.E.

SEAL 14114 ROBERT C. LARSON
3/30/2021

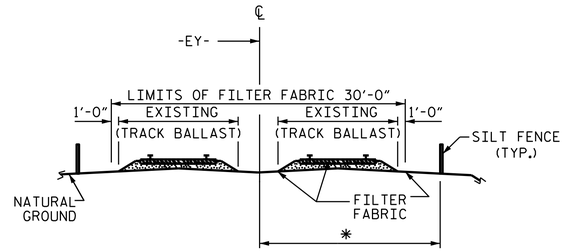
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

$$$$SYSTIME$$$$
$$$$USERNAME$$$$
$$$$$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$$$$$



THEORETICAL RAILROAD CROSS SECTION

(LOOKING AHEAD STA. ALONG -EY-)



RAILROAD EROSION CONTROL DETAIL

* TO BE DETERMINED BY THE RESIDENT ENGINEER IN CONSULTATION WITH THE RAILROAD ENGINEER

NOTES

RAILROAD EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO PERFORMING ANY WORK IN THE RAILROAD RIGHT-OF-WAY.

ADDITIONAL EROSION CONTROL MEASURES FOR PROTECTION OF RAILROAD DITCHES MAY BE REQUIRED AS DIRECTED BY THE ENGINEER.

NO SEPARATE PAYMENT WILL BE MADE FOR RAILROAD EROSION CONTROL MEASURES.

LIMITS OF SILT FENCE AND FILTER FABRIC PARALLEL TO RAILROAD SHALL EXTEND A MINIMUM OF 25'-0" OUTSIDE EDGE OF SUPERSTRUCTURE OR TOE OF SLOPE ON CONSTRUCTION. A GREATER LENGTH OF SILT FENCE OR FILTER FABRIC MAY BE REQUIRED IF SO DIRECTED BY THE ENGINEER.

FILTER FABRIC TO BE NAILED TO TIMBER RAIL TIES WITH PRIME SOURCE "GRIP CAP" OR EQUIVALENT. FILTER FABRIC ON SHOULDER TO BE SECURED AS DIRECTED BY THE ENGINEER AND RAILROAD.

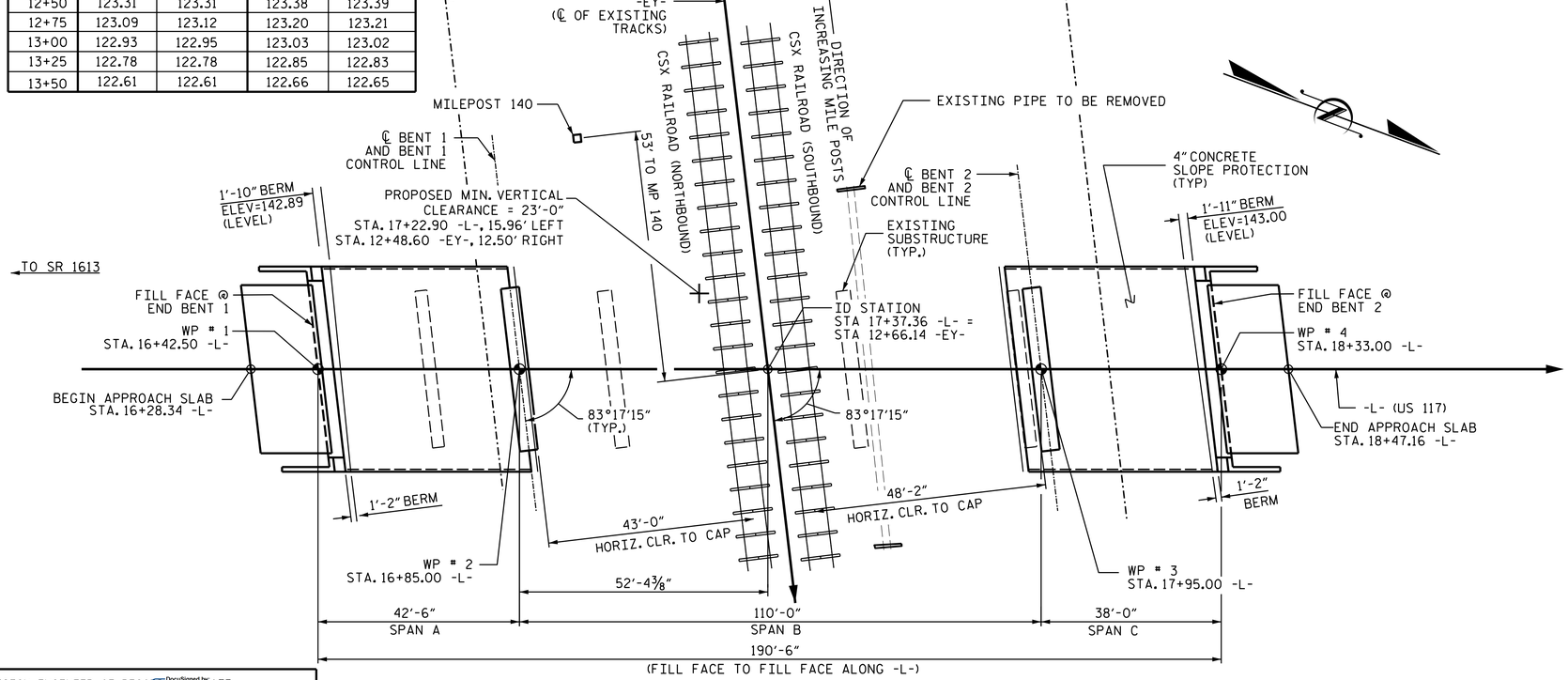
TOP OF RAIL ELEVATIONS

STATION -EY-	SOUTHBOUND TRACK		NORTHBOUND TRACK	
	LEFT RAIL ELEVATION	RIGHT RAIL ELEVATION	LEFT RAIL ELEVATION	RIGHT RAIL ELEVATION
11+75	123.98	123.98	123.90	123.91
12+00	123.76	123.77	123.74	123.74
12+25	123.53	123.54	123.56	123.56
12+50	123.31	123.31	123.38	123.39
12+75	123.09	123.12	123.20	123.21
13+00	122.93	122.95	123.03	123.02
13+25	122.78	122.78	122.85	122.83
13+50	122.61	122.61	122.66	122.65

SECTION ALONG -L-

SECTIONS AT BENTS AND END BENTS ARE AT RIGHT ANGLES

UNCLASSIFIED STRUCTURE EXCAVATION



PLAN

(PILES NOT SHOWN IN PLAN VIEW)

PROJECT NO. B-5666

WILSON COUNTY

STATION: 17+37.36 -L-
=12+66.14 -EY-

MILEPOST A-139.99

SHEET 1 OF 3

REPLACES BRIDGE NO. 47

KCI JOB NO: 25180194S.22

DESIGN ENGINEER OF RECORD: DocuSigned by: DB3C8E45B06D499... DATE: 2/16/2021

DRAWN BY: A. SAMBOY DATE: 04/17/19

CHECKED BY: R.C. LARSON DATE: 05/14/19

DocuSigned by: DB3C8E45B06D499... 2/16/2021

NORTH CAROLINA PROFESSIONAL SEAL 14114 ENGINEER ROBERT C. LARSON

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ENGINEERS ◆ PLANNERS ◆ SCIENTISTS ◆ CONSTRUCTION MANAGERS LICENSE NUMBER: C-0764

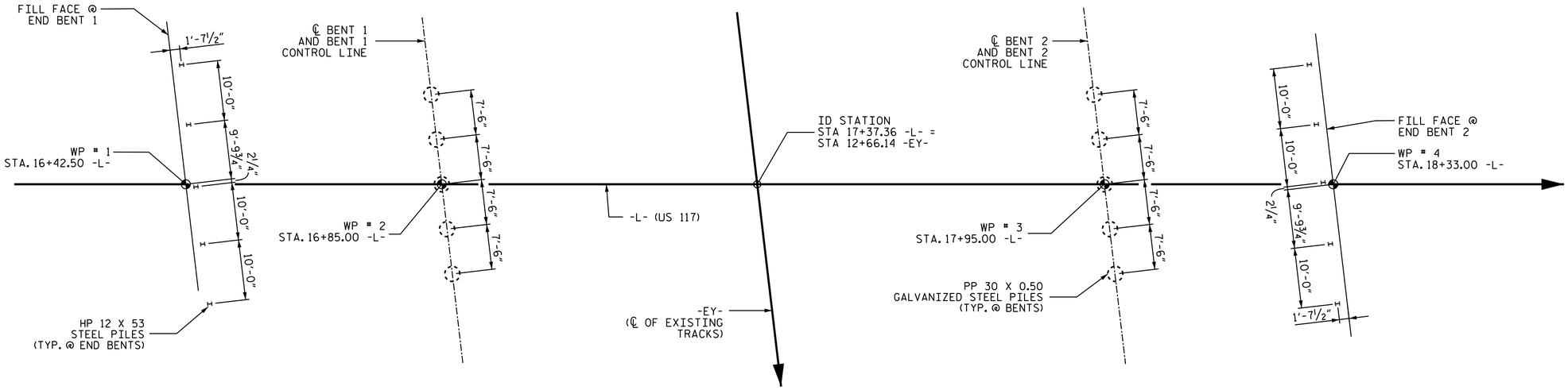
KCI Associates of North Carolina, P.A.

4505 Falls of Neuse Road, Suite 400 Raleigh, NC 27609-6270 Phone (919) 783-9214

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

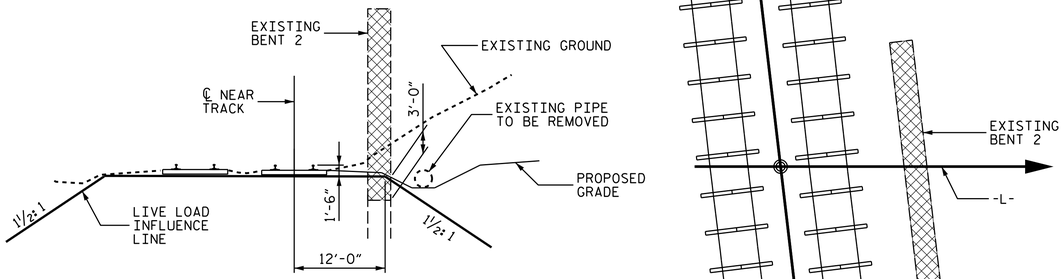
GENERAL DRAWING
FOR BRIDGE ON US 117 OVER CSX RAILROAD BETWEEN SR 1613 AND US 301

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

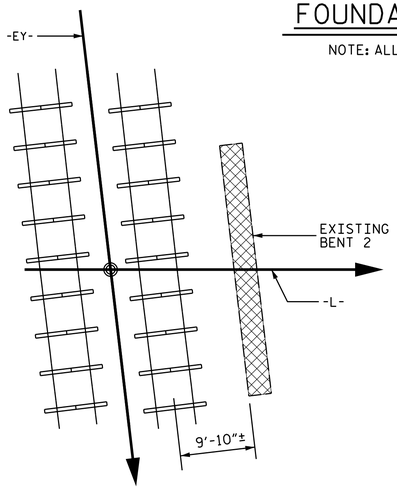


FOUNDATION LAYOUT

NOTE: ALL PILES ARE VERTICAL



SECTION A-A



PLAN

SUBSTRUCTURE TO BE REMOVED

EXISTING BENT 2 SHALL BE REMOVED TO 3'-0" BELOW PROPOSED GROUND LEVEL. METHOD FOR REMOVAL OF EXISTING BENTS SHALL BE SUBMITTED TO THE ENGINEER FOR APROVAL PRIOR TO BEGINNING WORK. SEE SECTION IV: DEMOLITION PROCEDURE AND SECTION VI: TEMPORARY EXCAVATION AND SHORING OF THE CSX TRANSPORTATION CONSTRUCTION SUBMISSION REQUIREMENTS INCLUDED IN THE PROJECT SPECIAL PROVISIONS.

OTHER EXISTING SUBSTRUCTURE UNITS WITHIN RAILROAD RIGHT-OF-WAY SHALL BE ENTIRELY REMOVED.

THE CONTRACTOR SHALL COORDINATE WITH THE RAILROAD FLAGGER SO THAT REMOVAL ACTIVITIES OF BENT ADJACENT TO RAIL LINES IS PERFORMED DURING STOPPAGES OF TRAINS. WHEN REMOVAL ACTIVITIES ARE SUSPENDED TO ALLOW FOR TRAIN PASSAGE, THE RAILROAD EMBANKMENT SHALL BE RESTORED AND COMPACTED TO AT LEAST THE CROSS SECTION OF THE LIVE LOAD INFLUENCE LINE SHOWN ON THE PLANS.

PROPOSED DITCH TO BE FIELD LOCATED TO MATCH THE EXISTING CSXT ROADBED SHOULDER LOCATION.

LOCATION OF CSXT SIGNALS INFRASTRUCTURE SHALL BE COORDINATED THROUGH THE CONSTRUCTION MONITORING REPRESENTATIVE WORKING ON BEHALF OF CSXT.

PLAN FOR STRUCTURE REMOVAL

FOUNDATION NOTES

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 95 TONS PER PILE.

PILES AT END BENT 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 90 TONS PER PILE.

PILES AT BENT 1 AND BENT 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 195 TONS PER PILE.

DRIVE PILES AT END BENT 1 TO A REQUIRED DRIVING RESISTANCE OF 160 TONS PER PILE.

DRIVE PILES AT END BENT 2 TO A REQUIRED DRIVING RESISTANCE OF 150 TONS PER PILE.

INSTALL PILES AT BENT 1 TO A TIP NO HIGHER THAN ELEVATION OF 97.0 FT.

INSTALL PILES AT BENT 2 TO A TIP NO HIGHER THAN ELEVATION OF 91.0 FT.

TESTING THE FIRST PRODUCTION PILE WITH THE PDA DURING DRIVING, RESTRIKING, OR REDRIVING IS REQUIRED AT BENT 1 OR BENT 2. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

DRIVE PILES AT BENT 1 TO A REQUIRED DRIVING RESISTANCE OF 335 TONS PER PILE. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE DUE TO DRIVING OF PILES BEFORE FUTURE EXCAVATION.

DRIVE PILES AT BENT 2 TO A REQUIRED DRIVING RESISTANCE OF 340 TONS PER PILE. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE DUE TO DRIVING OF PILES BEFORE FUTURE EXCAVATION.

PROJECT NO. B-5666

WILSON COUNTY

STATION: 17+37.36 -L-

SHEET 2 OF 3

KCI JOB NO: 251801945.22

DESIGN ENGINEER OF RECORD: DocuSigned by: DATE: 2/16/2021

DRAWN BY: R. C. LARSON DATE: 02/13/20

CHECKED BY: R. J. FLORY DATE: 02/21/20

DocuSigned by: DB3C8E45B06D499...

NORTH CAROLINA PROFESSIONAL SEAL 14114 ENGINEER ROBERT C. LARSON

2/16/2021

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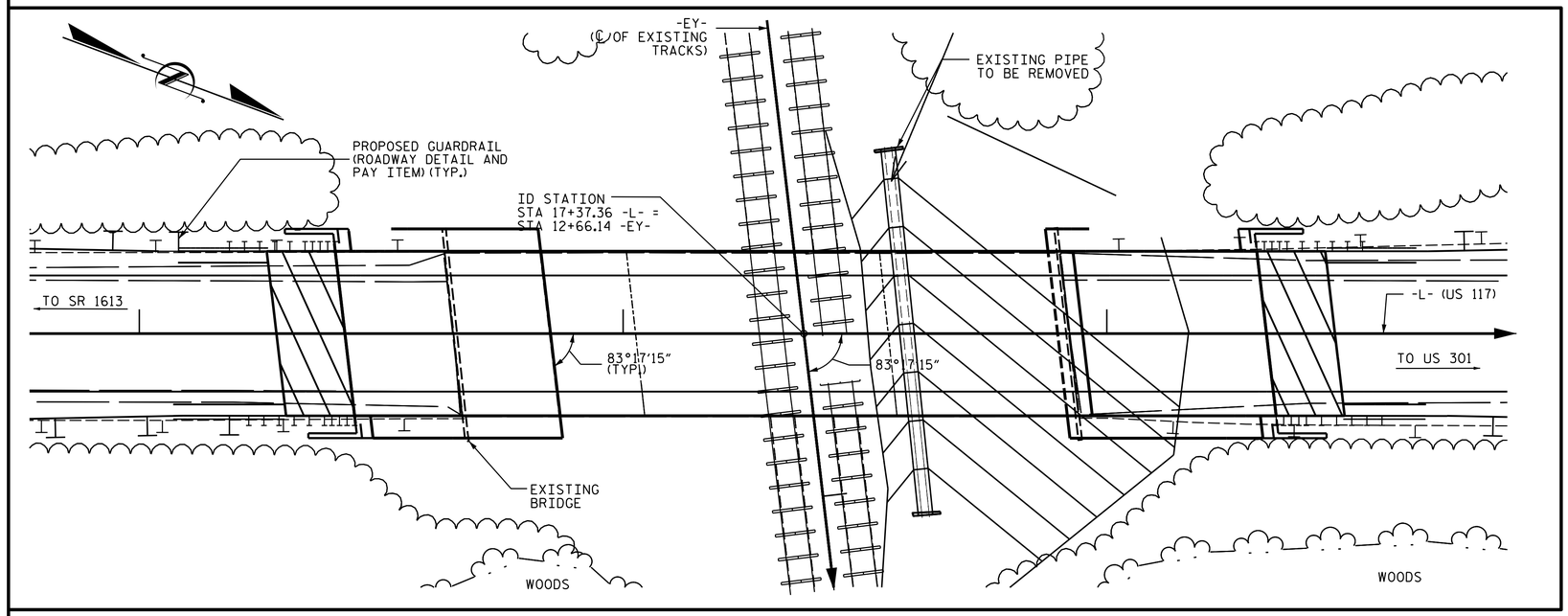
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON US 117 OVER CSX RAILROAD BETWEEN SR 1613 AND US 301

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

BENCHMARK BM#2: 8"NAIL IN BASE OF 20"ELM STA 16+58.06 -L- 140.47' LEFT ELEV. 125.69 NAVD 88



LOCATION SKETCH

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

NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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

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.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 30 FT EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE @ STA. 17+37.36 -L-	ASBESTOS ASSESSMENT	PDA TESTING	UNCLASSIFIED STRUCTURE EXCAVATION @ STA. 17+37.36 -L-	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REIN-FORCING STEEL	54" PRESTRESSED CONCRETE GIRDERS		PILE DRIVING EQUIPMENT SETUP FOR HP12X53 STEEL PILES	PILE DRIVING EQUIPMENT SETUP FOR PP30X0.5 GALV. STEEL PILES	HP 12 X 53 STEEL PILES		PP 30X0.50 GALVANIZED STEEL PILES		PILE REDRIVES	CONCRETE BARRIER RAIL	72" CHAIN LINK FENCE	4" SLOPE PROTECTION	ELASTO-MERIC BEARINGS	FIBER OPTIC CONDUIT SYSTEM
	LUMP SUM	LUMP SUM	EACH	LUMP SUM	SQ.FT.	SQ.FT.	CU.YDS.	LUMP SUM	LBS.	NO.	LIN.FT.	EACH	EACH	NO.	LIN.FT.	NO.	LIN.FT.	EACH	LIN.FT.	LIN.FT.	SQ.YDS.	LUMP SUM	LIN. FT.
SUPERSTRUCTURE				LUMP SUM	7034	7372		LUMP SUM		12	750.67								377.64	264.00		LUMP SUM	373.64
END BENT 1							33.9		5213			5		5	325			2			220		
BENT 1							19.0		2824				5			5	350	3					
BENT 2							19.0		2824				5			5	375	3					
END BENT 2							33.9		5213			5		5	350			2			220		
TOTAL	LUMP SUM	LUMP SUM	2	LUMP SUM	7034	7372	105.8	LUMP SUM	16074	12	750.67	10	10	10	675	10	725	10	377.64	264.00	440	LUMP SUM	373.64

NOTES (CONT'D):

THE EXISTING STRUCTURE CONSISTING OF 3 SPANS REINFORCED CONCRETE DECK GIRDER OF 37'-0", 52'-4", 37'-0" SPANS WITH 34' CLEAR ROADWAY WIDTH, REINFORCED CONCRETE DECK ON REINFORCED CONCRETE POST-AND-BEAM BENTS AND LOCATED AT THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT

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 INTERIOR BENTS 1 AND 2, ONLY PARTIAL GALVANIZING OF THE PILES IS REQUIRED. SEE INTERIOR BENT SHEET(S) FOR REQUIRED GALVANIZED LENGTHS. PAYMENT FOR PARTIALLY GALVANIZED PILES WILL BE MADE UNDER THE CONTRACT UNIT PRICE FOR GALVANIZED STEEL PILES.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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

PROJECT NO. B-5666

WILSON COUNTY

STATION: 17+37.36 -L-

SHEET 3 OF 3

KCI JOB NO: 251801945.22

DESIGN ENGINEER OF RECORD: DocuSigned by: DB3C8E45B06D499... DATE: 2/16/2021

DRAWN BY: A. SAMBOY DATE: 04/11/19

CHECKED BY: R.C. LARSON DATE: 06/18/19

DocuSigned by: DB3C8E45B06D499...

NORTH CAROLINA PROFESSIONAL SEAL 14114 ENGINEER ROBERT C. LARSON

2/16/2021

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON US 117 OVER CSX RAILROAD BETWEEN SR 1613 AND US 301

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

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

LEVEL		VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING (#)	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE						COMMENT NUMBER
								MOMENT					SHEAR					MOMENT						
							LIVE-LOAD FACTORS (γ_{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVE-LOAD FACTORS (γ_{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING		HL-93 (INVENTORY)	N/A	1	1.03		1.75	0.852	1.48	B	E	54.1	0.980	1.11	B	I	21.2	0.80	0.852	1.03	B	E	54.1	
		HL-93 (OPERATING)	N/A		1.49		1.35	0.852	1.91	B	E	54.1	0.980	1.49	B	I	21.2	N/A	--	--	--	--	--	
		HS-20 (INVENTORY)	36.000	2	1.46	52.56	1.75	0.852	2.10	B	E	54.1	0.980	1.53	B	I	21.2	0.80	0.852	1.46	B	E	54.1	
		HS-20 (OPERATING)	36.000		2.03	73.08	1.35	0.852	2.72	B	E	54.1	0.980	2.03	B	I	21.2	N/A	--	--	--	--	--	
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		3.51	47.38	1.40	0.964	5.57	A	I	19.9	0.980	5.05	B	I	21.2	0.80	0.852	3.51	B	E	54.1	
		SNGARBS2	20.000		2.52	50.40	1.40	0.852	4.52	B	E	54.1	0.980	3.48	B	I	21.2	0.80	0.852	2.52	B	E	54.1	
		SNAGRIS2	22.000		2.35	51.70	1.40	0.852	4.23	B	E	54.1	0.980	3.21	B	I	21.2	0.80	0.852	2.35	B	E	54.1	
		SNCOTTS3	27.250		1.74	47.41	1.40	0.964	2.78	A	I	19.9	0.980	2.43	B	I	21.2	0.80	0.852	1.74	B	E	54.1	
		SNAGGRS4	34.925		1.42	49.59	1.40	0.964	2.49	A	I	19.9	0.980	1.95	B	I	21.2	0.80	0.852	1.42	B	E	54.1	
		SNS5A	35.550		1.39	49.41	1.40	0.964	2.43	A	I	19.9	0.980	1.96	B	I	21.2	0.80	0.852	1.39	B	E	54.1	
		SNS6A	39.950		1.26	50.33	1.40	0.852	2.27	B	E	54.1	0.980	1.76	B	I	21.2	0.80	0.852	1.26	B	E	54.1	
		SNS7B	42.000		1.20	50.40	1.40	0.852	2.16	B	E	54.1	0.980	1.71	B	I	21.2	0.80	0.852	1.20	B	E	54.1	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.54	50.82	1.40	0.852	2.76	B	E	54.1	0.980	2.14	B	I	21.2	0.80	0.852	1.54	B	E	54.1	
		TNT4A	33.075		1.54	50.93	1.40	0.852	2.76	B	E	54.1	0.980	2.08	B	I	21.2	0.80	0.852	1.54	B	E	54.1	
		TNT6A	41.600		1.25	52.00	1.40	0.852	2.24	B	E	54.1	0.980	1.80	B	I	21.2	0.80	0.852	1.25	B	E	54.1	
		TNT7A	42.000		1.24	52.08	1.40	0.852	2.24	B	E	54.1	0.980	1.77	B	I	21.2	0.80	0.852	1.24	B	E	54.1	
		TNT7B	42.000		1.27	53.34	1.40	0.852	2.28	B	E	54.1	0.980	1.68	B	I	21.2	0.80	0.852	1.27	B	E	54.1	
		TNAGRIT4	43.000		1.22	52.46	1.40	0.852	2.19	B	E	54.1	0.980	1.61	B	I	21.2	0.80	0.852	1.22	B	E	54.1	
		TNAGT5A	45.000		1.16	52.20	1.40	0.852	2.08	B	E	54.1	0.980	1.58	B	I	21.2	0.80	0.852	1.16	B	E	54.1	
		TNAGT5B	45.000	3	1.15	51.75	1.40	0.852	2.06	B	E	54.1	0.980	1.54	B	I	21.2	0.80	0.852	1.15	B	E	54.1	

LOAD FACTORS:

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

NOTES:

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

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

(#) CONTROLLING LOAD RATING

(1) DESIGN LOAD RATING (HL-93)

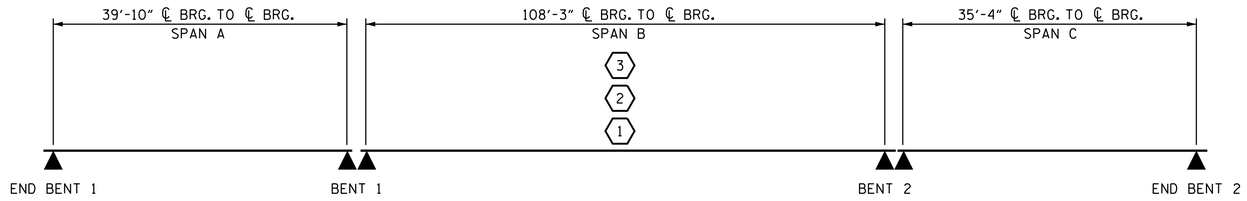
(2) DESIGN LOAD RATING (HS-20)

(3) LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER
E - EXTERIOR



LRFR SUMMARY

PROJECT NO. B-5666

WILSON COUNTY

STATION: 17+37.36 -L-

KCI JOB NO: 251801945.22

DESIGN ENGINEER OF RECORD: DocuSigned by: DATE : 2/16/2021

ASSEMBLED BY : C.E. LARSON DATE : 09/05/19
CHECKED BY : R.C. LARSON DATE : 09/09/19

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

REV. 11/12/08RR	MAA/GM
REV. 10/1/11	MAA/GM
REV. 12/17	MAA/THC

DocuSigned by: DB3C8E45B06D495...

NORTH CAROLINA PROFESSIONAL SEAL 14114 ENGINEER ROBERT C. LARSON

2/16/2021

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ENGINEERS ◆ PLANNERS ◆ SCIENTISTS ◆ CONSTRUCTION MANAGERS LICENSE NUMBER: C-0764
KCI Associates of North Carolina, P.A.
4505 Falls of Neuse Road, Suite 400 Raleigh, NC 27609-6270 Phone (919) 783-9214

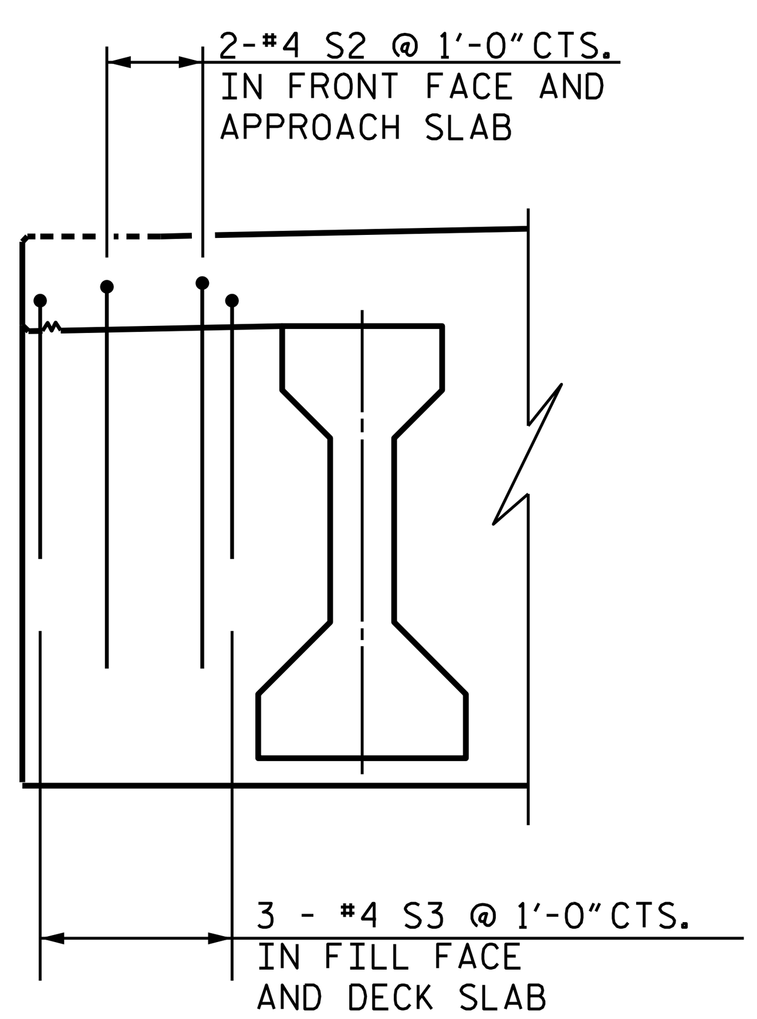
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

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

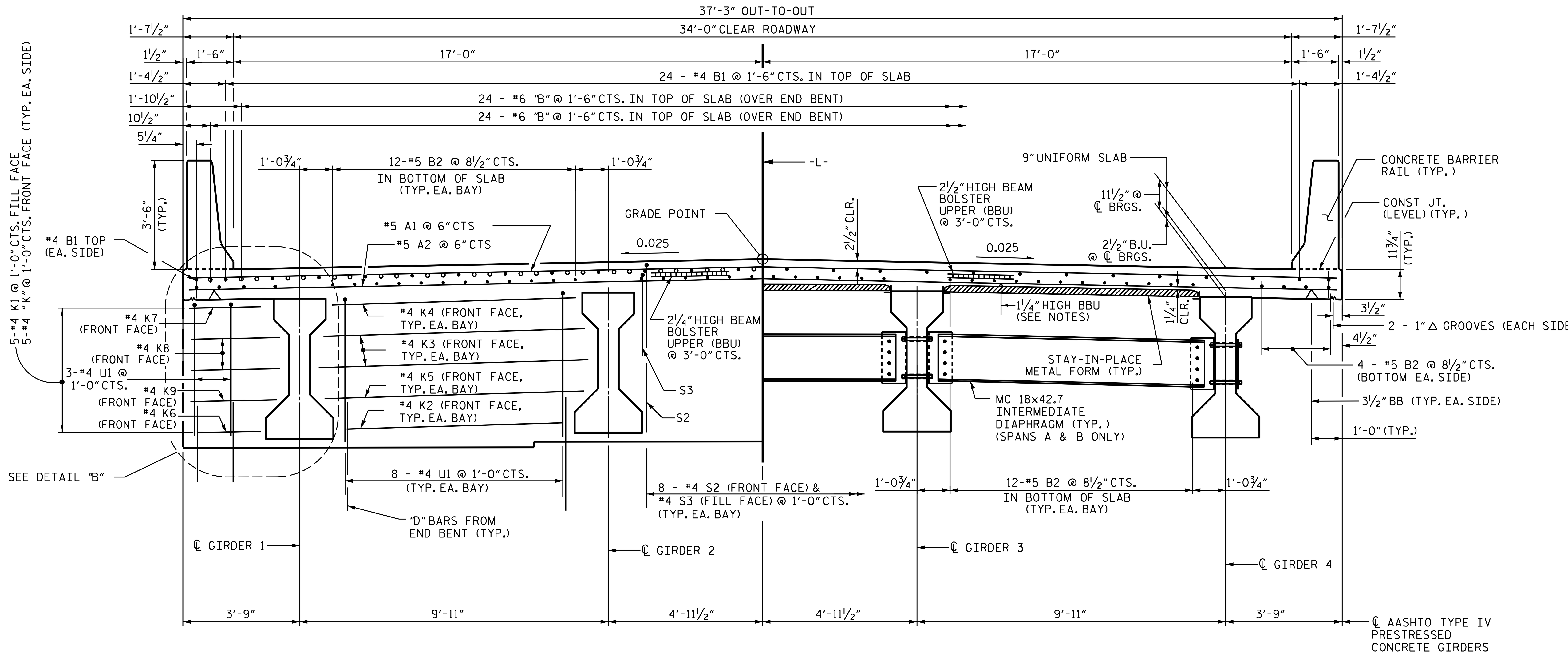
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS
2			4			30

STD. NO. LRFR1



DETAIL B

(TYP. EA. SIDE @ END BENTS)



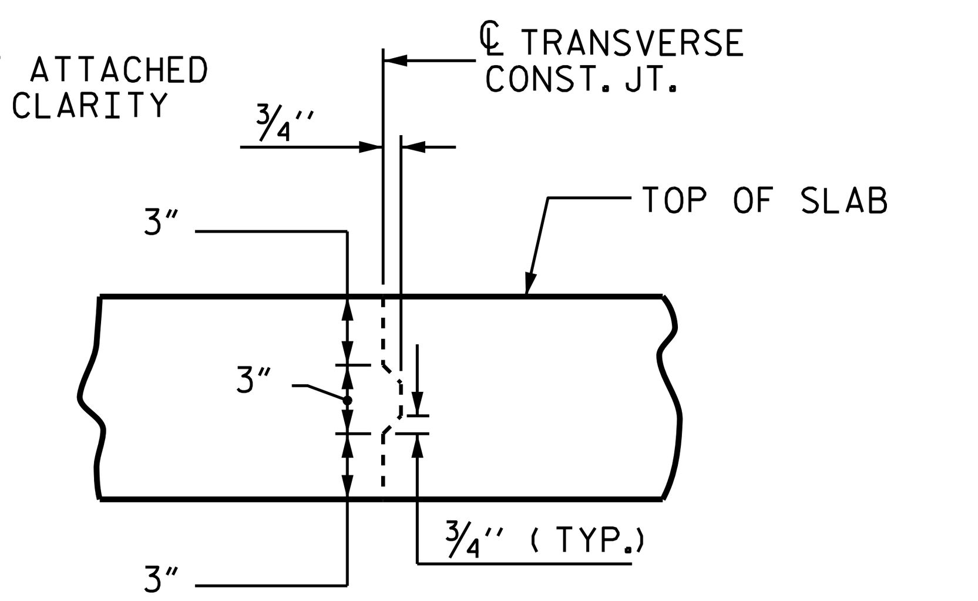
TYPICAL HALF SECTION AT END BENT DIAPHRAGM

TYPICAL HALF SECTION AT INTERMEDIATE DIAPHRAGM

● INDICATES CONTINUOUS REINFORCING
○ INDICATES ADDITIONAL REINFORCING OVER END BENT

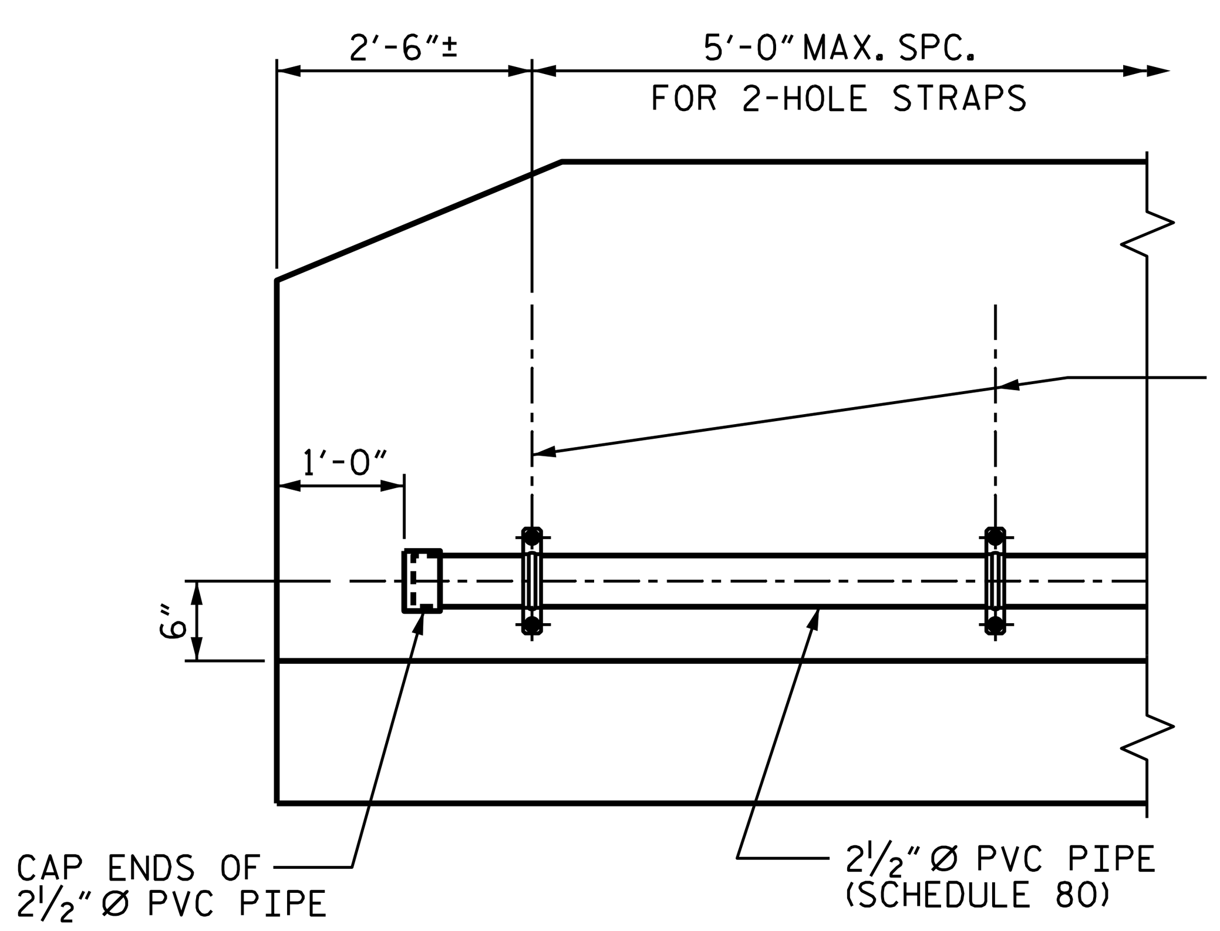
TYPICAL SECTION

CHAIN LINK FENCE (SEE SHEET S-16) AND CONDUIT ATTACHED TO OUTSIDE OF BARRIER RAIL NOT SHOWN FOR CLARITY

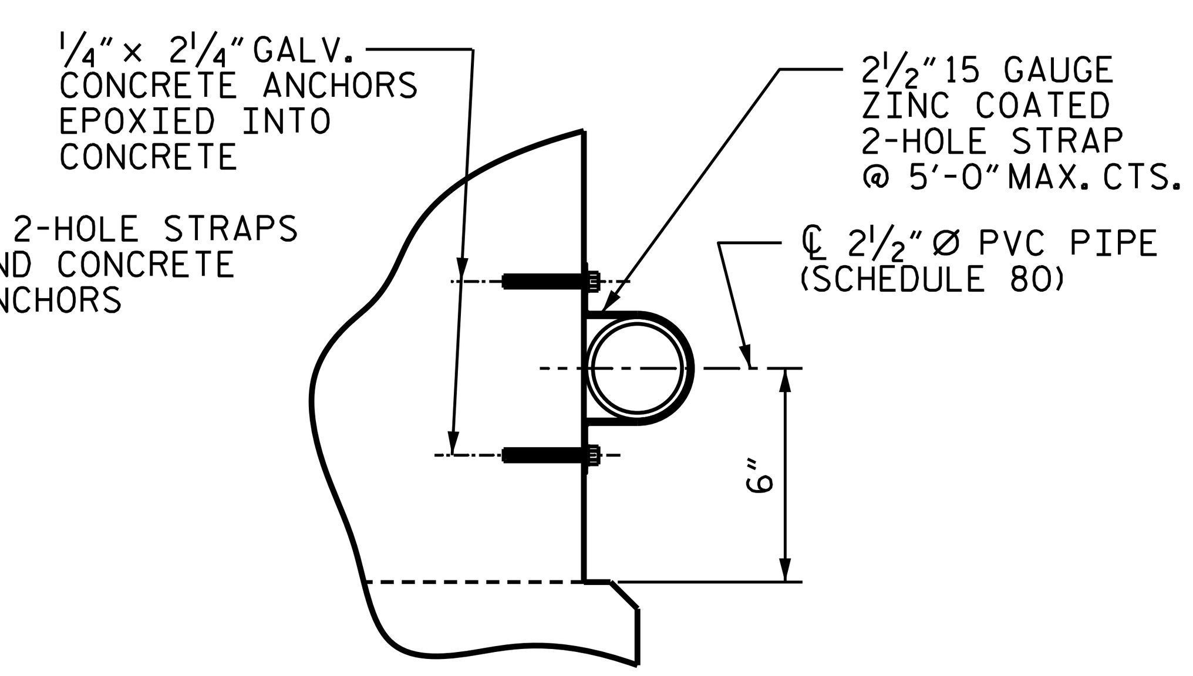


TRANSVERSE CONSTRUCTION JOINT DETAIL

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



ELEVATION



SECTION

FIBER OPTIC CONDUIT SYSTEM DETAILS

2½" Ø SCHEDULE 80 PVC PIPE ATTACHED TO THE BACK OF BOTH RAILS FOR FUTURE FIBER OPTIC CABLE.

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 (CHCM) @ 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF 'A' BARS A CLEAR DISTANCE OF 2½" ABOVE THE TOP OF THE REMOVABLE FORM.

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

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

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

SEE CONCRETE BARRIER RAIL DRAWINGS FOR ADDITIONAL REINFORCING STEEL EMBEDDED IN DECK.

DocuSigned by:
DB3C8E45B06D4...
NORTH CAROLINA PROFESSIONAL SEAL 14114 ENGINEER ROBERT C. LARSON
2/16/2021

PROJECT NO. B-5666
WILSON COUNTY
STATION: 17+37.36 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE TYPICAL SECTION

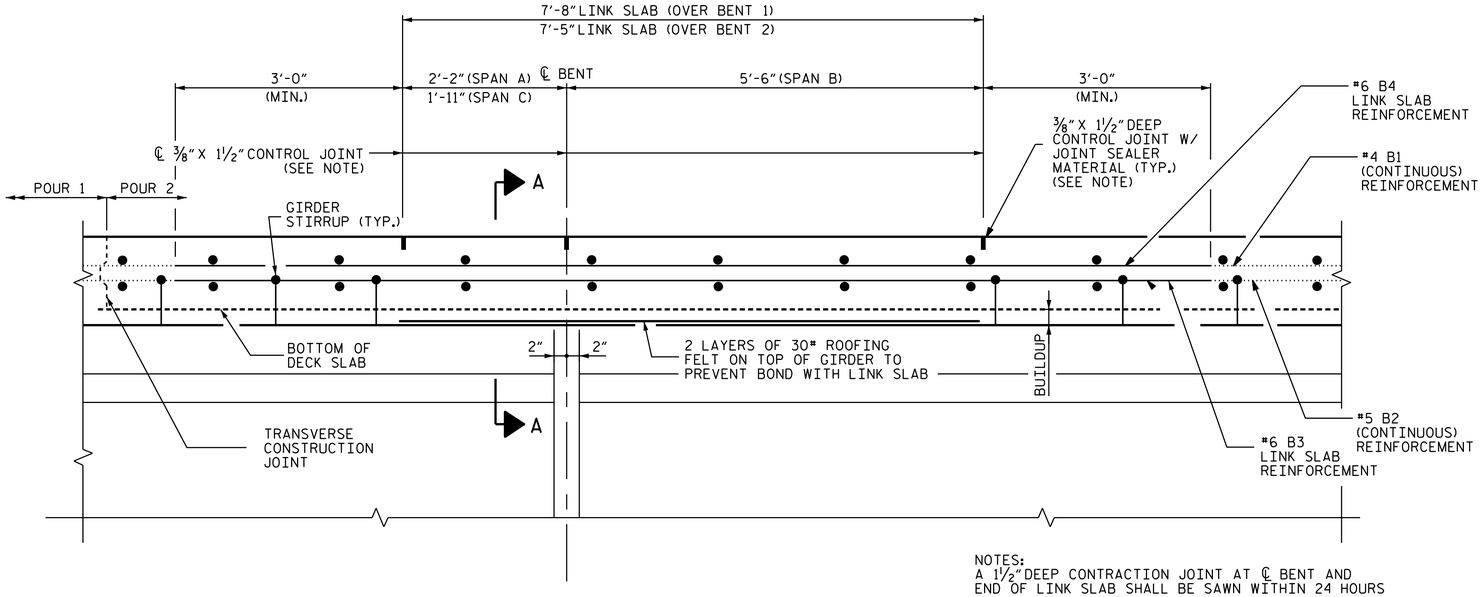
REVISIONS								SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:			S-5
1			3					TOTAL SHEETS
2			4					30

ENGINEERS • PLANNERS • SCIENTISTS • CONSTRUCTION MANAGERS LICENSE NUMBER: C-0764
KCI Associates of North Carolina, P.A.
4505 Falls of Neuse Road, Suite 400 Raleigh, NC 27609-6270 Phone (919) 783-9214

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DESIGN ENGINEER OF RECORD: DATE : 2/16/2021
DRAWN BY : A. K. ALLANKI DATE : 10/16/19
CHECKED BY : R. C. LARSON DATE : 12/13/19

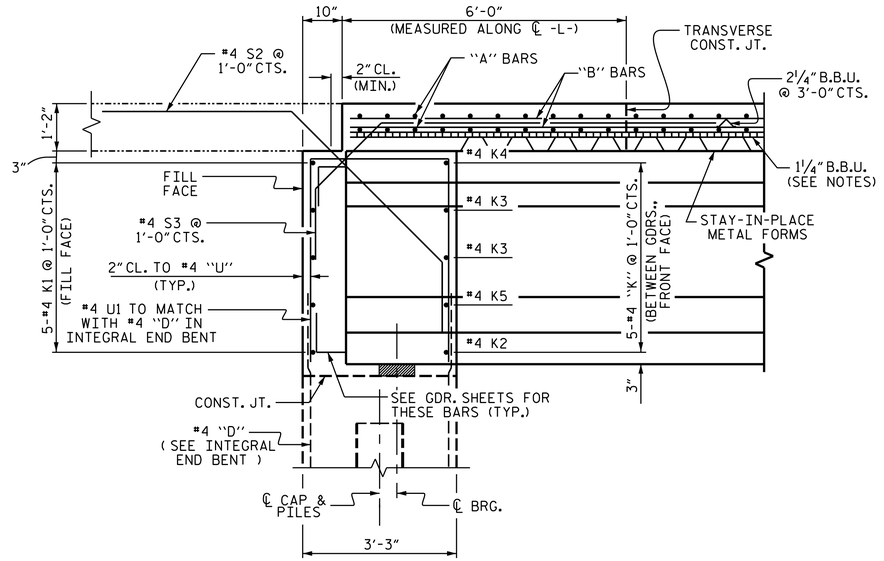
KCI JOB NO: 251801945.22



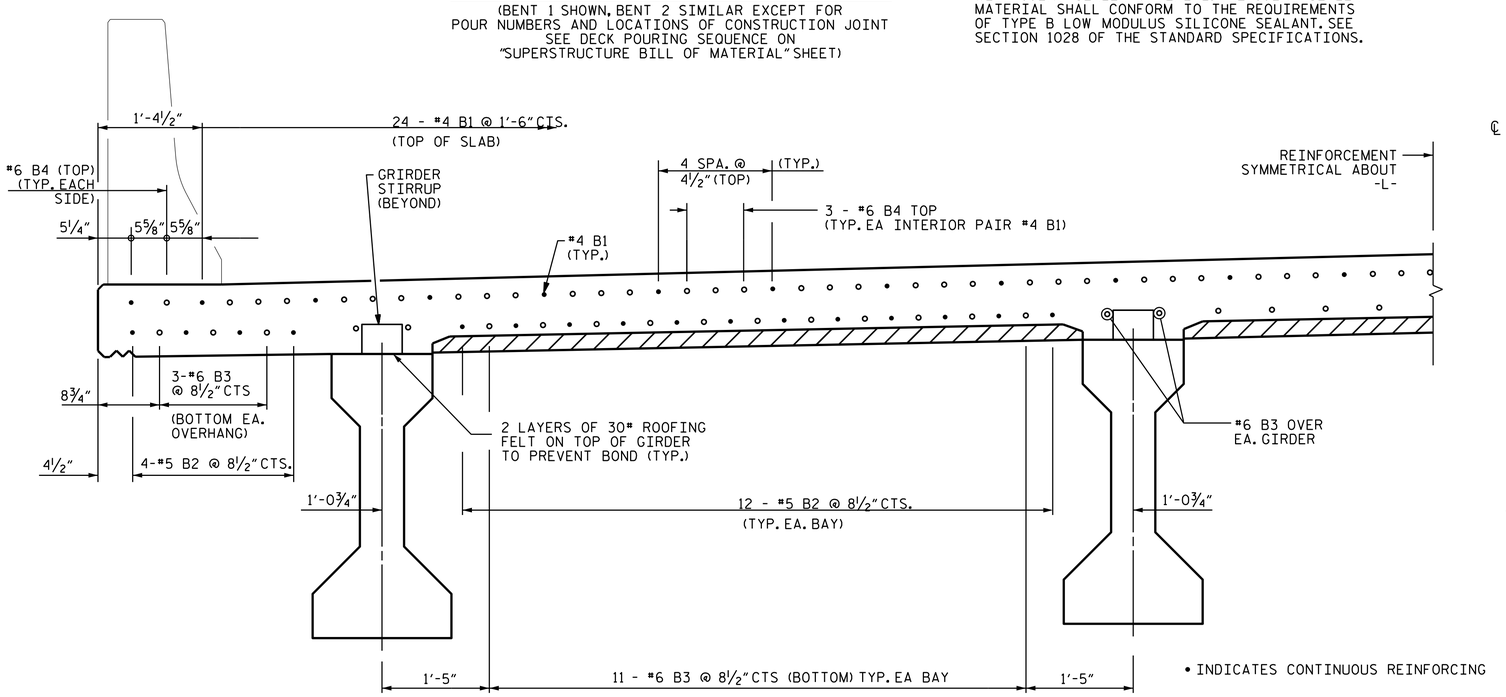
LONGITUDINAL SECTION AT LINK SLAB

(BENT 1 SHOWN, BENT 2 SIMILAR EXCEPT FOR POUR NUMBERS AND LOCATIONS OF CONSTRUCTION JOINT SEE DECK POURING SEQUENCE ON "SUPERSTRUCTURE BILL OF MATERIAL" SHEET)

NOTES:
A 1 1/2" DEEP CONTRACTION JOINT AT ℄ BENT AND END OF LINK SLAB SHALL BE SAWN WITHIN 24 HOURS OF POURING THE DECK. THE JOINT SHALL BE FILLED WITH JOINT SEALER MATERIAL. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF TYPE B LOW MODULUS SILICONE SEALANT. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.



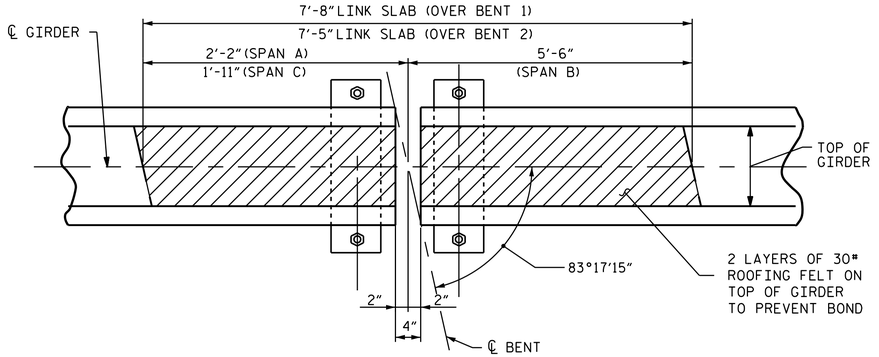
SECTION THRU INTEGRAL END BENT



TRANSVERSE SECTION "A-A" AT LINK SLAB

• INDICATES CONTINUOUS REINFORCING

○ INDICATES ADDITIONAL REINFORCING IN LINK SLAB



PLAN OF GIRDER ENDS AT BENT

** THE TOP OF THE GIRDER IN THE REGION OF THE LINK SLAB SHALL BE SMOOTH AND FREE OF STIRRUPS OR ANCHOR STUDS.

LINK SLAB DETAILS

("A" BARS IN SLAB NOT SHOWN FOR CLARITY)

KCI JOB NO: 251801945.22

DESIGN ENGINEER OF RECORD: DocuSigned by: DB3C8E45B06F499 DATE: 2/16/2021

DRAWN BY: A. K. ALLANKI DATE: 10/23/19

CHECKED BY: R.C. LARSON DATE: 12/16/19

DocuSigned by: DB3C8E45B06F499 2/16/2021

NORTH CAROLINA PROFESSIONAL SEAL 14114 ENGINEER ROBERT C. LARSON

PROJECT NO. B-5666

WILSON COUNTY

STATION: 17+37.36 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE TYPICAL SECTION

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			30

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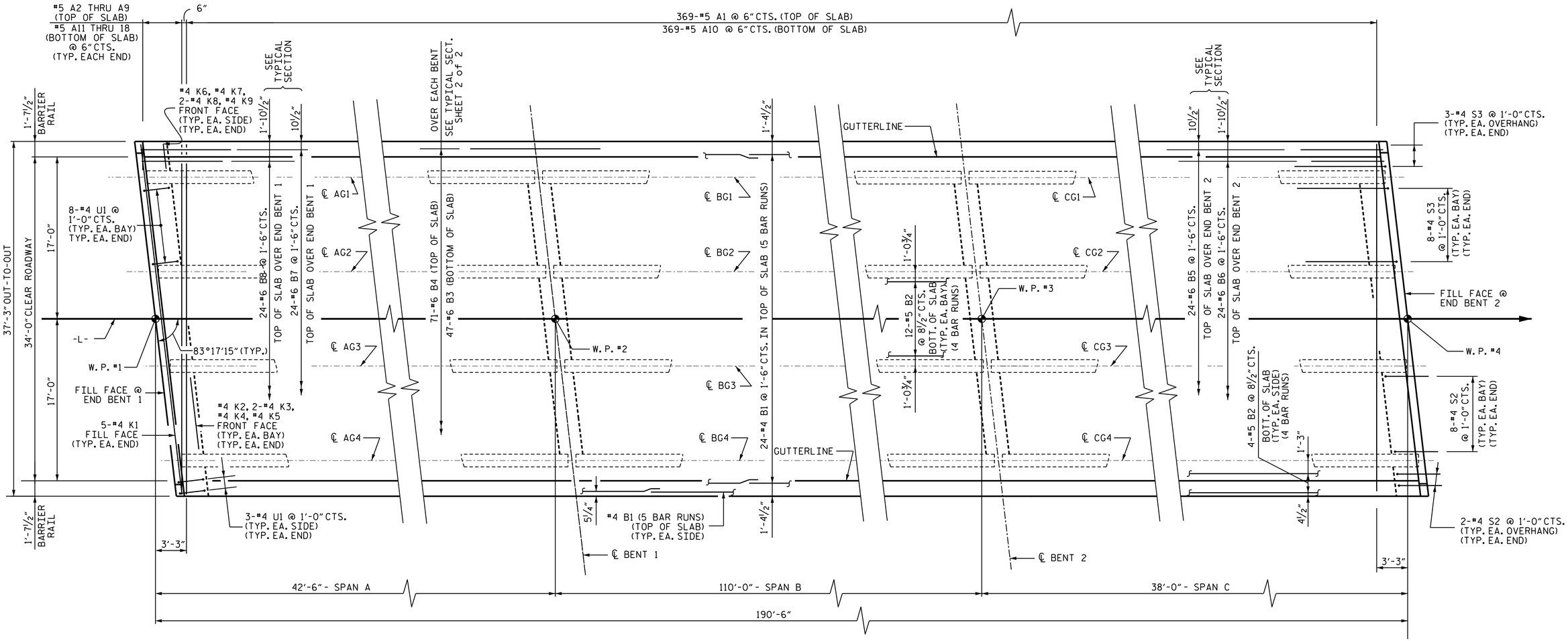
4505 Falls of Neuse Road, Suite 400, Raleigh, NC 27609-6270 Phone (919) 783-9214



PLAN - SPAN A, B & C

SEE SUPERSTRUCTURE BILL OF MATERIAL FOR REINFORCING SPLICE LENGTHS.

PROJECT NO. B-5666

WILSON COUNTY

STATION: 17+37.36 -L-

KCI JOB NO: 251801945.22

DESIGN ENGINEER OF RECORD: DocuSigned by: DB3C8E45B85D459... DATE: 2/16/2021

DRAWN BY: A.K. ALLANKI DATE: 10/23/19

CHECKED BY: R.C. LARSON DATE: 12/15/19

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NORTH CAROLINA PROFESSIONAL SEAL 14114 ENGINEER ROBERT C. LARSON

2/16/2021

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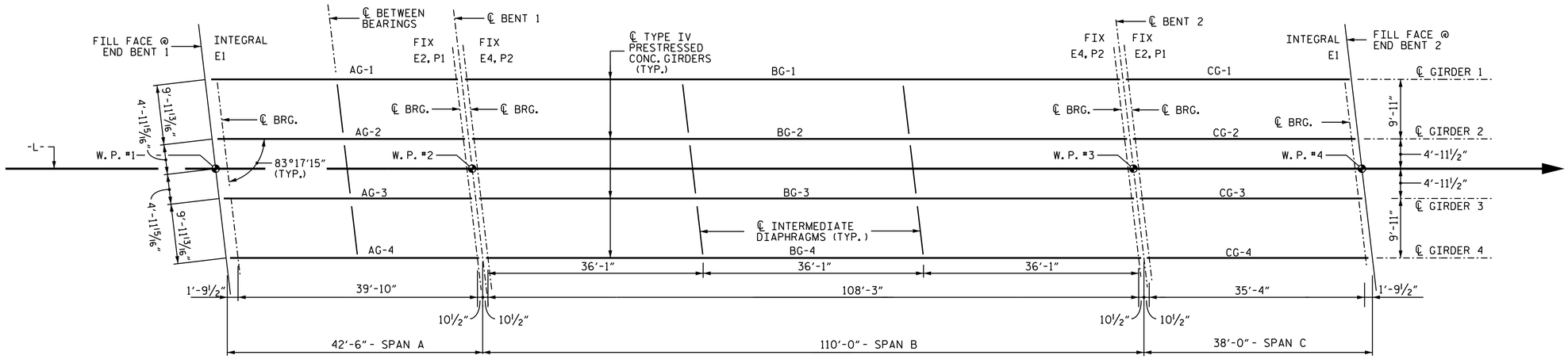
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE PLAN OF SPANS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			30



GIRDER LAYOUT

PROJECT NO. B-5666

WILSON COUNTY

STATION: 17+37.36 -L-

KCI JOB NO: 251801945.22

DESIGN ENGINEER OF RECORD: DocuSigned by: DATE : 2/16/2021

DRAWN BY : A. K. ALLANKI DATE : 09/05/19

CHECKED BY : R. C. LARSON DATE : 12/18/19

DocuSigned by: DB3C8E45B06D499...

NORTH CAROLINA PROFESSIONAL SEAL 14114 ENGINEER ROBERT C. LARSON

2/16/2021

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ENGINEERS ◆ PLANNERS ◆ SCIENTISTS ◆ CONSTRUCTION MANAGERS LICENSE NUMBER: C-0764

KCI Associates of North Carolina, P.A.

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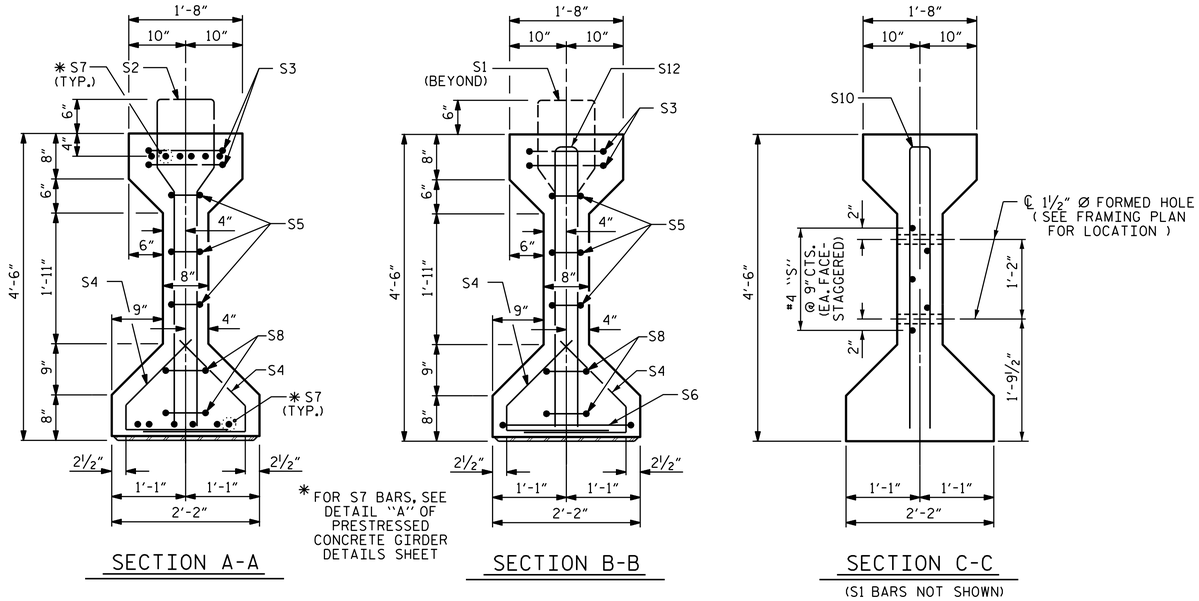
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			30

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE GIRDER LAYOUT



* FOR S7 BARS, SEE DETAIL "A" OF PRESTRESSED CONCRETE GIRDER DETAILS SHEET

SECTION A-A

SECTION B-B

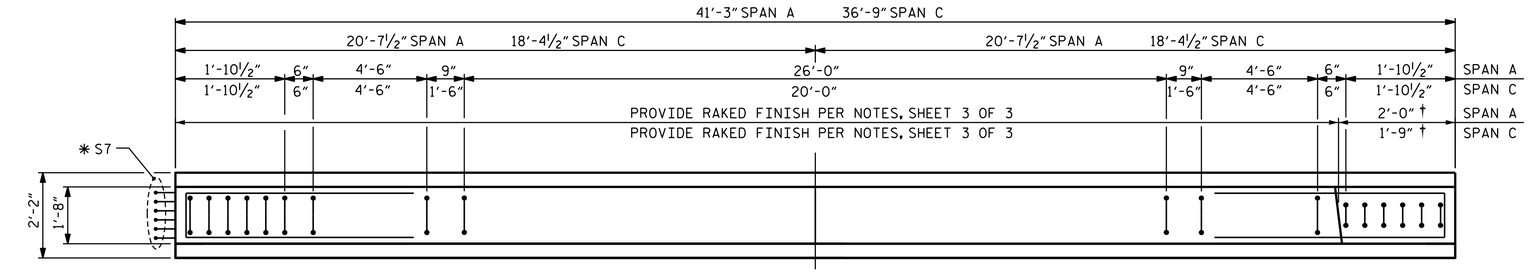
SECTION C-C

(S1 BARS NOT SHOWN)

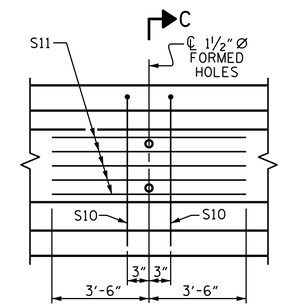
AT END OF GIRDER

AT ℄ OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

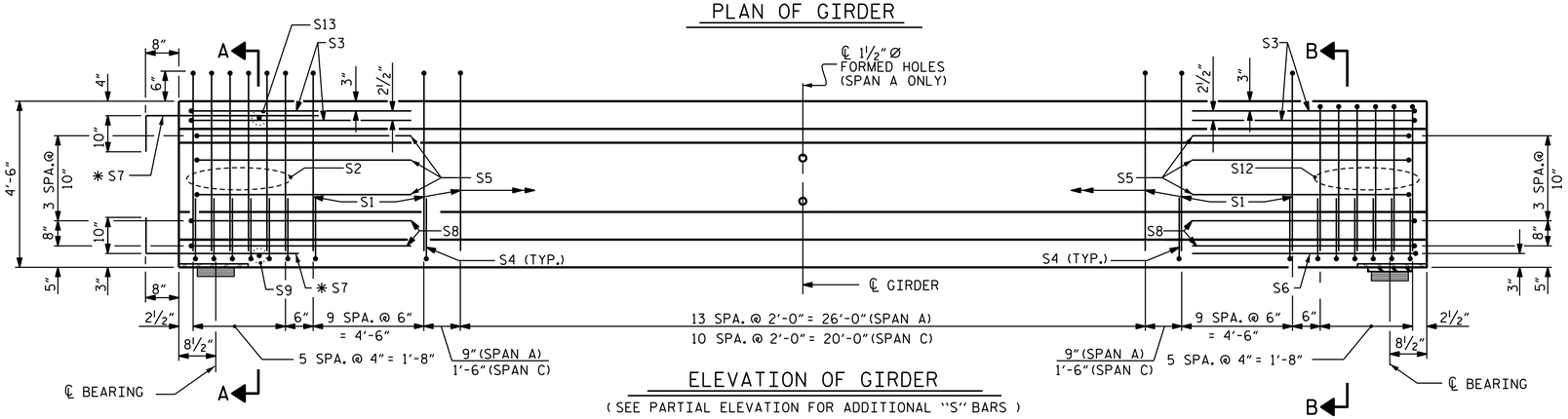


PLAN OF GIRDER



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR ALL GIRDERS SPAN A ONLY



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

INTEGRAL END BENT

FIX

† PROVIDE A SMOOTH TROWEL FINISH TO TOP OF GIRDER IN THESE AREAS TO PREVENT BOND WITH LINK SLAB

0.6" Ø L. R. GRADE 270 STRANDS

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

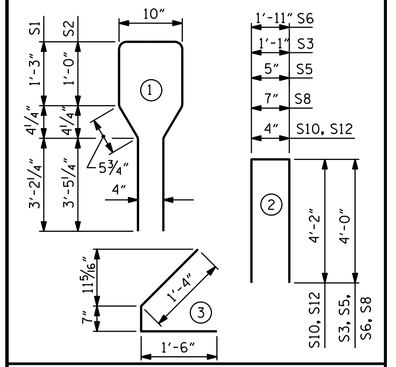
REINFORCING STEEL FOR ONE GIRDER

	BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
SPAN A	S1	34	#4	1	10'-8"	242
SPAN C	S1	31	#4	1	10'-8"	221
	S2	6	#6	1	10'-8"	96
	S3	4	#4	2	9'-1"	24
	S4	64	#4	3	3'-5"	146
	S5	6	#4	2	8'-5"	34
	S6	1	#4	2	9'-11"	7
	* S7	12	#5	STR	3'-8"	46
	S8	4	#4	2	8'-7"	23
	S9	1	#3	STR	1'-10"	1
SPAN A	S10	2	#5	2	8'-8"	18
SPAN A	S11	5	#4	STR	7'-0"	23
	S12	6	#6	2	8'-8"	78
	S13	1	#3	STR	1'-4"	1

* NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL LB.	5000 PSI CONCRETE C.Y.	0.6" Ø L.R. STRANDS No.
SPAN A	739	8.4	12
SPAN C	677	7.5	12

GIRDERS REQUIRED

	NUMBER	LENGTH	TOTAL LENGTH
SPAN A	4	41'-3"	165'-0"
SPAN C	4	36'-9"	147'-0"

PROJECT NO. B-5666

WILSON COUNTY

STATION: 17+37.36 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD AASHTO TYPE IV PRESTRESSED CONCRETE GIRDER

SPAN A & C

DocuSigned by: DB3C8E45B06D499...

NORTH CAROLINA PROFESSIONAL SEAL 14114 ENGINEER ROBERT C. LARSON

2/16/2021

KCI JOB NO: 251801945.22

DESIGN ENGINEER OF RECORD: DocuSigned by: DB3C8E45B06D499...	DATE: 2/16/2021	
ASSEMBLED BY : A. K. ALLANKI	DATE : 08/30/19	
CHECKED BY : R. C. LARSON	DATE : 12/27/19	
DRAWN BY : ELR 8/91	REV. 10/1/11	MAA/GM
CHECKED BY : GRP 8/91	REV. 1/15	MAA/TMG
	REV. 12/17	MAA/THC

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ENGINEERS ● PLANNERS ● SCIENTISTS ● CONSTRUCTION MANAGERS LICENSE NUMBER: C-0764
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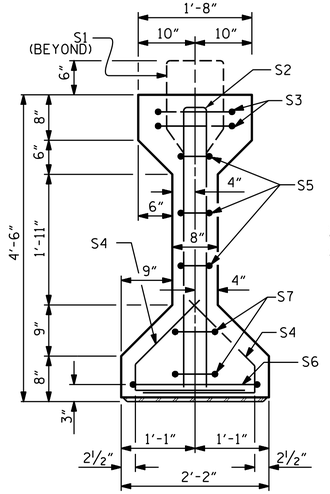
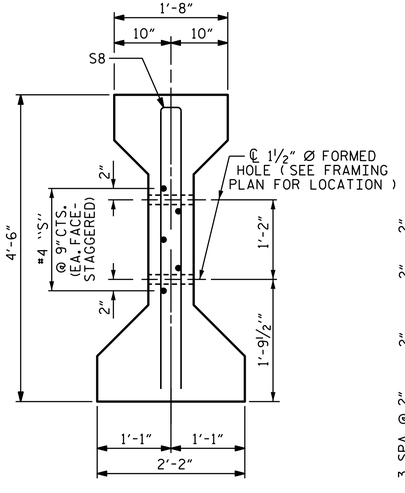
4505 Falls of Neuse Road, Suite 400 Raleigh, NC 27609-6270 Phone (919) 783-9214

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			30

STD. NO. PCG6 (Sht. 2)

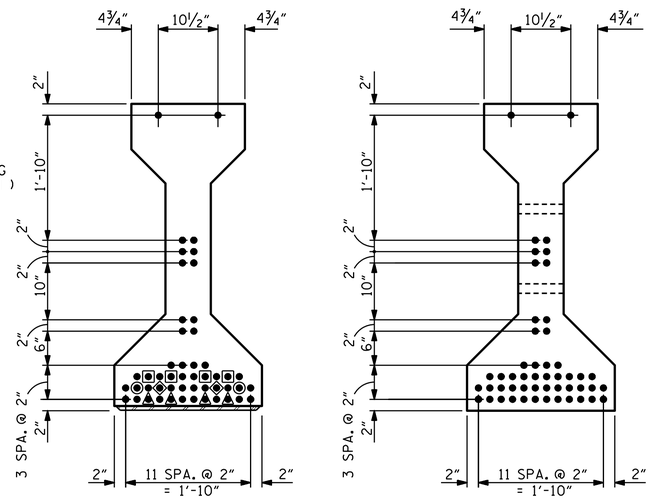


SECTION A-A



SECTION C-C

(S1 BARS NOT SHOWN)



AT END OF GIRDER

AT ℄ OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

▲ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 4'-0" FROM END OF GIRDER. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

▣ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 6'-0" FROM END OF GIRDER. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

◉ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 10'-0" FROM END OF GIRDER. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

◈ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 20'-0" FROM END OF GIRDER. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND

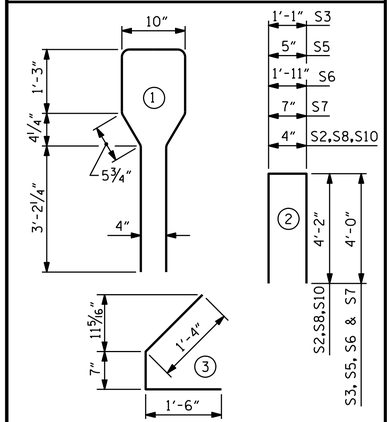
0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

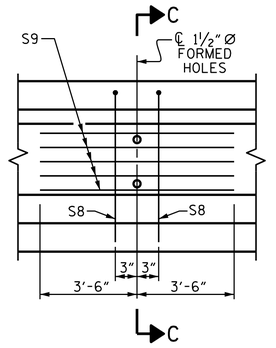
REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	72	#4	1	10'-8"	513
S2	20	#6	2	8'-8"	260
S3	4	#4	2	9'-1"	24
S4	80	#4	3	3'-5"	183
S5	6	#4	2	8'-5"	34
S6	2	#4	2	9'-11"	13
S7	4	#4	2	8'-7"	23
S8	4	#5	2	8'-8"	36
S9	10	#4	STR	7'-0"	47
S10	12	#4	2	8'-8"	69

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT





PARTIAL ELEVATION

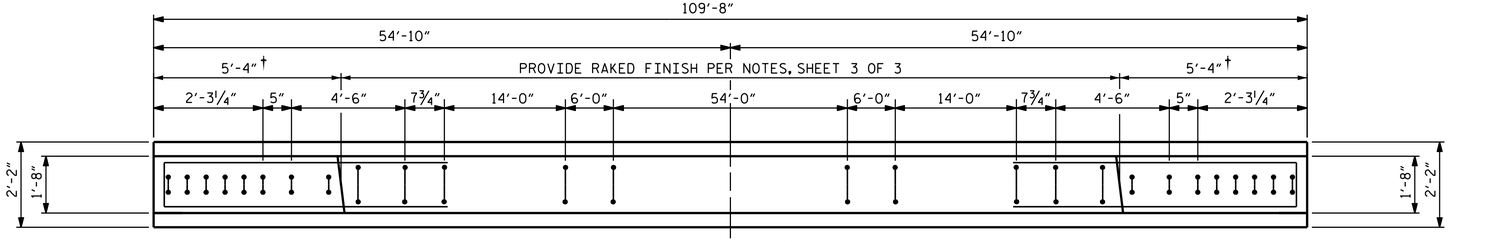
SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR ALL GIRDERS

QUANTITIES FOR ONE GIRDER

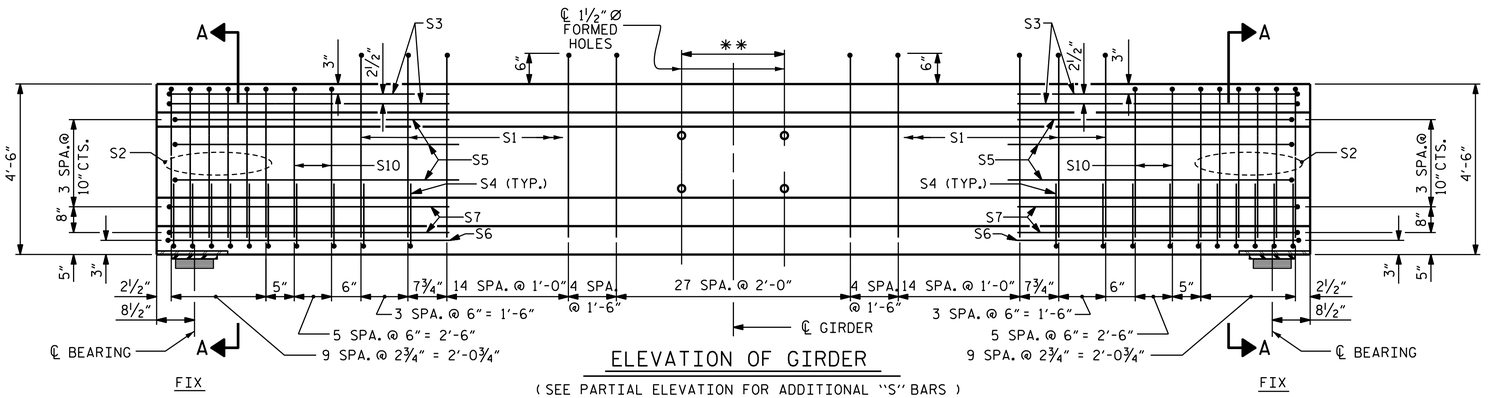
	REINFORCING STEEL	8500 PSI CONCRETE	0.6" Ø L.R. STRANDS
	LB.	C.Y.	No.
	1202	22.3	50

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
4	109'-8"	438'-8"



PLAN OF GIRDER



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

† PROVIDE A SMOOTH TROWEL FINISH TO TOP OF GIRDER IN THESE AREAS TO PREVENT BOND WITH DECK SLAB

** ℄ 1½" Ø FORMED HOLES SEE "GIRDER LAYOUT" SHEET FOR LOCATION & NO. OF HOLES.

DocuSigned by: DB3C8E45B06D499...

NORTH CAROLINA PROFESSIONAL SEAL 14114 ENGINEER ROBERT C. LARSON

2/16/2021

PROJECT NO. B-5666

WILSON COUNTY

STATION: 17+37.36 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

AASHTO TYPE IV
PRESTRESSED CONCRETE GIRDER
SPAN B

KCI JOB NO: 25180194S.22

ASSEMBLED BY : A. K. ALLANKI DATE : 12/19/19
CHECKED BY : R. C. LARSON DATE : 12/23/19

DRAWN BY : JMB 12/87
CHECKED BY : ARB 12/87

REV. 10/1/11 MAA/GM
REV. 1/15 MAA/TMG
REV. 12/17 MAA/THC

DESIGN ENGINEER OF RECORD: DocuSigned by: DB3C8E45B06D499... DATE : 2/16/2021

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ENGINEERS ● PLANNERS ● SCIENTISTS ● CONSTRUCTION MANAGERS LICENSE NUMBER: C-0761
KCI Associates of North Carolina, P.A.
4505 Falls of Neuse Road, Suite 400 Raleigh, NC 27609-6270 Phone (919) 783-9214

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			30

STD. NO. PCG3

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

0.6"Ø LOW RELAXATION	SPAN A (INTERIOR OR EXTERIOR)											SPAN C (INTERIOR OR EXTERIOR)										
TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.007	0.013	0.017	0.020	0.021	0.020	0.017	0.013	0.007	0.000	0.000	0.006	0.011	0.015	0.017	0.018	0.017	0.015	0.011	0.006	0.000
✱DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.001	0.003	0.005	0.006	0.006	0.006	0.005	0.003	0.001	0.000	0.000	0.001	0.002	0.003	0.003	0.003	0.003	0.003	0.002	0.001	0.000
FINAL CAMBER ↑	0	1/16"	1/8"	1/8"	3/16"	3/16"	3/16"	1/8"	1/8"	1/16"	0	0	1/16"	1/8"	1/8"	3/16"	3/16"	3/16"	1/8"	1/8"	1/16"	0

0.6"Ø LOW RELAXATION	SPAN B (INTERIOR GIRDER)																					
TWENTIETH POINTS	0	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	0
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.046	0.090	0.132	0.171	0.205	0.234	0.257	0.274	0.284	0.287	0.284	0.274	0.257	0.234	0.205	0.171	0.132	0.090	0.046	0.000
✱DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.043	0.081	0.126	0.159	0.195	0.221	0.244	0.260	0.270	0.273	0.270	0.260	0.244	0.221	0.195	0.159	0.126	0.081	0.043	0.000
FINAL CAMBER ↑	0	1/16"	1/8"	1/8"	1/8"	1/8"	3/16"	3/16"	3/16"	3/16"	3/16"	3/16"	3/16"	3/16"	3/16"	1/8"	1/8"	1/8"	1/8"	1/16"	0

0.6"Ø LOW RELAXATION	SPAN B (EXTERIOR GIRDER)																					
TWENTIETH POINTS	0	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	0
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.046	0.090	0.132	0.171	0.205	0.234	0.257	0.274	0.284	0.287	0.284	0.274	0.257	0.234	0.205	0.171	0.132	0.090	0.046	0.000
✱DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.040	0.074	0.115	0.145	0.177	0.201	0.223	0.237	0.246	0.249	0.246	0.237	0.223	0.201	0.177	0.145	0.115	0.074	0.040	0.000
FINAL CAMBER ↑	0	1/16"	3/16"	3/16"	5/16"	5/16"	3/8"	7/16"	7/16"	7/16"	7/16"	7/16"	7/16"	7/16"	3/8"	5/16"	5/16"	3/16"	3/16"	1/16"	0

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

NOTES

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

ALL REINFORCING STEEL SHALL BE GRADE 60.

EMBEDDED PLATE "B-1" SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ANCHOR STUDS SHALL CONFORM TO AASHTO M169 GRADES 1010 THROUGH 1020 OR APPROVED EQUAL, AND SHALL MEET THE TYPE "B" REQUIREMENTS OF SUBSECTION 7.3 OF THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE.

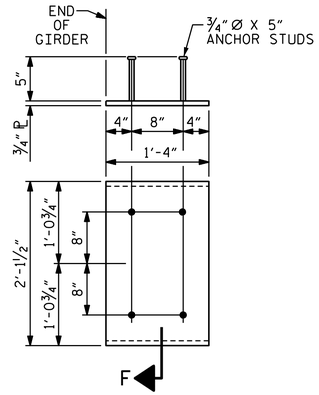
AT ENDS OF GIRDERS TO BE EMBEDDED IN CONCRETE DIAPHRAGMS OR END WALLS, PRESTRESSING STRANDS MAY EXTEND A MAXIMUM OF 2" BEYOND THE GIRDER ENDS. OTHERWISE, PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE GIRDER ENDS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 4000 PSI IN SPANS A AND C OR 6800 PSI IN SPAN B.

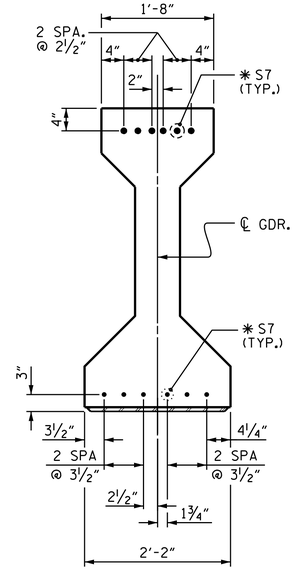
DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4", SHALL BE RAKED TO A DEPTH OF 1/4", EXCEPT SHERE SHOWN IN "PLAN OF GIRDER."

SECTION "F"
(SEE NOTES)



EMBEDDED PLATE "B-1" DETAILS
(2 REQ'D PER GIRDER)



DETAIL "A"
(FOR AASHTO TYPE IV GIRDERS)

KCI JOB NO: 25180194S.22

DESIGN ENGINEER OF RECORD: DocuSigned by: DB3C8E45B06D499...	DATE:	2/16/2021
ASSEMBLED BY: R.C. LARSON	DATE:	12/20/19
CHECKED BY: A.K. ALLANKI	DATE:	12/23/19
DRAWN BY: ELR 11/91	REV. 1/15	MAA/TMG
CHECKED BY: GRP 11/91	REV. 2/15	MAA/TMG
	REV. 12/17	MAA/THC

DocuSigned by: DB3C8E45B06D499...
2/16/2021

NORTH CAROLINA PROFESSIONAL SEAL 14114 ENGINEER ROBERT C. LARSON

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ENGINEERS ◆ PLANNERS ◆ SCIENTISTS ◆ CONSTRUCTION MANAGERS LICENSE NUMBER: C-0764
KCI Associates of North Carolina, P.A.
4505 Falls of Neuse Road, Suite 400 Raleigh, NC 27609-6270 Phone (919) 783-9214

PROJECT NO. B-5666
WILSON COUNTY
STATION: 17+37.36 -L-

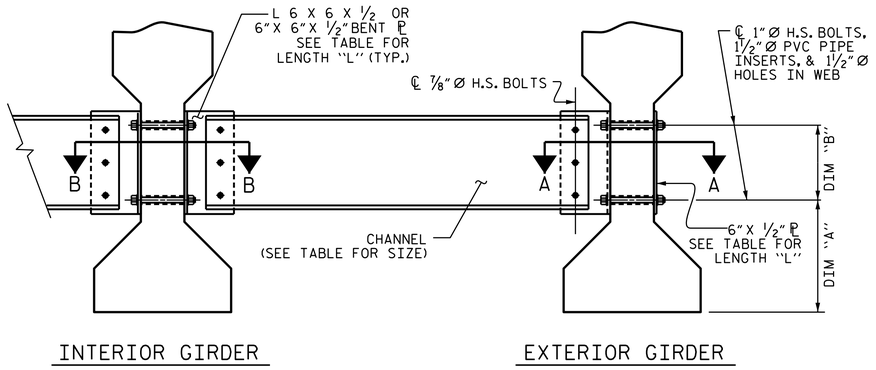
SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
PRESTRESSED CONCRETE GIRDER DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			30

STD. NO. PCG9 (Sht. 3a)

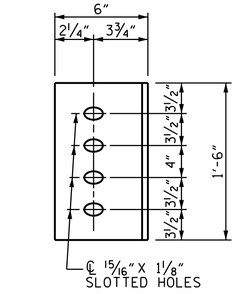


INTERIOR GIRDER

EXTERIOR GIRDER

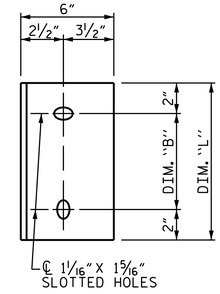
PART SECTION AT INTERMEDIATE DIAPHRAGM

(TYPE IV GDR.)



DIAPHRAGM FACE

(TYPE IV GDR.)



WEB FACE

STRUCTURAL STEEL NOTES

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

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

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

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

FOR METALLIZATION, APPLY A THERMAL SPRAYED COATING WITH A SEAL COAT TO ALL STEEL DIAPHRAGM SURFACES IN ACCORDANCE WITH THE DEPARTMENTS THERMAL SPRAYED COATINGS (METALLIZATION) PROGRAM, THERMAL SPRAYED COATINGS SPECIAL PROVISION AND SECTION 442 OF THE STANDARD SPECIFICATIONS.

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

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

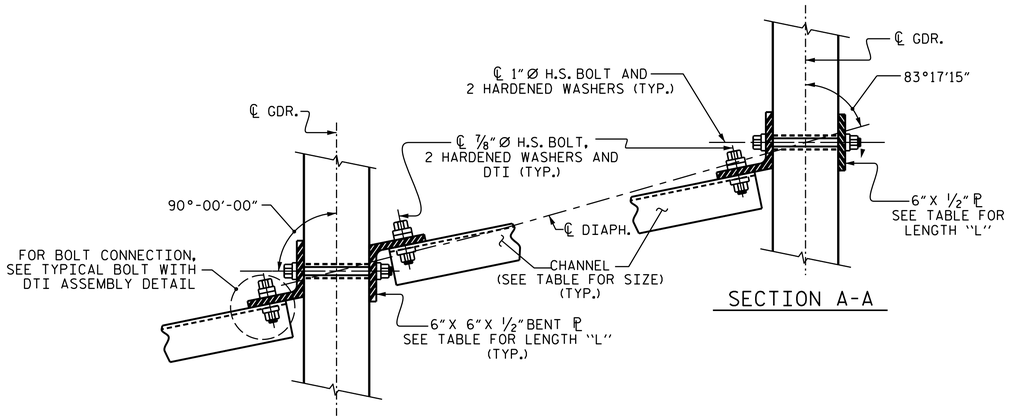
FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST ¼"PROJECTION BEYOND THE NUT.

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

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

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

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



SECTION A-A

SECTION B-B

CONNECTION DETAILS

CONNECTOR PLATE DETAILS

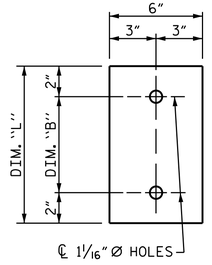
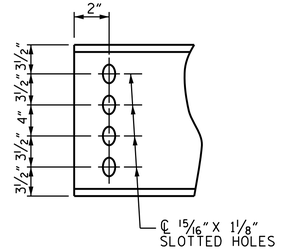


PLATE DETAILS

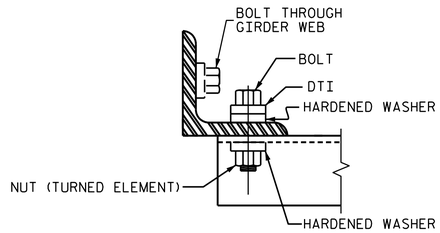


CHANNEL END

(TYPE IV GDR.)

TABLE

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



BOLT WITH DTI ASSEMBLY DETAIL

PROJECT NO. B-5666

WILSON COUNTY

STATION: 17+37.36 -L-

DocuSigned by: DB3C8E45B06D499...

NORTH CAROLINA PROFESSIONAL SEAL 14114 ENGINEER ROBERT C. LARSON

2/16/2021

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

KCI JOB NO: 251801945.22

DESIGN ENGINEER OF RECORD: DocuSigned by: DB3C8E45B06D499...	DATE : 2/16/2021	
ASSEMBLED BY : A. K. ALLANKI	DATE : 05/24/19	
CHECKED BY : K. SU	DATE : 06/03/19	
DRAWN BY : TLA 6/05	REV. 5/1/06RRR	KMM/GM
CHECKED BY : VC 6/05	REV. 10/1/11	MAA/GM
	REV. 12/17	MAA/THC

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ENGINEERS ● PLANNERS ● SCIENTISTS ● CONSTRUCTION MANAGERS LICENSE NUMBER: C-0764
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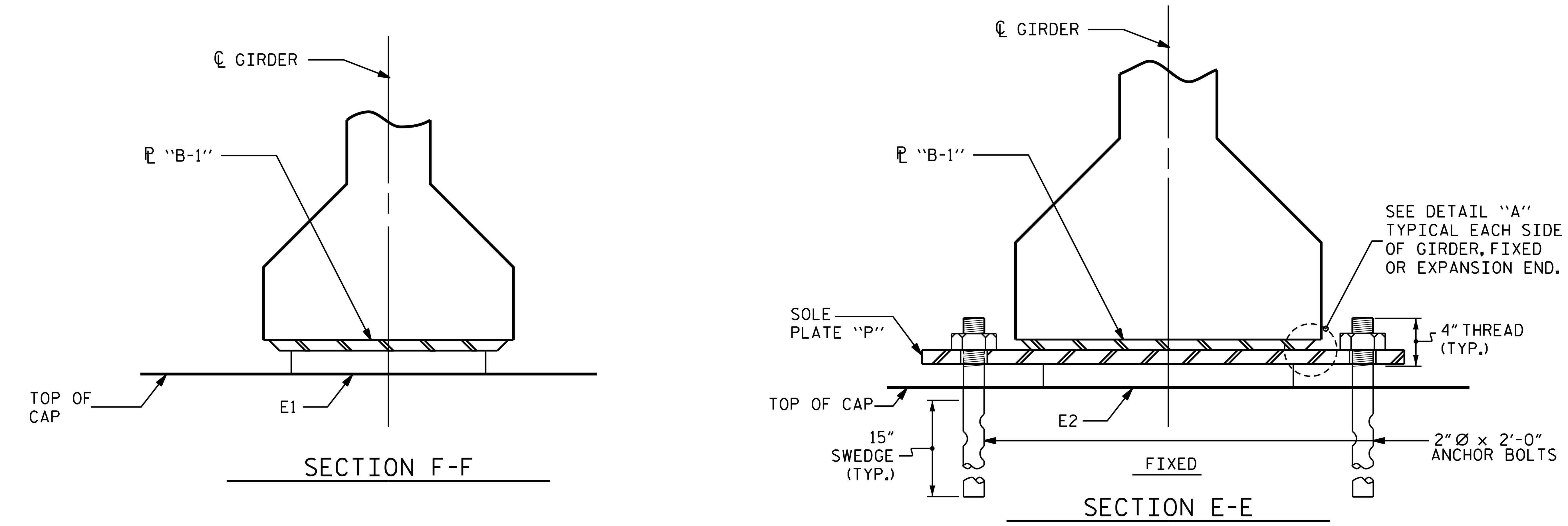
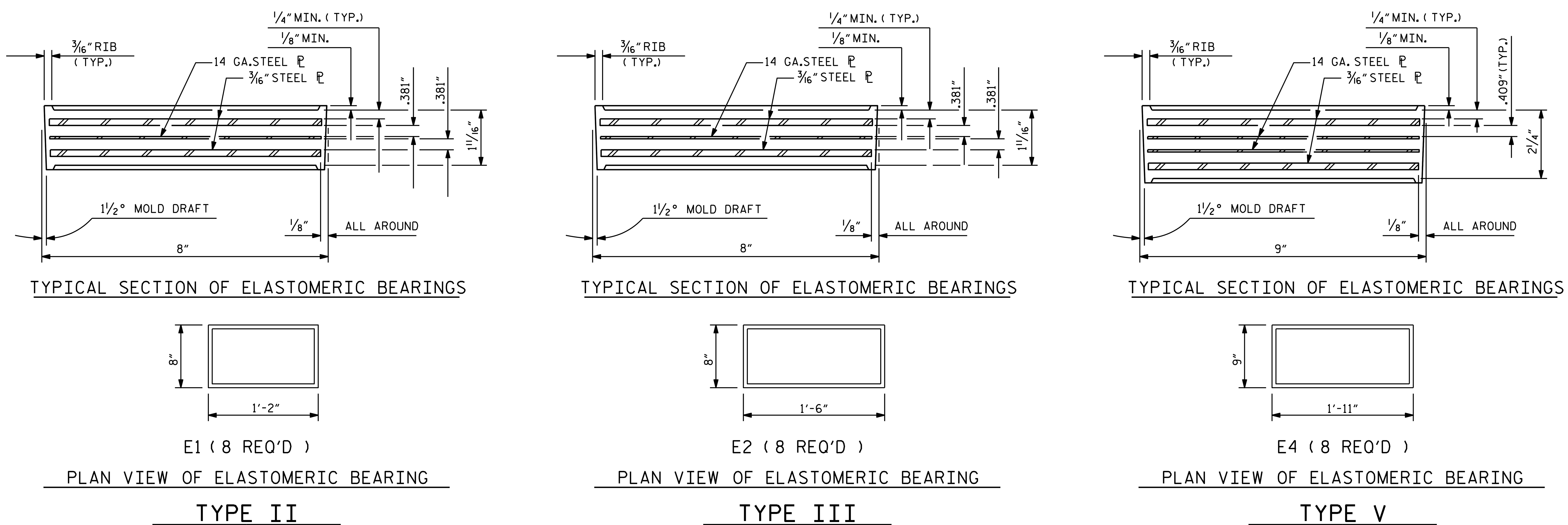
4505 Falls of Neuse Road, Suite 400 Raleigh, NC 27609-6270 Phone (919) 783-9214

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			30

STD. NO. PCG10





NOTES

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

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

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

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

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

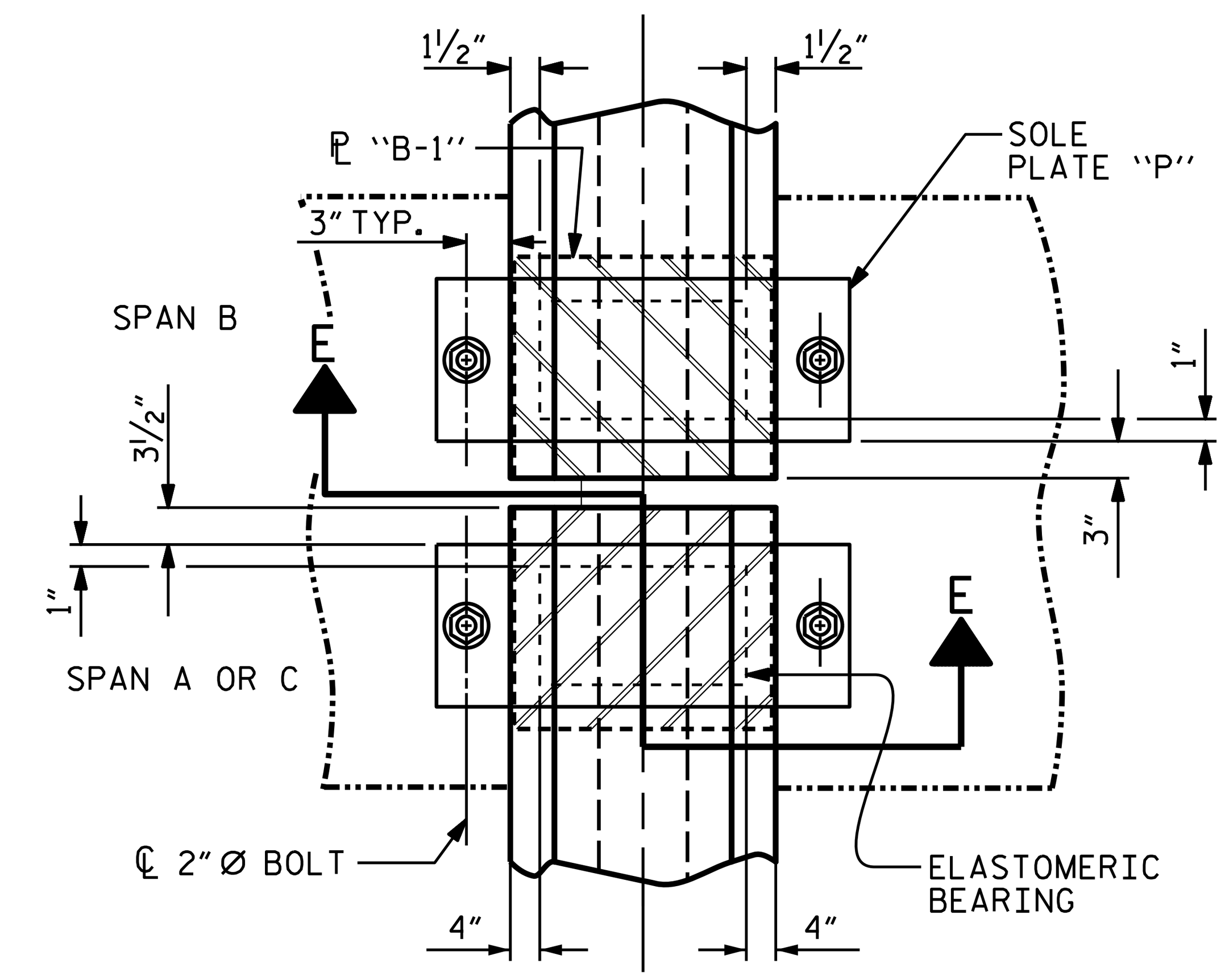
ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. SHOP DRAWINGS ARE NOT REQUIRED FOR ANCHOR BOLT, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

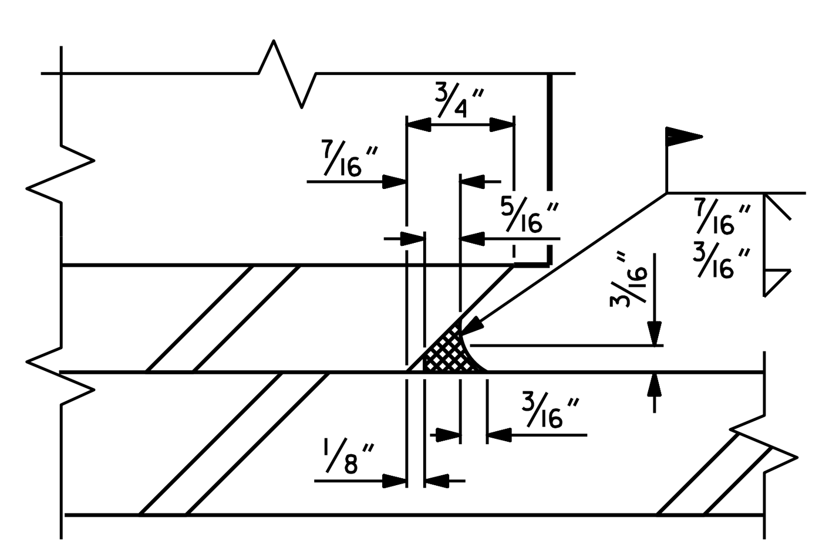
THE ELASTOMER IN THE STEEL REINFORCED BEARINGS SHALL HAVE A SHEAR MODULUS OF 0.160 KSI, IN ACCORDANCE WITH AASHTO M251.

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

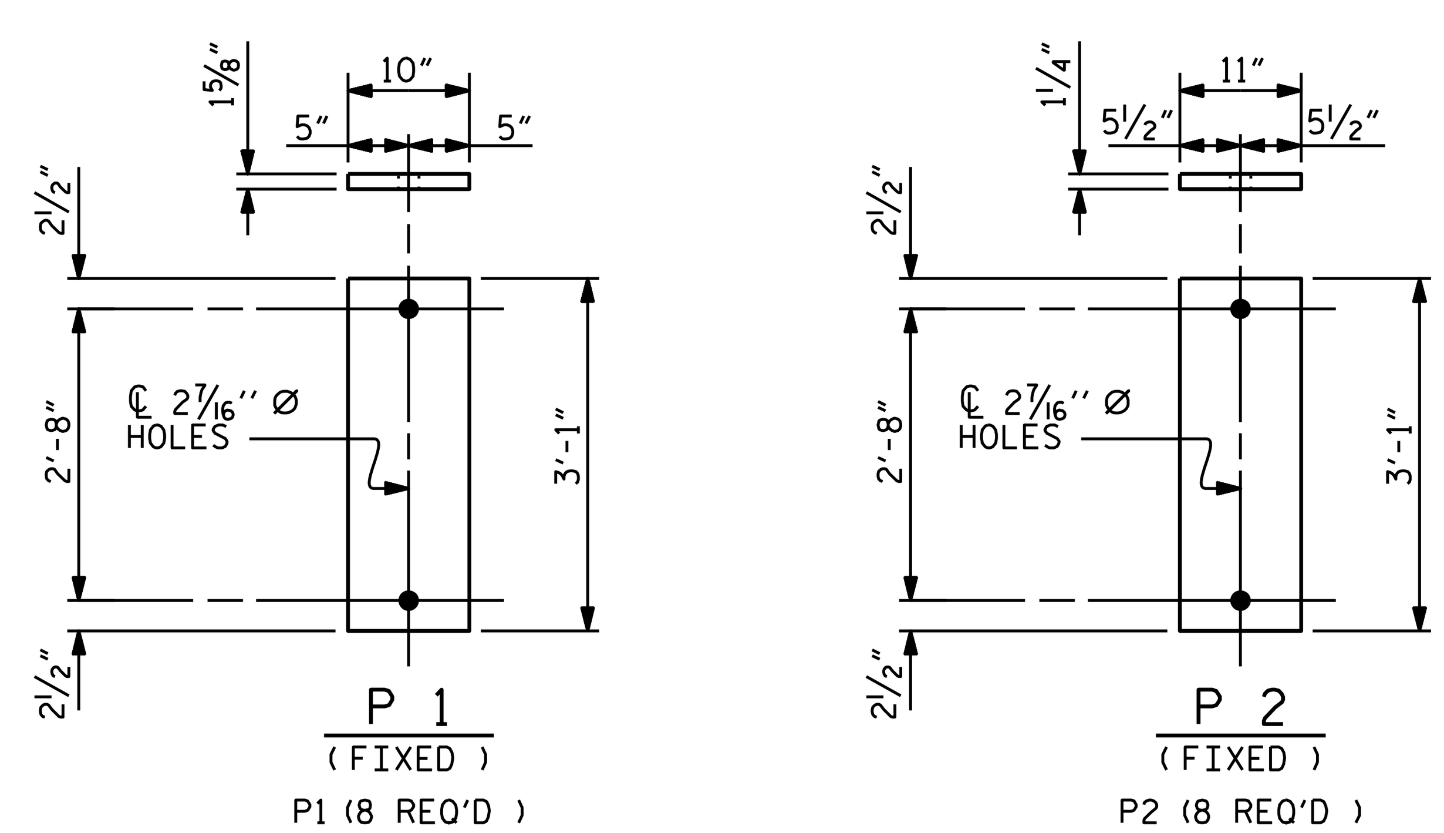
ALL SOLE PLATES SHALL BE AASHTO M270 GRADE 36.



TYPICAL PLAN AT BENTS

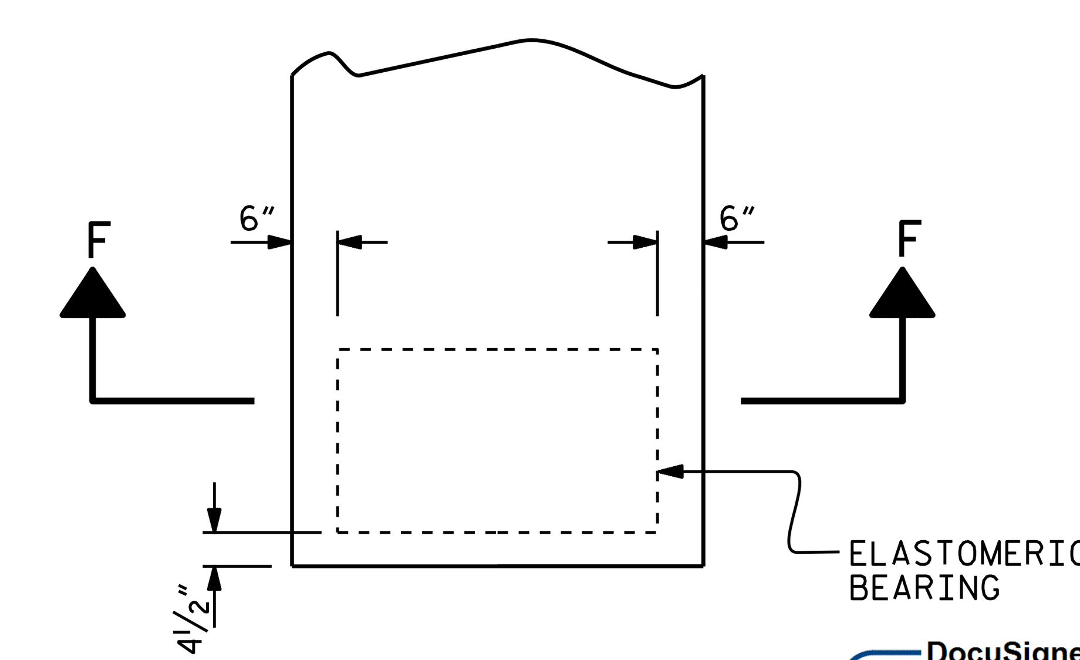


DETAIL "A"



SOLE PLATE DETAILS ("P")

MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE II	145 k
TYPE III	205 k
TYPE V	365 k



TYPICAL PLAN AT END BENTS

PROJECT NO. B-5666

WILSON COUNTY

STATION: 17+37.36 -L-

DocuSigned by:
DB3C8E45B06B499

NORTH CAROLINA PROFESSIONAL SEAL 14114 ENGINEER ROBERT C. LARSON

2/16/2021

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

ELASTOMERIC BEARING DETAILS

PRESTRESSED CONCRETE GIRDER SUPERSTRUCTURE

REVISIONS							SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:		S-13
1			3				TOTAL SHEETS
2			4				30

KCI JOB NO: 251801945.22

DESIGN ENGINEER OF RECORD: DATE : 2/16/2021

ASSEMBLED BY : R. C. LARSON		DATE : 12/20/19	
CHECKED BY : A. K. ALLANKI		DATE : 02/20/20	
DRAWN BY : WJH 8/89	REV. 6/13	AAC/MAA	
CHECKED BY : CRK 8/89	REV. 1/15	MAA/TMG	
	REV. 12/17	MAA/THC	

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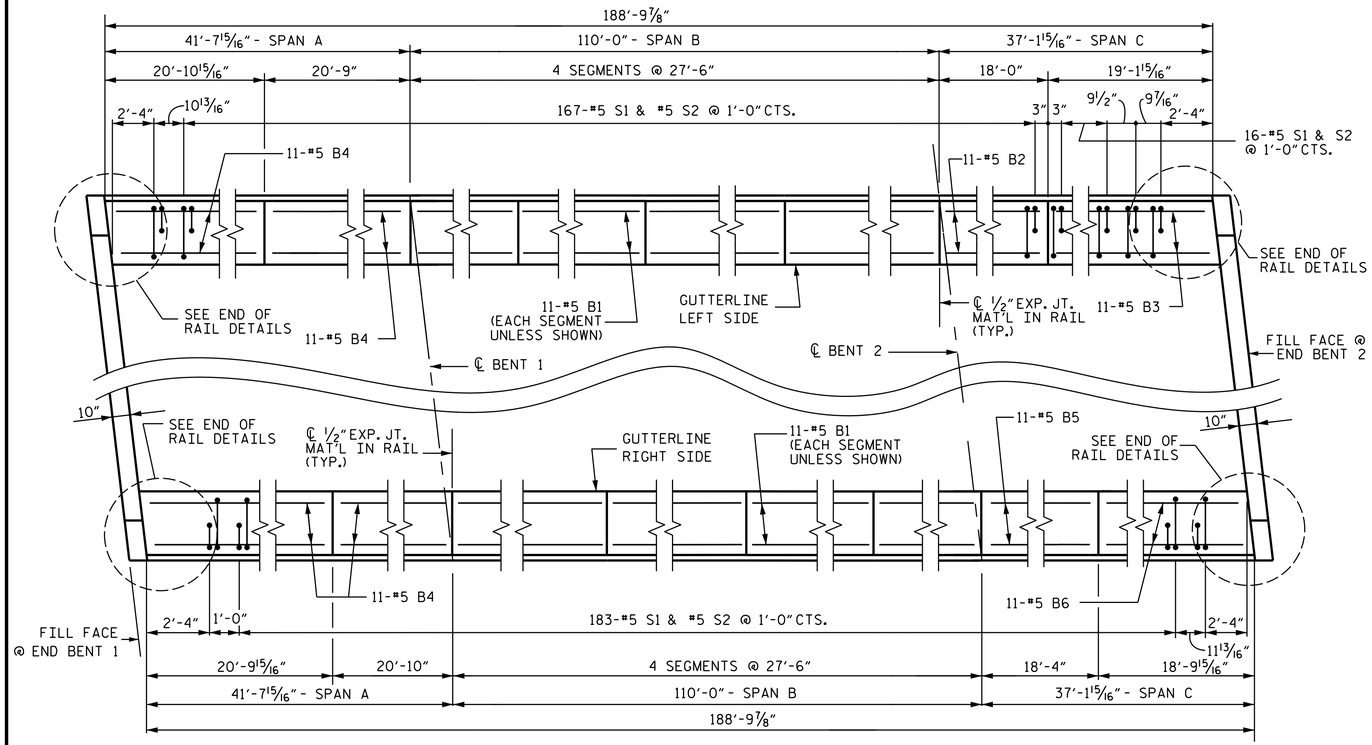
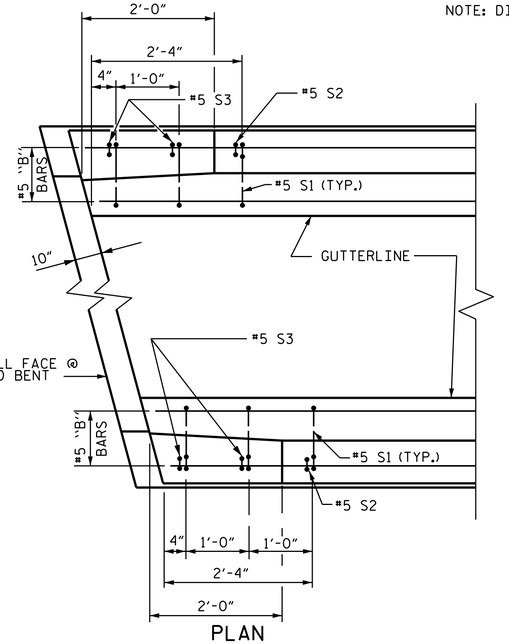
KCI Associates of North Carolina, P.A.
4505 Falls of Neuse Road, Suite 400 Raleigh, NC 27609-6270 Phone (919) 783-9214

STD. NO. EB3

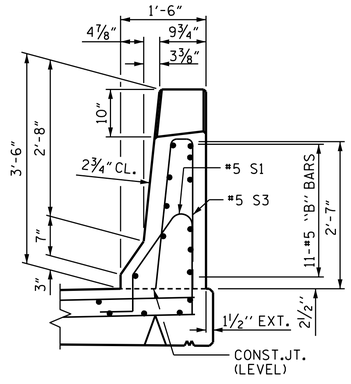


PLAN

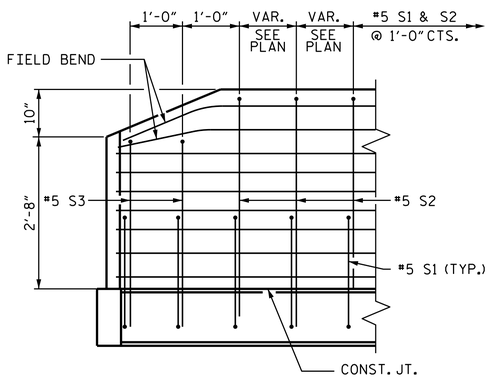
NOTE: DIMENSIONS SHOWN ARE ALONG OUTSIDE OF RAIL



PLAN



END VIEW



SIDE VIEW

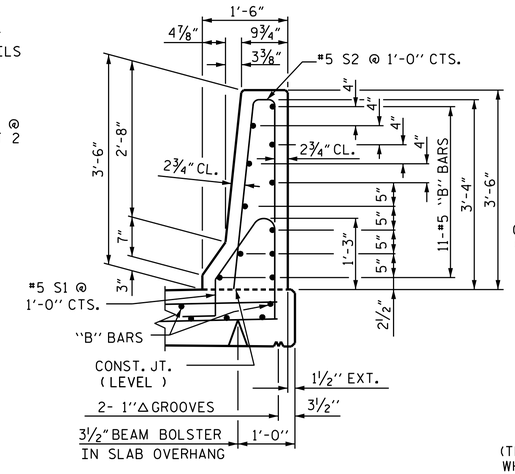
END OF RAIL DETAILS

NOTES

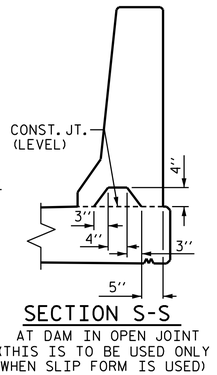
THE BARRIER RAIL IN EACH SPAN SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT SPAN HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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



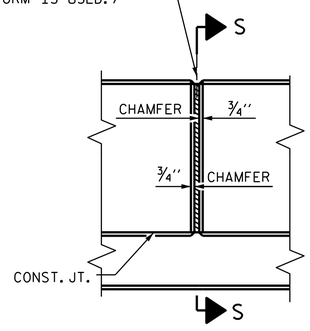
SECTION THRU RAIL



SECTION S-S

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

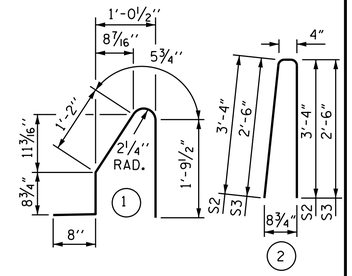
℄ 1/2" EXP.JT.MAT'L HELD IN PLACE WITH GALVANIZED NAILS.
(NOTE: OMIT EXP. JT. MAT'L. WHEN SLIP FORM IS USED.)



ELEVATION AT EXPANSION JOINTS

BARRIER RAIL DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* S1	379	#5	1	4'-10"	1911
* S2	371	#5	2	7'-0"	2709
* S3	8	#5	2	5'-4"	45
* B1	88	#5	STR	27'-2"	2493
* B2	11	#5	STR	17'-8 1/2	203
* B3	11	#5	STR	18'-10"	216
* B4	44	#5	STR	20'-5"	937
* B5	11	#5	STR	18'-0"	207
* B6	11	#5	STR	18'-6"	212

EPOXY COATED REINFORCING STEEL	8933 LBS.
CLASS AA CONCRETE	51.4 CU. YDS.
CONCRETE BARRIER RAIL	377.64 LIN. FT.

PROJECT NO. B-5666

WILSON COUNTY

STATION: 17+37.36 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

CONCRETE BARRIER RAIL

DocuSigned by: DB3C8E45B06D499...
NORTH CAROLINA PROFESSIONAL SEAL 14114 ENGINEER ROBERT C. LARSON
2/16/2021

DESIGN ENGINEER OF RECORD: DocuSigned by: DB3C8E45B06D499... DATE: 2/16/2021

ASSEMBLED BY : R. C. LARSON DATE : 01/04/20
CHECKED BY : K. SU DATE : 02/14/20

DRAWN BY : ARB 5/87
CHECKED BY : SJD 9/87

REV. 7/12 MAA/GM
REV. 6/13 MAA/GM
REV. 12/17 MAA/THC

KCI JOB NO: 25180194S.22

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4505 Falls of Neuse Road, Suite 400 Raleigh, NC 27609-6270 Phone (919) 783-9214

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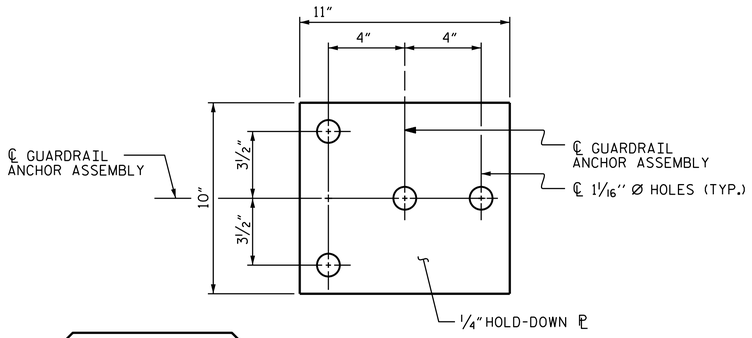
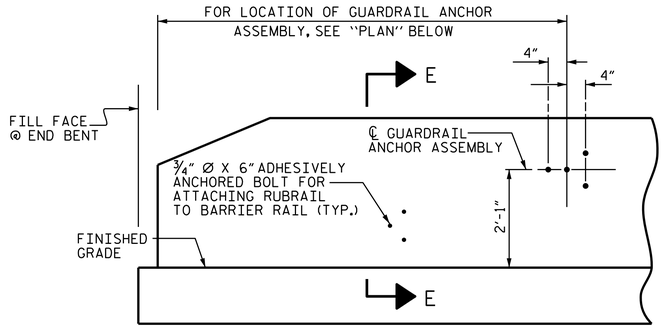
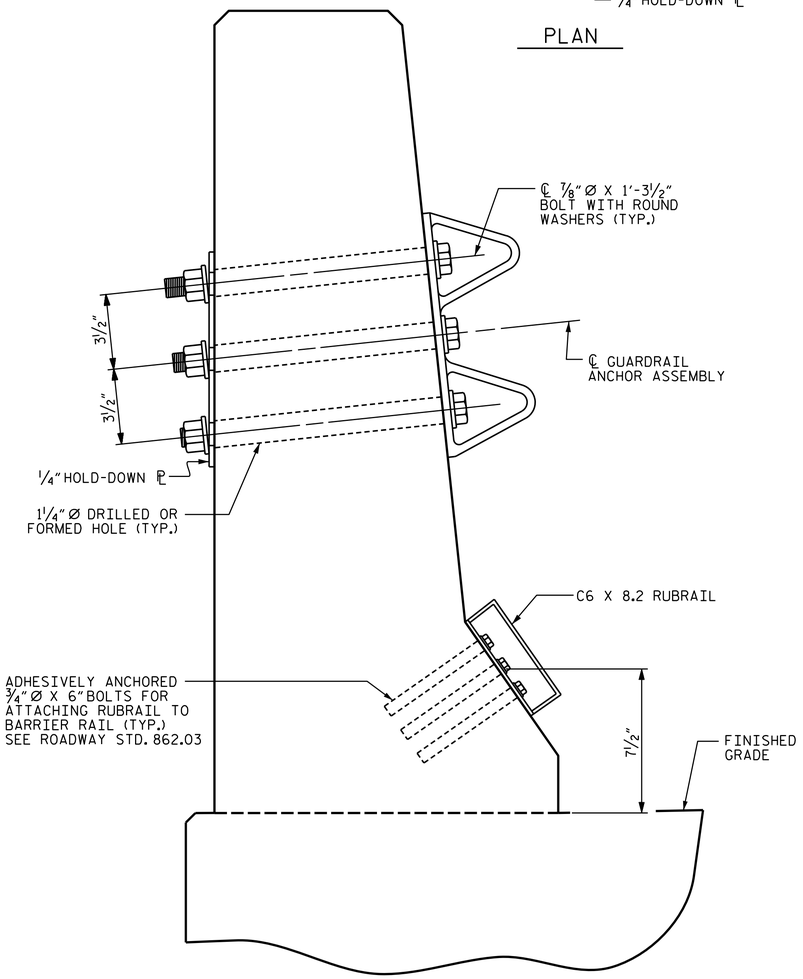
STD. NO. CBR1 (SHT 1)



PLAN

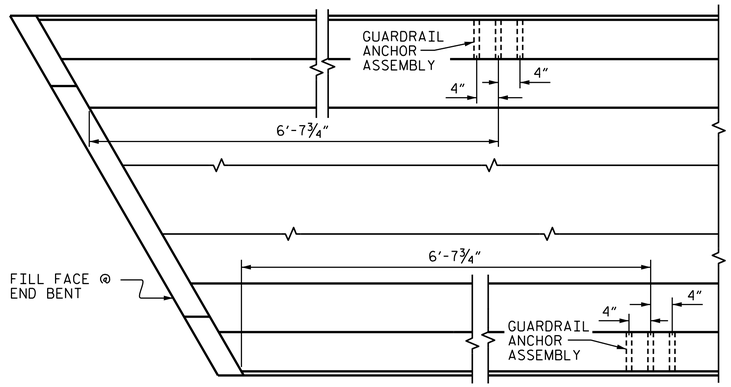


ELEVATION



SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

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

NOTES

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

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

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

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

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

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

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

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

SKETCH SHOWING POINTS OF ATTACHMENTS

✳ DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. B-5666

WILSON COUNTY

STATION: 17+37.36 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

GUARDRAIL ANCHORAGE FOR BARRIER RAIL

DocuSigned by: DB3C8E45B06D499...

NORTH CAROLINA PROFESSIONAL SEAL 14114 ENGINEER ROBERT C. LARSON

2/16/2021

DESIGN ENGINEER OF RECORD: DocuSigned by: DB3C8E45B06D499...	DATE : 2/16/2021
ASSEMBLED BY : A. K. ALLANKI	DATE : 05/30/19
CHECKED BY : K. SU	DATE : 06/03/19
DRAWN BY : TLA 5/06	REV. 7/12 MAA/GM
CHECKED BY : GM 5/06	REV. 6/13 MAA/GM
	REV. 12/17 MAA/THC

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KCI Associates of North Carolina, P.A.
4505 Falls of Neuse Road, Suite 400 Raleigh, NC 27609-6270 Phone (919) 783-9214

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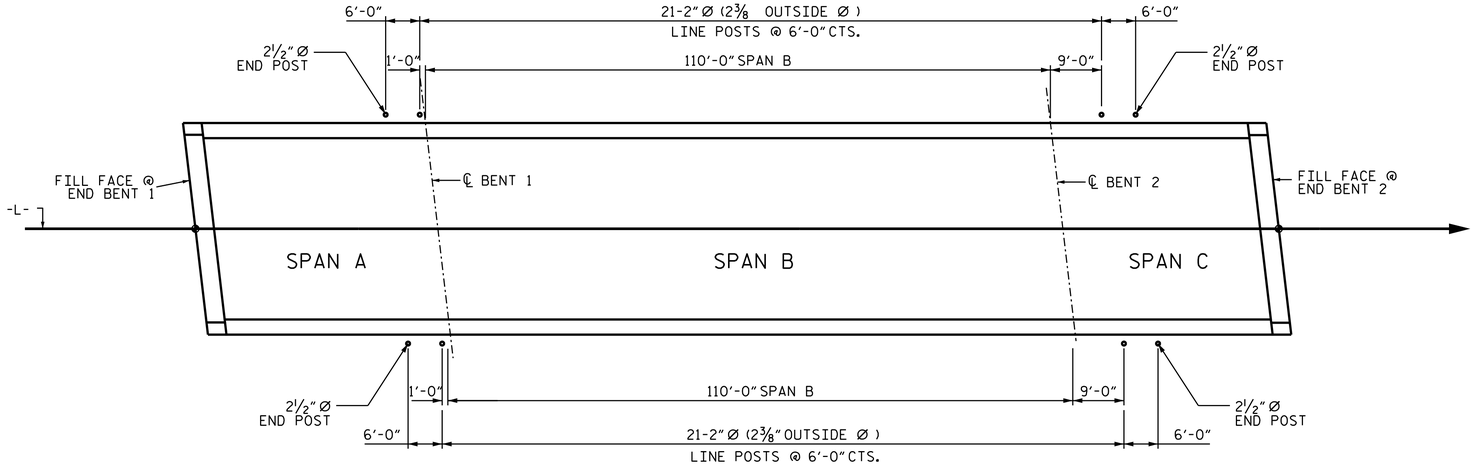
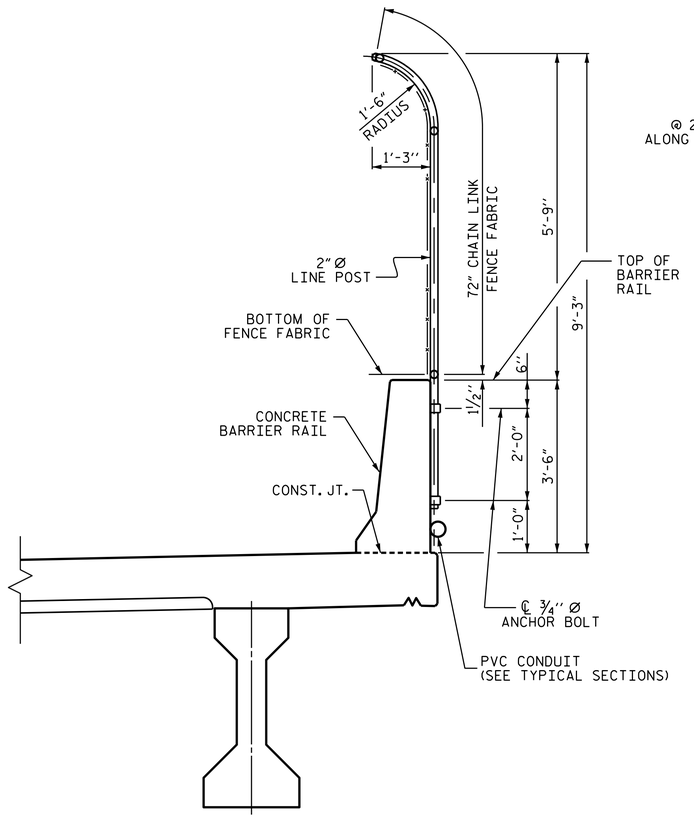
(SHT 1a) STD. NO. GRA2

KCI JOB NO: 251801945.22



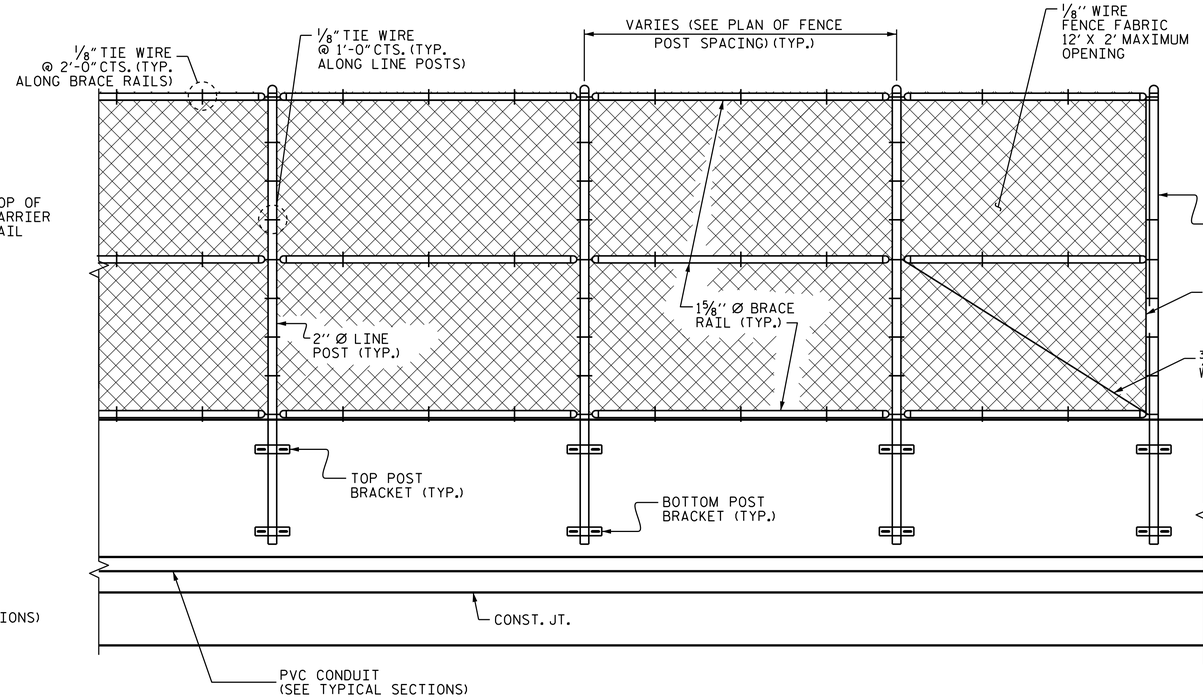
PLAN OF FENCE POST SPACING

PAY LENGTH 264.00 FEET



SECTION THRU FENCE

RIGHT SIDE SHOWN, LEFT SIMILAR



PARTIAL ELEVATION

NOTES:

FOR 72" CHAIN LINK FENCE, SEE SPECIAL PROVISIONS.

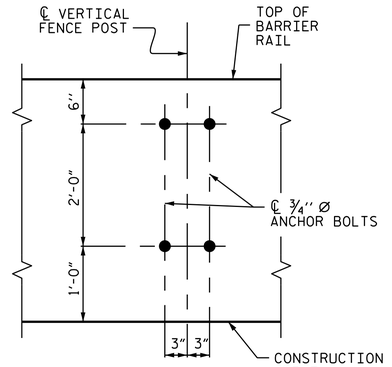
MATERIAL FOR ANCHOR BOLTS SHALL BE TYPE 304 STAINLESS STEEL WITH A MINIMUM 9000 PSI ULTIMATE STRENGTH. NUTS AND WASHERS SHALL BE TYPE 304 STAINLESS STEEL. ANCHOR BOLTS SHALL BE EMBEDDED AS PER ADHESIVE BONDING SYSTEM MANUFACTURER SPECIFICATIONS. NUTS SHALL BE AMERICAN STANDARD FINISHED HEXAGON THICK NUTS, CLASS 2B THREADS.

FOR SETTING ANCHOR BOLTS, THE CONTRACTOR SHALL USE AN ADHESIVE BONDING SYSTEM. LEVEL ONE FIELD TESTING OF BONDING SYSTEM IS REQUIRED AND THE YIELD LOAD OF THE ¾" Ø BOLTS IS 12.0 KIPS.

ALL FENCE MATERIAL SHALL MEET THE REQUIREMENTS OF SECTION 1050 OF THE STANDARD SPECIFICATIONS. GALVANIZE ALL STEEL PARTS AND HARDWARE IN ACCORDANCE WITH ARTICLE 1076 OF THE STANDARD SPECIFICATIONS.

FENCE POST LOCATIONS SHALL BE SHIFTED, AS NECESSARY, TO MAINTAIN 12" MINIMUM DISTANCE FROM ANCHOR BOLT TO JOINTS IN BARRIER RAIL.

DIMENSIONS TAKEN ALONG OUTSIDE FACE OF BARRIER RAIL.



BOLT SETTING DETAIL

PROJECT NO. B-5666

WILSON COUNTY

STATION: 17+37.36 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE MOUNTED 72" CHAIN LINK FENCE

DocuSigned by: DB3C8E45B06D495...

NORTH CAROLINA PROFESSIONAL SEAL 14114 ENGINEER ROBERT C. LARSON

2/16/2021

DESIGN ENGINEER OF RECORD: DocuSigned by: DATE: 2/16/2021

DRAWN BY: R.J. FLORY DATE: 02/10/2020

CHECKED BY: R.C. LARSON DATE: 02/10/2020

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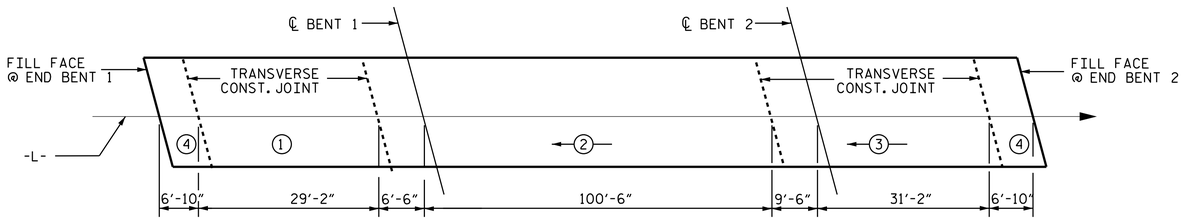
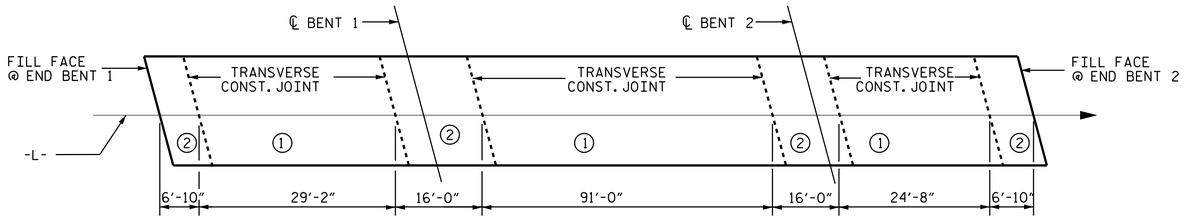


DECK POURING SEQUENCE

(2)→ INDICATES POUR SEQUENCE AND DIRECTION



OPTIONAL DECK POURING SEQUENCE

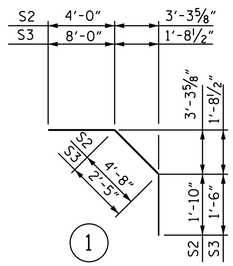
(2) INDICATES POUR SEQUENCE

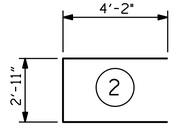
NO POUR 2 MAY BE STARTED UNTIL BOTH ADJACENT
POURS 1 HAVE REACHED A MINIMUM STRENGTH OF 3000 PSI.

BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✱ A1	369	5	STR.	36'-11"	14208
✱ A2	2	5	STR.	33'-3"	69
✱ A3	2	5	STR.	29'-0"	60
✱ A4	2	5	STR.	24'-9"	52
✱ A5	2	5	STR.	20'-6"	43
✱ A6	2	5	STR.	16'-3"	34
✱ A7	2	5	STR.	12'-0"	25
✱ A8	2	5	STR.	7'-9"	16
✱ A9	2	5	STR.	3'-6"	7
A10	369	5	STR.	36'-11"	14208
A11	2	5	STR.	33'-3"	69
A12	2	5	STR.	29'-0"	60
A13	2	5	STR.	24'-9"	52
A14	2	5	STR.	20'-6"	43
A15	2	5	STR.	16'-3"	34
A16	2	5	STR.	12'-0"	25
A17	2	5	STR.	7'-9"	16
A18	2	5	STR.	3'-6"	7
✱ B1	130	4	STR.	39'-4"	3416
B2	176	5	STR.	48'-8"	8934
✱ B3	94	6	STR.	13'-8"	1930
✱ B4	142	6	STR.	13'-8"	2915
✱ B5	24	6	STR.	8'-8"	312
✱ B6	24	6	STR.	7'-8"	276
✱ B7	24	6	STR.	9'-6"	342
✱ B8	24	6	STR.	8'-6"	306
K1	10	4	STR.	37'-2"	248
K2	6	4	STR.	7'-5"	30
K3	12	4	STR.	9'-0"	72
K4	6	4	STR.	8'-0"	32
K5	6	4	STR.	8'-8"	35
K6	4	4	STR.	2'-4"	6
K7	4	4	STR.	2'-7"	7
K8	8	4	STR.	3'-1"	16
K9	4	4	STR.	2'-11"	8
✱ S2	56	4	1	10'-6"	393
✱ S3	60	4	1	11'-11"	478
U1	30	4	2	11'-3"	225

BAR TYPES





ALL BAR DIMENSIONS ARE OUT TO OUT

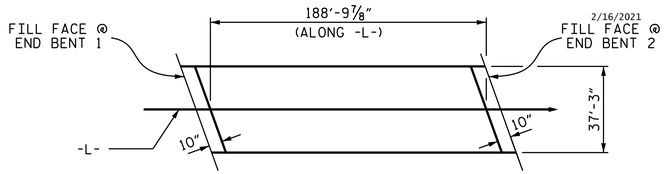
SUPERSTRUCTURE BILL OF MATERIAL

	CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	(CU. YDS.)	(LBS.)	(LBS.)
POUR 1	35.2	24127	24882
POUR 2	129.2		
POUR 3	49.1		
POUR 4	53.3		
TOTALS✱✱	266.8		

✱ EPOXY COATED REINFORCING STEEL ✱✱ QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED

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

BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPETS, AND BARRIER RAILS		APPROACH SLABS		PARAPETS AND BARRIER RAILS
	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"			



LAYOUT FOR COMPUTING AREA REINFORCED CONCRETE DECK SLAB

(SQ.FT.= 7034)

GROOVING BRIDGE FLOORS

APPROACH SLABS	1519	SQ.FT.
BRIDGE DECK	5853	SQ.FT.
TOTAL	7372	SQ.FT.

PROJECT NO. B-5666

WILSON COUNTY

STATION: 17+37.36 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

SUPERSTRUCTURE BILL OF MATERIAL

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NORTH CAROLINA PROFESSIONAL SEAL 14114 ENGINEER ROBERT C. LARSON

2/16/2021

DESIGN ENGINEER OF RECORD: DATE : 2/16/2021

ASSEMBLED BY : R. C. LARSON DATE : 02/06/20
CHECKED BY : A. K. ALLANKI DATE : 02/21/20

DRAWN BY : JMB 5/87
CHECKED BY : SJD 9/87

REV.	
REV. 10/1/11	MAA/GM
REV. 12/17	MAA/THC
REV. 06/19	BNB/THC

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STD. NO. BOM2

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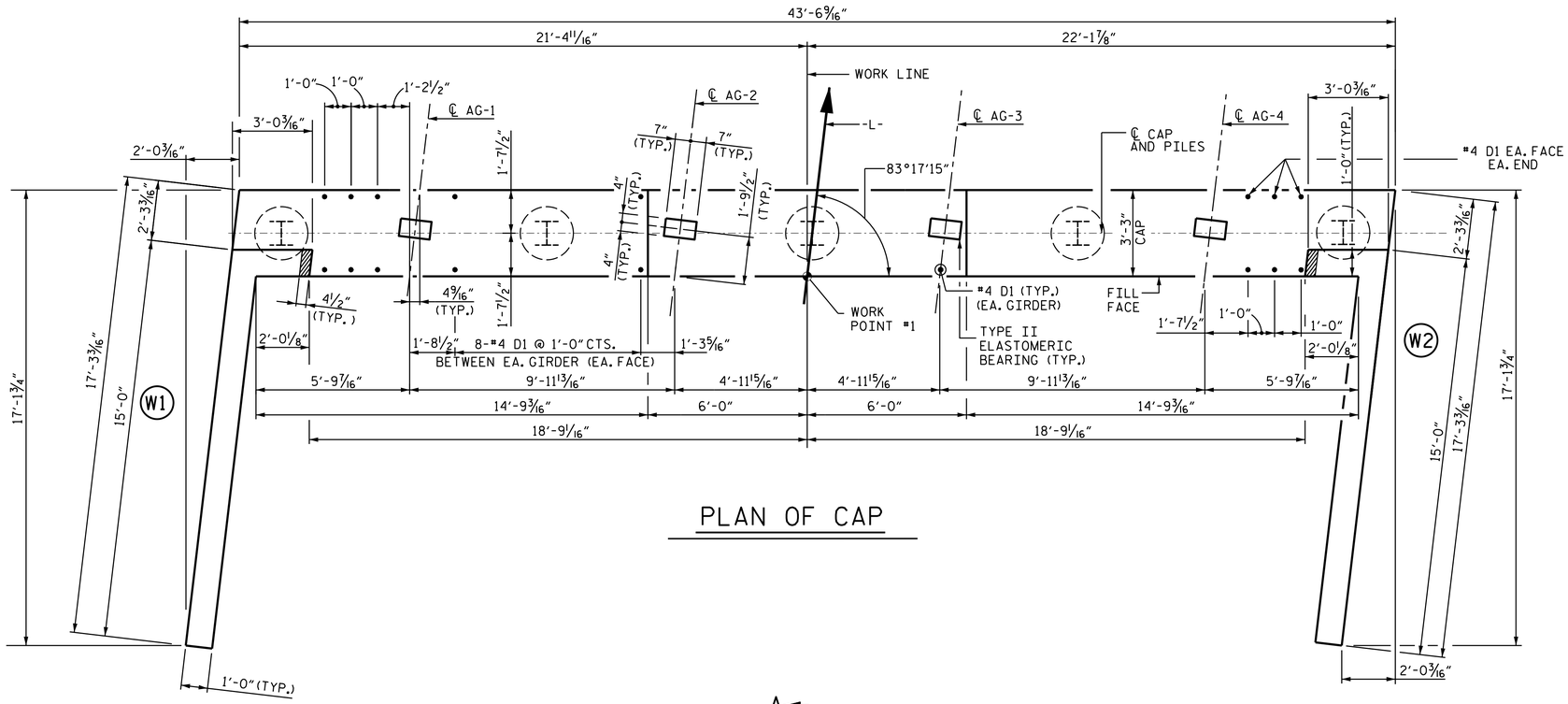
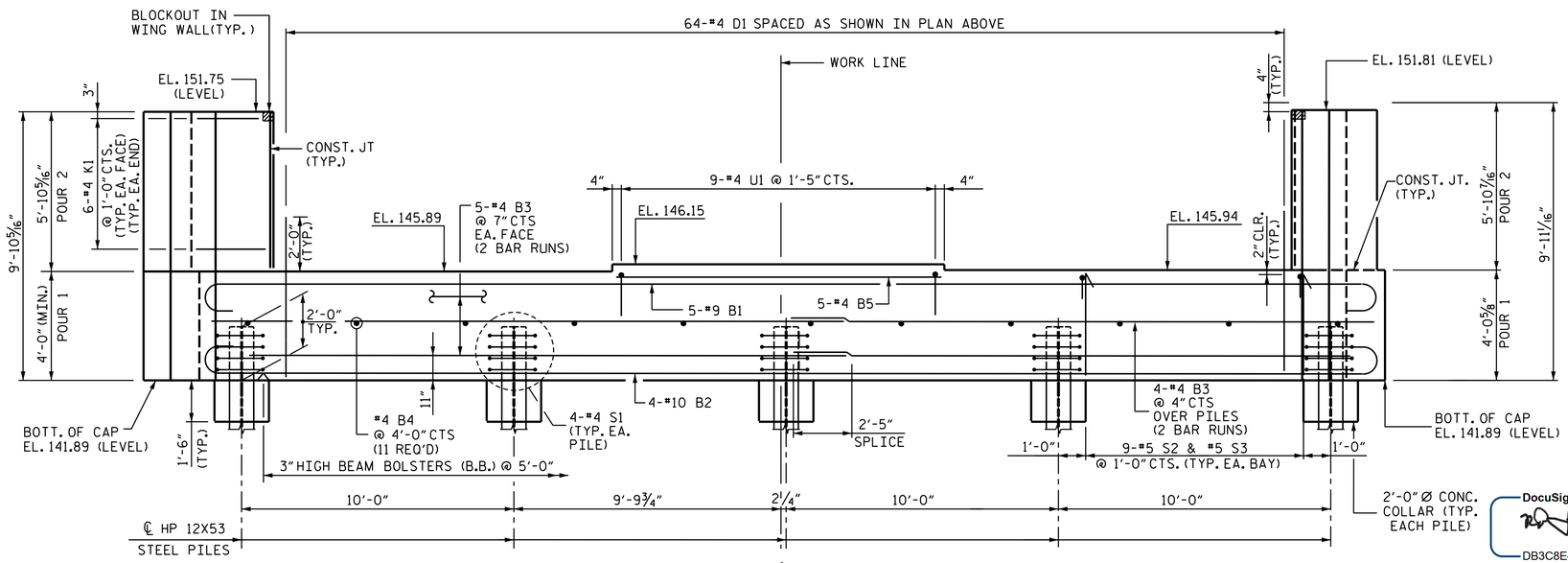


PLAN OF CAP

A



A

ELEVATION

NOTES

THE TOP SURFACE OF THE END BENT CAP AND WINGS (POUR 1) EXCEPT THE BEARING AREAS AND THE AREA OUTSIDE OF THE SUPERSTRUCTURE SHALL BE RAKED TO A DEPTH OF 1/4".

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

FOR "TEMPORARY DRAINAGE AT END BENT", SEE END BENT 2.

FOR SECTION A-A SEE SHEET 3 OF 3.

PROJECT NO. B-5666

WILSON COUNTY

STATION: 17+37.36 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE END BENT 1

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NORTH CAROLINA PROFESSIONAL SEAL 14114 ENGINEER ROBERT C. LARSON

2/16/2021

KCI JOB NO: 251801945.22

DESIGN ENGINEER OF RECORD: DocuSigned by: DB3C8E45B06D499... DATE: 2/16/2021

DRAWN BY : A. K. ALLANKI DATE : 02/07/20

CHECKED BY : R. C. LARSON DATE : 02/07/20

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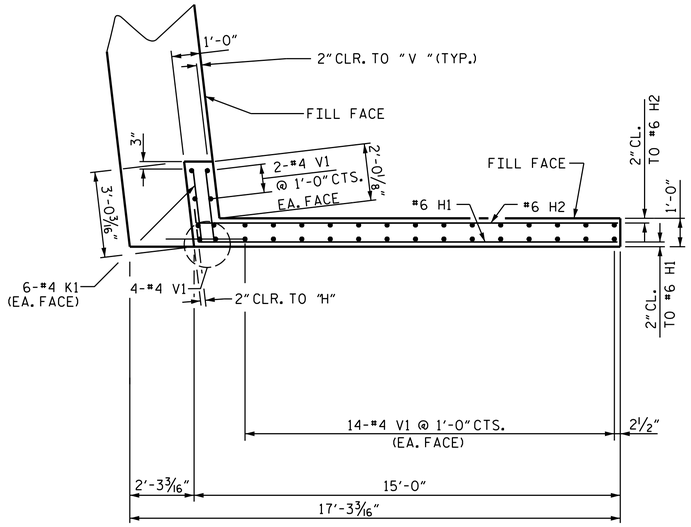
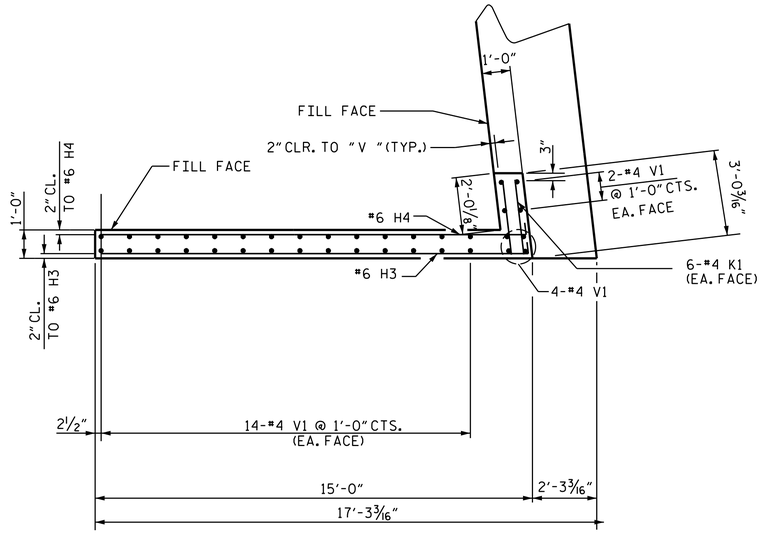


PLAN W1



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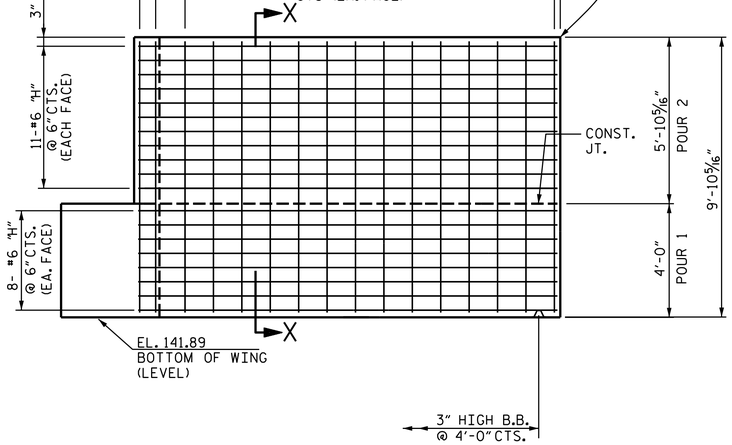
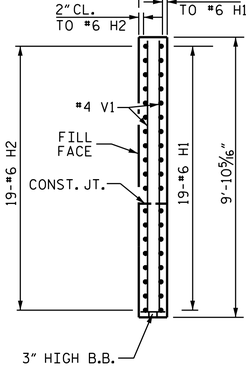
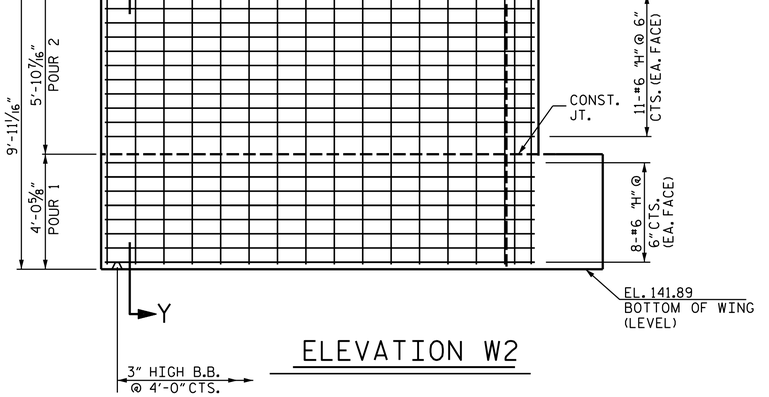


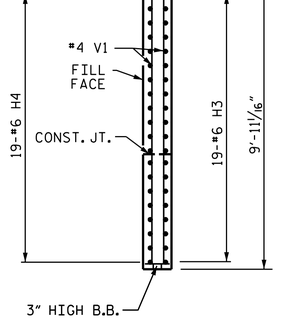
ELEVATION W1



SECTION X-X



ELEVATION W2



SECTION Y-Y

KCI JOB NO: 251801945.22

PROJECT NO. B-5666

WILSON COUNTY

STATION: 17+37.36 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE END BENT 1

DocuSigned by:
DB3C8E45B06D499...

NORTH CAROLINA PROFESSIONAL SEAL 14114 ENGINEER ROBERT C. LARSON

2/16/2021

DESIGN ENGINEER OF RECORD: DocuSigned by: DB3C8E45B06D499... DATE : 2/16/2021

DRAWN BY : A. K. ALLANKI DATE : 02/10/20

CHECKED BY : R. C. LARSON DATE : 02/11/20

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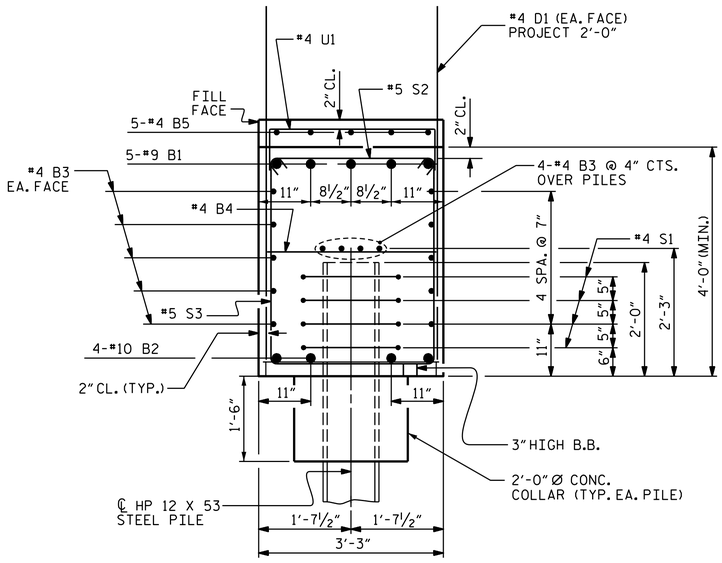
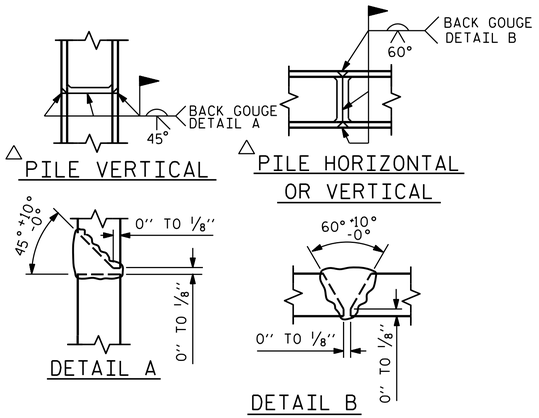


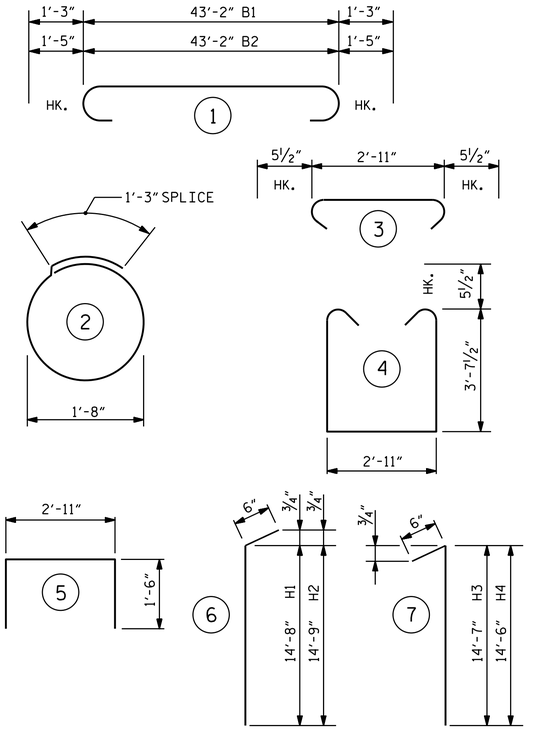
SECTION A-A



△ POSITION OF PILE DURING WELDING.

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	5	9	1	45'-8"	776
B2	4	10	1	46'-0"	792
B3	28	4	STR.	22'-10"	427
B4	11	4	STR.	2'-11"	21
B5	5	4	STR.	11'-8"	39
D1	64	4	STR.	5'-10"	249
H1	19	6	6	15'-2"	433
H2	19	6	6	15'-3"	435
H3	19	6	7	15'-1"	430
H4	19	6	7	15'-0"	428
K1	24	4	STR.	2'-8"	43
S1	20	4	2	6'-6"	87
S2	36	5	3	3'-10"	144
S3	36	5	4	11'-1"	416
U1	9	4	5	5'-11"	36
V1	72	4	STR.	9'-6"	457

REINFORCING STEEL, LBS.		5213
CLASS A CONCRETE, CY	POUR 1	26.5
	POUR 2	7.4
	TOTAL	33.9
HP 12X53 STEEL PILES	NO.	5
	L.F.	325
PILE DRIVING EQUIPMENT SETUP FOR HP 12X53 STEEL PILES, EA.		5
PILE REDRIVES, EA.		2

KCI JOB NO: 251801945.22

DESIGN ENGINEER OF RECORDS: DocuSigned by: DB3C8E45B06D4990... DATE: 2/16/2021

DRAWN BY: R. C. LARSON DATE: 02/13/20

CHECKED BY: A. K. ALLANKI DATE: 02/13/20

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NORTH CAROLINA PROFESSIONAL SEAL 14114 ENGINEER ROBERT C. LARSON

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KCI Associates of North Carolina, P.A.

4505 Falls of Neuse Road, Suite 400 Raleigh, NC 27609-6270 Phone (919) 783-9214

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PROJECT NO. B-5666

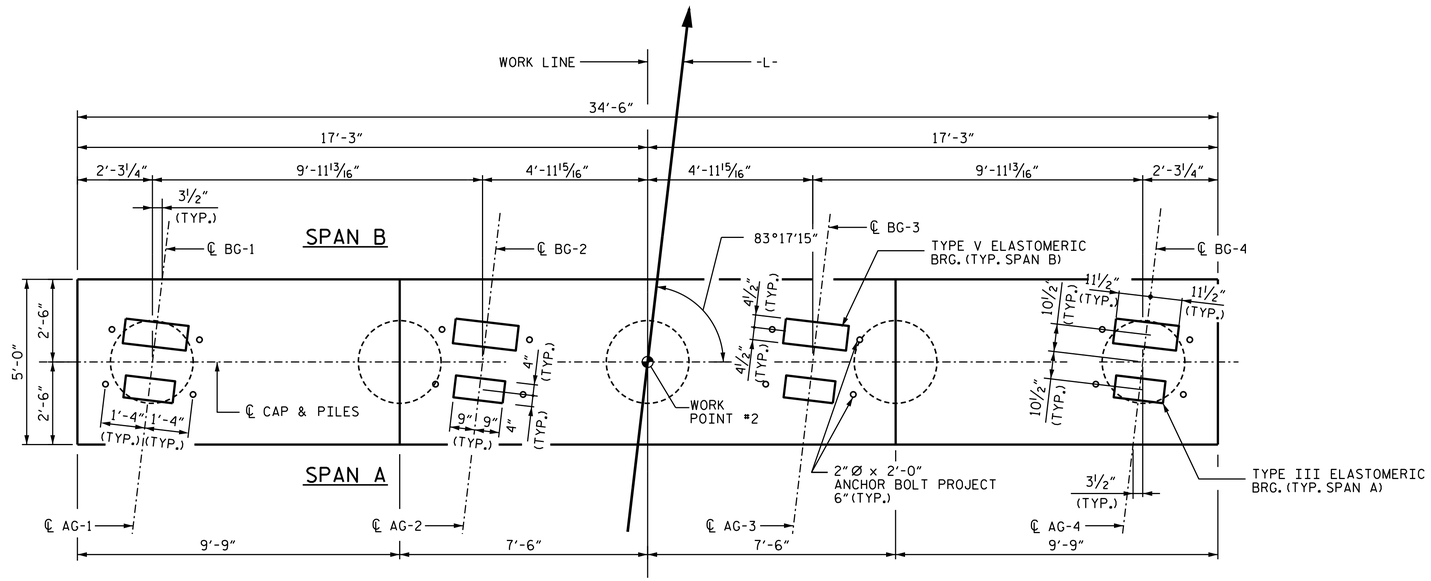
WILSON COUNTY

STATION: 17+37.36 -L-

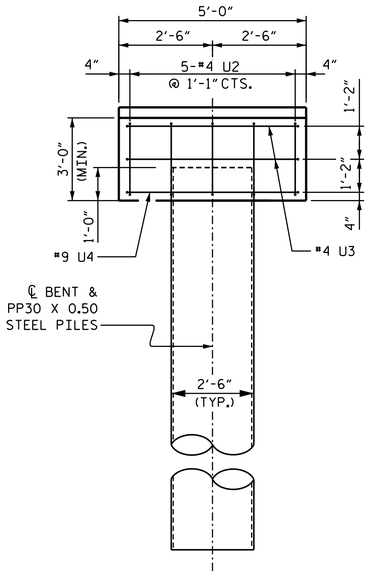
SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

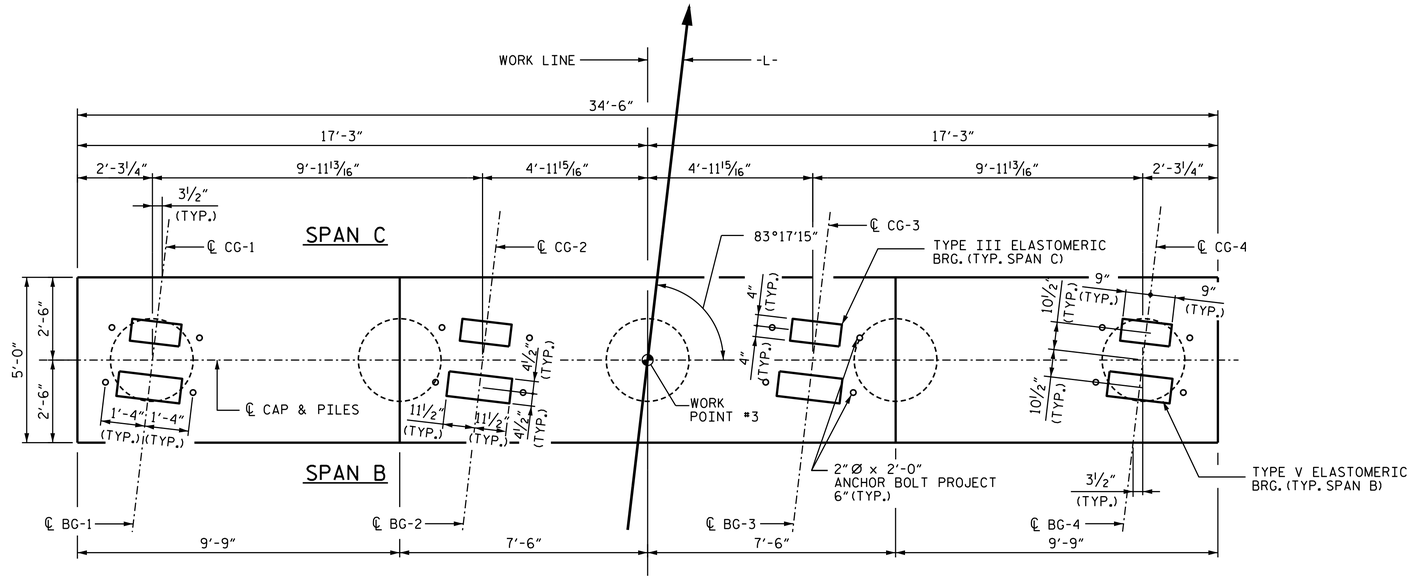
SUBSTRUCTURE END BENT 1



PLAN OF CAP - BENT 1



END ELEVATION



PLAN OF CAP - BENT 2

NOTES

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

GALVANIZE THE TOP OF EACH INTERIOR BENT PILE A MINIMUM OF 40'. GALVANIZE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.

FOR CONCRETE PLUG AND REINFORCING IN PILES SEE "30" STEEL PIPE PILE" STANDARD SHEET.

FOR SECTION THRU BENT CAP SEE SHEET 2 OF 2

PROJECT NO. B-5666

WILSON COUNTY

STATION: 17+37.36 -L-

SHEET 1 OF 2

KCI JOB NO: 251801945.22

DESIGN ENGINEER OF RECORD: DocuSigned by: DB3C8E45B06D4... DATE: 2/16/2021

DRAWN BY: A. K. ALLANKI DATE: 01/28/20

CHECKED BY: R. C. LARSON DATE: 01/29/20

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NORTH CAROLINA PROFESSIONAL SEAL 14114 ENGINEER ROBERT C. LARSON

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STATE OF NORTH CAROLINA
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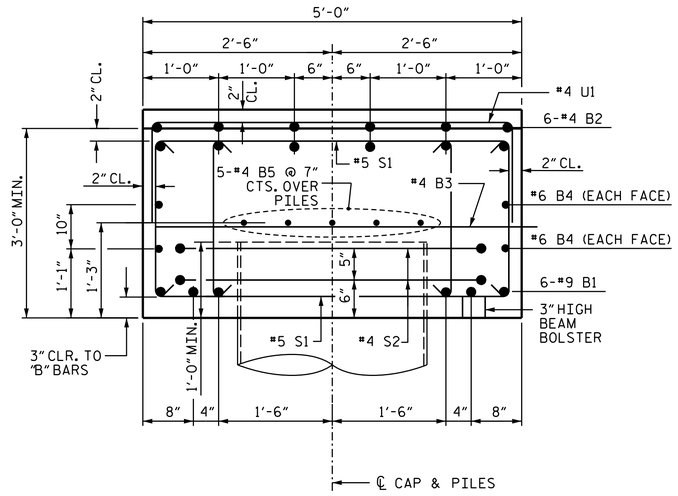
RALEIGH

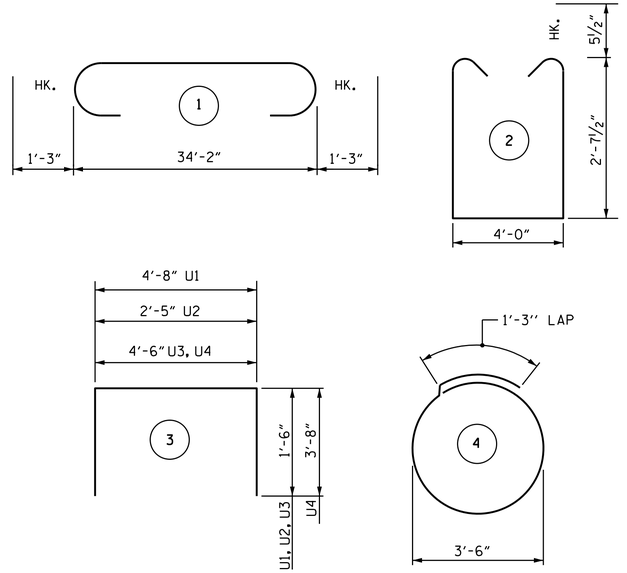
SUBSTRUCTURE BENT 1 OR 2



SECTION THRU BENT CAP

ELEVATION

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

FOR BENT 1 OR 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	12	9	1	36'-8"	1496
B2	6	4	STR.	14'-8"	59
B3	9	4	STR.	4'-8"	28
B4	4	6	STR.	34'-2"	205
B5	5	4	STR.	34'-2"	114
S1	48	5	2	10'-2"	509
S2	10	4	4	12'-3"	82
U1	38	4	3	7'-8"	195
U2	10	4	3	5'-5"	36
U3	4	4	3	7'-6"	20
U4	2	9	3	11'-10"	80

REINFORCING STEEL, LBS.	2824
CLASS A CONCRETE, CU. YD.	19.0
PP 30 X 0.50 GALVANIZED STEEL PILES	
NO.	5
BENT 1 LIN. FT.	350
BENT 2 LIN. FT.	375
PILE DRIVING EQUIPMENT SETUP FOR PP 30 X 0.50 GALVANIZED STEEL PILES, EA.	5
PILE REDRIVES, EA.	3
(NOTE: PILE HEADS HAVE BEEN DEDUCTED FROM CLASS A CONCRETE)	

KCI JOB NO: 251801945.22

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DocuSigned by: DB3C8E45B065480...
NORTH CAROLINA PROFESSIONAL SEAL 14114 ENGINEER ROBERT C. LARSON
2/16/2021

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PROJECT NO. B-5666
WILSON COUNTY
STATION: 17+37.36 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
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RALEIGH

SUBSTRUCTURE BENT 1 OR 2

REVISIONS						SHEET NO.
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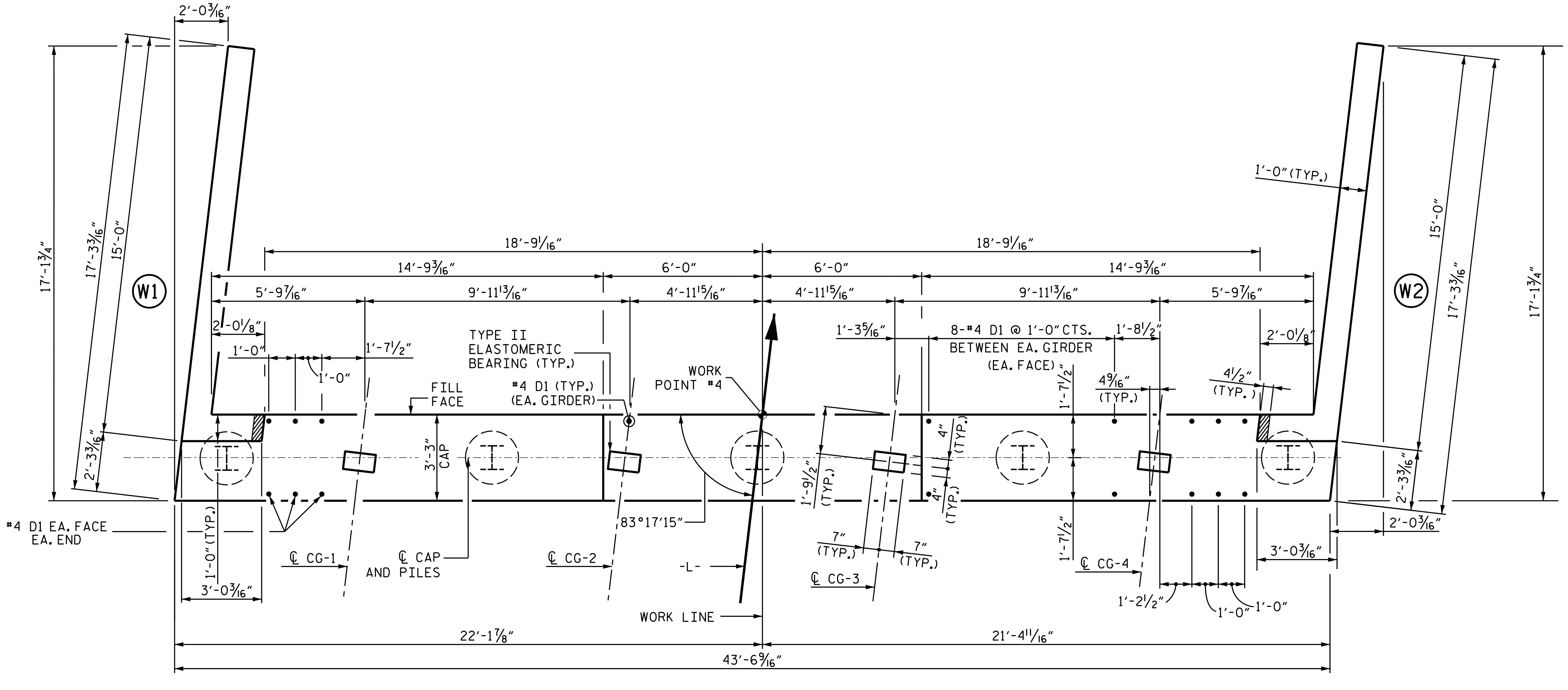
1			3			TOTAL SHEETS
2			4			30



PLAN OF CAP

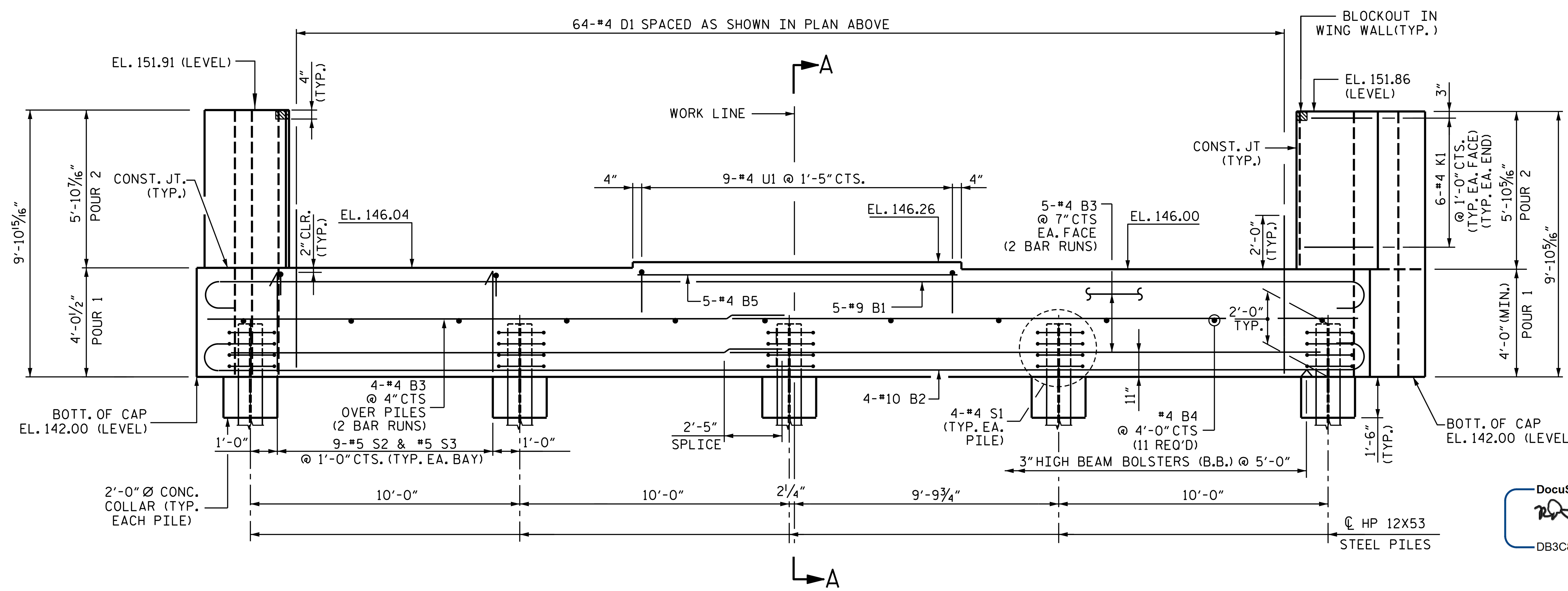
NOTES

THE TOP SURFACE OF THE END BENT CAP AND WINGS (POUR 1) EXCEPT THE BEARING AREAS AND THE AREA OUTSIDE OF THE SUPERSTRUCTURE SHALL BE RAKED TO A DEPTH OF 1/4".

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

FOR "PILE SPLICE DETAIL", SEE END BENT 1.

FOR SECTION A-A SEE SHEET 3 OF 3.



ELEVATION

PROJECT NO. B-5666

WILSON COUNTY

STATION: 17+37.36 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 2

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2/16/2021

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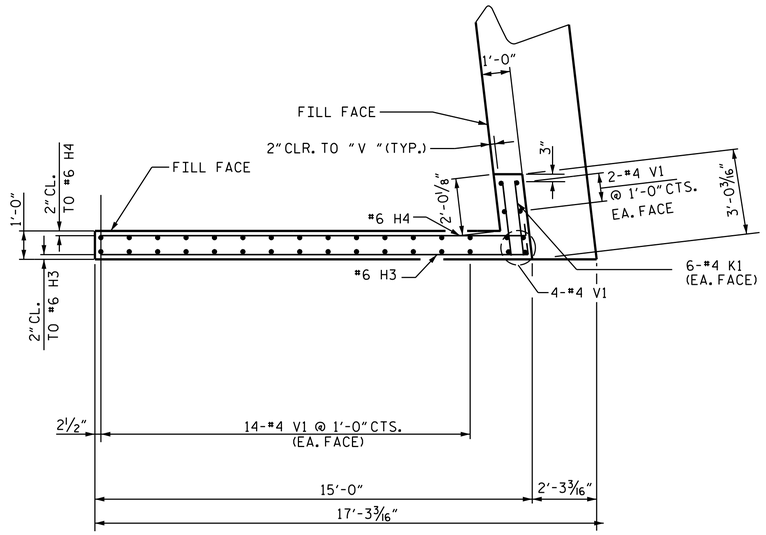
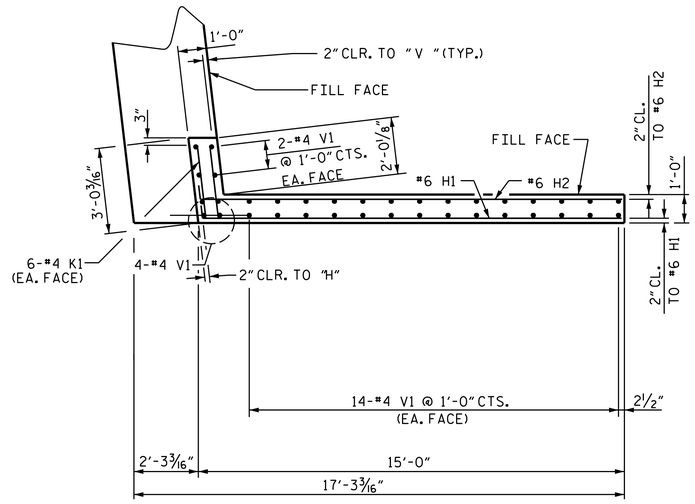
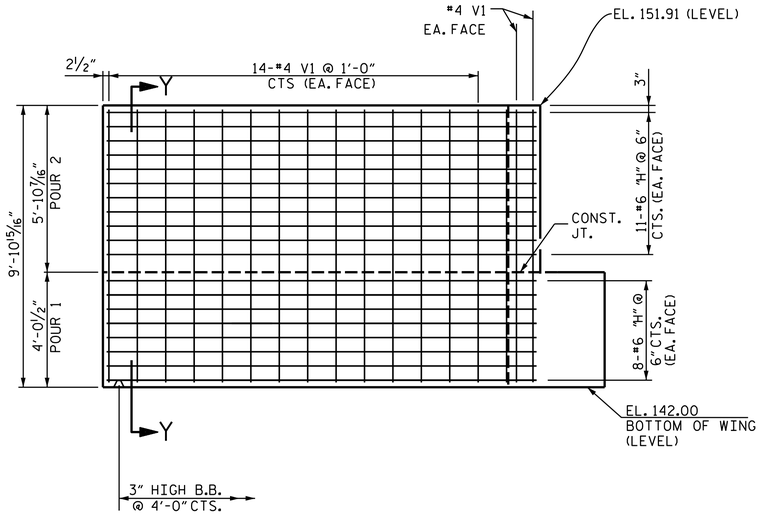
KCI JOB NO: 251801945.22



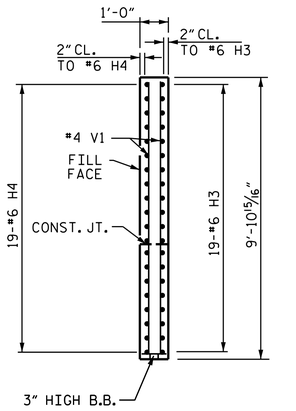
PLAN W1



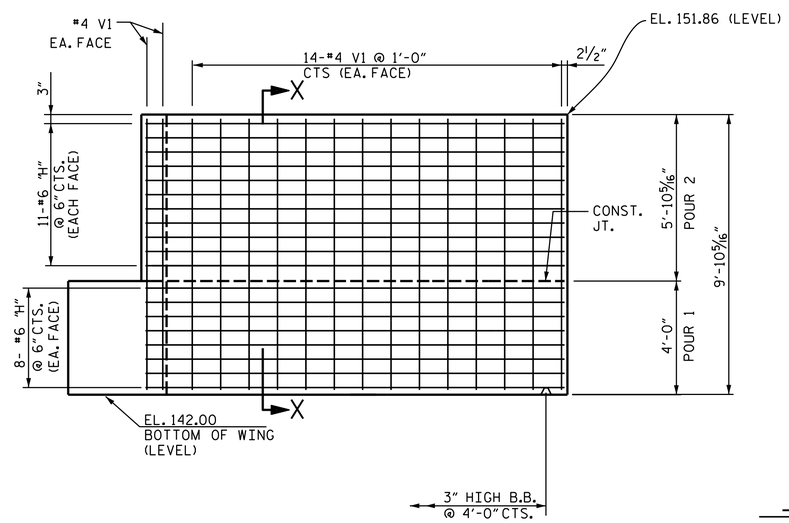
PLAN W2



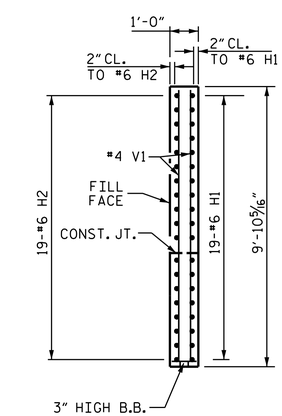
ELEVATION W1



SECTION Y-Y



ELEVATION W2



SECTION X-X

PROJECT NO. B-5666

WILSON COUNTY

STATION: 17+37.36 -L-

SHEET 2 OF 3

KCI JOB NO: 25180194S.22

DESIGN ENGINEER OF RECORD: DocuSigned by: DATE : 2/16/2021

DRAWN BY : A. K. ALLANKI DATE : 02/10/20

CHECKED BY : R. C. LARSON DATE : 02/11/20

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NORTH CAROLINA PROFESSIONAL SEAL 14114 ENGINEER ROBERT C. LARSON

2/16/2021

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE END BENT 2

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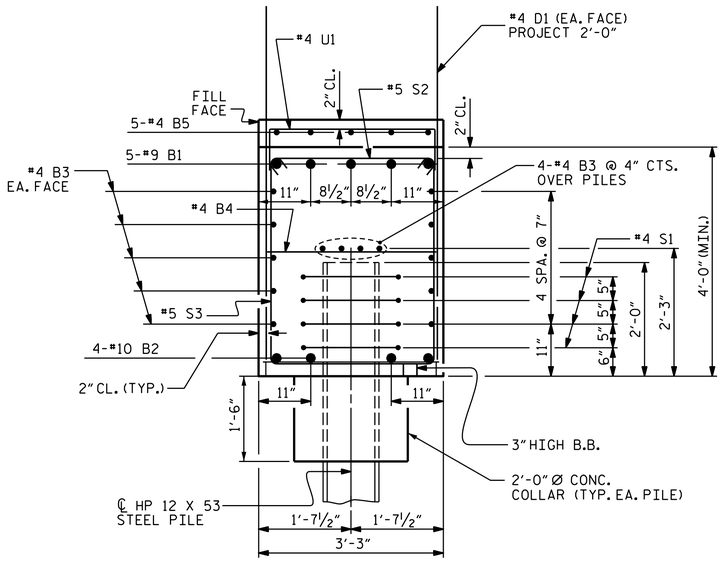
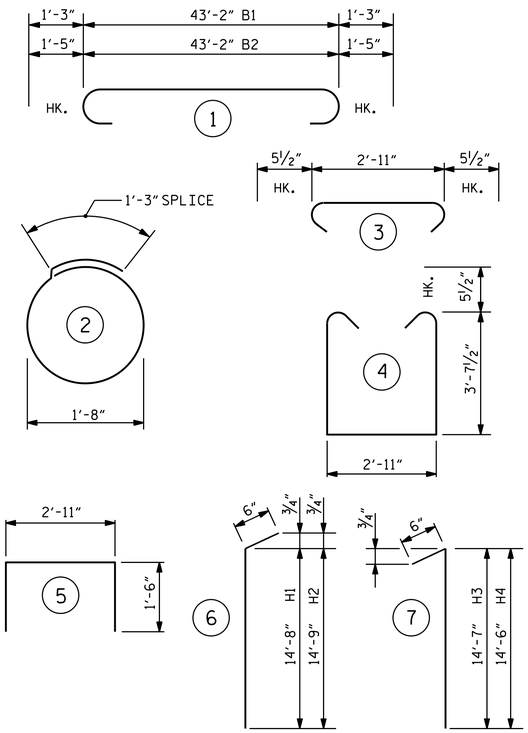


SECTION A-A

BAR TYPES



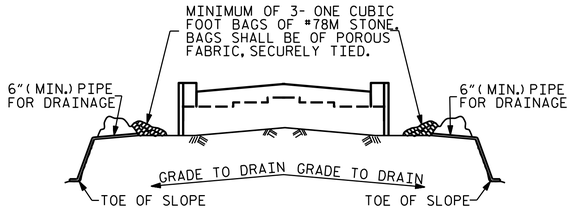
ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	5	9	1	45'-8"	776
B2	4	10	1	46'-0"	792
B3	28	4	STR.	22'-10"	427
B4	11	4	STR.	2'-11"	21
B5	5	4	STR.	11'-8"	39
D1	64	4	STR.	5'-10"	249
H1	19	6	6	15'-2"	433
H2	19	6	6	15'-3"	435
H3	19	6	7	15'-1"	430
H4	19	6	7	15'-0"	428
K1	24	4	STR.	2'-8"	43
S1	20	4	2	6'-6"	87
S2	36	5	3	3'-10"	144
S3	36	5	4	11'-1"	416
U1	9	4	5	5'-11"	36
V1	72	4	STR.	9'-6"	457

REINFORCING STEEL, LBS.		5213
CLASS A CONCRETE, CY	POUR 1	26.5
	POUR 2	7.4
	TOTAL	33.9
HP 12X53 STEEL PILES	NO.	5
	L.F.	350
PILE DRIVING EQUIPMENT SETUP FOR HP 12X53 STEEL PILES, EA.		5
PILE REDRIVES, EA.		2



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-5666

WILSON COUNTY

STATION: 17+37.36 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE END BENT 2

KCI JOB NO: 251801945.22

DESIGN ENGINEER OF RECORD: DocuSigned by: DB3C8E45B06D499... DATE: 2/16/2021

DRAWN BY: R. C. LARSON DATE: 02/13/20

CHECKED BY: A. K. ALLANKI DATE: 02/13/20

DocuSigned by: DB3C8E45B06D499...

NORTH CAROLINA PROFESSIONAL SEAL 14114 ENGINEER ROBERT C. LARSON

2/16/2021

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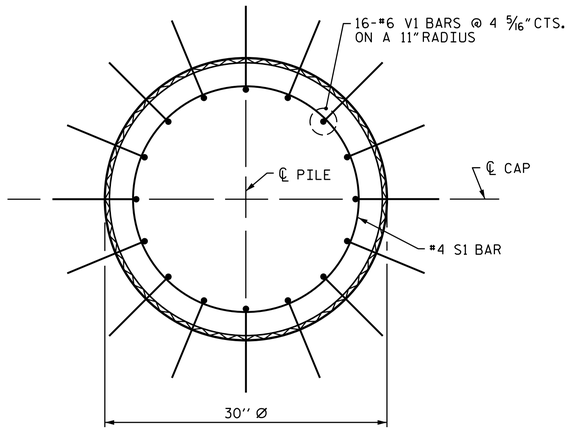
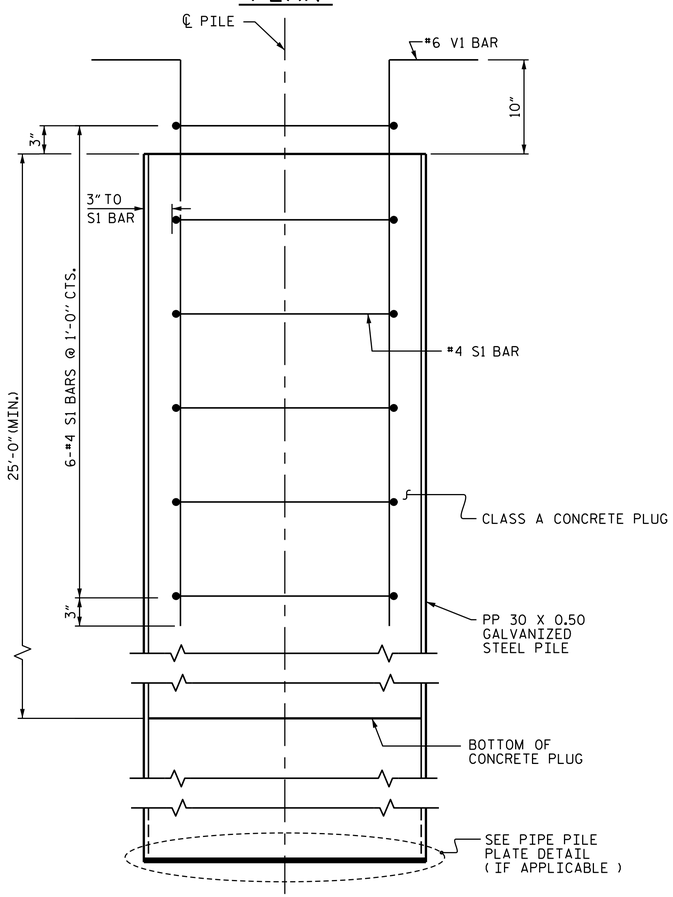


PLAN



ELEVATION

PP 30 X 0.50 GALVANIZED STEEL PILE

(OPEN OR CLOSED END)

NOTES

PIPE PILES SHALL BE IN ACCORDANCE WITH SECTION 1084 OF THE STANDARD SPECIFICATIONS.

GALVANIZE STEEL PIPE PILES IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS UNLESS METALLIZING IS REQUIRED. GALVANIZING OR METALLIZING PIPE PILE PLATES IS NOT REQUIRED.

PIPE PILE PLATES, IF REQUIRED, SHALL BE IN ACCORDANCE WITH SECTION 450 OF THE STANDARD SPECIFICATIONS.

REMOVE AND REPLACE OR REPAIR TO THE SATISFACTION OF THE ENGINEER PILES THAT ARE DAMAGED, DEFORMED OR COLLAPSED DURING INSTALLATION OR DRIVING.

PILE SPLICES SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AND AWS D1.1.

FOR CLOSED END PIPE PILES, REMOVE ALL SOIL AND WATER FROM INSIDE THE PILES JUST PRIOR TO PLACING REINFORCING STEEL AND CONCRETE FOR THE CONCRETE PLUG.

FOR OPEN END PIPE PILES, REMOVE ENOUGH SOIL AND WATER FROM INSIDE THE PILES TO CONSTRUCT THE CONCRETE PLUG WITHOUT FOULING THE CONCRETE.

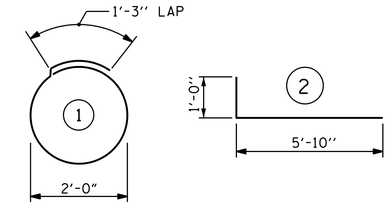
FORM THE CONCRETE PLUG SUCH THAT THE REINFORCING STEEL OR CONCRETE DOES NOT MOVE AND THE CLEARANCE FROM THE REINFORCING STEEL TO THE INSIDE OF THE PILE IS MAINTAINED AFTER CONCRETE PLACEMENT. DO NOT PLACE CONCRETE IN THE BENT CAP UNTIL THE CONCRETE PLUG HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 1500 PSI.

THE REINFORCING STEEL, CLASS A CONCRETE, AND GALVANIZING ARE CONSIDERED INCIDENTAL TO THE CONTRACT UNIT PRICE BID PER LINEAR FOOT FOR PP 30 X 0.50 GALVANIZED STEEL PILES.

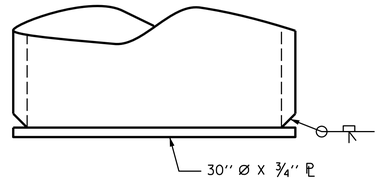
BILL OF MATERIAL FOR ONE PP 30 X 0.50 GALVANIZED STEEL PILE

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
S1	6	#4	1	7'-7"	30
V1	16	#6	2	6'-10"	164
REINFORCING STEEL =				194	lbs
CLASS A CONCRETE					
25'-0" MINIMUM PLUG					3.9 CY

BAR TYPES

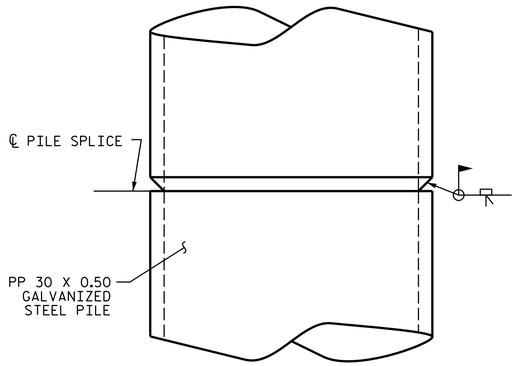


ALL BAR DIMENSIONS ARE OUT TO OUT.



PIPE PILE PLATE DETAIL

(IF APPLICABLE)



PIPE PILE SPLICE DETAIL

PROJECT NO. B-5666

WILSON COUNTY

STATION: 17+37.36 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

30" STEEL PIPE PILE

DocuSigned by: DB3C8E45B06D499...

NORTH CAROLINA PROFESSIONAL SEAL 14114 ENGINEER ROBERT C. LARSON

2/16/2021

DESIGN ENGINEER OF RECORD: DocuSigned by: DB3C8E45B06D499... DATE : 2/16/2021

ASSEMBLED BY : R. C. LARSON DATE : 01/15/20
CHECKED BY : R. J. FLORY DATE : 02/12/20

DRAWN BY : TLA 8/05
CHECKED BY : GM 9/05

REV. 5/1/06R MAA/KMM
REV. 10/1/11 MAA/GM
REV. 12/17 MAA/THC

KCI JOB NO: 251801945.22

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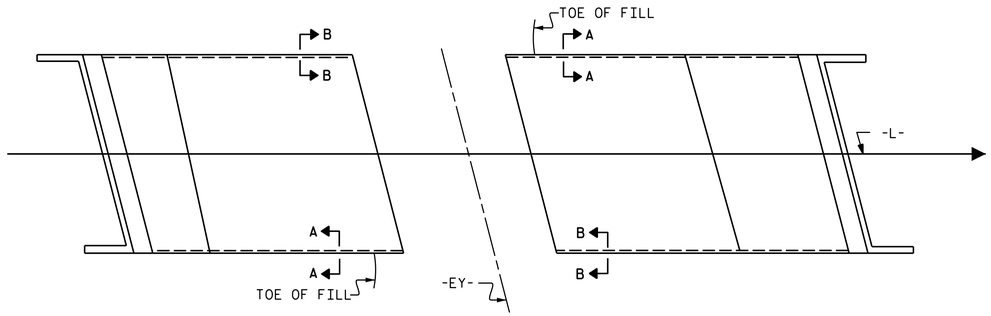
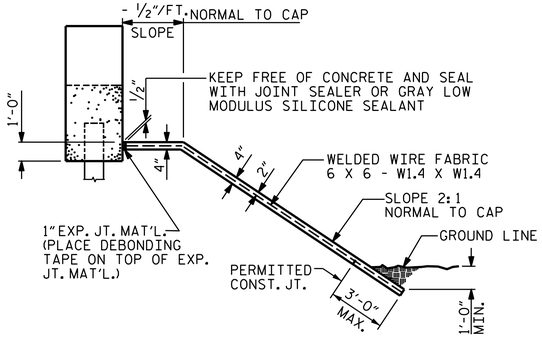
2			4			30

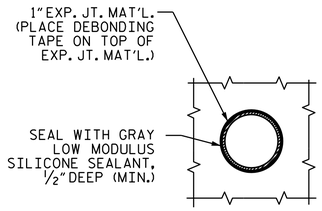
STD. NO. SPP5



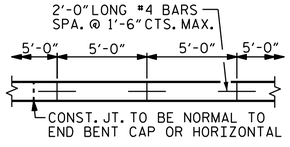
PLAN



SECTION ALONG ℄ SURVEY WHEN DITCH IS NOT PROVIDED

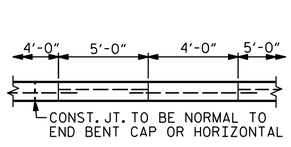


PLAN WHERE CONCRETE SLOPE PROTECTION MUST BE PLACED AROUND A BENT PILE



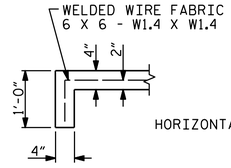
STRIP WIDTHS MAY VARY IN CURVED PORTION.

POURING DETAIL

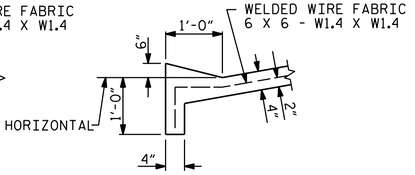


POUR A 4'-0" STRIP FIRST. STRIP WIDTHS MAY VARY IN CURVED PORTION.

OPTIONAL POURING DETAIL



SECTION A-A



SECTION B-B

GENERAL NOTES

SLOPE PROTECTION SHALL BE PLACED UNDER THE ENDS OF THE BRIDGE AS SHOWN IN THE DETAILS. THE CONTRACTOR, AT HIS OPTION, MAY USE ALTERNATE "B" ONLY FOR HIGHWAY OVER HIGHWAY GRADE SEPARATIONS WITH 2:1 END BENT SLOPE IN RURAL, UNPOPULATED AREAS. STRAIGHT EDGING WILL NOT BE REQUIRED UNLESS, IN THE OPINION OF THE ENGINEER, VISUAL INSPECTION INDICATES A NEED FOR IT. MEASUREMENT AND PAYMENT SHALL BE AS PRESCRIBED IN SECTION 462 OF THE STANDARD SPECIFICATIONS. FOR BERM WIDTH, SEE GENERAL DRAWING.

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.

BRIDGE @ STA. 17+37.36 -L-	4 INCH SLOPE PROTECTION	* WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	220	400
END BENT 2	220	400

* QUANTITY SHOWN IS BASED ON 5' POURS.

KCI JOB NO: 251801945.22

DESIGN ENGINEER OF RECORD: DocuSigned by: DB3C8E45B06D450... DATE: 2/16/2021

ASSEMBLED BY : R. C. LARSON DATE : 02/10/20
CHECKED BY : R. J. FLORY DATE : 02/20/20

DRAWN BY : ELR 5/92
CHECKED BY : GRP 6/92

REV. 12/21/11 MAA/GM
REV. 1/16 MAA/TMG
REV. 12/17 MAA/THC

DocuSigned by: DB3C8E45B06D450...

NORTH CAROLINA PROFESSIONAL SEAL 14114 ENGINEER ROBERT C. LARSON

2/16/2021

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ENGINEERS ◆ PLANNERS ◆ SCIENTISTS ◆ CONSTRUCTION MANAGERS LICENSE NUMBER: C-0764
KCI Associates of North Carolina, P.A.
4505 Falls of Neuse Road, Suite 400 Raleigh, NC 27609-6270 Phone (919) 783-9214

PROJECT NO. B-5666

WILSON COUNTY

STATION: 17+37.36 -L-

SHEET 1 OF 2

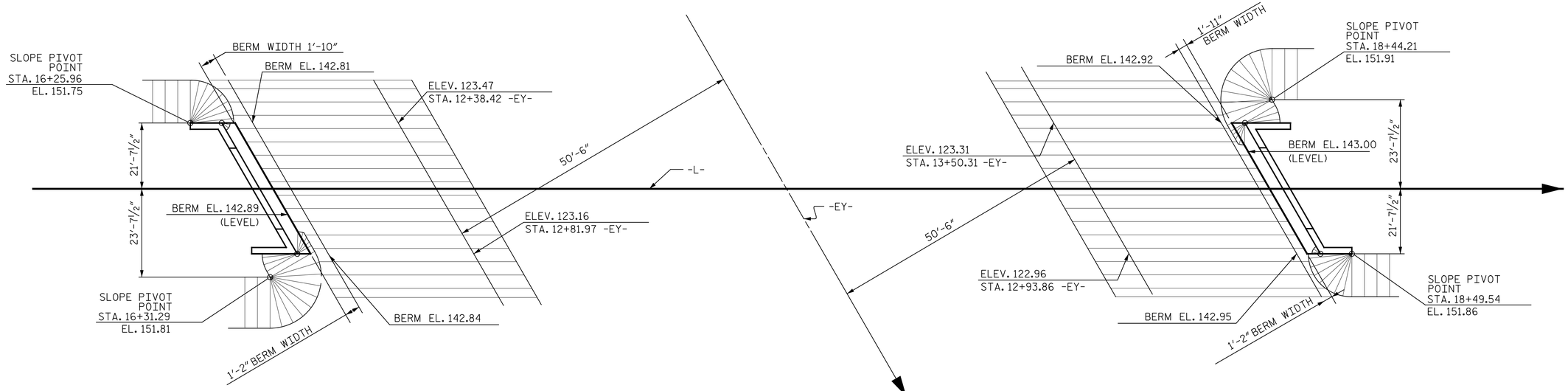
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

SLOPE PROTECTION DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-27
1			3			TOTAL SHEETS
2			4			30

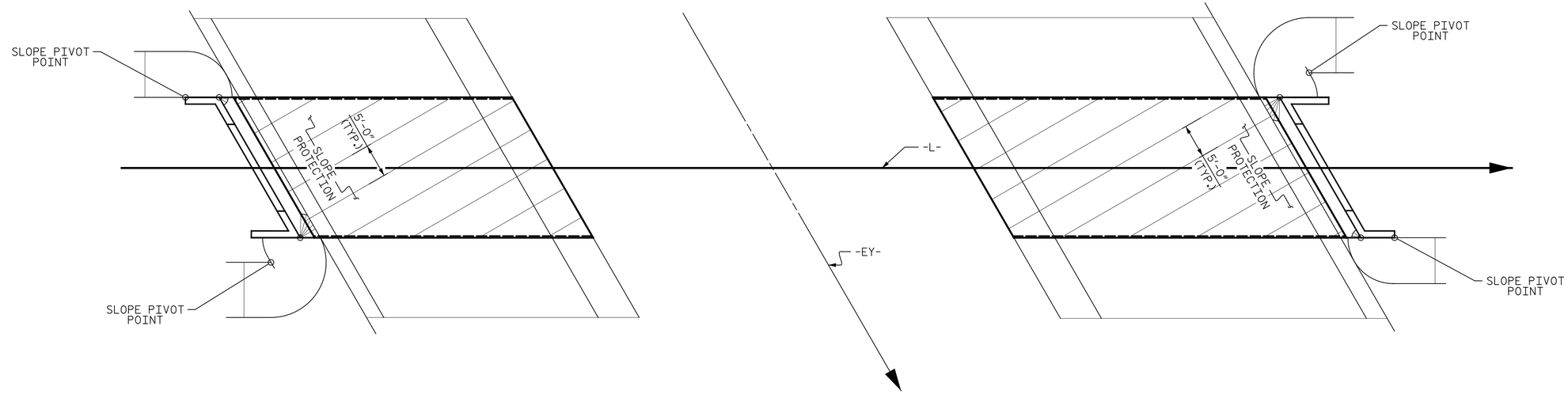
STD. NO. SP1 (SHT 2)



END BENT 1

PLAN - GRADING

END BENT 2



END BENT 1

PLAN - CONCRETE PLACEMENT

END BENT 2

PROJECT NO. B-5666

WILSON COUNTY

STATION: 17+37.36 -L-

SHEET 2 OF 2

KCI JOB NO: 251801945.22

DESIGN ENGINEER OF RECORD: DocuSigned by: DB3C8E45B06D489... DATE :	2/16/2021
ASSEMBLED BY : R. C. LARSON	DATE : 02/10/20
CHECKED BY : R. J. FLORY	DATE : 02/20/20
DRAWN BY : WJH 10/88	REV. 10/1/11 MAA/GM
CHECKED BY : FCJ 10/88	REV. 1/16 MAA/TMG
	REV. 12/17 MAA/THC

DocuSigned by: DB3C8E45B06D489...

NORTH CAROLINA PROFESSIONAL SEAL 14114 ENGINEER ROBERT C. LARSON

2/16/2021

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STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

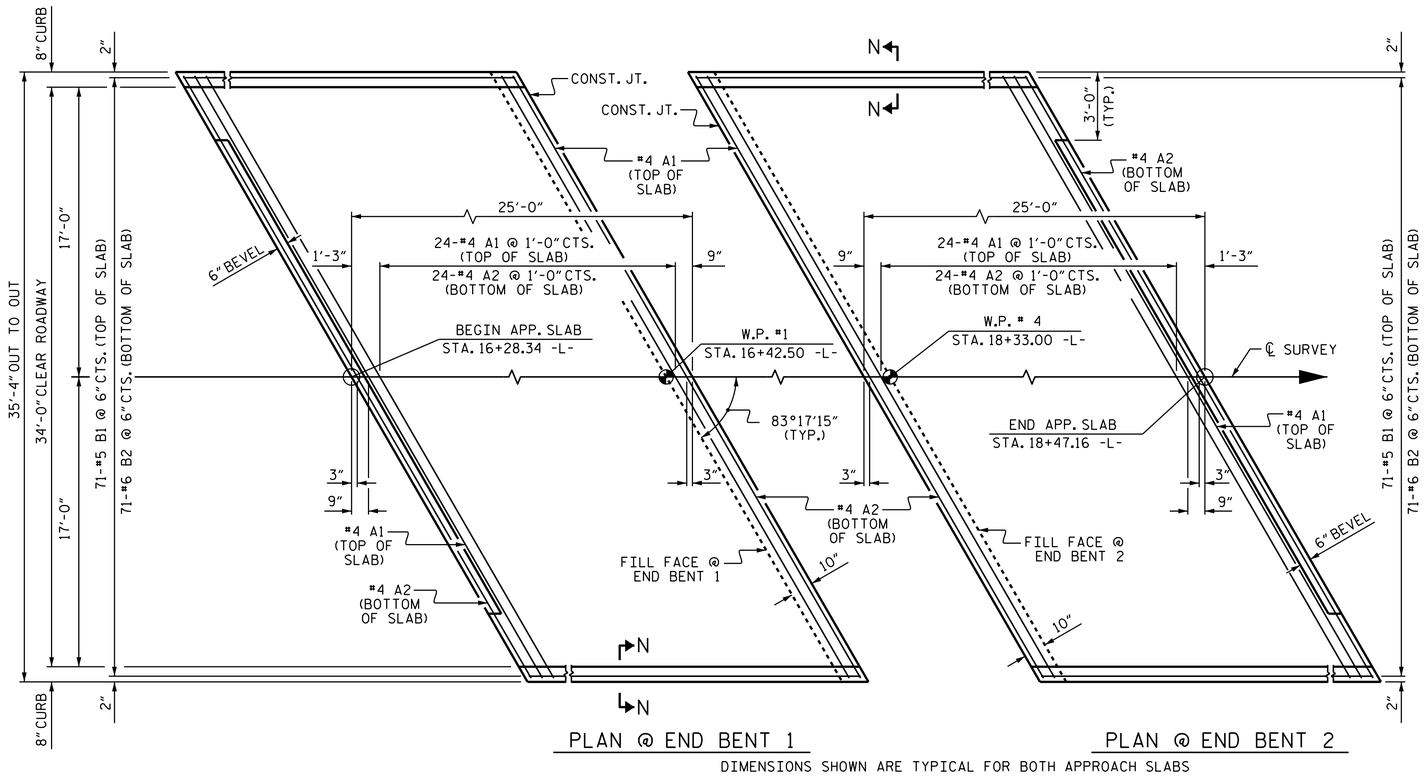
RALEIGH

STANDARD

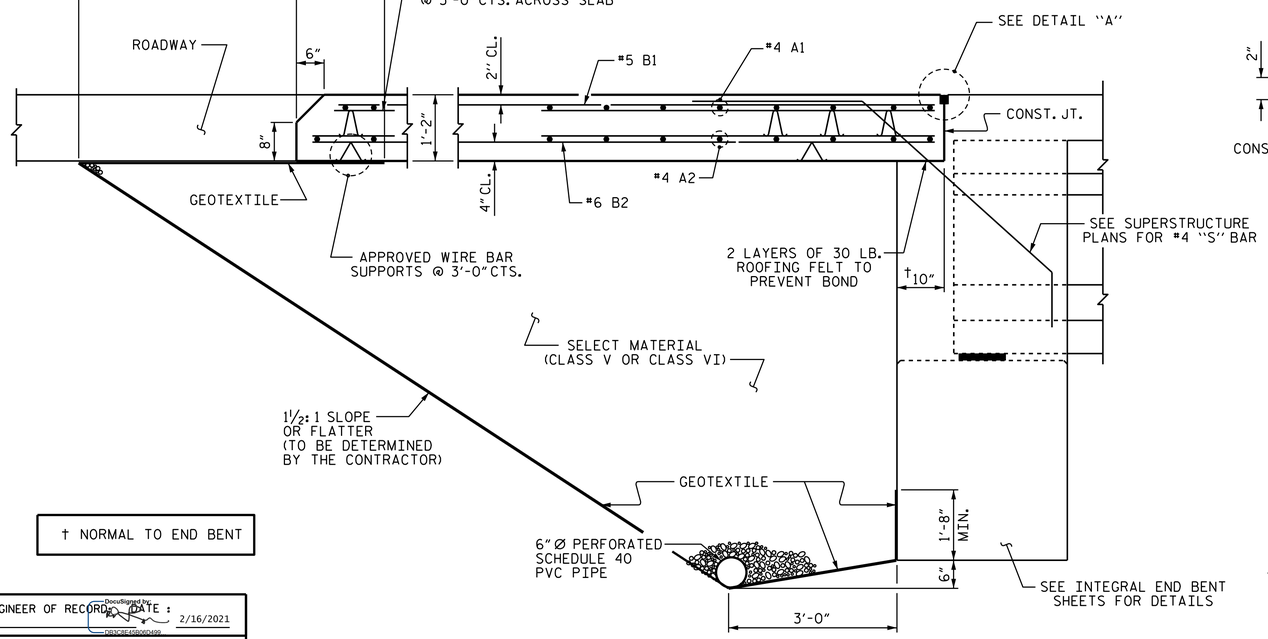
SLOPE PROTECTION DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-28
1			3			TOTAL SHEETS
2			4			30

STD. NO. SP2 (SHT 2)



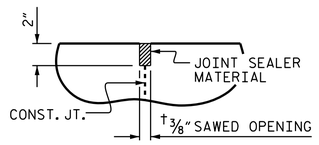
DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



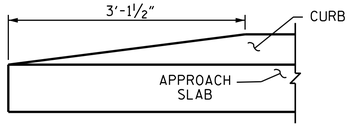
† NORMAL TO END BENT

SECTION THRU SLAB

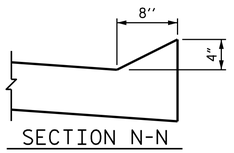
(TYPE I - STANDARD APPROACH FILL)



DETAIL "A"



END OF CURB WITHOUT SHOULDER BERM GUTTER



SECTION N-N

NOTES

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

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

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.

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

AT THE CONTRACTORS OPTION, "TYPE A - ALTERNATE APPROACH FILL" IN LIEU OF "TYPE I - STANDARD APPROACH FILL" MAY BE CONSTRUCTED AT NO ADDITIONAL COST TO THE DEPARTMENT. SEE SHEET 2 OF 2 FOR DETAILS AND NOTES.

BILL OF MATERIAL

FOR ONE APPROACH SLAB (2 REQ'D)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	26	#4	STR	35'-2"	611
A2	26	#4	STR	35'-2"	611
* B1	71	#5	STR	24'-1"	1783
B2	71	#6	STR	24'-8"	2631
REINFORCING STEEL				LBS.	3242
* EPOXY COATED REINFORCING STEEL				LBS.	2394
CLASS AA CONCRETE				C.Y.	38.1

SPLICE LENGTHS

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

PROJECT NO. B-5666

WILSON COUNTY

STATION: 17+37.36 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB FOR INTEGRAL ABUTMENT WITH FLEXIBLE PAVEMENT

DocuSigned by: DB3C8E45B06D469...

NORTH CAROLINA PROFESSIONAL SEAL 14114 ENGINEER ROBERT C. LARSON

2/16/2021

DESIGN ENGINEER OF RECORD:	DATE: 2/16/2021
ASSEMBLED BY: C.E. LARSON	DATE: 10/09/19
CHECKED BY: R.C. LARSON	DATE: 10/11/19
DRAWN BY: TLA 10/05	REV. 6/13 MAA/GM
CHECKED BY: GM 5/06	REV. 12/17 MAA/THC
	REV. 06/19 BNB/THC

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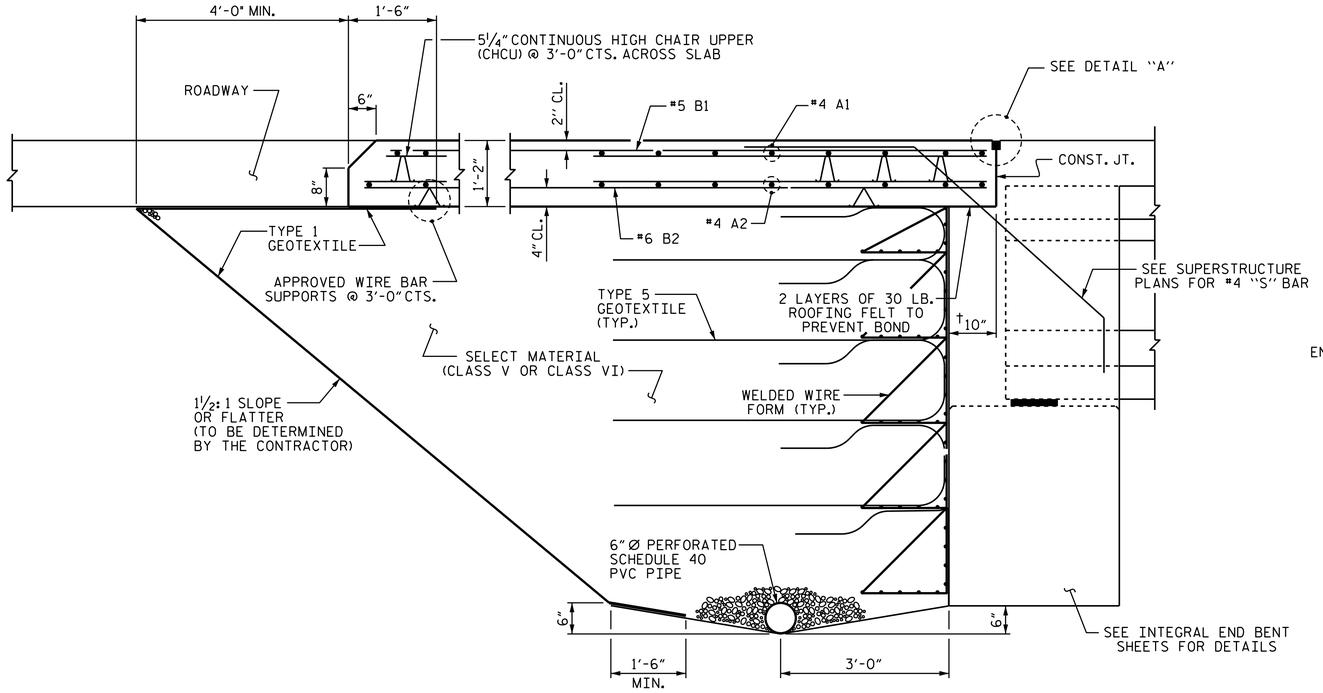
1			3			TOTAL SHEETS
2			4			30

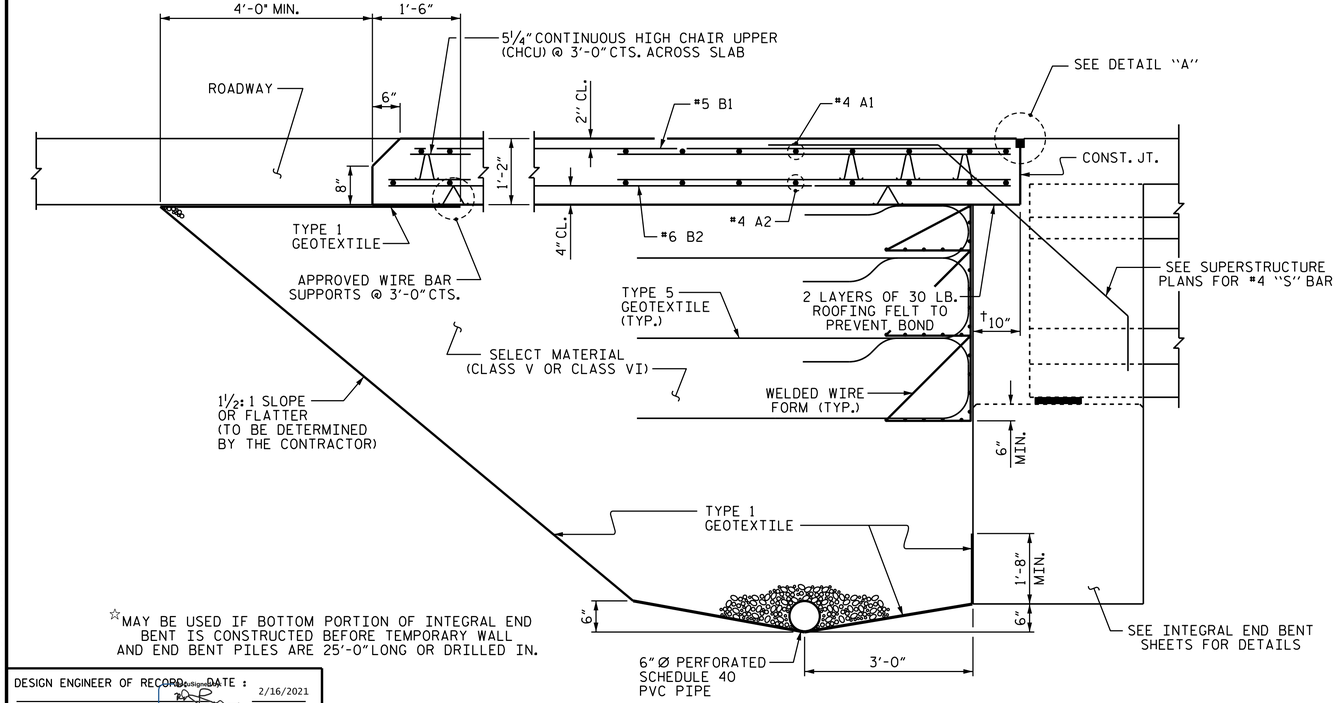
KCI JOB NO: 251801945.22

STD. NO. BAS5 (SHT 1a)



SECTION THRU SLAB

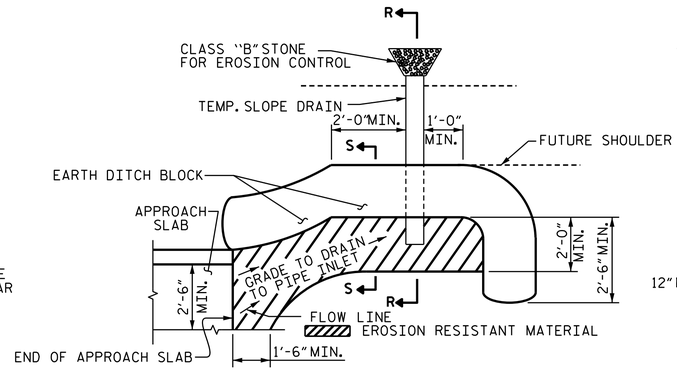
(TYPE A - ALTERNATE APPROACH FILL)



SECTION THRU SLAB

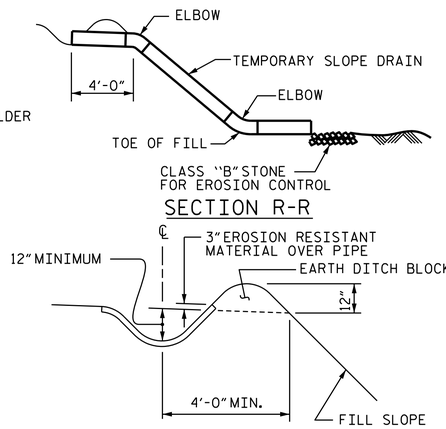
☆(TYPE A - ALTERNATE APPROACH FILL)

☆MAY BE USED IF BOTTOM PORTION OF INTEGRAL END BENT IS CONSTRUCTED BEFORE TEMPORARY WALL AND END BENT PILES ARE 25'-0" LONG OR DRILLED IN.



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

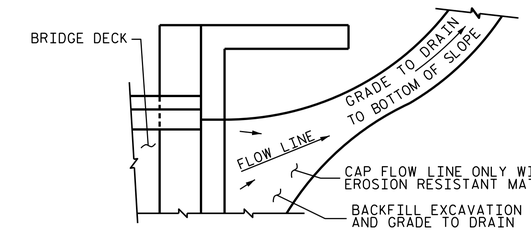
PLAN VIEW



SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



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

NOTES

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

FOR TEMPORARY GEOTEXTILE WALL INCLUDING GEOTEXTILE, 6" Ø DRAINAGE PIPE, WELDED WIRE FORM, AND SELECT MATERIAL, SEE ROADWAY PLANS.

GEOTEXTILE (TYPE 1 OR TYPE 5) SHALL BE 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.

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.

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

PROJECT NO. B-5666

WILSON COUNTY

STATION: 17+37.36 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 14114 ENGINEER ROBERT C. LARSON

DocuSigned by: DB3C8E45B06D499... 2/16/2021

DESIGN ENGINEER OF RECORD	DATE : 2/16/2021
ASSEMBLED BY : C.E. LARSON	DATE : 10/09/19
CHECKED BY : R.C. LARSON	DATE : 02/12/20
DRAWN BY : TLA 10/05	REV. 12/21/11 MAA/GM
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4505 Falls of Neuse Road, Suite 400 Raleigh, NC 27609-6270 Phone (919) 783-9214

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1			3			TOTAL SHEETS
2			4			30

KCI JOB NO: 25180194S.22

STD. NO. BAS5 (SHT 1a)

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 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 INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

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

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

SPECIAL NOTES:

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

ENGLISH

JANUARY, 1990

REV. 6-16-95 EEM (c) RGW REV. 5-7-03 RWW (c) JTE REV. 10-1-11 MAA (c) GM
REV. 8-16-99 RWW (c) LES REV. 5-1-06 TLA (c) GM REV. 12-17 MAA (c) THC
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