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09/08/99
2/3/2022
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pjacob

TIP PROJECT: B–5728

CONTRACT: C204438

STRUCTURES

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

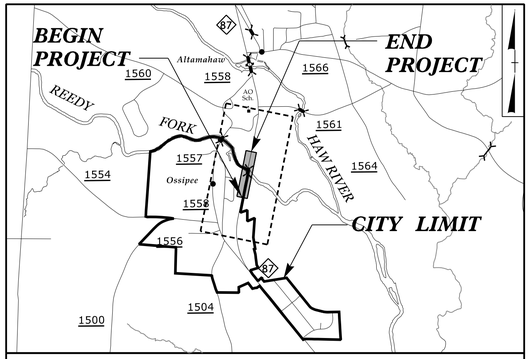
ALAMANCE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B–5728	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
45684.1.1	N/A	PE
45684.2.1	N/A	ROW/UT
45684.3.1	N/A	CONST

LOCATION: *REPLACEMENT OF BRIDGE NO. 000112 OVER REEDY FORK ON NC 87*

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

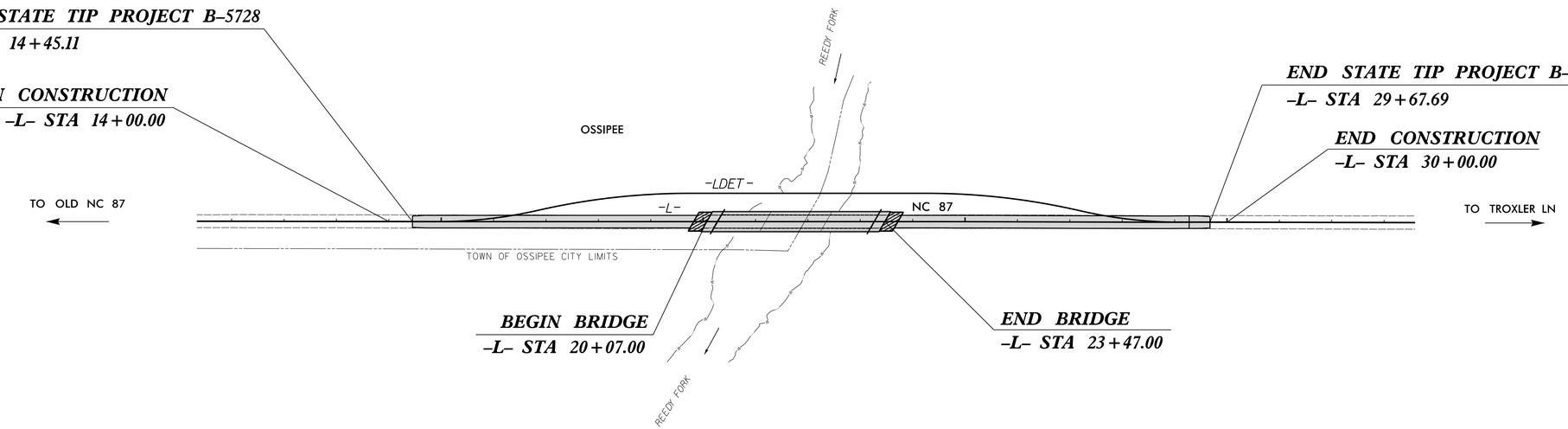


VICINITY MAP
(NOT TO SCALE)

NAD 83 NA 2011

BEGIN STATE TIP PROJECT B–5728
–L– STA 14+45.11

BEGIN CONSTRUCTION
–L– STA 14+00.00



END STATE TIP PROJECT B–5728
–L– STA 29+67.69

END CONSTRUCTION
–L– STA 30+00.00

BEGIN BRIDGE
–L– STA 20+07.00

END BRIDGE
–L– STA 23+47.00

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

PLANS: 50 25 0 50 100

PROFILE (HORIZONTAL): 50 25 0 50 100

PROFILE (VERTICAL): 10 5 0 10 20

DESIGN DATA

ADT 2021 = 6,340
ADT 2041 = 7,040
K = 10 %
D = 65 %
T = 10 % *
V = 55 MPH
* TTST = 3% DUAL 7%
FUNC CLASS = MINOR ARTERIAL – REGIONAL

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B–5728 = 0.224 mi
LENGTH OF STRUCTURES TIP PROJECT B–5728 = 0.064 mi
LENGTH OF TIP PROJECT B–5728 = 0.288 mi

Prepared in the Office of:
moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
NC License NO.: F-0105

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
MARCH 25, 2021

LETTING DATE:
APRIL 19, 2022

TRENT HUFFMAN P.E.
PROJECT ENGINEER

PAUL JACOB P.E.
PROJECT STRUCTURAL ENGINEER

DAVID STUTTS, P.E.
NCDOT CONTACT

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

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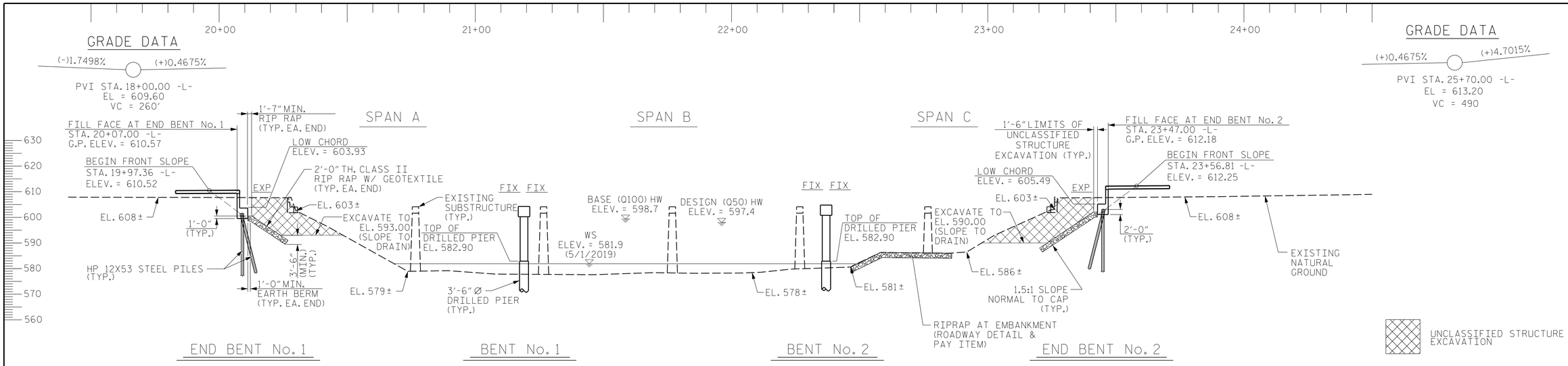
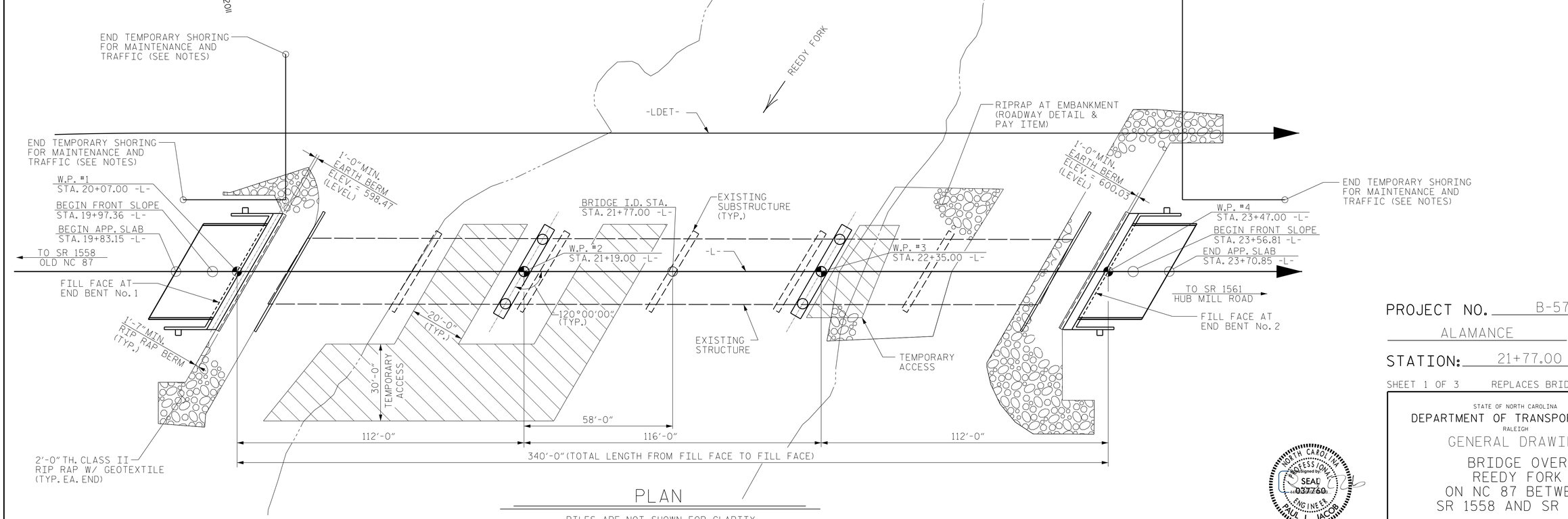


UNCLASSIFIED STRUCTURE EXCAVATION

SECTION ALONG -L-

(SECTION TAKEN AT RIGHT ANGLES TO BENTS AND END BENTS)

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS



PLAN

PILES ARE NOT SHOWN FOR CLARITY
END BENTS & BENTS ARE PARALLEL

NORTH CAROLINA PROFESSIONAL Digitally Signed by SEAL 037760 ENGINEER PAUL L. JACOB
2/3/2022

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DRAWN BY :	J. LOFTUS	DATE :	10-2020
CHECKED BY :	P. JACOB	DATE :	10-2021
DESIGN ENGINEER OF RECORD:	J. LOFTUS	DATE :	10-2021

PROJECT NO. B-5728

ALAMANCE COUNTY

STATION: 21+77.00 -L-

SHEET 1 OF 3 REPLACES BRIDGE No. 000112

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

BRIDGE OVER
REEDY FORK
ON NC 87 BETWEEN
SR 1558 AND SR 1561

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

2/3/2022
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pjacob

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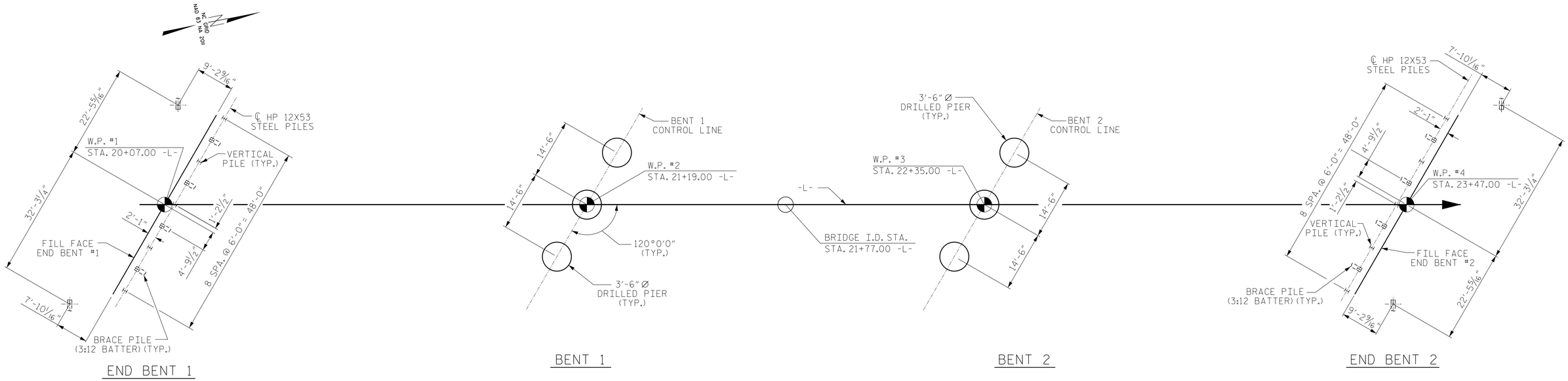

FOUNDATION LAYOUT

(DIMENSION LOCATING PILES ARE SHOWN TO THE CENTERLINE OF PILES AT BOTTOM OF CAP OR FOOTING)

FOUNDATION NOTES:

1. FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
2. DRILLED PIERS AT BENT NO. 1 AND BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 530 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE.
3. INSTALL PERMANENT STEEL CASINGS AT BENT NO. 1 BY VIBRATING, SCREWING OR DRIVING PERMANENT CASINGS BEFORE EXCAVATING OR DISTURBING ANY MATERIAL BELOW ELEVATION 577.3 FT (LT) AND 572.6 (CT, RT).
4. INSTALL PERMANENT STEEL CASINGS AT BENT NO. 2 BY VIBRATING, SCREWING OR DRIVING PERMANENT CASINGS BEFORE EXCAVATING OR DISTURBING ANY MATERIAL BELOW ELEVATION 580.2 FT (LT) AND 576.0 (CT, RT).
5. THE SCOUR CRITICAL ELEVATION (SCE) FOR BENT NO. 1 IS ELEVATION 575.3 FT (LT) AND 570.6 (CT, RT). SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.
6. THE SCOUR CRITICAL ELEVATION (SCE) FOR BENT NO. 2 IS ELEVATION 578.2 FT (LT) AND 574.0 (CT, RT). SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.
7. CSL TUBES ARE REQUIRED FOR DRILLED PIERS AT BENT NO. 1 AND BENT NO. 2. FOR CSL TESTING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
8. SID INSPECTIONS MAY BE REQUIRED FOR DRILLED PIERS AT BENT NO. 1 AND BENT NO. 2. THE ENGINEER WILL DETERMINE THE NEED FOR SID INSPECTIONS. FOR SID INSPECTIONS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
9. FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
10. PILES AT END BENT NO. 1 AND END BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 105 TONS PER PILE.
11. DRIVE PILES AT END BENT NO. 1 AND END BENT NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 175 TONS PER PILE.
12. TESTING THE FIRST PRODUCTION PILE WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING IS REQUIRED. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

FOUNDATION SPECIAL NOTES:

1. INSTALL DRILLED PIERS TO A TIP NO HIGHER THAN (TNHT) ELEVATION WITH THE REQUIRED TIP RESISTANCE AND PENETRATION INTO ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS NOTED BELOW.

BENT	PIER	TIP NO HIGHER THAN ELEVATION (FT)	REQUIRED TIP RESISTANCE (TSF)	PENETRATION INTO ROCK (FT)
BENT 1	LT	557.9	125	10.1
	CT	551.9	130	7.2
	RT	551.9	130	7.2
BENT 2	LT	569.1	125	9.9
	CT	562.9	125	11.3
	RT	562.9	125	11.3

DRAWN BY : J. LOFTUS DATE : 03-2021
CHECKED BY : P. JACOB DATE : 10-2021
DESIGN ENGINEER OF RECORD: J. LOFTUS DATE : 10-2021

1/12/2022
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PROJECT NO. B-5728
ALAMANCE COUNTY
STATION: 21+77.00 -L-
SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
GENERAL DRAWING
BRIDGE OVER
REEDY FORK
ON NC 87 BETWEEN
SR 1559 AND SR 1561

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

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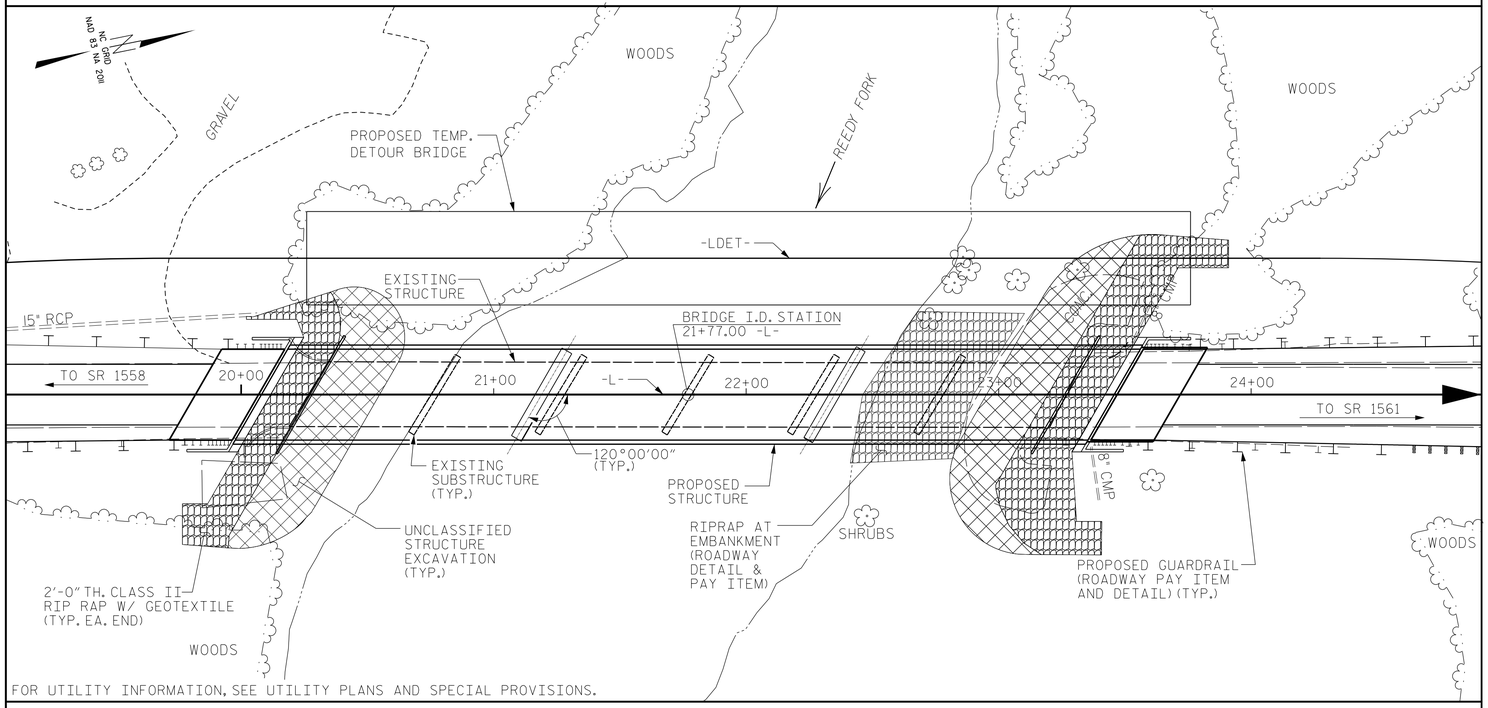
TBM #1 - SPIKE IN 16" QU, 115' LT. OF 18+69.15 -L-, EL. 615.33



LOCATION SKETCH

NOTES

ASSUMED LIVE LOAD= HL-93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

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

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.

AT THE CONTRACTOR'S OPTION, AND UPON REMOVAL OF THE CAUSEWAY, THE CLASS II RIP RAP USED IN THE CAUSEWAY MAY BE PLACED AS RIP RAP SLOPE PROTECTION. SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS AT STATION 21+77.00 -L-.

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

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

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 45 FT. LEFT OF -L- AND 60 FT. RIGHT OF -L- AT END BENT 1 AND 65 FT EACH SIDE OF -L- AT END BENT 2 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.

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

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

THE CONTRACTOR WILL BE REQUIRED TO CONSTRUCT, MAINTAIN AND AFTERWARDS REMOVE A TEMPORARY STRUCTURE AT STATION 22+05.00 -LDET- FOR USE DURING CONSTRUCTION OF THE PROPOSED STRUCTURE. FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY STRUCTURE, SEE SPECIAL PROVISIONS.

THE BRIDGE RAILS ON THE TEMPORARY STRUCTURE SHALL BE DESIGNED FOR THE AASHTO LRFD TEST LEVEL 3 (TL-3) CRASH TEST CRITERIA. FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY STRUCTURE, SEE SPECIAL PROVISIONS.

THE EXISTING STRUCTURE CONSISTING OF 6 SPANS @ 50'-0" WITH A REINFORCED CONCRETE DECK ON REINFORCED CONCRETE DECK GIRDERS AND A 25'-10" CLEAR ROADWAY WIDTH ON REINFORCED CONCRETE END BENTS WITH STEEL PILES AND BENTS CONSISTING OF REINFORCED CONCRETE CAPS AND COLUMNS ON SPREAD FOOTINGS AND LOCATED AT THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT.

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

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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

FOR FOAM JOINT SEALS, SEE SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL

	CONSTRUCTION MAINTENANCE & REMOVAL OF TEMPORARY STRUCTURE AT STA. 22+05 -LDET-	CONSTRUCTION MAINTENANCE & REMOVAL OF TEMPORARY ACCESS AT STA. 21+77 -L-	REMOVAL OF EXISTING STRUCTURE AT STA. 21+77 -L-	ASBESTOS ASSESSMENT	3'-6" Ø DRILLED PIERS IN SOIL	3'-6" Ø DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 3'-6" Ø DRILLED PIER	PDA TESTING	SID INSPECTION	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION AT STA. 21+77	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS AT STA. 21+77 -L-	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL
	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	EACH	EACH	EACH	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	LBS.
SUPERSTRUCTURE												13,247	12,761				
END BENT 1														61.9		7,361	
BENT 1					46.0	41.0	26.2		3	1				42.5		15,740	2,960
BENT 2					11.0	40.0	16.5		3	1				42.9		13,541	2,257
END BENT 2														62.2		7,361	
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	57.0	81.0	42.7	1	6	2	LUMP SUM	13,247	12,761	209.5	LUMP SUM	44,003	5,217

TOTAL BILL OF MATERIAL

	MODIFIED 63" PRESTRESSED CONCRETE GIRDERS		PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	HP 12 X 53 STEEL PILES		CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	FOAM JOINT SEALS
	NO.	LIN.FT.	EACH	NO.	LIN.FT.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE	12	1336.83				675.19			LUMP SUM	LUMP SUM
END BENT 1			11	11	330		237	263		
BENT 1										
BENT 2										
END BENT 2			11	11	250		432	480		
TOTAL	12	1336.83	22	22	580	675.19	669	743	LUMP SUM	LUMP SUM

HYDRAULIC DATA

DESIGN DISCHARGE	18300 CFS
FREQUENCY OF DESIGN FLOOD	50 YR.
DESIGN HIGHWATER ELEV.	597.4 FT.
DRAINAGE AREA	255 SQ. MI.
BASE DRAINAGE (Q100)	20900 CFS
BASE HIGHWATER ELEV.	598.7 FT.

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	83000 CFS
FREQUENCY OF OVERTOPPING FLOOD	500+ YR.
*OVERTOPPING FLOOD ELEV.	609.8 FT.

* OCCURS AT STA. 18+75.18 -L-

PROJECT NO. B-5728

ALAMANCE COUNTY

STATION: 21+77.00 -L-

SHEET 3 OF 3

DRAWN BY : J. LOFTUS DATE : 03-2021
CHECKED BY : P. JACOB DATE : 10-2021
DESIGN ENGINEER OF RECORD: J. LOFTUS DATE : 10-2021

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NORTH CAROLINA PROFESSIONAL SEAL 037760 ENGINEER PAUL L. JACOB
1/12/2022

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

BRIDGE OVER
REEDY FORK
ON NC 87 BETWEEN
SR 1558 AND SR 1561

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
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1/12/2022
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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	1.04	--	1.75	0.88	1.29	B	EL	57.13	1.07	1.33	B	I	103.39	0.80	0.88	1.04	B	EL	57.13	
		HL-93 (OPERATING)	N/A		1.67	--	1.35	0.88	1.67	B	EL	57.13	1.07	1.75	B	I	103.39	N/A	--	--	--	--	--	
		HS-20 (INVENTORY)	36.000	2	1.51	54.36	1.75	0.88	1.84	C	EL	53.92	1.07	1.95	A	I	10.22	0.80	0.88	1.51	B	EL	57.13	
		HS-20 (OPERATING)	36.000		2.38	85.68	1.35	0.88	2.38	C	EL	53.92	1.07	2.56	A	I	10.22	N/A	--	--	--	--	--	
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		3.64	49.14	1.40	0.88	5.52	C	EL	53.92	1.07	6.26	A	I	10.22	0.80	0.88	3.64	B	EL	57.13	
		SNGARBS2	20.000		2.61	52.20	1.40	0.88	3.97	C	EL	53.92	1.07	4.34	A	I	10.22	0.80	0.88	2.61	B	EL	57.13	
		SNAGRIS2	22.000		2.43	53.46	1.40	0.88	3.70	A	EL	53.92	1.07	3.99	A	I	10.22	0.80	0.88	2.43	B	EL	57.13	
		SNCOTTS3	27.250		1.81	49.32	1.40	0.88	2.74	C	EL	53.92	1.07	3.06	A	I	10.22	0.80	0.88	1.81	B	EL	57.13	
		SNAGGRS4	34.925		1.47	51.34	1.40	0.88	2.24	C	EL	53.92	1.07	2.40	B	I	103.39	0.80	0.88	1.47	B	EL	57.13	
		SNS5A	35.550		1.44	51.19	1.40	0.88	2.19	C	EL	53.92	1.07	2.36	B	I	103.39	0.80	0.88	1.44	B	EL	57.13	
		SNS6A	39.950		1.30	51.93	1.40	0.88	1.99	C	EL	53.92	1.07	2.16	B	I	103.39	0.80	0.88	1.30	B	EL	57.13	
		SNS7B	42.000		1.24	52.08	1.40	0.88	1.89	C	EL	53.92	1.07	2.08	B	I	103.39	0.80	0.88	1.24	B	EL	57.13	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.59	52.47	1.40	0.88	2.42	C	EL	53.92	1.07	2.58	B	I	103.39	0.80	0.88	1.59	B	EL	57.13	
		TNT4A	33.075		1.59	52.59	1.40	0.88	2.42	C	EL	53.92	1.07	2.50	B	I	103.39	0.80	0.88	1.59	B	EL	57.13	
		TNT6A	41.600		1.28	53.25	1.40	0.88	1.96	C	EL	53.92	1.07	2.15	B	I	103.39	0.80	0.88	1.28	B	EL	57.13	
		TNT7A	42.000		1.28	53.76	1.40	0.88	1.96	C	EL	53.92	1.07	2.08	B	I	103.39	0.80	0.88	1.28	B	EL	57.13	
		TNT7B	42.000		1.31	55.02	1.40	0.88	2.00	A	EL	53.92	1.07	1.99	B	I	103.39	0.80	0.88	1.31	B	EL	57.13	
		TNAGRIT4	43.000		1.26	54.18	1.40	0.88	1.92	C	EL	53.92	1.07	1.94	B	I	103.39	0.80	0.88	1.26	B	EL	57.13	
		TNAGT5A	45.000		1.19	53.55	1.40	0.88	1.82	C	EL	53.92	1.07	1.90	B	I	103.39	0.80	0.88	1.19	B	EL	57.13	
		TNAGT5B	45.000	3	1.18	53.10	1.40	0.88	1.81	C	EL	53.92	1.07	1.96	A	I	10.22	0.80	0.88	1.18	B	EL	57.13	

LOAD FACTORS:

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

NOTES:

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

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

(#) CONTROLLING LOAD RATING

(1) DESIGN LOAD RATING (HL-93)

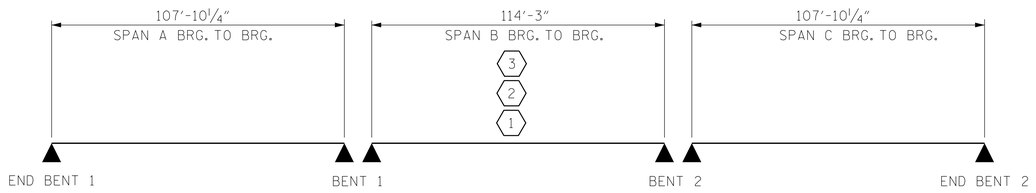
(2) DESIGN LOAD RATING (HS-20)

(3) LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER
EL - EXTERIOR LEFT GIRDER
ER - EXTERIOR RIGHT GIRDER



LRFR SUMMARY

PROJECT NO. B-5728

ALAMANCE COUNTY

STATION: 21+77.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

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

NORTH CAROLINA PROFESSIONAL SEAL 037760 ENGINEER PAUL L. JACOB
1/12/2022

DRAWN BY : J. LOFTUS DATE : 7-2020
CHECKED BY : P. JACOB DATE : 10-2021
DESIGN ENGINEER OF RECORD: J. LOFTUS DATE : 10-2021

moffatt & nichol
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NC License NO.: F-0105

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REVISIONS						SHEET NO.
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2			4			34

STD. NO. LRFR1

1/12/2022
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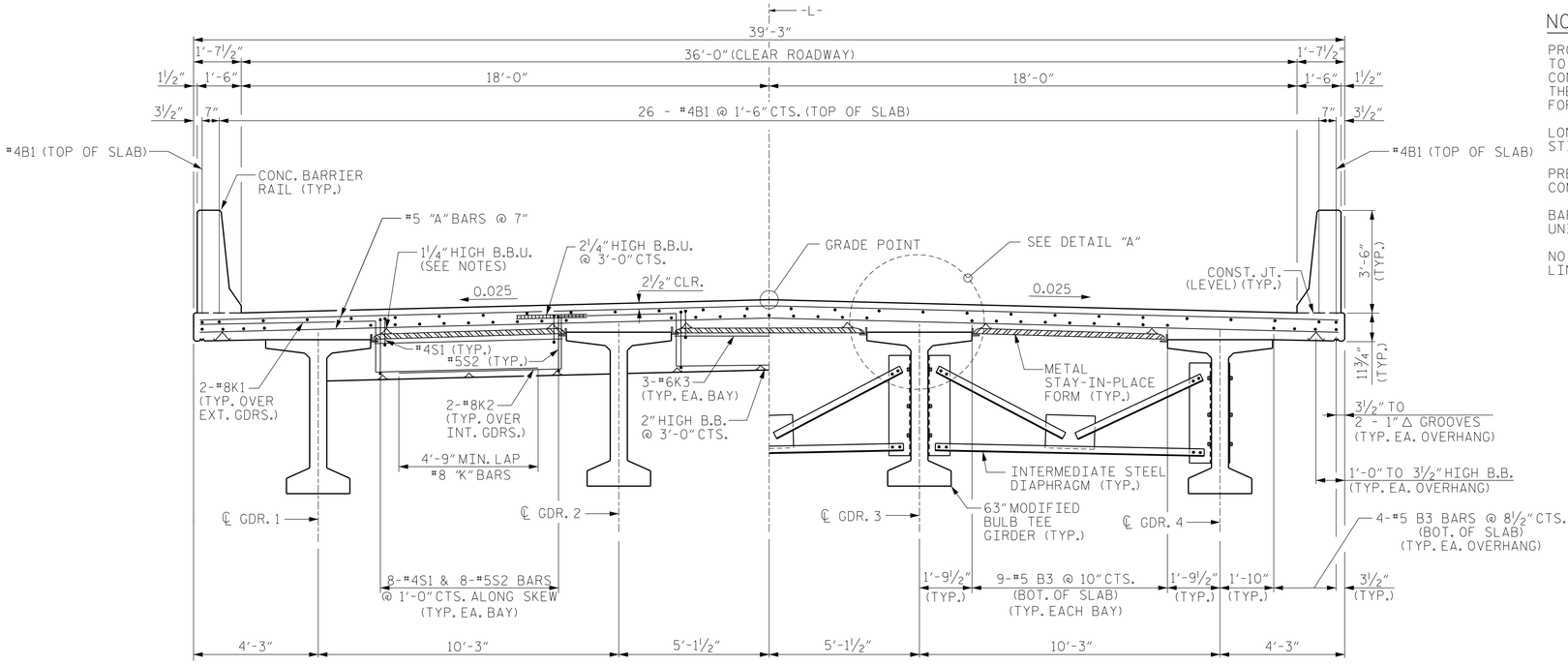
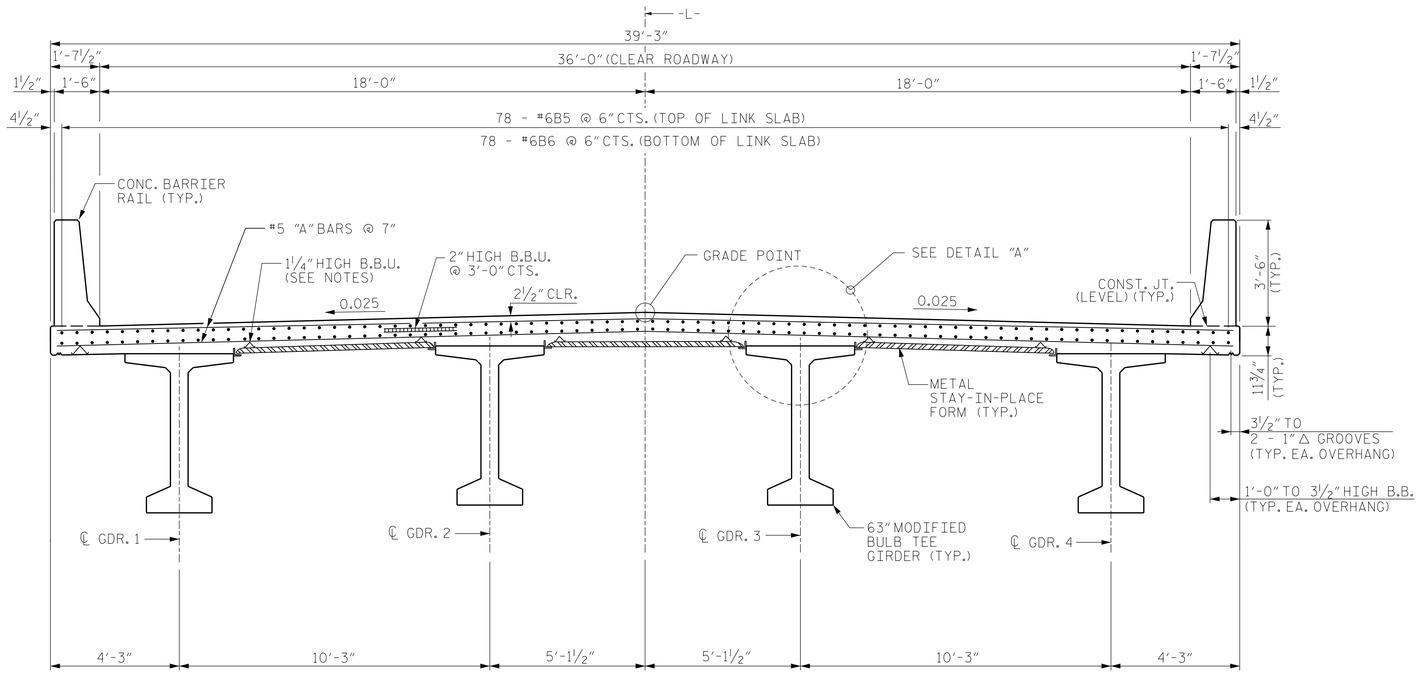


HALF SECTION AT END BENT DIAPHRAGM

HALF SECTION AT INTERMEDIATE DIAPHRAGM

FOR INTERMEDIATE STEEL DIAPHRAGM DETAILS, SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR 63" MODIFIED BULB TEE PRESTRESSED CONCRETE GIRDERS" SHEET.

TYPICAL SECTION



TYPICAL SECTION THROUGH LINK SLAB

NOTES

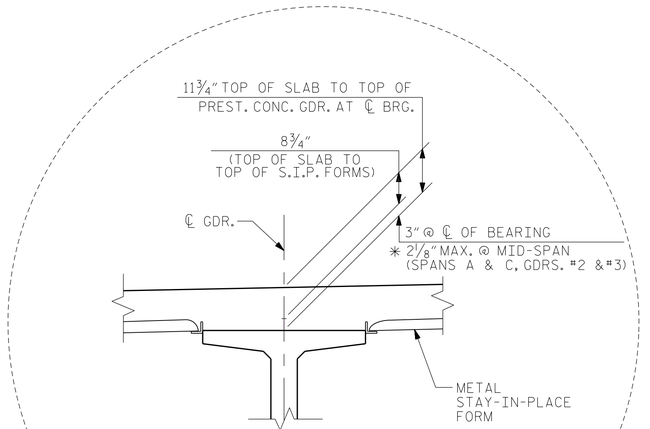
PROVIDE 1¼" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF "A" BARS WHEN USING REMOVABLE FORMS. PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF "A" BARS A CLEAR DISTANCE OF 2½" ABOVE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

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

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

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

NO WELDING OF FORMS OR FALSEWORK TO THE TOP OF THE GIRDER WILL BE PERMITTED IN THE LINK SLAB AREA. SEE "PLAN OF SPANS" SHEETS FOR LOCATIONS.



DETAIL "A"

* BASED ON PREDICTED FINAL CAMBER AND THEORETICAL GRADE LINE ELEVATIONS.

PROJECT NO. B-5728

ALAMANCE COUNTY

STATION: 21+77.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION

NORTH CAROLINA PROFESSIONAL SEAL 037760 ENGINEER PAUL L. JACOB
1/12/2022

DRAWN BY :	J. LOFTUS	DATE :	7-2020
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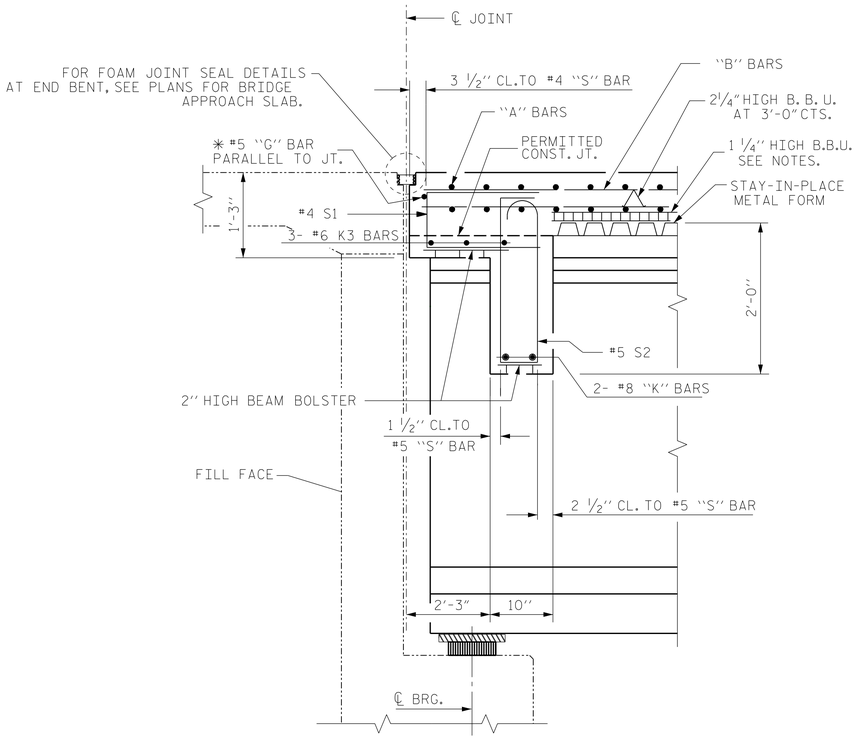
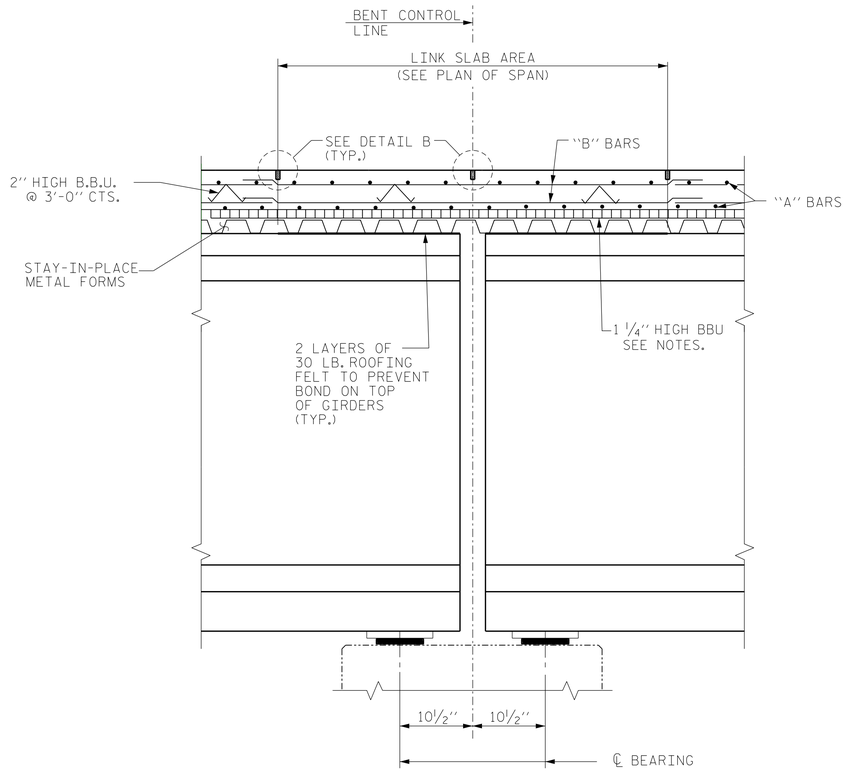
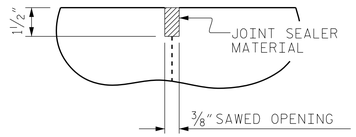


SECTION THROUGH END BENT DIAPHRAGM

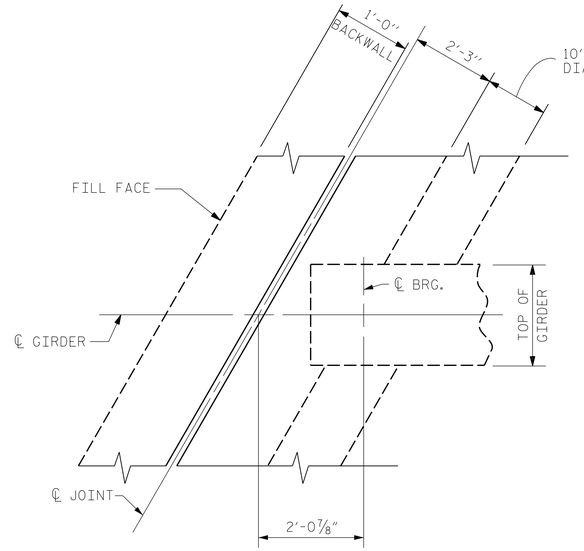


SECTION THRU BENT DIAPHRAGM

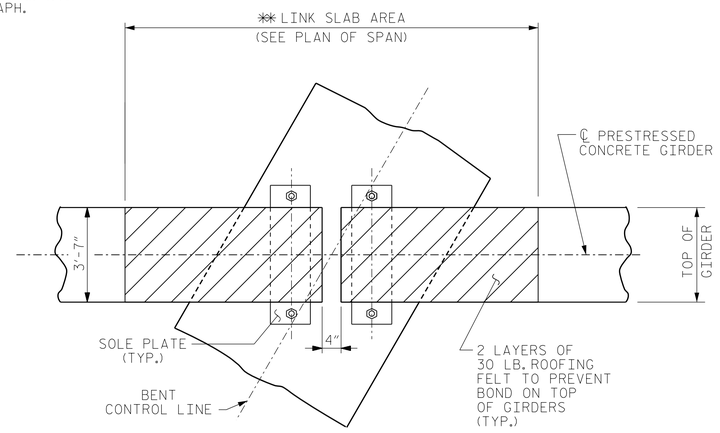


DETAIL "B"

1½" DEEP CONTRACTION JOINTS AT BENT CONTROL LINE AND AT THE LIMITS OF LINK SLABS 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.



PLAN @ END BENT



PLAN @ BENT

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

PROJECT NO. B-5728

ALAMANCE COUNTY

STATION: 21+77.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION DETAILS

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NORTH CAROLINA PROFESSIONAL SEAL 037760 ENGINEER PAUL L. JACOB
1/12/2022

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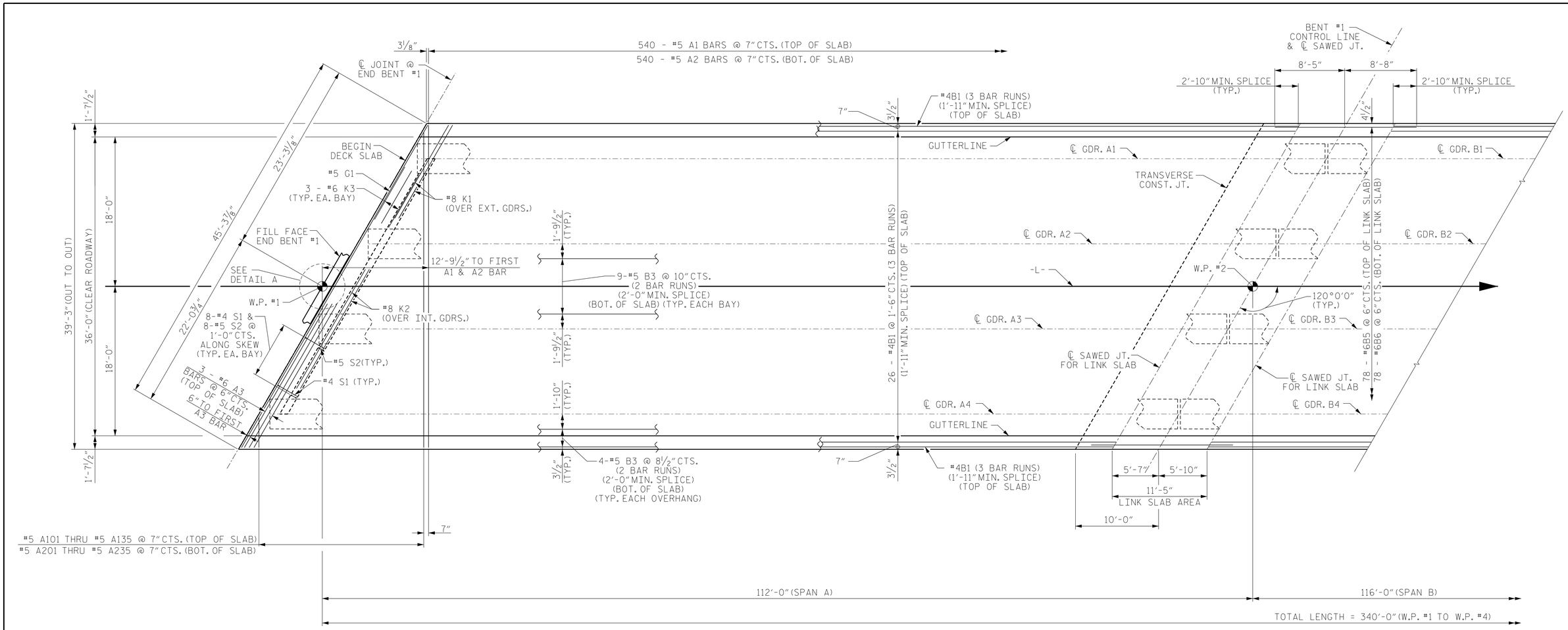
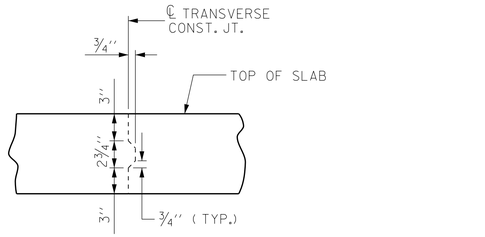


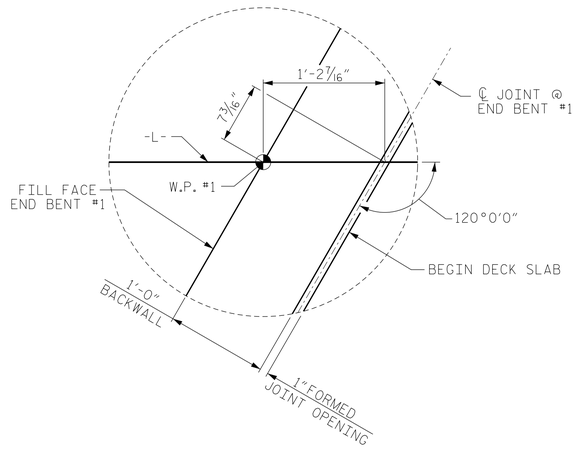
PLAN OF SPAN A

DIMENSIONS SHOWN ARE TAKEN TO CENTER OF JOINT WHERE APPLICABLE.



TRANSVERSE CONSTRUCTION JOINT DETAIL

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



DETAIL A

PROJECT NO. B-5728

ALAMANCE COUNTY

STATION: 21+77.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPAN A

REVISIONS						SHEET NO.
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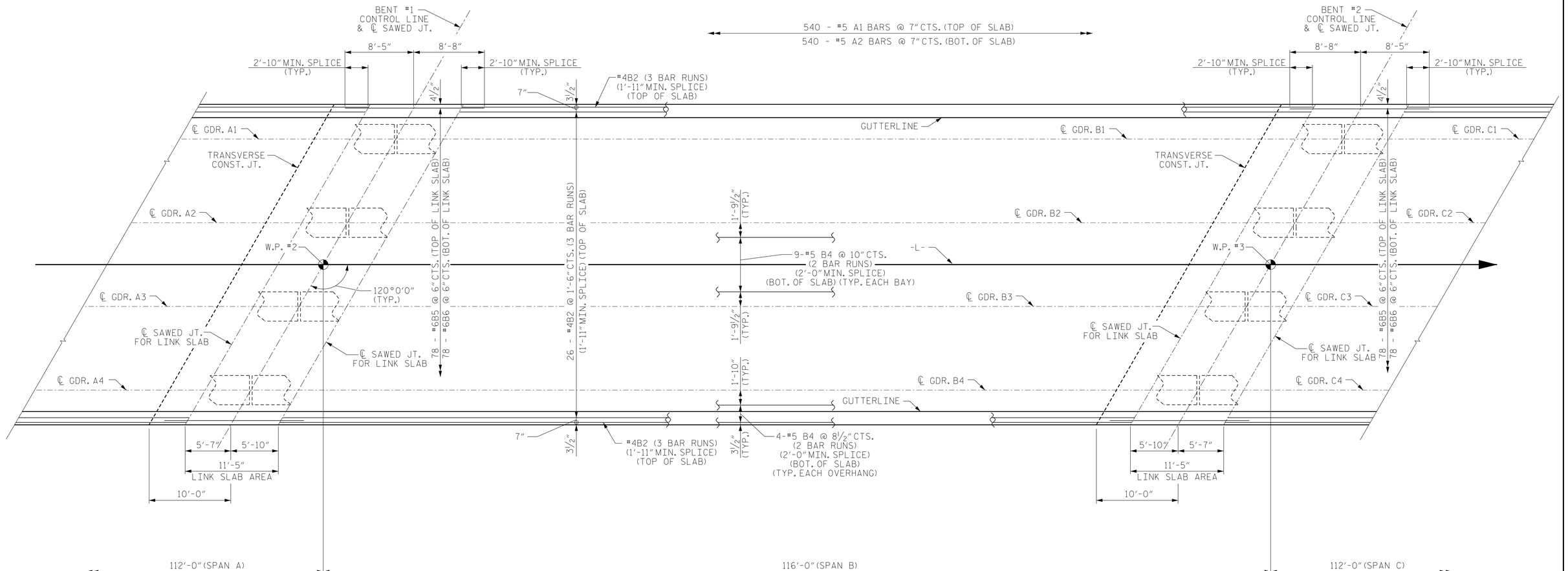

PLAN OF SPAN B

PROJECT NO. B-5728

ALAMANCE COUNTY

STATION: 21+77.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPAN B

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NORTH CAROLINA PROFESSIONAL SEAL 037760 ENGINEER PAUL L. JACOB
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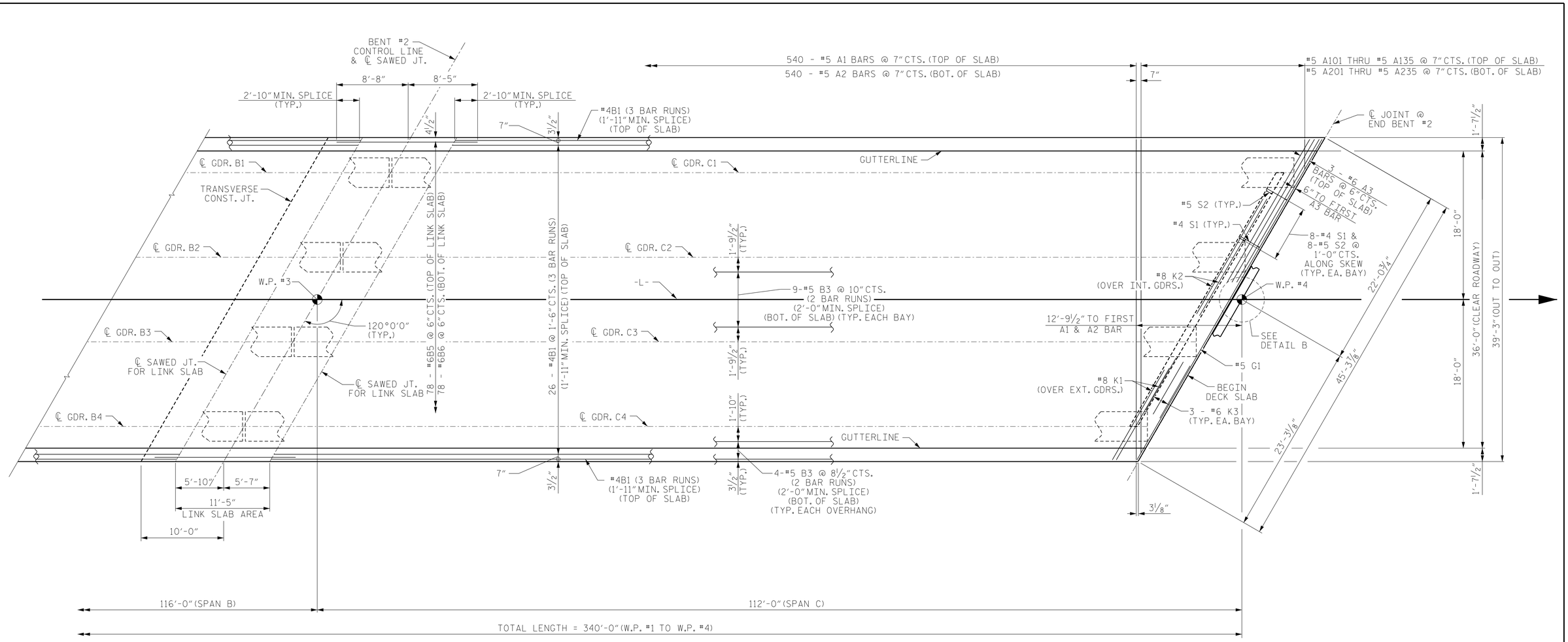
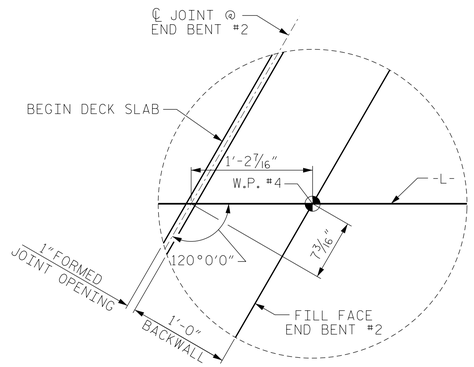


PLAN OF SPAN C



DETAIL B

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NORTH CAROLINA PROFESSIONAL SEAL 037760 ENGINEER PAUL L. JACOB
1/12/2022

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PROJECT NO. B-5728
ALAMANCE COUNTY
STATION: 21+77.00 -L-
SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
PLAN OF SPAN C

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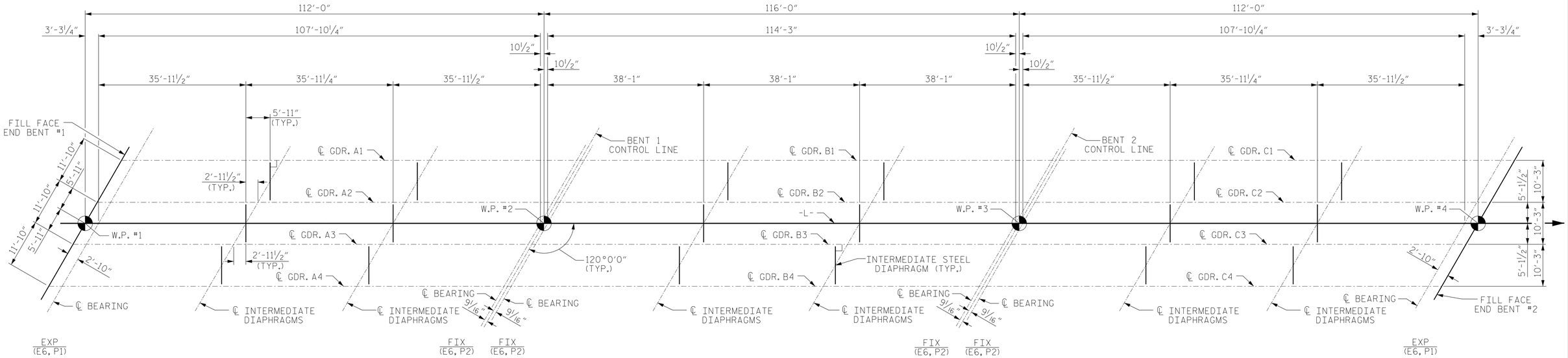

FRAMING PLAN

PROJECT NO. B-5728

ALAMANCE COUNTY

STATION: 21+77.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FRAMING PLAN

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
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NORTH CAROLINA PROFESSIONAL SEAL 037760 ENGINEER PAUL L JACOB
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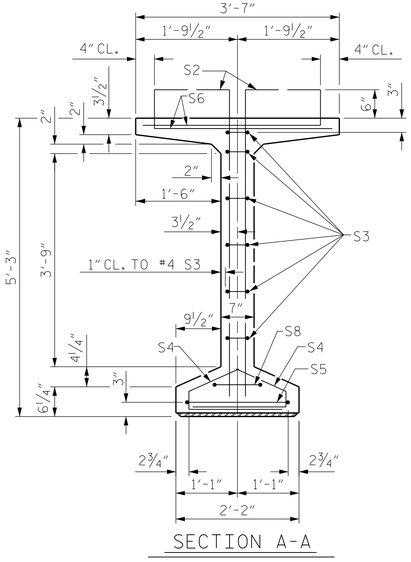
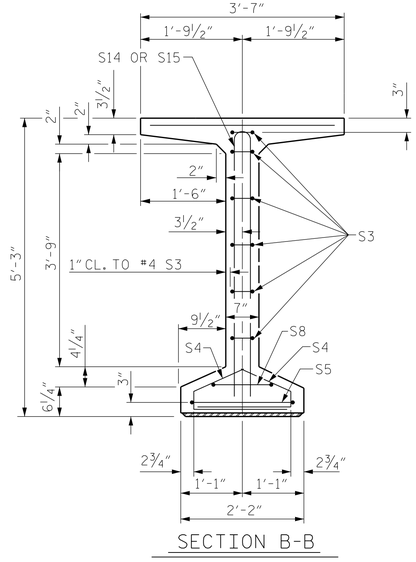
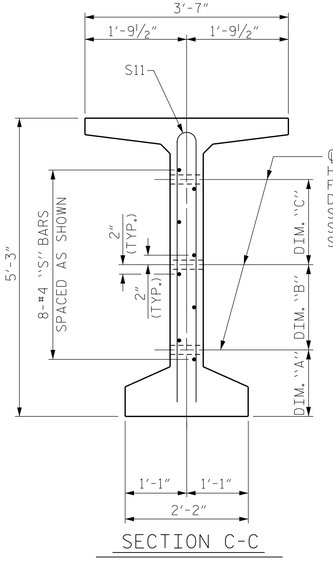


SECTION A-A



SECTION B-B

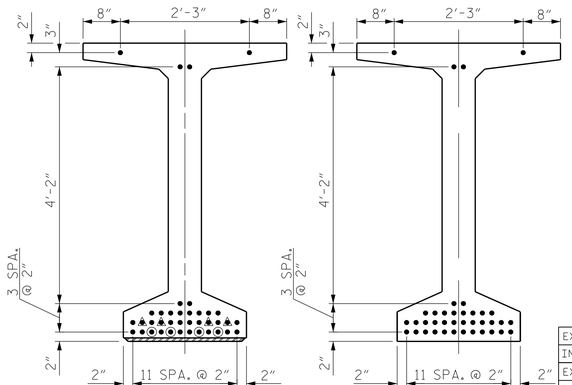


SECTION C-C

(S1, S6 AND S9 BARS NOT SHOWN)

DEBONDING LEGEND

- ● FULLY BONDED STRANDS
- △ STRANDS DEBONDED FOR 8'-0" FROM END OF GIRDER
- ⊙ STRANDS DEBONDED FOR 12'-0" FROM END OF GIRDER



0.6" Ø LOW RELAXATION STRAND LAYOUT

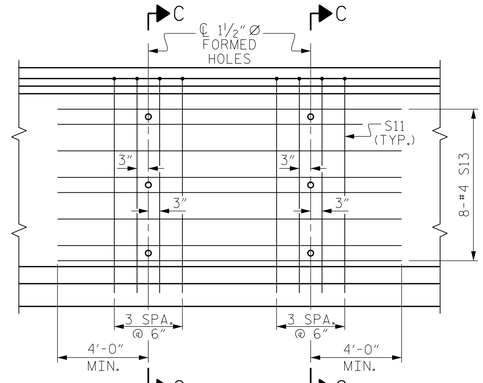
EXTERIOR GDR.	S11	8	#5	5	10'-0"	83
INTERIOR GDR.	S11	16	#5	5	10'-0"	167
EXTERIOR GDR.	S12	16	#4	STR	8'-0"	86
INTERIOR GDR.	S13	16	#4	STR	13'-11"	149

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

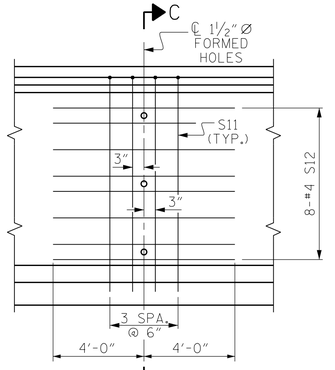
REINFORCING STEEL FOR ONE GDR

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	216	#4	1	6'-1"	878
S2	18	#5	1	6'-1"	114
S3	12	#4	2	8'-5"	67
S4	76	#4	3	3'-0"	152
S5	2	#5	2	9'-10"	21
S6	234	#5	4	4'-4"	1,058
S8	2	#5	2	9'-0"	19
S9	60	#5	STR	3'-3"	203



PARTIAL ELEVATION

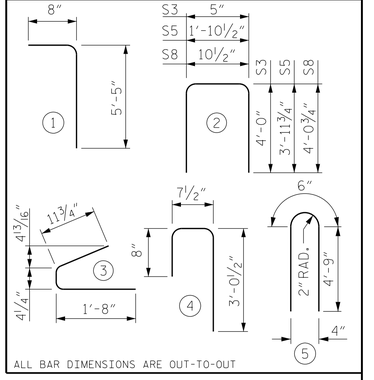
SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. A2 & A3



PARTIAL ELEVATION

SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. A1 & A4

BAR TYPES



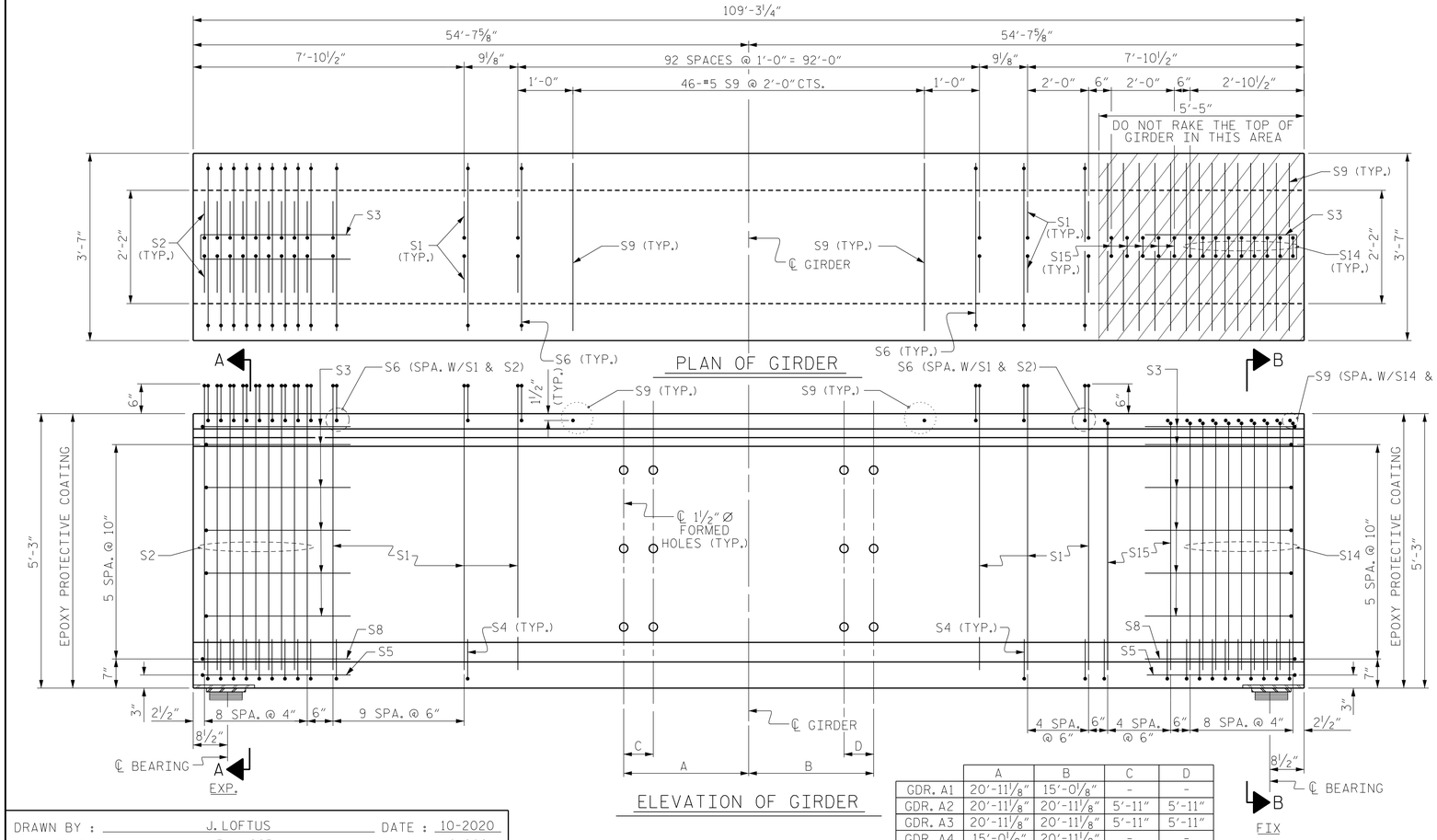
ALL BAR DIMENSIONS ARE OUT-TO-OUT

QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL	9500 PSI CONCRETE	0.6" Ø L.R. STRANDS
	LB.	C.Y.	No.
EXTERIOR GIRDER	2,808	21.65	38
INTERIOR GIRDER	2,955	21.65	38

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
4	109'-3¼"	437'-1"



PLAN OF GIRDER

ELEVATION OF GIRDER

	A	B	C	D
GDR. A1	20'-11⅛"	15'-0⅛"	-	-
GDR. A2	20'-11⅛"	20'-11⅛"	5'-11"	5'-11"
GDR. A3	20'-11⅛"	20'-11⅛"	5'-11"	5'-11"
GDR. A4	15'-0⅛"	20'-11⅛"	-	-

PROJECT NO. B-5728

ALAMANCE COUNTY

STATION: 21+77.00 -L-

SHEET 1 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

63" PRESTRESSED CONCRETE MODIFIED BULB TEE SPAN A

NORTH CAROLINA PROFESSIONAL SEAL 037760 ENGINEER PAUL L. JACOB
1/12/2022

DRAWN BY : J. LOFTUS DATE : 10-2020
CHECKED BY : P. JACOB DATE : 10-2021
DESIGN ENGINEER OF RECORD: J. LOFTUS DATE : 10-2021

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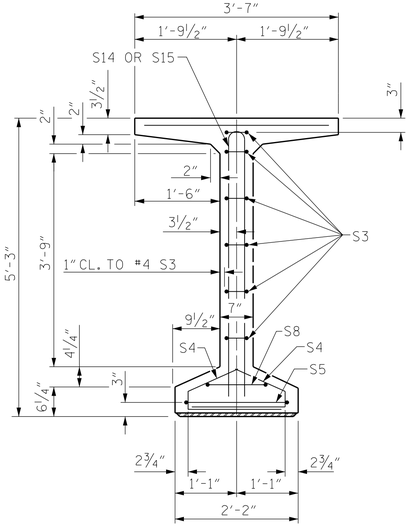
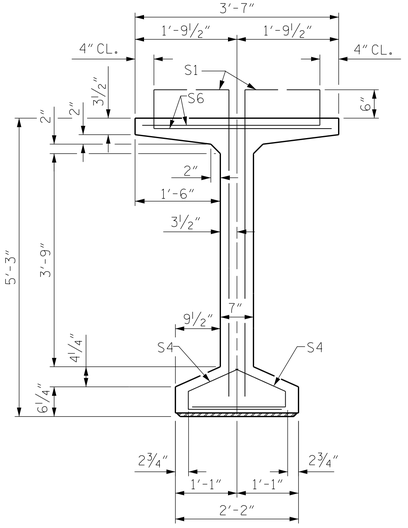
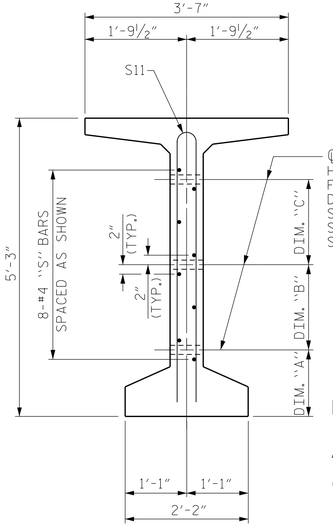


SECTION A-A



SECTION B-B

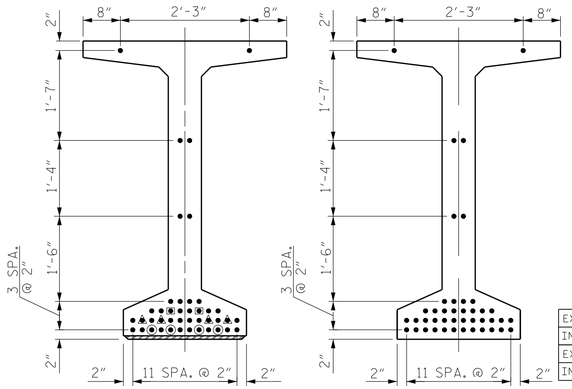


SECTION C-C

(S1, S6 AND S9 BARS NOT SHOWN)

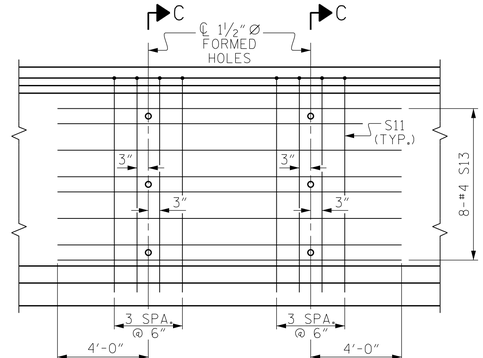
DEBONDING LEGEND

- FULLY BONDED STRANDS
- STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 8'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 12'-0" FROM END OF GIRDER



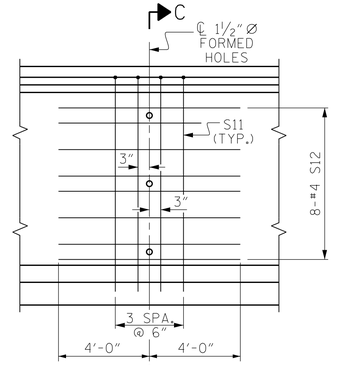
0.6" Ø LOW RELAXATION STRAND LAYOUT

EXTERIOR GDR.	S11	8	#5	5	10'-0"	83
INTERIOR GDR.	S11	16	#5	5	10'-0"	167
EXTERIOR GDR.	S12	16	#4	STR	8'-0"	86
INTERIOR GDR.	S13	16	#4	STR	13'-11"	149



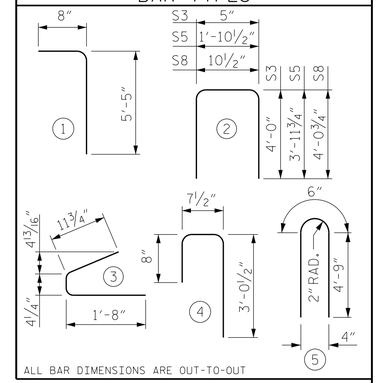
PARTIAL ELEVATION

SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. B2 & B3



PARTIAL ELEVATION

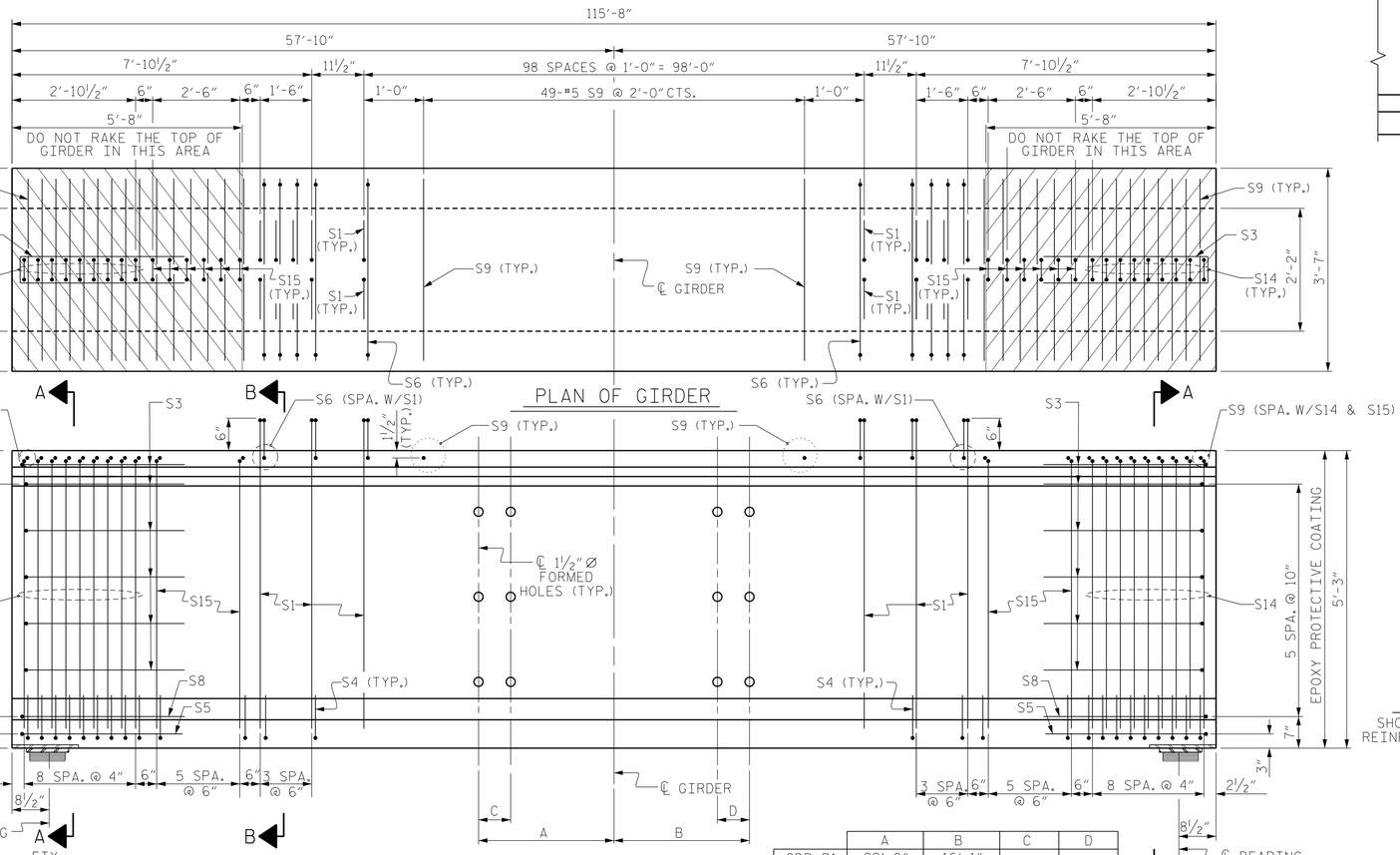
SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. B1 & B4



ALL BAR DIMENSIONS ARE OUT-TO-OUT

QUANTITIES FOR ONE GIRDER			
	REINFORCING STEEL	9500 PSI CONCRETE	0.6" Ø L.R. STRANDS
	LB.	C.Y.	No.
EXTERIOR GIRDER	2,801	22.91	42
INTERIOR GIRDER	2,948	22.91	42

GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
4	115'-8"	462'-8"



PLAN OF GIRDER

ELEVATION OF GIRDER

	A	B	C	D
GDR. B1	22'-0"	16'-1"	-	-
GDR. B2	22'-0"	22'-0"	5'-11"	5'-11"
GDR. B3	22'-0"	22'-0"	5'-11"	5'-11"
GDR. B4	16'-1"	22'-0"	-	-

PROJECT NO. B-5728

ALAMANCE COUNTY

STATION: 21+77.00 -L-

SHEET 2 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

63" PRESTRESSED CONCRETE MODIFIED BULB TEE SPAN B

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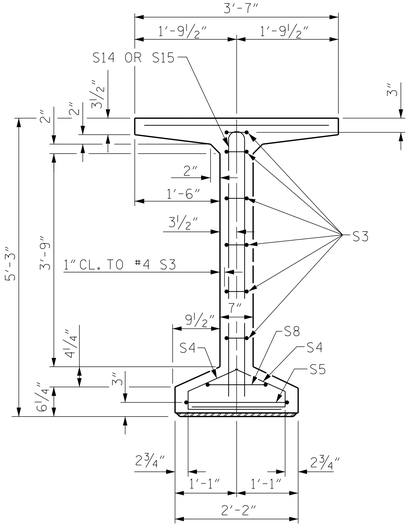
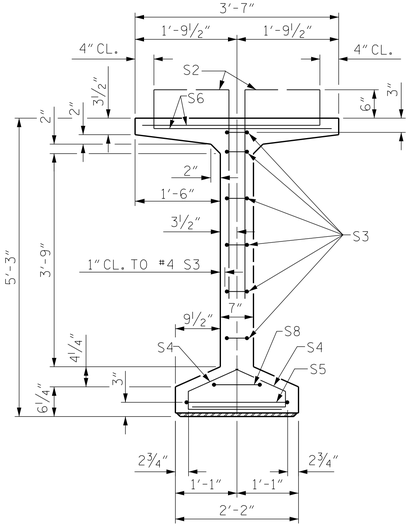
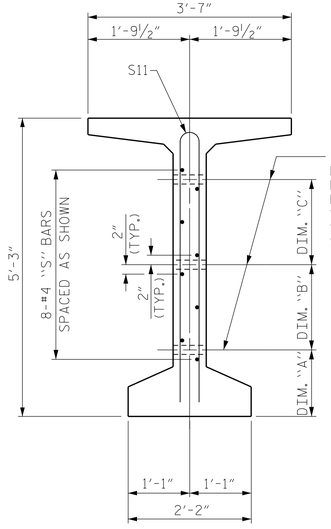


SECTION A-A



SECTION B-B

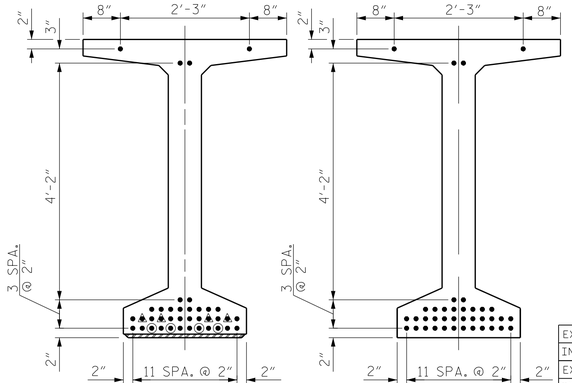


SECTION C-C

(S1, S6 AND S9 BARS NOT SHOWN)

DEBONDING LEGEND

- ● FULLY BONDED STRANDS
- △ STRANDS DEBONDED FOR 8′-0″ FROM END OF GIRDER
- ⊙ STRANDS DEBONDED FOR 12′-0″ FROM END OF GIRDER



0.6″ Ø LOW RELAXATION STRAND LAYOUT

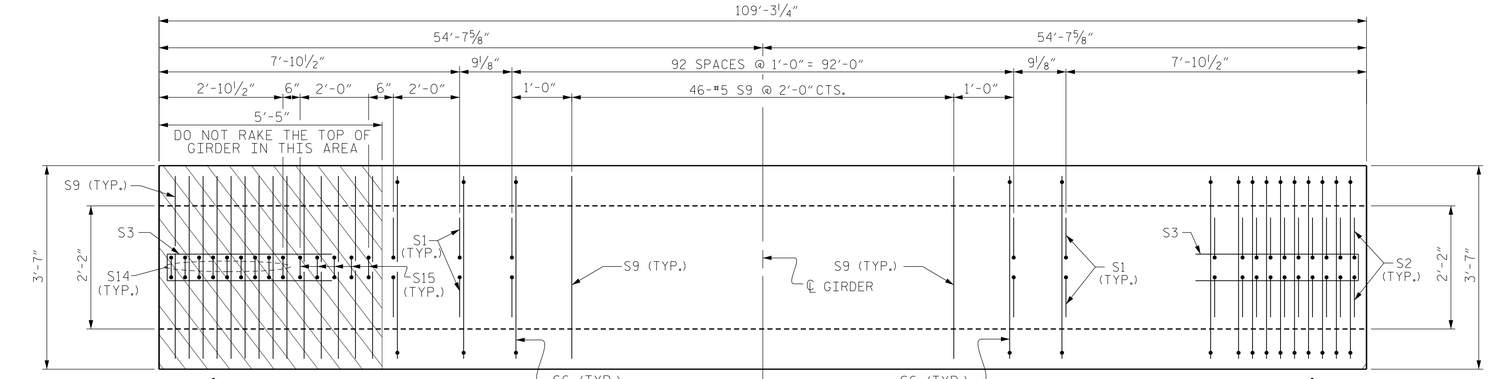
EXTERIOR GDR.	S11	8	#5	5	10′-0″	83
INTERIOR GDR.	S11	16	#5	5	10′-0″	167
EXTERIOR GDR.	S12	16	#4	STR	8′-0″	86
INTERIOR GDR.	S13	16	#4	STR	13′-11″	149
	S14	9	#5	5	10′-0″	94
	S15	5	#4	5	10′-0″	33

0.6″ Ø L. R. GRADE 270 STRANDS

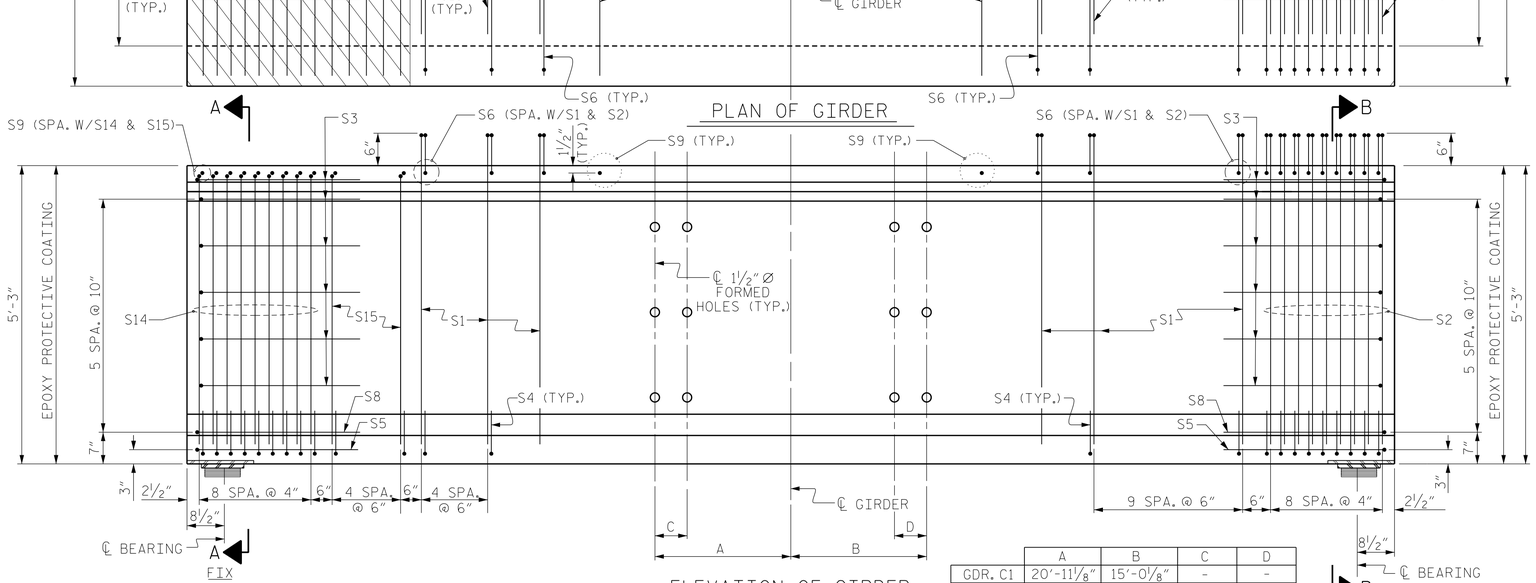
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GDR

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	216	#4	1	6′-1″	878
S2	18	#5	1	6′-1″	114
S3	12	#4	2	8′-5″	67
S4	76	#4	3	3′-0″	152
S5	2	#5	2	9′-10″	21
S6	234	#5	4	4′-4″	1,058
S8	2	#5	2	9′-0″	19
S9	60	#5	STR	3′-3″	203

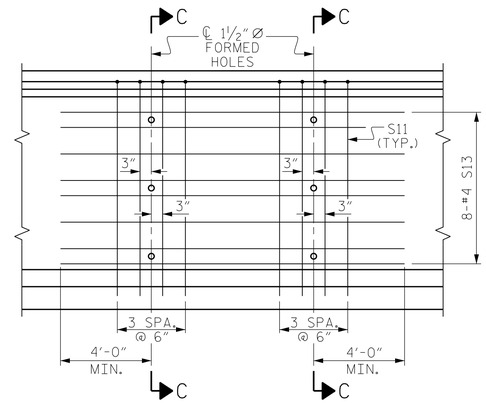


PLAN OF GIRDER



ELEVATION OF GIRDER

	A	B	C	D
GDR. C1	20′-11⅛″	15′-0⅛″	-	-
GDR. C2	20′-11⅛″	20′-11⅛″	5′-11″	5′-11″
GDR. C3	20′-11⅛″	20′-11⅛″	5′-11″	5′-11″
GDR. C4	15′-0⅛″	20′-11⅛″	-	-



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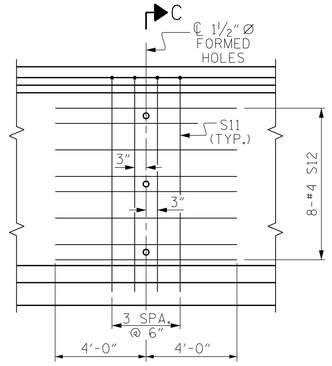
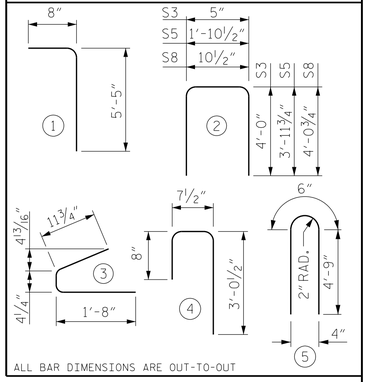
SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. C2 & C3



PARTIAL ELEVATION

SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. C1 & C4

BAR TYPES



ALL BAR DIMENSIONS ARE OUT-TO-OUT

QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL	9500 PSI CONCRETE	0.6″ Ø L.R. STRANDS
	LB.	C.Y.	No.
EXTERIOR GIRDER	2,808	21.65	38
INTERIOR GIRDER	2,955	21.65	38

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
4	109′-3¼″	437′-1″

PROJECT NO. B-5728

ALAMANCE COUNTY

STATION: 21+77.00 -L-

SHEET 3 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

63″ PRESTRESSED CONCRETE MODIFIED BULB TEE SPAN C

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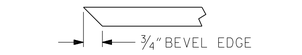
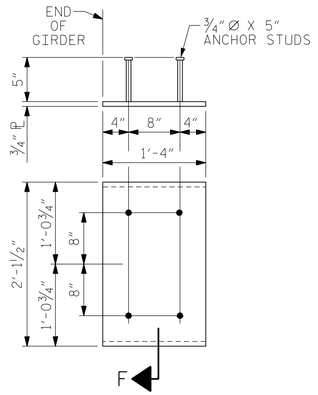


SECTION "F"

(SEE NOTES)



EMBEDDED PLATE "B-1" DETAILS FOR 63" MODIFIED BULB TEES

(2 REQ'D PER GIRDER)

NOTES

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

ALL REINFORCING STEEL SHALL BE GRADE 60.

APPLY EPOXY PROTECTIVE COATING TO END OF GIRDER SURFACES INDICATED IN ELEVATION VIEW.

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

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

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

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 7500 PSI.

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

THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4", SHALL BE RAKED TO A DEPTH OF ¼". DO NOT RAKE THE TOP OF GIRDER AT LOCATIONS BELOW LINK SLAB AREAS.

A 2" x 2" CHAMFER IS ALLOWED AT THE INTERSECTION OF THE WEB AND THE BOTTOM FLANGE OF THE 63" AND 72" MODIFIED BULB TEES ONLY.

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

PROJECT NO. B-5728

ALAMANCE COUNTY

STATION: 21+77.00 -L-

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PRESTRESSED CONCRETE GIRDER DETAILS

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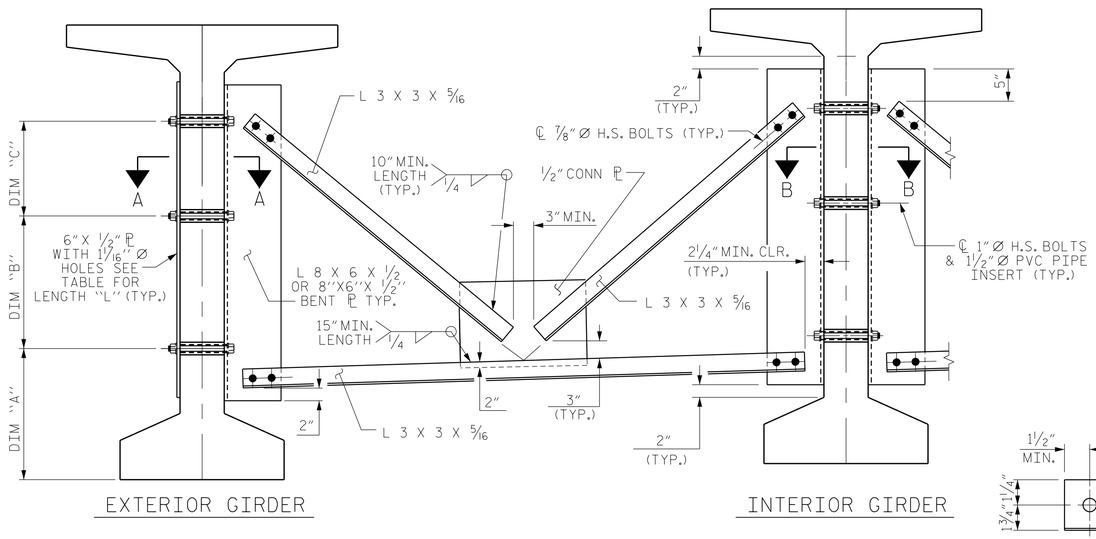
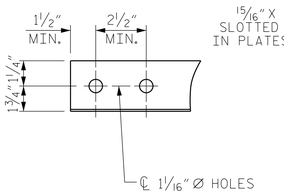


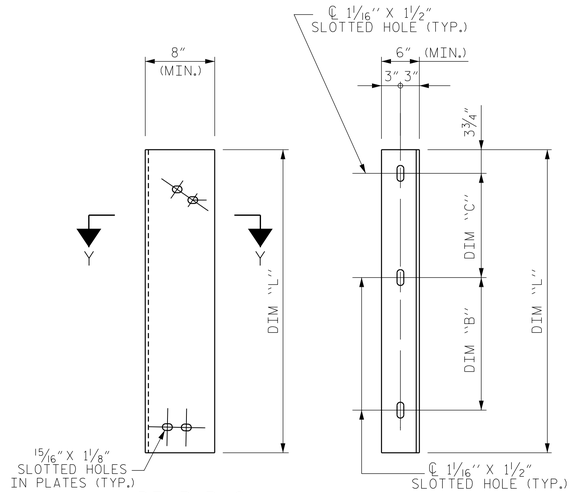
PART SECTION AT INTERMEDIATE DIAPHRAGM

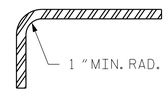
(63" BULB TEE GIRDER SHOWN)



ANGLE END

(L 3 X 3 X 5/16)





SECTION Y-Y

CONNECTOR PLATE DETAIL

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 ANGLE 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 1/4 TURN.

THE PLATES, BENT PLATES, 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 1/4" PROJECTION BEYOND THE NUT.

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

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

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

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

TABLE

GIRDER TYPE	DIM "A"	DIM "B"	DIM "C"	DIM "L"
63" BULB TEE	1'-5 3/4"	1'-4"	1'-4"	3'-5"

CONNECTION DETAILS

BOLT WITH DTI ASSEMBLY DETAIL

PROJECT NO. B-5728

ALAMANCE COUNTY

STATION: 21+77.00 -L-

SHEET 5 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

INTERMEDIATE STEEL DIAPHRAGMS FOR 63" MODIFIED BULB TEE PRESTRESSED CONCRETE GIRDERS

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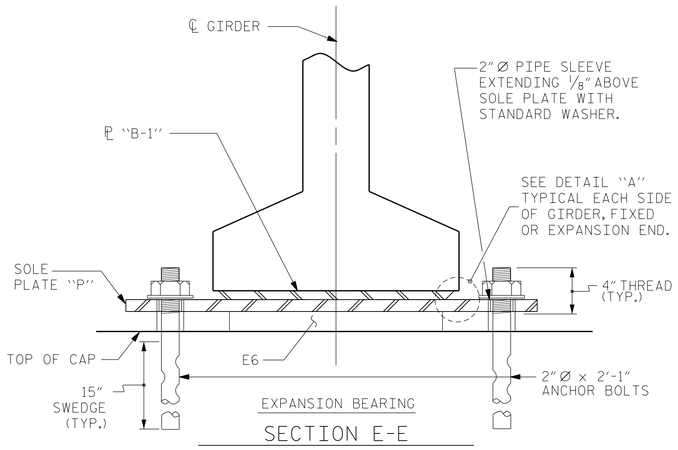
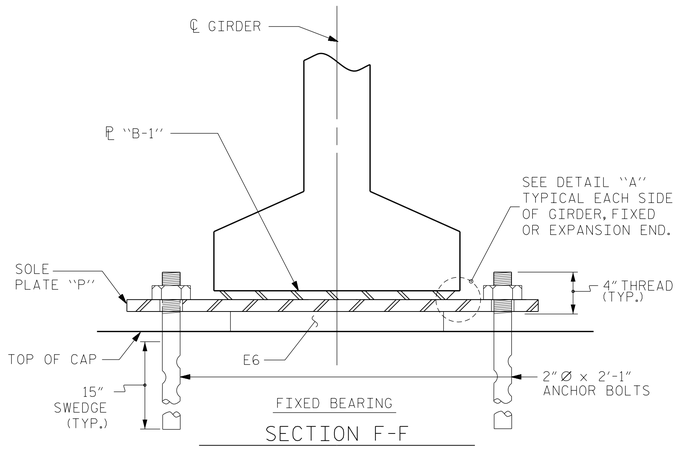
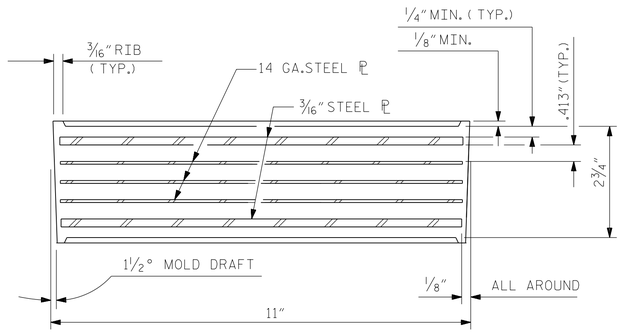


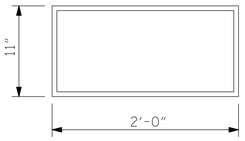
SECTION E-E



SECTION F-F



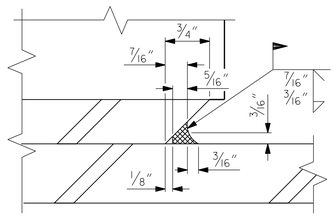
TYPICAL SECTION OF ELASTOMERIC BEARINGS



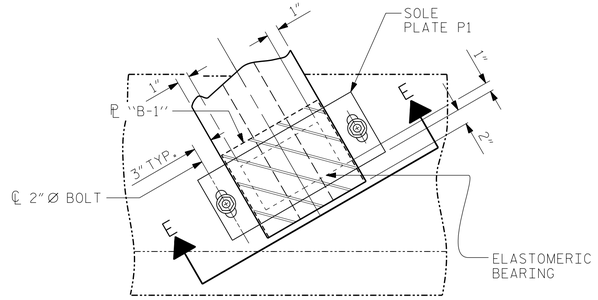
E6 (24 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING

TYPE VII

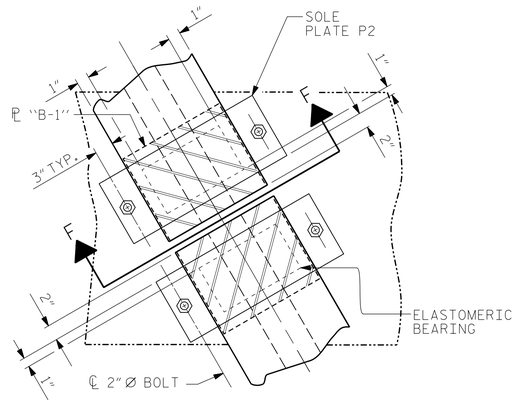


DETAIL "A"



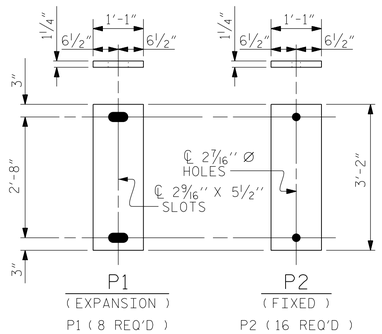
TYPICAL PLAN

(SHOWING END BENT)



TYPICAL PLAN

(SHOWING CONTINUOUS BENT)



NOTES

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

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

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

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

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

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

ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. NO SHOP DRAWINGS ARE REQUIRED FOR ANCHOR BOLTS, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

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

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

ALL SOLE PLATES SHALL BE AASHTO M270 GRADE 36.

MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE VII	470 k

PROJECT NO. B-5728

ALAMANCE COUNTY

STATION: 21+77.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

ELASTOMERIC BEARING DETAILS

PRESTRESSED CONCRETE GIRDER SUPERSTRUCTURE

DRAWN BY : J. LOFTUS DATE : 10-2020
CHECKED BY : P. JACOB DATE : 10-2021
DESIGN ENGINEER OF RECORD: J. LOFTUS DATE : 10-2021

1/12/2022

moffatt & nichol
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NC License NO.: F-0105

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			34

1/12/2022
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pjacob

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DEAD LOAD DEFLECTION TABLE FOR GIRDERS

0.6"Ø LOW RELAXATION	SPAN A & SPAN C GIRDERS 1 & 4																																										
FORTIETH POINTS	0	0.025	0.05	0.075	0.10	0.125	0.15	0.175	0.20	0.225	0.25	0.275	0.30	0.325	0.35	0.375	0.40	0.425	0.45	0.475	0.50	0.525	0.55	0.575	0.60	0.625	0.65	0.675	0.70	0.725	0.75	0.775	0.80	0.825	0.85	0.875	0.90	0.925	0.95	0.975	0
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.020	0.040	0.060	0.079	0.098	0.116	0.133	0.149	0.165	0.180	0.193	0.205	0.216	0.225	0.234	0.240	0.245	0.249	0.251	0.252	0.251	0.249	0.245	0.240	0.234	0.225	0.216	0.205	0.193	0.180	0.165	0.150	0.133	0.116	0.098	0.079	0.060	0.040	0.020	0.000
✳DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.013	0.026	0.039	0.052	0.065	0.077	0.089	0.101	0.111	0.121	0.131	0.139	0.147	0.153	0.159	0.164	0.168	0.170	0.172	0.172	0.172	0.171	0.168	0.164	0.159	0.154	0.147	0.140	0.131	0.122	0.112	0.101	0.090	0.078	0.065	0.052	0.039	0.026	0.013	0.000
FINAL CAMBER ↑	0	1/16"	3/16"	1/4"	5/16"	3/8"	7/16"	9/16"	9/16"	5/8"	11/16"	3/4"	13/16"	13/16"	7/8"	7/8"	15/16"	15/16"	15/16"	15/16"	15/16"	15/16"	15/16"	15/16"	15/16"	7/8"	7/8"	13/16"	13/16"	3/4"	11/16"	5/8"	9/16"	1/2"	7/16"	3/8"	5/16"	1/4"	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).

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

0.6"Ø LOW RELAXATION	SPAN A & SPAN C GIRDERS 2 & 3																																										
FORTIETH POINTS	0	0.025	0.05	0.075	0.10	0.125	0.15	0.175	0.20	0.225	0.25	0.275	0.30	0.325	0.35	0.375	0.40	0.425	0.45	0.475	0.50	0.525	0.55	0.575	0.60	0.625	0.65	0.675	0.70	0.725	0.75	0.775	0.80	0.825	0.85	0.875	0.90	0.925	0.95	0.975	0
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.020	0.040	0.060	0.079	0.098	0.116	0.133	0.149	0.165	0.180	0.193	0.205	0.216	0.225	0.234	0.240	0.245	0.249	0.251	0.252	0.251	0.249	0.245	0.240	0.234	0.225	0.216	0.205	0.193	0.180	0.165	0.150	0.133	0.116	0.098	0.079	0.060	0.040	0.020	0.000
✳DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.013	0.027	0.041	0.054	0.068	0.081	0.093	0.105	0.116	0.127	0.137	0.146	0.154	0.161	0.167	0.172	0.175	0.178	0.180	0.180	0.180	0.178	0.176	0.172	0.167	0.161	0.154	0.146	0.137	0.127	0.117	0.106	0.093	0.081	0.068	0.054	0.041	0.027	0.014	0.000
FINAL CAMBER ↑	0	1/16"	1/8"	1/4"	5/16"	3/8"	7/16"	1/2"	1/2"	9/16"	5/8"	11/16"	11/16"	3/4"	3/4"	13/16"	13/16"	13/16"	7/8"	7/8"	7/8"	7/8"	7/8"	13/16"	13/16"	13/16"	3/4"	3/4"	11/16"	11/16"	5/8"	9/16"	1/2"	1/2"	7/16"	3/8"	5/16"	1/4"	1/8"	1/16"	0

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

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

0.6"Ø LOW RELAXATION	SPAN B GIRDERS 1 & 4																																										
FORTIETH POINTS	0	0.025	0.05	0.075	0.10	0.125	0.15	0.175	0.20	0.225	0.25	0.275	0.30	0.325	0.35	0.375	0.40	0.425	0.45	0.475	0.50	0.525	0.55	0.575	0.60	0.625	0.65	0.675	0.70	0.725	0.75	0.775	0.80	0.825	0.85	0.875	0.90	0.925	0.95	0.975	0
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.025	0.049	0.073	0.097	0.119	0.142	0.163	0.182	0.202	0.219	0.235	0.250	0.263	0.275	0.285	0.293	0.299	0.304	0.307	0.308	0.307	0.304	0.299	0.293	0.285	0.275	0.263	0.250	0.235	0.219	0.202	0.183	0.163	0.142	0.119	0.097	0.073	0.049	0.025	0.000
✳DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.016	0.033	0.050	0.066	0.082	0.098	0.112	0.127	0.140	0.153	0.165	0.175	0.185	0.193	0.200	0.206	0.211	0.214	0.216	0.217	0.216	0.214	0.211	0.206	0.200	0.193	0.185	0.175	0.165	0.153	0.140	0.127	0.112	0.097	0.082	0.066	0.050	0.033	0.016	0.000
FINAL CAMBER ↑	0	1/8"	3/16"	1/4"	3/8"	7/16"	1/2"	5/8"	5/8"	3/4"	13/16"	7/8"	7/8"	15/16"	1"	1"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1"	1"	15/16"	7/8"	7/8"	13/16"	3/4"	11/16"	5/8"	1/2"	7/16"	3/8"	1/4"	3/16"	1/8"	0

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

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

0.6"Ø LOW RELAXATION	SPAN B GIRDERS 2 & 3																																										
FORTIETH POINTS	0	0.025	0.05	0.075	0.10	0.125	0.15	0.175	0.20	0.225	0.25	0.275	0.30	0.325	0.35	0.375	0.40	0.425	0.45	0.475	0.50	0.525	0.55	0.575	0.60	0.625	0.65	0.675	0.70	0.725	0.75	0.775	0.80	0.825	0.85	0.875	0.90	0.925	0.95	0.975	0
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.025	0.049	0.073	0.097	0.119	0.142	0.163	0.182	0.202	0.219	0.235	0.250	0.263	0.275	0.285	0.293	0.299	0.304	0.307	0.308	0.307	0.304	0.299	0.293	0.285	0.275	0.263	0.250	0.235	0.219	0.202	0.183	0.163	0.142	0.119	0.097	0.073	0.049	0.025	0.000
✳DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.017	0.035	0.052	0.068	0.086	0.102	0.118	0.133	0.147	0.160	0.172	0.183	0.193	0.202	0.210	0.216	0.221	0.224	0.226	0.227	0.226	0.224	0.221	0.216	0.210	0.202	0.193	0.183	0.172	0.160	0.147	0.133	0.118	0.102	0.086	0.068	0.052	0.035	0.017	0.000
FINAL CAMBER ↑	0	1/16"	3/16"	1/4"	5/16"	3/8"	1/2"	9/16"	9/16"	11/16"	11/16"	3/4"	13/16"	13/16"	7/8"	7/8"	15/16"	15/16"	15/16"	15/16"	1"	15/16"	15/16"	15/16"	15/16"	7/8"	7/8"	13/16"	13/16"	3/4"	11/16"	11/16"	5/8"	9/16"	1/2"	3/8"	5/16"	1/4"	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).

PROJECT NO. B-5728

ALAMANCE COUNTY

STATION: 21+77.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DEAD LOAD DEFLECTIONS

NORTH CAROLINA PROFESSIONAL SEAL 037760 ENGINEER PAUL L. JACOB
1/12/2022

DRAWN BY : J. LOFTUS DATE : 10-2021
CHECKED BY : P. JACOB DATE : 10-2021
DESIGN ENGINEER OF RECORD: J. LOFTUS DATE : 10-2021

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
NC License NO.: F-0105

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2			4			34

1/12/2022
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pjacob

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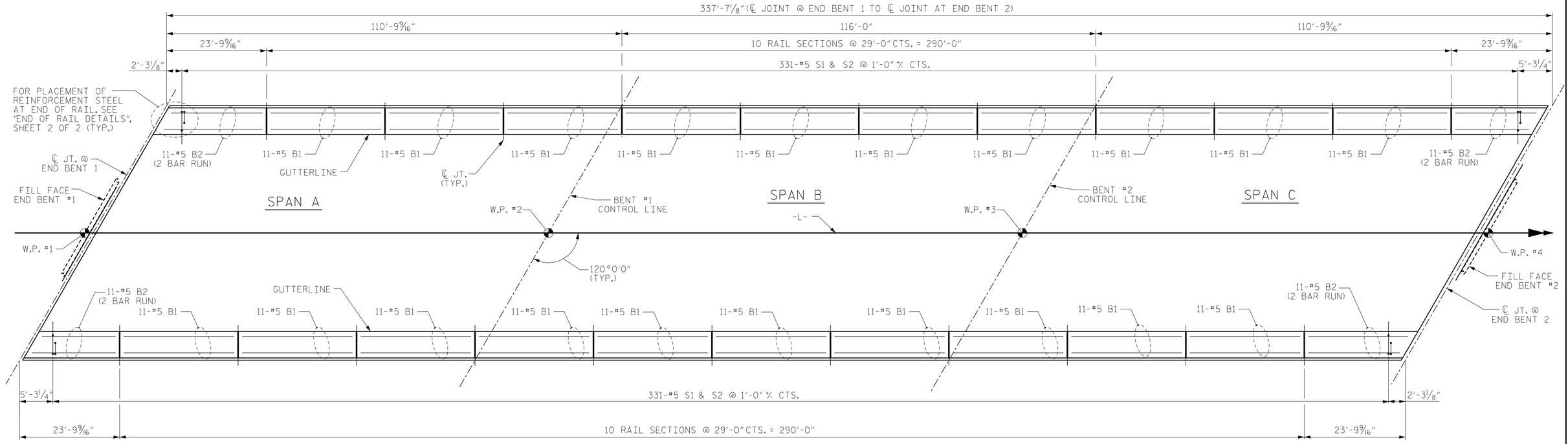
NOTES:

#5 S1 AND S2 BARS MAY BE SHIFTED SLIGHTLY TO MAINTAIN 2" CLEAR TO EXPANSION JOINT IN RAIL.

DIMENSIONS ARE MEASURED ALONG OUTSIDE OF DECK SLAB.



PLAN OF CONCRETE BARRIER RAIL

PROJECT NO. B-5728

ALAMANCE COUNTY

STATION: 21+77.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONCRETE BARRIER RAIL PLAN

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			34

DRAWN BY : J. LOFTUS DATE : 10-2020
CHECKED BY : P. JACOB DATE : 10-2021
DESIGN ENGINEER OF RECORD: J. LOFTUS DATE : 10-2021

NORTH CAROLINA PROFESSIONAL SEAL 037760 ENGINEER PAUL L. JACOB
1/12/2022

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
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NC License NO.: F-0105

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pjacob

DocuSign Envelope ID: F72DF843-F110-491D-9F41-8B5F9D364A94

NOTES

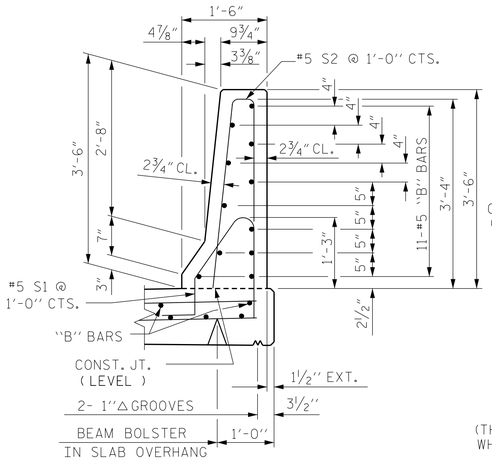
THE BARRIER RAIL IN EACH SPAN SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT SPAN HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

WHEN FOAM JOINT SEAL IS REQUIRED, THE JOINT IN THE DECK SHALL BE SAWED PRIOR TO THE CASTING OF BARRIER RAIL.

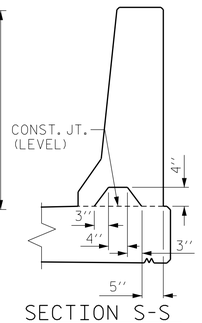
ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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

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



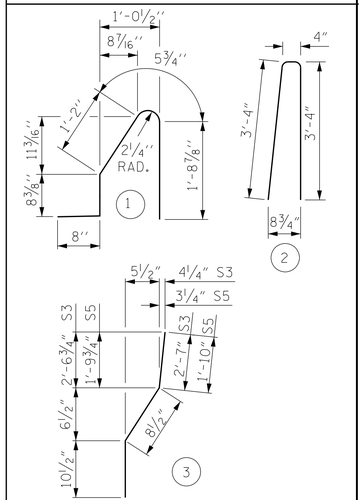
SECTION THRU RAIL



SECTION S-S

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

BAR TYPES



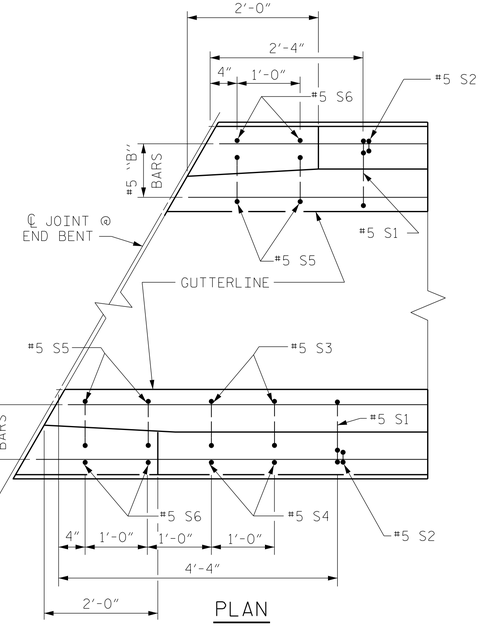
ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

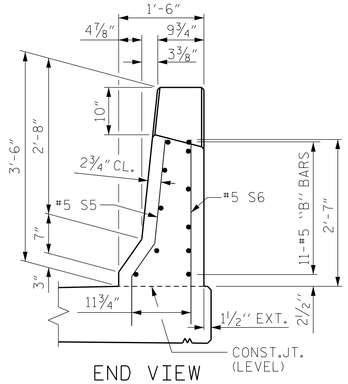
FOR CONCRETE BARRIER RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* S1	662	#5	1	4'-9"	3,280
* S2	662	#5	2	7'-0"	4,833
* S3	4	#5	3	4'-2"	17
* S4	4	#5	STR	4'-0"	17
* S5	8	#5	3	3'-5"	29
* S6	8	#5	STR	3'-3"	27
* B1	220	#5	STR	28'-7"	6,578
* B2	88	#5	STR	13'-8"	1,254

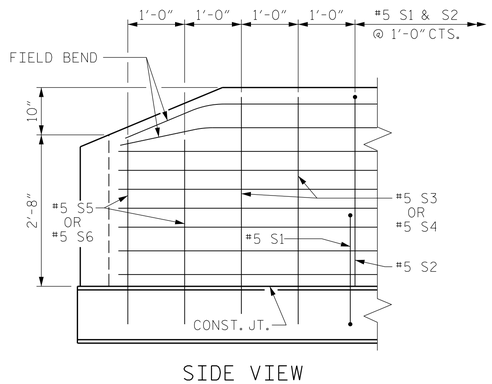
* EPOXY COATED REINFORCING STEEL	16,035 LBS.
CLASS AA CONCRETE	45.85 CU. YDS.
CONCRETE BARRIER RAIL	675.19 LIN. FT.



PLAN



END VIEW

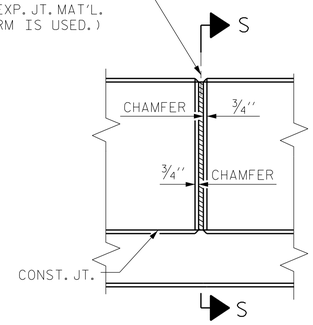


SIDE VIEW

END OF RAIL DETAILS

FOR ADHESIVE ANCHORING AT SAWED JOINTS

℄ 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

PROJECT NO. B-5728

ALAMANCE COUNTY

STATION: 21+77.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONCRETE BARRIER RAIL DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 037760 ENGINEER PAUL L JACOB
1/12/2022

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
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NC License NO.: F-0105

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CHECKED BY : P. JACOB DATE : 10-2021
DESIGN ENGINEER OF RECORD: J. LOFTUS DATE : 10-2021

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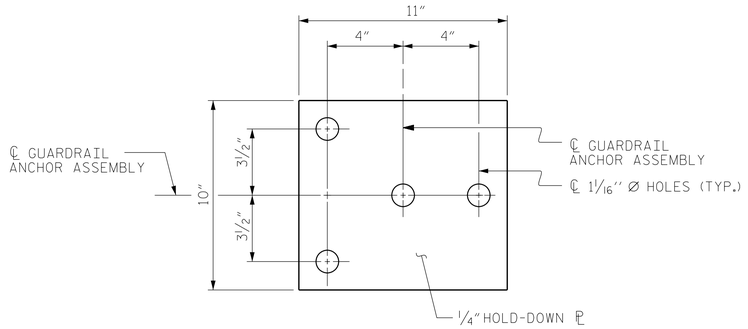
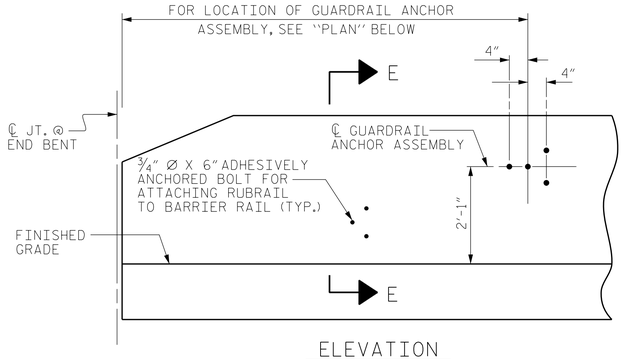
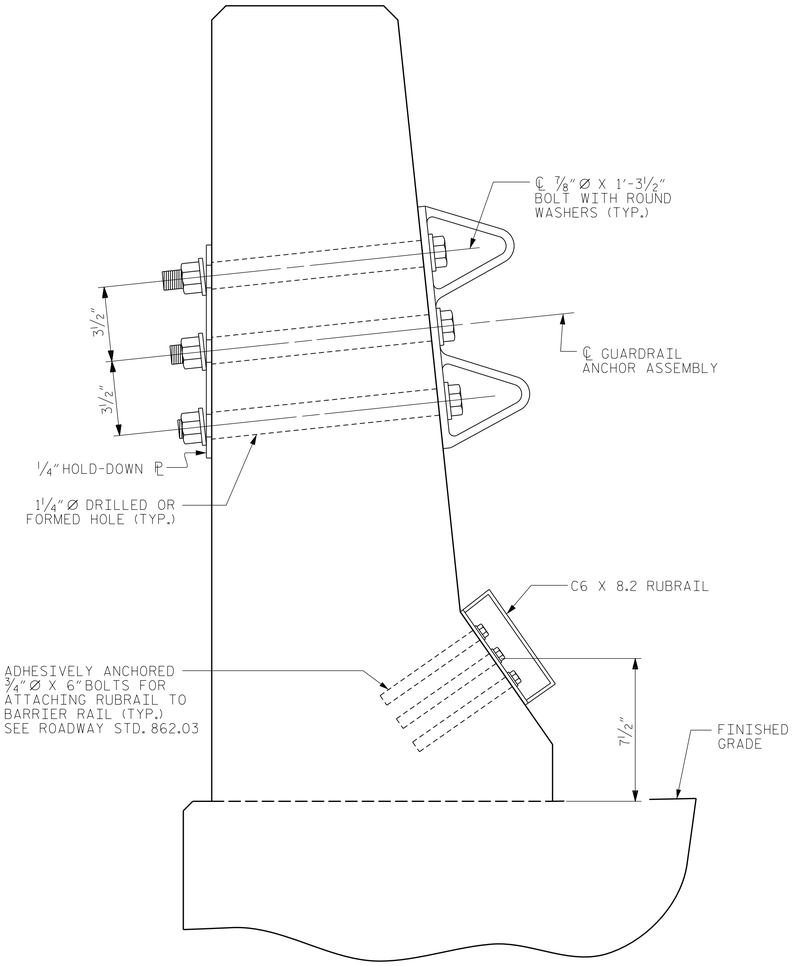


PLAN

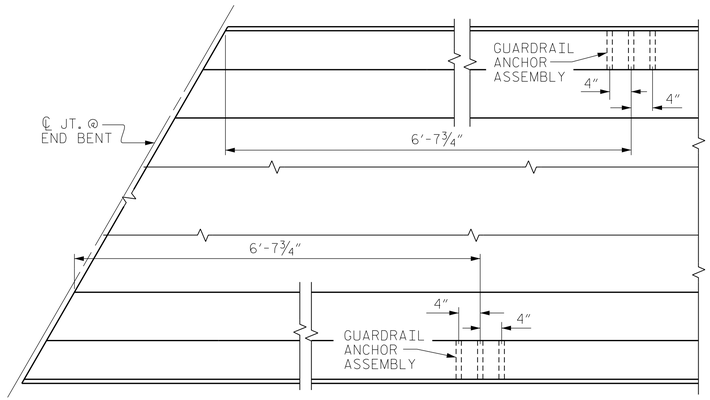


ELEVATION



SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

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

NOTES

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

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

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

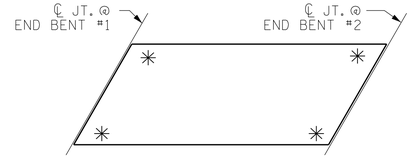
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

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

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



SKETCH SHOWING POINTS OF ATTACHMENTS

✳ DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. B-5728

ALAMANCE COUNTY

STATION: 21+77.00 -L-

DRAWN BY :	J. LOFTUS — DATE : 7-2020
CHECKED BY :	P. JACOB — DATE : 10-2021
DESIGN ENGINEER OF RECORD:	J. LOFTUS — DATE : 10-2021

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1/12/2022

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STATE OF NORTH CAROLINA
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RALEIGH

GUARDRAIL ANCHORAGE FOR BARRIER RAIL

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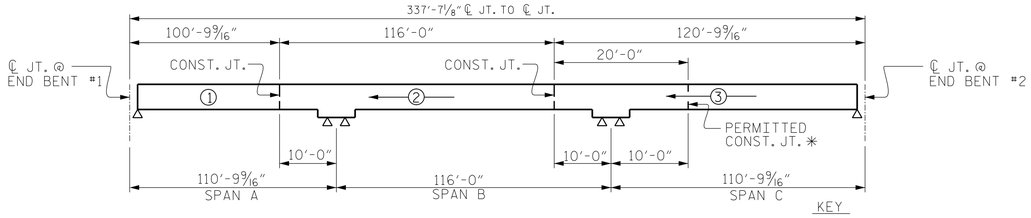
SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS

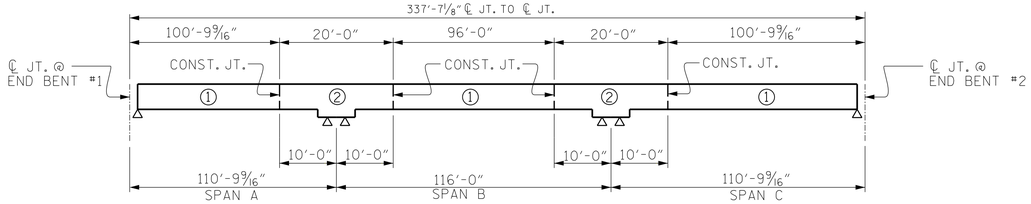
BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPETS, AND BARRIER RAILS		APPROACH SLABS		PARAPETS AND BARRIER RAILS
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#4	1′-11″	1′-7″	1′-11″	1′-7″	2′-6″
#5	2′-5″	2′-0″	2′-5″	2′-0″	3′-1″
#6	2′-10″	2′-5″	3′-7″	2′-5″	3′-8″
#7	4′-2″	2′-9″			
#8	4′-9″	3′-2″			

GROOVING BRIDGE FLOORS

APPROACH SLABS	1,631	SQ.FT.
BRIDGE DECK	11,130	SQ.FT.
TOTAL	12,761	SQ.FT.

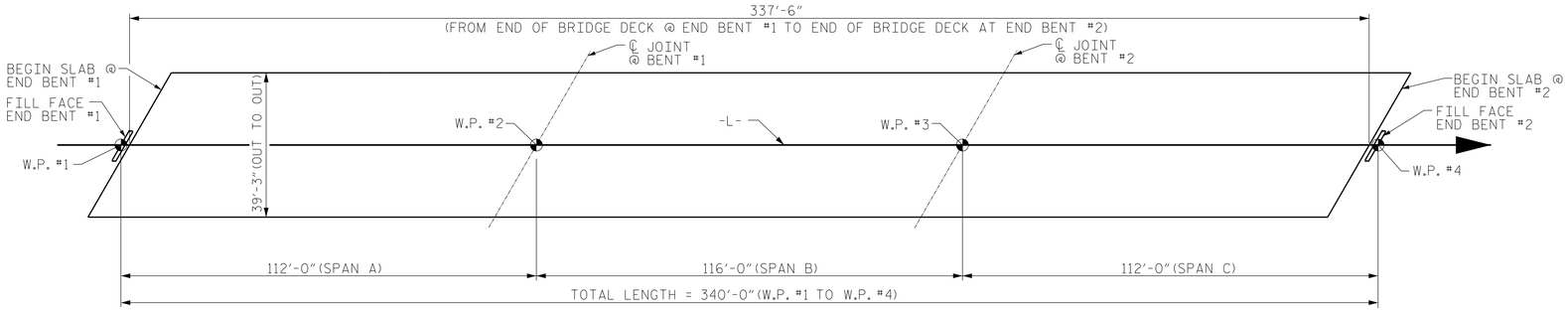


POURING SEQUENCE



OPTIONAL POURING SEQUENCE

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

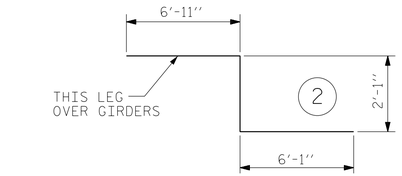


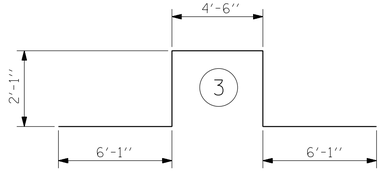
LAYOUT FOR COMPUTING AREA REINFORCED CONCRETE DECK SLAB (SQ. FT. = 13,247)

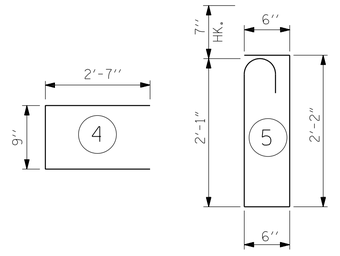
BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ A1	540	#5	STR	38′-10″	21,872	A201	2	#5	STR	37′-11″	79
A2	540	#5	STR	38′-10″	21,872	A202	2	#5	STR	36′-11″	77
✳ A3	6	#6	STR	20′-0″	180	A203	2	#5	STR	35′-11″	75
						A204	2	#5	STR	34′-11″	73
✳A101	2	#5	STR	37′-11″	79	A205	2	#5	STR	33′-11″	71
✳A102	2	#5	STR	36′-11″	77	A206	2	#5	STR	32′-11″	69
✳A103	2	#5	STR	35′-11″	75	A207	2	#5	STR	31′-11″	67
✳A104	2	#5	STR	34′-11″	73	A208	2	#5	STR	30′-11″	64
✳A105	2	#5	STR	33′-11″	71	A209	2	#5	STR	29′-10″	62
✳A106	2	#5	STR	32′-11″	69	A210	2	#5	STR	28′-10″	60
✳A107	2	#5	STR	31′-11″	67	A211	2	#5	STR	27′-10″	58
✳A108	2	#5	STR	30′-11″	64	A212	2	#5	STR	26′-10″	56
✳A109	2	#5	STR	29′-10″	62	A213	2	#5	STR	25′-10″	54
✳A110	2	#5	STR	28′-10″	60	A214	2	#5	STR	24′-10″	52
✳A111	2	#5	STR	27′-10″	58	A215	2	#5	STR	23′-10″	50
✳A112	2	#5	STR	26′-10″	56	A216	2	#5	STR	22′-10″	48
✳A113	2	#5	STR	25′-10″	54	A217	2	#5	STR	21′-9″	45
✳A114	2	#5	STR	24′-10″	52	A218	2	#5	STR	20′-9″	43
✳A115	2	#5	STR	23′-10″	50	A219	2	#5	STR	19′-9″	41
✳A116	2	#5	STR	22′-10″	48	A220	2	#5	STR	18′-9″	39
✳A117	2	#5	STR	21′-9″	45	A221	2	#5	STR	17′-9″	37
✳A118	2	#5	STR	20′-9″	43	A222	2	#5	STR	16′-9″	35
✳A119	2	#5	STR	19′-9″	41	A223	2	#5	STR	15′-9″	33
✳A120	2	#5	STR	18′-9″	39	A224	2	#5	STR	14′-9″	31
✳A121	2	#5	STR	17′-9″	37	A225	2	#5	STR	13′-8″	29
✳A122	2	#5	STR	16′-9″	35	A226	2	#5	STR	12′-8″	26
✳A123	2	#5	STR	15′-9″	33	A227	2	#5	STR	11′-8″	24
✳A124	2	#5	STR	14′-9″	31	A228	2	#5	STR	10′-8″	22
✳A125	2	#5	STR	13′-8″	29	A229	2	#5	STR	9′-8″	20
✳A126	2	#5	STR	12′-8″	26	A230	2	#5	STR	8′-8″	18
✳A127	2	#5	STR	11′-8″	24	A231	2	#5	STR	7′-8″	16
✳A128	2	#5	STR	10′-8″	22	A232	2	#5	STR	6′-7″	14
✳A129	2	#5	STR	9′-8″	20	A233	2	#5	STR	5′-7″	12
✳A130	2	#5	STR	8′-8″	18	A234	2	#5	STR	4′-7″	10
✳A131	2	#5	STR	7′-8″	16	A235	2	#5	STR	3′-7″	7
✳A132	2	#5	STR	6′-7″	14						
✳A133	2	#5	STR	5′-7″	12	✳ B1	168	#4	STR	36′-3″	4,068
✳A134	2	#5	STR	4′-7″	10	✳ B2	84	#4	STR	36′-1″	2,025
✳A135	2	#5	STR	3′-7″	7	B3	140	#5	STR	53′-6″	7,812
						B4	70	#5	STR	53′-2″	3,882
						✳ B5	156	#6	STR	17′-1″	4,003
						B6	156	#6	STR	17′-1″	4,003
						✳ G1	2	#5	STR	44′-10″	94
						✳ K1	8	#8	2	15′-1″	322
						✳ K2	8	#8	3	20′-10″	445
						✳ K3	18	#6	STR	7′-4″	198
						✳ S1	48	#4	4	5′-11″	190
						✳ S2	48	#4	5	5′-10″	292

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	135.7		
POUR 2	152.6		
POUR 3	162.0		
TOTALS ✳✳	450.3	39,086	35,206

✳✳ QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED

PROJECT NO. B-5728

ALAMANCE COUNTY

STATION: 21+77.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE BILL OF MATERIAL

NORTH CAROLINA PROFESSIONAL SEAL 037760 ENGINEER PAUL L. JACOB
1/12/2022

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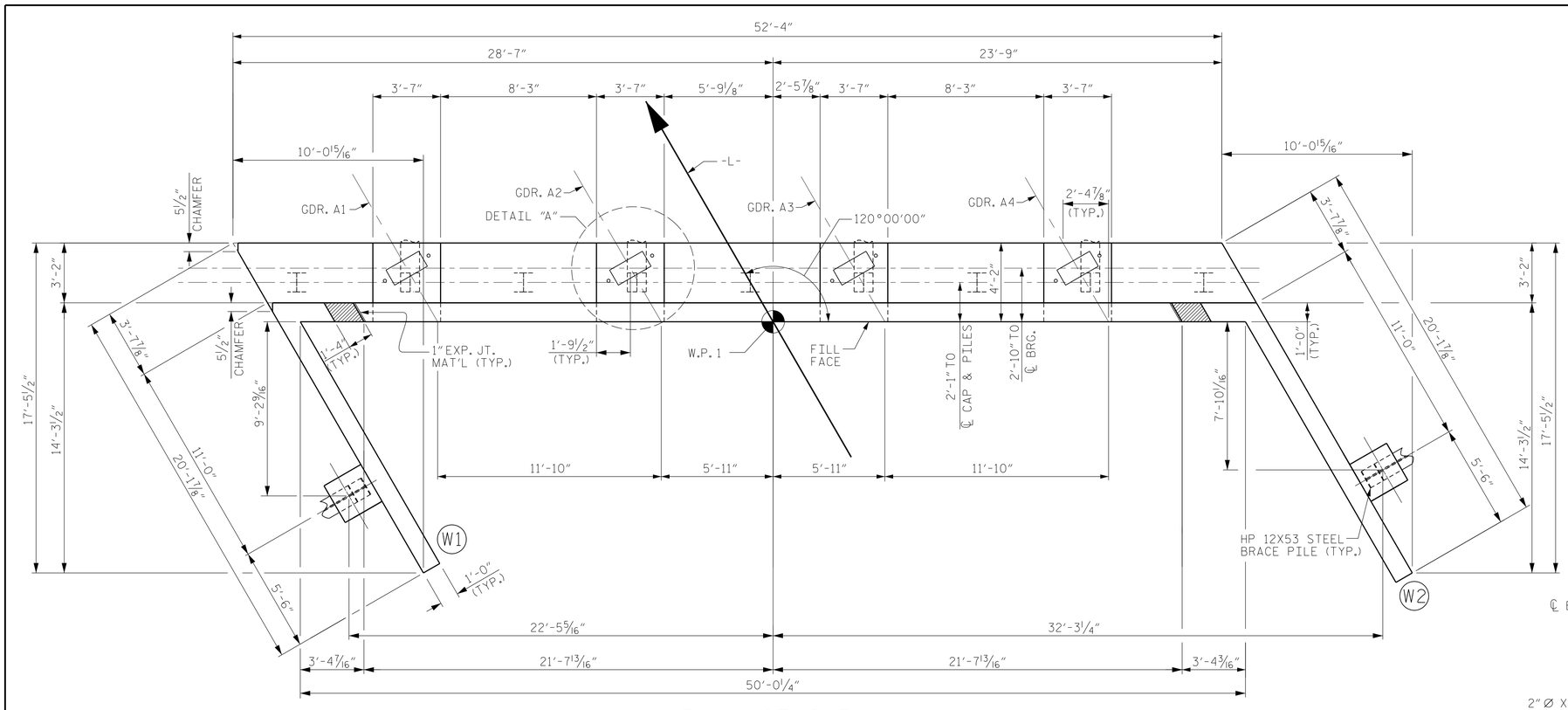


PLAN OF CAP

CONCRETE COLLARS FOR STEEL PILES NOT SHOWN FOR CLARITY.

NOTES:

STIRRUPS AND U2 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

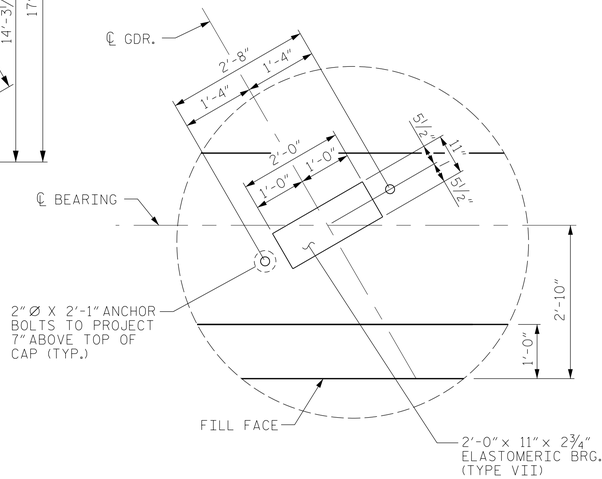
BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PREOTECTIVE COATING.

THE #5 ''V'' BARS IN BACKWALL SHALL BE PLACED 2" CLEAR FROM THE TOP OF BACKWALL.

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

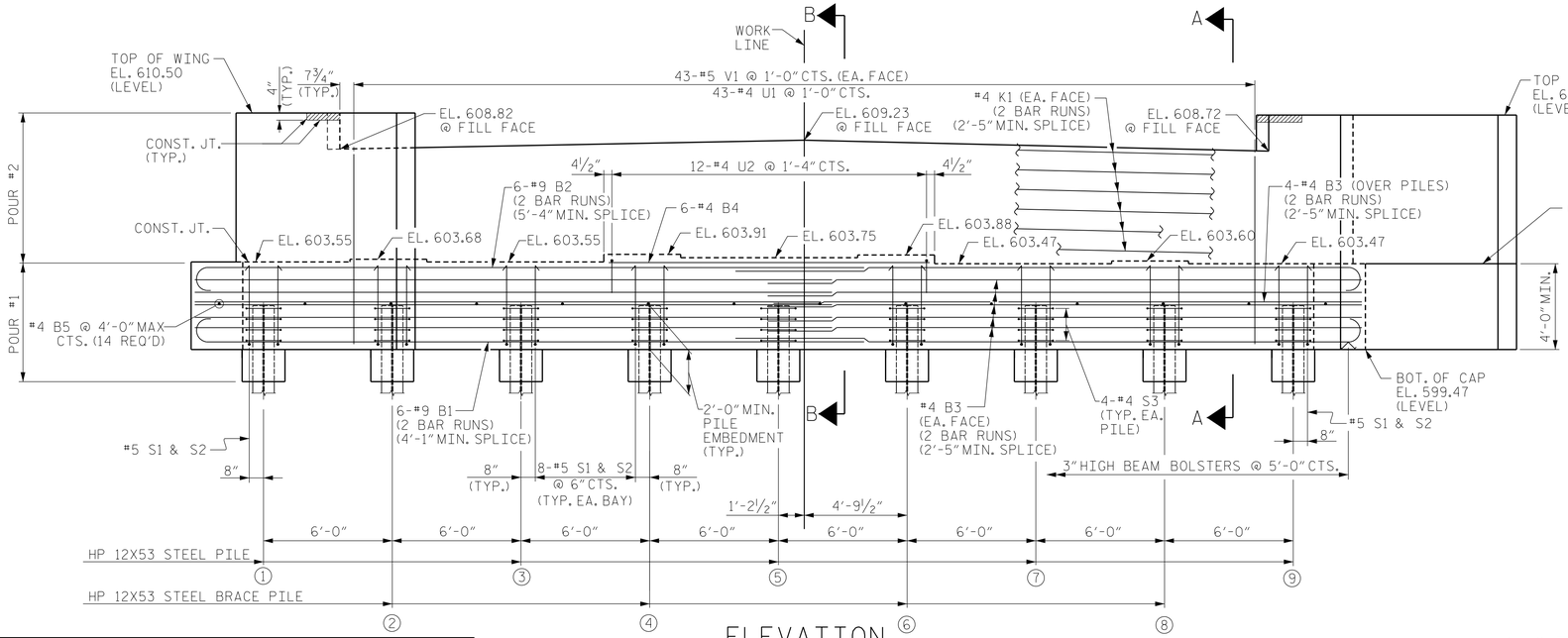
THE TOP SURFACE OF THE END BENT CAP, EXCEPT THE BRIDGE SEAT BUILDUPS, SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT A RATE OF 2%.

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



DETAIL "A"

(TYP. EACH GIRDER)



ELEVATION

FOR SECTIONS A-A AND B-B, SEE SHEET 3 OF 3
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 3 OF 3
(WING BRACE PILES NOT SHOWN FOR CLARITY)

PROJECT NO. B-5728

ALAMANCE COUNTY

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SHEET 1 OF 3

STATE OF NORTH CAROLINA
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RALEIGH

SUBSTRUCTURE

END BENT #1

NORTH CAROLINA PROFESSIONAL SEAL 037760 ENGINEER PAUL L. JACOB
1/12/2022

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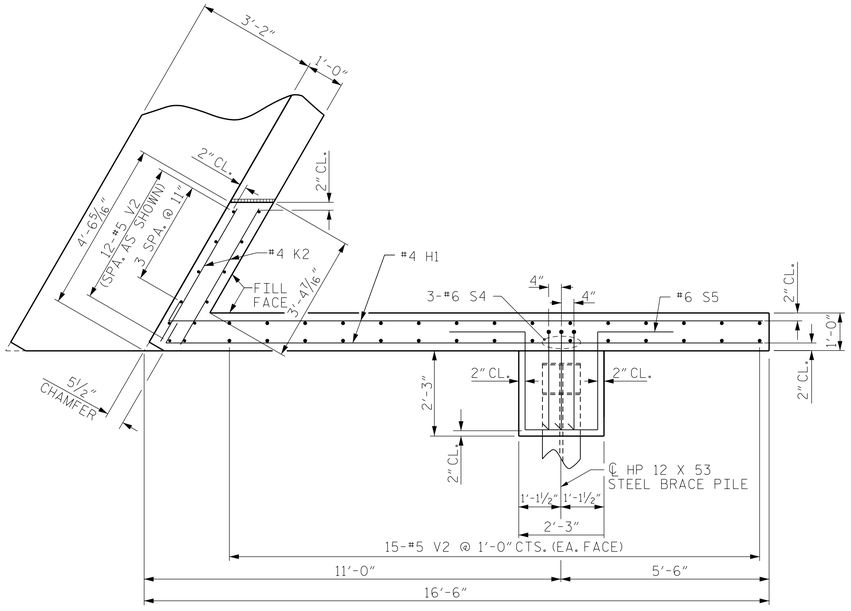
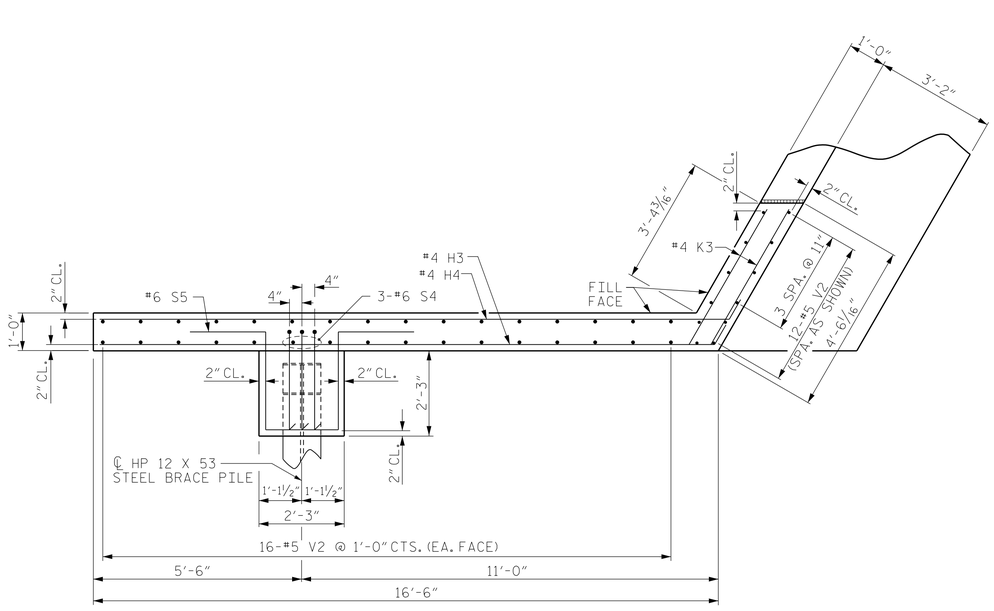
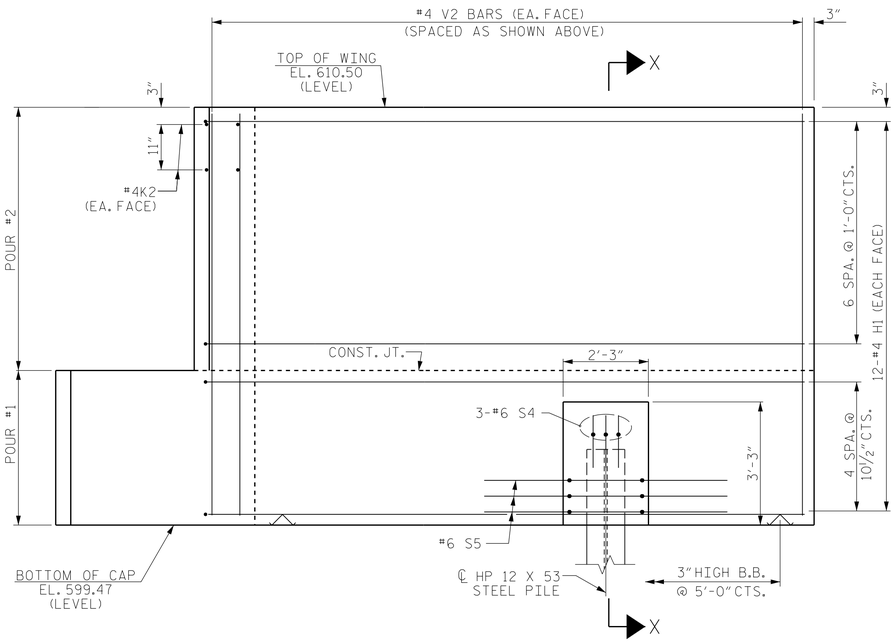


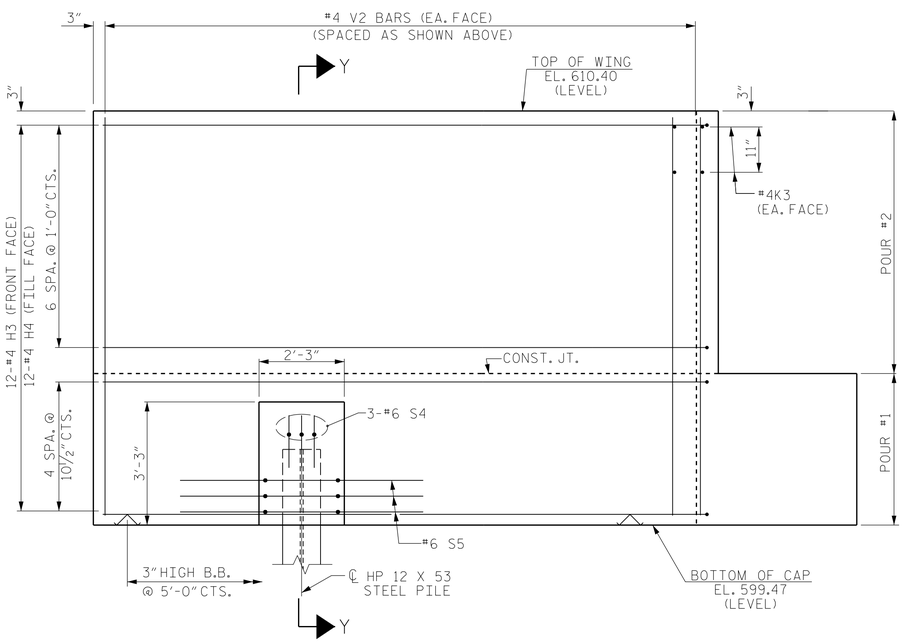
PLAN OF WING (W1)



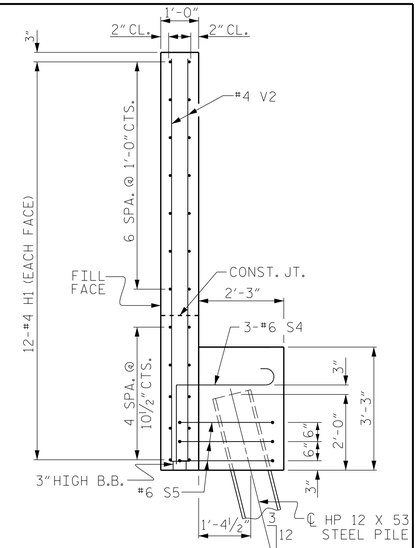
PLAN OF WING (W2)



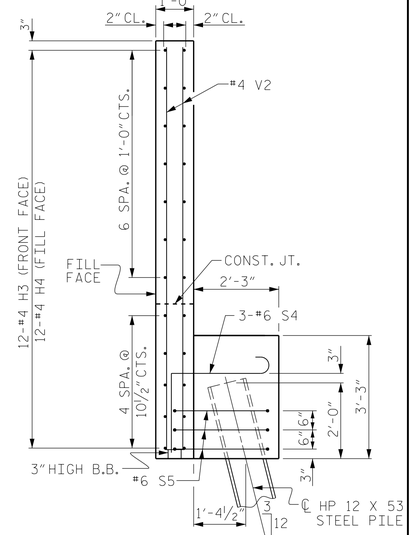
ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



SECTION X-X



SECTION Y-Y

PROJECT NO. B-5728

ALAMANCE COUNTY

STATION: 21+77.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE

END BENT 1
WING DETAILS

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WING DETAILS

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1/12/2022
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pjacob

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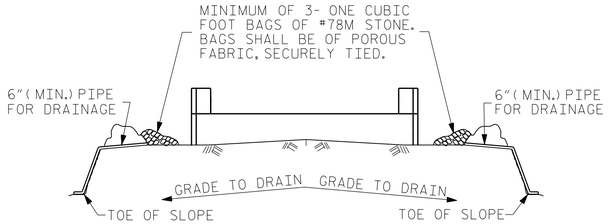
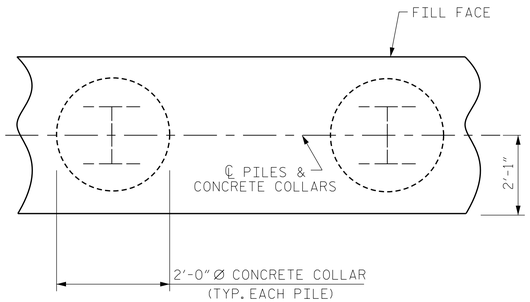


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

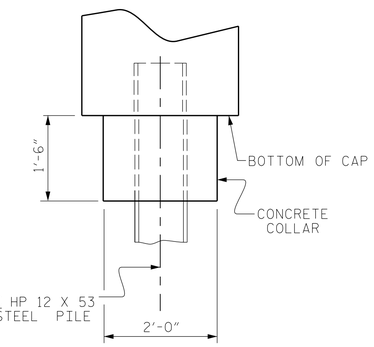
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

TEMPORARY DRAINAGE AT END BENT

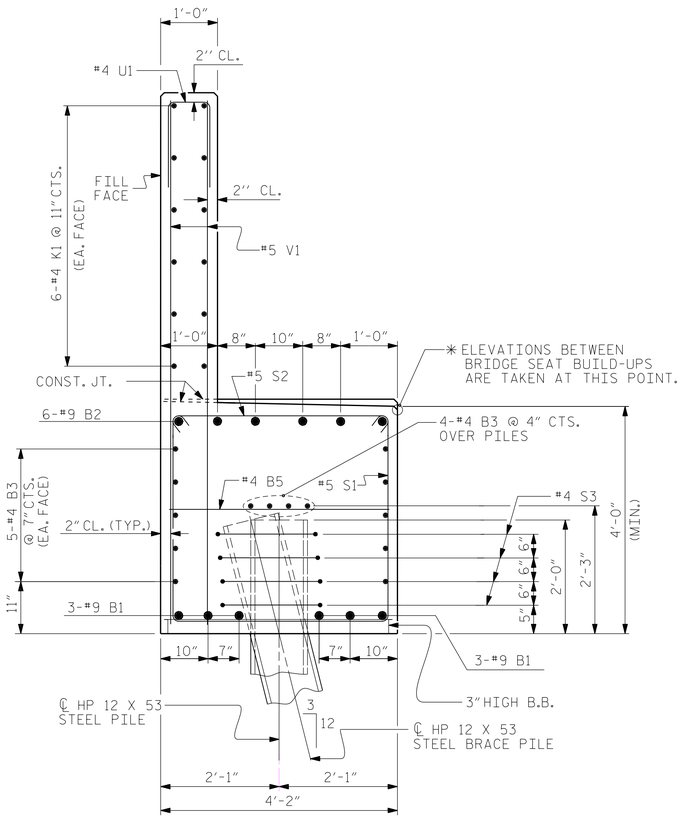


PLAN

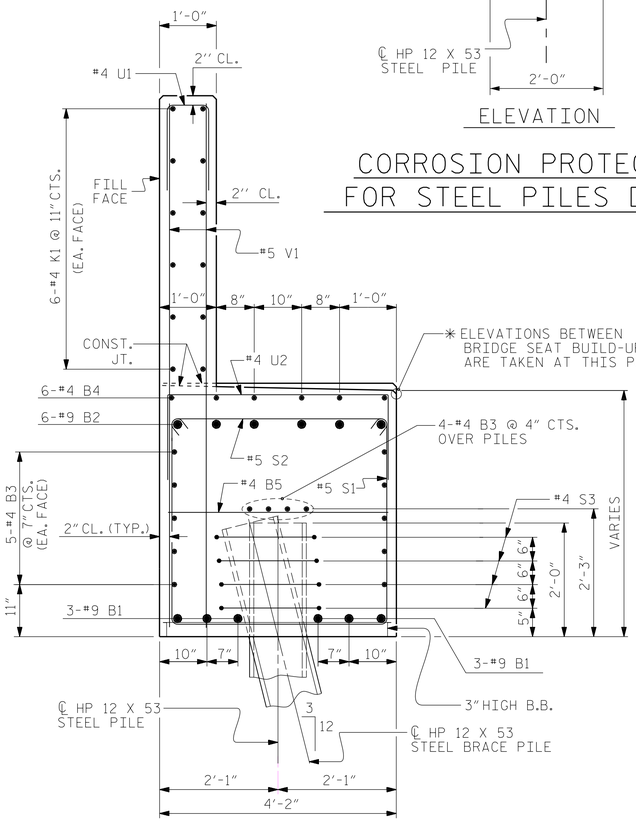


ELEVATION

CORROSION PROTECTION FOR STEEL PILES DETAIL

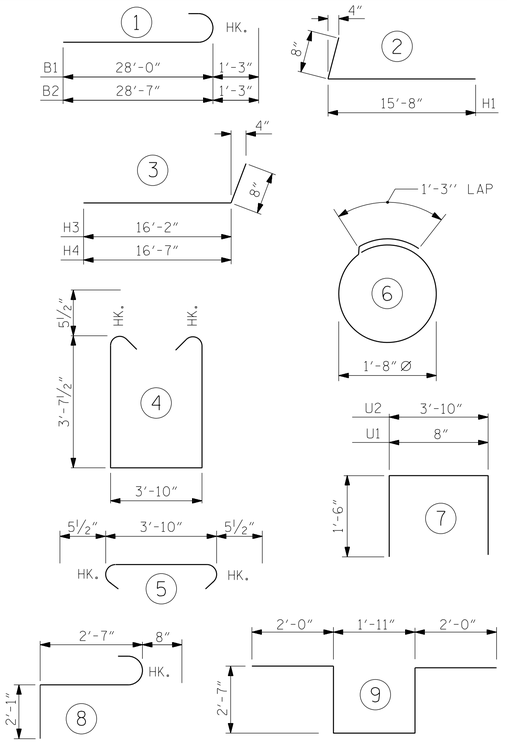


SECTION A-A



SECTION B-B

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL FOR END BENT #1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	12	#9	1	29'-3"	1,193
B2	12	#9	1	29'-10"	1,217
B3	28	#4	STR	27'-3"	510
B4	6	#4	STR	15'-0"	60
B5	14	#4	STR	3'-10"	36
K1	24	#4	STR	27'-3"	437
K2	4	#4	STR	4'-0"	11
K3	4	#4	STR	4'-1"	11
H1	24	#4	2	16'-4"	262
H3	12	#4	3	16'-10"	135
H4	12	#4	3	17'-3"	138
S1	66	#5	4	12'-0"	826
S2	66	#5	5	4'-9"	327
S3	36	#4	6	6'-6"	156
S4	6	#6	8	5'-4"	48
S5	6	#6	9	11'-1"	100
U1	43	#4	7	3'-8"	105
U2	12	#4	7	6'-10"	55
V1	86	#5	STR	8'-10"	792
V2	86	#5	STR	10'-6"	942

REINFORCING STEEL (FOR END BENT #1) 7,361 LBS.

CLASS A CONCRETE BREAKDOWN (FOR END BENT #1)

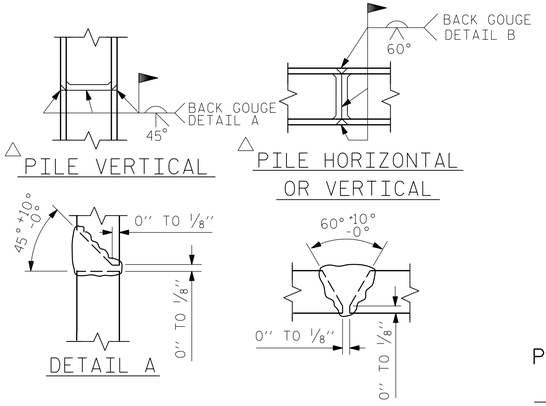
POUR #1 CAP, LOWER PART OF WINGS & COLLARS 40.9 C.Y.

POUR #2 UPPER PART OF WINGS 21.0 C.Y.

TOTAL CLASS A CONCRETE 61.9 C.Y.

HP 12 X 53 STEEL PILES NO: 11
LIN. FT.= 330

PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES NO: 11



△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

PROJECT NO. B-5728

ALAMANCE COUNTY

STATION: 21+77.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 1
DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 037760 ENGINEER PAUL L JACOB
1/12/2022

DRAWN BY : J. LOFTUS DATE : 03-2021
CHECKED BY : P. JACOB DATE : 10-2021
DESIGN ENGINEER OF RECORD: J. LOFTUS DATE : 10-2021

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
NC License NO.: F-0105

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REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			34

1/12/2022
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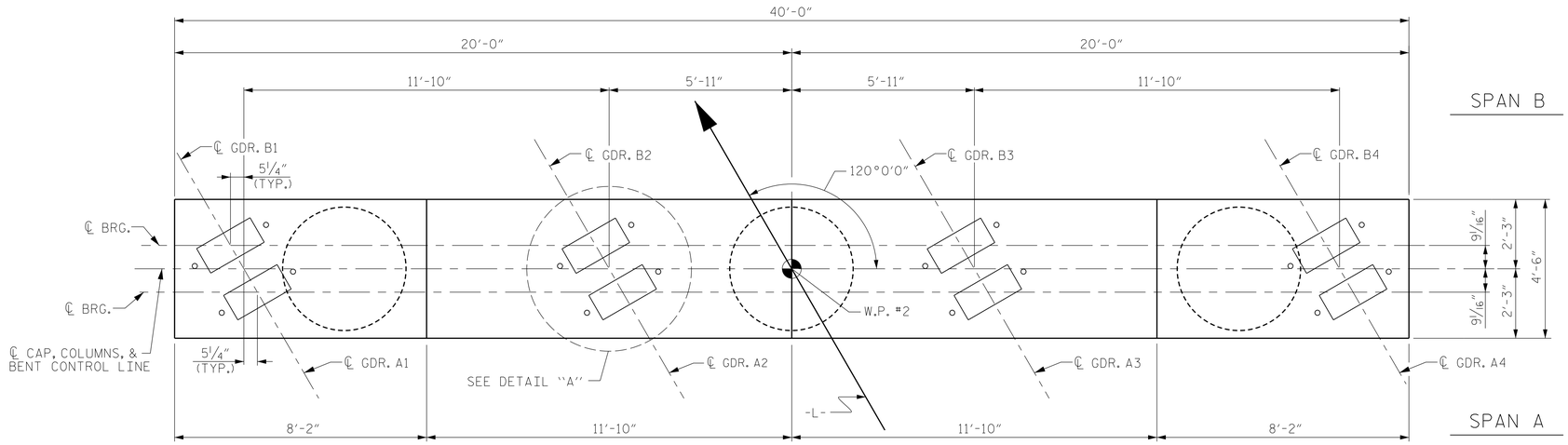
pjacob



NOTES

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

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

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

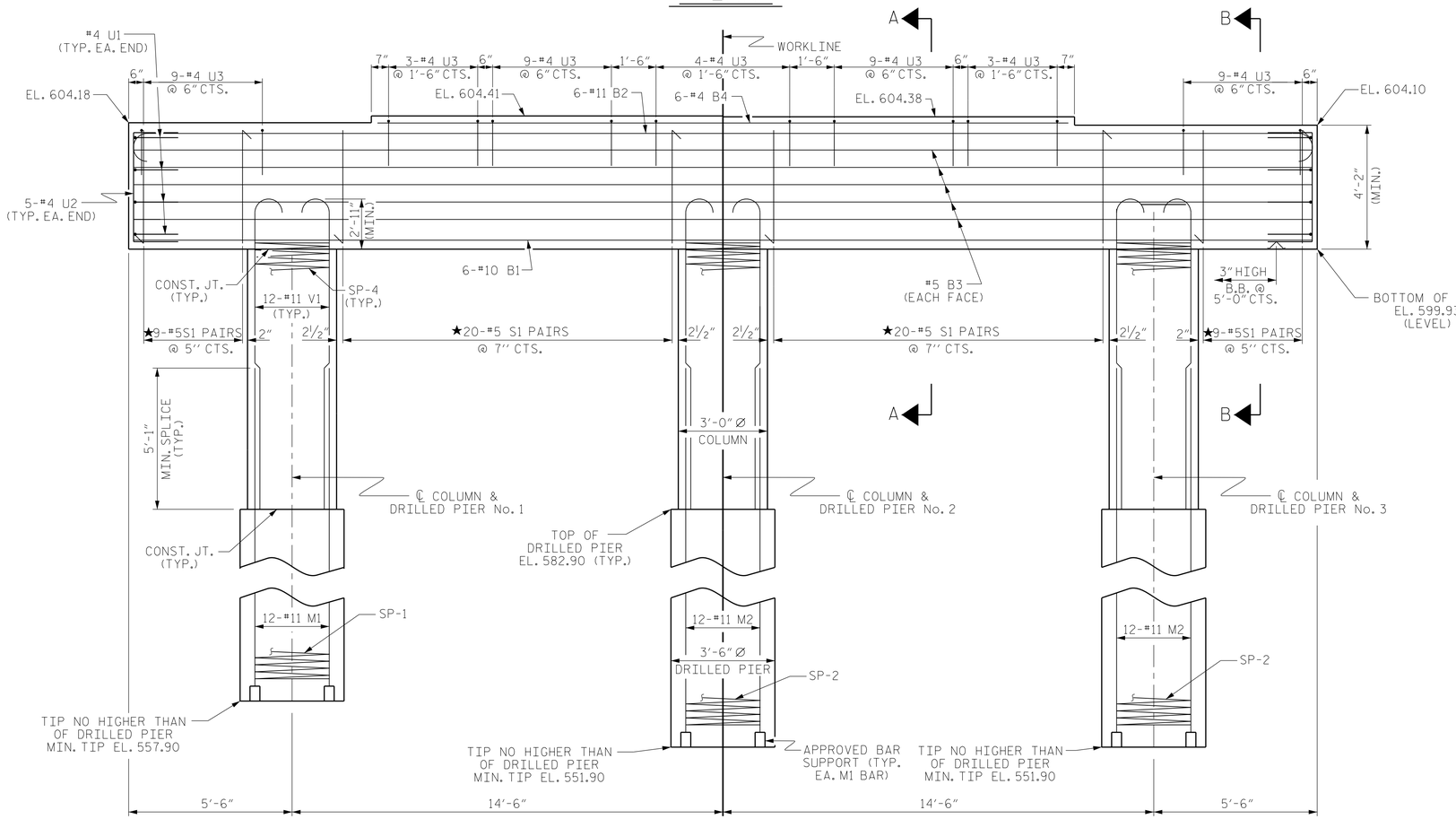
ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL."

★ INVERT ALTERNATE STIRRUPS.

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

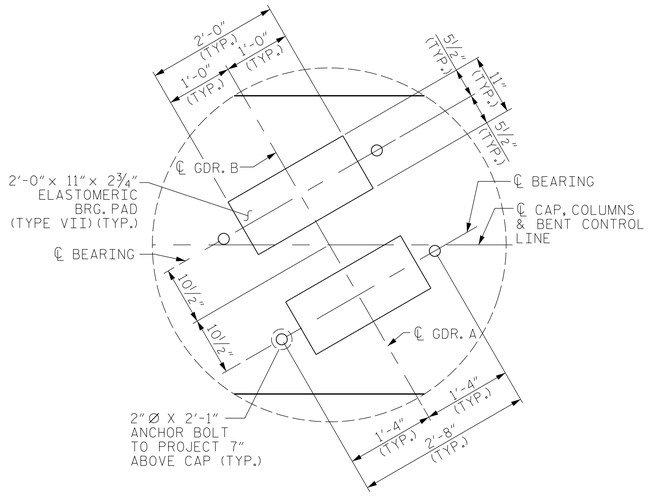
THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.

PLAN



ELEVATION

DIMENSIONS & REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & DRILLED PIER UNLESS OTHERWISE NOTED.



DETAIL "A"

(TYP. EACH GIRDER)

PROJECT NO. B-5728

ALAMANCE COUNTY

STATION: 21+77.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 1

NORTH CAROLINA PROFESSIONAL SEAL 037760 ENGINEER PAUL L. JACOB

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-25
1			3			TOTAL SHEETS
2			4			34

DRAWN BY : J. LOFTUS DATE : 03-2021
CHECKED BY : P. JACOB DATE : 10-2021
DESIGN ENGINEER OF RECORD: J. LOFTUS DATE : 10-2021

moffatt & nichol
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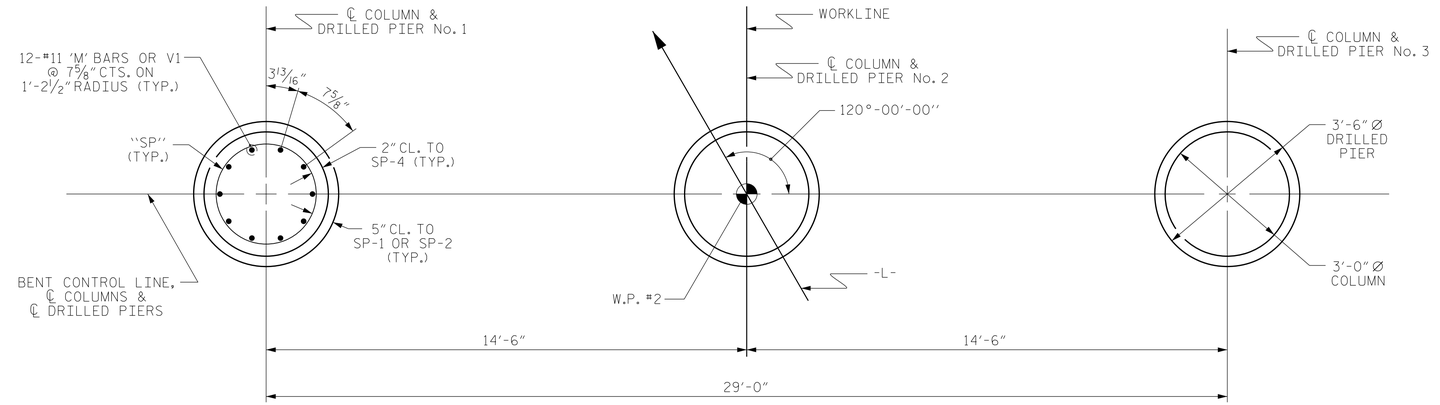
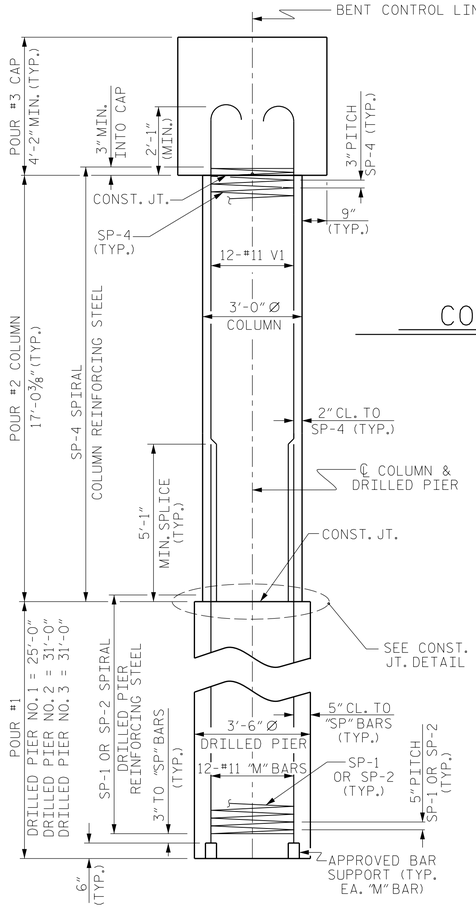
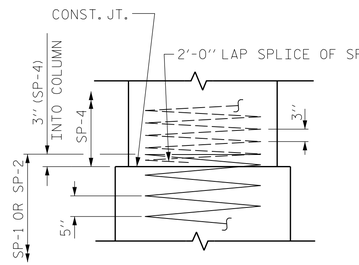


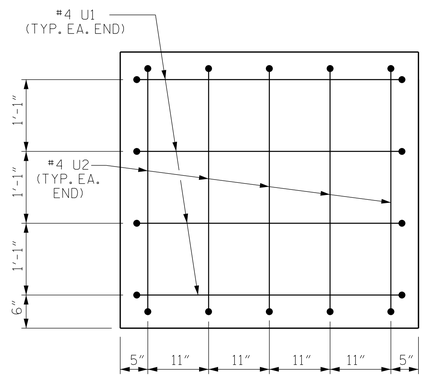
PLAN OF DRILLED PIERS & COLUMNS



END ELEVATION

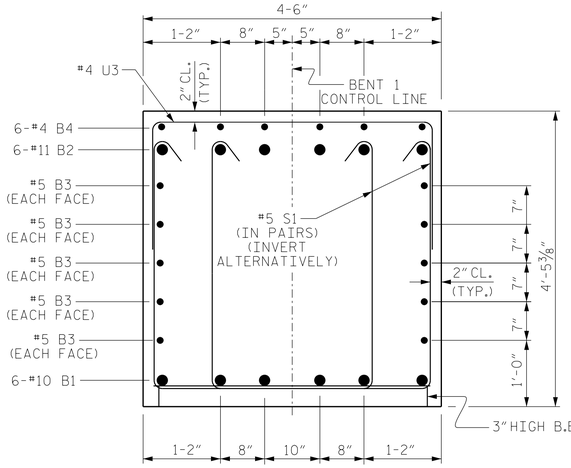


CONSTRUCTION JOINT DETAIL

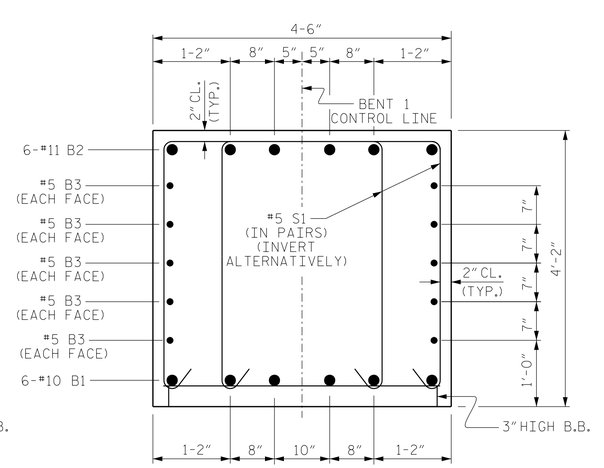


END OF CAP VIEW

(TYPICAL BOTH ENDS)

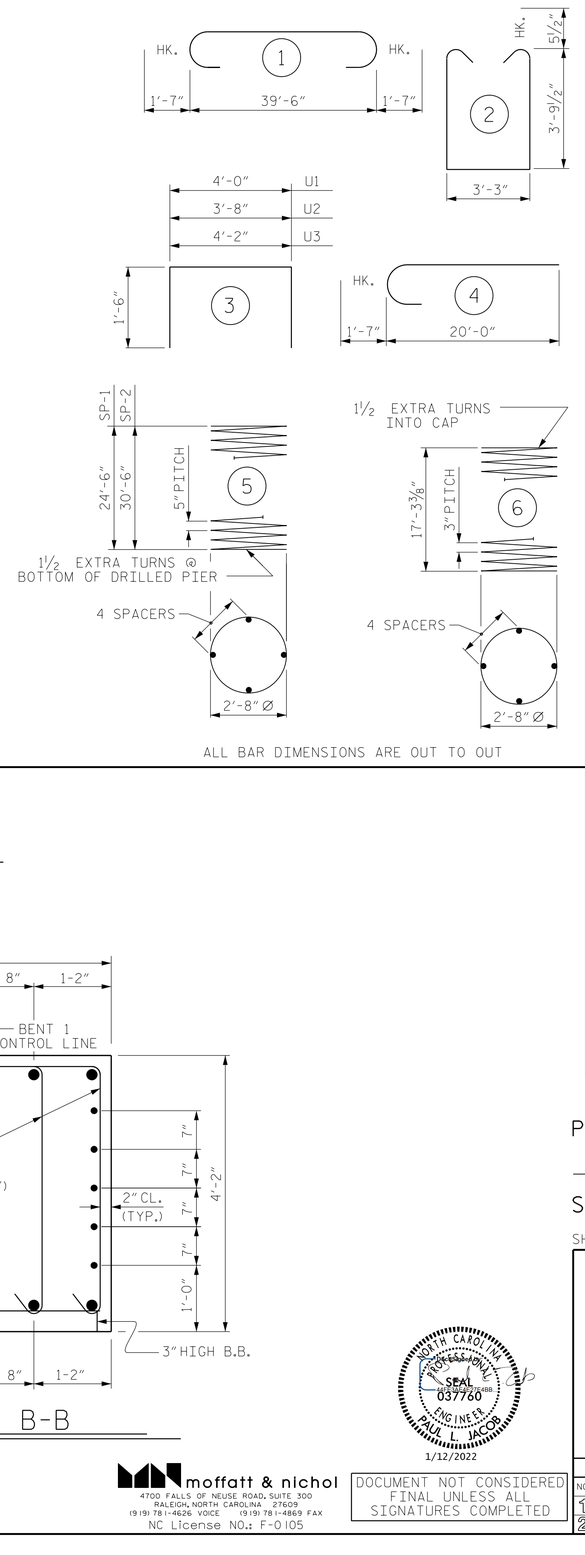


SECTION A-A



SECTION B-B

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR ONE BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#10	STR	39'-8"	1,024
B2	6	#11	1	42'-8"	1,360
B3	10	#5	STR	39'-8"	414
B4	6	#4	STR	23'-3"	93
M1	12	#11	STR	32'-7"	2,077
M2	24	#11	STR	38'-7"	4,920
S1	116	#5	2	11'-9"	1,422
U1	8	#4	3	7'-0"	37
U2	10	#4	3	6'-8"	45
U3	46	#4	3	7'-2"	220
V1	36	#11	4	21'-7"	4,128

REINFORCING STEEL (FOR ONE BENT) 15,740 LBS.

SP-1	1	✳	5	494'-11"	516
SP-2	2	✳	5	613'-2"	1,279
SP-4	3	✳✳	6	581'-6"	1,165

SPIRAL COLUMN REINFORCING STEEL (FOR ONE BENT) 2,960 LBS.

✳ THE SP-1 & SP-2 SPIRAL REINFORC. STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR

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

CLASS A CONCRETE BREAKDOWN (FOR ONE BENT)

POUR #2 (COLUMNS)	13.4 C.Y.
POUR #3 (CAP)	29.1 C.Y.
TOTAL CLASS A CONCRETE	42.5 C.Y.

DRILLED PIERS: (FOR ONE BENT)

DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)	31.0 C.Y.
3'-6" Ø DRILLED PIER NOT IN SOIL	41.0 LIN. FT.
3'-6" Ø DRILLED PIER IN SOIL	46.0 LIN. FT.
PERMANENT STEEL CASING FOR 3'-6" Ø DRILLED PIER	26.2 LIN. FT.
SID INSPECTIONS	3 EA.
CSL TESTING	1 EA.
CSL TUBES	366 LIN. FT.

PROJECT NO. B-5728

ALAMANCE COUNTY

STATION: 21+77.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 1 DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 037760 ENGINEER PAUL L. JACOB
1/12/2022

DRAWN BY : J. LOFTUS DATE : 03-2021
CHECKED BY : P. JACOB DATE : 10-2021
DESIGN ENGINEER OF RECORD: J. LOFTUS DATE : 10-2021

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2			4			34

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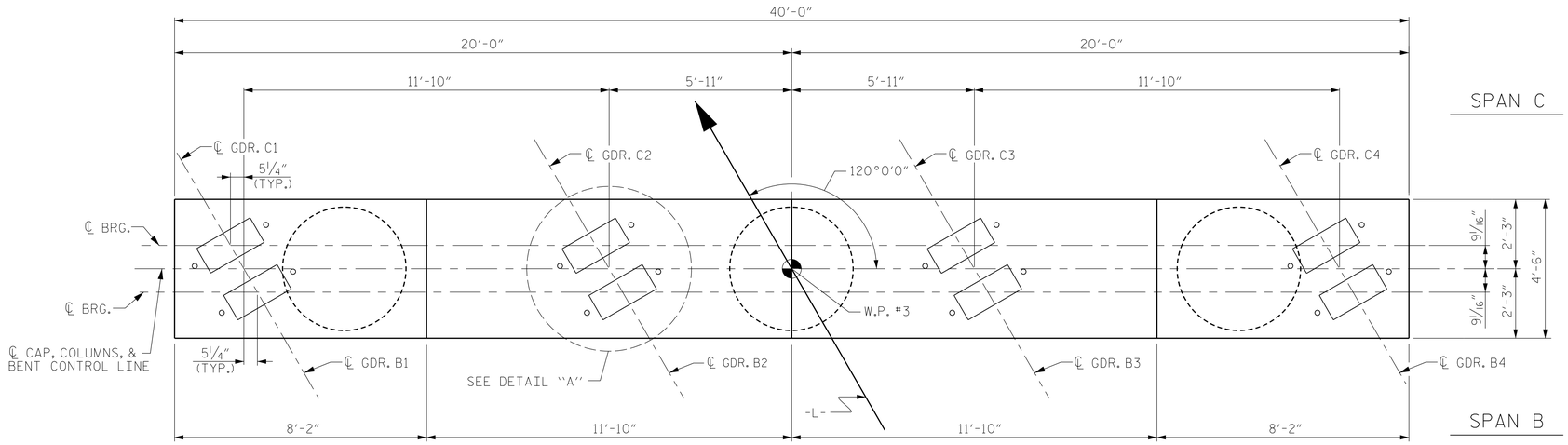
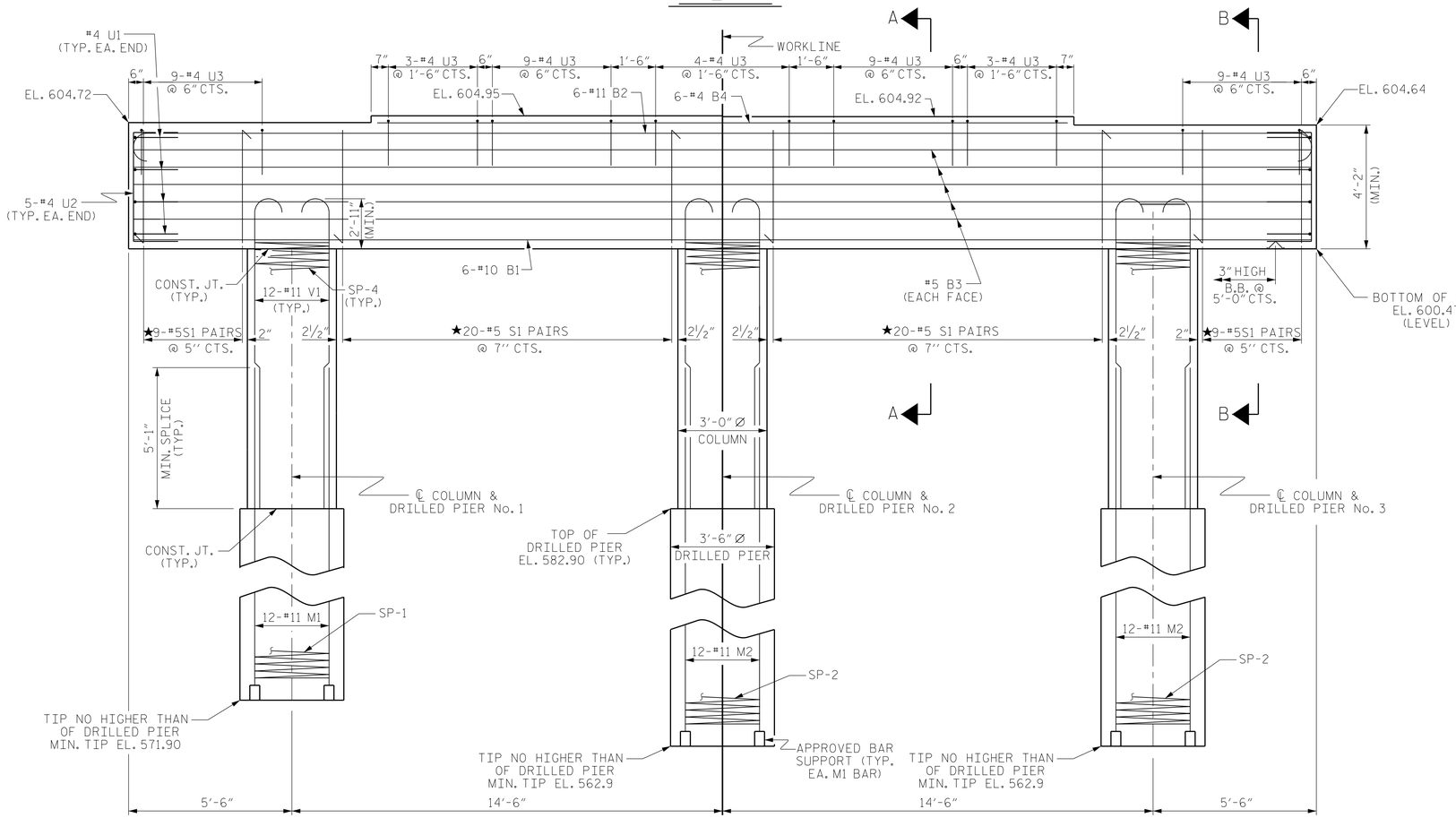


PLAN



NOTES

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

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

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

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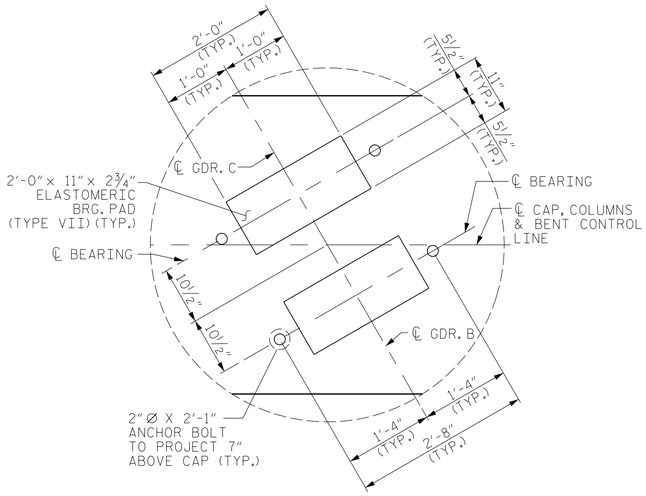

DETAIL "A"

(TYP. EACH GIRDER)

ELEVATION

DIMENSIONS & REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & DRILLED PIER UNLESS OTHERWISE NOTED.

PROJECT NO. B-5728

ALAMANCE COUNTY

STATION: 21+77.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE

BENT 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-27
1			3			TOTAL SHEETS
2			4			34

DRAWN BY : J. LOFTUS DATE : 03-2021
CHECKED BY : P. JACOB DATE : 10-2021
DESIGN ENGINEER OF RECORD: J. LOFTUS DATE : 10-2021

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(919) 781-4626 VOICE (919) 781-4869 FAX
NC License No.: F-0105

NORTH CAROLINA PROFESSIONAL SEAL 037760 ENGINEER PAUL L. JACOB

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pjacob

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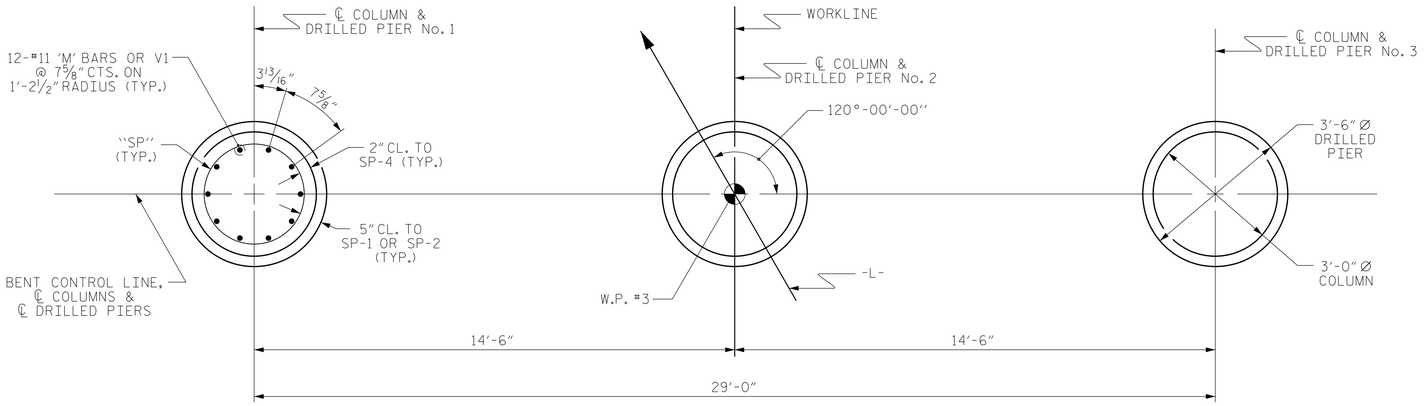
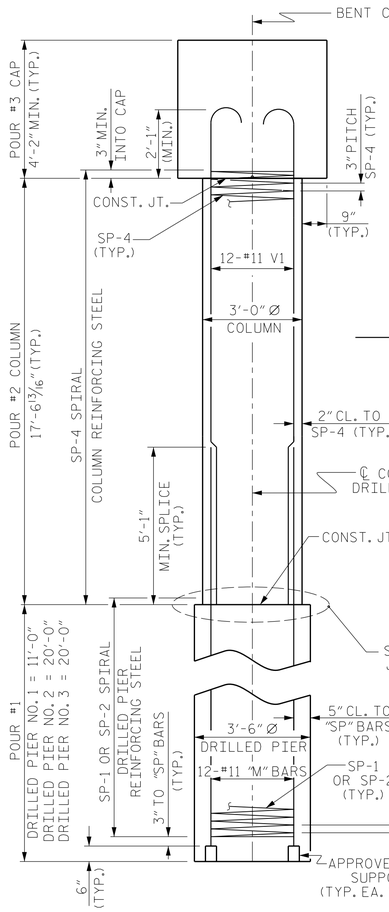
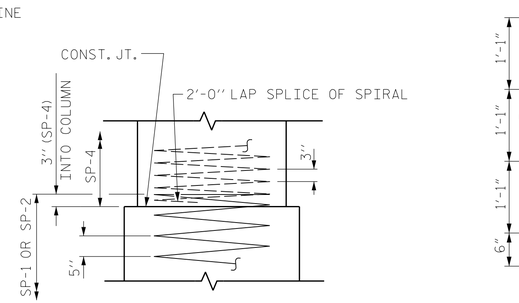


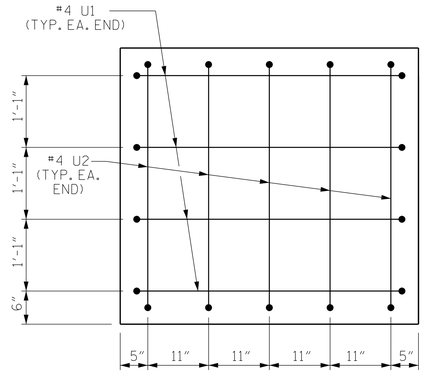
PLAN OF DRILLED PIERS & COLUMNS



END ELEVATION

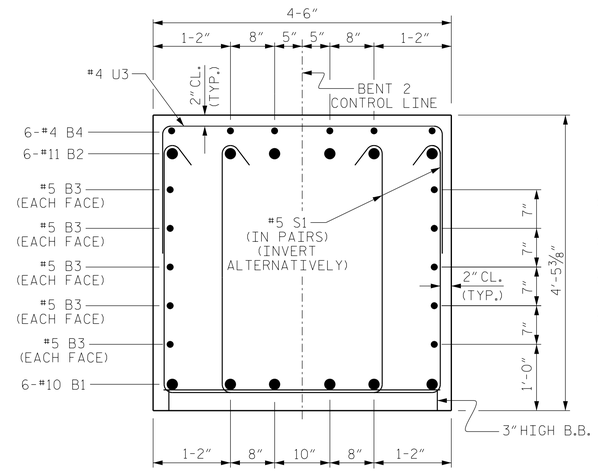


CONSTRUCTION JOINT DETAIL

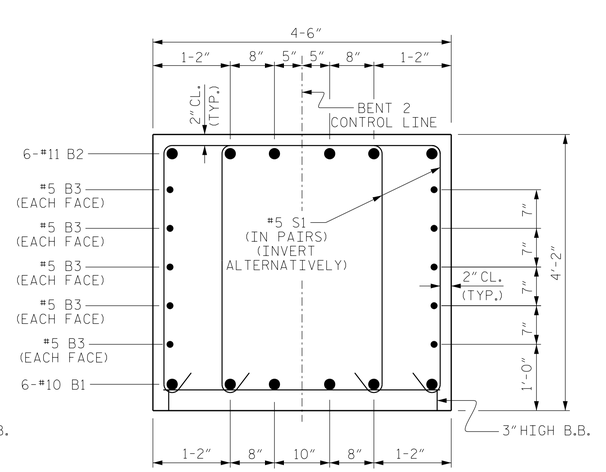


END OF CAP VIEW

(TYPICAL BOTH ENDS)

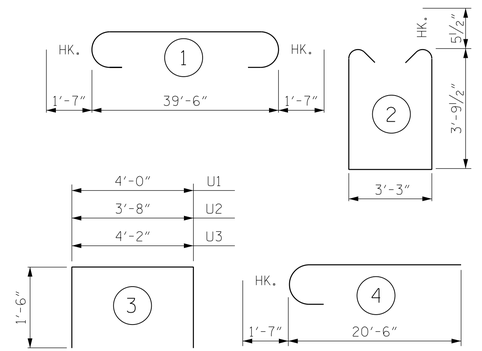


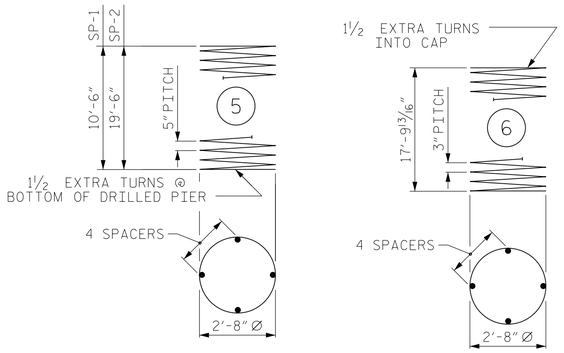
SECTION A-A



SECTION B-B

BAR TYPES





ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR ONE BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#10	STR	39'-8"	1,024
B2	6	#11	1	42'-8"	1,360
B3	10	#5	STR	39'-8"	414
B4	6	#4	STR	23'-3"	93
M1	12	#11	STR	18'-7"	1,185
M2	24	#11	STR	27'-7"	3,517
S1	116	#5	2	11'-9"	1,422
U1	8	#4	3	7'-0"	37
U2	10	#4	3	6'-8"	45
U3	46	#4	3	7'-2"	220
V1	36	#11	4	22'-1"	4,224

REINFORCING STEEL (FOR ONE BENT) 13,541 LBS.

SP-1	1	*	5	219'-2"	229
SP-2	2	*	5	396'-5"	827
SP-4	3	**	6	599'-3"	1,201

SPIRAL COLUMN REINFORCING STEEL (FOR ONE BENT) 2,257 LBS.

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

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

CLASS A CONCRETE BREAKDOWN (FOR ONE BENT)

POUR #2 (COLUMNS)	13.8 C.Y.
POUR #3 (CAP)	29.1 C.Y.
TOTAL CLASS A CONCRETE	42.9 C.Y.

DRILLED PIERS: (FOR ONE BENT)

DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)	18.2 C.Y.
3'-6" Ø DRILLED PIER NOT IN SOIL	40.0 LIN. FT.
3'-6" Ø DRILLED PIER IN SOIL	11.0 LIN. FT.
PERMANENT STEEL CASING FOR 3'-6" Ø DRILLED PIER	16.5 LIN. FT.
SID INSPECTIONS	3 EA.
CSL TESTING	1 EA.
CSL TUBES	222 LIN. FT.

PROJECT NO. B-5728

ALAMANCE COUNTY

STATION: 21+77.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 2 DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 037760 ENGINEER PAUL L JACOB

1/12/2022

DRAWN BY : J. LOFTUS DATE : 03-2021
CHECKED BY : P. JACOB DATE : 10-2021
DESIGN ENGINEER OF RECORD: J. LOFTUS DATE : 10-2021

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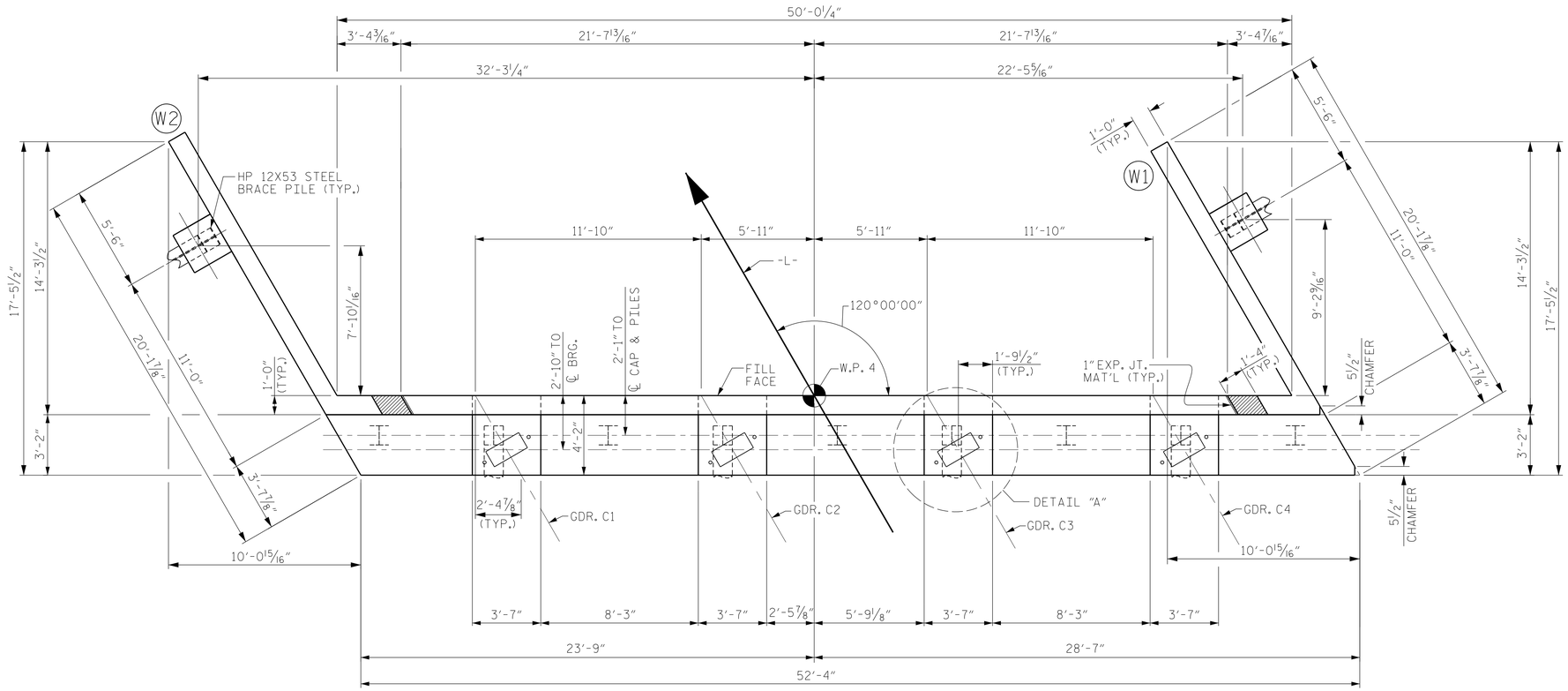


PLAN OF CAP

CONCRETE COLLARS FOR STEEL PILES NOT SHOWN FOR CLARITY.

NOTES:

STIRRUPS AND U2 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

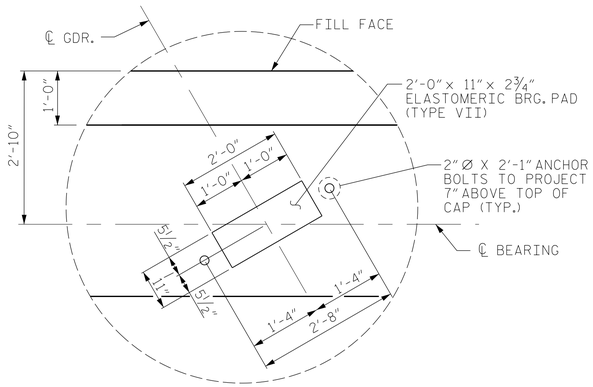
BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PREOTECTIVE COATING.

THE #5 ''V'' BARS IN BACKWALL SHALL BE PLACED 2" CLEAR FROM THE TOP OF BACKWALL.

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

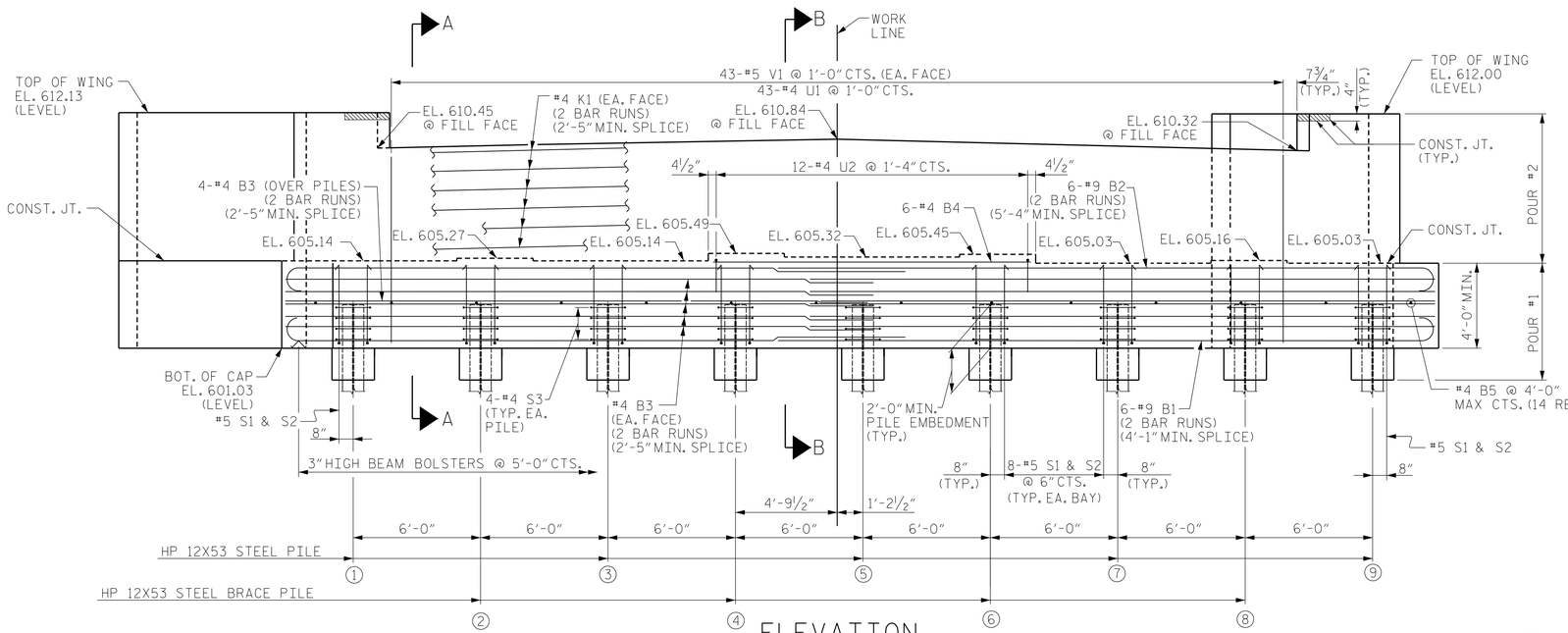
THE TOP SURFACE OF THE END BENT CAP, EXCEPT THE BRIDGE SEAT BUILDUPS, SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT A RATE OF 2%.

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



DETAIL "A"

(TYP. EACH GIRDER)



ELEVATION

FOR SECTIONS A-A AND B-B, SEE SHEET 3 OF 3
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 3 OF 3
(WING BRACE PILES NOT SHOWN FOR CLARITY)

PROJECT NO. B-5728

ALAMANCE COUNTY

STATION: 21+77.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT #2

REVISIONS						SHEET NO.
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NORTH CAROLINA PROFESSIONAL SEAL 037760 ENGINEER PAUL L. JACOB
1/12/2022

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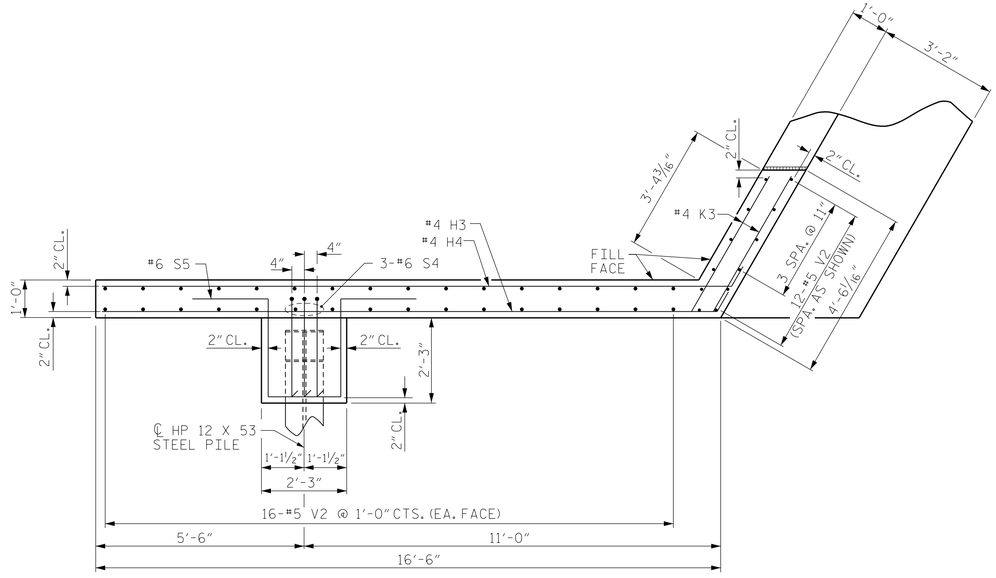
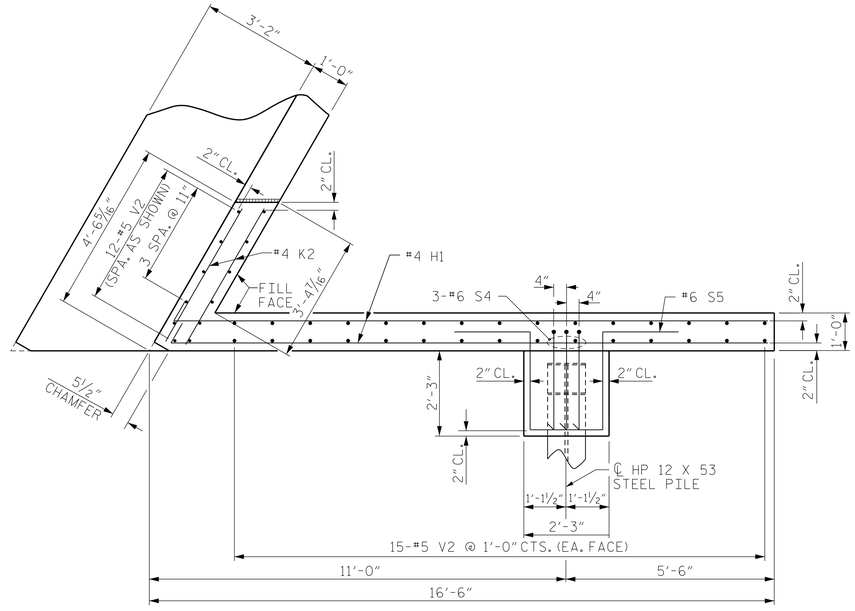
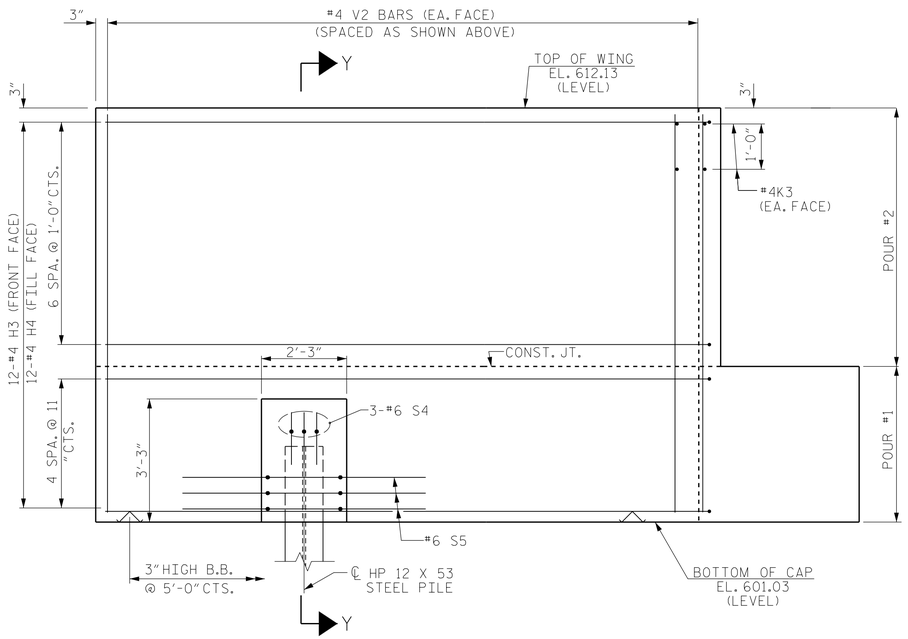


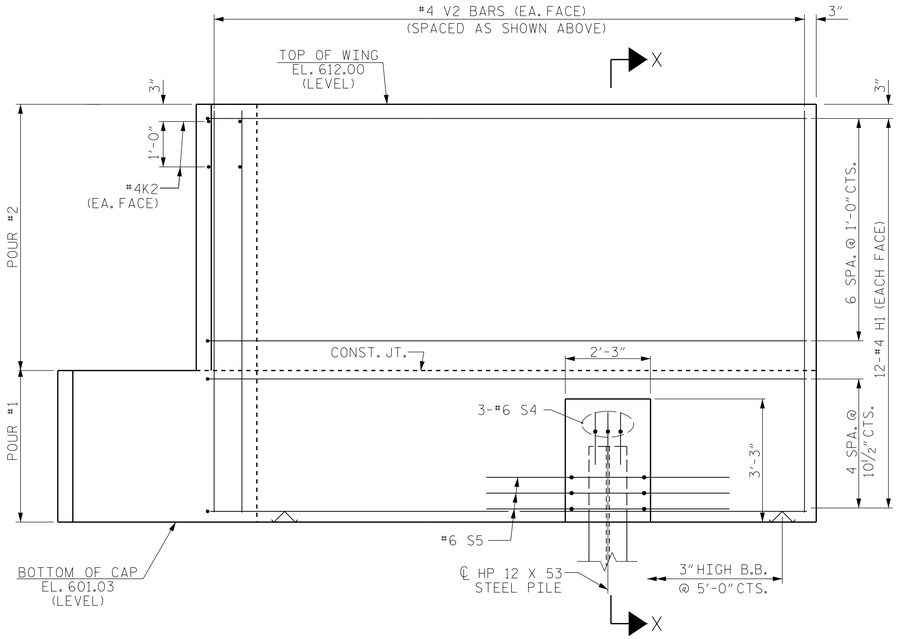
PLAN OF WING (W2)



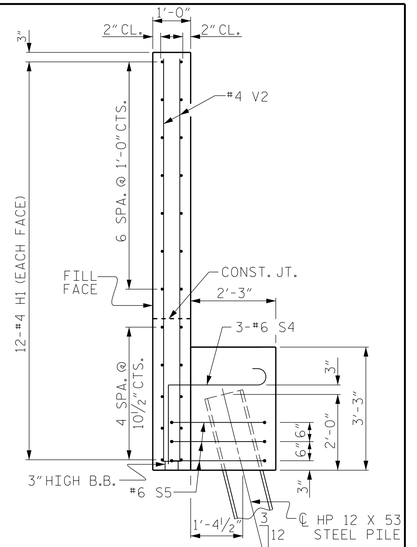
PLAN OF WING (W1)



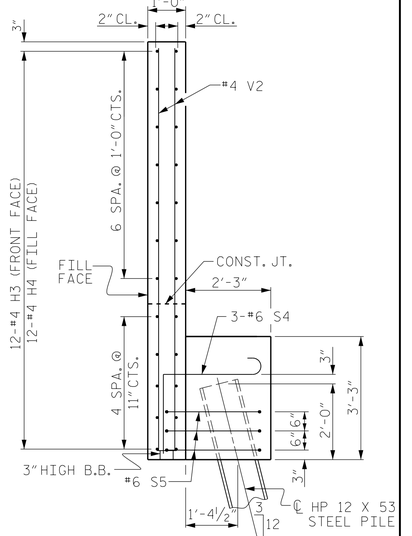
ELEVATION OF WING (W2)



ELEVATION OF WING (W1)



SECTION X-X



SECTION Y-Y

PROJECT NO. B-5728

ALAMANCE COUNTY

STATION: 21+77.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE

END BENT 2
WING DETAILS

WING DETAILS

DRAWN BY : J. LOFTUS DATE : 03-2021
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NORTH CAROLINA PROFESSIONAL SEAL 037760 ENGINEER PAUL L JACOB
1/12/2022

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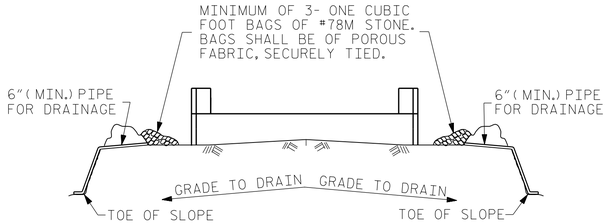
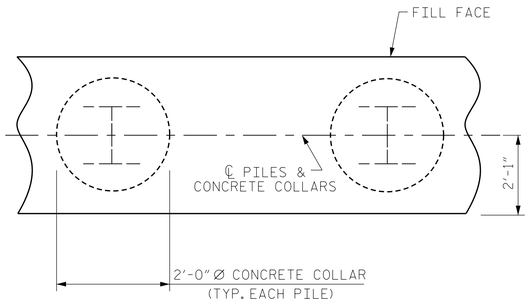


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

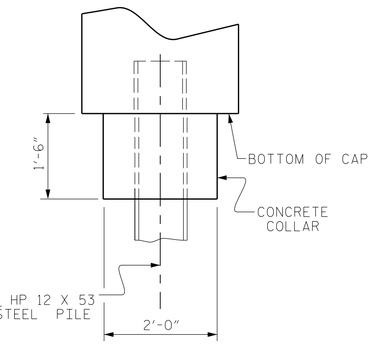
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

TEMPORARY DRAINAGE AT END BENT

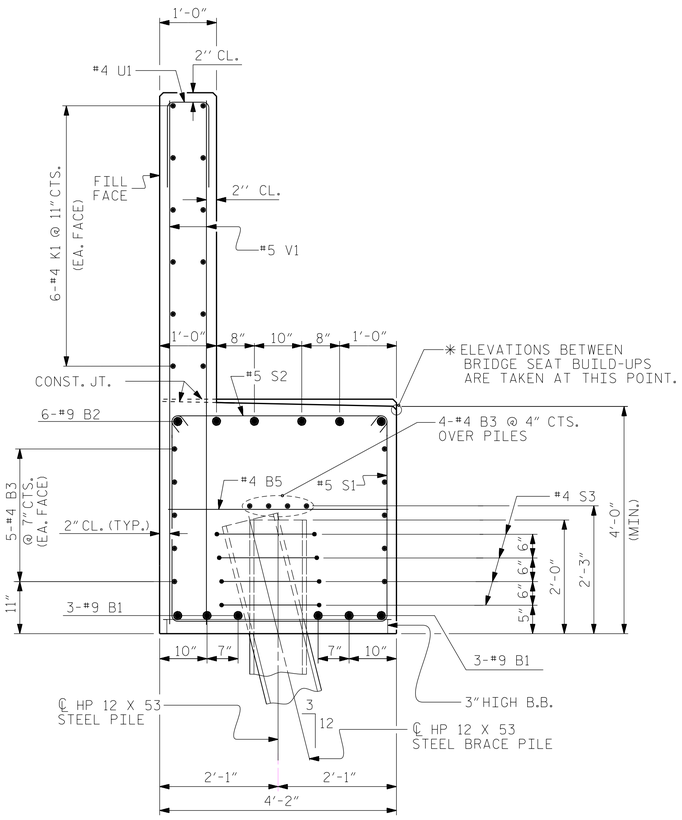


PLAN

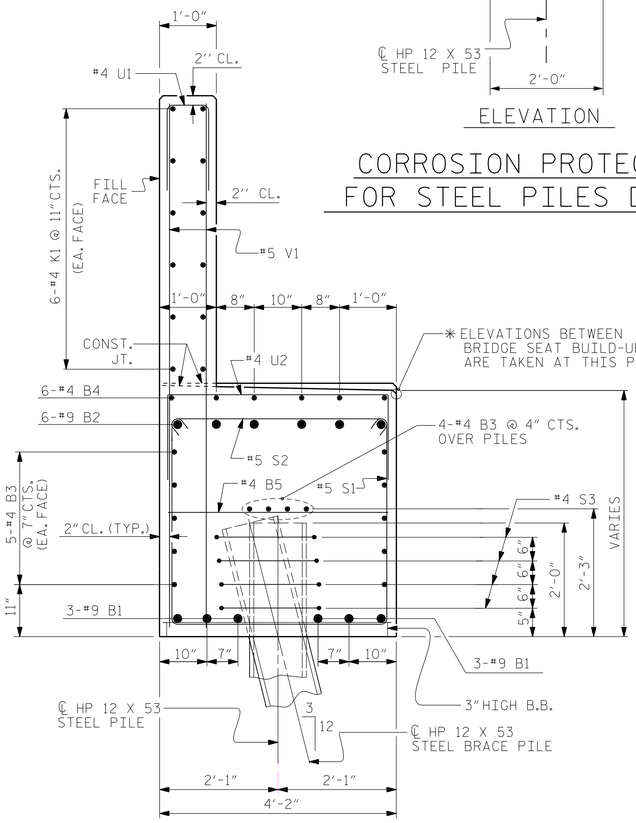


ELEVATION

CORROSION PROTECTION FOR STEEL PILES DETAIL

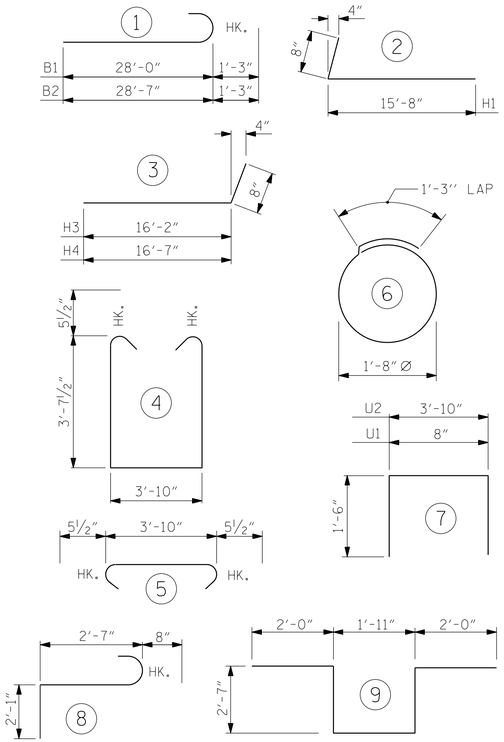


SECTION A-A



SECTION B-B

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL FOR END BENT #2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	12	#9	1	29'-3"	1,193
B2	12	#9	1	29'-10"	1,217
B3	28	#4	STR	27'-3"	510
B4	6	#4	STR	15'-0"	60
B5	14	#4	STR	3'-10"	36
K1	24	#4	STR	27'-3"	437
K2	4	#4	STR	4'-0"	11
K3	4	#4	STR	4'-1"	11
H1	24	#4	2	16'-4"	262
H3	12	#4	3	16'-10"	135
H4	12	#4	3	17'-3"	138
S1	66	#5	4	12'-0"	826
S2	66	#5	5	4'-9"	327
S3	36	#4	6	6'-6"	156
S4	6	#6	8	5'-4"	48
S5	6	#6	9	11'-1"	100
U1	43	#4	7	3'-8"	105
U2	12	#4	7	6'-10"	55
V1	86	#5	STR	8'-10"	792
V2	86	#5	STR	10'-6"	942

REINFORCING STEEL (FOR END BENT #2) 7,361 LBS.

CLASS A CONCRETE BREAKDOWN (FOR END BENT #2)

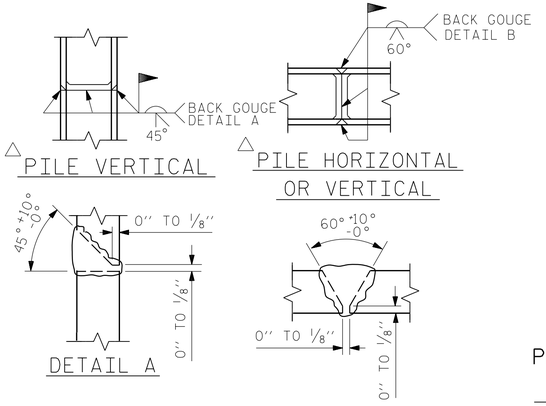
POUR #1 CAP, LOWER PART OF WINGS & COLLARS 41.0 C.Y.

POUR #2 UPPER PART OF WINGS 21.0 C.Y.

TOTAL CLASS A CONCRETE 62.2 C.Y.

HP 12 X 53 STEEL PILES NO: 11
LIN. FT.= 250

PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES NO: 11



△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

PROJECT NO. B-5728

ALAMANCE COUNTY

STATION: 21+77.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 2 DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 037760 ENGINEER PAUL L JACOB
1/12/2022

DRAWN BY : J. LOFTUS DATE : 03-2021
CHECKED BY : P. JACOB DATE : 10-2021
DESIGN ENGINEER OF RECORD: J. LOFTUS DATE : 10-2021

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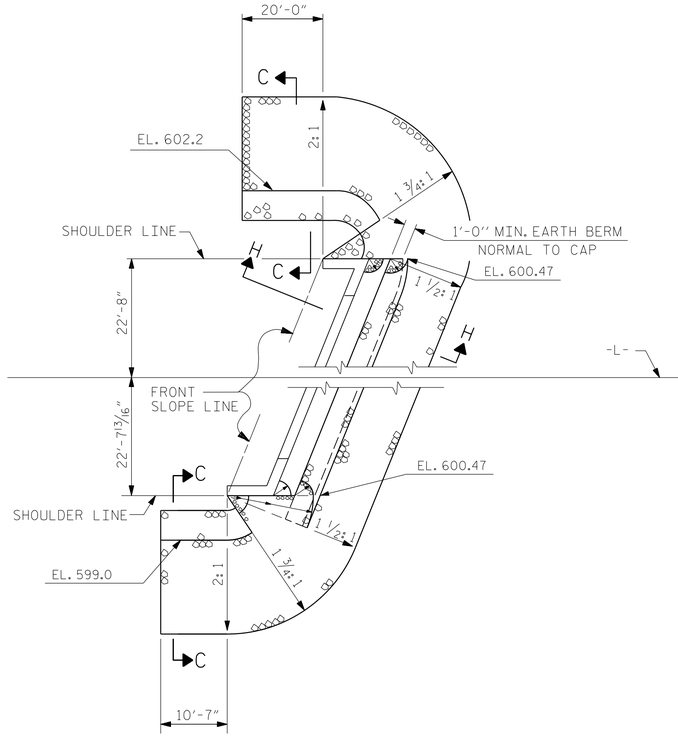
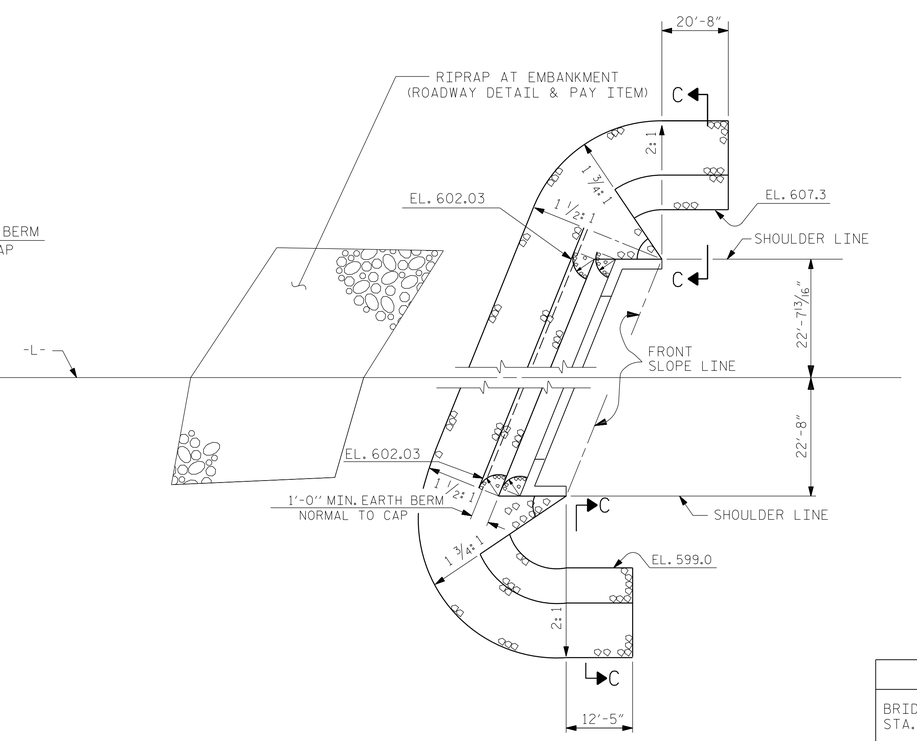
NOTES :

FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.



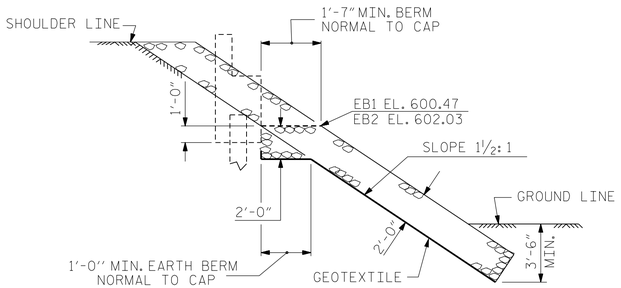
END BENT No. 1



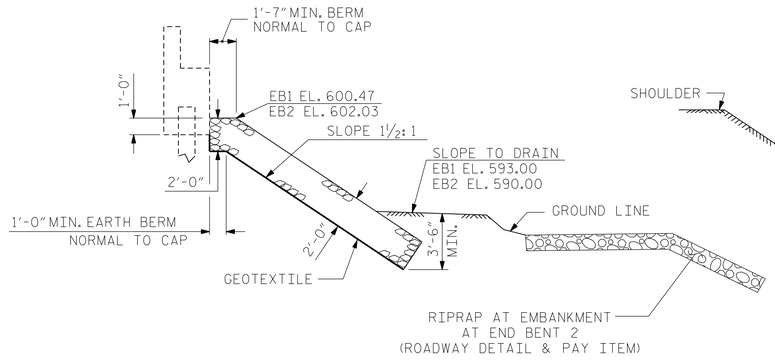
END BENT No. 2

ESTIMATED QUANTITIES		
BRIDGE @ STA. 21+77.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	237	263
END BENT 2	432	480

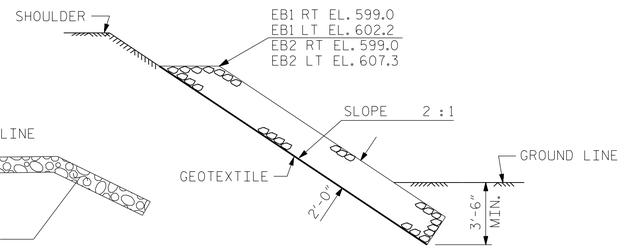
PLAN



SECTION H-H



℄ SECTION
BERM RIP RAPPED



SECTION C-C

PROJECT NO. B-5728

ALAMANCE COUNTY

STATION: 21+77.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

RIP RAP DETAILS

1/12/2022

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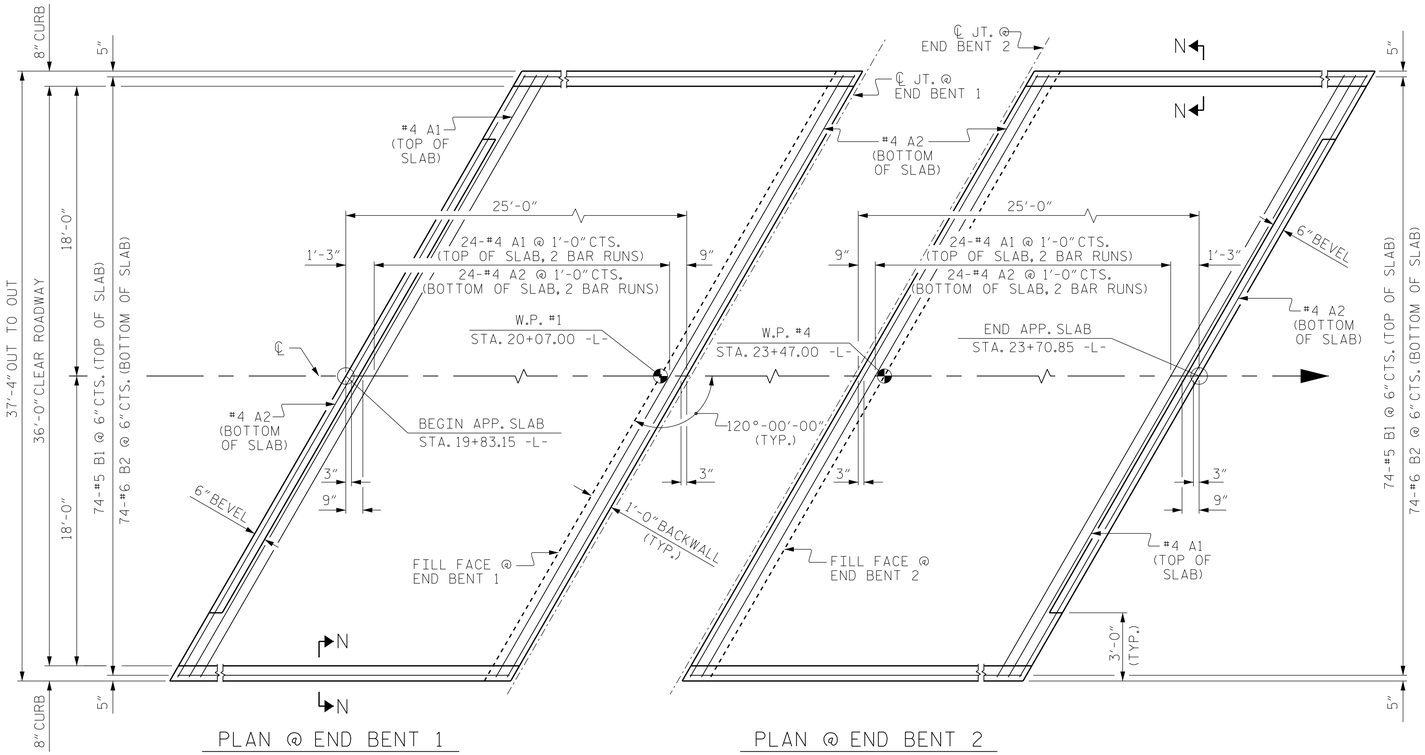
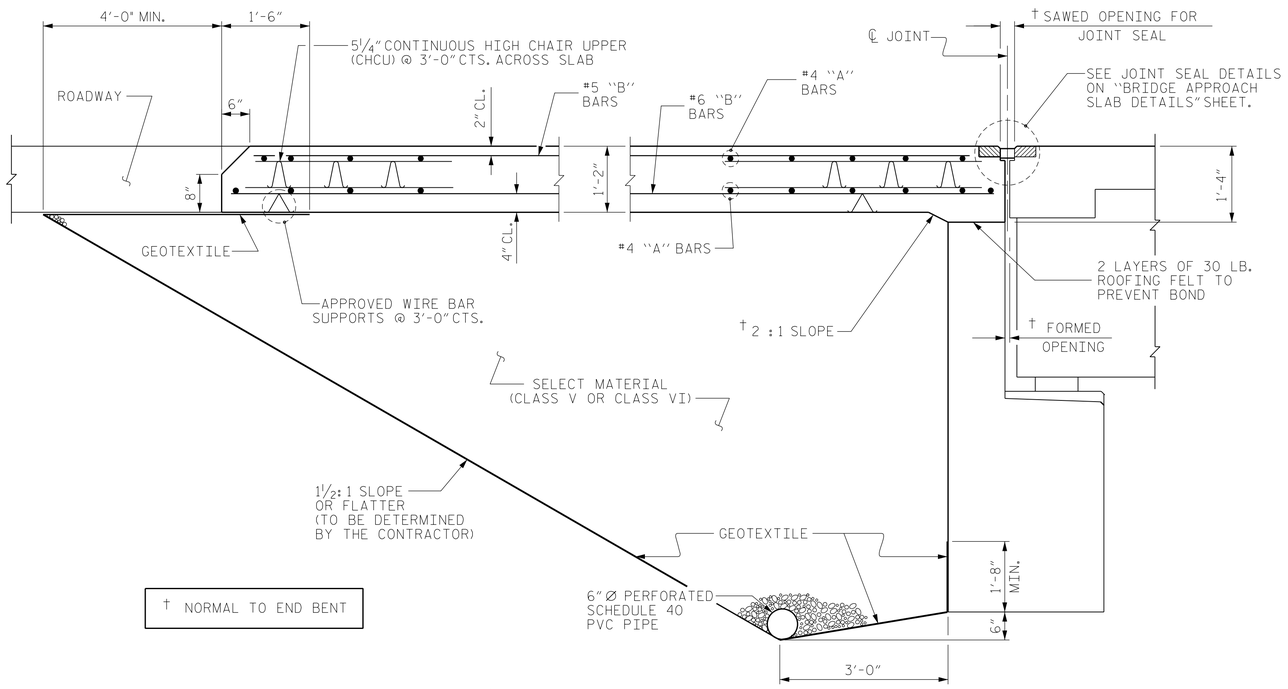


PLAN @ END BENT 1 — PLAN @ END BENT 2

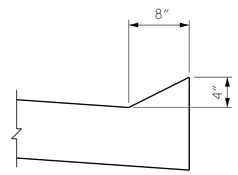
DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



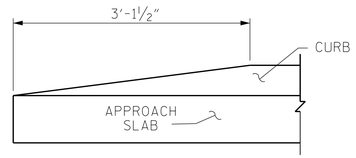
† NORMAL TO END BENT

SECTION THRU SLAB

(TYPE I - STANDARD APPROACH FILL)



SECTION N-N



END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS

NOTES

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

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

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

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

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

THE JOINT SHALL BE SAWED PRIOR TO THE CASTING OF THE BARRIER RAIL OR PARAPET AND END POST.

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

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

WITH FOAM JOINT SEAL

FOR FOAM JOINT SEALS, SEE SPECIAL PROVISIONS.

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

FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

BILL OF MATERIAL

APPROACH SLAB AT BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ A1	50	#4	STR	22′-4″	746
A2	52	#4	STR	22′-3″	773
✳ B1	74	#5	STR	23′-9″	1,833
B2	74	#6	STR	24′-8″	2,742

REINFORCING STEEL	3,515 LBS.
✳ EPOXY COATED REINFORCING STEEL	2,579 LBS.
CLASS AA CONCRETE	40.9 C. Y.

APPROACH SLAB AT BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ A1	50	#4	STR	22′-4″	746
A2	52	#4	STR	22′-3″	773
✳ B1	74	#5	STR	23′-9″	1,833
B2	74	#6	STR	24′-8″	2,742

REINFORCING STEEL	3,515 LBS.
✳ EPOXY COATED REINFORCING STEEL	2,579 LBS.
CLASS AA CONCRETE	40.7 C. Y.

SPLICE LENGTHS

BAR SIZE	EPOXY COATED	UNCOATED
#4	2′-0″	1′-9″
#5	2′-6″	2′-2″
#6	3′-10″	2′-7″

PROJECT NO. B-5728

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SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT

NORTH CAROLINA PROFESSIONAL SEAL 037760 ENGINEER PAUL L JACOB
1/12/2022

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DRAWN BY : J. LOFTUS DATE : 7-2020
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STD. NO. BAS2 (SHT 2b)

1/12/2022
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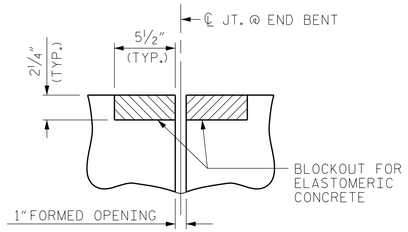
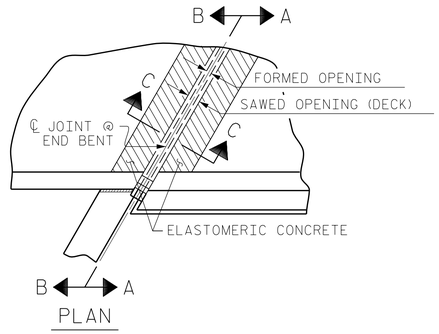
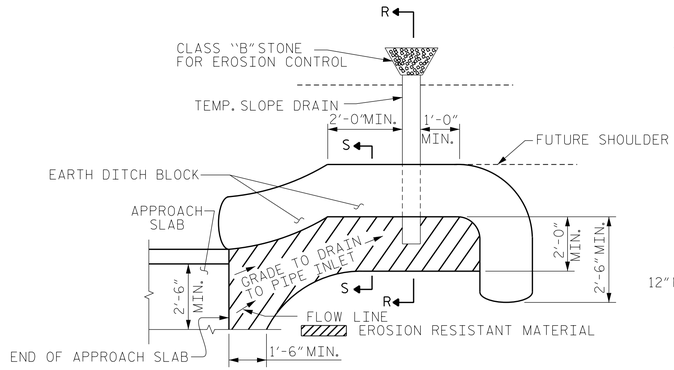


SECTION C-C
FOAM JOINT SEAL
(PRE-SAWED ELASTOMERIC CONCRETE DIMENSIONS)

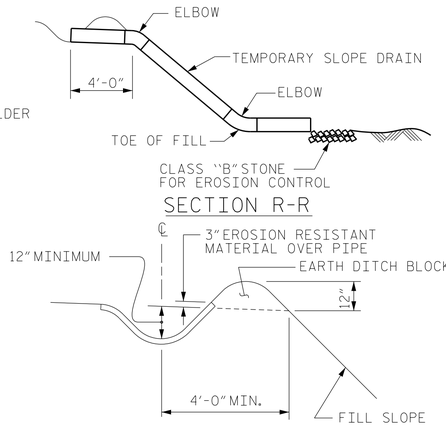


PLAN



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

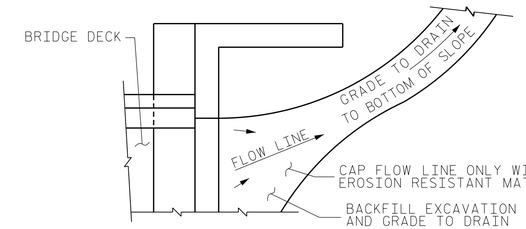


SECTION R-R

SECTION S-S

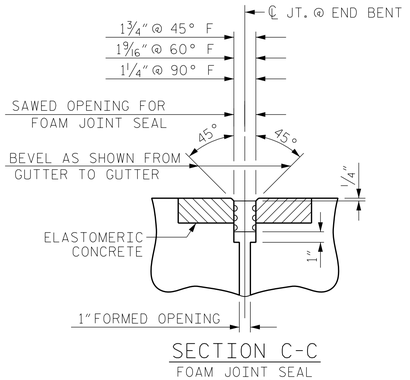
TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

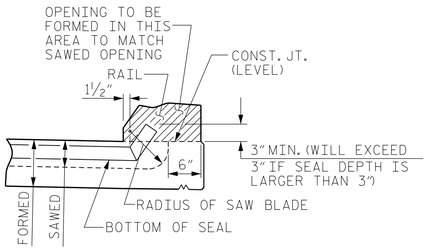


NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

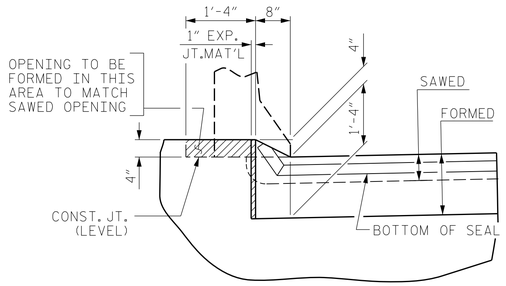
TEMPORARY DRAINAGE DETAIL



SECTION C-C
FOAM JOINT SEAL
(EXPANSION)



SECTION A-A



SECTION B-B

JOINT SEAL DETAILS @ END BENT

FOAM JOINT SEAL TO BE CUT, HEAT WELDED AND TURNED UP PARALLEL TO SLOPED FACE OF THE BARRIER RAIL.

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

ELASTOMERIC CONCRETE	
END BENT NO.	ELASTOMERIC CONCRETE * (CU. FT.)
1	7.2
2	7.2
TOTAL	14.4

* BASED ON THE MINIMUM BLOCKOUT SHOWN.

PROJECT NO. B-5728

ALAMANCE COUNTY

STATION: 21+77.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 037760 ENGINEER PAUL L. JACOB
1/12/2022

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

STD. NO. BAS4 (SHT 1b)

DRAWN BY : J. LOFTUS DATE : 7-2020
CHECKED BY : P. JACOB DATE : 10-2021
DESIGN ENGINEER OF RECORD: J. LOFTUS DATE : 10-2021

moffatt & nichol
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STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 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

STD. NO. SN