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PROJECT WBS: 17BP.14.R.155

CONTRACT: DN00474

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

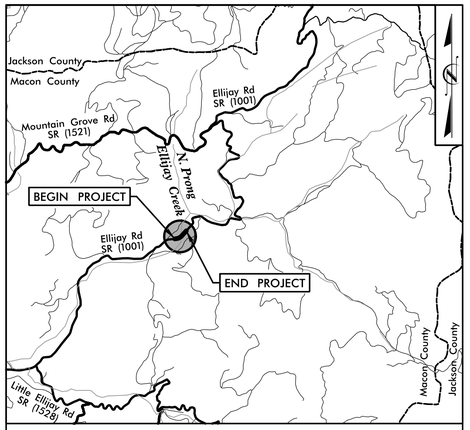
MACON COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.14.R.155		

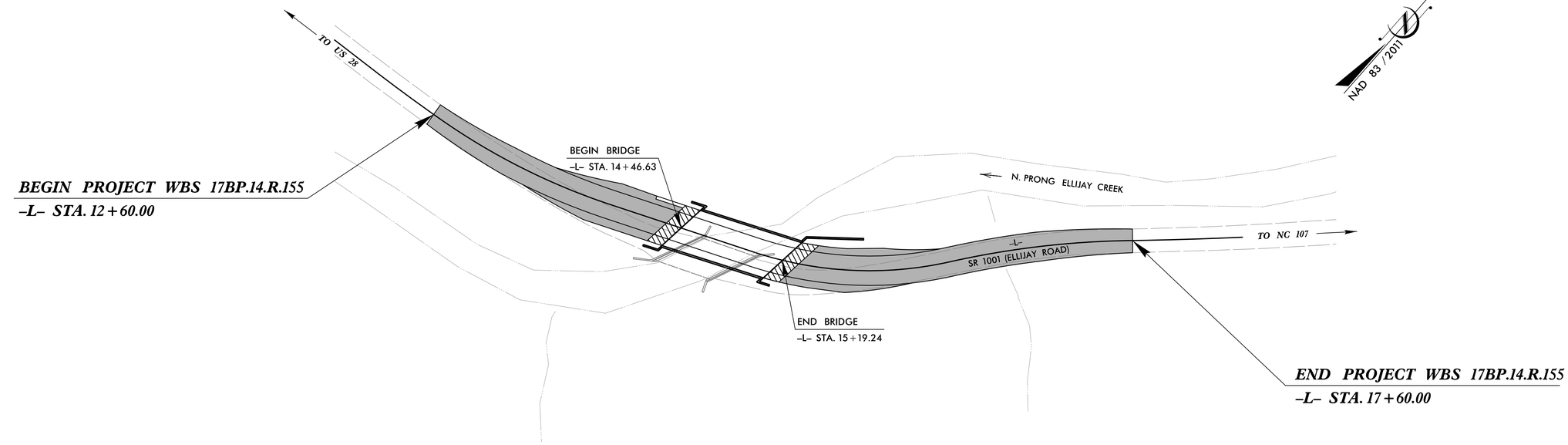
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
17BP.14.R.155		P.E.
17BP.14.R.155		ROW & UTILITIES
17BP.14.R.155		CONSTRUCTION

LOCATION: BRIDGE #550231 OVER NORTH PRONG ELLIJAY CREEK ON SR 1001 (ELLIJAY RD)

TYPE OF WORK: GRADING, PAVING, DRAINAGE, & STRUCTURE



VICINITY MAP N.T.S.



BEGIN PROJECT WBS 17BP.14.R.155
–L– STA. 12+60.00

END PROJECT WBS 17BP.14.R.155
–L– STA. 17+60.00

STRUCTURES

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DESIGN DATA

ADT 2010 = 100
ADT 2025 = 200
DHV = N/A
D = N/A
T = 6%
V = 30 MPH

FUNC. CLASSIFICATION: MINOR COLLECTOR

PROJECT LENGTH

LENGTH OF ROADWAY PROJECT WBS 17BP.14.R.155 = 0.081 MILES

LENGTH OF STRUCTURE PROJECT WBS 17BP.14.R.155 = 0.014 MILES

TOTAL LENGTH OF PROJECT WBS 17BP.14.R.155 = 0.095 MILES

NCDOT CONTACT: ADAM DOCKERY
Division Bridge Manager

PLANS PREPARED FOR THE NCDOT BY:

STV Engineers, Inc.
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JUNE 29, 2017

LETTING DATE:
FEBRUARY 27, 2024

J. WESLEY JONES, PE
PROJECT ENGINEER

ADAM J. PETER, PE
PROJECT DESIGNER

STRUCTURES ENGINEER

1/31/2024

NORTH CAROLINA PROFESSIONAL SEAL 038640 ENGINEER J. WESLEY JONES

DocuSigned by: D. Wesley Jones
SIGNATURE: *P.E.*

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

14+50 15+00 15+50

VERTICAL CURVE DATA -L-

(-)0.5143% (+)5.3333%

PI = 14+80.00
EL = 2,543.00
VC = 260'

SPAN A

2550
2540
2530

FILL FACE @ END BENT 1
STA. 14+46.63 -L-
GRADE POINT EL. 2544.22

LOW CHORD
EL. 2541.30

FIX.

EL. 2542±

UNCLASSIFIED STRUCTURE EXCAVATION (TYP.)

EL. 2542±

100 YR. W.S.
EL. 2542.34

25 YR. W.S.
EL. 2539.7

1'-0" (TYP.)

2'-0" (TYP.)

EL. 2536±

W.S. EL. 2534.3
(6/23/2016)

EL. 2533±

GRADE TO DRAIN (TYP.)

REMOVE EXISTING ABUTMENT TO TOP OF FOOTING, APPROX. EL. 2536±

REMOVE EXISTING ABUTMENT TO TOP OF FOOTING, APPROX. EL. 2532±

EXISTING STRUCTURE (TYP.)

EL. 2535±

1'-6" TO UNCLASSIFIED EXCAVATION (TYP.)

FILL FACE @ END BENT 2
STA. 15+19.24 -L-
GRADE POINT EL. 2546.02

LOW CHORD
EL. 2543.03

FIX.

EL. 2543±

EL. 2544±

APPROX. EXISTING GROUNDLINE

EL. 2547±

1 1/2 : 1 (TYP.)

CLASS II RIP RAP (TYP.)

HP12x53 STEEL PILES (TYP.)

END BENT 1

END BENT 2

SECTION ALONG -L-

(END BENTS ON SECTION AT RIGHT ANGLES TO END BENTS)

72'-7 3/8" ALONG -L- (FILL FACE END BENT 1 TO FILL FACE END BENT 2)

36'-3 5/8" ALONG -L-

W1

EARTH BERM EL. 2536.14

FILL FACE @ END BENT 1

BEGIN APPROACH SLAB
STA. 14+36.00 -L-

TO SR 1528 (LITTLE ELLIJAY RD.)

N 66°-56'-08.3"E

-L-

LONG CHORD

15+00

ID STA. 14+82.93 -L-

W.P. 1 @ FILL FACE
END BENT 1
STA. 14+46.63 -L-

JS

119°-21'-45"

120°-00'-00" (TO LONG CHORD)

W2

EARTH BERM EL. 2536.14

EXISTING STRUCTURE

FLOW N. PRONG ELLIJAY CREEK

JS

PC STA. 14+99.14 -L-

EARTH BERM EL. 2537.00

EARTH BERM EL. 2540.33

W3

JS

CLASS II RIP RAP (TYP.)

EARTH BERM EL. 2532.62

W4

SOLDIER PILE RETAINING WALL

120°-00'-00" (TO LONG CHORD)

JS

TO SR 1521 (ONION MOUNTAIN RD.)

END APPROACH SLAB
STA. 15+30.61 -L-

TEMPORARY SHORING (STAGE 1)

W.P. 2 @ FILL FACE
END BENT 2
STA. 15+19.24 -L-

123°-58'-09" (TO TAN.)

FILL FACE @ END BENT 2

BRIDGE TO BE CONSTRUCTED ALONG LONG CHORD

HORIZ. CURVE DATA -L-

PI STA. = 15+68.30
Δ = 30°-55'-29.9" (LT)
D = 22°-55'-05.9"
L = 134.94'
T = 69.15'
R = 250.00'

PLAN

(STEEL PILES NOT SHOWN FOR CLARITY)

PROJECT NO. 17BP.14.R.155

MACON COUNTY

STATION: 14+82.93 -L-

SHEET 1 OF 2 REPLACES BRIDGE NO. 231

11/14/2023

NORTH CAROLINA PROFESSIONAL SEAL 038640 ENGINEER WESLEY JONES

DocuSigned by: Wesley Jones 69C7E5EFD4F844E...

STV Engineers, Inc.
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

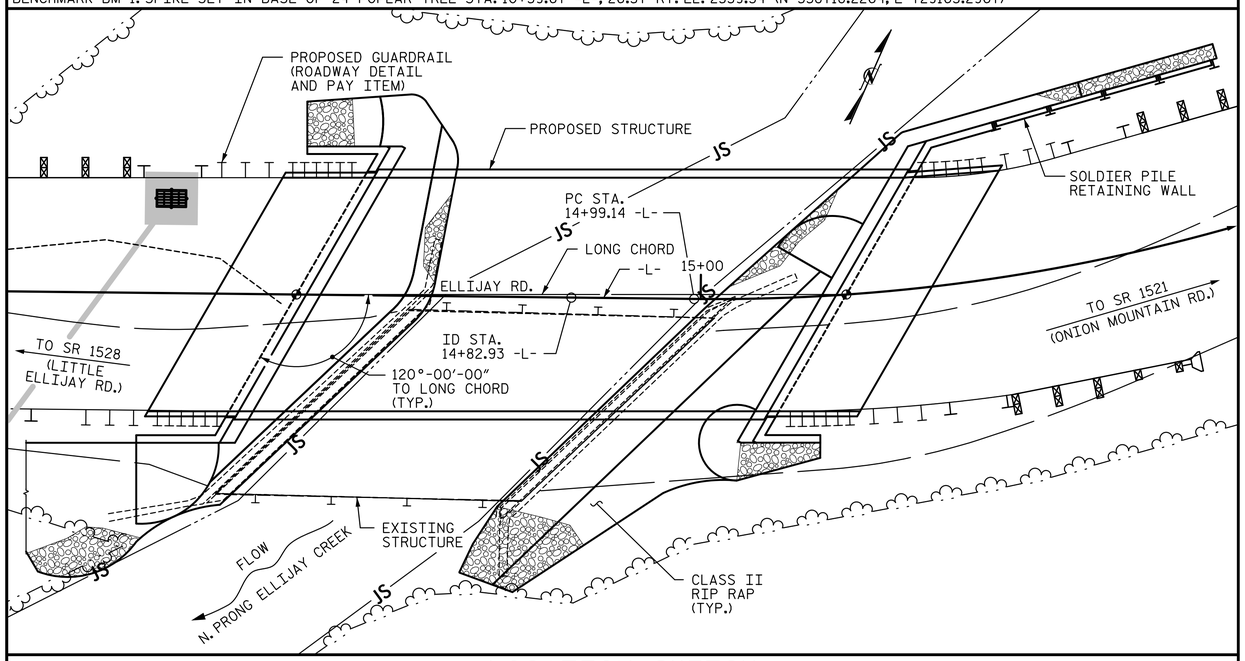
GENERAL DRAWING
FOR BRIDGE ON SR 1001 (ELLIJAY RD.) OVER NORTH PRONG ELLIJAY CREEK BETWEEN SR 1528 AND SR 1521

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

DRAWN BY :	AJP	DATE : 8-17
CHECKED BY :	MLO	DATE : 11-17
DESIGN ENGINEER OF RECORD :	JWJ	DATE : 11-23

JJones 11/13/2023 7:27:11 PM R:\Structures\Final\401_001_17BP.14.R.155_SMU_GD01_001_55023i.dgn

BENCHMARK BM#1: SPIKE SET IN BASE OF 24"POPLAR TREE STA. 10+59.67 -L-, 26.57' RT. EL. 2539.34' (N 558718.2264, E 729163.2967)



LOCATION SKETCH

FOR UTILITY INFORMATION, SEE UTILITY PLANS & SPECIAL PROVISIONS.

HYDRAULIC DATA

DESIGN DISCHARGE:	1400 CFS
FREQUENCY OF DESIGN FLOOD:	25 YRS.
DESIGN HIGH WATER ELEVATION:	2539.7'
DRAINAGE AREA:	5.9 SQ. MI.
BASE DISCHARGE (Q100):	2000 CFS
BASE HIGH WATER ELEVATION:	2542.34'

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE:	5800 CFS
FREQUENCY OF OVERTOPPING FLOOD:	500+ YRS.
OVERTOPPING FLOOD ELEVATION:	2543.6' @ STA. 13+73.00 -L-

GENERAL NOTES

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE "STANDARD NOTES" SHEET.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

THE EXISTING STRUCTURE CONSISTING OF (1) 41'-0" SPAN WITH TIMBER DECK ON STEEL I-BEAMS WITH A CLEAR ROADWAY OF 24'-0" AND SUPPORTED BY REINFORCED CONCRETE ABUTMENTS WITH WING WALLS SHALL BE REMOVED TO TOP OF FOOTING IN STAGES. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, THE LOAD LIMIT MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

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

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA (ON SHEET 1 OF 2) SHALL BE EXCAVATED FOR A DISTANCE FROM THE CENTERLINE OF ROADWAY OF 26.5'± (LEFT) AND 28'± (RIGHT) AT END BENT 1, 19.8'± (LEFT) AND 19.0'± (RIGHT) AT END BENT 2, AS DIRECTED BY THE ENGINEER. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

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

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

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.

ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE".

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

FOUNDATION NOTES

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 85 TONS PER PILE.

DRILLED-IN PILES ARE REQUIRED FOR END BENT 1. EXCAVATE HOLES AT PILE LOCATIONS TO ELEV. 2527.8 FEET. FOR PILE EXCAVATION, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

DRIVE PILES AT END BENT 1 TO A REQUIRED DRIVING RESISTANCE OF 145 TONS PER PILE.

PILES AT END BENT 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 95 TONS PER PILE.

DRILLED-IN PILES ARE REQUIRED FOR END BENT 2. EXCAVATE HOLES AT PILE LOCATIONS TO ELEV. 2524.2 FEET. FOR PILE EXCAVATION, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

DRIVE PILES AT END BENT 2 TO A REQUIRED DRIVING RESISTANCE OF 160 TONS PER PILE.

CONCRETE IS REQUIRED TO FILL HOLES FOR PILE EXCAVATION AT END BENT 1 AND END BENT 2.

TOTAL BILL OF MATERIAL

		REMOVAL OF EXISTING STRUCTURE	ASBESTOS ASSESSMENT	PILE EXCAVATION IN SOIL	PILE EXCAVATION NOT IN SOIL	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	HP 12 X 53 STEEL PILES		VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 2'-0" PRESTRESSED CONCRETE CORED SLABS		SOLDIER PILE RETAINING WALL
		LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	LUMP SUM	CU. YD.	LUMP SUM	LBS.	EA.	NO.	LIN. FT.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	NO.	LIN. FT.	SQ. FT.
SUPER-STRUCTURE	STAGE 1												70.0				5	350.0	
	STAGE 2												70.0				6	420.0	
END BENT 1	STAGE 1			28.0	12.0		15.2		1,895	4	4	65.0							
	STAGE 2			21.0	9.0		17.1		1,887	3	3	63.8		115	130				
END BENT 2	STAGE 1			0.0	40.0		25.1		2,501	4	4	80.0							367.5
	STAGE 2			0.0	30.0		27.3		2,161	3	3	60.0		110	125				
TOTAL		LUMP SUM	LUMP SUM	49.0	91.0	LUMP SUM	84.7	LUMP SUM	8,444	14	14	268.8	140.0	225	255	LUMP SUM	11	770.0	367.5

11/14/2023

NORTH CAROLINA PROFESSIONAL SEAL 038640 ENGINEER J. WESLEY JONES

DocuSigned by: J. Wesley Jones 68C7E5EFD4F844E...

PROJECT NO. 17BP.14.R.155

MACON COUNTY

STATION: 14+82.93 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON SR 1001 (ELLIJAY RD.) OVER NORTH PRONG ELLIJAY CREEK BETWEEN SR 1528 AND SR 1521

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

stv STV Engineers, Inc.
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

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DRAWN BY : AJP DATE : 8-17
CHECKED BY : MLO DATE : 11-17
DESIGN ENGINEER OF RECORD : JWJ DATE : 11-23

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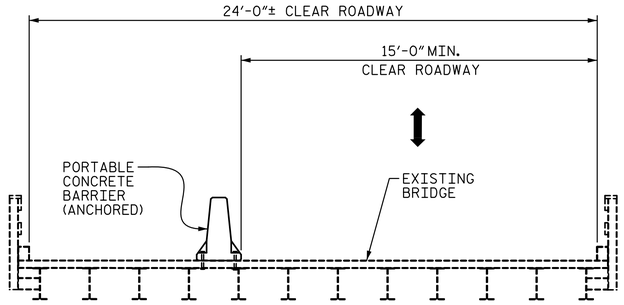
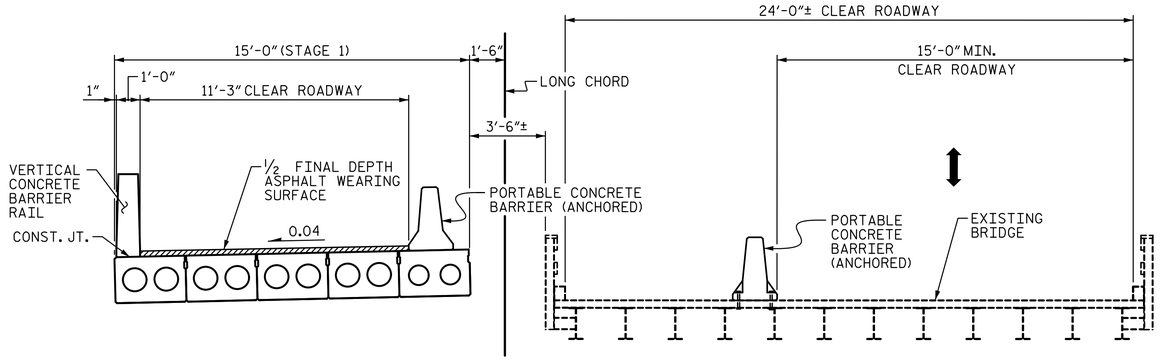


STAGE 1A

LOOKING UPSTATION

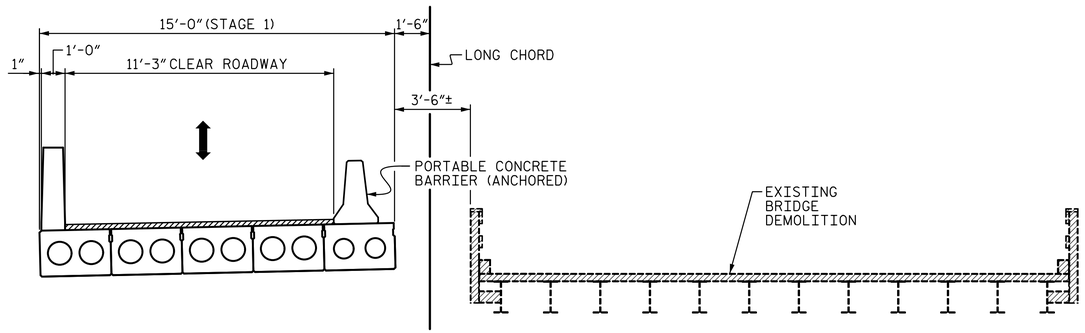
1. VERIFY EXISTING BRIDGE DIMENSIONS. CONTACT ENGINEER IF FIELD MEASUREMENTS VARY FROM PLAN DIMENSIONS.
2. ANCHOR PORTABLE CONCRETE BARRIER THROUGH EXISTING BRIDGE DECK AND TOP FLANGE OF STEEL BEAM.
3. PARTIAL DEMOLITION OF EXISTING ABUTMENT WINGS MAY BE REQUIRED.



STAGE 1B

LOOKING UPSTATION

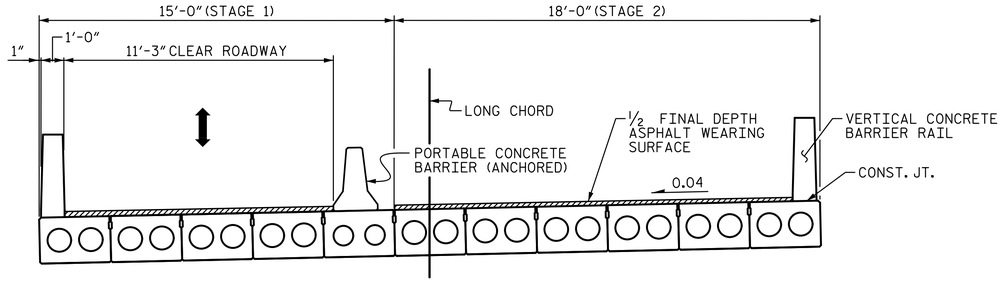
1. CONSTRUCT STAGE 1 PORTION OF PROPOSED BRIDGE. POST-TENSION STAGE 1 TRANSVERSE STRANDS.
2. PAVE ½ FINAL DEPTH ASPHALT WEARING SURFACE TO THE LIMITS SHOWN.
3. ANCHOR PORTABLE CONCRETE BARRIER TO NEW BRIDGE.



STAGE 1C

LOOKING UPSTATION

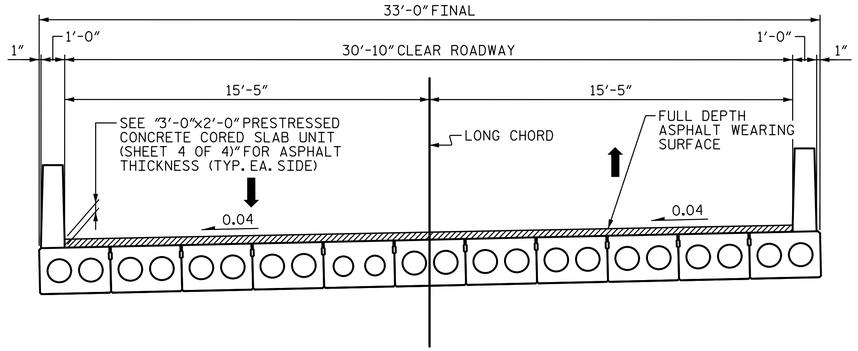
1. SHIFT TRAFFIC TO PROPOSED BRIDGE (STAGE 1).
2. REMOVE EXISTING SUPERSTRUCTURE AND REMAINDER OF EXISTING ABUTMENTS TO TOP OF FOOTING.



STAGE 2A

LOOKING UPSTATION

1. CONSTRUCT STAGE 2 PORTION OF PROPOSED BRIDGE.
2. PAVE ½ FINAL DEPTH ASPHALT WEARING SURFACE TO THE LIMITS SHOWN.



STAGE 2B

LOOKING UPSTATION

1. REMOVE PORTABLE CONCRETE BARRIER.
2. PAVE FULL DEPTH ASPHALT WEARING SURFACE.

PROJECT NO. 17BP.14.R.155

MACON COUNTY

STATION: 14+82.93 -L-

11/14/2023

NORTH CAROLINA PROFESSIONAL SEAL 038640 ENGINEER WESLEY JONES

DocuSigned by: Wesley Jones 68C7E5EFD4F844E...

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DEPARTMENT OF TRANSPORTATION
RALEIGH

CONSTRUCTION SEQUENCE

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

DRAWN BY :	AJP	DATE :	8-17
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DESIGN ENGINEER OF RECORD :	JWJ	DATE :	11-23

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

LOAD TYPE		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						
							LIVELOAD FACTORS	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)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD		HL-93(Inv)	N/A	**1**	1.03	--	1.75	0.248	1.04	70′	EL	34.423	0.655	1.06	70′	EL	6.885	0.80	0.248	**1.03**	70′	I	**34.423**	
		HL-93(Opr)	N/A	--	1.35	--	1.35	0.248	1.35	70′	EL	34.423	0.655	1.37	70′	EL	6.885	N/A	--	--	--	--	--	
		HS-20(Inv)	36.000	**2**	1.32	47.520	1.75	0.248	1.35	70′	EL	34.423	0.655	**1.32**	70′	EL	**6.885**	0.80	0.248	1.34	70′	I	34.423	
		HS-20(Opr)	36.000	--	1.71	61.560	1.35	0.248	1.75	70′	EL	34.423	0.655	1.71	70′	EL	6.885	N/A	--	--	--	--	--	
LEGAL LOAD	SINGLE VEHICLE (SV)	SNSH	13.500	--	2.99	40.365	1.4	0.248	3.76	70′	EL	34.423	0.655	3.9	70′	EL	6.885	0.80	0.248	2.99	70′	I	34.423	
		SNGARBS2	20.000	--	2.24	44.800	1.4	0.248	2.82	70′	EL	34.423	0.655	2.78	70′	EL	6.885	0.80	0.248	2.24	70′	I	34.423	
		SNAGRIS2	22.000	--	2.13	46.860	1.4	0.248	2.68	70′	EL	34.423	0.655	2.58	70′	EL	6.885	0.80	0.248	2.13	70′	I	34.423	
		SNCOTTS3	27.250	--	1.49	40.603	1.4	0.248	1.87	70′	EL	34.423	0.655	1.95	70′	EL	6.885	0.80	0.248	1.49	70′	I	34.423	
		SNAGGRS4	34.925	--	1.25	43.656	1.4	0.248	1.57	70′	EL	34.423	0.655	1.62	70′	EL	6.885	0.80	0.248	1.25	70′	I	34.423	
		SNS5A	35.550	--	1.22	43.371	1.4	0.248	1.54	70′	EL	34.423	0.655	1.65	70′	EL	6.885	0.80	0.248	1.22	70′	I	34.423	
		SNS6A	39.950	--	1.12	44.744	1.4	0.248	1.41	70′	EL	34.423	0.655	1.5	70′	EL	6.885	0.80	0.248	1.12	70′	I	34.423	
		SNS7B	42.000	--	1.07	44.940	1.4	0.248	1.35	70′	EL	34.423	0.655	1.48	70′	EL	6.885	0.80	0.248	1.07	70′	I	34.423	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000	--	1.37	45.210	1.4	0.248	1.72	70′	EL	34.423	0.655	1.79	70′	EL	6.885	0.80	0.248	1.37	70′	I	34.423	
		TNT4A	33.075	--	1.38	45.644	1.4	0.248	1.73	70′	EL	34.423	0.655	1.74	70′	EL	6.885	0.80	0.248	1.38	70′	I	34.423	
		TNT6A	41.600	--	1.13	47.008	1.4	0.248	1.42	70′	EL	34.423	0.655	1.58	70′	EL	6.885	0.80	0.248	1.13	70′	I	34.423	
		TNT7A	42.000	--	1.13	47.460	1.4	0.248	1.43	70′	EL	34.423	0.655	1.55	70′	EL	6.885	0.80	0.248	1.13	70′	I	34.423	
		TNT7B	42.000	--	1.18	49.560	1.4	0.248	1.48	70′	EL	34.423	0.655	1.44	70′	EL	6.885	0.80	0.248	1.18	70′	I	34.423	
		TNAGRIT4	43.000	--	1.12	48.160	1.4	0.248	1.41	70′	EL	34.423	0.655	1.4	70′	EL	6.885	0.80	0.248	1.12	70′	I	34.423	
		TNAGT5A	45.000	--	1.05	47.250	1.4	0.248	1.32	70′	EL	34.423	0.655	1.39	70′	EL	6.885	0.80	0.248	1.05	70′	I	34.423	
		TNAGT5B	45.000	**3**	1.04	46.800	1.4	0.248	1.31	70′	EL	34.423	0.655	1.33	70′	EL	6.885	0.80	0.248	**1.04**	70′	I	**34.423**	
EMERGENCY VEHICLE (EV)		EV2	28.750	--	1.59	45.713	1.3	0.248	2.15	70′	EL	34.423	0.655	2.08	70′	EL	6.885	0.80	0.248	1.59	70′	I	34.423	
		EV3	43.000	**4**	1.04	44.720	1.3	0.248	1.41	70′	EL	34.423	0.655	1.41	70′	EL	6.885	0.80	0.248	**1.04**	70′	I	**34.423**	

LOAD FACTORS:

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

NOTES:

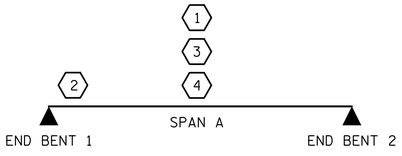
MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

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

COMMENTS:

(#) CONTROLLING LOAD RATING
(1) DESIGN LOAD RATING (HL-93)
(2) DESIGN LOAD RATING (HS-20)
(3) LEGAL LOAD RATING **
(4) EMERGENCY VEHICLE LOAD RATING **
** SEE CHART FOR VEHICLE TYPE

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



LRFR SUMMARY

PROJECT NO. 17BP.14.R.155

MACON COUNTY

STATION: 14+82.93 -L-

11/14/2023

NORTH CAROLINA PROFESSIONAL SEAL 038640 ENGINEER WESLEY JONES

DocuSigned by: Wesley Jones 69CTE5EF0AF84AE...

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NC License Number F-0991

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

LRFR SUMMARY FOR 70′ CORED SLAB UNIT 60° SKEW & 120° SKEW

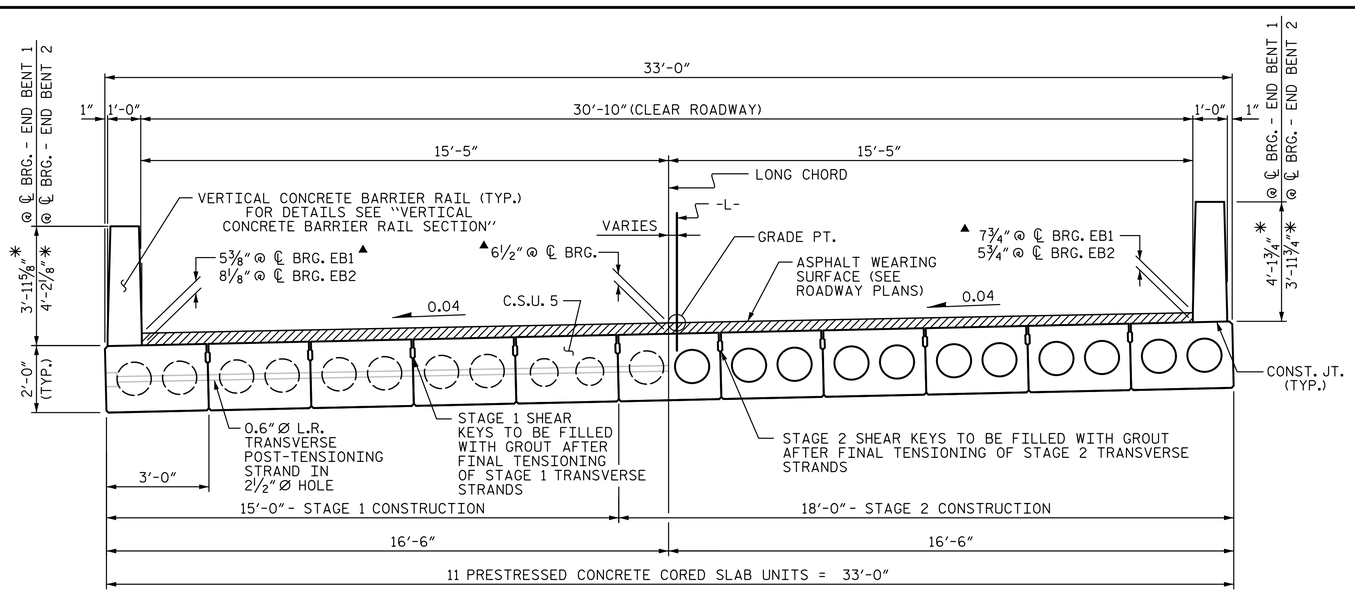
(NON-INTERSTATE TRAFFIC)

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

DRAWN BY :	AJP	DATE : 8-17
CHECKED BY :	MLO	DATE : 11-17
DESIGN ENGINEER OF RECORD :	JWJ	DATE : 11-23

STD. NO. 24LRFR1_60&120S_70L

R:\Structures\Final\40l_007_17BP.14.R.155_SMU_LRFR_004_55023l.dgn 11/14/2023 9:17:08 AM JJones



HALF SECTION
AT INTERMEDIATE DIAPHRAGMS

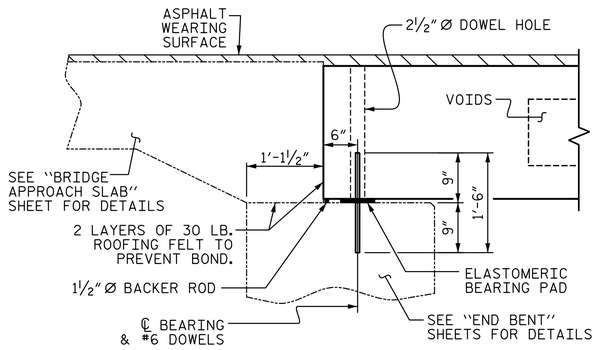
HALF SECTION
THROUGH VOIDS

TYPICAL SECTION

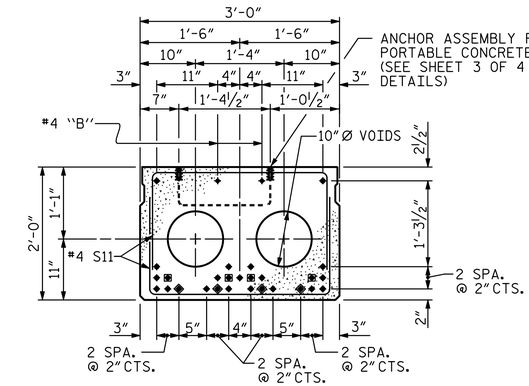
✱ - THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS, SEE THE ''VERTICAL CONCRETE BARRIER RAIL SECTION'' DETAIL.

▲ ASPHALT THICKNESS SHOWN IS FOR THE FINAL CONDITION. FOR ASPHALT THICKNESS AT STAGES, SEE ''CONSTRUCTION SEQUENCE'' SHEET.

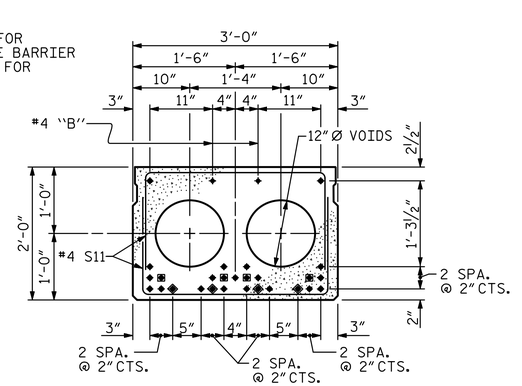
FIXED END



SECTION AT END BENT



INTERIOR SLAB SECTION (C.S.U. 5 ONLY)
(27 STRANDS REQUIRED)



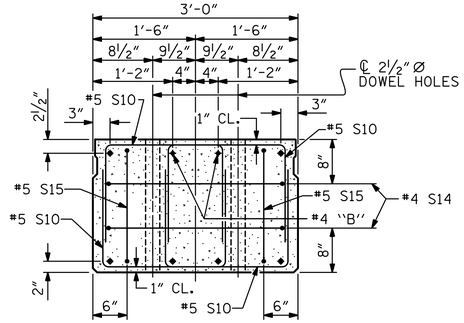
INTERIOR SLAB SECTION
(27 STRANDS REQUIRED)

0.6'' Ø LOW RELAXATION STRAND LAYOUT

◉ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 10′-0″ FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

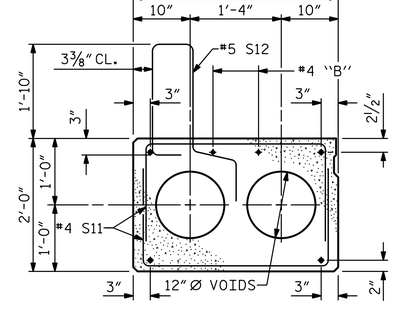
◈ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 12′-0″ FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND



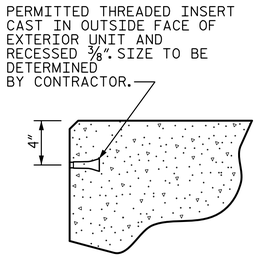
END ELEVATION

SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN.) INTERIOR SLAB UNIT SHOWN-EXTERIOR SLAB UNIT SIMILAR EXCEPT SHEAR KEY LOCATION.

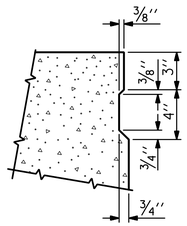


EXTERIOR SLAB SECTION

(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)



THREADED INSERT DETAIL



SHEAR KEY DETAIL

NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.

PROJECT NO. 17BP.14.R.155

MACON COUNTY

STATION: 14+82.93 -L-

SHEET 1 OF 4

11/14/2023

NORTH CAROLINA PROFESSIONAL SEAL 038640 ENGINEER WESLEY JONES

DocuSigned by: Wesley Jones 68C7E5EFD4F844E...

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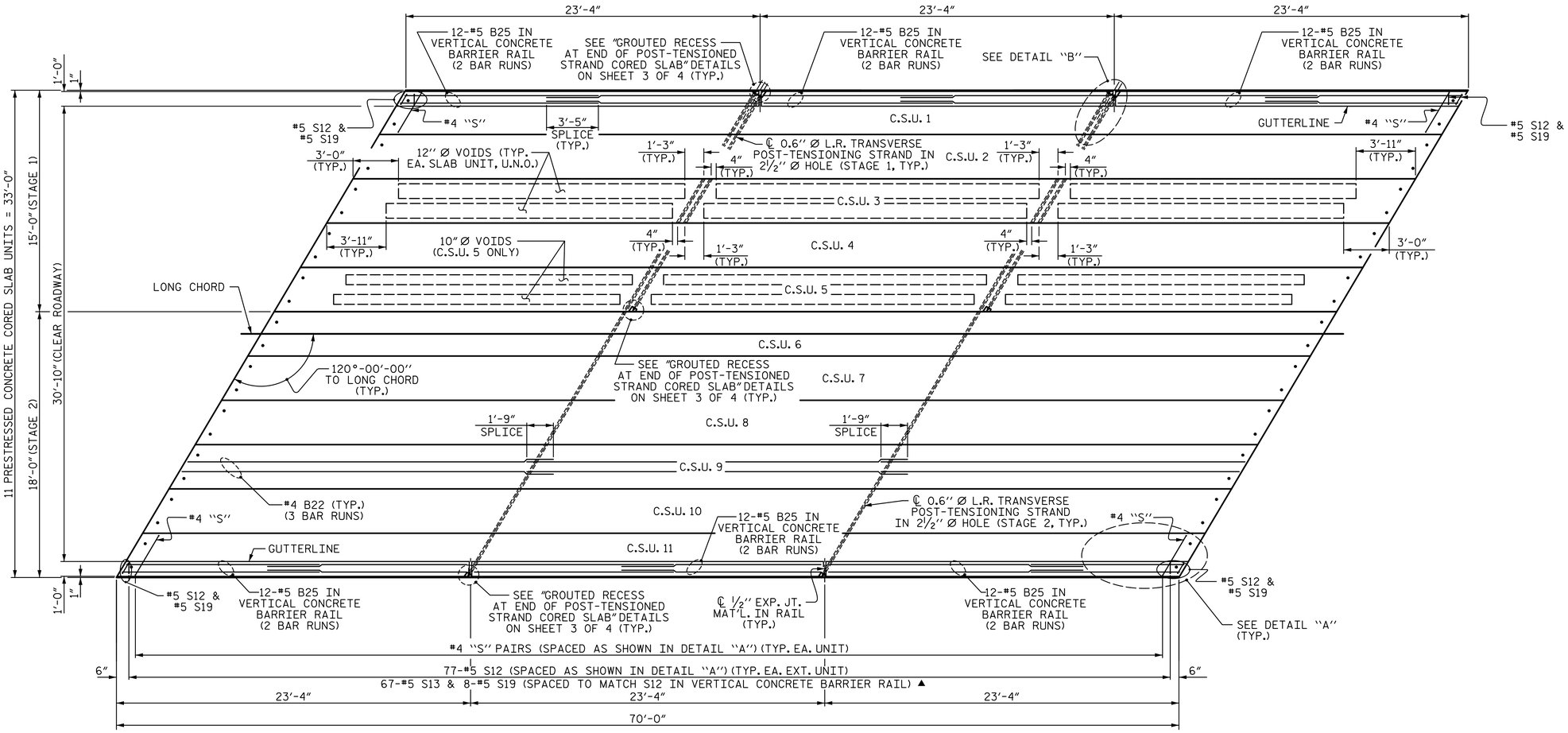
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3′-0'' X 2′-0'' PRESTRESSED CONCRETE CORED SLAB UNIT

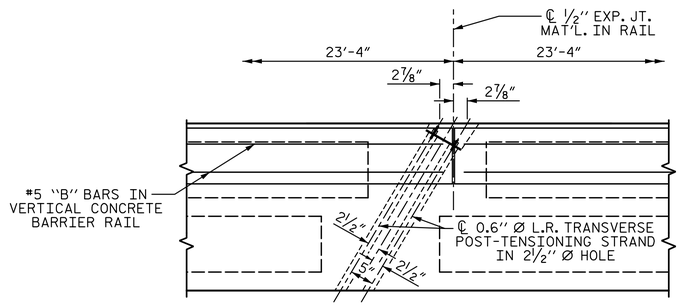
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			20

DRAWN BY :	AJP	DATE : 8-17
CHECKED BY :	MLO	DATE : 11-17
DESIGN ENGINEER OF RECORD :	JWJ	DATE : 11-23



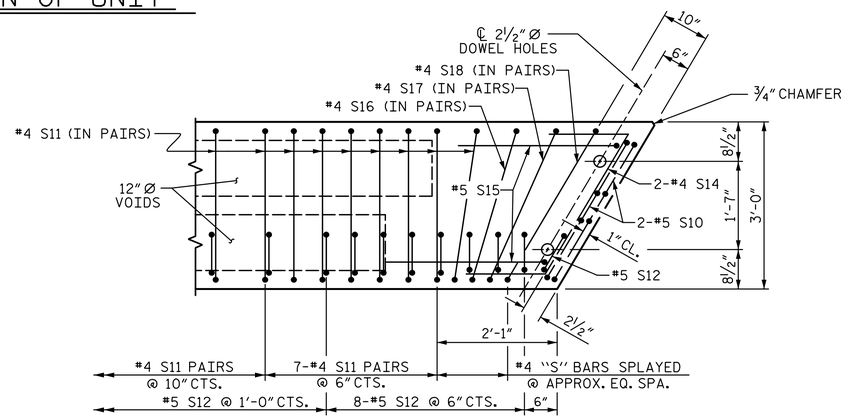
PLAN OF UNIT

▲ FOR #5 S13 & S19 BAR PLACEMENT, SEE "END OF RAIL DETAILS" ON SHEET 4 OF 4.



DETAIL "B"

#4 S11 BARS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1″ CLEAR TO GROUTED RECESS AND 2½″ Ø TRANSVERSE POST-TENSIONING STRAND HOLES



DETAIL "A"

(SIMILAR EACH END OF UNIT)
NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S12 BARS.

DRAWN BY :	AJP	DATE :	8-17
CHECKED BY :	MLO	DATE :	11-17
DESIGN ENGINEER OF RECORD :	JWJ	DATE :	11-23

11/14/2023

NORTH CAROLINA PROFESSIONAL SEAL 038640 ENGINEER WESLEY JONES

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PROJECT NO. 17BP.14.R.155

MACON COUNTY

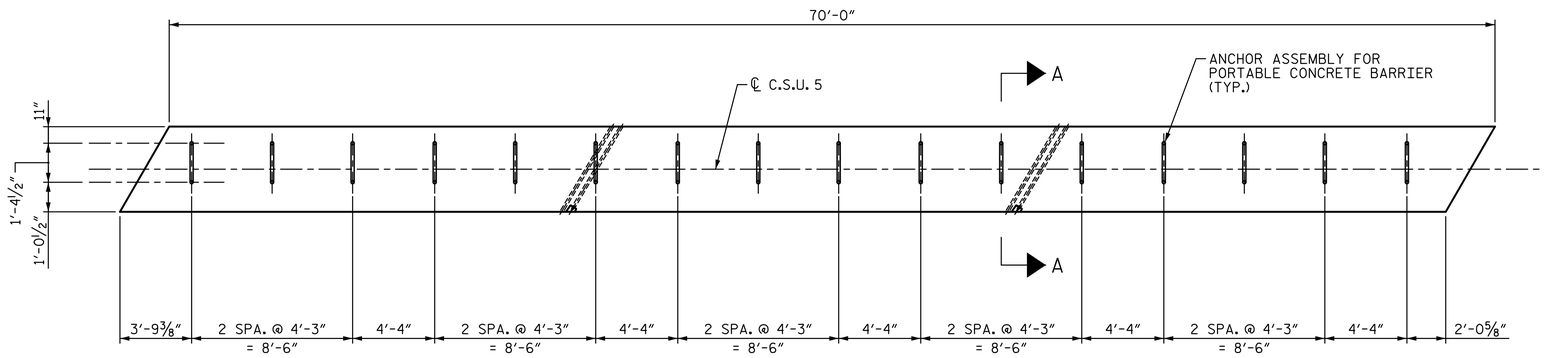
STATION: 14+82.93 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

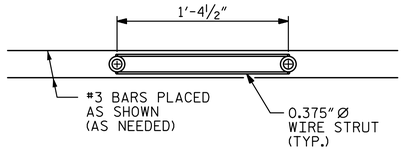
PLAN OF 70′ UNIT 30′-10″ CLEAR ROADWAY 120° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			20

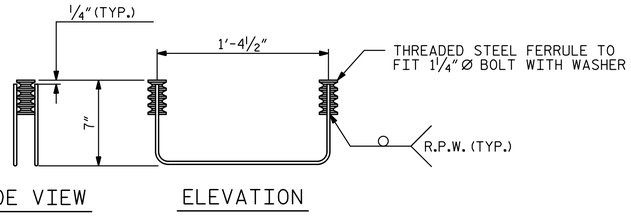


PLAN OF C.S.U. 5

(SHOWING LOCATION OF ANCHOR ASSEMBLIES)
(FOR ANCHOR ASSEMBLY SPACING ON APPROACH SLABS, SEE "BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE CORED SLAB UNIT".)



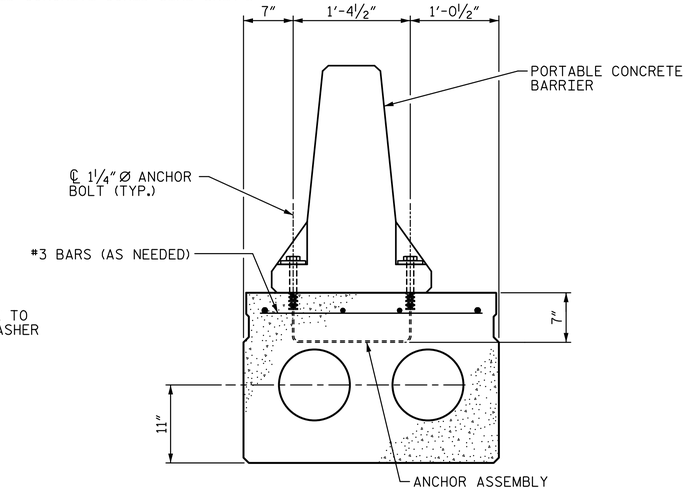
PLAN



SIDE VIEW ELEVATION

ANCHOR ASSEMBLY FOR PORTABLE CONCRETE BARRIER

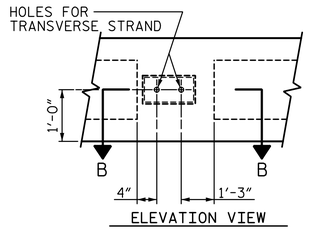
(16 ASSEMBLIES REQUIRED IN CORED SLAB UNIT 5,
6 ASSEMBLIES REQUIRED IN APPROACH SLABS)



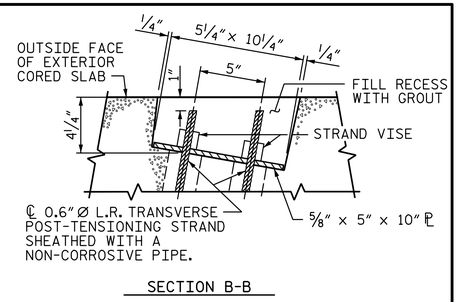
SECTION A-A

(SHOWING PLACEMENT OF ANCHOR ASSEMBLIES)

NOTE: THE #3 BARS ARE INCIDENTAL AND THEIR COST SHALL BE INCLUDED IN THE PRICE BID FOR THE PRESTRESSED CONCRETE CORED SLAB.

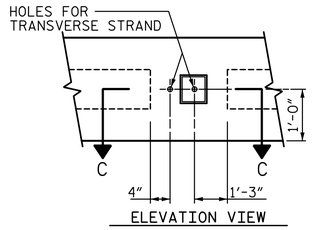


ELEVATION VIEW

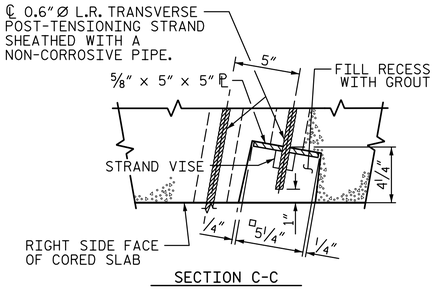


SECTION B-B

CORED SLAB UNIT 1

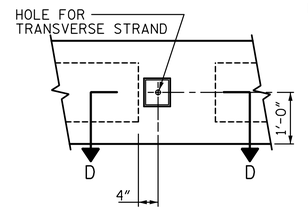


ELEVATION VIEW

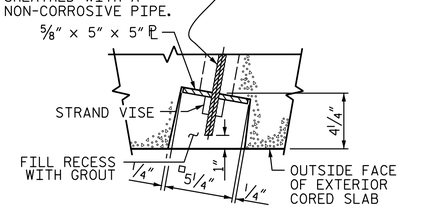


SECTION C-C

CORED SLAB UNIT 5



ELEVATION VIEW



SECTION D-D

CORED SLAB UNIT 11

GROUTED RECESS AT END OF POST-TENSIONED STRAND CORED SLABS

ANCHOR ASSEMBLY NOTES:

THE ANCHOR ASSEMBLY FOR PORTABLE CONCRETE BARRIER SHALL CONSIST OF THE FOLLOWING COMPONENTS:

A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2½".

B. 2 - 1¼" Ø BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS MAY BE USED AS AN ALTERNATE FOR THE 1¼" Ø GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

C. WIRE STRUTS SHOWN IN THE ANCHOR ASSEMBLY FOR TEMPORARY GUARDRAIL DETAIL ARE THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 P.S.I.

ANCHOR ASSEMBLY WITH BOLTS SHALL BE ASSEMBLED IN THE SHOP. BOLT THREADS MAY BE RECUT AS NECESSARY TO ENSURE FIT.

THE COST OF THE ANCHOR ASSEMBLY, COMPLETE IN PLACE, SHALL BE INCLUDED, AS APPLICABLE, IN THE UNIT CONTRACT PRICE BID FOR 3′-0″ × 2′-0″ PRESTRESSED CONCRETE CORED SLAB OR LUMP SUM FOR THE APPROACH SLABS.

FERRULES TO BE PLUGGED DURING CASTING OF THE CORED SLAB UNITS OR POURING OF APPROACH SLABS AS RECOMMENDED BY THE MANUFACTURER.

AT THE CONTRACTOR'S OPTION, FERRULES WITH OPEN OR CLOSED ENDS MAY BE USED.

PAYMENT FOR THE PORTABLE CONCRETE BARRIER IS INCLUDED IN THE TRAFFIC CONTROL PLANS.

ONCE PORTABLE CONCRETE BARRIER HAS BEEN REMOVED, COMPLETELY FILL ANCHOR ASSEMBLY HOLES WITH AN NCDOT APPROVED, NON-SHRINK, NON-METALLIC GROUT, OR AS DIRECTED BY THE ENGINEER.

DRAWN BY :	AJP	DATE :	8-17
CHECKED BY :	MLO	DATE :	11-17
DESIGN ENGINEER OF RECORD :	JWJ	DATE :	11-23

11/14/2023

NORTH CAROLINA PROFESSIONAL SEAL 038640 ENGINEER WESLEY JONES

DocuSigned by: Wesley Jones
-BC7E5EF04F844E...

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NC License Number F-0991

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PROJECT NO. 17BP.14.R.155

MACON COUNTY

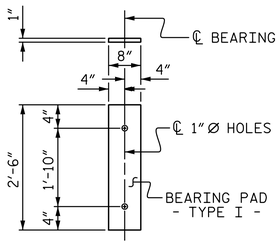
STATION: 14+82.93 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3′-0″ X 2′-0″ PRESTRESSED CONCRETE CORED SLAB UNIT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			20

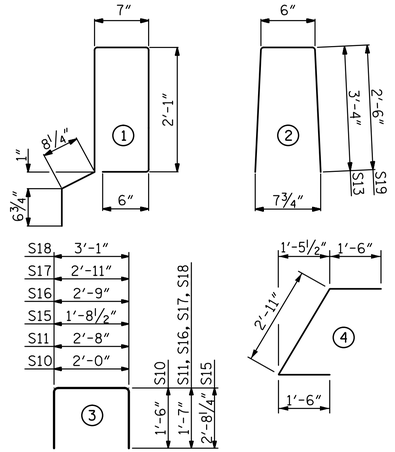


FIXED END
(TYPE I - 22 REQ'D)

BILL OF MATERIAL FOR ONE 70' CORED SLAB UNIT

				EXTERIOR UNITS C.S.U. 1 - C.S.U. 11		INTERIOR UNITS C.S.U. 2 - C.S.U. 4 C.S.U. 6 - C.S.U. 10		INTERIOR UNIT C.S.U. 5	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT
B22	6	#4	STR	24'-6"	98	24'-6"	98	24'-6"	98
S10	8	#5	3	5'-0"	42	5'-0"	42	5'-0"	42
S11	170	#4	3	5'-10"	662	5'-10"	662	5'-10"	662
✳S12	79	#5	1	6'-6"	536				
S14	4	#4	4	5'-11"	16	5'-11"	16	5'-11"	16
S15	4	#5	3	7'-1"	30	7'-1"	30	7'-1"	30
S16	4	#4	3	5'-11"	16	5'-11"	16	5'-11"	16
S17	4	#4	3	6'-1"	16	6'-1"	16	6'-1"	16
S18	4	#4	3	6'-3"	17	6'-3"	17	6'-3"	17
REINFORCING STEEL LBS.					897		897		897
✳EPOXY COATED REINFORCING STEEL LBS.					536				
7000 P.S.I. CONCRETE CU. YDS.					12.0		12.0		13.1
0.6"Ø L.R. STRANDS No.					27		27		27

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

GRADE 270 STRANDS

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

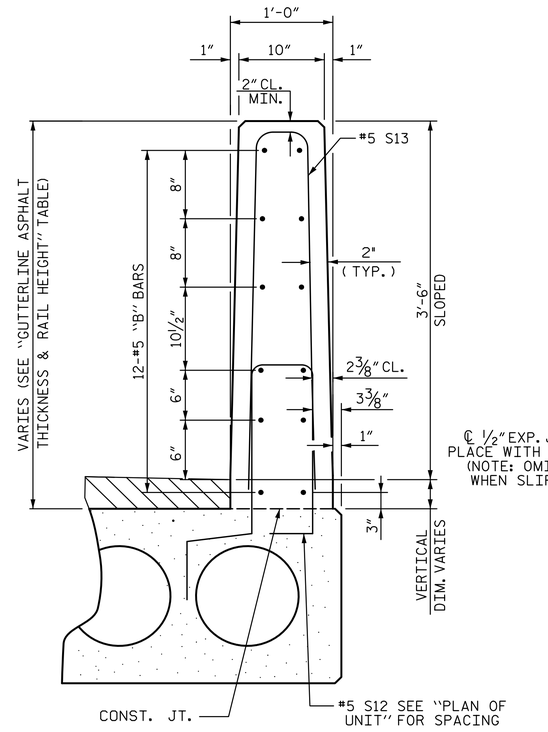
ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.

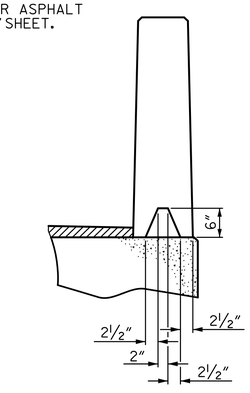
GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT

		ASPHALT OVERLAY THICKNESS▲			RAIL HEIGHT		
		℄ BRG. EB1	@ MID-SPAN	℄ BRG. EB2	℄ BRG. EB1	@ MID-SPAN	℄ BRG. EB2
SPAN A	LEFT	5⅜"	3¼"	8⅛"	3'-11⅝"	3'-9¼"	4'-2⅛"
	RIGHT	7¾"	3⅜"	5¾"	4'-1¾"	3'-9⅞"	3'-11¾"

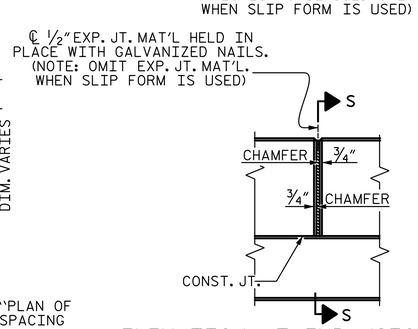
▲ASPHALT THICKNESS IS SHOWN FOR THE FINAL CONDITION. FOR ASPHALT THICKNESS AT EACH STAGE, SEE "CONSTRUCTION SEQUENCE" SHEET.



SECTION THRU RAIL



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



ELEVATION AT EXPANSION JOINTS

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL

BAR	BARS PER PAIR OF EXTERIOR UNITS 70' UNIT	SIZE	TYPE	LENGTH	WEIGHT
✳B25	144	#5	STR	13'-8"	2053
✳S13	138	#5	2	7'-2"	1032
✳S19	20	#5	2	5'-6"	115
✳EPOXY COATED REINFORCING STEEL			LBS.		3200
CLASS AA CONCRETE			CU.YDS.		19.1
TOTAL VERTICAL CONCRETE BARRIER RAIL			LN. FT.		140.0

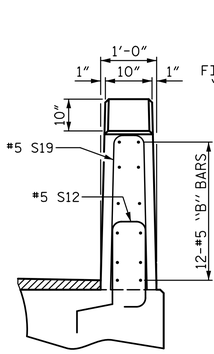
CORED SLABS REQUIRED

STAGE NUMBER	70' UNIT	NUMBER	LENGTH	TOTAL LENGTH
1	EXTERIOR C.S.U.	1	70'-0"	70'-0"
	INTERIOR C.S.U. W/ 12"Ø VOIDS	3	70'-0"	210'-0"
	INTERIOR C.S.U. W/ 10"Ø VOIDS	1	70'-0"	70'-0"
	TOTAL	5	-	350'-0"
2	EXTERIOR C.S.U.	1	70'-0"	70'-0"
	INTERIOR C.S.U. W/ 12"Ø VOIDS	5	70'-0"	350'-0"
	TOTAL	6	-	420'-0"

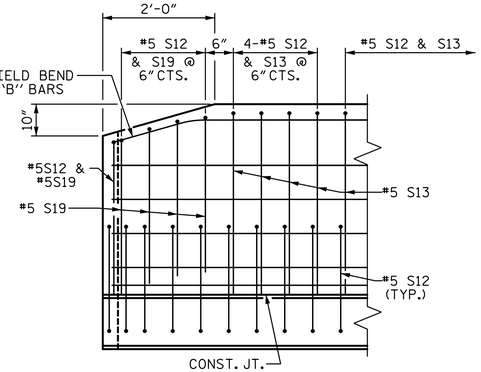
DEAD LOAD DEFLECTION AND CAMBER

	3'-0" x 2'-0"
70' CORED SLAB UNIT	0.6"Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	2" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD✳✳	¾" ↓
FINAL CAMBER	1¼" ↑

✳✳ INCLUDES FUTURE WEARING SURFACE



END VIEW



SIDE VIEW

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 CAST WITH THE CORED SLAB SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE CORED SLABS.

RECESSES FOR TRANSVERSE STRANDS SHALL BE GROUTED AFTER THE TENSIONING OF THE STRANDS.

THE 2½"Ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

THE BACKER RODS SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

WHEN CORED SLABS ARE CAST, AN INTERNAL HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDEWAYS. AT LEAST SIX WEEKS PRIOR TO CASTING CORED SLABS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL DETAILS, LOCATION AND SPACING OF THE HOLD-DOWNS SHALL BE INDICATED.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN THE REQUIRED STRENGTH SHOWN IN THE "CONCRETE RELEASE STRENGTH" TABLE.

ALL REINFORCING STEEL IN VERTICAL CONCRETE BARRIER RAILS SHALL BE EPOXY COATED.

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE CORED SLAB UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

GROOVED CONTRACTION JOINTS, ½" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A 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.

FLAME CUTTING OF THE TRANSVERSE POST-TENSIONING STRAND IS NOT ALLOWED.

THE #4 S11 STIRRUPS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO THE GROUTED RECESS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THE PERMITTED THREADED INSERTS ARE DETAILED AS AN OPTION FOR THE CONTRACTOR TO ATTACH FALSEWORK AND FORMWORK DURING CONSTRUCTION.

THE PERMITTED THREADED INSERTS IN THE EXTERIOR UNITS SHALL BE SIZED BY THE CONTRACTOR, SPACED AT 4'-0" CENTERS AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS. STAINLESS STEEL THREADED INSERTS MAY BE USED AS AN ALTERNATE.

THE PERMITTED THREADED INSERTS SHALL BE GROUTED BY THE CONTRACTOR IMMEDIATELY FOLLOWING REMOVAL OF THE FALSEWORK.

THE COST OF THE PERMITTED THREADED INSERTS SHALL BE INCLUDED IN THE PRICE BID FOR THE PRECAST UNITS.

CONCRETE RELEASE STRENGTH

UNIT	PSI
70' UNIT	5500

PROJECT NO. 17BP.14.R.155

MACON COUNTY

STATION: 14+82.93 -L-

SHEET 4 OF 4

11/14/2023

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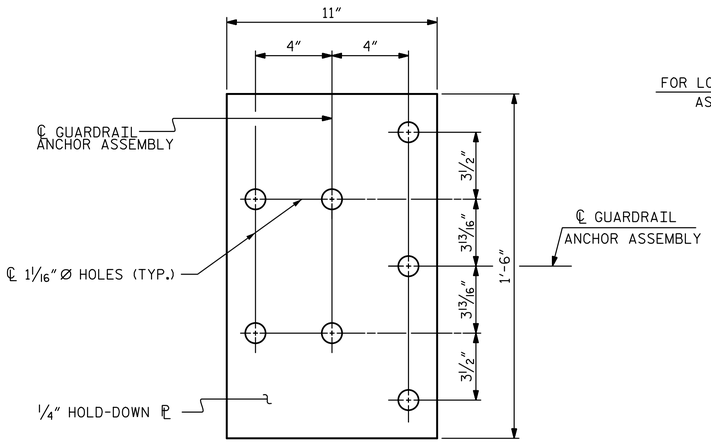
3'-0" X 2'-0" PRESTRESSED CONCRETE CORED SLAB UNIT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			20

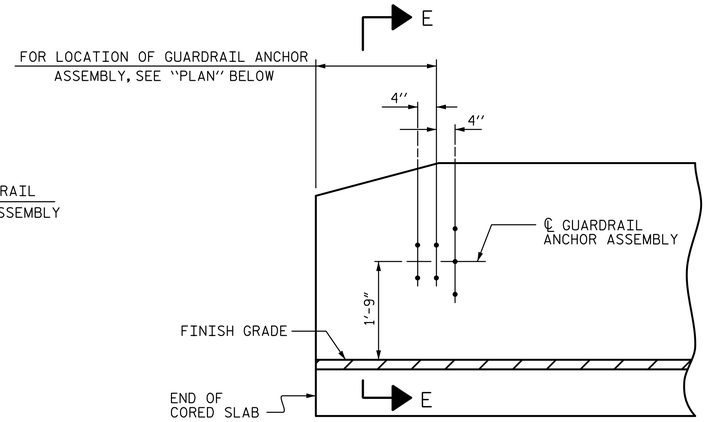
VERTICAL CONCRETE BARRIER RAIL DETAILS

END OF RAIL DETAILS

DRAWN BY :	AJP	DATE :	8-17
CHECKED BY :	MLO	DATE :	11-17
DESIGN ENGINEER OF RECORD :	JWJ	DATE :	11-23



PLAN



ELEVATION

NOTES

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

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

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

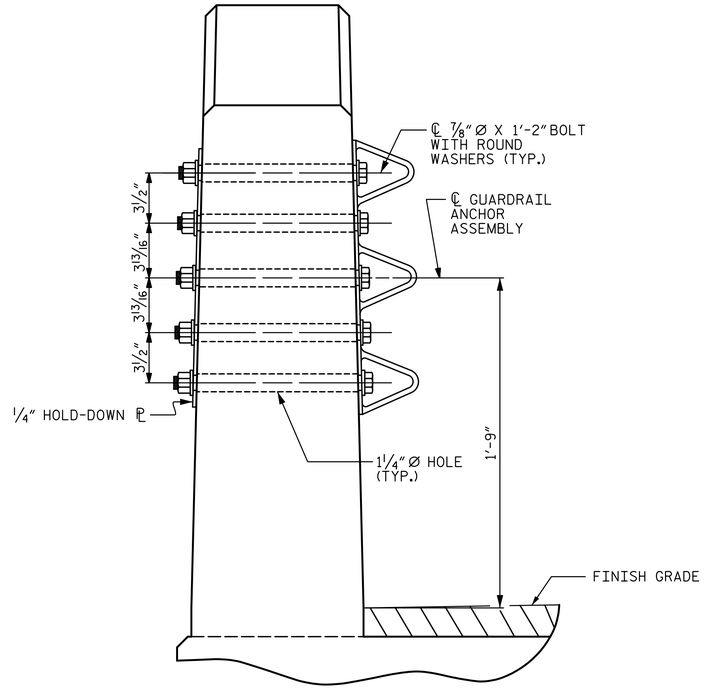
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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 VERTICAL CONCRETE BARRIER RAIL.

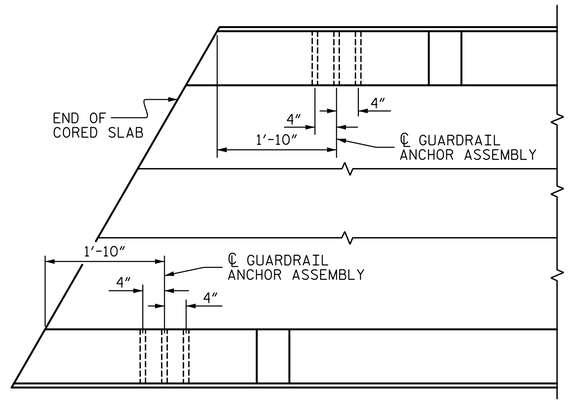
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

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



SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

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

SKETCH SHOWING POINTS OF ATTACHMENT

✳ DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. 17BP.14.R.155

MACON COUNTY

STATION: 14+82.93 -L-

11/14/2023

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RALEIGH

STANDARD

GUARDRAIL ANCHORAGE DETAILS FOR VERTICAL CONCRETE BARRIER RAIL

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NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			20

DRAWN BY : AJP		DATE : 8-17	
CHECKED BY : MLO		DATE : 11-17	
DESIGN ENGINEER OF RECORD : JWJ		DATE : 11-23	
DRAWN BY : MAA 5/10	REV. 1/15	MAA/TMG	
CHECKED BY : GM 5/10	REV. 12/17	MAA/THC	
	REV. 5/18	MAA/THC	

STD. NO. GRA3

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NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

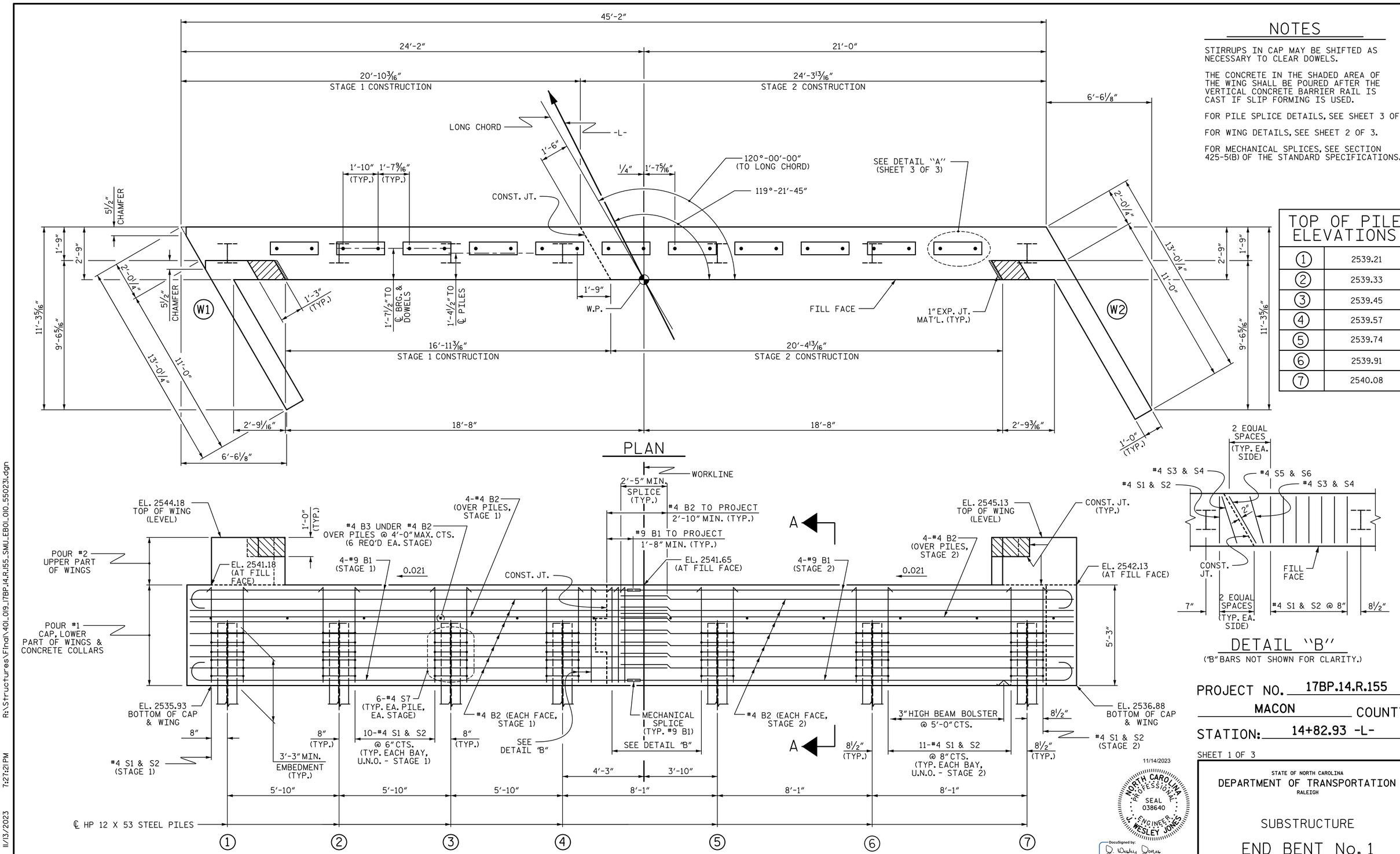
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.

FOR WING DETAILS, SEE SHEET 2 OF 3.

FOR MECHANICAL SPLICES, SEE SECTION 425-5(B) OF THE STANDARD SPECIFICATIONS.

TOP OF PILE ELEVATIONS	
①	2539.21
②	2539.33
③	2539.45
④	2539.57
⑤	2539.74
⑥	2539.91
⑦	2540.08



PLAN

ELEVATION

WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 3 OF 3.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 3 OF 3.

DETAIL "B"

("B" BARS NOT SHOWN FOR CLARITY.)

PROJECT NO. 17BP.14.R.155

MACON COUNTY

STATION: 14+82.93 -L-

SHEET 1 OF 3

11/14/2023

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SUBSTRUCTURE

END BENT No. 1

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NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			20

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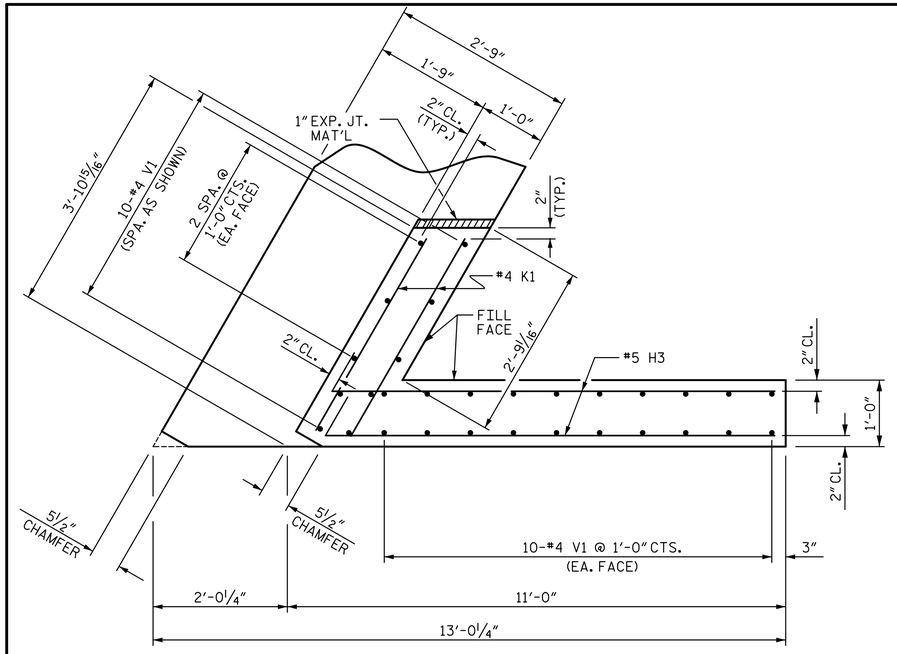
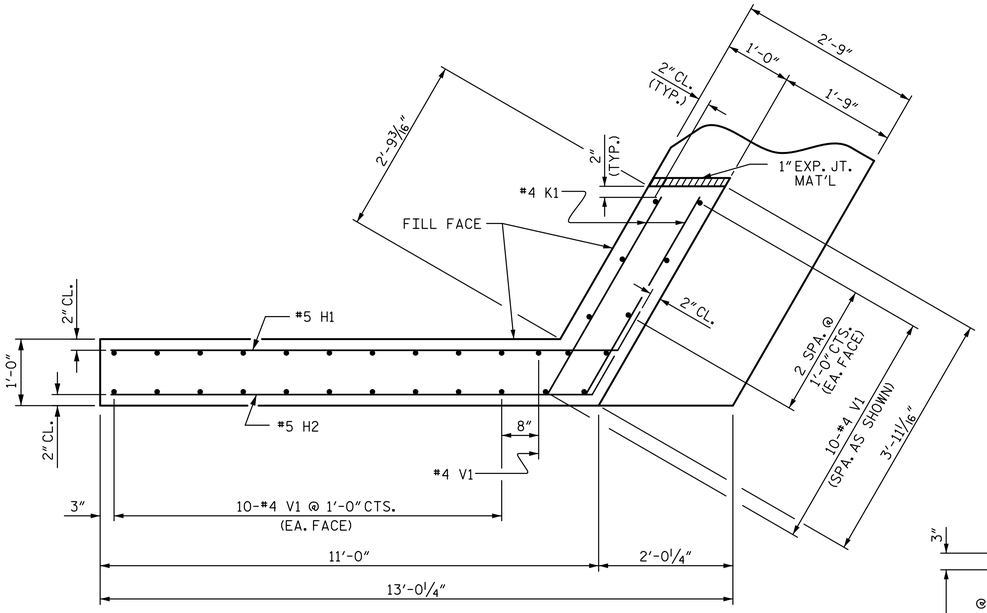
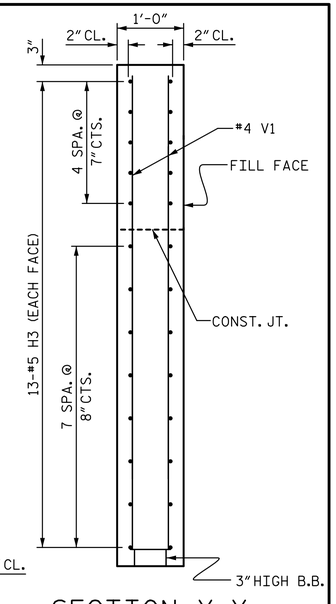


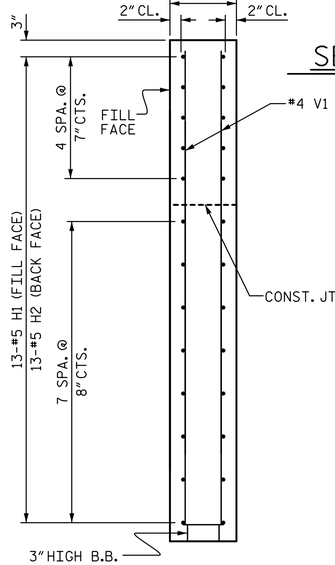
PLAN OF WING (W1)



PLAN OF WING (W2)



SECTION X-X



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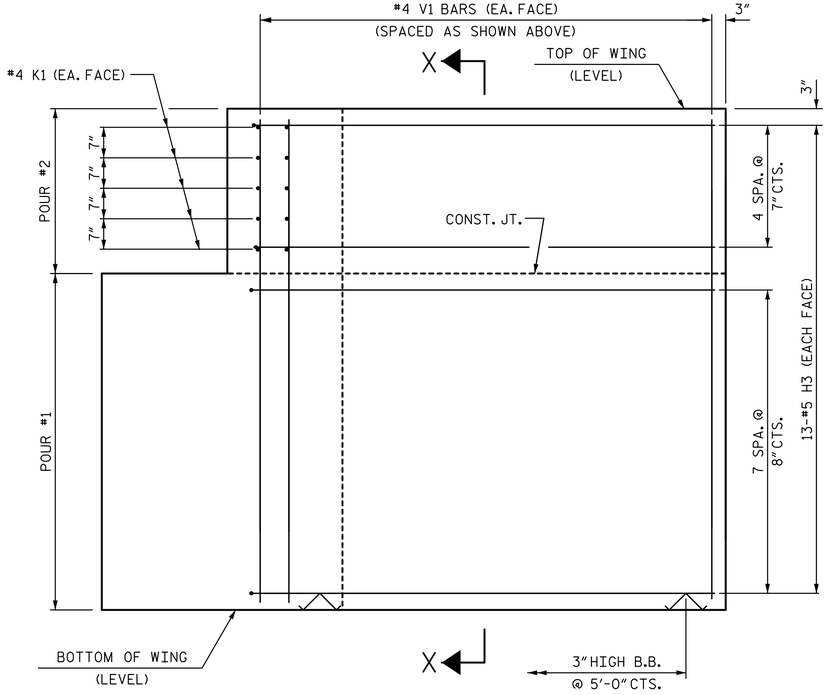
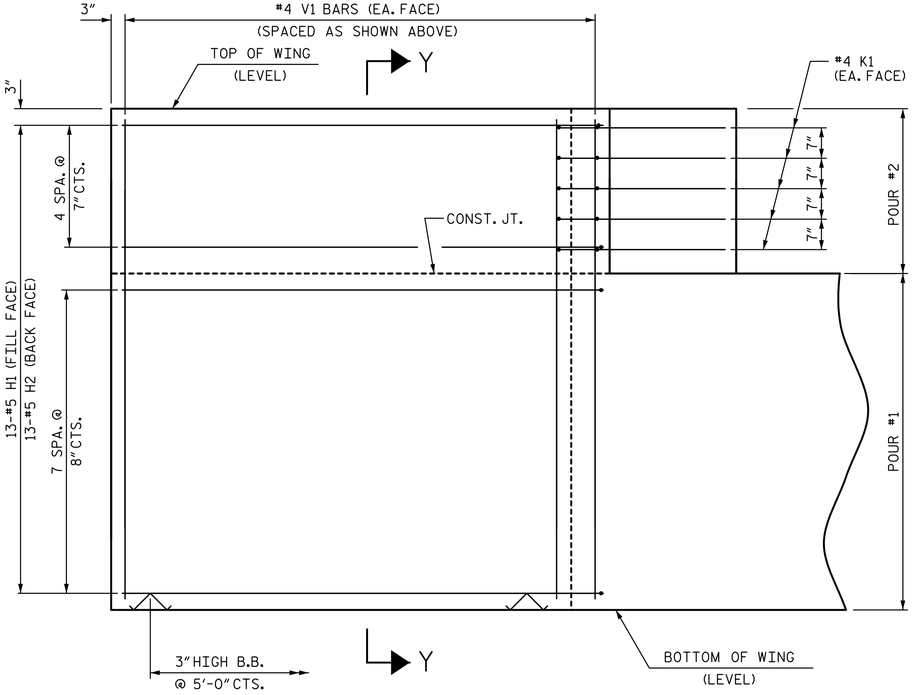


ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

WING DETAILS

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DESIGN ENGINEER OF RECORD :	JWJ	DATE :	11-23

11/14/2023

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SUBSTRUCTURE
END BENT No. 1
WING DETAILS

PROJECT NO. 17BP.14.R.155
MACON COUNTY
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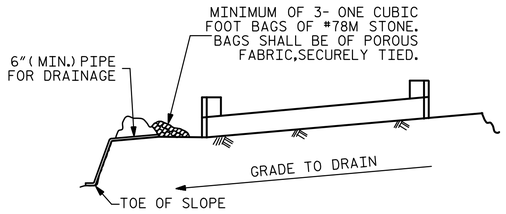
SHEET 2 OF 3

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			20

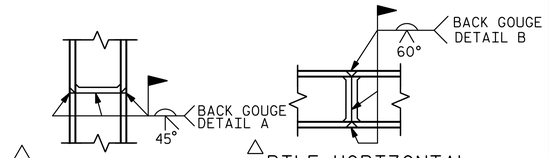


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

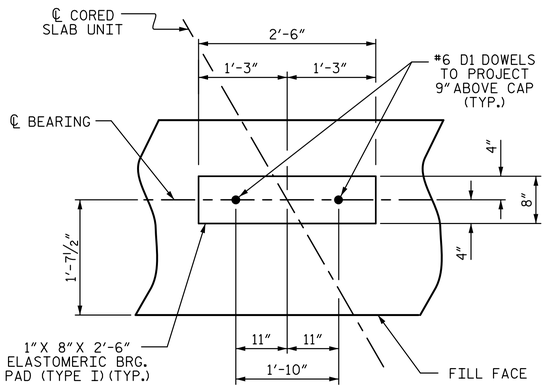
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

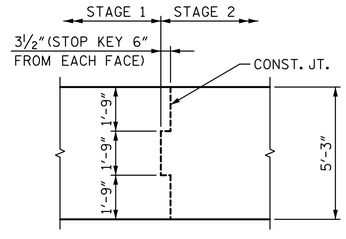


△POSITION OF PILE DURING WELDING.

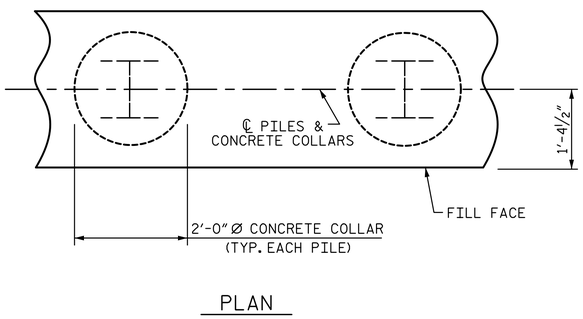
PILE SPLICE DETAILS



DETAIL "A"

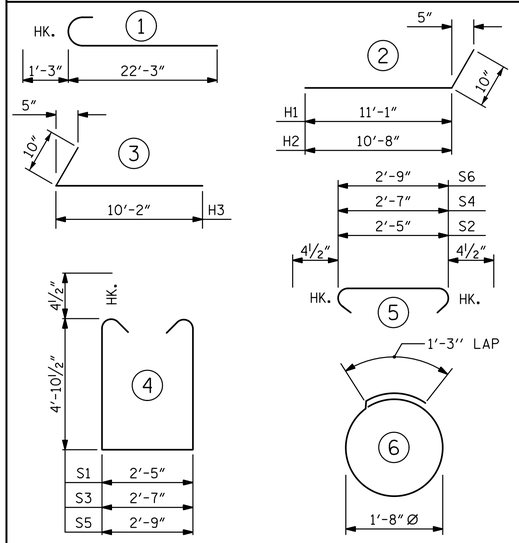


CONST. JT. DETAIL



CORROSION PROTECTION FOR STEEL PILES DETAIL

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

END BENT No. 1 - STAGE 1	END BENT No. 1 - STAGE 2
HP 12 X 53 STEEL PILES NO: 4 LIN. FT.= 65.0	HP 12 X 53 STEEL PILES NO: 3 LIN. FT.= 63.8
PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES NO: 4	PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES NO: 3
PILE EXCAVATION IN SOIL LIN. FT.= 28.0	PILE EXCAVATION IN SOIL LIN. FT.= 21.0
PILE EXCAVATION NOT IN SOIL LIN. FT.= 12.0	PILE EXCAVATION NOT IN SOIL LIN. FT.= 9.0

BILL OF MATERIAL
FOR END BENT 1 STAGE 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	23'-6"	639
B2	18	#4	STR	23'-8"	285
B3	6	#4	STR	2'-5"	10
D1	10	#6	STR	1'-6"	23
H3	26	#5	3	11'-0"	298
K1	10	#4	STR	3'-3"	22
S1	32	#4	4	12'-11"	276
S2	32	#4	5	3'-2"	68
S3	1	#4	4	13'-1"	9
S4	1	#4	5	3'-4"	2
S7	24	#4	6	6'-6"	104
V1	30	#4	STR	7'-11"	159

REINFORCING STEEL 1895 LBS.

CLASS A CONCRETE BREAKDOWN

POUR #1 CAP, LOWER PART OF WINGS & COLLARS 13.7 C.Y.

POUR #2 UPPER PART OF WINGS 1.5 C.Y.

TOTAL CLASS A CONCRETE 15.2 C.Y.

BILL OF MATERIAL
FOR END BENT 1 STAGE 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	23'-6"	639
B2	18	#4	STR	23'-8"	285
B3	6	#4	STR	2'-5"	10
D1	12	#6	STR	1'-6"	27
H1	13	#5	3	11'-11"	162
H2	13	#5	3	11'-6"	156
K1	10	#4	STR	3'-3"	22
S1	30	#4	4	12'-11"	259
S2	30	#4	5	3'-2"	63
S3	1	#4	4	13'-1"	9
S4	1	#4	5	3'-4"	2
S5	1	#4	4	13'-3"	9
S6	1	#4	5	3'-6"	2
S7	18	#4	6	6'-6"	78
V1	31	#4	STR	7'-11"	164

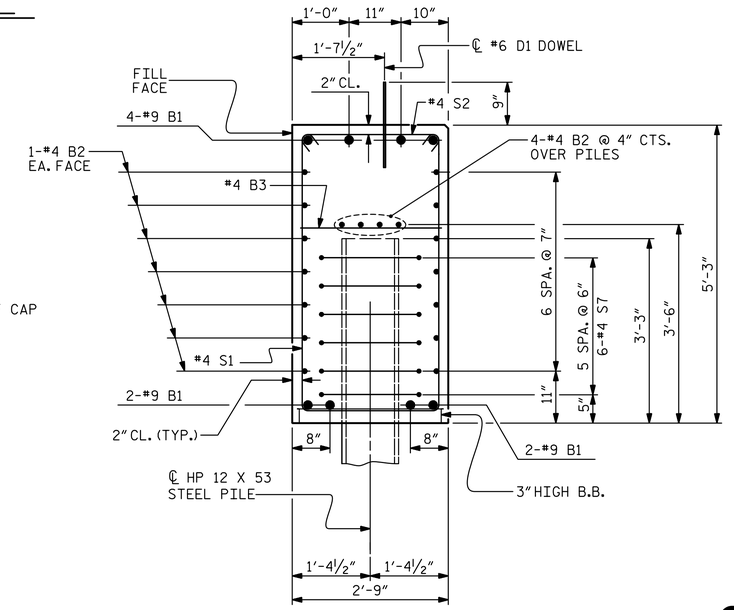
REINFORCING STEEL 1887 LBS.

CLASS A CONCRETE BREAKDOWN

POUR #1 CAP, LOWER PART OF WINGS & COLLARS 15.5 C.Y.

POUR #2 UPPER PART OF WINGS 1.6 C.Y.

TOTAL CLASS A CONCRETE 17.1 C.Y.



SECTION A-A

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

11/14/2023

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SHEET 3 OF 3

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DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 1 DETAILS

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1			3			TOTAL SHEETS
2			4			20

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DESIGN ENGINEER OF RECORD :	JWJ	DATE : 11-23

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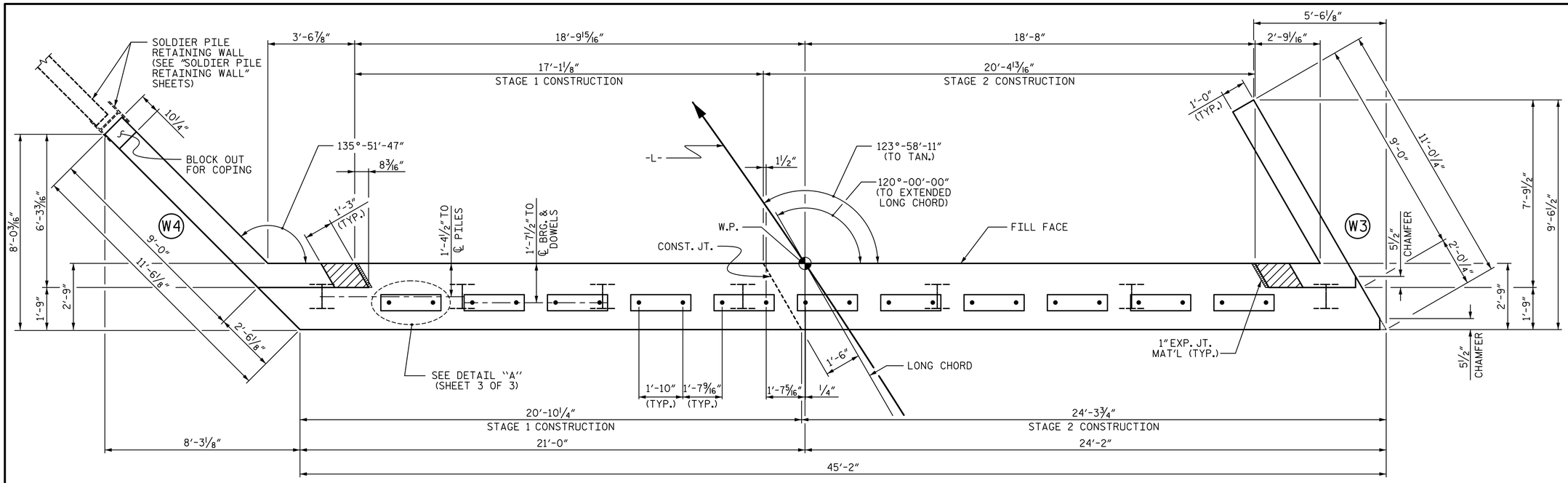


NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

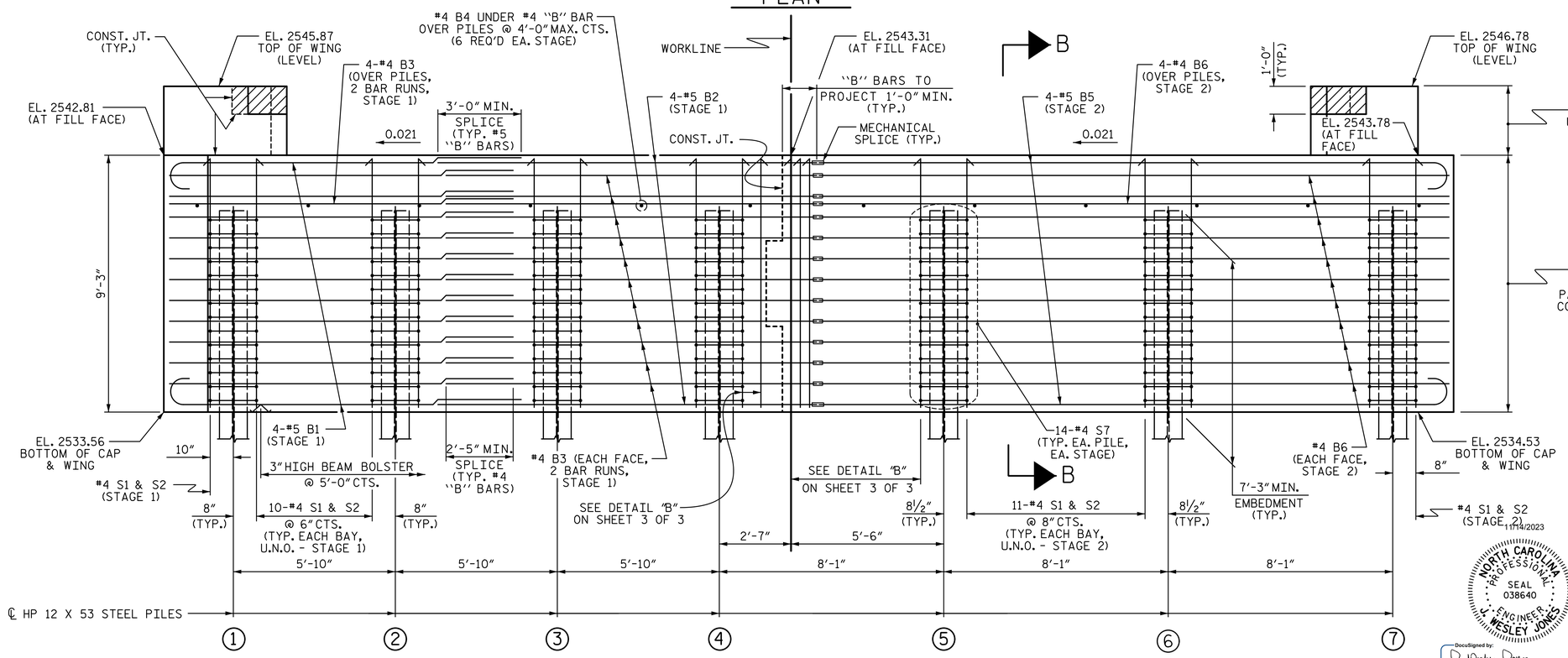
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.

FOR WING DETAILS, SEE SHEET 2 OF 3.

FOR MECHANICAL SPLICES, SEE SECTION 425-5(B) OF THE STANDARD SPECIFICATIONS.

PLAN



TOP OF PILE ELEVATIONS	
①	2540.90
②	2541.02
③	2541.15
④	2541.27
⑤	2541.44
⑥	2541.61
⑦	2541.78

ELEVATION

WINGS NOT SHOWN FOR CLARITY.
FOR SECTION B-B, SEE SHEET 3 OF 3.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 3 OF 3.

PROJECT NO. 17BP.14.R.155
MACON COUNTY
STATION: 14+82.93 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			20

DRAWN BY :	AJP	DATE : 8-17
CHECKED BY :	MLO	DATE : 11-17
DESIGN ENGINEER OF RECORD :	JWJ	DATE : 11-23

11/14/2023
NORTH CAROLINA PROFESSIONAL SEAL 038640 ENGINEER WESLEY JONES
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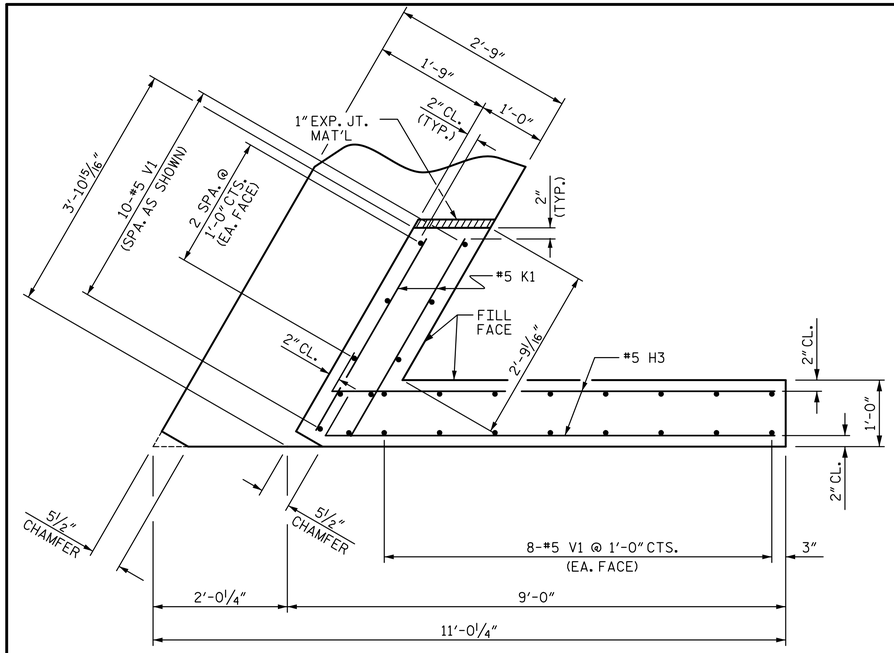
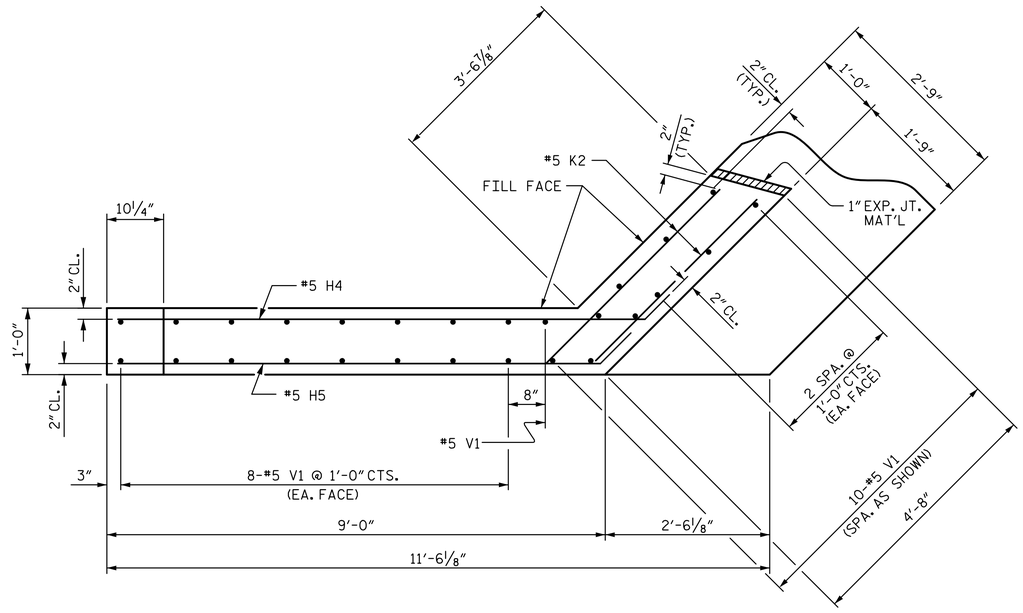
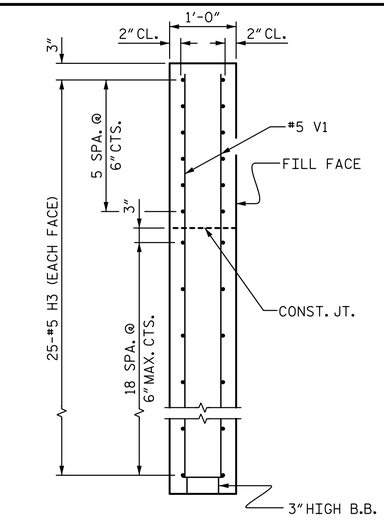


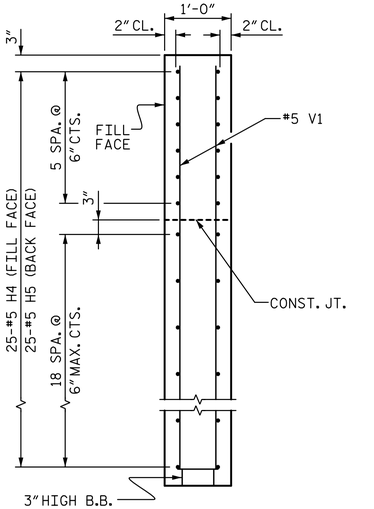
PLAN OF WING (W3)



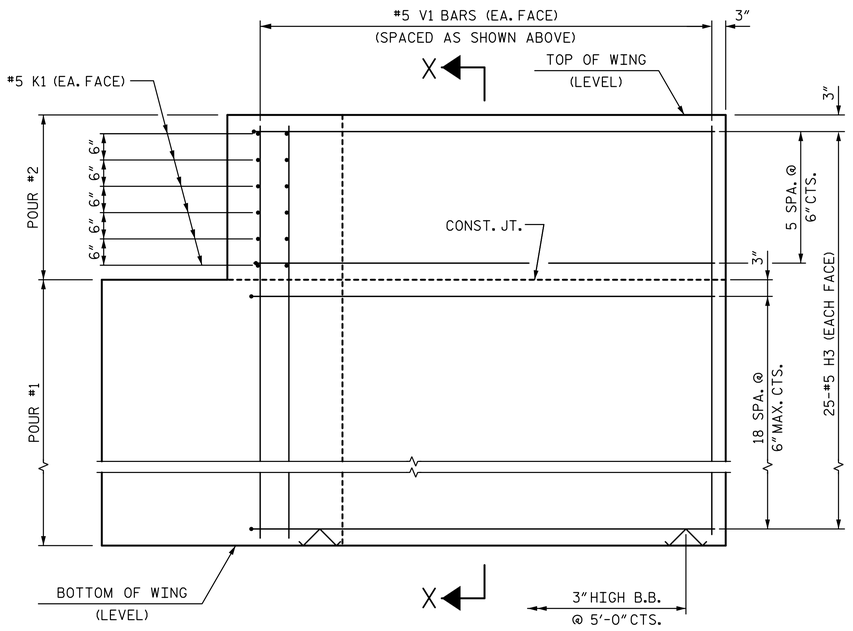
PLAN OF WING (W4)



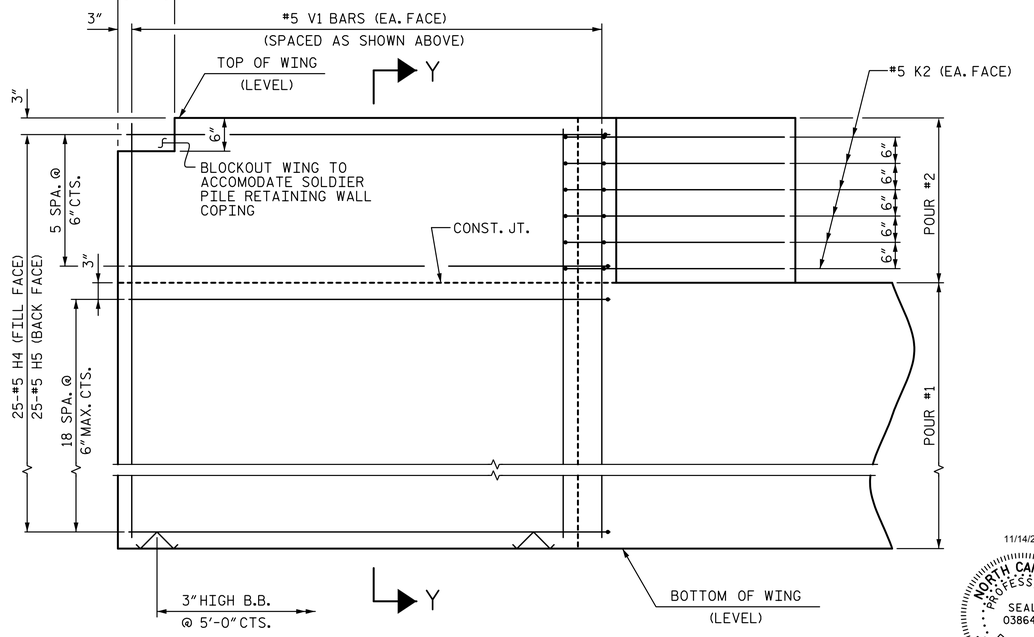
SECTION X-X



SECTION Y-Y



ELEVATION OF WING (W3)



ELEVATION OF WING (W4)

WING DETAILS

DRAWN BY :	AJP	DATE :	8-17
CHECKED BY :	MLO	DATE :	11-17
DESIGN ENGINEER OF RECORD :	JWJ	DATE :	11-23

11/14/2023

STATE OF NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 038640 WESLEY JONES

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PROJECT NO. 17BP.14.R.155

MACON COUNTY

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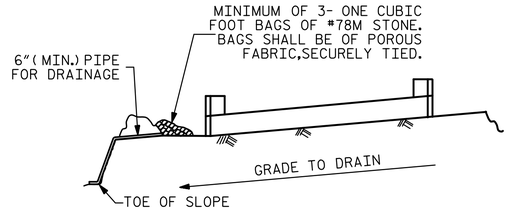
SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT No. 2
WING DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			20

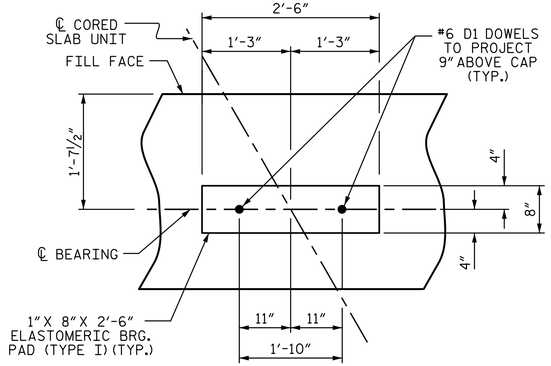


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

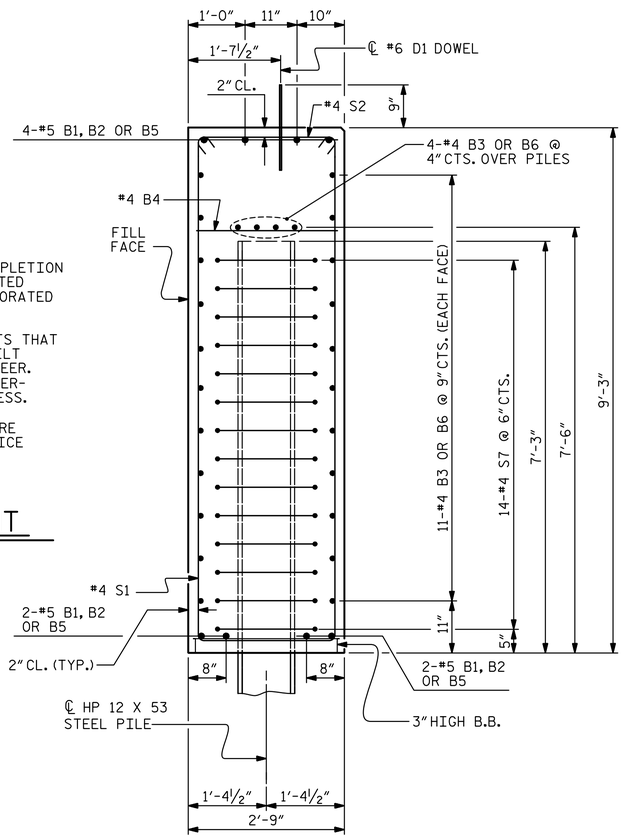
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

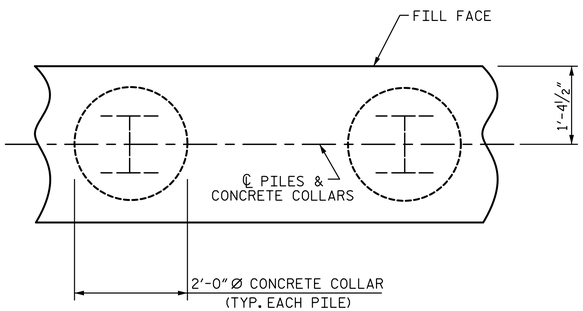


DETAIL "A"

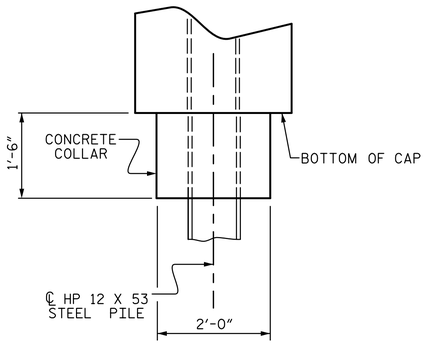


SECTION B-B

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

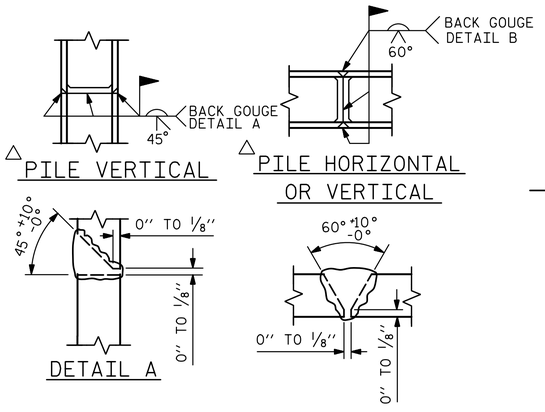


PLAN



ELEVATION

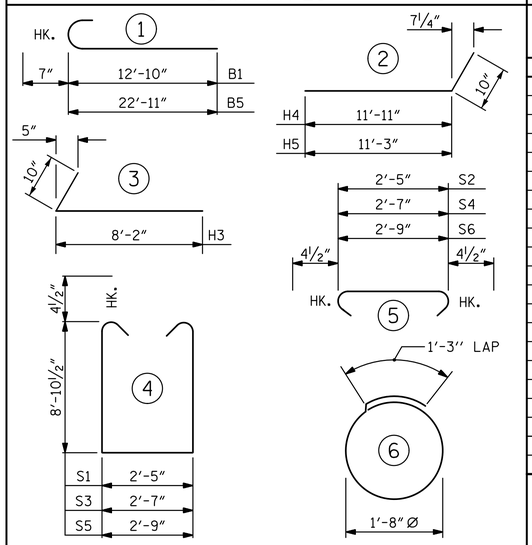
CORROSION PROTECTION FOR STEEL PILES DETAIL



△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

END BENT No. 2 - STAGE 1	END BENT No. 2 - STAGE 2
HP 12 X 53 STEEL PILES NO: 4 LIN. FT.= 80.0	HP 12 X 53 STEEL PILES NO: 3 LIN. FT.= 60.0
PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES NO: 4	PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES NO: 3
PILE EXCAVATION IN SOIL LIN. FT.= 0.0	PILE EXCAVATION IN SOIL LIN. FT.= 0.0
PILE EXCAVATION NOT IN SOIL LIN. FT.= 40.0	PILE EXCAVATION NOT IN SOIL LIN. FT.= 30.0

BILL OF MATERIAL FOR END BENT 2 STAGE 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#5	1	13'-5"	112
B2	8	#5	STR	12'-10"	107
B3	52	#4	STR	12'-8"	440
B4	6	#4	STR	2'-5"	10
D1	10	#6	STR	1'-6"	23
H4	25	#5	2	12'-9"	332
H5	25	#5	2	12'-1"	315
K2	12	#5	STR	4'-2"	52
S1	32	#4	4	20'-11"	447
S2	32	#4	5	3'-2"	68
S3	1	#4	4	21'-1"	14
S4	1	#4	5	3'-4"	2
S7	56	#4	6	6'-6"	243
V1	27	#5	STR	11'-11"	336

REINFORCING STEEL 2501 LBS.

CLASS A CONCRETE BREAKDOWN

POUR #1	CAP, LOWER PART OF WINGS & COLLARS	23.7 C.Y.
POUR #2	UPPER PART OF WINGS	1.4 C.Y.
TOTAL CLASS A CONCRETE		25.1 C.Y.

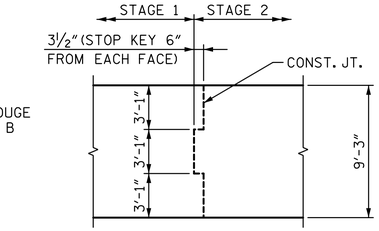
BILL OF MATERIAL FOR END BENT 2 STAGE 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B4	6	#4	STR	2'-5"	10
B5	8	#5	1	23'-6"	196
B6	26	#4	STR	23'-0"	399
D1	12	#6	STR	1'-6"	27
H3	50	#5	3	9'-0"	469
K1	12	#5	STR	3'-3"	41
S1	30	#4	4	20'-11"	419
S2	30	#4	5	3'-2"	63
S3	1	#4	4	21'-1"	14
S4	1	#4	5	3'-4"	2
S5	1	#4	4	21'-3"	14
S6	1	#4	5	3'-6"	2
S7	42	#4	6	6'-6"	182
V1	26	#5	STR	11'-11"	323

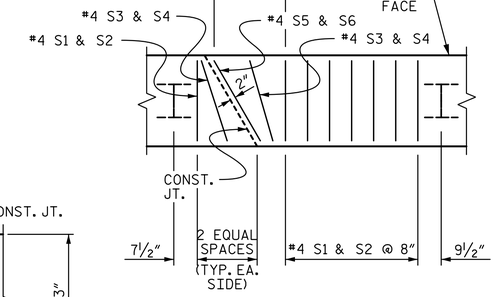
REINFORCING STEEL 2161

CLASS A CONCRETE BREAKDOWN

POUR #1	CAP, LOWER PART OF WINGS & COLLARS	26.0 C.Y.
POUR #2	UPPER PART OF WINGS	1.3 C.Y.
TOTAL CLASS A CONCRETE		27.3 C.Y.



CONST. JT. DETAIL



DETAIL "B"

("B" BARS NOT SHOWN FOR CLARITY.)

PROJECT NO. 17BP.14.R.155

MACON COUNTY

STATION: 14+82.93 -L-

SHEET 3 OF 3

11/14/2023

STATE OF NORTH CAROLINA PROFESSIONAL SEAL 038640 ENGINEER WESLEY JONES

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DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 2 DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			20

DRAWN BY :	AJP	DATE :	8-17
CHECKED BY :	MLO	DATE :	11-17
DESIGN ENGINEER OF RECORD :	JWJ	DATE :	11-23

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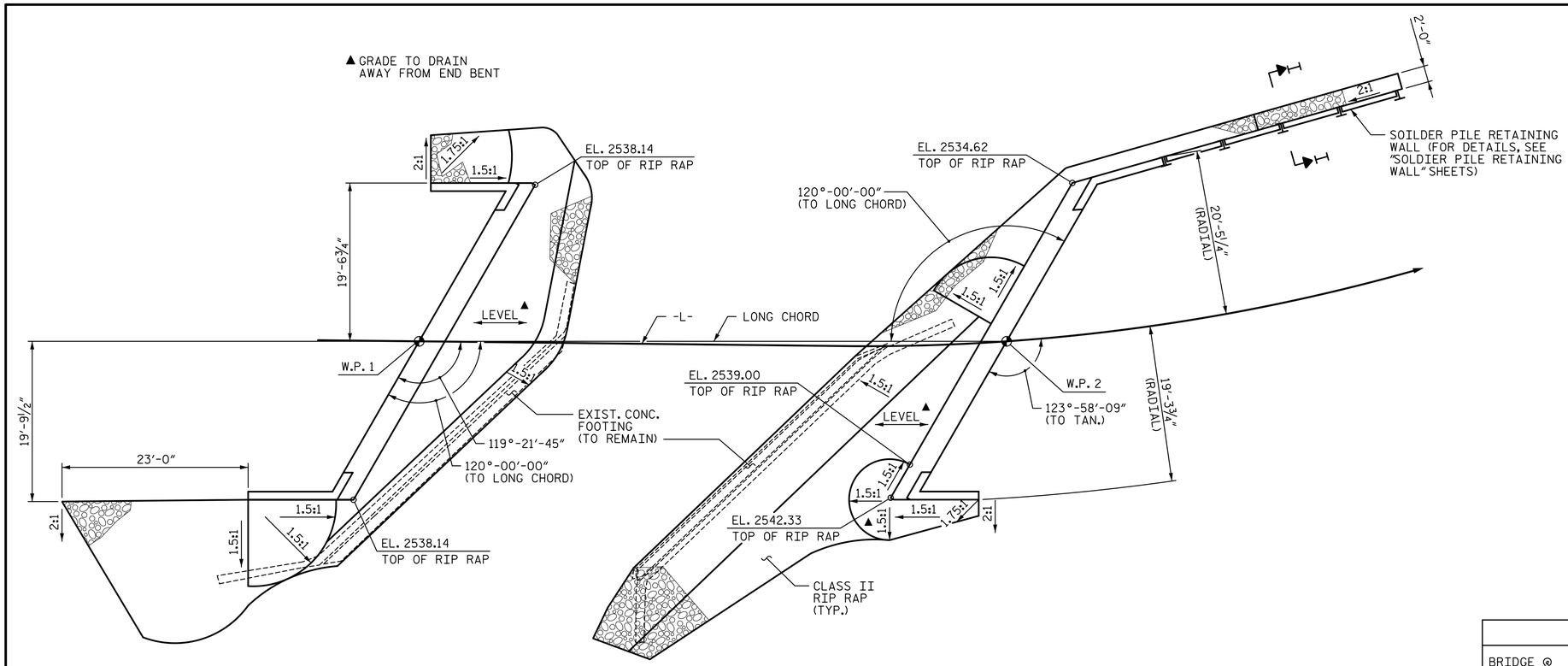
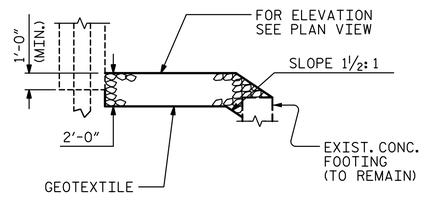


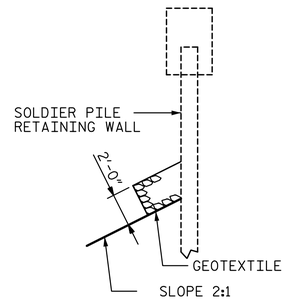
ESTIMATED QUANTITIES		
BRIDGE @ STA. 14+82.93 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	115	130
END BENT 2	110	125



LONG CHORD SECTION

BERM RIP RAPPED

(END BENT 1 SHOWN, END BENT 2 SIMILAR.)



SECTION I-I

PROJECT NO. 17BP.14.R.155

MACON COUNTY

STATION: 14+82.93 -L-

11/14/2023

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 038640 WESLEY JONES

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RIP RAP DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			20

DRAWN BY :	AJP	DATE : 8-17
CHECKED BY :	MLO	DATE : 11-17
DESIGN ENGINEER OF RECORD :	JWJ	DATE : 11-23

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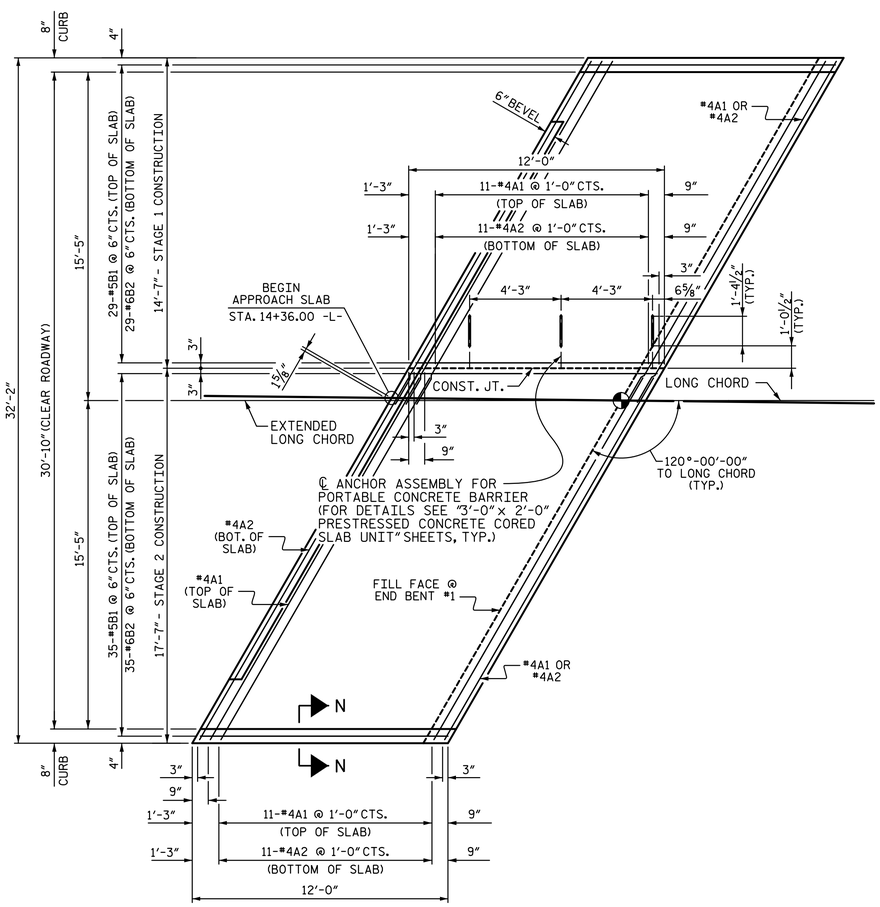
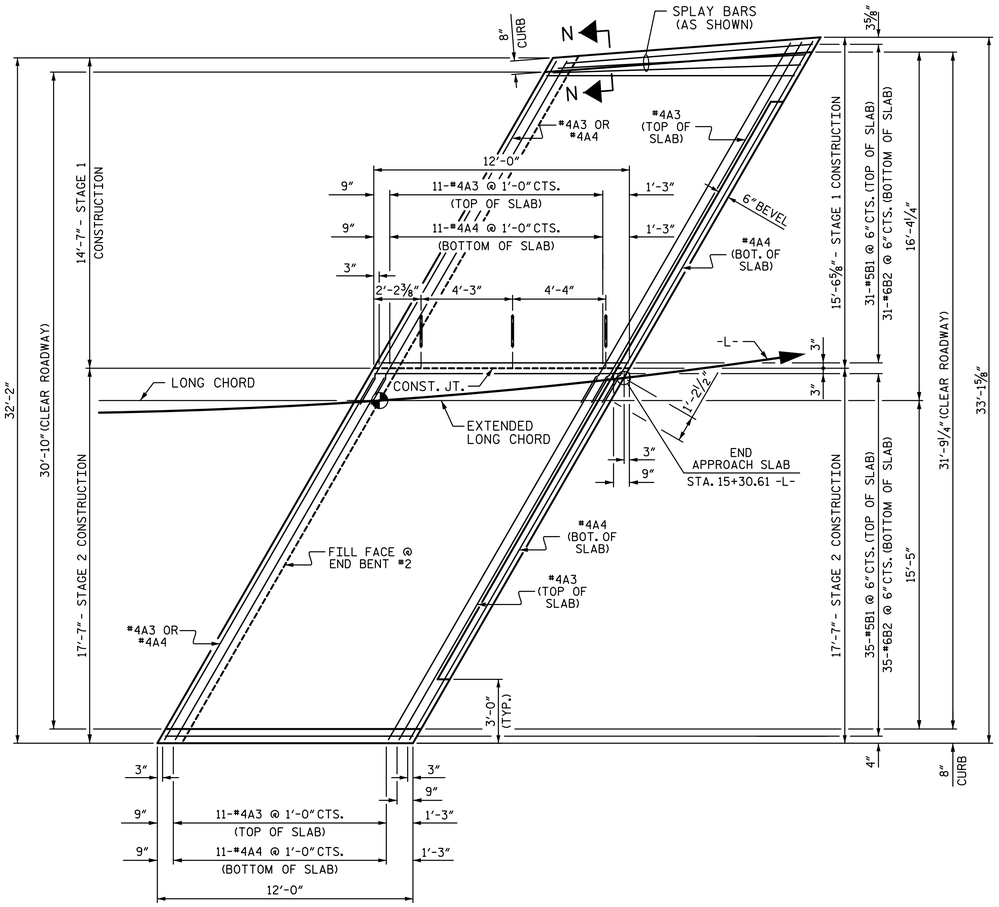


PLAN @ END BENT #1



PLAN @ END BENT #2

NOTE: LONG CHORD IS EXTENDED TO BEGIN AND END APPROACH SLAB FOR CLARITY

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

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CHECKED BY :	MLO	DATE :	11-17
DESIGN ENGINEER OF RECORD :	JWJ	DATE :	11-23

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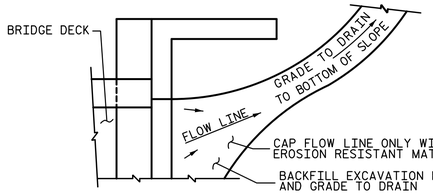
SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

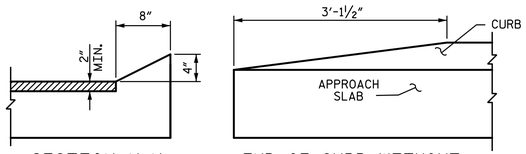
BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE CORED SLAB UNIT (SUB-REGIONAL TIER) 120° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			20



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 N-N

END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS

NOTES

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4" Ø DRAINAGE PIPE, AND SELECT MATERIAL, SEE ROADWAY PLANS.

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

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

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

FOR THE 4" 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.

APPROACH SLAB GROOVING IS NOT REQUIRED.

BILL OF MATERIAL

APPROACH SLAB AT EB #1 (STAGE 1)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ A1	13	#4	STR	19'-5"	169
A2	13	#4	STR	19'-4"	168
✳ B1	29	#5	STR	11'-1"	335
B2	29	#6	STR	11'-7"	505
REINFORCING STEEL				LBS.	673
✳ EPOXY COATED REINFORCING STEEL				LBS.	504
CLASS AA CONCRETE				C. Y.	9.5

APPROACH SLAB AT EB #2 (STAGE 1)

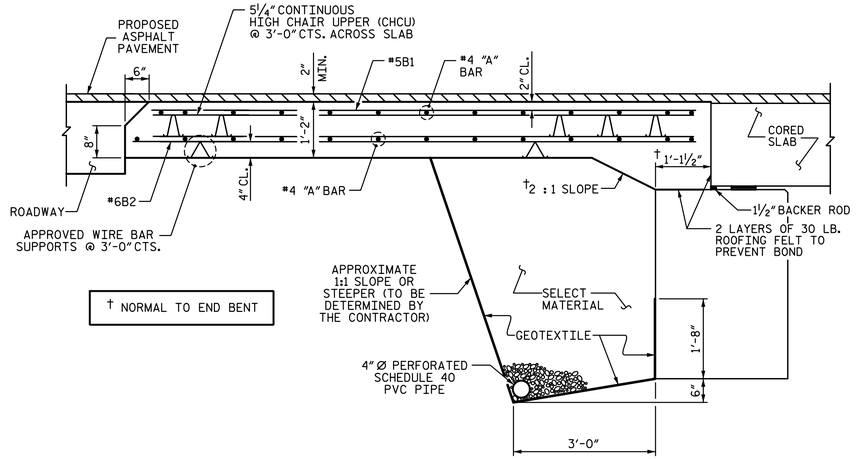
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ A3	13	#4	STR	19'-11"	173
A4	13	#4	STR	19'-10"	172
✳ B1	31	#5	STR	11'-1"	358
B2	31	#6	STR	11'-7"	539
REINFORCING STEEL				LBS.	711
✳ EPOXY COATED REINFORCING STEEL				LBS.	531
CLASS AA CONCRETE				C. Y.	10.2

APPROACH SLAB AT EB #1 (STAGE 2)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ A1	13	#4	STR	19'-5"	169
A2	13	#4	STR	19'-4"	168
✳ B1	35	#5	STR	11'-1"	405
B2	35	#6	STR	11'-7"	609
REINFORCING STEEL				LBS.	777
✳ EPOXY COATED REINFORCING STEEL				LBS.	574
CLASS AA CONCRETE				C. Y.	11.9

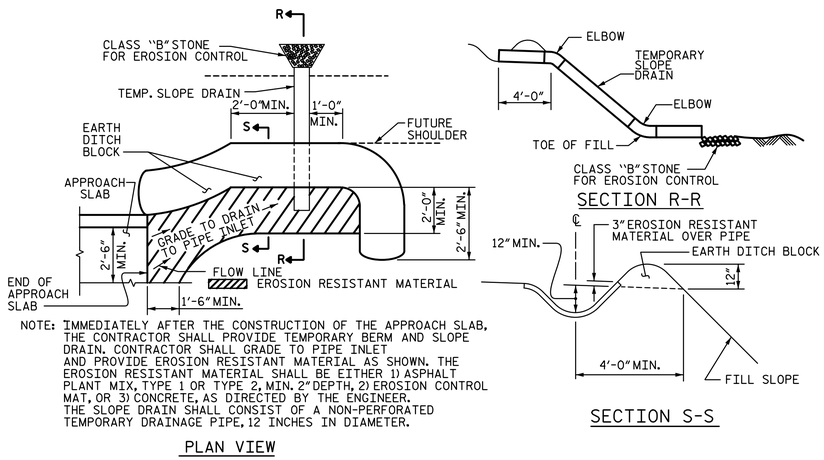
APPROACH SLAB AT EB #2 (STAGE 2)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ A3	13	#4	STR	19'-11"	173
A4	13	#4	STR	19'-10"	172
✳ B1	35	#5	STR	11'-1"	405
B2	35	#6	STR	11'-7"	609
REINFORCING STEEL				LBS.	781
✳ EPOXY COATED REINFORCING STEEL				LBS.	578
CLASS AA CONCRETE				C. Y.	11.5



SECTION THRU SLAB

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



TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

PROJECT NO. 17BP.14.R.155

MACON COUNTY

STATION: 14+82.93 -L-

SHEET 2 OF 2

11/14/2023

DocuSigned by: Wesley Jones 68C7E5EFD4F844E...

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE CORED SLAB UNIT (SUB-REGIONAL TIER) 120° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			20

DRAWN BY :	AJP	DATE :	8-17
CHECKED BY :	MLO	DATE :	11-17
DESIGN ENGINEER OF RECORD :	JWJ	DATE :	11-23

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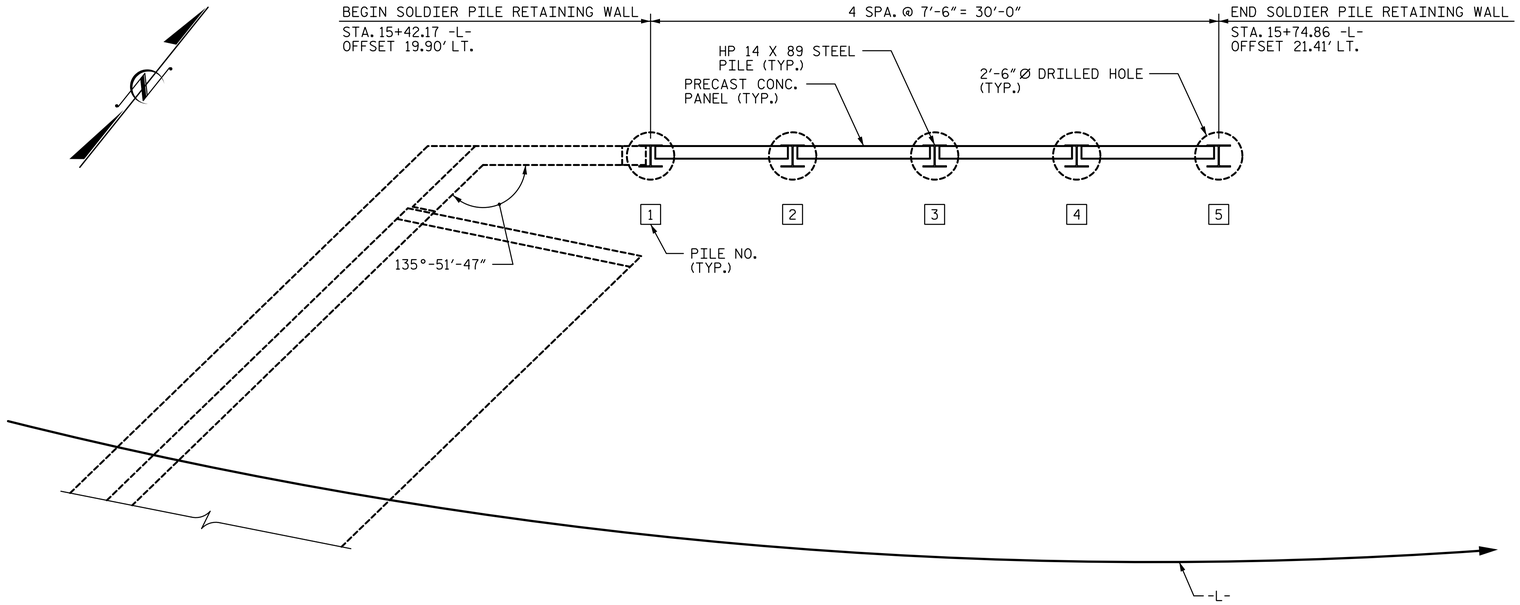
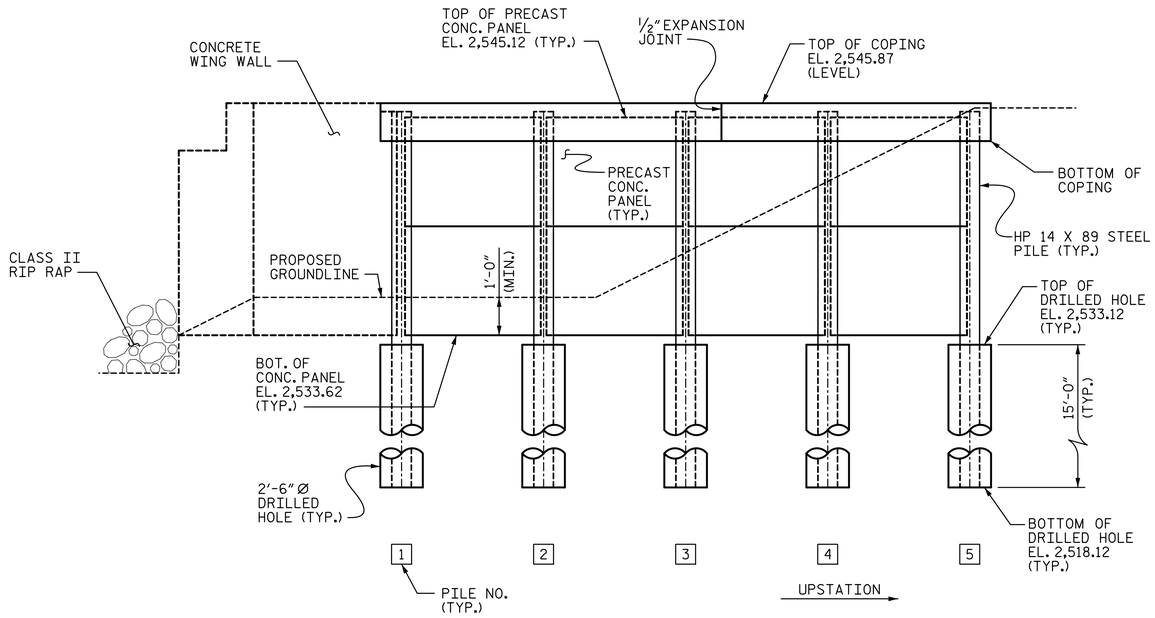


PLAN

(CONCRETE COPING NOT SHOWN FOR CLARITY.)
(SOLDIER PILE RETAINING WALL STATIONS, OFFSETS, AND DIMENSIONS ARE AT THE CENTER OF PILE AND DRILLED HOLE. FOR PILE STATIONS AND OFFSETS, SEE "PILE INFORMATION" TABLE ON SHEET 2 OF 2.)



ELEVATION

NOTES:

ALL PILES SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

THE CONTRACTOR SHALL FIELD VERIFY THAT THERE ARE NO CONFLICTS BETWEEN WALL SYSTEM AND EXISTING UTILITIES PRIOR TO INSTALLING ANY PORTION OF THE WALL.

THE BASE OF EACH BOTTOM PANEL SHALL BE LEVEL.

FOR SOLDIER PILE RETAINING WALLS, SEE SOLDIER PILE RETAINING WALLS PROVISION.

DRILLED IN PILES ARE REQUIRED.

USE A SOLDIER PILE RETAINING WALL WITH PRECAST CONCRETE PANELS THAT MEET SECTION 1077 OF THE STANDARD SPECIFICATIONS.

PAINT GALVANIZED PILES GRAY OR BLACK IN ACCORDANCE WITH ARTICLE 442-12 OF THE STANDARD SPECIFICATIONS.

BEFORE BEGINNING SOLDIER PILE WALL CONSTRUCTION, SURVEY WALL LOCATION AND SUBMIT A REVISED WALL PROFILE VIEW (WALL ENVELOPE) FOR REVIEW. DO NOT START CONSTRUCTION UNTIL THE REVISED WALL ENVELOPE IS ACCEPTED.

½" EXPANSION JOINT MATERIAL SHALL BE PLACED EVERY 30' MAX. DO NOT PLACE EXPANSION JOINT ABOVE A PILE. IF THE LOCATION FOR THE EXPANSION DIFFERS FROM WHAT IS DETAILED, THE CONTRACTOR IS RESPONSIBLE FOR FITTING REINFORCING STEEL IN COPING SUCH THAT 2" CL. IS MAINTAINED FROM THE EXPANSION JOINT.

PROJECT NO. 17BP.14.R.155

MACON COUNTY

STATION: 14+82.93 -L-

SHEET 1 OF 2

11/14/2023

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SOLDIER PILE RETAINING WALL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			20

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CHECKED BY :	MLO	DATE : 11-17
DESIGN ENGINEER OF RECORD :	JWJ	DATE : 11-23

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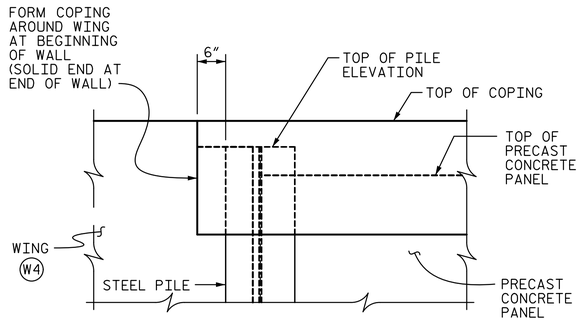
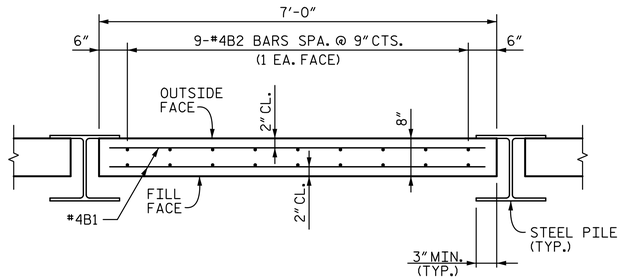
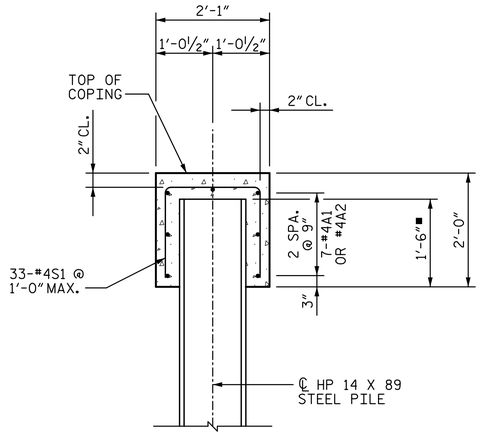


COPING END DETAIL

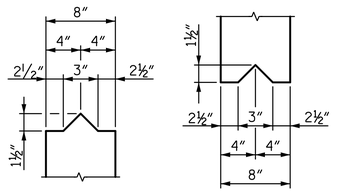
(BEGIN WALL COPING SHOWN, END WALL COPING SIMILAR)



TYPICAL SECTION THRU PRECAST CONCRETE PANEL

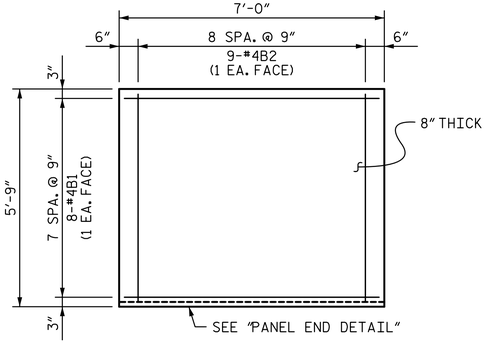


COPING DETAIL

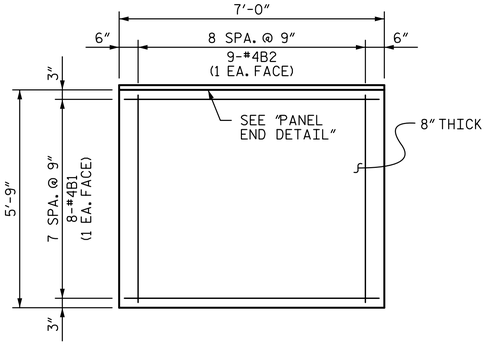


PANEL END DETAIL

■ CONTRACTOR IS RESPONSIBLE FOR MAINTAINING THIS MINIMUM DIMENSION TO ENSURE THAT TOPS OF ALL PANELS ARE COVERED



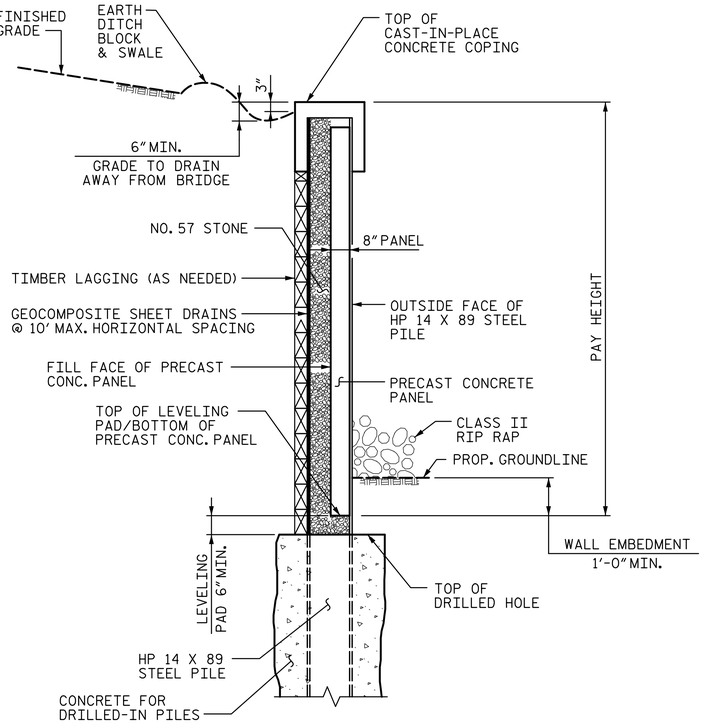
TOP PRECAST PANELS



BOTTOM PRECAST PANELS

PILE INFORMATION					
PILE NO.	PILE SIZE	STATION ▲	OFFSET ▲	TOP OF PILE ELEV.	TOTAL PILE LENGTH (FT.)
1	HP 14x89	15+42.17	19.90′	2,545.37	24.3
2	HP 14x89	15+50.29	20.64′	2,545.37	24.3
3	HP 14x89	15+58.46	21.15′	2,545.37	24.3
4	HP 14x89	15+66.65	21.40′	2,545.37	24.3
5	HP 14x89	15+74.86	21.41′	2,545.37	24.3

▲ ALL STATIONING AND OFFSETS ARE ALONG THE ℄ -L-. OFFSET IS TO CENTER OF PILE AND DRILLED HOLE.



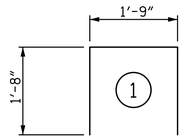
TYPICAL SECTION OF SOLDIER PILE RETAINING WALL

TOP PRECAST PANEL (4 REQUIRED)					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	16	#4	STR.	6′-8″	71
B2	18	#4	STR.	5′-5″	65
REINFORCING STEEL				LBS.	136
CLASS A CONCRETE				CU. YDS.	1.0

BOTTOM PRECAST PANEL (4 REQUIRED)					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	16	#4	STR.	6′-8″	71
B2	18	#4	STR.	5′-5″	65
REINFORCING STEEL				LBS.	136
CLASS A CONCRETE				CU. YDS.	1.0

BILL OF MATERIAL		
SOLDIER PILE RETAINING WALL	SQ. FT.	367.5

CAST-IN-PLACE COPING					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
▲A1	7	#4	STR.	17′-6″	82
▲A2	7	#4	STR.	13′-9″	64
S1	33	#4	①	5′-1″	112
REINFORCING STEEL				LBS.	258
CLASS A CONCRETE				CU. YDS.	4.1



▲ COPING REINFORCEMENT LENGTHS ARE BASED ON 18′-0″ AND 14′-3″ LONG SEGMENTS. IF THE CONTRACTOR ELECTS TO PLACE CONSTRUCTION JOINTS AT ANY OTHER INTERVALS, REINFORCEMENT SHALL BE ADJUSTED ACCORDINGLY AT NO ADDITIONAL COST.

11/14/2023

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 038640 WESLEY JONES

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PROJECT NO. 17BP.14.R.155

MACON COUNTY

STATION: 14+82.93 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SOLDIER PILE RETAINING WALL

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

DRAWN BY :	JWJ	DATE :	11-17
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DESIGN ENGINEER OF RECORD :	JWJ	DATE :	11-23

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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 2024 "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