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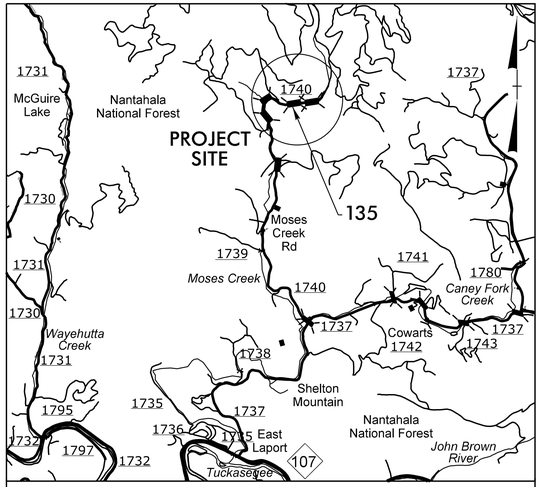
TIP PROJECT: 17BP.14.R.62

CONTRACT:



VICINITY MAP

STRUCTURE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

JACKSON COUNTY

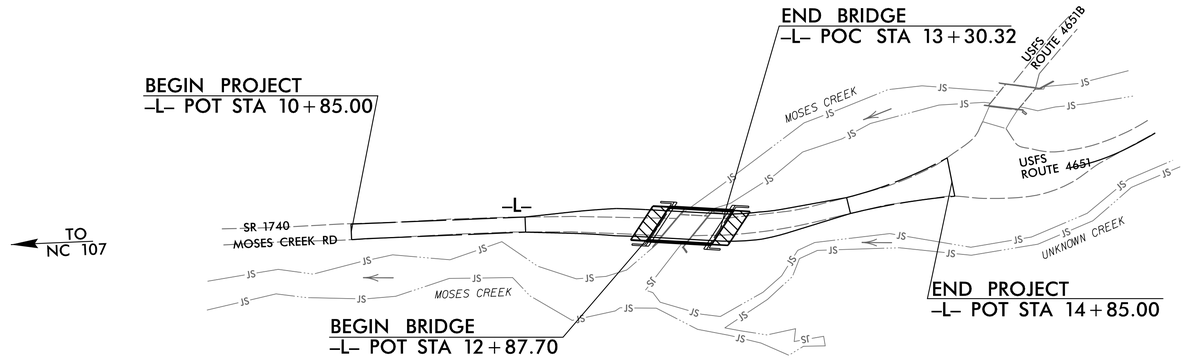
LOCATION: BRIDGE NO. 135 OVER MOSES CREEK ON SR 1740 (MOSES CREEK RD)

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.14.R.62	TS-01	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
17BP.14.R.62		PE, R/W
17BP.14.R.62		CONST

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

DESIGN DATA

ADT XXXX = XXX
V = 20 MPH
FUNC CLASS = LOCAL
SUB-REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY STATE PROJECT 17BP.14.R.62 = 0.068 MILES
LENGTH STRUCTURES STATE PROJECT 17BP.14.R.62 = 0.008 MILES
TOTAL LENGTH STATE PROJECT 17BP.14.R.62 = 0.076 MILES

NCDOT CONTACT: JOSHUA DEYTON, PE
PROJECT ENGINEER

Prepared in the Office of:
AECOM
NC FIRM LICENSE No: F-0342
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607
(919) 854-6200 - (919) 854-6259(FAX)

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: AUGUST 2, 2012

LETTING DATE: JULY 2016

LEN HILL, PE
PROJECT ENGINEER

LEN HILL, PE
PROJECT DESIGN ENGINEER

BRIDGE ENGINEER
7/5/2016

JOHN C. MORRISON *P.E.*
SIGNATURE:

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE HIGHWAY DESIGN ENGINEER

7/5/2016
Q:\60238772\400_Tech_Info_Disc_Files\450_NCDOTStrdTechDesFiles\BRG_135\Structures\401_005_B135_S00_TS.dgn
morrisonc

12+50 13+00 13+50 14+00

SPAN ''A''

(+)9.5925% (+)4.0000%

PI = 12+60.00 -L-
EL = 2583.63'
VC = 40'

GRADE DATA

FILL FACE @ END BENT No. 1
P.O.T. STA. 12+87.70 -L-
GRADE POINT
EL. = 2584.74

1'-6" LIMIT OF UNCLASSIFIED STR. EXCAVATION (TYP.)

HIGH WATER ELEV. 2589.11 (100 YR.)

NORMAL WATER SURFACE ELEV. 2581.60 (1/17/12)

FILL FACE @ END BENT No. 2
P.O.T. STA. 13+30.32 -L-
GRADE POINT
EL. = 2586.44

2590
2580
2570
2560

FIX.
FIX.
EL. = 2582.0 (±)
EL. = 2585.0 (±)
EL. = 2583.0 (±)
EL. = 2581.0 (±)
EL. = 2581.0 (±)
EL. = 2581.0 (±)
EL. = 2583.0 (±)
EL. = 2585.0 (±)
EL. = 2587.0 (±)
HP 12x53 STEEL PILES (TYP.)
UNCLASSIFIED EXCAVATION (TYP.)
EXISTING SUBSTRUCTURE (TYP.)
APPROXIMATE EXISTING GROUND LINE (ALONG ℄ -L-)
LT. EL. = 2578.80
RT. EL. = 2578.10
LT. EL. = 2580.15
RT. EL. = 2579.42

SECTION ALONG ℄ -L-

(SECTIONS AT END BENTS ARE AT RIGHT ANGLES)

HORIZONTAL CURVE DATA -L-

PI STA. 12+54.87	PI STA. 13+49.61
△ = 5°30'46.7" (RT)	△ = 17°15'39.2" (LT)
D = 11°27'33.0"	D = 38°11'49.9"
L = 48.11'	L = 45.19'
T = 24.07'	T = 22.77'
R = 500.00'	R = 150.00'

HYDRAULIC DATA

DESIGN DISCHARGE	410 CFS
FREQUENCY OF DESIGN FLOOD	2 YR.
DESIGN HIGH WATER ELEVATION	2585.10
DRAINAGE AREA	5.50 SQ. MI.
BASE DISCHARGE (Q 100)	1,900 CFS
BASE HIGH WATER ELEVATION	2589.11

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	459 CFS
FREQUENCY OF OVERTOPPING FLOOD	2+ YR.
OVERTOPPING FLOOD ELEVATION	2584.40

TOTAL LENGTH OF BRIDGE = 42'-7 7/16"
(FILL FACE TO FILL FACE ALONG ℄ -L-)

IDENTIFICATION STATION
P.O.T. STA. 13+09.50 -L-

W.P. #1
FILL FACE @ END BENT No. 1
P.O.T. STA. 12+87.70 -L-

CLASS II RIP RAP (TYP.)

5'-0" (MAX.) (TYP.)

W.P. #2
FILL FACE @ END BENT No. 2
P.O.C. STA. 13+30.32 -L-
(SEE INSET)

BEGIN APPROACH SLAB
P.O.C. STA. 12+76.85 -L-

℄ -L- & ℄ BRIDGE

P.T. STA. 13+72.04

TO DEAD END

TO SR 1737

P.C. STA. 12+30.80

P.T. STA. 12+78.91

120°00'00"

END APPROACH SLAB
P.O.C. STA. 13+41.59 -L-

FILL FACE @ END BENT No. 1

120°00'00" (TO TAN. EXT.)

FILL FACE @ END BENT No. 2

RIP RAP EL. 2582.0±

EARTH BERM EL. 2580.0±

3'-0"

EARTH BERM EL. 2580.1±

RIP RAP EL. 2582.1±

P.C. STA. 13+26.85

MOSES CREEK

UNCLASSIFIED STRUCTURE EXCAVATION (TYP.)

EXISTING STRUCTURE

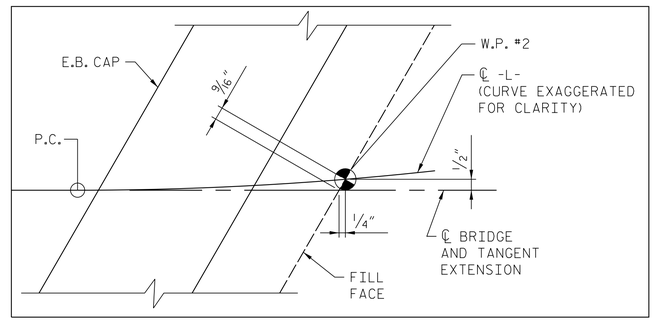
20'-0"± TEMPORARY SHORING

28'-0"± TEMPORARY SHORING

N4D 83 / NSRS 2007

PLAN

(PILES NOT SHOWN FOR CLARITY)



INSET SHOWING W.P. #2

PROJECT NO. 17BP.14.R.62

JACKSON COUNTY

STATION: 13+09.50 -L-

SHEET 1 OF 2 REPLACES BRIDGE NO. 135

AECOM
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AECOM License No. F-0342

7/5/2016

NORTH CAROLINA PROFESSIONAL SEAL 030474 ENGINEER JOHN C. MORRISON

John C. Morrison

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON SR 1740
OVER MOSES CREEK
BETWEEN SR 1737 & DEAD END ROAD

21'-10" CLEAR ROADWAY - 120° SKEW

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

DRAWN BY : MTB DATE : 06/16
CHECKED BY : JCM DATE : 06/16

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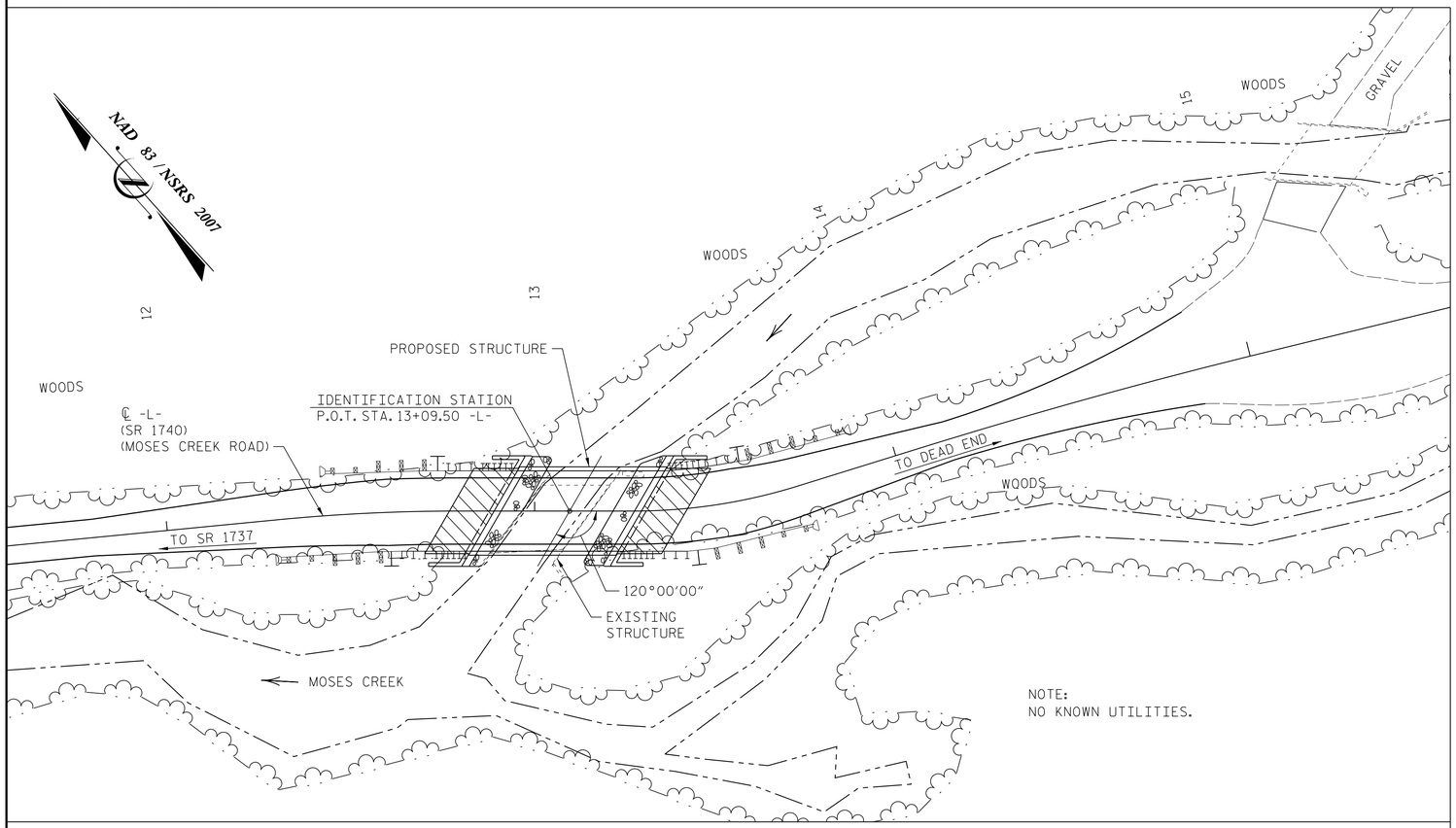
DGN: d:\60238772\400_Tech_Info_Dsc_Files\450_NCDOT Staff\eInDesFiles\BR6_135Structures(40)_000_BI35_S01_GDD.dgn

BENCH MARK: BM#1 - RR SPIKE IN 2' HICKORY,
23.27' LEFT OF -L- STA. 13+58.27
(20.36' LEFT OF -BL- STA. 7+92.84)
ELEV. 2587.20, NAVD 1988



NOTE:
NO KNOWN UTILITIES.

LOCATION SKETCH

NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR SEISMIC PERFORMANCE ZONE 1.

THE EXISTING STRUCTURE CONSISTING OF 1 @ 20'-6" SPAN, 17'± CLEAR ROADWAY WIDTH, TIMBER FLOOR ON TIMBER JOIST, ON TIMBER CAPS W/ TIMBER POSTS AND SILLS AND LOCATED AT EXISTING CROSSING FOR PROPOSED STRUCTURE, SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE FURTHER DETERIORATE, THIS LOAD LIMITATION MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL REMOVE THE BRIDGE AND SUBMIT PLANS FOR DEMOLITION IN ACCORDANCE WITH ARTICLE 401-2 OF THE STANDARD SPECIFICATIONS.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 18.0 FT± EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

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 COSTS INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT NO. 1 AND END BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 70 TONS PER PILE.

DRIVE PILES AT END BENT NO. 1 AND END BENT NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 120 TONS PER PILE.

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

PILE EXCAVATION IS REQUIRED TO INSTALL PILES AT END BENT NO. 1. EXCAVATE HOLES AT PILE LOCATIONS TO ELEVATION 2568.5 FT. FOR PILE EXCAVATION, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILE EXCAVATION IS REQUIRED TO INSTALL PILES AT END BENT NO. 2. EXCAVATE HOLES AT PILE LOCATIONS TO ELEVATION 2570 FT. FOR PILE EXCAVATION, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

FOR PILE DRIVING CRITERIA, SEE SPECIAL PROVISIONS.

AT THE CONTRACTOR'S OPTION, PRESTRESSED CONCRETE END BENT AND BENT CAPS MAY BE SUBSTITUTED IN PLACE OF THE CAST-IN-PLACE CAPS. THE CONTRACTOR SHALL COORDINATE WITH THE RESIDENT ENGINEER TO RECEIVE REVISED PLANS AND DETAILS FROM THE STRUCTURES MANAGEMENT UNIT. THE REDESIGN AND ANY ADDITIONAL MATERIALS NEEDED WILL BE AT NO ADDITIONAL COST TO THE CONTRACTOR.

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

THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH HEC 18, "EVALUATING SCOUR AT BRIDGE", MAY, 2001.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

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

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

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	PDA TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	3'-0" x 1'-9" PRESTRESSED CONCRETE CORED SLAB UNITS		VERTICAL CONCRETE BARRIER RAIL	PILE EXCAVATION IN SOIL	PILE EXCAVATION NOT IN SOIL	HP 12x53 STEEL PILES		RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	ASBESTOS ASSESSMENT
	LUMP SUM	EACH	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	NO.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	NO.	LIN. FT.	TONS	SQ. YD.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE	LUMP SUM		—	—	LUMP SUM	—	8	320	80.29	—	—	—	—	—	—	LUMP SUM	—
END BENT No. 1	—		LUMP SUM	19.5	—	2399	—	—	—	10	40	5	80	15	17	—	—
END BENT No. 2	—		LUMP SUM	19.5	—	2399	—	—	—	—	50	5	80	17	19	—	—
TOTAL	LUMP SUM	1	LUMP SUM	39.0	LUMP SUM	4798	8	320	80.29	10	90	10	160	32	36	LUMP SUM	LUMP SUM

PROJECT NO. 17BP.14.R.62

JACKSON COUNTY

STATION: 13+09.50 -L-

SHEET 2 OF 2 REPLACES BRIDGE NO. 135

AECOM
AECOM TECHNICAL SERVICES, INC.
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AECOM License No. F-0342

7/5/2016

NORTH CAROLINA PROFESSIONAL SEAL 030474 ENGINEER JOHN C. MORRISON

Document ID: A2FDE1420CB74AB...
John C. Morrison

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING FOR BRIDGE ON SR 1740 OVER MOSES CREEK BETWEEN SR 1737 & DEAD END ROAD

21'-10" CLEAR ROADWAY - 120° SKEW

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

DRAWN BY : MTB DATE : 06/16
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LOAD AND RESISTANCE FACTOR RATING (LRFD) 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						
							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 RATING		HL-93(Inv)	N/A	1	1.352	--	1.75	0.252	1.95	40′	EL	19.423	0.653	**1.35**	40′	EL	**7.769**	0.80	0.252	1.72	40′	EL	19.423	
		HL-93(Opr)	N/A	--	1.753	--	1.35	0.252	2.52	40′	EL	19.423	0.653	1.75	40′	EL	7.769	N/A	--	--	--	--	--	
		HS-20(Inv)	36.000	2	1.544	55.583	1.75	0.252	2.45	40′	EL	19.423	0.653	**1.54**	40′	EL	**7.769**	0.80	0.252	2.14	40′	EL	19.423	
		HS-20(Opr)	36.000	--	2.001	72.053	1.35	0.252	3.17	40′	EL	19.423	0.653	2	40′	EL	7.769	N/A	--	--	--	--	--	
LEGAL LOAD RATING	SV	SNSH	13.500	--	3.929	53.037	1.4	0.252	5.64	40′	EL	19.423	0.653	3.93	40′	EL	7.769	0.80	0.252	3.99	40′	EL	19.423	
		SNGARBS2	20.000	--	2.985	59.708	1.4	0.252	4.63	40′	EL	15.538	0.653	2.99	40′	EL	7.769	0.80	0.252	3.28	40′	EL	19.423	
		SNAGRIS2	22.000	--	2.852	62.746	1.4	0.252	4.53	40′	EL	15.538	0.653	2.85	40′	EL	7.769	0.80	0.252	3.23	40′	EL	15.538	
		SNCOTTS3	27.250	--	1.98	53.947	1.4	0.252	2.82	40′	EL	19.423	0.653	1.98	40′	EL	7.769	0.80	0.252	1.99	40′	EL	19.423	
		SNAGGRS4	34.925	--	1.782	62.222	1.4	0.252	2.54	40′	EL	19.423	0.653	1.78	40′	EL	7.769	0.80	0.252	1.79	40′	EL	19.423	
		SNS5A	35.550	--	1.746	62.059	1.4	0.252	2.47	40′	EL	19.423	0.653	1.89	40′	EL	7.769	0.80	0.252	1.75	40′	EL	19.423	
		SNS6A	39.950	--	1.662	66.381	1.4	0.252	2.35	40′	EL	19.423	0.653	1.79	40′	EL	7.769	0.80	0.252	1.66	40′	EL	19.423	
		SNS7B	42.000	--	1.585	66.556	1.4	0.252	2.24	40′	EL	19.423	0.653	1.86	40′	EL	7.769	0.80	0.252	1.58	40′	EL	19.423	
	TTST	TNAGRIT3	33.000	--	2.045	67.476	1.4	0.252	2.89	40′	EL	19.423	0.653	2.07	40′	EL	7.769	0.80	0.252	2.04	40′	EL	19.423	
		TNT4A	33.075	--	1.951	64.52	1.4	0.252	2.93	40′	EL	19.423	0.653	1.95	40′	EL	7.769	0.80	0.252	2.07	40′	EL	19.423	
		TNT6A	41.600	--	1.757	73.106	1.4	0.252	2.49	40′	EL	19.423	0.653	1.91	40′	EL	7.769	0.80	0.252	1.76	40′	EL	19.423	
		TNT7A	42.000	--	1.795	75.386	1.4	0.252	2.55	40′	EL	19.423	0.653	1.79	40′	EL	7.769	0.80	0.252	1.80	40′	EL	19.423	
		TNT7B	42.000	--	1.729	72.638	1.4	0.252	2.61	40′	EL	19.423	0.653	1.73	40′	EL	7.769	0.80	0.252	1.84	40′	EL	19.423	
		TNAGRIT4	43.000	--	1.661	71.441	1.4	0.252	2.53	40′	EL	15.538	0.653	1.66	40′	EL	7.769	0.80	0.252	1.79	40′	EL	19.423	
		TNAGT5A	45.000	--	1.659	74.644	1.4	0.252	2.35	40′	EL	19.423	0.653	1.77	40′	EL	7.769	0.80	0.252	1.66	40′	EL	19.423	
		TNAGT5B	45.000	3	1.568	70.561	1.4	0.252	2.28	40′	EL	19.423	0.653	**1.57**	40′	EL	**7.769**	0.80	0.252	1.61	40′	EL	19.423	

LOAD FACTORS:

	LIMIT STATE	γ_{DC}	γ_{DW}
DESIGN LOAD RATING FACTORS	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

FOR SPAN 'A'

PROJECT NO. 17BP.14.R.62

JACKSON COUNTY

STATION: 13+09.50 -L-

AECOM
AECOM TECHNICAL SERVICES, INC.
701 CORPORATE CENTER DRIVE, SUITE 475
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7/5/2016

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 030474 JOHN C. MORRISON

John C. Morrison

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

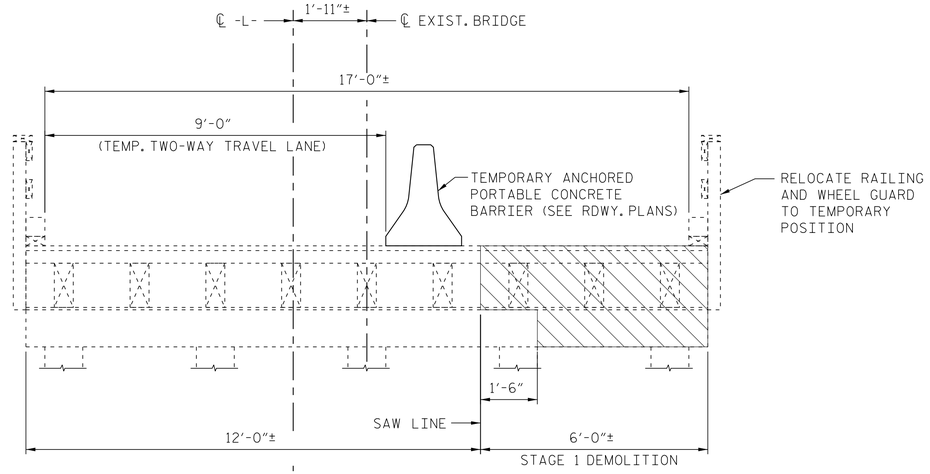
LRFR SUMMARY FOR 40′ CORED SLAB UNIT 60° SKEW & 120° SKEW

(NON-INTERSTATE TRAFFIC)

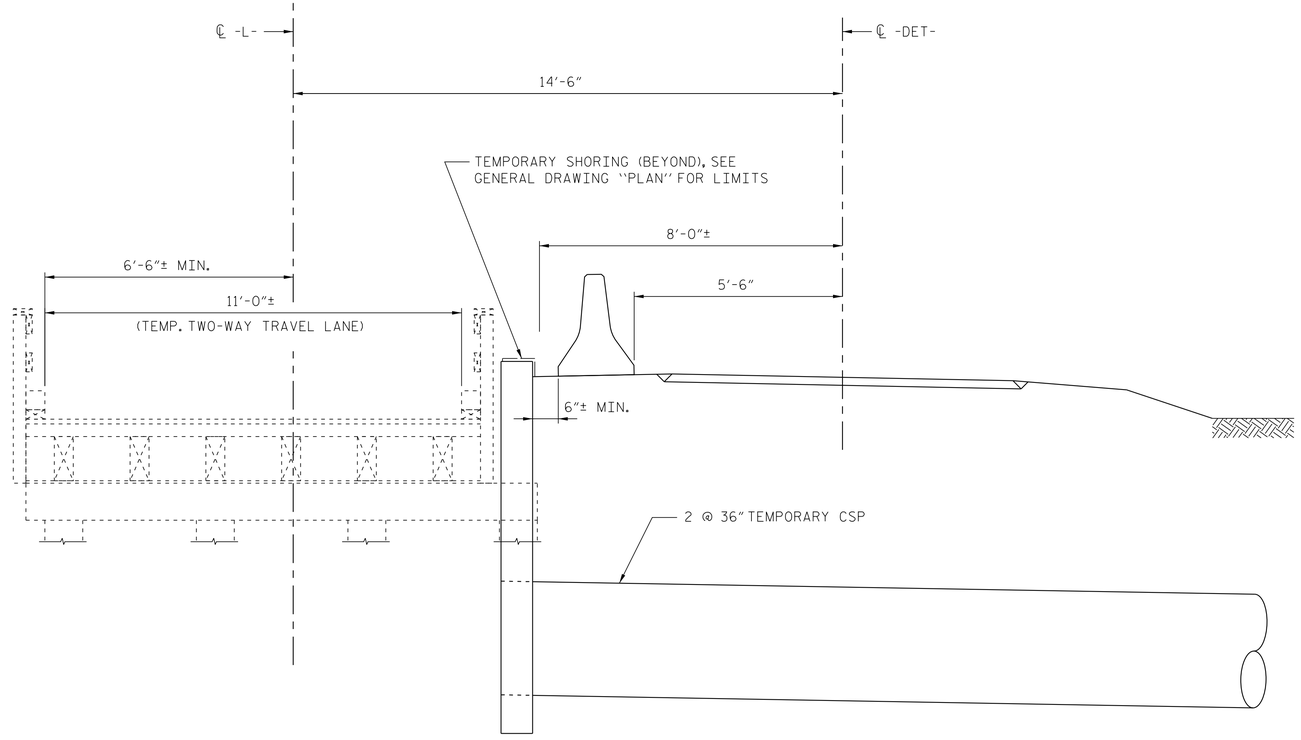
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-03
1			3			TOTAL SHEETS
2			4			

ASSEMBLED BY :	MTB	DATE :	06/16
CHECKED BY :	JCM	DATE :	06/16
DRAWN BY : CVC	6/10		
CHECKED BY : DNS	6/10		

STD. NO. 21LRFR1_60&120S_40L



STAGE 1



STAGE 2

NOTES:

CONTRACTOR TO VERIFY LOCATION OF EXISTING BRIDGE, INCLUDING LOCATION OF EXISTING TIMBER PILES. EXISTING PILE NUMBER AND LOCATION SHOWN ARE APPROXIMATE. STAGED DEMOLITION OF EXISTING SUBSTRUCTURE SHALL BE DETERMINED BY CONTRACTOR AND APPROVED BY THE ENGINEER.

LOCATION OF TEMPORARY SHORING SHOWN IS APPROXIMATE. EXACT LOCATION OF TEMPORARY SHORING SHALL BE DETERMINED BY CONTRACTOR.

DIMENSIONS ARE NORMAL TO ℄ BRIDGE UNLESS OTHERWISE NOTED.

SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY STRUCTURE AT STATION 13+09.50 -L-.

SEE TRAFFIC CONTROL PLANS FOR LOCATION AND PAY LIMITS OF THE ANCHORED PORTABLE CONCRETE BARRIER.

PROJECT NO. 17BP.14.R.62

JACKSON COUNTY

STATION: 13+09.50 -L-

SHEET 1 OF 4

AECOM
AECOM TECHNICAL SERVICES, INC.
701 CORPORATE CENTER DRIVE, SUITE 475
RALEIGH, NC 27607
(919) 854-6200 www.aecom.com
AECOM License No. F-0342

7/5/2016

NORTH CAROLINA PROFESSIONAL SEAL 030474 ENGINEER JOHN C. MORRICON

Digitally signed by John C. Morricon
A2F0E1420E0F4AE...

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE CONSTRUCTION STAGING FOR MAINTENANCE OF TRAFFIC

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-04
						TOTAL SHEETS

DRAWN BY : MTB DATE : 06/16
CHECKED BY : JCM DATE : 06/16

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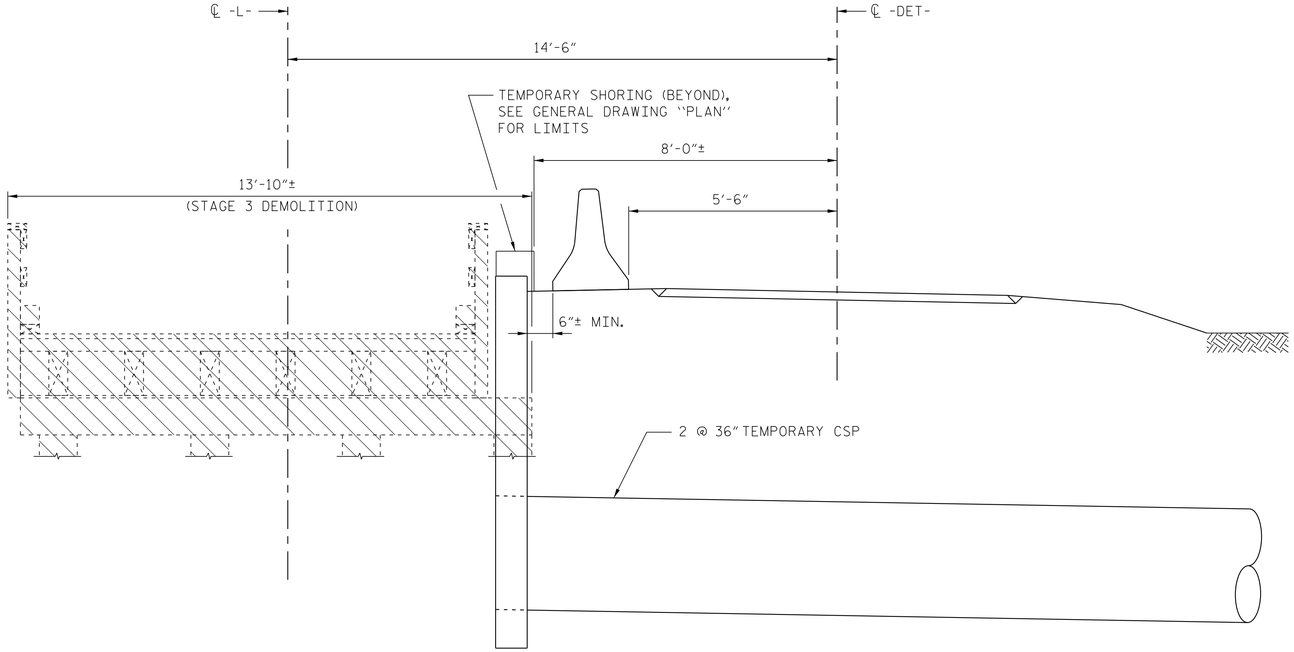

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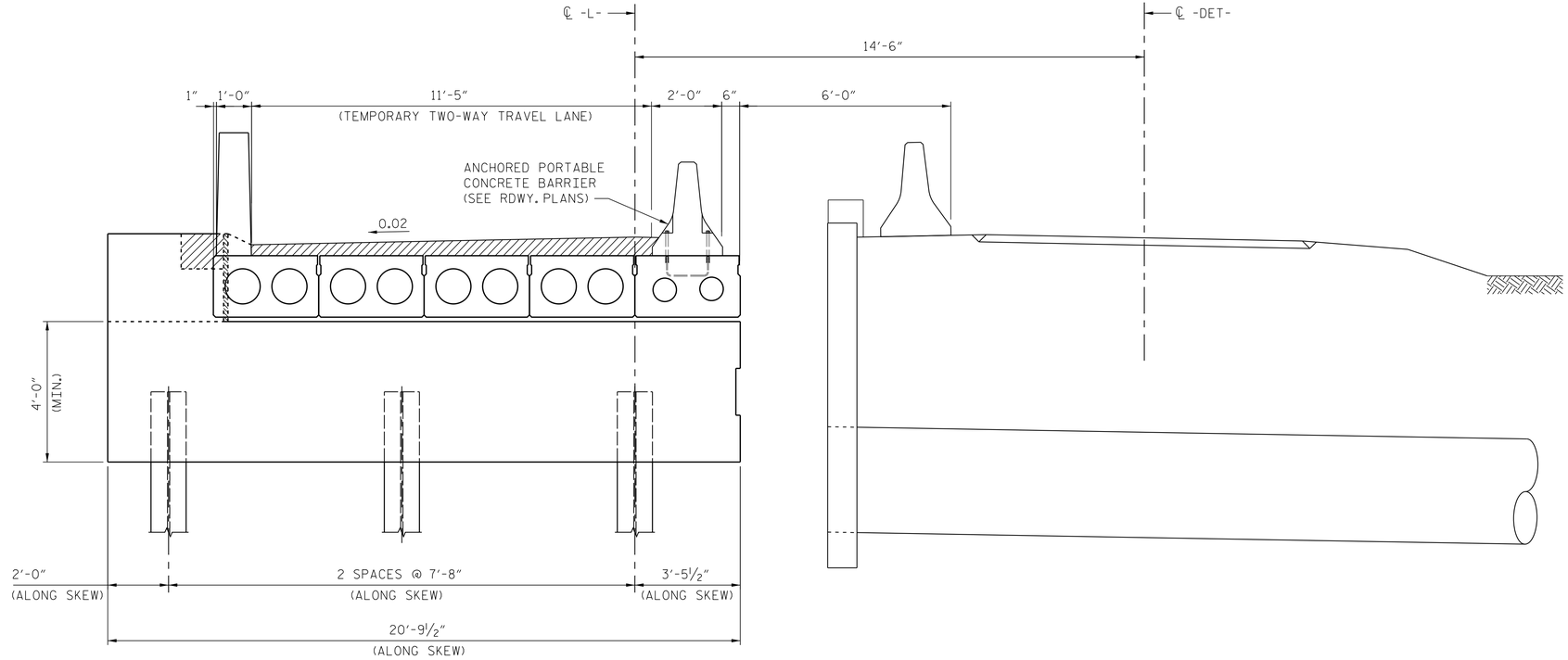

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JACKSON COUNTY

STATION: 13+09.50 -L-

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NORTH CAROLINA PROFESSIONAL SEAL 030474 ENGINEER JOHN C. MORRISON

John C. Morrison

A2FDE1420B2F4AB...

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE CONSTRUCTION STAGING FOR MAINTENANCE OF TRAFFIC

REVISIONS						SHEET NO.
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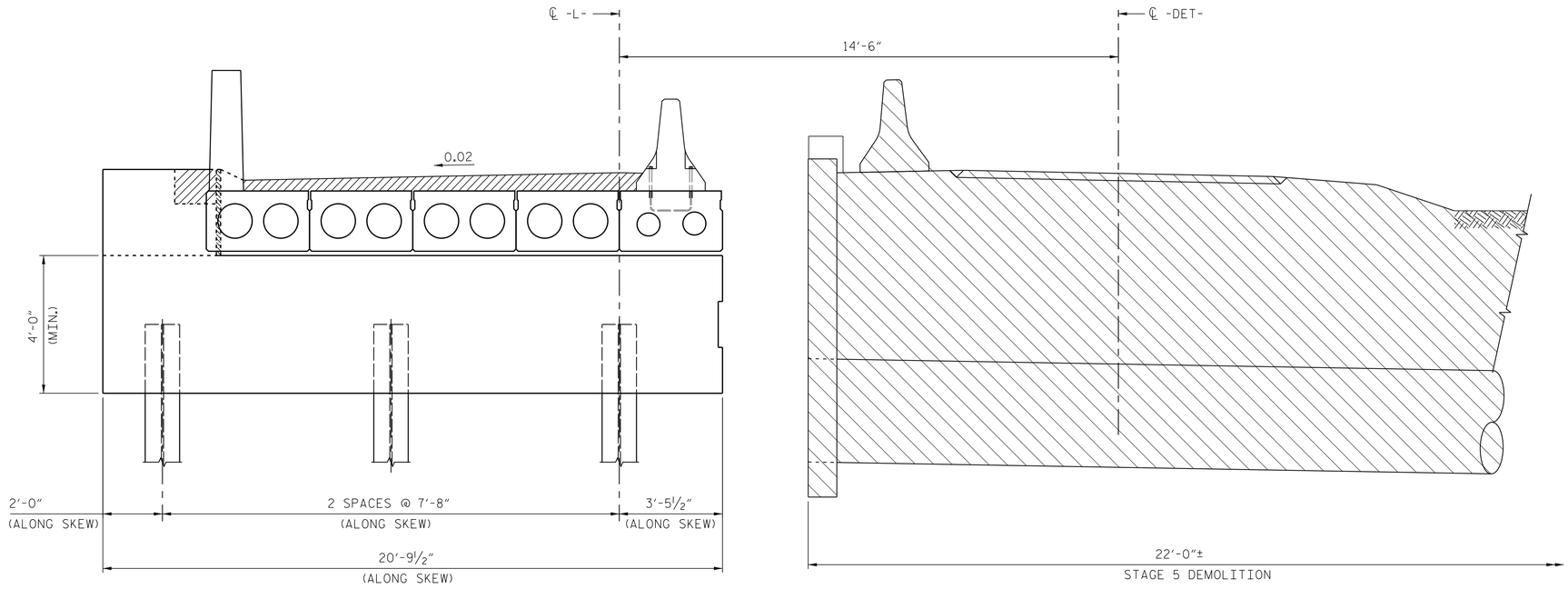

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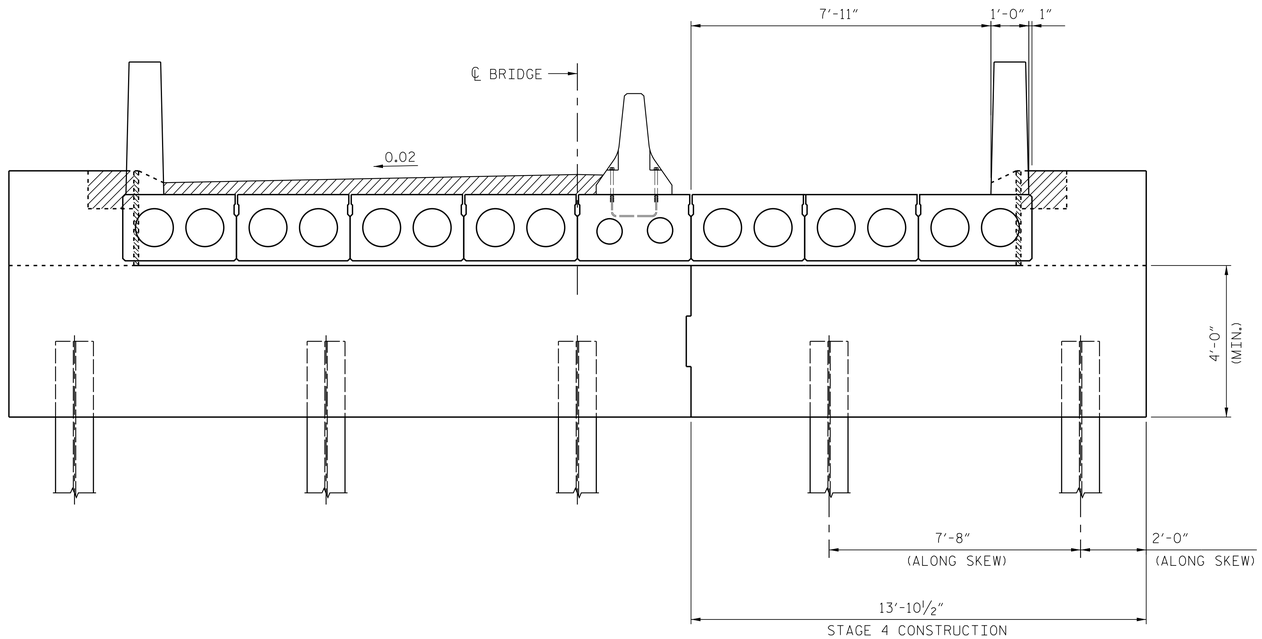

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PROJECT NO. 17BP.14.R.62

JACKSON COUNTY

STATION: 13+09.50 -L-

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7/5/2016

NORTH CAROLINA PROFESSIONAL SEAL 030474 ENGINEER JOHN C. MORRISON

John C. Morrison

A2FDE142C82F4AB...

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE CONSTRUCTION STAGING FOR MAINTENANCE OF TRAFFIC

REVISIONS						SHEET NO.
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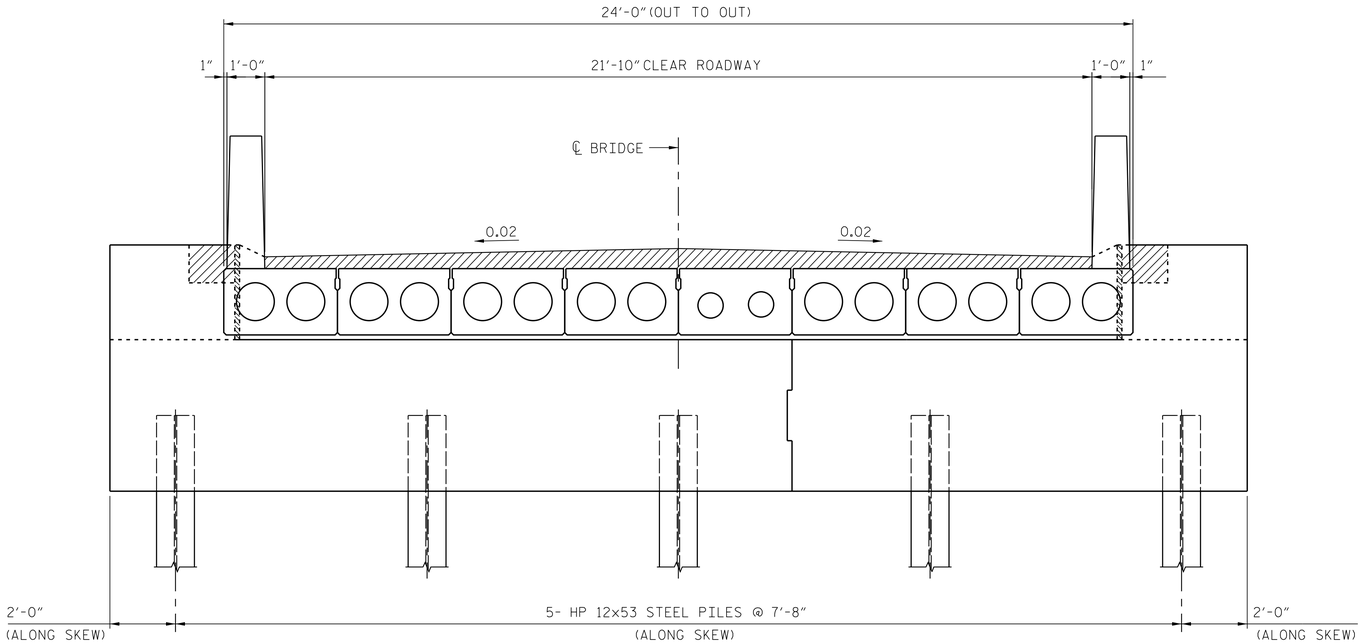

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John C. Morrison

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE CONSTRUCTION STAGING FOR MAINTENANCE OF TRAFFIC

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-07
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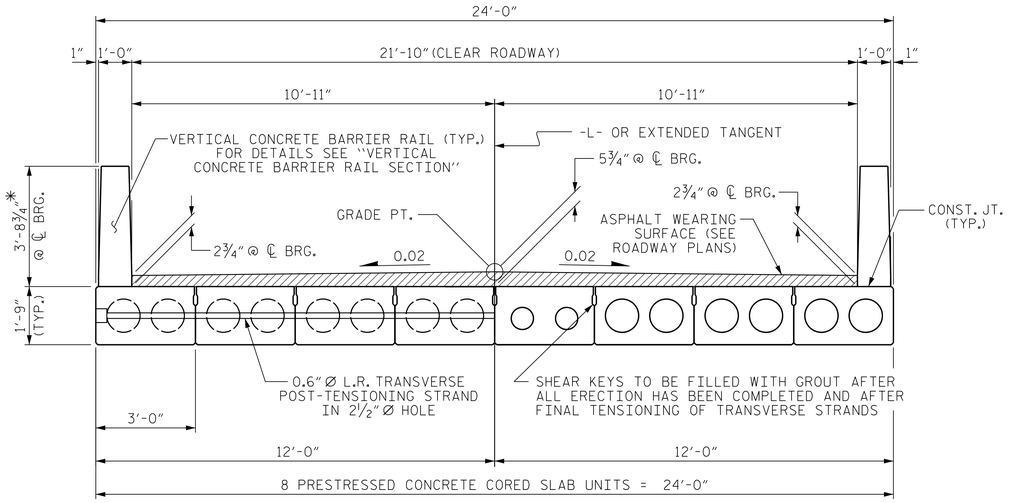
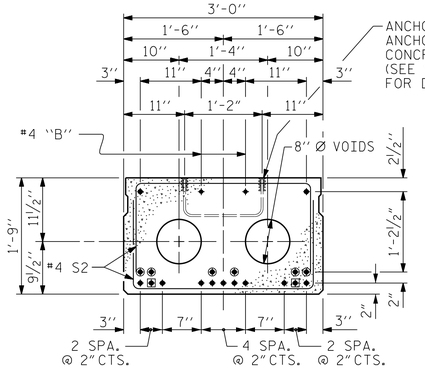


HALF SECTION AT INTERMEDIATE DIAPHRAGMS

HALF SECTION THROUGH VOIDS

TYPICAL SECTION

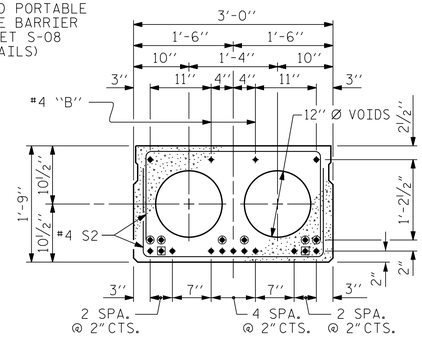
* - THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.



INTERIOR SLAB SECTION

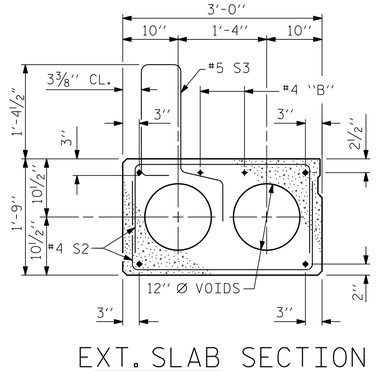
(13 STRANDS REQUIRED)

(CORED SLAB UNIT #5 ONLY)



INTERIOR SLAB SECTION

(13 STRANDS REQUIRED)



EXT. SLAB SECTION

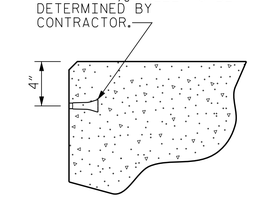
(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)

0.6" Ø LOW RELAXATION STRAND LAYOUT

◉ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 2'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

◉ OPTIONAL FULL LENGTH DEBONDED STRANDS. THESE STRANDS ARE NOT REQUIRED. IF THE FABRICATOR CHOOSES TO INCLUDE THESE STRANDS IN THE CORED SLAB UNIT, THE STRANDS SHALL BE DEBONDED FOR THE FULL LENGTH OF THE UNIT AT NO ADDITIONAL COST. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND



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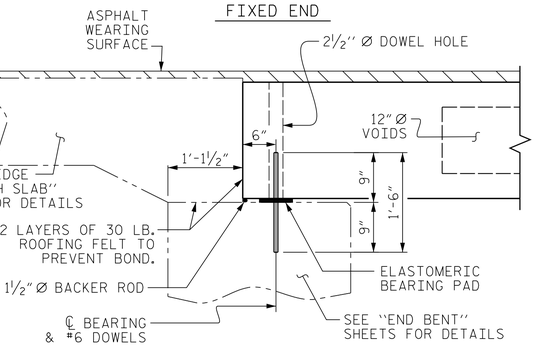
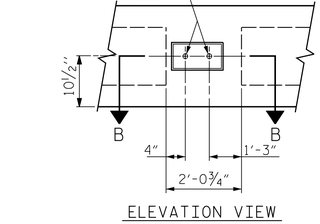
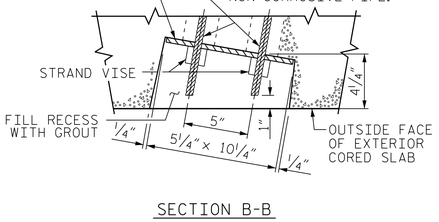


SECTION AT END BENT

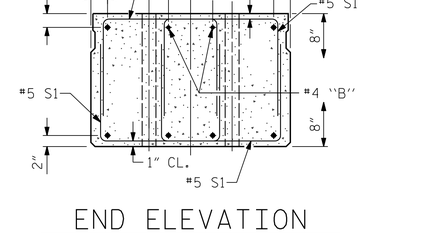


ELEVATION VIEW



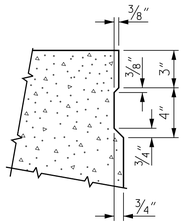
SECTION B-B

CORED SLAB UNIT #1



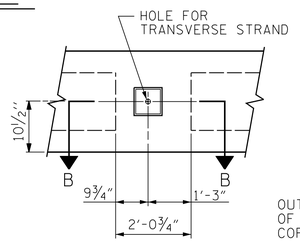
END ELEVATION

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

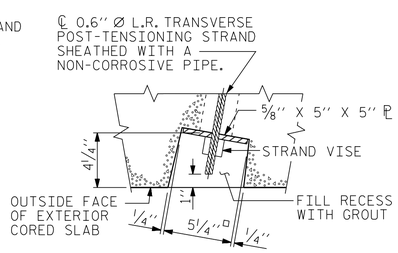


SHEAR KEY DETAIL

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

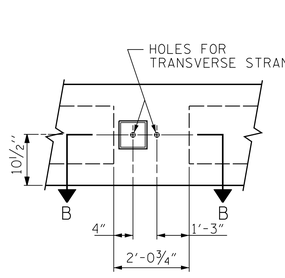


ELEVATION VIEW

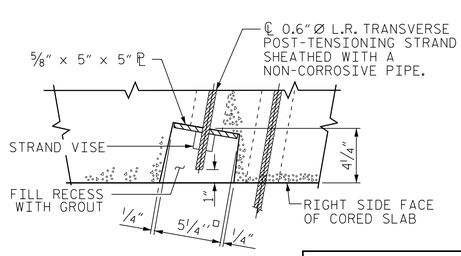


SECTION B-B

CORED SLAB UNIT #8



ELEVATION VIEW



SECTION B-B

CORED SLAB UNIT #5

GROUTED RECESS AT END OF POST-TENSIONED STRAND-CORED SLABS

PROJECT NO. 17BP.14.R.62

JACKSON COUNTY

STATION: 13+09.50 -L-

SHEET 1 OF 4

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7/5/2016

NORTH CAROLINA PROFESSIONAL SEAL 030474 ENGINEER JOHN C. MORRISON

John C. Morrison

A2FDE142C82F4AB...

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLAB UNIT 120° SKEW

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

MODIFIED STD. NO. 21"PCS2_27_120S

ASSEMBLED BY :	MTB	DATE :	06/16
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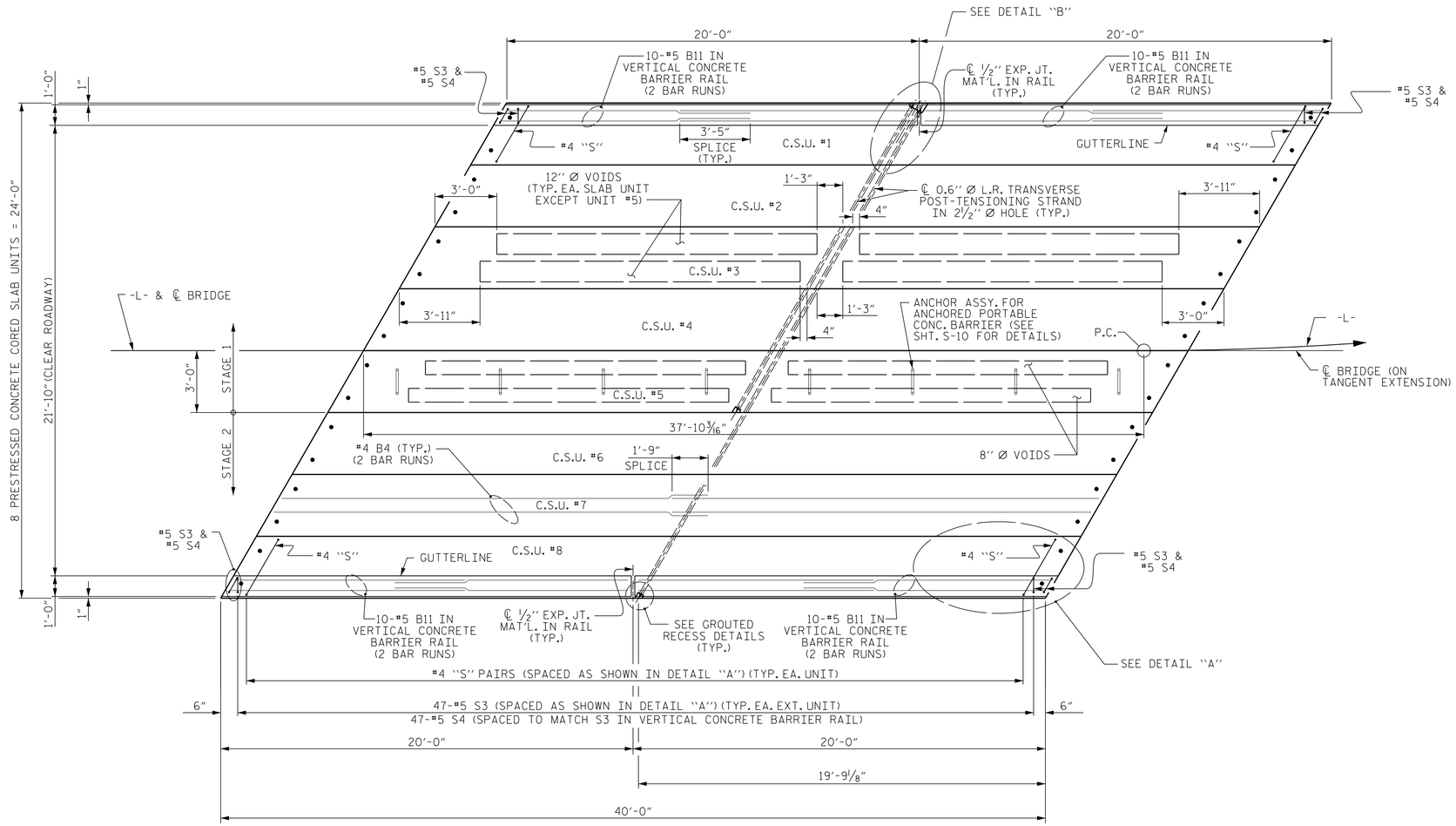
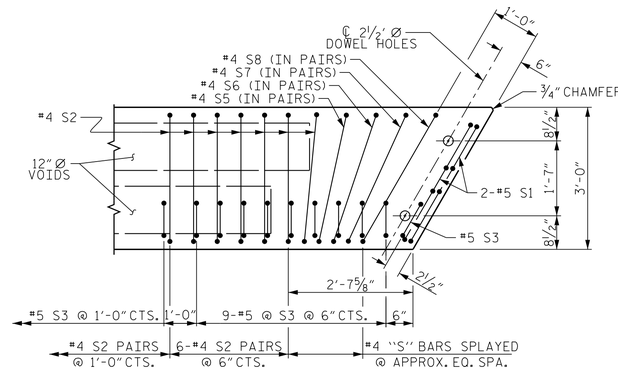
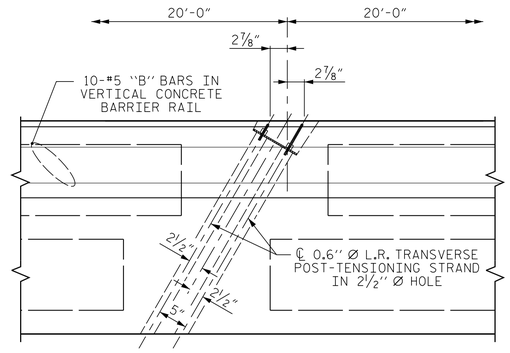


PLAN OF UNIT



DETAIL "A"

NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.



DETAIL "B"

#4 S11 BARS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO GROUTED RECESS AND 2 1/2" Ø TRANSVERSE POST-TENSIONING STRAND HOLES

PROJECT NO. 17BP.14.R.62

JACKSON COUNTY

STATION: 13+09.50 -L-

SHEET 2 OF 4

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7/5/2016

NORTH CAROLINA PROFESSIONAL SEAL 030474 ENGINEER JOHN C. MORRISON

Digitally signed by John C. Morrison
A2FDE142C62F4AB...

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 40' UNIT 21'-10" CLEAR ROADWAY 120° SKEW

REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			

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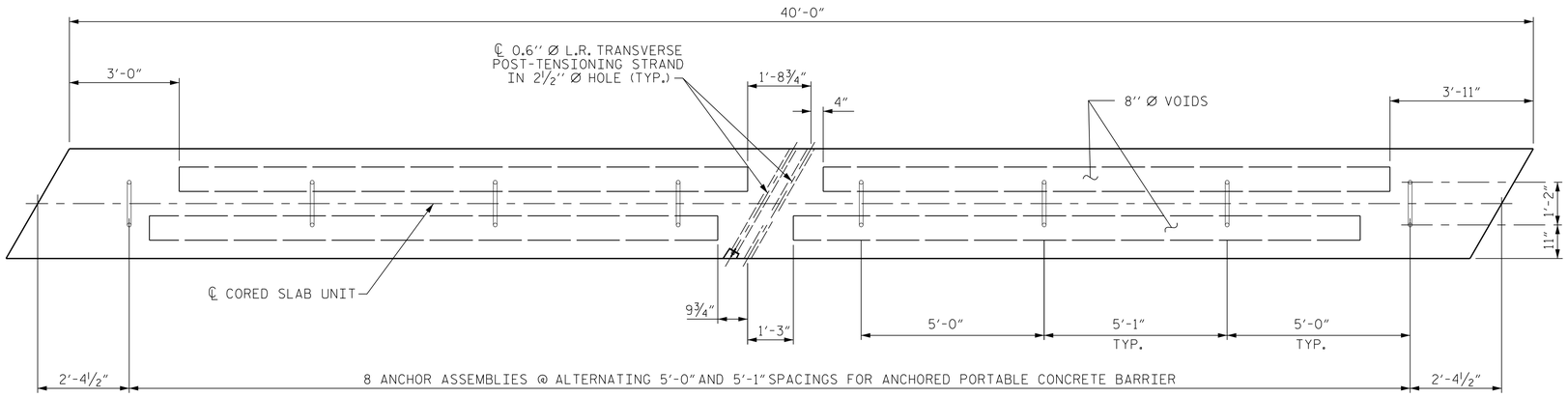
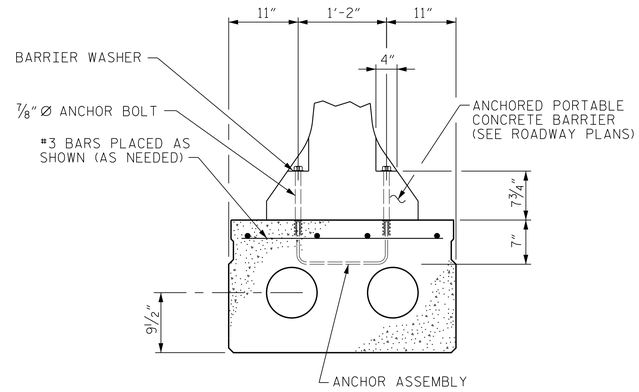


PLAN OF CORED SLAB UNIT #5

(SHOWING LOCATION OF ANCHOR ASSEMBLIES)



SECTION - CORED SLAB UNIT #5

(SHOWING PLACEMENT OF ANCHOR ASSEMBLY)

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

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- ⅞" Ø x 1'-0" ANCHOR BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. ANCHOR BOLTS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS MAY BE USED AS AN ALTERNATE FOR THE ⅞" Ø x 1'-0" GALVANIZED BOLTS. 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 DETAIL ARE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 P.S.I.

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

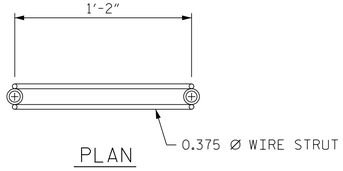
THE COST OF THE ANCHOR ASSEMBLY COMPLETE IN PLACE, SHALL BE INCLUDED, AS APPLICABLE, IN THE UNIT CONTRACT PRICE BID FOR 3'-0" x 1'-9" PRESTRESSED CONCRETE CORED SLAB OR LUMP SUM FOR THE APPROACH SLABS.

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

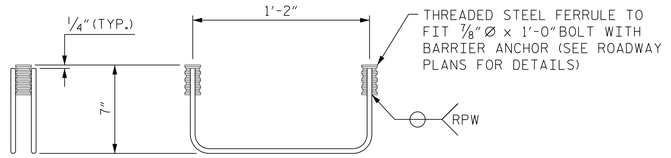
AT THE CONTRACTOR'S OPTION, FERRULES WITH OPEN OR CLOSED ENDS MAY BE USED.

FOR 4" x 3½" x ½" BARRIER WASHER TO BE USED WITH THE ANCHOR ASSEMBLY, SEE ROADWAY PLANS.

PAYMENT FOR THE ANCHORED PORTABLE CONCRETE BARRIER AND BARRIER WASHER ARE INCLUDED IN THE TRAFFIC CONTROL PLANS.



PLAN



SIDE VIEW ELEVATION

ANCHOR ASSEMBLY FOR ANCHORED PORTABLE CONCRETE BARRIER

(8 ASSEMBLIES REQUIRED IN CORED SLAB UNIT #5)
(4 ASSEMBLIES REQUIRED IN APPROACH SLABS)

DRAWN BY : MTB DATE : 06/16
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NORTH CAROLINA PROFESSIONAL SEAL 030474 ENGINEER JOHN C. MORRISON

Docusigned by: John C. Morrison A2FDE142C82F4AB...

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

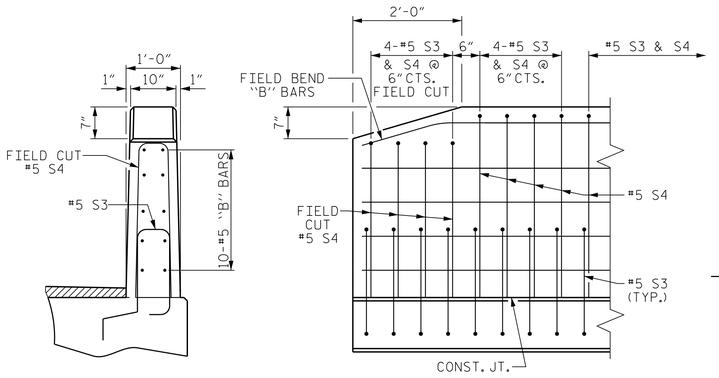
3'-0'' X 1'-9'' PRESTRESSED CONCRETE CORED SLAB UNIT 120° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
						TOTAL SHEETS

PROJECT NO. 17BP.14.R.62
JACKSON **COUNTY**
STATION: 13+09.50 -L-

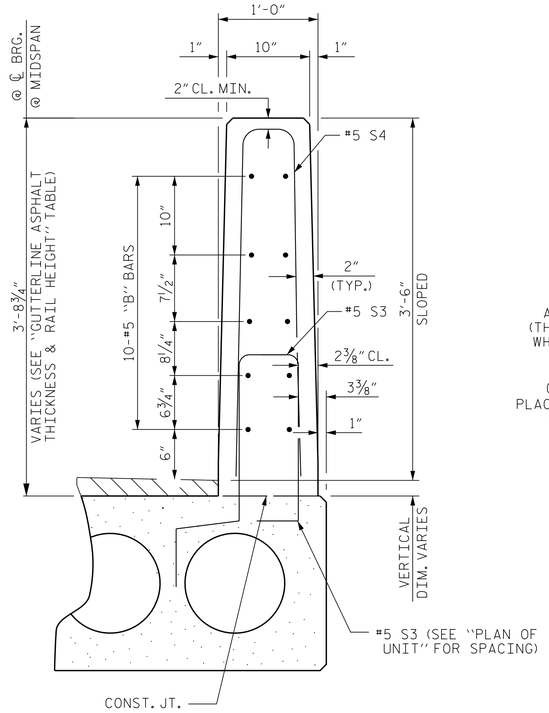
SHEET 3 OF 4

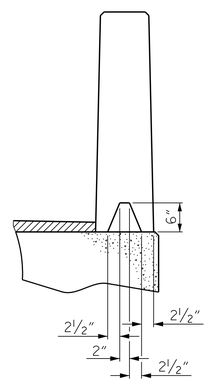
CORED SLABS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
40′ UNIT			
EXTERIOR C.S.	2	40′-0″	80′-0″
INTERIOR C.S.	6	40′-0″	240′-0″
TOTAL	8	40′-0″	320′-0″



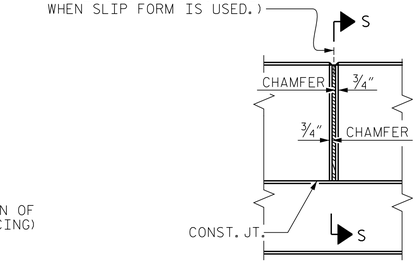
END VIEW SIDE VIEW

END OF RAIL DETAILS



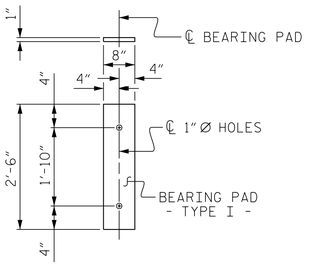


SECTION S-S
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)



ELEVATION AT EXPANSION JOINTS

VERTICAL CONCRETE BARRIER RAIL SECTION

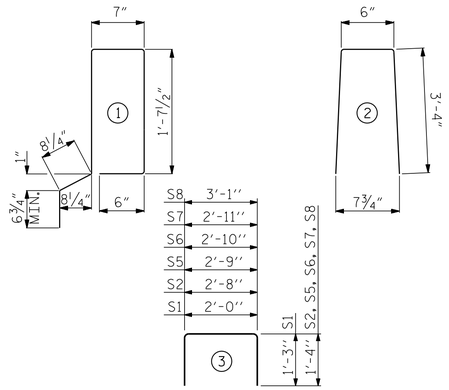


FIXED END
(TYPE I - 16 REQ′D)

ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS.

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

BILL OF MATERIAL FOR ONE 40′ CORED SLAB UNIT

				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B4	4	#4	STR	20′-8″	55	20′-9″	55
S1	8	#5	3	4′-6″	38	4′-6″	38
S2	82	#4	3	5′-4″	292	5′-4″	292
✳ S3	50	#5	1	5′-7″	291		
S5	4	#4	3	5′-5″	14	5′-5″	14
S6	4	#4	3	5′-6″	15	5′-6″	15
S7	4	#4	3	5′-7″	15	5′-7″	15
S8	4	#4	3	5′-9″	15	5′-9″	15
REINFORCING STEEL			LBS.		444		444
✳ EPOXY COATED REINFORCING STEEL			LBS.		291		
5000 P.S.I. CONCRETE			CU. YDS.		5.9		5.9
0.6″Ø L.R. STRANDS			No.		13		13

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT

21′-10″CLEAR ROADWAY	ASPHALT OVERLAY THICKNESS	RAIL HEIGHT
	℄ MID-SPAN	℄ MID-SPAN
	NORMAL CROWN SECTION	
40′ UNITS	2″	3′-8″

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL

BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
	40′ UNIT					
✳ B11	80	80	#5	STR	11′-9″	980
✳ S4	100	100	#5	2	7′-2″	747
✳ EPOXY COATED REINFORCING STEEL				LBS.		1727
CLASS AA CONCRETE				CU.YDS.		10.2
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.		80.29

DEAD LOAD DEFLECTION AND CAMBER	
	3′-0″ x 1′-9″
40′ CORED SLAB UNIT	0.6″Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	⅞″ ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	⅛″ ↓
FINAL CAMBER	¾″ ↑

** INCLUDES FUTURE WEARING SURFACE

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.

ALL REINFORCING STEEL IN THE VERTICAL CONCRETE BARRIER RAIL 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 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.

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
40′ UNITS	4000

PROJECT NO. 17BP.14.R.62

JACKSON COUNTY

STATION: 13+09.50 -L-

SHEET 4 OF 4

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7/5/2016

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John C. Morrison
A2FDE1420282F4AB...

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3′-0″ X 1′-9″ PRESTRESSED CONCRETE CORED SLAB UNIT 120° SKEW

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

MODIFIED STD. NO. 21"PCS3_27_120S

ASSEMBLED BY :	MTB	DATE :	06/16
CHECKED BY :	JCM	DATE :	06/16
DRAWN BY : DGE	5/09	REV. 11/14	MAA/TMG
CHECKED BY : BCH	6/09		

DATE: 7/5/2016
TIME: 3:59:58 PM

USER: mxrrisonc
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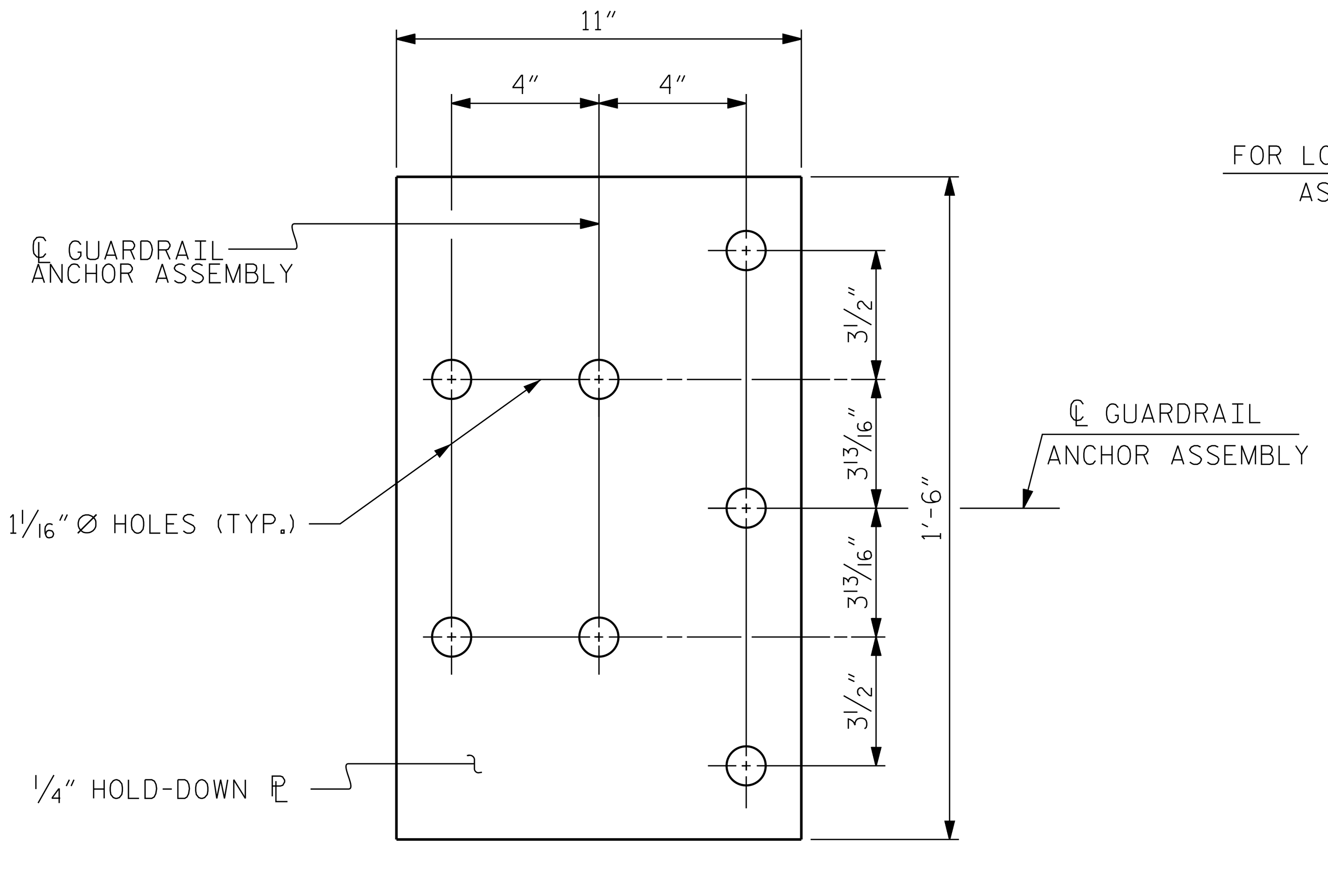
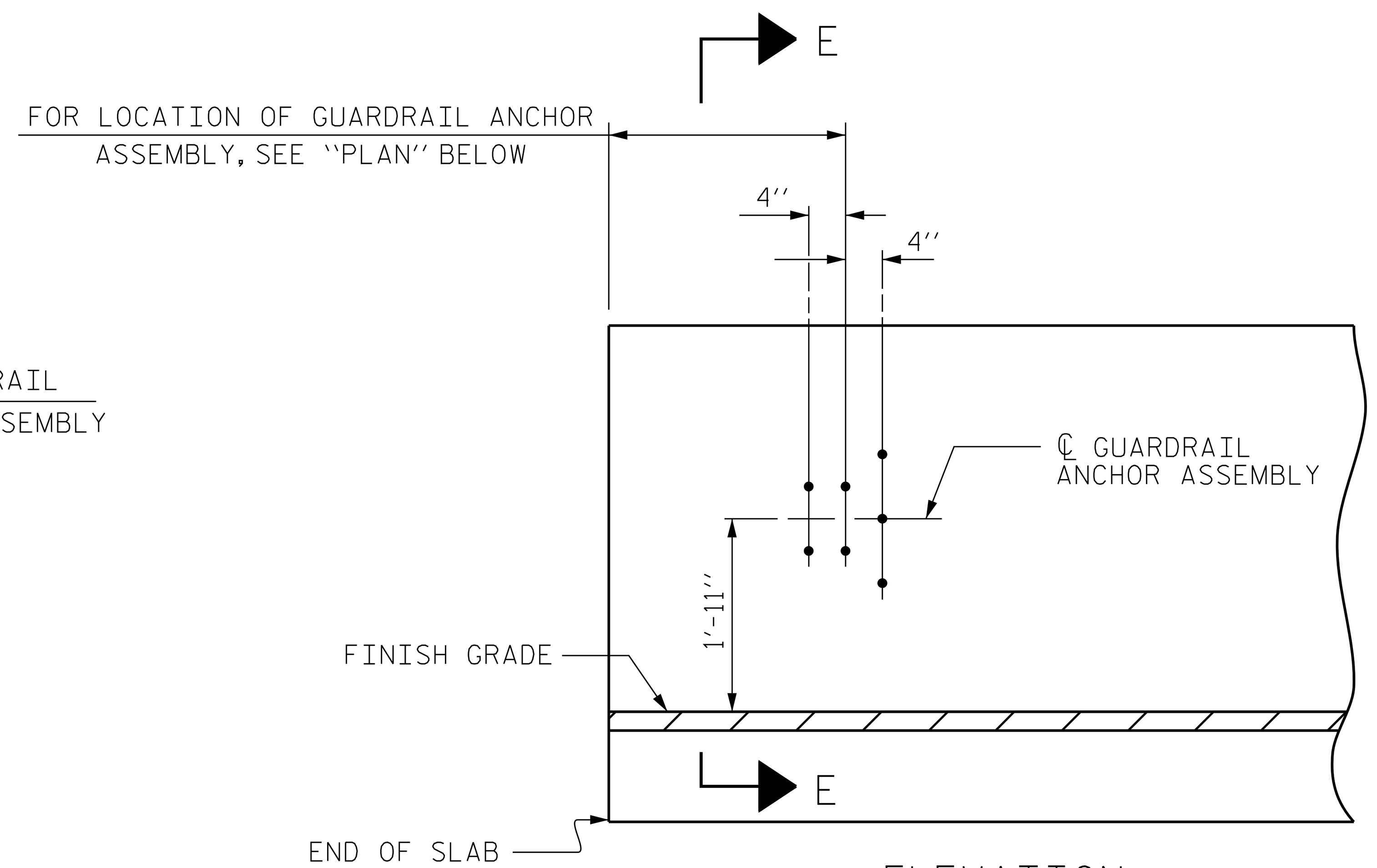


PLAN



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.)

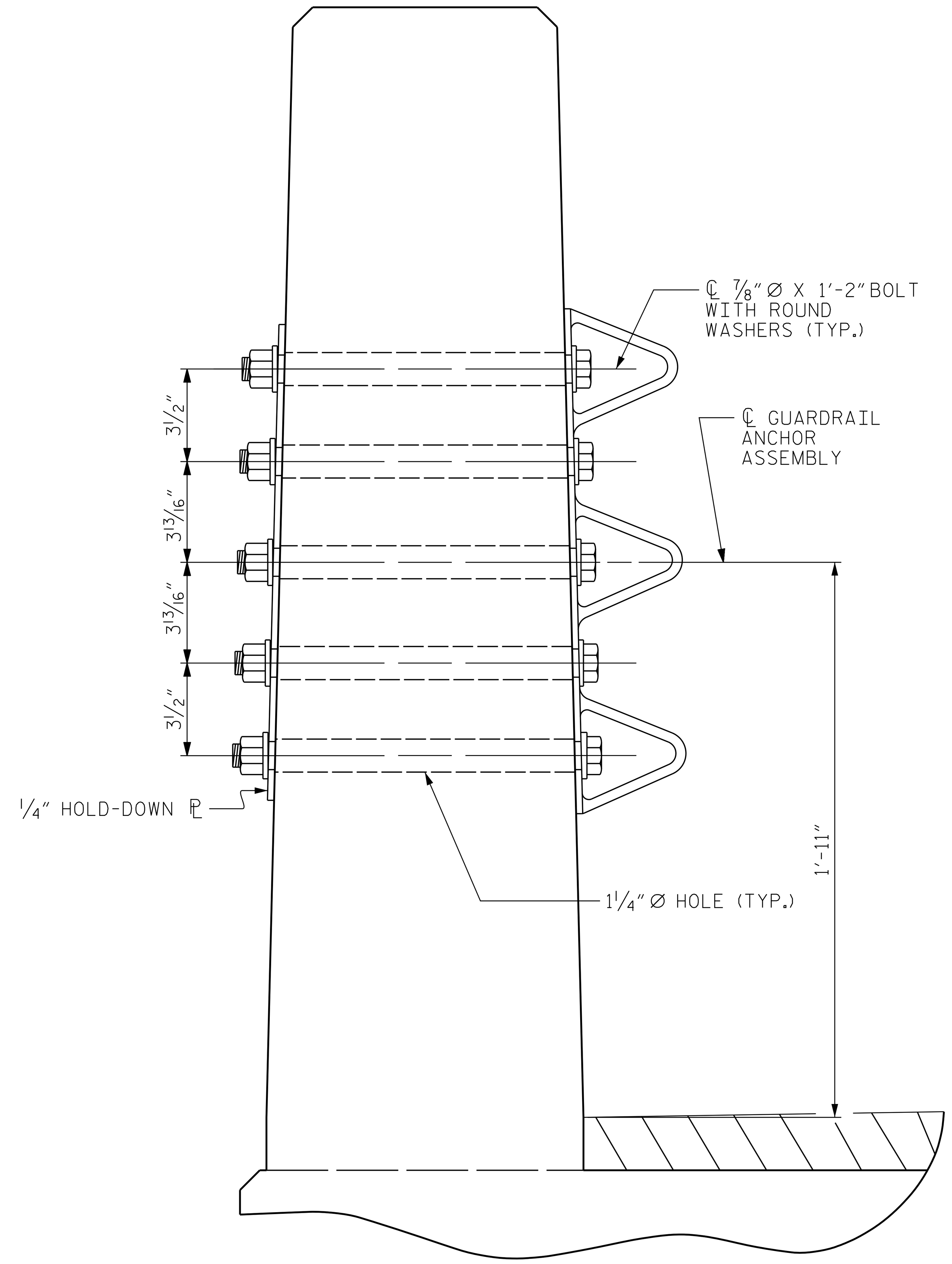
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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.

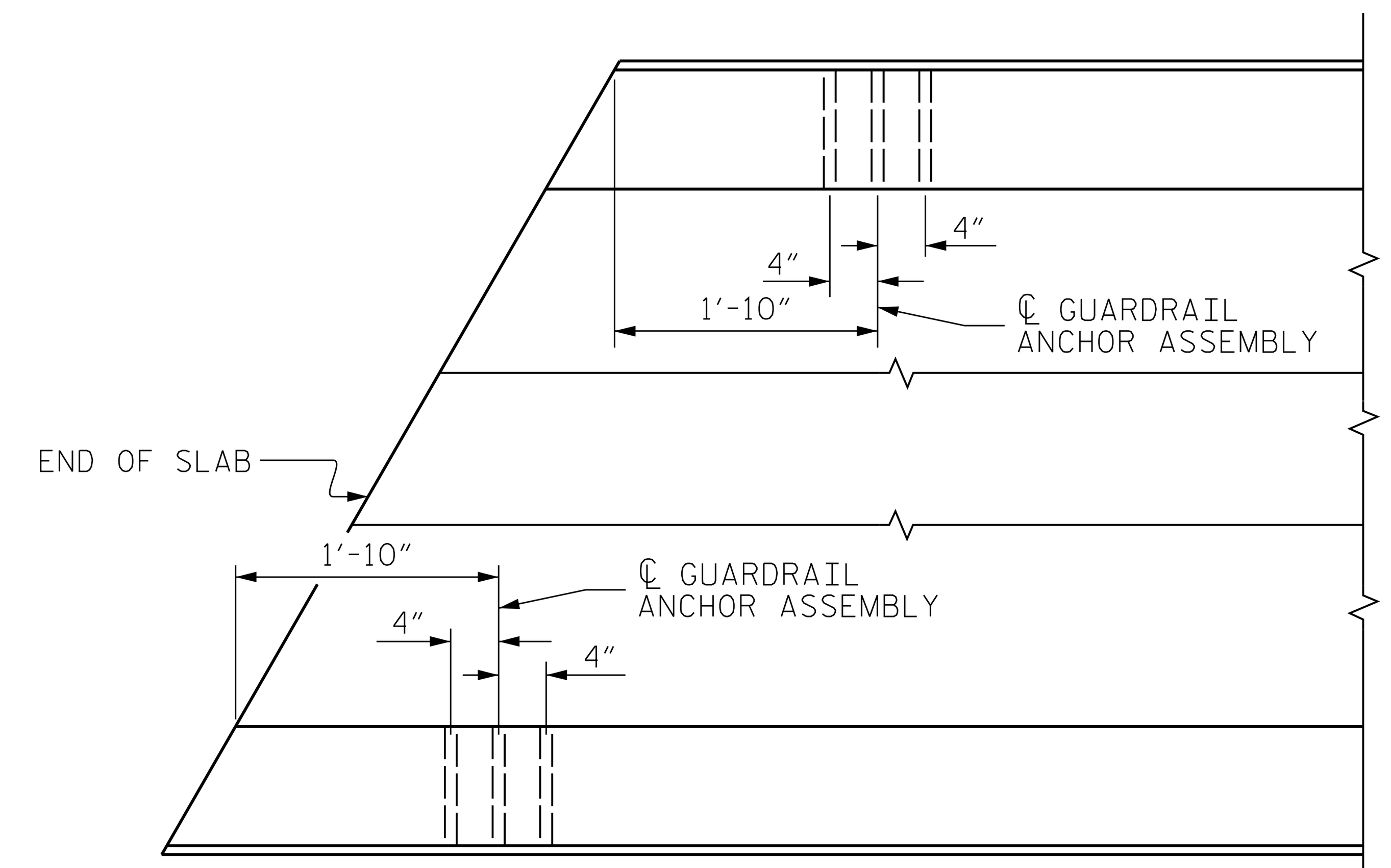
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

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.62

JACKSON COUNTY

STATION: 13+09.50 -L-

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7/5/2016

NORTH CAROLINA PROFESSIONAL SEAL 030474 ENGINEER JOHN C. MORRISON

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
GUARDRAIL ANCHORAGE FOR VERTICAL CONCRETE BARRIER RAIL

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

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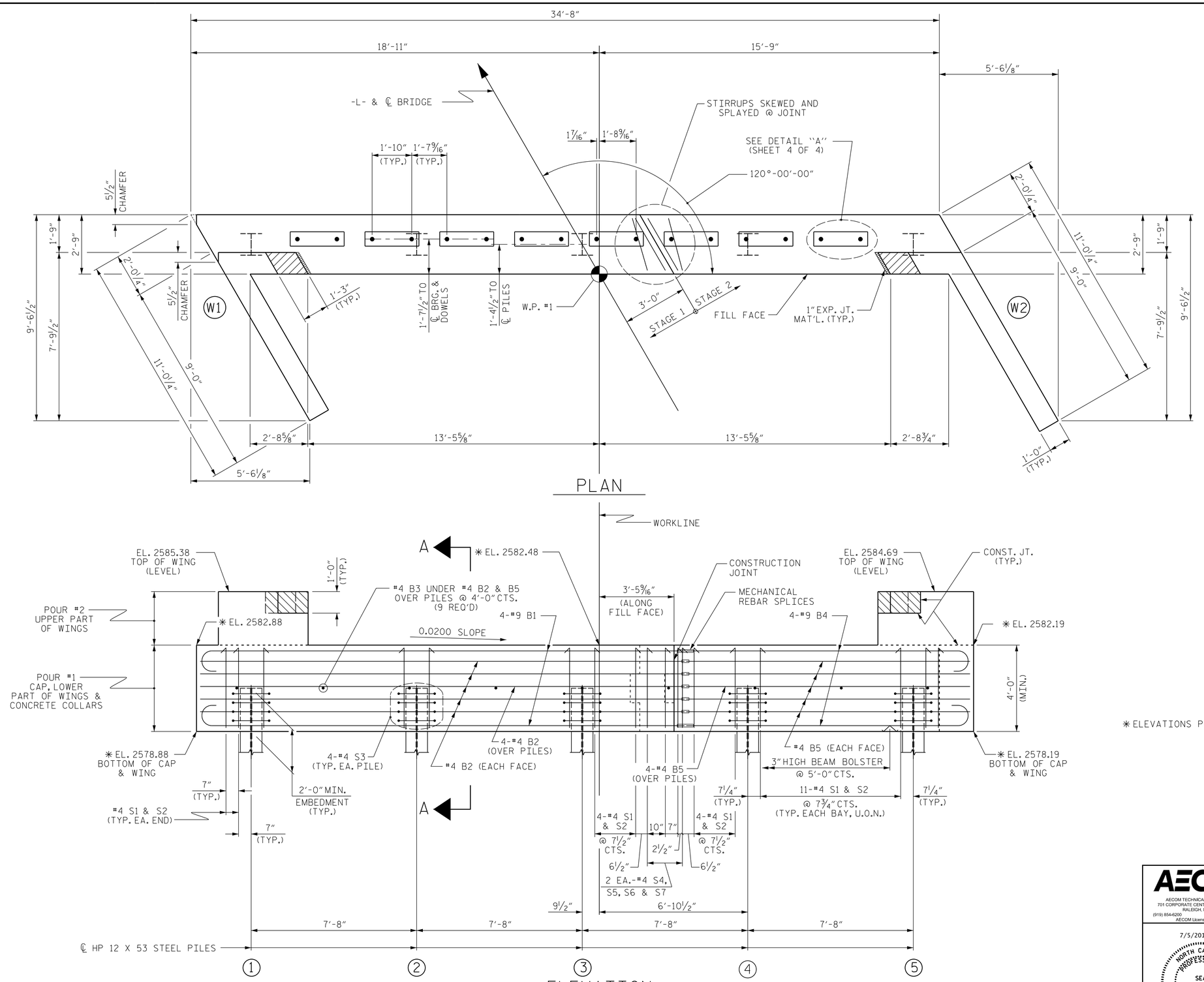
ASSEMBLED BY :	MTB	DATE :	06/16
CHECKED BY :	JCM	DATE :	06/16
DRAWN BY : MAA 5/10		REV. 12/5/11	MAA/GM
CHECKED BY : GM 5/10		REV. 6/13	MAA/GM
		REV. 1/15	MAA/TMG

STD. NO. GRA3 (Sht. 2)



PLAN

ELEVATION

WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 4 OF 4.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

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 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.

FOR FOUNDATION NOTES, SEE "GENERAL DRAWING, SHEET 2 OF 2".

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

TOP OF PILE ELEVATIONS

①	2580.84
②	2580.69
③	2580.54
④	2580.38
⑤	2580.23

✳ELEVATIONS PROJECTED ALONG ℄ BEARINGS.

PROJECT NO. 17BP.14.R.62

JACKSON COUNTY

STATION: 13+09.50 -L-

SHEET 1 OF 4

ASSEMBLED BY :	MTB	DATE :	06/16
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7/5/2016

NORTH CAROLINA PROFESSIONAL SEAL 030474 ENGINEER JOHN C. MORRISON

John C. Morrison
A2FDE1422B2F4AB...

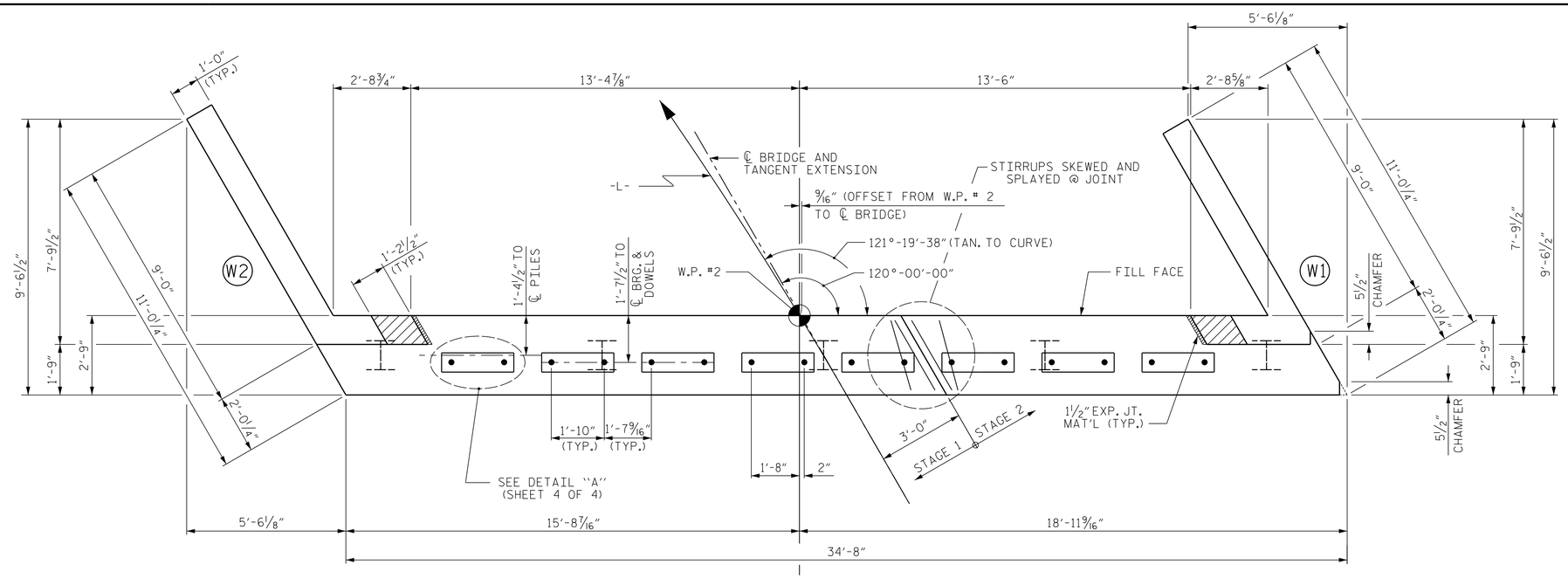
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

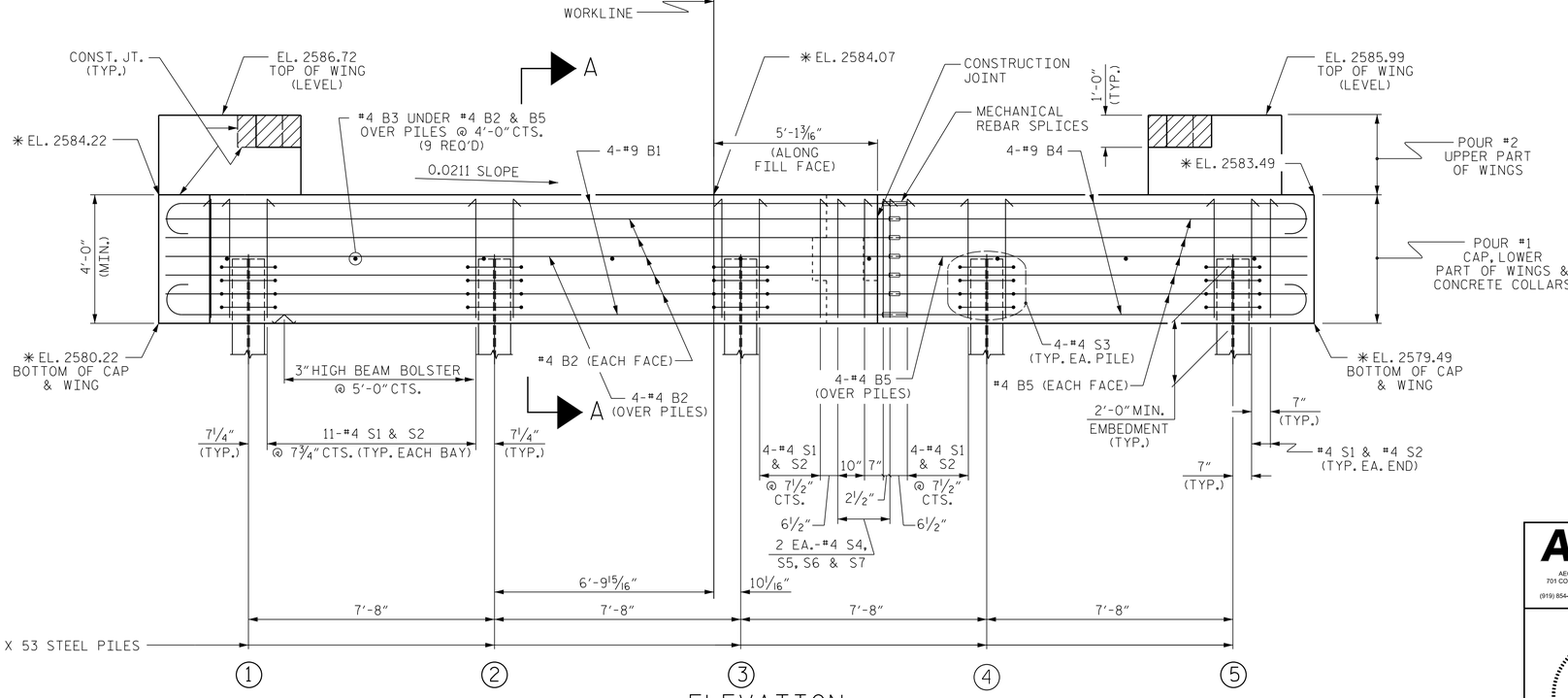
END BENT No. 1

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

MODIFIED STD. NO. EB_27_120S4



PLAN



ELEVATION

WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 4 OF 4.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
SEE ″CORROSION PROTECTION FOR STEEL PILES DETAIL″, SHEET 4 OF 4.

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 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.

FOR FOUNDATION NOTES, SEE ″GENERAL DRAWING, SHEET 2 OF 2″.

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

TOP OF PILE ELEVATIONS	
①	2582.18
②	2582.02
③	2581.79
④	2581.69
⑤	2581.53

✳ELEVATIONS PROJECTED ALONG ℄ BEARINGS.

PROJECT NO. 17BP.14.R.62

JACKSON COUNTY

STATION: 13+09.50 -L-

SHEET 2 OF 4

ASSEMBLED BY :	MTB
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DATE :	06/16
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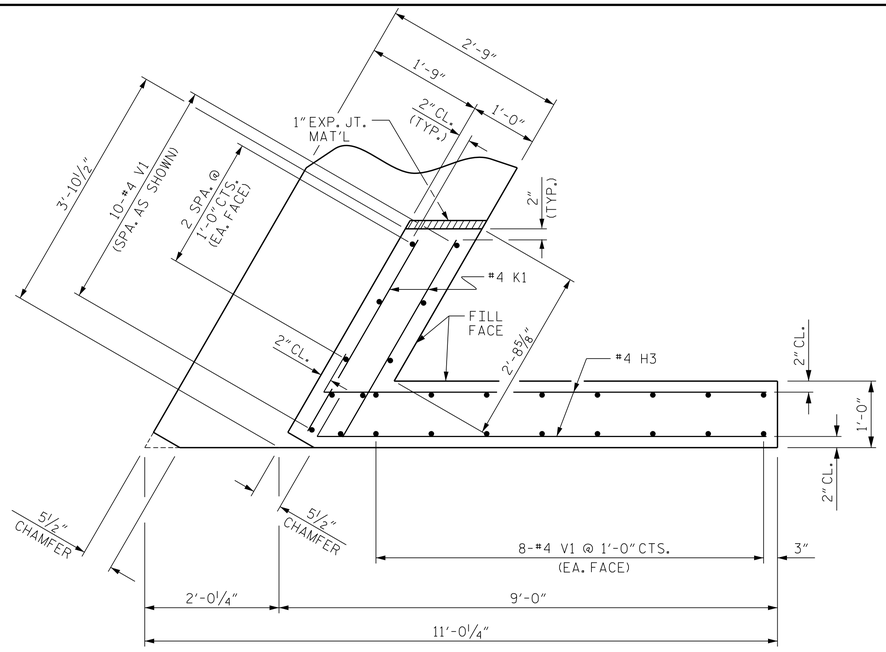
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

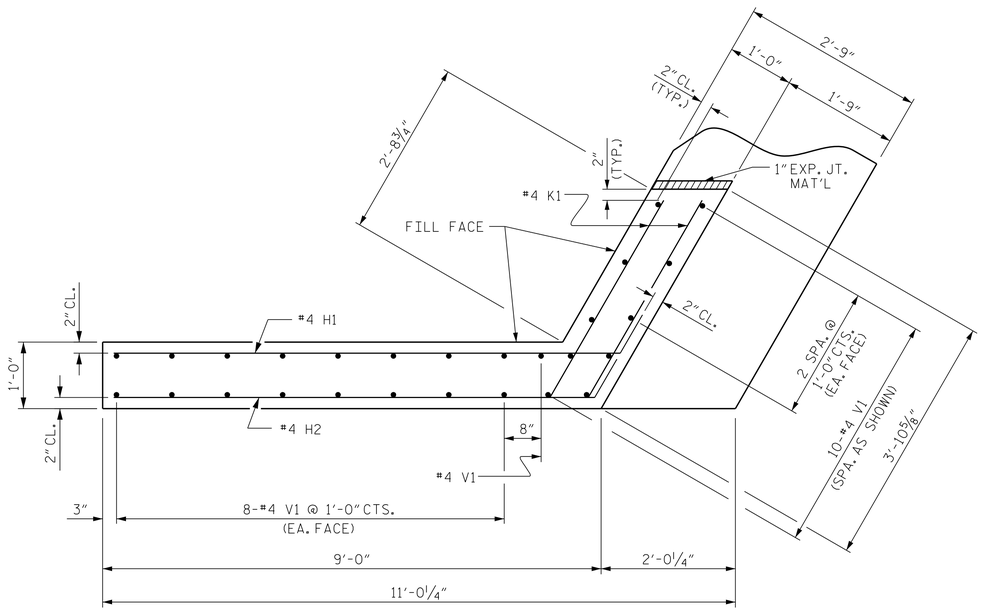
END BENT No. 2

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

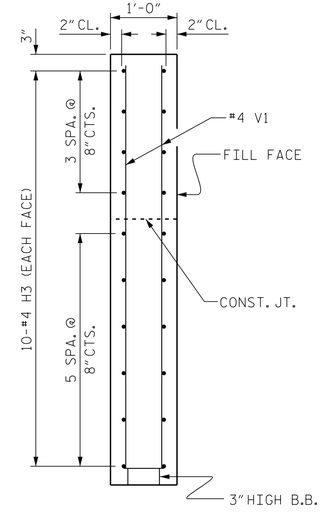
MODIFIED STD. NO. EB_27_120S4



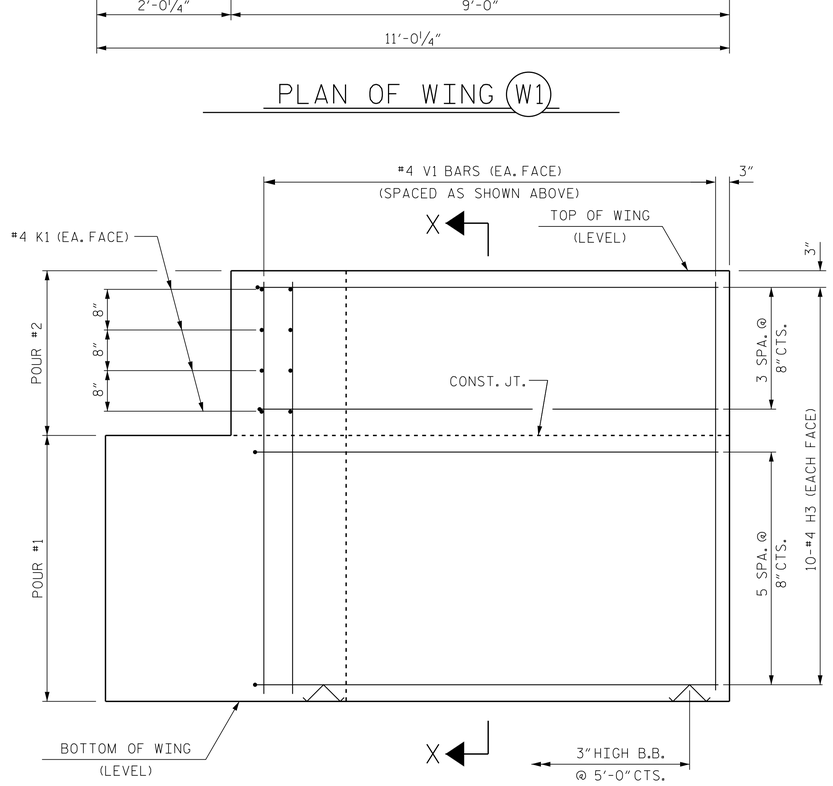
PLAN OF WING (W1)



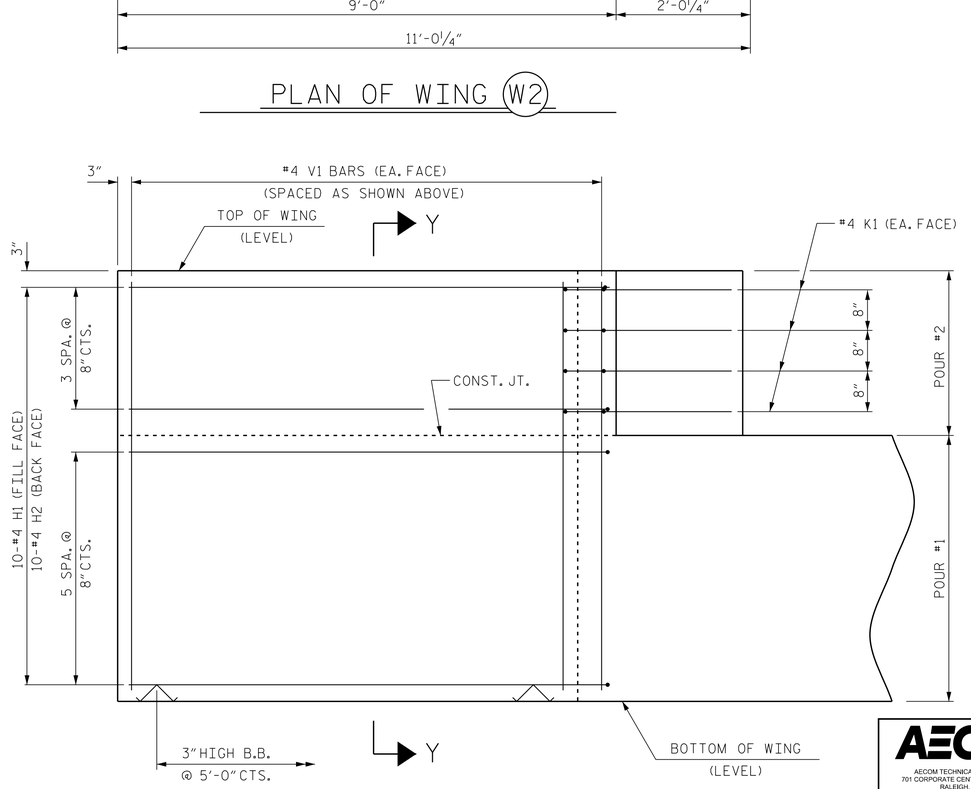
PLAN OF WING (W2)



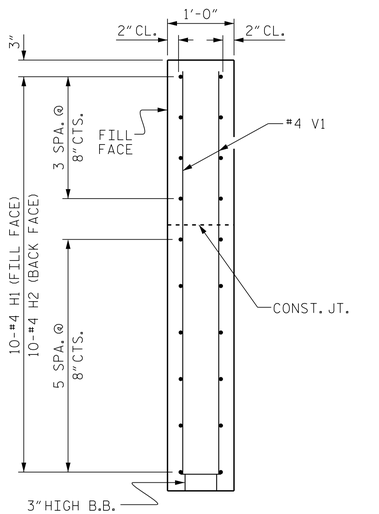
SECTION X-X



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



SECTION Y-Y

WING DETAILS

PROJECT NO. 17BP.14.R.62

JACKSON COUNTY

STATION: 13+09.50 -L-

SHEET 3 OF 4

ASSEMBLED BY :	MTB	DATE :	06/16
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NORTH CAROLINA PROFESSIONAL SEAL 030474 ENGINEER JOHN C. MORRISON

John C. Morrison

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DEPARTMENT OF TRANSPORTATION
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SUBSTRUCTURE
END BENT
WING DETAILS

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

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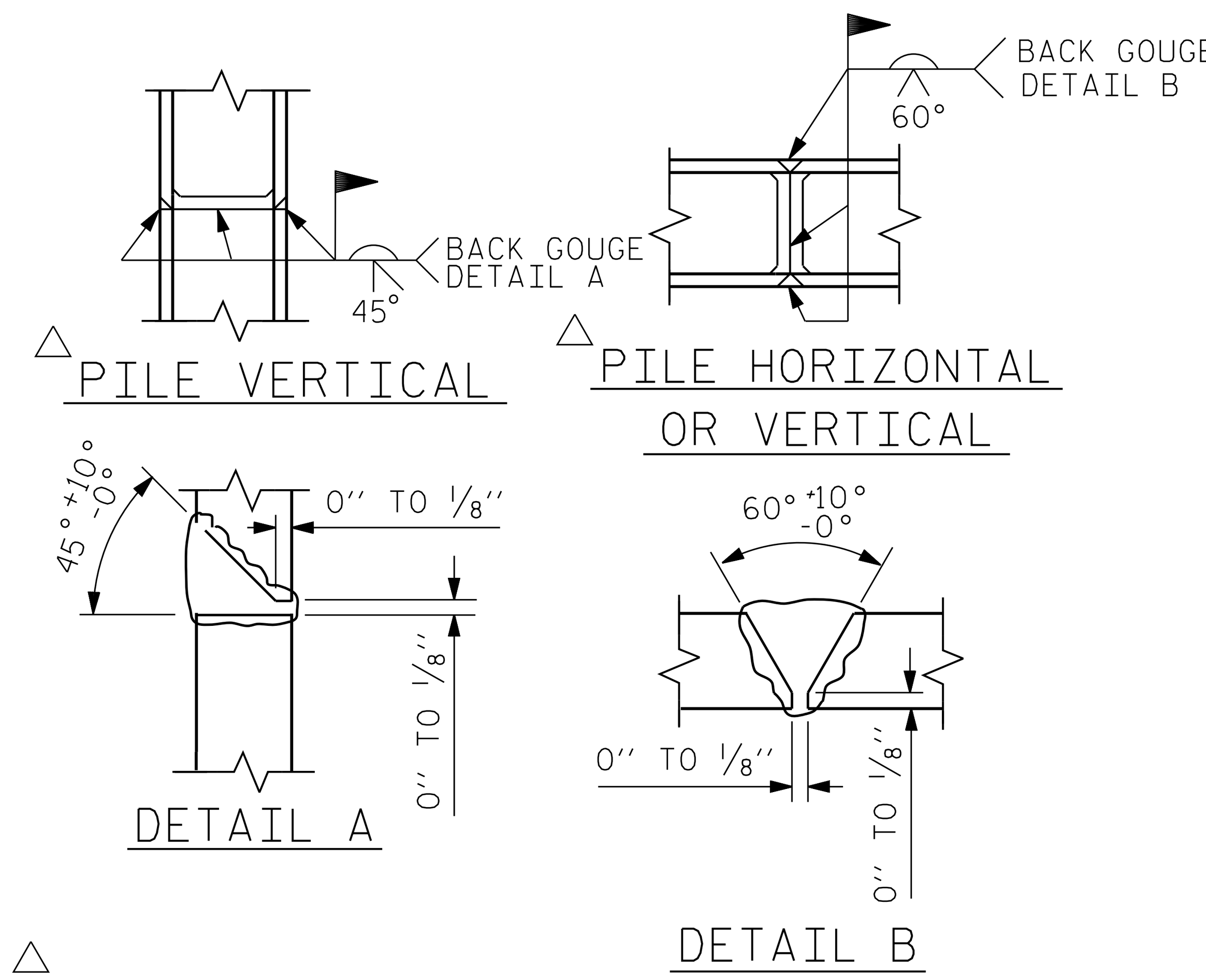
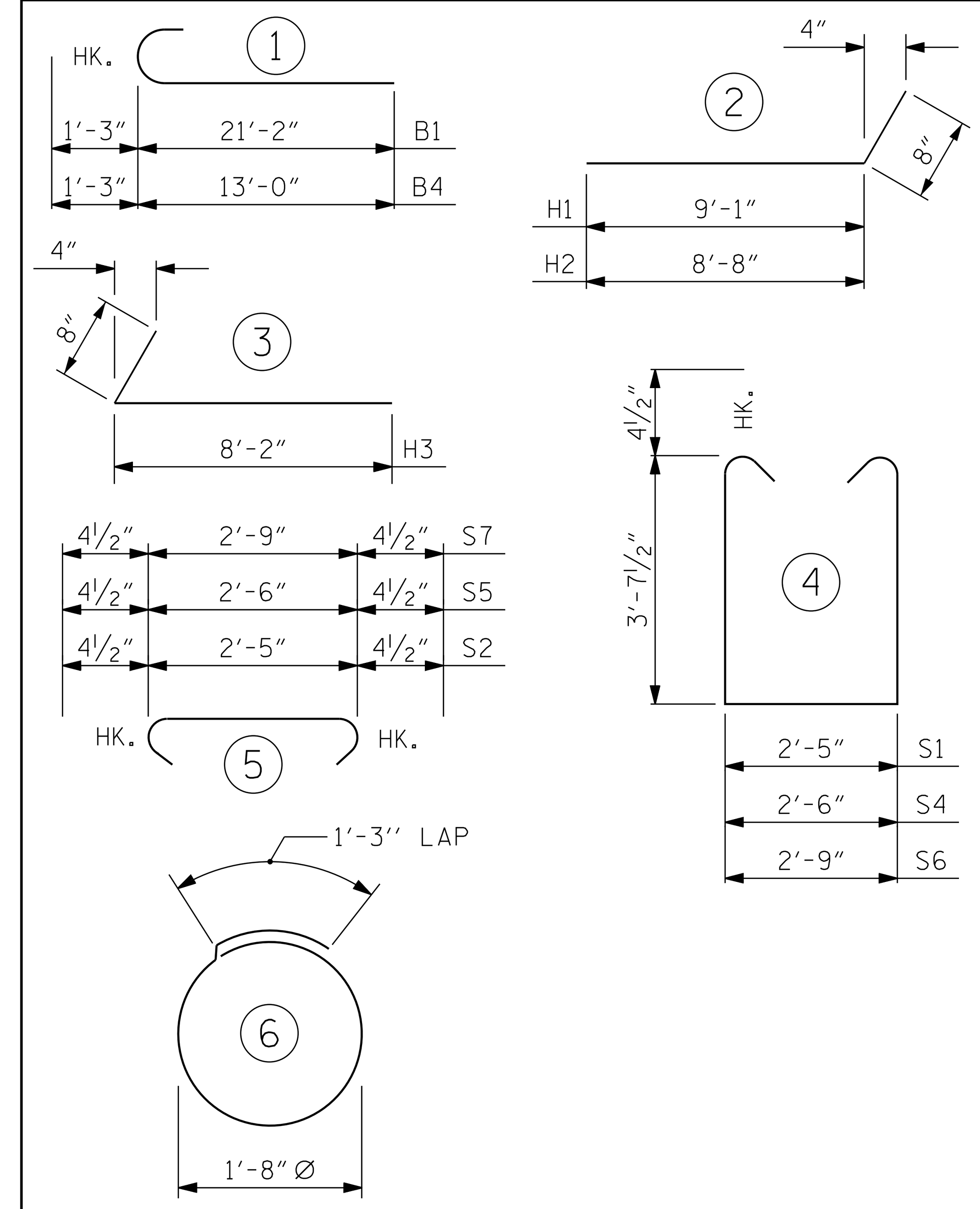


△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

END BENT No. 1	END BENT No. 2
HP 12 X 53 STEEL PILES	HP 12 X 53 STEEL PILES
NO: 5 LIN. FT. = 80	NO: 5 LIN. FT. = 80

BILL OF MATERIAL FOR ONE END BENT

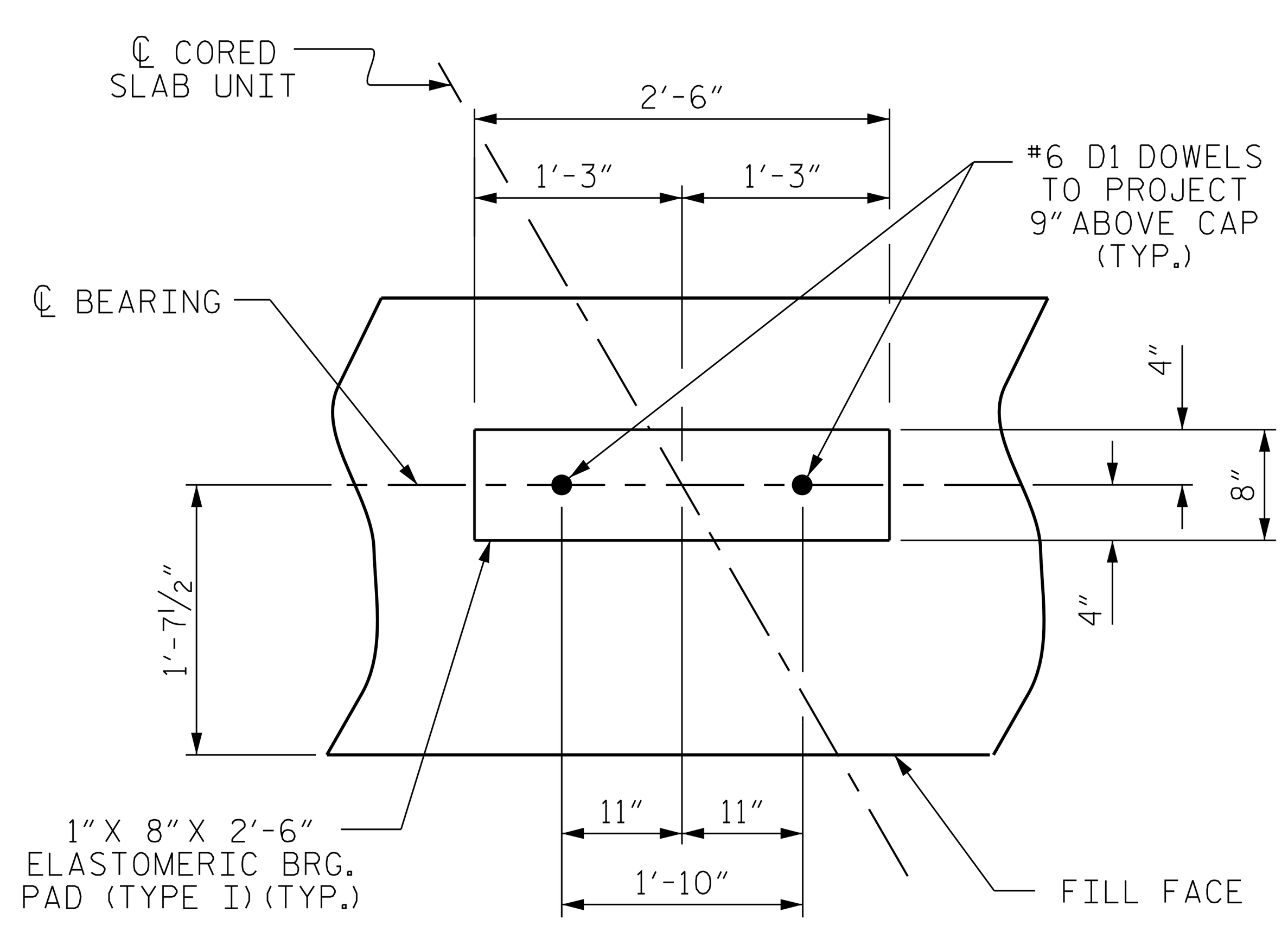
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	22'-5″	610
B2	14	#4	STR	21'-2″	198
B3	9	#4	STR	2'-5″	15
B4	8	#9	1	14'-3″ ✳	388
B5	14	#4	STR	13'-0″ ✳	122
D1	16	#6	STR	1'-6″	36
H1	10	#4	2	9'-9″	65
H2	10	#4	2	9'-4″	62
H3	20	#4	3	8'-10″	118
K1	16	#4	STR	3'-3″	35
S1	45	#4	4	10'-5″	313
S2	45	#4	5	3'-2″	95
S3	20	#4	6	6'-6″	87
S4	2	#4	4	10'-6″	14
S5	2	#4	5	3'-3″	4
S6	2	#4	4	10'-9″	14
S7	2	#4	5	3'-6″	5
V1	53	#4	STR	6'-2″	218

REINFORCING STEEL (FOR ONE END BENT) 2399 LBS.

CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)

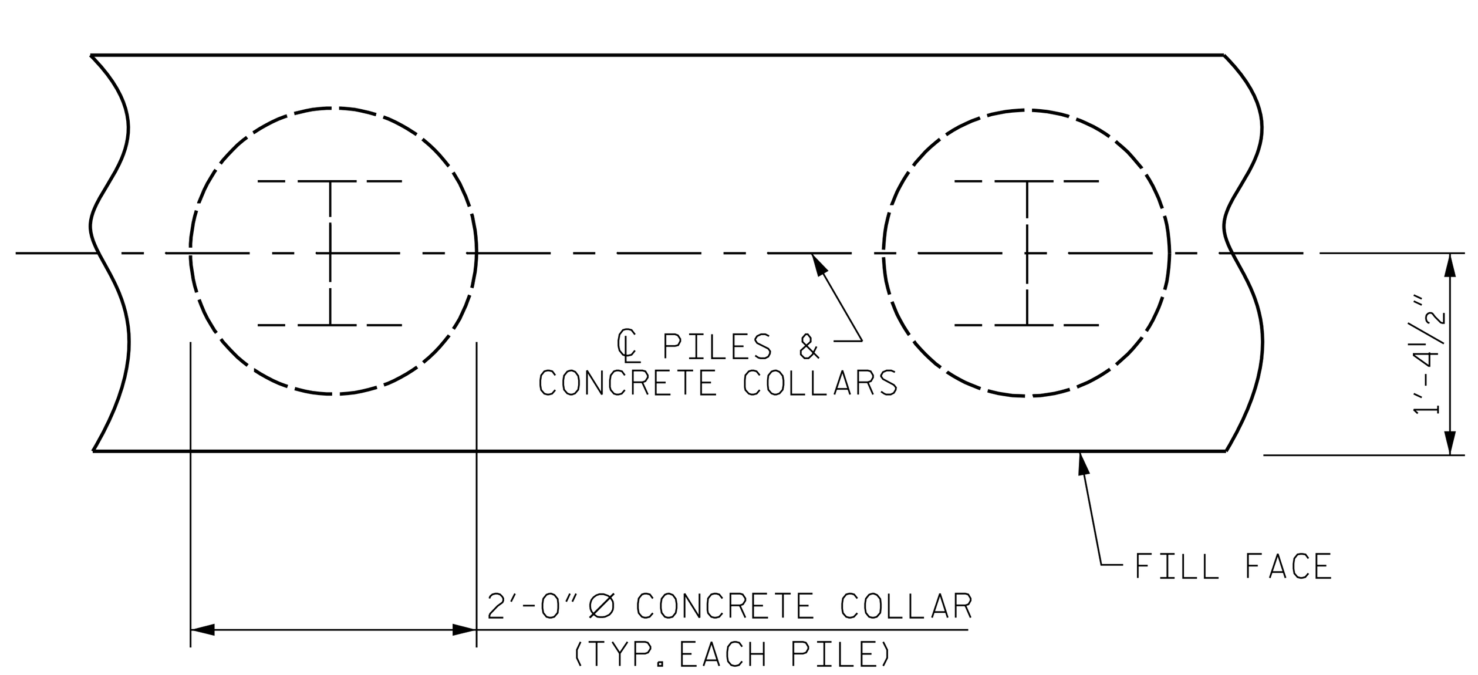
POUR #1	CAP, LOWER PART OF WINGS & COLLARS	17.3 C.Y.
POUR #2	UPPER PART OF WINGS	2.2 C.Y.
TOTAL CLASS A CONCRETE		19.5 C.Y.

✳ MECHANICAL COUPLERS ARE REQUIRED. ADJUST BAR LENGTHS AS NECESSARY FOR THE APPROVED SPLICE MECHANISM USED. FOR MECHANICAL SPLICES, SEE SECTION 425-5(B) OF THE STANDARD SPECIFICATIONS.

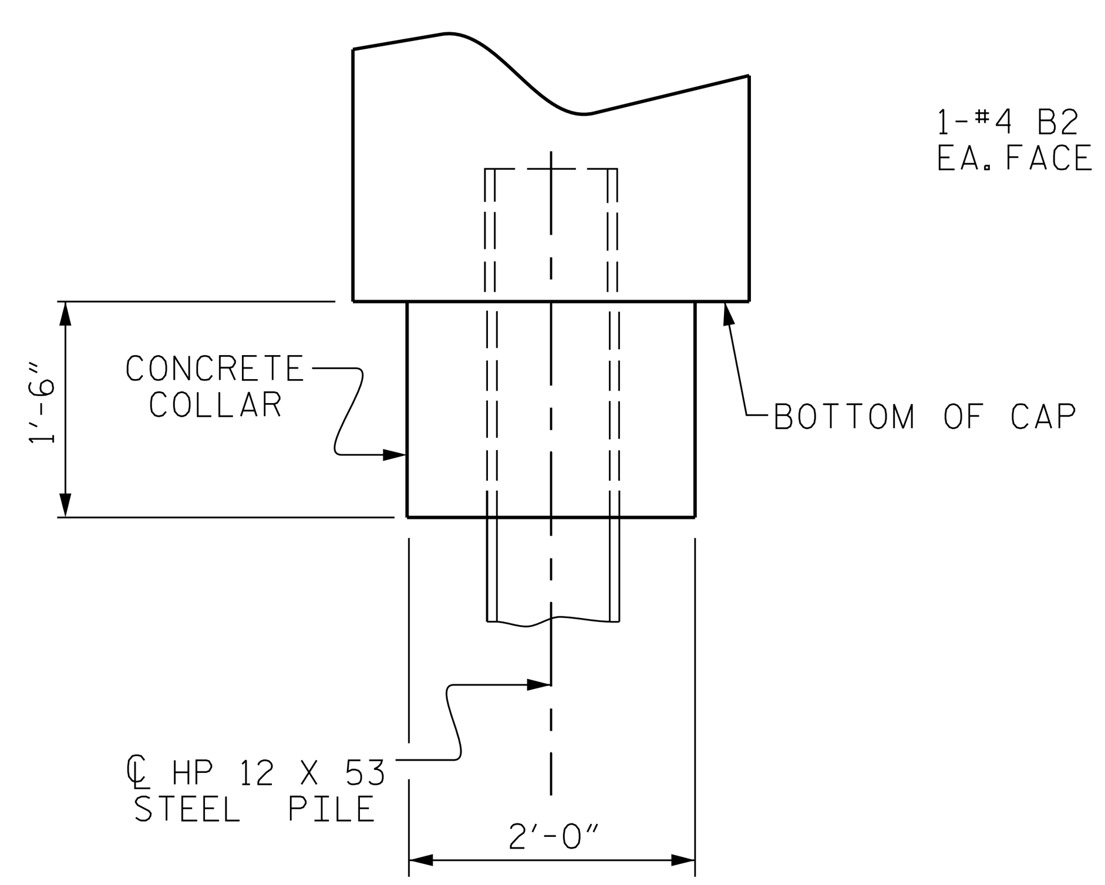


DETAIL "A"

(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)



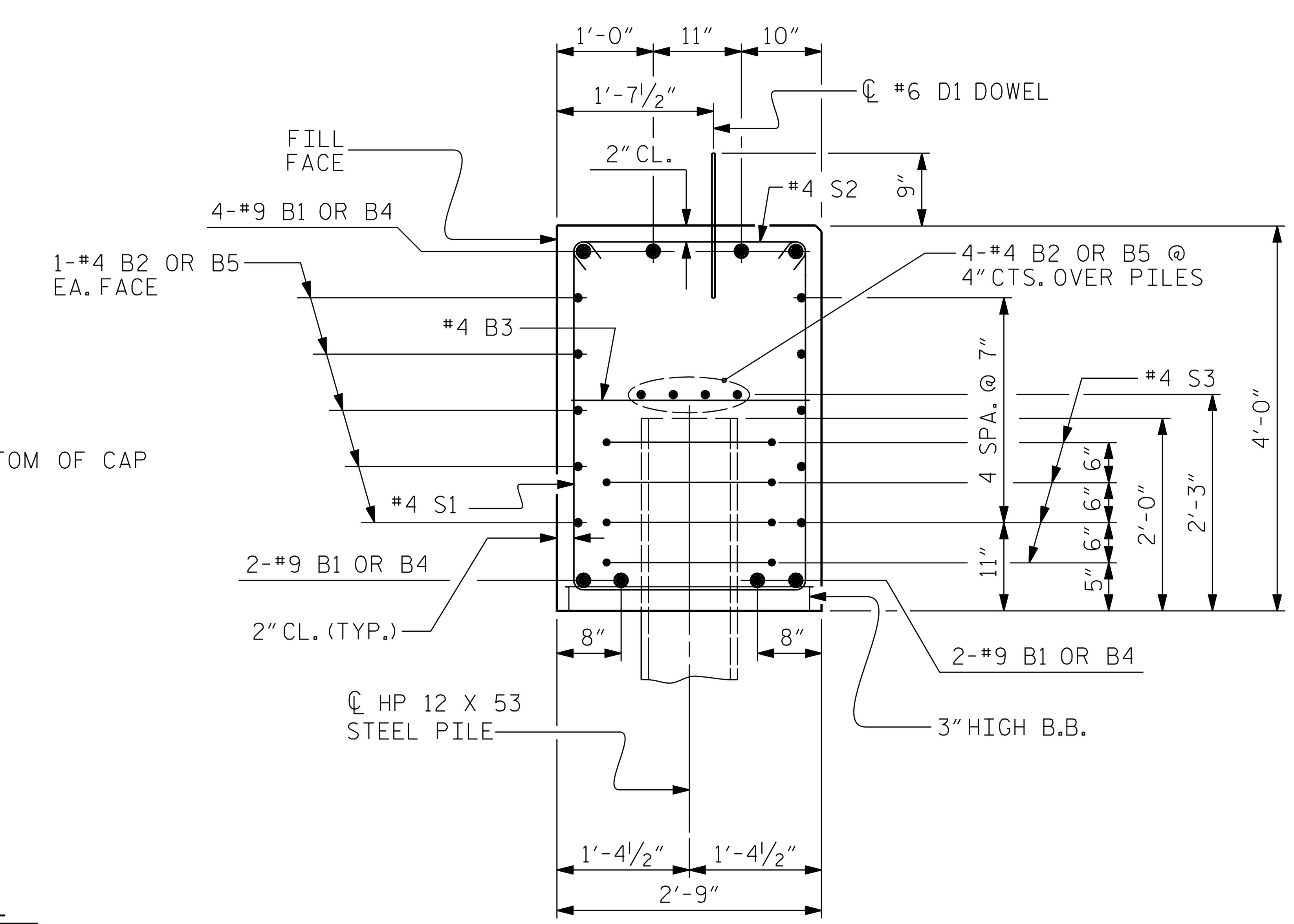
PLAN



ELEVATION

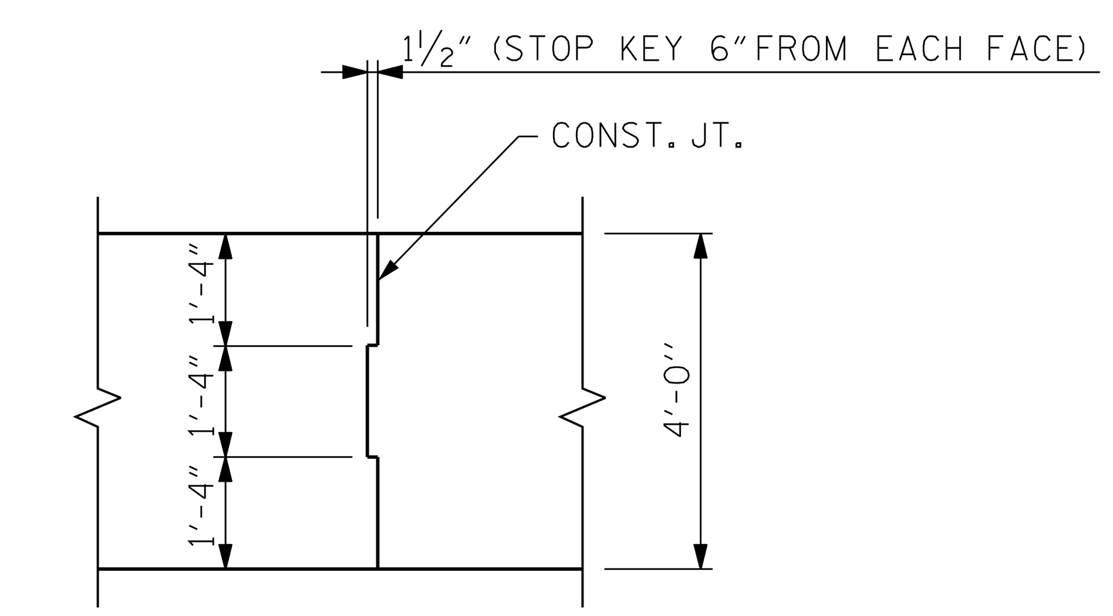
CORROSION PROTECTION FOR STEEL PILES DETAIL

(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)



SECTION A-A

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



CONST. JT. DETAIL

PROJECT NO. 17BP.14.R.62

JACKSON COUNTY

STATION: 13+09.50 -L-

SHEET 4 OF 4

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7/5/2016
NORTH CAROLINA PROFESSIONAL SEAL 030474 ENGINEER JOHN C. MORRISON

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

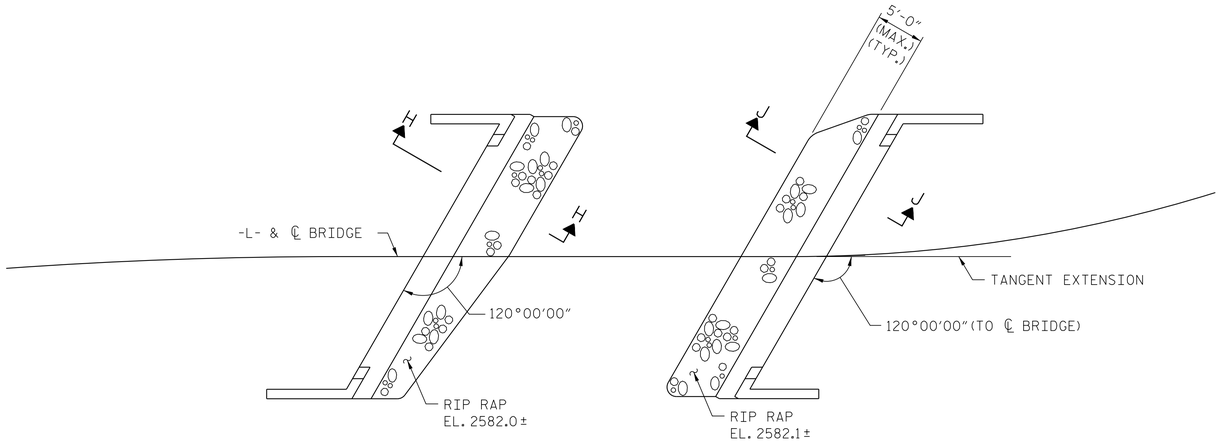
END BENT No. 1 & 2 DETAILS

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ASSEMBLED BY :	MTB	DATE :	06/16
CHECKED BY :	JCM	DATE :	06/16
DRAWN BY : WJH 12/11	CHECKED BY : AAC 12/11	REV. 4/15	MAA/TMG

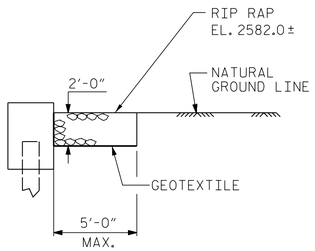
MODIFIED STD. NO. EB_27_120S4



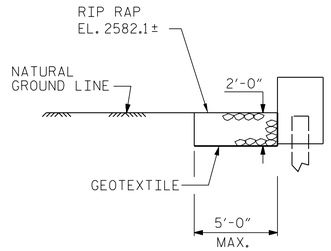
RIP RAP
AT END BENT No. 1

RIP RAP
AT END BENT No. 2

ESTIMATED QUANTITIES		
BRIDGE @ STA. 13+09.50 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	15	17
END BENT 2	17	19



SECTION H-H
℄ SECTION - SIM.



SECTION J-J
℄ SECTION - SIM.

PROJECT NO. 17BP.14.R.62
JACKSON COUNTY
STATION: 13+09.50 -L-

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7/5/2016
NORTH CAROLINA PROFESSIONAL SEAL 030474 ENGINEER JOHN C. MORRICON
John C. Morricon
A2F0E1420E0F4AE...

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

RIP RAP DETAILS

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

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CHECKED BY : JCM DATE : 06/16

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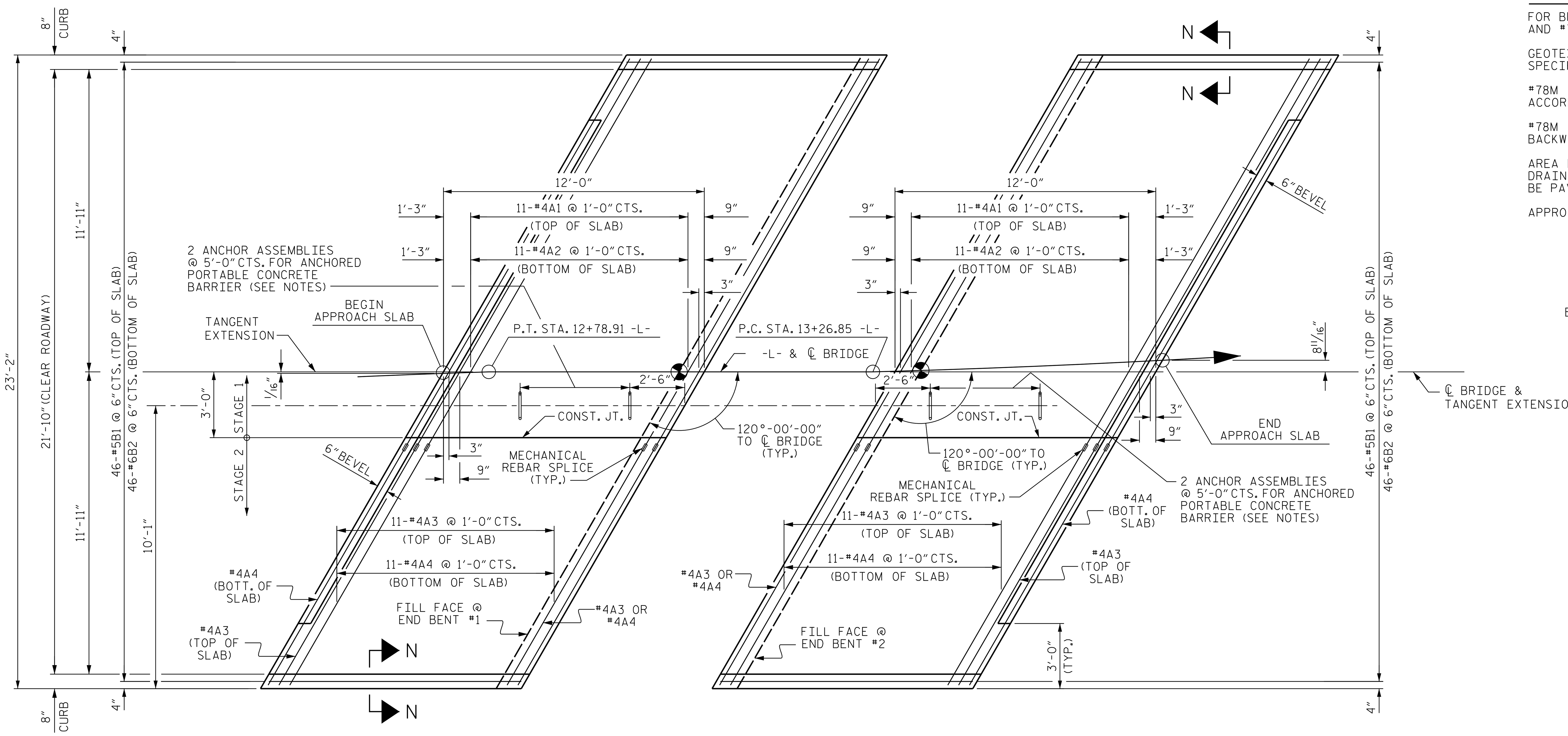
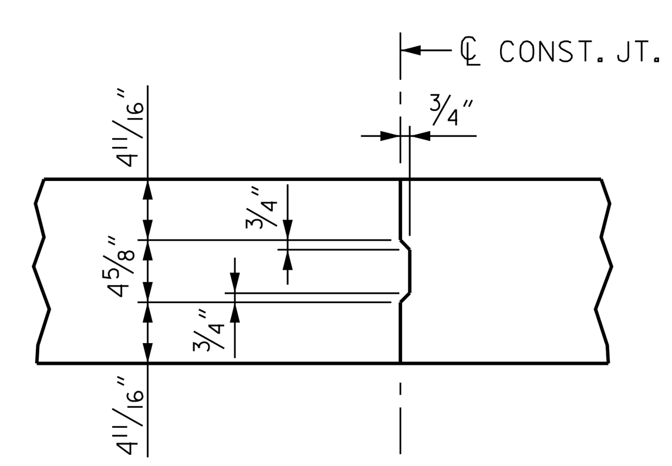


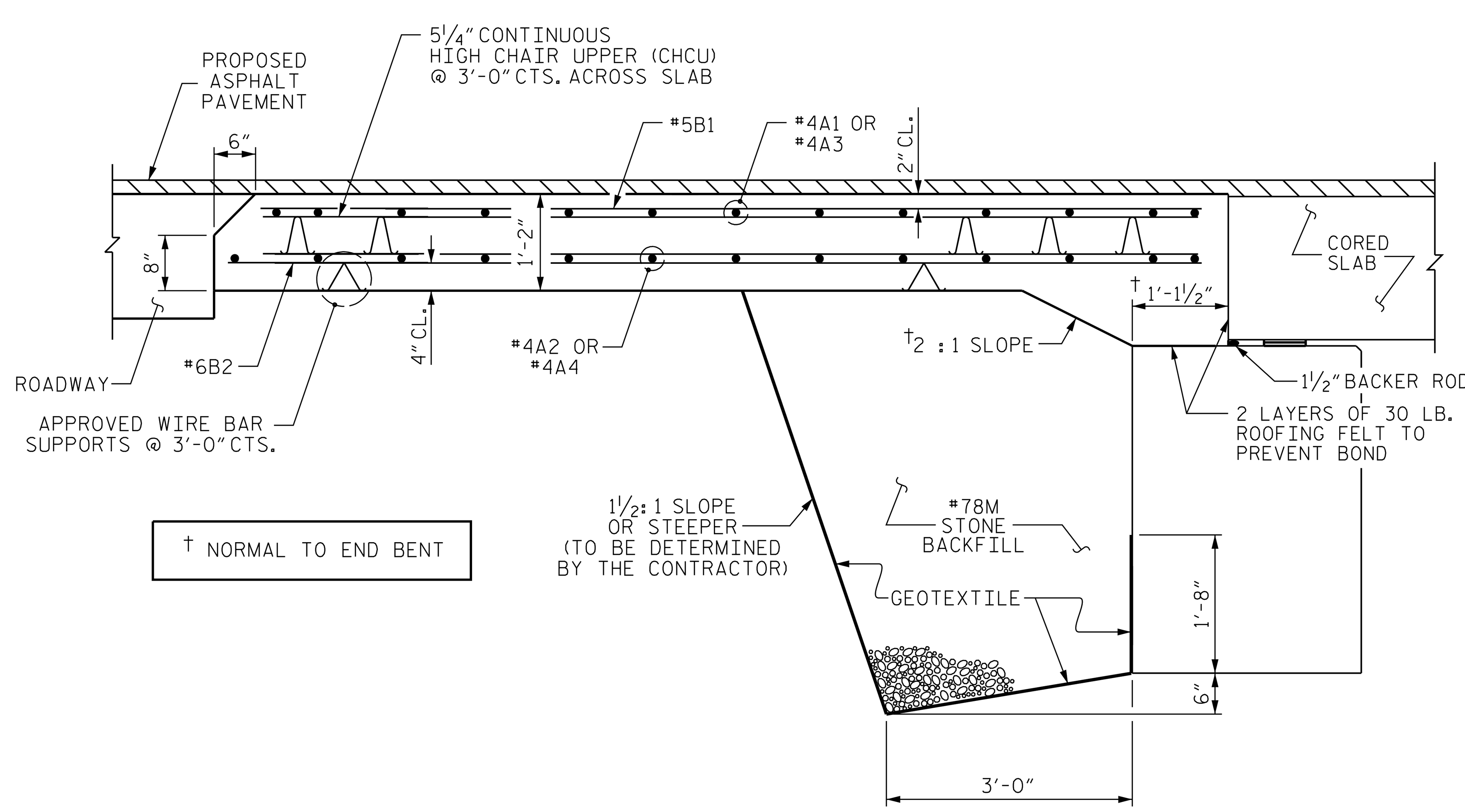
PLAN @ END BENT #1

PLAN @ END BENT #2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

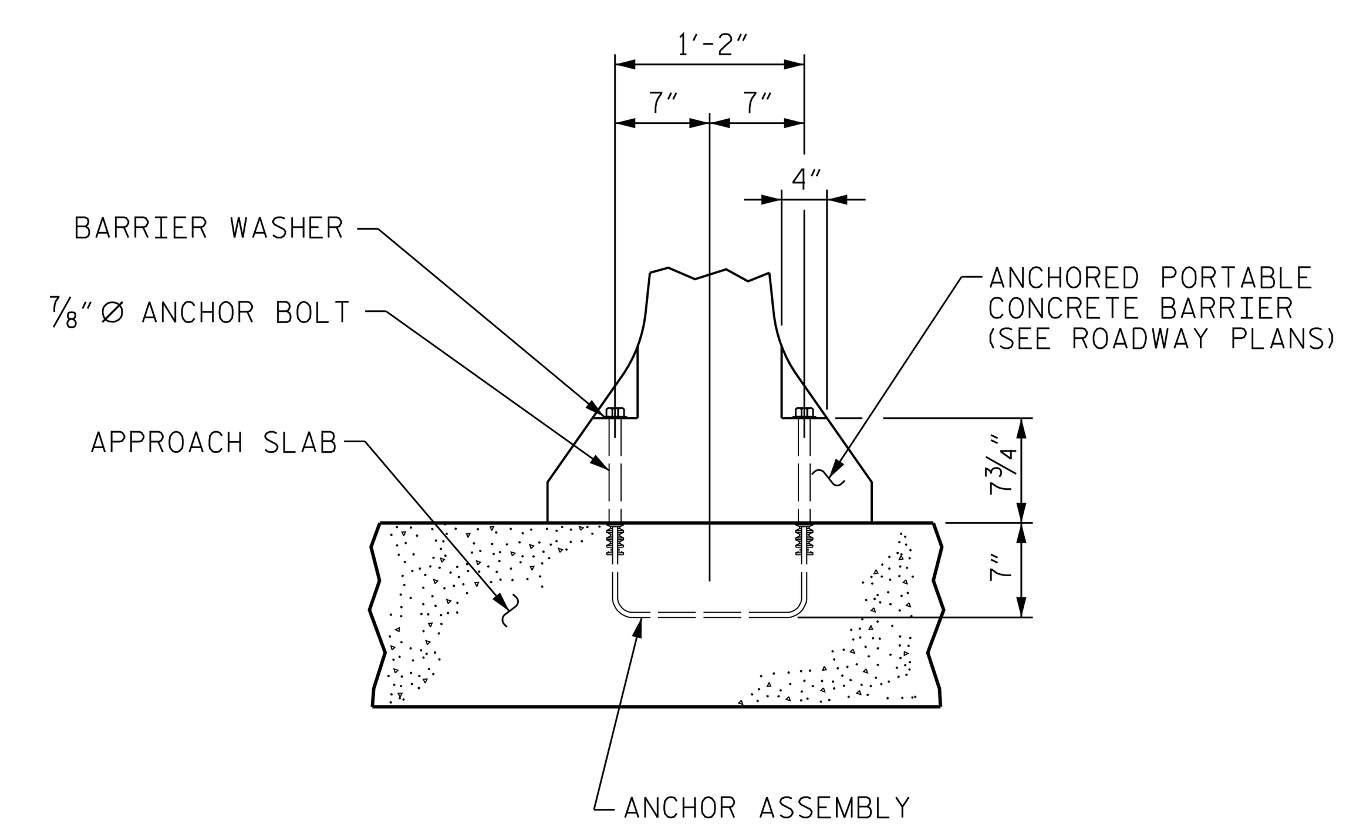


CONSTRUCTION JOINT DETAIL



† NORMAL TO END BENT

SECTION THRU SLAB



ANCHOR ASSEMBLY PLACEMENT DETAIL

(SHOWING PLACEMENT OF ANCHOR ASSEMBLY)

NOTES

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4" Ø DRAINAGE PIPE, AND #78M STONE BACKFILL, SEE ROADWAY PLANS.

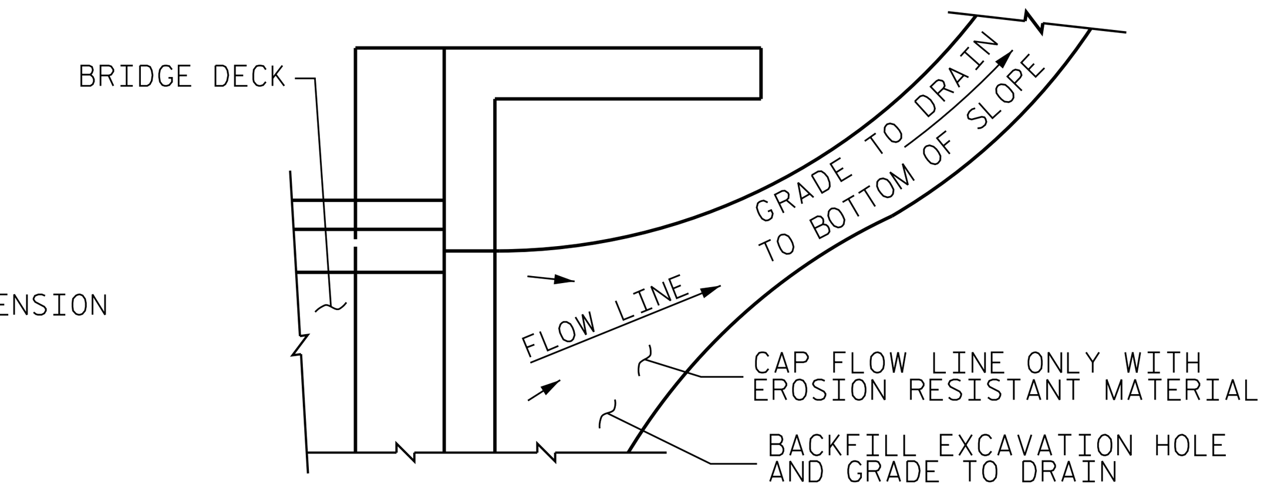
GEOTEXTILE SHALL BE TYPE 1IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

#78M STONE BACKFILL (CLASS V SELECT MATERIAL) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

#78M STONE BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

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.



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

BILL OF MATERIAL

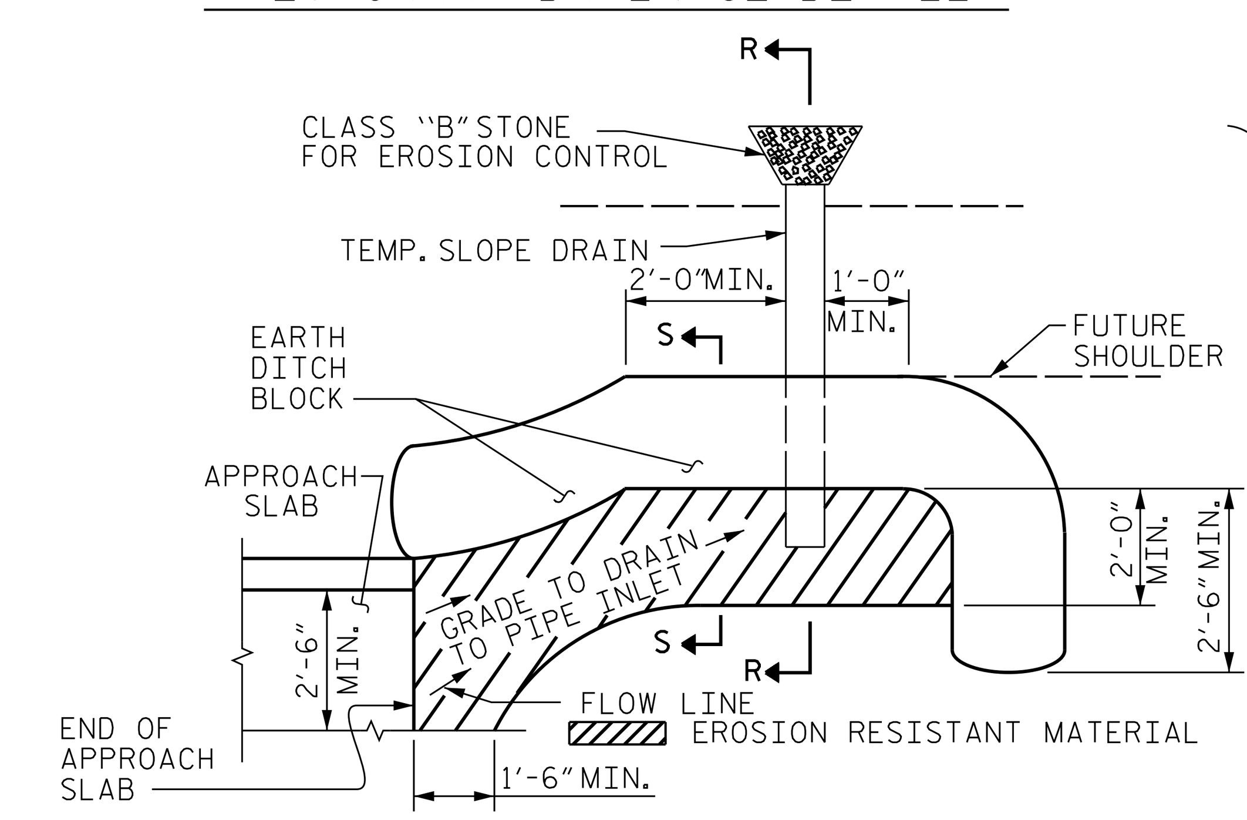
APPROACH SLAB AT EB #1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	13	#4	STR	17'-3" **	150
A2	13	#4	STR	17'-3" **	150
* A3	13	#4	STR	9'-0" **	78
A4	13	#4	STR	9'-0" **	78
* B1	46	#5	STR	11'-1"	532
B2	46	#6	STR	11'-7"	800
REINFORCING STEEL				LBS.	1028
* EPOXY COATED REINFORCING STEEL				LBS.	760
CLASS AA CONCRETE				C. Y.	13.7

APPROACH SLAB AT EB #2

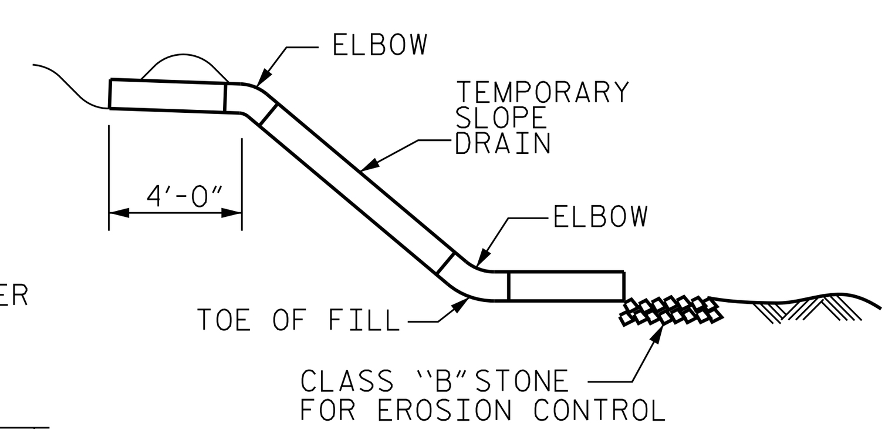
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	13	#4	STR	17'-3" **	150
A2	13	#4	STR	17'-3" **	150
* A3	13	#4	STR	9'-0" **	78
A4	13	#4	STR	9'-0" **	78
* B1	46	#5	STR	11'-1"	532
B2	46	#6	STR	11'-7"	800
REINFORCING STEEL				LBS.	1028
* EPOXY COATED REINFORCING STEEL				LBS.	760
CLASS AA CONCRETE				C. Y.	13.7

** MECHANICAL COUPLERS ARE REQUIRED. ADJUST BAR LENGTHS AS NECESSARY FOR THE APPROVED SPLICE MECHANISM USED. FOR MECHANICAL SPLICES, SEE SECTION 425-5(B) OF THE STANDARD SPECIFICATIONS.

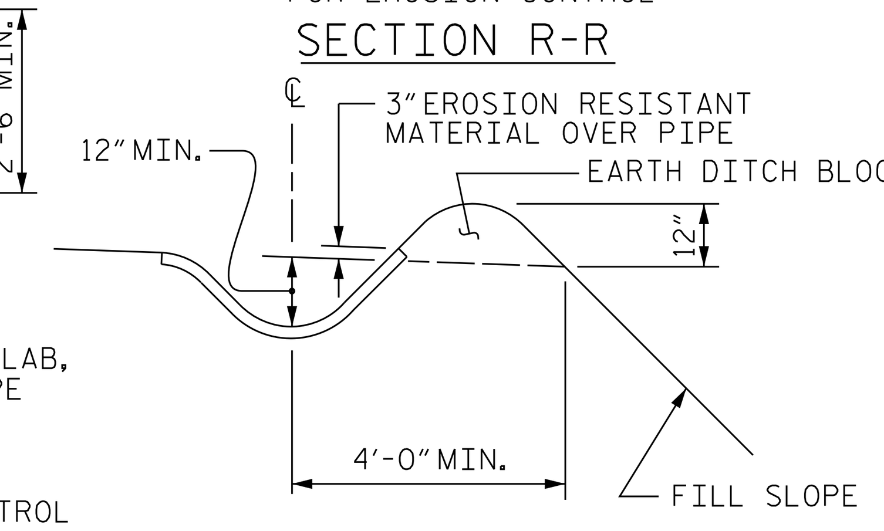


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 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



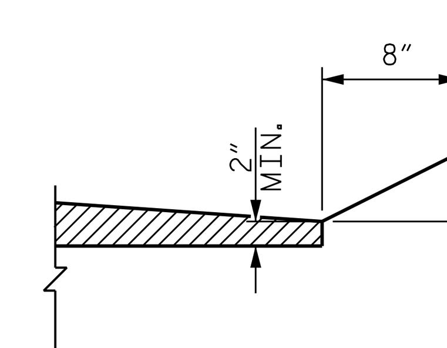
SECTION R-R



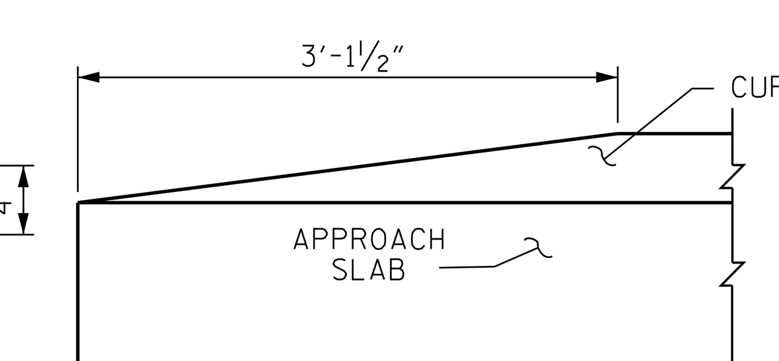
SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



SECTION N-N



END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS

PROJECT NO. 17BP.14.R.62

JACKSON COUNTY

STATION: 13+09.50 -L-

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7/5/2016

NORTH CAROLINA PROFESSIONAL SEAL 030474 ENGINEER JOHN C. MORRISON

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					

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DRAWN BY : SHS/MAA 5-09	REV. 9-15	MAA/TMG	
CHECKED BY : BCH 5-09			

MODIFIED STD. NO. BAS_27_120S

DATE: 7/5/2016 TIME: 4:05:42 PM DATE: 7/5/2016 TIME: 4:05:54 PM

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 2012 "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 3/4" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1-1/2" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 1/4" 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 1/4" 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 7/8" Ø SHEAR STUDS FOR THE 3/4" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" 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

DATE: 7/5/2016
TIME: 3:38:30 PM

USER: morrisonc
DGN: Q:\60238772\400_Tech_Info_Disc_Files\450_NCDOT StdTechDesFiles\BRG_135\Structures\SN.dgn

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