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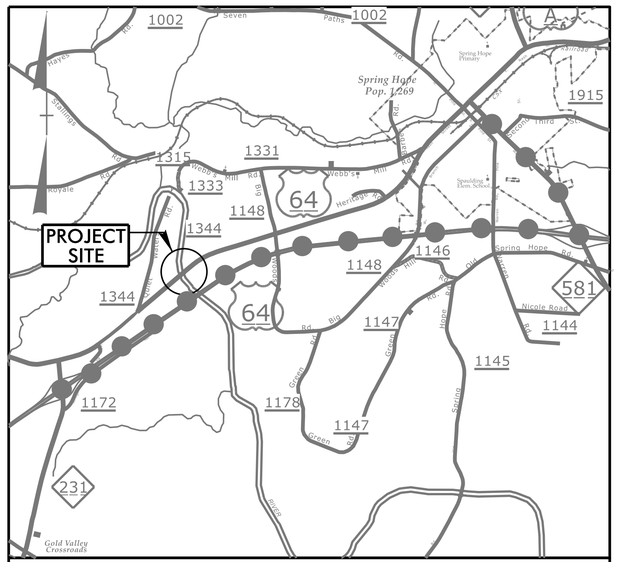
TIP PROJECT: B-5670

CONTRACT: C204478



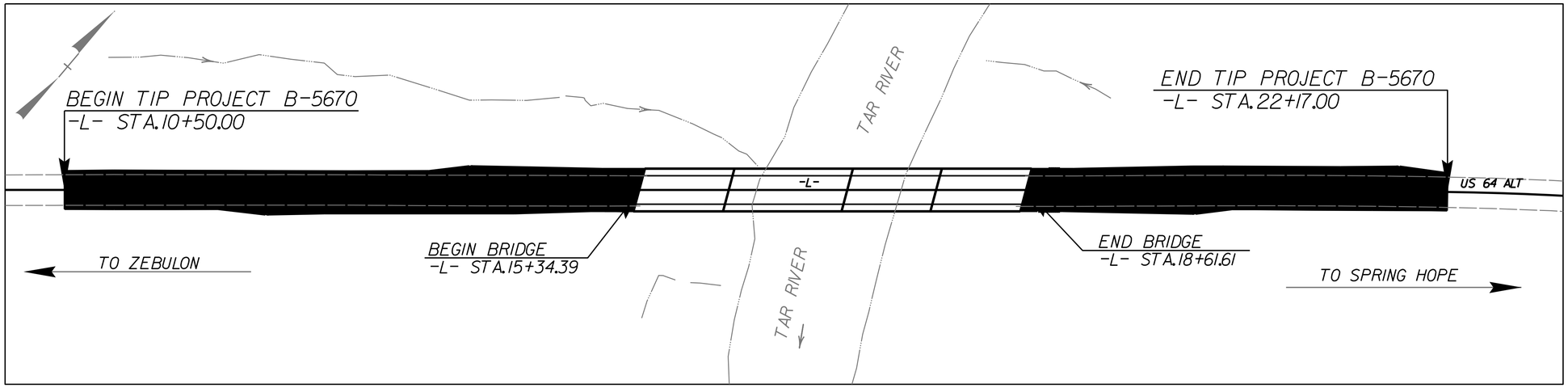
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
NASH COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5670	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
45625.1.1		P.E.
45625.2.1		ROW/UTIL
45625.3.1		CONST.

LOCATION: REPLACE BRIDGE NO. 29 OVER TAR RIVER ON US 64 ALT

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE



STRUCTURE

DESIGN DATA

ADT (2022) = 2,652
ADT (2042) = 3,261
K = 8 %
D = 55 %
T = 6 % **
* V = 60 MPH
** (TTST 2 %, DUAL 4 %)

FUNC CLASS = MAJOR COLLECTOR

REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-5670 = .159 MILES
LENGTH STRUCTURE TIP PROJECT B-5670 = .062 MILES

TOTAL LENGTH TIP PROJECT B-5670 = .221 MILES

Prepared In the Office of:
DIVISION OF HIGHWAYS
STRUCTURES MANAGEMENT UNIT
1000 BIRCH RIDGE DR.
RALEIGH, N.C. 27610

2018 STANDARD SPECIFICATIONS

LETTING DATE :

NOVEMBER 15, 2022

KRISTY W. ALFORD, P.E., CPM
PROJECT ENGINEER

ASTER G. ABRAHA, P.E.
PROJECT DESIGN ENGINEER

15+00 15+50 16+00 16+50 17+00 17+50 18+00 18+50 19+00 19+50

190 180 170 160 150 140 130

SPAN A SPAN B SPAN C SPAN D

(-)0.5000% (-)0.3035%

GRADE DATA

PI STA. 19+60.00 -L-
EL. = 172.95
VC = 180'

FILL FACE @ END BENT 1
STA. 15+34.39 -L-
GRADE POINT
EL. 175.08

BEGIN FRONT SLOPE
STA. 15+22.01 -L-
GRADE PT. EL. 175.14

1'-7" MIN. BERM (TYP.)

LOW CHORD EL. 169.13

FIX.

APPROXIMATE NATURAL GROUND

1'-0"

HP 12 x 53 STEEL PILES

CLASS II RIP RAP (TYP.)

EXCAVATE TO EL. 149.5

TOP OF DRILLED PIER ELEV 148.0

EL. 149.0±

EL. 149.0±

100YR. (FEMA) WS EL. 166.1

50YR WS EL. 168.8

100YR WS EL. 169.9

EL. 141.0±

NWS EL. 141.2

TEMPORARY CAUSEWAY (TYP.)

EL. 139.0±

TOP OF DRILLED PIER ELEV 142.2

EL. 139.0±

EXISTING STRUCTURE (TYP.)

EL. 145.0±

EL. 150.0±

TOP OF DRILLED PIER ELEV 149.0

3'-6" ∅ DRILLED PIER (TYP.)

EL. 152.0±

EXCAVATE TO EL. 152.4

1½:1 SLOPE (TYP.) (NORMAL TO CAP)

1'-0" MIN. EARTH BERM (TYP.)

LOW CHORD EL. 167.51

FILL FACE @ END BENT 2
STA. 18+61.61 -L-
GRADE POINT
EL. 173.44

BEGIN FRONT SLOPE
STA. 18+73.77 -L-
GRADE PT. EL. 173.38

1'-0"

HP 12 x 53 STEEL PILES

TEMPORARY* ACCESS

UNCLASSIFIED STRUCTURE EXCAVATION

* TEMPORARY FILL SHALL NOT BLOCK MORE THAN 50 PERCENT OF THE CHANNEL AT ANY TIME.

END BENT 1
INTEGRAL

BENT 1

BENT 2

BENT 3

END BENT 2
INTEGRAL

SECTION ALONG -L-

NAD 83/2011

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

CLASS II RIP RAP

1'-0" MIN. EARTH BERM (LEVEL) EL. 163.94

W.P. #1
FILL FACE @ END BENT #1
STA. 15+34.39 -L-

TO SR 1331

BEGIN APPROACH SLAB
STA. 15+20.25 -L-

BEGIN FRONT SLOPE
STA. 15+22.01 -L-

RIP RAP CLASS II TO SHOULDER POINT (TYP.)

BENT #1 CONTROL LINE

TAR RIVER

BENT #2 CONTROL LINE

BENT #3 CONTROL LINE

W.P. #2
STA. 16+10.50 -L-

105°-00'-00" (TYP.)

EXISTING STRUCTURE (TYP.)

BRIDGE I.D.
STA. 16+98.00 -L-

W.P. #3
STA. 17+10.50 -L-

W.P. #4
STA. 17+85.50 -L-

CLASS II RIP RAP

RIP RAP CLASS II TO SHOULDER POINT (TYP.)

W.P. #5
FILL FACE @ END BENT #2
STA. 18+61.61 -L-

-L-

TO SR 1148

END APPROACH SLAB
STA. 18+75.75 -L-

BEGIN FRONT SLOPE
STA. 18+73.77 -L-

1'-0" MIN. EARTH BERM (LEVEL) EL. 162.33

87'-6" 12'-6"

76'-1 5/16" SPAN A

100'-0" SPAN B

75'-0" SPAN C

76'-1 5/16" SPAN D

327'-2 5/8"
(FILL FACE END BENT 1 TO FILL FACE END BENT 2)

PLAN

PILES NOT SHOWN FOR CLARITY

NORTH CAROLINA PROFESSIONAL SEAL 29441 ENGINEER KRISTY W. ALFORD
F2458389308F40E...
09/20/2022

NORTH CAROLINA PROFESSIONAL SEAL 030024 ENGINEER ASTER G. ABRAHA
DDA094AED5104FD...
09/20/2022

PROJECT NO. B-5670

NASH COUNTY

STATION: 16+98.00 -L-

SHEET 1 OF 4 REPLACES BRIDGE 630029

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

BRIDGE OVER TAR RIVER
ON US 64 ALT. BETWEEN
SR 1331 AND SR 1148

DRAWN BY : M.M. AHMED DATE : 06/22
CHECKED BY : S. WANCE DATE : 06/22
DESIGN ENGINEER OF RECORD: M.M. AHMED DATE :

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			40

9/20/2022
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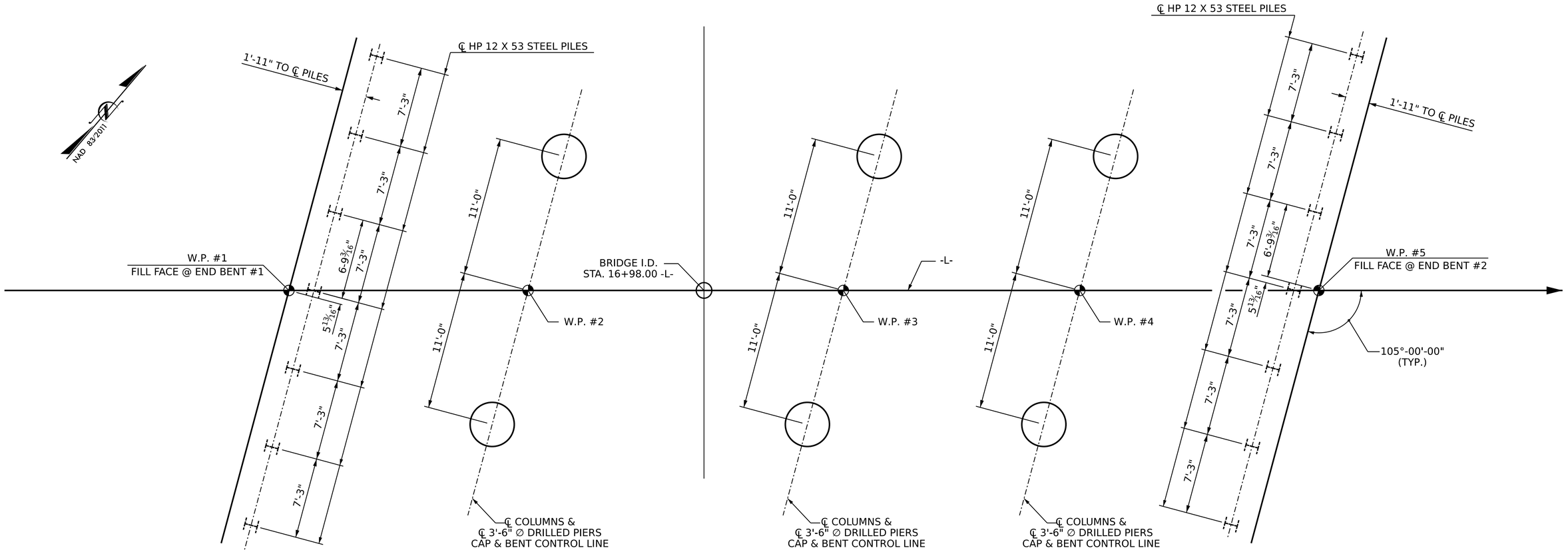

END BENT #1
INTEGRAL

BENT #1

BENT #2

BENT #3

END BENT #2
INTEGRAL

FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO PILE CENTERLINE.

NOTES:

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

OBSERVE A ONE MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT, END BENT AND REINFORCED BRIDGE APPROACH FILL, IF APPLICABLE, BEFORE BEGINNING APPROACH SLAB CONSTRUCTION AT END BENT NO. 1. FOR BRIDGE WAITING PERIODS, SEE ROADWAY PLANS AND SECTION 235 OF THE STANDARD SPECIFICATIONS. NO WAITING PERIOD IS REQUIRED FOR END BENT 2.

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

DO NOT USE MULTIPLE TEMPORARY STEEL CASINGS IN A TELESCOPED ARRANGEMENT TO STABILIZE DRILLED PIER EXCAVATIONS AT BENT NO. 1 THROUGH BENT NO. 3.

DO NOT USE SLURRY CONSTRUCTION FOR THE DRILLED PIERS AT BENT NO. 1 THROUGH BENT NO. 3.

PROJECT NO. B-5670

NASH COUNTY

STATION: 16+98.00 -L-

SHEET 2 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 030024 ENGINEER ASTER G. ABRAHA

Aster Abraha

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09/20/2022

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

BRIDGE OVER TAR RIVER
ON US 64 ALT. BETWEEN
SR 1331 AND SR 1148

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
1			3			TOTAL SHEETS
2			4			40

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DRAWN BY : M.M. AHMED DATE : 06/22
CHECKED BY : S. WANCE DATE : 06/22
DESIGN ENGINEER OF RECORD: M.M. AHMED DATE : 7/2020

9/20/2022
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aabraha

SUMMARY OF PILE INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pile(s) #-# (e.g., "Bent 1, Piles 1-5")	Factored Resistance per Pile TONS	Pile Cut-Off (Top of Pile) Elevation FT	Estimated Pile Lenth per Pile FT	Scour Critical Elevation FT	Driven Piles			Predrilling for Piles*			Drilled-In Piles		
					Min Pile Tip (Tip No Higher Than) Elev FT	Required Driving Resistance (RDR)** per Pile TONS	Total Pile Redrives Quantity EACH	Predrilling Length per Pile Lin FT	Predrilling Elevation (Elev Not To Predrill Below) FT	Maximum Predrilling Dia INCHES	Pile Excavation (Bottom of Hole) Elev FT	Pile Exc Not In Soil per Pile Lin FT	Pile Exc In Soil per Pile Lin FT
End Bent 1, Piles 1-7	105	166.94	25			195							
End Bent 2, Piles 1-7	105	165.33	25			195							

*Predrilling for Piles is required for end bents/bents with a predrilling length and at the Contractor's option for end bents/bents with predrilling information but no predrilling length.

$$^{**}RDR = \frac{Factored\ Resistance + Factored\ Downdrag\ Load + Factored\ Dead\ Load}{Dynamic\ Resistance\ Factor} + Nominal\ Downdrag\ Resistance + \frac{Nominal\ Scour\ Resistance}{Scour\ Resistance\ Factor}$$

PILE DESIGN INFORMATION

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pile(s) #-# (e.g., "Bent 1, Piles 1-5")	Factored Axial Load per Pile TONS	Factored Downdrag Load per Pile TONS	Factored Dead Load* per Pile TONS	Dynamic Resistance Factor	Nominal Downdrag Resistance per Pile TONS	Nominal Scour Resistance per Pile TONS	Scour Resistance Factor (Default = 1.00)
End Bent 1, Piles 1-7	104	7.9		0.60	6.3		1.00
End Bent 2, Piles 1-7	104	7.3		0.60	5.8		1.00

*Factored Dead Load is factored weight of pile above the ground line.

SUMMARY OF DRILLED PIER INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pier(s) #-# (e.g., "Bent 1, Piers 1-3")	Factored Resistance per Pier TONS	Minimum Pier Tip (Tip No Higher Than) Elevation FT	Required Tip Resistance per Pier TSF	Scour Critical Elevation FT	Minimum Drilled Pier Penetration Into Rock per Pier Lin FT	Drilled Pier Length per Pier Lin FT	Drilled Pier Length Not In Soil per Pier Lin FT	Drilled Pier Length In Soil per Pier Lin FT	Permanent Steel Casing Required? YES or MAYBE	Permanent Steel Casing Tip Elevation (Elev Not To Extend Casing Below) FT	Permanent Steel Casing Length* per Pier Lin FT
Bent 1, Piers 1-2	685	129.0	110	137	9.0		11.0	8.0	MAYBE	139.0	12.0
Bent 2, Piers 1-2	685	128.0	115	135	9.0		10.5	3.7	YES	137.0	5.2
Bent 3, Piers 1-2	615	129.0	100	136	9.0		11.0	9.0	MAYBE	139.0	11.5

*Permanent Steel Casing Length equals the difference between the ground line or top of drilled pier elevation, whichever is higher, and the permanent casing tip elevation.

SUMMARY OF PDA/PILE ORDER LENGTHS

(Blank entries indicate item is not applicable to structure)

Pile Driving Analyzer (PDA)				Pile Order Lengths	
End Bent/ Bent No	PDA Testing Required? YES or MAYBE	PDA Test Pile Length FT	Total PDA Testing Quantity EACH	End Bent/ Bent No(s)	Pile Order Length Basis* EST or PDA
End Bent 1	MAYBE	30	1		
End Bent 2	MAYBE	30			

*EST = Pile order lengths from estimated pile lengths; PDA = Pile order lengths based on PDA testing. For groups of end bents/bents with pile order lengths based on PDA testing, the first end bent/bent no. listed for each group is the representative end bent/bent with the PDA.

SUMMARY OF PILE ACCESSORIES

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pile(s) #-# (e.g., "Bent 1, Piles 1-5")	Pipe Pile Plates Required? YES or MAYBE	Steel Pile Points			Steel Pile Tips Required? YES
		Pipe Pile Cutting Shoes Required? YES	Pipe Pile Conical Points Required? YES	H-Pile Points Required? YES	
End Bent 1, Piles 1-7				YES	
End Bent 2, Piles 1-7				YES	
TOTAL QTY:				14	

SUMMARY OF DRILLED PIER TESTING

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pier(s) #-# (e.g., "Bent 1, Piers 1-3")	Standard Penetration Test (SPT) Required? YES or MAYBE	Crosshole Sonic Logging (CSL) Required?* YES or MAYBE	Total CSL Tube Length (For All Tubes) per Pier Lin FT	Shaft Inspection Device (SID) Required? YES or MAYBE	Pile Integrity Test (PIT) Required? MAYBE
Bent 1, Piers 1-2		MAYBE	82	MAYBE	
Bent 2, Piers 1-2		MAYBE	63	MAYBE	
Bent 3, Piers 1-2		MAYBE	86	MAYBE	
TOTAL QTY:		3	462	3	

*CSL Tubes are required if CSL Testing is or may be required. The number of CSL Tubes per drilled pier is equal to one tube per foot of design pier diameter with at least 4 tubes per pier. The length of each CSL Tube is equal to the drilled pier length plus 1.5 ft.

PROJECT NO. B-5670

NASH COUNTY

STATION: 16+98.00 -L-

NOTES:

1. The Pile and Drilled Pier Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Jinyoung Park, PE# 032171) on 11-16-2021.
2. Total Pile Driving Equipment Setup quantity (not shown in Pile Foundation Tables) equals the number of driven piles, i.e., the number of piles with a Required Driving Resistance.
3. The Engineer will determine the need for PDA Testing, Permanent Steel Casing, SPTs, CSL Testing and SID Inspections when these items may be required.

NORTH CAROLINA PROFESSIONAL SEAL 030024 ENGINEER ASTER CHARALA

DDA094AED5104FD...

09/20/2022

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

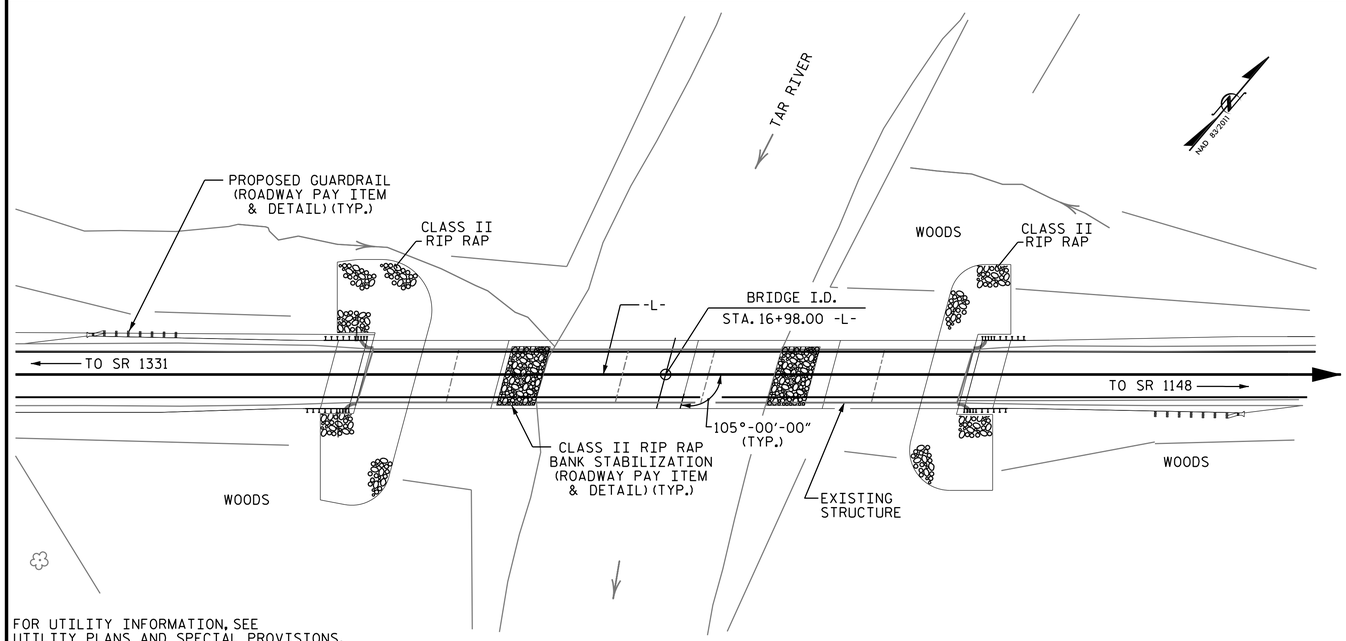
PILE AND DRILLED PIER FOUNDATION TABLES

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			40
2			4			

TOTAL BILL OF MATERIAL

	CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY ACCESS	REMOVAL OF EXISTING STRUCTURE STA. 16+98.00	ASBESTOS ASSESSMENT	3'-6"Ø DRILLED PIERS IN SOIL	3'-6"Ø DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 3'-6"Ø DRILLED PIER	PDA TESTING	SID INSPECTIONS	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL REINFORCING STEEL	54" PRESTRESSED CONCRETE GIRDERS		PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	HP 12 x 53 STEEL PILES		STEEL PILE POINTS	CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS
	LUMP SUM	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	EACH	EACH	EACH	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	LBS.	NO.	LIN. FT.	EACH	NO.	LIN. FT.	EACH	LIN. FT.	TONS	SQ. YDS.	LUMP SUM
SUPERSTRUCTURE											12,776	11,623		LUMP SUM			16	1,294.67					651.0			LUMP SUM
END BENT 1													32.4		4,618				7	7	175	7		475	528	
BENT 1				16.0	22.0	24.0							30.0		11,835	1,547										
BENT 2				7.4	21.0	10.4							32.7		11,938	1,582										
BENT 3				18.0	22.0	23.0							29.0		9,943	1,503										
END BENT 2													32.4		4,618				7	7	175	7		374	415	
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	41.4	65.0	57.4	1	3	3	LUMP SUM	12,776	11,623	156.5	LUMP SUM	42,952	4,632	16	1,294.67	14	14	350	14	651.0	849	943	LUMP SUM

BENCH MARK: B.M.#2 R/R SPIKE IN BASE OF 30"PINE, STA. 18+92.73 -L-, OFFSET 69.5' LT



FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

LOCATION SKETCH

NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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

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

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

THE EXISTING STRUCTURE CONSISTS OF 7 SPANS @ 45'-0" WITH A CLEAR ROADWAY WIDTH OF 30.0 FT. WITH RC FLOOR AND RC DECK GIRDERS, END BENTS ARE RC CAP WITH H-PILES AND BENTS ARE ON A RC PIER AND BEAM. AND LOCATED AT PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE. A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

TEMPORARY FILL SHALL NOT BLOCK MORE THAN 50 PERCENT OF THE CHANNEL AT ANY TIME.

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

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED 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 4 SHALL BE EXCAVATED FOR A DISTANCE OF 42' LEFT AND 63' RIGHT OF CENTERLINE ROADWAY AT END BENT #1, AND 50' LEFT AND 51' RIGHT OF CENTERLINE ROADWAY AT END BENT #2, OR AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION.

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

AT THE CONTRACTOR'S OPTION, AND UPON REMOVAL OF THE CAUSEWAY, THE CLASS II RIP RAP USED IN THE CAUSEWAY MAY BE PLACED AS RIP RAP SLOPE PROTECTION. SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY ACCESS AT STA. 16+98.00.

TEMPORARY CAUSEWAY SHALL NOT BE PERMITTED TO BLOCK THE CONFLUENCE OF ANY JURISDICTIONAL TRIBUTARY STREAM WITH THE TAR RIVER.

HYDRAULIC DATA

DESIGN DISCHARGE	= 33,000 CFS
FREQUENCY OF DESIGN FLOOD	= 50 YRS.
DESIGN HIGH WATER ELEVATION	= 168.8 FT.
DRAINAGE AREA	= 664 SQ. MI.
BASE DISCHARGE (Q100)	= 25337 CFS
BASE HIGH WATER ELEVATION	= 166.1 FT.

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	= 41700 CFS
FREQUENCY OF OVERTOPPING FLOOD	= 100+ YRS.
OVERTOPPING FLOOD ELEVATION	= 172.5 FT.

PROJECT NO. B-5670

NASH COUNTY

STATION: 16+98.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

BRIDGE OVER TAR RIVER ON US 64 ALT BETWEEN SR 1331 AND SR 1148

NORTH CAROLINA PROFESSIONAL SEAL 030024 ENGINEER ASTER G. ABRAHA

Aster Abraha
DOA90A4ED5195AFD...
09/20/2022

DRAWN BY : M.M. AHMED DATE : JUN 2022
CHECKED BY : S. WANCE DATE : JUN 2022
DESIGN ENGINEER OF RECORD: M.M. AHMED DATE : 07/2020

9/20/2022
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gabraha

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS
2			4			40

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		HL93(Inv)	N/A	1	1.29	--	1.75	0.860	1.41	A	I	36.625	1.032	1.54	A	I	43.95	0.80	0.860	1.29	A	I	36.625	
		HL93(Opr)	N/A	--	1.83	--	1.35	0.860	1.83	A	I	36.625	1.032	2.00	A	I	43.95	N/A	0.860	1.29	A	I	36.625	
		HS20(Inv)	36.00	2	1.69	60.89	1.75	0.860	1.85	A	I	36.625	1.032	1.82	A	I	43.95	0.80	0.860	1.69	A	I	36.625	
		HS20(Opr)	36.00	--	2.35	84.73	1.35	0.860	2.40	A	I	36.625	1.032	2.35	A	I	43.95	N/A	0.860	1.69	A	I	36.625	
LEGAL LOAD RATING	SV	SNSH	13.50	--	3.82	51.61	1.4	0.860	5.24	A	I	36.625	1.032	5.07	A	I	43.95	0.80	0.860	3.82	A	I	36.625	
		SNGARBS2	20.00	--	2.85	56.93	1.4	0.860	3.90	A	I	36.625	1.032	3.70	A	I	43.95	0.80	0.860	2.85	A	I	36.625	
		SNAGRIS2	22.00	--	2.69	59.29	1.4	0.860	3.69	A	I	36.625	1.032	3.48	A	I	43.95	0.80	0.860	2.69	A	I	36.625	
		SNCOTTS3	27.25	--	1.90	51.84	1.4	0.860	2.61	A	I	36.625	1.032	2.54	A	I	43.95	0.80	0.860	1.90	A	I	36.625	
		SNAGGRS4	34.93	--	1.59	55.49	1.4	0.860	2.18	A	I	36.625	1.032	2.18	A	I	43.95	0.80	0.860	1.59	A	I	36.625	
		SNS5A	35.55	--	1.55	55.24	1.4	0.860	2.13	A	I	36.625	1.032	2.25	A	I	43.95	0.80	0.860	1.55	A	I	36.625	
		SNS6A	39.95	--	1.43	56.94	1.4	0.860	1.95	A	I	36.625	1.032	2.08	A	I	43.95	0.80	0.860	1.43	A	I	36.625	
		SNS7B	42.00	--	1.36	57.01	1.4	0.860	1.86	A	I	36.625	1.032	2.09	A	I	43.95	0.80	0.860	1.36	A	I	36.625	
	TTST	TNAGRIT3	33.00	--	1.74	57.35	1.4	0.860	2.38	A	I	36.625	1.032	2.45	A	I	43.95	0.80	0.860	1.74	A	I	36.625	
		TNT4A	33.08	--	1.75	57.73	1.4	0.860	2.39	A	I	36.625	1.032	2.36	A	I	43.95	0.80	0.860	1.75	A	I	36.625	
		TNAGRIT4	43.00	--	1.41	60.67	1.4	0.860	1.93	A	I	36.625	1.032	1.93	A	I	43.95	0.80	0.860	1.41	A	I	36.625	
		TNAGRT5A	45.00	--	1.33	59.87	1.4	0.860	1.82	A	I	36.625	1.032	1.97	A	I	43.95	0.80	0.860	1.33	A	I	36.625	
		TNAGRT5B	45.00	3	1.31	59.15	1.4	0.860	1.80	A	I	36.625	1.032	1.83	A	I	43.95	0.80	0.860	1.31	A	I	36.625	
		TNT6A	41.60	--	1.43	59.36	1.4	0.860	1.95	A	I	36.625	1.032	2.31	A	I	43.95	0.80	0.860	1.43	A	I	36.625	
		TNT7A	42.00	--	1.43	60.22	1.4	0.860	1.96	A	I	36.625	1.032	2.25	A	I	43.95	0.80	0.860	1.43	A	I	36.625	
		TNT7B	42.00	--	1.48	62.28	1.4	0.860	2.03	A	I	36.625	1.032	2.01	A	I	43.95	0.80	0.860	1.48	A	I	36.625	

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:

1.
2.
3.
4.

⟨#⟩ CONTROLLING LOAD RATING

⟨1⟩ DESIGN LOAD RATING (HL-93)

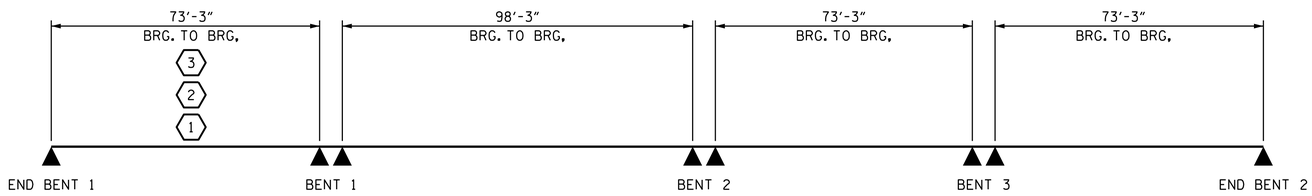
⟨2⟩ DESIGN LOAD RATING (HS-20)

⟨3⟩ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



LRFR SUMMARY

PROJECT NO. B-5670

NASH COUNTY

STATION: 16+98.00 -L-

NORTH CAROLINA PROFESSIONAL SEAL 030024 ENGINEER ASTER G. ABRAHA

Digitally signed by ASTER ABRAHA
DocuSigned by: DDA094AED5104FD...
09/20/2022

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

LRFR SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

(NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			40

STD. NO. LRFR1

ASSEMBLED BY : G. AYES		DATE : 6/2022	
CHECKED BY : S. WANCE		DATE : 07/2022	
DRAWN BY : MAA 1/08	REV. 11/12/08RR	MAA/GM	
CHECKED BY : GM/DI 2/08	REV. 10/1/11	MAA/GM	

9/20/2022
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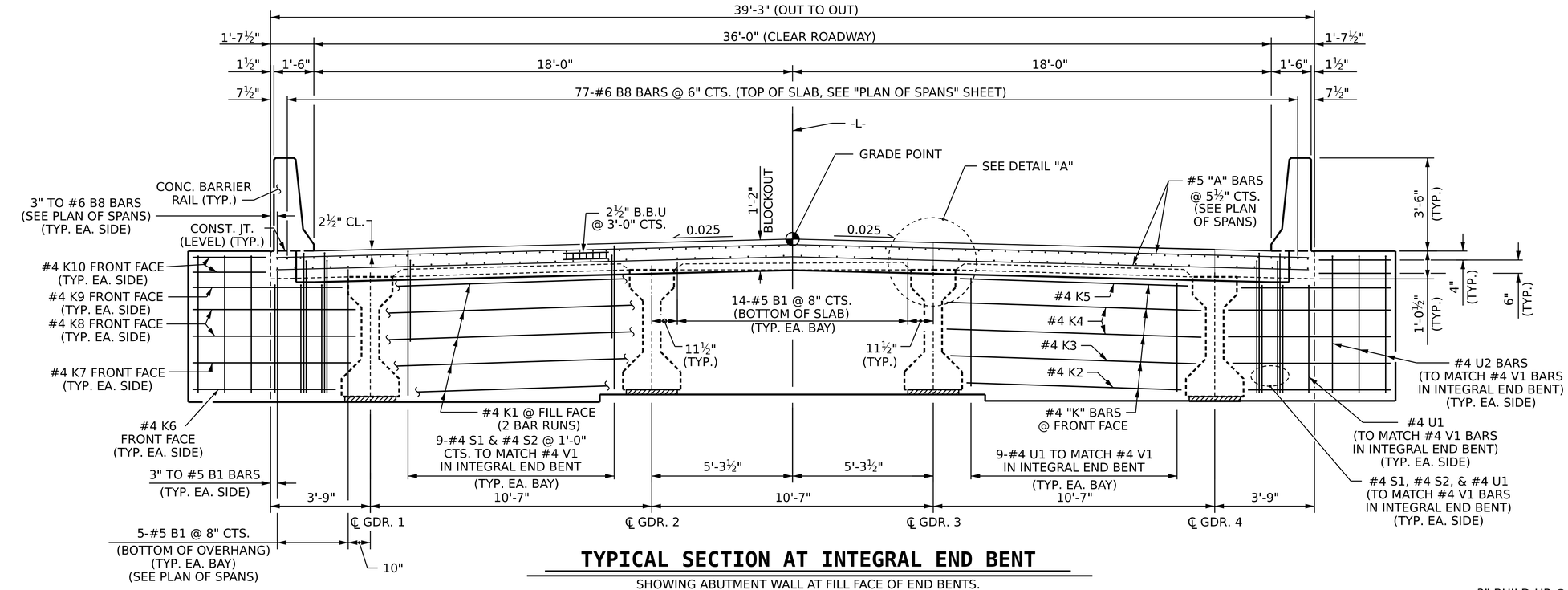
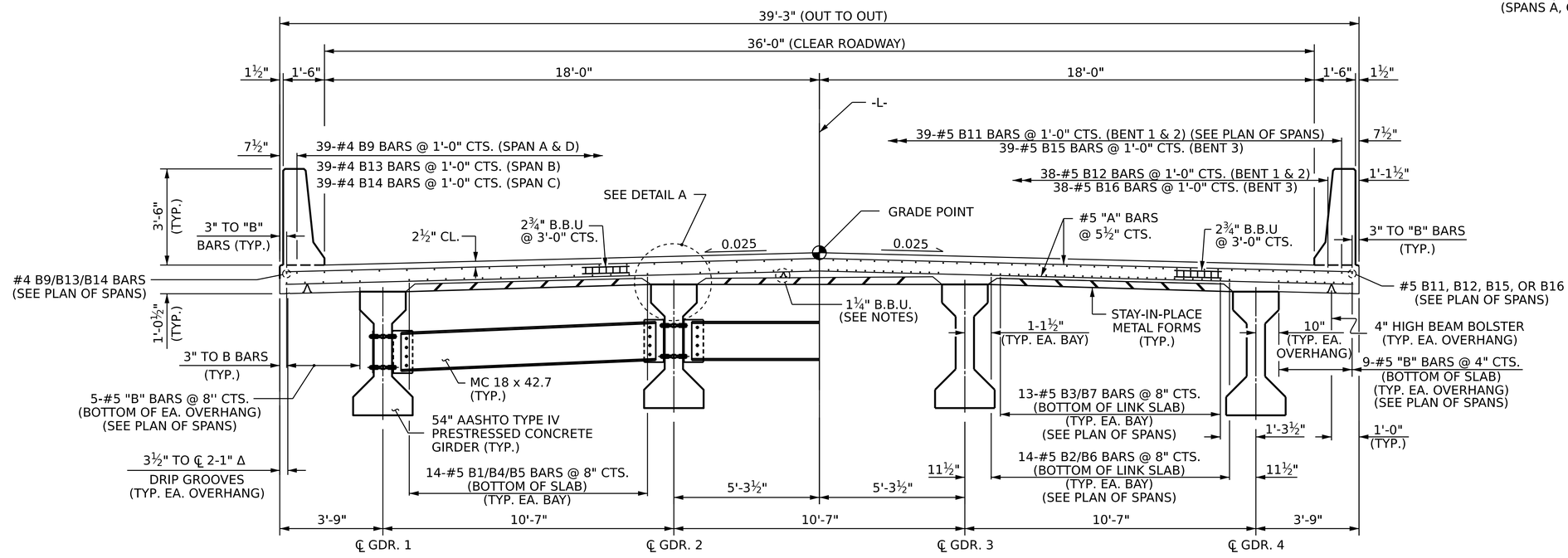


TYPICAL SECTION AT INTEGRAL END BENT

SHOWING ABUTMENT WALL AT FILL FACE OF END BENTS.
WINGS NOT SHOWN FOR CLARITY.



HALF SECTION @ MID SPAN

HALF SECTION - LINK SLAB @ BENTS

TYPICAL SECTION

2 SPAN CONTINUOUS FOR LIVELOAD WITH COMPOSITE DECK

NOTES

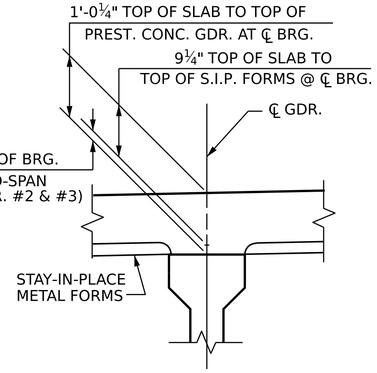
PROVIDE 1 1/4" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF 'A' BARS.

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

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

FOR INTERMEDIATE STEEL DIAPHRAGMS DETAILS, SEE ``INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE IV PRESTRESSED CONCRETE GIRDERS SHEET.

METAL STAY-IN-PLACE FORMS SHALL NOT BE WELDED TO THE SUPPORT ANGLES WITHIN THE LINK SLAB AREAS. SEE "PLAN OF SPANS'' SHEETS FOR LOCATION.



DETAIL "A"

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

PROJECT NO. B-5670

NASH COUNTY

STATION: 16+98.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION

NORTH CAROLINA PROFESSIONAL SEAL 030024 ENGINEER ASTER G. ABRAHA

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09/20/2022

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			40

DRAWN BY : G. AYES DATE : 12/2021
CHECKED BY : M. M. AHMED DATE : 3/2022
DESIGN ENGINEER OF RECORD: M. M. AHMED DATE : 4/2020

9/20/2022
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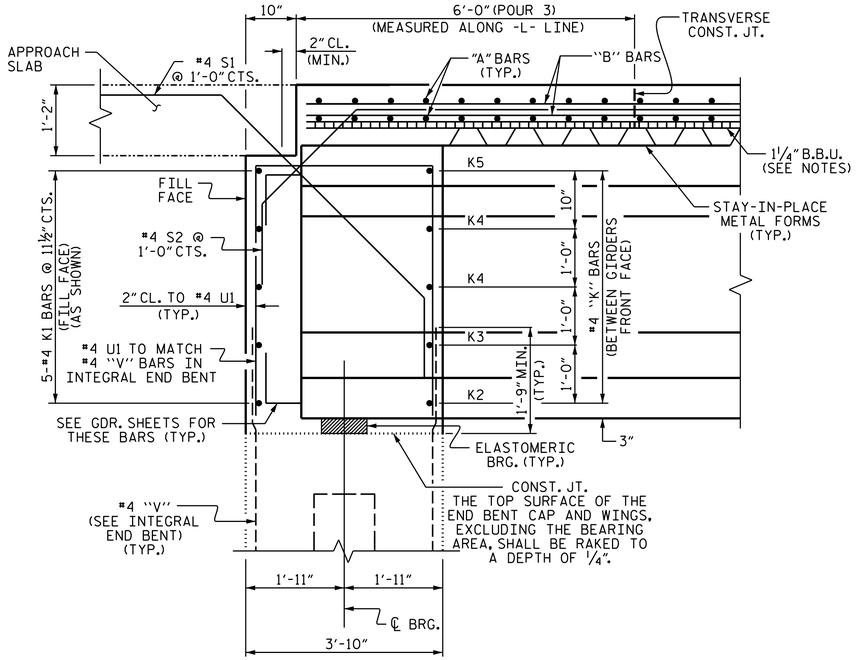
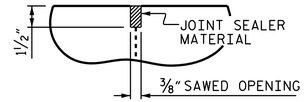


SECTION @ INTEGRAL END BENT

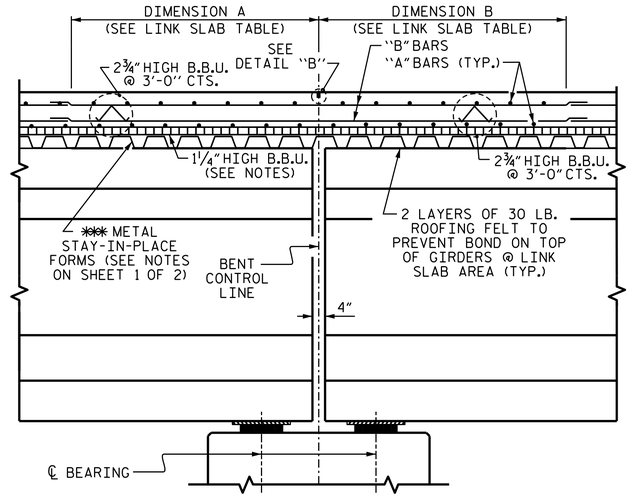
LINK SLAB TABLE		
BENT NO.	DIMENSION A	DIMENSION B
1	✱ 4'-1¹¹⁄₁₆"	✱ 5'-5¼"
2	✱ 5'-5¼"	✱ 4'-1¹¹⁄₁₆"
3	✱ 4'-1¹¹⁄₁₆"	✱ 4'-1¹¹⁄₁₆"

✱MEASURED ALONG ℄ GIRDER



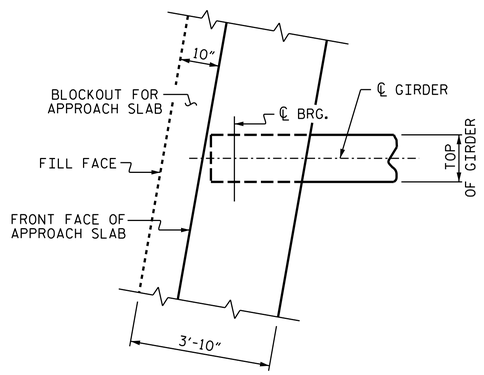
DETAIL "B"

A 1½" DEEP CONTRACTION JOINT AT BENT CONTROL LINE SHALL BE SAWN WITHIN 24 HOURS OF POURING THE DECK. THE JOINT SHALL BE FILLED WITH JOINT SEALER MATERIAL. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF TYPE B LOW MODULUS SILICONE SEALANT. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

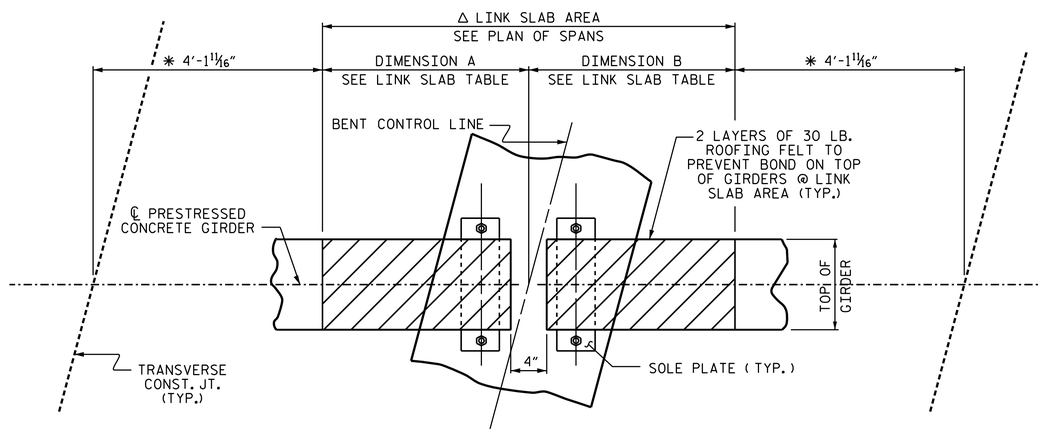


SECTION @ LINK SLAB

✱✱✱ METAL STAY-IN-PLACE FORMS SHALL NOT BE WELDED TO THE GIRDER FLANGES IN THE REGION OF LINK SLAB



PLAN OF GIRDER AT INTEGRAL END BENT



PLAN @ INTERIOR BENTS

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

NORTH CAROLINA PROFESSIONAL SEAL 030024 ENGINEER ASTER G. ABRAHA
Signed by: Aster Abraha
DDA094AED5104FD...
09/20/2022

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PROJECT NO. B-5670
NASH COUNTY
STATION: 16+98.00 -L-
SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			40

DRAWN BY : G. AYES DATE : 1/2022
CHECKED BY : M. M. AHMED DATE : 3/2022
DESIGN ENGINEER OF RECORD: M. M. AHMED DATE : 04/2020

9/20/2022
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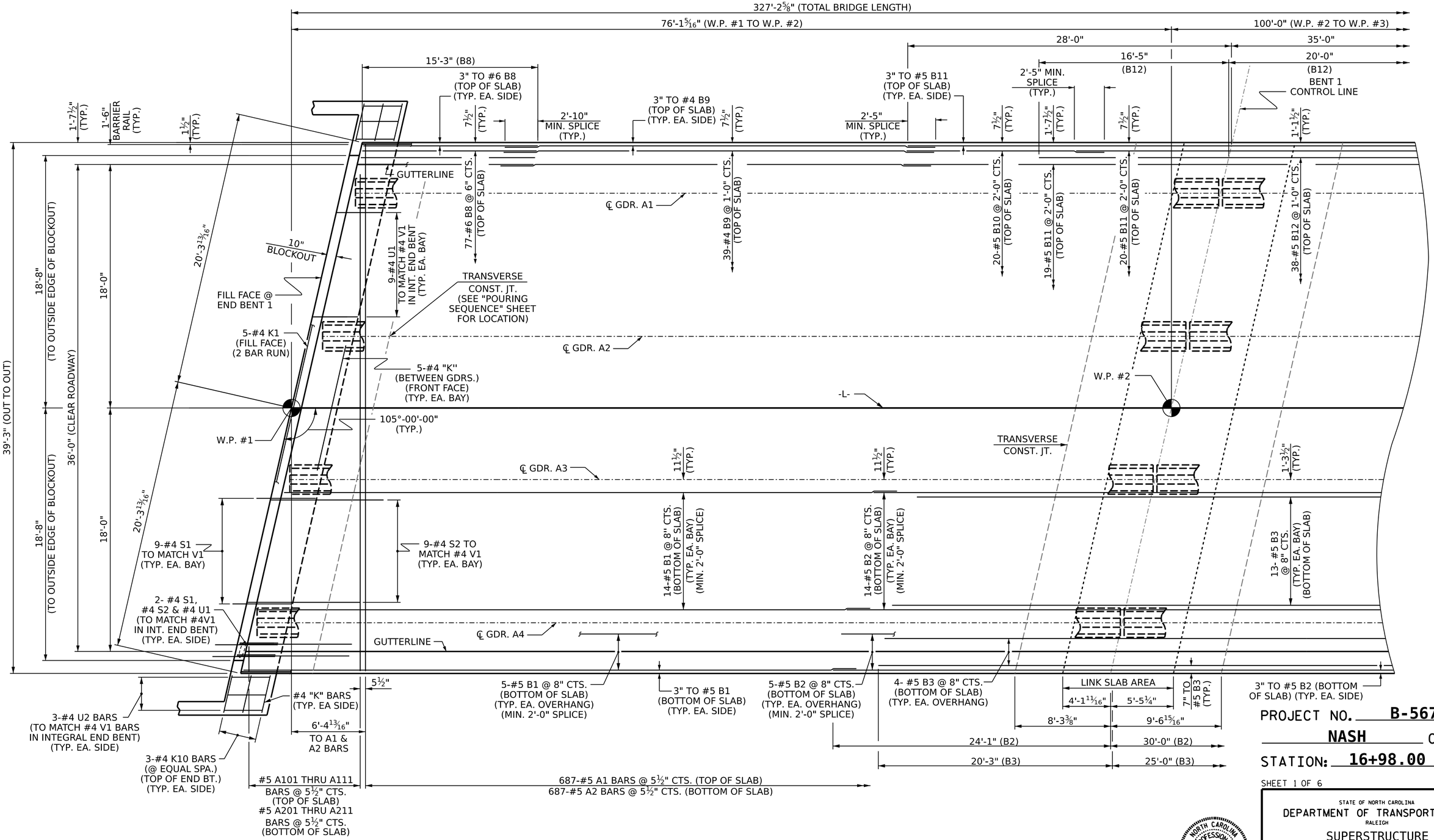

SPAN A

PROJECT NO. B-5670

NASH COUNTY

STATION: 16+98.00 -L-

SHEET 1 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPANS SPAN A

NORTH CAROLINA PROFESSIONAL SEAL 030024 ENGINEER ASTER G. ABRAHA

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			40

DRAWN BY : G. AYES DATE : 12/2021
CHECKED BY : M. M. AHMED DATE : 3/2022
DESIGN ENGINEER OF RECORD: M. M. AHMED DATE : 4/2020

9/20/2022
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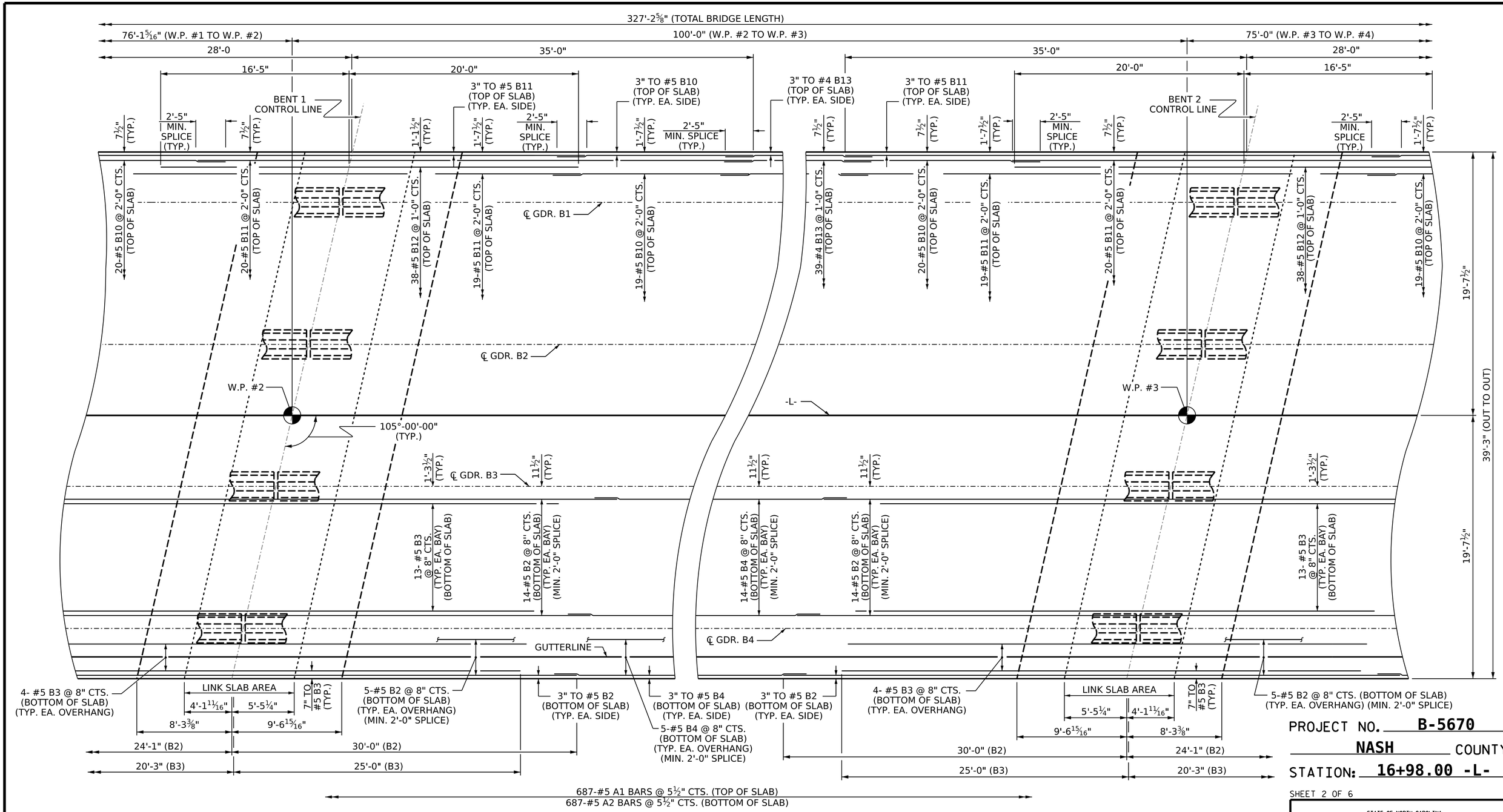

SPAN B

PROJECT NO. B-5670

NASH COUNTY

STATION: 16+98.00 -L-

SHEET 2 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

PLAN OF SPANS SPAN B

NORTH CAROLINA PROFESSIONAL SEAL 030024 ENGINEER ASTER G. ABRAHA

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09/20/2022

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
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DRAWN BY : G. AYES DATE : 12/2021
CHECKED BY : M. M. AHMED DATE : 3/2022
DESIGN ENGINEER OF RECORD: M. M. AHMED DATE : 4/2020

9/20/2022
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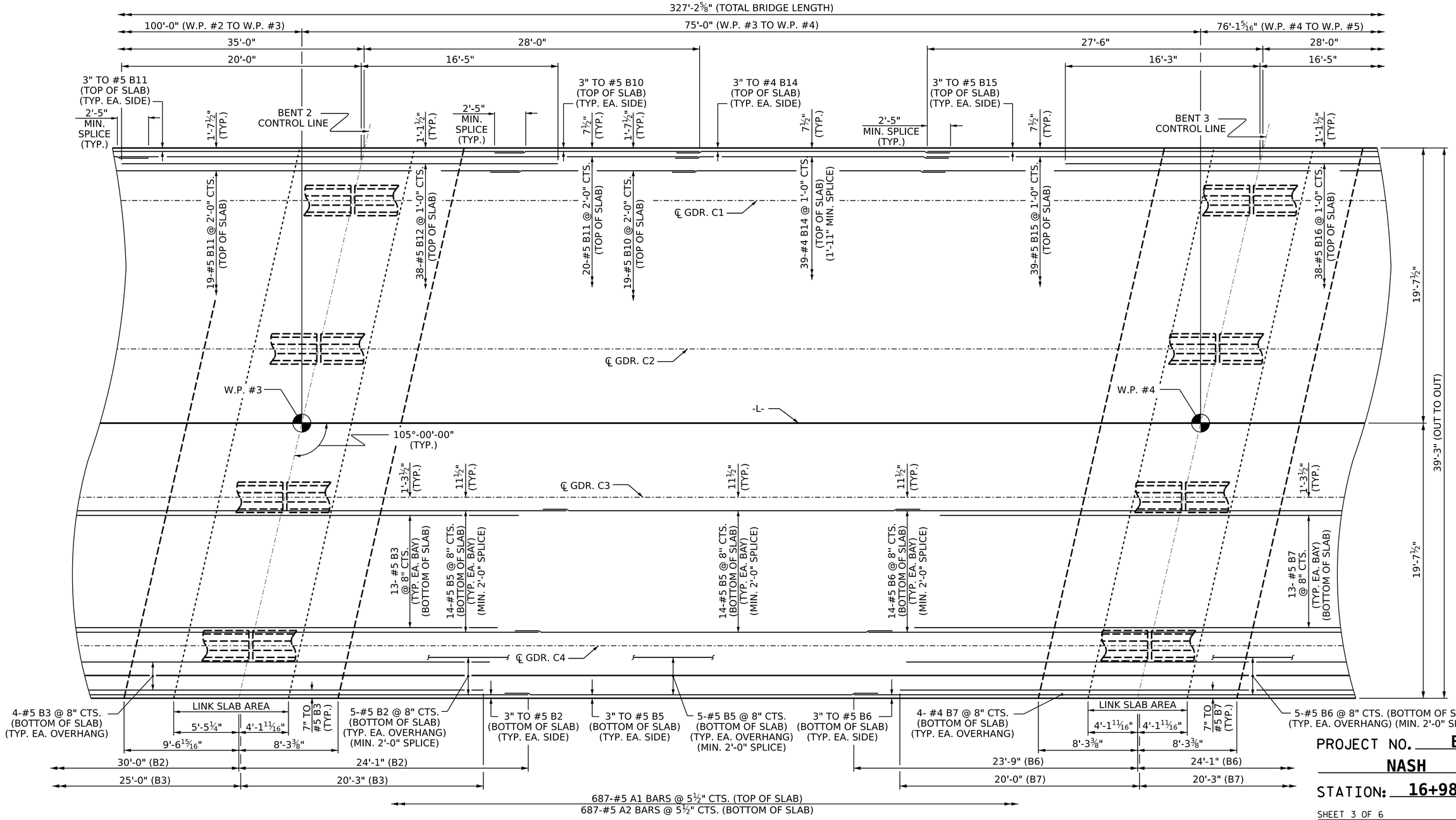

SPAN C

PROJECT NO. B-5670

NASH COUNTY

STATION: 16+98.00 -L-

SHEET 3 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPANS SPAN C

NORTH CAROLINA PROFESSIONAL SEAL 030024 ENGINEER ASTER G. ABRAHA

Digitally signed by: Aster Abraha
0DA094AED5104FD...
09/20/2022

DRAWN BY :	G. AYES	DATE :	12/2021		
CHECKED BY :	M. M. AHMED	DATE :	3/2022		
DESIGN ENGINEER OF RECORD:	M. M. AHMED	DATE :	4/2020		

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
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9/20/2022
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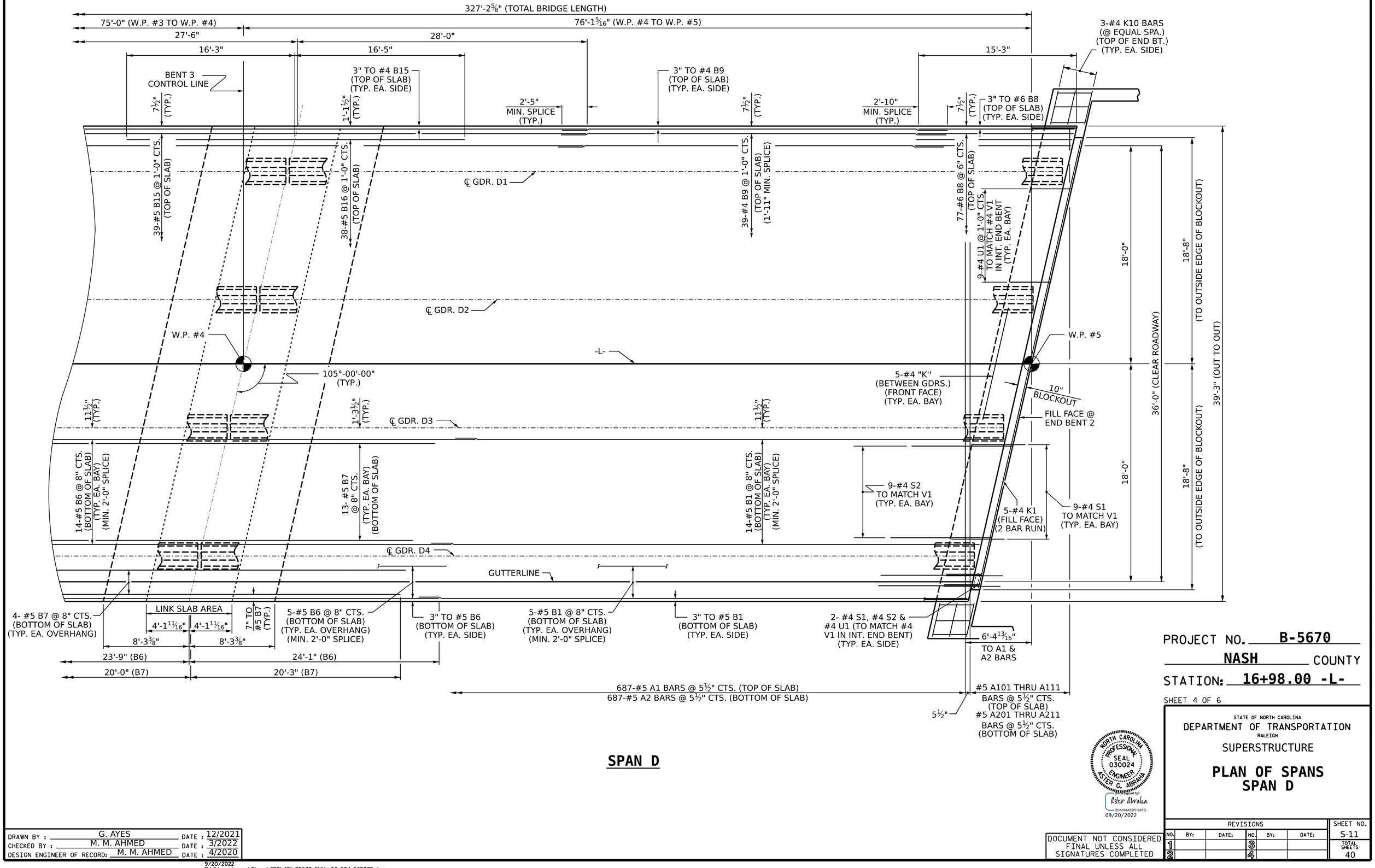

SPAN D

PROJECT NO. B-5670

NASH COUNTY

STATION: 16+98.00 -L-

SHEET 4 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPANS
SPAN D

NORTH CAROLINA PROFESSIONAL SEAL 030024 ENGINEER ASTER G. ABRAHA

DocuSigned by: Aster Abraha DDAD94AED5104FD...

09/20/2022

DRAWN BY : G. AYES DATE : 12/2021
CHECKED BY : M. M. AHMED DATE : 3/2022
DESIGN ENGINEER OF RECORD: M. M. AHMED DATE : 4/2020

9/20/2022
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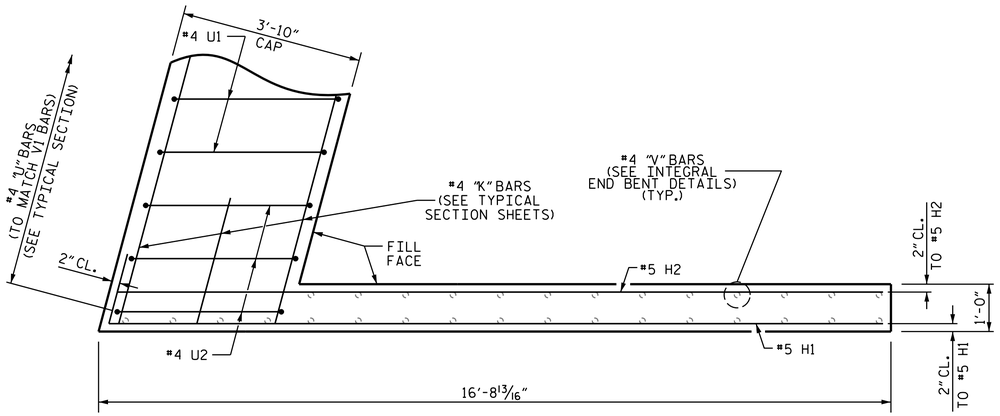
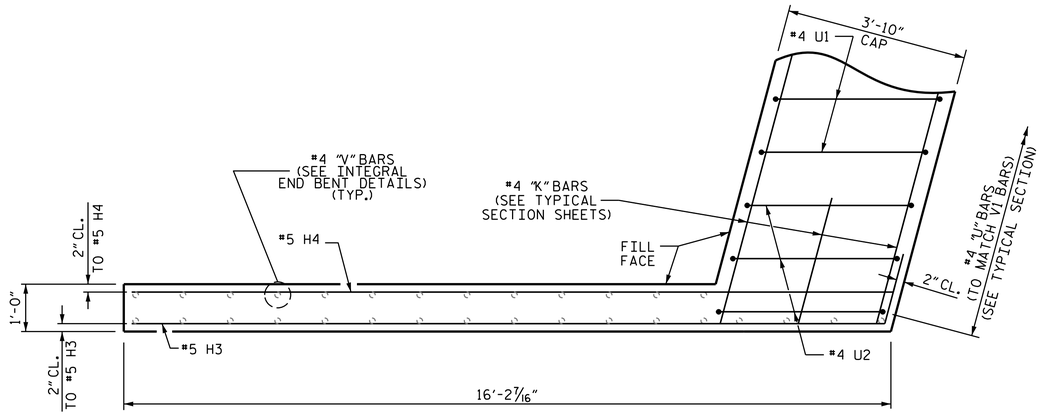
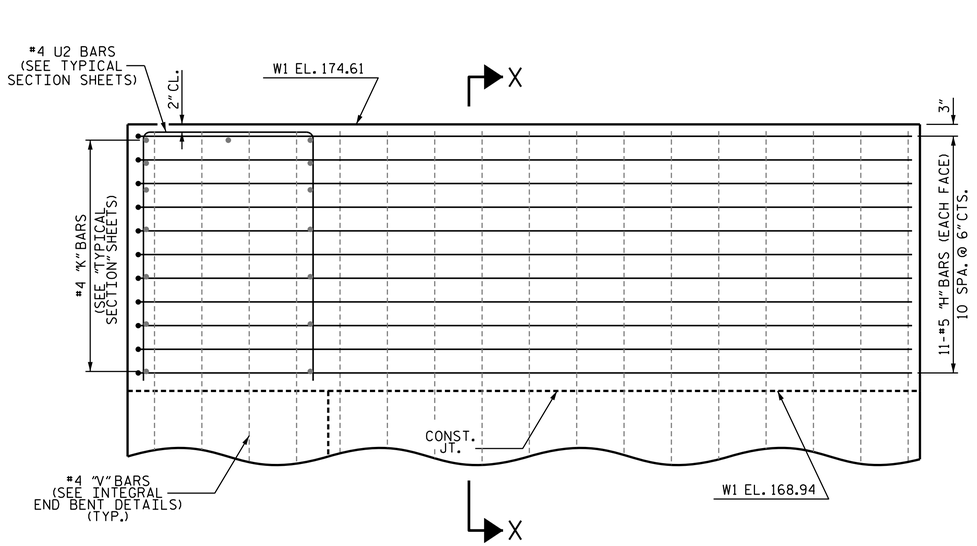
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			40

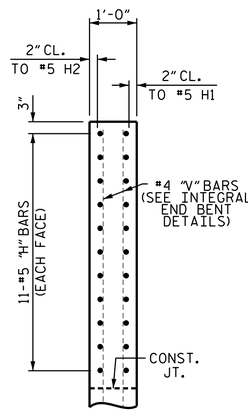




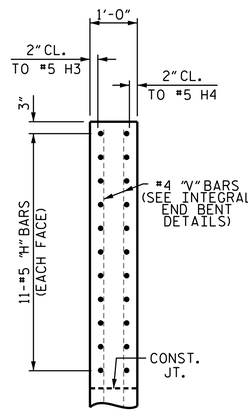
PLAN OF WING W1

PLAN OF WING W2

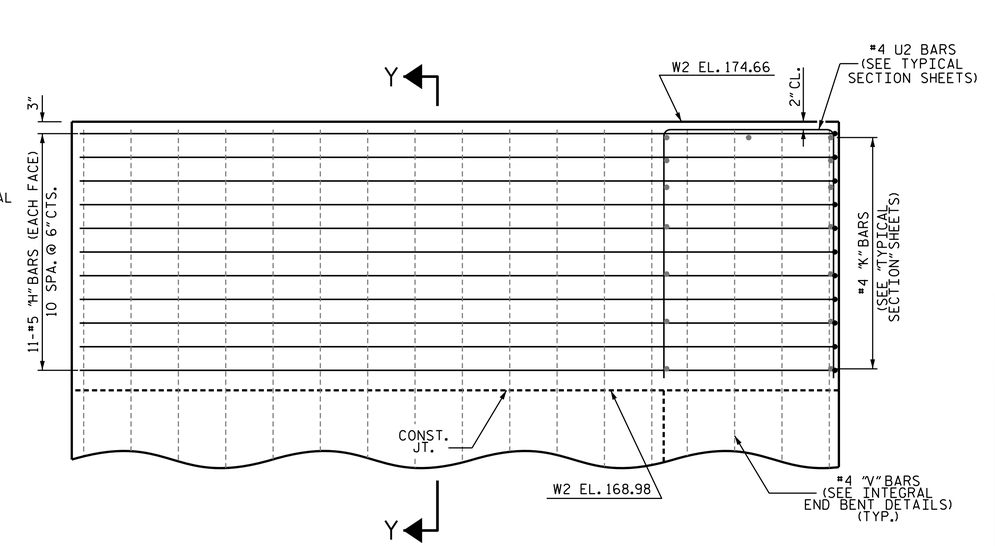




SECTION X-X



SECTION Y-Y



ELEVATION OF WING W1

ELEVATION OF WING W2

UPPER WINGS AT INTEGRAL END BENT 1

FOR LOWER WING REINFORCING STEEL AND DETAILS, SEE "INTEGRAL END BENT 1" SHEETS

PROJECT NO. B-5670

NASH COUNTY

STATION: 16+98.00 -L-

SHEET 5 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

PLAN OF SPANS DETAILS @ END BENT 1

NORTH CAROLINA PROFESSIONAL SEAL 030024 ENGINEER ASTER G. ABRAHA

DocuSigned by: Aster Abraha 0DA094AED5104FD...

09/20/2022

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			40

DRAWN BY : G. AYES DATE : 6/2022
CHECKED BY : M. M. AHMED DATE : 7/2022
DESIGN ENGINEER OF RECORD: M. M. AHMED DATE : 6/2022

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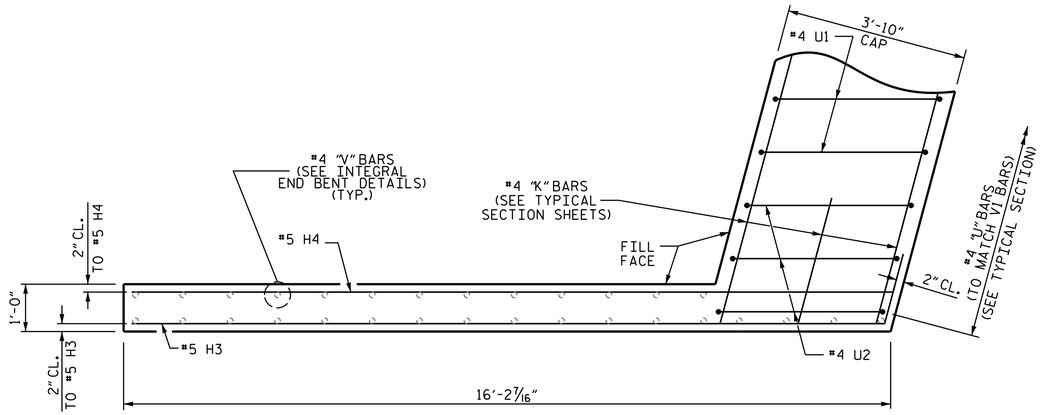
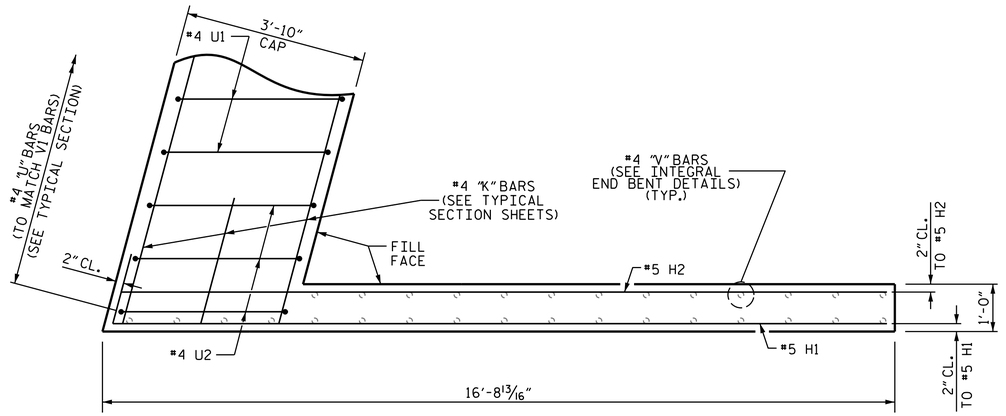
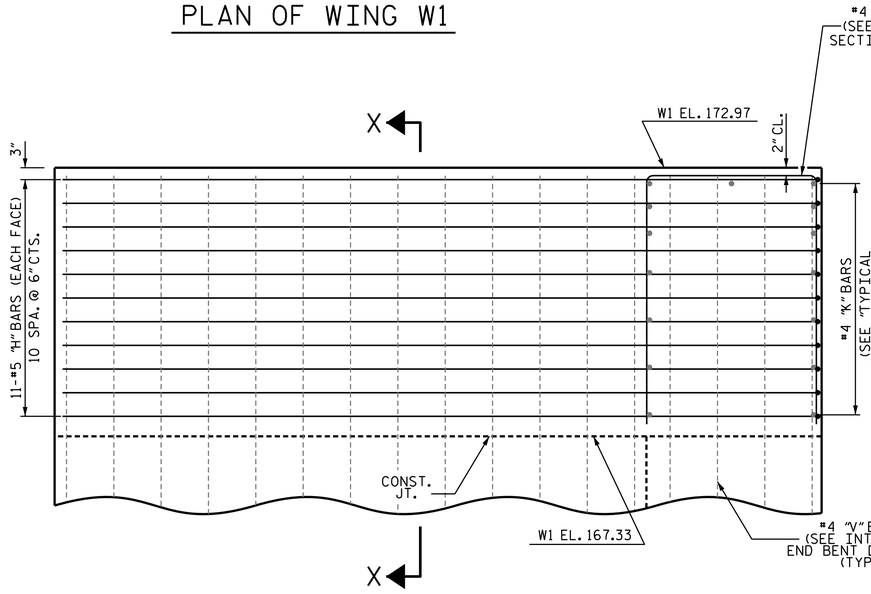
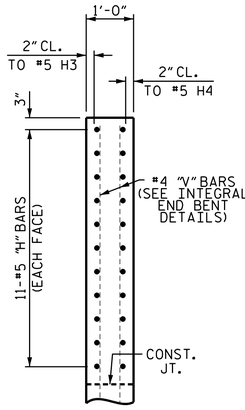


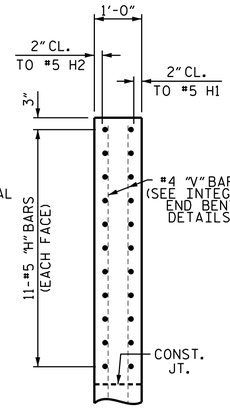


PLAN OF WING W1



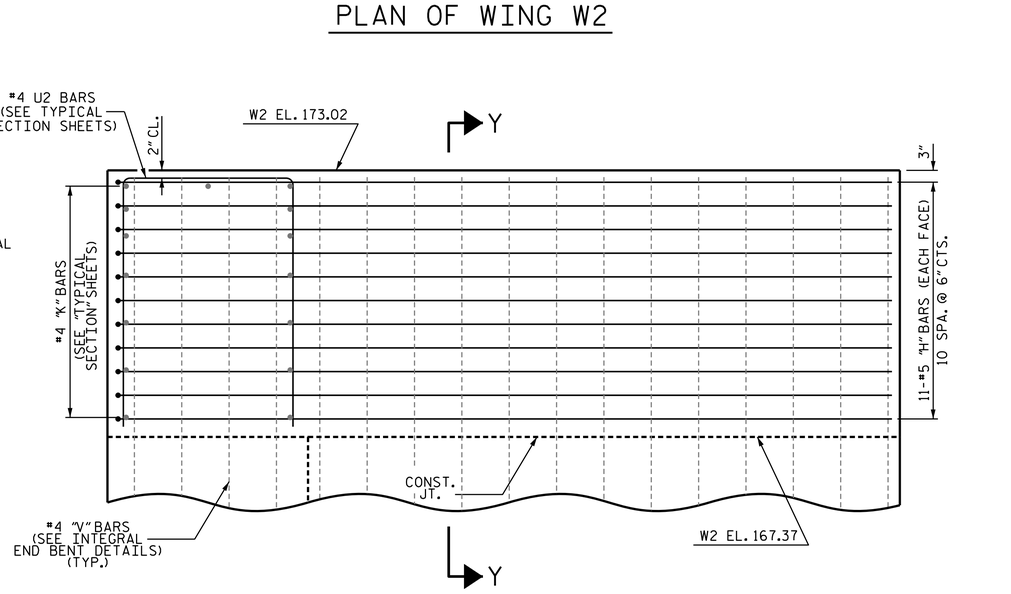


SECTION X-X



SECTION Y-Y

PLAN OF WING W2



ELEVATION OF WING W1

ELEVATION OF WING W2

UPPER WINGS AT INTEGRAL END BENT 2

FOR LOWER WING REINFORCING STEEL AND DETAILS, SEE "INTEGRAL END BENT 2" SHEETS

PROJECT NO. B-5670

NASH COUNTY

STATION: 16+98.00 -L-

SHEET 6 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

PLAN OF SPANS DETAILS @ END BENT 2

NORTH CAROLINA PROFESSIONAL SEAL 030024 ENGINEER ASTER G. ABRAHA

Digitally signed by: Aster Abraha
0DA094AED5104FD...
09/20/2022

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			40

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DRAWN BY :	G. AYES	DATE :	6/2022
CHECKED BY :	M. M. AHMED	DATE :	7/2022
DESIGN ENGINEER OF RECORD:	M. M. AHMED	DATE :	6/2022

9/20/2022
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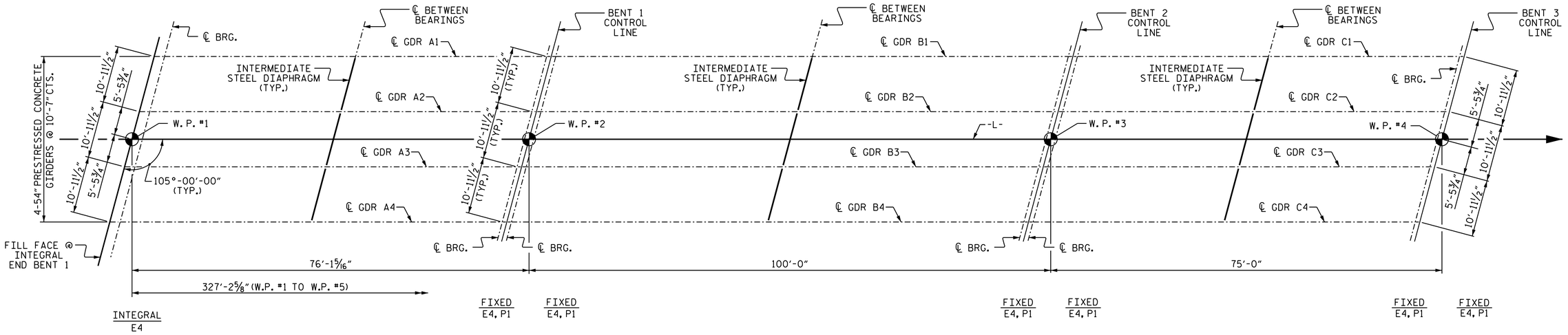
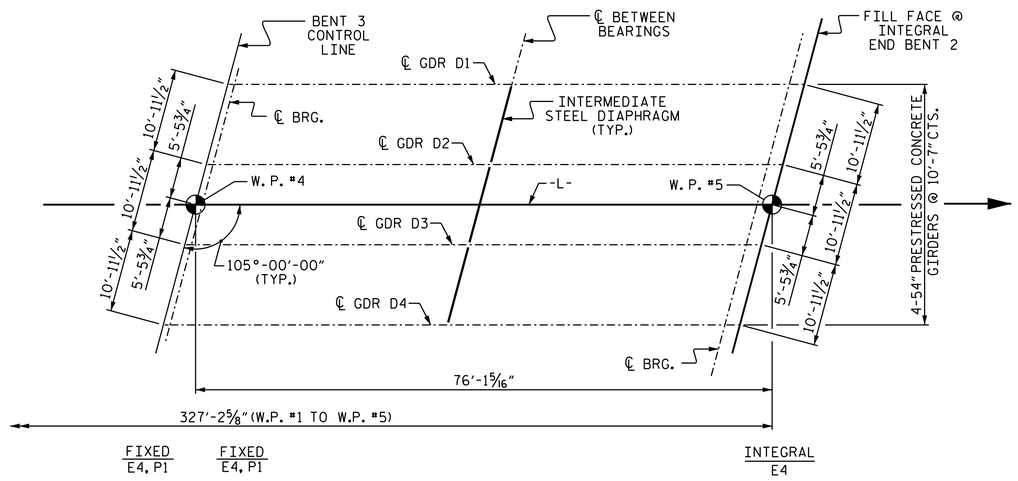
gabraha





SPAN D

FRAMING PLAN

PROJECT NO. B-5670

NASH COUNTY

STATION: 16+98.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

FRAMING PLAN

NORTH CAROLINA PROFESSIONAL SEAL 030024 ENGINEER ASTER G. ABRAHA

Aster Abraha
DOA094AED5104FD...
09/20/2022

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			40

DRAWN BY : M.M. AHMED DATE : 06/22
CHECKED BY : S. WANCE DATE : 06/22
DESIGN ENGINEER OF RECORD: M.M. AHMED DATE : 04/2020

9/20/2022
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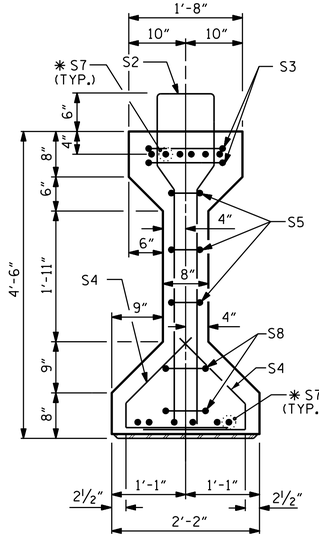
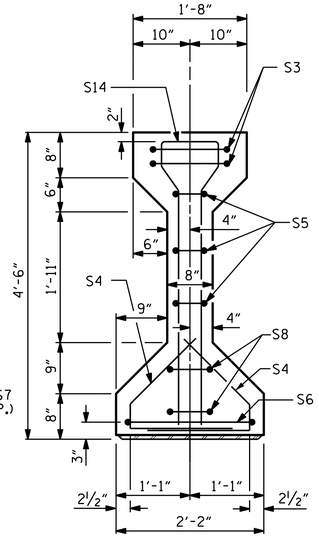
aabraha

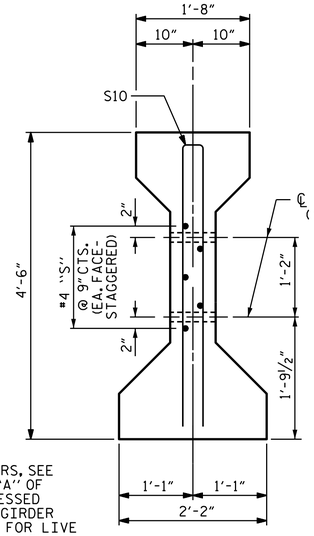


SECTION A-A



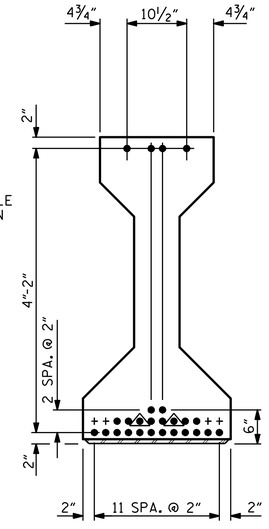
SECTION B-B

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

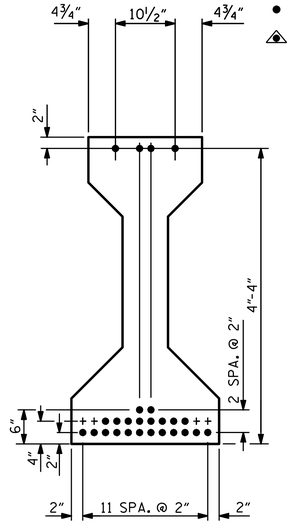


SECTION C-C

(S1 BARS NOT SHOWN)



AT END OF GIRDER

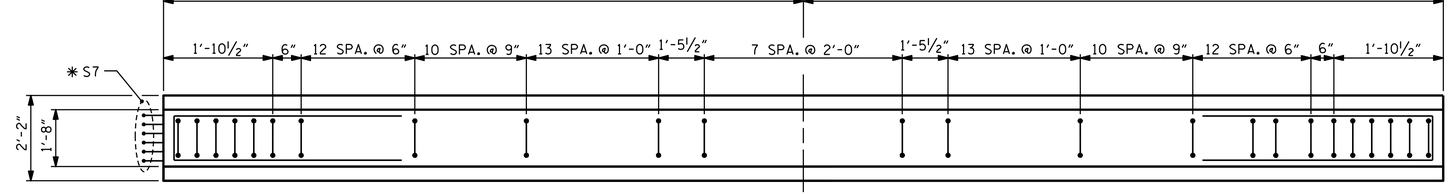


AT ℄ OF GIRDER

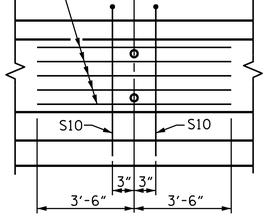
DEBONDING LEGEND
- ● FULLY BONDED STRANDS
- ◈ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

(26 STRANDS REQUIRED. ALL STRAIGHT, PARTIALLY DEBONDED)

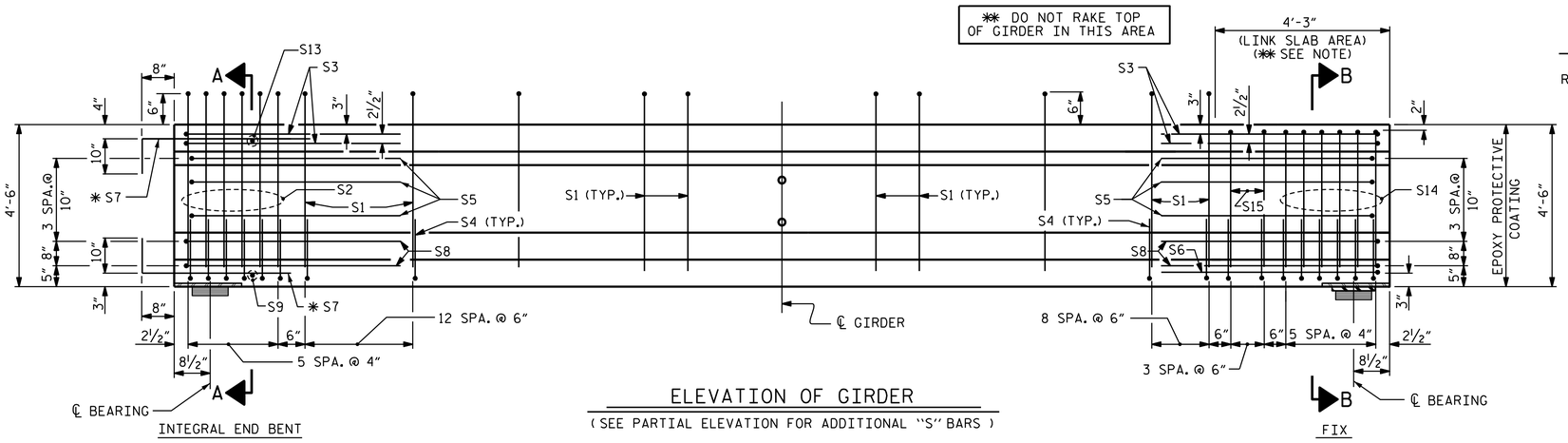


PLAN OF GIRDER



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR ALL GIRDERS



INTEGRAL END BENT

ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

FIX

0.6" Ø L. R. GRADE 270 STRANDS

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

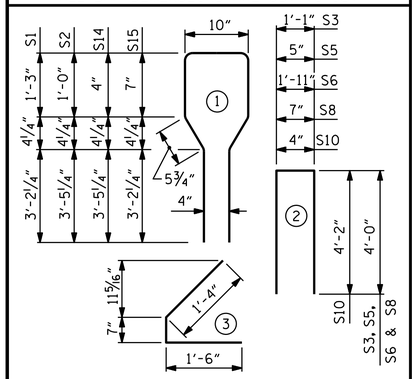
REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	76	#4	1	10'-8"	542
S2	6	#6	1	10'-8"	96
S3	4	#4	2	9'-1"	24
S4	76	#4	3	3'-5"	173
S5	6	#4	2	8'-5"	34
S6	1	#4	2	9'-11"	7
* S7	12	#5	STR	3'-8"	46
S8	4	#4	2	8'-7"	23
S9	1	#3	STR	1'-10"	1
S10	2	#5	2	8'-8"	18
S11	5	#4	STR	7'-0"	23
S13	1	#3	STR	1'-4"	1
S14	6	#6	1	9'-4"	84
S15	4	#4	1	9'-4"	25

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

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL LB.	7500 PSI CONCRETE C.Y.	0.6" Ø L.R. STRANDS No.
SPAN A	1097	15.2	26

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
4	74'-8"	298'-8"

PROJECT NO. B-5670

NASH COUNTY

STATION: 16+98.00 -L-

SHEET 1 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

AASHTO TYPE IV
PRESTRESSED CONCRETE GIRDER
LINK SLAB
SPAN A

NORTH CAROLINA PROFESSIONAL SEAL 030024 ENGINEER ASTER G. ABRAHA

Aster Abraha
DDA094AED5104FD...
09/20/2022

ASSEMBLED BY : M.M. AHMED	DATE : 06/22		
CHECKED BY : S. WANCE	DATE : 06/22		
DESIGN ENGINEER OF RECORD: M.M. AHMED	DATE : 07/22		
DRAWN BY : ELR 8/91	REV. 10/1/11	MAA/GM	
CHECKED BY : GRP 8/91	REV. 1/15	MAA/TMG	
	REV. 12/17	MAA/THC	

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2			4			40

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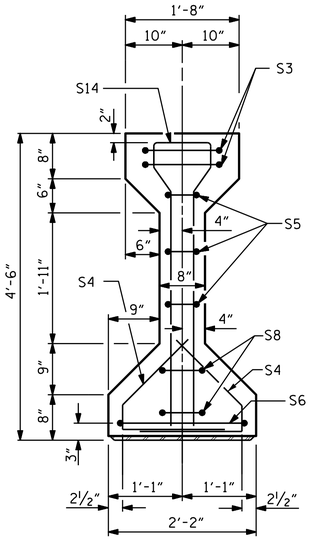
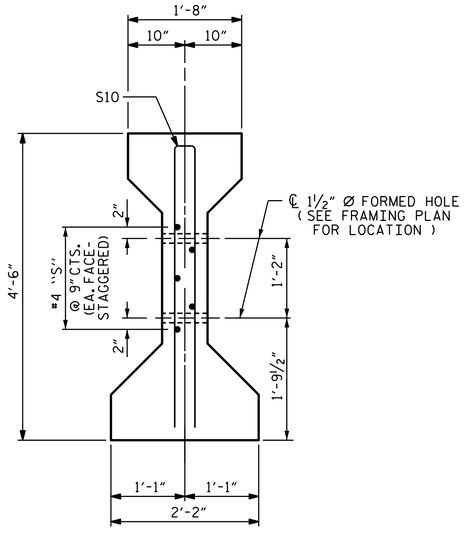
STD. NO. PCG6 (Sht. 2)

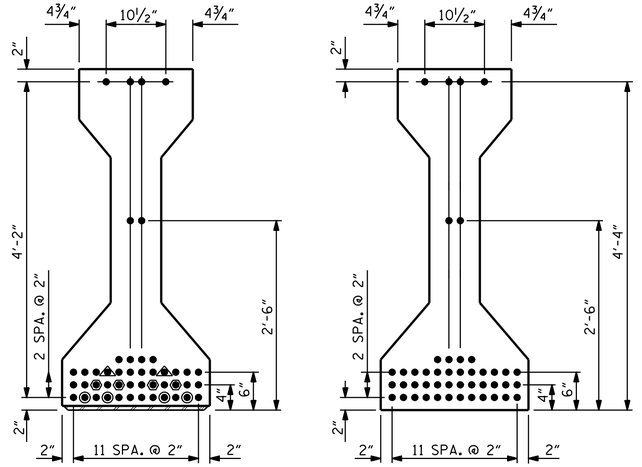


SECTION B-B



SECTION C-C

(S1 BARS NOT SHOWN)



AT END OF GIRDER

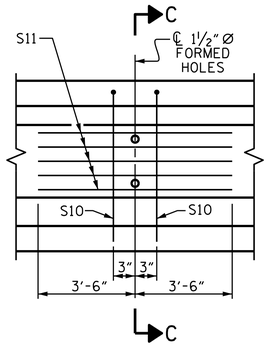
AT ℄ OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

(46 STRANDS REQUIRED. ALL STRAIGHT, PARTIALLY DEBONDED)

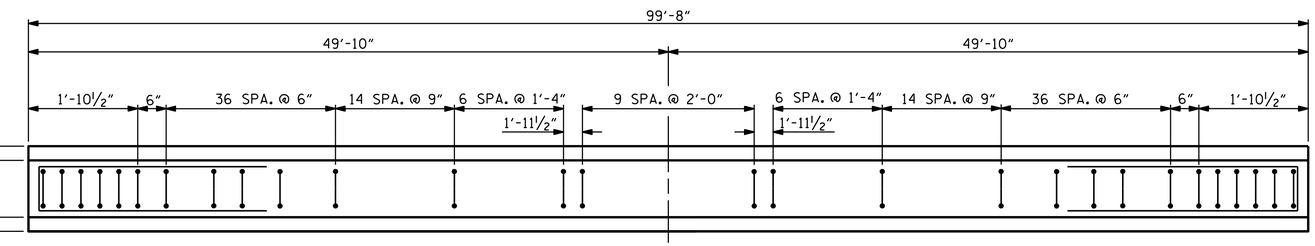
DEBONDING LEGEND

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

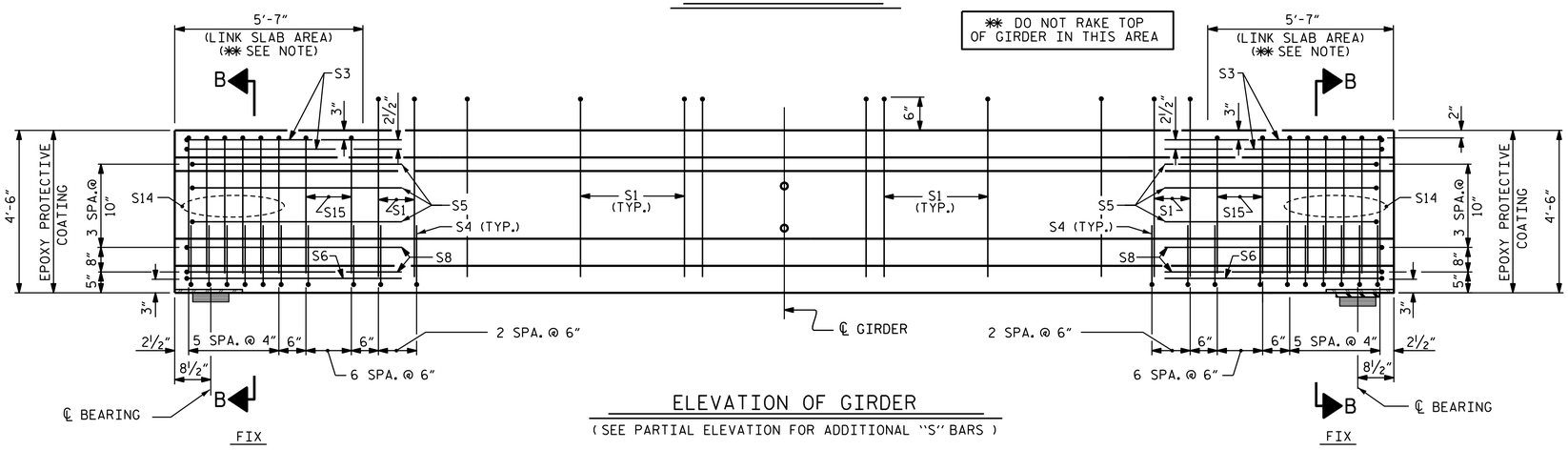


PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR ALL GIRDERS



PLAN OF GIRDER



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

0.6" Ø L. R. GRADE 270 STRANDS

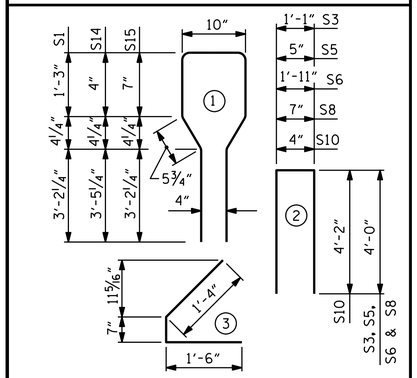
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	110	#4	1	10'-8"	784
S3	4	#4	2	9'-1"	24
S4	64	#4	3	3'-5"	146
S5	6	#4	2	8'-5"	34
S6	2	#4	2	9'-11"	13
S8	4	#4	2	8'-7"	23
S10	2	#5	2	8'-8"	18
S11	5	#4	STR	7'-0"	23
S14	12	#6	1	9'-4"	168
S15	14	#4	1	9'-4"	87

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL LB.	9000 PSI CONCRETE C.Y.	0.6" Ø L.R. STRANDS No.
SPAN B	1320	20.2	46

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
4	99'-8"	398'-8"

PROJECT NO. B-5670

NASH COUNTY

STATION: 16+98.00 -L-

SHEET 2 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

AASHTO TYPE IV PRESTRESSED CONCRETE GIRDER LINK SLAB SPAN B

NORTH CAROLINA PROFESSIONAL SEAL 030024 ENGINEER ASTER G. ABRAHA

Aster Abraha
DDA094AED5104FD...
09/20/2022

ASSEMBLED BY :	M.M. AHMED	DATE : 06/22
CHECKED BY :	S. WANCE	DATE : 06/22
DESIGN ENGINEER OF RECORD:	M.M. AHMED	DATE : 07/22
DRAWN BY :	ELR 8/91	
CHECKED BY :	GRP 8/91	

REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			40
REV. 10/1/11	MAA/GM					
REV. 1/15	MAA/TMG					
REV. 12/17	MAA/THC					

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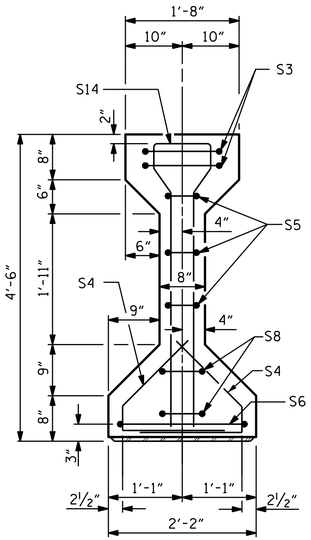
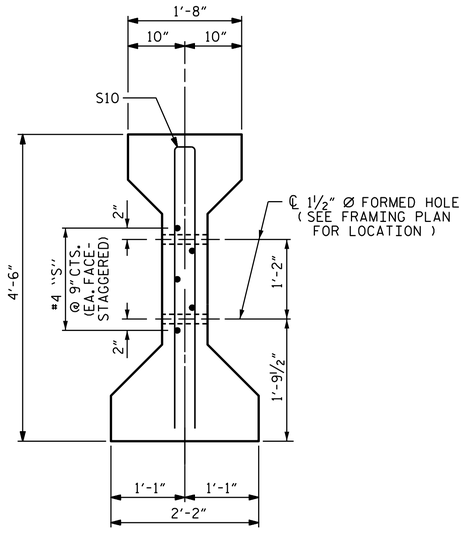
aabraha

STD. NO. PCG6 (Sht. 2)

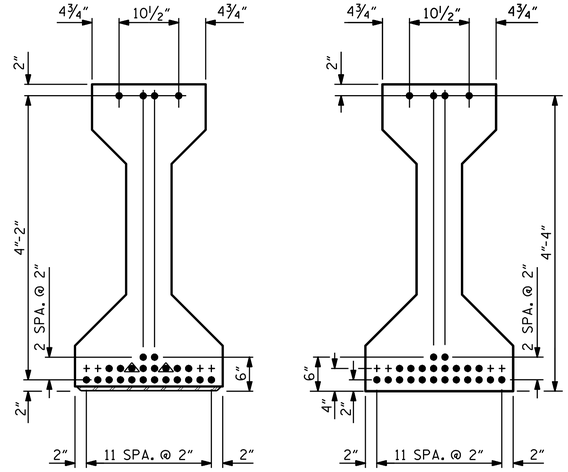


SECTION B-B



SECTION C-C

(S1 BARS NOT SHOWN)



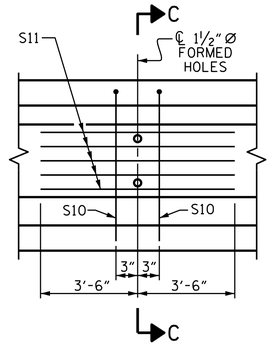
0.6"Ø LOW RELAXATION STRAND LAYOUT

(26 STRANDS REQUIRED. ALL STRAIGHT, PARTIALLY DEBONDED)

DEBONDING LEGEND

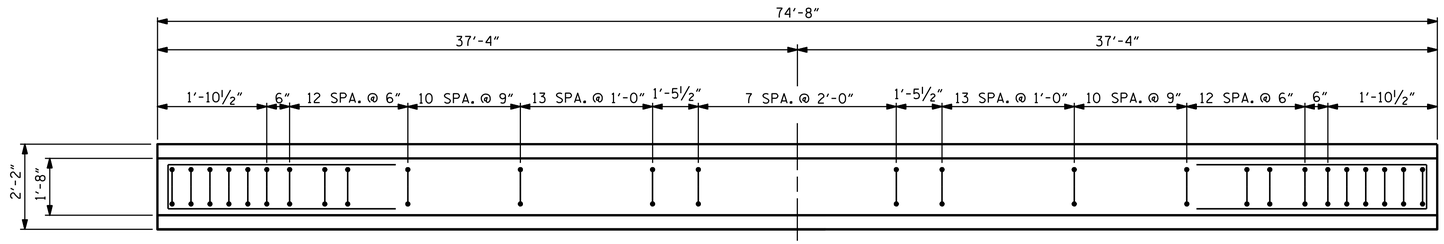
● FULLY BONDED STRANDS

◬ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER

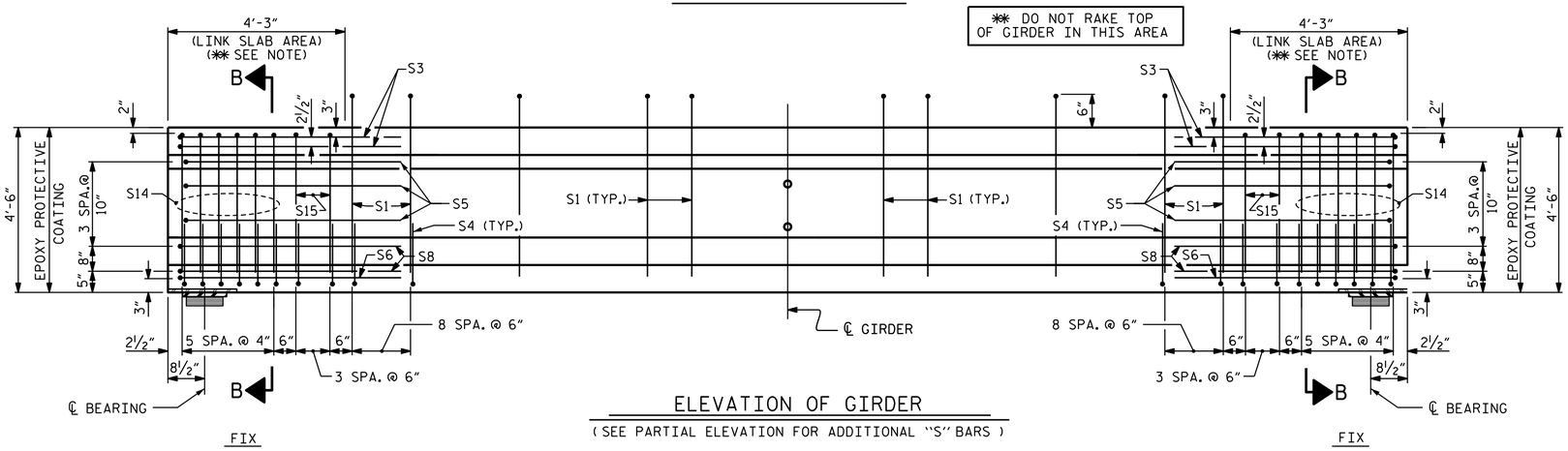


PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM
REINFORCING STEEL FOR ALL GIRDERS



PLAN OF GIRDER



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

0.6" Ø L. R. GRADE 270 STRANDS

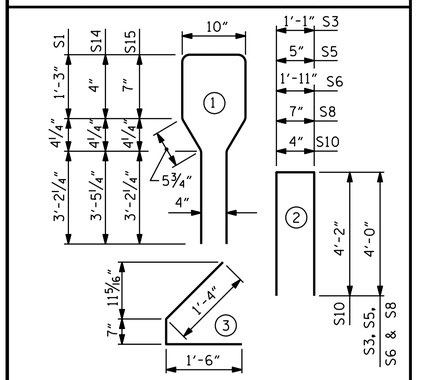
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	72	#4	1	10'-8"	513
S3	4	#4	2	9'-1"	24
S4	76	#4	3	3'-5"	173
S5	6	#4	2	8'-5"	34
S6	2	#4	2	9'-11"	13
S8	4	#4	2	8'-7"	23
S10	2	#5	2	8'-8"	18
S11	5	#4	STR	7'-0"	23
S14	12	#6	1	9'-4"	168
S15	8	#4	1	9'-4"	50

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL LB.	7500 PSI CONCRETE C.Y.	0.6" Ø L.R. STRANDS No.
SPAN C	1039	15.2	26

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
4	74'-8"	298'-8"

PROJECT NO. B-5670

NASH COUNTY

STATION: 16+98.00 -L-

SHEET 3 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

AASHTO TYPE IV PRESTRESSED CONCRETE GIRDER LINK SLAB SPAN C

NORTH CAROLINA PROFESSIONAL SEAL 030024 ENGINEER ASTER G. ABRAHA

Aster Abraha
DDA094AED5104FD...
09/20/2022

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			40

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ASSEMBLED BY :	M.M. AHMED	DATE :	06/22
CHECKED BY :	S. WANCE	DATE :	06/22
DESIGN ENGINEER OF RECORD:	M.M. AHMED	DATE :	07/22
DRAWN BY : ELR 8/91	REV. 10/1/11		MAA/GM
CHECKED BY : GRP 8/91	REV. 1/15		MAA/TMG
	REV. 12/17		MAA/THC

9/20/2022
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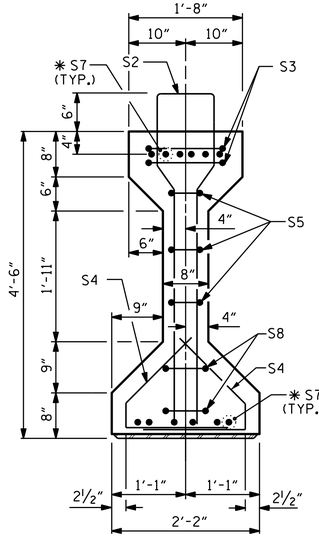
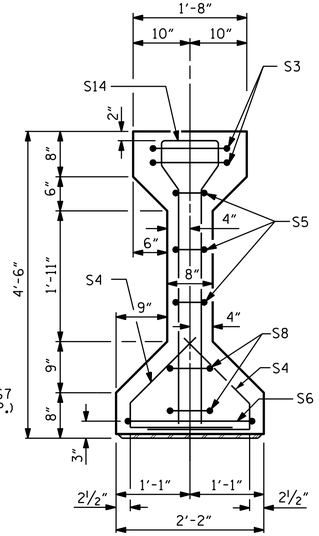
aabraha

STD. NO. PCG6 (Sht. 2)

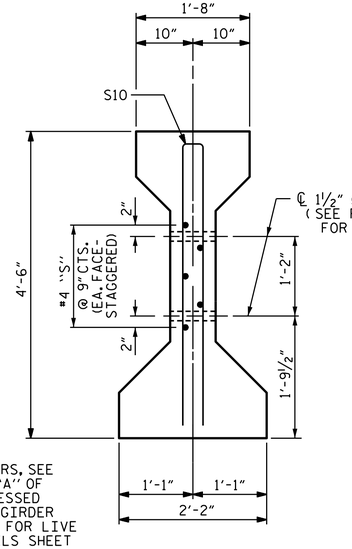


SECTION A-A



SECTION B-B

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

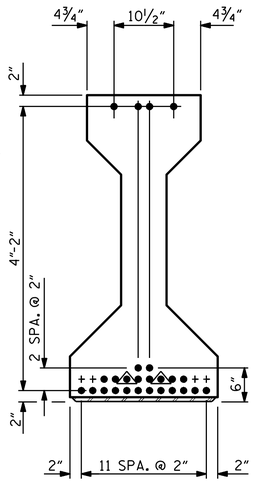


SECTION C-C

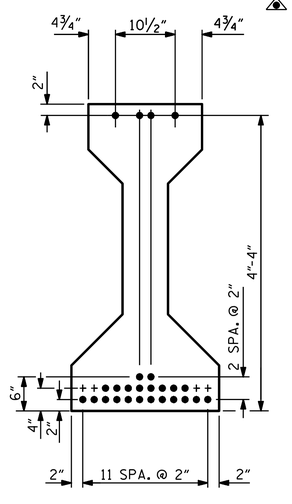
(S1 BARS NOT SHOWN)

DEBONDING LEGEND

- ● FULLY BONDED STRANDS
- ◈ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER



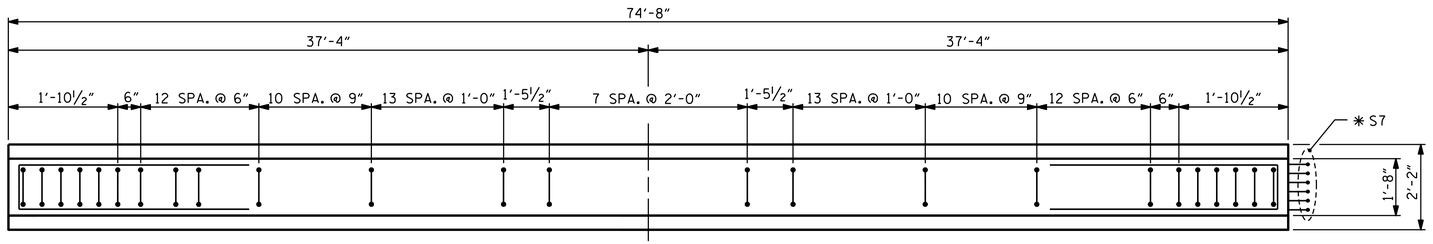
AT END OF GIRDER



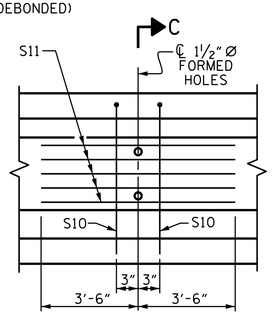
AT ℄ OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

(26 STRANDS REQUIRED. ALL STRAIGHT, PARTIALLY DEBONDED)

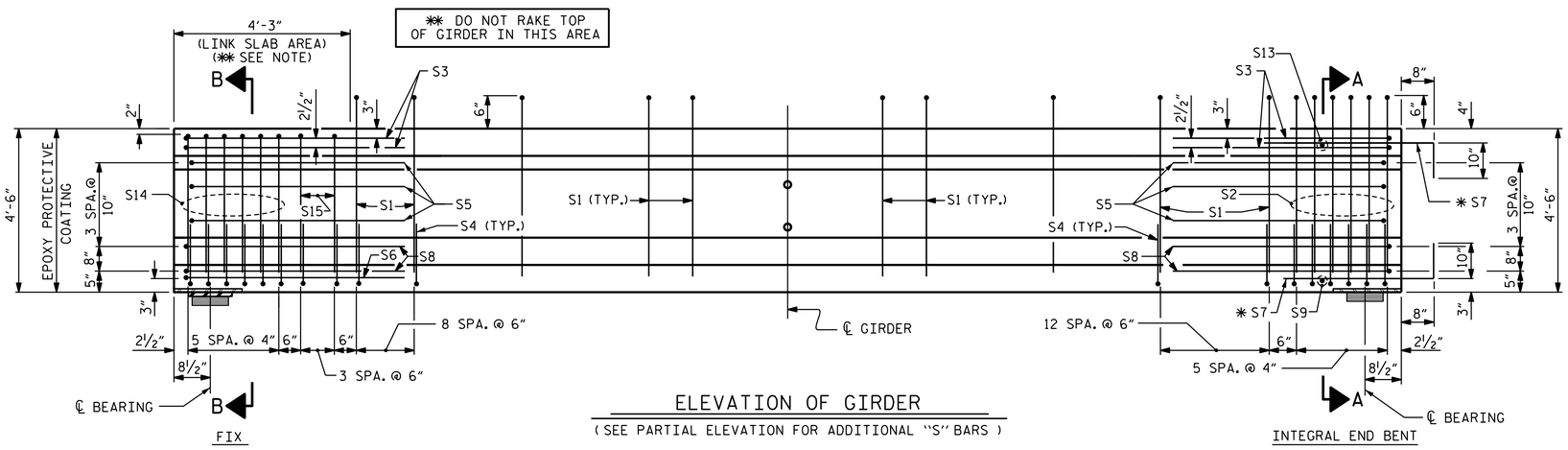


PLAN OF GIRDER



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR ALL GIRDERS



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

0.6" Ø L. R. GRADE 270 STRANDS

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

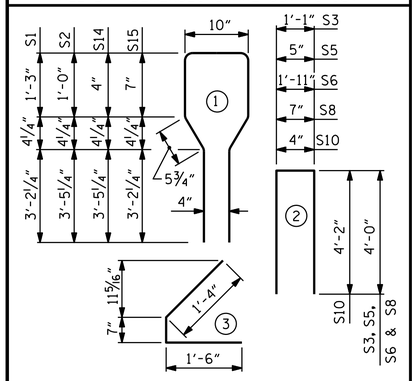
REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	76	#4	1	10'-8"	542
S2	6	#6	1	10'-8"	96
S3	4	#4	2	9'-1"	24
S4	76	#4	3	3'-5"	173
S5	6	#4	2	8'-5"	34
S6	1	#4	2	9'-11"	7
*S7	12	#5	STR	3'-8"	46
S8	4	#4	2	8'-7"	23
S9	1	#3	STR	1'-10"	1
S10	2	#5	2	8'-8"	18
S11	5	#4	STR	7'-0"	23
S13	1	#3	STR	1'-4"	1
S14	6	#6	1	9'-4"	84
S15	4	#4	1	9'-4"	25

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

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL LB.	7500 PSI CONCRETE C.Y.	0.6" Ø L.R. STRANDS No.
SPAN D	1097	15.2	26

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
4	74'-8"	298'-8"

PROJECT NO. B-5670

NASH COUNTY

STATION: 16+98.00 -L-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

AASHTO TYPE IV PRESTRESSED CONCRETE GIRDER LINK SLAB SPAN D

NORTH CAROLINA PROFESSIONAL SEAL 030024 ENGINEER ASTER G. ABRAHA

Aster Abraha
DDA094AED5104FD...
09/20/2022

ASSEMBLED BY :	M.M. AHMED	DATE :	06/22
CHECKED BY :	S. WANCE	DATE :	06/22
DESIGN ENGINEER OF RECORD:	M.M. AHMED	DATE :	07/22
DRAWN BY :	ELR 8/91	REV. 10/1/11	MAA/GM
CHECKED BY :	GRP 8/91	REV. 1/15	MAA/TMG
		REV. 12/17	MAA/THC

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			40

9/20/2022
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aabraha

STD. NO. PCG6 (Sht. 2)

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

SPANS A, C & D

0.6" Ø LOW RELAXATION	EXTERIOR GIRDERS 1 & 4																					
TWENTIETH POINTS	0	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	.55	.6	.65	.7	.75	.8	.85	.9	.95	0
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.014	0.028	0.040	0.052	0.062	0.071	0.077	0.084	0.086	0.088	0.086	0.084	0.077	0.071	0.062	0.052	0.040	0.028	0.014	0
✳ DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.009	0.018	0.027	0.035	0.041	0.048	0.052	0.056	0.057	0.059	0.057	0.056	0.052	0.048	0.041	0.035	0.027	0.018	0.009	0
FINAL CAMBER ↑	0	1/16"	1/8"	3/16"	3/16"	1/4"	5/16"	5/16"	5/16"	5/16"	3/8"	5/16"	5/16"	5/16"	5/16"	1/4"	3/16"	3/16"	1/8"	1/16"	0

0.6" Ø LOW RELAXATION	INTERIOR GIRDERS 2 & 3																					
TWENTIETH POINTS	0	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	.55	.6	.65	.7	.75	.8	.85	.9	.95	0
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.014	0.027	0.040	0.052	0.062	0.071	0.077	0.083	0.085	0.087	0.085	0.083	0.077	0.071	0.062	0.052	0.040	0.027	0.014	0
✳ DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.011	0.021	0.030	0.039	0.047	0.054	0.058	0.063	0.065	0.066	0.065	0.063	0.058	0.054	0.047	0.039	0.030	0.021	0.011	0
FINAL CAMBER ↑	0	1/16"	1/16"	1/8"	1/8"	3/16"	3/16"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	3/16"	3/16"	1/8"	1/8"	1/16"	1/16"	0

SPAN B

0.6" Ø LOW RELAXATION	EXTERIOR GIRDERS 1 & 4																					
TWENTIETH POINTS	0	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	.55	.6	.65	.7	.75	.8	.85	.9	.95	0
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.038	0.074	0.107	0.140	0.166	0.192	0.209	0.225	0.231	0.236	0.231	0.225	0.209	0.192	0.166	0.140	0.107	0.074	0.038	0
✳ DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.029	0.056	0.081	0.106	0.126	0.146	0.158	0.170	0.175	0.179	0.175	0.170	0.158	0.146	0.126	0.106	0.081	0.056	0.029	0
FINAL CAMBER ↑	0	1/8"	3/16"	5/16"	7/16"	1/2"	9/16"	5/8"	5/8"	11/16"	11/16"	11/16"	5/8"	5/8"	9/16"	1/2"	7/16"	5/16"	3/16"	1/8"	0

0.6" Ø LOW RELAXATION	INTERIOR GIRDERS 2 & 3																					
TWENTIETH POINTS	0	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	.55	.6	.65	.7	.75	.8	.85	.9	.95	0
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.038	0.074	0.107	0.140	0.166	0.192	0.208	0.224	0.230	0.236	0.230	0.224	0.208	0.192	0.166	0.140	0.107	0.074	0.038	0
✳ DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.032	0.063	0.092	0.120	0.142	0.164	0.178	0.192	0.197	0.202	0.197	0.192	0.178	0.164	0.142	0.120	0.092	0.063	0.032	0
FINAL CAMBER ↑	0	1/16"	1/8"	3/16"	1/4"	5/16"	5/16"	3/8"	3/8"	3/8"	7/16"	3/8"	3/8"	3/8"	5/16"	5/16"	1/4"	3/16"	1/8"	1/16"	0

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

NOTES

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

ALL REINFORCING STEEL SHALL BE GRADE 60.

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

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

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

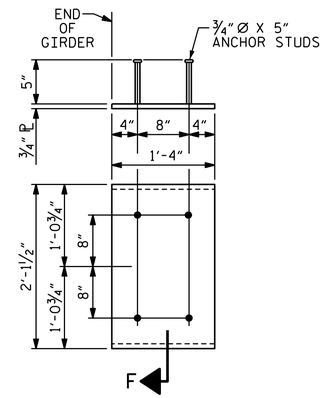
AT ENDS OF GIRDERS TO BE EMBEDDED IN CONCRETE DIAPHRAGMS OR END WALLS, PRESTRESSING STRANDS MAY EXTEND A MAXIMUM OF 2" BEYOND THE GIRDER ENDS. OTHERWISE, PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE GIRDER ENDS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6000 PSI. FOR SPAN A AND 7600 PSI FOR SPAN B.

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

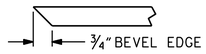
THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4" AND THE PORTION WITHIN THE LINK SLAB AREA, SHALL BE RAKED TO A DEPTH OF 1/4".

THE TOP OF GIRDER IN THE REGION OF THE LINK SLAB SHALL BE SMOOTH (NOT RAKED) AND FREE OF STIRRUPS/STUDS, ANCHOR STUDS, DECK FORMWORK ATTACHMENTS, AND OVERHANG FALSEWORK/FORMWORK ATTACHMENTS.



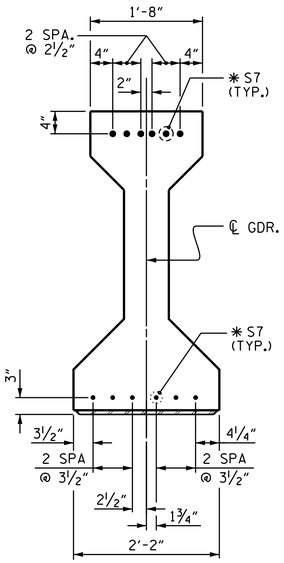
EMBEDDED PLATE "B-1" DETAILS FOR AASHTO TYPE IV GIRDERS

(2 REQ'D PER GIRDER)



SECTION "F"

(SEE NOTES)



AT END INTEGRAL END BENT END

DETAIL "A"

(FOR AASHTO TYPE IV GIRDERS)

PROJECT NO. B-5670
NASH COUNTY
STATION: 16+98.00 -L-

SHEET 5 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 030024 ENGINEER ASTER G. ABRAHA

Aster Abraha
DOA094AED5104FD...
09/20/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS							SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:		S-19
1			3				TOTAL SHEETS
2			4				40

ASSEMBLED BY : M.M. AHMED	DATE : 06/22	
CHECKED BY : S. WANCE	DATE : 06/22	
DESIGN ENGINEER OF RECORD: M.M. AHMED	DATE : 07/22	
DRAWN BY : ELR 11/91	REV. 1/15	MAA/TMG
CHECKED BY : GRP 11/91	REV. 2/15	MAA/TMG
	REV. 12/17	MAA/THC

9/20/2022
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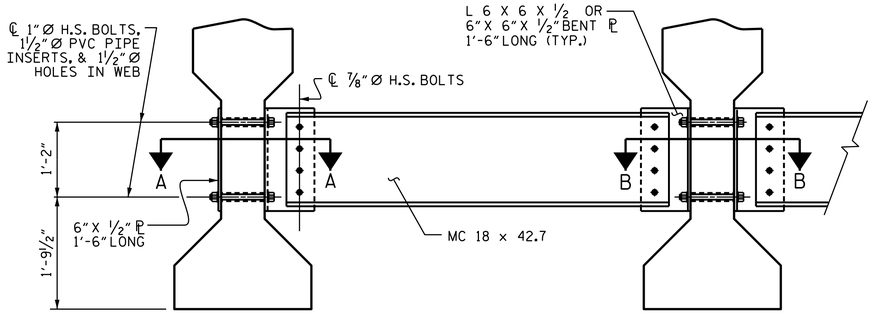
aabraha

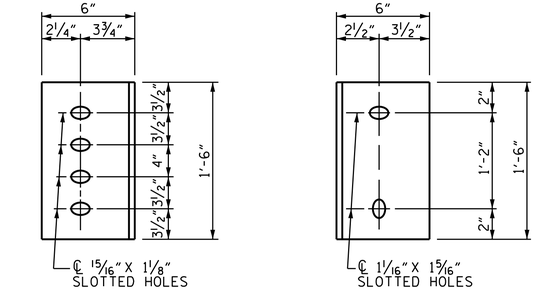
STD. NO. PCG9 (Sht. 1)



EXTERIOR GIRDER INTERIOR GIRDER

PART SECTION AT INTERMEDIATE DIAPHRAGM

(TYPE IV GIRDER)



DIAPHRAGM FACE WEB FACE

CONNECTOR PLATE DETAILS

(TYPE IV GIRDER)

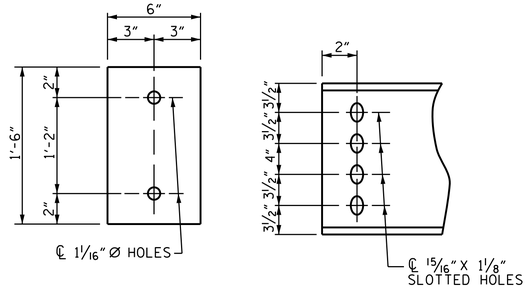
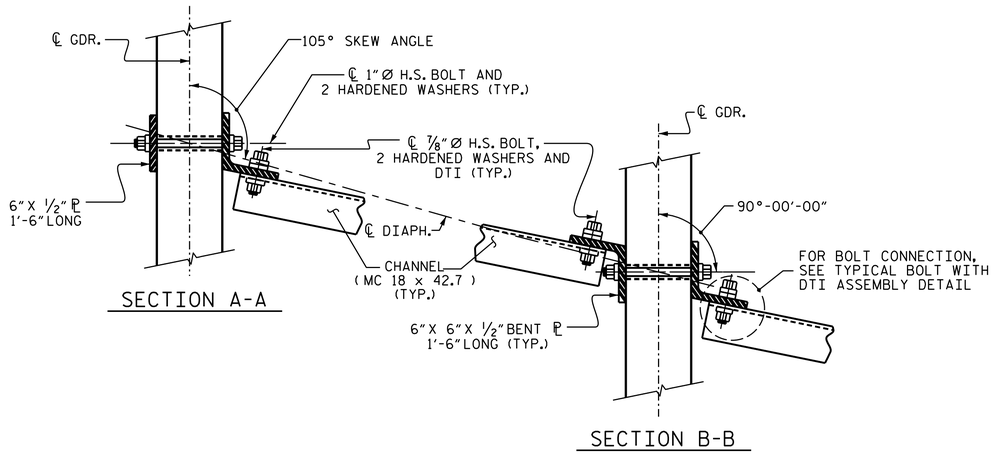
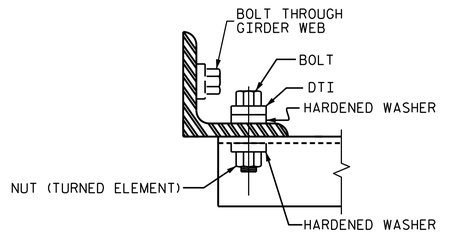


PLATE DETAILS CHANNEL END



SECTION A-A SECTION B-B

CONNECTION DETAILS



BOLT WITH DTI ASSEMBLY DETAIL

STRUCTURAL STEEL NOTES

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

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

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

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

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

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

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

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

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

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

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

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

PROJECT NO. B-5670

NASH COUNTY

STATION: 16+98.00 -L-

ASSEMBLED BY : M.M. AHMED	DATE : 06/22		
CHECKED BY : S. WANCE	DATE : 06/22		
DRAWN BY : TLA 6/05	REV. 5/17/06RRR	KMM/GM	
CHECKED BY : VC 6/05	REV. 10/1/11	MAA/GM	
	REV. 12/17	MAA/THC	

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NORTH CAROLINA PROFESSIONAL SEAL 030024 ENGINEER ASTER G. ABRAHA
Aster Abraha
DDA094AED5104FD...
09/20/2022

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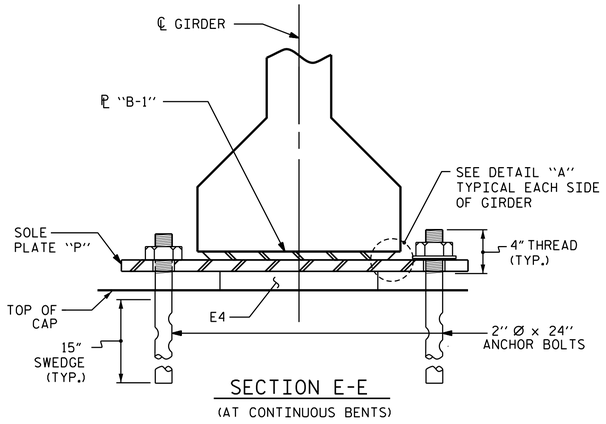
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE IV PRESTRESSED CONCRETE GIRDERS

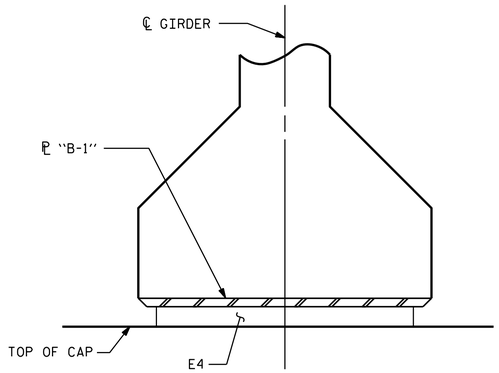
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS
2			4			40

STD. NO. PCG10 (SHT 4)



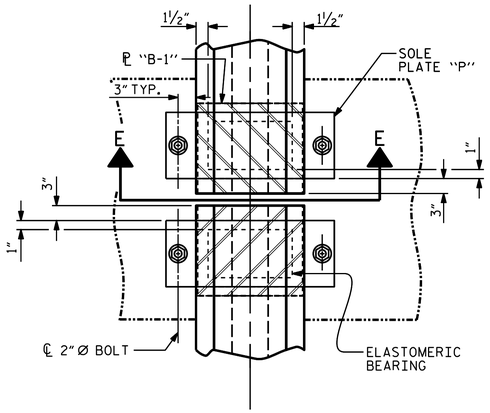
SECTION E-E

(AT CONTINUOUS BENTS)



SECTION D-D

(AT INTEGRAL END BENTS)



TYPICAL PLAN

(AT CONTINUOUS BENT)

NOTES

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

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

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

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

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

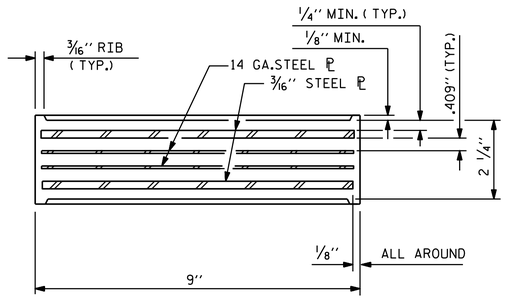
ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. NO SHOP DRAWINGS ARE REQUIRED FOR ANCHOR BOLTS, AND NUTS. SHOP INSPECTION IS REQUIRED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

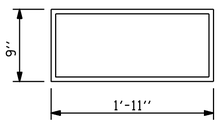
THE ELASTOMER IN THE STEEL REINFORCED BEARINGS SHALL HAVE A SHEAR MODULUS OF 0.160 KSI, IN ACCORDANCE WITH AASHTO M251.

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

ALL SOLE PLATES SHALL BE AASHTO M270 GRADE 36.



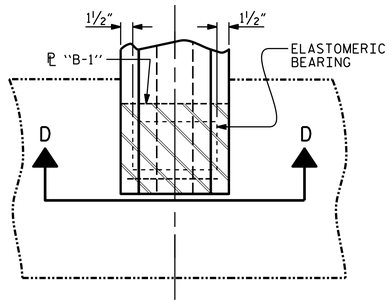
TYPICAL SECTION OF ELASTOMERIC BEARINGS



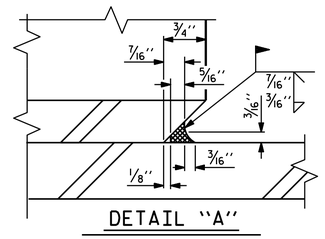
E4 (32 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING

TYPE V

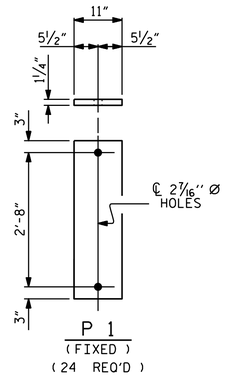


TYPICAL PLAN OF INTEGRAL END BENT



DETAIL "A"

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

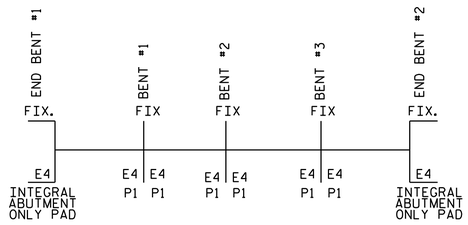


P 1

(FIXED)

(24 REQ'D)

SOLE PLATE DETAILS ("P")



SOLE PLATE LOCATION SKETCH

PROJECT NO. B-5670

NASH COUNTY

STATION: 16+98.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

ELASTOMERIC BEARING DETAILS

PRESTRESSED CONCRETE GIRDER SUPERSTRUCTURE

NORTH CAROLINA PROFESSIONAL SEAL 030024 ENGINEER ASTER G. ABRAHA

Aster Abraha

09/20/2022

REVISIONS						SHEET NO.
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2			4			40

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ASSEMBLED BY : M.M. AHMED	DATE : 06/22	
CHECKED BY : S. WANCE	DATE : 06/22	
DESIGN ENGINEER OF RECORD : M.M. AHMED	DATE : 04/20	
DRAWN BY : EEM 2/97	REV. 5/1/06	TLA/GM
CHECKED BY : VAP 2/97	REV. 10/1/11	MAA/GM
	REV. 10/24/12	AAC/MAA

9/20/2022
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gabraha

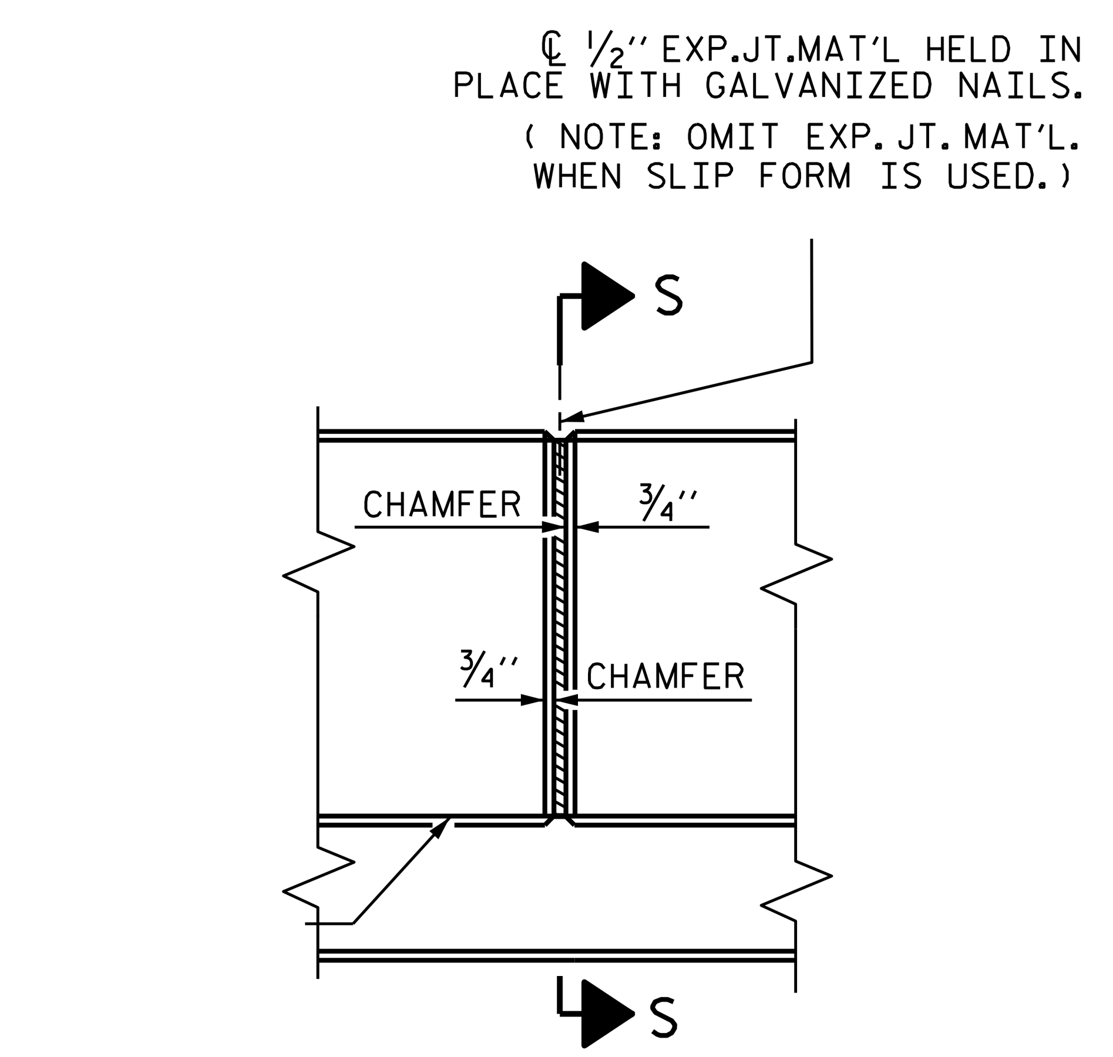
STD. NO. EB4 (SHT 1)

NOTES

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

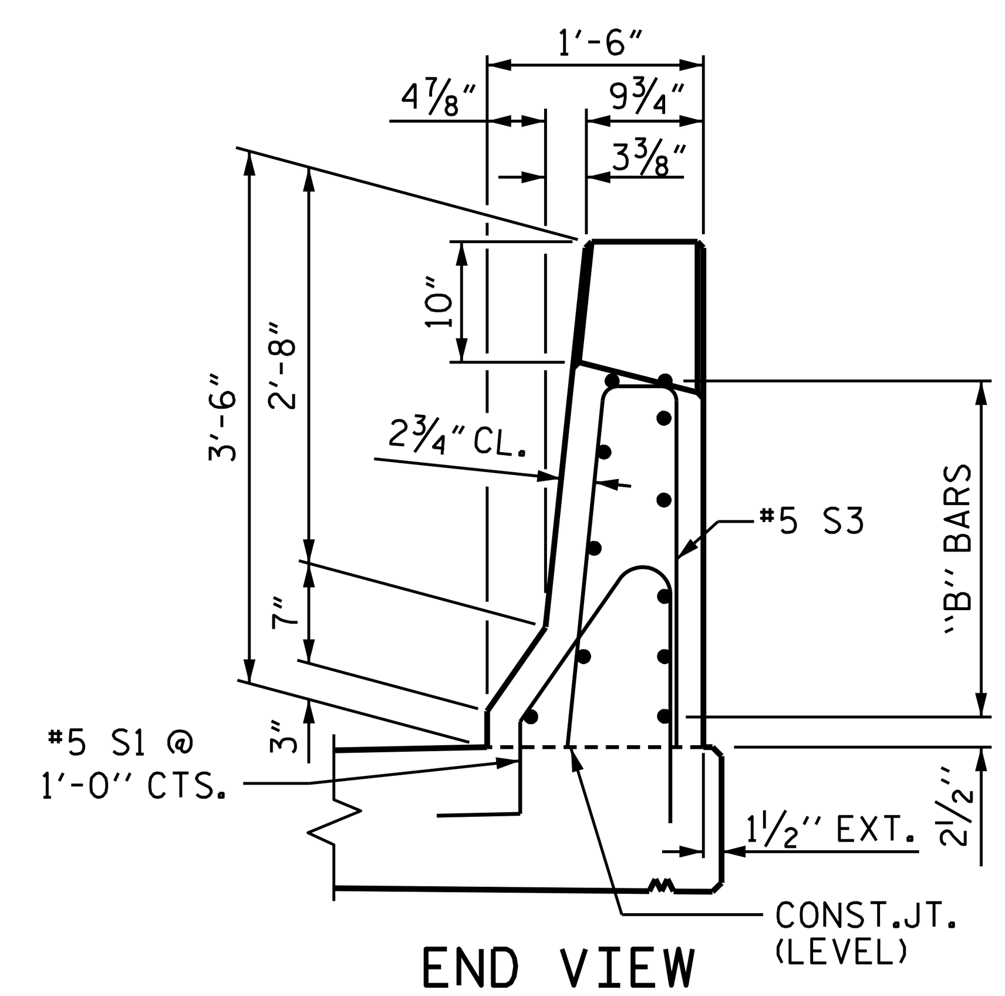
ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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

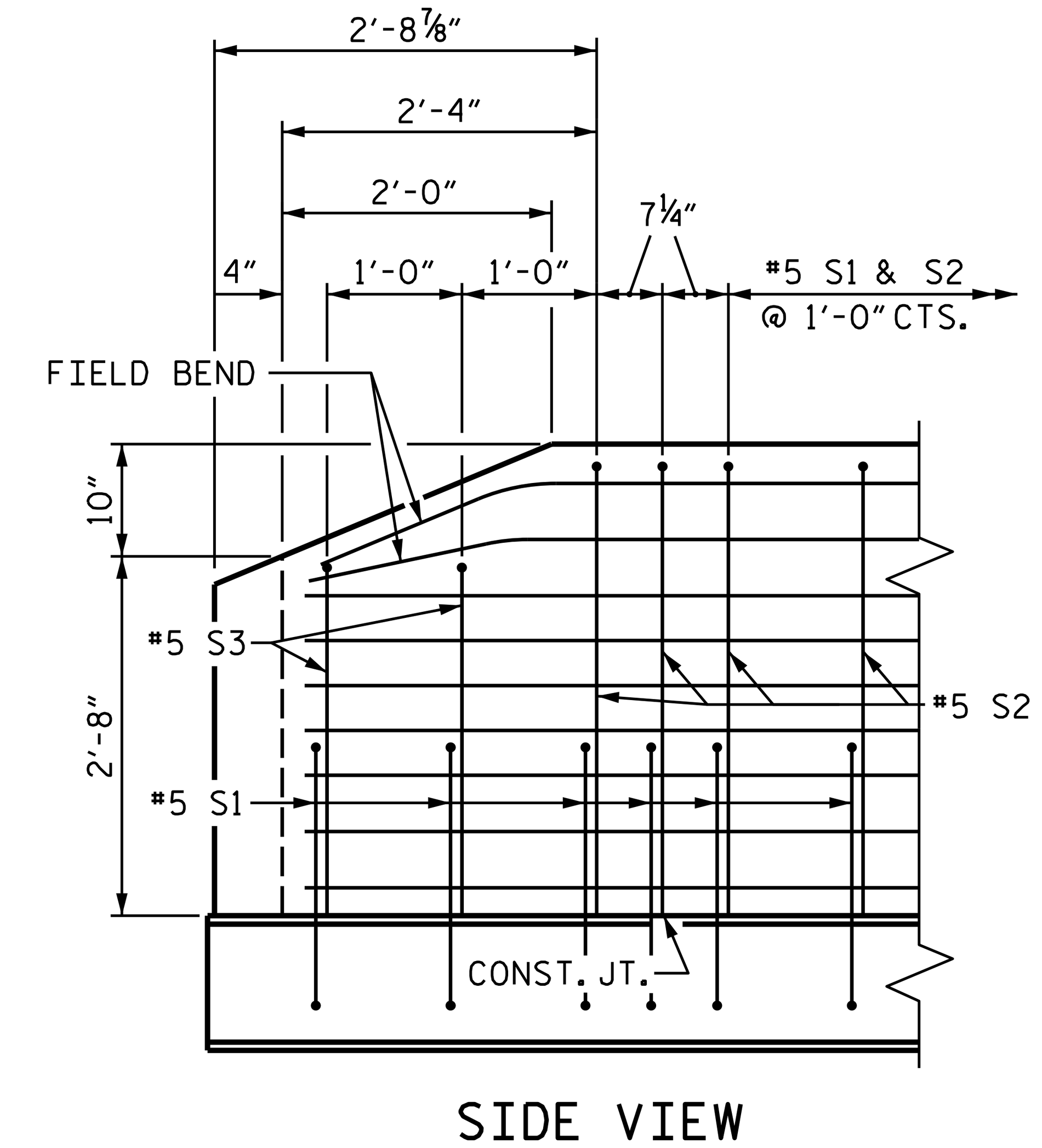


ELEVATION AT EXPANSION JOINTS

BARRIER RAIL DETAILS

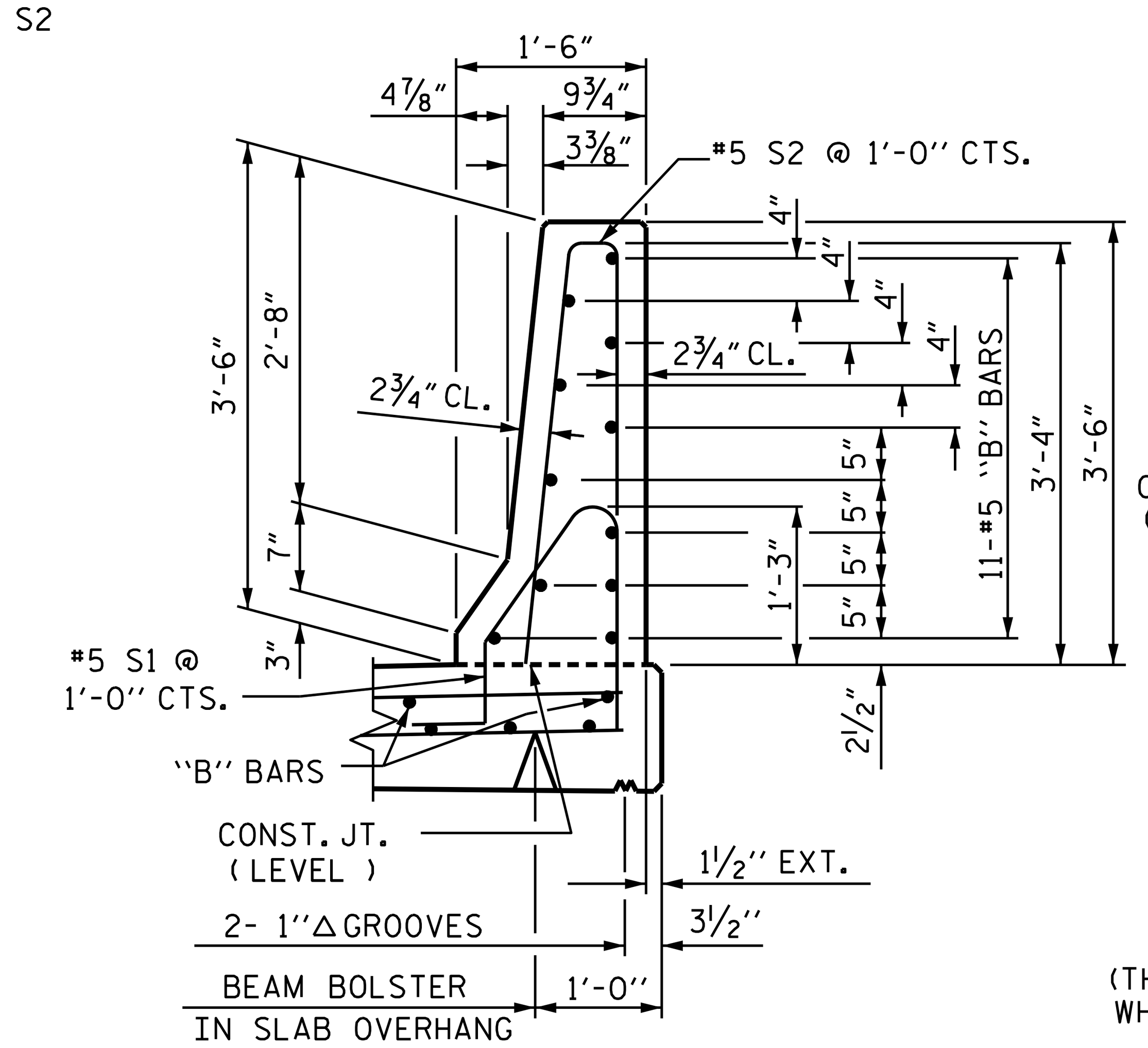


END VIEW

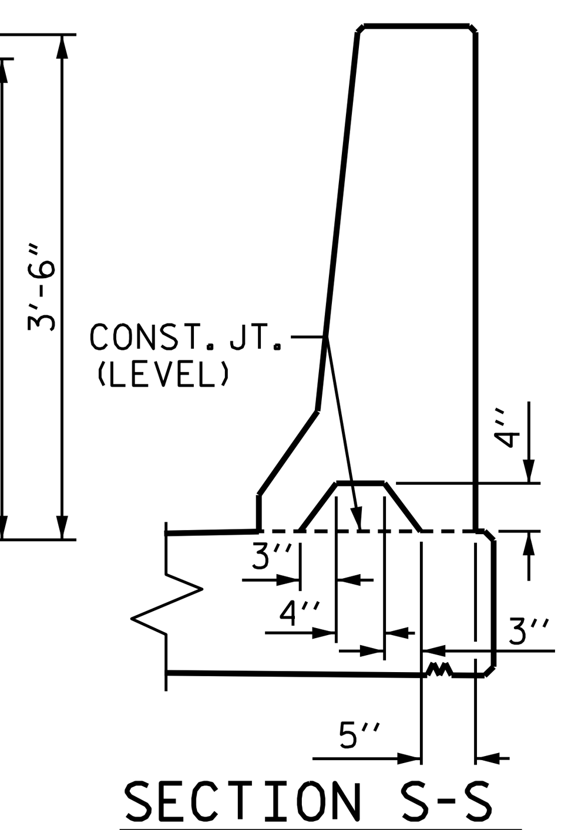


SIDE VIEW

END OF RAIL DETAILS



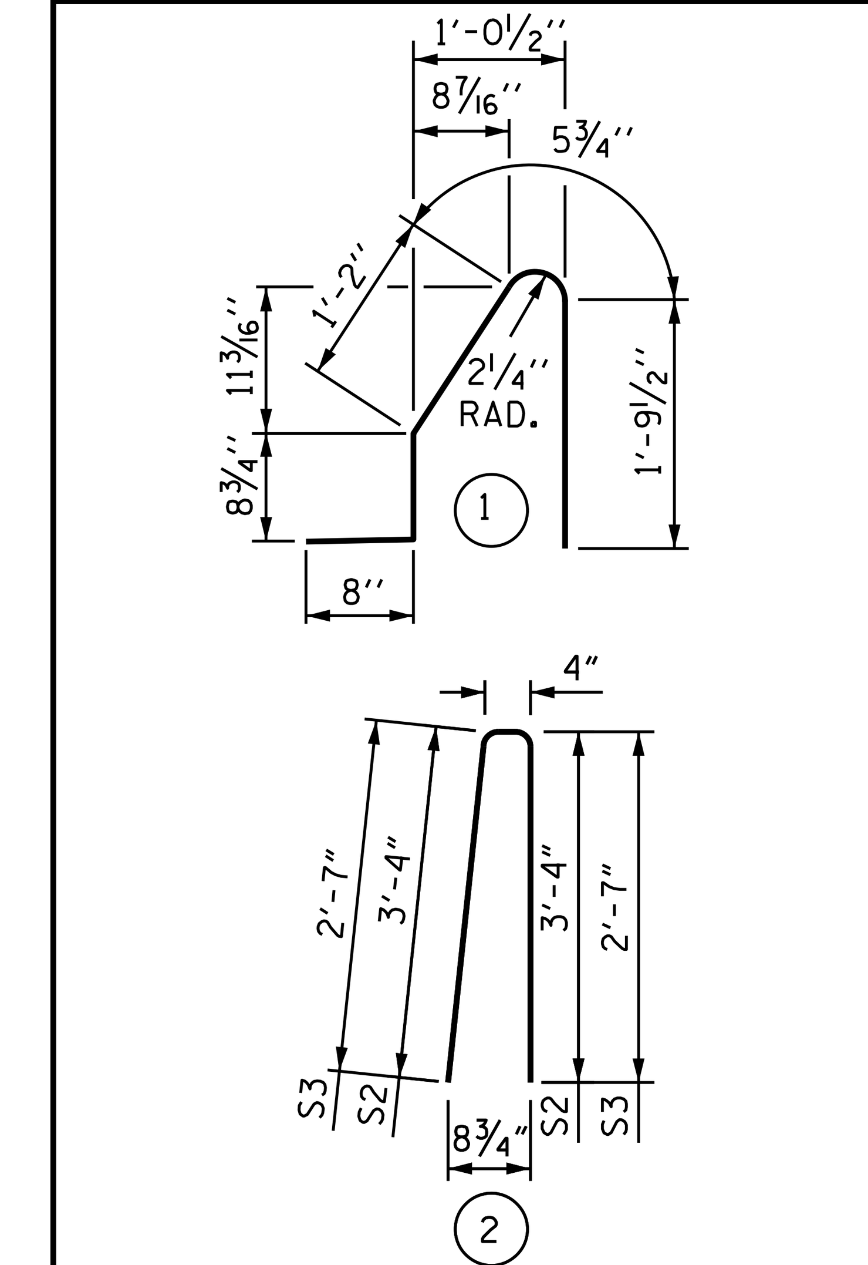
SECTION THRU RAIL



SECTION S-S

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

BAR TYPES



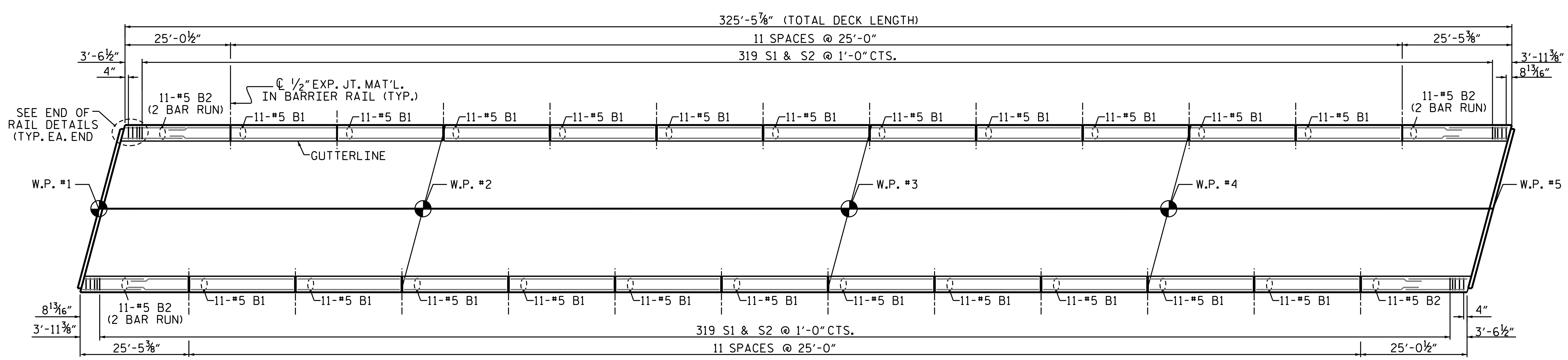
ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	242	#5	STR	24'-7"	6,205
* B2	88	#5	STR	14'-1"	1,293
* S1	654	#5	1	4'-10"	3,297
* S2	646	#5	2	7'-0"	4,716
* S3	8	#5	2	5'-6"	46

* EPOXY COATED REINFORCING STEEL	LBS.	15,557
CLASS AA CONCRETE	CU. YDS.	88.4
CONCRETE BARRIER RAIL	LIN. FT.	651.0



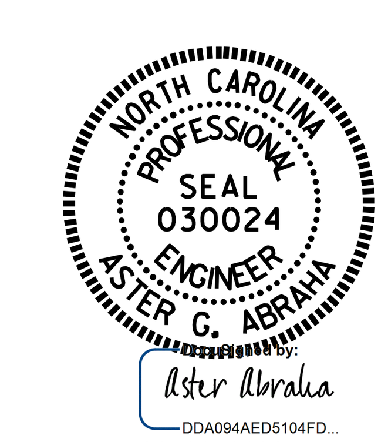
PLAN OF BARRIER RAIL

(LEFT RAIL DIMENSIONS SHOWN, RIGHT RAIL SIMILAR)

PROJECT NO. B-5670

NASH COUNTY

STATION: 16+98.00 -L-



09/20/2022

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONCRETE BARRIER RAIL

ASSEMBLED BY : G. AYES	DATE : 10/2021
CHECKED BY : S. WANCE	DATE : 6/2022

DRAWN BY : ARB 5/87	REV. 7/12	MAA/GM
CHECKED BY : SJD 9/87	REV. 6/13	MAA/GM
	REV. 12/17	MAA/THC

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REVISIONS

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2			4		

SHEET NO. S-22

TOTAL SHEETS 40

STD. NO. CBR1 (SHT 2)

9/20/2022
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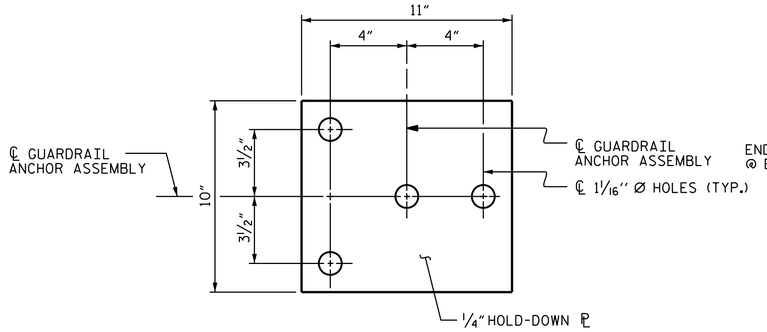
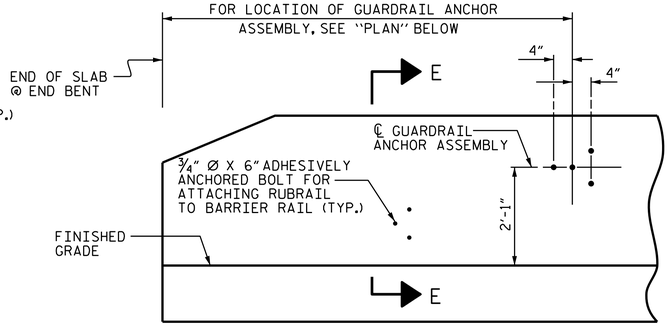
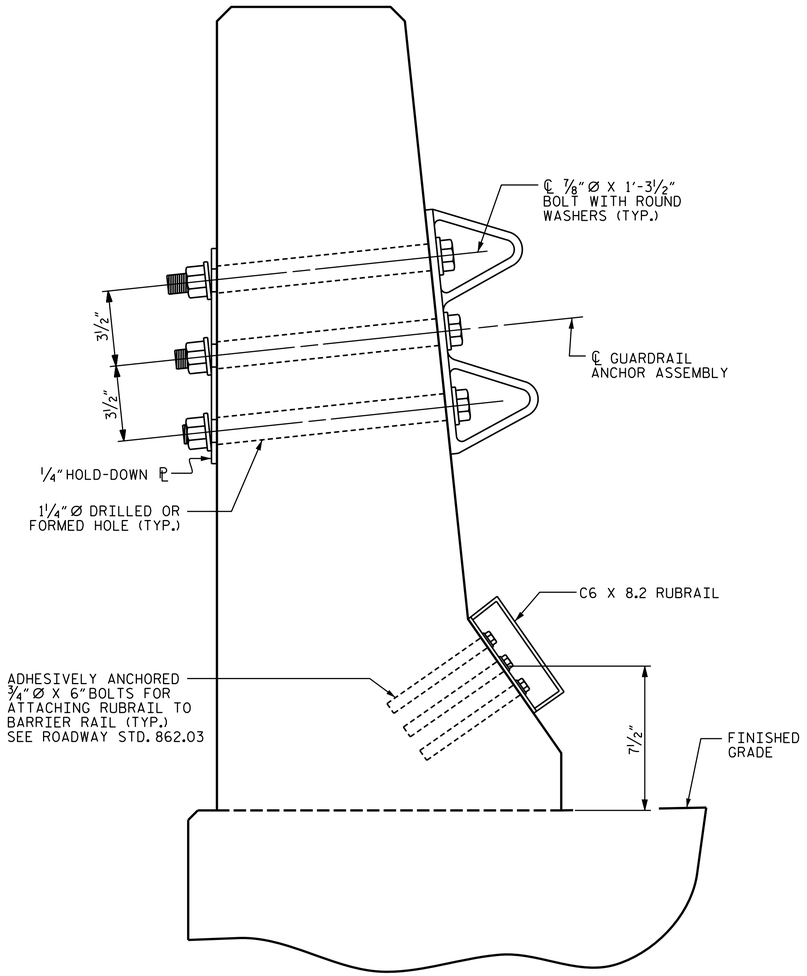
aabraha



PLAN

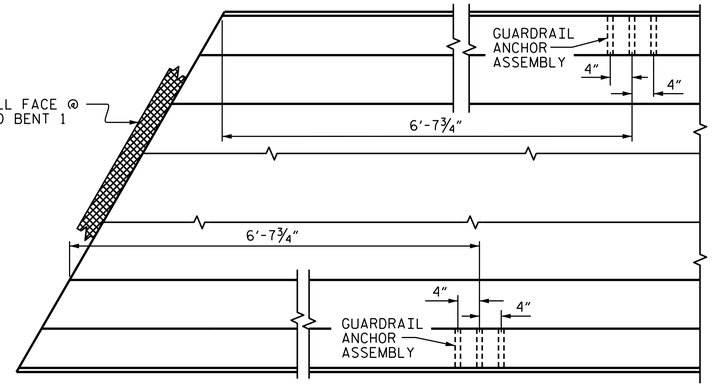


ELEVATION



SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

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

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A ¼" HOLD-DOWN PLATE AND 4 - ⅞" Ø BOLTS WITH NUTS AND WASHERS, RUBRAIL, AND ADHESIVELY ANCHORED BOLTS.

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

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE ⅞" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

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

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

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

THE 1 ¼" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE ¾" Ø X 6" BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE ¾" Ø BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS. SEE ROADWAY STANDARD 862.03 FOR DETAILS AND LOCATION OF THE RUBRAIL.

SKETCH SHOWING POINTS OF ATTACHMENTS

✳ DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. B-5670

NASH COUNTY

STATION: 16+98.00

ASSEMBLED BY :	G. AYES	DATE :	8/2022
CHECKED BY :	S. WANCE	DATE :	8/2022
DRAWN BY : TLA	5/06	REV. 7/12	MAA/GM
CHECKED BY : GM	5/06	REV. 6/13	MAA/GM
		REV. 12/17	MAA/THC

9/20/2022
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NORTH CAROLINA PROFESSIONAL SEAL 030024 ENGINEER ASTER G. ABRAHA

Aster Abraha
DDA094AED5104FD...
09/20/2022

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

GUARDRAIL ANCHORAGE FOR BARRIER RAIL

REVISIONS						SHEET NO.
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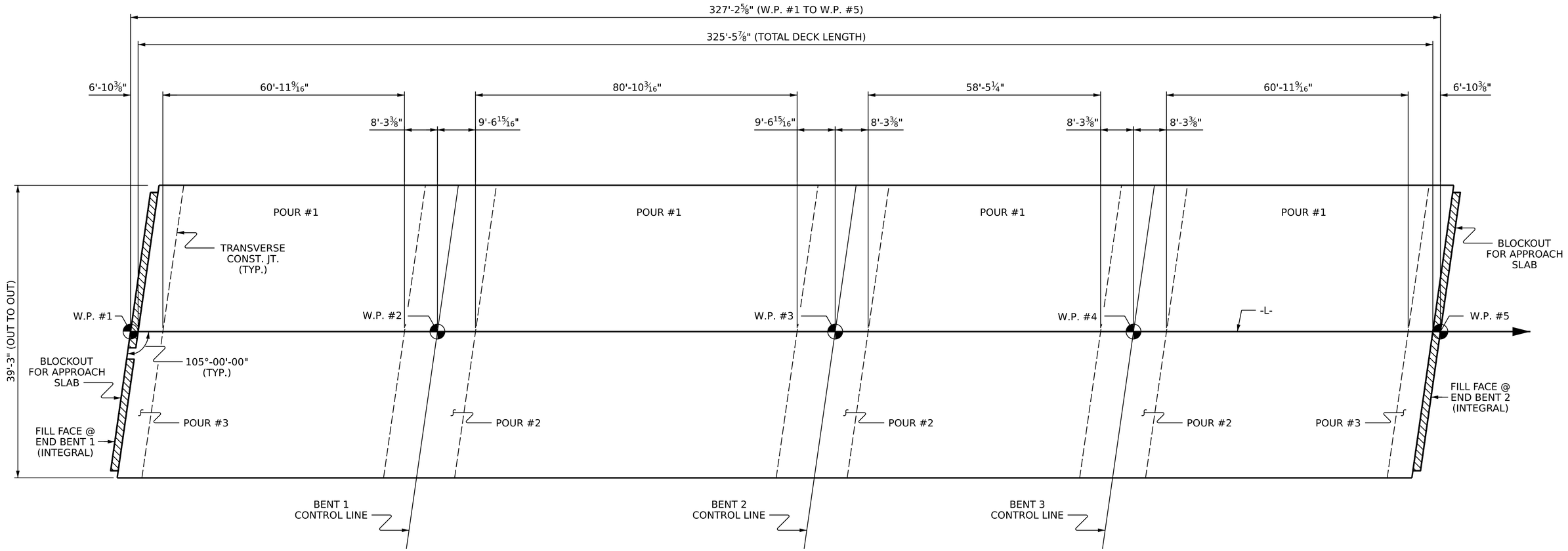
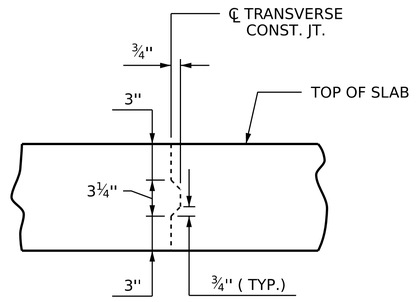
1			3			TOTAL SHEETS
2			4			40

(SHT 1b) STD. NO. GRA2



POURING SEQUENCE

POUR #2 CANNOT BE STARTED UNTIL BOTH ADJACENT POUR #1 REACH A MIN. OF 3000 PSI



TRANSVERSE CONSTRUCTION JOINT DETAIL

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

PROJECT NO. B-5670

NASH COUNTY

STATION: 16+98.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

POURING SEQUENCE

NORTH CAROLINA PROFESSIONAL SEAL 030024 ENGINEER ASTER G. ABRAHA

Digitally signed by: Aster Abraha DDA094AED5104FD...

09/20/2022

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DRAWN BY :	G. AYES	DATE :	1/2022
CHECKED BY :	M. M. AHMED	DATE :	6/2022
DESIGN ENGINEER OF RECORD:	M. M. AHMED	DATE :	4/2020

9/20/2022
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gabraha

REINFORCING BAR SCHEDULE

SPANS A & D						SPANS A-B-C-D					
BAR	No.	SIZE	TYPE	LENGTH	WEIGHT	BAR	No.	SIZE	TYPE	LENGTH	WEIGHT
* A101	4	#5	STR.	1'-10"	8	* A1	687	#5	STR.	38'-11"	27,885
* A102	4	#5	STR.	5'-3"	22	A2	687	#5	STR.	38'-11"	27,885
* A103	4	#5	STR.	8'-8"	36						
* A104	4	#5	STR.	12'-1"	50	B1	104	#5	STR.	53'-0"	5,749
* A105	4	#5	STR.	15'-6"	65	B2	104	#5	STR.	54'-1"	5,867
* A106	4	#5	STR.	18'-11"	79	B3	94	#5	STR.	45'-3"	4,436
* A107	4	#5	STR.	22'-4"	93	B4	52	#5	STR.	44'-0"	2,386
* A108	4	#5	STR.	25'-9"	107	B5	52	#5	STR.	31'-2"	1,690
* A109	4	#5	STR.	29'-2"	122	B6	52	#5	STR.	47'-10"	2,594
* A110	4	#5	STR.	32'-7"	136	B7	47	#5	STR.	40'-3"	1,973
* A111	4	#5	STR.	36'-0"	150						
						* B8	158	#6	STR.	15'-1"	3,580
A201	4	#5	STR.	1'-10"	8	* B9	82	#4	STR.	37'-3"	2,040
A202	4	#5	STR.	5'-3"	22	* B10	82	#5	STR.	17'-1"	1,461
A203	4	#5	STR.	8'-8"	36	* B11	82	#5	STR.	48'-4"	4,134
A204	4	#5	STR.	12'-1"	50	* B12	76	#5	STR.	36'-5"	2,887
A205	4	#5	STR.	15'-6"	65	* B13	41	#4	STR.	34'-10"	954
A206	4	#5	STR.	18'-11"	79	* B14	41	#4	STR.	24'-4"	666
A207	4	#5	STR.	22'-4"	93	* B15	41	#5	STR.	55'-6"	2,373
A208	4	#5	STR.	25'-9"	107	* B16	38	#5	STR.	32'-8"	1,295
A209	4	#5	STR.	29'-2"	122	REINFORCING STEEL					52,580 LBS.
A210	4	#5	STR.	32'-7"	136	* EPOXY COATED REINFORCING STEEL					47,275 LBS.
A211	4	#5	STR.	36'-0"	150						
* S1	62	#4	1	10'-11"	452						
* S2	62	#4	1	11'-11"	494						
U1	66	#4	2	11'-9"	518						
U2	12	#4	2	14'-1"	113						
K1	20	#4	STR.	24'-1"	322						
K2	6	#4	STR.	8'-3"	33						
K3	6	#4	STR.	9'-6"	38						
K4	12	#4	STR.	9'-9"	78						
K5	6	#4	STR.	8'-9"	35						
K6	4	#4	STR.	5'-6"	15						
K7	4	#4	STR.	6'-2"	16						
K8	8	#4	STR.	6'-4"	34						
K9	4	#4	STR.	5'-10"	16						
K10	24	#4	STR.	2'-9"	44						
H1	22	#5	3	17'-2"	394						
H2	22	#5	3	17'-0"	390						
H3	22	#5	4	16'-9"	384						
H4	22	#5	4	16'-11"	388						
REINFORCING STEEL					3,686 LBS.						
* EPOXY COATED REINFORCING STEEL					1,814 LBS.						

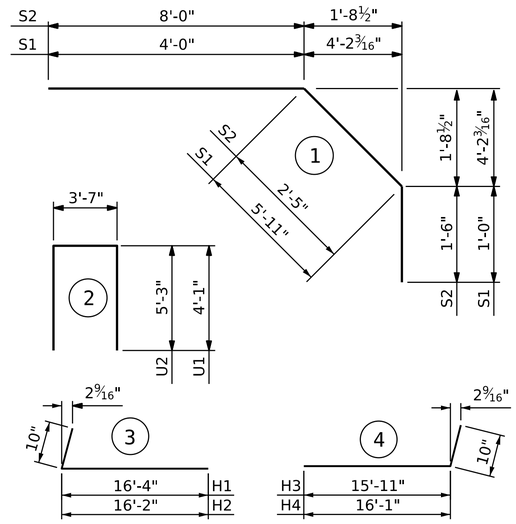
SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS

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

GROOVING BRIDGE FLOORS

APPROACH SLABS	932	SQ.FT.
BRIDGE DECK	10,691	SQ.FT.
TOTAL	11,623	SQ.FT.

BAR TYPES

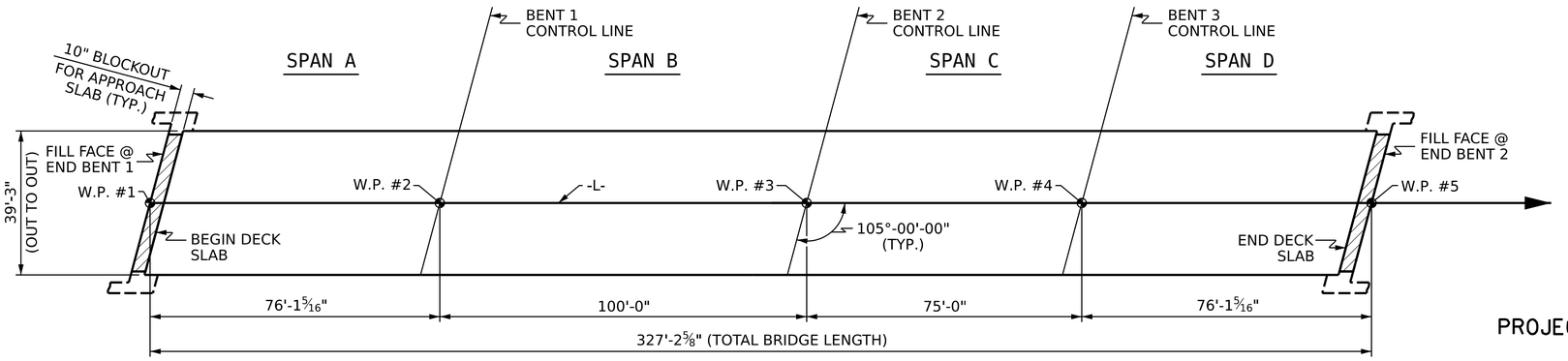


ALL BAR DIMENSIONS ARE OUT TO OUT

SUPERSTRUCTURE BILL OF MATERIAL

	CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	(CU. YDS.)	(LBS.)	(LBS.)
POUR #1	348.5	———	———
POUR #2	69.8	———	———
POUR #3	81.9	———	———
TOTALS**	500.2	56,266	49,089

** QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED



LAYOUT FOR COMPUTING AREA REINFORCED CONCRETE DECK SLAB (SQ. FT. = 12,776)

(NOT TO SCALE)

PROJECT NO. B-5670

NASH COUNTY

STATION: 16+98.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
SUPERSTRUCTURE
BILL OF MATERIAL

NORTH CAROLINA PROFESSIONAL SEAL 030024 ENGINEER ASTER C. ABRALIA

Aster Abralia
DocuSigned by:
DDA094AED5104FD...
09/20/2022

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ASSEMBLED BY :	GA	DATE :	1/2022
CHECKED BY :	MMA	DATE :	3/2022
DRAWN BY : JMB 5/87	REV. 5/1/06		TLA/GM
CHECKED BY : SJD 9/87	REV. 10/1/11		MAA/GM
	REV. 12/17		MAA/THC

9/20/2022
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aabraha

STD. NO. BOM2

NOTES

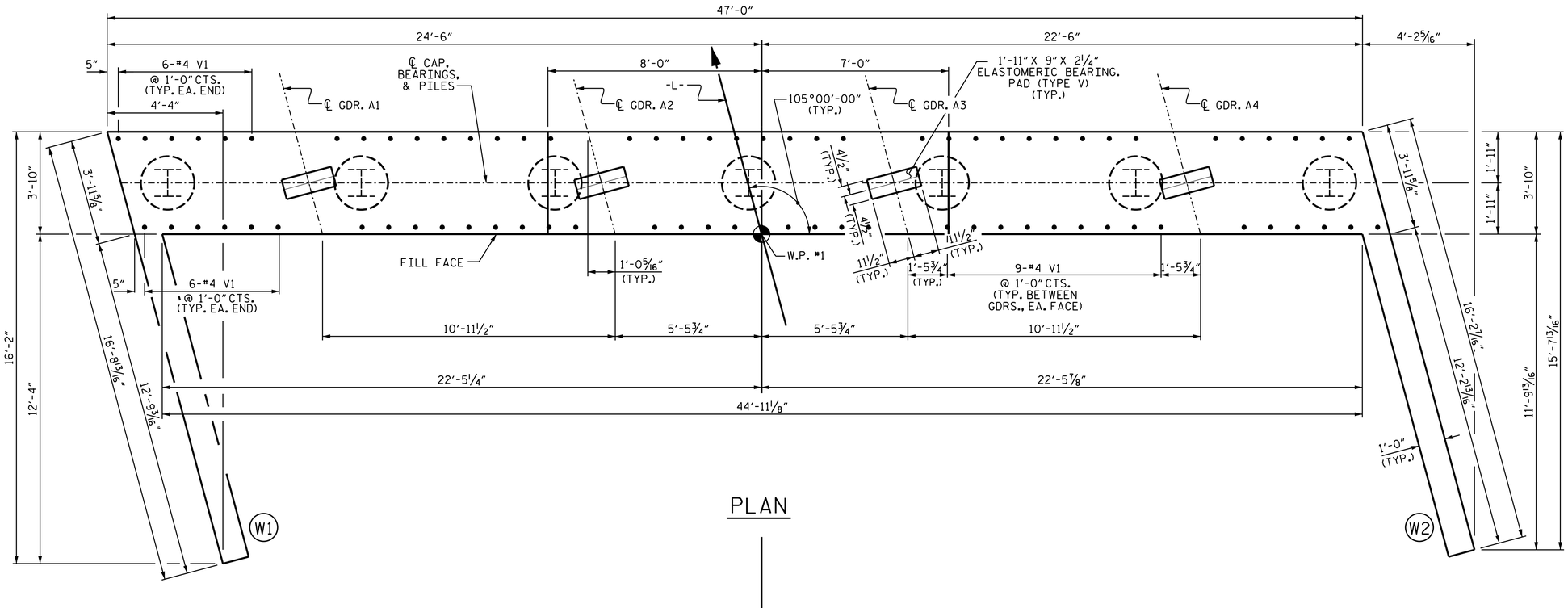
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #4 V1 BARS.

SEE THE SUPERSTRUCTURE SHEETS FOR UPPER PART OF INTEGRAL END BENT DETAIL.

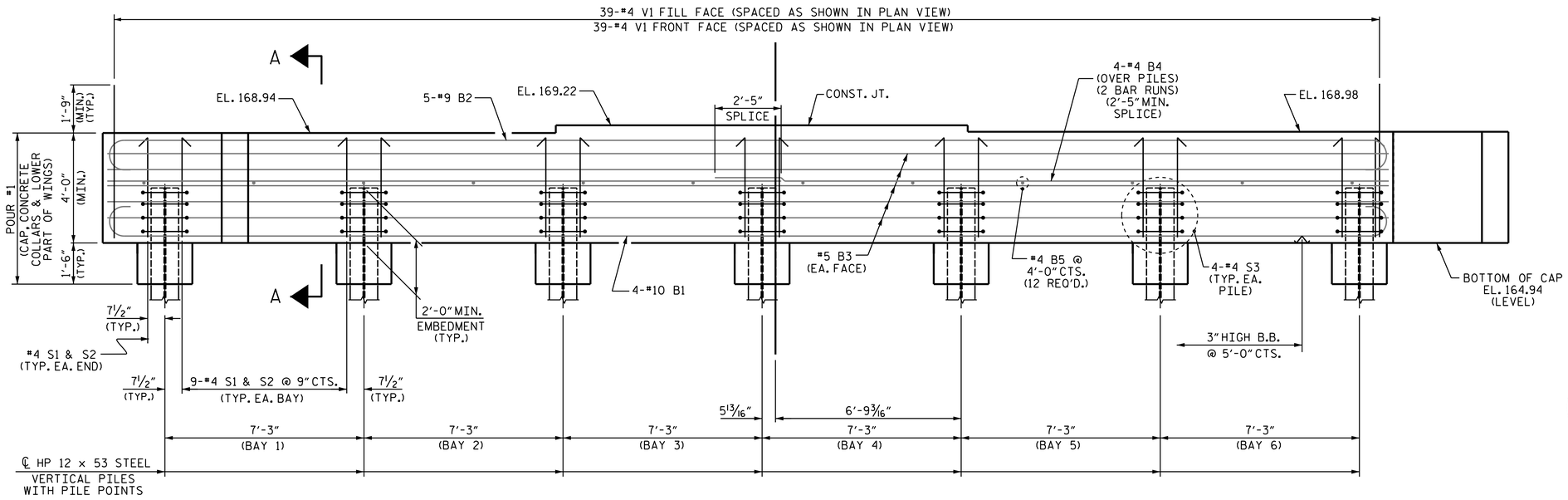
THE UPPER PART OF INTEGRAL PORTION AND WINGS SHALL BE POURED WITH THE SUPERSTRUCTURE. SEE SUPERSTRUCTURE PLAN OF SPANS.

THE TOP SURFACE OF POUR #1 OF THE END BENT CAP AND WINGS, EXCLUDING THE BEARING AREA. SHALL BE RAKED TO A DEPTH OF 1/4".

STEEL H-PILE POINTS ARE REQUIRED FOR STEEL H-PILES AT END BENTS 1 & 2. SEE SECTION 450 OF THE STANDARD SPECIFICATION.



PLAN



ELEVATION

PROJECT NO. B-5670

NASH COUNTY

STATION: 16+98.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
INTEGRAL
END BENT 1

NORTH CAROLINA PROFESSIONAL SEAL 030024 ENGINEER ASTER G. ABRAHA

Aster Abraha
DOA094AED5104FD...
09/20/2022

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-26
1			3			TOTAL SHEETS
2			4			40

DRAWN BY : M.M. AHMED DATE : 06/22
CHECKED BY : S. WANCE DATE : 06/22
DESIGN ENGINEER OF RECORD: M.M. AHMED DATE : 07/2020

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9/20/2022
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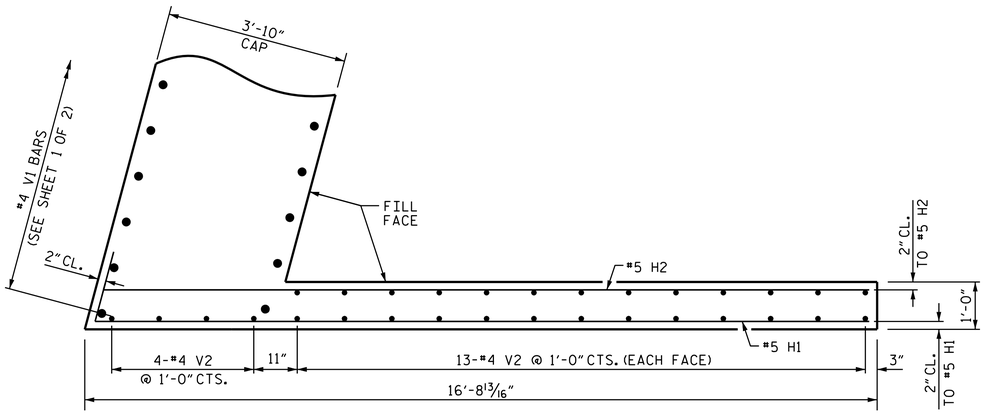
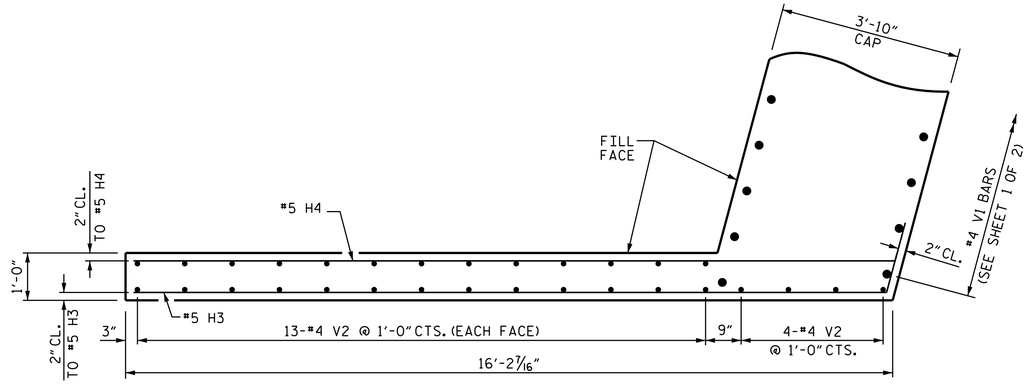
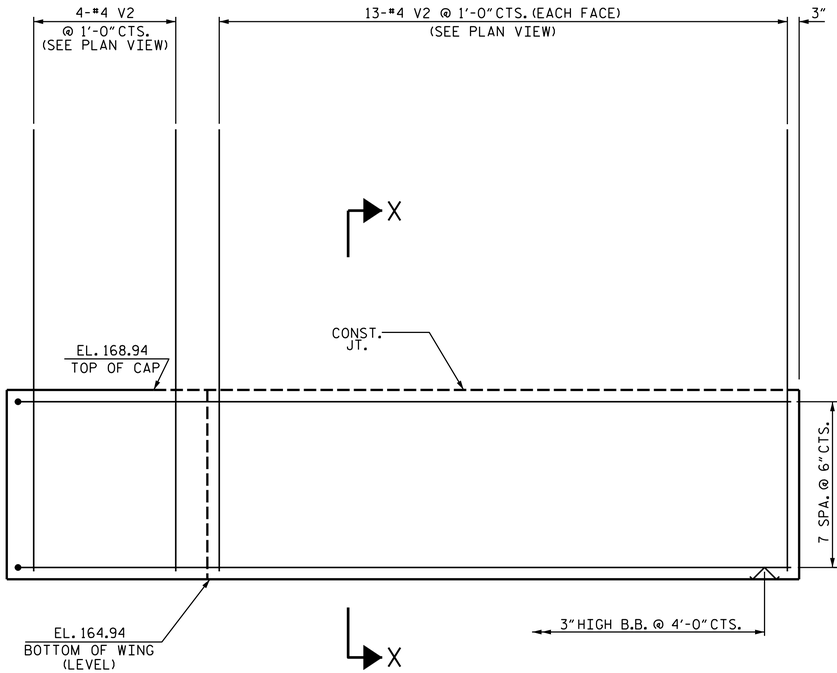
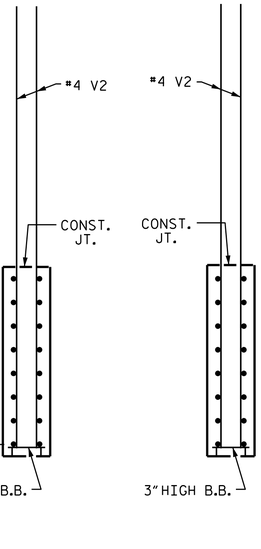


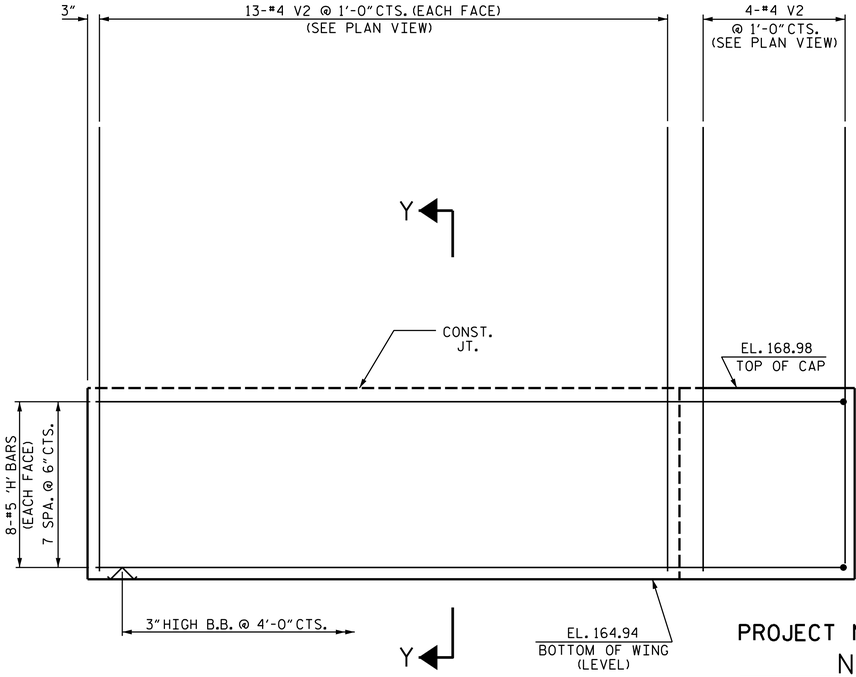


PLAN OF WING W1





PLAN OF WING W2



ELEVATION OF WING W1

SECTION X-X

SECTION Y-Y

ELEVATION OF WING W2

PROJECT NO. B-5670

NASH COUNTY

STATION: 16+98.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 1

NORTH CAROLINA PROFESSIONAL SEAL 030024 ENGINEER ASTER G. ABRAHA

Aster Abraha

DDA094AED5104FD...

09/20/2022

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-27
1			3			TOTAL SHEETS
2			4			40

DRAWN BY : M.M. AHMED DATE : 05/22

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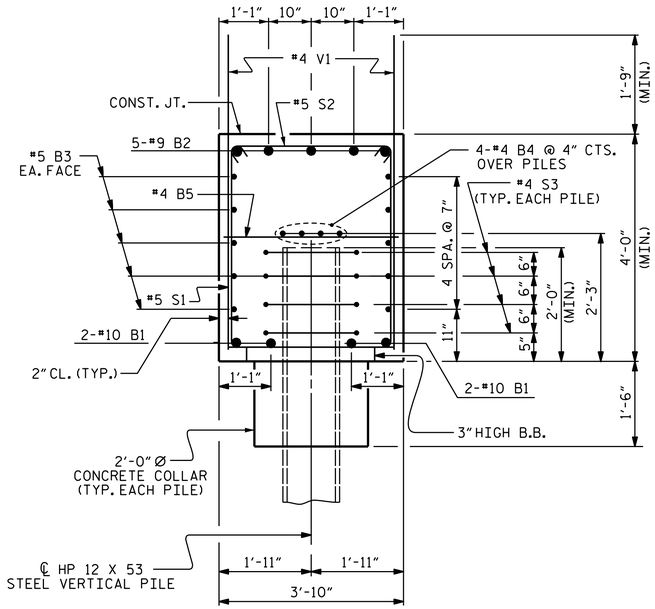
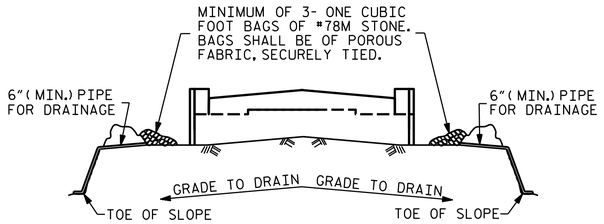


SECTION A-A



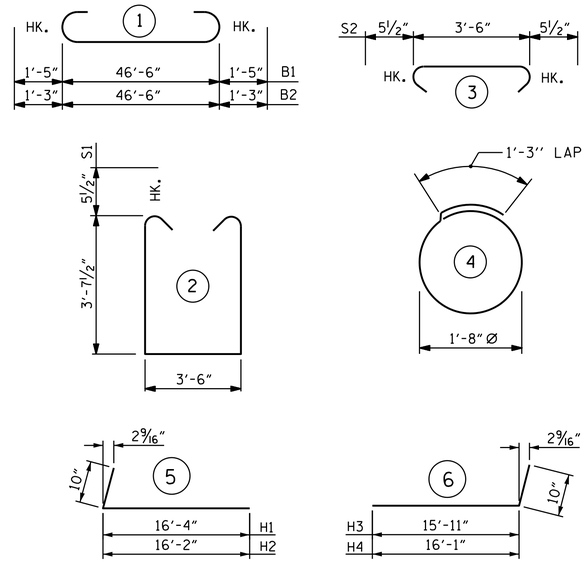
BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

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

TEMPORARY DRAINAGE AT END BENT

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

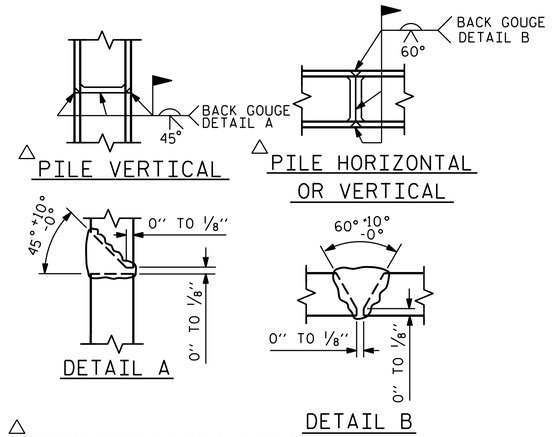
INTEGRAL END BENT #1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	1	49'-4"	849
B2	5	#9	1	49'-0"	833
B3	10	#5	STR	46'-6"	485
B4	8	#4	STR	24'-7"	131
B5	12	#4	STR	3'-6"	28
H1	8	#5	5	17'-2"	143
H2	8	#5	5	17'-0"	142
H3	8	#5	6	16'-9"	140
H4	8	#5	6	16'-11"	141
S1	56	#5	2	11'-8"	681
S2	56	#5	3	4'-5"	258
S3	28	#4	4	6'-6"	122
V1	78	#4	STR	5'-7"	291
V2	60	#4	STR	9'-4"	374

REINFORCING STEEL = 4618 LBS

CLASS A CONCRETE

POUR #1 (CAP, CONCRETE COLLARS & LOWER PART OF WINGS) 32.4 C.Y.



△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

PROJECT NO. B-5670

NASH COUNTY

STATION: 16+98.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 1

NORTH CAROLINA PROFESSIONAL SEAL 030024 ENGINEER ASTER G. ABRAHA

Aster Abraha
DDA094AED5104FD...
09/20/2022

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1			3			TOTAL SHEETS
2			4			40

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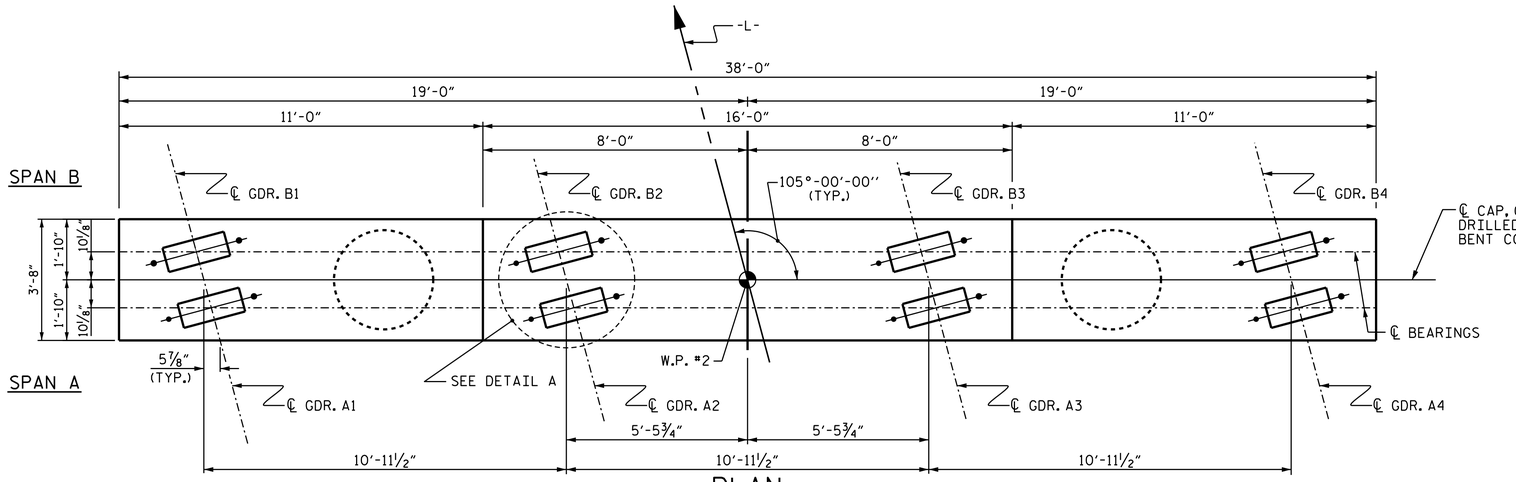
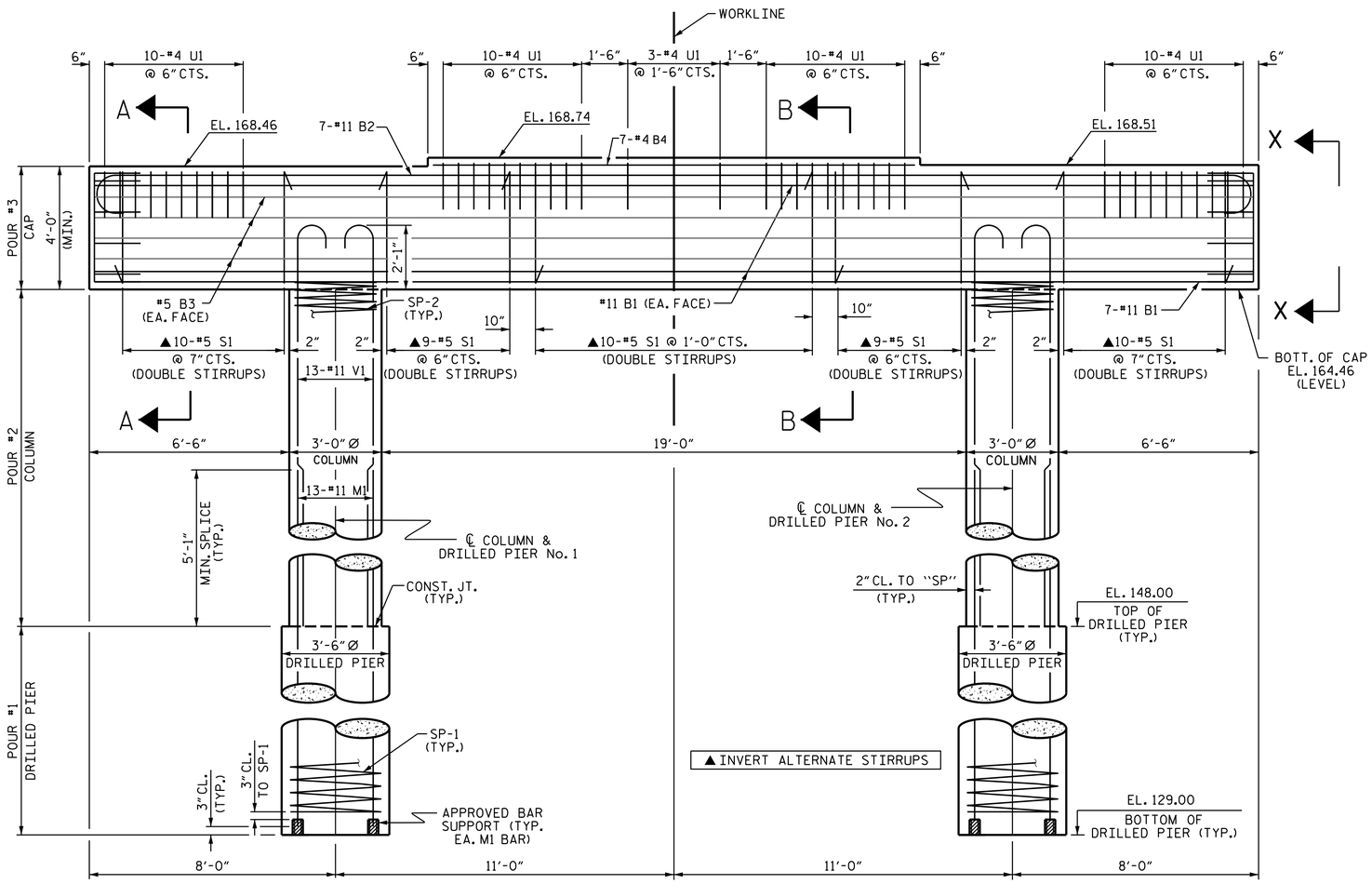


PLAN



ELEVATION

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

NOTES

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

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

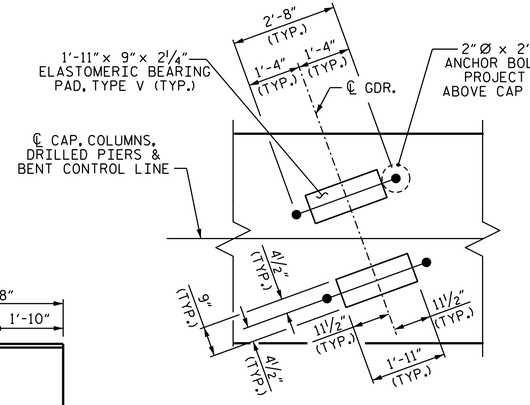
ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL" OR "EPOXY COATED SPIRAL COLUMN REINFORCING STEEL".

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

SPLICING OF THE LONGITUDINAL BARS IN THE DRILLED PIER WILL NOT BE PERMITTED.

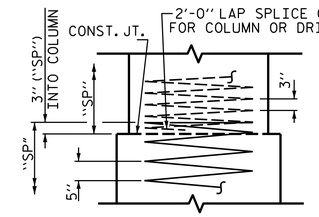
THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FOOT BELOW THE GROUND LINE.

FOR DRILLED PIER INSTALLATION INFORMATION, SEE PILE AND DRILLED PIER FOUNDATION TABLES, SHEET S-3.

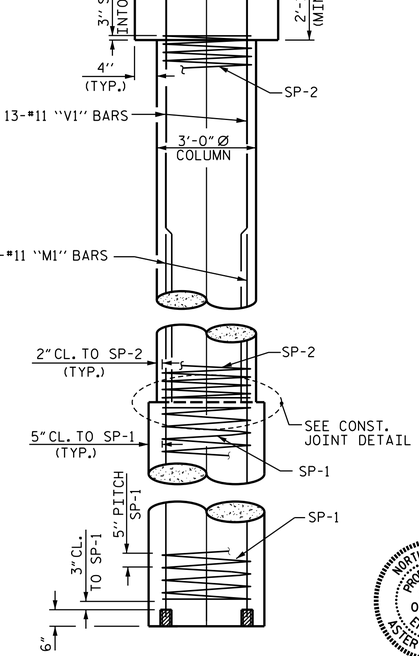


DETAIL "A"

(TYP. EA. GDR.)



CONSTRUCTION JOINT DETAIL



END ELEVATION

NORTH CAROLINA PROFESSIONAL SEAL 030024 ENGINEER ASTER G. ABRAHA

Aster Abraha DOA094AED5104FD...

09/20/2022

PROJECT NO. B-5670

NASH COUNTY

STATION: 16+98.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 1

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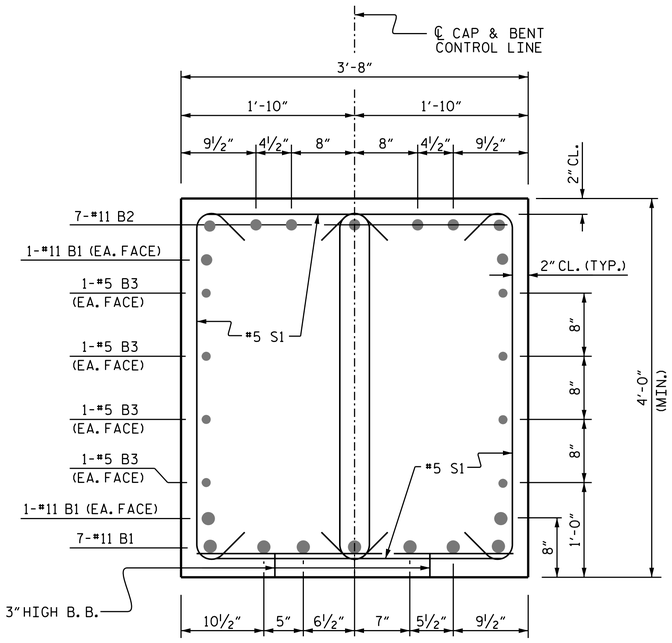
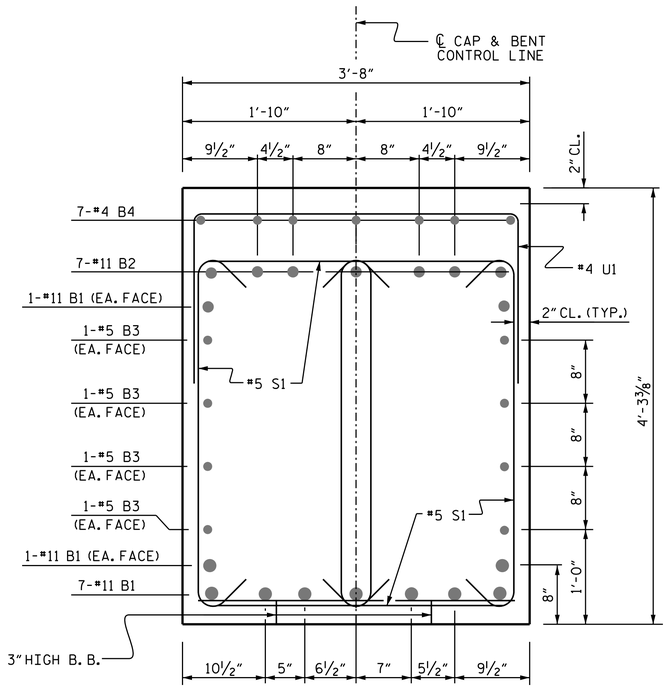
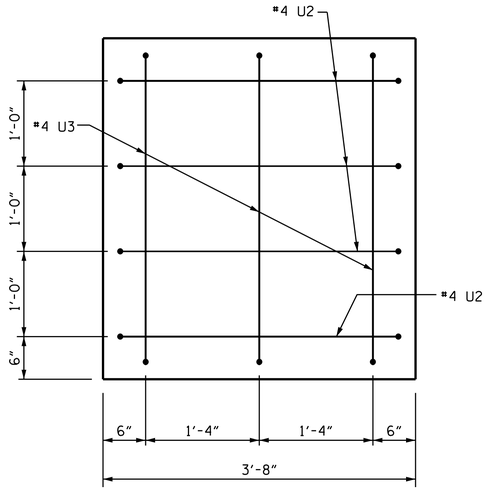


SECTION A-A

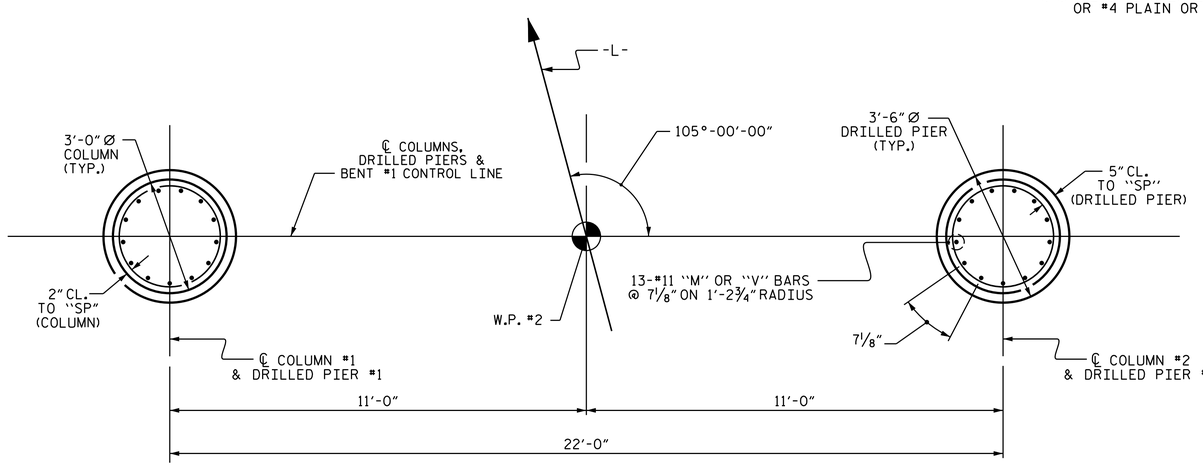


SECTION B-B



SECTION X-X

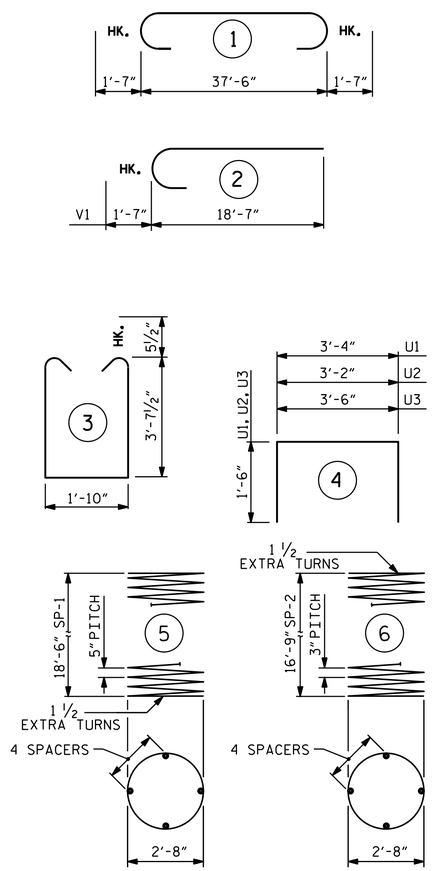
(TYPICAL BOTH ENDS)



PLAN OF COLUMNS AND DRILLED PIERS

(DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN AND DRILLED PIER)

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	11	#11	STR	37'-8"	2,201
B2	7	#11	1	40'-8"	1,512
B3	8	#5	STR	37'-8"	314
B4	7	#4	STR	15'-8"	73
M1	26	#11	STR	26'-10"	3,707
S1	96	#5	3	10'-0"	1001
U1	43	#4	4	6'-4"	182
U2	8	#4	4	6'-2"	33
U3	6	#4	4	6'-6"	26
V1	26	#11	2	20'-2"	2,786

REINFORCING STEEL _____ 11,835 LBS.

SPIRAL COLUMN REINFORCING STEEL

SP-1	2	✱✱✱	5	379'-0"	791
SP-2	2	✱✱	6	566'-0"	756

TOTAL SPIRAL COLUMN REINFORCING STEEL _____ 1,547 LBS.

CLASS A CONCRETE BREAKDOWN

POUR 2 (COLUMNS)	8.7 CU.YDS.
POUR 3 (CAP)	21.3 CU.YDS.
TOTAL CLASS A CONCRETE	30.0 CU.YDS.

3'-6" Ø DRILLED PIERS

DRILLED PIER CONCRETE POUR 1 (DRILLED PIERS) 13.6 CU.YDS.

✱✱✱ THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.

✱✱ THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

PROJECT NO. B-5670

NASH COUNTY

STATION: 16+98.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT #1

NORTH CAROLINA PROFESSIONAL SEAL 030024 ENGINEER ASTER G. ABRAHA

Aster Abraha

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09/20/2022

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1			3			TOTAL SHEETS
2			4			40

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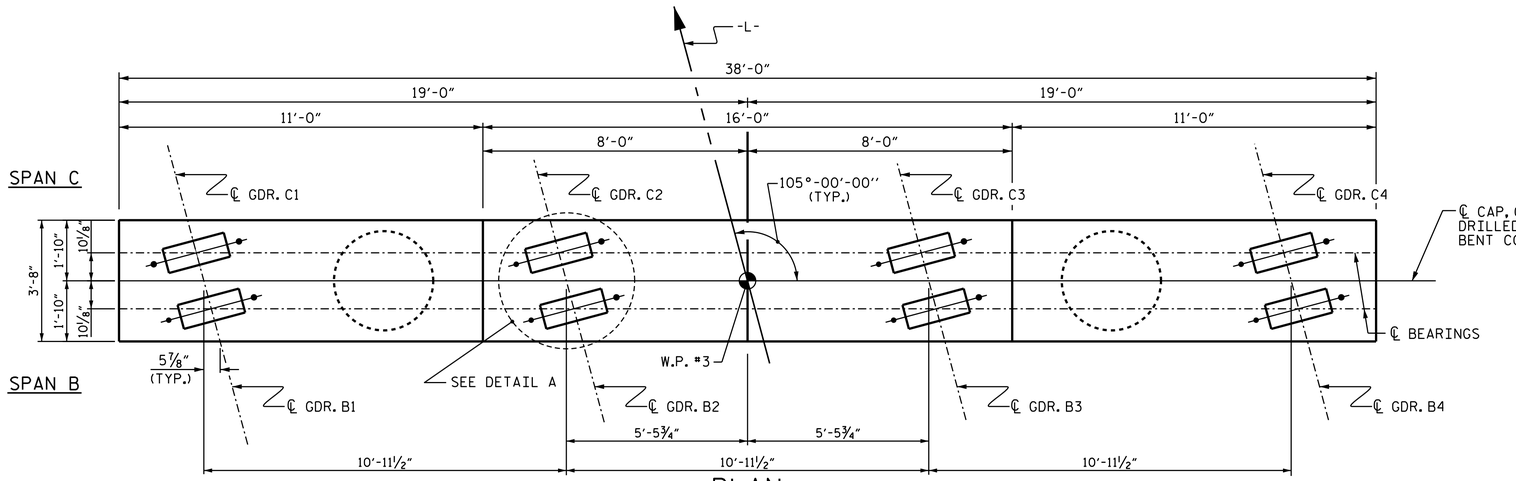
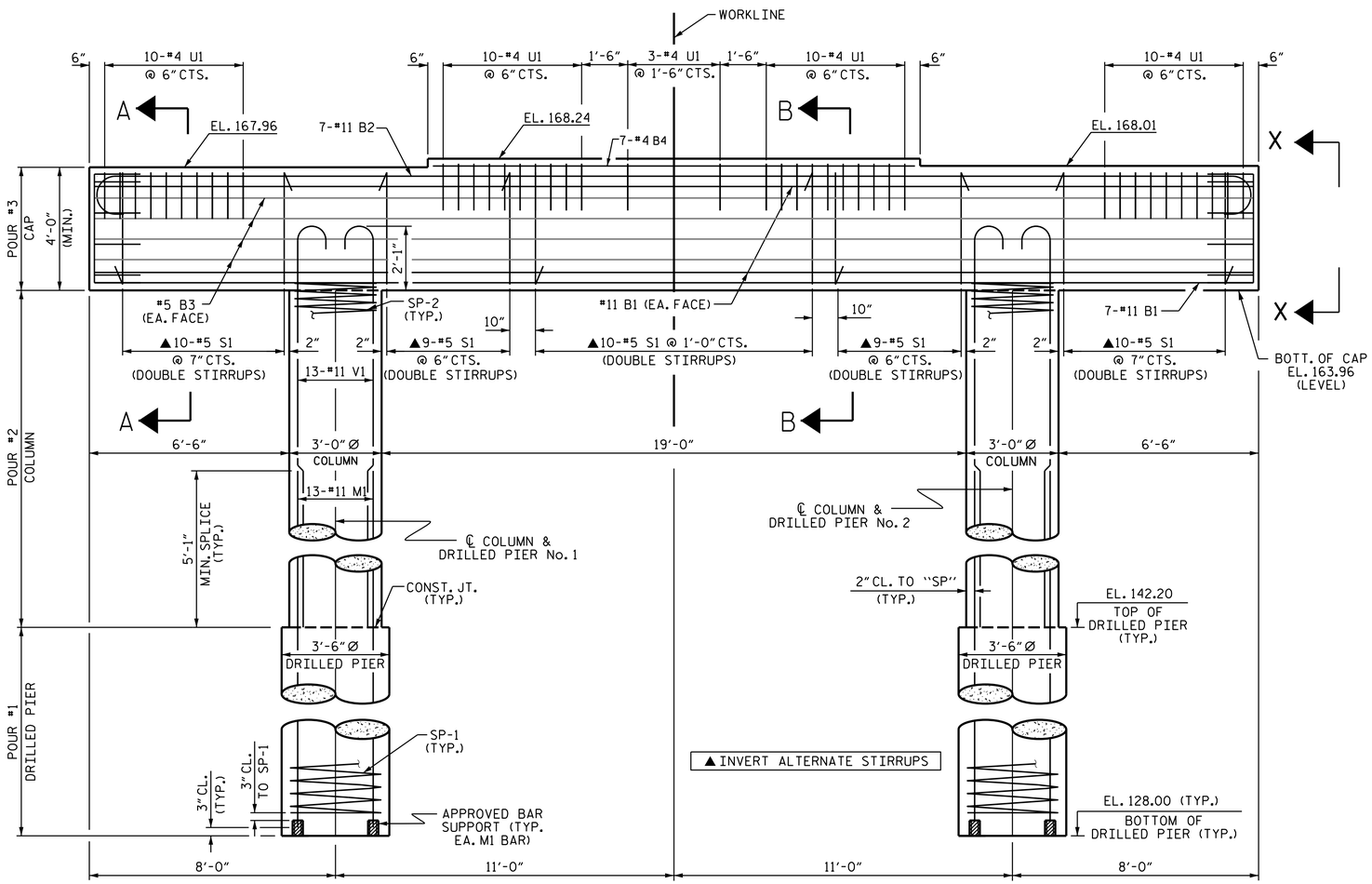


PLAN



ELEVATION

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

NOTES

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

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

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

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

SPLICING OF THE LONGITUDINAL BARS IN THE DRILLED PIER WILL NOT BE PERMITTED.

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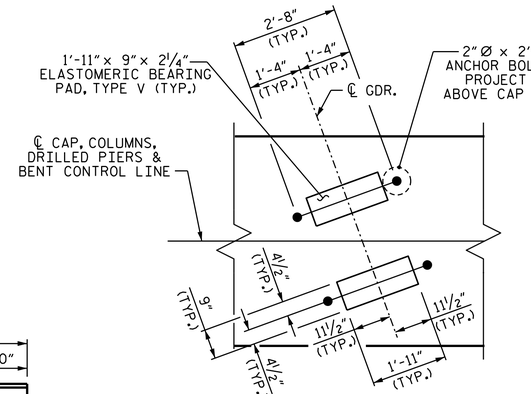
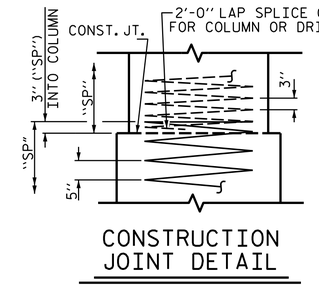


DETAIL "A"

(TYP. EA. GDR.)

END ELEVATION



CONSTRUCTION JOINT DETAIL

PROJECT NO. B-5670

NASH COUNTY

STATION: 16+98.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 2

NORTH CAROLINA PROFESSIONAL SEAL 030024 ENGINEER ASTER C. ABRAHA

Aster Abraha
DDA094AED5104FD...
09/20/2022

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-31
1			3			TOTAL SHEETS
2			4			40

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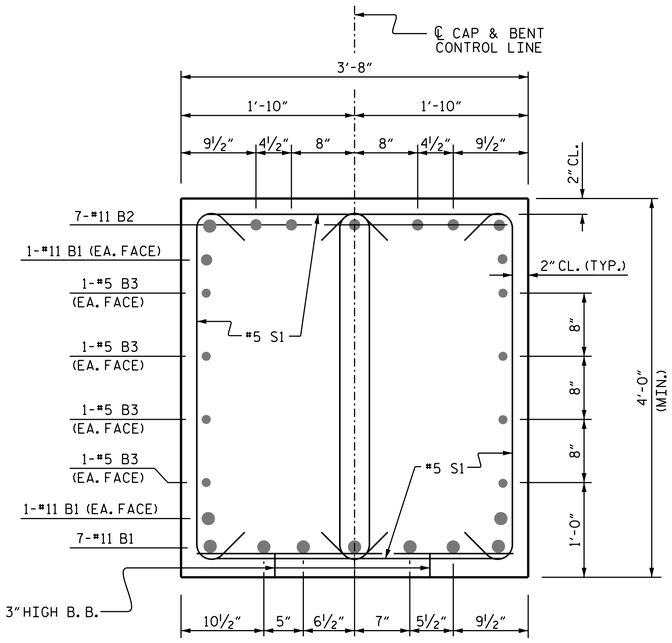
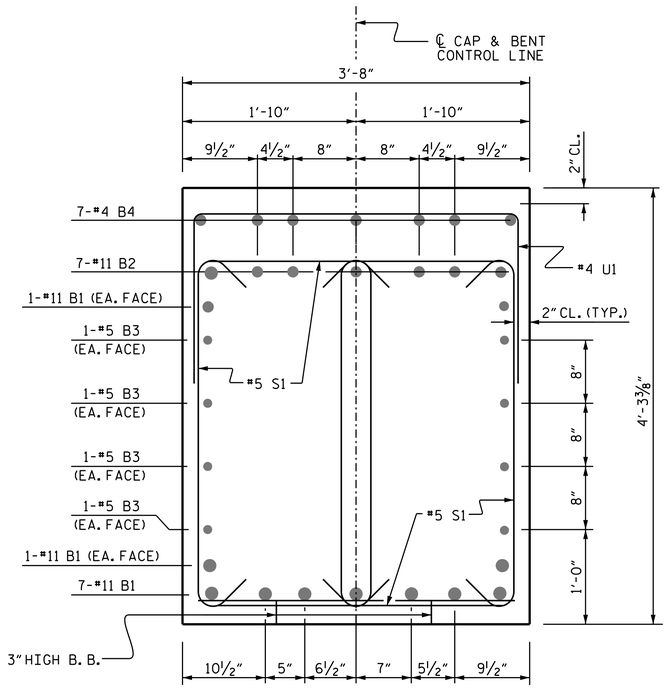
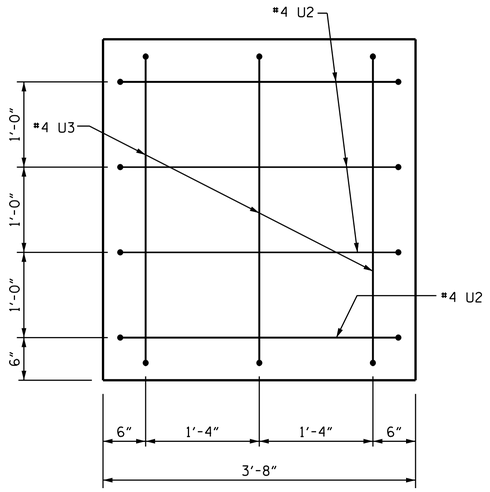


SECTION A-A

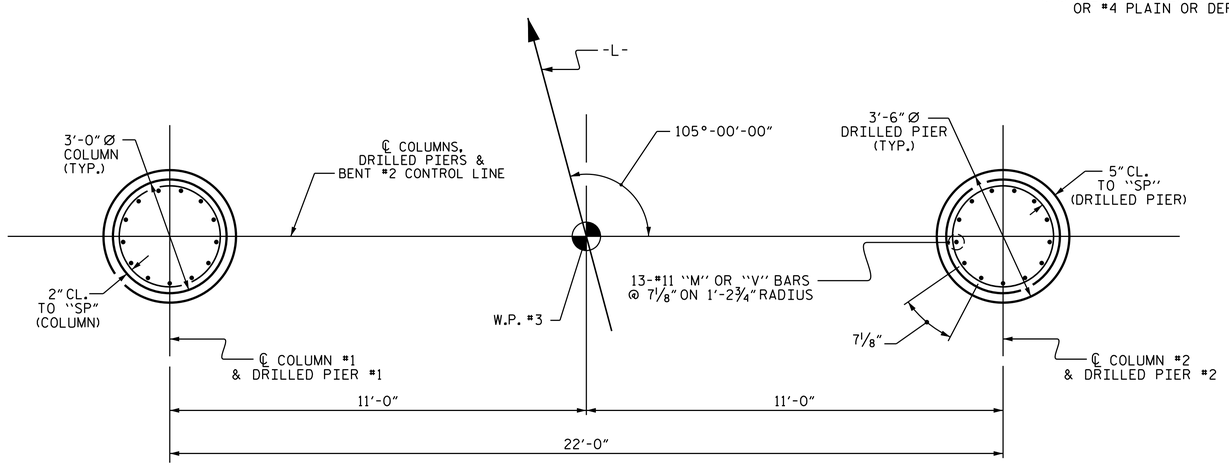


SECTION B-B



SECTION X-X

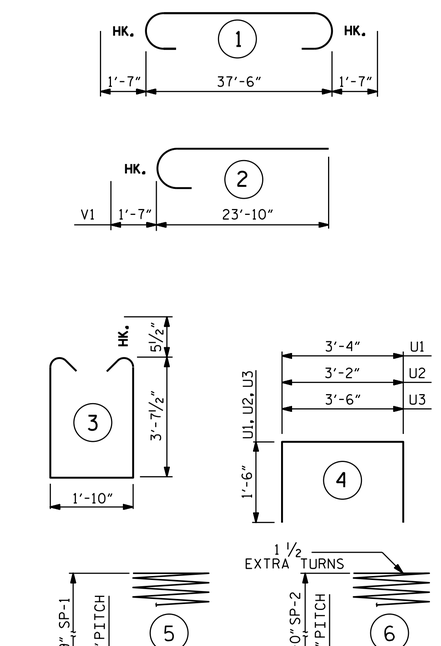
(TYPICAL BOTH ENDS)



PLAN OF COLUMNS AND DRILLED PIERS

(DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN AND DRILLED PIER)

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	11	#11	STR	37'-8"	2,201
B2	7	#11	1	40'-8"	1,512
B3	8	#5	STR	37'-8"	314
B4	7	#4	STR	15'-8"	73
M1	26	#11	STR	22'-4"	3,085
S1	96	#5	3	10'-0"	1001
U1	43	#4	4	6'-4"	182
U2	8	#4	4	6'-2"	33
U3	6	#4	4	6'-6"	26
V1	26	#11	2	25'-5"	3,511

REINFORCING STEEL _____ 11,938 LBS.

SPIRAL COLUMN REINFORCING STEEL

SP-1	2	***	5	285'-0"	595
SP-2	2	**	6	739'-0"	987

TOTAL SPIRAL COLUMN REINFORCING STEEL _____ 1,582 LBS.

CLASS A CONCRETE BREAKDOWN

POUR 2 (COLUMNS)	11.4 CU.YDS.
POUR 3 (CAP)	21.3 CU.YDS.
TOTAL CLASS A CONCRETE	32.7 CU.YDS.

3'-6" Ø DRILLED PIERS

DRILLED PIER CONCRETE POUR 1 (DRILLED PIERS) 10.2 CU.YDS.

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

** THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

PROJECT NO. B-5670

NASH COUNTY

STATION: 16+98.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT #2

NORTH CAROLINA PROFESSIONAL SEAL 030024 ENGINEER ASTER G. ABRAHA

09/20/2022

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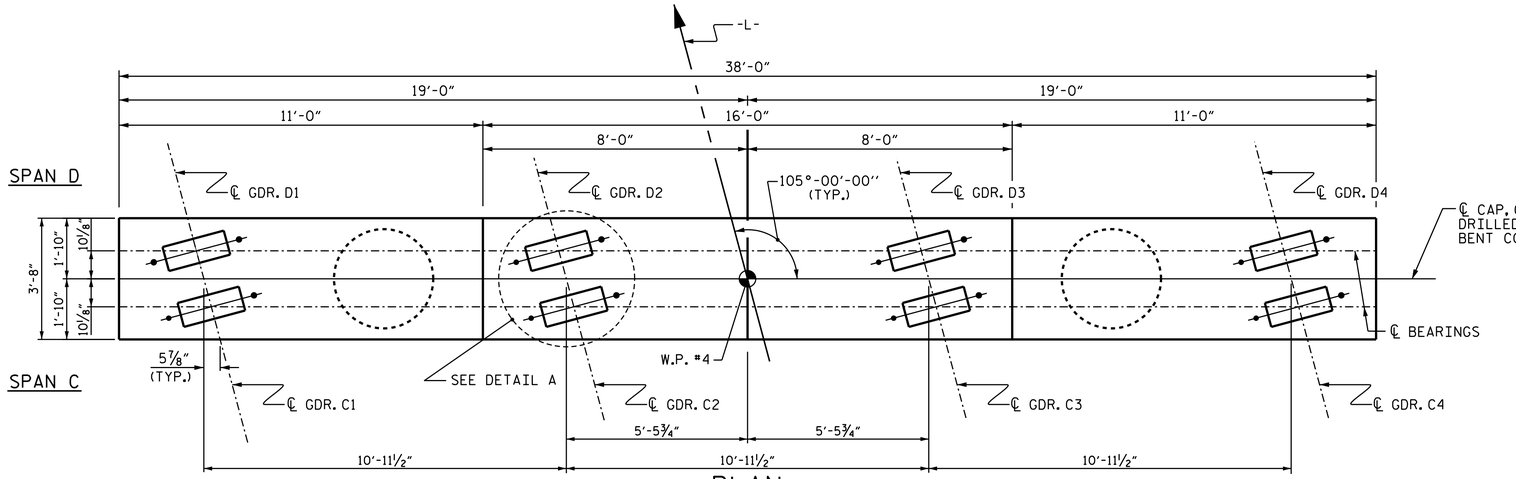

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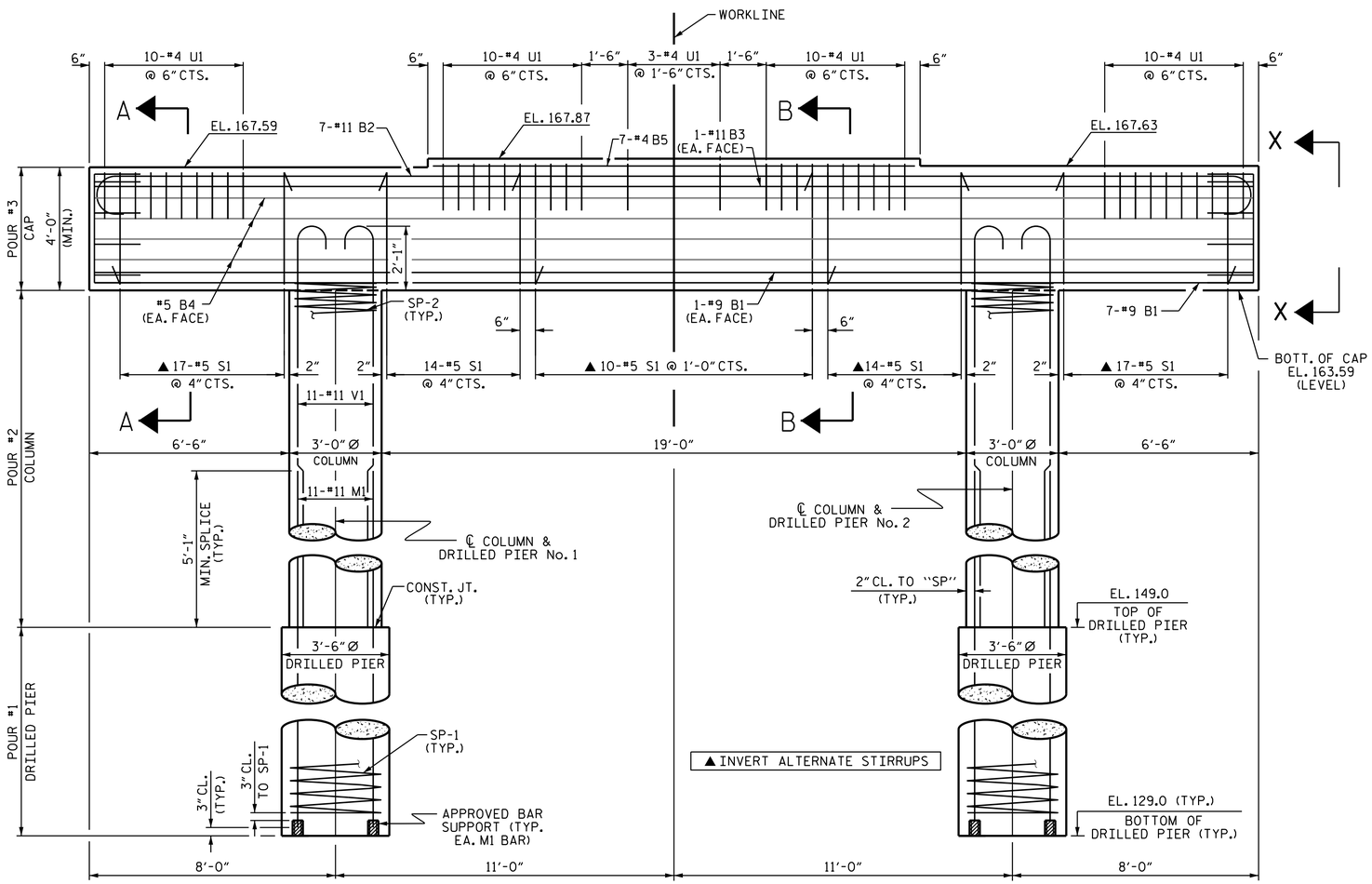


ELEVATION

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

NOTES

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

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

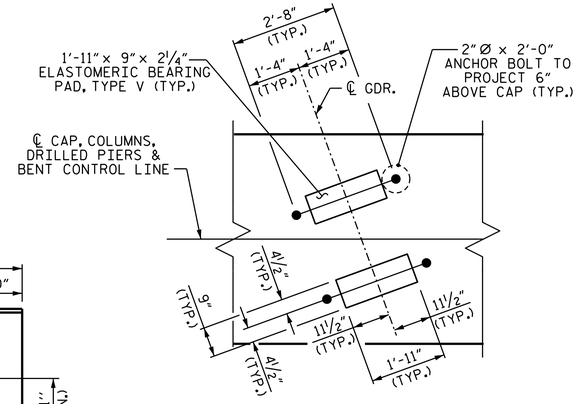
ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL" OR "EPOXY COATED SPIRAL COLUMN REINFORCING STEEL".

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

SPLICING OF THE LONGITUDINAL BARS IN THE DRILLED PIER WILL NOT BE PERMITTED.

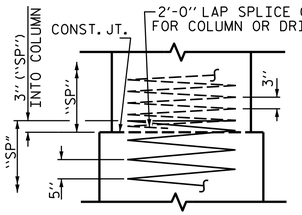
THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FOOT BELOW THE GROUND LINE.

FOR DRILLED PIER INSTALLATION INFORMATION, SEE PILE AND DRILLED PIER FOUNDATION TABLES, SHEET S-3.



DETAIL "A"

(TYP. EA. GDR.)



CONSTRUCTION JOINT DETAIL

END ELEVATION

PROJECT NO. B-5670

NASH COUNTY

STATION: 16+98.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 3

NORTH CAROLINA PROFESSIONAL SEAL 030024 ENGINEER ASTER G. ABRAHA

Aster Abraha
DDA094AED5104FD...
09/20/2022

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-33
1			3			TOTAL SHEETS
2			4			40

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DRAWN BY : M.M. AHMED DATE : 06/22
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9/20/2022
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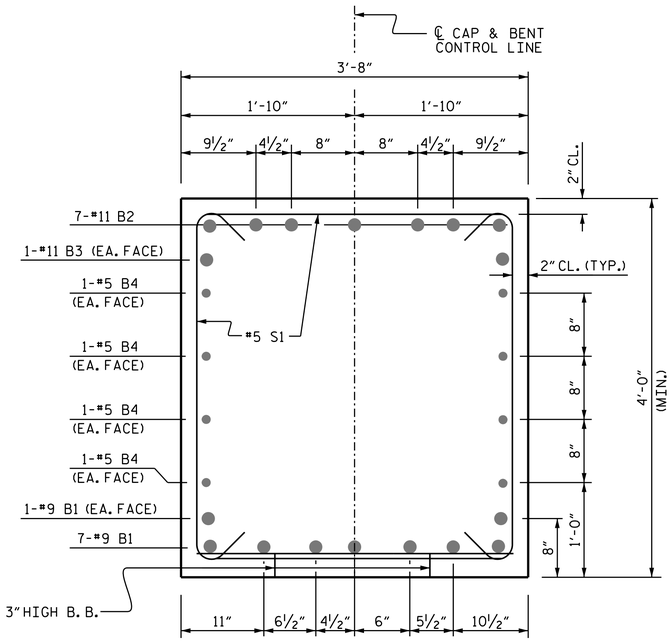
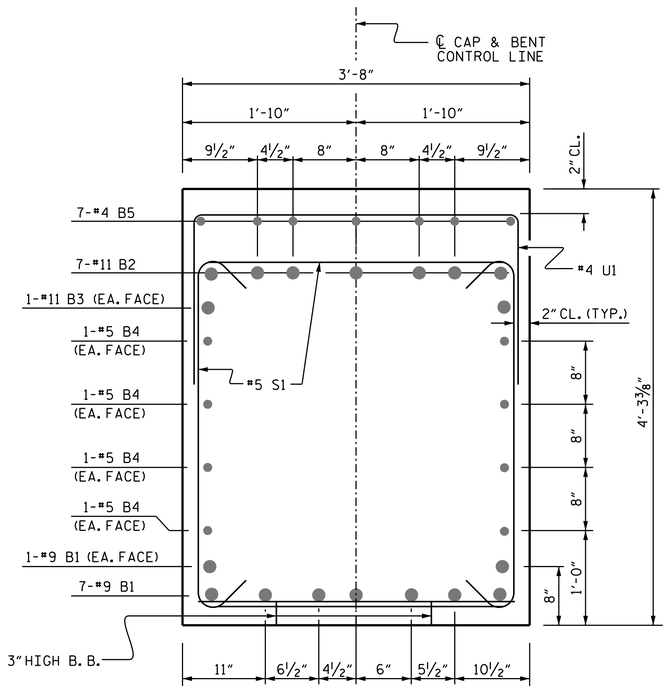


SECTION A-A



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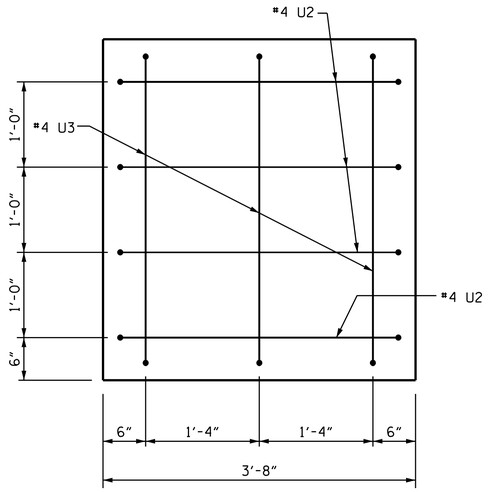
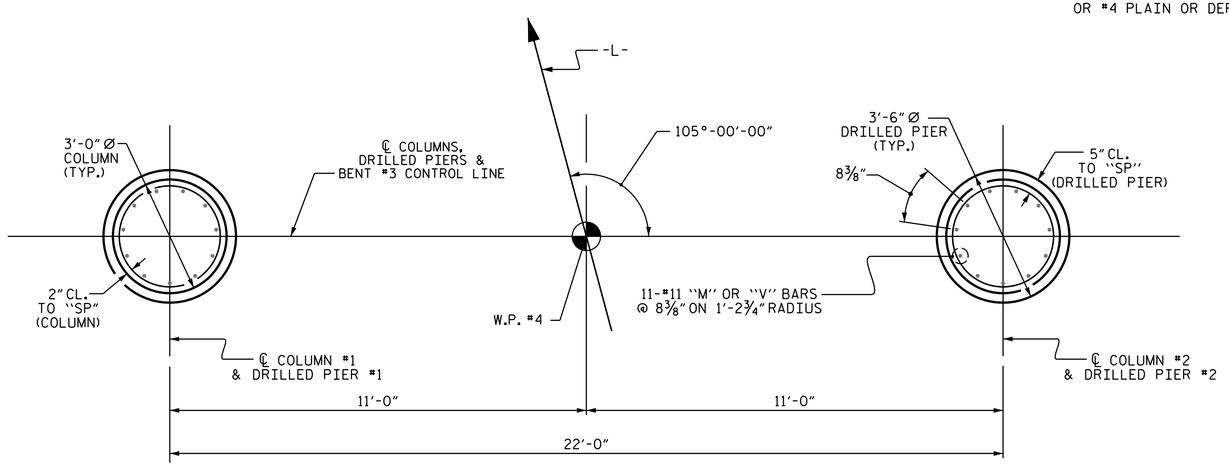
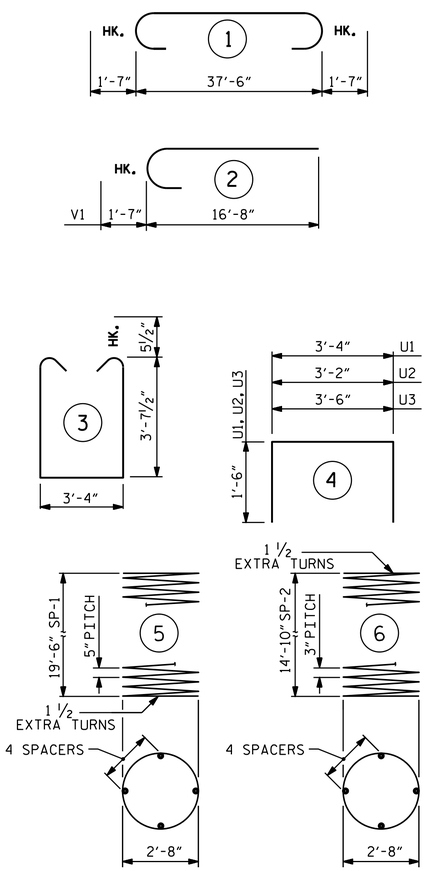


SECTION X-X
(TYPICAL BOTH ENDS)



PLAN OF COLUMNS AND DRILLED PIERS
(DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN AND DRILLED PIER)

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

BENT 3

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	9	#9	STR	37'-8"	1,153
B2	7	#11	1	40'-8"	1,512
B3	2	#11	STR	37'-8"	400
B4	8	#5	STR	37'-8"	314
B5	7	#4	STR	15'-8"	73
M1	22	#11	STR	27'-10"	3253
S1	72	#5	3	11'-6"	864
U1	43	#4	4	6'-4"	182
U2	8	#4	4	6'-2"	33
U3	6	#4	4	6'-6"	26
V1	22	#11	2	18'-3"	2,133

REINFORCING STEEL _____ 9,943 LBS.

SPIRAL COLUMN REINFORCING STEEL					
SP-1	2	***	5	399'-0"	832
SP-2	2	**	6	502'-0"	671

TOTAL SPIRAL COLUMN REINFORCING STEEL _____ 1,503 LBS.

CLASS A CONCRETE BREAKDOWN

POUR 2 (COLUMNS)	7.7 CU.YDS.
POUR 3 (CAP)	21.3 CU.YDS.
TOTAL CLASS A CONCRETE	29.0 CU.YDS.

3'-6" Ø DRILLED PIERS

DRILLED PIER CONCRETE POUR 1 (DRILLED PIERS)	14.3 CU.YDS.

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

** THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

PROJECT NO. B-5670

NASH COUNTY

STATION: 16+98.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT #3

NORTH CAROLINA PROFESSIONAL SEAL 030024 ENGINEER ASTER G. ABRAHA
Aster Abraha
DDA094AED5104FD...
09/20/2022

DRAWN BY : M.M. AHMED DATE : 06/22
CHECKED BY : S. WANCE DATE : 06/22
DESIGN ENGINEER OF RECORD: M.M. AHMED DATE : 07/2020

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1			3			TOTAL SHEETS
2			4			40

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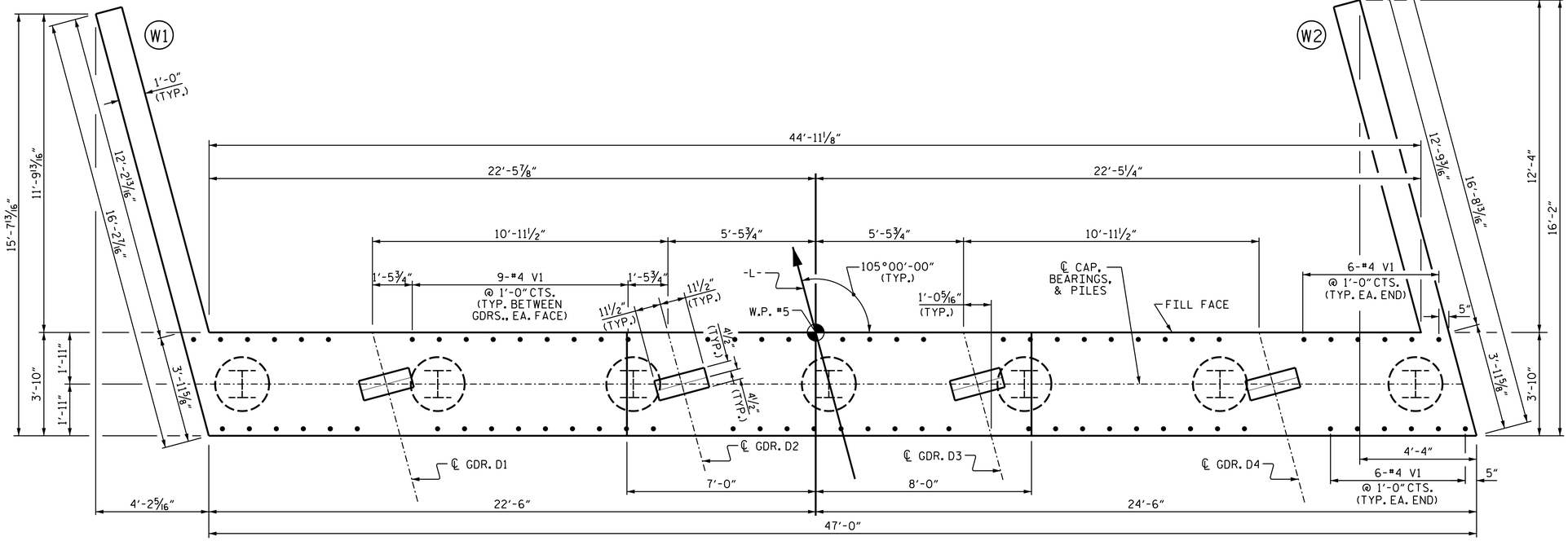
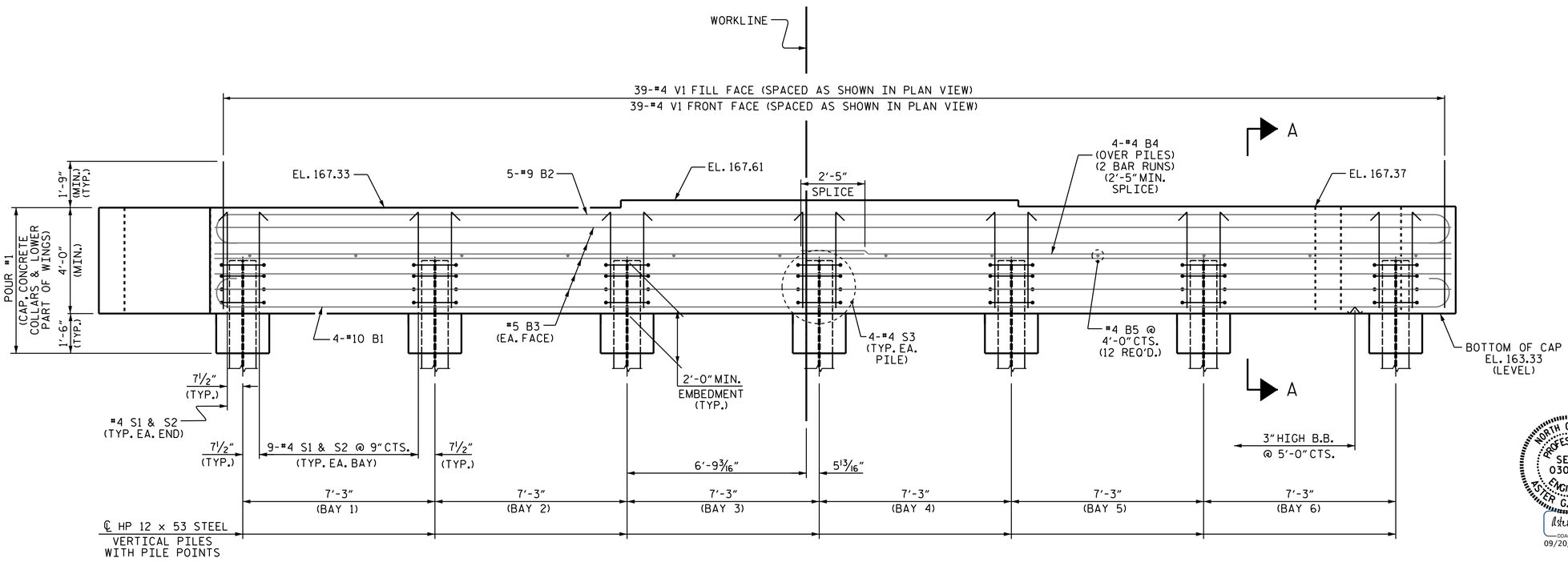
gabraha



PLAN



ELEVATION

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #4 V1 BARS.

SEE THE SUPERSTRUCTURE SHEETS FOR UPPER PART OF INTEGRAL END BENT DETAIL.

THE UPPER PART OF INTEGRAL PORTION AND WINGS SHALL BE POURED WITH THE SUPERSTRUCTURE. SEE SUPERSTRUCTURE PLAN OF SPANS.

THE TOP SURFACE OF POUR #1 OF THE END BENT CAP AND WINGS, EXCLUDING THE BEARING AREA. SHALL BE RAKED TO A DEPTH OF 1/4".

STEEL H-PILE POINTS ARE REQUIRED FOR STEEL H-PILES AT END BENTS 1 & 2. SEE SECTION 450 OF THE STANDARD SPECIFICATION.

PROJECT NO. B-5670

NASH COUNTY

STATION: 16+98.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE INTEGRAL END BENT 2

NORTH CAROLINA PROFESSIONAL SEAL 030024 ENGINEER ASTER G. ABRAHA

Aster Abraha
DOA094AED5104FD...
09/20/2022

DRAWN BY : M.M. AHMED DATE : 06/22
CHECKED BY : S. WANCE DATE : 06/22
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1			3			TOTAL SHEETS
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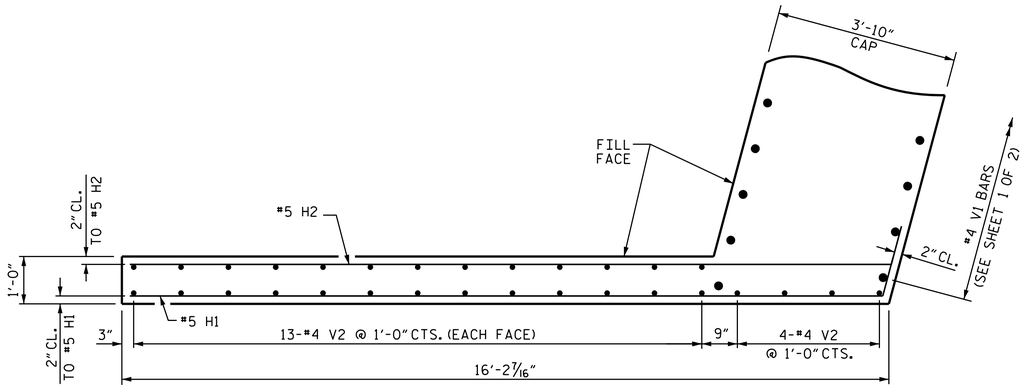
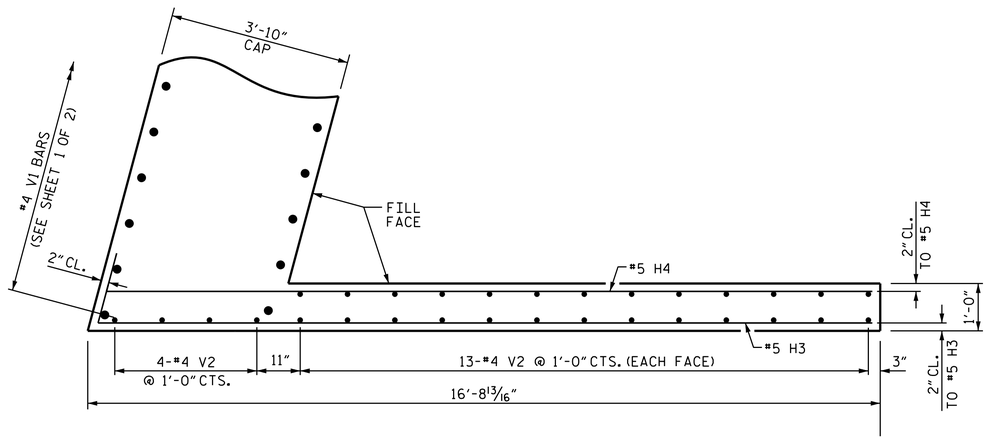
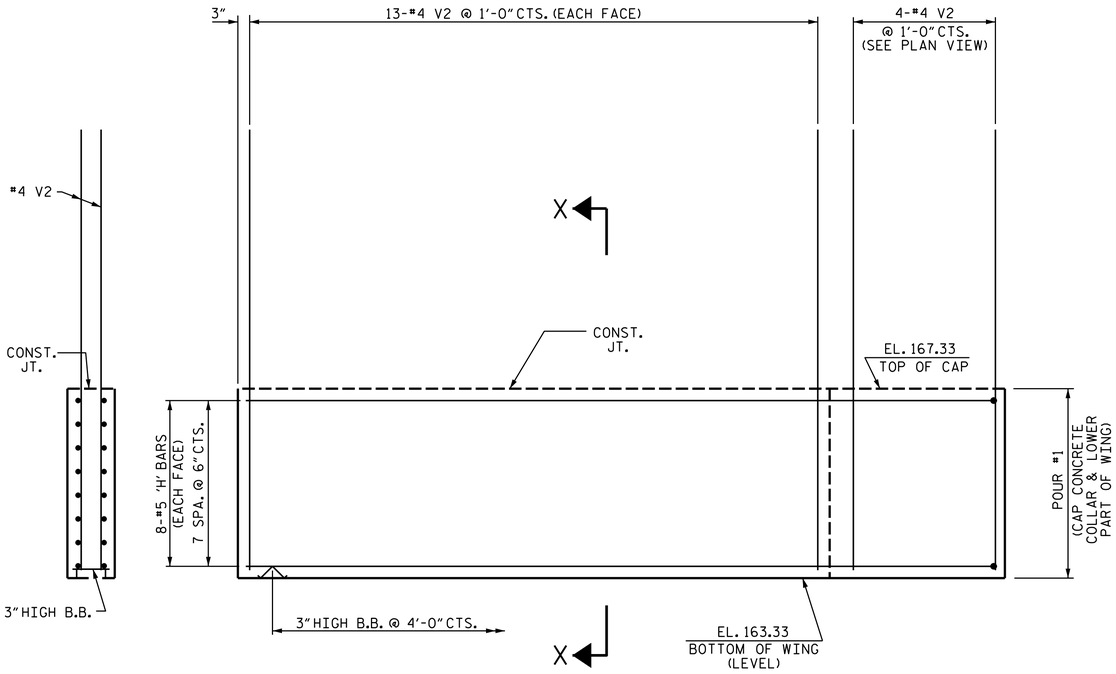


PLAN OF WING W1

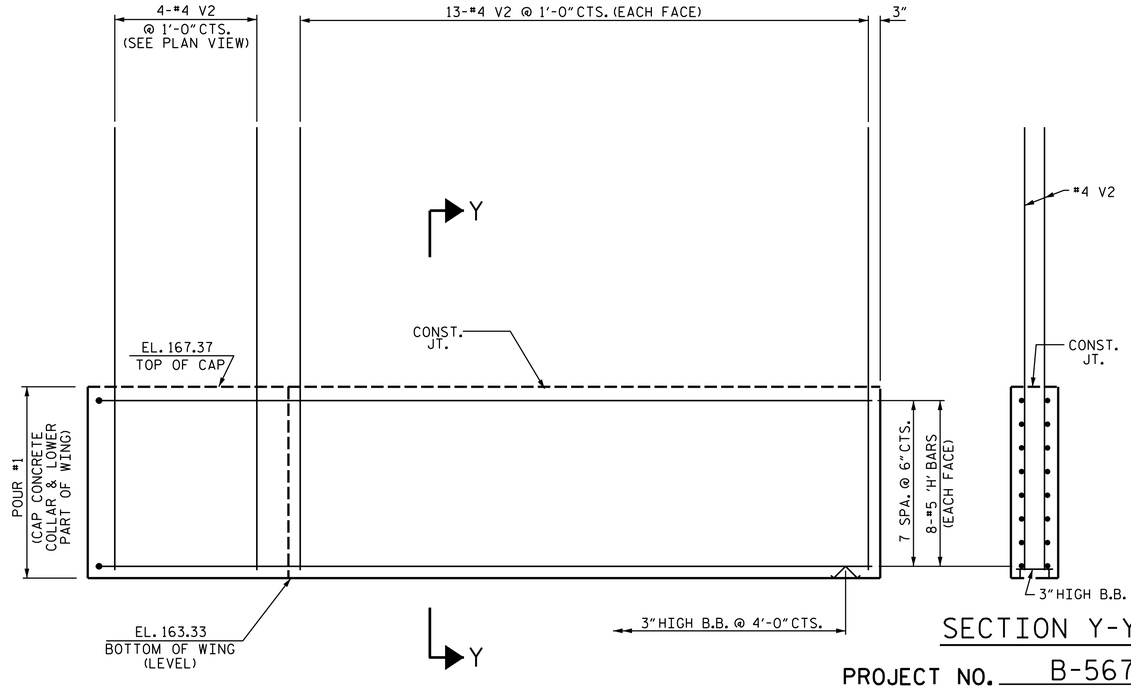


PLAN OF WING W2



SECTION X-X

ELEVATION OF WING W1



ELEVATION OF WING W2

SECTION Y-Y

PROJECT NO. B-5670

NASH COUNTY

STATION: 16+98.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 2

NORTH CAROLINA PROFESSIONAL SEAL 030024 ENGINEER ASTER G. ABRAHA

Aster Abraha
DOA094AED5104FD...
09/20/2022

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1			3			TOTAL SHEETS
2			4			40

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8/3/2022
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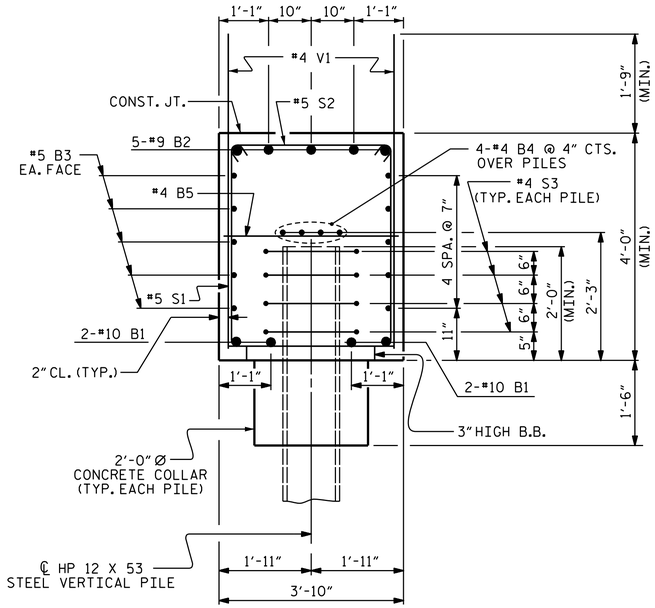
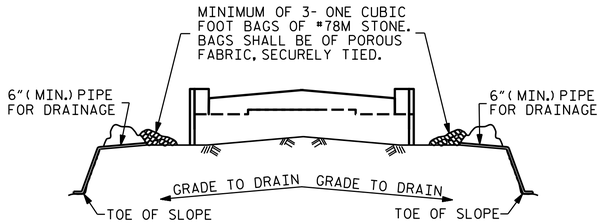


SECTION A-A

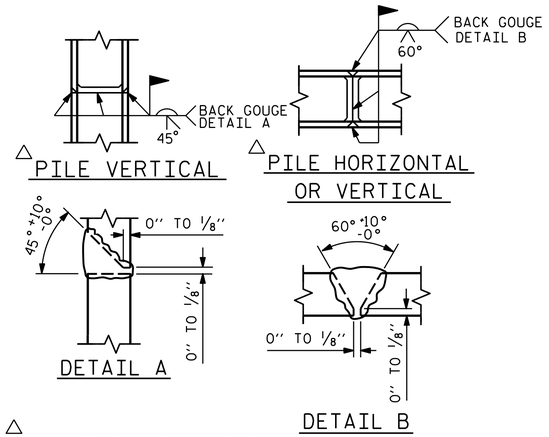


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

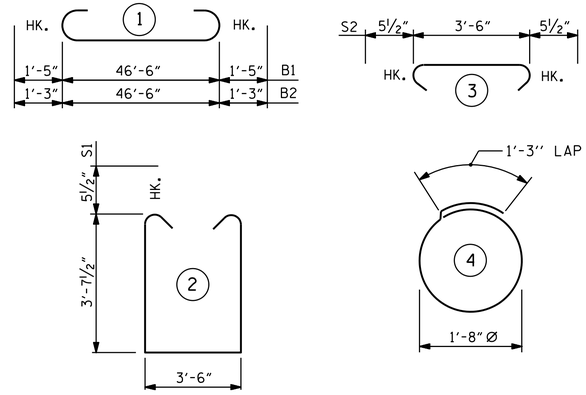
TEMPORARY DRAINAGE AT END BENT



△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

INTEGRAL END BENT #2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	1	49'-4"	849
B2	5	#9	1	49'-0"	833
B3	10	#5	STR	46'-6"	485
B4	8	#4	STR	24'-7"	131
B5	12	#4	STR	3'-6"	28
H1	8	#5	6	16'-9"	140
H2	8	#5	6	16'-11"	141
H3	8	#5	5	17'-2"	143
H4	8	#5	5	17'-0"	142
S1	56	#5	2	11'-8"	681
S2	56	#5	3	4'-5"	258
S3	28	#4	4	6'-6"	122
V1	78	#4	STR	5'-7"	291
V2	60	#4	STR	9'-4"	374
REINFORCING STEEL				=	4618 LBS

CLASS A CONCRETE

POUR #1 (CAP, CONCRETE COLLARS & LOWER PART OF WINGS) 32.4 C.Y.

PROJECT NO. B-5670

NASH COUNTY

STATION: 16+98.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 2

NORTH CAROLINA PROFESSIONAL SEAL 030024 ENGINEER ASTER G. ABRAHA

Aster Abraha
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09/20/2022

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1			3			TOTAL SHEETS
2			4			40

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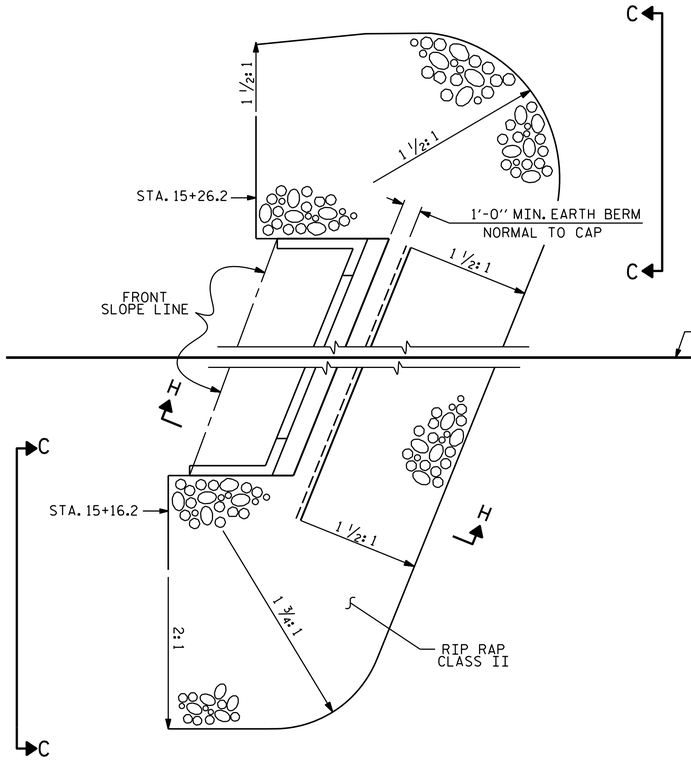
NOTES :

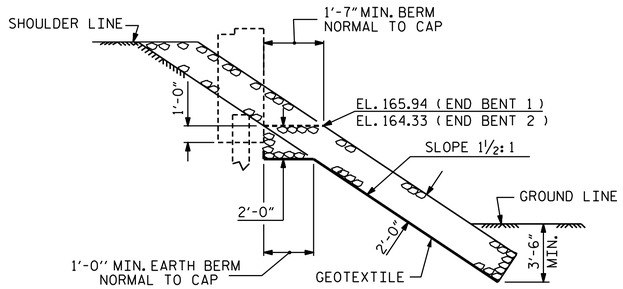
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.



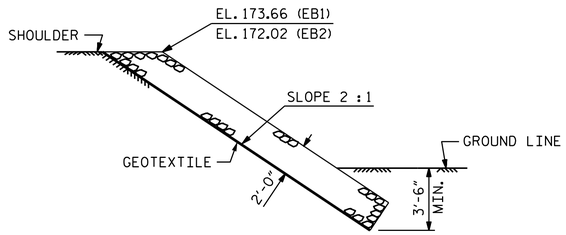
END BENT 1

END BENT 2

ESTIMATED QUANTITIES		
BRIDGE @ STA. 16+98.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	475	528
END BENT 2	374	415



SECTION H-H



VIEW C-C

PROJECT NO. B-5670

NASH COUNTY

STATION: 16+98.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

RIP RAP DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 030024 ENGINEER ASTER G. ABRAHA

Digitally signed by: Aster Abraha
DocuSigned by: DDA094AED5104FD...
09/20/2022

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-38
1			3			TOTAL SHEETS
2			4			40

ASSEMBLED BY : G. AYES	DATE : 1/2022	
CHECKED BY : M. M. AHMED/S. WANCE	DATE : 6/2022	
DRAWN BY : REK 1/84	REV. 10/1/11	MAA/GM
CHECKED BY : RDU 1/84	REV. 12/21/11	MAA/GM
	REV. 12/17	MAA/THC

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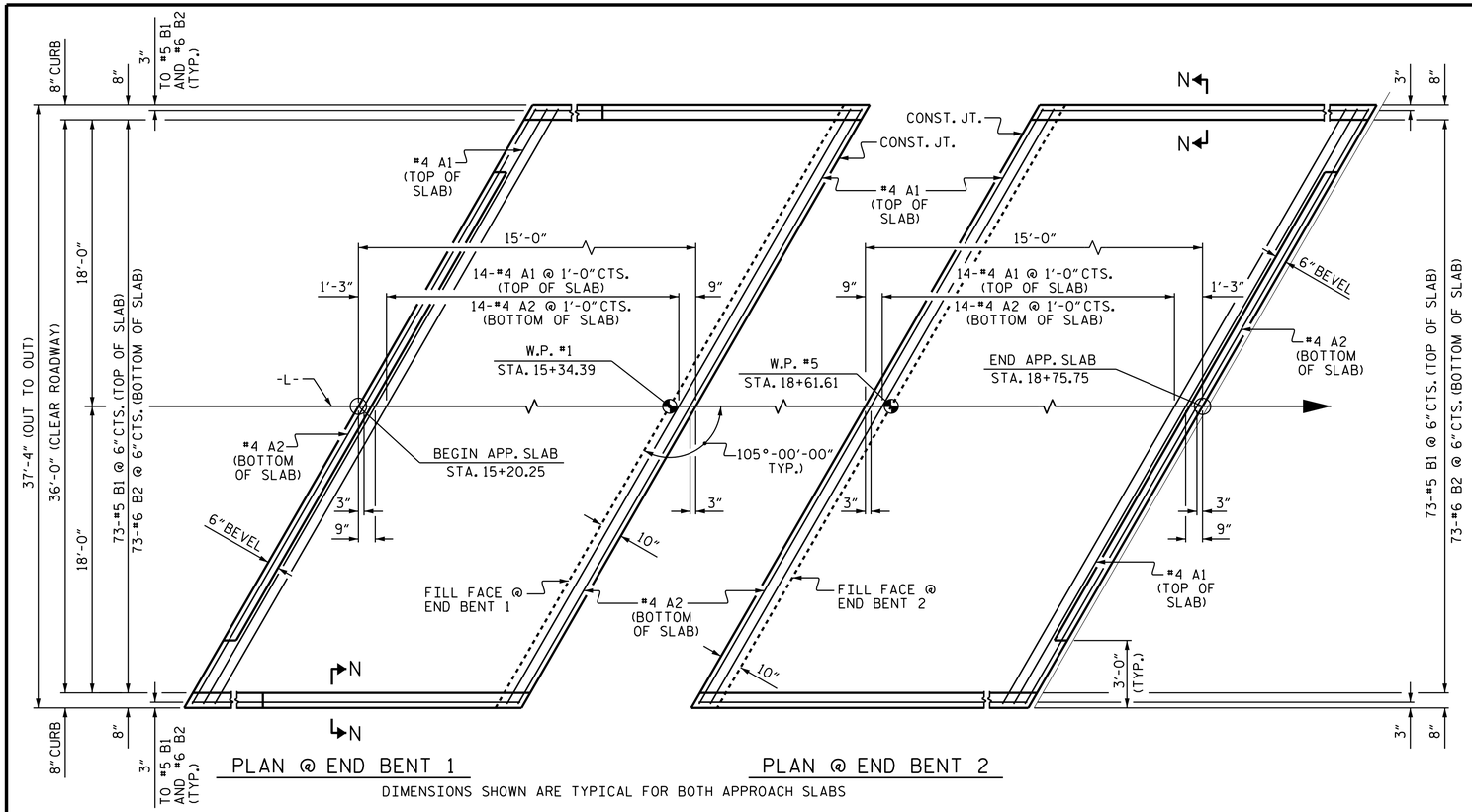


DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

NOTES

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

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

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

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

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

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

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

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

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

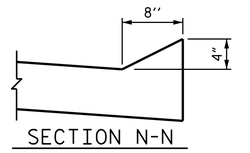
BILL OF MATERIAL

FOR ONE APPROACH SLAB (2 REQ'D)

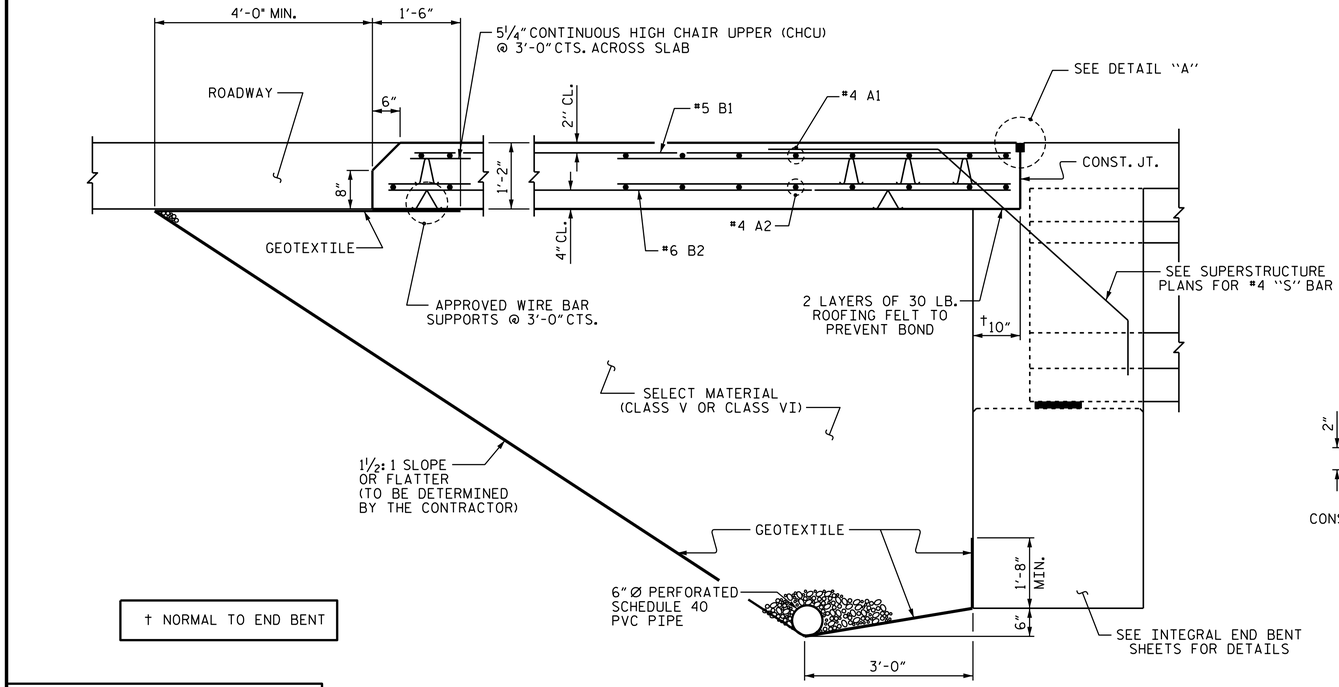
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✱ A1	16	#4	STR	38'-3"	409
A2	16	#4	STR	38'-3"	409
✱ B1	75	#5	STR	14'-2"	1,108
B2	75	#6	STR	14'-7"	1,643
REINFORCING STEEL				LBS.	2,052
✱ EPOXY COATED REINFORCING STEEL				LBS.	1,517
CLASS AA CONCRETE				C.Y.	48.4

SPLICE LENGTHS

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



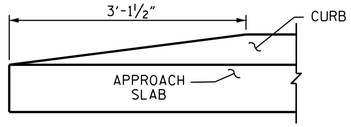
SECTION N-N



† NORMAL TO END BENT

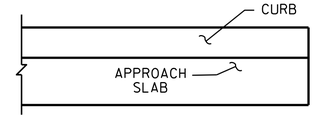
SECTION THRU SLAB

(TYPE I - STANDARD APPROACH FILL)



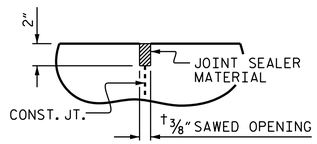
END OF CURB WITHOUT SHOULDER BERM GUTTER

@ END BENT 1



END OF CURB WITH SHOULDER BERM GUTTER

@ END BENT 2



DETAIL "A"

PROJECT NO. B-5670

NASH COUNTY

STATION: 16+98.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

BRIDGE APPROACH SLAB FOR INTEGRAL ABUTMENT WITH FLEXIBLE PAVEMENT

NORTH CAROLINA PROFESSIONAL SEAL 030024 ENGINEER ASTER G. ABRAHA

09/20/2022

ASSEMBLED BY :	G. AYES	DATE :	1/2022
CHECKED BY :	M. M. AHMED	DATE :	6/2022
DRAWN BY : TLA	10/05	REV. 6/13	MAA/GM
CHECKED BY : GM	5/06	REV. 12/17	MAA/THC
		REV. 06/19	BNB/THC

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-39
1			3			TOTAL SHEETS
2			4			40

9/20/2022
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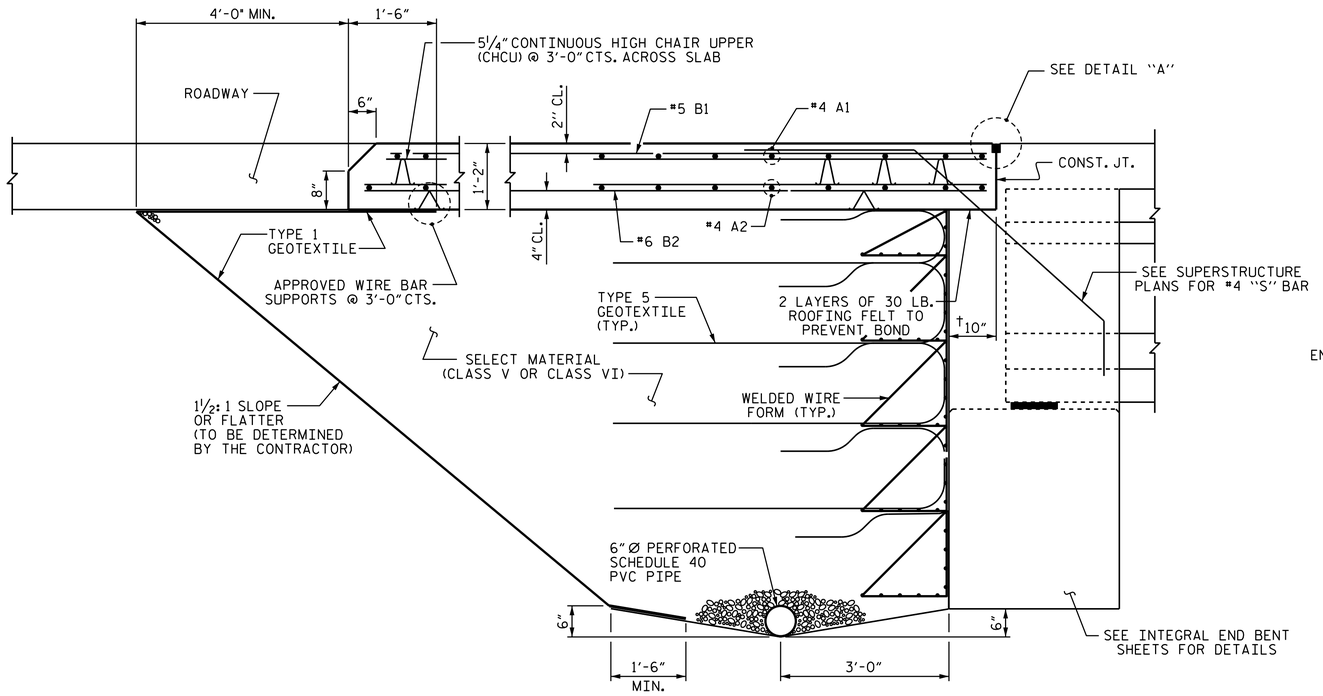
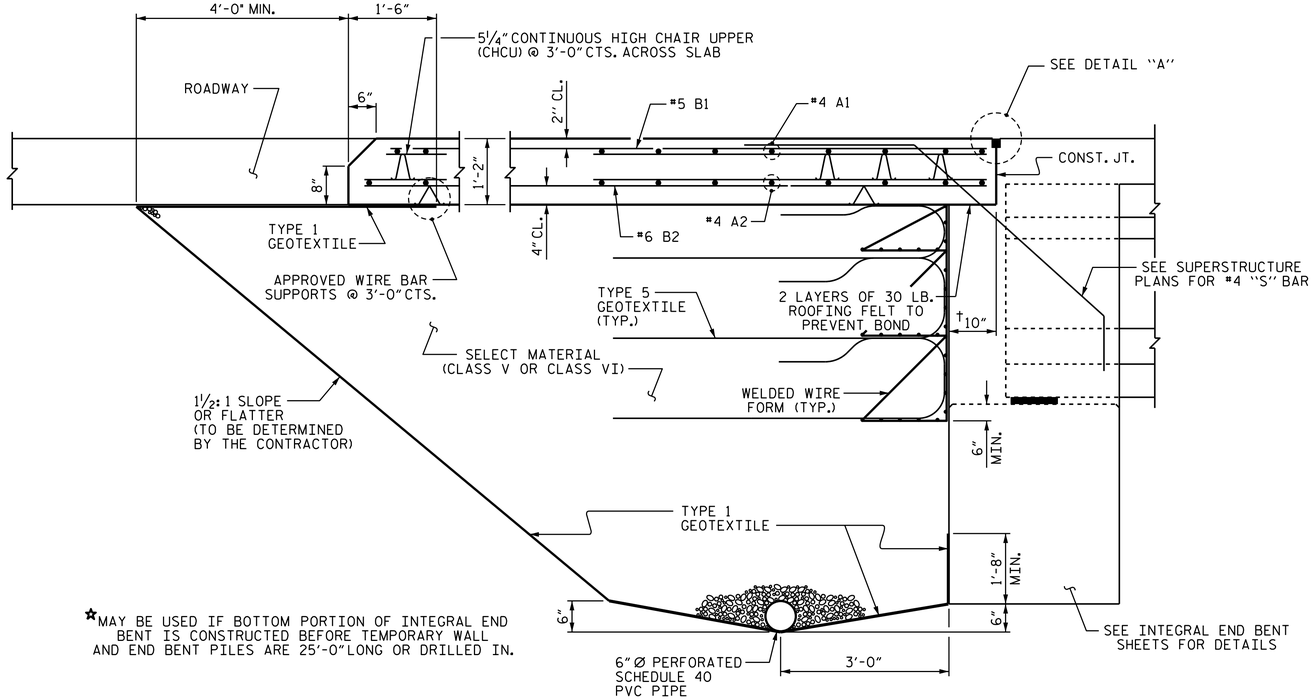
STD. NO. BAS5 (SHT 1b)



SECTION THRU SLAB

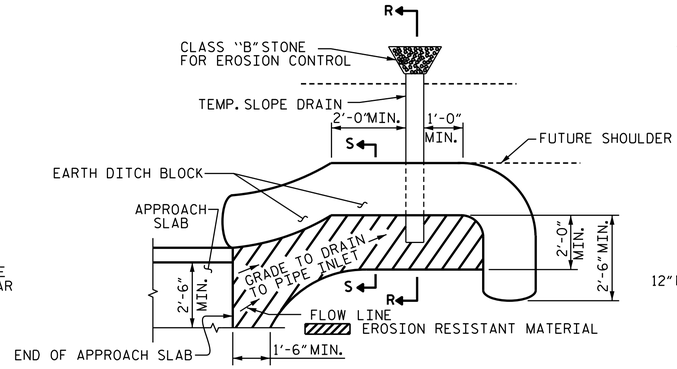
(TYPE A - ALTERNATE APPROACH FILL)



SECTION THRU SLAB

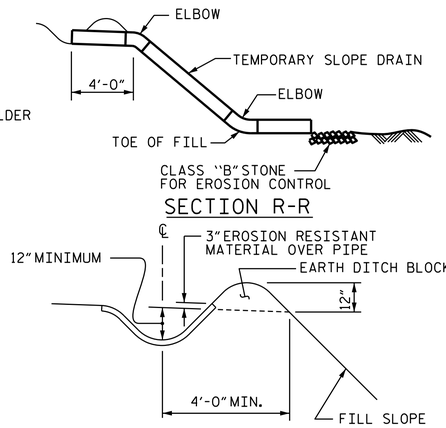
★(TYPE A - ALTERNATE APPROACH FILL)

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



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

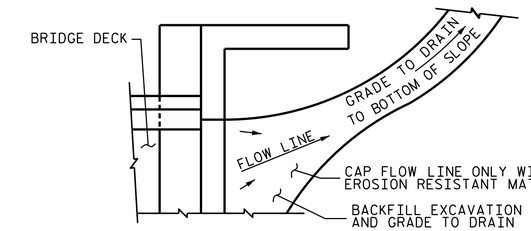
PLAN VIEW



SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



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

TEMPORARY DRAINAGE DETAIL

NOTES

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

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

GEOTEXTILE (TYPE 1 OR TYPE 5) SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

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

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

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

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

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

PROJECT NO. B-5670

NASH COUNTY

STATION: 16+98.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 030024 ENGINEER ASTER G. ABRAHA

Aster Abraha
DDA094AED5104FD...
09/20/2022

ASSEMBLED BY :	G. AYES	DATE :	1/2022
CHECKED BY :	M. M. AHMED	DATE :	6/2022
DRAWN BY : TLA	10/05	REV. 12/21/11	MAA/GM
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1			3			TOTAL SHEETS
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STD. NO. BAS5 (SHT 1b)

9/20/2022
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