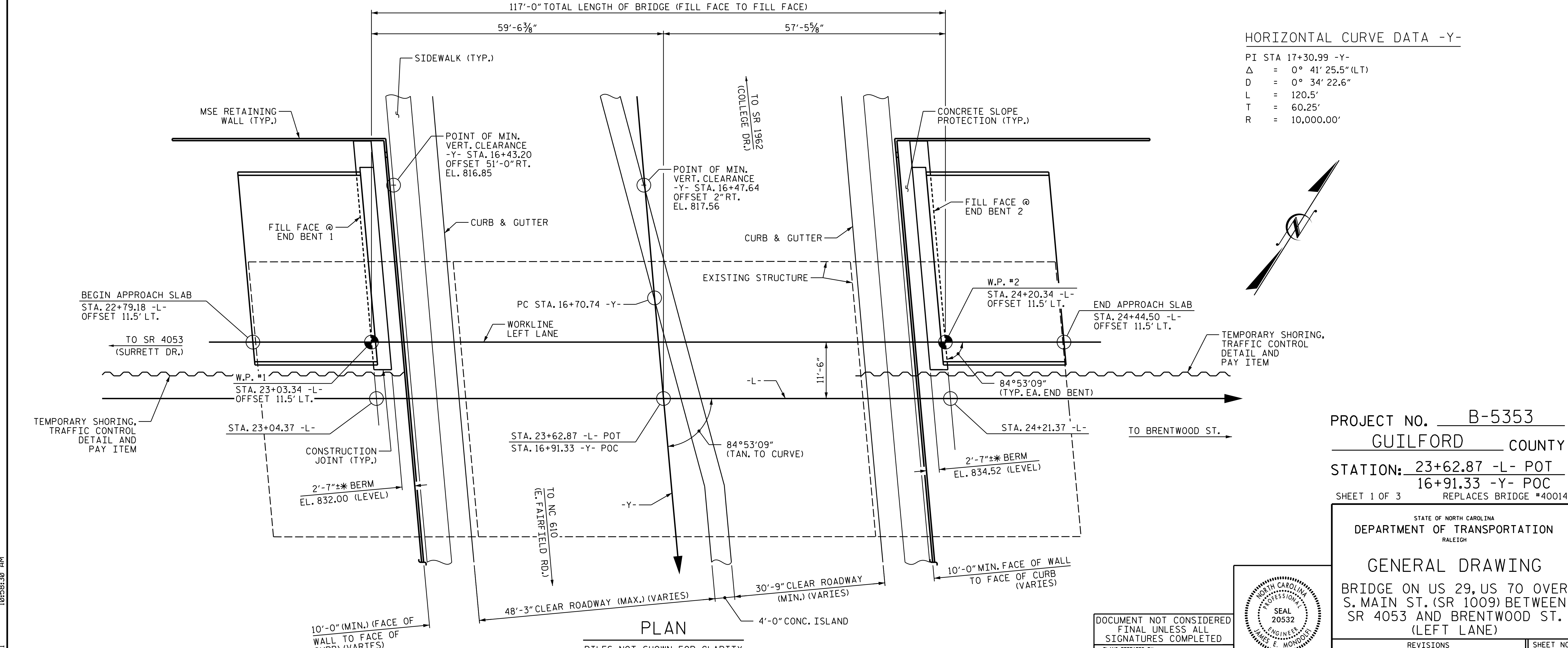


GRADE DATA -L-
 (+)3.9824% (-)0.7390%
 PI STA 24+50.00 -L-
 EL. 850.00
 VC = 720'

SECTION ALONG WORKLINE LEFT LANE
 SECTIONS AT END BENTS ARE TAKEN AT RIGHT ANGLES



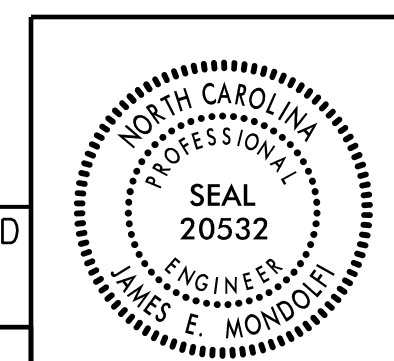
HORIZONTAL CURVE DATA -Y-
 PI STA 17+30.99 -Y-
 $\Delta = 0^\circ 41' 25.5''$ (LT)
 $D = 0^\circ 34' 22.6''$
 $L = 120.5'$
 $T = 60.25'$
 $R = 10,000.00'$

PLAN

PILES NOT SHOWN FOR CLARITY
 * BERM WIDTH IS DEPENDENT ON FINAL MSE RETAINING WALL DESIGN

PROJECT NO. B-5353
GUILFORD COUNTY
 STATION: 23+62.87 -L- POT
16+91.33 -Y- POC
 SHEET 1 OF 3 REPLACES BRIDGE #400147

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 BRIDGE ON US 29, US 70 OVER
 S. MAIN ST. (SR 1009) BETWEEN
 SR 4053 AND BRENTWOOD ST.
 (LEFT LANE)

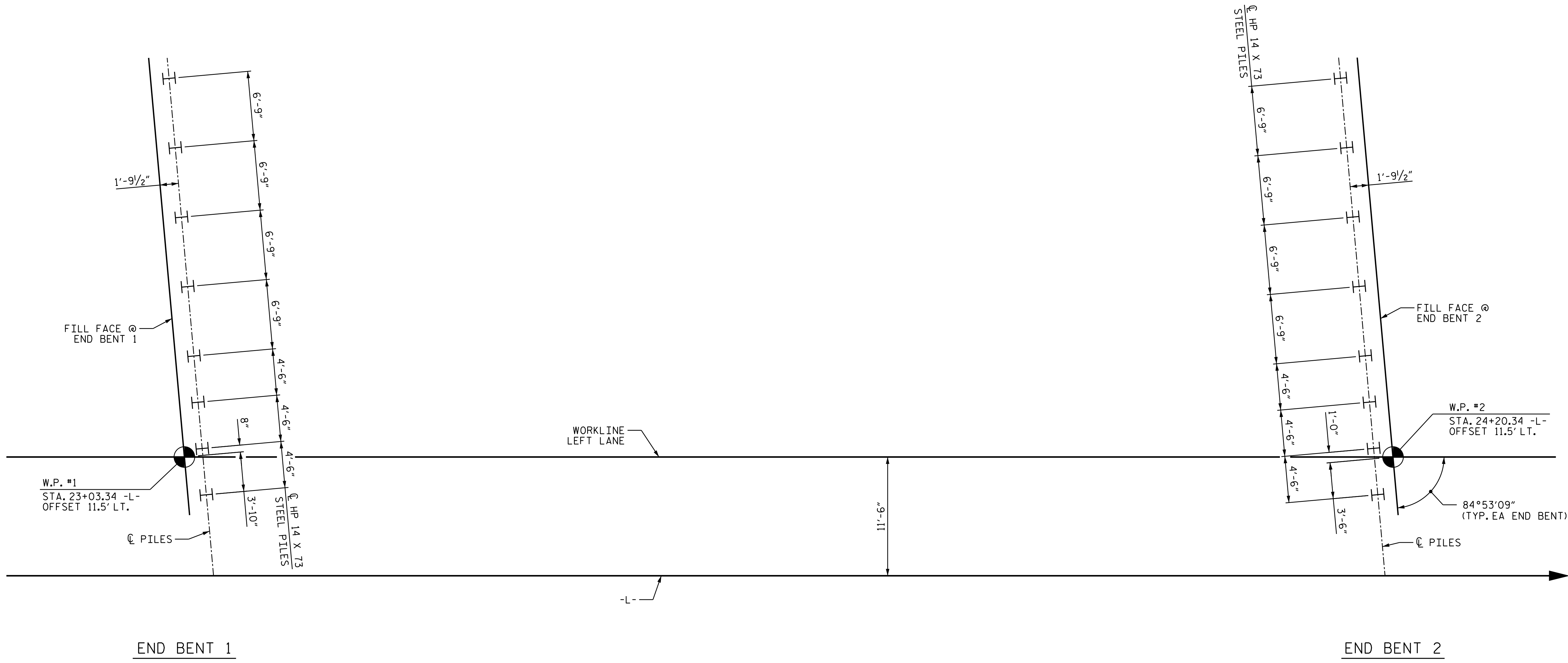


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 SIGNATURES COMPLETED
 PLANS PREPARED BY:
 MOTT MACDONALD
 PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
 LICENSE NO. F-0669

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-1
1			3			TOTAL SHEETS
2			4			26

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DRAWN BY: J. T. WILLIAMS DATE: 3-2020
 CHECKED BY: J. E. MONDOLFI DATE: 5-2020
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 5-2020



FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO PILE CENTERLINE
ORIENT PILES AS SHOWN

NOTES:

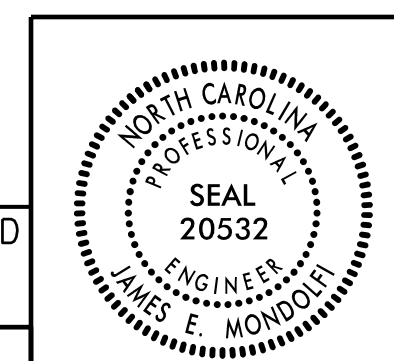
- FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
- PILES AT END BENT 1 AND END BENT 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 130 TONS PER PILE.
- DRIVE PILES AT END BENT 1 AND END BENT 2 TO A REQUIRED DRIVING RESISTANCE OF 220 TONS PER PILE.
- STEEL H-PILE POINTS ARE REQUIRED FOR STEEL H-PILES AT END BENT 1 AND END BENT 2. FOR STEEL PILE POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
- IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 40,000 TO 50,000 FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT 1 AND END BENT 2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(d)(2) OF THE STANDARD SPECIFICATIONS.

PROJECT NO. B-5353
GUILFORD COUNTY
STATION: 23+62.87 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
BRIDGE ON US 29, US 70 OVER
S. MAIN ST. (SR 1009) BETWEEN
SR 4053 AND BRENTWOOD ST.
(LEFT LANE)



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PLANS PREPARED BY:
M MOTT MACDONALD
PO Box 700
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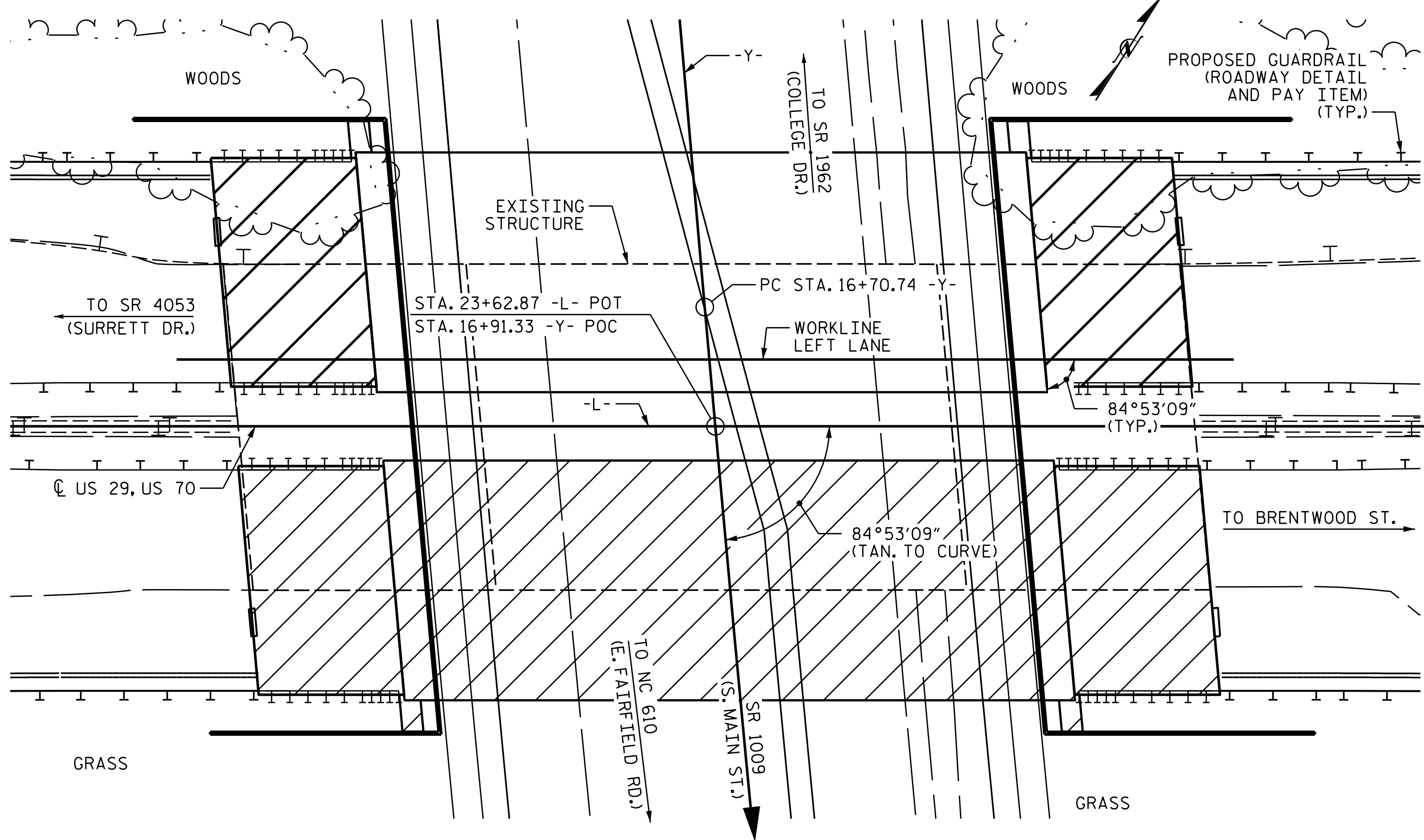
DocuSigned by:
James E. Mondolfi
32EDA2F2E426449
02 December 2021

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-2
1			3			TOTAL SHEETS
2			4			26

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DRAWN BY: J. T. WILLIAMS DATE: 10-2020
 CHECKED BY: J. E. MONDOLFI DATE: 10-2020
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 11-2020

BM3: MAG NAIL IN CURB, -BY- STA. 23+04.76, 179.0' LT., ELEV.= 835.99



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 REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
- THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.
- FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- THE ELEVATION AND CLEARANCE SHOWN ON THE PLANS AT THE POINT OF MINIMUM VERTICAL CLEARANCE ARE FROM THE BEST INFORMATION AVAILABLE. PRIOR TO BEGINNING BRIDGE CONSTRUCTION, VERIFY THE ELEVATIONS ON THE EXISTING PAVEMENT AND CHECK THE CLEARANCE. REPORT ANY VARIATIONS TO THE ENGINEER. ANY PLAN REVISIONS NECESSARY TO ACHIEVE THE REQUIRED MINIMUM VERTICAL CLEARANCE WILL BE PROVIDED BY THE DEPARTMENT.
- FOR MAINTENANCE AND PROTECTION OF TRAFFIC BENEATH PROPOSED STRUCTURE, SEE SPECIAL PROVISIONS.
- 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.
- INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE @ STA. 23+62.87 -L-".
- THE CLASS AA CONCRETE IN THE BRIDGE DECK SHALL CONTAIN FLY ASH OR GROUND GRANULATED BLAST FURNACE SLAG AT THE SUBSTITUTION RATE SPECIFIED IN ARTICLE 1024-1 AND IN ACCORDANCE WITH ARTICLES 1024-5 AND 1024-6 OF THE STANDARD SPECIFICATIONS. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE COST OF THE REINFORCED CONCRETE DECK SLAB.
- FOR LIMITS OF TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS. FOR PAY ITEM FOR TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE ROADWAY PLANS.
- THE CONTRACTOR WILL BE REQUIRED TO CONSTRUCT, MAINTAIN AND AFTERWARDS REMOVE A TEMPORARY STRUCTURE AT STATION 16+74.54 -DET- FOR USE DURING CONSTRUCTION OF THE PROPOSED STRUCTURE. FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY STRUCTURE, SEE SPECIAL PROVISIONS.
- THE BRIDGE RAILS ON THE TEMPORARY STRUCTURE SHALL BE DESIGNED FOR THE AASHTO LRFD TEST LEVEL 3 (TL-3) CRASH TEST CRITERIA. FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY STRUCTURE, SEE SPECIAL PROVISIONS.
- AFTER SERVING AS A TEMPORARY STRUCTURE THE EXISTING STRUCTURE CONSISTING OF 3 SPANS: 1 @ 43', 1 @ 81', & 1 @ 43'; 52'-7" CLEAR ROADWAY WIDTH AND REINFORCED CONCRETE DECK ON 8 LINES OF STEEL W 36 X 150 CONTINUOUS I-BEAMS; END BENTS WITH REINFORCED CONCRETE CAPS ON TIMBER PILES AND INTERIOR BENTS ON SPREAD FOOTINGS, LOCATED AT THE PROPOSED STRUCTURE SITE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.
- THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.
- FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
- FOR ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.
- FOR ARCHITECTURAL CONCRETE SURFACE TREATMENT, SEE SPECIAL PROVISIONS.
- FOR APPLICATION OF BRIDGE COATING, SEE SPECIAL PROVISIONS.
- FOR LIMITS OF SUPERSTRUCTURE BRIDGE COATING AND ARCHITECTURAL CONCRETE SURFACE TREATMENT, SEE "TYPICAL SECTION DETAILS", SHEET 2 OF 2.

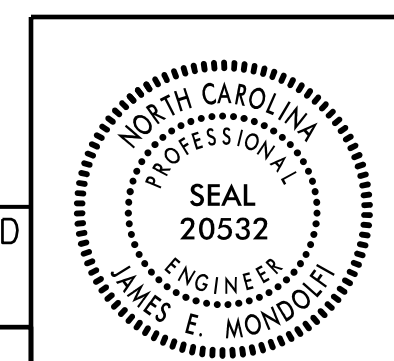
TOTAL BILL OF MATERIAL

	CONSTRUCTION, MAINTENANCE, & REMOVAL OF TEMP STRUCTURE	REMOVAL OF EXISTING STRUCTURE	ASBESTOS ASSESSMENT	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	MODIFIED 63" PRESTRESSED CONCRETE GIRDERS	PILE DRIVING EQUIPMENT SETUP FOR HP 14 X 73 STEEL PILES	HP 14 X 73 STEEL PILES	STEEL PILE POINTS	CONCRETE BARRIER RAIL	ARCHITECTURAL CONCRETE SURFACE TREATMENT	APPLICATION OF BRIDGE COATING	4" SLOPE PROTECTION	ELASTOMERIC BEARINGS		
	LUMP SUM	LUMP SUM	LUMP SUM	SQ. FT.	SO. FT.	CU. YDS.	LUMP SUM	LBS.	NO.	LIN. FT.	EA.	NO.	LIN. FT.	EA.	LIN. FT.	SO. FT.	SO. FT.	SO. YDS.	LUMP SUM
SUPERSTRUCTURE			LUMP SUM	4,757	5,741				5	573.96			230.65	327	2939				LUMP SUM
END BENT 1						26.7		3,310			8	8	240	8				14	
END BENT 2						26.6		3,305			8	8	200	8				14	
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	4,757	5,741	53.3	LUMP SUM	6,615	5	573.96	16	16	440	16	230.65	327	2939	28	LUMP SUM

PROJECT NO. B-5353
GUILFORD COUNTY
 STATION: 23+62.87 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 BRIDGE ON US 29, US 70 OVER
 S. MAIN ST. (SR 1009) BETWEEN
 SR 4053 AND BRENTWOOD ST.
 (LEFT LANE)



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 PLANS PREPARED BY:
M MOTT MACDONALD
 PO Box 700
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 (919) 552-2253
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 LICENSE NO. F-0669

DocuSigned by:
 James E. Mondolfi
 32EDAF2E428449
 02 December 2021

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2			4			26

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DRAWN BY: J. T. WILLIAMS DATE: 10-2020
 CHECKED BY: J. E. MONDOLFI DATE: 10-2020
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 11-2020

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

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVE-LOAD FACTORS (γ _{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	LIVE-LOAD FACTORS (γ _{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	①	1.20	--	1.75	.776	1.26	A	E	56.7	.873	1.28	A	I	10.8	0.80	.776	1.20	A	E	56.7		
	HL-93 (OPERATING)	N/A		1.63	--	1.35	.776	1.63	A	E	56.7	.873	1.69	A	I	10.8	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	②	1.73	62.280	1.75	.776	1.81	A	E	56.7	.873	1.80	A	I	10.8	0.80	.776	1.73	A	E	56.7		
	HS-20 (OPERATING)	36.000		2.35	84.600	1.35	.776	2.35	A	E	56.7	.873	2.37	A	I	10.8	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		4.18	56.430	1.40	.776	5.47	A	E	56.7	.873	5.88	A	I	10.8	0.80	.776	4.18	A	E	56.7	
		SNGARBS2	20.000		3.00	60.00	1.40	.776	3.92	A	E	56.7	.873	4.06	A	I	10.8	0.80	.776	3.00	A	E	56.7	
		SNAGRIS2	22.000		2.79	61.380	1.40	.776	3.65	A	E	56.7	.873	3.73	A	I	10.8	0.80	.776	2.79	A	E	56.7	
		SNCOTTS3	27.250		2.08	56.680	1.40	.776	2.72	A	E	56.7	.873	2.86	A	I	10.8	0.80	.776	2.08	A	E	56.7	
		SNAGGRS4	34.925		1.69	59.023	1.40	.776	2.21	A	E	56.7	.873	2.29	A	I	10.8	0.80	.776	1.69	A	E	56.7	
		SNS5A	35.550		1.66	59.013	1.40	.776	2.17	A	E	56.7	.873	2.30	A	I	10.8	0.80	.776	1.66	A	E	56.7	
		SNS6A	39.950		1.50	59.925	1.40	.776	1.96	A	E	56.7	.873	2.06	A	I	10.8	0.80	.776	1.50	A	E	56.7	
		SNS7B	42.000		1.43	60.060	1.40	.776	1.87	A	E	56.7	.873	2.00	A	I	10.8	0.80	.776	1.43	A	E	56.7	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.82	60.060	1.40	.776	2.39	A	E	56.7	.873	2.50	A	I	10.8	0.80	.776	1.82	A	E	56.7	
		TNT4A	33.075		1.83	60.527	1.40	.776	2.39	A	E	56.7	.873	2.45	A	I	10.8	0.80	.776	1.83	A	E	56.7	
		TNT6A	41.600		1.48	61.568	1.40	.776	1.93	A	E	56.7	.873	2.08	A	I	10.8	0.80	.776	1.48	A	E	56.7	
		TNT7A	42.000		1.48	62.160	1.40	.776	1.93	A	E	56.7	.873	2.05	A	I	10.8	0.80	.776	1.48	A	E	56.7	
		TNT7B	42.000		1.51	63.420	1.40	.776	1.97	A	E	56.7	.873	1.97	A	I	10.8	0.80	.776	1.51	A	E	56.7	
		TNAGRIT4	43.000		1.45	62.350	1.40	.776	1.90	A	E	56.7	.873	1.91	A	I	10.8	0.80	.776	1.45	A	E	56.7	
TNAGT5A	45.000		1.37	61.650	1.40	.776	1.80	A	E	56.7	.873	1.86	A	I	10.8	0.80	.776	1.37	A	E	56.7			
TNAGT5B	45.000		③	1.36	61.200	1.40	.776	1.78	A	E	56.7	.873	1.81	A	I	10.8	0.80	.776	1.36	A	E	56.7		

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)

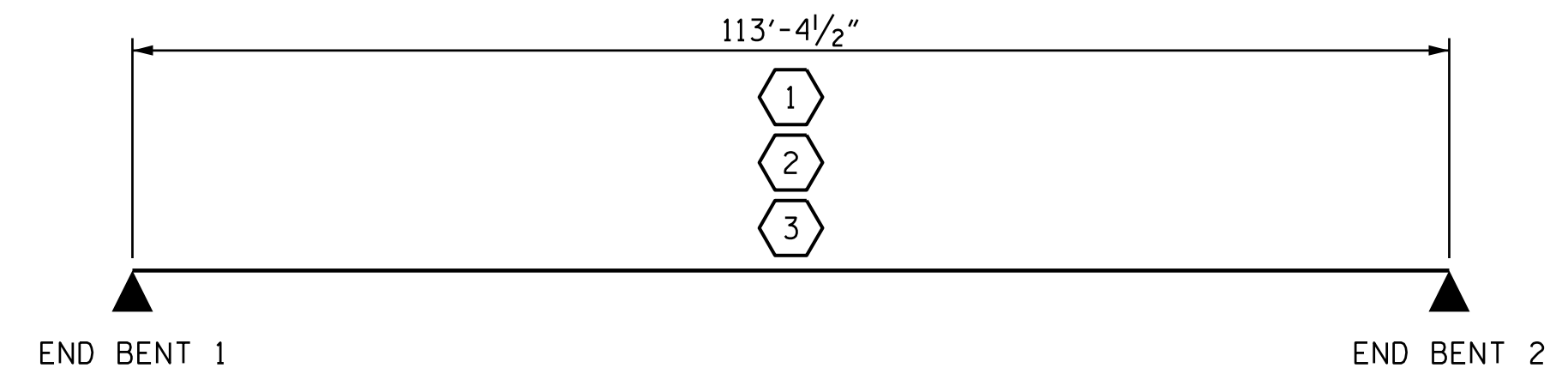
② DESIGN LOAD RATING (HS-20)

③ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER
 E - EXTERIOR GIRDER

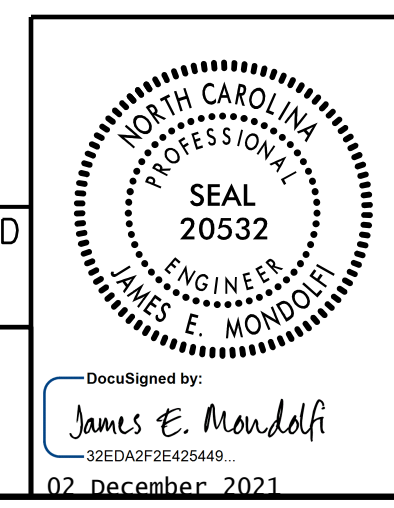


LRFR SUMMARY

PROJECT NO. B-5353
GUILFORD COUNTY
 STATION: 23+62.87 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

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



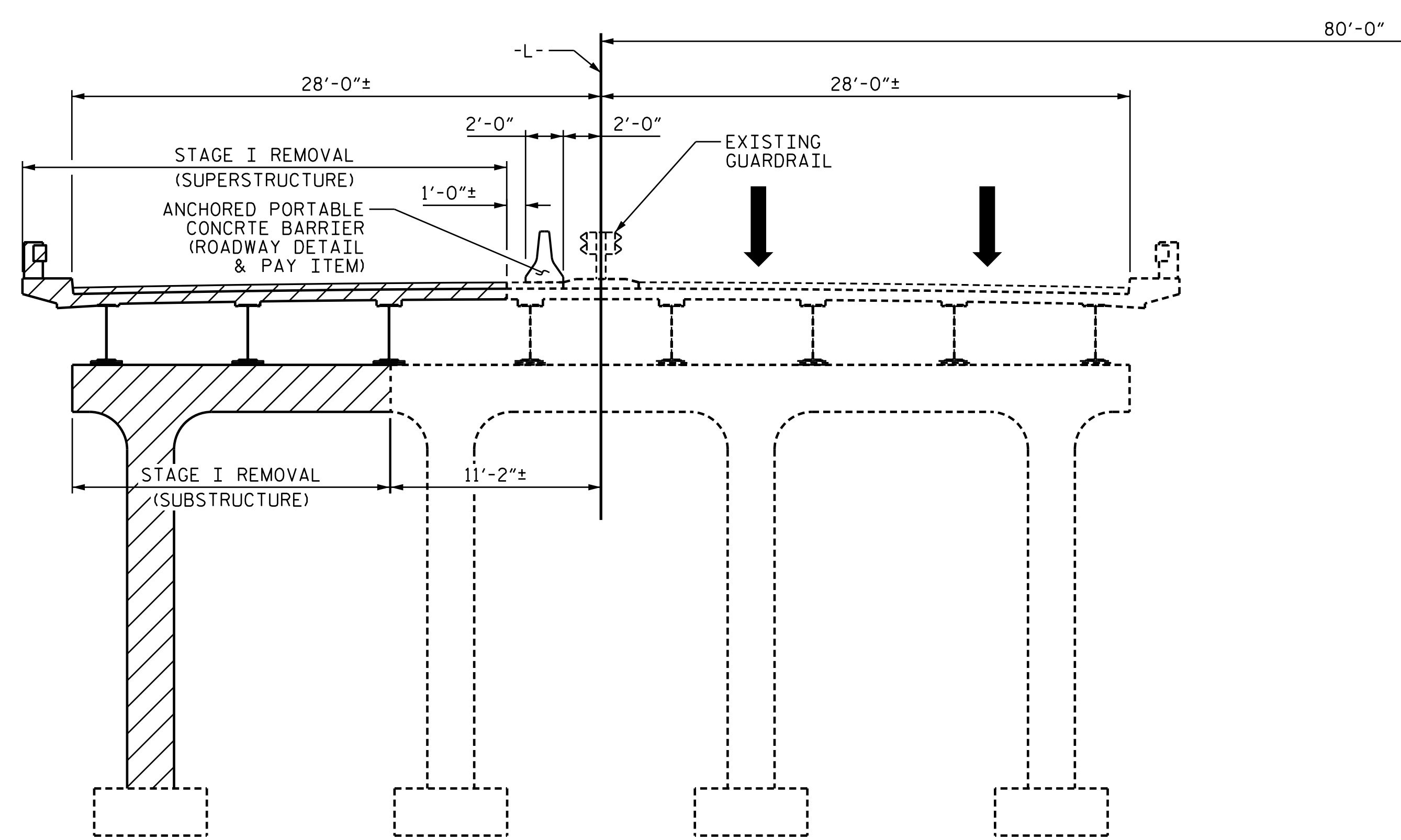
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PLANS PREPARED BY:
M MOTT MACDONALD
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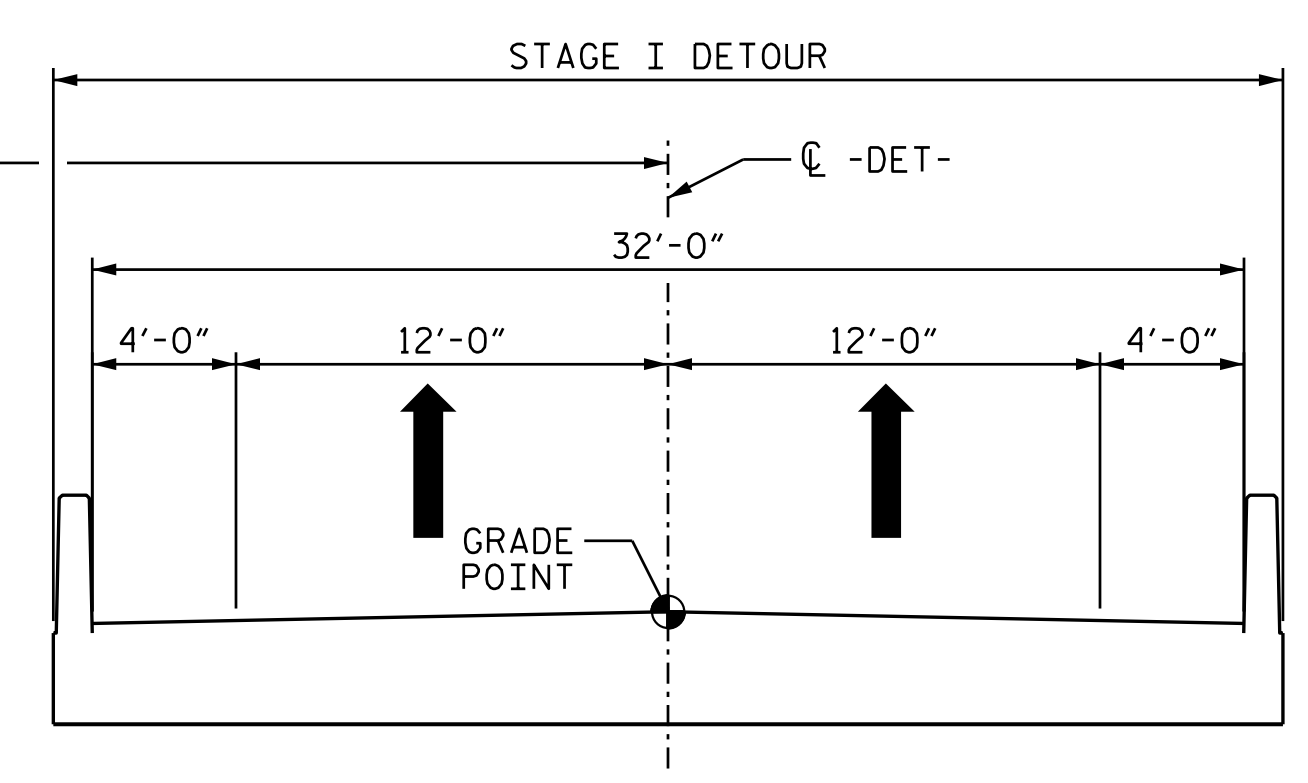
DRAWN BY: J. T. WILLIAMS DATE: 1-2020
 CHECKED BY: J. E. MONDOLFI DATE: 1-2020
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 1-2020



EXISTING STRUCTURE

STAGE I DETOUR & REMOVAL

CONSTRUCT DETOUR BRIDGE. SHIFT NORTHBOUND TRAFFIC TO DETOUR BRIDGE AND SOUTHBOUND TRAFFIC TO RIGHT SIDE OF EXISTING BRIDGE. REMOVE LEFT SIDE PORTION OF EXISTING STRUCTURE AS INDICATED.



DETOUR BRIDGE

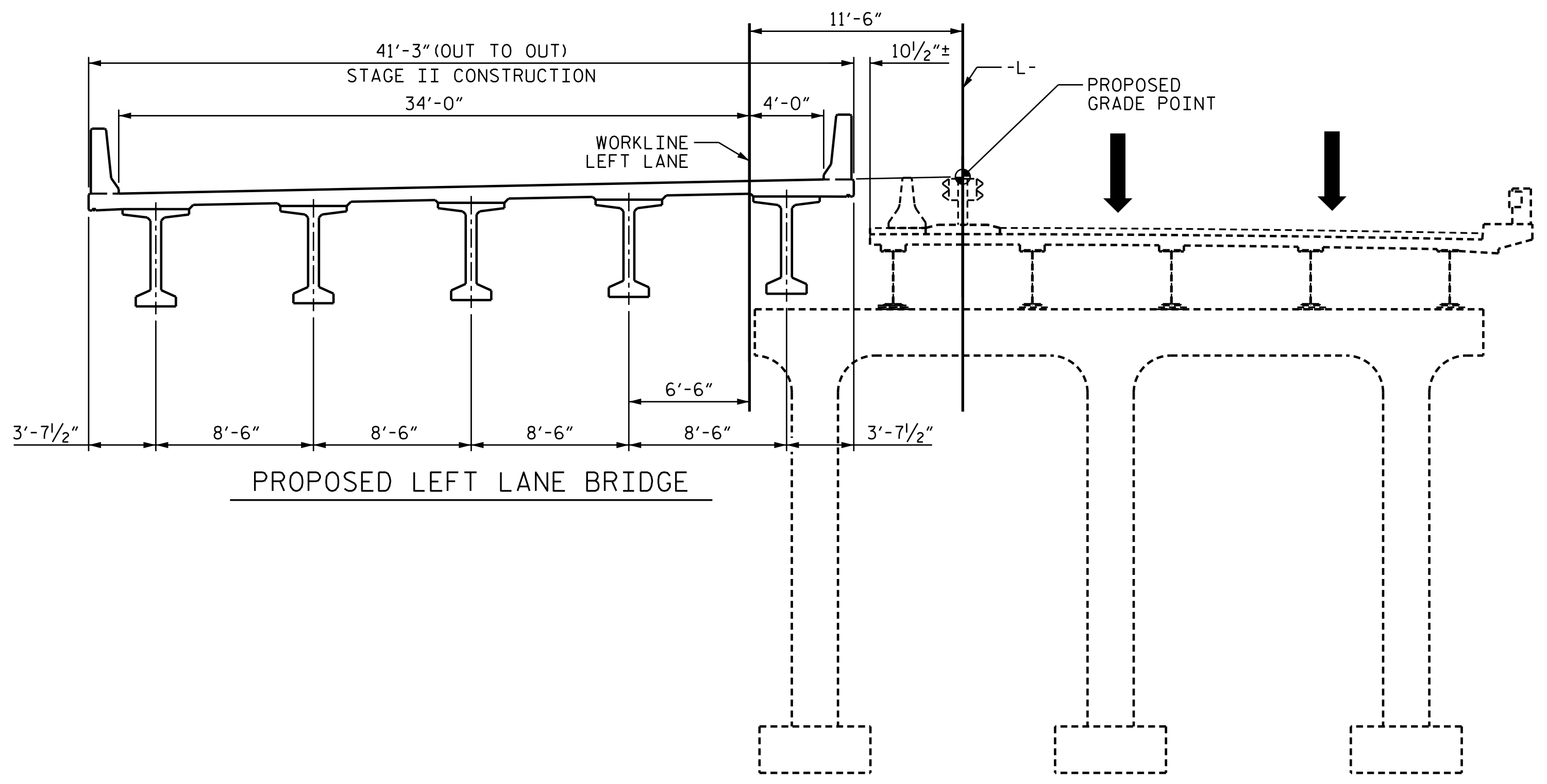
NOTES:

THE EXISTING STRUCTURE SHALL BE REMOVED IN ACCORDANCE WITH THESE PLANS, THE STANDARD SPECIFICATIONS AND AS DIRECTED BY THE ENGINEER.

1. PARTIAL REMOVAL OF THE EXISTING STRUCTURE SHALL BE DONE AS INDICATED IN THE STAGE I DETOUR AND REMOVAL SKETCH.
2. THE EXISTING SUBSTRUCTURE SHALL BE PARTIALLY REMOVED TO THE LIMITS SHOWN AND AS NECESSARY TO FACILITATE STAGE IA CONSTRUCTION OR AS DIRECTED BY THE ENGINEER.

CARE SHALL BE TAKEN DURING THE PARTIAL REMOVAL TO AVOID DAMAGING THE REMAINING EXISTING STRUCTURE SERVING AS A TEMPORARY STRUCTURE. DAMAGE TO THE REMAINING EXISTING STRUCTURE SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE DEPARTMENT. THE METHOD OF REPAIR SHALL BE SUBJECT TO APPROVAL BY THE ENGINEER.

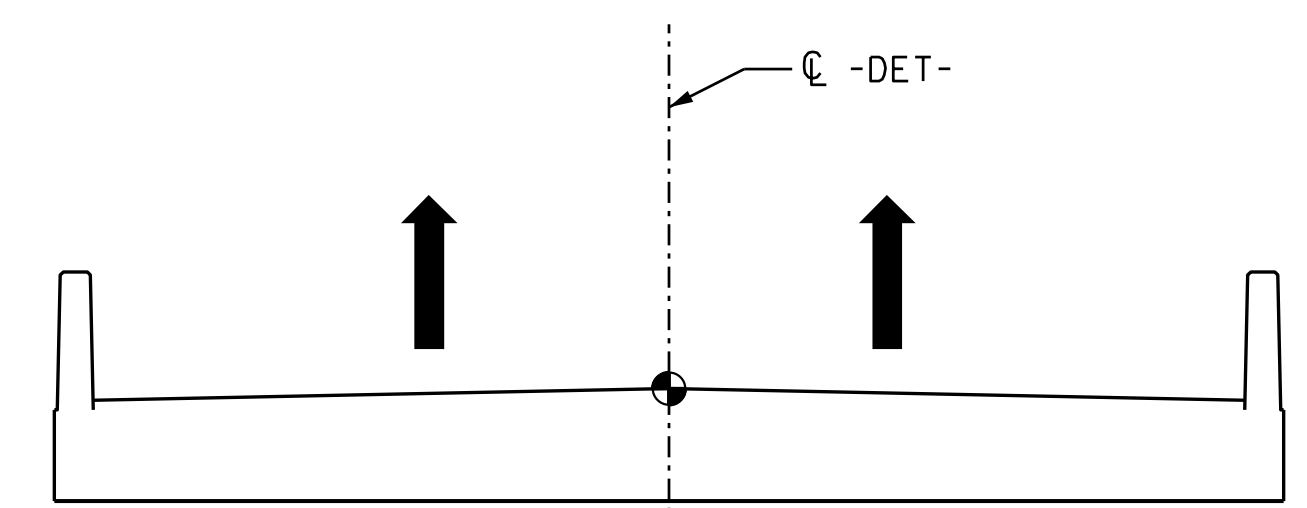
ALL WORK, MATERIALS, EQUIPMENT AND INCIDENTALS REQUIRED FOR THE REMOVAL AND DISPOSAL OF THE EXISTING BRIDGE SHALL BE INCLUDED IN THE UNIT CONTRACT BID FOR "REMOVAL OF EXISTING STRUCTURE".



PROPOSED LEFT LANE BRIDGE

STAGE II CONSTRUCTION

CONSTRUCT STAGE II LEFT LANE BRIDGE (SHOWN AT EXISTING INTERIOR BENT)



DETOUR BRIDGE

PROJECT NO. B-5353
GUILFORD COUNTY
 STATION: 23+62.87 -L-

SHEET 1 OF 2

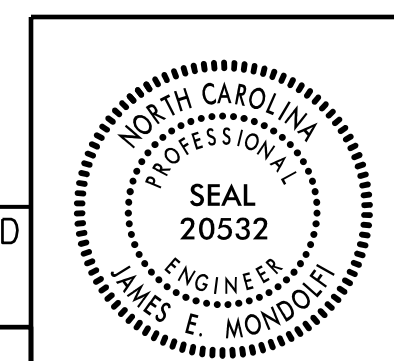
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

CONSTRUCTION SEQUENCE (LEFT LANE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-5
1			3			TOTAL SHEETS
2			4			26

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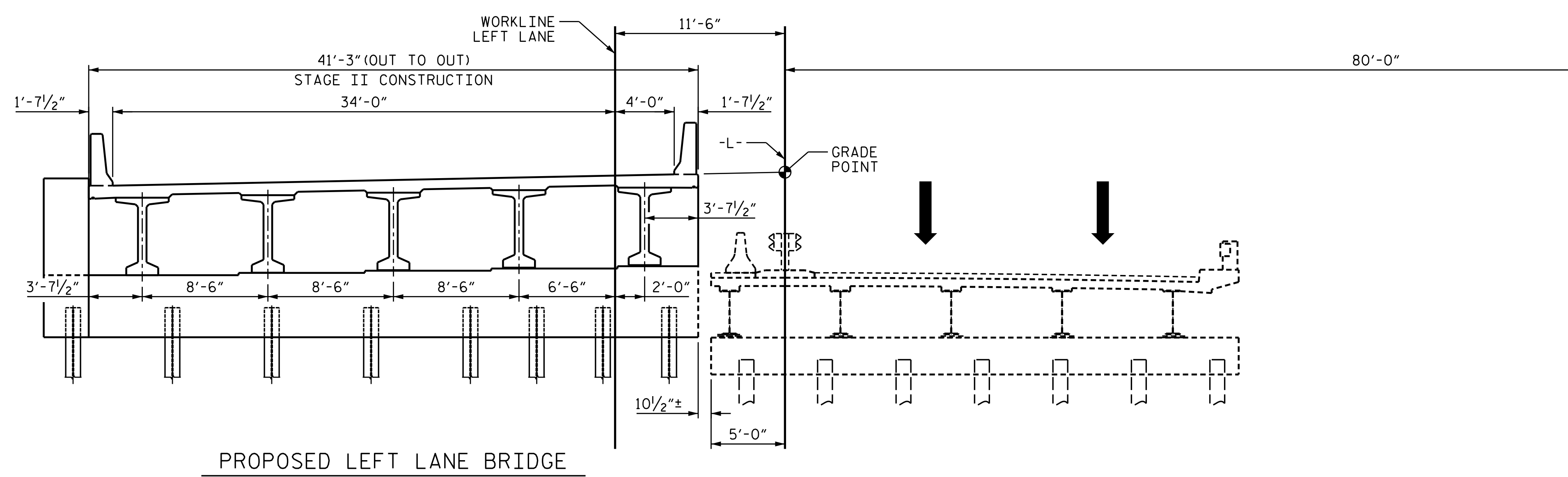
PLANS PREPARED BY:
M MOTT MACDONALD
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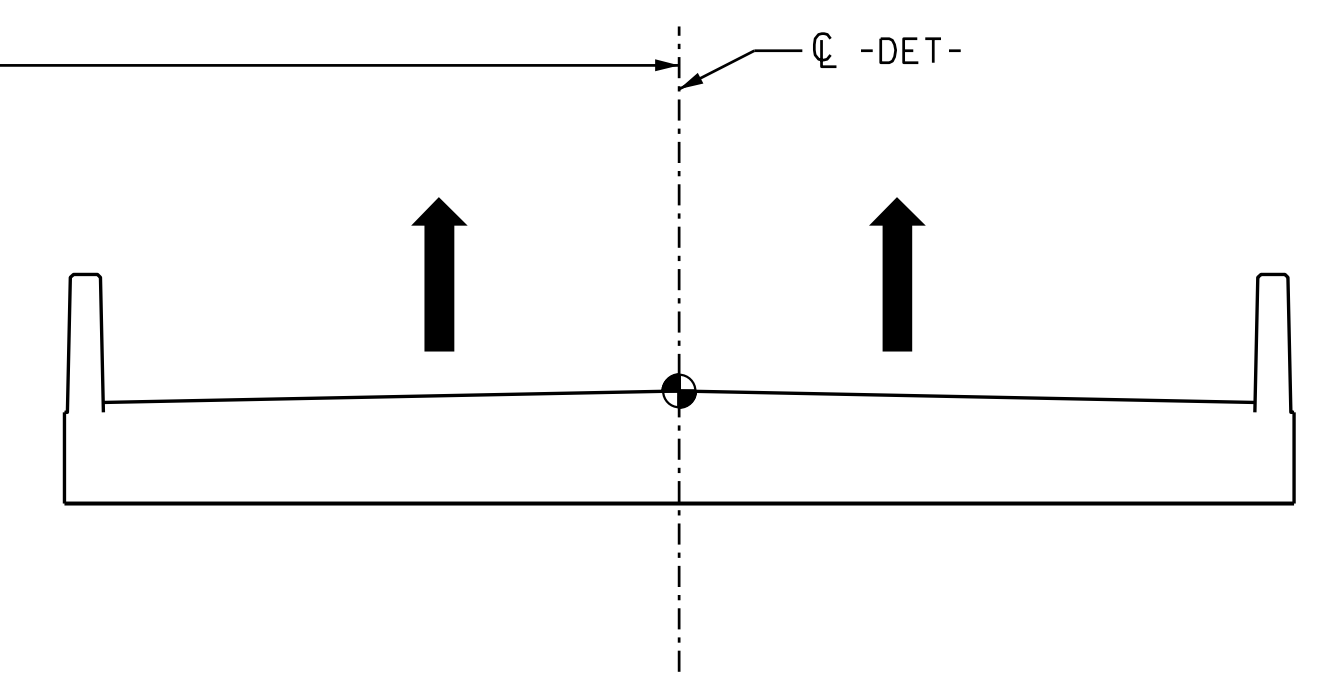
DocuSigned by:
 James E. Mondolfi
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 02 December 2021

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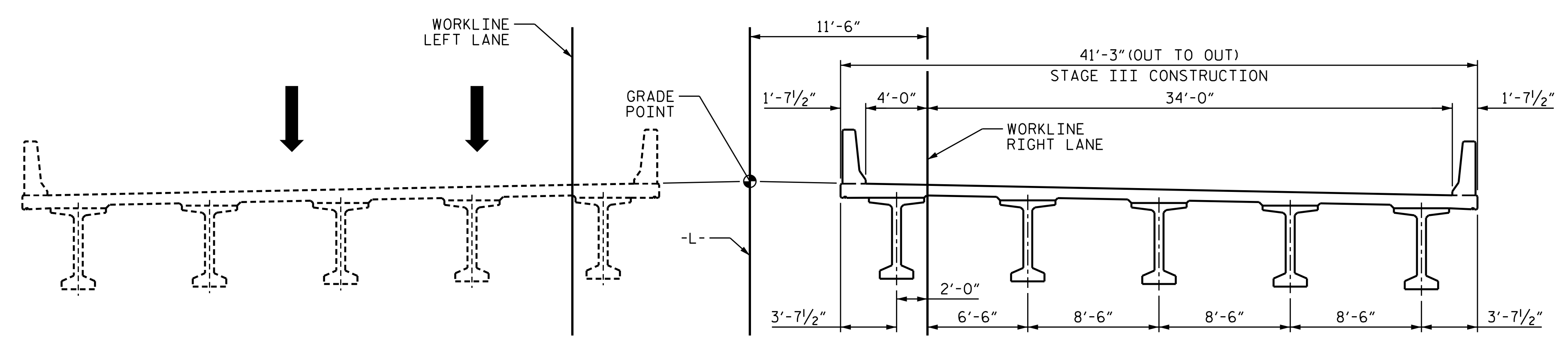
DRAWN BY: J. T. WILLIAMS DATE: 3-2019
 CHECKED BY: J. E. MONDOLFI DATE: 10-2019
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 11-2019



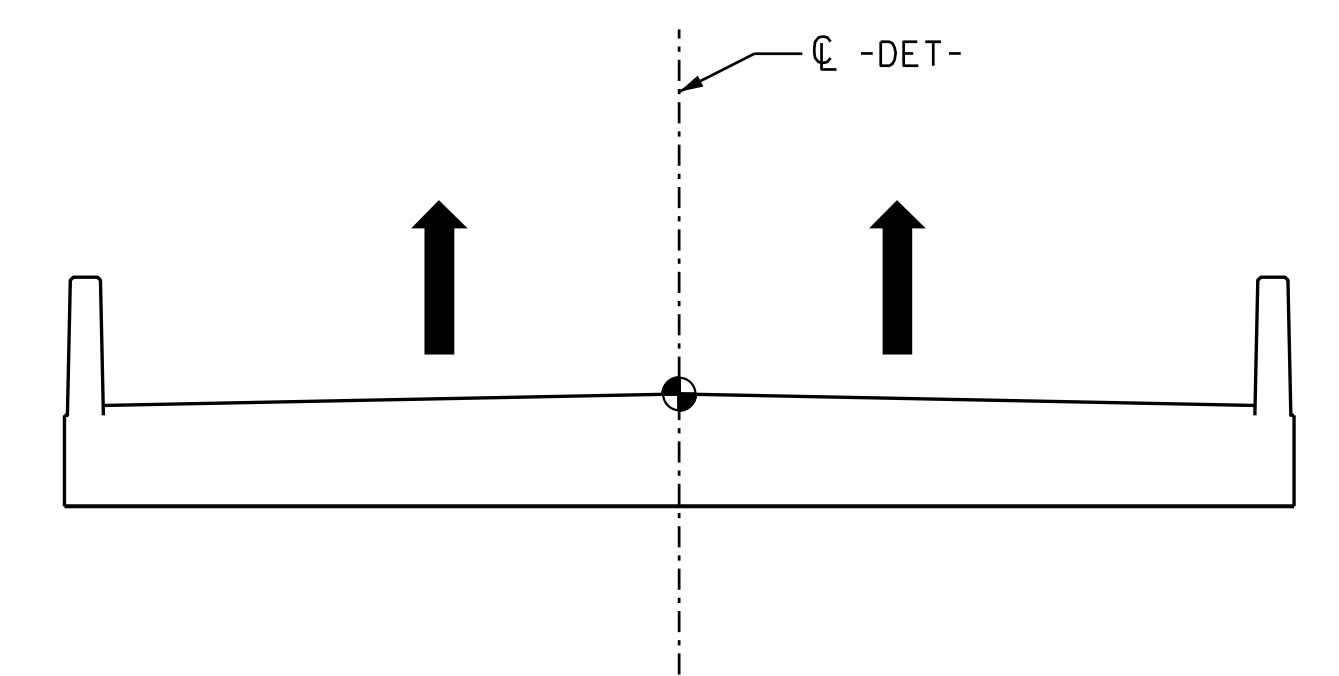
PROPOSED LEFT LANE BRIDGE
 STAGE II CONSTRUCTION
 CONSTRUCT STAGE II LEFT LANE BRIDGE
 (SHOWN AT EXISTING END BENT)



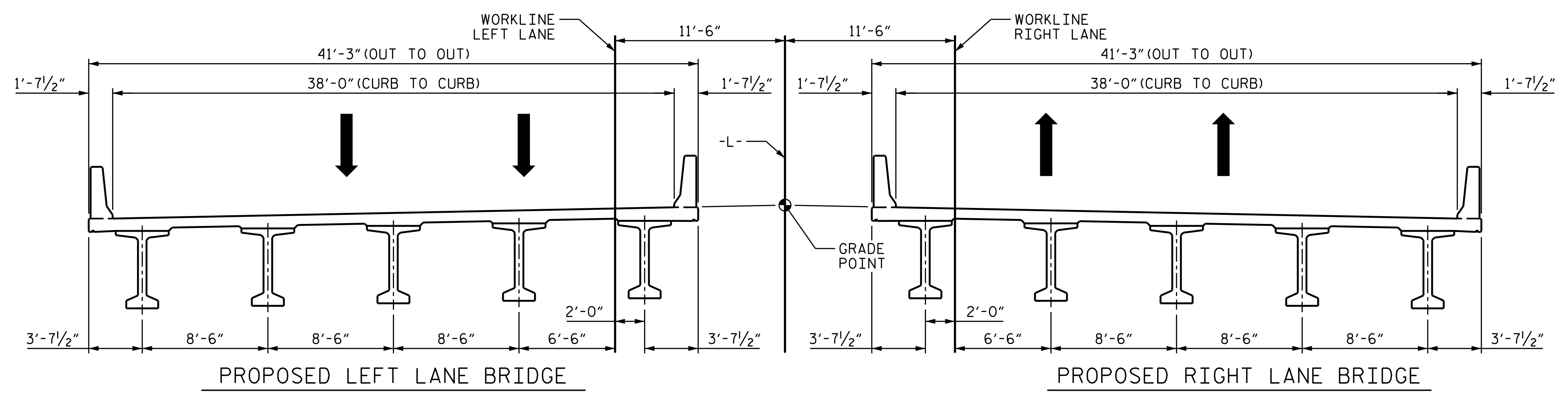
DETOUR BRIDGE



PROPOSED LEFT LANE BRIDGE
 PROPOSED RIGHT LANE BRIDGE
 STAGE III CONSTRUCTION
 SHIFT SOUTHBOUND TRAFFIC TO COMPLETED LEFT LANE BRIDGE
 AND CONSTRUCT STAGE III RIGHT LANE BRIDGE.



DETOUR BRIDGE



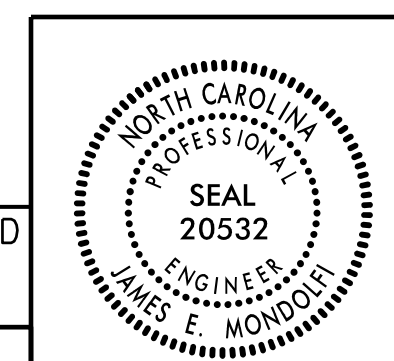
PROPOSED LEFT LANE BRIDGE
 PROPOSED RIGHT LANE BRIDGE
 FINAL
 SHIFT NORTHBOUND TRAFFIC TO COMPLETED RIGHT LANE
 BRIDGE AND REMOVE DETOUR BRIDGE

PROJECT NO. B-5353
GUILFORD COUNTY
 STATION: 23+62.87 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

CONSTRUCTION
 SEQUENCE
 (LEFT LANE)



DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

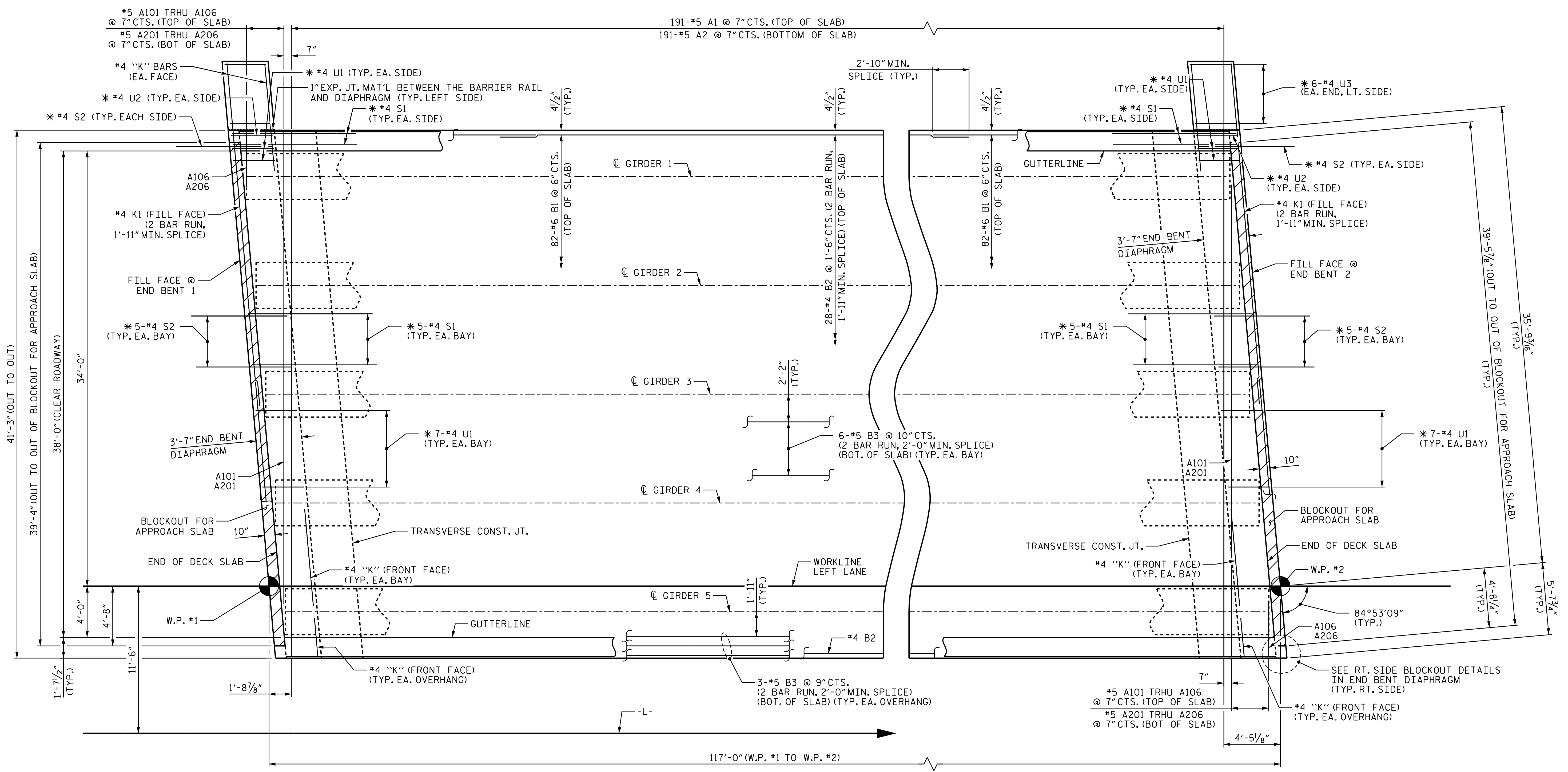
PLANS PREPARED BY:
M MOTT
 MOTT
 MACDONALD

PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
 LICENSE NO. F-0669

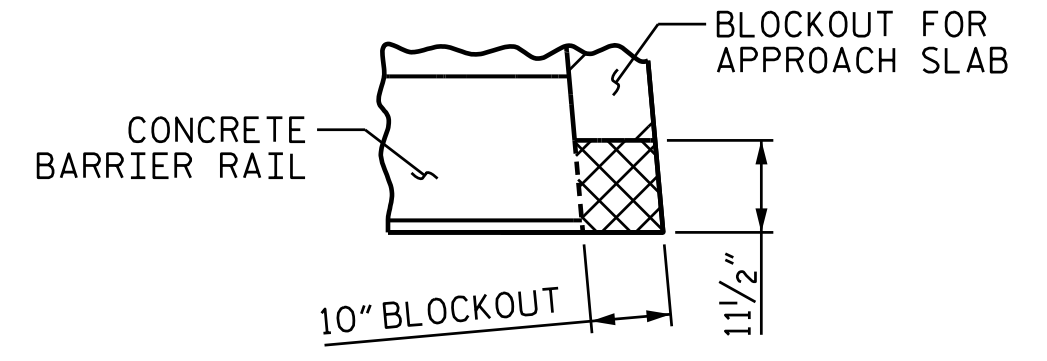
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NO.	BY:	DATE:	NO.	BY:	DATE:	S1-6
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2			4			26

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 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 11-2019



PLAN OF SPAN A

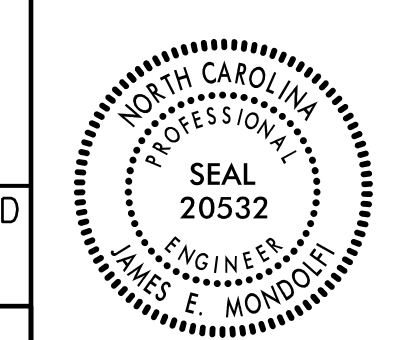


RT. SIDE PLAN VIEW
FOR ELEVATION VIEW, SEE
TYPICAL SECTION SHEET 2 OF 2

**BLOCKOUT DETAILS
IN END BENT DIAPHRAGM**
CONCRETE SHALL BE POURED IN THE CROSS-HATCHED
AREA TO MATCH THE TOP OF CURB, UNLESS OTHERWISE
DIRECTED BY THE ENGINEER

PROJECT NO. B-5353
GUILFORD COUNTY
STATION: 23+62.87 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
PLAN OF SPAN A
(LEFT LANE)



DOCUMENT NOT CONSIDERED
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SIGNATURES COMPLETED

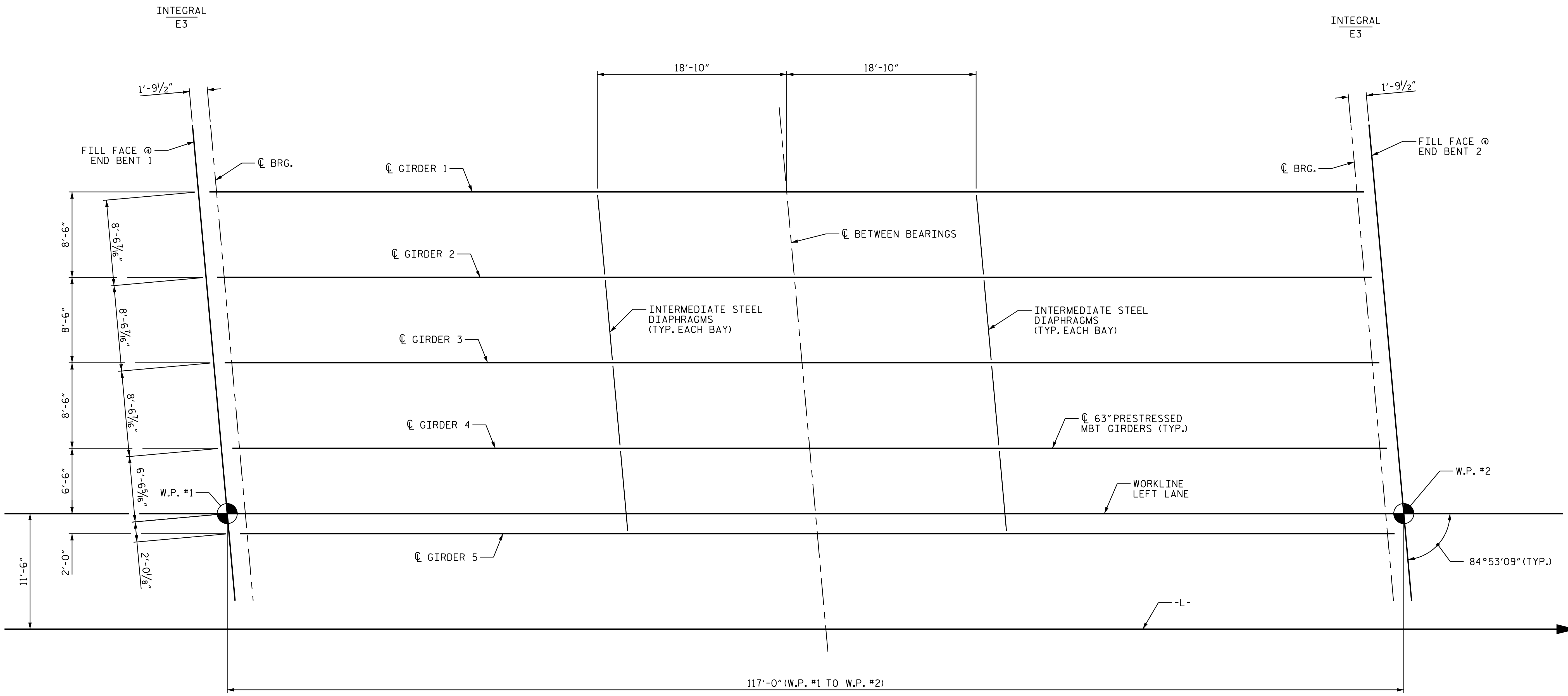
PLANS PREPARED BY:
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(919) 552-2253
www.mottmac.com
LICENSE NO. F-0669

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James E. Mondolfi
30E2A3F5E425449
02 December 2021

REVISIONS						SHEET NO. S1-9 TOTAL SHEETS 26
NO.	BY:	DATE:	NO.	BY:	DATE:	
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2			4			

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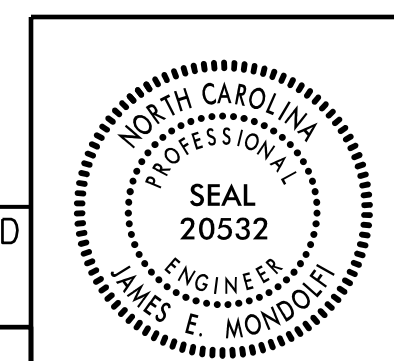


SPAN A

FRAMING PLAN

PROJECT NO. B-5353
GUILFORD COUNTY
 STATION: 23+62.87 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 FRAMING PLAN
 (LEFT LANE)



DOCUMENT NOT CONSIDERED
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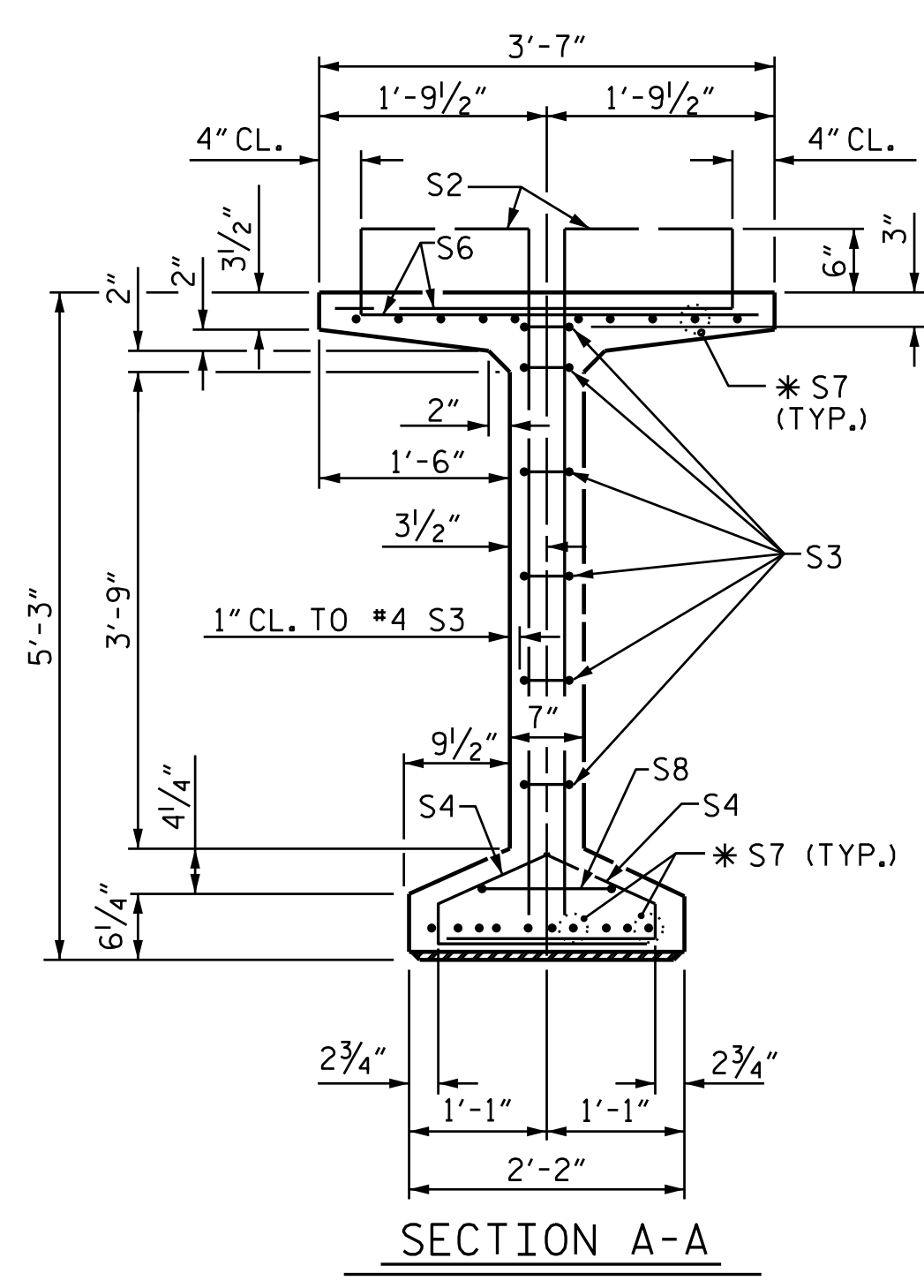
PLANS PREPARED BY:
M MOTT MACDONALD
 PO Box 700
 Fuquay-Varina, NC 27526
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DocuSigned by:
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 32E0A3F2E428449
 02 December 2021

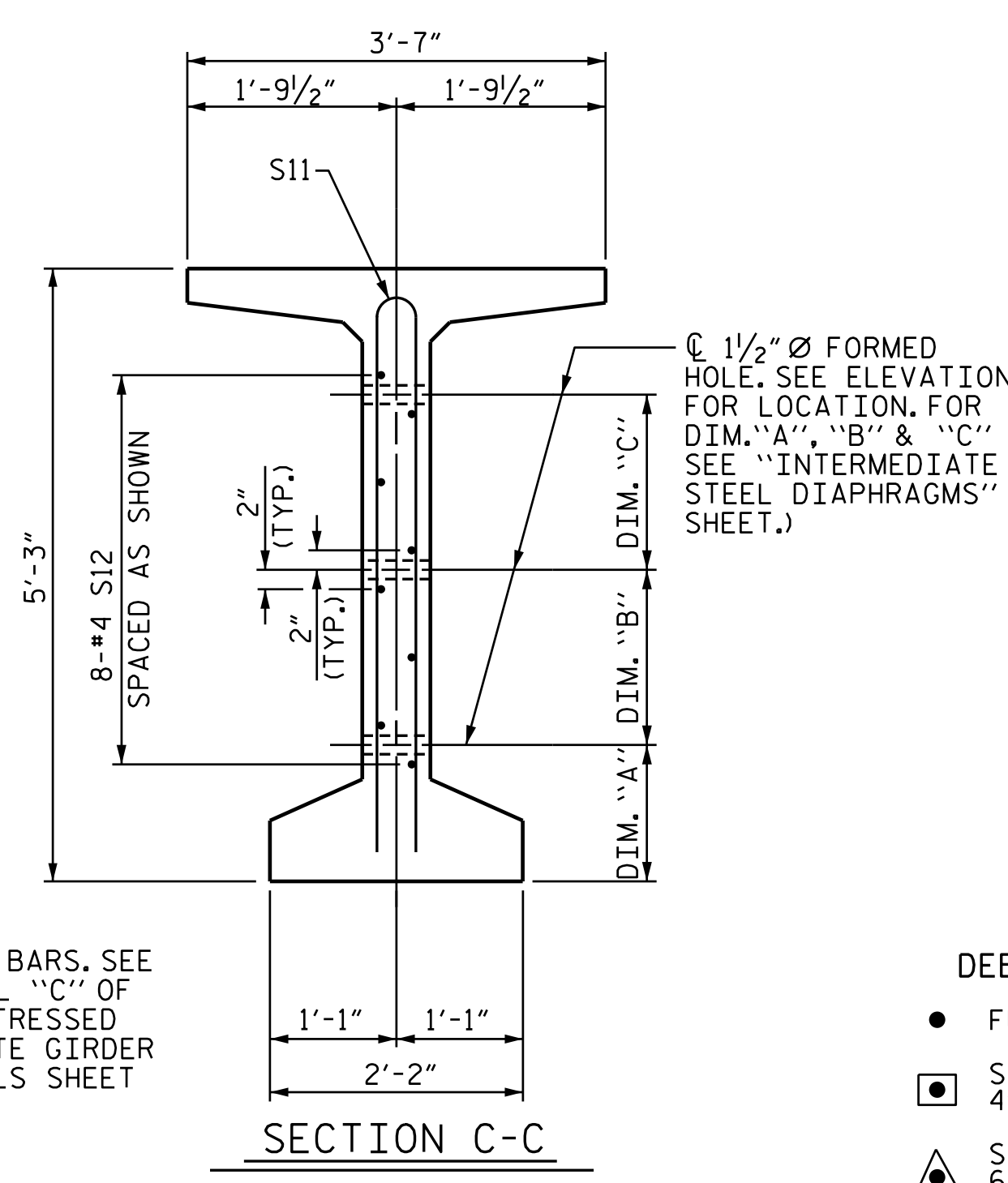
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 CHECKED BY: J. E. MONDOLFI DATE: 12-2019
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 12-2019



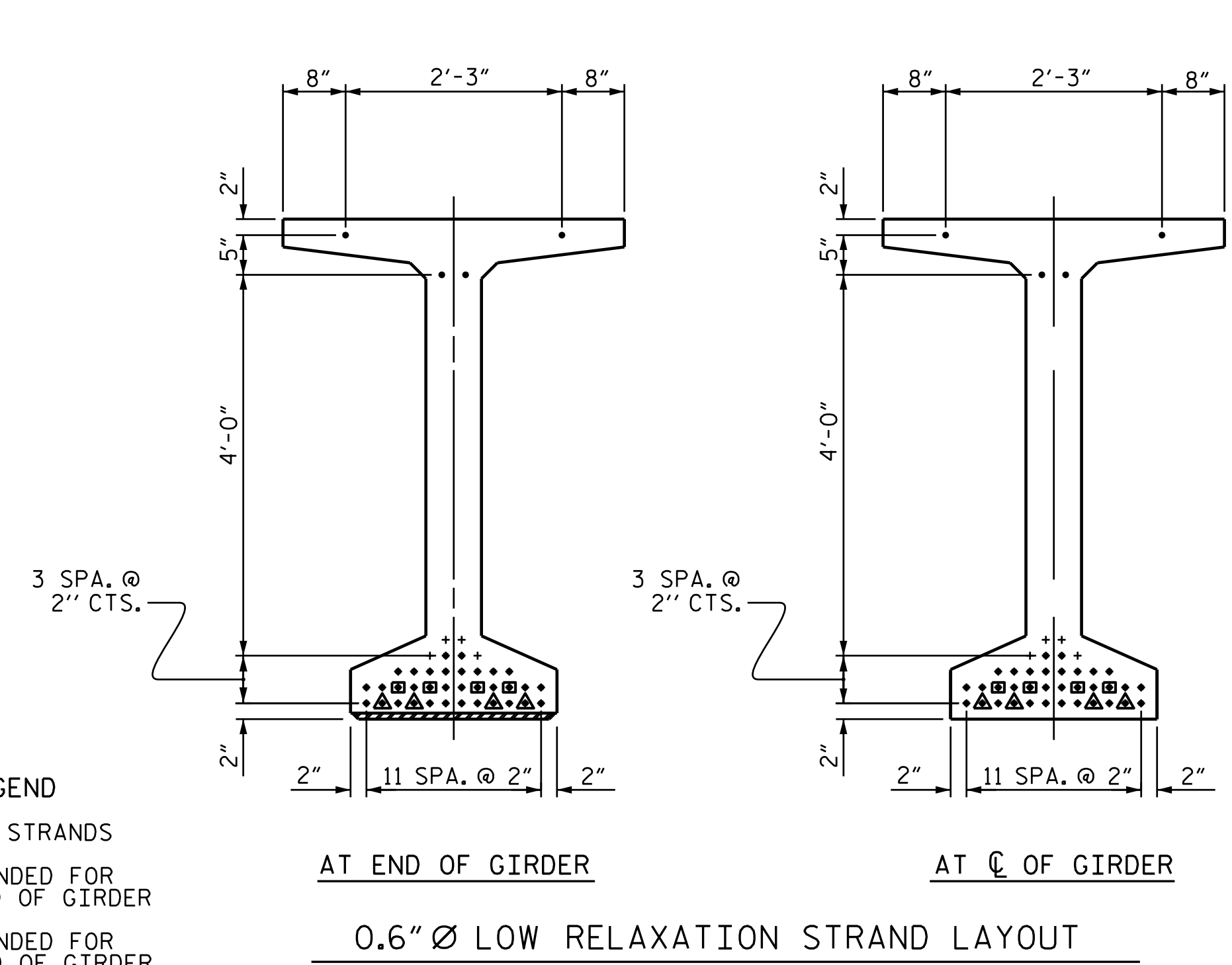
SECTION A-A



SECTION C-C
(S1, S6 AND S9 BARS NOT SHOWN)

* FOR S7 BARS, SEE
DETAIL 'C' OF
PRESTRESSED
CONCRETE GIRDER
DETAILS SHEET

- DEBONDING LEGEND
- FULLY BONDED STRANDS
 - ◻ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
 - ◼ STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER

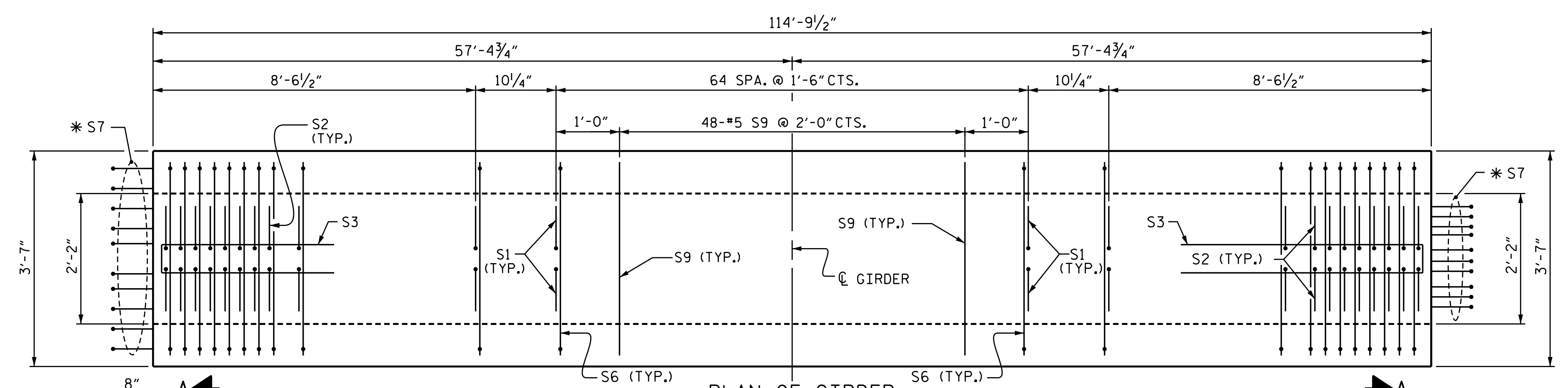


AT END OF GIRDER

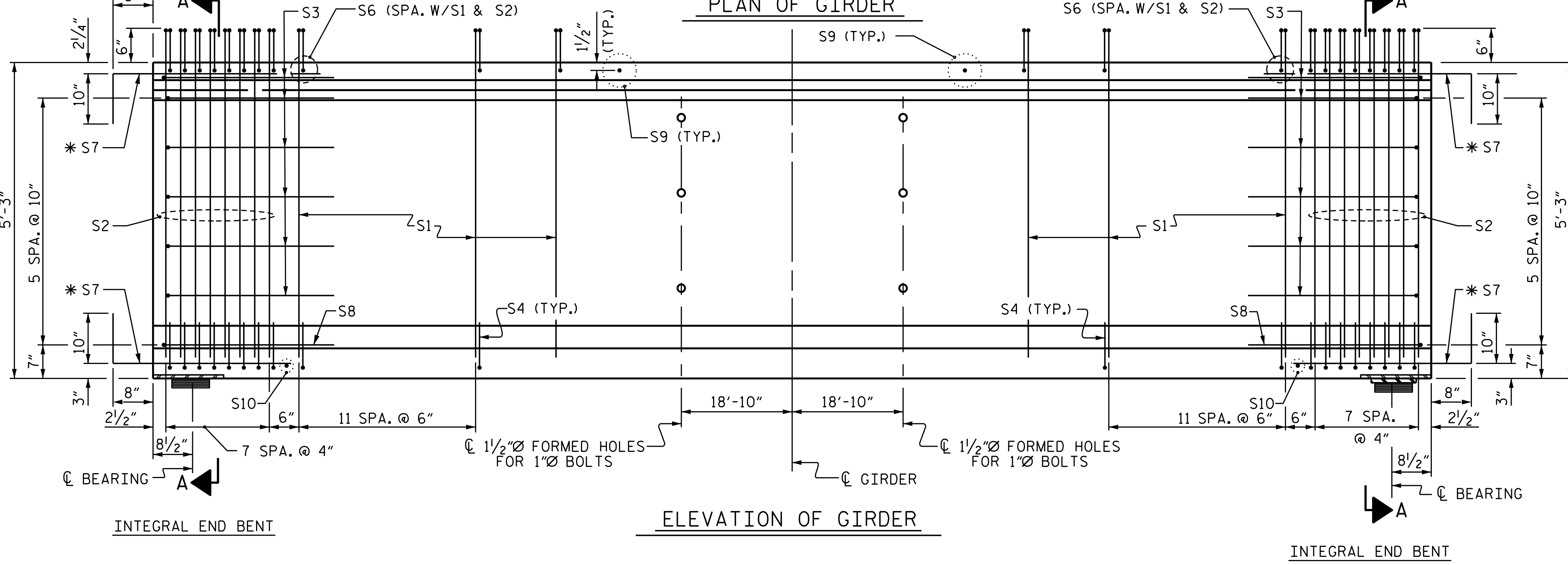
AT C OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

(38 STRANDS, ALL STRAIGHT, 8 DEBONDED STRANDS)



PLAN OF GIRDER



ELEVATION OF GIRDER

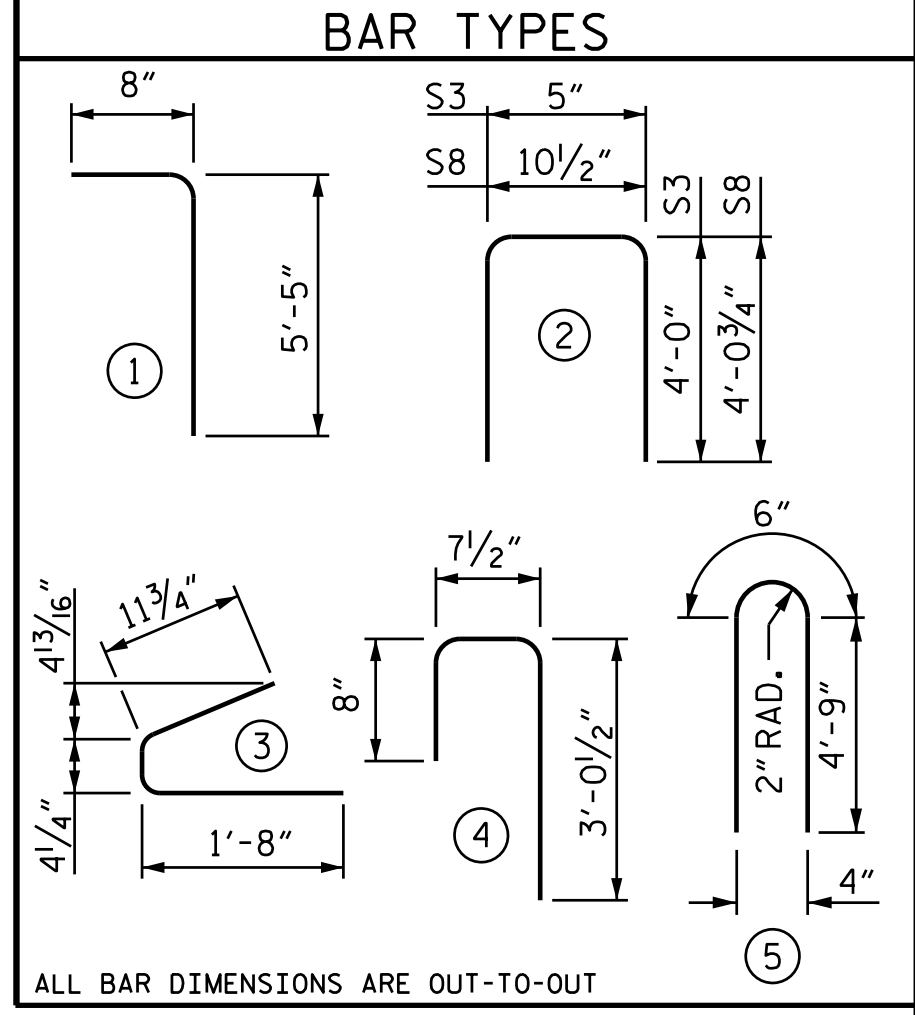
INTEGRAL END BENT

INTEGRAL END BENT

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

REINFORCING STEEL FOR ONE GDR					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	178	#4	1	6'-1"	723
S2	32	#5	1	6'-1"	203
S3	12	#4	2	8'-5"	67
S4	80	#4	3	3'-0"	160
S6	210	#5	4	4'-4"	949
* S7	40	#5	STR	3'-8"	153
S8	2	#5	2	9'-0"	19
S9	48	#5	STR	3'-3"	163
S10	2	#3	STR	1'-10"	1
S11	8	#5	5	10'-0"	83
S12	16	#4	STR	8'-0"	86

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



ALL BAR DIMENSIONS ARE OUT-TO-OUT

	QUANTITIES FOR ONE GIRDER		
	REINFORCING STEEL	9000 PSI CONCRETE	0.6" Ø L.R. STRANDS
	LB.	C.Y.	No.
GIRDER	2607	22.8	38

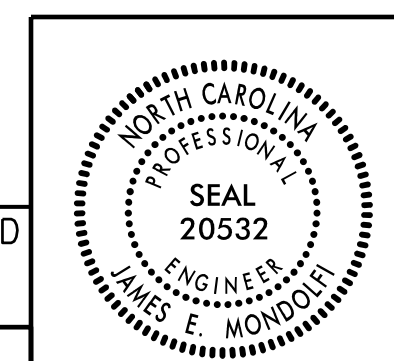
GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
5	114'-9 1/2"	573.96'

PROJECT NO. B-5353
GUILFORD COUNTY
 STATION: 23+62.87 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

63" PRESTRESSED CONCRETE
 MODIFIED BULB TEE
 SPAN A
 (LEFT LANE)



DOCUMENT NOT CONSIDERED
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 SIGNATURES COMPLETED

PLANS PREPARED BY:
M PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
 MOTT MACDONALD LICENSE NO. F-0669

DocuSigned by:
 James E. Mondolfi
 32ED2AF2E426449
 02 December 2021

REVISIONS						SHEET NO. S1-11
NO.	BY:	DATE:	NO.	BY:	DATE:	
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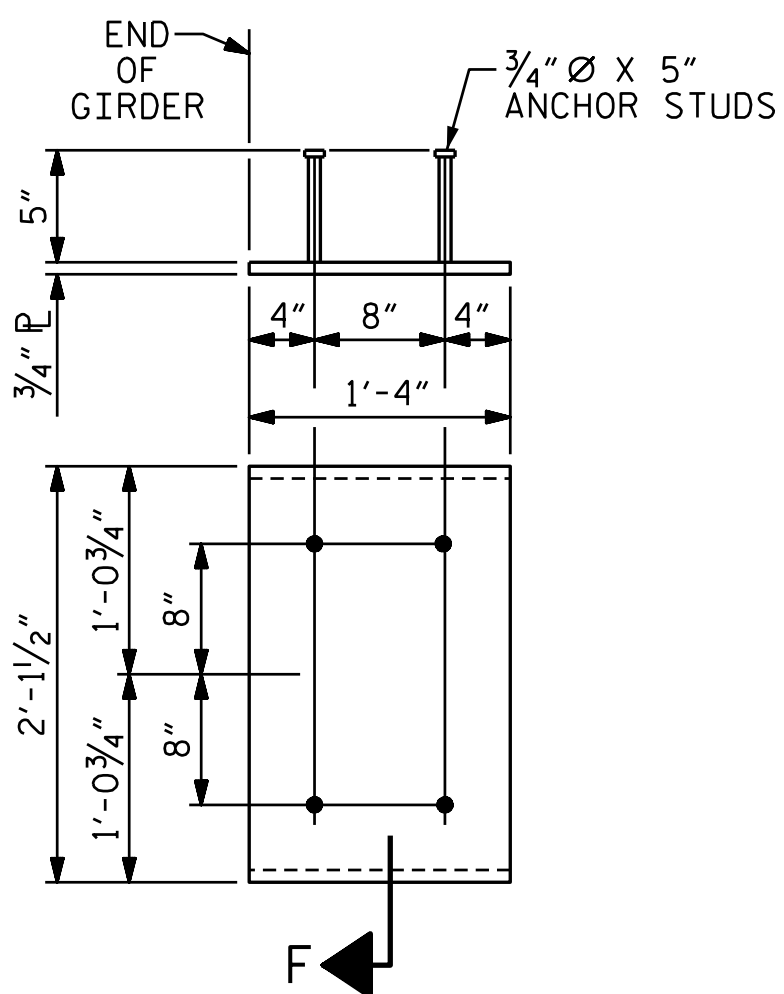
DRAWN BY: M. L. MARLEY DATE: 1-2020
 CHECKED BY: J. E. MONDOLFI DATE: 1-2020
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 1-2020

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

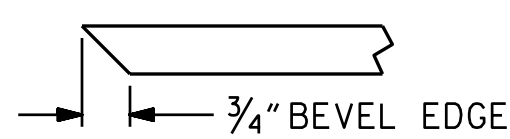
		SPAN A																				
		EXTERIOR GIRDER																				
FOURTIETH POINTS		0	.025	.05	.075	.10	.125	.15	.175	.20	.225	.25	.275	.30	.325	.35	.375	.40	.425	.45	.475	.50
CAMBER		0.000	0.022	0.044	0.066	0.087	0.108	0.128	0.147	0.164	0.183	0.199	0.213	0.227	0.239	0.249	0.258	0.265	0.271	0.275	0.278	0.279
* DEFLECTION DUE D.L.		0.000	-0.013	-0.026	-0.039	-0.049	-0.064	-0.076	-0.087	-0.096	-0.108	-0.118	-0.126	-0.133	-0.141	-0.148	-0.153	-0.157	-0.161	-0.163	-0.165	-0.165
FINAL		0	1/8"	3/16"	5/16"	7/16"	1/2"	5/8"	3/4"	13/16"	7/8"	1"	1 1/16"	1 1/8"	1 3/16"	1 3/16"	1 1/4"	1 5/16"	1 5/16"	1 3/8"	1 3/8"	1 3/8"
		INTERIOR GIRDER																				
FOURTIETH POINTS		0	.025	.05	.075	.10	.125	.15	.175	.20	.225	.25	.275	.30	.325	.35	.375	.40	.425	.45	.475	.50
CAMBER		0.000	0.022	0.044	0.066	0.087	0.108	0.128	0.147	0.164	0.183	0.199	0.213	0.227	0.239	0.249	0.258	0.265	0.271	0.275	0.278	0.279
* DEFLECTION DUE D.L.		0.000	-0.014	-0.028	-0.041	-0.052	-0.067	-0.080	-0.092	-0.101	-0.114	-0.124	-0.133	-0.140	-0.148	-0.155	-0.161	-0.165	-0.169	-0.171	-0.173	-0.173
FINAL		0	1/8"	3/16"	5/16"	7/16"	1/2"	9/16"	11/16"	3/4"	13/16"	7/8"	15/16"	1 1/16"	1 1/16"	1 1/8"	1 3/16"	1 3/16"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
		EXTERIOR GIRDER																				
FOURTIETH POINTS		.525	.55	.575	.60	.625	.65	.675	.70	.725	.75	.775	.80	.825	.85	.875	.90	.925	.95	.975	0	
CAMBER		0.278	0.275	0.271	0.265	0.258	0.249	0.239	0.227	0.213	0.199	0.183	0.164	0.147	0.128	0.108	0.087	0.066	0.044	0.022	0.000	
* DEFLECTION DUE D.L.		-0.165	-0.163	-0.161	-0.157	-0.153	-0.148	-0.141	-0.133	-0.126	-0.118	-0.108	-0.096	-0.087	-0.076	-0.064	-0.049	-0.039	-0.026	-0.013	0.000	
FINAL		1 3/8"	1 3/8"	1 5/16"	1 5/16"	1 1/4"	1 3/16"	1 3/16"	1 1/8"	1 1/16"	1"	7/8"	13/16"	3/4"	5/8"	1/2"	7/16"	5/16"	3/16"	1/8"	0.000	
		INTERIOR GIRDER																				
FOURTIETH POINTS		.525	.55	.575	.60	.625	.65	.675	.70	.725	.75	.775	.80	.825	.85	.875	.90	.925	.95	.975	0	
CAMBER		0.278	0.275	0.271	0.265	0.258	0.249	0.239	0.227	0.213	0.199	0.183	0.164	0.147	0.128	0.108	0.087	0.066	0.044	0.022	0.000	
* DEFLECTION DUE D.L.		-0.173	-0.171	-0.169	-0.165	-0.161	-0.155	-0.148	-0.140	-0.133	-0.124	-0.114	-0.101	-0.092	-0.080	-0.067	-0.052	-0.041	-0.028	-0.014	0.000	
FINAL		1 1/4"	1 1/4"	1 1/4"	1 3/16"	1 3/16"	1 1/8"	1 1/16"	1 1/16"	15/16"	7/8"	13/16"	3/4"	11/16"	9/16"	1/2"	7/16"	5/16"	3/16"	1/8"	0	

* INCLUDES FUTURE WEARING SURFACE

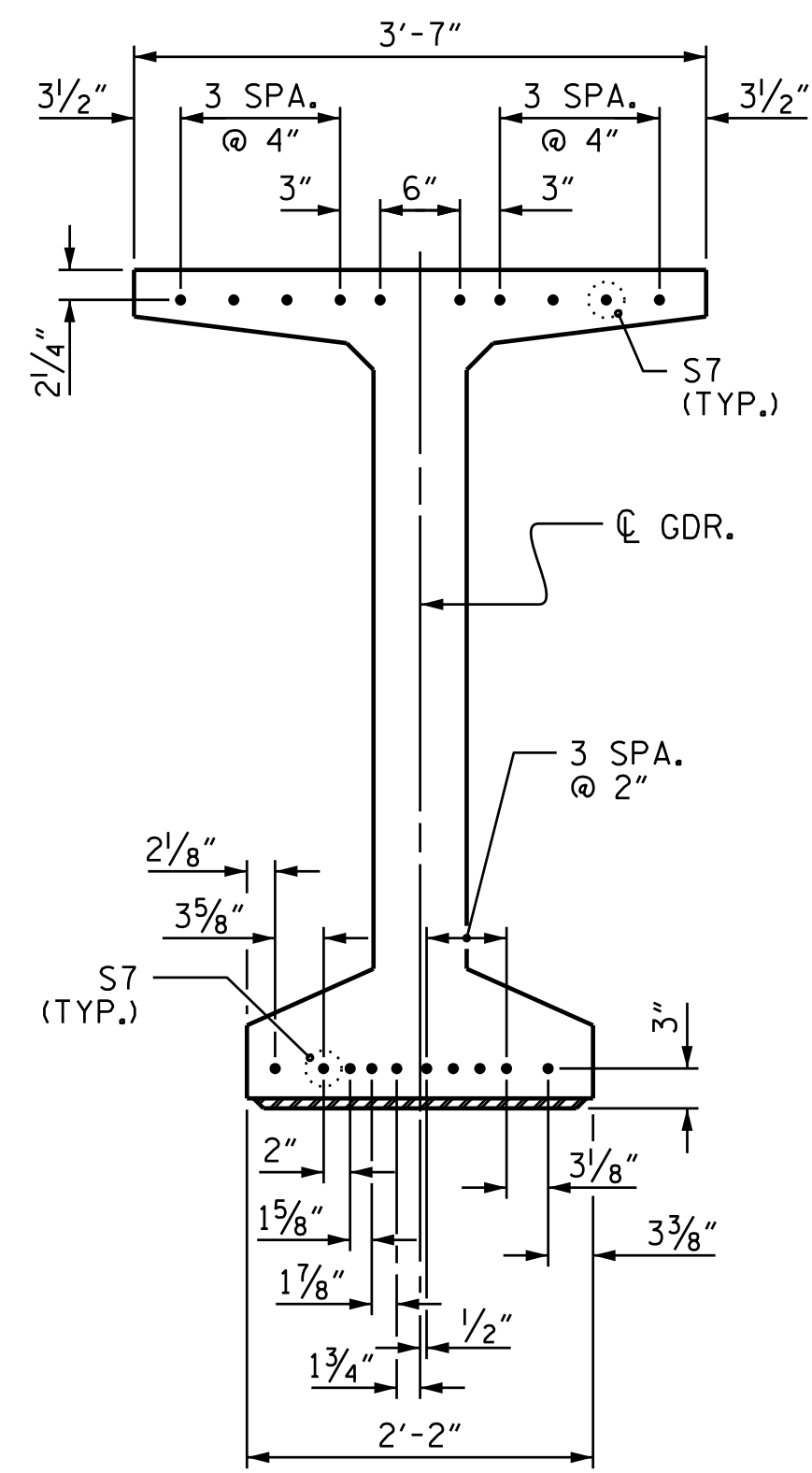
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "FINAL CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).



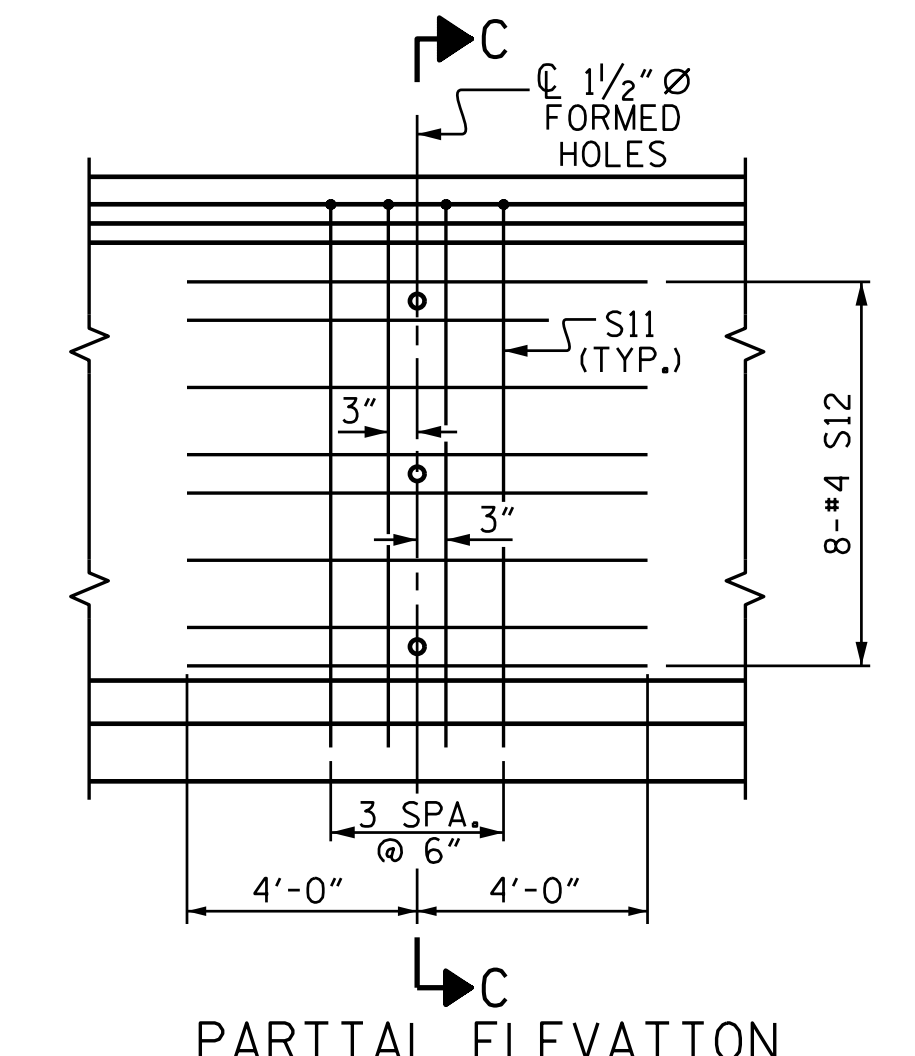
EMBEDDED PLATE "B-1" DETAILS
63" MODIFIED BULB TEES
(2 REQ'D PER GIRDER)



SECTION "F"
(SEE NOTES)



DETAIL "C"



PARTIAL ELEVATION
SHOWING INTERMEDIATE STEEL DIAPHRAGM
REINFORCING STEEL FOR GIRDER Nos. 1 THROUGH 5

NOTES

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

ALL REINFORCING STEEL SHALL BE GRADE 60.

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

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

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

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 7000 PSI.

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

THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4", SHALL BE RAKED TO A DEPTH OF 1/4".

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

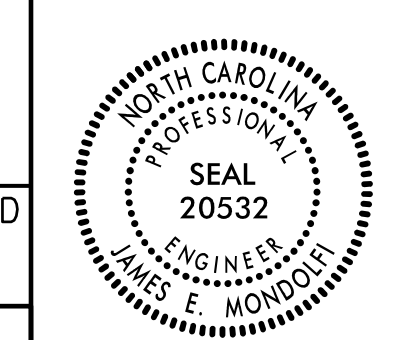
THE CONTRACTOR HAS THE OPTION TO PROVIDE, AT NO ADDITIONAL COST TO THE DEPARTMENT, 2 ADDITIONAL STRANDS AT THE TOP OF THE GIRDER TO FACILITATE TYING OF THE REINFORCING STEEL. THESE STRANDS SHALL BE PULLED TO A LOAD OF 4500 LBS.

PROJECT NO. B-5353
GUILFORD COUNTY
STATION: 23+62.87 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PRESTRESSED CONCRETE
GIRDER DETAILS
(LEFT LANE)



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SIGNATURES COMPLETED

PLANS PREPARED BY:
MOTT MACDONALD

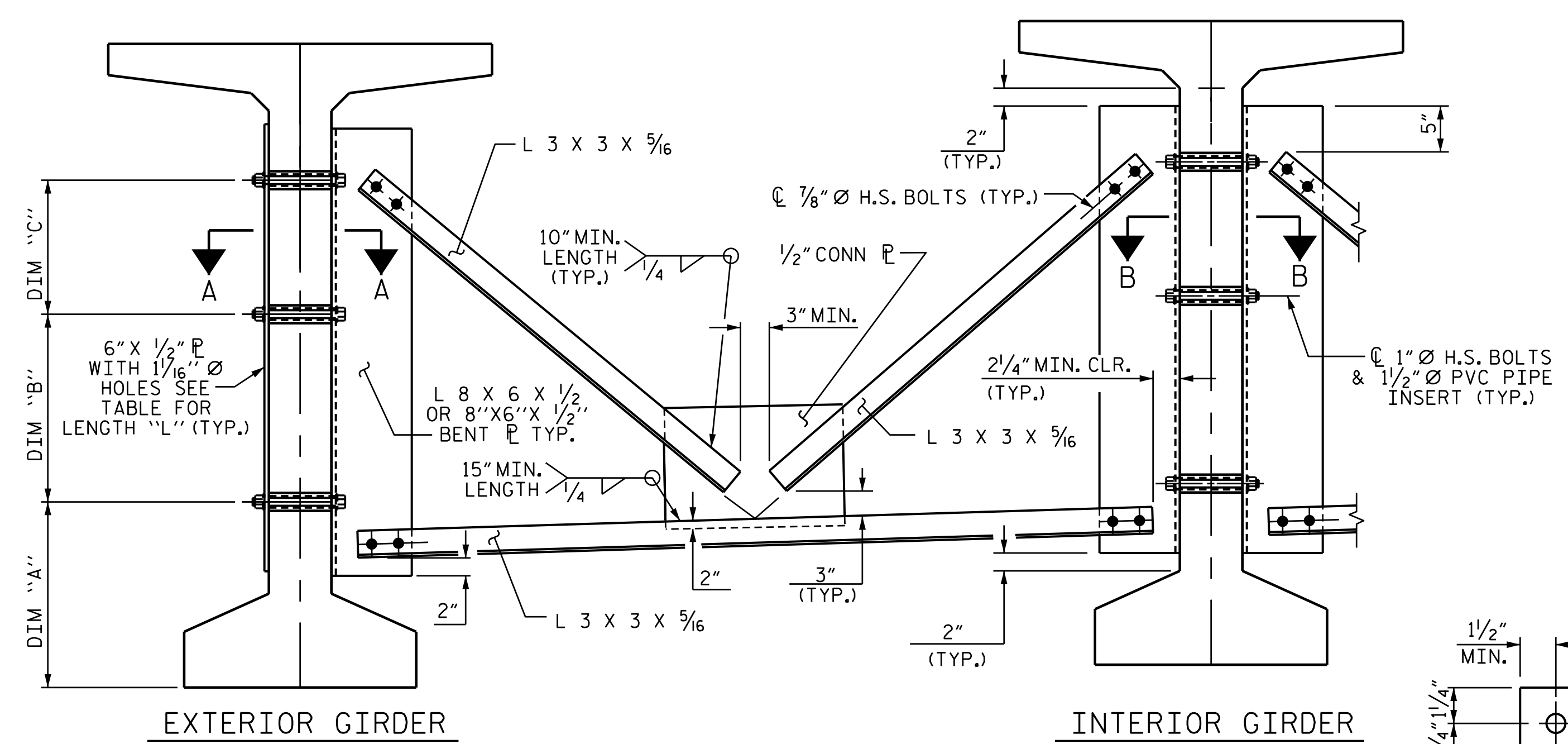
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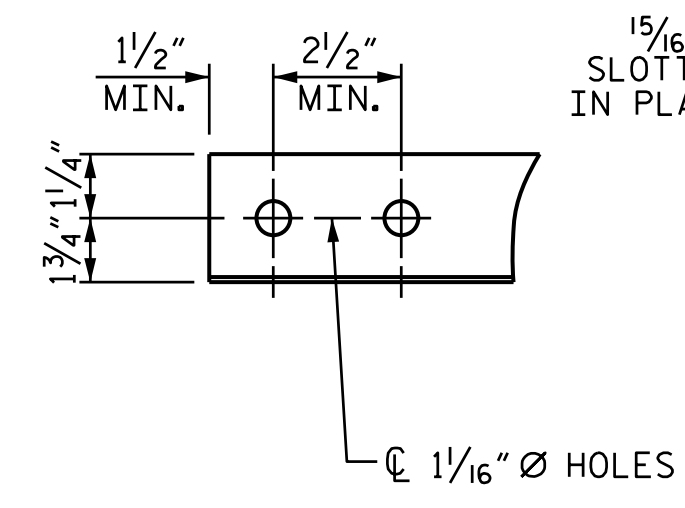
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 CHECKED BY: J. E. MONDOLFI DATE: 1-2020
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 1-2020

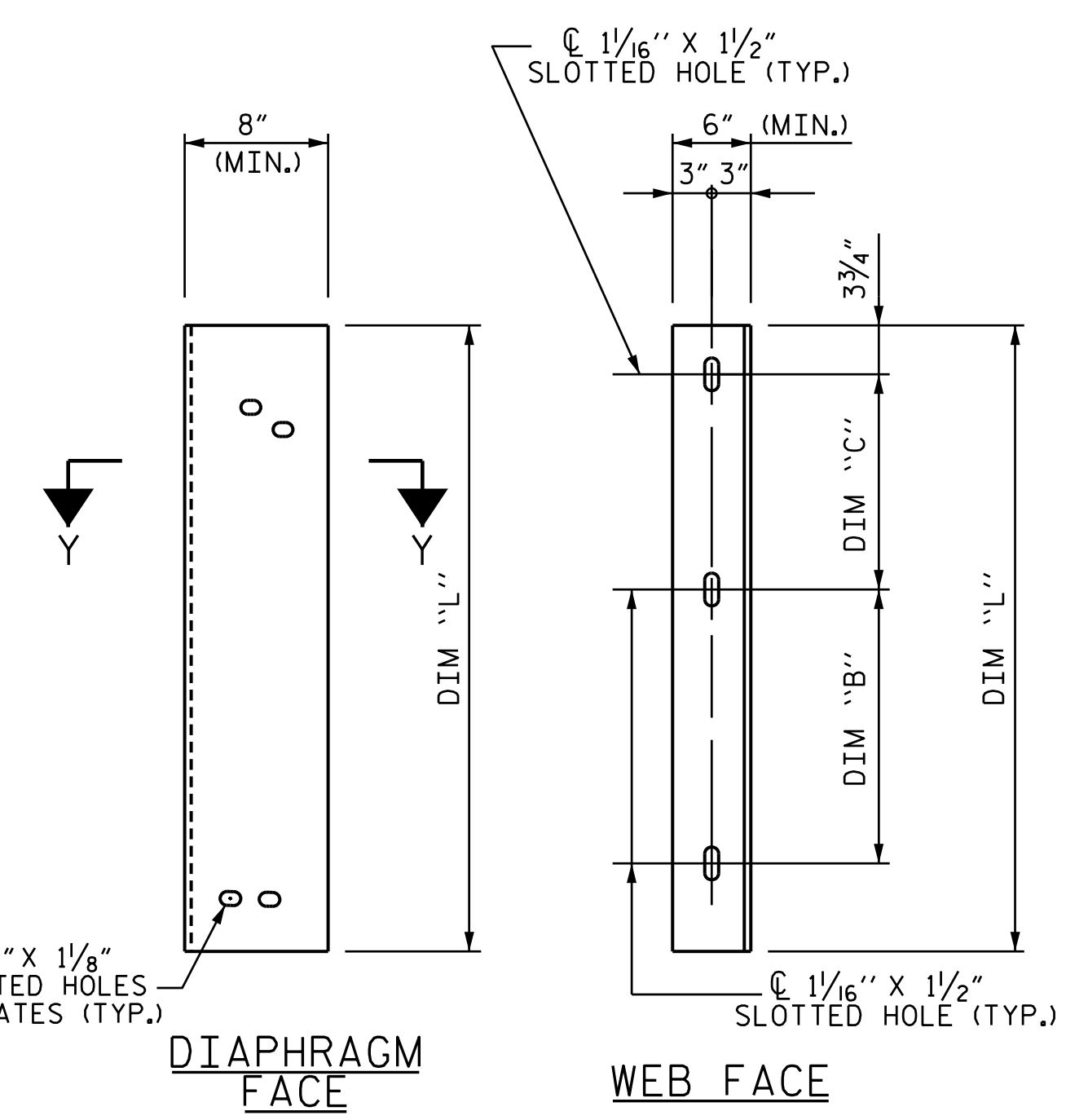
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James E. Mondolfi
32ED2F2E425449
02 December 2021



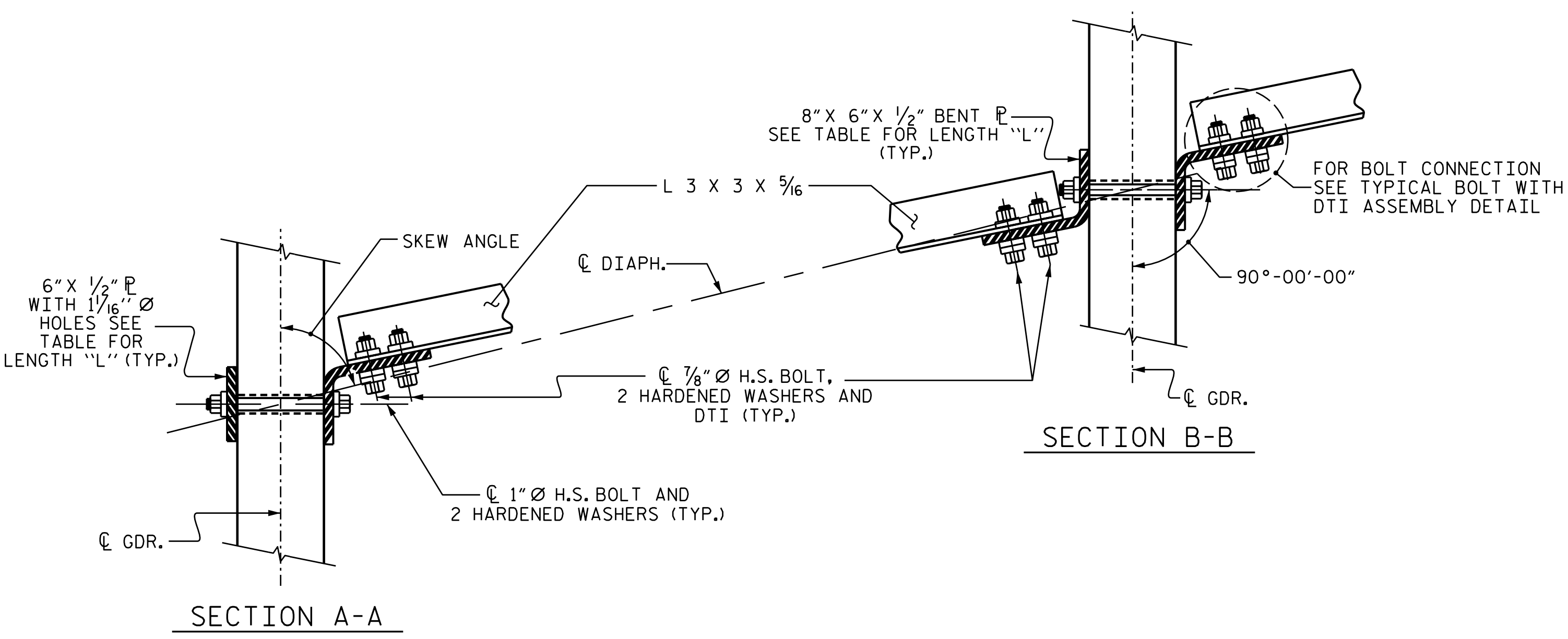
PART SECTION AT INTERMEDIATE DIAPHRAGM



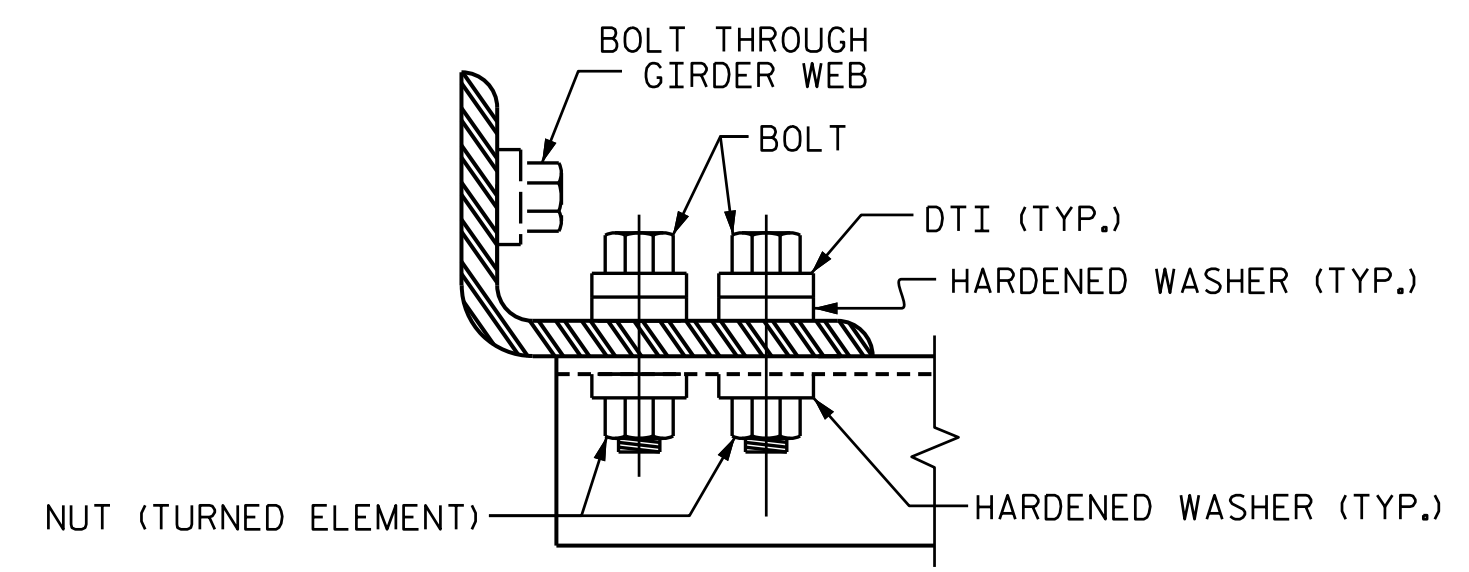
ANGLE END
(L 3 x 3 x 5/16)



CONNECTOR PLATE DETAIL



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 ANGLE MEMBER SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

TENSION ON THE ASTM A449 BOLTS THROUGH THE GIRDER WEB SHALL BE SNUG TIGHTENED FOLLOWED BY AN ADDITIONAL 1/4 TURN.

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

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

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

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

FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

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

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

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

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

TABLE

GIRDER TYPE	DIM "A"	DIM "B"	DIM "C"	DIM "L"
63" BULB TEE	1'-6"	1'-7"	1'-3"	3'-5"

PROJECT NO. B-5353
GUILFORD COUNTY
 STATION: 23+62.87 -L-

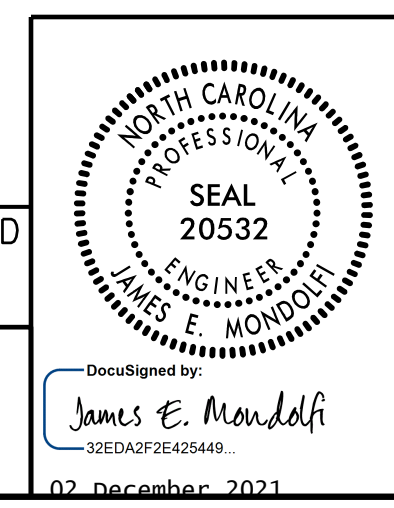
SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

INTERMEDIATE
 STEEL DIAPHRAGMS
 FOR 63" MODIFIED
 BULB TEE PRESTRESSED
 CONCRETE GIRDERS
 (LEFT LANE)

REVISIONS				SHEET NO.
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1			3	
2			4	

TOTAL SHEETS: 26



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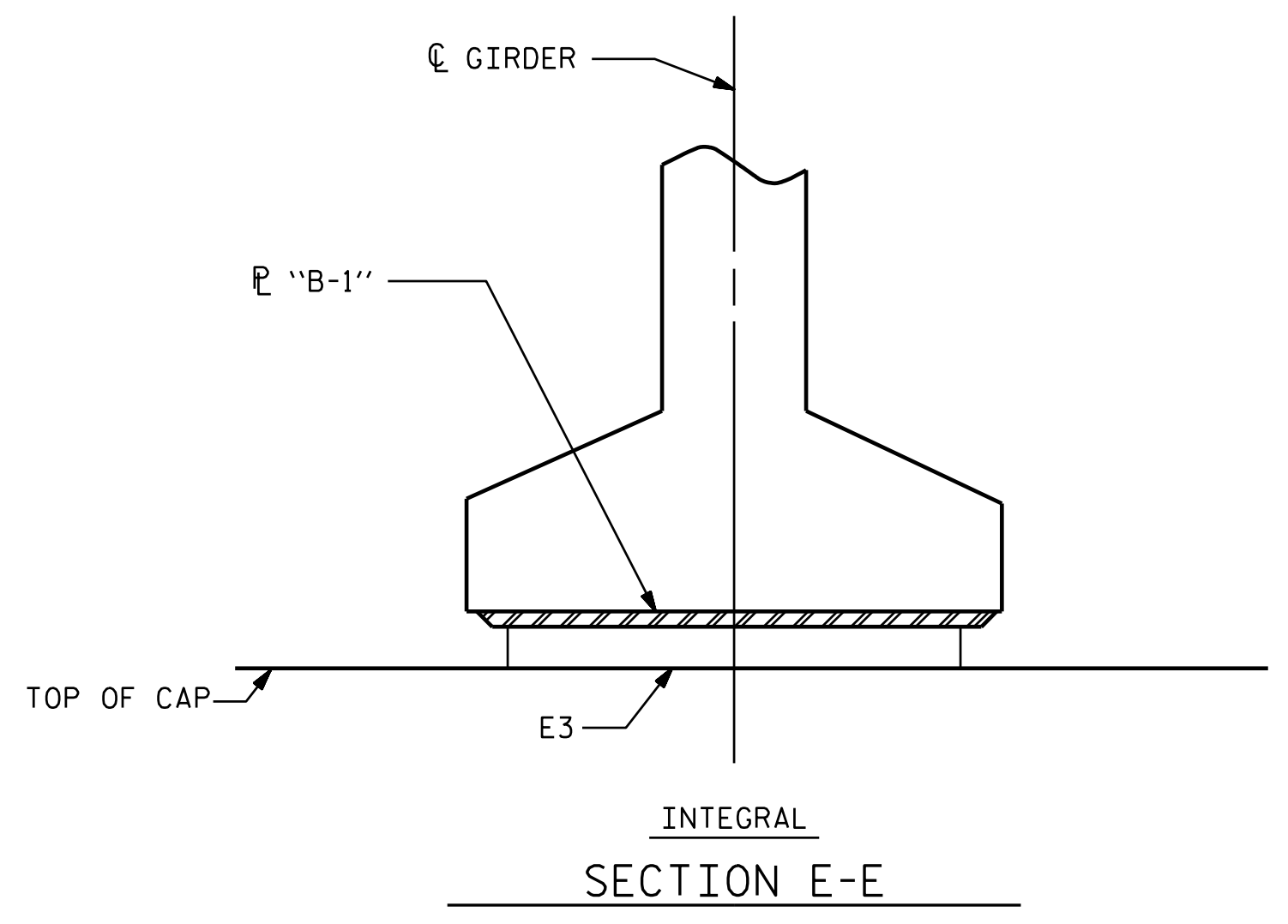
PLANS PREPARED BY:
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 Fuquay-Varina, NC 27526
 (919) 552-2253
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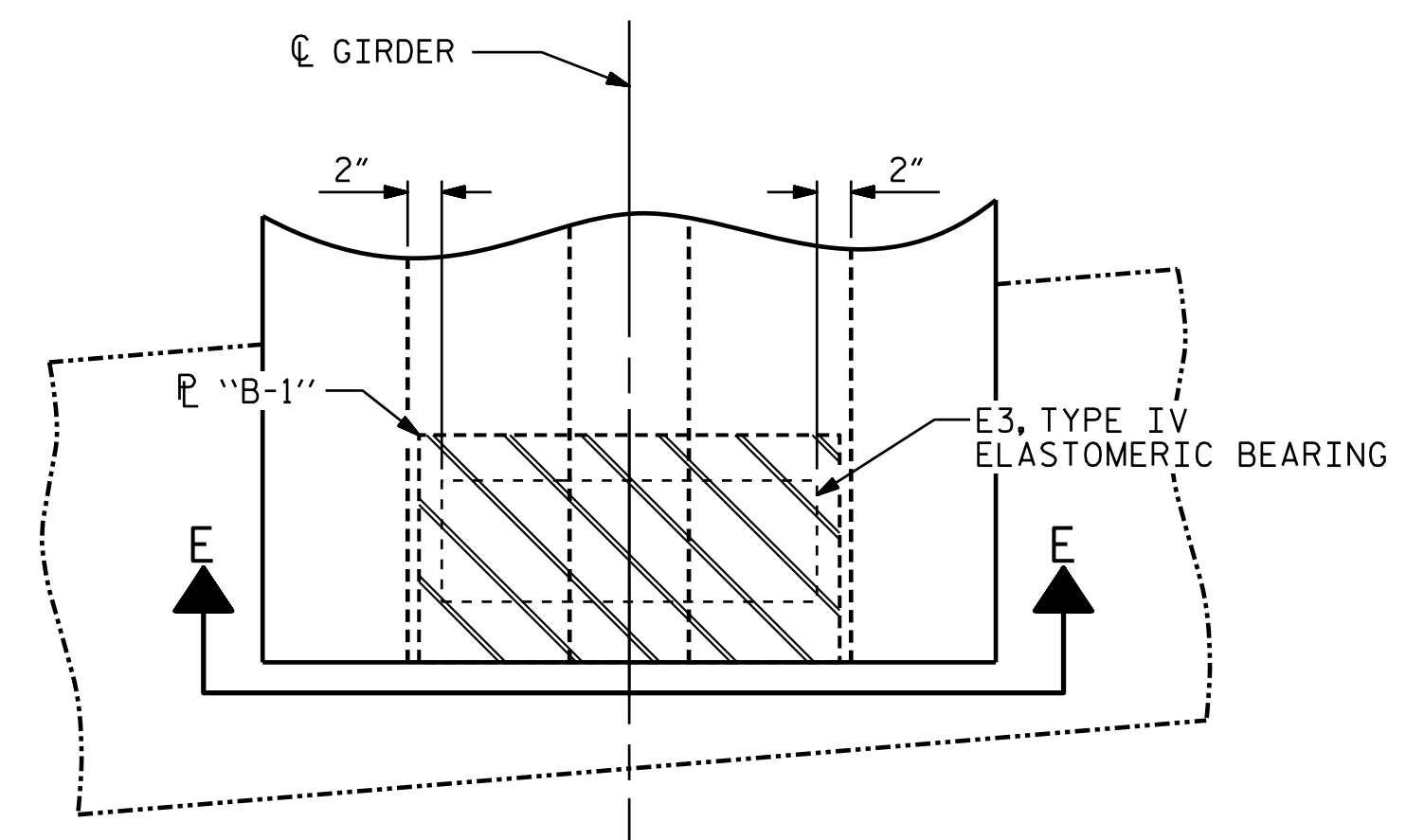
DRAWN BY: M. L. MARLEY DATE: 12-2019
 CHECKED BY: J. E. MONDOLFI DATE: 12-2019
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 12-2019

NOTES

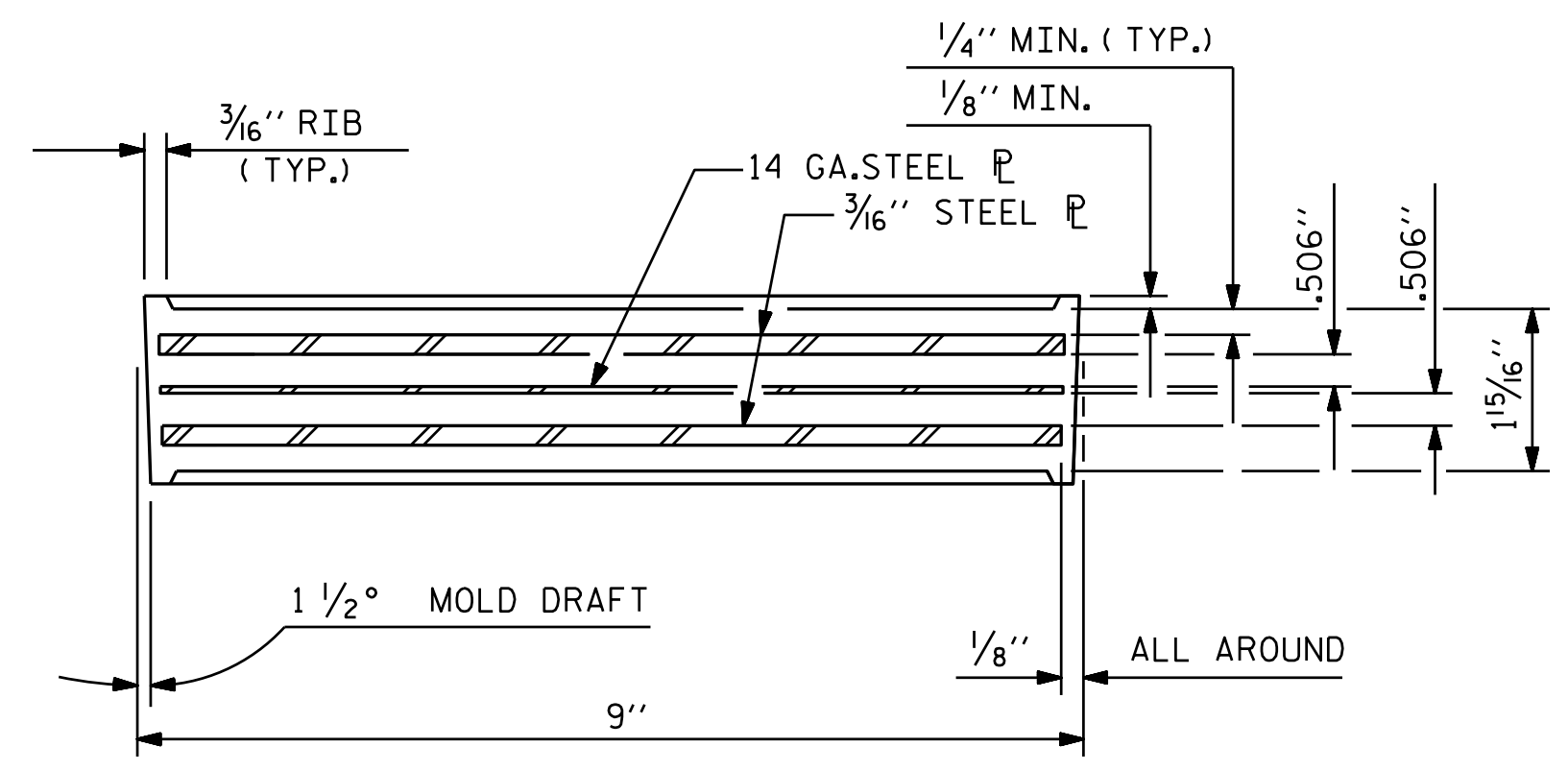
THE ELASTOMER IN THE STEEL REINFORCED BEARINGS SHALL HAVE A SHEAR MODULUS OF 0.160 KSI, IN ACCORDANCE WITH AASHTO M251.
 FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.



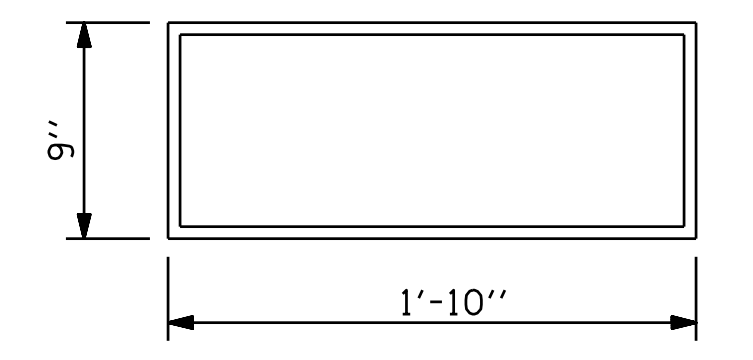
INTEGRAL SECTION E-E



TYPICAL PLAN @ END BENT



TYPICAL SECTION OF ELASTOMERIC BEARINGS



E3 (10 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING TYPE IV

MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE IV	225 k

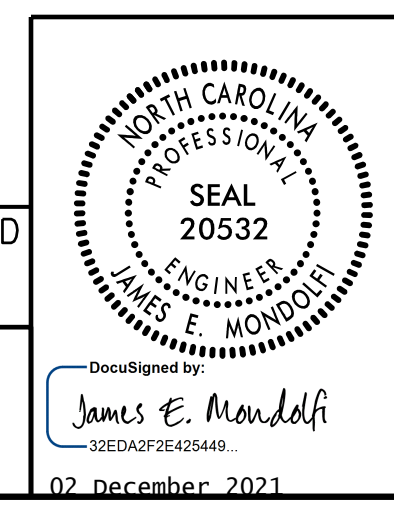
PROJECT NO. B-5353
GUILFORD COUNTY
 STATION: 23+62.87 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

ELASTOMERIC BEARING
 DETAILS
 PRESTRESSED CONCRETE GIRDER
 SUPERSTRUCTURE
 (LEFT LANE)

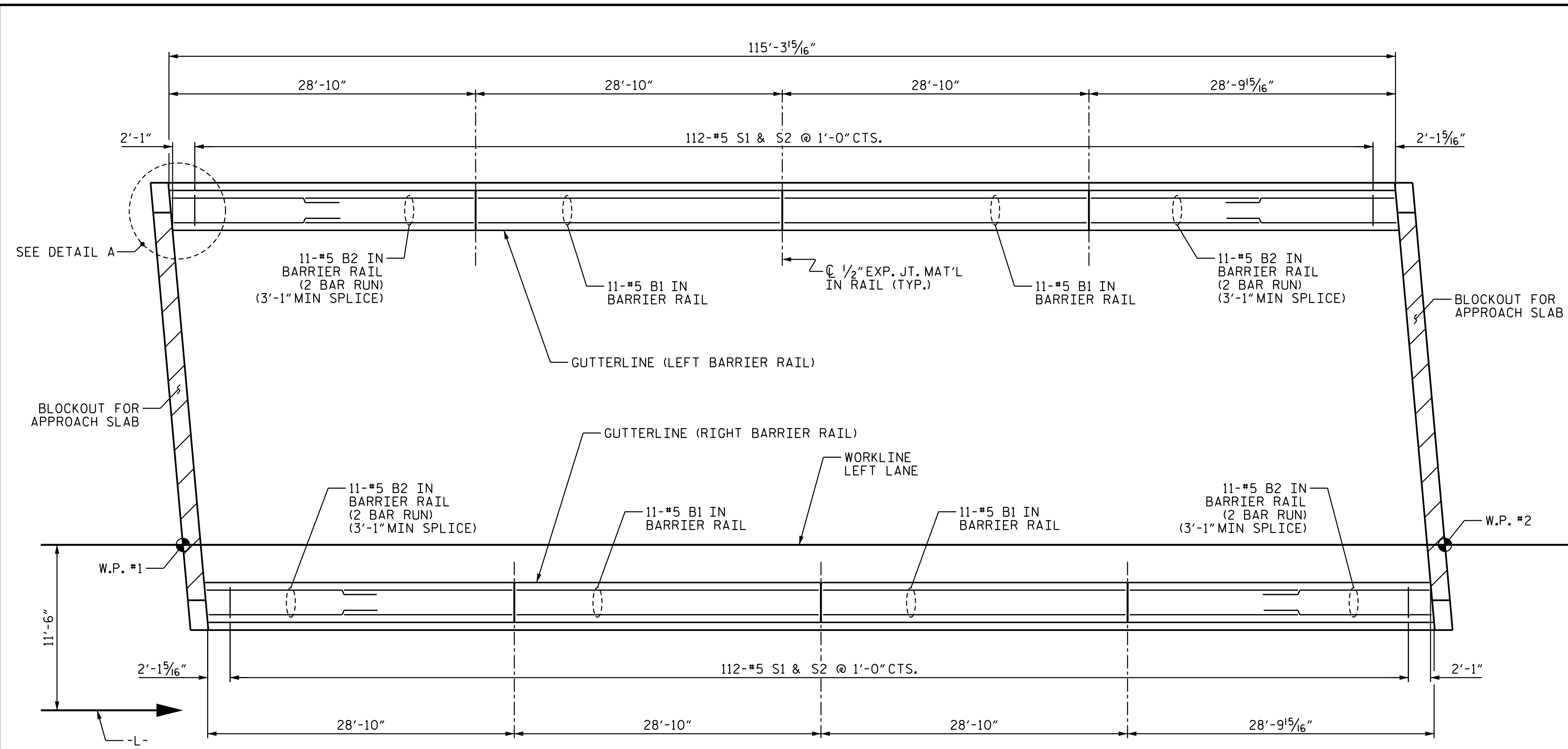
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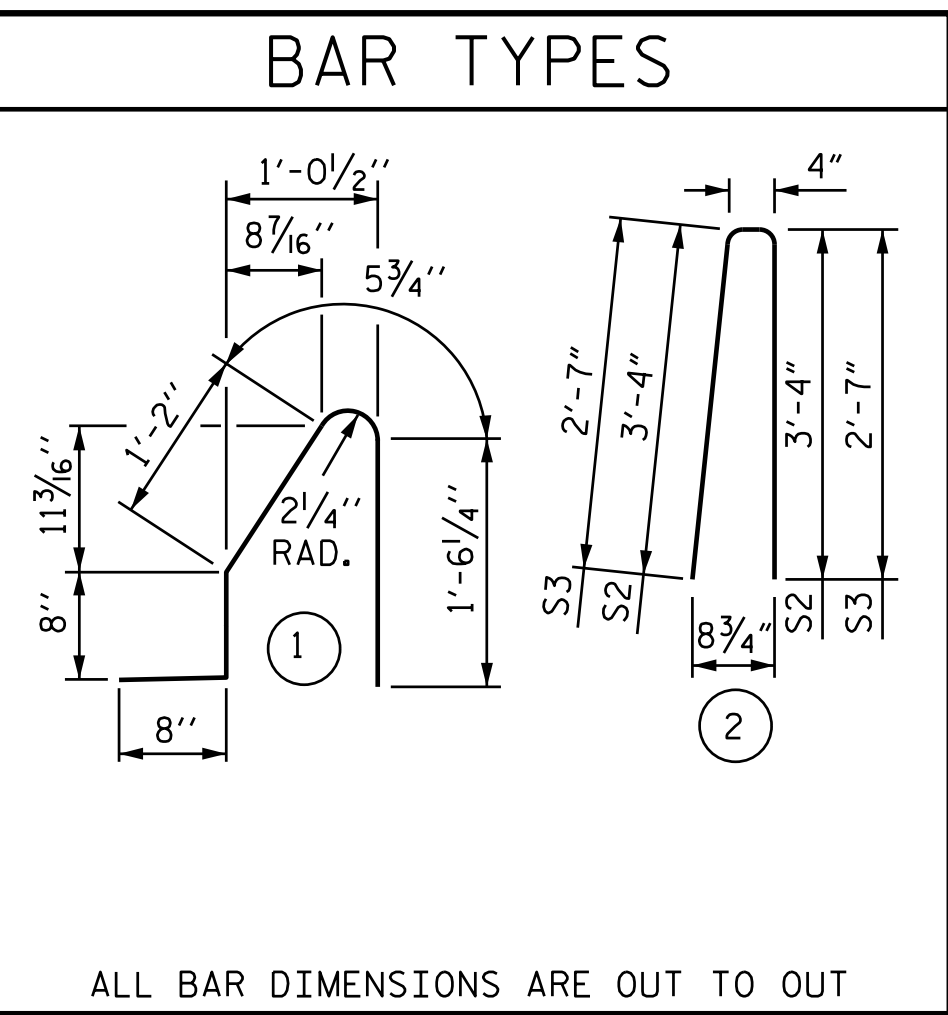
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2			4			26

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PLAN OF BARRIER RAIL

BILL OF MATERIAL					
FOR CONCRETE BARRIER RAIL ONLY					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	44	#5	STR	28'-5"	1304
* B2	88	#5	STR	15'-10"	1453
* S1	232	#5		4'-6"	1089
* S2	224	#5		7'-0"	1635
* S3	8	#5		5'-6"	46
* EPOXY COATED REINFORCING STEEL					5,527 LBS.
CLASS AA CONCRETE BREAKDOWN					
LT. BARRIER					16.3 CU. YDS.
RT. BARRIER					15.7 CU. YDS.
TOTAL CLASS AA CONCRETE					32.0 CU. YDS.
CONCRETE BARRIER RAIL					230.65 LIN. FT.



NOTES

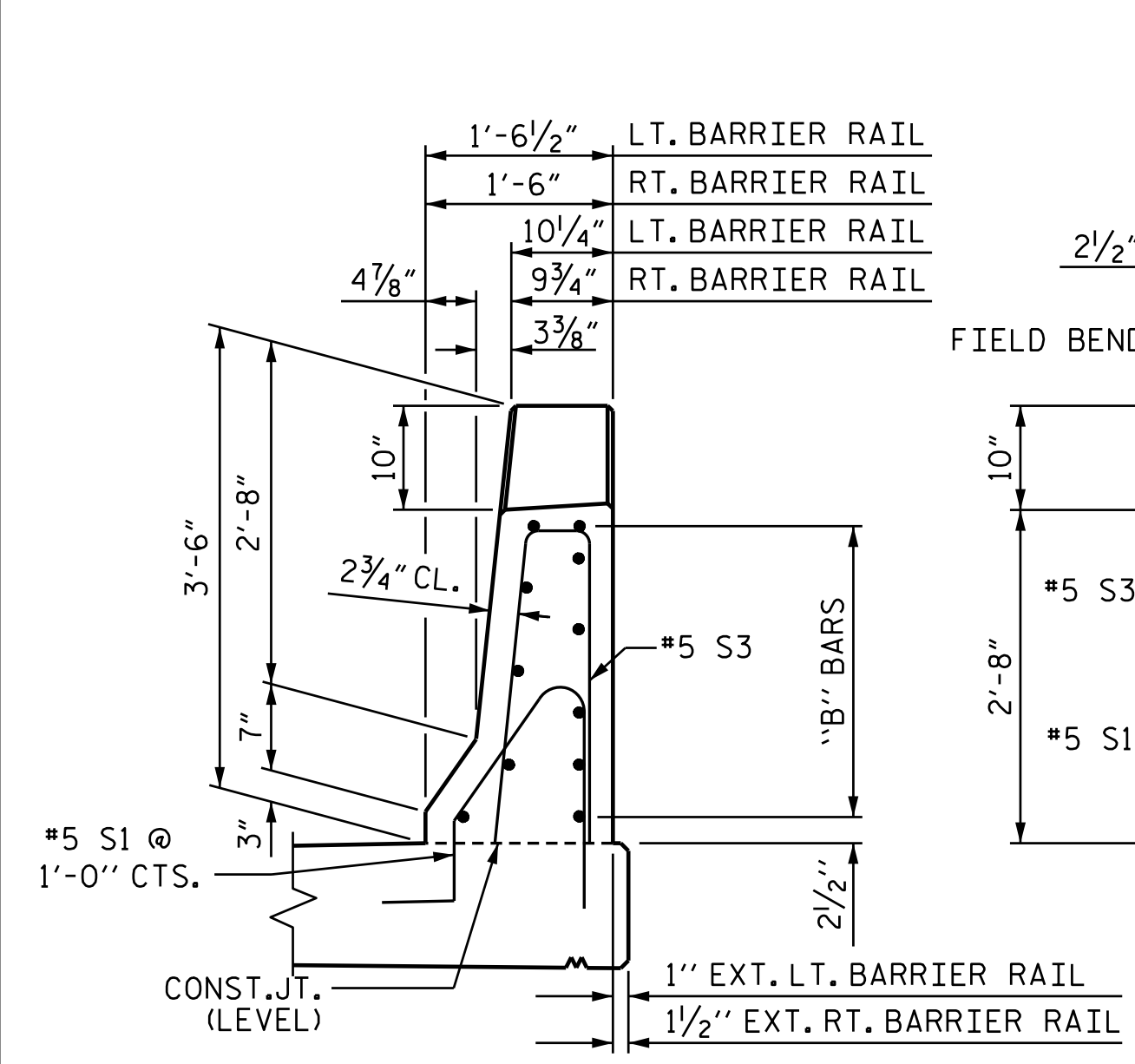
THE BARRIER RAIL SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

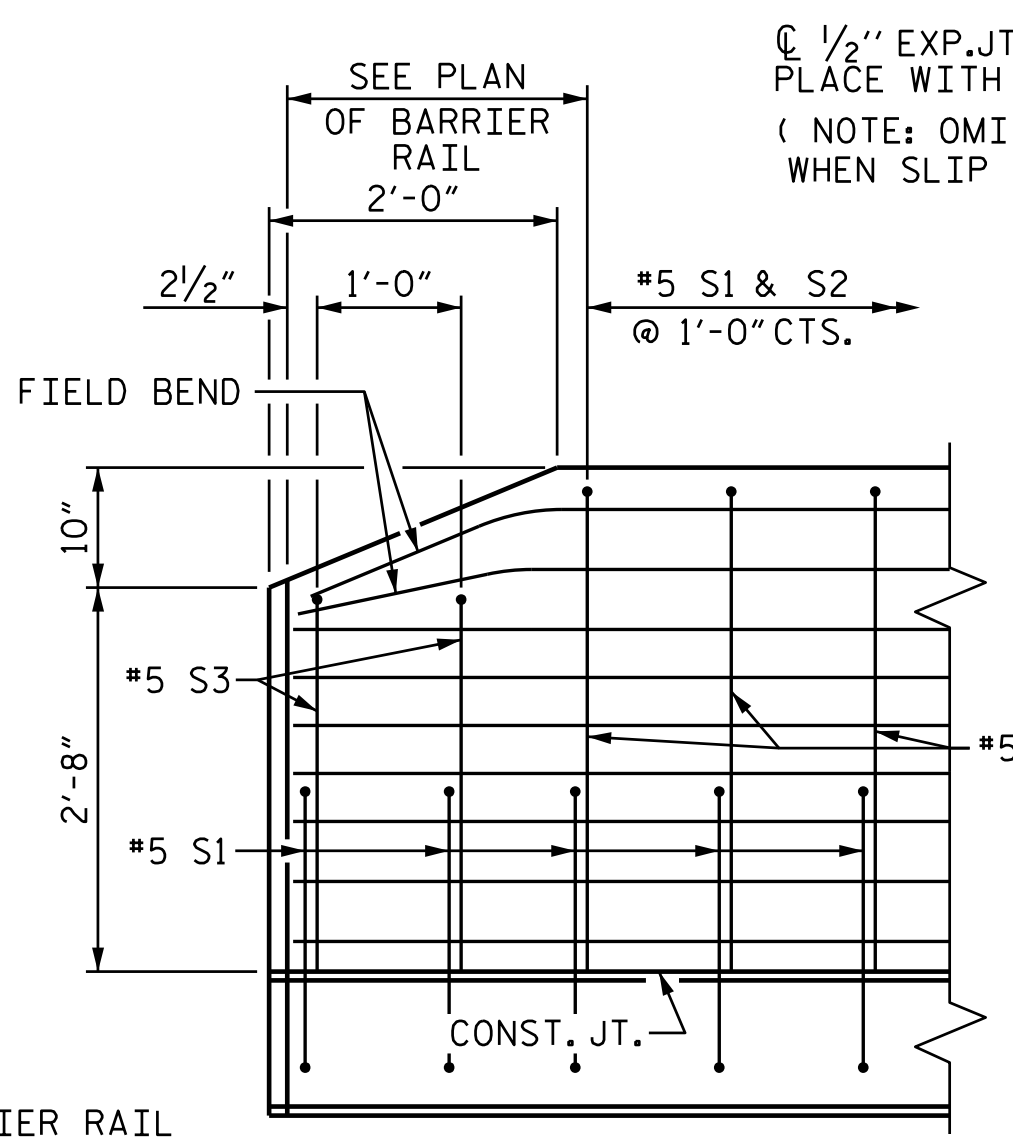
GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS 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.

FOR ARCHITECTURAL CONCRETE SURFACE TREATMENT AND BRIDGE COATING, SEE "TYPICAL SECTION DETAILS" SHEET.

THE COST FOR FORM LINERS REQUIRED FOR SURFACE FINISH ARE INCLUDED IN THE S.F. COST FOR ARCH. CONC. SURFACE TREATMENT.

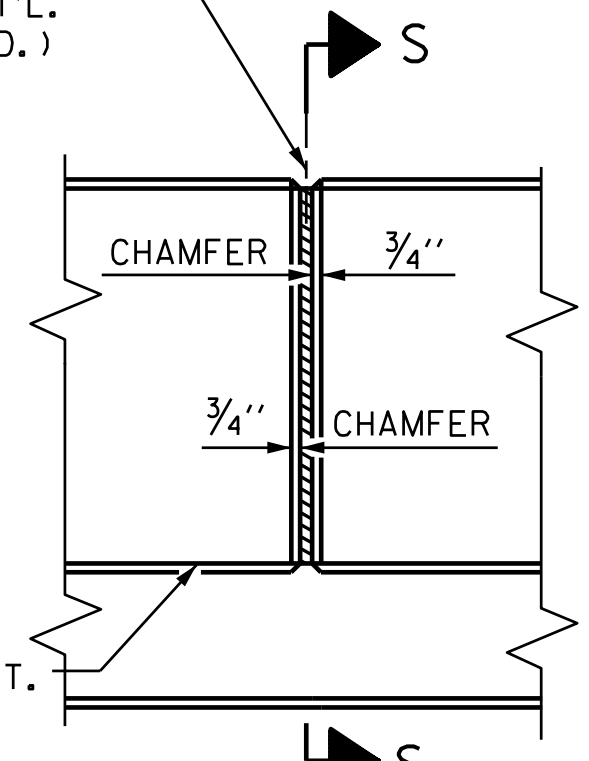


END VIEW

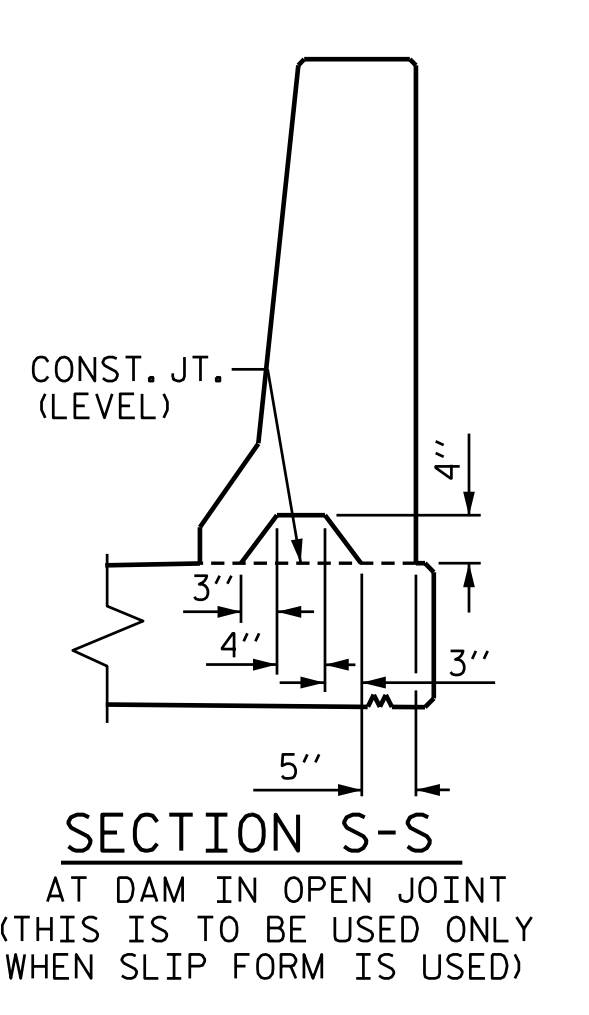


SIDE VIEW

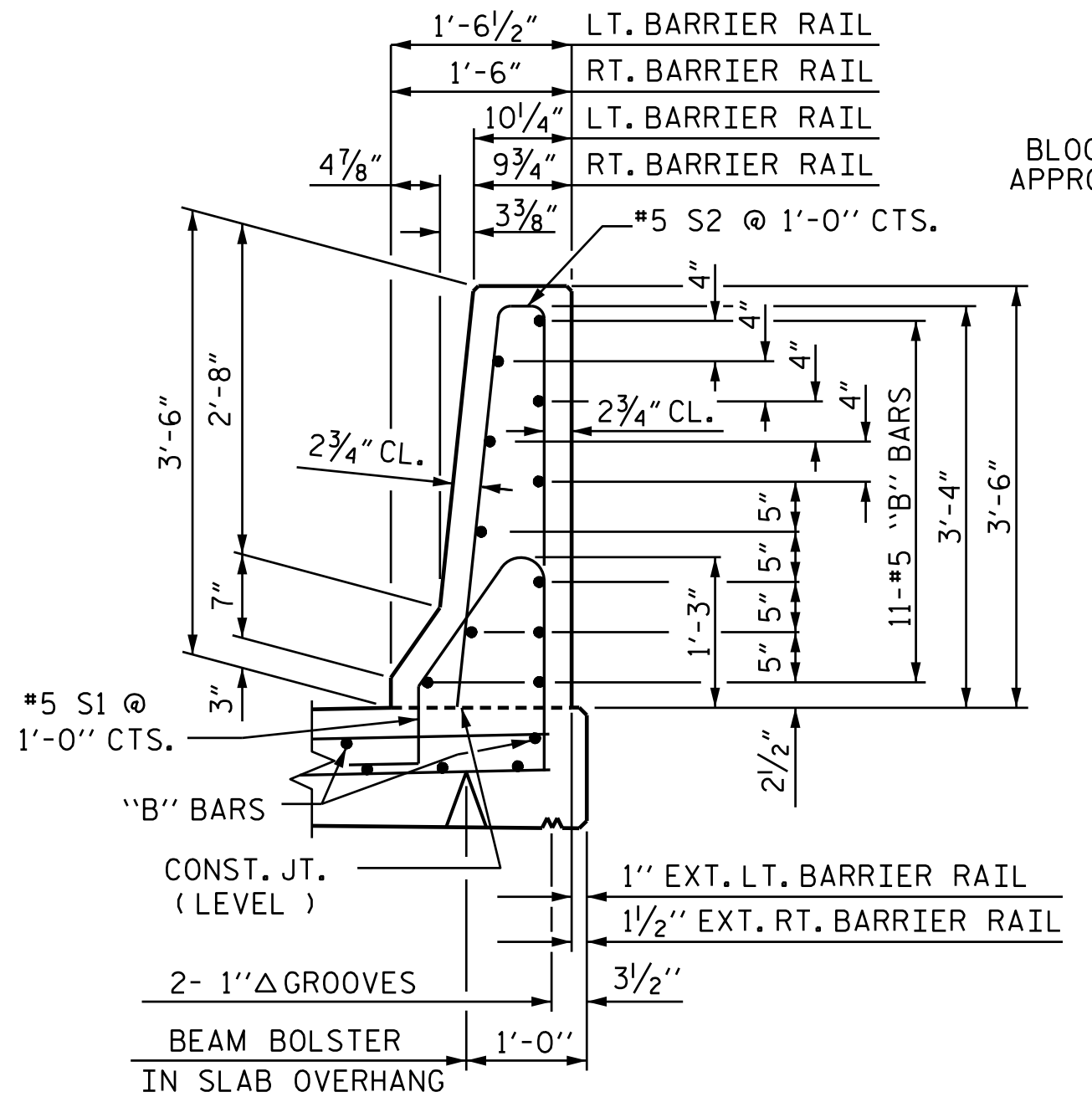
1/2" EXP. JT. MAT'L HELD IN PLACE WITH GALVANIZED NAILS.
(NOTE: OMIT EXP. JT. MAT'L. WHEN SLIP FORM IS USED.)



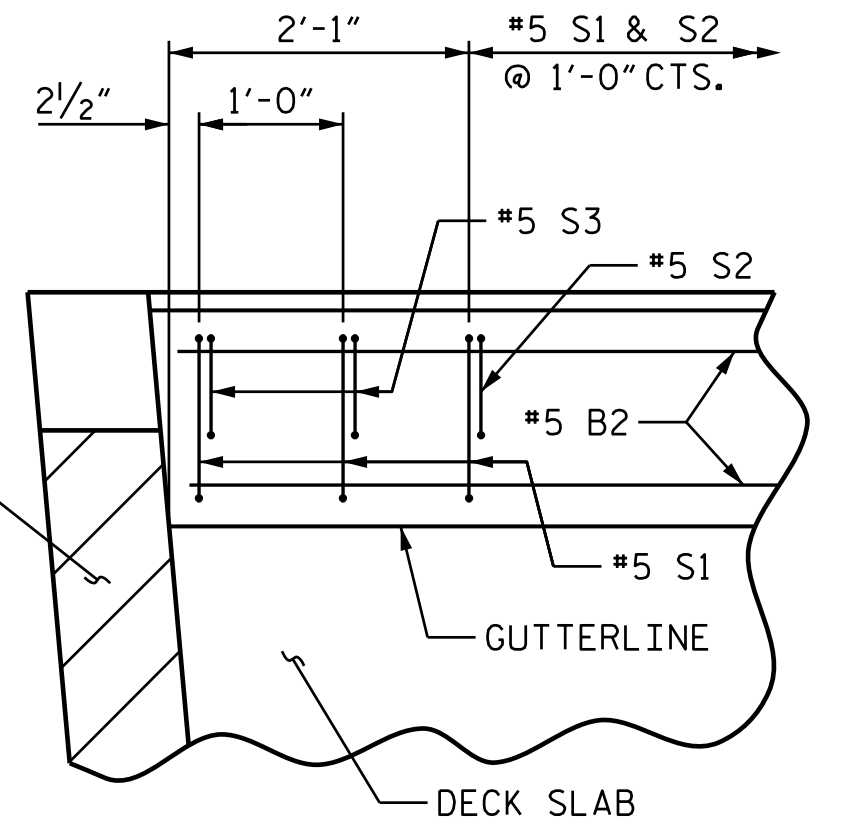
ELEVATION AT EXPANSION JOINTS



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



SECTION THRU RAIL



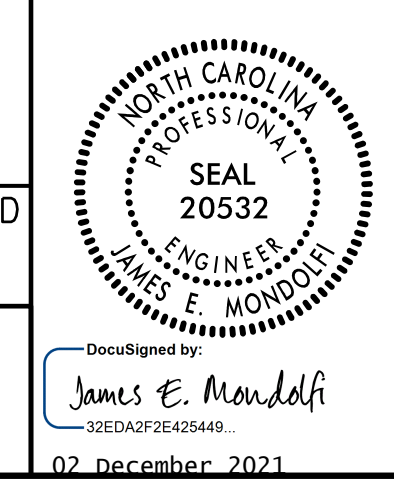
DETAIL A

ALL CORNERS SIMILAR

PROJECT NO. B-5353
GUILFORD COUNTY
STATION: 23+62.87 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
CONCRETE BARRIER RAIL
(LEFT LANE)

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DRAWN BY: J. T. WILLIAMS DATE: 1-2020
 CHECKED BY: J. E. MONDOLFI DATE: 1-2020
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 1-2020

NOTES

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

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

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

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

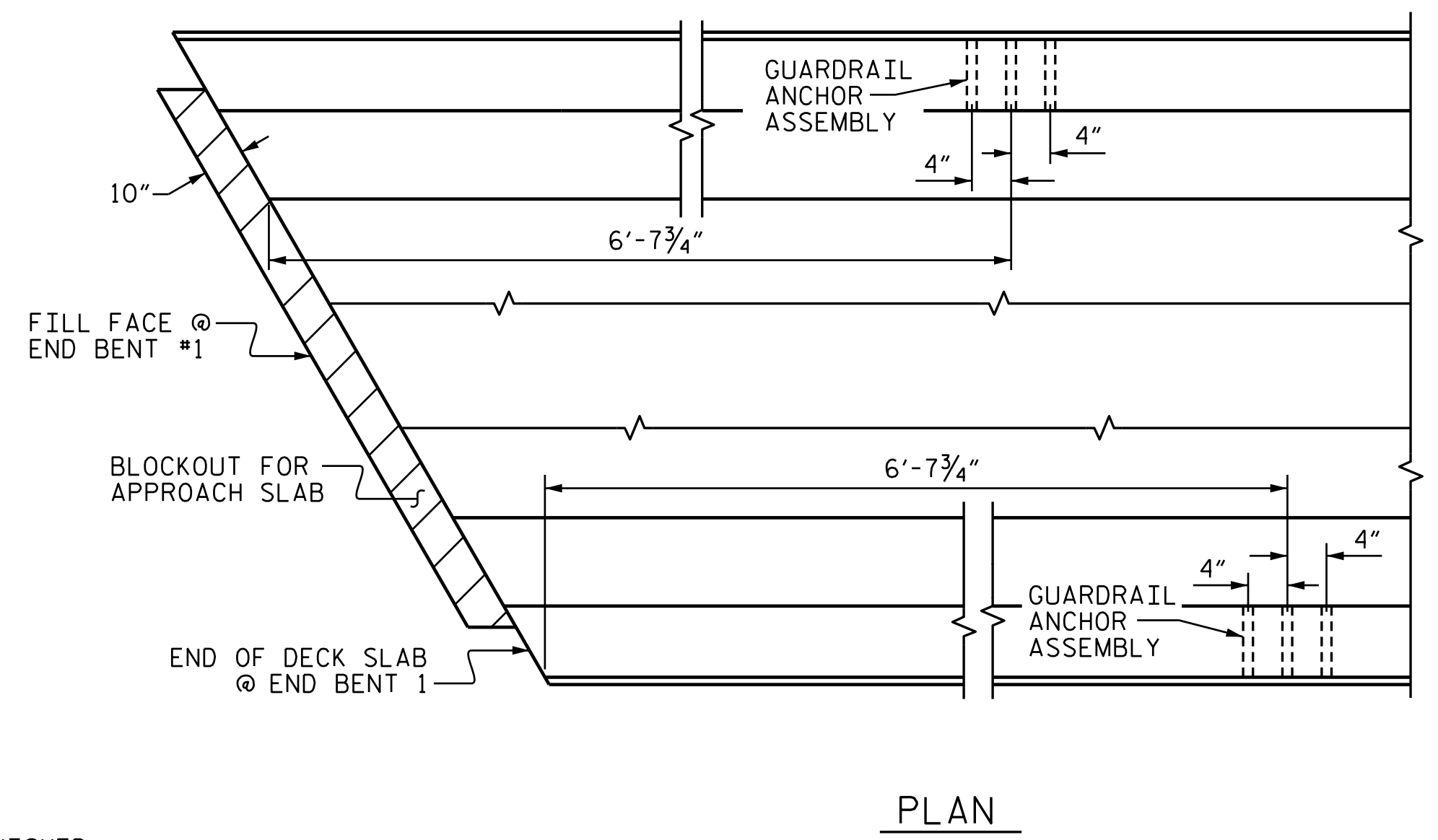
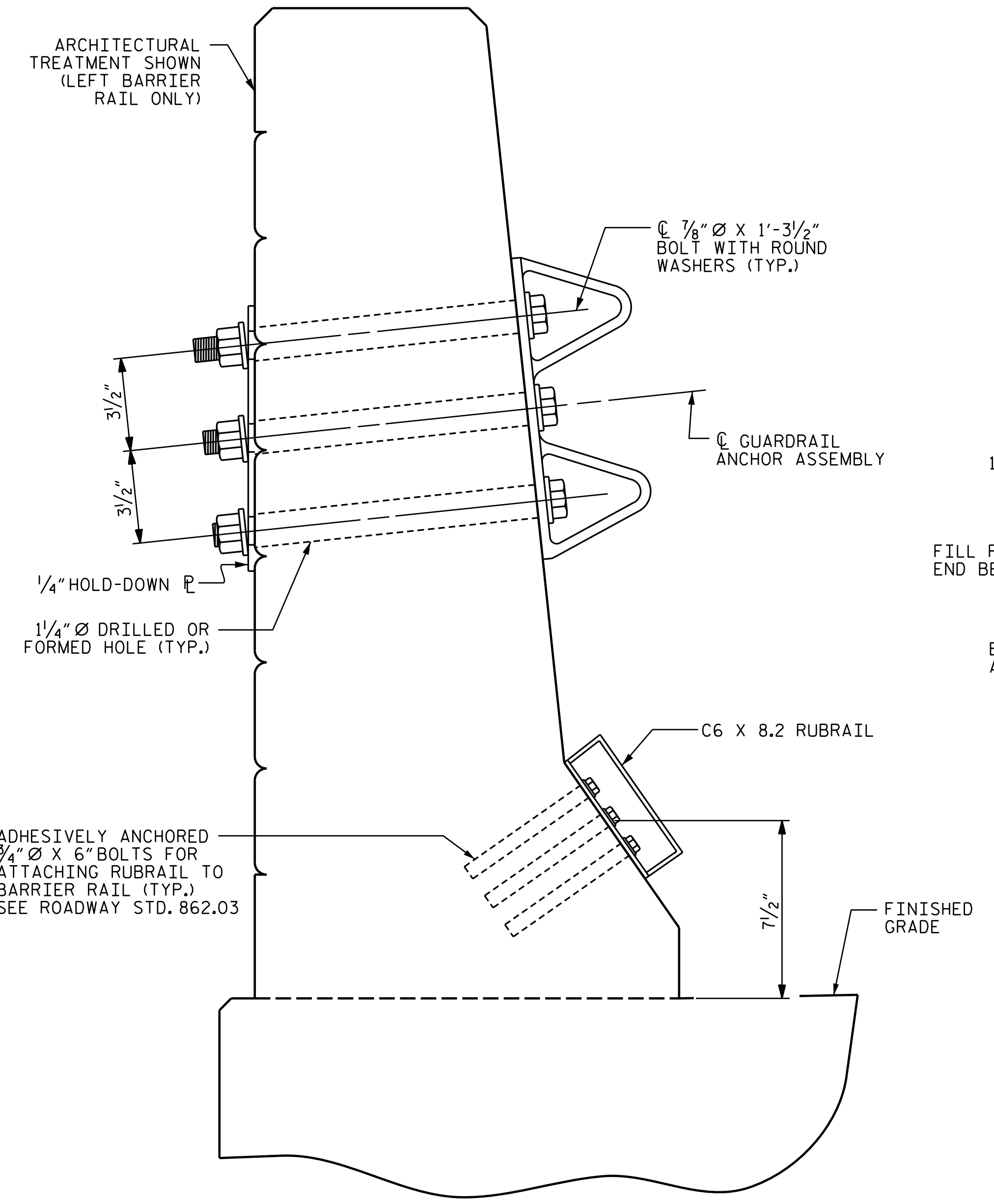
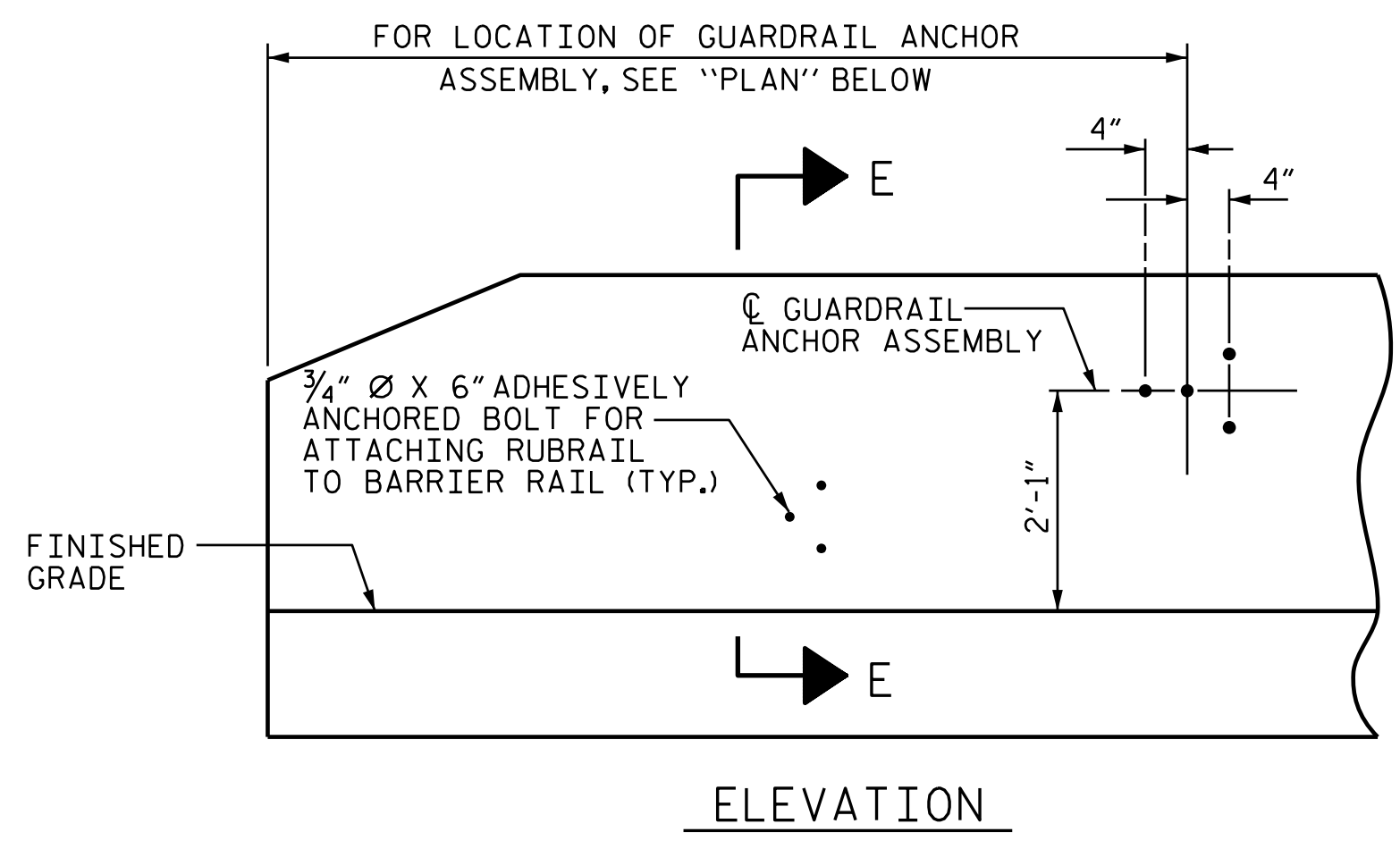
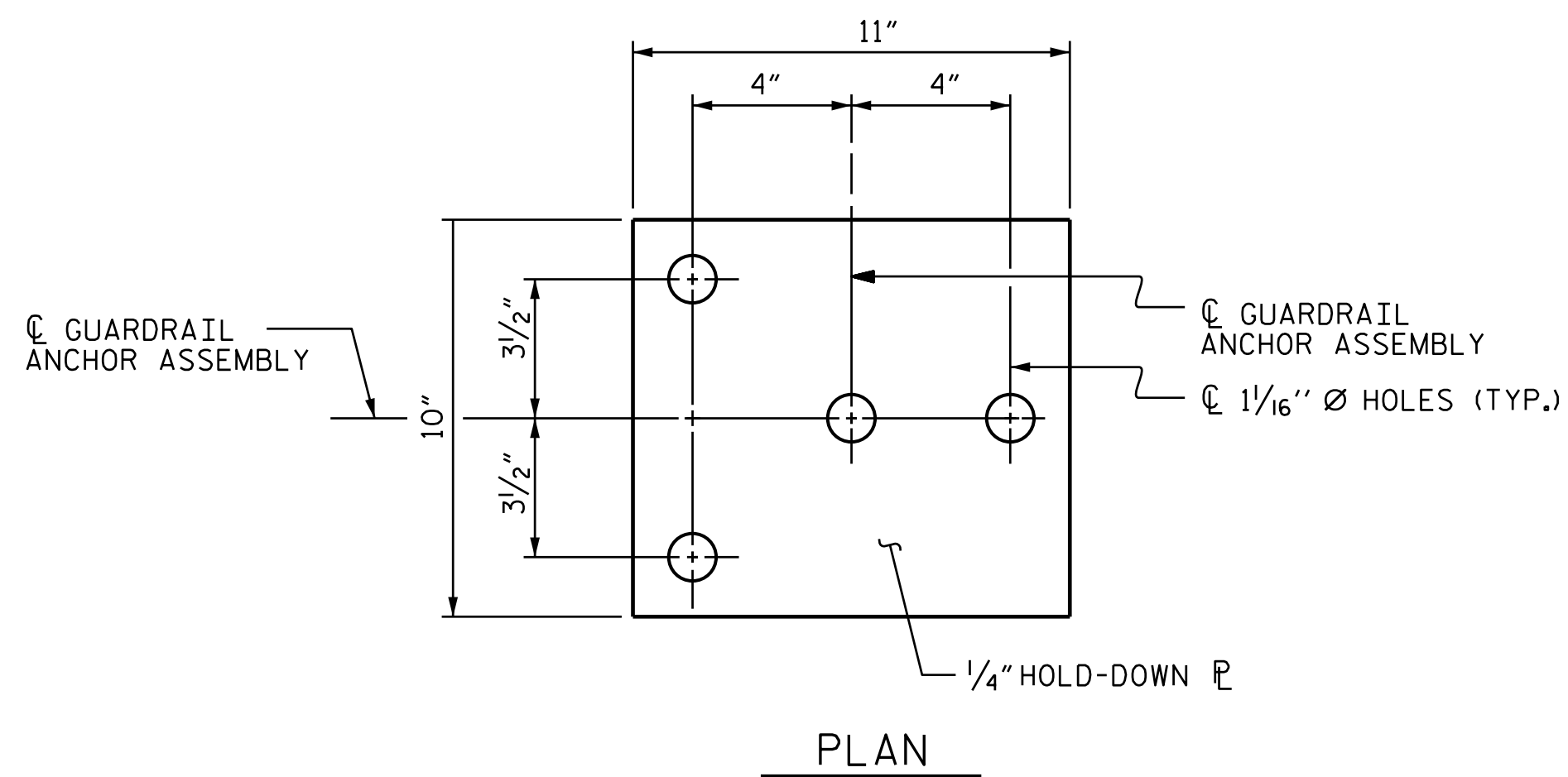
AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.

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

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

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

PAINT HOLD-DOWN PLATE AND EXPOSED ENDS OF ANCHOR BOLTS, NUTS AND WASHERS TO MATCH COATING ON THE LEFT BARRIER RAIL. SEE SPECIAL PROVISIONS.



SKETCH SHOWING POINTS OF ATTACHMENTS

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

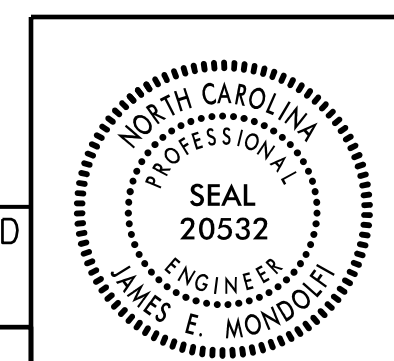
LOCATION OF ANCHORS FOR GUARDRAIL

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

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GUILFORD COUNTY
 STATION: 23+62.87 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
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GUARDRAIL ANCHORAGE
 FOR BARRIER RAIL
 (LEFT LANE)



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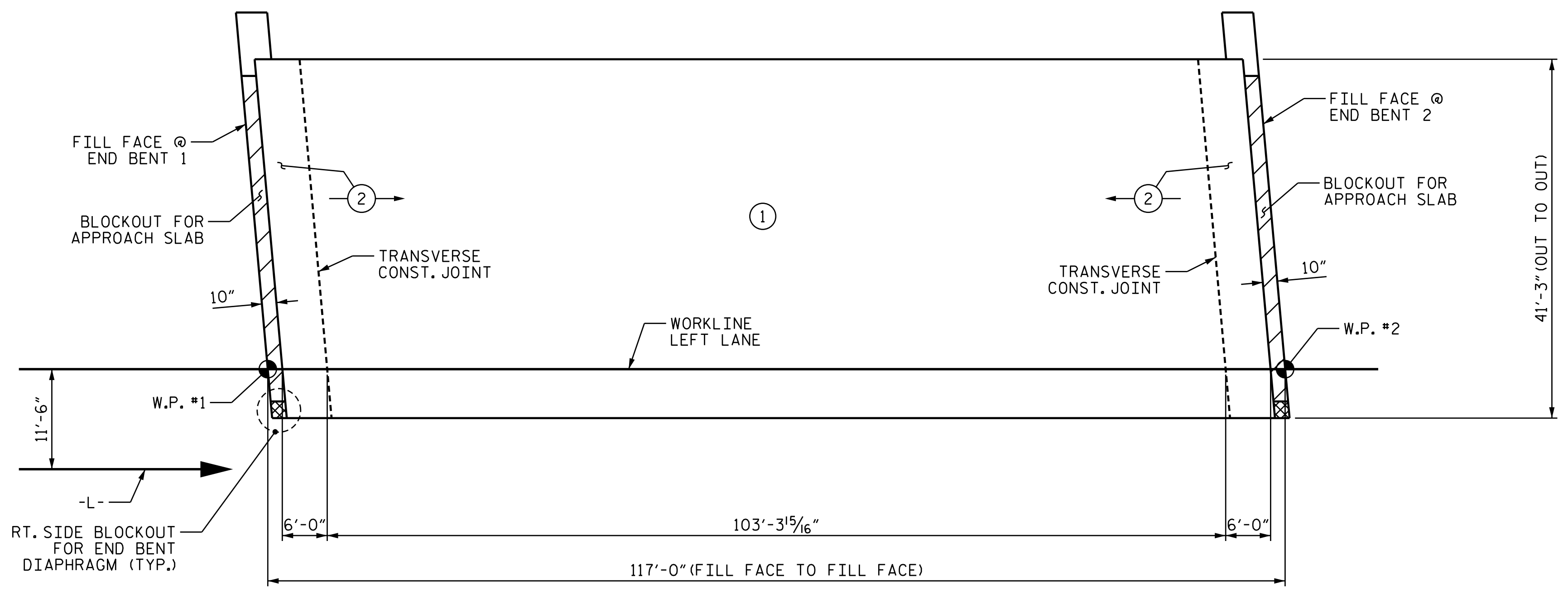
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DocuSigned by:
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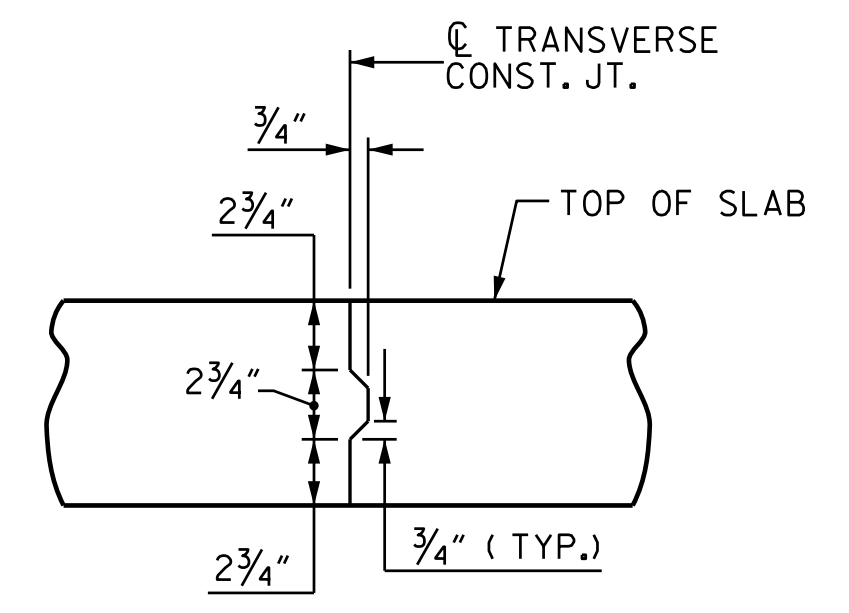
DRAWN BY: M. L. MARLEY DATE: 11-2019
 CHECKED BY: J. E. MONDOLFI DATE: 4-2020
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 4-2020



POURING SEQUENCE AND LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB

(4,757 SF)

← ⊕ = INDICATES POUR NUMBER AND DIRECTION OF POUR

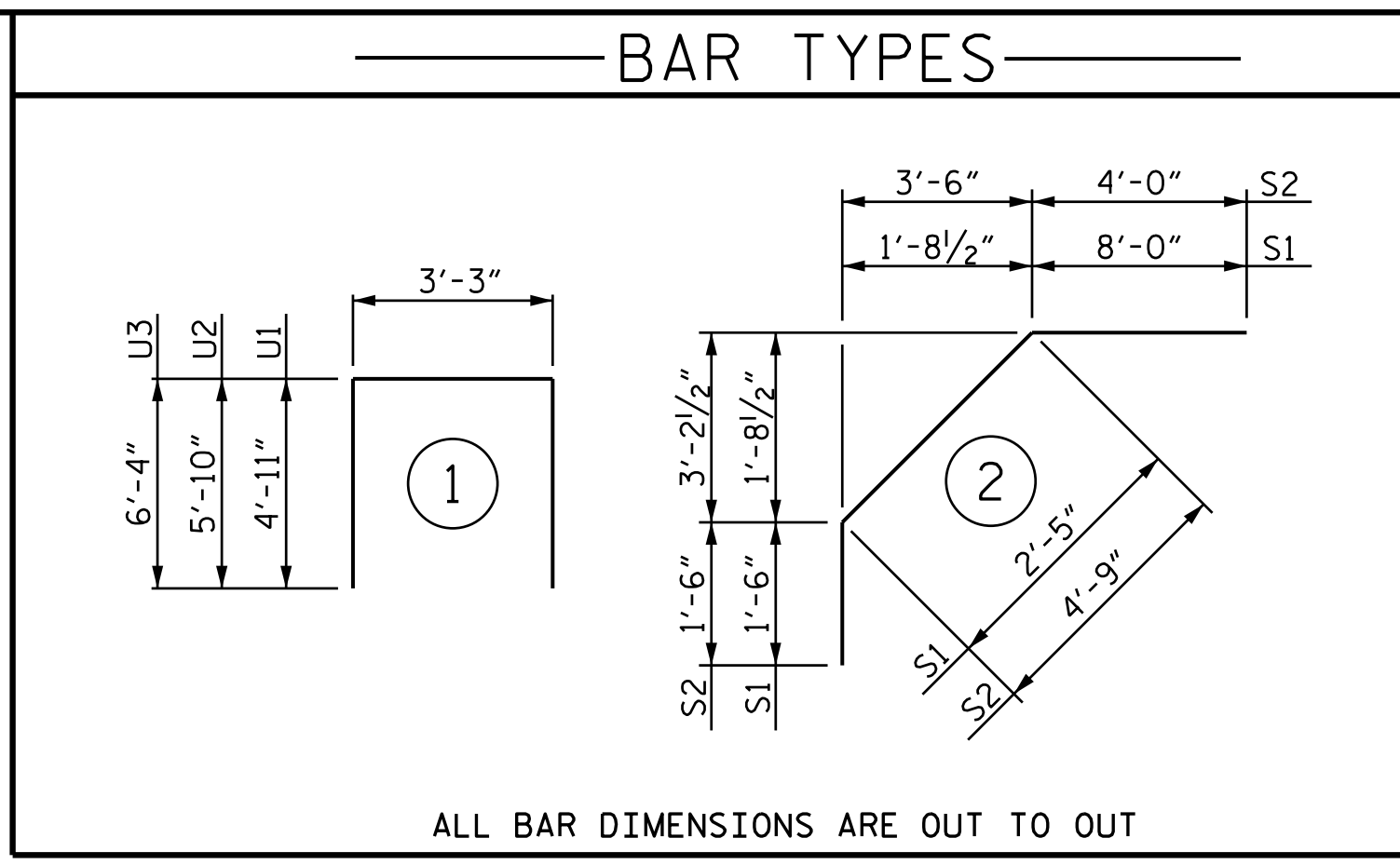


**TRANSVERSE CONSTRUCTION JOINT
DETAIL**

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

GROOVING BRIDGE FLOORS

APPROACH SLABS	1,704	SO.FT.
BRIDGE DECK	4,037	SO.FT.
TOTAL	5,741	SO.FT.



ALL BAR DIMENSIONS ARE OUT TO OUT

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

BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPET, AND BARRIER RAIL		APPROACH SLABS		PARAPET AND BARRIER RAIL
	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"	—	—	—

— SUPERSTRUCTURE BILL OF MATERIAL —

	CLASS AA CONCRETE (CU. YDS.)	REINFORCING STEEL (LBS.)	EPOXY COATED REINFORCING STEEL (LBS.)
SPAN A		13,550	16,191
POUR 1	130.9		
POUR 2	78.7		
TOTALS**	209.6	13,550	16,191

**QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED

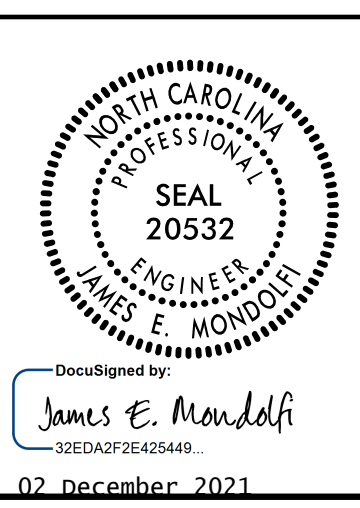
BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	191	#5	STR	40'-11"	8151
A2	191	#5	STR	40'-11"	8151
*A101	2	#5	STR	36'-10"	77
*A102	2	#5	STR	30'-4"	63
*A103	2	#5	STR	23'-9"	50
*A104	2	#5	STR	17'-3"	36
*A105	2	#5	STR	10'-9"	22
*A106	2	#5	STR	4'-3"	9
A201	2	#5	STR	36'-10"	77
A202	2	#5	STR	30'-4"	63
A203	2	#5	STR	23'-9"	50
A204	2	#5	STR	17'-3"	36
A205	2	#5	STR	10'-9"	22
A206	2	#5	STR	4'-3"	9
*B1	164	#6	STR	23'-0"	5666
*B2	56	#4	STR	38'-4"	1434
B3	60	#5	STR	58'-6"	3661
K1	24	#4	STR	24'-3"	389
K2	8	#4	STR	6'-0"	32
K3	32	#4	STR	7'-7"	162
K4	8	#4	STR	7'-3"	39
K5	2	#4	STR	2'-2"	3
K6	8	#4	STR	3'-0"	16
K7	2	#4	STR	1'-6"	2
K8	2	#4	STR	7'-7"	10
K9	10	#4	STR	8'-5"	56
K10	8	#4	STR	5'-0"	27
K11	4	#4	STR	6'-8"	18
*S1	48	#4	2	11'-11"	382
*S2	44	#4	2	10'-3"	301
U1	64	#4	1	13'-1"	559
U2	4	#4	1	14'-11"	40
U3	12	#4	1	15'-11"	128
REINFORCING STEEL					LBS. 13,550
*EPOXY COATED REINFORCING STEEL					LBS. 16,191

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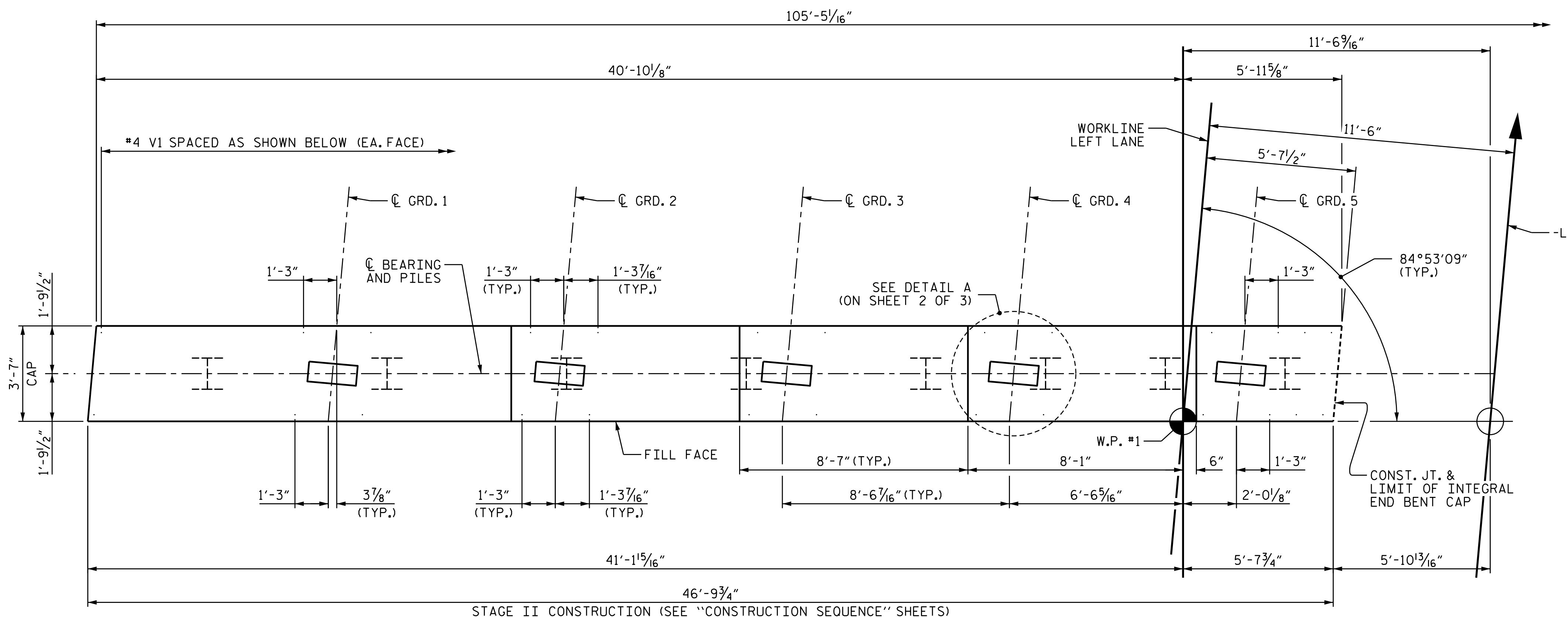


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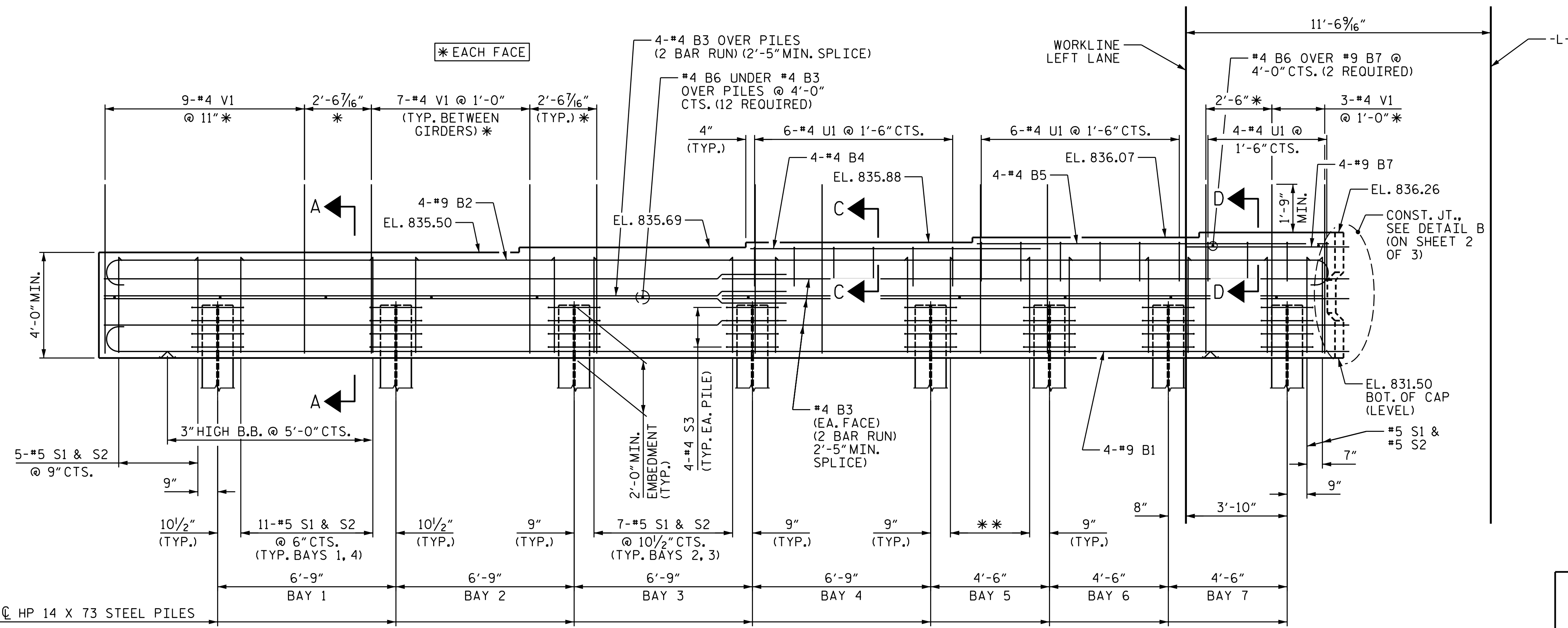
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DEPARTMENT OF TRANSPORTATION
RALEIGH

**SUPERSTRUCTURE
BILL OF MATERIAL
(LEFT LANE)**

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PLAN



ELEVATION

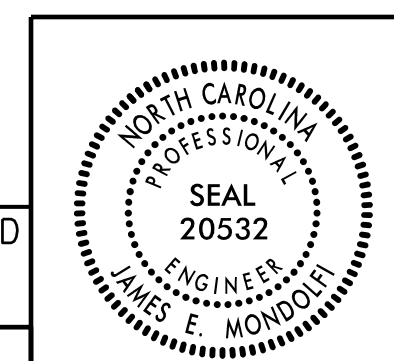
** 5-#5 S1 & S2 @ 9" CTS. (TYP. BAYS 5, 6, 7)

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GUILFORD COUNTY
 STATION: 23+62.87 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 1
 (INTEGRAL)
 (LEFT LANE)



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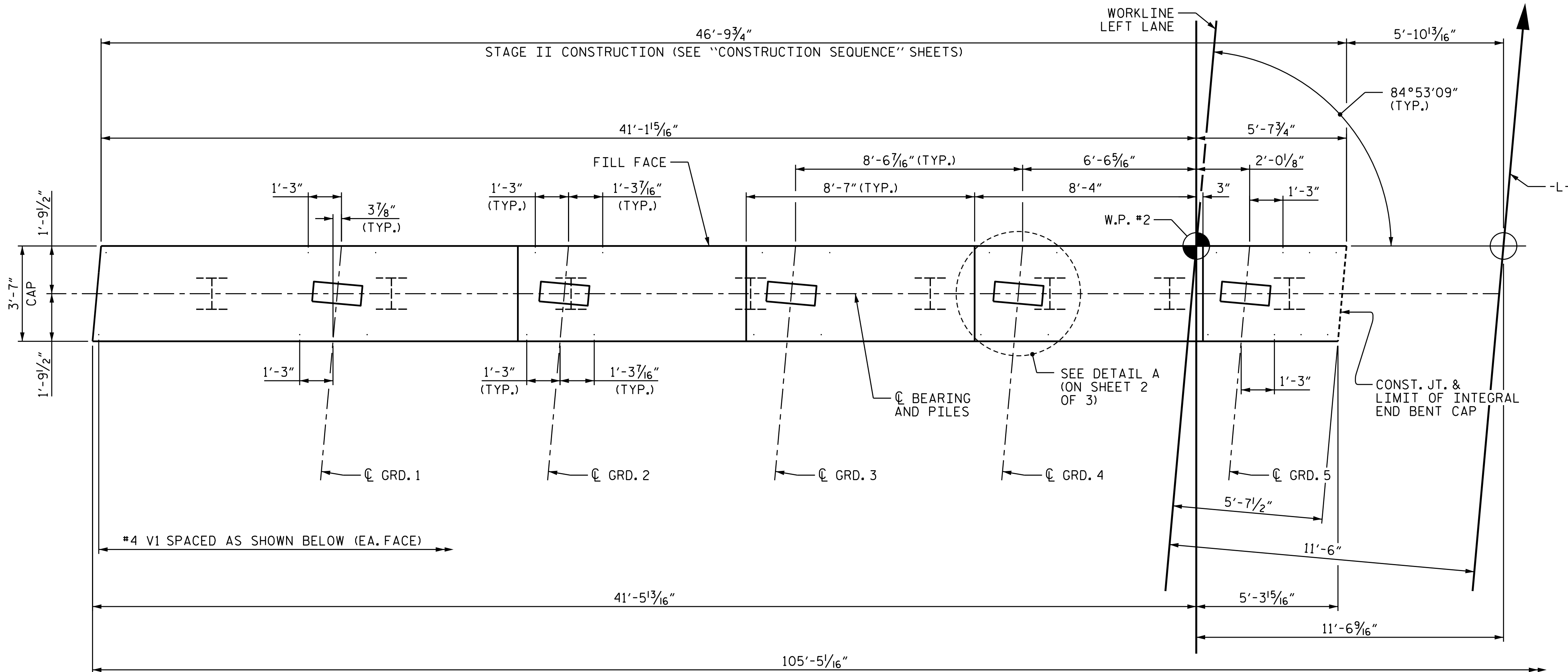
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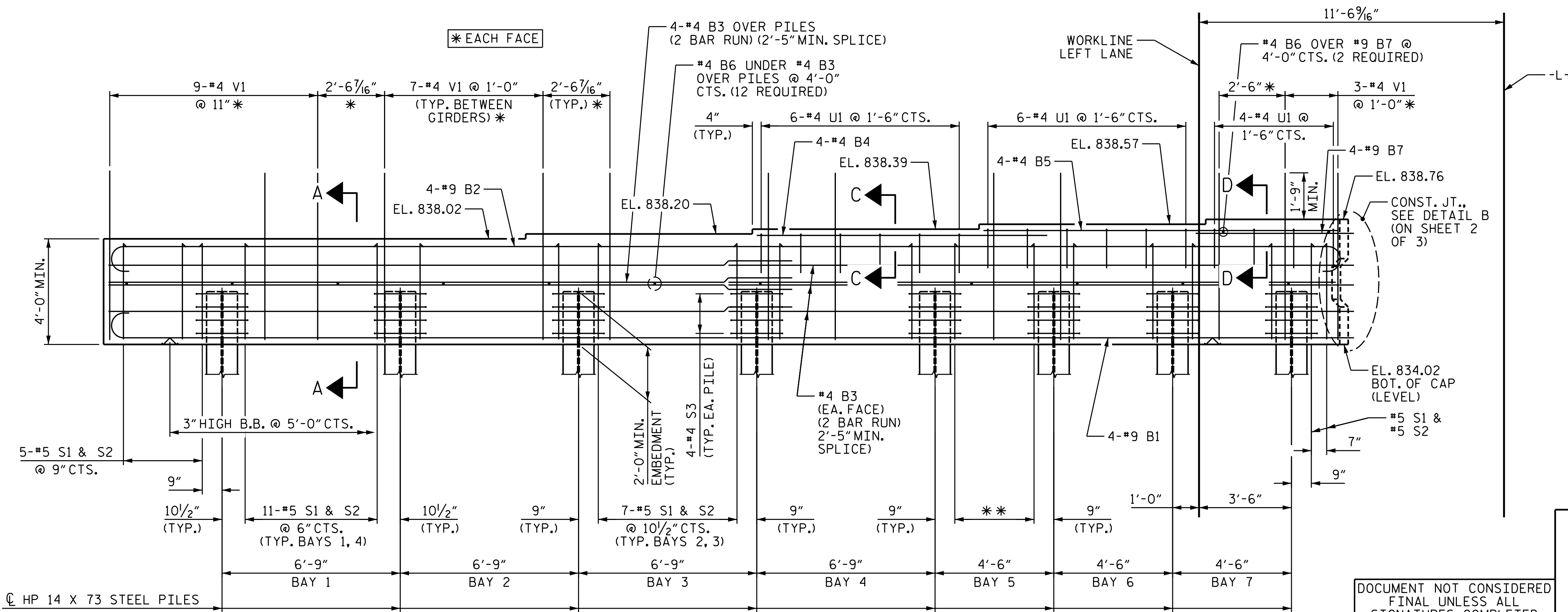
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PLAN

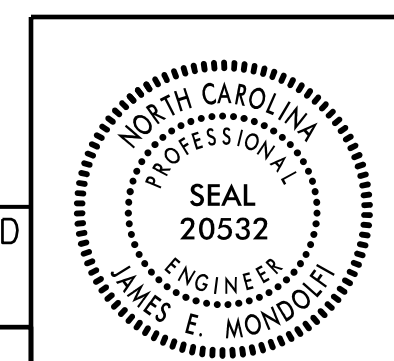


ELEVATION

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STATE OF NORTH CAROLINA
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 RALEIGH
 SUBSTRUCTURE
 END BENT 2
 (INTEGRAL)
 (LEFT LANE)



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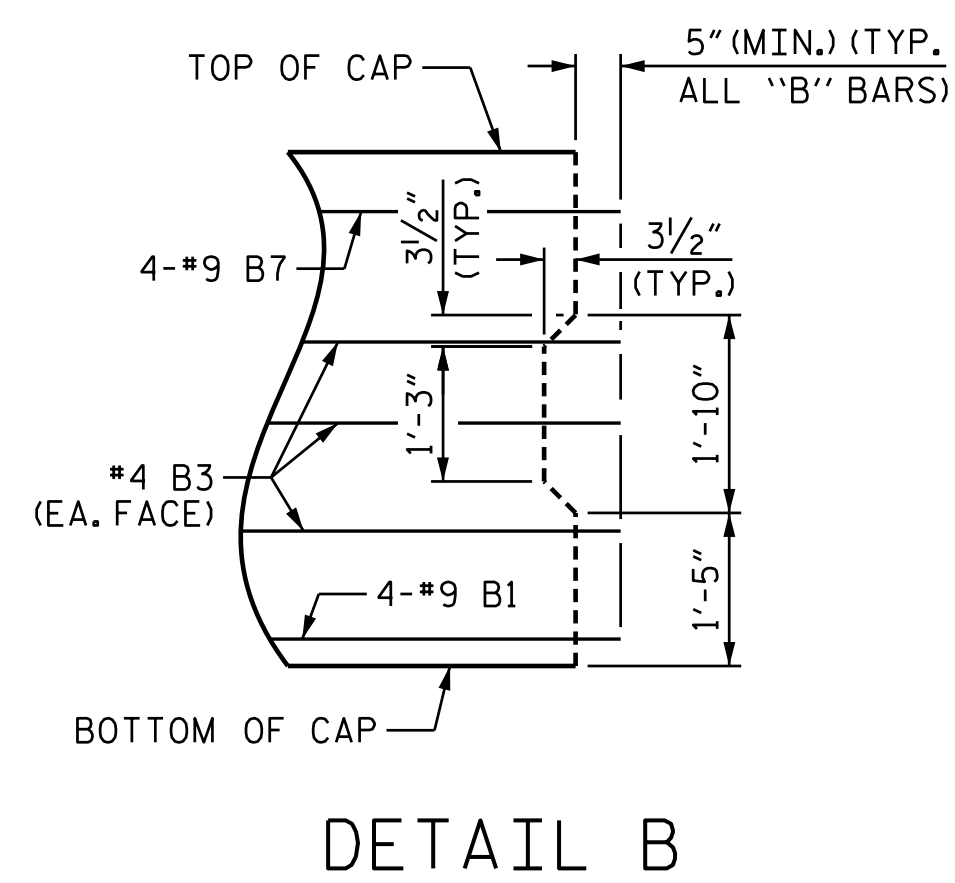
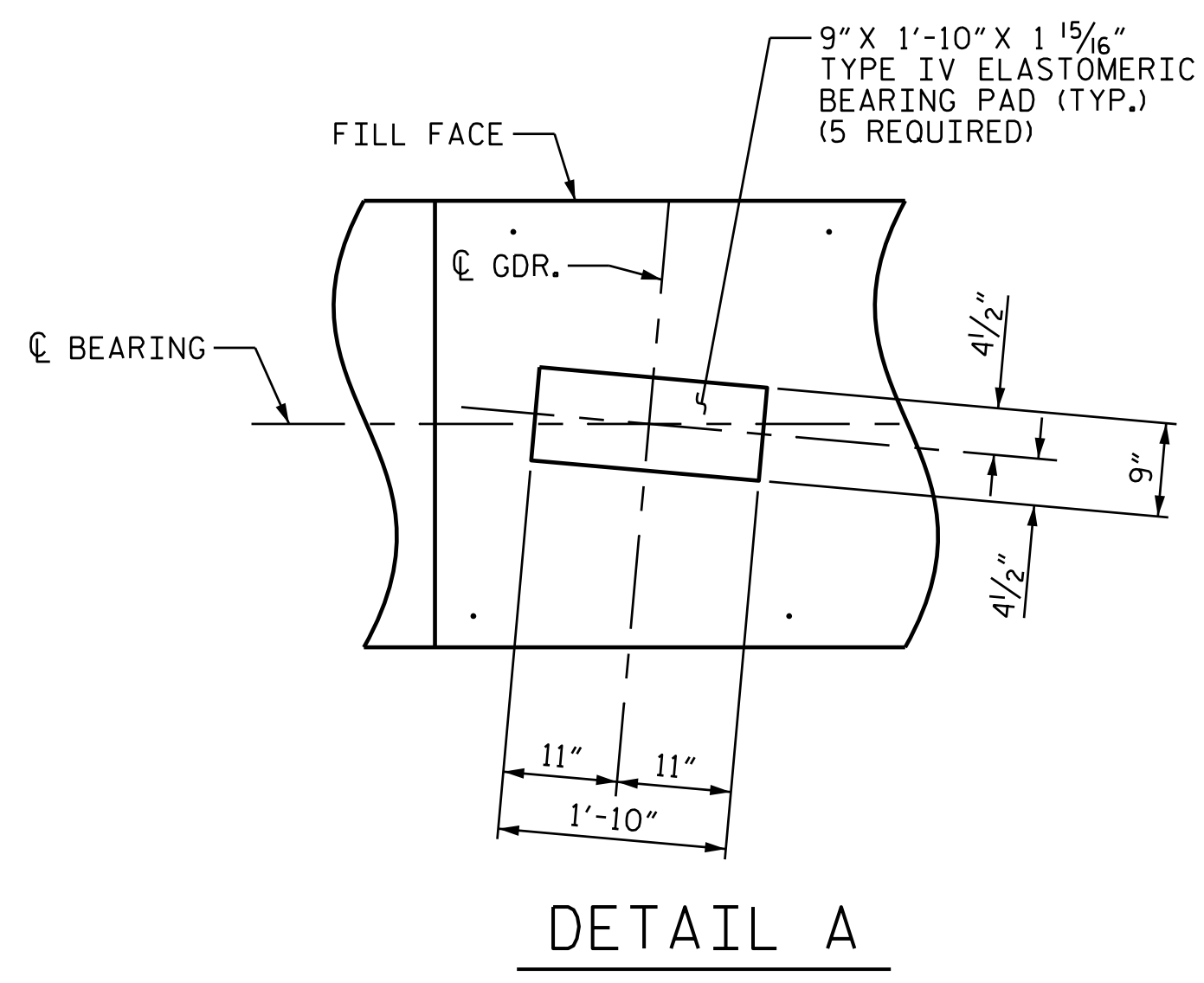
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NOTES:

SEE SUPERSTRUCTURE SHEETS FOR UPPER PART OF INTEGRAL END BENT DETAILS.
 #5 S1, #5 S2, AND #4 U1 BARS MAY BE SHIFTED SLIGHTLY TO CLEAR #4 V1.
 FOR PILE SPLICE DETAILS, SEE "END BENT DETAILS", SHEET 3 OF 3.
 THE TOP SURFACE OF THE END BENT CAP, EXCLUDING THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4".
 THE END BENT IS DETAILED TO FIT WITH MSE WALL COPING DETAIL A AS SHOWN ON THE SLOPE PROTECTION DETAIL SHEET. COORDINATE WITH THE MSE WALL FABRICATOR FOR COPING DETAIL TO BE USED. CONTRACTOR SHALL VERIFY REQUIRED LENGTH BASED ON FINAL LOCATION OF MSE WALL. BAR LENGTHS AND BAR POSITIONS SHALL BE ADJUSTED TO FIT.

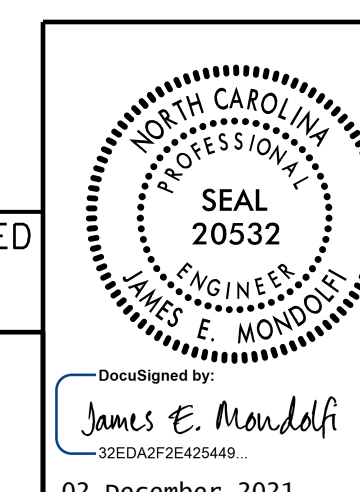
PROJECT NO. B-5353
GUILFORD COUNTY
 STATION: 23+62.87 -L-

SHEET 2 OF 3

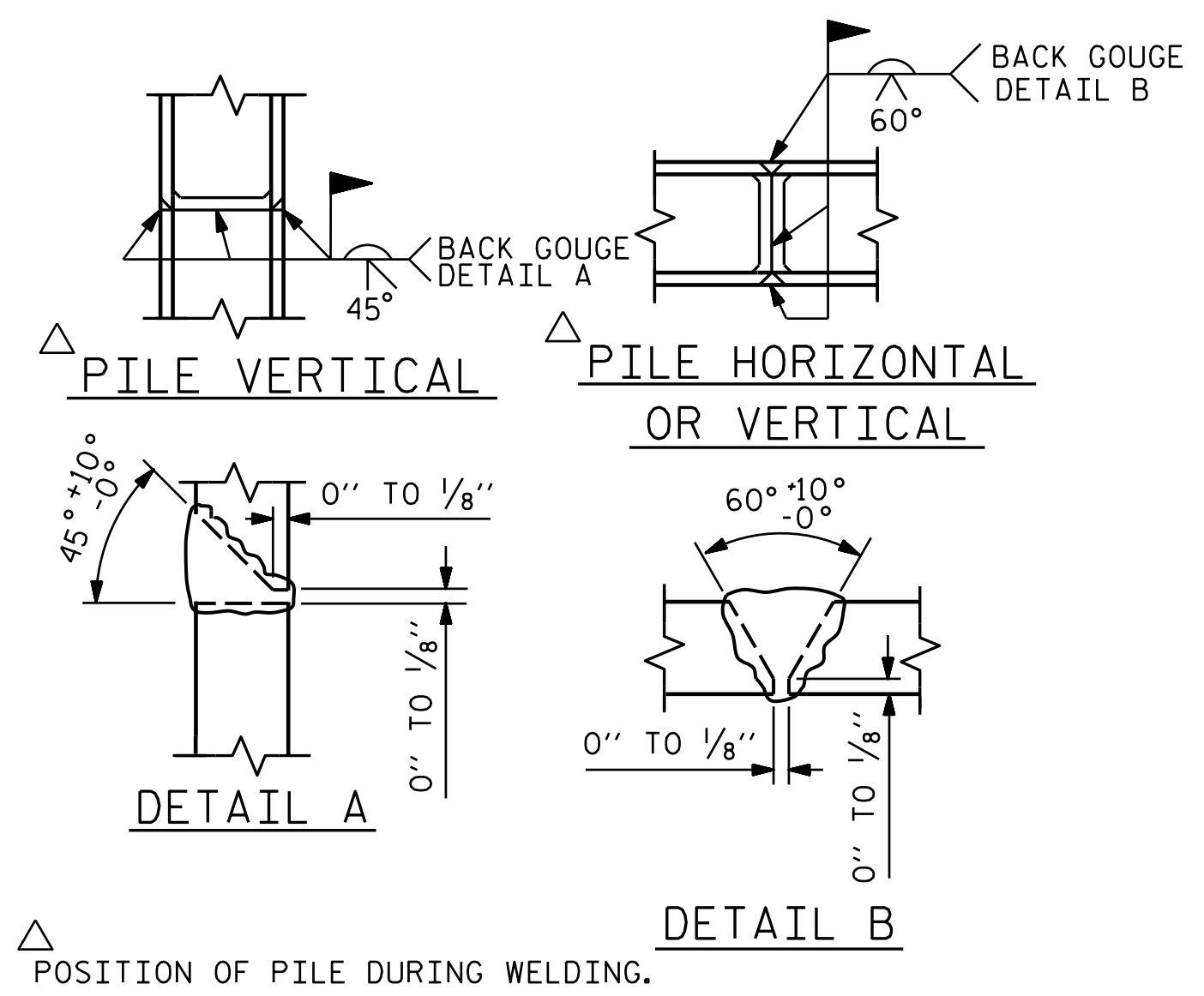
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE					
END BENT 2 (INTEGRAL)					
(LEFT LANE)					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 26

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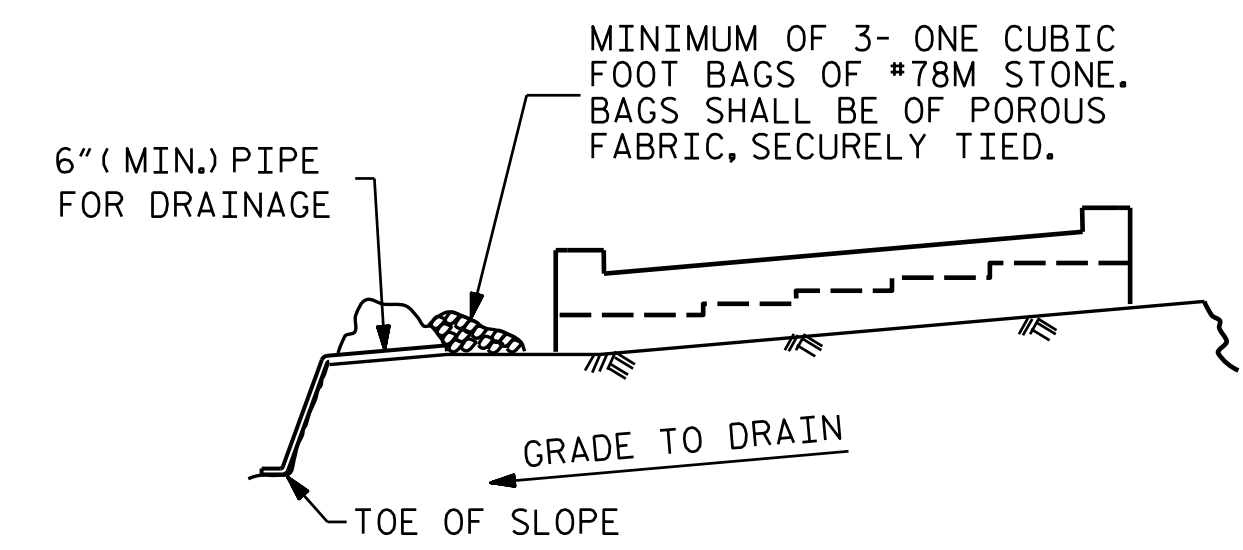
PLANS PREPARED BY:
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 (919) 552-2253
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 LICENSE NO. F-0669



DRAWN BY: J. T. WILLIAMS DATE: 4-2020
 CHECKED BY: J. E. MONDOLFI DATE: 4-2020
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 4-2020



PILE SPLICE DETAILS

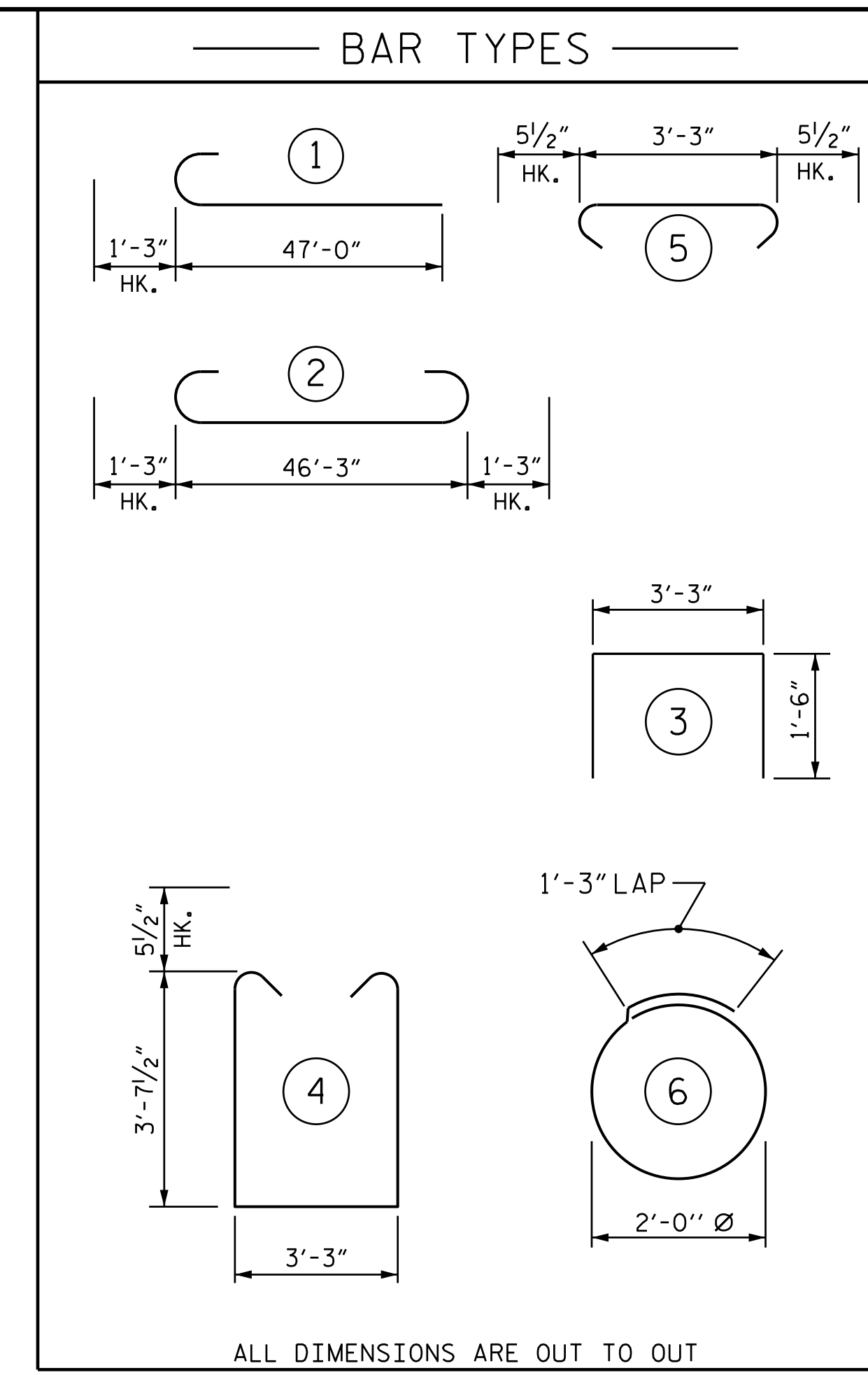


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

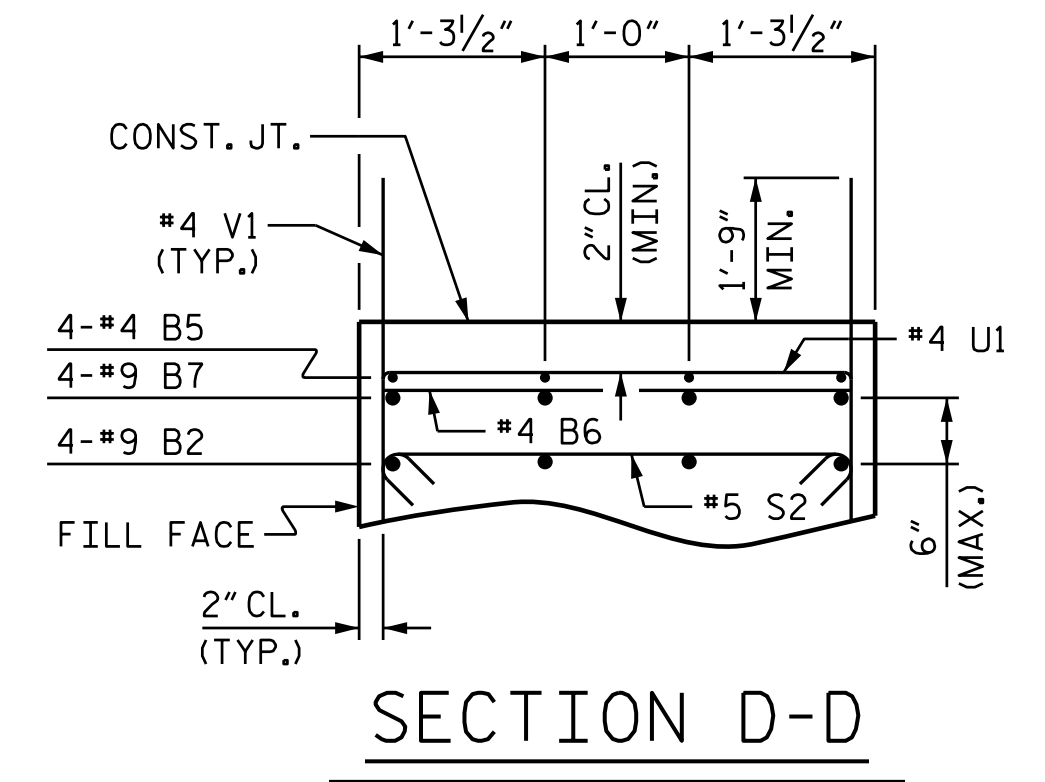
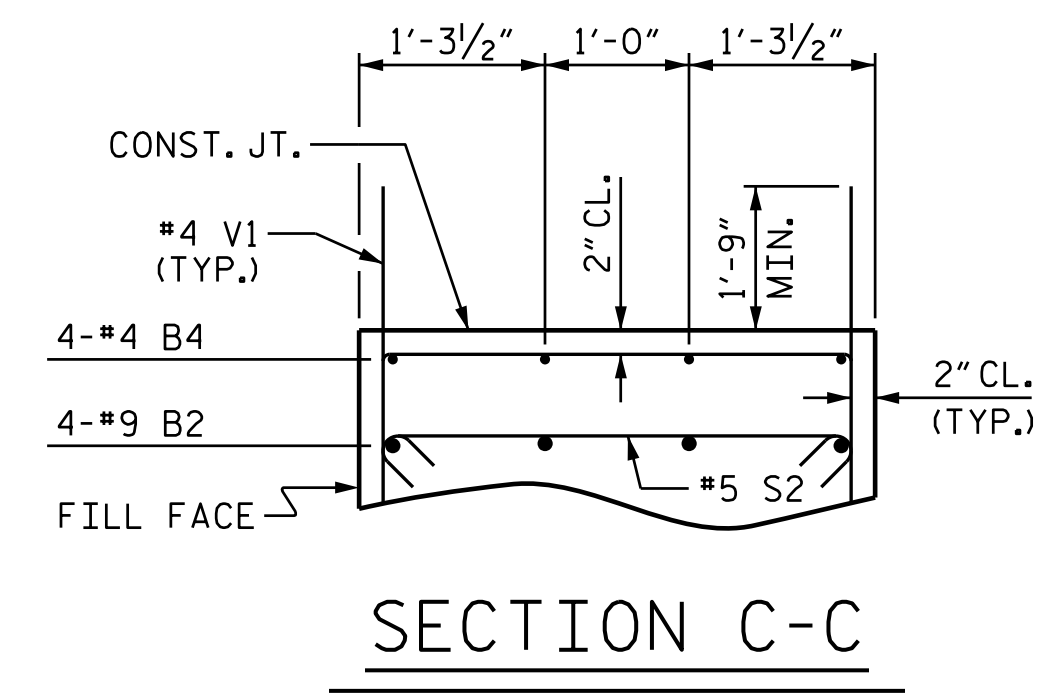
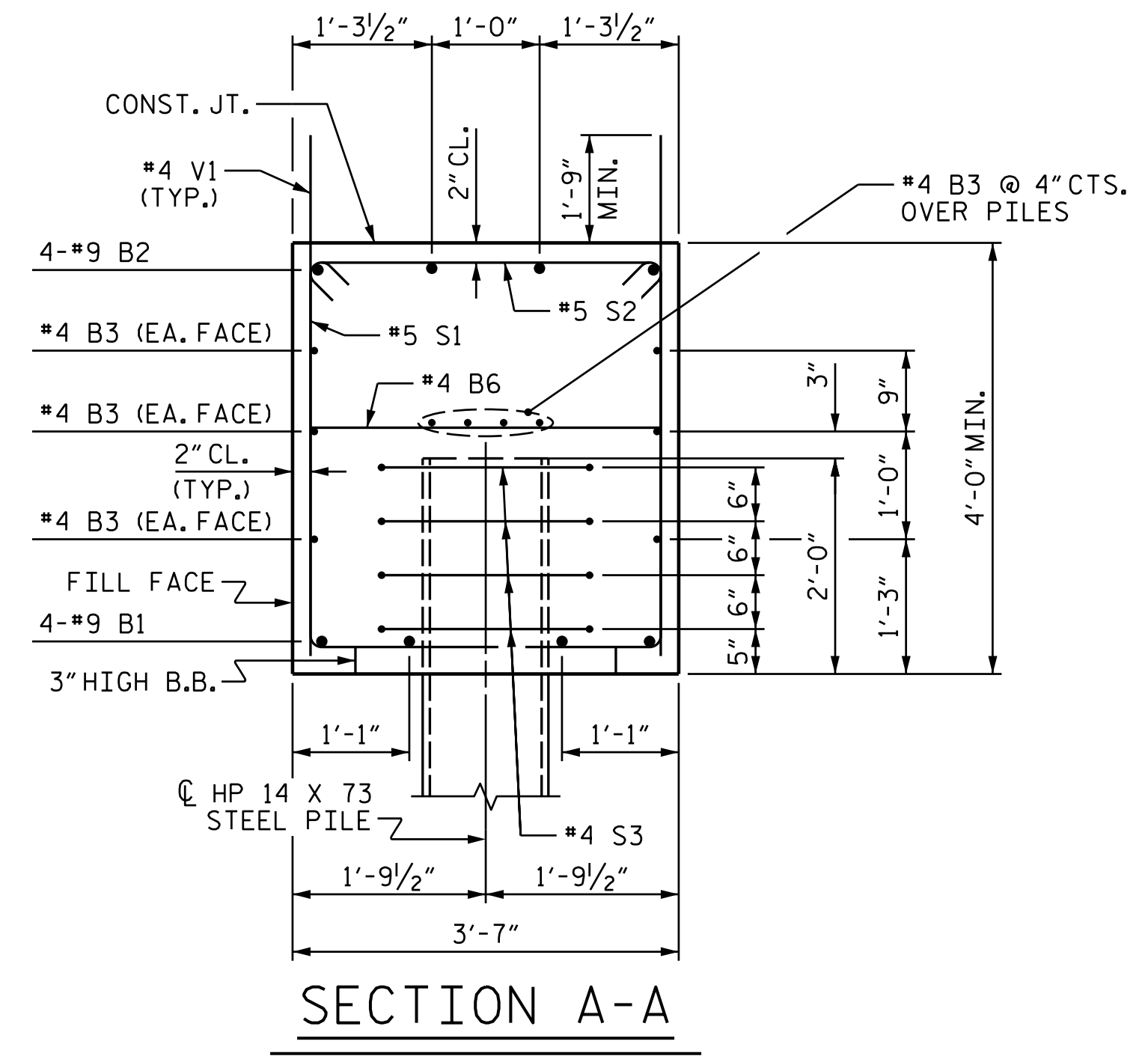
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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



BILL OF MATERIAL					
END BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#9	1	48'-3"	656
B2	4	#9	2	48'-9"	663
B3	20	#4	STR.	24'-9"	331
B4	4	#4	STR.	11'-0"	29
B5	4	#4	STR.	13'-4"	36
B6	14	#4	STR.	3'-3"	30
B7	4	#9	STR.	6'-1"	83
S1	56	#5	4	11'-5"	667
S2	56	#5	5	4'-2"	243
S3	32	#4	6	7'-7"	162
U1	16	#4	3	6'-3"	67
V1	80	#4	STR.	6'-4"	338
REINFORCING STEEL				=	3,305 LBS.
CLASS A CONCRETE BREAKDOWN					
POUR #1 CAP					26.6 C.Y.
TOTAL CLASS A CONCRETE					26.6 C.Y.
HP 14 X 73 STEEL PILES:					
NO. 8				200 LIN. FT.	
STEEL PILE POINTS				8 EA.	
PILE DRIVING EQUIPMENT SETUP FOR HP 14 X 73 STEEL PILES				NO. 8	

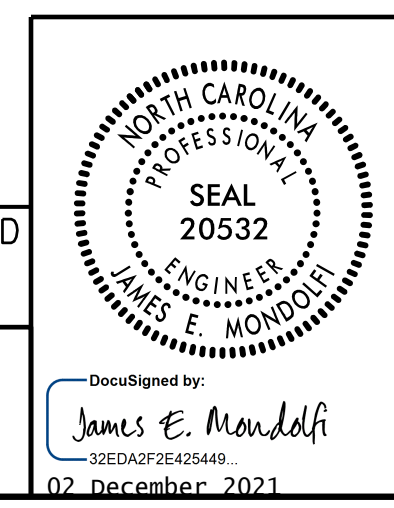


PROJECT NO. B-5353
GUILFORD COUNTY
 STATION: 23+62.87 -L-
 SHEET 3 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT 2 (INTEGRAL) (LEFT LANE)					
REVISIONS					SHEET NO.
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1			3		
2			4		
					TOTAL SHEETS 26

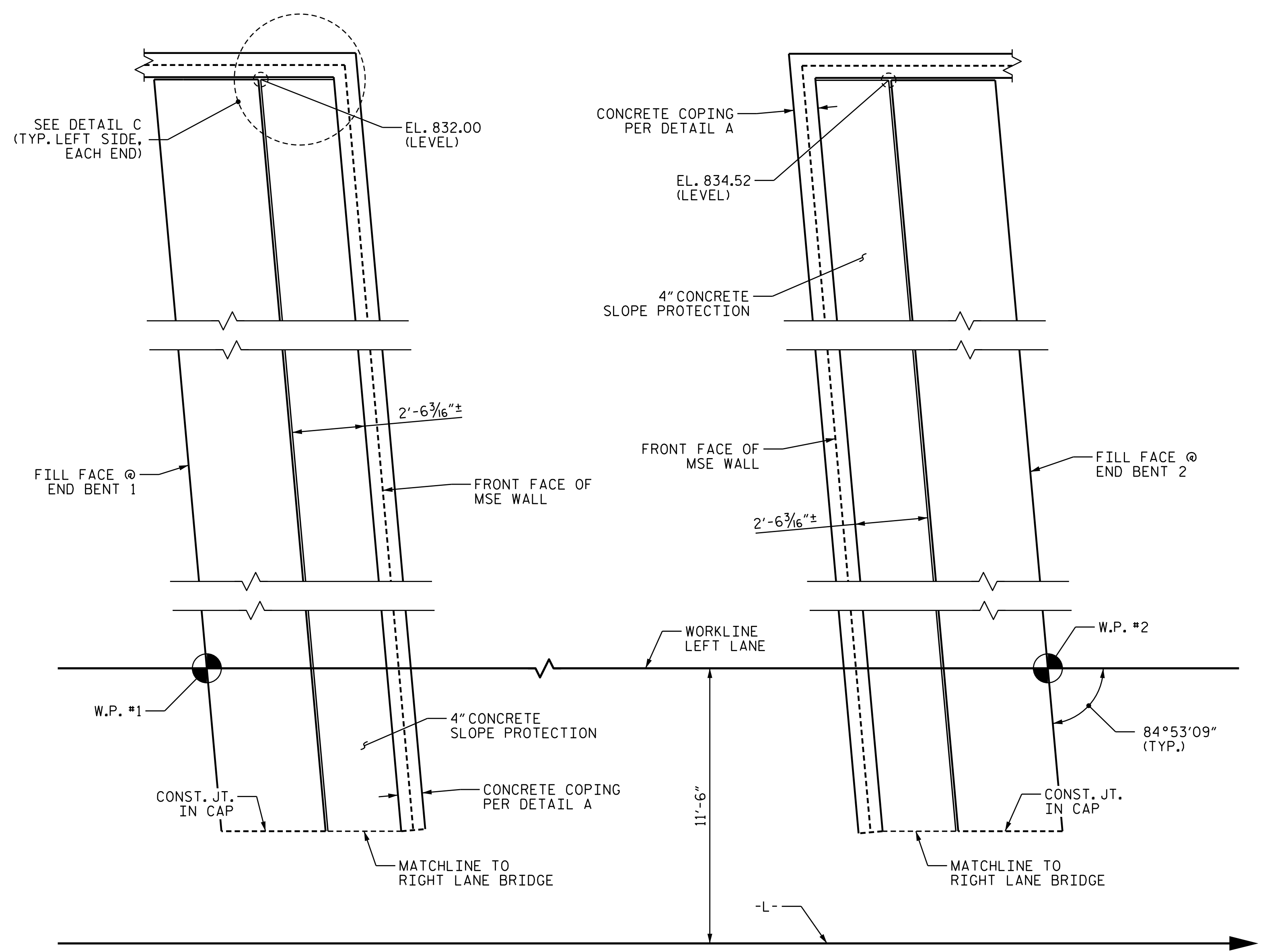
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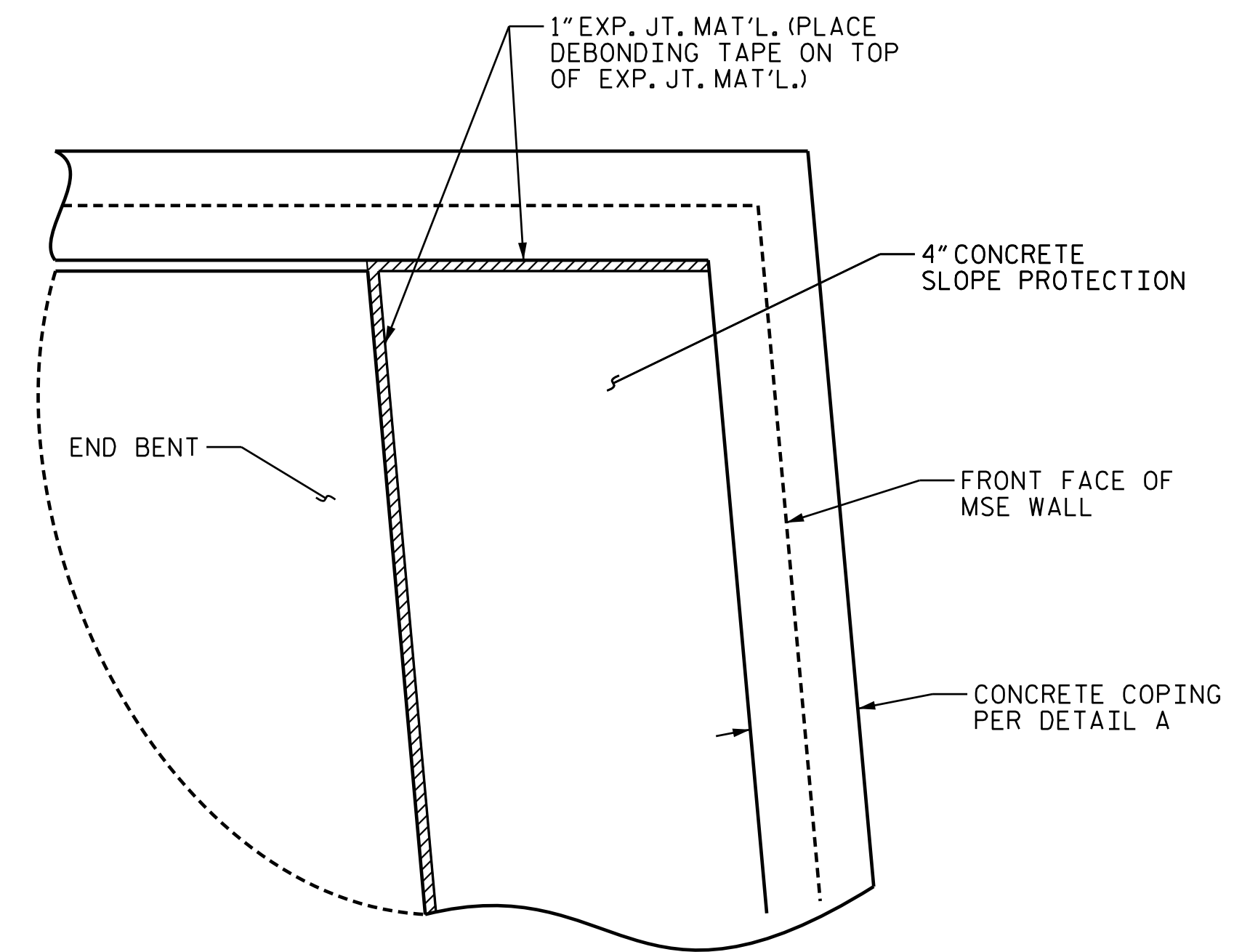
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DRAWN BY: J. T. WILLIAMS DATE: 4-2020
 CHECKED BY: J. E. MONDOLFI DATE: 4-2020
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 4-2020

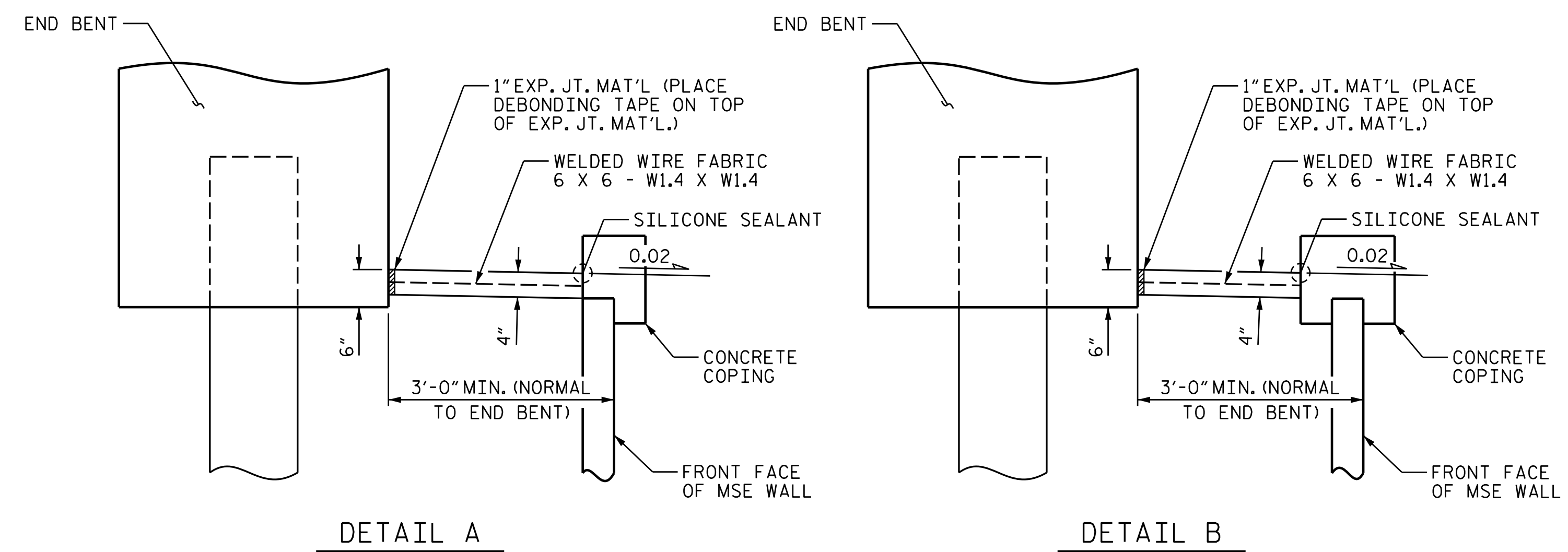


PLAN

ELEVATIONS SHOWN ARE AT TOP OF SLOPE PROTECTION AT FACE OF END BENT



DETAIL C



DETAIL A

DETAIL B

COPING DETAILS

THE CONTRACTOR HAS THE OPTION OF USING COPING IN DETAILS A OR B, SEE MSE END BENT WALLS TYPICAL SECTION

NOTES:

SLOPE PROTECTION SHALL CONSIST OF 4\"/>

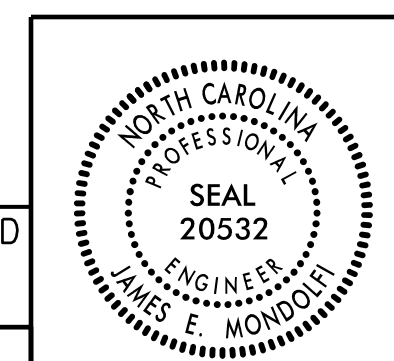
THE SLOPE PROTECTION IS DETAILED TO FIT WITH THE MSE WALL COPING DETAIL A, IF MSE WALL COPING DETAIL B IS USED, SLOPE PROTECTION SHALL BE ADJUSTED TO FIT. COORDINATE WITH THE MSE WALL FABRICATOR FOR ACTUAL WALL THICKNESS AND COPING TO BE USED. ADJUST SLOPE PROTECTION QUANTITIES AS NECESSARY TO FIT COPING USED.

BRIDGE @	4 INCH SLOPE PROTECTION	WELDED WIRE FABRIC
23+62.87 -L-	SQUARE YARDS	APPROX. L.F.
END BENT 1	14	47
END BENT 2	14	47

PROJECT NO. B-5353
GUILFORD COUNTY
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STATE OF NORTH CAROLINA
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 RALEIGH

CONCRETE SLOPE PROTECTION
 (LEFT LANE)



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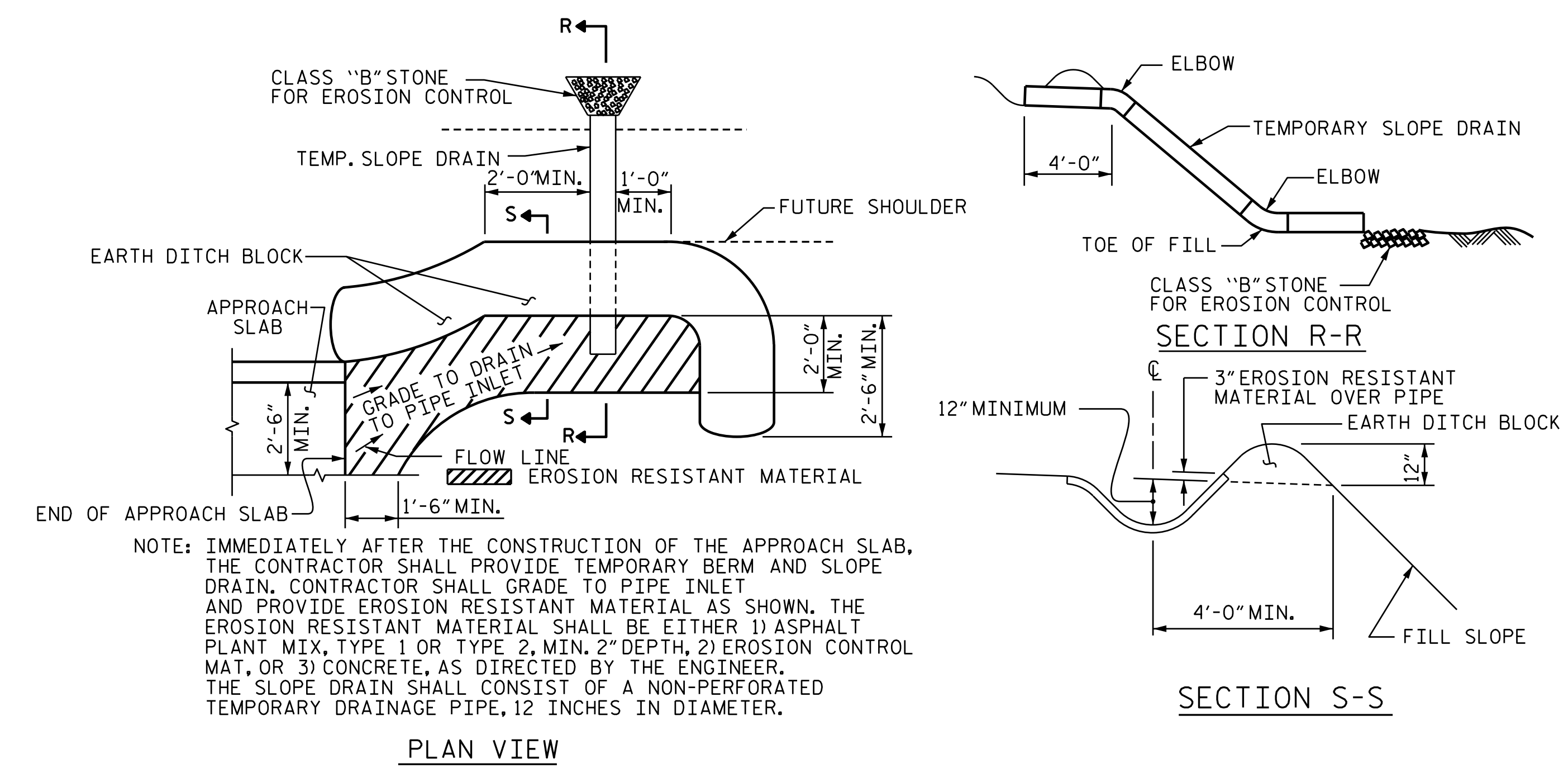
PLANS PREPARED BY: MOTT MACDONALD
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 (919) 552-2253 www.mottmac.com
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DocuSigned by: James E. Mondolfi
 02 December 2021

REVISIONS						SHEET NO.
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2			4			26

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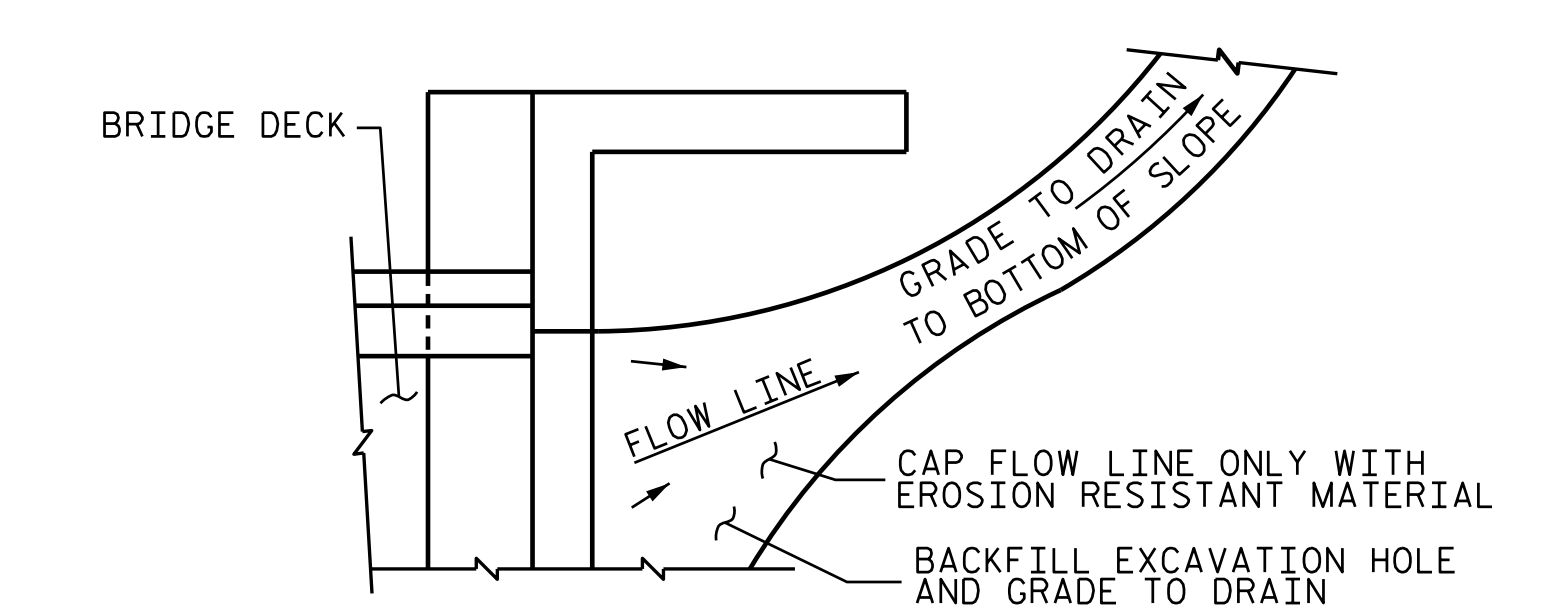


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

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

PROJECT NO. B-5353
GUILFORD COUNTY
 STATION: 23+62.87 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

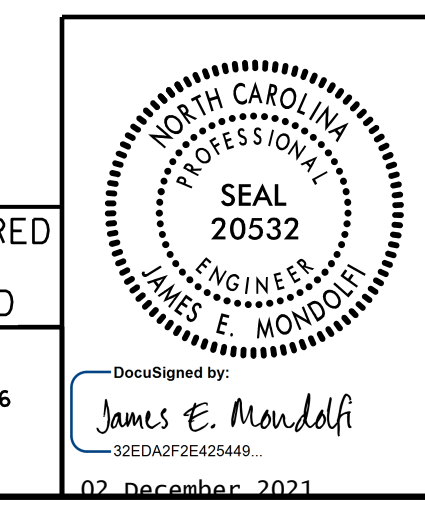
**BRIDGE APPROACH
 SLAB DETAILS**

(LEFT LANE)

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DRAWN BY: M. L. MARLEY DATE: 1-2020
 CHECKED BY: J. E. MONDOLFI DATE: 1-2020
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 1-2020