

TIP PROJECT: U-4424
CONTRACT: C204838

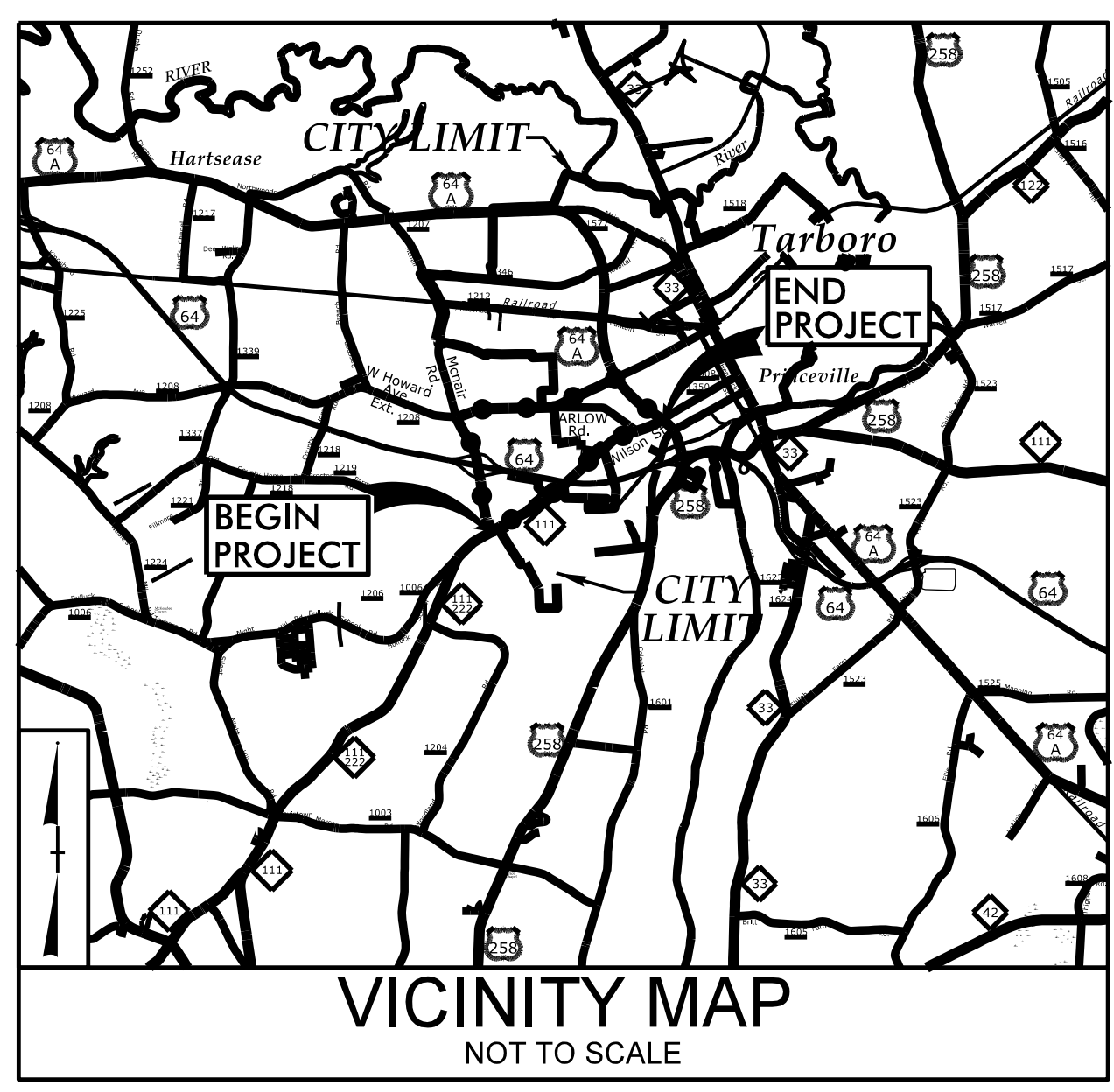
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

EDGECOMBE COUNTY

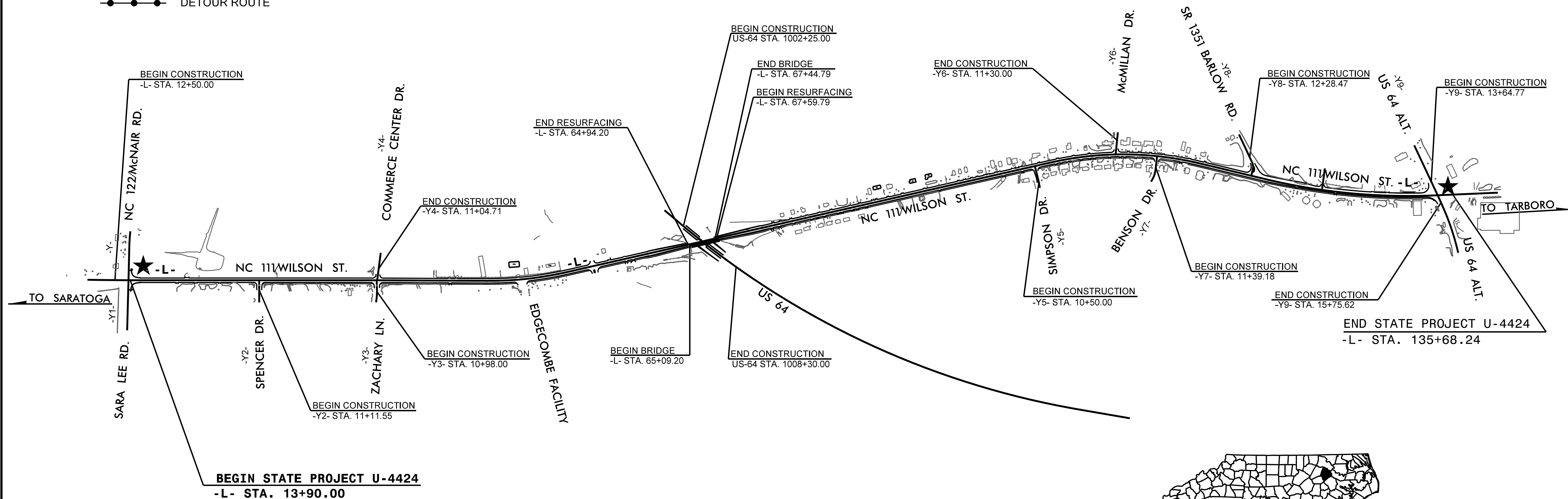
LOCATION: TARBORO - NC 111 (WILSON STREET) FROM US 64 ALTERNATE (WESTERN BOULEVARD) TO NC 122 (MCNAIR ROAD)

TYPE OF WORK: DRAINAGE, GRADING, PAVING, SIGNALS AND BRIDGE WIDENING

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-4424		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
39062.1.2	NA	PE	
39062.2.2	NA	RW & UTILITIES	
39062.3.2	NA	CONSTRUCTION	

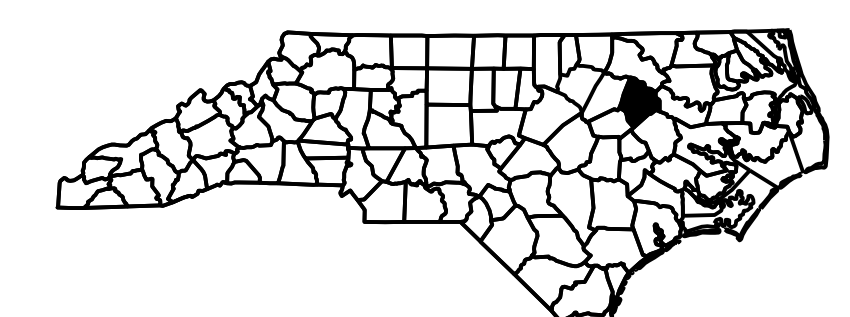


●-●-●-● DETOUR ROUTE

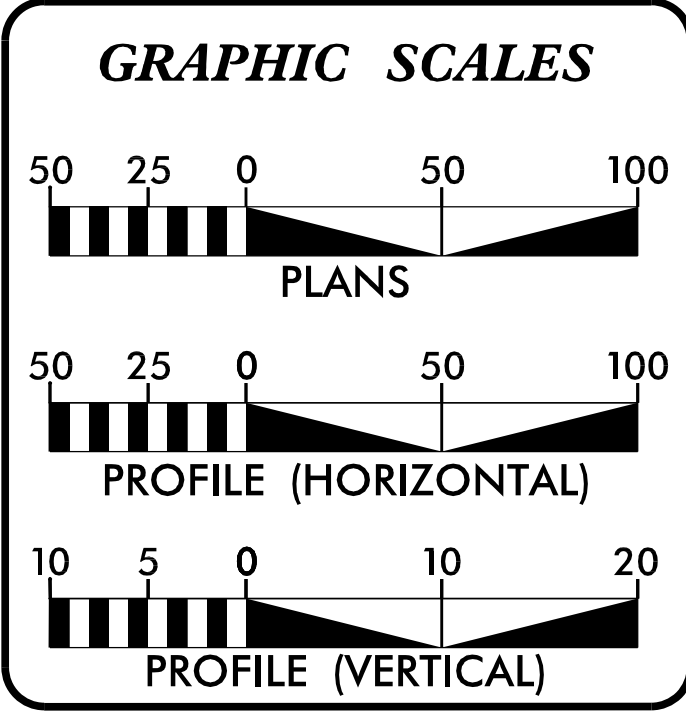


STRUCTURE

★ UPGRADE EXISTING SIGNAL



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DESIGN DATA

ADT 2018 =	9,100
ADT 2045 =	10,400
K =	8%
D =	55%
T =	3% *
V =	50 MPH
* TTST = 1% DUAL 2%	
FUNC CLASS =	MINOR ARTERIAL

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-4424	=	2.288 MI
LENGTH STRUCTURE TIP PROJECT U-4424	=	0.045 MI
TOTAL LENGTH TIP PROJECT U-4424	=	2.333 MI

PREPARED IN THE OFFICE OF:

wsp
WSP USA
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1-919-836-4040
FAX: 1-919-836-4099
LICENSE NO. E-0165

FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JUNE 21, 2019

LETTING DATE:
JUNE 20, 2023

NCDOT CONTACT: RUSSELL BROADWELL, PE
DIVISION 4

THOMAS M. HARRIS, PE
PROJECT ENGINEER

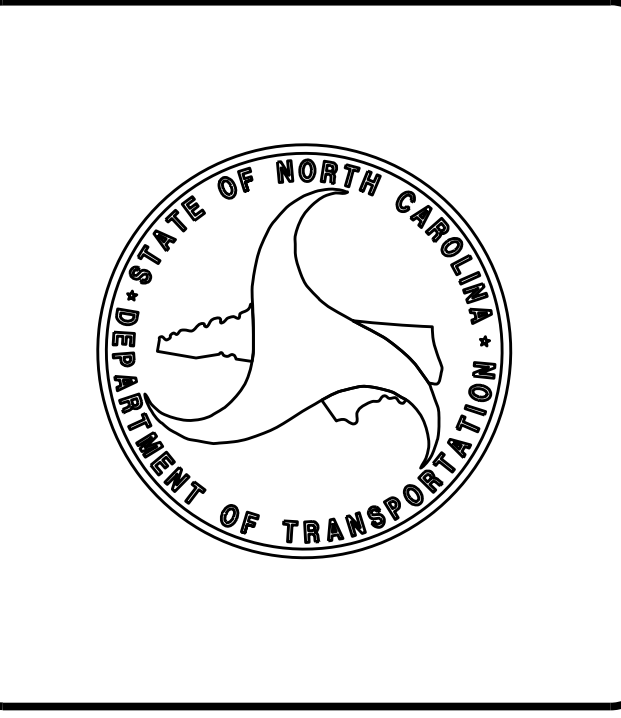
JAIME WHEATLEY, PE
PROJECT DESIGN ENGINEER

STRUCTURE DESIGN ENGINEER

THOMAS M. HARRIS, PE
SEAL 19299
ENGINEER
3/28/2023

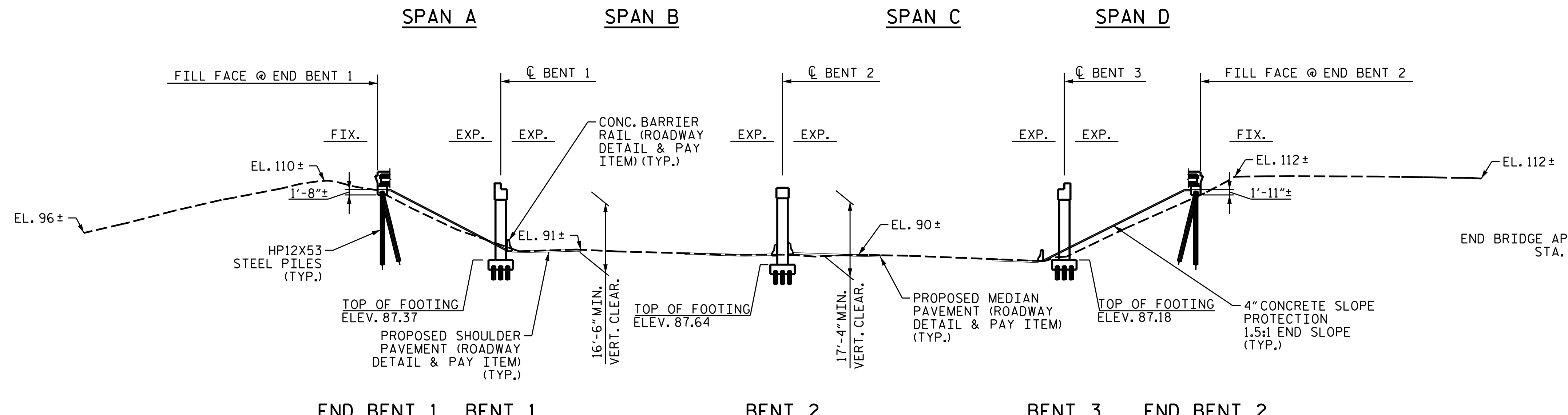
DocuSigned by:
Thomas Harris
E08B02AC4AEE P.E.

SIGNATURE:



64+00 +50 65+00 +50 66+00 +50 67+00 +50 68+00 +50

NOTES
FOR GENERAL NOTES, SEE SHEET 3 OF 3.



BEGIN BRIDGE APPROACH SLAB
STA. 64+94.20 -L-
EL. 112.36

(+)4.4349% (-)0.7475%

PI STA = 63+35.00 -L-
EL = 111.16
VC = 310'

(-)0.9968% (-)4.1104%

PI STA = 69+10.00 -L-
EL = 110.86
VC = 300'

GRADE DATA -L-

END BRIDGE APPROACH SLAB
STA. 67+59.79 -L-
EL. 112.36

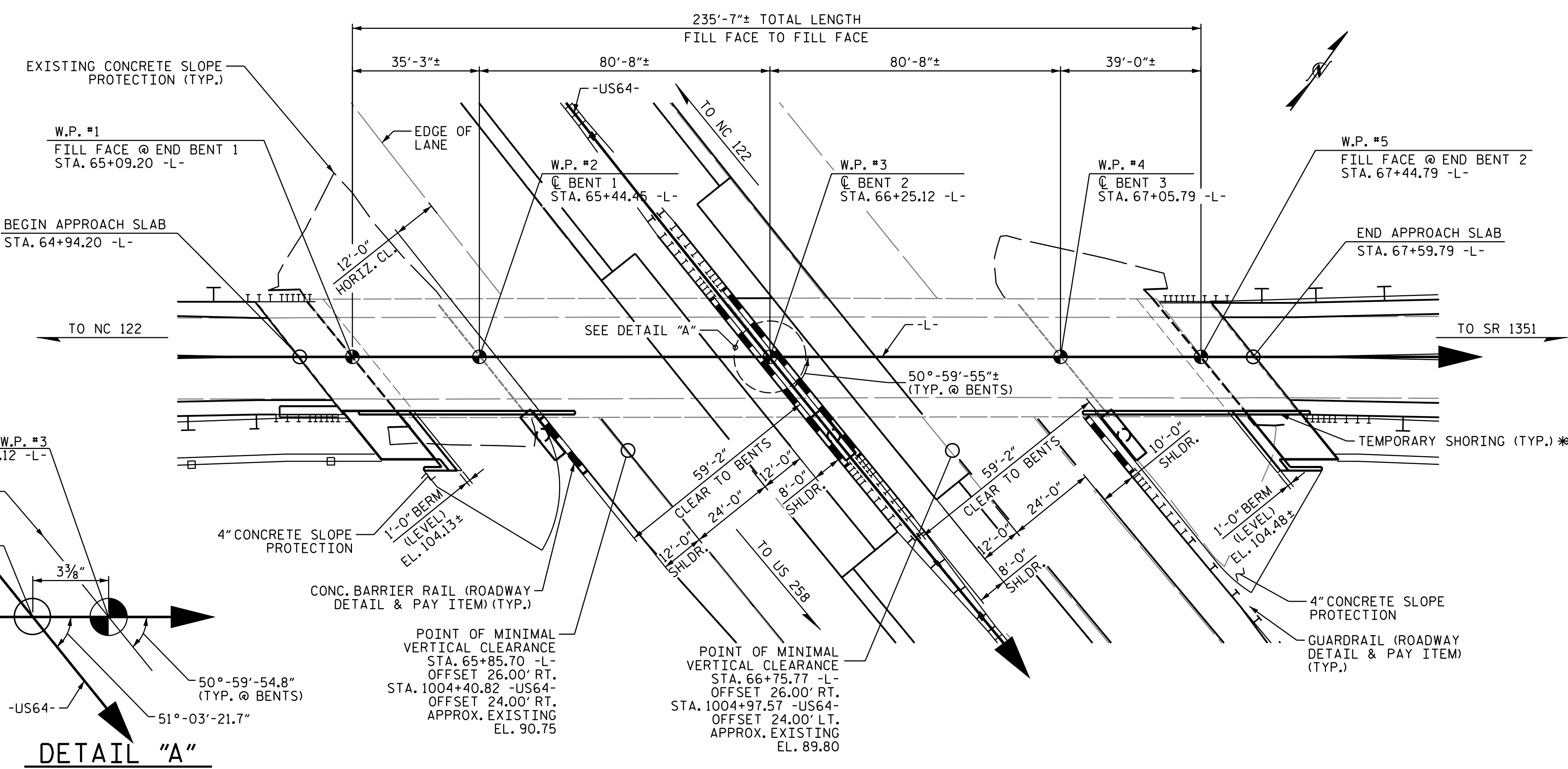
CL JOINT @ BENT 2

(+)4.000% (-)4.000%

VC = 760'

SECTION THROUGH WIDENING
(SECTION 20.00' RIGHT OF -L-)
(SECTION TAKEN AT RIGHT ANGLES TO END BENTS AND BENTS)

EXISTING GRADE DATA -L-
(FOR INFORMATION ONLY
FROM EXISTING BRIDGE PLANS)



*** TEMPORARY SHORING WILL BE REQUIRED TO REMAIN IN PLACE AND CUT OFF BELOW THE PAVEMENT STRUCTURE. USE PRECAST CONCRETE, STEEL PLATE LAGGING OR STEEL SHEET PILES FOR TEMPORARY SHORING.**

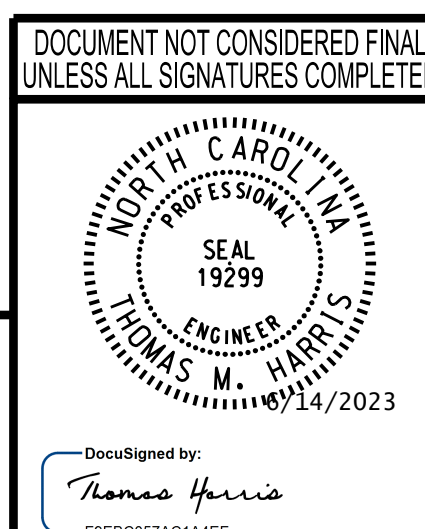
DETAIL "A"

PLAN
(FOR CLARITY, PILES ARE NOT SHOWN IN PLAN VIEW)

PROJECT NO. U-4424
EDGEcombe COUNTY
STATION: 66+24.84 -L-
1004+45.18 -US64-
SHEET 1 OF 3 WIDENING & REHAB. BRIDGE 320152

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE WIDENING OVER US 64
(-US64-) ON NC 111 (-L-)
BETWEEN NC 122 AND SR 1351

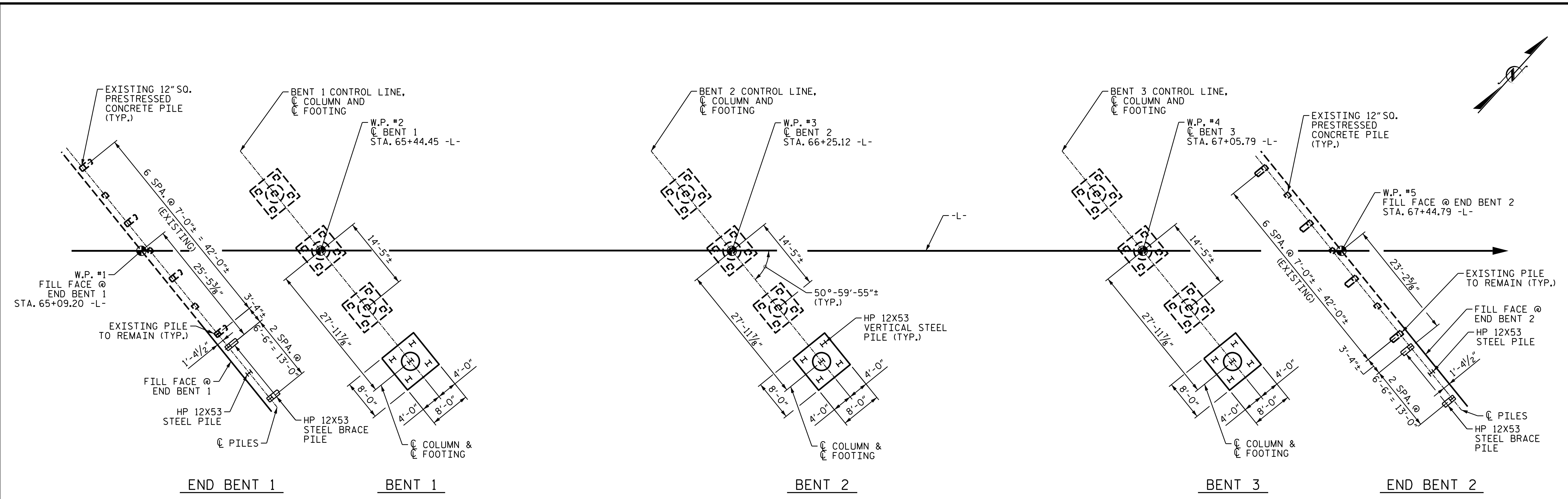


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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			37

6/14/2023 4:18:771-06 NCDOT NC 111U-4424S\structures\Dr-off\ing\DGNS\401_003_U4424_SML_GD1_001.dgn

DESIGNED BY: J. WHEATLEY DATE: MAR 2023
DRAWN BY: J. WHEATLEY DATE: MAR 2023
CHECKED BY: T. KIRSCHBAUM DATE: MAR 2023
DESIGN ENGINEER OF RECORD: T. HARRIS DATE: MAR 2023

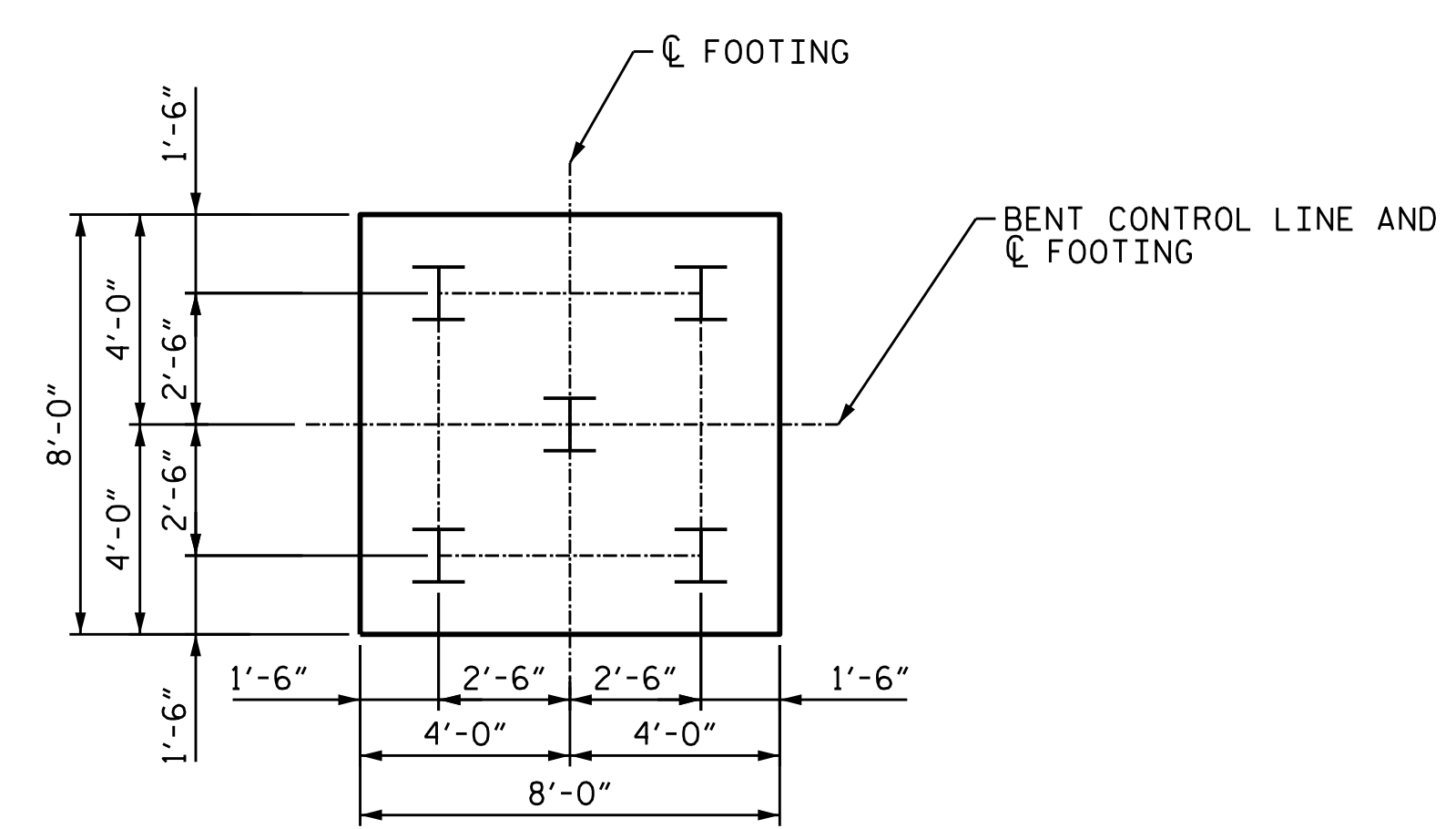


FOUNDATION LAYOUT

END BENTS AND INTERIOR BENTS ARE PARALLEL.
 DIMENSIONS LOCATING PILES ARE SHOWN TO CENTERLINE OF PILES
 AT BOTTOM OF THE END BENT CAP OR BENT FOOTING.
 ORIENT PILES AS SHOWN.

NOTES

- FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
- PILES AT END BENT NO.1 AND NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 55 TONS PER PILE.
- PILES AT BENTS NO.1, NO.2, AND NO.3 ARE DESIGNED FOR A FACTORED RESISTANCE OF 120 TONS PER PILE.
- DRIVE PILES AT END BENTS NO.1 AND NO.2 TO A REQUIRED DRIVING RESISTANCE OF 95 TONS PER PILE.
- DRIVE PILES AT BENTS NO.1, NO.2, AND NO.3 TO A REQUIRED DRIVING RESISTANCE OF 200 TONS PER PILE.
- TESTING PILES WITH THE PILE DRIVING ANALYZER (PDA) DURING DRIVING, RESTRIKING OR REDRIVING MAY BE REQUIRED. THE ENGINEER WILL DETERMINE THE NEED FOR PDA TESTING. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.



FOOTING DETAIL

PROJECT NO. U-4424
EDGEcombe COUNTY
 STATION: 66+24.84 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE WIDENING OVER US 64
 (-US64-) ON NC 111 (-L-)
 BETWEEN NC 122 AND SR 1351

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

THOMAS M. HARRIS
 ENGINEER
 SEAL 19299
 3/28/2023

wsp

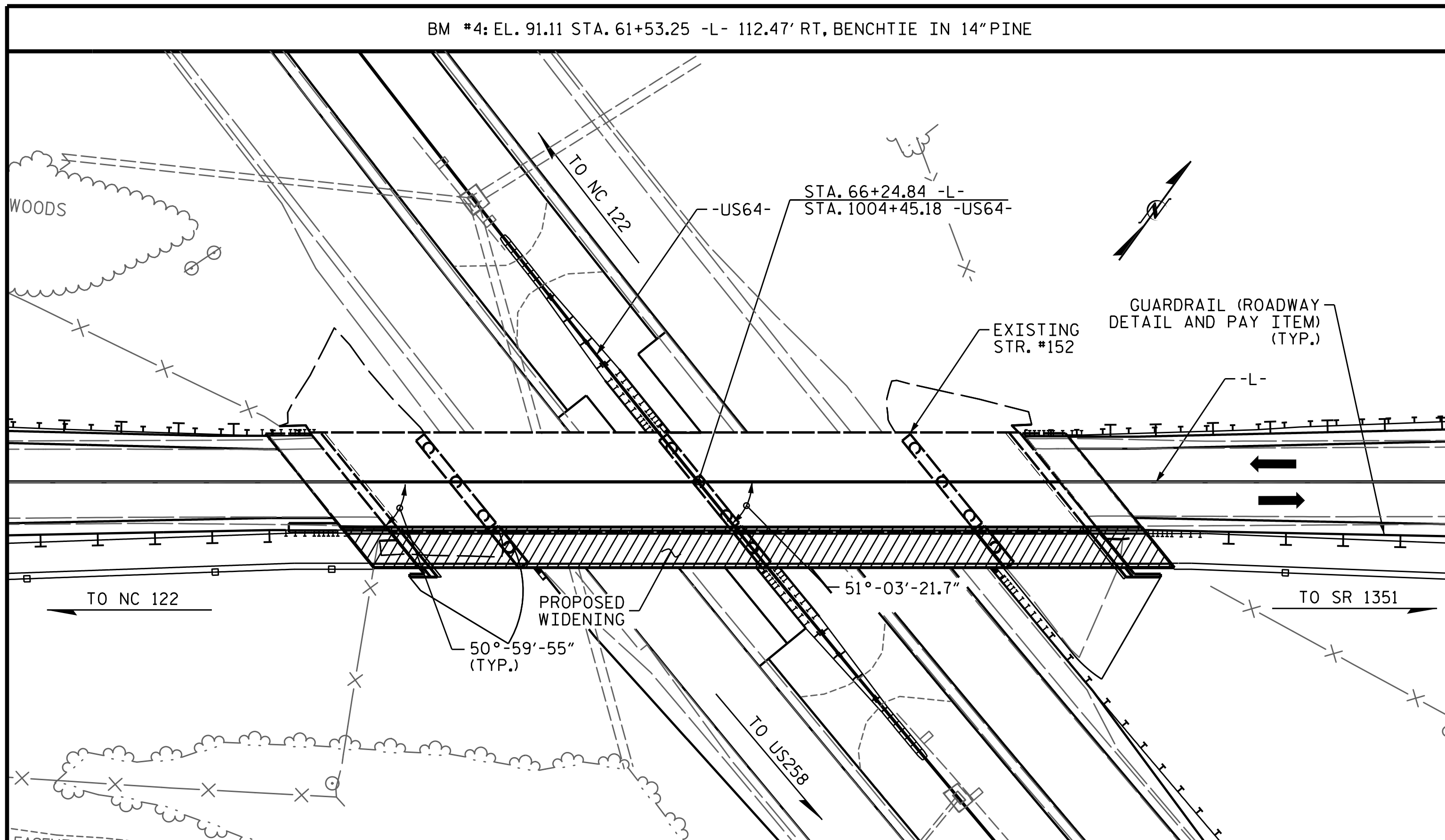
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REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	DATE:
1			3	
2			4	

TOTAL SHEETS: 37

3/28/2023 4:\188771-06 NCDOT NC 111\U-4424\Structures\Dr-off-fig\DGNS\401.005_U4424_SML.GD2_002.dgn

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DRAWN BY:	J. WHEATLEY	DATE:	MAR 2023
CHECKED BY:	T. KIRSCHBAUM	DATE:	MAR 2023
DESIGN ENGINEER OF RECORD:	T. HARRIS	DATE:	MAR 2023



LOCATION SKETCH
FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

ASSUMED PEDESTRIAN LIVE LOAD (WIDENING) = 90 PSF
 THIS BRIDGE WIDENING 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 "STANDARD NOTES" SHEET.
 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 ELEVATIONS AND CLEARANCES 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.
 STEEL SHEET PILING REQUIRED FOR SHORING SHALL BE HOT ROLLED.
 FOR LIMITS OF TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS.
 FOR PAYMENT OF TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE ROADWAY PLANS.
 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 VOLUMETRIC MIXER, SEE SPECIAL PROVISIONS.

NOTES

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
 FOR ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.
 FOR LATEX MODIFIED CONCRETE (LMC) OVERLAY, SEE SPECIAL PROVISIONS.
 FOR LMC OVERLAY SURFACE PREPARATION, SEE SPECIAL PROVISIONS.
 WORK POINT STATIONS ARE BASED ON PROPOSED -L- LINE AND SHOULD BE FIELD VERIFIED BY THE CONTRACTOR. LONGITUDINAL CONSTRUCTION JOINTS OF OVERLAYS SHALL BE LOCATED ALONG THE CENTERLINE OR EDGE OF TRAVEL LANES.
 EXISTING JOINTS SHALL BE SEALED PRIOR TO BEGINNING SURFACE PREPARATION OF BRIDGE DECK.
 THE CONTRACTOR SHALL PROVIDE A METHOD OF HANDLING UNEXPECTED BLOW THROUGH OF THE DECK.
 FOR SCARIFYING BRIDGE DECK, HYDRO-DEMOLITION OF BRIDGE DECK AND CLASS II SURFACE PREPARATION SEE OVERLAY SURFACE PREPARATION SPECIAL PROVISIONS.
 THE CONTRACTOR MUST COLLECT, TREAT AND DISPOSE OF RUN-OFF WATER AND CONCRETE GRINDING RESIDUALS FROM THE HYDRO-DEMOLITION PROCESS.
 DURING CONSTRUCTION, BERMS OR APPROPRIATE MEASURES SHALL BE USED TO ENSURE HYDRO-DEMOLITION WATER DOES NOT FLOW OR MIGRATE INTO ACTIVE TRAVEL LANES.
 CARE SHALL BE TAKEN DURING THE PARTIAL REMOVAL OF THE EXISTING STRUCTURE. DAMAGE TO THE REMAINING 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.
 FOR ADHESIVELY ANCHOR DOWELS, SEE STANDARD SPECIFICATIONS.
 IT IS THE CONTRACTOR'S RESPONSIBILITY TO FOLLOW ALL STATE AND FEDERAL SAFETY REQUIREMENTS FOR CONTROL OF TRAFFIC AND LIMITS ON PHASING OF CONSTRUCTION. SEE TRAFFIC CONTROL PLANS.
 FOR BRIDGE JOINT DEMOLITION, SEE SPECIAL PROVISIONS.
 FOR FOAM JOINT SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.
 FOR ELASTOMERIC CONCRETE FOR PRESERVATION, SEE SPECIAL PROVISIONS.
 FOR CONCRETE FOR DECK REPAIR, SEE SPECIAL PROVISIONS.
 FOR SILANE BARRIER RAIL TREATMENT, SEE SPECIAL PROVISIONS.
 IT MAY BE DETERMINED IN THE FIELD THAT THE FOLLOWING ITEM(S) WILL BE NECESSARY TO COMPLETE THE BRIDGE PRESERVATION/REHABILITATION WORK. SUCH WORK SHALL BE CONSIDERED EXTRA WORK AND SHALL BE ADDRESSED AS PER ARTICLE 104-7 OF THE STANDARD SPECIFICATIONS. PROJECT SPECIAL PROVISIONS THAT OUTLINE REQUIREMENTS FOR THE FOLLOWING ITEMS HAVE BEEN PROVIDED, BUT NO QUANTITIES HAVE BEEN LISTED. ACTUAL PAY ITEMS, QUANTITIES, AND COSTS WILL BE ESTABLISHED, AS REQUIRED, IF EXTRA WORK IS ENCOUNTERED. UNANTICIPATED ITEMS:

- .CLASS III SURFACE PREPARATION
- .CONCRETE FOR DECK REPAIR
- .VOLUMETRIC MIXER

ALL EXISTING AND PROPOSED DIMENSIONS AND ELEVATIONS SHOWN ON THE PLANS ARE FROM THE BEST INFORMATION AVAILABLE. PRIOR TO BEGINNING BRIDGE CONSTRUCTION, THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND ELEVATIONS, INCLUDING EXISTING SEAT ELEVATIONS. IF ANY DIMENSIONS OR ELEVATIONS VARY FROM THE PLANS, REPORT ANY VARIATIONS TO THE ENGINEER.

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE @ STA. 66+24.84 -L-	ASBESTOS ASSESSMENT	FOUNDATION EXCAVATION FOR BENTS @ STA. 66+24.84 -L-	PDA TESTING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	36" PRE-STRESSED CONCRETE GIRDERS	54" PRE-STRESSED CONCRETE GIRDERS	PILE DRIVING EQUIPMENT SETUP FOR HP 12X53 STEEL PILES	HP 12X53 STEEL PILES	PILE REDRIVES			
	LUMP SUM	LUMP SUM	LUMP SUM	EACH	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	LBS.	NO.	LIN. FT.	NO.	LIN. FT.	EACH	NO.	LIN. FT.	EACH
SUPERSTRUCTURE	LUMP SUM	LUMP SUM	LUMP SUM		3,171	7,419		LUMP SUM			4	143.6	4	321.7				
END BENT 1							7.4		1,740						3	3	195	2
BENT 1			LUMP SUM				18.0		3,189	392					5	5	400	3
BENT 2			LUMP SUM				17.4		3,090	392					5	5	400	3
BENT 3			LUMP SUM				18.0		3,189	392					5	5	400	3
END BENT 2							8.8		2,012						3	3	195	2
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	1	3,171	7,419	69.6	LUMP SUM	13,220	1,176	4	143.6	4	321.7	21	21	1,590	13

TOTAL BILL OF MAT'L. CONT.

	2-BAR METAL RAIL	VERTICAL CONCRETE BARRIER RAIL	1'-2"x2'-6" CONCRETE PARAPET	4" SLOPE PROTECTION	CLASS II SURFACE PREPARATION	LATEX MODIFIED CONCRETE OVERLAY	PLACING & FINISHING OF LATEX MODIFIED CONCRETE OVERLAY	ELASTOMERIC BEARINGS	FOAM JOINT SEALS FOR PRESERVATION	ELASTOMERIC CONCRETE FOR PRESERVATION	BRIDGE JOINT DEMOLITION	SCARIFYING BRIDGE DECK	HYDRO-DEMOLITION BRIDGE DECK	SURFACE PREPARATION FOR CONCRETE BARRIER RAIL	SILANE BARRIER RAIL TREATMENT
	LIN. FT.	LIN. FT.	LIN. FT.	SO. YDS.	SO. YDS.	CU. YDS.	SO. YDS.	LUMP SUM	LIN. FT.	CU. FT.	SO. FT.	SO. YDS.	SO. YDS.	SO. FT.	SO. FT.
SUPERSTRUCTURE	257.1	265.6	265.6		35	32.2	896	LUMP SUM	271.3	39.0	155.8	896	896	1,475	1,475
END BENT 1				155											
BENT 1															
BENT 2															
BENT 3															
END BENT 2				212											
TOTAL	257.1	265.6	265.6	367	35	32.2	896	LUMP SUM	271.3	39.0	155.8	896	896	1,475	1,475

PAY ITEM INCLUDES CONCRETE FOR STAGED LMC.

PROJECT NO. U-4424
EDGEcombe COUNTY
 STATION: 66+24.84 -L-
 SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE WIDENING OVER US 64
 (-US64-) ON NC 111 (-L-) BETWEEN NC 122 AND SR 1351

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S-3
2			4			TOTAL SHEETS 37

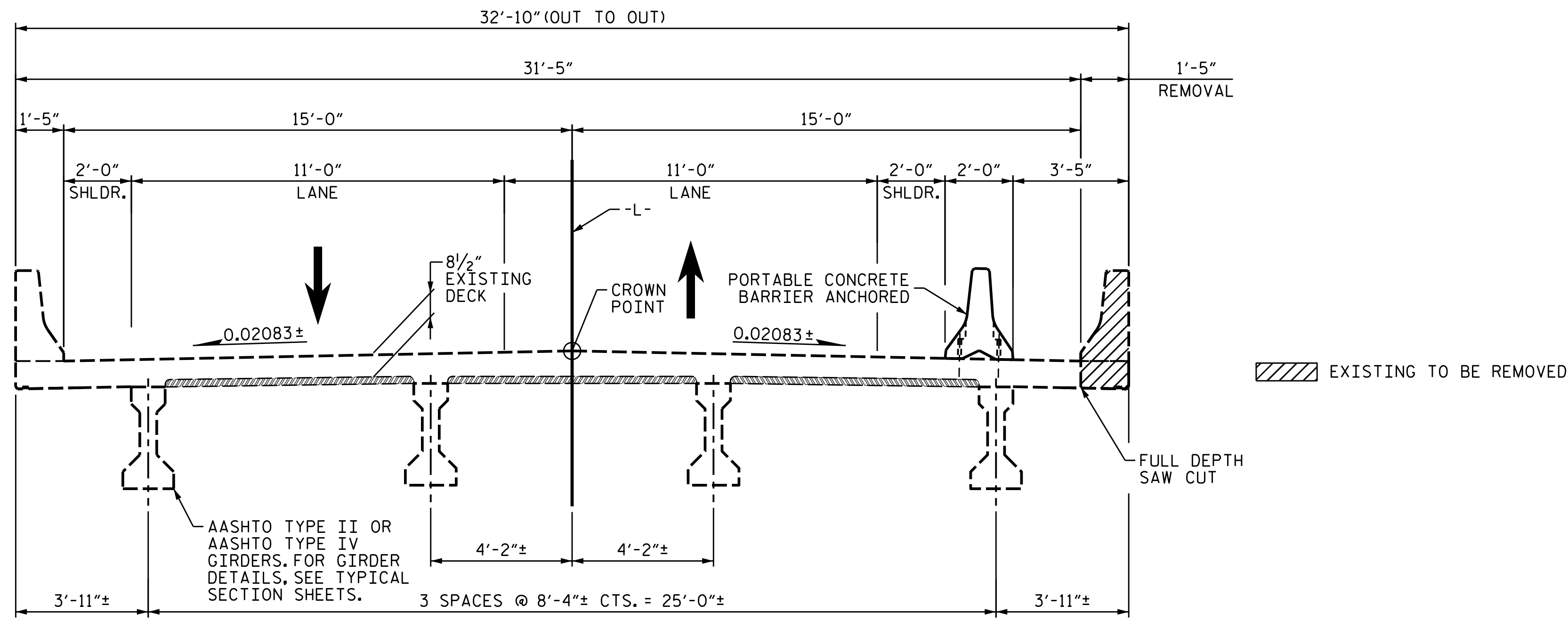
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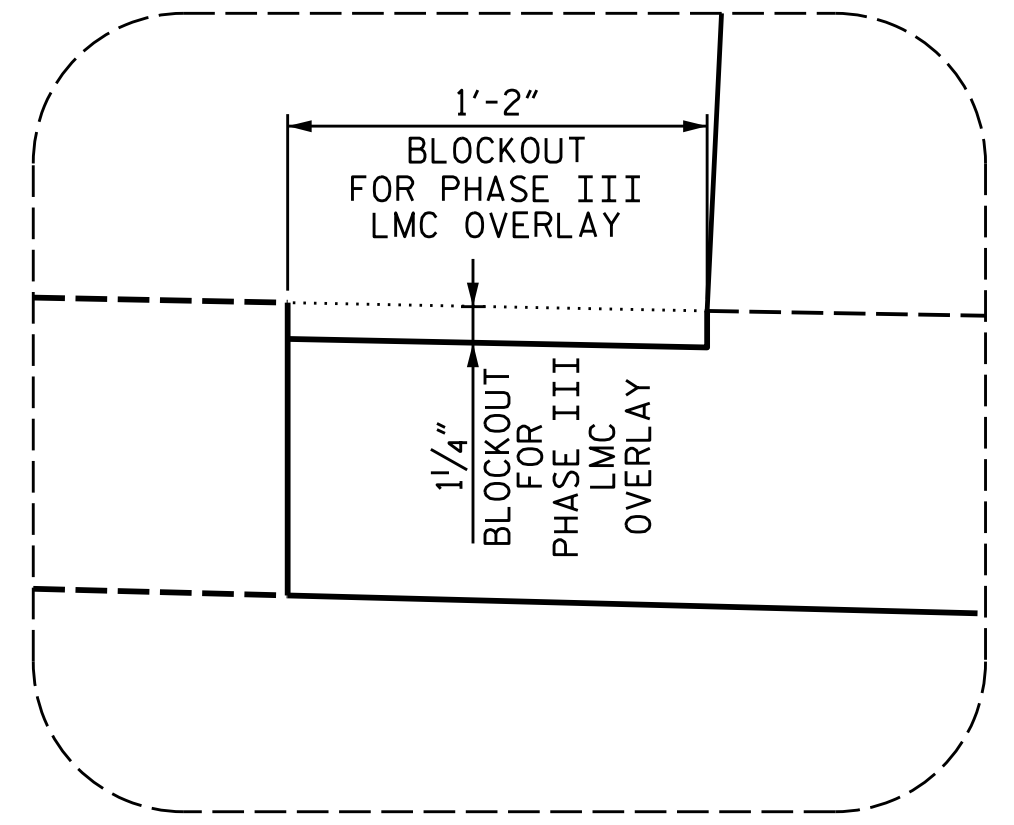
WSP USA Inc.
 434 FAYETTEVILLE STREET
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 LICENSE NO. P-0165

DESIGNED BY: J. WHEATLEY DATE: MAR 2023
 DRAWN BY: J. WHEATLEY DATE: MAR 2023
 CHECKED BY: T. KIRSCHBAUM DATE: MAR 2023
 DESIGN ENGINEER OF RECORD: T. HARRIS DATE: MAR 2023

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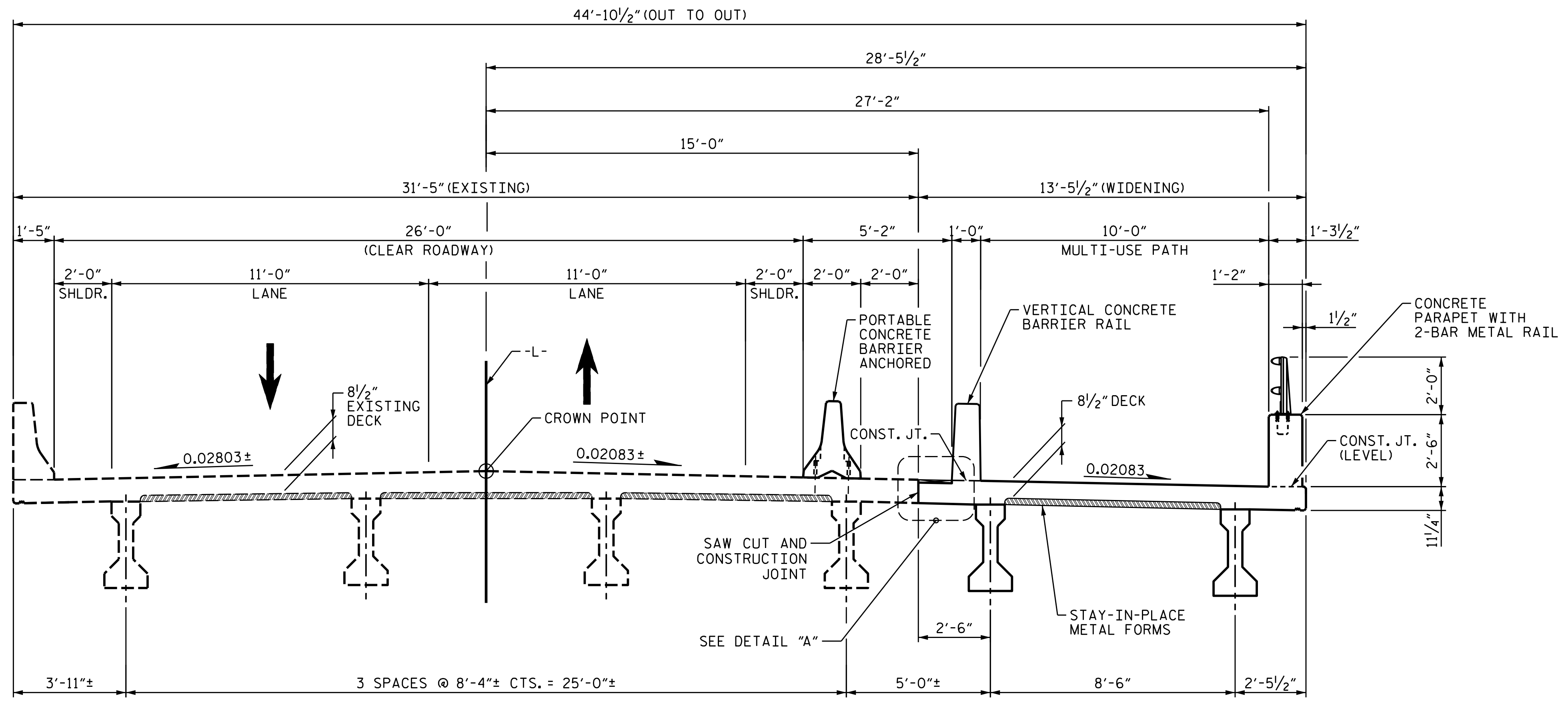


PHASE I



DETAIL "A"

BRIDGE DECK SHOWN; APPROACH SLAB SIMILAR



PHASE II

PROJECT NO. U-4424
EDGEcombe COUNTY
 STATION: 66+24.84 -L-
 SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

CONSTRUCTION SEQUENCE

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THOMAS M. HARRIS
 ENGINEER
 SEAL 19299
 3/28/2023

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS
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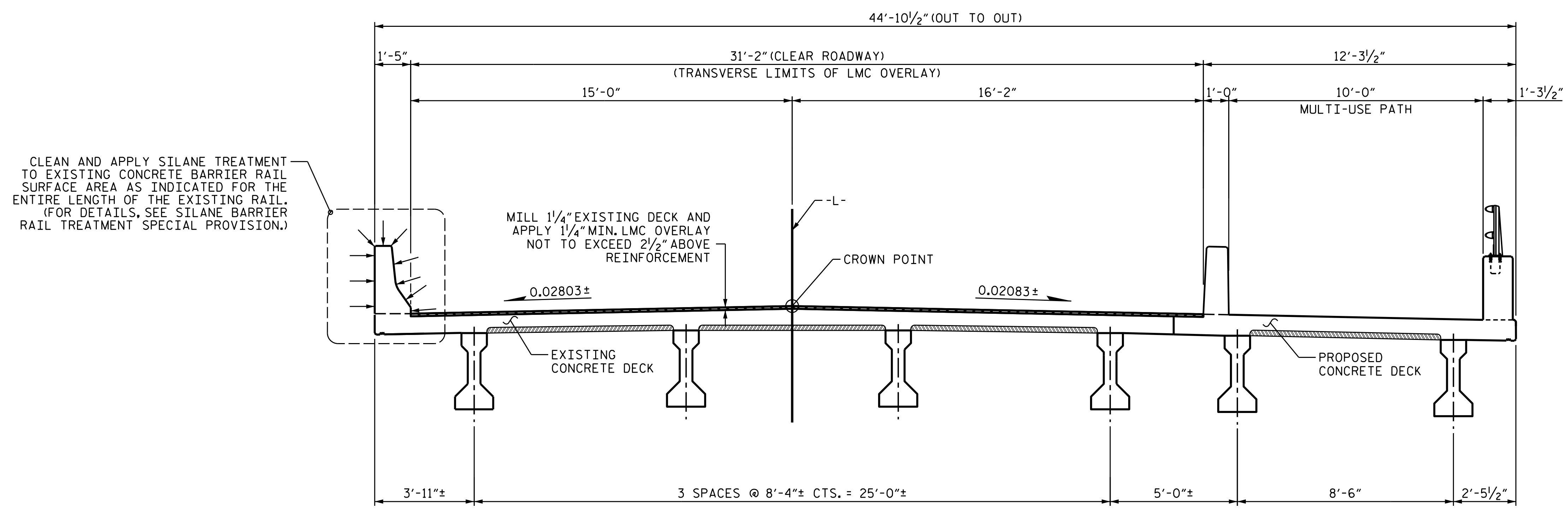
3/28/2023 4:\188771-06 NCDOT NC 111\U-4424\Structures\Dr-off\ing\DGNS\401.009_U4424_SML_PCL_004.dgn

DESIGNED BY: J. WHEATLEY DATE: MAR 2023
 DRAWN BY: J. WHEATLEY DATE: MAR 2023
 CHECKED BY: T. KIRSCHBAUM DATE: MAR 2023
 DESIGN ENGINEER OF RECORD: T. HARRIS DATE: MAR 2023

NOTES

FOR MAINTENANCE OF TRAFFIC DURING MILLING AND INSTALLATION OF OVERLAY, SEE TRANSPORTATION MANAGEMENT PLANS.

FOR DETAIL FOR LATEX MODIFIED CONCRETE OVERLAY, SEE "TYPICAL SECTION DETAILS" SHEET 4 OF 4.



PHASE III
(LATEX MODIFIED CONCRETE OVERLAY)

PROJECT NO. U-4424
EDGEcombe COUNTY
 STATION: 66+24.84 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

CONSTRUCTION SEQUENCE

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STATE OF NORTH CAROLINA
 PROFESSIONAL SEAL
 19299
 ENGINEER
 THOMAS M. HARRIS
 3/28/2023

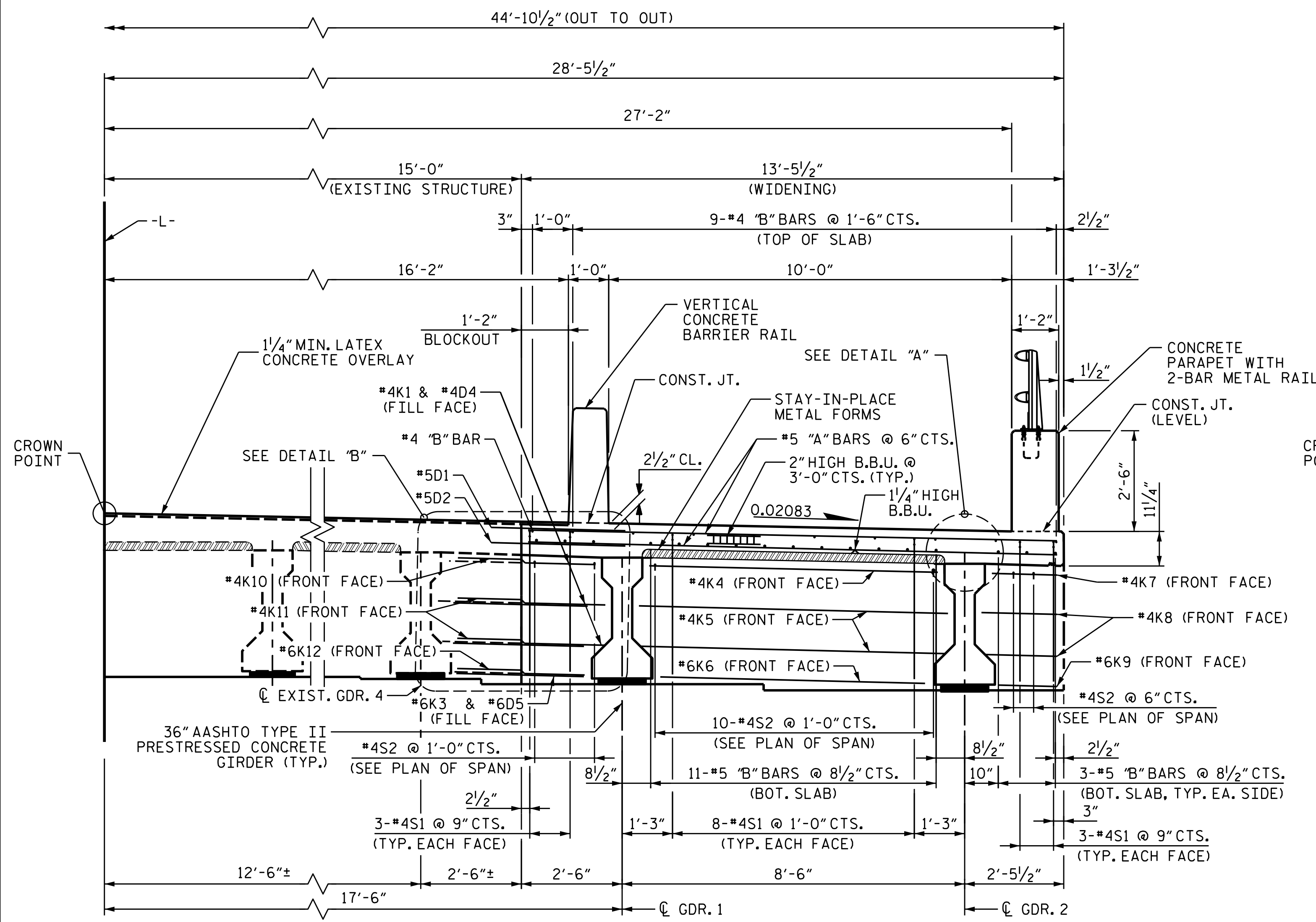
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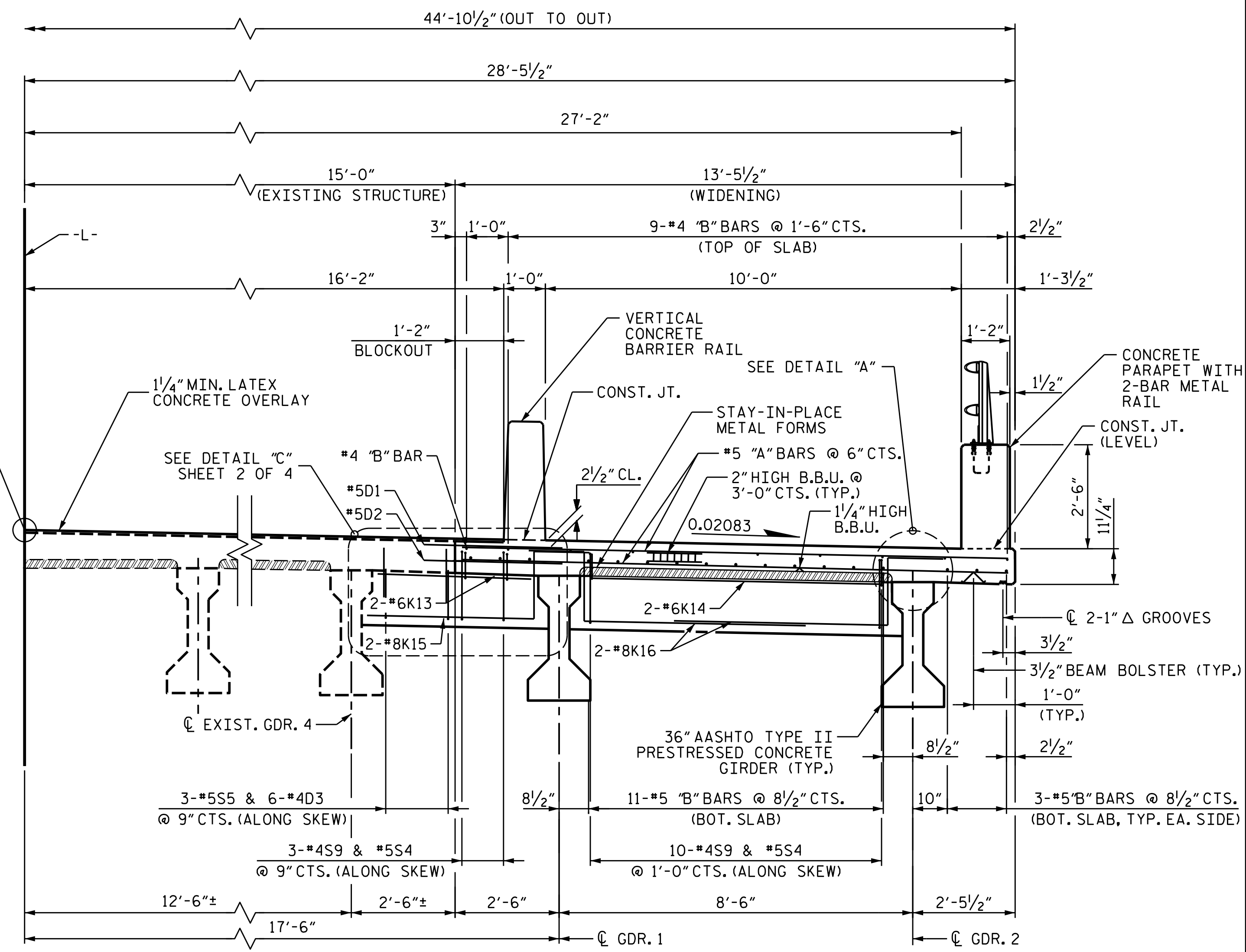
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REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
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TYPICAL SECTION - END BENT



TYPICAL SECTION - BENT DIAPHRAGM

NOTES

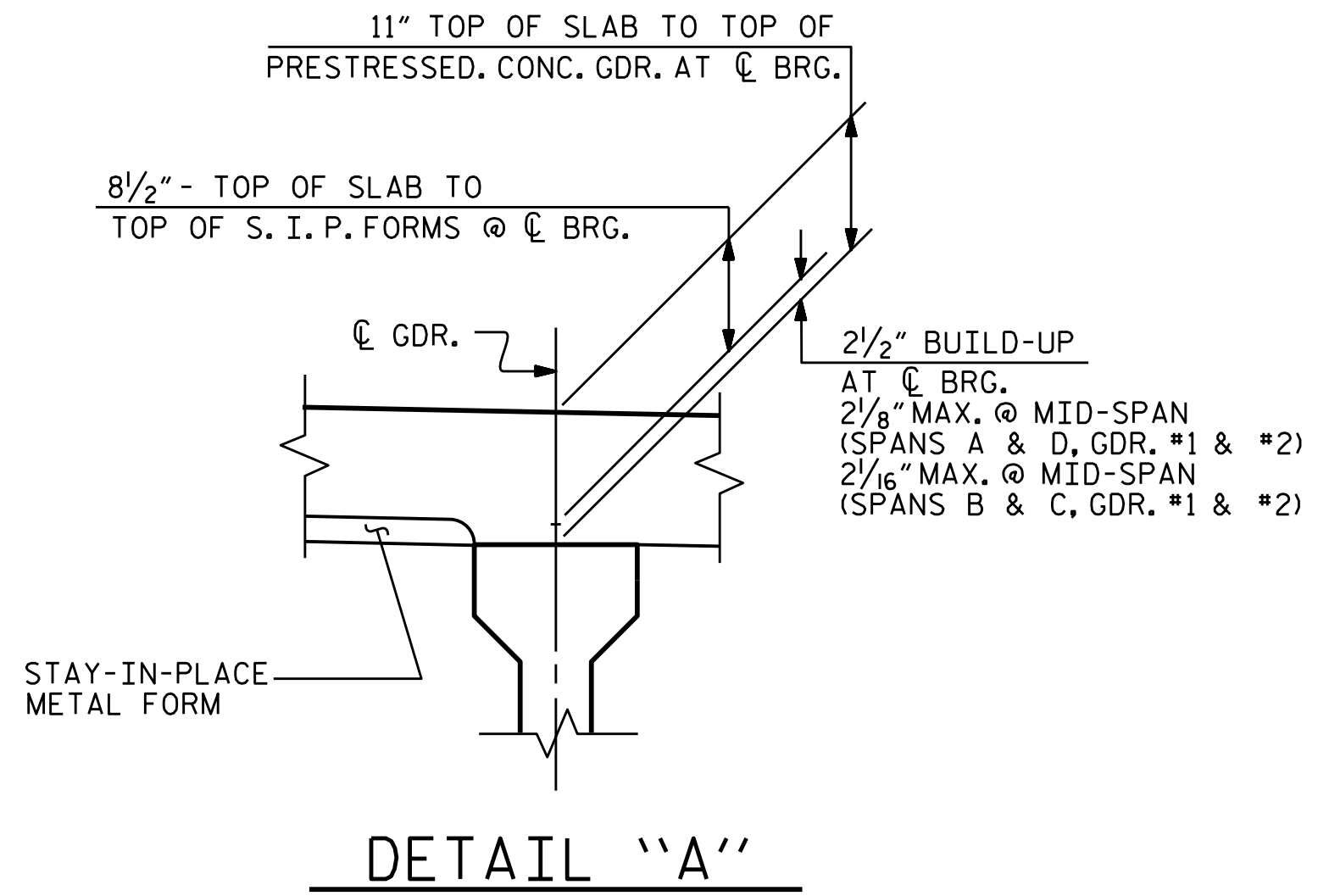
- PROVIDE 1/4" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF "A" BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF "A" BARS A CLEAR DISTANCE OF 2 1/2" ABOVE THE TOP OF THE REMOVABLE FORM.
- LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS.
- PARAPET AND BARRIER RAIL SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE SPAN HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.
- FOR CONCRETE PARAPET REINFORCING DETAILS, SEE "CONCRETE PARAPET" SHEET.
- FOR VERTICAL CONCRETE BARRIER RAIL REINFORCING DETAILS, SEE "VERTICAL CONCRETE BARRIER RAIL" SHEET.
- FOR BLOCKOUT DETAILS, SEE CONSTRUCTION SEQUENCE SHEET 1 OF 2.

PROJECT NO. U-4424
EDGEcombe COUNTY
 STATION: 66+24.84 -L-
 SHEET 1 OF 4

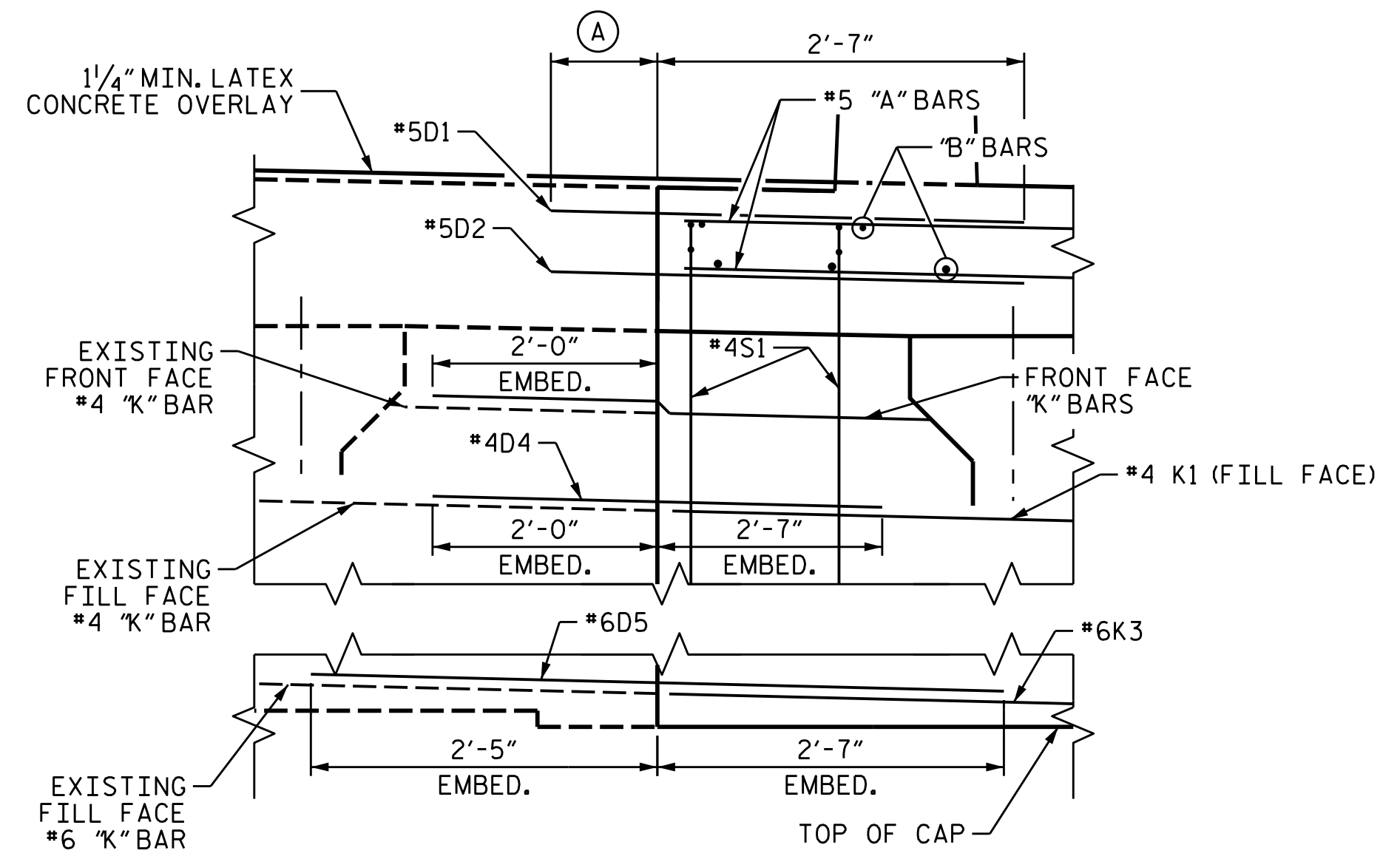
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

TYPICAL SECTION
 SPANS A & D

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS 37
2			4			



DETAIL "A"



DETAIL "B"

END BENT 1 SHOWN; END BENT 2 SIMILAR

(A) DRILLED HOLE DIAMETER AND EMBEDMENT SHALL BE PER ADHESIVE BONDING MANUFACTURER'S RECOMMENDATIONS. BAR LENGTH BASED ON 9" MIN. EMBEDMENT.

3/28/2023 4:18:771-06 NCDOT NC 111U-4424Sfructures\Dr-offring\DCNs\401.013_U4424_SML_TSI_006.dgn

DESIGNED BY: J. WHEATLEY DATE: MAR 2023
 DRAWN BY: J. WHEATLEY DATE: MAR 2023
 CHECKED BY: T. KIRSCHBAUM DATE: MAR 2023
 DESIGN ENGINEER OF RECORD: T. HARRIS DATE: MAR 2023

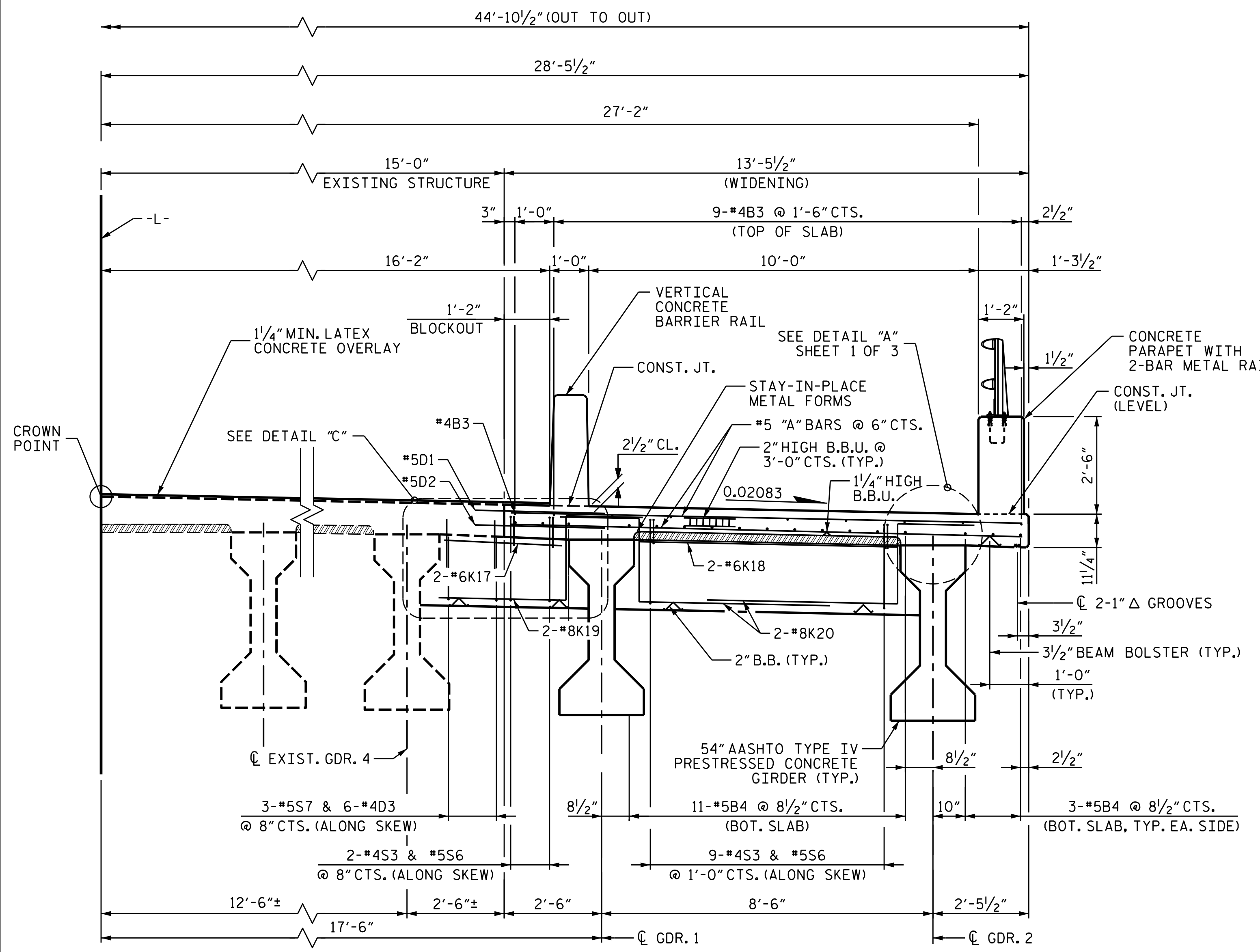
wsp WSP USA Inc.
 434 FAYETTEVILLE STREET
 SUITE 1500
 RALEIGH, NC 27601
 TEL: 1.919.836.4040
 LICENSE NO. F-0165

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

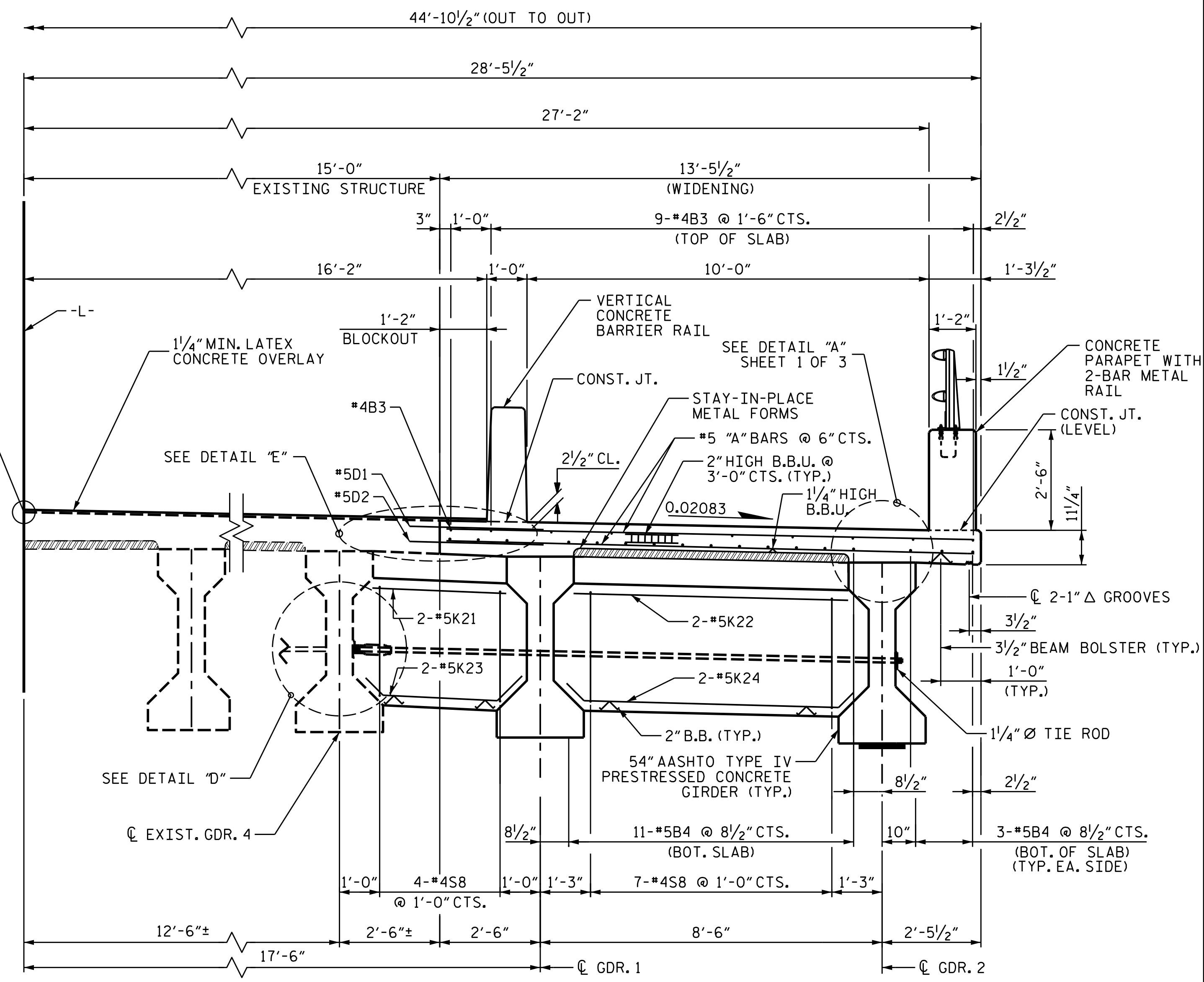
STATE OF NORTH CAROLINA
 PROFESSIONAL ENGINEER
 SEAL 19299
 THOMAS M. HARRIS
 3/28/2023

NOTES

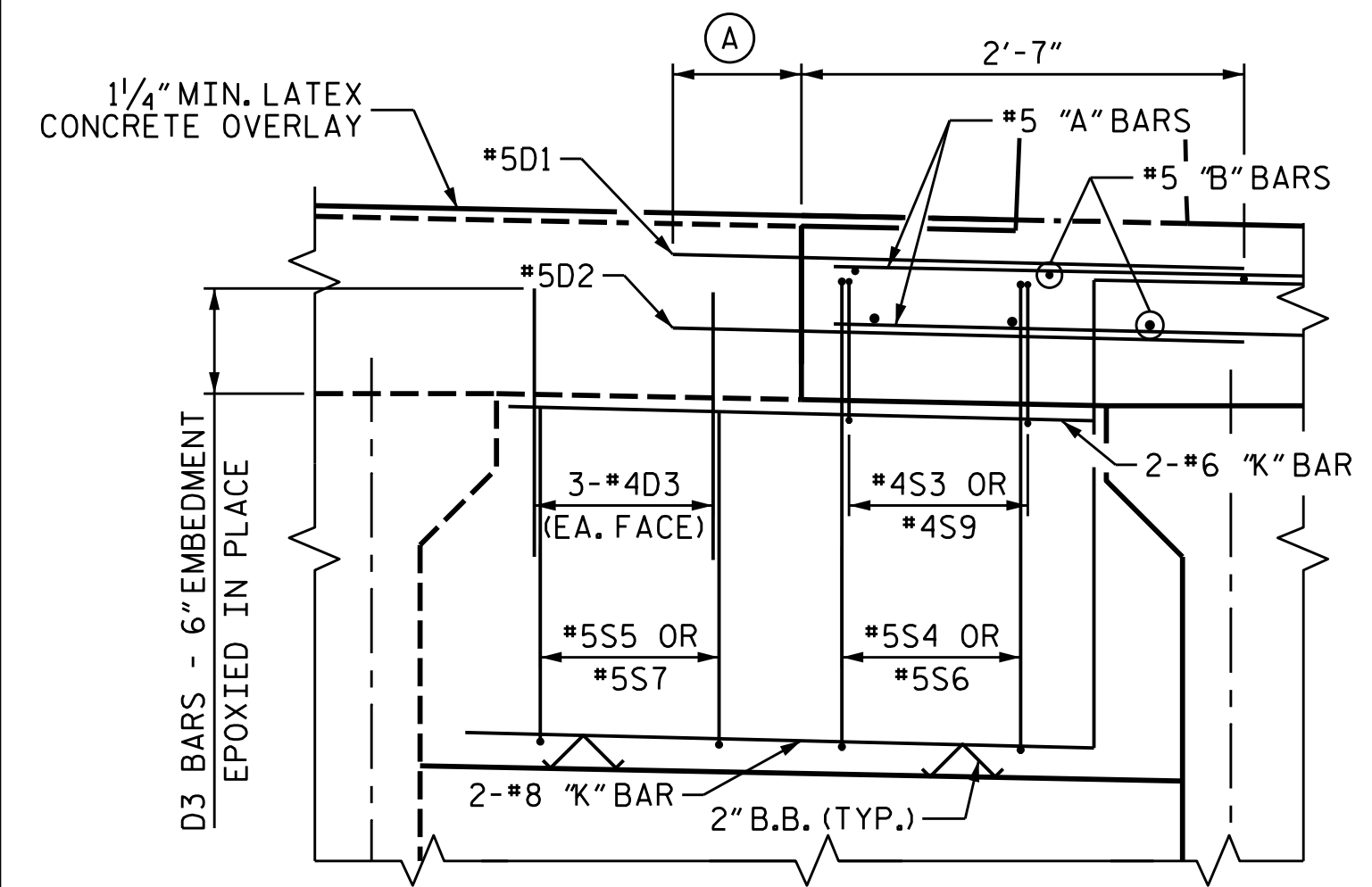
FOR NOTES, SEE SHEET 1 OF 4.



TYPICAL SECTION - BENT DIAPHRAGM

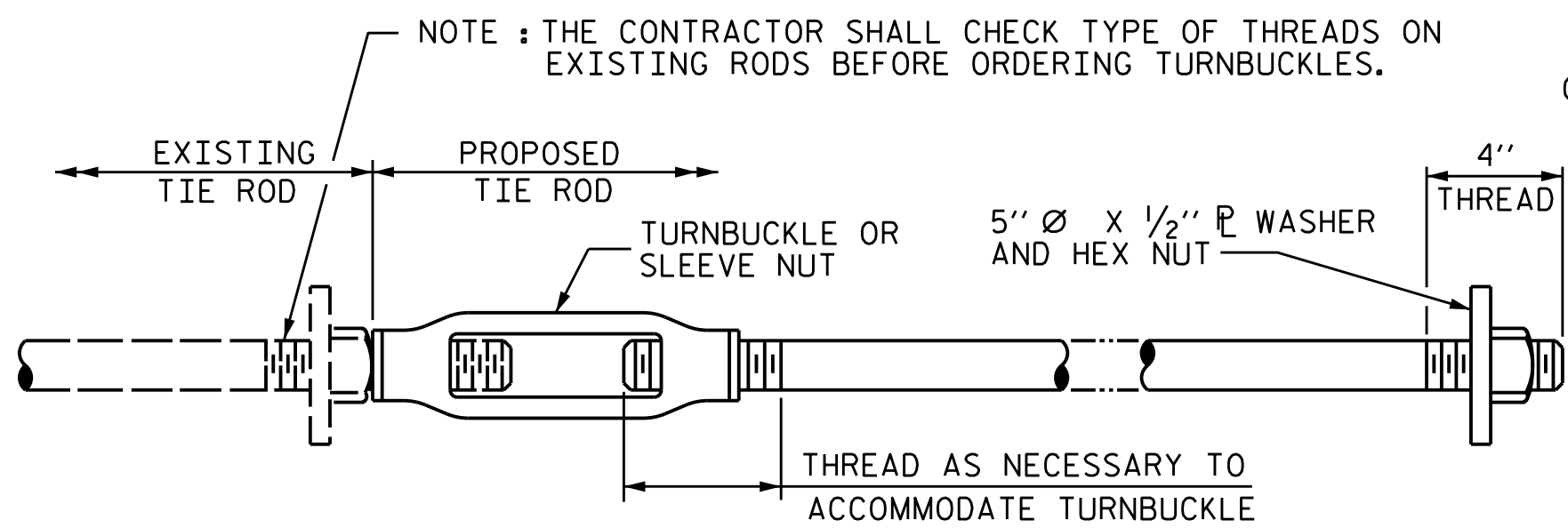


TYPICAL SECTION - INTERMEDIATE DIAPHRAGM



DETAIL "C"

(A) DRILLED HOLE DIAMETER AND EMBEDMENT SHALL BE PER ADHESIVE BONDING MANUFACTURER'S RECOMMENDATIONS. BAR LENGTH BASED ON 9" MIN. EMBEDMENT.

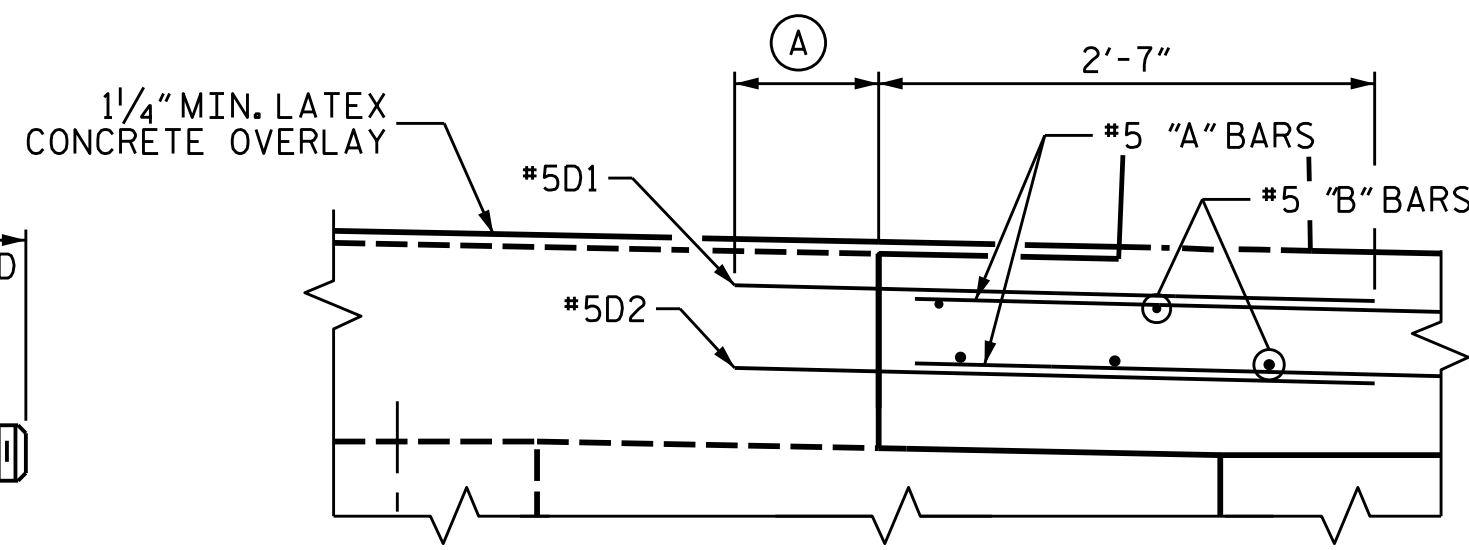


DETAIL "D"

NOTE: THE CONTRACTOR SHALL CHECK TYPE OF THREADS ON EXISTING RODS BEFORE ORDERING TURNBUCKLES.

LOCATION OF THE PROPOSED 1/4" Ø TIE RODS FOR THE INTERIOR DIAPHRAGMS IS TO LINE UP, AS NEAR AS POSSIBLE, WITH EXISTING 1/4" Ø TIE RODS. THESE DIMENSIONS SHOWN ON THE PLANS SHALL BE CHECKED BY THE RESIDENT ENGINEER AND SUBMITTED, ALONG WITH SPAN LENGTHS, TO THE STRUCTURE DESIGN UNIT.

NUTS ON EXISTING TIE RODS SHALL NOT BE REMOVED UNLESS TIE ROD PROJECTION BEYOND THE NUT IS LESS THAN 1/8". TURNBUCKLES SHALL BE TIGHTENED AGAINST THE EXISTING NUTS EXCEPT AS NOTED ABOVE.



DETAIL "E"

(A) DRILLED HOLE DIAMETER AND EMBEDMENT SHALL BE PER ADHESIVE BONDING MANUFACTURER'S RECOMMENDATIONS. BAR LENGTH BASED ON 9" MIN. EMBEDMENT.

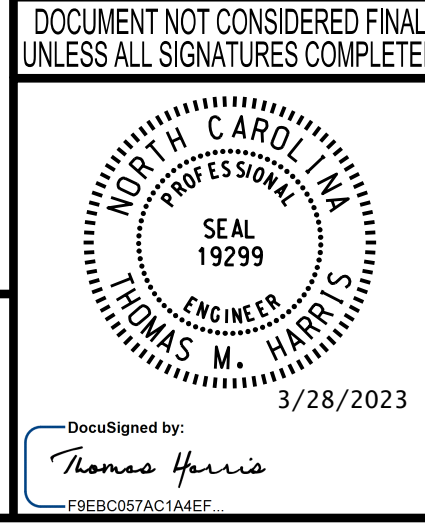
PROJECT NO. U-4424
 EDGEcombe COUNTY
 STATION: 66+24.84 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

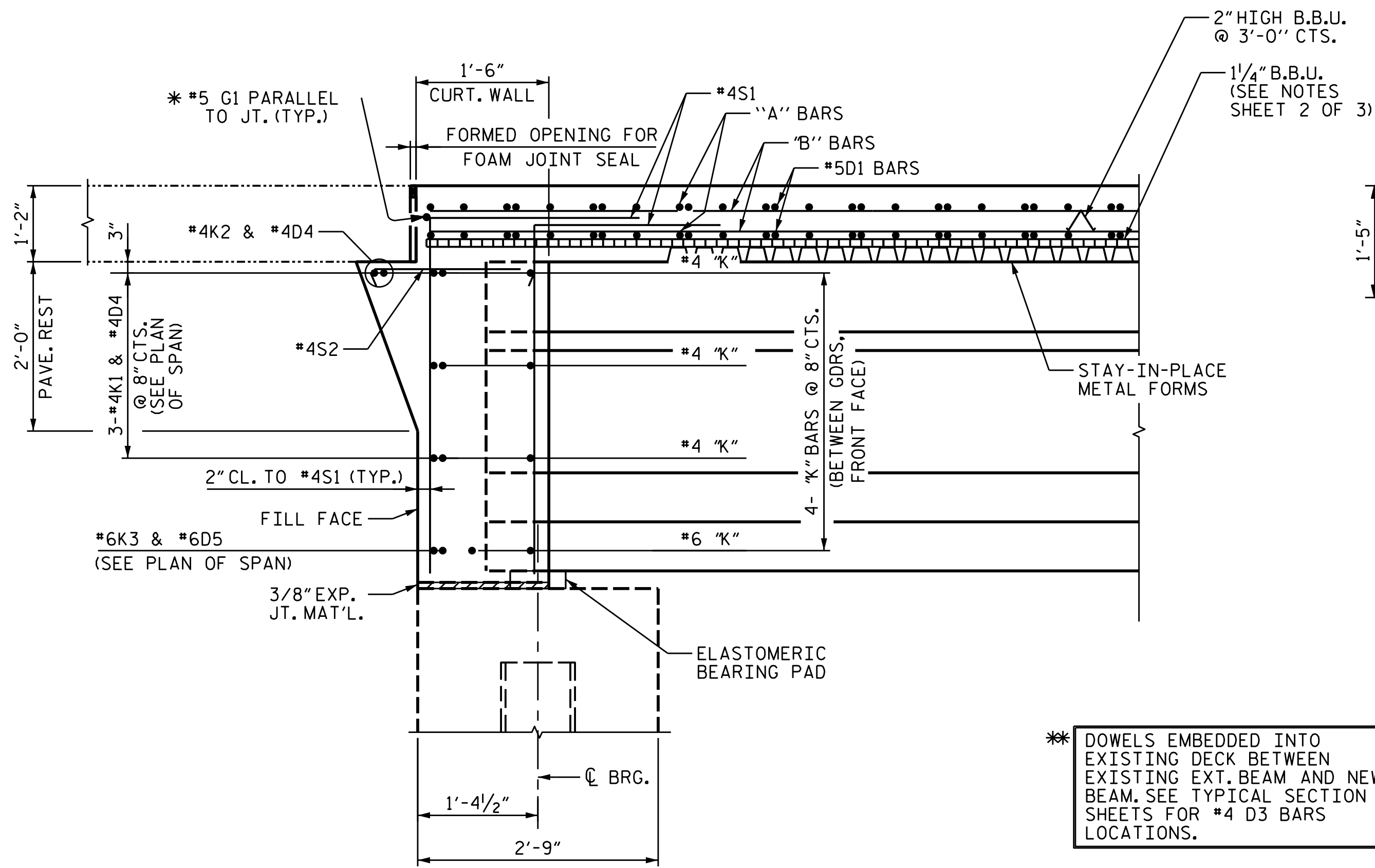
TYPICAL SECTION SPANS B & C

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			37



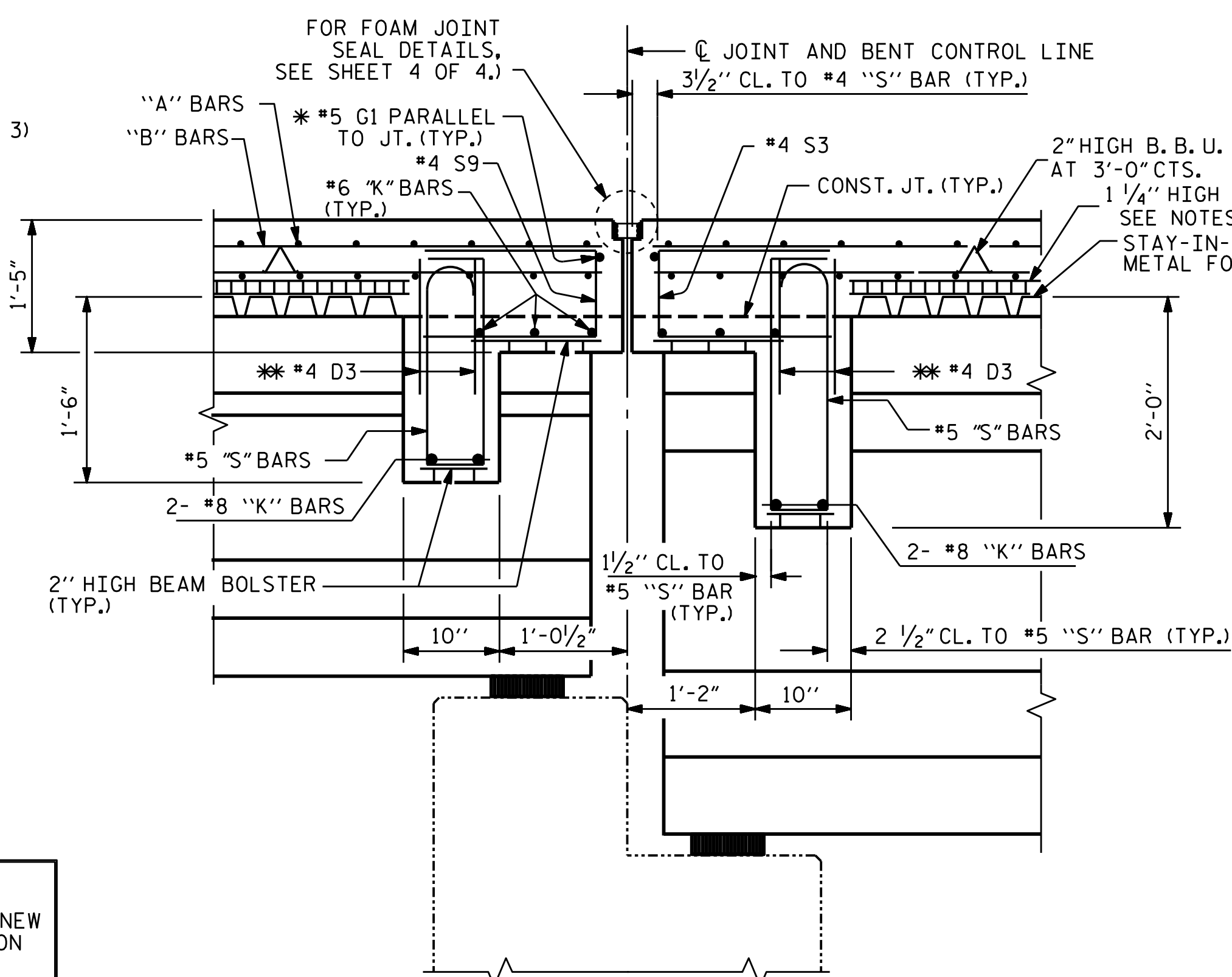
3/28/2023
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DESIGNED BY: J. WHEATLEY DATE: MAR 2023
 DRAWN BY: J. WHEATLEY DATE: MAR 2023
 CHECKED BY: T. KIRSCHBAUM DATE: MAR 2023
 DESIGN ENGINEER OF RECORD: T. HARRIS DATE: MAR 2023



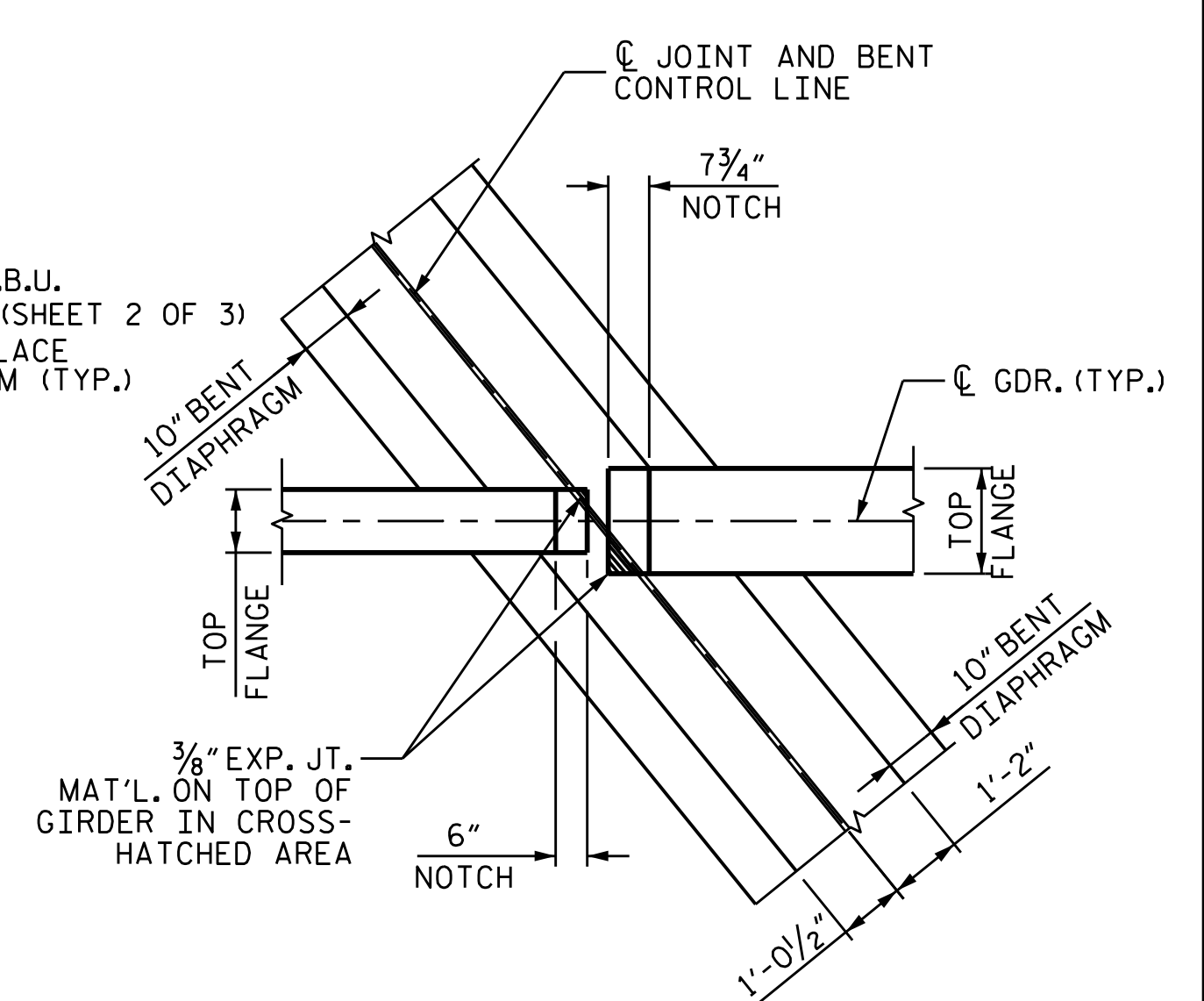
SECTION AT CURTAIN WALL

(END BENT 1 SHOWN, END BENT 2 SIMILAR)
 * #5G BAR MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO CLEAR REINFORCING STEEL AND STIRRUPS.



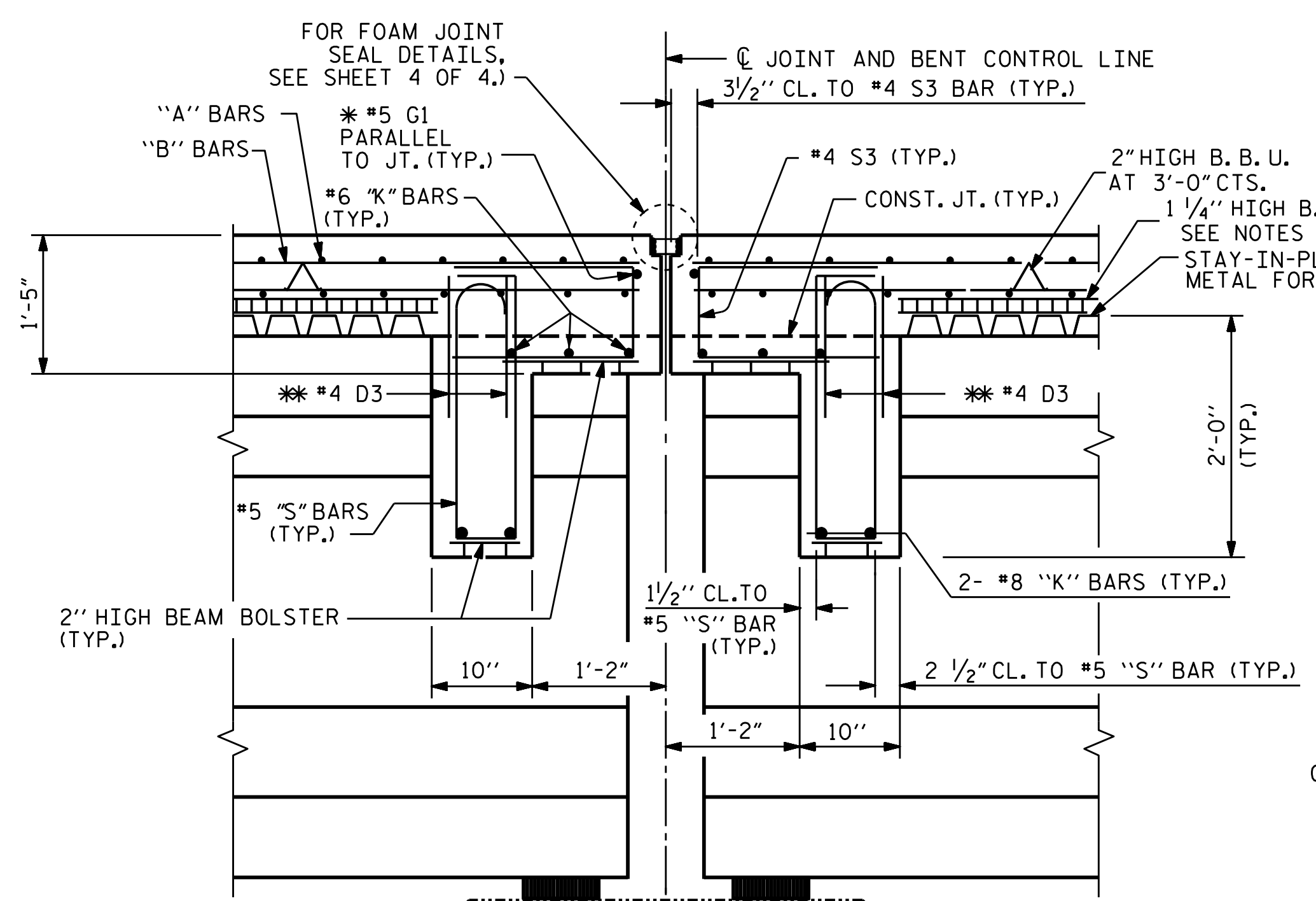
SECTION AT BENT 1 & 3 DIAPHRAGM

(BENT 1 SHOWN; BENT 3 SIMILAR)
 * #5G BAR MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO CLEAR REINFORCING STEEL AND STIRRUPS.



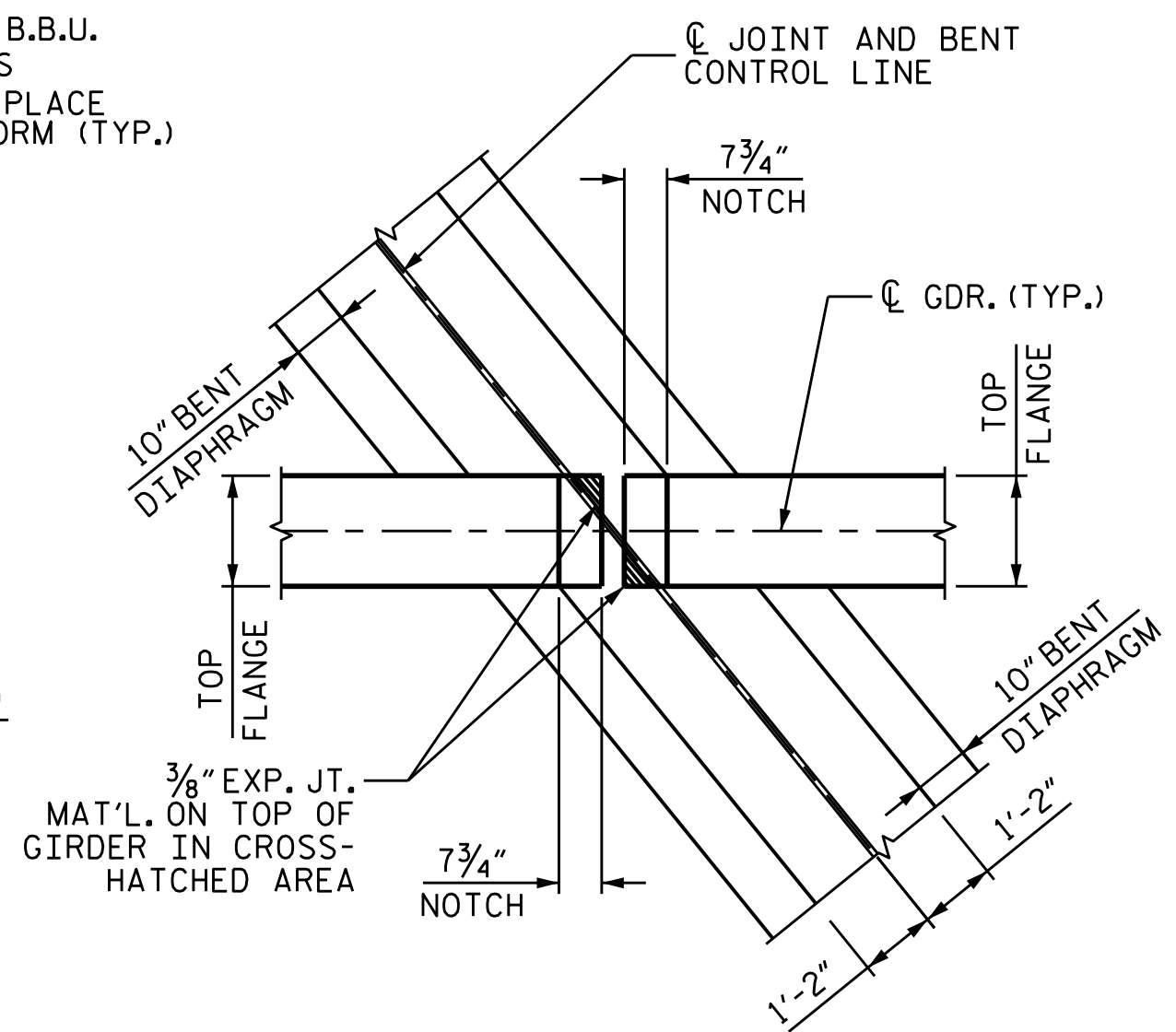
PLAN OF DIAPHRAGM AT BENT 1

(BENT 1 SHOWN, BENT 3 SIMILAR.)

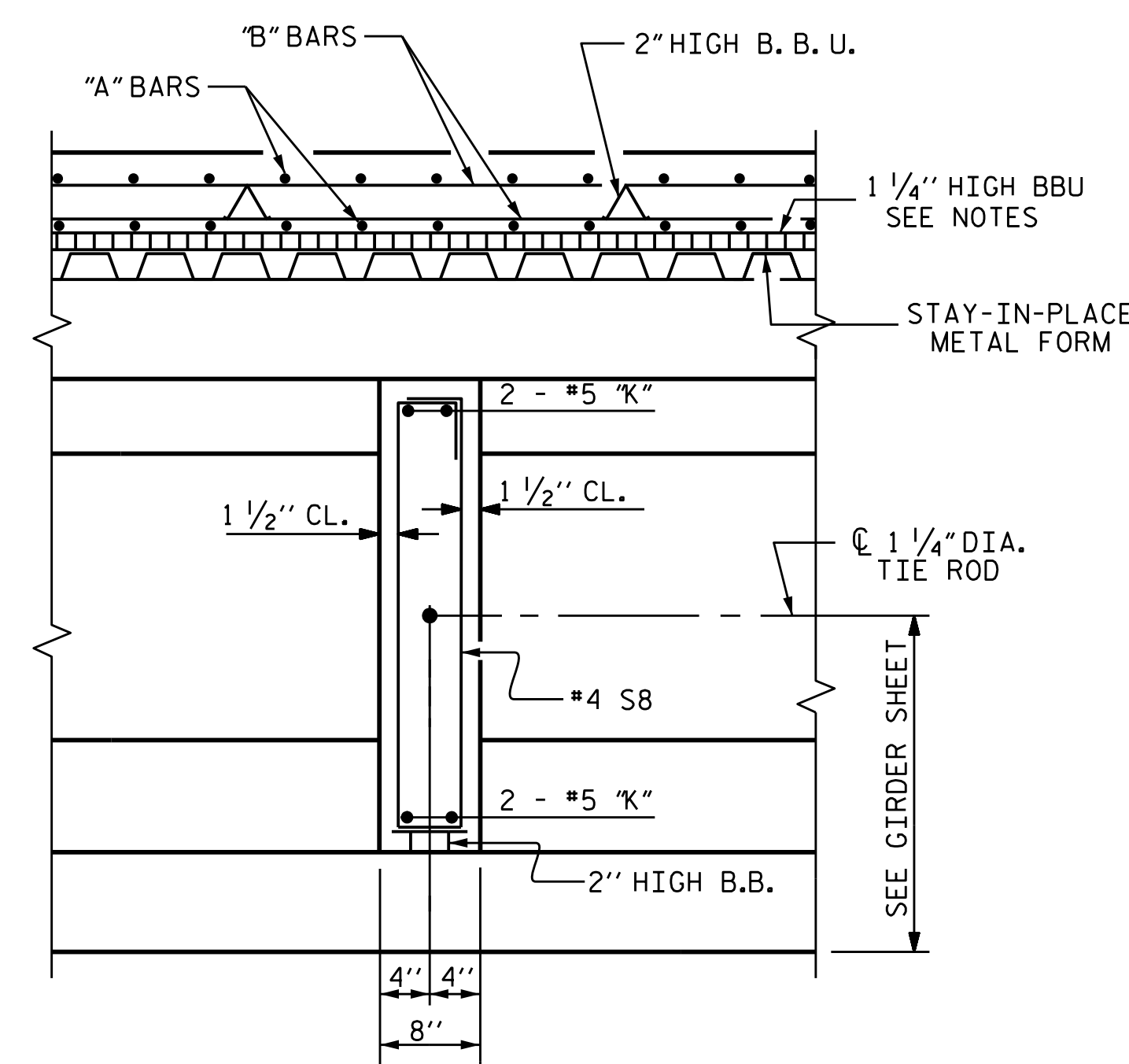


SECTION AT BENT 2 DIAPHRAGM

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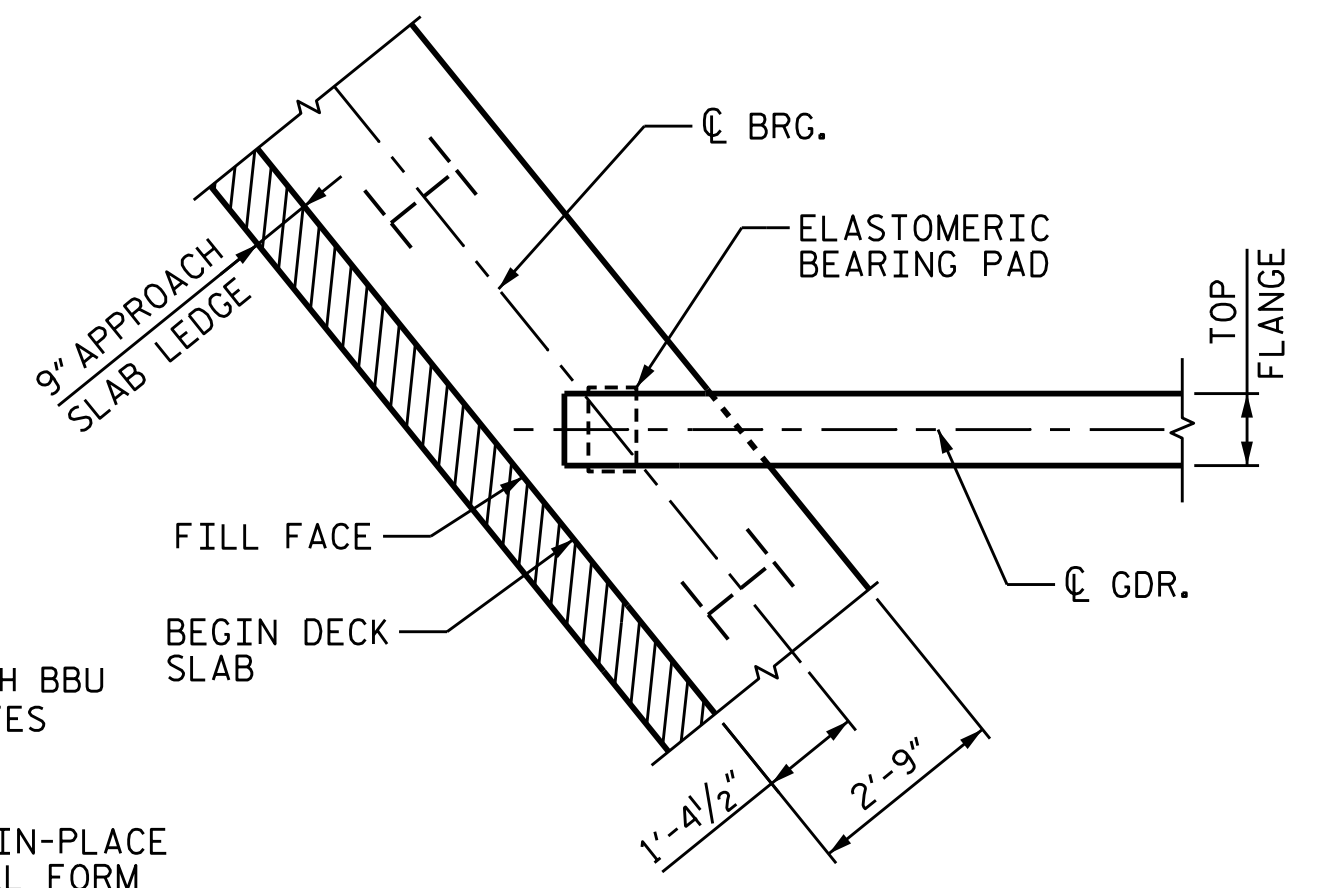


PLAN OF DIAPHRAGM AT BENT 2



SECTION AT INT. DIAPHRAGM

(SPANS B AND C)



PLAN OF DIAPHRAGM AT END BENT

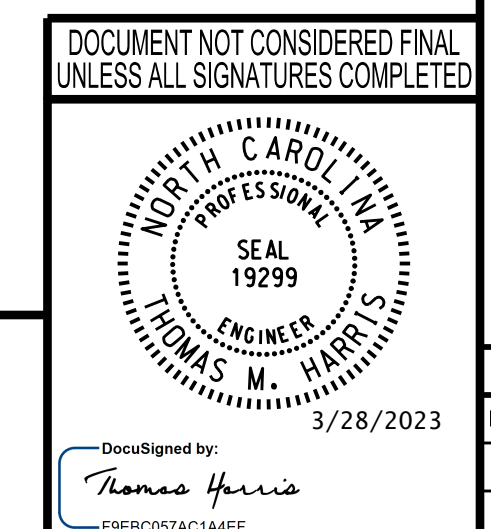
(END BENT 1 SHOWN, END BENT 2 SIMILAR.)

PROJECT NO. U-4424
 EDGEcombe COUNTY
 STATION: 66+24.84 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

TYPICAL SECTION DETAILS

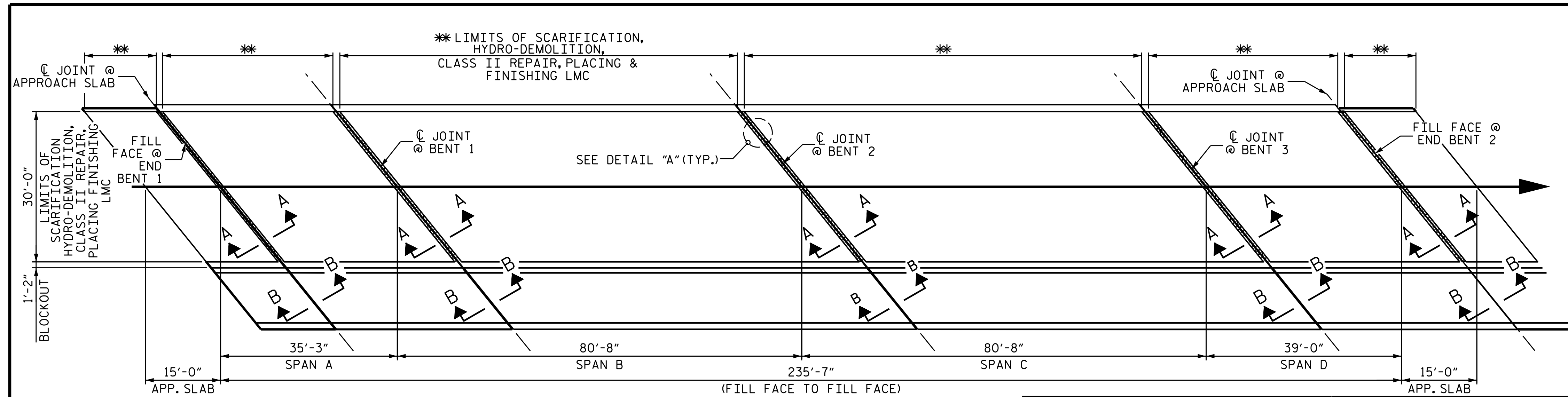


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			37

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 J:\188771-06_NCDOT_NC_111U-4424\Structures\Drawings\0401_017_U4424_SML_T53_008.dgn

DESIGNED BY:	J. WHEATLEY	DATE:	MAR 2023
DRAWN BY:	J. WHEATLEY	DATE:	MAR 2023
CHECKED BY:	T. KIRSCHBAUM	DATE:	MAR 2023
DESIGN ENGINEER OF RECORD:	T. HARRIS	DATE:	MAR 2023



ELASTOMERIC CONCRETE FOR PRESERVATION			JOINT REPAIR QUANTITY TABLE	
LOCATION	ESTIMATED * (CU. FT.)	ACTUAL (CU. FT.)	ESTIMATED (LIN. FT.)	ACTUAL (LIN. FT.)
END BENT 1	7.8		271.3	
BENT 1	7.8			
BENT 2	7.8			
BENT 3	7.8			
END BENT 2	7.8			
TOTAL	39.0			

* BASED ON THE MINIMUM BLOCKOUT SHOWN.

NOTES

HYDRO-DEMOLITION OR EXCAVATION OF CONCRETE AT THE EXISTING JOINT SHALL RESULT IN THE BOTTOM OF THE EXCAVATION BEING REASONABLY FLAT AND LEVEL, TO PROVIDE SUFFICIENT SUBSTRATE FOR PLACEMENT AND SUPPORT OF ELASTOMERIC CONCRETE.

RETAIN ALL EXISTING REINFORCING STEEL. CLEAN AND REPAIR AS NEEDED.

FINAL JOINT SEALS SHALL NOT BE INSTALL UNTIL THE LMC OVERLAY IS COMPLETE.

THE CONTRACTOR SHALL FIELD VERIFY THE EXISTING JOINT OPENING PRIOR TO ORDERING JOINT SEAL MATERIAL. IF THE ACTUAL JOINT OPENING VARIES FROM THE OPENING INDICATED IN THE DETAILS BY MORE THAN 1/4", NOTIFY THE ENGINEER.

THE MANUFACTURER IS TO PROVIDE THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE FOAM JOINT SEAL FOR THE SIZE OF THE OPENING ON THE PLANS AND ACCOMMODATE THE MINIMUM EXPANSION SHOWN ON THE PLANS.

FOAM JOINTS SHALL BE INSTALLED AS PER THE MANUFACTURER'S RECOMMENDATIONS.

THE CONTRACTOR SHALL TAKE CARE DURING JOINT REHAB OPERATIONS NOT TO DROP ANY MATERIAL BELOW THE BRIDGE, WITHOUT PROTECTIVE DEVICES BELOW TO CATCH THE MATERIAL. ANY MATERIAL THAT FALLS BELOW THE BRIDGE SHALL BE CONTAINED, REMOVED AND DISPOSED OF BY THE CONTRACTOR AT NO EXTRA COST TO THE DEPARTMENT. IF THE ENGINEER DETERMINES THAT THE PROTECTIVE DEVICES ARE NOT ADEQUATE OR NOT BEING EMPLOYED, THE WORK SHALL BE SUSPENDED UNTIL ADEQUATE PROTECTION IS PROVIDED.

THE CONTRACTOR WILL NOT BE PERMITTED TO FORM THE JOINTS IN LIEU OF SAWING THE JOINT.

THE INSTALLED FOAM JOINT SEALS SHALL BE WATER TIGHT.

FOR FOAM JOINT SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.

THE CONTRACTOR SHALL SAW CUT TO A NOMINAL DEPTH OF 1/2" BUT REINFORCING STEEL SHALL NOT BE DAMAGED. VERIFY THAT SAW-CUT DEPTH WILL NOT DAMAGE EXISTING REINFORCING STEEL.

QUANTITIES SHOWN IN THE ELASTOMERIC CONCRETE FOR PRESERVATION TABLE ARE BASED ON THE MINIMUM JOINT DEMOLITION SHOWN.

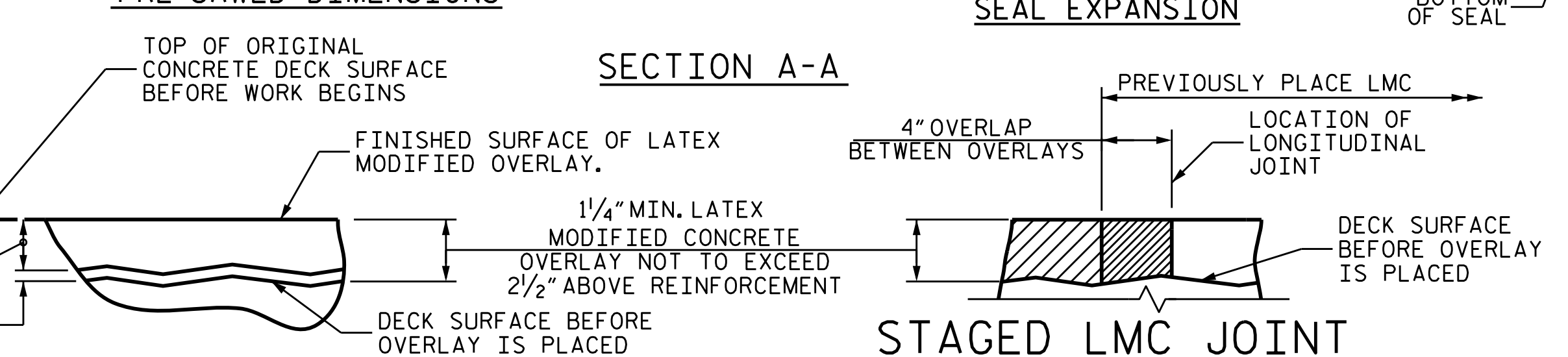
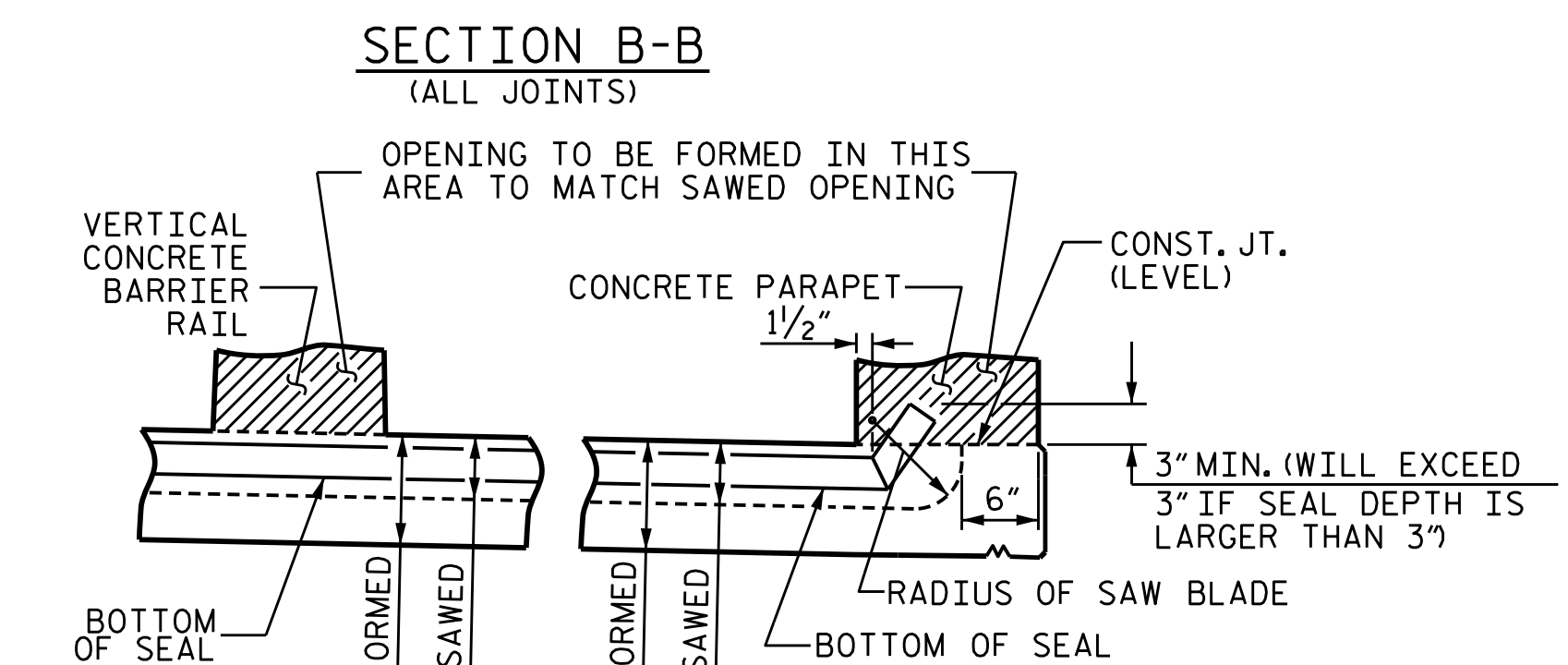
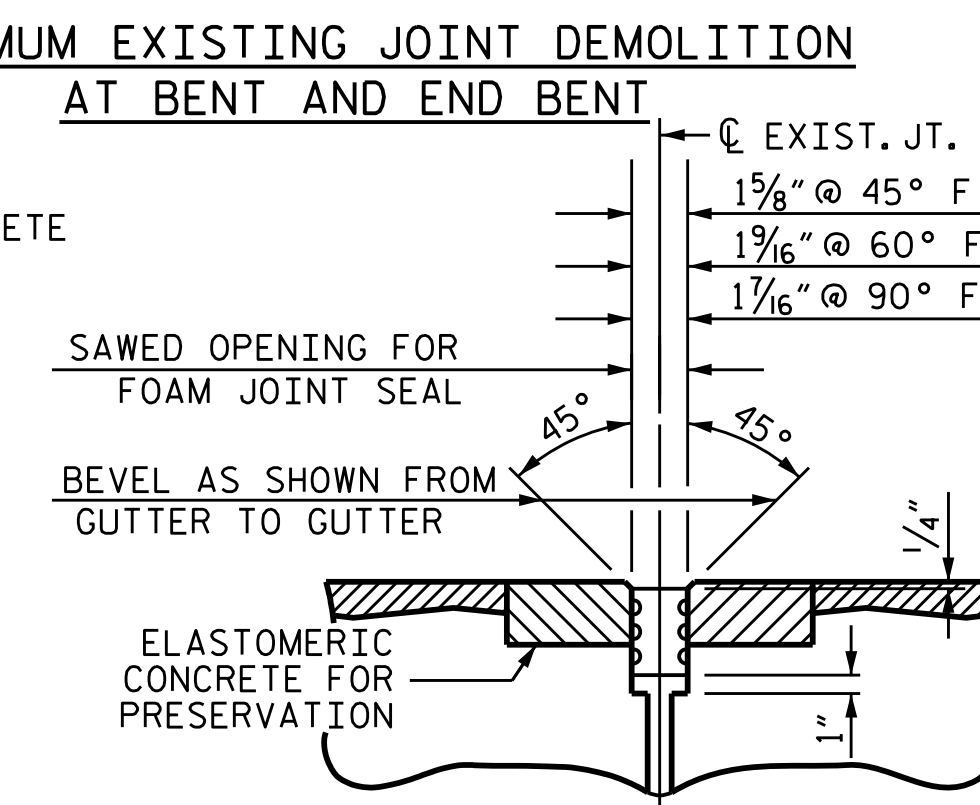
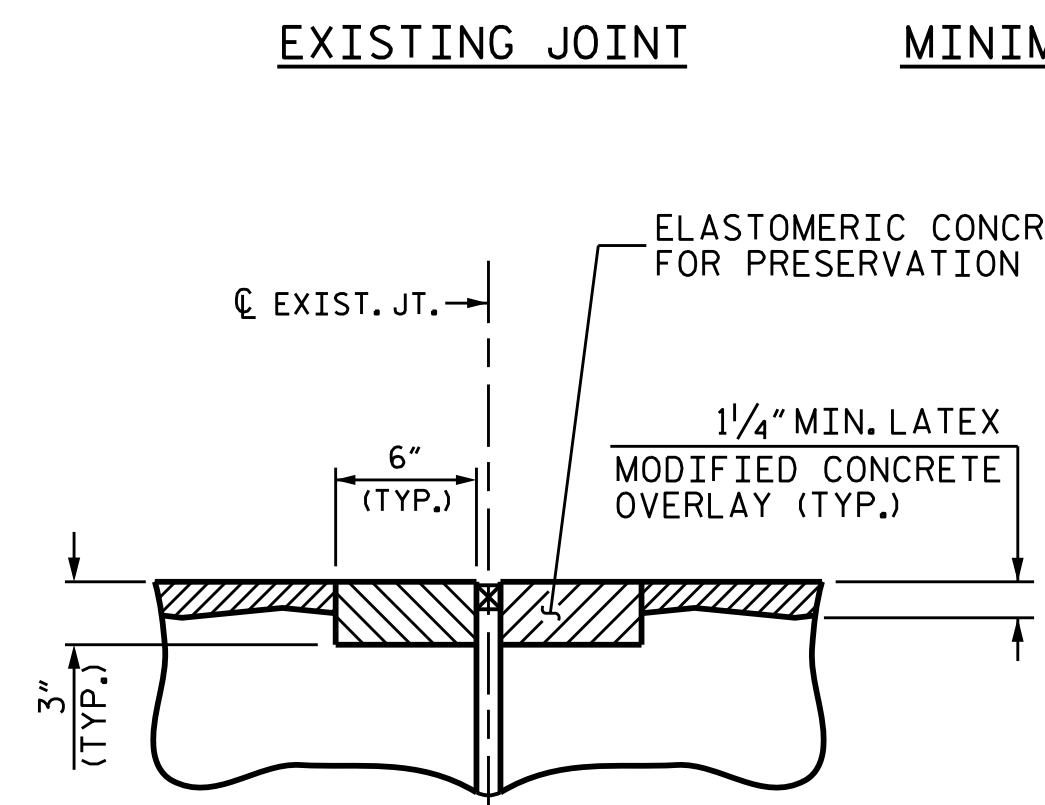
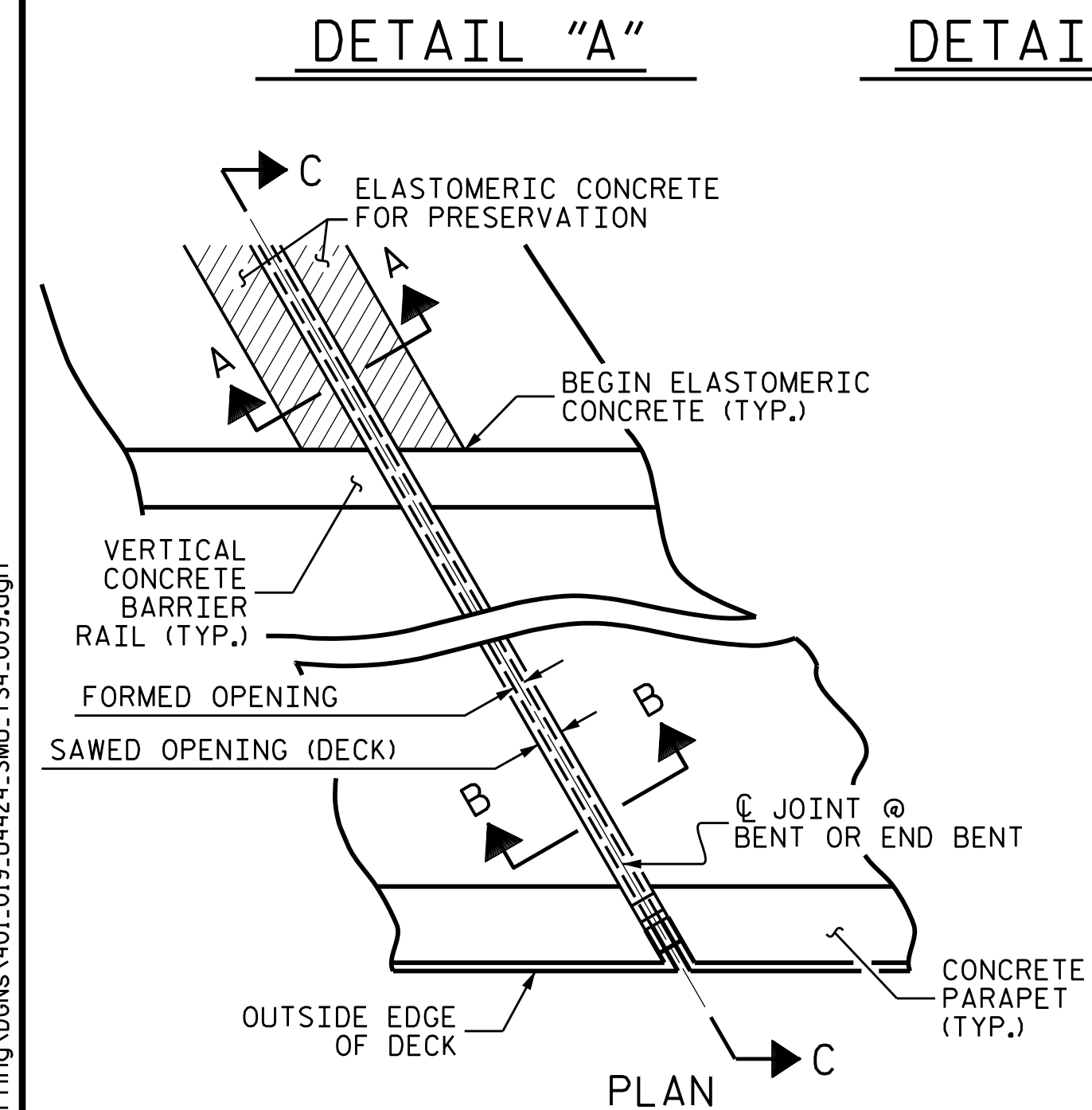
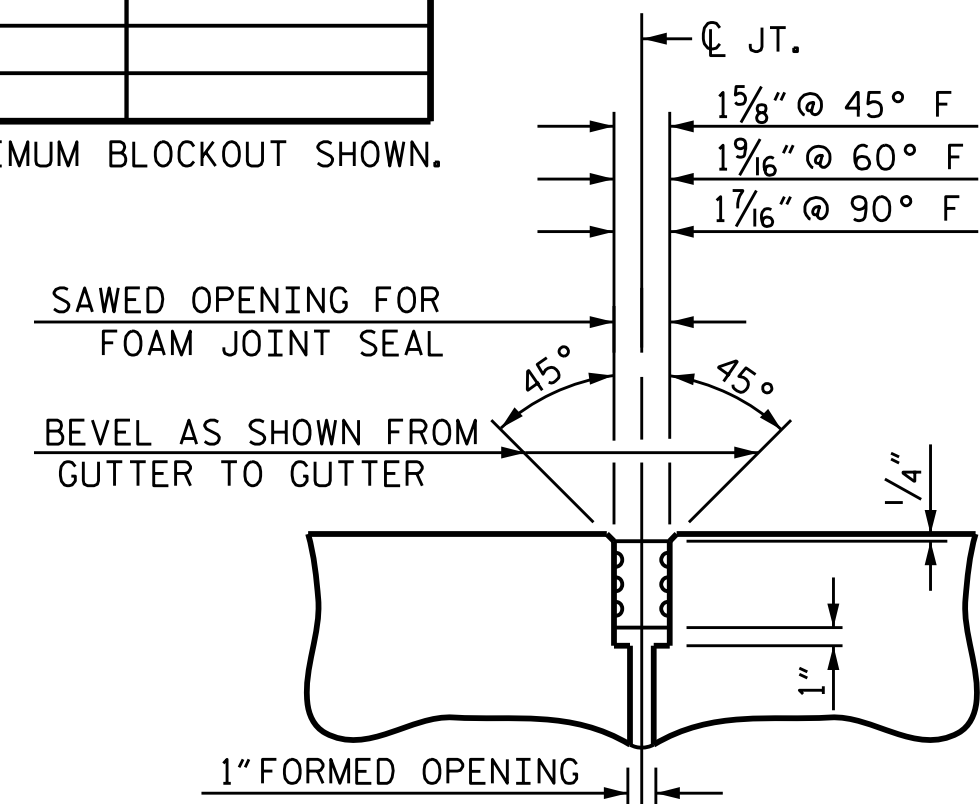
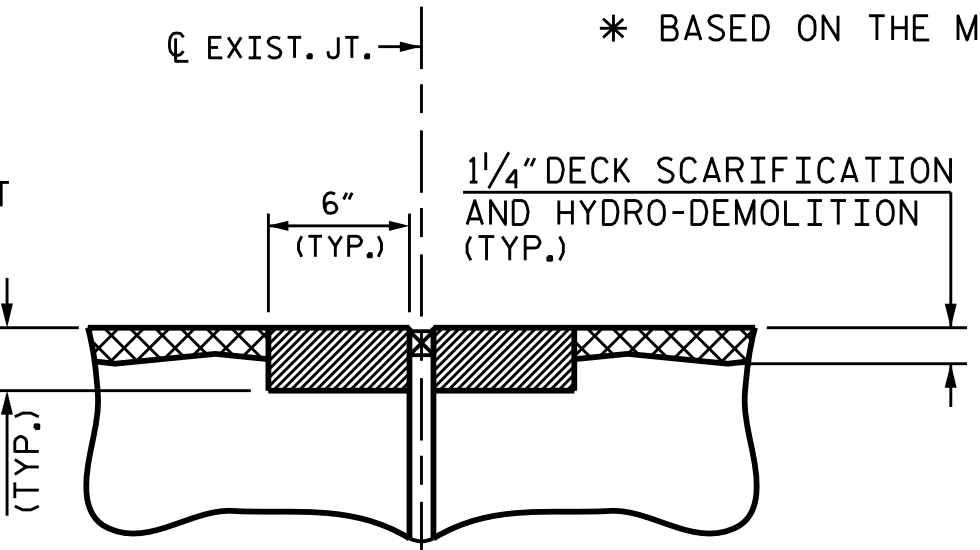
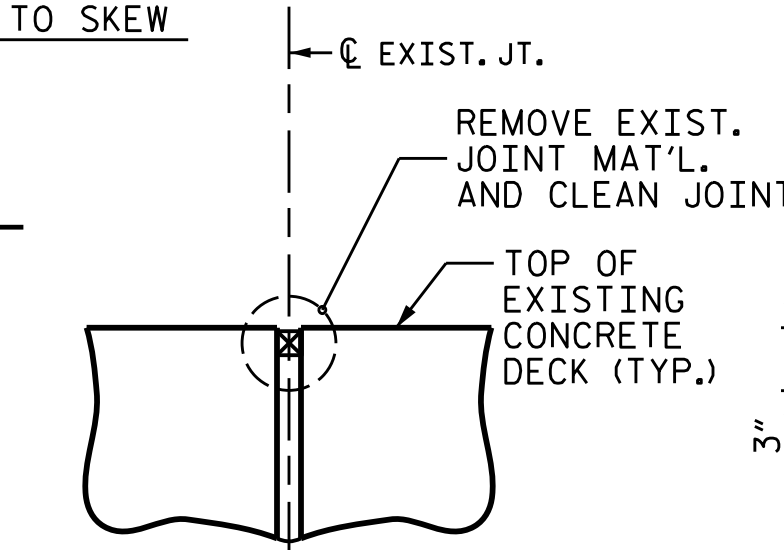
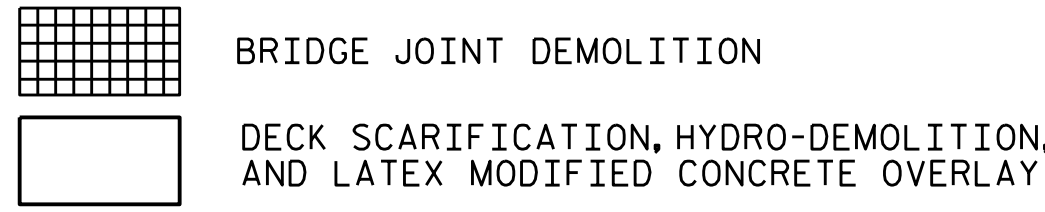
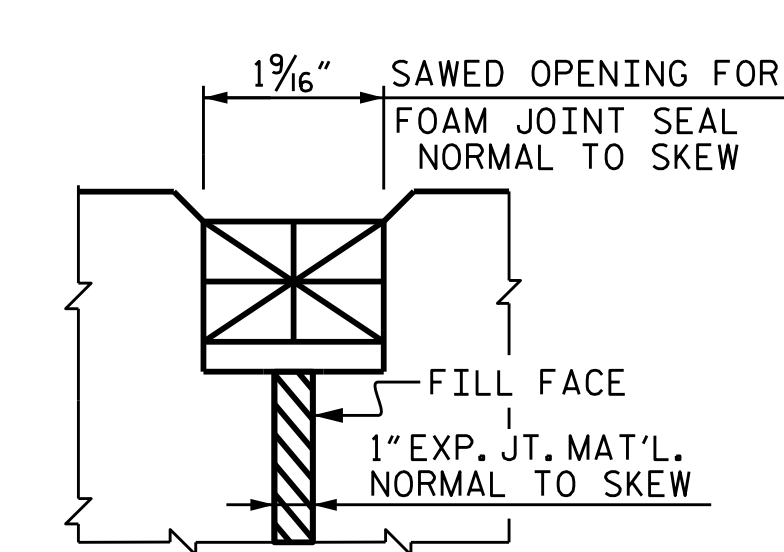
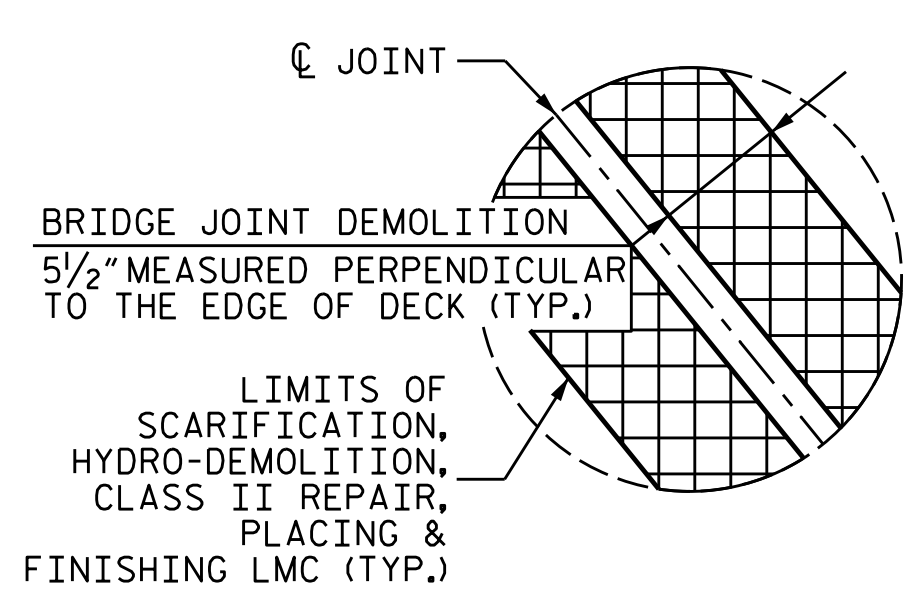
FOR EXCAVATION BELOW THE BOTTOM OF THE PLANNED JOINT DEMOLITION, CONCRETE FOR DECK REPAIRS SHALL BE PLACED IN THE EXCAVATED AREA TO THE ELEVATION AT BOTTOM OF THE PROPOSED ELASTOMERIC CONCRETE FOR PRESERVATION HEADERS SHOWN.

FINAL SURFACE OF THE JOINT DEMOLITION AREA PRIOR TO PLACEMENT OF CONCRETE REPAIR MATERIAL OR ELASTOMERIC CONCRETE FOR PRESERVATION SHOULD BE REASONABLY FLAT AND LEVEL. ENGINEER SHALL DETERMINE THE ACCEPTABILITY OF THE SURFACE PRIOR TO PLACEMENT OF REPAIR CONCRETE OR ELASTOMERIC CONCRETE FOR PRESERVATION.

FOR BRIDGE JOINT DEMOLITION, SEE SPECIAL PROVISIONS.

FOR ELASTOMERIC CONCRETE FOR PRESERVATION, SEE SPECIAL PROVISIONS.

FOR CONCRETE FOR DECK REPAIR, SEE SPECIAL PROVISIONS.



WHEN PREPARING THE SURFACE FOR LMC OVERLAY ADJACENT TO A PREVIOUSLY PLACED LMC STAGE, THE PREVIOUSLY PLACED LMC SHALL BE REMOVED FOR A DISTANCE OF 4" FROM THE LMC EDGE. THE SURFACE OF THE NEW STAGE AREA, ALONG WITH THE 4" OVERLAY AREA SHALL BE PREPARED AS PER THE OVERLAY SURFACE PREPARATION SPECIAL PROVISIONS. NEW LMC SHALL BE PLACED IN THE 4" OVERLAP AS PART OF THE LMC STAGE PLACEMENT. NOTE: CLASS II AND CLASS III REPAIRS AS NEEDED.

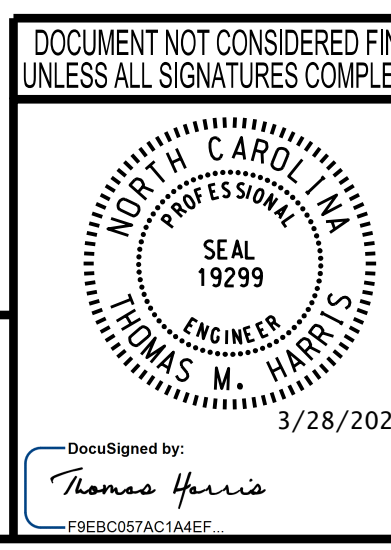
PAY ITEM INCLUDES CONCRETE FOR STAGED LMC.

SCARIFICATION AND HYDRO-DEMOLITION APPLY TO EXISTING BRIDGE DECK ONLY. FOR PROPOSED BRIDGE DECK BLOCKOUT FOR LMC OVERLAY DETAILS, SEE CONSTRUCTION SEQUENCE SHEET 1 OF 2. FOR APPROACH SLAB BLOCKOUT DETAILS, SEE BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT SHEET.

PROJECT NO. U-4424
EDGEcombe COUNTY
STATION: 66+24.84 -L-
SHEET 4 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
TYPICAL SECTION DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S-9
TOTAL SHEETS 37



3/28/2023 4:188771-06 NCDOT_NC_111U-4424Sfructures\Dr-offring\06Ns\401_019_U4424_SML_T54_009.dgn

DESIGNED BY: J. WHEATLEY DATE: MAR 2023
DRAWN BY: J. WHEATLEY DATE: MAR 2023
CHECKED BY: T. KIRSCHBAUM DATE: MAR 2023
DESIGN ENGINEER OF RECORD: T. HARRIS DATE: MAR 2023

NOTES

FOR LAP LENGTHS NOT SHOWN, REFER TO TABLE ON "SUPERSTRUCTURE BILL OF MATERIAL" SHEET.

INTERMEDIATE DIAPHRAGMS NOT SHOWN FOR CLARITY. FOR LOCATIONS, SEE "FRAMING PLAN" SHEET.

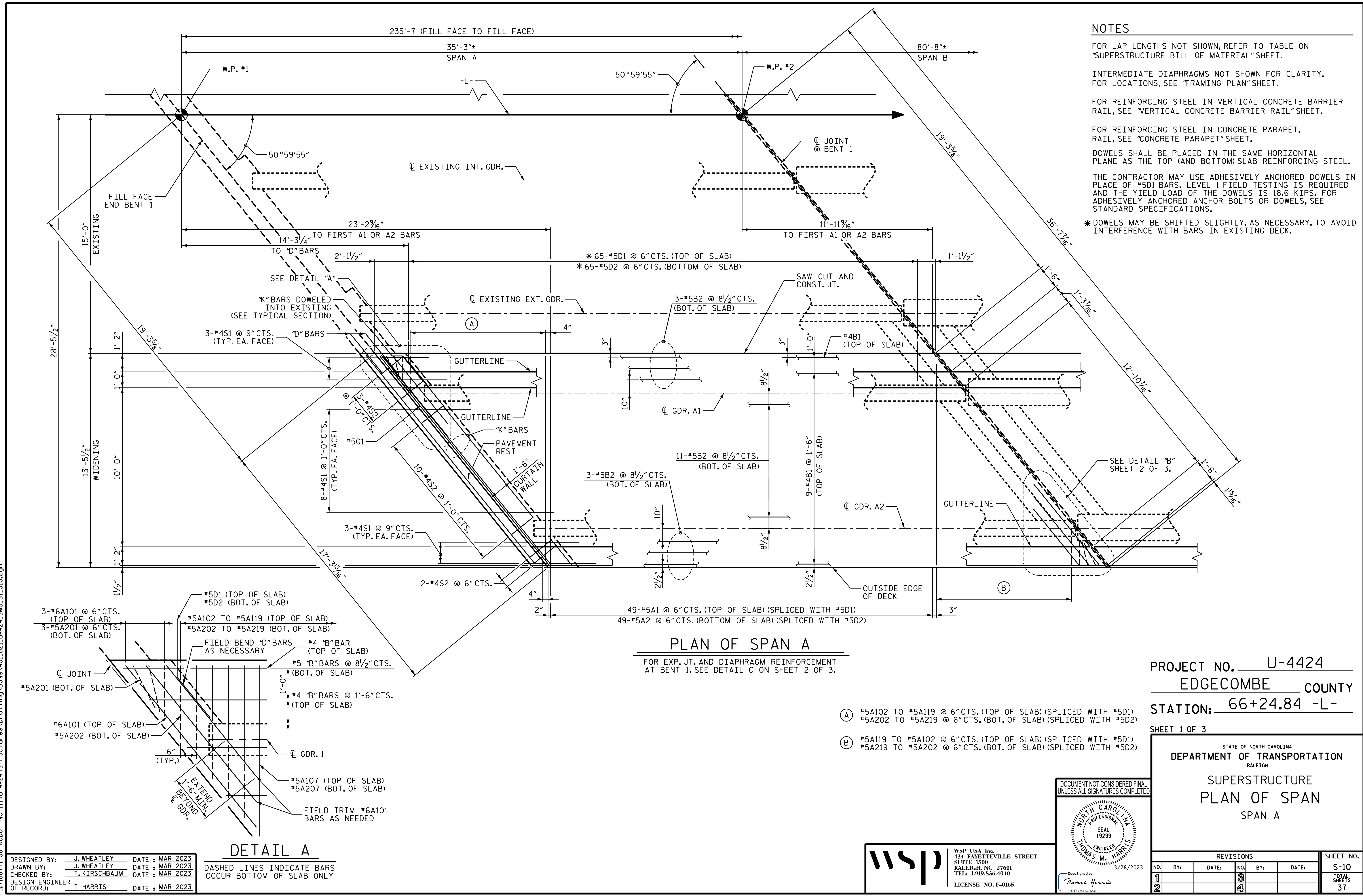
FOR REINFORCING STEEL IN VERTICAL CONCRETE BARRIER RAIL, SEE "VERTICAL CONCRETE BARRIER" SHEET.

FOR REINFORCING STEEL IN CONCRETE PARAPET, RAIL, SEE "CONCRETE PARAPET" SHEET.

DOWELS SHALL BE PLACED IN THE SAME HORIZONTAL PLANE AS THE TOP (AND BOTTOM) SLAB REINFORCING STEEL.

THE CONTRACTOR MAY USE ADHESIVELY ANCHORED DOWELS IN PLACE OF #5D1 BARS. LEVEL 1 FIELD TESTING IS REQUIRED AND THE YIELD LOAD OF THE DOWELS IS 18.6 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS.

* DOWELS MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH BARS IN EXISTING DECK.

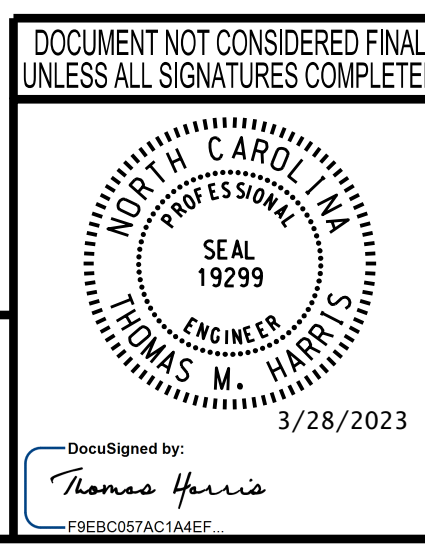


PROJECT NO. U-4424
EDGEcombe COUNTY
 STATION: 66+24.84 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 PLAN OF SPAN
 SPAN A**

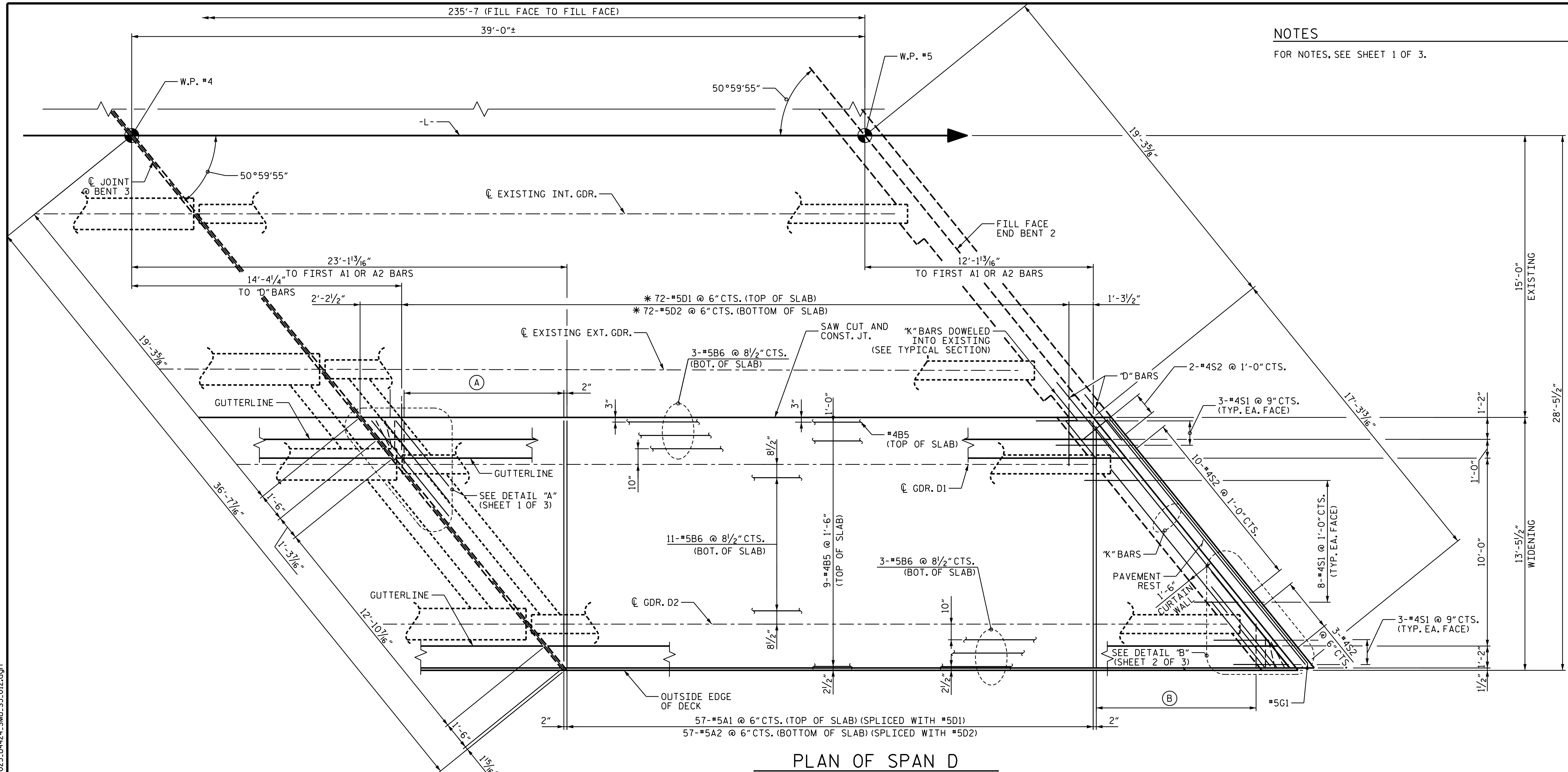


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NOTES
FOR NOTES, SEE SHEET 1 OF 3.

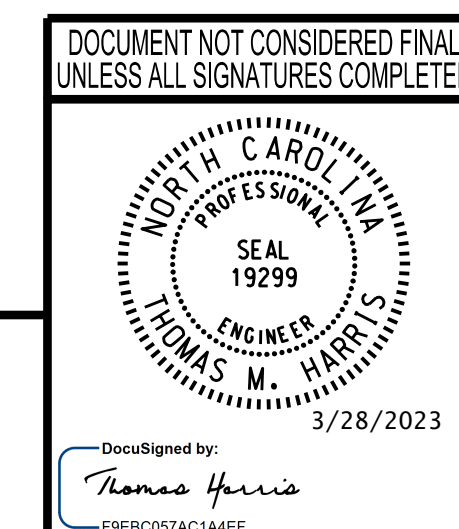


PLAN OF SPAN D
 FOR EXP. JT. AND DIAPHRAGM REINFORCEMENT AT BENT 3, SEE DETAIL C ON SHEET 2 OF 3.

- (A) #5A102 TO #5A119 @ 6" CTS. (TOP OF SLAB) (SPliced WITH #5D1)
 #5A202 TO #5A219 @ 6" CTS. (BOT. OF SLAB) (SPliced WITH #5D2)
- (B) #5A119 TO #5A102 @ 6" CTS. (TOP OF SLAB)
 #5A219 TO #5A202 @ 6" CTS. (BOT. OF SLAB)

PROJECT NO. U-4424
EDGEcombe COUNTY
 STATION: 66+24.84 -L-
 SHEET 3 OF 3

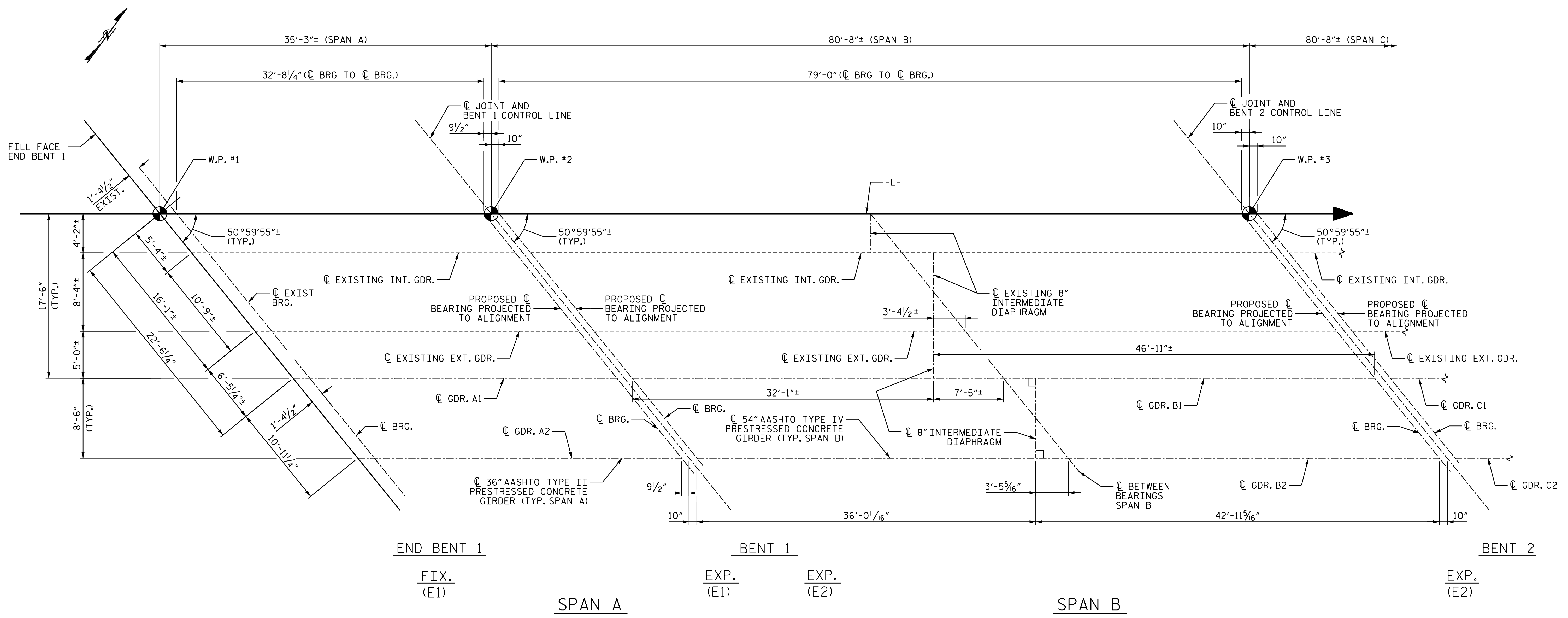
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE PLAN OF SPAN SPAN D					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S-12
TOTAL SHEETS					37



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3/28/2023
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DESIGNED BY:	J. WHEATLEY	DATE:	MAR 2023
DRAWN BY:	J. WHEATLEY	DATE:	MAR 2023
CHECKED BY:	T. KIRSCHBAUM	DATE:	MAR 2023
DESIGN ENGINEER OF RECORD:	T. HARRIS	DATE:	MAR 2023



FRAMING PLAN - SPANS A & B

NOTES

FOR ELASTOMERIC BEARING DETAILS, SEE "ELASTOMERIC BEARING DETAILS" SHEET.

END BENTS AND BENTS ARE PARALLEL.

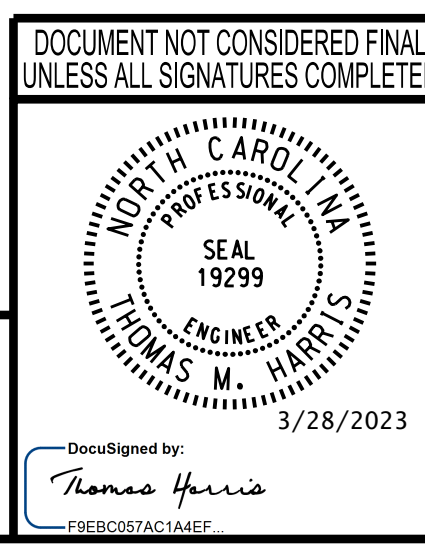
CONTRACTOR IS RESPONSIBLE FOR FURNISHING ANY NECESSARY TEMPORARY BRACING FOR GIRDERS DURING ERECTION PRIOR TO PLACING DIAPHRAGMS AND DECK.

ALL DIMENSIONS SHOWN ARE HORIZONTAL.

EXISTING INTERIOR BENT BEARING LINES DO NOT ALIGN WITH PROPOSED BEARING LINES.

PROJECT NO. U-4424
EDGEcombe COUNTY
 STATION: 66+24.84 -L-
 SHEET 1 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE FRAMING PLAN SPANS A & B					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S-13
TOTAL SHEETS					37

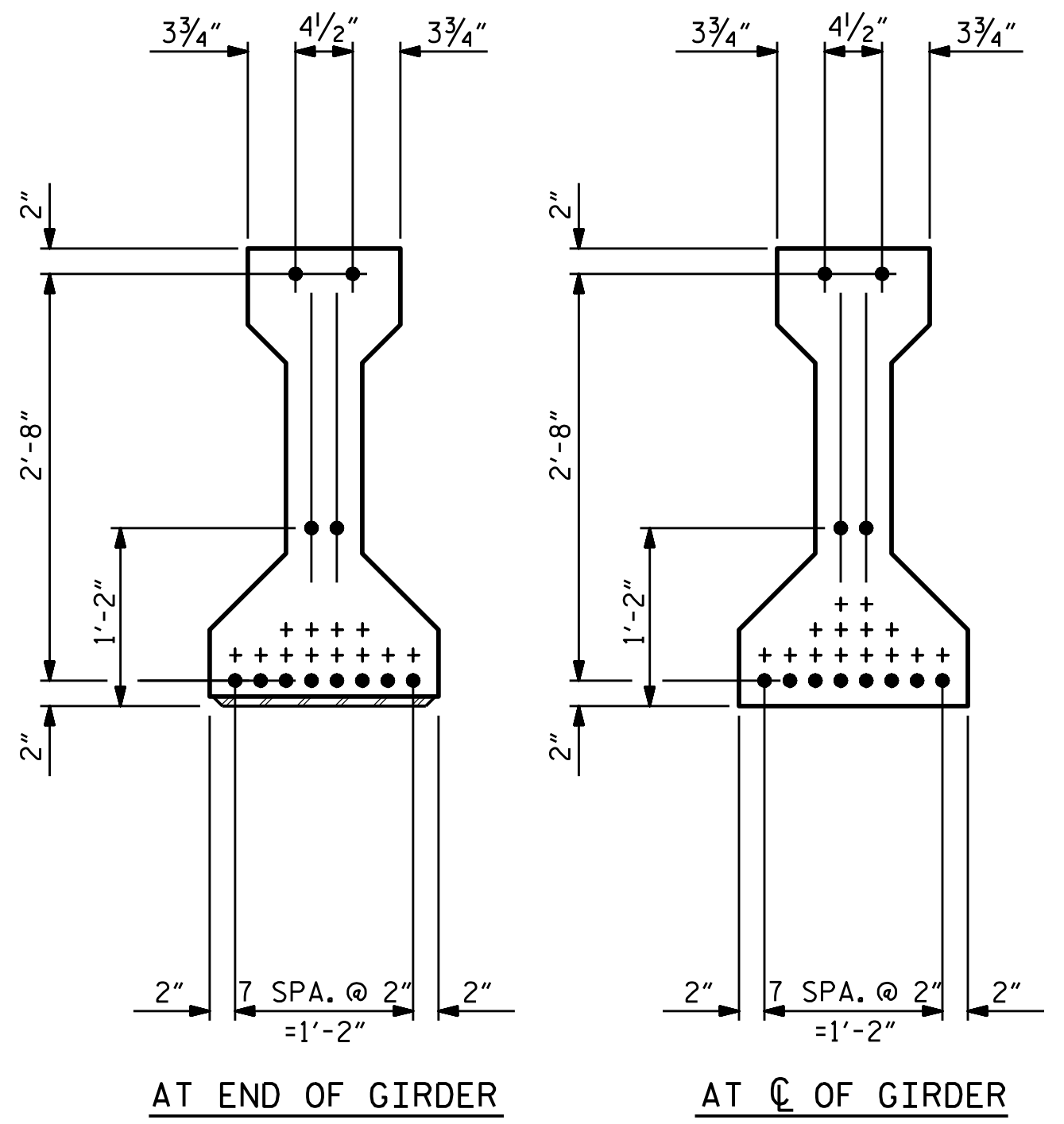
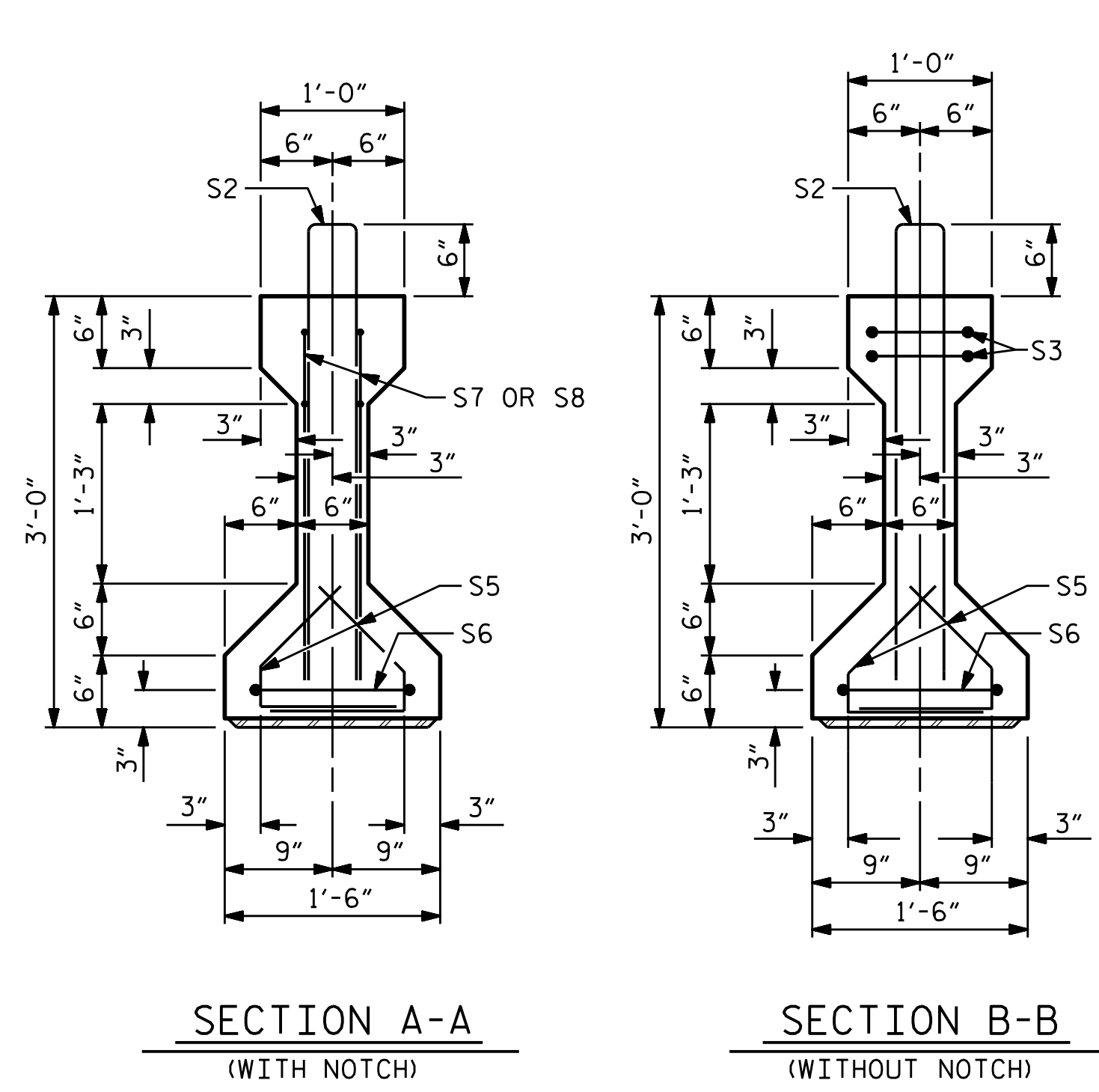


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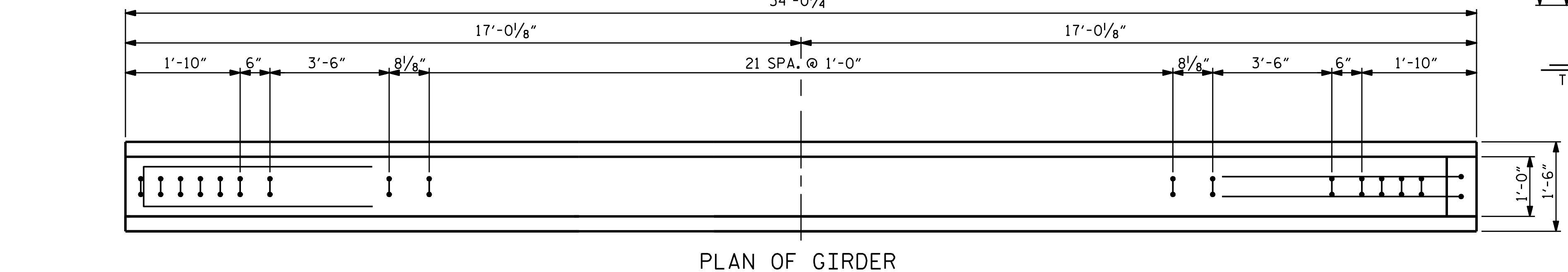
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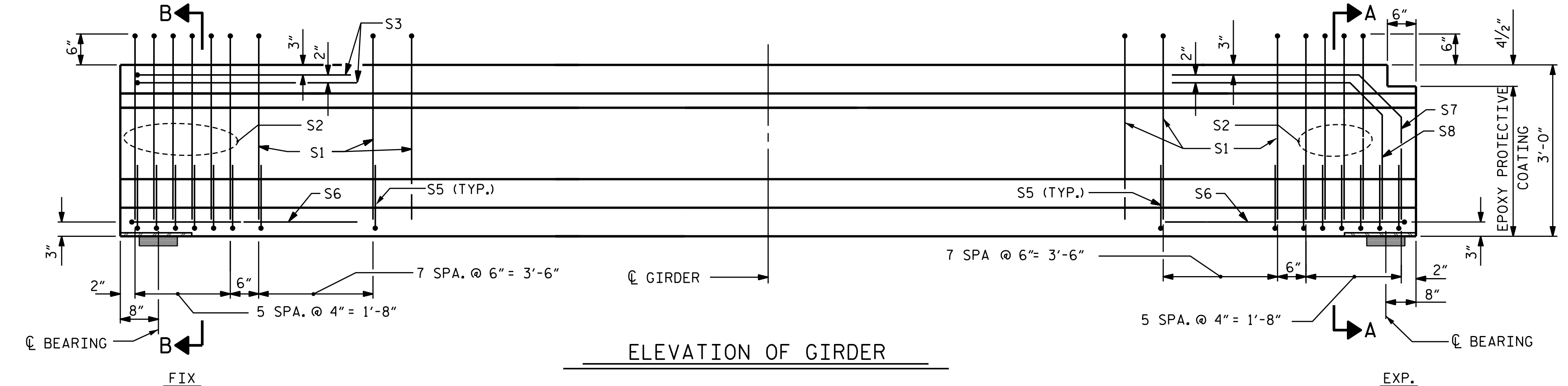
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DESIGN ENGINEER OF RECORD:	T. HARRIS	DATE:	MAR 2023



12-0.6" Ø LOW RELAXATION STRAND LAYOUT
• FULLY BONDED STRANDS



PLAN OF GIRDER



ELEVATION OF GIRDER

NOTES

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

APPLY EPOXY PROTECTIVE COATING TO END OF GIRDER SURFACES AS SHOWN.

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.

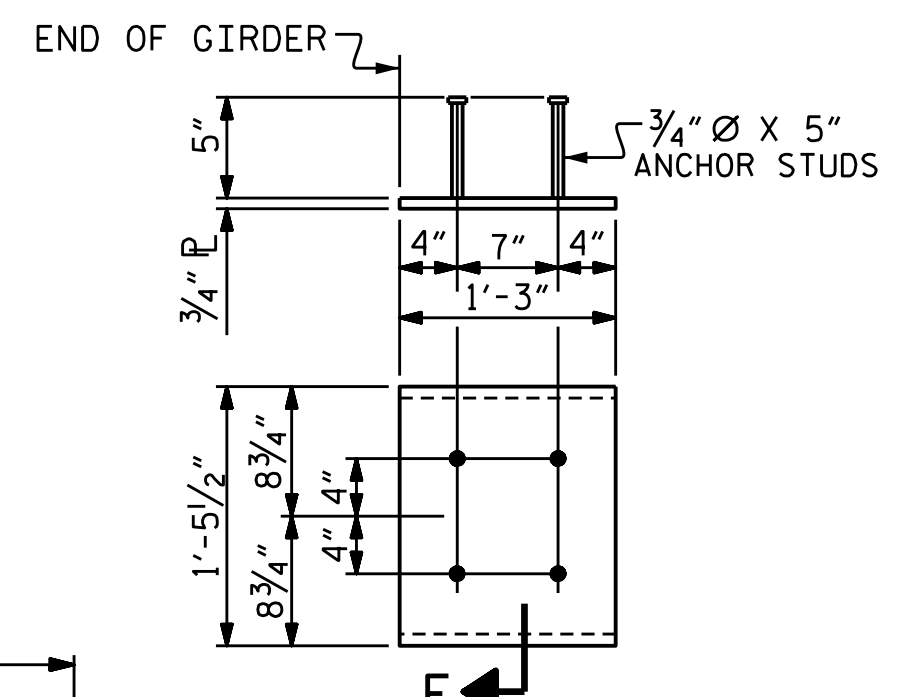
ALL PRESTRESSED STRANDS SHALL BE CUT FLUSH WITH THE GIRDER ENDS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 4000 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 SHALL BE RAKED TO A DEPTH OF 1/4" EXCEPT IN THE AREA BETWEEN THE STIRRUP AND THE EDGE OF THE GIRDER.

ALL REINFORCING STEEL SHALL BE GRADE 60.



EMBEDDED PLATE "B-1" DETAILS
TWO EMBEDDED PLATES "B-1" ARE REQUIRED FOR EACH GIRDER.

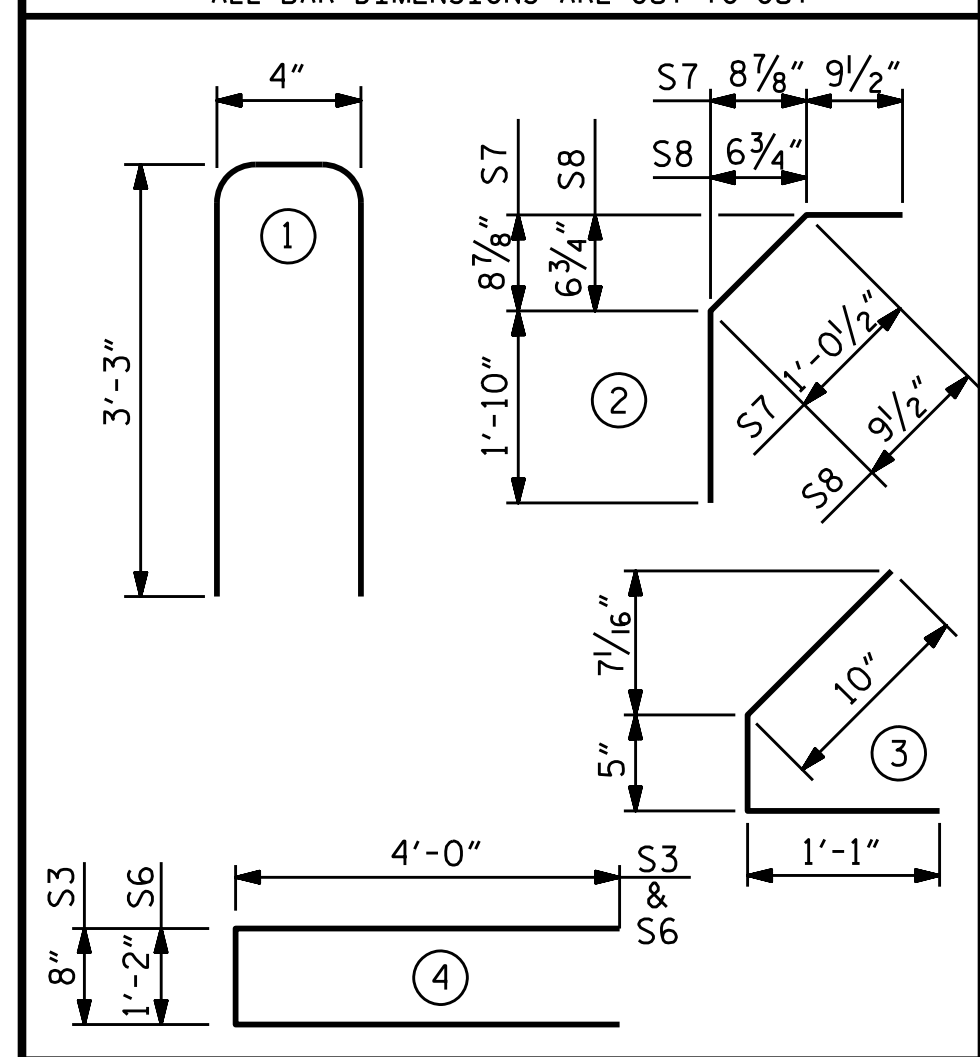
0.6" Ø L. R. GRADE 270 STRANDS

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	38	#4	1	6'-10"	173
S2	10	#5	1	6'-10"	71
S3	2	#4	4	8'-8"	12
S5	56	#4	3	2'-4"	87
S6	2	#4	4	9'-2"	12
S7	2	#5	2	3'-8"	8
S8	2	#5	2	3'-5"	7

BAR TYPES



QUANTITIES FOR ONE GIRDER

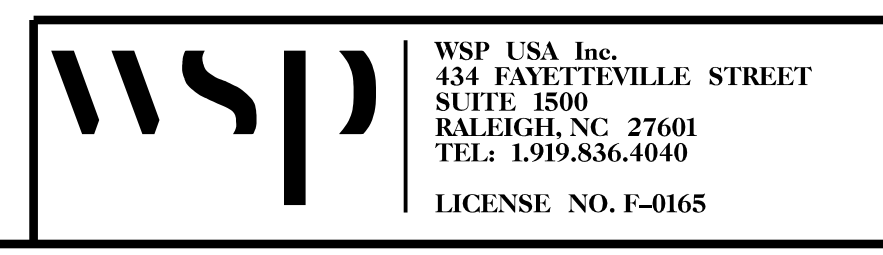
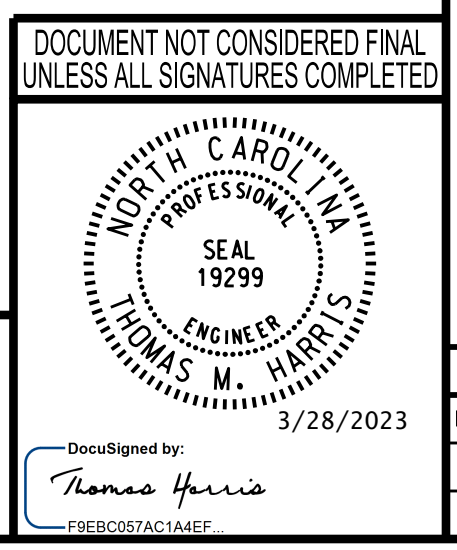
	REINFORCING STEEL LB.	5000 PSI CONCRETE C.Y.	0.6" Ø L. R. STRANDS No.
A1, A2	370	3.23	12

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
2	34.0	68.0

PROJECT NO. U-4424
EDGEcombe COUNTY
STATION: 66+24.84 -L-

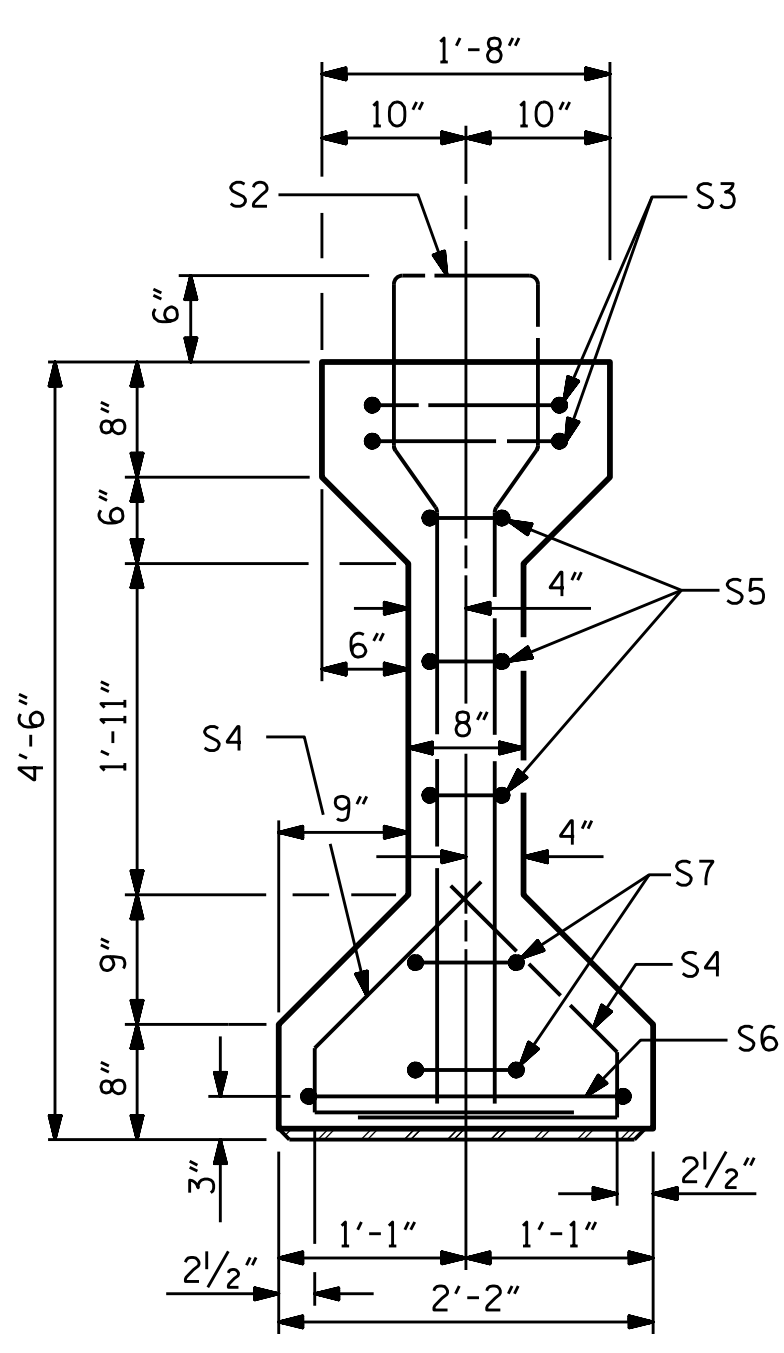
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
AASHTO TYPE II
PRESTRESSED CONCRETE GIRDER
SPAN A



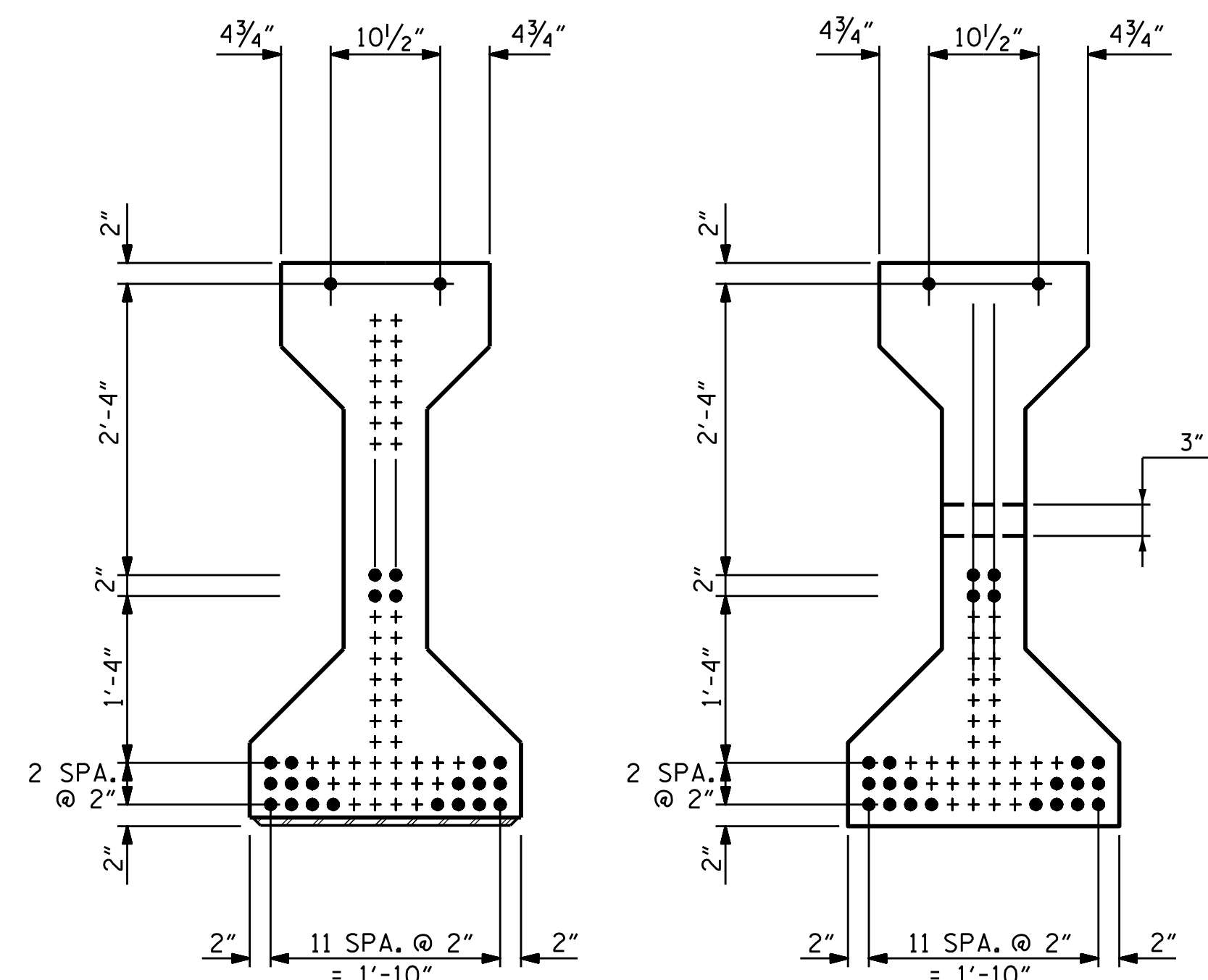
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			37

3/28/2023 J:\188771-06 NCDOT NC 111U-4424\Structures\Dr-off-ring\DGNS\401_031_U4424_SMU.G1_015.dgn

DRAWN BY: JMB 12/87	REV. 1/15	MAA/TMG
CHECKED BY: ARB 12/87	REV. 2/15	MAA/TMG
	REV. 12/17	MAA/THC
DESIGNED BY: J. WHEATLEY	DATE: MAR 2023	
DRAWN BY: J. WHEATLEY	DATE: MAR 2023	
CHECKED BY: T. KIRSCHBAUM	DATE: MAR 2023	
DESIGN ENGINEER OF RECORD: T. HARRIS	DATE: MAR 2023	



SECTION A-A



24-0.6" Ø LOW RELAXATION STRAND LAYOUT

• FULLY BONDED STRANDS

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.

APPLY EPOXY PROTECTIVE COATING TO END OF GIRDER SURFACES.

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.

ALL PRESTRESSED 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 4000 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 SHALL BE RAKED TO A DEPTH OF 1/4" EXCEPT IN THE AREA BETWEEN THE STIRRUP AND THE EDGE OF THE GIRDER.

WHEN DRAPED STRANDS ARE DETAILED, THE LONGITUDINAL LOCATION OF THE HOLD DOWN DEVICES SHALL BE WITHIN 6" OF THE LOCATION SHOWN AND THE CENTER OF GRAVITY OF THE GROUP OF DRAPED STRANDS SHALL BE LOCATED WITHIN 1/2" OF THE THEORETICAL LOCATION SHOWN.

ALL REINFORCING STEEL SHALL BE GRADE 60.

END OF GIRDER

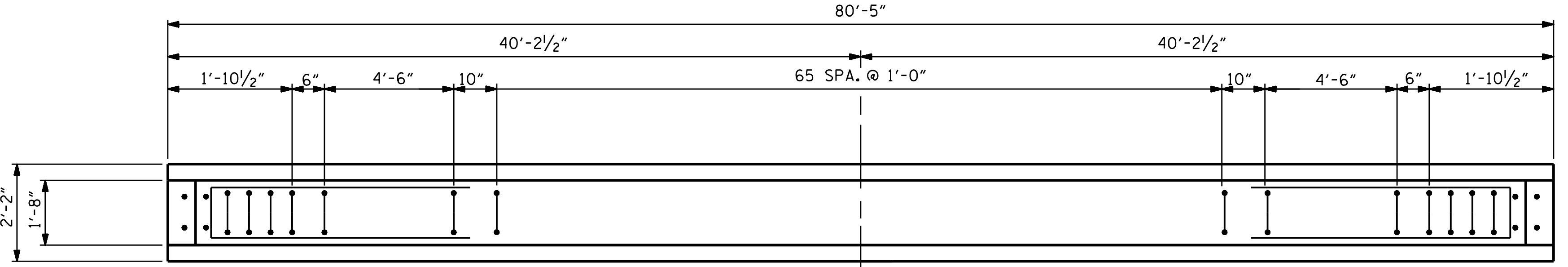
ANCHOR STUDS

SECTION "F"

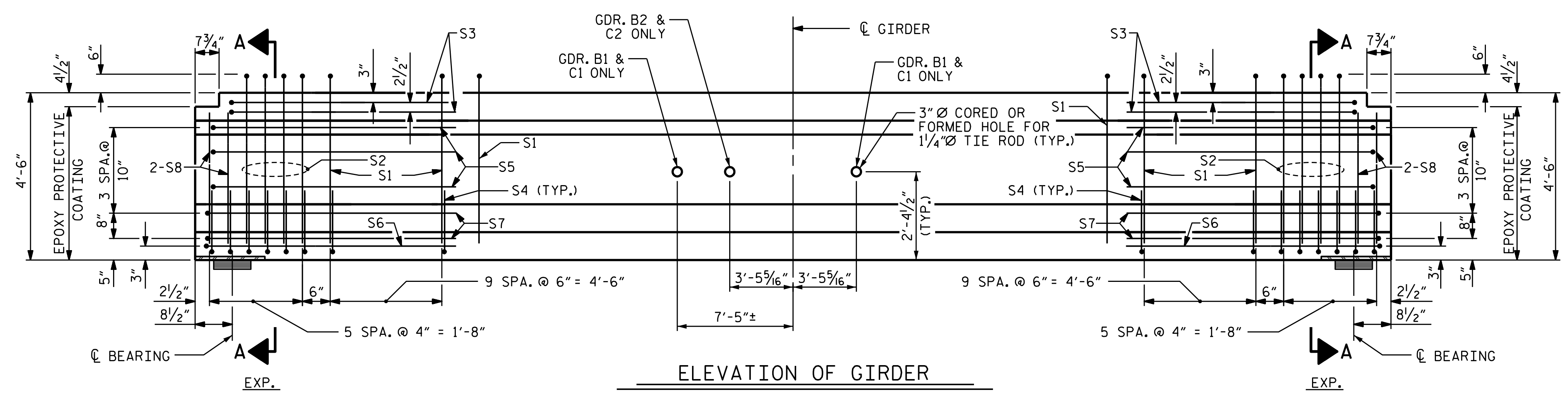
(SEE NOTES)

EMBEDDED PLATE "B-1" DETAILS

TWO EMBEDDED PLATES "B-1" ARE REQUIRED FOR EACH GIRDER.



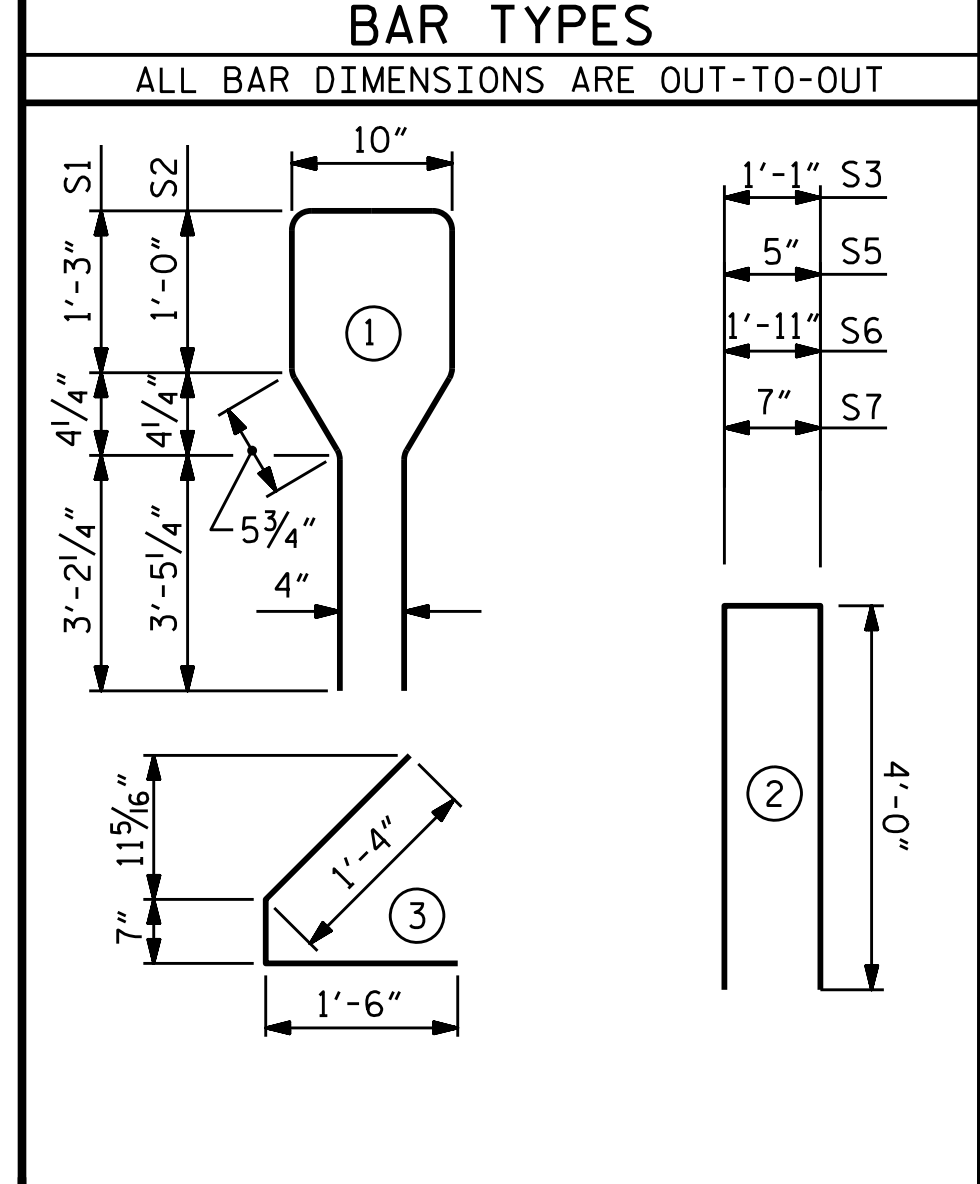
PLAN OF GIRDER



ELEVATION OF GIRDER

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	86	#4	1	10'-8"	613
S2	8	#6	1	10'-8"	128
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
S7	4	#4	2	8'-7"	23
S8	8	#6	STR	3'-9"	45



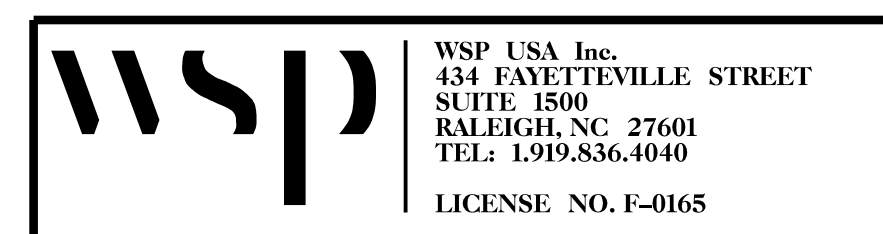
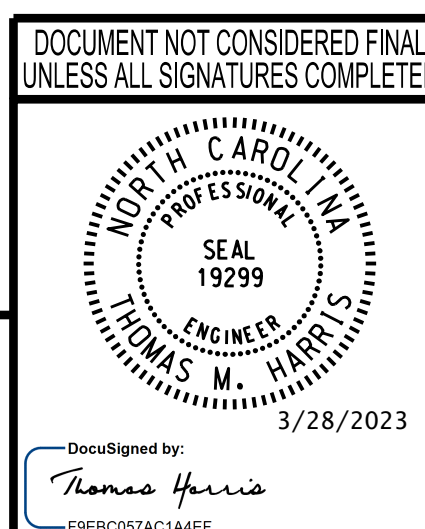
QUANTITIES FOR ONE GIRDER			
	REINFORCING STEEL LB.	5000 PSI CONCRETE C.Y.	0.6" Ø L. R. STRANDS No.
B1, B2, C1, C2	1026	16.3	24

GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
4	80.4	321.7

PROJECT NO. U-4424
 EDGEcombe COUNTY
 STATION: 66+24.84 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
 AASHTO TYPE IV
 PRESTRESSED CONCRETE GIRDER
 SPANS B & C

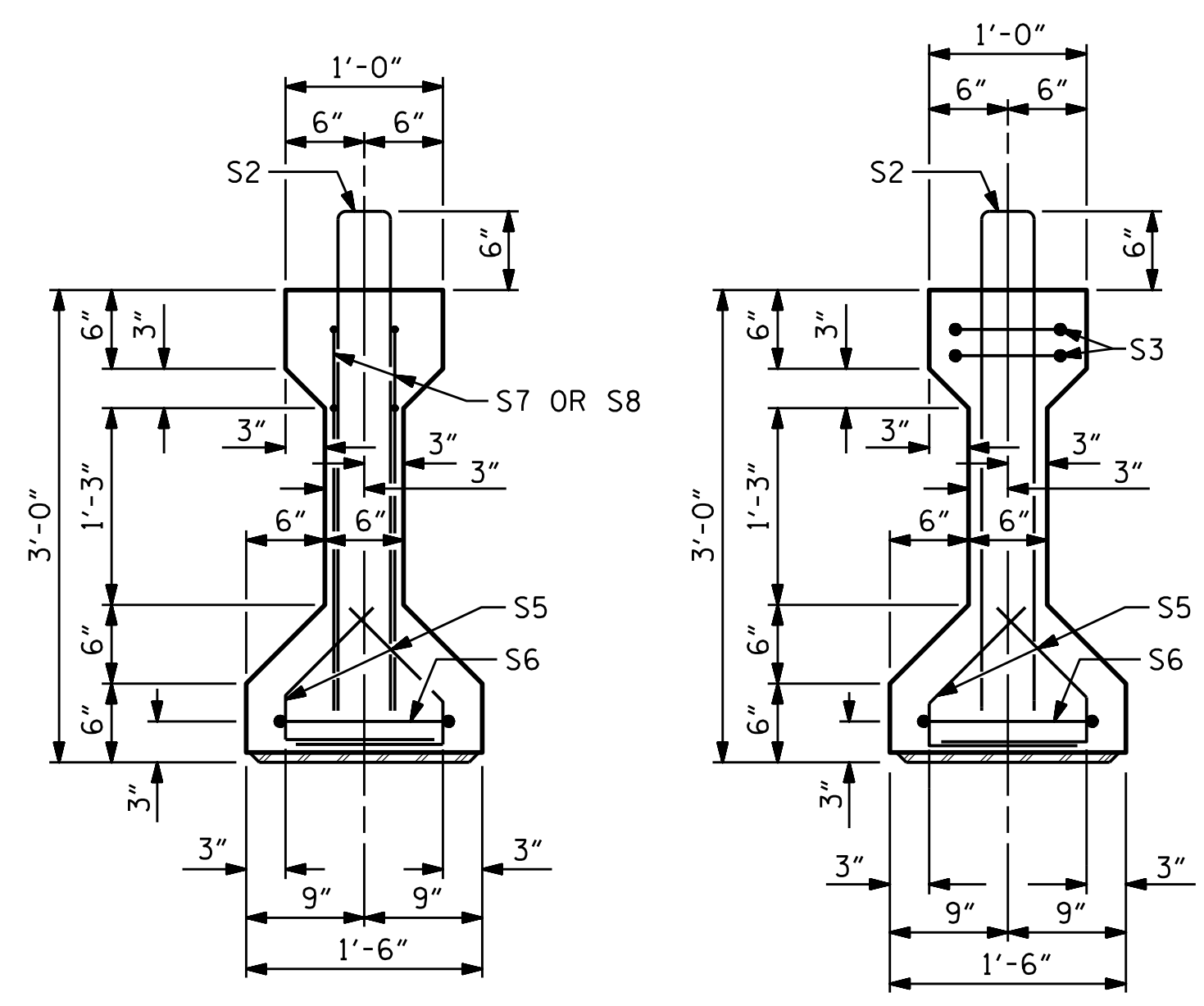


REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

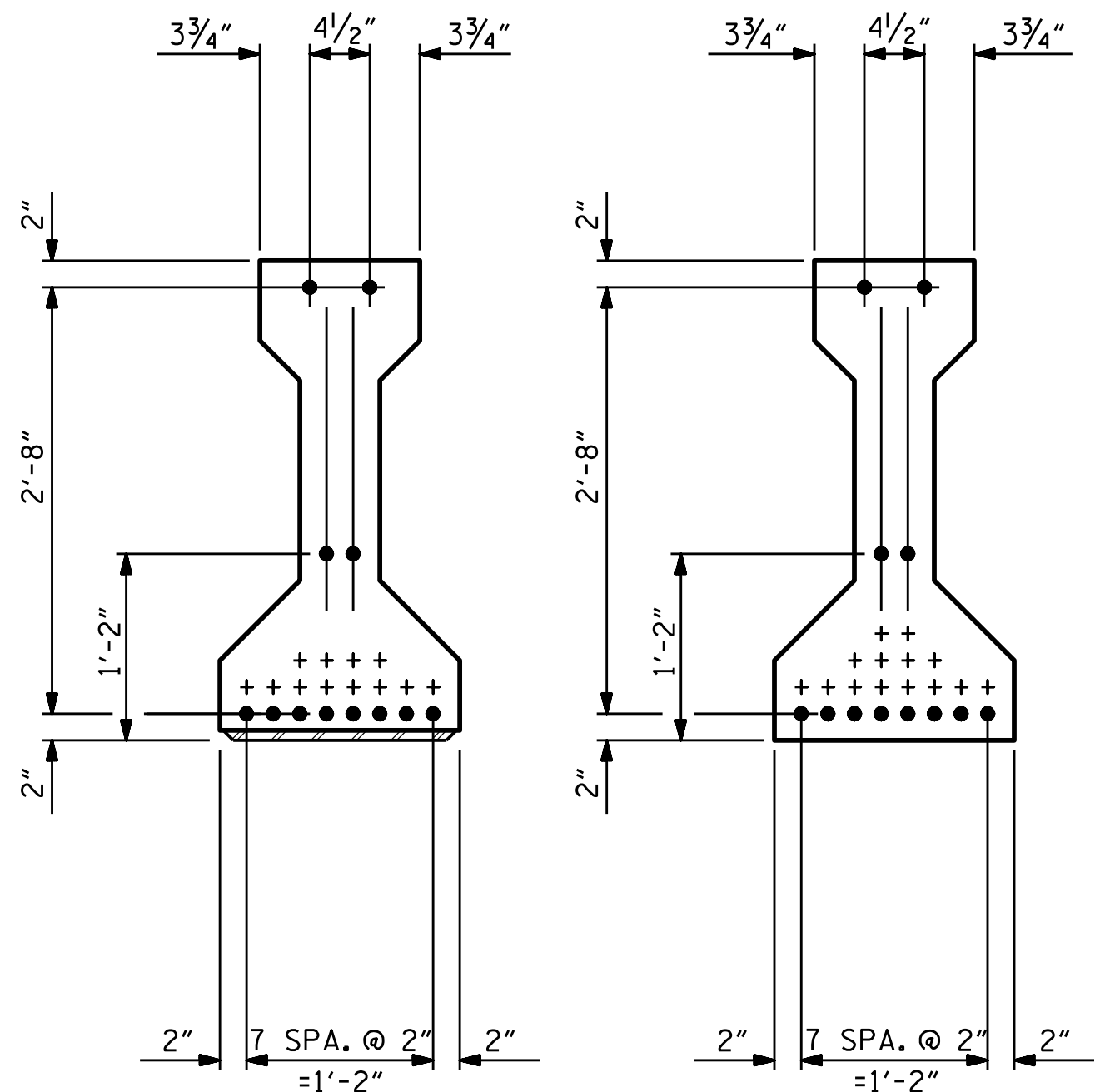
SHEET NO.	S-16
TOTAL SHEETS	37

3/28/2023
 J:\188771-06_NCDOT_NC_111\U-4424\Structures\Dr-off-fig.DGNs\401_033_U4424_SML_C2_016.dgn

DRAWN BY : JMB 12/87	REV. 10/11	MAA/GM
CHECKED BY : ARB 12/87	REV. 1/15	MAA/TMG
	REV. 12/17	MAA/THC
DESIGNED BY : J. WHEATLEY	DATE : MAR 2023	
DRAWN BY : J. WHEATLEY	DATE : MAR 2023	
CHECKED BY : T. KIRSCHBAUM	DATE : MAR 2023	
DESIGN ENGINEER OF RECORD : T. HARRIS	DATE : MAR 2023	

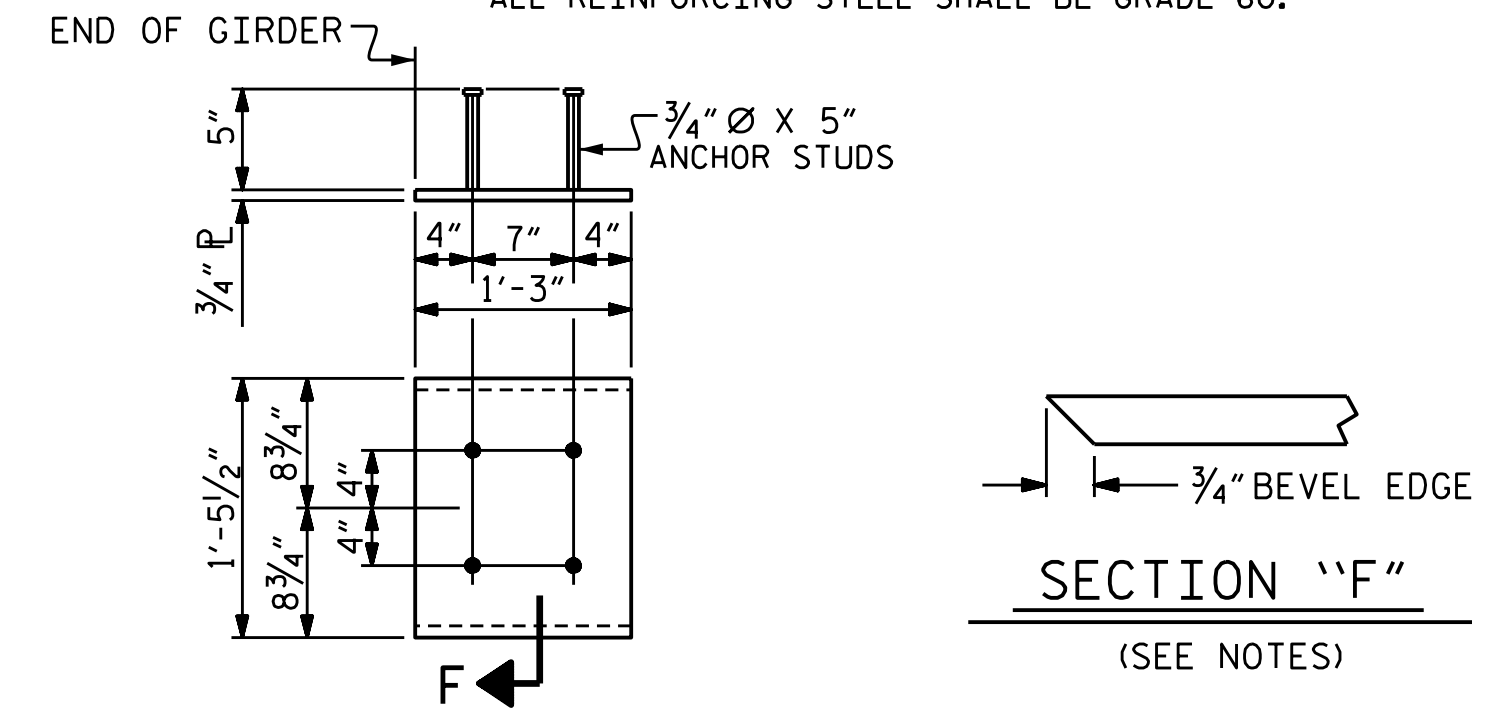


SECTION A-A (WITH NOTCH)
SECTION B-B (WITHOUT NOTCH)

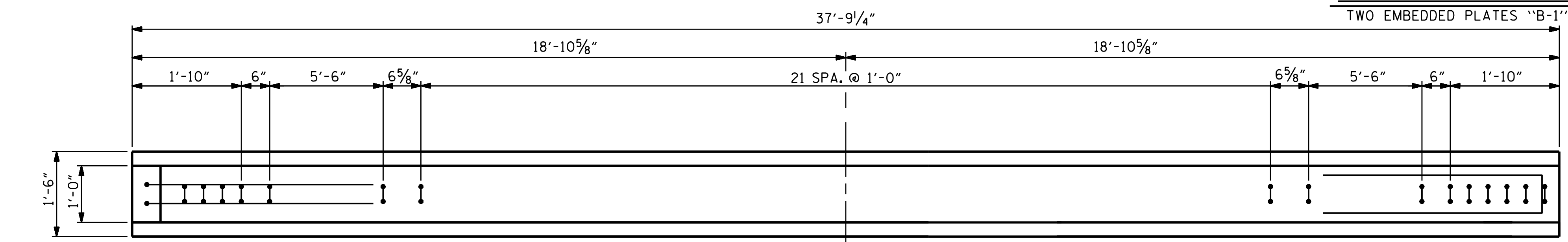


AT END OF GIRDER AT CL OF GIRDER

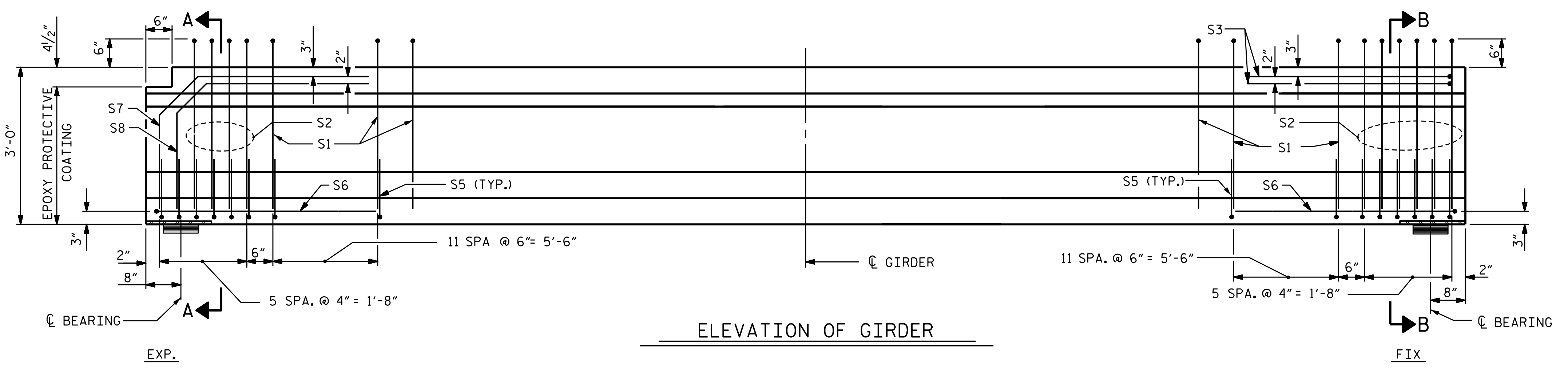
12-0.6" Ø LOW RELAXATION STRAND LAYOUT
• FULLY BONDED STRANDS



EMBEDDED PLATE "B-1" DETAILS
TWO EMBEDDED PLATES "B-1" ARE REQUIRED FOR EACH GIRDER.



PLAN OF GIRDER



ELEVATION OF GIRDER

NOTES

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

APPLY EPOXY PROTECTIVE COATING TO END OF GIRDER SURFACES AS SHOWN.

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.

ALL PRESTRESSED 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 4000 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 SHALL BE RAKED TO A DEPTH OF 1/4" EXCEPT IN THE AREA BETWEEN THE STIRRUP AND THE EDGE OF THE GIRDER.

ALL REINFORCING STEEL SHALL BE GRADE 60.

0.6" Ø L. R. GRADE 270 STRANDS

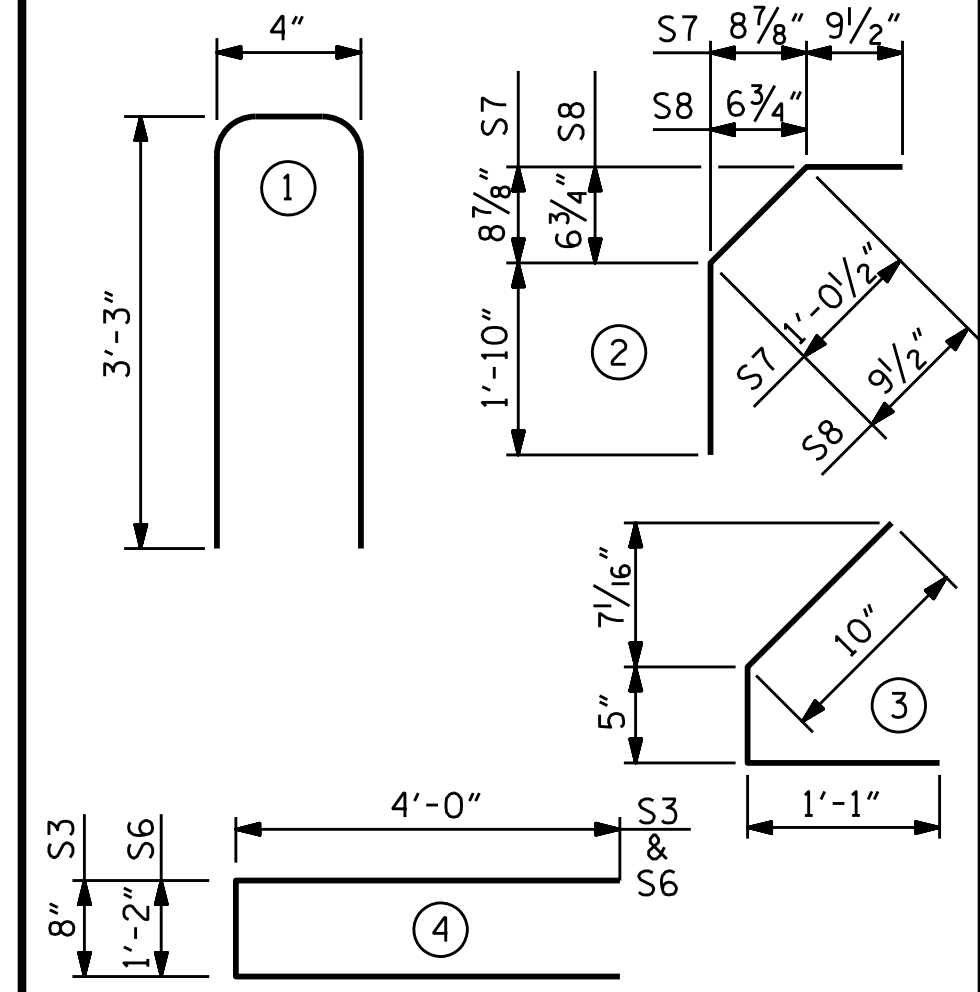
AREA (SQ. INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	46	#4	1	6'-10"	210
S2	10	#5	1	6'-10"	71
S3	2	#4	4	8'-8"	12
S5	72	#4	3	2'-4"	112
S6	2	#4	4	9'-2"	12
S7	2	#5	2	3'-8"	8
S8	2	#5	2	3'-5"	7

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



QUANTITIES FOR ONE GIRDER

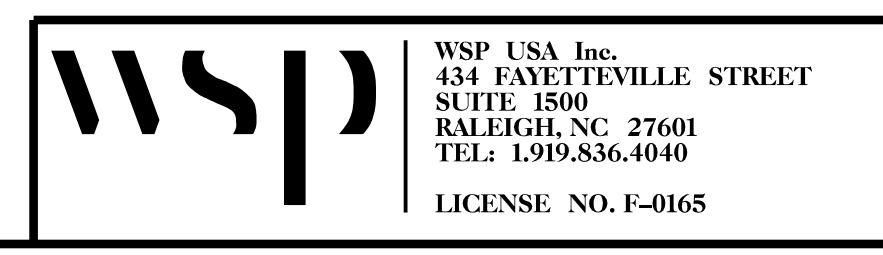
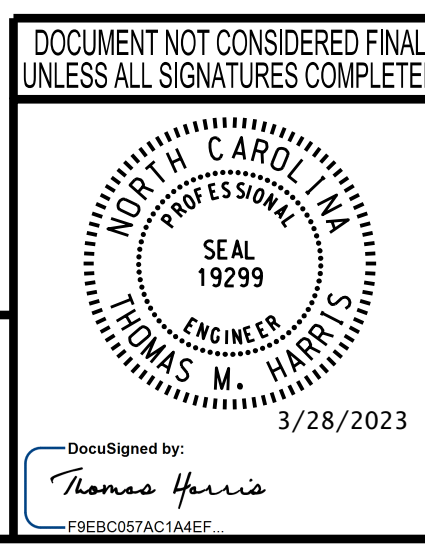
	REINFORCING STEEL LB.	5000 PSI CONCRETE C.Y.	0.6" Ø L. R. STRANDS No.
D1, D2	432	3.58	12

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
2	37.8	75.5

PROJECT NO. U-4424
EDGEcombe COUNTY
STATION: 66+24.84 -L-

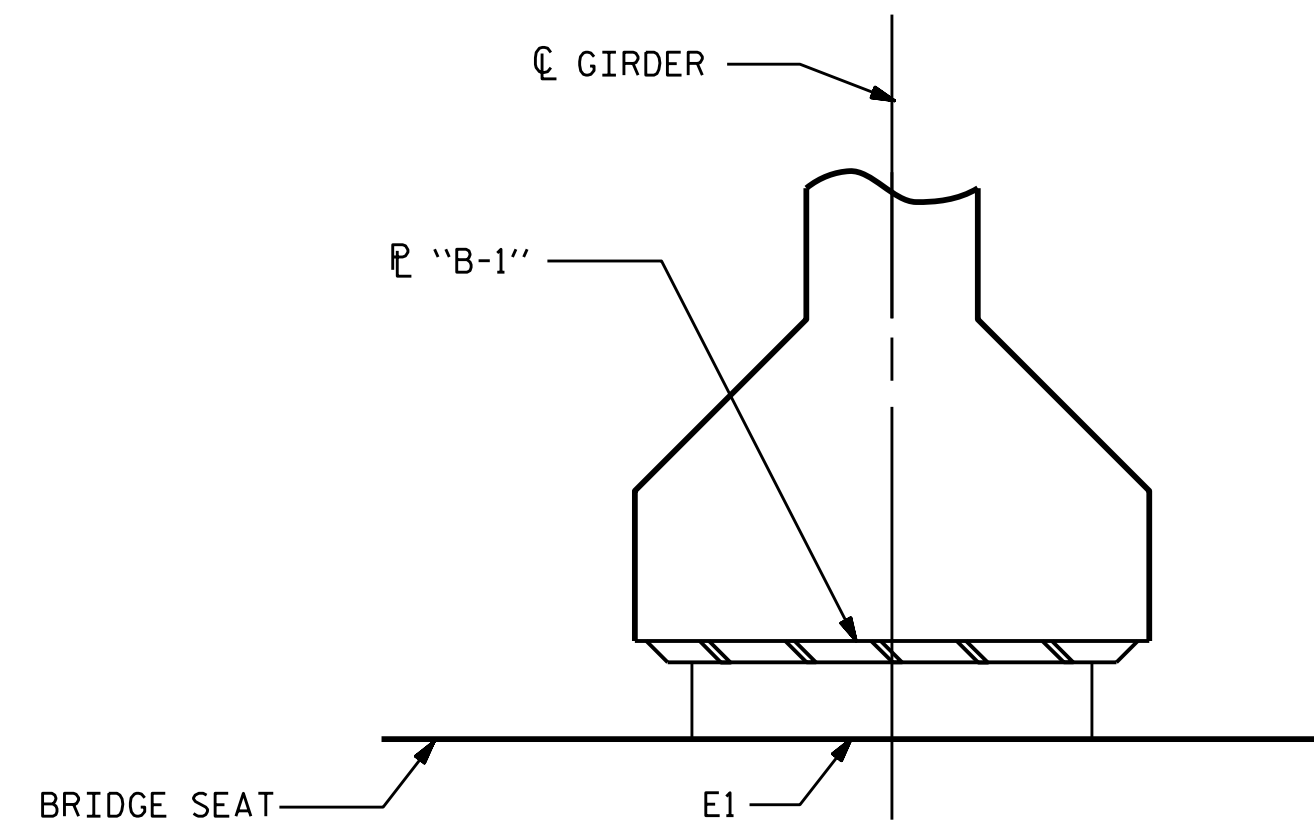
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
AASHTO TYPE II
PRESTRESSED CONCRETE GIRDER
SPAN D



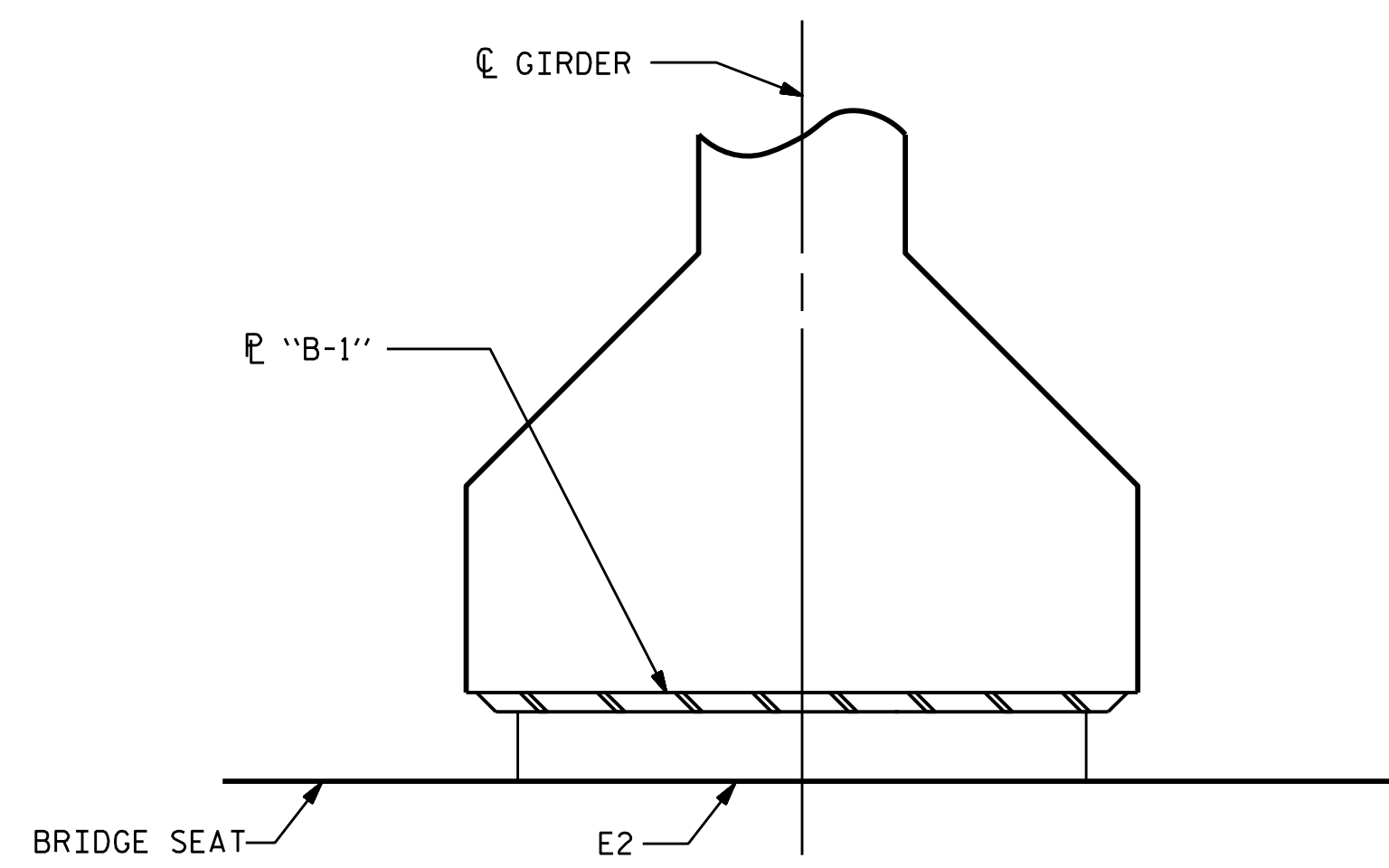
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			37

3/28/2023 J:\188771-06_NCDOT_NC_111U-4424\Structures\Dr-off-fig\DGNS\401_035_U4424_SML_C3_017.dgn

DRAWN BY: JMB 12/87	REV. 1/15	MAA/TMG
CHECKED BY: ARB 12/87	REV. 2/15	MAA/TMG
	REV. 12/17	MAA/THC
DESIGNED BY: J. WHEATLEY	DATE: MAR 2023	
DRAWN BY: J. WHEATLEY	DATE: MAR 2023	
CHECKED BY: T. KIRSCHBAUM	DATE: MAR 2023	
DESIGN ENGINEER OF RECORD: T. HARRIS	DATE: MAR 2023	



FIXED OR EXP.
SECTION E-E

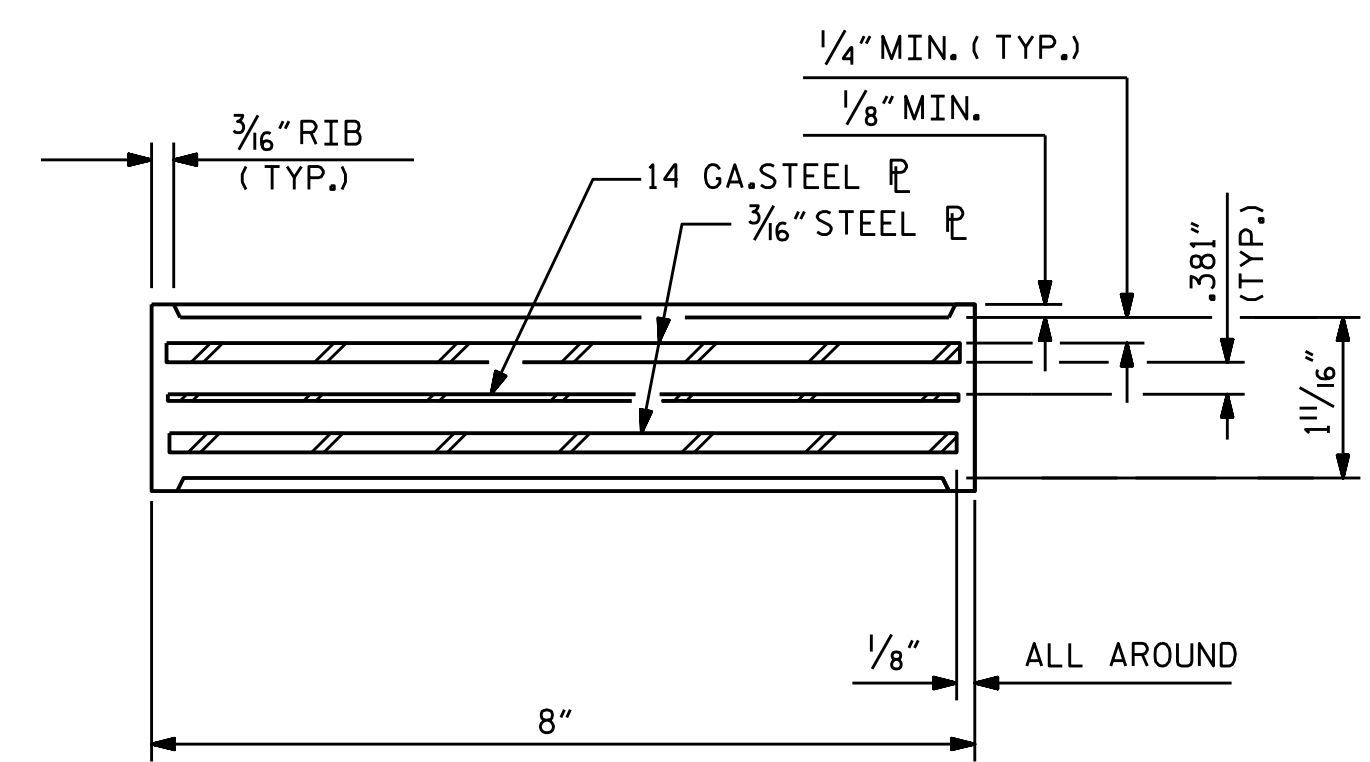


EXP.
SECTION E-E

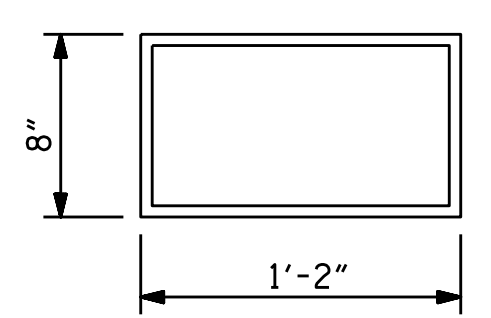
NOTES

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.

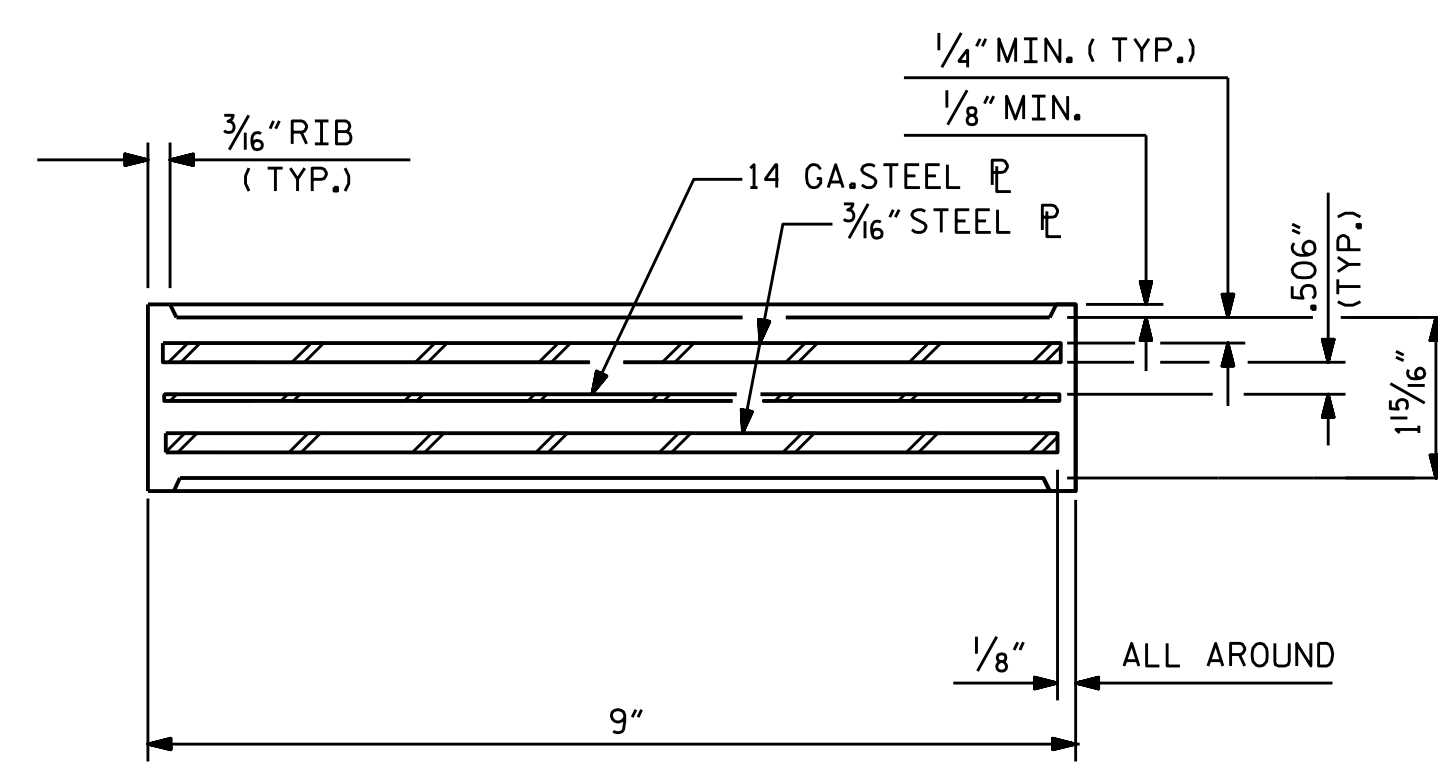
MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE II	145 k
TYPE IV	225 k



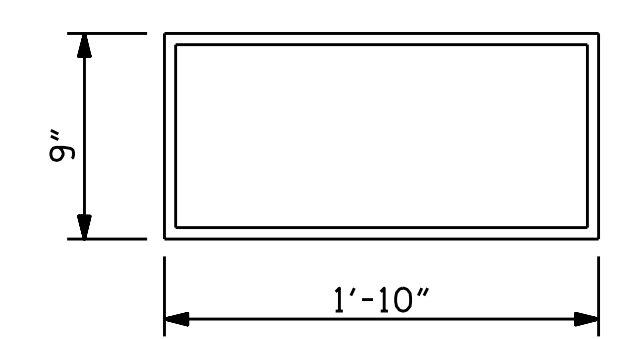
TYPICAL SECTION OF ELASTOMERIC BEARINGS



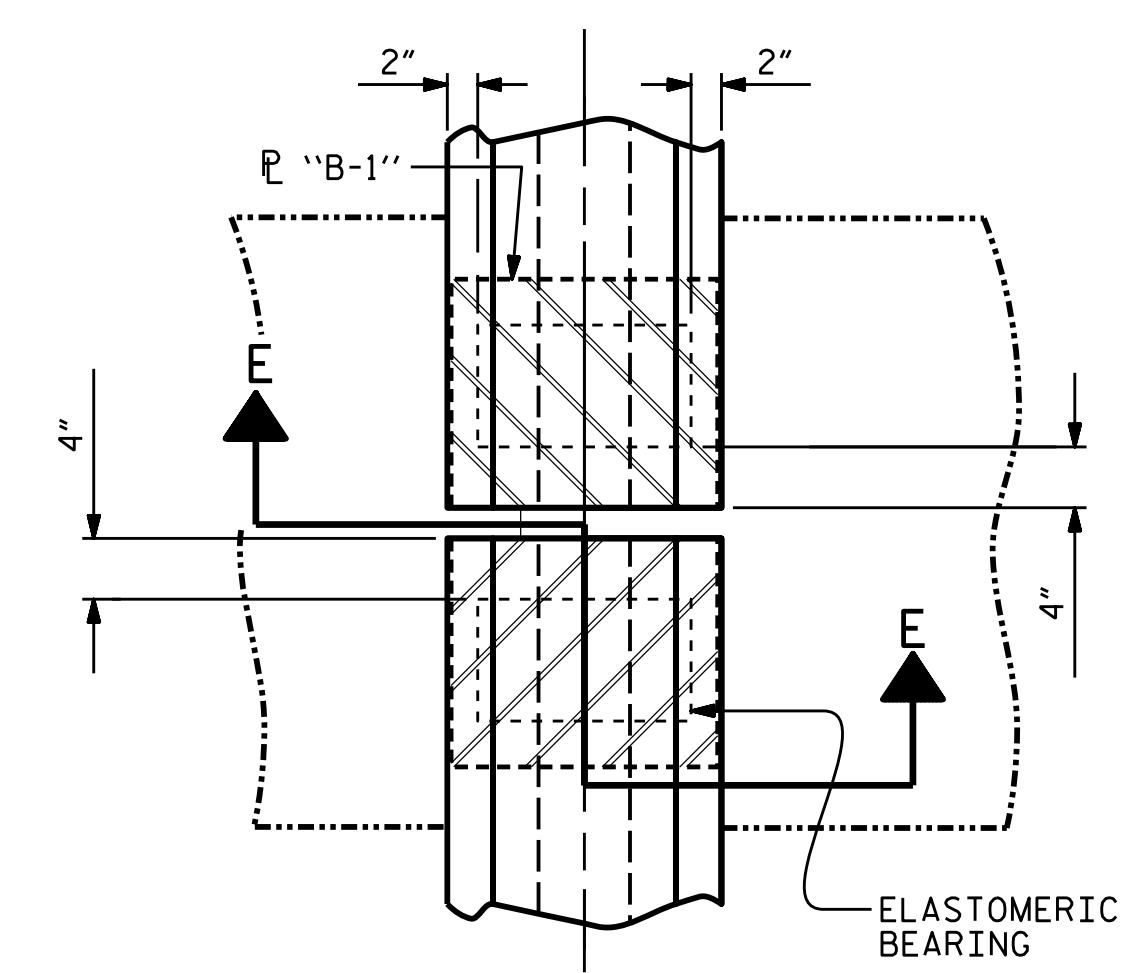
E1 (8 REQ'D)
PLAN VIEW OF ELASTOMERIC BEARING
TYPE II



TYPICAL SECTION OF ELASTOMERIC BEARINGS



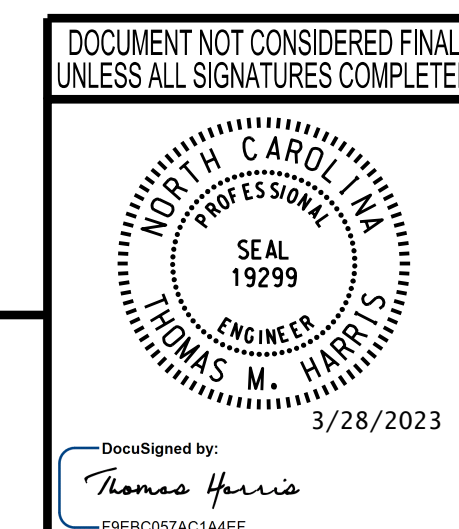
E2 (8 REQ'D)
PLAN VIEW OF ELASTOMERIC BEARING
TYPE IV



TYPICAL PLAN
(SHOWING SIMPLE SPAN BENT 2; OTHERS SIMILAR)

PROJECT NO. U-4424
EDGEcombe COUNTY
STATION: 66+24.84 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
ELASTOMERIC BEARING
DETAILS
PRESTRESSED CONCRETE GIRDER
SUPERSTRUCTURE



wsp
WSP USA Inc.
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
LICENSE NO. F-0165

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			37

3/28/2023 J:\188771-06 NCDOT NC 111\U-4424\Structures\Dr-off\ing\DGNS\401_037_U4424_SML.BG_018.dgn

DRAWN BY: WJH	8/89	REV. 1/15	MAA/TMG
CHECKED BY: CRK	8/89	REV. 12/17	MAA/THC
		REV. 10/21	BNB/AAI
DESIGNED BY: J. WHEATLEY	DATE: MAR 2023		
DRAWN BY: J. WHEATLEY	DATE: MAR 2023		
CHECKED BY: T. KIRSCHBAUM	DATE: MAR 2023		
DESIGN ENGINEER OF RECORD: T. HARRIS	DATE: MAR 2023		

NOTES

GIRDER CAMBER PREDICTED USING REFINED METHOD FOR CAMBER, PER NCDOT STRUCTURAL DESIGN MANUAL.

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																						
SPAN A																						
GIRDERS 1&2	TWENTIETH POINTS	0.00	0.05	0.1	.15	0.2	.25	0.3	.35	0.4	.45	0.5	.55	0.6	.65	0.7	.75	0.8	.85	0.9	.95	1.00
	CAMBER (GIRDER ALONE IN PLACE) (FT.)	0.000	0.006	0.012	0.017	0.022	0.027	0.031	0.034	0.036	0.037	0.038	0.037	0.036	0.034	0.031	0.027	0.022	0.017	0.012	0.006	0.000
	DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.)	0.000	0.001	0.002	0.004	0.005	0.006	0.007	0.008	0.008	0.009	0.009	0.009	0.008	0.008	0.007	0.006	0.005	0.004	0.002	0.001	0.000
	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"
SPAN B&C																						
GIRDERS 1&2	TWENTIETH POINTS	0.00	0.05	0.1	.15	0.2	.25	0.3	.35	0.4	.45	0.5	.55	0.6	.65	0.7	.75	0.8	.85	0.9	.95	0.00
	CAMBER (GIRDER ALONE IN PLACE) (FT.)	0.000	0.016	0.032	0.047	0.060	0.072	0.082	0.091	0.097	0.100	0.101	0.100	0.097	0.091	0.082	0.072	0.060	0.047	0.032	0.016	0.000
	DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.)	0.000	0.009	0.019	0.029	0.038	0.047	0.053	0.059	0.063	0.065	0.066	0.065	0.063	0.059	0.053	0.047	0.038	0.029	0.019	0.009	0.000
	FINAL CAMBER	0"	1/16"	1/8"	3/16"	1/4"	5/16"	3/8"	3/8"	3/8"	7/16"	7/16"	7/16"	3/8"	3/8"	3/8"	5/16"	1/4"	3/16"	1/8"	1/16"	0"
SPAN D																						
GIRDERS 1&2	TWENTIETH POINTS	0.00	0.05	0.1	.15	0.2	.25	0.3	.35	0.4	.45	0.5	.55	0.6	.65	0.7	.75	0.8	.85	0.9	.95	1.00
	CAMBER (GIRDER ALONE IN PLACE) (FT.)	0.000	0.007	0.014	0.020	0.026	0.031	0.036	0.039	0.042	0.044	0.044	0.044	0.042	0.039	0.036	0.031	0.026	0.020	0.014	0.007	0.000
	DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.)	0.000	0.002	0.004	0.006	0.008	0.009	0.011	0.012	0.013	0.013	0.014	0.013	0.013	0.012	0.011	0.009	0.008	0.006	0.004	0.002	0.000
	FINAL CAMBER	0"	1/16"	1/8"	3/16"	1/4"	1/4"	5/16"	5/16"	3/8"	3/8"	3/8"	3/8"	3/8"	5/16"	5/16"	1/4"	1/4"	3/16"	1/8"	1/16"	0"

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

PROJECT NO. U-4424
EDGEcombe COUNTY
 STATION: 66+24.84 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**GIRDER CAMBER
 AND
 DEFLECTION TABLES**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			37

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

3/28/2023

DocuSigned by:
 Thomas Harris
 F9EB057AC14MEF

WSP USA Inc.
 434 FAYETTEVILLE STREET
 SUITE 1500
 RALEIGH, NC 27601
 TEL: 1.919.836.4040
 LICENSE NO. F-0165

DESIGNED BY: J. WHEATLEY DATE : MAR 2023
 DRAWN BY: J. WHEATLEY DATE : MAR 2023
 CHECKED BY: T. KIRSCHBAUM DATE : MAR 2023
 DESIGN ENGINEER OF RECORD: T. HARRIS DATE : MAR 2023

3/28/2023 J:\188771-06 NCDOT NC 111\U-4424\Structures\Dr-off\ing\DGNS\401_039_U4424_SWL_DL_019.dgn

NOTES

AT THE CONTRACTOR'S OPTION, METAL RAIL MAY BE EITHER ALUMINUM OR GALVANIZED STEEL IN ACCORDANCE WITH THE REQUIREMENTS OF THE GENERAL NOTES AND THE FOLLOWING SPECIFICATIONS FOR THE ALTERNATE MATERIALS; HOWEVER, THE CONTRACTOR WILL BE REQUIRED TO USE THE SAME RAIL MATERIAL ON ALL STRUCTURES ON THE PROJECT FOR WHICH METAL RAIL IS DESIGNATED.

UNLESS OTHERWISE REQUIRED IN THE CONTRACT DOCUMENTS, THE CONTRACTOR HAS THE OPTION TO USE AN ALTERNATE TO THE 2 BAR METAL RAIL. THE ALTERNATE RAIL SHALL MEET THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS AND MUST BE LISTED ON THE DEPARTMENT'S APPROVED PRODUCTS LIST (APL) UNDER "2 BAR METAL RAIL ALTERNATE". ADJUSTMENTS TO THE CONCRETE PARAPET WILL NOT BE ALLOWED.

ALUMINUM RAILS

MATERIAL FOR POSTS, BASES AND RAILS, EXPANSION BARS AND CLAMP BARS SHALL BE ASTM B-221 ALLOY 6061-T6. MATERIAL FOR RIVETS SHALL BE ASTM B316 ALLOY 6061-T6. RIVETS SHALL BE STANDARD BUTTON HEAD AND CONE POINT COLD DRIVEN AS PER DRAWING.

THE BASE OF RAIL POSTS, OR ANY OTHER ALUMINUM SURFACE IN CONTACT WITH CONCRETE SHALL BE THOROUGHLY COATED WITH AN ALUMINUM IMPREGNATED CAULKING COMPOUND OF APPROVED QUALITY.

MATERIAL FOR SHIMS TO BE ASTM B209 ALLOY 6061-T6.

GALVANIZED STEEL RAILS

MATERIAL AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:

POST, POST BASES, RAILS, EXPANSION BARS AND CLAMP BARS: AASHTO M270 GRADE 36 STRUCTURAL STEEL - GALVANIZED TO AASHTO M111.

RIVETS: RIVETS SHALL MEET THE REQUIREMENTS OF ASTM A502 FOR GRADE 1 RIVETS.

THE CUT ENDS OF GALVANIZED STEEL RAILING, AFTER GRINDING SMOOTH SHALL BE GIVEN TWO COATS OF ZINC RICH PAINT MEETING THE REQUIREMENTS OF FEDERAL SPECIFICATION MIL-P-26915 USAF TYPE 1, OR OF FEDERAL SPECIFICATIONS TT-P-641.

SHIMS: SHIMS SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.

RAIL CAPS: RAIL CAPS SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.

GENERAL NOTES

RAILING SHALL BE CONTINUOUS FROM END POST TO END POST OF BRIDGE, EACH JOINT IN RAIL LENGTH SHALL BE SPLICED AS DETAILED. PANEL LENGTHS OF RAIL SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS.

FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE STANDARD NO. BMR2.

CAP SCREWS SHALL BE ASTM F593 ALLOY 305 STAINLESS STEEL, WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.

CERTIFIED MILL REPORTS ARE REQUIRED FOR RAILS AND POSTS. SHOP INSPECTION IS NOT REQUIRED.

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

METHOD OF MEASUREMENT FOR METAL RAILS: FOR LENGTH OF METAL RAILS TO BE PAID FOR, SEE THE STANDARD SPECIFICATIONS.

CURVED RAIL USAGE: WHERE RAILS ARE TO BE USED ON BRIDGES ON HORIZONTAL AND/OR VERTICAL CURVATURE THE CONTRACTOR MAY, AT HIS OPTION, HAVE THE REQUIRED CURVATURE IN THE RAIL FORMED IN THE SHOP OR IN THE FIELD. IN EITHER EVENT, THE RAIL SHALL CONFORM WITHOUT BUCKLING OR KINKING TO THE REQUIRED CURVATURE IN A UNIFORM MANNER ACCEPTABLE TO THE ENGINEER.

TO INSURE FUTURE IDENTIFICATION OF THE FABRICATOR, A PERMANENT IDENTIFYING MARK SHALL BE PLACED ON EACH POST. THE METHOD OF MARKING AND LOCATION SHALL BE SUCH THAT IT DOES NOT DETRACT FROM THE APPEARANCE OF THE POST, BUT REMAINS VISIBLE AFTER RAIL PLACEMENT.

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

ALLOY 6351-T5 MAY BE SUBSTITUTED FOR ALLOY 6061-T6 WHERE APPLICABLE.

MINOR VARIATIONS IN DETAILS OF METAL RAIL WILL BE CONSIDERED. DETAILS OF SUCH VARIATIONS, IF DESIRED, SHALL BE SUBMITTED FOR APPROVAL.

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

PAY LENGTH = 257.1 LIN. FT.

PROJECT NO. U-4424
EDGEcombe COUNTY
 STATION: 66+24.84 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD

2 BAR METAL RAIL

REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

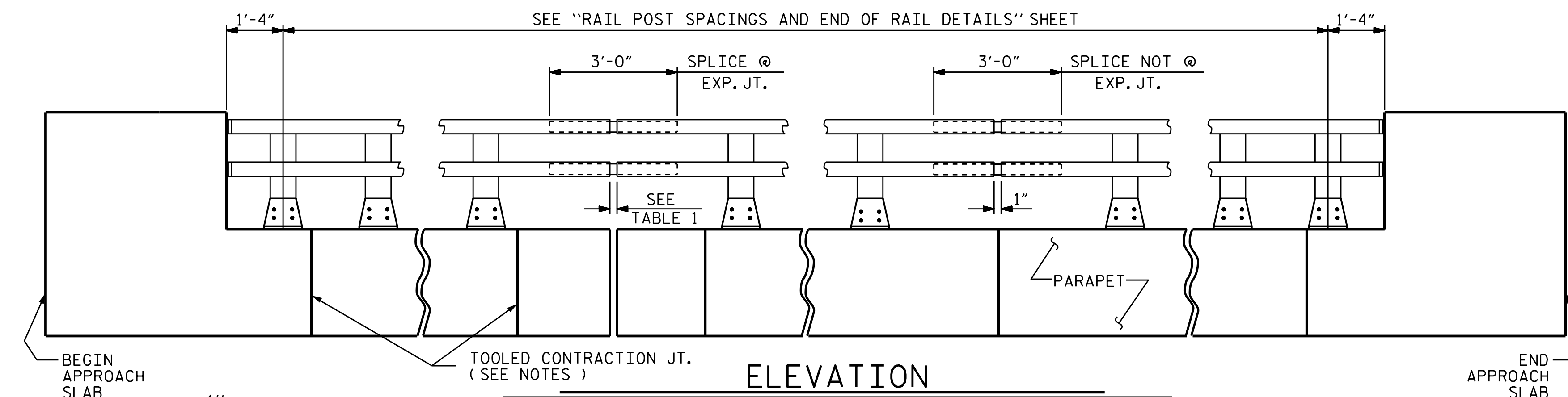
SHEET NO.

S-20

TOTAL SHEETS

37

STD. NO. BMR3

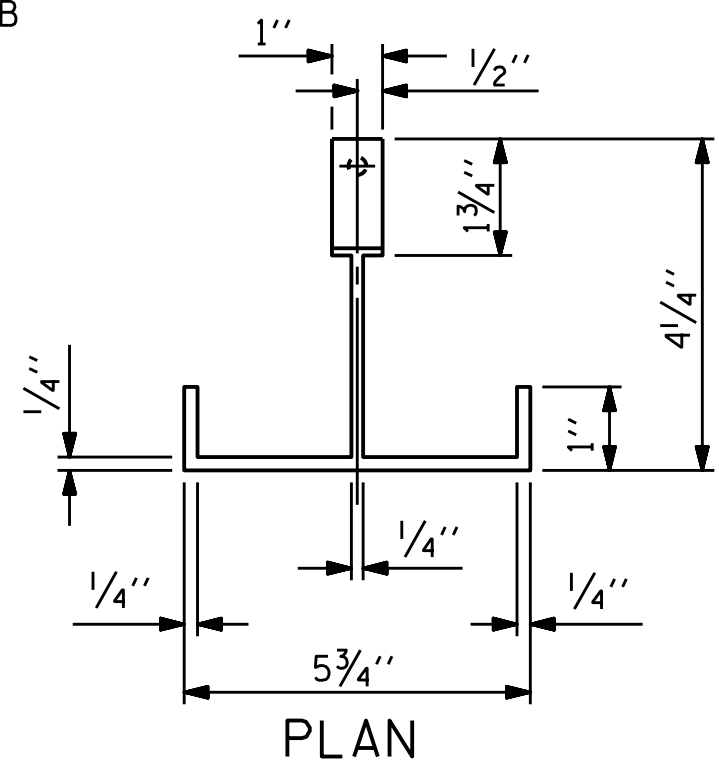


ELEVATION

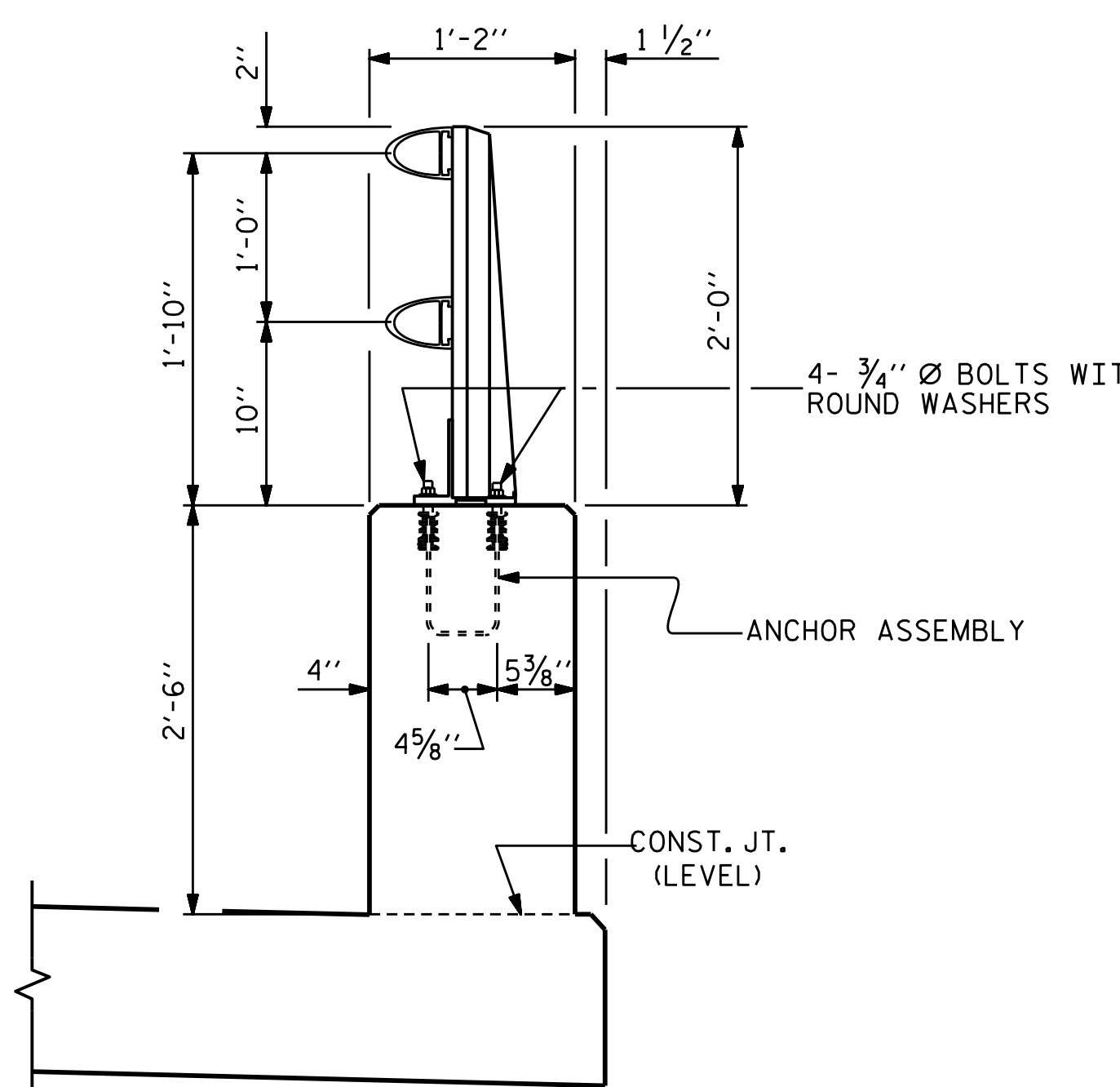
NOTE: FOR ATTACHMENT OF METAL RAIL TO END POST, SEE STANDARD NO. BMR2.

EXP. JT. @	RAIL OPENING
END BENT 1	1 5/16"
BENT 1	2"
BENT 2	2"
BENT 3	2"
END BENT 2	1 5/16"

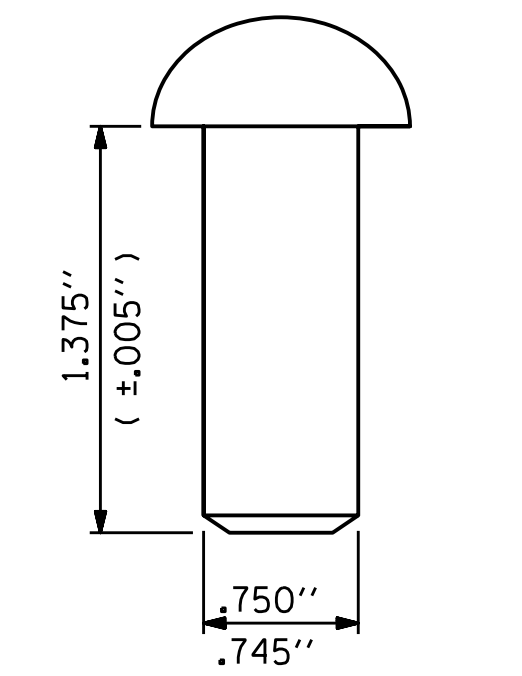
RAIL OPENING @ 60°F



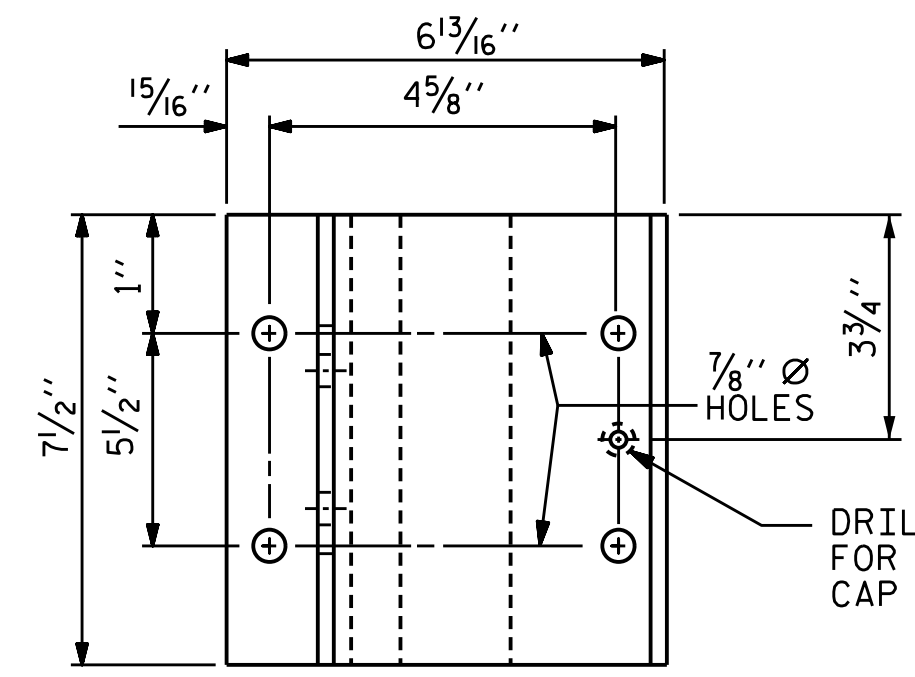
PLAN



SECTION THRU PARAPET AND RAIL

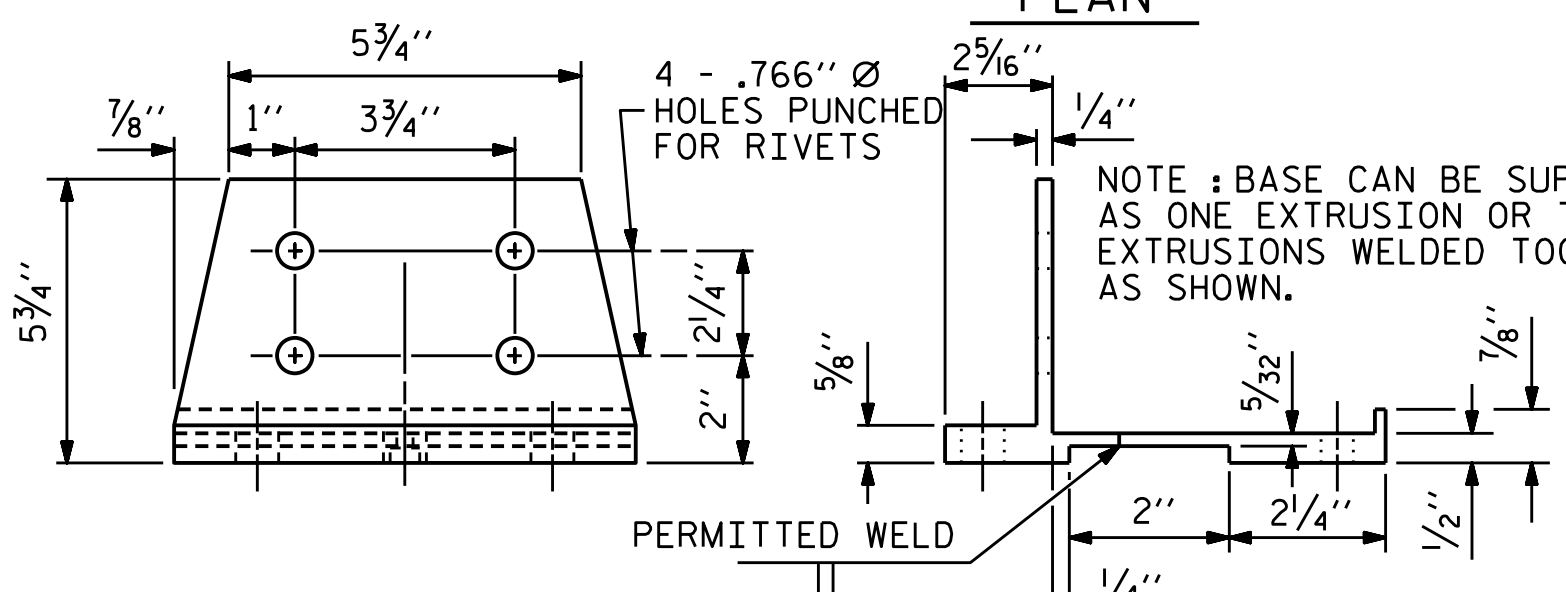


RIVET DETAIL



PLAN

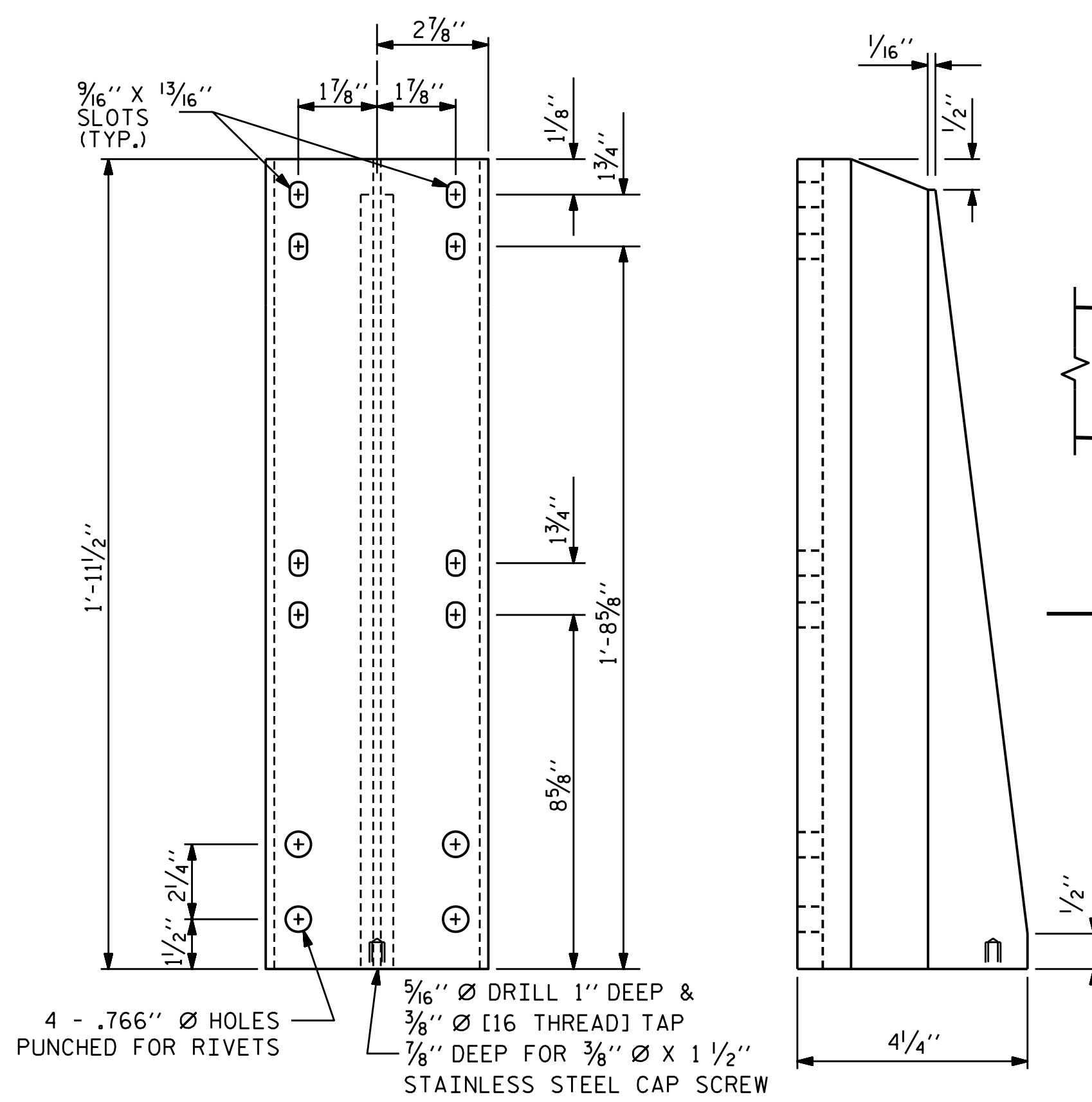
DRILL & COUNTER BORE FOR 3/8" Ø [16 THREAD] CAP SCREW



FRONT ELEVATION

SIDE ELEVATION

POST BASE DETAILS



FRONT ELEVATION

SIDE ELEVATION

DETAILS OF POST

DRAWN BY: EEM 6/94	REV. 10/11	MAA/GM
CHECKED BY: RGW 6/94	REV. 6/13	MAA/GM
	REV. 12/17	MAA/THC
DESIGNED BY: J. WHEATLEY	DATE: MAR 2023	
DRAWN BY: J. WHEATLEY	DATE: MAR 2023	
CHECKED BY: T. KIRSCHBAUM	DATE: MAR 2023	
DESIGN ENGINEER OF RECORD: T. HARRIS	DATE: MAR 2023	

wsp
 WSP USA Inc.
 434 FAYETTEVILLE STREET
 SUITE 1500
 RALEIGH, NC 27601
 TEL: 1.919.836.4040
 LICENSE NO. P-0165

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DocuSigned by: Thomas Harris
 3/28/2023
 PSEB0257AC14MEF

3/28/2023 J:\188771-06 NCDOT NC 111\U-4424\Structures\Drawings\Drawings\401_041_U4424_SML_2MFL_020.dgn

NOTES

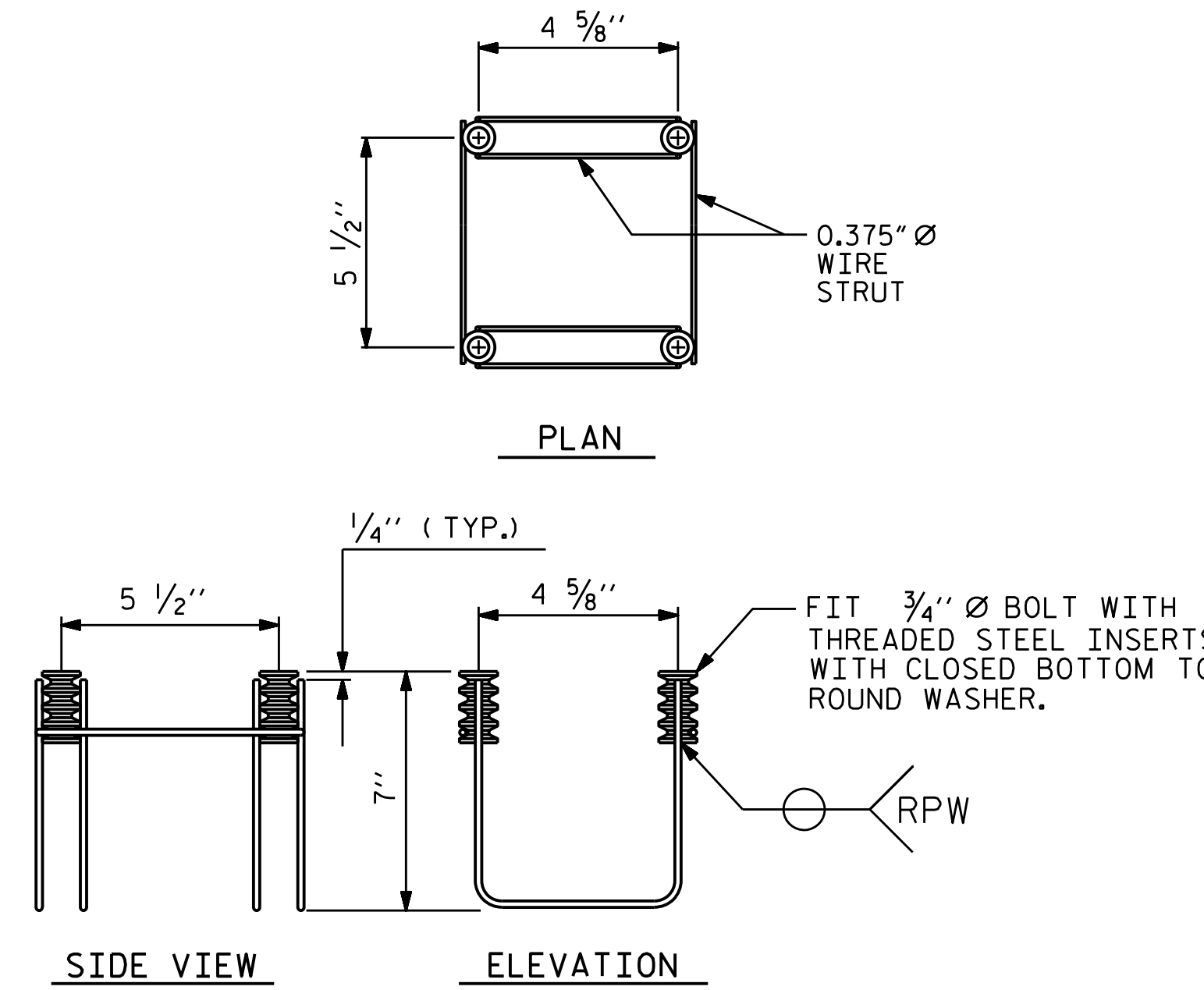
STRUCTURAL CONCRETE ANCHOR ASSEMBLY

THE STRUCTURAL CONCRETE ANCHOR ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS :

- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2" FOR 3/4" FERRULES.
- B. 4 - 3/4" Ø X 2 1/2" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø X 2 1/2" GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.
- C. WIRE STRUT SHOWN IN THE CONCRETE ANCHOR ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 1/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.
- D. THE METAL RAIL ANCHOR ASSEMBLIES TO BE HOT DIPPED GALVANIZED TO CONFORM TO REQUIREMENTS OF AASHTO M111.
- E. THE COST OF THE METAL RAIL ANCHOR ASSEMBLY WITH BOLTS AND WASHERS COMPLETE IN PLACE SHALL BE INCLUDED IN THE PRICE BID FOR LINEAR FEET OF METAL RAIL.
- F. BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.

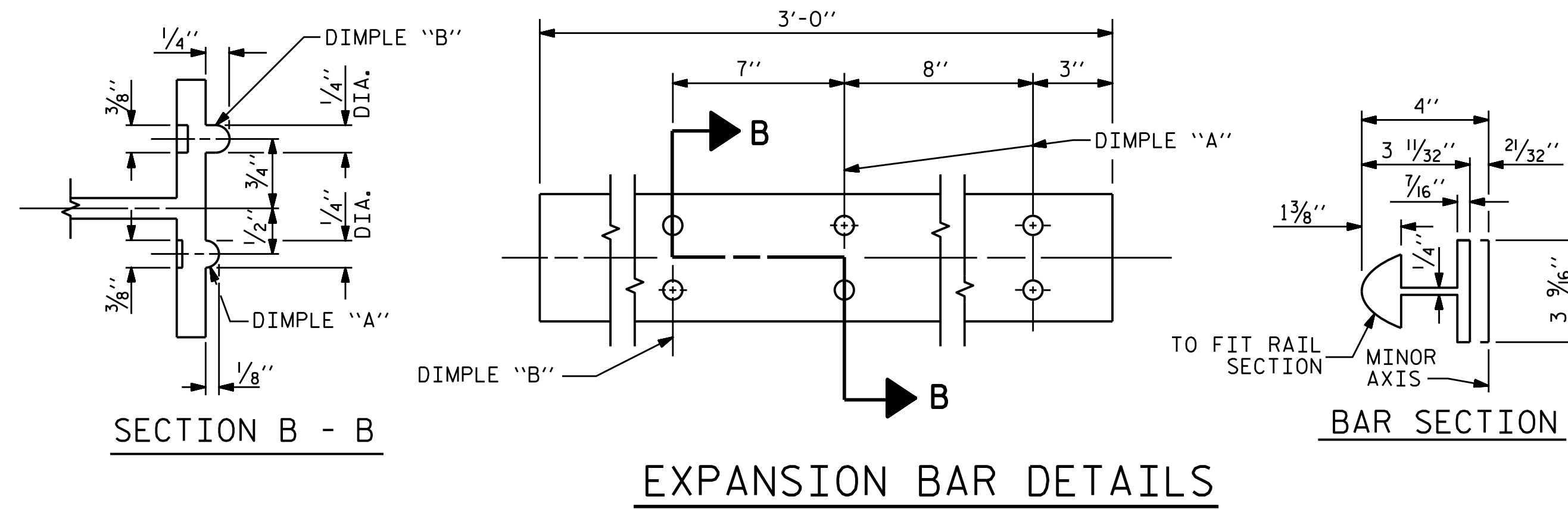
THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF THE METAL RAIL ANCHOR ASSEMBLY. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 10 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE THE STANDARD SPECIFICATIONS.

WHEN ADHESIVELY ANCHORED ANCHOR BOLTS ARE USED, BOLTS SHALL MEET THE REQUIREMENTS OF ASTM F593 ALLOY 304 STAINLESS STEEL WITH MINIMUM 75,000 PSI ULTIMATE STRENGTH. NUTS SHALL MEET THE REQUIREMENTS OF ASTM F594 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.

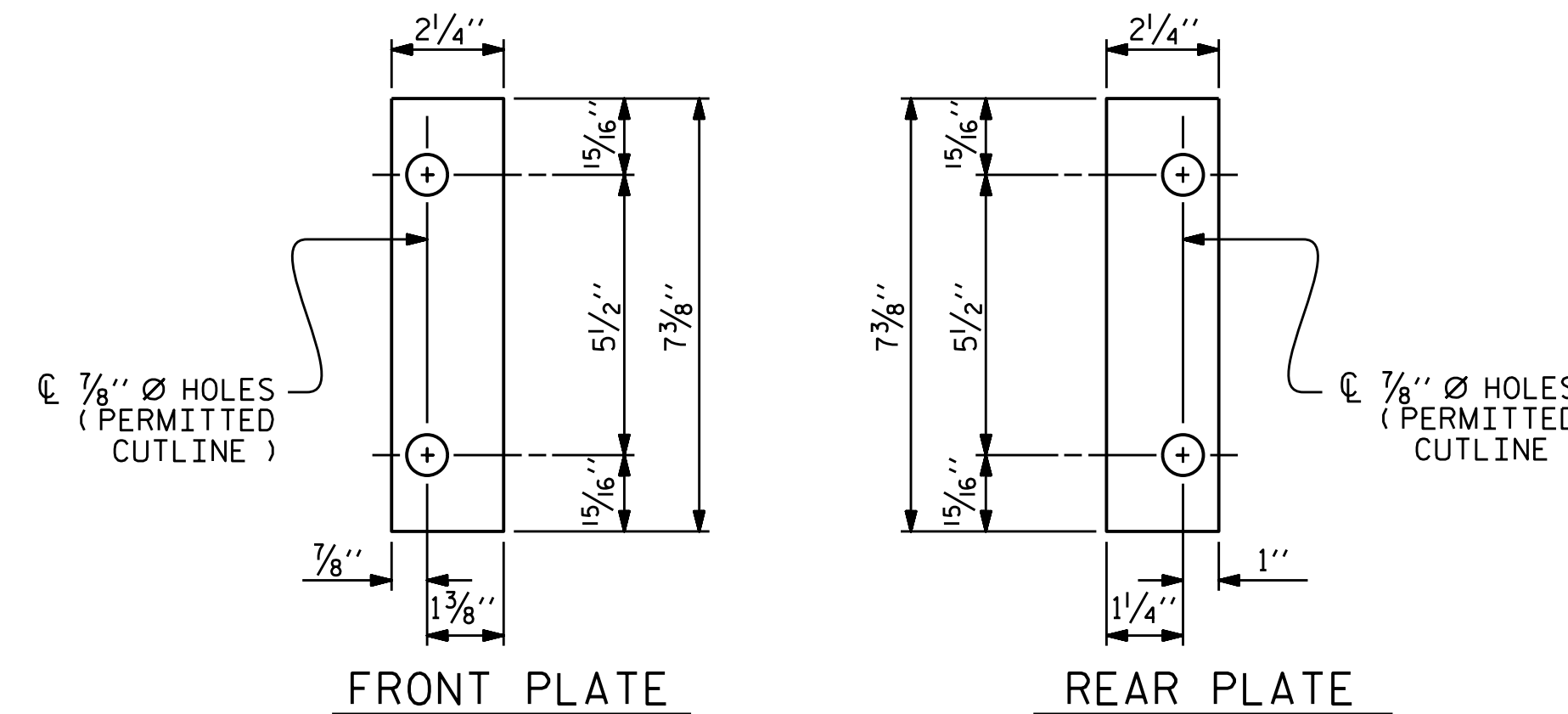


4-BOLT METAL RAIL ANCHOR ASSEMBLY

(48 ASSEMBLIES REQUIRED)

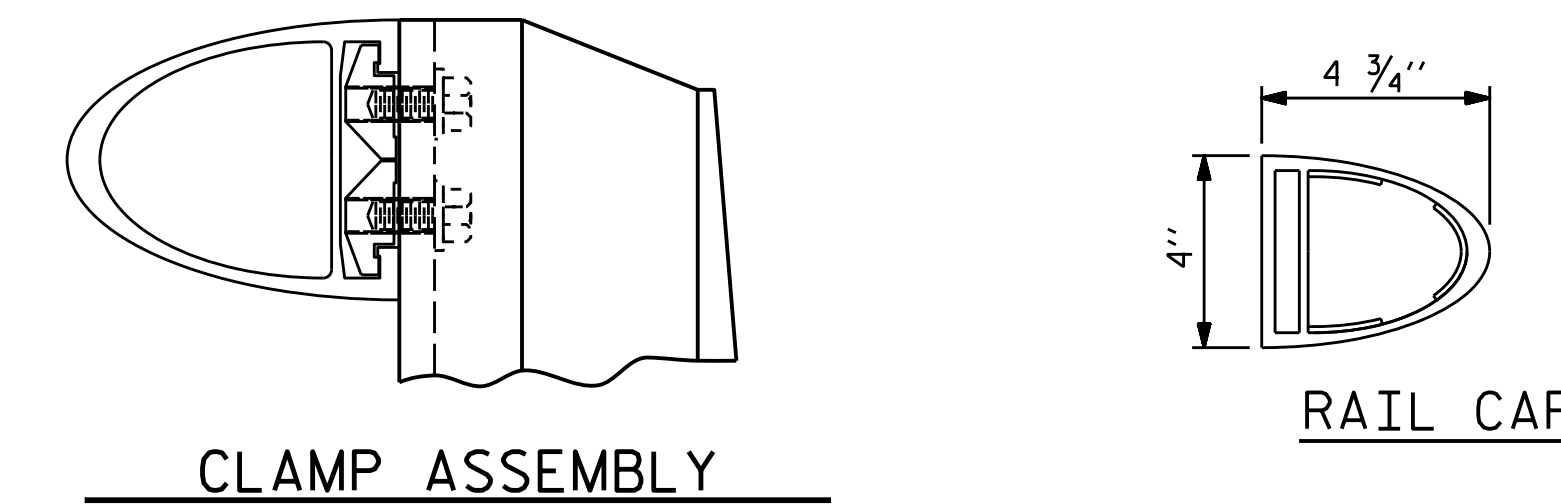


EXPANSION BAR DETAILS



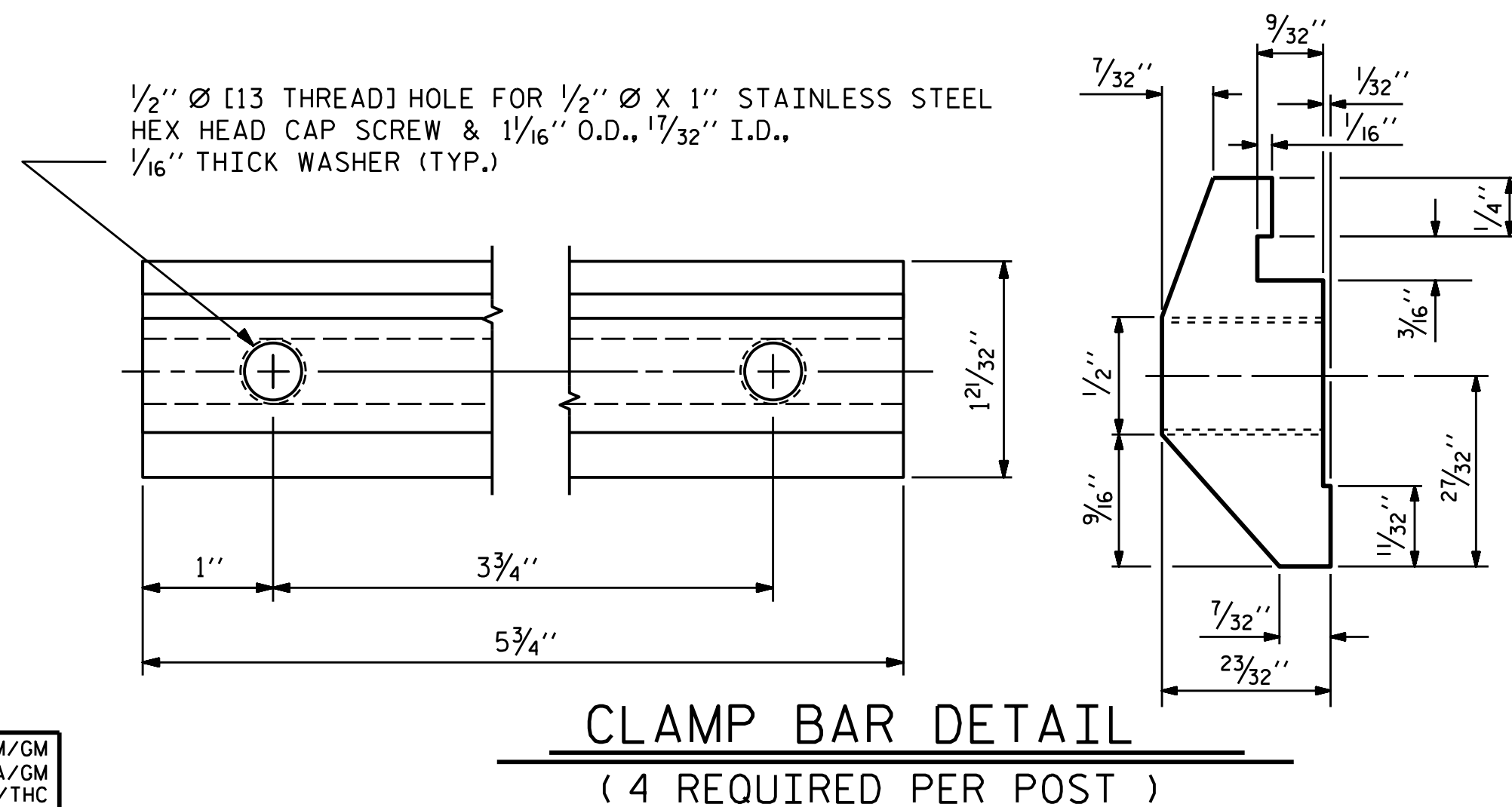
SHIM DETAILS

NOTE : SHIMS MAY BE CUT ALONG PERMITTED CUTLINE OR SLOTTED TO EDGE OF PLATE TO FACILITATE PLACEMENT.



CLAMP ASSEMBLY

RAIL CAP



CLAMP BAR DETAIL

(4 REQUIRED PER POST)

PROJECT NO. U-4424
EDGEcombe COUNTY
STATION: 66+24.84 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

2 BAR METAL RAIL

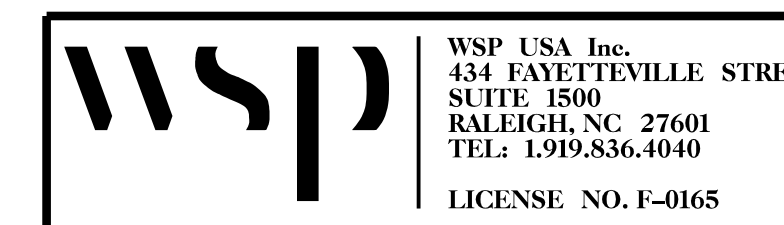
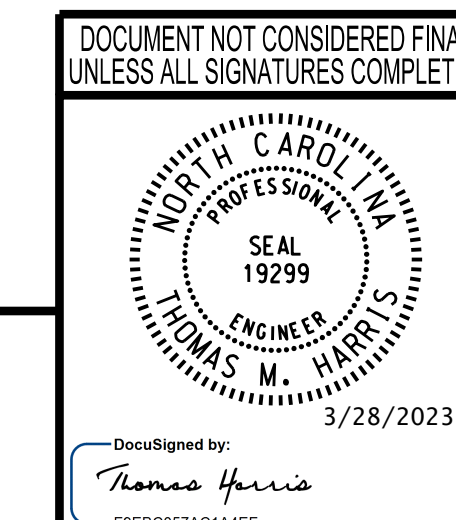
REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S-21

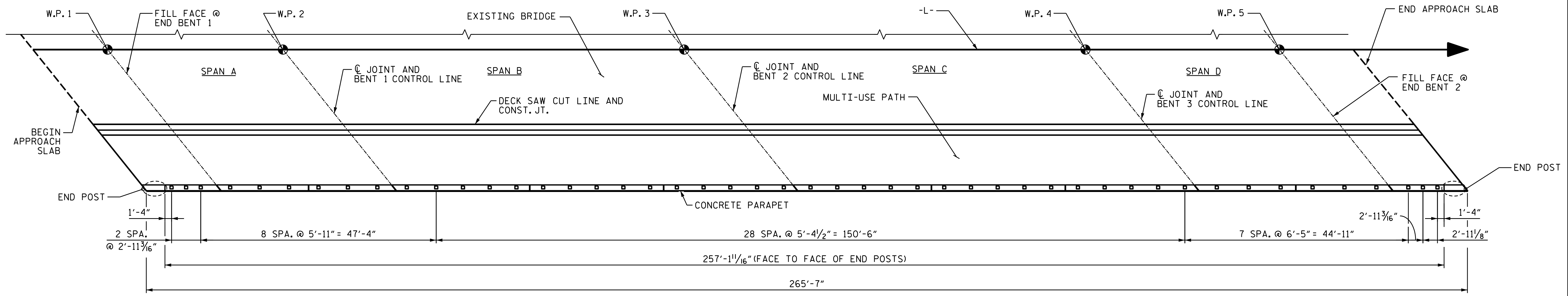
TOTAL SHEETS 37

STD. NO. BMR4



DRAWN BY : EEM	6/94	REV. 5/1/06R	KMM/GM
CHECKED BY : RGW	6/94	REV. 10/1/11	MAA/GM
		REV. 12/17	MAA/THC
DESIGNED BY : J. WHEATLEY	DATE : MAR 2023		
DRAWN BY : J. WHEATLEY	DATE : MAR 2023		
CHECKED BY : T. KIRSCHBAUM	DATE : MAR 2023		
DESIGN ENGINEER OF RECORD : T. HARRIS	DATE : MAR 2023		

3/28/2023 J:\188771-06_NCDOT_NC_111\U-4424\Structures\Dr-off-fig\DGNS\401_043_U4424_SML_2MR2_021.dgn



NOTES

STRUCTURAL CONCRETE INSERT

THE STRUCTURAL CONCRETE INSERT ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:

FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1/2".

1 - 3/4" Ø X 1 5/8" BOLT WITH WASHER. BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø X 1 5/8" GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

WIRE STRUT SHOWN IN THE CONCRETE INSERT ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 7/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

NOTES

METAL RAIL TO END POST CONNECTION

THE METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:

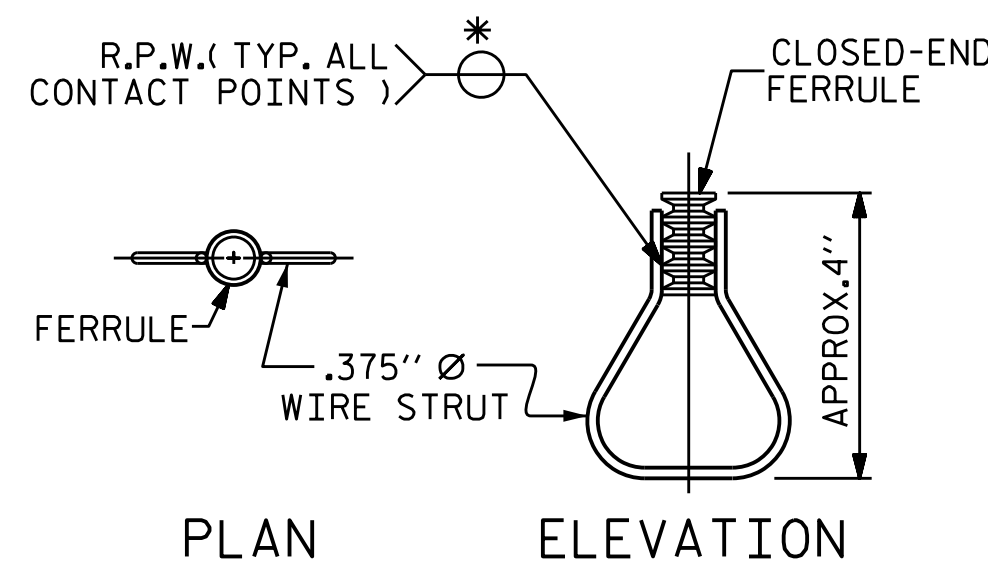
- A. 1/2" PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
- B. 3/4" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A 3/4" Ø X 1 5/8" BOLT WITH 2" O.D. WASHER IN PLACE. THE 3/4" Ø X 1 5/8" BOLT SHALL HAVE N. C. THREADS.
- C. CAP SCREWS FOR RAIL ATTACHMENT TO ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F593 ALLOY 305 STAINLESS STEEL. CAP SCREWS TO BE CENTERED IN SLOTS AT 60°.
- D. STANDARD CLAMP BARS (SEE METAL RAIL SHEET).
- E. 1/2" Ø PIPE SLEEVES (IF REQUIRED) TO BE GALVANIZED.

THE COST OF THE STANDARD CLAMP BARS AND CAP SCREWS USED IN THE METAL RAIL TO END POST CONNECTION SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF 1 OR 2 BAR METAL RAILS.

THE 3/4" STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.

THE COST OF THE 3/4" STRUCTURAL CONCRETE INSERT ASSEMBLY, AND THE 1/2" PLATES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

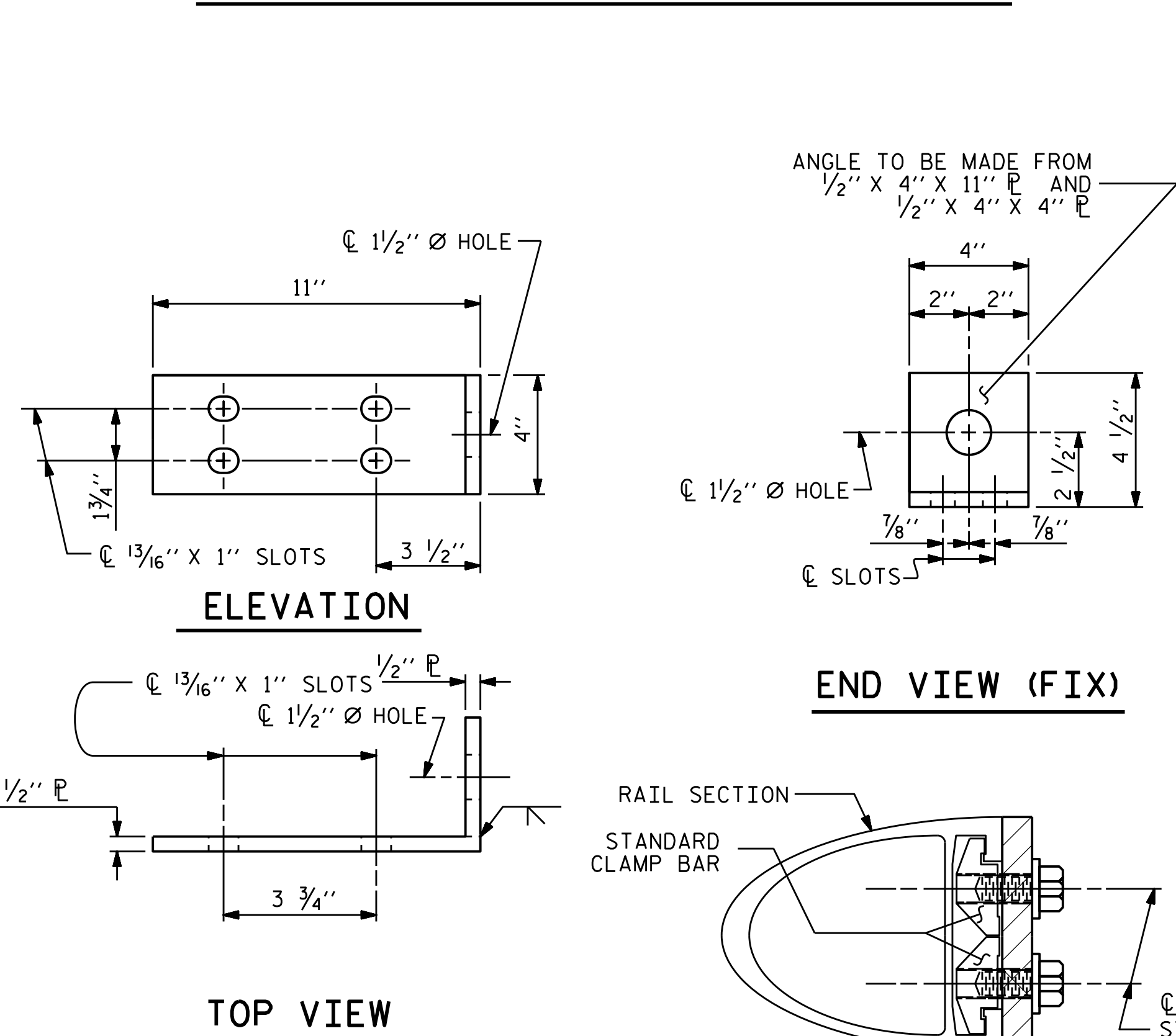
THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE 3/4" Ø X 1 5/8" BOLT WITH WASHER SHALL BE REPLACED WITH A 3/4" Ø X 6 1/2" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE 3/4" Ø X 1 5/8" BOLT SHALL APPLY TO THE 3/4" Ø X 6 1/2" BOLT. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.



STRUCTURAL CONCRETE INSERT

* EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.

PLAN OF RAIL POST SPACING



ELEVATION

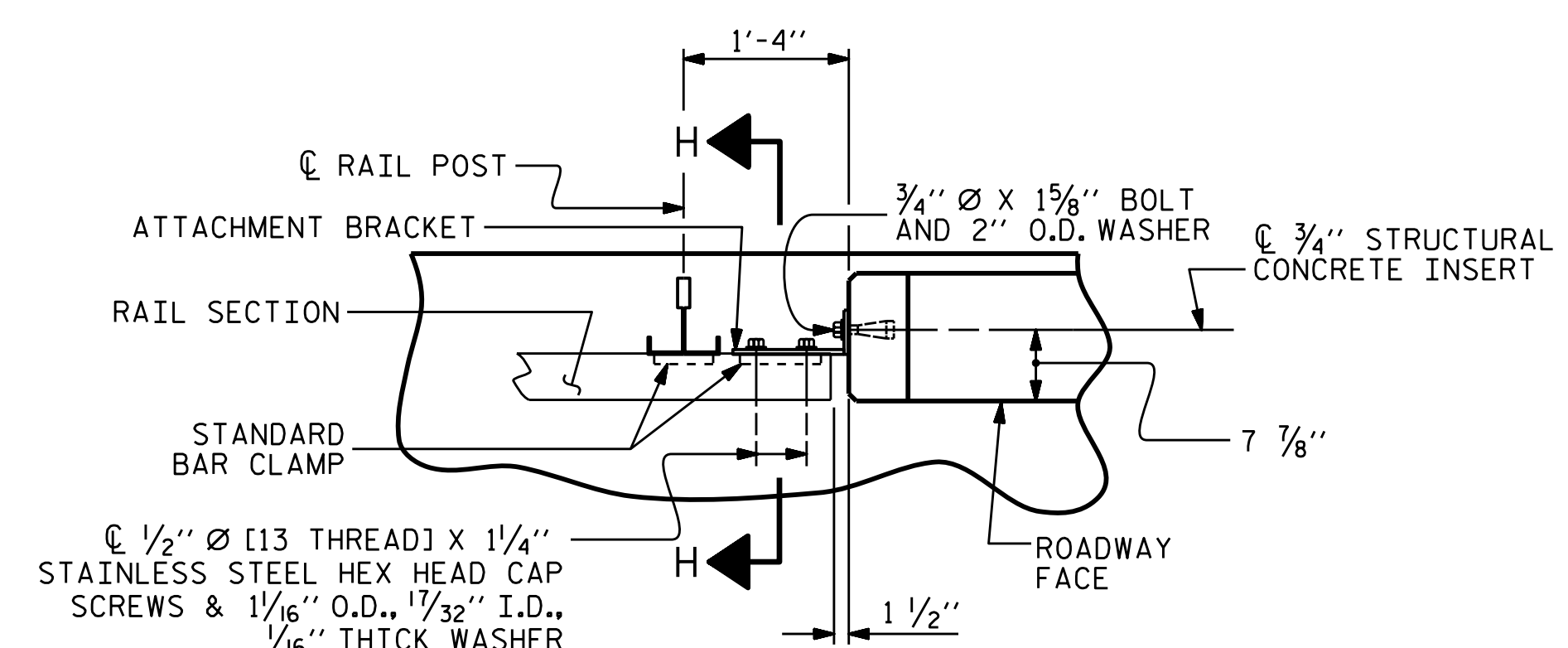
TOP VIEW

END VIEW (FIX)

SECTION H-H (FIX)

FIXED

DETAILS FOR ATTACHING METAL RAIL TO END POST



PLAN - RAIL AND END POST

PROJECT NO. U-4424
EDGEcombe COUNTY
 STATION: 66+24.84 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
RAIL POST SPACINGS
 AND
END OF RAIL DETAILS
 FOR TWO BAR METAL RAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
1			3			TOTAL SHEETS
2			4			37

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

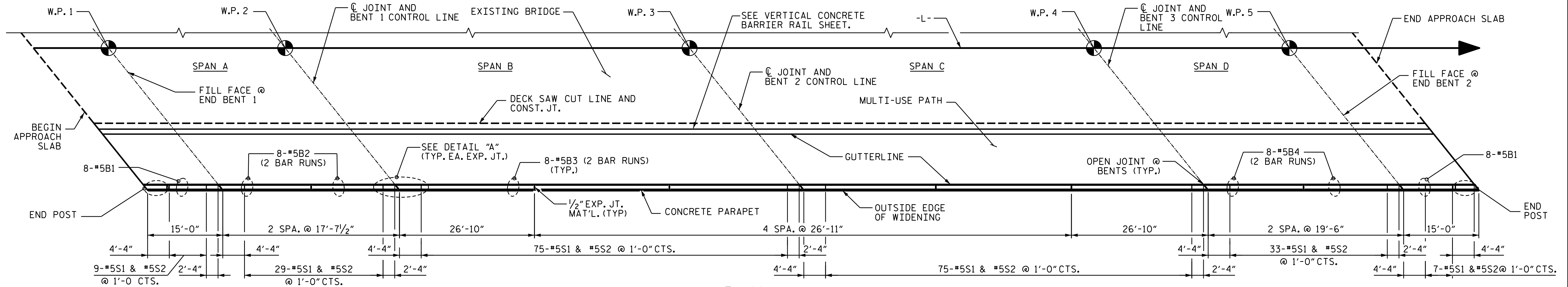
THOMAS M. HARRIS
 PROFESSIONAL ENGINEER
 SEAL 19299
 3/28/2023

wsp

WSP USA Inc.
 434 FAYETTEVILLE STREET
 SUITE 1500
 RALEIGH, NC 27601
 TEL: 1.919.836.4040
 LICENSE NO. F-0165

3/28/2023 4:18:771-06 NCDOT NC 111U-4424SfructuresDr-offring.DGNs\401_045_U4424_SML2MR3_022.dgn

DRAWN BY: FCJ 1/88	REV. 5/1/06	TLA/GM
CHECKED BY: CRK 3/89	REV. 10/11/11	MAA/GM
	REV. 12/17	MAA/THC
DESIGNED BY: J. WHEATLEY	DATE: MAR 2023	
DRAWN BY: J. WHEATLEY	DATE: MAR 2023	
CHECKED BY: T. KIRSCHBAUM	DATE: MAR 2023	
DESIGN ENGINEER OF RECORD: T. HARRIS	DATE: MAR 2023	



NOTES

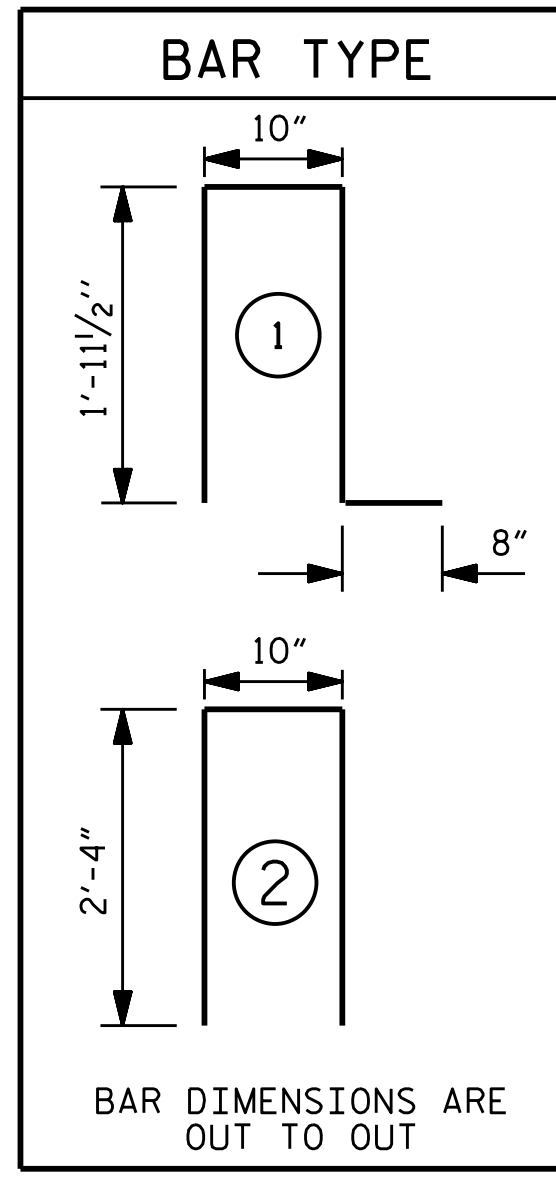
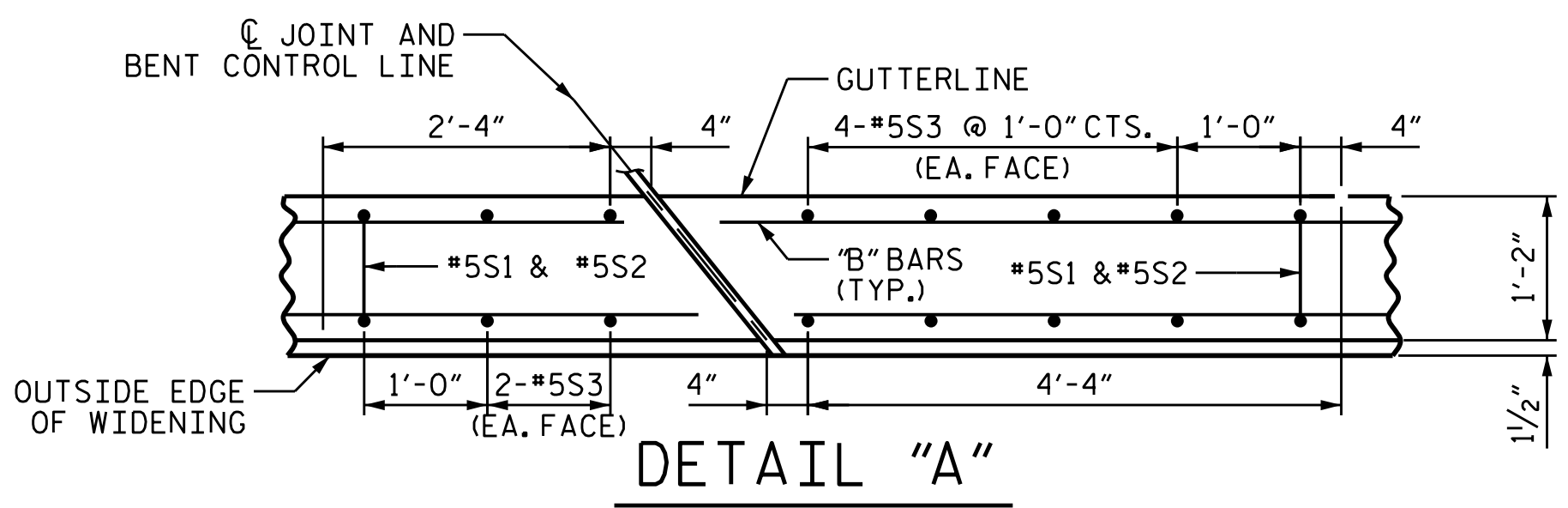
PARAPET IN EACH SPAN OR APPROACH SLAB SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE SPAN/SLAB HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

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

ALL REINFORCING STEEL IN PARAPET SHALL BE EPOXY COATED.

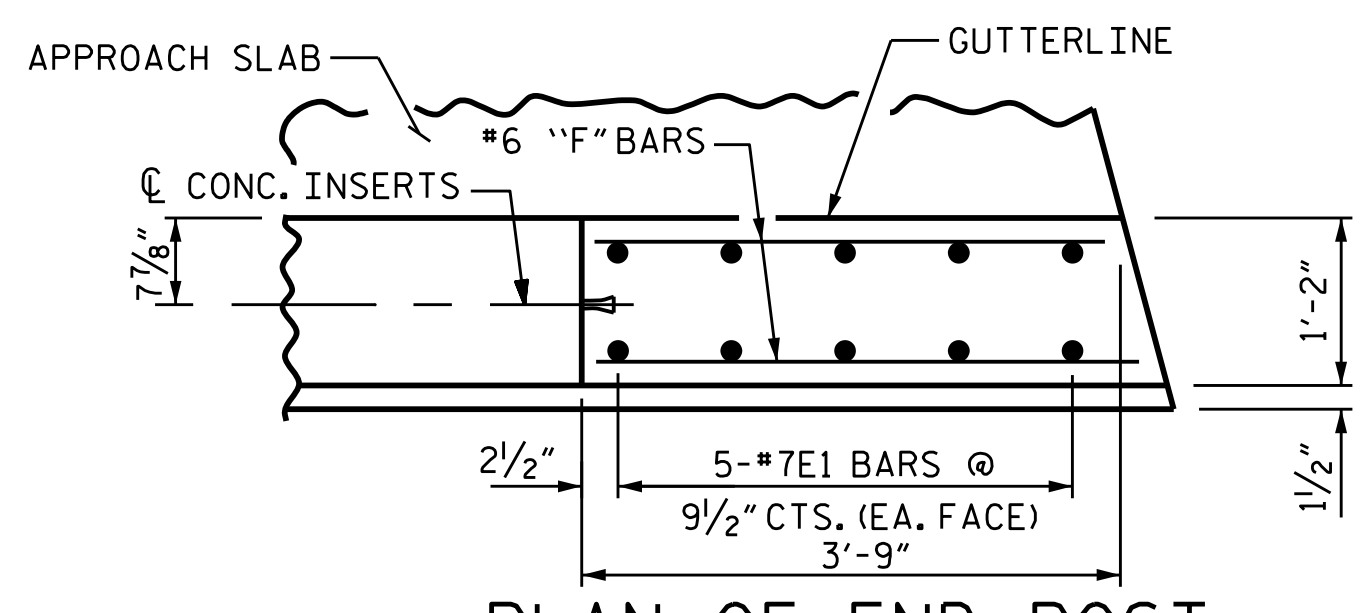
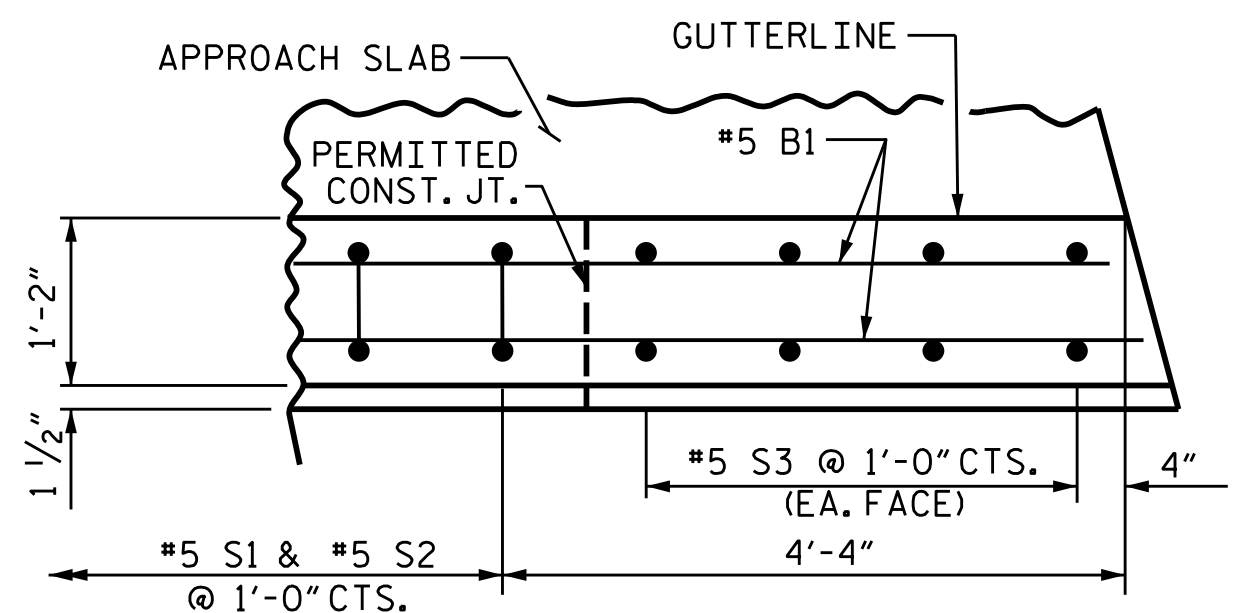
GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN PARAPET EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT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

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

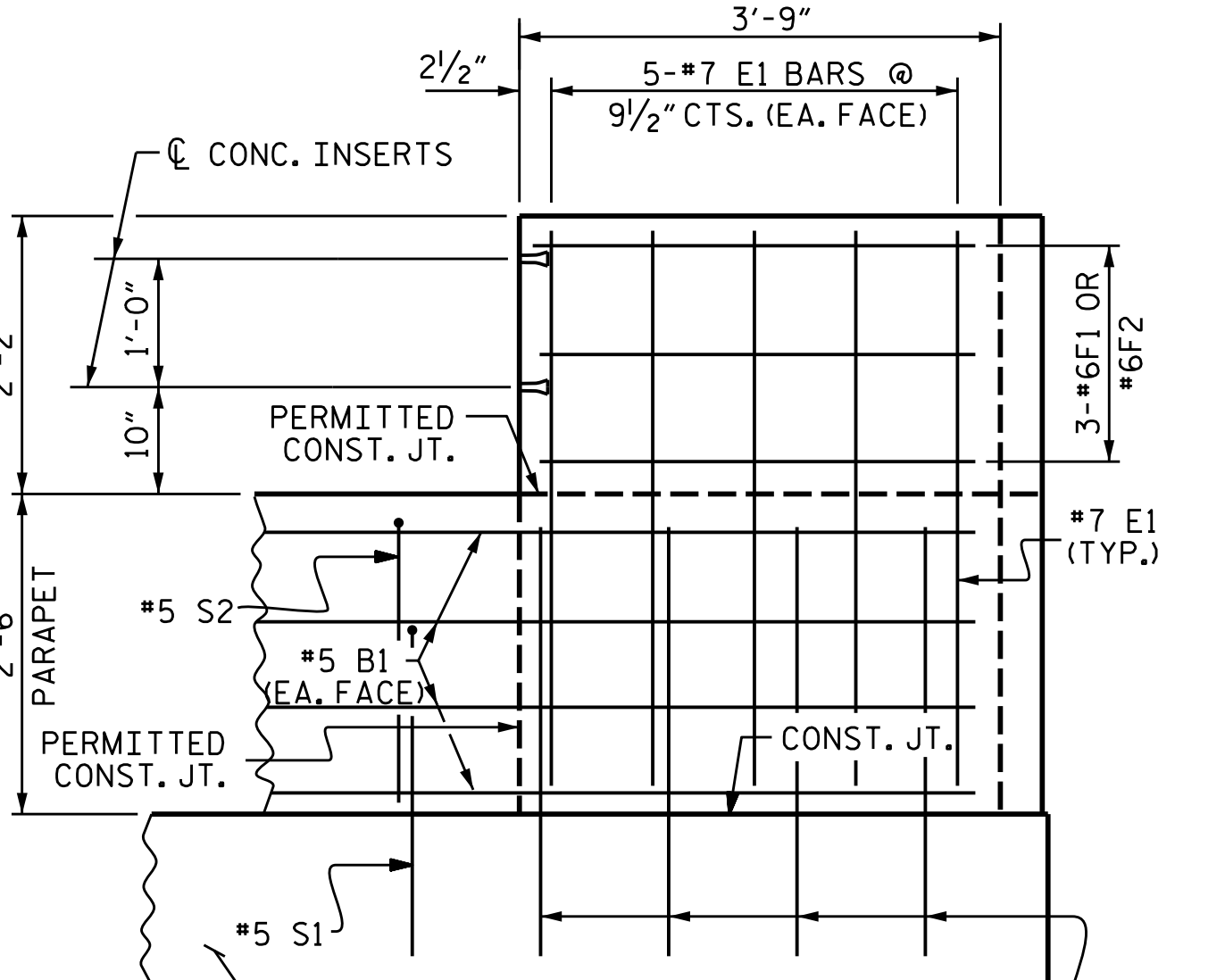
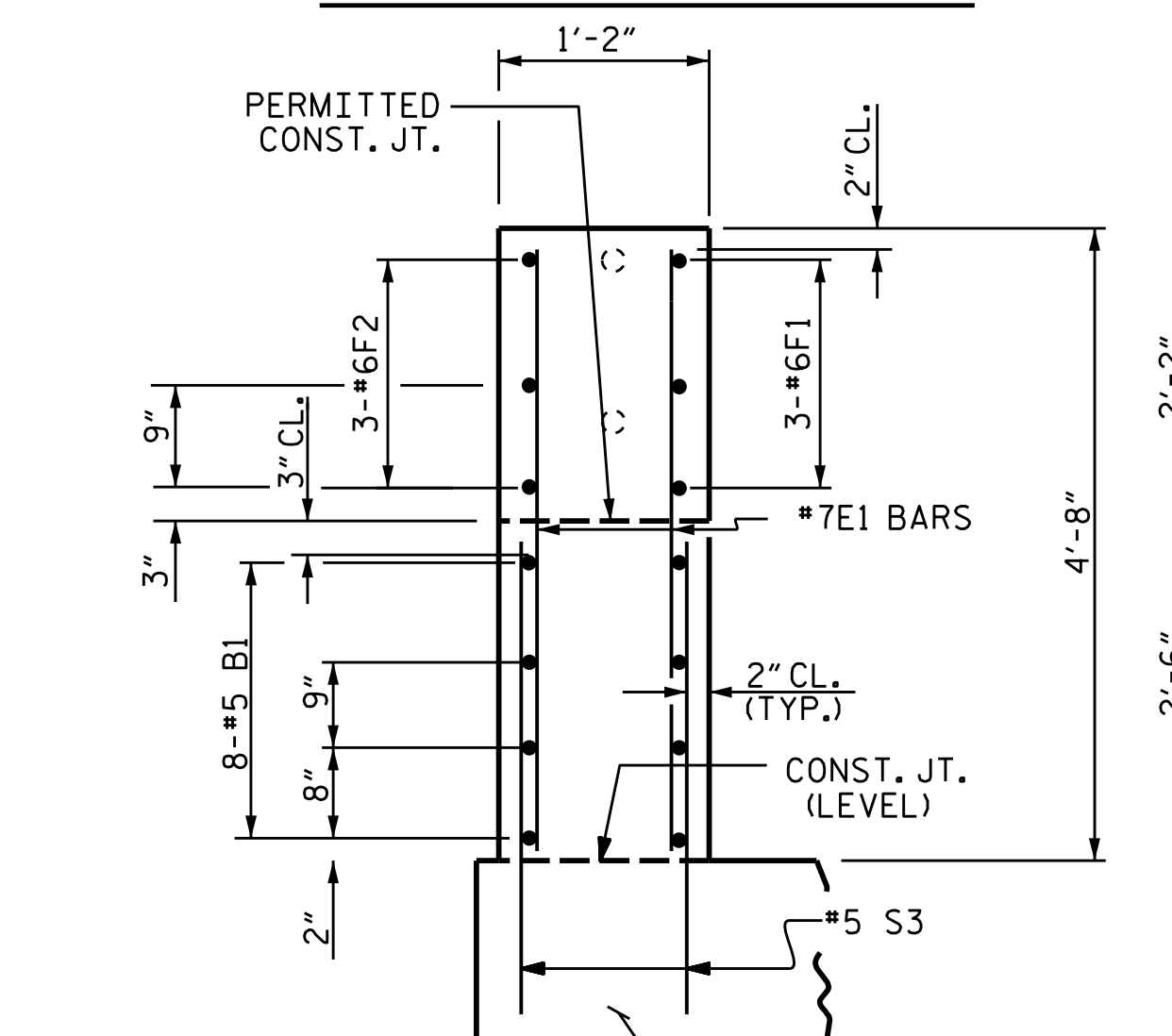
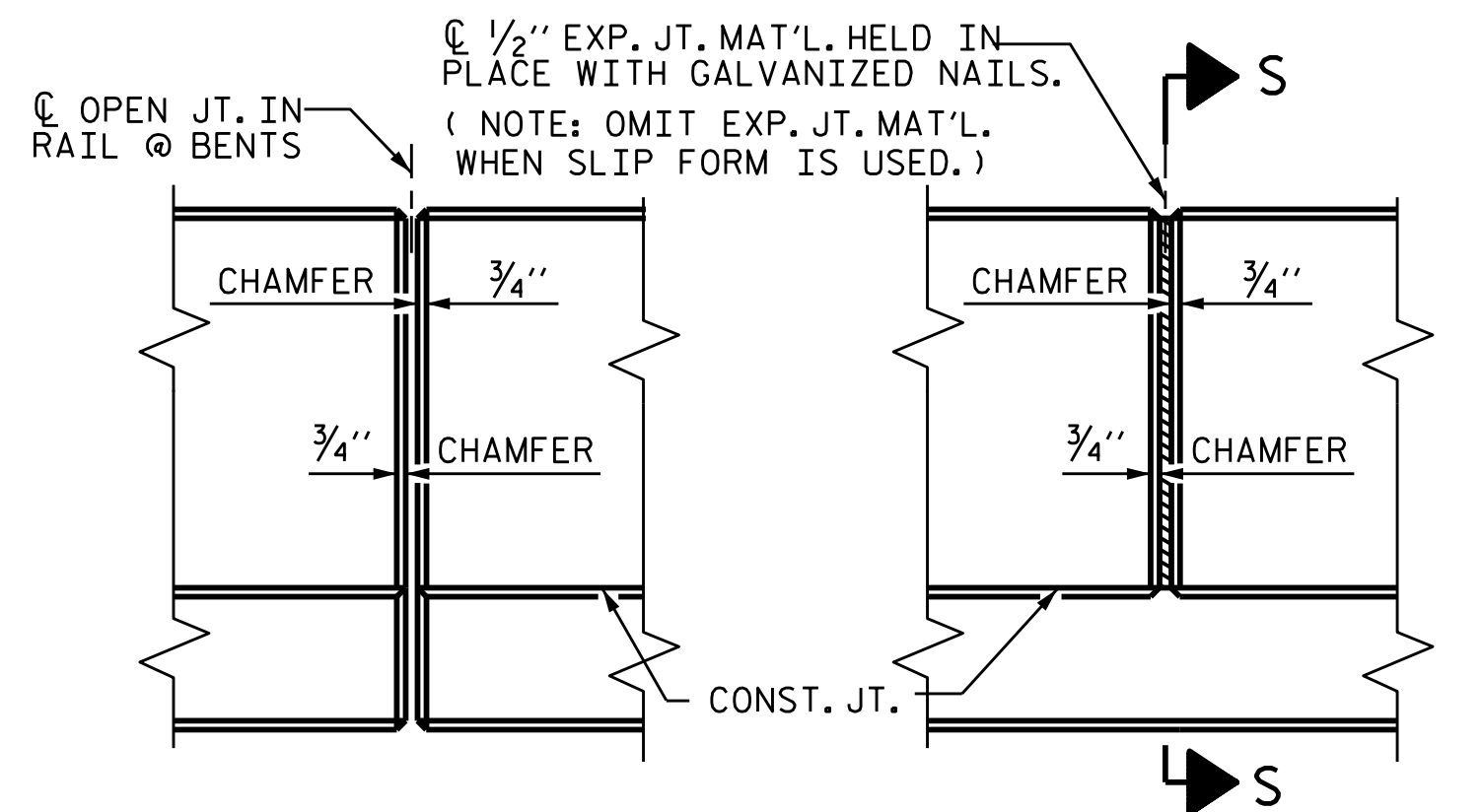
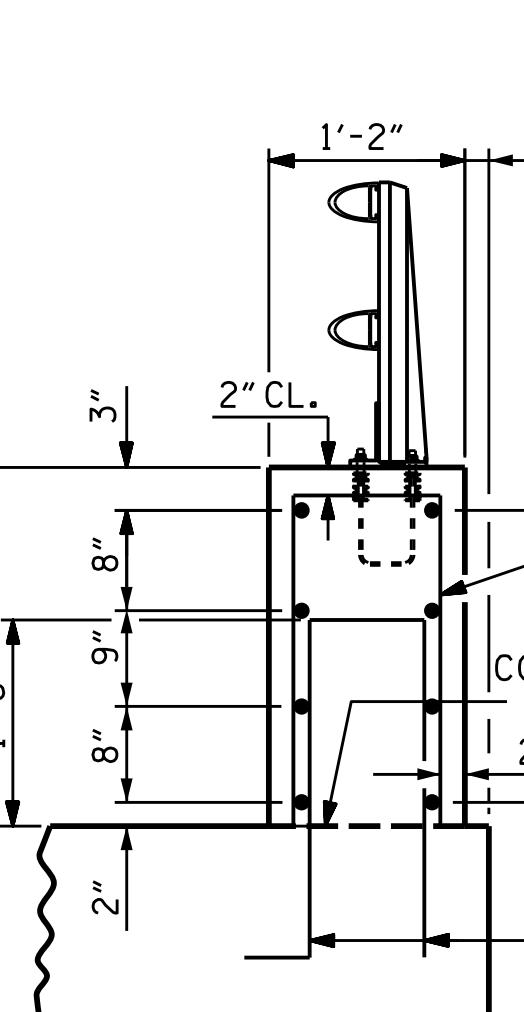


BILL OF MATERIAL FOR PARAPET AND TWO END POSTS

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT (LBS)
* B1	16	#5	STR	14'-8"	245
* B2	32	#5	STR	10'-10"	362
* B3	96	#5	STR	15'-6"	1552
* B4	32	#5	STR	11'-9"	392
* E1	20	#7	STR	4'-4"	177
* F1	6	#6	STR	3'-5"	31
* F2	6	#6	STR	4'-1"	37
* S1	228	#5	1	5'-5"	1288
* S2	228	#5	2	5'-6"	1308
* S3	76	#5	STR	3'-0"	238
* EPOXY COATED REINF. STEEL					5,630 LBS.
CLASS AA CONCRETE					29.5 CU. YDS.
1'-2" X 2'-6" CONCRETE PARAPET					265.6 LIN. FT.



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



SECTION THRU PARAPET



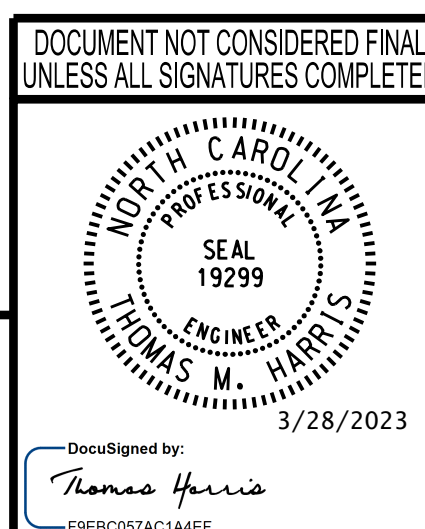
PROJECT NO. U-4424
EDGEcombe COUNTY
 STATION: 66+24.84 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
CONCRETE PARAPET

REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

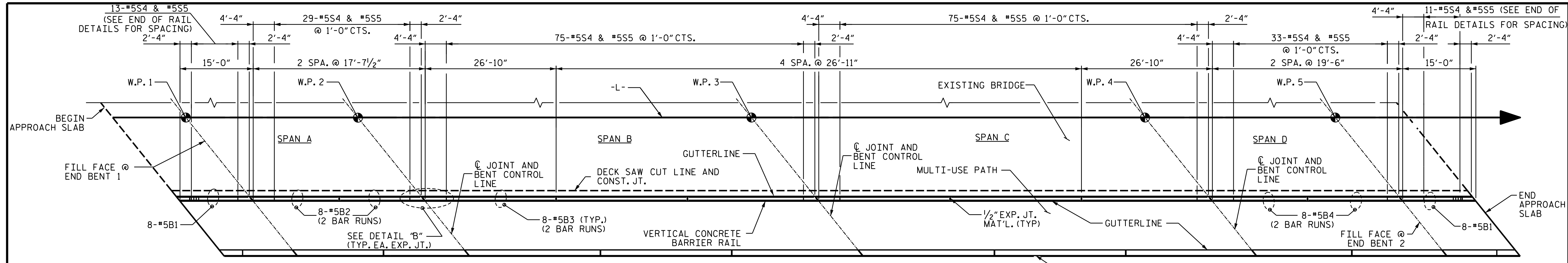
SHEET NO. **S-23**
 TOTAL SHEETS 37



wsp
 WSP USA Inc.
 434 FAYETTEVILLE STREET
 SUITE 1500
 RALEIGH, NC 27601
 TEL: 1.919.836.4040
 LICENSE NO. P-0165

3/28/2023
 J:\188771-06 NCDOT NC 111U-4424\Structures\Drawings\Drawings\401.047_U4424_SML_2MR4_023.dgn

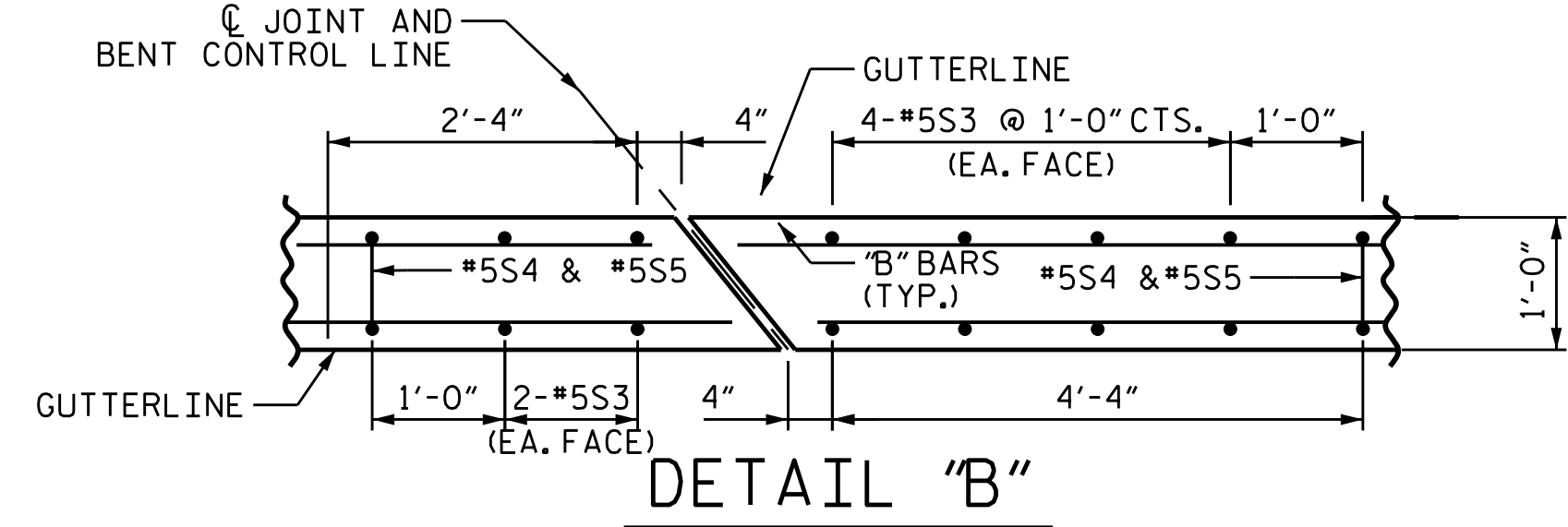
DESIGNED BY: J. WHEATLEY DATE: MAR 2023
 DRAWN BY: J. WHEATLEY DATE: MAR 2023
 CHECKED BY: T. KIRSCHBAUM DATE: MAR 2023
 DESIGN ENGINEER OF RECORD: T. HARRIS DATE: MAR 2023



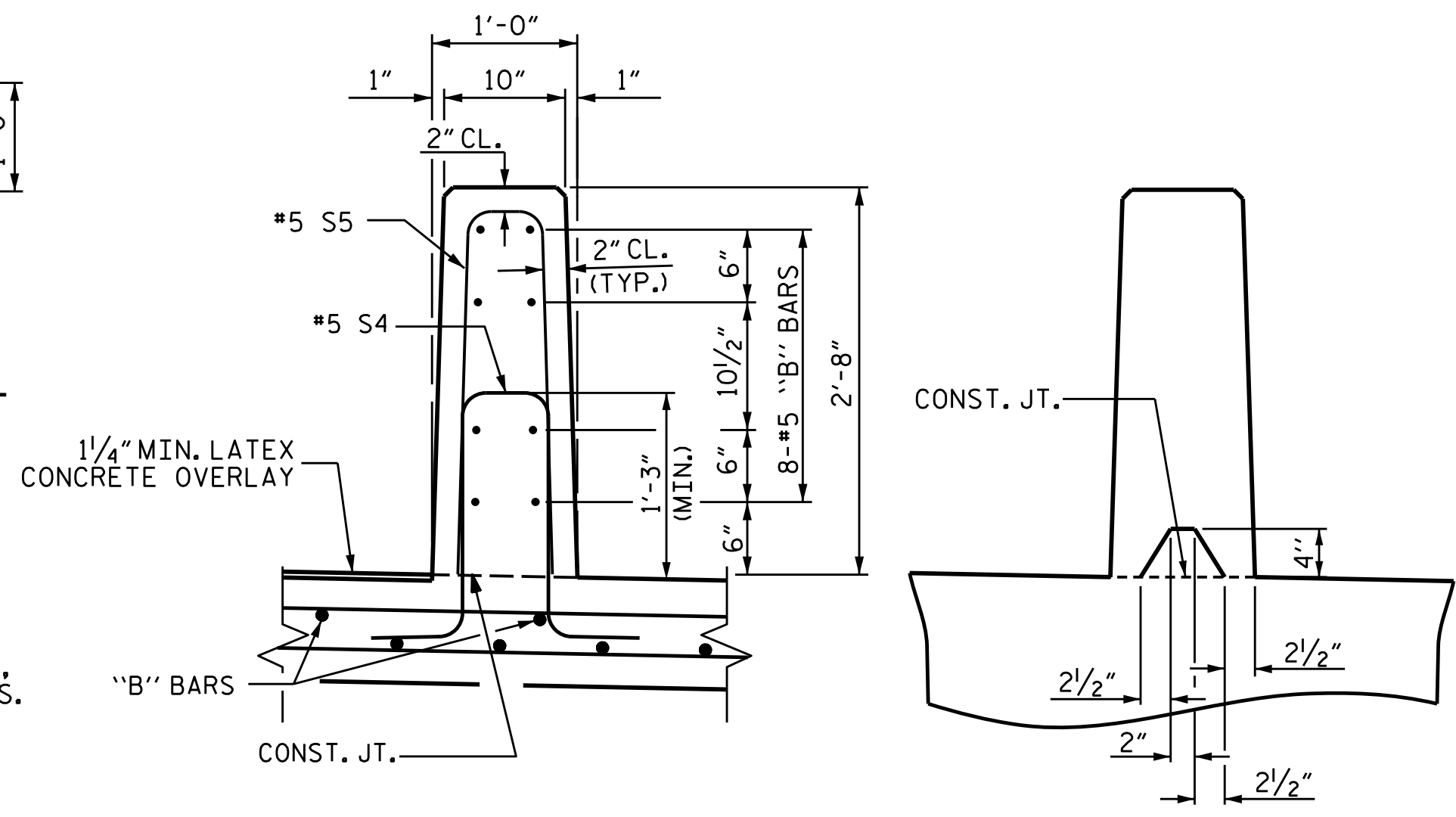
PLAN

FOR CONCRETE PARAPET DETAILS, SEE CONCRETE PARAPET SHEET.

MIN. LAP SPLICE LENGTH FOR #5 "B" BARS = 3'-1"



DETAIL "B"

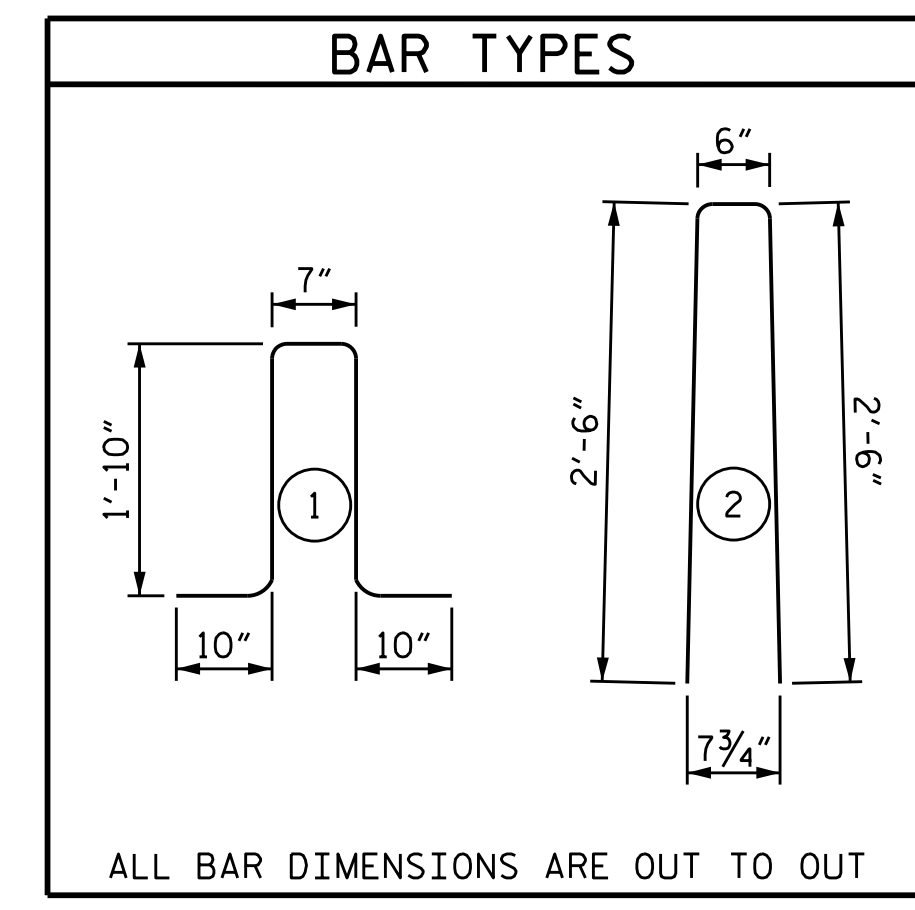


SECTION THRU RAIL

BRIDGE DECK SHOWN; APPROACH SLAB SIMILAR

SECTION S-S

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



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL					
FOR VERTICAL CONCRETE BARRIER RAIL ONLY					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	16	#5	STR	14'-8"	245
* B2	32	#5	STR	10'-10"	362
* B3	96	#5	STR	15'-6"	1552
* B4	32	#5	STR	11'-9"	392
* S3	60	#5	STR	3'-0"	188
* S4	161	#5	1	5'-11"	994
* S5	161	#5	2	5'-6"	924
* S6	16	#5	STR	3'-6"	58
* EPOXY COATED REINFORCING STEEL					4,715 LBS.
CLASS AA CONCRETE					24.0 CU. YDS.
VERTICAL CONCRETE BARRIER RAIL					265.6 LIN. FT.

NOTES

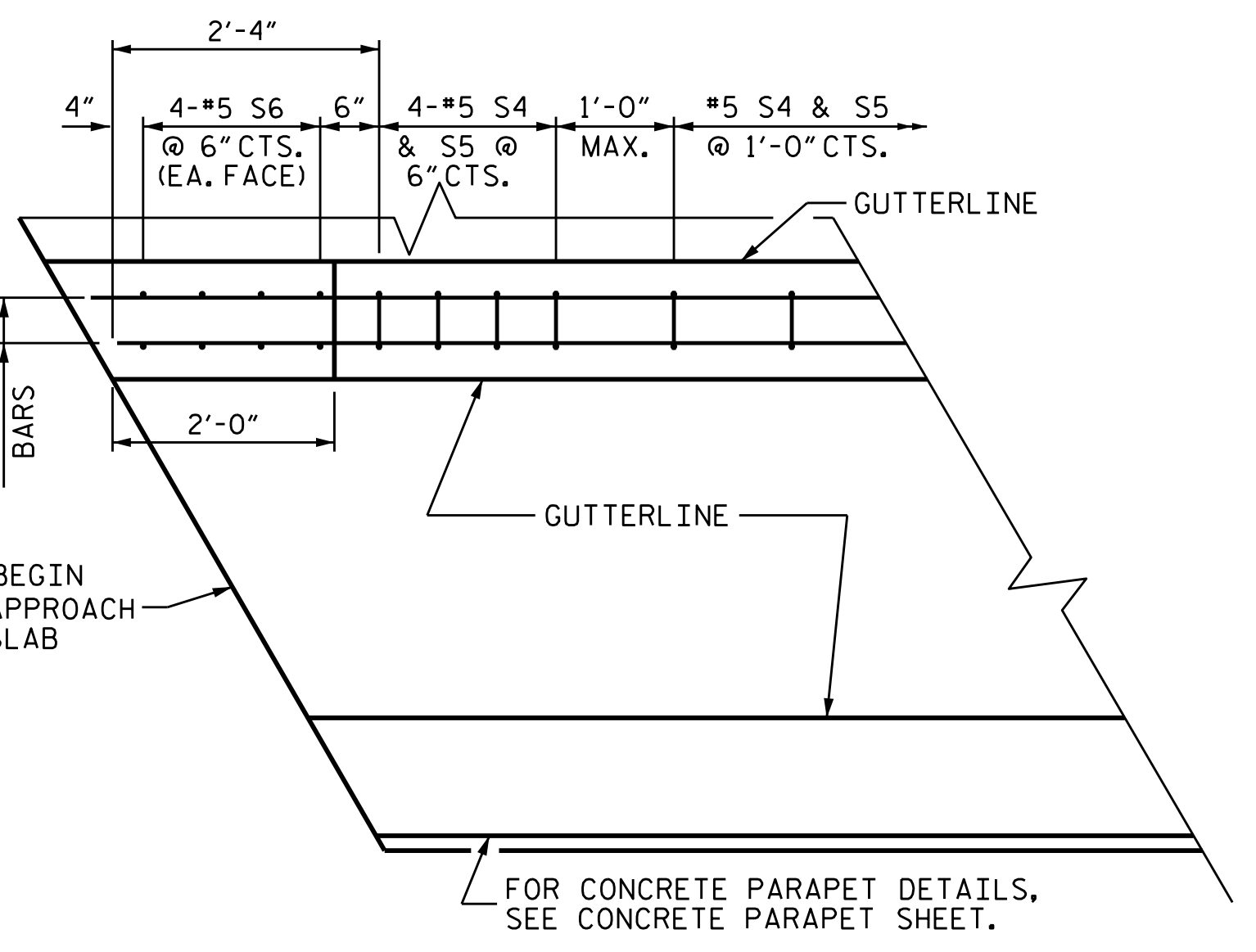
THE BARRIER RAIL IN EACH SPAN AND APPROACH SLAB SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT SPAN/SLAB HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

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

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

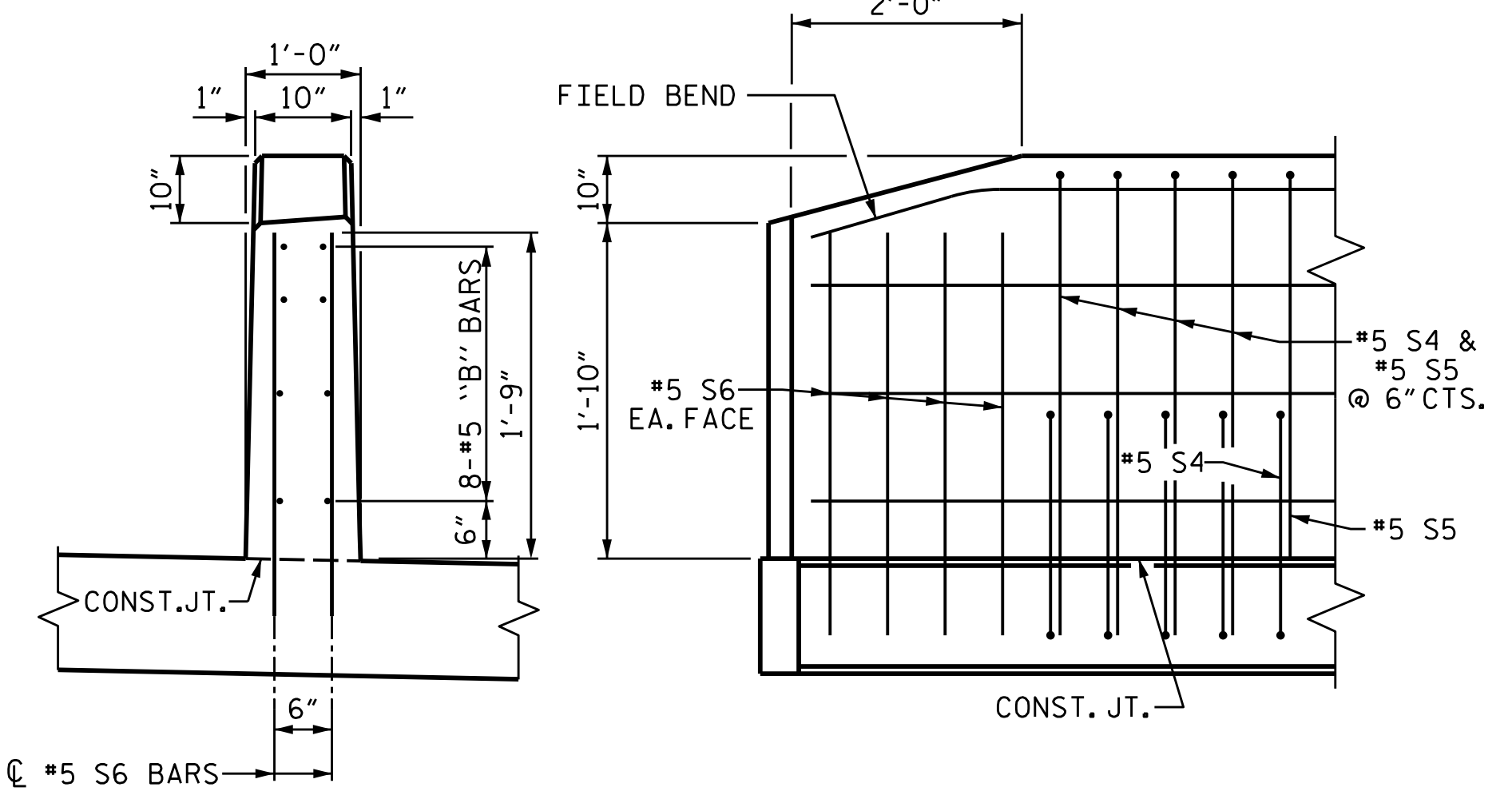
THE #5 S3 & S6 BARS SHALL BE INSTALLED, USING AN ADHESIVE ANCHORING SYSTEM, AFTER SAWING THE JOINT. THE YIELD LOAD FOR THE #5 S3 & S6 BARS IS 18.6 KIPS. FIELD TESTING FOR THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

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



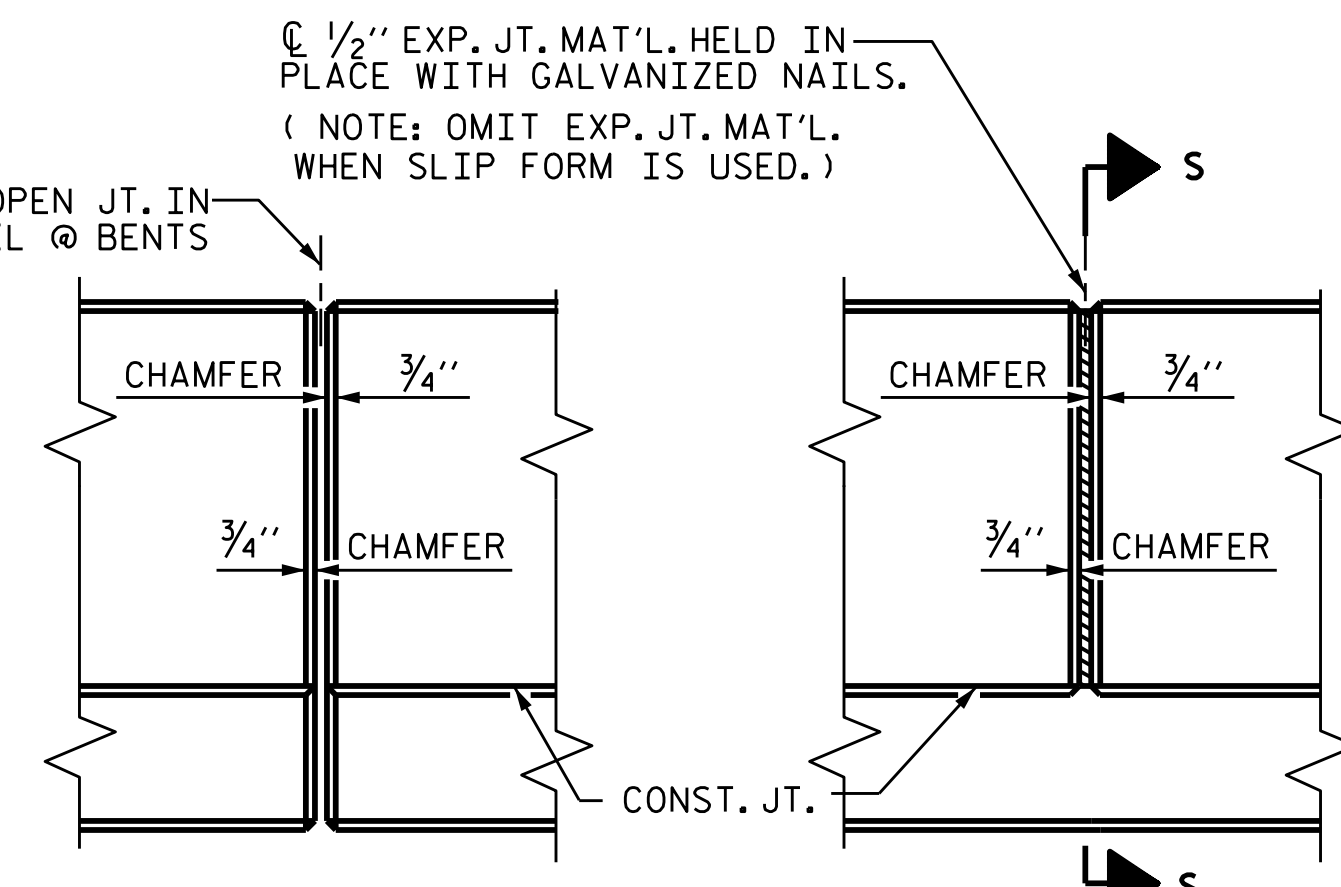
PLAN

FOR CONCRETE PARAPET DETAILS, SEE CONCRETE PARAPET SHEET.



END VIEW

SIDE VIEW

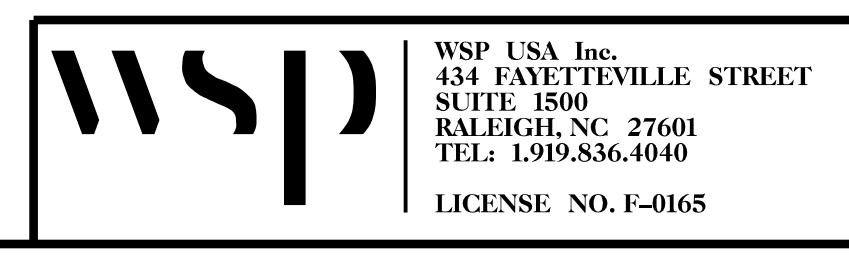
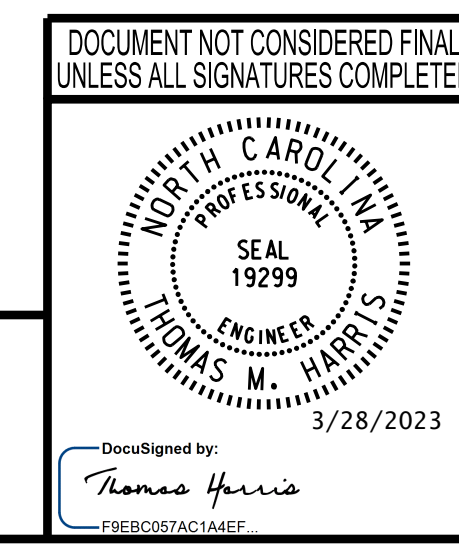


ELEVATION AT EXPANSION JOINTS

BARRIER RAIL DETAILS

PROJECT NO. U-4424
EDGEcombe COUNTY
STATION: 66+24.84 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
VERTICAL CONCRETE BARRIER RAIL					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-24					TOTAL SHEETS 37



3/28/2023 4:\188771-06 NCDOT NC 111U-4424\Structures\Drawings\401_049_U4424_SML.BR_024.dgn

DESIGNED BY: J. WHEATLEY DATE: MAR 2023
DRAWN BY: J. WHEATLEY DATE: MAR 2023
CHECKED BY: T. KIRSCHBAUM DATE: MAR 2023
DESIGN ENGINEER OF RECORD: T. HARRIS DATE: MAR 2023

END OF RAIL DETAILS

FOR ADHESIVE ANCHORING AT SAWED JOINTS

NOTES

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

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

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

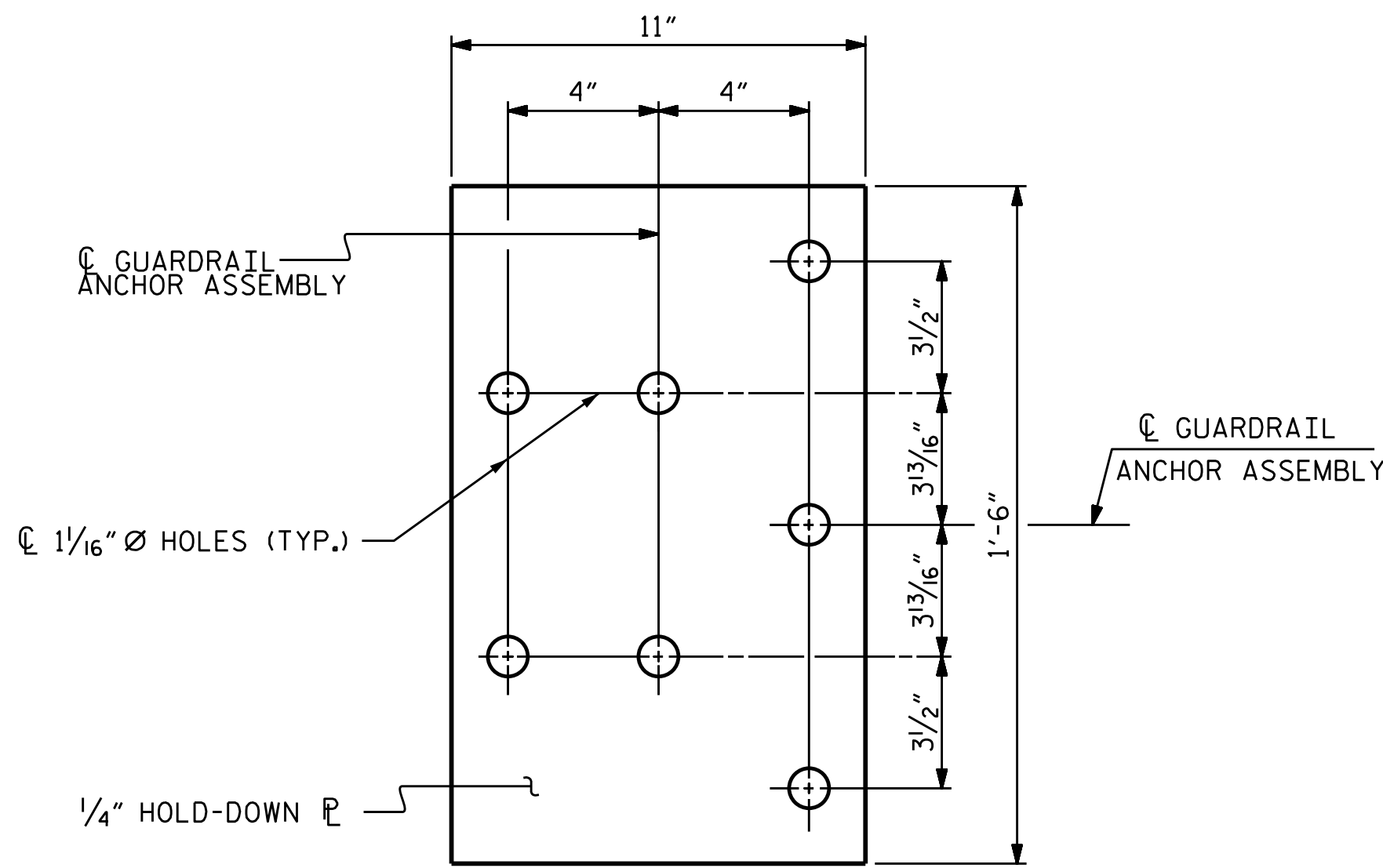
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

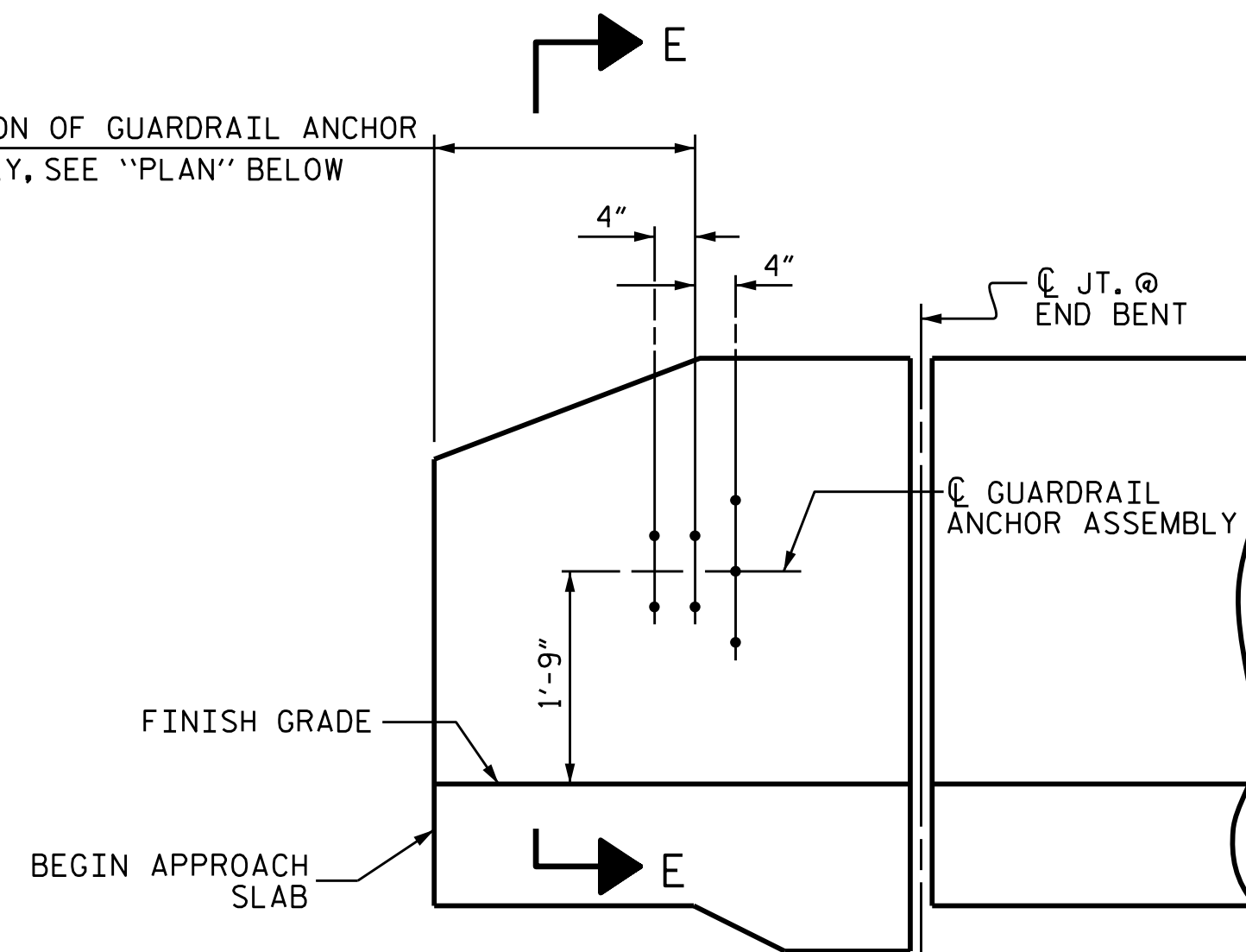
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

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



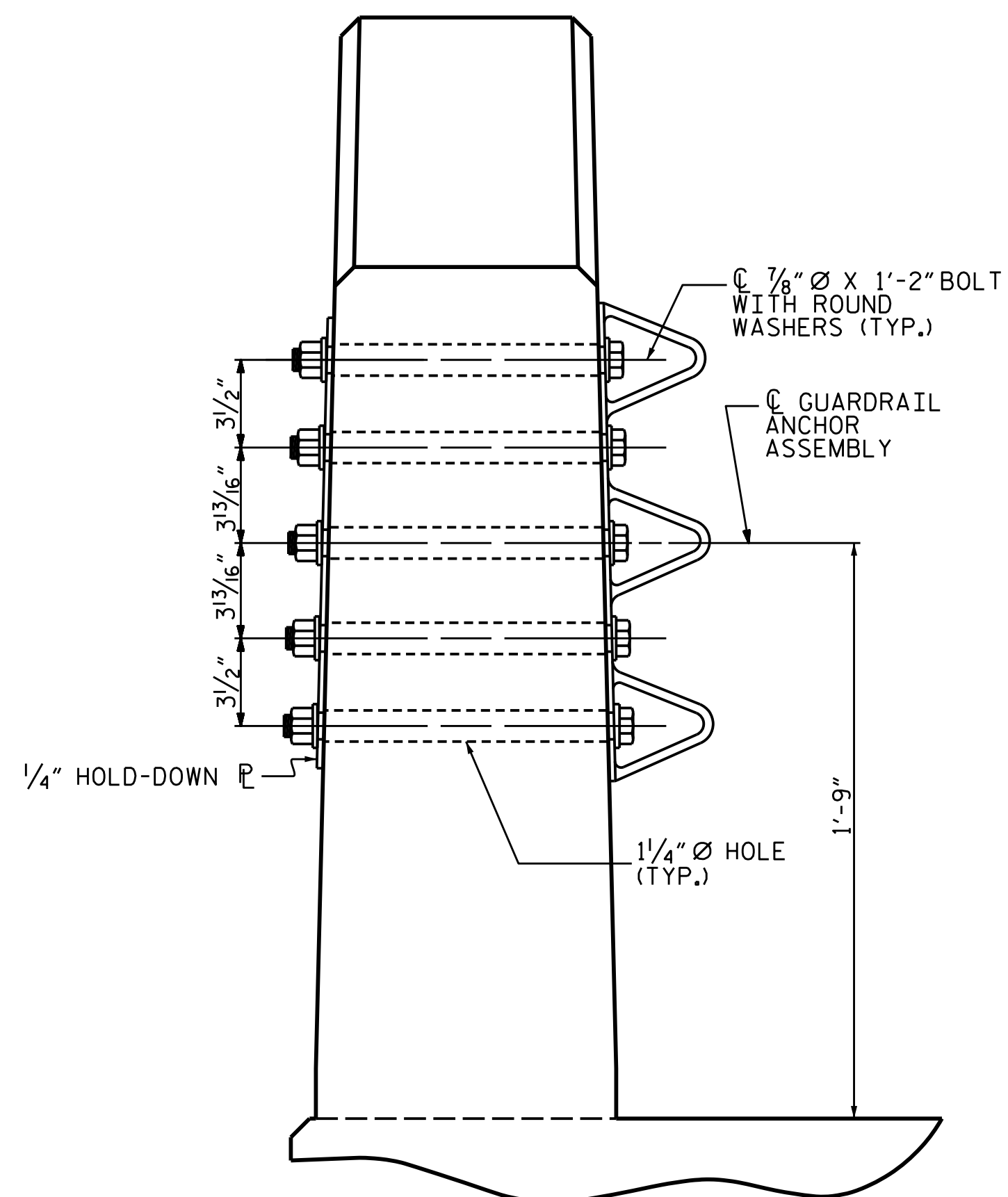
PLAN

FOR LOCATION OF GUARDRAIL ANCHOR ASSEMBLY, SEE "PLAN" BELOW

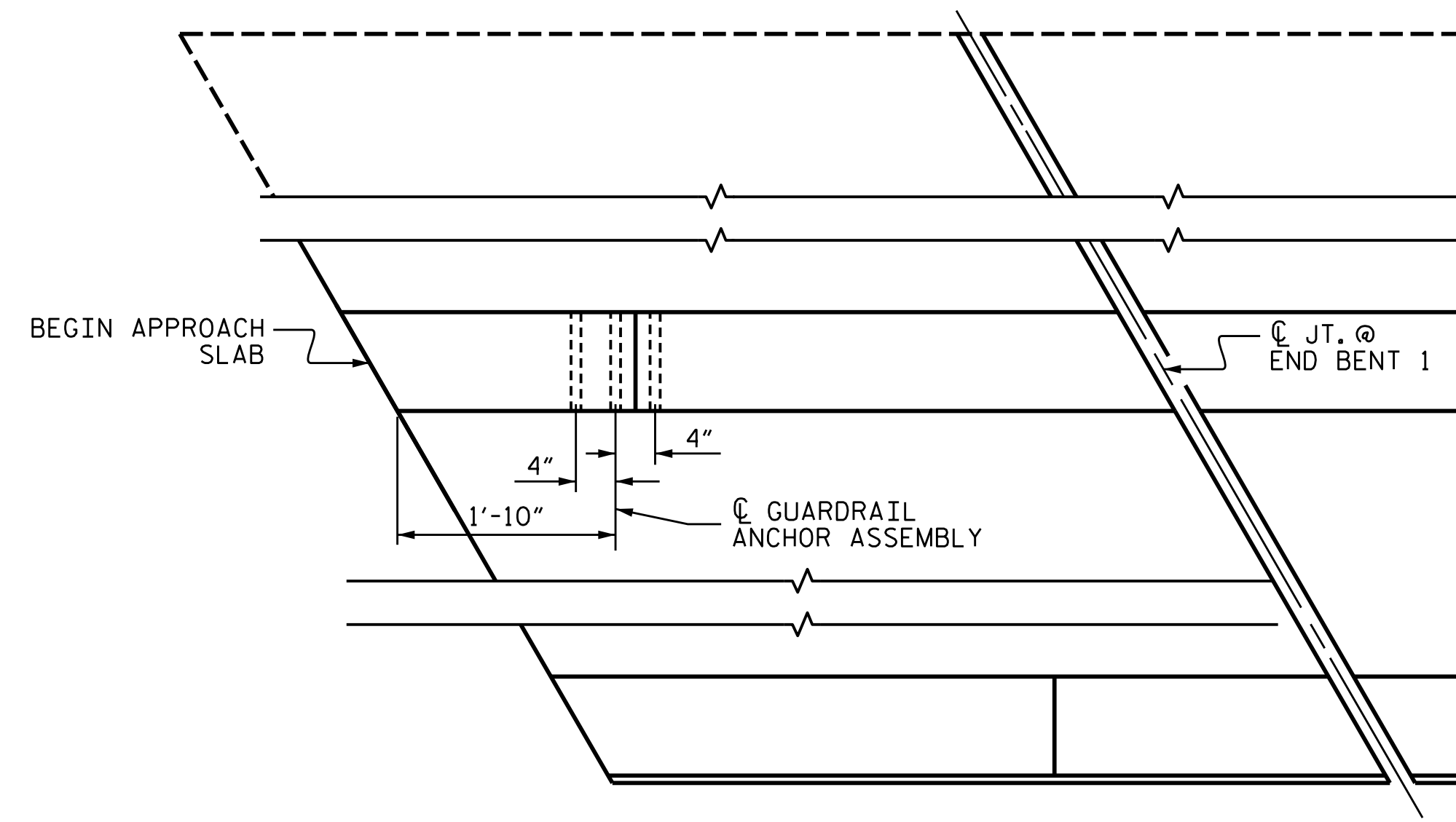


ELEVATION

GUARDRAIL ANCHOR ASSEMBLY DETAILS



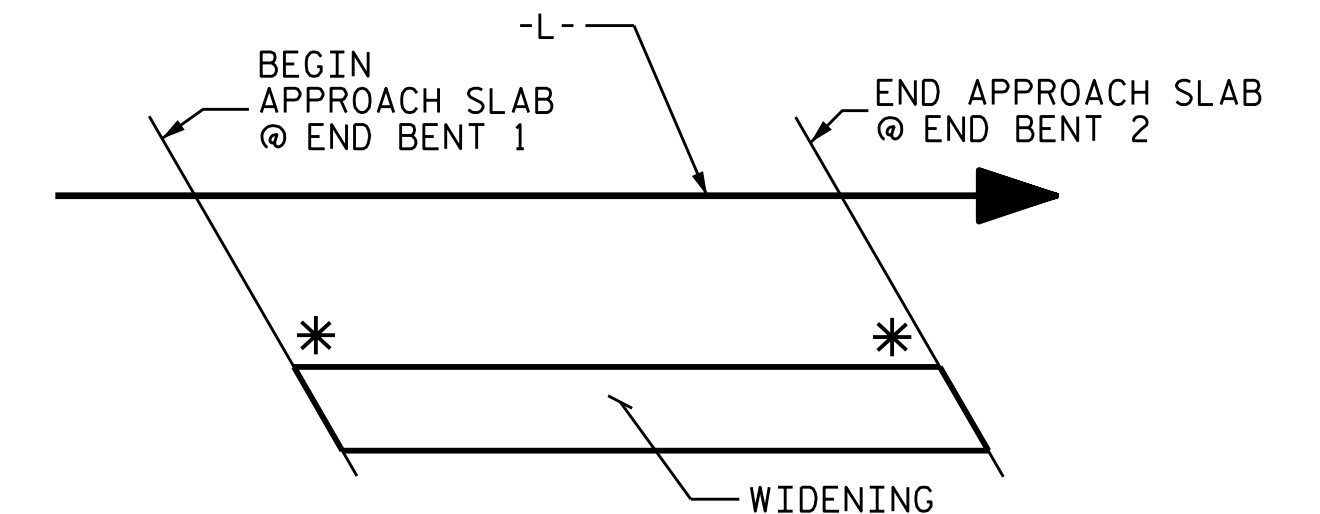
SECTION E-E



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

BEGIN APPROACH SLAB SHOWN, END APPROACH SLAB SIMILAR.



SKETCH SHOWING POINTS OF ATTACHMENT

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. U-4424
EDGEcombe COUNTY
 STATION: 66+24.84 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 GUARDRAIL ANCHORAGE
 DETAILS
 FOR VERTICAL CONCRETE
 BARRIER RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-25
1			3			TOTAL SHEETS
2			4			37

STD. NO. GRA3

DRAWN BY : MAA 5/10	REV. 1/15	MAA/TMG
CHECKED BY : GM 5/10	REV. 12/17	MAA/THC
	REV. 5/18	MAA/THC
DESIGNED BY : J. WHEATLEY	DATE : MAR 2023	
DRAWN BY : J. WHEATLEY	DATE : MAR 2023	
CHECKED BY : T. KIRSCHBAUM	DATE : MAR 2023	
DESIGN ENGINEER OF RECORD : T. HARRIS	DATE : MAR 2023	

wsp
 WSP USA Inc.
 434 FAYETTEVILLE STREET
 SUITE 1500
 RALEIGH, NC 27601
 TEL: 1.919.836.4040
 LICENSE NO. P-0165

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

3/28/2023 J:\188771-06_NCDOT_NC_111\U-4424\Structures\Dr-off\ing\DGNS\401_051_U4424_SML_CR_025.dgn

BILL OF MATERIAL SPAN A						BILL OF MATERIAL SPAN B&C†						BILL OF MATERIAL SPAN D					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	49	#5	STR	13'-2"	673	* A1	140	#5	STR	13'-2"	1923	* A1	57	#5	STR	13'-2"	783
A2	49	#5	STR	13'-2"	673	A2	140	#5	STR	13'-2"	1923	A2	57	#5	STR	13'-2"	783
* A101	6	#6	STR	6'-6"	59	* A101	6	#6	STR	6'-6"	59	* A101	6	#6	STR	6'-6"	59
* A102	2	#5	STR	1'-0"	2	* A102	2	#5	STR	1'-0"	2	* A102	2	#5	STR	1'-0"	2
* A103	2	#5	STR	1'-2"	2	* A103	2	#5	STR	1'-2"	2	* A103	2	#5	STR	1'-2"	2
* A104	2	#5	STR	1'-9"	4	* A104	2	#5	STR	1'-9"	4	* A104	2	#5	STR	1'-9"	4
* A105	2	#5	STR	2'-5"	5	* A105	2	#5	STR	2'-5"	5	* A105	2	#5	STR	2'-5"	5
* A106	2	#5	STR	3'-0"	6	* A106	2	#5	STR	3'-0"	6	* A106	2	#5	STR	3'-0"	6
* A107	2	#5	STR	5'-5"	11	* A107	2	#5	STR	5'-5"	11	* A107	2	#5	STR	5'-5"	11
* A108	2	#5	STR	6'-0"	13	* A108	2	#5	STR	6'-0"	13	* A108	2	#5	STR	6'-0"	13
* A109	2	#5	STR	6'-7"	14	* A109	2	#5	STR	6'-7"	14	* A109	2	#5	STR	6'-7"	14
* A110	2	#5	STR	7'-3"	15	* A110	2	#5	STR	7'-3"	15	* A110	2	#5	STR	7'-3"	15
* A111	2	#5	STR	7'-10"	16	* A111	2	#5	STR	7'-10"	16	* A111	2	#5	STR	7'-10"	16
* A112	2	#5	STR	8'-6"	18	* A112	2	#5	STR	8'-6"	18	* A112	2	#5	STR	8'-6"	18
* A113	2	#5	STR	9'-1"	19	* A113	2	#5	STR	9'-1"	19	* A113	2	#5	STR	9'-1"	19
* A114	2	#5	STR	9'-9"	20	* A114	2	#5	STR	9'-9"	20	* A114	2	#5	STR	9'-9"	20
* A115	2	#5	STR	10'-4"	22	* A115	2	#5	STR	10'-4"	22	* A115	2	#5	STR	10'-4"	22
* A116	2	#5	STR	11'-0"	23	* A116	2	#5	STR	11'-0"	23	* A116	2	#5	STR	11'-0"	23
* A117	2	#5	STR	11'-7"	24	* A117	2	#5	STR	11'-7"	24	* A117	2	#5	STR	11'-7"	24
* A118	2	#5	STR	12'-3"	26	* A118	2	#5	STR	12'-3"	26	* A118	2	#5	STR	12'-3"	26
* A119	2	#5	STR	12'-9"	27	* A119	2	#5	STR	12'-9"	27	* A119	2	#5	STR	12'-9"	27
A201	6	#5	STR	1'-9"	11	A201	6	#5	STR	1'-9"	11	A201	6	#5	STR	1'-9"	11
A202	2	#5	STR	2'-3"	5	A202	2	#5	STR	2'-3"	5	A202	2	#5	STR	2'-3"	5
A203	2	#5	STR	3'-0"	6	A203	2	#5	STR	3'-0"	6	A203	2	#5	STR	3'-0"	6
A204	2	#5	STR	3'-6"	7	A204	2	#5	STR	3'-6"	7	A204	2	#5	STR	3'-6"	7
A205	2	#5	STR	4'-2"	9	A205	2	#5	STR	4'-2"	9	A205	2	#5	STR	4'-2"	9
A206	2	#5	STR	4'-9"	10	A206	2	#5	STR	4'-9"	10	A206	2	#5	STR	4'-9"	10
A207	2	#5	STR	5'-5"	11	A207	2	#5	STR	5'-5"	11	A207	2	#5	STR	5'-5"	11
A208	2	#5	STR	6'-0"	13	A208	2	#5	STR	6'-0"	13	A208	2	#5	STR	6'-0"	13
A209	2	#5	STR	6'-7"	14	A209	2	#5	STR	6'-7"	14	A209	2	#5	STR	6'-7"	14
A210	2	#5	STR	7'-3"	15	A210	2	#5	STR	7'-3"	15	A210	2	#5	STR	7'-3"	15
A211	2	#5	STR	7'-10"	16	A211	2	#5	STR	7'-10"	16	A211	2	#5	STR	7'-10"	16
A212	2	#5	STR	8'-6"	18	A212	2	#5	STR	8'-6"	18	A212	2	#5	STR	8'-6"	18
A213	2	#5	STR	9'-1"	19	A213	2	#5	STR	9'-1"	19	A213	2	#5	STR	9'-1"	19
A214	2	#5	STR	9'-9"	20	A214	2	#5	STR	9'-9"	20	A214	2	#5	STR	9'-9"	20
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A216	2	#5	STR	11'-0"	23	A216	2	#5	STR	11'-0"	23	A216	2	#5	STR	11'-0"	23
A217	2	#5	STR	11'-7"	24	A217	2	#5	STR	11'-7"	24	A217	2	#5	STR	11'-7"	24
A218	2	#5	STR	12'-3"	26	A218	2	#5	STR	12'-3"	26	A218	2	#5	STR	12'-3"	26
A219	2	#5	STR	12'-9"	27	A219	2	#5	STR	12'-9"	27	A219	2	#5	STR	12'-9"	27
* B1	10	#4	STR	34'-9"	232	* B3	30	#4	STR	28'-1"	563	* B5	10	#4	STR	38'-7"	258
B2	17	#5	STR	34'-9"	616	B4	34	#5	STR	41'-2"	1460	B6	17	#5	STR	38'-7"	684
* D1	65	#5	STR	3'-4"	226	* D1	156	#5	STR	3'-4"	542	* D1	72	#5	STR	3'-4"	250
D2	65	#5	STR	3'-4"	226	D2	156	#5	STR	3'-4"	542	D2	72	#5	STR	3'-4"	250
D3	6	#4	STR	1'-6"	6	D3	12	#4	STR	1'-6"	12	D3	6	#4	STR	1'-6"	6
D4	4	#4	STR	4'-7"	12	D4	4	#4	STR	4'-7"	12	D4	4	#4	STR	4'-7"	12
D5	1	#6	STR	5'-0"	8	* G1	2	#5	STR	16'-11"	35	D5	1	#6	STR	5'-0"	8
* G1	2	#5	STR	16'-11"	35	K17	4	#6	STR	3'-10"	23	* G1	2	#5	STR	16'-11"	35
K1	3	#4	STR	16'-11"	34	K18	4	#6	STR	8'-5"	51	K1	3	#4	STR	16'-11"	34
K2	1	#4	STR	16'-9"	11	K19	4	#8	7	8'-11"	95	K2	1	#4	STR	16'-9"	11
K3	1	#6	STR	16'-11"	25	K20	4	#8	7	10'-9"	115	K3	1	#6	STR	16'-11"	25
K4	1	#4	STR	9'-3"	6	K21	2	#5	STR	3'-10"	8	K4	1	#4	STR	9'-3"	6
K5	2	#4	STR	9'-11"	13	K22	2	#5	STR	8'-5"	18	K5	2	#4	STR	9'-11"	13
K6	1	#6	STR	8'-8"	13	K23	2	#5	5	4'-7"	10	K6	1	#6	STR	8'-8"	13
K7	1	#4	STR	2'-2"	1	K24	2	#5	5	9'-1"	19	K7	1	#4	STR	2'-2"	1
K8	2	#4	STR	2'-6"	3	S3	22	#4	3	3'-11"	58	K8	2	#4	STR	2'-6"	3
K9	1	#6	STR	1'-10"	3	S6	22	#5	4	5'-8"	130	K9	1	#6	STR	1'-10"	3
K10	1	#4	8	5'-4"	4	S7	6	#5	3	3'-10"	24	K10	1	#4	8	5'-4"	4
K11	2	#4	8	5'-0"	7	S8	11	#4	6	7'-3"	53	K11	2	#4	8	5'-0"	7
K12	1	#6	8	4'-8"	7							K12	1	#6	8	4'-8"	7
K13	2	#6	STR	4'-8"	14							K13	2	#6	STR	4'-8"	14
K14	2	#6	STR	9'-3"	28							K14	2	#6	STR	9'-3"	28
K15	2	#8	7	8'-3"	44							K15	2	#8	7	8'-3"	44
K16	4	#8	7	9'-8"	103							K16	4	#8	7	9'-8"	103
S1	28	#4	1	4'-9"	89							S1	28	#4	1	4'-9"	89
S2	15	#4	2	2'-6"	25							S2	15	#4	2	2'-6"	25
S4	13	#5	4	4'-8"	63							S4	13	#5	4	4'-8"	63
S5	3	#5	3	2'-10"	9							S5	3	#5	3	2'-10"	9
S9	13	#4	3	3'-9"	33							S9	13	#4	3	3'-9"	33
REINFORCING STEEL (LBS.)					2,372	REINFORCING STEEL (LBS.)					4,837	REINFORCING STEEL (LBS.)					2,574
* EPOXY COATED REINFORCING STEEL (LBS.)					1,492	* EPOXY COATED REINFORCING STEEL (LBS.)					3,389	* EPOXY COATED REINFORCING STEEL (LBS.)					1,652
† QUANTITIES ARE PER SPAN																	
DESIGNED BY: J. WHEATLEY DATE: MAR 2023						DESIGNED BY: J. WHEATLEY DATE: MAR 2023						DESIGNED BY: J. WHEATLEY DATE: MAR 2023					
DRAWN BY: J. WHEATLEY DATE: MAR 2023						DRAWN BY: J. WHEATLEY DATE: MAR 2023						DRAWN BY: J. WHEATLEY DATE: MAR 2023					
CHECKED BY: T. KIRSCHBAUM DATE: MAR 2023						CHECKED BY: T. KIRSCHBAUM DATE: MAR 2023						CHECKED BY: T. KIRSCHBAUM DATE: MAR 2023					
DESIGN ENGINEER OF RECORD: T. HARRIS DATE: MAR 2023						DESIGN ENGINEER OF RECORD: T. HARRIS DATE: MAR 2023						DESIGN ENGINEER OF RECORD: T. HARRIS DATE: MAR 2023					

—SUPERSTRUCTURE BILL OF MATERIAL—			
	CLASS AA CONCRETE	REINFORCING STEEL	* EPOXY COATED REINFORCING STEEL
	(CU. YDS.)	(LBS.)	(LBS.)
SPAN A	16.7	2,372	1,492
SPAN B	30.9	4,837	3,389
SPAN C	30.9	4,837	3,389
SPAN D	18.0	2,574	1,652
TOTALS**	96.5	14,620	9,922

** QUANTITIES FOR CONCRETE PARAPET AND BARRIER RAIL ARE NOT INCLUDED

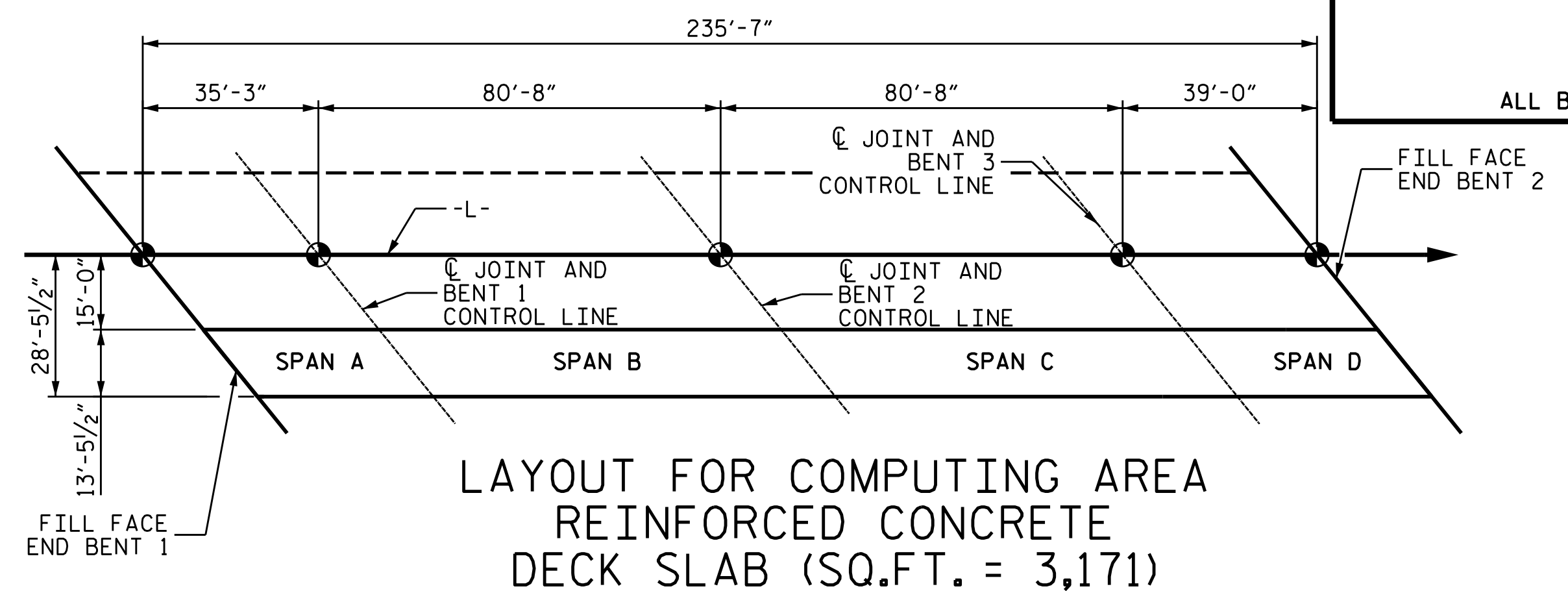
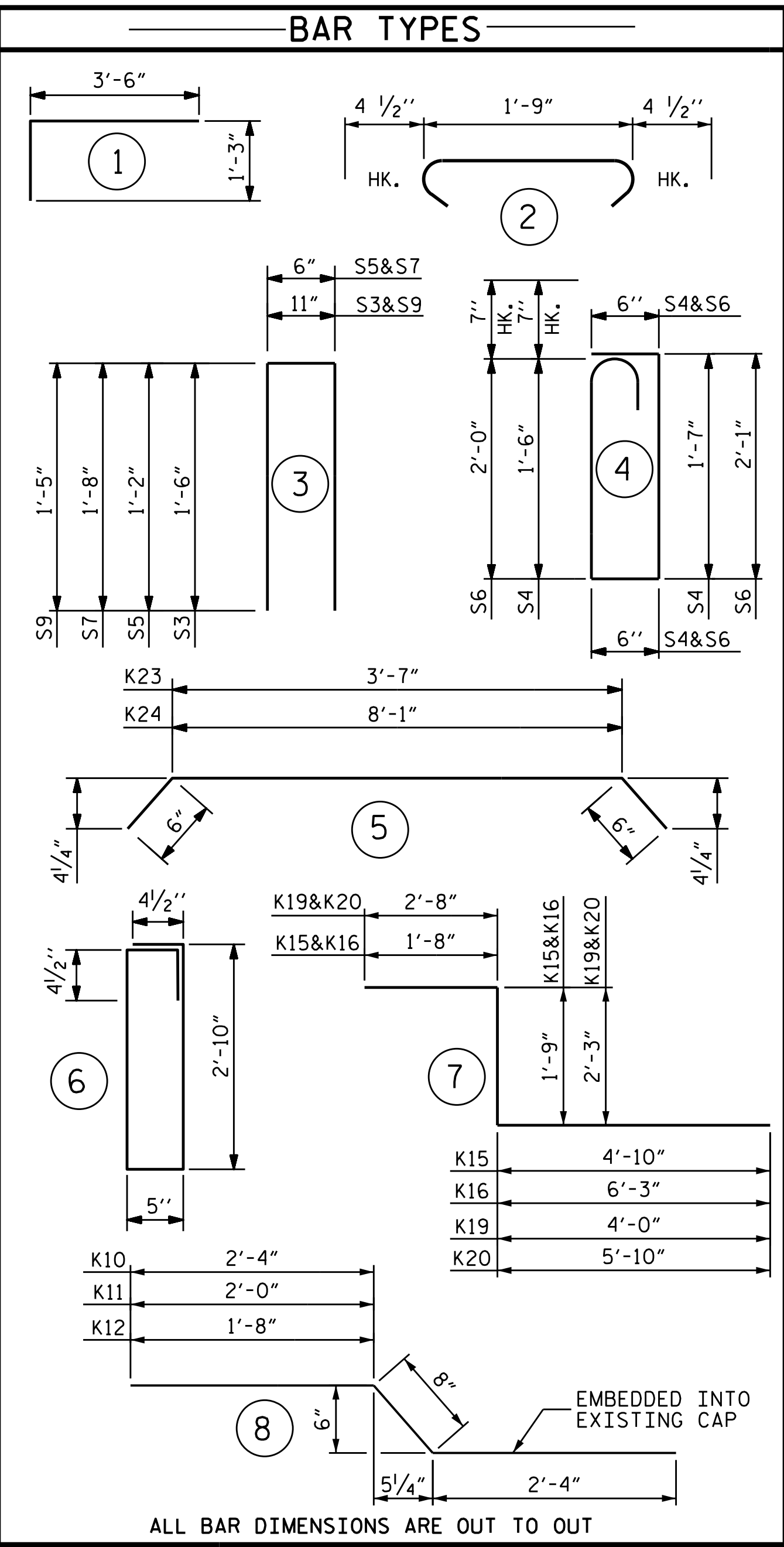
SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS

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"	—	—	—

GROOVING BRIDGE FLOORS

APPROACH SLABS	830	SO.FT.
BRIDGE DECK	6589	SO.FT.
TOTAL	7419	SO.FT.

NOTE: GROOVING IS FOR LATEX MODIFIED CONCRETE OVERLAY. MULTI-USE PATH SHALL BE BROOM FINISHED.



PROJECT NO. U-4424
 EDGEcombe COUNTY
 STATION: 66+24.84 -L-

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

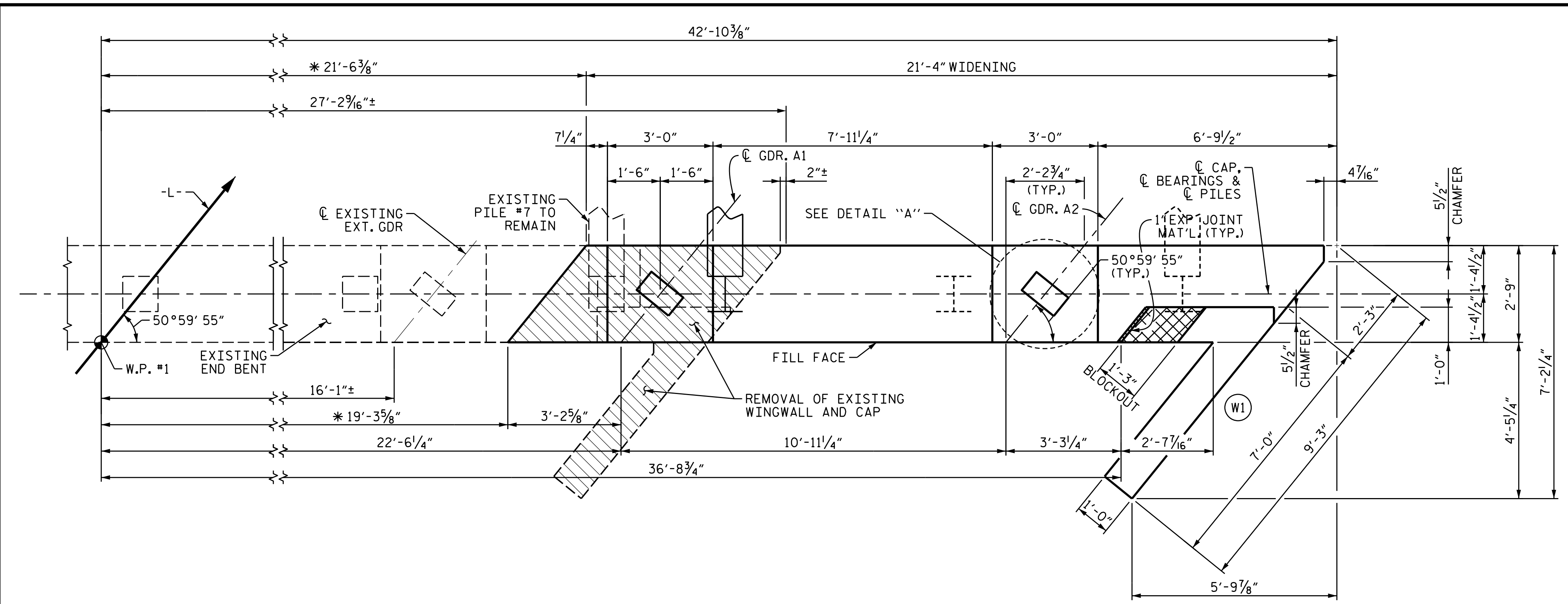
Seal of Thomas M. Harris, Professional Engineer, No. 19299, State of North Carolina, dated 3/28/2023.

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE BILL OF MATERIALS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.	
S-26	TOTAL SHEETS 37

wsp WSP USA Inc. 434 FAYETTEVILLE STREET SUITE 1500 RALEIGH, NC 27601 TEL: 1.919.836.4040 LICENSE NO. P-0165

3/28/2023 J:\188771-06 NCDOT NC 111U-4424\Structures\Dr-off\ing\DNMs\401_053_U4424_SML.BM_026.dgn

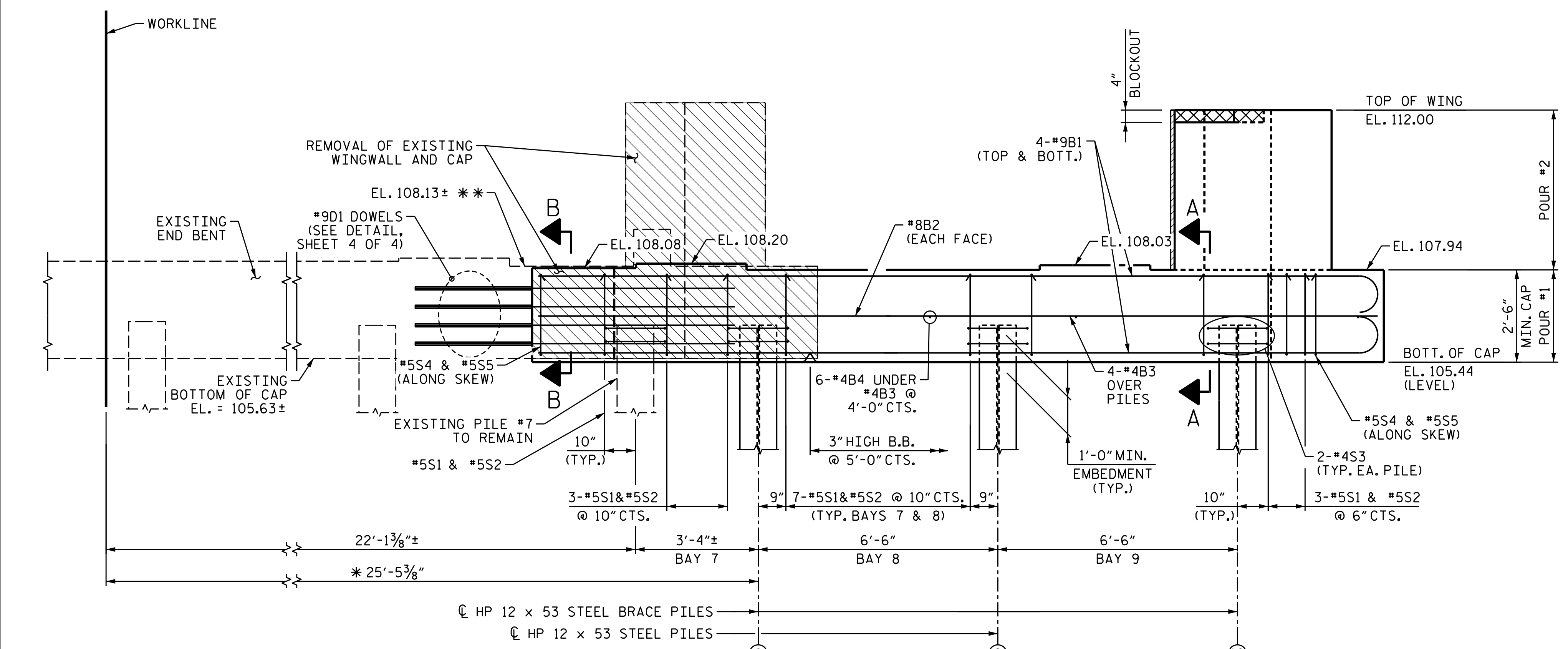


PLAN

PORTION OF EXISTING END BENT, CURTAIN WALL AND WINGWALL TO BE REMOVED AS REQUIRED TO FACILITATE CONSTRUCTION OF END BENT WIDENING.

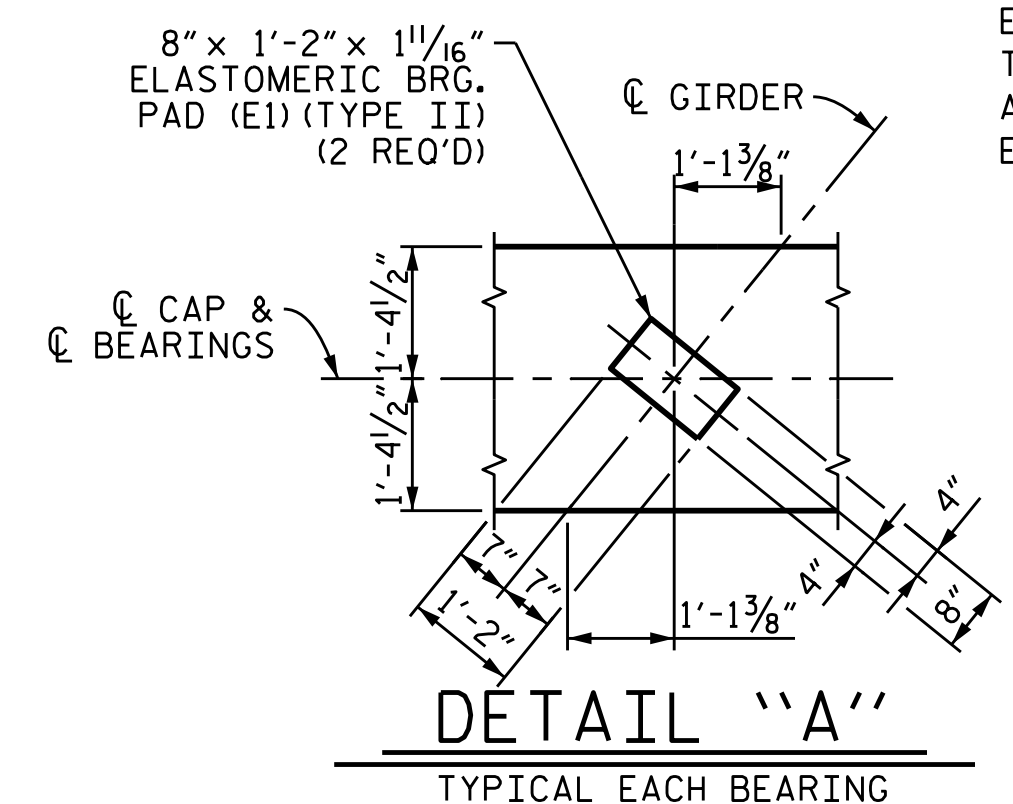
NOTES:

- CURTAIN WALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.
- THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE CONCRETE PARAPET IS CAST IF SLIP FORMING IS USED.
- THE TOP SURFACE AREAS OF THE END BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.
- INSTALL THE 4"Ø DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS. SEE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.
- FOR SECTION A-A AND B-B, SEE SHEET 4 OF 4.
- FOR UPPER PORTION OF CURTAIN WALL, SEE SUPERSTRUCTURE SHEETS.
- FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.
- FOR BEARING DETAILS, SEE "ELASTOMERIC BEARING DETAILS" SHEET.
- *9D1 DRILLED HOLE AND FINAL EMBEDMENT SHALL BE PER ADHESIVE BONDING MATERIAL MANUFACTURER'S RECOMMENDATIONS. MINIMUM EMBEDMENT IS 3'-2".
- THE CONTRACTOR SHALL USE ADHESIVELY ANCHORED DOWELS TO CONNECT THE NEW AND EXISTING END BENTS. LEVEL 1 TESTING IS REQUIRED. THE YIELD LOAD OF THE DOWELS IS 60 KIPS. THE CONTRACTOR SHALL PLACE ADHESIVELY ANCHORED DOWELS IN ACCORDANCE WITH ARTICLE 420-13 OF THE STANDARD SPECIFICATIONS.
- THE TOP SURFACE OF THE CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.
- * - TO BE FIELD VERIFIED.
- ** - PRIOR TO CASTING END BENT, THE CONTRACTOR SHALL FIELD VERIFY ACTUAL BRIDGE DECK ELEVATIONS AT THE SAW-CUT LINE AND COMPARE TO COMPUTED ELEVATIONS. IF DISCREPANCIES ARE OBSERVED ADJUSTMENTS TO SEAT ELEVATIONS MAY BE REQUIRED.



ELEVATION

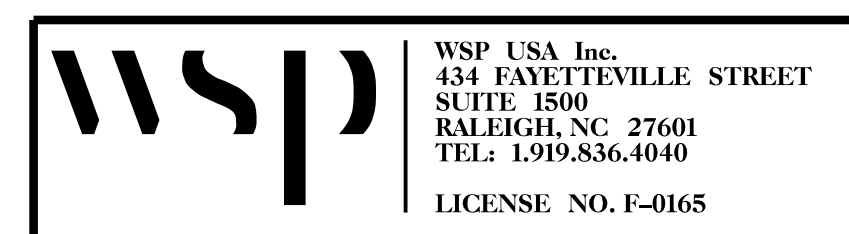
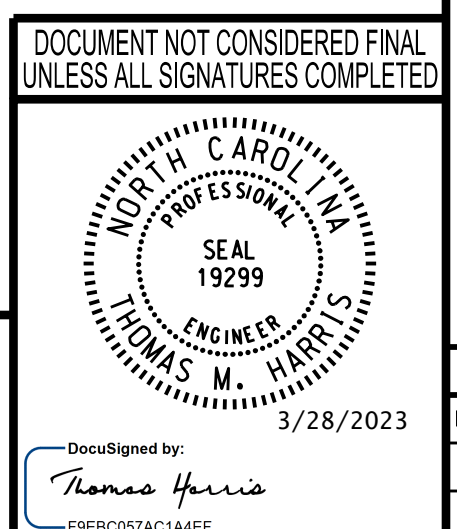
WING NOT SHOWN FOR CLARITY



DETAIL "A"

PROJECT NO. U-4424
 EDGEcombe COUNTY
 STATION: 66+24.84 -L-
 SHEET 1 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT 1
 PLAN & ELEVATION

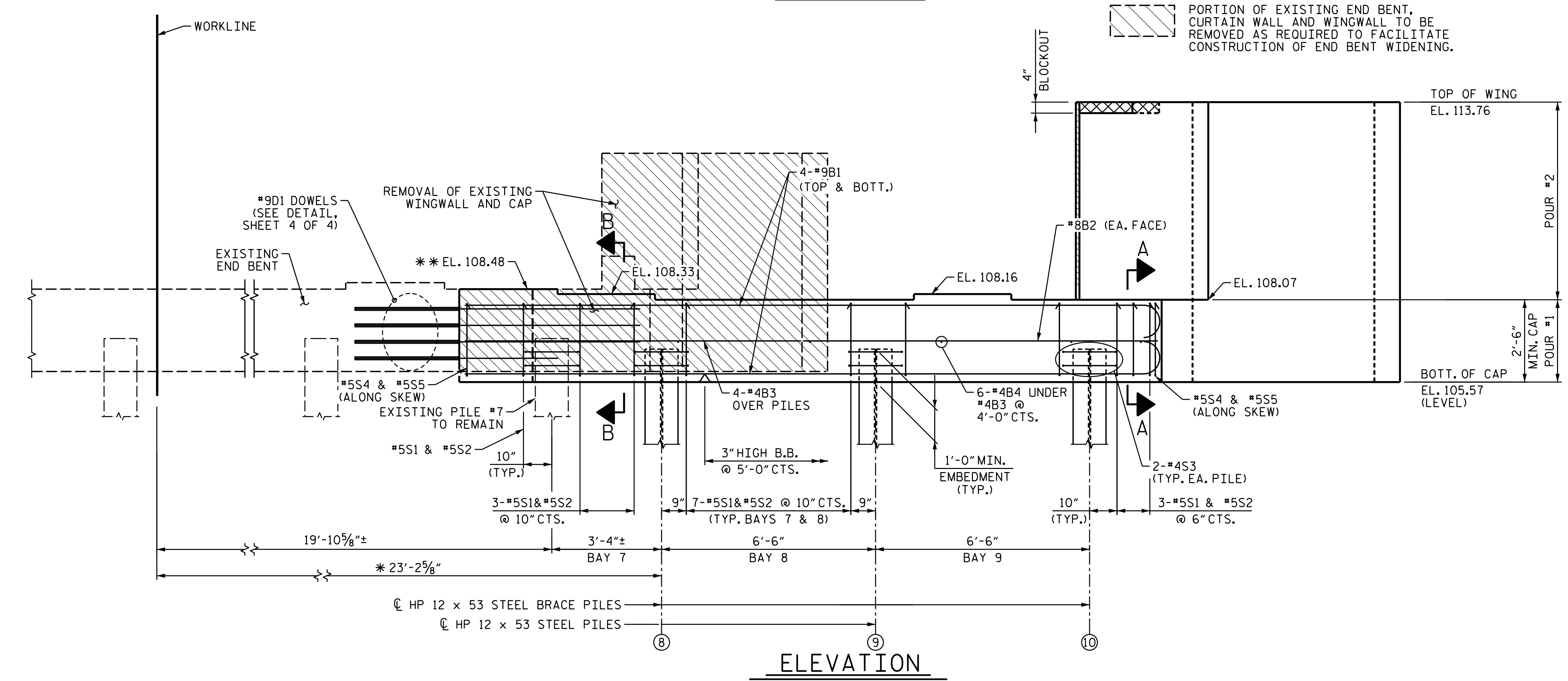
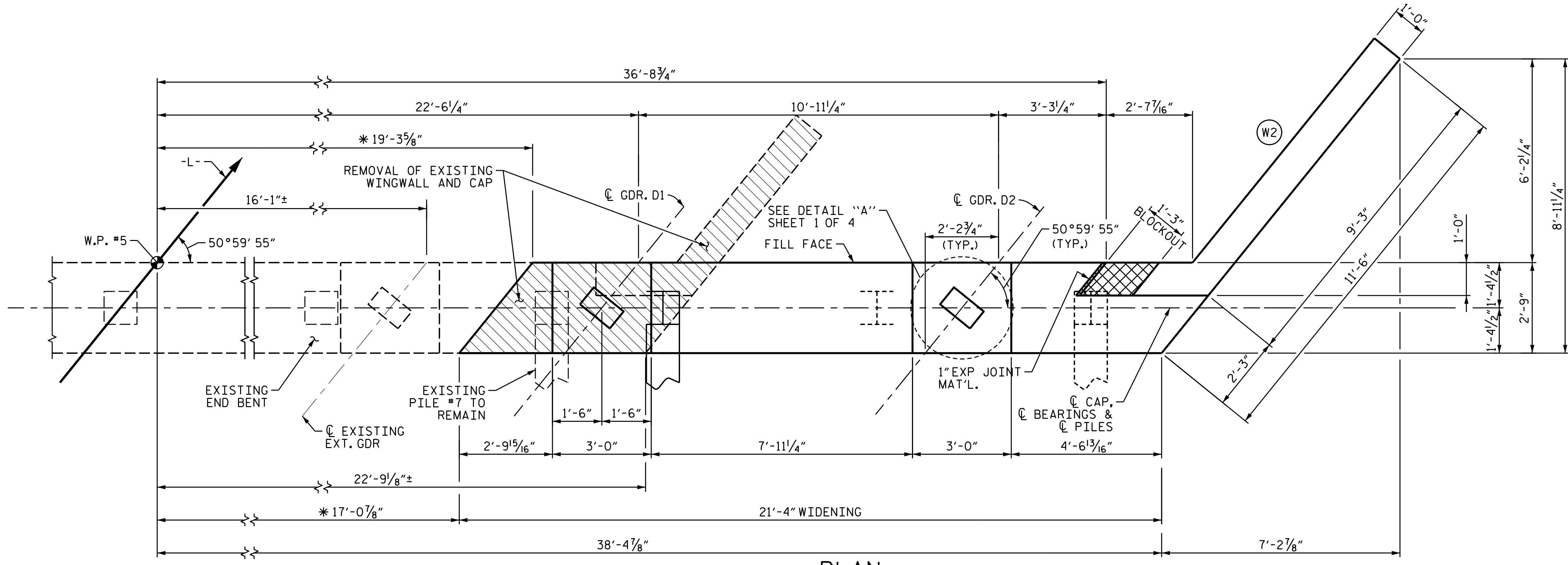


DESIGNED BY:	J. WHEATLEY	DATE:	MAR 2023
DRAWN BY:	M. HOBBS	DATE:	MAR 2023
CHECKED BY:	J.N. SMITH	DATE:	MAR 2023
DESIGN ENGINEER OF RECORD:	T.M. HARRIS	DATE:	MAR 2023

REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

TOTAL SHEETS: 37

3/28/2023 J:\188771-06 NCDOT_NC_111\U-4424\Structure\Drawings\055_U4424_SML.EBI_027.dgn



NOTES:

CURTAIN WALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

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

INSTALL THE 4"Ø DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS. SEE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

FOR SECTION A-A AND B-B, SEE SHEET 4 OF 4.

FOR UPPER PORTION OF CURTAIN WALL, SEE SUPERSTRUCTURE SHEETS.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR BEARING DETAILS, SEE "ELASTOMERIC BEARING DETAILS" SHEET.

#9D1 DRILLED HOLE AND FINAL EMBEDMENT SHALL BE PER ADHESIVE BONDING MATERIAL MANUFACTURER'S RECOMMENDATIONS. MINIMUM EMBEDMENT IS 3'-2".

THE CONTRACTOR SHALL USE ADHESIVELY ANCHORED DOWELS TO CONNECT THE NEW AND EXISTING END BENTS. LEVEL 1 TESTING IS REQUIRED. THE YIELD LOAD OF THE DOWELS IS 60 KIPS. THE CONTRACTOR SHALL PLACE ADHESIVELY ANCHORED DOWELS IN ACCORDANCE WITH ARTICLE 420-13 OF THE STANDARD SPECIFICATIONS.

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

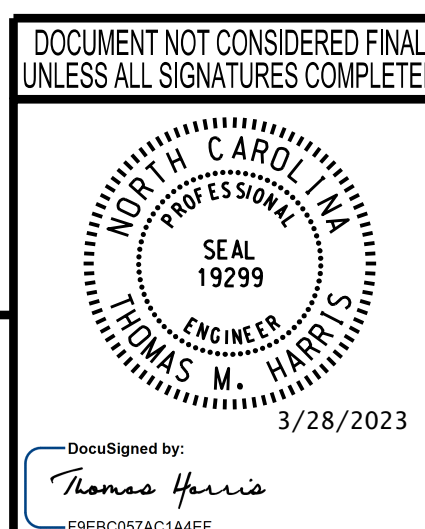
* - TO BE FIELD VERIFIED.

** - PRIOR TO CASTING END BENT, THE CONTRACTOR SHALL FIELD VERIFY ACTUAL BRIDGE DECK ELEVATIONS AT THE SAW-CUT LINE AND COMPARE TO COMPUTED ELEVATIONS. IF DISCREPANCIES ARE OBSERVED ADJUSTMENTS TO SEAT ELEVATIONS MAY BE REQUIRED.

PROJECT NO. U-4424
 EDGEcombe COUNTY
 STATION: 66+24.84 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT 2
 PLAN & ELEVATION

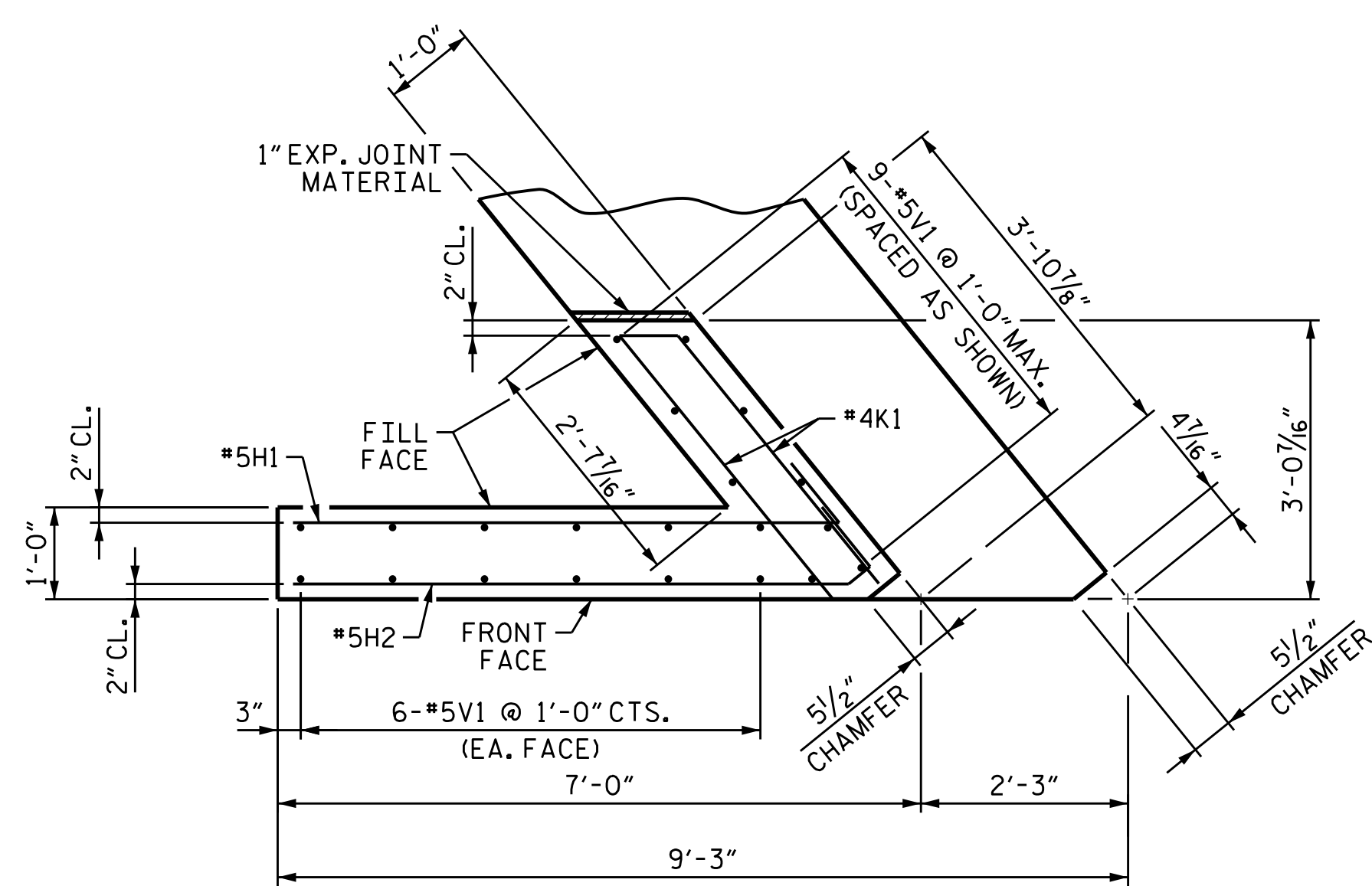


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 TEL: 1.919.836.4040
 LICENSE NO. P-0165

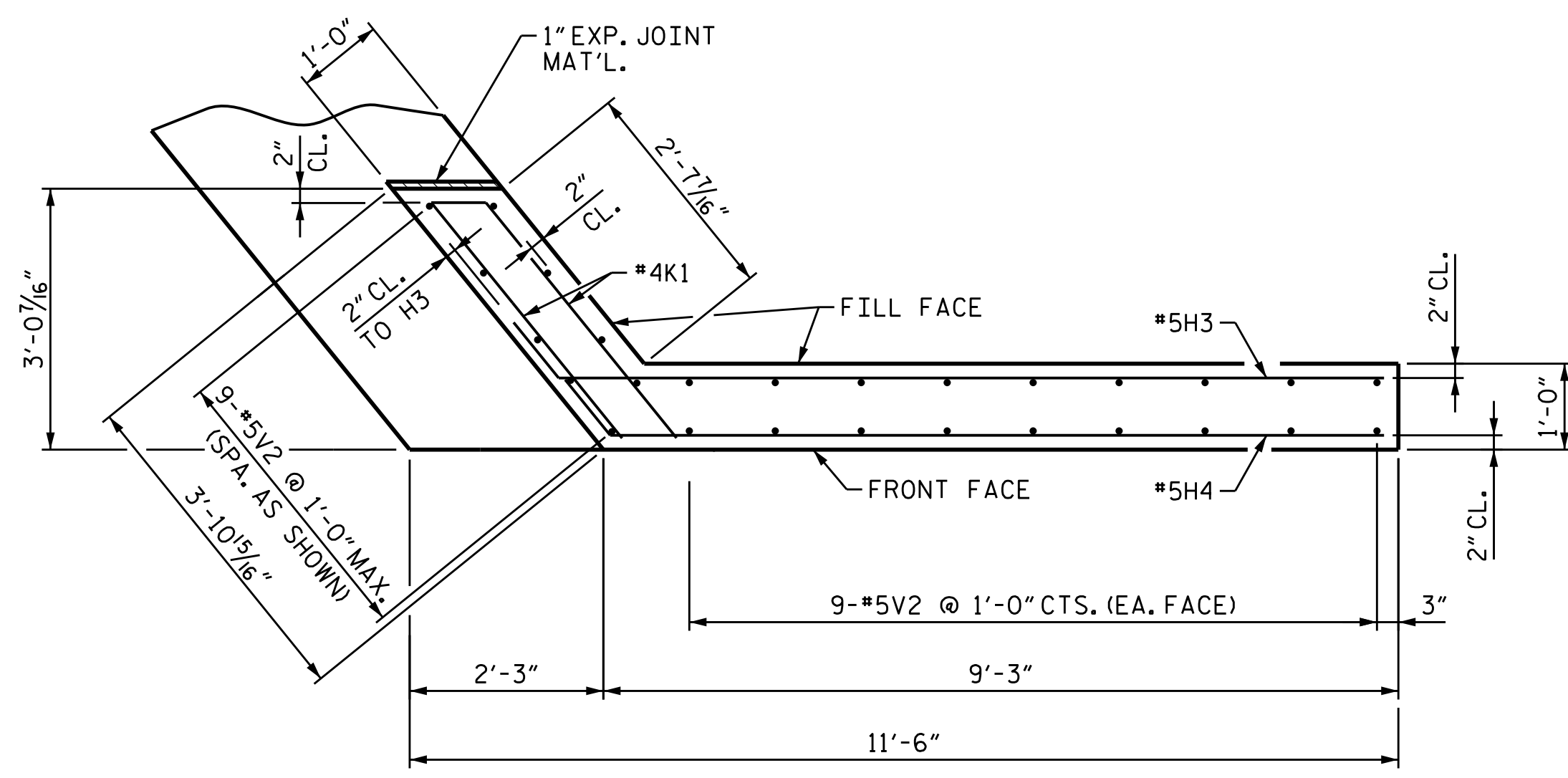
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-28
1			3			TOTAL SHEETS
2			4			37

3/28/2023
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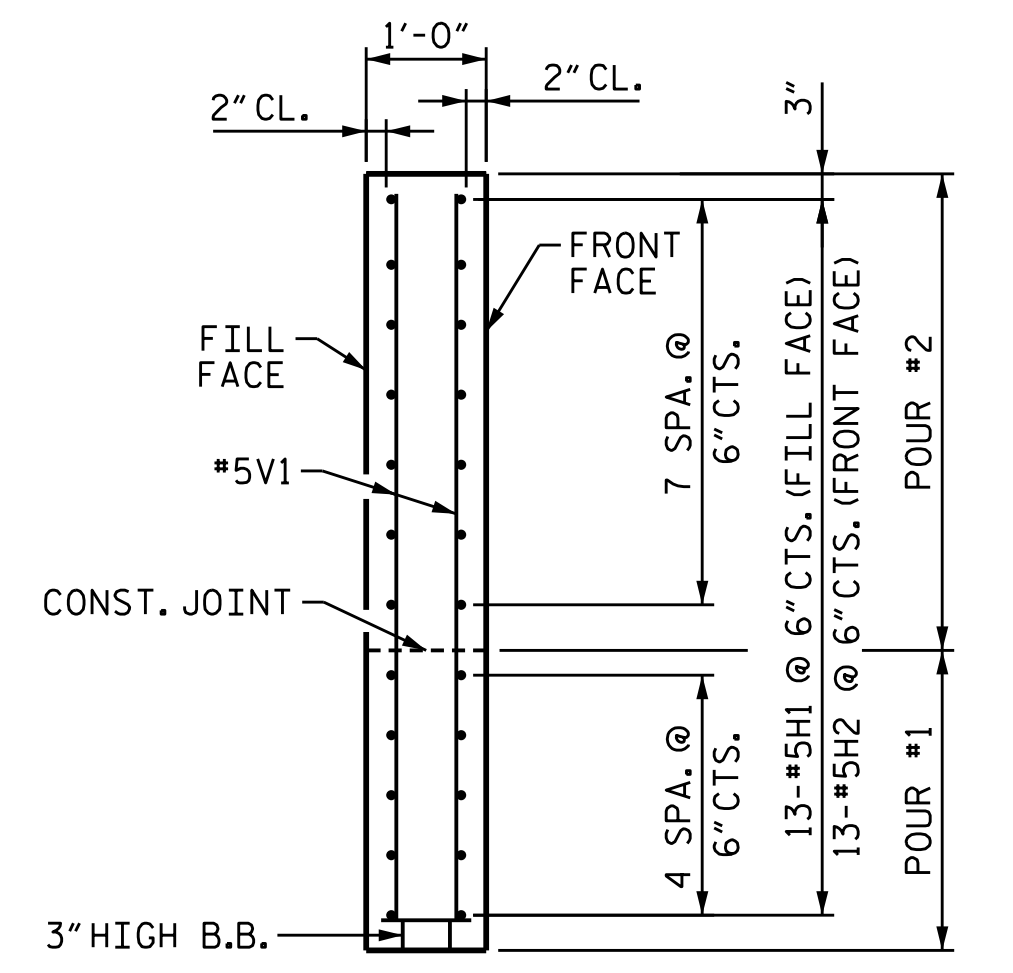
DESIGNED BY: J. WHEATLEY DATE: MAR 2023
 DRAWN BY: M. HOBBS DATE: MAR 2023
 CHECKED BY: J.N. SMITH DATE: MAR 2023
 DESIGN ENGINEER OF RECORD: T.M. HARRIS DATE: MAR 2023



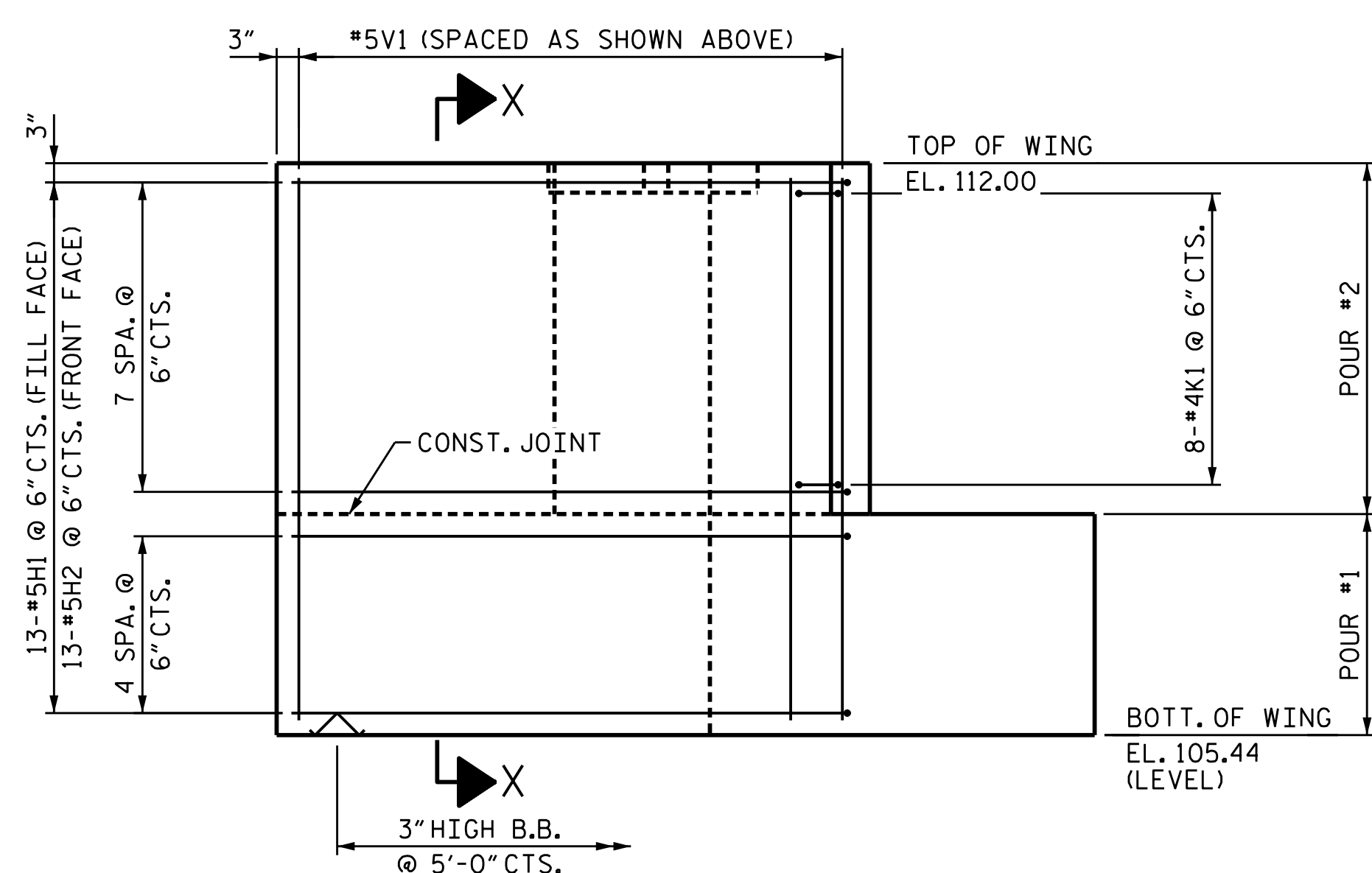
END BENT 1 PLAN OF WING - (W1)



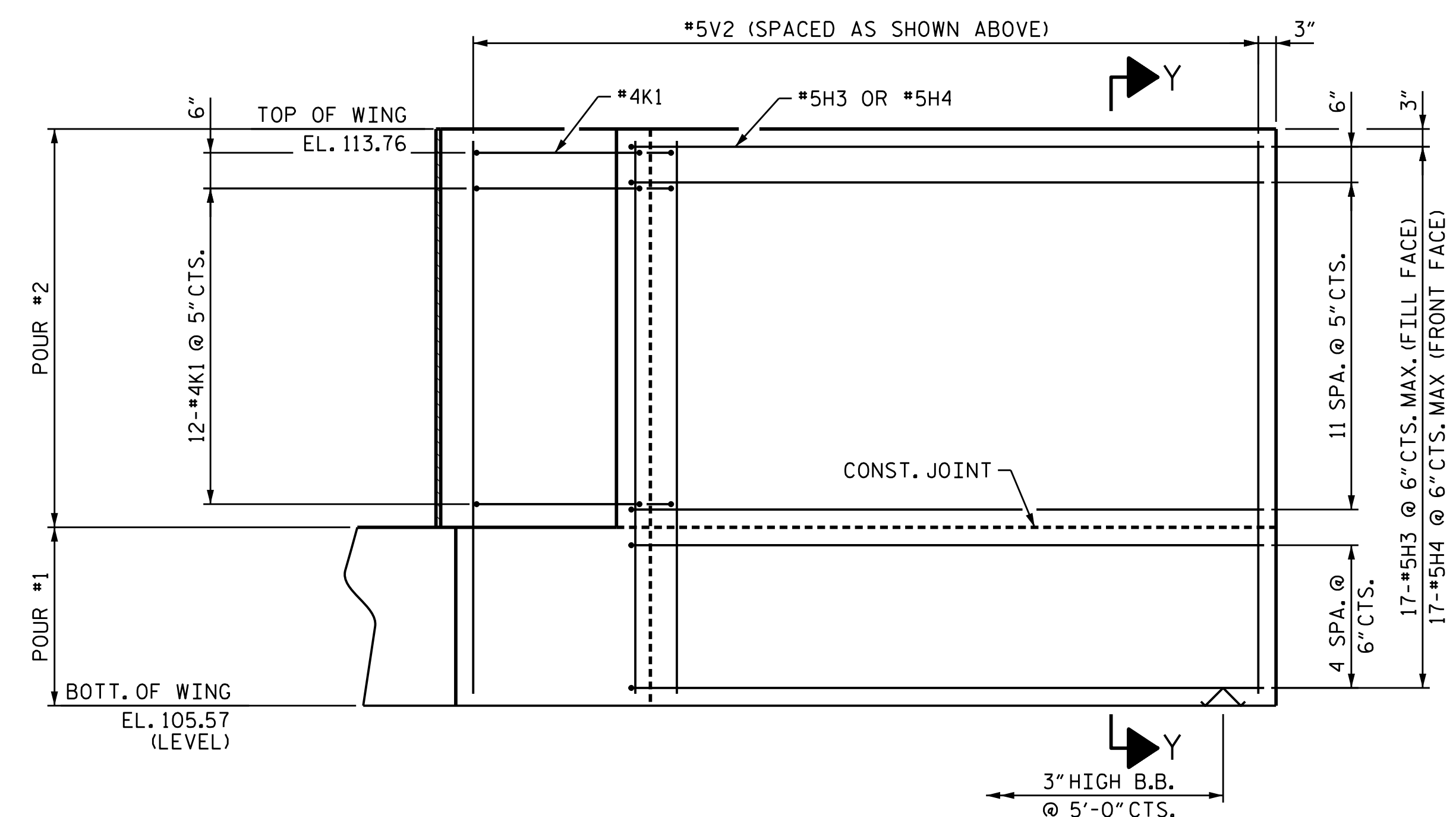
END BENT 2 PLAN OF WING - (W2)



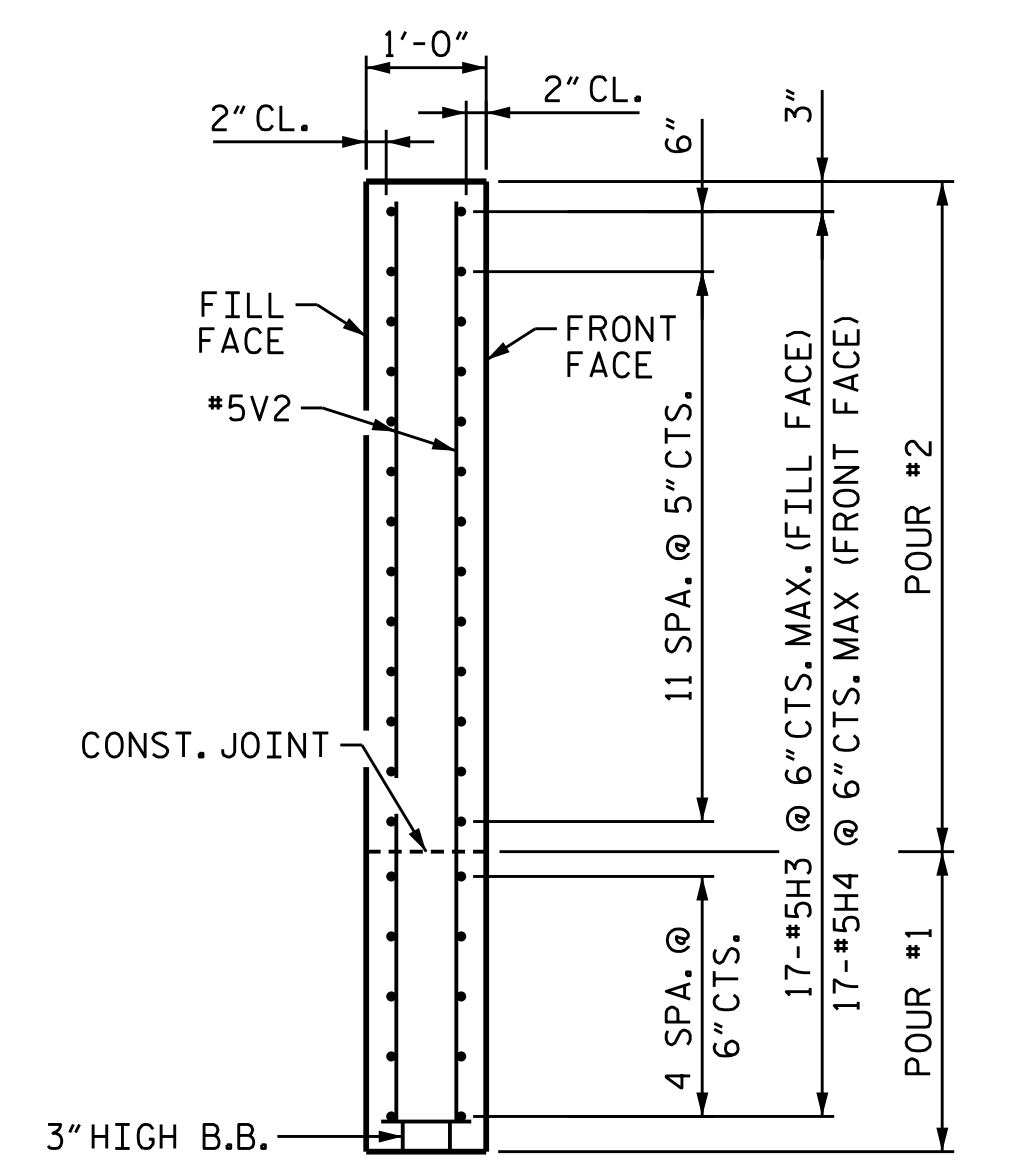
SECTION X-X



END BENT 1 ELEVATION OF WING - (W1)



END BENT 2 ELEVATION OF WING - (W2)



SECTION Y-Y

PROJECT NO. U-4424
 EDGEcombe COUNTY
 STATION: 66+24.84 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENTS 1 & 2
 WINGWALL DETAILS

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

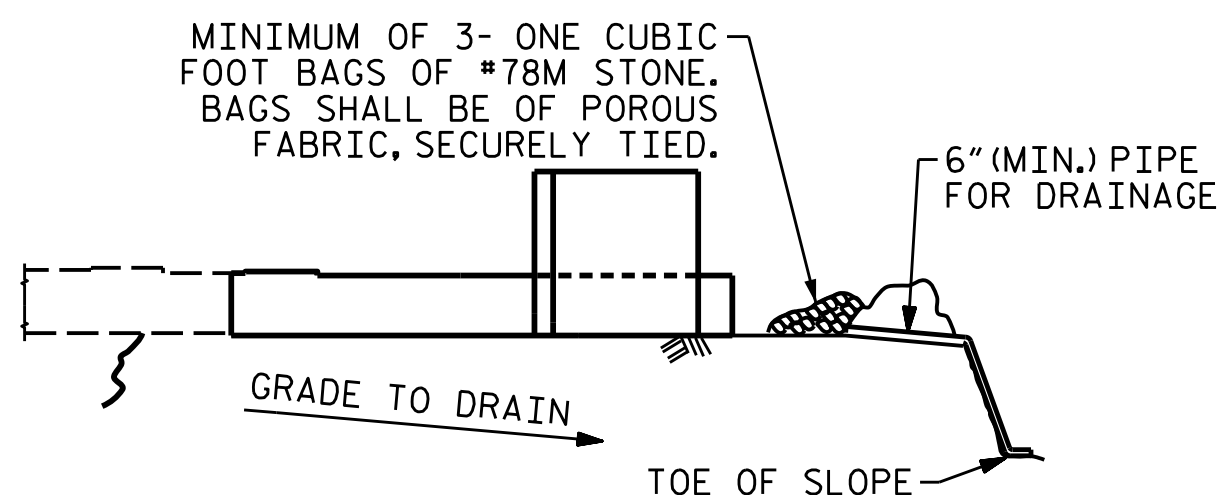
Seal of Thomas M. Harris, Professional Engineer, License No. 19299, State of North Carolina.

wsp
 WSP USA Inc.
 434 FAYETTEVILLE STREET
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 RALEIGH, NC 27601
 TEL: 1.919.836.4040
 LICENSE NO. F-0165

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-29
1			3			TOTAL SHEETS
2			4			37

3/28/2023
 J:\188771-06 NCDOT NC 111U-4424\Structures\Dr-offring\Drawings\401_059_U4424_SML.EB3_029.dgn

DESIGNED BY:	J. WHEATLEY	DATE:	MAR 2023
DRAWN BY:	M. HOBBS	DATE:	MAR 2023
CHECKED BY:	J.N. SMITH	DATE:	MAR 2023
DESIGN ENGINEER OF RECORD:	T.M. HARRIS	DATE:	MAR 2023

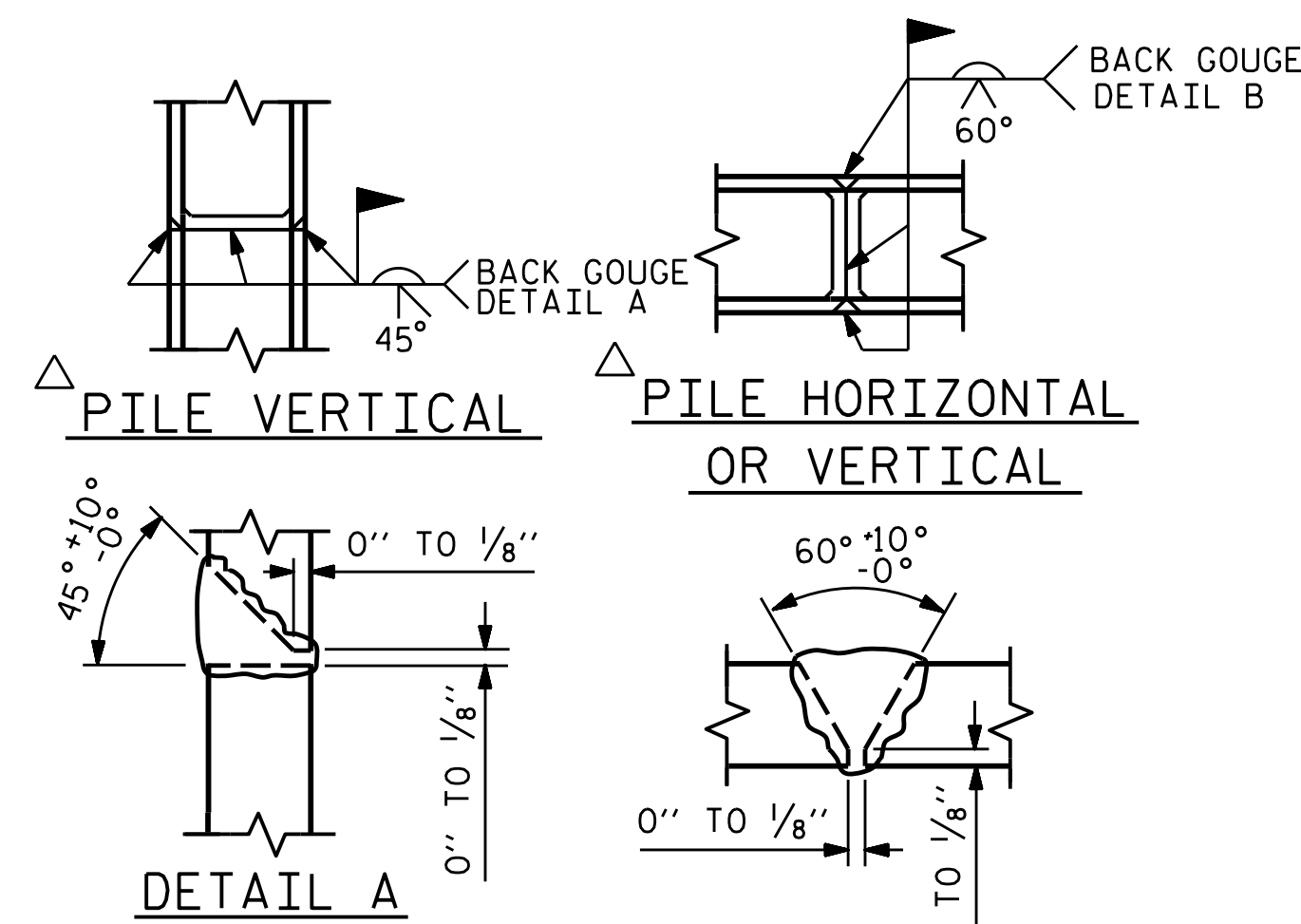


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

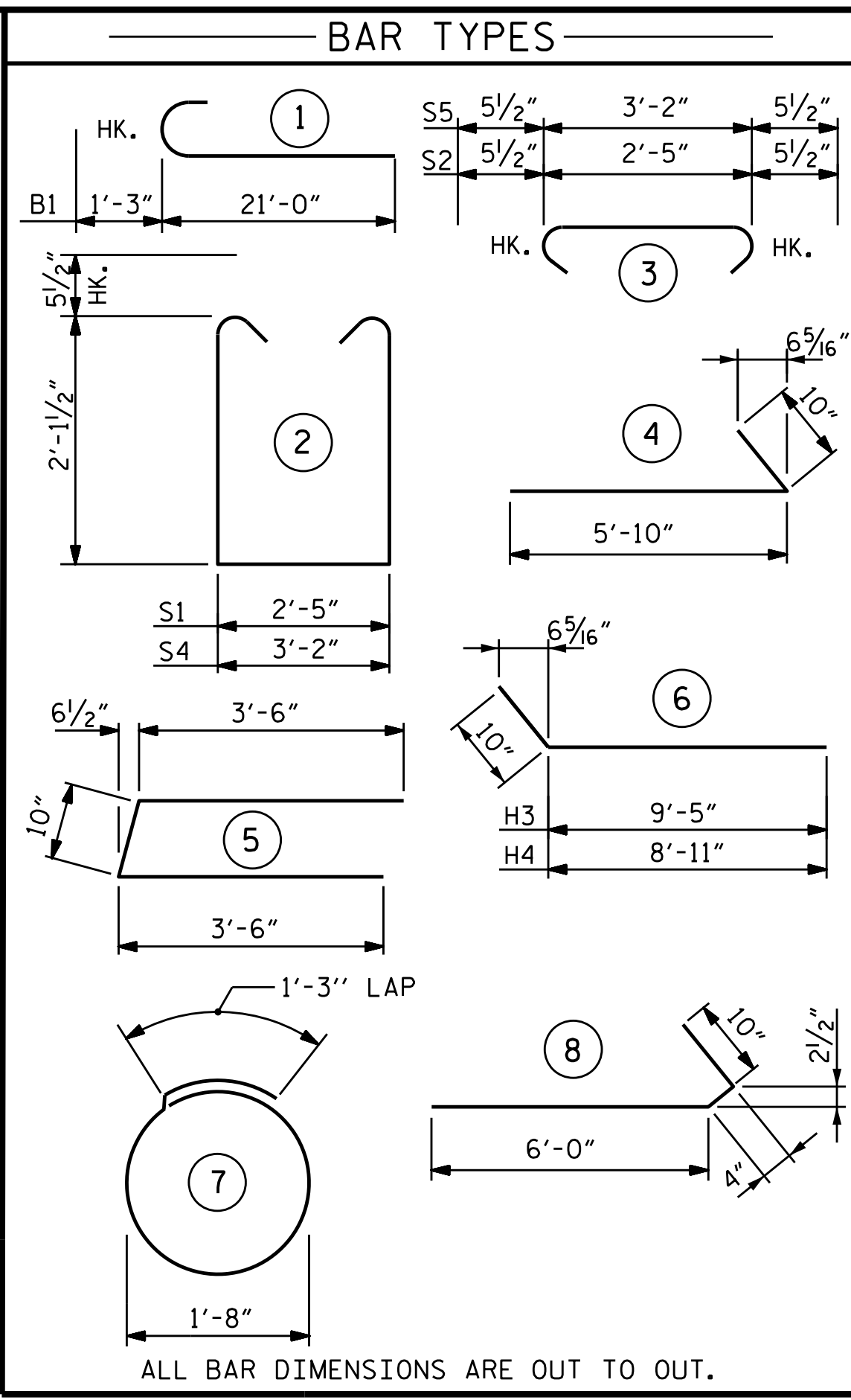
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

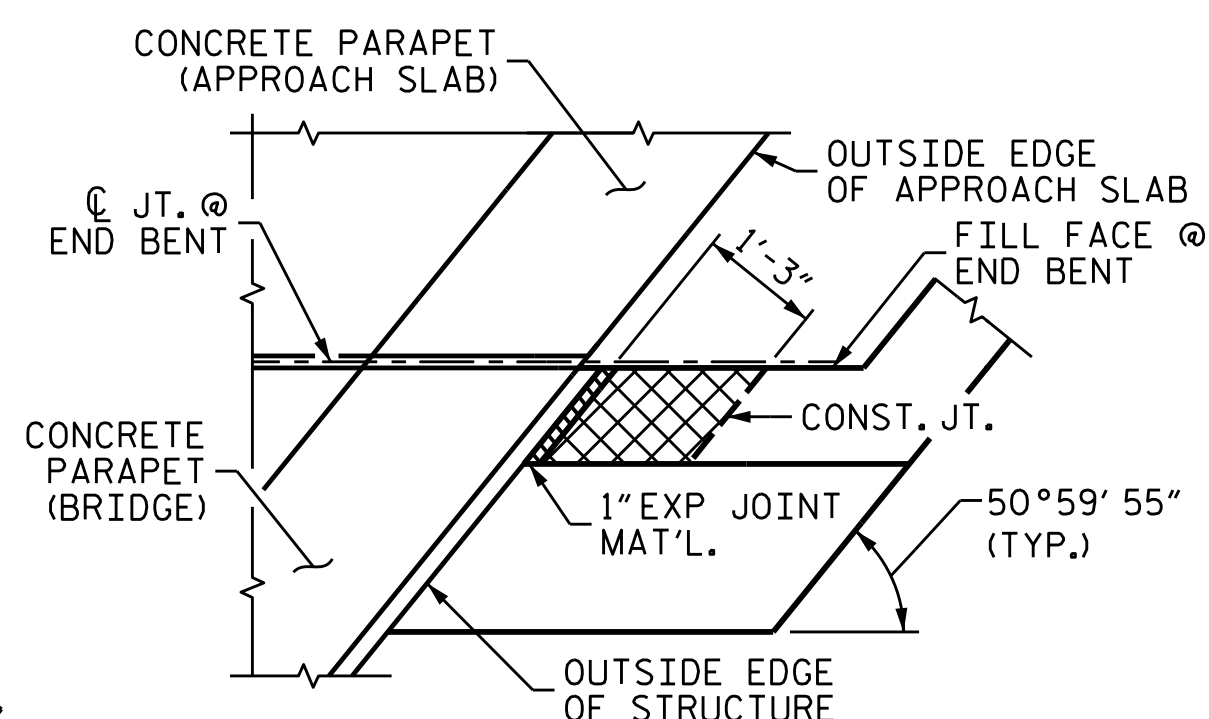
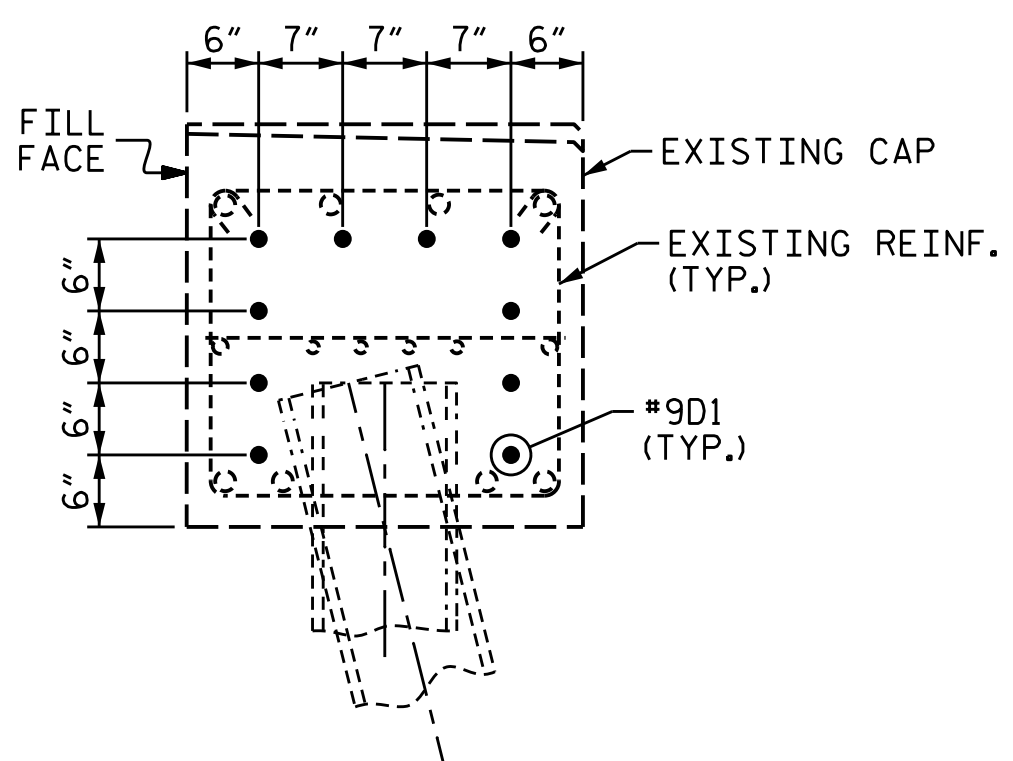
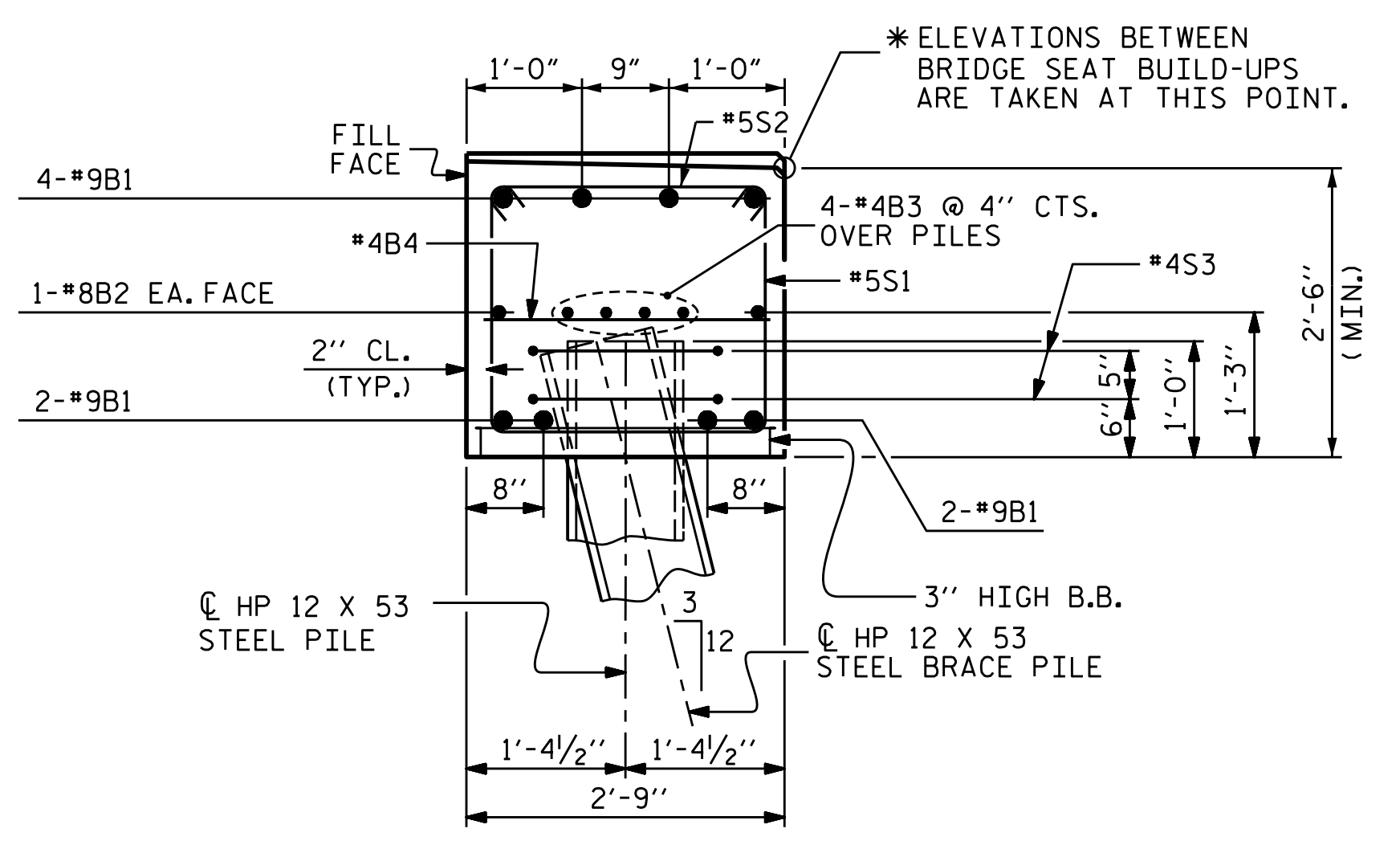
TEMPORARY DRAINAGE AT END BENT



PILE SPLICE DETAILS

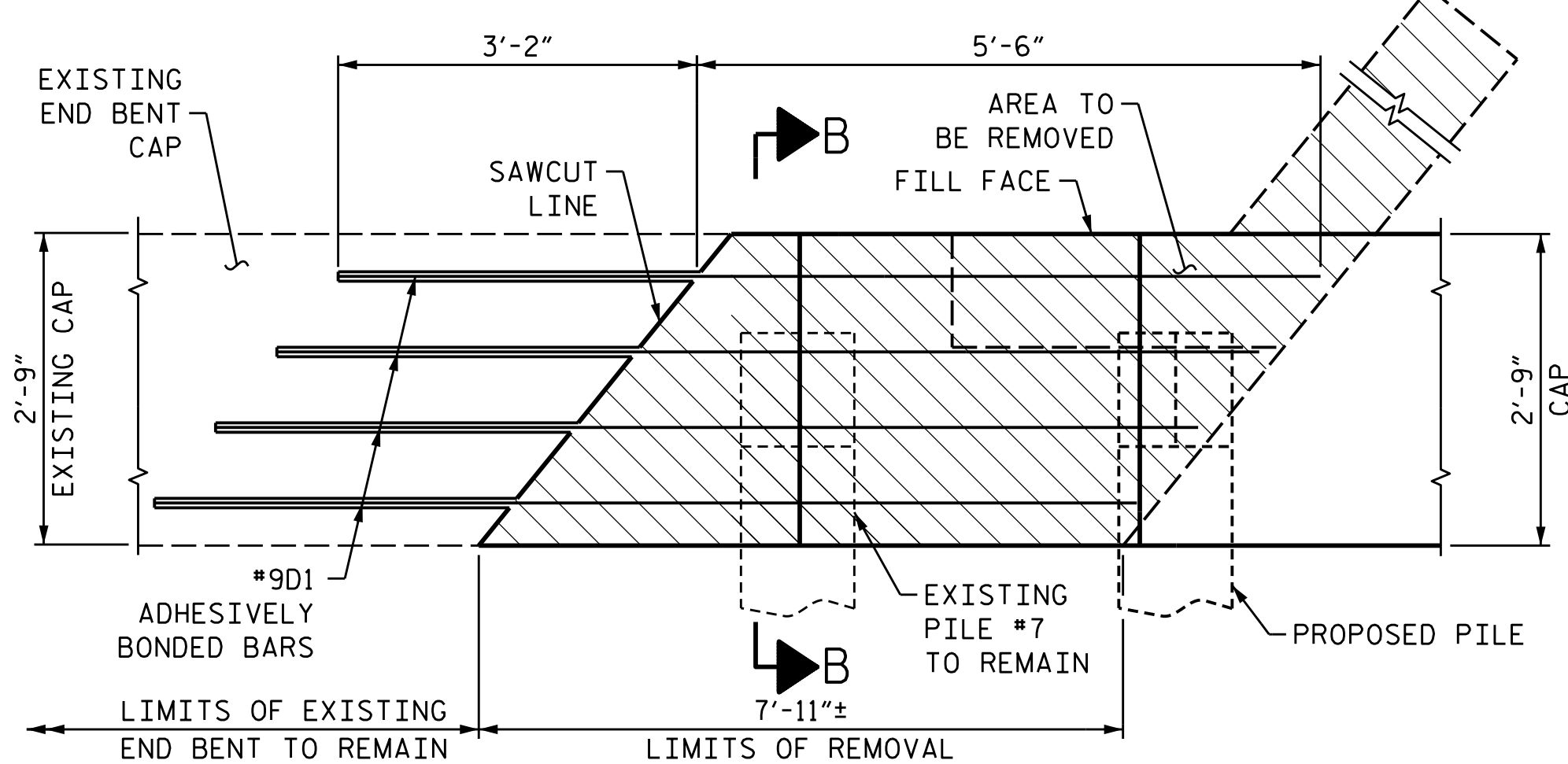
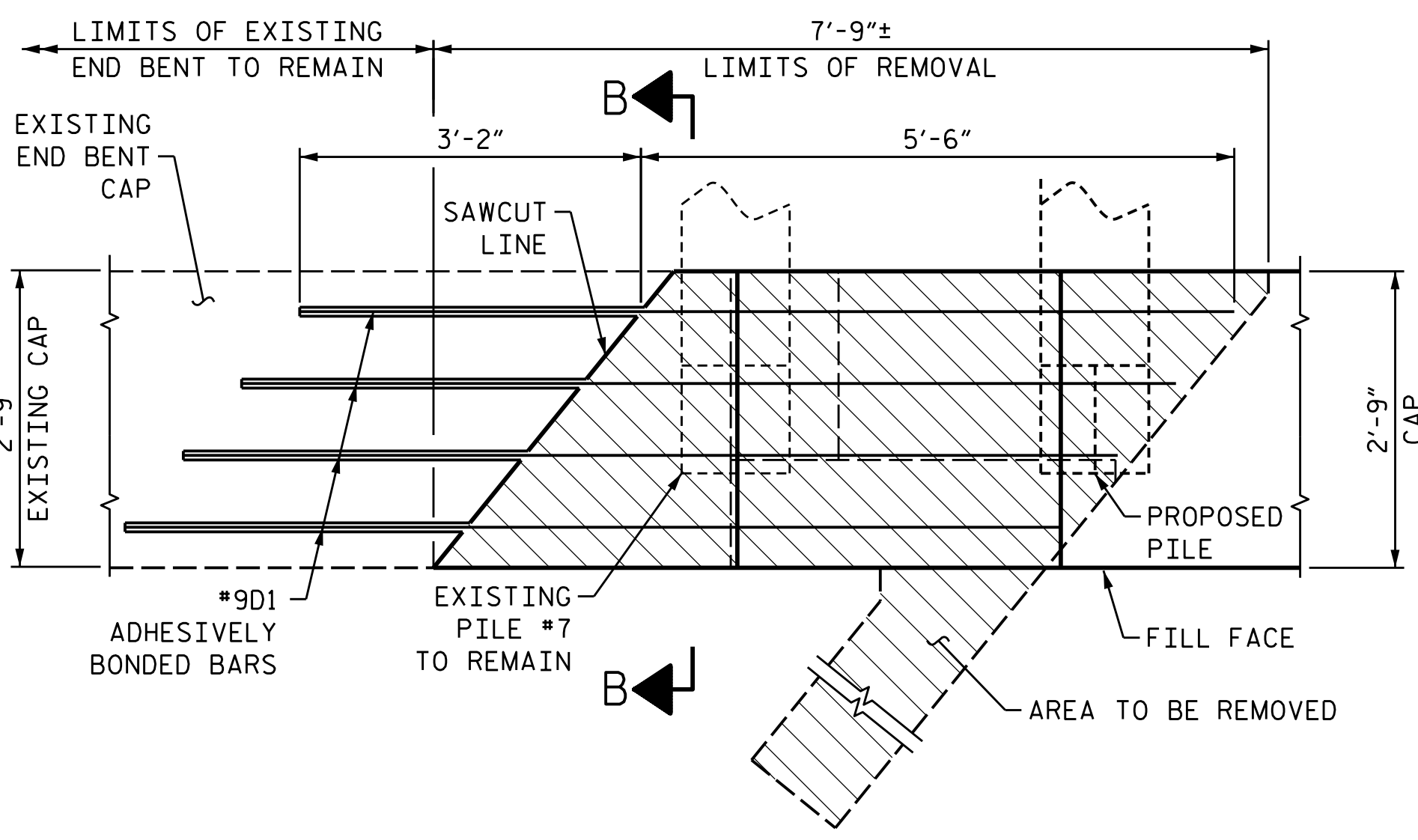


BILL OF MATERIAL END BENT 1						BILL OF MATERIAL END BENT 2							
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT		
B1	8	#9		22'-3"	605	B1	8	#9		22'-3"	605		
B2	2	#8	STR	21'-0"	112	B2	2	#8	STR	21'-0"	112		
B3	4	#4	STR	21'-0"	56	B3	4	#4	STR	21'-0"	56		
B4	6	#4	STR	2'-5"	10	B4	6	#4	STR	2'-5"	10		
<hr/>						<hr/>							
D1	10	#9	STR	8'-8"	295	D1	10	#9	STR	8'-8"	295		
<hr/>						<hr/>							
H1	13	#5	4	6'-8"	90	H3	17	#5	6	10'-3"	182		
H2	13	#5	8	7'-2"	97	H4	17	#5	6	9'-9"	173		
<hr/>						<hr/>							
K1	8	#4	5	7'-10"	42	K1	12	#4	5	7'-10"	63		
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S1	21	#5	2	7'-7"	166	S1	21	#5	2	7'-7"	166		
S2	21	#5	3	3'-4"	73	S2	21	#5	3	3'-4"	73		
S3	8	#4	7	6'-6"	35	S3	8	#4	7	6'-6"	35		
S4	2	#5	2	8'-4"	17	S4	2	#5	2	8'-4"	17		
S5	2	#5	3	4'-1"	9	S5	2	#5	3	4'-1"	9		
<hr/>						<hr/>							
V1	21	#5	STR	6'-1"	133	V2	27	#5	STR	7'-8"	216		
<hr/>						<hr/>							
REINFORCING STEEL					LBS.	1,740	REINFORCING STEEL					LBS.	2,012
<hr/>						<hr/>							
CLASS A CONCRETE:						CLASS A CONCRETE:							
POUR #1 - CAP & LOWER WING			C.Y.	6.0		POUR #1 - CAP & LOWER WING			C.Y.	6.3			
POUR #2 - BACKWALL & UPPER WING			C.Y.	1.4		POUR #2 - BACKWALL & UPPER WING			C.Y.	2.5			
<hr/>						<hr/>							
CLASS A CONCRETE					C.Y.	7.4	CLASS A CONCRETE					C.Y.	8.8
<hr/>						<hr/>							
HP 12x53 STEEL PILES					NO: 3	LIN. FT. = 195	HP 12x53 STEEL PILES					NO: 3	LIN. FT. = 195
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PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES					NO: 3		PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES					NO: 3	
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PILE REDRIVES					NO: 2		PILE REDRIVES					NO: 2	



BLOCKOUT IN WINGWALL

END BENT 2 SHOWN; END BENT 1 SIMILAR



LIMITS OF REMOVAL DETAIL

PORTION OF EXISTING END BENT, CURTAIN WALL AND WINGWALL TO BE REMOVED AS REQUIRED TO FACILITATE CONSTRUCTION OF END BENT WIDENING.

PROJECT NO. U-4424
EDGEcombe COUNTY
 STATION: 66+24.84 -L-
 SHEET 4 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENTS 1 & 2
 DETAILS AND
 BILL OF MATERIALS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

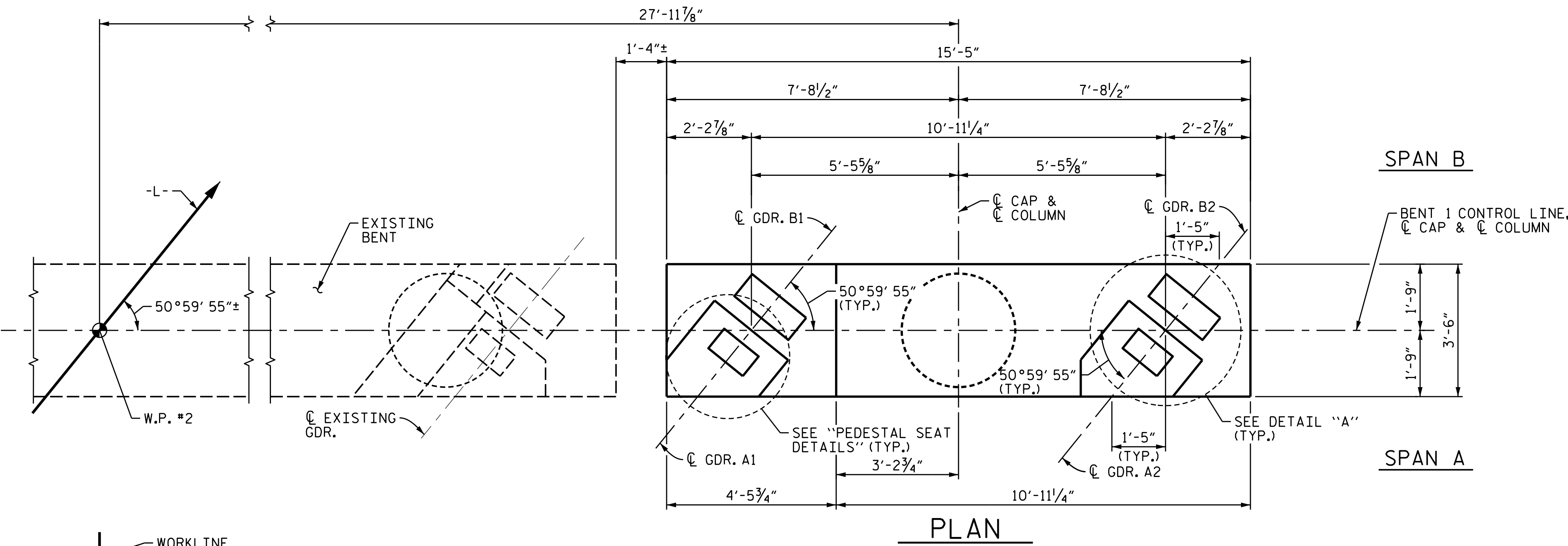
THOMAS M. HARRIS
 ENGINEER
 SEAL 19299
 3/28/2023

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-30	
1			3			TOTAL SHEETS 37	
2			4				

wsp
 WSP USA Inc.
 434 FAYETTEVILLE STREET
 SUITE 1500
 RALEIGH, NC 27601
 TEL: 1.919.836.4040
 LICENSE NO. P-0165

3/28/2023 4:188771-06 NCDOT NC 111U-4424\Structures\Dr-offing\DCNs\401.061_U4424_SML_EB4_030.dgn

DESIGNED BY: J. WHEATLEY DATE: MAR 2023
 DRAWN BY: M. HOBBS DATE: MAR 2023
 CHECKED BY: J.N. SMITH DATE: MAR 2023
 DESIGN ENGINEER OF RECORD: T.M. HARRIS DATE: MAR 2023



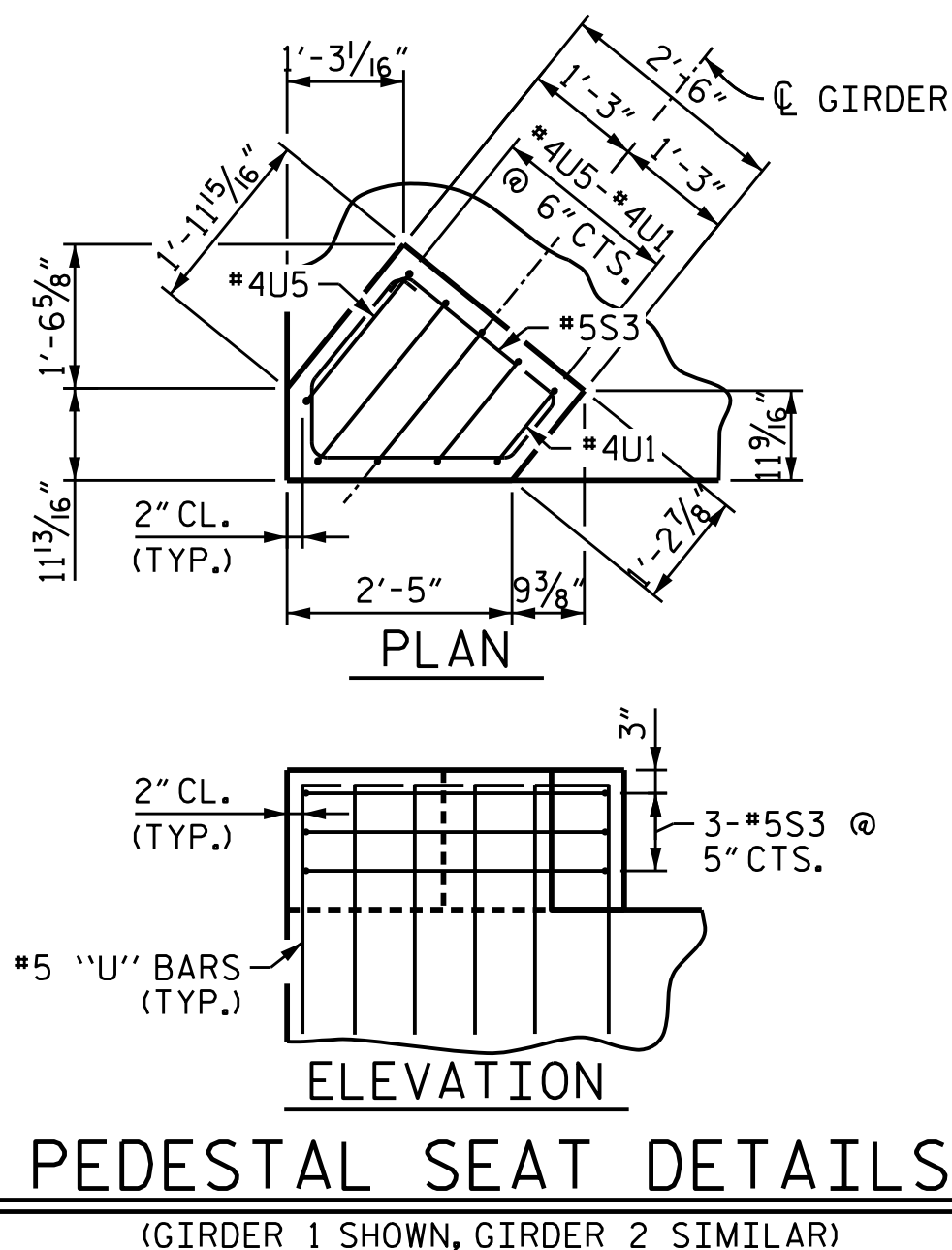
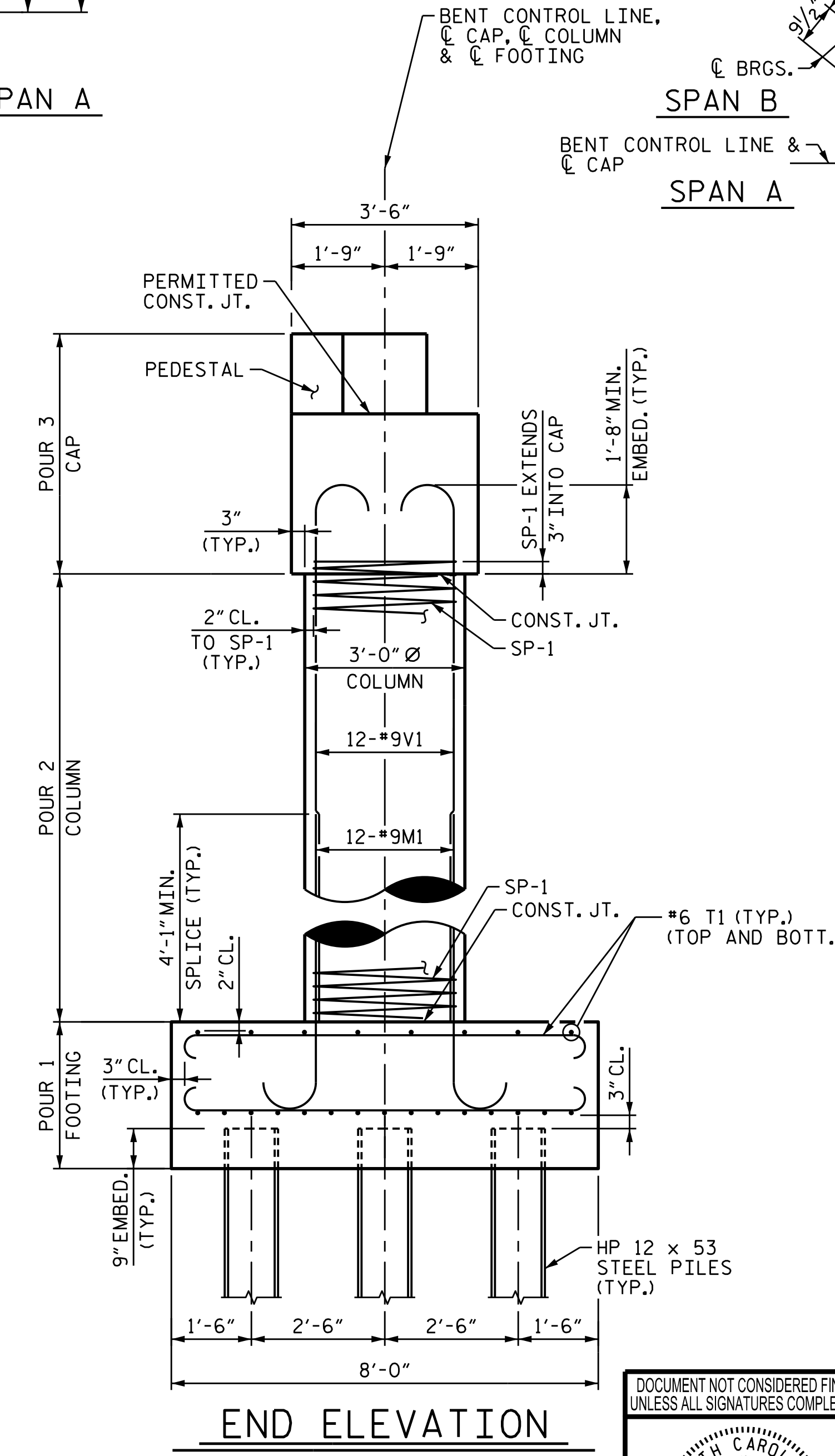
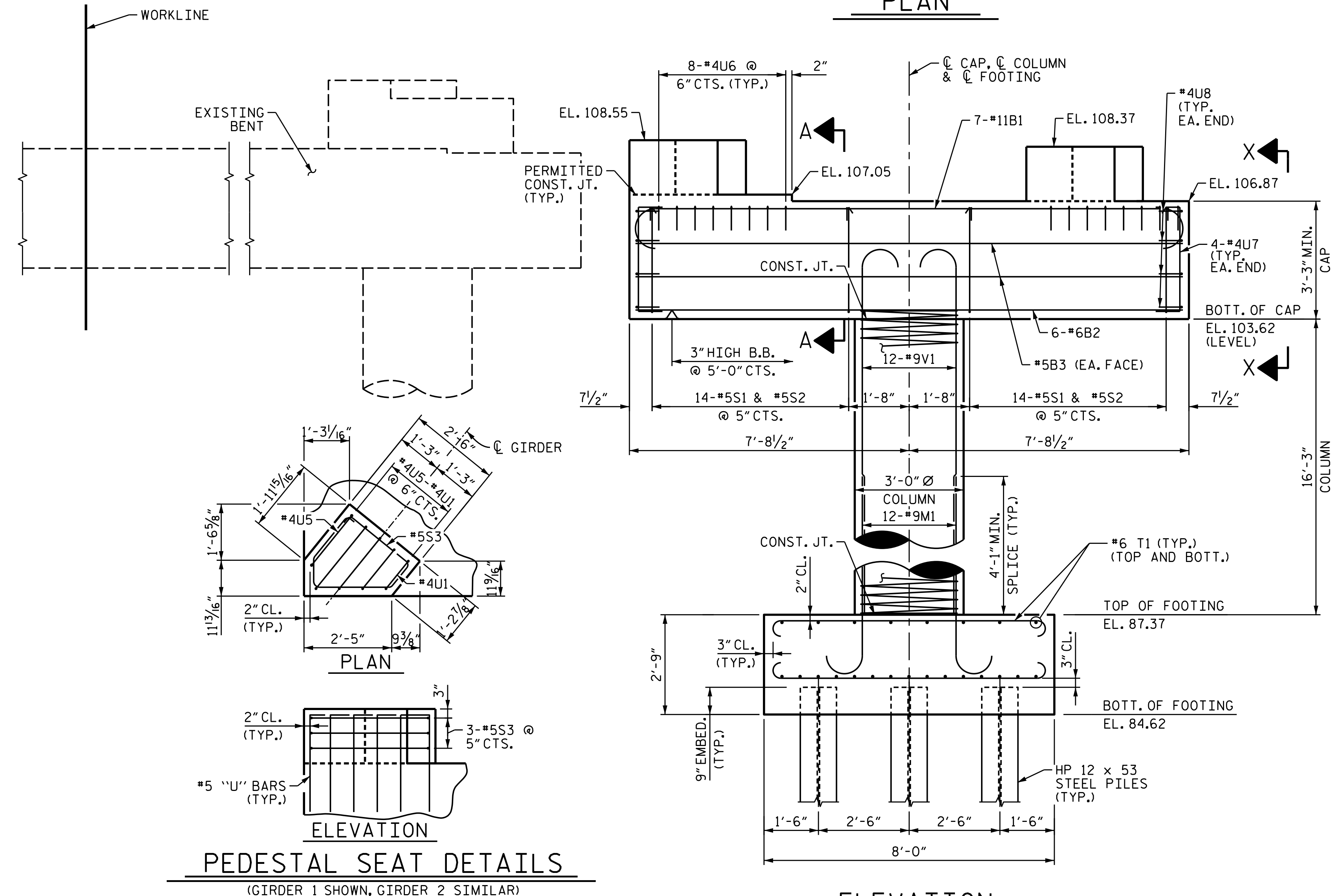
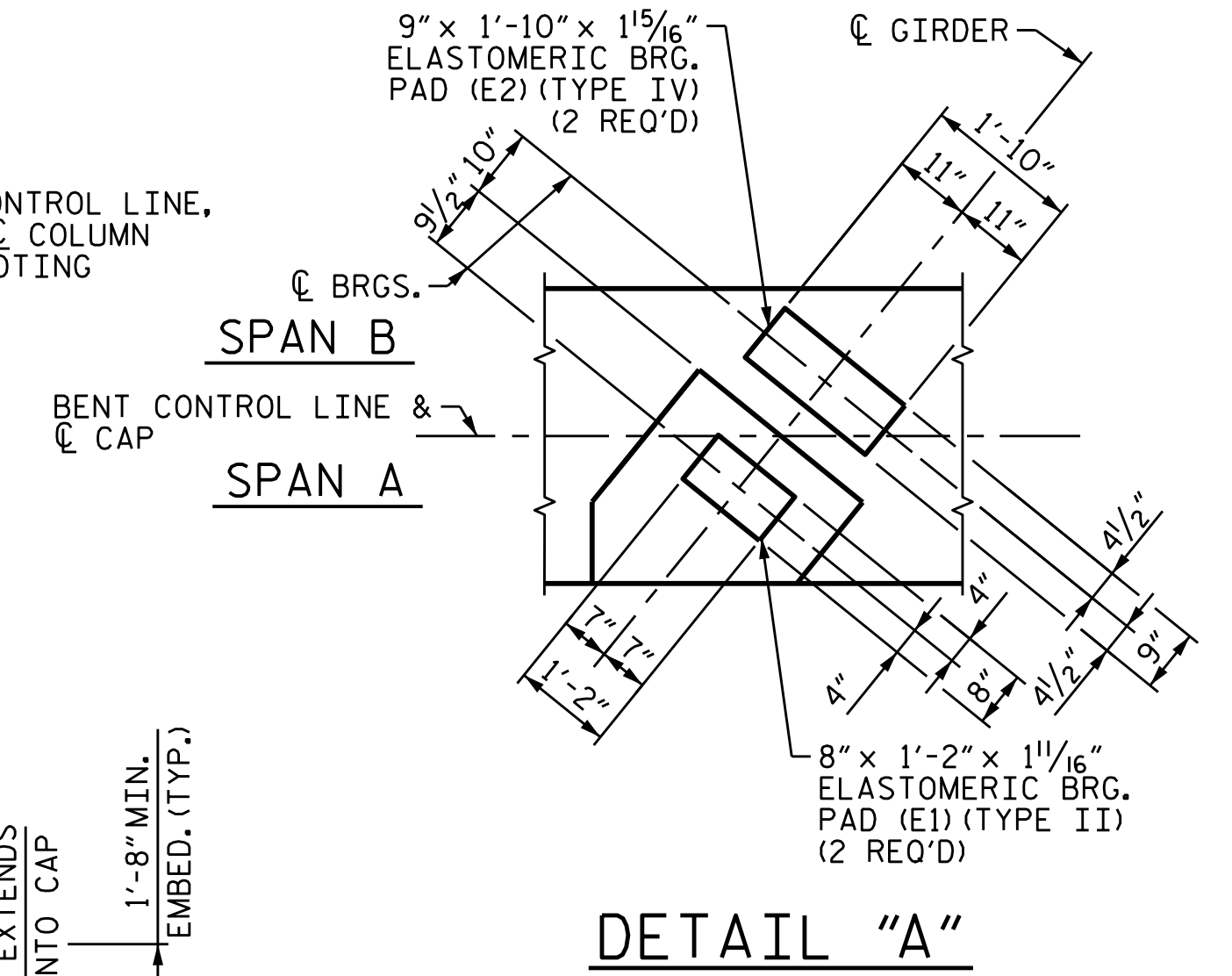
NOTES:

HOOKS ON V1 BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

FOR SECTION A-A, SEE SHEET 4 OF 4.

FOR VIEW X-X, SEE SHEET 4 OF 4.

THE TOP SURFACE AREAS OF THE BENT CAPS SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.



PROJECT NO. U-4424

EDGEcombe COUNTY

STATION: 66+24.84 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA

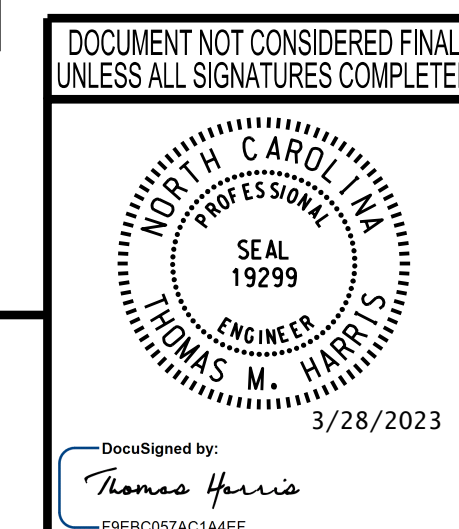
DEPARTMENT OF TRANSPORTATION

RALEIGH

SUBSTRUCTURE

BENT 1

PLAN & ELEVATION



wsp

WSP USA Inc.

434 FAYETTEVILLE STREET

SUITE 1500

RALEIGH, NC 27601

TEL: 1.919.836.4040

LICENSE NO. P-0165

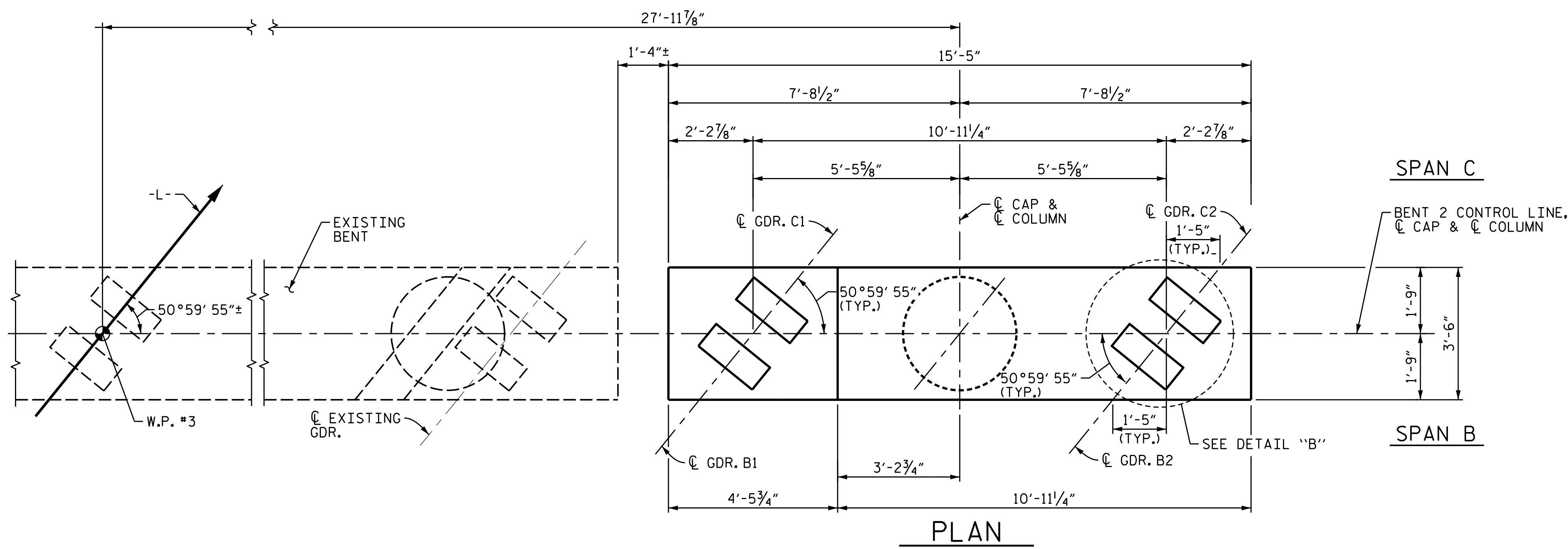
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-31
1			3			TOTAL SHEETS 37
2			4			

DESIGNED BY: J. WHEATLEY DATE: MAR 2023

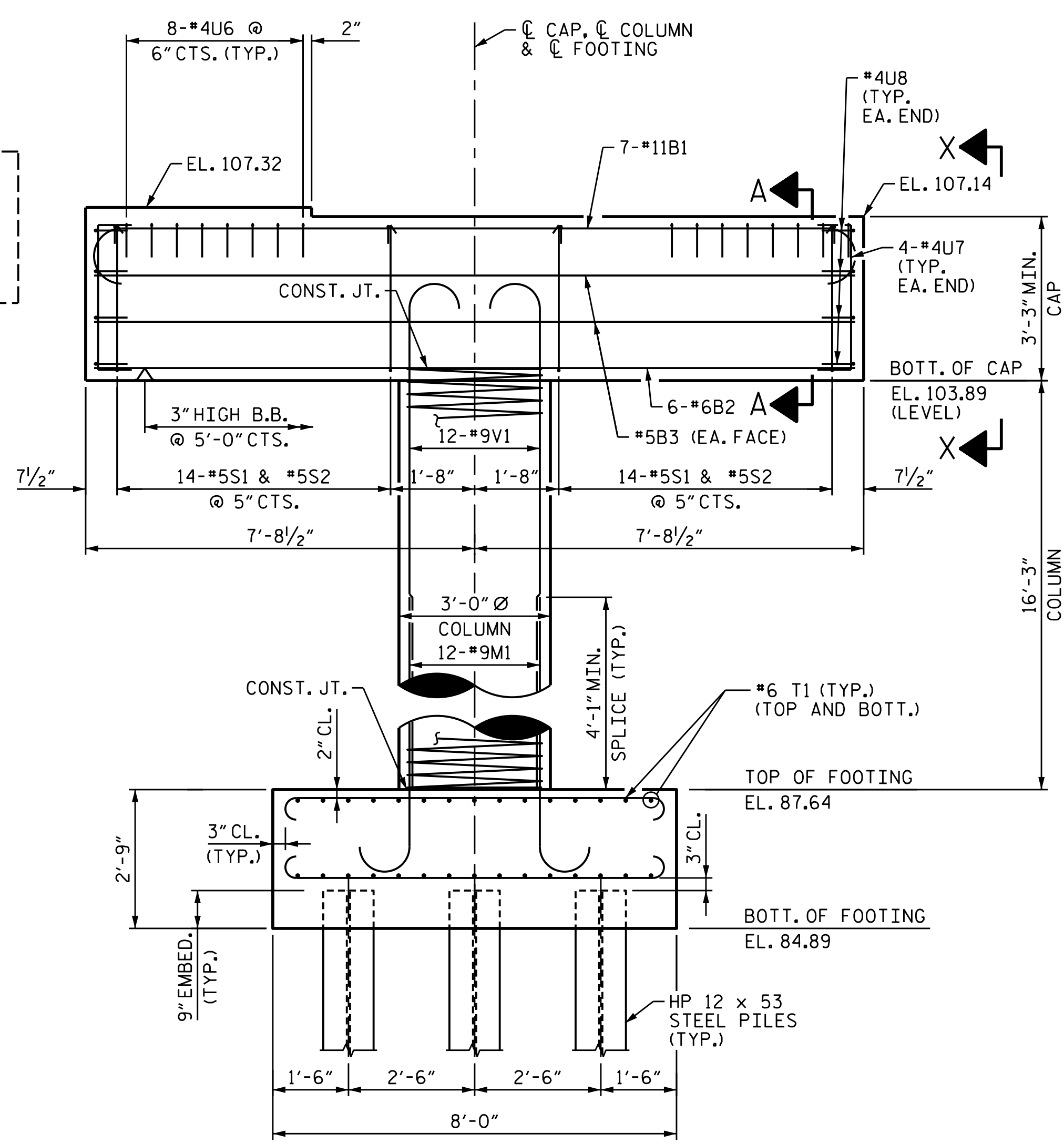
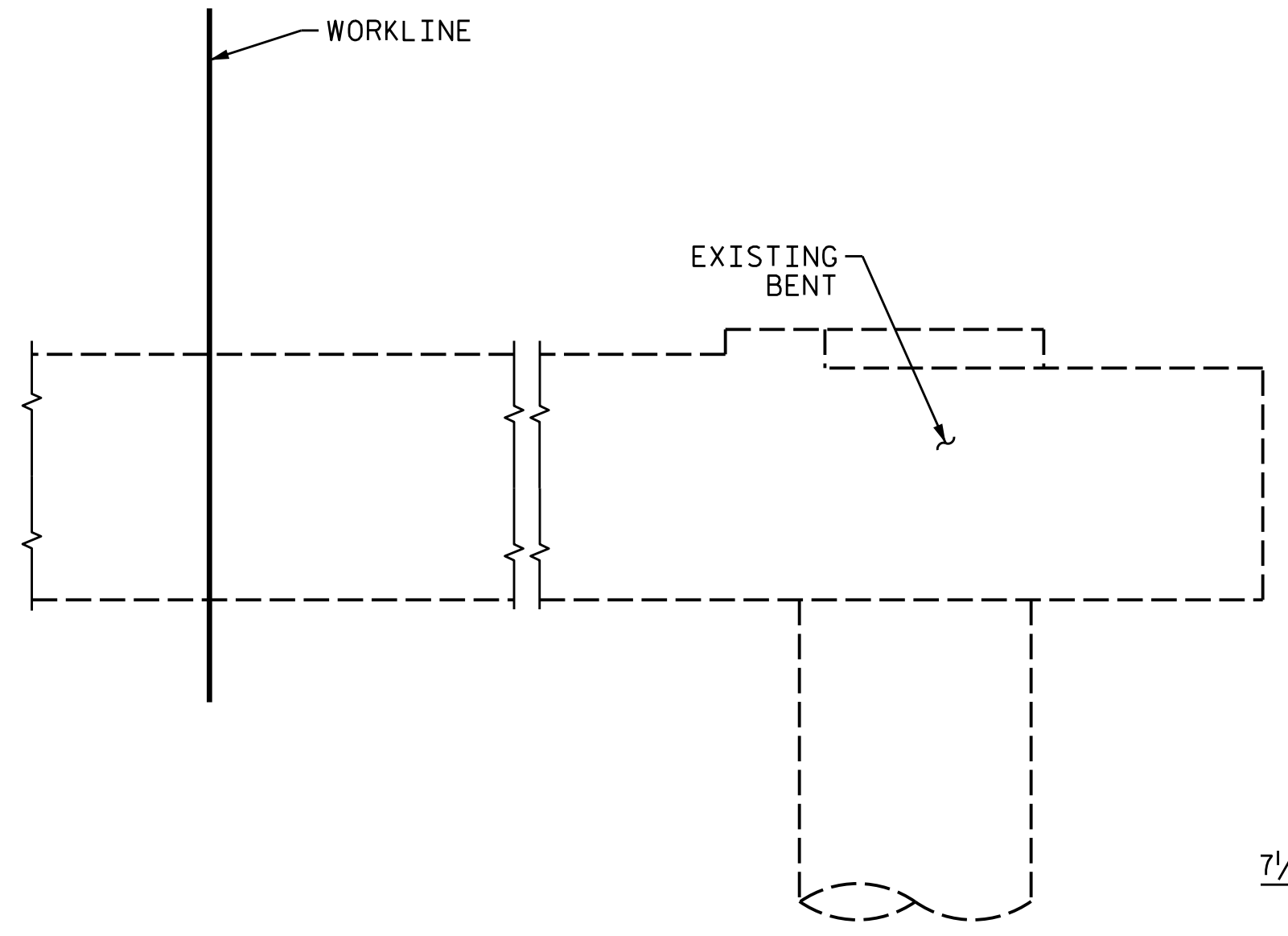
DRAWN BY: M. HOBBS DATE: MAR 2023

CHECKED BY: J.N. SMITH DATE: MAR 2023

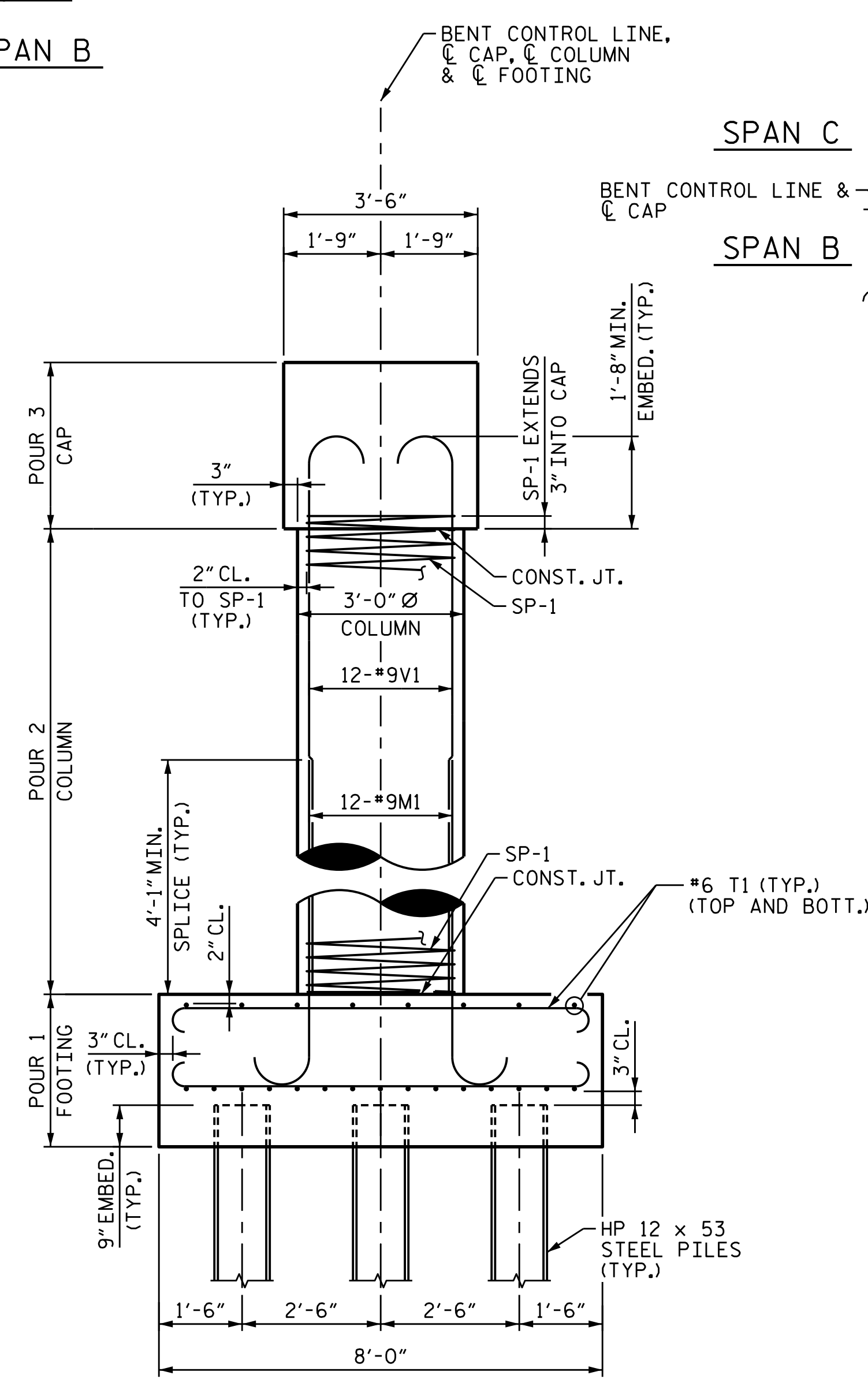
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PLAN

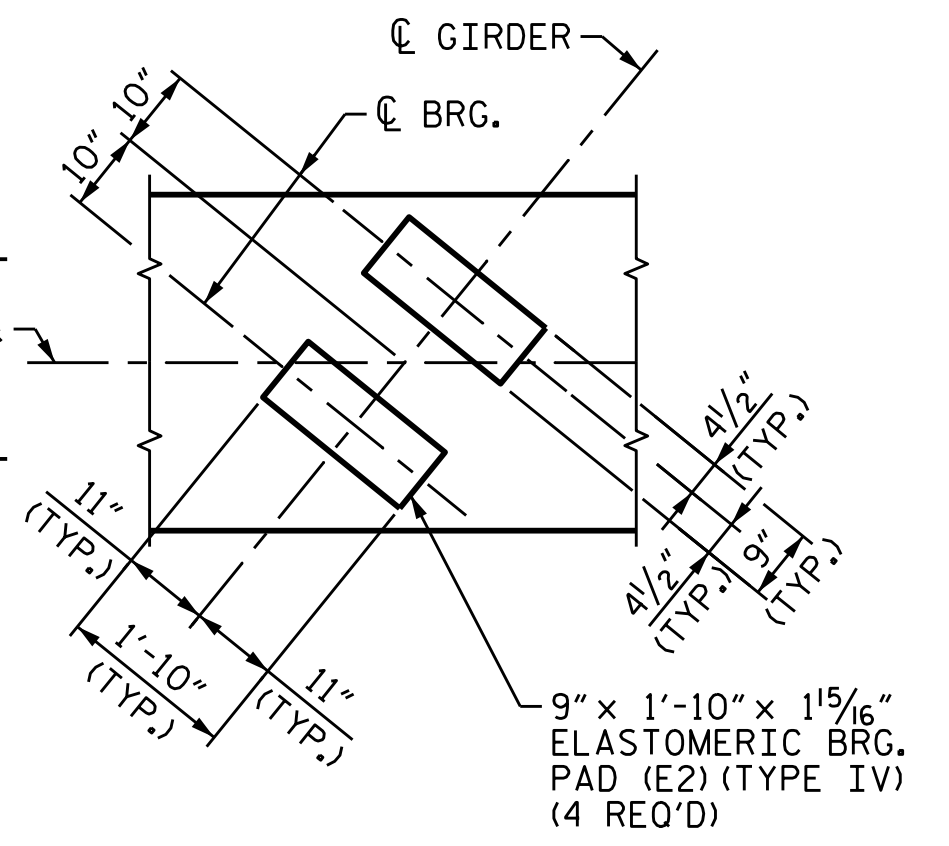


ELEVATION



END ELEVATION

NOTES:
 HOOKS ON V1 BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.
 FOR SECTION A-A, SEE SHEET 4 OF 4.
 FOR VIEW X-X, SEE SHEET 4 OF 4.
 THE TOP SURFACE AREAS OF THE BENT CAPS SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.



DETAIL "B"

PROJECT NO. U-4424
EDGEcombe COUNTY
 STATION: 66+24.84 -L-
 SHEET 2 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
BENT 2
 PLAN & ELEVATION

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

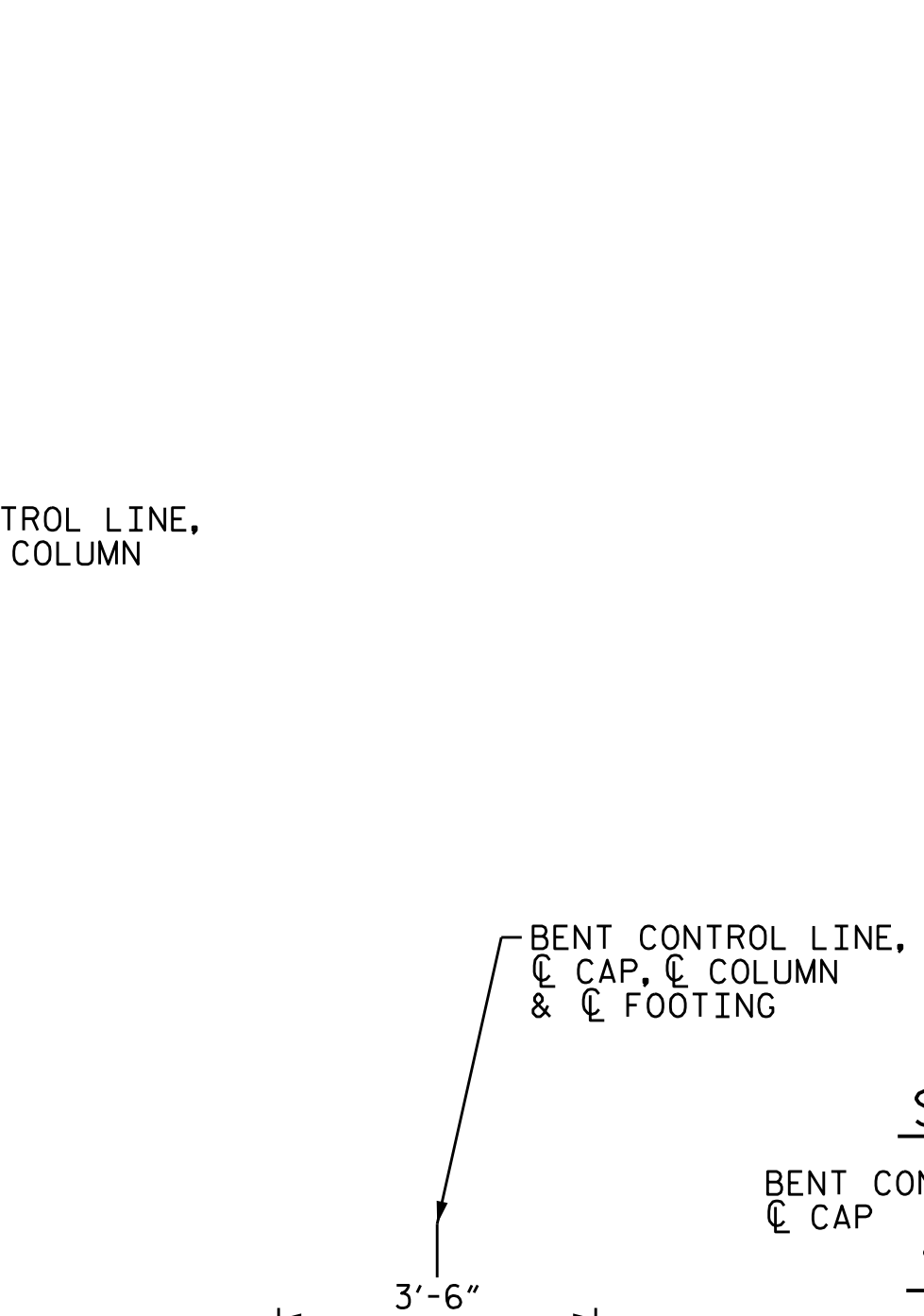
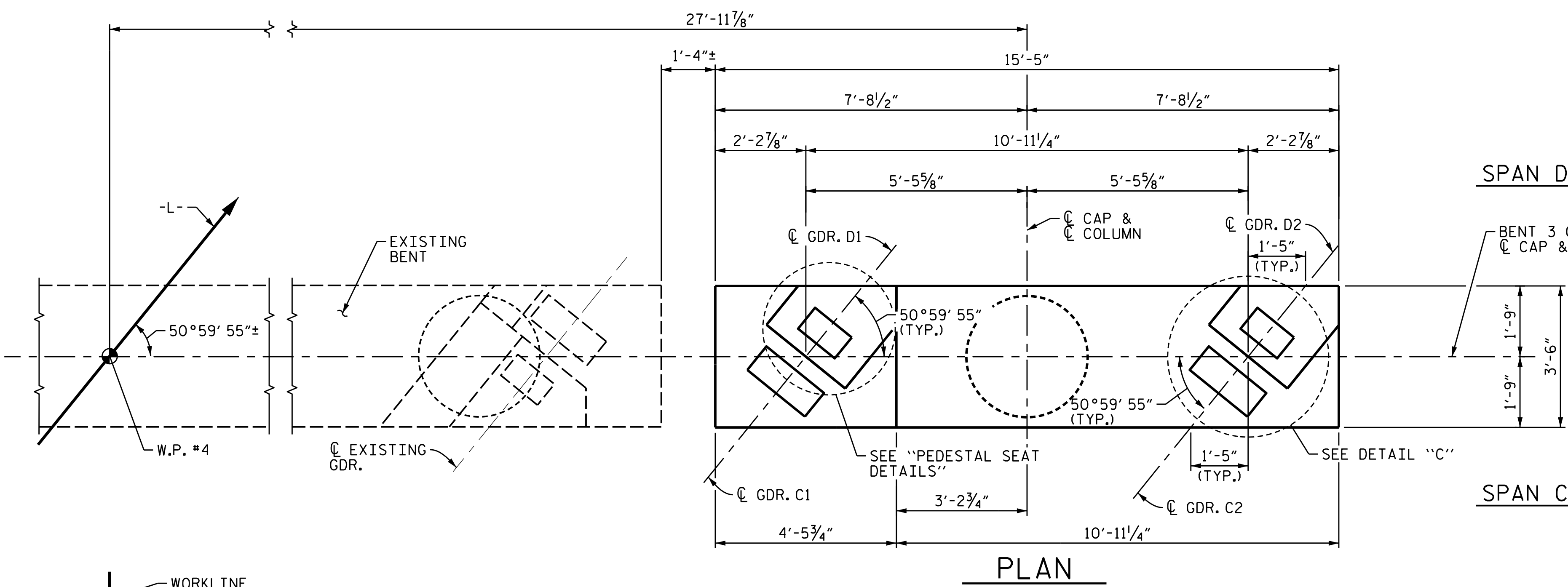
THOMAS M. HARRIS
 ENGINEER
 SEAL 19299
 3/28/2023

wsp
 WSP USA Inc.
 434 FAYETTEVILLE STREET
 SUITE 1500
 RALEIGH, NC 27601
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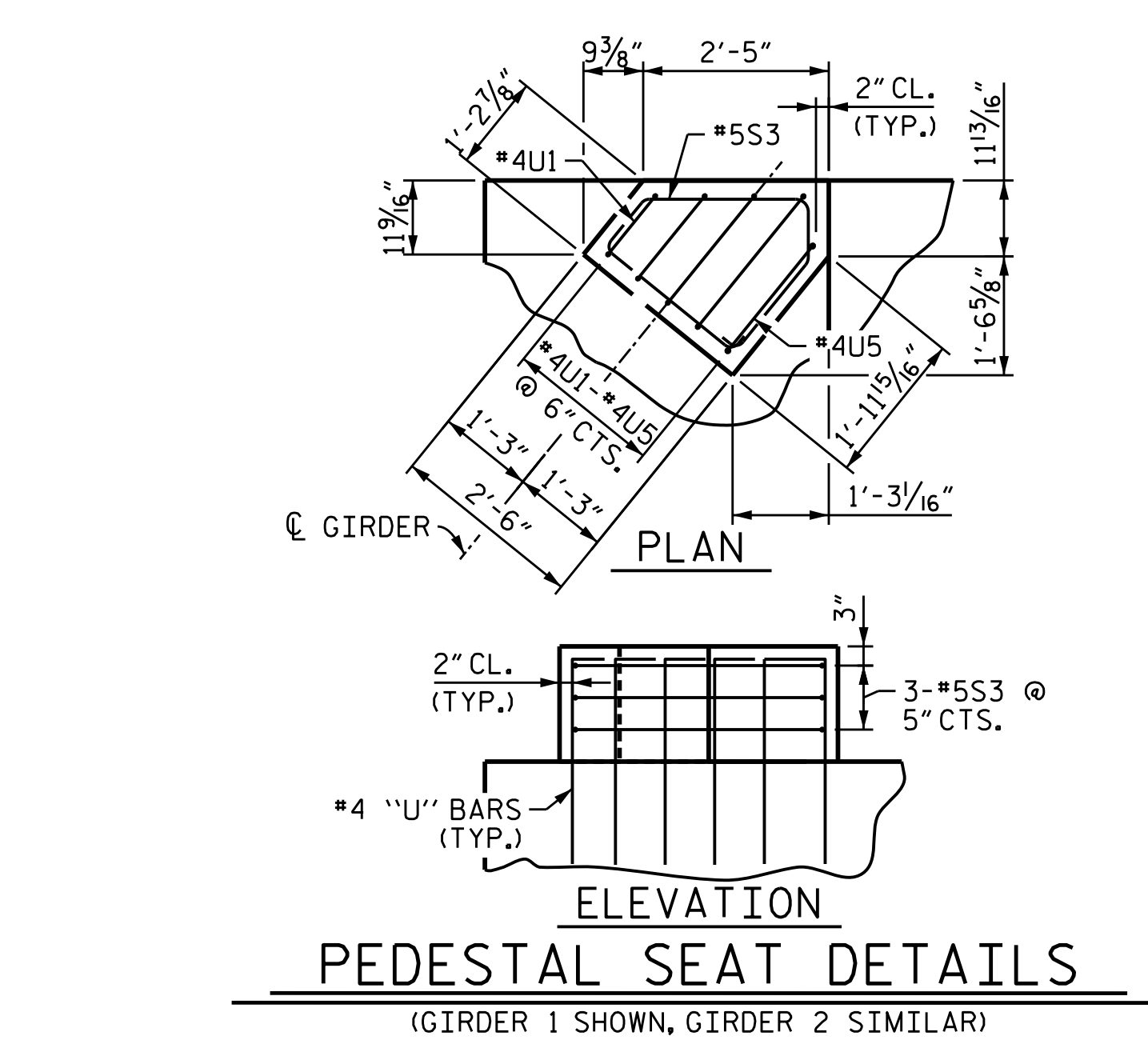
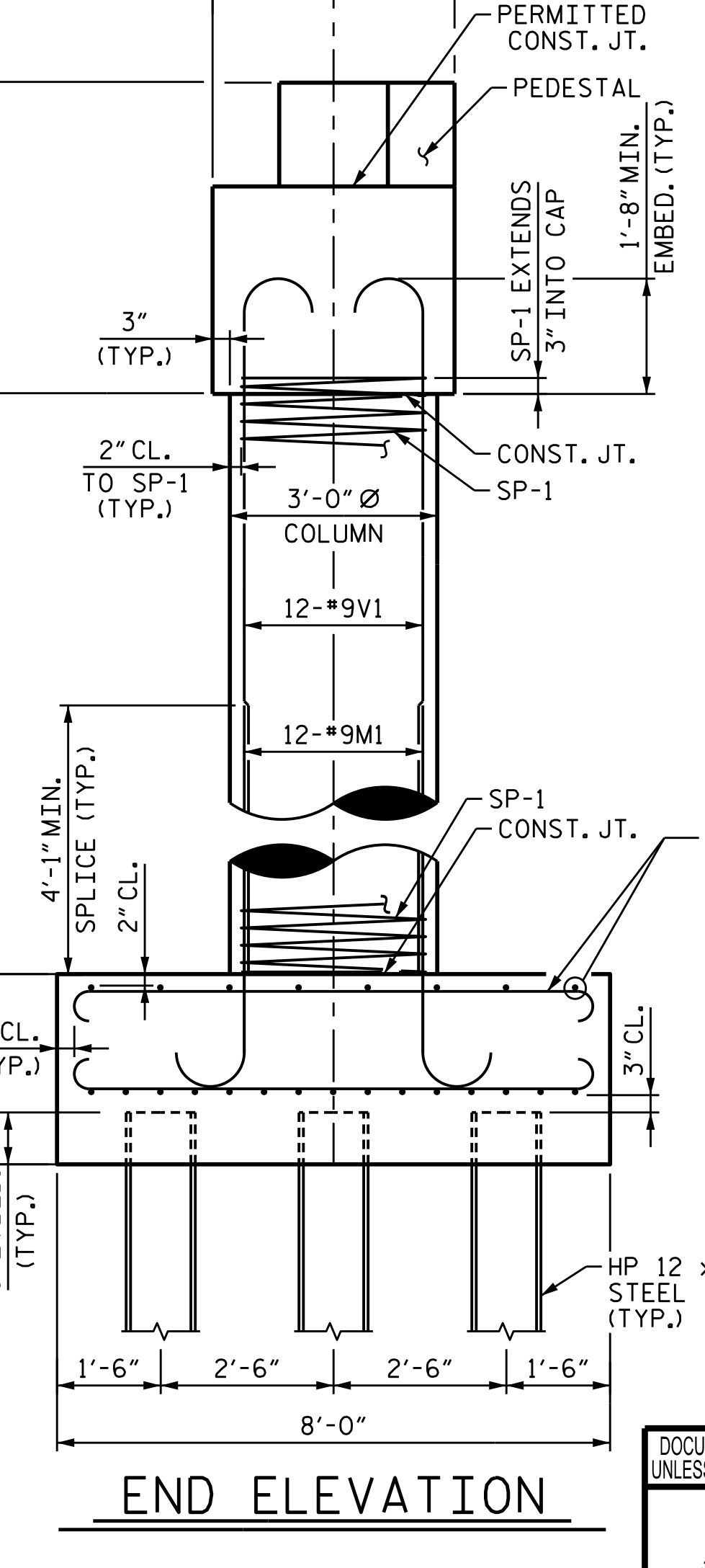
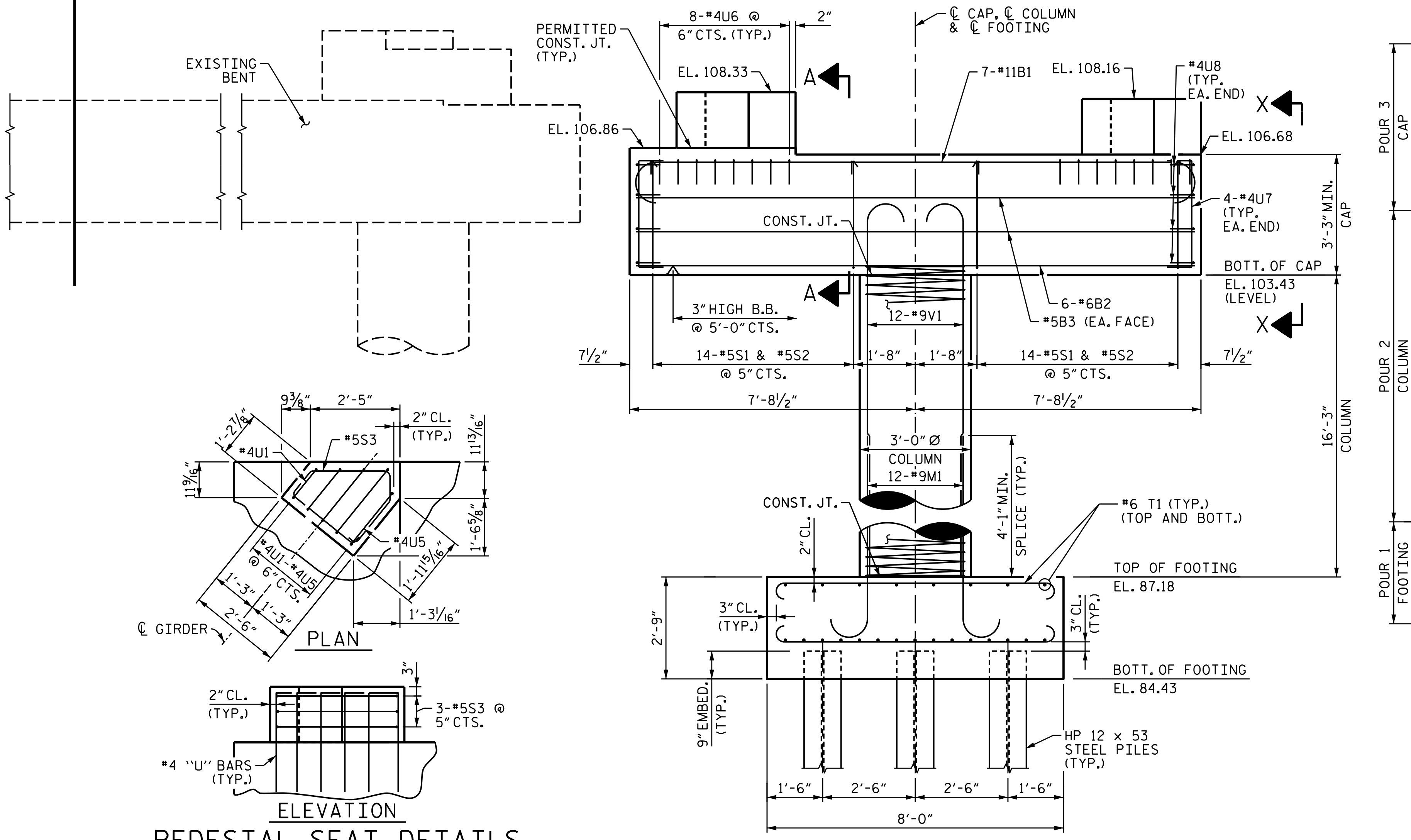
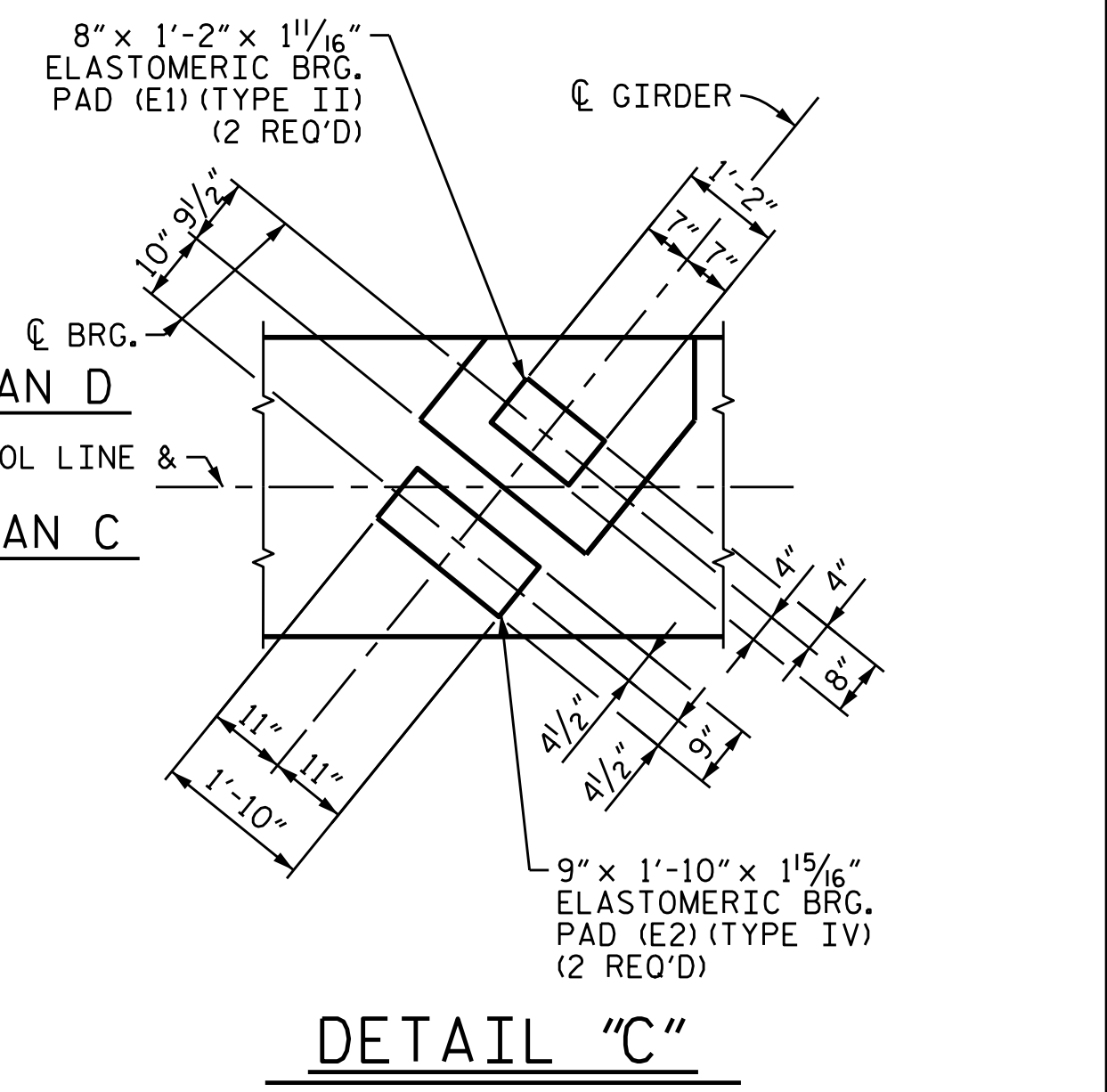
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-32
1			3			TOTAL SHEETS
2			4			37

3/28/2023
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DESIGNED BY: J. WHEATLEY DATE: MAR 2023
 DRAWN BY: M. HOBBS DATE: MAR 2023
 CHECKED BY: J.N. SMITH DATE: MAR 2023
 DESIGN ENGINEER OF RECORD: T.M. HARRIS DATE: MAR 2023



NOTES:
 HOOKS ON V1 BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.
 FOR SECTION A-A, SEE SHEET 4 OF 4.
 FOR VIEW X-X, SEE SHEET 4 OF 4.
 THE TOP SURFACE AREAS OF THE BENT CAPS SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.



PEDESTAL SEAT DETAILS
(GIRDER 1 SHOWN, GIRDER 2 SIMILAR)

ELEVATION
REINFORCEMENT IN PEDESTAL NOT SHOWN FOR CLARITY

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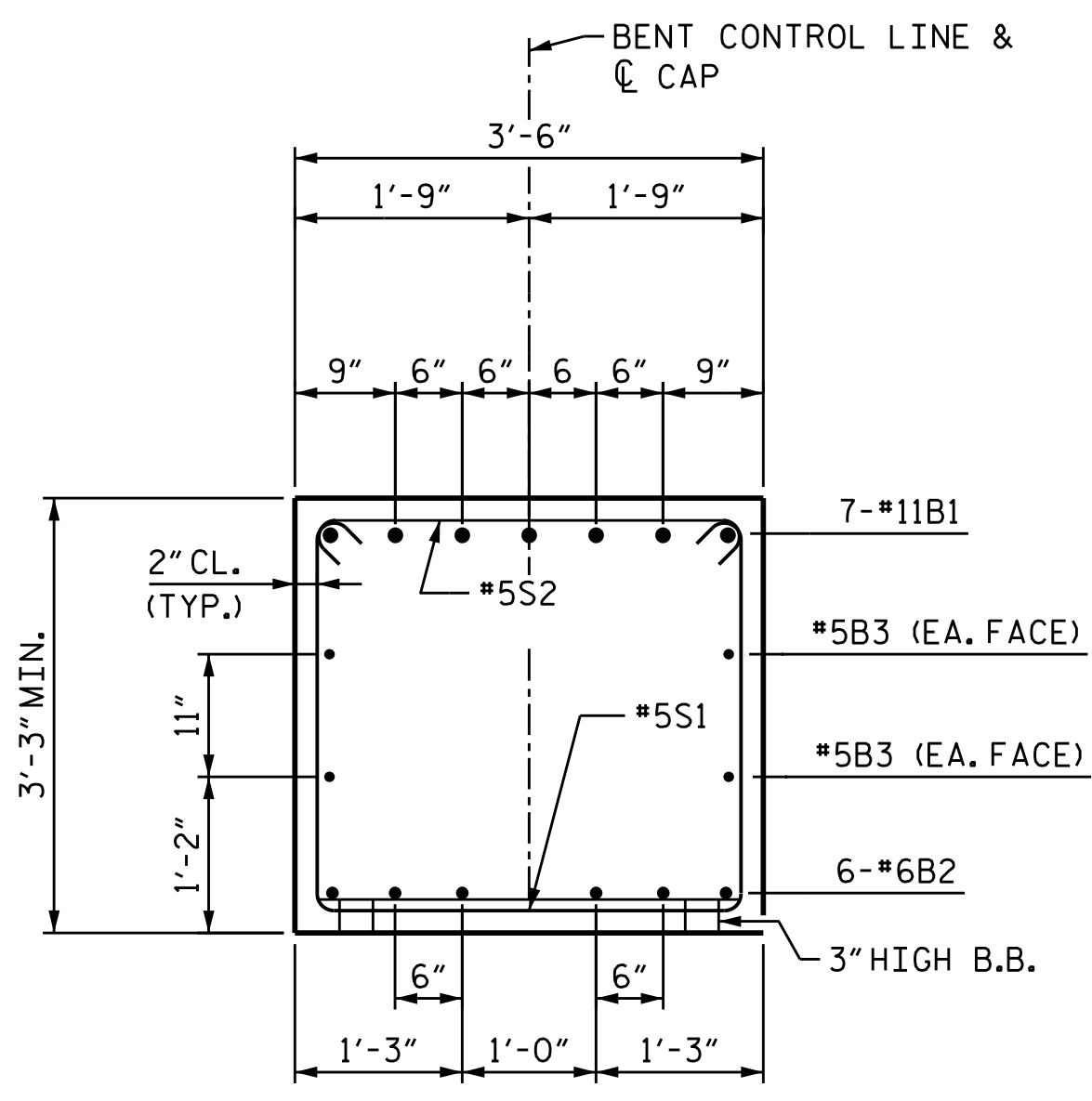
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
 THOMAS M. HARRIS
 PROFESSIONAL ENGINEER
 SEAL 19299
 3/28/2023
 F9EB2057AC14MEF

PROJECT NO. U-4424
EDGEcombe COUNTY
 STATION: 66+24.84 -L-
 SHEET 3 OF 4

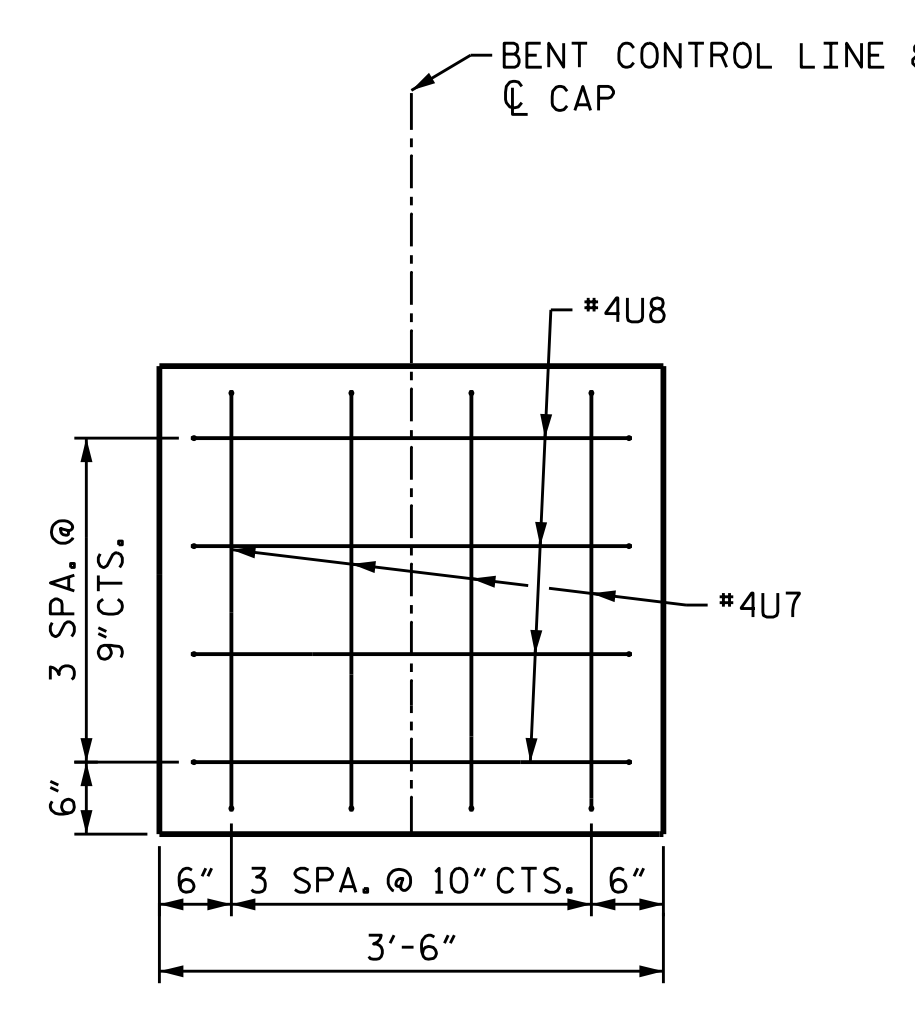
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S-33	
SUBSTRUCTURE BENT 3 PLAN & ELEVATION						TOTAL SHEETS 37	
REVISIONS							
NO.	BY:	DATE:	NO.	BY:	DATE:		
1			3				
2			4				

3/28/2023 NCDOT NC 111U-4424Sfructures\Dr-offring\DGNS\401_067_U4424_SML.B3_033.dgn

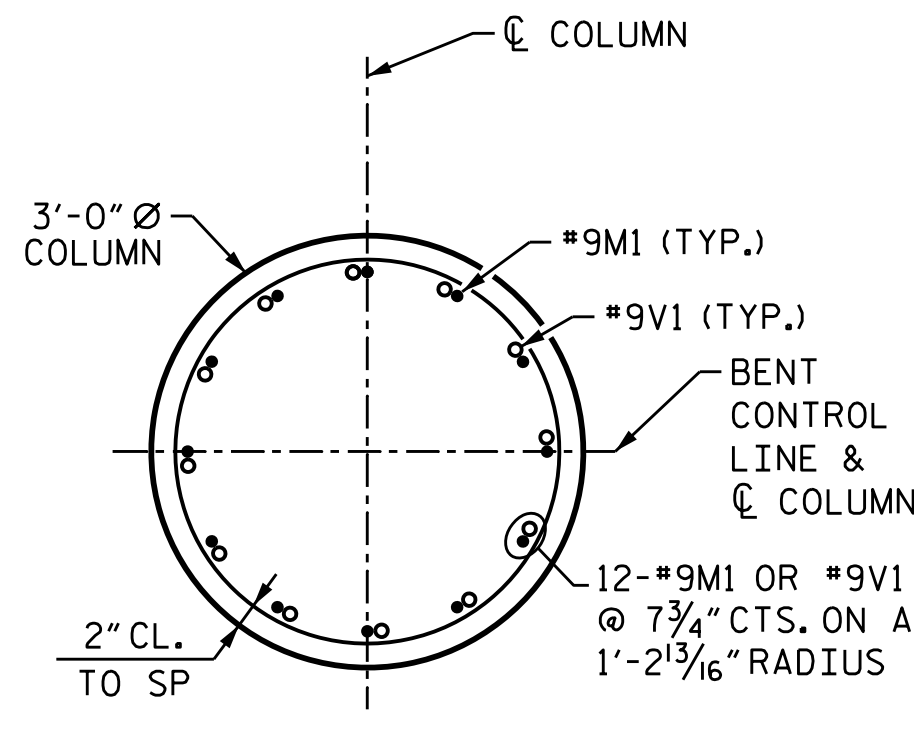
DESIGNED BY:	J. WHEATLEY	DATE :	MAR 2023
DRAWN BY:	M. HOBBS	DATE :	MAR 2023
CHECKED BY:	J.N.SMITH	DATE :	MAR 2023
DESIGN ENGINEER OF RECORD:	T.M.HARRIS	DATE :	MAR 2023



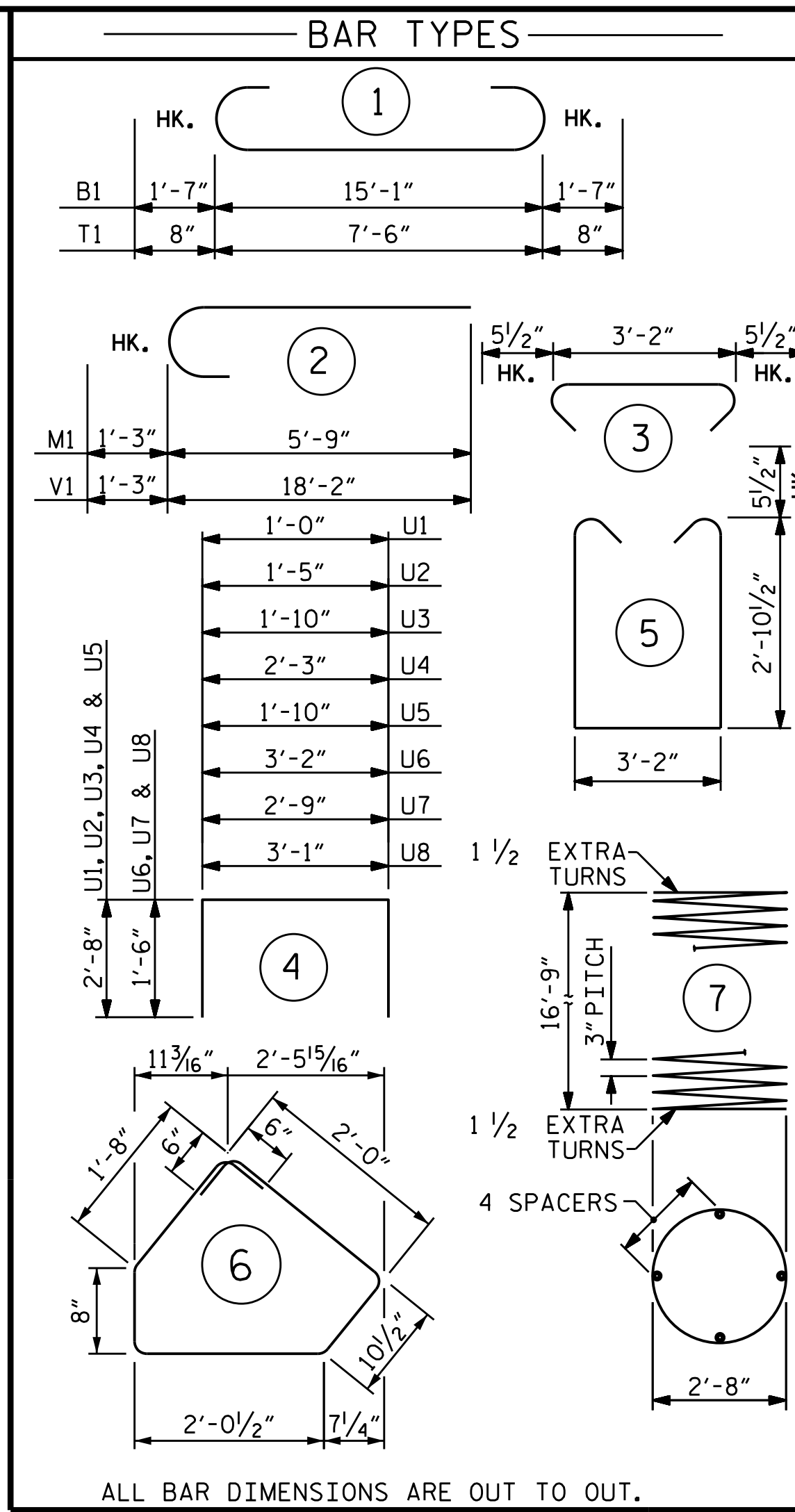
SECTION A-A
 (PEDESTAL NOT SHOWN FOR CLARITY ON BENTS 1 & 3, SEE "PEDESTAL SEAT DETAILS" ON SHEET 1 OF 4 AND SHEET 3 OF 4)



VIEW X-X
 (SIMILAR BOTH ENDS)



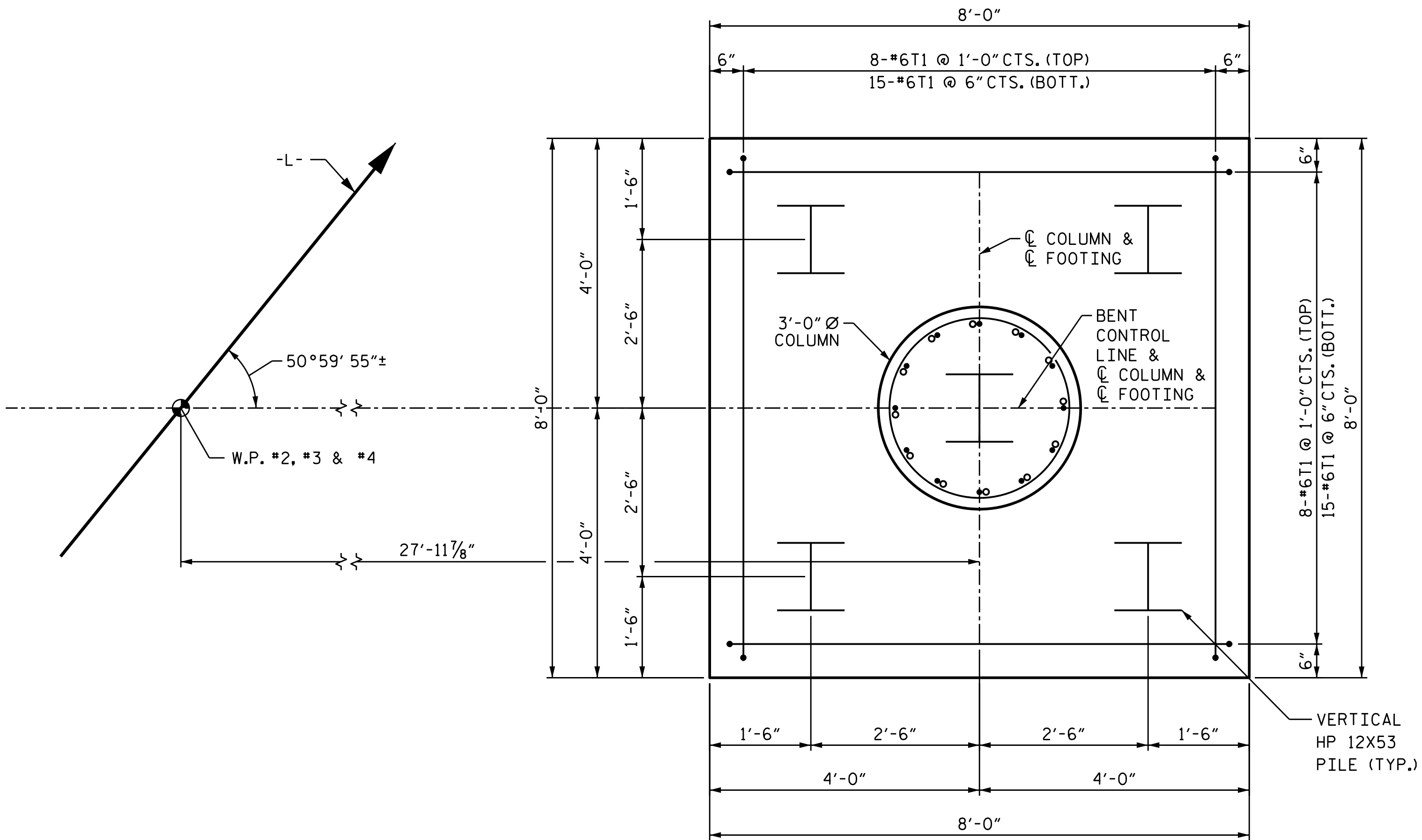
COLUMN SECTION



ALL BAR DIMENSIONS ARE OUT TO OUT.

— BILL OF MATERIAL —						— BILL OF MATERIAL —					
ONE(1) BENT. BENT 1 & BENT 3						BENT 2					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	7	#11	1	18'-3"	679	B1	7	#11	1	18'-3"	679
B2	6	#6	STR	15'-1"	136	B2	6	#6	STR	15'-1"	136
B3	4	#5	STR	15'-1"	63	B3	4	#5	STR	15'-1"	63
M1	12	#9	2	7'-0"	286	M1	12	#9	2	7'-0"	286
S1	28	#5	5	9'-9"	285	S1	28	#5	5	9'-9"	285
S2	28	#5	3	4'-1"	119	S2	28	#5	3	4'-1"	119
S3	6	#5	6	8'-3"	52						
T1	46	#6	1	8'-10"	610	T1	46	#6	1	8'-10"	610
U1	2	#4	4	6'-4"	8	U6	16	#4	4	6'-2"	66
U2	2	#4	4	6'-9"	9	U7	8	#4	4	5'-9"	31
U3	2	#4	4	7'-2"	10	U8	8	#4	4	6'-1"	33
U4	2	#4	4	7'-7"	10	V1	12	#9	2	19'-2"	782
U5	2	#4	4	7'-2"	10						
U6	16	#4	4	6'-2"	66						
U7	8	#4	4	5'-9"	31						
U8	8	#4	4	6'-1"	33						
V1	12	#9	2	19'-2"	782						
REINFORCING STEEL LBS 3,189						REINFORCING STEEL LBS 3,090					
SP-1	1	*	7	578'-4"	386	SP-1	1	*	7	578'-4"	386
SPIRAL COLUMN REINFORCING STEEL LBS 386						SPIRAL COLUMN REINFORCING STEEL LBS 386					
CLASS A CONCRETE CU. YDS.						CLASS A CONCRETE CU. YDS.					
POUR #1: FOOTING 6.5						POUR #1: FOOTING 6.5					
POUR #2: COLUMN 4.3						POUR #2: COLUMN 4.3					
POUR #3: CAP & PEDESTALS 7.2						POUR #3: CAP 6.6					
TOTAL CLASS A CONCRETE 18.0						TOTAL CLASS A CONCRETE 17.4					
HP 12x53 STEEL PILES NO: 5 LIN. FT. = 400						HP 12x53 STEEL PILES NO: 5 LIN. FT. = 400					
PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES NO: 5						PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES NO: 5					
PILE REDRIVES NO: 3						PILE REDRIVES NO: 3					

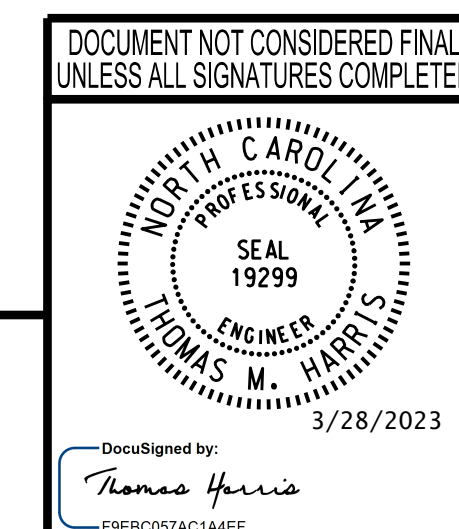
* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.



FOOTING & COLUMN PLAN

PROJECT NO. U-4424
EDGEcombe COUNTY
 STATION: 66+24.84 -L-
 SHEET 4 OF 4

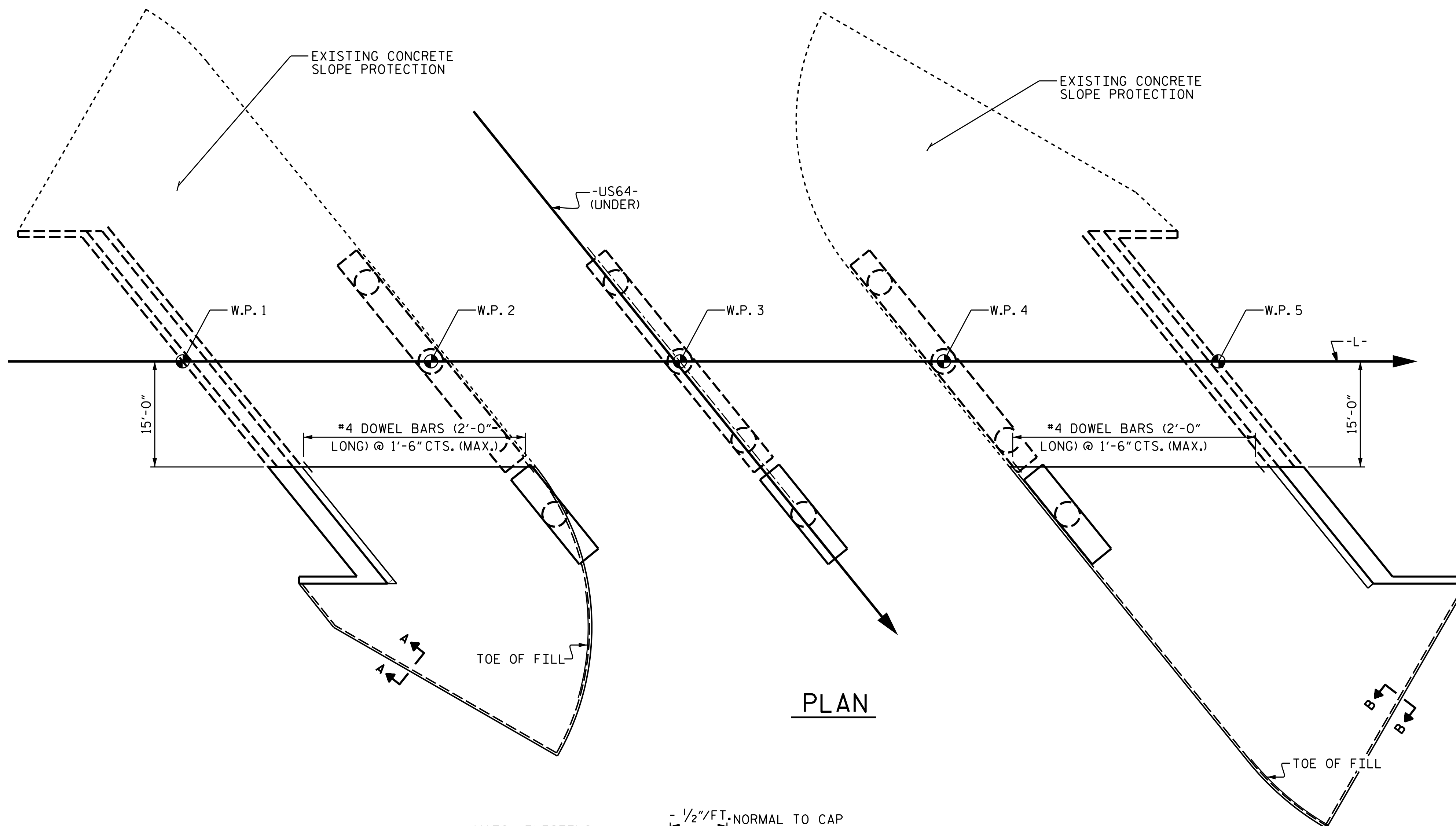
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENTS 1, 2 & 3 DETAILS AND BILL OF MATERIALS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		



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3/28/2023
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DESIGNED BY:	J. WHEATLEY	DATE:	MAR 2023
DRAWN BY:	M. HOBBS	DATE:	MAR 2023
CHECKED BY:	J.N. SMITH	DATE:	MAR 2023
DESIGN ENGINEER OF RECORD:	T.M. HARRIS	DATE:	MAR 2023



GENERAL NOTES

STRAIGHT EDGING WILL NOT BE REQUIRED UNLESS, IN THE OPINION OF THE ENGINEER, VISUAL INSPECTION INDICATES A NEED FOR IT. MEASUREMENT AND PAYMENT SHALL BE AS PRESCRIBED IN SECTION 462 OF THE STANDARD SPECIFICATIONS.

FOR BERM WIDTH, SEE GENERAL DRAWING.

SLOPE PROTECTION SHALL CONSIST OF 4" POURED-IN-PLACE CONCRETE PAVING AS SHOWN IN THE DETAILS ON THIS SHEET. CONCRETE SHALL BE CLASS "B". THE CONCRETE SURFACE SHALL BE FLOATED WITH A WOODEN FLOAT AND FINISHED.

WELDED WIRE FABRIC REINFORCING SHALL BE 6 X 6 - W1.4 X W1.4, 60" WIDE.

SLOPE PROTECTION SHALL BE POURED IN 5' STRIPS AS SHOWN IN THE "POURING DETAIL" WITH 2'-0" LONG #4 BARS PLACED ALONG THE SLOPE BETWEEN STRIPS AT 1'-6" MAXIMUM SPACING.

SLOPE PROTECTION MAY BE POURED IN ALTERNATE 4' AND 5' STRIPS AS SHOWN IN THE "OPTIONAL POURING DETAIL" WITH ADJACENT RUNS OF WELDED WIRE FABRIC LAPPING AT LEAST 6". THE COST OF THE WELDED WIRE FABRIC AND #4 BARS, IF USED, SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID PER SQUARE YARD FOR SLOPE PROTECTION.

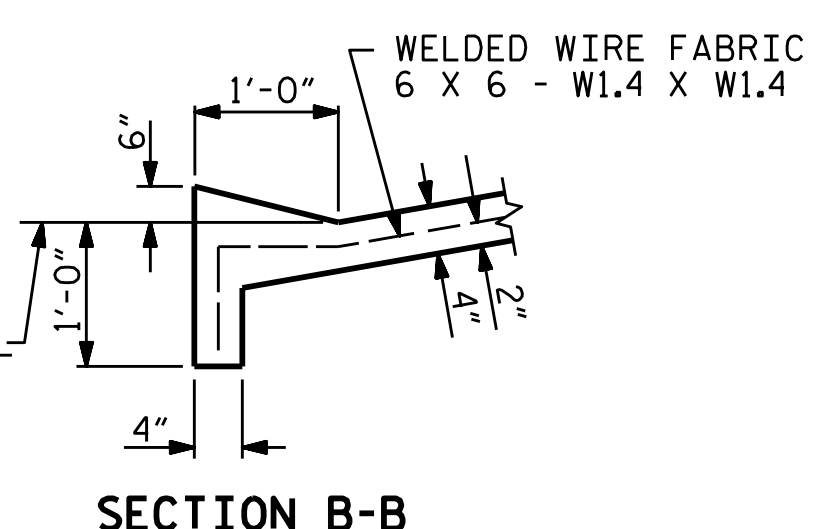
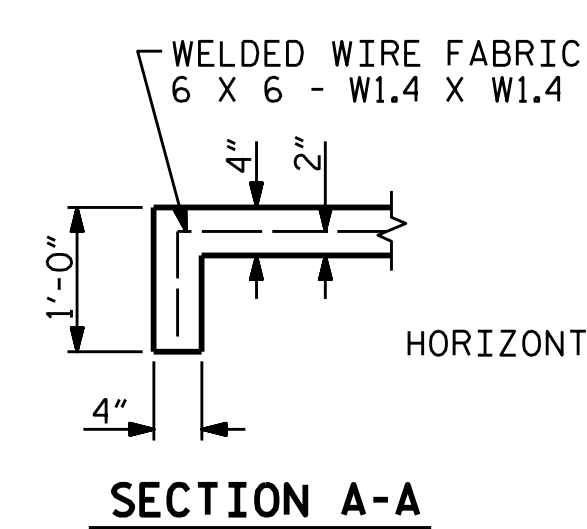
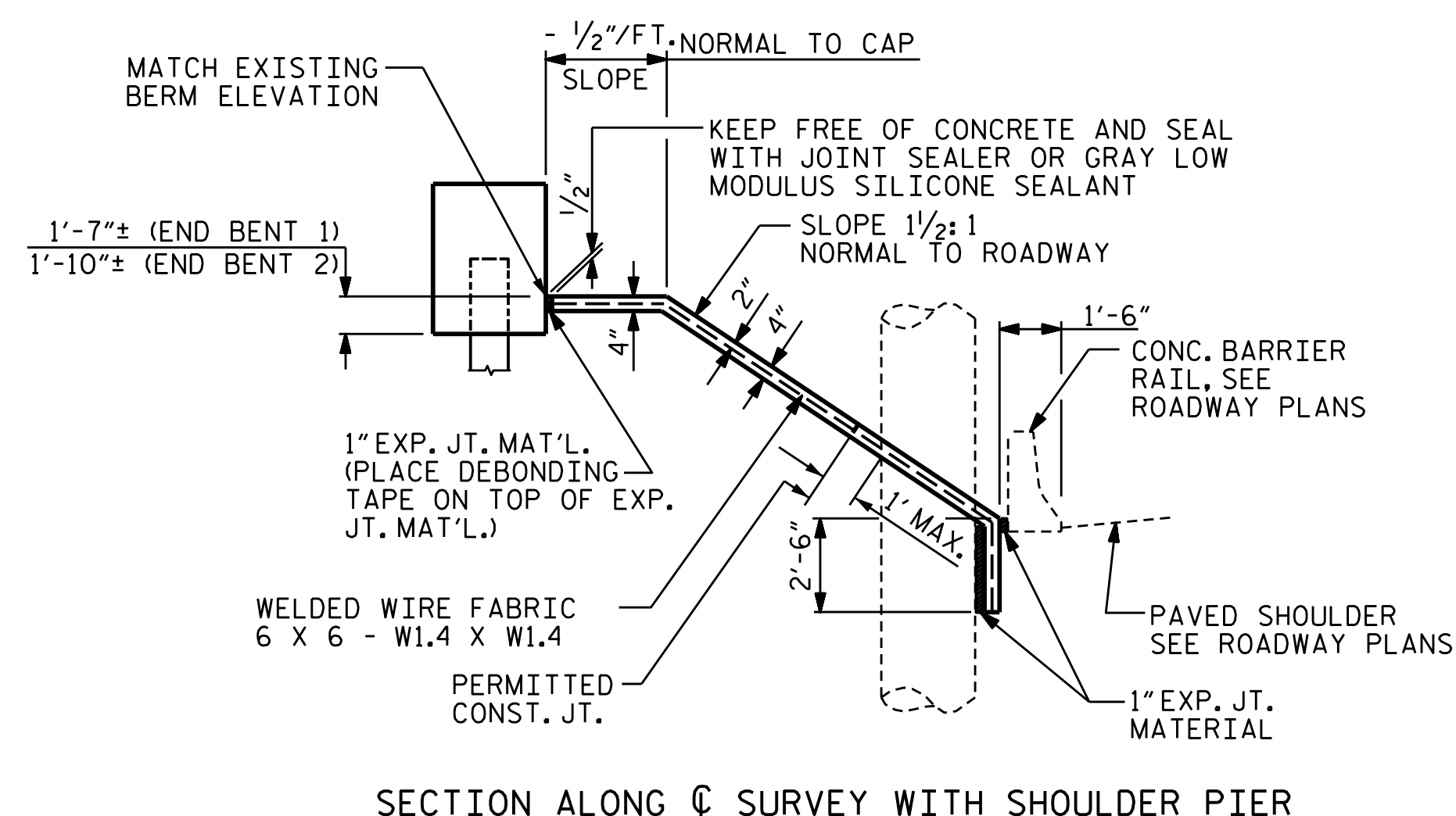
REMOVAL OF EXISTING CONCRETE SLOPE PROTECTION SHALL BE INCLUDED IN THE CONTRACT/LUMP SUM PRICE FOR REMOVAL OF EXISTING STRUCTURE.

PROVIDE AND INSTALL 2'-0" LONG #4 BARS SPACE AT 1'-6" CTS. MAX. AT THE INTERFACE OF THE EXISTING AND PROPOSED SLOPE PROTECTION. ADHESIVELY ANCHOR INTO EXISTING SLOPE PROTECTION WITH EMBEDMENT INTO EXISTING PER MANUFACTURER'S RECOMMENDATIONS.

BRIDGE @ STA. 66+24.84 -L-	4 INCH SLOPE PROTECTION	* WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	155	276
END BENT 2	212	491

* QUANTITY SHOWN IS BASED ON 5' POURS.

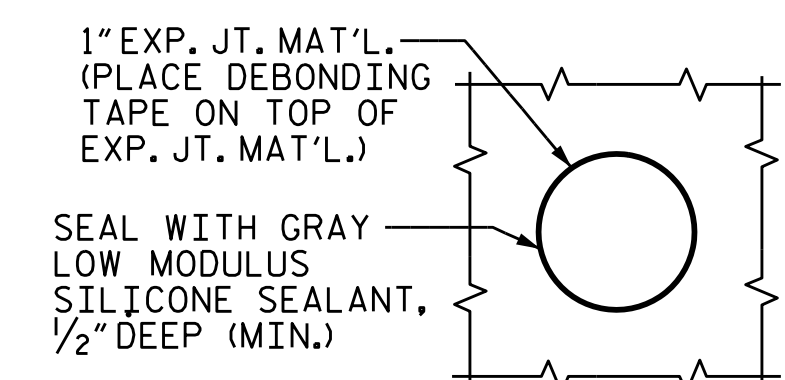
PLAN



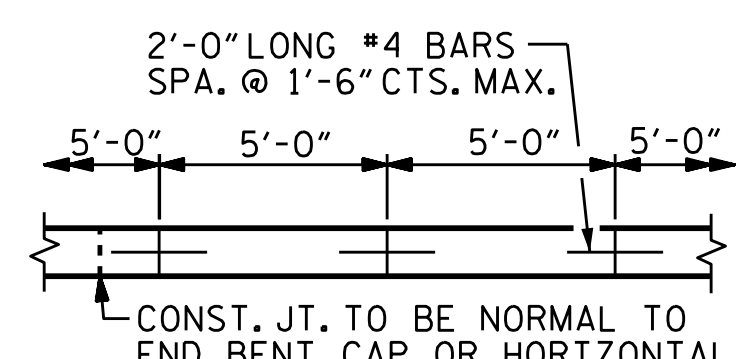
SECTION ALONG Q SURVEY WITH SHOULDER PIER

SECTION A-A

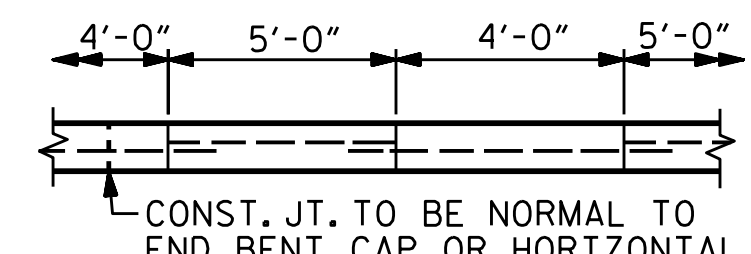
SECTION B-B



PLAN WHERE CONCRETE SLOPE PROTECTION MUST BE PLACED AROUND A BENT COLUMN



POURING DETAIL



OPTIONAL POURING DETAIL

PROJECT NO. U-4424
EDGEcombe COUNTY
 STATION: 66+24.84 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SLOPE PROTECTION DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-35
1			3			TOTAL SHEETS 37
2			4			

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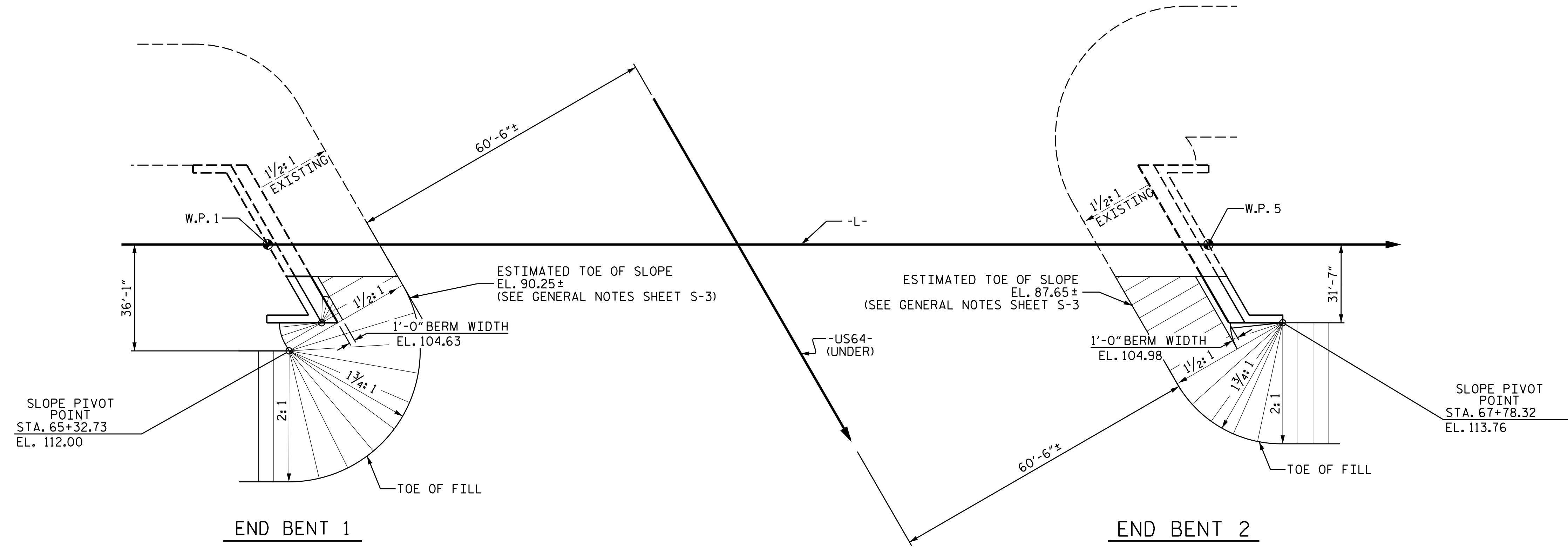
THOMAS M. HARRIS
 PROFESSIONAL ENGINEER
 SEAL 19299
 3/28/2023

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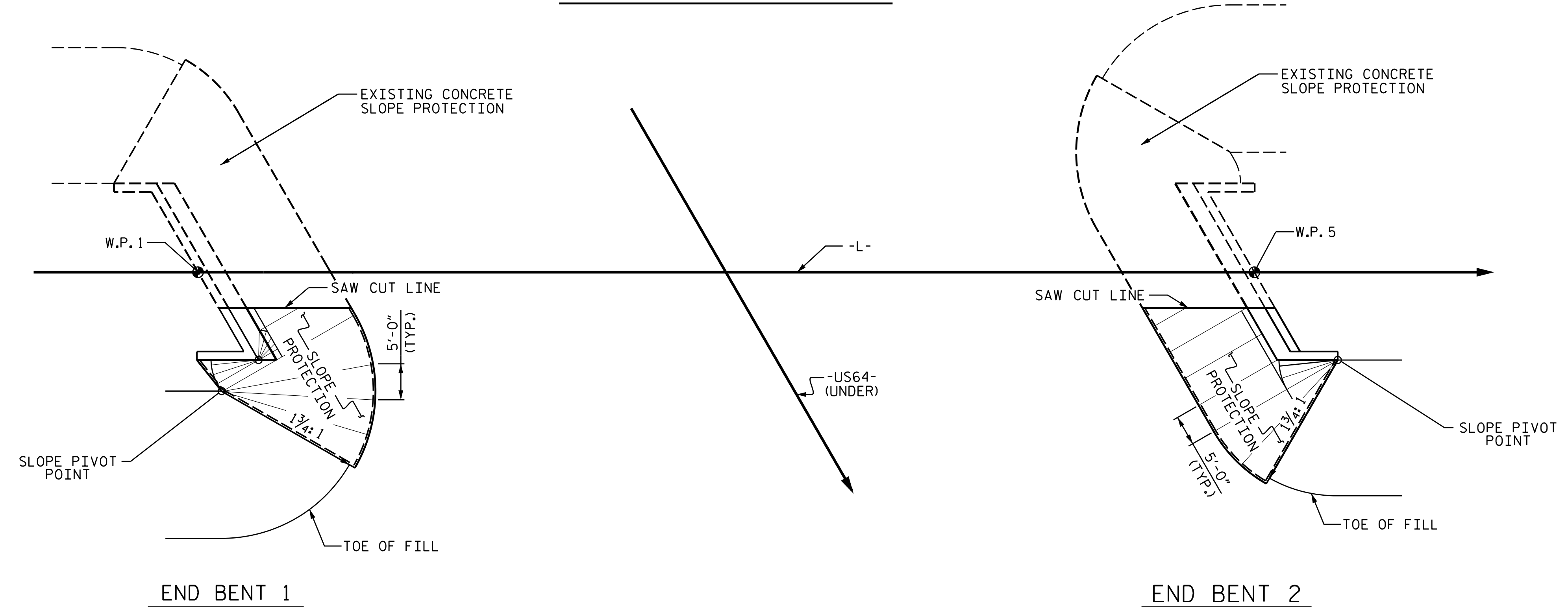
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 RALEIGH, NC 27601
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3/28/2023 4:\188771-06 NCDOT NC 111\U-4424\Structures\Dr-off-rimg\DGNS\401_071_U4424_SML_SPL_035.dgn

DESIGNED BY: J. WHEATLEY DATE: MAR 2023
 DRAWN BY: J. WHEATLEY DATE: MAR 2023
 CHECKED BY: T. KIRSCHBAUM DATE: MAR 2023
 DESIGN ENGINEER OF RECORD: T. HARRIS DATE: MAR 2023



PLAN - GRADING



PLAN - CONCRETE PLACEMENT

PROJECT NO. U-4424
EDGEcombe COUNTY
 STATION: 66+24.84 -L-
 SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SLOPE PROTECTION
 DETAILS**

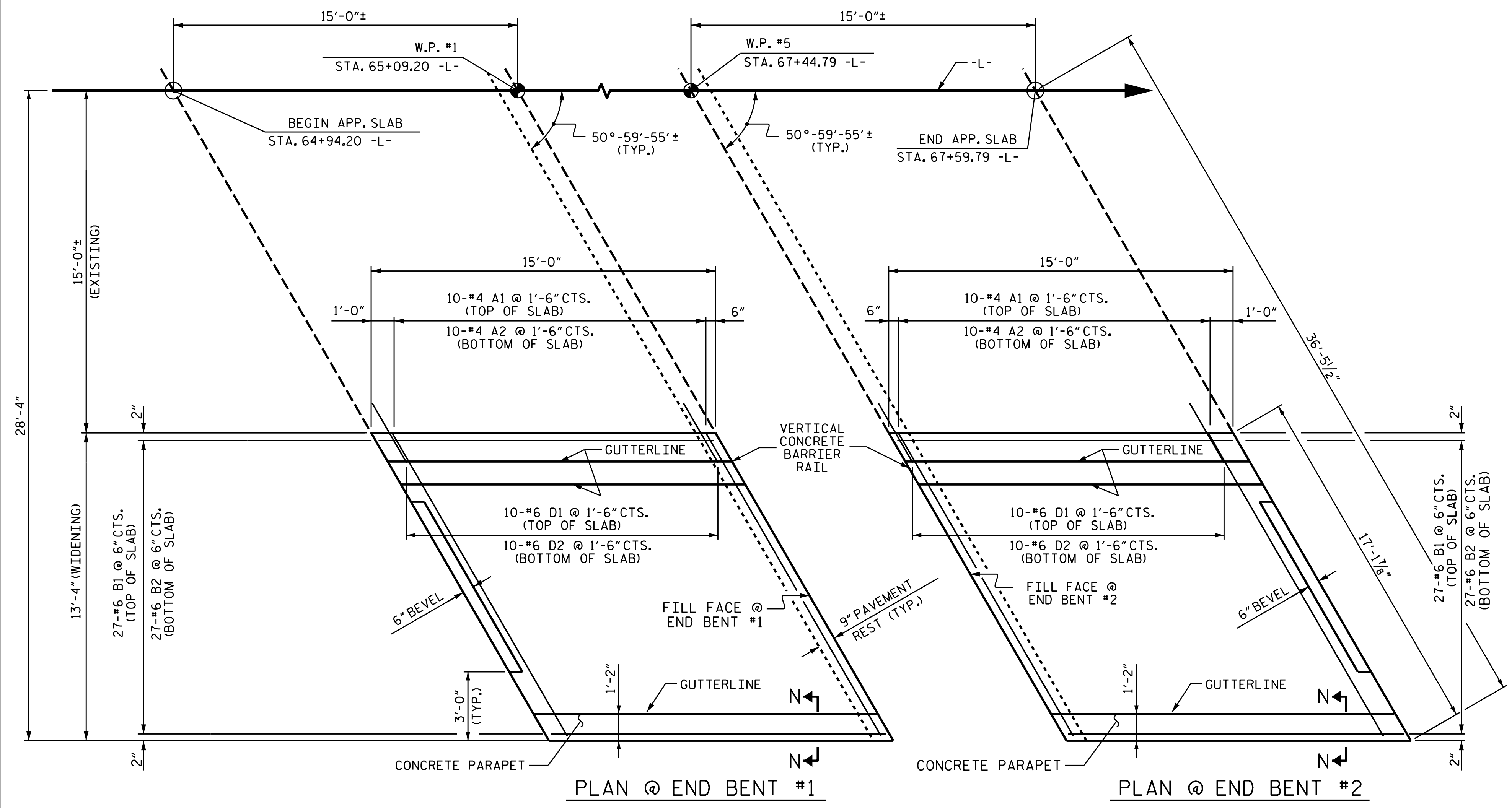
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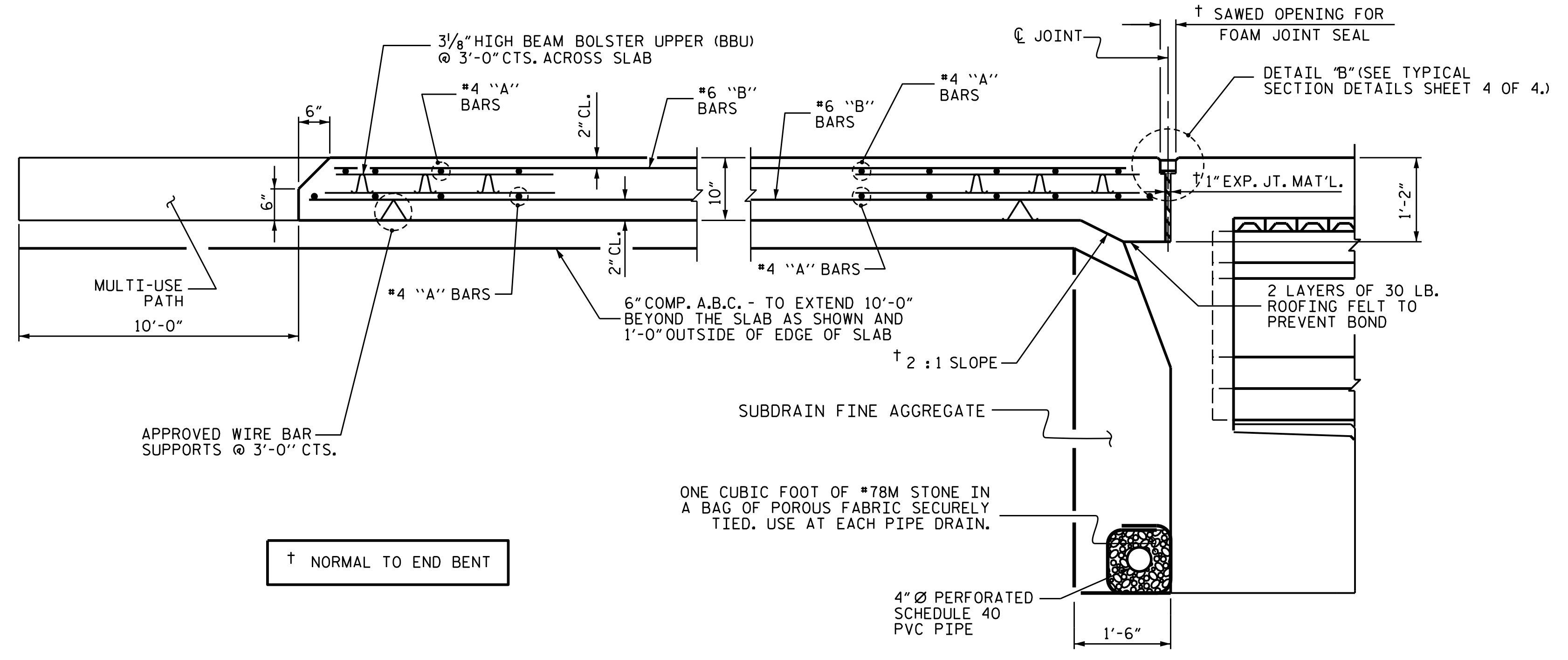
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-36
1			3			TOTAL SHEETS
2			4			37

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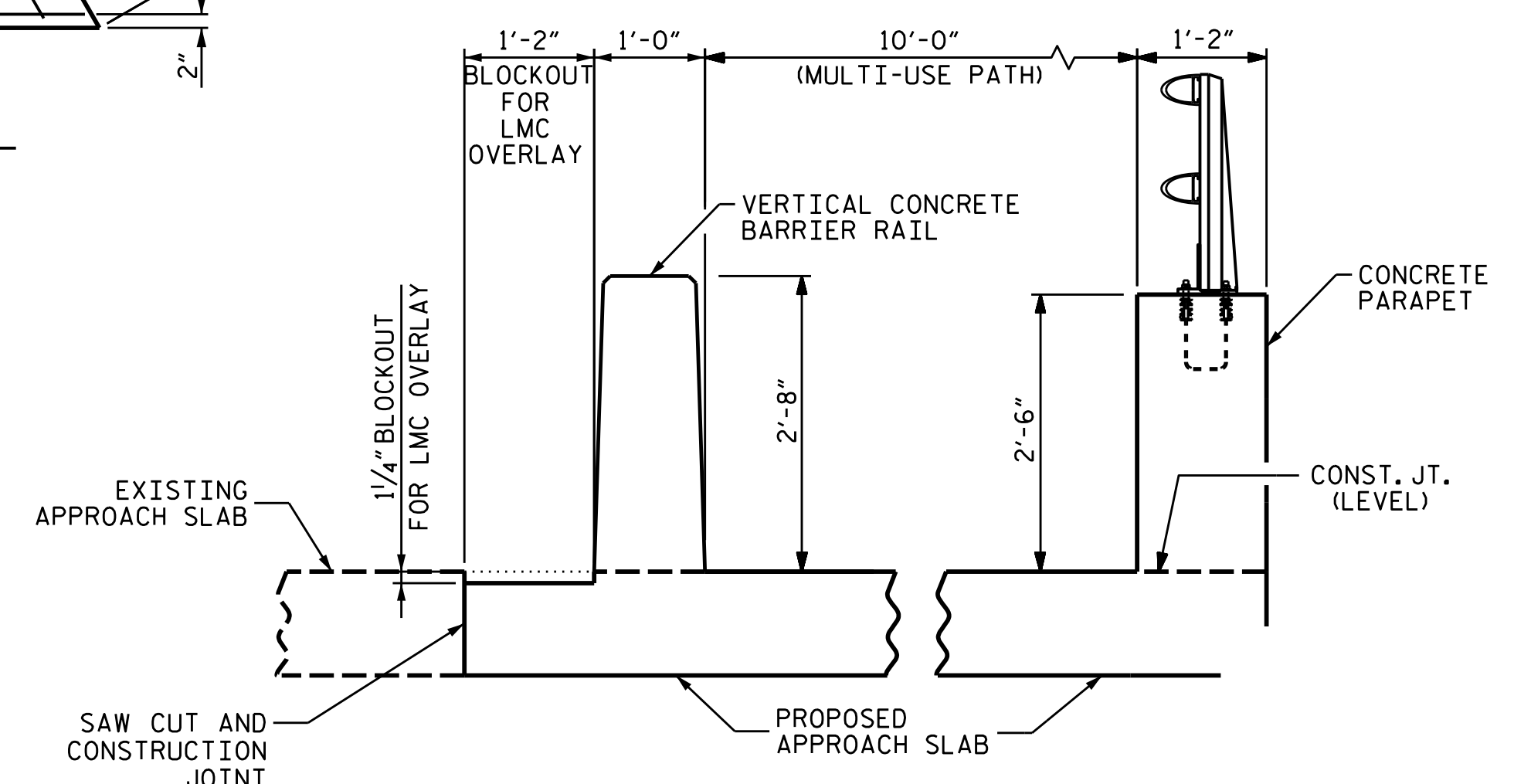
DESIGNED BY:	J. WHEATLEY	DATE:	MAR 2023
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CHECKED BY:	T. KIRSCHBAUM	DATE:	MAR 2023
DESIGN ENGINEER OF RECORD:	T. HARRIS	DATE:	MAR 2023



PLAN @ END BENT #1 PLAN @ END BENT #2
DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



SECTION THRU SLAB



SECTION THRU PARAPET

NOTES

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

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

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

SELECT MATERIAL BACKFILL IS TO BE ALONG FILL FACE OF BACKWALL UNDER THE BRIDGE WIDENING.

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

THE JOINT SHALL BE SAWED PRIOR TO THE CASTING OF THE PARAPET.

FOR THE 4" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

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

FOR CONCRETE PARAPET DETAILS, SEE "CONCRETE PARAPET" SHEET.

FOR VERTICAL CONCRETE BARRIER RAIL, SEE "VERTICAL CONCRETE BARRIER RAIL" SHEET.

WITH FOAM JOINT SEAL

FOR FOAM JOINT SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.

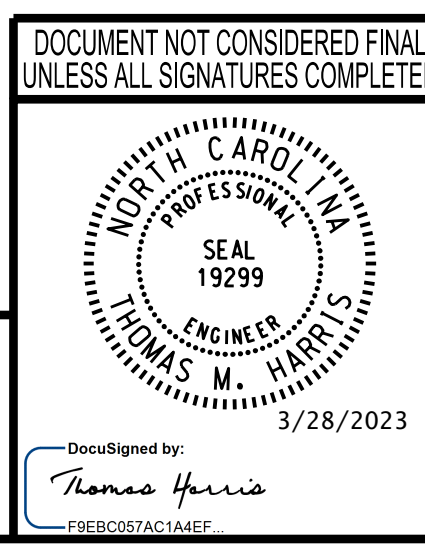
FOR LIMITS OF LATEX MODIFIED CONCRETE OVERLAY, SEE TYPICAL SECTION DETAILS SHEET 4 OF 4.

BILL OF MATERIAL						
APPROACH SLAB AT EB #1						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	10	#4	STR	16'-8"	111	
A2	10	#4	STR	16'-8"	111	
*B1	27	#6	STR	14'-0"	568	
B2	27	#6	STR	14'-6"	588	
*D1	10	#6	STR	3'-0"	45	
D2	10	#6	STR	3'-0"	45	
REINFORCING STEEL					LBS.	744
*EPOXY COATED REINFORCING STEEL					LBS.	724
CLASS AA CONCRETE					C. Y.	7.5
APPROACH SLAB AT EB #2						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	10	#4	STR	16'-8"	111	
A2	10	#4	STR	16'-8"	111	
*B1	27	#6	STR	14'-0"	568	
B2	27	#6	STR	14'-6"	588	
*D1	10	#6	STR	3'-0"	45	
D2	10	#6	STR	3'-0"	45	
REINFORCING STEEL					LBS.	744
*EPOXY COATED REINFORCING STEEL					LBS.	724
CLASS AA CONCRETE					C. Y.	6.2

PROJECT NO. U-4424
EDGEcombe COUNTY
STATION: 66+24.84 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
BRIDGE APPROACH SLAB
FOR FLEXIBLE PAVEMENT

REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		



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3/28/2023 4:18:771-06 NCDOT_NC_111U-4424\Structures\Drawings\06\01_075_U4424_SML_AS_037.dgn

DESIGNED BY: J. WHEATLEY DATE: MAR 2023
DRAWN BY: J. WHEATLEY DATE: MAR 2023
CHECKED BY: T. KIRSCHBAUM DATE: MAR 2023
DESIGN ENGINEER OF RECORD: T. HARRIS DATE: MAR 2023

NOTE: SUBDRAIN FINE AGGREGATE TO BE CONTINUOUS ALONG FILL FACE OF END BENT FROM OUTSIDE EDGE TO OUTSIDE EDGE OF SUPERSTRUCTURE.

SHEET NO. S-37
TOTAL SHEETS 37

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2018 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N.C. DEPARTMENT OF TRANSPORTATION.

STEEL SHEET PILING FOR PERMANENT OR TEMPORARY APPLICATIONS SHALL BE HOT ROLLED.

CONCRETE:

UNLESS OTHERWISE REQUIRED ON PLANS, CLASS A CONCRETE SHALL BE USED FOR ALL PORTIONS OF ALL STRUCTURES WITH THE EXCEPTION THAT: CLASS AA CONCRETE SHALL BE USED IN BRIDGE SUPERSTRUCTURES, ABUTMENT BACKWALLS, AND APPROACH SLABS; AND CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP.

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED $\frac{3}{4}$ " WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO $\frac{1}{2}$ " RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A $\frac{1}{4}$ " FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A $\frac{1}{4}$ " RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

DOWELS WHEN INDICATED ON PLANS AS FOR CULVERT EXTENSIONS, SHALL BE EMBEDDED AT LEAST 12" INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT, ETC. IN CASTING SUPERSTRUCTURES:

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.

ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE $\frac{7}{8}$ " \emptyset SHEAR STUDS FOR THE $\frac{3}{4}$ " \emptyset STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - $\frac{7}{8}$ " \emptyset STUDS FOR 4 - $\frac{3}{4}$ " \emptyset STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF $\frac{7}{8}$ " \emptyset STUDS ALONG THE BEAM AS SHOWN FOR $\frac{3}{4}$ " \emptyset STUDS BASED ON THE RATIO OF 3 - $\frac{7}{8}$ " \emptyset STUDS FOR 4 - $\frac{3}{4}$ " \emptyset STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST $\frac{5}{16}$ " IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY $\frac{1}{16}$ " INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINIS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105-4.

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