

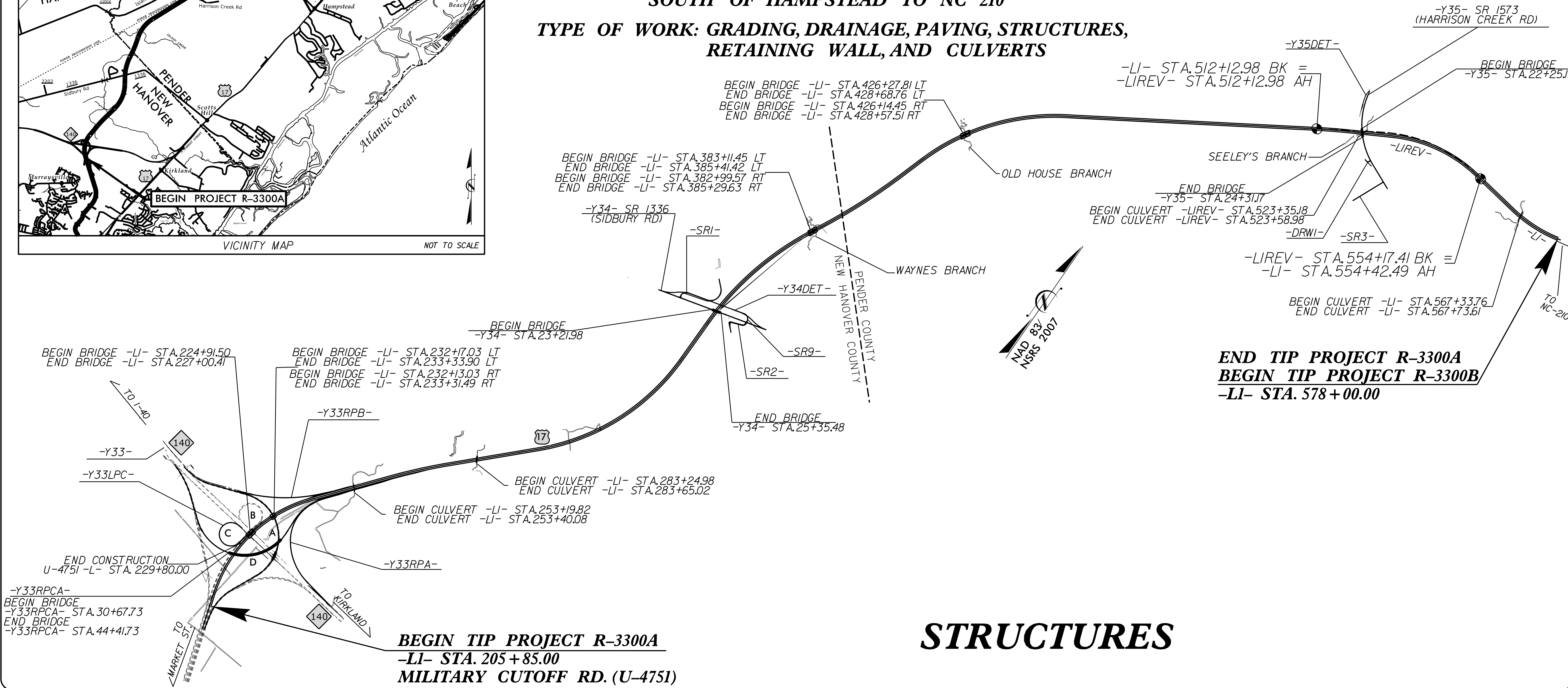
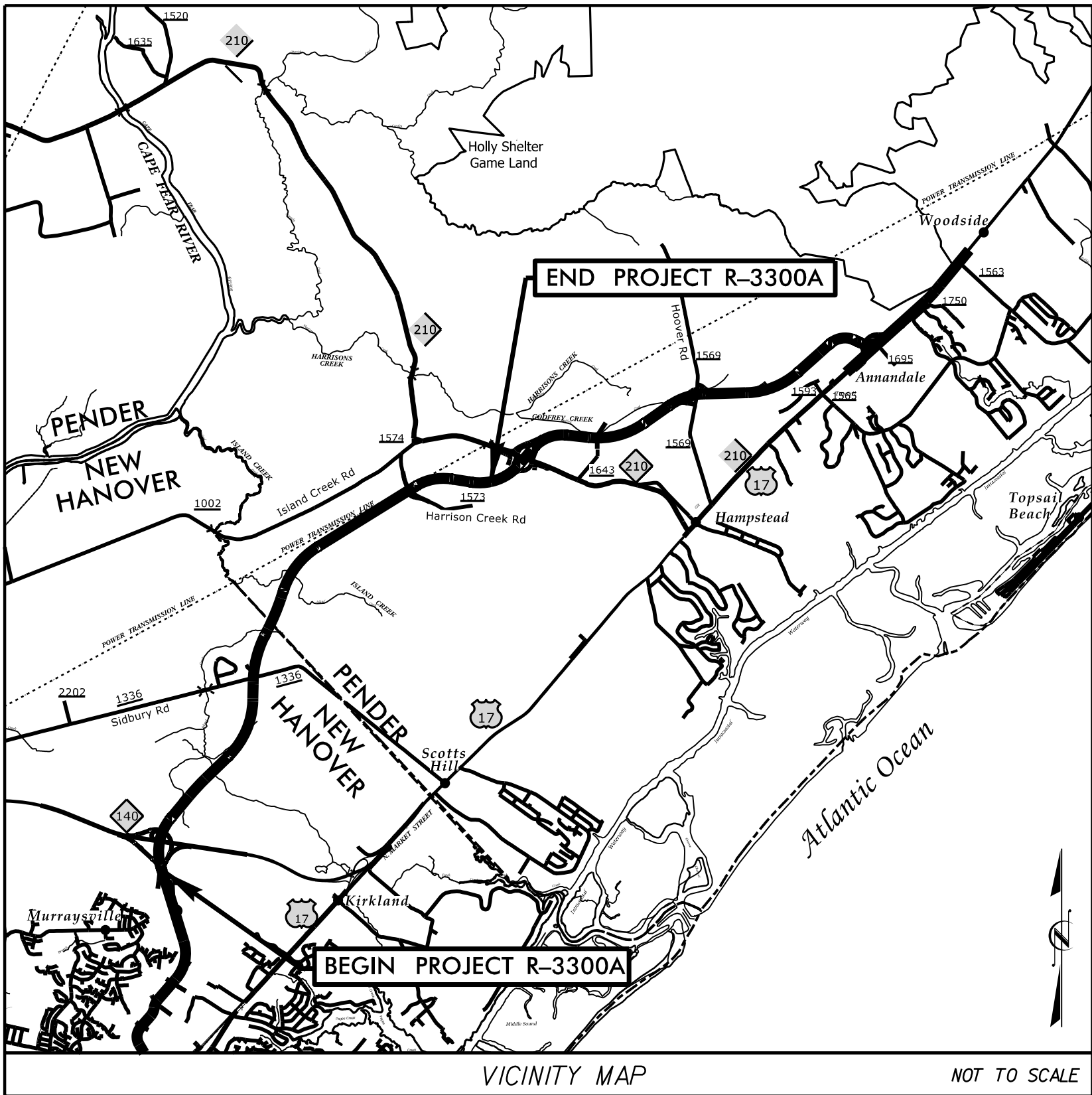
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-3300A	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
40237.1.3	N/A	PE	
40237.2.4	N/A	RW	
40237.2.6	N/A	UTILITIES	
40237.3.2	N/A	CONST	

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

NEW HANOVER &
PENDER COUNTIES

LOCATION: US 17 HAMPSTEAD BYPASS FROM US 17 BYPASS
SOUTH OF HAMPSTEAD TO NC 210

TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURES,
RETAINING WALL, AND CULVERTS



STRUCTURES

DESIGN DATA

ADT 2016 = N/A
ADT 2040 = 54,800
K = 8 %
D = 60 %
T = 6 % *
V = 70 MPH
*(TTST 2% + DUALS 4%)
FUNC CLASS = FREEWAY
REGIONAL TIER

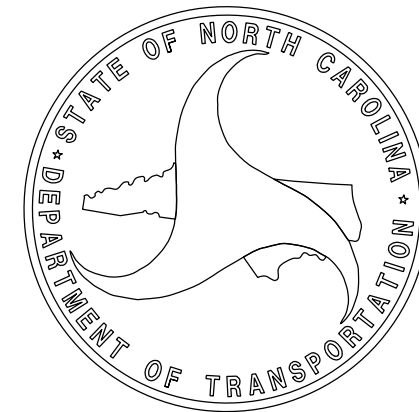
PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-3300A = 6.869 MILES
LENGTH STRUCTURE TIP PROJECT R-3300A = 0.175 MILES
(NORTHBOUND LANES STATIONS USED)
TOTAL LENGTH TIP PROJECT R-3300A = 7.044 MILES

PREPARED IN THE OFFICE OF:
STANTEC CONSULTING
801 Jones Franklin Road | Suite 300 | Raleigh, NC 27606
Tel. (919) 851-6866 | Fax. (919) 851-7024 | www.stantec.com
License No. F-9672
FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
APRIL 1, 2019

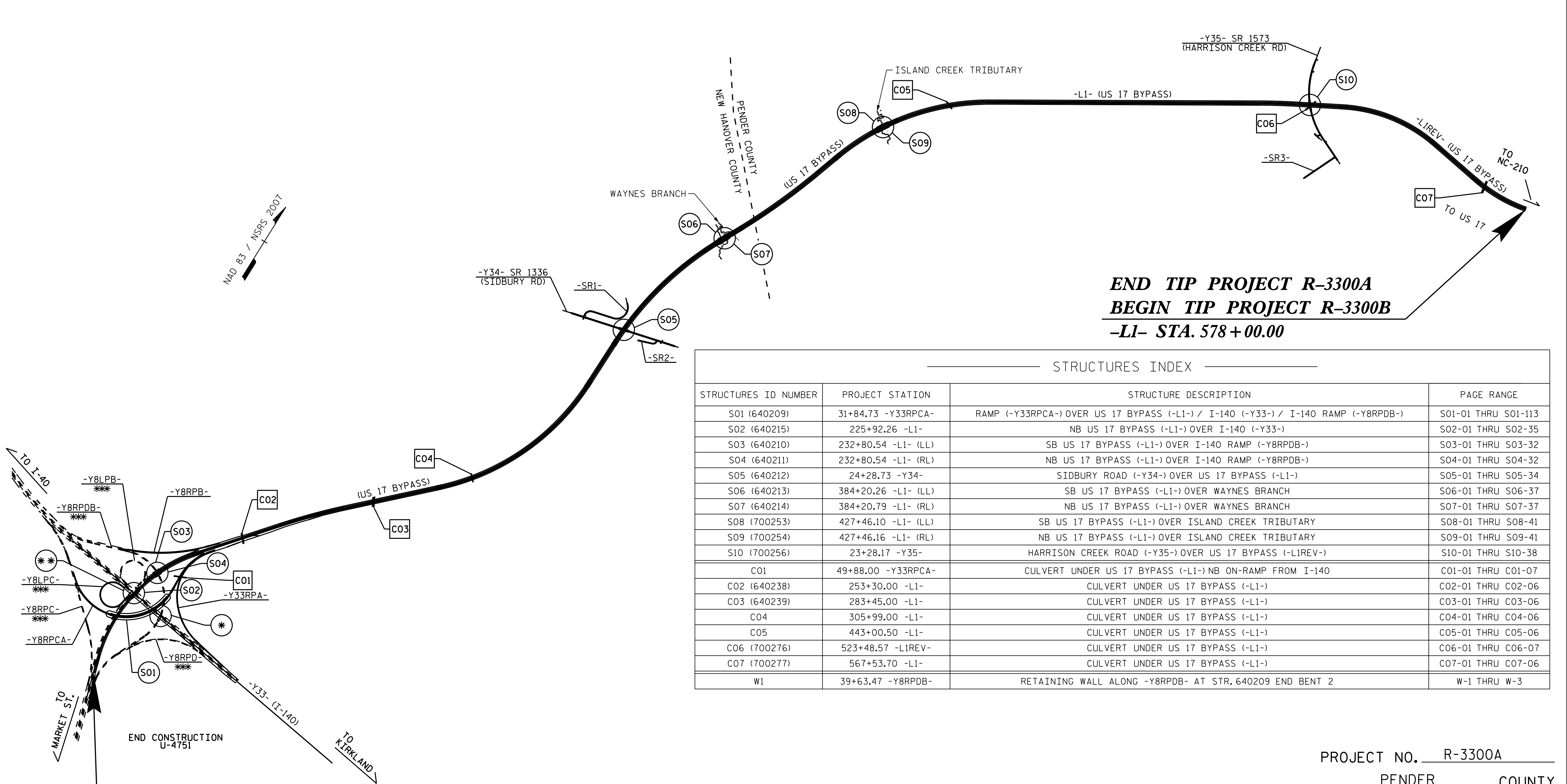
LETTING DATE:
JULY 15, 2025



spoolle

5/6/2025

U:\Structures\INDEX & NOTE SHEET\R-3300A.SMU\ISOL.dgn



***END TIP PROJECT R-3300A
BEGIN TIP PROJECT R-3300B
-L1- STA. 578 + 00.00***

STRUCTURES INDEX

STRUCTURES ID NUMBER	PROJECT STATION	STRUCTURE DESCRIPTION	PAGE RANGE
S01 (640209)	31+84.73 -Y33RPCA-	RAMP (-Y33RPCA-) OVER US 17 BYPASS (-L1-) / I-140 (-Y33-) / I-140 RAMP (-Y8RPDB-)	S01-01 THRU S01-113
S02 (640215)	225+92.26 -L1-	NB US 17 BYPASS (-L1-) OVER I-140 (-Y33-)	S02-01 THRU S02-35
S03 (640210)	232+80.54 -L1- (LL)	SB US 17 BYPASS (-L1-) OVER I-140 RAMP (-Y8RPDB-)	S03-01 THRU S03-32
S04 (640211)	232+80.54 -L1- (RL)	NB US 17 BYPASS (-L1-) OVER I-140 RAMP (-Y8RPDB-)	S04-01 THRU S04-32
S05 (640212)	24+28.73 -Y34-	SIDBURY ROAD (-Y34-) OVER US 17 BYPASS (-L1-)	S05-01 THRU S05-34
S06 (640213)	384+20.26 -L1- (LL)	SB US 17 BYPASS (-L1-) OVER WAYNES BRANCH	S06-01 THRU S06-37
S07 (640214)	384+20.79 -L1- (RL)	NB US 17 BYPASS (-L1-) OVER WAYNES BRANCH	S07-01 THRU S07-37
S08 (700253)	427+46.10 -L1- (LL)	SB US 17 BYPASS (-L1-) OVER ISLAND CREEK TRIBUTARY	S08-01 THRU S08-41
S09 (700254)	427+46.16 -L1- (RL)	NB US 17 BYPASS (-L1-) OVER ISLAND CREEK TRIBUTARY	S09-01 THRU S09-41
S10 (700256)	23+28.17 -Y35-	HARRISON CREEK ROAD (-Y35-) OVER US 17 BYPASS (-L1REV-)	S10-01 THRU S10-38
C01	49+88.00 -Y33RPCA-	CULVERT UNDER US 17 BYPASS (-L1-) NB ON-RAMP FROM I-140	C01-01 THRU C01-07
C02 (640238)	253+30.00 -L1-	CULVERT UNDER US 17 BYPASS (-L1-)	C02-01 THRU C02-06
C03 (640239)	283+45.00 -L1-	CULVERT UNDER US 17 BYPASS (-L1-)	C03-01 THRU C03-06
C04	305+99.00 -L1-	CULVERT UNDER US 17 BYPASS (-L1-)	C04-01 THRU C04-06
C05	443+00.50 -L1-	CULVERT UNDER US 17 BYPASS (-L1-)	C05-01 THRU C05-06
C06 (700276)	523+48.57 -L1REV-	CULVERT UNDER US 17 BYPASS (-L1-)	C06-01 THRU C06-07
C07 (700277)	567+53.70 -L1-	CULVERT UNDER US 17 BYPASS (-L1-)	C07-01 THRU C07-06
W1	39+63.47 -Y8RPDB-	RETAINING WALL ALONG -Y8RPDB- AT STR. 640209 END BENT 2	W-1 THRU W-3

***BEGIN TIP PROJECT R-3300A
END TIP PROJECT U-4751
(MILITARY CUTOFF RD.)
-L1- STA. 205 + 86.84***

- * BRIDGE 640204 PROPOSED BY OTHERS UNDER TIP PROJECT U-4751
- ** BRIDGE 640203 PROPOSED BY OTHERS UNDER TIP PROJECT U-4751
- *** PROPOSED BY OTHERS UNDER TIP PROJECT U-4751

PROJECT NO. R-3300A
PENDER COUNTY
NEW HANOVER



Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
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www.stantec.com
License No. F-0672

DRAWN BY : S. S. POOLE DATE : 04/23/25
CHECKED BY : J. I. KELVINGTON DATE : 04/23/25
DESIGN ENGINEER OF RECORD : S. S. POOLE DATE : 05/06/25



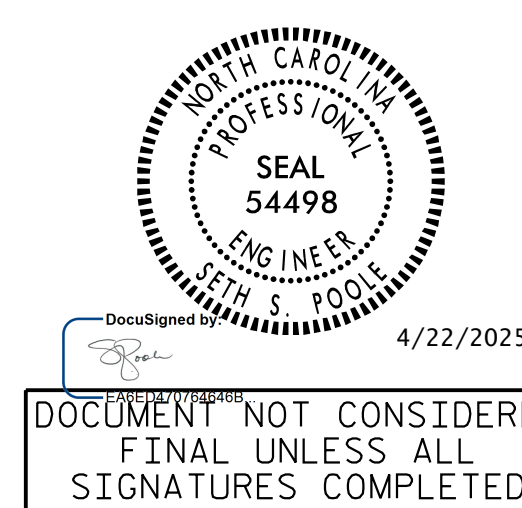
Signed by: S. S. POOLE 5/6/2025

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STRUCTURES INDEX

REVISIONS						SHEET NO. S-00
NO.	BY:	DATE:	NO.	BY:	DATE:	
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2			4			

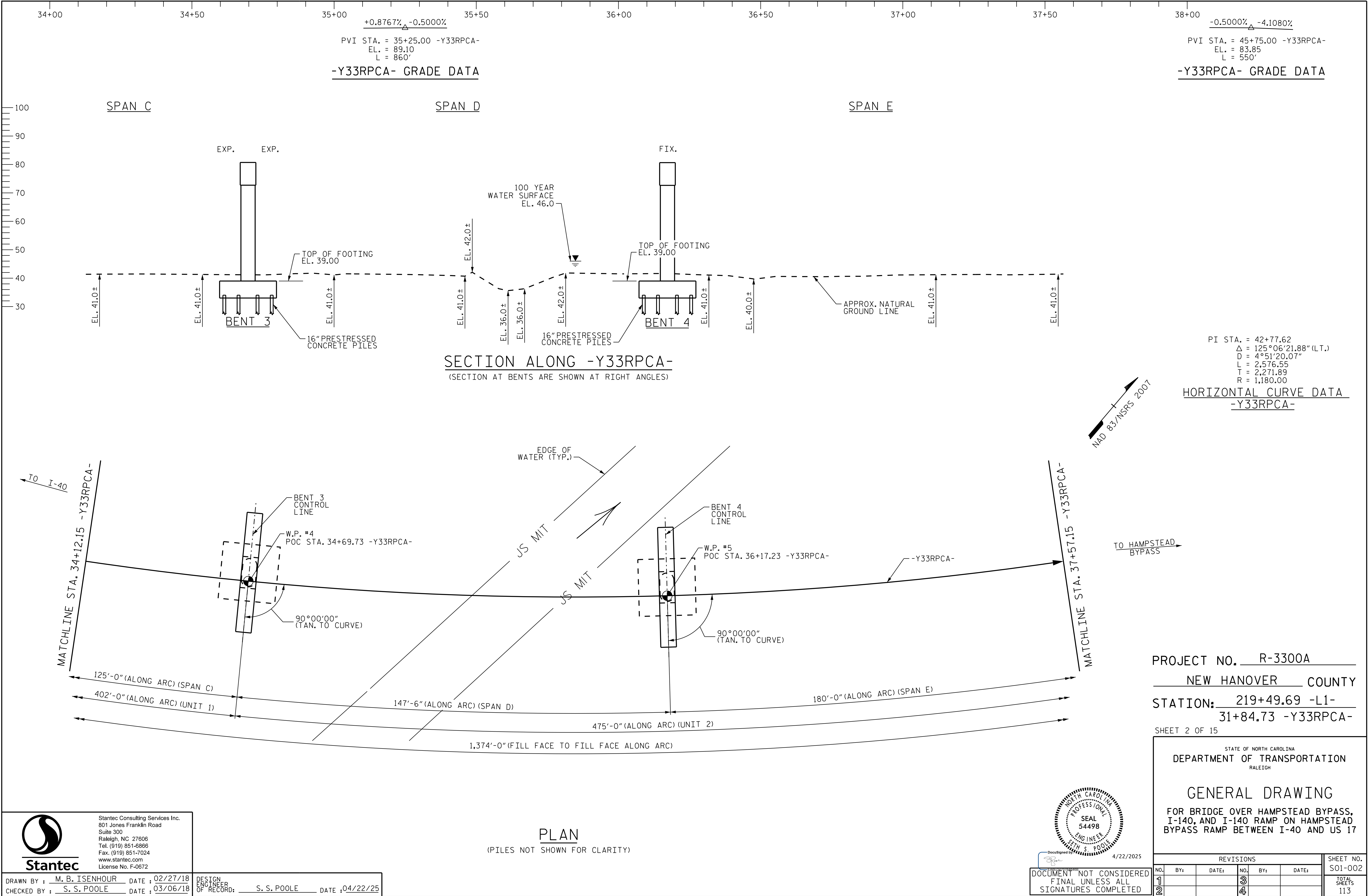


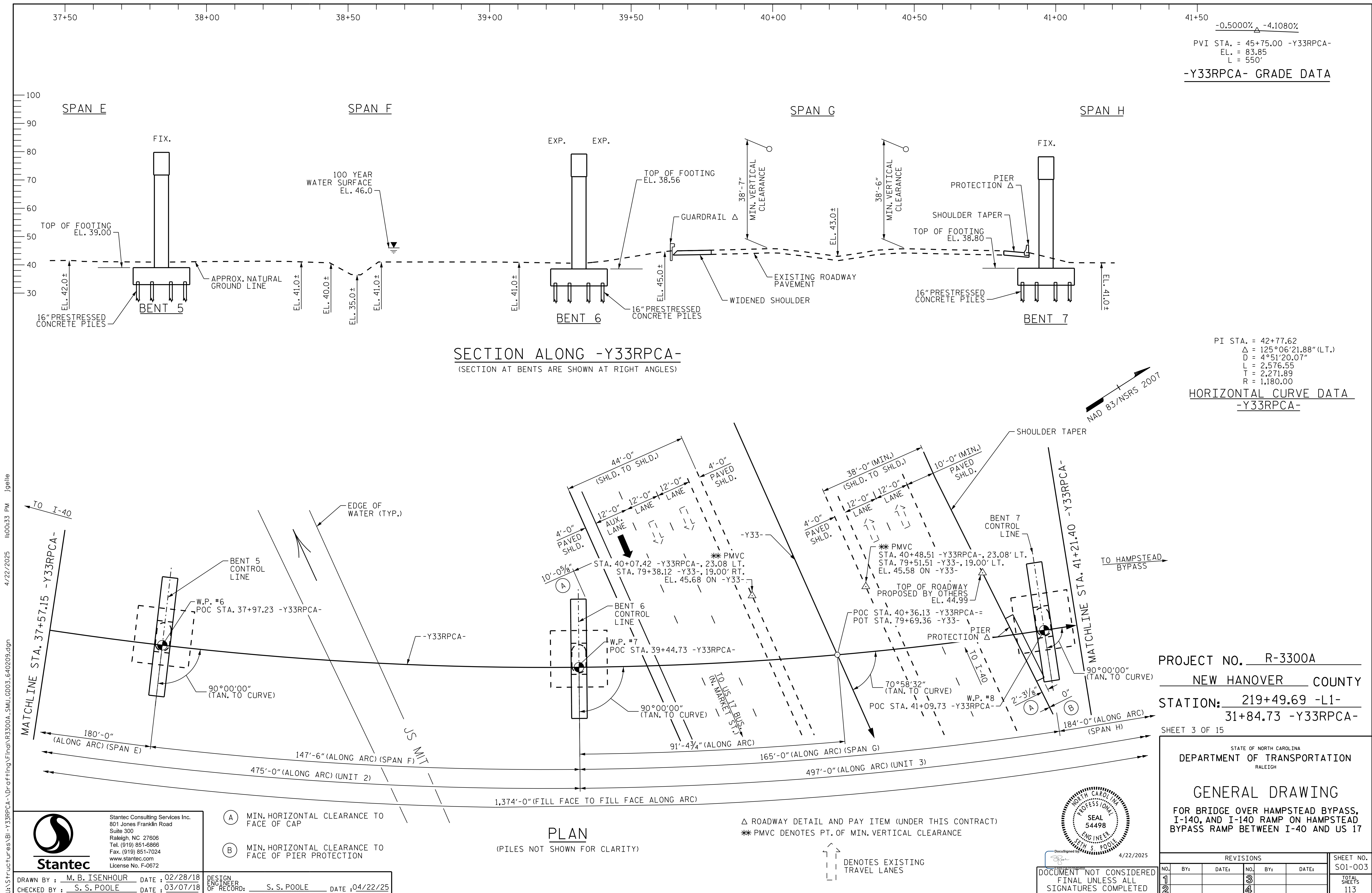
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NO.	BY:	DATE:	NO.	BY:	DATE:	
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2			4			

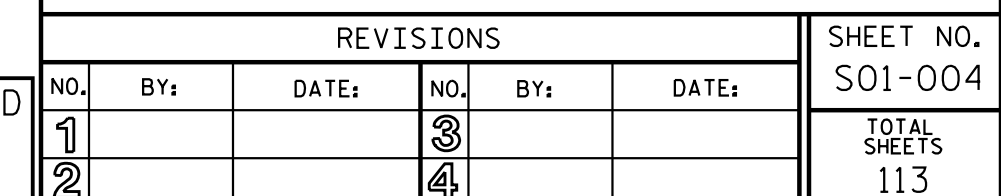
 Stantec	Stantec Consulting Services Inc. 801 Jones Franklin Road Suite 300 Raleigh, NC 27606 Tel. (919) 851-6866 Fax. (919) 851-7024 www.stantec.com License No. F-0672		(A) MIN. HORIZONTAL CLEARANCE FACE OF CAP
			(B) MIN. HORIZONTAL CLEARANCE FACE OF PIER PROTECTION
DRAWN BY : <u>M. B. ISENHOUR</u>		DATE : <u>02/26/18</u>	DESIGN ENGINEER OF RECORD: <u>S. S. POOLE</u>
CHECKED BY : <u>S. S. POOLE</u>		DATE : <u>03/05/18</u>	

4/22/2025 11:00:28 PM jgelle

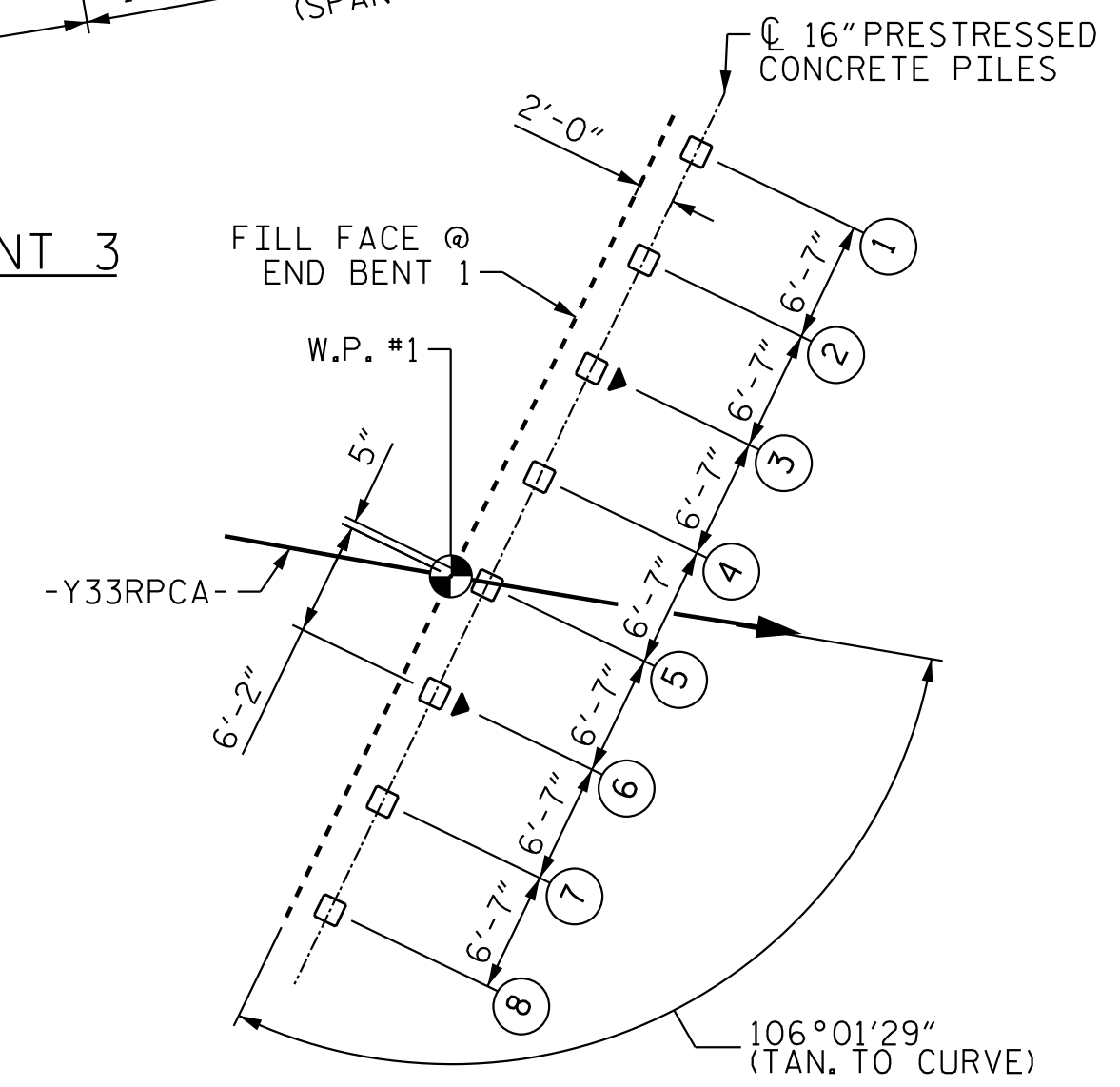
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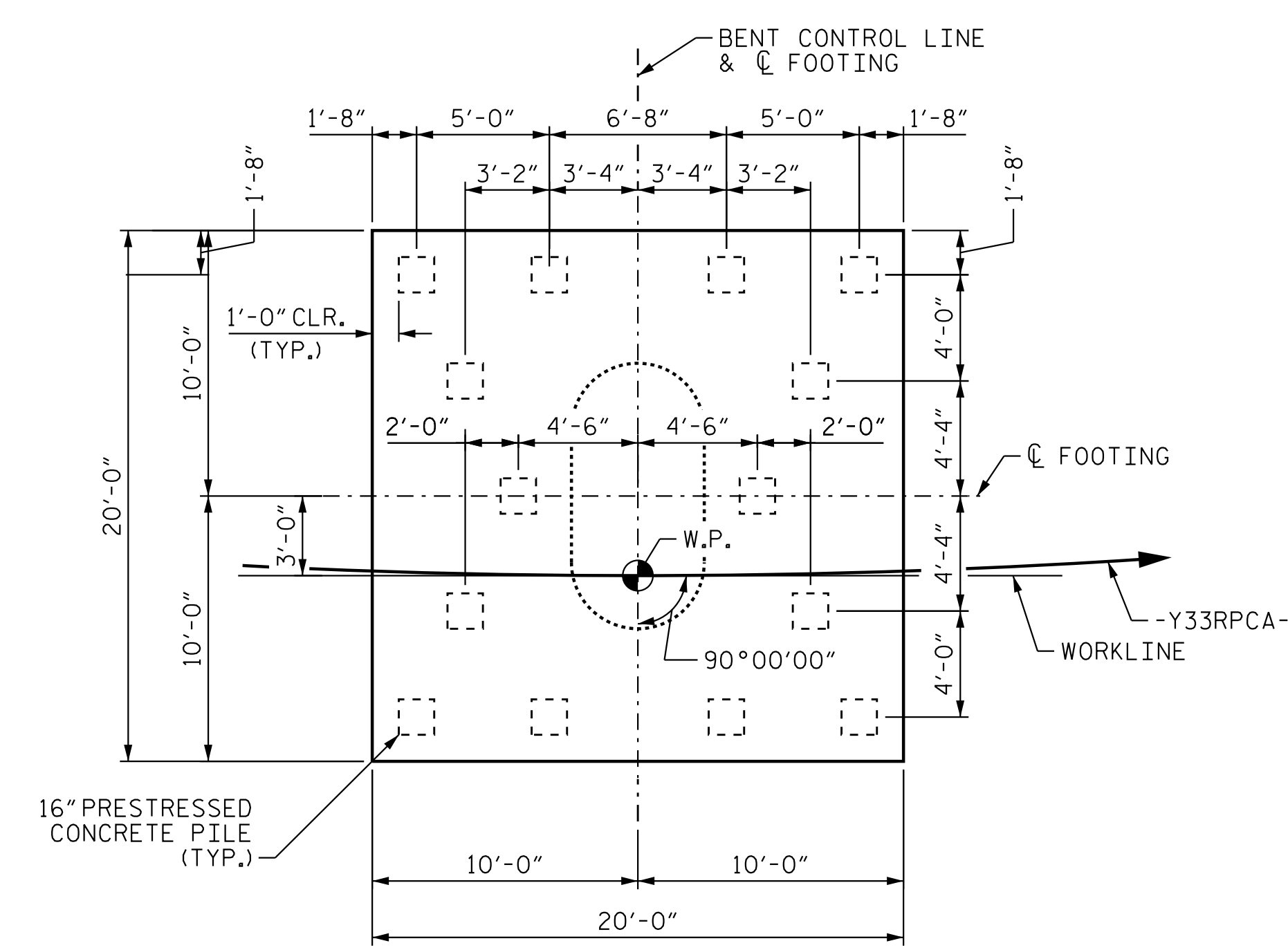




DocuSigned by:  4/22/2025
E-FILED 07/05/2025
DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED



 OR DENOTES DIRECTION OF BATTER

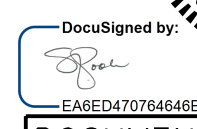


1. FOR FOUNDATION RECOMMENDATION
NOTES, SEE NOTES ON SHEET 6 OF 15.

DESIGN
ENGINEER
OF RECORD: S. S. POOLE DATE: 04/22/25

(PILE NUMBERING IS TYPICAL
FOR ALL INTERIOR BENTS)

(APPLIES TO BENTS 2 AND 3 ONLY)
(DIMENSIONS TYPICAL EACH FACE)



EA8ED470764846B
DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

SHEET 5 OF 15

GENERAL DRAWING FOUNDATION LAYOUT

UNIT 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-005
1			3			TOTAL SHEETS 113
2			4			

4/30/2025 4:42:23 PM jhagenbush
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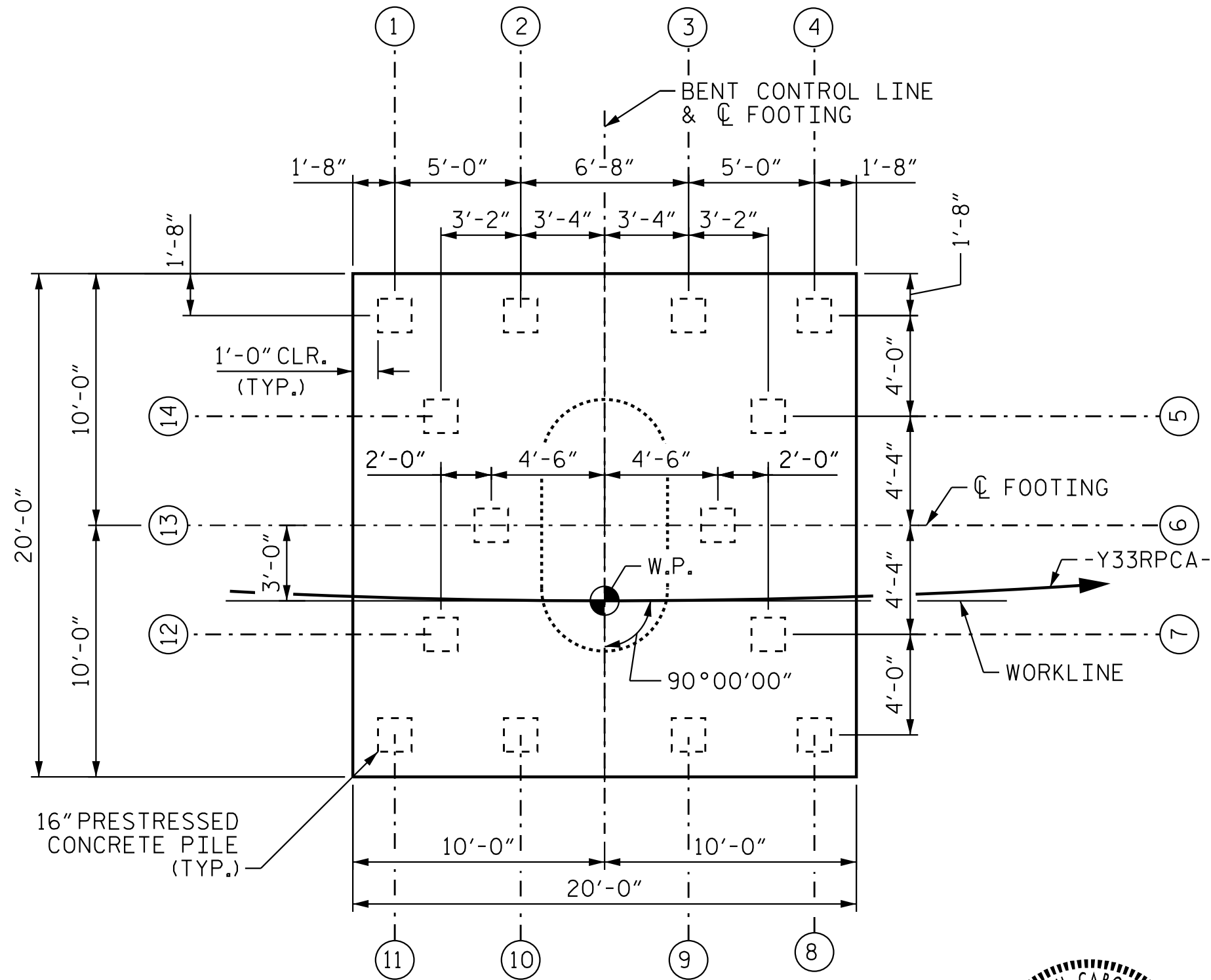
DRAWN BY : S. S. POOLE DATE : 08/31/18
CHECKED BY : V. E. FRAGA DATE : 04/05/19

DESIGN
ENGINEER
OF RECORD: S. S. POOLE DATE : 04/22/25

NOTES

- FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
- SEE ROADWAY PLANS AND SECTION 235 OF THE STANDARD SPECIFICATIONS FOR THE SETTLEMENT GAUGES AND SURCHARGE REQUIRED AT END BENTS NO.1 AND 2.
- OBSERVE A 1 MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT TO FINAL GRADE BEFORE BEGINNING END BENT CONSTRUCTION AT END BENT NO.1.FOR BRIDGE WAITING PERIODS,SEE ROADWAY PLANS AND SECTION 235 OF THE STANDARD SPECIFICATIONS.
- OBSERVE A 1 MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT TO FINAL GRADE PLUS 5 FT OF SURCHARGE MATERIAL BEFORE BEGINNING END BENT CONSTRUCTION AT END BENT NO 2.FOR BRIDGE WAITING PERIODS,SEE ROADWAY PLANS AND SECTION 235 OF THE STANDARD SPECIFICATIONS.
- APPROACH EMBANKMENT CONSTRUCTION AT END BENT NO.1 MUST BE COMPLETED IN STAGES FOR SHORT TERM SLOPE STABILITY.TOTAL WAITING PERIOD INCLUDING ALL STAGES IS 3 MONTHS AT END BENT NO.1.SEE ROADWAY PLANS FOR EMBANKMENT CONSTRUCTION STAGE DETAILS.
- APPROACH EMBANKMENT CONSTRUCTION AT END BENT NO.2 MUST BE COMPLETED IN STAGES FOR SHORT TERM SLOPE STABILITY.TOTAL WAITING PERIOD INCLUDING ALL STAGES IS 2 MONTHS AT END BENT NO.2.SEE ROADWAY PLANS FOR EMBANKMENT CONSTRUCTION STAGE DETAILS.
- IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 55 TO 110 FT-KIPS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT NO.1 AND BENTS NO.2,3, AND 6.THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.
- IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 60 TO 125 FT-KIPS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT BENTS NO.4,5, AND 7.THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.
- IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 90 TO 125 FT-KIPS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT BENTS NO.1 AND 8.THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.
- TESTING THE FIRST PRODUCTION PILES WITH THE PDA DURING DRIVING,RESTRIKING,OR REDRIVING IS REQUIRED AT BENTS NO.1 THROUGH 8.FOR PDA TESTING,SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

FOUNDATION LAYOUT - UNIT 2



DETAIL "B"

(APPLIES TO BENTS 3-6)
(DIMENSIONS TYPICAL EACH FACE)

(PILE NUMBERING IS TYPICAL
FOR ALL INTERIOR BENTS)



DocuSigned by:
S. S. POOLE
EABED4707648408
4/30/2025
DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

PROJECT NO. R-3300A
NEW HANOVER COUNTY
STATION: 219+49.69 -L1-
31+84.73 -Y33RPCA-

SHEET 6 OF 15

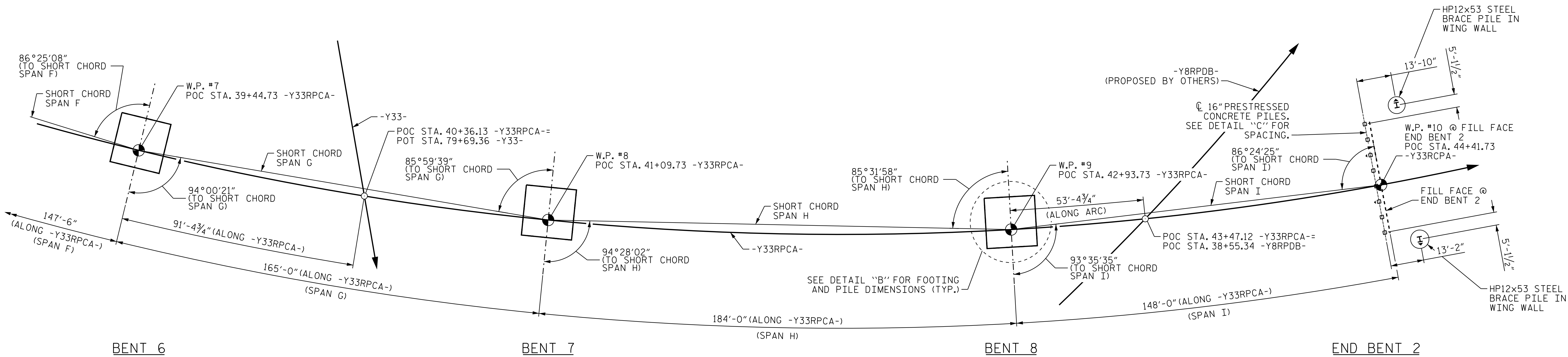
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING FOUNDATION LAYOUT

UNIT 2

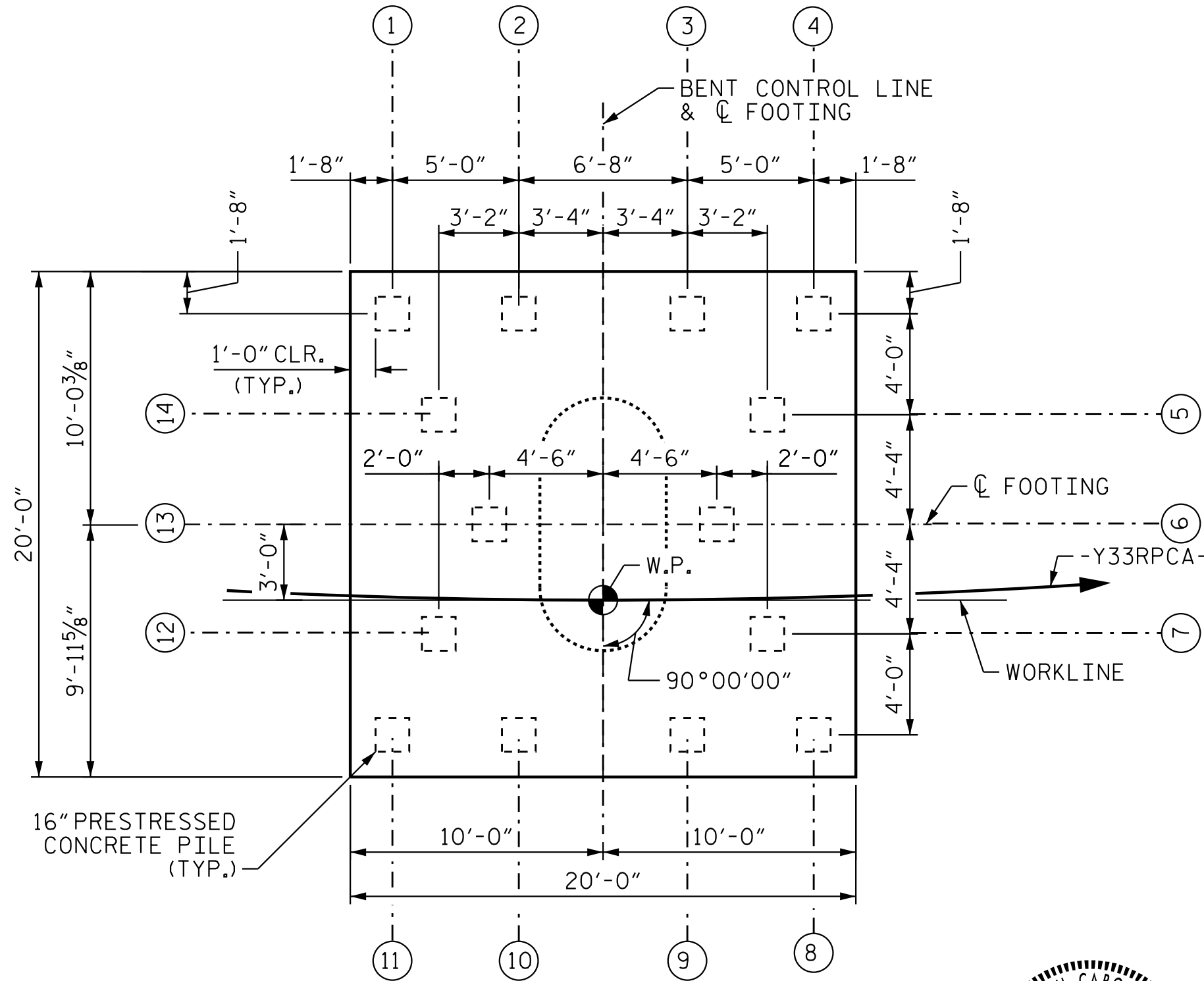
REVISIONS						SHEET NO. S01-006
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 113
2			4			

4/30/2025 4:42:24 PM jhagenbush
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FOUNDATION LAYOUT - UNIT 3

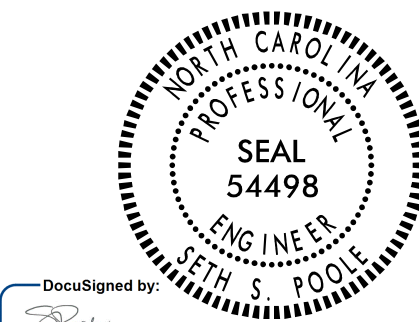
↓ OR ↘ DENOTES DIRECTION OF BATTER



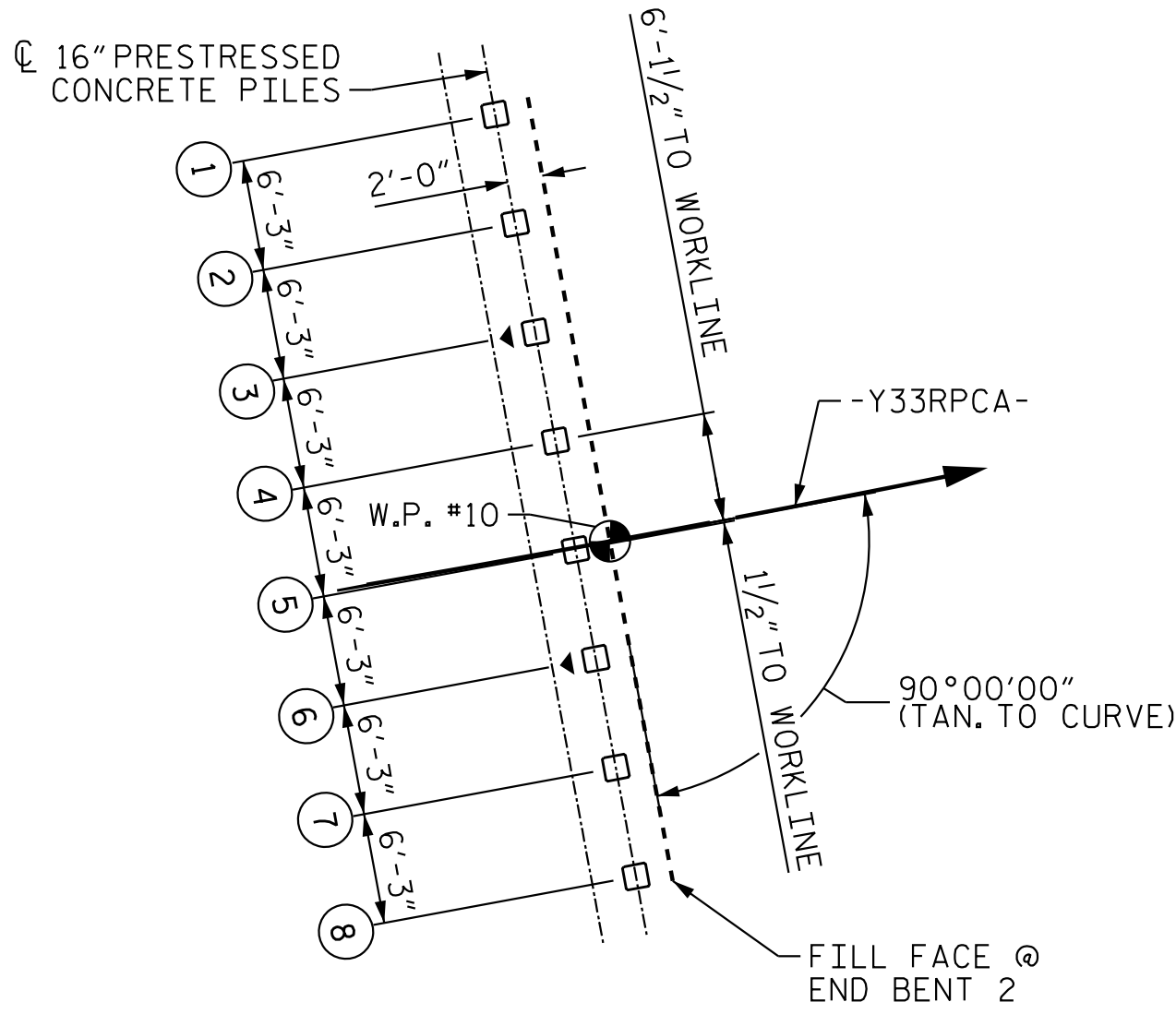
DETAIL "B"

(APPLIES TO BENTS 6-8)
(DIMENSIONS TYPICAL EACH FACE)

(PILE NUMBERING IS TYPICAL FOR ALL INTERIOR BENTS)



DocuSigned by:
S. S. POOLE
EA6ED4707648408
4/30/2025
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DETAIL "C"

NOTES

1. FOR FOUNDATION RECOMMENDATION NOTES, SEE NOTES ON SHEET 6 OF 15.



Stantec Consulting Services Inc.
801 Jones Franklin Road
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DRAWN BY : S. S. POOLE DATE : 08/31/18
CHECKED BY : V. E. FRAGA DATE : 04/05/19

DESIGN ENGINEER OF RECORD: S. S. POOLE DATE : 04/22/25

PROJECT NO. R-3300A
NEW HANOVER COUNTY
STATION: 219+49.69 -L1-
31+84.73 -Y33RPCA-

SHEET 7 OF 15

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOUNDATION LAYOUT

UNIT 3

REVISIONS						SHEET NO. S01-007
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 113
2			4			

SUMMARY OF PILE INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Number of Piles per Line	Factored Resistance per Pile KIPS	Pile Cut-Off (Top of Pile) Elevation FT	Estimated Pile Length per Pile FT	Scour Critical Elevation FT	Driven Piles			Predrilling for Piles **			Drilled-In Piles		
						Minimum Pile Tip (Tip No Higher Than) Elevation FT	Required Driving Resistance (RDR)* per pile KIPS	Pile Redrives Quantity EACH	Predrilling Length per Pile LIN FT	Predrilling Elevation (Elevation Not To Predrill Below) FT	Maximum Predrilling Diameter INCHES	Pile Excavation (Bottom of Hole) Elevation FT	Pile Excavation Not In Soil per Pile LIN FT	Pile Excavation In Soil per Pile LIN FT
End Bent 1, Piles 1-8	8	420	See Substructure Plans	75			560	4						
Bent 1, Piles 1-14	14	465	See Substructure Plans	55			620	7						
Bent 2, Piles 1-14	14	450	See Substructure Plans	45			600	7						
Bent 3, Piles 1-14	14	385	See Substructure Plans	40			515	7						
Bent 4, Piles 1-14	14	495	See Substructure Plans	40			660	7						
Bent 5, Piles 1-14	14	495	See Substructure Plans	40			660	7						
Bent 6, Piles 1-14	14	410	See Substructure Plans	45			550	7						
Bent 7, Piles 1-14	14	530	See Substructure Plans	35			710	7						
Bent 8, Piles 1-14	14	490	See Substructure Plans	45			655	7						
End Bent 2, Piles 1-8	8	345	See Substructure Plans	70			460	4						
TOTAL QUANTITY:								64						

$$* RDR = \frac{\text{Factored Resistance} + \text{Factored Drag Load} + \text{Factored Dead Load}}{\text{Dynamic Resistance Factor}} + \text{Nominal Drag Load Resistance} + \text{Nominal Resistance from Scourable Material}$$

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

PILE DESIGN INFORMATION

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Factored Axial Load per Pile KIPS	Factored Drag Load per Pile KIPS	Factored Dead Load * per Pile KIPS	Dynamic Resistance Factor	Nominal Drag Resistance per Pile KIPS	Nominal Scour Resistance per Pile KIPS
End Bent 1, Piles 1-8	419			0.75		
Bent 1, Piles 1-14	461			0.75		
Bent 2, Piles 1-14	450			0.75		
Bent 3, Piles 1-14	385			0.75		
Bent 4, Piles 1-14	493			0.75		
Bent 5, Piles 1-14	493			0.75		
Bent 6, Piles 1-14	409			0.75		
Bent 7, Piles 1-14	530			0.75		
Bent 8, Piles 1-14	490			0.75		
End Bent 2, Piles 1-8	341			0.75		

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

SUMMARY OF PILE ACCESSORIES

(Blank entries indicate item is not applicable to structure)

[illegible]

SUMMARY OF DPT/PILE ORDER LENGTHS

(Blank entries indicate item is not applicable to structure)

Dynamic Pile Testing (DPT)		
End Bent / Bent No (e.g., "Bent 1 - Bent 3")	DPT Test Pile Length FT	DPT Testing Quantity EACH
End Bent 1	80	1
End Bent 2	75	
Bent 1	60	2
Bent 2	50	
Bent 3	45	
Bent 4	45	
Bent 5	45	
Bent 6	50	
Bent 7	40	
Bent 8	50	
TOTAL QUANTITY:		3

Pile Order Lengths for Concrete Piles

[illegible]

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

PROJECT NO. R-3300A

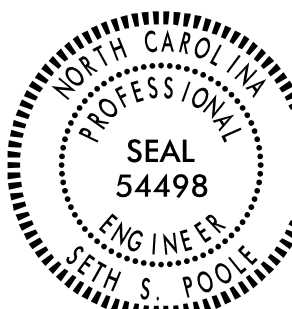
NEW HANOVER COUNTY

STATION: 31+84.73 -Y33RPCA-

SHEET 8 OF 15

NOTES:

1. The Pile Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Jeremy R. Hamm, #039779) on 03/09/2025.
2. Total Pile Driving Equipment Setup quantity (not shown in Pile Foundation Tables) equals the number of driven piles, i.e., the number of piles with a Required Driving Resistance.
3. The Engineer may adjust the quantity for DPT Testing and Pipe Pile Plates when necessary.



STATE OF NORTH CAROLINA

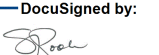
DEPARTMENT OF TRANSPORTATION

RALEIGH

PILE
FOUNDATION
TABLES

SHEET NO.
S01-008

DocuSigned by:



SIGNATURE

4/22/2025

DATE

REVISIONS						TOTAL SHEETS 112
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

4/22/2025 11:01:06 PM jgelle
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DRAWN BY : S. S. POOLE DATE : 07/30/18
CHECKED BY : V. E. FRAGA DATE : 04/05/19

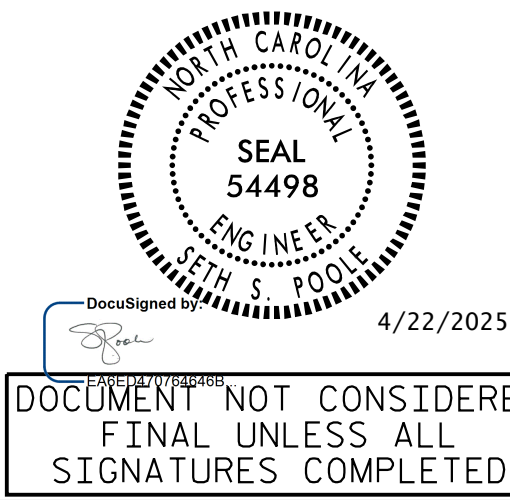
DESIGN ENGINEER OF RECORD: S. S. POOLE DATE : 04/22/25

BRIDGE LONG CHORD LAYOUT (UNITS 1, 2, & 3)

(FOR UNIT LONG CHORD LAYOUTS, SEE SHEETS S01-010, S01-011, AND S01-012)
(END BENT 1 AND BENT 1 ARE PARALLEL)

* BENT SKEW MEASURED TO TANGENT TO THE SURVEY LINE ARC @ THE WORK POINT
** MEASURED ALONG BRIDGE LONG CHORD

PI STA. = 42+77.62
 Δ = 125°06'21.88" (LT.)
D = 4°51'20.07"
L = 2,576.55
T = 2,271.89
R = 1,180.00
HORIZONTAL CURVE DATA
-Y33RPCA-

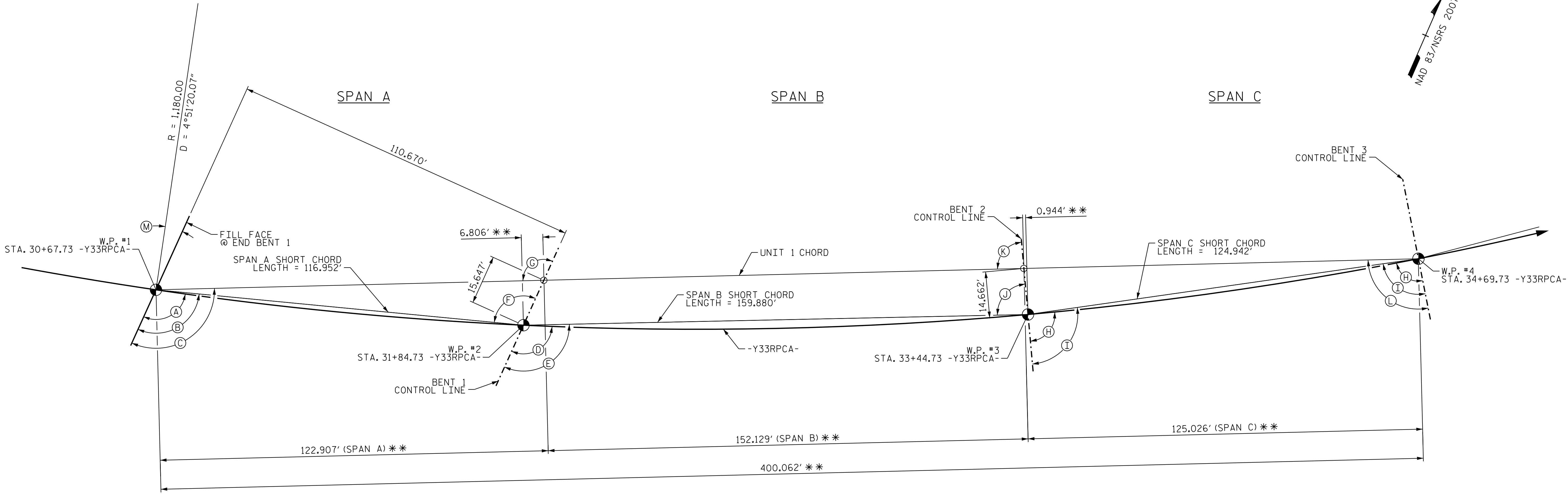


PROJECT NO. R-3300A
NEW HANOVER COUNTY
STATION: 219+49.69 -L1-
31+84.73 -Y33RPCA-

SHEET 9 OF 15

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S01-009	
GENERAL DRAWING						FOR BRIDGE OVER HAMPSTEAD BYPASS, I-140, AND I-140 RAMP ON HAMPSTEAD BYPASS RAMP BETWEEN I-40 AND US17	
REVISIONS						TOTAL SHEETS 113	
NO.	BY:	DATE:	NO.	BY:	DATE:		
1			3				
2			4				

4/22/2025 11:04:16 PM jgelle
U:\Structures\BI-Y33RPCA-Dr-offing\Final\R3300A-SMU.LC02.640209.dgn



ANGLES	
(A)	106°01'29" *
(B)	108°51'55"
(C)	115°47'04"
(D)	111°42'21" *
(E)	115°35'25"
(F)	108°51'55"
(G)	115°47'04"
(H)	90°00'00" *
(I)	93°02'05"
(J)	86°06'56"
(K)	86°18'35"
(L)	99°45'35"
(M)	16°01'29"

* BENT SKEW MEASURED TO TANGENT TO THE SURVEY LINE ARC @ THE WORK POINT

LONG CHORD LAYOUT (UNIT 1)

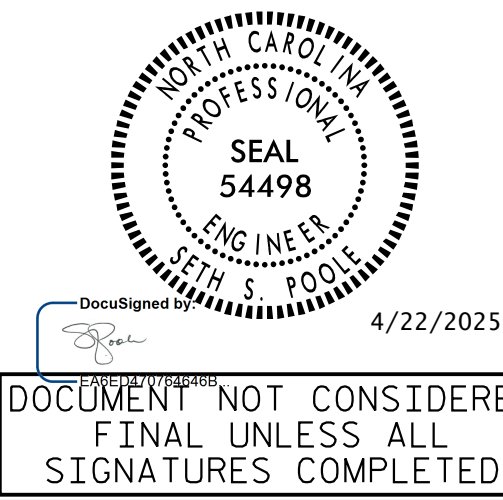
(END BENT 1 AND BENT 1 ARE PARALLEL)
(CONTROL LINES AT BENTS 2 AND 3 ARE RADIAL THROUGH THE WORK POINT)
** MEASURED ALONG UNIT 1 CHORD

PI STA. = 42+77.62
Δ = 125°06'21.88" (LT.)
D = 4°51'20.07"
L = 2,576.55
T = 2,271.89
R = 1,180.00
HORIZONTAL CURVE DATA
-Y33RPCA-

PROJECT NO. R-3300A
NEW HANOVER COUNTY
STATION: 219+49.69 -L1-
31+84.73 -Y33RPCA-
SHEET 10 OF 15

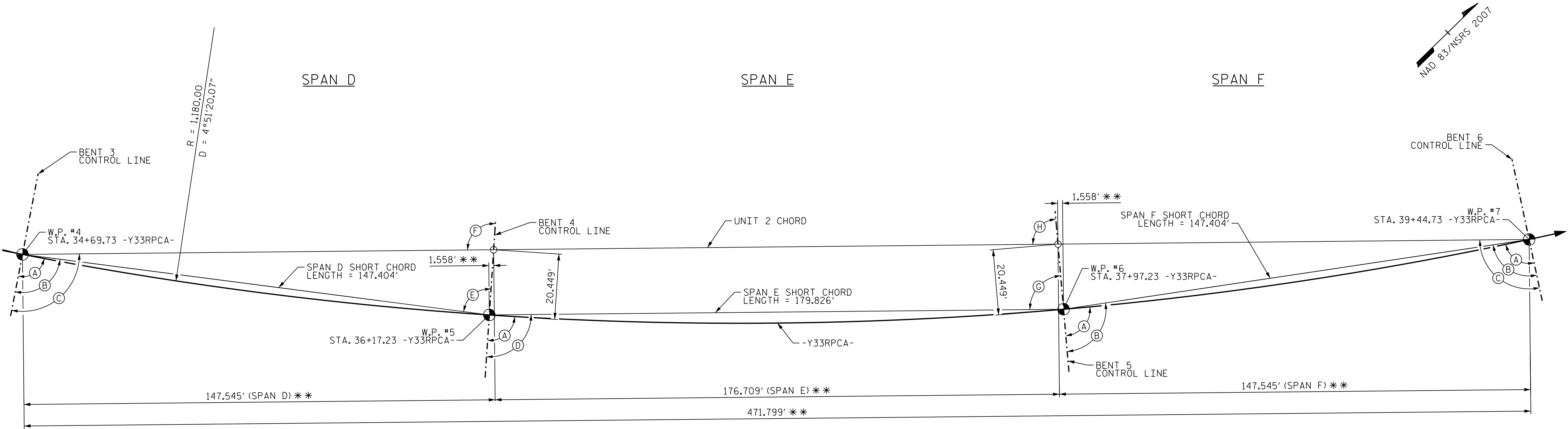


DRAWN BY : S. S. POOLE DATE : 07/27/18
CHECKED BY : V. E. FRAGA DATE : 04/05/19
DESIGN ENGINEER OF RECORD: S. S. POOLE DATE : 04/22/25



REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-010	
1			3			TOTAL SHEETS	
2			4			113	

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
GENERAL DRAWING
FOR BRIDGE OVER HAMPSTEAD BYPASS,
I-140, AND I-140 RAMP ON HAMPSTEAD
BYPASS RAMP BETWEEN I-40 AND US17



ANGLES	
(A)	90°00'00"*
(B)	93°34'52"
(C)	101°31'55"
(D)	94°22'12"
(E)	86°25'08"
(F)	94°22'12"
(G)	85°37'48"
(H)	85°37'48"

* BENT SKEW MEASURED TO TANGENT TO THE SURVEY LINE ARC @ THE WORK POINT

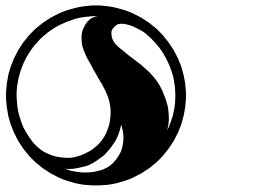
LONG CHORD LAYOUT (UNIT 2)

(CONTROL LINES @ BENTS 3 THROUGH 6 ARE RADIAL THROUGH THE WORK POINT)
** MEASURED ALONG UNIT 2 CHORD

PI STA. = 42+77.62
Δ = 125°06'21.88" (LT.)
D = 4°51'20.07"
L = 2,576.55
T = 2,271.89
R = 1,180.00
HORIZONTAL CURVE DATA
-Y33RPCA-

PROJECT NO. R-3300A
NEW HANOVER COUNTY
STATION: 219+49.69 -L1-
31+84.73 -Y33RPCA-

SHEET 11 OF 15



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www.stantec.com
License No. F-0672

DRAWN BY : S. S. POOLE DATE : 07/27/18
CHECKED BY : V. E. FRAGA DATE : 04/05/19

DESIGN ENGINEER OF RECORD: S. S. POOLE DATE : 04/22/25



DocuSigned by
4/22/2025

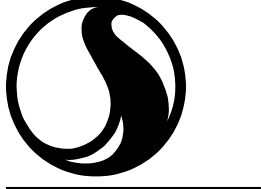
DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

REVISIONS						SHEET NO. S01-011
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 113
2			4			

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+

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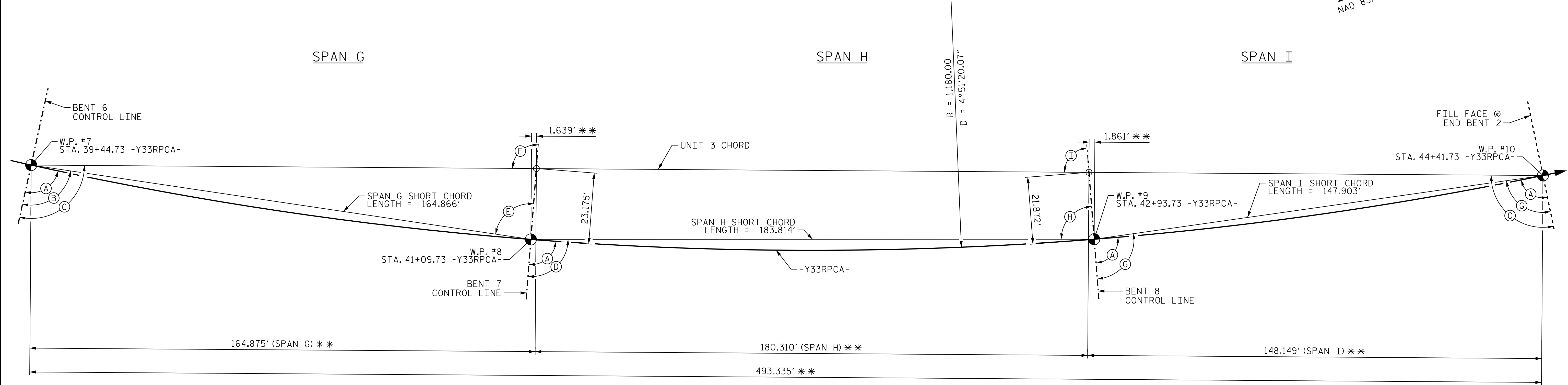
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DRAWN BY : S. S. POOLE DATE : 07/27/18
CHECKED BY : V. E. FRAGA DATE : 04/05/19

DESIGN
ENGINEER
OF RECORD: S. S. POOLE DATE : 04/22/25

ANGLES	
Ⓐ	90°00'00"*
Ⓑ	94°00'21"
Ⓒ	102°03'58"
Ⓓ	94°28'02"
Ⓔ	85°59'39"
Ⓕ	94°03'16"
Ⓖ	93°35'35"
Ⓗ	85°31'58"
Ⓘ	85°07'13"

* BENT SKEW MEASURED TO
TANGENT TO THE SURVEY
LINE ARC @ THE WORK
POINT

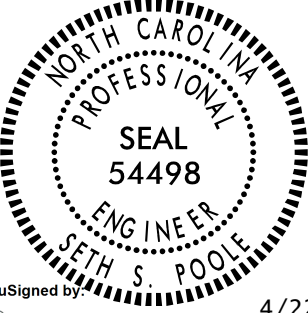


LONG CHORD LAYOUT (UNIT 3)

(CONTROL LINES @ BENTS 6 THROUGH 8 AND FILL FACE @ END BENT 2 ARE RADIAL THROUGH THE WORK POINT)
** MEASURED ALONG UNIT 3 CHORD

PI STA. = 42+77.62
Δ = 125°06'21.88" (LT.)
D = 4°51'20.07"
L = 2,576.55
T = 2,271.89
R = 1,180.00
HORIZONTAL CURVE DATA
-Y33RPCA-

PROJECT NO. R-3300A
NEW HANOVER COUNTY
STATION: 219+49.69 -L1-
31+84.73 -Y33RPCA-
SHEET 12 OF 15



DocuSigned by
S. S. POOLE
4/22/2025

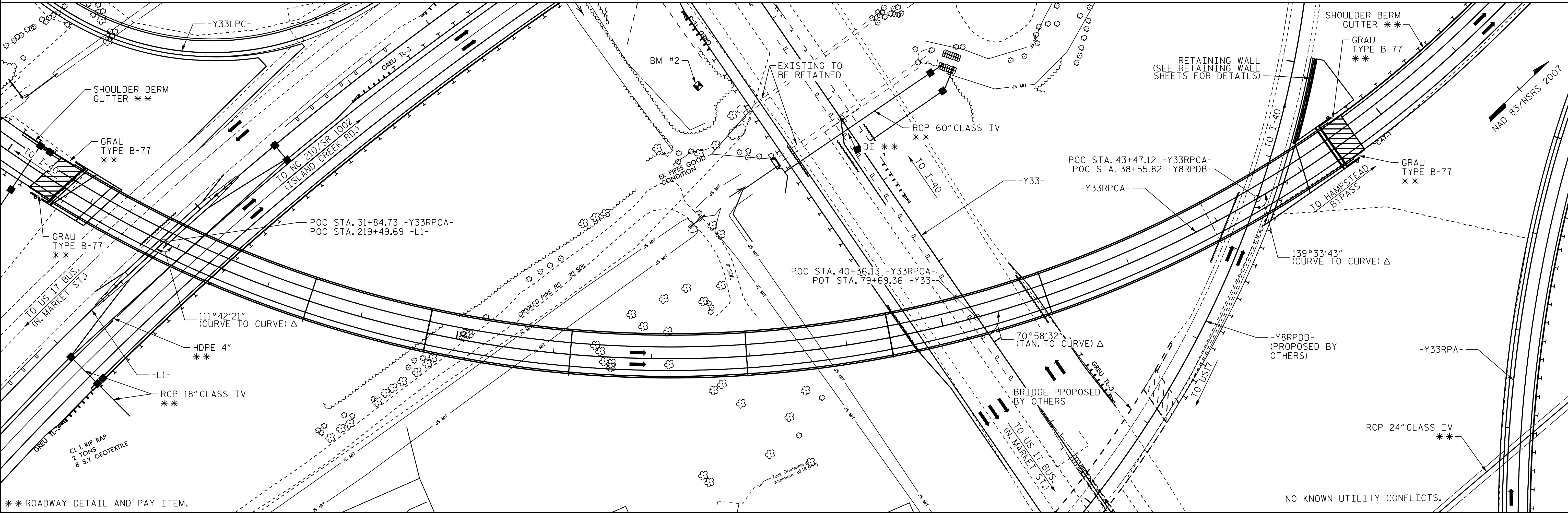
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FINAL UNLESS ALL
SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE OVER HAMPSTEAD BYPASS,
I-140, AND I-140 RAMP ON HAMPSTEAD
BYPASS RAMP BETWEEN I-40 AND US17

REVISIONS						SHEET NO. S01-012
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 113
2			4			

BM #11: RR SPIKE IN 18" PINE. N206327 E2354194, STA. 65+12.00 -BL-, 96' RT. EL. 43.53

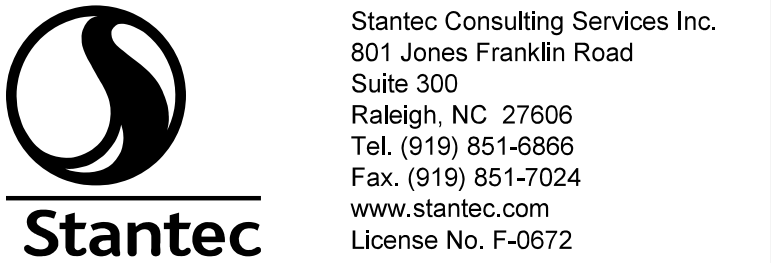


LOCATION SKETCH

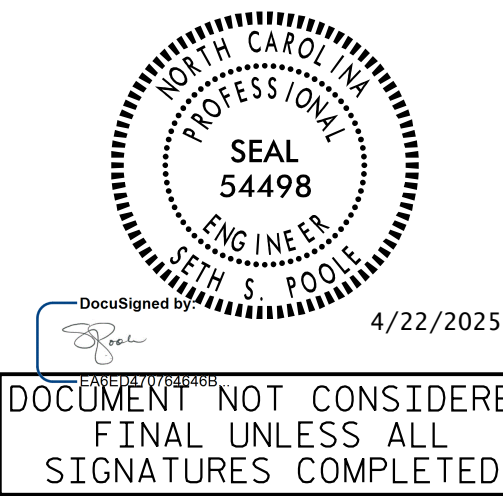
NOTES

FOR GENERAL NOTES, SEE SHEET S01-014.
FOR TOTAL BILL OF MATERIALS, SEE SHEET S01-014.
Δ : ANGLE BETWEEN SURVEY ALIGNMENTS. FOR CURVED SURVEY ALIGNMENTS, ANGLE MEASURED TO LINE TANGENT TO SURVEY AT POINT OF INTERSECTION.

PROJECT NO. R-3300A
NEW HANOVER COUNTY
STATION: 219+49.69 -L1-
31+84.73 -Y33RPCA-
SHEET 13 OF 15



DRAWN BY : M. B. ISENHOUR DATE : 03/02/18
CHECKED BY : S. S. POOLE DATE : 03/09/18
DESIGN ENGINEER OF RECORD: S. S. POOLE DATE : 04/22/25



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S01-013		
GENERAL DRAWING						FOR BRIDGE OVER HAMPSTEAD BYPASS, I-140, AND I-140 RAMP ON HAMPSTEAD BYPASS RAMP BETWEEN I-40 AND US 17		
REVISIONS						TOTAL SHEETS 113		
NO.	BY:	DATE:	NO.	BY:	DATE:			
1			3					
2			4					

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TOTAL BILL OF MATERIAL															
	FOUNDATION EXCAVATION FOR BENT	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS AA CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	APPROX. 2,808,131 LBS STRUCTURAL STEEL	PILE DRIVING EQUIPMENT SETUP FOR 16"PRESTRESSED CONCRETE PILES	PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	16"PRESTRESSED CONCRETE PILES		HP 12 X 53 STEEL PILES		PILE REDRIVES	DYNAMIC PILE TESTING
	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	LUMP SUM	EA.	EA.	NO.	LIN. FT.	NO.	LIN. FT.	EA.	EA.
SUPERSTRUCTURE		61,848	55,151				LUMP SUM								
END BENT 1				57.9		7,074		8	1	8	600	1	70	4	1
BENT 1	LUMP SUM			187.2		35,430		14		14	770			7	2
BENT 2	LUMP SUM			204.9		39,308		14		14	630			7	
BENT 3	LUMP SUM			205.8		36,804		14		14	560			7	
BENT 4	LUMP SUM			205.9		39,543		14		14	560			7	
BENT 5	LUMP SUM			205.7		39,347		14		14	560			7	
BENT 6	LUMP SUM			205.7		36,550		14		14	630			7	
BENT 7	LUMP SUM			203.7		38,962		14		14	490			7	
BENT 8	LUMP SUM			182.9		35,313		14		14	630			7	
END BENT 2				58.3		7,012		8	2	8	560	2	140	4	
TOTAL	LUMP SUM	61,848	55,151	1,718.0	LUMP SUM	315,343	LUMP SUM	128	3	128	5,990	3	210	64	3

	CONCRETE BARRIER RAIL	4" SLOPE PROTECTION	DISC BEARINGS	EXPANSION JOINT SEALS	MODULAR EXPANSION JOINT SEALS
	LIN. FT.	SQ. YD.	LUMP SUM	LUMP SUM	LUMP SUM
SUPERSTRUCTURE	2,776		LUMP SUM	LUMP SUM	LUMP SUM
END BENT 1		195			
BENT 1					
BENT 2					
BENT 3					
BENT 4					
BENT 5					
BENT 6					
BENT 7					
BENT 8					
END BENT 2		480			
TOTAL	2,776	675	LUMP SUM	LUMP SUM	LUMP SUM

NOTES

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

THIS STRUCTURE CONTAINS THE NECESSARY CORROSION PROTECTION REQUIRED FOR A CORROSIVE SITE.

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THE ELEVATION(S) AND CLEARANCE(S) SHOWN ON THE PLANS AT THE POINT(S) OF MINIMUM VERTICAL CLEARANCE ARE FROM THE BEST INFORMATION AVAILABLE. PRIOR TO BEGINNING BRIDGE CONSTRUCTION, VERIFY THE ELEVATION(S) 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.

ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 50 AND PAINTED IN ACCORDANCE WITH SYSTEM 1 OR SYSTEM 2 OF THE STRUCTURAL STEEL COATINGS PROGRAM AND ARTICLE 442-8 OF THE STANDARD SPECIFICATIONS UNLESS OTHERWISE NOTED ON THE PLANS.

CLASS AA CONCRETE SHALL BE USED IN ALL CAST-IN-PLACE COLUMNS, BENT CAPS, PILE CAPS, AND FOOTINGS, AND SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR. FOR CALCIUM NITRITE CORROSION INHIBITOR, SEE ARTICLE 1000-3(J) OF THE STANDARD SPECIFICATIONS.

ALL BAR SUPPORTS USED IN THE COLUMNS, PILE CAPS, AND FOOTINGS AND ALL INCIDENTAL REINFORCING STEEL SHALL BE EPOXY COATED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

THE CONCRETE IN THE COLUMNS, PILE CAPS, AND PILES OF ALL BENTS AND END BENTS SHALL CONTAIN SILICA FUME. SILICA FUME SHALL BE SUBSTITUTED FOR 5% OF THE PORTLAND CEMENT BY WEIGHT. IF THE OPTION OF ARTICLE 1024-1 OF THE STANDARD SPECIFICATIONS TO PARTIALLY SUBSTITUTE CLASS F FLY ASH FOR PORTLAND CEMENT IS EXERCISED, THEN THE RATE OF FLY ASH SUBSTITUTION SHALL BE REDUCED TO 1.0 LB OF FLY ASH PER 1.0 LB OF CEMENT. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE VARIOUS PAY ITEMS.

FOR LIMITS OF TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS. FOR PAY ITEM FOR TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE ROADWAY PLANS.

FOR MASS CONCRETE, SEE SPECIAL PROVISIONS. BENTS 1, 2, 3, 4, 5, 6, 7, AND 8 INCLUDE MASS CONCRETE.

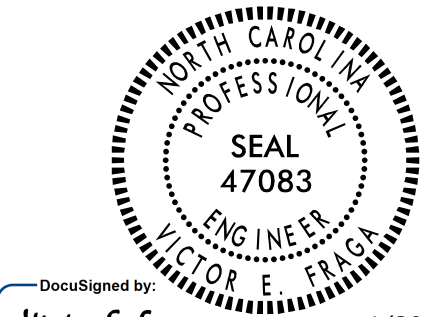
FOR DISC BEARINGS, SEE SPECIAL PROVISIONS.

ALL METALIZED SURFACES SHALL RECEIVE A SEAL COATING AS SPECIFIED IN THE SPECIAL PROVISION FOR THERMAL SPRAYED COATINGS (METALLIZATION).

THE WATER/CEMENT RATIO FOR CONCRETE PILES SHALL NOT EXCEED 0.40.

APPLY AN 8 MIL THICK 1350 ALUMINUM (W-AL-1350) THERMAL SPRAY COATING WITH A 0.5 MIL THICK SEAL COAT TO THE STEEL PILES, IN ACCORDANCE WITH THE THERMAL SPRAYED COATINGS SPECIAL PROVISION AND SECTION 442 OF THE STANDARD SPECIFICATION. FOR THERMAL SPRAYED COATINGS, SEE SPECIAL PROVISIONS.

AFTER DRIVING THE STEEL PILES, APPLY 1 COAT EACH OF 1080-9 BROWN AND 1080-9 GRAY PAINT TO THE EMBEDDED SECTION OF THE METALLIZED PILE PRIOR TO CONCRETE EMBEDMENT IN ACCORDANCE WITH SECTION 442 OF THE STANDARD SPECIFICATIONS.



DocuSigned by
Victor E. Fraga
30D8348A9AC4471
4/30/2025

DOCUMENT NOT CONSIDERED
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SIGNATURES COMPLETED

PROJECT NO. R-3300A
NEW HANOVER COUNTY
STATION: 219+49.69 -L1-
31+84.73 -Y33RPCA-
SHEET 14 OF 15

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S01-014		
GENERAL DRAWING						TOTAL SHEETS 113		
TOTAL BILL OF MATERIAL								
REVISIONS								
NO.	BY:	DATE:	NO.	BY:	DATE:			
1			3					
2			4					

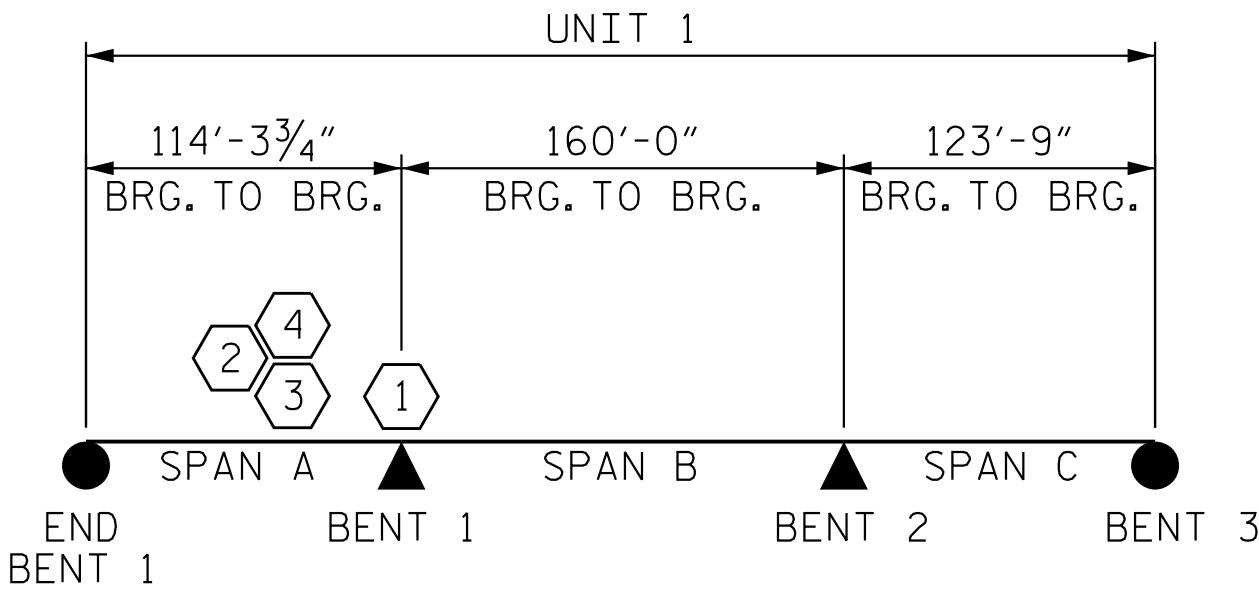


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www.stantec.com
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DRAWN BY : V. E. FRAGA DATE : 01/17/19
CHECKED BY : S. S. POOLE DATE : 02/10/22
DESIGN
ENGINEER
OF RECORD: V. E. FRAGA DATE : 04/22/25

\$FILE\$ \$DATES\$ \$TIME\$ \$USER\$

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR STEEL GIRDERS																								
LOAD TYPE		VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING ⬡	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE II LIMIT STATE						COMMENT NUMBER	
							LIVE-LOAD FACTORS (γLL)	MOMENT				SHEAR				LIVE-LOAD FACTORS (γLL)	MOMENT							
								DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION		DISTANCE FROM LEFT END OF SPAN (ft)
DESIGN LOAD		HL-93 (INVENTORY)	N/A	⬡1	1.12	--	1.75	--	1.12	B	ER	0.00	--	1.15	A	I	94.49	1.30	--	1.81	B	ER	168.53	
		HL-93 (OPERATING)	N/A		1.45	--	1.35	--	1.45	B	ER	0.00	--	1.49	A	I	94.49	1.00	--	2.36	B	ER	168.53	
		HS-20 (INVENTORY)	36.000	⬡2	1.53	55.2	1.75	--	2.16	B	ER	84.27	--	1.53	A	I	94.49	1.30	--	2.67	B	ER	84.27	
		HS-20 (OPERATING)	36.000		1.99	71.5	1.35	--	2.80	B	ER	84.27	--	1.99	A	I	94.49	1.00	--	3.48	B	ER	84.27	
LEGAL LOAD	SINGLE VEHICLE (SV)	SNSH	13.500		4.22	57.0	1.40	--	5.75	B	ER	84.27	--	4.22	A	I	94.49	1.30	--	5.43	B	ER	84.27	
		SNGARBS2	20.000		3.12	62.5	1.40	--	4.40	B	ER	84.27	--	3.12	A	I	94.49	1.30	--	4.26	B	ER	84.27	
		SNAGRIS2	22.000		2.95	64.8	1.40	--	4.21	B	ER	84.27	--	2.95	A	I	94.49	1.30	--	4.13	B	ER	84.27	
		SNCOTTS3	27.250		2.09	57.0	1.40	--	3.10	B	ER	84.27	--	2.09	A	I	94.49	1.30	--	3.00	B	ER	84.27	
		SNAGGRS4	34.925		1.85	64.5	1.40	--	2.82	B	ER	84.27	--	1.85	A	I	94.49	1.30	--	2.82	B	ER	84.27	
		SNS5A	35.550		1.92	68.1	1.40	--	2.75	B	ER	88.06	--	1.92	A	I	94.49	1.30	--	2.76	B	ER	88.06	
		SNS6A	39.950		1.78	71.2	1.40	--	2.50	B	ER	88.06	--	1.78	A	I	94.49	1.30	--	2.50	B	ER	88.06	
		SNS7B	42.000		1.80	75.6	1.40	--	2.41	B	ER	84.27	--	1.80	A	I	94.49	1.30	--	2.41	B	ER	84.27	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		2.11	69.7	1.40	--	2.95	B	ER	88.06	--	2.11	A	I	94.49	1.30	--	2.91	B	ER	88.06	
		TNT4A	33.075		1.99	65.7	1.40	--	2.90	B	ER	88.06	--	1.99	A	I	94.49	1.30	--	2.85	B	ER	88.06	
		TNT6A	41.600		1.88	78.3	1.40	--	2.47	B	ER	84.27	--	1.88	A	I	94.49	1.30	--	2.47	B	ER	84.27	
		TNT7A	42.000		1.79	75.2	1.40	--	2.48	B	ER	84.27	--	1.79	A	I	94.49	1.30	--	2.48	B	ER	84.27	
		TNT7B	42.000		1.69	71.2	1.40	--	2.48	B	ER	88.06	--	1.69	A	I	94.49	1.30	--	2.48	B	ER	88.06	
		TNAGRIT4	43.000		1.64	70.7	1.40	--	2.33	B	ER	84.27	--	1.64	A	I	94.49	1.30	--	2.31	B	ER	84.27	
		TNAGT5A	45.000		1.67	75.0	1.40	--	2.27	B	ER	84.27	--	1.67	A	I	94.49	1.30	--	2.26	B	ER	84.27	
		TNAGT5B	45.000	⬡3	1.57	70.5	1.40	--	2.26	B	ER	84.27	--	1.57	A	I	94.49	1.30	--	2.26	B	ER	84.27	
EMERGENCY VEHICLE (EV)		EV2	28.750		2.35	67.5	1.30	--	3.29	B	ER	84.27	--	2.35	A	I	94.49	--	--	--	--	--	--	
		EV3	43.000	⬡4	1.60	68.8	1.30	--	2.35	B	ER	88.06	--	1.60	A	I	94.49	--	--	--	--	--	--	
FATIGUE		HL-93 (INVENTORY)	γLL=0.80		2.54	--																		



LRFR SUMMARY
MEASUREMENTS ALONG -Y33RPCA-

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γDC	γDW
	STRENGTH I	1.25	1.50
	SERVICE II	1.00	1.00

NOTES:

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

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

COMMENTS:

- ANALYSIS METHOD: GRILLAGE MODEL WITH EFFECTIVE TORSIONAL STIFFNESS, TIMOSHENKO BEAM ELEMENT FOR CROSS FRAMES, AND SEPARATE LATERAL FLANGE BENDING ANALYSIS PER NCHRP REPORT 725.
- LIVE LOAD APPLIED TO ECCENTRIC PLATE DECK ELEMENTS.
- ALL DISTANCES ARE MEASURED WITH RESPECT TO LEFT BEARING.

CONTROLLING LOAD RATING

DESIGN LOAD RATING (HL-93)

DESIGN LOAD RATING (HS-20)

LEGAL LOAD RATING **

EMERGENCY VEHICLE LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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

PROJECT NO. R-3300A
NEW HANOVER COUNTY
STATION: 219+49.69 -L1-
31+84.73 -Y33RPCA-
SHEET 15 OF 15

DRAWN BY: MAA 1/08
CHECKED BY: GM/DI 2/08

Stantec

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License No. F-0672

DRAWN BY : V. E. FRAGA DATE : 02/11/25
CHECKED BY : S. S. POOLE DATE : 02/01/22
DESIGN ENGINEER OF RECORD: V. E. FRAGA DATE : 04/22/25

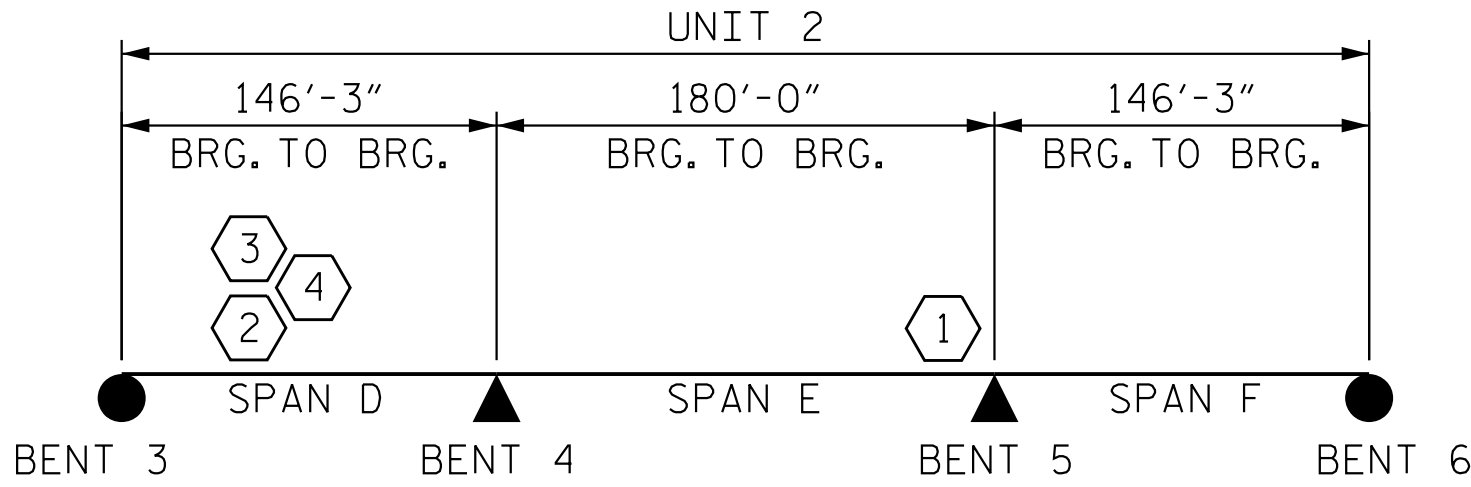
Victor E. Fraga
4/22/2025
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
LRFR SUMMARY FOR
STEEL GIRDERS
(UNIT 1)
(NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO. S01-015
NO.	BY:	DATE:	NO.	BY:	DATE:	
						TOTAL SHEETS 113

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR STEEL GIRDERS																								
LOAD TYPE		VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING Ⓢ	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE II LIMIT STATE						COMMENT NUMBER	
							LIVE-LOAD FACTORS (γLL)	MOMENT				SHEAR				LIVE-LOAD FACTORS (γLL)	MOMENT							
								DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION		DISTANCE FROM LEFT END OF SPAN (ft)
DESIGN LOAD		HL-93 (INVENTORY)	N/A	Ⓢ1	1.09	--	1.75	--	1.09	E	ER	166.34	--	1.45	D	ER	12.61	1.30	--	1.58	D	ER	49.69	
		HL-93 (OPERATING)	N/A		1.44	--	1.35	--	1.44	E	ER	166.34	--	1.87	D	ER	12.61	1.00	--	2.06	D	ER	49.69	
		HS-20 (INVENTORY)	36.000	Ⓢ2	1.81	65.1	1.75	--	1.81	D	ER	49.69	--	2.03	E	I	44.89	1.30	--	2.29	D	ER	49.69	
		HS-20 (OPERATING)	36.000		2.35	84.6	1.35	--	2.35	D	ER	49.69	--	2.63	E	I	44.89	1.00	--	2.97	D	ER	49.69	
LEGAL LOAD	SINGLE VEHICLE (SV)	SNSH	13.500		4.67	63.0	1.40	--	4.81	D	ER	49.69	--	5.49	D	I	97.49	1.30	--	4.67	D	ER	49.69	
		SNGARBS2	20.000		3.67	73.3	1.40	--	3.70	D	ER	49.69	--	4.11	D	I	97.49	1.30	--	3.67	D	ER	49.69	
		SNAGRIS2	22.000		3.55	78.0	1.40	--	3.55	D	ER	49.69	--	3.90	D	I	97.49	1.30	--	3.55	D	ER	49.69	
		SNCOTTS3	27.250		2.39	65.2	1.40	--	2.44	D	ER	49.69	--	2.74	D	I	97.49	1.30	--	2.39	D	ER	49.69	
		SNAGGRS4	34.925		2.19	76.5	1.40	--	2.19	D	ER	49.69	--	2.41	D	I	97.49	1.30	--	2.20	D	ER	49.69	
		SNS5A	35.550		2.16	76.9	1.40	--	2.16	D	ER	49.69	--	2.53	D	I	97.49	1.30	--	2.18	D	ER	49.69	
		SNS6A	39.950		2.03	81.0	1.40	--	2.03	D	ER	49.69	--	2.34	F	I	48.61	1.30	--	2.06	D	ER	49.69	
		SNS7B	42.000		1.92	80.7	1.40	--	1.92	D	ER	49.69	--	2.31	E	I	134.66	1.30	--	1.95	D	ER	49.69	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		2.51	82.8	1.40	--	2.51	D	ER	49.69	--	2.77	D	I	97.49	1.30	--	2.54	D	ER	49.69	
		TNT4A	33.075		2.46	81.3	1.40	--	2.46	D	ER	49.69	--	2.61	D	I	97.49	1.30	--	2.48	D	ER	49.69	
		TNT6A	41.600		2.02	84.0	1.40	--	2.02	D	ER	49.69	--	2.51	D	I	97.49	1.30	--	2.05	D	ER	49.69	
		TNT7A	42.000		2.04	85.8	1.40	--	2.04	D	ER	49.69	--	2.33	D	I	97.49	1.30	--	2.08	D	ER	49.69	
		TNT7B	42.000		2.06	86.4	1.40	--	2.06	D	ER	49.69	--	2.25	D	I	97.49	1.30	--	2.10	D	ER	49.69	
		TNAGRIT4	43.000		1.97	84.6	1.40	--	1.97	D	ER	49.69	--	2.17	D	I	97.49	1.30	--	2.01	D	ER	49.69	
		TNAGT5A	45.000		1.91	86.2	1.40	--	1.91	D	ER	49.69	--	2.19	E	I	134.66	1.30	--	1.96	D	ER	49.69	
		TNAGT5B	45.000	Ⓢ3	1.89	85.2	1.40	--	1.89	D	ER	49.69	--	2.07	D	I	97.49	1.30	--	1.94	D	ER	49.69	
EMERGENCY VEHICLE (EV)		EV2	28.750		2.83	81.4	1.30	--	2.83	D	ER	49.69	--	3.07	D	I	97.49	--	--	--	--	--	--	
		EV3	43.000	Ⓢ4	1.89	81.4	1.30	--	1.89	D	ER	49.69	--	2.11	D	I	97.49	--	--	--	--	--	--	
FATIGUE		HL-93 (INVENTORY)	γLL=0.80		2.55	--																		



LRFR SUMMARY
MEASUREMENTS ALONG -Y33RPCA-

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γDC	γDW
	STRENGTH I	1.25	1.50
	SERVICE II	1.00	1.00

NOTES:

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

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

COMMENTS:

- ANALYSIS METHOD: GRILLAGE MODEL WITH EFFECTIVE TORSIONAL STIFFNESS, TIMOSHENKO BEAM ELEMENT FOR CROSS FRAMES, AND SEPARATE LATERAL FLANGE BENDING ANALYSIS PER NCHRP REPORT 725.
- LIVE LOAD APPLIED TO ECCENTRIC PLATE DECK ELEMENTS.
- ALL DISTANCES ARE MEASURED WITH RESPECT TO LEFT BEARING.

Ⓢ CONTROLLING LOAD RATING

Ⓢ1 DESIGN LOAD RATING (HL-93)

Ⓢ2 DESIGN LOAD RATING (HS-20)

Ⓢ3 LEGAL LOAD RATING **

Ⓢ4 EMERGENCY VEHICLE LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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

PROJECT NO. R-3300A
NEW HANOVER COUNTY
STATION: 219+49.69 -L1-
31+84.73 -Y33RPCA-
SHEET 15 OF 15

DRAWN BY: MAA 1/08
CHECKED BY: GM/DI 2/08

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DocuSigned by
Victor E. Fraga
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4/22/2025

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
LRFR SUMMARY FOR
STEEL GIRDERS
(UNIT 2)
(NON-INTERSTATE TRAFFIC)

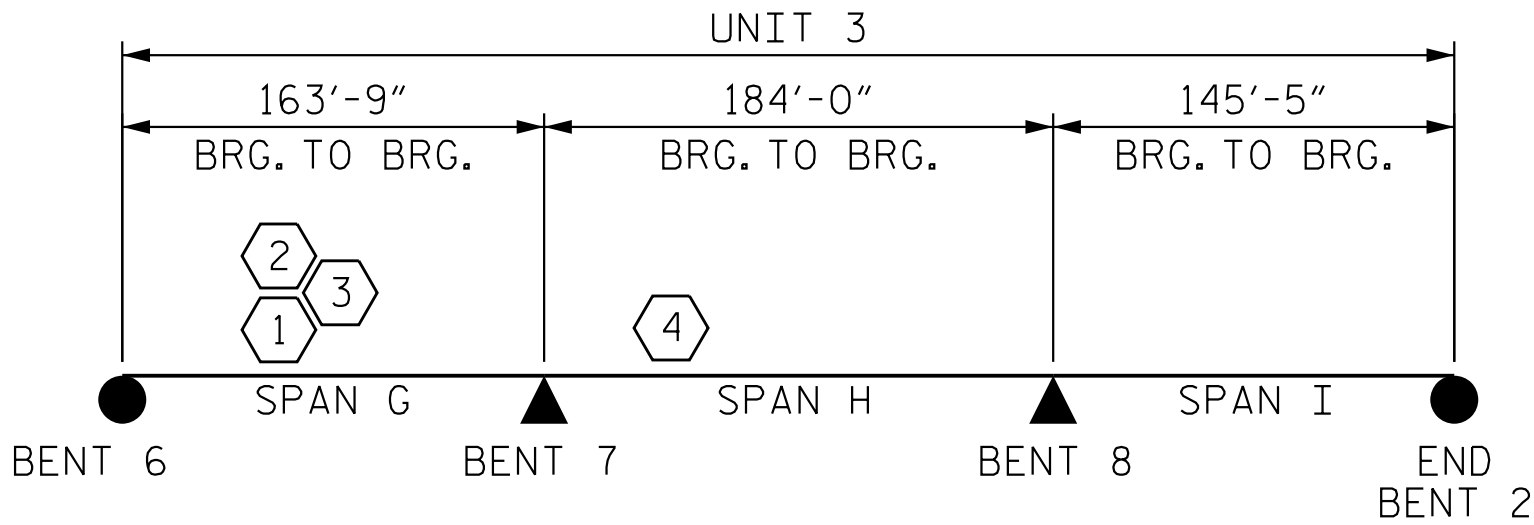
REVISIONS						SHEET NO. S01-016
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 113
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LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR STEEL GIRDERS																								
LOAD TYPE		VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING ⬡	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE II LIMIT STATE						COMMENT NUMBER	
							LIVE-LOAD FACTORS (YLL)	MOMENT				SHEAR				LIVE-LOAD FACTORS (YLL)	MOMENT							
								DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION		DISTANCE FROM LEFT END OF SPAN (ft)
DESIGN LOAD		HL-93 (INVENTORY)	N/A	⬡1	1.09	--	1.75	--	1.09	G	ER	66.49	--	1.32	H	ER	46.62	1.30	--	1.53	G	ER	66.49	
		HL-93 (OPERATING)	N/A		1.42	--	1.35	--	1.42	G	ER	66.49	--	1.71	H	ER	46.62	1.00	--	1.99	G	ER	66.49	
		HS-20 (INVENTORY)	36.000	⬡2	1.73	62.5	1.75	--	1.73	G	ER	66.49	--	1.90	H	I	45.88	1.30	--	2.37	G	ER	66.49	
		HS-20 (OPERATING)	36.000		2.25	81.1	1.35	--	2.25	G	ER	66.49	--	2.46	H	I	45.88	1.00	--	3.08	G	ER	66.49	
LEGAL LOAD	SINGLE VEHICLE (SV)	SNSH	13.500		4.87	65.7	1.40	--	4.87	G	ER	66.49	--	5.13	H	I	45.88	1.30	--	5.12	G	ER	71.38	
		SNGARBS2	20.000		3.63	72.6	1.40	--	3.63	G	ER	66.49	--	3.86	H	I	45.88	1.30	--	3.90	G	ER	66.49	
		SNAGRIS2	22.000		3.42	75.2	1.40	--	3.42	G	ER	66.49	--	3.67	H	I	45.88	1.30	--	3.70	G	ER	66.49	
		SNCOTTS3	27.250		2.50	68.0	1.40	--	2.69	G	ER	66.49	--	2.50	H	I	45.88	1.30	--	2.93	G	ER	66.49	
		SNAGGRS4	34.925		2.20	76.8	1.40	--	2.31	G	ER	66.49	--	2.20	H	I	45.88	1.30	--	2.57	G	ER	66.49	
		SNS5A	35.550		2.26	80.2	1.40	--	2.26	G	ER	66.49	--	2.27	H	I	45.88	1.30	--	2.51	G	ER	66.49	
		SNS6A	39.950		2.09	83.4	1.40	--	2.09	G	ER	66.49	--	2.10	H	I	45.88	1.30	--	2.33	G	ER	66.49	
		SNS7B	42.000		1.97	82.7	1.40	--	1.97	G	ER	66.49	--	2.08	H	I	45.88	1.30	--	2.20	G	ER	66.49	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		2.47	81.6	1.40	--	2.47	G	ER	66.49	--	2.55	H	I	45.88	1.30	--	2.74	G	ER	66.49	
		TNT4A	33.075		2.41	79.7	1.40	--	2.41	G	ER	66.49	--	2.41	H	I	45.88	1.30	--	2.66	G	ER	66.49	
		TNT6A	41.600		2.09	86.7	1.40	--	2.09	G	ER	66.49	--	2.24	H	I	45.88	1.30	--	2.32	G	ER	71.38	
		TNT7A	42.000		2.05	86.1	1.40	--	2.05	G	ER	66.49	--	2.10	H	I	45.88	1.30	--	2.29	G	ER	66.49	
		TNT7B	42.000		2.02	84.9	1.40	--	2.02	G	ER	66.49	--	2.04	H	I	45.88	1.30	--	2.25	G	ER	66.49	
		TNAGRIT4	43.000		1.95	84.0	1.40	--	1.95	G	ER	66.49	--	1.99	H	I	45.88	1.30	--	2.18	G	ER	66.49	
		TNAGT5A	45.000		1.91	85.9	1.40	--	1.91	G	ER	66.49	--	2.03	H	I	45.88	1.30	--	2.12	G	ER	71.38	
		TNAGT5B	45.000	⬡3	1.87	84.2	1.40	--	1.87	G	ER	66.49	--	1.90	H	I	45.88	1.30	--	2.09	G	ER	66.49	
EMERGENCY VEHICLE (EV)		EV2	28.750		2.76	79.4	1.30	--	2.76	G	ER	66.49	--	2.84	H	I	45.88	--	--	--	--	--	--	
		EV3	43.000	⬡4	1.88	80.9	1.30	--	1.99	G	ER	66.49	--	1.88	H	I	45.88	--	--	--	--	--	--	
FATIGUE		HL-93 (INVENTORY)	YLL=0.80		2.53	--																		



LRFR SUMMARY

MEASUREMENTS ALONG -Y33RPCA-

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	YDC	YDW
	STRENGTH I	1.25	1.50
	SERVICE II	1.00	1.00

NOTES:

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

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

COMMENTS:

- ANALYSIS METHOD: GRILLAGE MODEL WITH EFFECTIVE TORSIONAL STIFFNESS, TIMOSHENKO BEAM ELEMENT FOR CROSS FRAMES, AND SEPARATE LATERAL FLANGE BENDING ANALYSIS PER NCHRP REPORT 725.
- LIVE LOAD APPLIED TO ECCENTRIC PLATE DECK ELEMENTS.
- ALL DISTANCES ARE MEASURED WITH RESPECT TO LEFT BEARING.

⬡ CONTROLLING LOAD RATING

⬡1 DESIGN LOAD RATING (HL-93)

⬡2 DESIGN LOAD RATING (HS-20)

⬡3 LEGAL LOAD RATING **

⬡4 EMERGENCY VEHICLE LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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

PROJECT NO. R-3300A

NEW HANOVER COUNTY

STATION: 219+49.69 -L1-31+84.73 -Y33RPCA-

SHEET 15 OF 15

DRAWN BY: MAA 1/08
CHECKED BY: GM/DI 2/08

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DESIGN ENGINEER OF RECORD: V. E. FRAGA DATE : 04/22/25

DocuSigned by
Victor E. Fraga
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4/22/2025

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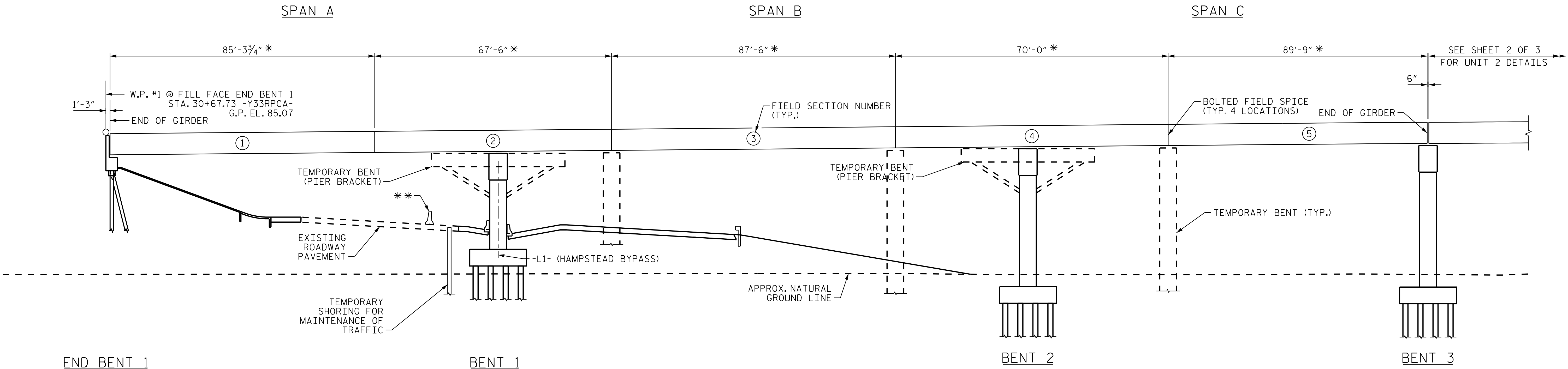
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
LRFR SUMMARY FOR
STEEL GIRDERS
(UNIT 3)
(NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO. S01-017
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 113
2			4			

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ERECTION NOTES

SECTION ALONG -Y33RPCA- (UNIT 1)
(SECTIONS AT BENTS AND END BENT ARE AT RIGHT ANGLES)

- * FIELD SECTION LENGTHS SHOWN ARE MEASURED ALONG -Y33RPCA-. ACTUAL FIELD SECTION LENGTHS VARY BY GIRDER.
- ** PORTABLE PRECAST CONCRETE MEDIAN BARRIER, (TRAFFIC CONTROL DETAIL AND PAY ITEM), SEE NCDOT STD. 854.04 & 1170.01.

TEMPORARY BENT LOCATIONS SHOWN ARE PERMITTED POSITIONS IN WHICH STEEL GIRDERS CAN BE SUPPORTED DURING STEEL ERECTION.

THE STRUCTURAL STEEL SHALL BE SUPPORTED DURING ERECTION IN ITS CAMBERED POSITION, ONE EXTERIOR GIRDER AND ITS ADJACENT INTERIOR GIRDER SHALL BE ERECTED WITH ALL DIAPHRAGMS, CROSSFRAMES, AND LATERAL BRACING BETWEEN GIRDERS IN PLACE AND ALL BOLTS TIGHTENED PRIOR TO RELEASE OF THE GIRDERS. THE REMAINING GIRDERS SHALL THEN BE ERECTED WITH DIAPHRAGMS CONNECTING THE GIRDER TO THE ADJACENT ERECTED GIRDER AND ALL BOLTS TIGHTENED BEFORE RELEASING THE GIRDER.

DURING THE GIRDER ERECTION PROCEDURE, THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING TEMPORARY LATERAL BRACING AND OTHER MEANS OF SUPPORT, AS REQUIRED, TO ENSURE STABILITY OF THE GIRDERS, AVOID UPLIFT OF THE GIRDERS AT POINTS OF SUPPORT, AND MAINTAIN PLUMBNESS OF THE GIRDERS.

THE CONTRACTOR MAY SUBMIT ALTERNATE ERECTION METHODS. PLANS FOR SUCH ERECTION METHODS SHALL BE APPROVED BY THE ENGINEER.

PLACEMENT OF TEMPORARY BENT(S) OR TEMPORARY BENT BRACKETS, IF USED, SHALL BE COORDINATED WITH TRAFFIC PHASING REQUIREMENTS, SEE TRANSPORTATION MANAGEMENT PLANS. THE CONTRACTOR SHALL ENSURE ADEQUATE CLEARANCES ARE PROVIDED BETWEEN TEMPORARY BENTS OR TEMPORARY BENT BRACKETS AND EDGE OF TRAVEL LANES.

METHOD OF TEMPORARY BENT REMOVAL SHALL UNIFORMLY APPLY THE STRUCTURAL STEEL WEIGHT TO THE GIRDERS AND DIAPHRAGMS.

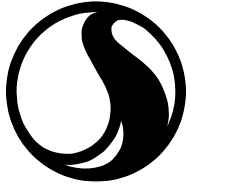
THE CONTRACTOR IS RESPONSIBLE FOR DESIGNING ANY TEMPORARY BENTS. THE DESIGN SHALL FOLLOW THE AASHTO DESIGN GUIDE SPECIFICATIONS FOR TEMPORARY WORKS, 1995, INCLUDING THE 2008 INTERIM REVISIONS, AND SHALL BE COMPLETED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NORTH CAROLINA. THE CONTRACTOR SHALL SUBMIT SIGNED AND SEALED CALCULATIONS AND WORK DRAWINGS FOR APPROVAL BY THE ENGINEER. WORKING DRAWINGS SHALL INCLUDE PLANS FOR TEMPORARY BENT(S), ERECTION SEQUENCE, AND TEMPORARY BENT REMOVAL.

NO SEPARATE MEASUREMENT OR PAYMENT WILL BE MADE FOR PROVIDING TEMPORARY BENT(S). THE COST FOR ALL MATERIALS, EQUIPMENT, TOOLS, LABOR, AND ANY INCIDENTALS NECESSARY TO PROVIDE THE TEMPORARY BENT(S) SHALL BE CONSIDERED INCIDENTAL TO THE LUMP SUM BID PRICE FOR STRUCTURAL STEEL.

FOR TEMPORARY BENTS, SEE SPECIAL PROVISIONS.

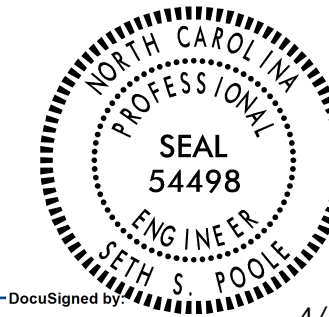
PROJECT NO. R-3300A
NEW HANOVER COUNTY
STATION: 219+49.69 -L1-
31+84.73 -Y33RPCA-

SHEET 1 OF 3



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DRAWN BY : S. S. POOLE DATE : 07/26/18
CHECKED BY : V. E. FRAGA DATE : 04/05/19
DESIGN ENGINEER OF RECORD: S. S. POOLE DATE : 04/22/25



4/22/2025

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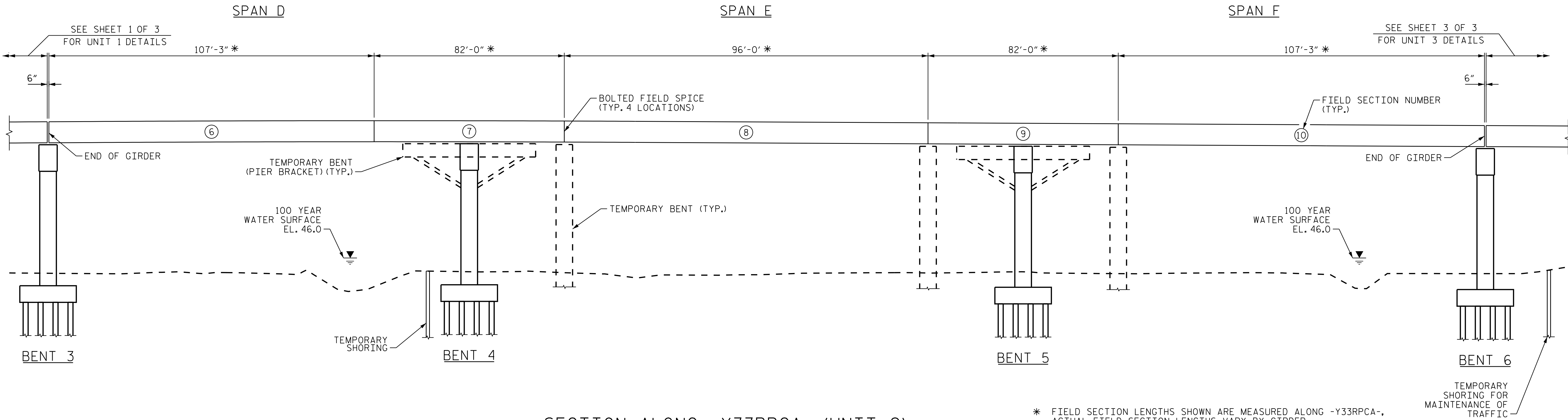
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GIRDER ERECTION
DETAILS

UNIT 1

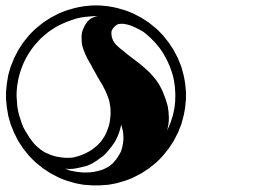
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NO.	BY:	DATE:	NO.	BY:	DATE:	S01-018	
1			3			TOTAL SHEETS	
2			4			113	

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ERECTION NOTES

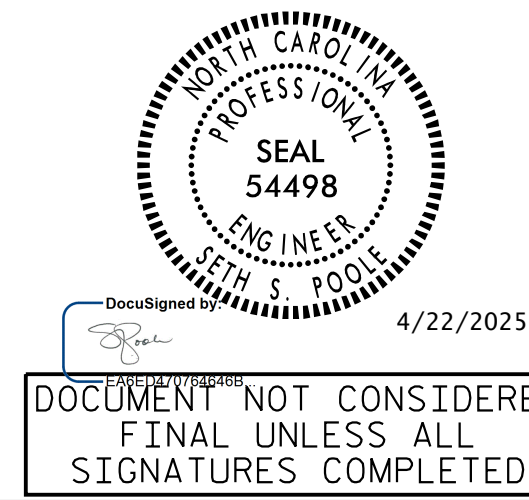
SEE SHEET 1 OF 3 FOR ERECTION NOTES.



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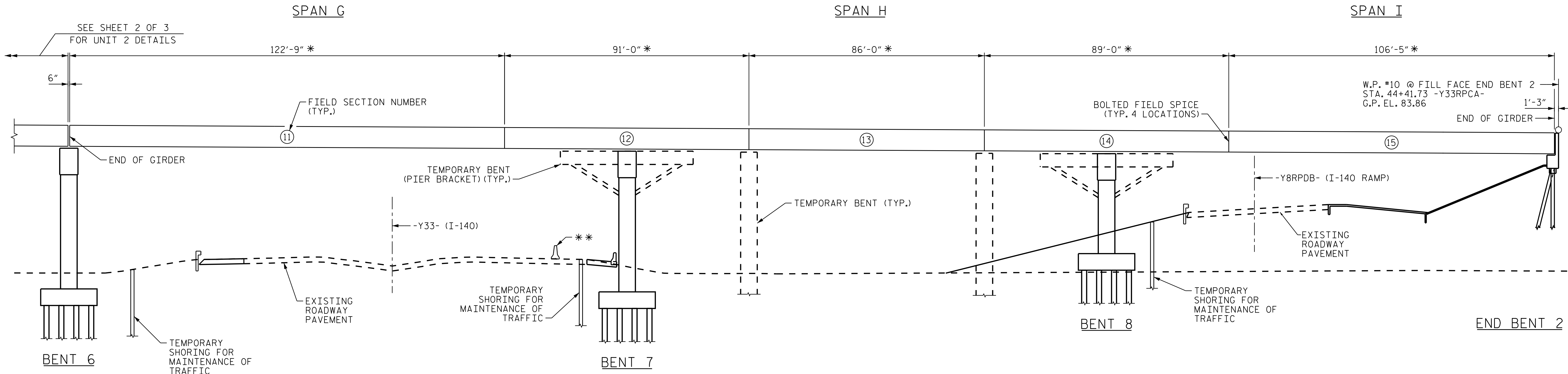
DESIGN ENGINEER OF RECORD: S. S. POOLE DATE : 04/22/25



PROJECT NO. R-3300A
NEW HANOVER COUNTY
STATION: 219+49.69 -L1-
31+84.73 -Y33RPCA-
SHEET 2 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S01-019		
GIRDER ERECTION DETAILS						UNIT 2		
REVISIONS						TOTAL SHEETS 113		
NO.	BY:	DATE:	NO.	BY:	DATE:			
1			3					
2			4					

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SECTION ALONG -Y33RPCA- (UNIT 3)
(SECTIONS AT BENTS ARE AT RIGHT ANGLES)

* FIELD SECTION LENGTHS SHOWN ARE MEASURED ALONG -Y33RPCA-,
ACTUAL FIELD SECTION LENGTHS VARY BY GIRDER.

** PORTABLE PRECAST CONCRETE MEDIAN
BARRIER, (TRAFFIC CONTROL DETAIL
AND PAY ITEM), SEE NCDOT STD. 854.04 & 1170.01.

ERECTION NOTES

SEE SHEET 1 OF 3 FOR ERECTION NOTES.

PROJECT NO. R-3300A

NEW HANOVER COUNTY

STATION: 219+49.69 -L1-
31+84.73 -Y33RPCA-

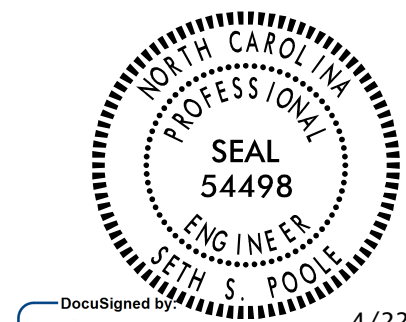
SHEET 3 OF 3



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Keith S. Poole
4/22/2025

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

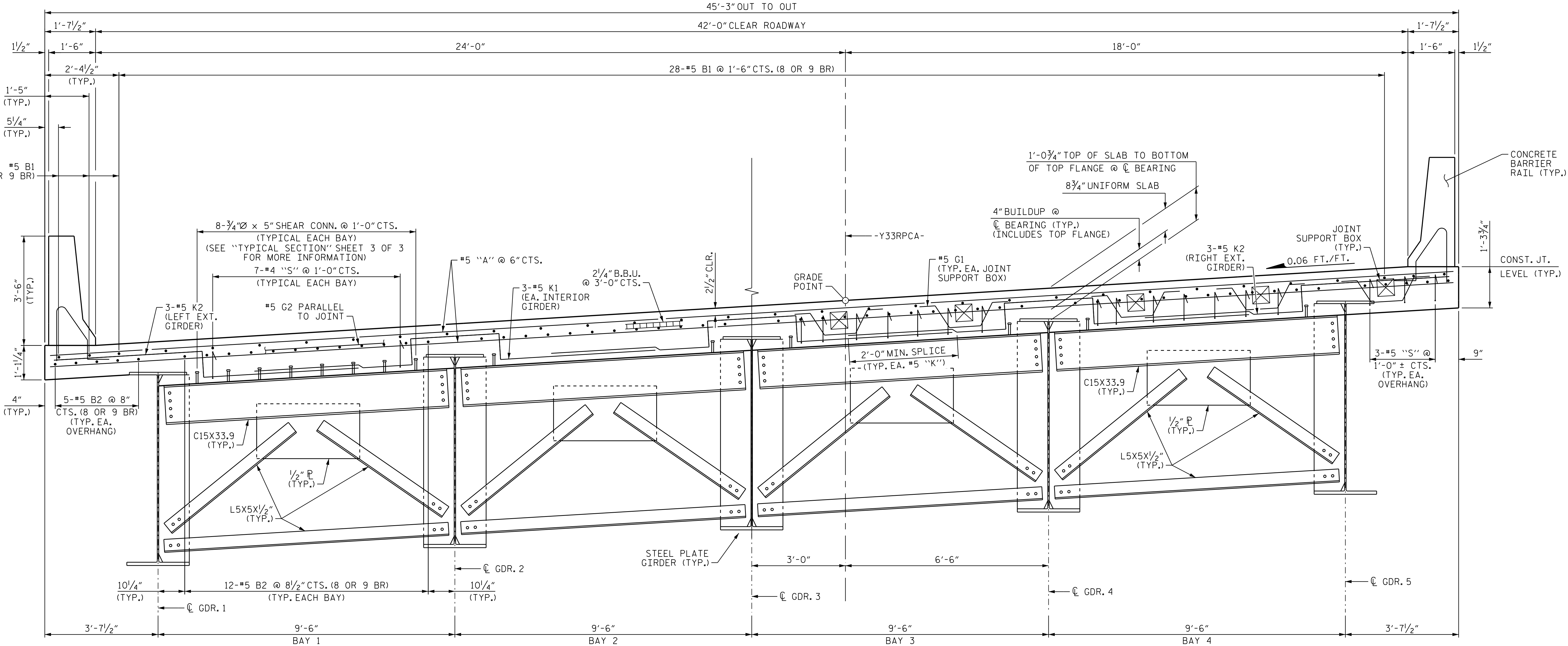
**GIRDER ERECTION
DETAILS**

UNIT 3

REVISIONS						SHEET NO. S01-020
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 113
2			4			

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DIAPHRAGMS AT END BENTS

DIAPHRAGMS AT EXPANSION BENTS

NOTES:

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

(8 OR 9 BR) DENOTES 8 BAR RUN FOR UNIT 1, 9 BAR RUN FOR UNITS 2 AND 3.

SEE "SUPERSTRUCTURE TYPICAL SECTION", SHEET 3 OF 3 FOR NOTES.

ALL DIMENSIONS ARE RADIAL.

#4 J1 BARS NOT SHOWN FOR CLARITY.

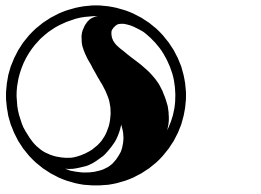
TYPICAL SECTION - ALL SPANS

PROJECT NO. R-3300A

NEW HANOVER COUNTY

STATION: 219+49.69 -L1-31+84.73 -Y33RPCA-

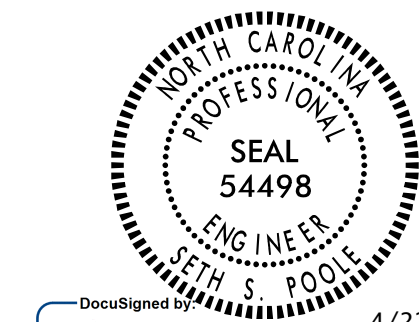
SHEET 2 OF 3



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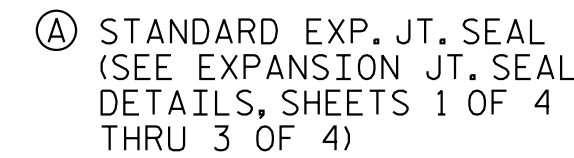
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STATE OF NORTH CAROLINA
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RALEIGH
SUPERSTRUCTURE
TYPICAL SECTION
AT EXPANSION BENTS
AND END BENTS

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3/4"Ø x 5" SHEAR STUDS SPACED AT 1'-0" SEE SHEET S01-044 FOR MORE INFORMATION

4'-0" 4'-0"

TRANSVERSE CONST. JT.

2 1/4" HIGH B.B.U. @ 3'-0" CTS.

"A" BARS

1'-5"

3 1/2" CLR. TO S1 (TYP.)

#4 S1 (TYP.)

#5 G1 (TYP.)

1 1/4" HIGH B.B.U. (TYP.) (SEE NOTES)

TRANSVERSE CONST. JT.

"B" BARS

STAY-IN-PLACE METAL FORM (TYP.)

JOINT SUPPORT BOX (TYP.)

2 7/8"

2" CLR. TO S1

3-#5 "K" (TYP.)

2" HIGH BEAM BOLSTER (TYP.)

2" CLR. TO #4 "S"

8 3/4" UNIFORM SLAB

1'-3" 1'-3"

1'-9" 1'-9"

BEARING STIFFENER P

L5x5x1/2 (TYP.)

Ø BEARING

* FORMED JOINT OPENING @ 60°F.

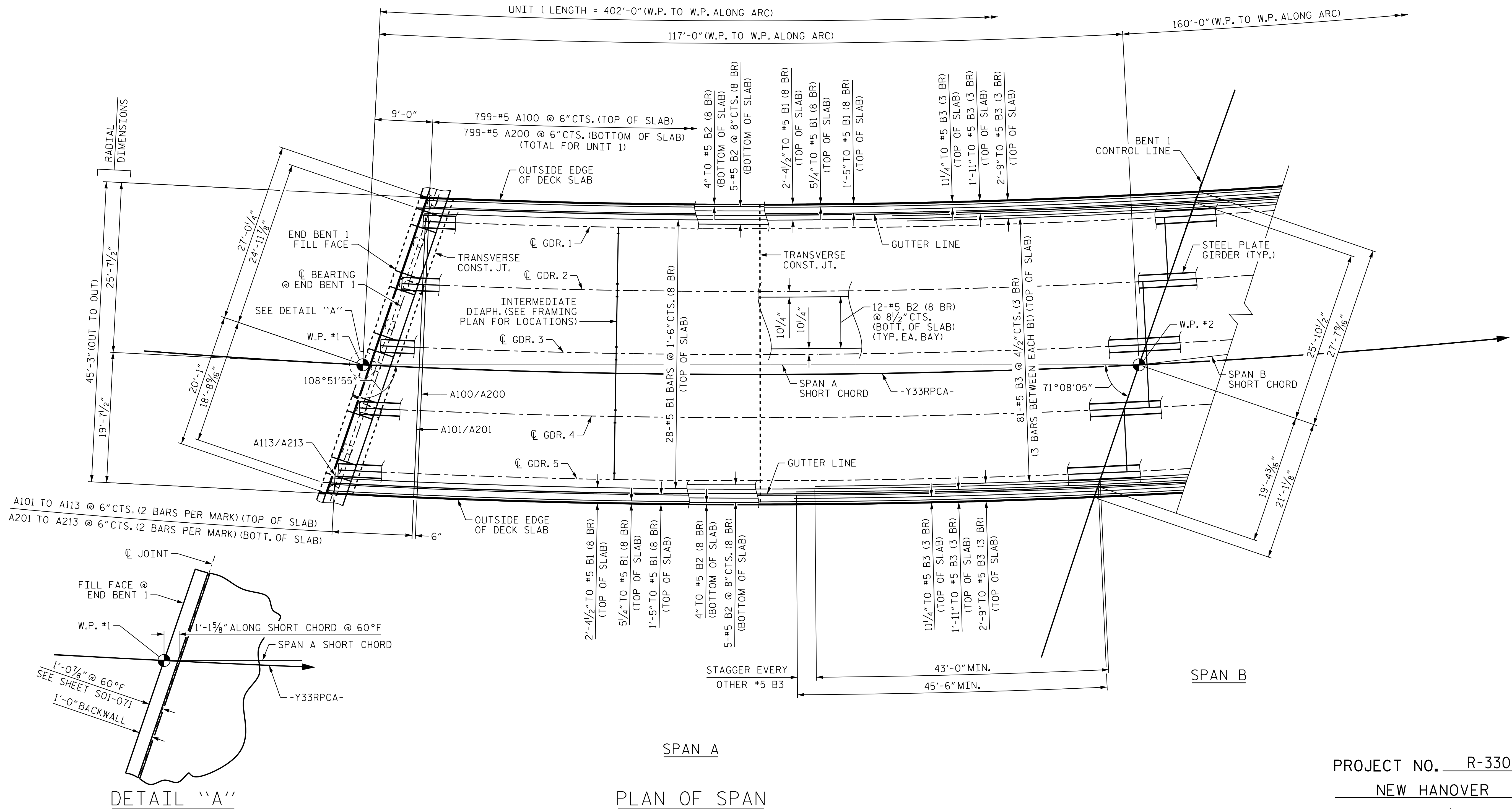
REINFORCING STEEL IN SLAB NOT SHOWN.
LONGITUDINAL REINFORCING STEEL SHALL BE
CONTINUOUS THROUGH JOINT.



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2			4			



SPLICES

BAR MARK	SIZE	MIN. SPLICE
B1 AND B3 (COATED)	#5	2'-5"
B2 (UNCOATED)	#5	2'-0"

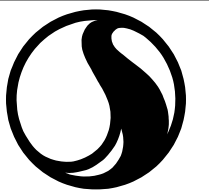
NOTES:

(8 BR) DENOTES 8 BAR RUN
(3 BR) DENOTES 3 BAR RUN

ALL DIMENSIONS MEASURED
RADIALLY UNLESS OTHERWISE
NOTED.

FOR TRANSVERSE CONSTRUCTION
JOINTS AND DECK POUR SEQUENCE,
SEE SUPERSTRUCTURE BILL OF
MATERIAL.

PLACE #5 "A" BARS NORMAL TO AND
ALONG SPAN SHORT CHORD.



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NEW HANOVER COUNTY

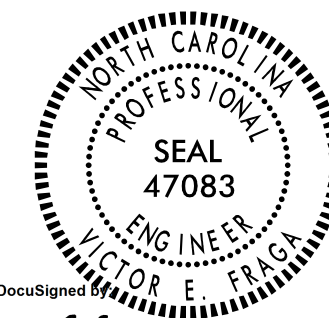
STATION: 219+49.69 -L1-
31+84.73 -Y33RPCA-

SHEET 1 OF 10

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

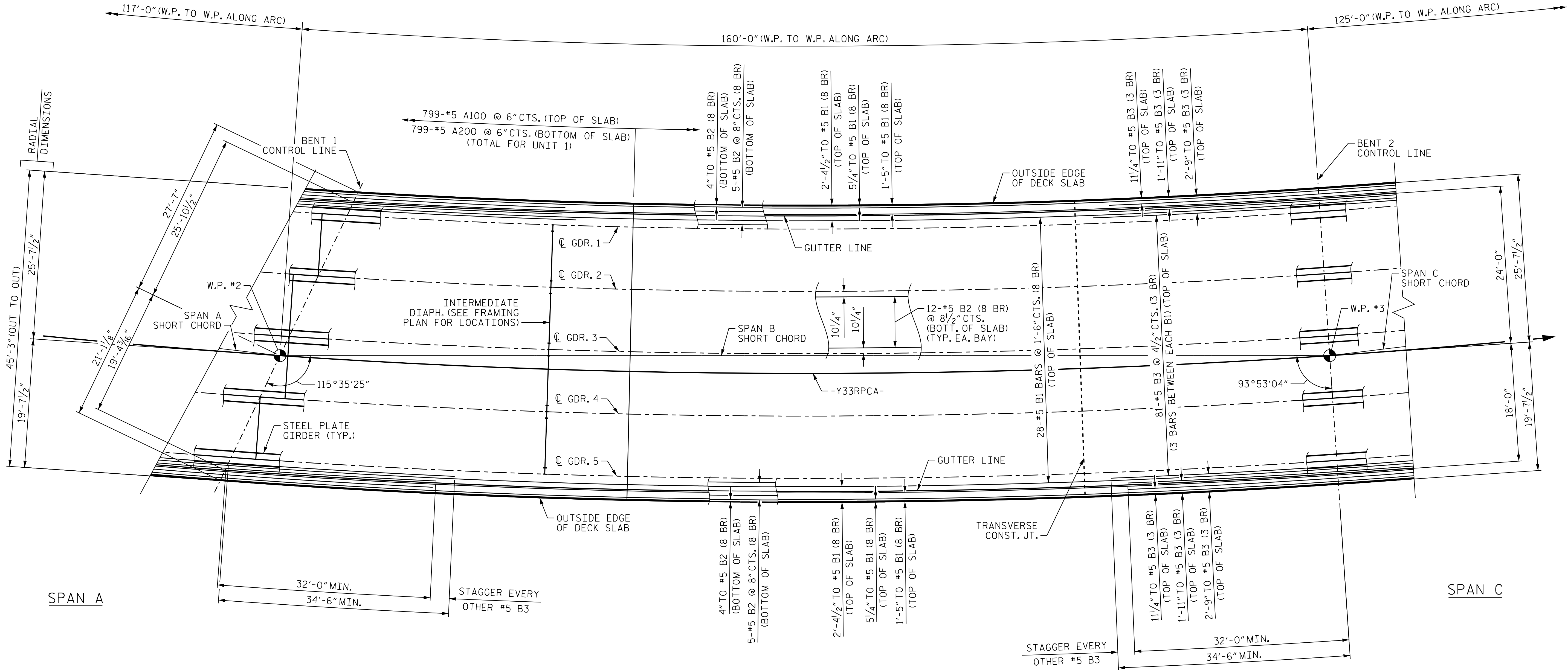
PLAN OF SPAN
SPAN A



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PLAN OF SPAN

SPICES		
BAR MARK	SIZE	MIN. SPLICE
B1 AND B3 (COATED)	#5	2'-5"
B2 (UNCOATED)	#5	2'-0"

NOTES:
(8 BR) DENOTES 8 BAR RUN
(3 BR) DENOTES 3 BAR RUN

ALL DIMENSIONS MEASURED
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FOR TRANSVERSE CONSTRUCTION
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MATERIAL.

PLACE #5 "A" BARS NORMAL TO AND
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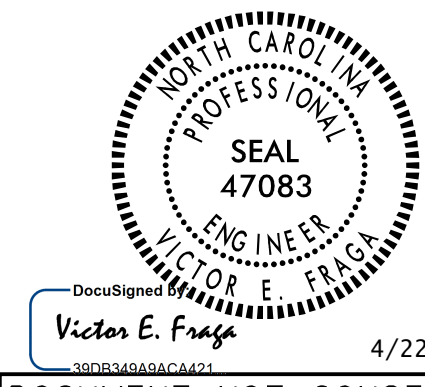


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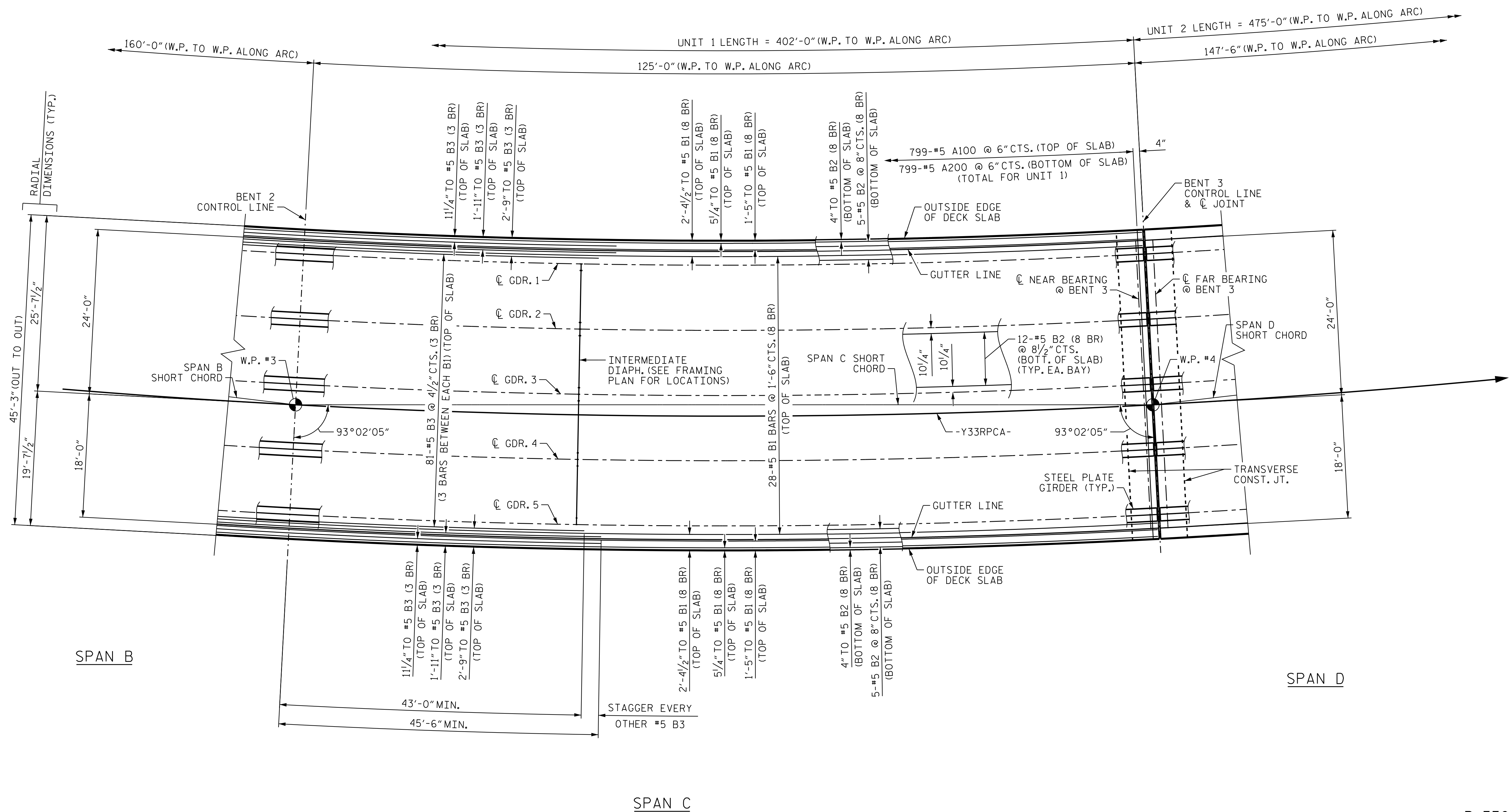
PROJECT NO. R-3300A
NEW HANOVER COUNTY
STATION: 219+49.69 -L1-
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SHEET 2 OF 10

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
PLAN OF SPAN
SPAN B



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PLAN OF SPAN

SPLICES		
BAR MARK	SIZE	MIN. SPLICE
B1 AND B3 (COATED)	#5	2'-5"
B2 (UNCOATED)	#5	2'-0"

NOTES:

(8 BR) DENOTES 8 BAR RUN
(3 BR) DENOTES 3 BAR RUN

ALL DIMENSIONS MEASURED
RADIALLY UNLESS OTHERWISE
NOTED.

FOR TRANSVERSE CONSTRUCTION
JOINTS AND DECK POUR SEQUENCE,
SEE SUPERSTRUCTURE BILL OF
MATERIAL.

PLACE #5 "A" BARS NORMAL TO AND
ALONG SPAN SHORT CHORD.



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NEW HANOVER COUNTY

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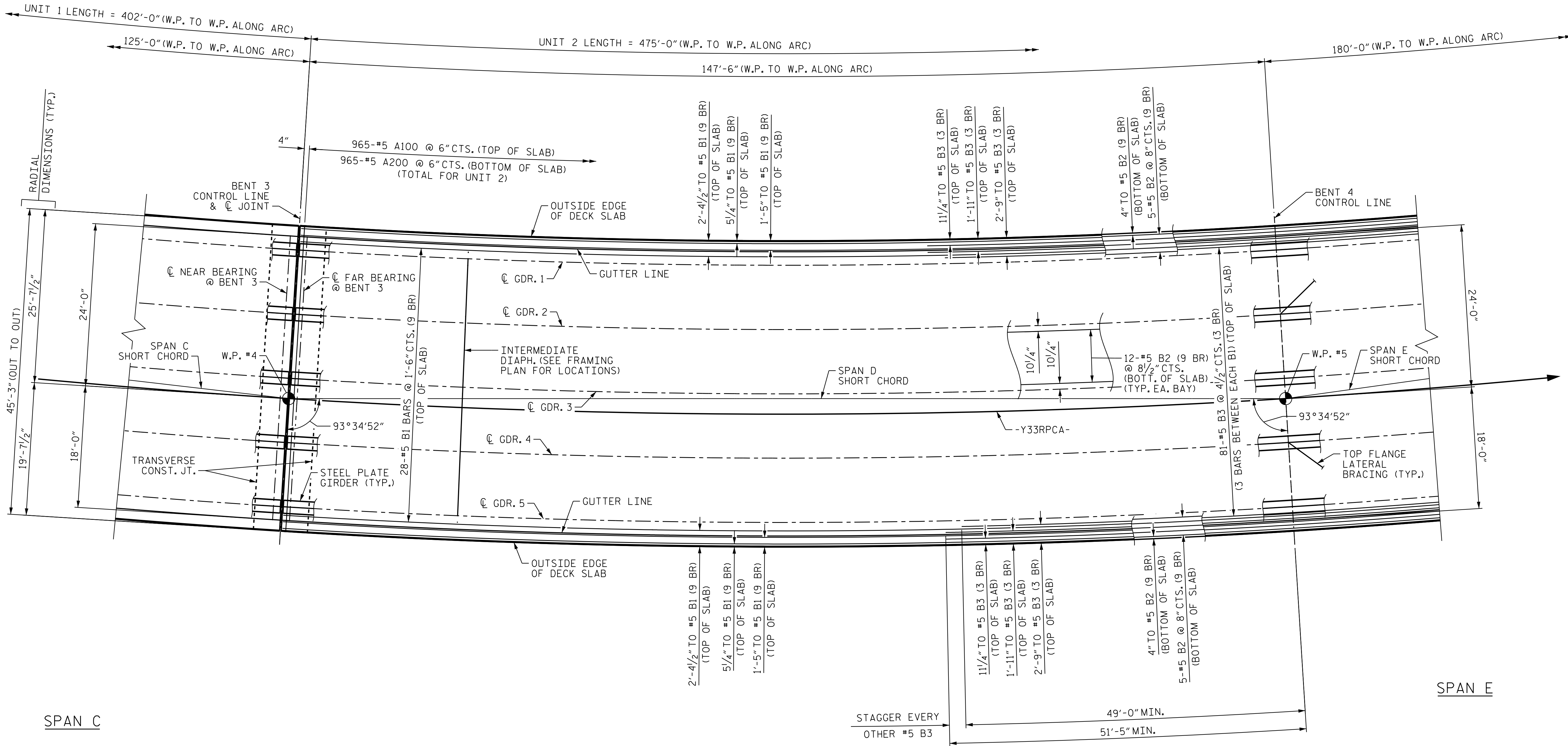
SHEET 3 OF 10

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

RALEIGH
SUPERSTRUCTURE

PLAN OF SPAN
SPAN C

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PLAN OF SPAN

SPICES		
BAR MARK	SIZE	MIN. SPLICE
B1 AND B3 (COATED)	#5	2'-5"
B2 (UNCOATED)	#5	2'-0"

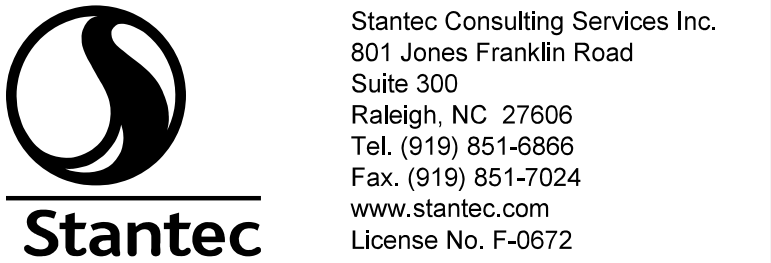
NOTES:

(9 BR) DENOTES 9 BAR RUN
(3 BR) DENOTES 3 BAR RUN

ALL DIMENSIONS MEASURED
RADIALLY UNLESS OTHERWISE
NOTED.

FOR TRANSVERSE CONSTRUCTION
JOINTS AND DECK POUR
SEQUENCE, SEE SUPERSTRUCTURE
BILL OF MATERIAL.

PLACE #5 "A" BARS NORMAL TO
AND ALONG SPAN SHORT CHORD.



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NEW HANOVER COUNTY
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SHEET 4 OF 10

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

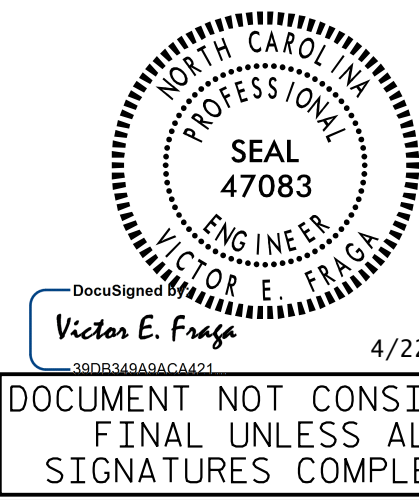
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SUPERSTRUCTURE

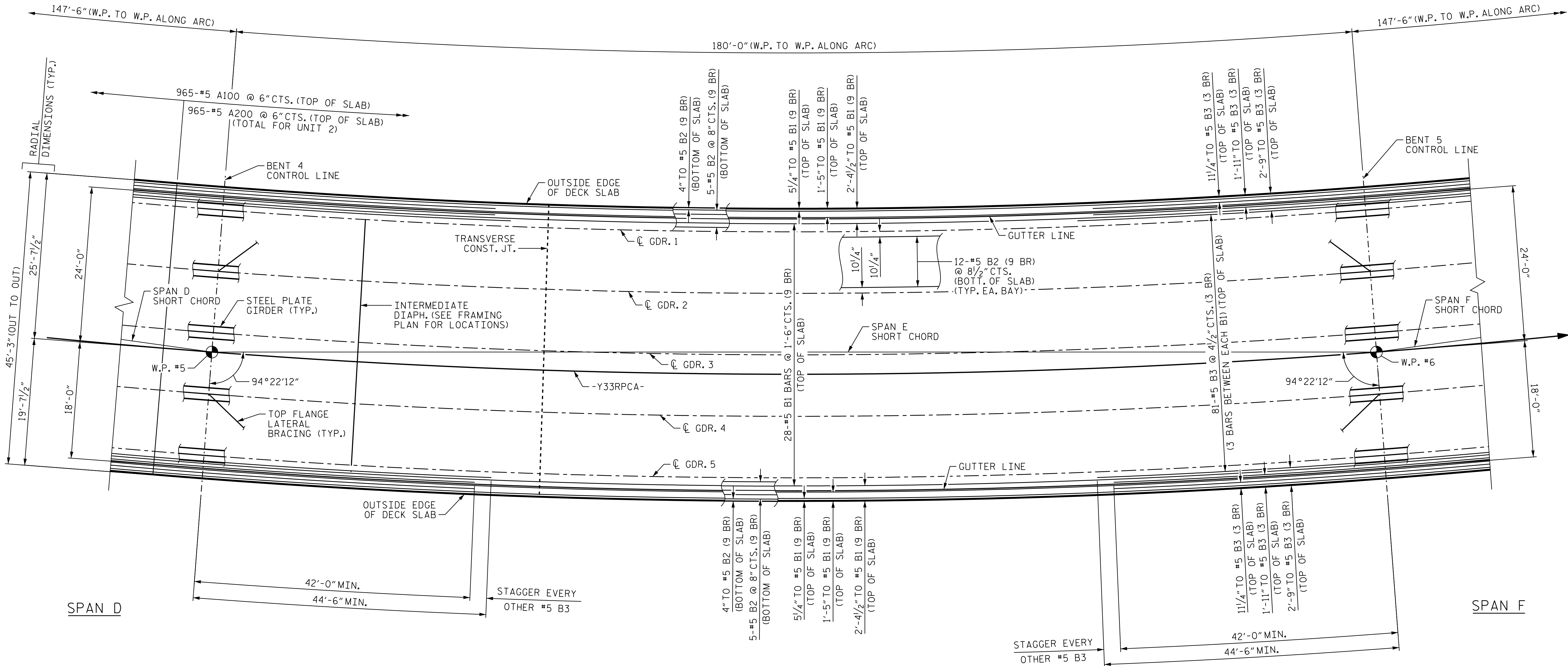
PLAN OF SPAN

SPAN D

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PLAN OF SPAN

SPlices		
BAR MARK	SIZE	MIN. SPLICE
B1 AND B3 (COATED)	#5	2'-5"
B2 (UNCOATED)	#5	2'-0"

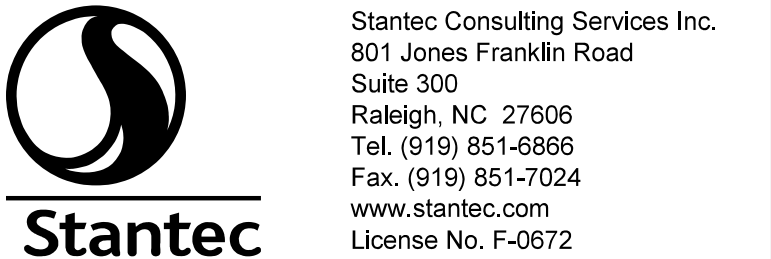
NOTES:

(9 BR) DENOTES 9 BAR RUN
(3 BR) DENOTES 3 BAR RUN

ALL DIMENSIONS MEASURED
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NOTED.

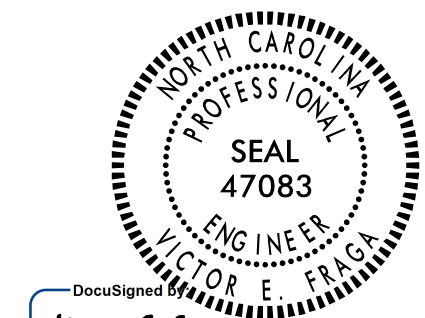
FOR TRANSVERSE CONSTRUCTION
JOINTS AND DECK POUR SEQUENCE,
SEE SUPERSTRUCTURE BILL OF
MATERIAL.

PLACE #5 "A" BARS NORMAL TO
AND ALONG SPAN SHORT CHORD.



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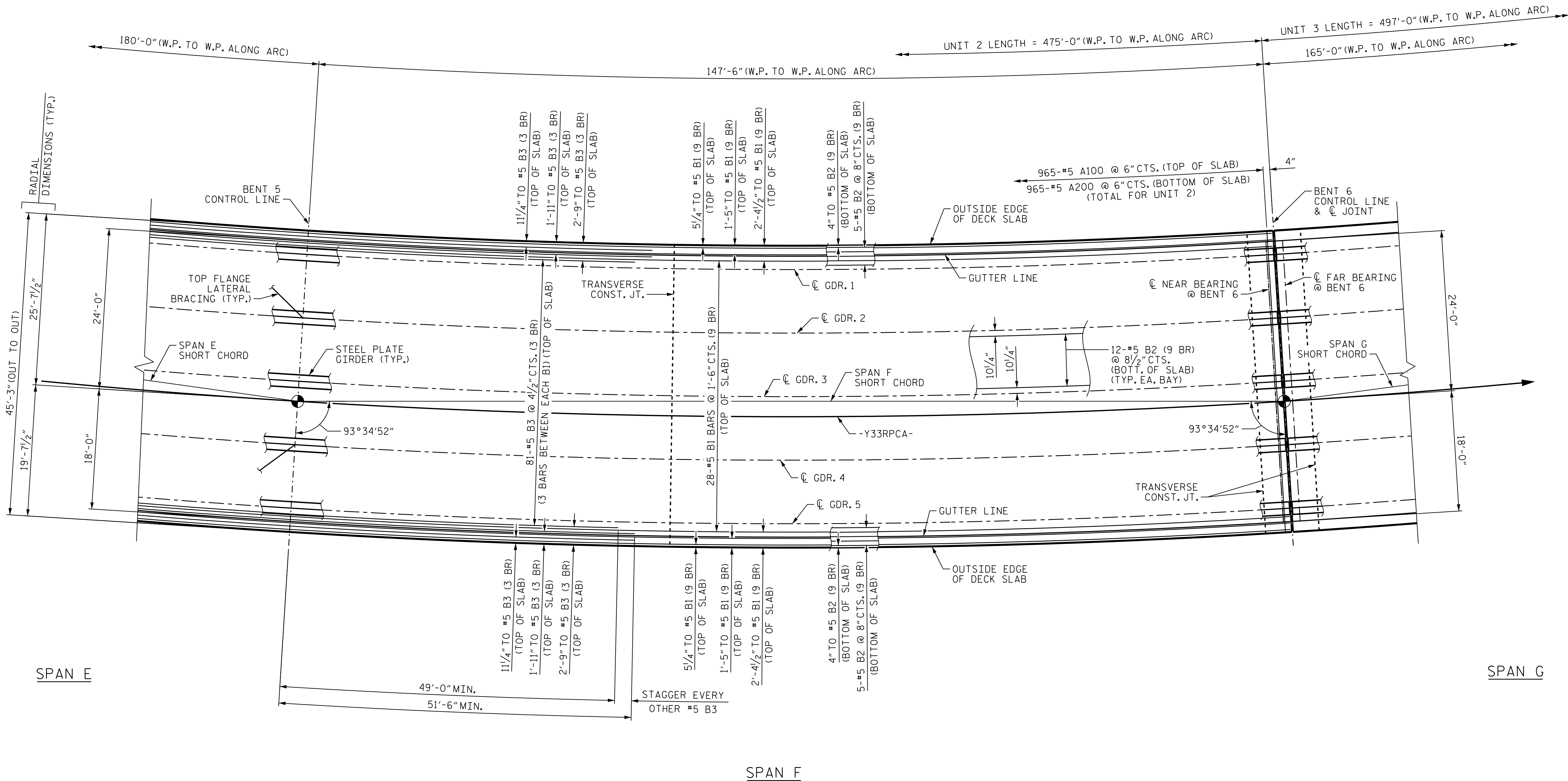
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SHEET 5 OF 10



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PLAN OF SPAN

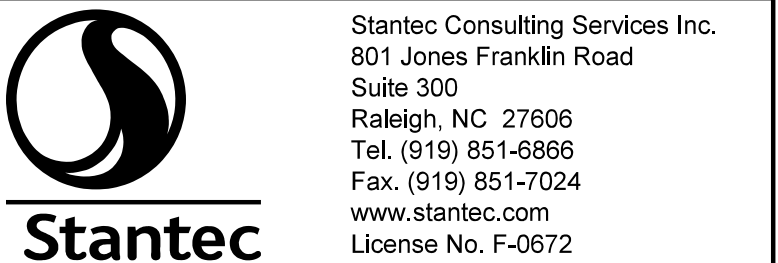
SPICES		
BAR MARK	SIZE	MIN. SPLICE
B1 AND B3 (COATED)	#5	2'-5"
B2 (UNCOATED)	#5	2'-0"

NOTES:
(9 BR) DENOTES 9 BAR RUN
(3 BR) DENOTES 3 BAR RUN

ALL DIMENSIONS MEASURED
RADIALLY UNLESS OTHERWISE
NOTED.

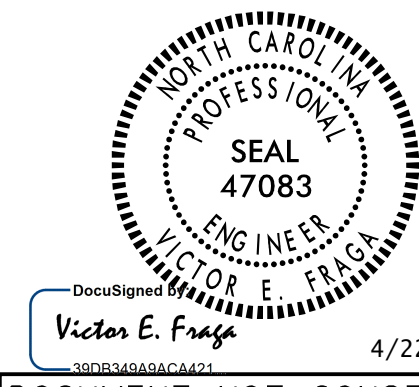
FOR TRANSVERSE CONSTRUCTION
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PLACE #5 "A" BARS NORMAL TO AND
ALONG SPAN SHORT CHORD.



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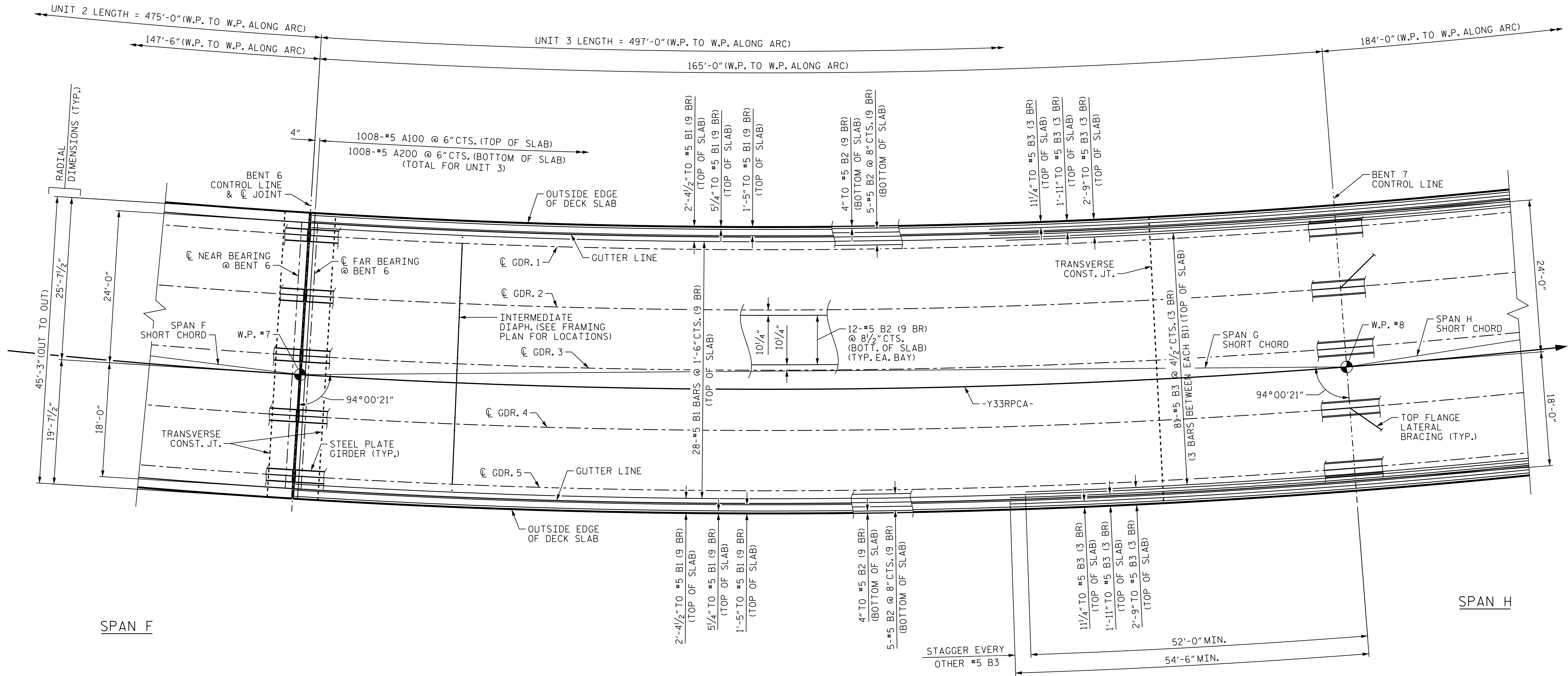
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STATION: 219+49.69 -L1-
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SHEET 6 OF 10



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SPAN F

SPAN H

SPAN G

PLAN OF SPAN

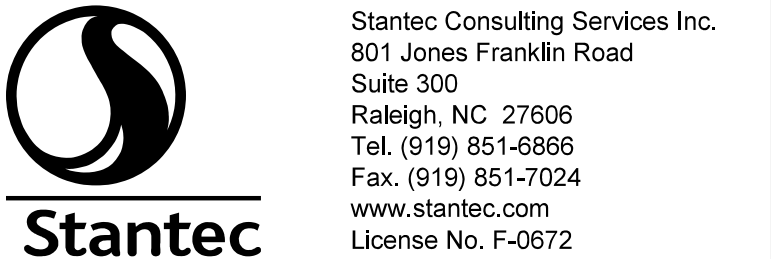
SPICES		
BAR MARK	SIZE	MIN. SPLICE
B1 AND B3 (COATED)	#5	2'-5"
B2 (UNCOATED)	#5	2'-0"

NOTES:
(9 BR) DENOTES 9 BAR RUN
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ALL DIMENSIONS MEASURED
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NOTED.

FOR TRANSVERSE CONSTRUCTION
JOINTS AND DECK POUR
SEQUENCE, SEE SUPERSTRUCTURE
BILL OF MATERIAL.

PLACE #5 "A" BARS NORMAL TO
AND ALONG SPAN SHORT CHORD.



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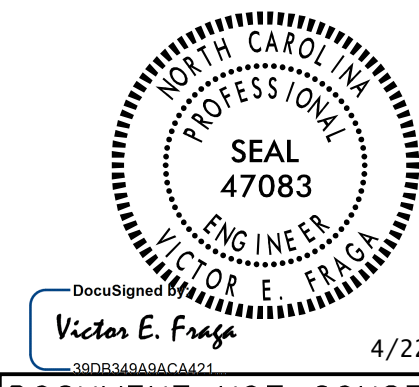
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31+84.73 -Y33RPCA-

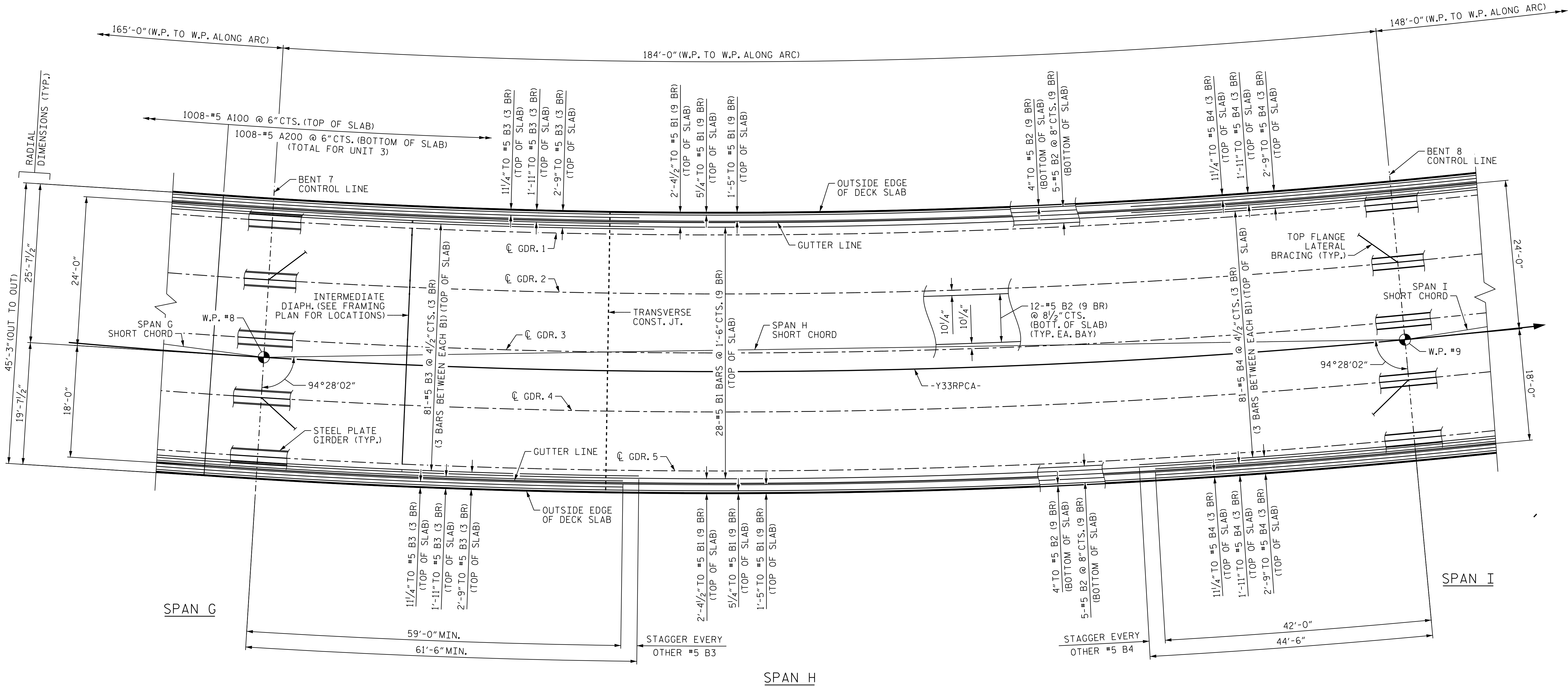
SHEET 7 OF 10

STATE OF NORTH CAROLINA
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PLAN OF SPAN
SPAN G



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PLAN OF SPAN

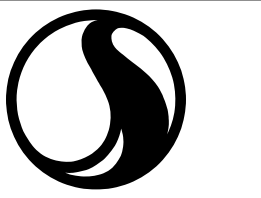
NOTES:
(9 BR) DENOTES 9 BAR RUN
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FOR TRANSVERSE CONSTRUCTION
JOINTS AND DECK POUR SEQUENCE,
SEE SUPERSTRUCTURE BILL OF
MATERIAL.

PLACE #5 "A" BARS NORMAL TO
AND ALONG SPAN SHORT CHORD.

SPlices		
BAR MARK	SIZE	MIN. SPLICE
B1 AND B3 (COATED)	#5	2'-5"
B2 (UNCOATED)	#5	2'-0"



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PROJECT NO. R-3300A
NEW HANOVER COUNTY
STATION: 219+49.69 -L1-
31+84.73 -Y33RPCA-
SHEET 8 OF 10

STATE OF NORTH CAROLINA
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RALEIGH
SUPERSTRUCTURE
PLAN OF SPAN
SPAN H

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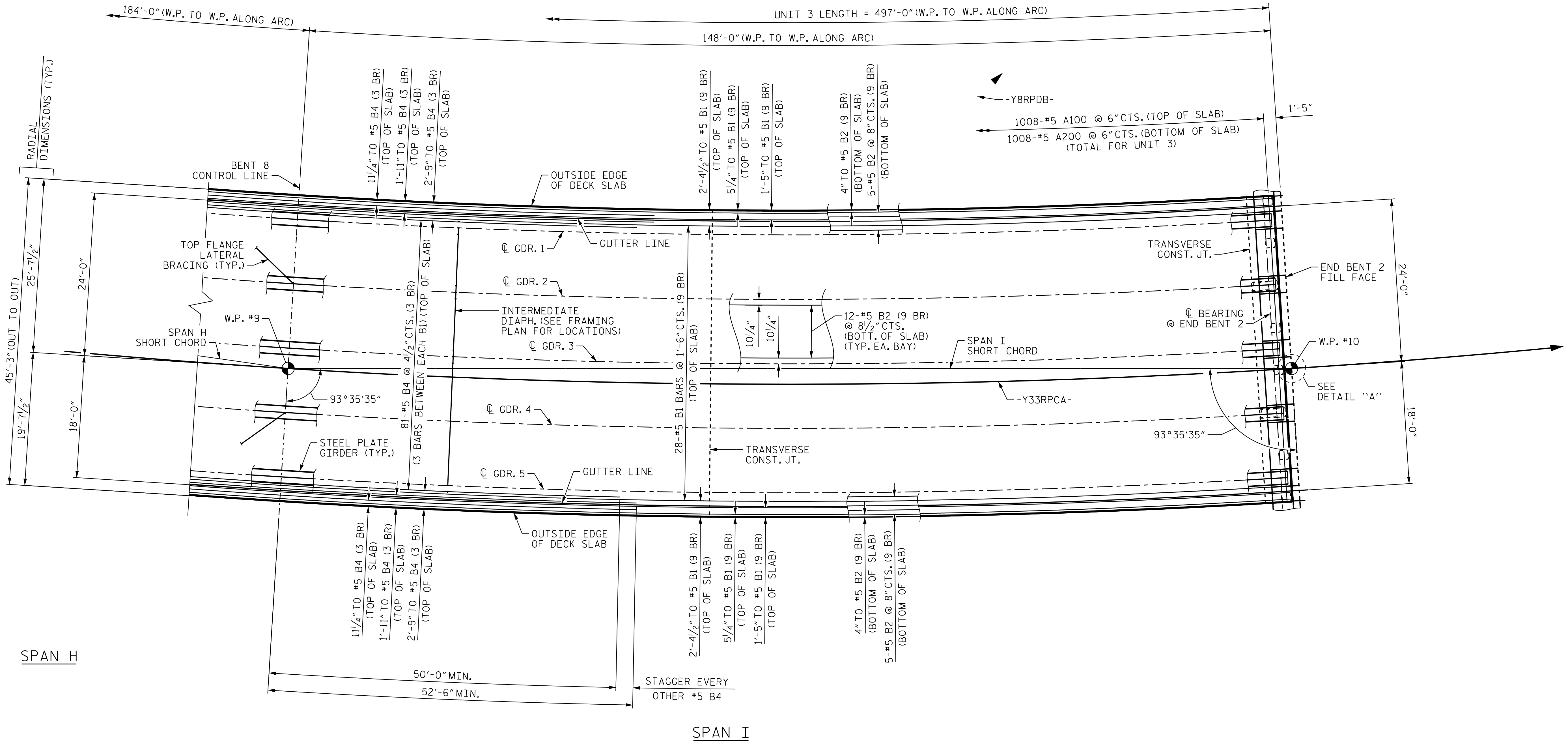


Victor E. Fraga
47083
ENGINEER

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PLAN OF SPAN

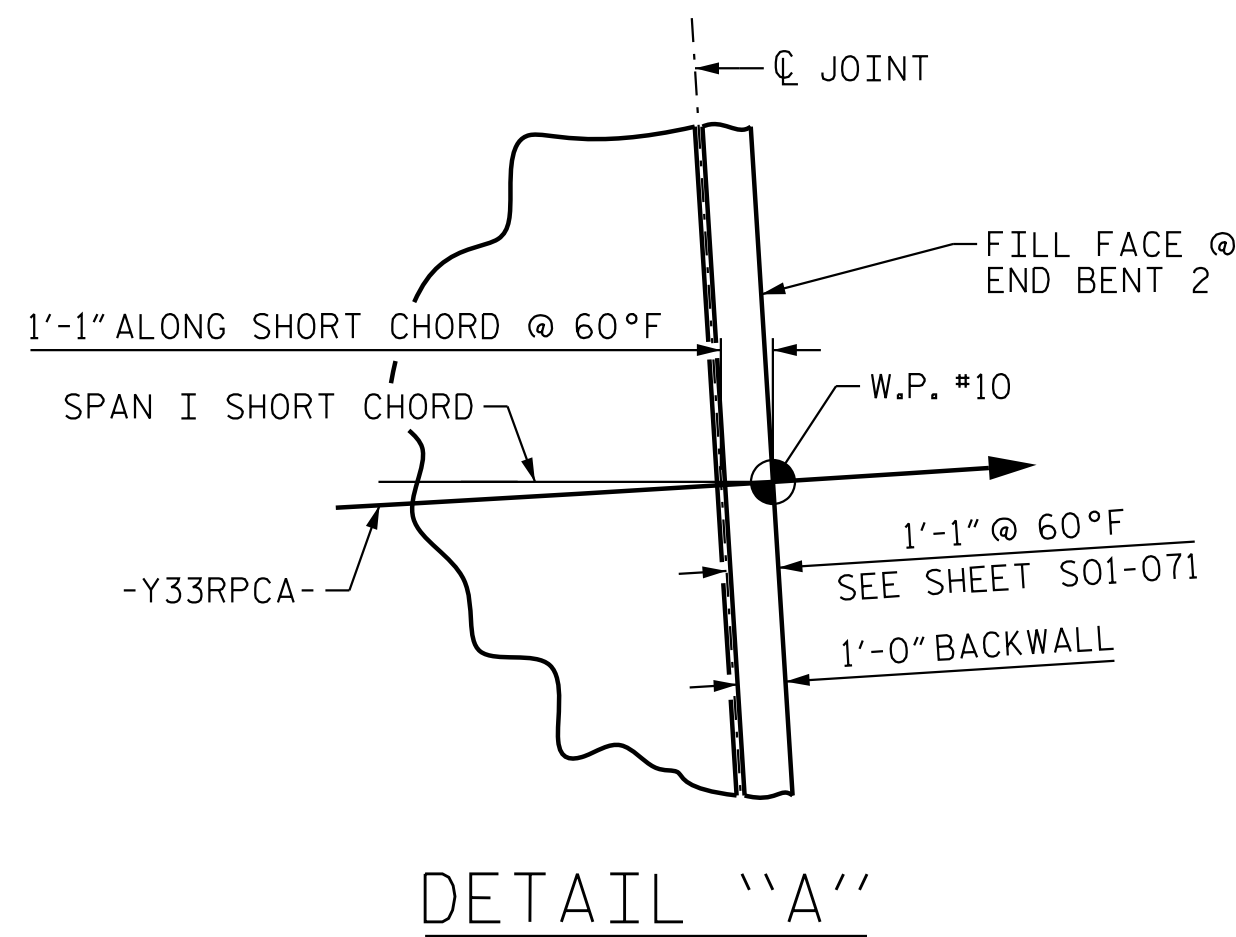
NOTES:

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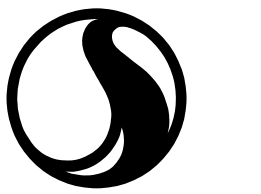
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JOINTS AND DECK POUR
SEQUENCE, SEE SUPERSTRUCTURE
BILL OF MATERIAL.

PLACE #5 "A" BARS NORMAL TO
AND ALONG SPAN SHORT CHORD.



DETAIL 'A'

SPICES		
BAR MARK	SIZE	MIN. SPLICE
B1 AND B3 (COATED)	#5	2'-5"
B2 (UNCOATED)	#5	2'-0"



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ENGINEER
OF RECORD: V. E. FRAGA DATE : 04/22/25

PROJECT NO. R-3300A

NEW HANOVER COUNTY

STATION: 219+49.69 -L1-
31+84.73 -Y33RPCA-

SHEET 9 OF 10

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

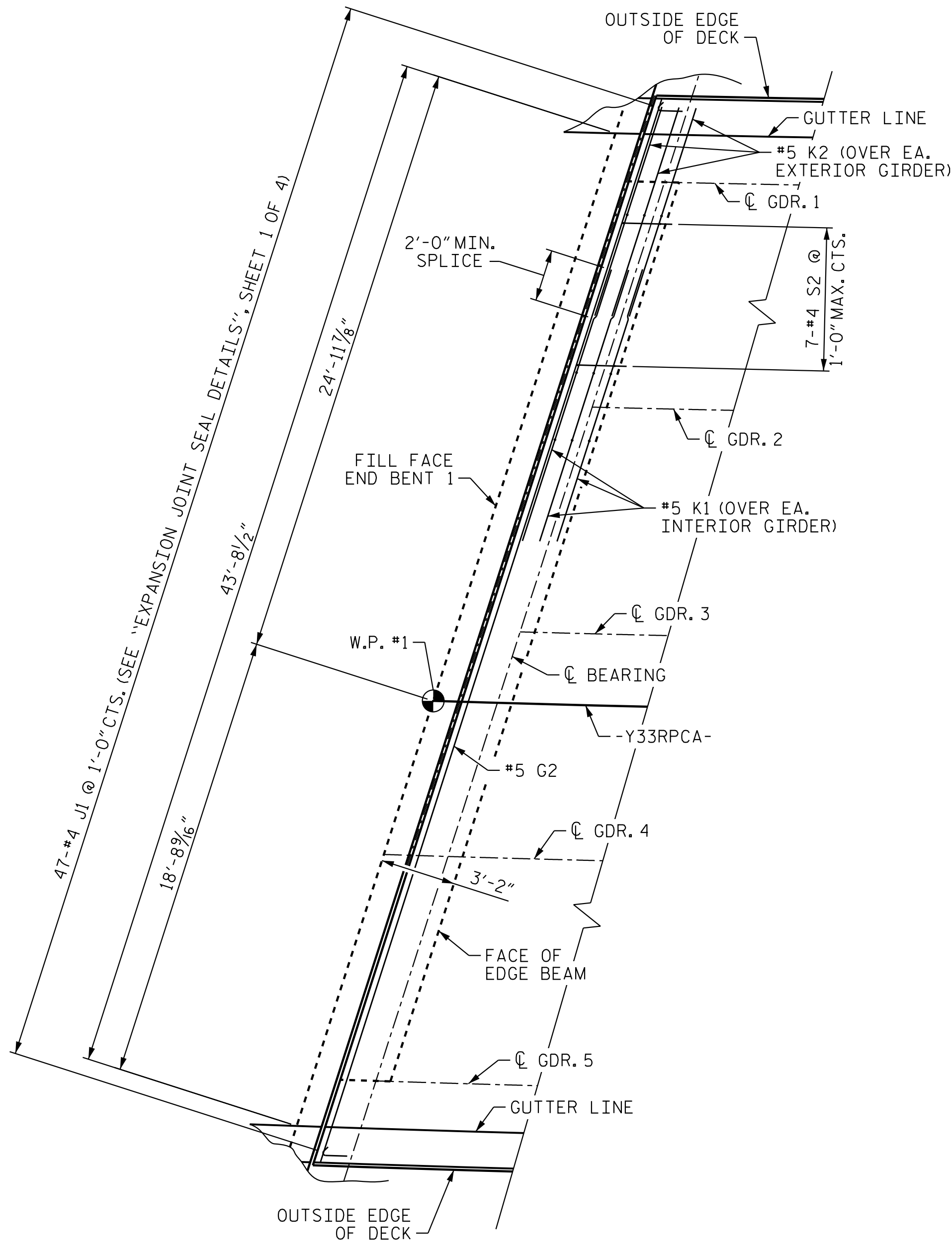
SUPERSTRUCTURE

PLAN OF SPAN
SPAN I

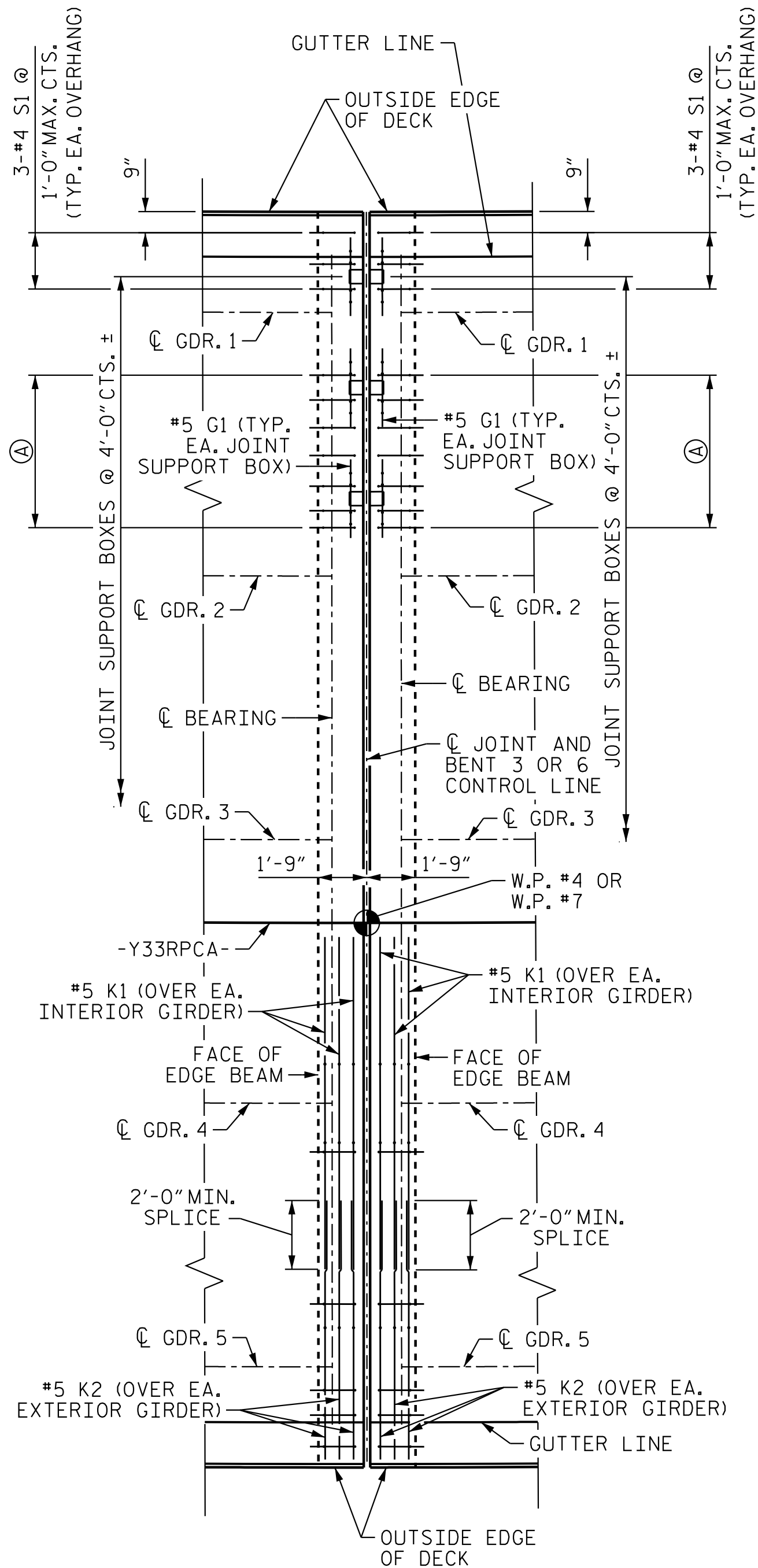


DocuSigned by
Victor E. Fraga
3018534069AC7A21
4/22/2025
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REVISIONS						SHEET NO. S01-032
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 113
2			4			

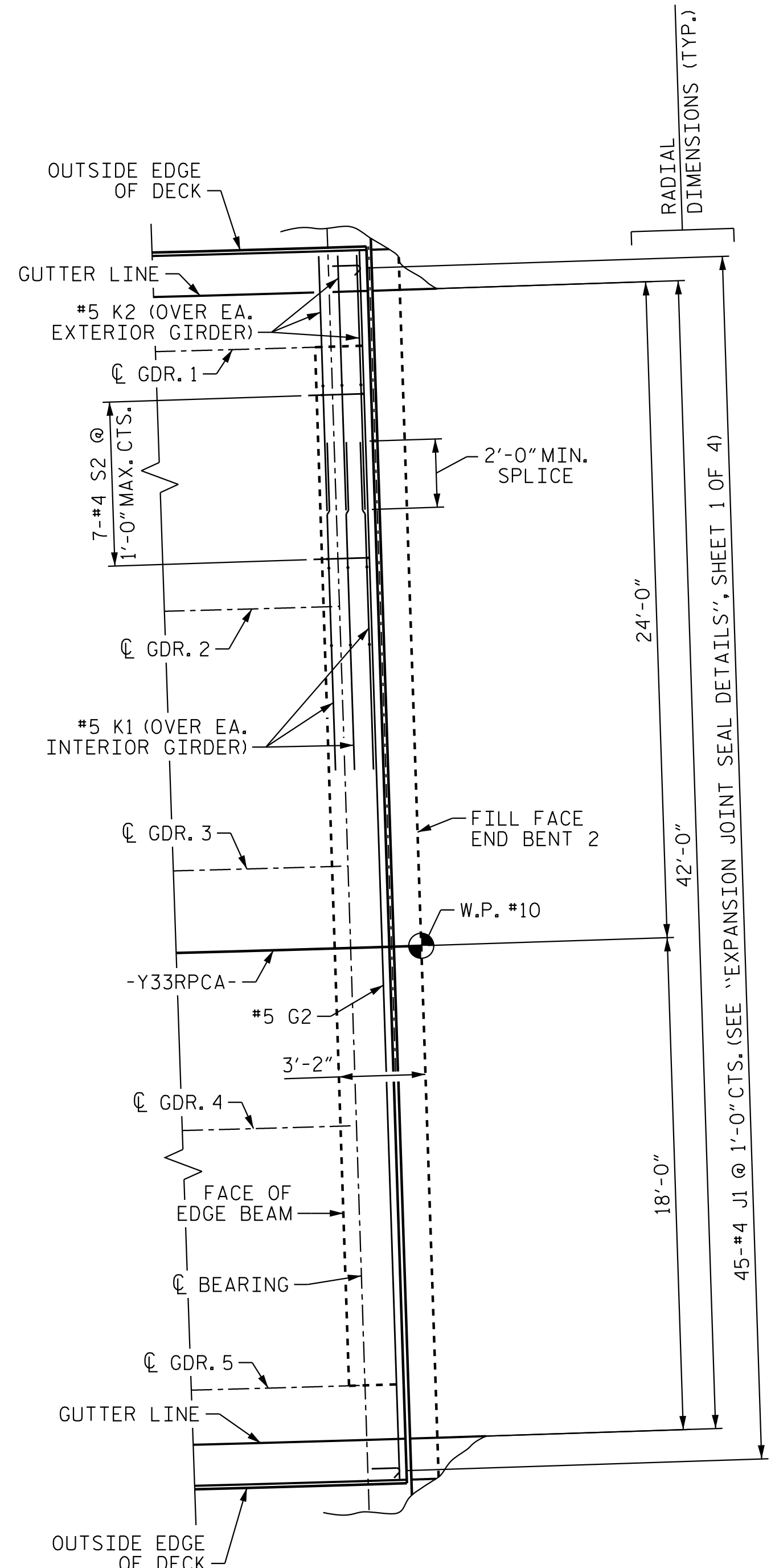


JOINT AT END BENT 1



JOINT AT BENTS 3 AND 6

Ⓐ : 7-#4 S1 PLACED AS SHOWN AT JOINT SUPPORT BOX LOCATIONS AND @ 1'-0" MAX. CTS.
SEE "MODULAR EXPANSION JOINT SEAL DETAILS", SHEET 4 OF 4.
CONTRACTOR MAY RELOCATE OR MODIFY DIAPHRAGM "K" AND "S" BARS
AS DIRECTED BY THE ENGINEER TO CLEAR MODULAR JOINT SEAL COMPONENTS.



JOINT AT END BENT 2

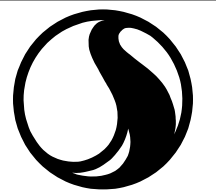
PLAN OF SPAN -- DETAIL OF EDGE BEAM AT JOINTS

PROJECT NO. R-3300A

NEW HANOVER COUNTY

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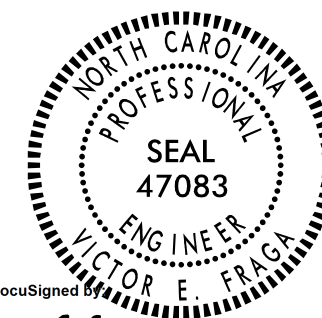
SHEET 10 OF 10



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DRAWN BY : V. E. FRAGA DATE : 09/05/18
CHECKED BY : S. S. POOLE DATE : 02/01/22

DESIGN
ENGINEER
OF RECORD: V. E. FRAGA DATE : 04/22/25

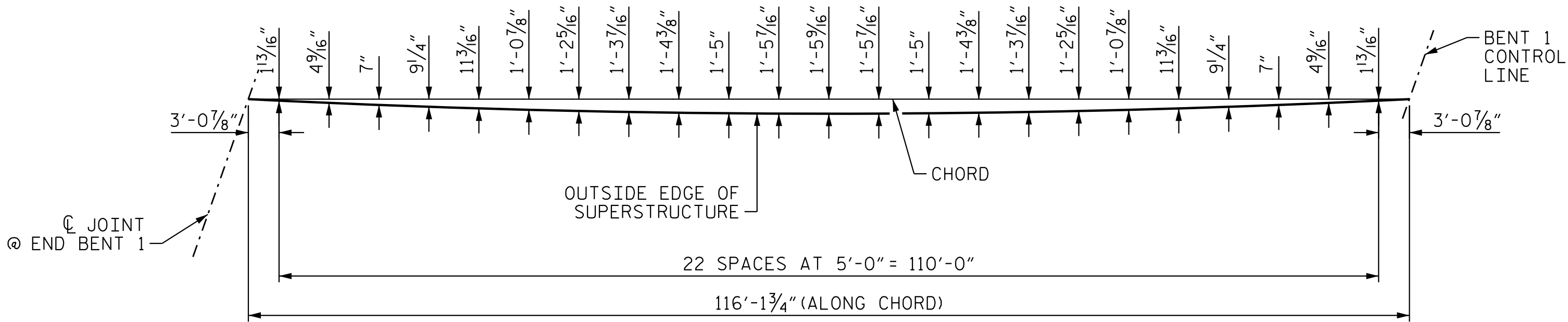


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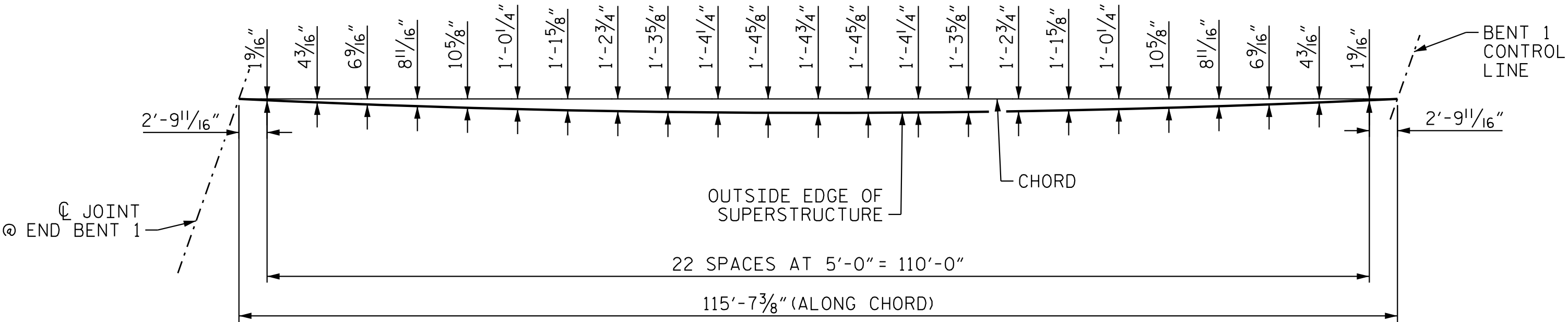
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

PLAN OF SPAN
DETAILS OF THICKENED
END SLAB AT EXPANSION JOINTS

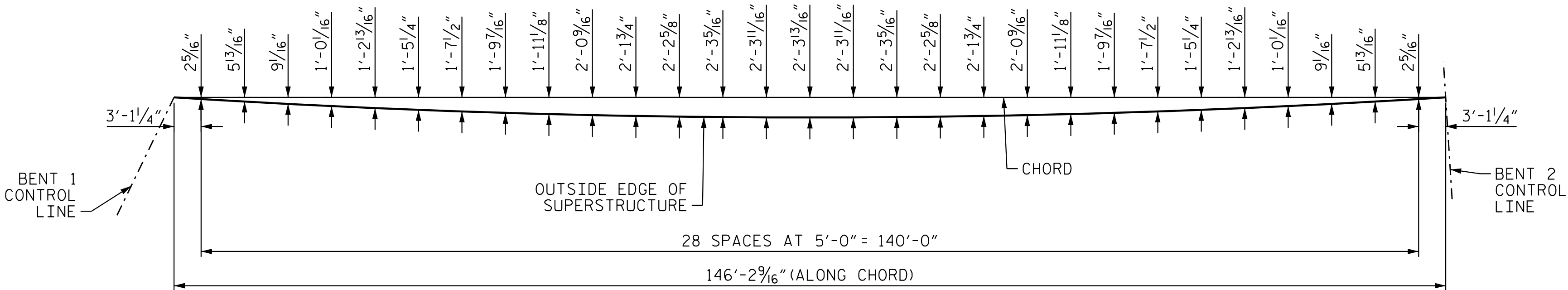
REVISIONS						SHEET NO. S01-033
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 113
2			4			



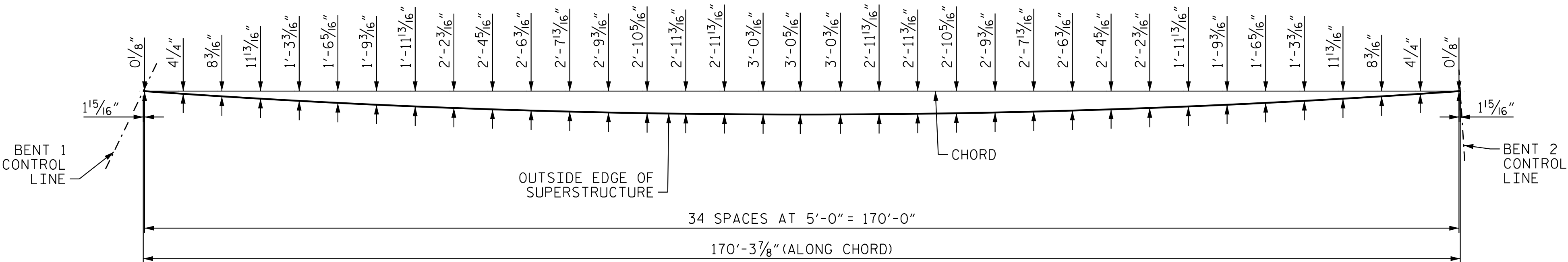
ARC OFFSETS - SPAN A (LEFT SIDE)



ARC OFFSETS - SPAN A (RIGHT SIDE)



ARC OFFSETS - SPAN B (LEFT SIDE)



ARC OFFSETS - SPAN B (RIGHT SIDE)

PROJECT NO. R-3300A

NEW HANOVER COUNTY

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SHEET 1 OF 5

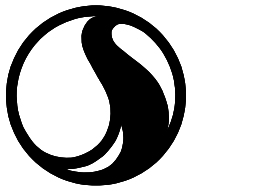
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

ARC OFFSETS

SPAN A, SPAN B

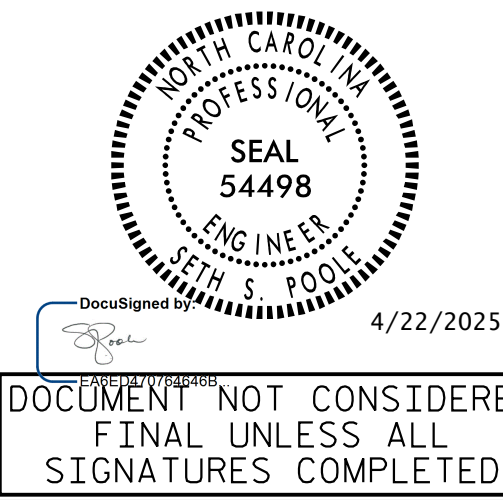
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NO.	BY:	DATE:	NO.	BY:	DATE:	
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2			4			



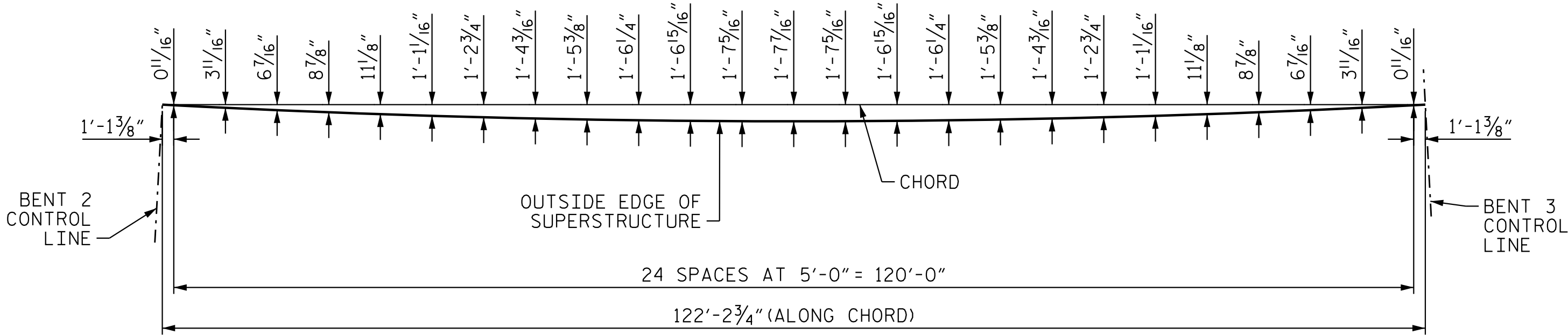
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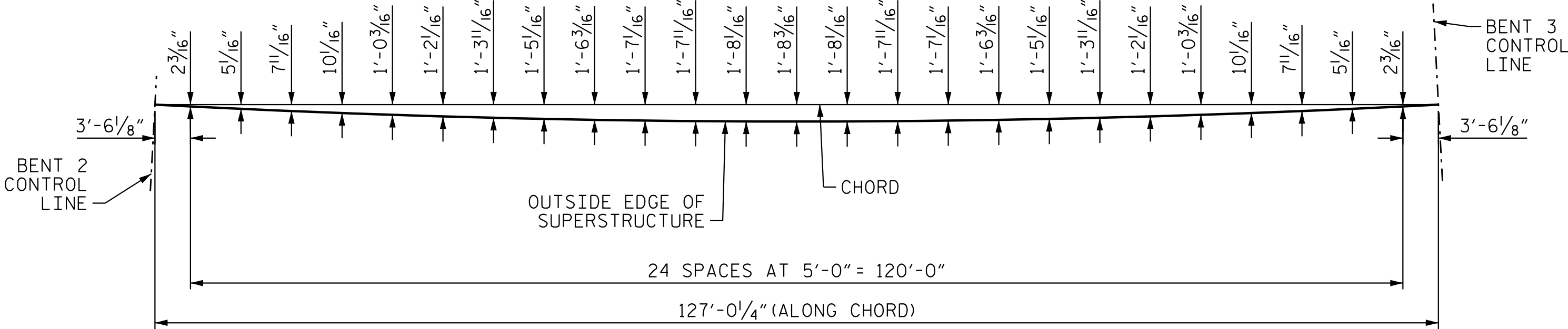
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OF RECORD: S. S. POOLE DATE : 04/22/25



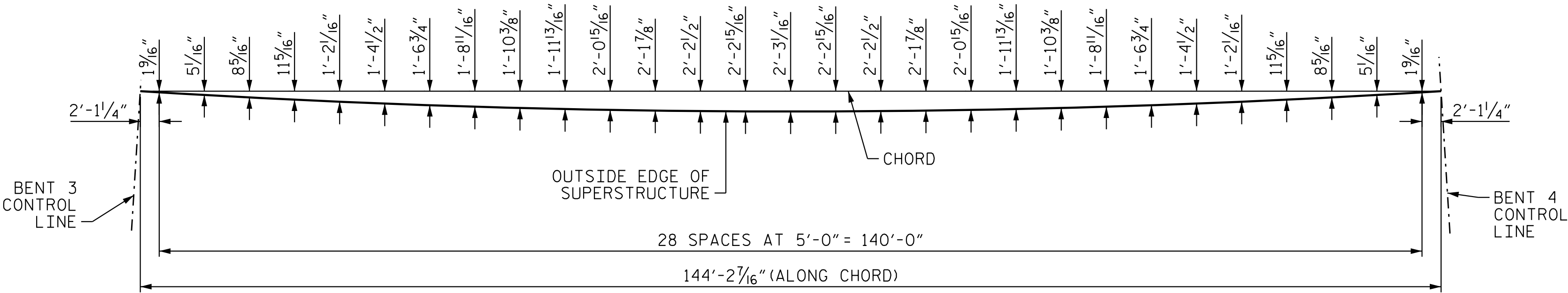
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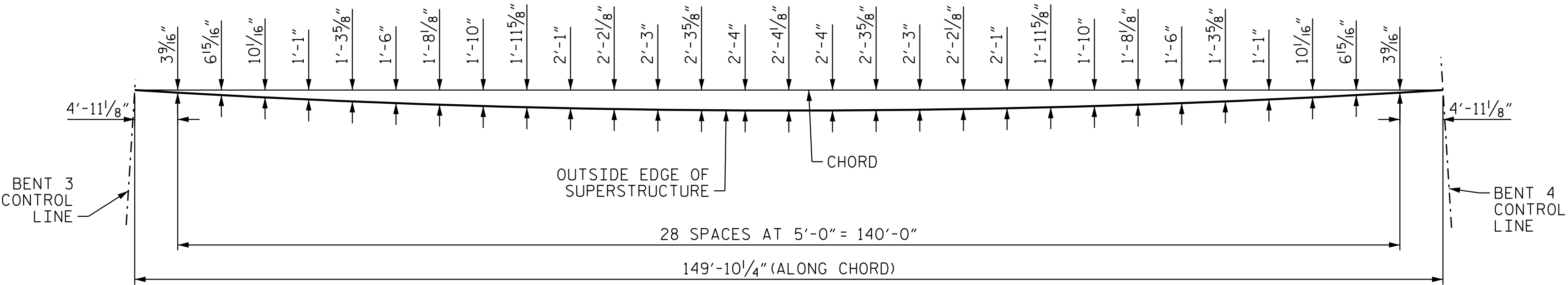
ARC OFFSETS - SPAN C (LEFT SIDE)



ARC OFFSETS - SPAN C (RIGHT SIDE)



ARC OFFSETS - SPAN D (LEFT SIDE)

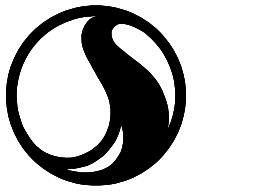


ARC OFFSETS - SPAN D (RIGHT SIDE)

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NEW HANOVER COUNTY
STATION: 219+49.69 -L1-
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SHEET 2 OF 5

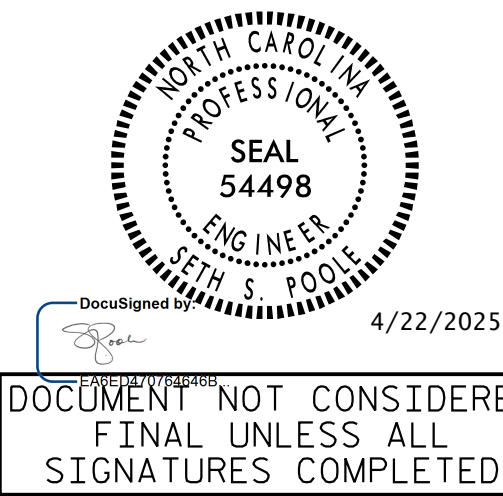
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SUPERSTRUCTURE						TOTAL SHEETS 113	
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SPAN C, SPAN D							
REVISIONS							
NO.	BY:	DATE:	NO.	BY:	DATE:		
1			3				
2			4				

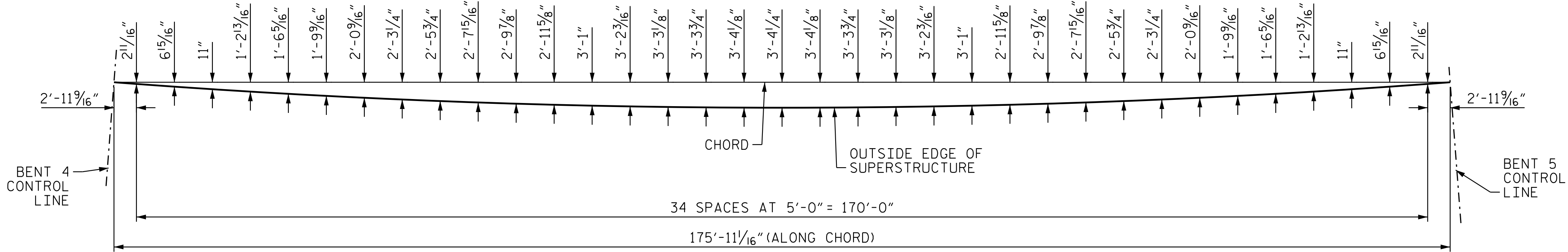


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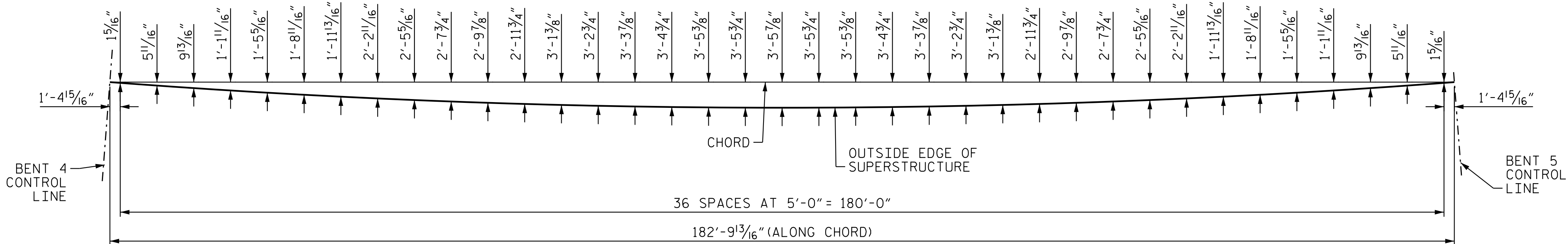
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CHECKED BY : V.E. FRAGA DATE : 04/10/19

DESIGN ENGINEER OF RECORD: S. S. POOLE DATE : 04/22/25

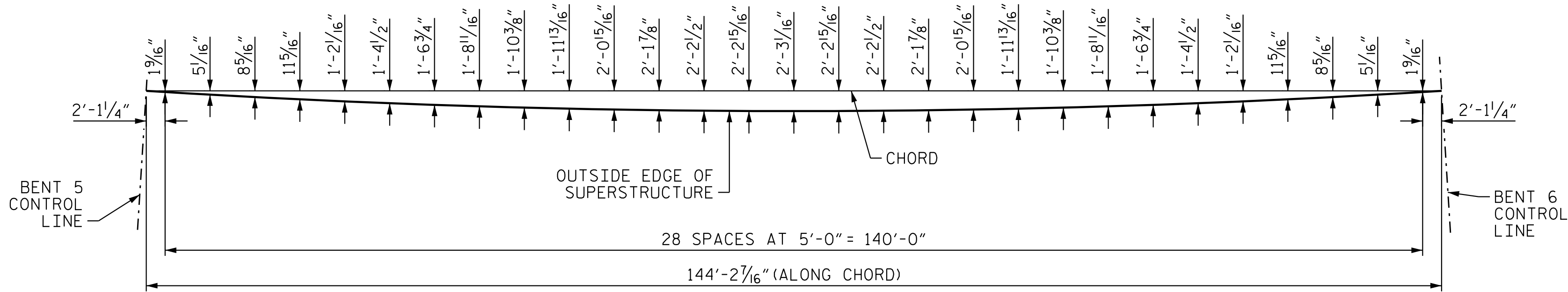




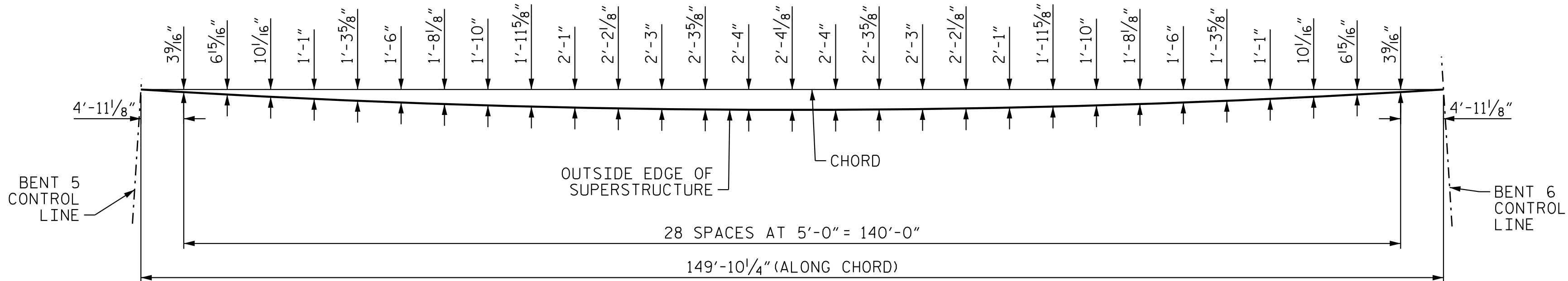
ARC OFFSETS - SPAN E (LEFT SIDE)



ARC OFFSETS - SPAN E (RIGHT SIDE)



ARC OFFSETS - SPAN F (LEFT SIDE)

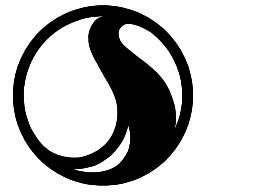


ARC OFFSETS - SPAN F (RIGHT SIDE)

PROJECT NO. R-3300A
NEW HANOVER COUNTY
STATION: 219+49.69 -L1-
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SHEET 3 OF 5

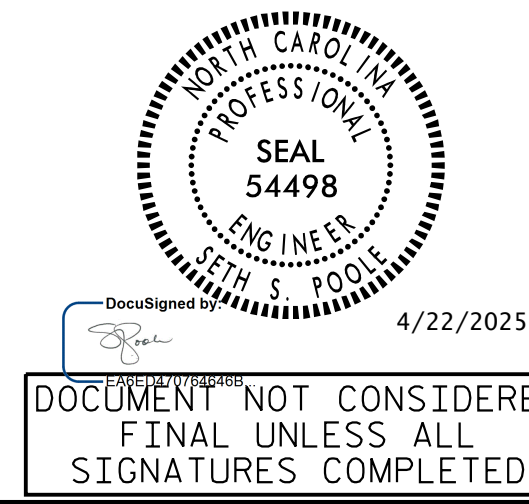
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH SUPERSTRUCTURE ARC OFFSETS SPAN E, SPAN F						SHEET NO. S01-036	
REVISIONS						TOTAL SHEETS 113	
NO.	BY:	DATE:	NO.	BY:	DATE:		
1			3				
2			4				

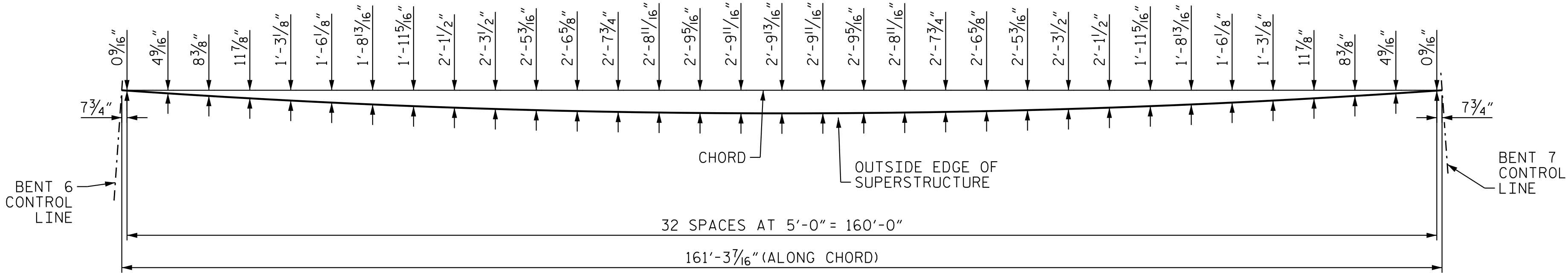


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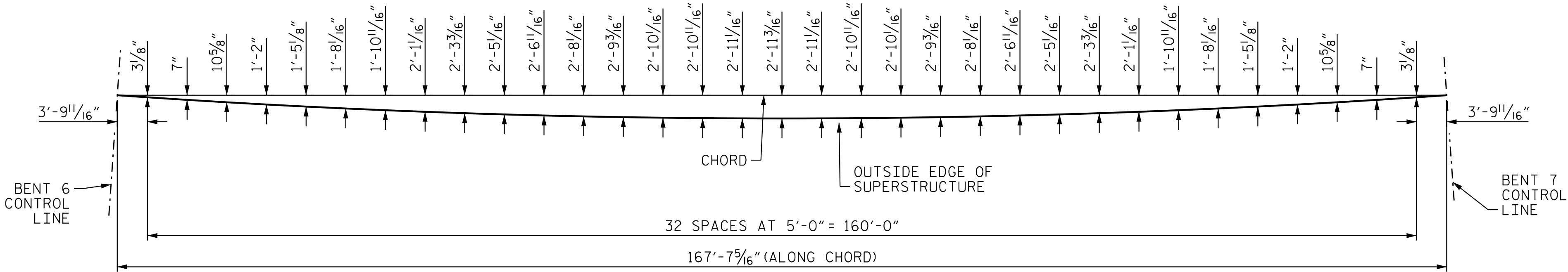
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DESIGN ENGINEER OF RECORD: S. S. POOLE DATE : 04/22/25

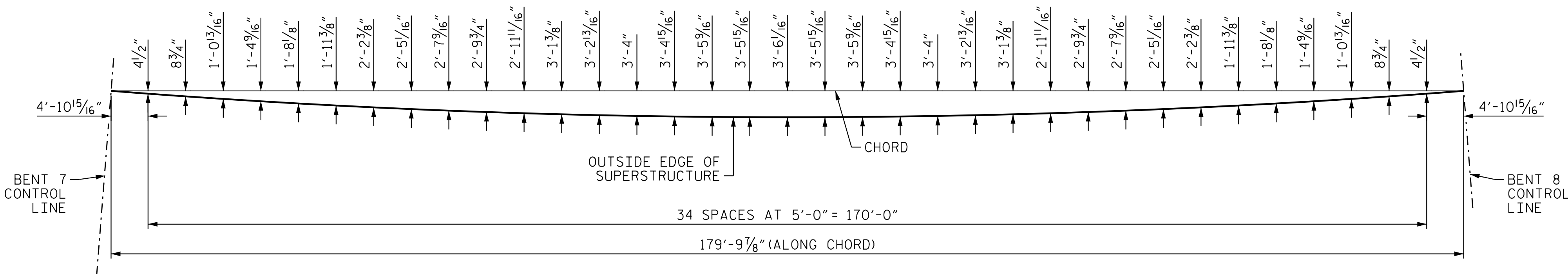




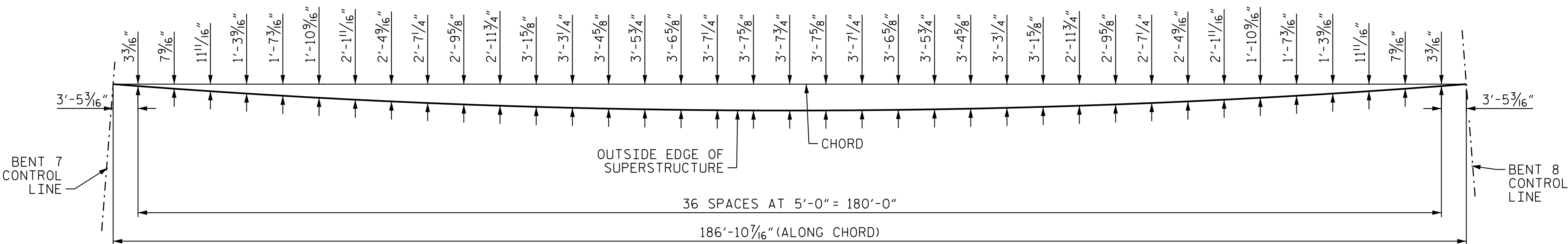
ARC OFFSETS - SPAN G (LEFT SIDE)



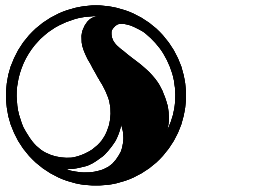
ARC OFFSETS - SPAN G (RIGHT SIDE)



ARC OFFSETS - SPAN H (LEFT SIDE)



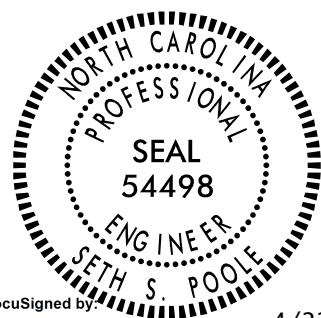
ARC OFFSETS - SPAN H (RIGHT SIDE)



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NEW HANOVER COUNTY

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SHEET 4 OF 5

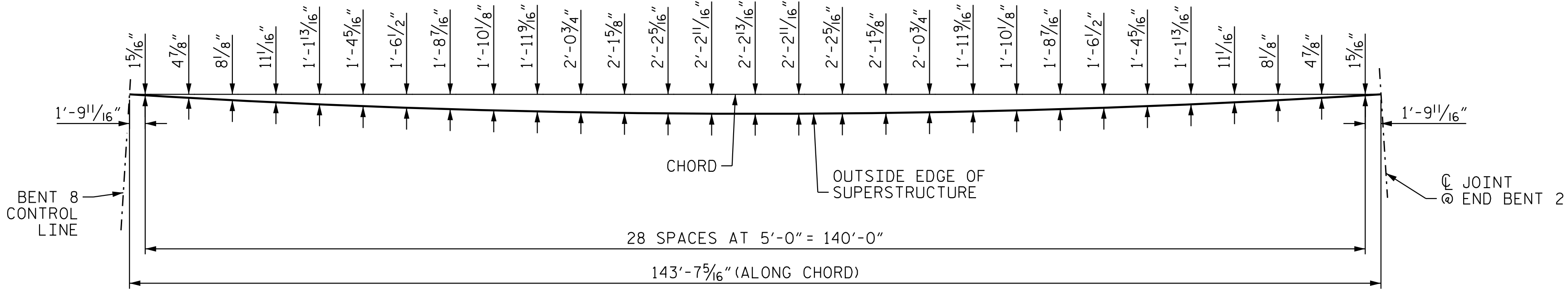
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

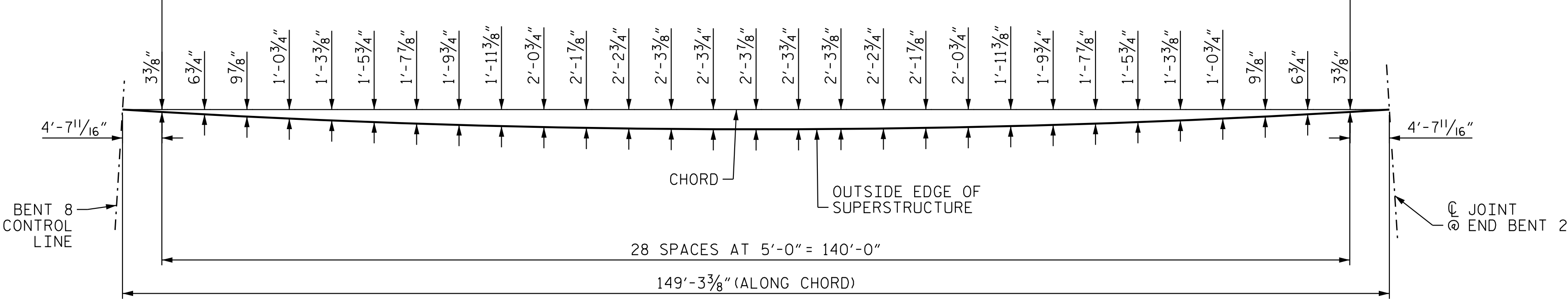
ARC OFFSETS

SPAN G, SPAN H

REVISIONS						SHEET NO. S01-037
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 113
2			4			



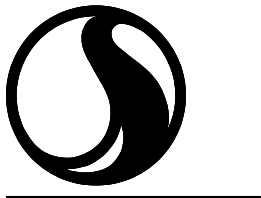
ARC OFFSETS - SPAN I (LEFT SIDE)



ARC OFFSETS - SPAN I (RIGHT SIDE)

PROJECT NO. R-3300A
NEW HANOVER COUNTY
STATION: 219+49.69 -L1-
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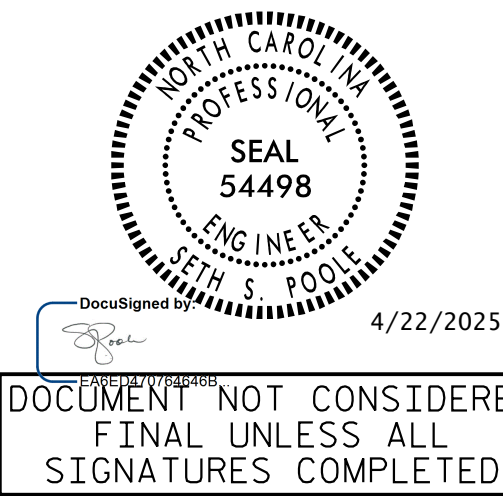
SHEET 5 OF 5



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REVISIONS						SHEET NO. S01-038
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 113
2			4			



23'-4 $\frac{7}{8}$ "

15'-8 $\frac{9}{16}$ "

2

CL GDR. 1

BENT 1 CONTROL LINE

CL GDR. 2

INTERMEDIATE CROSS FRAME (TYP.)

CL GDR. 3

W.P. #2

CL GDR. 4

CL GDR. 5

10'-3"

10'-2 $\frac{3}{16}$ "

10'-2 $\frac{1}{16}$ "

10'-2 $\frac{1}{2}$ "

3'-2 $\frac{3}{4}$ "

-Y33RPCA-

6'-11 $\frac{5}{16}$ "

3'-9 $\frac{7}{8}$ "

1

16'-5 $\frac{9}{16}$ "

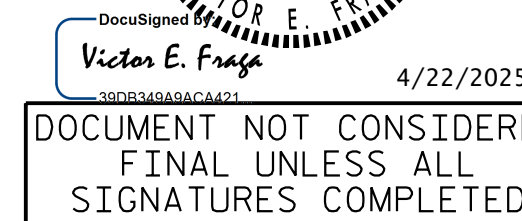
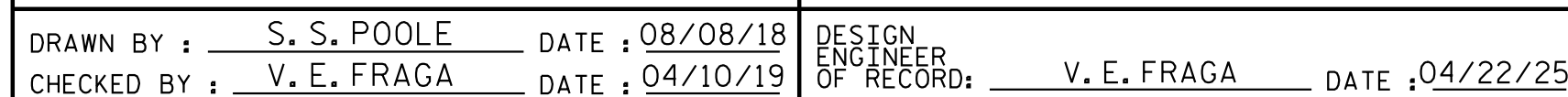
23'-11 $\frac{5}{16}$ "

1

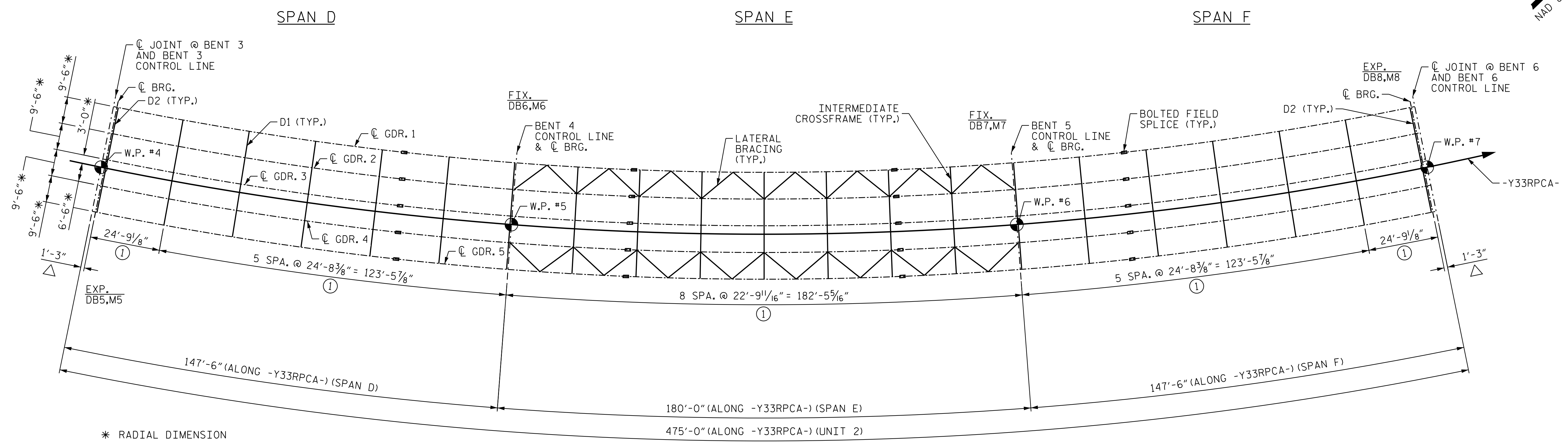
FIX.
DB2,M2

DETAIL "A"

REVISIONS						SHEET NO. 501-039
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 113
2			4			



NAD 83/NSRS 2007



- * RADIAL DIMENSION
- ① MEASURED ALONG CL GDR. 5
- $\triangle$ MEASURED PERPENDICULAR TO BENT CONTROL LINE

FRAMING PLAN - UNIT 2

NOTES:

ALL BENTS ARE RADIAL.

FOR INTERMEDIATE TRANSVERSE STIFFENER SPACING AND DETAILS, SEE STRUCTURAL STEEL DETAILS, SHEET S01-043.

FOR LATERAL BRACING DETAILS, SEE SHEET S01-048.

FOR BOLTED FIELD SPLICE DETAILS, SEE SHEET S01-046.

PROVIDE DIAPHRAGM D1 AT ALL INTERMEDIATE AND INTERIOR BENT LOCATIONS WHERE FIXED BEARINGS ARE TO BE USED.

PROVIDE DIAPHRAGM D2 AT EACH END OF THE UNIT.

DB*,M* DENOTES THE DISC BEARING AND MASONRY PLATE MARK NUMBER TO BE USED AT EACH SUPPORT LOCATION.

BEARINGS AND MASONRY PLATES ARE TYPICAL FOR ALL GIRDERS AT EACH SUPPORT LOCATION. SEE DISC BEARING DETAILS FOR ADDITIONAL INFORMATION.

GIRDER RADII:

- GIRDER 1 = 1158'-0"
- GIRDER 2 = 1167'-6"
- GIRDER 3 = 1177'-0"
- GIRDER 4 = 1186'-6"
- GIRDER 5 = 1196'-0"

PROJECT NO. R-3300A

NEW HANOVER COUNTY

STATION: 219+49.69 -L1-
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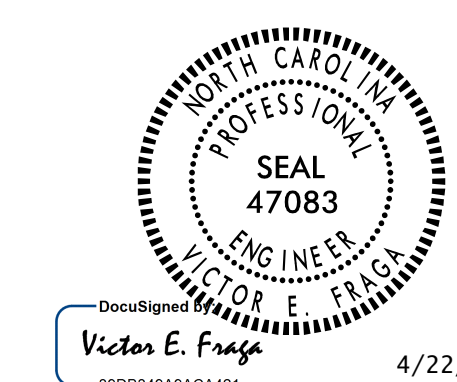
SHEET 2 OF 3



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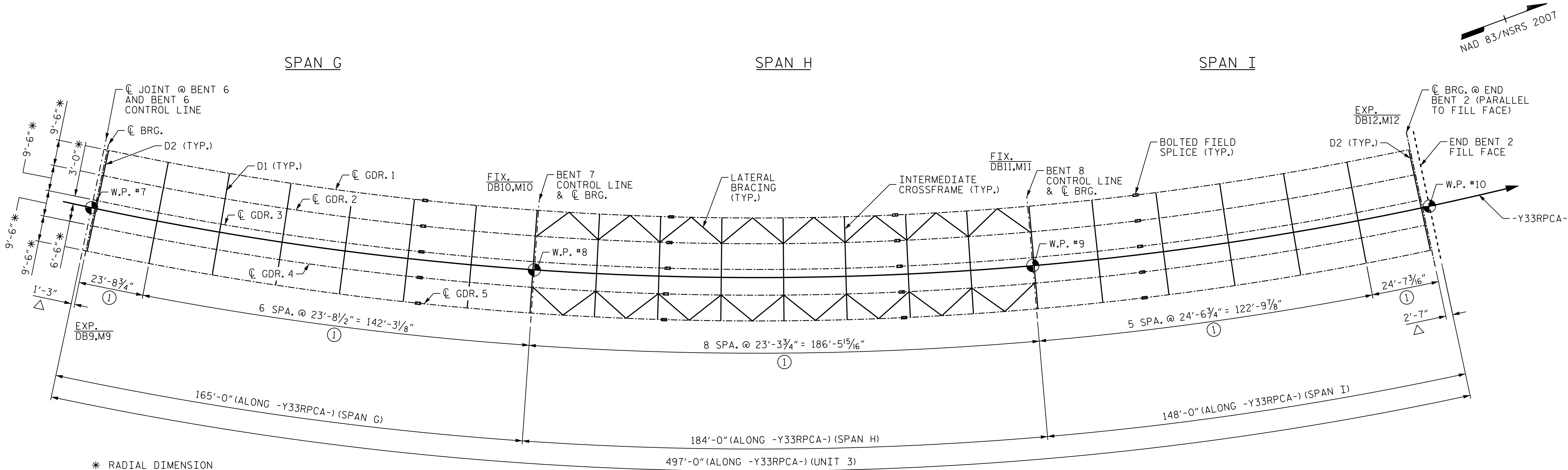
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2			4			



- * RADIAL DIMENSION
① MEASURED ALONG CL GDR. 5
△ MEASURED PERPENDICULAR TO END BENT FILL FACE OR BENT CONTROL LINE

FRAMING PLAN - UNIT 3

NOTES:

BENTS 6-8 AND END BENT 2 ARE RADIAL.

FOR INTERMEDIATE TRANSVERSE STIFFENER SPACING AND DETAILS, SEE STRUCTURAL STEEL DETAILS, SHEET S01-044.

FOR LATERAL BRACING DETAILS, SEE SHEET S01-048.

FOR BOLTED FIELD SPLICE DETAILS, SEE SHEET S01-047.

PROVIDE DIAPHRAGM D1 AT ALL INTERMEDIATE AND INTERIOR BENT LOCATIONS WHERE FIXED BEARINGS ARE TO BE USED.

PROVIDE DIAPHRAGM D2 AT EACH END OF THE UNIT.

DB*,M* DENOTES THE DISC BEARING AND MASONRY PLATE MARK NUMBER TO BE USED AT EACH SUPPORT LOCATION.

BEARINGS AND MASONRY PLATES ARE TYPICAL FOR ALL GIRDERS AT EACH SUPPORT LOCATION. SEE DISC BEARING DETAILS FOR ADDITIONAL INFORMATION.

GIRDER RADII:

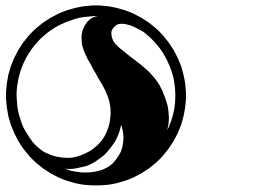
GIRDER 1 = 1158'-0"
GIRDER 2 = 1167'-6"
GIRDER 3 = 1177'-0"
GIRDER 4 = 1186'-6"
GIRDER 5 = 1196'-0"

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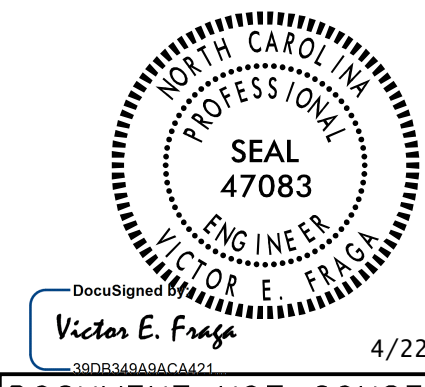
SHEET 3 OF 3



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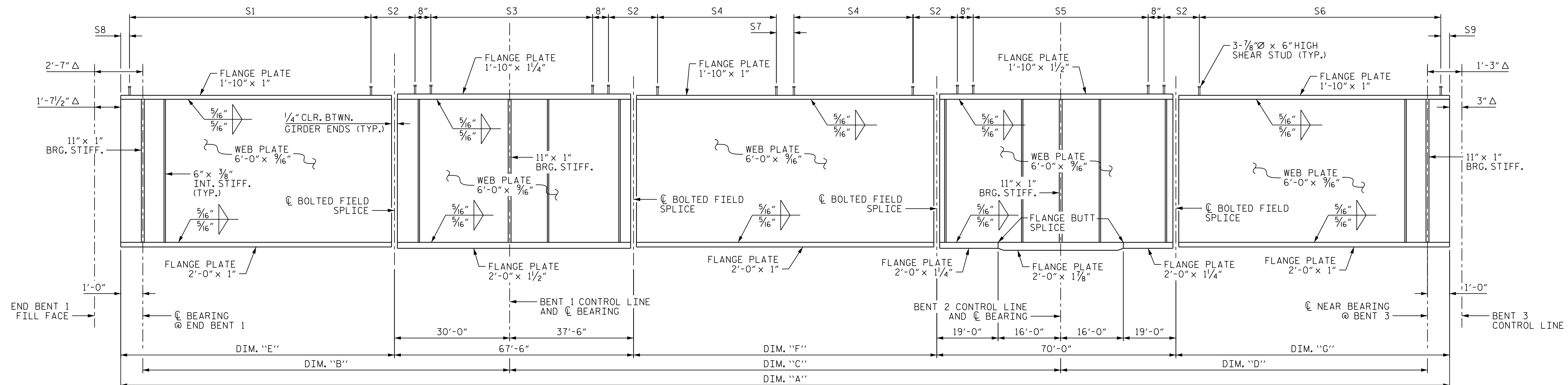
DESIGN ENGINEER OF RECORD: V. E. FRAGA DATE : 04/22/25



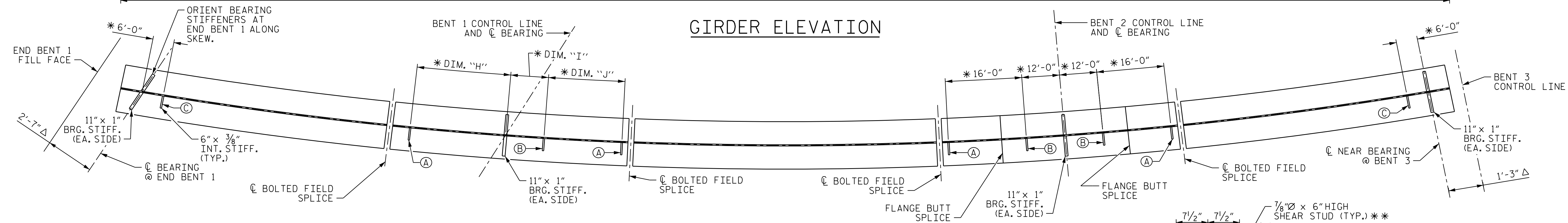
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NO.	BY:	DATE:	NO.	BY:	DATE:	
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2			4			

4/22/2025 8:23:00 PM jgelle
U:\Structures\BL-Y33RPCA-Dr-offing\Final\R3300A_SML_S50_640209.dgn



GIRDER ELEVATION



PLAN OF BOTTOM FLANGE

* INTERMEDIATE STIFFENERS TO BE ATTACHED ON ALTERNATING SIDES OF WEB FOR INTERIOR GIRDERS AND INSIDE FACE FOR EXTERIOR GIRDERS.
Δ : MEASURED PERPENDICULAR TO FILL FACE OR BENT CONTROL LINE.

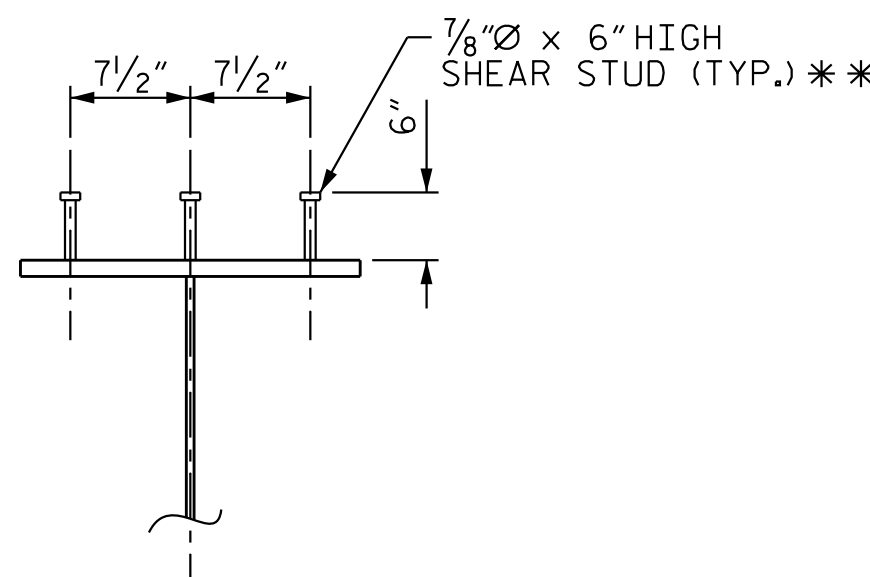
GIRDER DIMENSIONS

GIRDER	C RADIUS	DIMENSION "A"	DIMENSION "B"	DIMENSION "C"	DIMENSION "D"	DIMENSION "E"	DIMENSION "F"	DIMENSION "G"	DIMENSION "H"	DIMENSION "I"	DIMENSION "J"
1	1158'-0"	386'-2 ¹⁵ / ₁₆ "	114'-6 ⁷ / ₈ "	148'-3 ¹ / ₁₆ "	121'-5"	85'-6 ⁷ / ₈ "	75'-9 ¹ / ₁₆ "	87'-5"	14'-0"	10'-0"	18'-0"
2	1167'-6"	392'-2 ⁹ / ₁₆ "	114'-5 ¹ / ₂ "	153'-3 ¹⁵ / ₁₆ "	122'-5 ¹ / ₈ "	85'-5 ¹ / ₂ "	80'-9 ¹⁵ / ₁₆ "	88'-5 ¹ / ₈ "	14'-0"	10'-0"	18'-0"
3	1177'-0"	398'-2 ¹ / ₈ "	114'-4 ¹ / ₈ "	158'-4 ¹³ / ₁₆ "	123'-5 ³ / ₁₆ "	85'-4 ¹ / ₈ "	85'-10 ¹³ / ₁₆ "	89'-5 ³ / ₁₆ "	14'-0"	10'-0"	18'-0"
4	1186'-6"	404'-1 ³ / ₄ "	114'-2 ⁷ / ₈ "	163'-5 ⁵ / ₈ "	124'-5 ¹ / ₄ "	85'-2 ⁷ / ₈ "	90'-11 ⁵ / ₈ "	90'-5 ¹ / ₄ "	24'-0"	14'-0"	18'-0"
5	1196'-0"	410'-1 ⁵ / ₁₆ "	114'-1 ¹ / ₁₆ "	168'-6 ⁷ / ₁₆ "	125'-5 ⁵ / ₁₆ "	85'-1 ¹ / ₁₆ "	96'-0 ⁷ / ₁₆ "	91'-5 ⁵ / ₁₆ "	24'-0"	14'-0"	18'-0"

SHEAR CONNECTOR SPACING

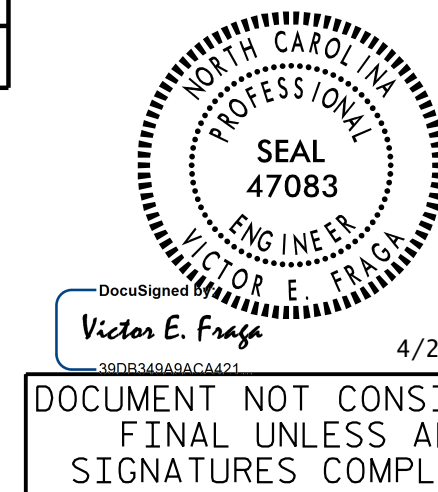
GIRDER	S1	S2**	S3	S4	S5	S6	S7	S8	S9
1	110 SPA. @ 9" CTS. = 82'-6"	4'-6"	74 SPA. @ 10" CTS. = 61'-8"	47 SPA. @ 9" CTS. = 35'-3"	77 SPA. @ 10" CTS. = 64'-2"	112 SPA. @ 9" CTS. = 84'-0"	9 ¹ / ₁₆ "	9 ⁷ / ₈ "	1'-2"
2	110 SPA. @ 9" CTS. = 82'-6"	4'-6"	74 SPA. @ 10" CTS. = 61'-8"	50 SPA. @ 9" CTS. = 37'-6"	77 SPA. @ 10" CTS. = 64'-2"	114 SPA. @ 9" CTS. = 85'-6"	2 SPA. @ 7 ³ / ₃₂ " CTS. = 1'-3 ¹⁵ / ₁₆ "	8 ¹ / ₂ "	8 ¹ / ₈ "
3	110 SPA. @ 9" CTS. = 82'-6"	4'-6"	74 SPA. @ 10" CTS. = 61'-8"	53 SPA. @ 9" CTS. = 39'-9"	77 SPA. @ 10" CTS. = 64'-2"	115 SPA. @ 9" CTS. = 86'-3"	2 SPA. @ 11 ¹³ / ₃₂ " CTS. = 1'-10 ¹³ / ₁₆ "	7 ¹ / ₈ "	11 ³ / ₁₆ "
4	109 SPA. @ 9" CTS. = 81'-9"	4'-6"	74 SPA. @ 10" CTS. = 61'-8"	57 SPA. @ 9" CTS. = 42'-9"	77 SPA. @ 10" CTS. = 64'-2"	116 SPA. @ 9" CTS. = 87'-0"	2 SPA. @ 5 ¹³ / ₁₆ " CTS. = 11 ⁵ / ₈ "	1'-2 ⁷ / ₈ "	1'-2 ¹ / ₄ "
5	109 SPA. @ 9" CTS. = 81'-9"	4'-6"	74 SPA. @ 10" CTS. = 61'-8"	60 SPA. @ 9" CTS. = 45'-0"	77 SPA. @ 10" CTS. = 64'-2"	118 SPA. @ 9" CTS. = 88'-6"	2 SPA. @ 9 ⁷ / ₃₂ " CTS. = 1'-6 ⁷ / ₁₆ "	1'-1 ¹ / ₁₆ "	8 ⁵ / ₁₆ "

GIRDER SHEAR CONNECTORS



- (A) : SEE "INTERMEDIATE STIFFENER DETAIL -- A", ON "STRUCTURAL STEEL DETAILS" SHEET 5 OF 7.
(B) : SEE "INTERMEDIATE STIFFENER DETAIL -- B", ON "STRUCTURAL STEEL DETAILS" SHEET 5 OF 7.
(C) : SEE "INTERMEDIATE STIFFENER DETAIL -- C", ON "STRUCTURAL STEEL DETAILS" SHEET 5 OF 7.

** FOR STUD SPACING OVER FIELD SPLICE, SEE "SHEAR STUD SPACING ON TOP FLANGE" DETAIL ON SHEET S01-047.



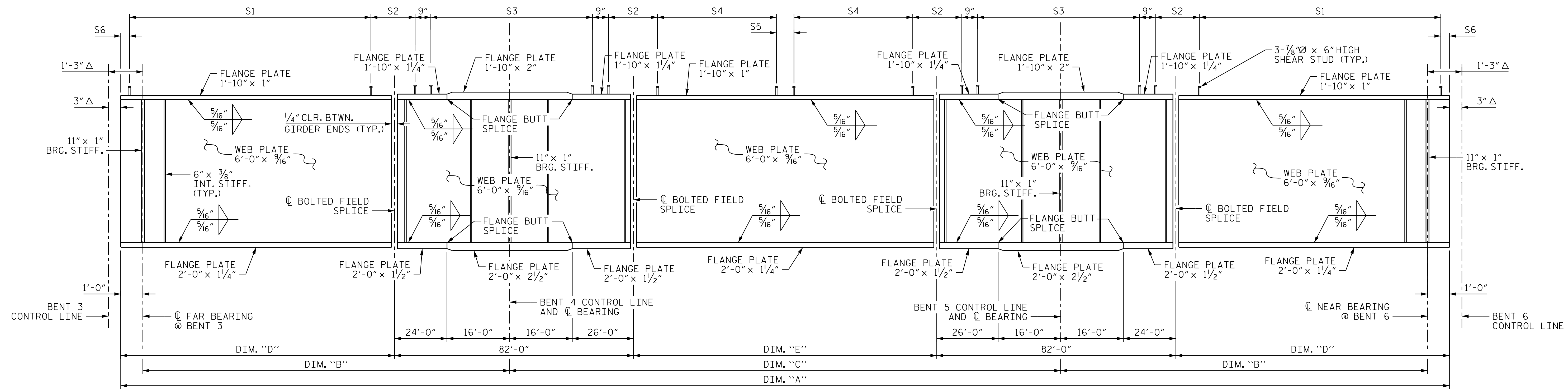
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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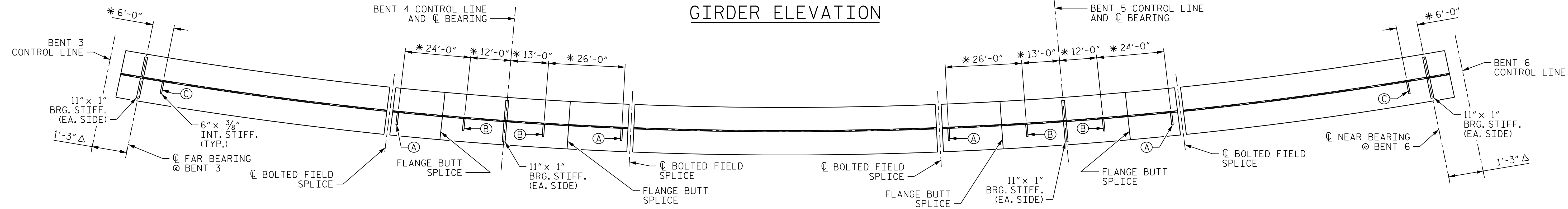
SHEET 1 OF 7

REVISIONS						SHEET NO. S01-042
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 113
2			4			

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
STRUCTURAL STEEL GIRDER
UNIT 1



GIRDER ELEVATION



PLAN OF BOTTOM FLANGE

* INTERMEDIATE STIFFENERS TO BE ATTACHED ON ALTERNATING SIDES OF WEB FOR INTERIOR GIRDERS AND INSIDE FACE FOR EXTERIOR GIRDERS.
Δ : MEASURED PERPENDICULAR TO BENT CONTROL LINE.

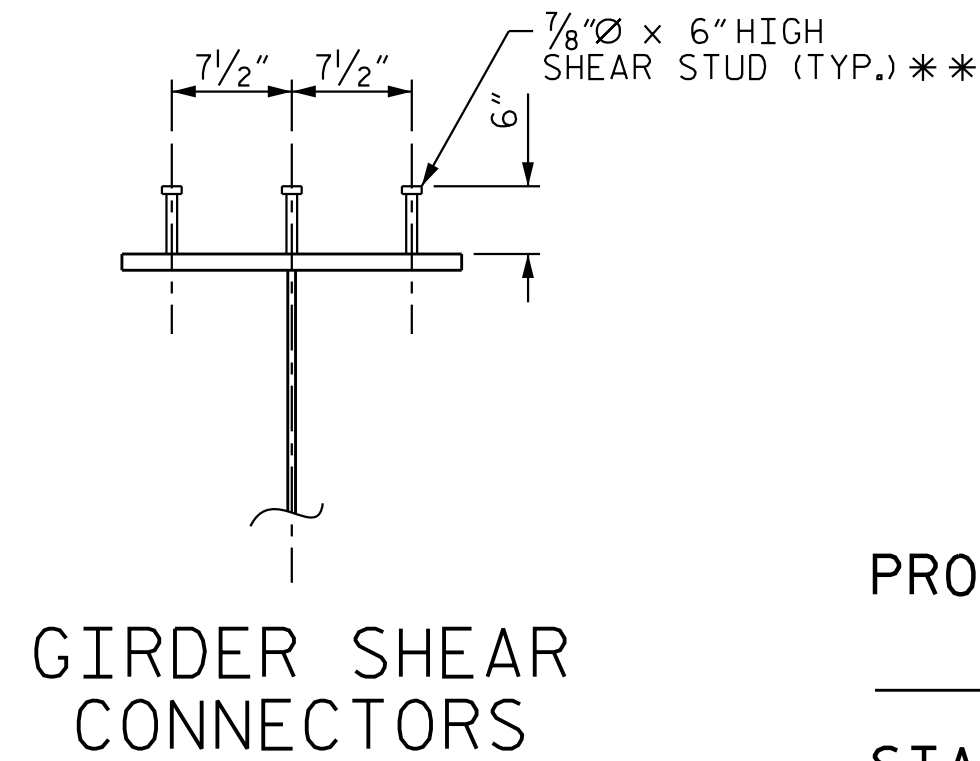
GIRDER DIMENSIONS						
GIRDER	℄ RADIUS	DIMENSION "A"	DIMENSION "B"	DIMENSION "C"	DIMENSION "D"	DIMENSION "E"
1	1158'-0"	465'-7 ³ / ₄ "	143'-6"	176'-7 ³ / ₄ "	104'-6"	92'-7 ³ / ₄ "
2	1167'-6"	469'-5 ⁵ / ₈ "	144'-8 ¹ / ₄ "	178'-1 ¹ / ₈ "	105'-8 ¹ / ₄ "	94'-1 ¹ / ₈ "
3	1177'-0"	473'-3 ¹ / ₂ "	145'-10 ¹ / ₂ "	179'-6 ¹ / ₂ "	106'-10 ¹ / ₂ "	95'-6 ¹ / ₂ "
4	1186'-6"	477'-1 ¹ / ₁₆ "	147'-0 ³ / ₄ "	180'-11 ¹ / ₈ "	108'-0 ³ / ₄ "	96'-11 ¹ / ₈ "
5	1196'-0"	480'-11 ⁵ / ₁₆ "	148'-3"	182'-5 ⁵ / ₁₆ "	109'-3"	98'-5 ⁵ / ₁₆ "

SHEAR CONNECTOR SPACING						
GIRDER	S1	S2 **	S3	S4	S5	S6
1	122 SPA. @ 10" CTS. = 101'-8"	4'-6"	76 SPA. @ 1'-0" CTS. = 76'-0"	52 SPA. @ 10" CTS. = 43'-4"	2 SPA. @ 8 ⁷ / ₈ " CTS. = 1'-5 ³ / ₄ "	7"
2	123 SPA. @ 10" CTS. = 102'-6"	4'-6"	76 SPA. @ 1'-0" CTS. = 76'-0"	53 SPA. @ 10" CTS. = 44'-2"	2 SPA. @ 7 ⁷ / ₁₆ " CTS. = 1'-3 ¹ / ₈ "	11 ¹ / ₄ "
3	125 SPA. @ 10" CTS. = 104'-2"	4'-6"	76 SPA. @ 1'-0" CTS. = 76'-0"	54 SPA. @ 10" CTS. = 45'-0"	2 SPA. @ 6 ¹ / ₄ " CTS. = 1'-0 ¹ / ₂ "	5 ¹ / ₂ "
4	126 SPA. @ 10" CTS. = 105'-0"	4'-6"	76 SPA. @ 1'-0" CTS. = 76'-0"	55 SPA. @ 10" CTS. = 45'-10"	9 ⁷ / ₈ "	9 ³ / ₄ "
5	127 SPA. @ 10" CTS. = 105'-10"	4'-6"	76 SPA. @ 1'-0" CTS. = 76'-0"	56 SPA. @ 10" CTS. = 46'-8"	7 ⁵ / ₁₆ "	1'-2"

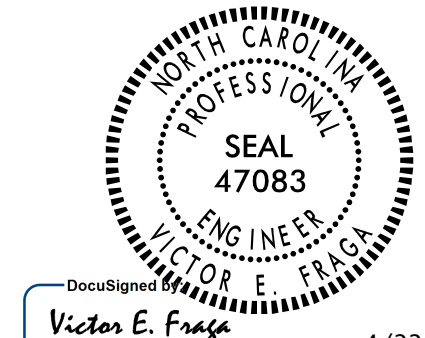


- (A) : SEE "INTERMEDIATE STIFFENER DETAIL -- A", ON "STRUCTURAL STEEL DETAILS" SHEET 5 OF 7.
- (B) : SEE "INTERMEDIATE STIFFENER DETAIL -- B", ON "STRUCTURAL STEEL DETAILS" SHEET 5 OF 7.
- (C) : SEE "INTERMEDIATE STIFFENER DETAIL -- C", ON "STRUCTURAL STEEL DETAILS" SHEET 5 OF 7.

** FOR STUD SPACING OVER FIELD SPLICE, SEE "SHEAR STUD SPACING ON TOP FLANGE" DETAIL ON SHEET S01-047.



GIRDER SHEAR CONNECTORS

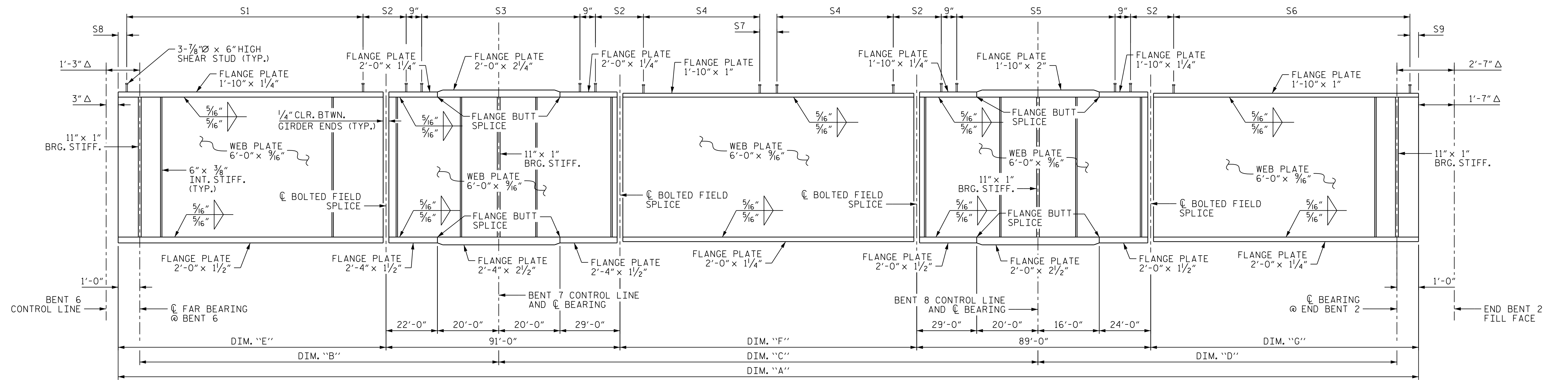


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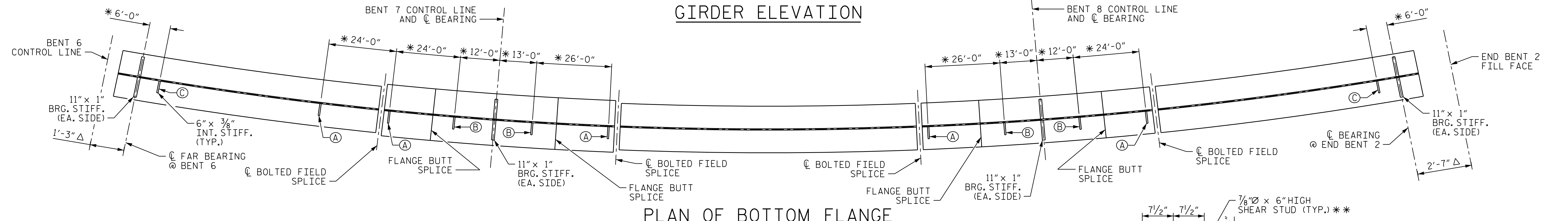
SHEET 2 OF 7

REVISIONS						SHEET NO. S01-043
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 113
2			4			

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GIRDER ELEVATION



PLAN OF BOTTOM FLANGE

* INTERMEDIATE STIFFENERS TO BE ATTACHED ON ALTERNATING SIDES OF WEB FOR INTERIOR GIRDERS AND INSIDE FACE FOR EXTERIOR GIRDERS.
Δ : MEASURED PERPENDICULAR TO FILL FACE OR BENT CONTROL LINE.

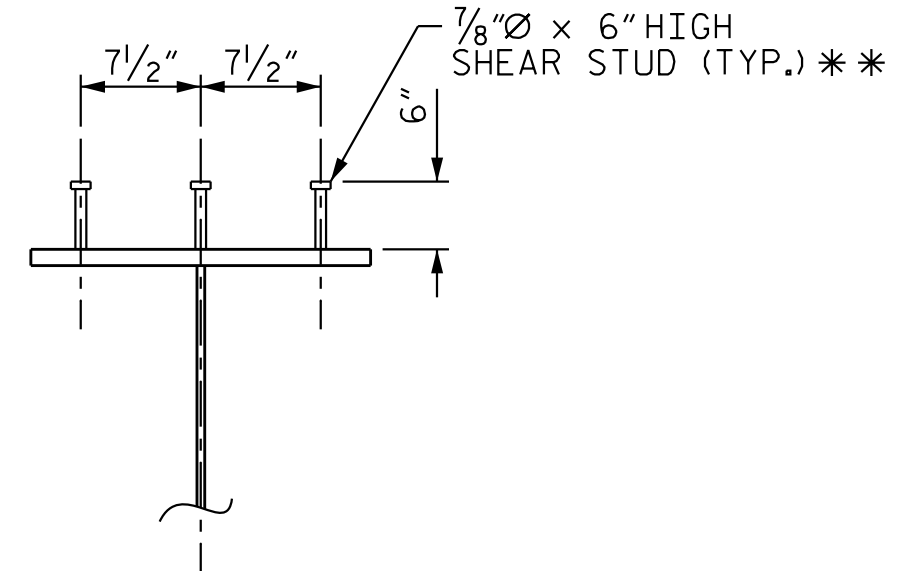
GIRDER DIMENSIONS

GIRDER	CL RADIUS	DIMENSION "A"	DIMENSION "B"	DIMENSION "C"	DIMENSION "D"	DIMENSION "E"	DIMENSION "F"	DIMENSION "G"
1	1158'-0"	485'-10 ³ / ₁₆ "	160'-8 ¹ / ₁₆ "	180'-6 ¹³ / ₁₆ "	142'-7 ⁷ / ₈ "	119'-8 ¹ / ₁₆ "	82'-6 ¹³ / ₁₆ "	103'-7 ⁷ / ₈ "
2	1167'-6"	489'-10 ³ / ₁₆ "	162'-0"	182'-0 ⁵ / ₈ "	143'-10 ³ / ₁₆ "	121'-0"	84'-0 ⁵ / ₈ "	104'-10 ³ / ₁₆ "
3	1177'-0"	493'-10 ³ / ₁₆ "	163'-4"	183'-6 ³ / ₈ "	145'-0 ¹ / ₂ "	122'-4"	85'-6 ³ / ₈ "	106'-0 ¹ / ₂ "
4	1186'-6"	497'-10 ⁷ / ₈ "	164'-7 ¹⁵ / ₁₆ "	185'-0 ³ / ₁₆ "	146'-2 ¹³ / ₁₆ "	123'-7 ¹⁵ / ₁₆ "	87'-0 ³ / ₁₆ "	107'-2 ¹³ / ₁₆ "
5	1196'-0"	501'-10 ⁷ / ₈ "	165'-11 ¹ / ₈ "	186'-5 ¹⁵ / ₁₆ "	147'-5 ¹ / ₁₆ "	124'-11 ⁷ / ₈ "	88'-5 ¹⁵ / ₁₆ "	108'-5 ¹ / ₁₆ "

SHEAR CONNECTOR SPACING

GIRDER	S1	S2 **	S3	S4	S5	S6	S7	S8	S9
1	140 SPA. @ 10" CTS. = 116'-8"	4'-6"	85 SPA. @ 1'-0" CTS. = 85'-0"	46 SPA. @ 10" CTS. = 38'-4"	83 SPA. @ 1'-0" CTS. = 83'-0"	121 SPA. @ 10" CTS. = 100'-10"	2 SPA. @ 8 ¹³ / ₃₂ " CTS. = 1'-4 ¹³ / ₁₆ "	9 ¹ / ₁₆ "	6 ⁷ / ₈ "
2	141 SPA. @ 10" CTS. = 117'-6"	4'-6"	85 SPA. @ 1'-0" CTS. = 85'-0"	47 SPA. @ 10" CTS. = 39'-2"	83 SPA. @ 1'-0" CTS. = 83'-0"	122 SPA. @ 10" CTS. = 101'-8"	2 SPA. @ 7 ⁹ / ₁₆ " CTS. = 1'-2 ⁵ / ₈ "	1'-3"	11 ³ / ₁₆ "
3	143 SPA. @ 10" CTS. = 119'-2"	4'-6"	85 SPA. @ 1'-0" CTS. = 85'-0"	48 SPA. @ 10" CTS. = 40'-0"	83 SPA. @ 1'-0" CTS. = 83'-0"	124 SPA. @ 10" CTS. = 103'-4"	2 SPA. @ 6 ³ / ₁₆ " CTS. = 1'-0 ³ / ₈ "	11"	5 ¹ / ₂ "
4	145 SPA. @ 10" CTS. = 120'-10"	4'-6"	85 SPA. @ 1'-0" CTS. = 85'-0"	49 SPA. @ 10" CTS. = 40'-10"	83 SPA. @ 1'-0" CTS. = 83'-0"	125 SPA. @ 10" CTS. = 104'-2"	2 SPA. @ 5 ³ / ₃₂ " CTS. = 10 ³ / ₁₆ "	6 ¹⁵ / ₁₆ "	9 ¹³ / ₁₆ "
5	146 SPA. @ 10" CTS. = 121'-8"	4'-6"	85 SPA. @ 1'-0" CTS. = 85'-0"	50 SPA. @ 10" CTS. = 41'-8"	83 SPA. @ 1'-0" CTS. = 83'-0"	126 SPA. @ 10" CTS. = 105'-0"	7 ¹⁵ / ₁₆ "	1'-0 ⁷ / ₈ "	1'-2 ¹ / ₁₆ "

GIRDER SHEAR CONNECTORS



PROJECT NO. R-3300A
NEW HANOVER COUNTY
STATION: 219+49.69 -L1-
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SHEET 3 OF 7



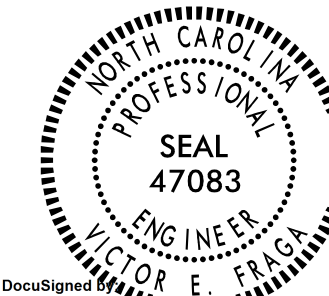
Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
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Tel. (919) 851-8866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

DRAWN BY : V. E. FRAGA DATE : 08/09/18
CHECKED BY : S. S. POOLE DATE : 03/10/22

(A) : SEE "INTERMEDIATE STIFFENER DETAIL -- A", ON "STRUCTURAL STEEL DETAILS" SHEET 5 OF 7.
(B) : SEE "INTERMEDIATE STIFFENER DETAIL -- B", ON "STRUCTURAL STEEL DETAILS" SHEET 5 OF 7.
(C) : SEE "INTERMEDIATE STIFFENER DETAIL -- C", ON "STRUCTURAL STEEL DETAILS" SHEET 5 OF 7.

DESIGN ENGINEER OF RECORD: V. E. FRAGA DATE : 04/22/25

** FOR STUD SPACING OVER FIELD SPLICE, SEE "SHEAR STUD SPACING ON TOP FLANGE" DETAIL ON SHEET S01-047.



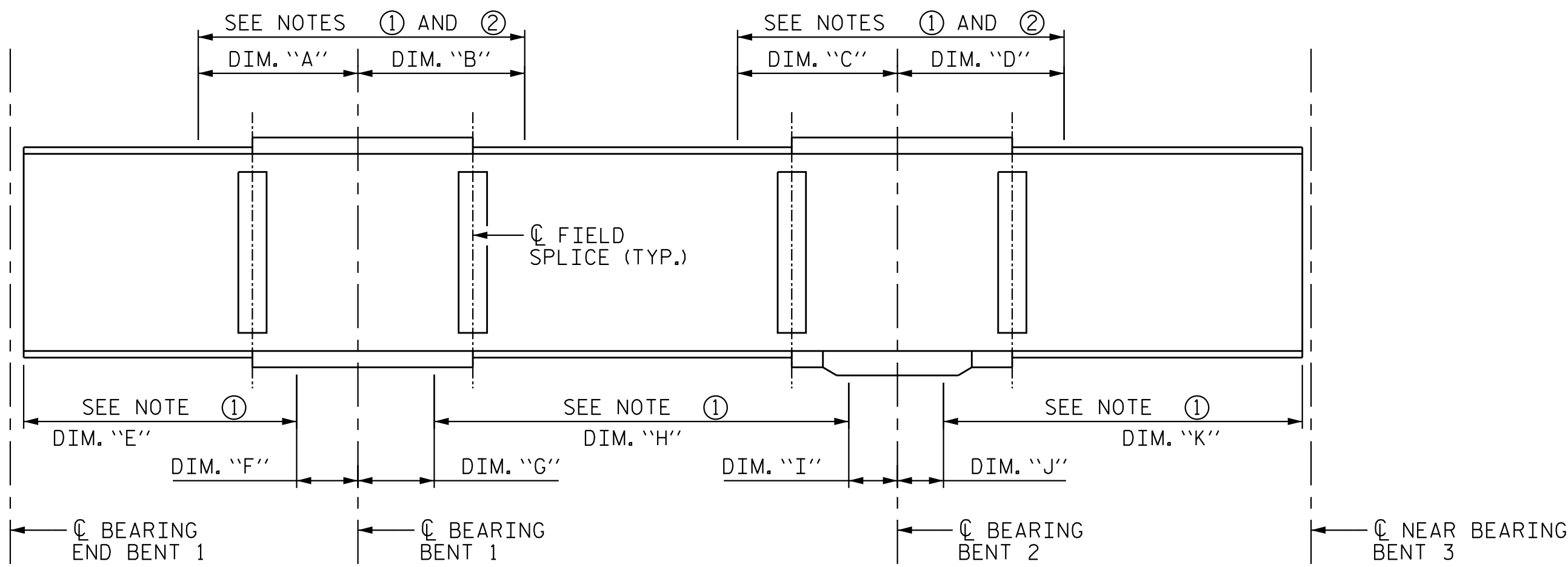
DocuSigned by
Victor E. Fraga
30B36A9ACAC471

4/22/2025

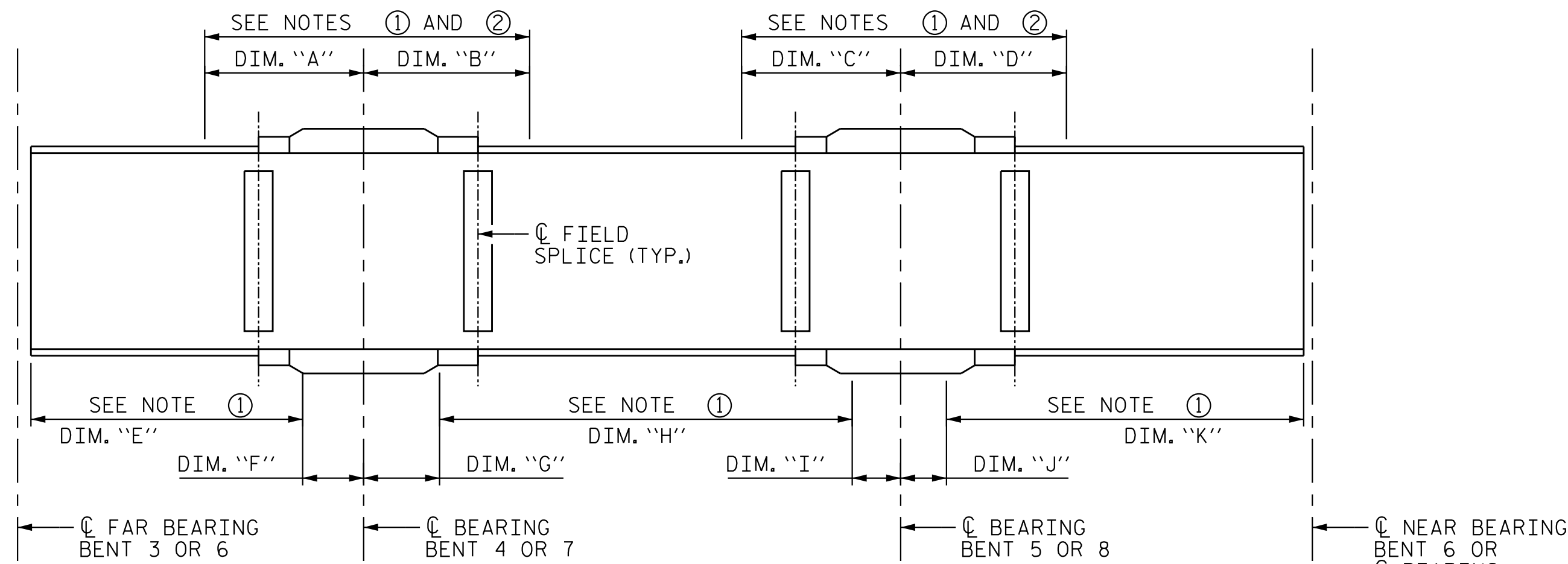
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
STRUCTURAL STEEL GIRDER
UNIT 3

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1			3			TOTAL SHEETS 113
2			4			



UNIT 1 GIRDER MAKE-UP



UNITS 2 AND 3 GIRDER MAKE-UP

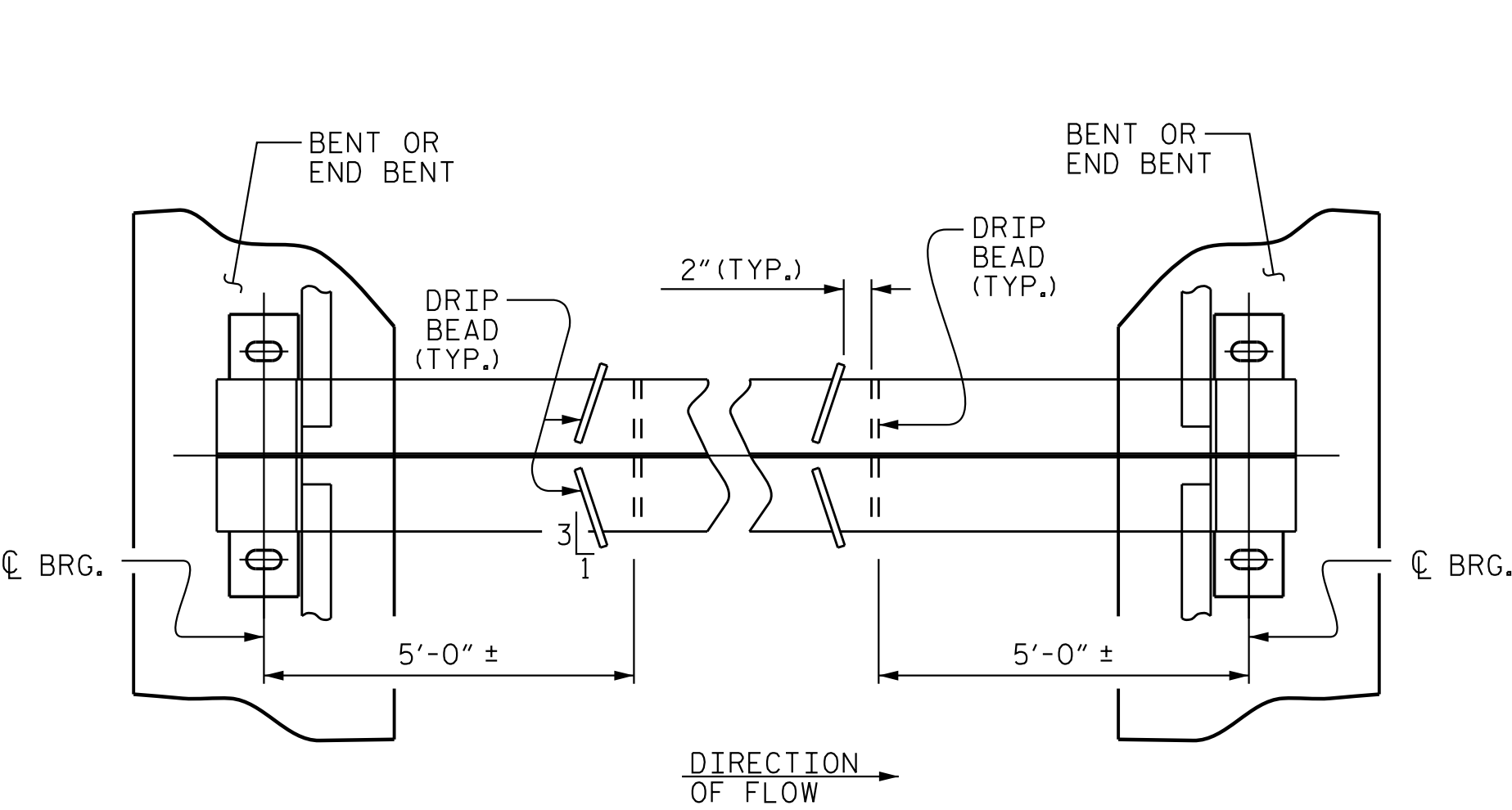
CHARPY V-NOTCH TESTS FOR CONTINUOUS PLATE GIRDERS

NOTES:

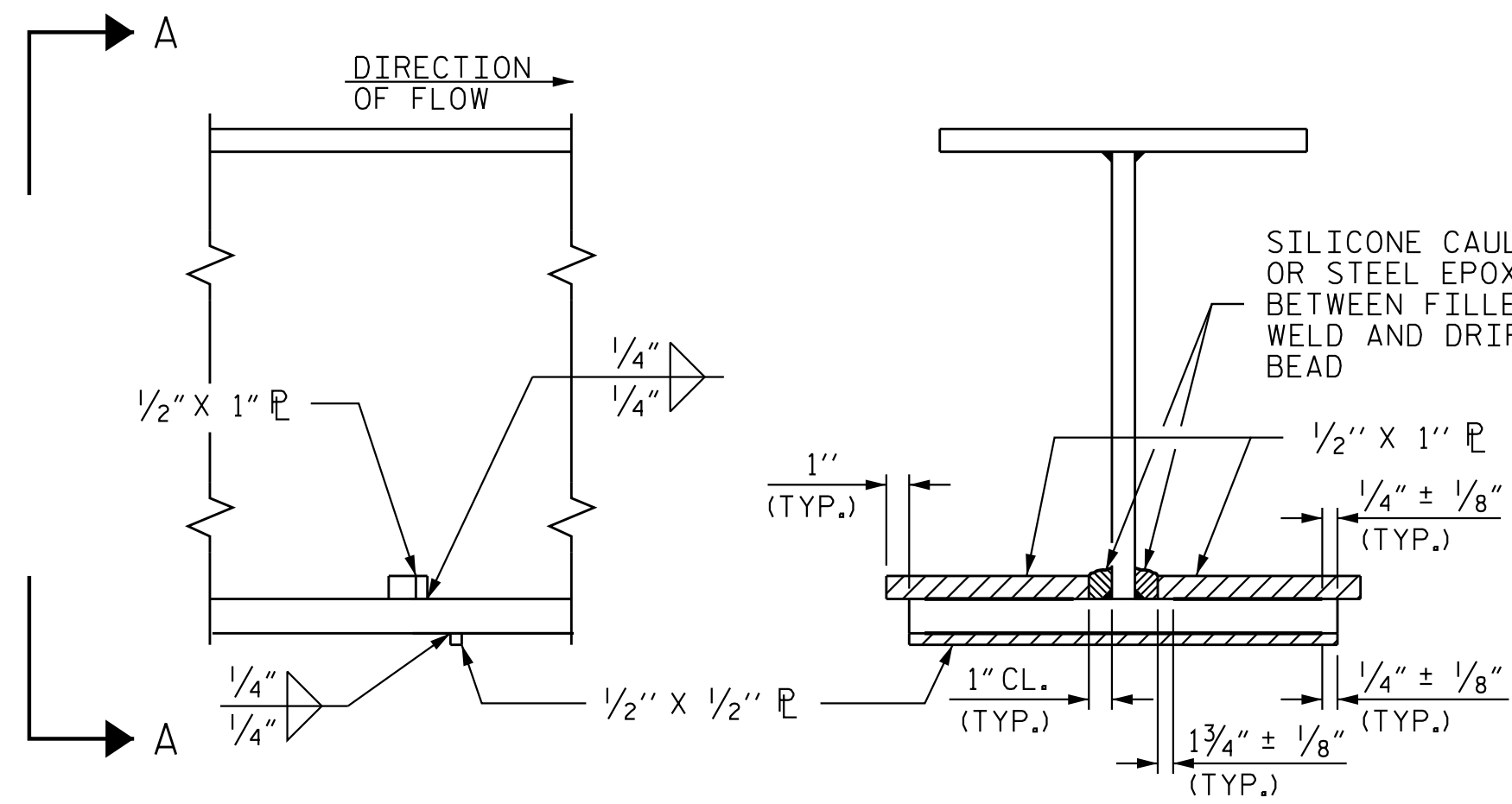
- ① : CHARPY V-NOTCH TESTS ARE REQUIRED FOR ALL TOP OR BOTTOM FLANGE PLATES WHICH FALL WITHIN THESE LIMITS, ALL WEB PLATES AND ALL SPLICE PLATES. IF A PERMITTED SHOP FLANGE SPLICE IS NOT USED, CHARPY V-NOTCH TESTS WILL BE REQUIRED FOR THE ENTIRE FLANGE PLATE. FOR CHARPY V-NOTCH TESTS, SEE ARTICLE 1072-7 OF THE STANDARD SPECIFICATIONS.
- ② : A CHARPY V-NOTCH TEST IS REQUIRED FOR HORIZONTALLY CURVED MEMBERS, SEE ARTICLE 1072-7 OF THE STANDARD SPECIFICATIONS.
- ③ : NO WELDING OF FORMS OR FALSEWORK TO THE TOP FLANGE WILL BE PERMITTED IN THIS REGION.

GIRDER MAKE-UP DIMENSIONS

UNIT	GIRDER	DIM. "A"	DIM. "B"	DIM. "C"	DIM. "D"	DIM. "E"	DIM. "F"	DIM. "G"	DIM. "H"	DIM. "I"	DIM. "J"	DIM. "K"
UNIT 1	GIRDER 1	33'-10"	35'-5"	37'-5"	36'-0"	94'-6"	20'-0 ⁷ / ₈ "	22'-4 ³ / ₄ "	102'-11"	22'-11 ⁵ / ₁₆ "	22'-5 ¹ / ₁₆ "	99'-0"
	GIRDER 2	35'-2"	34'-4"	37'-2"	37'-5"	93'-1"	21'-4 ¹ / ₂ "	22'-11 ⁵ / ₁₆ "	106'-8"	23'-8 ⁵ / ₈ "	24'-6 ¹ / ₈ "	97'-11"
	GIRDER 3	37'-6"	34'-6"	37'-5"	39'-3"	91'-6"	22'-10 ⁷ / ₈ "	24'-1 ³ / ₄ "	109'-2"	25'-1 ¹ / ₁₆ "	25'-10 ³ / ₁₆ "	97'-7"
	GIRDER 4	39'-3"	35'-0"	38'-0"	41'-3"	91'-6"	22'-8 ⁷ / ₈ "	24'-4 ¹¹ / ₁₆ "	114'-0"	25'-0 ⁵ / ₁₆ "	26'-0 ¹ / ₄ "	98'-5"
	GIRDER 5	42'-10"	36'-10"	39'-8"	44'-3"	91'-0"	23'-1 ⁹ / ₁₆ "	24'-10 ⁹ / ₁₆ "	117'-8"	25'-11 ⁷ / ₈ "	26'-3 ⁵ / ₁₆ "	99'-2"
UNIT 2	GIRDER 1	42'-11"	44'-6"	44'-5"	43'-0"	115'-2"	28'-4"	30'-4 ¹¹ / ₁₆ "	116'-0"	30'-3 ¹ / ₁₆ "	28'-6"	115'-0"
	GIRDER 2	42'-5"	44'-7"	44'-7"	42'-4"	115'-6"	29'-2 ¹ / ₄ "	31'-0 ¹ / ₄ "	116'-3"	30'-9 ⁷ / ₈ "	29'-5 ¹ / ₄ "	115'-3"
	GIRDER 3	42'-4"	45'-1"	45'-1"	42'-4"	116'-1"	29'-9 ¹ / ₂ "	32'-0 ³ / ₄ "	115'-7"	31'-10 ³ / ₄ "	30'-0 ¹ / ₂ "	115'-10"
	GIRDER 4	42'-11"	46'-3"	46'-2"	42'-11"	117'-9"	29'-3 ³ / ₄ "	32'-0 ⁹ / ₁₆ "	117'-1"	31'-10 ⁵ / ₁₆ "	29'-6 ³ / ₄ "	117'-6"
	GIRDER 5	44'-6"	48'-3"	48'-2"	44'-7"	119'-5"	28'-10"	32'-6 ³ / ₄ "	117'-6"	32'-4 ⁹ / ₁₆ "	29'-1"	119'-2"
UNIT 3	GIRDER 1	46'-3"	50'-6"	44'-11"	43'-6"	129'-9"	30'-11 ¹ / ₁₆ "	33'-3 ³ / ₁₆ "	118'-9"	28'-6 ⁵ / ₈ "	28'-7 ⁷ / ₈ "	114'-0"
	GIRDER 2	45'-4"	51'-1"	45'-0"	42'-7"	130'-6"	31'-6"	34'-8 ¹ / ₈ "	118'-3"	29'-1 ¹ / ₂ "	29'-4 ³ / ₁₆ "	114'-6"
	GIRDER 3	45'-1"	52'-3"	45'-7"	42'-5"	130'-10"	32'-5 ⁵ / ₁₆ "	36'-8 ³ / ₈ "	116'-7"	30'-3"	29'-9 ¹ / ₂ "	115'-3"
	GIRDER 4	45'-6"	54'-2"	46'-11"	42'-11"	133'-0"	31'-7 ⁵ / ₁₆ "	36'-8 ⁹ / ₁₆ "	118'-1"	30'-2 ⁵ / ₈ "	29'-1 ¹³ / ₁₆ "	117'-1"
	GIRDER 5	47'-0"	57'-4"	49'-0"	44'-7"	134'-10"	31'-1 ⁷ / ₈ "	37'-7 ¹ / ₄ "	118'-3"	30'-7 ¹¹ / ₁₆ "	28'-3 ¹ / ₁₆ "	119'-2"



PART PLAN - BOTTOM FLANGE



SECTION

VIEW A-A

DRIP BEAD DETAILS

PROJECT NO. R-3300A

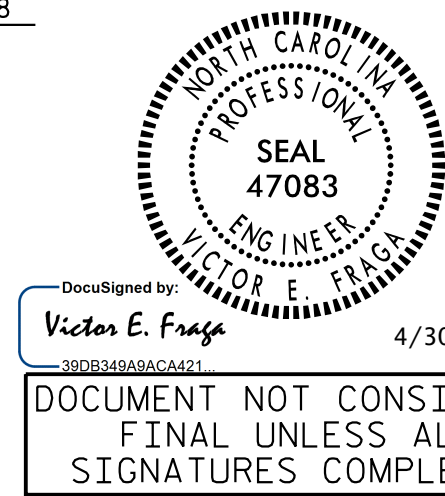
NEW HANOVER COUNTY

STATION: 219+49.69 -L1-
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SHEET 4 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
STRUCTURAL STEEL

CHARPY V-NOTCH DETAILS



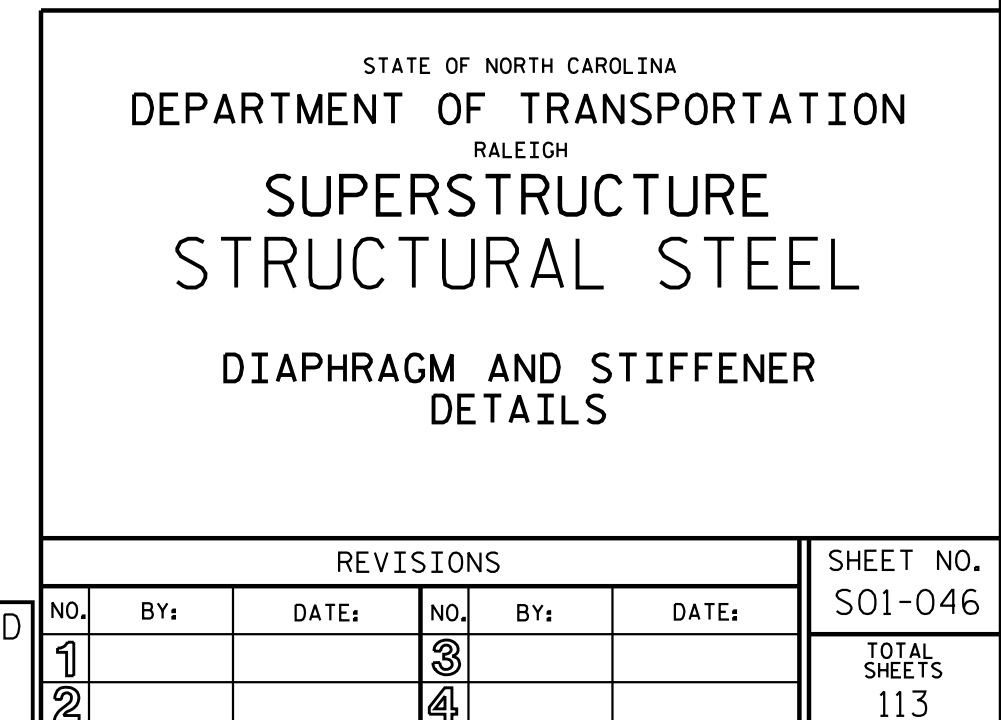
REVISIONS						SHEET NO. S01-045
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 113
2			4			



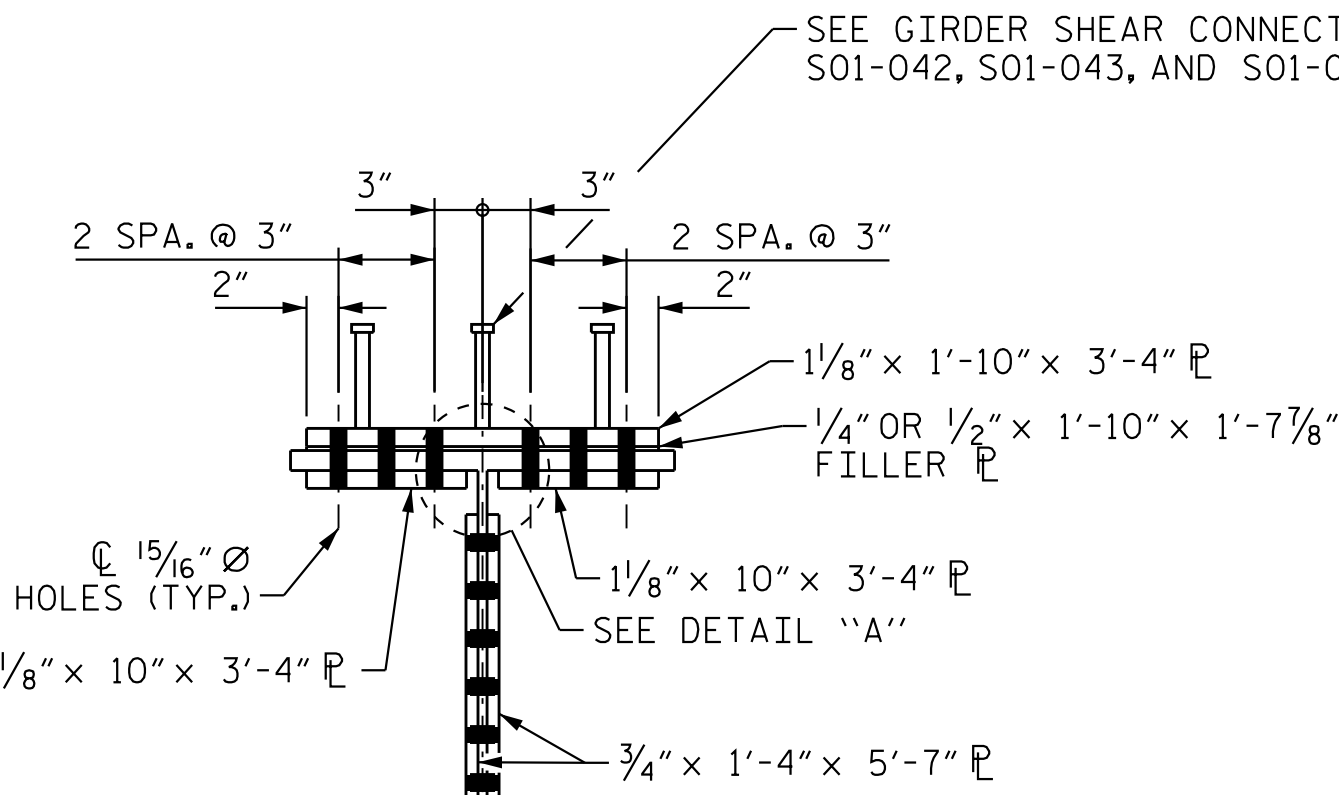
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801 Jones Franklin Road
Suite 300
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Tel. (919) 851-8866
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License No. F-0672

DRAWN BY : V. E. FRAGA DATE : 09/04/18
CHECKED BY : S. S. POOLE DATE : 02/10/22

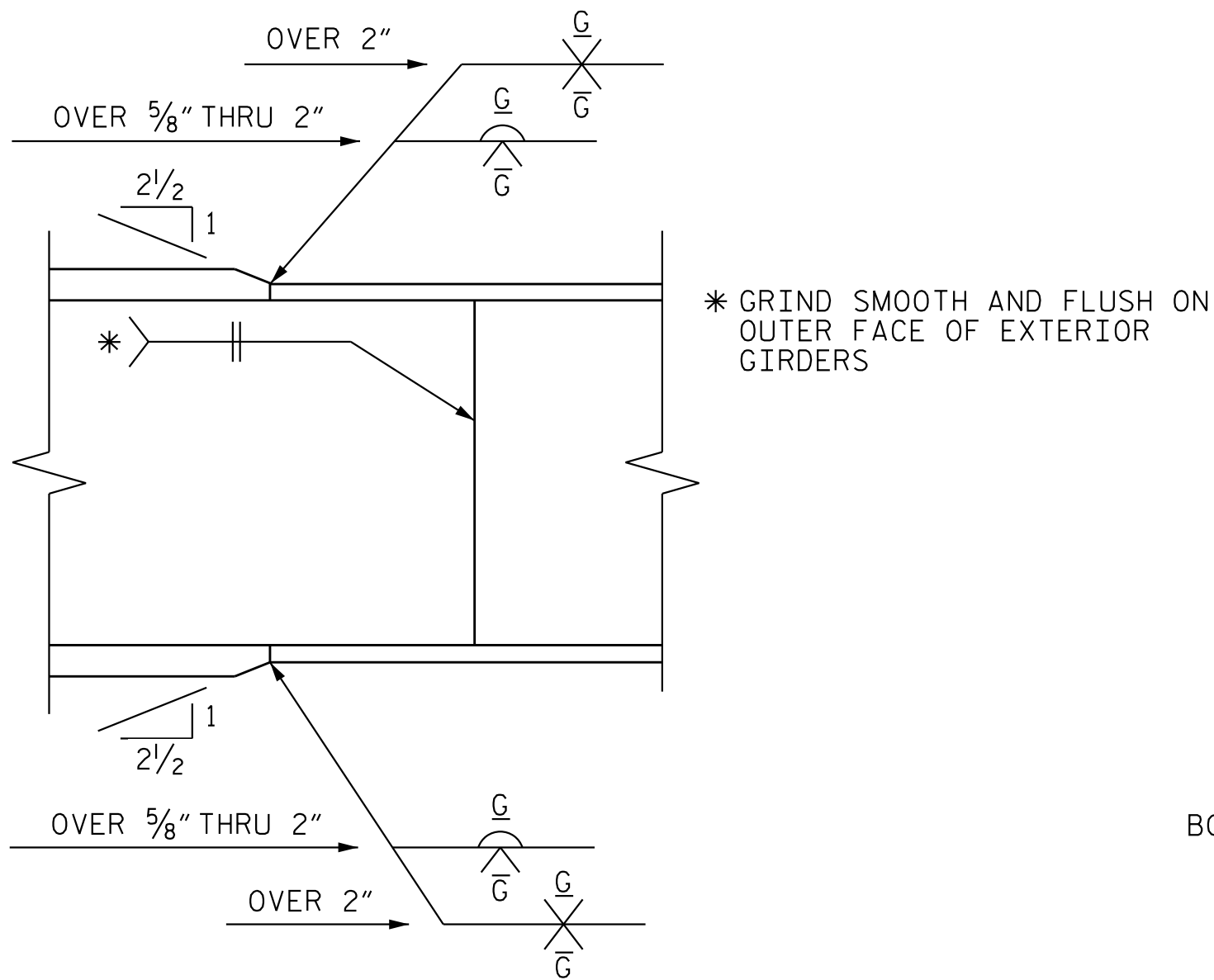
DESIGN
ENGINEER
OF RECORD: V. E. FRAGA DATE : 04/22/25



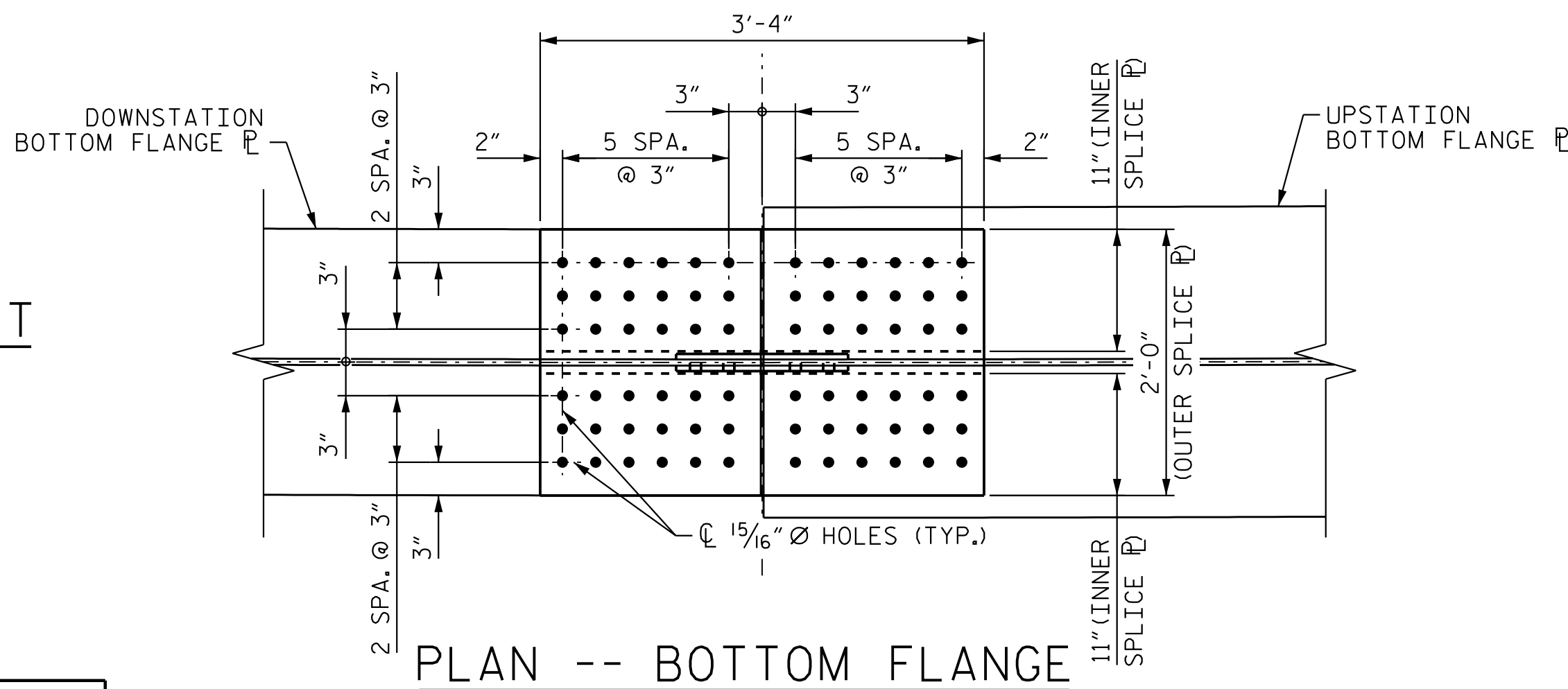
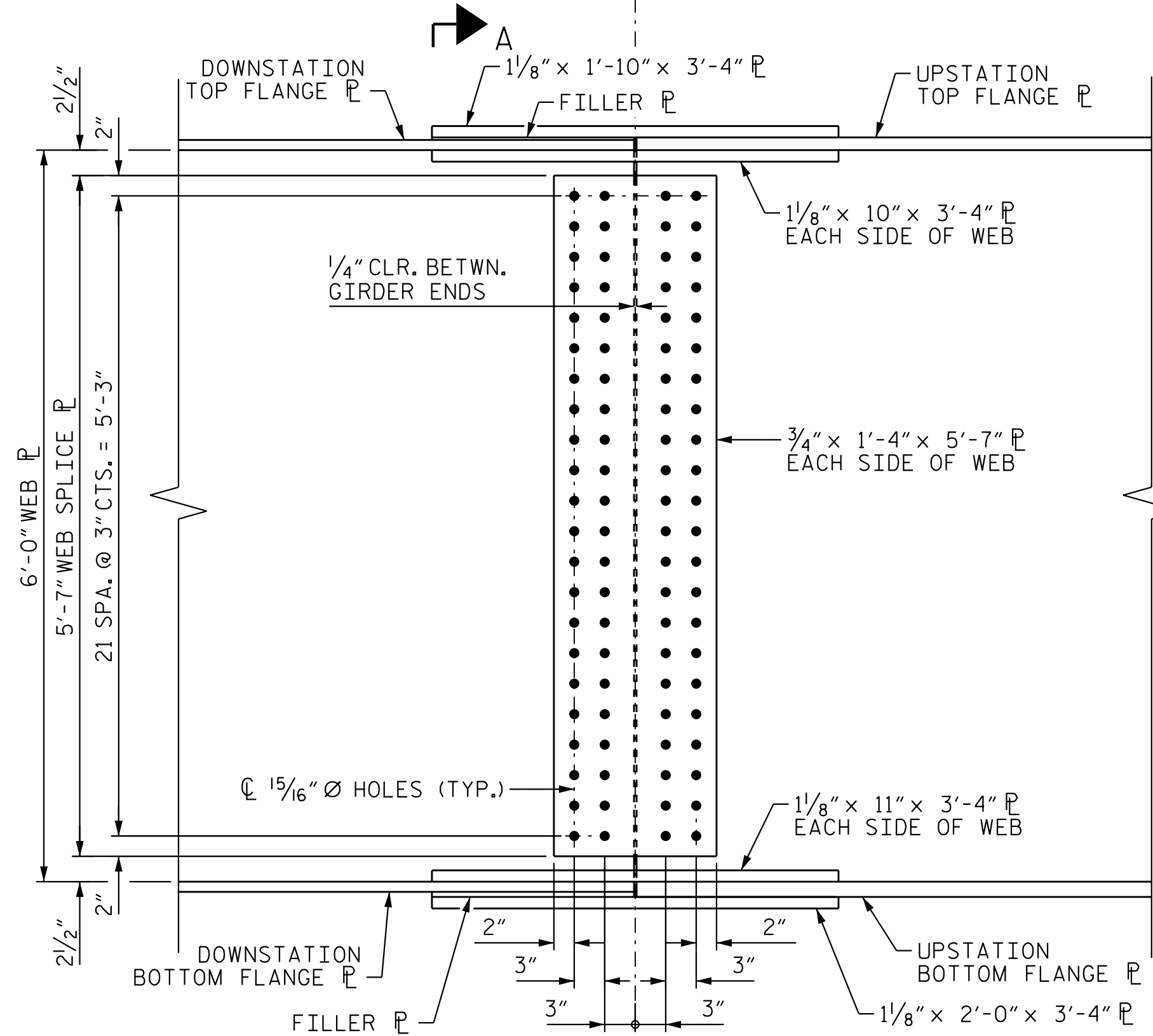
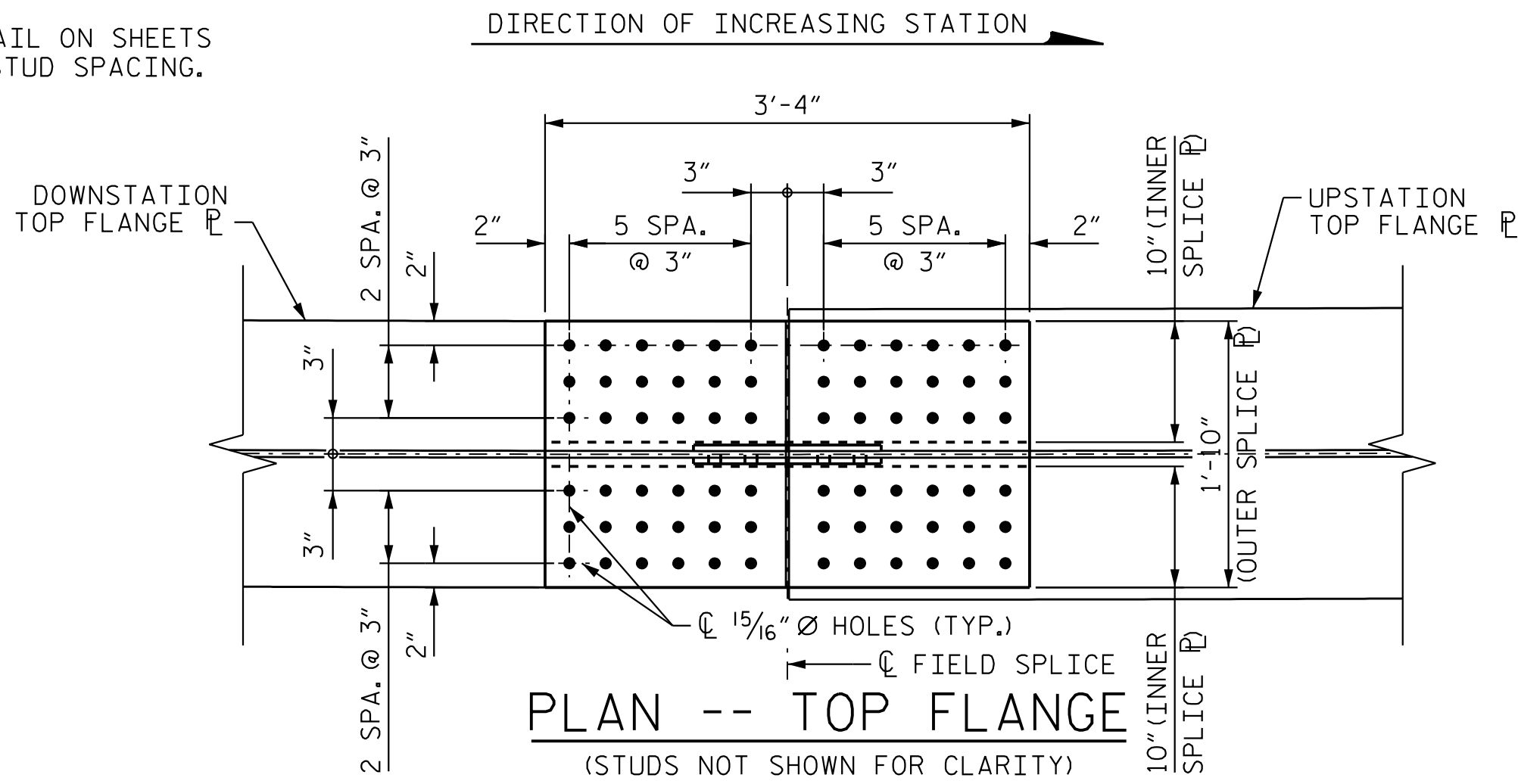
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SECTION A-A

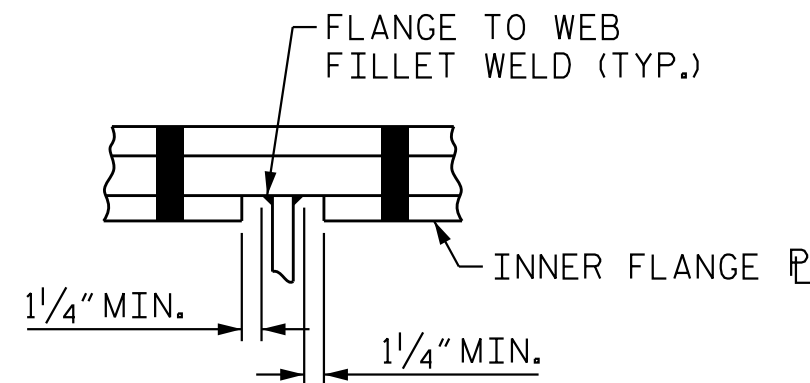


TYPICAL FLANGE AND WEB BUTT JOINT



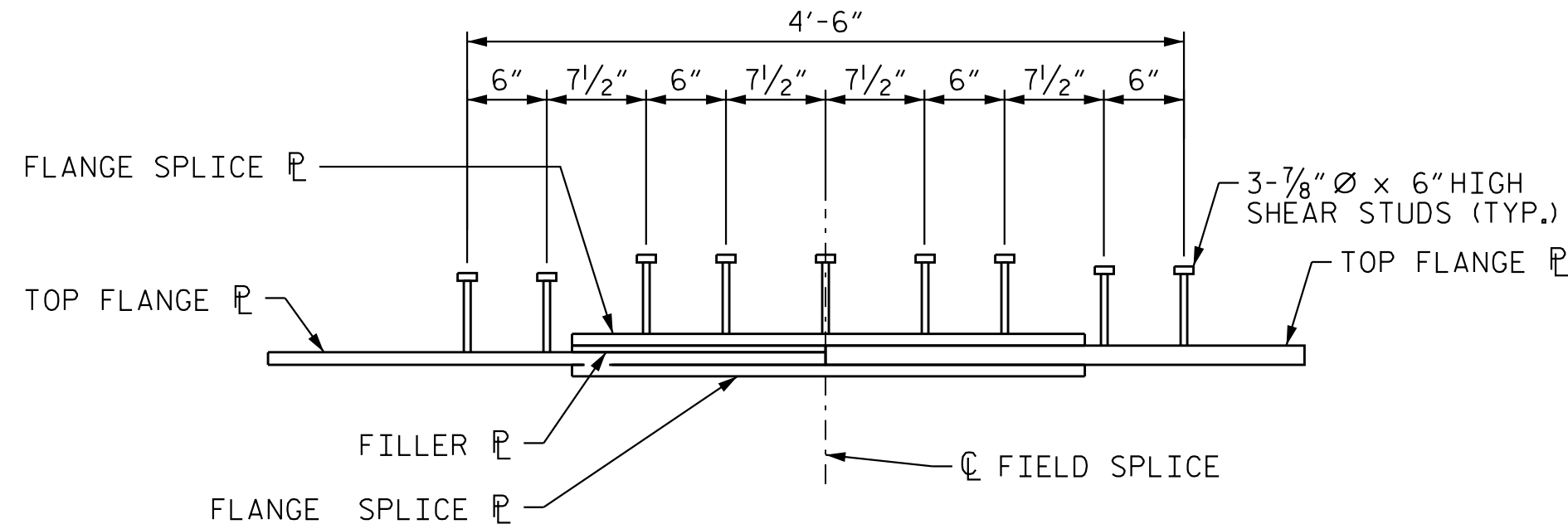
SPLICE DETAILS

SPLICE DESIGNATION	TOP FLANGE			BOTTOM FLANGE		
	DOWNSTATION	UPSTATION	FILLER	DOWNSTATION	UPSTATION	FILLER
UNIT 1 -- SP1-1	1" x 1'-10"	1 1/4" x 1'-10"	1/4" x 1'-10"	1" x 2'-0"	1 1/2" x 2'-0"	1/2" x 2'-0"
UNIT 1 -- SP1-2	1 1/4" x 1'-10"	1" x 1'-10"	1/4" x 1'-10"	1 1/2" x 2'-0"	1" x 2'-0"	1/2" x 2'-0"
UNIT 1 -- SP1-3	1" x 1'-10"	1 1/2" x 1'-10"	1/2" x 1'-10"	1" x 2'-0"	1 1/4" x 2'-0"	1/4" x 2'-0"
UNIT 1 -- SP1-4	1 1/2" x 1'-10"	1" x 1'-10"	1/2" x 1'-10"	1 1/4" x 2'-0"	1" x 2'-0"	1/4" x 2'-0"
UNIT 2 -- SP2-1	1" x 1'-10"	1 1/4" x 1'-10"	1/4" x 1'-10"	1 1/4" x 2'-0"	1 1/2" x 2'-0"	1/4" x 2'-0"
UNIT 2 -- SP2-2	1 1/4" x 1'-10"	1" x 1'-10"	1/4" x 1'-10"	1 1/2" x 2'-0"	1 1/4" x 2'-0"	1/4" x 2'-0"
UNIT 2 -- SP2-3	1" x 1'-10"	1 1/4" x 1'-10"	1/4" x 1'-10"	1 1/4" x 2'-0"	1 1/2" x 2'-0"	1/4" x 2'-0"
UNIT 2 -- SP2-4	1 1/4" x 1'-10"	1" x 1'-10"	1/4" x 1'-10"	1 1/2" x 2'-0"	1 1/4" x 2'-0"	1/4" x 2'-0"
UNIT 3 -- SP3-1	1 1/4" x 1'-10"	1 1/4" x 2'-0"	NOT NEEDED	1 1/2" x 2'-0"	1 1/2" x 2'-4"	NOT NEEDED
UNIT 3 -- SP3-2	1 1/4" x 2'-0"	1" x 1'-10"	1/4" x 1'-10"	1 1/2" x 2'-4"	1 1/4" x 2'-0"	1/4" x 2'-0"
UNIT 3 -- SP3-3	1" x 1'-10"	1 1/4" x 1'-10"	1/4" x 1'-10"	1 1/4" x 2'-0"	1 1/2" x 2'-0"	1/4" x 2'-0"
UNIT 3 -- SP3-4	1 1/4" x 1'-10"	1" x 1'-10"	1/4" x 1'-10"	1 1/2" x 2'-0"	1 1/4" x 2'-0"	1/4" x 2'-0"



DETAIL "A"

(STUDS NOT SHOWN FOR CLARITY)



SHEAR STUD SPACING ON TOP FLANGE

SHEAR STUDS SHALL BE SHOP WELDED ON TOP FLANGE PLATE BEFORE FIELD ASSEMBLY

PROJECT NO. R-3300A

NEW HANOVER COUNTY

STATION: 219+49.69 -L1-

31+84.73 -Y33RPCA-

SHEET 6 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
STRUCTURAL STEEL

BOLTED FIELD SPLICE
DETAILS



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30DB3406ACAC471
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REVISIONS						SHEET NO. S01-047
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 113
2			4			

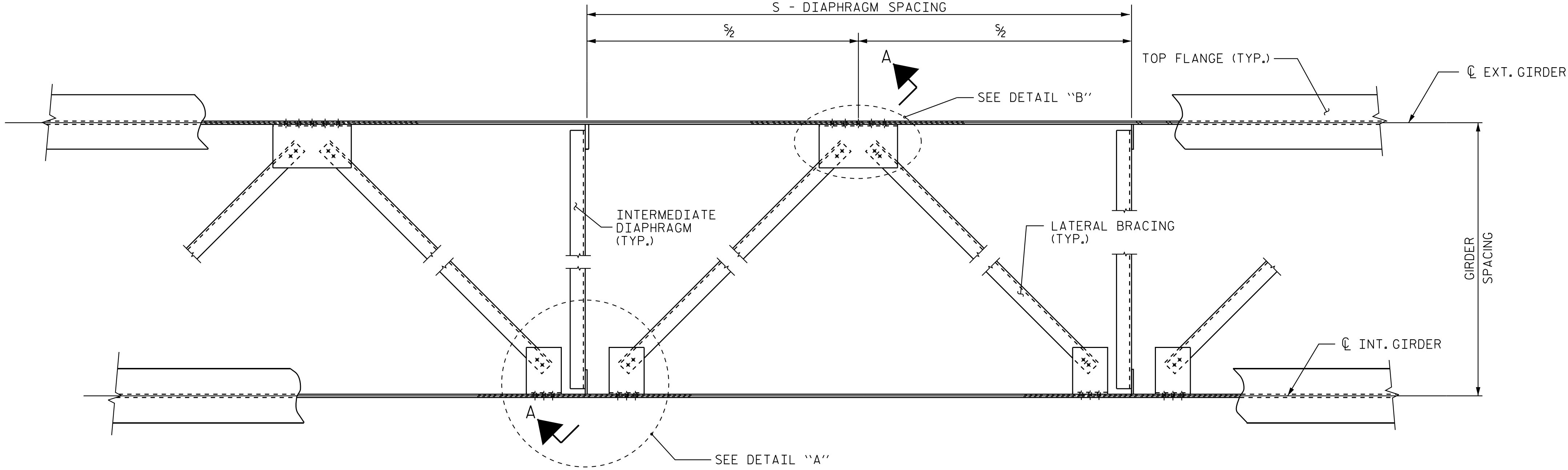


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Fax. (919) 851-7024
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DRAWN BY : V. E. FRAGA DATE : 08/30/18
CHECKED BY : S. S. POOLE DATE : 03/10/22

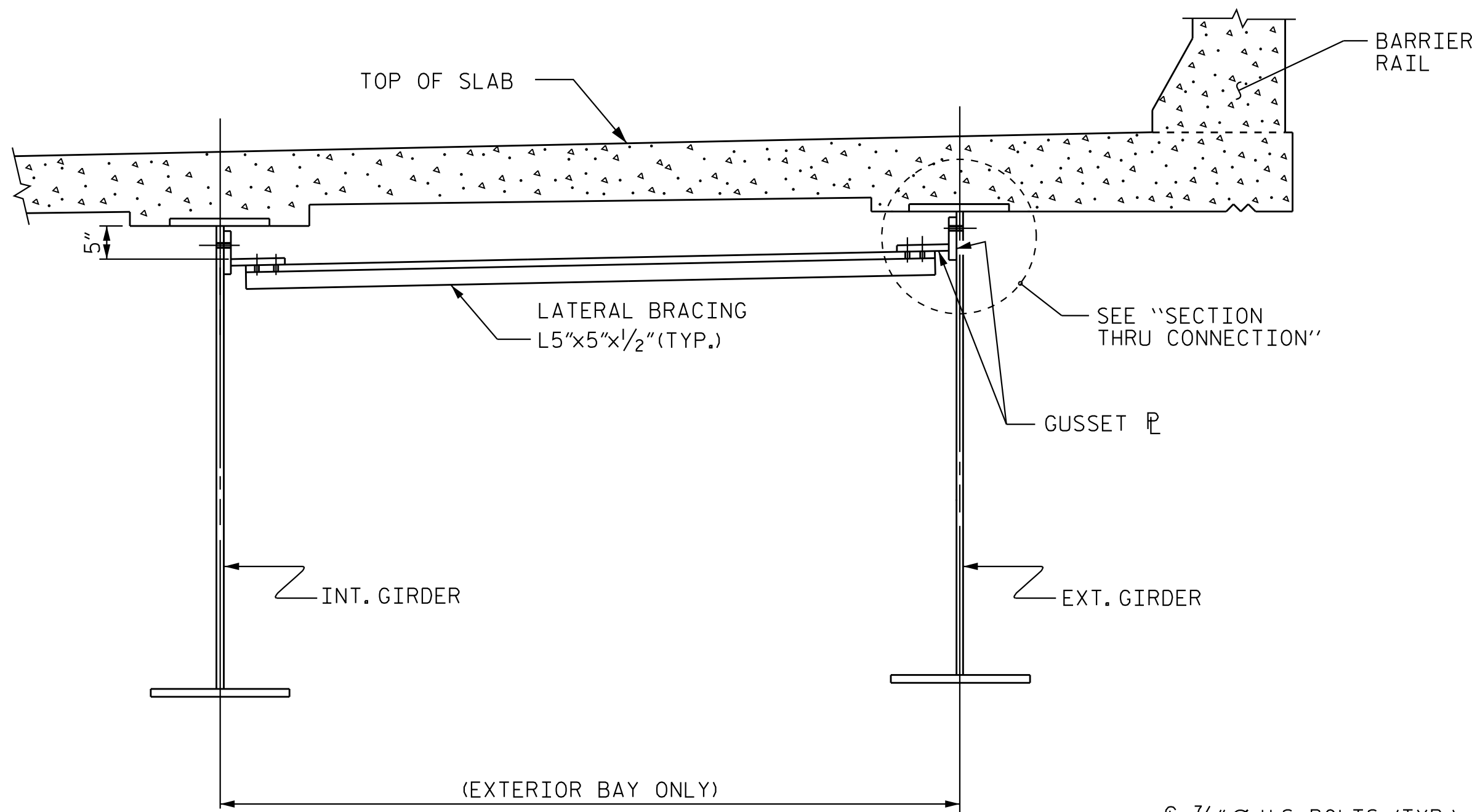
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ENGINEER
OF RECORD: V. E. FRAGA DATE : 04/22/25

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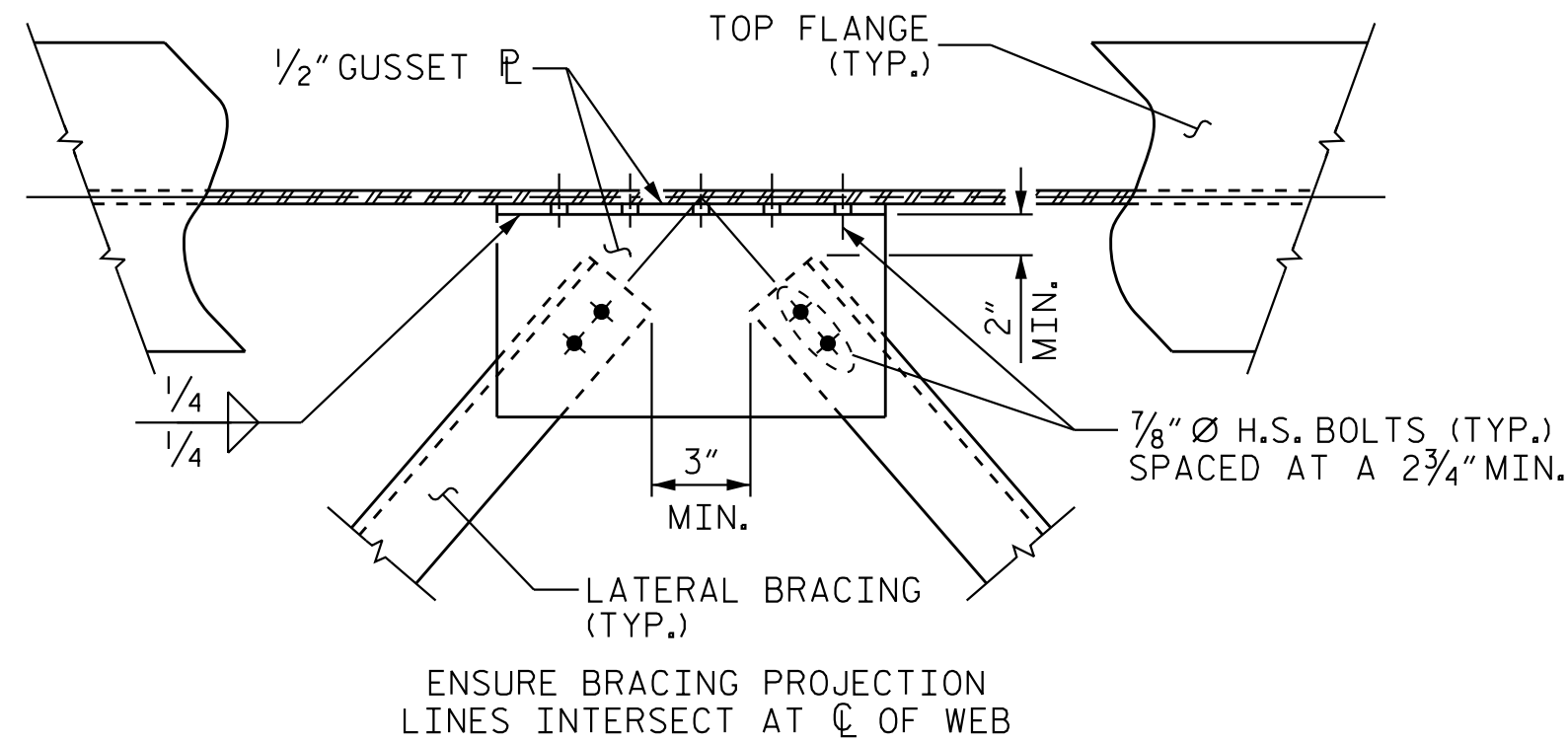


PART PLAN - NEAR TOP FLANGE LATERAL BRACING

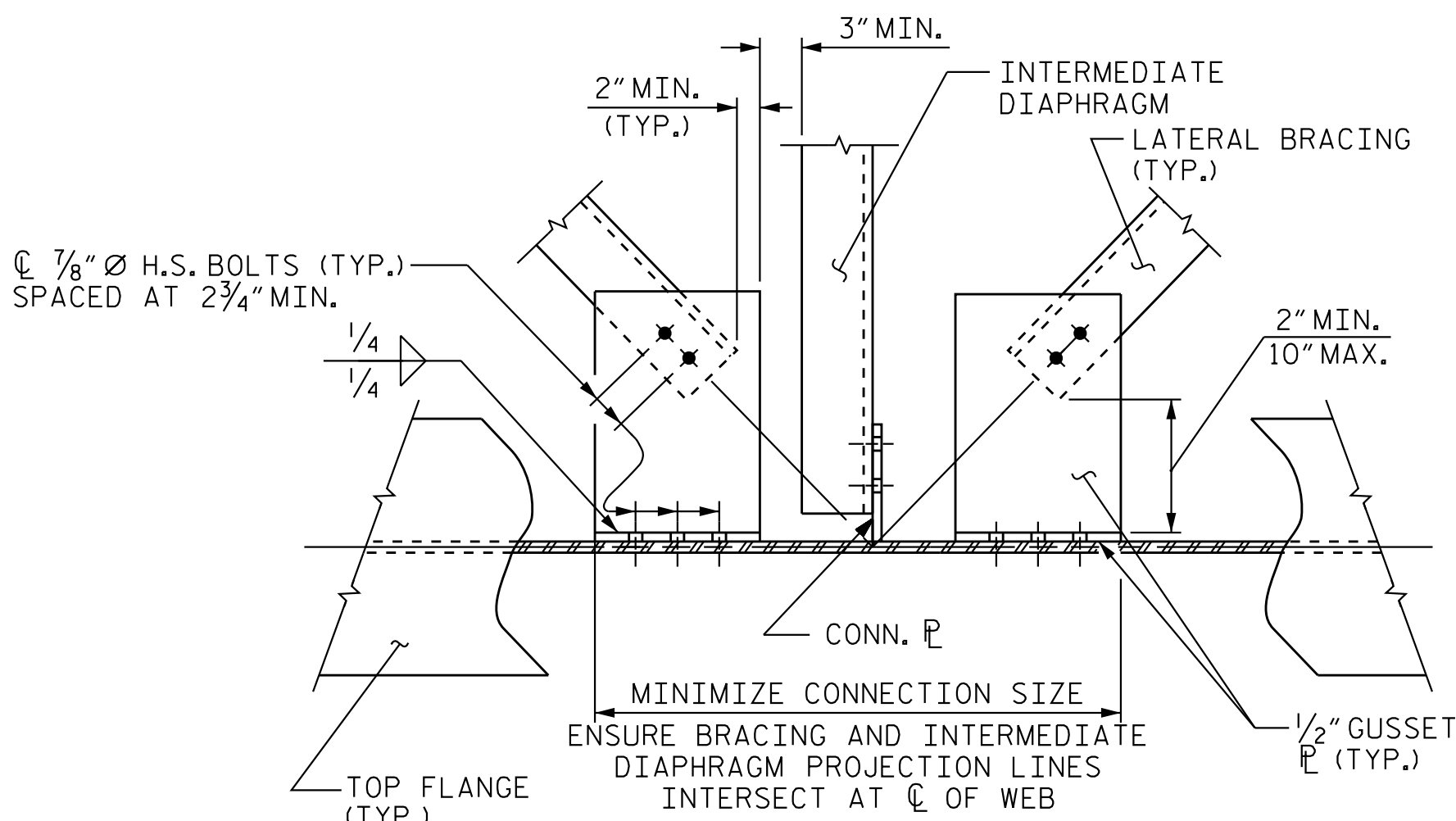
(THROUGHOUT EXTERIOR BAYS IN SPANS E AND H ONLY)



SECTION A-A



DETAIL "B"



DETAIL "A"

NOTES

LATERAL BRACING ASSEMBLY SHALL COMPLY WITH SECTION 1072 OF THE STANDARD SPECIFICATIONS.

ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 50 AND PAINTED IN ACCORDANCE WITH SYSTEM 1 OR SYSTEM 2 OF THE STRUCTURAL STEEL COATINGS PROGRAM AND ARTICLE 442-8 OF THE STANDARD SPECIFICATIONS UNLESS OTHERWISE NOTED ON THE PLANS.

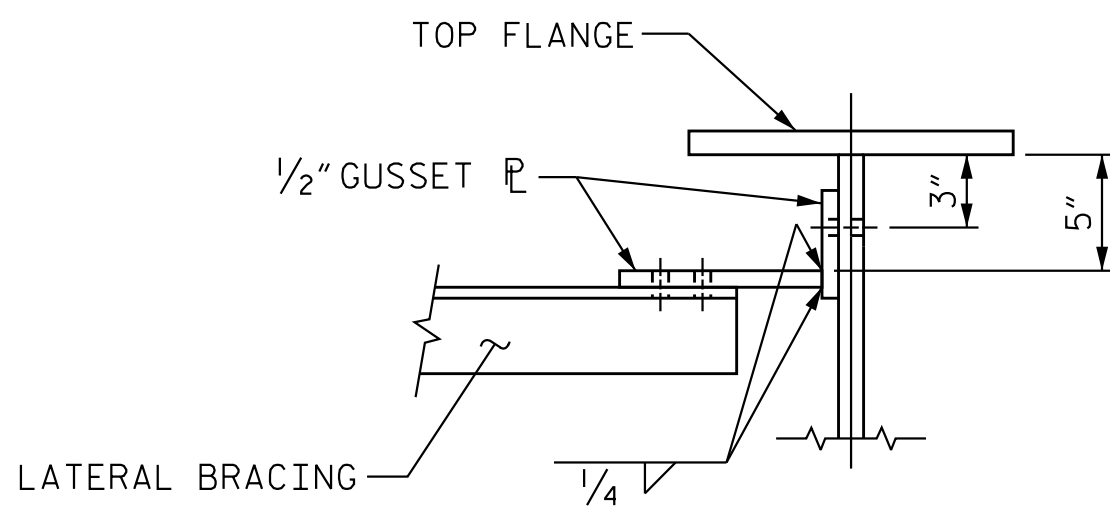
TENSION ON THE ASTM A325 BOLTS SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH ARTICLE 440-8 OF THE STANDARD SPECIFICATIONS.

ALL BOLTED CONNECTIONS SHALL BE 7/8" Ø HIGH STRENGTH BOLTS.

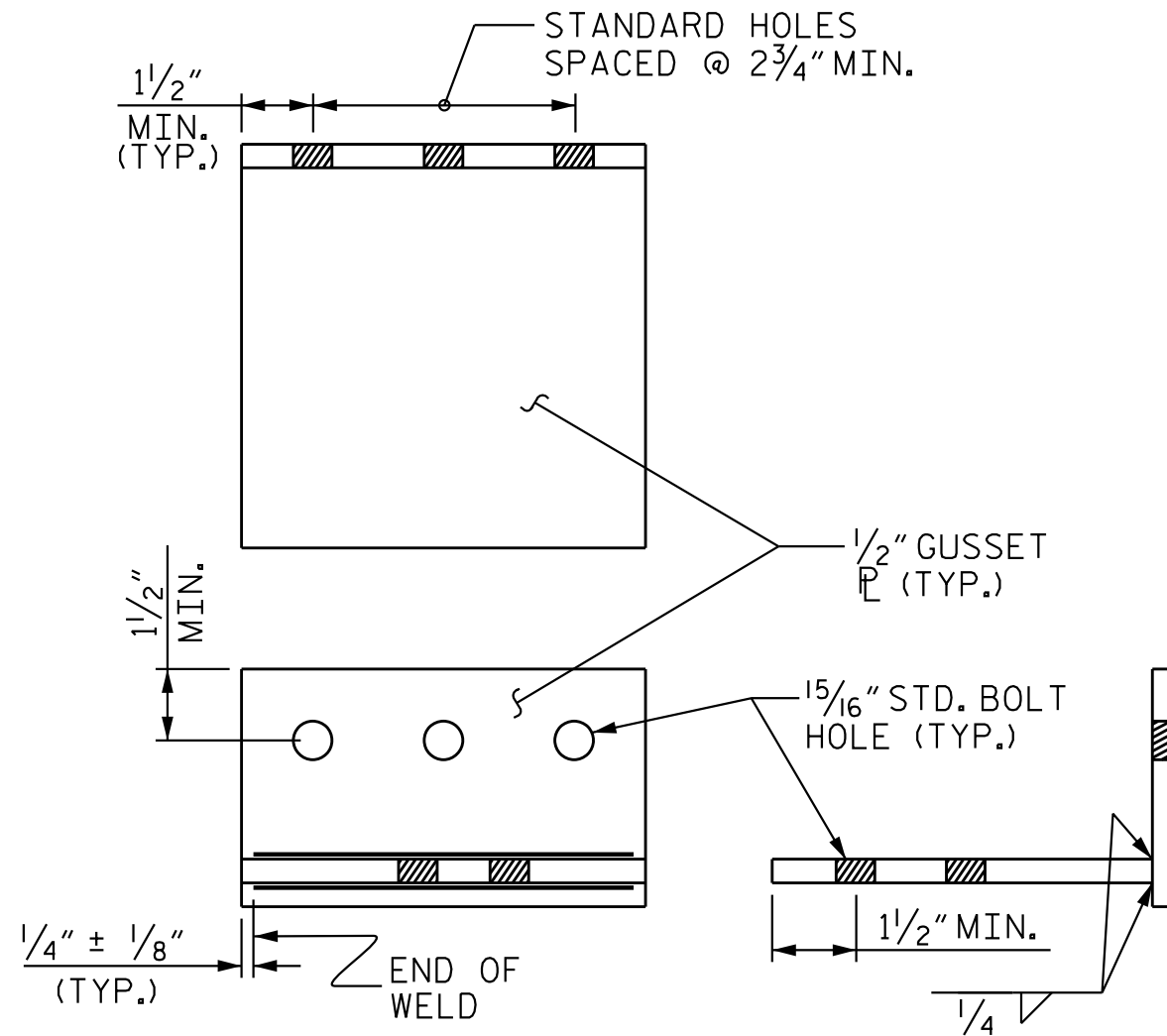
THE CONTRACTOR HAS THE OPTION TO CLIP THE PROTRUDING CORNERS OF THE GUSSET PLATES, AT NO ADDITIONAL COST TO THE DEPARTMENT.

BENT GUSSET PLATES OR ROLLED ANGLE SHAPES MAY BE SUBSTITUTED FOR THE WELDED GUSSET PLATES DETAILED IF APPROVED BY THE ENGINEER, AT NO ADDITIONAL COST TO THE DEPARTMENT.

INSTALL THE LATERAL BRACING AFTER ERECTING THE EXTERIOR GIRDER AND THE ADJACENT INTERIOR GIRDER AND INSTALLING THE INTERMEDIATE DIAPHRAGMS.



SECTION THRU CONNECTION



CONNECTION DETAIL

PROJECT NO. R-3300A

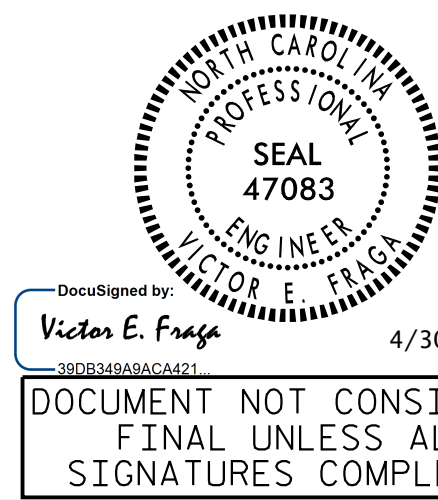
NEW HANOVER COUNTY

STATION: 219+49.69 -L1-
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SHEET 7 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

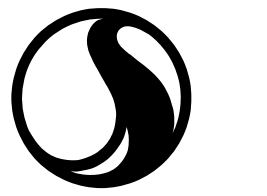
LATERAL BRACING



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39DB348BAC6A21
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2			4			

STD. NO. LB1



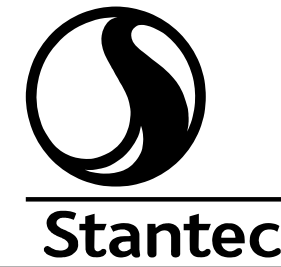
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ASSEMBLED BY: V. E. FRAGA DATE: 08/29/18
CHECKED BY: S. S. POOLE DATE: 02/10/22

DRAWN BY: WMC 6/11 REV. 12/17 MAA/THC
CHECKED BY: GM 6/11

4/22/2025 8:23:39 PM jgelle
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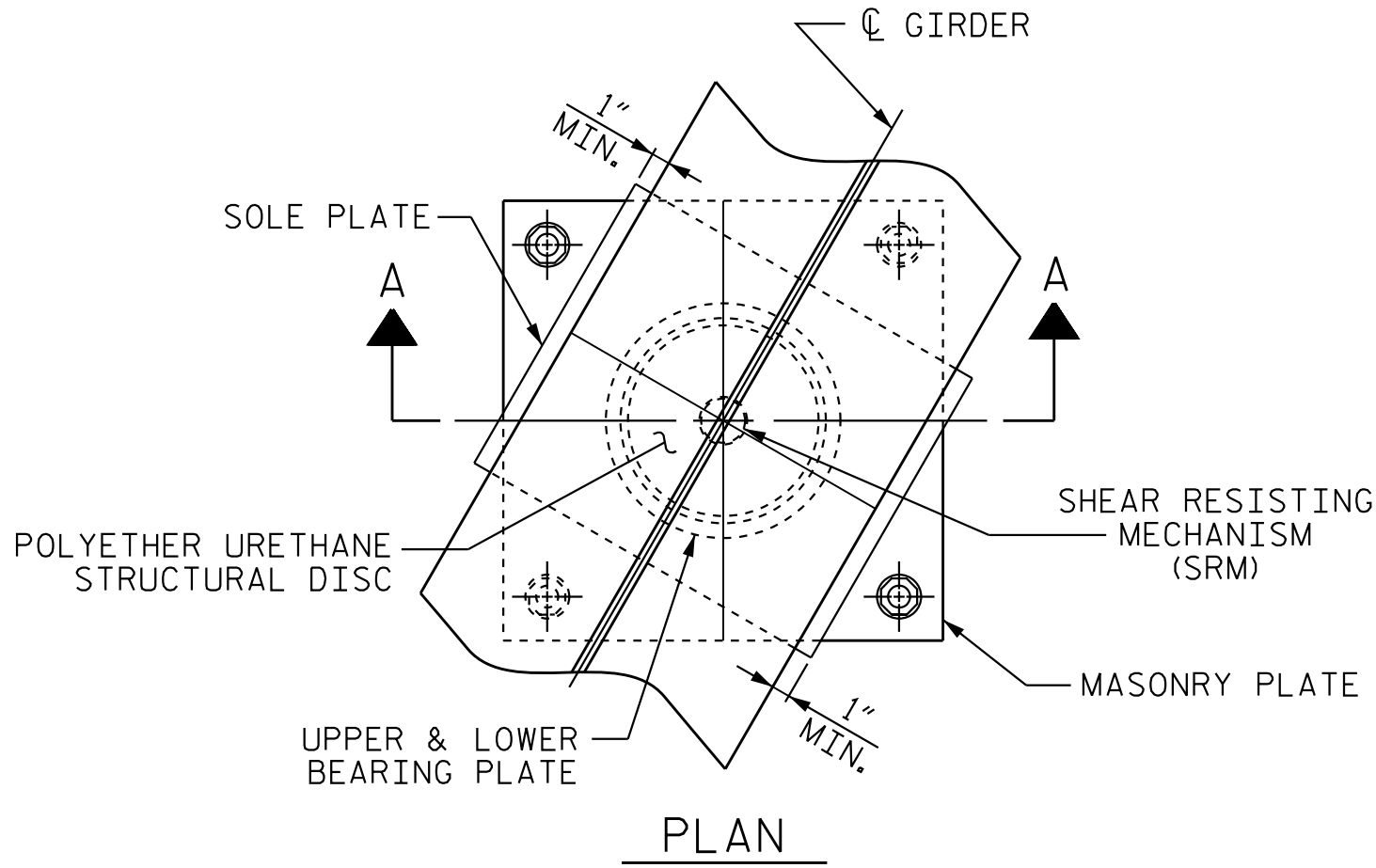


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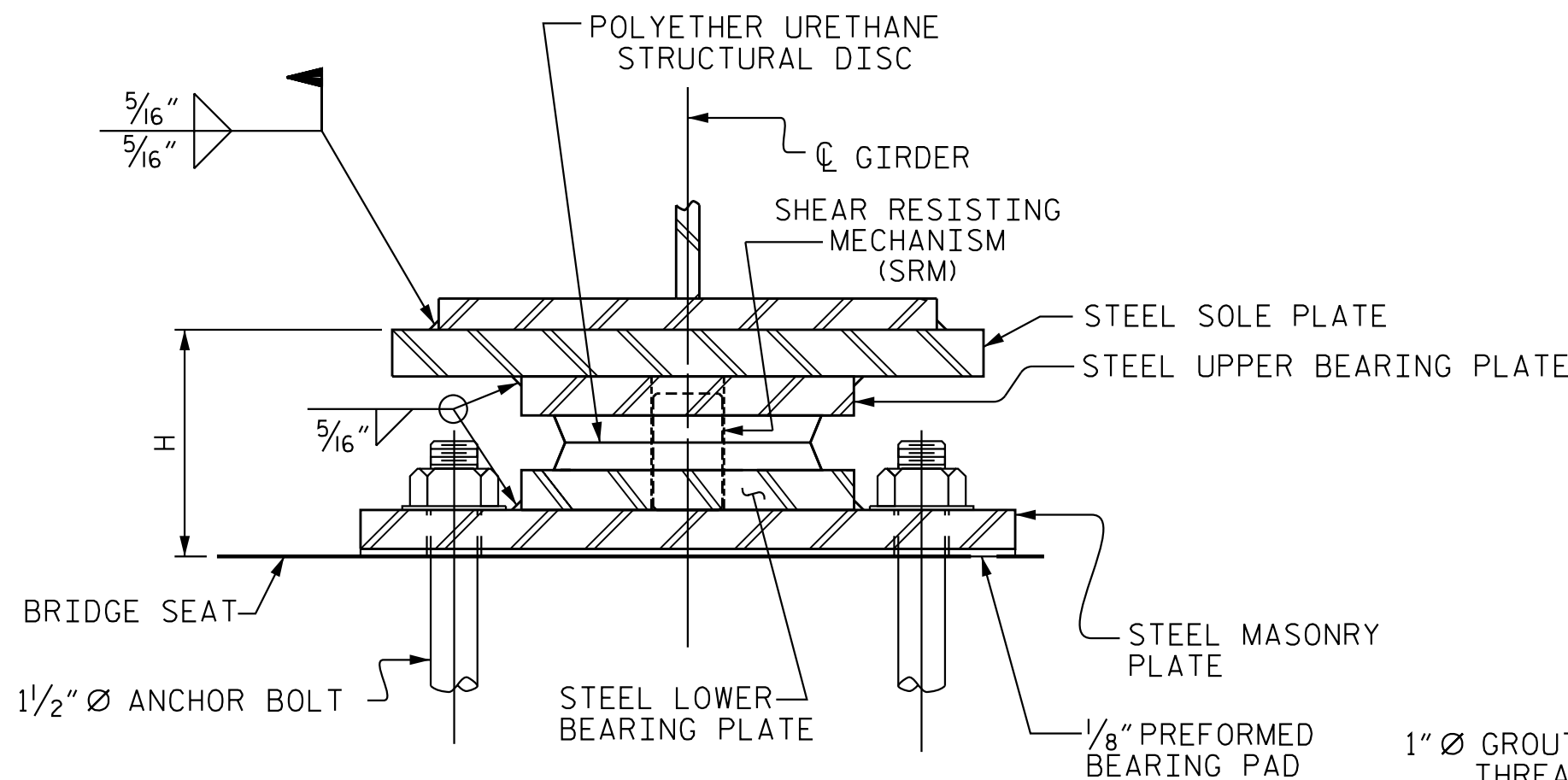
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ENGINEER
OF RECORD: V. E. FRAGA DATE : 04/22/25

ASSEMBLED BY : V. E. FRAGA DATE : 08/29/18
CHECKED BY : S. S. POOLE DATE : 03/10/22

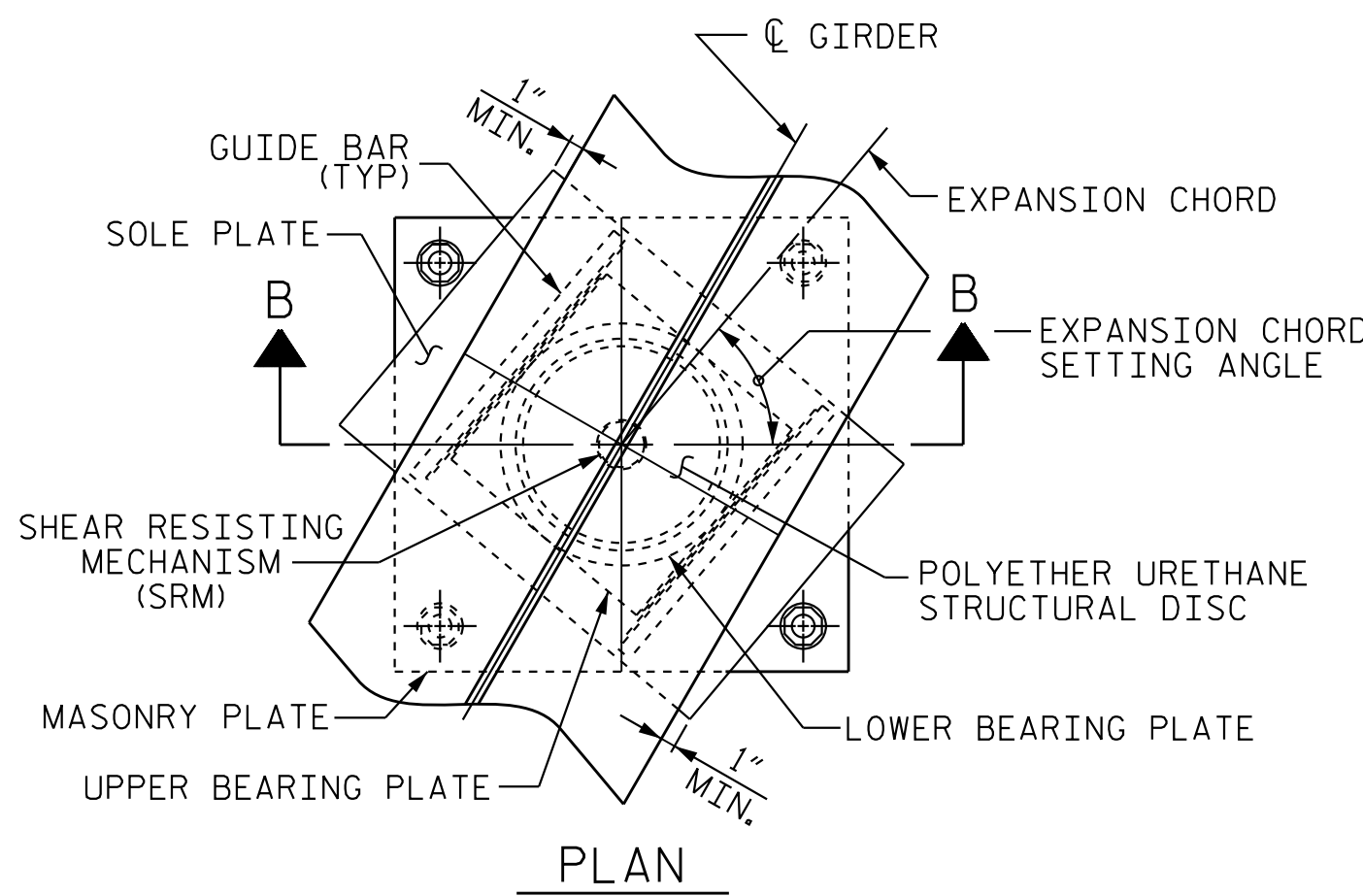
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CHECKED BY : EXP 10/13



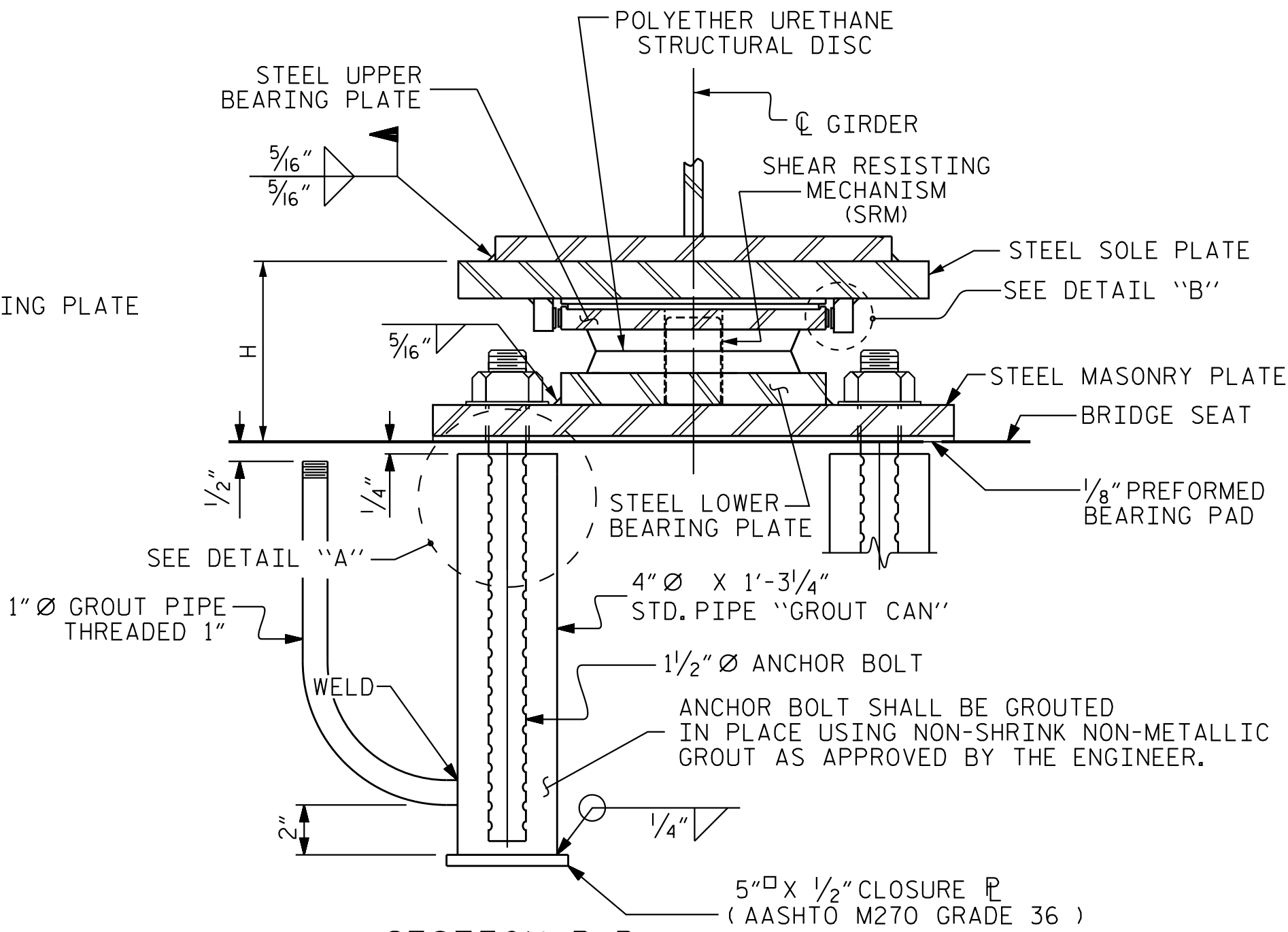
PLAN



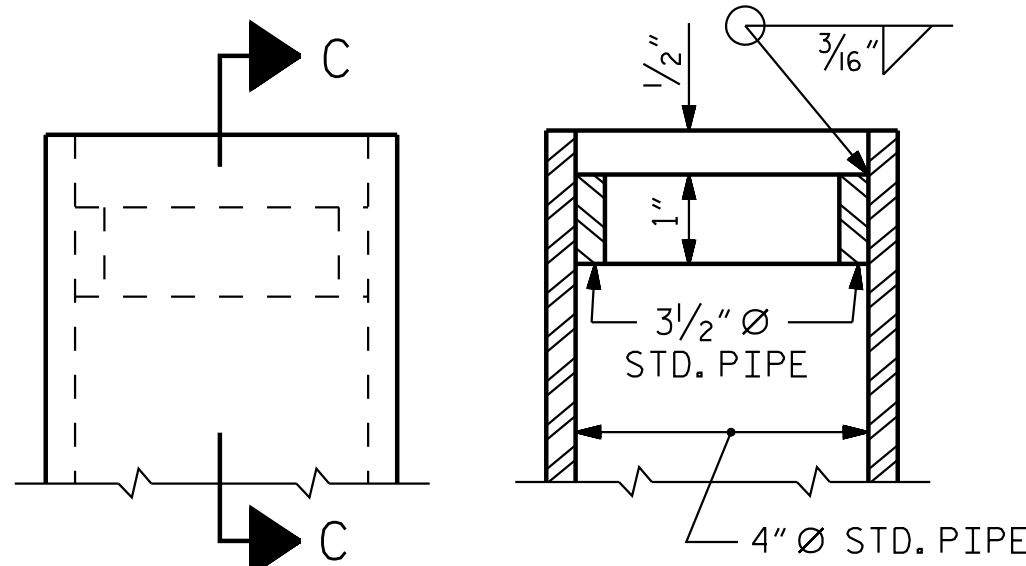
SECTION A-A
DB1, FIXED



PLAN

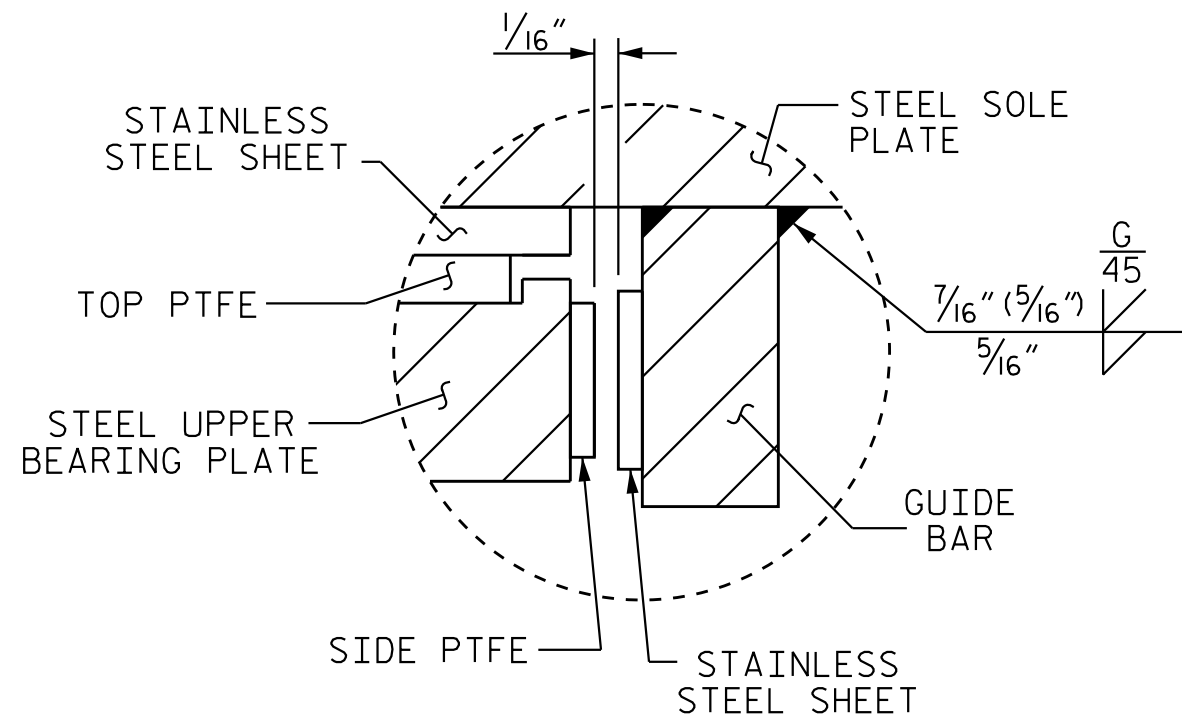


SECTION B-B
DB2, EXP.



SECTION C-C

DETAIL "A"



DETAIL "B"

NOTES

FOR DISC BEARINGS, SEE SPECIAL PROVISIONS.

ALL BEARING PLATES SHALL BE AASHTO M270 GRADE 50.

AT ALL POINTS OF SUPPORT, NUTS FOR ANCHOR BOLTS SHALL BE FINGER-TIGHTENED PLUS AN ADDITIONAL 1/4 TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

WHEN WELDING THE SOLE PLATE TO THE GIRDER, USE TEMPERATURE INDICATING WAX PENS, OR OTHER SUITABLE MEANS, TO ENSURE THAT THE TEMPERATURE OF THE BEARING DOES NOT EXCEED 250°F. TEMPERATURES ABOVE THIS MAY DAMAGE THE TFE OR URETHANE DISC.

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

AFTER BEARING ASSEMBLY IS IN PLACE AND ANCHOR BOLTS HAVE BEEN FINALLY POSITIONED, THEY SHALL BE GROUTED IN PLACE AS SHOWN.

THE CLOSURE PLATE, GROUT PIPE, AND STANDARD PIPE FOR THIS ASSEMBLY NEED NOT BE GALVANIZED.

SOLE PLATES SHOULD BE WELDED TO GIRDER FLANGES AND ANCHOR BOLTS SHOULD BE GROUTED BEFORE FALSEWORK IS PLACED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

FOR ATTACHMENT OF THE STAINLESS STEEL SHEETS TO THE STEEL SOLE PLATE AND GUIDE BARS, AS WELL AS THE TOP AND SIDE PTFE SHEETS TO THE STEEL UPPER BEARING PLATE, SEE SPECIAL PROVISIONS.

FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

THE MINIMUM ROTATIONAL CAPACITY FOR ALL BEARINGS SHALL BE 0.02 RADIAN.

FOR SOLE PLATE DETAILS, BEARING AND MASONRY PLATE DESIGNATIONS, LOCATIONS, BEARING HEIGHTS, MASONRY PLATE DIMENSIONS, TOP OF SOLE PLATE SLOPE, LOADS AND MOVEMENTS, AND EXPANSION CHORD SETTING ANGLES, SEE SHEET 2 OF 2.

PROJECT NO. R-3300A
NEW HANOVER COUNTY
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SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
DISC BEARING
DETAILS



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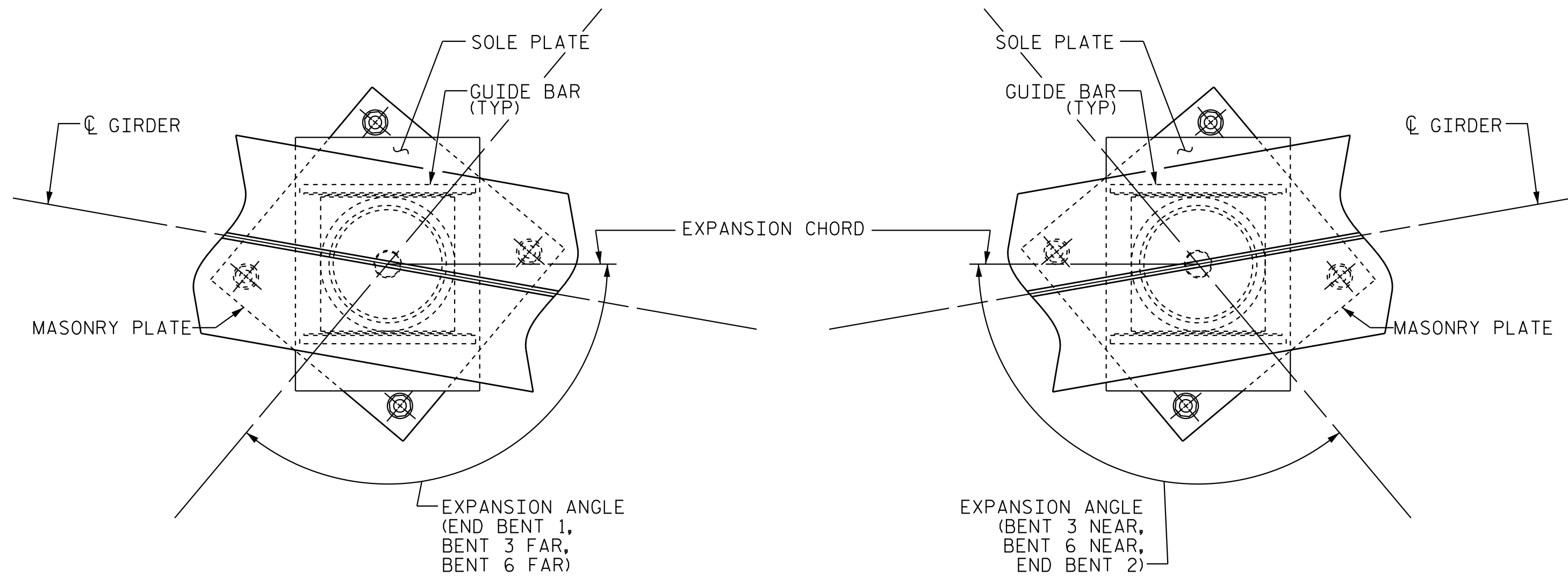
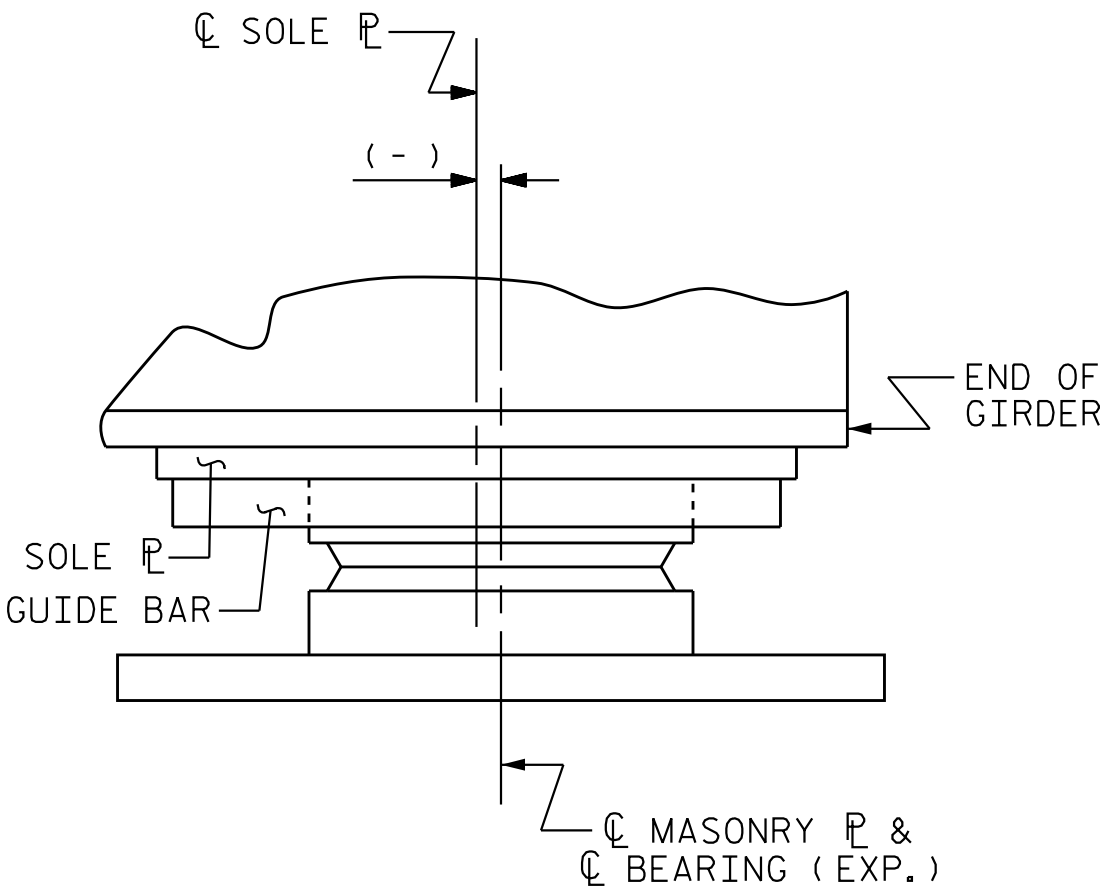
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NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 112
2			4			

STD. NO. DB1

PLATE SETTING DATA (EXPANSION DISC BEARINGS)				
LOCATION	TEMPERATURE AT TIME OF SETTING			*
	45° F	60° F	90° F	
END BENT 1	-1/4"	0"	1/2"	-1/16
BENT 3 NEAR	-1/4"	0"	1/2"	-1/16
BENT 3 FAR	-1/4"	0"	1/2"	-3/16
BENT 6 NEAR	-1/4"	0"	1/2"	-3/16
BENT 6 FAR	-1/4"	0"	5/8"	-1/4
END BENT 2	-1/4"	0"	5/8"	-3/16

* CORRECTION FOR END ROTATION DUE TO WEIGHT OF SLAB AND COMPOSITE DEAD LOAD.

TEMPERATURE SETTING DETAIL

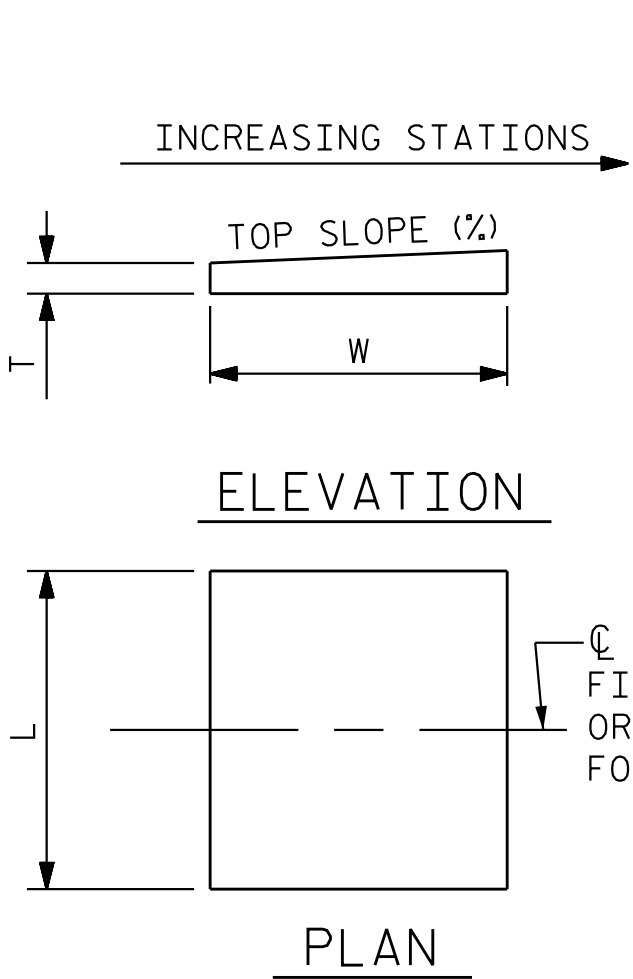


PLAN SHOWING EXPANSION ANGLES

				DIMENSIONS					LOADS AND MOVEMENT				
DESIGNATIONS		LOCATION	NUMBER OF BEARINGS	BEARING	MASONRY PLATE				SOLE PLATE	UNFACTORED VERTICAL LOAD (KIPS)		FACTORED HORIZONTAL LOAD (KIPS)	ONE-WAY MOVEMENT (IN.)
BEARINGS	MASONRY PL			H (IN.)	A (IN.)	B (IN.)	C (IN.)	TOP SLOPE (%)		DC	DW	LL+IM	
DB1 (EXP.)	M1	END BENT 1	5	5 1/16	25 1/2	25 1/2	3/4	1.045%		74.6	11.3	103.3	34
DB2 (FIXED)	M2	BENT 1	5	6 1/2	26 1/2	26 1/2	1	0.877%		306.3	45.8	205.4	114
DB3 (FIXED)	M3	BENT 2	5	6 1/2	26 1/2	26 1/2	1	0.877%		320.0	47.5	203.4	117
DB4 (EXP.)	M4	BENT 3 NEAR	5	5 5/8	25 1/2	25 1/2	3/4	0.559%		83.8	12.5	103.1	37
DB5 (EXP.)	M5	BENT 3 FAR	5	5 13/16	25 1/2	25 1/2	3/4	0.543%		108.6	15.5	115.7	45
DB6 (FIXED)	M6	BENT 4	5	6 7/16	26 1/2	26 1/2	1	-0.416%		367.1	54.4	220.0	133
DB7 (FIXED)	M7	BENT 5	5	6 7/16	26 1/2	26 1/2	1	-0.500%		367.1	54.3	219.6	133
DB8 (EXP.)	M8	BENT 6 NEAR	5	6	25 1/2	25 1/2	3/4	-0.500%		108.7	15.6	115.7	46
DB9 (EXP.)	M9	BENT 6 FAR	5	5 9/16	25 1/2	25 1/2	3/4	-0.500%		129.5	18.2	122.0	52
DB10 (FIXED)	M10	BENT 7	5	6 7/16	26 1/2	26 1/2	1	-0.500%		410.8	59.3	230.2	146
DB11 (FIXED)	M11	BENT 8	5	6 7/16	26 1/2	26 1/2	1	-0.500%		365.9	53.6	222.3	133
DB12 (EXP.)	M12	END BENT 2	5	5 1/16	25 1/2	25 1/2	3/4	-1.430%		108.0	15.5	116.1	45

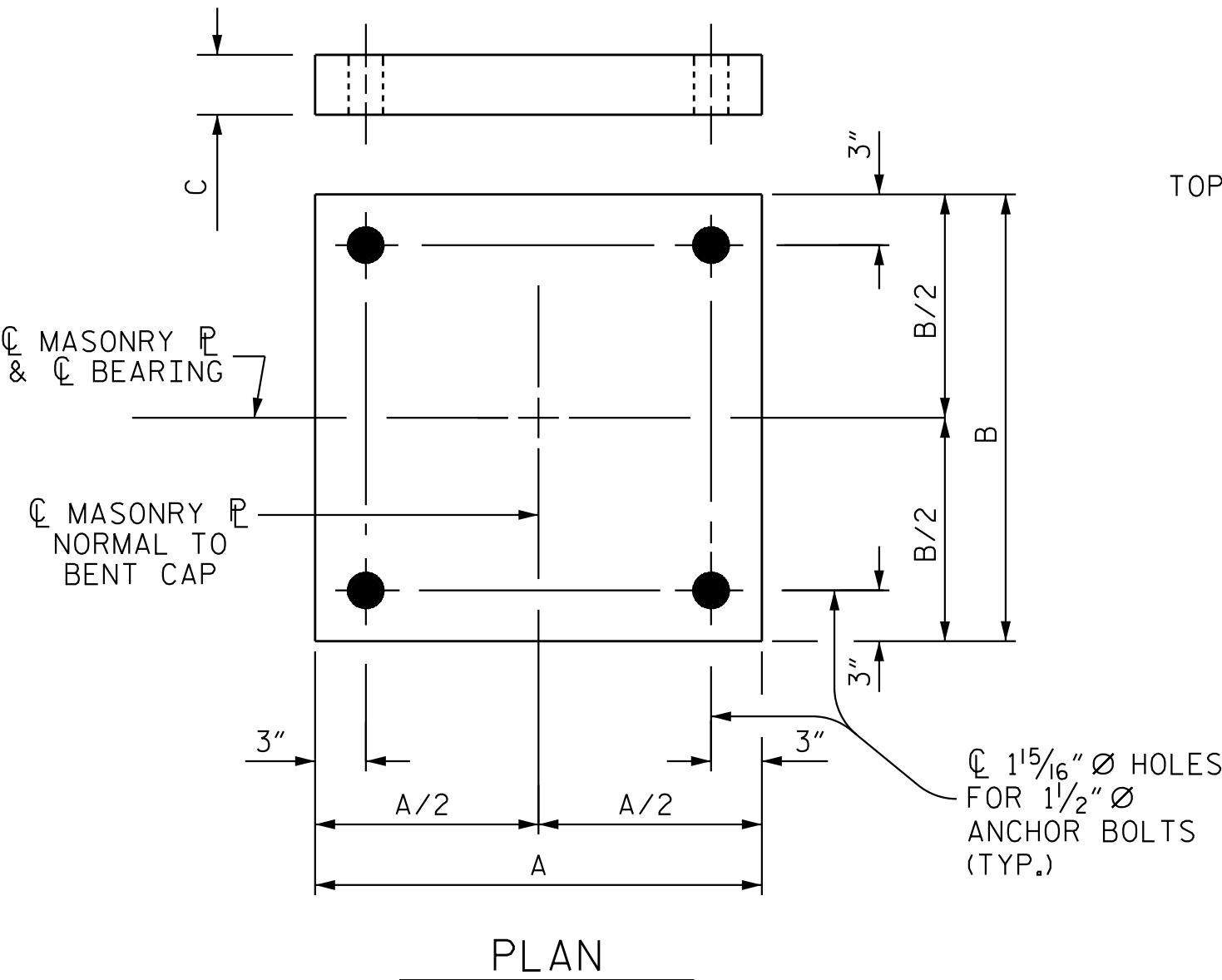
NOTE: ALL SUBSTRUCTURE BEARING SEAT ELEVATIONS HAVE BEEN ESTABLISHED ASSUMING THE VALUE "H" ABOVE. ALL DIMENSIONS IN TABLE ARE ASSUMED VALUES USED FOR DESIGN PURPOSES. FINAL VALUES SHALL BE DETERMINED BY THE BEARING MANUFACTURER. VARIANCE FROM ASSUMED HEIGHT "H" WILL NECESSITATE ADJUSTMENTS TO SUBSTRUCTURE BEARING SEAT ELEVATIONS.

EXPANSION CHORD SETTING ANGLES (EXPANSION DISC BEARINGS)						
GIRDER	LOCATION					
	END BENT 1	BENT 3 NEAR	BENT 3 FAR	BENT 6 NEAR	BENT 6 FAR	END BENT 2
1	111° 7' 39"	94° 54' 38"	95° 47' 48"	95° 47' 48"	96° 3' 50"	96° 5' 49"
2	111° 3' 31"	94° 54' 38"	95° 47' 48"	95° 47' 48"	96° 3' 49"	96° 5' 47"
3	110° 59' 27"	94° 54' 37"	95° 47' 47"	95° 47' 47"	96° 3' 48"	96° 5' 45"
4	110° 55' 27"	94° 54' 36"	95° 47' 46"	95° 47' 46"	96° 3' 47"	96° 5' 43"
5	110° 51' 31"	94° 54' 35"	95° 47' 45"	95° 47' 45"	96° 3' 46"	96° 5' 41"

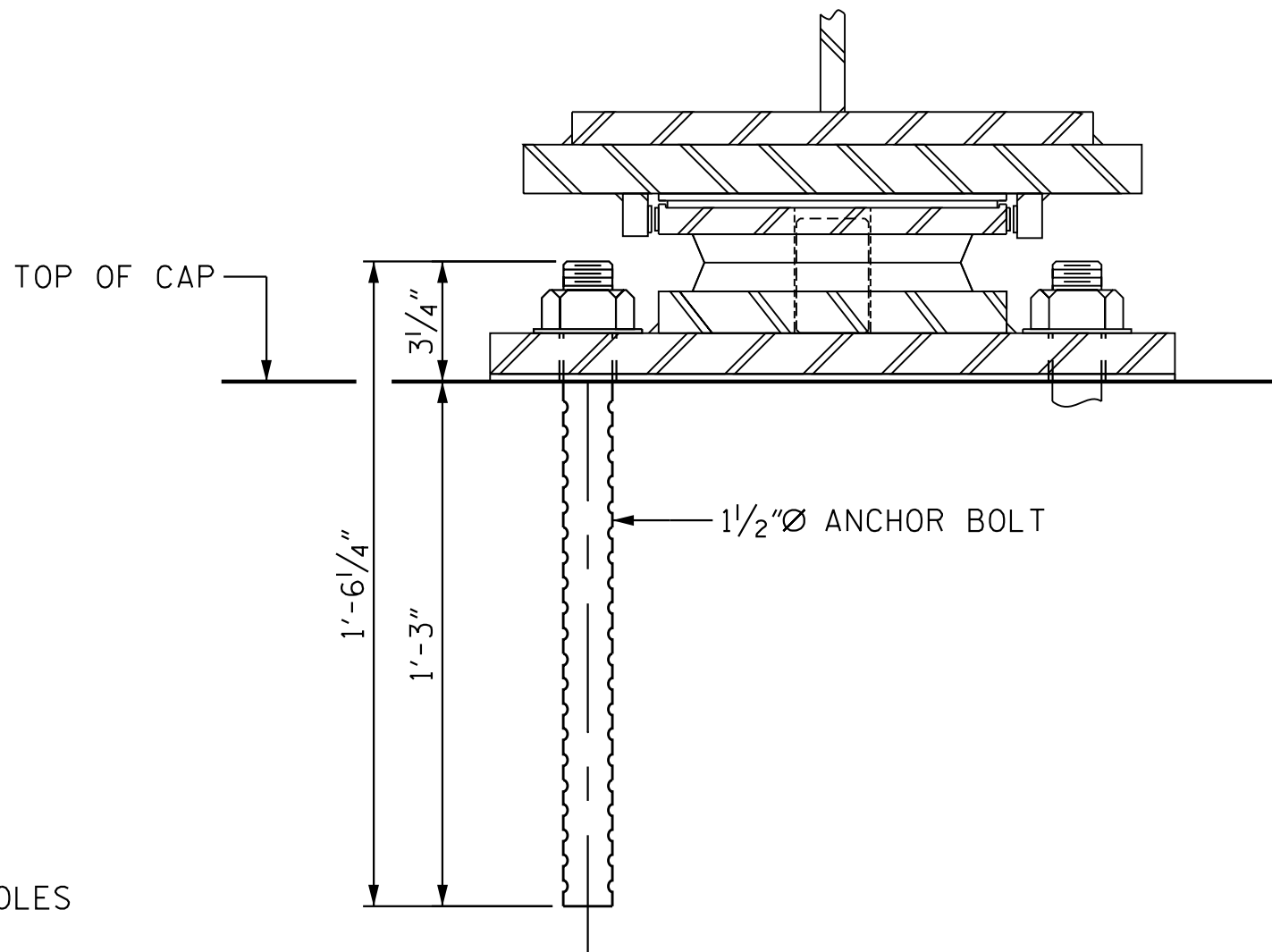


NOTE: DIMENSIONS "L", "W", AND "T" SHALL BE DETERMINED BY THE BEARING MANUFACTURER. SET DIMENSION "L" SUCH THAT THE MINIMUM EDGE DISTANCE TO THE GIRDER FLANGE IS 1".

SOLE PLATE DETAILS



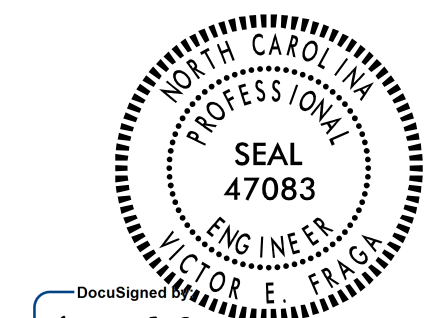
MASONRY PLATE DETAILS



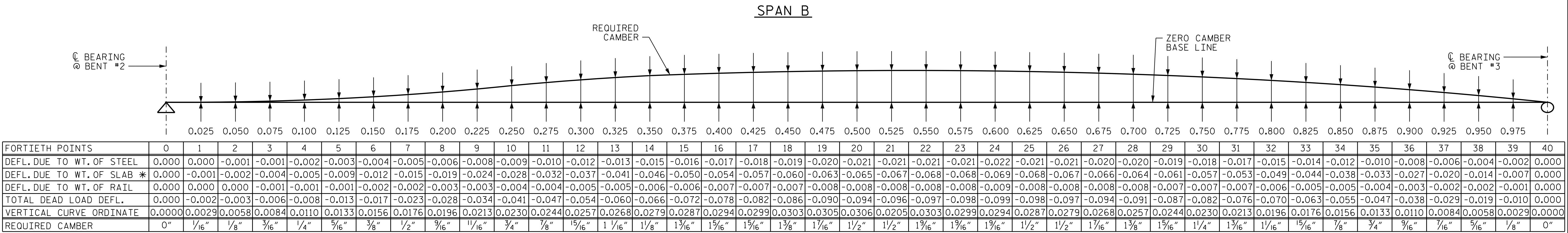
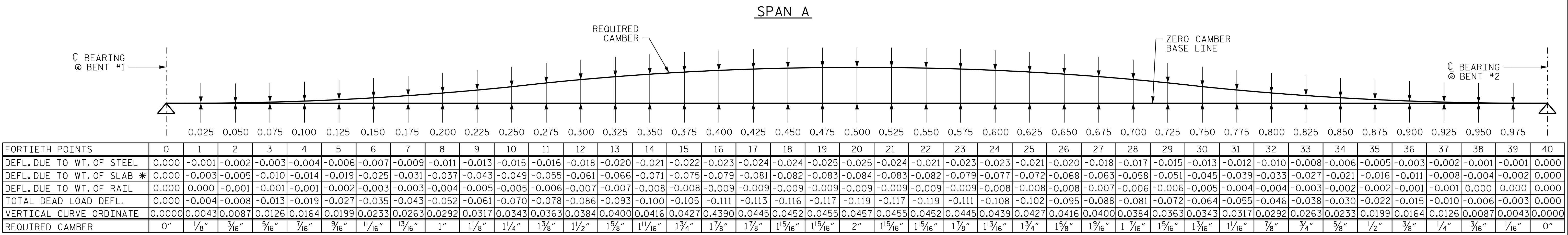
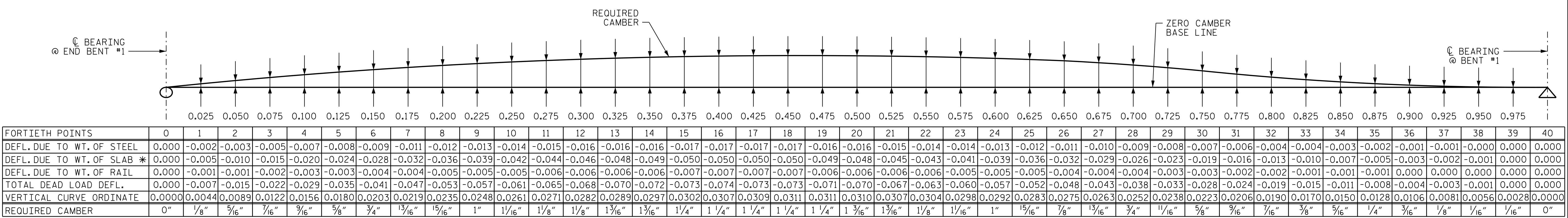
ANCHOR BOLT DETAILS

PROJECT NO. R-3300A
NEW HANOVER COUNTY
STATION: 219+49.69 -L1-
31+84.73 -Y33RPCA-
SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD DISC BEARING DETAILS					
REVISIONS					
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2			4		
SHEET NO. S01-050					TOTAL SHEETS 112



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SCHEMATIC CAMBER ORDINATES UNIT 1, GIRDER 1

NOTES:

- ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "REQUIRED CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).
- NEGATIVE DEFLECTION ORDINATES DENOTE DOWNWARD DISPLACEMENT DUE TO LOAD.
- POSITIVE CAMBER DENOTES REQUIRED GIRDER ORDINATE ABOVE THE ZERO CAMBER BASE LINE.
- NEGATIVE CAMBER DENOTES REQUIRED GIRDER ORDINATE BELOW THE ZERO CAMBER BASE LINE.
- SLOPE FOR THE ZERO CAMBER BASE LINE VARIES.
- * INCLUDES SLAB, BUILDUP, AND STAY-IN-PLACE FORMS
- SUPERELEVATION ORDINATES FOR ALL GIRDERS = 0

PROJECT NO. R-3300A

NEW HANOVER COUNTY

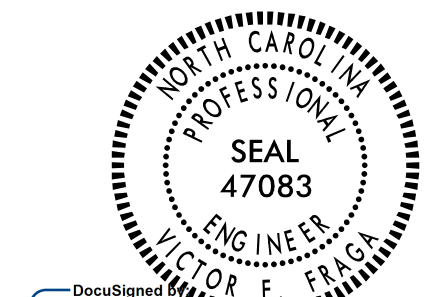
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SHEET 1 OF 15

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
GIRDER DEFLECTION
AND CAMBER SCHEDULES

UNIT 1, GIRDER 1

REVISIONS						SHEET NO. S01-051
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 113
2			4			

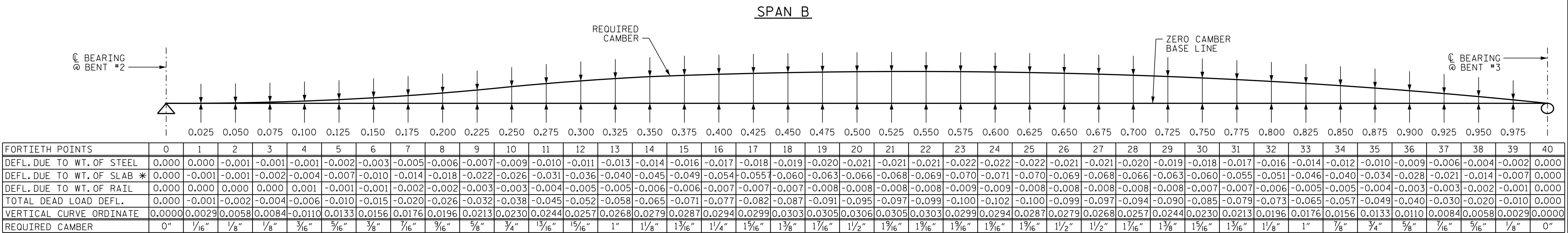
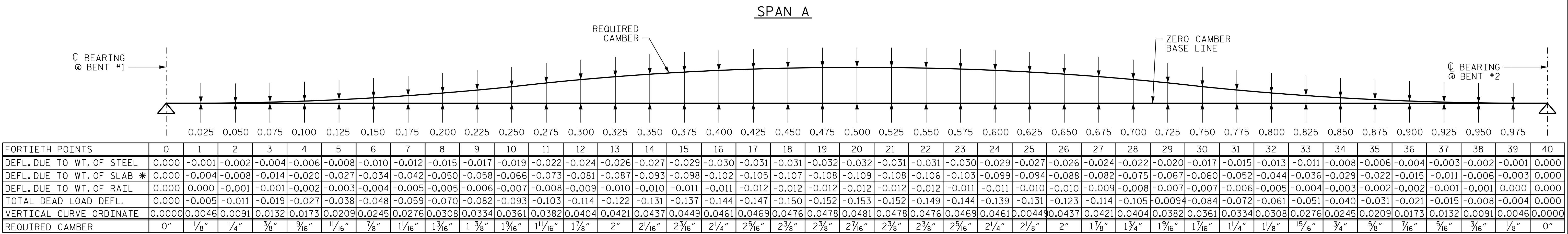
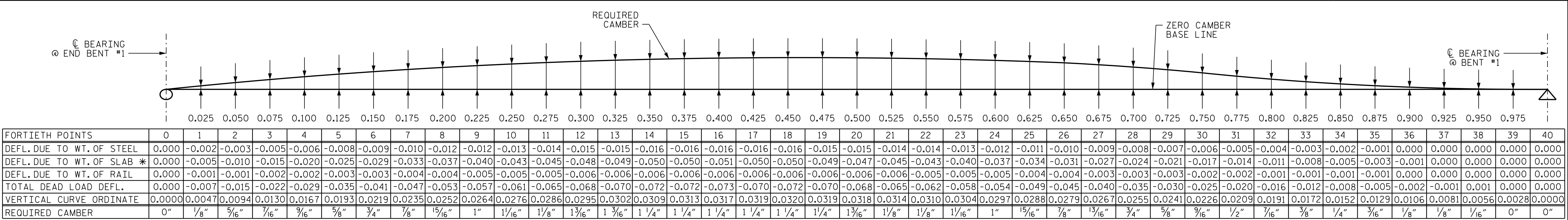


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SCHEMATIC CAMBER ORDINATES UNIT 1, GIRDER 2

NOTES:

- ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "REQUIRED CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).
- NEGATIVE DEFLECTION ORDINATES DENOTE DOWNWARD DISPLACEMENT DUE TO LOAD.
- POSITIVE CAMBER DENOTES REQUIRED GIRDER ORDINATE ABOVE THE ZERO CAMBER BASE LINE.
- NEGATIVE CAMBER DENOTES REQUIRED GIRDER ORDINATE BELOW THE ZERO CAMBER BASE LINE.
- SLOPE FOR THE ZERO CAMBER BASE LINE VARIES.
- * INCLUDES SLAB, BUILDUP, AND STAY-IN-PLACE FORMS
- SUPERELEVATION ORDINATES FOR ALL GIRDERS = 0

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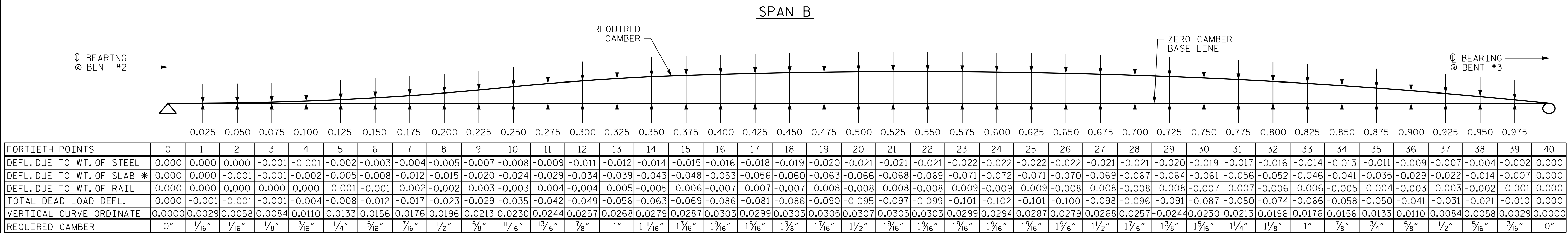
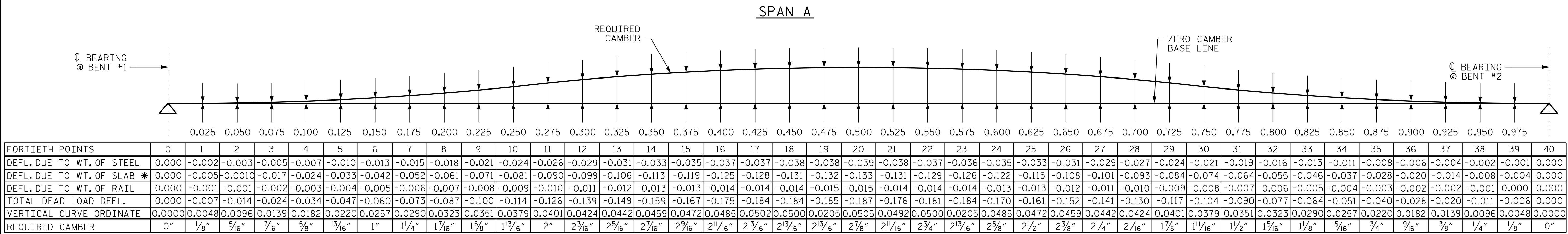
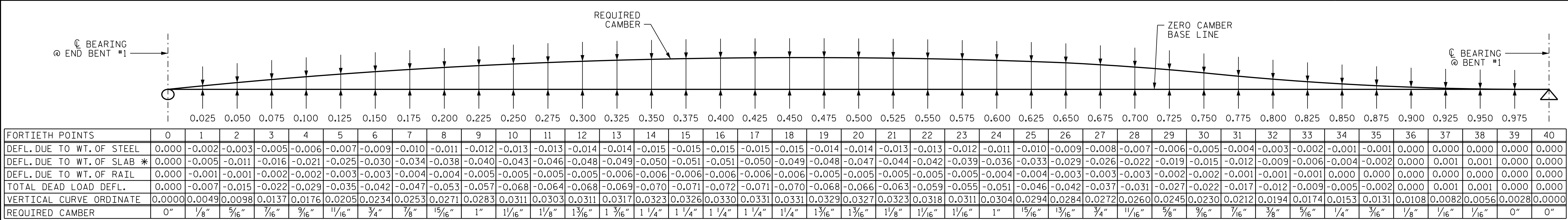
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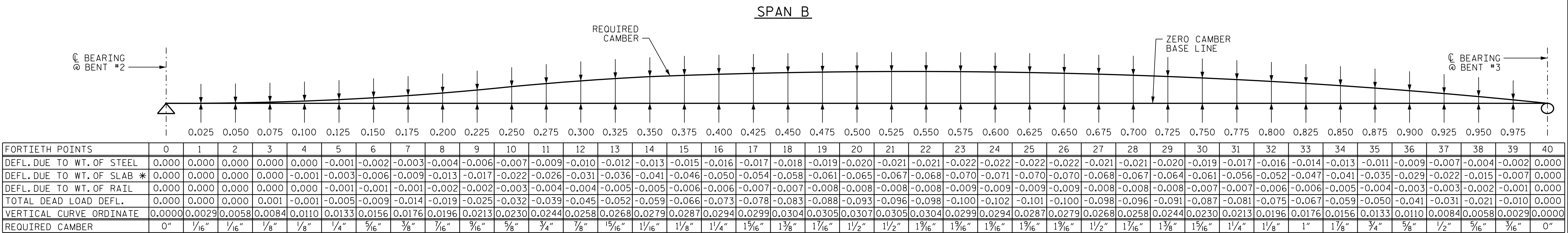
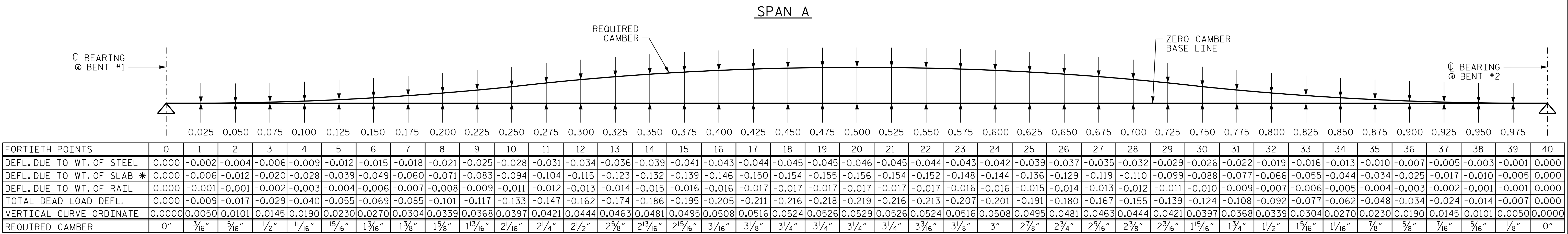
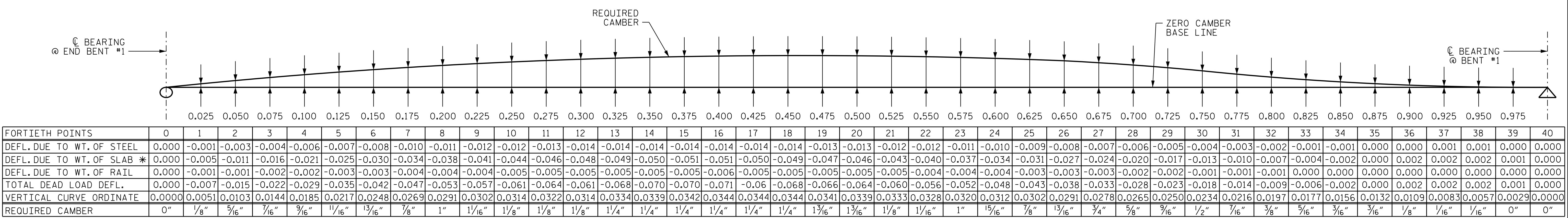
SHEET 2 OF 15

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
GIRDER DEFLECTION AND CAMBER SCHEDULES
UNIT 1, GIRDER 2

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1			3			
2			4			

TOTAL SHEETS
113





SCHEMATIC CAMBER ORDINATES UNIT 1, GIRDER 4

NOTES:
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "REQUIRED CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).
NEGATIVE DEFLECTION ORDINATES DENOTE DOWNWARD DISPLACEMENT DUE TO LOAD.
POSITIVE CAMBER DENOTES REQUIRED GIRDER ORDINATE ABOVE THE ZERO CAMBER BASE LINE.
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SLOPE FOR THE ZERO CAMBER BASE LINE VARIES.
* INCLUDES SLAB, BUILDUP, AND STAY-IN-PLACE FORMS
SUPERELEVATION ORDINATES FOR ALL GIRDERS = 0

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DATE : 11/06/18

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OF RECORD: V. E. FRAGA
DATE : 04/22/25

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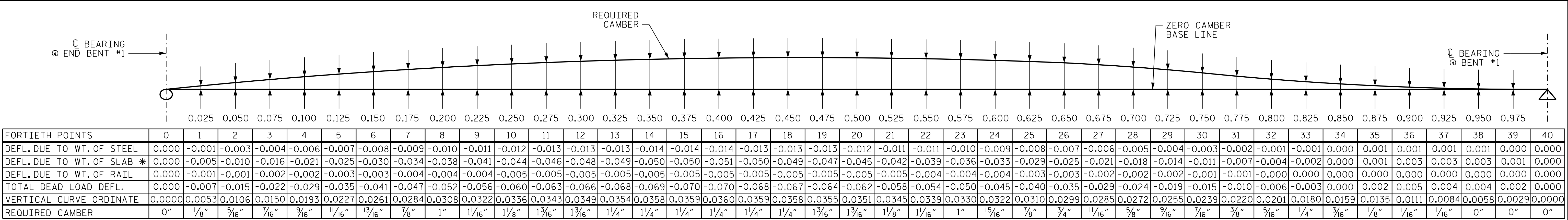
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RALEIGH
SUPERSTRUCTURE
GIRDER DEFLECTION
AND CAMBER SCHEDULES
UNIT 1, GIRDER 4

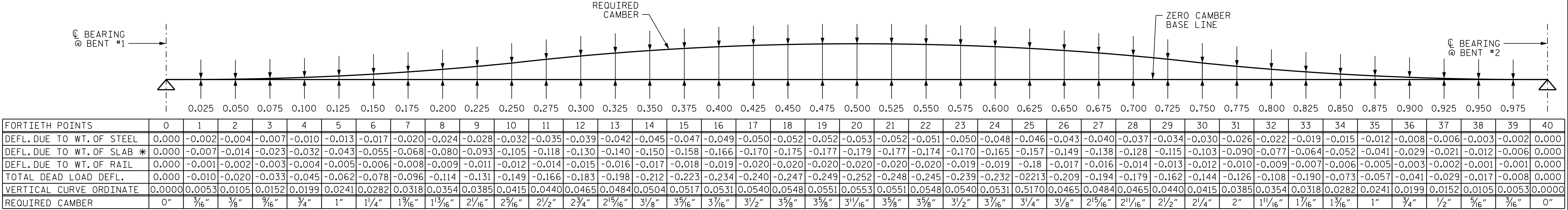
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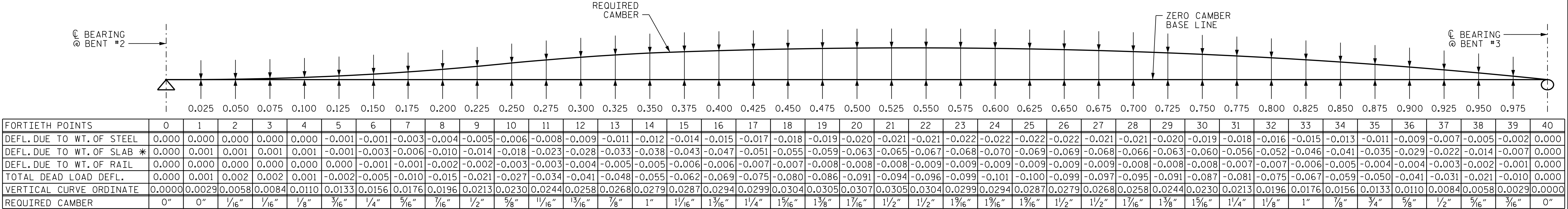
SHEET NO.
S01-054
TOTAL
SHEETS
113



SPAN A



SPAN B



SPAN C

SCHEMATIC CAMBER ORDINATES UNIT 1, GIRDER 5

NOTES:

- ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "REQUIRED CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).
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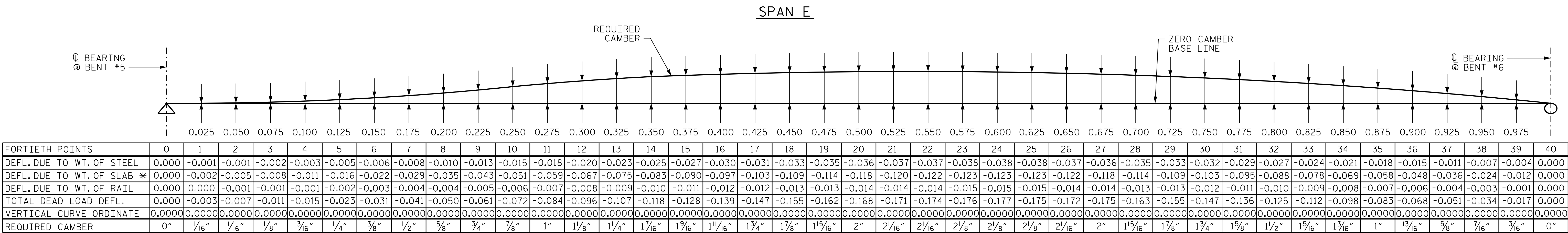
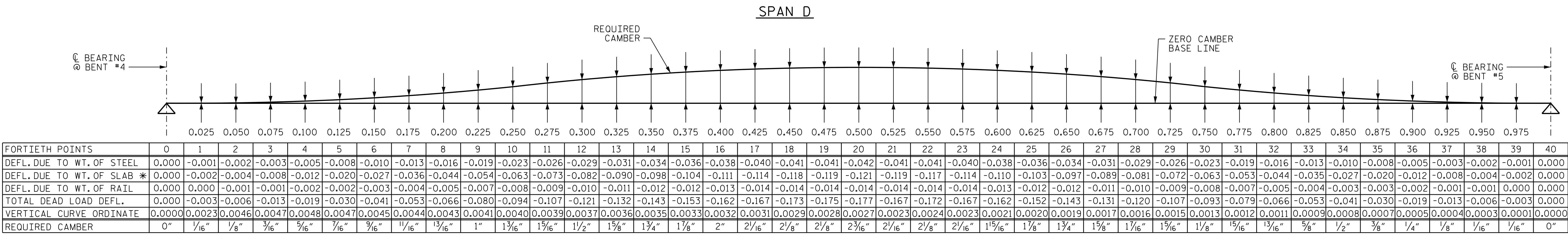
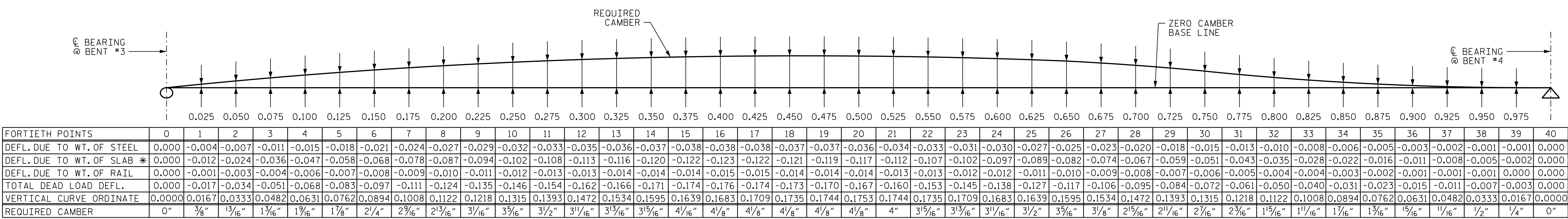
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DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

GIRDER DEFLECTION
AND CAMBER SCHEDULES

UNIT 1, GIRDER 5

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SCHEMATIC CAMBER ORDINATES UNIT 2, GIRDER 1

NOTES:

- ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "REQUIRED CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).
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PROJECT NO. R-3300A

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SHEET 6 OF 15

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

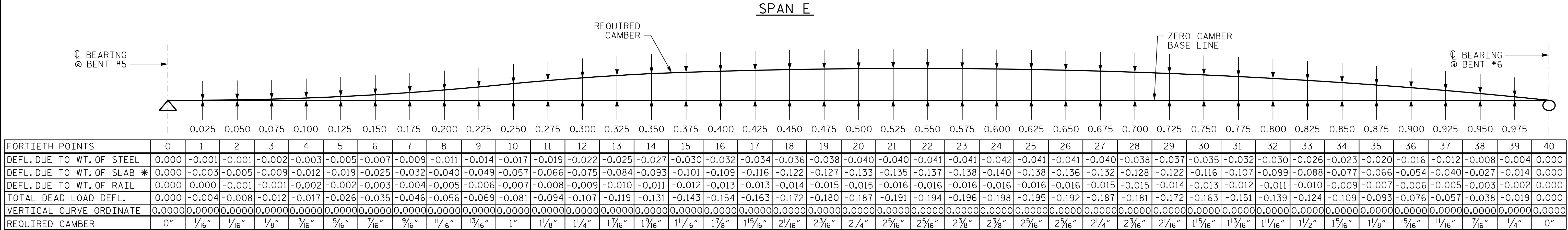
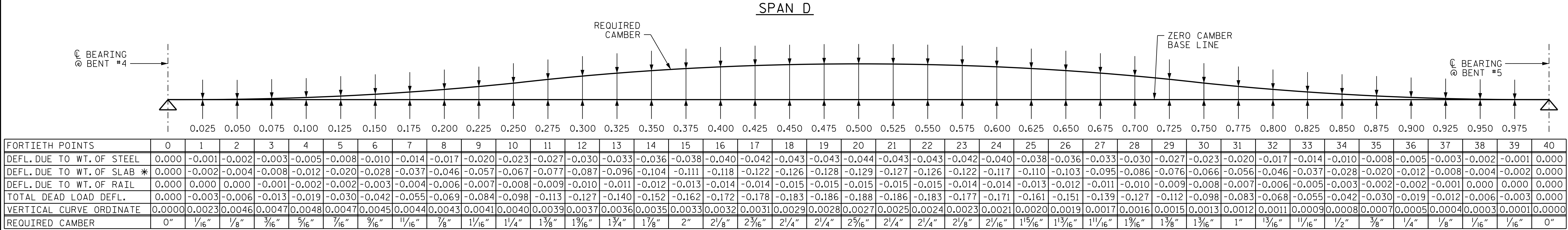
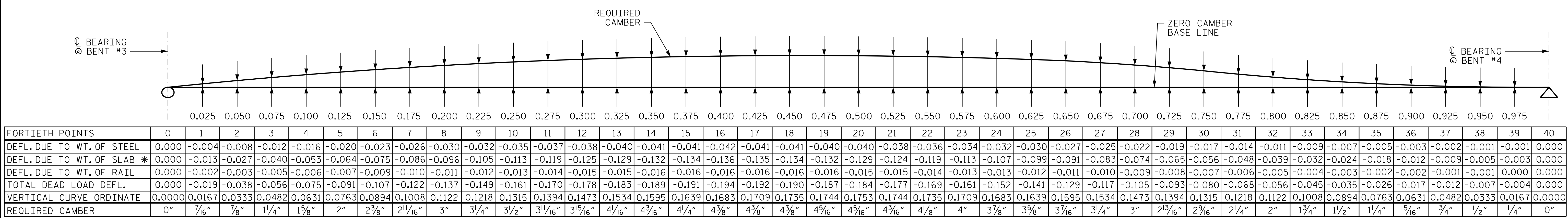
GIRDER DEFLECTION
AND CAMBER SCHEDULES

UNIT 2, GIRDER 1

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

SHEET NO.
S01-056

TOTAL
SHEETS
113



SCHEMATIC CAMBER ORDINATES UNIT 2, GIRDER 2

NOTES:

- ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "REQUIRED CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).
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PROJECT NO. R-3300A

NEW HANOVER COUNTY

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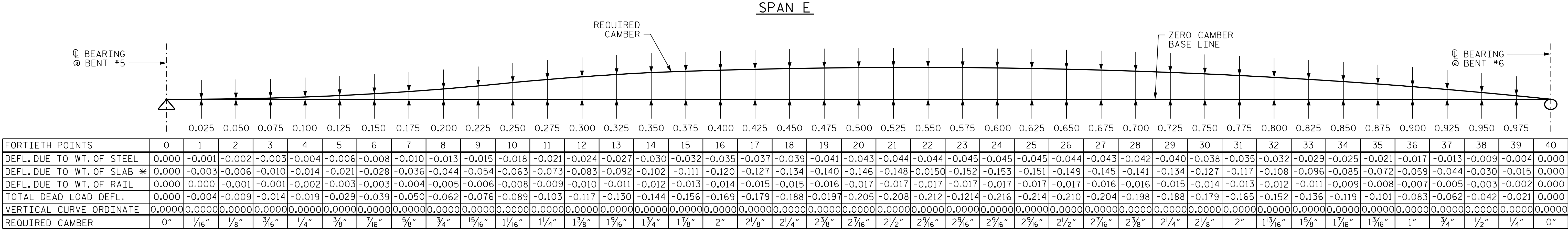
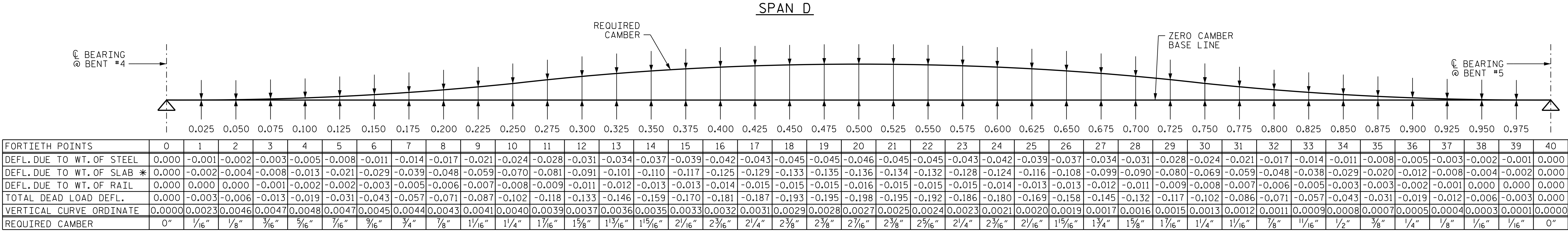
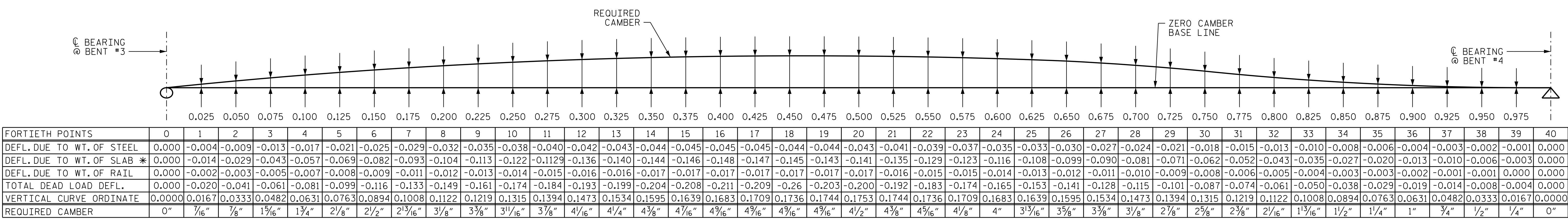
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AND CAMBER SCHEDULES
UNIT 2, GIRDER 2

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1			3			TOTAL SHEETS 113
2			4			



SPAN F

SCHEMATIC CAMBER ORDINATES UNIT 2, GIRDER 3

NOTES:

- ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "REQUIRED CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).
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- SUPERELEVATION ORDINATES FOR ALL GIRDERS = 0

PROJECT NO. R-3300A

NEW HANOVER COUNTY

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GIRDER DEFLECTION
AND CAMBER SCHEDULES
UNIT 2, GIRDER 3

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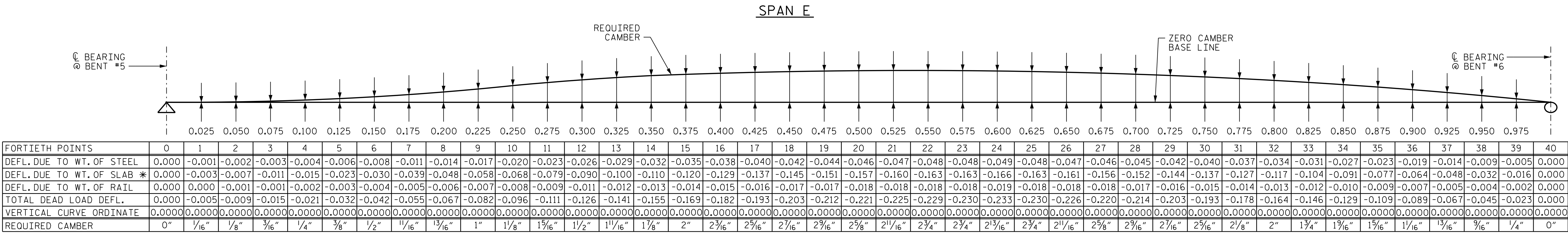
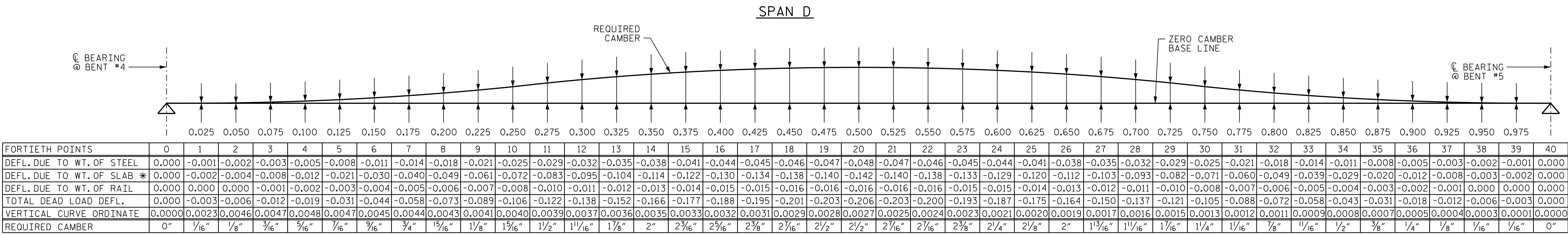
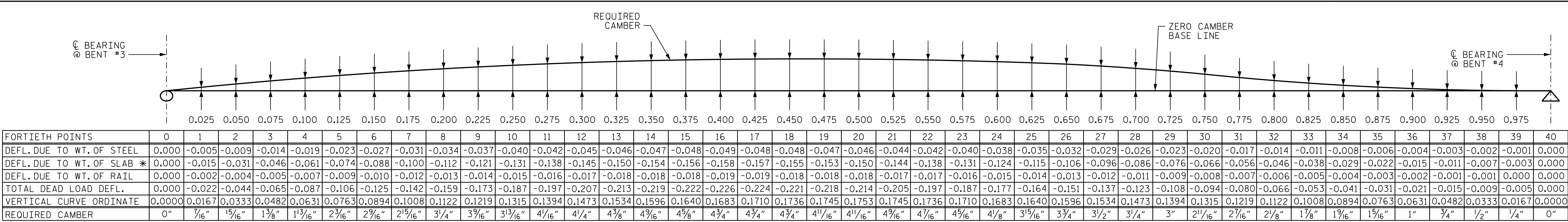
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SCHEMATIC CAMBER ORDINATES UNIT 2, GIRDER 4

NOTES:

- ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "REQUIRED CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).
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NEW HANOVER COUNTY

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DEPARTMENT OF TRANSPORTATION

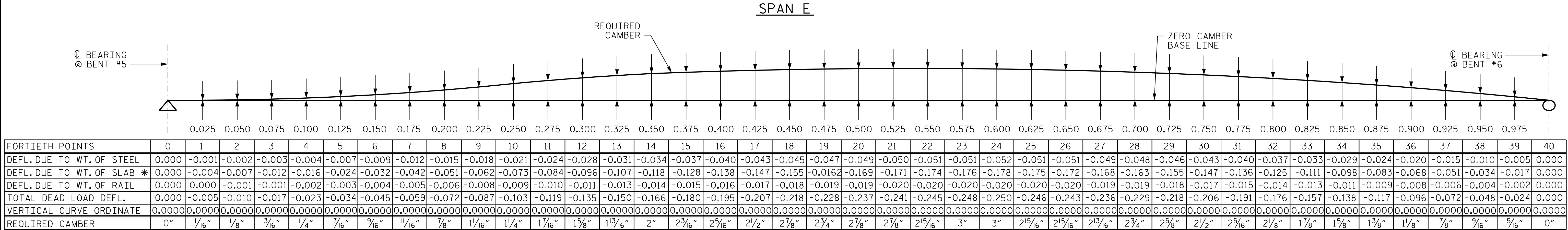
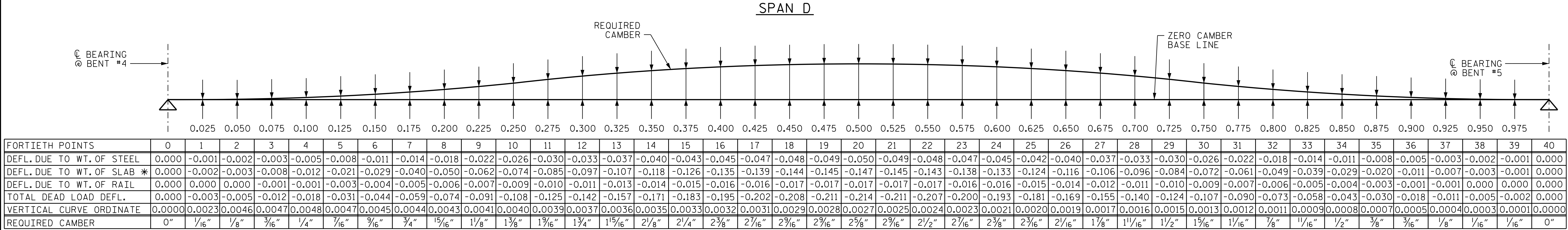
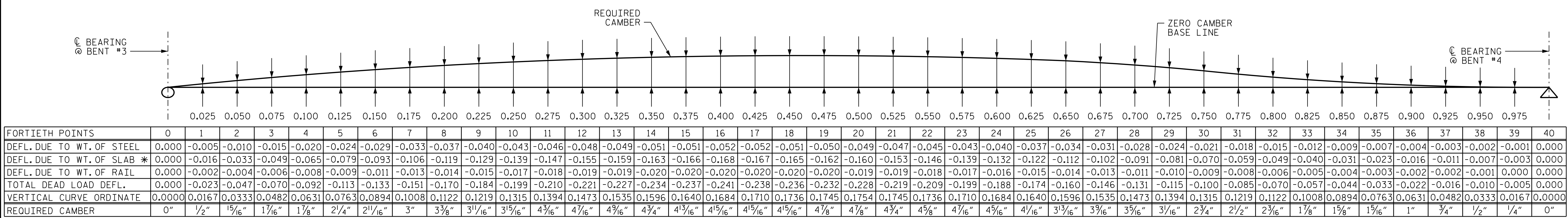
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SUPERSTRUCTURE

GIRDER DEFLECTION
AND CAMBER SCHEDULES

UNIT 2, GIRDER 4

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SCHEMATIC CAMBER ORDINATES UNIT 2, GIRDER 5

NOTES:

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SHEET 10 OF 15

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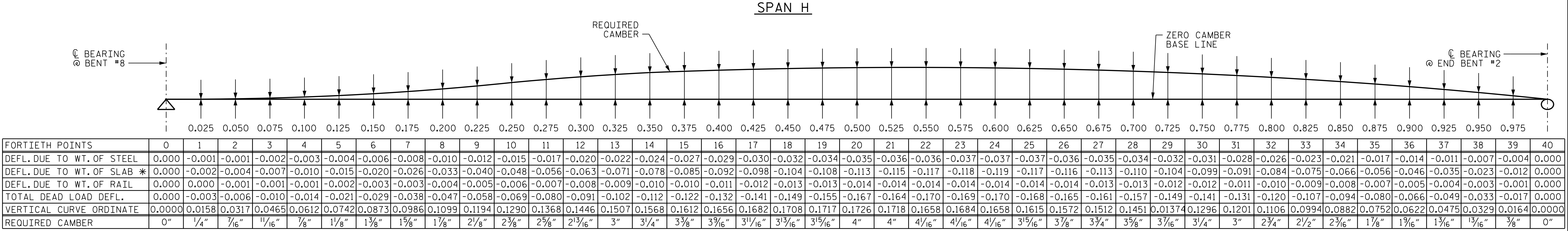
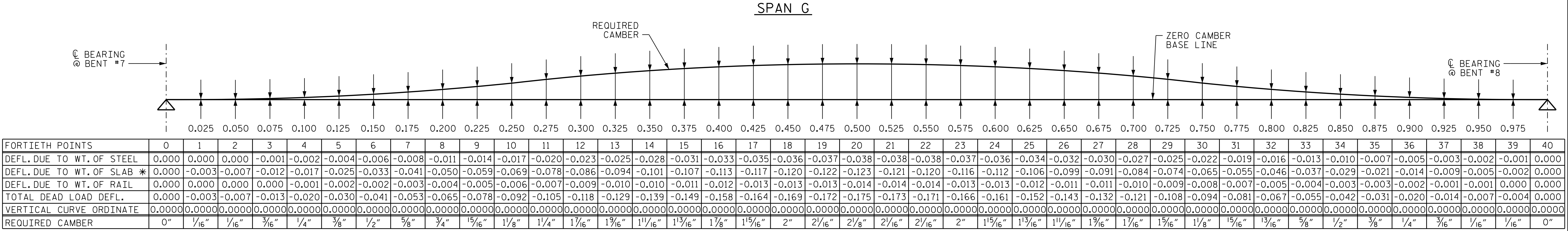
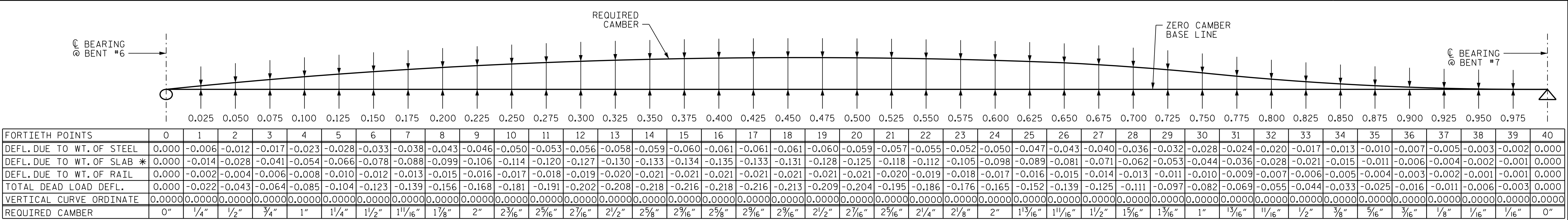
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AND CAMBER SCHEDULES
UNIT 2, GIRDER 5

REVISIONS						SHEET NO. S01-060
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2			4			



SPAN I

SCHEMATIC CAMBER ORDINATES UNIT 3, GIRDER 1

NOTES:

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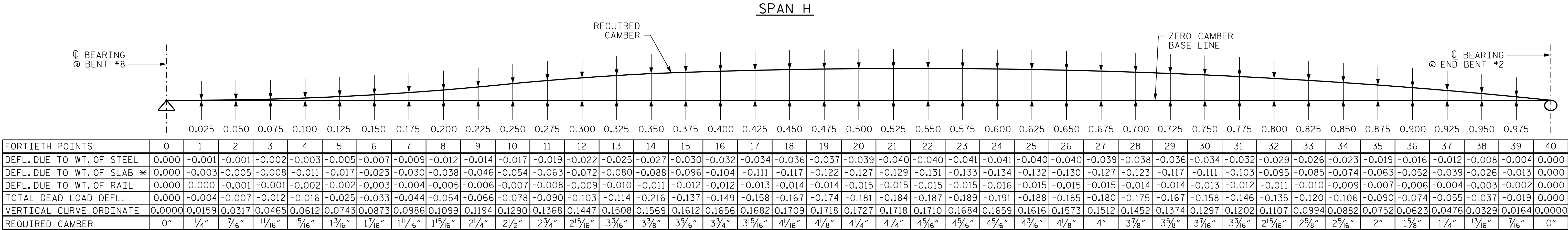
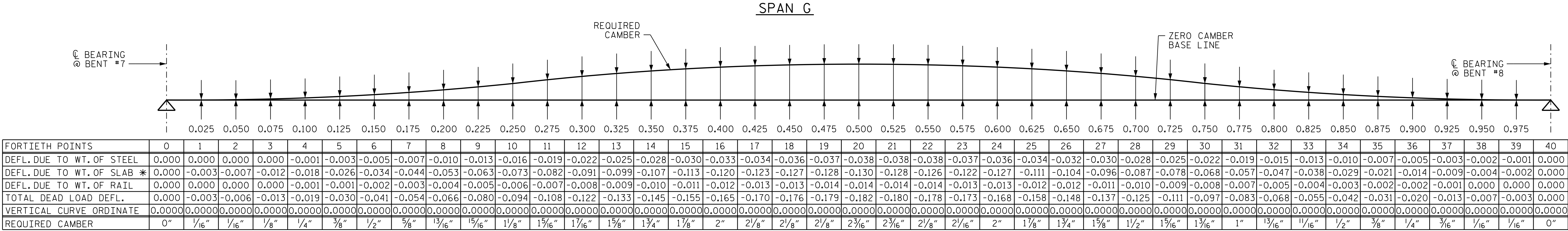
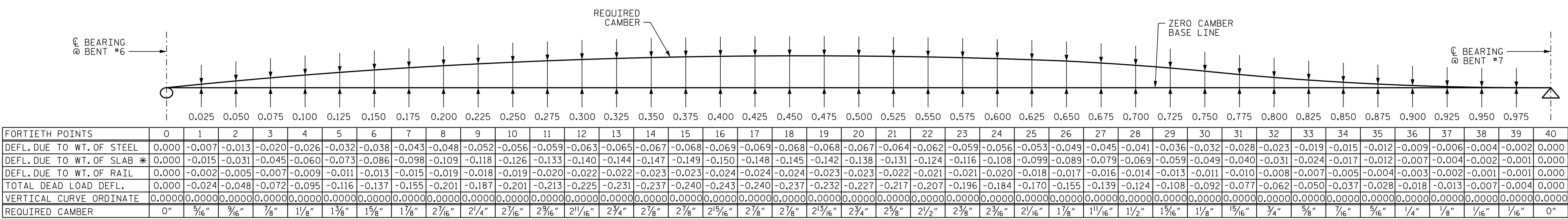
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SUPERSTRUCTURE
GIRDER DEFLECTION
AND CAMBER SCHEDULES
UNIT 3, GIRDER 1

REVISIONS					
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S01-061

TOTAL
SHEETS
113



SCHEMATIC CAMBER ORDINATES UNIT 3, GIRDER 2

NOTES:

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

NEGATIVE DEFLECTION ORDINATES DENOTE DOWNWARD DISPLACEMENT DUE TO LOAD.

POSITIVE CAMBER DENOTES REQUIRED GIRDER ORDINATE ABOVE THE ZERO CAMBER BASE LINE.

NEGATIVE CAMBER DENOTES REQUIRED GIRDER ORDINATE BELOW THE ZERO CAMBER BASE LINE.

SLOPE FOR THE ZERO CAMBER BASE LINE VARIES.

* INCLUDES SLAB, BUILDUP, AND STAY-IN-PLACE FORMS

SUPERELEVATION ORDINATES FOR ALL GIRDERS = 0

Stantec

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Fax. (919) 851-7024
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License No. F-0672

DRAWN BY : S. S. POOLE

DATE : 07/26/18

CHECKED BY : V. E. FRAGA

DATE : 11/06/18

DESIGN
ENGINEER
OF RECORD: V. E. FRAGA

DATE : 04/22/25

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SUPERSTRUCTURE
GIRDER DEFLECTION
AND CAMBER SCHEDULES
UNIT 3, GIRDER 2

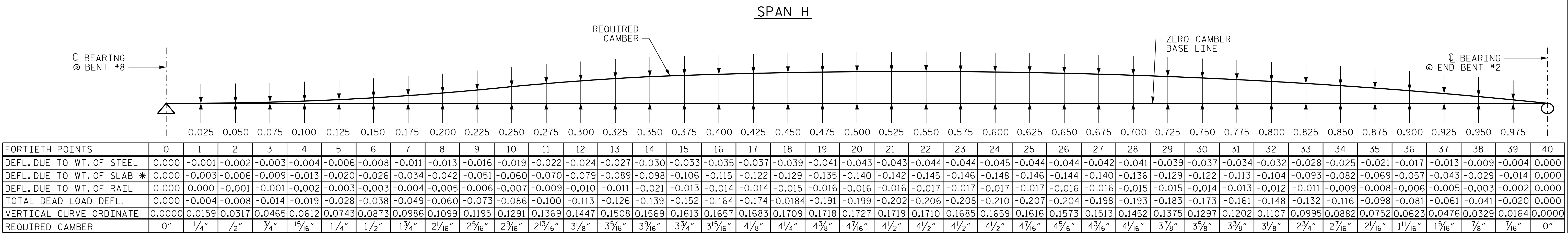
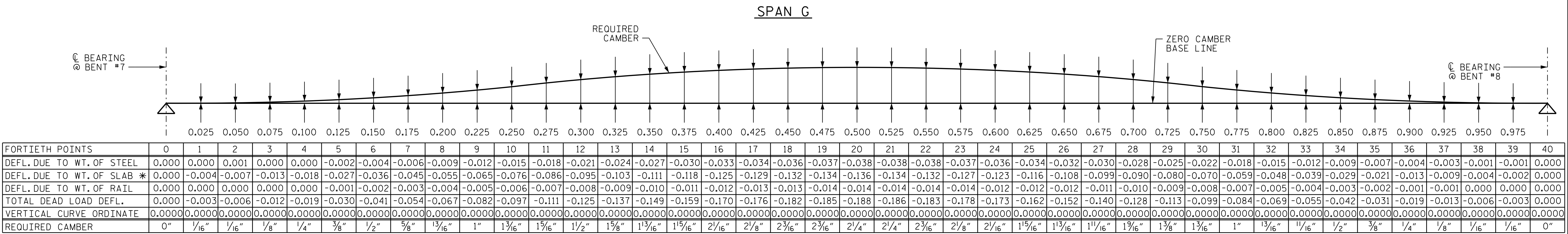
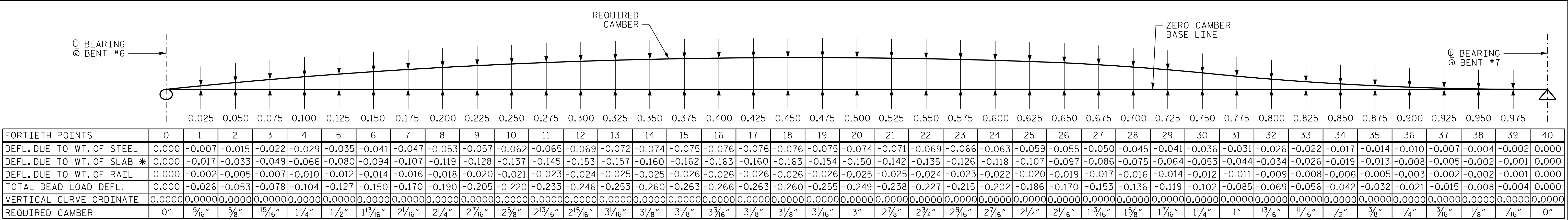
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SHEET NO.
S01-062

TOTAL
SHEETS
113

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SPAN I

SCHEMATIC CAMBER ORDINATES UNIT 3, GIRDER 3

NOTES:

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- SLOPE FOR THE ZERO CAMBER BASE LINE VARIES.
- * INCLUDES SLAB, BUILDUP, AND STAY-IN-PLACE FORMS
- SUPERELEVATION ORDINATES FOR ALL GIRDERS = 0

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OF RECORD: V. E. FRAGA DATE : 04/22/25

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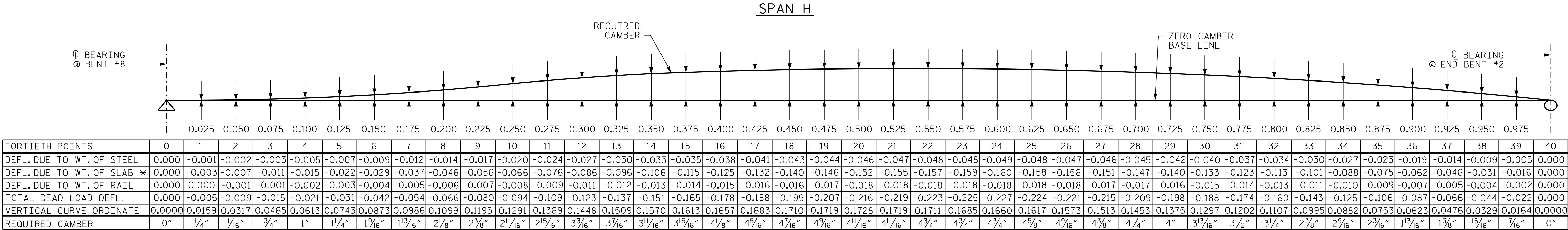
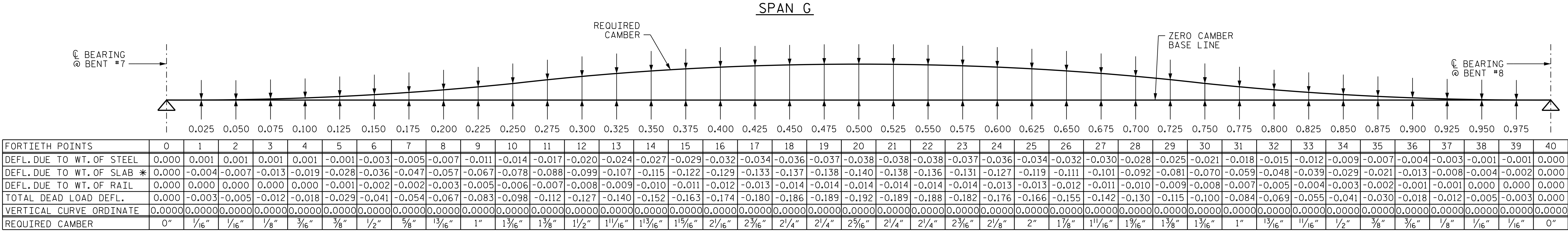
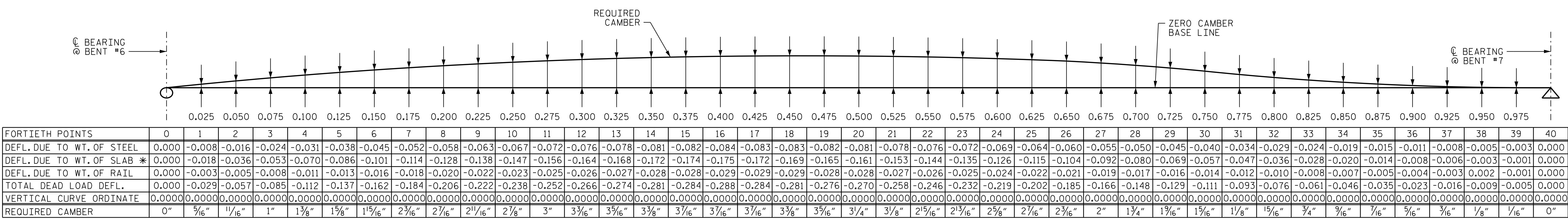
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SHEET 13 OF 15

STATE OF NORTH CAROLINA
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RALEIGH
SUPERSTRUCTURE
GIRDER DEFLECTION
AND CAMBER SCHEDULES
UNIT 3, GIRDER 3

REVISIONS						SHEET NO. S01-063
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1			3			TOTAL SHEETS 113
2			4			



SPAN I

SCHEMATIC CAMBER ORDINATES UNIT 3, GIRDER 4

NOTES:

- ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "REQUIRED CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).
- NEGATIVE DEFLECTION ORDINATES DENOTE DOWNWARD DISPLACEMENT DUE TO LOAD.
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- NEGATIVE CAMBER DENOTES REQUIRED GIRDER ORDINATE BELOW THE ZERO CAMBER BASE LINE.
- SLOPE FOR THE ZERO CAMBER BASE LINE VARIES.
- * INCLUDES SLAB, BUILDUP, AND STAY-IN-PLACE FORMS
- SUPERELEVATION ORDINATES FOR ALL GIRDERS = 0

PROJECT NO. R-3300A

NEW HANOVER COUNTY

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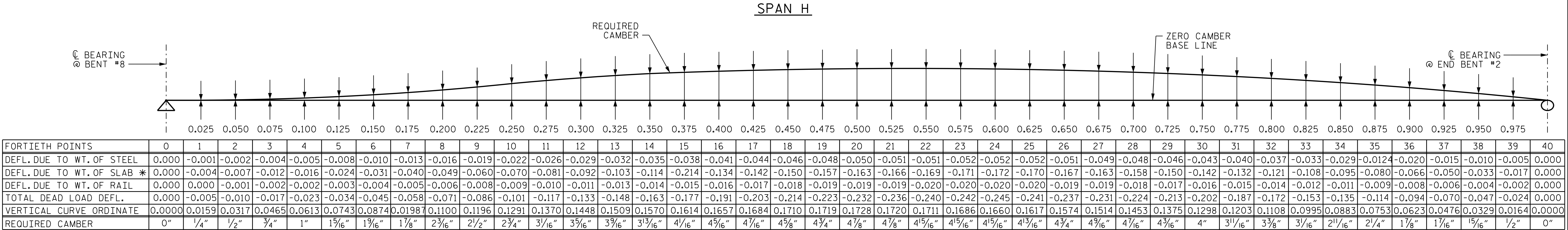
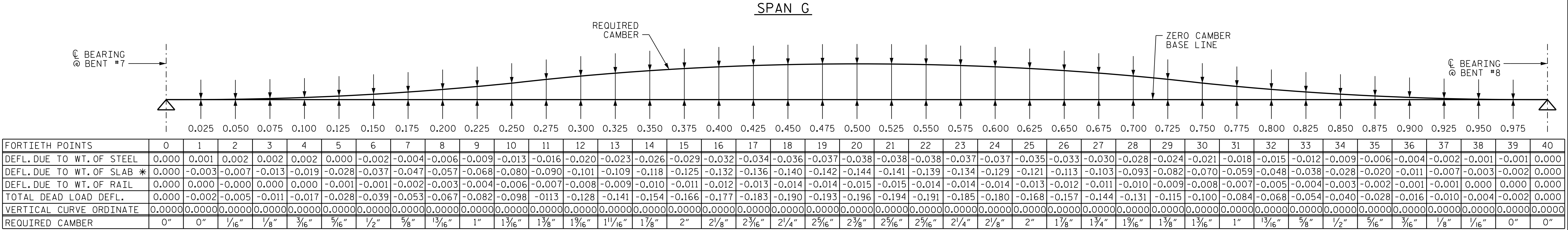
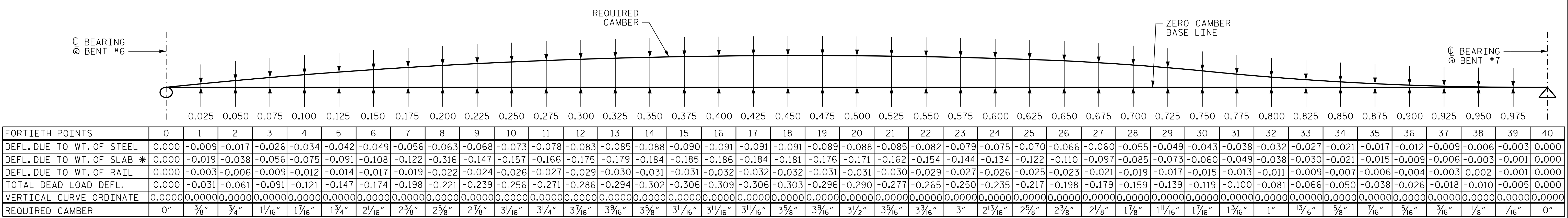
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GIRDER DEFLECTION
AND CAMBER SCHEDULES
UNIT 3, GIRDER 4

REVISIONS						SHEET NO. S01-064
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 113
2			4			



CL BEARING
@ BENT #8

REQUIRED CAMBER

ZERO CAMBER
BASE LINE

CL BEARING
@ END BENT #2

CL BEARING
@ BENT #8

REQUIRED CAMBER

ZERO CAMBER
BASE LINE

CL BEARING
@ END BENT #2

CL BEARING
@ BENT #8

REQUIRED CAMBER

ZERO CAMBER
BASE LINE

CL BEARING
@ END BENT #2

CL BEARING
@ BENT #8

REQUIRED CAMBER

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BASE LINE

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REQUIRED CAMBER

ZERO CAMBER
BASE LINE

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REQUIRED CAMBER

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BASE LINE

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REQUIRED CAMBER

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BASE LINE

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REQUIRED CAMBER

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BASE LINE

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REQUIRED CAMBER

ZERO CAMBER
BASE LINE

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REQUIRED CAMBER

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BASE LINE

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REQUIRED CAMBER

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BASE LINE

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REQUIRED CAMBER

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BASE LINE

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REQUIRED CAMBER

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BASE LINE

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BASE LINE

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BASE LINE

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REQUIRED CAMBER

ZERO CAMBER
BASE LINE

CL BEARING
@ END BENT #2

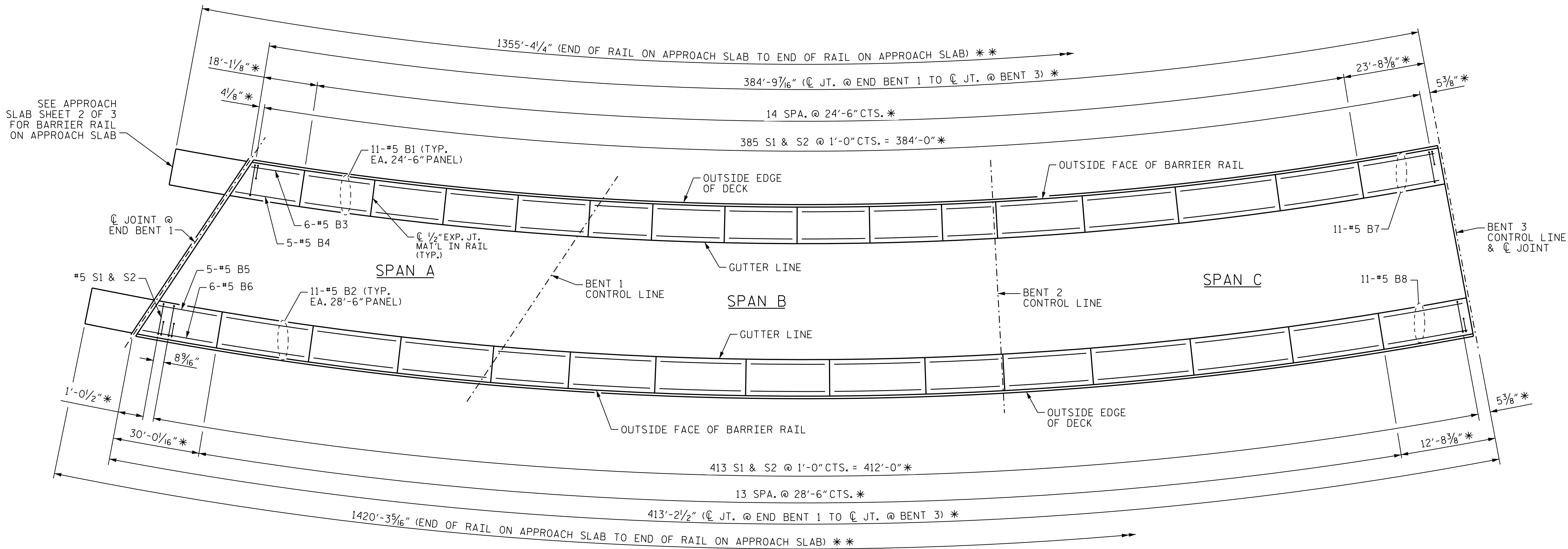
CL BEARING
@ BENT #8

REQUIRED CAMBER

ZERO CAMBER
BASE LINE

CL BEARING
@

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PLAN OF BARRIER RAILS - UNIT 1

NOTES:
* MEASURED ALONG OUTSIDE EDGE OF DECK.
* * MEASURED ALONG OUTSIDE FACE OF RAIL.

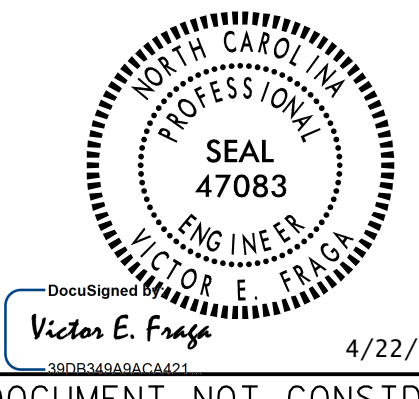
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SHEET 1 OF 4



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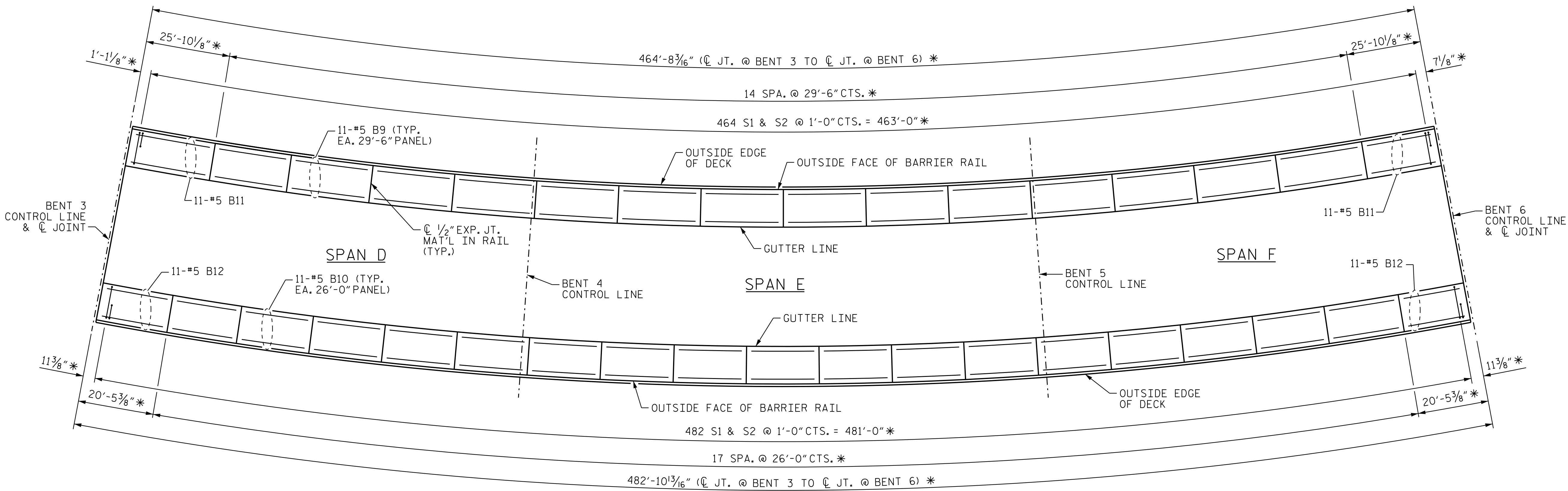
DRAWN BY : V. E. FRAGA DATE : 08/28/18
CHECKED BY : S. S. POOLE DATE : 03/10/22
DESIGN ENGINEER OF RECORD: V. E. FRAGA DATE : 04/22/25



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SUPERSTRUCTURE
CONCRETE
BARRIER RAIL
DETAILS
UNIT 1

REVISIONS						SHEET NO. S01-066
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1			3			TOTAL SHEETS 113
2			4			



PLAN OF BARRIER RAILS - UNIT 2

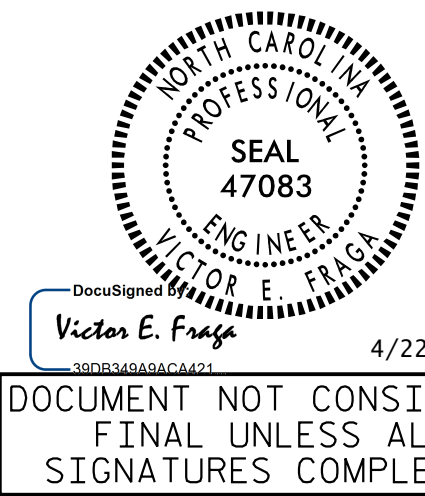
- NOTES:
- * MEASURED ALONG OUTSIDE EDGE OF DECK.
 - ** MEASURED ALONG OUTSIDE FACE OF RAIL.

PROJECT NO. R-3300A
NEW HANOVER COUNTY
STATION: 219+49.69 -L1-
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SHEET 2 OF 4



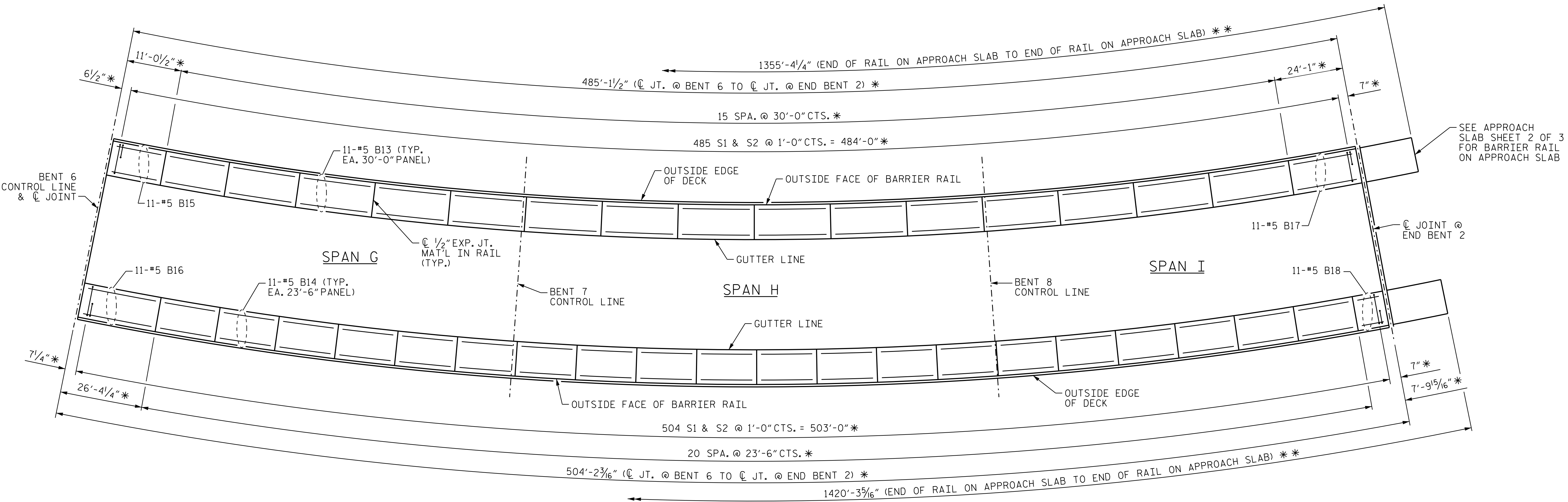
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1			3			TOTAL SHEETS 113
2			4			

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PLAN OF BARRIER RAILS - UNIT 3

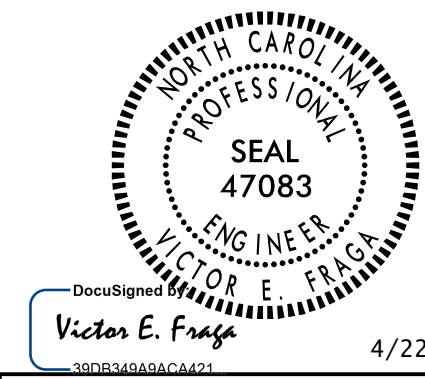
- NOTES:
- * MEASURED ALONG OUTSIDE EDGE OF DECK.
 - ** MEASURED ALONG OUTSIDE FACE OF RAIL.

PROJECT NO. R-3300A
NEW HANOVER COUNTY
STATION: 219+49.69 -L1-
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SHEET 3 OF 4



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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S01-068		
SUPERSTRUCTURE CONCRETE BARRIER RAIL DETAILS UNIT 3						TOTAL SHEETS 113		
REVISIONS								
NO.	BY:	DATE:	NO.	BY:	DATE:			
1			3					
2			4					

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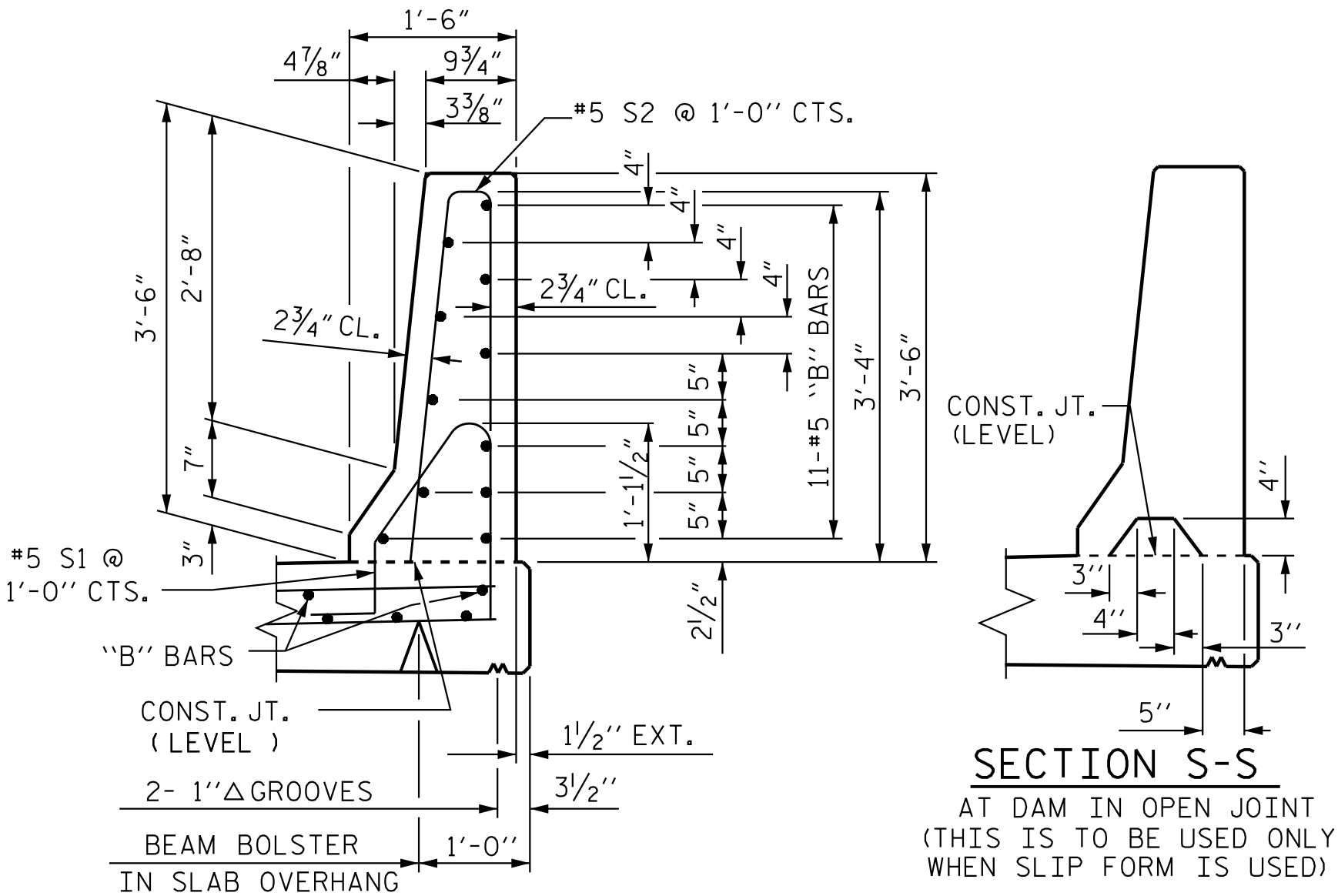
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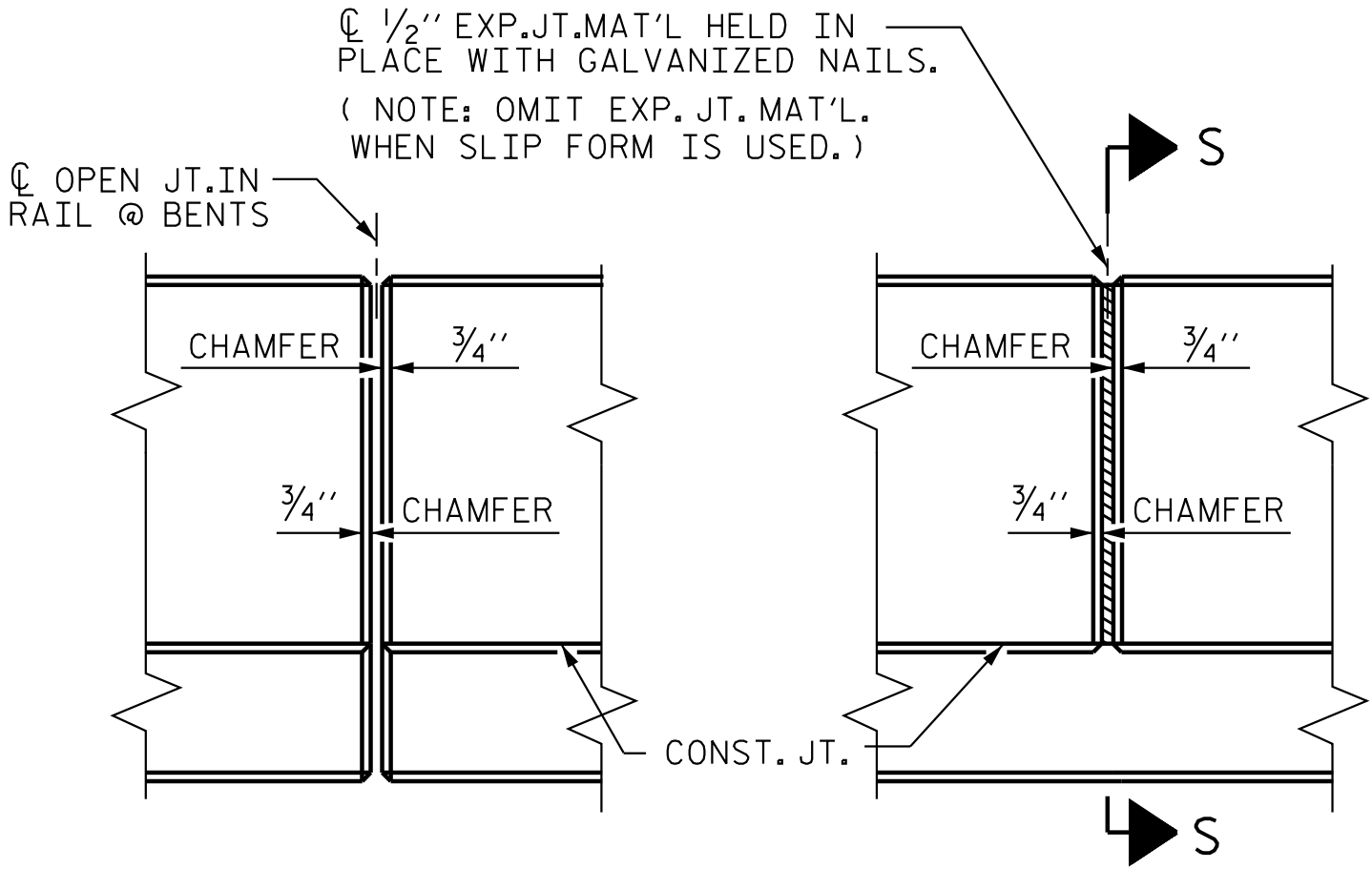
THE BARRIER RAIL IN EACH CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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

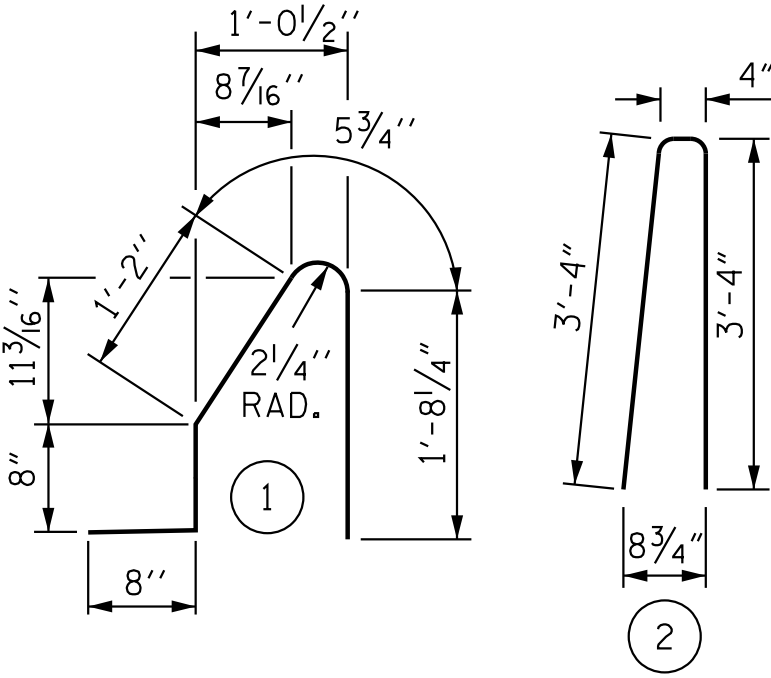


SECTION THRU RAIL



ELEVATION AT EXPANSION JOINTS
BARRIER RAIL DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	154	#5	STR	24'-1"	3,869
* B2	143	#5	STR	28'-1"	4,189
* B3	6	#5	STR	17'-9"	112
* B4	5	#5	STR	18'-0"	94
* B5	5	#5	STR	29'-1"	152
* B6	6	#5	STR	29'-5"	185
* B7	11	#5	STR	23'-2"	266
* B8	11	#5	STR	12'-2"	140
* B9	154	#5	STR	29'-1"	4,672
* B10	187	#5	STR	25'-7"	4,990
* B11	22	#5	STR	25'-4"	581
* B12	22	#5	STR	19'-11"	457
* B13	165	#5	STR	29'-7"	5,092
* B14	220	#5	STR	23'-1"	5,297
* B15	11	#5	STR	10'-6"	121
* B16	11	#5	STR	25'-10"	297
* B17	11	#5	STR	23'-7"	271
* B18	11	#5	STR	7'-4"	85

Δ	* EPOXY COATED REINFORCING STEEL		
	UNIT 1	18,718	LBS.
	UNIT 2	22,212	LBS.
	UNIT 3	23,198	LBS.
	TOTAL	64,128	LBS.
Δ	CLASS AA CONCRETE		
	UNIT 1	108.6	CU. YDS.
	UNIT 2	129.0	CU. YDS.
	UNIT 3	134.7	CU. YDS.
	TOTAL	372.3	CU. YDS.
**	CONCRETE BARRIER RAIL	2,776	LIN. FT.

Δ THE QUANTITIES FOR BARRIER RAIL ON APPROACH SLABS IS NOT INCLUDED, FOR BARRIER RAIL ON APPROACH SLABS, SEE "BRIDGE APPROACH SLAB DETAILS".

* BARRIER RAIL LENGTH IS TOTAL LENGTH INCLUDING PORTION ON APPROACH SLABS.

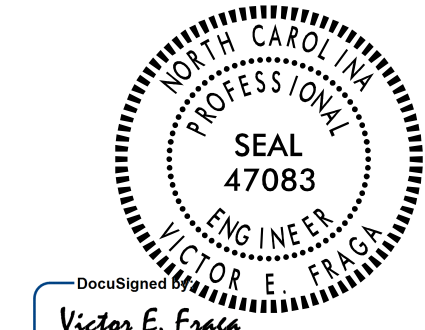
PROJECT NO. R-3300A

NEW HANOVER COUNTY

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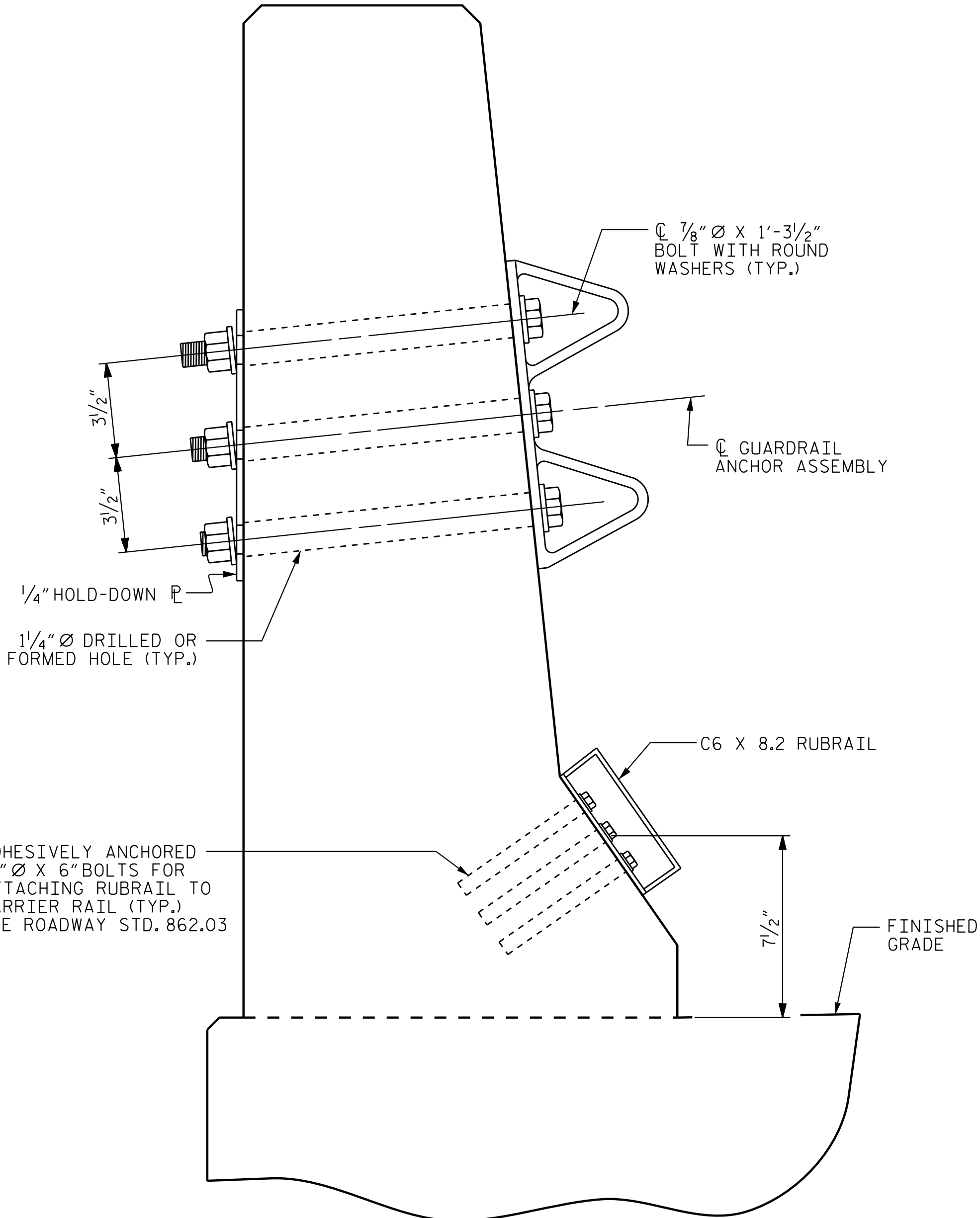
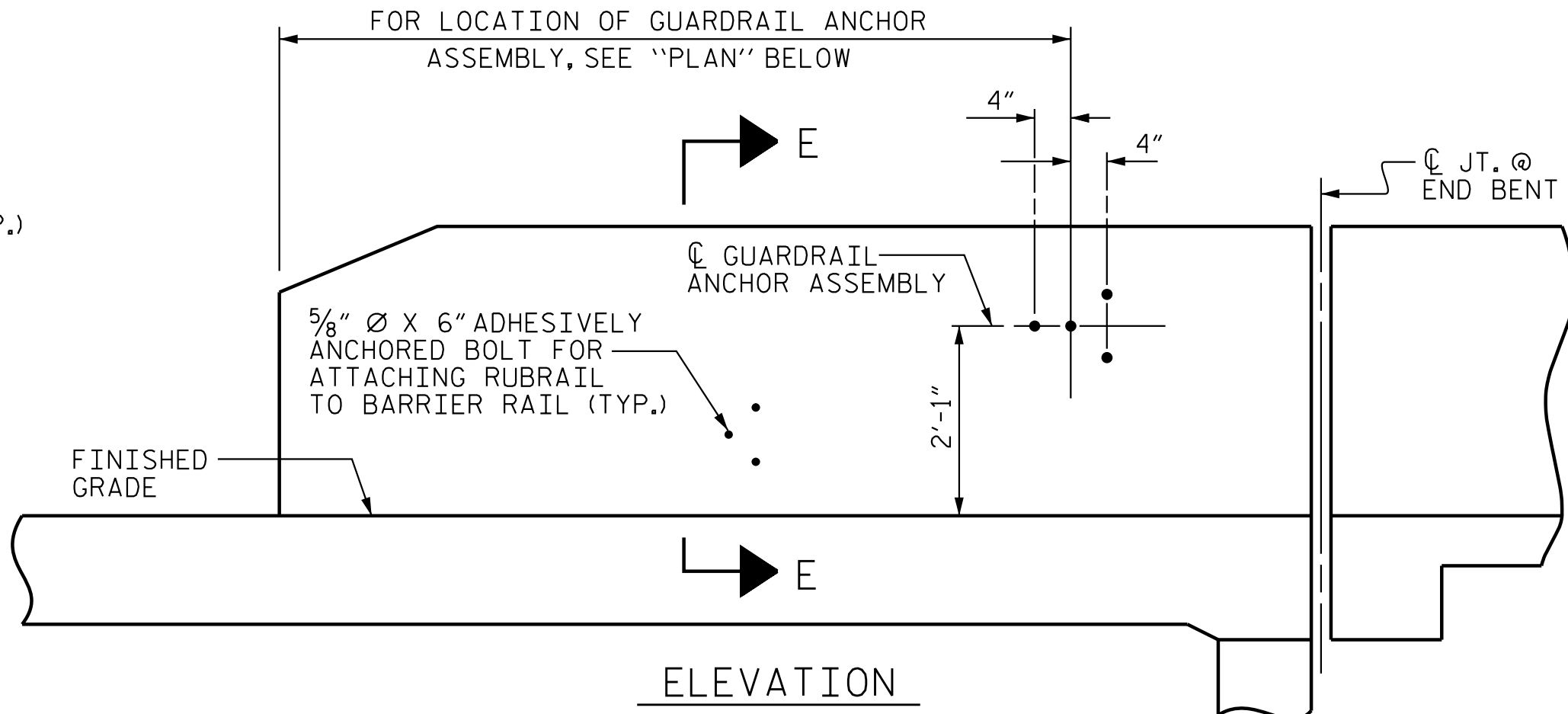
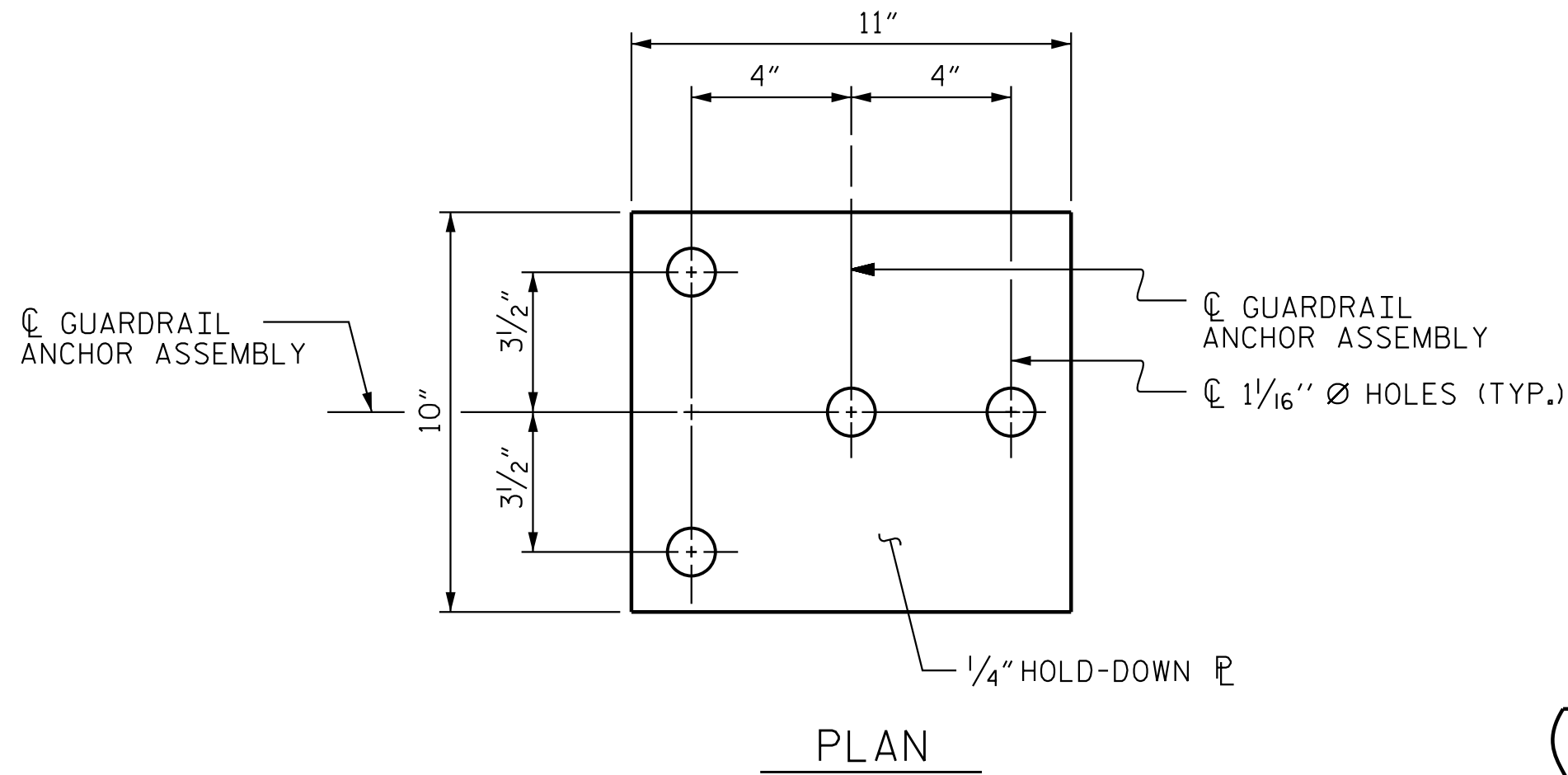
SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
CONCRETE
BARRIER RAIL
DETAILS

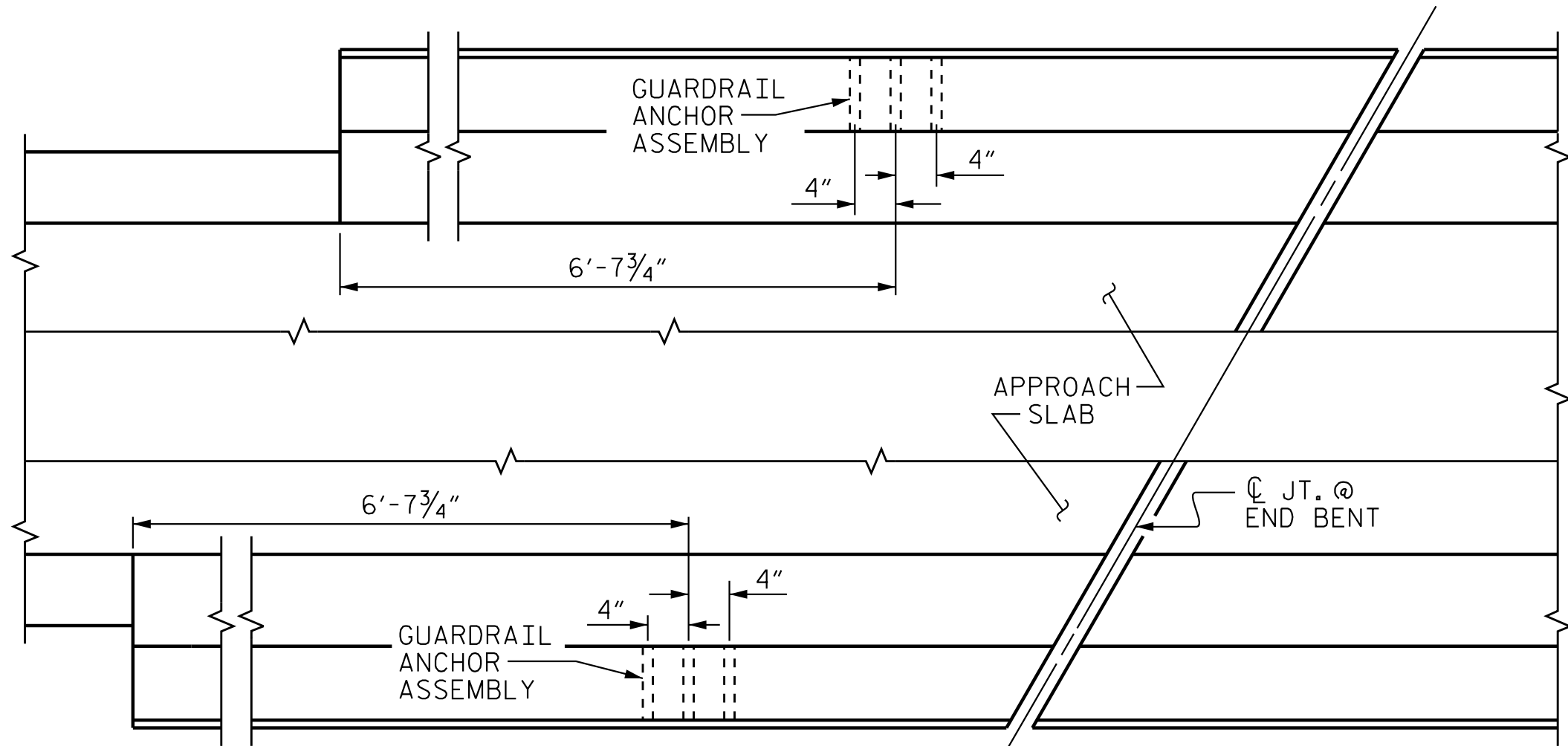


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1			3			TOTAL SHEETS 113
2			4			



GUARDRAIL ANCHOR ASSEMBLY DETAILS



LOCATION OF ANCHORS FOR GUARDRAIL

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

NOTES

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

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

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

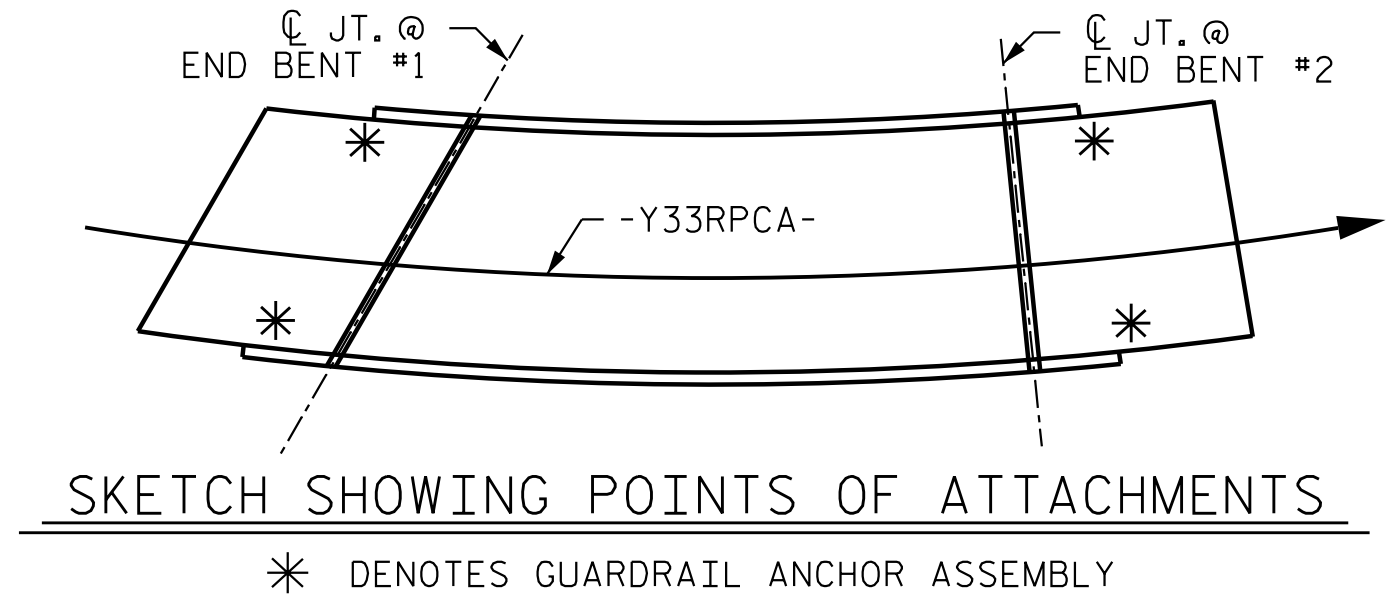
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

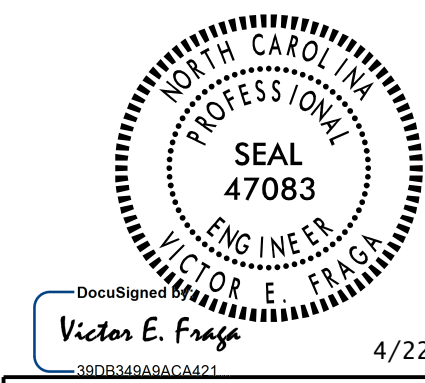
THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 5/8" Ø X 6" BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 5/8" Ø BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS. SEE ROADWAY STANDARD 862.03 FOR DETAILS AND LOCATION OF THE RUBRAIL.



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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD GUARDRAIL ANCHORAGE FOR BARRIER RAIL					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S01-070					TOTAL SHEETS 113

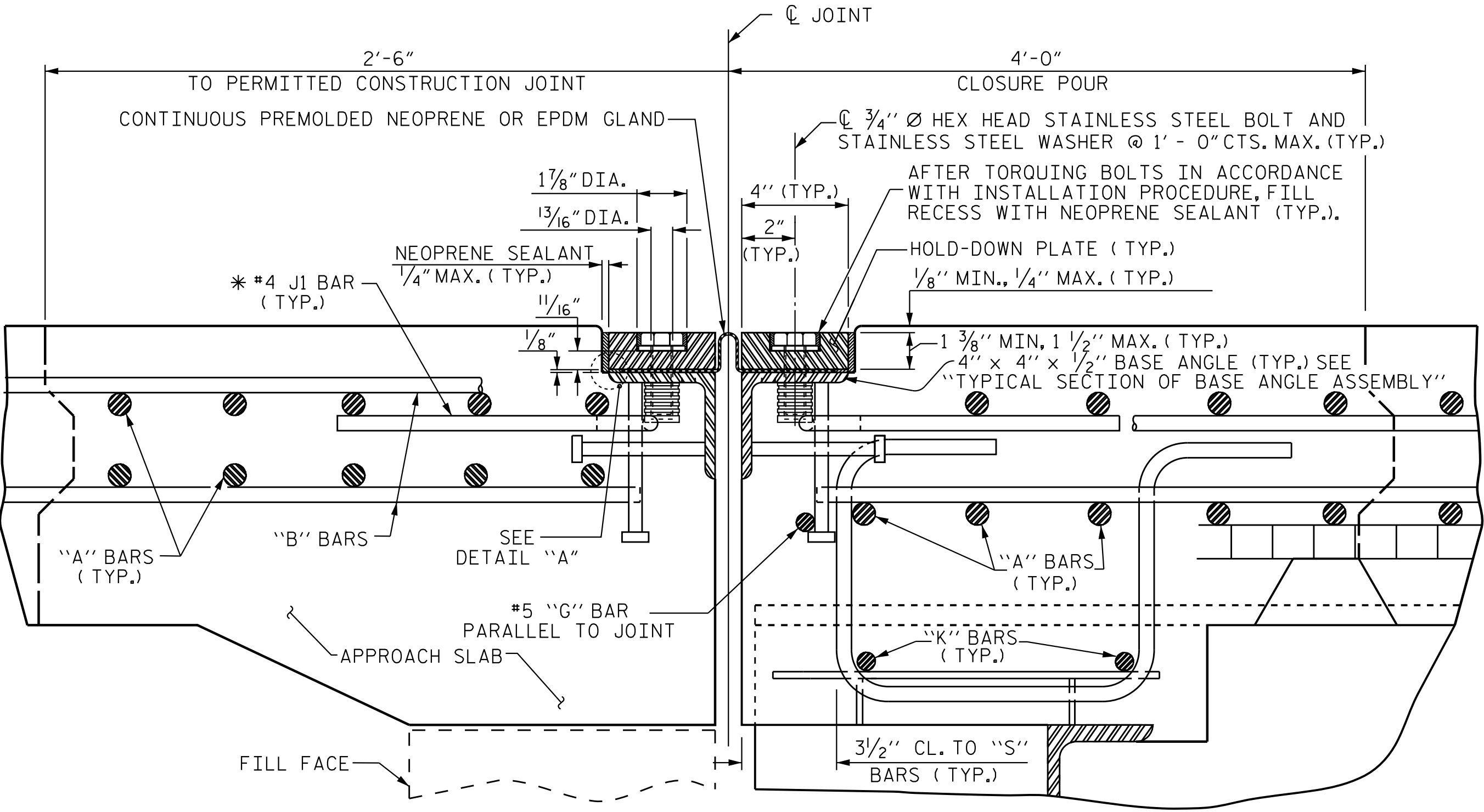


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ASSEMBLED BY : V. E. FRAGA
CHECKED BY : S. S. POOLE
DATE : 08/29/18
DATE : 03/10/22
REV. 7/12
REV. 6/13
REV. 12/17
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DESIGN
ENGINEER
OF RECORD: V. E. FRAGA DATE : 04/22/25

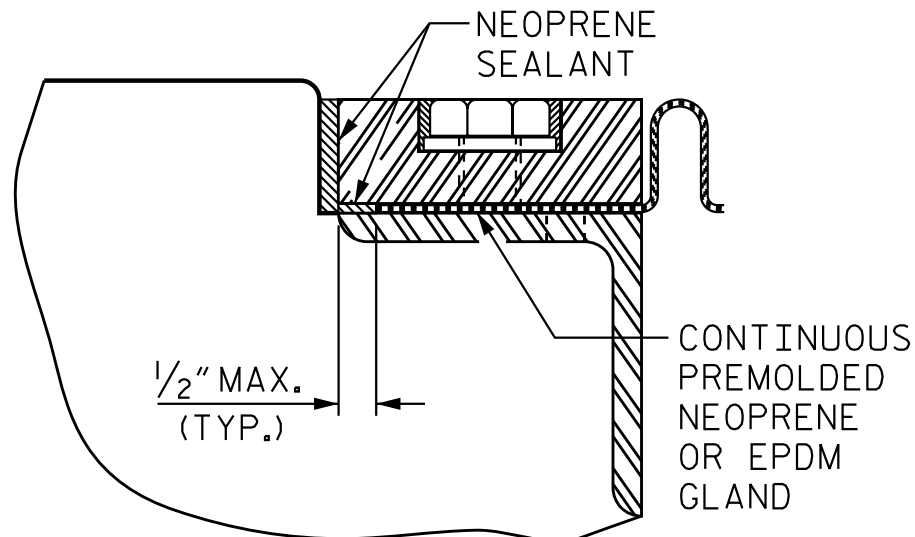
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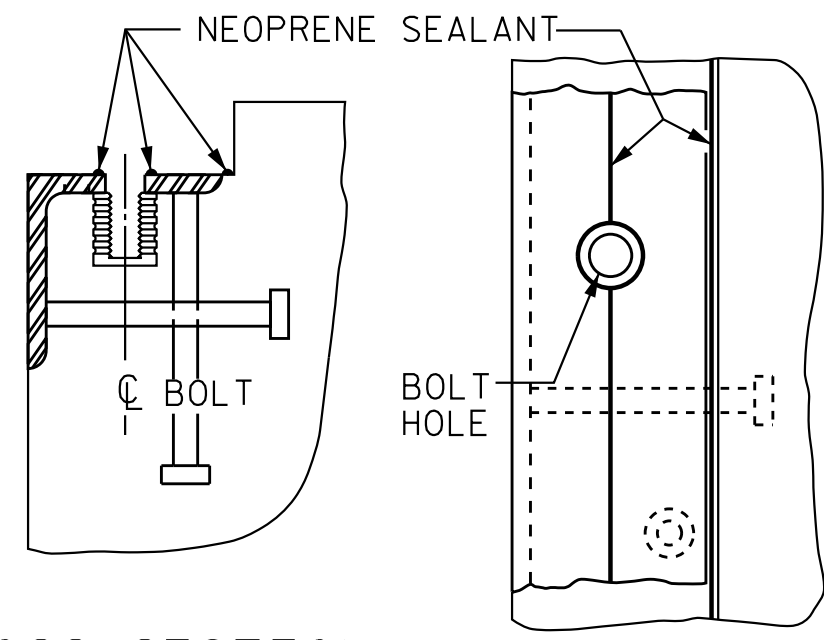
EXPANSION JOINT DETAILS

SECTION NORMAL TO JOINT

* THE QUANTITY OF #4 J1 BARS ON THE BILL OF MATERIAL IS BASED ON 1'-0" CENTERS. J1 BARS SHALL BE PLACED AT EACH VERTICAL STUD ANCHOR BOLT. IN THE EVENT THAT THE NUMBER OF VERTICAL STUD ANCHORS EXCEEDS THE NUMBER OF J1 BARS SPECIFIED, ADDITIONAL J1 BARS WILL NOT BE REQUIRED.



DETAIL "A"

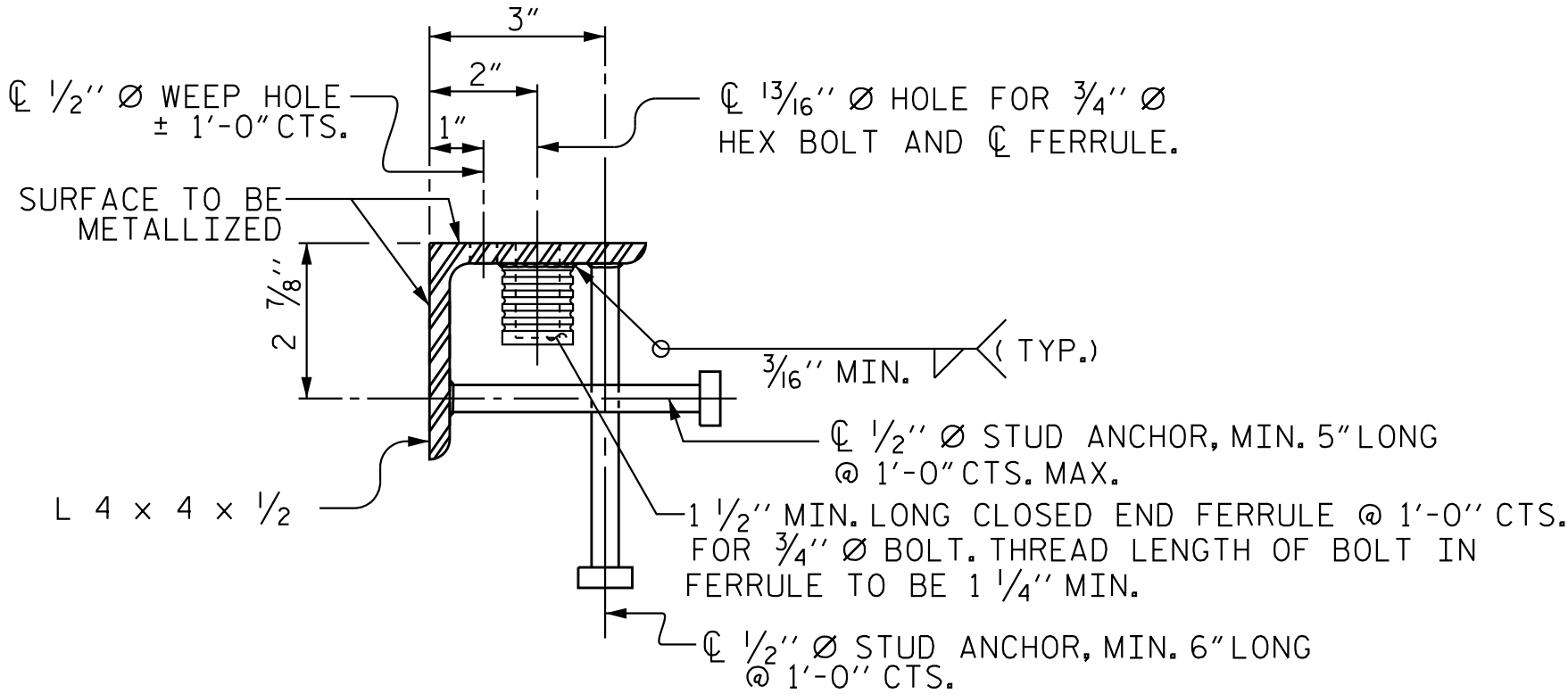


CROSS SECTION

PLAN VIEW

INSTALLATION SKETCH

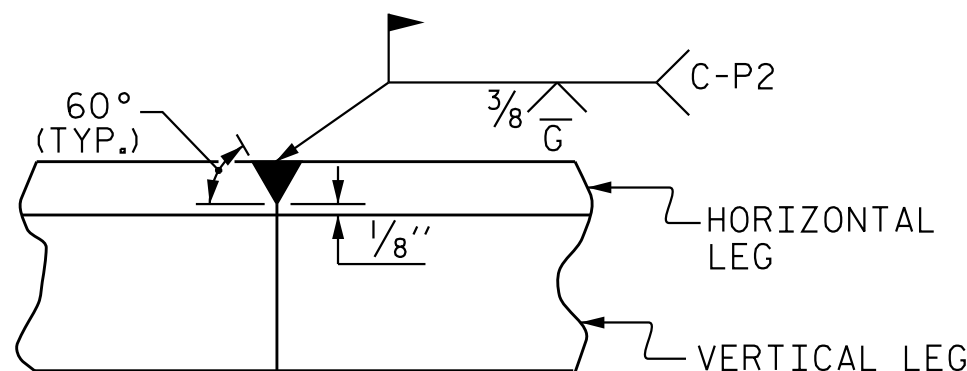
MOVEMENT AND SETTING AT JOINT					
END BENT NO.	SKEW ANGLE (TAN. TO CURVE)	TOTAL MOVEMENT (ALONG C RDWY)	PERPENDICULAR JOINT OPENING AT 45° F	PERPENDICULAR JOINT OPENING AT 60° F	PERPENDICULAR JOINT OPENING AT 90° F
1	106°01'29"	1 1/2"	2"	1 3/4"	1 1/4"
2	90°00'00"	2"	2 1/4"	2"	1 3/8"



TYPICAL SECTION OF BASE ANGLE ASSEMBLY

GENERAL NOTES

- FOR EXPANSION JOINT SEALS, SEE SPECIAL PROVISIONS.
- ALL PLATES AND ANGLES SHALL CONFORM TO AASHTO M270 GRADE 36 STEEL OR APPROVED EQUAL. ALL HOLD-DOWN BOLTS SHALL CONFORM TO ASTM F593 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL CONFORM TO ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL. ALL STUD ANCHORS SHALL CONFORM TO AASHTO M169, GRADES 1010 THRU 1020 OR APPROVED EQUAL. ALL CONCRETE INSERTS SHALL BE CLOSED END AND SHALL CONFORM TO AASHTO M169, GRADE 12L14. TENSILE CAPACITY SHALL BE 3000 LBS. MINIMUM.
- A PREMOLDED CORRUGATED OR NON-CORRUGATED GLAND SHALL BE USED FOR JOINTS SKEWED BETWEEN 50° THRU 130°. FOR JOINTS SKEWED LESS THAN 50° OR MORE THAN 130°, ONLY A CORRUGATED GLAND SHALL BE USED.
- CLOSED END FERRULES AND STUD ANCHORS SHALL BE SHOP WELDED AND ALL HOLES SHALL BE SHOP DRILLED AS SHOWN ON PLANS. STUD ANCHORS SHALL BE ELECTRIC ARC END WELDED WITH COMPLETE FUSION.
- SURFACES COMING IN CONTACT WITH NEOPRENE SHALL BE GROUND SMOOTH PRIOR TO METALLIZING.
- UPON COMPLETION OF SHOP FABRICATION, THE HOLD-DOWN PLATE AND BASE ANGLE ASSEMBLY, AS SHOWN IN THE "TYPICAL SECTION OF BASE ANGLE ASSEMBLY", SHALL BE METALLIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.
- THE COVER PLATES SHALL BE GALVANIZED OR METALLIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.
- BASE ANGLE ASSEMBLY SHALL BE CONTINUOUS FOR THE LENGTH OF THE JOINT. AT CROWN BREAKS, THE ENDS OF THE BASE ANGLE ASSEMBLY SHALL BE CUT PARALLEL TO THE BRIDGE CENTERLINE FOR SKEWS LESS THAN 80° AND GREATER THAN 100°. FINISHED WELD SHALL BE REPAIRED IN ACCORDANCE WITH THE SPECIAL PROVISION FOR THERMAL SPRAYED COATINGS (METALLIZATION).
- FIELD SPLICES OF HOLD-DOWN PLATES SHALL BE KEPT TO A MINIMUM. CONTRACTOR SHALL FURNISH DETAILED PLANS SHOWING PROPOSED SPLICE LOCATIONS FOR APPROVAL. HOLD-DOWN PLATES SHALL NOT EXCEED 20' LENGTHS UNLESS APPROVED BY THE ENGINEER.
- NO ALTERNATE JOINT DETAILS SHALL BE PERMITTED IN LIEU OF THOSE SHOWN ON THESE PLANS.
- THE CONTRACTOR MAY, AT HIS OPTION, USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF CONCRETE INSERTS FOR COVER PLATES. THE YIELD LOAD OF THE 3/4" Ø BOLT IS 10 KIPS. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.
- THE FABRICATOR SHALL PROVIDE 1/2" Ø THREADED HOLES IN THE HOLD-DOWN PLATES TO ASSIST IN LIFTING AND PLACING. THE HOLES SHALL BE 3/4" DEEP AT 6'-0" MAXIMUM SPACING AND A MINIMUM OF TWO HOLES PER PLATE.
- NO SEPARATE PAYMENT SHALL BE MADE FOR FURNISHING AND INSTALLING COVER PLATE THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE LUMP SUM PRICE FOR EXPANSION JOINT SEALS.



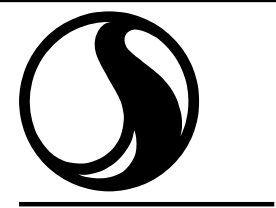
DETAIL - FIELD WELD SPLICE OF BASE ANGLE

PROJECT NO. R-3300A

NEW HANOVER COUNTY

STATION: 219+49.69 -L1-
31+84.73 -Y33RPCA-

SHEET 1 OF 4



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DESIGN ENGINEER OF RECORD: V. E. FRAGA DATE : 04/22/25

ASSEMBLED BY : V. E. FRAGA DATE : 08/23/18
CHECKED BY : S. S. POOLE DATE : 02/09/22

DRAWN BY : REK 9/87 REV. 10/1/11 MAA/GM
CHECKED BY : CRK 10/87 REV. 10/1/11 MAA/THC
REV. 6/18

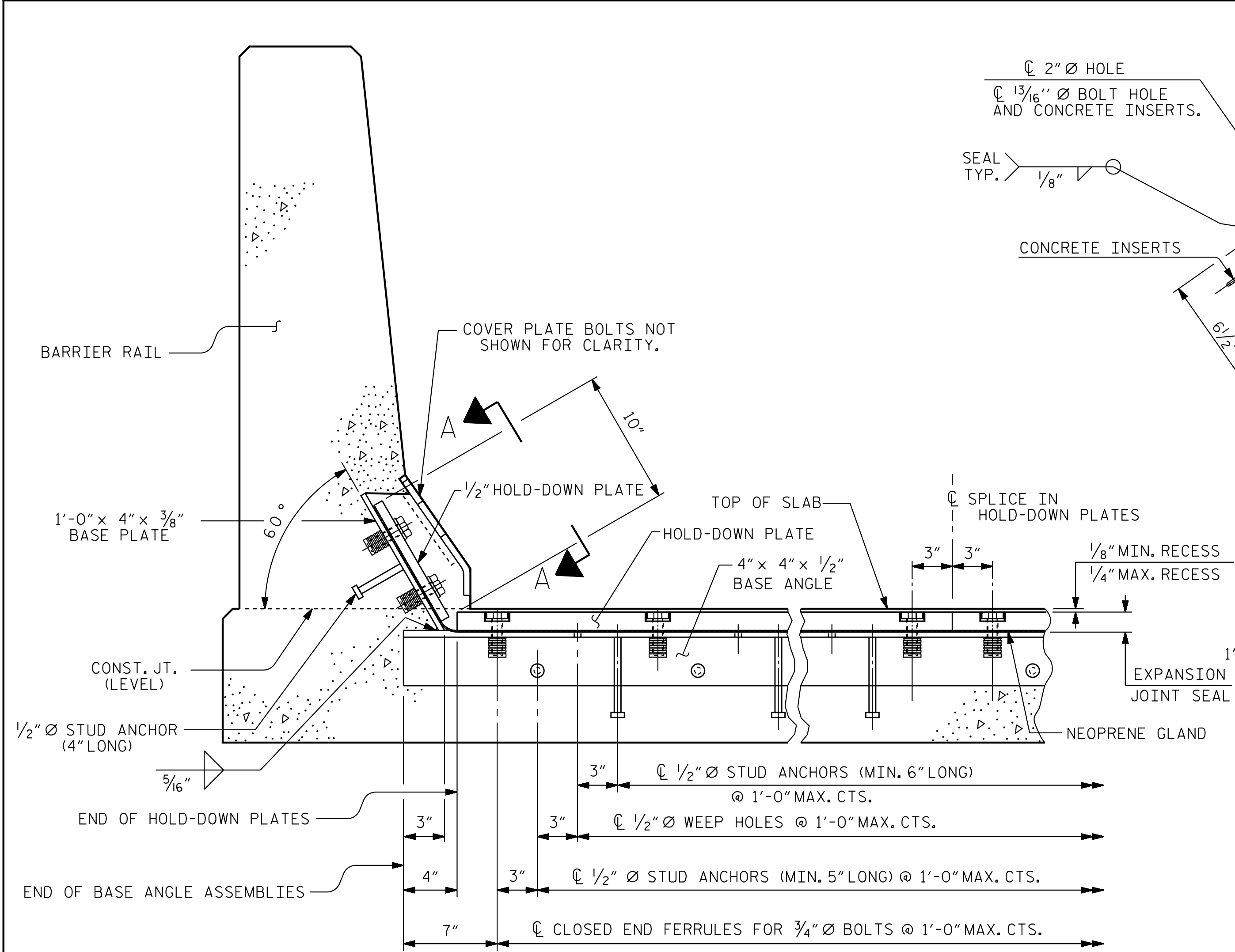


DocuSign
Victor E. Fraga
4/22/2025
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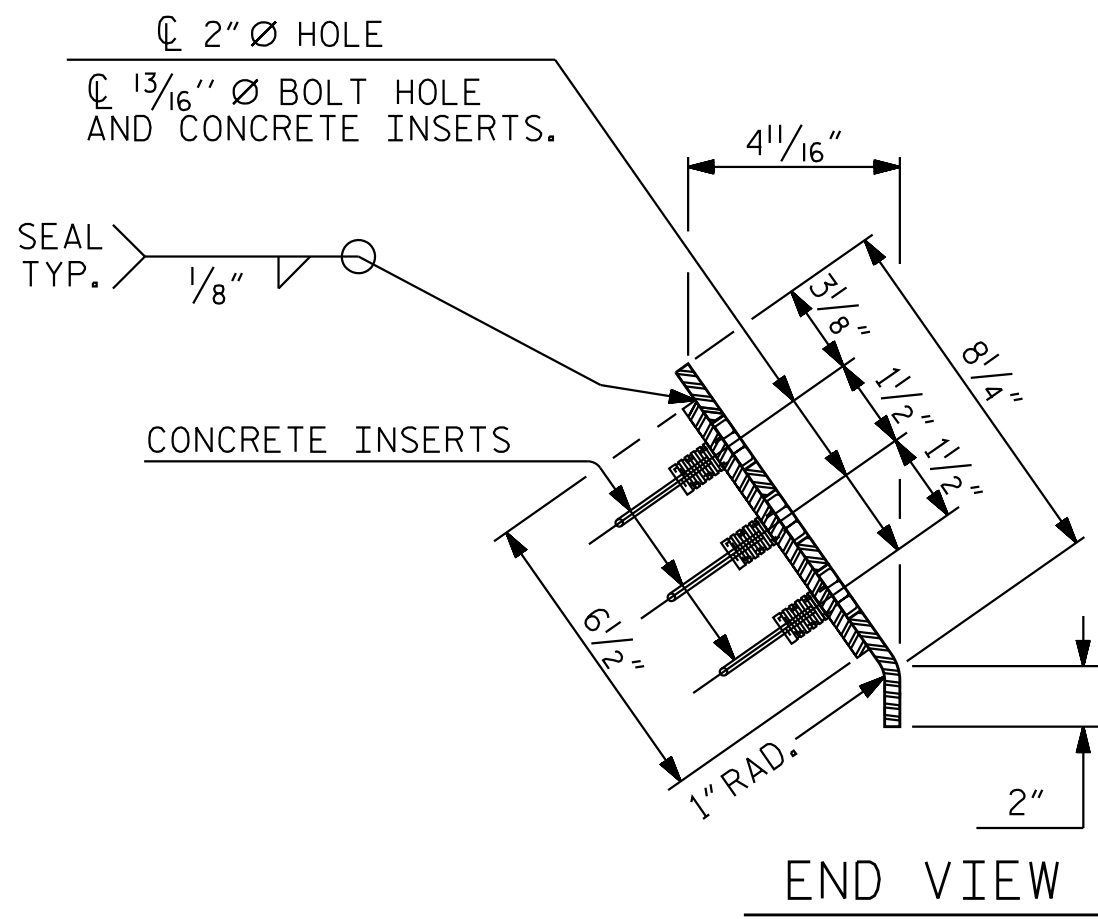
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NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 113
2			4			

STD. NO. EJS1 (SHT 2)

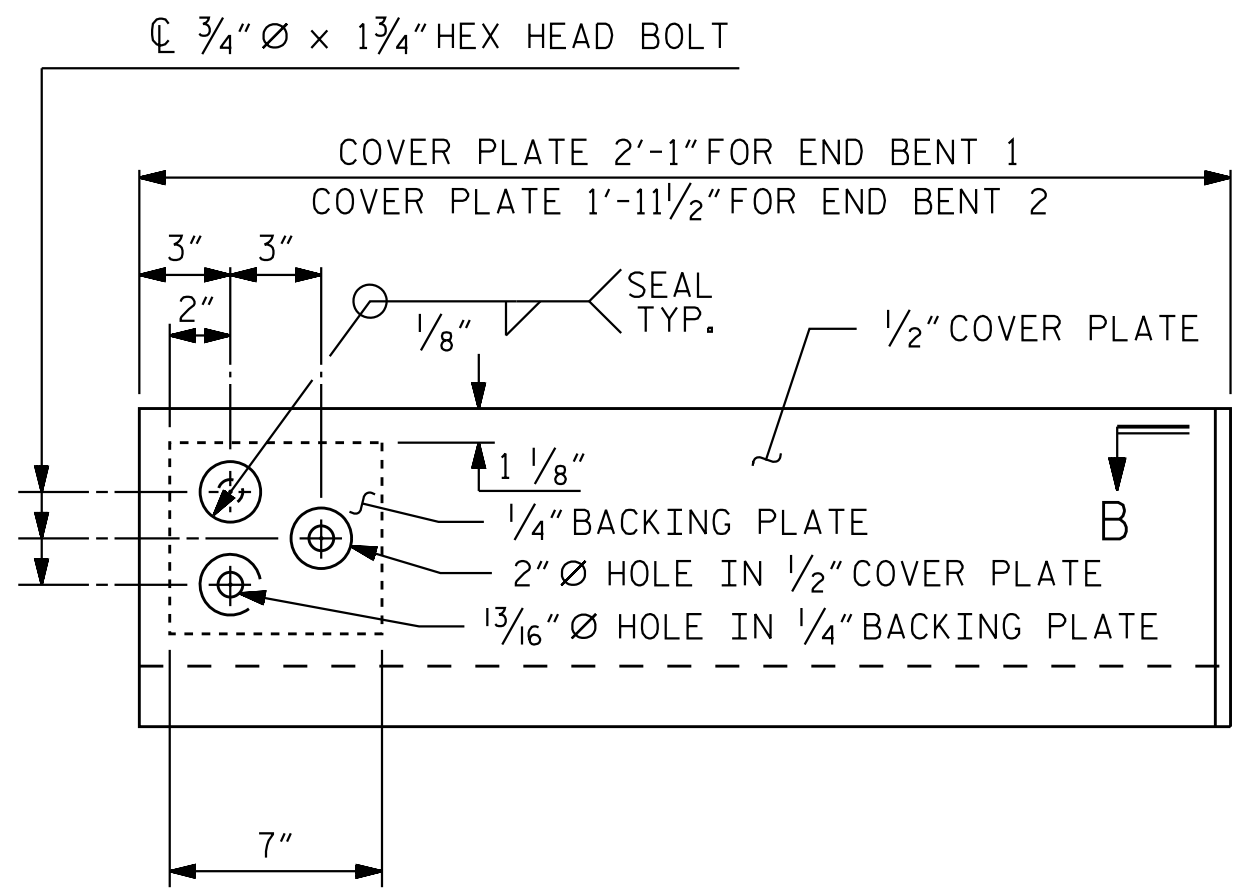
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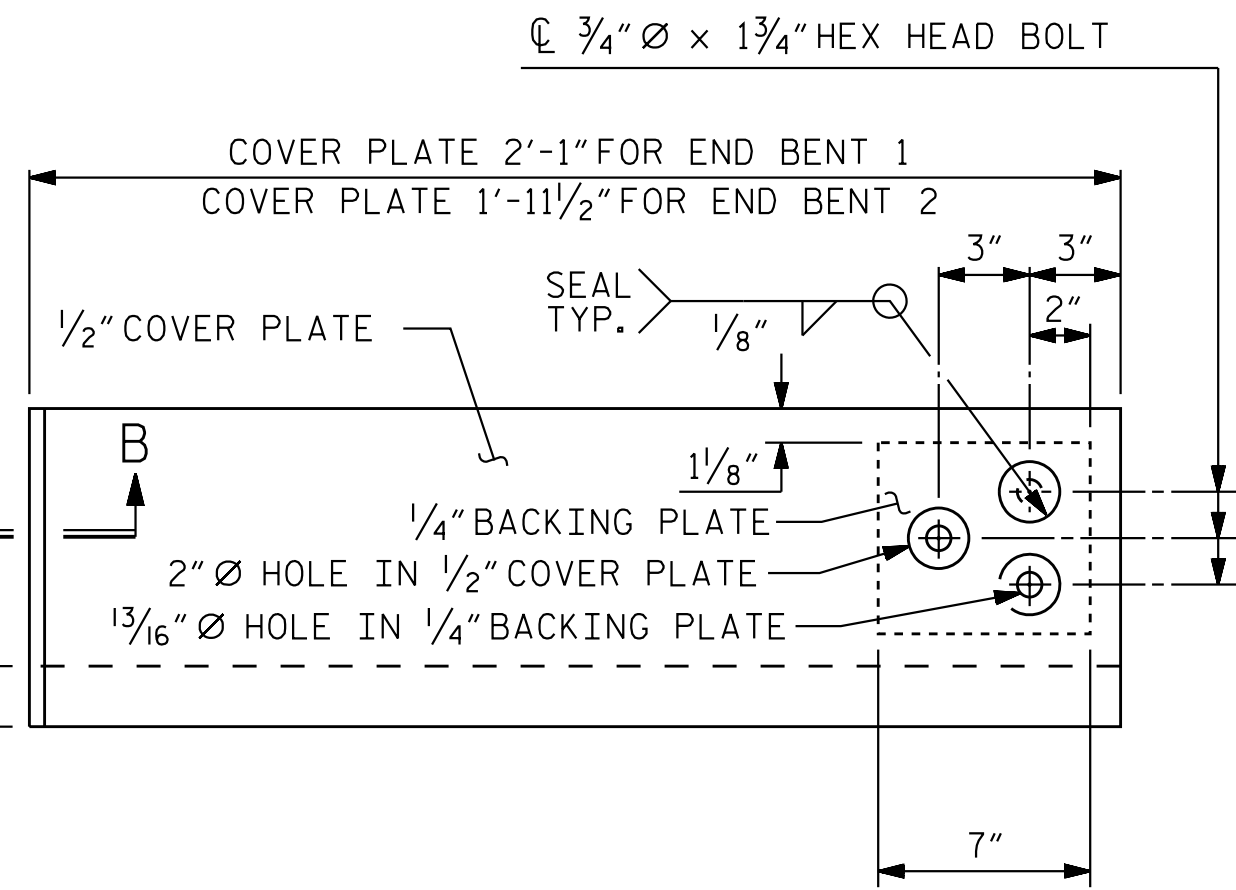
SECTION THRU RAIL NORMAL TO JOINT



END VIEW

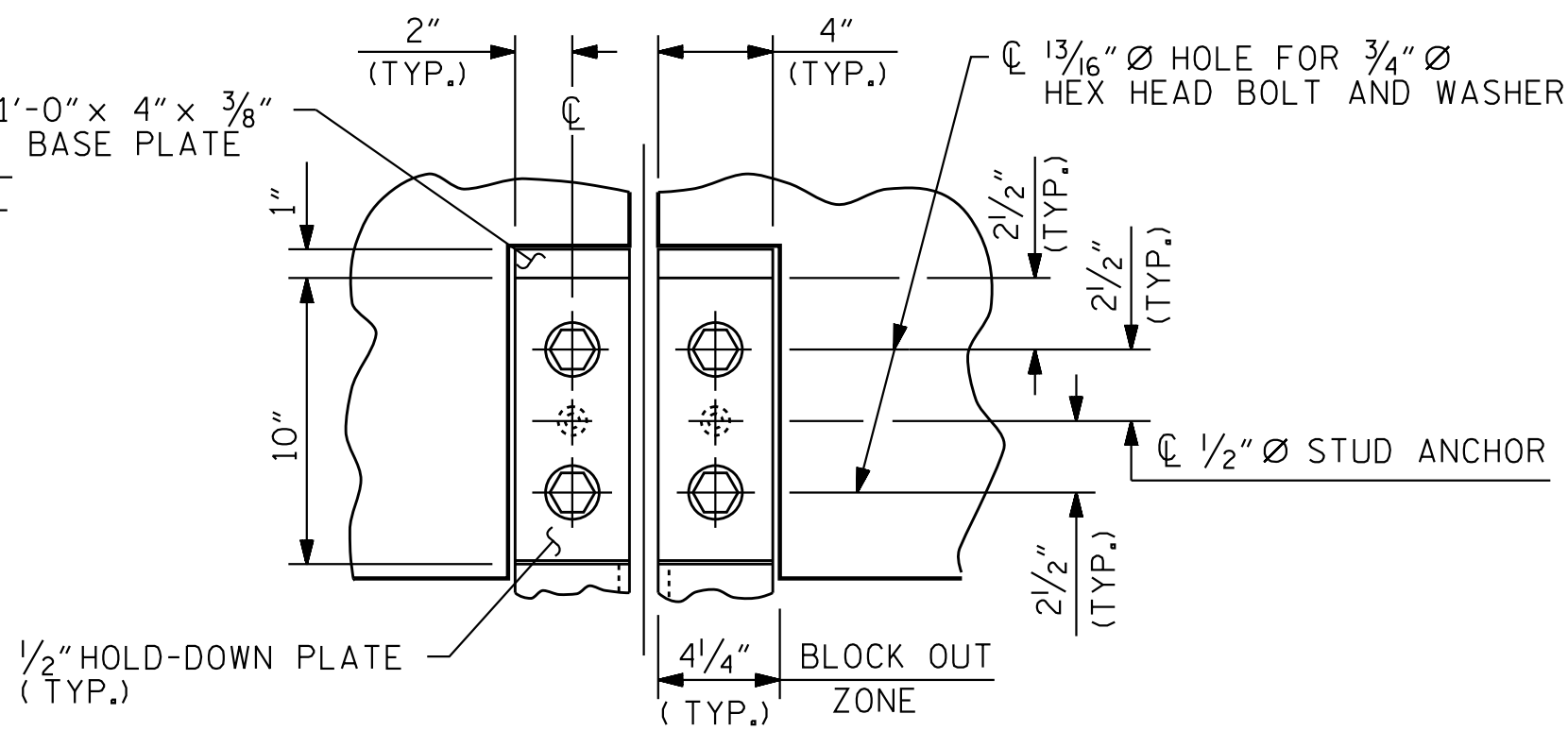


TYPE I - ELEVATION VIEW

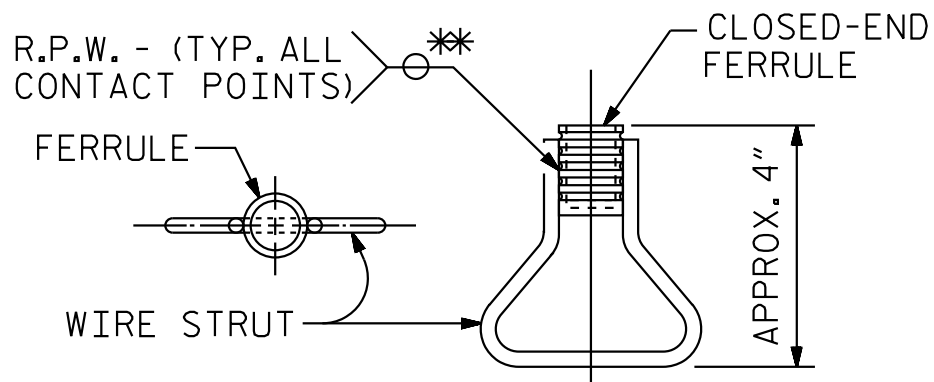


TYPE II - ELEVATION VIEW

COVER PLATE DETAILS



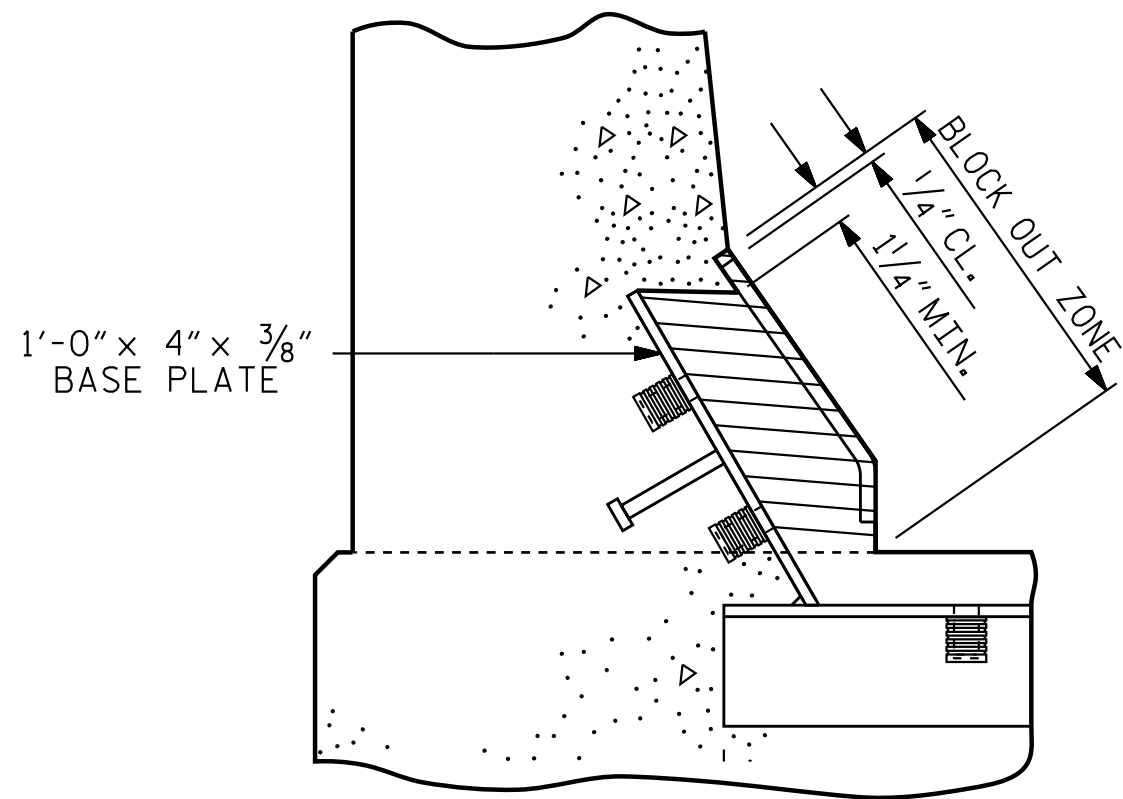
SECTION A - A



PLAN ELEVATION

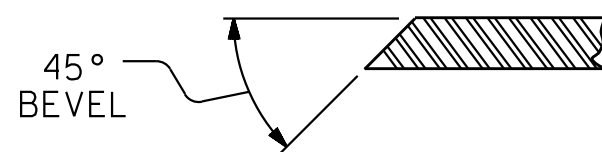
CONCRETE INSERT

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



BLOCK OUT DETAIL

SEE "SECTION A - A" FOR OTHER DETAILS.



SECTION B - B

PROJECT NO. R-3300A

NEW HANOVER COUNTY

STATION: 219+49.69 -L1-

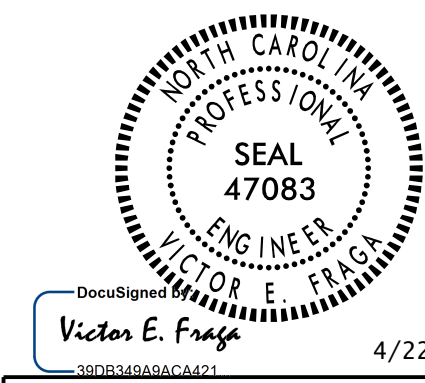
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SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
EXPANSION JOINT
SEAL DETAILS
FOR BARRIER RAIL

REVISIONS						SHEET NO. S01-072
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 113
2			4			



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DRAWN BY : REK 9/87	REV. 7/12 MAA/GM
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