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09/28/19

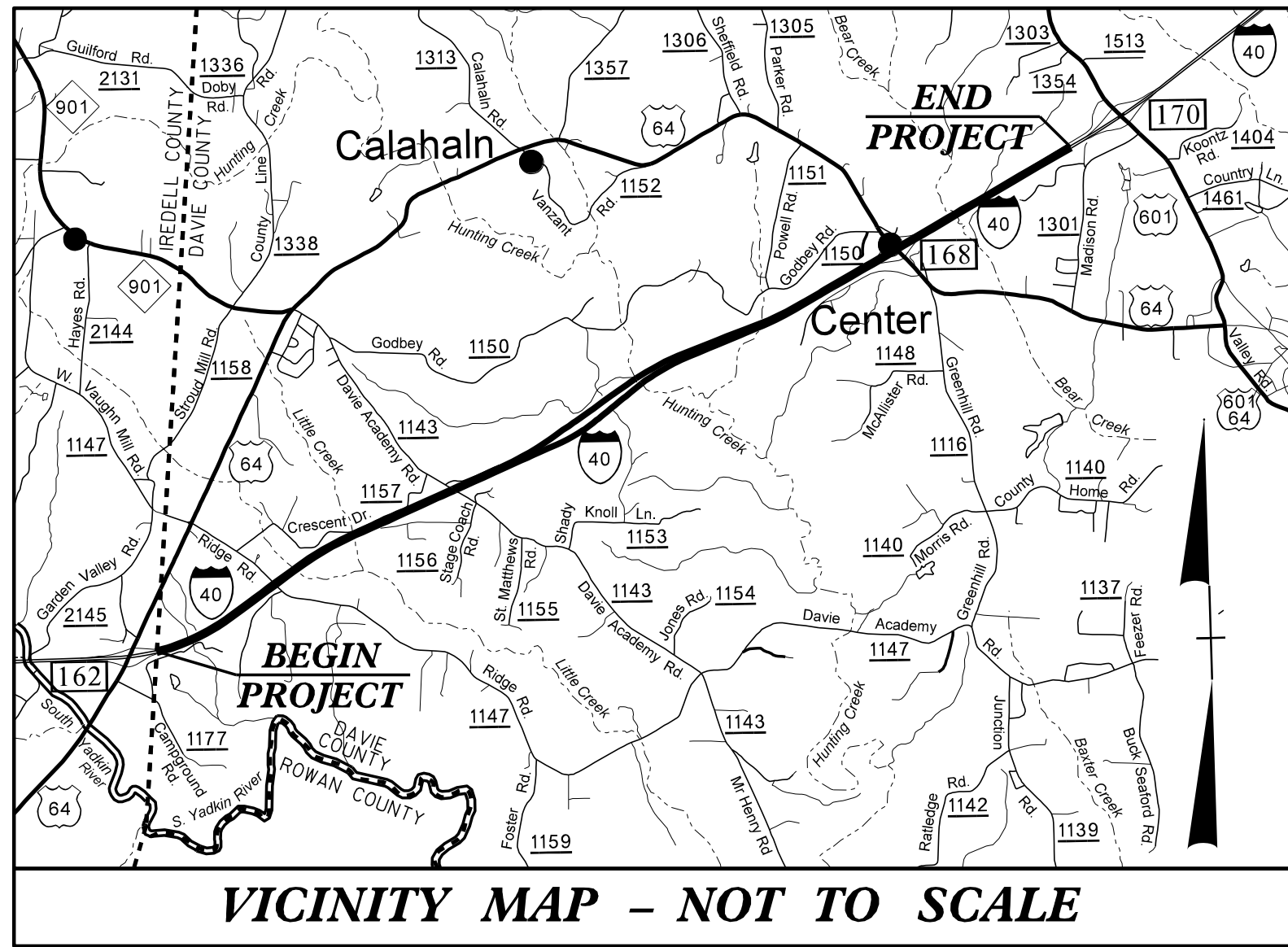
See Sheet 1-A For Index of Sheets

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

DAVIE COUNTY

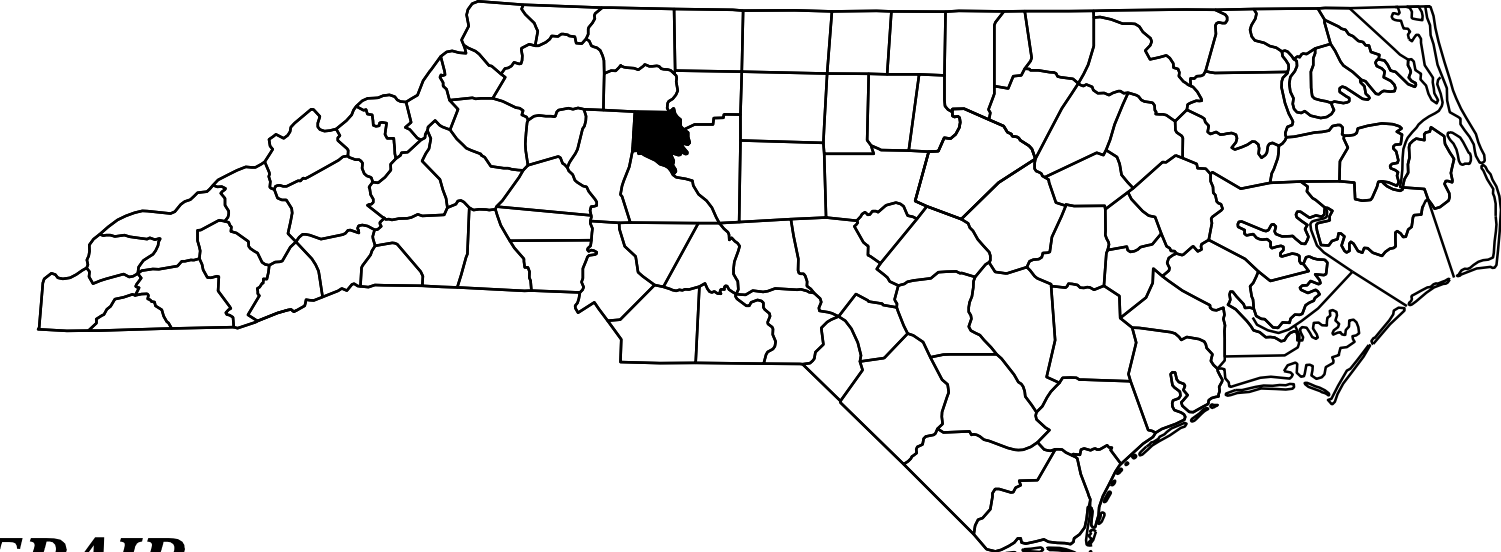
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5823	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
50466.1.1	NHPP-0040(033)	PE	
50466.3.1	NHPP-0040(033)	CONST	

TIP PROJECT: I-5823

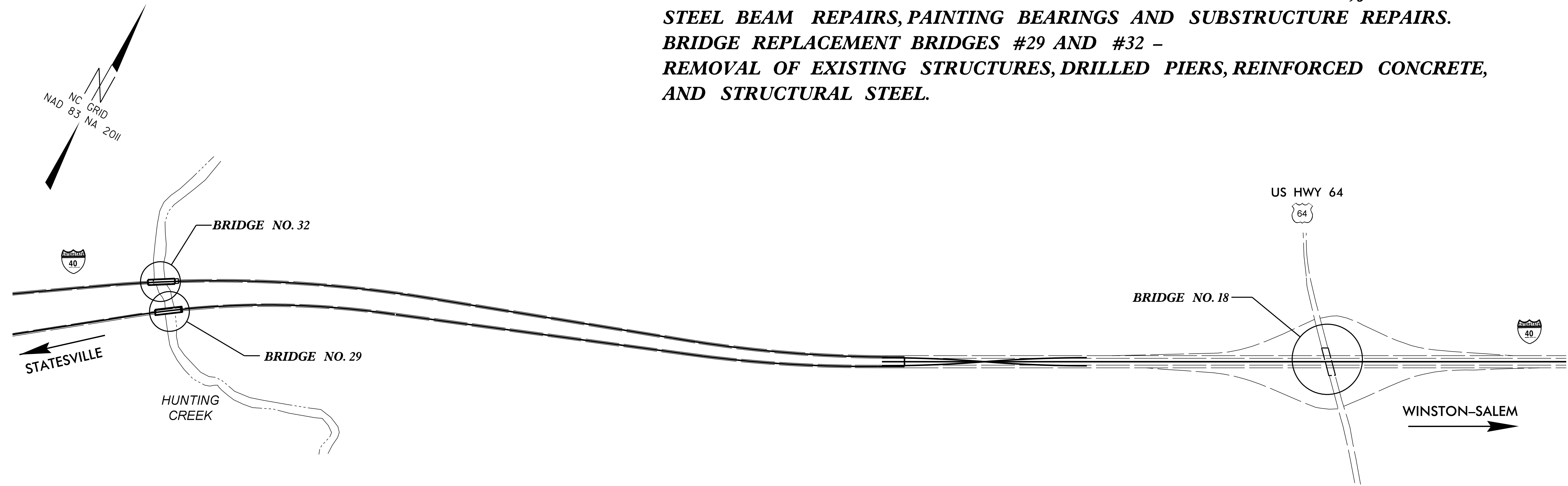


VICINITY MAP - NOT TO SCALE

**LOCATION: BRIDGE #18 ON US-64 OVER I-40
BRIDGE #29 ON I-40 OVER HUNTING CREEK
BRIDGE #32 ON I-40 OVER HUNTING CREEK**



**TYPE OF WORK: BRIDGE PRESERVATION BRIDGE #18 -
SCARIFICATION, HYDRO-DEMOLITION, DECK REPAIR,
LATEX MODIFIED CONCRETE OVERLAY - VERY EARLY STRENGTH, JOINT REPLACEMENT,
STEEL BEAM REPAIRS, PAINTING BEARINGS AND SUBSTRUCTURE REPAIRS.
BRIDGE REPLACEMENT BRIDGES #29 AND #32 -
REMOVAL OF EXISTING STRUCTURES, DRILLED PIERS, REINFORCED CONCRETE,
AND STRUCTURAL STEEL.**

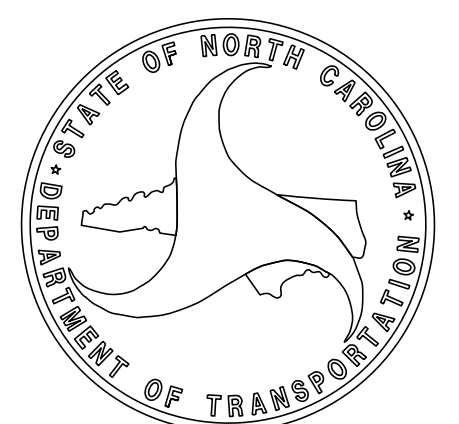


STRUCTURES

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

\$\$\$ SYSTEM \$\$\$\$
\$\$\$ DON \$\$\$\$
\$\$\$ USERNAME \$\$\$\$

CONTRACT: C204241



DESIGN DATA (I-40)	DESIGN DATA (US-64)
ADT 2018 = 49,235	BRIDGE NO. 18
ADT 2030 = 78,600	ADT 2014 = 5,000
K = 10 %	
D = 60 %	
T = 17 % *	
V = 75 MPH	
* TTST = 13 DUAL 4	
FUNC CLASS =	
INTERSTATE	
STATEWIDE TIER	
(REFERENCE PROJECT I-3600)	

PROJECT LENGTH
LENGTH ROADWAY TIP PROJECT I-5823 = 6.506 MILES
LENGTH STRUCTURE TIP PROJECT I-5823 = 0.045 MILES
TOTAL LENGTH TIP PROJECT I-5823 = 6.551 MILES (USED RT LANE FOR LENGTH)
BRIDGE #18 = 0.048 MILE

Bridge Preservation Prepared in the Office of:	
DIVISION OF HIGHWAYS	
STRUCTURES MANAGEMENT UNIT	
1000 Birch Ridge Dr., Raleigh, NC 27610	
2018 STANDARD SPECIFICATIONS	
	A. KEITH PASCHAL, P.E. PROJECT ENGINEER
	K. P. SEDAI, P.E. PROJECT DESIGN ENGINEER
LETTING DATE:	JANUARY 15, 2019

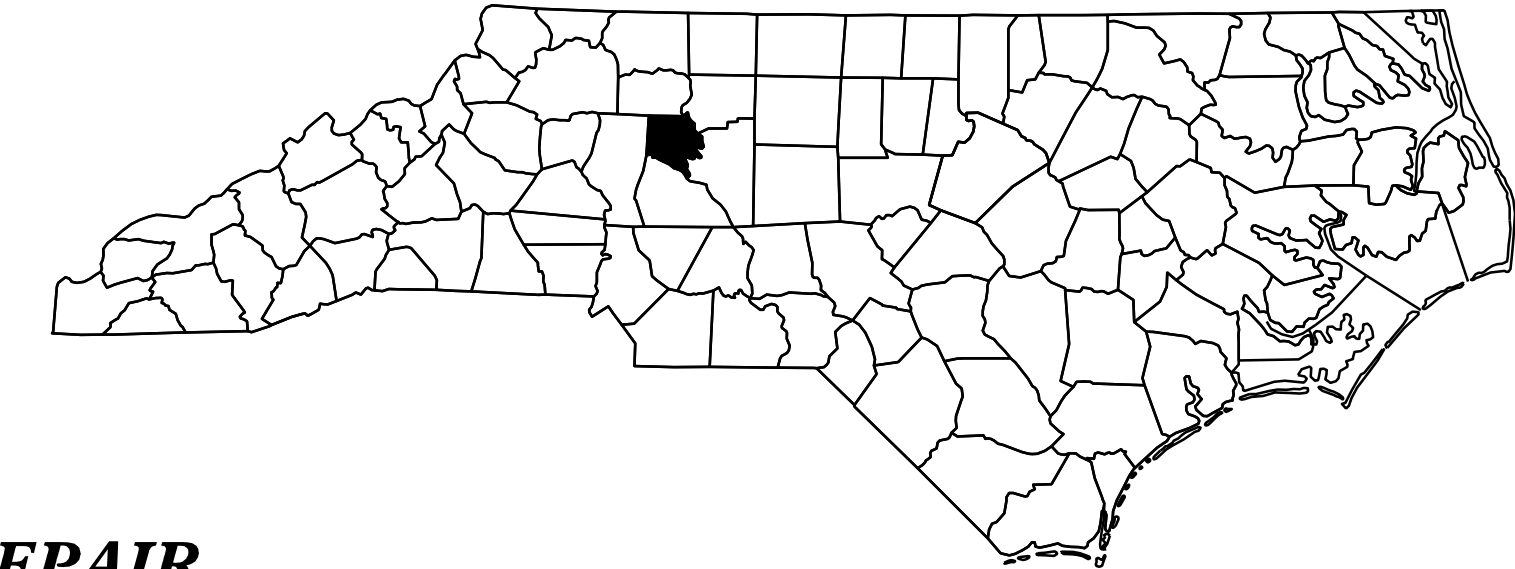
Bridge Replacement Prepared in the Office of:	
Dewberry	
NC COA NO. F-0929	
2610 Wycliff Rd., Suite 410	
Raleigh, NC 27607 (919) 881-9939	
2018 STANDARD SPECIFICATIONS	
	L. MARK PEARSON, P.E. PROJECT ENGINEER
	MATTHEW PAYNE, P.E. PROJECT DESIGN ENGINEER

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5823	1A	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
50466.1.1	NHPP-0040(033)	PE	
50466.3.1	NHPP-0040(033)	CONST	

DAVIE COUNTY

**LOCATION: BRIDGE #18 ON US-64 OVER I-40
BRIDGE #29 ON I-40 OVER HUNTING CREEK
BRIDGE #32 ON I-40 OVER HUNTING CREEK**



**TYPE OF WORK: BRIDGE PRESERVATION BRIDGE #18 -
SCARIFICATION, HYDRO-DEMOLITION, DECK REPAIR,
LATEX MODIFIED CONCRETE OVERLAY - VERY EARLY STRENGTH, JOINT REPLACEMENT,
STEEL BEAM REPAIRS, PAINTING BEARINGS AND SUBSTRUCTURE REPAIRS.
BRIDGE REPLACEMENT BRIDGES #29 AND #32 -
REMOVAL OF EXISTING STRUCTURES, DRILLED PIERS, REINFORCED CONCRETE,
AND STRUCTURAL STEEL.**

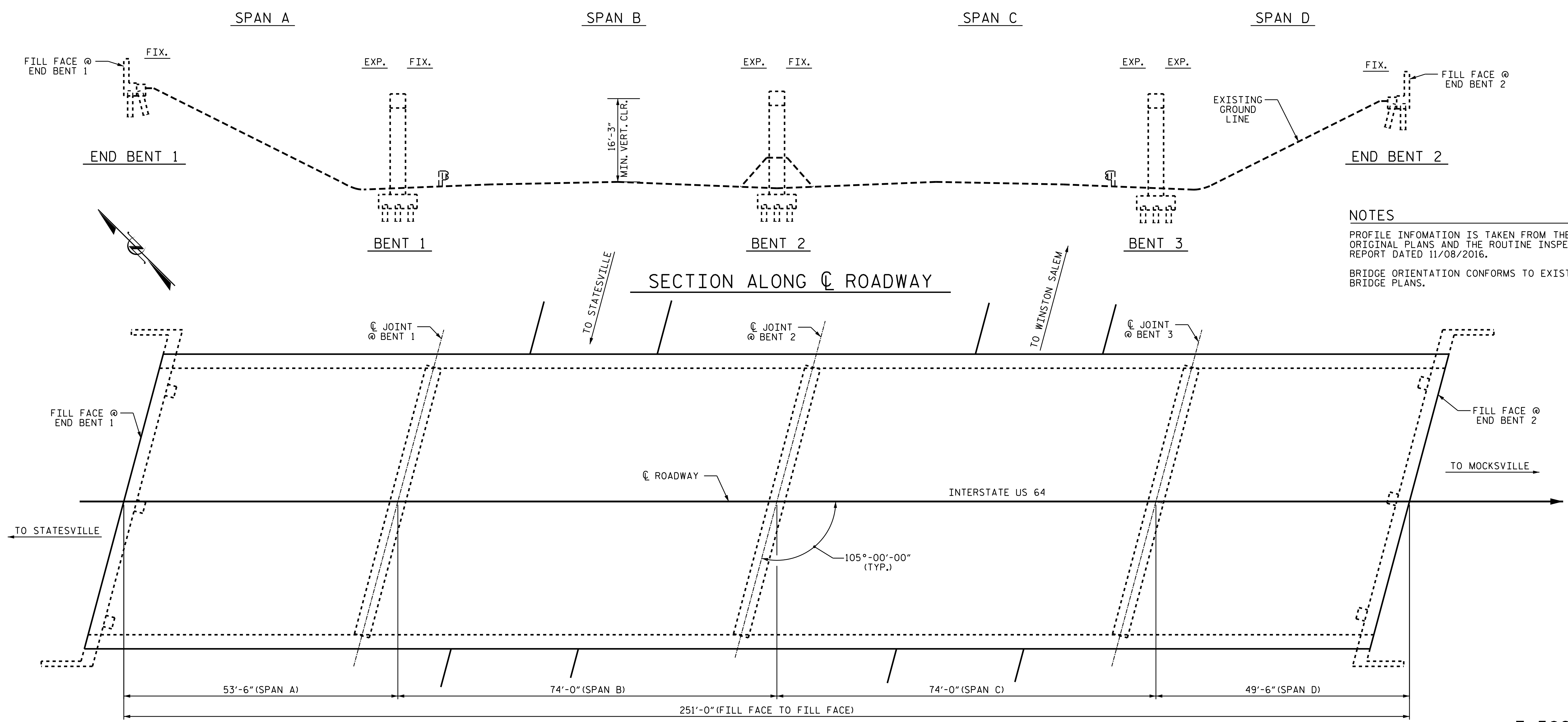
INDEX OF SHEETS

1	TITLE SHEET
1A	INDEX OF SHEETS
S1-1 THRU S1-34	STRUCTURAL PLANS - BRIDGE NO. 32
S2-1 THRU S2-34	STRUCTURAL PLANS - BRIDGE NO. 29
S3-1 THRU S3-23	STRUCTURAL PLANS - BRIDGE NO. 18
SN	STANDARD NOTES

TIP PROJECT: I-5823

CONTRACT: C204241

STRUCTURES



NOTES
 PROFILE INFORMATION IS TAKEN FROM THE ORIGINAL PLANS AND THE ROUTINE INSPECTION REPORT DATED 11/08/2016.
 BRIDGE ORIENTATION CONFORMS TO EXISTING BRIDGE PLANS.

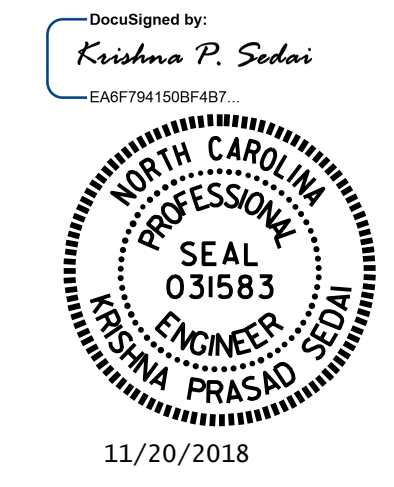
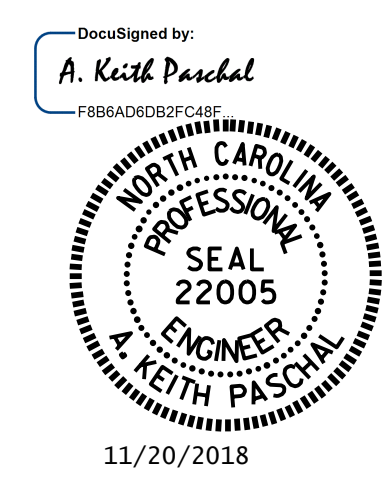
PLAN

SCOPE OF WORK

- PERFORM ANY REQUIRED CLASS II OR CLASS III CONCRETE REPAIRS IN PREPARED AREAS.
- PARTIALLY REMOVE BRIDGE DECK CONCRETE USING SCARIFICATION.
- PREPARE CONCRETE DECK SURFACE BY HYDRO-DEMOLITION.
- EPOXY INJECTION OF CONCRETE CRACKS.
- REPAIR CONCRETE DECK AREAS.
- REMOVE UNSOUND CONCRETE AND PROPERLY PREPARE SHOTCRETE AND CONCRETE REPAIR AREAS.
- PERFORM SHOTCRETE AND CONCRETE REPAIRS IN PREPARED AREAS.
- CLEANING & PAINTING EXISTING BEARINGS WITH HRCSA
- APPLY LATEX MODIFIED CONCRETE OVERLAY - VERY EARLY STRENGTH.
- PREPARE BRIDGE JOINTS AND INSTALL JOINT SEALS.
- GROOVE LMC-VES BRIDGE DECK.
- REMOVE DEBRIS FROM TOP OF END BENT CAPS, BENT CAPS AND APPLY EPOXY COATING TO TOP OF CAPS.

I HEREBY CERTIFY THAT THIS STRUCTURE WAS REHABILITATED ACCORDING TO THESE PLANS OR AS NOTED HEREIN.

 RESIDENT ENGINEER DATE



PROJECT NO. I-5823

 DAVIE COUNTY
 BRIDGE NO. 18

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**GENERAL DRAWING
 FOR BRIDGE ON US-64
 OVER I-40**

DRAWN BY : M. G. SHAIKH DATE : 03/2018
 CHECKED BY : REZA KOUICHEKI DATE : 08/2018

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-1
1			3			TOTAL SHEETS
2			4			25

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LATITUDE: 35° 39' 27.17"; LONGITUDE: 80° 27' 33.86"

LOCATION SKETCH

INFORMATION INDICATED ON THE LOCATION SKETCH SHALL BE CONSIDERED GENERAL INFORMATION ONLY. THE CONTRACTOR SHALL CONFIRM, THROUGH OTHER SOURCES, SPECIFIC INFORMATION REGARDING BRIDGES, ROADWAYS, UTILITIES, THE SURROUNDING AREA, AND ANY OTHER ASPECTS THAT MAY BE NECESSARY TO PERFORM AND COMPLETE THE PROJECT.

TOTAL BILL OF MATERIAL

INCIDENTAL MILLING	ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B	ASPHALT BINDER FOR PLANT MIX	GROOVING BRIDGE FLOORS	POLLUTION CONTROL	CLASS II SURFACE PREPARATION	CLASS III SURFACE PREPARATION	LATEX MODIFIED CONCRETE OVERLAY - VERY EARLY STRENGTH	PLACING & FINISHING OF LATEX MODIFIED CONCRETE OVERLAY - VERY EARLY STRENGTH	CONCRETE REPAIRS	SHOTCRETE REPAIRS	EPOXY RESIN INJECTION	PAINTING CONTAINMENT FOR BRIDGE NO.---
SO. YDS.	TONS	TONS	SO. FT.	LUMP SUM	SO. YDS.	SO. YDS.	CU. YDS.	SO. YDS.	CU. FT.	CU. FT.	LIN. FT.	LUMP SUM
578.0	50.0	4.0	12200.0	LUMP SUM	59.2	0.5 *	85.5	1435.0	12.9	333.9	346.6	LUMP SUM

SPOT PAINTING OF STEEL STRUCTURE REPAIR AREAS	VOLUMETRIC MIXER	FOAM JOINT SEALS FOR PRESERVATION	CONCRETE FOR DECK REPAIR	ELASTOMERIC CONCRETE FOR PRESERVATION	BEAM REPAIR	EPOXY COATING	BRIDGE JOINT DEMOLITION	CONCRETE WORK FOR JOINT REPLACEMENT	SCARIFYING BRIDGE DECK	HYDRO-DEMOLITION OF BRIDGE DECK	CLEANING & PAINTING EXISTING BEARINGS WITH HRCSA	TYPE I BRIDGE JACKING BRIDGE NO.---
LUMP SUM	LUMP SUM	LIN. FT.	CU. FT.	CU. FT.	LBS.	SO. FT.	SO. FT.	SO. FT.	SO. YDS.	SO. YDS.	EA.	EA.
LUMP SUM	LUMP SUM	162.0	177.6	40.5	434.0	789.0	162.0	162.0	1435.0	1435.0	64	2

*CLASS III SURFACE PREPARATION IS NOT ANTICIPATED. A TOKEN PAY ITEM IS INDICATED FOR PRICING PURPOSES IN THE EVENT UNANTICIPATED CLASS III AREAS ARE ENCOUNTERED.

DRAWN BY : M. G. SHAIKH DATE : 09/2018
 CHECKED BY : REZA KAUCHEKI DATE : 09/2018

NOTES

- EXISTING DIMENSIONS AND BRIDGE CONDITION ARE FROM THE BEST INFORMATION AVAILABLE.
- THE CONTRACTOR SHALL FIELD VERIFY THE INFORMATION SHOWN ON THE PLANS AND NOTIFY THE ENGINEER IF ACTUAL DIMENSIONS AND CONDITIONS DIFFER.
- THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THAT SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO FOLLOW ALL STATE AND FEDERAL SAFETY REQUIREMENTS.
- 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.
- FOR TRAFFIC CONTROL AND LIMITS OF PHASING OF CONSTRUCTION, SEE TRANSPORTATION MANAGEMENT PLANS.
- EXISTING JOINTS AND DECK DRAINS SHALL BE SEALED PRIOR TO BEGINNING SURFACE REPARATION OF BRIDGE DECK. THE CONTRACTOR SHALL TAKE CARE THAT ANY CONSTRUCTION DEBRIS THAT COLLECTS IN THE DRAINS IS CONTAINED. DRAINS IN SHOULDERS OF TRAVEL LANE(S) SHALL BE KEPT FREE AND CLEAR OF DEBRIS.
- FOR SCARIFYING BRIDGE DECK, HYDRO-DEMOLITION OF BRIDGE DECK, AND CLASS II AND CLASS III SURFACE PREPARATION, SEE OVERLAY SURFACE PREPARATION SPECIAL PROVISION.
- THE CONTRACTOR SHALL PROVIDE A METHOD OF HANDLING UNEXPECTED BLOW THROUGH OF THE DECK DURING HYDRO-DEMOLITION OPERATIONS.
- FOR LATEX MODIFIED CONCRETE - VERY EARLY STRENGTH, SEE SPECIAL PROVISIONS.
- FOR LMC-VES MATERIALS AND PLACING & FINISHING LMC-VES OVERLAY, SEE LATEX MODIFIED CONCRETE - VERY EARLY STRENGTH SPECIAL PROVISIONS.
- FOR BRIDGE JOINT DEMOLITION, SEE SPECIAL PROVISIONS.
- FOR CONCRETE WORK FOR JOINT REPLACEMENT, SEE SPECIAL PROVISIONS.
- FOR CONCRETE FOR DECK REPAIRS, SEE SPECIAL PROVISIONS.
- FOR FOAM JOINT SEAL FOR PRESERVATION, SEE SPECIAL PROVISIONS.
- FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.
- FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.
- FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.
- FOR ELASTOMERIC CONCRETE FOR PRESERVATION, SEE SPECIAL PROVISIONS.
- FOR POLLUTION CONTROL, PAINTING CONTAINMENT AND CLEANING AND PAINTING EXISTING BEARINGS WITH HRCSA, SEE CLEANING AND PAINTING EXISTING BEARINGS WITH HRCSA SPECIAL PROVISIONS.
- FOR EPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.
- FOR BRIDGE JACKING, SEE SPECIAL PROVISIONS.
- FOR BEAM REPAIR, SEE SPECIAL PROVISIONS.
- WORK ON BRIDGE SHALL BE PREFORMED SO AS NOT TO ALLOW DEBRIS TO FALL BELOW. THE CONTRACTOR SHALL SUBMIT PLANS FOR CONSTRUCTION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS AND THE PROJECT SPECIAL PROVISIONS.
- LONGITUDINAL CONSTRUCTION JOINTS SHALL BE LOCATED ALONG THE CENTERLINE OR EDGE OF TRAVEL LANES.
- DURING CONSTRUCTION, BERMS OR APPROPRIATE MEASURES SHALL BE USED TO ENSURE HYDRO-DEMOLITION WATER DOES NOT MIGRATE INTO ACTIVE TRAVEL LANES.
- FOR SPOT PAINTING OF STEEL STRUCTURE REPAIR AREAS, SEE SPECIAL PROVISIONS.
- THE CONTRACTOR SHALL COLLECT, TREAT AND DISPOSE OF RUN-OFF WATER FROM THE HYDRO-DEMOLITION PROCESS, SEE OVERLAY SURFACE PREPARATION SPECIAL PROVISIONS.
- ANY DAMAGE TO EXISTING REINFORCING STEEL, DURING CONTRACTOR'S OPERATIONS, SHALL BE REPAIRED AS DIRECTED BY THE ENGINEER AND PERFORMED AT NO ADDITIONAL COST TO THE DEPARTMENT.
- PRIOR TO BEGINING WORK, THE CONTRACTOR SHALL SUBMIT FOR REVIEW AND APPROVAL A COMPLETE SEQUENCE OF TASKS FOR EACH OPERATION AFFECTING THE BRIDGE SURFACE AND/OR TRAFFIC.
- REPAIR LOCATIONS AND ESTIMATES OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS.

INASMUCH AS THE PAINT SYSTEMS ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICES FOR ITEMS ASSOCIATED WITH THE CLEANING AND REPAINTING OF BRIDGES.

DocuSigned by:
 Krishna P. Sedai
 EAF6794150BF4B7



11/20/2018

PROJECT NO. I-5823
DAVIE COUNTY
 BRIDGE NO. 18

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE ON US-64
 OVER I-40

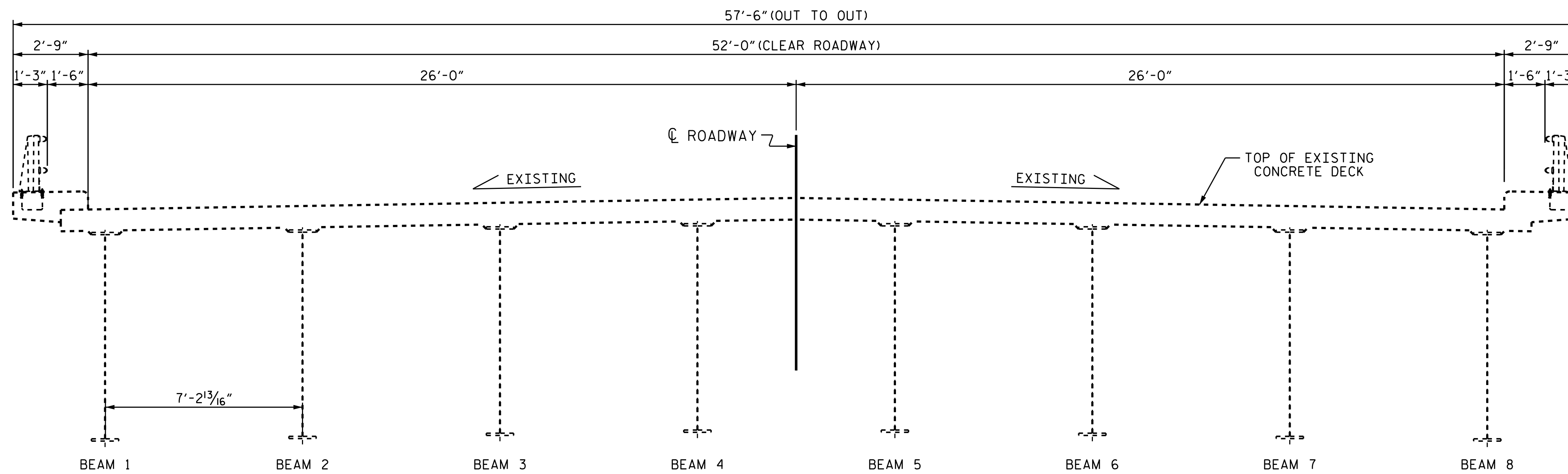
NO.	REVISIONS			NO.	REVISIONS			SHEET NO.
	BY:	DATE:			BY:	DATE:		
1				3				S3-2
2				4				TOTAL SHEETS 25

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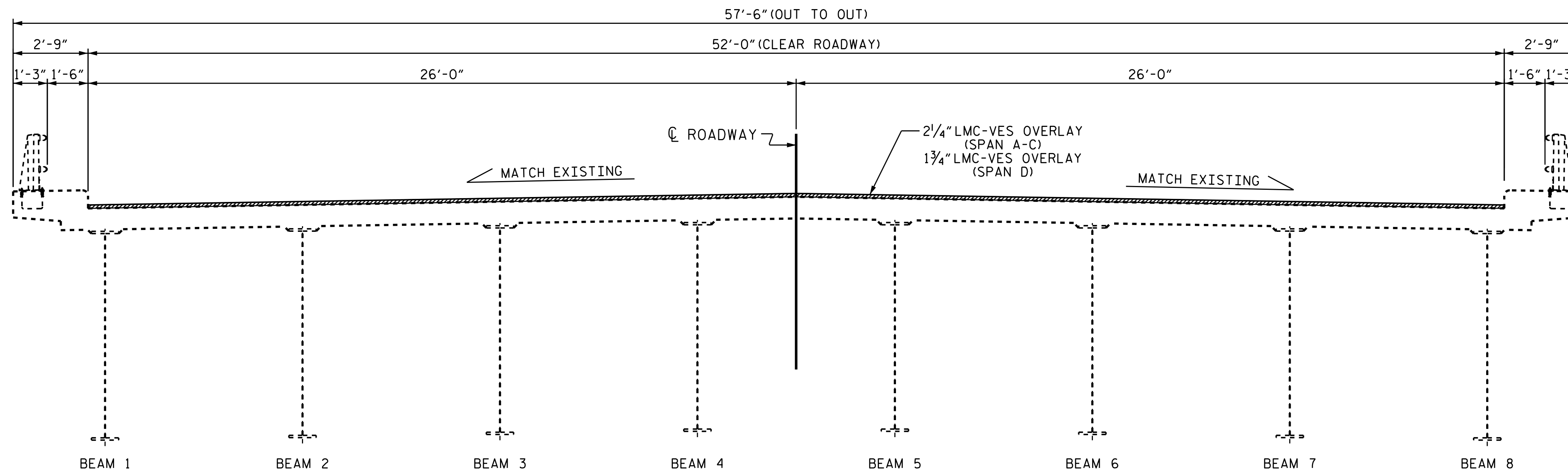
NOTE:

WHEN PREPARING THE SURFACE FOR LMC-VES OVERLAY ADJACENT TO A PREVIOUSLY PLACED LMC-VES STAGE, THE PREVIOUSLY PLACED LMC-VES SHALL BE REMOVED FOR A DISTANCE OF 4-INCHES FROM THE LMC-VES EDGE. THE SURFACE OF THE NEW STAGE AREA, ALONG WITH THE 4 INCH OVERLAY AREA, SHALL BE PREPARED AS PER THE OVERLAY SURFACE PREPARATION SPECIAL PROVISIONS. NEW LMC-VES SHALL BE PLACED IN THE 4-INCH OVERLAP, AS PART OF NEW LMC-VES STAGE PLACEMENT.

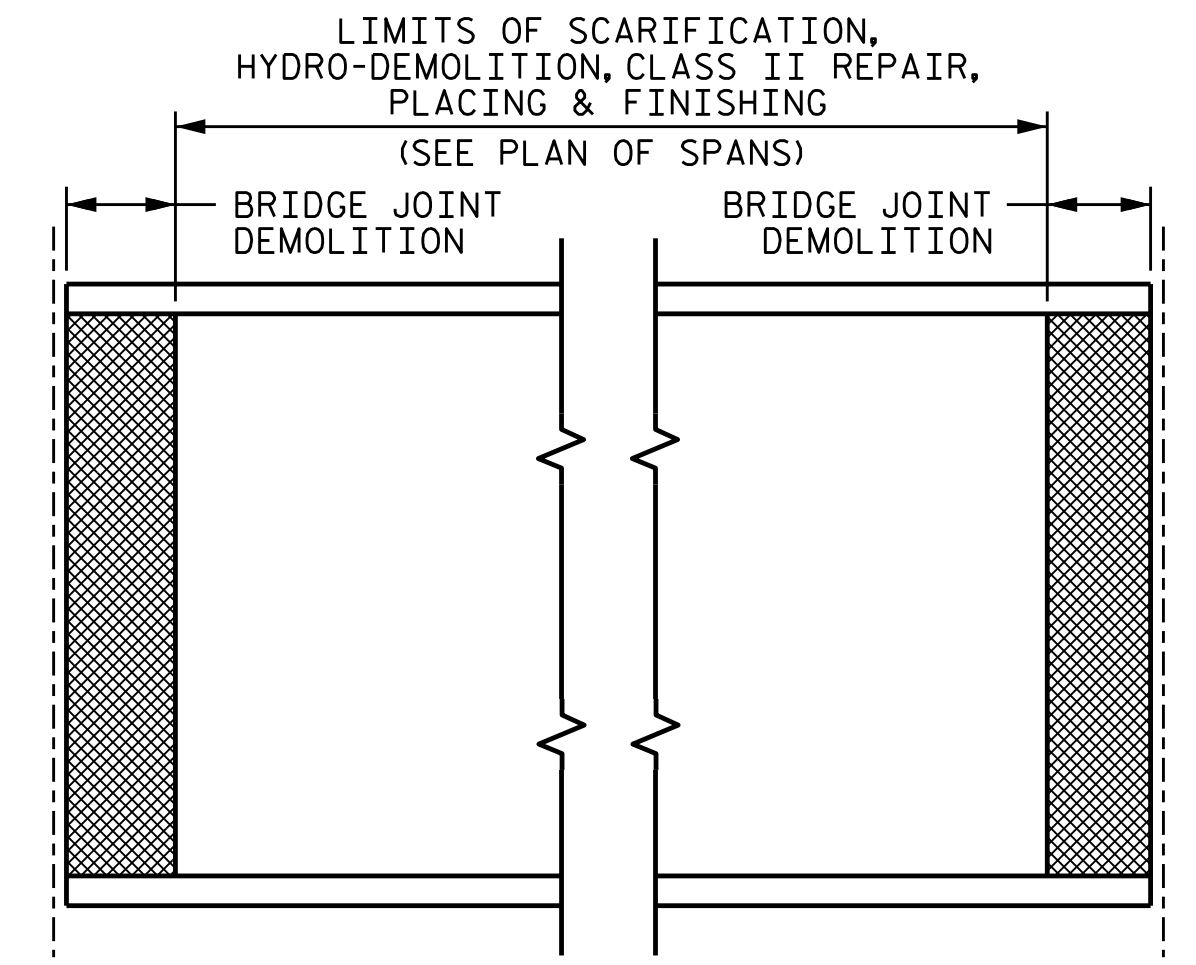
SEE TRAFFIC MANAGEMENT PLANS FOR LANE WIDTHS, SEQUENCING, AND OTHER TRAFFIC CONTROL MEASURES FOR STAGING OF OVERLAY SURFACE PREPARATION AND LMC-VES PLACEMENT.



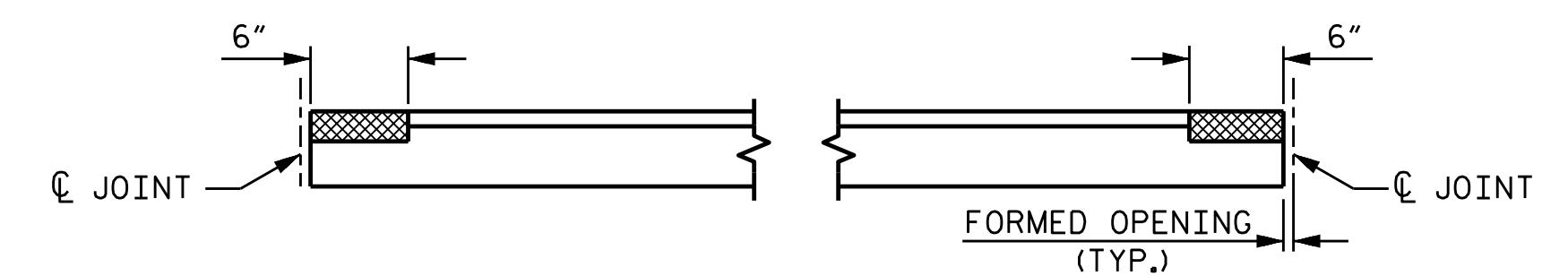
TYPICAL SECTION
(EXISTING)



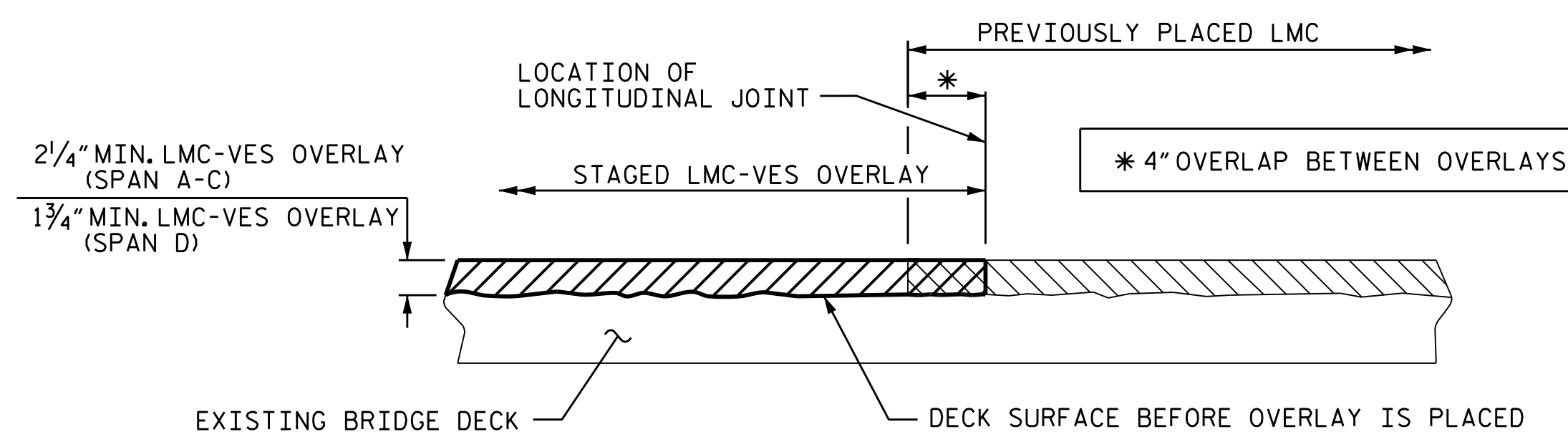
TYPICAL SECTION
(PROPOSED)



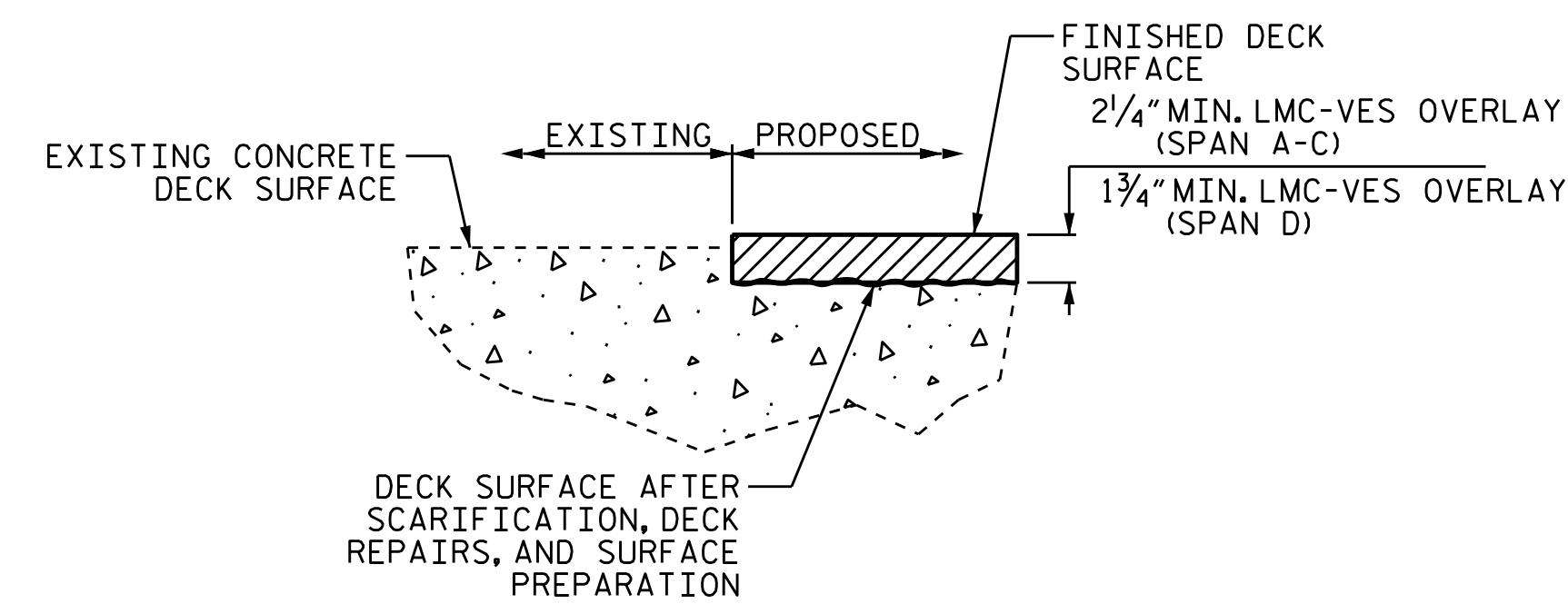
PLAN



ELEVATION

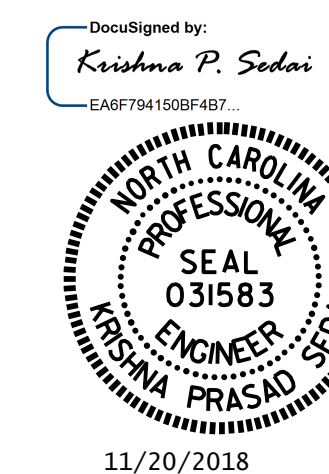


SECTION THRU DECK
STAGED LMC OVERLAY JOINT
(AS NEEDED)



DETAIL OF LATEX MODIFIED CONCRETE OVERLAY
(FINISHED SURFACE OF THE LATEX MODIFIED CONCRETE OVERLAY IS APPROXIMATED)

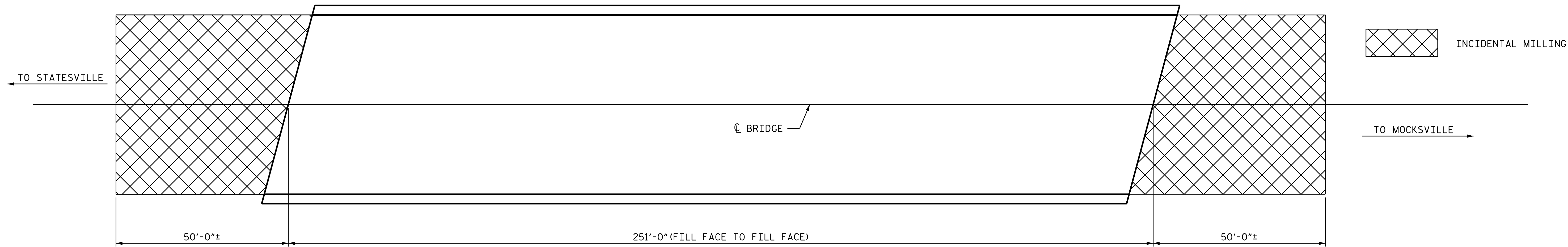
PROJECT NO. I-5823
DAVIE COUNTY
BRIDGE NO. 18



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
TYPICAL SECTION & SURFACE PREPARATION DETAILS

DRAWN BY : M. G. SHAIKH DATE : 09/2018
CHECKED BY : REZA KOUCHEKI DATE : 09/2018

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



INCIDENTAL MILLING

TO STATESVILLE ←

→ TO MOCKSVILLE

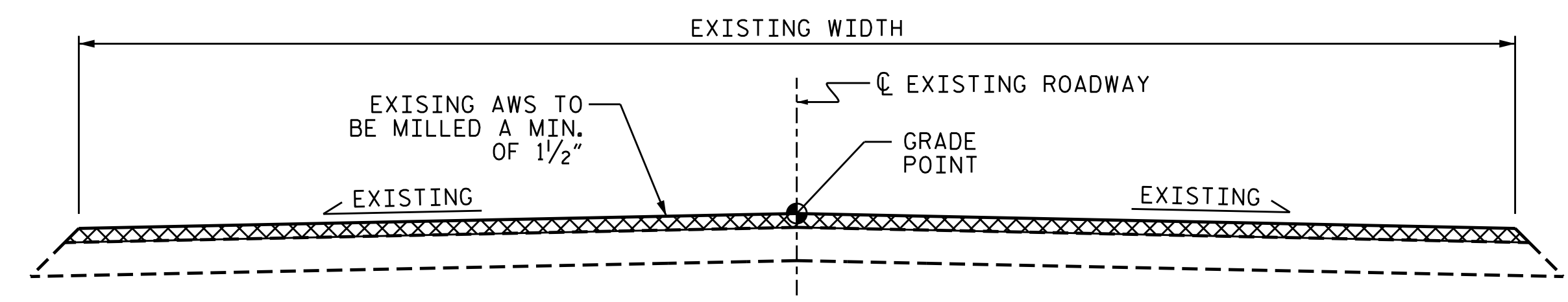
50'-0"± 251'-0" (FILL FACE TO FILL FACE) 50'-0"±

NOTES

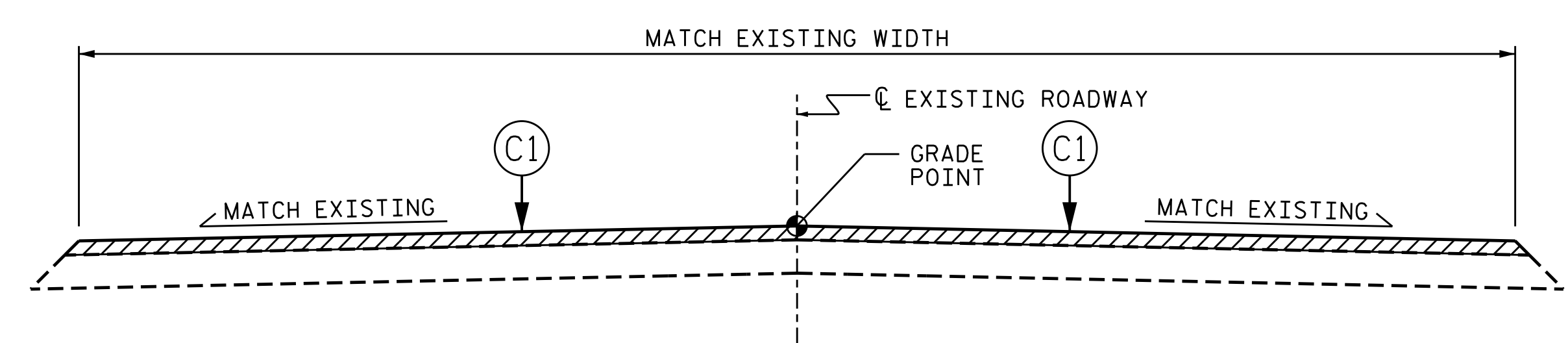
INCIDENTAL MILLING - EXISTING APPROACH ASPHALT PAVEMENT TO BE MILLED AS NECESSARY TO ATTAIN MINIMUM 1/2" DEPTH OF NEW ASPHALT PAVEMENT. NEW ASPHALT PAVEMENT SHALL BE OF THICKNESS NECESSARY TO PROVIDE A SMOOTH TRANSITION BETWEEN THE ROADWAY AND THE BRIDGE DECK. THE NEW ASPHALT PAVEMENT THICKNESS MAY EXCEED 1/2" DUE TO SETTLEMENT OF THE EXISTING APPROACH.

C1 PROPOSED VARIABLE DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1/2" IN DEPTH OR GREATER THAN 2" IN DEPTH.

SUMMARY OF QUANTITIES		
	ESTIMATE	ACTUAL
INCIDENTAL MILLING	578.0 SY	
ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B	50.0 TONS	
ASPHALT BINDER FOR PLANT MIX	4.0 TONS	

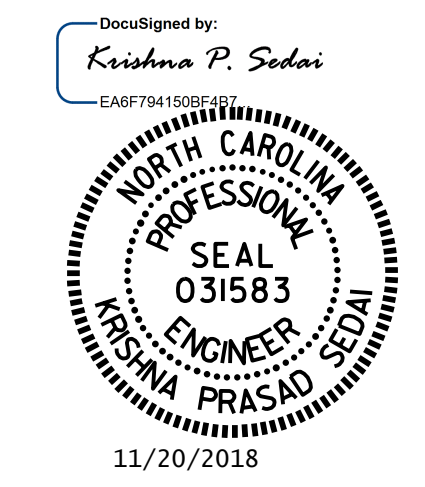


TYPICAL ROADWAY MILLING SECTION
(MILL TO 1/2" DEPTH)



TYPICAL ROADWAY SECTION

PROJECT NO. I-5823
DAVIE COUNTY
 BRIDGE NO. 18



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**APPROACH MILLING &
 TYPICAL ROADWAY
 SECTIONS**

DRAWN BY : M. G. SHAIKH DATE : 09/2018
 CHECKED BY : REZA KOUCHEKI DATE : 09/2018

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S3-4
2			4			25

AS-BUILT REPAIR QUANTITY TABLE		
TOP OF DECK REPAIRS		
	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	1,435 SY	
CLASS II SURFACE PREPARATION	59.2 SY	
CLASS III SURFACE PREPARATION	0.5 SY *	
CONCRETE FOR DECK REPAIR	177.6 CU. FT.	
HYDRO-DEMOLITION OF BRIDGE DECK	1,435 SY	
LATEX MODIFIED CONCRETE OVERLAY - VES	85.5 CY	
PLACING AND FINISHING LMC-VES OVERLAY	1,435 SY	
GROOVING BRIDGE FLOORS	12,200 SF	

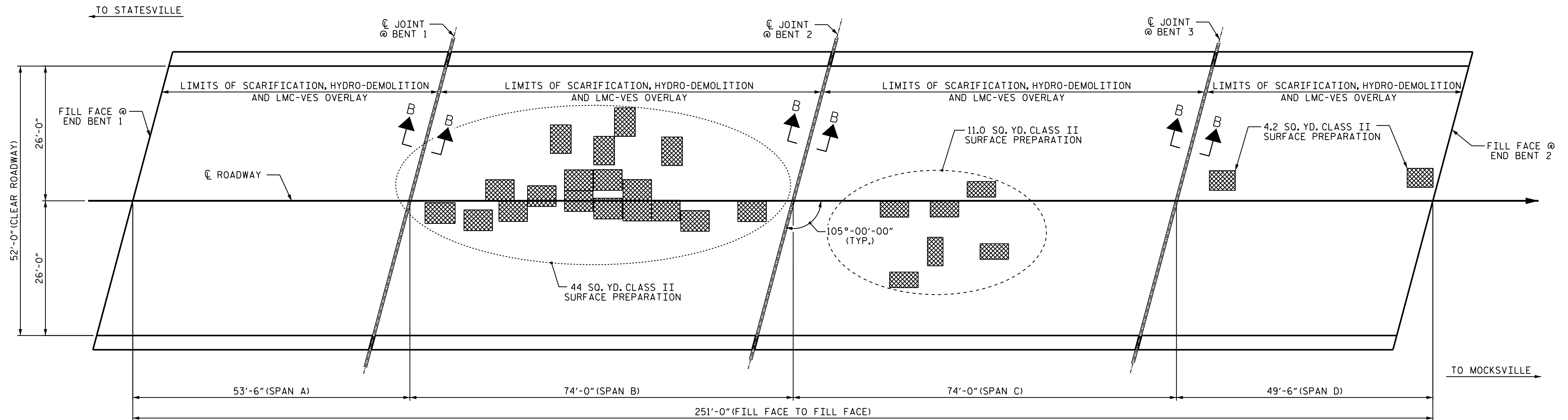
TOP OF DECK REPAIR QUANTITIES REPRESENT ESTIMATED VALUES OF CLASS II SURFACE PREPARATION AND CONCRETE DECK REPAIR FOR LMC-VES OVERLAY AFTER REMOVAL OF UNSOUND CONCRETE. (MIN. 2" CLEAR TO SAWCUT). FOR OVERLAY SURFACE PREPARATION FOR LATEX MODIFIED CONCRETE-VES, SEE SPECIAL PROVISIONS.

NOTES:

REPAIR LOCATIONS AND ESTIMATED QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATIONS AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE AS-BUILT REPAIR QUANTITY TABLE.

FOR SECTION B-B, SEE "JOINT DETAILS" SHEET.

* CLASS III SURFACE PREPARATION IS NOT ANTICIPATED. A TOKEN PAY ITEM IS INDICATED FOR PRICING PURPOSES IN THE EVENT UNANTICIPATED CLASS III AREAS ARE ENCOUNTERED.



PLAN OF SPANS A, B, C AND D

APPROX. CLASS II SURFACE PREPARATION
 EPOXY RESIN INJECTION (ERI)

PROJECT NO. I-5823
DAVIE COUNTY
BRIDGE NO. 18

DocuSigned by:
Krishna P. Sedai
EAF794150BF4B7

11/20/2018

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF SPANS

DRAWN BY : M. G. SHAIKH DATE : .09/2018
CHECKED BY : REZA KOUCHEKI DATE : .09/2018

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S3-5
2			4			TOTAL SHEETS 25




AS-BUILT REPAIR QUANTITY TABLE				
UNDERSIDE OF DECK REPAIRS				
SHOTCRETE REPAIRS	ESTIMATE		ACTUAL	
	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	41.0	13.7		
UNDERSIDE OF OVERHANG	7.9	2.6		
EXTERIOR DIAPHRAGMS	2.4	0.8		
OTHER REPAIR	ESTIMATE		ACTUAL	
UNDERSIDE EPOXY RESIN INJECTION	60.0 LF			
DIAPHRAGM EPOXY RESIN INJECTION	0.0 LF			

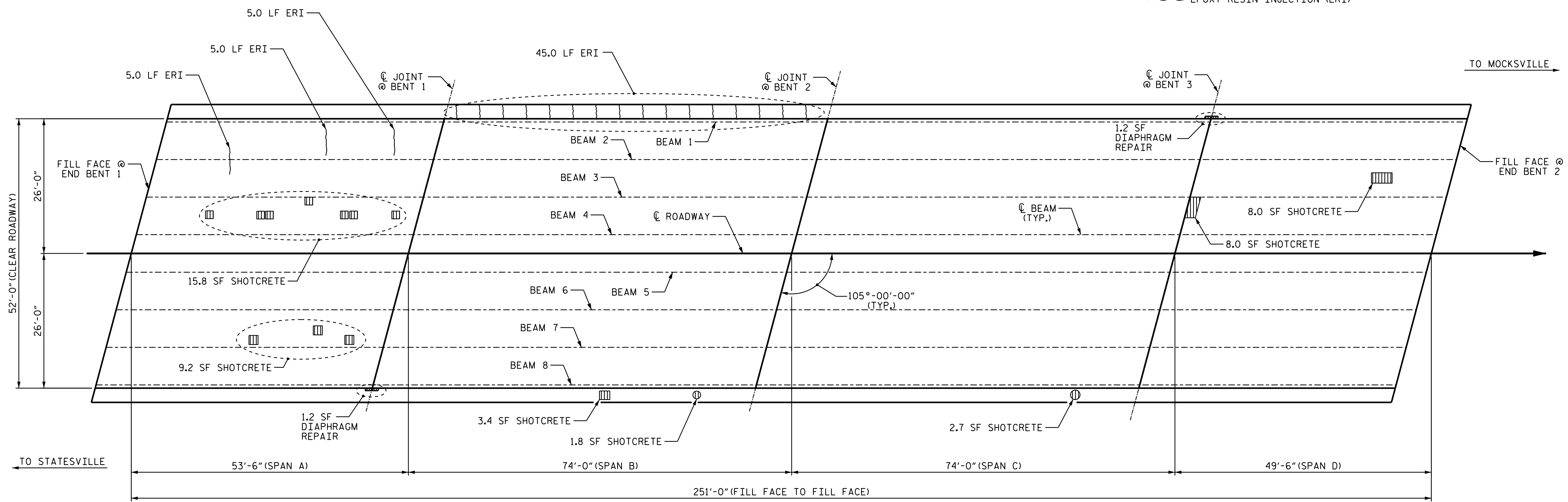
NOTES:

REPAIR LOCATIONS AND ESTIMATED QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATIONS AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE AS-BUILT REPAIR QUANTITY TABLE.

FOR UNDERSIDE OF DECK AND DIAPHRAGM REPAIRS, SEE "OVERHANG AND DIAPHRAGM REPAIRS DETAILS" SHEET.

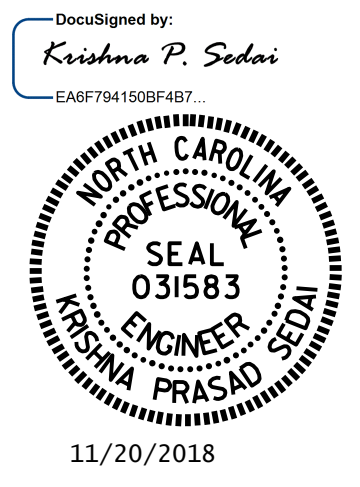
VALUES REPRESENT ESTIMATED UNDERSIDE OF DECK REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MINIMUM OF 1" BEHIND REBAR AND MINIMUM OF 2" CLEAR TO SAWCUT. SEE REPAIR DETAILS.

-  UNDERSIDE REPAIR
-  DIAPHRAGM REPAIR
-  EPOXY RESIN INJECTION (ERI)



PLAN

PROJECT NO. I-5823
DAVIE COUNTY
 BRIDGE NO. 18

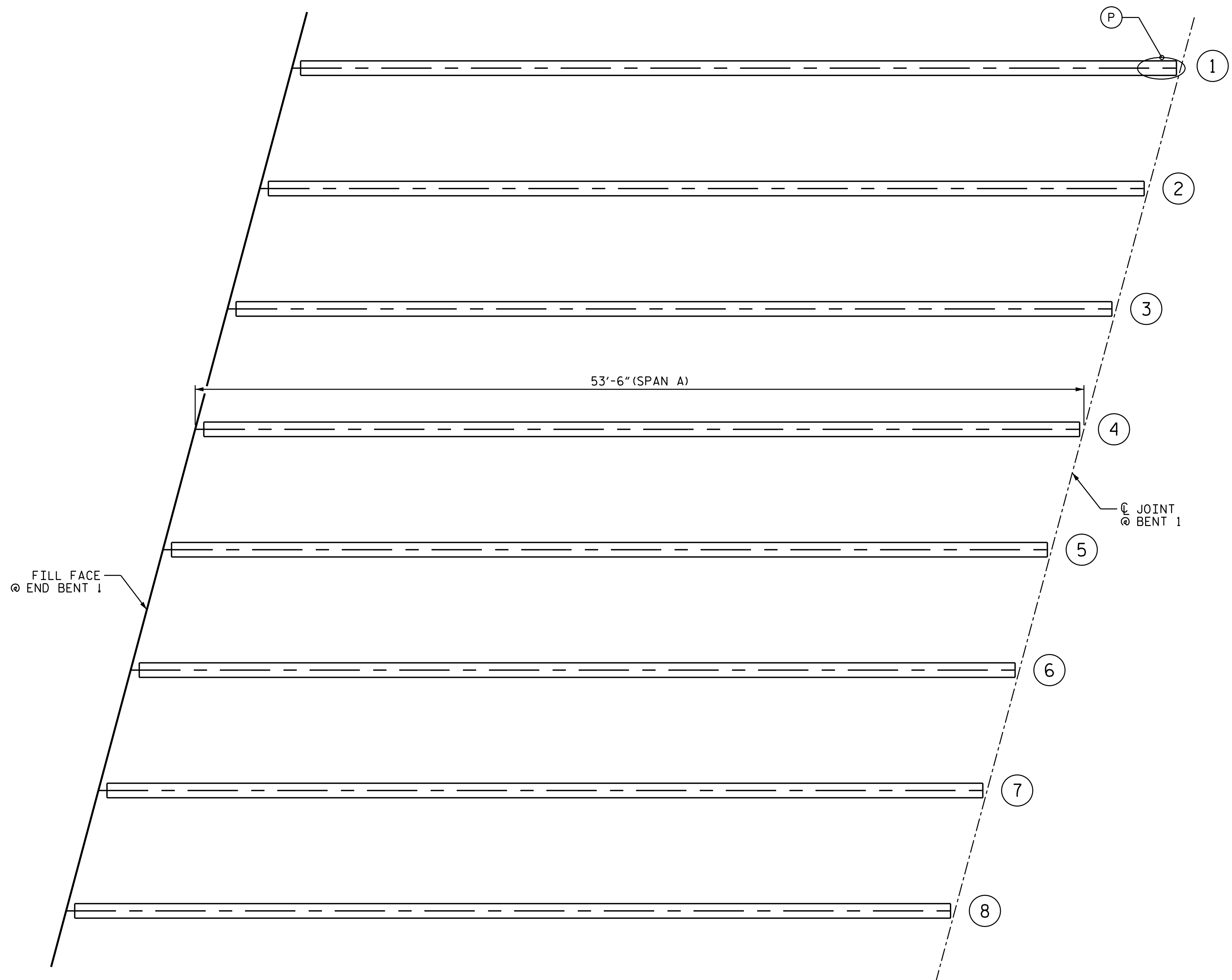


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**PLAN OF SPANS
 (UNDERSIDE)**

DRAWN BY : M. G. SHAIKH DATE : 04/2018
 CHECKED BY : REZA KOUICHEKI DATE : 08/2018

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S3-6
2			4			TOTAL SHEETS 25



**SPAN A
BEAM REPAIR LOCATIONS**
(OTHER LOCATIONS MAY EXIST, SEE NOTES)

NOTES
FOR BEAM PLATING REPAIR, SEE "BEAM PLATING REPAIR DETAILS" SHEET.

THE LOCATIONS AND DIMENSIONS OF THE AREAS FOR REPAIR ARE BASED ON THE BEST INFORMATION AVAILABLE. THE CONTRACTOR, IN CONJUNCTION WITH THE ENGINEER, SHALL VERIFY THE LOCATION AND EXTENT OF REPAIR AREAS PRIOR TO STEEL FABRICATION. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ENTER THE ACTUAL QUANTITIES INTO THE AS-BUILT REPAIR QUANTITY TABLE.

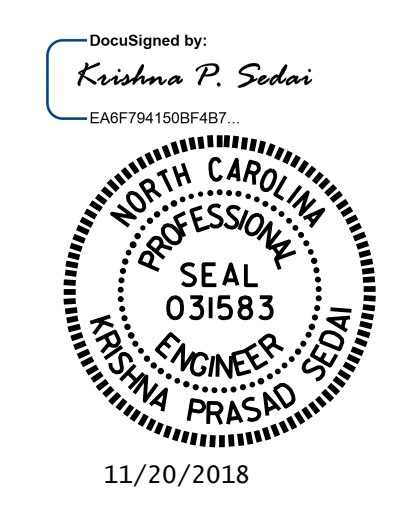
- ① BEAM NUMBER
- Ⓟ PLATING REPAIR
- Ⓢ STIFFENER REPAIR
- Ⓣ DIAPHRAGM REPAIR

PROJECT NO. I-5823
DAVIE COUNTY
BRIDGE NO. 18

SHEET 1 OF 4

BEAM REPAIR QUANTITY TABLE					
PLATING REPAIR		STIFFENER REPAIR		DIAPHRAGM REPAIR	
LBS.		LBS.		LBS.	
ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL
98		0		0	

ANTICIPATED BEAM REPAIR LOCATIONS							
SPAN	BEAM	BENT	LOCATION	DIM "A"	DIM "B"	DIM "C"	DIM "G"
A	1	BENT 1	BOTT. FLANGE		1'-7"		5 3/16"
A	1	BENT 1	BOTT. FLANGE		1'-7"		5 3/16"
A	1	BENT 1	WEB	1'-1"	2'-8"		
A	1	BENT 1	WEB	1'-1"	2'-8"		



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**BEAM REPAIR LOCATIONS
(SPAN A)**

DRAWN BY : M. G. SHAIKH DATE : 08/2018
CHECKED BY : REZA KOUCHEKI DATE : 08/2018

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

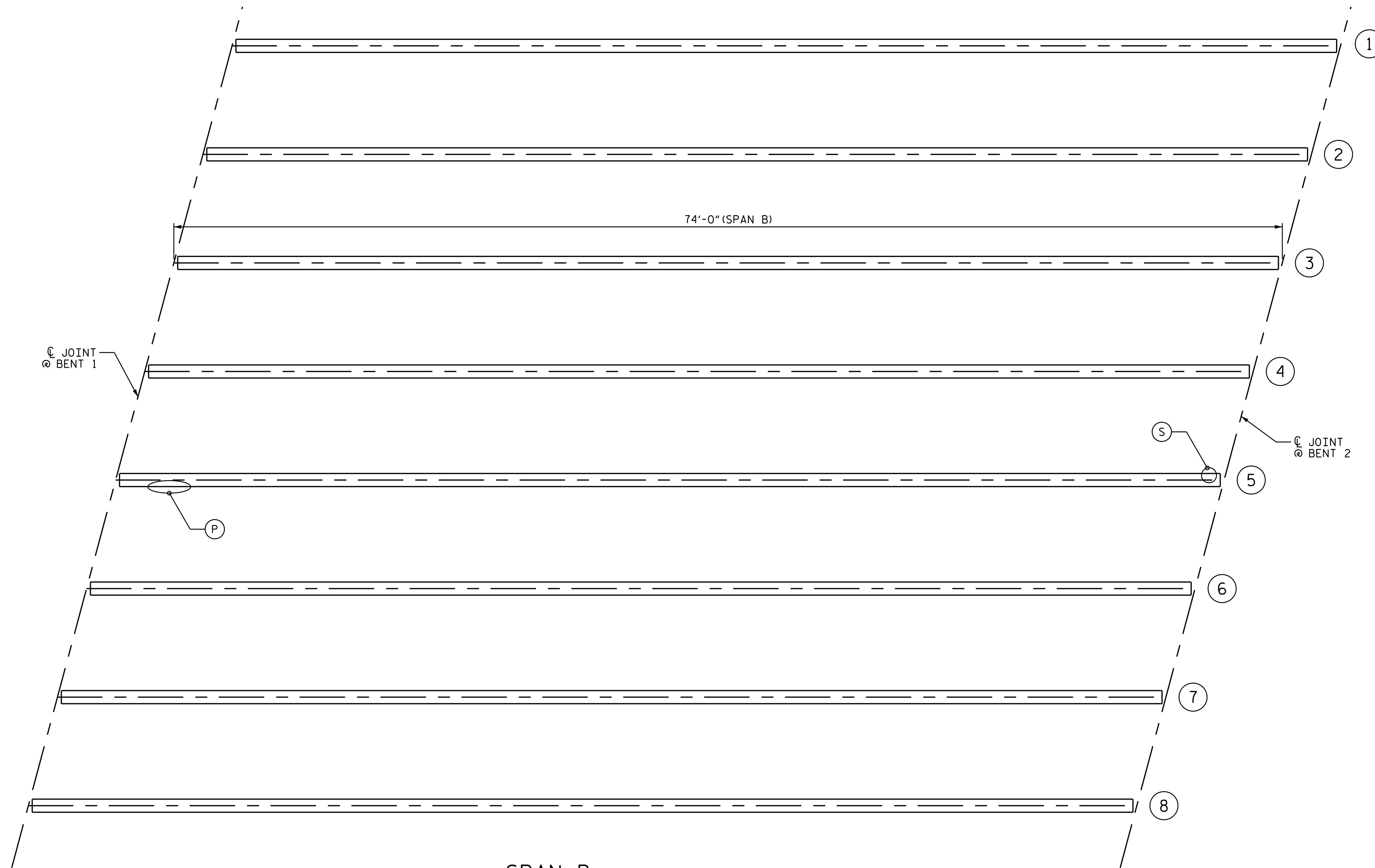
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S3-7
2			4			TOTAL SHEETS 25

NOTES

FOR BEAM PLATING REPAIR, SEE 'BEAM PLATING REPAIR DETAILS' SHEET.

THE LOCATIONS AND DIMENSIONS OF THE AREAS FOR REPAIR ARE BASED ON THE BEST INFORMATION AVAILABLE. THE CONTRACTOR, IN CONJUNCTION WITH THE ENGINEER, SHALL VERIFY THE LOCATION AND EXTENT OF REPAIR AREAS PRIOR TO STEEL FABRICATION. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ENTER THE ACTUAL QUANTITIES INTO THE AS-BUILT REPAIR QUANTITY TABLE.

- ① BEAM NUMBER
- Ⓟ PLATING REPAIR
- Ⓢ STIFFENER REPAIR
- Ⓣ DIAPHRAGM REPAIR



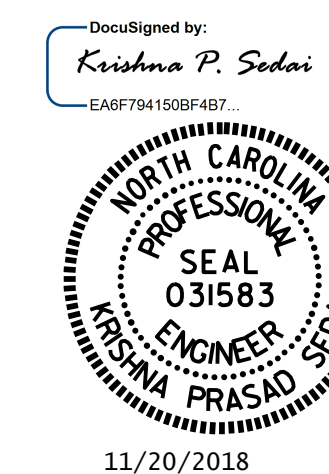
**SPAN B
BEAM REPAIR LOCATIONS**
(OTHER LOCATIONS MAY EXIST, SEE NOTES)

PROJECT NO. I-5823
DAVIE COUNTY
BRIDGE NO. 18

SHEET 2 OF 4

BEAM REPAIR QUANTITY TABLE					
PLATING REPAIR		STIFFENER REPAIR		DIAPHRAGM REPAIR	
LBS.		LBS.		LBS.	
ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL
20		6		0	

ANTICIPATED BEAM REPAIR LOCATIONS							
SPAN	BEAM	BENT	LOCATION	DIM "A"	DIM "B"	DIM "C"	DIM "G"
B	5	BENT 2	STIFFNER	9"			-
B	5	BENT 1	BOTT. FLANGE		2'-3"		5 3/16"



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**BEAM REPAIR LOCATIONS
(SPAN B)**

DRAWN BY : M. G. SHAIKH DATE : 08/2018
CHECKED BY : REZA KOUCHEKI DATE : 08/2018

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

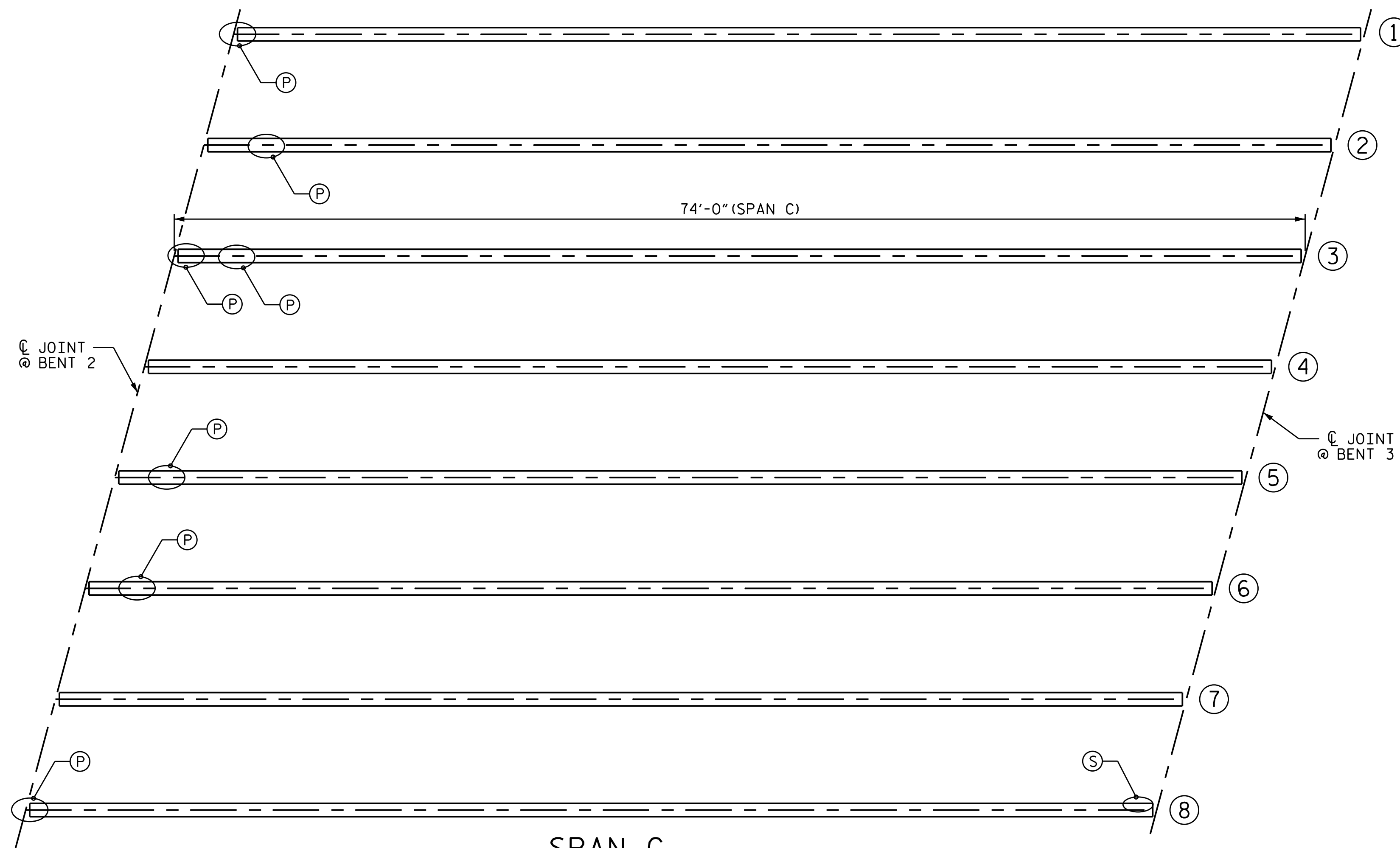
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S3-8
2			4			TOTAL SHEETS 25

NOTES

FOR BEAM PLATING REPAIR, SEE "BEAM PLATING REPAIR DETAILS" SHEET.

THE LOCATIONS AND DIMENSIONS OF THE AREAS FOR REPAIR ARE BASED ON THE BEST INFORMATION AVAILABLE. THE CONTRACTOR, IN CONJUNCTION WITH THE ENGINEER, SHALL VERIFY THE LOCATION AND EXTENT OF REPAIR AREAS PRIOR TO STEEL FABRICATION. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ENTER THE ACTUAL QUANTITIES INTO THE AS-BUILT REPAIR QUANTITY TABLE.

- ① BEAM NUMBER
- Ⓟ PLATING REPAIR
- Ⓢ STIFFENER REPAIR
- Ⓣ DIAPHRAGM REPAIR



**SPAN C
BEAM REPAIR LOCATIONS**

(OTHER LOCATIONS MAY EXIST, SEE NOTES)

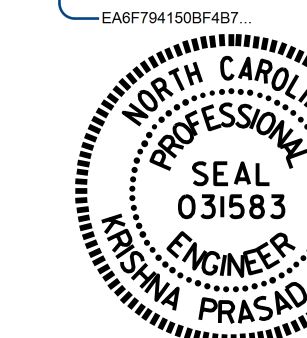
BEAM REPAIR QUANTITY TABLE					
PLATING REPAIR		STIFFENER REPAIR		DIAPHRAGM REPAIR	
LBS.		LBS.		LBS.	
ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL
272		6		0	

ANTICIPATED BEAM REPAIR LOCATIONS									
SPAN	BEAM	BENT	LOCATION	DIM "A"	DIM "B"	DIM "C"	DIM "G"	DIM "E"	DIM "F"
C	1	BENT 2	WEB	-	1'-6"	-	-	-	1'-5"
C	1	BENT 2	WEB	-	1'-6"	-	-	-	1'-5"
C	2	BENT 2	WEB	7"	3'-9"	-	-	-	-
C	2	BENT 2	WEB	7"	3'-9"	-	-	-	-
C	3	BENT 2	BOTT. FLANGE	-	1'-6"	-	5 ³ / ₁₆ "	-	-
C	3	BENT 2	BOTT. FLANGE	-	1'-6"	-	5 ³ / ₁₆ "	-	-
C	3	BENT 2	WEB	7"	3'-9"	-	-	-	-
C	3	BENT 2	WEB	7"	3'-9"	-	-	-	-
C	5	BENT 2	WEB	6"	1'-3"	-	-	-	-
C	5	BENT 2	WEB	6"	1'-3"	-	-	-	-
C	6	BENT 2	WEB	8"	3'-3"	-	-	-	-
C	6	BENT 2	WEB	8"	3'-3"	-	-	-	-
C	8	BENT 2	WEB	-	9"	-	-	5"	-
C	8	BENT 2	WEB	-	9"	-	-	5"	-
C	8	BENT 3	STIFFNER BOTT.	9"	-	-	-	-	-

PROJECT NO. I-5823
DAVIE COUNTY
 BRIDGE NO. 18

SHEET 3 OF 4

DocuSigned by:
 Krishna P. Sedai
 EA6F7941508F4B7



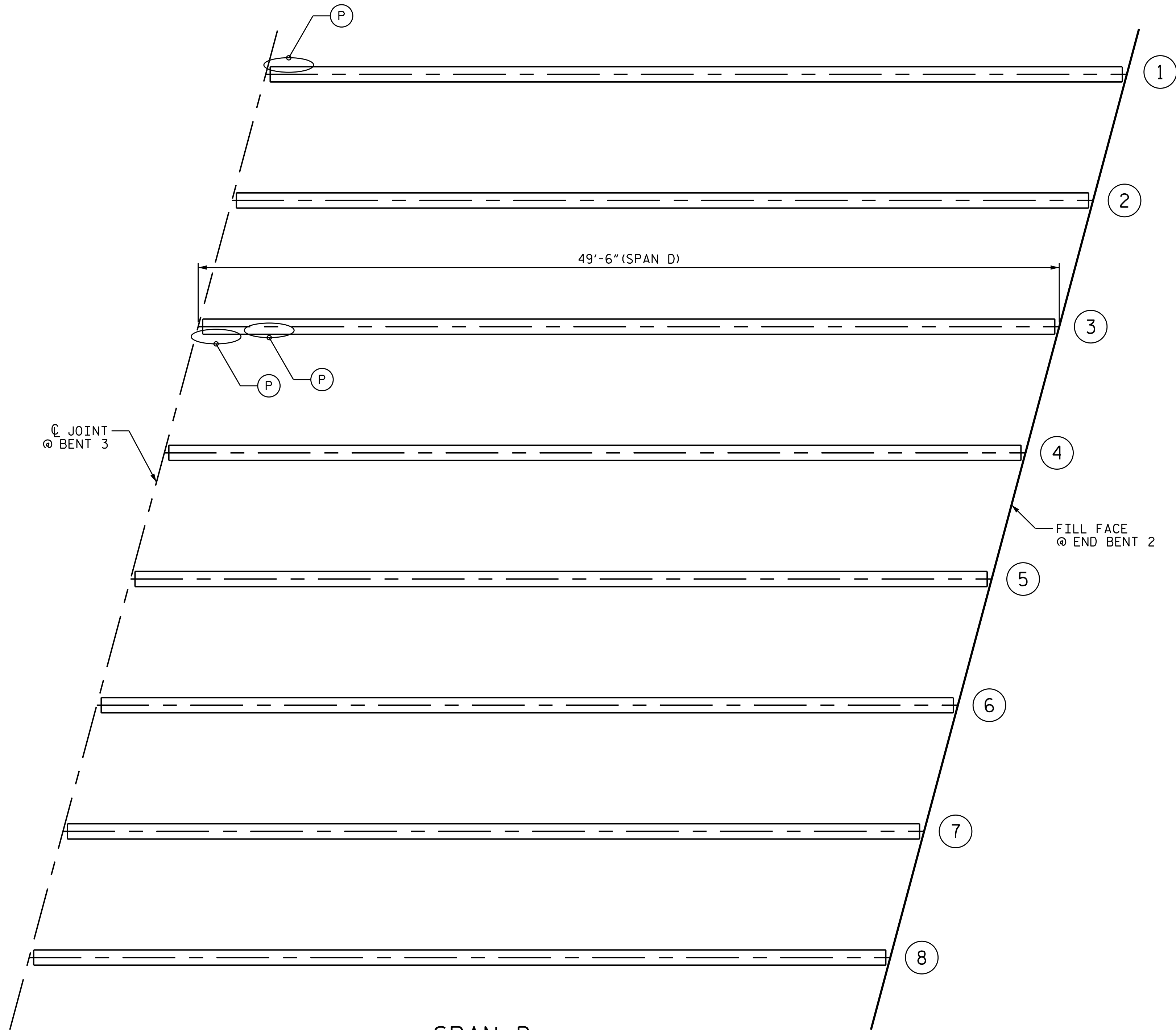
11/20/2018

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**BEAM REPAIR
 LOCATIONS
 (SPAN C)**

DRAWN BY : M. G. SHAIKH DATE : 08/2018
 CHECKED BY : REZA KOUCHEKI DATE : 08/2018

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S3-9
2			4			TOTAL SHEETS 25



**SPAN D
BEAM REPAIR LOCATIONS**
(OTHER LOCATIONS MAY EXIST, SEE NOTES)

NOTES

FOR BEAM PLATING REPAIR, SEE 'BEAM PLATING REPAIR DETAILS' SHEET.

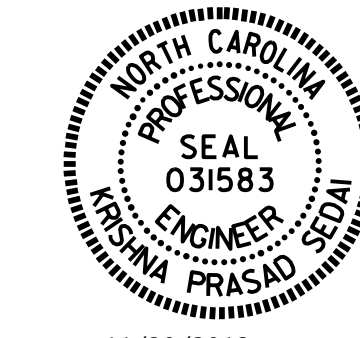
THE LOCATIONS AND DIMENSIONS OF THE AREAS FOR REPAIR ARE BASED ON THE BEST INFORMATION AVAILABLE. THE CONTRACTOR, IN CONJUNCTION WITH THE ENGINEER, SHALL VERIFY THE LOCATION AND EXTENT OF REPAIR AREAS PRIOR TO STEEL FABRICATION. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ENTER THE ACTUAL QUANTITIES INTO THE AS-BUILT REPAIR QUANTITY TABLE.

- ① BEAM NUMBER
- Ⓟ PLATING REPAIR
- Ⓢ STIFFENER REPAIR
- Ⓣ DIAPHRAGM REPAIR

PROJECT NO. I-5823
DAVIE COUNTY
 BRIDGE NO. 18

SHEET 4 OF 4

DocuSigned by:
Krishna P. Sedai
 EAF67941508F4B7...



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**BEAM REPAIR
 LOCATIONS
 (SPAN D)**

BEAM REPAIR QUANTITY TABLE					
PLATING REPAIR		STIFFENER REPAIR		DIAPHRAGM REPAIR	
LBS.		LBS.		LBS.	
ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL
32		0		0	

ANTICIPATED BEAM REPAIR LOCATIONS								
SPAN	BEAM	BENT	LOCATION	DIM "A"	DIM "B"	DIM "C"	DIM "F"	DIM "G"
D	1	BENT 3	WEB		1'-7"		10"	-
D	3	BENT 3	BOTT. FLANGE		1'-3"		-	5 3/8"
D	3	BENT 3	WEB	9"	6"		-	-

DRAWN BY : M. G. SHAIKH DATE : 08/2018
 CHECKED BY : REZA KOUCHEKI DATE : 08/2018

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-10
1			3			TOTAL SHEETS
2			4			25

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NOTES

FOAM JOINTS SHALL BE INSTALLED AS PER MANUFACTURER'S RECOMMENDATIONS.
 FOR FOAM JOINT SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.
 THE INSTALLED FOAM JOINTS SHALL BE WATER TIGHT.
 FOR ELASTOMERIC CONCRETE FOR PRESERVATION, SEE SPECIAL PROVISIONS.

THE FOAM JOINTS SHALL MEET THE MANUFACTURER'S RECOMMENDATION FOR THE SIZE OF OPENING ON THE PLANS, AND ACCOMMODATE THE MINIMUM EXPANSION SHOWN ON THE PLANS.

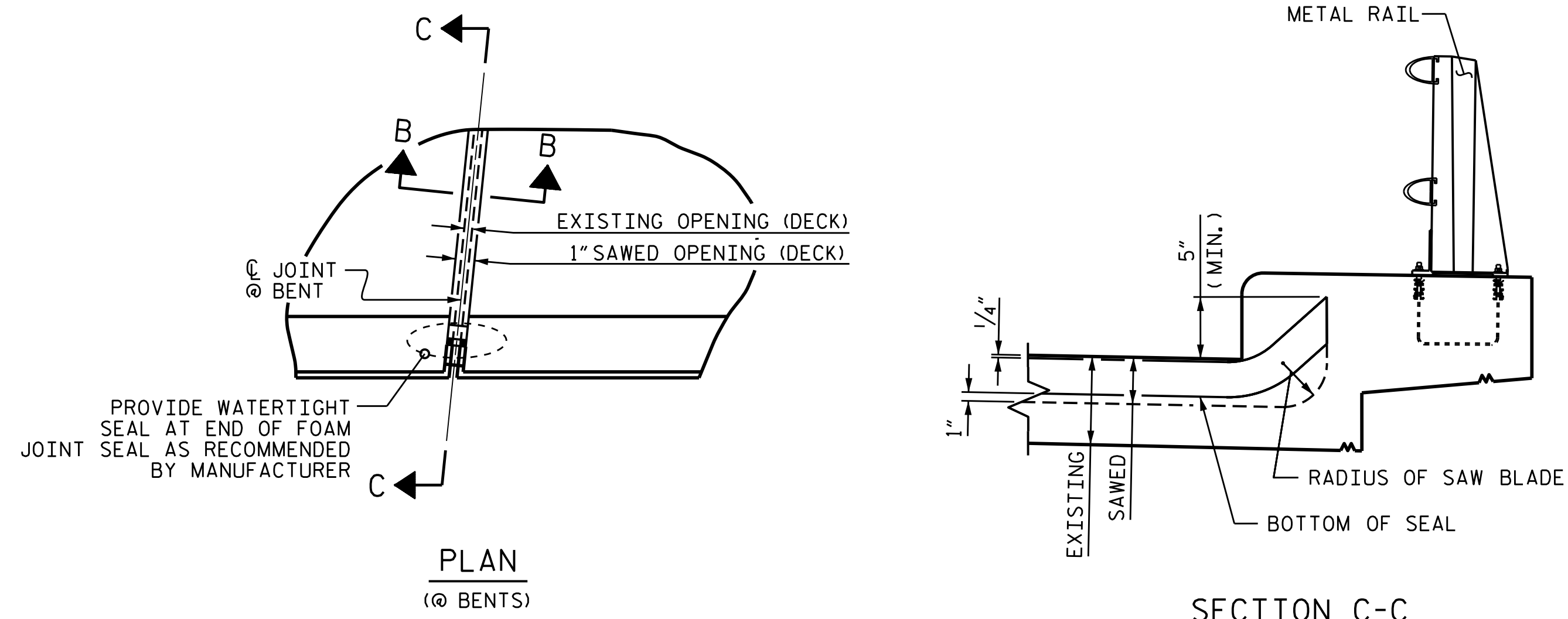
THE CONTRACTOR WILL NOT BE PERMITTED TO FORM THE JOINTS IN LIEU OF SAWING THE JOINT.

THE MANUFACTURER IS TO PROVIDE THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE FOAM JOINT SEAL BASED ON JOINT OPENINGS.

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

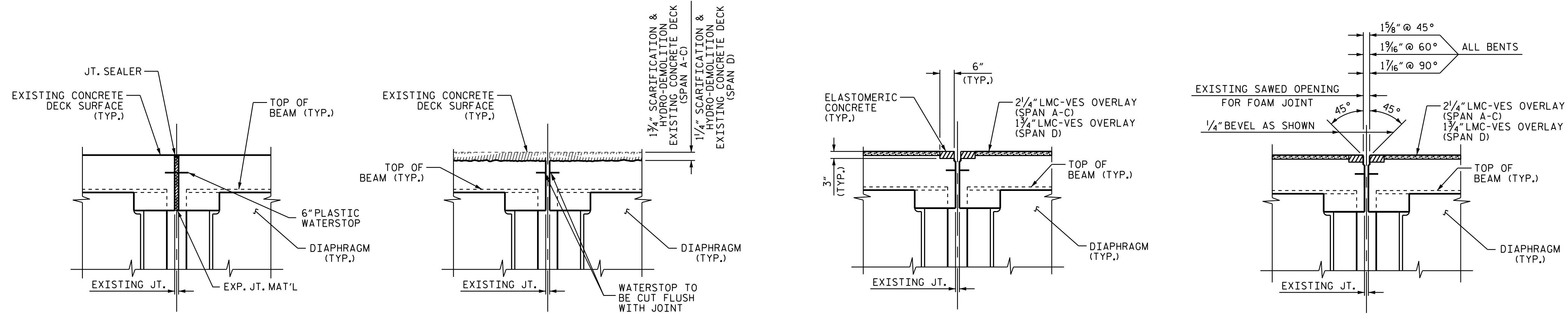
HYDRO-DEMOLITION OR EXCAVATION OF CONCRETE AT THE EXISTING JOINT SHALL RESULT IN THE BOTTOM OF THE EXCAVATION BEING REASONABLY FLAT AND LEVEL, TO PROVIDE SUFFICIENT SUBSTRATE FOR PLACEMENT AND SUPPORT OF ELASTOMERIC OR REPAIR CONCRETE. DEMOLISH BRIDGE JOINT TO THE NECESSARY DEPTH, SUCH THE ELASTOMERIC CONCRETE SHALL BE FOUNDED ON CONCRETE OR REPAIR CONCRETE SUBSTRATE, NOT OVERLAY MATERIAL.

IF THE EMBEDDED PORTION OF THE EXISTING PLASTIC WATERSTOP IS EXPOSED DURING REMOVAL OF UNSOUND CONCRETE, OR IF UNSOUND CONCRETE IS REMOVED WITHIN 2" OF THE WATERSTOP, THE ENTIRE CONCRETE DEPTH TO THE WATERSTOP SHALL BE REMOVED.



PLAN
 (@ BENTS)
JOINT SEAL DETAILS

SECTION C-C



EXISTING JOINT

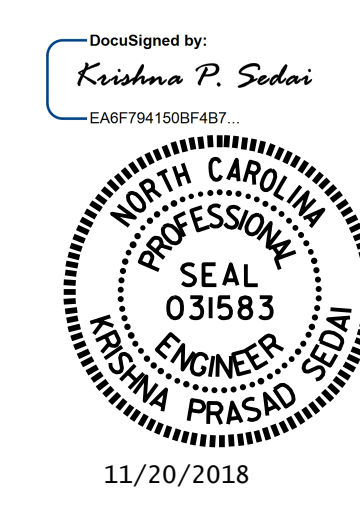
EXISTING JOINT AFTER DECK SCARIFICATION

PROPOSED JOINT PRE-SAWED

PROPOSED FOAM JOINT SEAL

SECTION B-B
**JOINT INSTALLATION SEQUENCE
 AT BENTS**

QUANTITIES	
BRIDGE JOINT DEMOLITION	162.0 SQ. FT.
CONCRETE WORK FOR JOINT REPLACEMENT	162.0 SQ. FT.
ELASTOMERIC CONCRETE	40.5 CU. FT.



PROJECT NO. I-5823
DAVIE COUNTY
 BRIDGE NO. 18

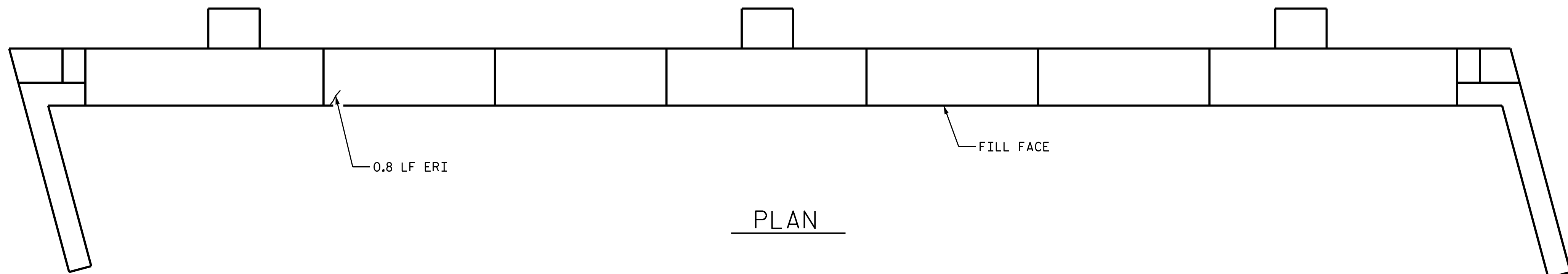
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

JOINT DETAILS

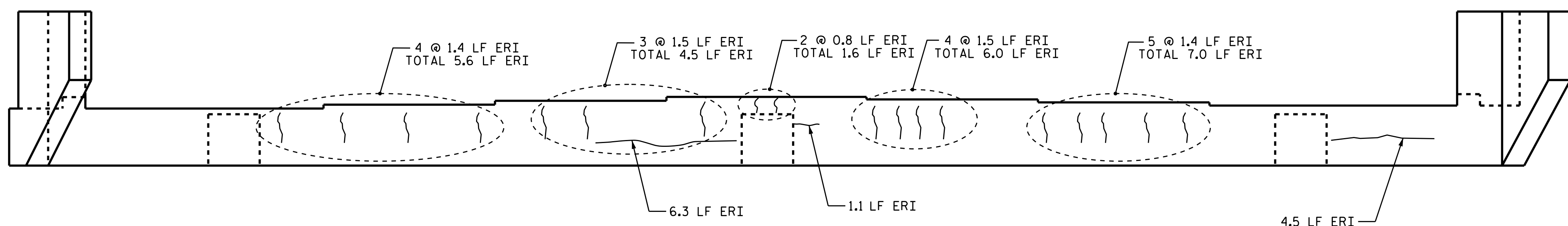
DRAWN BY : M. G. SHAIKH DATE : 09/2018
 CHECKED BY : REZA KOUCHEKI DATE : 09/2018

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-11
1			3			TOTAL SHEETS
2			4			25

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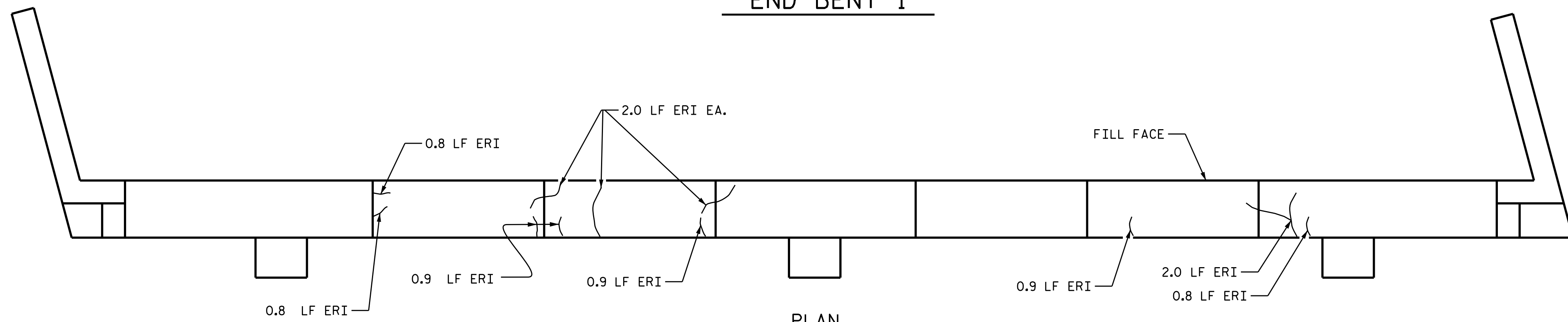


PLAN

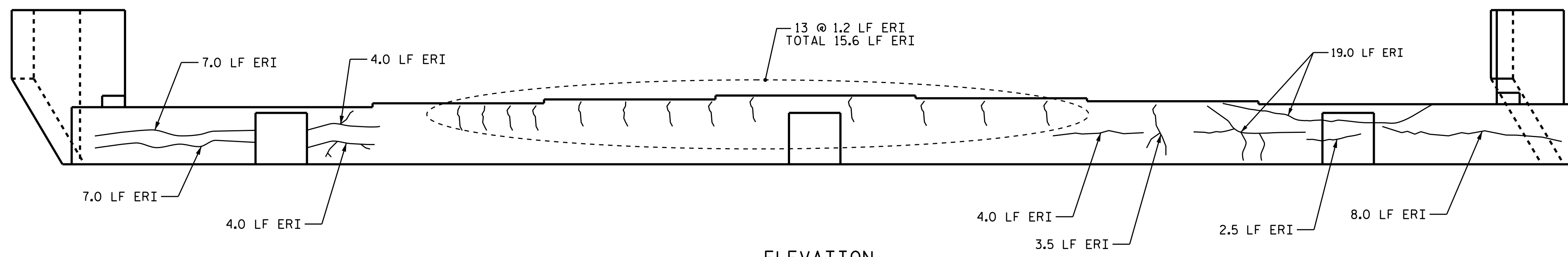


ELEVATION

END BENT 1



PLAN



ELEVATION

END BENT 2

- CONCRETE REPAIR AREA
- SHOTCRETE REPAIR AREA
- EPOXY RESIN INJECTION (ERI)

DocuSigned by:
Krishna P. Sedai
 EAF6794150BF4B7

 11/20/2018

AS-BUILT REPAIR QUANTITY TABLE				
END BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
CURTAIN WALL	0.0	0.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CURTAIN WALL	0.0			
CAP	37.4			
EPOXY COATING	SQ. FT.		SQ. FT.	
TOP OF END BENT CAP	150.0			
CURTAIN WALL	0.0			

AS-BUILT REPAIR QUANTITY TABLE				
END BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
CURTAIN WALL	0.0	0.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CURTAIN WALL	0.0			
CAP	83.7			
EPOXY COATING	SQ. FT.		SQ. FT.	
TOP OF END BENT CAP	150.0			
CURTAIN WALL	0.0			

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MINIMUM OF 1" BEHIND REBAR AND MINIMUM 2" CLEARANCE TO SAWCUT. FOR REPAIR DETAILS, SEE "TYPICAL CAP AND COLUMN REPAIR DETAILS" SHEET.

NOTES

REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN BASED ON THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ENTER THE ACTUAL QUANTITIES INTO THE AS-BUILT REPAIR QUANTITY TABLE.

CONCRETE REPAIRS MAY BE SUBSTITUTED IN LIEU OF SHOTCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

FOR CAP REPAIRS, SEE "TYPICAL CAP, COLUMN, AND PEDESTAL REPAIR DETAILS" SHEET.

CLEAN AND REMOVE DEBRIS FROM THE TOP OF THE CAP AND APPLY EPOXY PROTECTIVE COATING TO THE TOP SURFACE OF THE CAP. THE CONTRACTOR SHALL NOT COAT THE AREA OF THE CAP BENEATH THE MASONRY PLATES. FOR EPOXY COATING, SEE SPECIAL PROVISIONS.

CLEAN AND PAINT ALL BEARINGS.

PROJECT NO. I-5823
DAVIE COUNTY
 BRIDGE NO. 18

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

 END BENTS 1 & 2

DRAWN BY : M. G. SHAIKH DATE : 09/2018
 CHECKED BY : REZA KOUCHEKI DATE : 09/2018

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S3-12
2			4			TOTAL SHEETS 25

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AS-BUILT REPAIR QUANTITY TABLE

END BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
CURTAIN WALL	1.7	0.9		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CURTAIN WALL	5.0			
CAP	0.0			
EPOXY COATING	SQ. FT.		SQ. FT.	
TOP OF END BENT CAP	0.0			
CURTAIN WALL	0.0			

AS-BUILT REPAIR QUANTITY TABLE

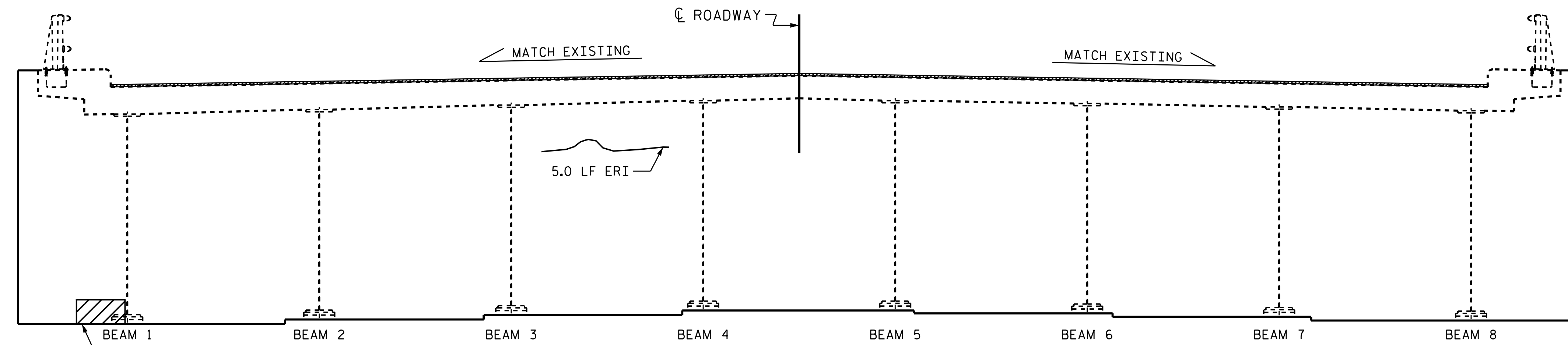
END BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
CURTAIN WALL	12.5	6.3		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CURTAIN WALL	0.0			
CAP	0.0			
EPOXY COATING	SQ. FT.		SQ. FT.	
TOP OF END BENT CAP	0.0			
CURTAIN WALL	0.0			

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MINIMUM OF 1" BEHIND REBAR AND MINIMUM 2" CLEARANCE TO SAWCUT. FOR REPAIR DETAILS, SEE "TYPICAL CAP AND COLUMN REPAIR DETAILS" SHEET.

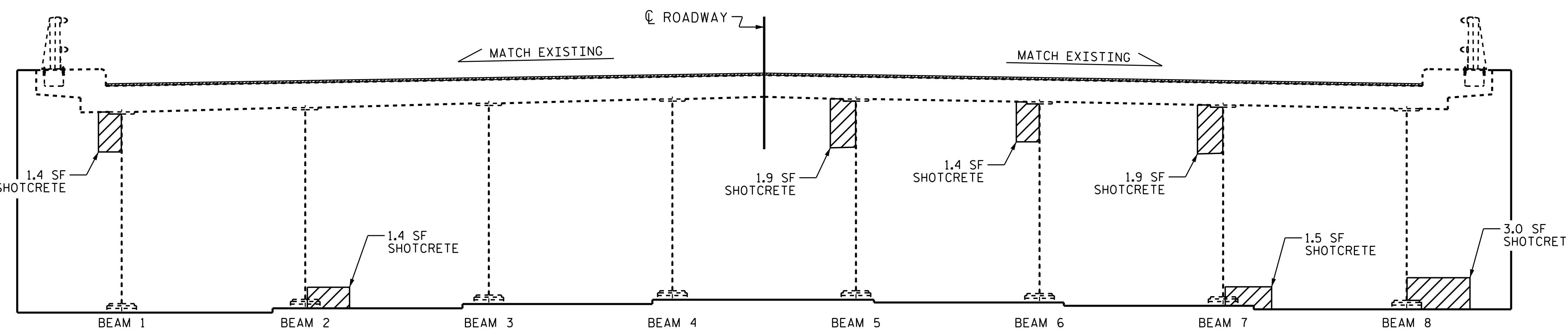
NOTES

REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN BASED ON THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ENTER THE ACTUAL QUANTITIES INTO THE AS-BUILT REPAIR QUANTITY TABLE.

CONCRETE REPAIRS MAY BE SUBSTITUTED IN LIEU OF SHOTCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

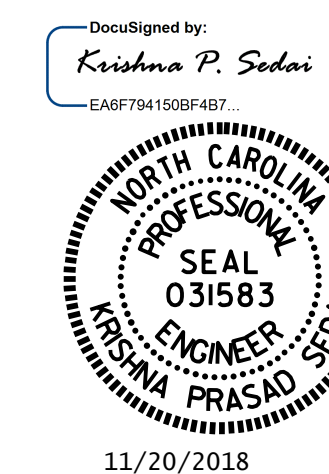


TYPICAL SECTION @ END BENT 1



TYPICAL SECTION @ END BENT 2

- CONCRETE REPAIR AREA
- SHOTCRETE REPAIR AREA
- EPOXY RESIN INJECTION (ERI)



PROJECT NO. I-5823
DAVIE COUNTY
 BRIDGE NO. 18

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

TYPICAL SECTION
 AT END BENT 1 &
 END BENT 2 WITH
 CURTAIN WALL

DRAWN BY : M. G. SHAIKH DATE : 09/2018
 CHECKED BY : REZA KOUCHEKI DATE : 09/2018

NO.	REVISIONS			SHEET NO.
	BY:	DATE:	DATE:	
1				S3-13
2				TOTAL SHEETS 25

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NOTES:

REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

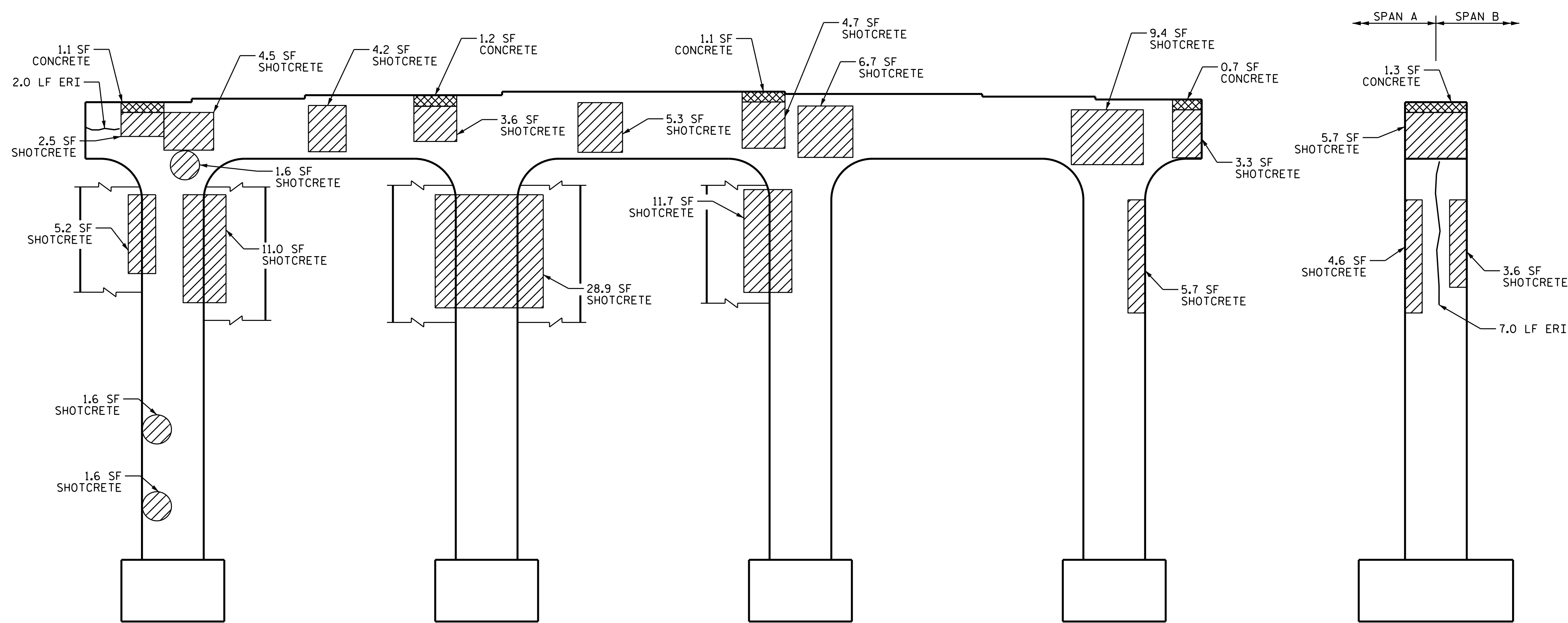
CLEAN AND REMOVE DEBRIS FROM TOP OF CAP AND APPLY EPOXY PROTECTIVE COATING. EPOXY COATING SHALL BE APPLIED TO THE TOP FACE OF THE CAP. THE CONTRACTOR SHALL NOT COAT THE AREA OF THE CAP BENEATH THE MASONRY PLATES. FOR EPOXY COATING, SEE SPECIAL PROVISIONS.

FOR REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN AND PEDESTAL REPAIR DETAILS" SHEET.

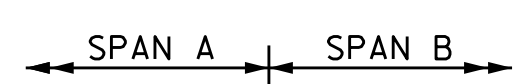
CONCRETE REPAIRS MAY BE SUBSTITUTED IN LIEU OF SHOTCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.



TOP OF CAP



ELEVATION



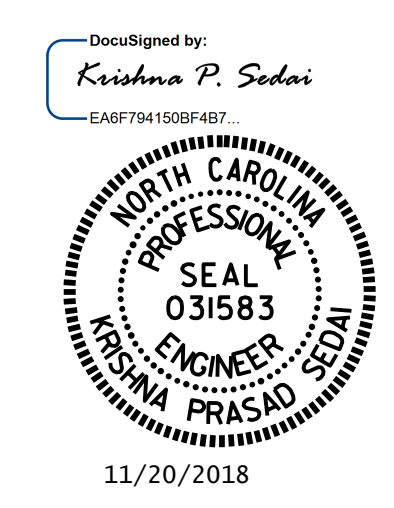
END VIEW

AS-BUILT REPAIR QUANTITY TABLE				
BENT 1 SPAN A FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	51.5	25.8		
COLUMN	73.9	37.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	5.4	2.7		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	2.0			
COLUMN	7.0			
EPOXY COATING	SQ. FT.		SQ. FT.	
TOP OF BENT CAP	163			

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MINIMUM OF 1" BEHIND REBAR AND MINIMUM 2" CLEARANCE TO SAWCUT. FOR REPAIR DETAILS, SEE "TYPICAL CAP AND COLUMN REPAIR DETAILS" SHEET.

- CONCRETE REPAIR AREA
- SHOTCRETE REPAIR AREA
- EPOXY RESIN INJECTION (ERI)

PROJECT NO. I-5823
 _____ DAVIE COUNTY
 BRIDGE NO. 18



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**BENT 1
 SPAN A FACE**

DRAWN BY : M. G. SHAIKH DATE : 09/2018
 CHECKED BY : REZA KOUCHEKI DATE : 09/2018

NO.	REVISIONS			SHEET NO.
	BY:	DATE:	NO.	
1			3	S3-14
2			4	

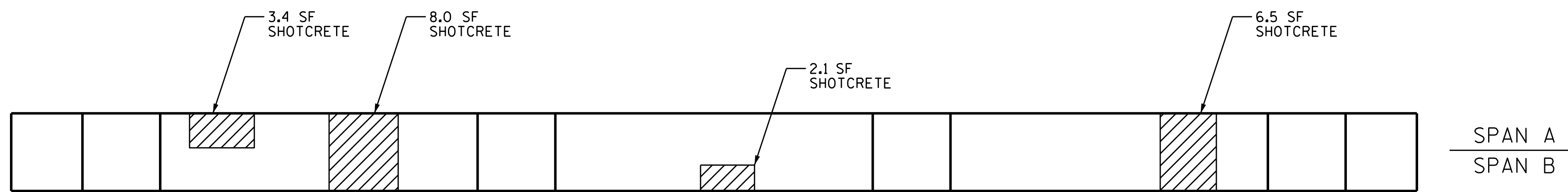
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NOTES:

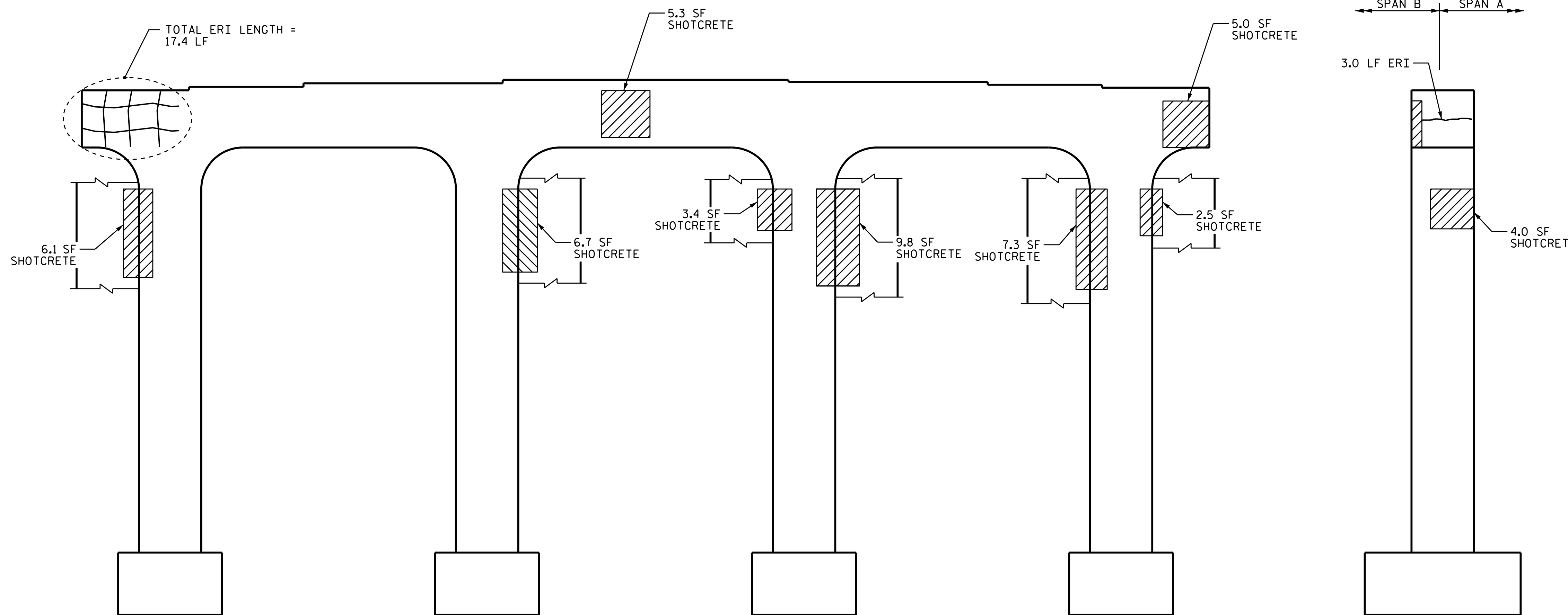
REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

FOR REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN AND PEDESTAL REPAIR DETAILS" SHEET.

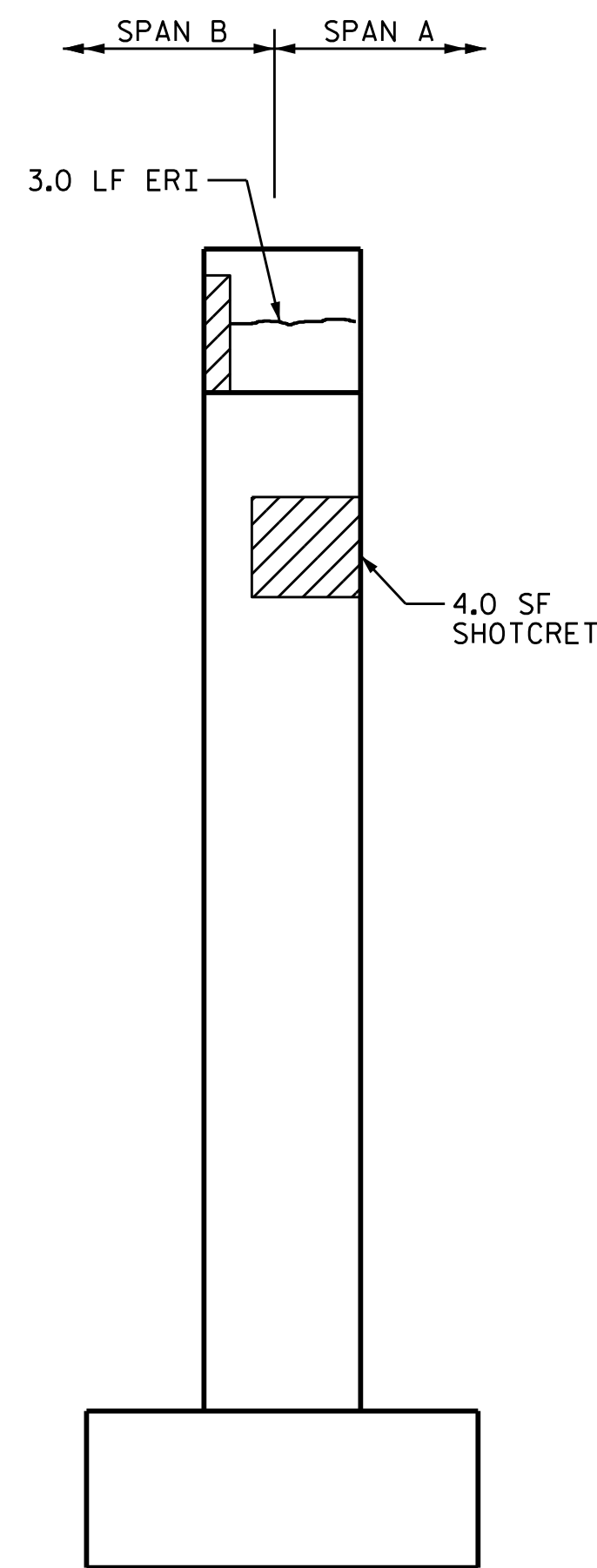
CONCRETE REPAIRS MAY BE SUBSTITUTED IN LIEU OF SHOTCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.



BOTTOM OF CAP



ELEVATION



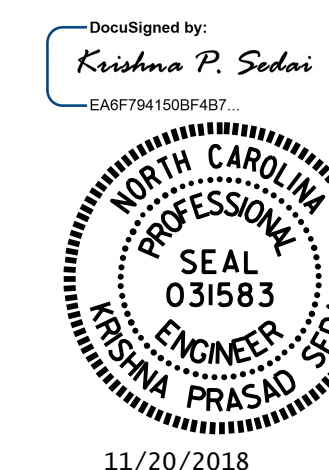
END VIEW

AS-BUILT REPAIR QUANTITY TABLE				
BENT 1 SPAN B FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SO. FT.	VOLUME CU. FT.	AREA SO. FT.	VOLUME CU. FT.
CAP	30.3	15.2		
COLUMN	39.8	19.9		
CONCRETE REPAIRS	AREA SO. FT.	VOLUME CU. FT.	AREA SO. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	20.4			
COLUMN	0.0			
EPOXY COATING	SO. FT.		SO. FT.	
TOP OF BENT CAP	0.0			

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MINIMUM OF 1" BEHIND REBAR AND MINIMUM 2" CLEARANCE TO SAWCUT. FOR REPAIR DETAILS, SEE "TYPICAL CAP AND COLUMN REPAIR DETAILS" SHEET.

- CONCRETE REPAIR AREA
- SHOTCRETE REPAIR AREA
- EPOXY RESIN INJECTION (ERI)

PROJECT NO. I-5823
DAVIE COUNTY
 BRIDGE NO. 18



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**BENT 1
 SPAN B FACE**

DRAWN BY : M. G. SHAIKH DATE : 09/2018
 CHECKED BY : REZA KOUCHEKI DATE : 09/2018

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S3-15
2			4			TOTAL SHEETS 25

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NOTES:

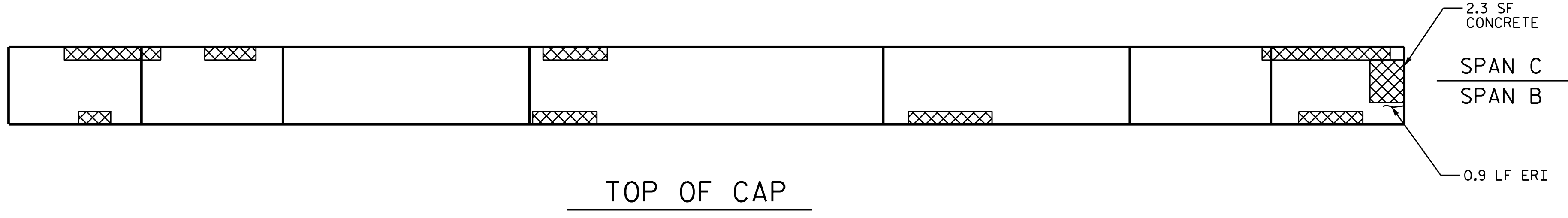
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CLEAN AND REMOVE DEBRIS FROM TOP OF CAP AND APPLY EPOXY PROTECTIVE COATING. EPOXY COATING SHALL BE APPLIED TO THE TOP FACE OF THE CAP, THE CONTRACTOR SHALL NOT COAT THE AREA OF THE CAP BENEATH THE MASONRY PLATES. FOR EPOXY COATING, SEE SPECIAL PROVISIONS.

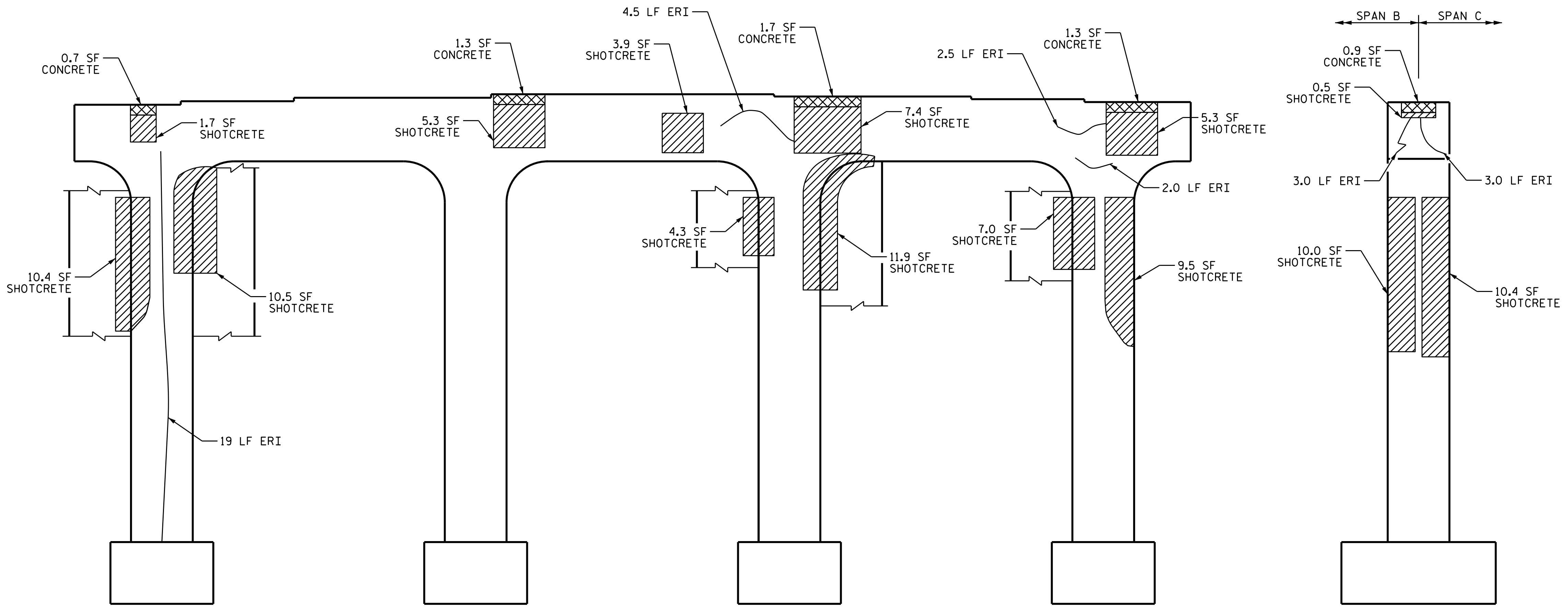
FOR REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN AND PEDESTAL REPAIR DETAILS" SHEET.

CONCRETE REPAIRS MAY BE SUBSTITUTED IN LIEU OF SHOTCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

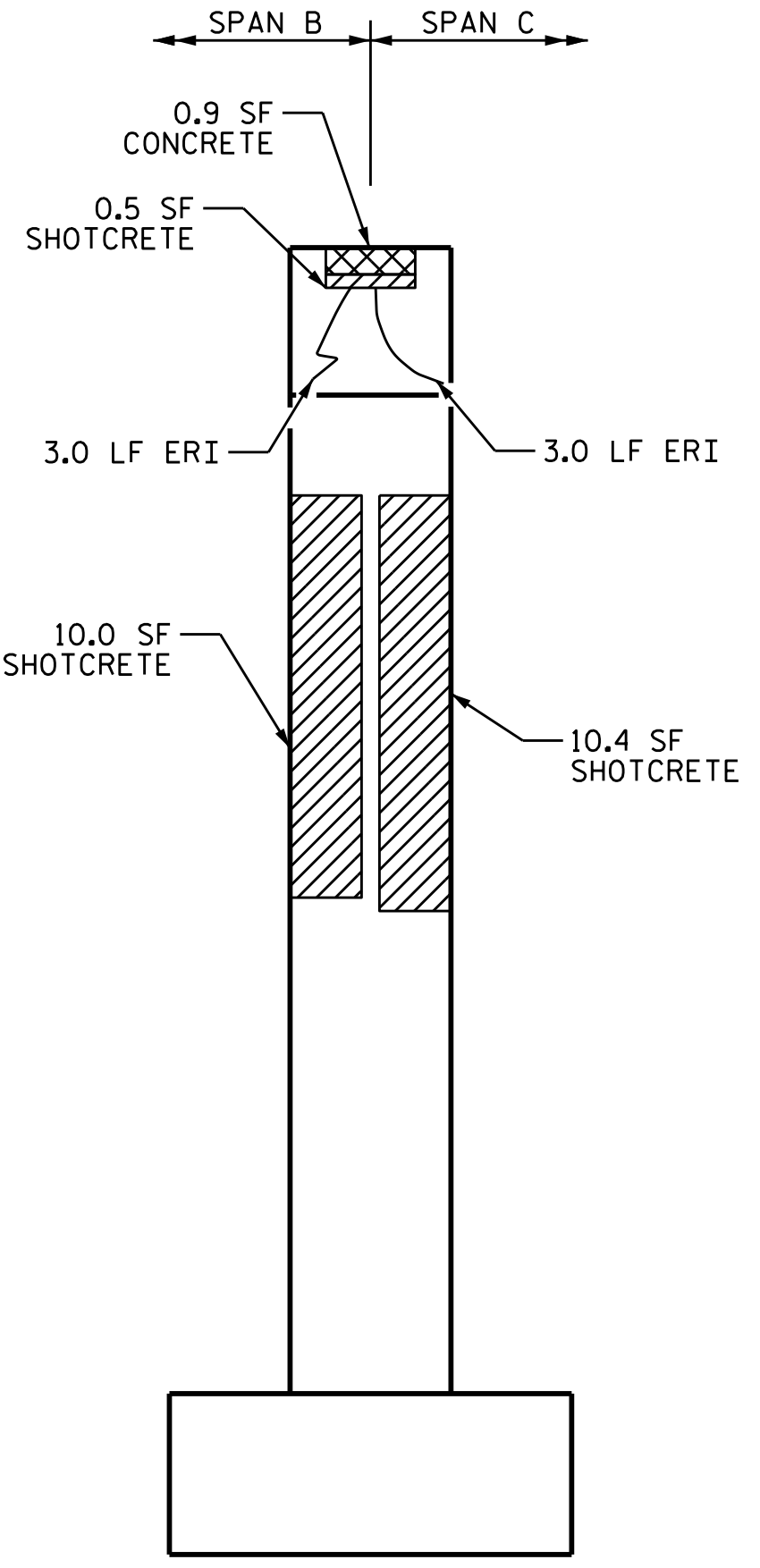
CONCRETE REPAIRS TO THE BENT CAP MAY REQUIRE BRIDGE JACKING. FOR BRIDGE JACKING, SEE "JACKING DETAILS" SHEET.



TOP OF CAP



ELEVATION



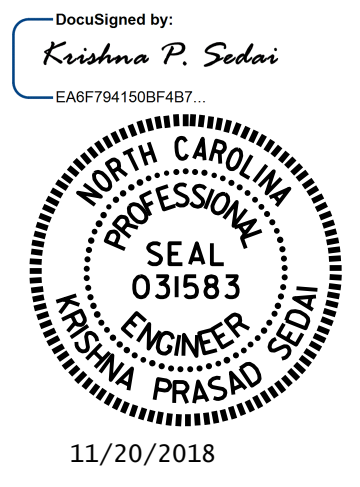
END VIEW

AS-BUILT REPAIR QUANTITY TABLE					
BENT 2 SPAN B FACE	QUANTITIES				
	ESTIMATE		ACTUAL		
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.	
CAP	24.1	12.1			
COLUMN	74.0	37.0			
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.	
CAP	8.2	4.1			
EPOXY RESIN INJECTION		LIN. FT.		LIN. FT.	
CAP		15.9			
COLUMN		19.0			
EPOXY COATING		SQ. FT.		SQ. FT.	
TOP OF BENT CAP		163			

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MINIMUM OF 1" BEHIND REBAR AND MINIMUM 2" CLEARANCE TO SAWCUT. FOR REPAIR DETAILS, SEE "TYPICAL CAP AND COLUMN REPAIR DETAILS" SHEET.

- CONCRETE REPAIR AREA
- SHOTCRETE REPAIR AREA
- EPOXY RESIN INJECTION (ERI)

PROJECT NO. I-5823
DAVIE COUNTY
 BRIDGE NO. 18



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**BENT 2
 SPAN B FACE**

DRAWN BY : M. G. SHAIKH DATE : 09/2018
 CHECKED BY : REZA KOUCHEKI DATE : 09/2018

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S3-16
2			4			TOTAL SHEETS 25

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NOTES:

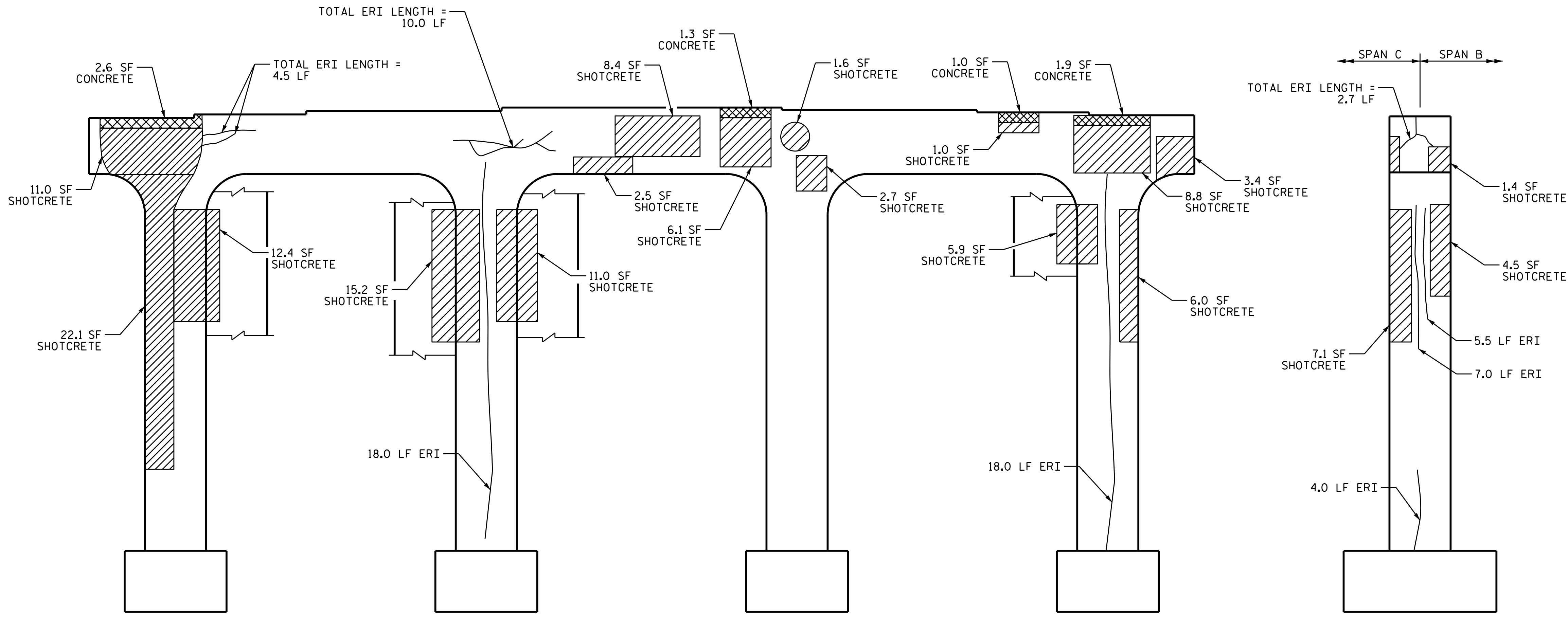
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FOR REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN AND PEDESTAL REPAIR DETAILS" SHEET.

CONCRETE REPAIRS MAY BE SUBSTITUTED IN LIEU OF SHOTCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.



BOTTOM OF CAP



ELEVATION

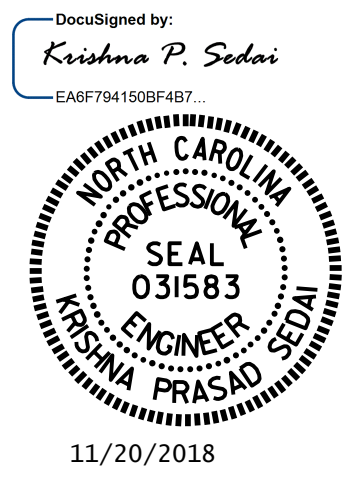
END VIEW

AS-BUILT REPAIR QUANTITY TABLE				
BENT 2 SPAN C FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SO. FT.	VOLUME CU. FT.	AREA SO. FT.	VOLUME CU. FT.
CAP	46.9	23.5		
COLUMN	84.2	42.1		
CONCRETE REPAIRS	AREA SO. FT.	VOLUME CU. FT.	AREA SO. FT.	VOLUME CU. FT.
CAP	6.8	3.4		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	17.2			
COLUMN	52.5			
EPOXY COATING	SQ. FT.		SQ. FT.	
TOP OF BENT CAP	0.0			

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MINIMUM OF 1" BEHIND REBAR AND MINIMUM 2" CLEARANCE TO SAWCUT. FOR REPAIR DETAILS, SEE "TYPICAL CAP AND COLUMN REPAIR DETAILS" SHEET.

- CONCRETE REPAIR AREA
- SHOTCRETE REPAIR AREA
- EPOXY RESIN INJECTION (ERI)

PROJECT NO. I-5823
DAVIE COUNTY
 BRIDGE NO. 18



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**BENT 2
 SPAN C FACE**

DRAWN BY : M. G. SHAIKH DATE : 09/2018
 CHECKED BY : REZA KOUCHEKI DATE : 09/2018

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S3-17
2			4			TOTAL SHEETS 25

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NOTES:

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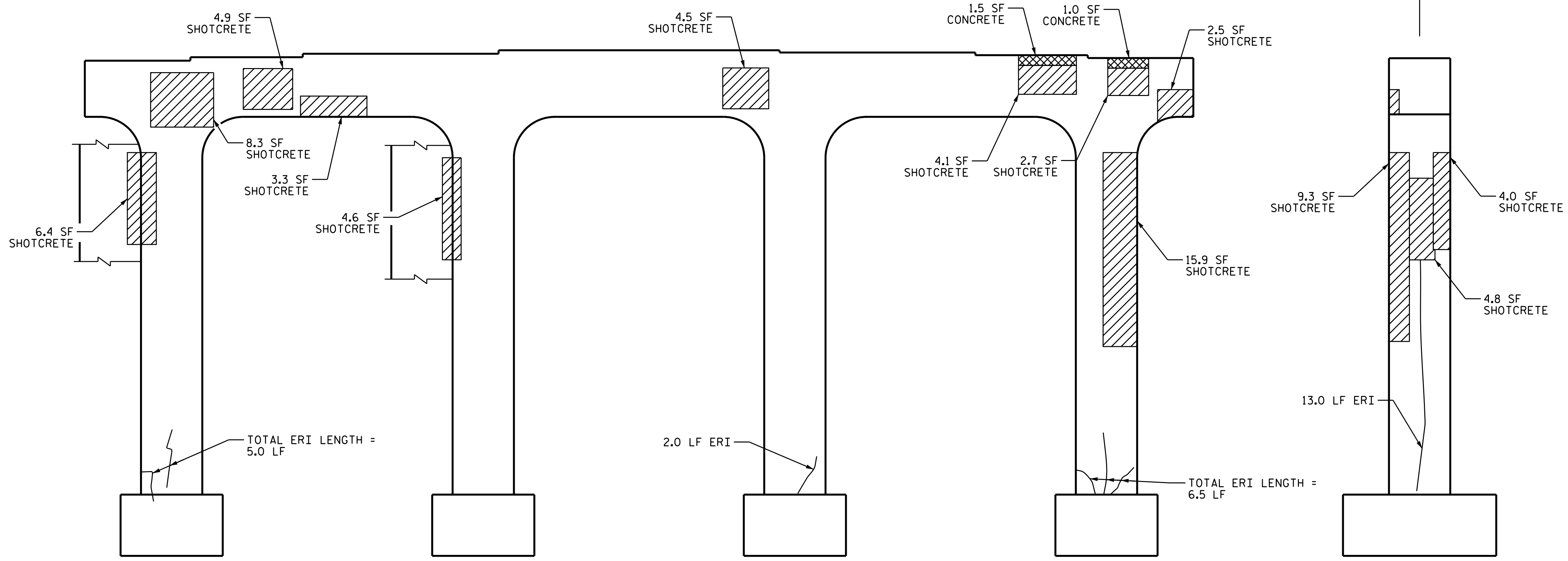
CLEAN AND REMOVE DEBRIS FROM TOP OF CAP AND APPLY EPOXY PROTECTIVE COATING. EPOXY COATING SHALL BE APPLIED TO THE TOP FACE OF THE CAP. THE CONTRACTOR SHALL NOT COAT THE AREA OF THE CAP BENEATH THE MASONRY PLATES. FOR EPOXY COATING, SEE SPECIAL PROVISIONS.

FOR REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN AND PEDESTAL REPAIR DETAILS" SHEET.

CONCRETE REPAIRS MAY BE SUBSTITUTED IN LIEU OF SHOTCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.



TOP OF CAP



ELEVATION

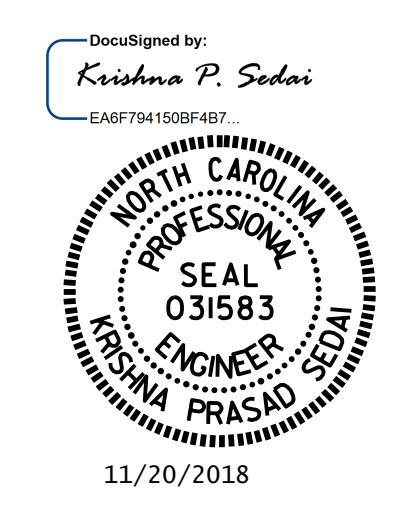
END VIEW

AS-BUILT REPAIR QUANTITY TABLE				
BENT 3 SPAN C FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	30.3	15.2		
COLUMN	45.0	22.5		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	2.5	1.3		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	0.0			
COLUMN	26.5			
EPOXY COATING	SQ. FT.		SQ. FT.	
TOP OF BENT CAP	163			

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MINIMUM OF 1" BEHIND REBAR AND MINIMUM 2" CLEARANCE TO SAWCUT. FOR REPAIR DETAILS, SEE "TYPICAL CAP AND COLUMN REPAIR DETAILS" SHEET.

- CONCRETE REPAIR AREA
- SHOTCRETE REPAIR AREA
- EPOXY RESIN INJECTION (ERI)

PROJECT NO. I-5823
DAVIE COUNTY
 BRIDGE NO. 18



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**BENT 3
 SPAN C FACE**

DRAWN BY : M. G. SHAIKH DATE : 09/2018
 CHECKED BY : REZA KOUCHEKI DATE : 09/2018

NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S3-18
2			4			TOTAL SHEETS 25

NOTES:

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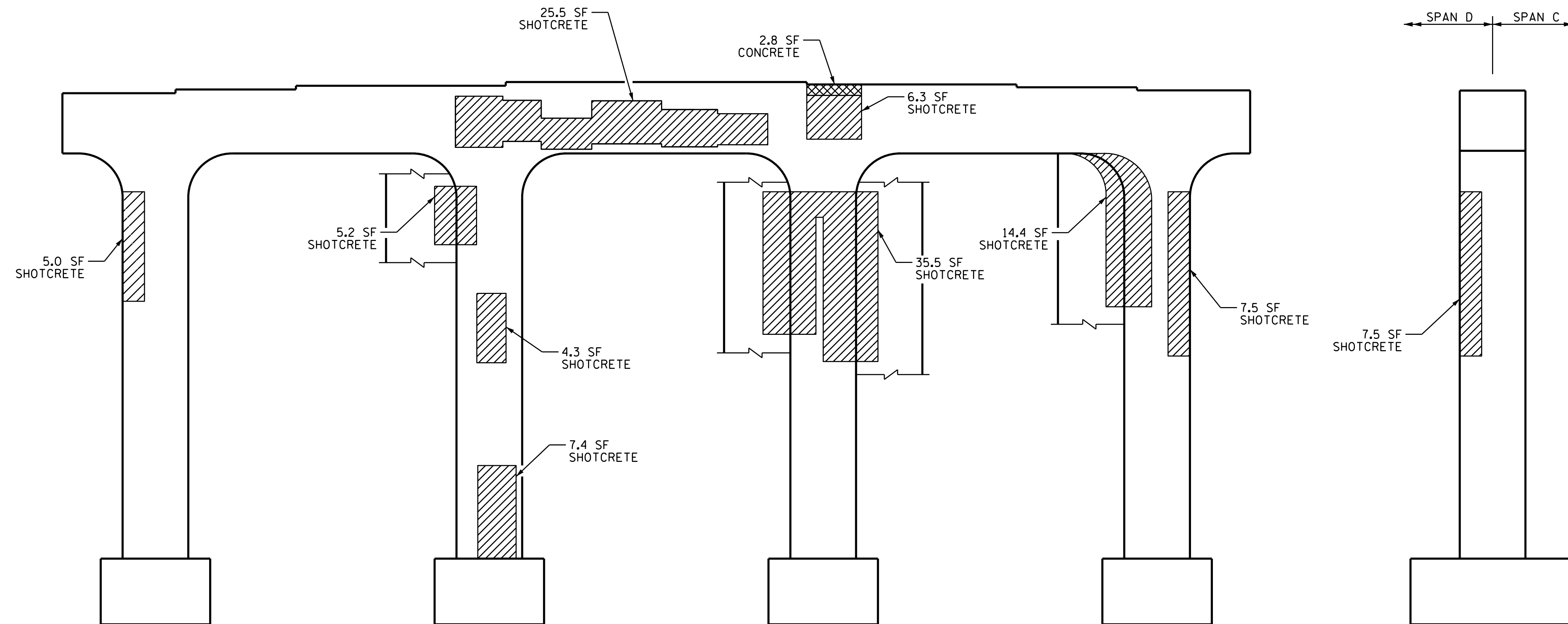
FOR REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN AND PEDESTAL REPAIR DETAILS" SHEET.

CONCRETE REPAIRS MAY BE SUBSTITUTED IN LIEU OF SHOTCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.



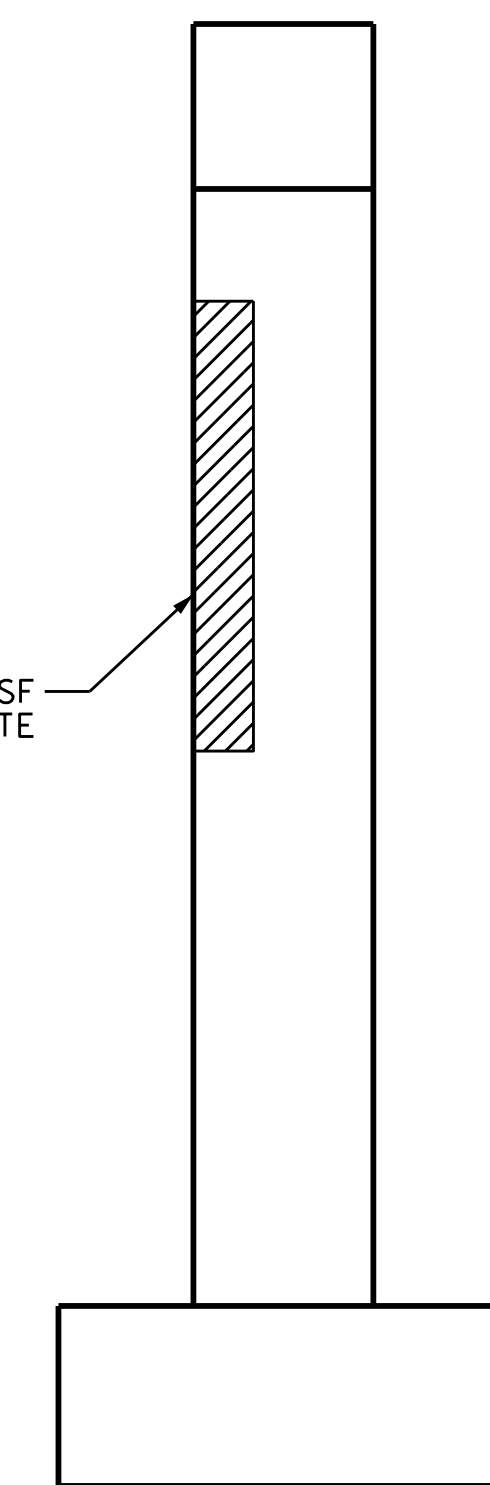
SPAN C
SPAN D

BOTTOM OF CAP



ELEVATION

← SPAN D | SPAN C →



END VIEW

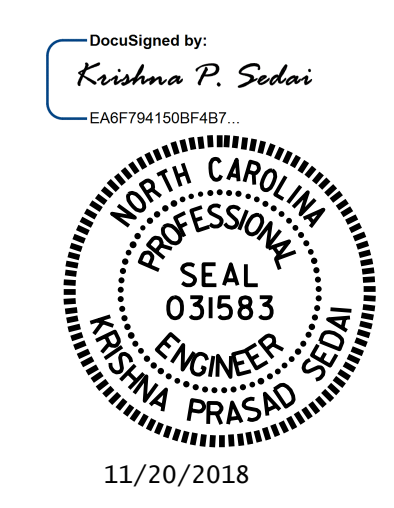
AS-BUILT REPAIR QUANTITY TABLE

BENT 3 SPAN D FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SO. FT.	VOLUME CU. FT.	AREA SO. FT.	VOLUME CU. FT.
CAP	31.8	15.9		
COLUMN	86.8	43.4		
CONCRETE REPAIRS	AREA SO. FT.	VOLUME CU. FT.	AREA SO. FT.	VOLUME CU. FT.
CAP	2.8	1.4		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	0.0			
COLUMN	0.0			
EPOXY COATING	SQ. FT.		SQ. FT.	
TOP OF BENT CAP	0.0			

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MINIMUM OF 1" BEHIND REBAR AND MINIMUM 2" CLEARANCE TO SAWCUT. FOR REPAIR DETAILS, SEE "TYPICAL CAP AND COLUMN REPAIR DETAILS" SHEET.

- CONCRETE REPAIR AREA
- SHOTCRETE REPAIR AREA
- EPOXY RESIN INJECTION (ERI)

PROJECT NO. I-5823
DAVIE COUNTY
 BRIDGE NO. 18



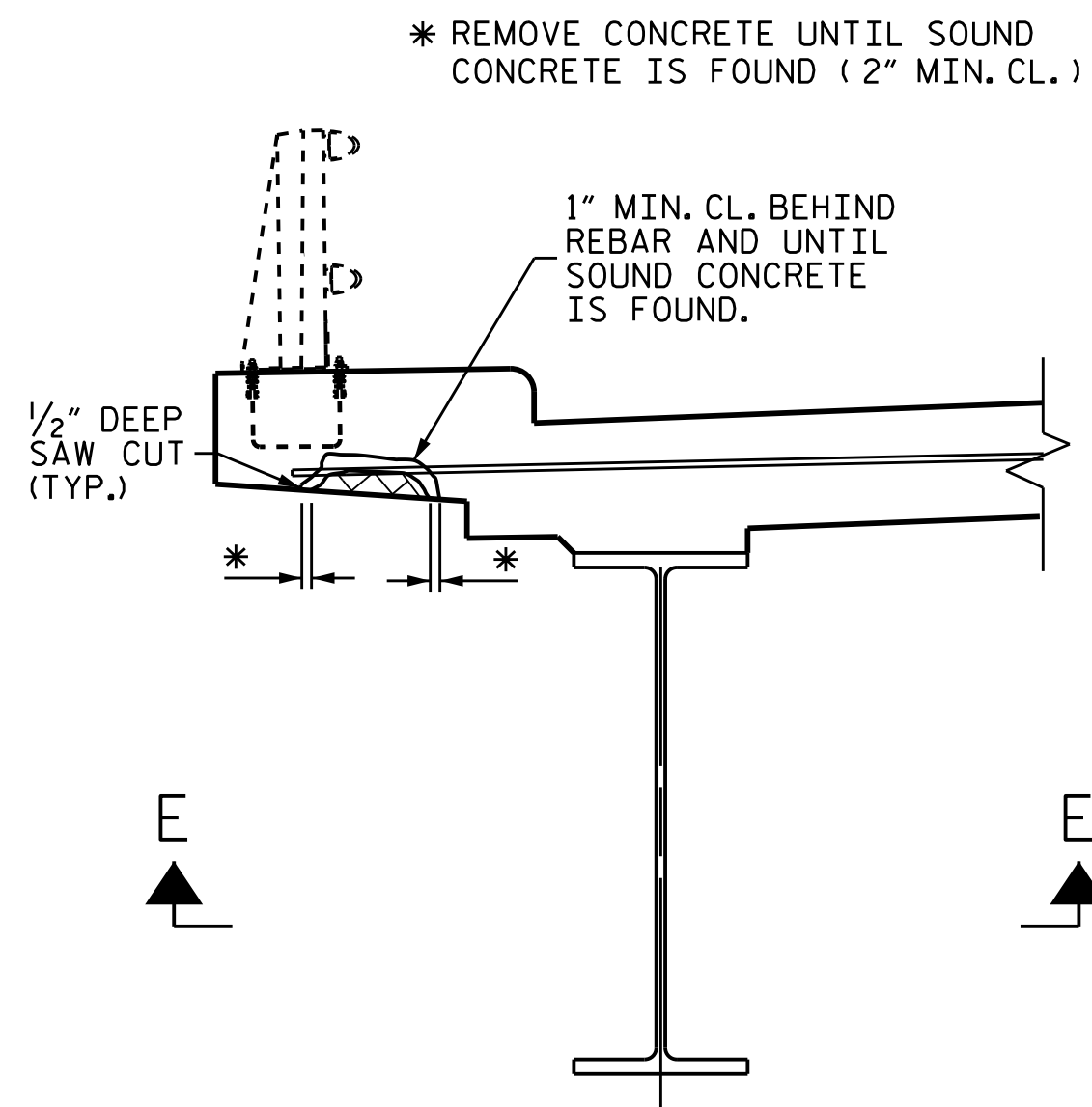
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**BENT 3
 SPAN D FACE**

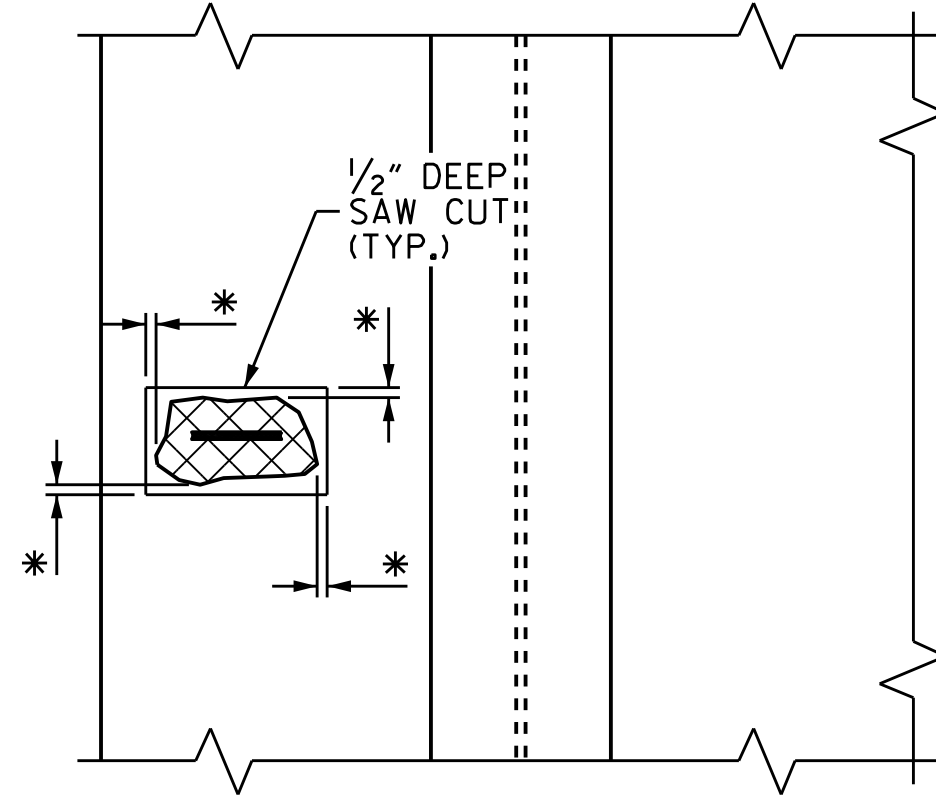
DRAWN BY : M. G. SHAIKH DATE : 09/2018
 CHECKED BY : REZA KOUCHEKI DATE : 09/2018

NO.	REVISIONS			NO.	REVISIONS			SHEET NO.
	BY:	DATE:			BY:	DATE:		
1				3				S3-19
2				4				TOTAL SHEETS 25

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

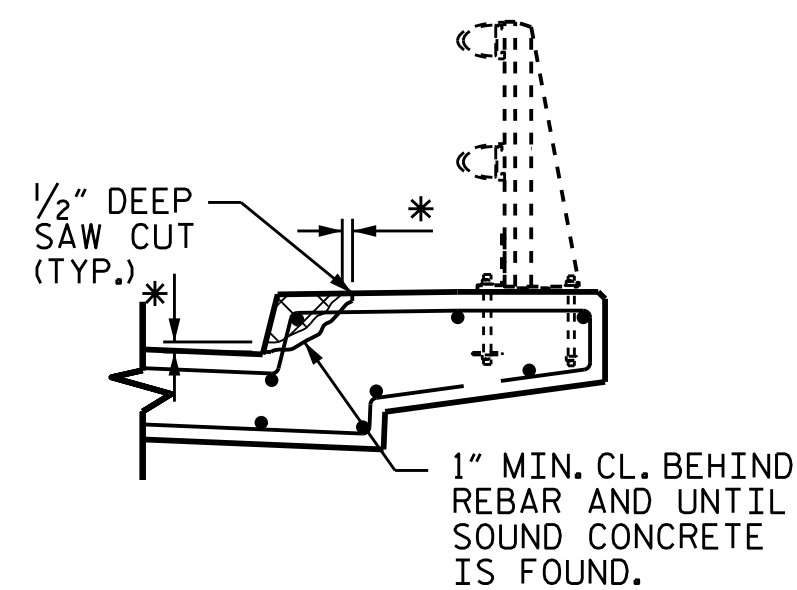


TYPICAL SECTION



SECTION E-E

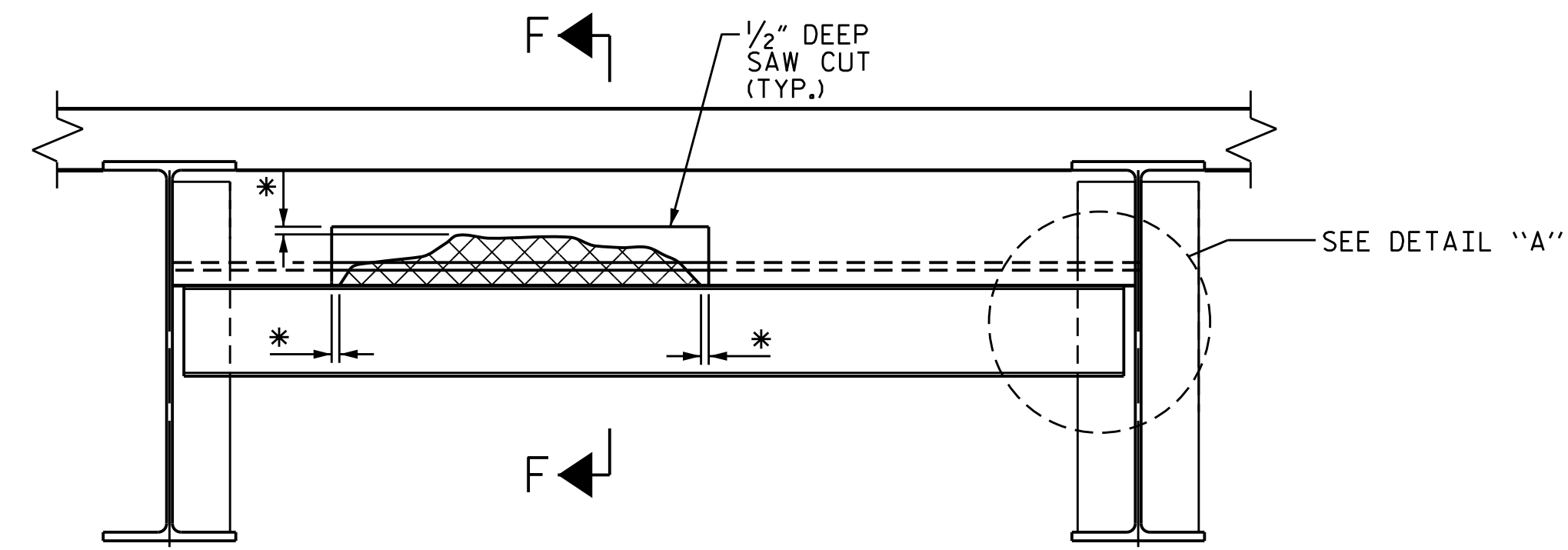
OVERHANG DETAILS



* REMOVE CONCRETE UNTIL SOUND CONCRETE IS FOUND (2" MIN. CL.)

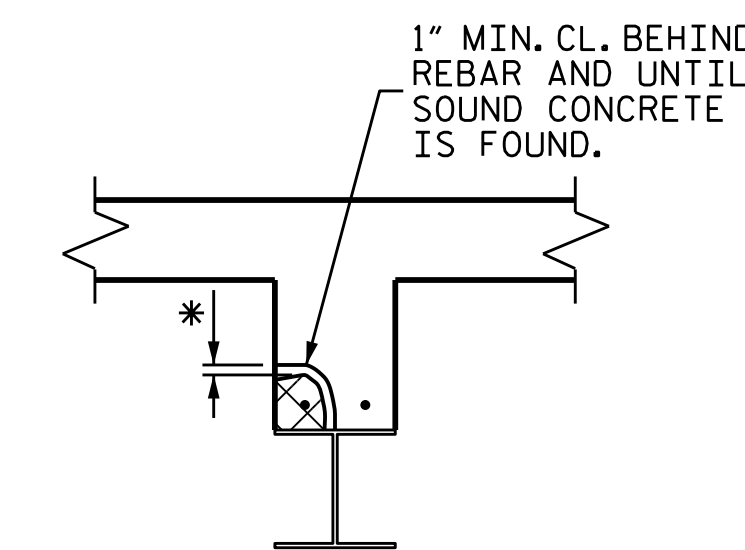
TYPICAL SECTION

BRIDGE RAIL AND CURB REPAIR DETAILS



TYPICAL SECTION

* REMOVE CONCRETE UNTIL SOUND CONCRETE IS FOUND (2" MIN. CL.)



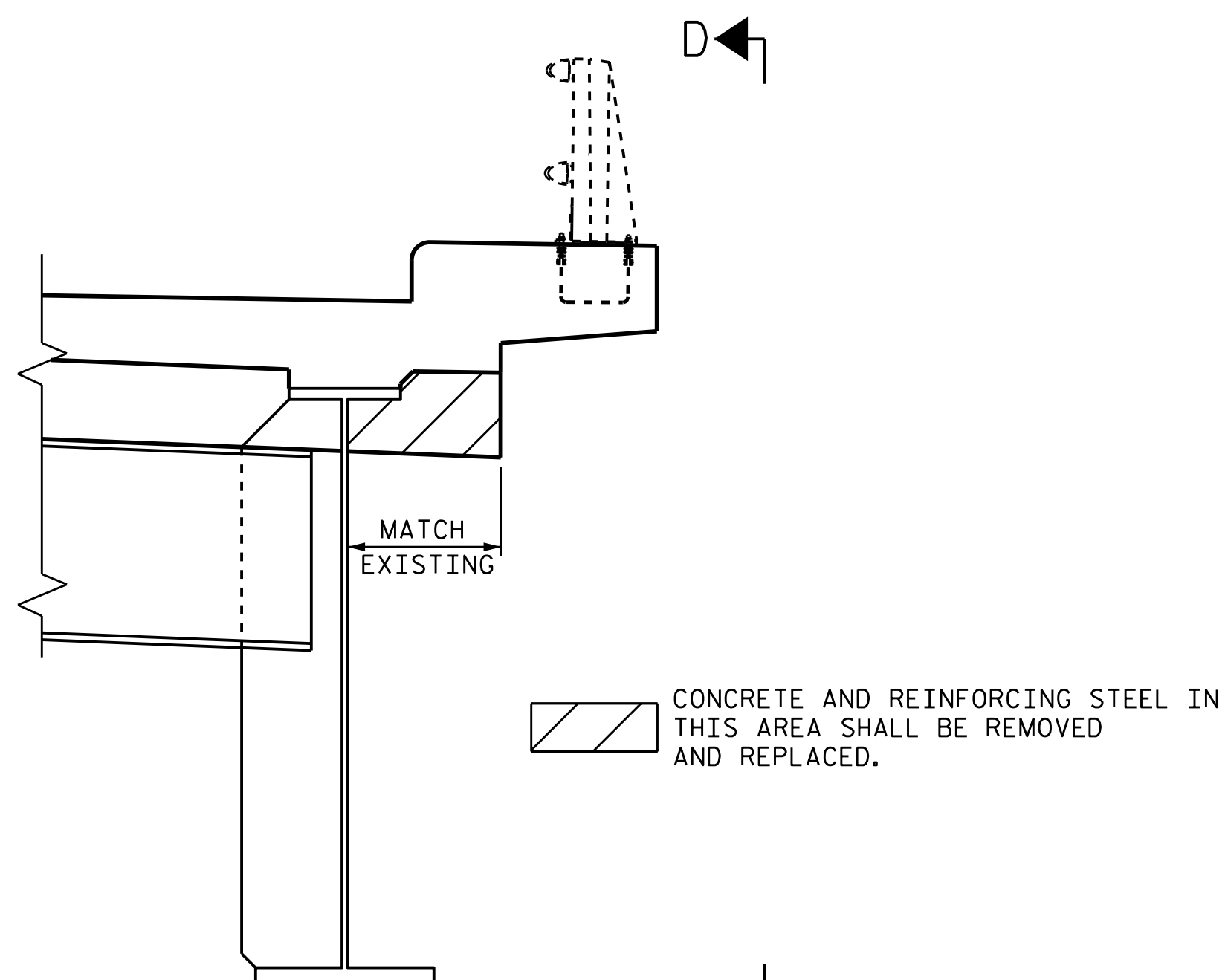
SECTION F-F

DAMAGED AREA

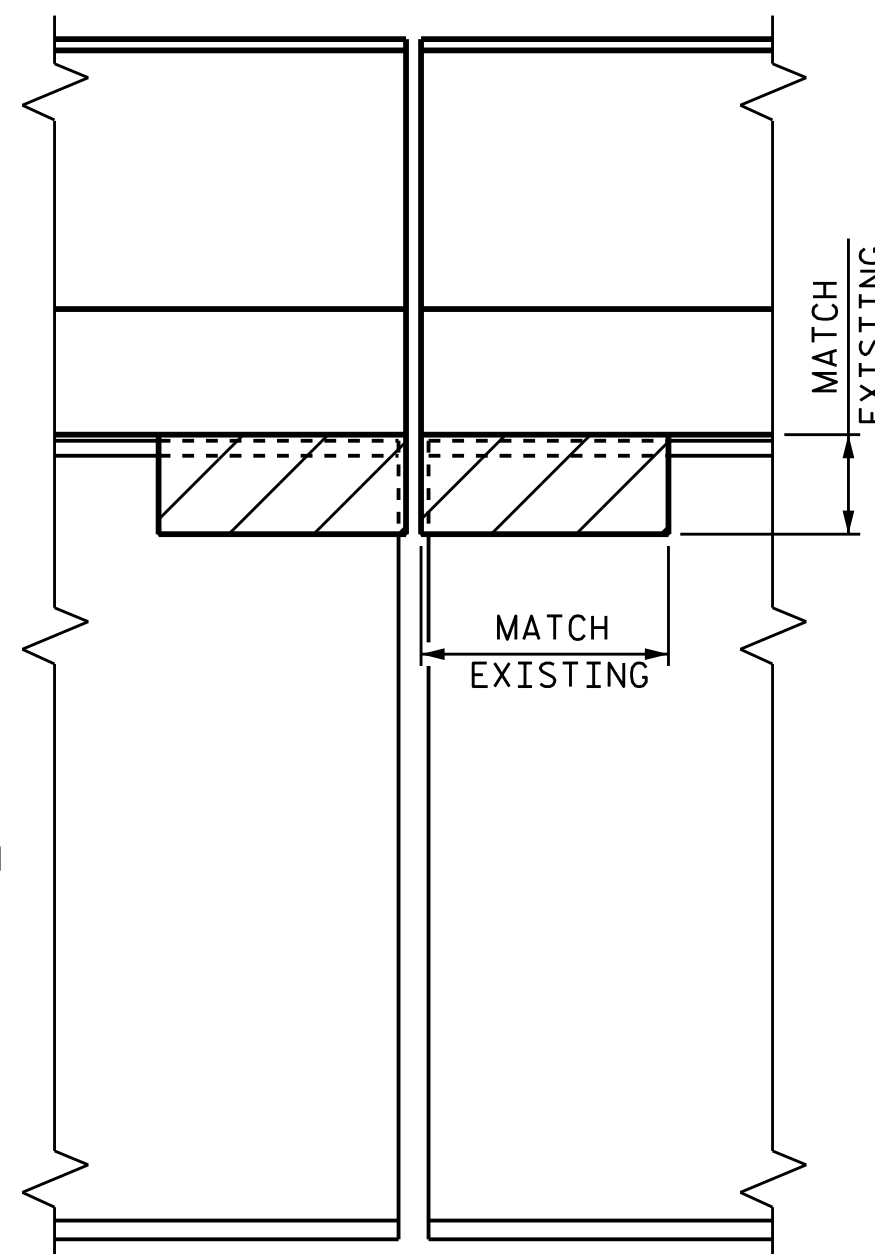
NOTE:
EXISTING REBAR TO REMAIN IN PLACE. CLEAN AND REPAIR AS NECESSARY.

INTERIOR DIAPHRAGM REPAIR DETAILS

NOTE: OVERHANG DIAPHRAGMS TO BE REMOVED AND REPLACED, ARE SHOWN ON "PLAN OF SPAN" SHEET. OVERHANG DIAPHRAGMS SHALL BE REMOVED PRIOR TO CLEANING AND PAINTING OF BEARINGS AND REPLACED AFTER BEAM REPAIRS AND PAINTING ARE COMPLETE.

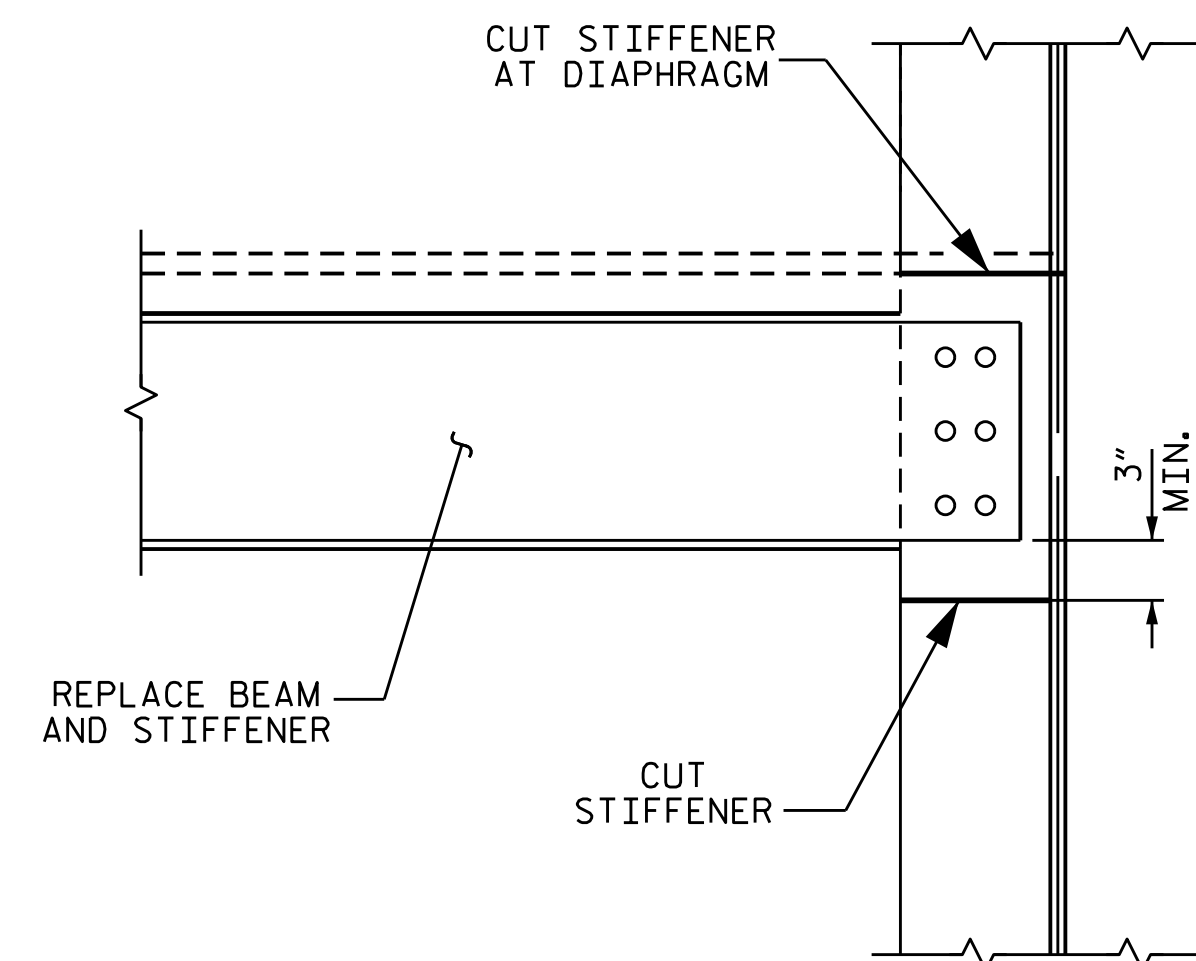


TYPICAL SECTION

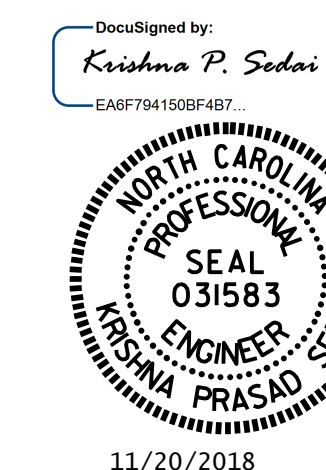


SECTION D-D

OVERHANG DIAPHRAGM REPLACEMENT DETAILS



DETAIL "A"



PROJECT NO. I-5823
DAVIE COUNTY
BRIDGE NO. 18

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

OVERHANG AND DIAPHRAGM REPAIR DETAILS

DRAWN BY : M. G. SHAIKH DATE : 08/2018
CHECKED BY : REZA KOUCHEKI DATE : 08/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-20
1			3			TOTAL SHEETS
2			4			25

NOTES

TYPICAL BENT CAP REPAIRS ARE SHOWN. REPAIR DETAILS SIMILAR FOR END BENT CAPS AND STRUTS.

THE METHOD USED TO DELINEATE THE AREAS OF UNSOUND CONCRETE TO BE REPAIRED SHALL NOT PERMANENTLY MARK THE CONCRETE, LEAVE ANY RESIDUE AFTER REMOVAL OR REQUIRE HARSH CHEMICALS TO REMOVE.

THE CONTRACTOR SHALL REMOVE THE DETERIORATED CONCRETE IN ACCORDANCE WITH THE GUIDELINES SET IN THESE NOTES, IN THE SPECIAL PROVISIONS AND THE STANDARD SPECIFICATIONS.

REMOVE UNSOUND CONCRETE TO THE EXTENT NECESSARY, MINIMUM OF 1" BEHIND REBAR AND MINIMUM OF 2" CLEARANCE TO SAWCUT.

NO MORE THAN ONE-THIRD OF THE CAP OR COLUMN CROSS SECTIONAL AREA SHALL BE REMOVED AT ONE TIME. SHOULD IT BECOME NECESSARY TO REMOVE MORE THAN 30% OF A CAP OR COLUMN CROSS SECTIONAL AREA, NOTIFY THE ENGINEER PRIOR TO PROCEEDING.

SIMULTANEOUS REMOVAL OF UNSOUND CONCRETE MAY BE PERMITTED ON MORE THAN ONE FACE OF A CAP AND/OR COLUMN, IF THE AREAS OF REMOVAL ARE NOT ADJACENT TO OR DIRECTLY OPPOSITE ONE ANOTHER. IF REMOVAL EXTENDS MORE THAN 1 1/2" BEHIND THE MAIN REINFORCING BARS, NOTIFY THE ENGINEER PRIOR TO PROCEEDING.

REINFORCING STEEL WHICH IS DETERMINED BY THE ENGINEER TO BE REPLACED, SHALL BE REMOVED TO A POINT WHERE IT IS SOUND. THE PATCH SHALL EXTEND A SUFFICIENT DISTANCE BEYOND THIS POINT TO DEVELOP A SPLICE LENGTH SPECIFIED IN THE TABLE ON THIS SHEET.

THE #4 "U" DOWELS ARE REQUIRED ONLY AROUND THE ANCHOR BOLTS. THE EXISTING REINFORCING STEEL IN THE PEDESTAL WALL SHALL BE CLEANED, STRAIGHTENED AND REMAIN IN PLACE.

FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS.

COAT ALL REPAIR SURFACE AREAS ON THE TOP OF CAPS, INCLUDING CHAMFERS, WITH EPOXY PROTECTIVE COATING, OVERLAPPING THE REPAIR AREA BY A MINIMUM OF 3" ON ALL POSSIBLE SIDES.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

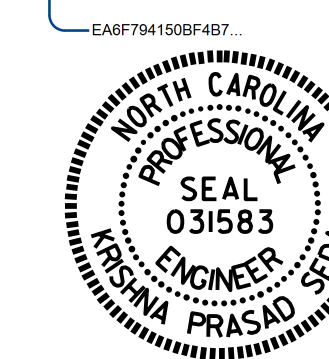
FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY PROTECTIVE COATING, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION (REI), SEE SPECIAL PROVISIONS.

PROJ. NO. I-5823
DAVIE COUNTY
 BRIDGE NO. 18

DocuSigned by:
 Krishna P. Sedai
 EAEF7041506F4B7...

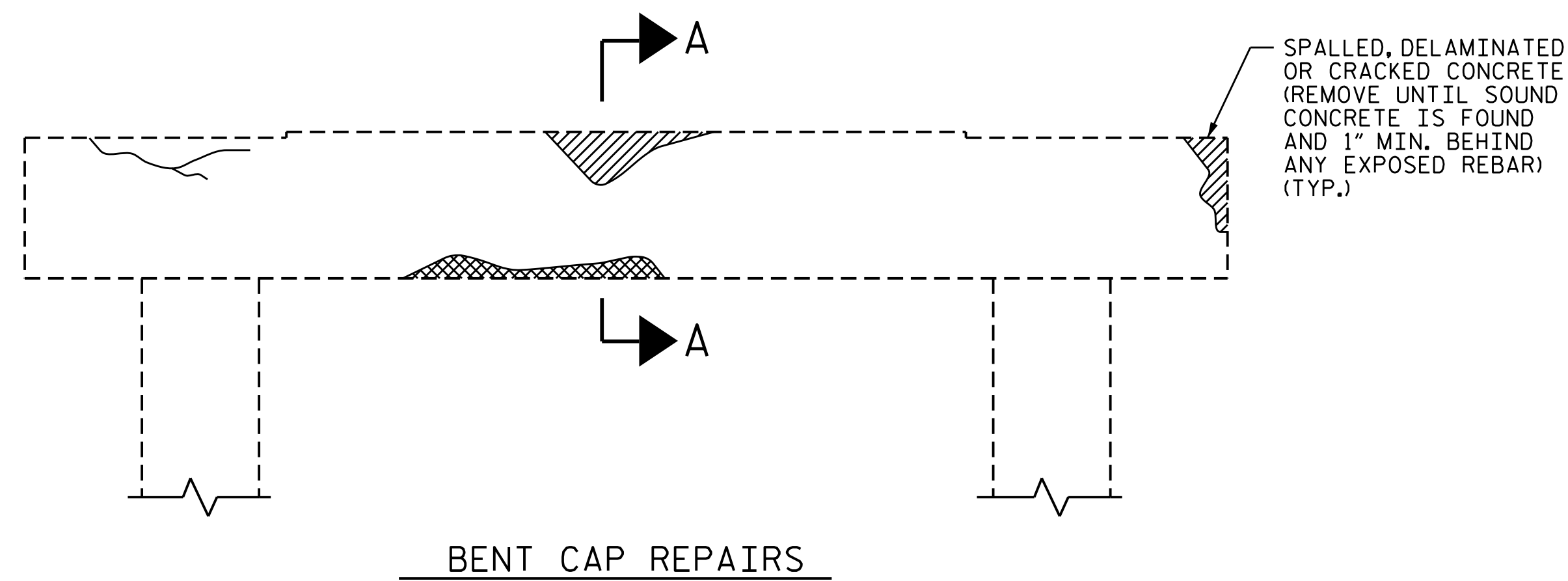


11/20/2018

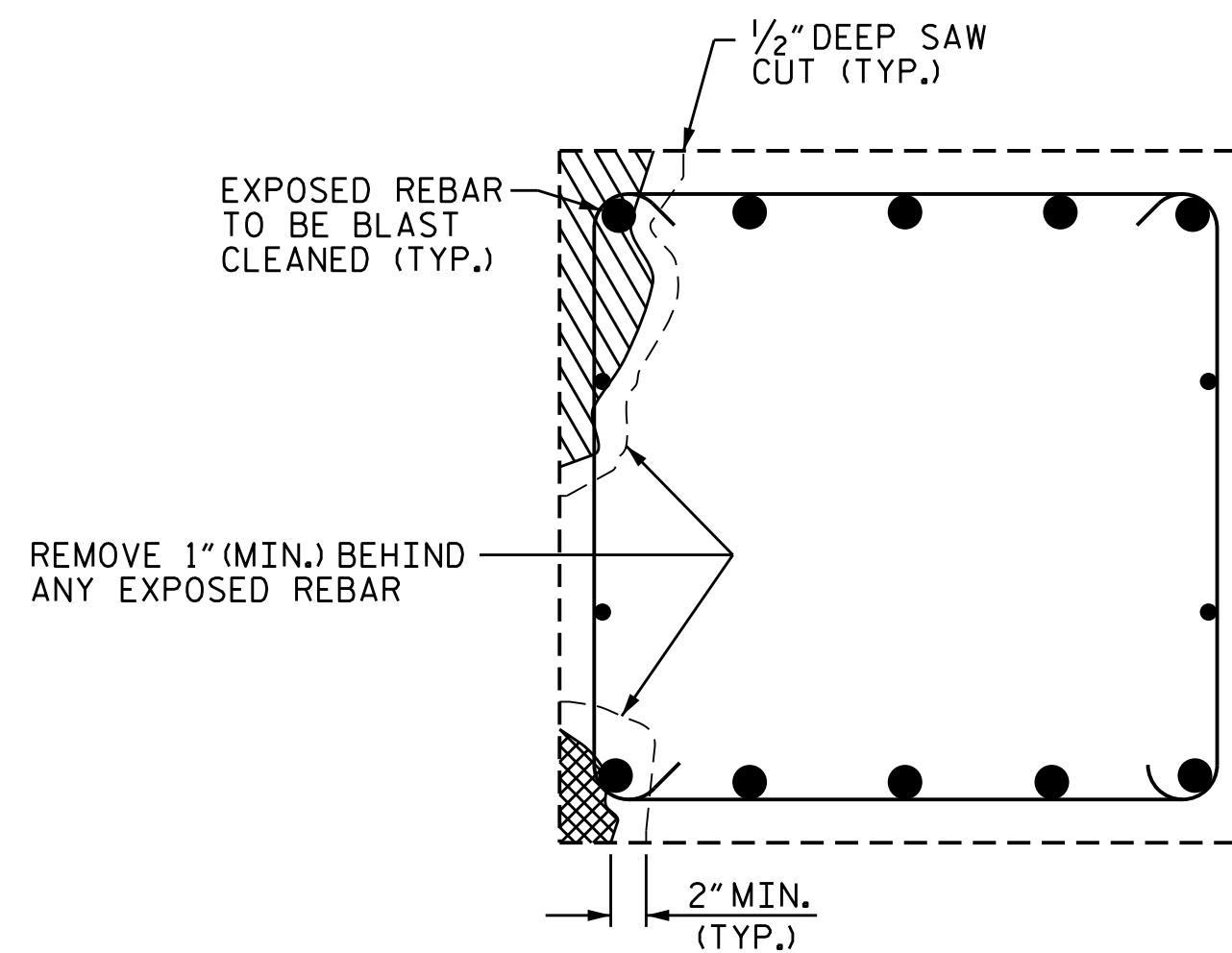
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 TYPICAL CAP
 AND COLUMN
 REPAIR DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S3-21
2			4			25

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

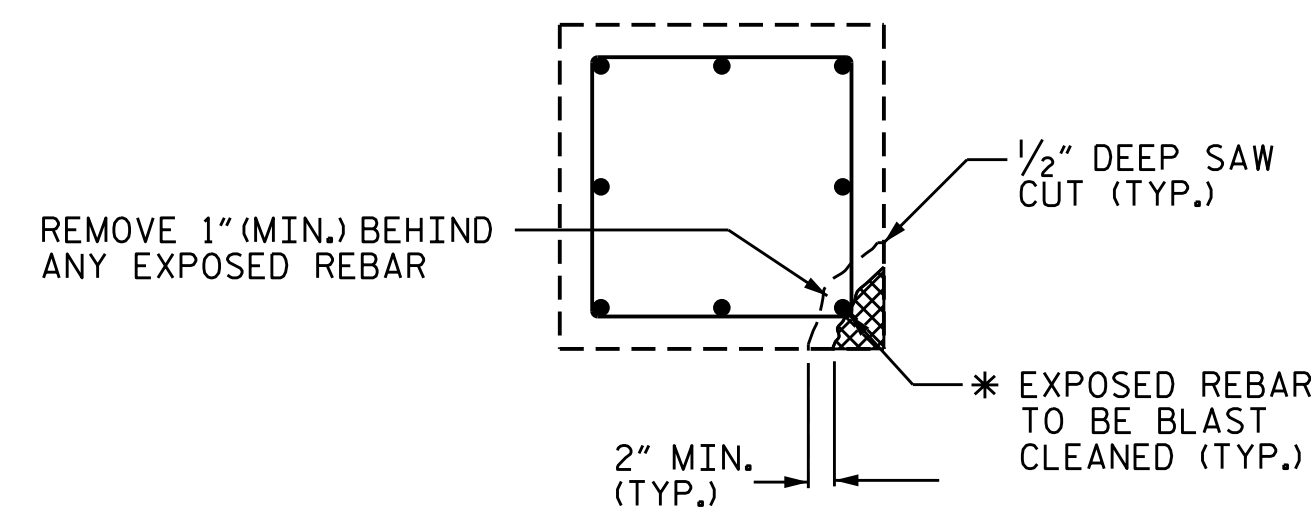


BENT CAP REPAIRS



SECTION A-A

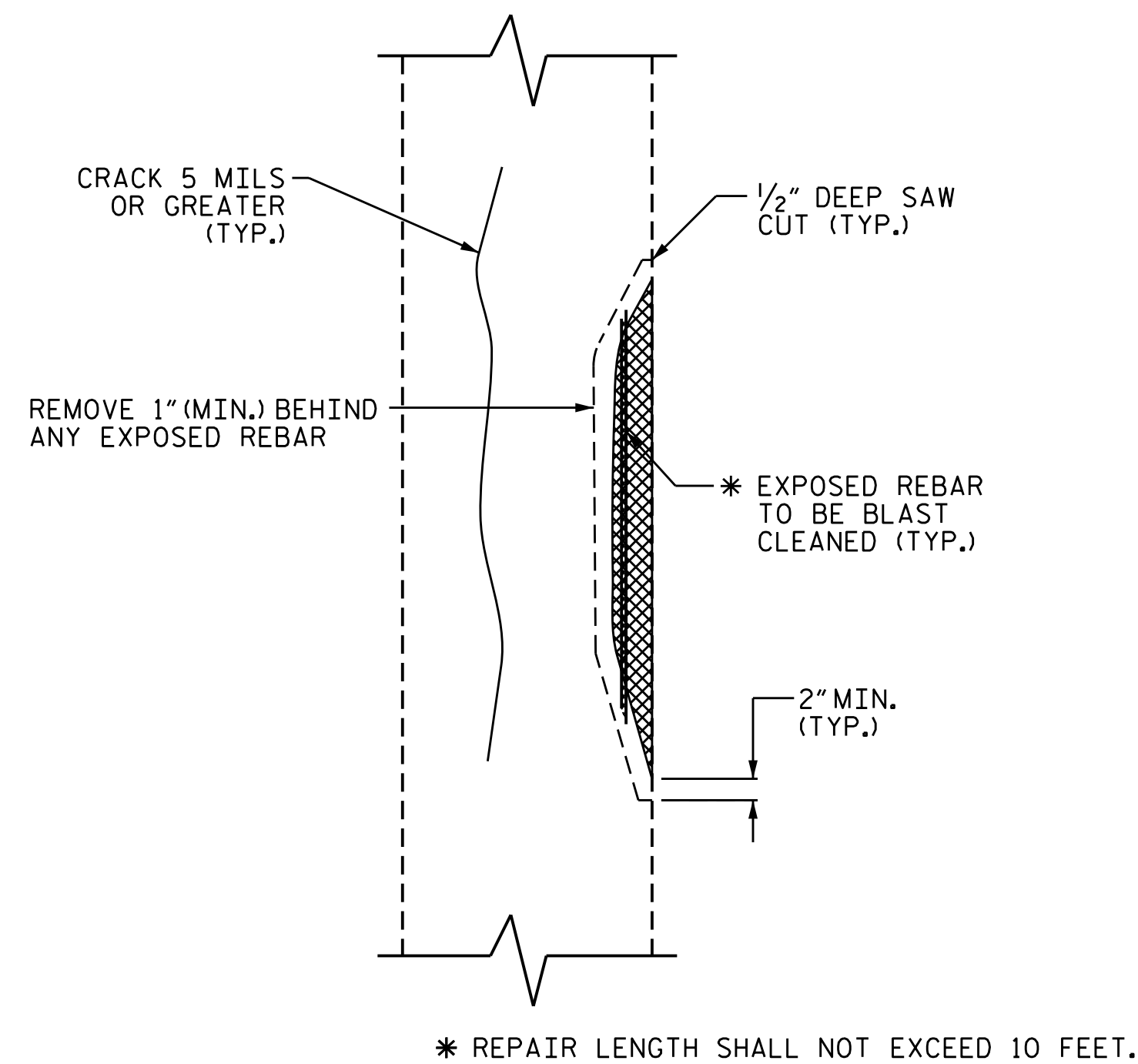
CAP REPAIR



PLAN OF COLUMN

REPAIR KEY

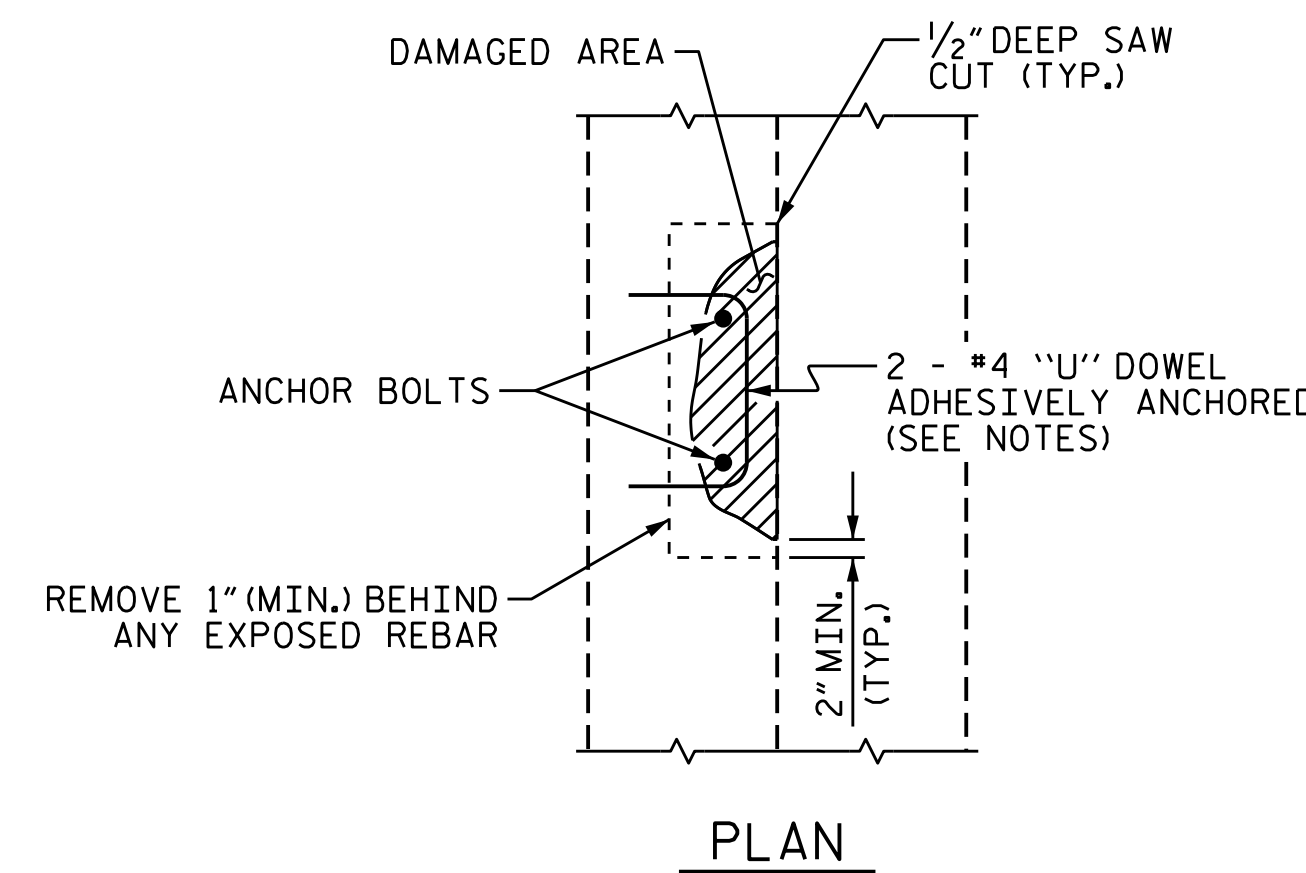
- CONCRETE REPAIR AREA (FORM AND POUR)
- SHOTCRETE REPAIR AREA
- EPOXY RESIN INJECTION (REI)



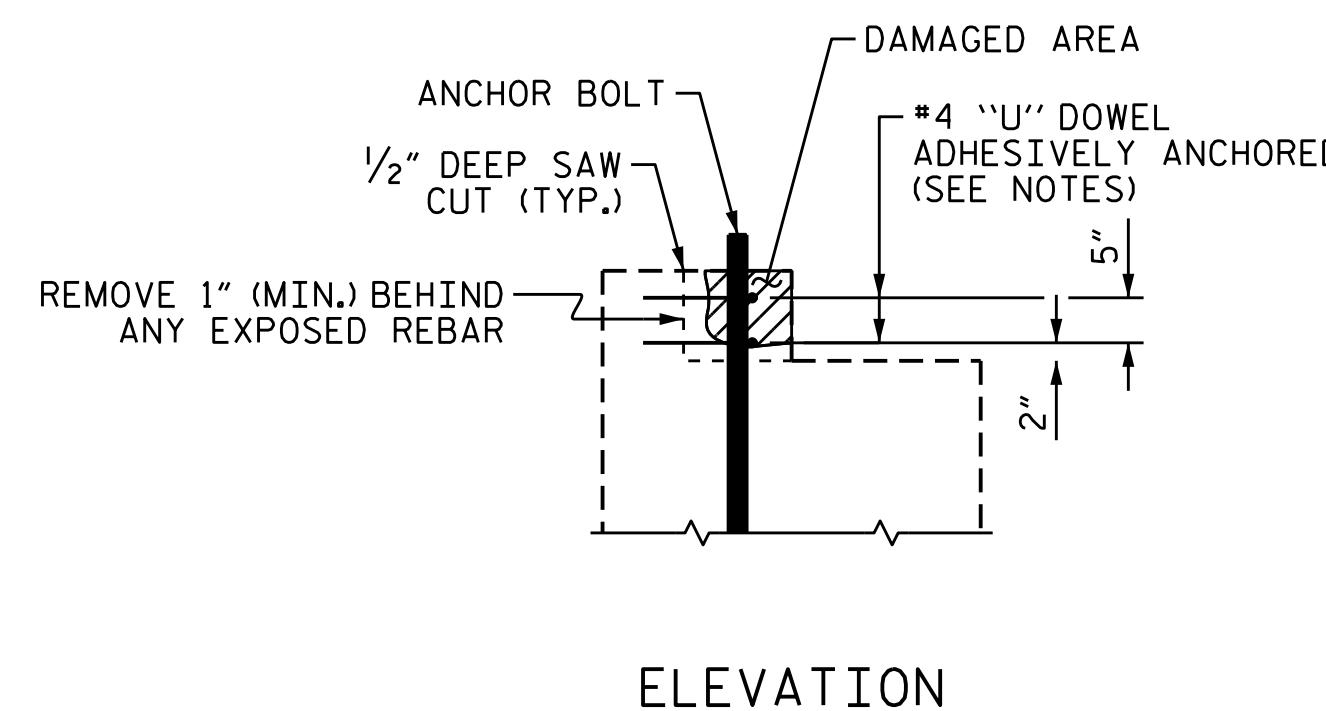
ELEVATION OF COLUMN

COLUMN REPAIR

BAR SIZE	MIN. SPLICE LENGTH
#4	2'-4"
#5	2'-9"
#6	4'-0"
#7	5'-3"
#8	6'-9"
#9	8'-6"
#10	10'-11"
#11	13'-4"



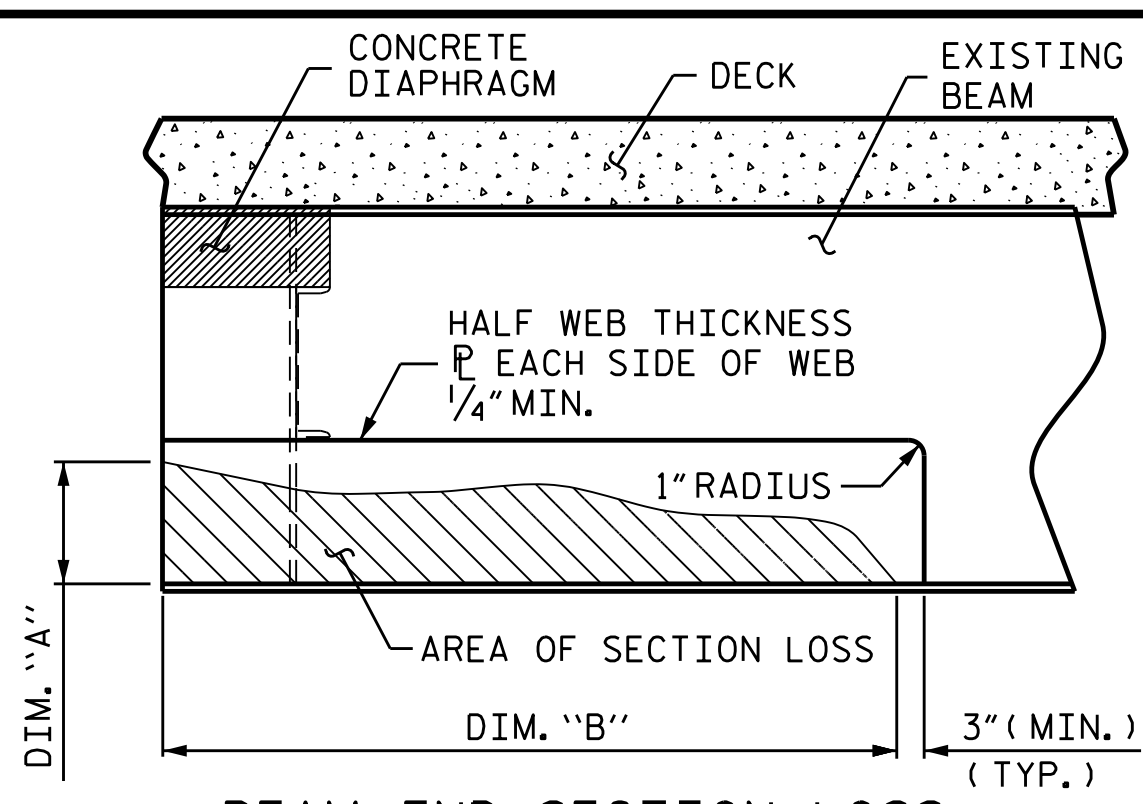
PLAN



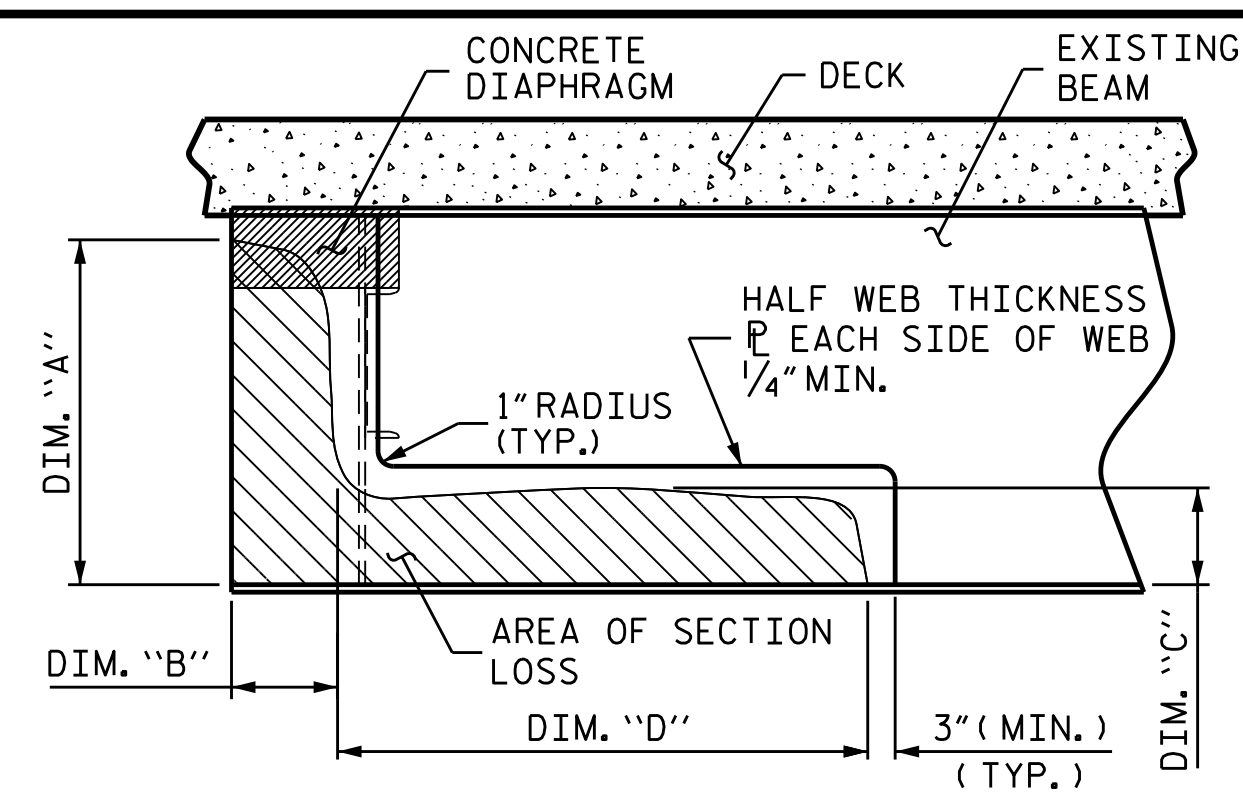
ELEVATION

PEDESTAL WALL REPAIR

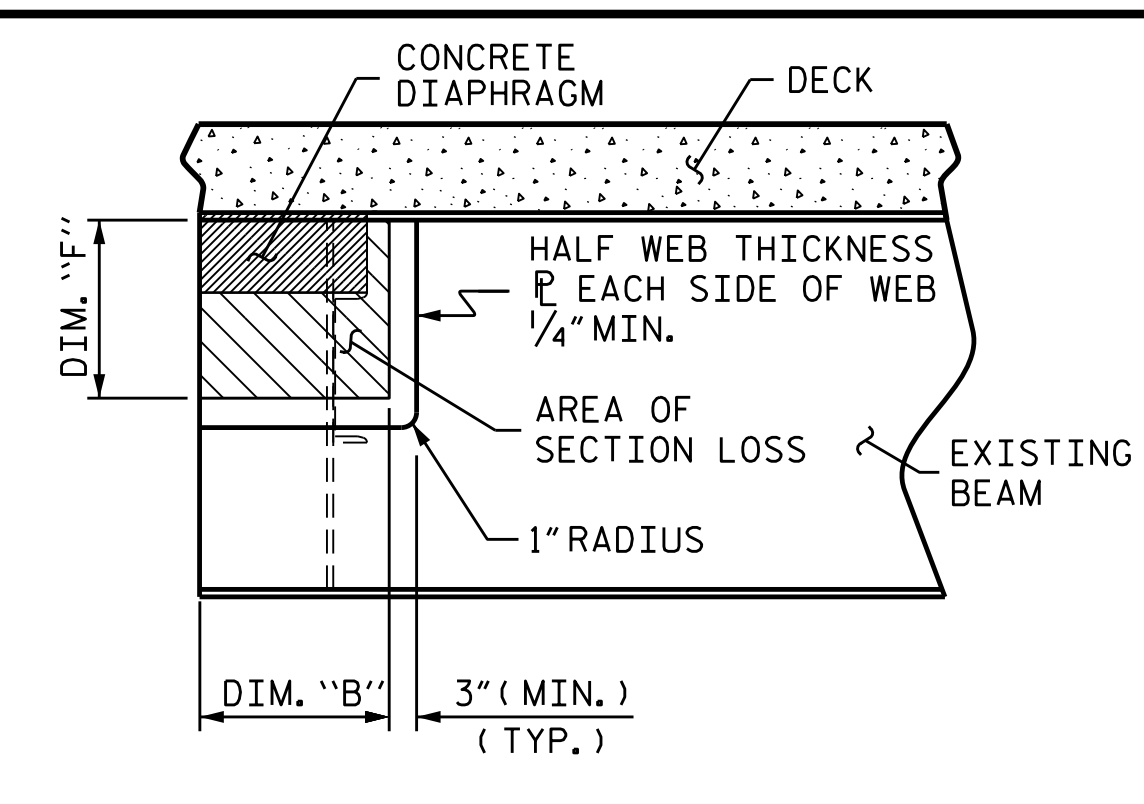
ASSEMBLED BY : M. G. SHAIKH DATE : 09/2018
 CHECKED BY : REZA KOUCHEKI DATE : 09/2018
 DRAWN BY : NAP 8/18
 CHECKED BY :



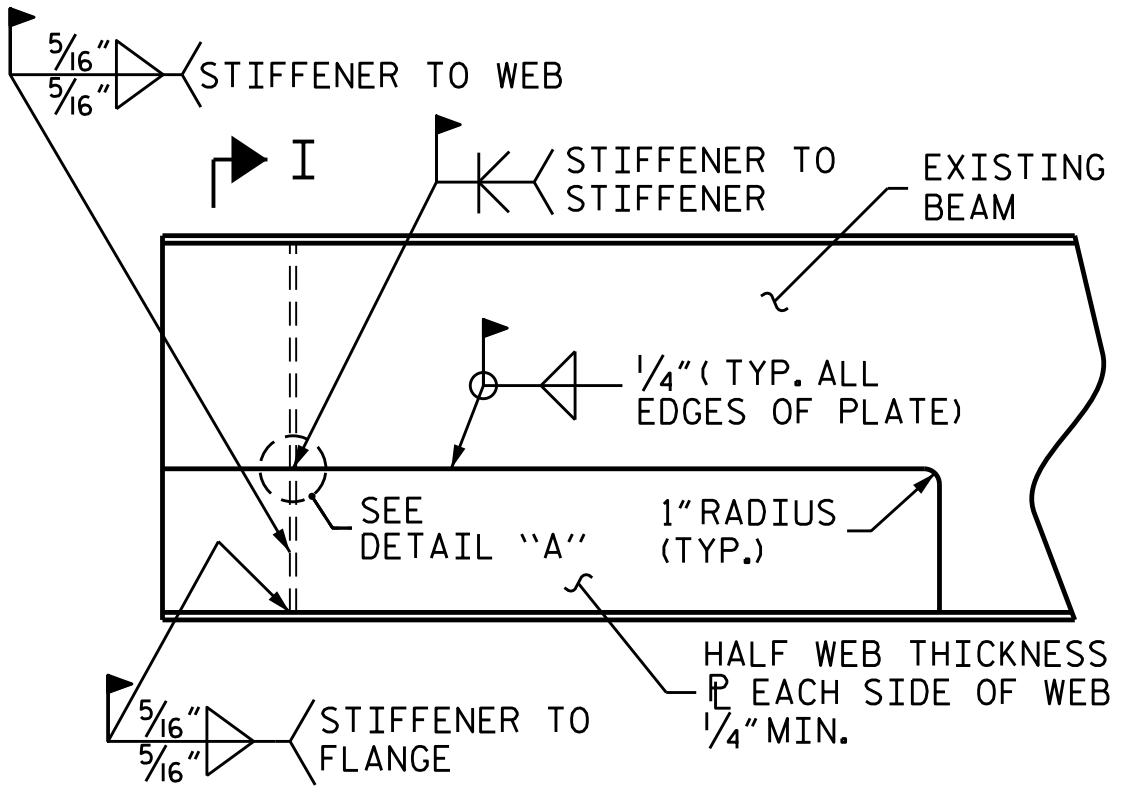
BEAM END SECTION LOSS AND PLATING REPAIR



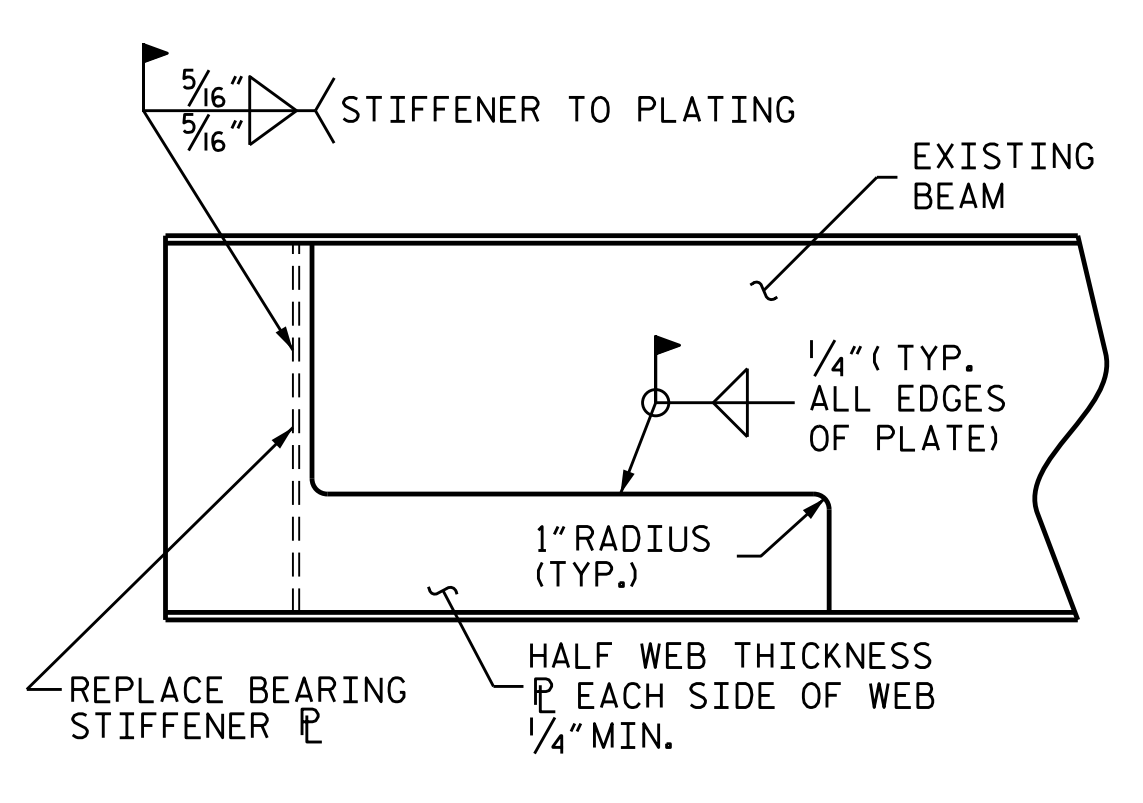
BEAM END SECTION LOSS AND PLATING REPAIR



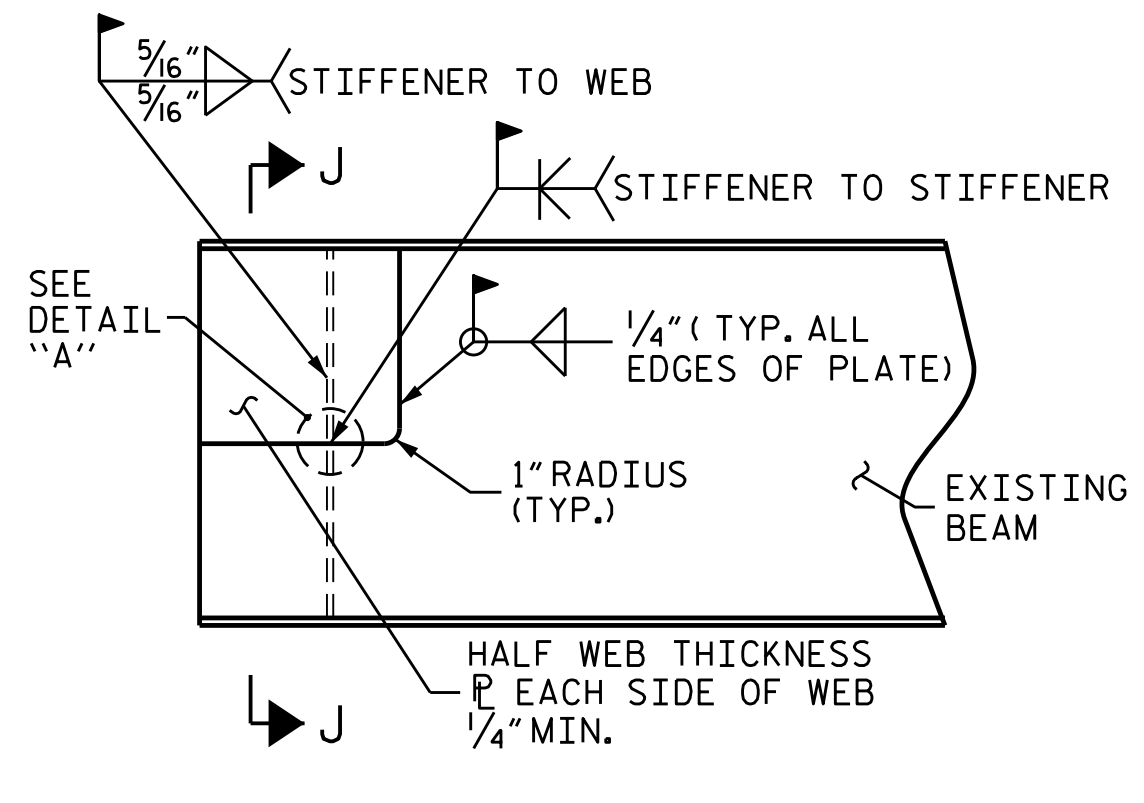
BEAM END SECTION LOSS AND PLATING REPAIR



BEAM END PLATING REPAIR

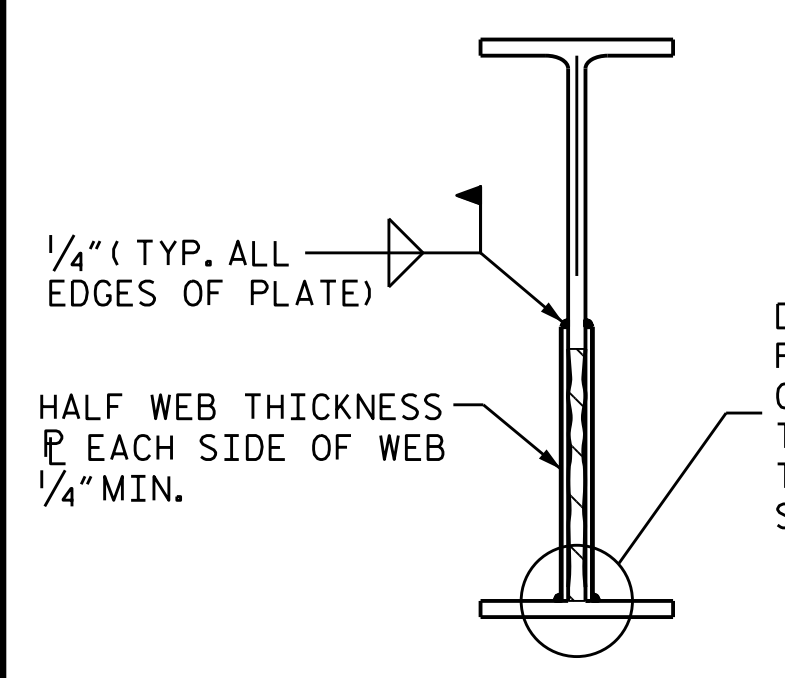


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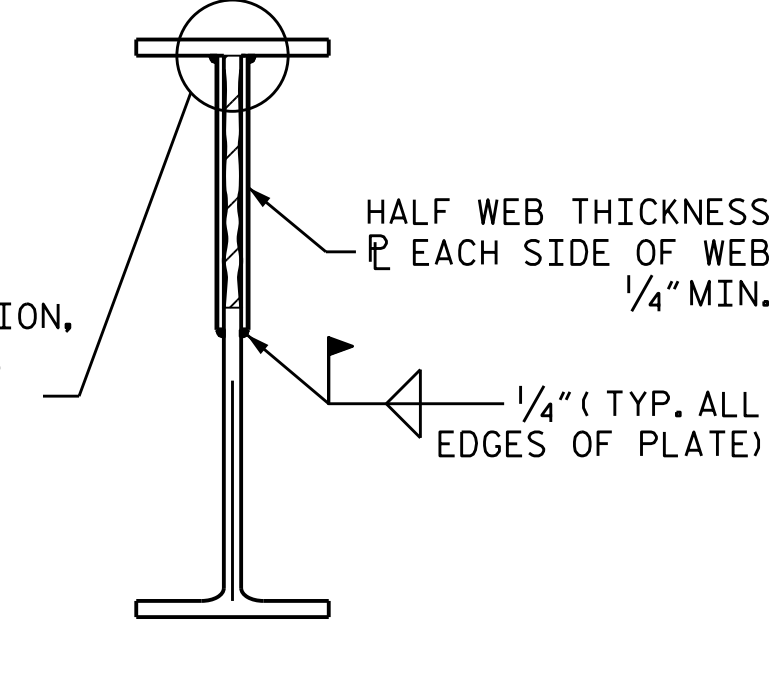


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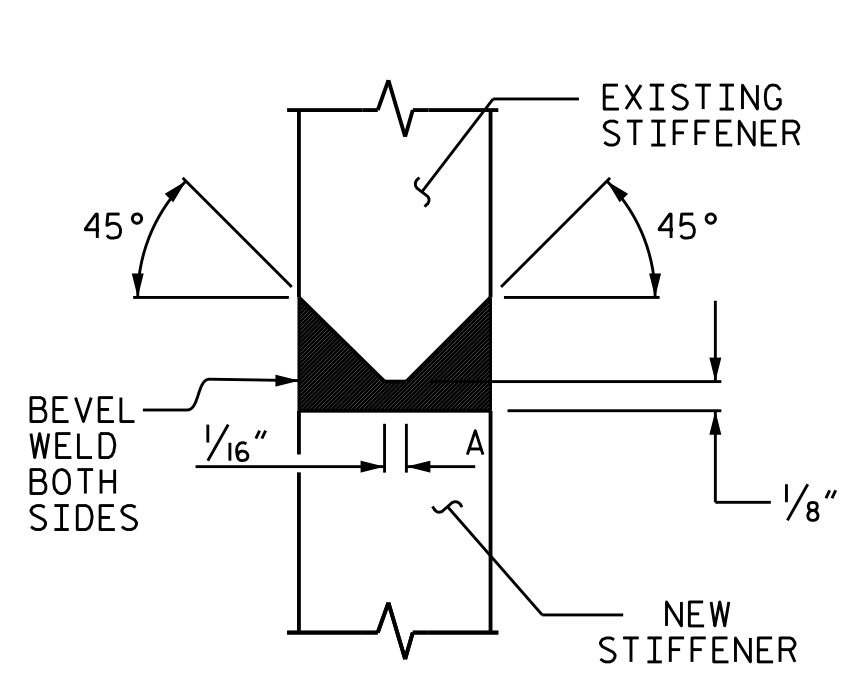
BEAM END PLATING REPAIR



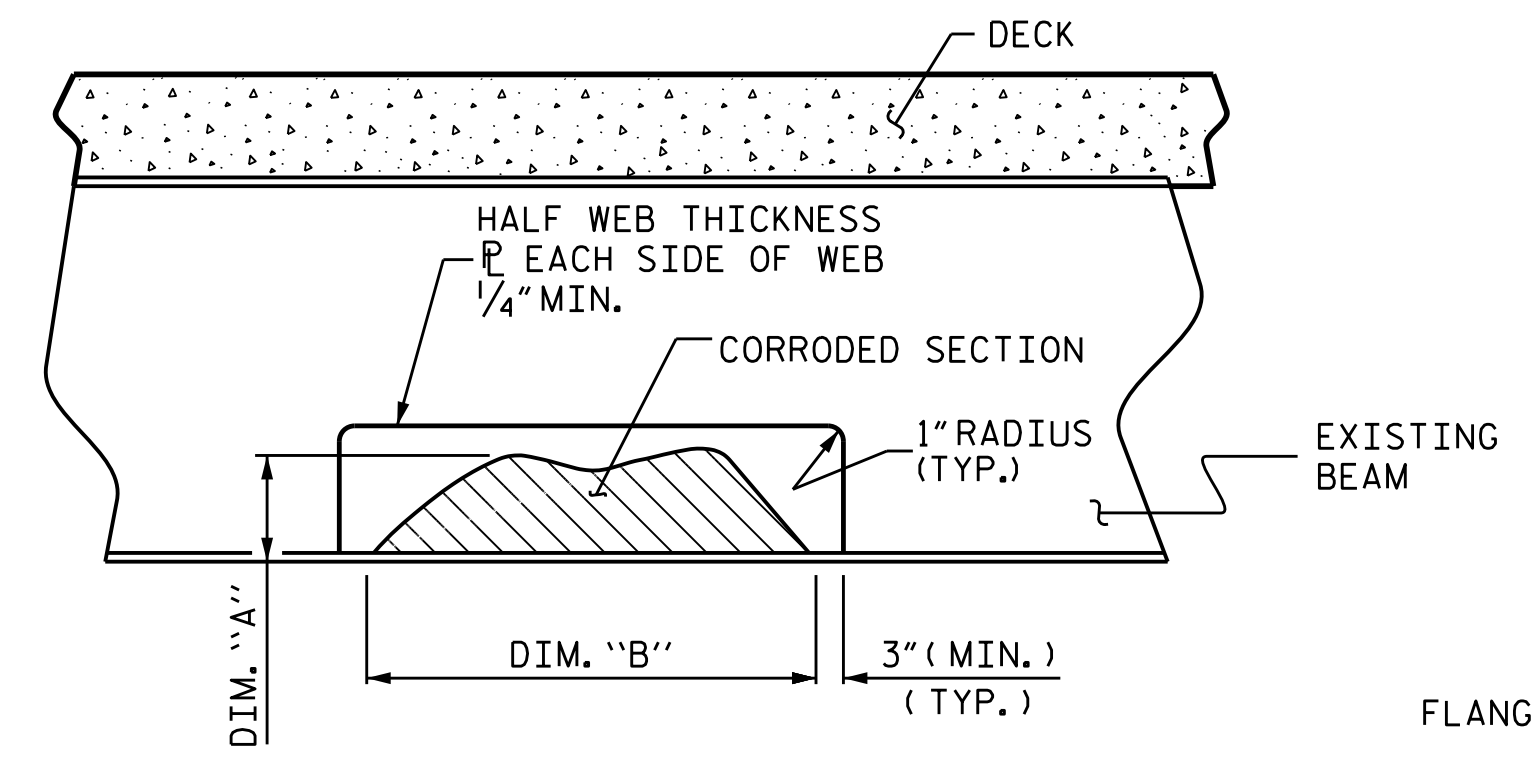
SECTION I-I



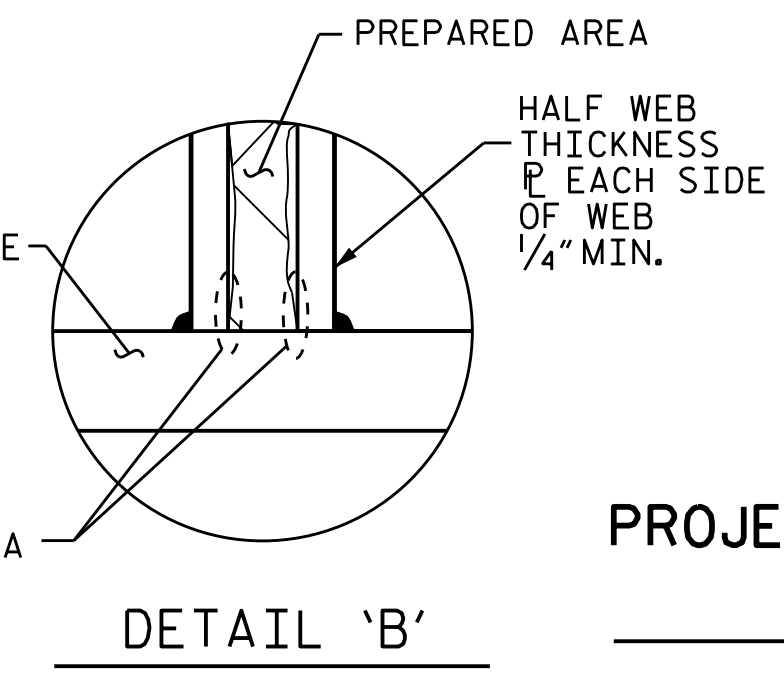
SECTION J-J



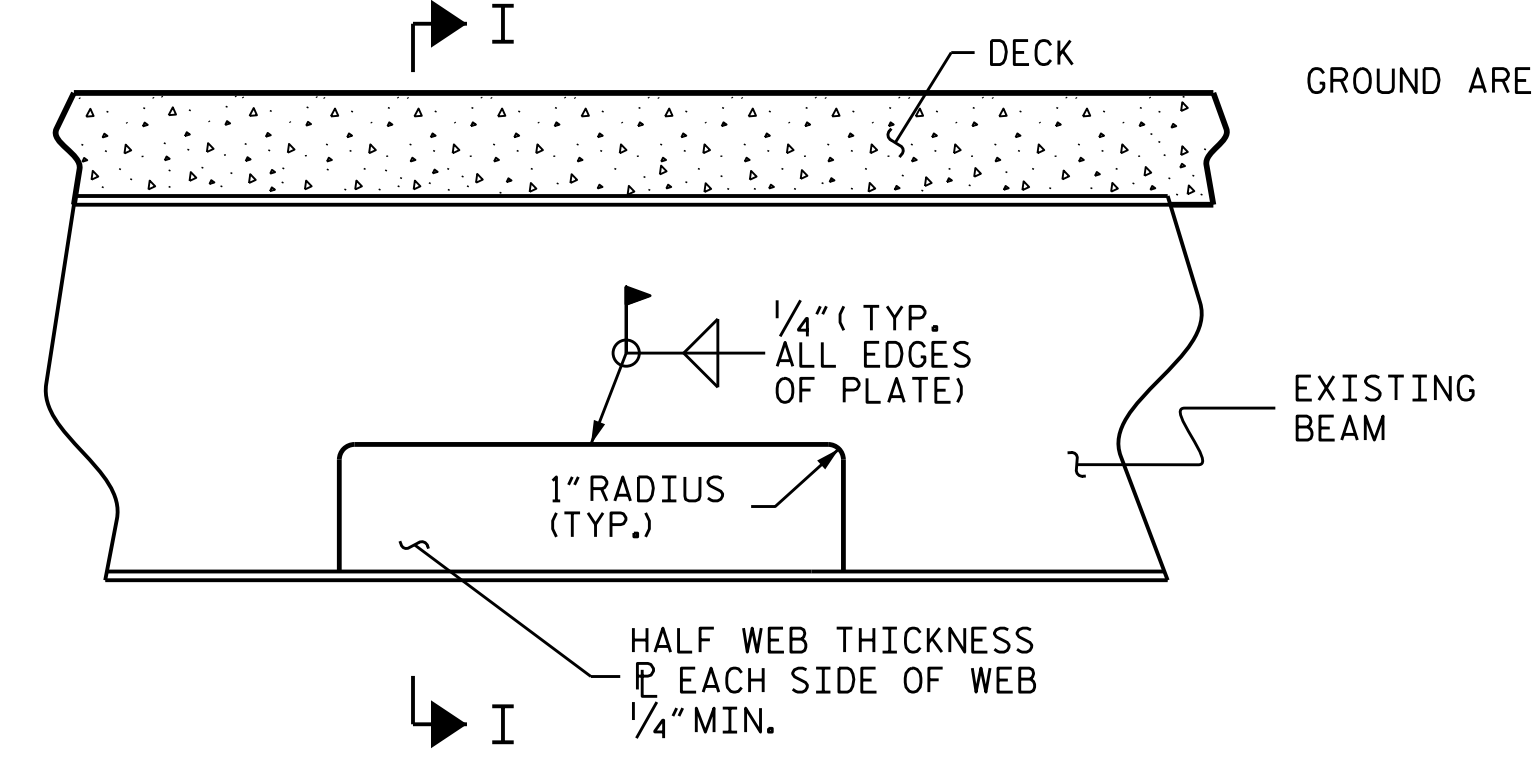
DETAIL 'A'



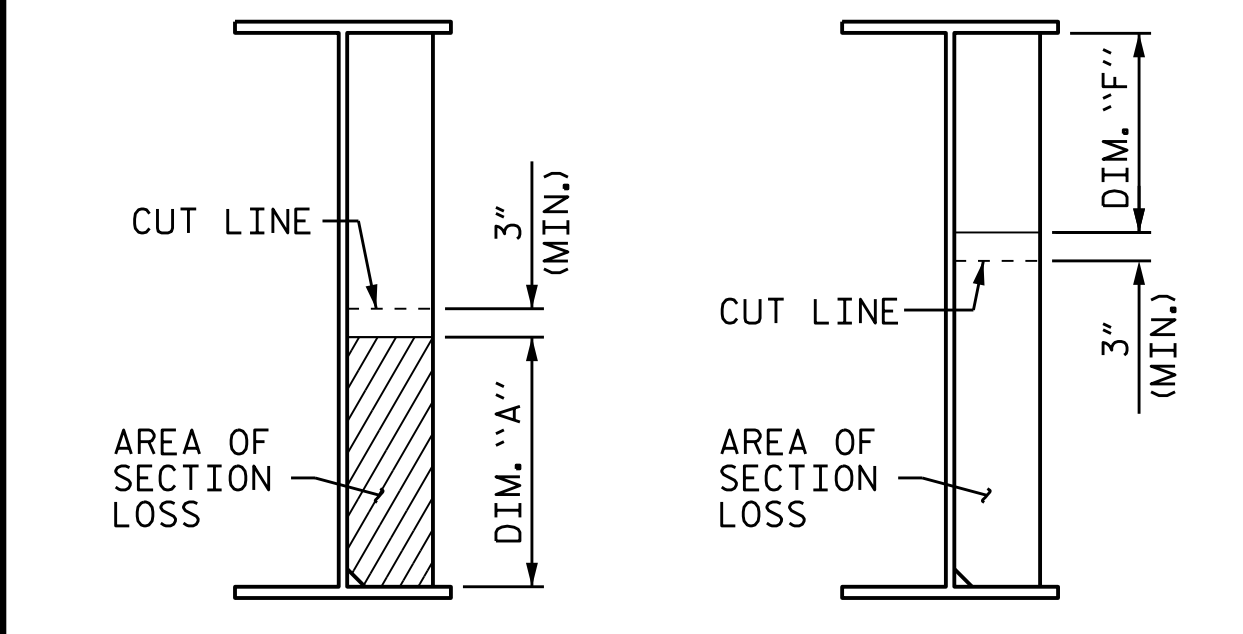
INTERMEDIATE SECTION LOSS BEAM PLATING REPAIR



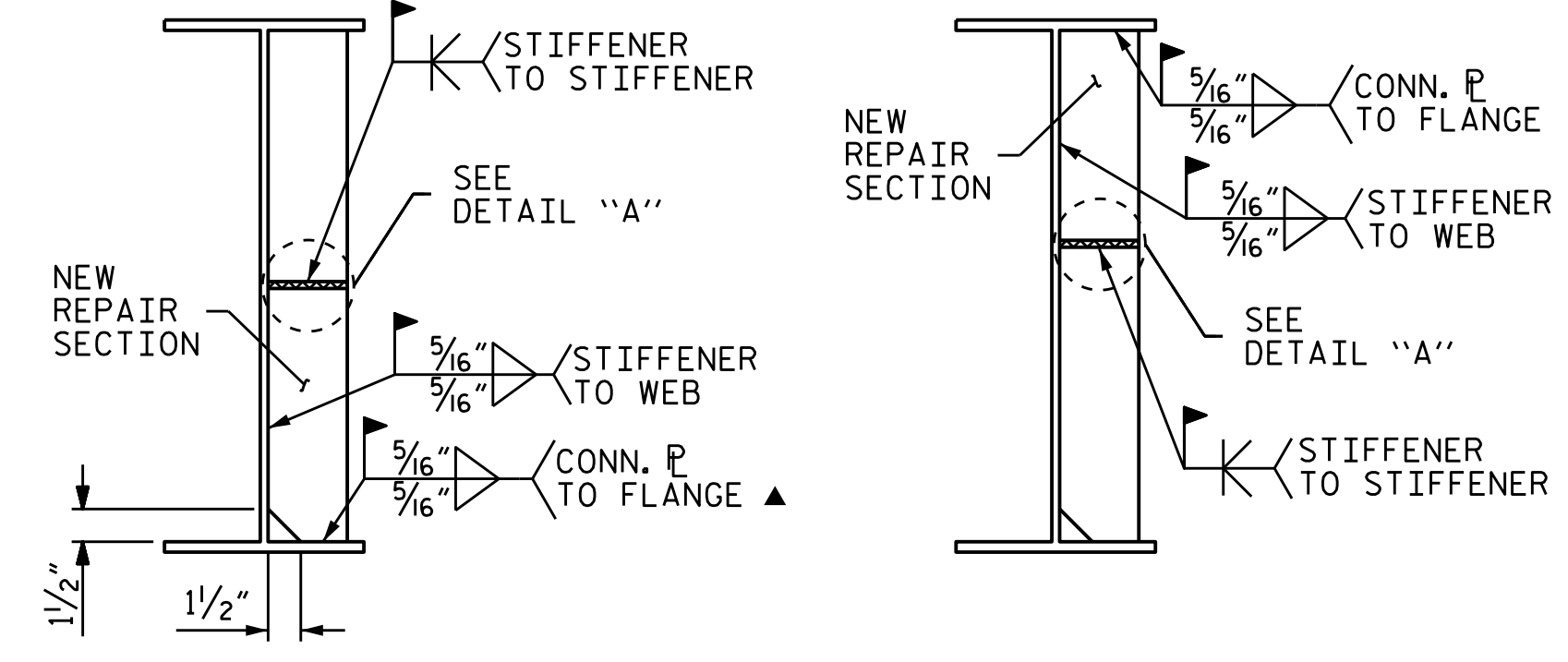
DETAIL 'B'



INTERMEDIATE SECTION LOSS BEAM PLATING REPAIR



STIFFENER/CONN. PLATE SECTION LOSS



STIFFENER/CONN. PLATE SECTION REPAIR

▲ FOR STIFFENERS, MILL TO BEAR AND DO NOT WELD

STIFFENER/CONNECTOR PLATE REPAIR

DRAWN BY : CL BRIGHT DATE : 10/18
 CHECKED BY : T. SHERRILL DATE : 10/18

20-NOV-2018 14:18
 Q:\Division09\I5823\Structures\Plans\401.043.I-5823.SMU.SSR1.022.290018.dgn
 kseddl

BEAM PLATING REPAIR NOTES

ALL CONDITIONS AND DIMENSIONS SHALL BE FIELD VERIFIED PRIOR TO FABRICATION OR INSTALLATION OF ANY COMPONENTS.

REPAIR PLATES SHALL BE NEW, AND SHALL BE THE SAME GRADE OF THE EXISTING STEEL MEMBER OR BETTER.

REPAIR SEQUENCE:

COORDINATE WITH MATERIALS AND TEST UNIT AT LEAST 4 DAYS PRIOR TO ANTICIPATED WORK.

REMOVE LIVE LOAD FROM REPAIR AREA BY EITHER CLOSING BRIDGE TO TRAFFIC OR SHIFTING TRAFFIC AWAY FROM REPAIR AREA.

IF NECESSARY, REMOVE EXISTING STIFFENER TO INSTALL WELDED PLATE REPAIR. REPLACE WITH A NEW STIFFENER PLATE OF SIMILAR SIZE.

IF BEAM DETERIORATION EXTENDS INTO THE CONCRETE DIAPHRAGM THEN CHIP AWAY CONCRETE TO DETERMINE THE EXTENT OF THE DAMAGE.

IF PAINTING THE STEEL, CLEAN AND BLAST STEEL AS REQUIRED, PRIOR TO PERFORMING STEEL REPAIRS. OTHERWISE, MECHANICALLY CLEAN RUST, SCALE, AND EXISTING PAINT TO AT LEAST 3" BEYOND REPAIR AREA.

PRIME ENTIRE REPAIR AREA AND REPAIR PLATES WITH AN ORGANIC ZINC PRIMER PRIOR TO WELDING NEW PLATES. REMOVE PRIMER IN WELD AREA.

ONE PLATE SHALL BE PLACED, AS INDICATED ON EACH SIDE OF THE BEAM WEB.

EACH PLATE SHALL BE APPROXIMATELY ONE-HALF THE ORIGINAL THICKNESS OF THE BEAM WEB.

FULLY WELD ALONG TOP AND SIDES OF THE PLATES AS SHOWN.

ALL WELDING SHALL BE IN ACCORDANCE WITH CURRENT APPLICABLE AWS AND NCDOT STANDARD SPECIFICATIONS.

ALL WELDS SHALL BE INSPECTED AND TESTED BY THE NCDOT MATERIALS AND TEST UNIT IN ACCORDANCE WITH THE CURRENT AWS BRIDGE WELDING CODE AND STANDARD SPECIFICATIONS.

IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS, AFTER REPAIR, GRIND ALL WELDS FLUSH, AND THOROUGHLY CLEAN AREA TO REMOVE DEBRIS AND OILS FROM THE REPAIR PROCESS.

CLEANING AND PAINTING OF REPAIRED STRUCTURAL STEEL SHALL BE PERFORMED AS PART OF THE OVERALL CLEANING AND PAINTING CONTRACT.

FOR CLEANING AND PAINTING, SEE PAINTING EXISTING STRUCTURE SPECIAL PROVISIONS.

AFTER BEAMS ARE REPAIRED AND PAINTED, ANY CONCRETE REMOVED FROM THE BENT DIAPHRAGMS SHALL BE RECAST. ANY REINFORCING STEEL CUT DURING THE REMOVAL PROCESS SHALL BE SPLICED WITH A SIMILAR SIZE BAR WITH AT LEAST A ONE FOOT SPLICE TO THE EXISTING STEEL. NO SEPARATE PAYMENT SHALL BE MADE FOR CONCRETE AND REINFORCING STEEL AS THIS IS CONSIDERED INCIDENTAL TO THE PAY ITEM "BEAM REPAIR". FOR BEAM REPAIR, SEE SPECIAL PROVISIONS.

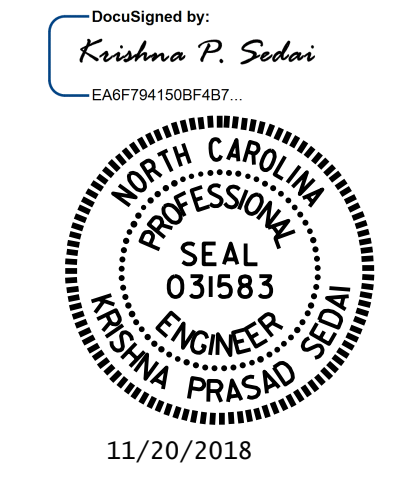
REMOVE ALL TRAFFIC CONTROL DEVICES.

PROJECT NO. I-5823

DAVIE COUNTY

BRIDGE NO. 18

SHEET 1 OF 3

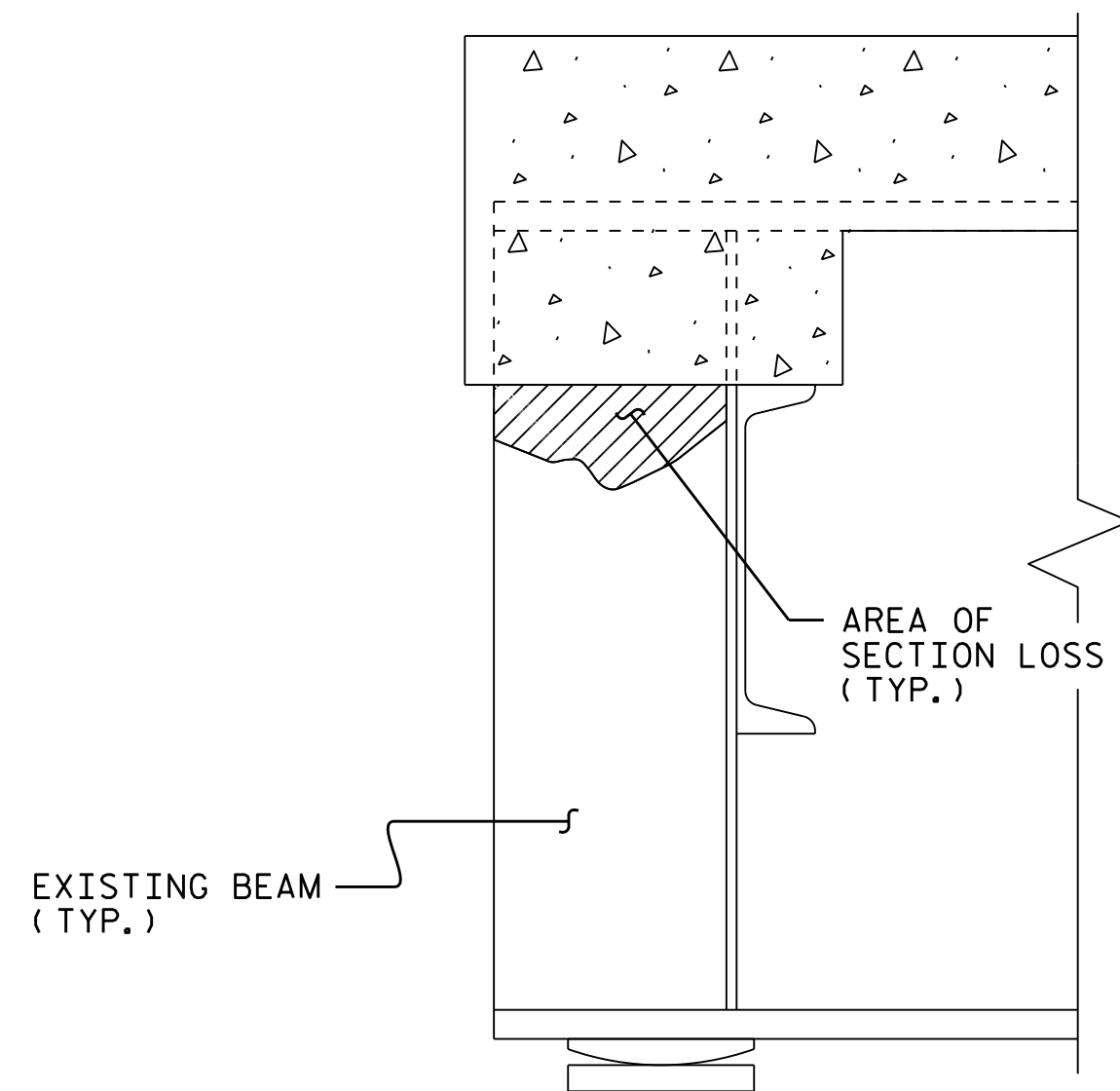


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

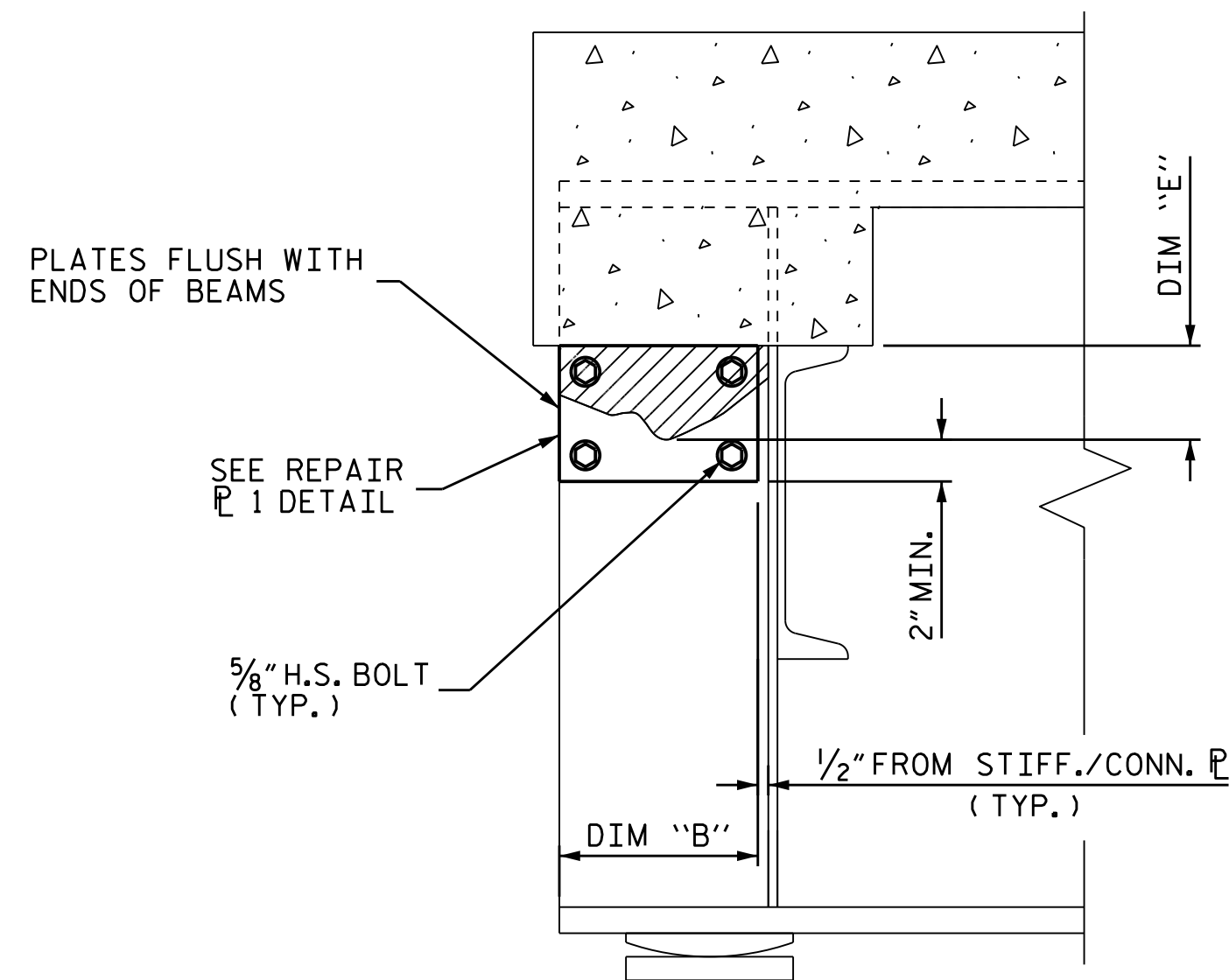
BEAM PLATING REPAIR DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-22
1			3			TOTAL SHEETS
2			4			25

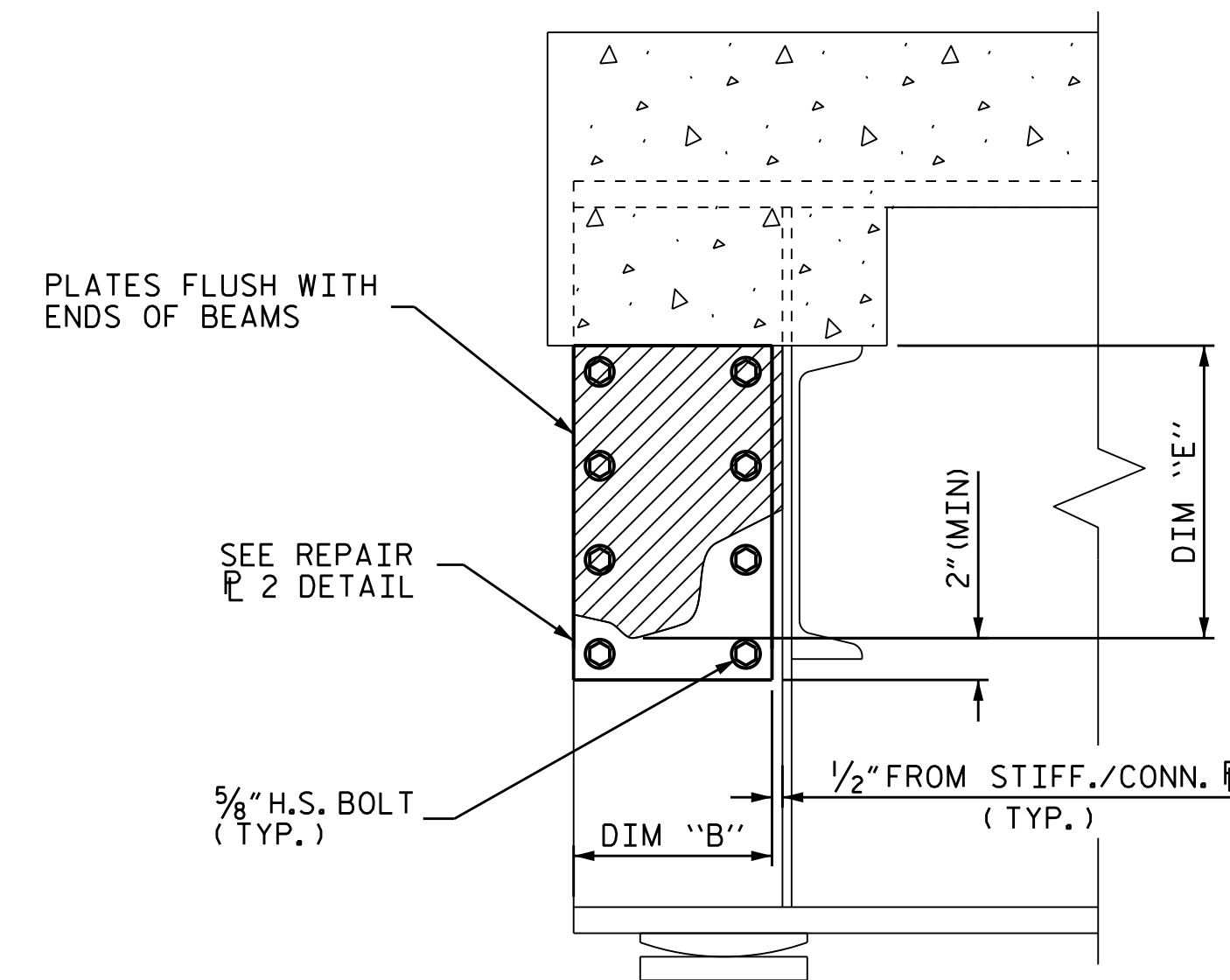
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



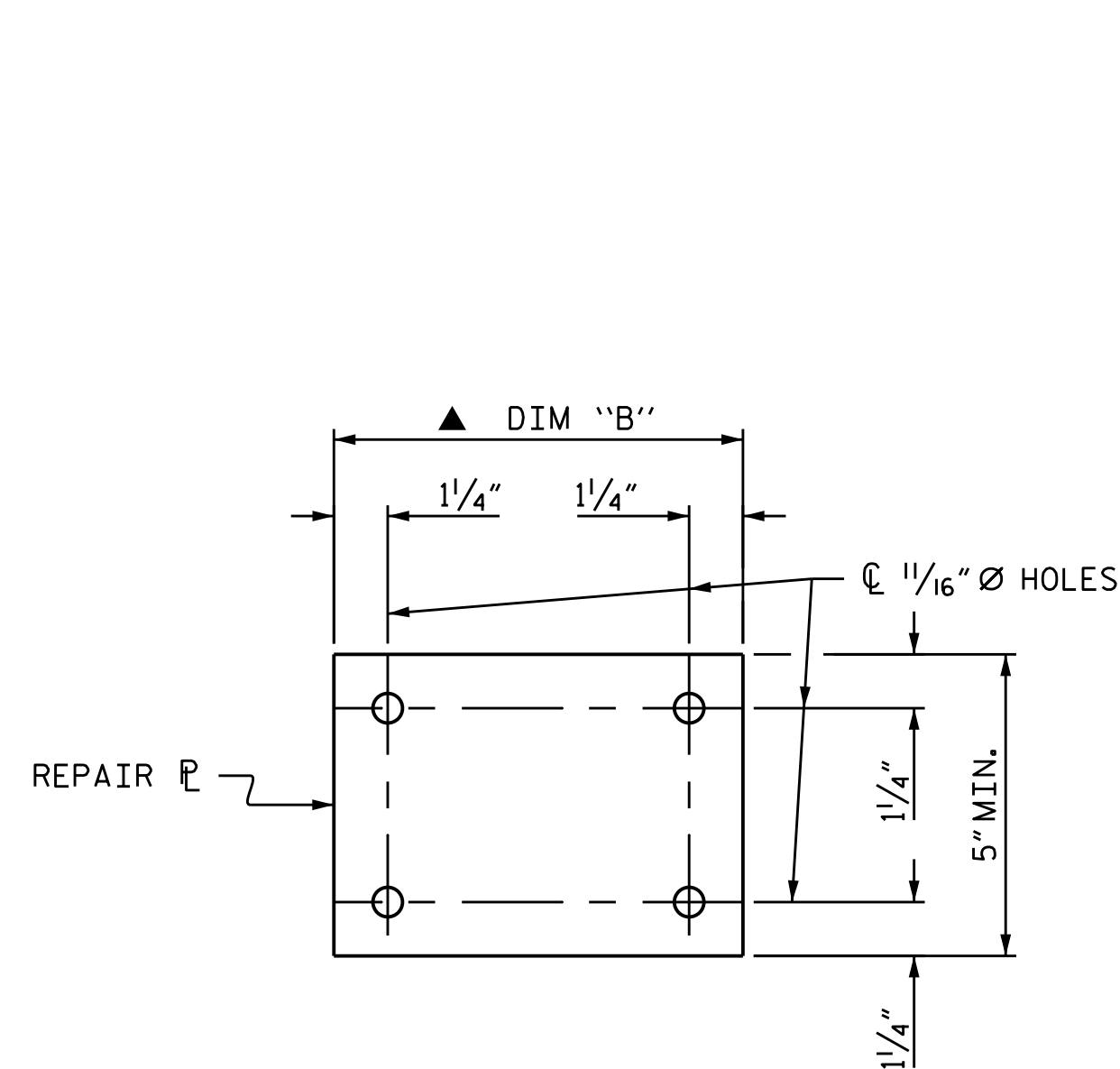
BEAM END SECTION LOSS
(EXISTING)



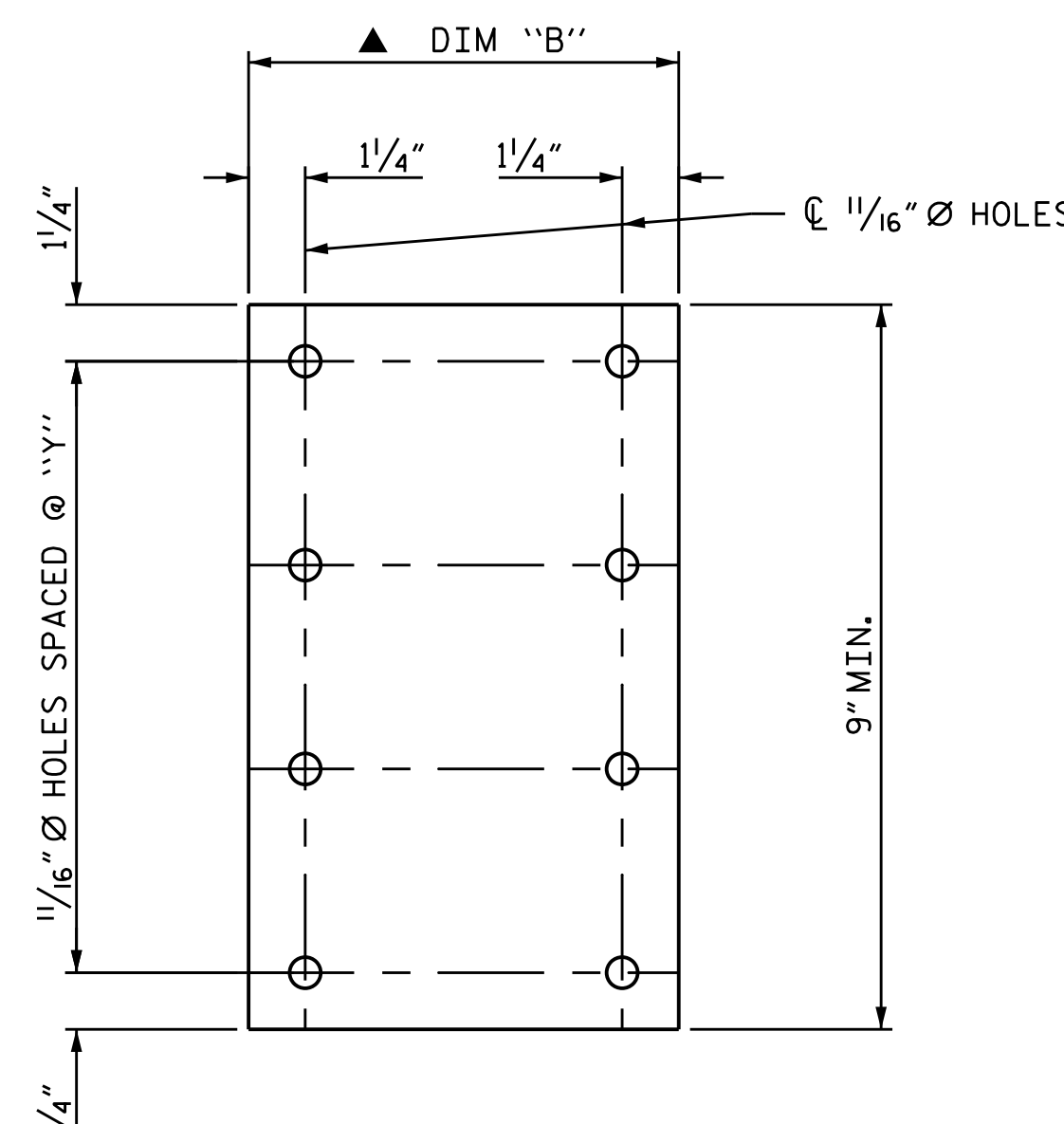
BEAM END SECTION LOSS PLATING REPAIR
(DIMENSION "E" 3" TO 6 1/2" USE REPAIR P 1)



BEAM END SECTION LOSS PLATING REPAIR
(DIMENSION "E" GREATER THAN 6 1/2" USE REPAIR P 2)



REPAIR P 1 DETAIL
(2-PLATES REQ'D PER REPAIR)



REPAIR P 2 DETAIL
(2-PLATES REQ'D PER REPAIR)

NOTES:

▲ FOR EACH BEAM BEING REPAIRED, CONTRACTOR SHALL FIELD VERIFY DIMENSIONS. PLATE DIMENSIONS SHALL BE ADJUSTED TO FIT IN THE SPACE FROM BEAM END TO 1/2" FROM STIFFENER / CONNECTOR PLATE.

THE ENGINEER SHALL BE NOTIFIED IF DIMENSION "B" EXCEEDS 12". IF SO, AN ADDITIONAL COLUMN OF BOLTS SHALL BE ADDED.

THE PLATES FOR DIM "E" SHALL BE PLACED SNUG TO THE BOTTOM OF THE DIAPHRAGM.

DIMENSION "Y" SHALL BE A MINIMUM OF 3/4" AND A MAXIMUM OF 6".

EACH PLATE SHALL BE APPROXIMATELY ONE-HALF THE ORIGINAL THICKNESS OF THE BEAM WEB AND SHALL BE APPROVED BY THE ENGINEER.

PLATES SHALL BE SHOP PRIMED PRIOR TO DELIVERY.

PLATES SHALL BE NEW, AND SHALL BE THE SAME GRADE OF THE EXISTING STEEL MEMBER OR BETTER.

ALL BOLTS SHALL MEET ASTM A325.

ALL NUTS SHALL MEET ASTM A194.

ALL FLAT WASHERS SHALL MEET ASTM F436.

IF STEEL IS WEATHER, ALL BOLTS, NUT, AND WASHERS SHALL BE AASHTO M163 TYPE 3.

THE EPOXY MASTIC USED FOR THIS WORK SHALL BE COMPATIBLE WITH THE PAINT SYSTEM USED FOR THE PAINTING OF EXISTING STEEL AND SHALL BE APPROVED BY THE NCDOT MATERIALS AND TEST UNIT. THE EPOXY MASTIC WILL BE ACCEPTED ON THE BASIS OF THE MANUFACTURER'S WRITTEN CERTIFICATION THAT THE BATCH PRODUCED MEETS THEIR PRODUCT SPECIFICATION.

REPAIR SEQUENCE:

REMOVE LIVE LOAD FROM REPAIR AREA BY EITHER CLOSING BRIDGE TO TRAFFIC OR SHIFTING TRAFFIC AWAY FROM REPAIR AREA.

IF PAINTING THE STEEL, CLEAN AND BLAST STEEL AS REQUIRED, PRIOR TO PERFORMING STEEL REPAIRS. OTHERWISE, MECHANICALLY CLEAN RUST, SCALE, AND EXISTING PAINT TO AT LEAST 3" BEYOND REPAIR AREA.

PRIME ENTIRE REPAIR AREA AND REPAIR PLATES WITH AN ORGANIC ZINC PRIMER PRIOR TO ATTACHING NEW PLATES

ONE PLATE SHALL BE PLACED, ON EACH SIDE OF THE BEAM ENDS.

PRIOR TO PLACEMENT OF THE PLATES, APPLY WET EPOXY MASTIC AROUND THE TOP AND SIDE PERIMETERS ON THE PLATE FACE THAT IS TO BE IN CONTACT WITH THE BEAM. AMOUNT OF EPOXY MASTIC SHALL BE SUFFICIENT TO SEAL THE INTERFACE OF THE PLATE AND THE BEAM AFTER BOLTS ARE TIGHTENED. NO EPOXY MASTIC SHALL BE PLACED ALONG THE BOTTOM PERIMETER ON THE PLATE. WHILE THE MASTIC IS STILL WET, PLATES SHALL BE PUT IN PLACE AND BOLTS PROPERLY TIGHTENED.

TENSION ON THE BOLTS SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS (DTIS) IN ACCORDANCE WITH ARTICLE 440-8 OF THE NCDOT STANDARD SPECIFICATIONS. DTIS SHALL BE MEET ASTM F959.

AFTER PLACEMENT OF THE PLATES AND TIGHTENING OF THE BOLTS, PLATES, BOLTS, AND SURROUNDING AREA SHALL BE PAINTED OR PAINT SHALL BE REPAIRED AS PER PROJECT REQUIREMENTS AND NCDOT STANDARD SPECIFICATIONS.

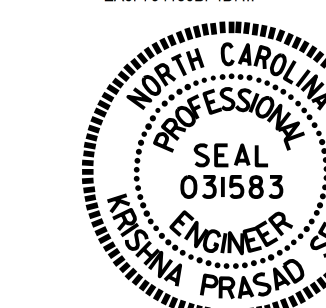
PAYMENT WILL BE MADE AT CONTRACT PRICE BID PER POUNDS STRUCTURAL STEEL USED FOR GIRDER REPAIR. SUCH PAYMENTS WILL BE FULL COMPENSATION FOR ALL MATERIALS, EQUIPMENT, TOOLS, LABOR, MISCELLANEOUS STEEL, AND INCIDENTALS NECESSARY TO COMPLETE THE WORK.

PROJECT NO. I-5823
DAVIE COUNTY
BRIDGE NO. 18

SHEET 2 OF 3

DocuSigned by:
Krishna P. Sedai

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11/20/2018

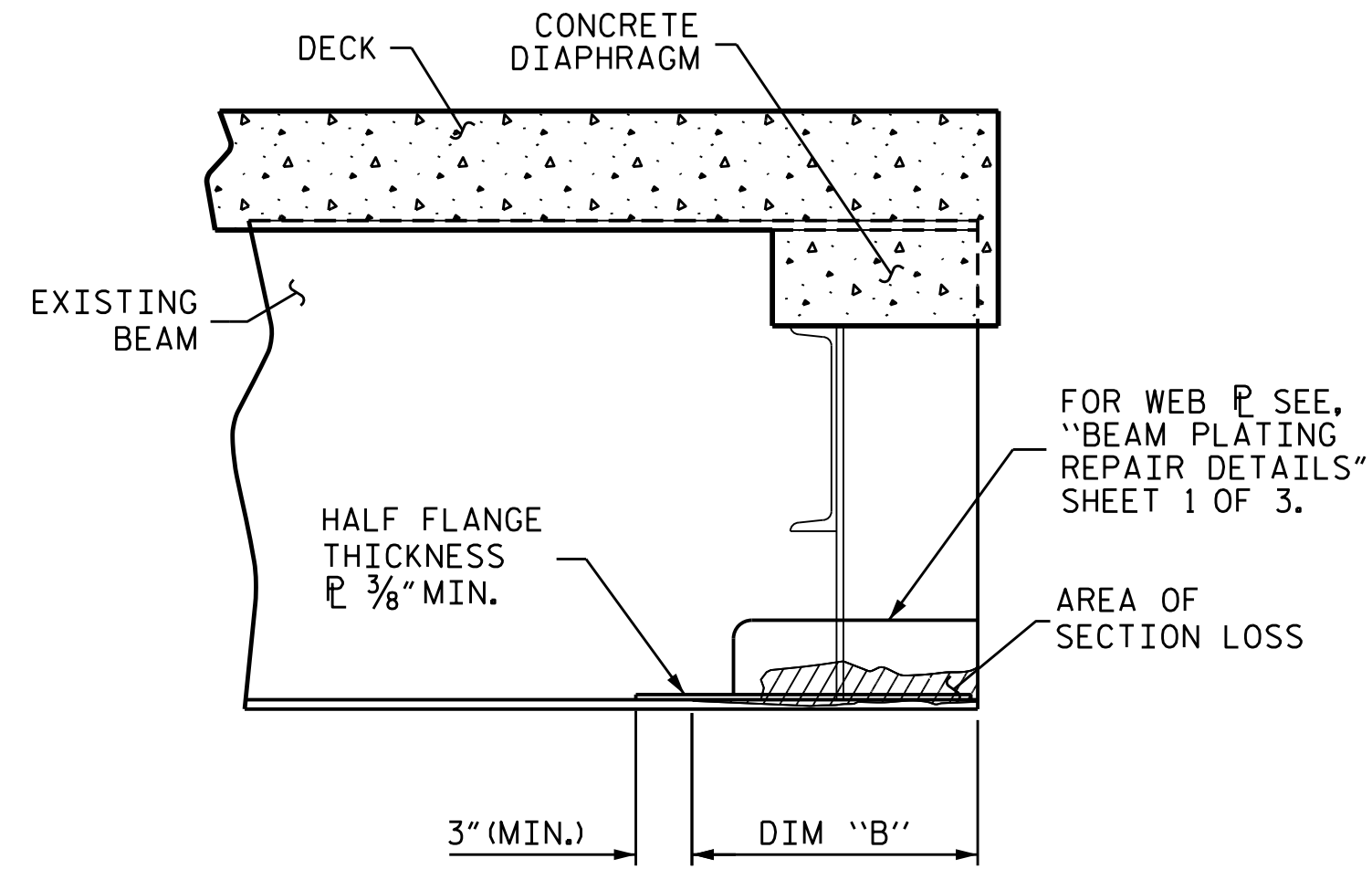
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BEAM PLATING REPAIR DETAILS

DRAWN BY : C.L. BRIGHT DATE : 9/2018
CHECKED BY : T. M. SHERRILL DATE : 9/2018

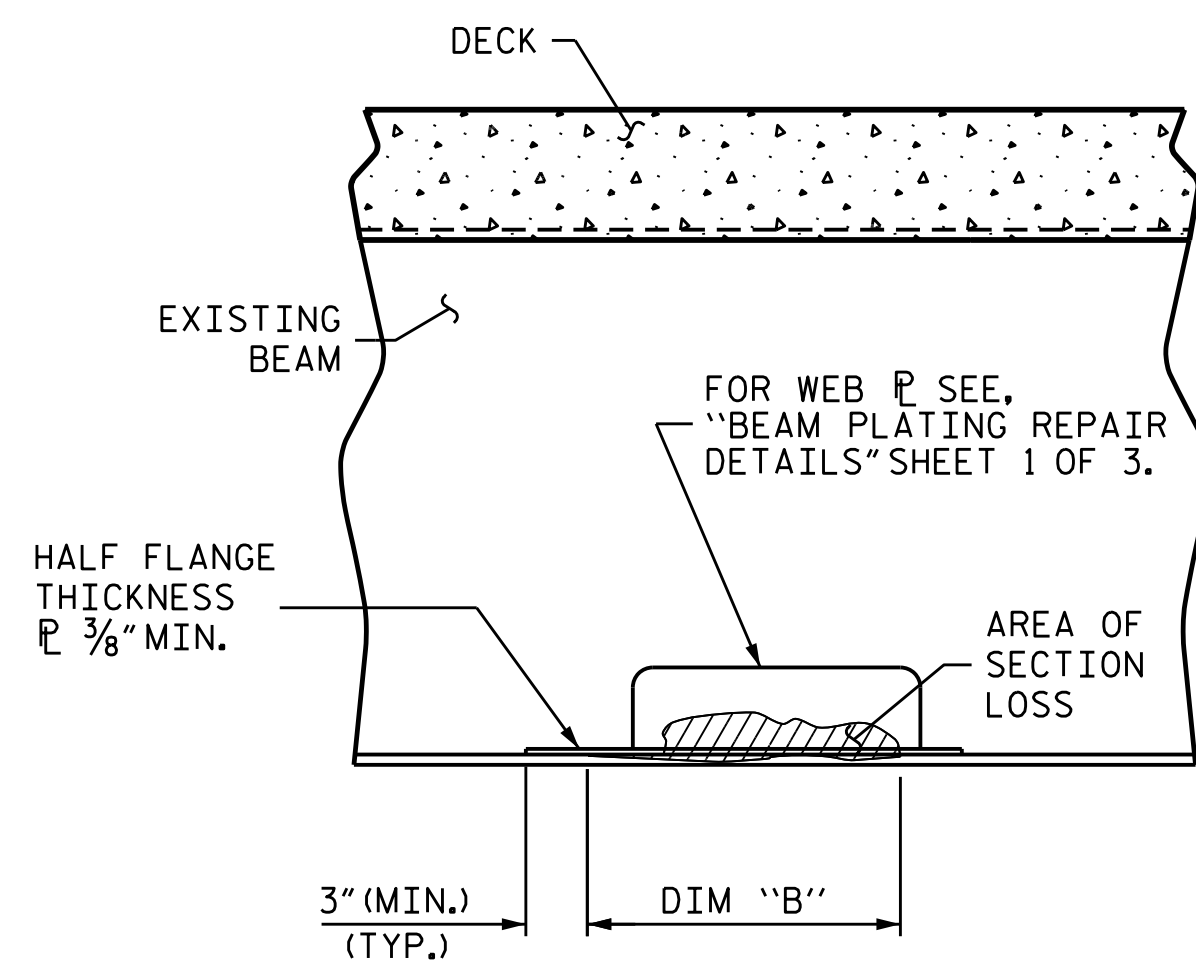
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FINAL UNLESS ALL
SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S3-23
2			4			TOTAL SHEETS 25



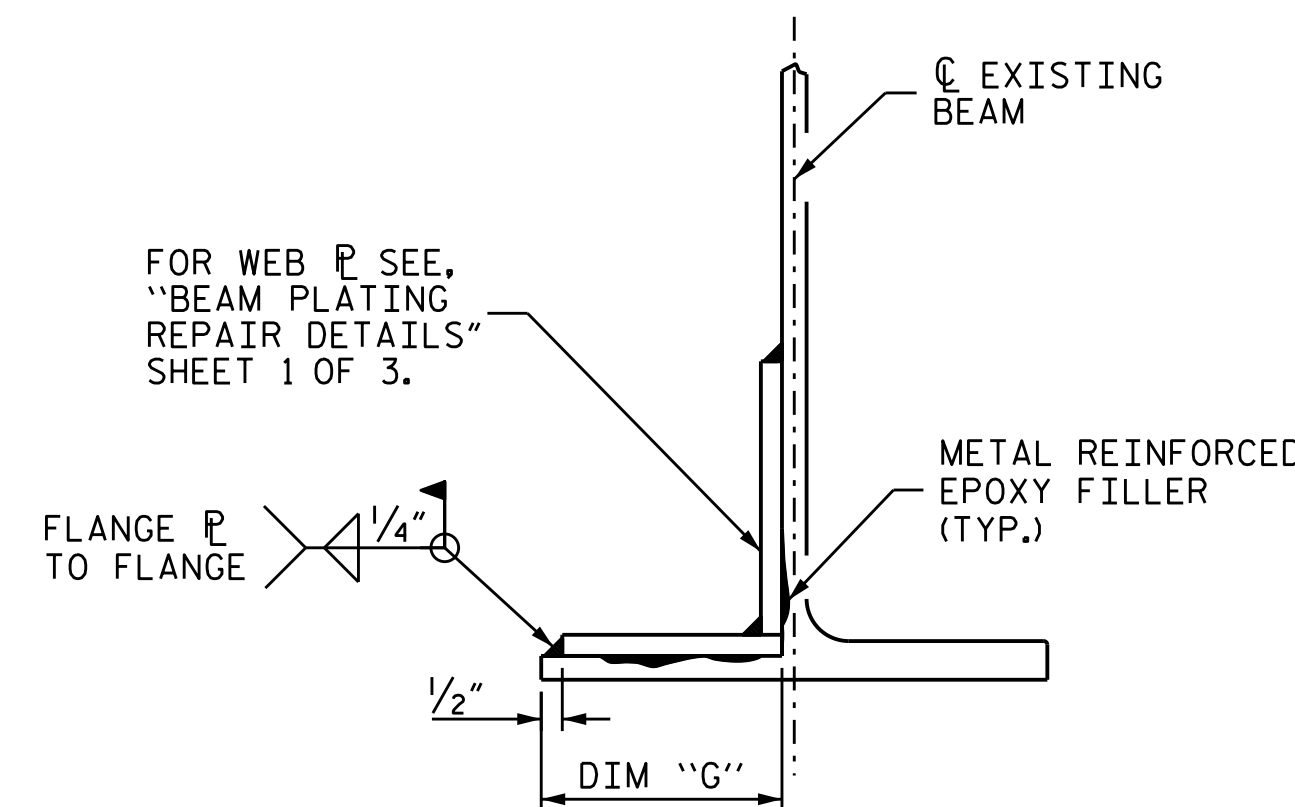
BEAM END SECTION LOSS AND PLATING REPAIR

(BOTTOM FLANGE REPAIR MAY NOT REQUIRE WEB P)



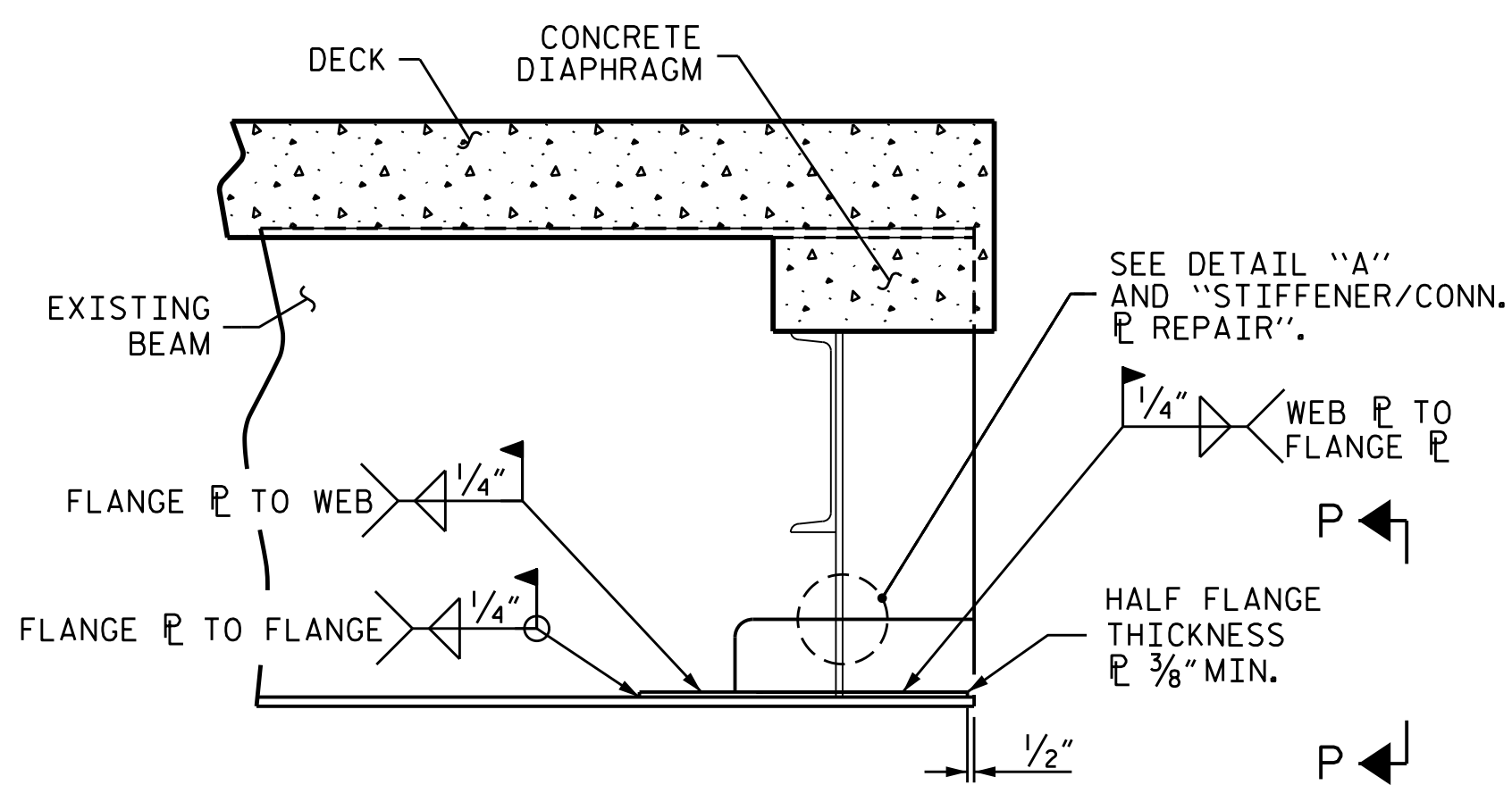
INTERMEDIATE SECTION LOSS AND BEAM PLATING REPAIR

(BOTTOM FLANGE REPAIR MAY NOT REQUIRE WEB P)

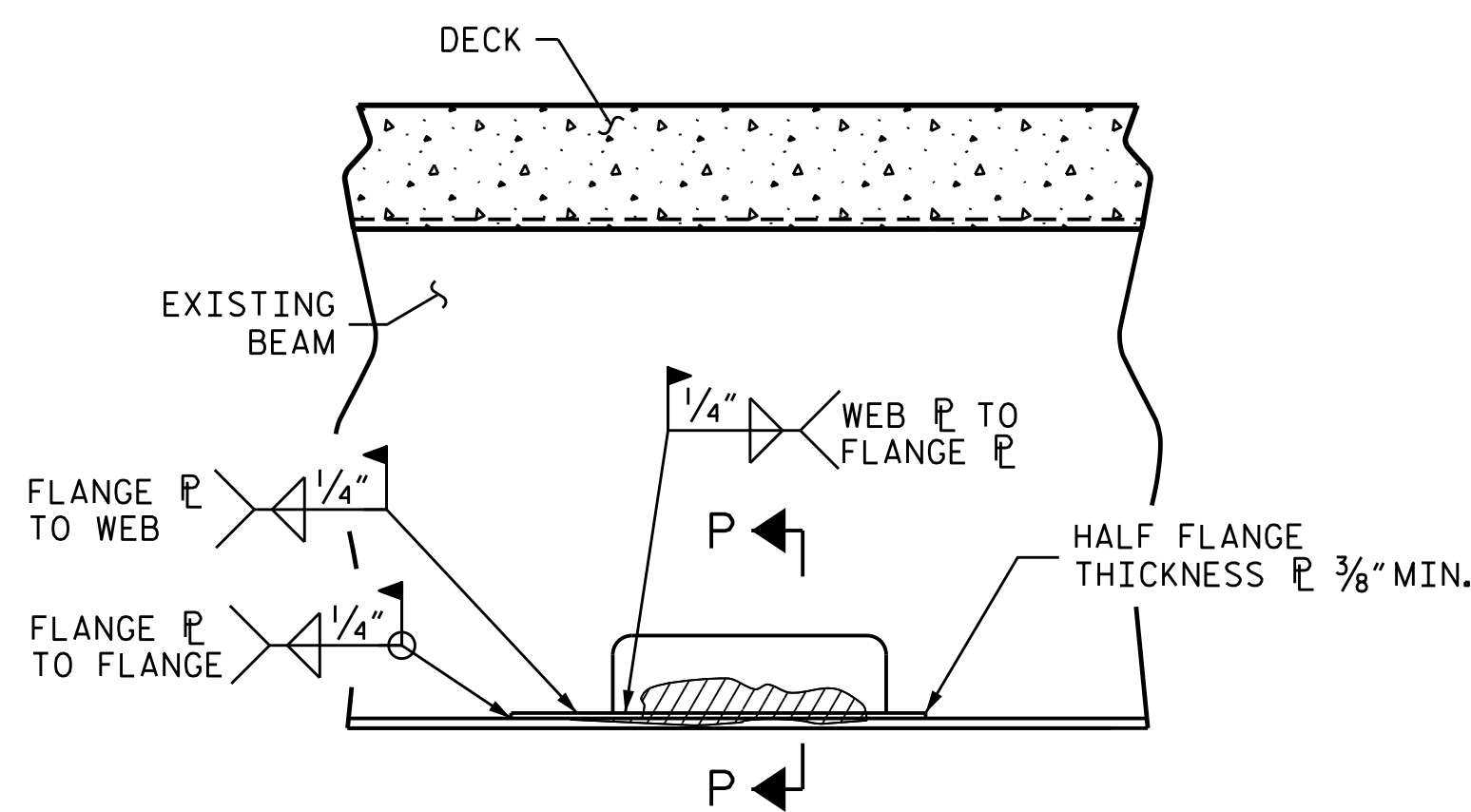


SECTION P-P

(REPAIR SHOWN LEFT SIDE OF BEAM. RIGHT SIDE SIMILAR.)



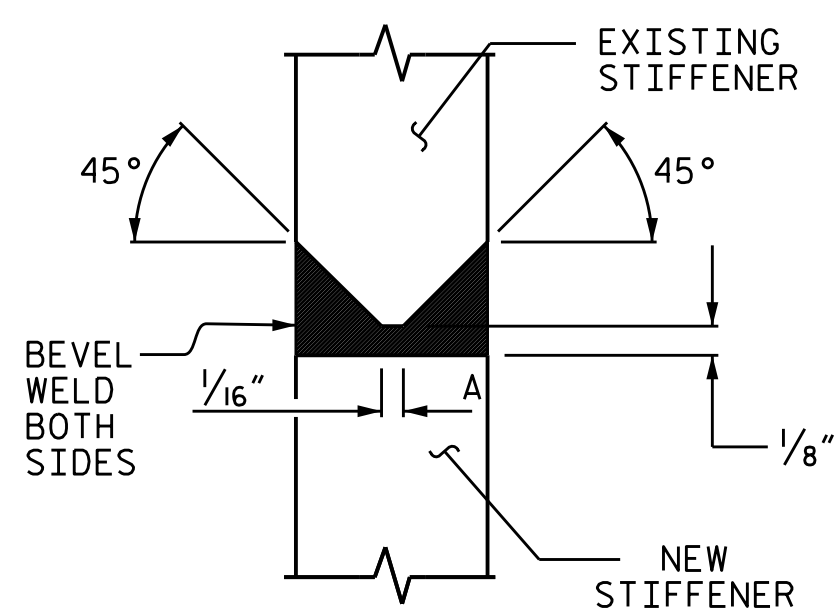
BEAM END PLATING REPAIR



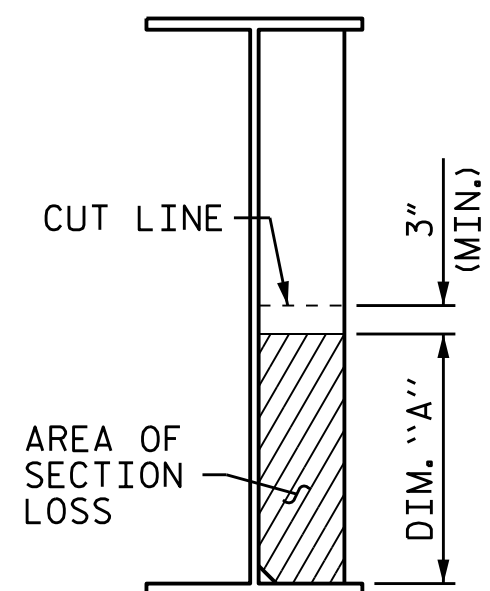
INTERMEDIATE BEAM PLATING REPAIR

BEAM END PLATING REPAIR

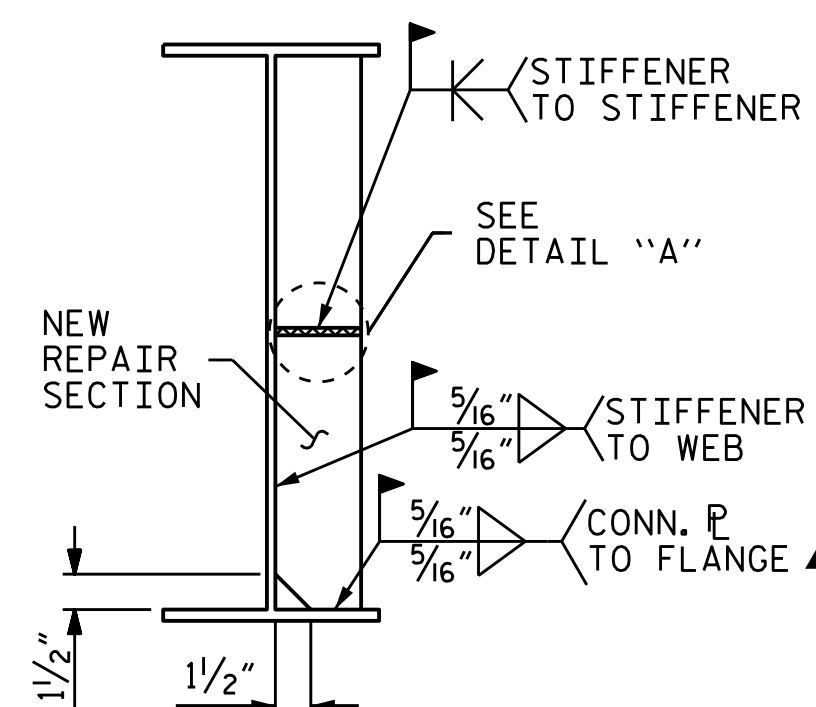
INTERMEDIATE BEAM PLATING REPAIR



DETAIL 'A'



STIFFENER/CONN. P SECTION LOSS



STIFFENER/CONN. P SECTION REPAIR

▲ FOR STIFFENERS, MILL TO BEAR AND DO NOT WELD

STIFFENER/CONNECTOR PLATE REPAIR

BEAM PLATING REPAIR NOTES

ALL CONDITIONS AND DIMENSIONS SHALL BE FIELD VERIFIED PRIOR TO FABRICATION OR INSTALLATION OF ANY COMPONENTS.

REPAIR PLATES SHALL BE NEW, AND SHALL BE THE SAME GRADE OF THE EXISTING STEEL MEMBER OR BETTER.

REPAIR SEQUENCE:

COORDINATE WITH MATERIALS AND TEST UNIT AT LEAST 4 DAYS PRIOR TO ANTICIPATED WORK.

REMOVE LIVE LOAD FROM REPAIR AREA BY EITHER CLOSING BRIDGE TO TRAFFIC OR SHIFTING TRAFFIC AWAY FROM REPAIR AREA.

IF NECESSARY, REMOVE EXISTING STIFFENER TO INSTALL WELDED PLATE REPAIR. REPLACE WITH A NEW STIFFENER PLATE OF SIMILAR SIZE.

IF BEAM DETERIORATION EXTENDS INTO THE CONCRETE DIAPHRAGM THEN CHIP AWAY CONCRETE TO DETERMINE THE EXTENT OF THE DAMAGE.

IF PAINTING THE STEEL, CLEAN AND BLAST STEEL AS REQUIRED, PRIOR TO PERFORMING STEEL REPAIRS. OTHERWISE, MECHANICALLY CLEAN RUST, SCALE, AND EXISTING PAINT TO AT LEAST 3" BEYOND REPAIR AREA.

PRIME ENTIRE REPAIR AREA AND REPAIR PLATES WITH AN ORGANIC ZINC PRIMER PRIOR TO WELDING NEW PLATES. REMOVE PRIMER IN WELD AREA.

UNLESS OTHERWISE NOTED EACH FLANGE PLATE SHALL BE APPROXIMATELY ONE-HALF THE ORIGINAL THICKNESS OF THE BEAM FLANGE.

FULLY WELD ALONG TOP AND SIDES OF THE PLATES AS SHOWN.

ALL WELDING SHALL BE IN ACCORDANCE WITH CURRENT APPLICABLE AWS AND NCDOT STANDARD SPECIFICATIONS.

ALL WELDS SHALL BE INSPECTED AND TESTED BY THE NCDOT MATERIALS AND TEST UNIT IN ACCORDANCE WITH THE CURRENT AWS BRIDGE WELDING CODE AND STANDARD SPECIFICATIONS.

IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS, AFTER REPAIR, GRIND ALL WELDS FLUSH, AND THOROUGHLY CLEAN AREA TO REMOVE DEBRIS AND OILS FROM THE REPAIR PROCESS.

CLEANING AND PAINTING OF REPAIRED STRUCTURAL STEEL SHALL BE PERFORMED AS PART OF THE OVERALL CLEANING AND PAINTING CONTRACT.

FOR CLEANING AND PAINTING, SEE PAINTING EXISTING STRUCTURE SPECIAL PROVISIONS.

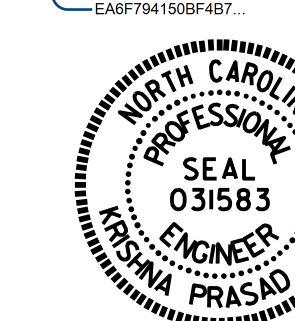
AFTER BEAMS ARE REPAIRED AND PAINTED, ANY CONCRETE REMOVED FROM THE BENT DIAPHRAGMS SHALL BE RECAST. ANY REINFORCING STEEL CUT DURING THE REMOVAL PROCESS SHALL BE SPLICED WITH A SIMILAR SIZE BAR WITH AT LEAST A ONE FOOT SPLICE TO THE EXISTING STEEL. NO SEPARATE PAYMENT SHALL BE MADE FOR CONCRETE AND REINFORCING STEEL AS THIS IS CONSIDERED INCIDENTAL TO THE PAY ITEM 'BEAM REPAIR'. FOR BEAM REPAIR, SEE SPECIAL PROVISIONS.

REMOVE ALL TRAFFIC CONTROL DEVICES.

PROJECT NO. I-5823
DAVIE COUNTY
 BRIDGE NO. 18

SHEET 3 OF 3

DocuSigned by:
 Krishna P. Sedai
 EABF7941508F487...



11/20/2018

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

BEAM PLATING REPAIR DETAILS

DRAWN BY : CL BRIGHT DATE : 10/2018
 CHECKED BY : T. SHERRILL DATE : 10/2018

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-24
1			3			TOTAL SHEETS
2			4			25

BRIDGE JACKING NOTES:

THIS DETAIL IS A GENERIC EXAMPLE OF A JACKING SCHEME AND DOES NOT NECESSARILY REPRESENT SPECIFIC CONDITIONS AT A PARTICULAR BRIDGE. ACTUAL BRIDGE GEOMETRIES, DIMENSIONS, AND CONDITIONS MAY DIFFER FROM THIS DETAIL. PRIOR TO BEGINNING WORK, THE CONTRACTOR SHALL INVESTIGATE THE BRIDGES ON THE PROJECT AND DEVELOP A JACKING PLAN TO BE SUBMITTED FOR REVIEW AND APPROVAL. SEE BRIDGE JACKING SPECIAL PROVISION.

PRIOR TO BRIDGE JACKING OPERATIONS, THE ENGINEER AND CONTRACTOR SHALL INSPECT THE STRUCTURE FOR ANY NOTABLE DEFECTS TO THE PRIMARY AND SECONDARY STRUCTURAL MEMBERS. ALL NOTABLE DEFECTS SHALL BE DOCUMENTED AND REPORTED TO THE AREA BRIDGE MAINTENANCE ENGINEER PRIOR TO COMMENCEMENT OF ANY BRIDGE JACKING. THE CONTRACTOR SHALL PROVIDE SAFE AND SUFFICIENT ACCESS TO ALL STRUCTURAL MEMBERS FOR THE ENGINEER TO ESTABLISH PROPER DOCUMENTATION.

PRIOR TO JACKING, THE CONTRACTOR SHALL ENSURE THERE ARE NO OBSTACLES PREVENTING THE BEAM FROM BEING LIFTED.

THE BEAM SHALL BE LIFTED ENOUGH THAT THE BEAM CLEARS THE BEARINGS AND ALL LOAD IS SUPPORTED BY THE JACKS. AFTER JACKING IS COMPLETE, THE CONTRACTOR SHALL PROVIDE FOR A METHOD TO REMOVE THE JACKS AND SUPPORT THE BEAM FOR DEAD AND LIVE LOAD DURING THE REPAIR OPERATIONS. IF THE JACKS REMAIN IN PLACE DURING THE ENTIRE JACKING AND REPAIR OPERATION, THEY SHALL HAVE MECHANICAL LOCK OFF CAPABILITIES.

IF, DURING THE JACKING PROCESS, OR WHILE THE BEAM IS BEING SUPPORTED, THE BEAM SHIFTS FROM ITS ORIGINAL POSITION, ALL WORK SHALL CEASE AND THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY.

BEARINGS ADJACENT TO THE BEAM BEING JACKED MAY BE LOOSENED TO DECREASE THE RESISTANCE OF THE DECK SLAB DURING JACKING. ALL BEARINGS LOOSENED SHALL BE TIGHTENED BACK AFTER REPAIR OPERATIONS ARE COMPLETED AND THE JACKS AND BLOCKING HAVE BEEN REMOVED.

THE MAXIMUM DIFFERENTIAL BETWEEN ADJACENT BEAMS THAT ARE BEING JACKED IS $\frac{1}{8}$ ".

LOADS PROVIDED IN THE "BRIDGE JACKING TABLE" ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY. THE CONTRACTOR'S ENGINEER SHALL DETERMINE THE EXPECTED LOADS TO BE LIFTED DURING THE BRIDGE JACKING OPERATIONS.

THE CONTRACTOR SHALL SUBMIT WORKING DRAWINGS AND CALCULATIONS OF THE JACKING PROCEDURE(S) SEALED BY A PROFESSIONAL ENGINEER IN THE STATE OF NORTH CAROLINA TO THE ENGINEER FOR APPROVAL PRIOR TO BRIDGE JACKING OPERATIONS.

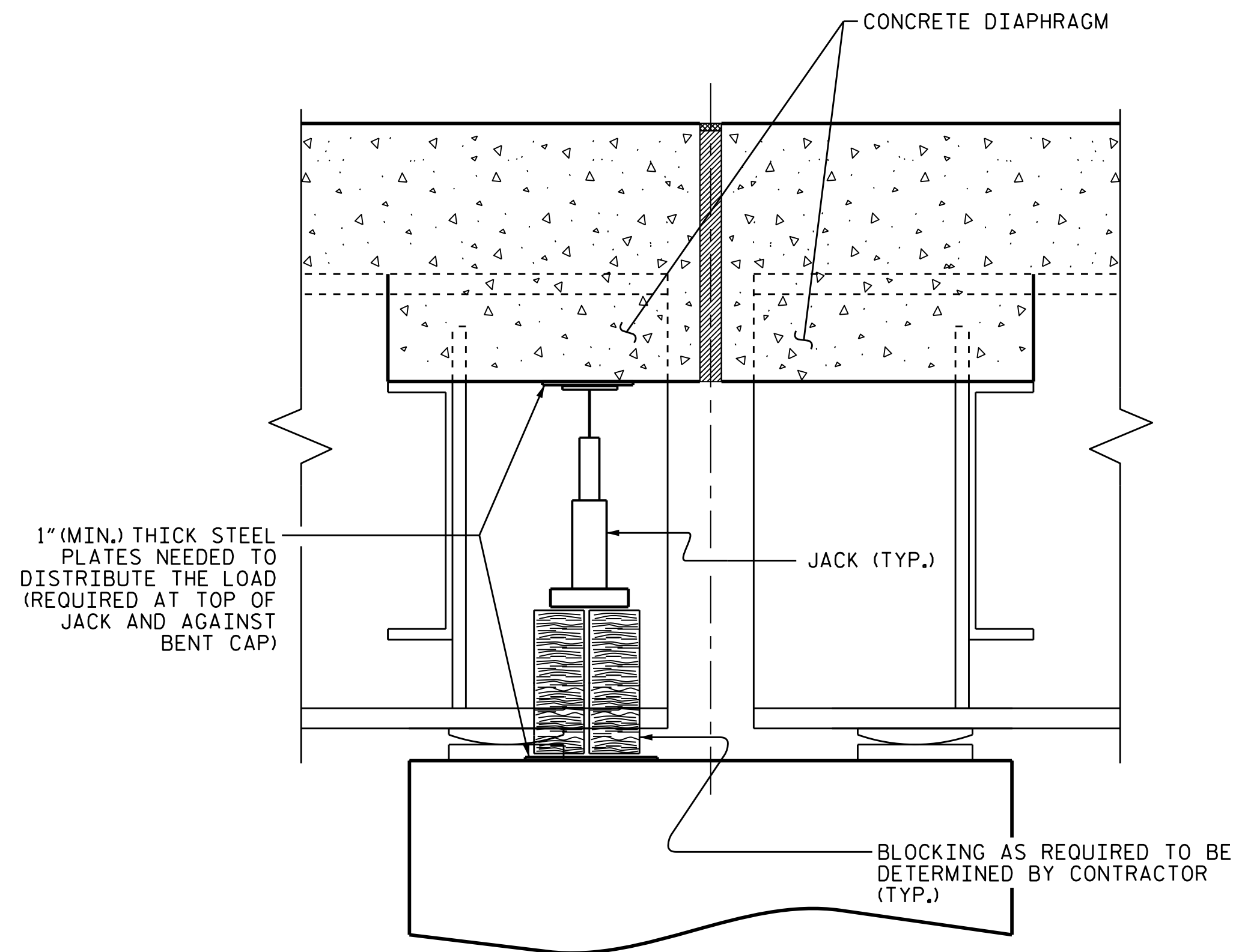
FOR TYPE I OR TYPE II BRIDGE JACKING, SEE SPECIAL PROVISIONS.

FOR WORKING DRAWING SUBMITTALS, SEE SPECIAL PROVISIONS.

ANY STEEL THAT HAS BEEN WELDED TO THE EXISTING STRUCTURE SHALL REMAIN IN PLACE.

TYPE II BRIDGE JACKING SHALL BE DONE WITH A HYDRULIC JACKING SYSTEM THAT LIFTS EACH BEAM ALONG ENTIRE SPAN END WITH EQUAL FORCE AND AT AN EQUAL RATE.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ANY DAMAGE CAUSED TO THE EXISTING STRUCTURE BY BRIDGE JACKING OPERATIONS AT NO ADDITIONAL COST TO THE DEPARTMENT.

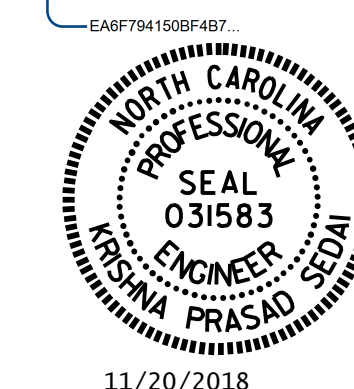


SECTION THRU DIAPHRAGM

BRIDGE JACKING TABLE				
LOCATION	SPAN	BEAM(S)	BRIDGE JACKING TYPE	DEAD LOAD (DC+DW) (KIPS)
END BENT 1				
BENT 1				
BENT 2	C	1 & 8	I	43
END BENT 2				

PROJ. NO. I-5823
DAVIE COUNTY
 BRIDGE NO. 18

DocuSigned by:
 Krishna P. Sedai
 EAF67941505F4B7...



11/20/2018

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD

BRIDGE JACKING
 DETAILS

ASSEMBLED BY : M. G. SHAIKH DATE : 08/2018
 CHECKED BY : REZA KAUCHEKI DATE : 08/2018
 DRAWN BY : NAP 08/18
 CHECKED BY :

20-NOV-2018 14:19
 Q:\Division09\I5823\Structures\Plans\401.049.I-5823.SMU.JCK.025.290018.dgn

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-25
1			3			TOTAL SHEETS
2			4			25

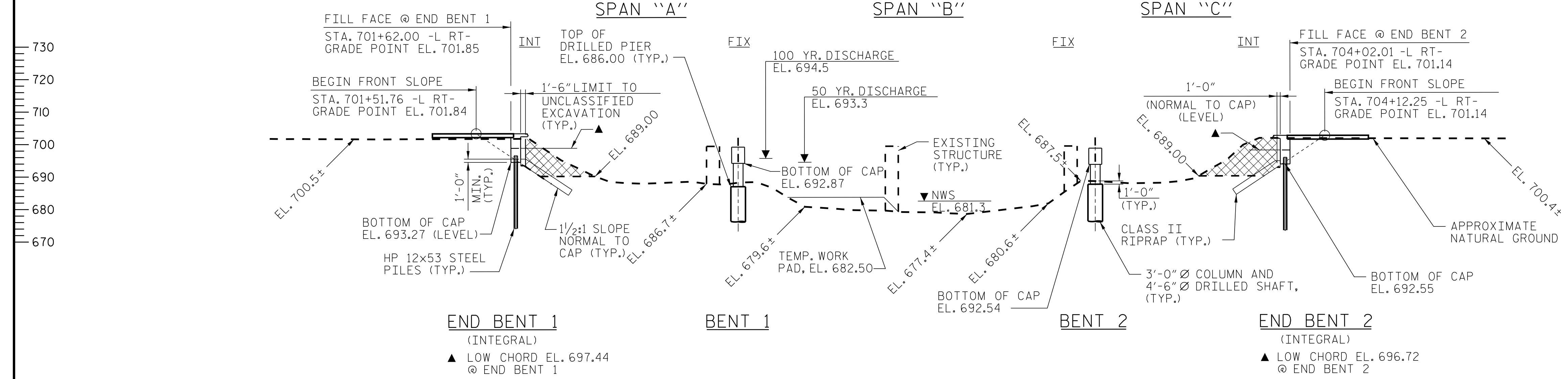
701+00 702+00 703+00 704+00 705+00

GRADE DATA -L RT-

0.3000% (-)0.3000%
 P.I. STA. = 701+60.00
 ELEV. = 701.86'
 VC = 0

GRADE DATA -L RT-

(-)0.3000% (-)0.1453%
 P.I. STA. = 704+10.00
 ELEV. = 701.11'
 VC = 0



SECTION ALONG -L RT-
 (SECTIONS AT BENT AND END BENTS ARE AT RIGHT ANGLES)

HYDRAULIC DATA

DESIGN DISCHARGE	= 16,800 CFS
FREQUENCY OF DESIGN FLOOD	= 50 YR.
DESIGN HIGH WATER ELEVATION	= 693.3
DRAINAGE AREA	= 194 SQ.MI.
BASIC DISCHARGE (Q100)	= 20,089 CFS
BASIC HIGH WATER ELEVATION	= 694.5

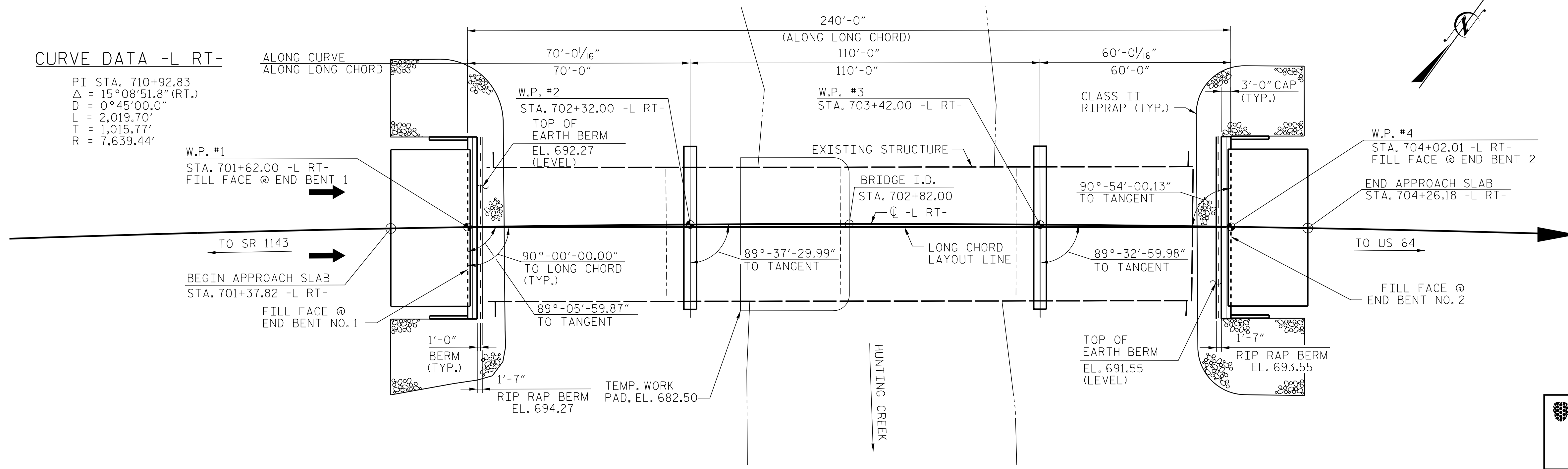
OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	= N/A
FREQUENCY OF OVERTOPPING FLOOD	= +500 YR.
OVERTOPPING FLOOD ELEVATION	= 700.9

KEY
 UNCLASSIFIED STRUCTURE EXCAVATION

CURVE DATA -L RT-

PI STA. 710+92.83
 Δ = 15°08'51.8" (RT.)
 D = 0°45'00.0"
 L = 2,019.70'
 T = 1,015.77'
 R = 7,639.44'



PLAN (EASTBOUND STRUCTURE)
 (PILES NOT SHOWN FOR CLARITY)

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

PROJECT NO. I-5823
 DAVIE COUNTY
 STATION: 702+82.00 -L RT-
 REPLACES BRIDGE NO. 29

Dewberry
 2610 WYCLIFF ROAD
 SUITE 410
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 NC COA No. F-0929

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 030046
 ENGINEER MATTHEW PAYNE

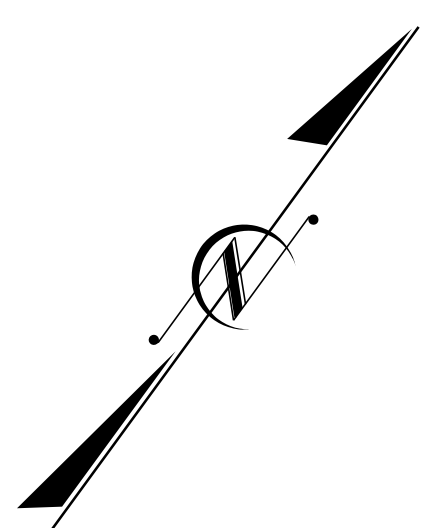
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 FOR BRIDGE ON I-40 EB
 OVER HUNTING CREEK
 BETWEEN SR 1143 AND US 64
 (INTERSTATE TRAFFIC)

DRAWN BY: D. SMITH DATE: DEC. 18
 CHECKED BY: M. PAYNE DATE: DEC. 18
 DESIGN ENGINEER OF RECORD: M. PAYNE DATE: DEC. 18

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			34
2			4			

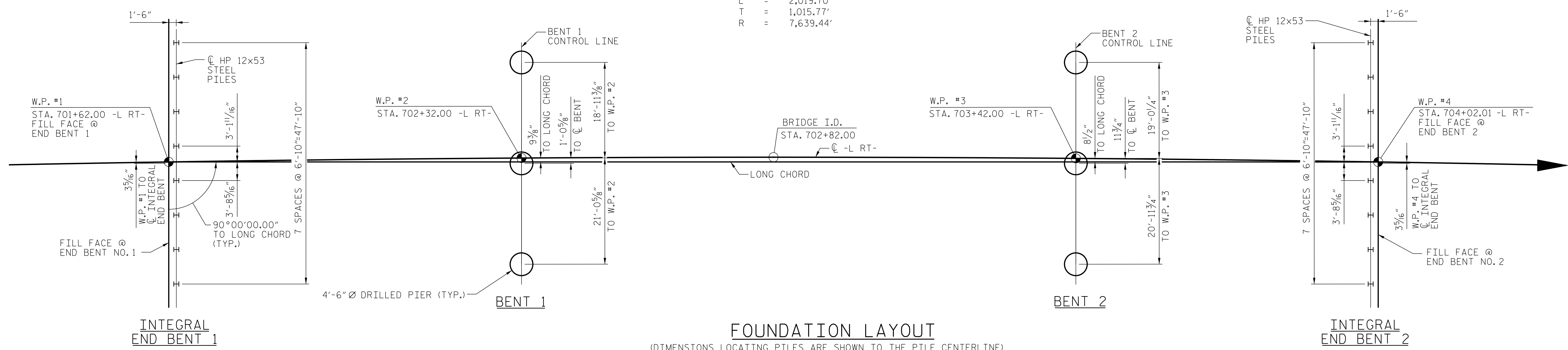
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

*****SYTIME*****
 *****SDON*****
 *****USERNAME*****



CURVE DATA

PI STA. 710+92.83 -L RT-
 Δ = 15°-08'-51.8" (RT.)
 D = 0°-45'-00.0"
 L = 2,019.70'
 T = 1,015.77'
 R = 7,639.44'



FOUNDATION LAYOUT
 (DIMENSIONS LOCATING PILES ARE SHOWN TO THE PILE CENTERLINE)

NOTES

1. FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
2. PILES AT END BENT NO.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 80 TONS PER PILE.
3. DRIVE PILES AT END BENT NO.1 TO A REQUIRED DRIVING RESISTANCE OF 135 TONS PER PILE.
4. FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
5. DRILLED PIERS AT BENT NO.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 610 TONS/PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 90 TSF.
6. INSTALL DRILLED PIERS AT BENT NO.1 TO A TIP ELEVATION NO HIGHER THAN 649 FT(LT); 640 FT(CT); 640 FT(RT), SATISFY THE REQUIRED TIP RESISTANCE AND HAVE A PENETRATION OF AT LEAST 8 FT INTO ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.
7. PERMANENT STEEL CASINGS MAY BE REQUIRED FOR DRILLED PIERS AT BENT NO.1. IF REQUIRED, DO NOT EXTEND PERMANENT CASINGS BELOW ELEVATION 670 FT WITHOUT PRIOR APPROVAL FROM THE ENGINEER.
8. THE SCOUR CRITICAL ELEVATION FOR BENT NO.1 IS 663 FT. THE SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.
9. DRILLED PIERS AT BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 610 TONS/PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 30 TSF.
10. INSTALL DRILLED PIERS AT BENT NO.2 TO A TIP ELEVATION NO HIGHER THAN 645 FT (LT); 641 FT (CT); 641 FT (RT), SATISFY THE REQUIRED TIP RESISTANCE AND HAVE A PENETRATION OF AT LEAST 12 FT INTO WEATHERED ROCK.
11. PERMANENT STEEL CASINGS MAY BE REQUIRED FOR DRILLED PIERS AT BENT NO.2. IF REQUIRED, DO NOT EXTEND PERMANENT CASINGS BELOW ELEVATION 668 FT WITHOUT PRIOR APPROVAL FROM THE ENGINEER.
12. THE SCOUR CRITICAL ELEVATION FOR BENT NO.2 IS 663 FT. THE SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.
13. TO VERIFY BEARING STRATA, STANDARD PENETRATION TESTING (SPT) IS REQUIRED FOR DRILLED PIERS AT BENT NO.2. PERFORM SPTS AT ELEVATION 657.7 FT (LT), 653.9 FT (CT), AND 653.9 FT (RT) TO VERIFY TOP OF PARTIALLY WEATHERED ROCK AND AGAIN AT THE FINAL TIP ELEVATION INDICATED. FOR SPT TESTING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
14. SID INSPECTIONS ARE REQUIRED FOR DRILLED PIERS AT BENT NO 2. FOR SID INSPECTIONS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
15. CSL TUBES ARE REQUIRED AND CSL TESTING MAY BE REQUIRED FOR THE DRILLED PIERS . THE ENGINEER WILL DETERMINE THE NEED FOR CSL TESTING. FOR CSL TESTING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
16. PILES AT END BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 80 TONS PER PILE.
17. DRIVE PILES AT END BENT NO.2 TO A REQUIRED DRIVING RESISTANCE OF 135 TONS PER PILE.

PROJECT NO. I-5823
 _____ DAVIE COUNTY
 STATION: 702+82.00 -L RT-
 SHEET 2 OF 4

Dewberry
 2610 WYCLIFF ROAD
 SUITE 410
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 NC COA No. F-0929

NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 030046
 ENGINEER MATTHEW PAYNE
 12/14/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING

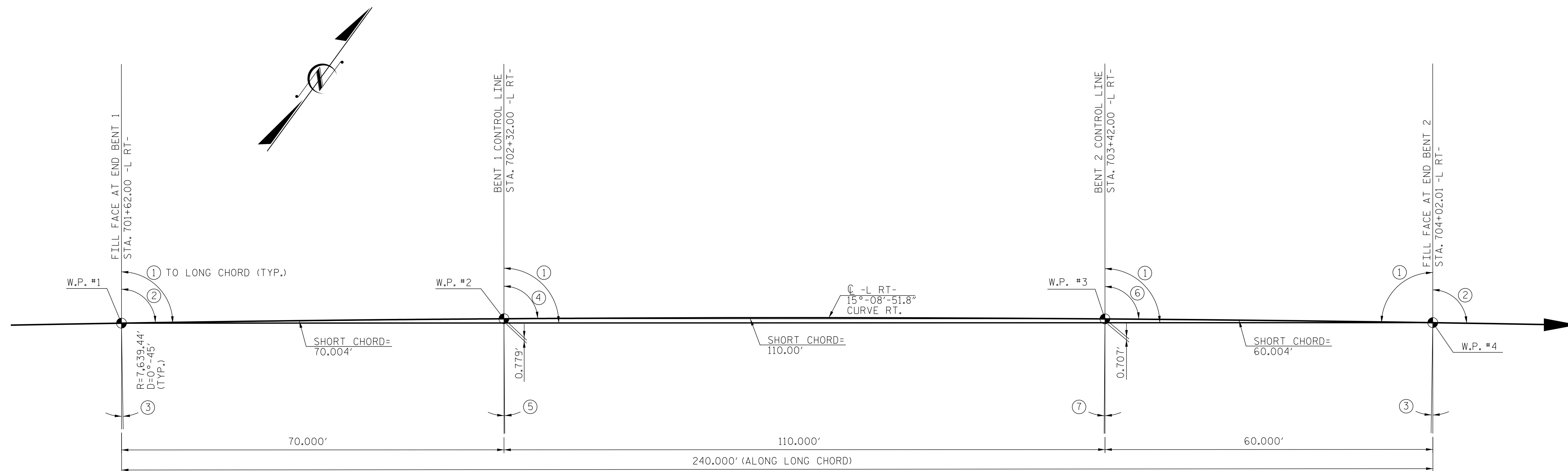
FOR BRIDGE ON I-40 EB
 OVER HUNTING CREEK
 BETWEEN SR 1143 AND US 64
 (INTERSTATE TRAFFIC)

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

SHEET NO. S2-2
 TOTAL SHEETS 34

DRAWN BY : D. SMITH DATE : DEC. 18
 CHECKED BY : M. PAYNE DATE : DEC. 18
 DESIGN ENGINEER OF RECORD: M. PAYNE DATE : DEC. 18

*****SYTIME*****
 *****SDON*****
 *****USERNAME*****



INTEGRAL
END BENT 1

BENT 1

LONG CHORD LAYOUT
(ALL BENTS ARE PARALLEL)

BENT 2

INTEGRAL
END BENT 2

ANGLES

- ① 90°-00'-00.00"
- ② 89°-05'-59.87" TANGENT TO CURVE
- ③ 00°-54'-00.13"
- ④ 89°-37'-29.99" TANGENT TO CURVE
- ⑤ 00°-22'-30.01"
- ⑥ 89°-32'-59.98" TANGENT TO CURVE
- ⑦ 00°-27'-00.02"

PROJECT NO. I-5823

DAVIE COUNTY

STATION: 702+82.00 -L RT-

SHEET 3 OF 4

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

NORTH CAROLINA
PROFESSIONAL
ENGINEER
SEAL
030046
MATTHEW PAYNE

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

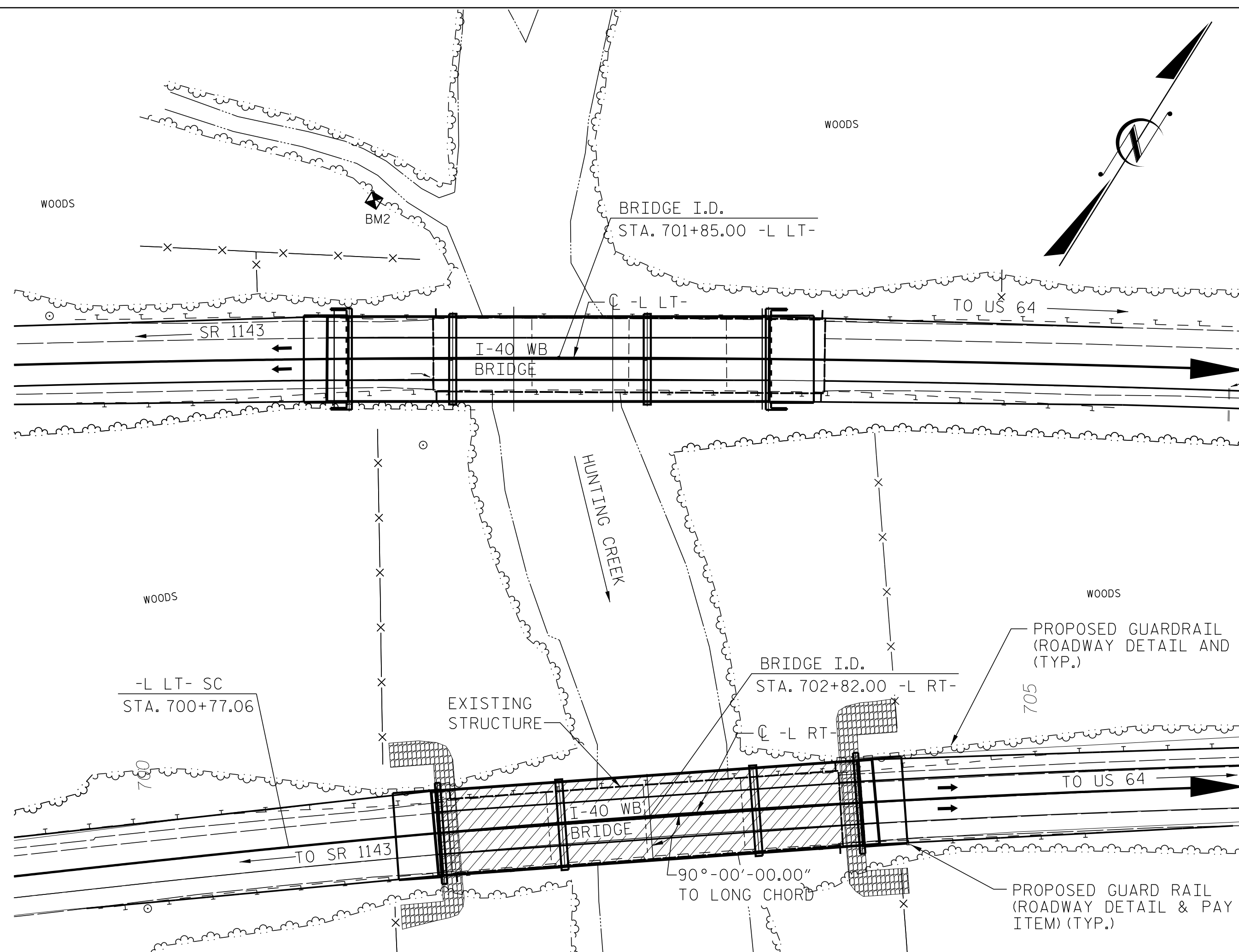
GENERAL DRAWING
FOR BRIDGE ON I-40 EB
OVER HUNTING CREEK
BETWEEN SR 1143 AND US 64
(INTERSTATE TRAFFIC)

DRAWN BY : D. SMITH DATE : DEC. 18
CHECKED BY : M. PAYNE DATE : DEC. 18
DESIGN ENGINEER OF RECORD : M. PAYNE DATE : DEC. 18

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS	
1			3			S2-3	
2			4			34	

*****SYSTEM*****
*****SDON*****
*****USERNAME*****

BENCH MARK: BM#36 - R/R SPIKE SET IN 28" OAK TREE, -Y13LPC- STATION 10+55, 85' RIGHT
N 871980 E 1783179, ELEV. = 821.46', NAVD 1988



LOCATION SKETCH

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS

GENERAL NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

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.

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

AT THE CONTRACTOR'S OPTION, AND UPON REMOVAL OF THE CAUSEWAY, THE CLASS II RIP RAP USED IN THE CAUSEWAY MAY BE PLACED AS RIP RAP SLOPE PROTECTION. SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS AT STATION 701+85.00 -L LT-.

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 50W AND PAINTED IN ACCORDANCE WITH SYSTEM 5 OR SYSTEM 6 OF THE STRUCTURAL STEEL SHOP COATINGS PROGRAM AND SECTION 442-8 OF THE STANDARD SPECIFICATIONS UNLESS OTHERWISE NOTED ON THE PLANS.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 701+85.00 -L LT-."

THE CLASS AA CONCRETE IN THE BRIDGE DECK SHALL CONTAIN FLY ASH OR GROUND GRANULATED BLAST FURNACE SLAG AT THE SUBSTITUTION RATE SPECIFIED IN ARTICLE 1024-1 AND IN ACCORDANCE WITH ARTICLES 1024-5 AND 1024-6 OF THE STANDARD SPECIFICATIONS. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE COST OF THE REINFORCED CONCRETE DECK SLAB.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 75 FT EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE SAMPLE BARS SHOULD COME FROM STEEL ACTUALLY USED IN THE PROJECT AND THE SAMPLE BARS SHOULD BE REPLACED BY SPLICED BARS AS SPECIFIED IN THE SAMPLE BAR REPLACEMENT CHART. PAYMENT FOR THE SAMPLE BARS AND REPLACEMENT REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

THE EXISTING STRUCTURE CONSISTING OF STEEL GIRDERS, 4 SPANS, 220 FT LONG; 42 FT WIDE WITH REINFORCED CONCRETE DECK; ON CAST-IN-PLACE CONCRETE END BENTS AND INTERIOR BENTS SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT. FOR REMOVAL OF EXISTING STRUCTURE, SEE SPECIAL PROVISION.

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

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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

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

SAMPLE BAR REPLACEMENT	
SIZE	LENGTH
#3	6'-2"
#4	7'-4"
#5	8'-6"
#6	9'-8"
#7	10'-10"
#8	12'-0"
#9	13'-2"
#10	14'-6"
#11	15'-10"

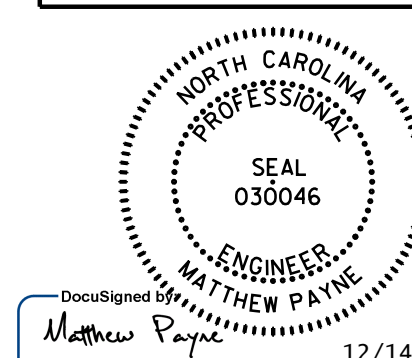
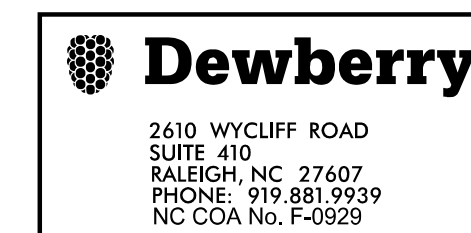
NOTE: SAMPLE BAR REPLACEMENT LENGTHS ARE BASED ON 30 INCH (SAMPLE LENGTH) PLUS TWO SPLICE LENGTHS AND fy=60 KSI.

PROJECT NO. I-5823

DAVIE COUNTY

STATION: 702+82.00 -L RT-

SHEET 4 OF 4



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON I-40 EB
OVER HUNTING CREEK
BETWEEN SR 1143 AND US 64
(INTERSTATE TRAFFIC)

TOTAL BILL OF MATERIAL

	CONST., MAINT. & REMOVAL TEMP. ACCESS AT STA 702+82.00 -L RT-	REMOVAL OF EXISTING STRUCTURE AT STA 702+82.00 -L RT-	ASBESTOS ASSESSEMENT	4'-6" DIA. DRILLED PIER IN SOIL	4'-6" DIA. DRILLED PIER NOT IN SOIL	PERMANENT STEEL CASING FOR 4'-6" DIA DRILLED PIER	SID INSPECTIONS	SPT TESTING	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION AT STA 702+82.00 -L RT-	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS
	LUMP SUM	LUMP SUM	LUMP SUM	LF	LF	LF	EA	EA	EA	LUMP SUM	SF	SF	CY	LUMP SUM
SUPERSTRUCTURE	—	—	—							—	12,300	13,920	—	LUMP SUM
INT. END BENT 1	—	—	—							—			38.5	—
BENT 1	—	—	—	95.0	34.0	54.0				—			39.5	—
BENT 2	—	—	—	102.0	29.0	54.0	3	6		—			39.2	—
INT. END BENT 2	—	—	—							—			38.5	—
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	197.0	63.0	108.0	3	6	1	LUMP SUM	12,300	13,920	155.7	LUMP SUM

	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	STRUCTURAL STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP12X53	HP12X53 STEEL PILES	CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS
	LBS	LBS	LBS	APPROX. LBS	EA	EA	LF	TON	SY	LUMP SUM
SUPERSTRUCTURE	45,047	55,392		494,111			476.67			LUMP SUM
INT. END BENT 1	7,079				8	8	350	195	216	—
BENT 1	19,019		4,355							—
BENT 2	19,173		4,287							—
INT. END BENT 2	7,079				8	8	300	237	263	—
TOTAL	97,397	55,392	8,642	494,111	16	16	650	432	479	LUMP SUM

DRAWN BY : D. SMITH DATE : DEC. 18
CHECKED BY : M. PAYNE DATE : DEC. 18
DESIGN ENGINEER OF RECORD: M. PAYNE DATE : DEC. 18

*****SYTIME*****
*****SYSDON*****
*****USERNAME*****

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			4
2			4			34

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR STEEL GIRDERS

LEVEL	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		
						MOMENT				SHEAR				MOMENT										
						LIVE-LOAD FACTORS (γ _{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVE-LOAD FACTORS (γ _{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION		DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	①	1.675	--	1.75	0.607	1.675	B	EL	110	0.731	4.276	B	I	110	1.30	0.607	2.428	B	EL	53.5		
	HL-93 (OPERATING)	N/A		1.807	--	1.35	0.607	1.807	B	EL	0	0.731	5.543	B	I	110	1.00							
	HS-20 (INVENTORY)	36.000	②	2.425	87,300	1.75	0.607	2.425	B	EL	0	0.731	6.057	B	I	0.1	1.30	0.607	5.424	B	EL	53.5		
	HS-20 (OPERATING)	36.000		3.472	124,992	1.35	0.607	3.472	B	EL	110	0.731	7.852	B	I	0.1	1.00							
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SH	12.500		9.427	117,838	1.40	0.607	9.427	B	EL	110	0.731	20.713	B	I	110	1.30	0.607	13.555	B	EL	53.5	
		S3C	21.500		5.622	120,873	1.40	0.607	5.622	B	EL	110	0.731	12.698	B	I	110	1.30	0.607	9.066	B	EL	53.5	
		S3A	22.750		4.763	108,358	1.40	0.607	4.763	B	EL	0	0.731	11.909	B	I	0.1	1.30	0.607	9.973	B	EL	53.5	
		S4A	26.750		4.773	127,678	1.40	0.607	4.773	B	EL	110	0.731	10.931	B	I	0.1	1.30	0.607	8.278	B	EL	53.5	
		S5A	30.500		3.978	121,329	1.40	0.607	3.978	B	EL	0	0.731	10.482	B	I	110	1.30	0.607	9.311	B	EL	53.5	
		S6A	34.500		4.625	159,563	1.40	0.607	4.625	B	EL	110	0.731	10.448	B	I	0.1	1.30	0.607	10.222	B	EL	53.5	
		S7B	38.500		3.872	149,072	1.40	0.607	3.872	B	EL	0	0.731	10.402	B	I	0.1	1.30	0.607	8.634	B	EL	53.5	
		S7A	40.000		4.853	194,120	1.40	0.607	4.853	B	EL	110	0.731	10.410	B	I	0.1	1.30	0.607	8.830	B	EL	53.5	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	T4A	28.250		4.784	135,148	1.40	0.607	4.784	B	EL	110	0.731	11.125	B	I	110	1.30	0.607	8.701	B	EL	53.5	
		T5B	32.000		4.390	140.48	1.40	0.607	4.390	B	EL	110	0.731	10.259	B	I	0.1	1.30	0.607	7.793	B	EL	53.5	
BOLTED FIELD SPLICE	T6A	36.000	③	3.854	138,744	1.40	0.607	3.854	B	EL	0	0.731	10.733	B	I	110	1.30	0.607	9.843	B	EL	53.5		
	T7A	40.000		4.735	189,400	1.40	0.607	4.735	B	EL	110	0.731	10.719	B	I	110	1.30	0.607	8.355	B	EL	53.5		
	T7B	40.000		6.497	259,880	1.40	0.607	6.497	B	EL	110	0.731	14.795	B	I	110	1.30	0.607	13.186	B	EL	53.5		
FATIGUE	HL-93 (INVENTORY)	γ _{LL} =0.75	④	1.137	--	1.75	0.607	1.541	B	I	19.5	0.731	1.137	B	I	19.5								

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ _{DC}	γ _{DW}
	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 STRESS FOR SERVICE II LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

1. BOLTED FIELD SPLICES AT BEAMS 3 AND 5 CONTROLS DESIGN.
2. FOR FUTURE RATING EVALUATIONS, VERIFY FIELD SPLICE CAPACITY.
- 3.
- 4.

CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

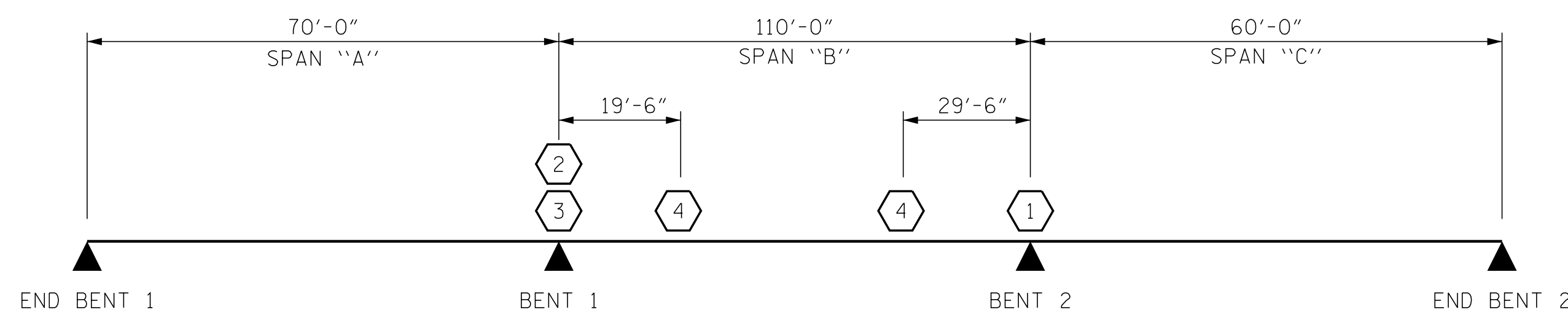
② DESIGN LOAD RATING (HS-20)

③ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



LRFR SUMMARY

PROJECT NO. I-5823
DAVIE COUNTY
 STATION: 702+82.00 -L RT-

Dewberry

2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD

LRFR SUMMARY FOR
 STEEL GIRDERS
 (INTERSTATE TRAFFIC)

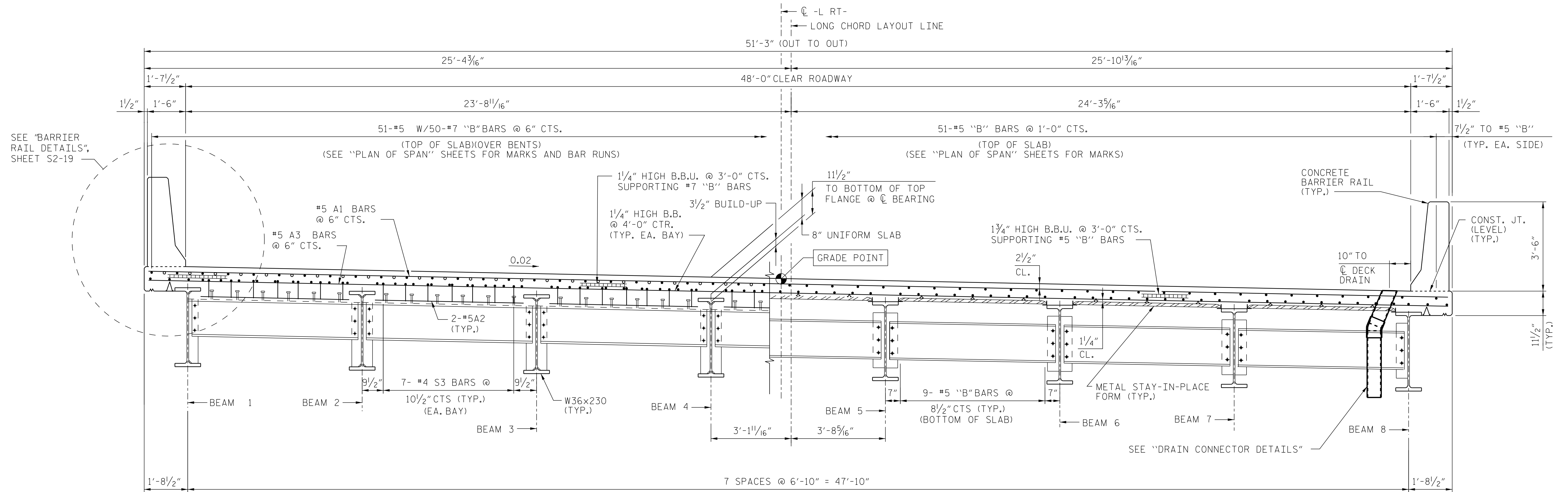
DocuSigned by:
Matthew Payne
 12/14/2018

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-5
1			3			TOTAL SHEETS
2			4			34

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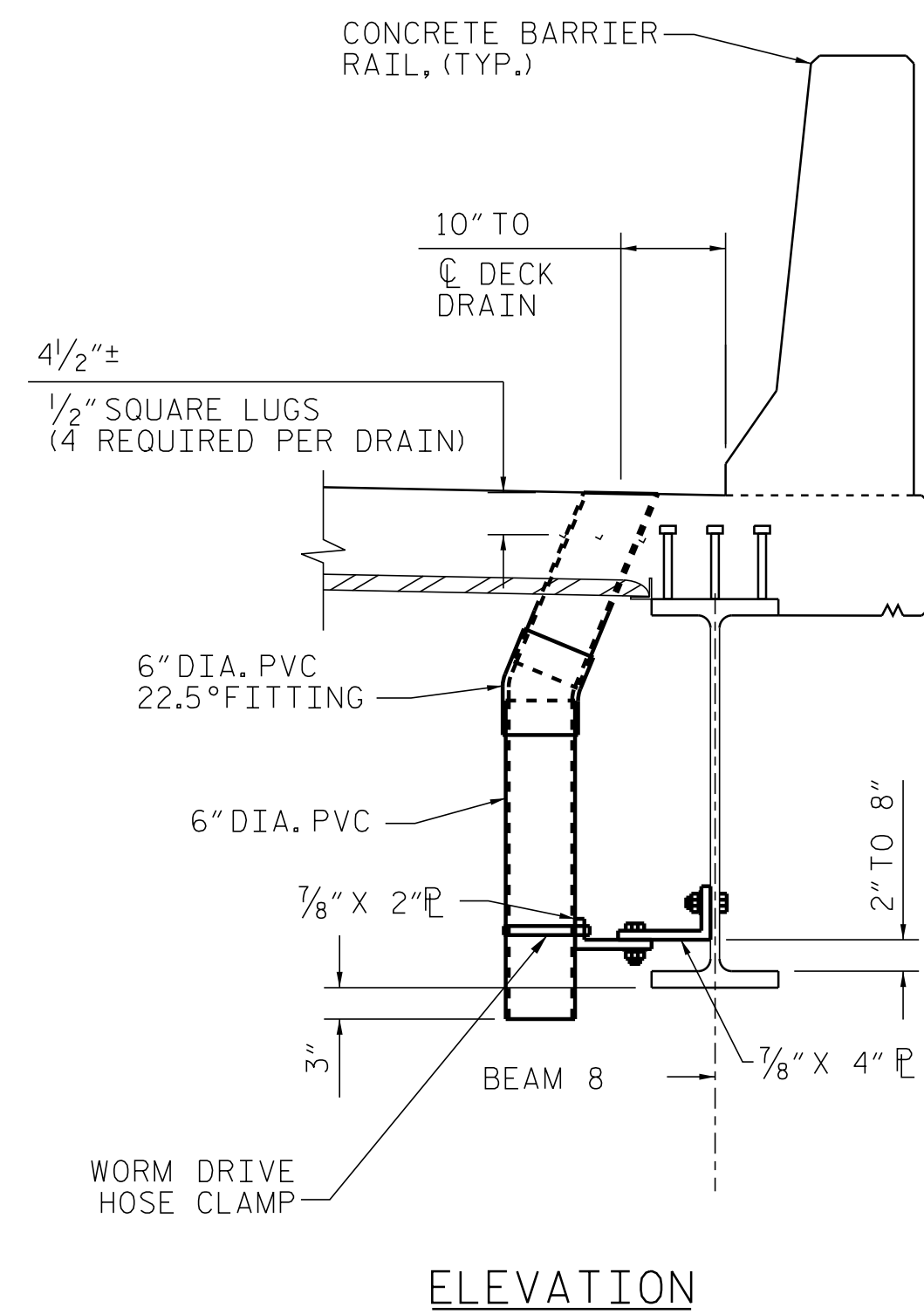
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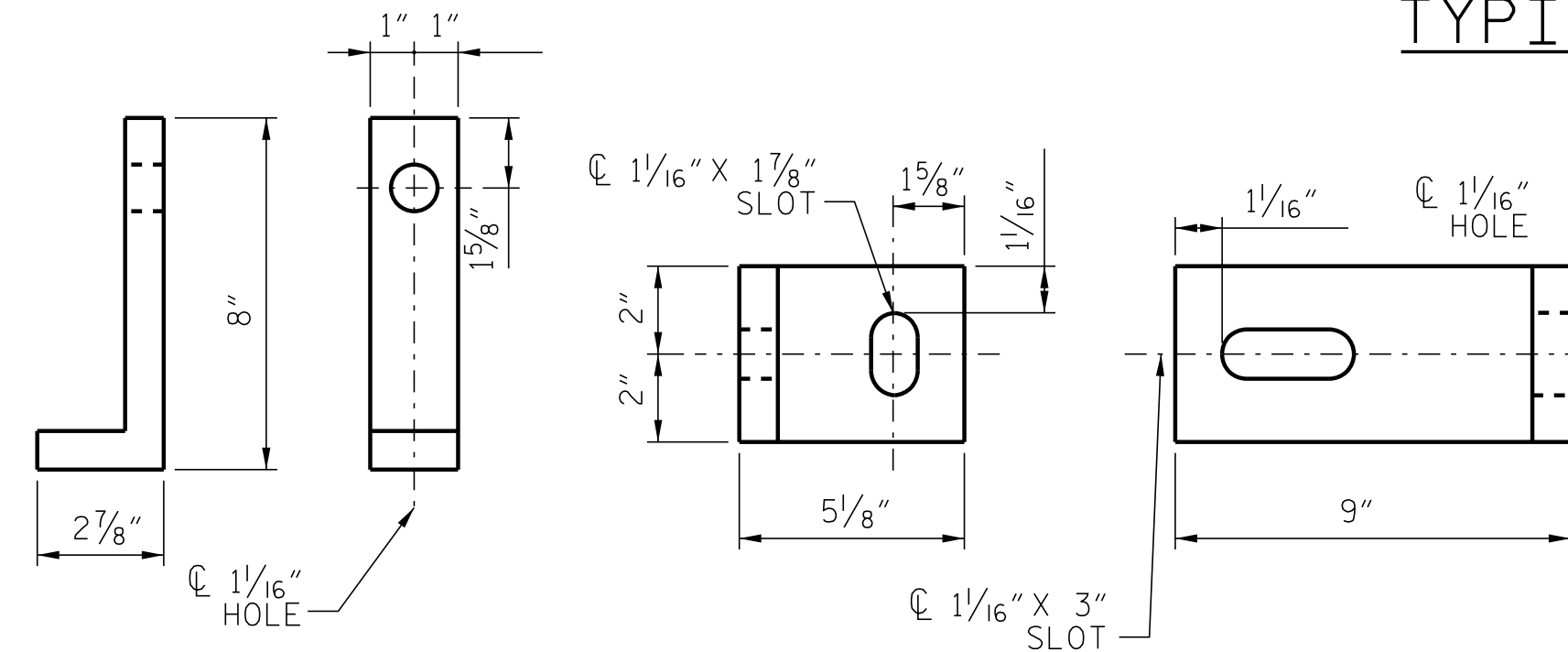
TYPICAL HALF SECTION AT BENTS

TYPICAL SECTION

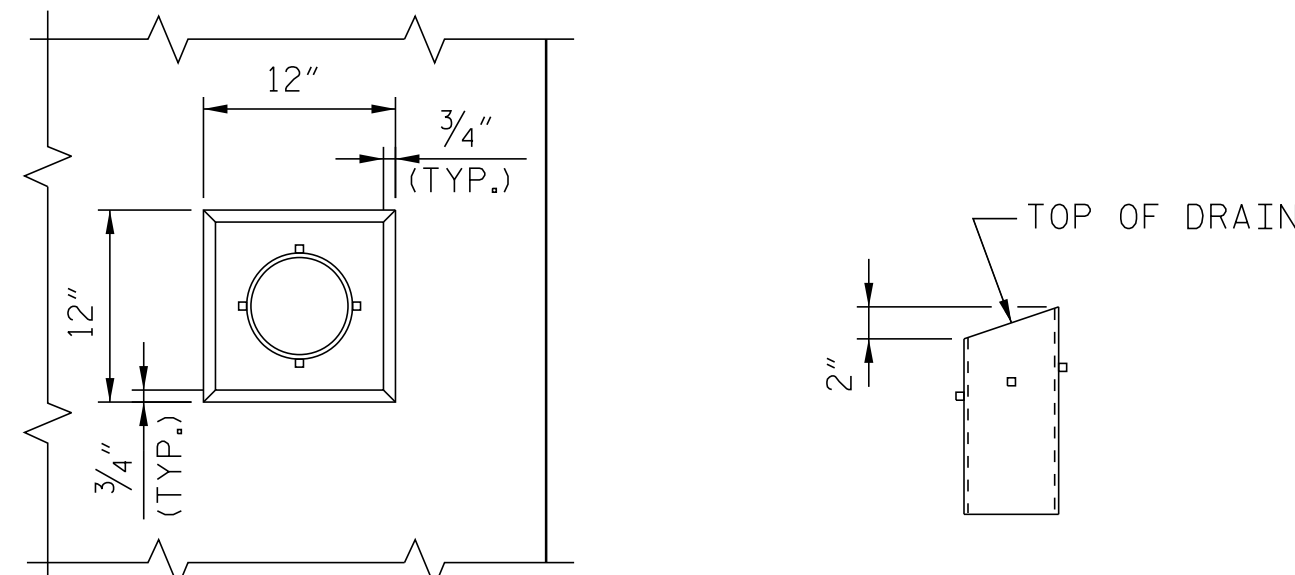
TYPICAL HALF SECTION AT INTERMEDIATE DIAPHRAGM



ELEVATION



CONNECTOR PLATES



PLAN OF RECESS

PIPE DETAIL

DRAIN CONNECTOR DETAILS

(21 REQUIRED)

NOTES:

PROVIDE 1/4" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE STAY-IN-PLACE METAL FORMS TO SUPPORT THE BOTTOM MAT OF "A" BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) AT 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF "A" BARS A CLEAR DISTANCE OF 2 1/2" ABOVE THE TOP OF THE REMOVABLE FORM.

STRUCTURAL STEEL ERECTION IN A CONTINUOUS UNIT SHALL BE COMPLETE BEFORE FALSEWORK OR FORMS ARE PLACED ON THE UNIT.

PREVIOUSLY CAST CONCRETE IN A CONTINUOUS UNIT SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI BEFORE ADDITIONAL CONCRETE IS CAST ON THE UNIT.

BARRIER RAIL IN A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI.

THE CONTRACTOR MAY, WHEN NECESSARY, PROPOSE A SCHEME FOR AVOIDING INTERFERENCE BETWEEN METAL STAY-IN-PLACE FORM SUPPORTS OR FORMS AND BEAM STIFFENER OR CONNECTOR PLATES. THE PROPOSAL SHALL BE INDICATED, AS APPROPRIATE, ON EITHER STEEL WORKING DRAWINGS OR THE METAL STAY-IN-PLACE FORM WORKING DRAWINGS.

METAL STAY-IN-PLACE FORMS AND FALSEWORK SHALL NOT BE WELDED TO BEAM FLANGES IN THE ZONES REQUIRING CHARPY V-NOTCH TEST. SEE "STRUCTURAL STEEL DETAILS" SHEET.

FOR ENDWALL DETAILS, SEE "ENDWALL DETAILS" SHEETS.

TOP OF FLOOR DRAIN TO BE SET 3/8" BELOW SURFACE OF SLAB.

4 - 1/2" SQUARE LUGS TO BE GLUED TO THE PVC PLASTIC PIPE AT EQUAL SPACES AROUND THE PIPE DRAIN APPROXIMATELY 4" FROM THE TOP OF THE PIPE.

BOLT SIZES TO BE SAME AS DIAPHRAGMS AND CROSS FRAME CONNECTIONS. STAINLESS STEEL WORM DRIVE HOSE CLAMP TO BE COMMERCIAL QUALITY.

THE 6" DIA. PVC PLASTIC PIPE AND FITTINGS SHALL BE SCHEDULE 40 AND CONFORM TO ASTM D1785.

PROJECT NO. I-5823

DAVIE COUNTY

STATION: 702+82.00 -L RT-

SHEET 1 OF 2

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

NORTH CAROLINA
PROFESSIONAL
ENGINEER
SEAL
030046
MATTHEW PAYNE

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

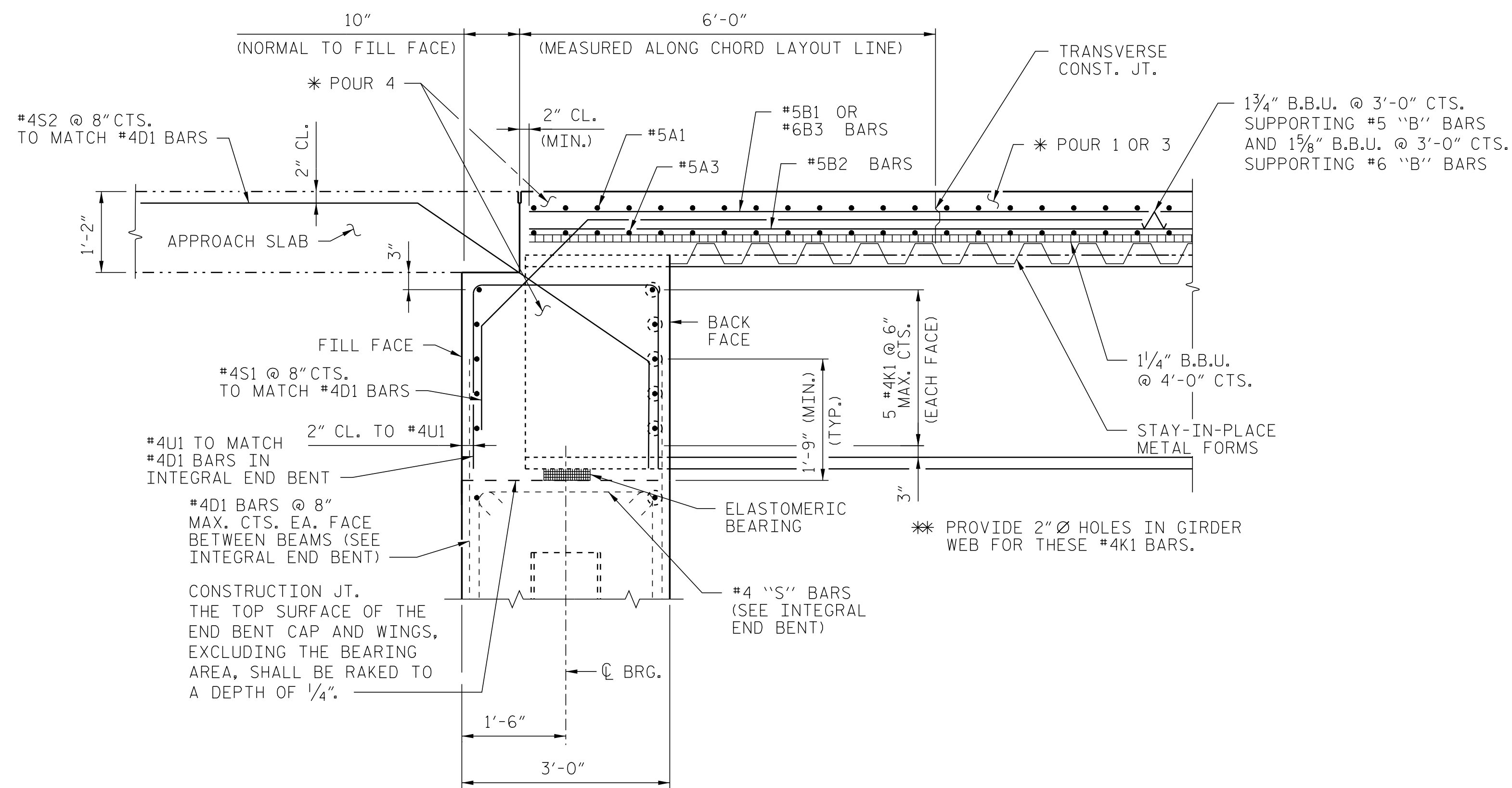
SUPERSTRUCTURE
TYPICAL SECTION

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2			4			

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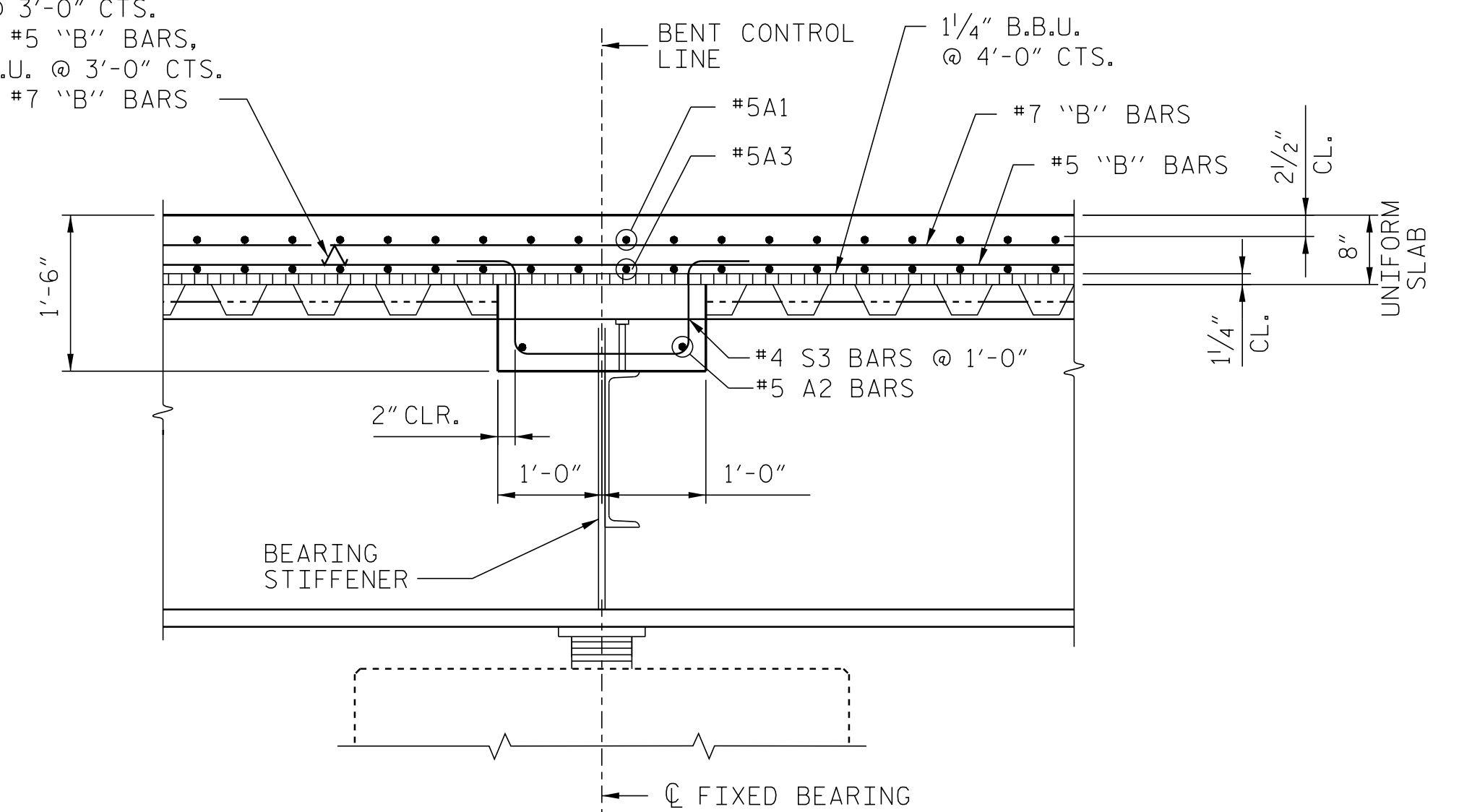


* SEE "SUPERSTRUCTURE BILL OF MATERIAL" SHEET FOR POUR SEQUENCE.

SECTION "A-A"

(SEE "PLAN OF SPAN" SHEET)
NOTE: SHEAR STUDS ON BEAM NOT SHOWN FOR CLARITY.

1 3/4" B.B.U. @ 3'-0" CTS. SUPPORTING #5 "B" BARS, AND 1 1/8" B.B.U. @ 3'-0" CTS. SUPPORTING #6 "B" BARS



SECTION "B-B"

(SEE "PLAN OF SPAN" SHEETS)
NOTE: SHEAR STUDS ON BEAM NOT SHOWN FOR CLARITY.

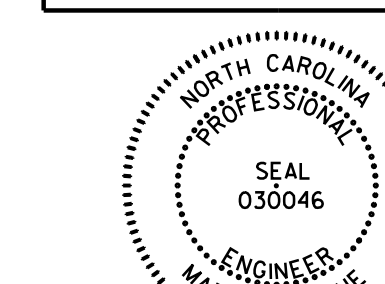
PROJECT NO. I-5823

DAVIE COUNTY

STATION: 702+82.00 -L RT-

SHEET 2 OF 2

Dewberry
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NC COA No. F-0929



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Matthew Payne
12/14/2018

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DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
TYPICAL DETAILS

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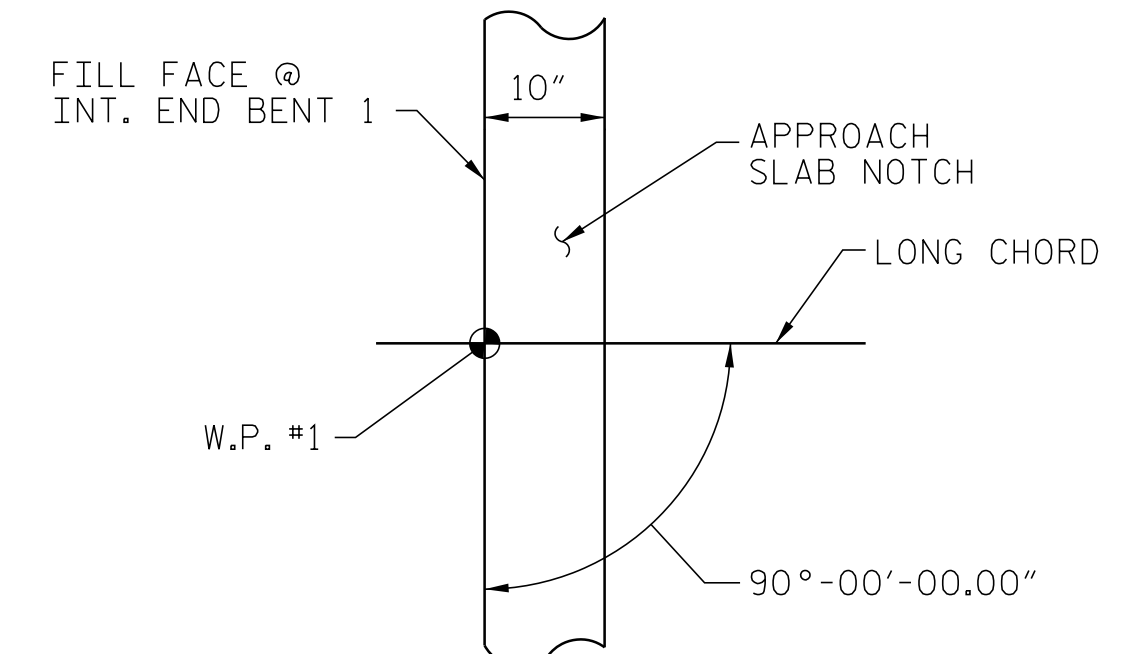
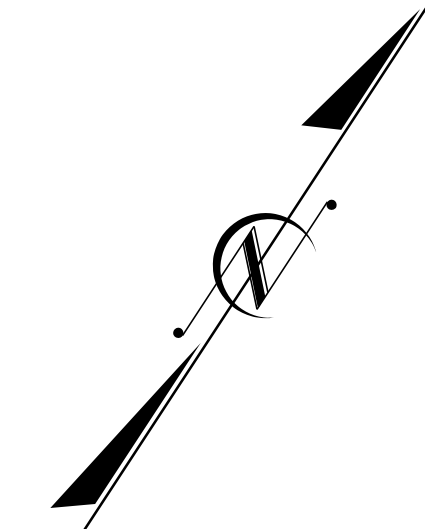
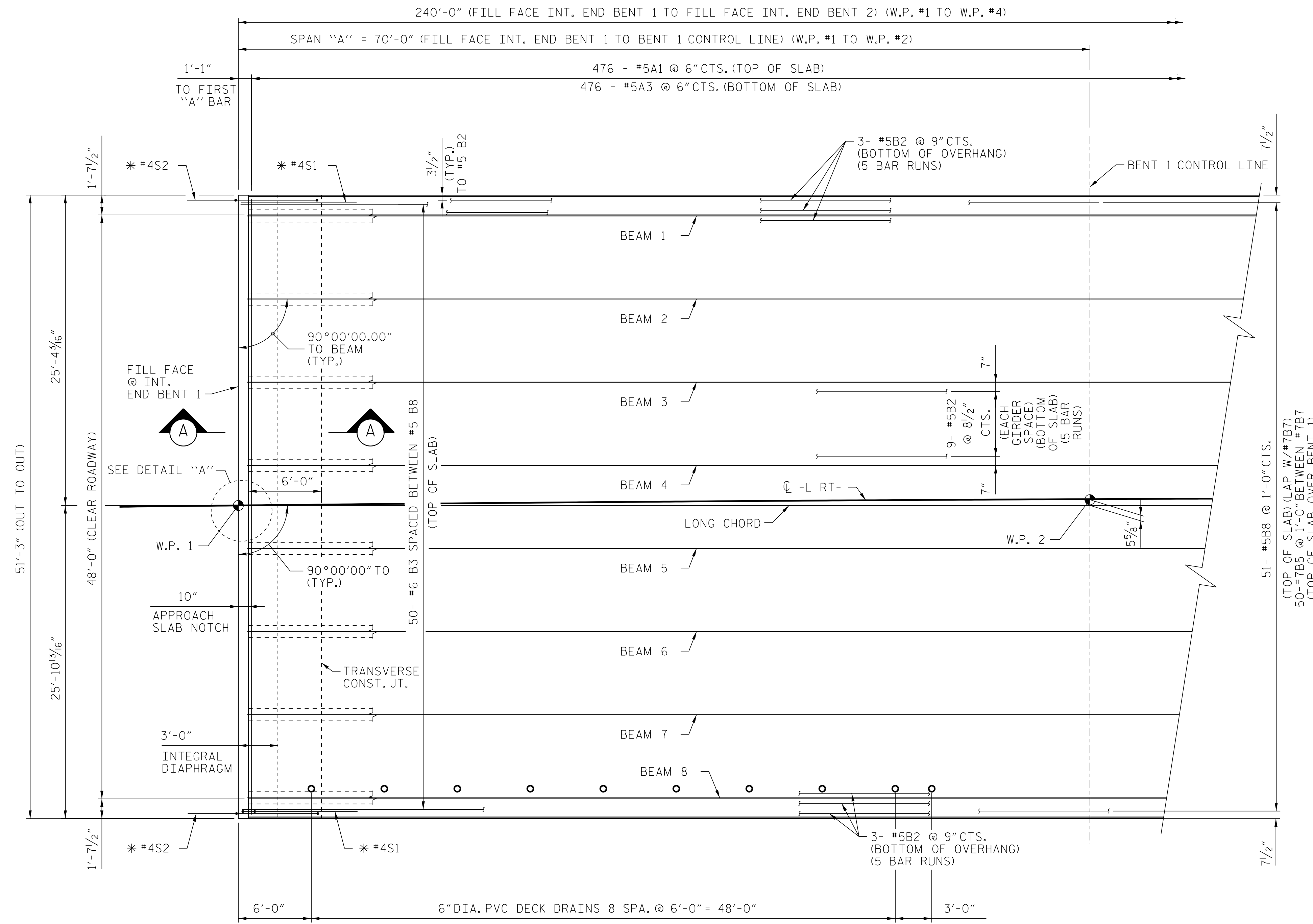
NOTES:

FOR CONCRETE BARRIER RAIL REINFORCING STEEL THAT MUST BE CAST IN DECK SLAB, SEE "CONCRETE BARRIER RAIL" SHEET.

TRANSVERSE CONSTRUCTION JOINT SHALL BE PLACED ALONG THE SKEW. FOR TRANSVERSE CONSTRUCTION JOINT DETAIL, SEE "BILL OF MATERIAL" SHEET.

FOR SECTION "A-A", SEE "TYPICAL DETAILS" SHEET.

LONGITUDINAL REINFORCING STEEL SHALL BE CONTINUOUS THROUGH TRANSVERSE CONSTRUCTION JOINT.



DETAIL "A"

* SEE "TYPICAL DETAILS" AND "ENDWALL DIAPHRAGM DETAILS" SHEETS FOR SPACING.

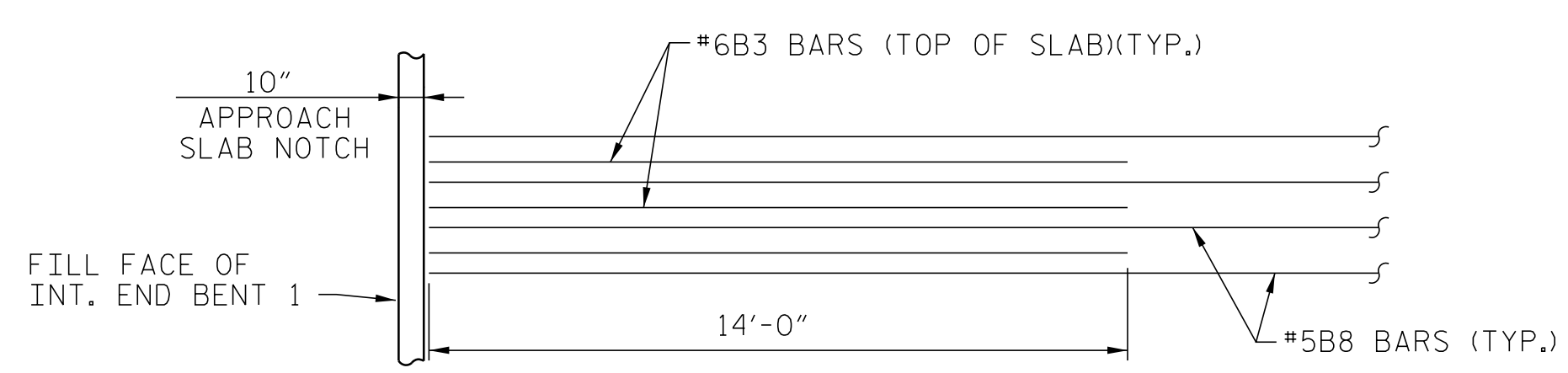
PLAN OF SPAN "A"

PROJECT NO. I-5823

DAVIE COUNTY

STATION: 702+82.00 -L RT-

SHEET 1 OF 3



TOP OF SLAB REINFORCEMENT LAYOUT

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Dewberry
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 SEAL
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 ENGINEER
 MATTHEW PAYNE

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

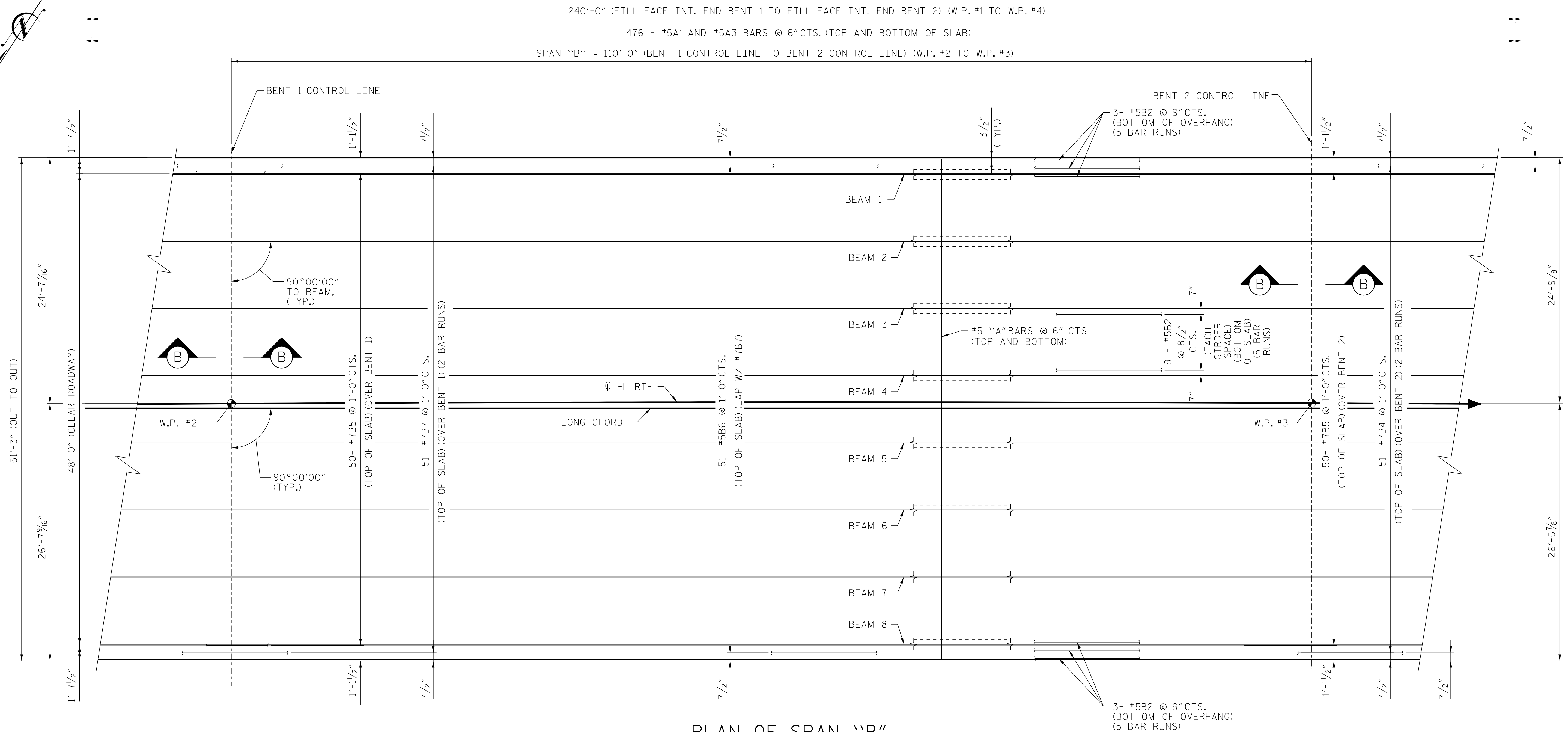
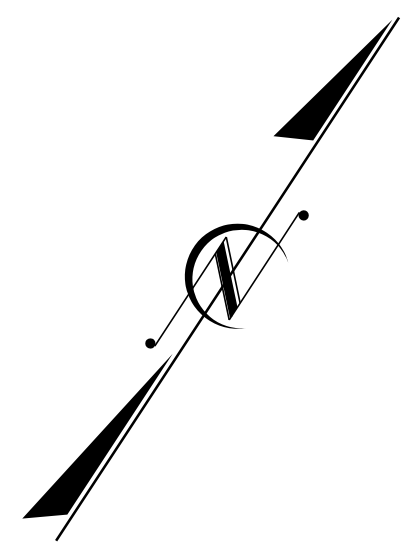
SUPERSTRUCTURE
PLAN OF SPAN "A"

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NO.	BY:	DATE:	NO.	BY:	DATE:	S2-8
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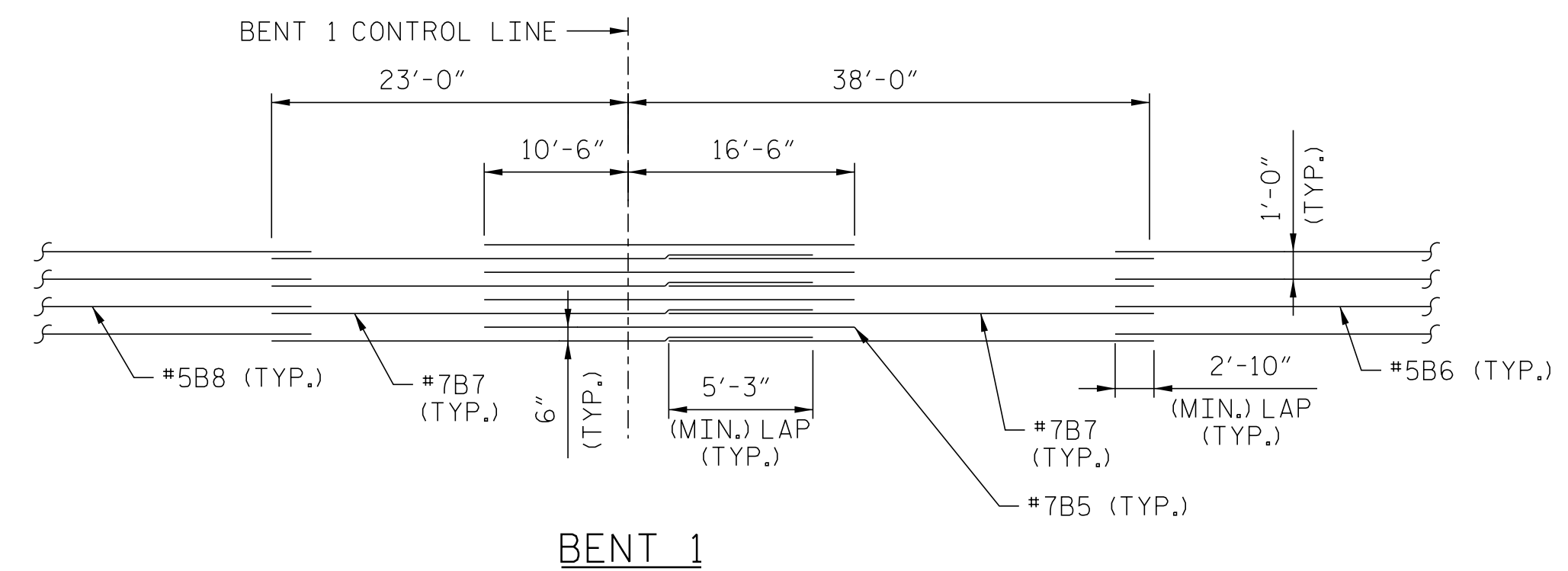
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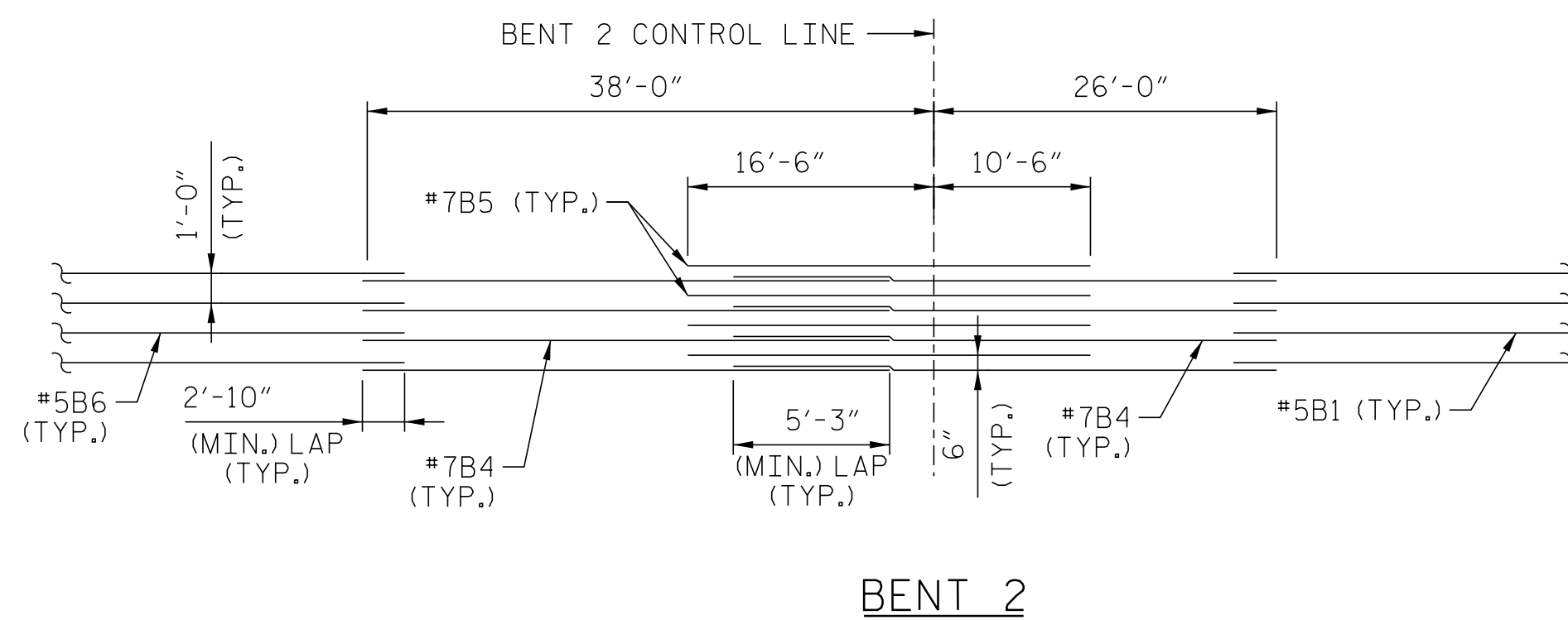
NOTES:
 FOR SECTION "B-B", SEE "TYPICAL DETAILS" SHEET.
 FOR ADDITIONAL NOTES, SEE SHEET 1 OF 3.



PLAN OF SPAN "B"



BENT 1



BENT 2

TOP OF SLAB REINFORCEMENT LAYOUT

PROJECT NO. I-5823
DAVIE COUNTY
 STATION: 702+82.00 -L RT-
 SHEET 2 OF 3

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 2610 WYCLIFF ROAD
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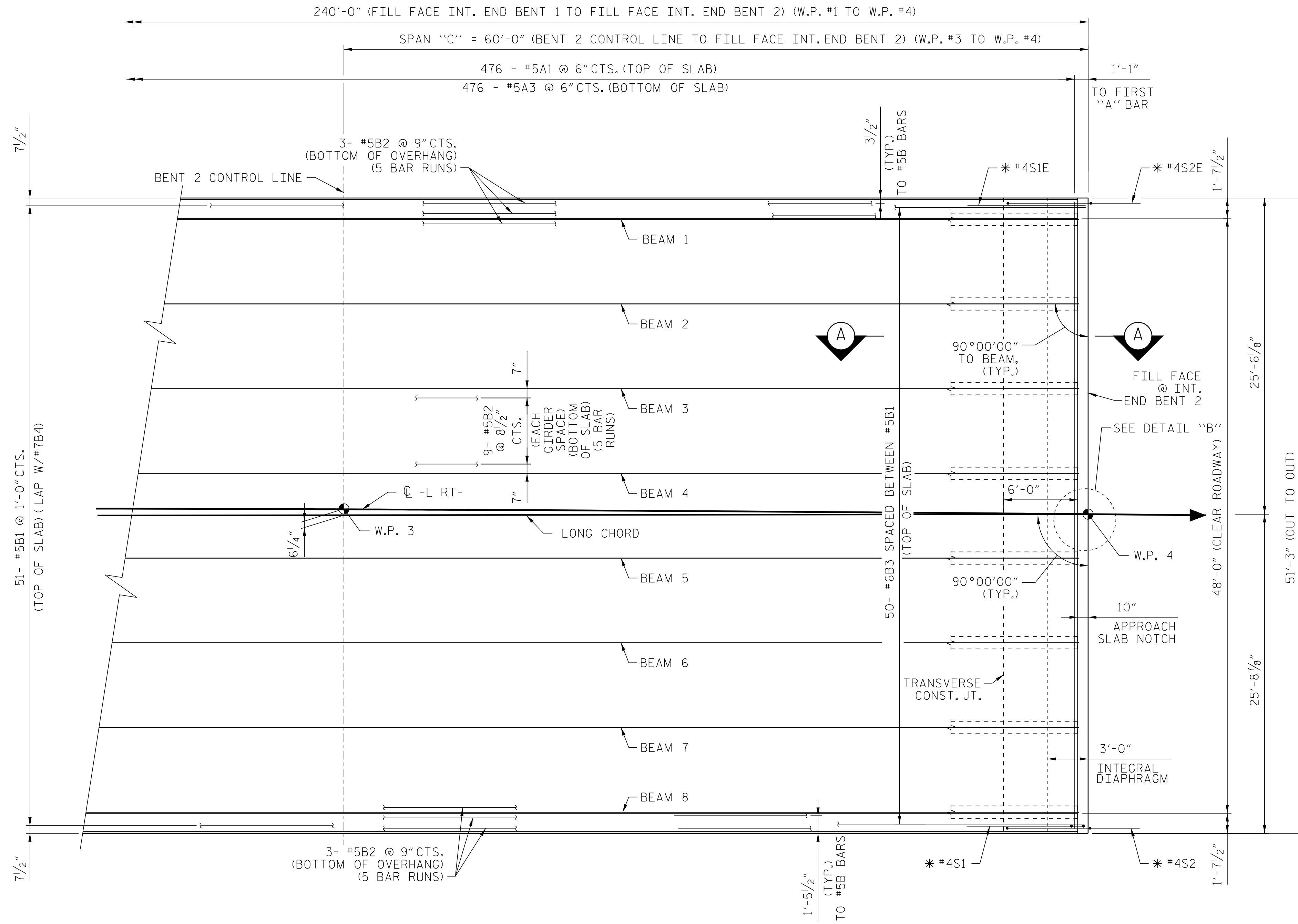
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPAN "B"

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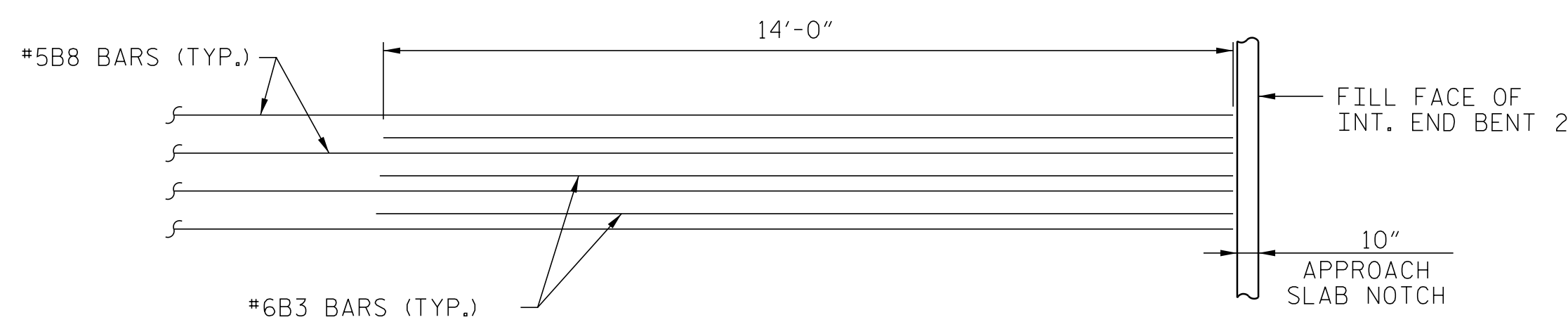
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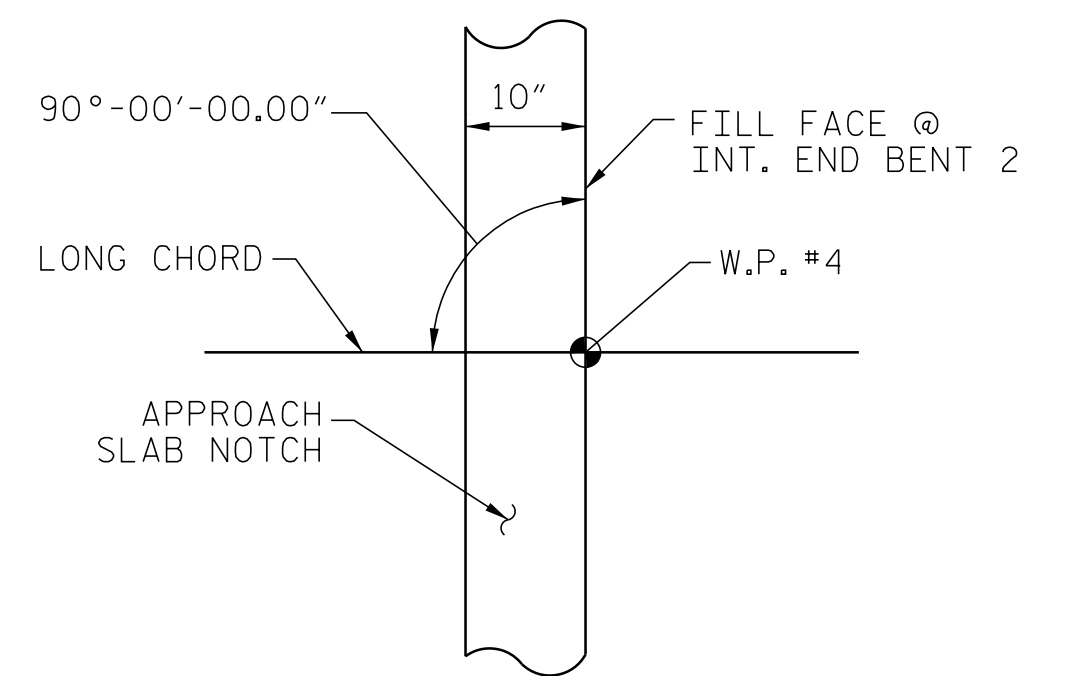
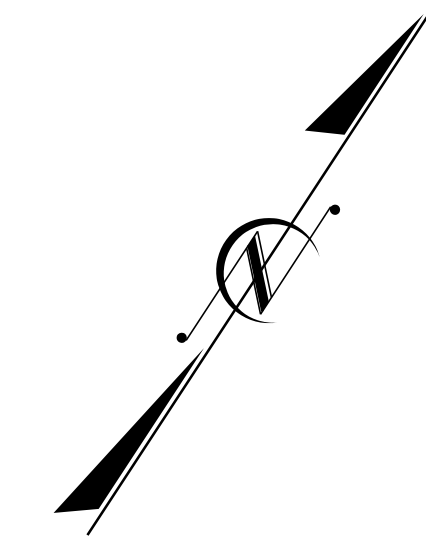
NOTES:
 FOR SECTION "A-A", SEE "TYPICAL DETAILS" SHEET.
 FOR ADDITIONAL NOTES, SEE SHEET 1 OF 3.



PLAN OF SPAN "C"



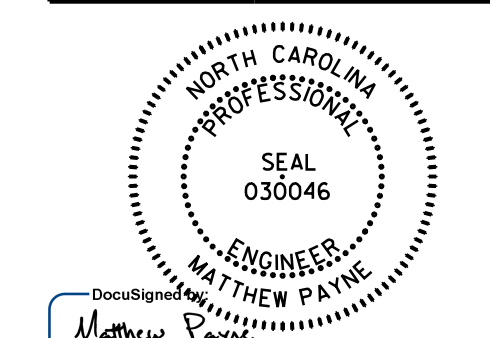
TOP OF SLAB REINFORCEMENT LAYOUT



DETAIL "B"

PROJECT NO. I-5823
 DAVIE COUNTY
 STATION: 702+82.00 -L RT-
 SHEET 3 OF 3

Dewberry
 2610 WYCLIFF ROAD
 SUITE 410
 RALEIGH, NC 27607
 PHONE: 919.881.9939
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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 PLAN OF SPAN "C"

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1			3			TOTAL SHEETS	
2			4			34	

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NOTES:

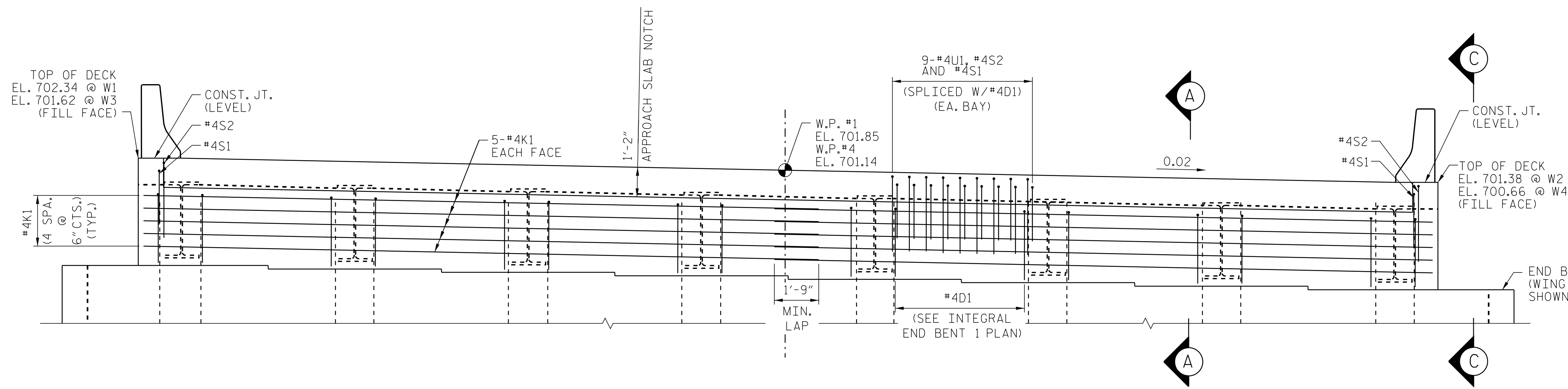
FOR UPPER WINGWALL DETAILS AND REINFORCING STEEL, SEE END BENT 1, SHEETS 2 & 3.

REINFORCING STEEL AND CONCRETE FOR ENDWALL DIAPHRAGM IS INCLUDED IN THE PAY ITEM "REINFORCED CONCRETE DECK SLAB".

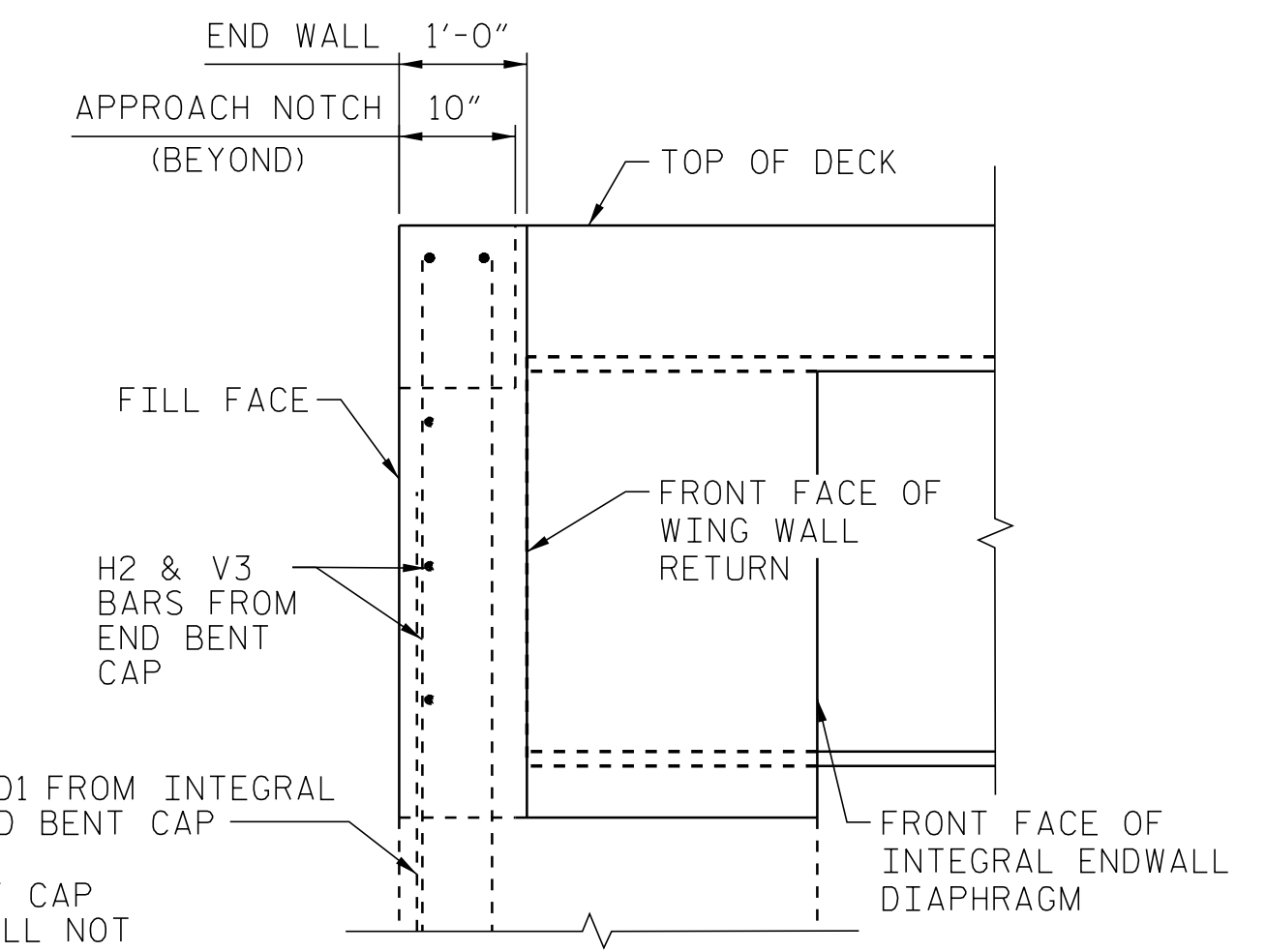
DECK REINFORCING NOT SHOWN FOR CLARITY.

THE CONTRACTOR SHALL PAY PARTICULAR ATTENTION TO ENSURE THAT THE AREAS BETWEEN THE BOTTOM OF THE GIRDERS AND THE BRIDGE SEATS ARE COMPLETELY FILLED WITH CONCRETE.

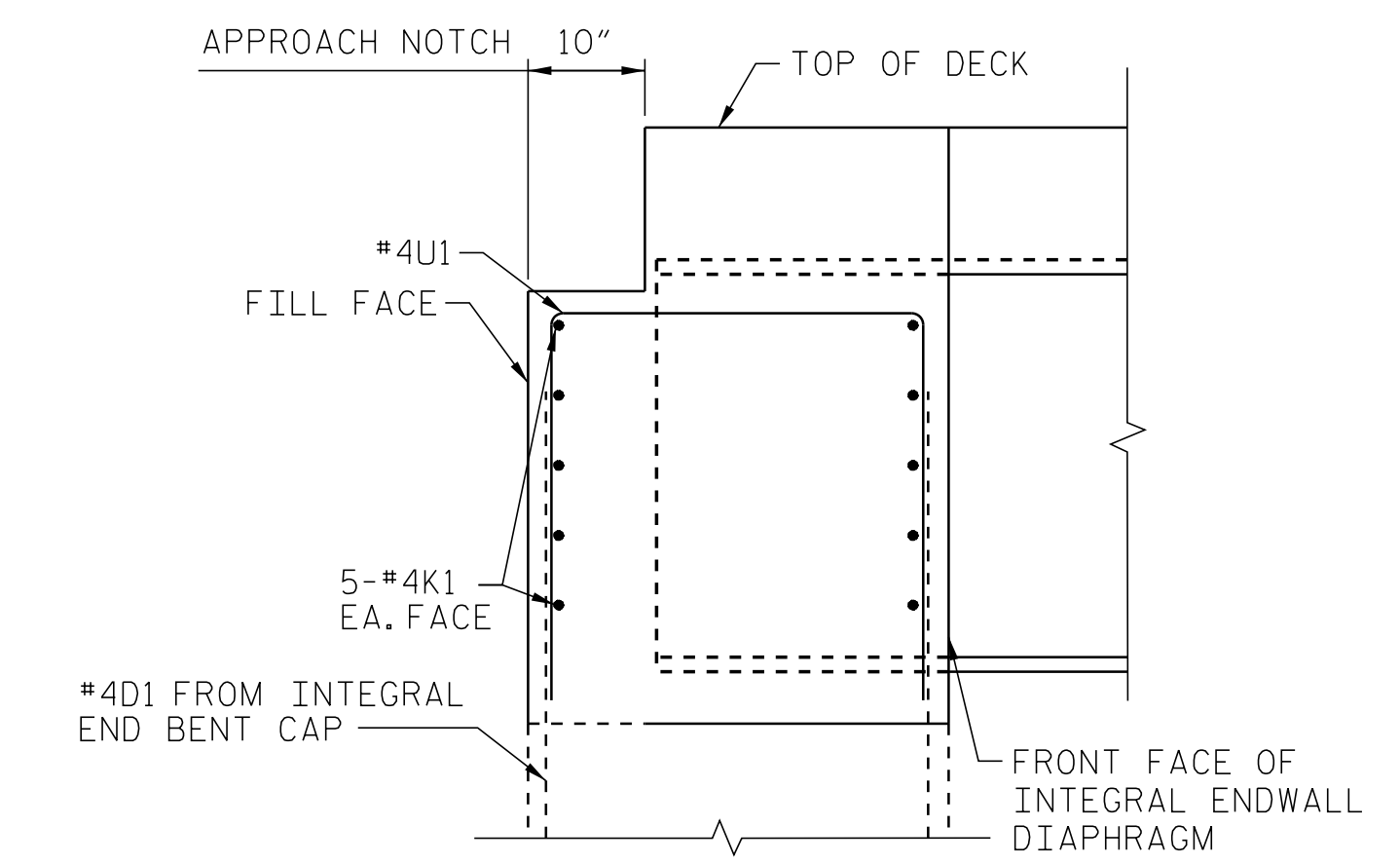
FOR SECTIONS "A-A" & "C-C", SEE "SUPERSTRUCTURE TYPICAL DETAILS" SHEET.



ELEVATION
(INTEGRAL END BENT 1 SHOWN, INTEGRAL END BENT 2 SIMILAR)



SECTION A-A



SECTION C-C

PROJECT NO. I-5823
DAVIE COUNTY
 STATION: 702+82.00 -L RT-

Dewberry
 2610 WYCLIFF ROAD
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**SUPERSTRUCTURE
 ENDWALL DIAPHRAGM DETAILS**

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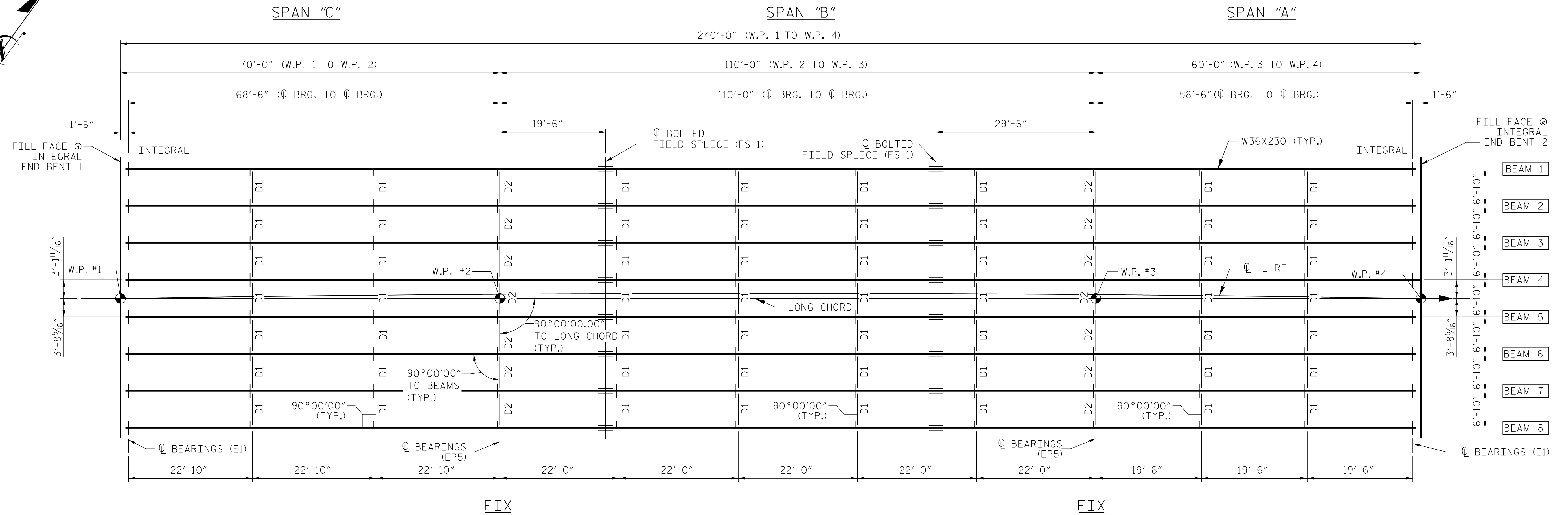
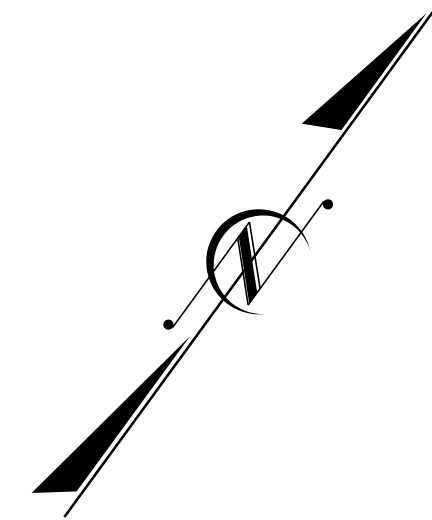
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NOTES:

D1 AND D2 DENOTE DIAPHRAGMS. SEE "SUPERSTRUCTURE STRUCTURAL STEEL DETAILS".

FOR FIELD SPLICE LOCATION, SEE "SUPERSTRUCTURE STRUCTURAL STEEL DETAILS - BEAM ELEVATION".

FOR FIELD SPLICE DETAILS, SEE "SUPERSTRUCTURE STRUCTURAL STEEL DETAILS, SHEET 3 OF 3".



CONTINUOUS BEAM FRAMING PLAN
(BEAMS PARALLEL TO LONG CHORD)

BEAM ERECTION SEQUENCE

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

THE LOCATION OF THE TEMPORARY BENT SHALL BE ADJUSTED BY THE CONTRACTOR AS NECESSARY.

THE TEMPORARY BENT SHALL REMAIN IN PLACE UNTIL ALL DIAPHRAGMS AND LATERAL BRACING ARE IN PLACE AND HIGH STRENGTH BOLTS TIGHTENED.

PLANS FOR THE TEMPORARY BENT, ERECTION SEQUENCE AND TEMPORARY BENT REMOVAL SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW.

THE TEMPORARY BENT SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NORTH CAROLINA.

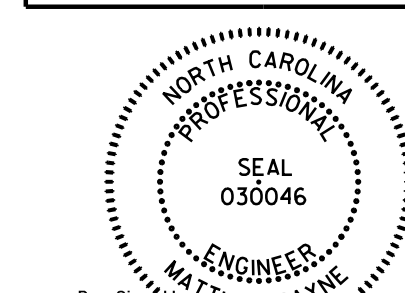
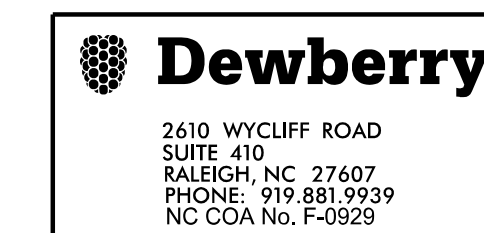
DURING THE BEAM ERECTION PROCEDURE, THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING TEMPORARY LATERAL BRACING AND OTHER MEANS OF SUPPORT, AS REQUIRED, TO ENSURE STABILITY OF THE BEAMS, AVOID UPLIFT OF THE BEAMS AT THE TEMPORARY ERECTION BENTS AND MAINTAIN PLUMBNESS OF THE BEAM WEBS.

THE CONTRACTOR'S ERECTION PLAN SHALL INCLUDE A METHOD OF TEMPORARY BENT REMOVAL THAT WILL UNIFORMLY APPLY THE STRUCTURAL STEEL WEIGHT TO THE BRIDGE DIAPHRAGMS.

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

FOR TEMPORARY BENTS, SEE SPECIAL PROVISIONS.

PROJECT NO. I-5823
 _____ DAVIE COUNTY
 STATION: 702+82.00 -L RT-



STATE OF NORTH CAROLINA
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 RALEIGH

**SUPERSTRUCTURE
 FRAMING PLAN**

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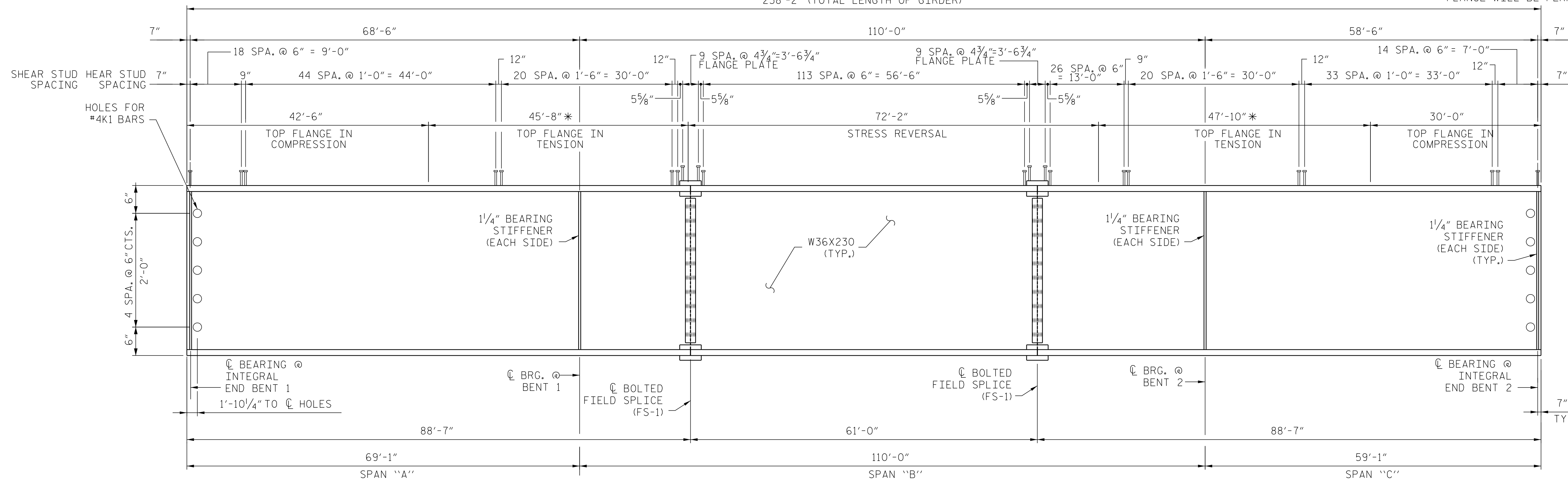
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NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS	
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2			4			34	

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NOTES:

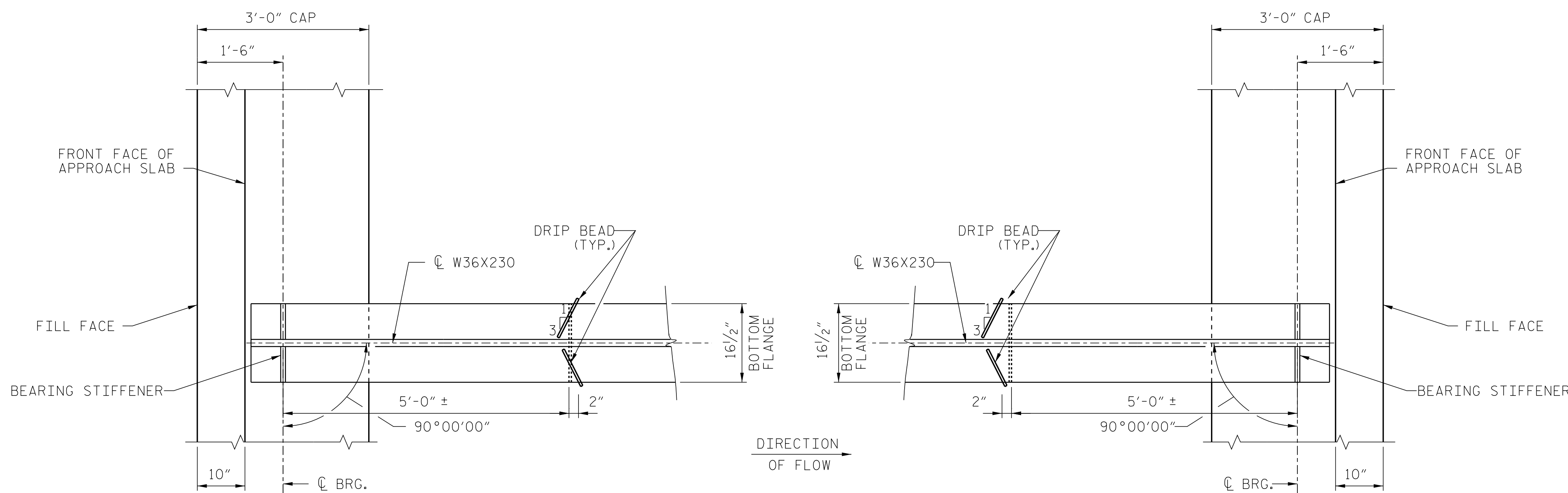
ALL DIMENSIONS ON THIS SHEET ARE HORIZONTAL.
 FOR ADDITIONAL STRUCTURAL STEEL NOTES, SEE SHEET 2 OF 3.
 * NO WELDING OF FORMS OR FALSEWORK TO THE TOP FLANGE WILL BE PERMITTED IN THIS REGION.

238'-2" (TOTAL LENGTH OF GIRDER)

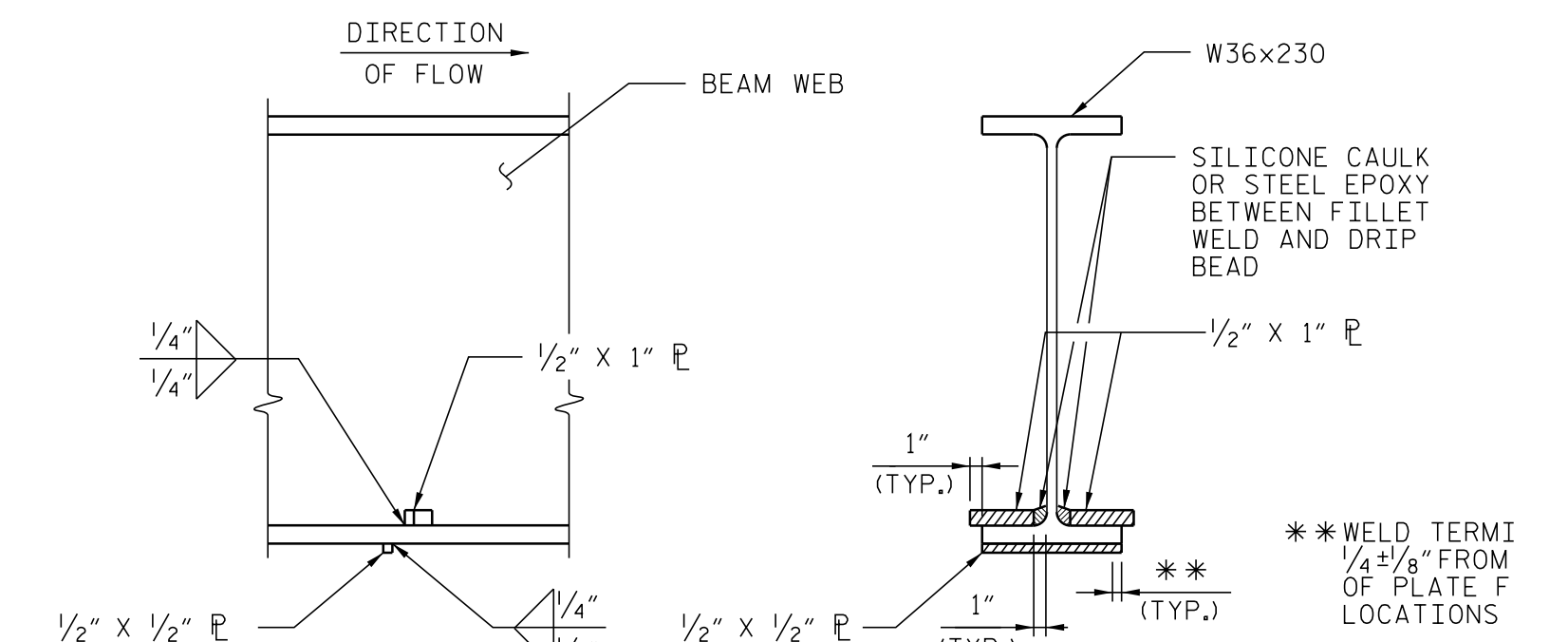


BEAM ELEVATION

(INTERMEDIATE CROSSFRAME CONNECTOR PLATES NOT SHOWN FOR CLARITY)



DRIP BEAD PLAN



DRIP BEAD DETAILS

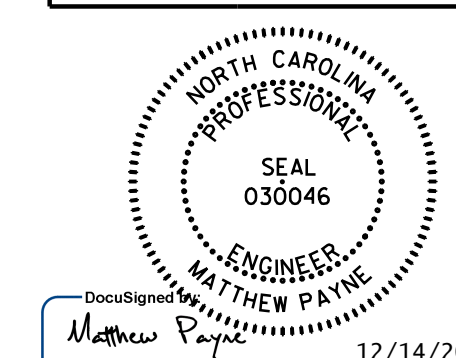
PROJECT NO. I-5823

DAVIE COUNTY

STATION: 702+82.00 -L RT-

SHEET 1 OF 3

Dewberry
 2610 WYCLIFF ROAD
 SUITE 410
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 NC COA No. F-0929



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

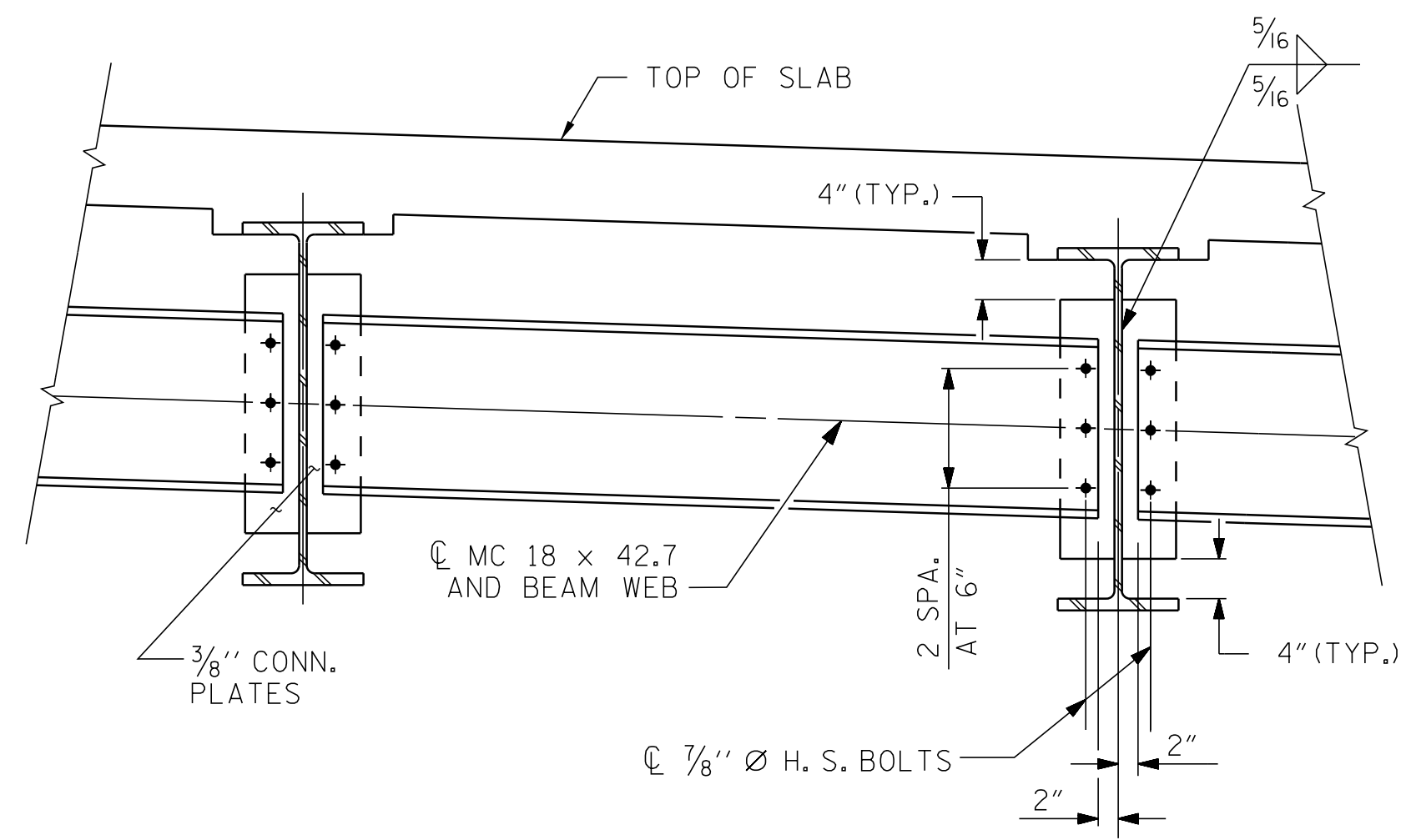
**SUPERSTRUCTURE
 STRUCTURAL STEEL
 DETAILS**

DRAWN BY : D. SMITH DATE : DEC. 18
 CHECKED BY : M. PAYNE DATE : DEC. 18
 DESIGN ENGINEER OF RECORD: M. PAYNE DATE : DEC. 18

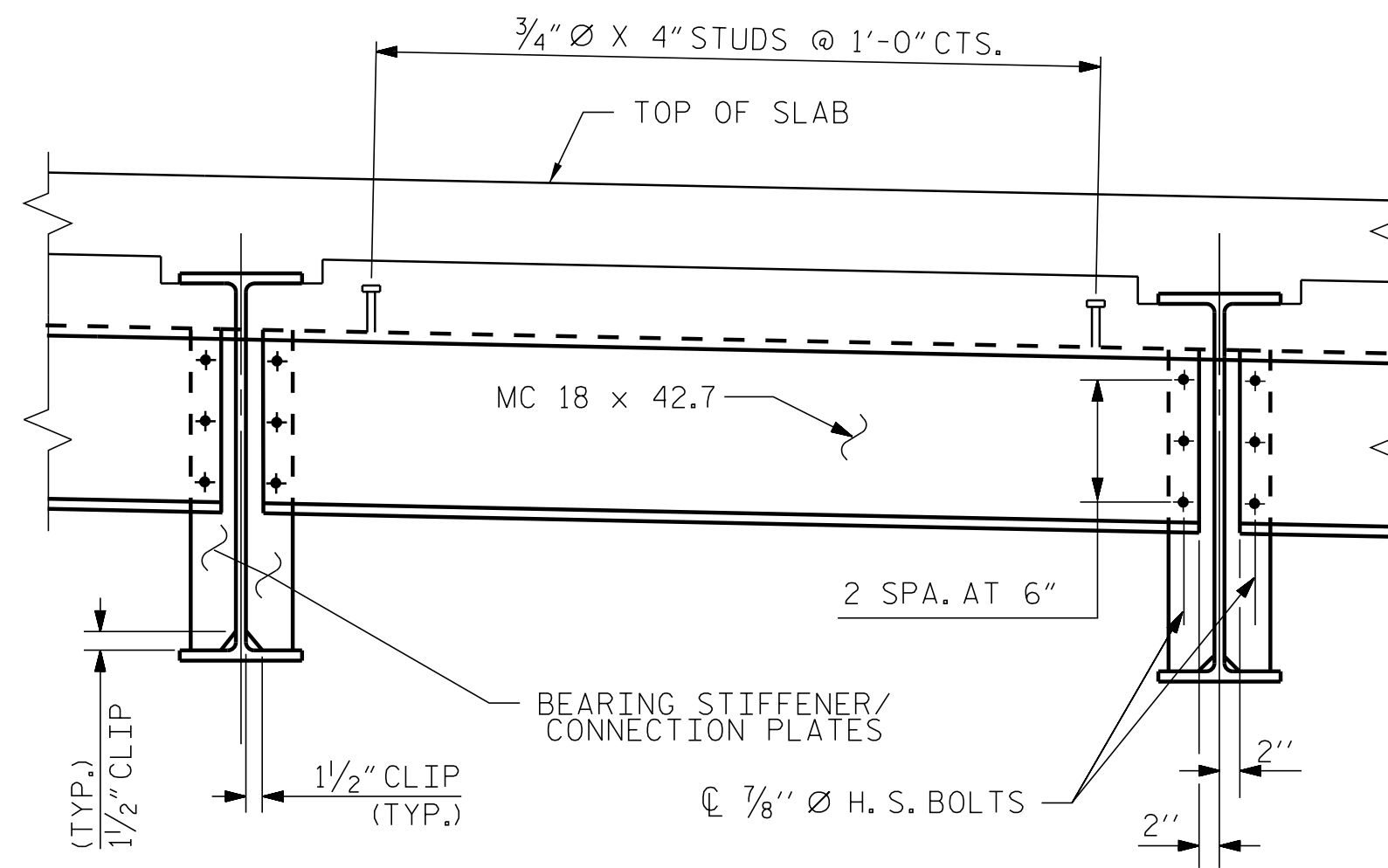
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-13
1			3			TOTAL SHEETS
2			4			34

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TYPICAL INTERMEDIATE DIAPHRAGM (D1)



TYPICAL BENT DIAPHRAGM (D2)

NOTES:

ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 50W AND PAINTED IN ACCORDANCE WITH SYSTEM 5 OR SYSTEM 6 OF ARTICLE 442-8 OF THE STANDARD SPECIFICATIONS UNLESS OTHERWISE NOTED ON THE PLANS.

ALL DIMENSIONS SHOWN ARE HORIZONTAL OR VERTICAL, UNLESS OTHERWISE NOTED.

ALL FIELD CONNECTIONS TO BE 7/8" DIA. HIGH STRENGTH BOLTS, UNLESS OTHERWISE NOTED.

BEARING STIFFENERS MAY REQUIRE COPING IF WIDER THAN BOTTOM FLANGE.

BEARING STIFFENERS SHALL BE PLACED NORMAL TO THE WEB OF BEAM AND SHALL BE PLUMB.

ENDS OF GIRDERS SHALL BE PLUMB.

STUDS ON GIRDERS MAY BE SHIFTED UP TO 1 INCH IF NECESSARY TO CLEAR FLANGE SPLICE WELD.

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

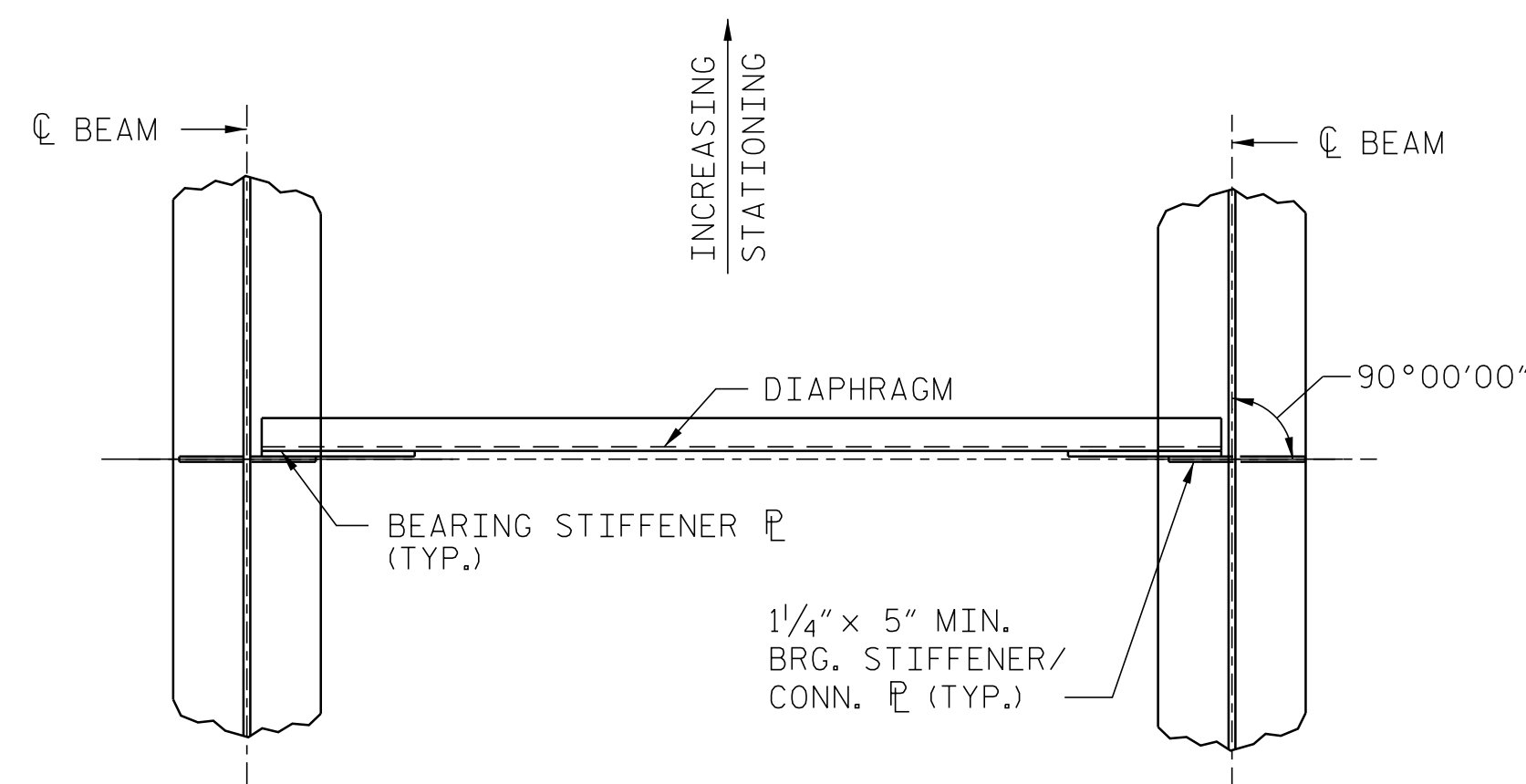
STRUCTURAL STEEL ERECTION IN A CONTINUOUS UNIT SHALL BE COMPLETE BEFORE FALSEWORK OR FORMS ARE PLACED ON THE UNIT.

FABRICATORS SHALL DETAIL DIAPHRAGM MEMBERS AND CONNECTIONS FOR STEEL DEAD LOAD FIT UP. GIRDERS SHALL BE PLUMB AFTER THE FULL AMOUNT OF DEAD LOAD IS APPLIED.

THE CONTRACTOR MAY, WHEN NECESSARY, PROPOSE A SCHEME FOR AVOIDING INTERFERENCE BETWEEN METAL STAY-IN-PLACE FORM SUPPORTS OR FORMS AND BEAM/GIRDER STIFFENERS OR CONNECTOR PLATES. THE PROPOSAL SHALL BE INDICATED, AS APPROPRIATE, ON EITHER THE STEEL WORKING DRAWINGS OR THE METAL STAY-IN-PLACE FORM WORKING DRAWINGS.

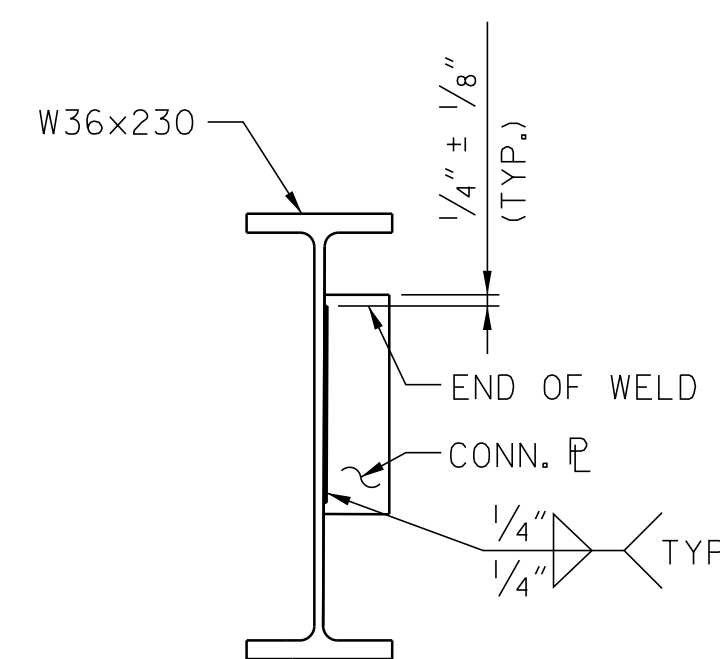
CHARPY V-NOTCH TESTS ARE REQUIRED ON ALL BEAM SECTIONS, COVER PLATES AND SPLICE PLATES AS INDICATED IN THE PLANS AND IN ACCORDANCE WITH ARTICLE 1072-7 OF THE STANDARD SPECIFICATIONS.

CHARPY V-NOTCH TESTS ARE REQUIRED.



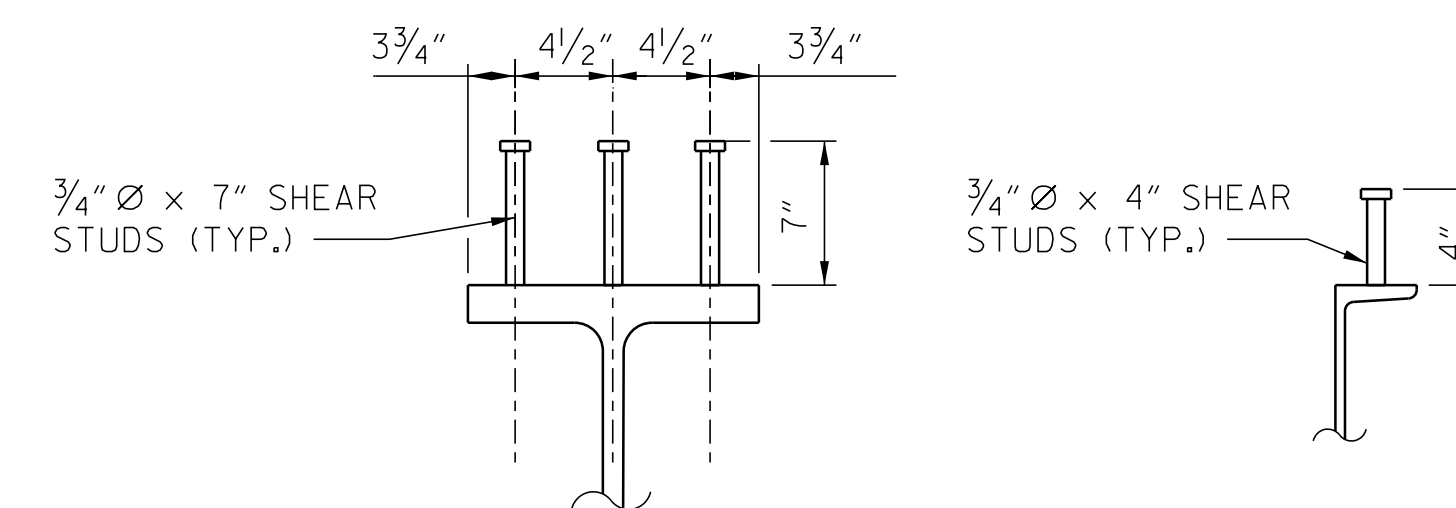
PLAN OF BENT DIAPHRAGM (D2)

(DIAPHRAGMS (D1) ARE SIMILAR)

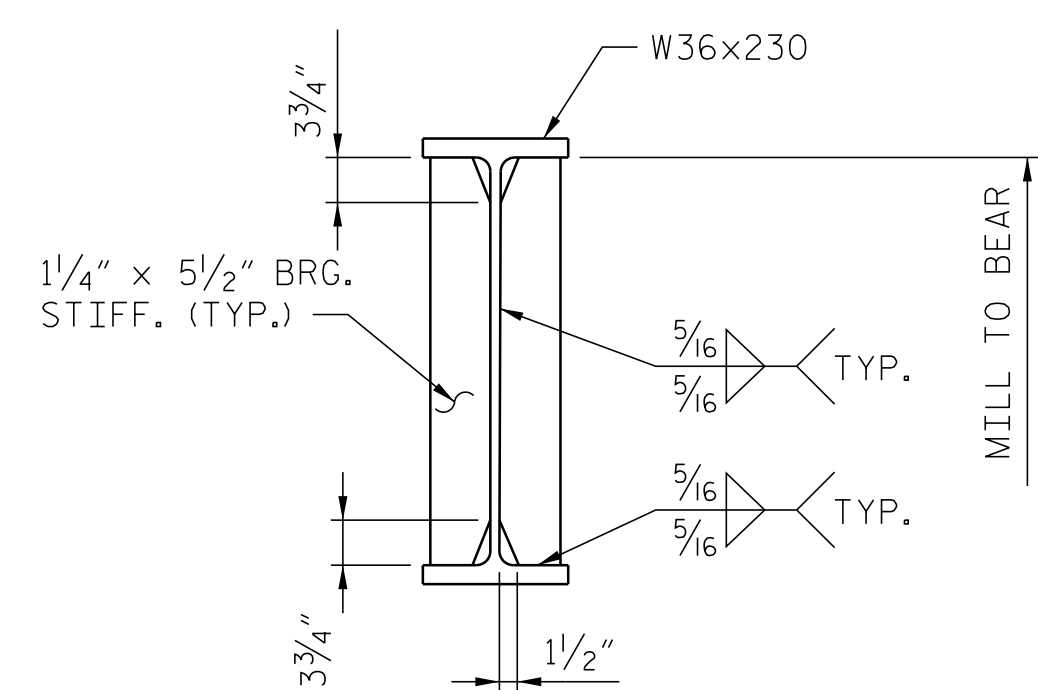


TYPICAL CONNECTOR PLATE DETAILS

(EXTERIOR BEAM SHOWN, HOLES NOT SHOWN)
(INTERMEDIATE DIAPHRAGM)

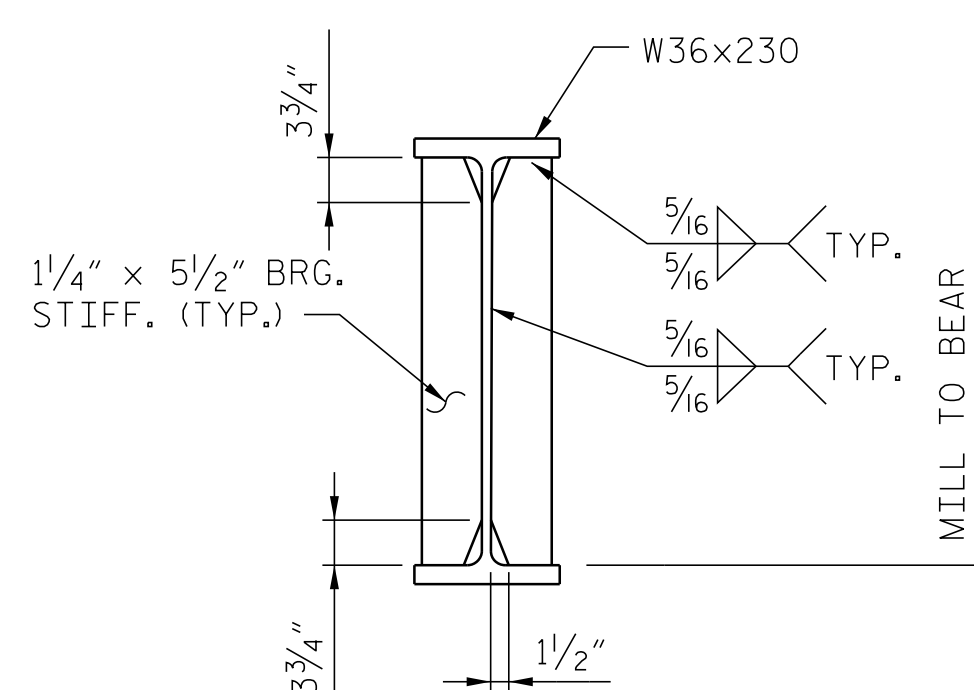


SHEAR STUD DETAILS

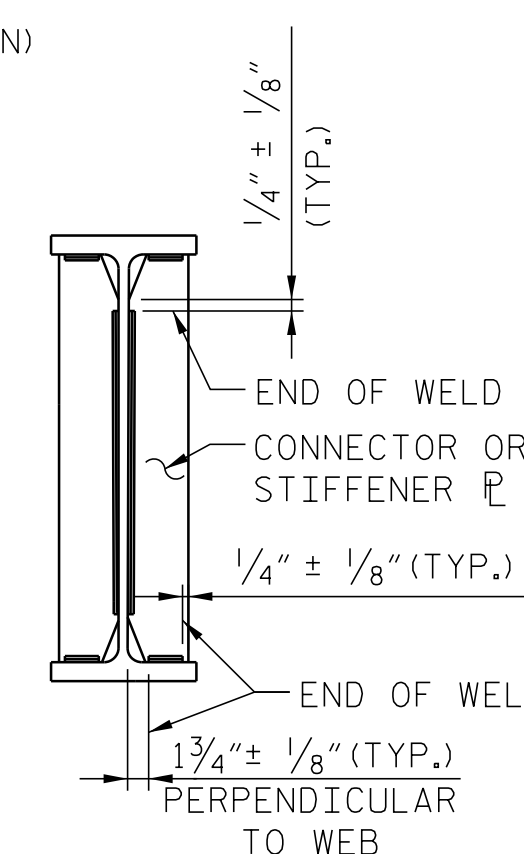


BEARING STIFFENER/
CONNECTION PLATE DETAIL
AT BENT

(INTERIOR BEAM SHOWN)
(HOLES NOT SHOWN)



BEARING STIFFENER DETAIL
AT INTEGRAL END BENT



TYPICAL WELD TERMINATION
DETAILS

PROJECT NO. I-5823

DAVIE COUNTY

STATION: 702+82.00 -L RT-

SHEET 2 OF 3

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

NORTH CAROLINA
PROFESSIONAL
SEAL
030046
ENGINEER
MATTHEW PAYNE

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

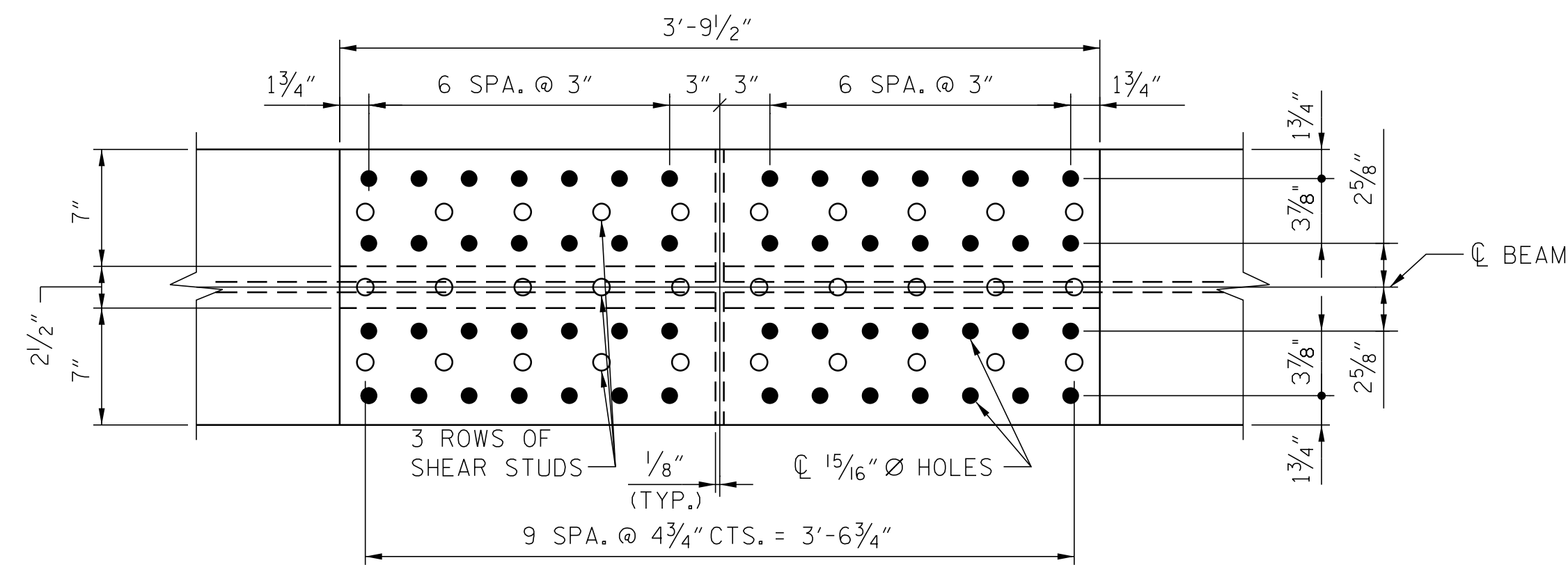
SUPERSTRUCTURE
STRUCTURAL STEEL
DETAILS

DRAWN BY: D. SMITH DATE: DEC. 18
CHECKED BY: M. PAYNE DATE: DEC. 18
DESIGN ENGINEER OF RECORD: M. PAYNE DATE: DEC. 18

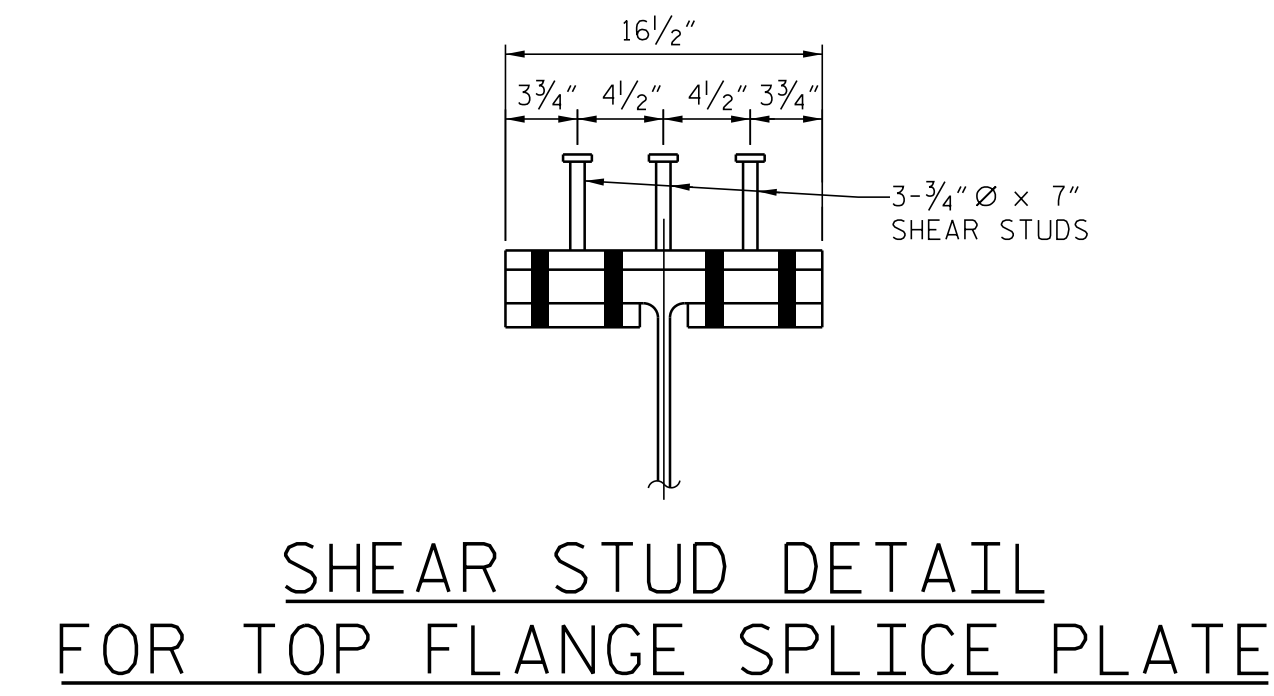
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*****USERNAME*****

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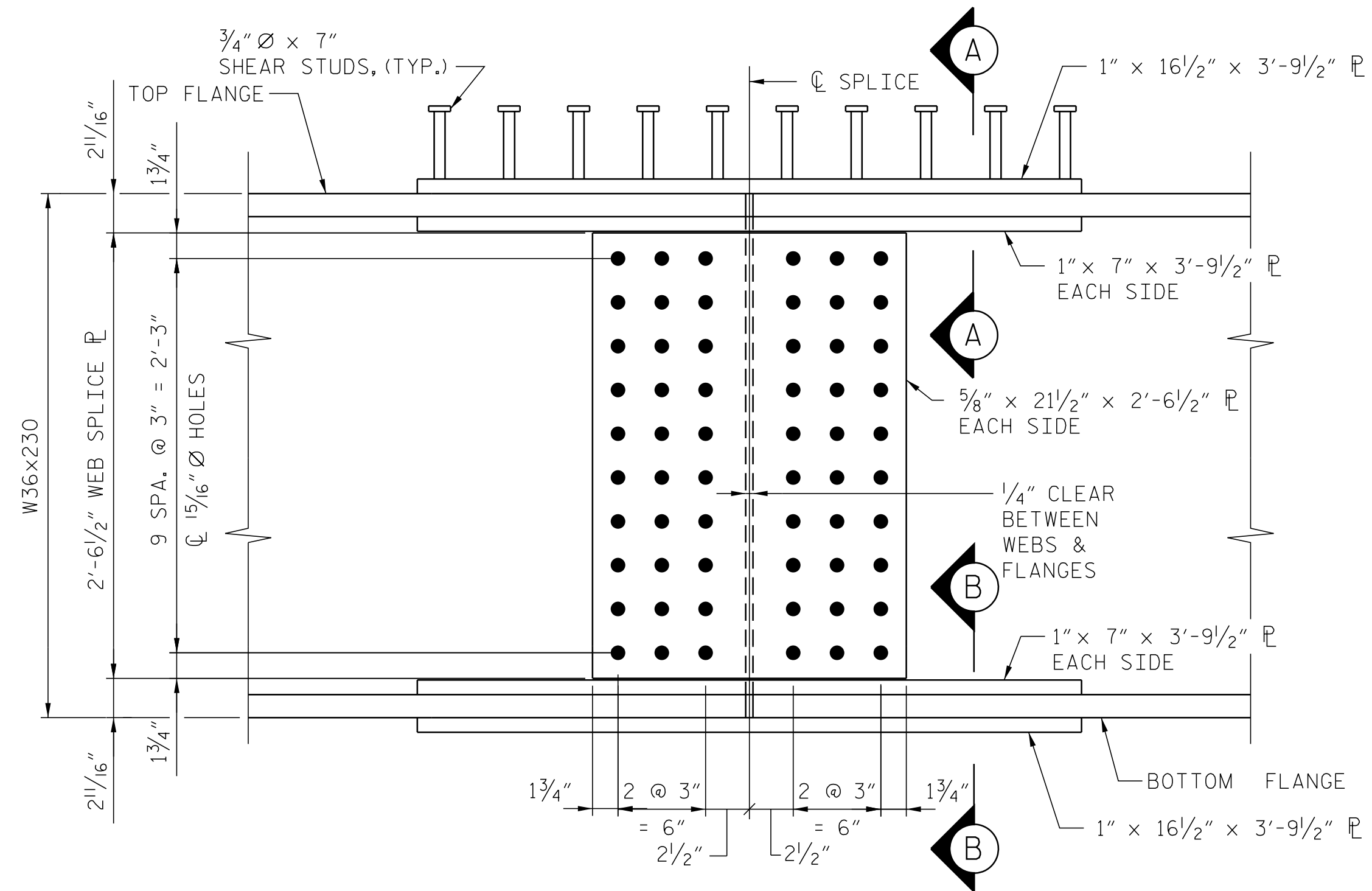
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-14
1			3			TOTAL SHEETS
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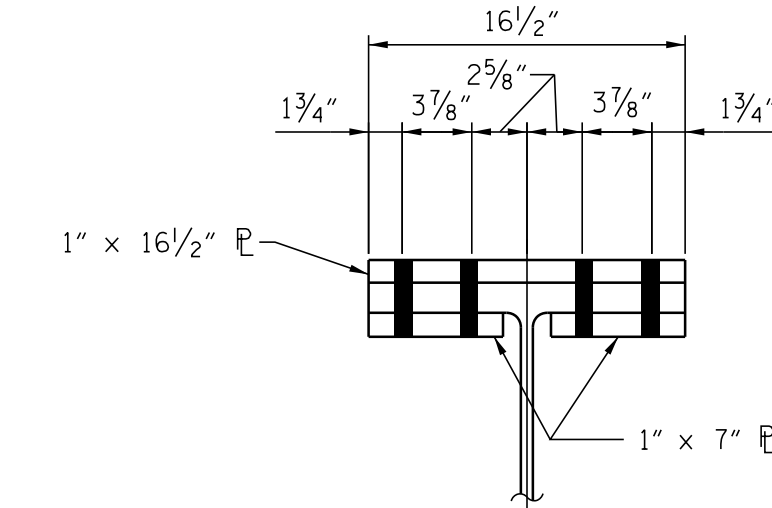
PLAN (TOP OF TOP FLANGE) (FS-1)



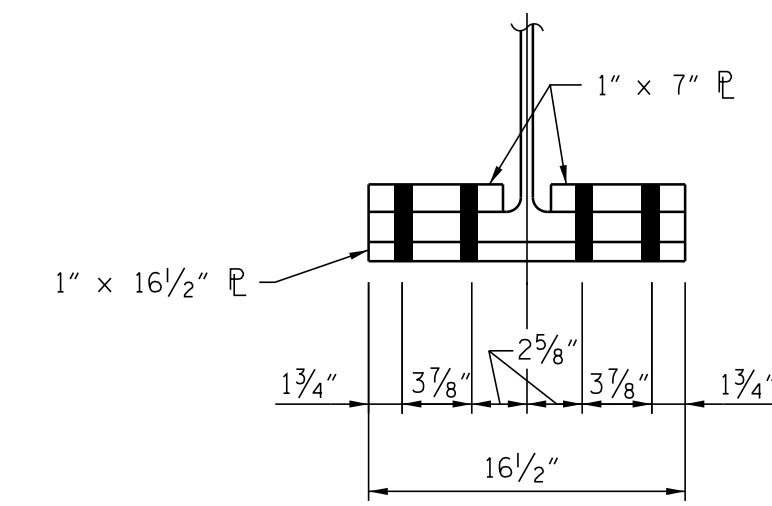
SHEAR STUD DETAIL FOR TOP FLANGE SPLICE PLATE



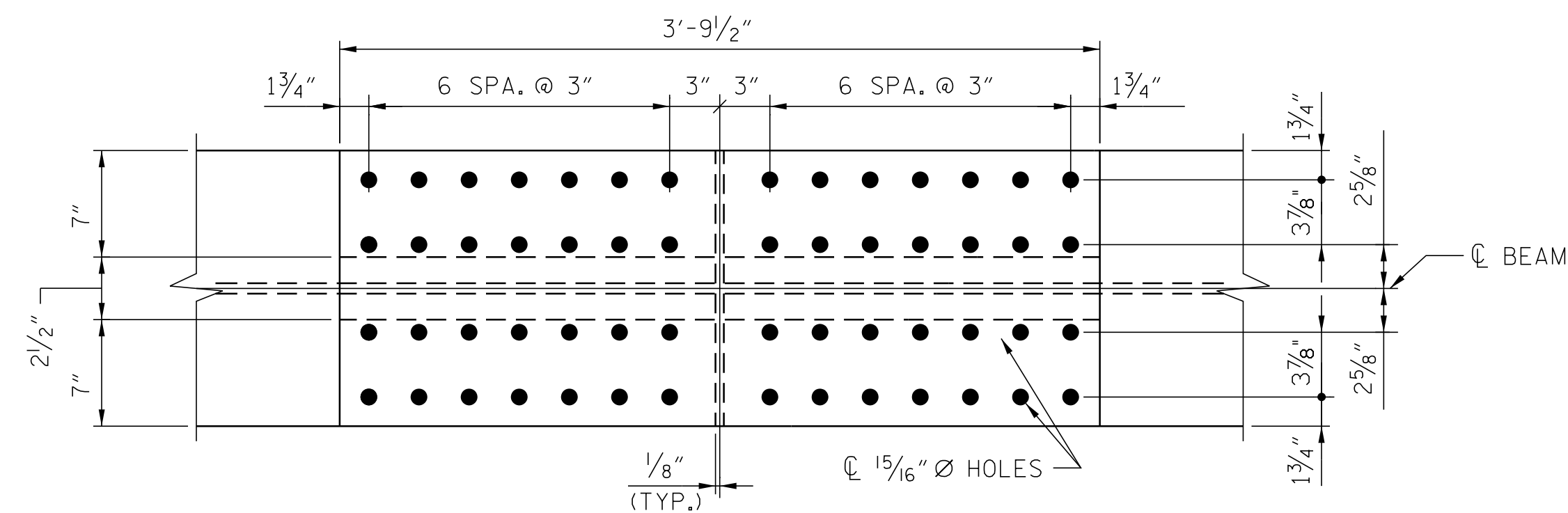
ELEVATION (FS-1)



SECTION A-A



SECTION B-B



PLAN (BOTTOM OF TOP FLANGE) (FS-1)
BOLTED FIELD SPLICES

PROJECT NO. I-5823
 DAVIE COUNTY
 STATION: 702+82.00 -L RT-
 SHEET 3 OF 3

Dewberry
 2610 WYCLIFF ROAD
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 PHONE: 919.881.9939
 NC COA No. F-0929

NORTH CAROLINA
 PROFESSIONAL
 SEAL
 030046
 ENGINEER
 MATTHEW PAYNE

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 STRUCTURAL STEEL
 DETAILS

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REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-15	
1			3			TOTAL SHEETS	
2			4			34	

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DEAD LOAD DEFLECTION TABLE FOR BEAMS 1 THROUGH 8

ORDINATES	SPAN "A"											
	EXTERIOR AND INTERIOR BEAMS											
	TWENTIETH POINTS	BRG.	1.10	1.20	1.30	1.40	1.50	1.60	1.70	1.80	1.90	BRG.
DEFLECTION DUE TO WEIGHT OF STEEL	0.000	-0.002	-0.003	-0.003	-0.002	-0.001	0.001	0.002	0.003	0.003	0.003	0.000
* DEFLECTION DUE TO WEIGHT OF SLAB	0.000	-0.005	-0.008	-0.010	-0.005	0.000	0.003	0.008	0.012	0.010	0.000	0.000
DEFLECTION DUE TO WEIGHT OF RAIL	0.000	-0.001	-0.001	-0.002	-0.002	-0.001	0.000	0.001	0.002	0.001	0.000	0.000
TOTAL DL DEFLECTION	0.000	-0.008	-0.013	-0.015	-0.009	-0.002	0.003	0.010	0.017	0.014	0.000	0.000
REQUIRED CAMBER	0	0	0	0	0	0	0	0	0	0	0	0

DEAD LOAD DEFLECTION TABLE FOR BEAMS 1 THROUGH 8

ORDINATES	SPAN "B"																					
	EXTERIOR AND INTERIOR BEAMS																					
	TWENTIETH POINTS	BRG.	2.05	2.10	1.15	2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	BRG.
DEFLECTION DUE TO WEIGHT OF STEEL	0.000	-0.006	-0.012	-0.018	-0.024	-0.030	-0.037	-0.041	-0.046	-0.047	-0.048	-0.047	-0.046	-0.041	-0.036	-0.030	-0.024	-0.017	-0.010	-0.005	0.000	0.000
* DEFLECTION DUE TO WEIGHT OF SLAB	0.000	-0.020	-0.040	-0.059	-0.078	-0.100	-0.123	-0.136	-0.150	-0.155	-0.159	-0.155	-0.151	-0.134	-0.117	-0.099	-0.081	-0.056	-0.032	-0.016	0.000	0.000
DEFLECTION DUE TO WEIGHT OF RAIL	0.000	-0.003	-0.006	-0.009	-0.012	-0.016	-0.020	-0.022	-0.024	-0.025	-0.026	-0.025	-0.024	-0.021	-0.019	-0.016	-0.013	-0.009	-0.005	-0.003	0.000	0.000
TOTAL DL DEFLECTION	0.000	-0.029	-0.058	-0.086	-0.114	-0.146	-0.179	-0.199	-0.219	-0.226	-0.233	-0.227	-0.221	-0.196	-0.171	-0.144	-0.118	-0.082	-0.046	-0.023	0.000	0.000
REQUIRED CAMBER	0	3/8"	1/16"	1"	1 3/8"	1 3/4"	2 1/8"	2 3/8"	2 5/8"	2 3/4"	2 13/16"	2 3/4"	2 5/8"	2 3/8"	2 1/16"	1 3/4"	1 1/16"	1"	9/16"	1/4"	0	0

DEAD LOAD DEFLECTION TABLE FOR BEAMS 1 THROUGH 8

ORDINATES	SPAN "C"											
	EXTERIOR AND INTERIOR BEAMS											
	TWENTIETH POINTS	BRG.	3.10	3.20	3.30	3.40	3.50	3.60	3.70	3.80	3.90	BRG.
DEFLECTION DUE TO WEIGHT OF STEEL	0.000	0.002	0.003	0.004	0.003	0.002	0.013	0.001	0.000	0.000	0.000	0.000
* DEFLECTION DUE TO WEIGHT OF SLAB	0.000	0.006	0.011	0.013	0.011	0.008	0.005	0.003	0.002	0.001	0.000	0.000
DEFLECTION DUE TO WEIGHT OF RAIL	0.000	0.000	0.002	0.002	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
TOTAL DL DEFLECTION	0.000	0.008	0.016	0.019	0.015	0.011	0.018	0.004	0.002	0.001	0.000	0.000
REQUIRED CAMBER	0	-1/8"	-3/16"	-3/16"	-3/16"	-3/16"	-3/16"	-1/16"	0	0	0	0

* INCLUDES SLAB, BUILD-UP AND STAY-IN-PLACE METAL FORMS.

CAMBER NOTES:

1. ALL DEFLECTIONS AND CAMBER VALUES SHOWN ARE IN INCHES (DECIMAL FORM), EXCEPT FOR "REQUIRED CAMBER" GIVEN IN INCHES (FRACTIONAL FORM).
2. DEFLECTIONS IN THE DOWNWARD DIRECTION ARE NEGATIVE. A REQUIRED CAMBER IN THE UPWARD DIRECTION IS POSITIVE.

PROJECT NO. I-5823
 DAVIE COUNTY
 STATION: 702+82.00 -L RT-

Dewberry
 2610 WYCLIFF ROAD
 SUITE 410
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 NC COA No. F-0929



DocuSigned by:
 Matthew Payne
 12/14/2018

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

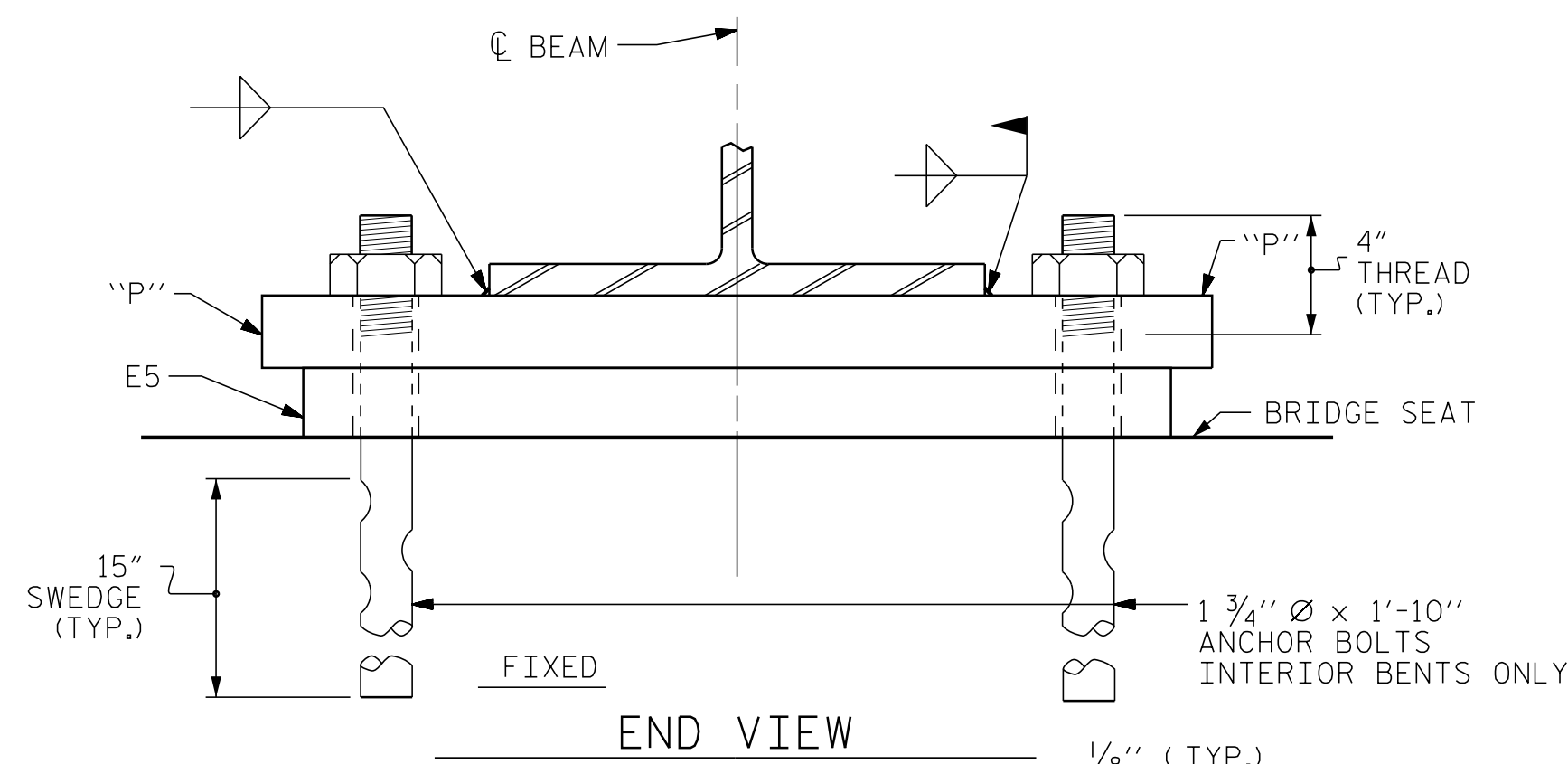
SUPERSTRUCTURE
 DEAD LOAD DEFLECTION
 AND CAMBER SCHEDULE

DRAWN BY : D. SMITH DATE : DEC. 18
 CHECKED BY : M. PAYNE DATE : DEC. 18
 DESIGN ENGINEER OF RECORD: M. PAYNE DATE : DEC. 18

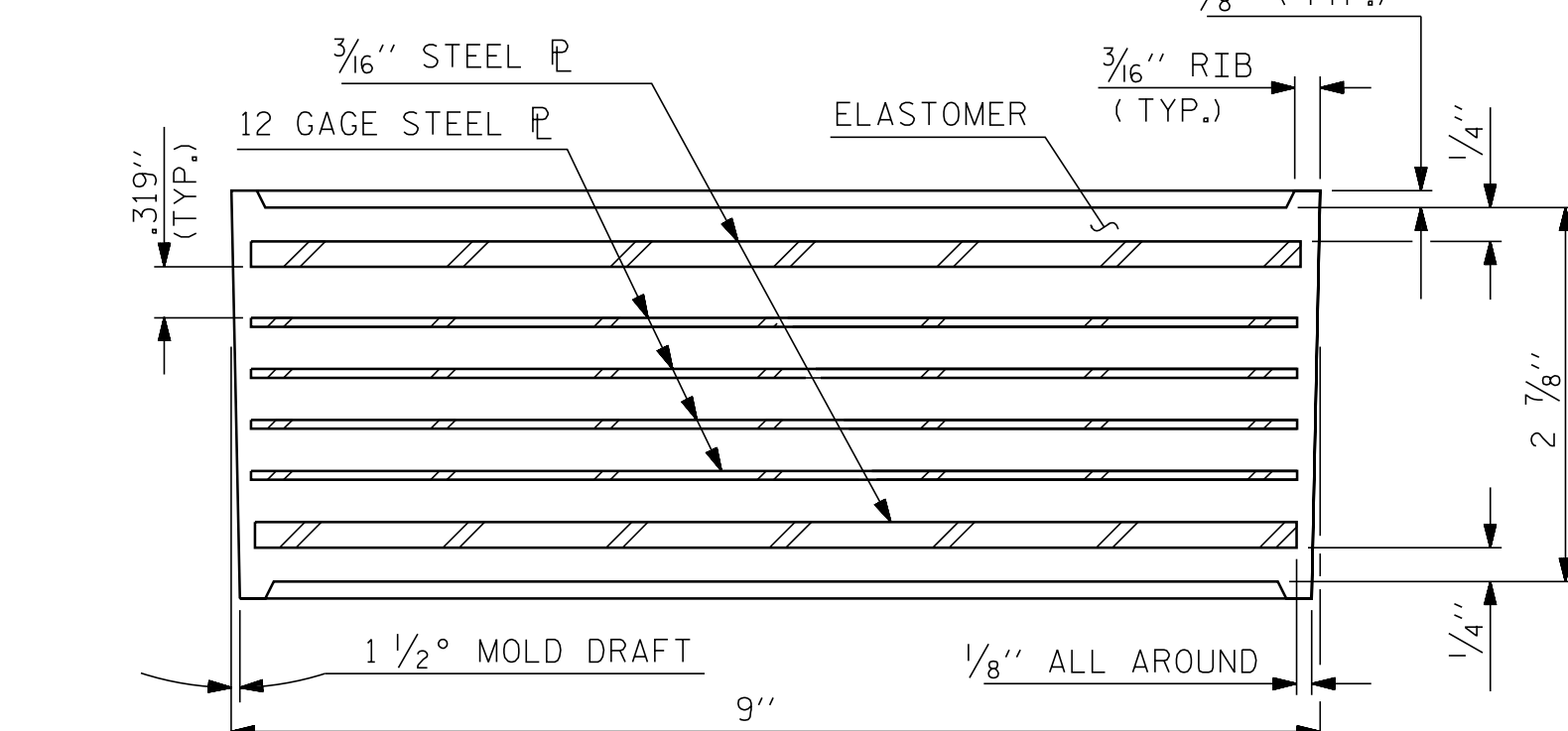
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2				4				TOTAL SHEETS 34

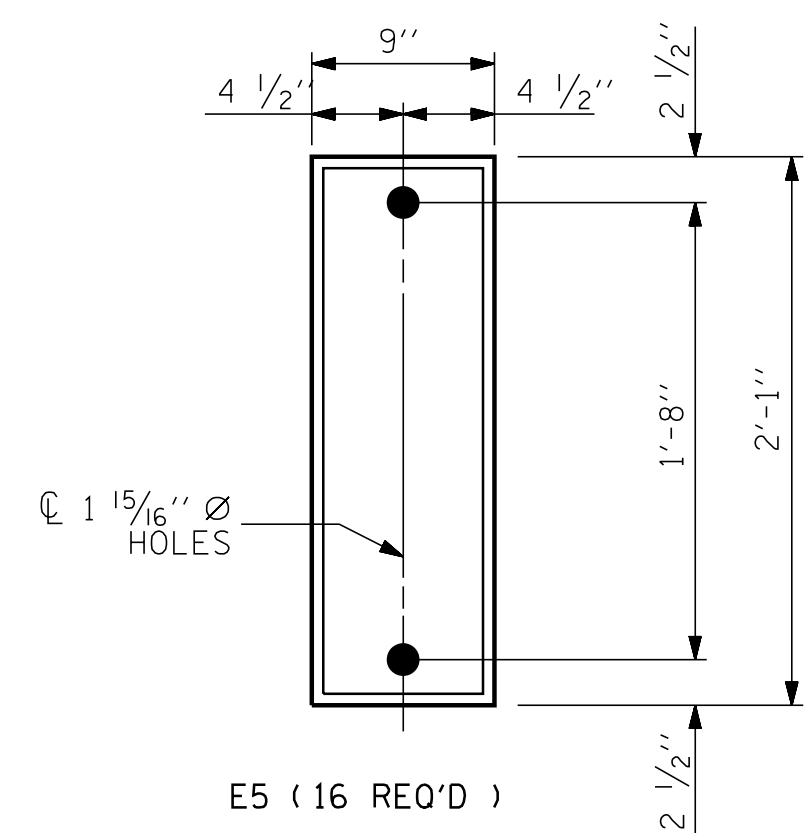
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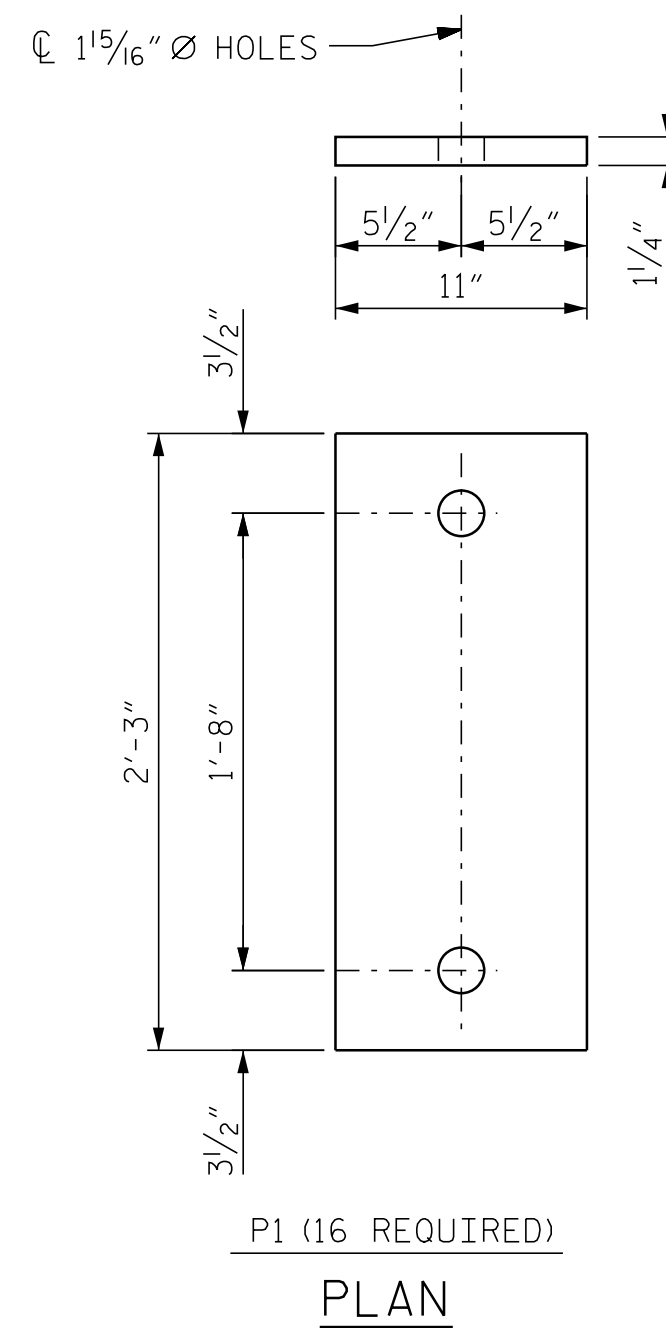
END VIEW



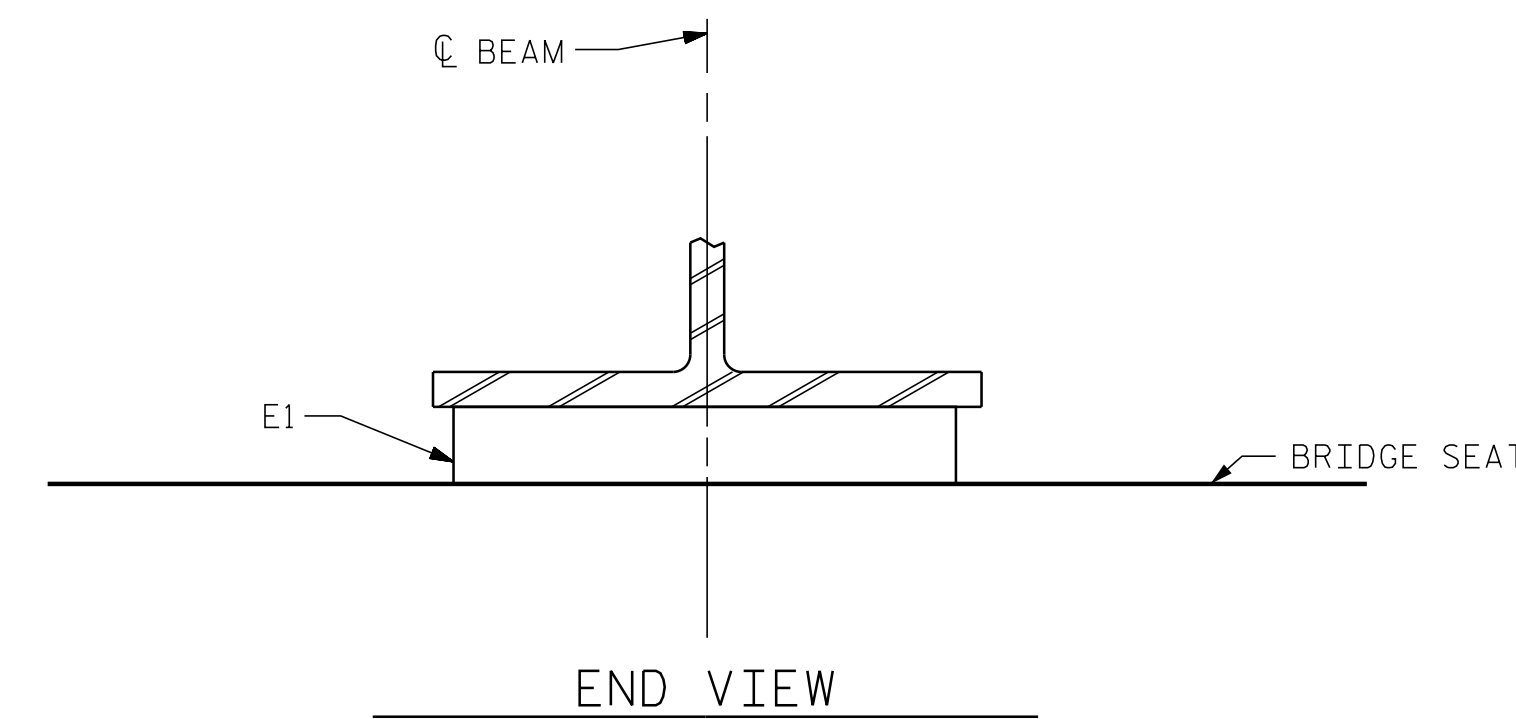
TYPICAL SECTION OF ELASTOMERIC BEARINGS



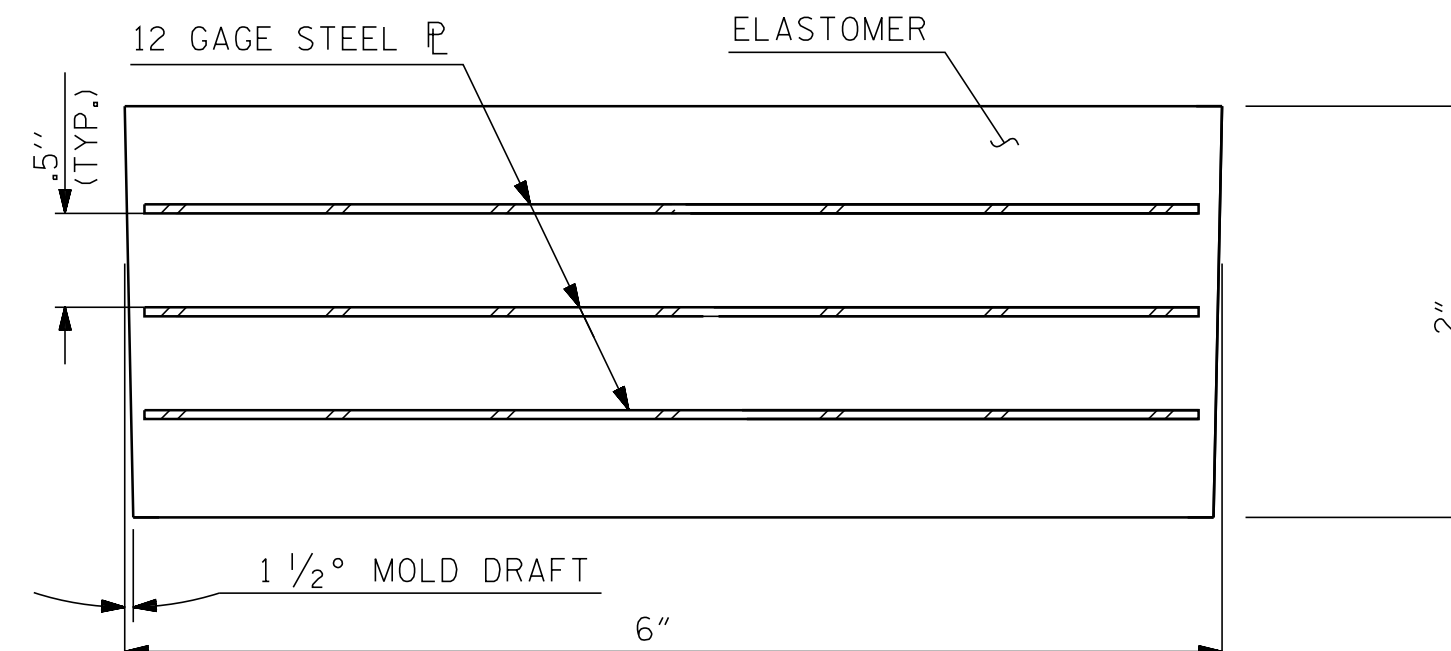
PLAN VIEW OF ELASTOMERIC BEARING
TYPE III



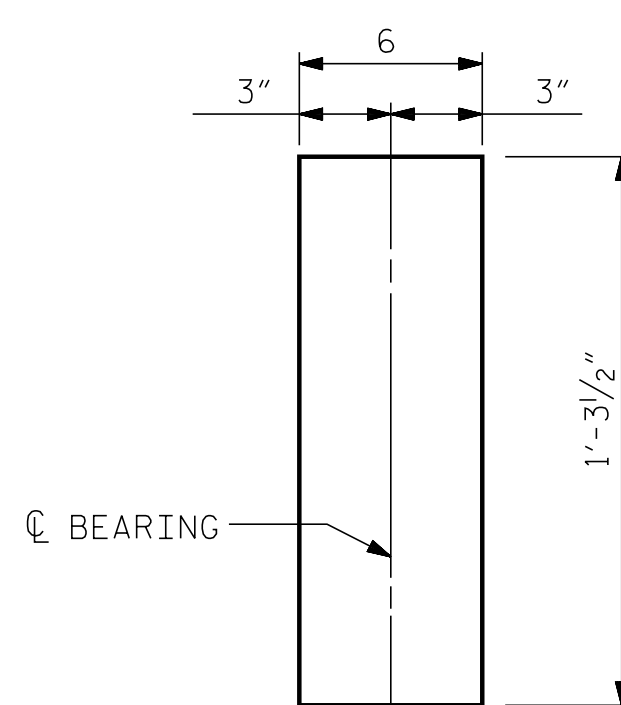
SOLE PLATE DETAILS ("P")



END VIEW



TYPICAL SECTION OF ELASTOMERIC BEARINGS



PLAN VIEW OF ELASTOMERIC BEARING
INTEGRAL END BENT BEARING

NOTES

AT ALL FIXED POINTS OF SUPPORT, NUTS FOR ANCHOR BOLTS ARE TO BE TIGHTENED FINGER TIGHT AND THEN BACKED OFF 1/2 TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

THE 2" Ø PIPE SLEEVE SHALL BE CUT FROM SCHEDULE 40 PVC PLASTIC PIPE. THE PVC PLASTIC PIPE SHALL MEET THE REQUIREMENTS OF ASTM D1785.

THE PAYMENT FOR THE PIPE SLEEVES SHALL BE INCLUDED IN THE SEVERAL PAY ITEMS.

FOR PAINTED STRUCTURAL STEEL (EXCLUDING AASHTO M270 GRADE 50W), SOLE PLATES, ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

FOR AASHTO M270 GRADE 50W STRUCTURAL STEEL, SOLE PLATE SHALL BE AASHTO M270 GRADE 50W AND SHALL NOT BE GALVANIZED. ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. SHOP DRAWINGS ARE NOT REQUIRED FOR ANCHOR BOLTS, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

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

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

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

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE III	255 k
E1	38 k

PROJECT NO. I-5823
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 NC COA No. F-0929



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 ELASTOMERIC BEARING
 DETAILS
 (STEEL SUPERSTRUCTURE)

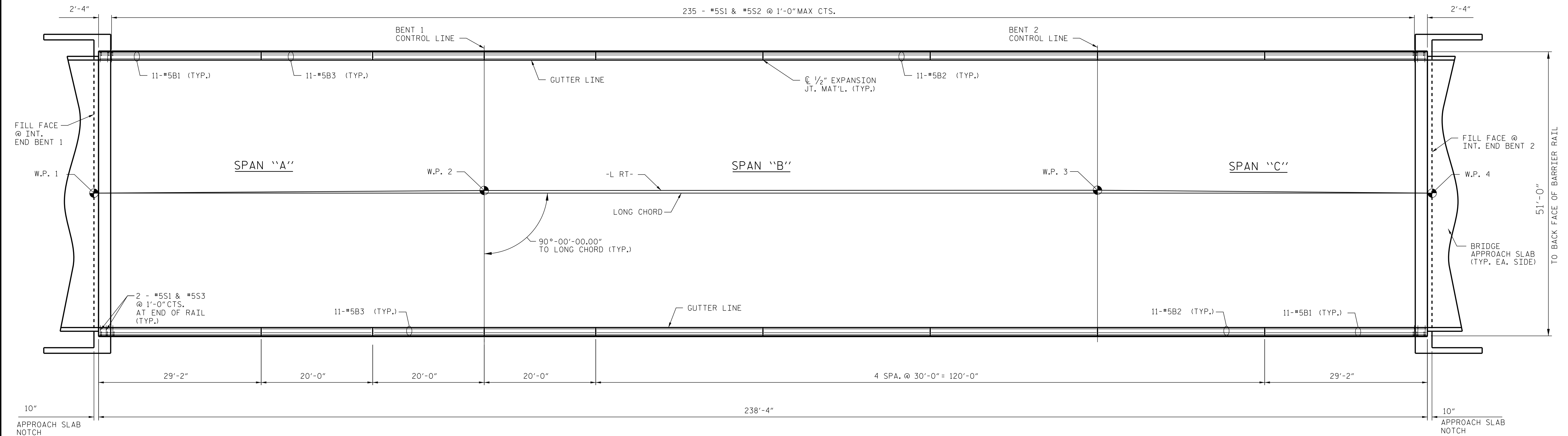
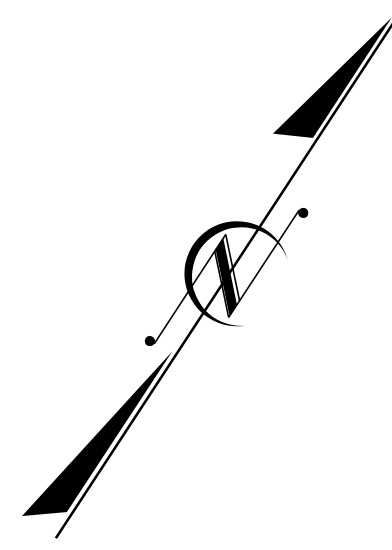
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NO.	BY:	DATE:	NO.	BY:	DATE:	S2-17	
1			3			TOTAL SHEETS	
2			4			34	

DRAWN BY: D. SMITH DATE: DEC. 18
 CHECKED BY: M. PAYNE DATE: DEC. 18
 DESIGN ENGINEER OF RECORD: M. PAYNE DATE: DEC. 18

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DocuSigned by:
 Matthew Payne
 12/14/2018
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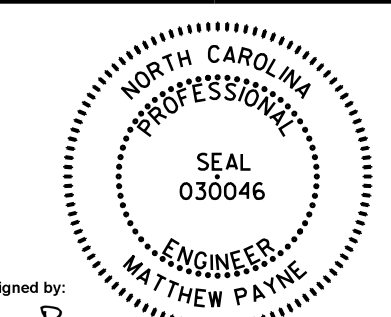
NOTES:
 FOR REINFORCING STEEL IN BARRIER RAIL, SEE "STANDARD CONCRETE BARRIER RAIL" SHEET.
 SEE "STANDARD GUARDRAIL ANCHORAGE FOR BARRIER RAIL" SHEET FOR ANCHOR ASSEMBLY PLACEMENT.
 DIMENSIONS ARE GIVEN ALONG OUTSIDE FACE OF RAIL UNLESS OTHERWISE NOTED.
 #5 "S" BARS MAY BE SHIFTED AS NECESSARY TO CLEAR EXPANSION JOINTS IN RAIL.



PLAN OF BARRIER RAIL REINFORCING

PROJECT NO. I-5823
DAVIE COUNTY
 STATION: 702+82.00 -L RT-

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 NC COA No. F-0929



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

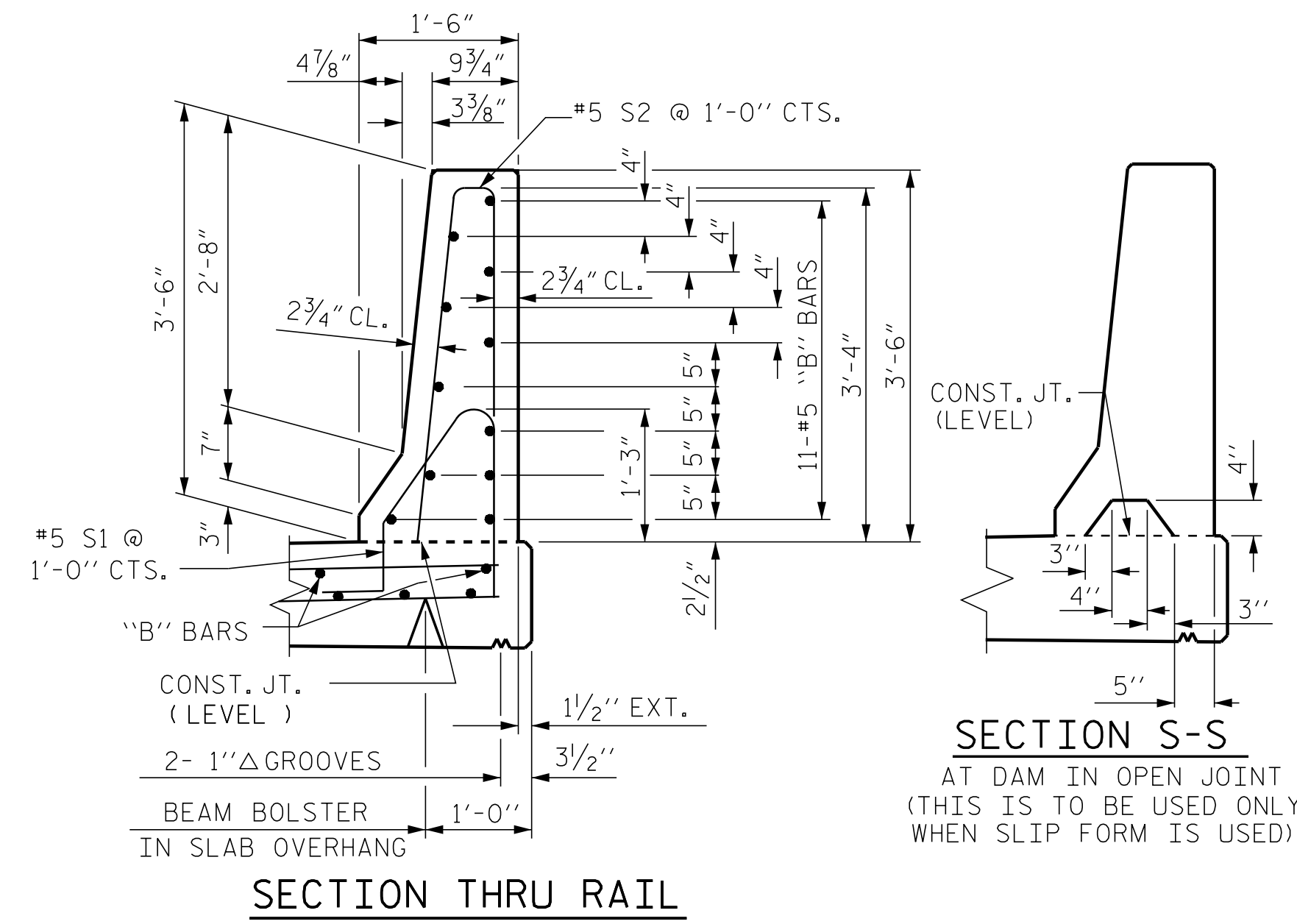
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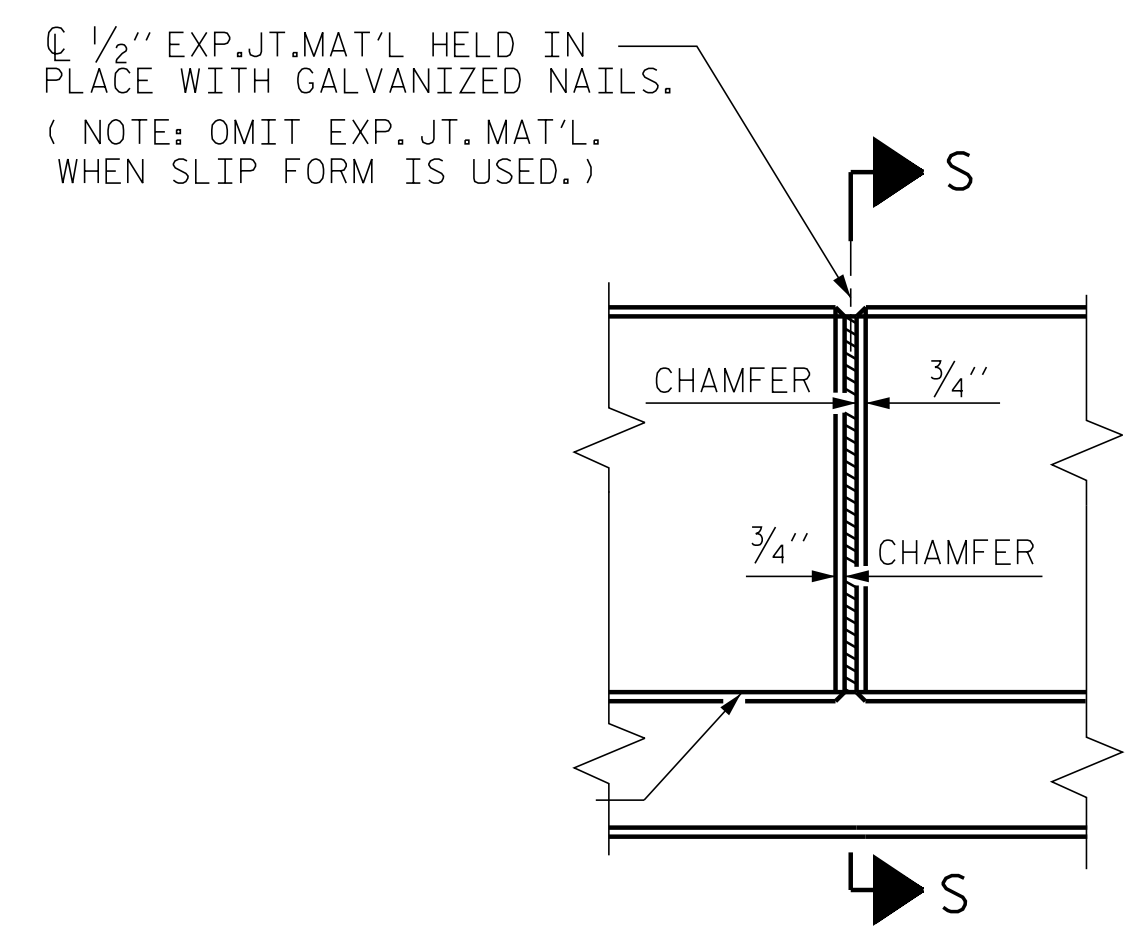
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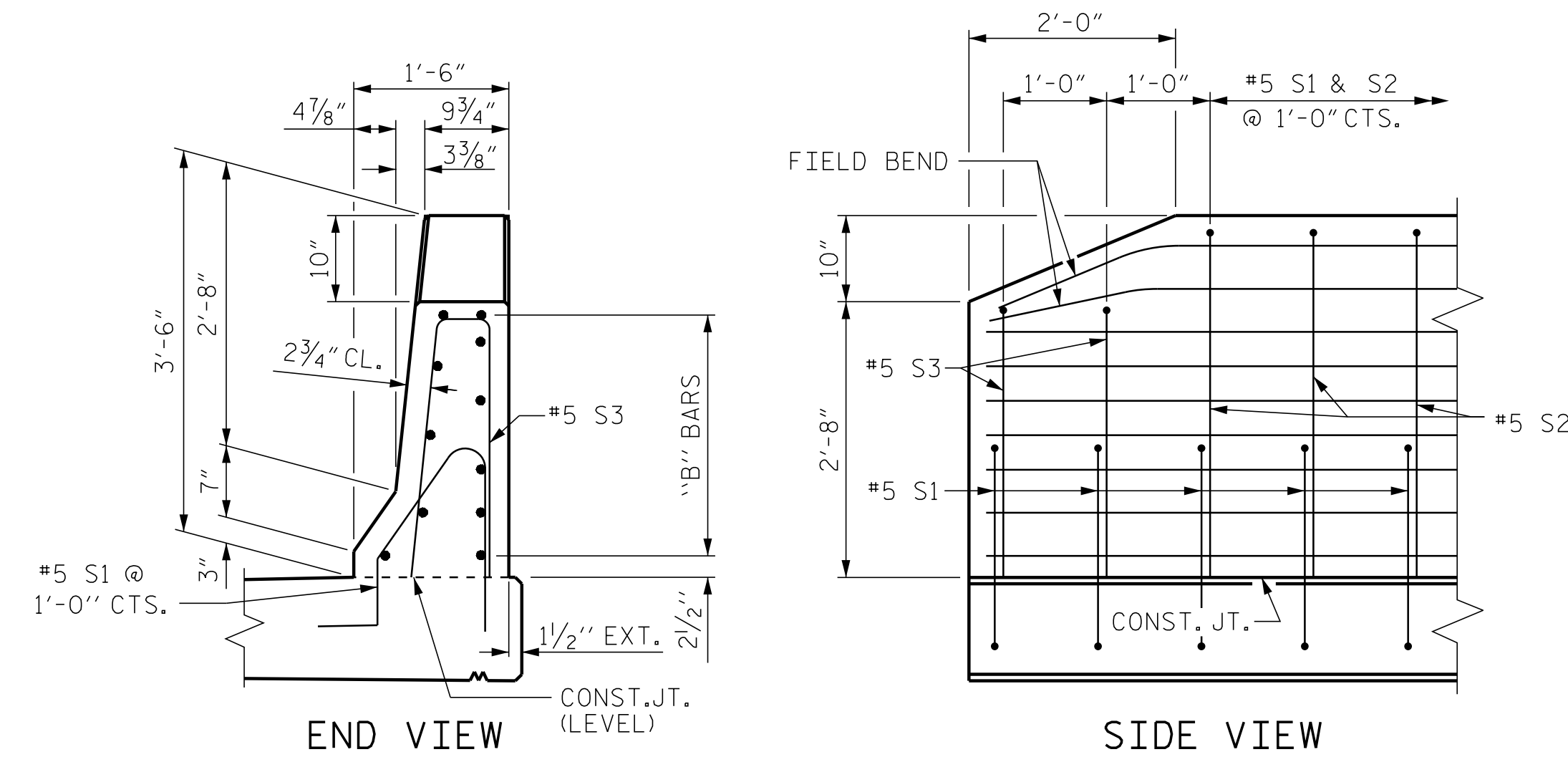
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SECTION S-S
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY
WHEN SLIP FORM IS USED)



ELEVATION AT EXPANSION JOINTS
BARRIER RAIL DETAILS



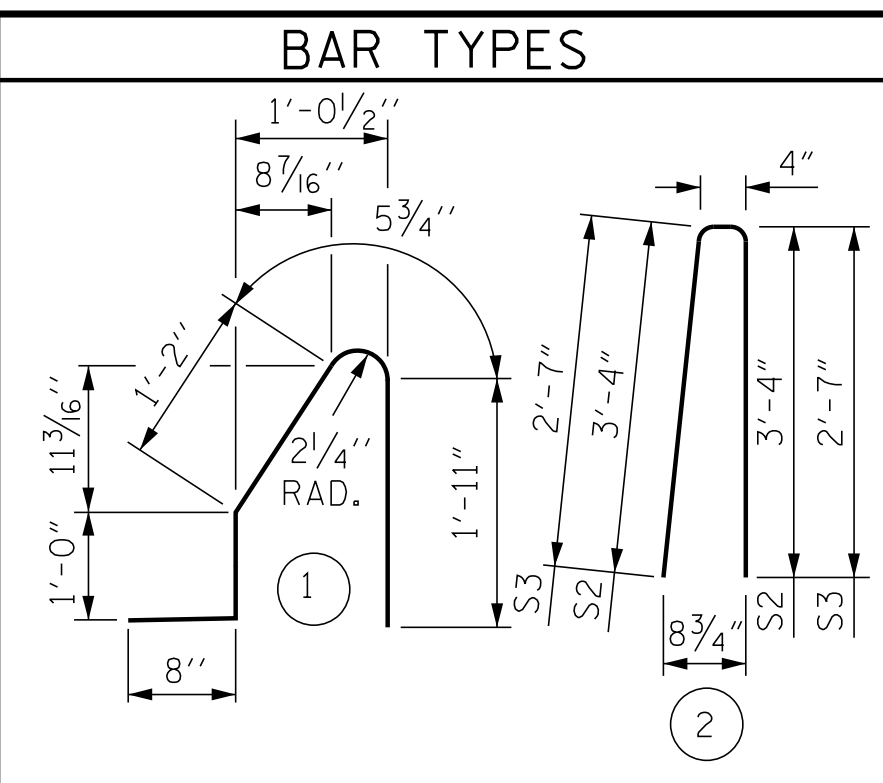
END OF RAIL DETAILS
FOR ADHESIVE ANCHORING AT SAWED JOINTS

NOTES

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

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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



ALL BAR DIMENSIONS ARE OUT TO OUT

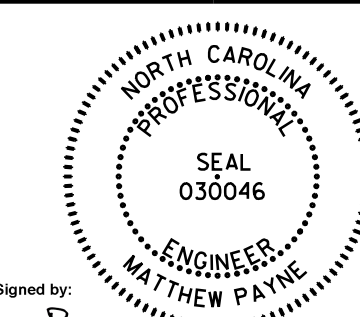
BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* S1	478	#5	1	5'-3"	2618
* S2	470	#5	2	7'-0"	3432
* S3	8	#5	2	5'-6"	46
* B1	44	#5	STR	28'-10"	1324
* B2	66	#5	STR	29'-8"	2723
* B3	66	#5	STR	19'-8"	1354
* EPOXY COATED REINFORCING STEEL					11,497 LBS.
CLASS AA CONCRETE					64.8 CU. YDS.
CONCRETE BARRIER RAIL					476.67 LIN. FT.

PROJECT NO. I-5823
DAVIE COUNTY
 STATION: 702+82.00 -L RT-

Dewberry
 2610 WYCLIFF ROAD
 SUITE 410
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 NC COA No. F-0929



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 Matthew Payne
 12/14/2018
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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

CONCRETE BARRIER RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-19
1			3			TOTAL SHEETS
2			4			34

DRAWN BY : D. SMITH DATE : DEC. 18
 CHECKED BY : M. PAYNE DATE : DEC. 18
 DESIGN ENGINEER OF RECORD: M. PAYNE DATE : DEC. 18

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 *****SDCN*****
 *****USERNAME*****

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD-DOWN PLATE AND 4 - 1/8" 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 ASTM A309. 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 1/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

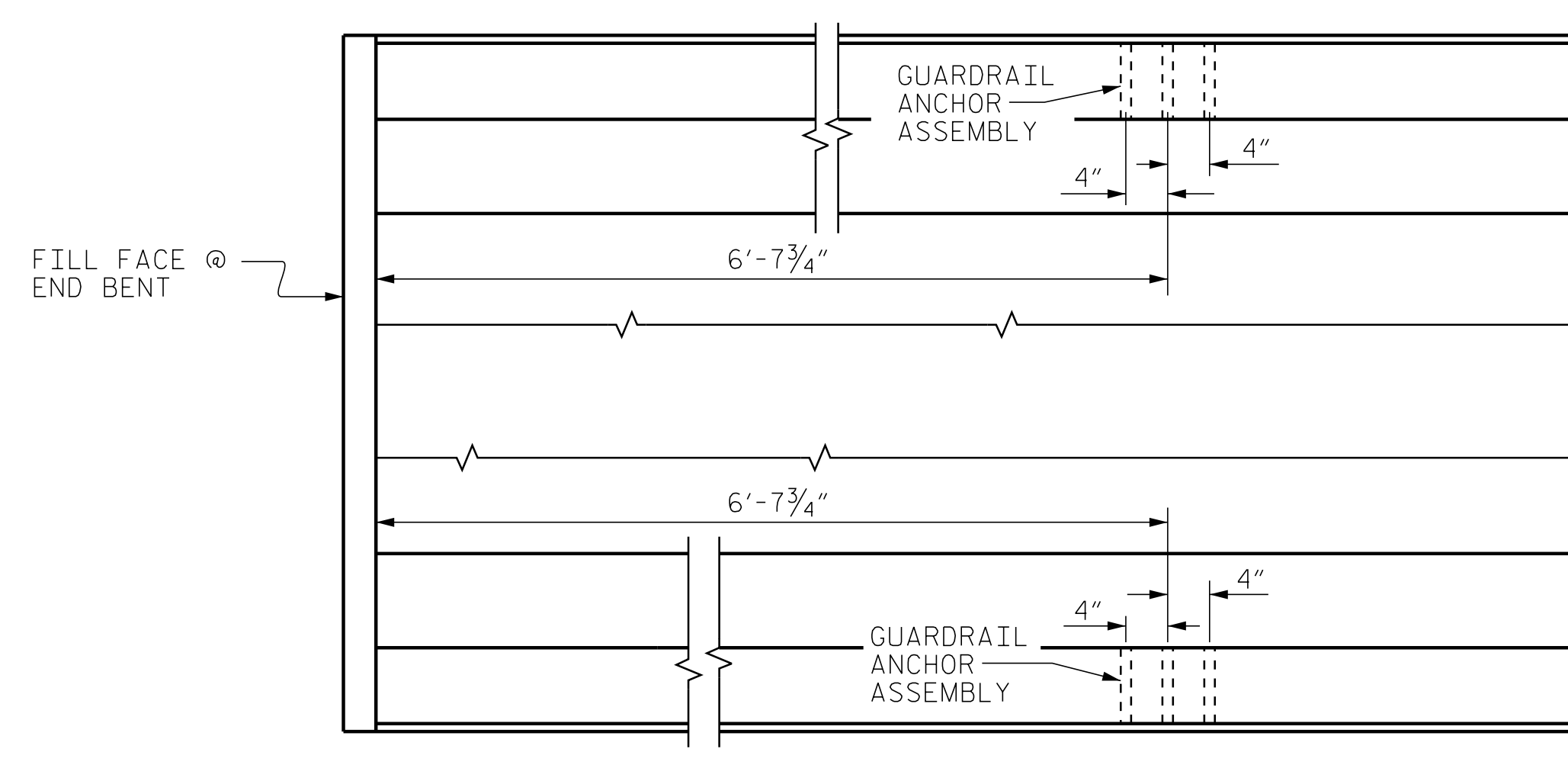
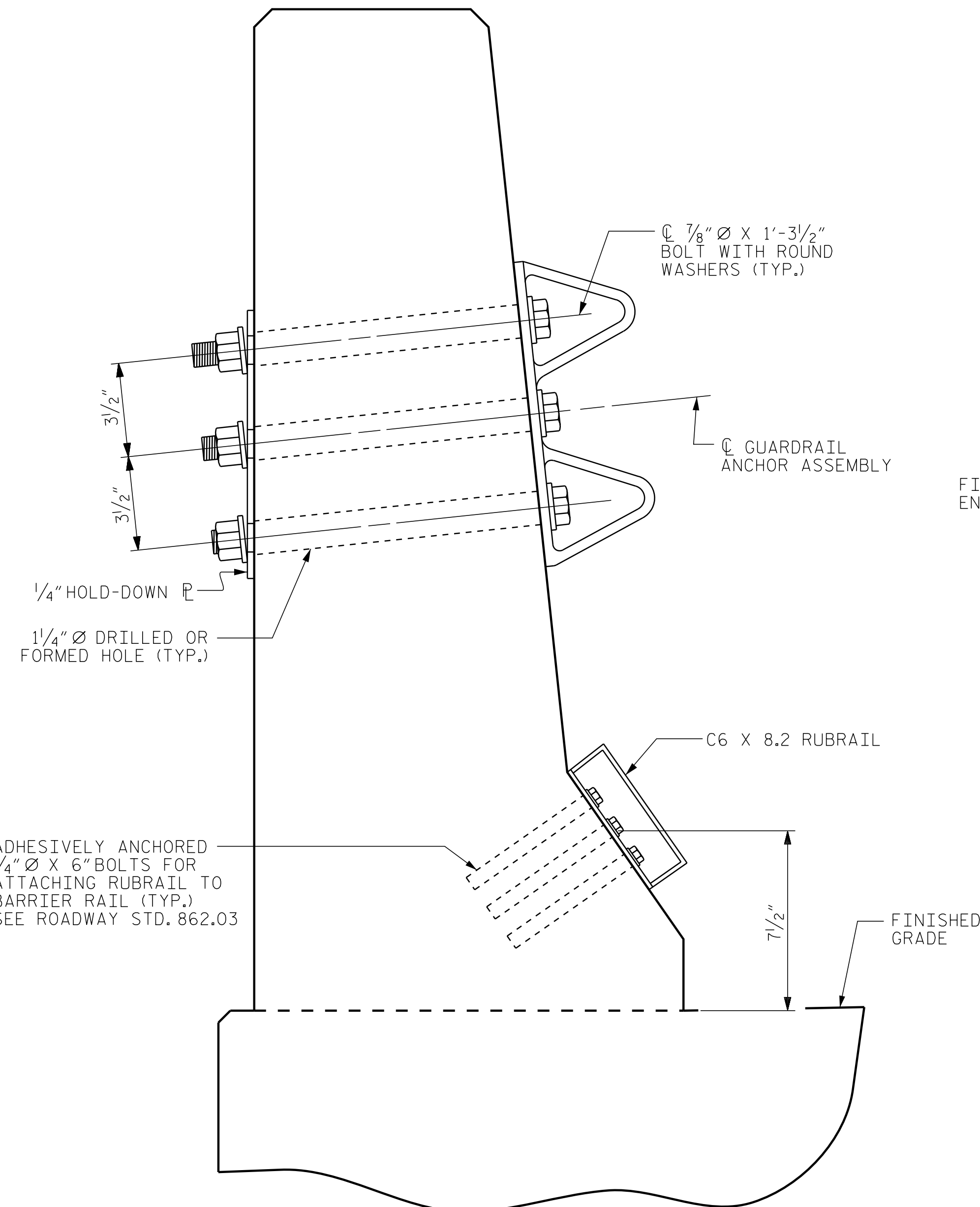
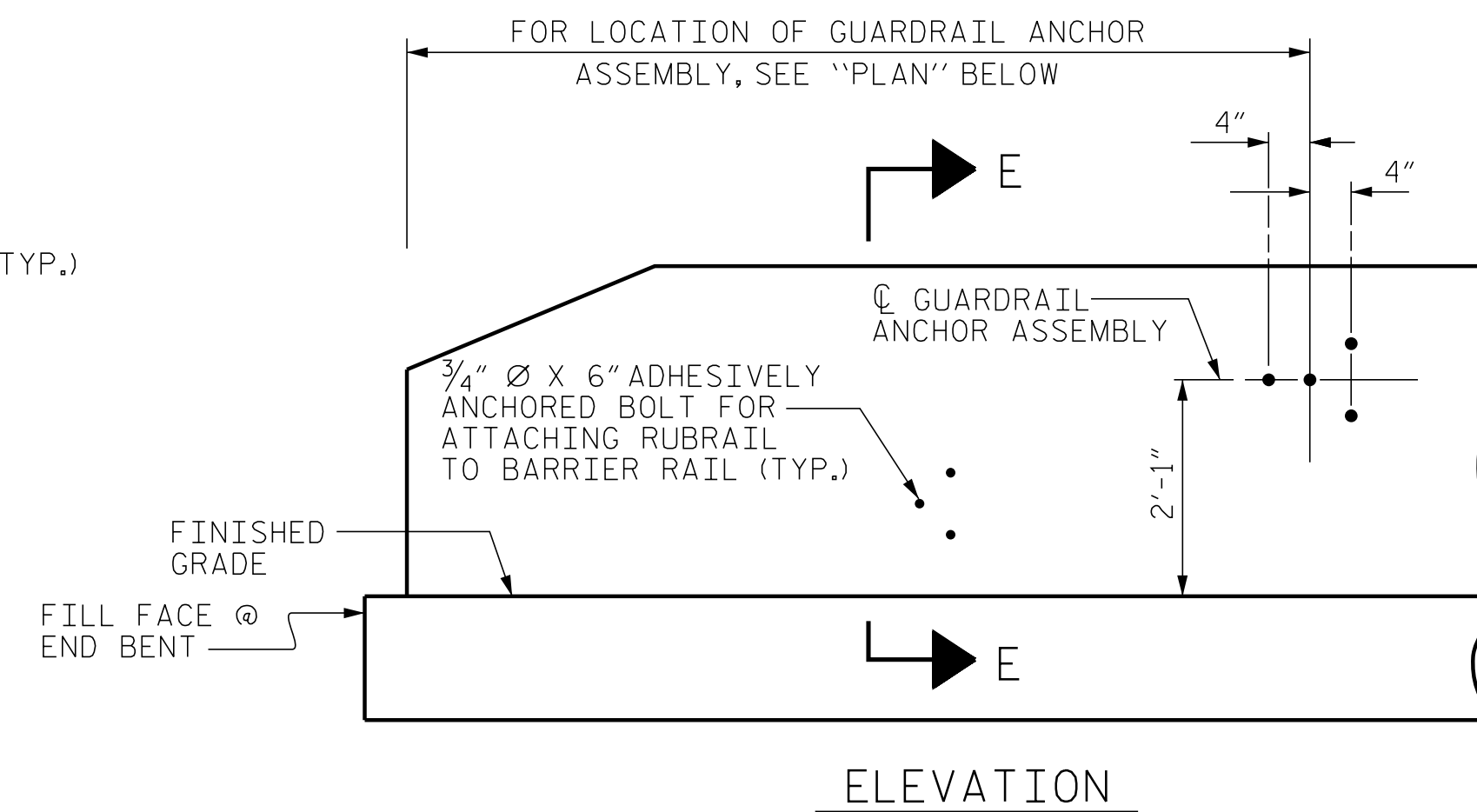
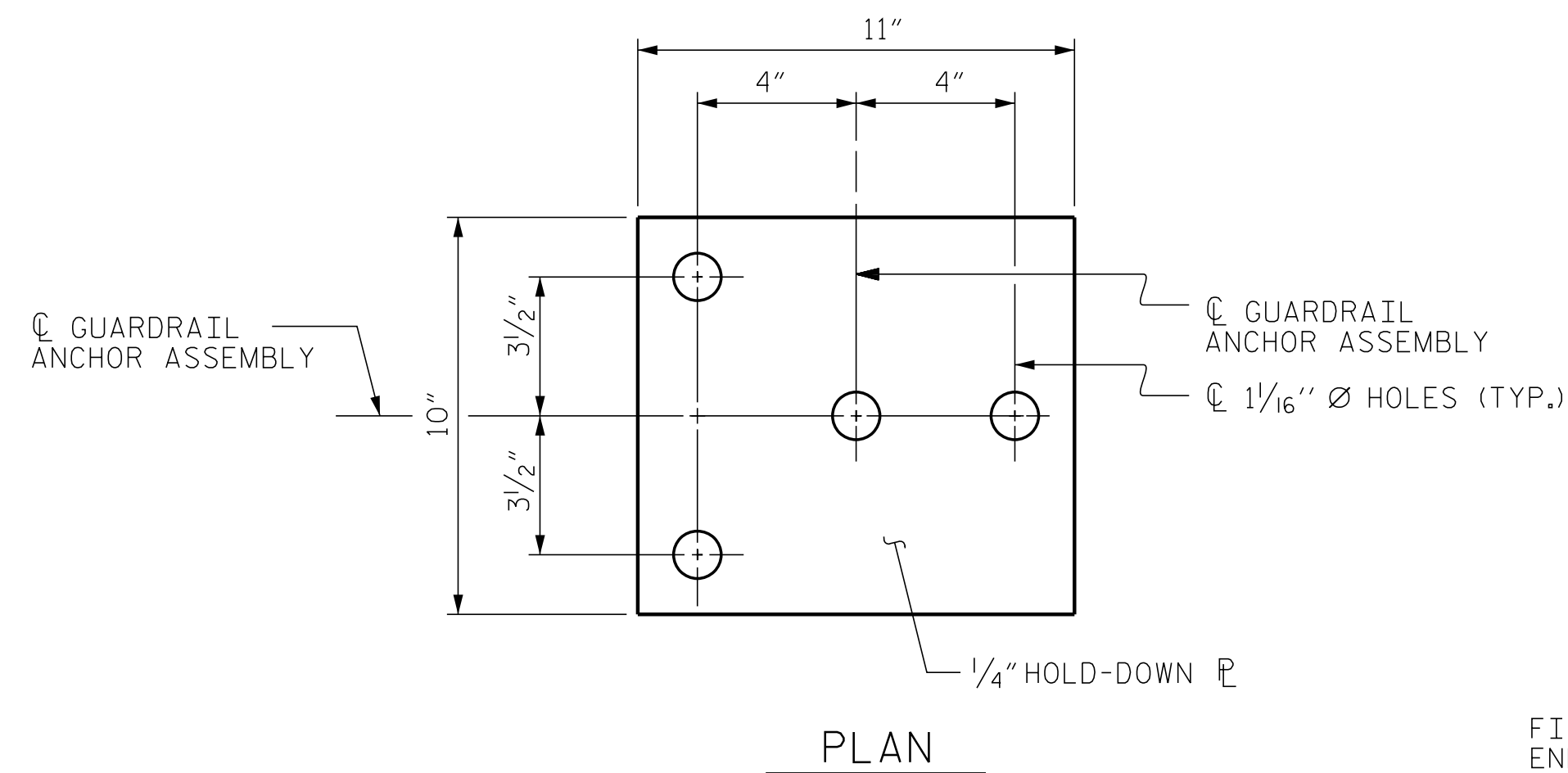
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

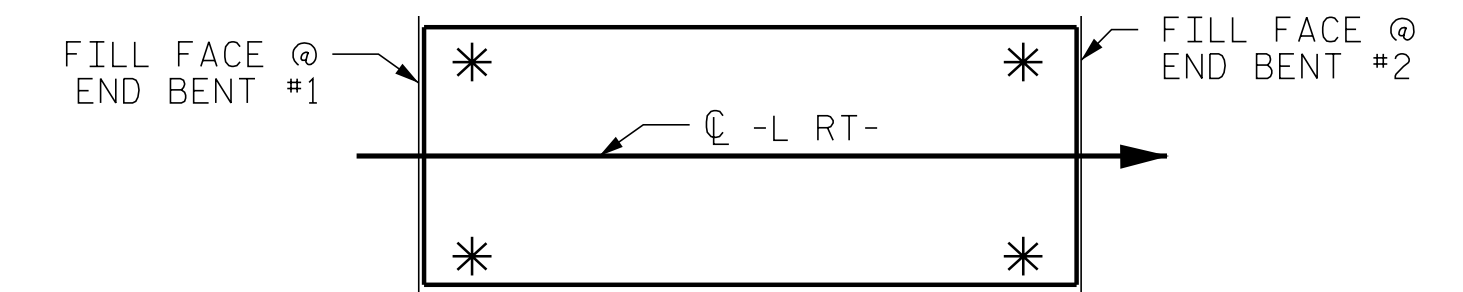
THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

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



LOCATION OF ANCHORS FOR GUARDRAIL

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

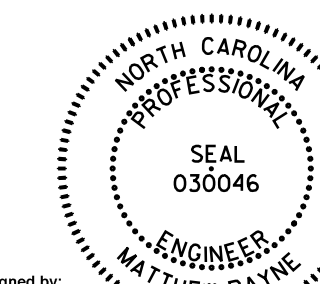


SKETCH SHOWING POINTS OF ATTACHMENTS

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
 GUARDRAIL ANCHORAGE
 FOR BARRIER RAIL

DRAWN BY: D. SMITH DATE: DEC. 18
 CHECKED BY: M. PAYNE DATE: DEC. 18
 DESIGN ENGINEER OF RECORD: M. PAYNE DATE: DEC. 18

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 Matthew Payne
 12/14/2018

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-20
1			3			TOTAL SHEETS
2			4			34

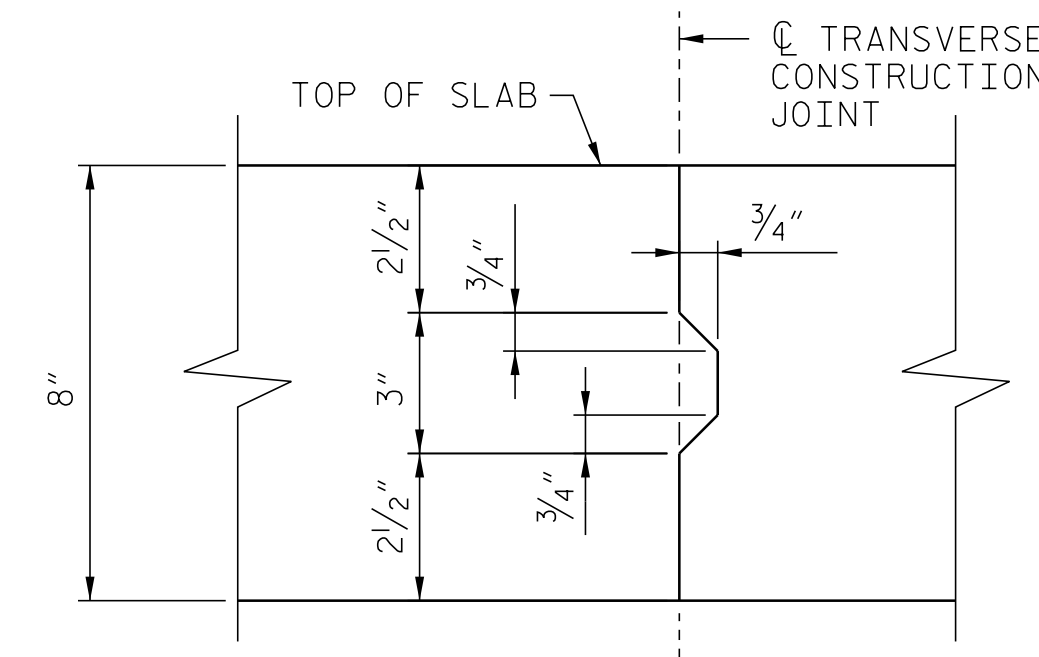
*****SYSTEM*****
 *****SDCN*****
 *****USERNAME*****

REINFORCING BAR SCHEDULE					
SPANS "A", "B" AND "C"					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	476	#5	STR	50'-10"	25,237
A2	28	#5	STR	5'-1"	149
A3	476	#5	STR	50'-10"	25,237
*B1	51	#5	STR	35'-10"	1,907
B2	345	#5	STR	49'-11"	17,962
*B3	100	#6	STR	14'-0"	2,103
*B4	102	#7	STR	34'-8"	7,228
*B5	100	#7	STR	27'-0"	5,519
*B6	51	#5	STR	39'-8"	2,111
*B7	102	#7	STR	33'-2"	6,915
*B8	51	#5	STR	48'-10"	2,598
*S1	130	#4	(2)	11'-6"	999
*S2	130	#4	(2)	8'-11"	775
S3	102	#4	(4)	4'-10"	330
K1	40	#4	STR	26'-3"	702
U1	130	#4	(1)	7'-8"	667
REINFORCING STEEL					45,047
EPOXY COATED REINFORCING STEEL					55,392

* DENOTES EPOXY COATED REINFORCING STEEL.

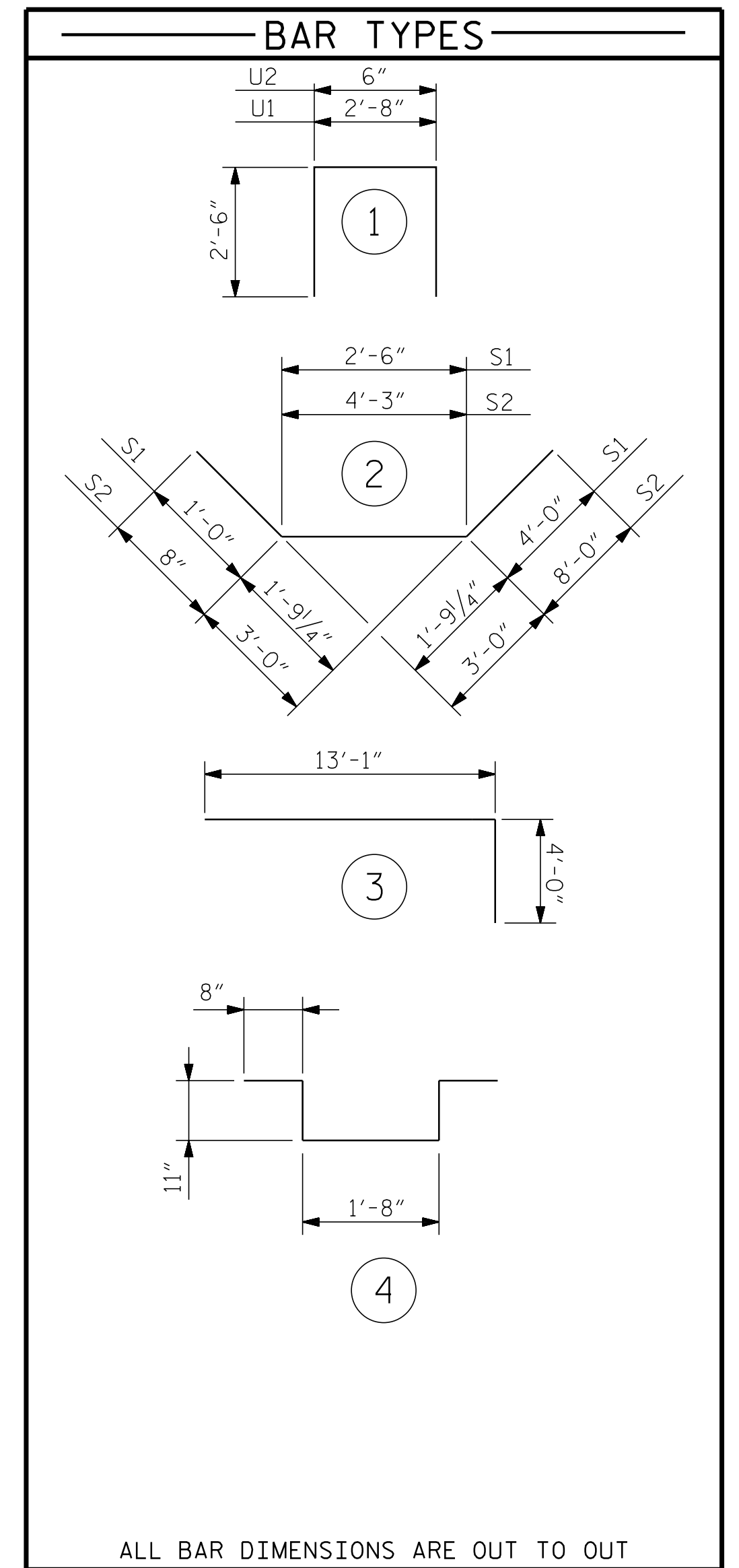
SUPERSTRUCTURE BILL OF MATERIAL			
SPANS	CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	(CU. YDS.)	(LBS.)	(LBS.)
"A", "B" AND "C"		45,047	55,392
POUR 1	28.7		
POUR 2	180.4		
POUR 3	124.5		
POUR 4	53.3		
**TOTALS	386.9	45,047	55,392

**QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED.

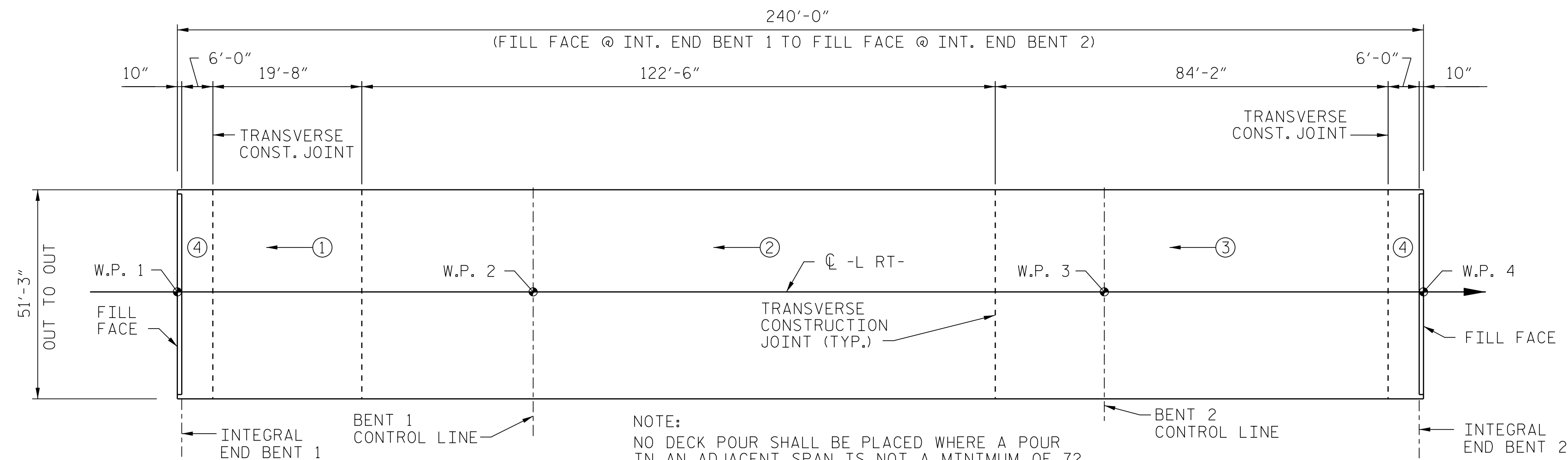


NOTE: REINFORCING STEEL IN SLAB NOT SHOWN FOR CLARITY LONGITUDINAL REINFORCING STEEL SHALL BE CONTINUOUS THRU JOINT.

TRANSVERSE CONSTRUCTION JOINT IN DECK SLAB



ALL BAR DIMENSIONS ARE OUT TO OUT



SKETCH SHOWING LOCATION OF TRANSVERSE CONSTRUCTION JOINTS AND ORDER OF POURS

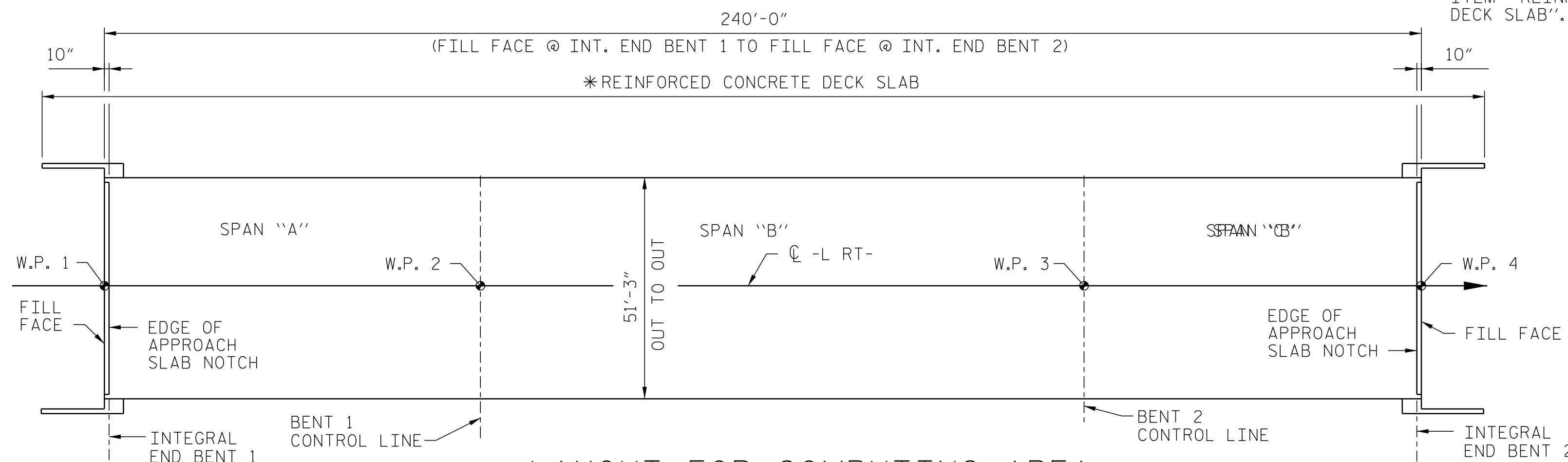
○ INDICATES POUR NUMBER

* REINFORCING STEEL AND CONCRETE FOR THE UPPER PORTION OF THE WINGS IS INCLUDED IN THE PAY ITEM "REINFORCED CONCRETE DECK SLAB".

GROOVING BRIDGE FLOORS	
APPROACH SLABS	2,400 SQ.FT.
BRIDGE DECK	11,520 SQ.FT.
TOTAL	13,920 SQ.FT.

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

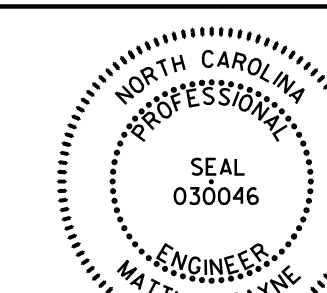
BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPET, AND BARRIER RAIL		APPROACH SLABS		PARAPET AND BARRIER RAIL
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#4	2'-0"	1'-9"	2'-0"	1'-9"	2'-9"
#5	2'-6"	2'-2"	2'-6"	2'-2"	3'-5"
#6	3'-0"	2'-7"	3'-10"	2'-7"	4'-4"
#7	5'-3"	3'-6"			
#8	6'-10"	4'-7"			



LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB (SQ. FT. = 12,300)

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 DAVIE COUNTY
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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 BILL OF MATERIAL

DRAWN BY: D. SMITH DATE: DEC. 18
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 DESIGN ENGINEER OF RECORD: M. PAYNE DATE: DEC. 18

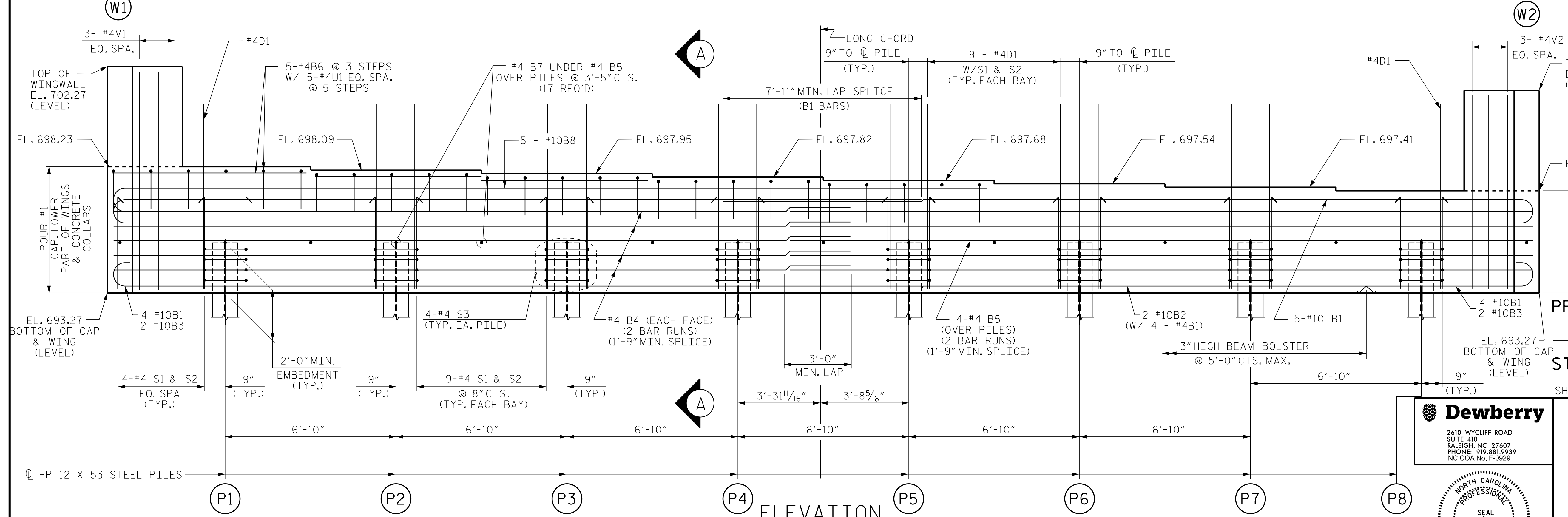
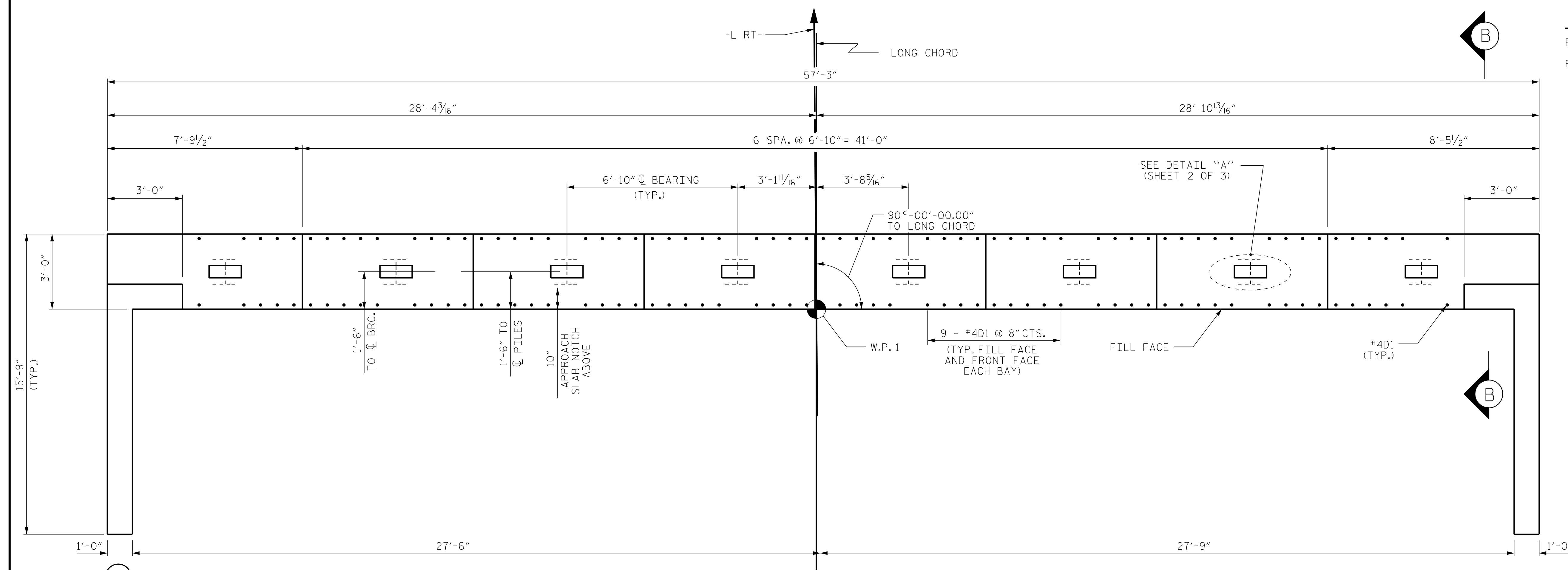
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REVISIONS						SHEET NO. S2-21
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 34
2			4			

*****SYSTEM*****
 *****SDGN*****
 *****USER*****

NOTES

FOR PILE SPLICE DETAILS, SEE SHEET 2 OF 3.
FOR WING DETAILS, SEE SHEET 3 OF 3.



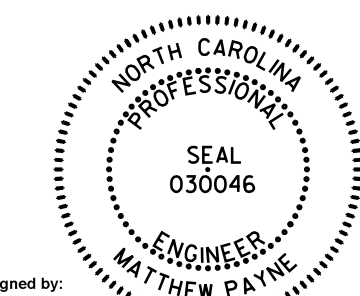
ELEVATION

FOR SECTION A-A, SEE SHEET 2 OF 3.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 2 OF 3.

PROJECT NO. I-5823
DAVIE COUNTY
STATION: 702+82.00 -L RT-

SHEET 1 OF 3

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NC COA No. F-0529



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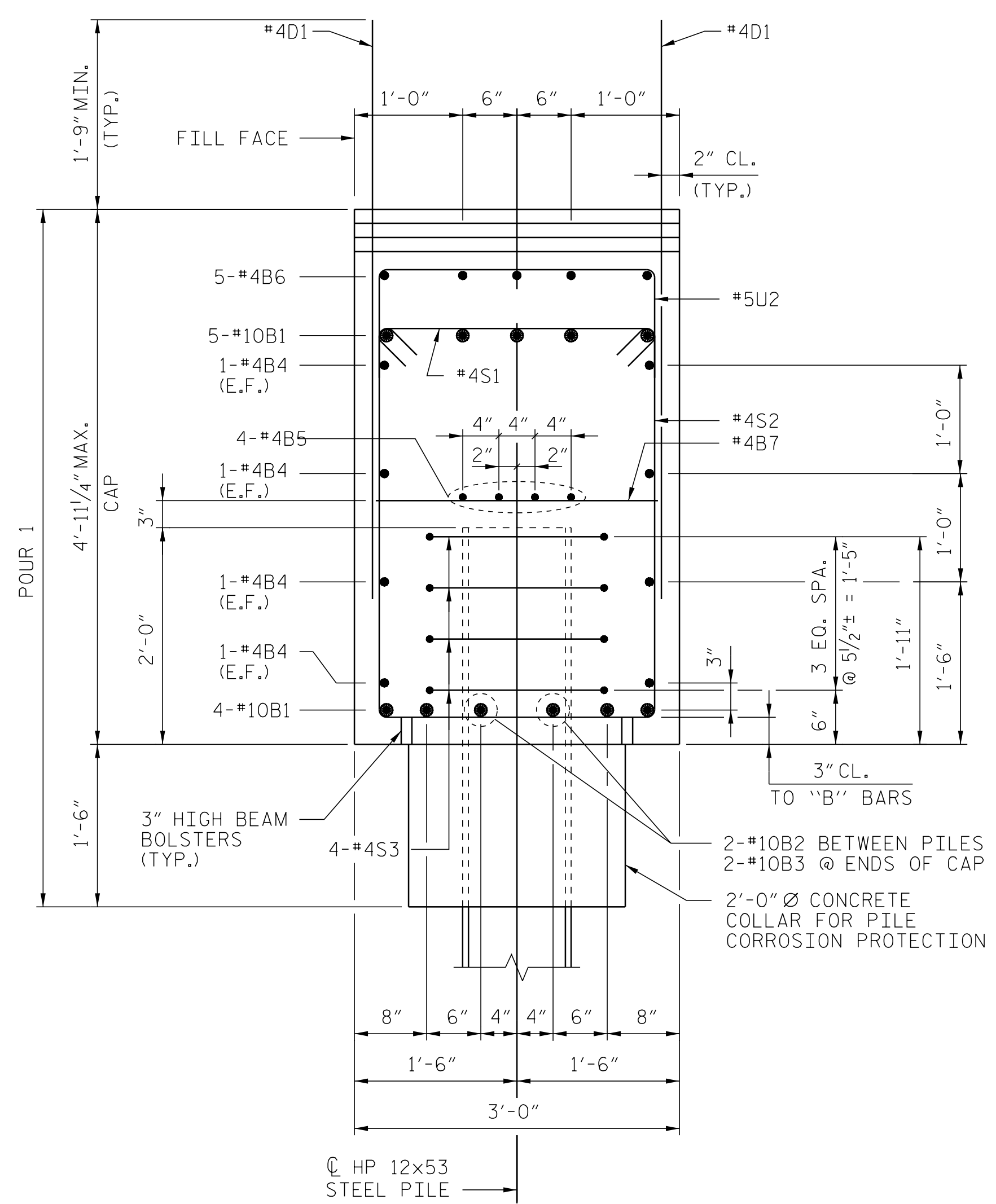
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
INTEGRAL
END BENT NO. 1

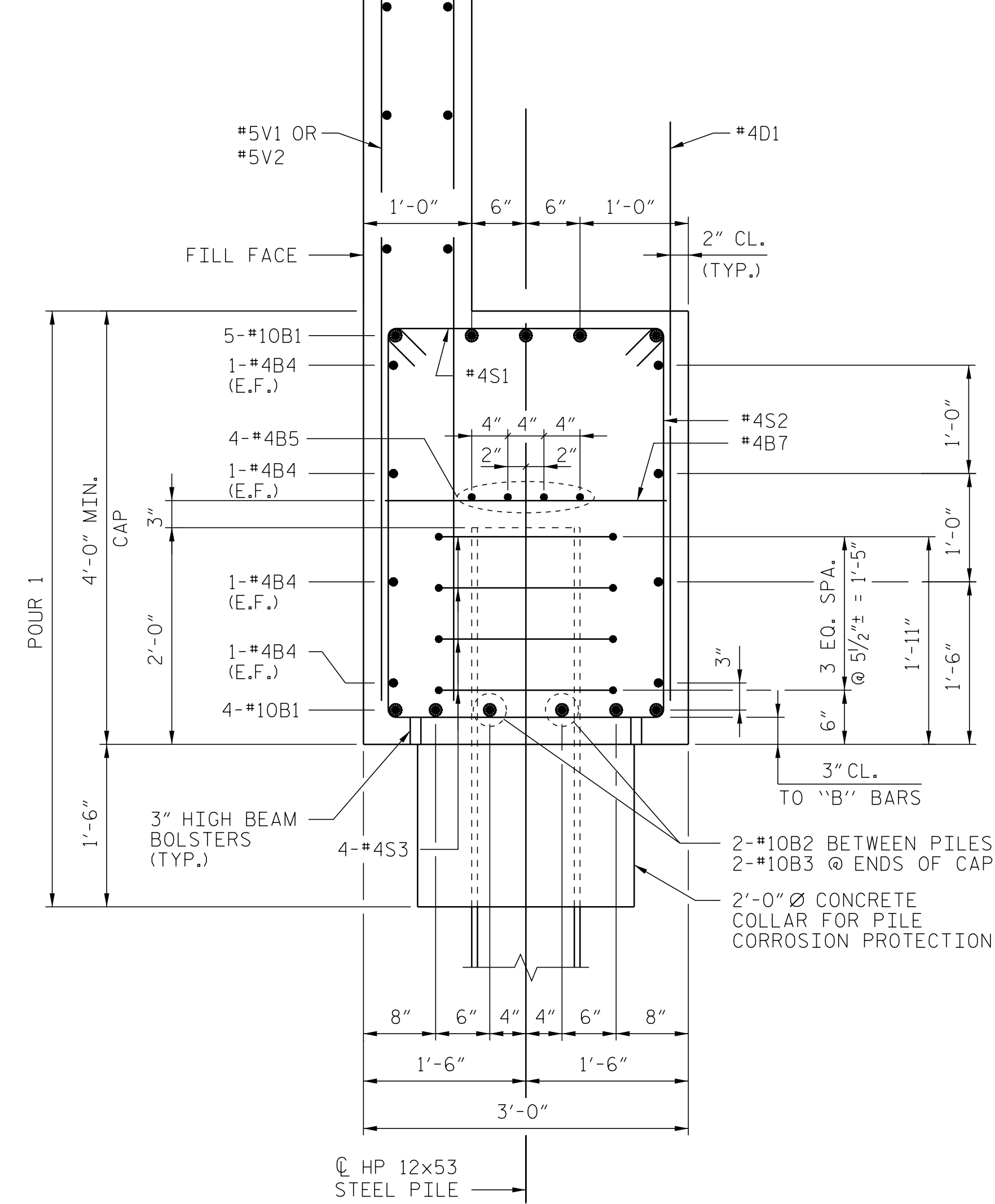
DRAWN BY: D. SMITH DATE: DEC. 18
CHECKED BY: M. PAYNE DATE: DEC. 18
DESIGN ENGINEER OF RECORD: M. PAYNE DATE: DEC. 18

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-22	
1			3			TOTAL SHEETS	
2			4			34	

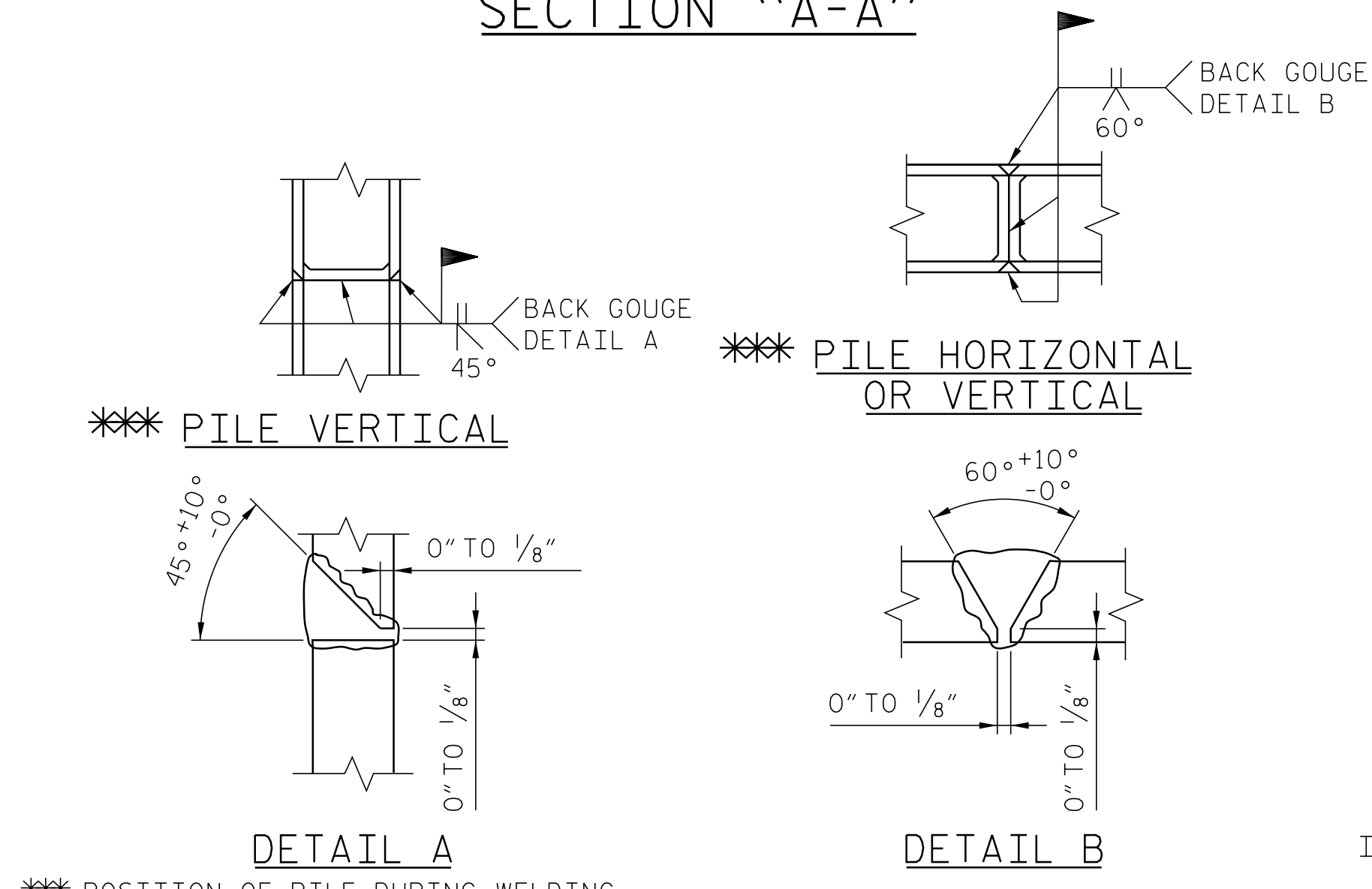
*****SYSTEM*****
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*****USER*****



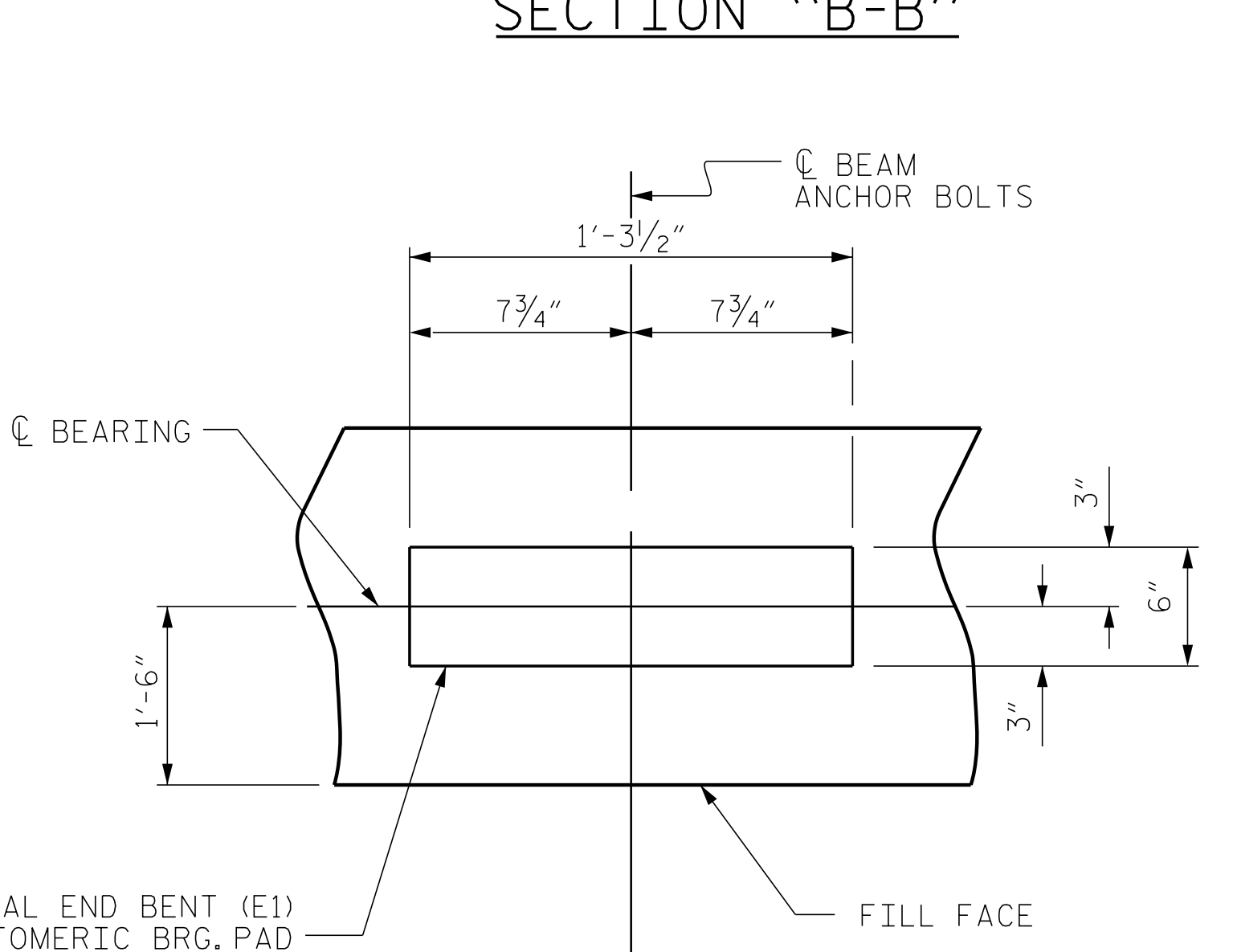
SECTION "A-A"



SECTION "B-B"

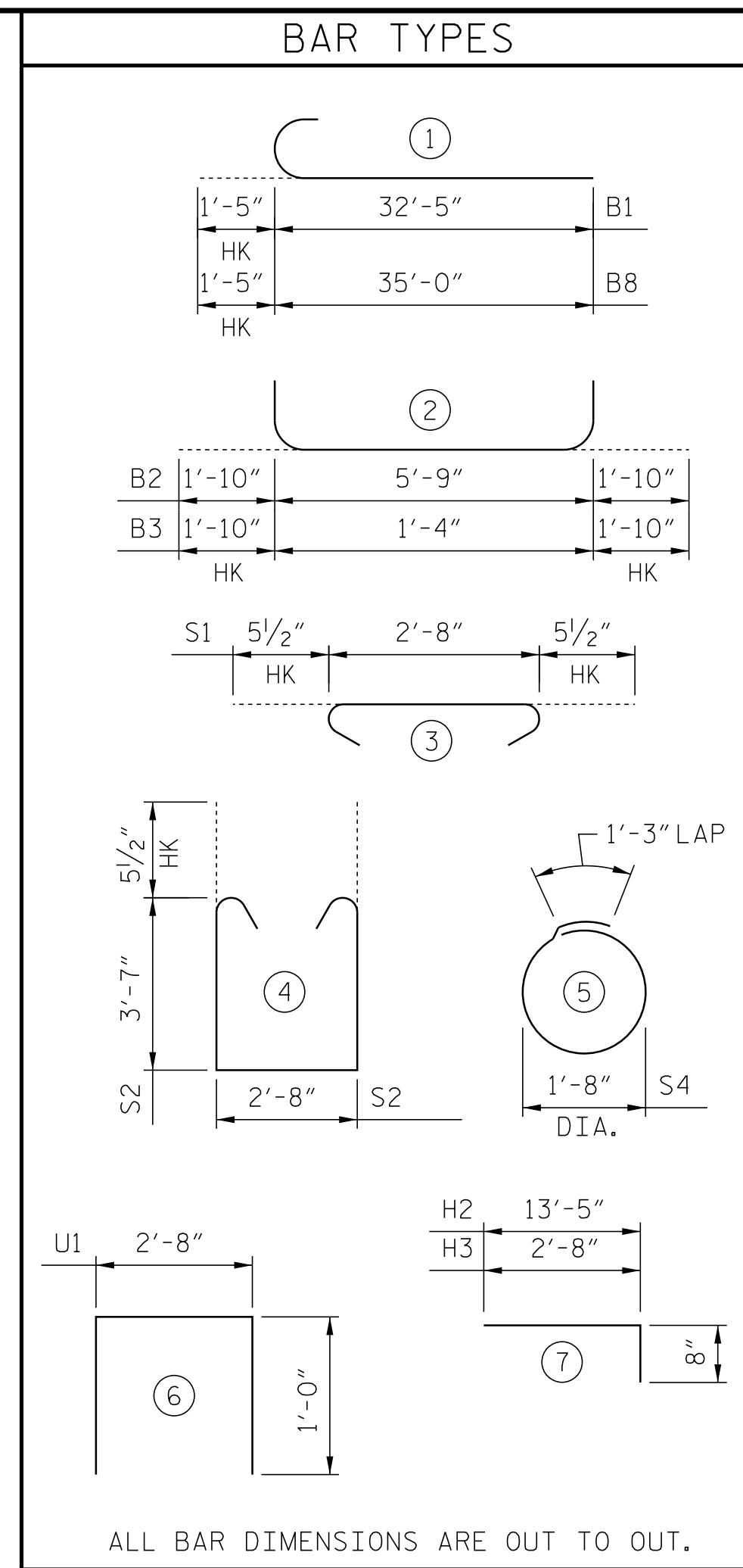


PILE SPLICE DETAILS



DETAIL "A"

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

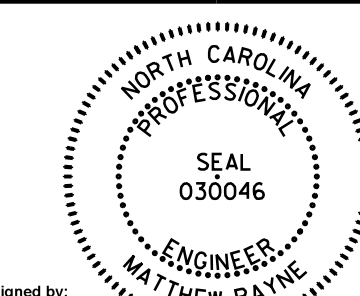


NOTES:
FOR OTHER NOTES, SEE "FOUNDATION LAYOUT"
AND "LOCATION SKETCH".

BILL OF MATERIAL					
END BENT 1					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	18	#10	(1)	33'-10"	2,619
B2	14	#10	(2)	9'-5"	567
B3	4	#10	(2)	5'-0"	86
B4	16	4	STR	29'-3"	313
B5	8	#4	STR	29'-4"	157
B6	15	#4	STR	6'-6"	66
B7	17	#4	STR	2'-8"	31
B8	5	#10	(1)	36'-5"	783
D1	130	#4	STR	5'-6"	478
H1	20	#5	STR	15'-3"	319
H2	16	#5	(7)	14'-1"	236
H3	16	#5	(7)	3'-3"	56
S1	71	#4	(3)	3'-7"	170
S2	71	#4	(4)	10'-9"	510
S3	32	#4	(5)	6'-6"	139
U1	25	#4	(6)	4'-8"	78
V1	28	#5	STR	8'-6"	249
V2	28	#5	STR	7'-7"	222
TOTAL REINFORCING STEEL					7,079
END BENT 1 TOTAL QUANTITIES					
CLASS A CONCRETE					
POUR 1 (COLLARS, CAP & LOWER WINGWALLS)					
					38.5
HP 12x53 STEEL PILES					NO. 8
					350
PILE DRIVING EQUIPMENT SETUP FOR HP12X53 STEEL PILES					NO. 8
NOTE: REINFORCING STEEL AND CONCRETE FOR THE UPPER PORTION OF THE WINGS IS INCLUDED IN THE PAY ITEM "REINFORCED CONCRETE DECK SLAB".					

PROJECT NO. I-5823
DAVIE COUNTY
STATION: 702+82.00 -L RT-
SHEET 2 OF 3

Dewberry
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

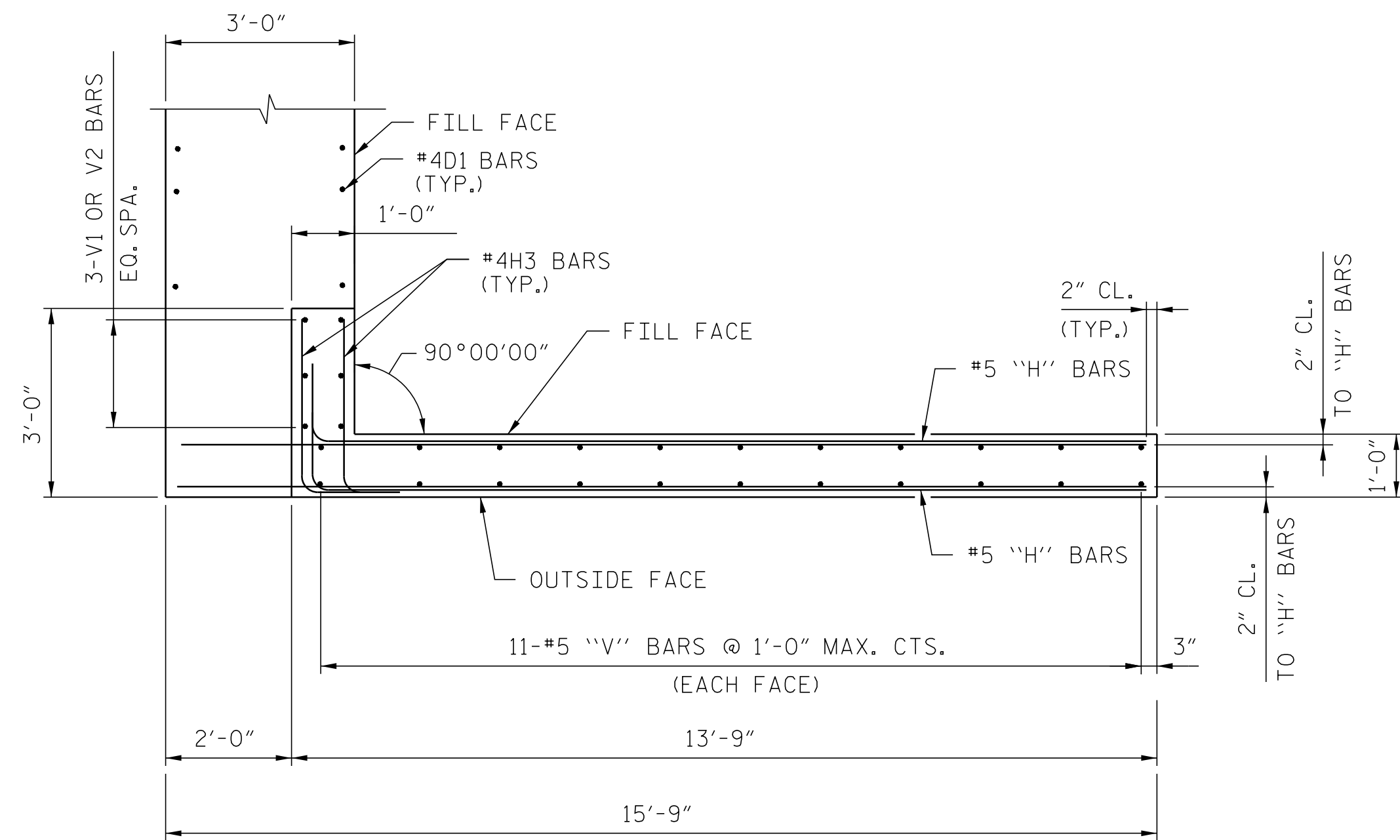
SUBSTRUCTURE
INTEGRAL END BENT 1
SECTIONS AND DETAILS

DRAWN BY: D. SMITH DATE: DEC. 18
CHECKED BY: M. PAYNE DATE: DEC. 18
DESIGN ENGINEER OF RECORD: M. PAYNE DATE: DEC. 18

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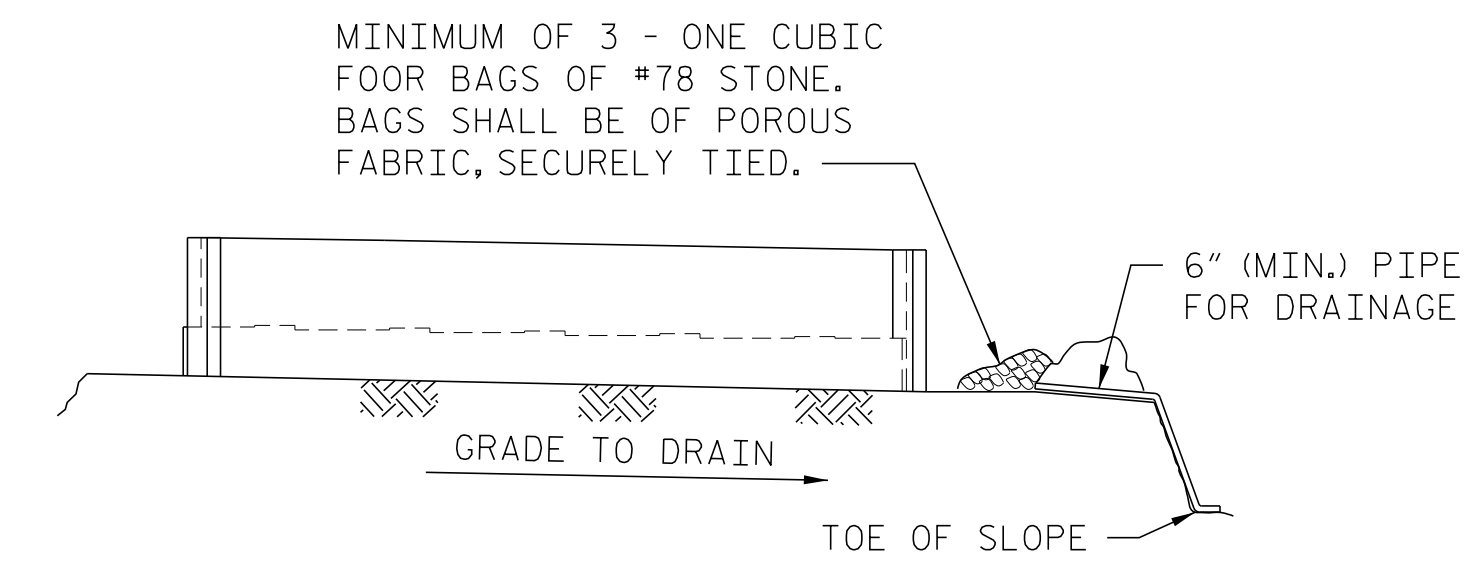
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-23
1			3			TOTAL SHEETS
2			4			34

*****SYSTEM*****
*****SDGN*****
*****USERNAME*****



PLAN W1

(WING 1 SHOWN, WING 2 SIMILAR)

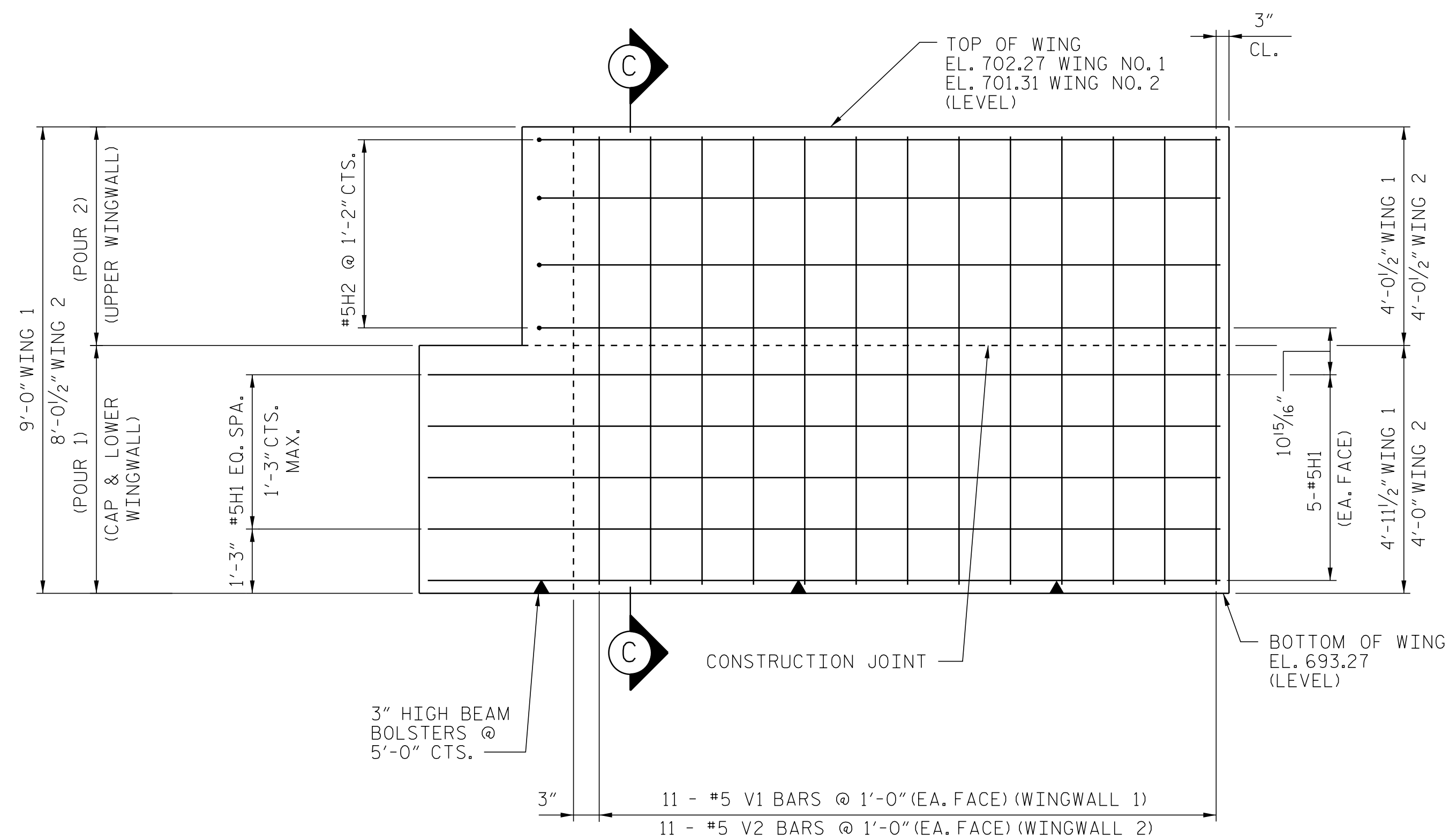


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

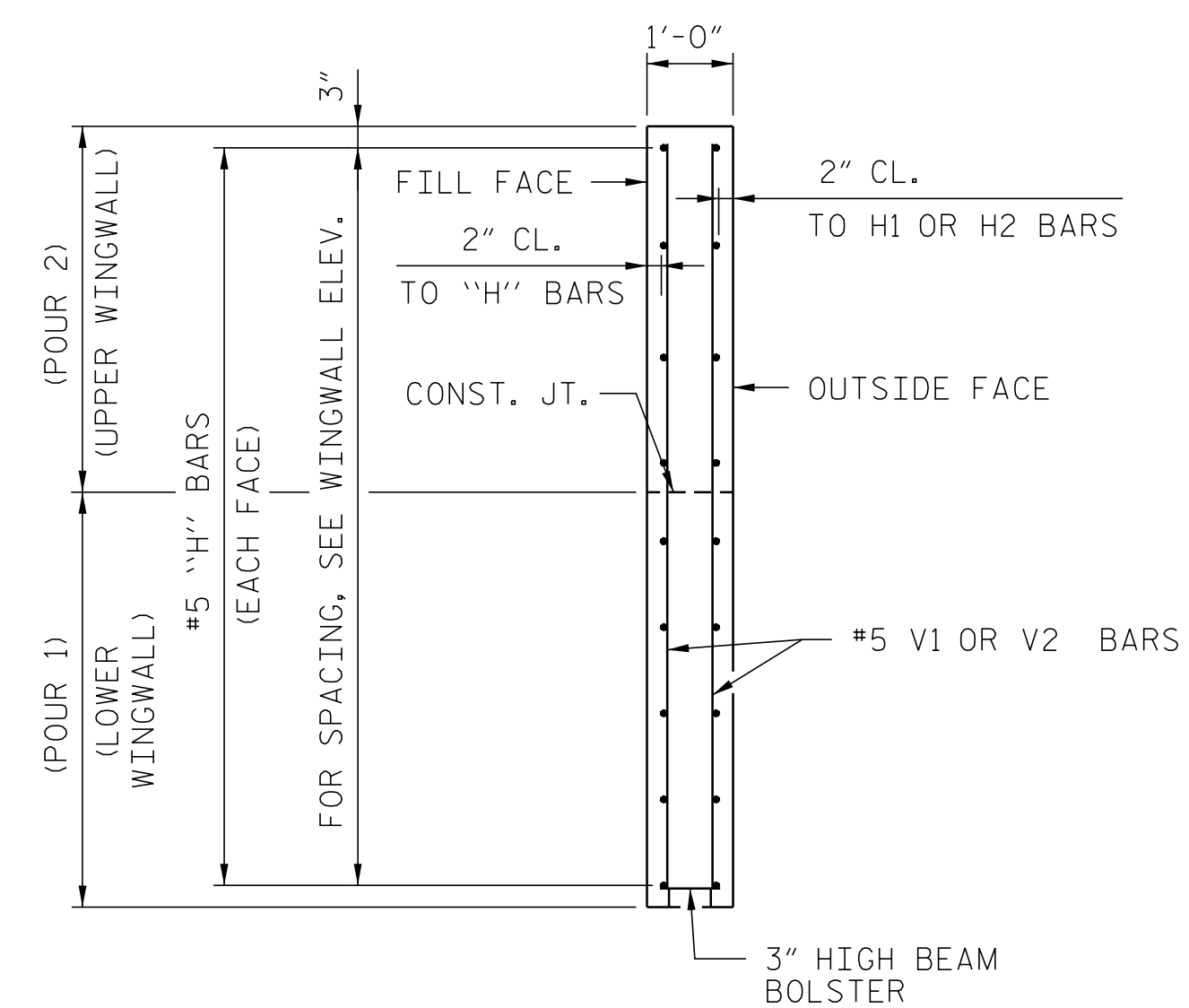
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

TEMPORARY DRAINAGE END BENT



ELEVATION



SECTION C-C

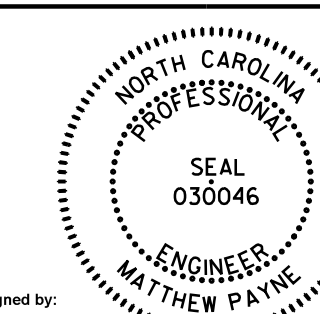
PROJECT NO. I-5823

DAVIE COUNTY

STATION: 702+82.00 -L RT-

SHEET 3 OF 3

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DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
INTEGRAL END BENT 1
WING WALL DETAILS

DRAWN BY: D. SMITH DATE: DEC. 18
CHECKED BY: M. PAYNE DATE: DEC. 18
DESIGN ENGINEER OF RECORD: M. PAYNE DATE: DEC. 18

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-24
1			3			TOTAL SHEETS
2			4			34

NOTES

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

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

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

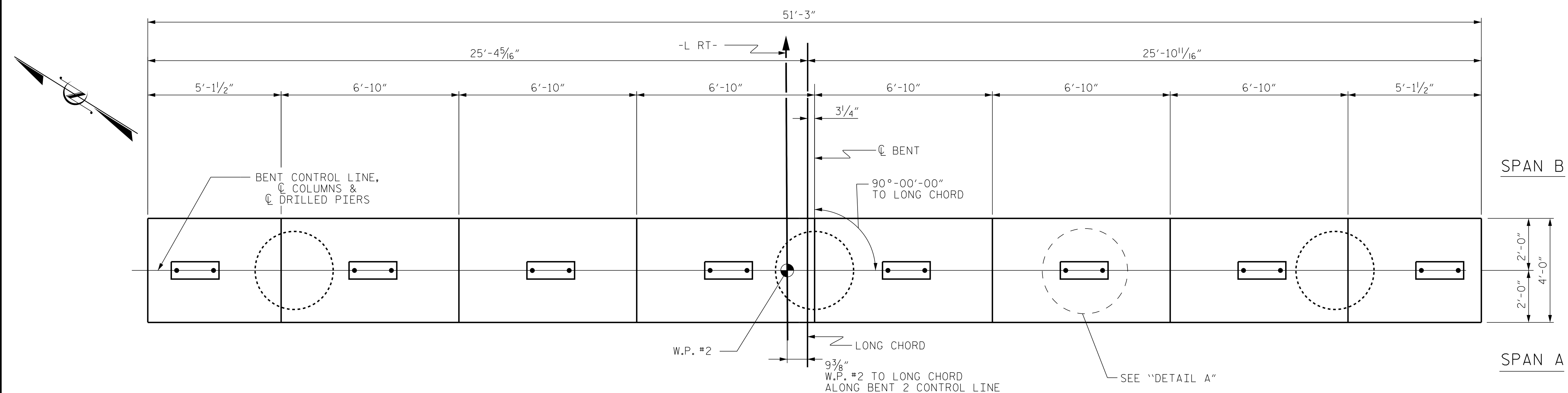
ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL."

★ INVERT ALTERNATE STIRRUPS.

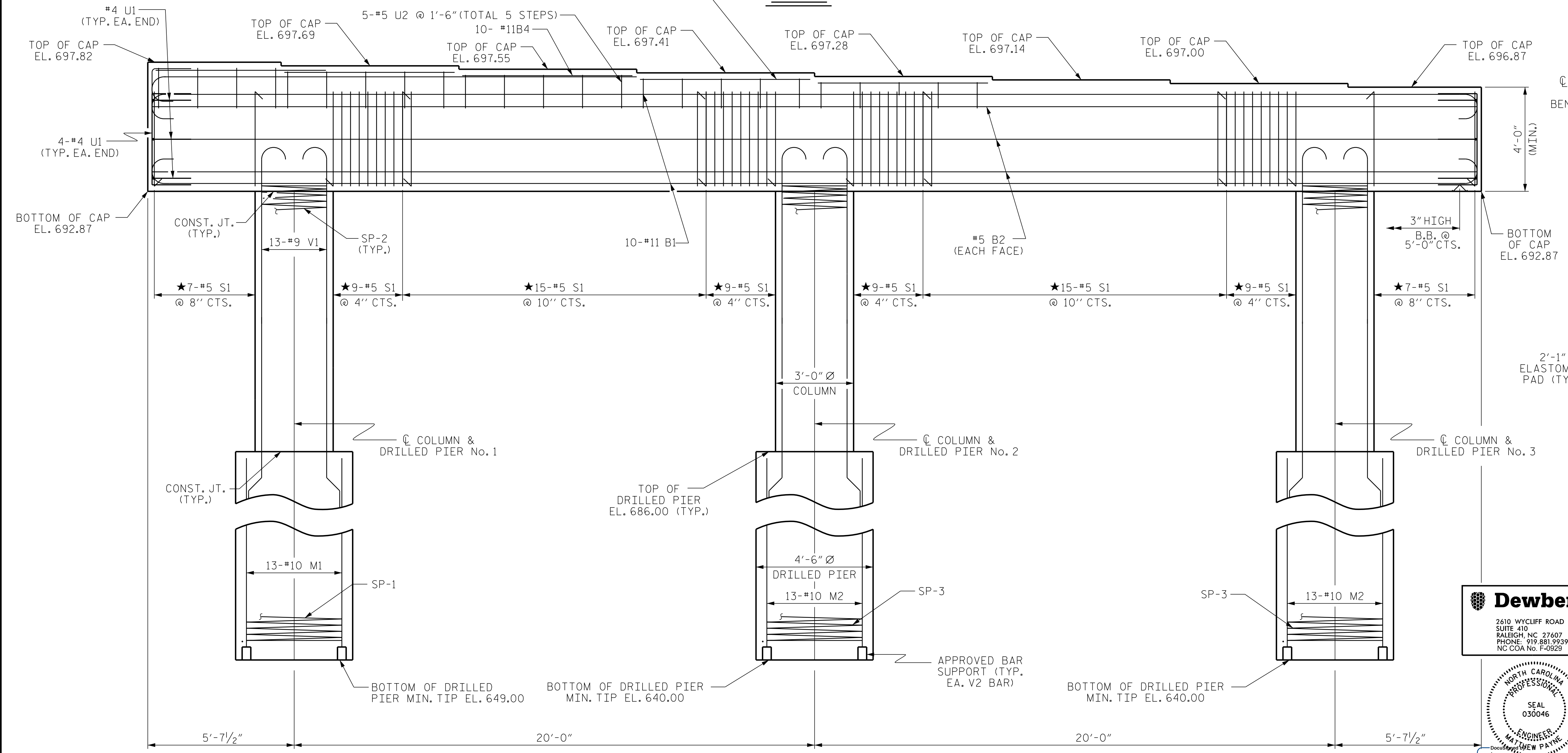
THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT ONE FOOT BELOW THE GROUND LINE.

DRILLED PIERS SHALL BE TERMINATED ONE FOOT ± ABOVE NORMAL WATER SURFACE ELEVATION FOR SHAFTS LOCATED IN WATER.

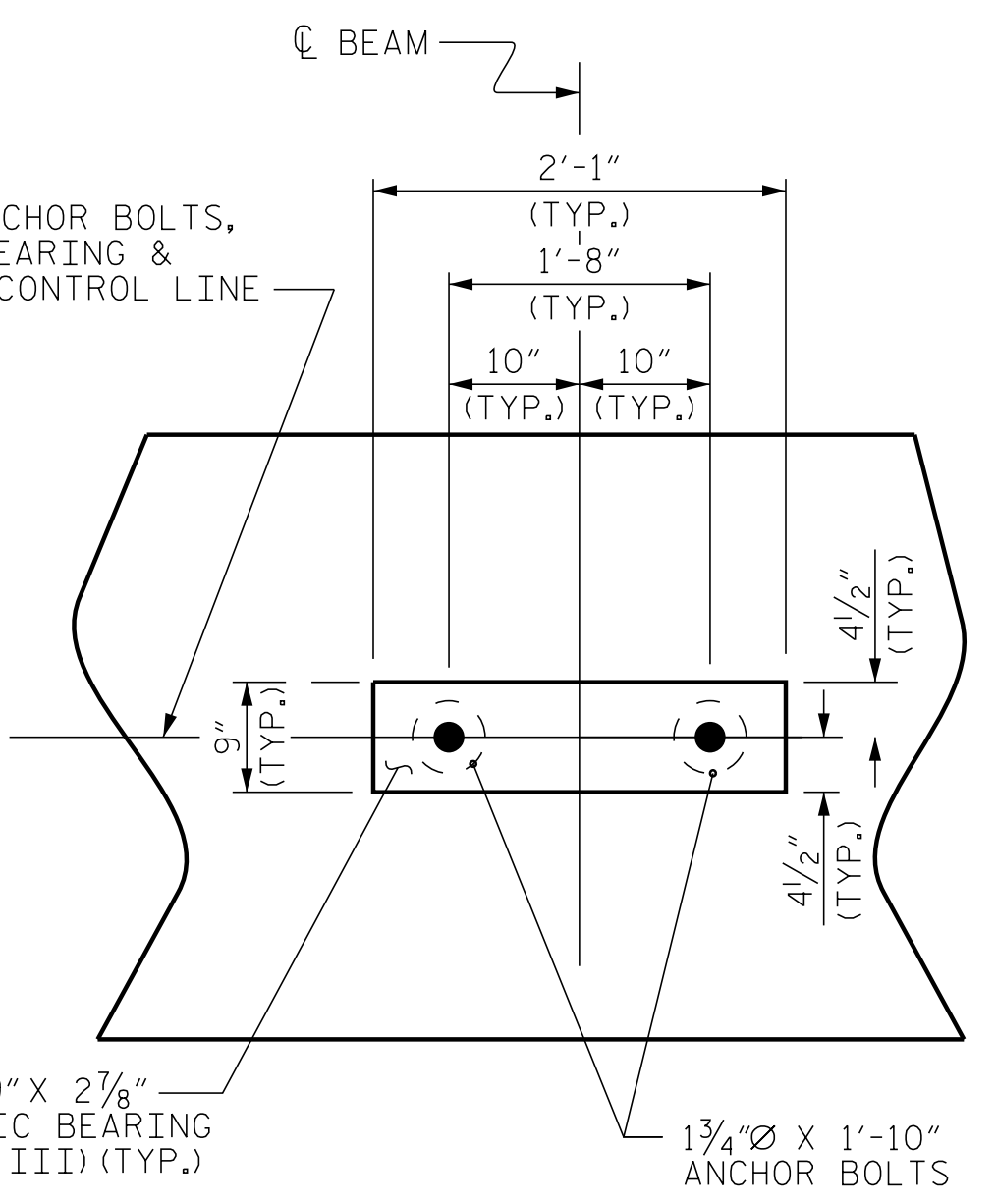
THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.



PLAN



ELEVATION



DETAIL "A"

(DIMENSIONS ARE TYPICAL EACH BEARING)

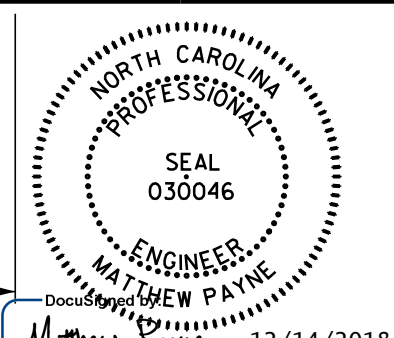
PROJECT NO. I-5823

DAVIE COUNTY

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SHEET 1 OF 2

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 PHONE: 919.881.9939
 NC COA No. F-0929



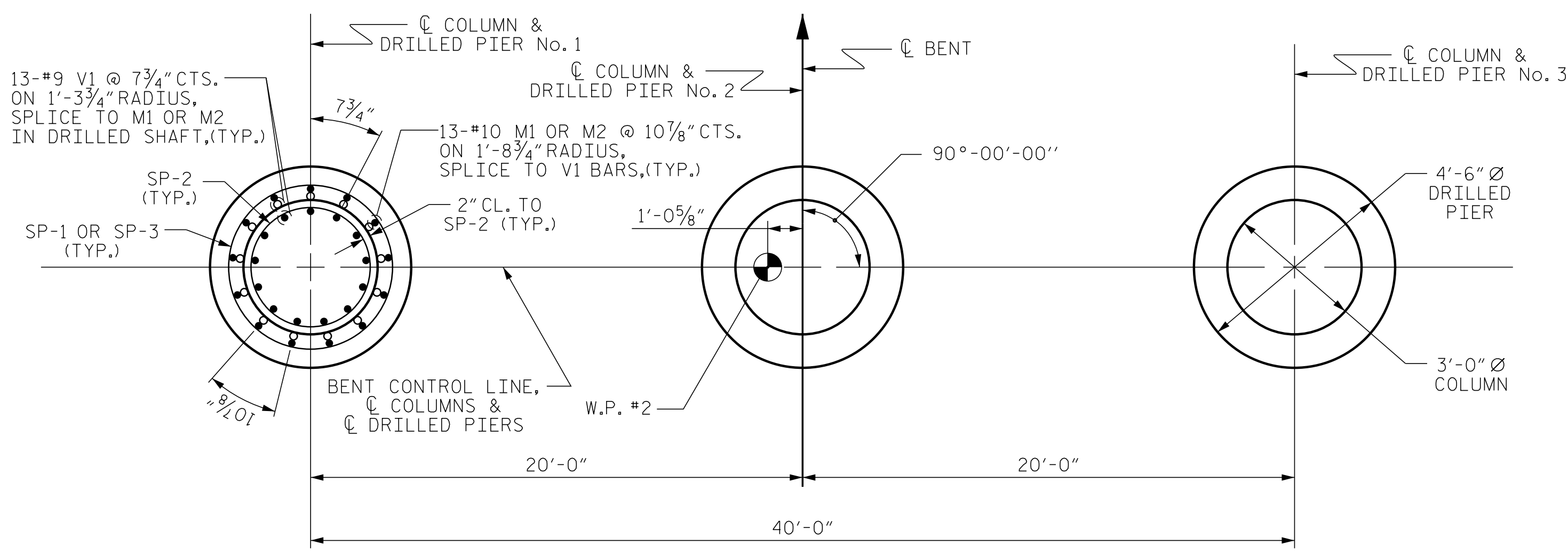
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 BENT No. 1**

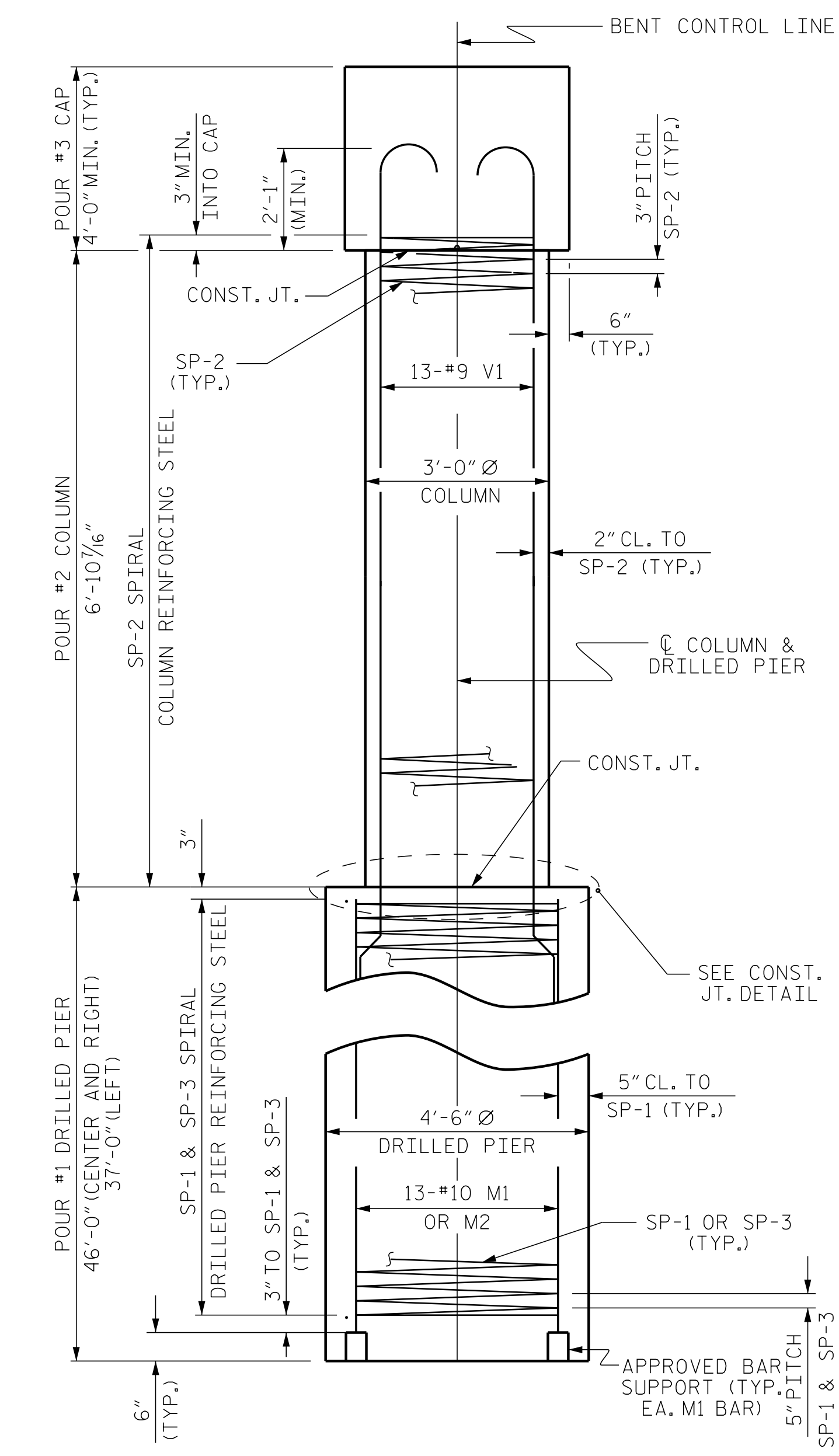
DRAWN BY : D. SMITH DATE : DEC. 18
 CHECKED BY : M. PAYNE DATE : DEC. 18
 DESIGN ENGINEER OF RECORD: M. PAYNE DATE : DEC. 18

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

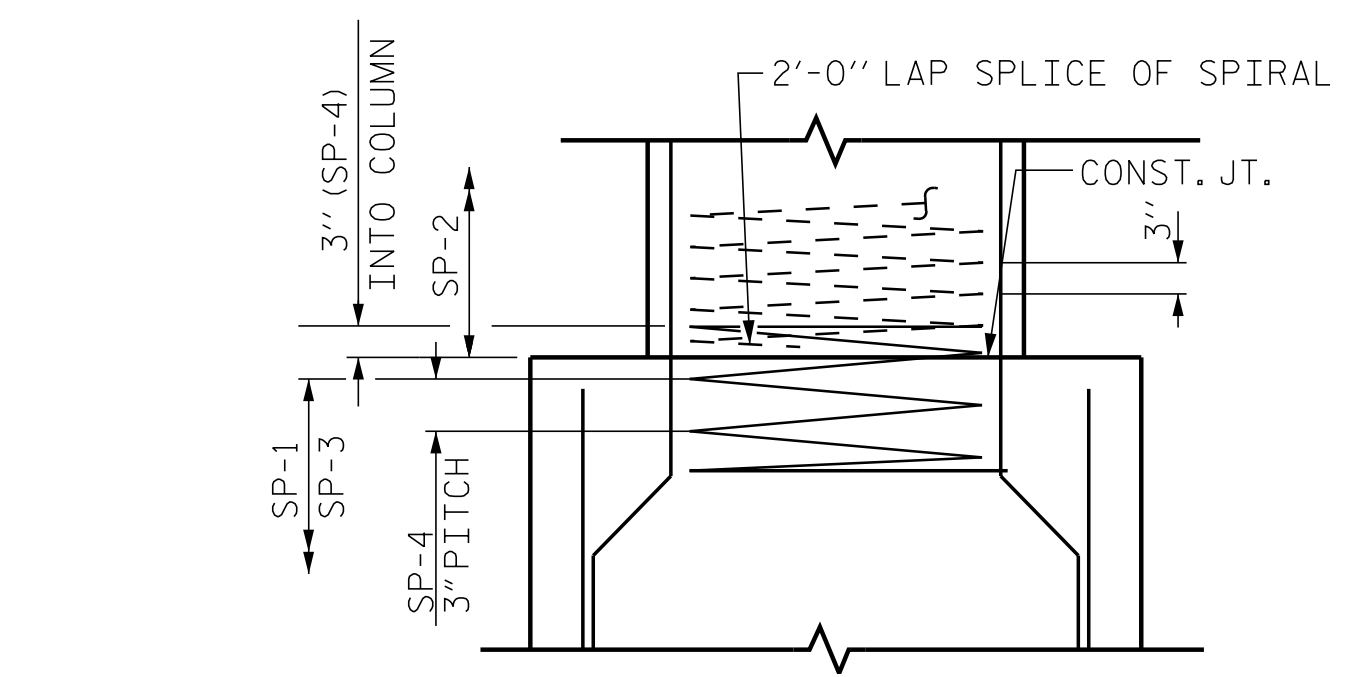
REVISIONS						SHEET NO. S2-25
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 34
2			4			



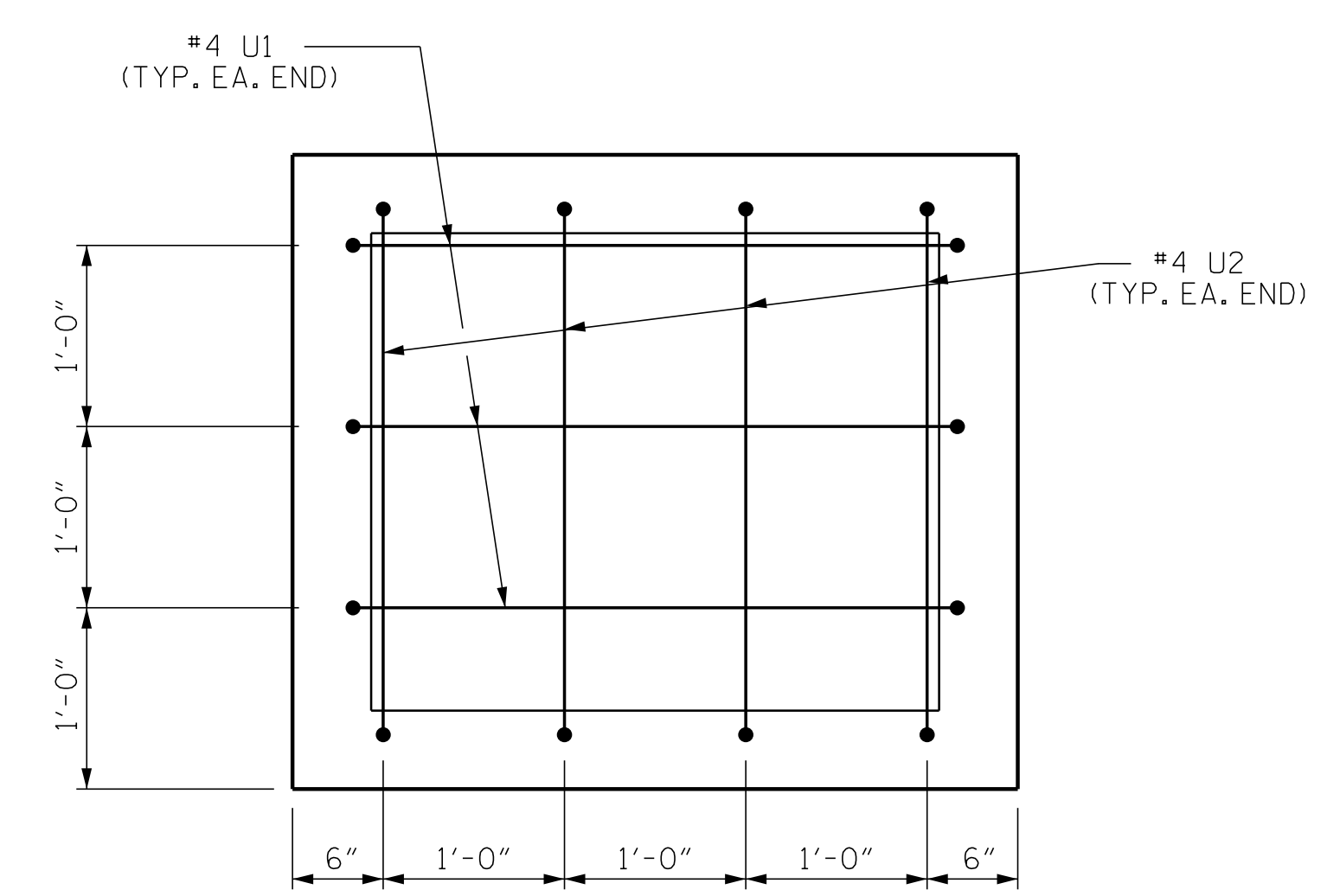
PLAN OF DRILLED PIERS & COLUMNS



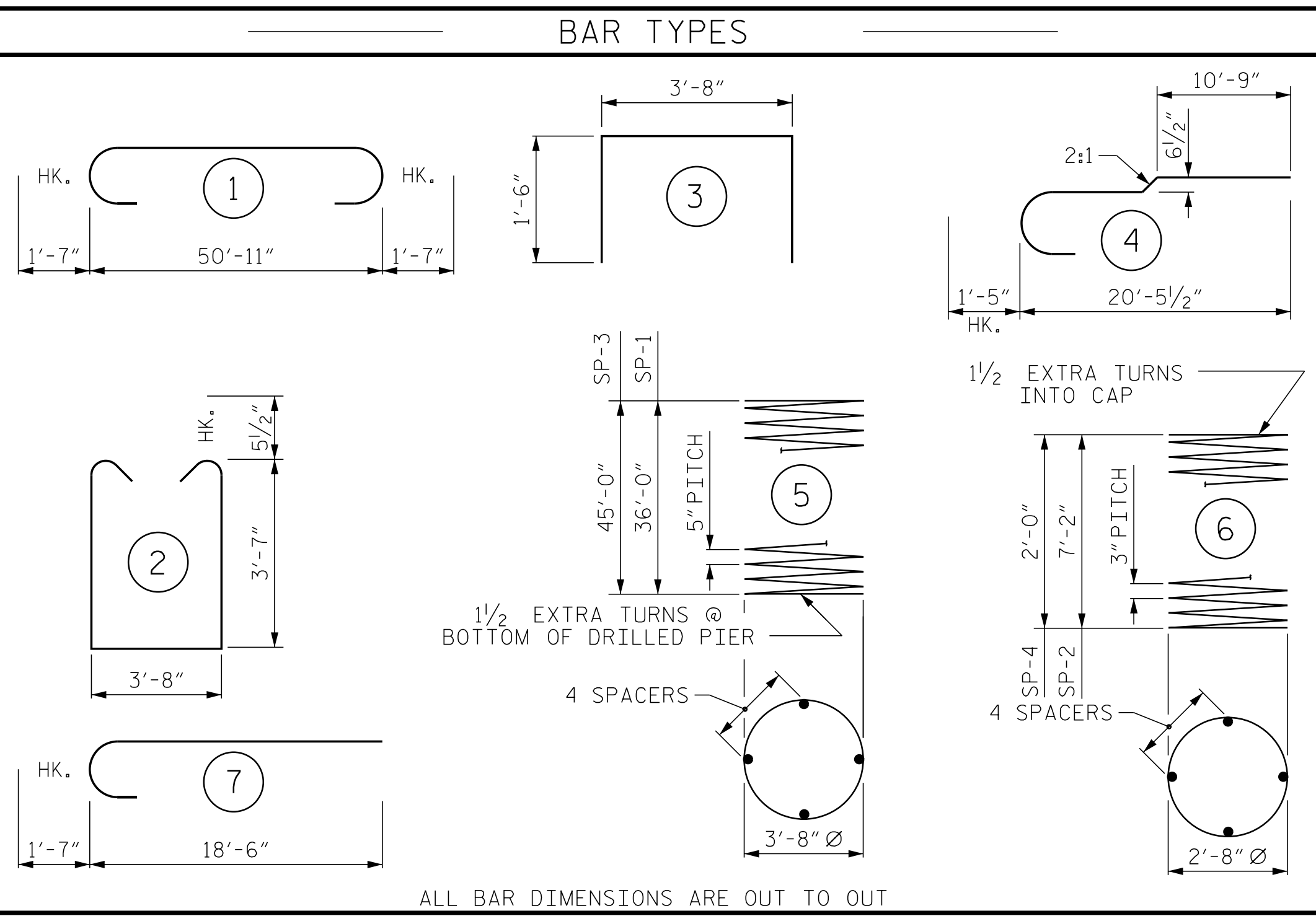
END ELEVATION



CONSTRUCTION JOINT DETAIL

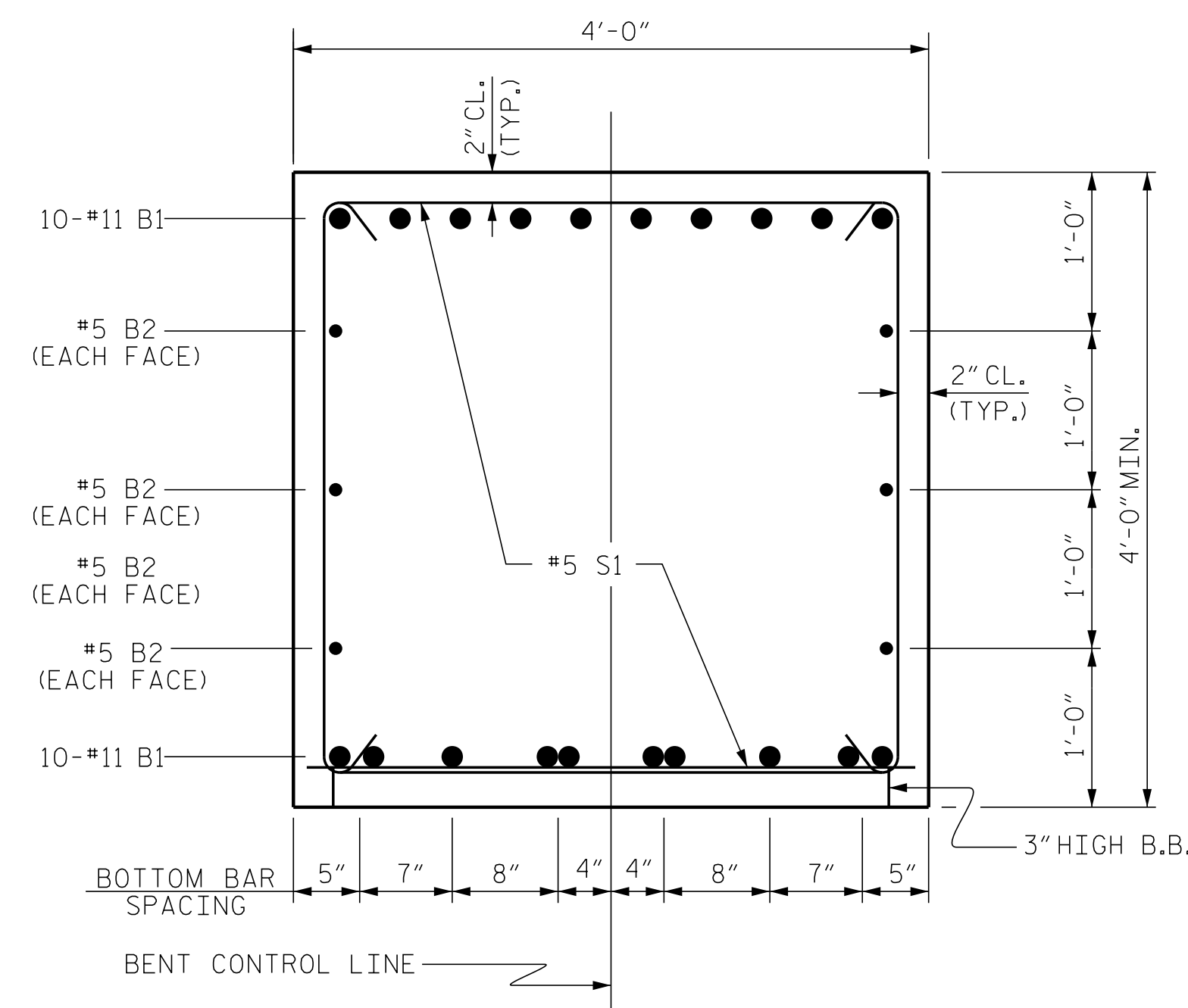


END OF CAP VIEW
(TYPICAL BOTH ENDS)



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR ONE BENT					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	20	#11	1	54'-11"	5,747
B2	6	#5	STR	50'-11"	319
B3	25	#5	STR	6'-6"	170
B4	10	#11	STR	20'-1"	1,068
S1	80	#5	2	11'-9"	981
U1	14	#4	3	6'-8"	63
U2	25	#5	3	6'-8"	174
V1	39	#9	4	21'-11"	2,907
M1	13	#10	STR	39'-3"	2,195
M2	26	#10	STR	48'-3"	5,395
REINFORCING STEEL (FOR ONE BENT)					19,019 LBS.
SP-1	1	*	5	1,013'-6"	1,057
SP-2	3	**	6	252'-3"	506
SP-3	2	*	5	1,261'-6"	2,632
SP-4	3	*	6	79'-7"	160
SPIRAL COLUMN REINFORCING STEEL (FOR ONE BENT)					4,355 LBS.
* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR					
** THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR					
CLASS A CONCRETE BREAKDOWN (FOR ONE BENT)					
POUR #2 (COLUMNS)					5.5 C.Y.
POUR #3 (CAP)					34.0 C.Y.
TOTAL CLASS A CONCRETE					39.5 C.Y.
DRILLED PIERS: (FOR ONE BENT)					
DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)					76.0 C.Y.
4'-6" Ø DRILLED PIER NOT IN SOIL					34.0 LIN. FT.
4'-6" Ø DRILLED PIER IN SOIL					95.0 LIN. FT.
PERMANENT STEEL CASING FOR 4'-6" Ø DRILLED PIER					54.0 LIN. FT.
CSL TUBES					516.0 LIN. FT.



SECTION THRU CAP

PROJECT NO. I-5823
 DAVIE COUNTY
 STATION: 702+82.00 -L RT-
 SHEET 2 OF 2

Dewberry
 2610 WYCLIFF ROAD
 SUITE 410
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 NC COA No. F-0829



DocuSigned by:
 Matthew Payne
 12/14/2018
 DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT No. 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S2-26
2			4			34

DRAWN BY: D. SMITH DATE: DEC. 18
 CHECKED BY: M. PAYNE DATE: DEC. 18
 DESIGN ENGINEER OF RECORD: M. PAYNE DATE: DEC. 18

*****SYSTEM*****
 *****SDGN*****
 *****USER*****

NOTES

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

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

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

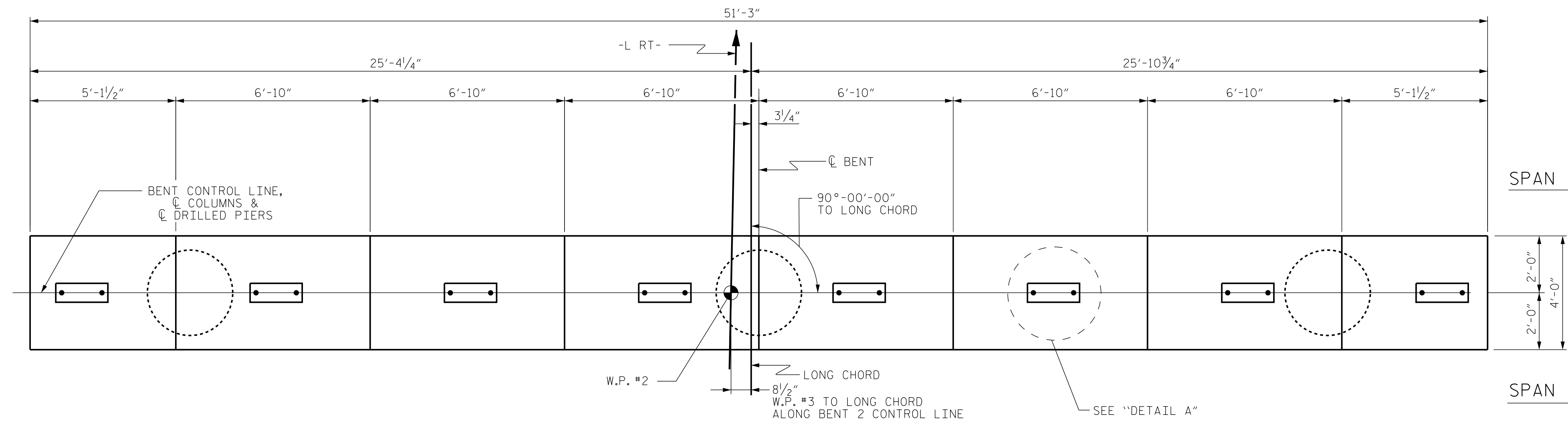
ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL."

★ INVERT ALTERNATE STIRRUPS.

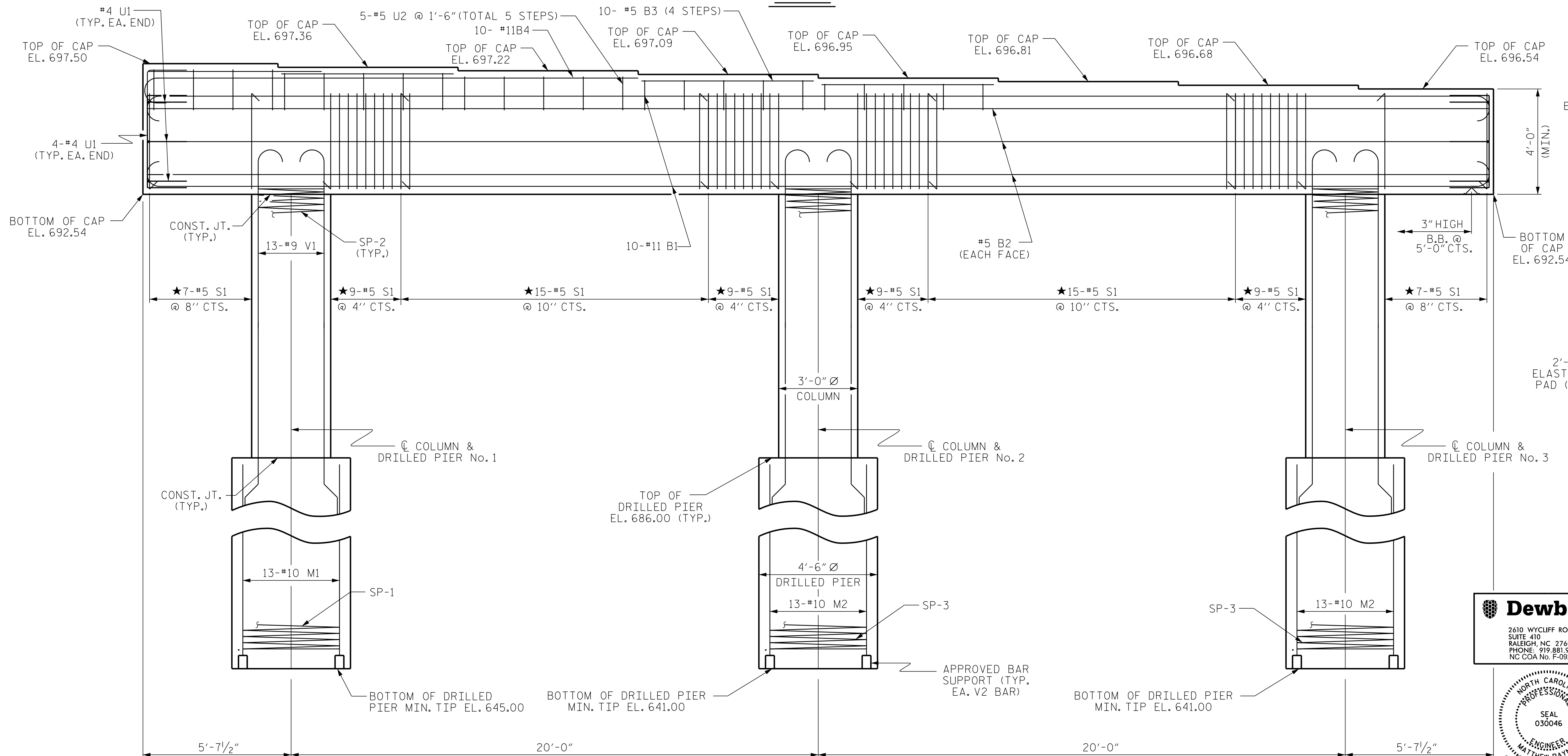
THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT ONE FOOT BELOW THE GROUND LINE.

DRILLED PIERS SHALL BE TERMINATED ONE FOOT ± ABOVE NORMAL WATER SURFACE ELEVATION FOR SHAFTS LOCATED IN WATER.

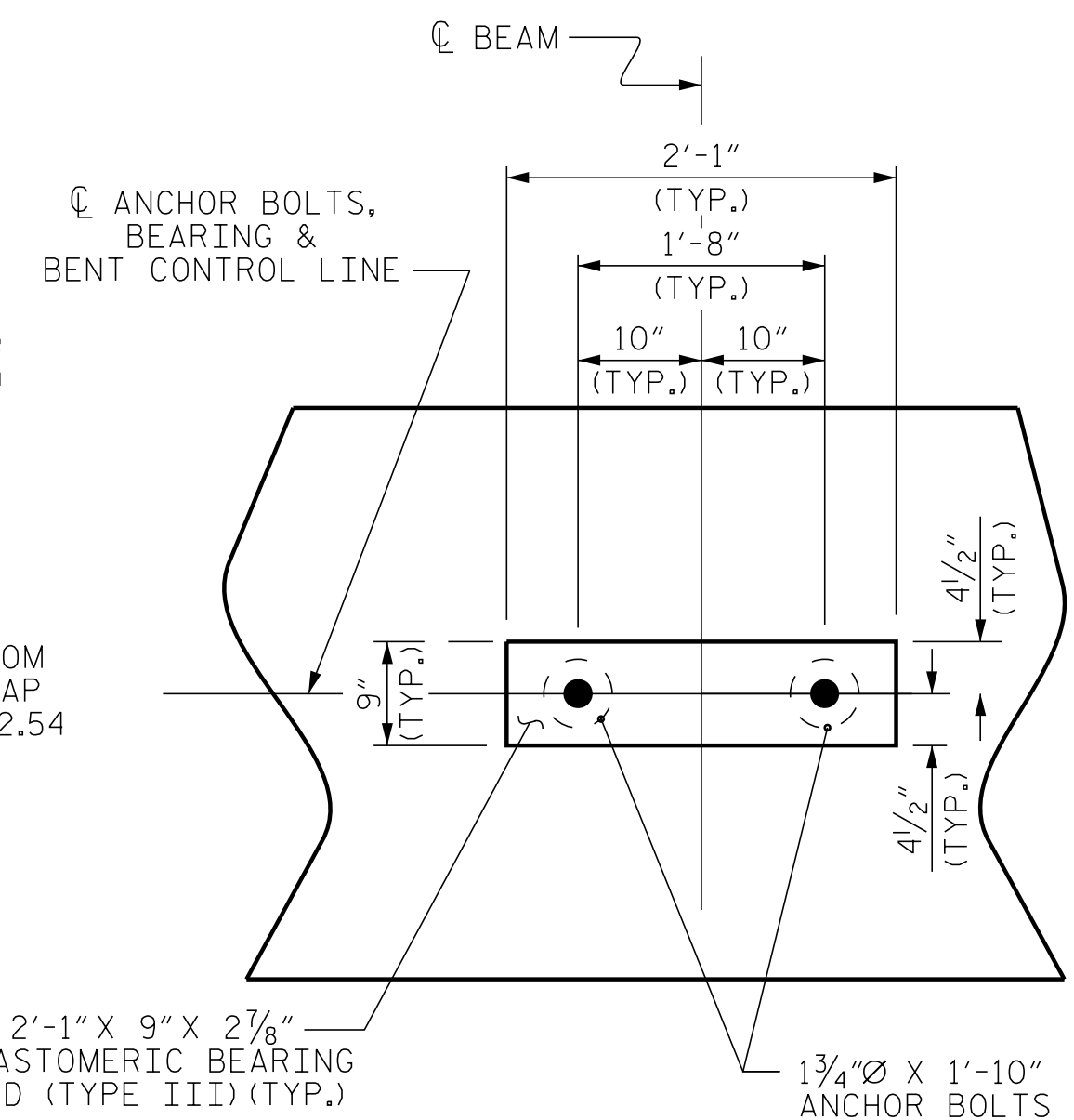
THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.



PLAN



ELEVATION



DETAIL "A"

(DIMENSIONS ARE TYPICAL EACH BEARING)

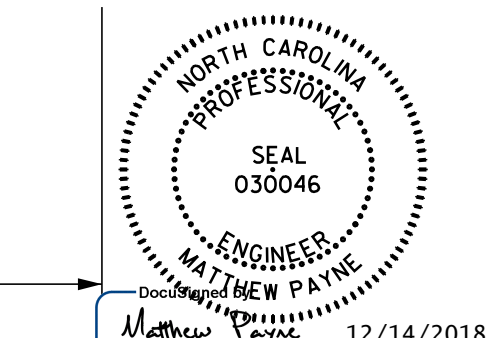
PROJECT NO. I-5823

DAVIE COUNTY

STATION: 702+82.00 -L RT-

SHEET 1 OF 2

Dewberry
 2610 WYCLIFF ROAD
 SUITE 410
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 NC COA No. F-0829



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 BENT No. 2**

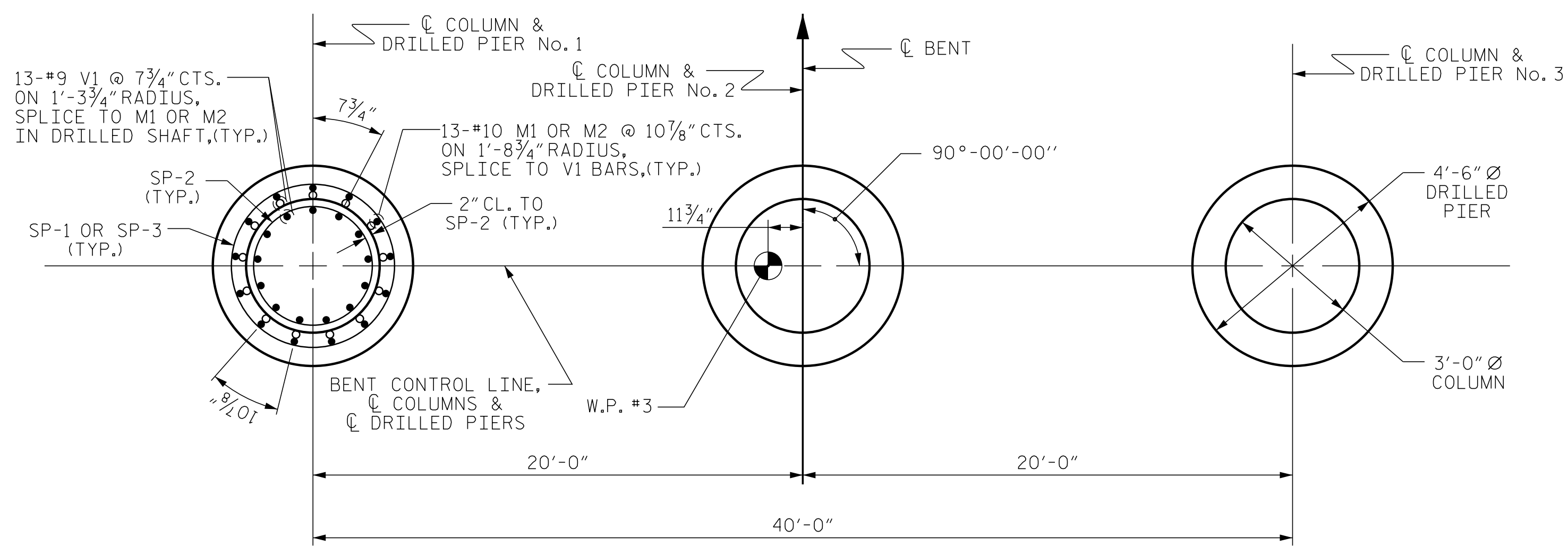
DRAWN BY : D. SMITH DATE : DEC. 18
 CHECKED BY : M. PAYNE DATE : DEC. 18
 DESIGN ENGINEER OF RECORD : M. PAYNE DATE : DEC. 18

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

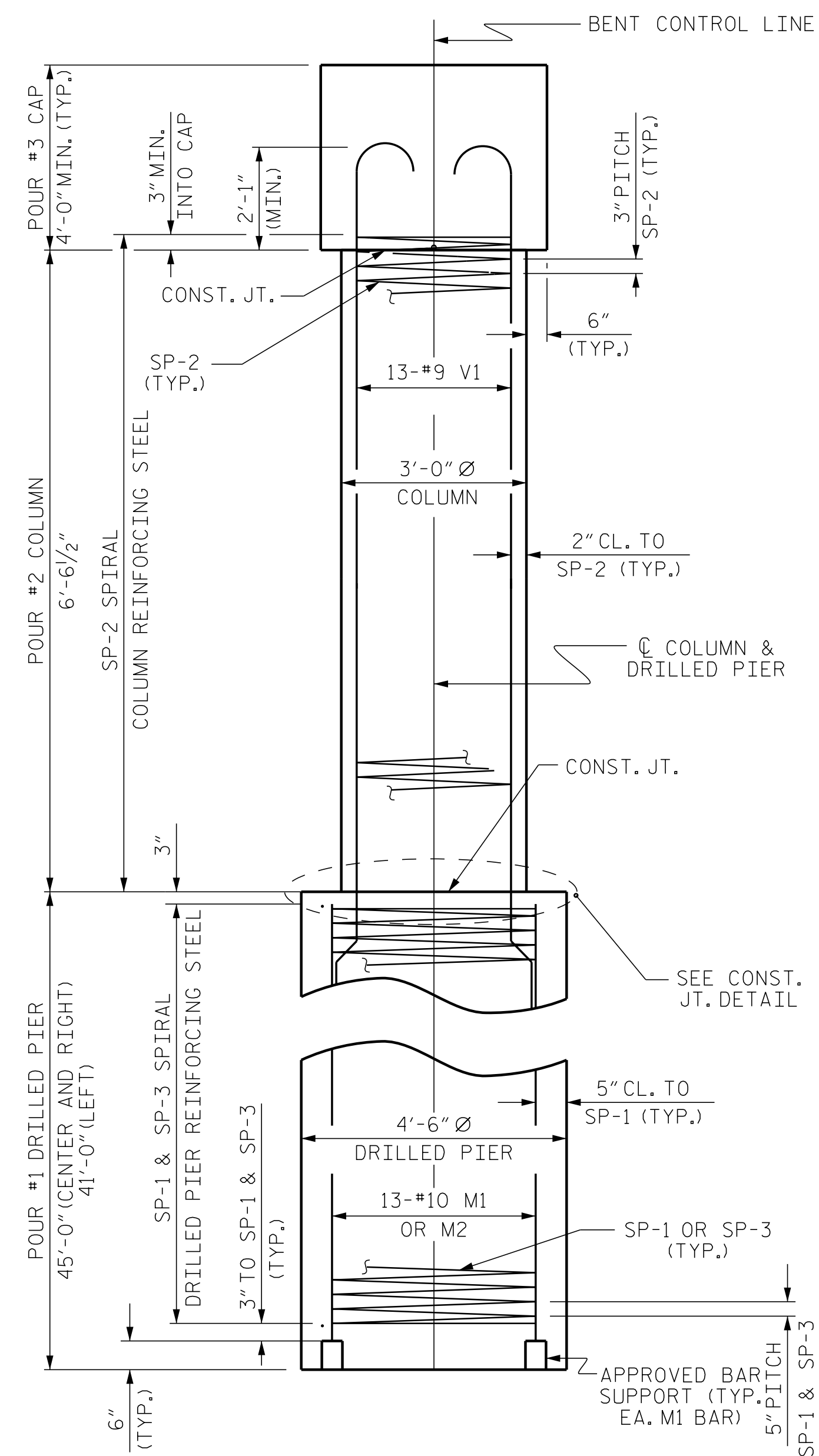
DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO. S2-27
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 34
2			4			

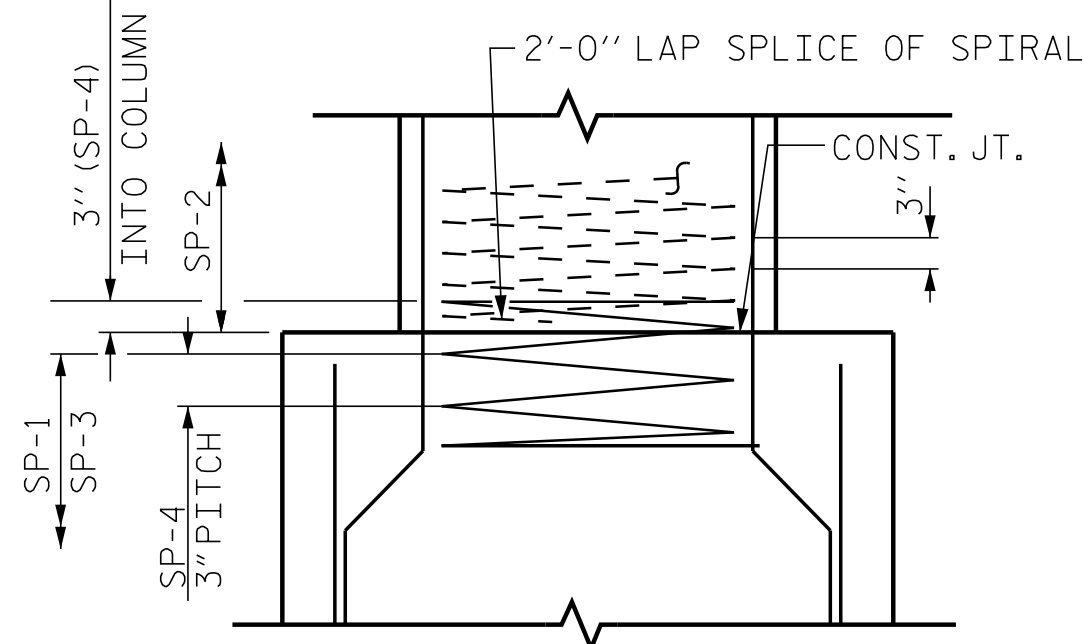
*****SYSTEM*****
 *****SDGN*****
 *****USER*****



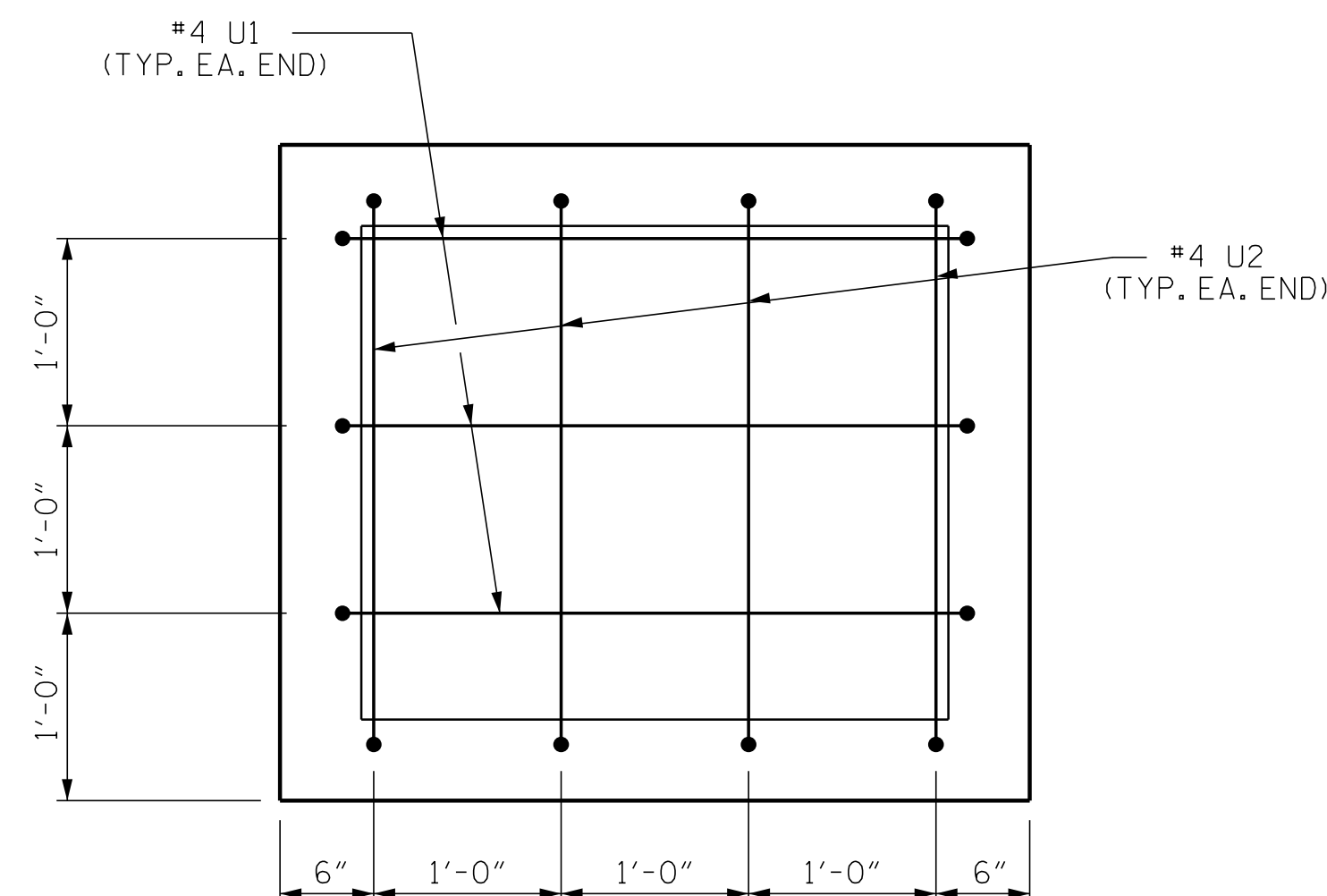
PLAN OF DRILLED PIERS & COLUMNS



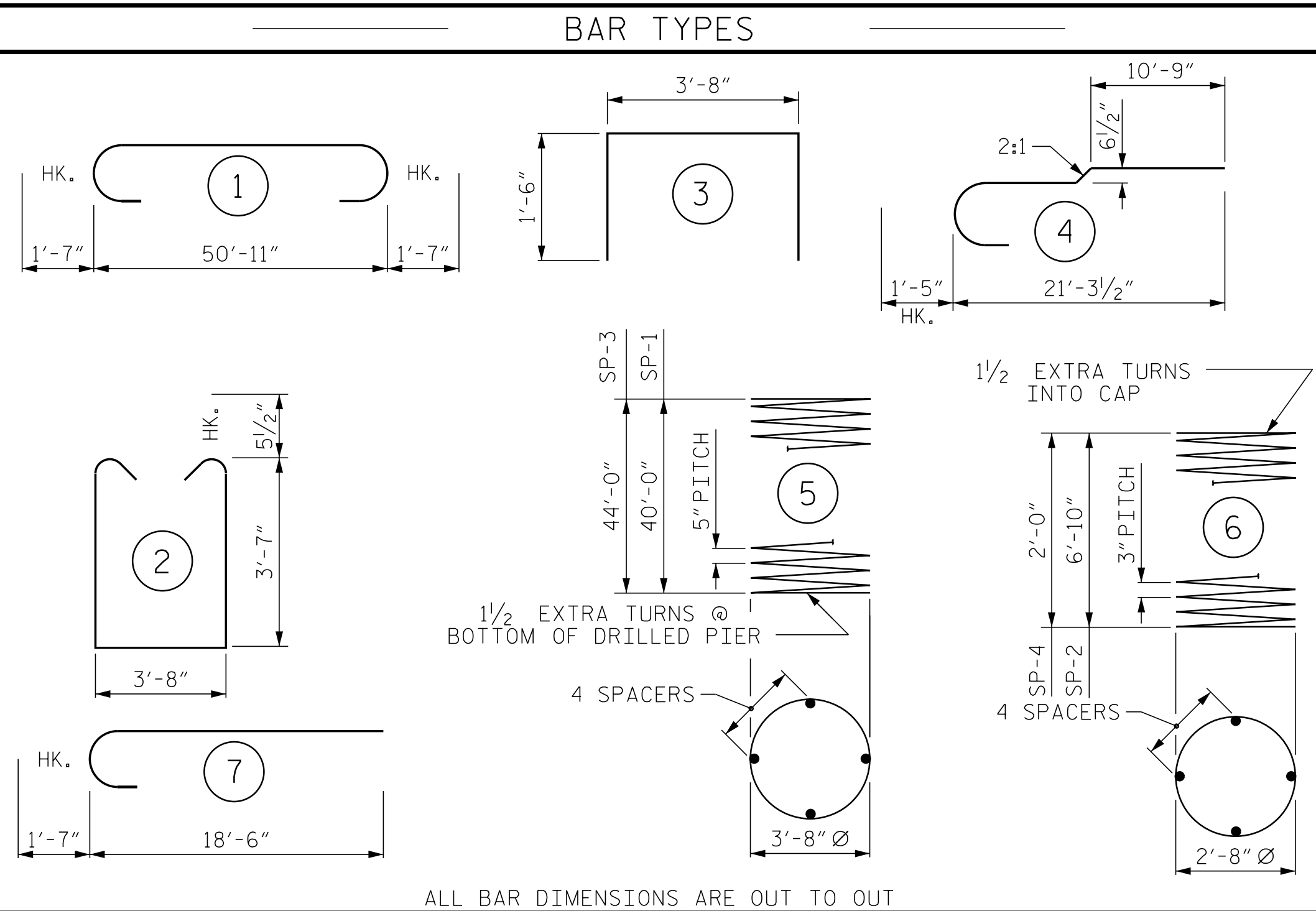
END ELEVATION



CONSTRUCTION JOINT DETAIL

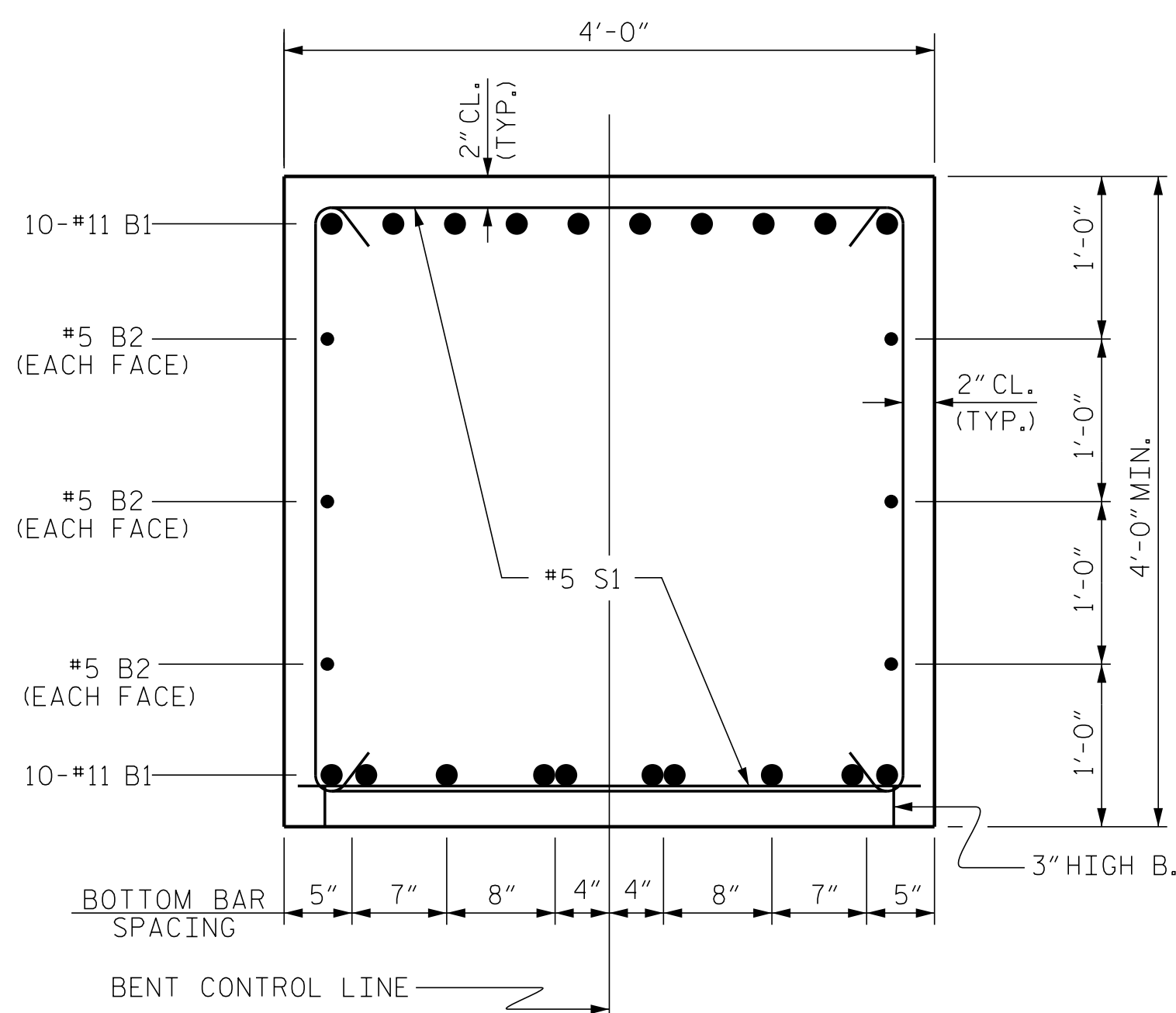


END OF CAP VIEW
(TYPICAL BOTH ENDS)



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR ONE BENT					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	20	#11	1	54'-1"	5,747
B2	6	#5	STR	50'-11"	319
B3	20	#5	STR	6'-6"	136
B4	10	#11	7	20'-1"	1,068
S1	80	#5	2	11'-9"	981
U1	14	#4	3	6'-8"	63
U2	25	#5	3	6'-8"	174
V1	39	#9	4	22'-6"	2,984
M1	13	#10	STR	43'-3"	2,418
M2	26	#10	STR	47'-3"	5,283
REINFORCING STEEL (FOR ONE BENT)					19,173 LBS.
SP-1	1	*	5	1123'-3"	1,172
SP-2	3	**	6	208'-1"	417
SP-3	2	*	5	1,216'-6"	2,538
SP-4	3	*	6	79'-7"	160
SPIRAL COLUMN REINFORCING STEEL (FOR ONE BENT)					4,287 LBS.
* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR					
** THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR					
CLASS A CONCRETE BREAKDOWN (FOR ONE BENT)					
POUR #2 (COLUMNS)					5.2 C.Y.
POUR #3 (CAP)					34.0 C.Y.
TOTAL CLASS A CONCRETE					39.2 C.Y.
DRILLED PIERS: (FOR ONE BENT)					
DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)					77.2 C.Y.
4'-6" Ø DRILLED PIER NOT IN SOIL					29.0 LIN. FT.
4'-6" Ø DRILLED PIER IN SOIL					102.0 LIN. FT.
PERMANENT STEEL CASING FOR 4'-6" Ø DRILLED PIER					54.0 LIN. FT.
CSL TUBES					524 LIN. FT.



SECTION THRU CAP

PROJECT NO. I-5823
DAVIE COUNTY
STATION: 702+82.00 -L RT-
SHEET 2 OF 2

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0829

NORTH CAROLINA PROFESSIONAL ENGINEER
SEAL 030046
MATTHEW PAYNE
12/14/2018

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT No. 2

DRAWN BY: D. SMITH DATE: DEC. 18
CHECKED BY: M. PAYNE DATE: DEC. 18
DESIGN ENGINEER OF RECORD: M. PAYNE DATE: DEC. 18

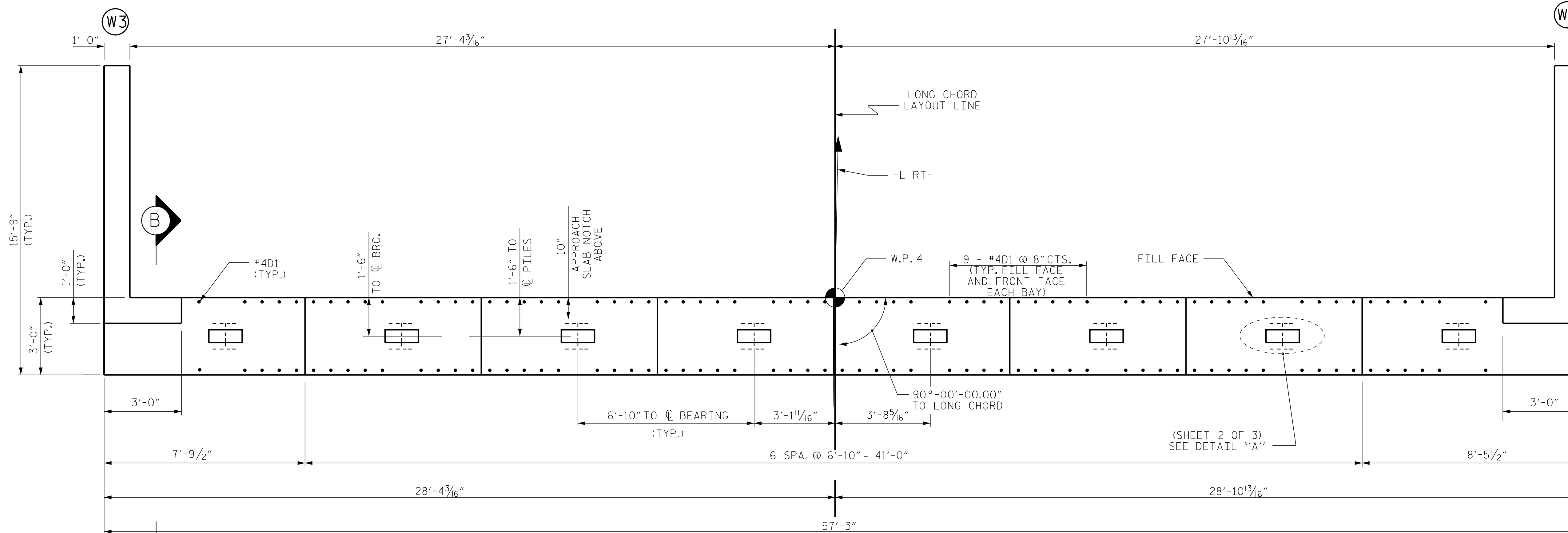
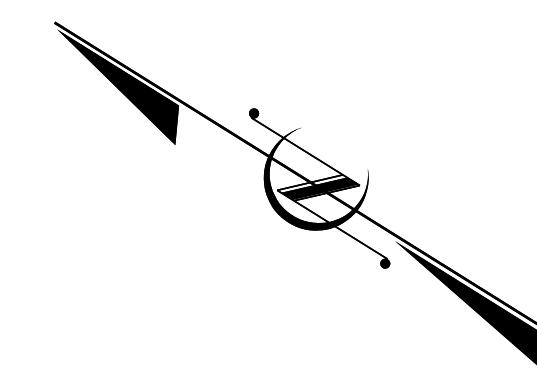
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*****SDGN*****
*****USER*****

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

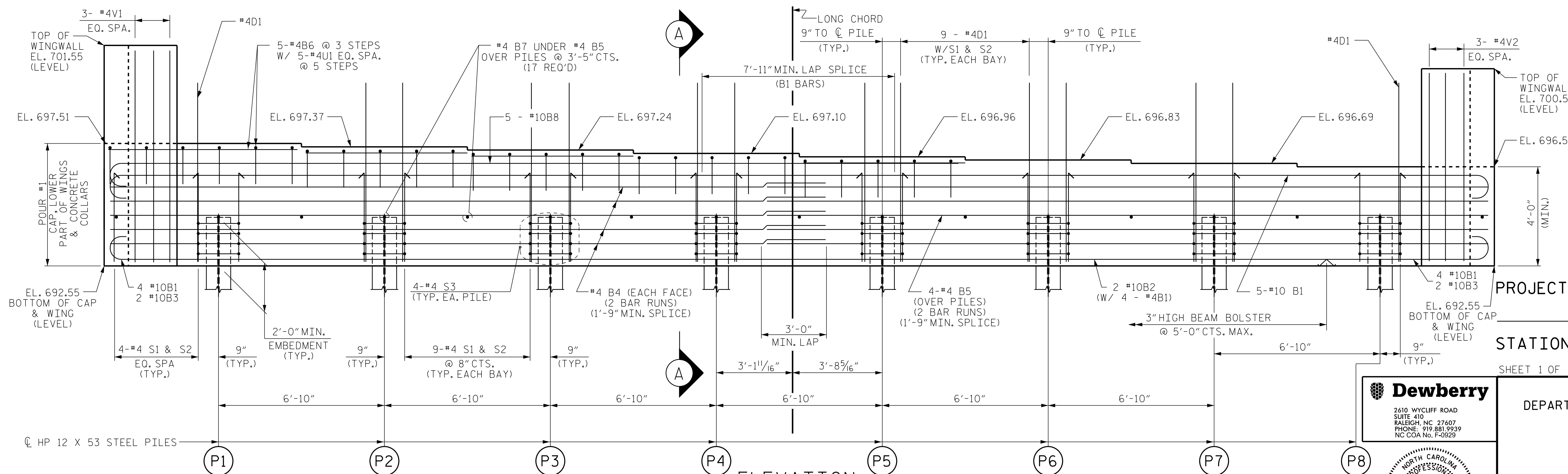
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-28	
1			3			TOTAL SHEETS	
2			4			34	

NOTES

FOR PILE SPLICE DETAILS, SEE SHEET 2 OF 3.
FOR WING DETAILS, SEE SHEET 3 OF 3.



PLAN

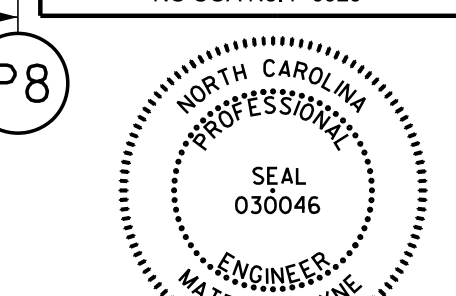


ELEVATION

FOR SECTION A-A, SEE SHEET 2 OF 3.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 2 OF 3.

PROJECT NO. I-5823
DAVIE COUNTY
STATION: 702+82.00 -L RT-
SHEET 1 OF 3

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0529

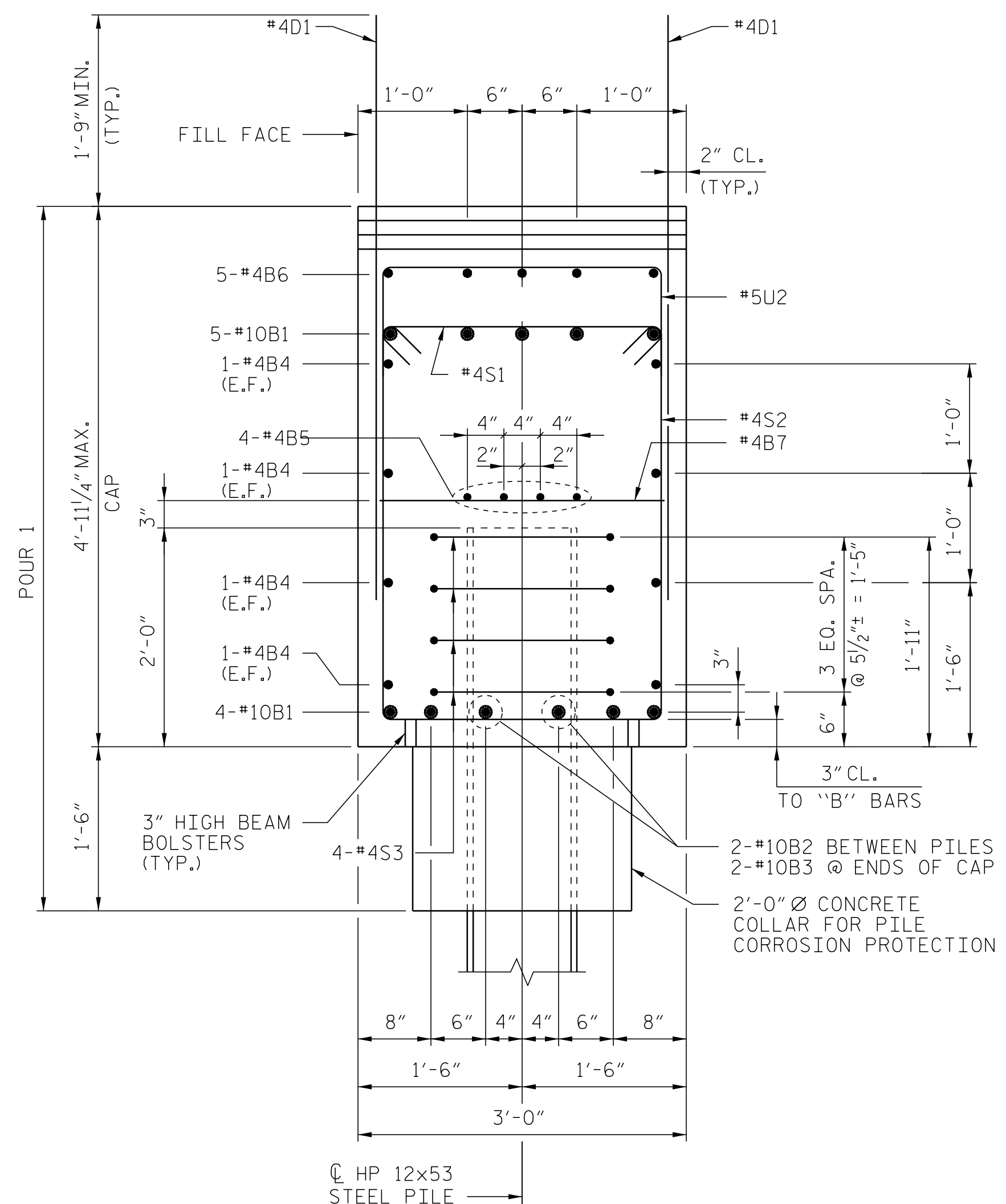


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
**SUBSTRUCTURE
INTEGRAL
END BENT No. 2**

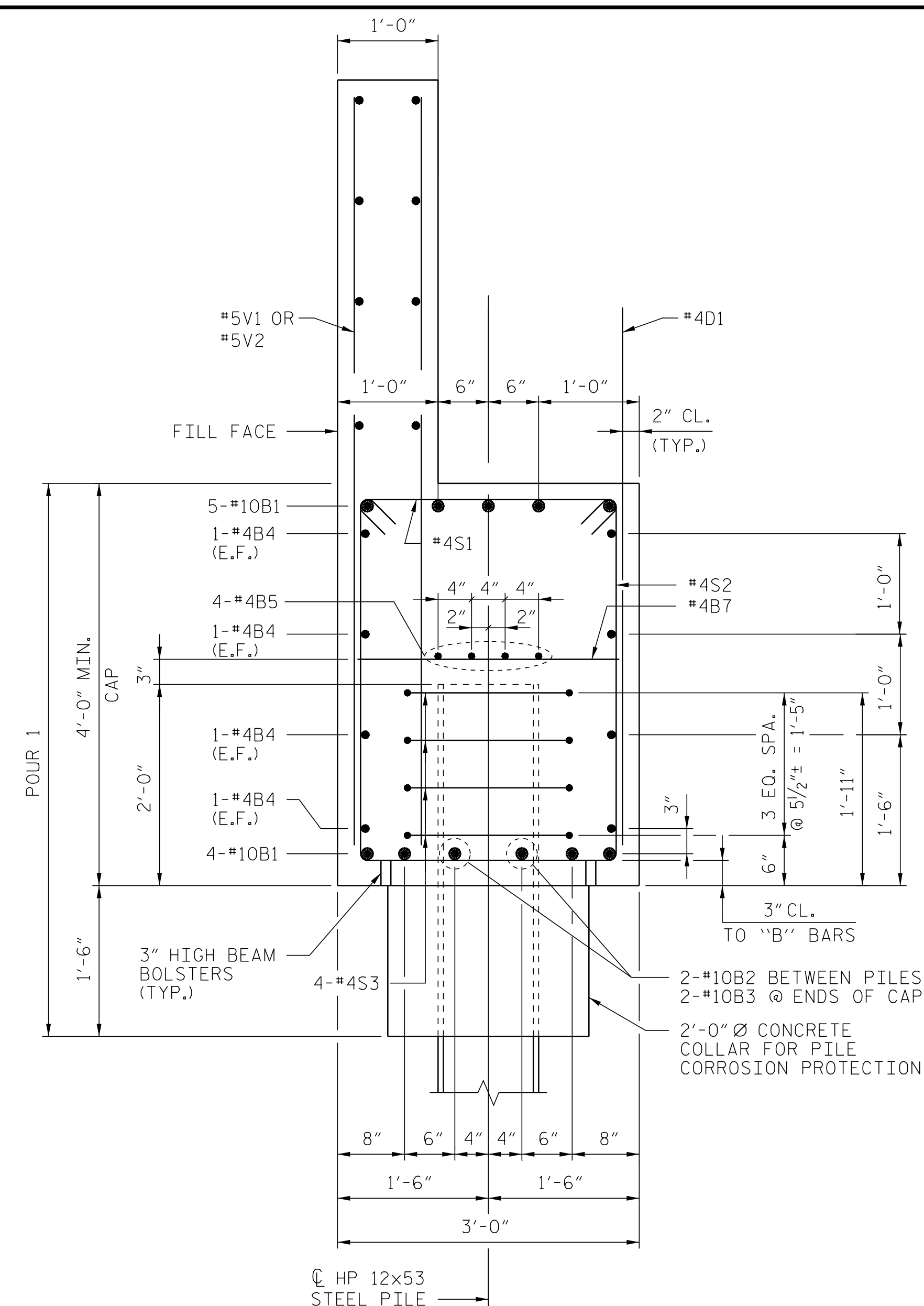
DRAWN BY: D. SMITH DATE: DEC. 18
CHECKED BY: M. PAYNE DATE: DEC. 18
DESIGN ENGINEER OF RECORD: M. PAYNE DATE: DEC. 18

REVISIONS						SHEET NO. S2-29
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 34
2			4			

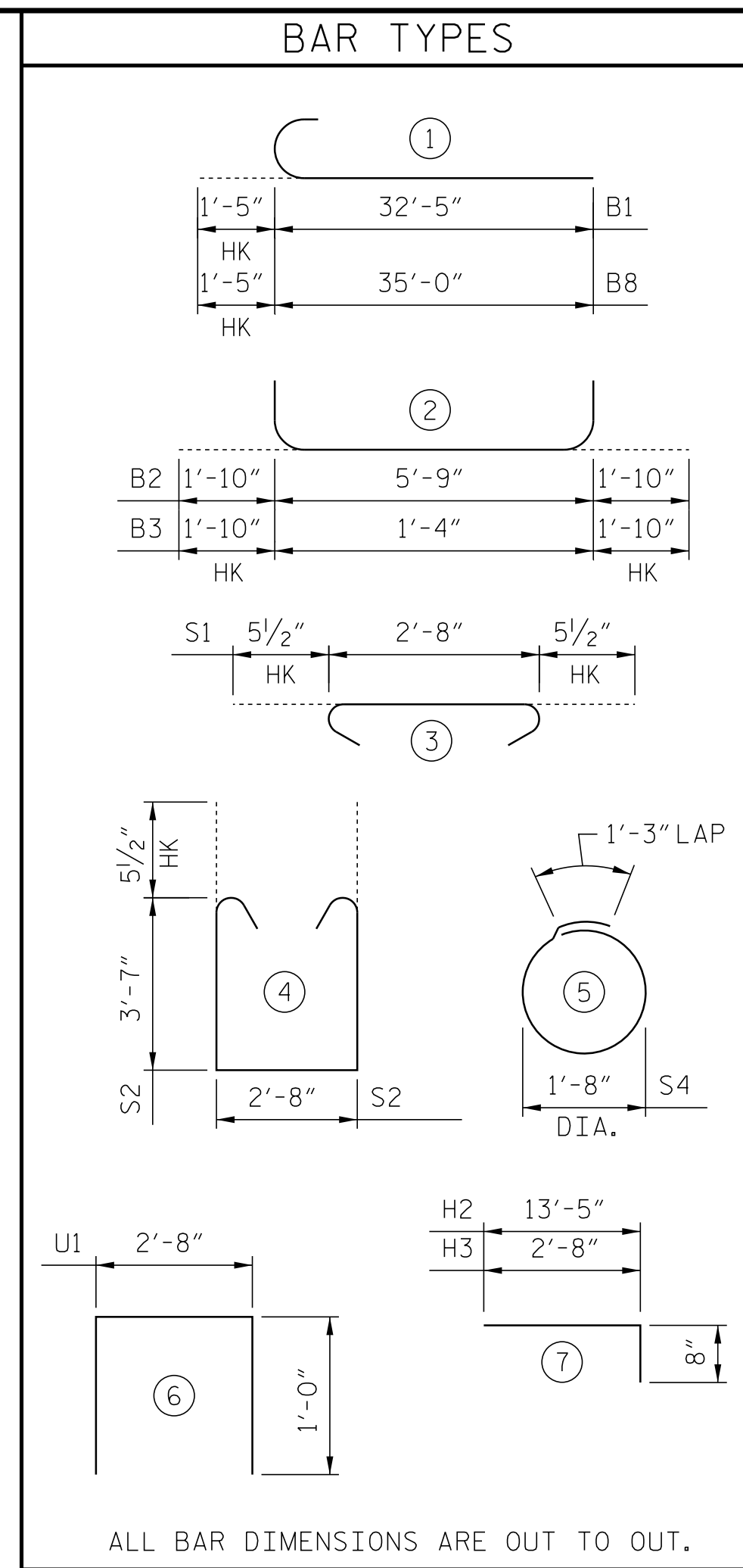
*****SYSTEM*****
*****SYSDGN*****
*****USERNAME*****



SECTION "A-A"



SECTION "B-B"

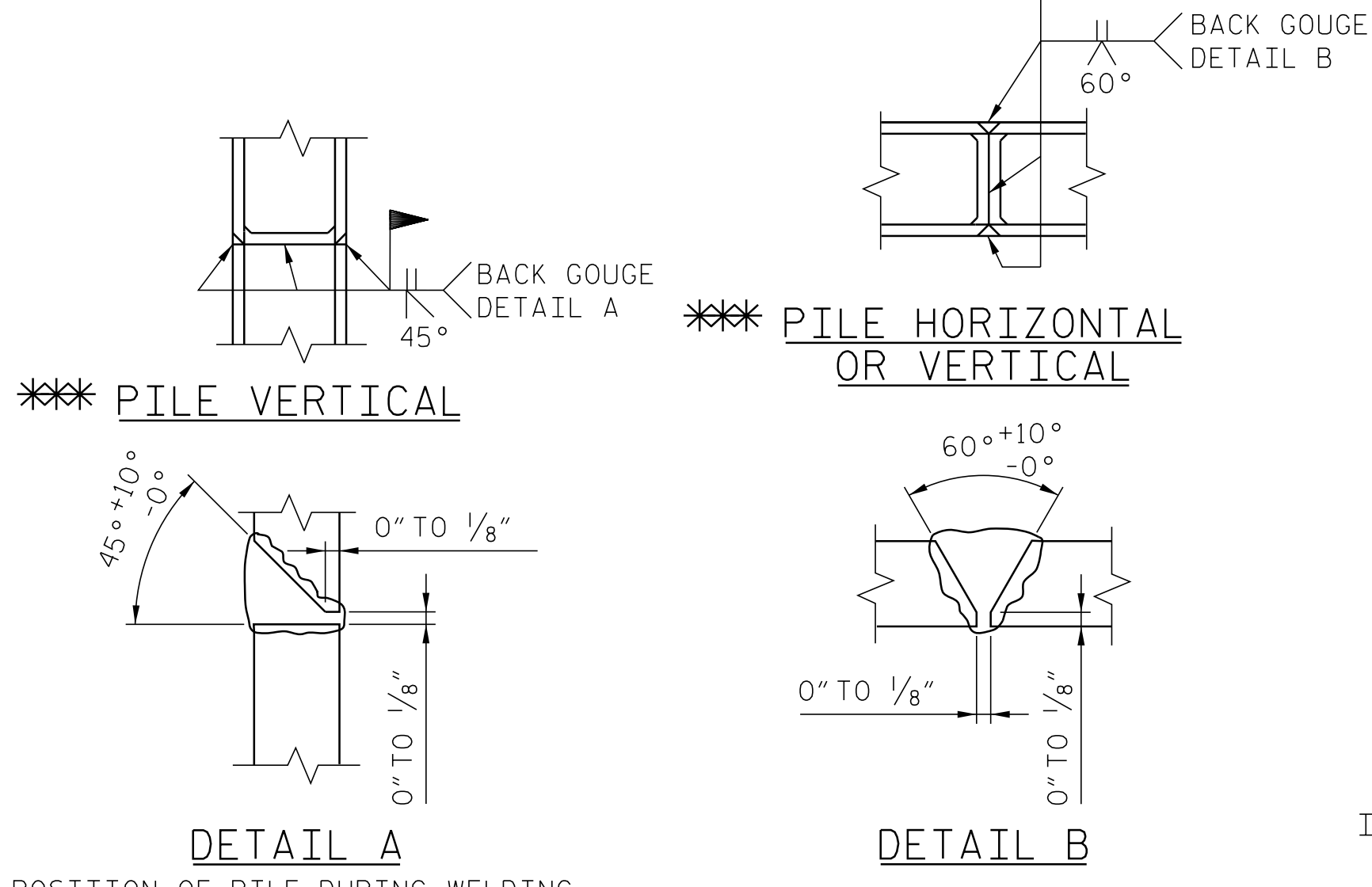


BILL OF MATERIAL					
END BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	18	#10	①	33'-10"	2,619
B2	14	#10	②	9'-5"	567
B3	4	#10	②	5'-0"	86
B4	16	4	STR	29'-3"	313
B5	8	#4	STR	29'-4"	157
B6	15	#4	STR	6'-6"	66
B7	17	#4	STR	2'-8"	31
B8	5	#10	①	36'-5"	783
D1	130	#4	STR	5'-6"	478
H1	20	#5	STR	15'-3"	319
H2	16	#5	⑦	14'-1"	236
H3	16	#5	⑦	3'-3"	56
S1	71	#4	③	3'-7"	170
S2	71	#4	④	10'-9"	510
S3	32	#4	⑤	6'-6"	139
U1	25	#4	⑥	4'-8"	78
V1	28	#5	STR	8'-6"	249
V2	28	#5	STR	7'-7"	222
TOTAL REINFORCING STEEL					7,079

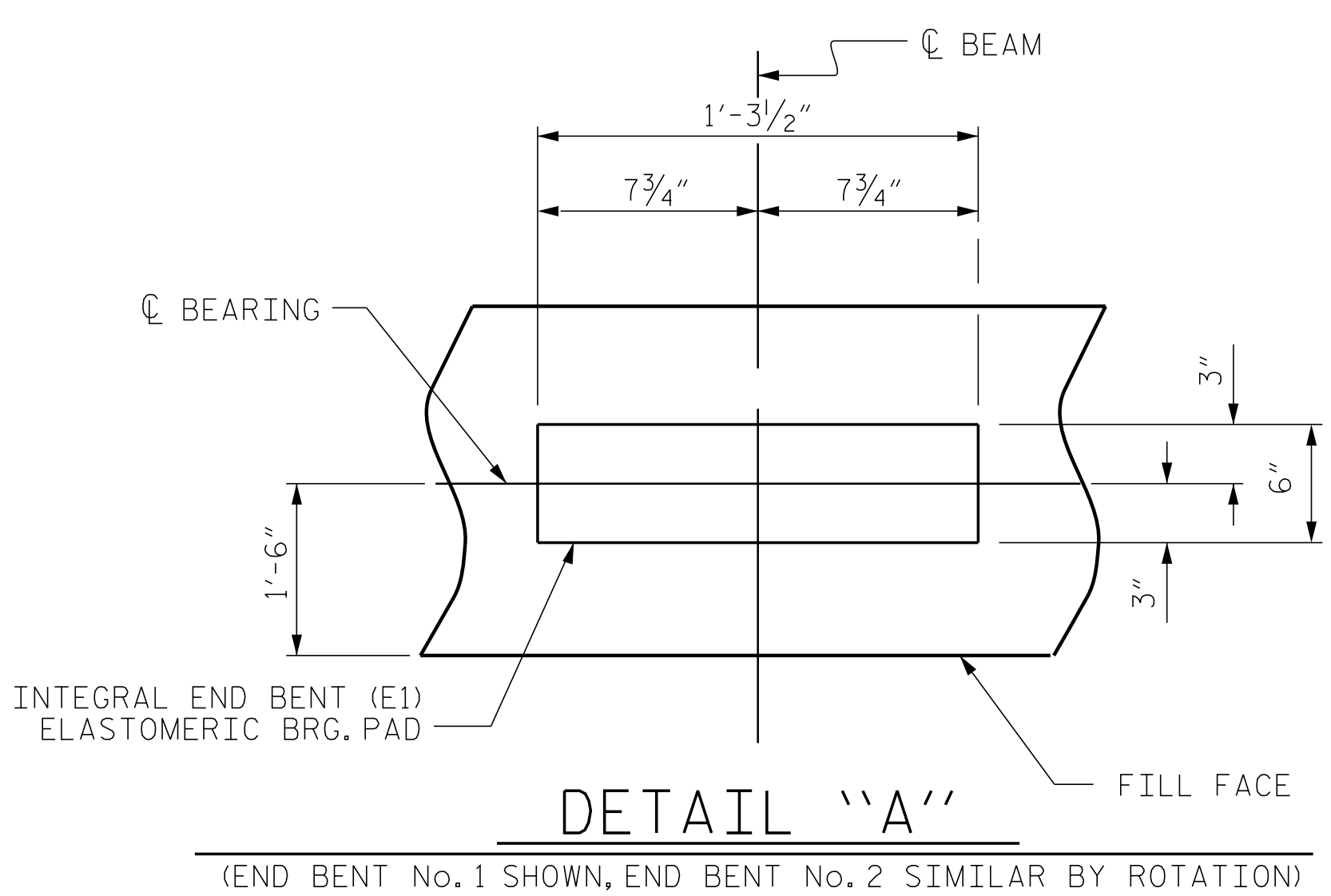
END BENT 2 TOTAL QUANTITIES	
CLASS A CONCRETE	
POUR 1 (COLLARS, CAP & LOWER WINGWALLS)	38.5
HP 12x53 STEEL PILES	NO. 8
	LIN. FT. 300
PILE DRIVING EQUIPMENT SETUP FOR HP12x53 STEEL PILES	NO. 8

NOTE: REINFORCING STEEL AND CONCRETE FOR THE UPPER PORTION OF THE WINGS IS INCLUDED IN THE PAY ITEM "REINFORCED CONCRETE DECK SLAB".

NOTES:
FOR OTHER NOTES, SEE "FOUNDATION LAYOUT" AND "LOCATION SKETCH".



PILE SPLICE DETAILS

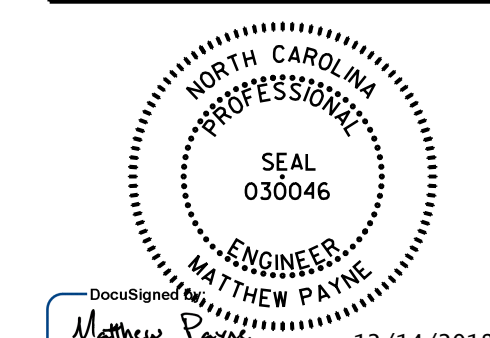


DETAIL "A"

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

PROJECT NO. I-5823
DAVIE COUNTY
STATION: 702+82.00 -L RT-
SHEET 2 OF 3

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929



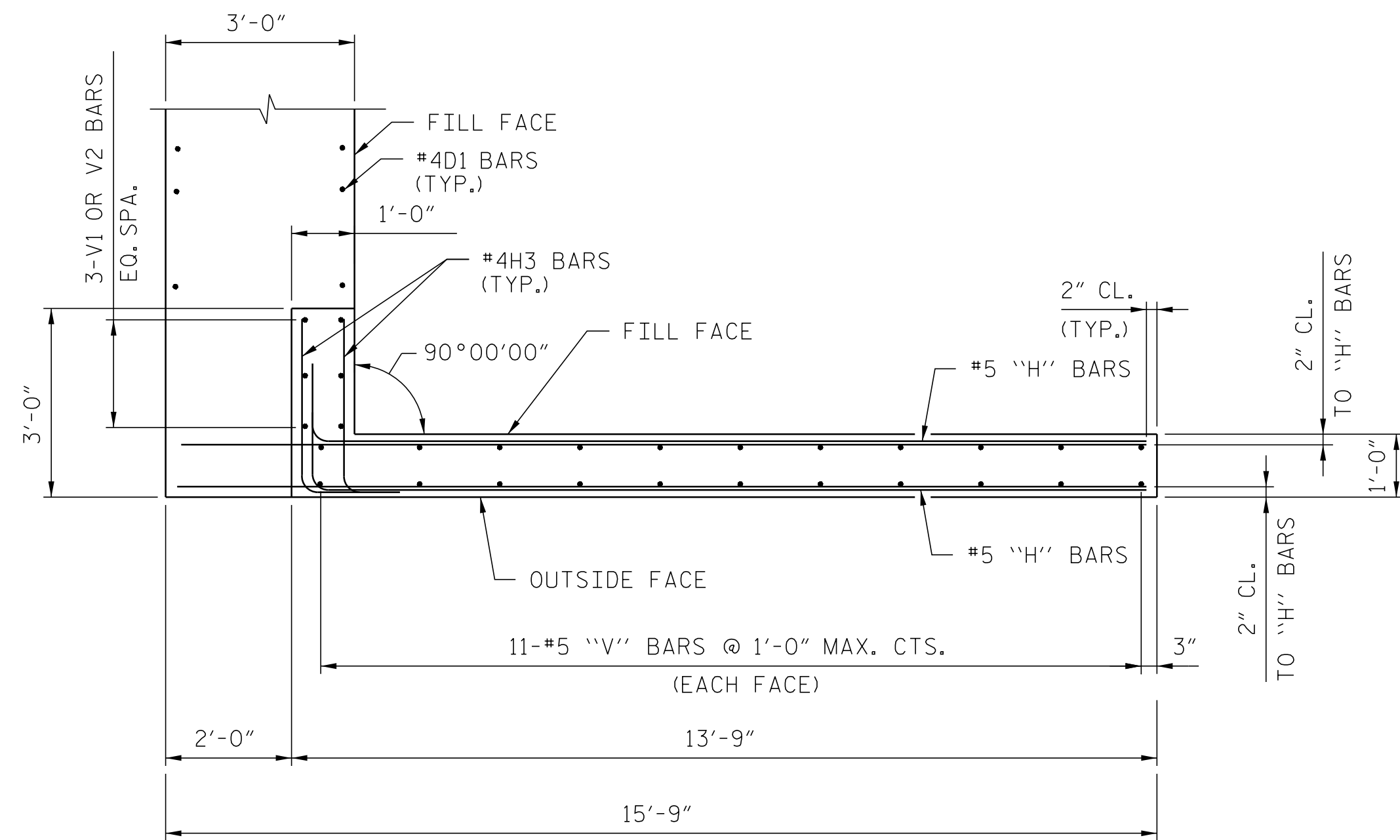
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
INTEGRAL END BENT 2
SECTIONS AND DETAILS

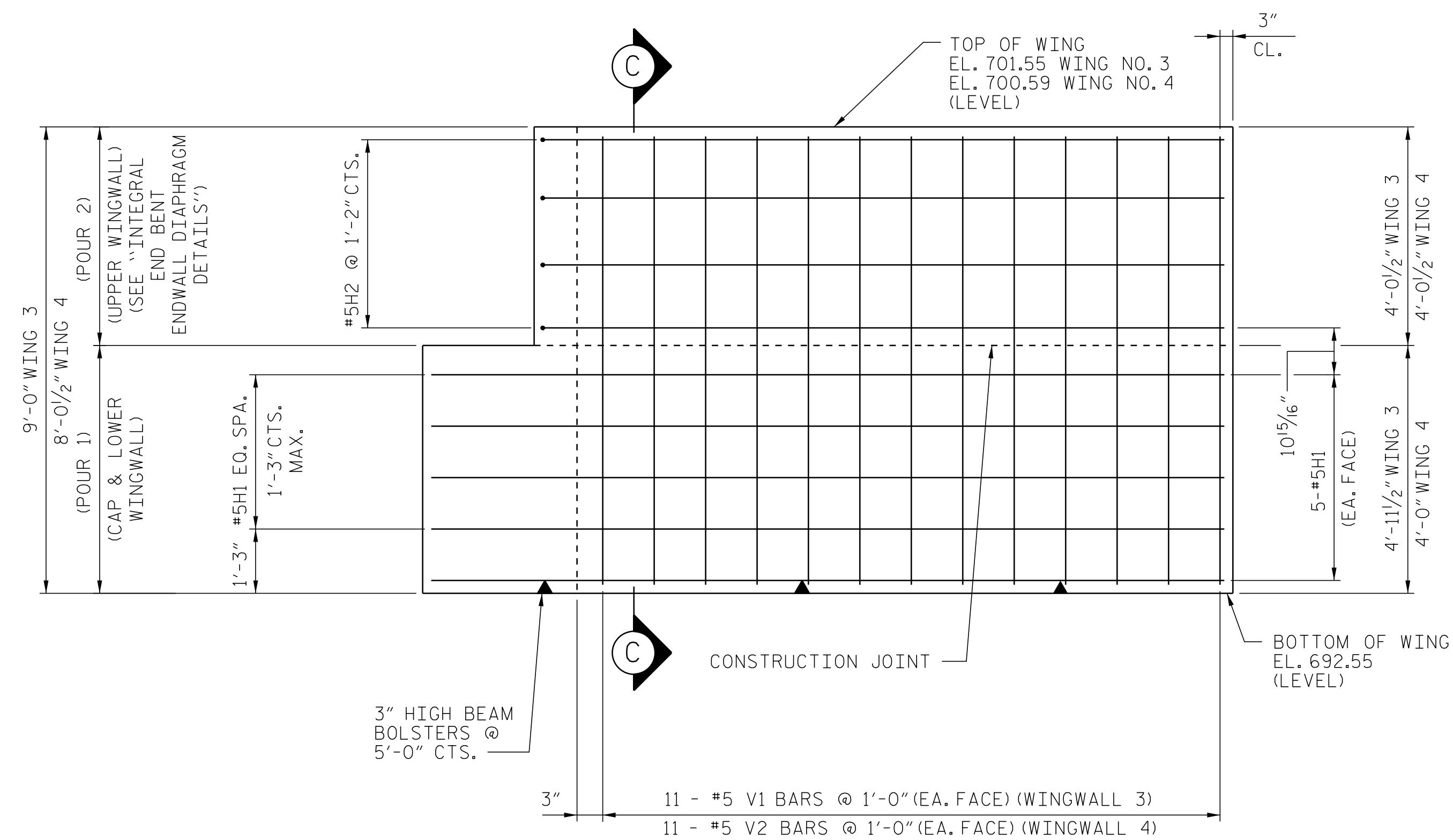
DRAWN BY: D. SMITH DATE: DEC. 18
CHECKED BY: M. PAYNE DATE: DEC. 18
DESIGN ENGINEER OF RECORD: M. PAYNE DATE: DEC. 18

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-30	
1			3			TOTAL SHEETS	
2			4			34	

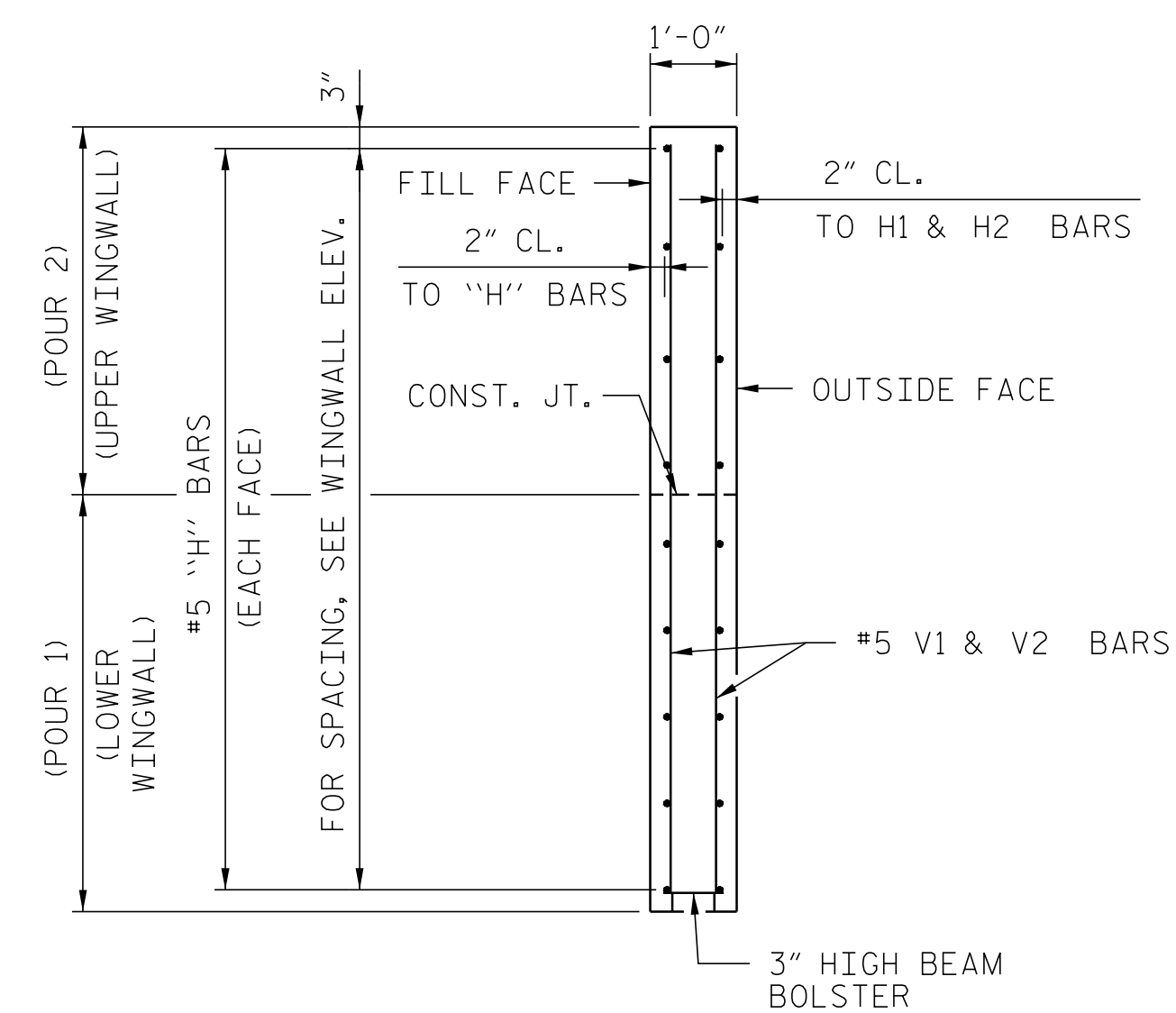
*****SYSTEM*****
*****SDGN*****
*****USERNAME*****



PLAN W3 OR W4
 (WING 3 SHOWN, WING 4 SIMILAR)



ELEVATION



SECTION C-C

PROJECT NO. I-5823
 DAVIE COUNTY
 STATION: 702+82.00 -L RT-
 SHEET 3 OF 3

Dewberry
 2610 WYCLIFF ROAD
 SUITE 410
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 NC COA No. F-0929

NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 030046
 ENGINEER MATTHEW PAYNE

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 INTEGRAL END BENT 2
 WING WALL DETAILS

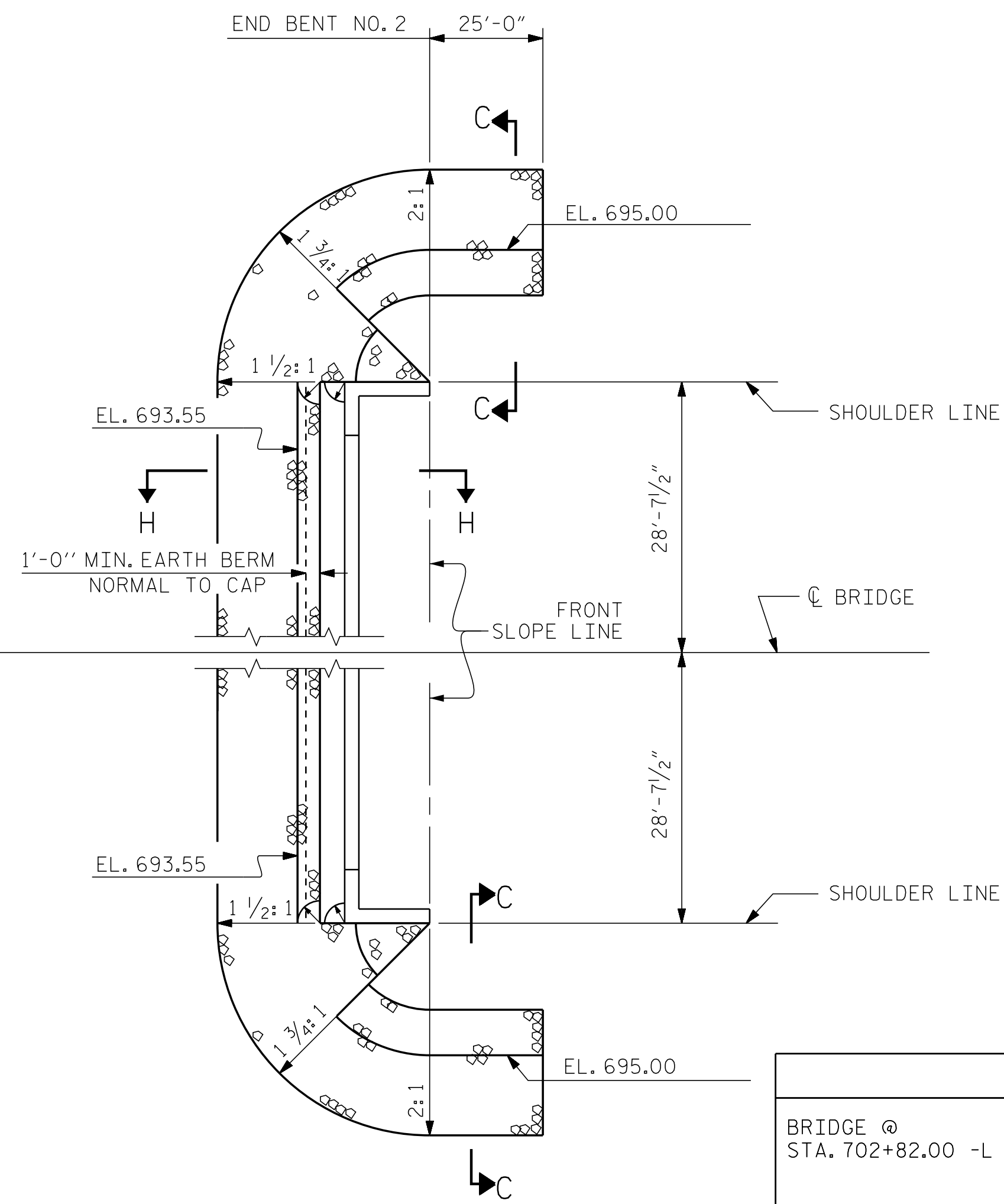
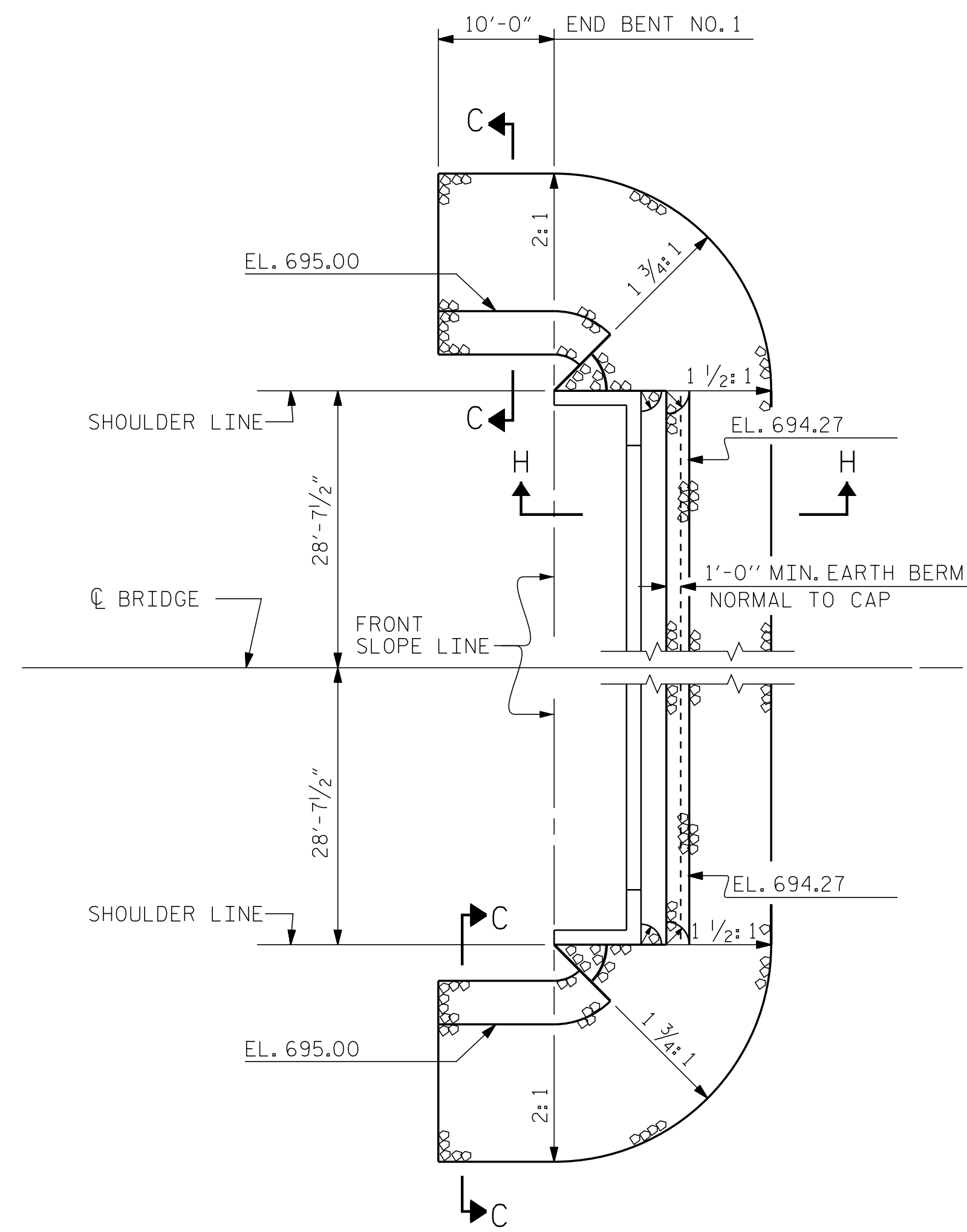
DRAWN BY: D. SMITH DATE: DEC. 18
 CHECKED BY: M. PAYNE DATE: DEC. 18
 DESIGN ENGINEER OF RECORD: M. PAYNE DATE: DEC. 18

*****SYSTEM*****
 *****SD/CN*****
 *****USERNAME*****

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-31
1			3			TOTAL SHEETS
2			4			34

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

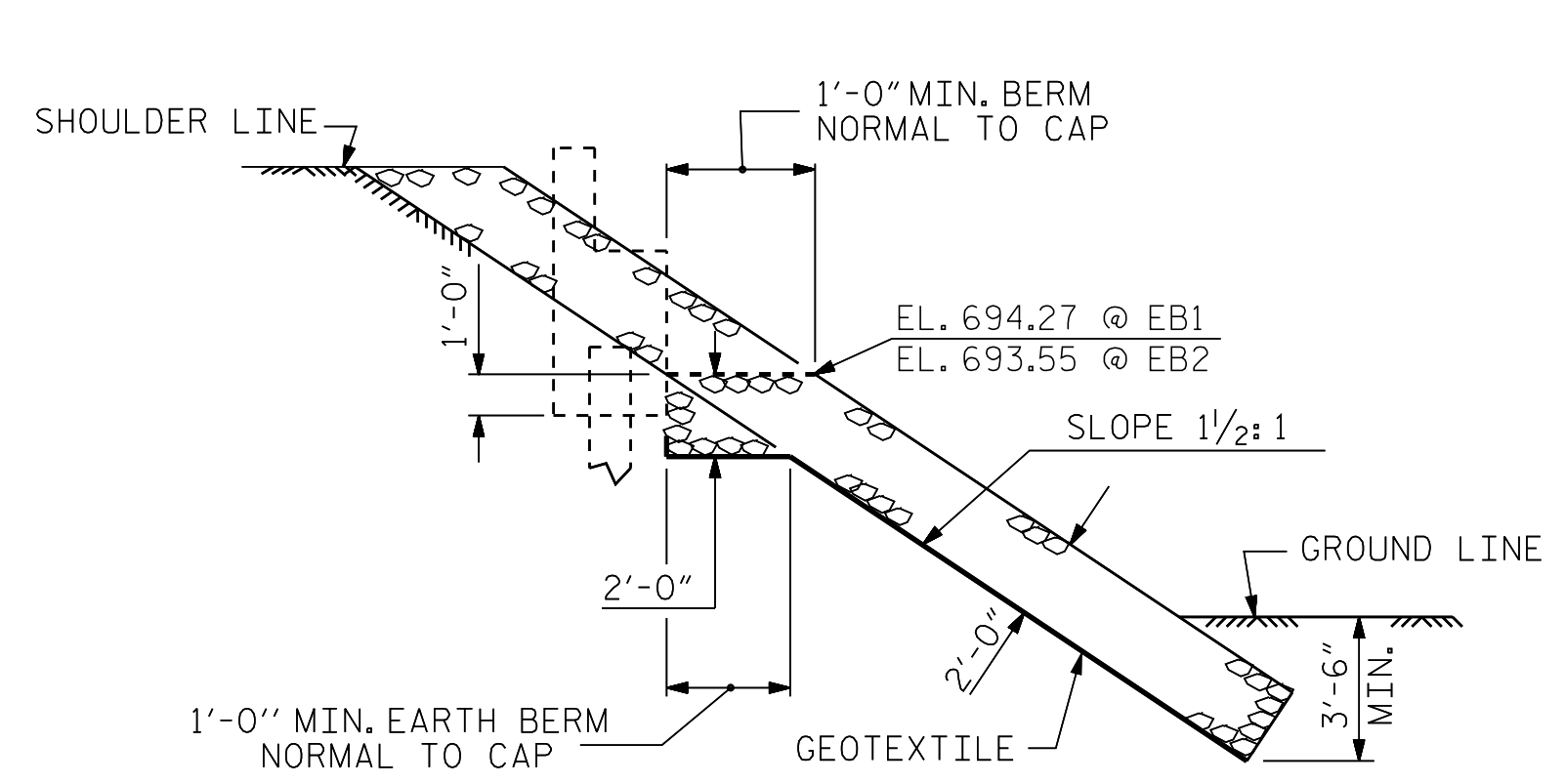
NOTES :
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.



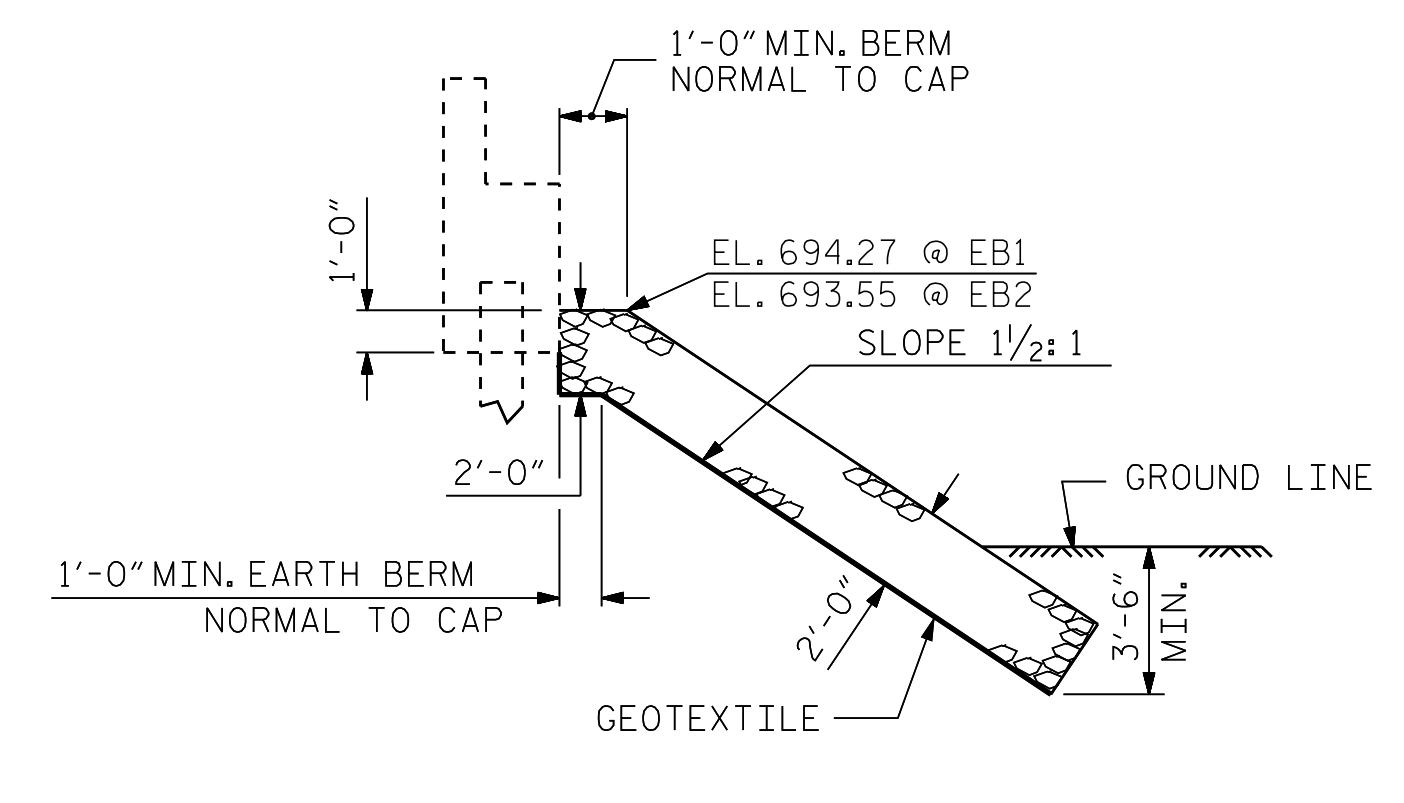
ESTIMATED QUANTITIES		
BRIDGE @ STA. 702+82.00 -L RT-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	195	216
END BENT 2	237	263

SHOULDER RIP RAP IS HIGHER THAN BERM RIP RAP

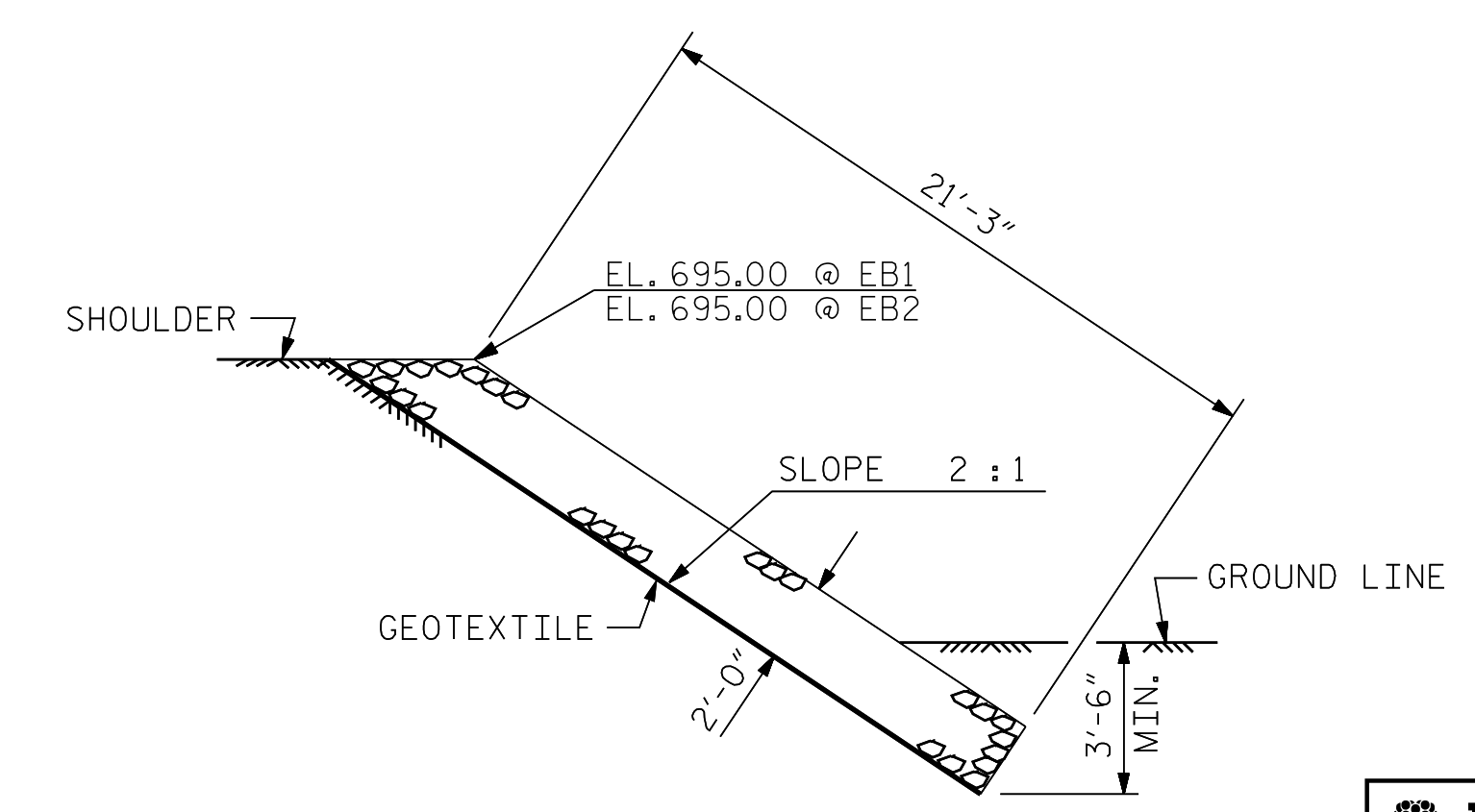
BERM RIP RAPPED



SECTION H-H



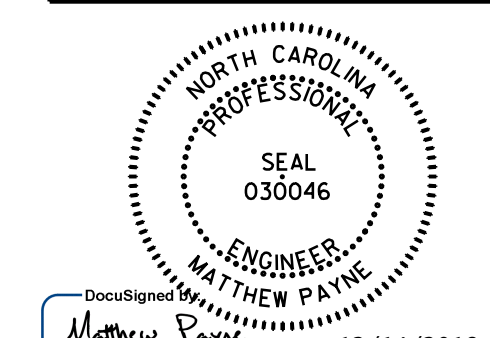
SECTION C-C
BERM RIP RAPPED



SECTION C-C

PROJECT NO. I-5823
DAVIE COUNTY
STATION: 702+82.00 -L RT-

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
RIP RAP DETAILS

DRAWN BY : D. SMITH DATE : DEC. 18
CHECKED BY : M. PAYNE DATE : DEC. 18
DESIGN ENGINEER OF RECORD: M. PAYNE DATE : DEC. 18

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

REVISIONS						SHEET NO. S2-32
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 34
2			4			

*****SYSTEM*****
*****SDGN*****
*****USERNAME*****

NOTES

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

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

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

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

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

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

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

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

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

BILL OF MATERIAL

FOR ONE APPROACH SLAB (2 REQ'D)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	25	#4	STR	49'-0"	819
A2	25	#4	STR	49'-0"	819
* B1	98	#5	STR	24'-8"	2,522
B2	98	#6	STR	24'-8"	3,631

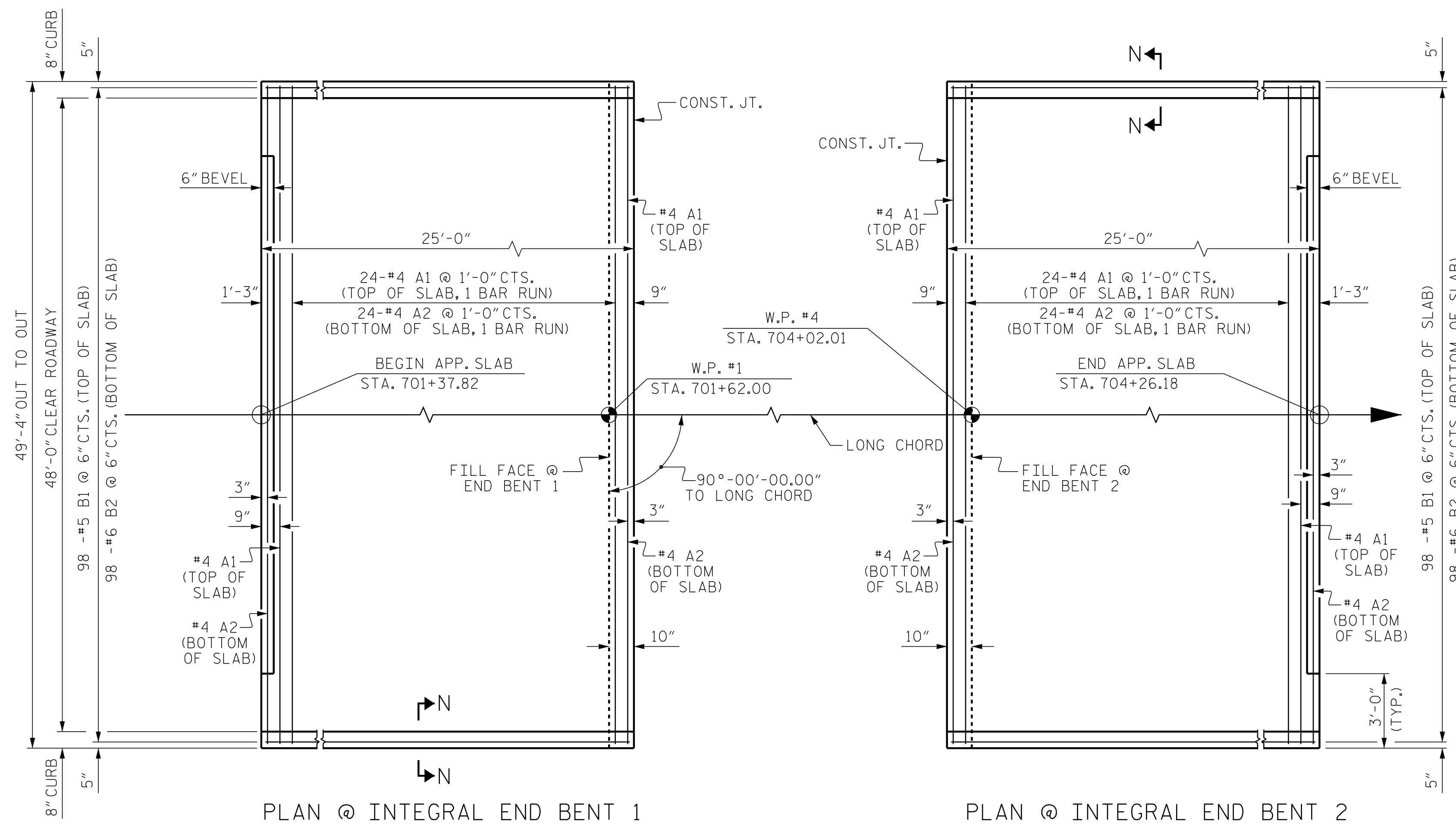
REINFORCING STEEL LBS. 4,450

* EPOXY COATED REINFORCING STEEL LBS. 3,341

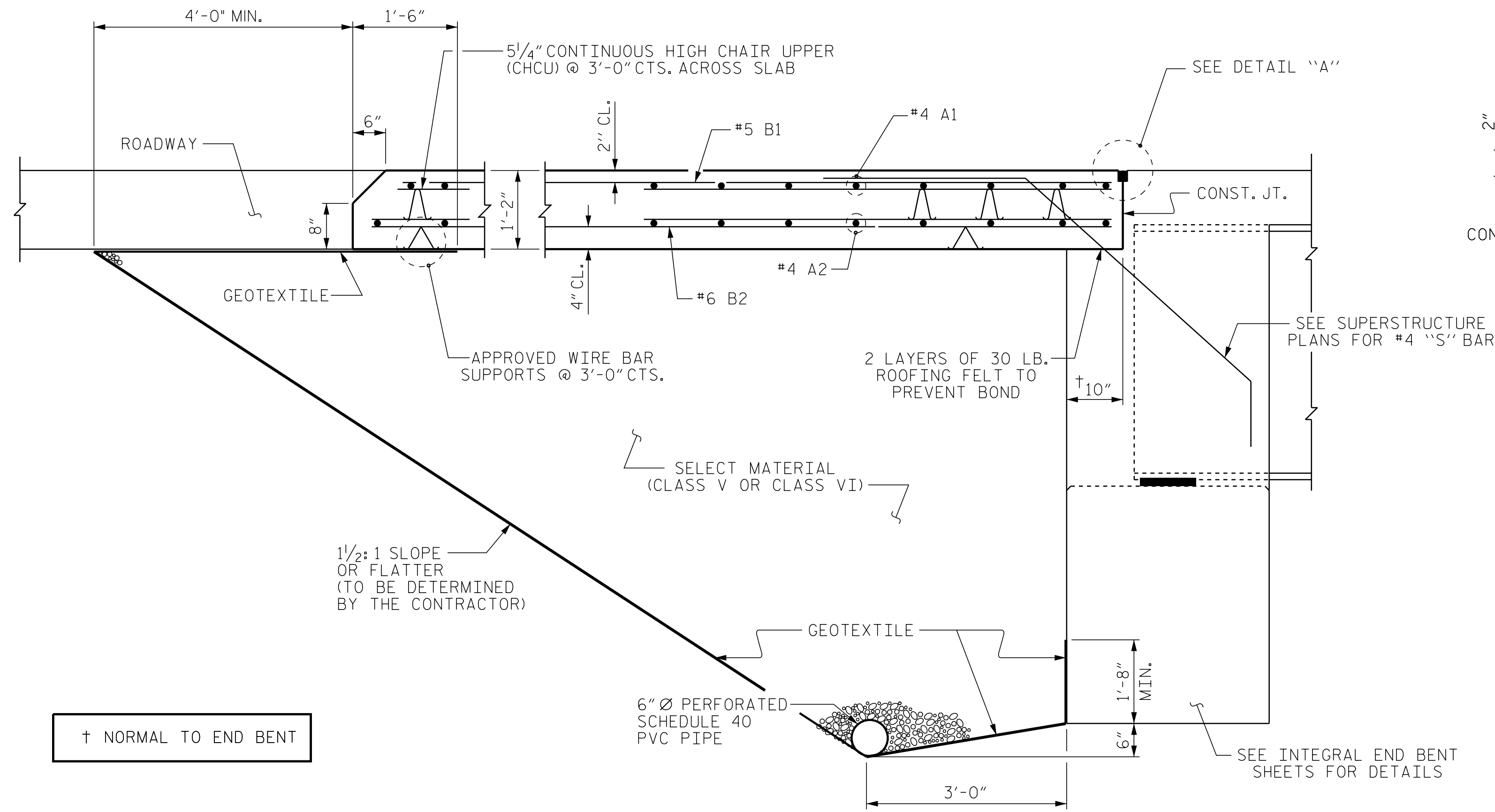
CLASS AA CONCRETE C. Y. 53

SPLICE LENGTHS

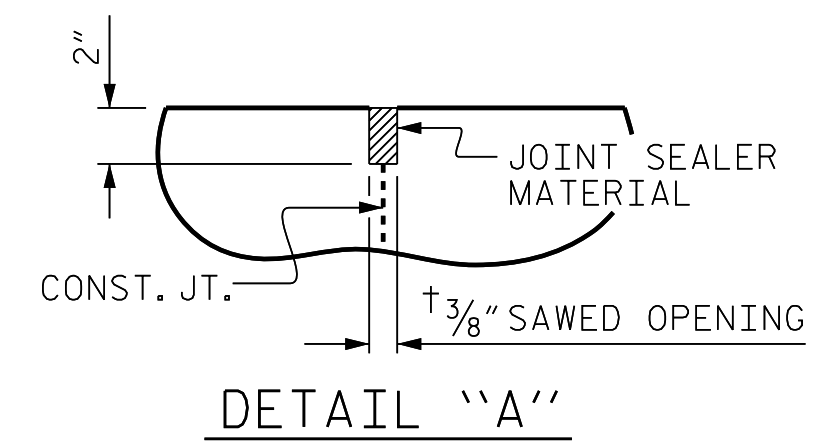
BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	1'-9"
#5	2'-6"	2'-2"
#6	3'-10"	2'-7"



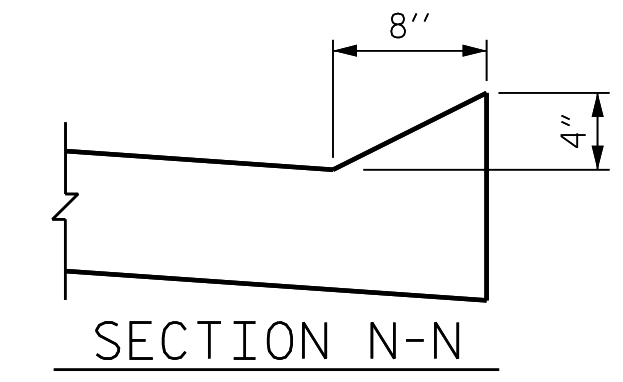
PLAN @ INTEGRAL END BENT 1 PLAN @ INTEGRAL END BENT 2
DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



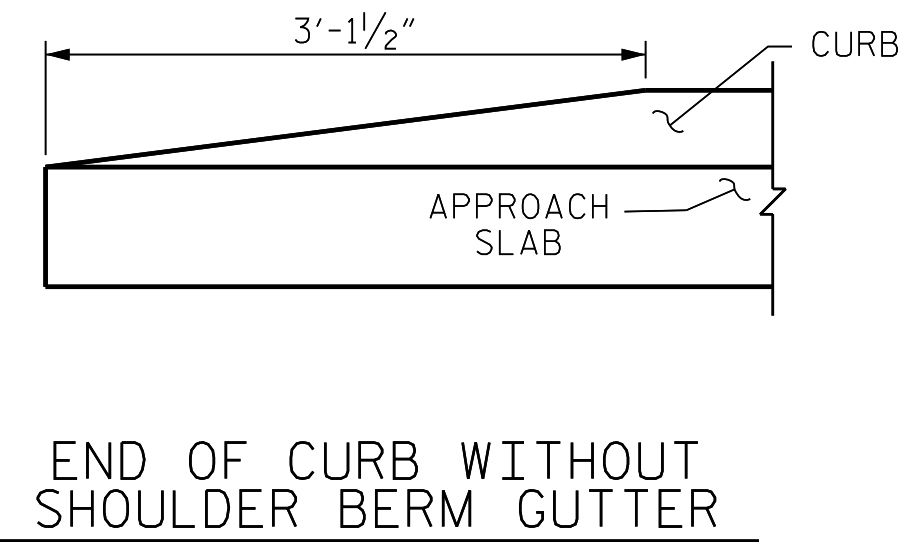
SECTION THRU SLAB
(TYPE I - STANDARD APPROACH FILL)



DETAIL "A"



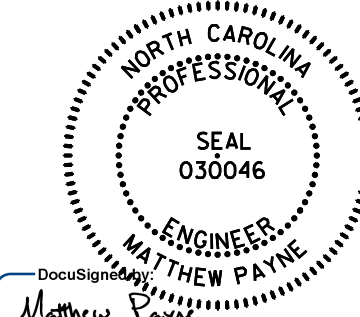
SECTION N=N



END OF CURB WITHOUT SHOULDER BERM GUTTER

PROJECT NO. I-5823
DAVIE COUNTY
STATION: 702+82.00 -L RT-
SHEET 1 OF 2

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

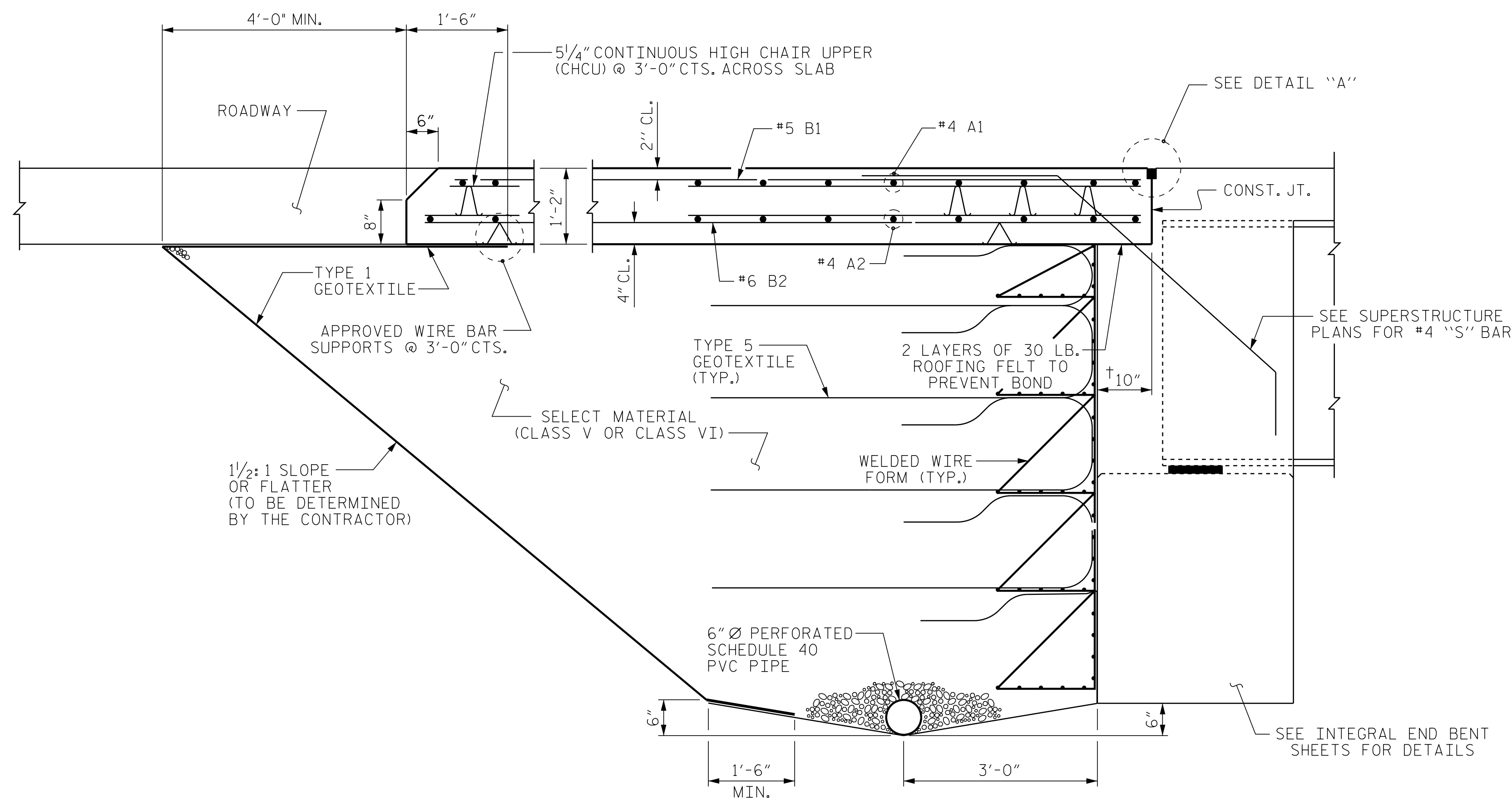


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
BRIDGE APPROACH SLAB
FOR INTEGRAL ABUTMENT
WITH FLEXIBLE PAVEMENT

DRAWN BY: D. SMITH DATE: DEC. 18
CHECKED BY: M. PAYNE DATE: DEC. 18
DESIGN ENGINEER OF RECORD: M. PAYNE DATE: DEC. 18

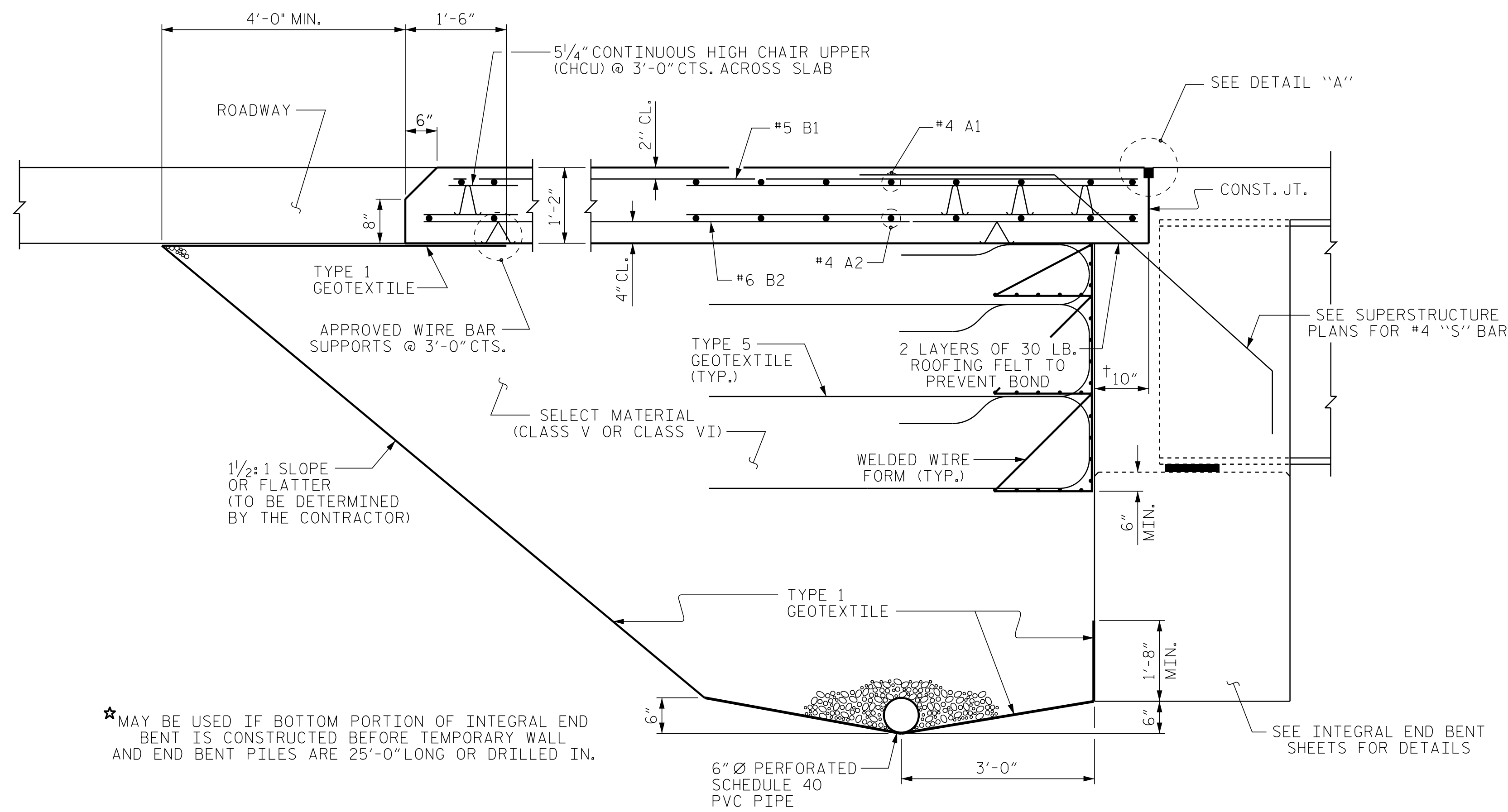
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-33
1			3			TOTAL SHEETS
2			4			34

*****SYSTEM*****
*****SDCN*****
*****USERNAME*****



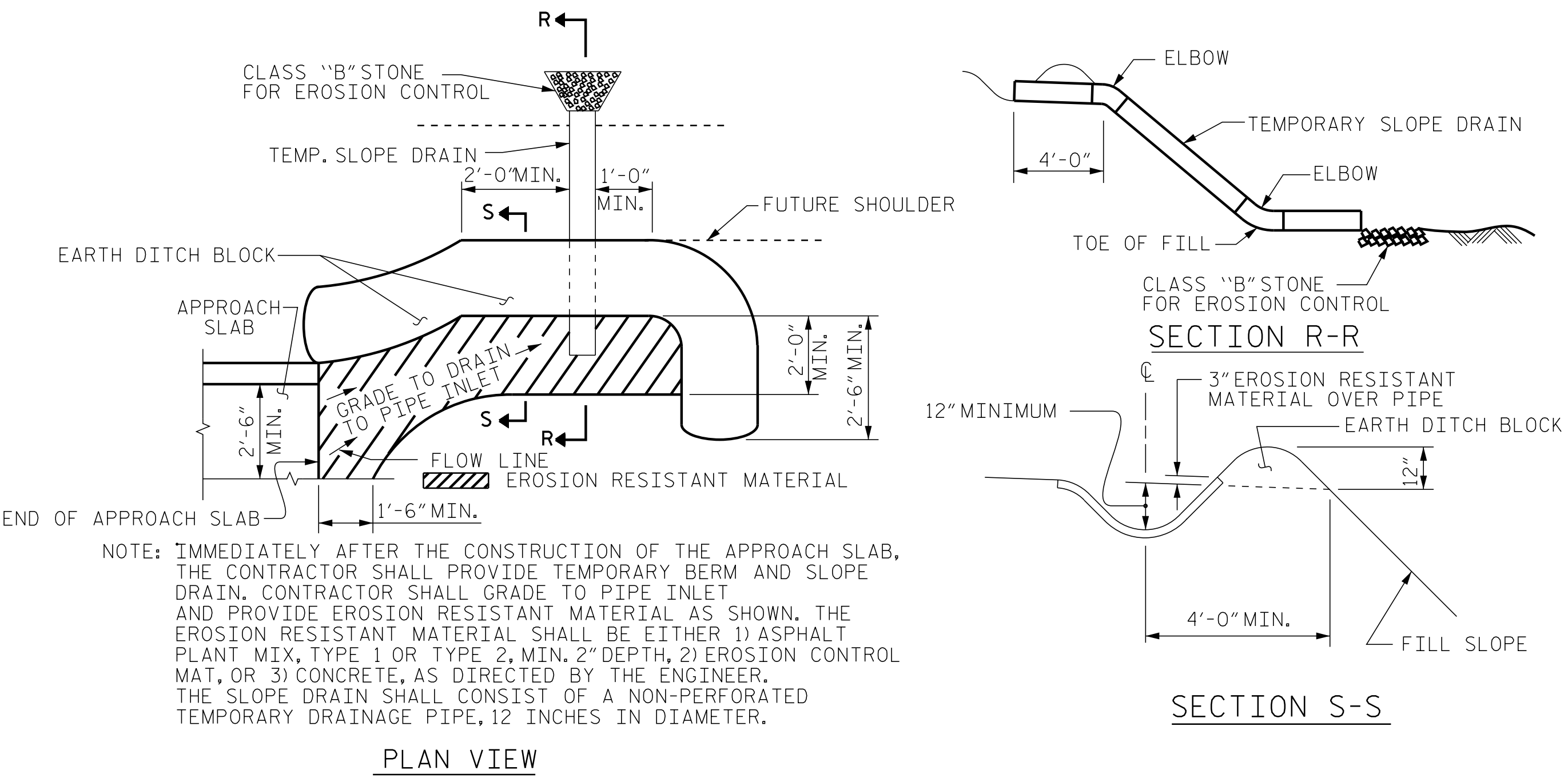
SECTION THRU SLAB

(TYPE A - ALTERNATE APPROACH FILL)



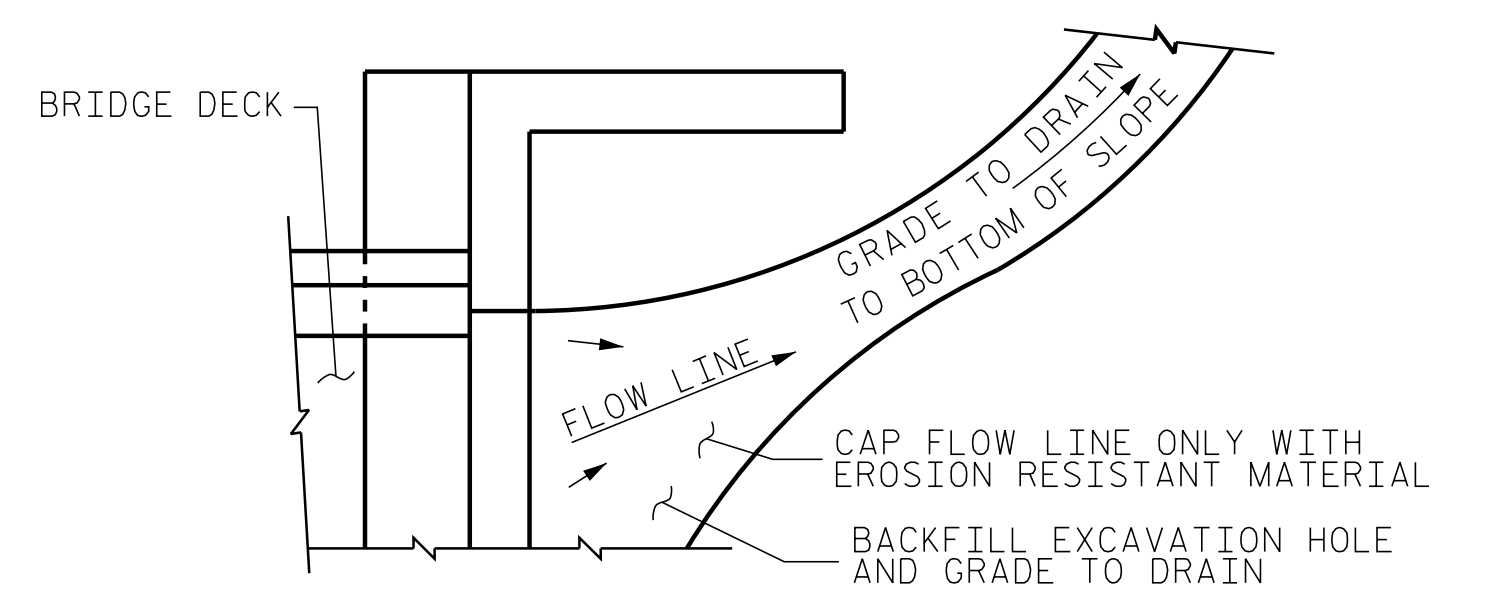
SECTION THRU SLAB

(TYPE A - ALTERNATE APPROACH FILL)



TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



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

NOTES

- APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.
- FOR TEMPORARY GEOTEXTILE WALL INCLUDING GEOTEXTILE, 6" Ø DRAINAGE PIPE, WELDED WIRE FORM, AND SELECT MATERIAL, SEE ROADWAY PLANS.
- GEOTEXTILE (TYPE 1 OR TYPE 5) SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.
- SELECT MATERIAL BACKFILL (CLASS V OR CLASS VI) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.
- SELECT MATERIAL BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.
- FOR THE 6" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.
- AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.
- THE JOINT OPENING AT THE APPROACH SLAB/DECK INTERFACE SHALL BE SAWED NO MORE THAN 12 HOURS AFTER THE APPROACH SLAB IS CAST. THE JOINT SHALL BE CLEANED OF ALL DEBRIS BEFORE THE SEALANT IS APPLIED. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1028-3 OF THE STANDARD SPECIFICATIONS.

PROJECT NO. I-5823
 DAVIE COUNTY
 STATION: 702+82.00 -L RT-

SHEET 2 OF 2

Dewberry
 2610 WYCLIFF ROAD
 SUITE 410
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 NC COA No. F-0929

NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 030046
 MATTHEW PAYNE

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 BRIDGE APPROACH
 SLAB DETAILS

ASSEMBLED BY : M. PAYNE	DATE : DEC. 18
CHECKED BY : M. PEARSON	DATE : DEC. 18
DRAWN BY : TLA 10/05	REV. 12/21/11 MAA/GM
CHECKED BY : GM 5/06	REV. 6/13 MAA/GM
	REV. 12/17 MAA/THC

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

REVISIONS						SHEET NO. S2-34
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 34
2			4			

700+00 701+00 702+00 703+00 704+00

GRADE DATA -L LT-

(+)-0.3000% (-)-0.300%
 P.I. STA. = 700+54.00
 ELEV. = 702.48'
 VC = 0

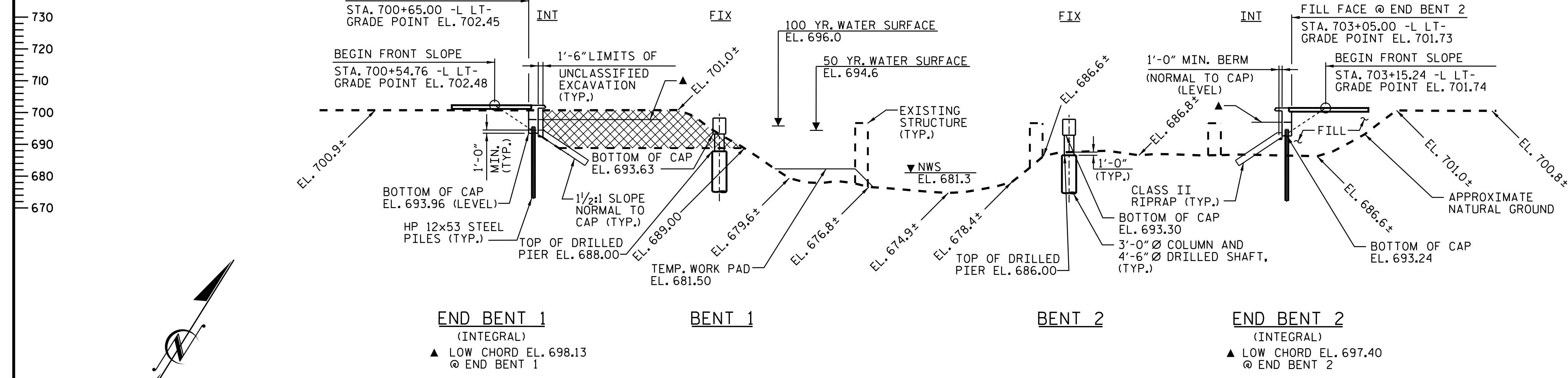
GRADE DATA -L LT-

(-)-0.300% 0.0800%
 P.I. STA. = 703+05.00
 ELEV. = 701.73'
 VC = 0

SPAN "A"

SPAN "B"

SPAN "C"



HYDRAULIC DATA

DESIGN DISCHARGE	=	16,800 CFS
FREQUENCY OF DESIGN FLOOD	=	50 YR.
DESIGN HIGH WATER ELEVATION	=	694.6
DRAINAGE AREA	=	194 SQ.MI.
BASIC DISCHARGE (Q100)	=	20,089 CFS
BASIC HIGH WATER ELEVATION	=	696.0

OVERTOPPING FLOOD DATA

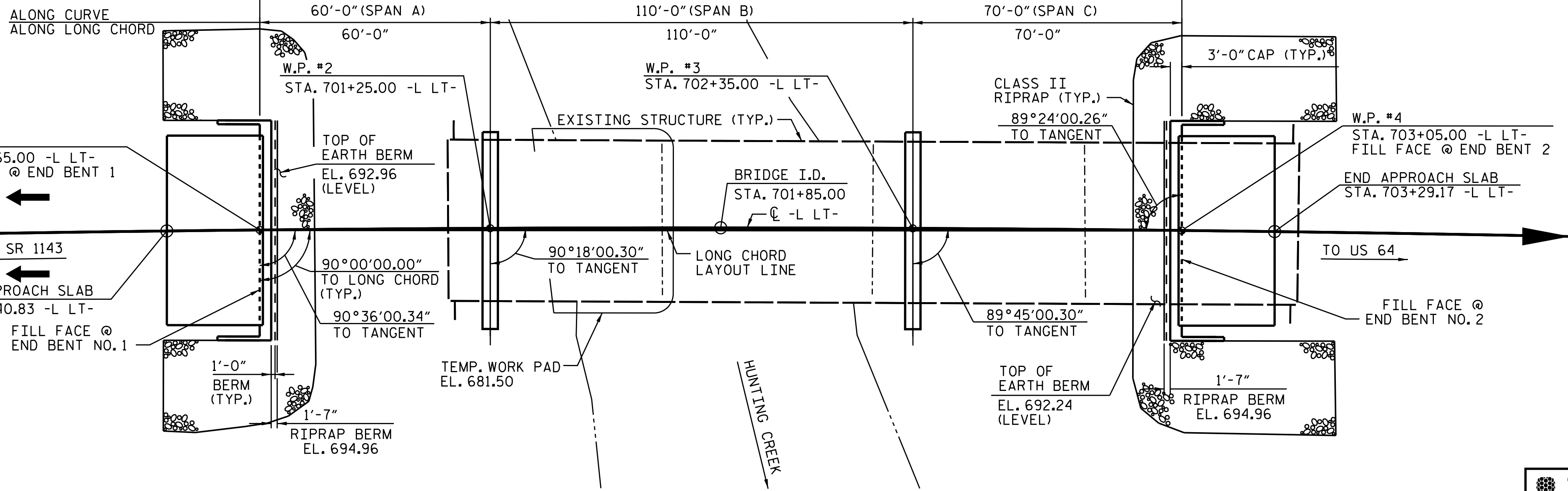
OVERTOPPING DISCHARGE	=	25,100 CFS
FREQUENCY OF OVERTOPPING FLOOD	=	+500 YR.
OVERTOPPING FLOOD ELEVATION	=	700.0

KEY

UNCLASSIFIED STRUCTURE EXCAVATION

CURVE DATA -L LT-

PI STA. 711+08.79
 $\Delta = 13^\circ 23' 16.1''$ (RT.)
 $D = 0^\circ 30' 00.0''$
 $L = 2,677.56'$
 $T = 1,344.90'$
 $R = 11,459.16'$



I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

PROJECT NO. I-5823
 DAVIE COUNTY
 STATION: 701+85.00 -L LT-

REPLACES BRIDGE NO. 32

Dewberry
 2610 WYCLIFF ROAD
 SUITE 410
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 NC COA No. F-0929

NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 030046
 MATTHEW PAYNE
 12/14/2018

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

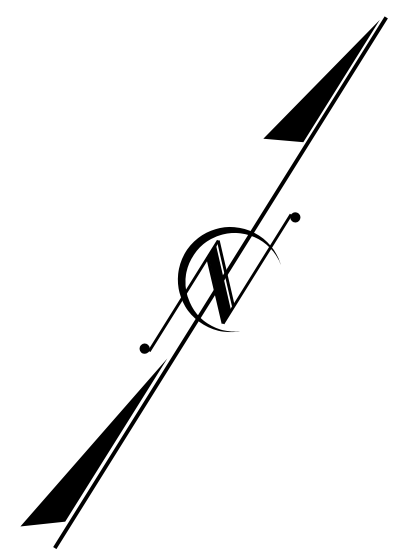
GENERAL DRAWING
 FOR BRIDGE ON I-40 WB
 OVER HUNTING CREEK
 BETWEEN SR 1143 AND US 64
 (INTERSTATE TRAFFIC)

DRAWN BY: D. SMITH DATE: DEC. 18
 CHECKED BY: M. PAYNE DATE: DEC. 18
 DESIGN ENGINEER OF RECORD: M. PAYNE DATE: DEC. 18

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

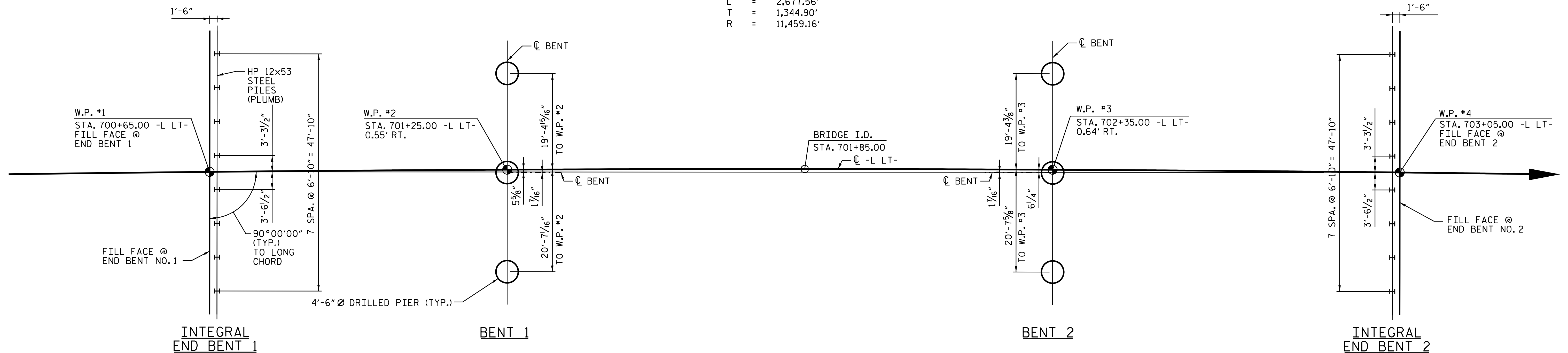
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-1
1			3			TOTAL SHEETS
2			4			34

*****SYTIME*****
 *****SDON*****
 *****USERNAME*****



CURVE DATA

PI STA. 711+08.79 -L LT-
 Δ = 13°-23'-16.1" (RT.)
 D = 0°-30'-00.0"
 L = 2,677.56'
 T = 1,344.90'
 R = 11,459.16'



FOUNDATION LAYOUT

(DIMENSIONS LOCATING PILES ARE SHOWN TO THE PILE CENTERLINE)

NOTES

- FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
- PILES AT END BENT NO.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 80 TONS PER PILE.
- DRIVE PILES AT END BENT NO.1 TO A REQUIRED DRIVING RESISTANCE OF 135 TONS PER PILE.
- FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
- DRILLED PIERS AT BENT NO.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 610 TONS/PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 30 TSF.
- INSTALL DRILLED PIERS AT BENT NO.1 TO A TIP ELEVATION NO HIGHER THAN 645 FT(LT); 645 FT(CT); 648 FT(RT), SATISFY THE REQUIRED TIP RESISTANCE AND HAVE A PENETRATION OF AT LEAST 12 FT INTO WEATHERED ROCK.
- PERMANENT STEEL CASINGS MAY BE REQUIRED FOR DRILLED PIERS AT BENT NO.1. IF REQUIRED, DO NOT EXTEND PERMANENT CASINGS BELOW ELEVATION 669 FT WITHOUT PRIOR APPROVAL FROM THE ENGINEER.
- THE SCOUR CRITICAL ELEVATION FOR BENT NO.1 IS 664 FT. THE SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.
- TO VERIFY STRATA, STANDARD PENETRATION TESTING (SPT) IS REQUIRED FOR DRILLED PIERS AT BENT NO.1. PERFORM SPTS AT ELEVATION 657.5 FT(LT), 657.5 FT(CT), AND 660.4 FT(RT) TO VERIFY TOP OF PARTIALLY WEATHERED ROCK AND AGAIN AT THE FINAL TIP ELEVATION INDICATED. FOR SPT TESTING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
- DRILLED PIERS AT BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 610 TONS/PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 30 TSF.
- INSTALL DRILLED PIERS AT BENT NO.2 TO A TIP ELEVATION NO HIGHER THAN 653 FT (LT); 649 FT (CT); 649 FT (RT), SATISFY THE REQUIRED TIP RESISTANCE AND HAVE A PENETRATION OF AT LEAST 12 FT INTO WEATHERED ROCK.
- PERMANENT STEEL CASINGS MAY BE REQUIRED FOR DRILLED PIERS AT BENT NO.2. IF REQUIRED, DO NOT EXTEND PERMANENT CASINGS BELOW ELEVATION 667 FT WITHOUT PRIOR APPROVAL FROM THE ENGINEER.
- THE SCOUR CRITICAL ELEVATION FOR BENT NO.2 IS 662 FT. THE SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.
- TO VERIFY BEARING STRATA, STANDARD PENETRATION TESTING (SPT) IS REQUIRED FOR DRILLED PIERS AT BENT NO.2. PERFORM SPTS AT ELEVATION 665.7 FT (LT), 661.5 FT (CT), AND 661.5 FT (RT) TO VERIFY TOP OF PARTIALLY WEATHERED ROCK AND AGAIN AT THE FINAL TIP ELEVATION INDICATED. FOR SPT TESTING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
- SID INSPECTIONS ARE REQUIRED FOR DRILLED PIERS AT BENTS NO 1 AND 2. FOR SID INSPECTIONS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
- CSL TUBES ARE REQUIRED AND CSL TESTING MAY BE REQUIRED FOR THE DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR CSL TESTING. FOR CSL TESTING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
- PILES AT END BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 80 TONS PER PILE.
- DRIVE PILES AT END BENT NO.2 TO A REQUIRED DRIVING RESISTANCE OF 135 TONS PER PILE.

PROJECT NO. I-5823

DAVIE COUNTY

STATION: 701+85.00 -L LT-

SHEET 2 OF 4

Dewberry
 2610 WYCLIFF ROAD
 SUITE 410
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 NC COA No. F-09229

NORTH CAROLINA
 PROFESSIONAL
 SEAL
 030046
 ENGINEER
 MATTHEW PAYNE

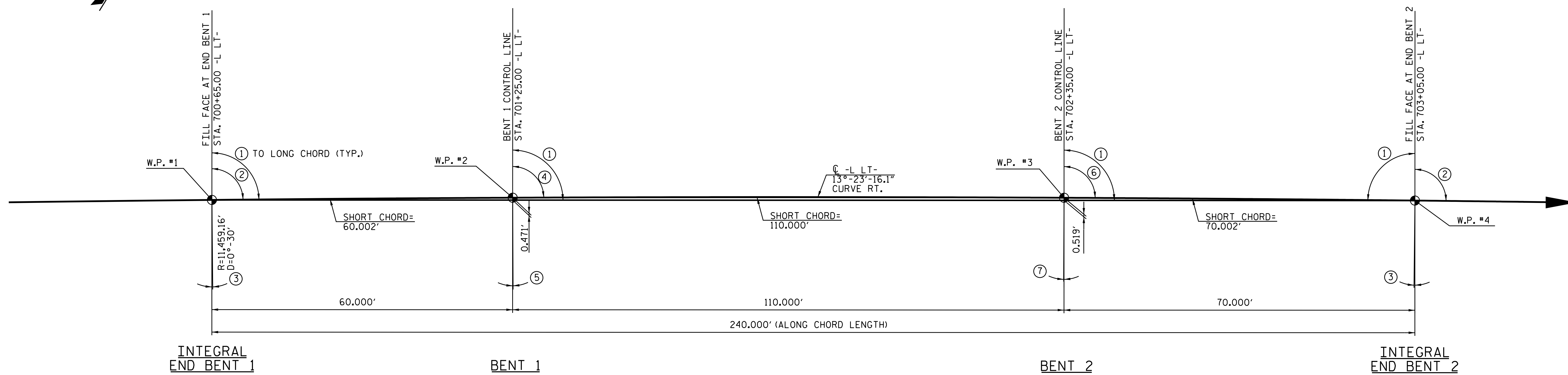
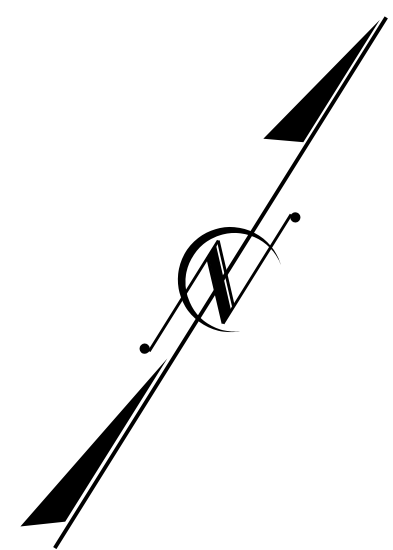
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 FOR BRIDGE ON I-40 WB
 OVER HUNTING CREEK
 BETWEEN SR 1143 AND US 64
 (INTERSTATE TRAFFIC)

DRAWN BY : D. SMITH DATE : DEC. 18
 CHECKED BY : M. PAYNE DATE : DEC. 18
 DESIGN ENGINEER OF RECORD: M. PAYNE DATE : DEC. 18

*****SYTIME*****
 *****SDON*****
 *****USERNAME*****

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S1-2
2			4			TOTAL SHEETS 34

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED



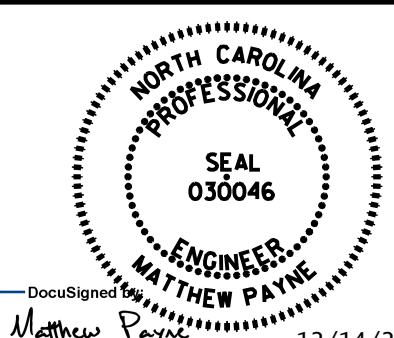
LONG CHORD LAYOUT
(ALL END BENTS AND BENTS ARE PARALLEL)

ANGLES

- ① 90°-00'-00.0"
- ② 89°-23'-59.66" TANGENT TO CURVE
- ③ 00°-36'-00.34"
- ④ 89°-41'-59.70" TANGENT TO CURVE
- ⑤ 00°-18'-00.30"
- ⑥ 90°-14'-59.70" TANGENT TO CURVE
- ⑦ 00°-14'-59.70"

PROJECT NO. I-5823
DAVIE COUNTY
 STATION: 701+85.00 -L LT-

Dewberry
 2610 WYCLIFF ROAD
 SUITE 410
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 NC COA No. F-0929



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

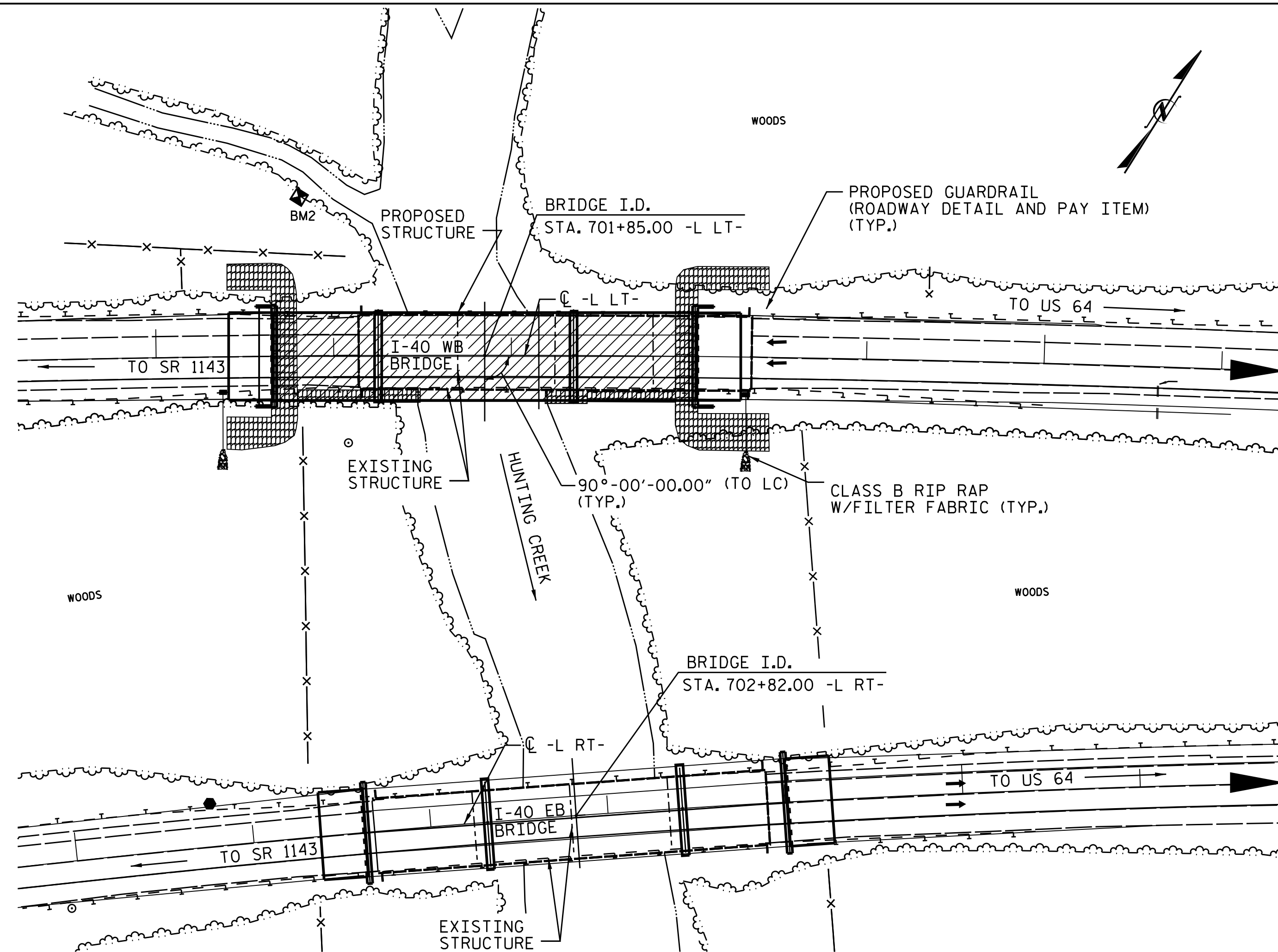
GENERAL DRAWING
 FOR BRIDGE ON I-40 WB
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DRAWN BY : D. SMITH DATE : DEC. 18
 CHECKED BY : M. PAYNE DATE : DEC. 18
 DESIGN ENGINEER OF RECORD: M. PAYNE DATE : DEC. 18

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			34
2			4			

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

*****SYSTEMS*****
 *****SDON*****
 *****USERNAME*****



LOCATION SKETCH

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS

GENERAL NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

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.

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

AT THE CONTRACTOR'S OPTION, AND UPON REMOVAL OF THE CAUSEWAY, THE CLASS II RIP RAP USED IN THE CAUSEWAY MAY BE PLACED AS RIP RAP SLOPE PROTECTION. SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS AT STATION 701+85.00 -L LT-.

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 50W AND PAINTED IN ACCORDANCE WITH SYSTEM 5 OR SYSTEM 6 OF THE STRUCTURAL STEEL SHOP COATINGS PROGRAM AND SECTION 442-8 OF THE STANDARD SPECIFICATIONS UNLESS OTHERWISE NOTED ON THE PLANS.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 701+85.00 -L LT-."

THE CLASS AA CONCRETE IN THE BRIDGE DECK SHALL CONTAIN FLY ASH OR GROUND GRANULATED BLAST FURNACE SLAG AT THE SUBSTITUTION RATE SPECIFIED IN ARTICLE 1024-1 AND IN ACCORDANCE WITH ARTICLES 1024-5 AND 1024-6 OF THE STANDARD SPECIFICATIONS. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE COST OF THE REINFORCED CONCRETE DECK SLAB.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 75 FT EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE SAMPLE BARS SHOULD COME FROM STEEL ACTUALLY USED IN THE PROJECT AND THE SAMPLE BARS SHOULD BE REPLACED BY SPLICED BARS AS SPECIFIED IN THE SAMPLE BAR REPLACEMENT CHART. PAYMENT FOR THE SAMPLE BARS AND REPLACEMENT REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

THE EXISTING STRUCTURE CONSISTING OF STEEL GIRDERS, 4 SPANS, 220 FT LONG; 42 FT WIDE WITH REINFORCED CONCRETE DECK; ON CAST-IN-PLACE CONCRETE END BENTS AND INTERIOR BENTS SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT. FOR REMOVAL OF EXISTING STRUCTURE, SEE SPECIAL PROVISION.

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

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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

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

SAMPLE BAR REPLACEMENT	
SIZE	LENGTH
#3	6'-2"
#4	7'-4"
#5	8'-6"
#6	9'-8"
#7	10'-10"
#8	12'-0"
#9	13'-2"
#10	14'-6"
#11	15'-10"

NOTE: SAMPLE BAR REPLACEMENT LENGTHS ARE BASED ON 30 INCH (SAMPLE LENGTH) PLUS TWO SPLICE LENGTHS AND fy=60 KSI.

PROJECT NO. I-5823
 DAVIE COUNTY
 STATION: 701+85.00 -L LT-

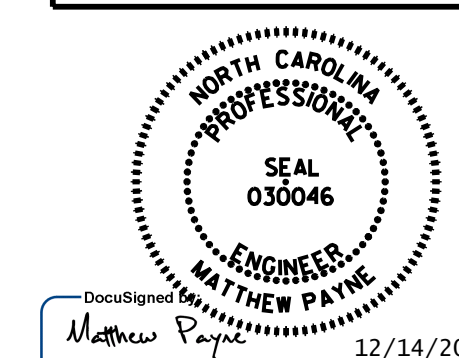
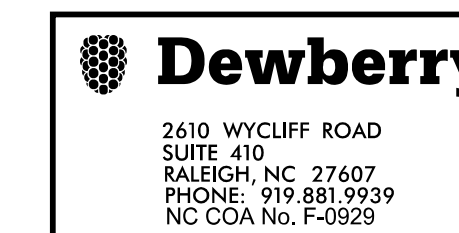
TOTAL BILL OF MATERIAL

	CONST., MAINT. & REMOVAL TEMP. ACCESS AT STA 701+85.00 -L LT-	REMOVAL OF EXISTING STRUCTURE AT STA 701+85.00 -L LT-	ASBESTOS ASSESSEMENT	4'-6" DIA. DRILLED PIER IN SOIL	4'-6" DIA. DRILLED PIER NOT IN SOIL	PERMANENT STEEL CASING FOR 4'-6" DIA DRILLED PIER	SID INSPECTIONS	SPT TESTING	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION AT STA 701+85.00 -L LT-	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS
	LUMP SUM	LUMP SUM	LUMP SUM	LF	LF	LF	EA	EA	EA	LUMP SUM	SF	SF	CY	LUMP SUM
SUPERSTRUCTURE	—	—	—	—	—	—	—	—	—	—	12,300	13,840	—	—
INT. END BENT 1	—	—	—	—	—	—	—	—	—	—	—	—	38.5	—
BENT 1	—	—	—	98.0	28.0	57.0	3	6	—	—	—	—	38.4	—
BENT 2	—	—	—	75.0	32.0	57.0	3	6	—	—	—	—	39.7	—
INT. END BENT 2	—	—	—	—	—	—	—	—	—	—	—	—	38.5	—
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	173.0	60.0	114.0	6	12	1	LUMP SUM	12,300	13,840	155.1	LUMP SUM

	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	STRUCTURAL STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP12X53	HP12X53 STEEL PILES	CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS
	LBS	LBS	LBS	APPROX. LBS	EA	EA	LF	TON	SY	LUMP SUM
SUPERSTRUCTURE	45,047	55,392	—	493,424	—	—	476.7	—	—	LUMP SUM
INT. END BENT 1	7,079	—	—	—	8	8	280	232	258	—
BENT 1	18,783	—	4,183	—	—	—	—	—	—	—
BENT 2	17,942	—	3,747	—	—	—	—	—	—	—
INT. END BENT 2	7,079	—	—	—	8	8	340	417	463	—
TOTAL	95,930	55,392	7,930	493,424	16	16	620	958	871	LUMP SUM

DRAWN BY: D. SMITH DATE: DEC. 18
 CHECKED BY: M. PAYNE DATE: DEC. 18
 DESIGN ENGINEER OF RECORD: M. PAYNE DATE: DEC. 18

*****SYTIME*****
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 *****SYTIME*****



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE ON I-40 WB
 OVER HUNTING CREEK
 BETWEEN SR 1143 AND US 64
 (INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S1-4
2			4			TOTAL SHEETS 34

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR STEEL GIRDERS

LEVEL	VEHICLE	WEIGHT (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE						SERVICE II LIMIT STATE						COMMENT NUMBER						
						MOMENT			SHEAR			MOMENT			SHEAR									
						LIVE-LOAD FACTORS (γ _{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVE-LOAD FACTORS (γ _{LL})		DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	①	1.675	--	1.75	0.607	1.675	B	EL	110	0.731	4.276	B	I	110	1.30	0.607	2.428	B	EL	53.5		
	HL-93 (OPERATING)	N/A		1.807	--	1.35	0.607	1.807	B	EL	0	0.731	5.543	B	I	110	1.00							
	HS-20 (INVENTORY)	36.000	②	2.425	87,300	1.75	0.607	2.425	B	EL	0	0.731	6.057	B	I	0.1	1.30	0.607	5.424	B	EL	53.5		
	HS-20 (OPERATING)	36.000		3.472	124,992	1.35	0.607	3.472	B	EL	110	0.731	7.852	B	I	0.1	1.00							
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SH	12.500		9.427	117,838	1.40	0.607	9.427	B	EL	110	0.731	20.713	B	I	110	1.30	0.607	13.555	B	EL	53.5	
		S3C	21.500		5.622	120,873	1.40	0.607	5.622	B	EL	110	0.731	12.698	B	I	110	1.30	0.607	9.066	B	EL	53.5	
		S3A	22.750		4.763	108,358	1.40	0.607	4.763	B	EL	0	0.731	11.909	B	I	0.1	1.30	0.607	9.973	B	EL	53.5	
		S4A	26.750		4.773	127,678	1.40	0.607	4.773	B	EL	110	0.731	10.931	B	I	0.1	1.30	0.607	8.278	B	EL	53.5	
		S5A	30.500		3.978	121,329	1.40	0.607	3.978	B	EL	0	0.731	10.482	B	I	110	1.30	0.607	9.311	B	EL	53.5	
		S6A	34.500		4.625	159,563	1.40	0.607	4.625	B	EL	110	0.731	10.448	B	I	0.1	1.30	0.607	10.222	B	EL	53.5	
		S7B	38.500		3.872	149,072	1.40	0.607	3.872	B	EL	0	0.731	10.402	B	I	0.1	1.30	0.607	8.634	B	EL	53.5	
		S7A	40.000		4.853	194,120	1.40	0.607	4.853	B	EL	110	0.731	10.410	B	I	0.1	1.30	0.607	8.830	B	EL	53.5	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	T4A	28.250		4.784	135,148	1.40	0.607	4.784	B	EL	110	0.731	11.125	B	I	110	1.30	0.607	8.701	B	EL	53.5	
		T5B	32.000		4.390	140.48	1.40	0.607	4.390	B	EL	110	0.731	10.259	B	I	0.1	1.30	0.607	7.793	B	EL	53.5	
		T6A	36.000	③	3.854	138,744	1.40	0.607	3.854	B	EL	0	0.731	10.733	B	I	110	1.30	0.607	9.843	B	EL	53.5	
		T7A	40.000		4.735	189,400	1.40	0.607	4.735	B	EL	110	0.731	10.719	B	I	110	1.30	0.607	8.355	B	EL	53.5	
	T7B	40.000		6.497	259,880	1.40	0.607	6.497	B	EL	110	0.731	14.795	B	I	110	1.30	0.607	13.186	B	EL	53.5		
BOLTED FIELD SPLICE	HL-93 (INVENTORY)	N/A	④	1.137	--	1.75	0.607	1.541	B	I	90.5	0.731	1.137	B	I	90.5								
FATIGUE	HL-93 (INVENTORY)	γ _{LL} =0.75		2.380																				

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE		γ _{DC}	γ _{DW}
	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 STRESS FOR SERVICE II LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

- BOLTED FIELD SPLICE AT BEAMS 3 AND 5, CONTROLS DESIGN.
- FOR FUTURE RATING EVALUATIONS, VERIFY FIELD SPLICE CAPACITY.
-
-

CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

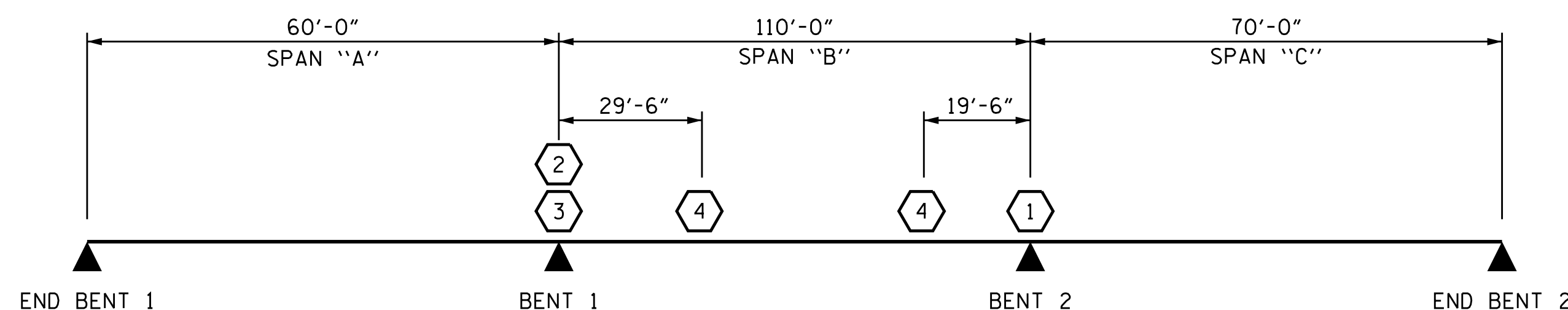
② DESIGN LOAD RATING (HS-20)

③ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



PROJECT NO. I-5823
 COUNTY DAVIE
 STATION: 701+85.00 -L LT-

Dewberry

2610 WYCLIFF ROAD
 SUITE 410
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 NC COA No. F-0929

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD

LRFR SUMMARY FOR
 STEEL GIRDERS
 (INTERSTATE TRAFFIC)

REVISIONS

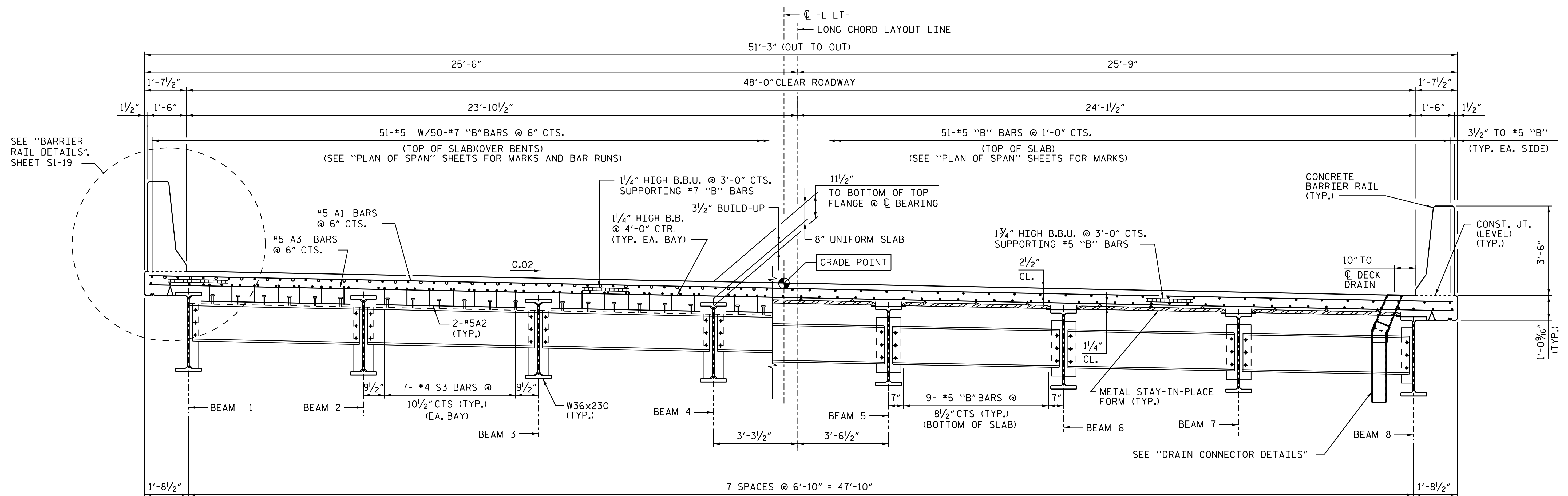
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2			4		

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SHEET NO. S1-5
 TOTAL SHEETS 34

DRAWN BY: D. SMITH DATE: DEC. 18
 CHECKED BY: M. PAYNE DATE: DEC. 18
 DESIGN ENGINEER OF RECORD: M. PAYNE DATE: DEC. 18

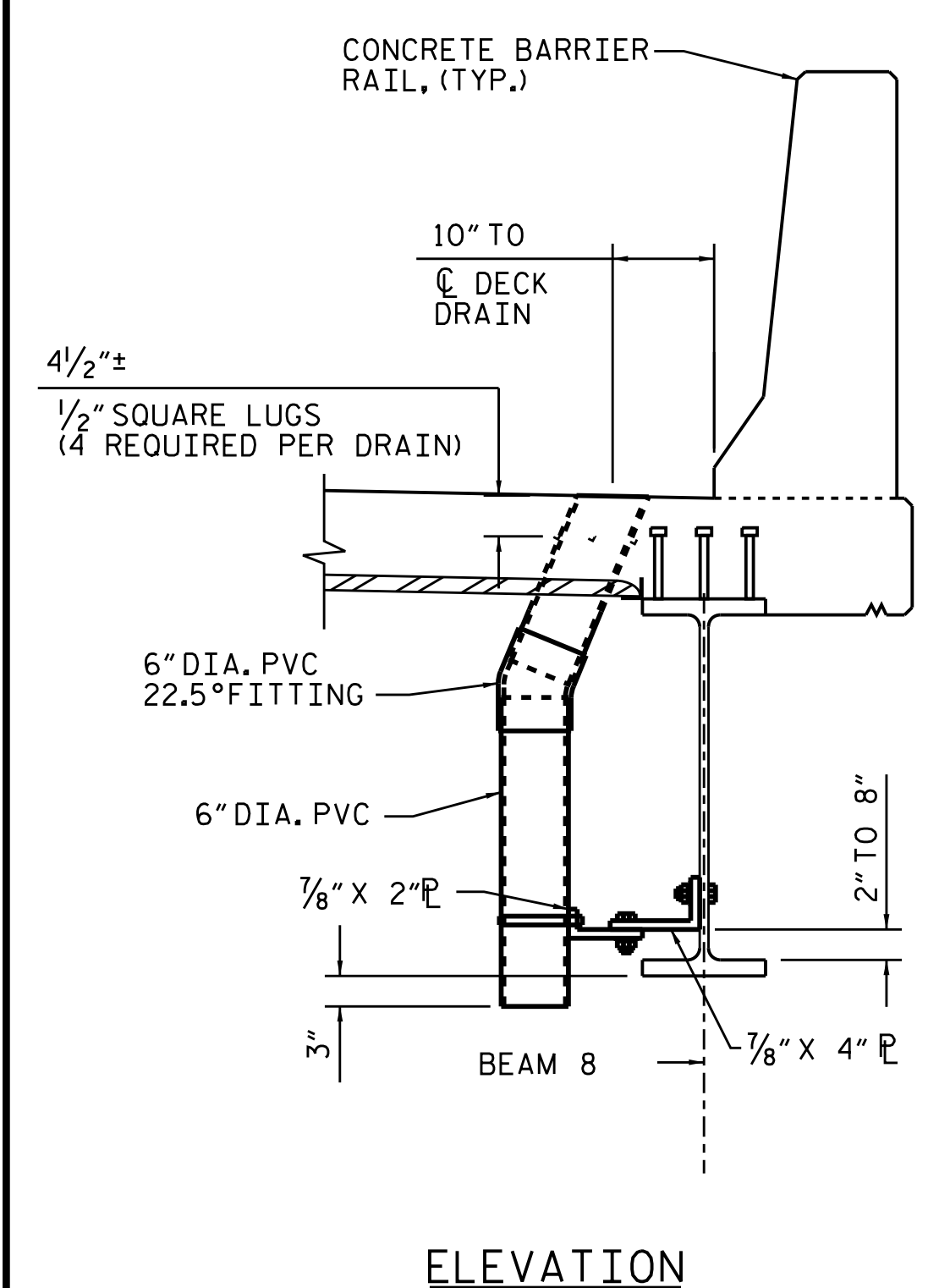
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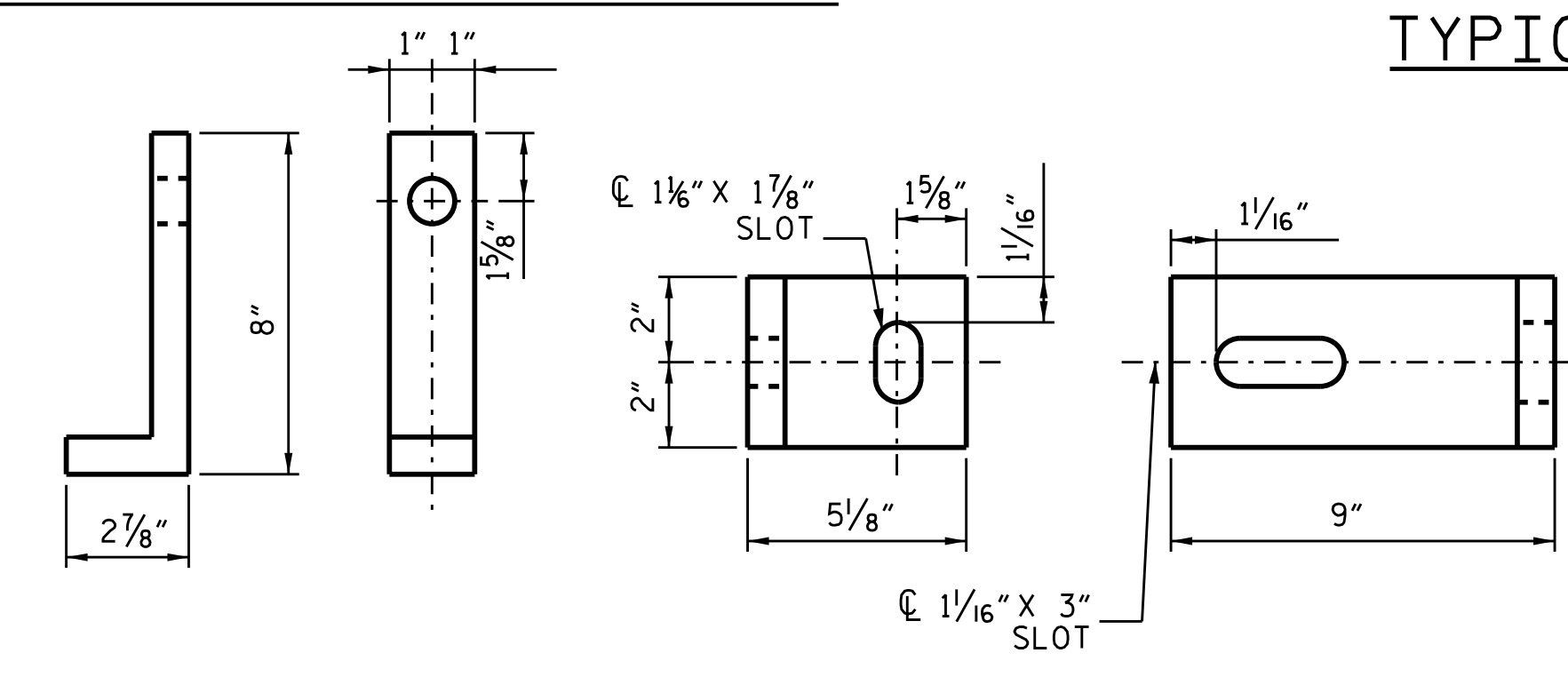
TYPICAL HALF SECTION AT BENTS

TYPICAL SECTION

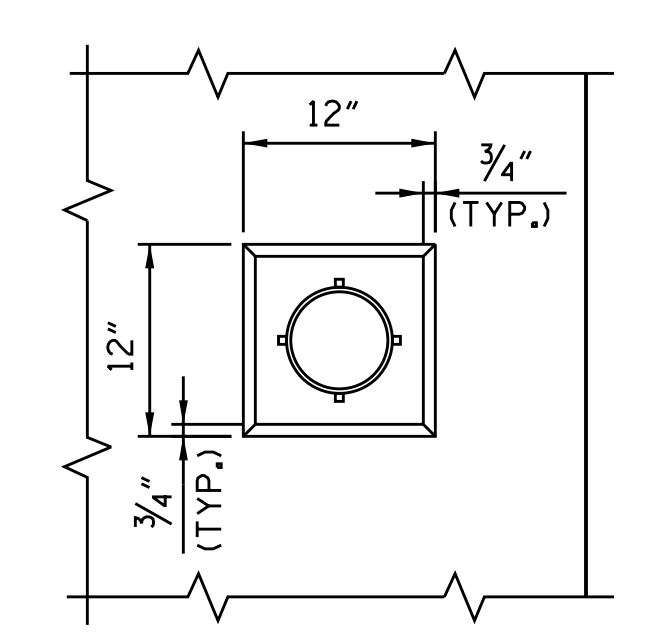
TYPICAL HALF SECTION AT INTERMEDIATE DIAPHRAGM



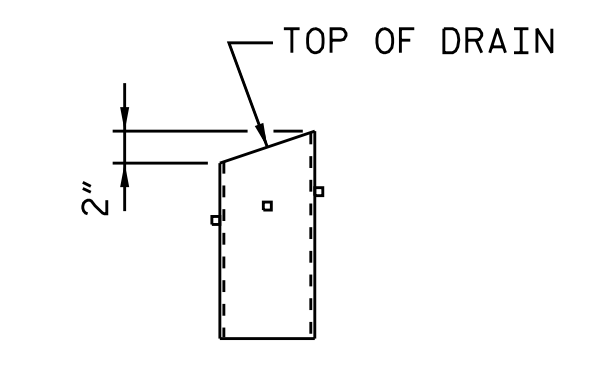
ELEVATION



CONNECTOR PLATES



PLAN OF RECESS



PIPE DETAIL

DRAIN CONNECTOR DETAILS (21 REQUIRED)

NOTES:

- PROVIDE 1/4" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE STAY-IN-PLACE METAL FORMS TO SUPPORT THE BOTTOM MAT OF "A" BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) AT 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF "A" BARS A CLEAR DISTANCE OF 2 1/2" ABOVE THE TOP OF THE REMOVABLE FORM.
- STRUCTURAL STEEL ERECTION IN A CONTINUOUS UNIT SHALL BE COMPLETE BEFORE FALSEWORK OR FORMS ARE PLACED ON THE UNIT.
- PREVIOUSLY CAST CONCRETE IN A CONTINUOUS UNIT SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI BEFORE ADDITIONAL CONCRETE IS CAST ON THE UNIT.
- BARRIER RAIL IN A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI.
- THE CONTRACTOR MAY, WHEN NECESSARY, PROPOSE A SCHEME FOR AVOIDING INTERFERENCE BETWEEN METAL STAY-IN-PLACE FORMS SUPPORTS OR FORMS AND BEAM STIFFENER OR CONNECTOR PLATES. THE PROPOSAL SHALL BE INDICATED, AS APPROPRIATE, ON EITHER STEEL WORKING DRAWINGS OR THE METAL STAY-IN-PLACE FORM WORKING DRAWINGS.
- METAL STAY-IN-PLACE FORMS AND FALSEWORK SHALL NOT BE WELDED TO BEAM FLANGES IN THE ZONES REQUIRING CHARPY V-NOTCH TEST. SEE "STRUCTURAL STEEL DETAILS" SHEET.
- FOR ENDWALL DETAILS, SEE "ENDWALL DETAILS" SHEETS.
- TOP OF FLOOR DRAIN TO BE SET 3/8" BELOW SURFACE OF SLAB.
- 4 -1/2" SQUARE LUGS TO BE GLUED TO THE PVC PLASTIC PIPE AT EQUAL SPACES AROUND THE PIPE DRAIN APPROXIMATELY 4" FROM THE TOP OF THE PIPE.
- BOLT SIZES TO BE SAME AS DIAPHRAGMS AND CROSS FRAME CONNECTIONS. STAINLESS STEEL WORM DRIVE HOSE CLAMP TO BE COMMERCIAL QUALITY.
- THE 6" DIA. PVC PLASTIC PIPE AND FITTINGS SHALL BE SCHEDULE 40 AND CONFORM TO ASTM D1785.

PROJECT NO. I-5823
 DAVIE COUNTY
 STATION: 701+85.00 -L LT-
 SHEET 1 OF 2

Dewberry
 2610 WYCLIFF ROAD
 SUITE 410
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 NC COA No. F-09229

NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 030046
 MATTHEW PAYNE

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

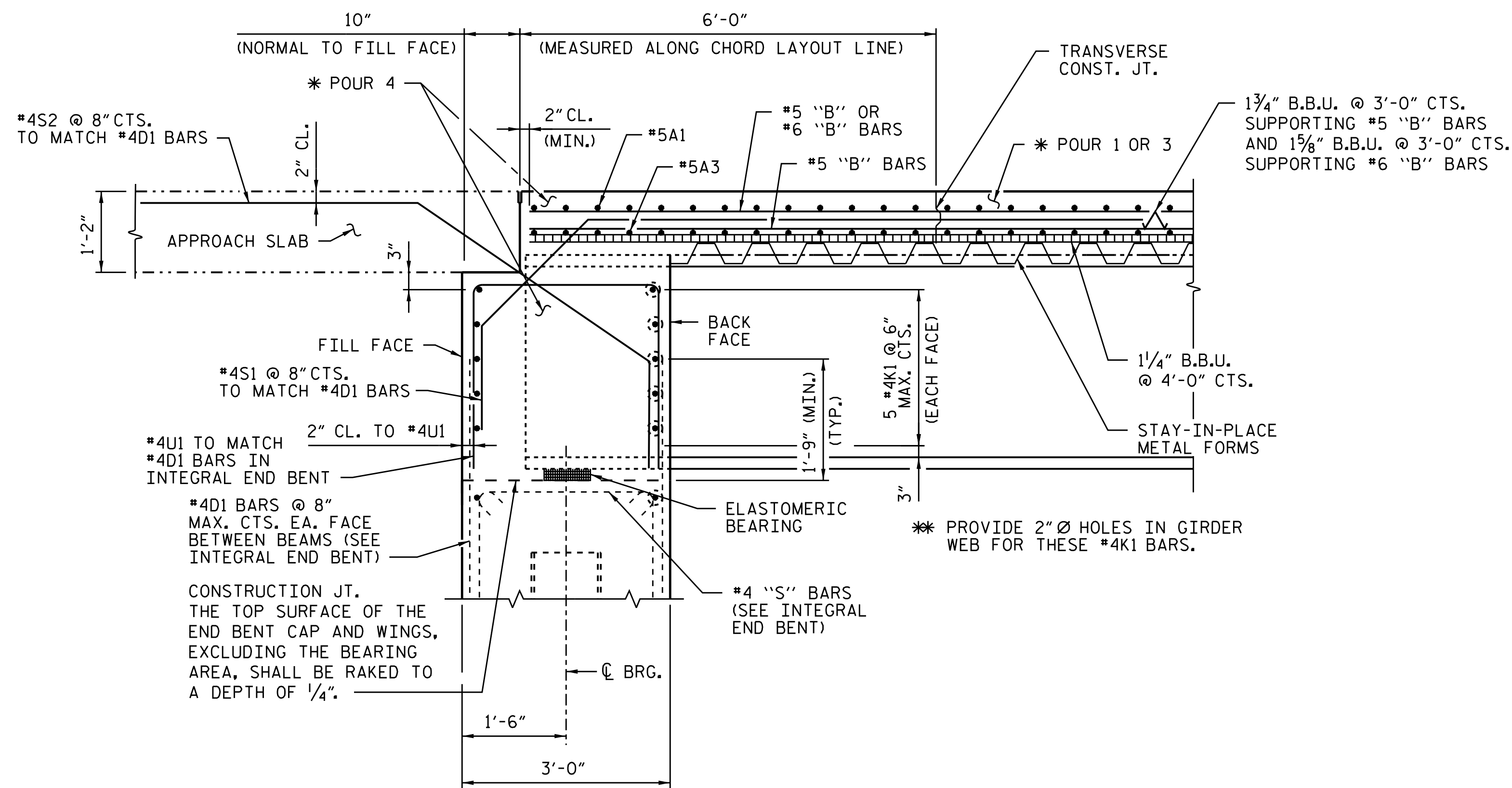
SUPERSTRUCTURE
 TYPICAL SECTION

DRAWN BY: D. SMITH DATE: DEC. 18
 CHECKED BY: M. PAYNE DATE: DEC. 18
 DESIGN ENGINEER OF RECORD: M. PAYNE DATE: DEC. 18

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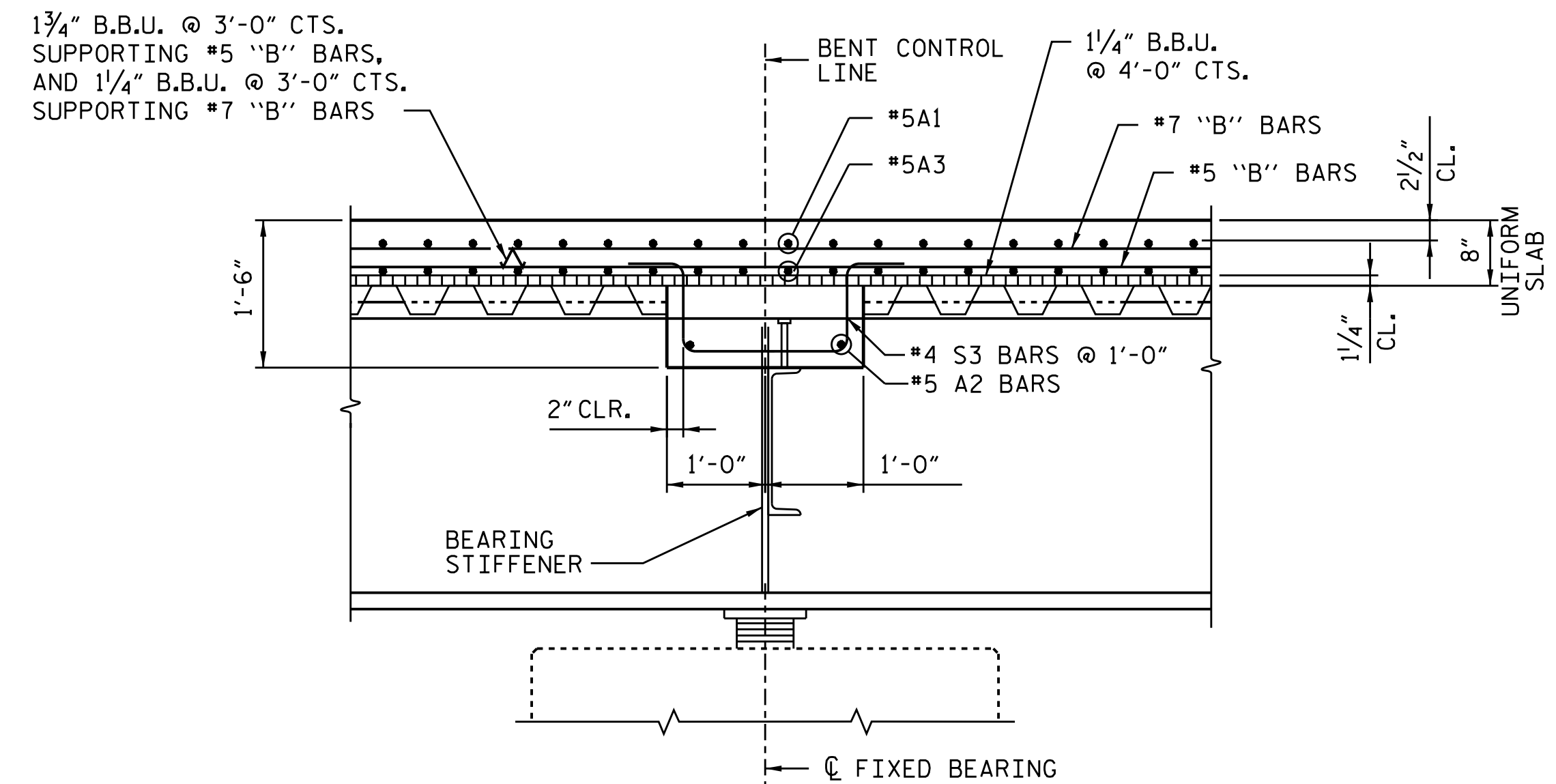
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS	
1			3			S1-6	
2			4			34	

*****SYTIME*****
 *****SDON*****
 *****USERNAME*****



* SEE "SUPERSTRUCTURE BILL OF MATERIAL" SHEET FOR POUR SEQUENCE.

SECTION "A-A"
(SEE "PLAN OF SPAN" SHEET)
NOTE: SHEAR STUDS ON BEAM NOT SHOWN FOR CLARITY.



SECTION "B-B"
(SEE "PLAN OF SPAN" SHEETS)
NOTE: SHEAR STUDS ON BEAM NOT SHOWN FOR CLARITY.

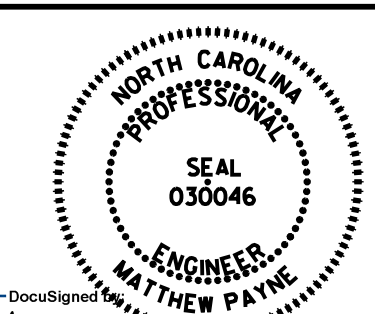
PROJECT NO. I-5823

DAVIE COUNTY

STATION: 701+85.00 -L LT-

SHEET 2 OF 2

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929



DocuSigned by: Matthew Payne 12/14/2018

STATE OF NORTH CAROLINA		SHEET NO.	
DEPARTMENT OF TRANSPORTATION		S1-7	
RALEIGH		TOTAL SHEETS	
SUPERSTRUCTURE		34	
TYPICAL DETAILS			
REVISIONS			
NO.	BY:	DATE:	DATE:
1		3	
2		4	

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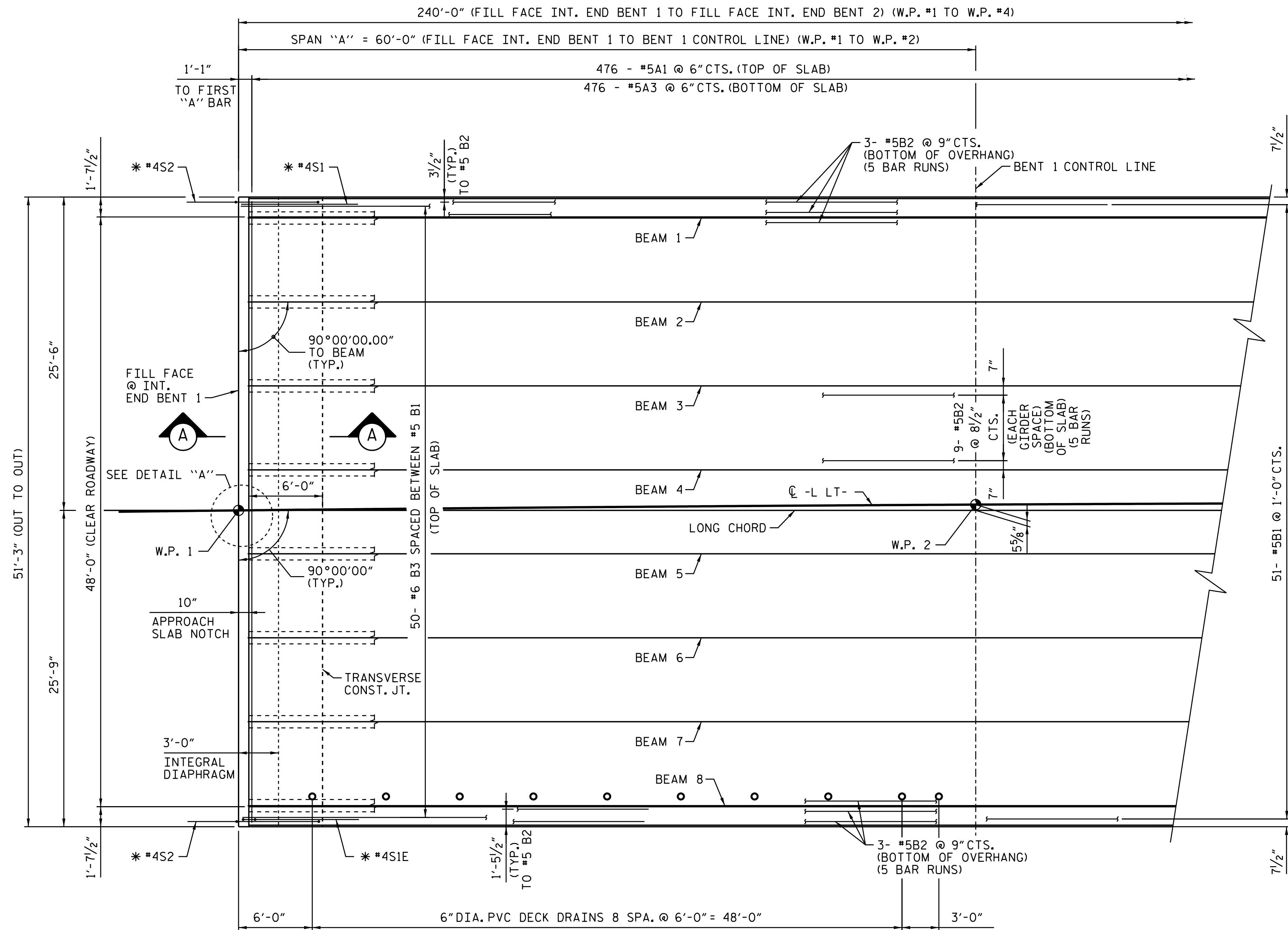
NOTES:

FOR CONCRETE BARRIER RAIL REINFORCING STEEL THAT MUST BE CAST IN DECK SLAB, SEE "CONCRETE BARRIER RAIL" SHEET.

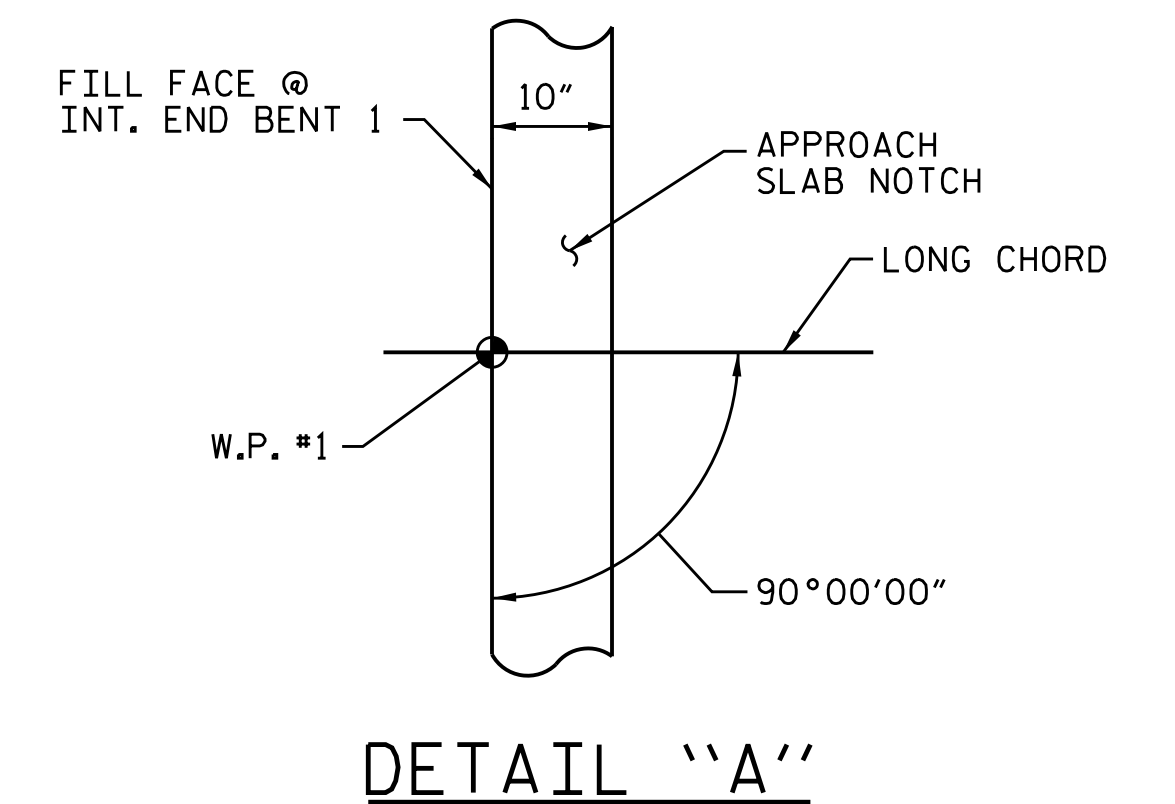
TRANSVERSE CONSTRUCTION JOINT SHALL BE PLACED ALONG THE SKEW. FOR TRANSVERSE CONSTRUCTION JOINT DETAIL, SEE "BILL OF MATERIAL" SHEET.

FOR SECTION "A-A", SEE "TYPICAL DETAILS" SHEET.

LONGITUDINAL REINFORCING STEEL SHALL BE CONTINUOUS THROUGH TRANSVERSE CONSTRUCTION JOINT.



PLAN OF SPAN "A"



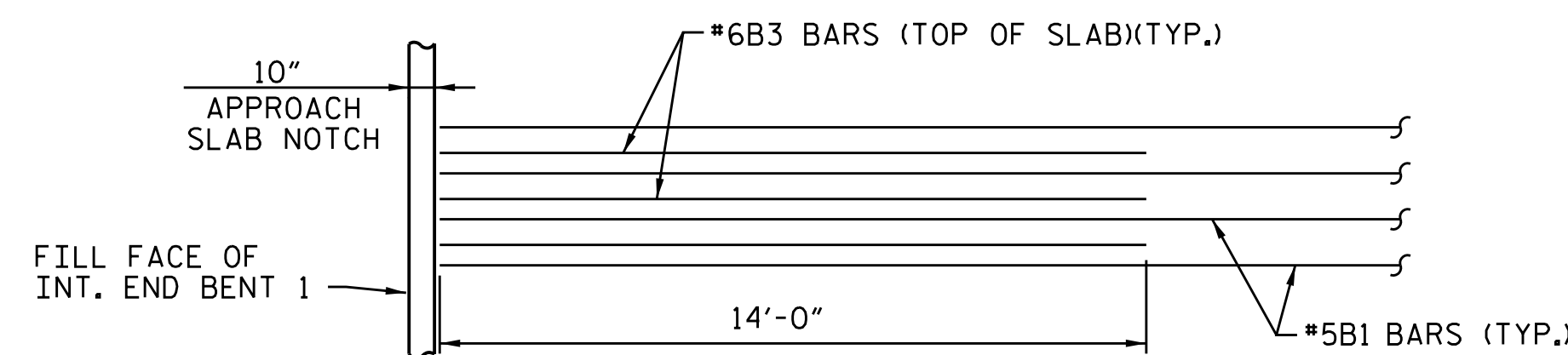
PROJECT NO. I-5823

DAVIE COUNTY

STATION: 701+85.00 -L LT-

SHEET 1 OF 3

* SEE "TYPICAL DETAILS" AND "ENDWALL DIAPHRAGM DETAILS" SHEETS FOR SPACING.

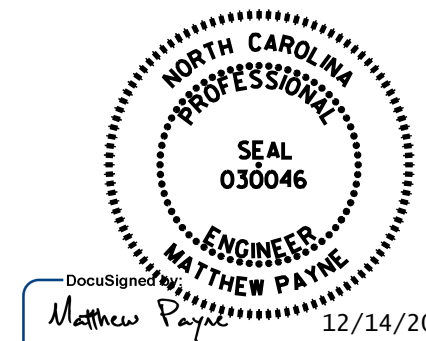


TOP OF SLAB REINFORCEMENT LAYOUT

DRAWN BY: D. SMITH DATE: DEC. 18
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 2610 WYCLIFF ROAD
 SUITE 410
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 NC COA No. F-0929



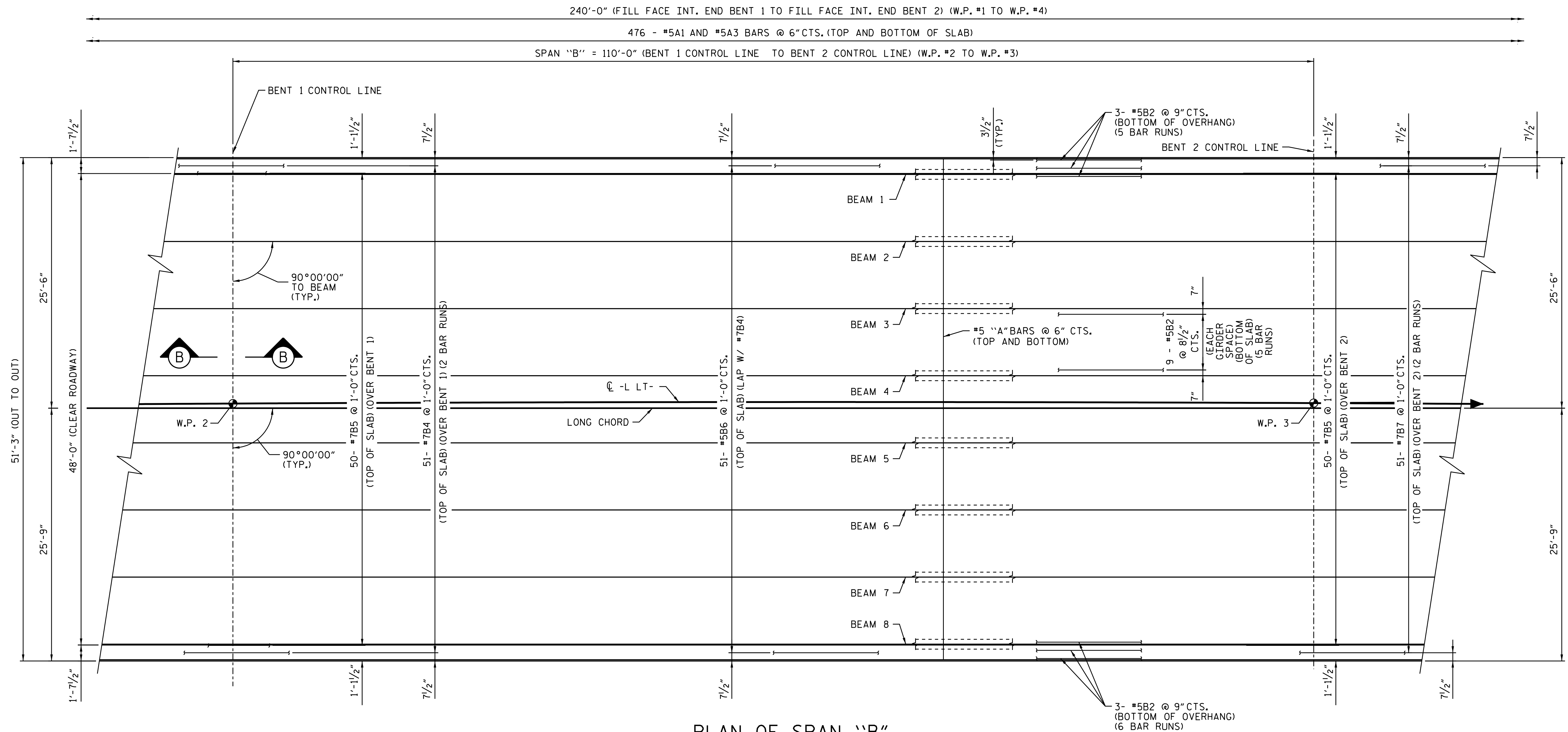
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 PLAN OF SPAN "A"

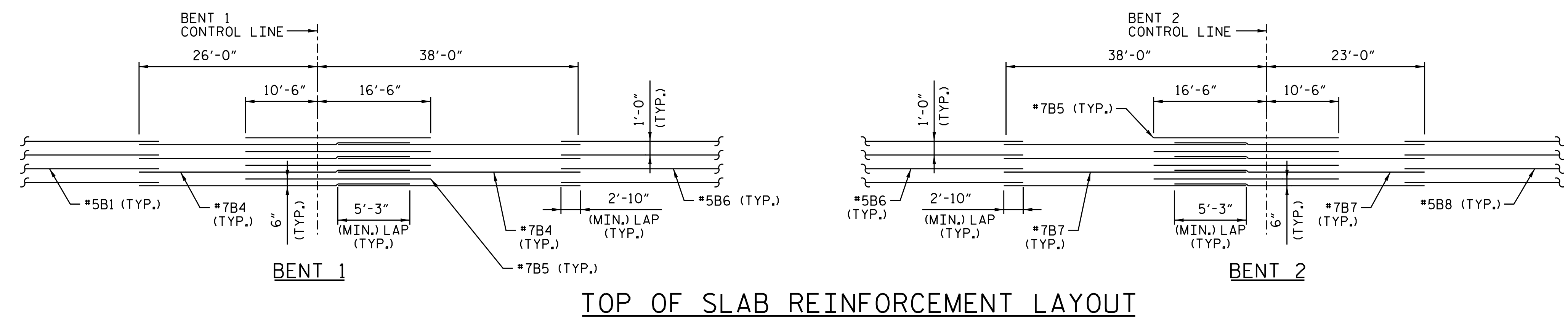
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NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S1-8
2			4			34

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NOTES:
 FOR SECTION "B-B", SEE "TYPICAL DETAILS" SHEET.
 FOR ADDITIONAL NOTES, SEE SHEET 1 OF 3.



PLAN OF SPAN "B"



PROJECT NO. I-5823
 DAVIE COUNTY
 STATION: 701+85.00 -L LT-
 SHEET 2 OF 3

Dewberry
 2610 WYCLIFF ROAD
 SUITE 410
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 NC COA No. F-09229

NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 030046
 MATTHEW PAYNE

12/14/2018

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 PLAN OF SPAN "B"

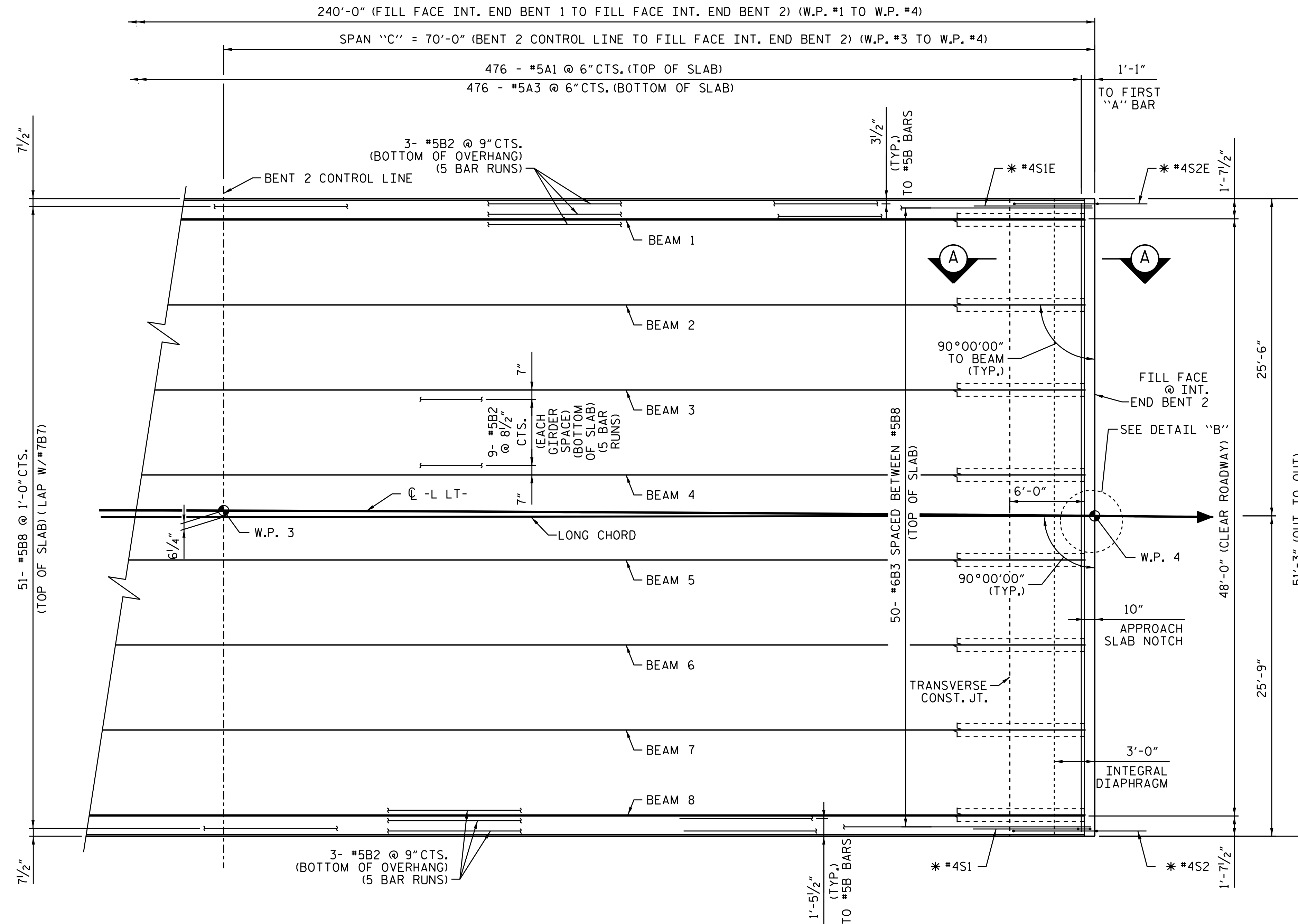
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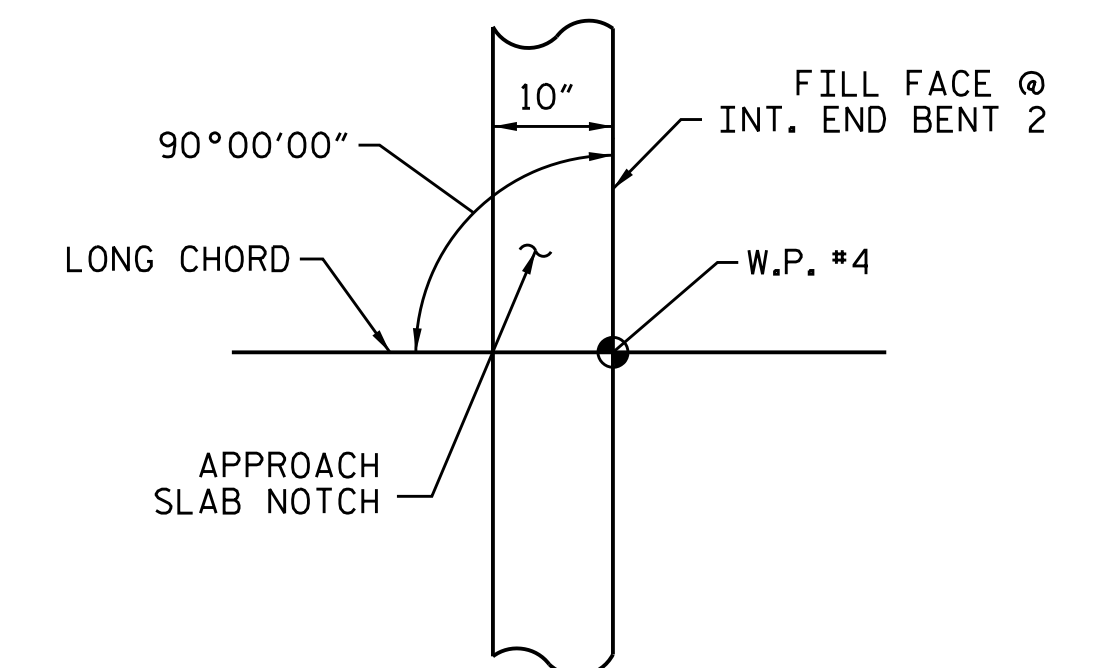
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S1-9
2			4			34

*****SYTIME*****
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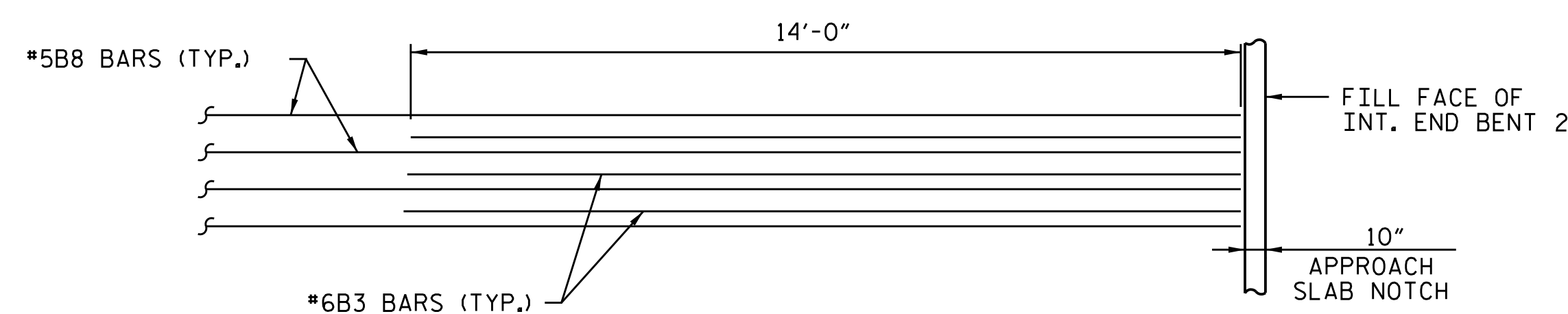
NOTES:
 FOR SECTION "A-A", SEE "TYPICAL DETAILS" SHEET.
 FOR ADDITIONAL NOTES, SEE SHEET 1 OF 3.



PLAN OF SPAN "C"



DETAIL "B"



TOP OF SLAB REINFORCEMENT LAYOUT

PROJECT NO. I-5823

DAVIE COUNTY

STATION: 701+85.00 -L LT-

SHEET 3 OF 3

Dewberry
 2610 WYCLIFF ROAD
 SUITE 410
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 NC COA No. F-0929



12/14/2018
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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE

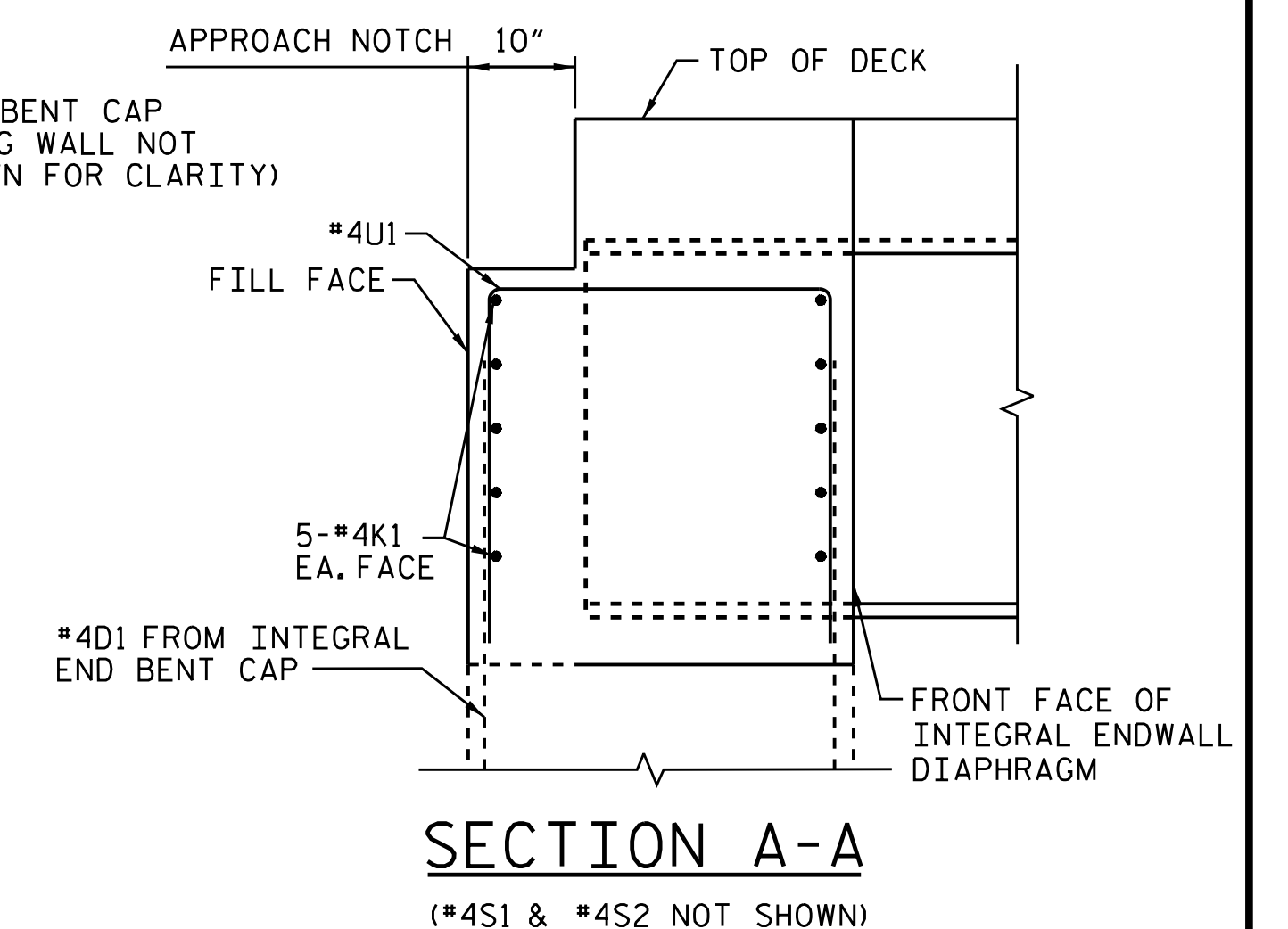
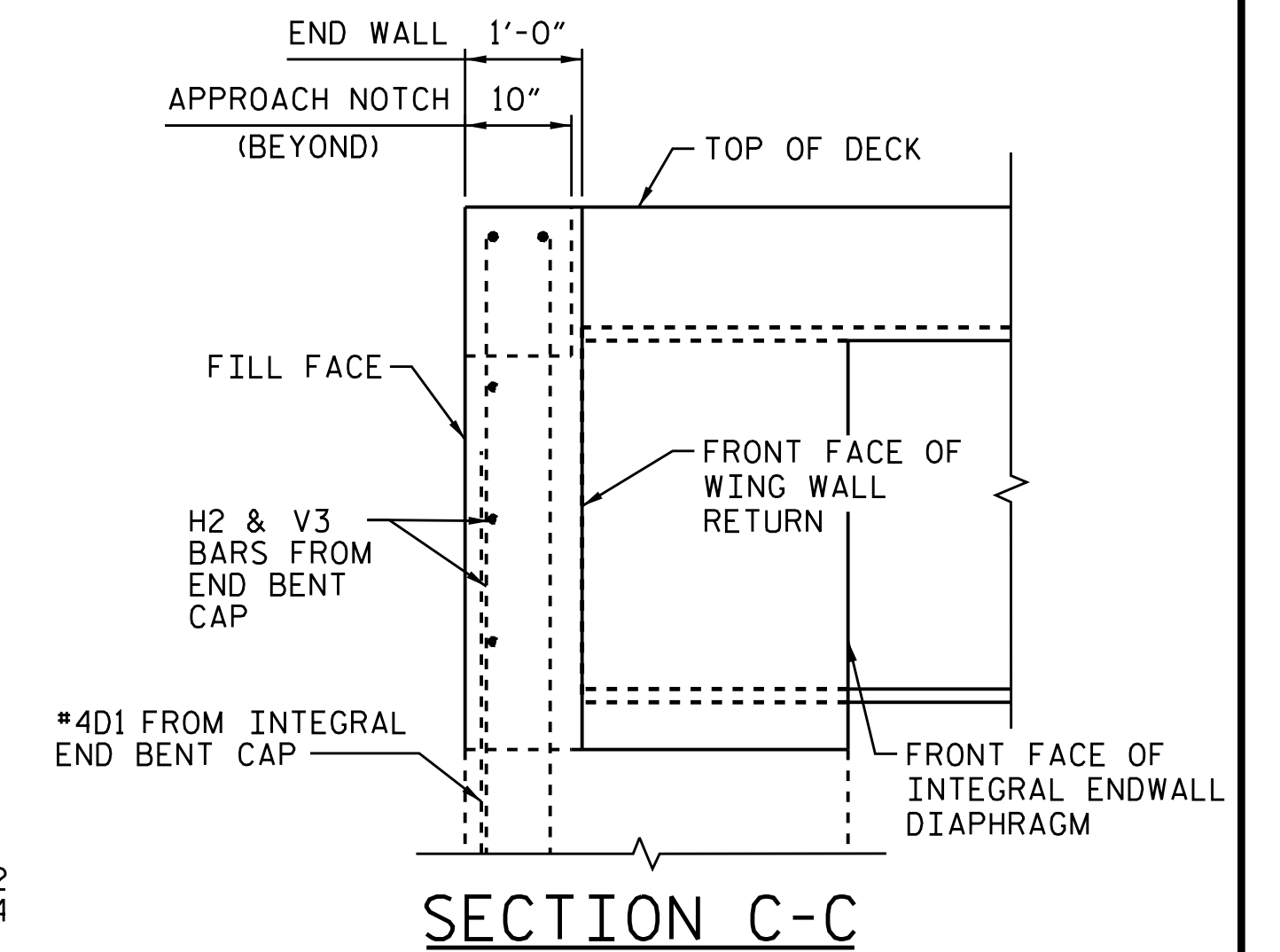
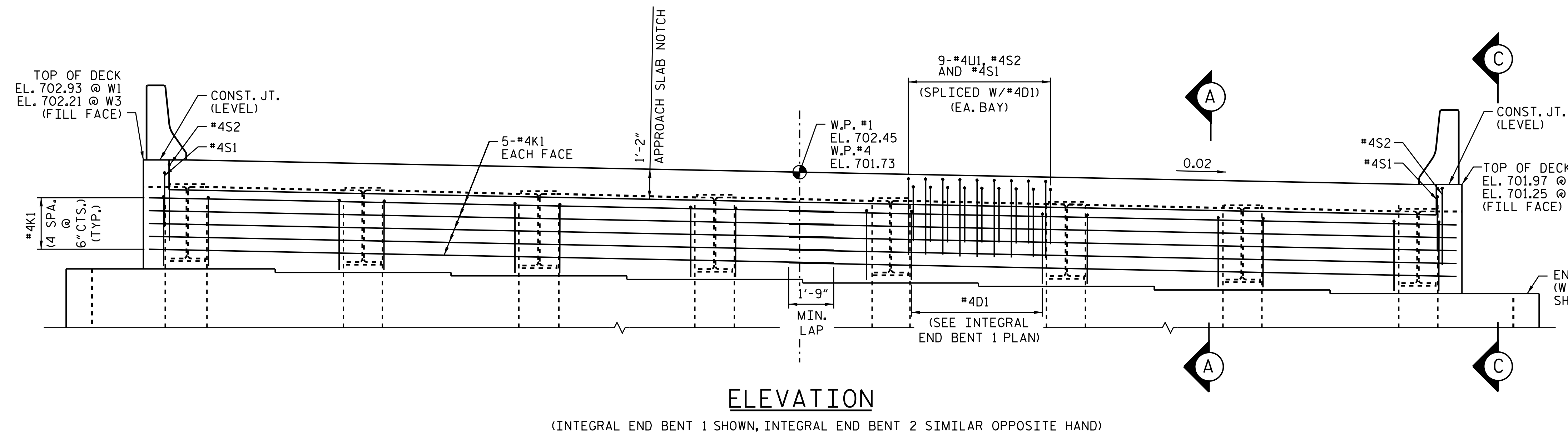
PLAN OF SPAN "C"

DRAWN BY: D. SMITH DATE: DEC. 18
 CHECKED BY: M. PAYNE DATE: DEC. 18
 DESIGN ENGINEER OF RECORD: M. PAYNE DATE: DEC. 18

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			34
2			4			

NOTES:
 FOR UPPER WINGWALL DETAILS AND REINFORCING STEEL, SEE END BENT 1, SHEETS 2 & 3.
 REINFORCING STEEL AND CONCRETE FOR ENDWALL DIAPHRAGM IS INCLUDED IN THE PAY ITEM "REINFORCED CONCRETE DECK SLAB".
 DECK REINFORCING NOT SHOWN FOR CLARITY.
 THE CONTRACTOR SHALL PAY PARTICULAR ATTENTION TO ENSURE THAT THE AREAS BETWEEN THE BOTTOM OF THE GIRDERS AND THE BRIDGE SEATS ARE COMPLETELY FILLED WITH CONCRETE.



PROJECT NO. I-5823

DAVIE COUNTY

STATION: 701+85.00 -L LT-

SHEET 1 OF 2

Dewberry
 2610 WYCLIFF ROAD
 SUITE 410
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 NC COA No. F-0929

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
ENDWALL DIAPHRAGM DETAILS
(INTEGRAL END BENT 1)

REVISIONS

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

SHEET NO.
S1-11

TOTAL SHEETS
34

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DRAWN BY: D. SMITH DATE: DEC. 18
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 DESIGN ENGINEER OF RECORD: M. PAYNE DATE: DEC. 18

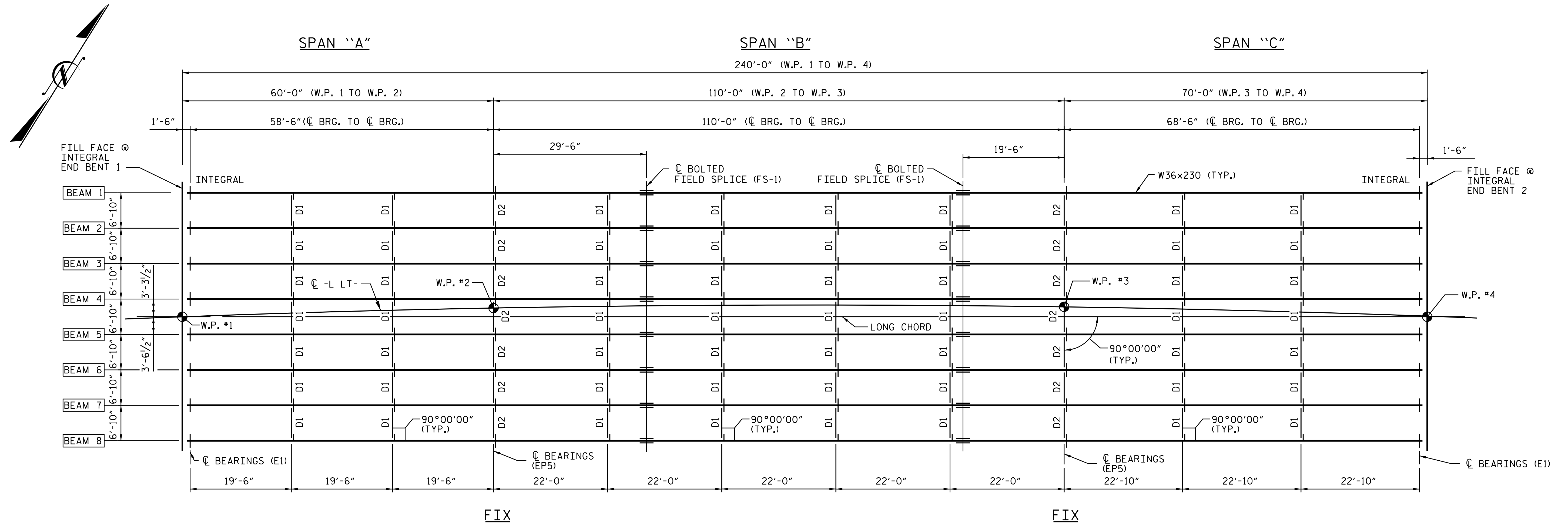
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 *****SDON*****
 *****USERNAME*****

NOTES:

D1 AND D2 DENOTE DIAPHRAGMS. SEE "SUPERSTRUCTURE STRUCTURAL STEEL DETAILS".

FOR FIELD SPLICE LOCATION, SEE "SUPERSTRUCTURE STRUCTURAL STEEL DETAILS - BEAM ELEVATION".

FOR FIELD SPLICE DETAILS, SEE "SUPERSTRUCTURE STRUCTURAL STEEL DETAILS, SHEET 3 OF 3."



CONTINUOUS BEAM FRAMING PLAN

(BEAMS PARALLEL TO LONG CHORD)

BEAM ERECTION SEQUENCE

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

THE LOCATION OF THE TEMPORARY BENT SHALL BE ADJUSTED BY THE CONTRACTOR AS NECESSARY.

THE TEMPORARY BENT SHALL REMAIN IN PLACE UNTIL ALL DIAPHRAGMS AND LATERAL BRACING ARE IN PLACE AND HIGH STRENGTH BOLTS TIGHTENED.

PLANS FOR THE TEMPORARY BENT, ERECTION SEQUENCE AND TEMPORARY BENT REMOVAL SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW.

THE TEMPORARY BENT SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NORTH CAROLINA.

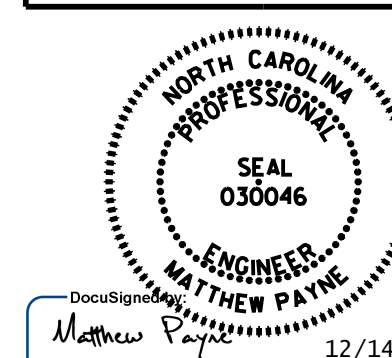
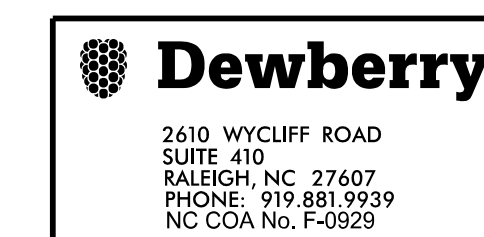
DURING THE BEAM ERECTION PROCEDURE, THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING TEMPORARY LATERAL BRACING AND OTHER MEANS OF SUPPORT, AS REQUIRED, TO ENSURE STABILITY OF THE BEAMS, AVOID UPLIFT OF THE GIRDERS AT THE TEMPORARY ERECTION BENTS AND MAINTAIN PLUMBNESS OF THE BEAM WEBS.

THE CONTRACTOR'S ERECTION PLAN SHALL INCLUDE A METHOD OF TEMPORARY BENT REMOVAL THAT WILL UNIFORMLY APPLY THE STRUCTURAL STEEL WEIGHT TO THE BRIDGE DIAPHRAGMS.

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

FOR TEMPORARY BENTS, SEE SPECIAL PROVISIONS.

PROJECT NO. I-5823
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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 FRAMING PLAN**

DRAWN BY : D. SMITH DATE : DEC. 18
 CHECKED BY : M. PAYNE DATE : DEC. 18
 DESIGN ENGINEER OF RECORD: M. PAYNE DATE : DEC. 18

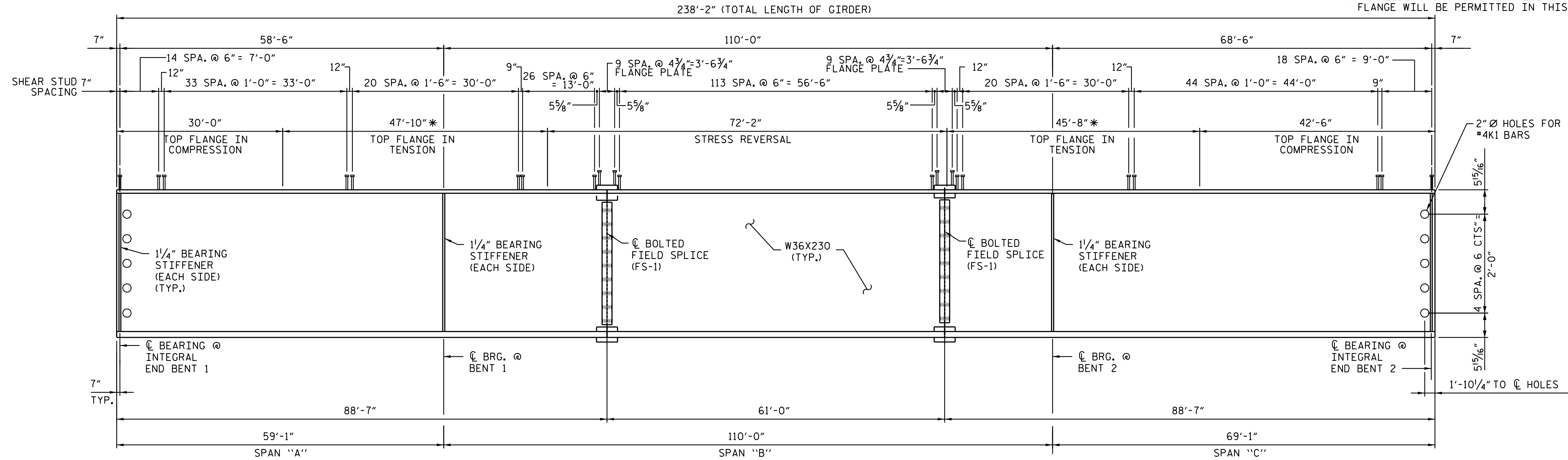
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NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS	
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2			4			34	

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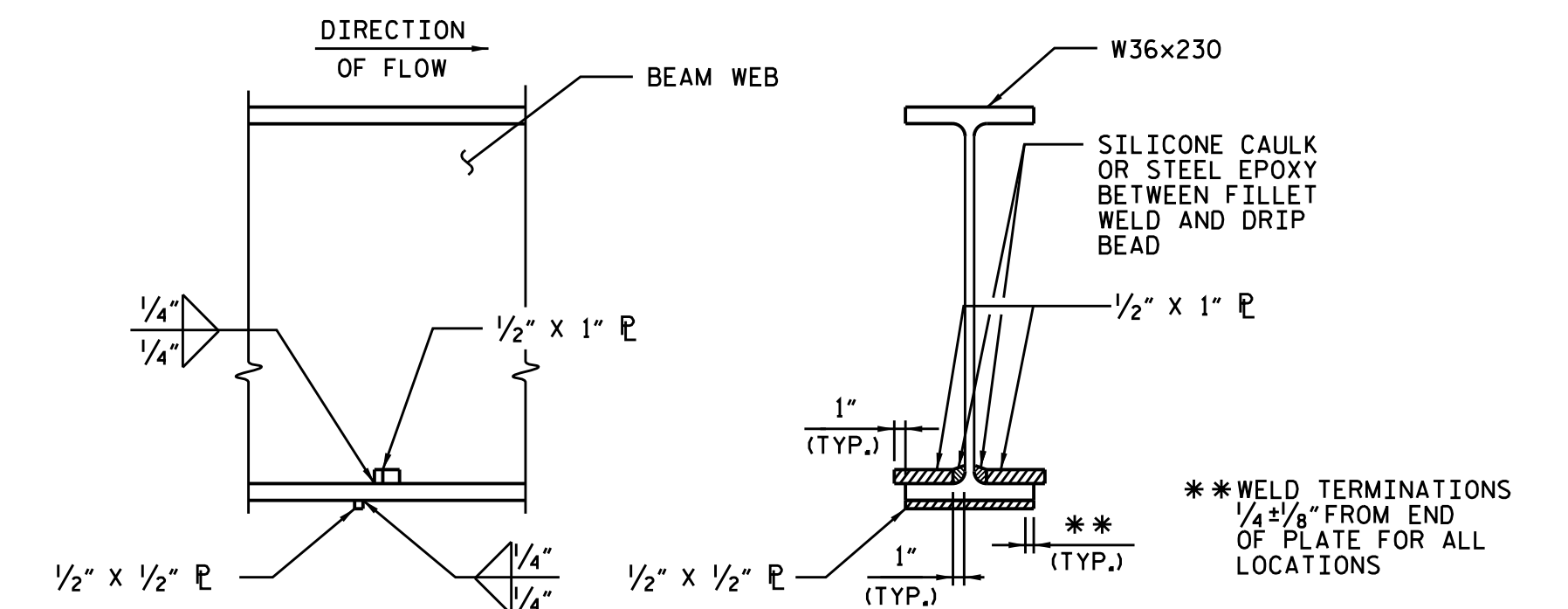
NOTES:

ALL DIMENSIONS ON THIS SHEET ARE HORIZONTAL.
 FOR ADDITIONAL STRUCTURAL STEEL NOTES, SEE SHEET 2 OF 3.
 * NO WELDING OF FORMS OR FALSEWORK TO THE TOP FLANGE WILL BE PERMITTED IN THIS REGION.



BEAM ELEVATION

(INTERMEDIATE CROSSFRAME CONNECTOR PLATES NOT SHOWN FOR CLARITY)



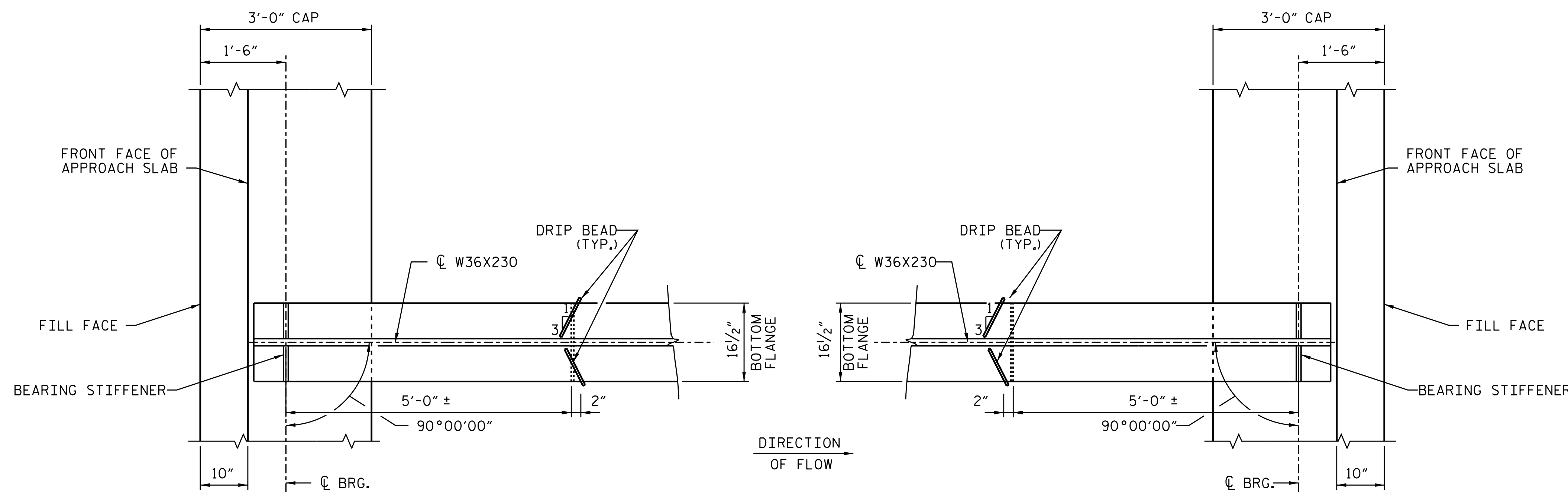
DRIP BEAD DETAILS

PROJECT NO. I-5823

DAVIE COUNTY

STATION: 701+85.00 -L LT-

SHEET 1 OF 3



DRIP BEAD PLAN

Dewberry
 2610 WYCLIFF ROAD
 SUITE 410
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 NC COA NO. F-09229

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 030046
 MATTHEW PAYNE

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

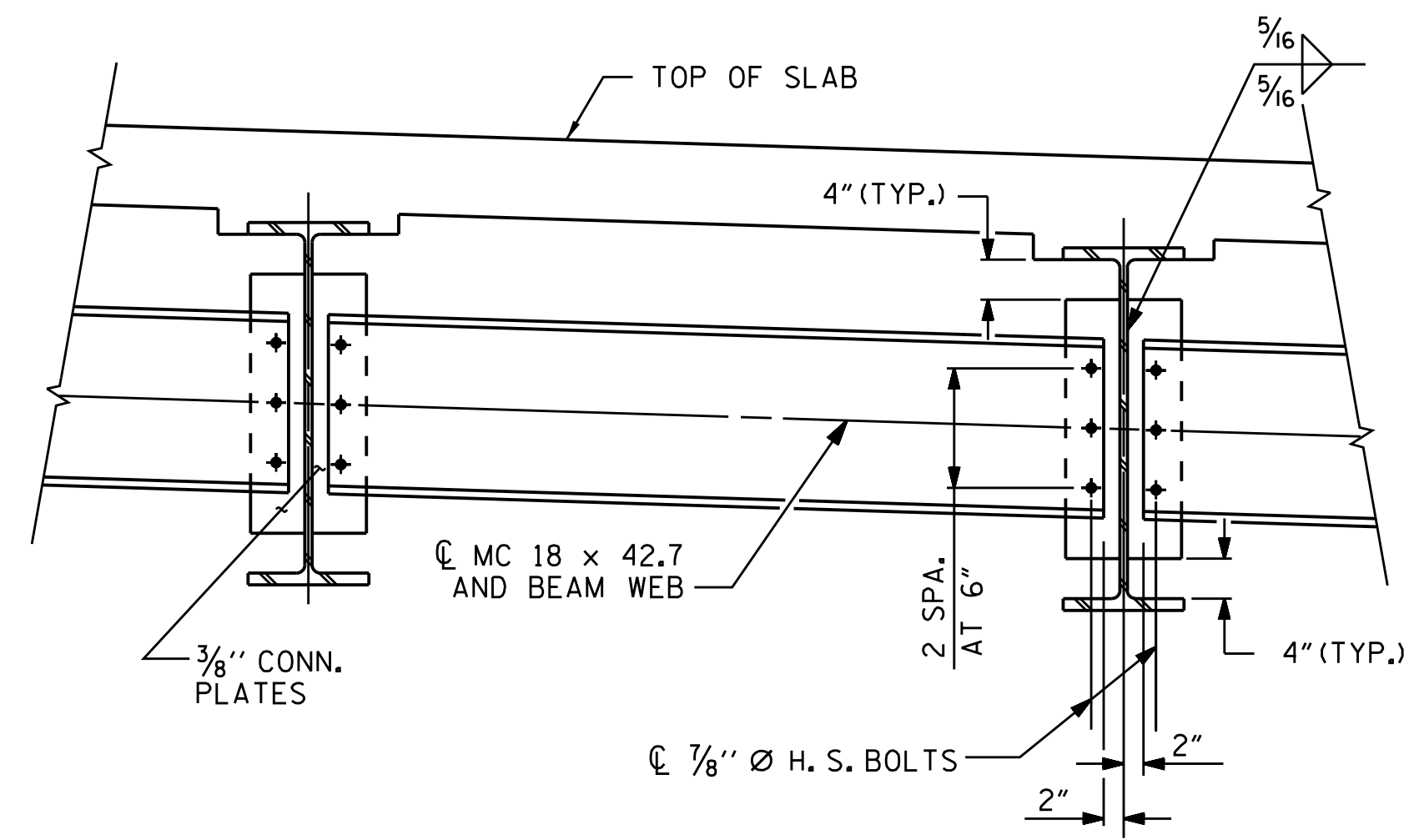
SUPERSTRUCTURE
 STRUCTURAL STEEL
 DETAILS

DRAWN BY: D. SMITH DATE: DEC. 18
 CHECKED BY: M. PAYNE DATE: DEC. 18
 DESIGN ENGINEER OF RECORD: M. PAYNE DATE: DEC. 18

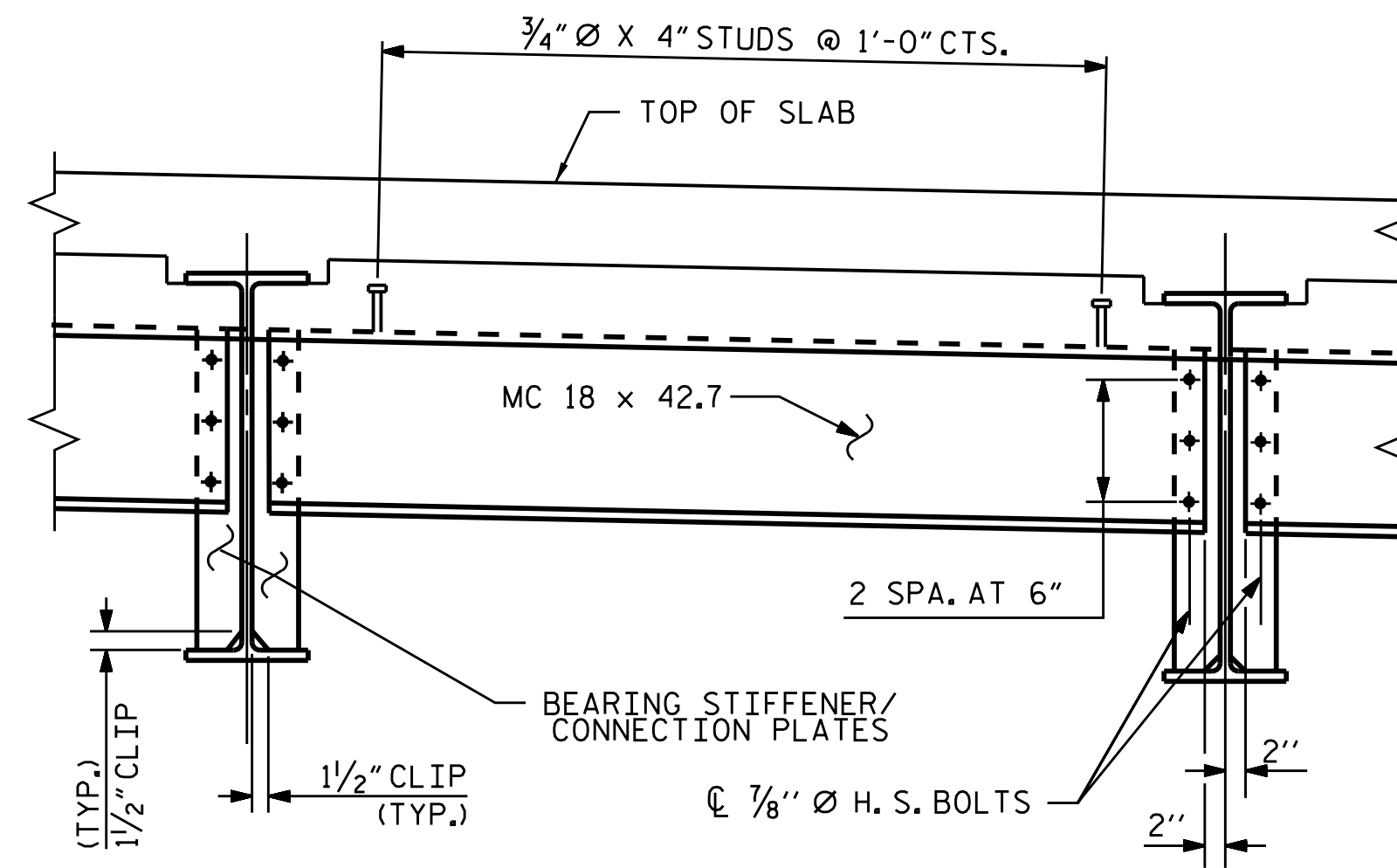
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S1-13
2			4			TOTAL SHEETS 34

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TYPICAL INTERMEDIATE DIAPHRAGM (D1)



TYPICAL BENT DIAPHRAGM (D2)

NOTES:

ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 50W AND PAINTED IN ACCORDANCE WITH SYSTEM 5 OR SYSTEM 6 OF ARTICLE 442-8 OF THE STANDARD SPECIFICATIONS UNLESS OTHERWISE NOTED ON THE PLANS.

ALL DIMENSIONS SHOWN ARE HORIZONTAL OR VERTICAL, UNLESS OTHERWISE NOTED.

ALL FIELD CONNECTIONS TO BE 7/8" DIA. HIGH STRENGTH BOLTS, UNLESS OTHERWISE NOTED.

BEARING STIFFENERS MAY REQUIRE COPING IF WIDER THAN BOTTOM FLANGE.

BEARING STIFFENERS SHALL BE PLACED NORMAL TO THE WEB OF BEAM AND SHALL BE PLUMB.

ENDS OF GIRDERS SHALL BE PLUMB.

STUDS ON GIRDERS MAY BE SHIFTED UP TO 1 INCH IF NECESSARY TO CLEAR FLANGE SPLICE WELD.

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

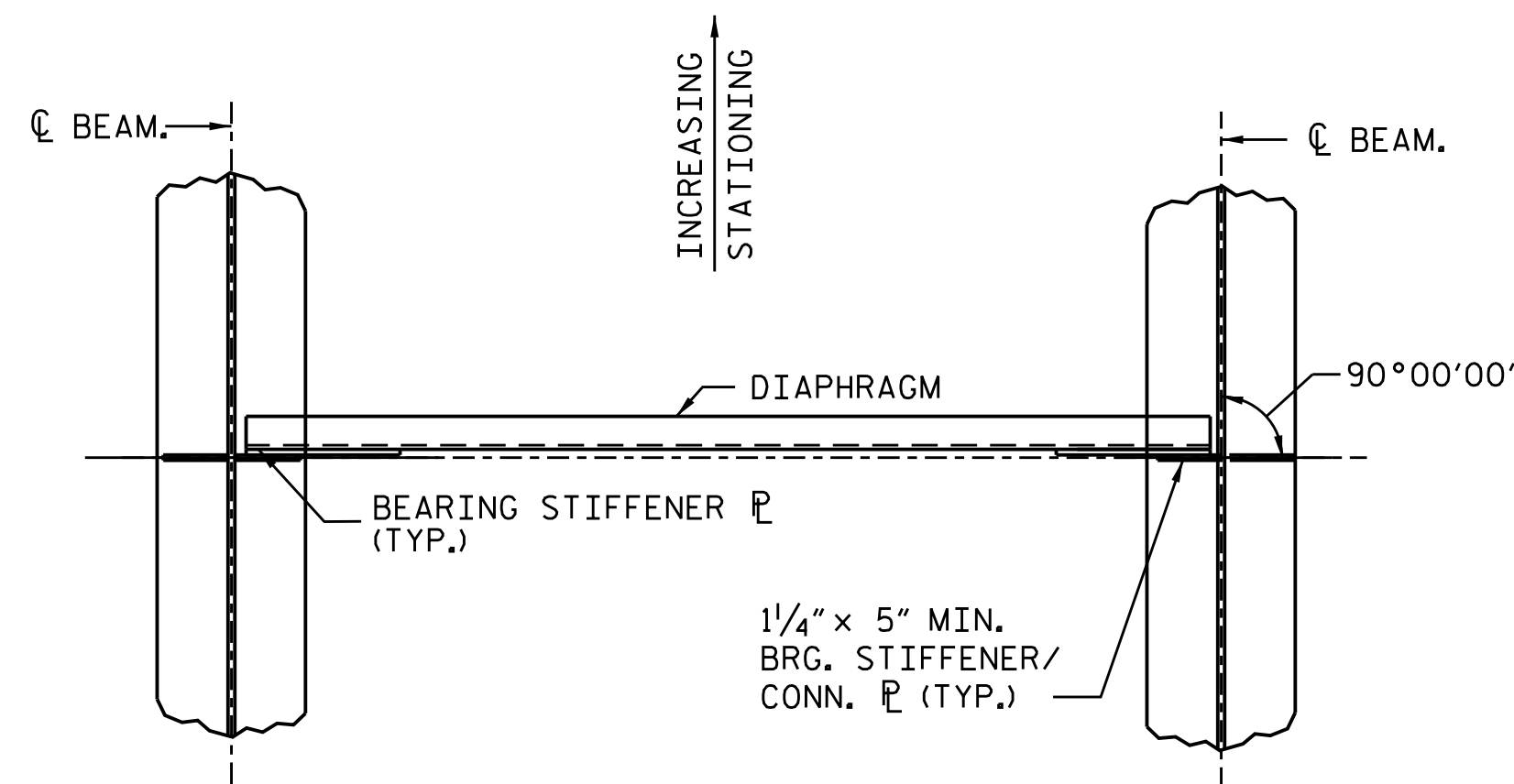
STRUCTURAL STEEL ERECTION IN A CONTINUOUS UNIT SHALL BE COMPLETE BEFORE FALSEWORK OR FORMS ARE PLACED ON THE UNIT.

FABRICATORS SHALL DETAIL DIAPHRAGM MEMBERS AND CONNECTIONS FOR STEEL DEAD LOAD FIT UP. BEAMS SHALL BE PLUMB AFTER THE FULL AMOUNT OF DEAD LOAD IS APPLIED.

THE CONTRACTOR MAY, WHEN NECESSARY, PROPOSE A SCHEME FOR AVOIDING INTERFERENCE BETWEEN METAL STAY-IN-PLACE FORM SUPPORTS OR FORMS AND BEAM STIFFENERS OR CONNECTOR PLATES. THE PROPOSAL SHALL BE INDICATED, AS APPROPRIATE, ON EITHER THE STEEL WORKING DRAWINGS OR THE METAL STAY-IN-PLACE FORM WORKING DRAWINGS.

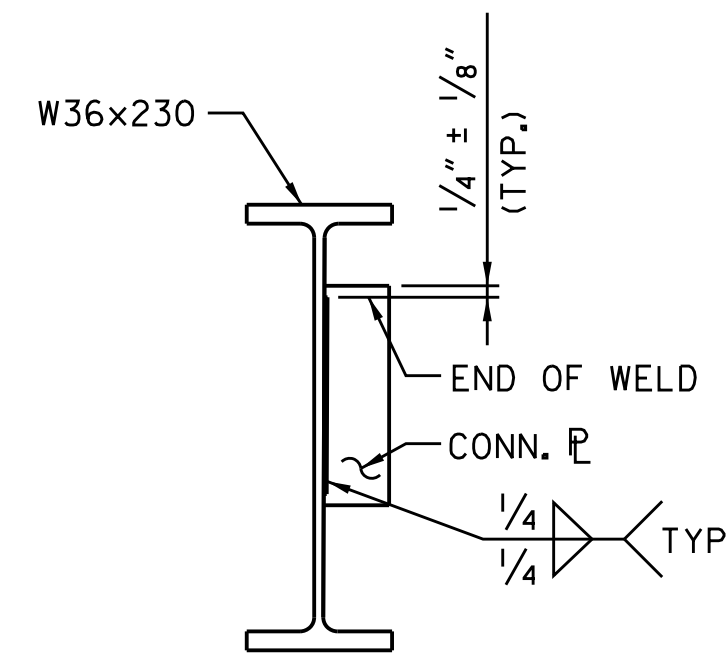
CHARPY V-NOTCH TESTS ARE REQUIRED ON ALL BEAM SECTIONS, COVER PLATES AND SPLICE PLATES AS INDICATED IN THE PLANS AND IN ACCORDANCE WITH ARTICLE 1072-7 OF THE STANDARD SPECIFICATIONS.

CHARPY V-NOTCH TEST ARE REQUIRED.



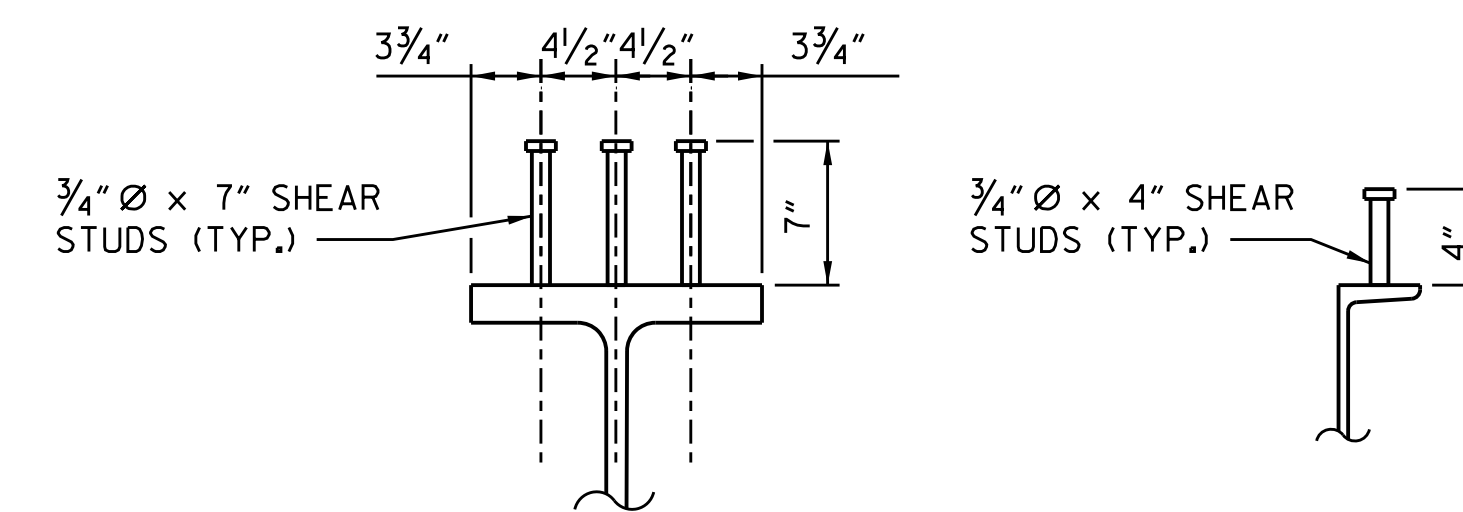
PLAN OF BENT DIAPHRAGM (D2)

(DIAPHRAGMS (D1) ARE SIMILAR)

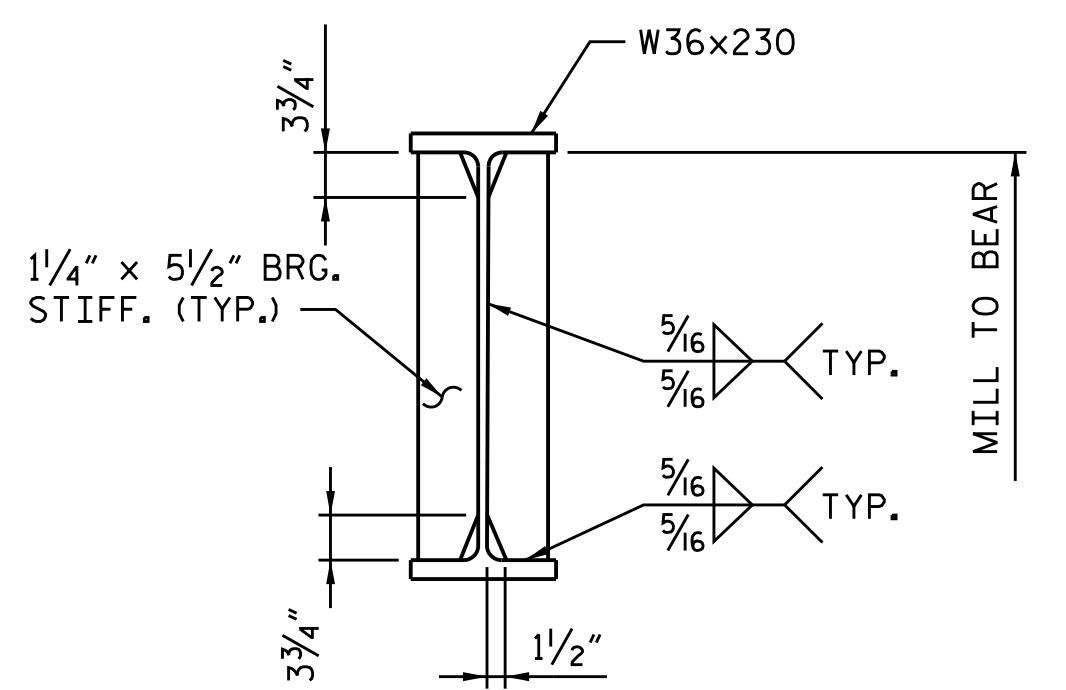


TYPICAL CONNECTOR PLATE DETAILS

(EXTERIOR BEAM SHOWN, HOLES NOT SHOWN)
(INTERMEDIATE DIAPHRAGM)

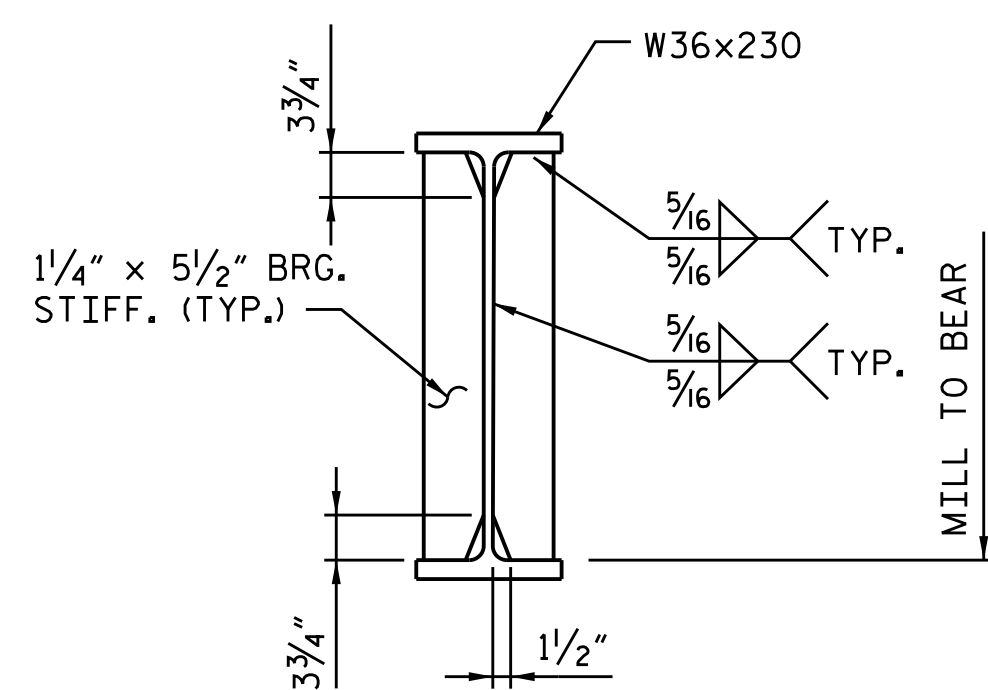


SHEAR STUD DETAILS



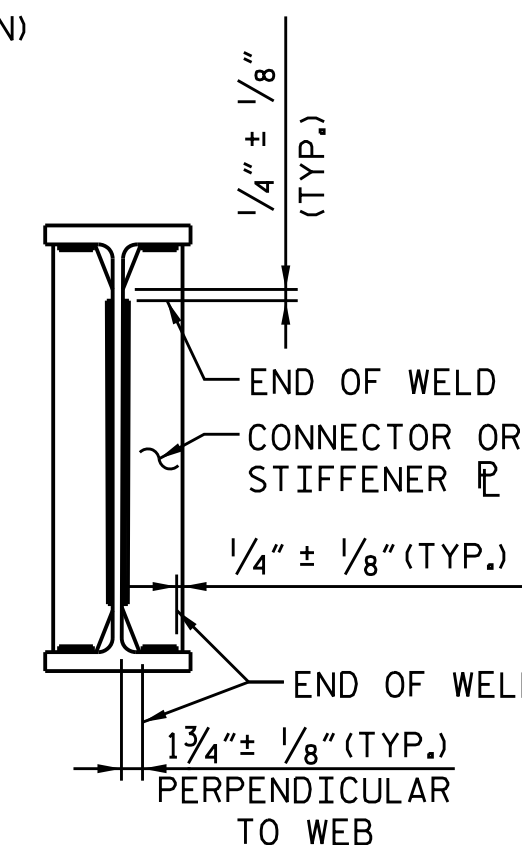
BEARING STIFFENER/
CONNECTION PLATE DETAIL
AT BENT

(INTERIOR BEAM SHOWN)
(HOLES NOT SHOWN)



BEARING STIFFENER DETAIL
AT INTEGRAL END BENT

(HOLES NOT SHOWN)



TYPICAL WELD TERMINATION
DETAILS

(INTEGRAL BENT DIAPHRAGM SHOWN)

PROJECT NO. I-5823

DAVIE COUNTY

STATION: 701+85.00 -L LT-

SHEET 2 OF 3

Dewberry
2610 WYCLIFF ROAD
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NORTH CAROLINA
PROFESSIONAL
SEAL
030046
ENGINEER
MATTHEW PAYNE

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

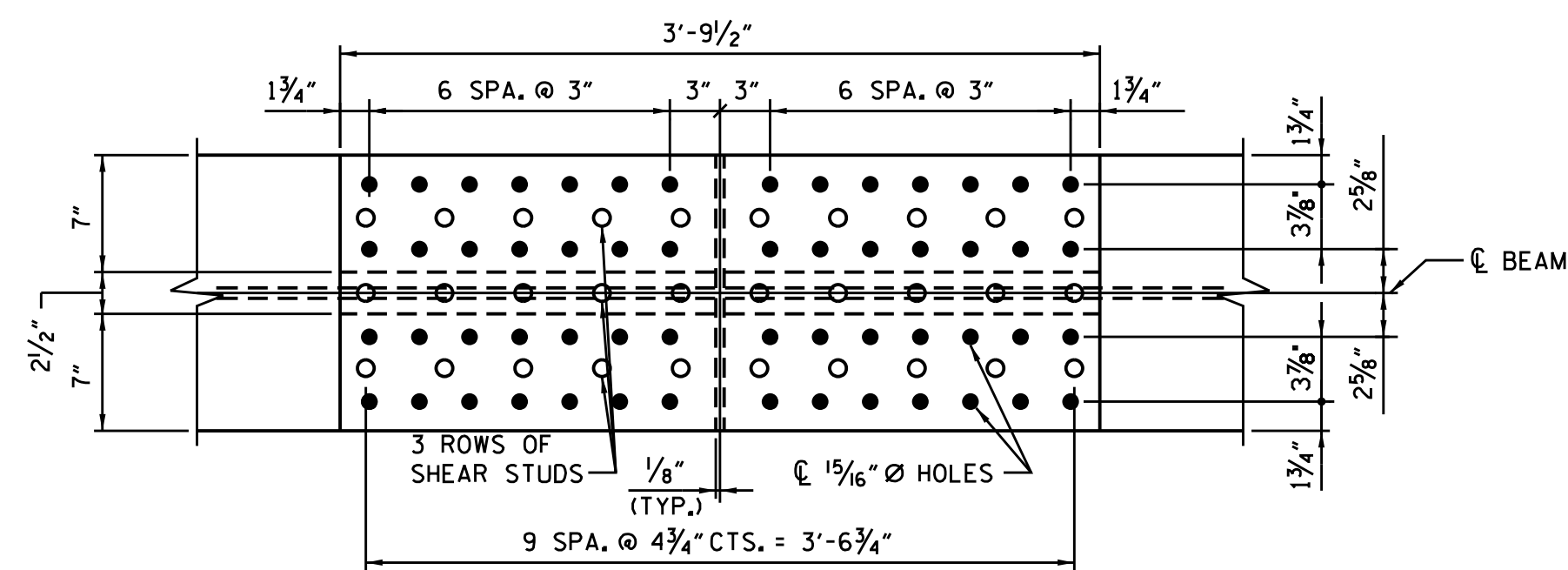
SUPERSTRUCTURE
STRUCTURAL STEEL
DETAILS

DRAWN BY: D. SMITH DATE: DEC. 18
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DESIGN ENGINEER OF RECORD: M. PAYNE DATE: DEC. 18

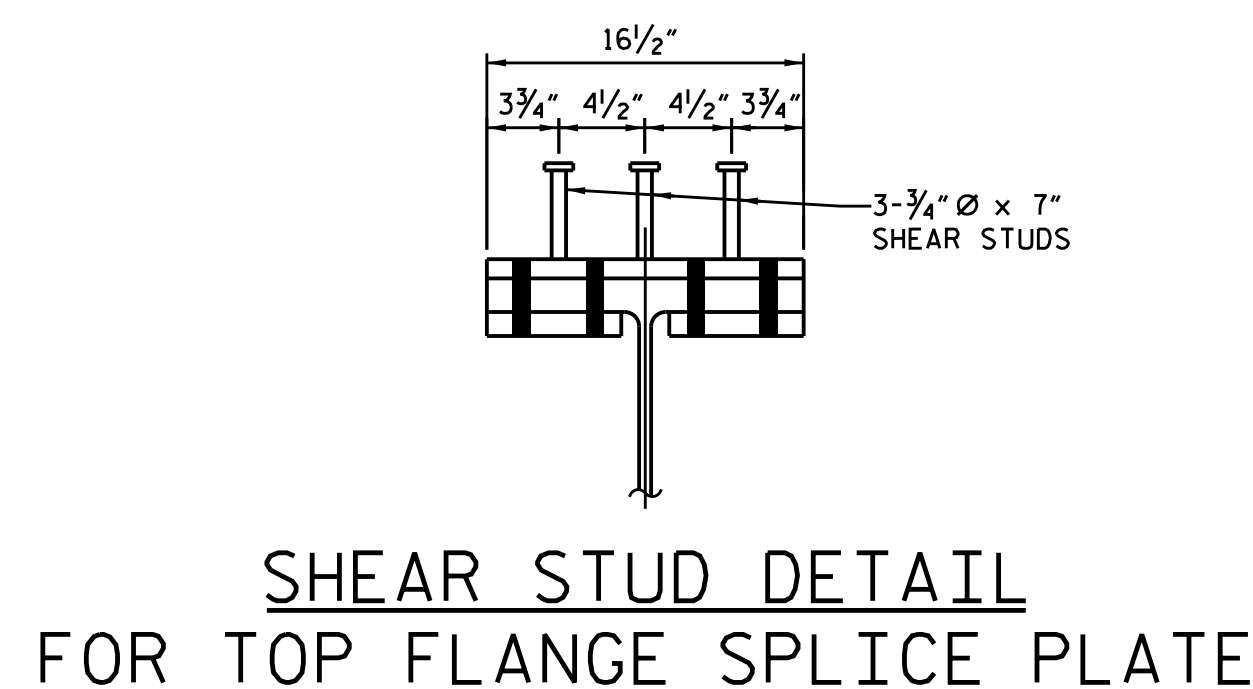
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REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS	
1			3			S1-14	
2			4			34	

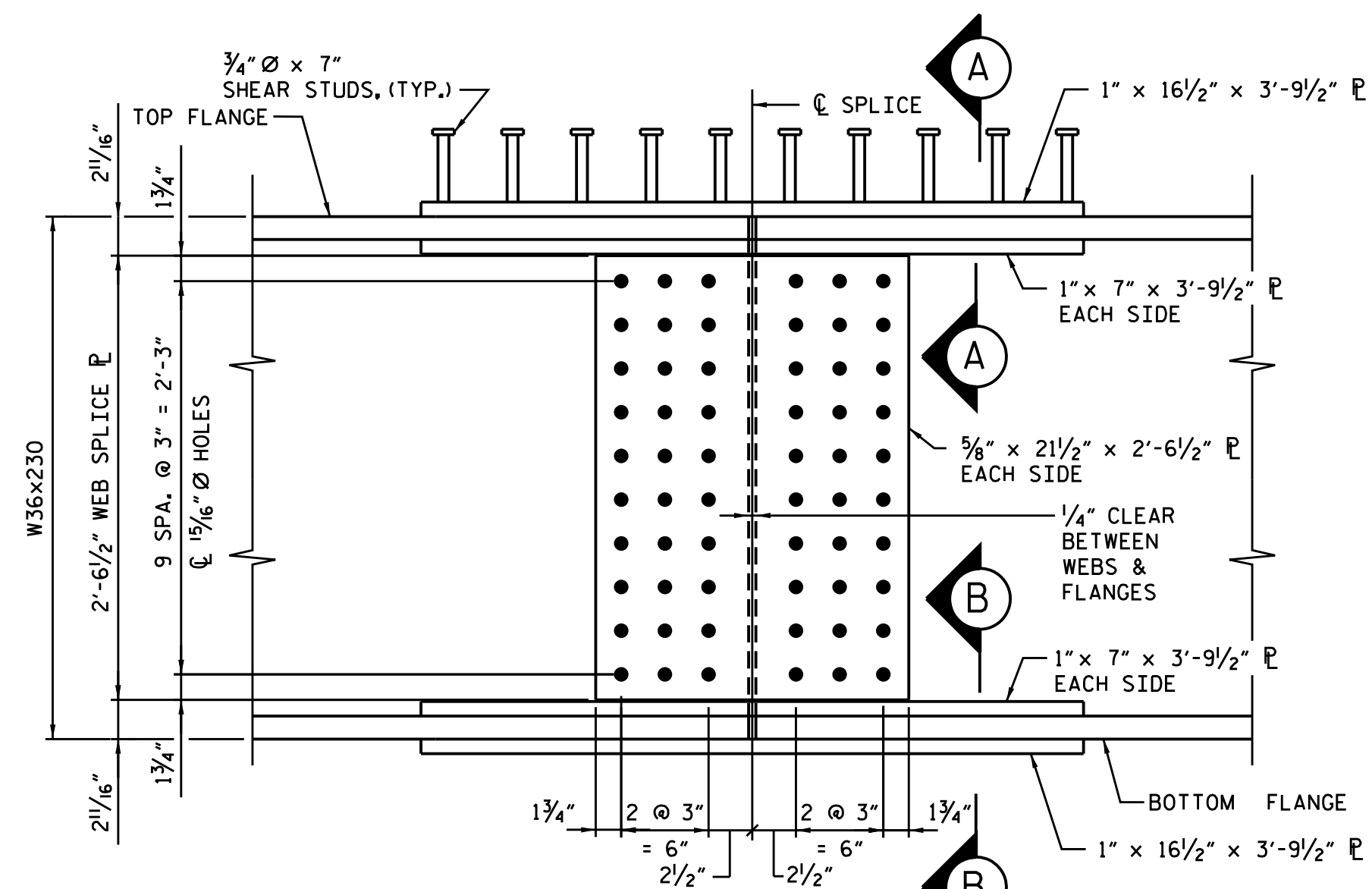


PLAN (TOP OF TOP FLANGE) (FS-1)

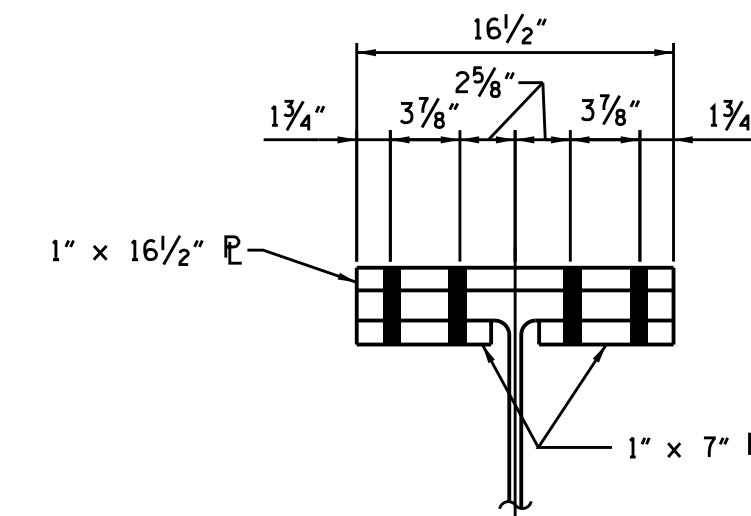


SHEAR STUD DETAIL

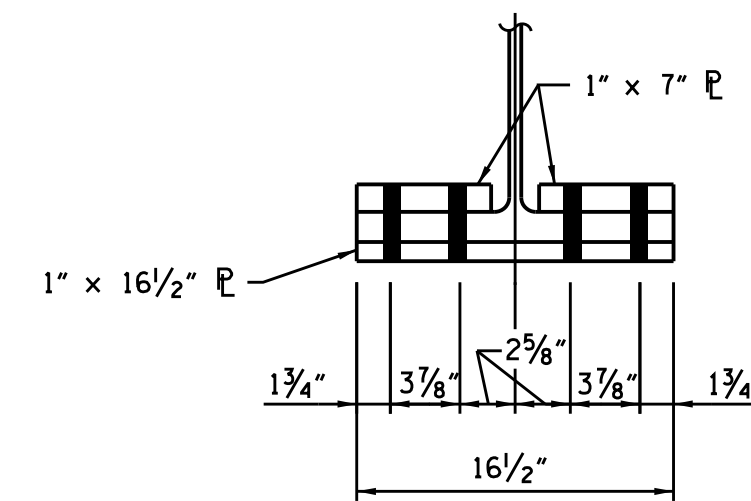
FOR TOP FLANGE SPLICE PLATE



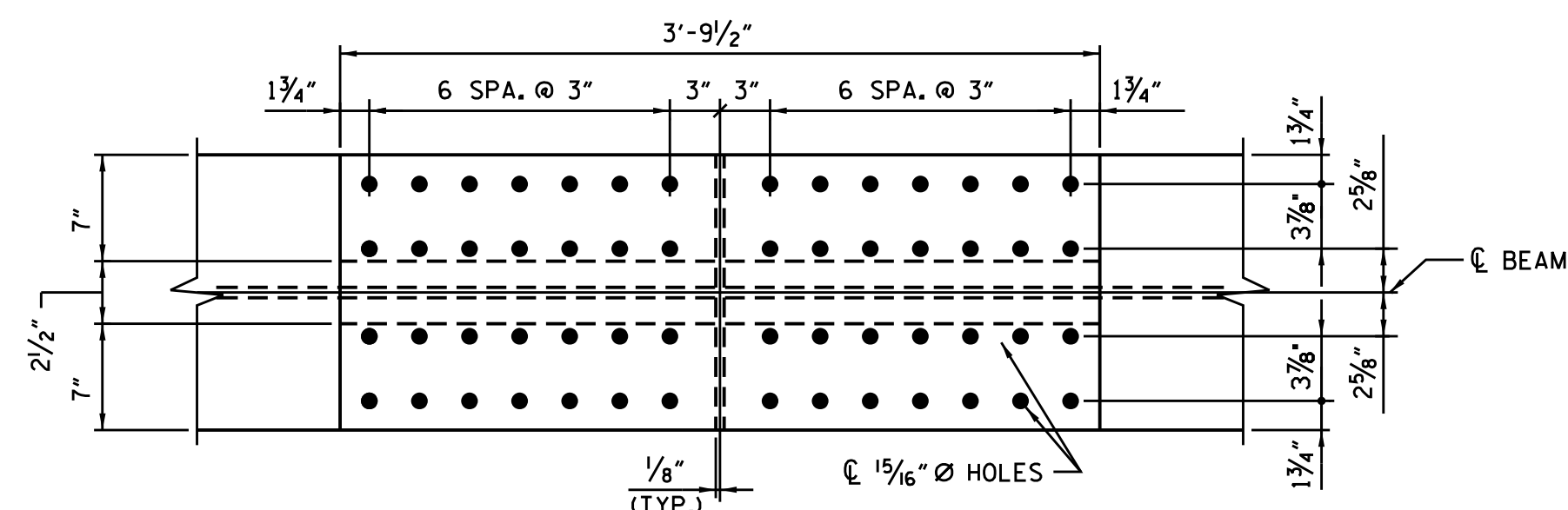
ELEVATION (FS-1)



SECTION A-A



SECTION B-B



PLAN (BOTTOM OF TOP FLANGE) (FS-1)
BOLTED FIELD SPLICES

PROJECT NO. I-5823

DAVIE COUNTY

STATION: 701+85.00 -L LT-

SHEET 3 OF 3

Dewberry
2610 WYCLIFF ROAD
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PROFESSIONAL
ENGINEER
SEAL
030046
MATTHEW PAYNE

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
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SUPERSTRUCTURE
STRUCTURAL STEEL
DETAILS

DRAWN BY: D. SMITH DATE: DEC. 18
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REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	SI-15	
1			3			TOTAL SHEETS	34
2			4				

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DEAD LOAD DEFLECTION TABLE FOR BEAMS 1 THROUGH 8											
ORDINATES	SPAN "A"										
	EXTERIOR AND INTERIOR BEAMS										
TWENTIETH POINTS	BRG.	1.10	1.20	1.30	1.40	1.50	1.60	1.70	1.80	1.90	BRG.
DEFLECTION DUE TO WEIGHT OF STEEL	0.000	0.000	0.000	0.001	0.013	0.002	0.003	0.004	0.003	0.002	0.000
* DEFLECTION DUE TO WEIGHT OF SLAB	0.000	0.001	0.002	0.003	0.005	0.008	0.011	0.013	0.011	0.006	0.000
DEFLECTION DUE TO WEIGHT OF RAIL	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.002	0.002	0.000	0.000
TOTAL DL DEFLECTION	0.000	0.001	0.002	0.004	0.018	0.011	0.015	0.019	0.016	0.008	0.000
REQUIRED CAMBER	0	0	0	-1/16"	-3/16"	-3/16"	-3/16"	-3/16"	-3/16"	-1/8"	0

DEAD LOAD DEFLECTION TABLE FOR BEAMS 1 THROUGH 8																					
ORDINATES	SPAN "B"																				
	EXTERIOR AND INTERIOR BEAMS																				
TWENTIETH POINTS	BRG.	2.05	2.10	1.15	2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	BRG.
DEFLECTION DUE TO WEIGHT OF STEEL	0.000	-0.005	-0.010	-0.017	-0.024	-0.030	-0.036	-0.041	-0.046	-0.047	-0.048	-0.047	-0.046	-0.041	-0.037	-0.030	-0.024	-0.018	-0.012	-0.006	0.000
* DEFLECTION DUE TO WEIGHT OF SLAB	0.000	-0.016	-0.032	-0.056	-0.081	-0.099	-0.117	-0.134	-0.151	-0.155	-0.159	-0.155	-0.150	-0.136	-0.123	-0.100	-0.078	-0.059	-0.040	-0.020	0.000
DEFLECTION DUE TO WEIGHT OF RAIL	0.000	-0.003	-0.005	-0.009	-0.013	-0.016	-0.019	-0.021	-0.024	-0.025	-0.026	-0.025	-0.024	-0.022	-0.020	-0.016	-0.012	-0.009	-0.006	-0.003	0.000
TOTAL DL DEFLECTION	0.000	-0.023	-0.046	-0.082	-0.118	-0.144	-0.171	-0.196	-0.221	-0.227	-0.233	-0.226	-0.219	-0.199	-0.179	-0.146	-0.114	-0.086	-0.058	-0.029	0.000
REQUIRED CAMBER	0	1/4"	3/8"	1"	1 1/16"	1 3/4"	2 1/16"	2 3/8"	2 5/8"	2 3/4"	2 13/16"	2 3/4"	2 5/8"	2 3/8"	2 1/8"	1 3/4"	1 3/8"	1"	1/16"	3/8"	0

DEAD LOAD DEFLECTION TABLE FOR BEAMS 1 THROUGH 8											
ORDINATES	SPAN "C"										
	EXTERIOR AND INTERIOR BEAMS										
TWENTIETH POINTS	BRG.	3.10	3.20	3.30	3.40	3.50	3.60	3.70	3.80	3.90	BRG.
DEFLECTION DUE TO WEIGHT OF STEEL	0.000	0.003	0.003	0.002	0.001	-0.001	-0.002	-0.003	-0.003	-0.002	0.000
* DEFLECTION DUE TO WEIGHT OF SLAB	0.000	0.010	0.012	0.008	0.003	0.000	-0.005	-0.010	-0.008	-0.005	0.000
DEFLECTION DUE TO WEIGHT OF RAIL	0.000	0.001	0.002	0.001	0.000	-0.001	-0.002	-0.002	-0.001	-0.001	0.000
TOTAL DL DEFLECTION	0.000	0.014	0.017	0.010	0.003	-0.002	-0.009	-0.015	-0.013	-0.008	0.000
REQUIRED CAMBER	0	0	0	0	0	0	0	0	0	0	0

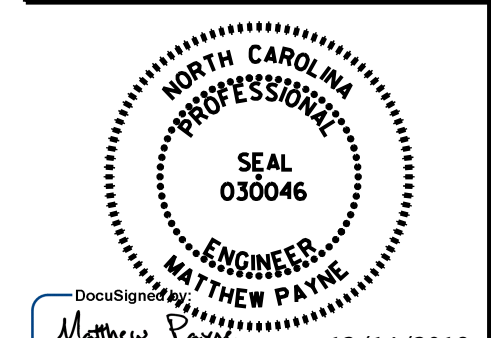
* INCLUDES SLAB, BUILD-UP AND STAY-IN-PLACE METAL FORMS.

CAMBER NOTES:

1. ALL DEFLECTIONS AND CAMBER VALUES SHOWN ARE IN INCHES (DECIMAL FORM), EXCEPT FOR "REQUIRED CAMBER" GIVEN IN INCHES (FRACTIONAL FORM).
2. DEFLECTIONS IN THE DOWNWARD DIRECTION ARE NEGATIVE. A REQUIRED CAMBER IN THE UPWARD DIRECTION IS POSITIVE.

PROJECT NO. I-5823
DAVIE COUNTY
 STATION: 701+85.00 -L LT-

Dewberry
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 NC COA No. F-0929



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

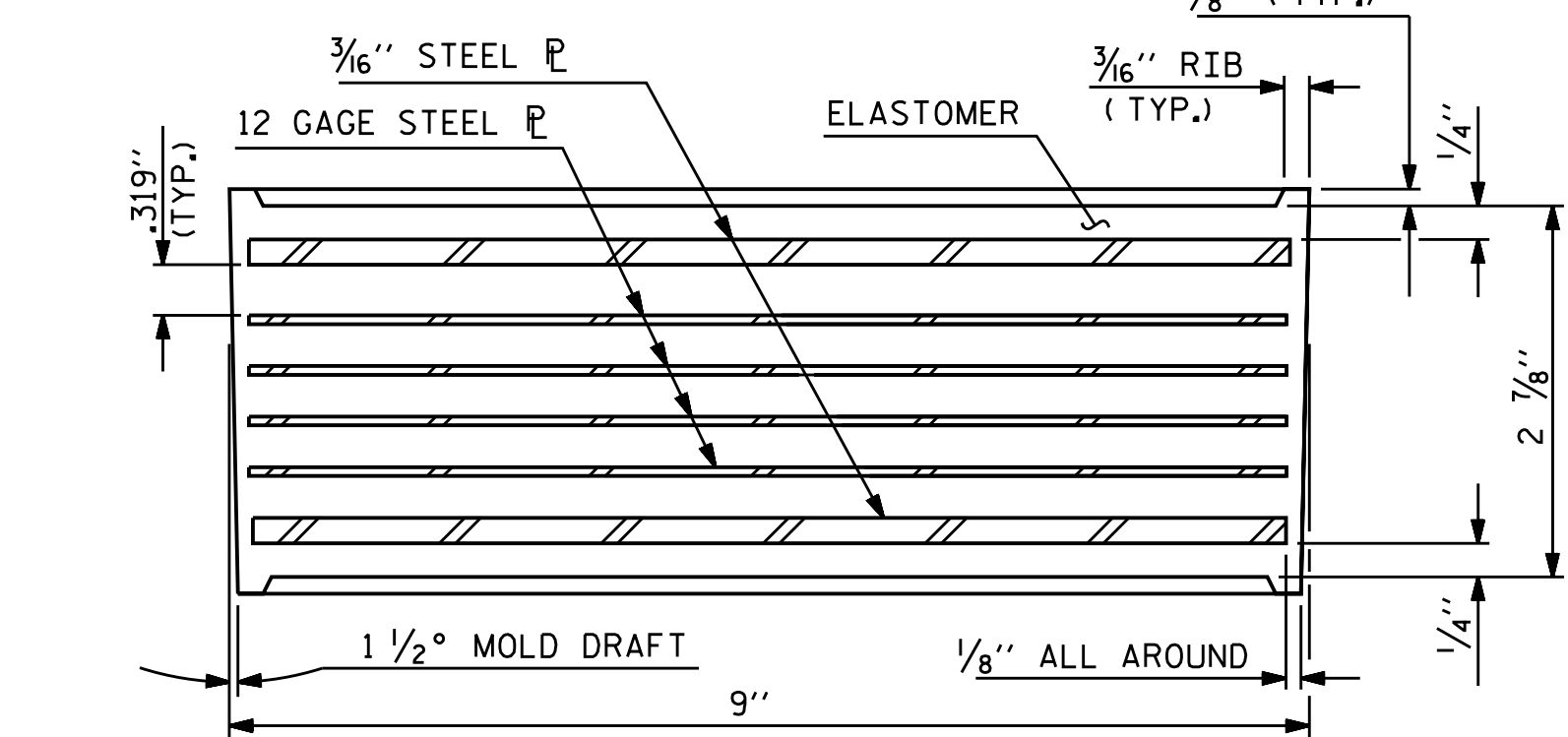
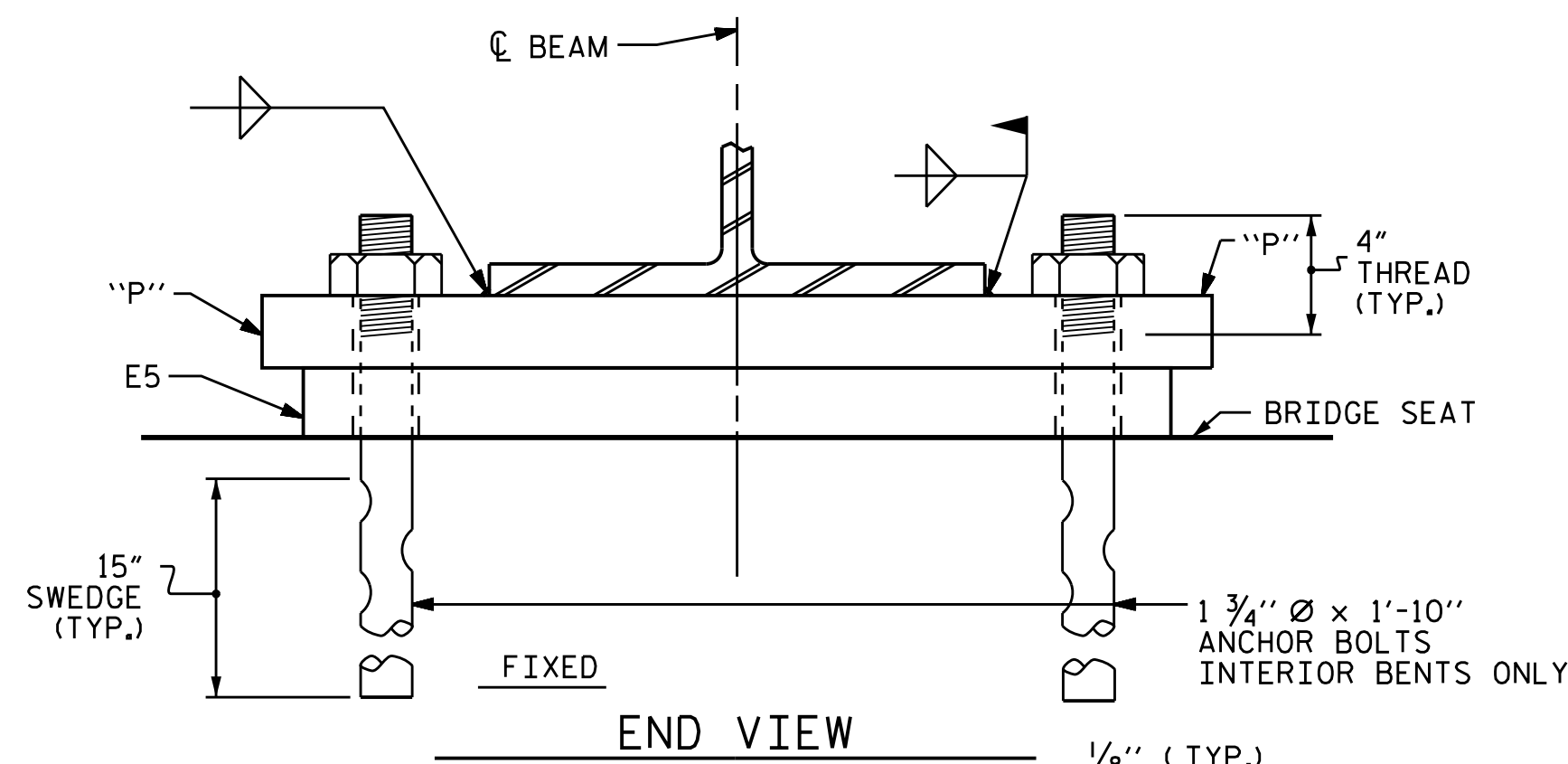
SUPERSTRUCTURE
 BEAM DEFLECTION
 AND CAMBER SCHEDULE

DRAWN BY : D. SMITH DATE : DEC. 18
 CHECKED BY : M. PAYNE DATE : DEC. 18
 DESIGN ENGINEER OF RECORD: M. PAYNE DATE : DEC. 18

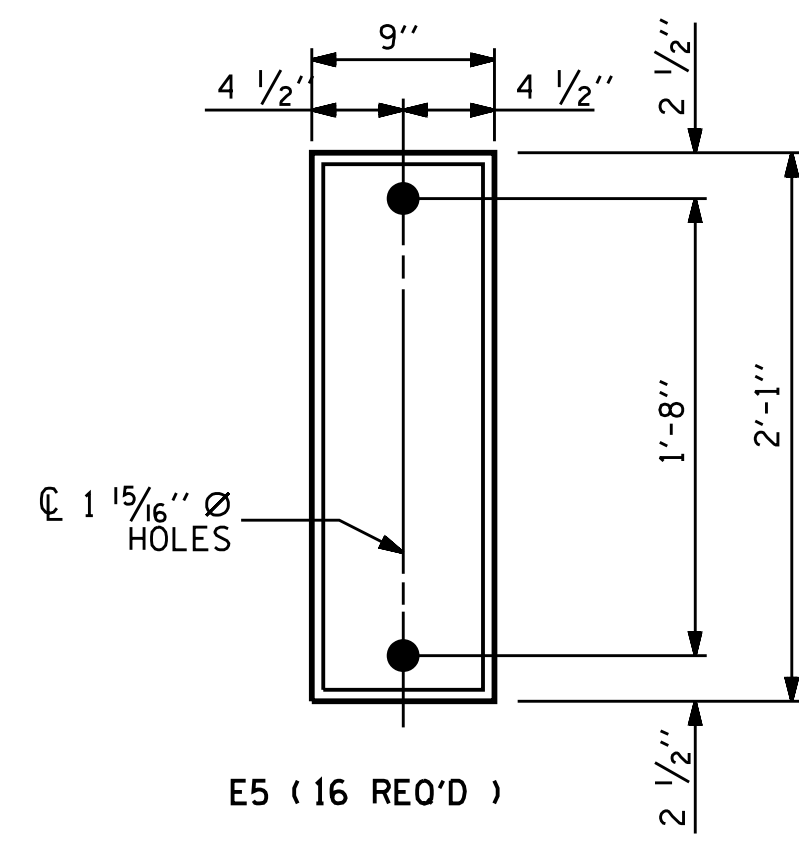
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	SI-16	
1			3			TOTAL SHEETS	34
2			4				

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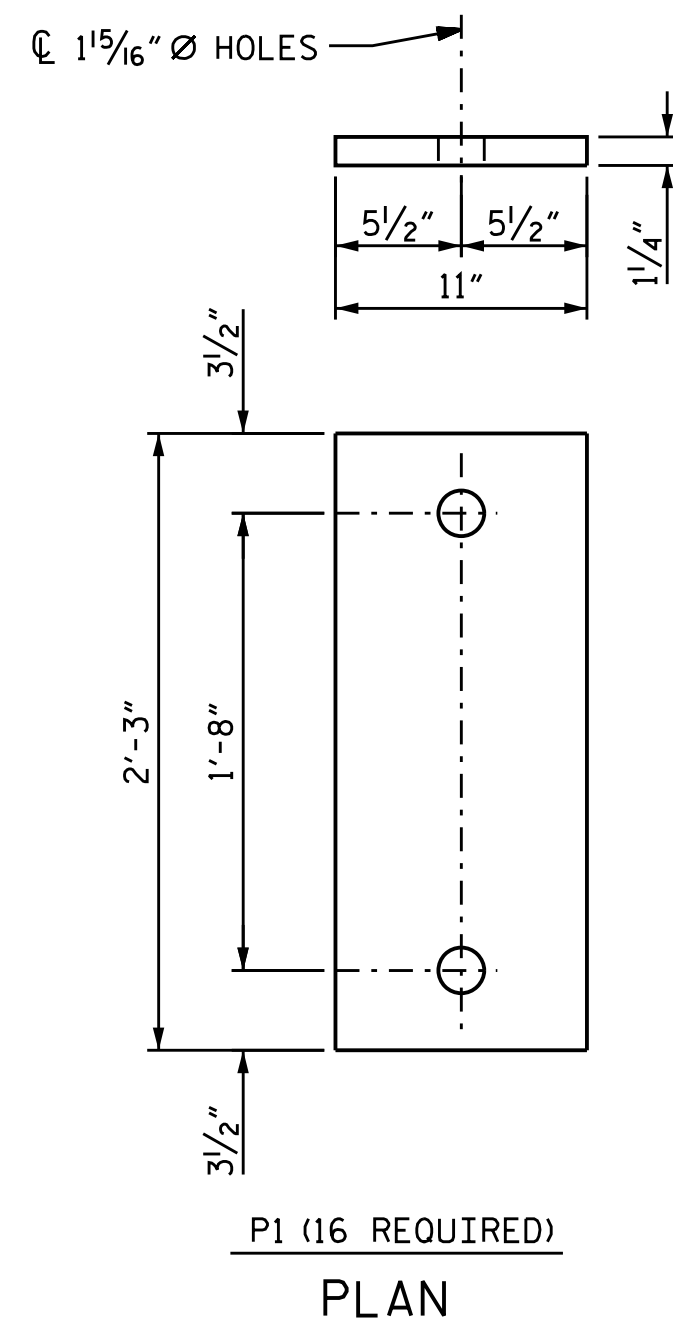
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TYPICAL SECTION OF ELASTOMERIC BEARINGS

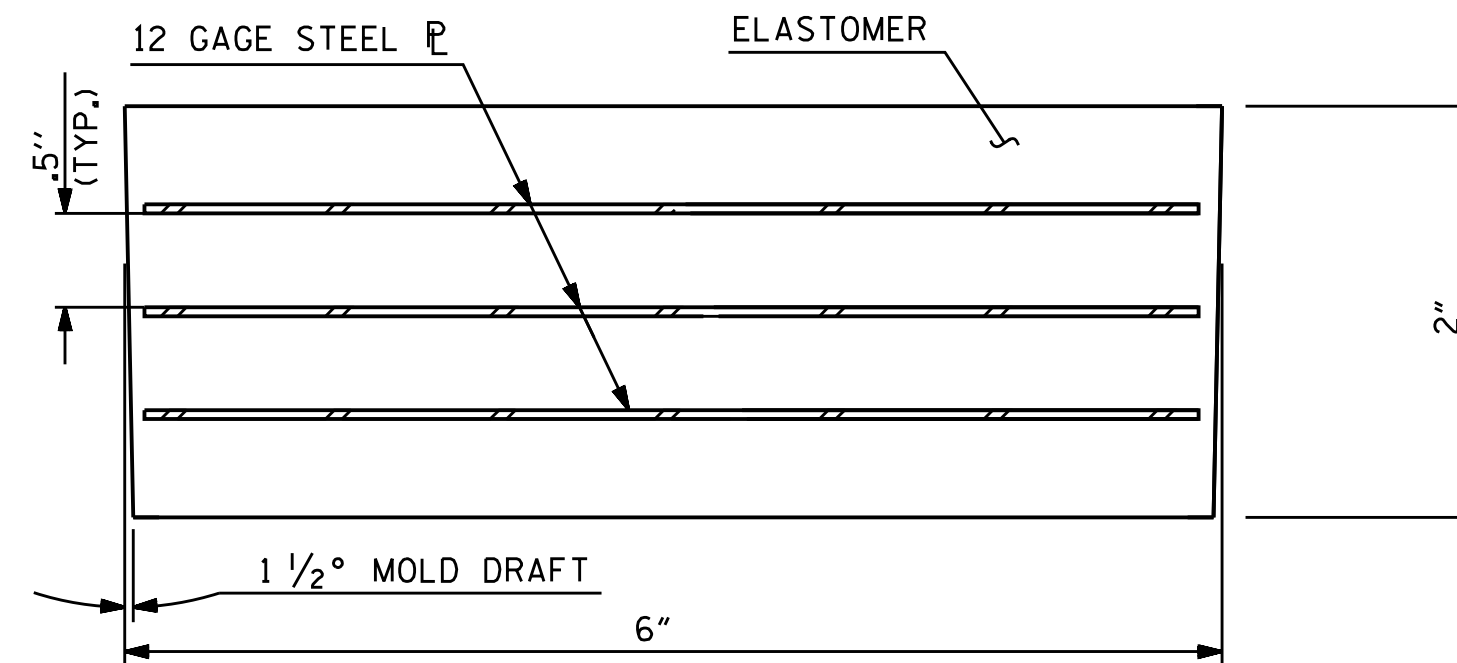
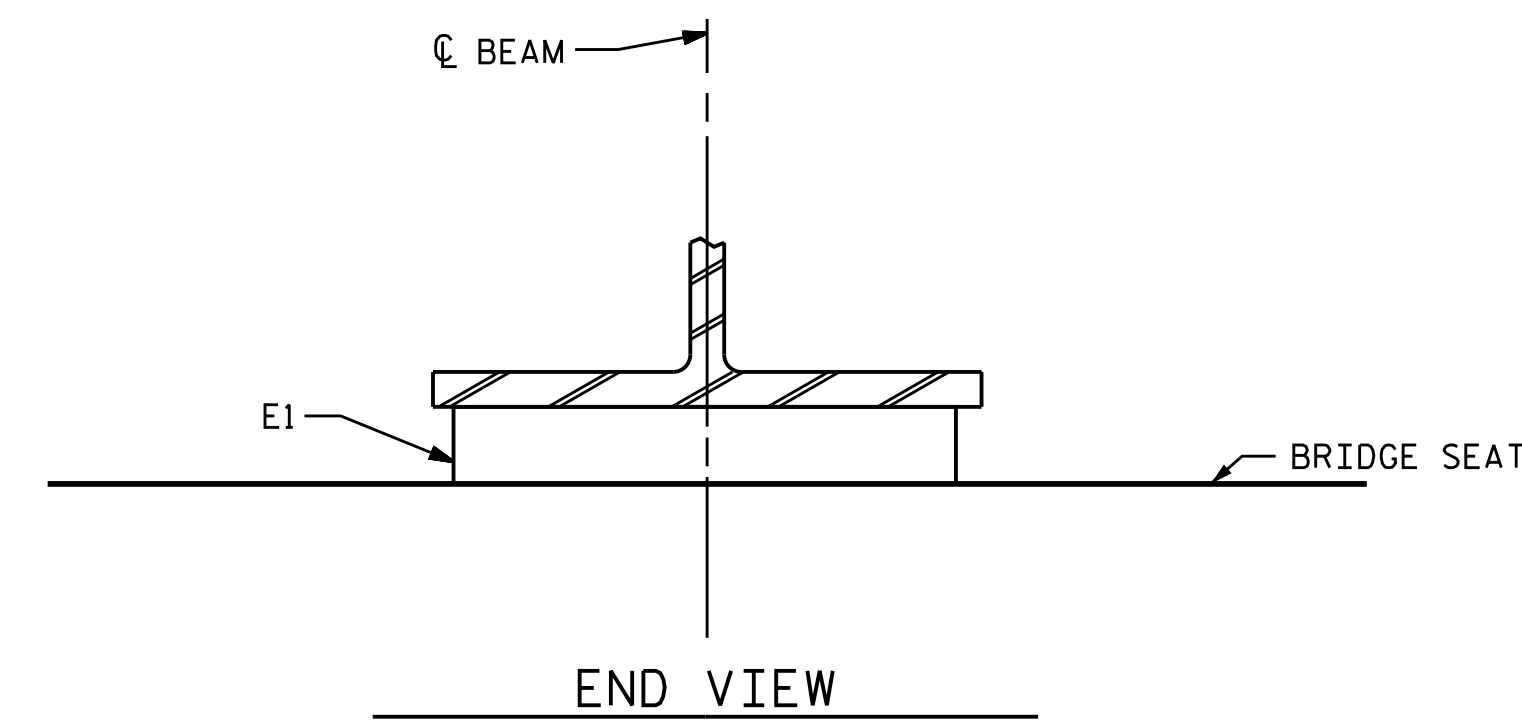


PLAN VIEW OF ELASTOMERIC BEARING
TYPE III

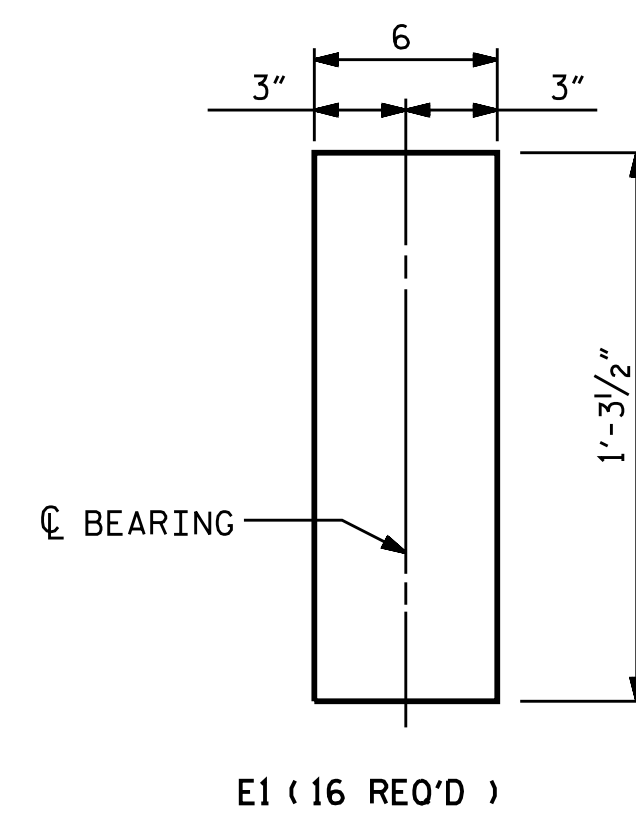


PLAN VIEW OF ELASTOMERIC BEARING
INTEGRAL END BENT BEARING

SOLE PLATE DETAILS ("P")



TYPICAL SECTION OF ELASTOMERIC BEARINGS



PLAN VIEW OF ELASTOMERIC BEARING
INTEGRAL END BENT BEARING

NOTES

AT ALL FIXED POINTS OF SUPPORT, NUTS FOR ANCHOR BOLTS ARE TO BE TIGHTENED FINGER TIGHT AND THEN BACKED OFF 1/2 TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

THE 2" Ø PIPE SLEEVE SHALL BE CUT FROM SCHEDULE 40 PVC PLASTIC PIPE. THE PVC PLASTIC PIPE SHALL MEET THE REQUIREMENTS OF ASTM D1785.

THE PAYMENT FOR THE PIPE SLEEVES SHALL BE INCLUDED IN THE SEVERAL PAY ITEMS.

FOR PAINTED STRUCTURAL STEEL (EXCLUDING AASHTO M270 GRADE 50W), SOLE PLATES, ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

FOR AASHTO M270 GRADE 50W STRUCTURAL STEEL, SOLE PLATE SHALL BE AASHTO M270 GRADE 50W AND SHALL NOT BE GALVANIZED. ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. SHOP DRAWINGS ARE NOT REQUIRED FOR ANCHOR BOLTS, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

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

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

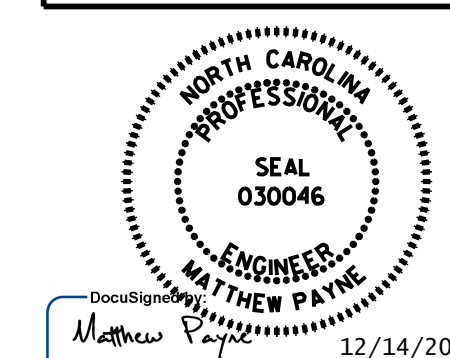
THE ELASTOMER IN THE STEEL REINFORCED BEARINGS SHALL HAVE A SHEAR MODULUS OF 0.160 KSI, IN ACCORDANCE WITH AASHTO M251.

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE III	255 K
E1	39 K

PROJECT NO. I-5823
DAVIE COUNTY
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NC COA No. F-0929



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
ELASTOMERIC BEARING
DETAILS
(STEEL SUPERSTRUCTURE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S1-17
2			4			TOTAL SHEETS 34

DRAWN BY: D. SMITH DATE: DEC. 18
CHECKED BY: M. PAYNE DATE: DEC. 18
DESIGN ENGINEER OF RECORD: M. PAYNE DATE: DEC. 18

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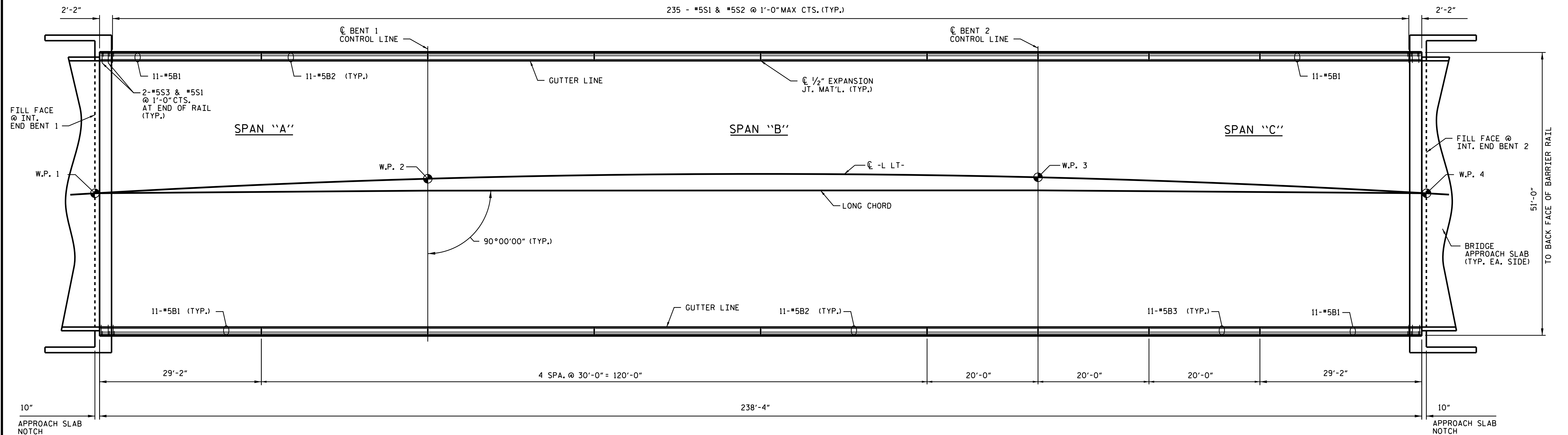
NOTES:

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

SEE "GUARDRAIL ANCHORAGE FOR BARRIER RAIL" SHEET FOR ANCHOR ASSEMBLY PLACEMENT.

DIMENSIONS ARE GIVEN ALONG OUTSIDE FACE OF RAIL UNLESS OTHERWISE NOTED.

*5 "S" BARS MAY BE SHIFTED AS NECESSARY TO CLEAR EXPANSION JOINTS IN RAIL.

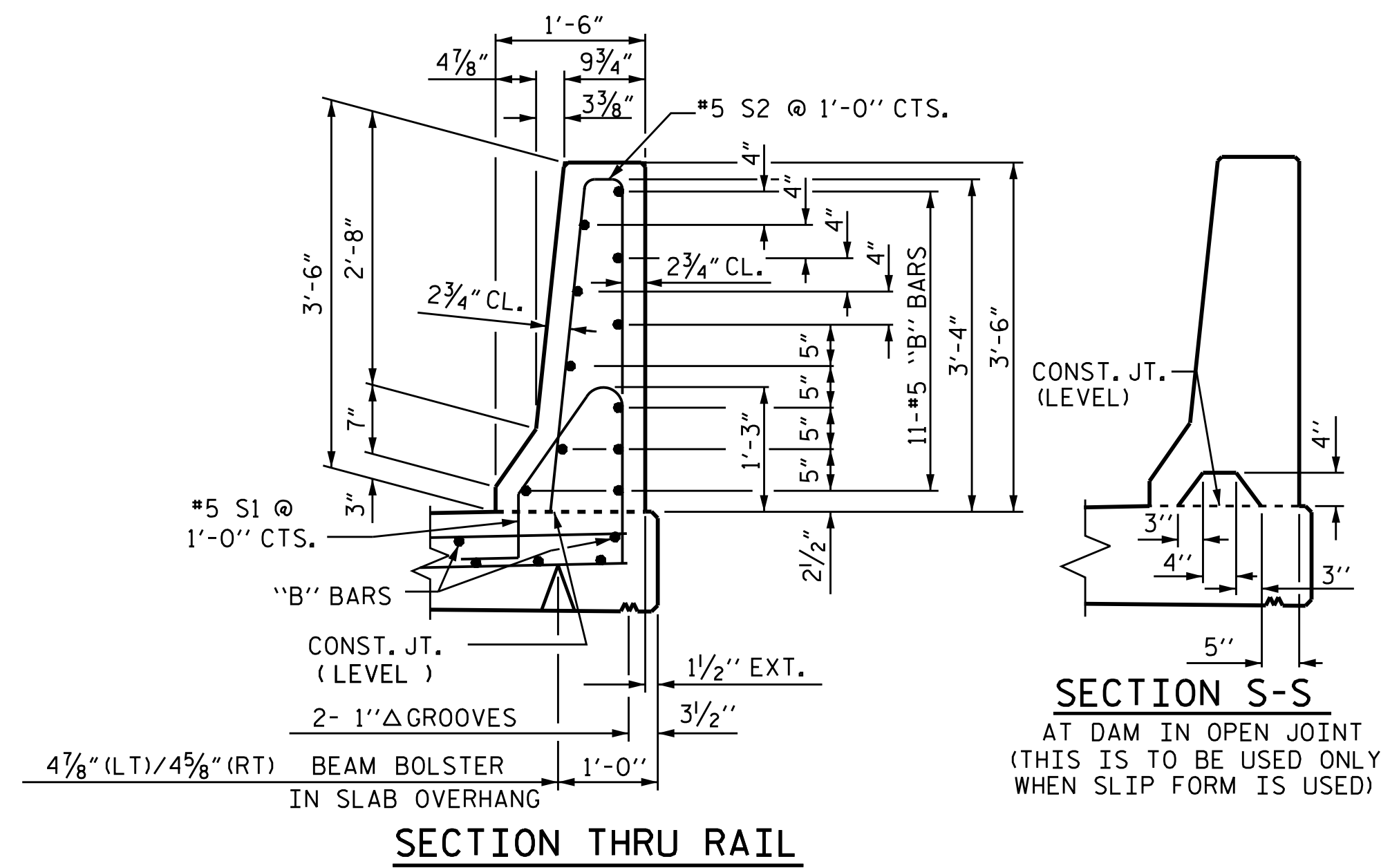


PLAN OF BARRIER RAIL REINFORCING

PROJECT NO. I-5823
DAVIE COUNTY
 STATION: 701+85.00 -L LT-

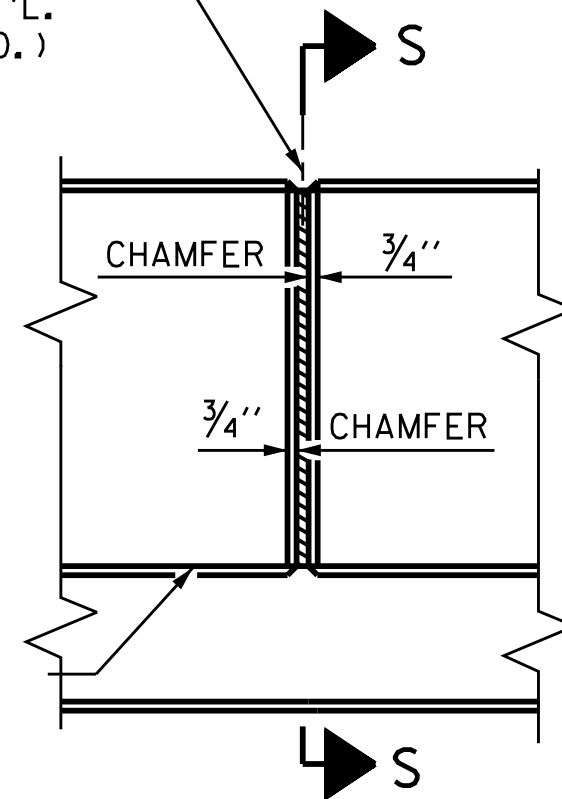
<p>2610 WYCLIFF ROAD SUITE 410 RALEIGH, NC 27607 PHONE: 919.881.9939 NC COA No. F-0929</p>	STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH SUPERSTRUCTURE CONCRETE BARRIER RAIL LAYOUT		SHEET NO. S1-18 TOTAL SHEETS 34																		
	NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 030046 MATTHEW PAYNE 12/14/2018																				
DRAWN BY: <u>D. SMITH</u> DATE: <u>DEC. 18</u> CHECKED BY: <u>M. PAYNE</u> DATE: <u>DEC. 18</u> DESIGN ENGINEER OF RECORD: <u>M. PAYNE</u> DATE: <u>DEC. 18</u>		REVISIONS <table border="1"> <thead> <tr> <th>NO.</th> <th>BY:</th> <th>DATE:</th> <th>NO.</th> <th>BY:</th> <th>DATE:</th> </tr> </thead> <tbody> <tr> <td>1</td> <td></td> <td></td> <td>3</td> <td></td> <td></td> </tr> <tr> <td>2</td> <td></td> <td></td> <td>4</td> <td></td> <td></td> </tr> </tbody> </table>		NO.	BY:	DATE:	NO.	BY:	DATE:	1			3			2			4		
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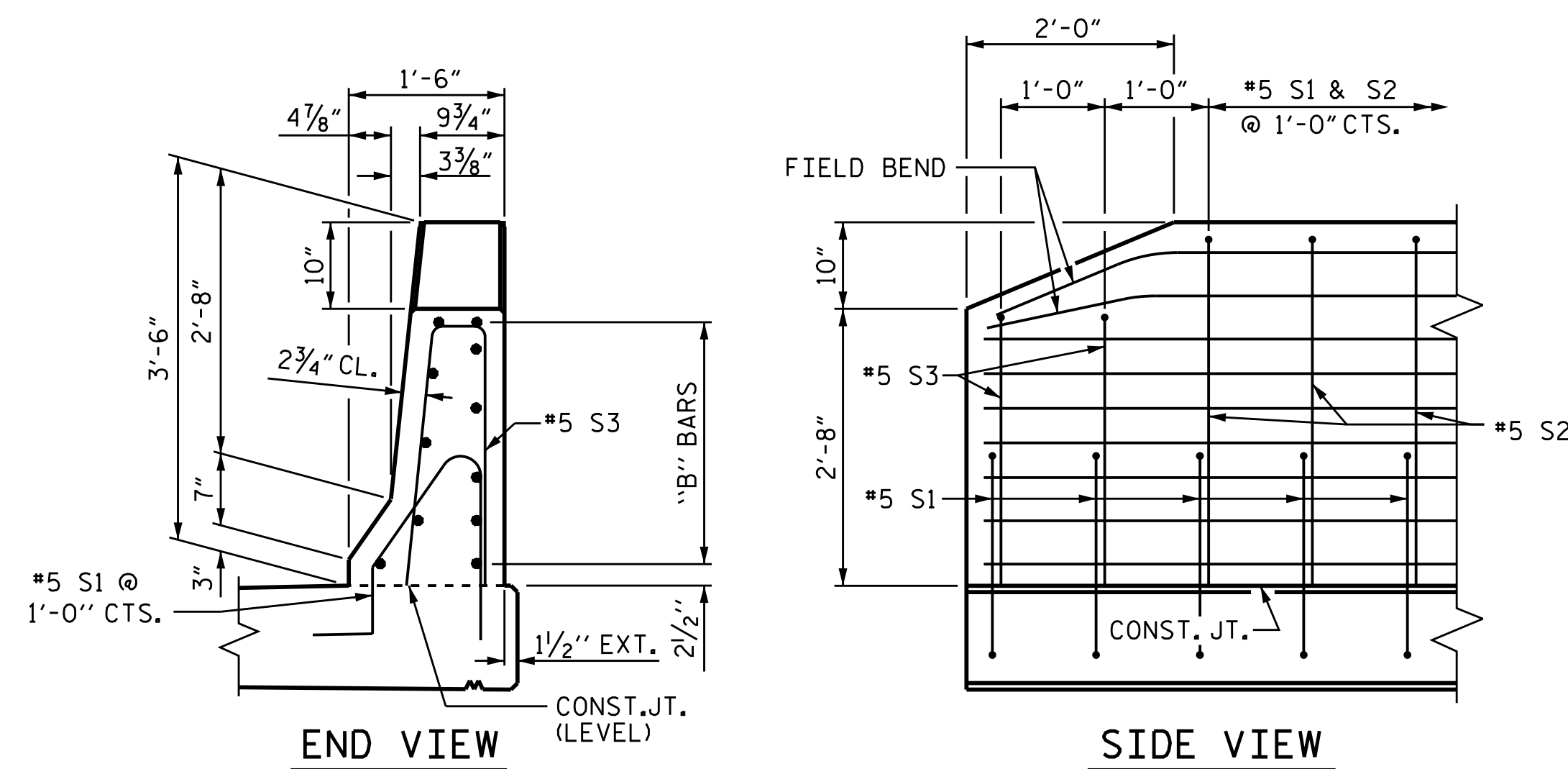


SECTION S-S
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY
WHEN SLIP FORM IS USED)

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



ELEVATION AT EXPANSION JOINTS
BARRIER RAIL DETAILS



END OF RAIL DETAILS

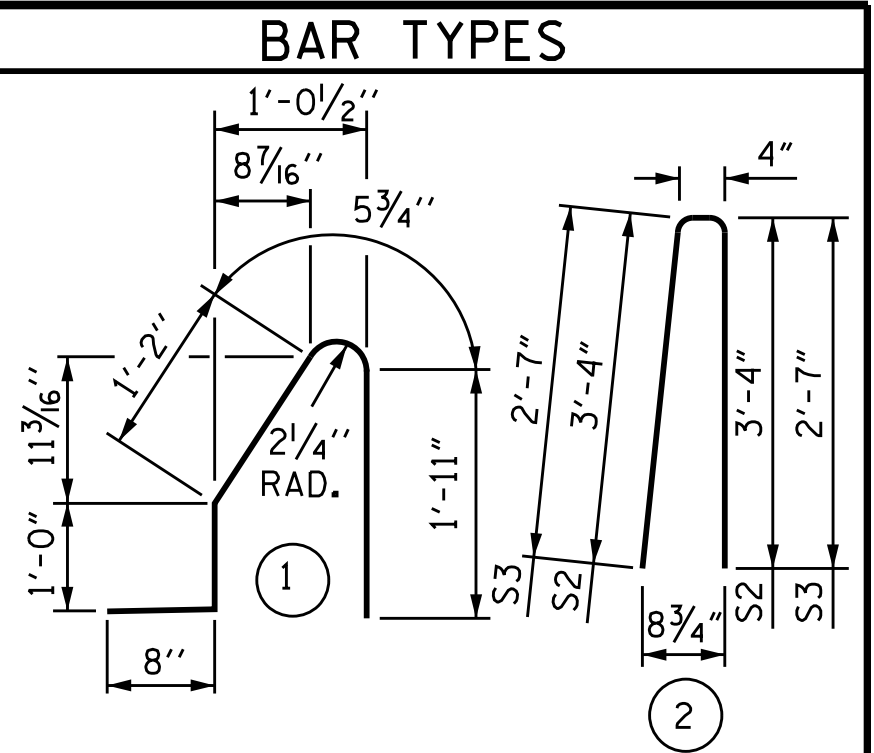
FOR ADHESIVE ANCHORING AT SAWED JOINTS

NOTES

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

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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



ALL BAR DIMENSIONS ARE OUT TO OUT

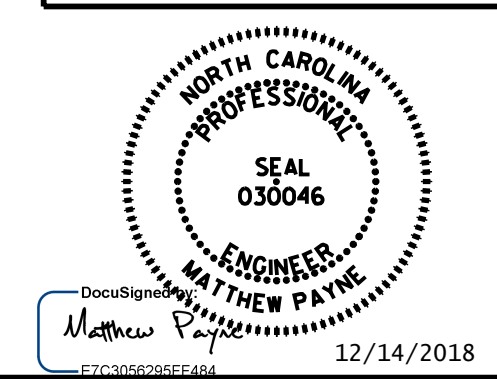
BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* S1	478	#5	1	5'-3"	2618
* S2	470	#5	2	7'-0"	3432
* S3	8	#5	2	5'-6"	46
* B1	44	#5	STR	28'-10"	1324
* B2	88	#5	STR	29'-8"	2723
* B3	66	#5	STR	19'-8"	1354
* EPOXY COATED REINFORCING STEEL					11,497 LBS.
CLASS AA CONCRETE					64.8 CU. YDS.
CONCRETE BARRIER RAIL					476.67 LIN. FT.

PROJECT NO. I-5823
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STATION: 701+85.22 -L LT-

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONCRETE BARRIER RAIL

DRAWN BY : D. SMITH DATE : DEC. 18
CHECKED BY : M. PAYNE DATE : DEC. 18
DESIGN ENGINEER OF RECORD: M. PAYNE DATE : DEC. 18

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-19
1			3			TOTAL SHEETS 34
2			4			

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NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD-DOWN PLATE AND 4 - 1/8" 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 1/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

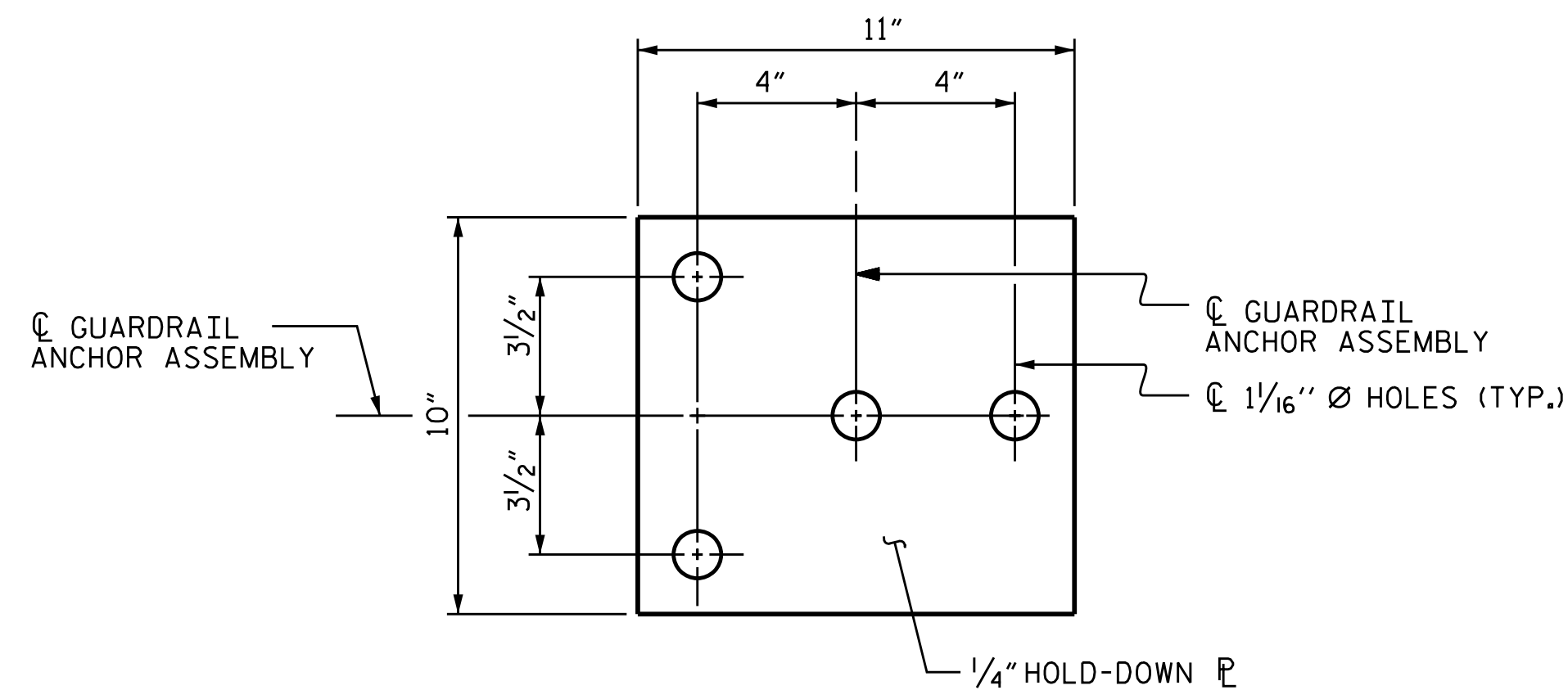
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

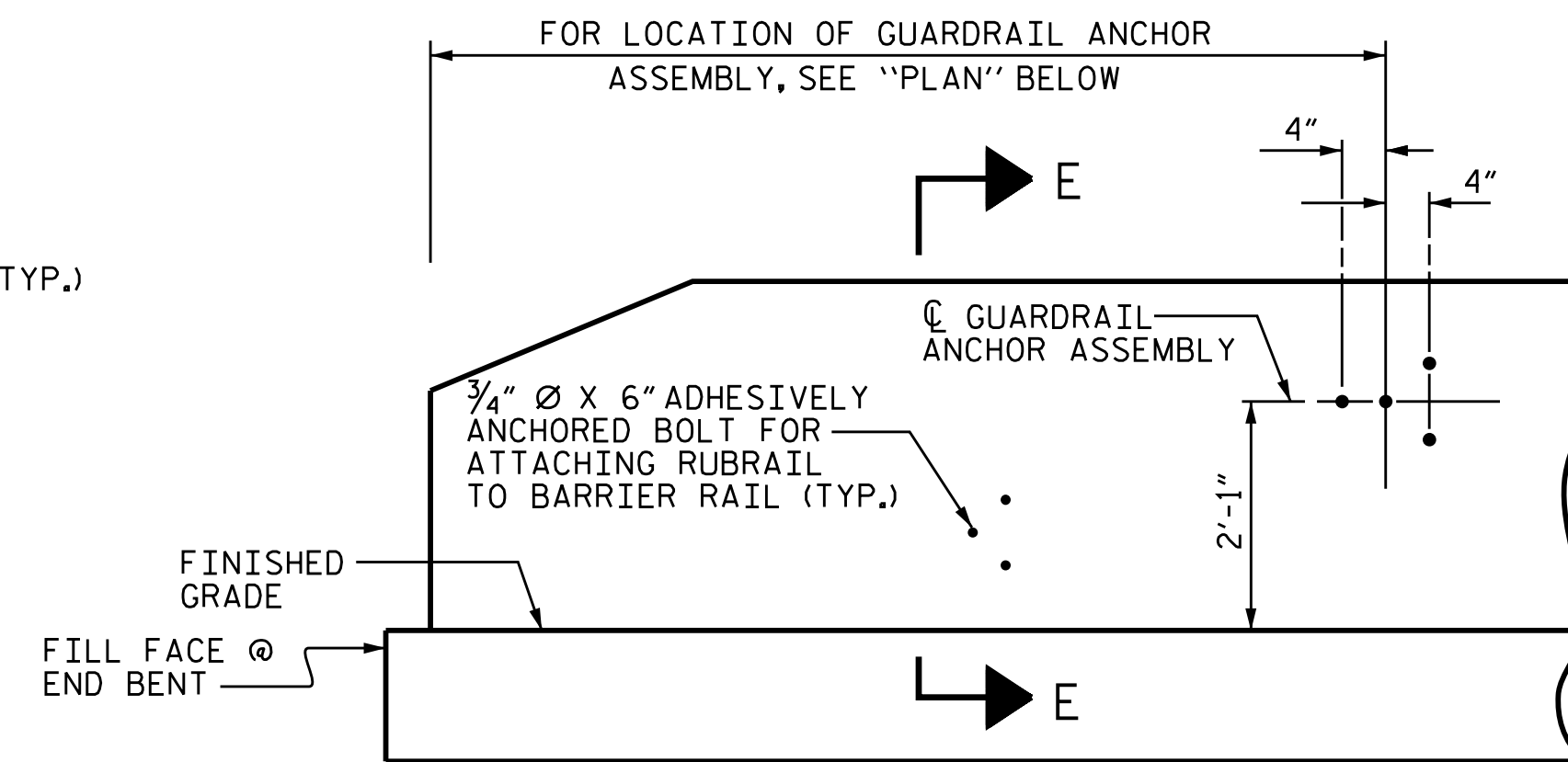
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.

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

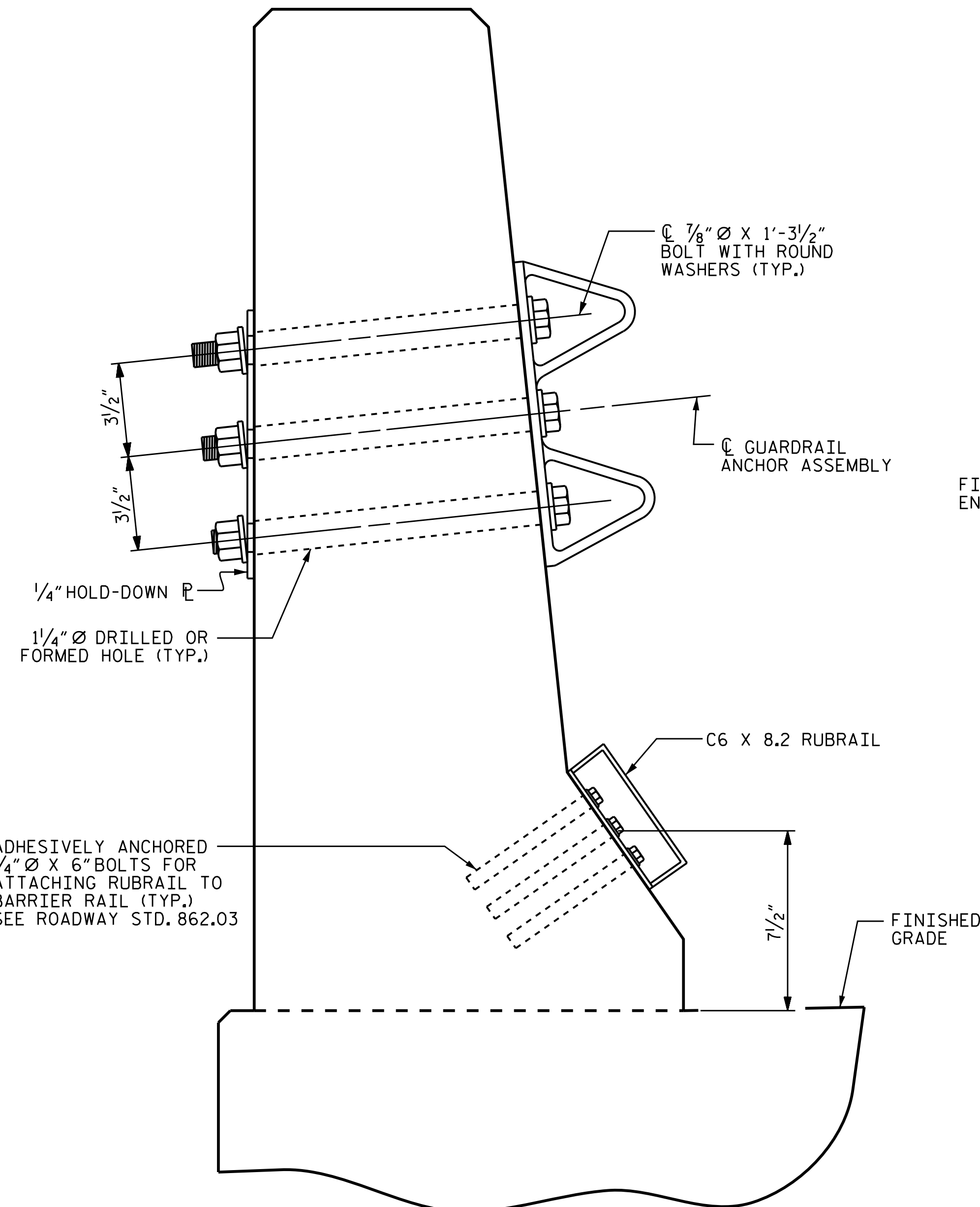
THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 3/4" Ø X 6" BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS. SEE ROADWAY STANDARD 862.03 FOR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



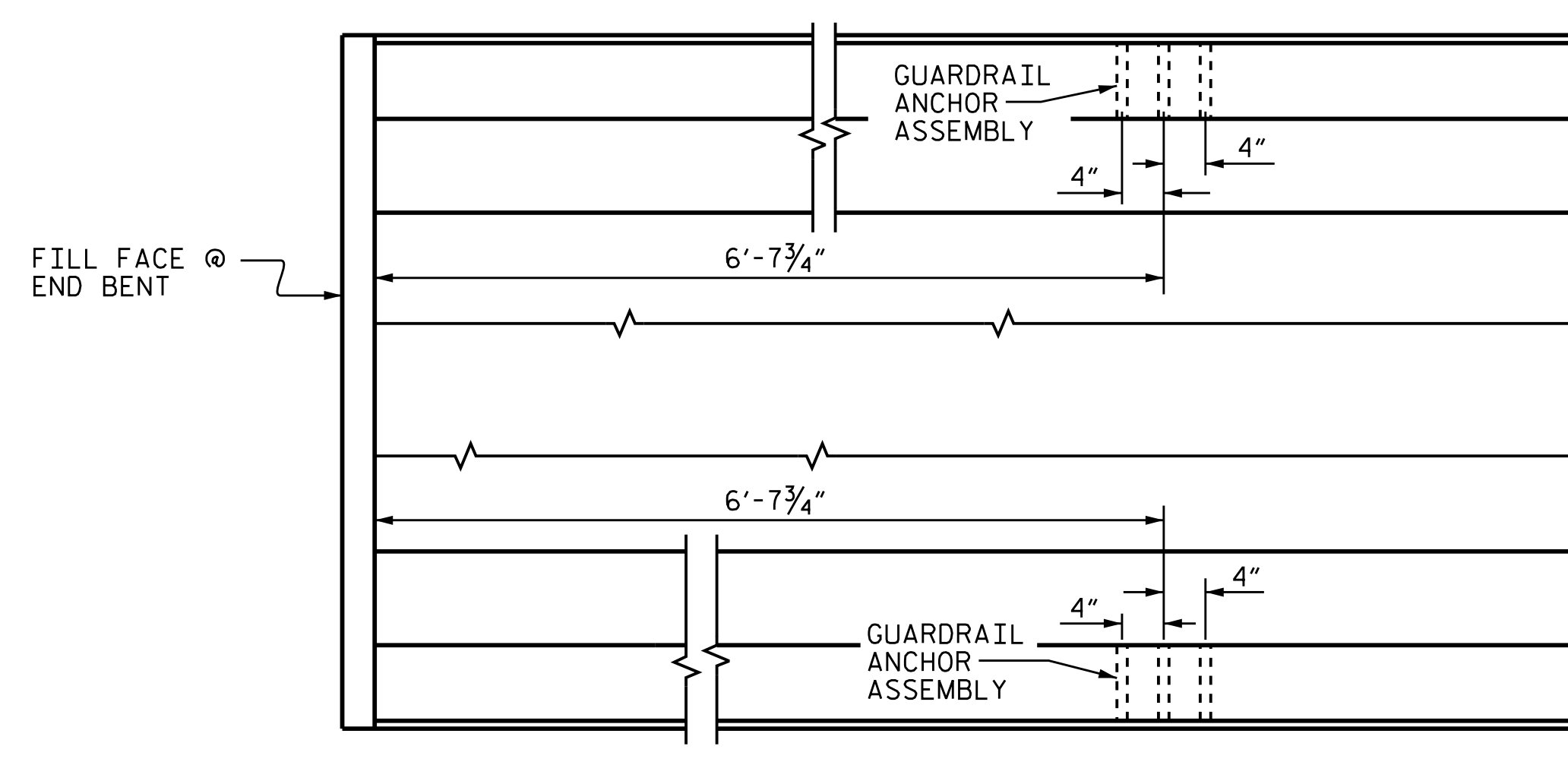
PLAN



ELEVATION



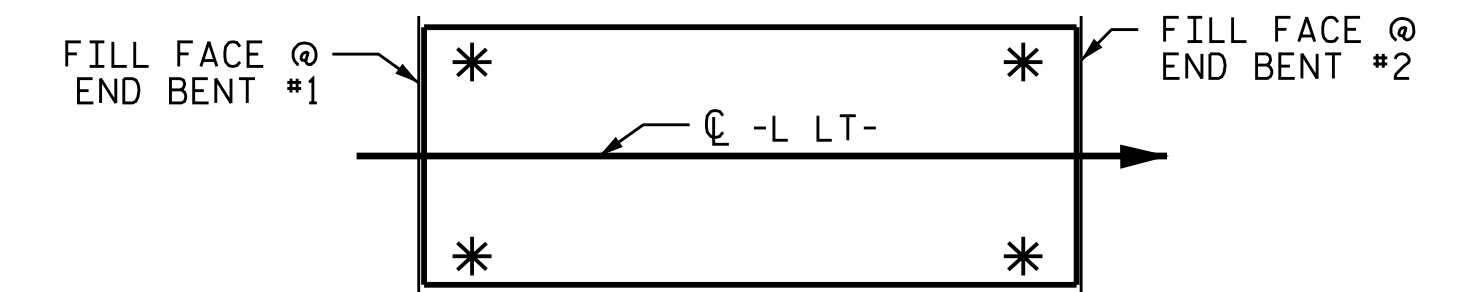
SECTION E-E
GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

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

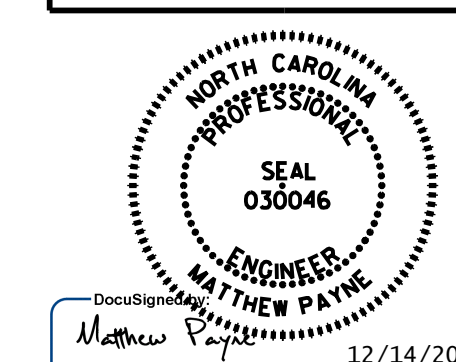


SKETCH SHOWING POINTS OF ATTACHMENTS

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. I-5823
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Dewberry
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NC COA No. F-0929



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
GUARDRAIL ANCHORAGE
FOR BARRIER RAIL

DRAWN BY: D. SMITH DATE: DEC. 18
CHECKED BY: M. PAYNE DATE: DEC. 18
DESIGN ENGINEER OF RECORD: M. PAYNE DATE: DEC. 18

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