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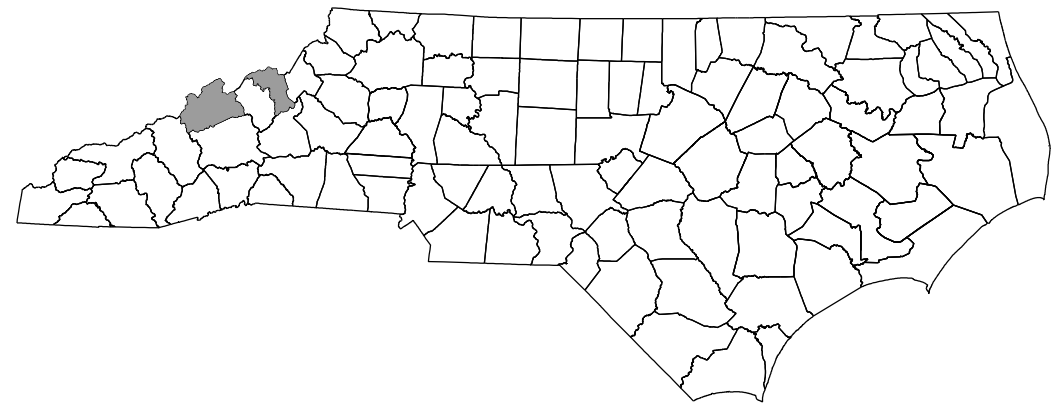
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9/26/2018 5:12:26 PM G:\Projects\2042678 NCDOT Structures LSA\15BPR.28 (Madison, Mitchell)\Mitchell\247\FINAL\_DGNS\400\_001\_15BPR.28\_SMU\_TSH.dgn  
 CKE\_R2514B\_PDF\_Full.pltctfg MITCHELL\_247.tbl

**TIP PROJECT: 15BPR.28**

**CONTRACT: -**



STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS

**MADISON AND MITCHELL COUNTIES**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	15BPR.28	1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
-	-	P.E.	
-	-	CONSTRUCTION	

**LOCATION - MADISON COUNTY :**

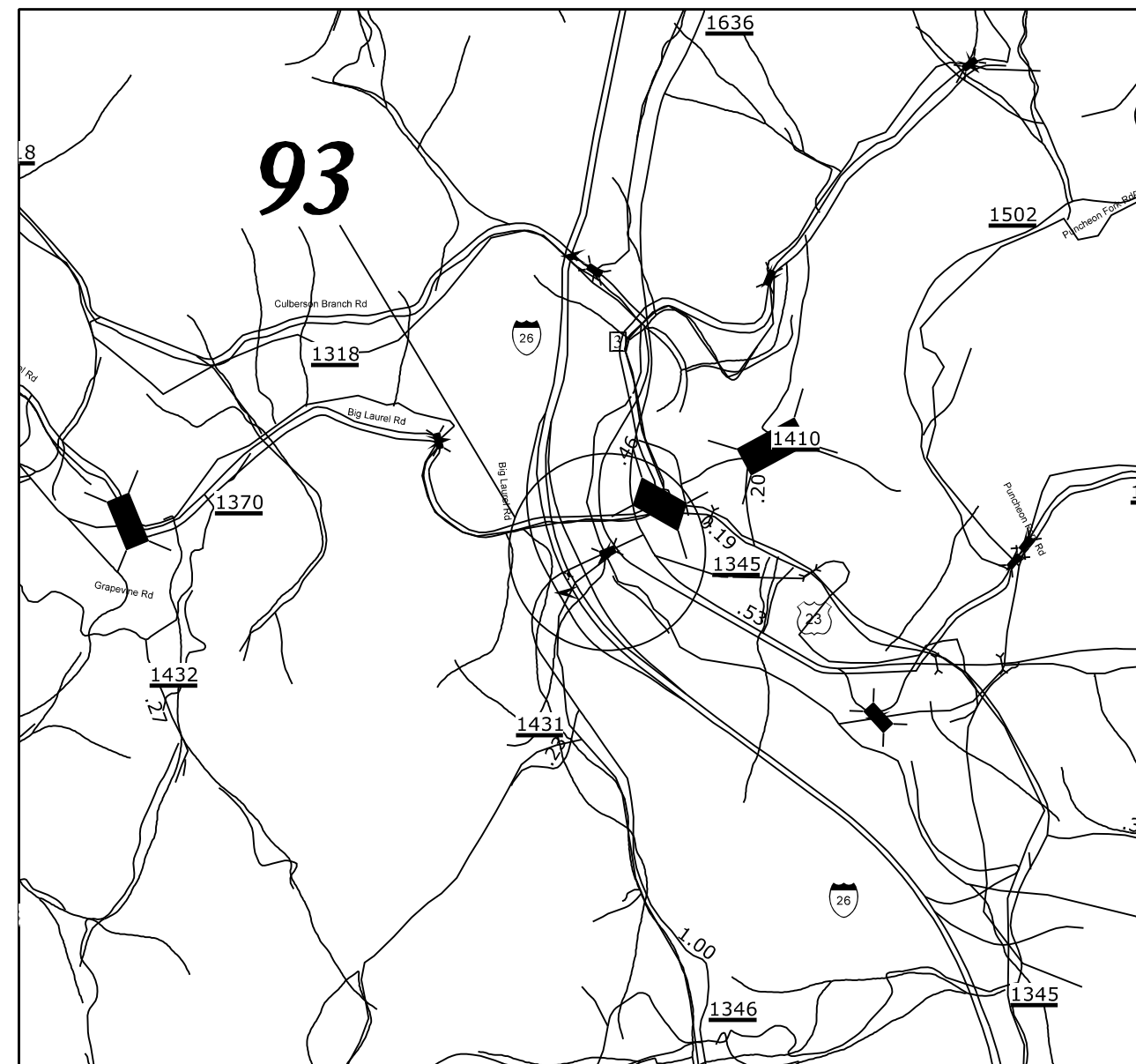
**BRIDGE #93 ON SR 1346 (BEAR BRANCH ROAD) OVER BIG LAUREL CREEK**

**BRIDGE #113 ON SR 1151 (BIG PINE ROAD) OVER FRENCH BROAD RIVER**

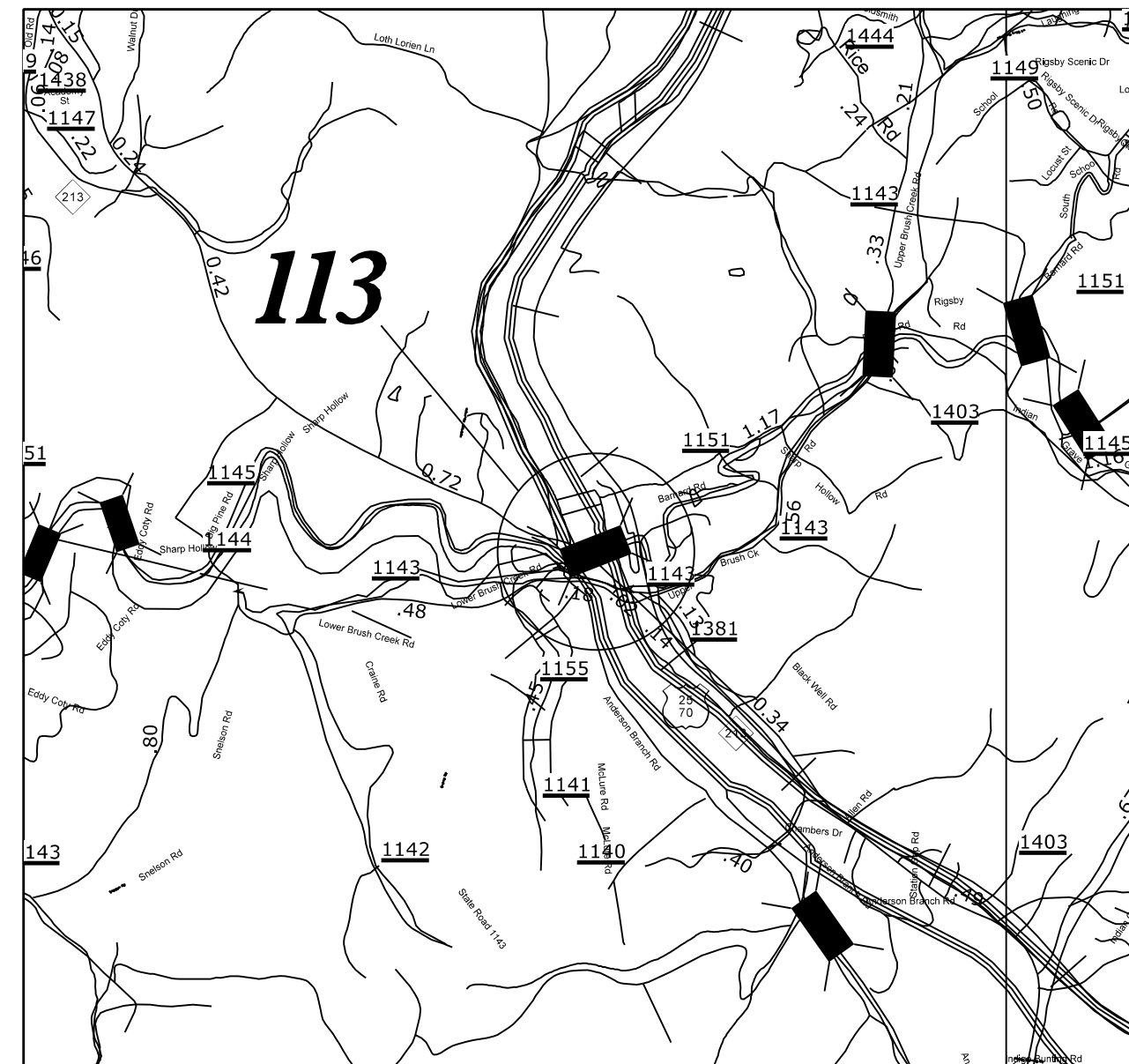
**MITCHELL COUNTY :**

**BRIDGE #247 ON NC 226 OVER NORTH TOE RIVER AND CSX RAILROAD**

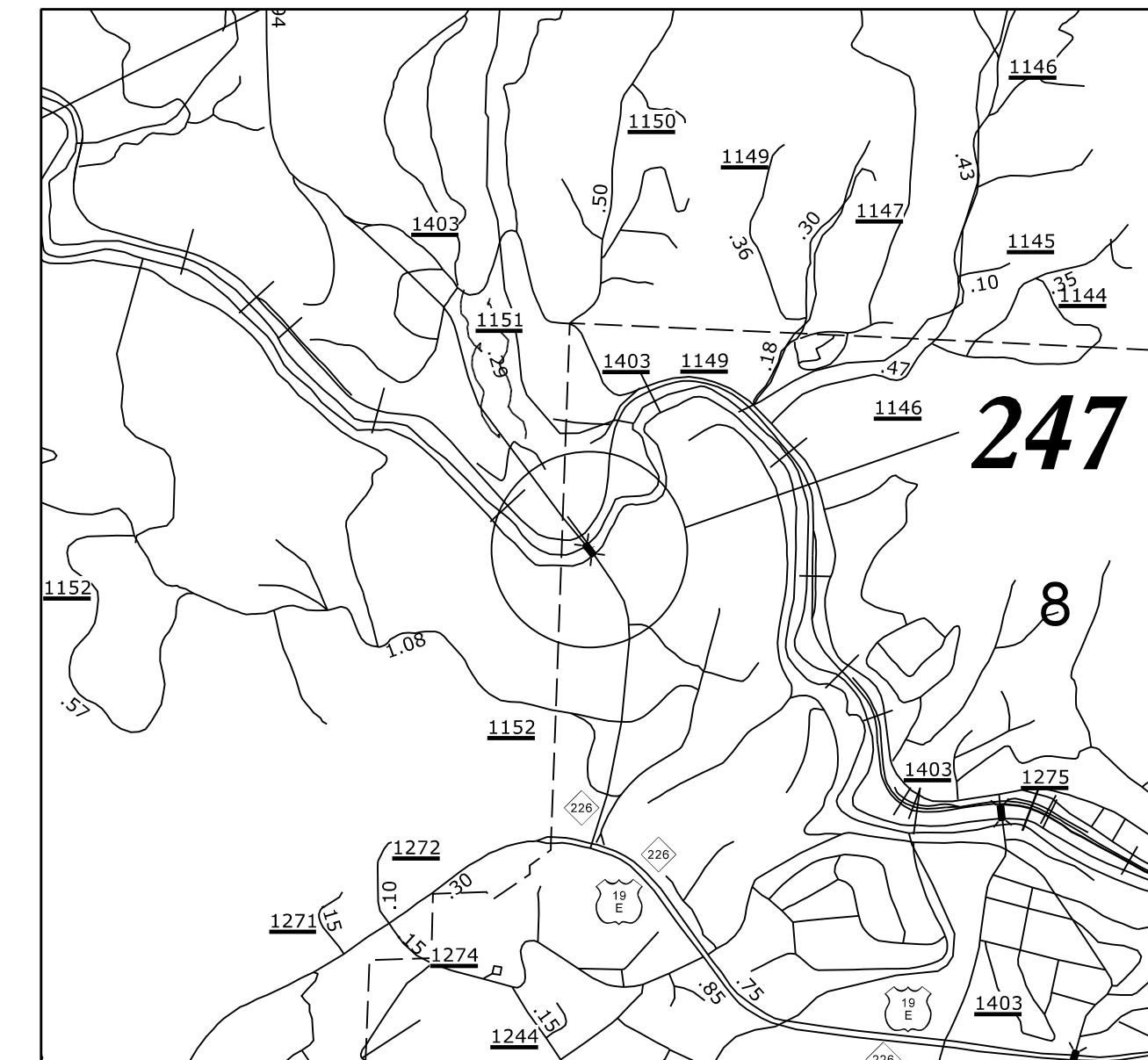
**TYPE OF WORK: BRIDGE PRESERVATION - DECK REPAIRS, LATEX MODIFIED CONCRETE OVERLAY-EARLY STRENGTH, JOINT REPLACEMENTS, SUBSTRUCTURE REPAIRS AND CLEANING AND PAINTING OF EXISTING WEATHERING STEEL BRIDGE STRUCTURES.**



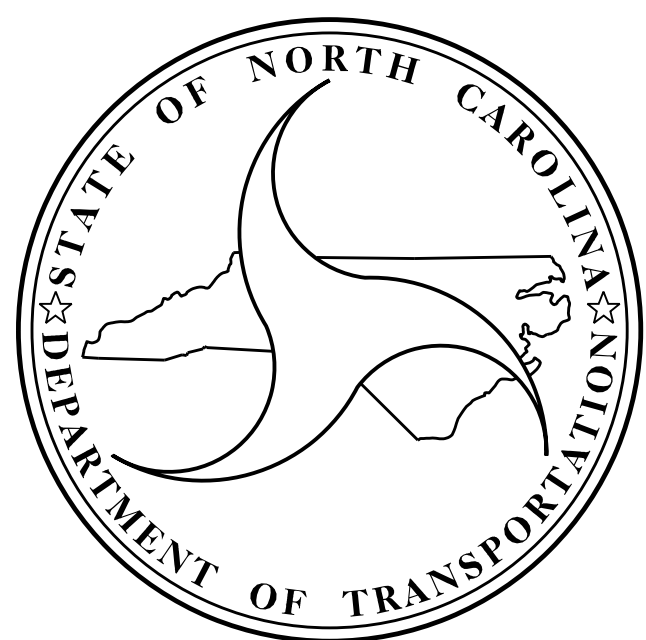
VICINITY MAP - MADISON CO.



VICINITY MAP - MADISON CO.



VICINITY MAP - MITCHELL CO.



**DESIGN DATA**

MADISON COUNTY  
 #93 ADT 1996 = 190  
 #113 ADT 2012 = 590  
 MITCHELL COUNTY  
 #247 ADT 2013 = 9200

**PROJECT LENGTH**

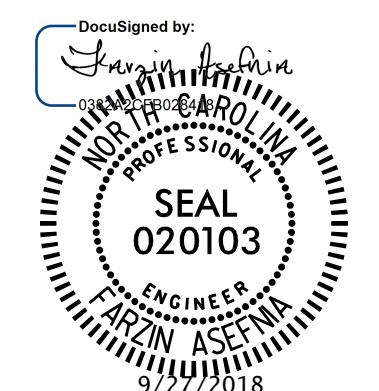
MADISON COUNTY  
 - #93 = 0.08 MILES  
 - #113 = 0.13 MILES  
 MITCHELL COUNTY  
 - #247 = 0.14 MILES



**FARZIN ASEFNIA, P.E.**  
 PROJECT ENGINEER

2018 STANDARD SPECIFICATIONS

LETTING DATE :  
 NOVEMBER 20, 2018

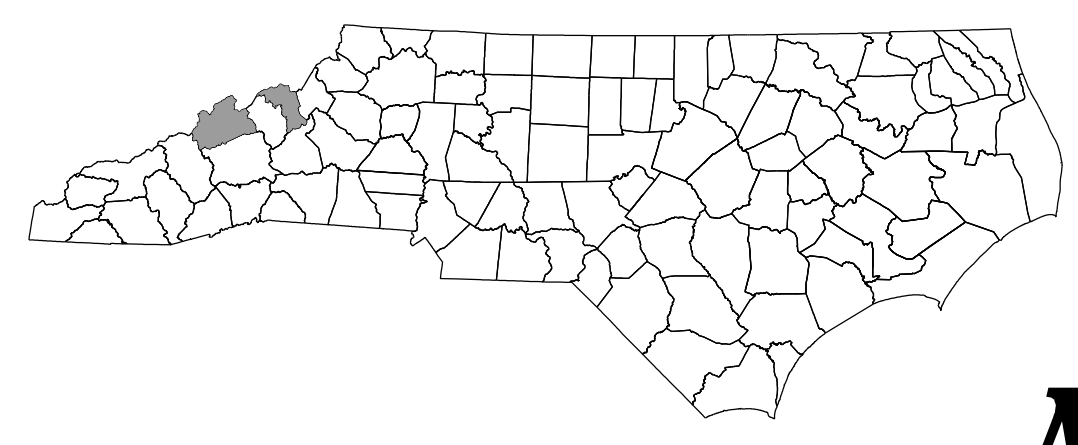


**FARZIN ASEFNIA, P.E.**

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CKE-R2514B-PDF-Full.pltctfg MITCHELL-247.tbl

**TIP PROJECT: 15BPR.28**

**CONTRACT: -**



STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**MADISON AND MITCHELL COUNTIES**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	15BPR.28	1A	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
-	-	P.E.	
-	-	CONSTRUCTION	

**LOCATION - MADISON COUNTY :**

**BRIDGE #93 ON SR 1346 (BEAR BRANCH ROAD) OVER BIG LAUREL CREEK**

**BRIDGE #113 ON SR 1151 (BIG PINE ROAD) OVER FRENCH BROAD RIVER**

**MITCHELL COUNTY :**

**BRIDGE #247 ON NC 226 OVER NORTH TOE RIVER AND CSX RAILROAD**

**TYPE OF WORK: BRIDGE PRESERVATION - DECK REPAIRS, LATEX MODIFIED CONCRETE OVERLAY-EARLY STRENGTH, JOINT REPLACEMENTS, SUBSTRUCTURE REPAIRS AND CLEANING AND PAINTING OF EXISTING WEATHERING STEEL BRIDGE STRUCTURES.**

**INDEX OF SHEETS**

<b>1</b>	<b>TITLE SHEET</b>
<b>1A</b>	<b>INDEX OF SHEETS</b>
<b>S-1</b>	<b>TOTAL BILL OF MATERIAL</b>
<b>S-2 THRU S-15</b>	<b>STRUCTURAL PLANS - MADISON COUNTY, BRIDGE NO. 93</b>
<b>S-17 THRU S-41</b>	<b>STRUCTURAL PLANS - MADISON COUNTY, BRIDGE NO. 113</b>
<b>S-42 THRU S-60</b>	<b>STRUCTURAL PLANS - MITCHELL COUNTY, BRIDGE NO. 247</b>
<b>S-61</b>	<b>TYPICAL CAP AND COLUMN REPAIR DETAILS</b>
<b>S-62</b>	<b>OVERHANG &amp; DIAPHRAGM REPAIR DETAILS</b>
<b>S-63</b>	<b>JACKING DETAILS</b>
<b>SN</b>	<b>STANDARD NOTES</b>

TOTAL BILL OF MATERIAL

BRIDGE NO.	INCIDENTAL MILLING	ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B	ASPHALT BINDER FOR PLANT MIX	GROOVING BRIDGE FLOORS	CLASS AA CONCRETE	EPOXY COATED REINFORCING STEEL	CLASS II, SURFACE PREPARATION	CLASS III, SURFACE PREPARATION	RIP RAP, CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	STONE FOR EROSION CONTROL, CLASS B	SHOTCRETE REPAIRS	EPOXY RESIN INJECTION	FOAM JOINT SEALS	PREFORMED SILICONE EXPANSION JOINT SEALS	EXPANSION JOINT SEAL REPAIR	CLEANING AND PAINTING EXISTING WEATHERING STEEL FOR BRIDGE #---
	SQ. YDS.	TONS	TONS	SQ. FT.	CU. YDS.	LBS.	SQ. YDS.	SQ. YDS.	TONS	SQ. YDS.	TONS	CU. FT.	LIN. FT.	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM
560093	275	25	2	10,489	0.6	45	68.2	1.6	----	----	1	17.5	47.0	LUMP SUM	----	LUMP SUM	LUMP SUM
560113	460	40	3	14,891	----	----	247.3	3.5	----	----	----	274.9	27.0	LUMP SUM	----	----	LUMP SUM
600247	670	60	4	36,620	0.3	46	66.8	2.0	10	11	----	664.9	43.0	----	LUMP SUM	----	LUMP SUM
TOTAL	1,405	125	9	62,000	0.9	91	382.3	7.1	10	11	1	957.3	117.0	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM

TOTAL BILL OF MATERIAL

BRIDGE NO.	PAINTING CONTAINMENT FOR BRIDGE #---	POLLUTION CONTROL	REPAIR OF EXISTING DECK DRAINS	VOLUMETRIC MIXER	LATEX MODIFIED CONCRETE - EARLY STRENGTH	CONCRETE FOR DECK REPAIR	ELASTOMERIC CONCRETE	BRIDGE JOINT DEMOLITION	CONCRETE WORK FOR JOINT REPLACEMENT	EPOXY COATING AND DEBRIS REMOVAL	SCARIFYING BRIDGE DECK	HYDRO-DEMOLITION OF BRIDGE DECK	PLACING AND FINISHING LATEX MODIFIED CONCRETE OVERLAY- EARLY STRENGTH	GUARDRAIL ANCHOR UNIT REPAIR	TYPE I BRIDGE JACKING BRIDGE #---
	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	CU. YDS.	CU. FT.	CU. FT.	SQ. FT.	SQ. FT.	SQ. FT.	SQ. YDS.	SQ. YDS.	SQ. YDS.	EA.	EA.
560093	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	75.2	9.0	9.0	72	----	220	1,268	1,268	1,268	1	----
560113	LUMP SUM	LUMP SUM	----	LUMP SUM	120.6	21.0	45.6	180	----	534	1,845	1,845	1,845	----	28
600247	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	242.5	12.0	30.0	----	240	405	4,285	4,285	4,285	3	2
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	438.3	42.0	84.6	252	240	1,159	7,398	7,398	7,398	4	30

PROJECT NO. 15BPR.28

MADISON & MITCHELL COUNTY

BRIDGE NO. 560093, 560113, 600247

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STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

TOTAL BILL  
OF MATERIAL

REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S-1
2			4			TOTAL SHEETS 63

DRAWN BY : S. DHOLAKIA DATE : 8/2018  
 CHECKED BY : J. YANNAKONE DATE : 8/2018  
 DESIGN ENGINEER OF RECORD : F. ASEFNIA DATE : 8/2018

Louis Berger  
1001 Wade Avenue, Suite 400  
Raleigh, NC 27605-3322  
NC COA No. F-0840

FILL FACE @  
END BENT 1

SPAN A

SPAN B

SPAN C

FILL FACE @  
END BENT 2

END BENT 1

BENT 1

BENT 2

END BENT 2

NORMAL  
WATER SURFACE

EXISTING  
GROUND LINE

SECTION ALONG  $\text{C}$  ROADWAY

NOTES:

PROFILE INFORMATION IS TAKEN FROM THE ORIGINAL PLANS AND THE ROUTINE INSPECTION REPORT DATED 09/30/2016.

BRIDGE ORIENTATION CONFORMS TO EXISTING BRIDGE PLANS.

SCOPE OF WORK

- PARTIALLY REMOVE BRIDGE DECK AND APPROACH SLAB HEADER CONCRETE BY SCARIFICATION AND HYDRODEMOLITION METHODS.
- DEMOLISH EXISTING BRIDGE DECK JOINTS.
- OVERLAY PREPARED BRIDGE DECK AND APPROACH SLAB HEADER WITH LATEX MODIFIED CONCRETE-EARLY STRENGTH.
- RECONSTRUCT BRIDGE JOINTS AND INSTALL JOINT SEALS.
- GROOVE LATEX MODIFIED CONCRETE EARLY STRENGTH BRIDGE DECK AND APPROACH SLAB.
- CLEANING AND ZONE PAINTING OF WEATHERING STEEL GIRDERS.
- REMOVE DEBRIS FROM TOP OF END BENT AND BENT CAPS.
- EPOXY INJECTION OF CONCRETE CRACKS.
- CLEAN AND REPAIR REBAR IN CONCRETE REPAIR AREAS.
- PERFORM SHOTCRETE AND CONCRETE REPAIRS IN PREPARED AREAS.
- APPLY EPOXY COATING TO TOP OF END BENT CAPS.
- CLEAN AND REPAIR DECK DRAINS.
- REPAIR GUARDRAIL ANCHORAGES.
- REPAIR ERODED FRONT SLOPE AND BERM WITH CLASS B STONE FOR EROSION CONTROL.
- MILL AND PAVE ASPHALT APPROACHES.

FILL FACE @  
END BENT 1

TO I-26

$\text{C}$  BENT 1

BIG LAUREL  
CREEK

$\text{C}$  BENT 2

$\text{C}$  BRIDGE

FILL FACE @  
END BENT 2

TO SR 1636

90°-00'-00"  
(TYP.)

11'-0"  
APPR.  
SLAB

97'-0" (SPAN A)

122'-0" (SPAN B)

97'-0" (SPAN C)

11'-0"  
APPR.  
SLAB

316'-0" (FILL FACE TO FILL FACE)

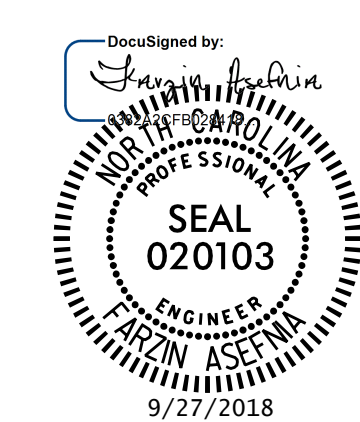
PLAN

PROJECT NO. 15BPR.28  
MADISON COUNTY  
 BRIDGE NO. 560093

I hereby certify that this structure was rehabilitated according to these plans or as noted therein.

-----  
 Resident Engineer Date

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



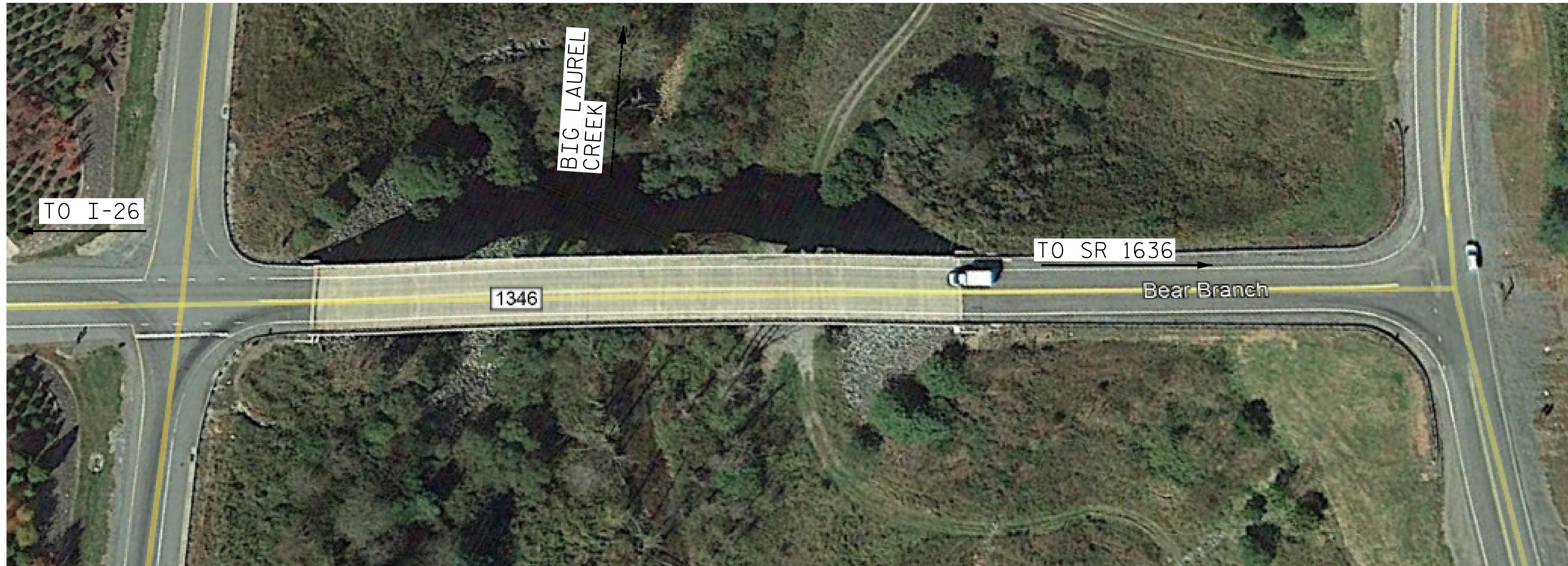
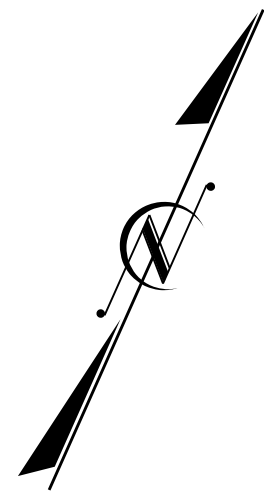
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**GENERAL DRAWING**  
 FOR BRIDGE ON SR 1346 (BEAR  
 BRANCH ROAD)  
 OVER BIG LAUREL CREEK



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
1			3			TOTAL SHEETS
2			4			63

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 MITCHELL\_247.tbl

DRAWN BY :	J. MYA	DATE :	7/2018
CHECKED BY :	T. KIRSCHBAUM	DATE :	7/2018
DESIGN ENGINEER OF RECORD :	F. ASEFNIA	DATE :	8/2018



**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 ASPECT THAT MAY BE NECESSARY TO PERFORM AND COMPLETE THE PROJECT.

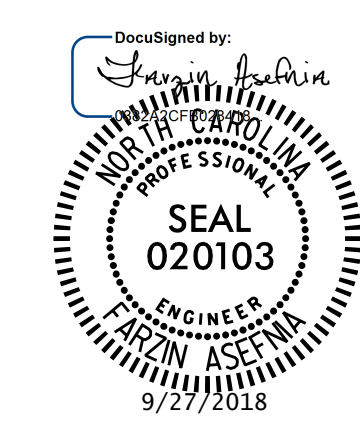
BRIDGE COORDINATES	
LATITUDE	LONGITUDE
35°54'34.30"	82°33'23.68"

**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.
- EXISTING JOINTS AND DECK DRAINS SHALL BE SEALED PRIOR TO BEGINNING SURFACE PREPARATION OF BRIDGE DECK.
- FOR CLEANING AND PAINTING OF BRIDGE, SEE PAINTING EXISTING WEATHERING STEEL STRUCTURE SPECIAL PROVISION.
- FOR PAINTING CONTAINMENT, SEE PAINTING EXISTING WEATHERING STEEL STRUCTURE SPECIAL PROVISION.
- FOR POLLUTION CONTROL, SEE PAINTING EXISTING WEATHERING STEEL STRUCTURE SPECIAL PROVISION.
- FOR OVERLAY OF BRIDGE WITH LATEX MODIFIED CONCRETE-EARLY STRENGTH, SEE SPECIAL PROVISIONS.
- THE CONTRACTOR SHALL PROVIDE A METHOD OF HANDLING UNEXPECTED BLOW THROUGH OF THE DECK DURING HYDRO-DEMOLITION OPERATIONS.
- FOR SCARIFYING BRIDGE DECK, HYDRO-DEMOLITION OF BRIDGE DECK, CLASS II SURFACE PREPARATION AND CLASS III SURFACE PREPARATION, SEE OVERLAY SURFACE PREPARATION SPECIAL PROVISIONS.
- DURING CONSTRUCTION, BERMS OR APPROPRIATE MEASURES SHALL BE LOCATED ALONG THE CENTER LINE OR EDGE OF TRAVEL LANES TO CONTROL RUN-OFF OF HYDRO-DEMOLITION WATER FROM FLOWING OR MIGRATING INTO ACTIVE TRAVEL LANES.
- THE CONTRACTOR MUST COLLECT, TREAT AND DISPOSE OF RUN-OFF WATER FROM THE HYDRO-DEMOLITION PROCESS, SEE OVERLAY SURFACE PREPARATION SPECIAL PROVISIONS.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSE WORK AND FORM WORK, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- FOR BRIDGE JOINT DEMOLITION, SEE SPECIAL PROVISIONS.
- FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.
- FOR FOAM JOINT SEALS, SEE SPECIAL PROVISIONS.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO FOLLOW ALL STATE AND FEDERAL SAFETY REQUIREMENTS.
- FOR CONTROL OF TRAFFIC AND LIMITS ON PHASING OF CONSTRUCTION, SEE TRANSPORTATION MANAGEMENT PLAN SHEETS.
- LONGITUDINAL CONSTRUCTION JOINTS OF OVERLAYS SHALL BE LOCATED ALONG THE CENTERLINE OR EDGE OF TRAVEL LANES.
- FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.
- FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.
- FOR EPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.
- FOR REPAIR OF EXISTING DECK DRAINS, SEE SPECIAL PROVISIONS.
- FOR GUARDRAIL ANCHOR UNIT REPAIR, SEE SPECIAL PROVISIONS.
- FOR EXPANSION JOINT SEAL REPAIR, SEE SPECIAL PROVISIONS.
- FOR CONCRETE FOR DECK REPAIR, SEE SPECIAL PROVISIONS.
- FOR VOLUMETRIC MIXER, SEE SPECIAL PROVISIONS.

PROJECT NO. 15BPR.28  
MADISON COUNTY  
 BRIDGE NO. 560093

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STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**GENERAL DRAWING**  
 FOR BRIDGE ON SR 1346 (BEAR  
 BRANCH ROAD)  
 OVER BIG LAUREL CREEK

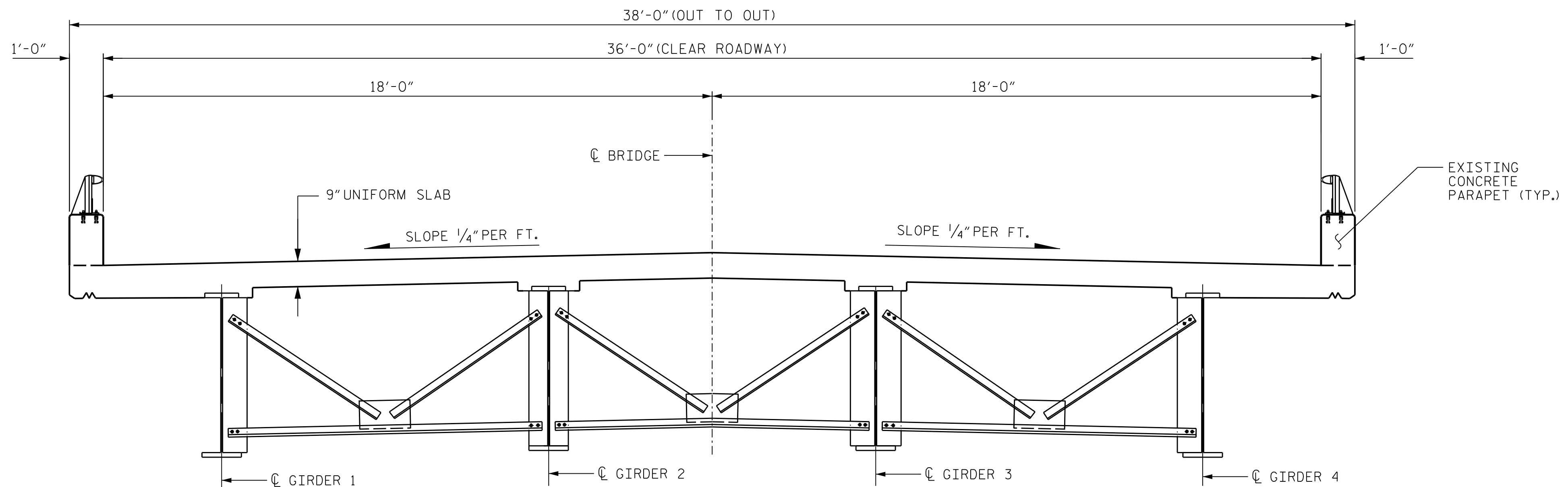
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2			4		

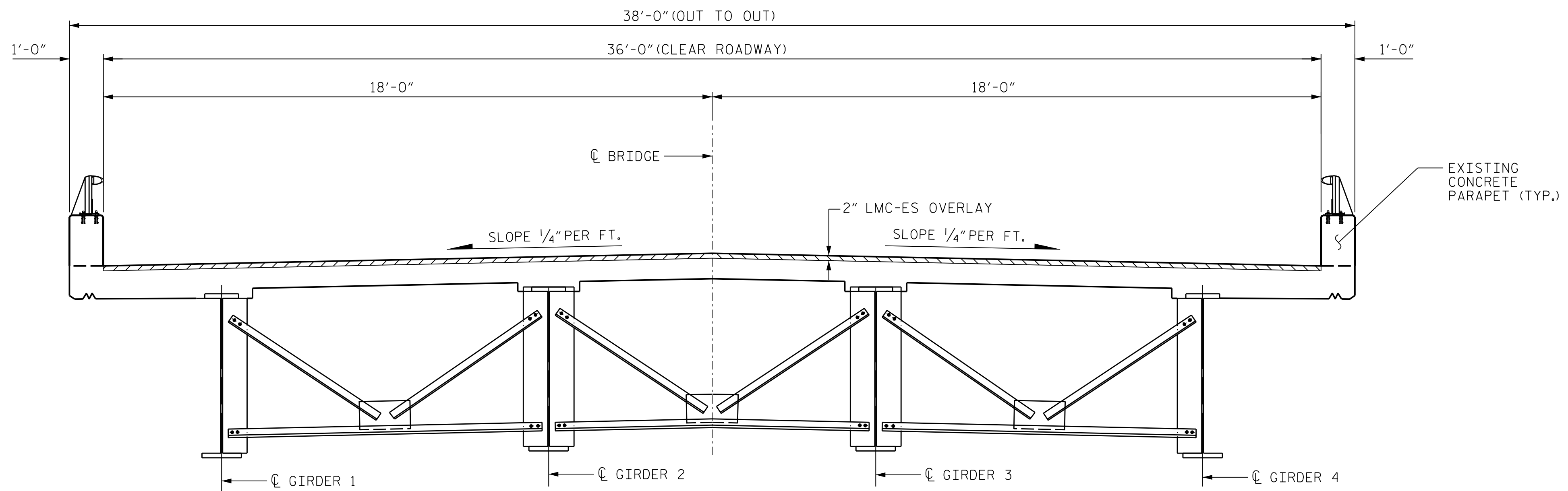
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 S-3  
 TOTAL SHEETS  
 63



DRAWN BY : J. MYA DATE : 7/2018  
 CHECKED BY : T. KIRSCHBAUM DATE : 7/2018  
 DESIGN ENGINEER OF RECORD : F. ASEFNIA DATE : 8/2018



TYPICAL SECTION  
(EXISTING)

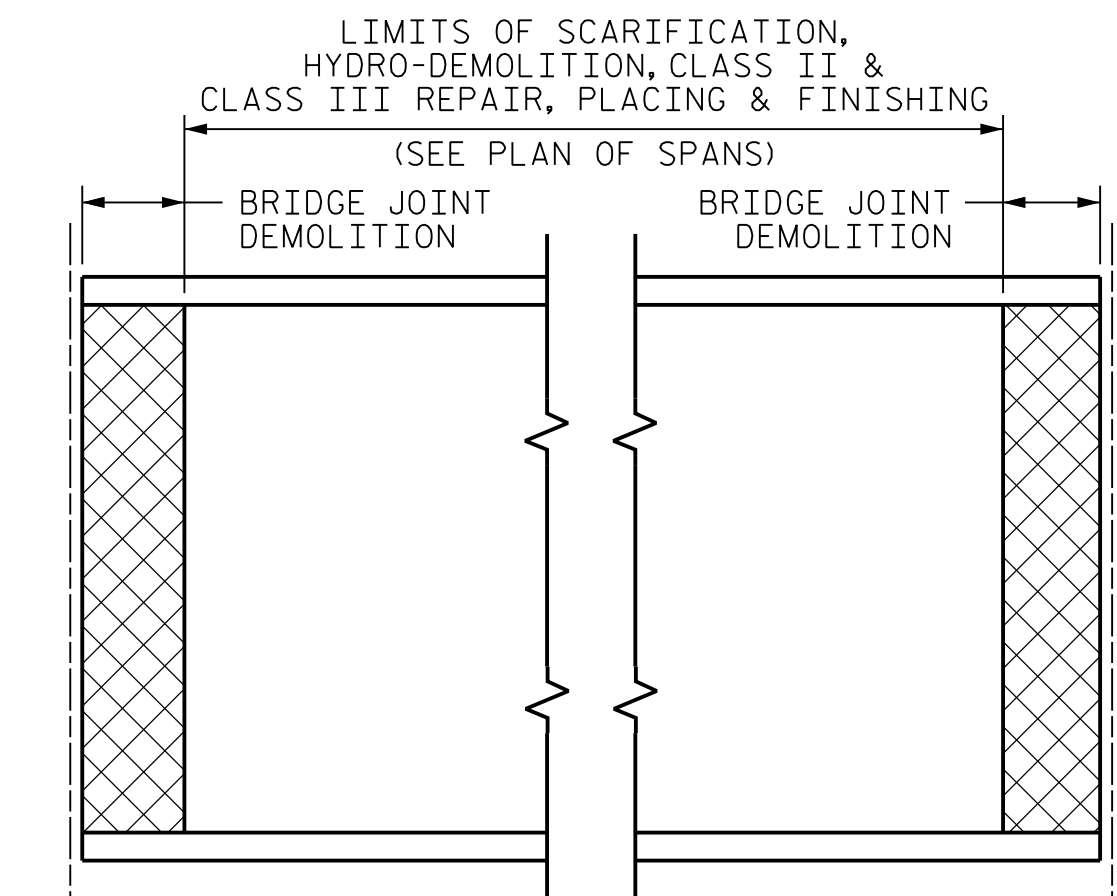


TYPICAL SECTION  
(PROPOSED)

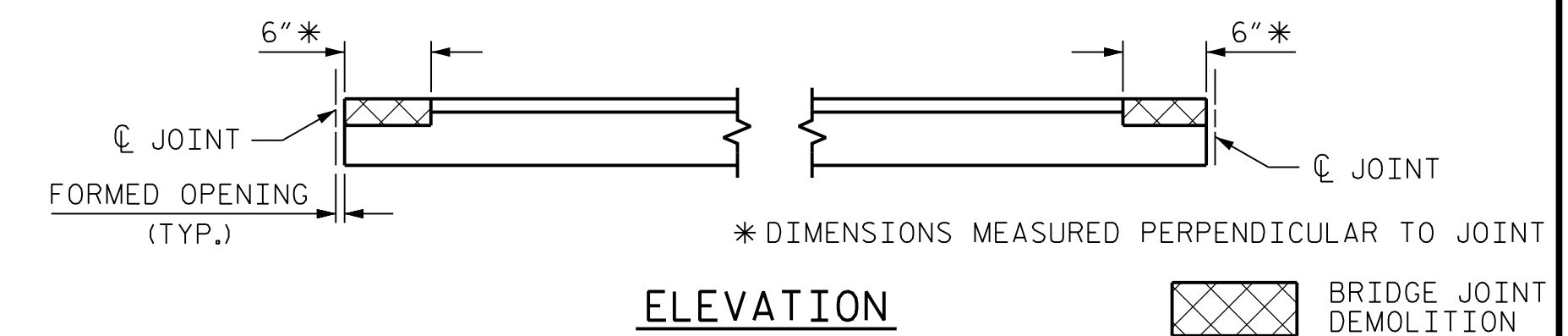
NOTES:

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

WHEN PREPARING THE SURFACE FOR LMC-ES OVERLAY ADJACENT TO A PREVIOUSLY PLACED LMC-ES STAGE, THE PREVIOUSLY PLACED LMC-ES SHALL BE REMOVED FOR A DISTANCE OF 4 INCHES FROM THE LMC-ES 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-ES SHALL BE PLACED IN THE 4-INCH OVERLAP, AS PART OF THE NEW LMC-ES STAGE PLACEMENT.

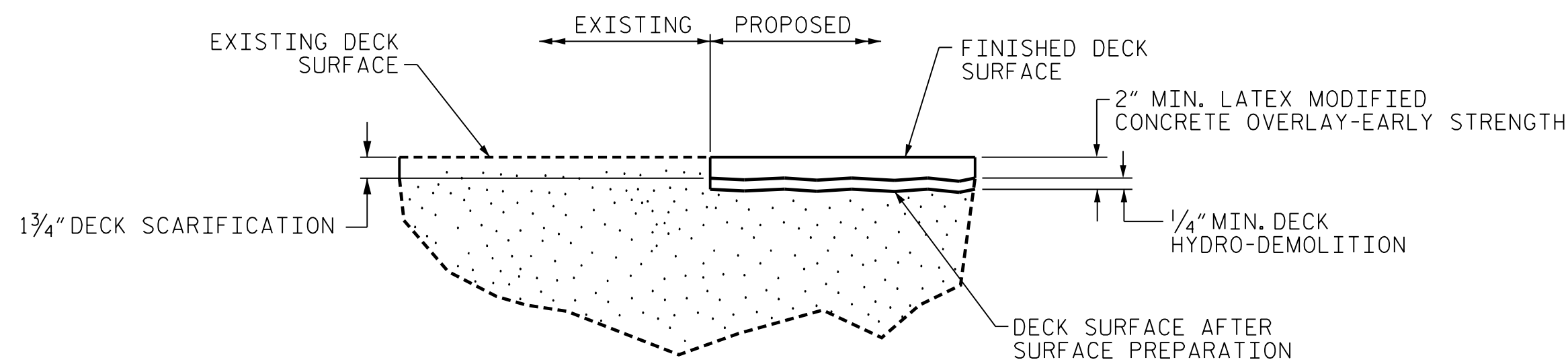


PLAN

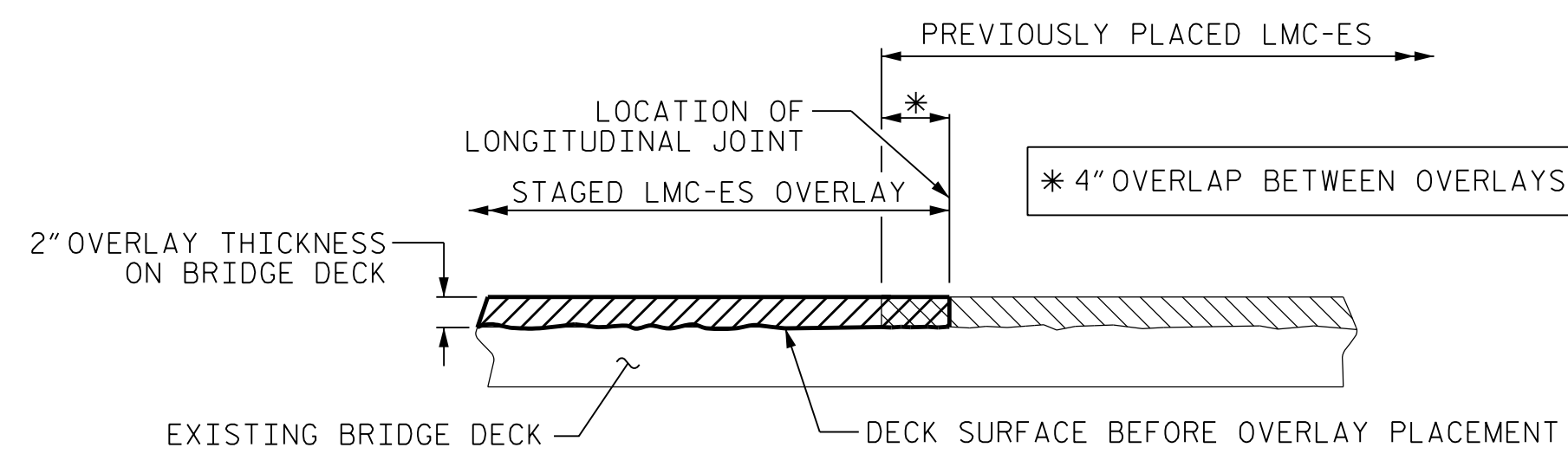


ELEVATION

PAY LIMITS FOR OVERLAY BID ITEMS



DETAIL FOR  
LMC-ES OVERLAY



SECTION THRU DECK  
STAGED LMC-ES OVERLAY JOINT  
(AS NEEDED)

PROJECT NO. 15BPR.28  
MADISON COUNTY  
BRIDGE NO. 560093

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DocuSigned by:  
F. Asefnia  
Professional Engineer  
SEAL 020103  
F. ASEFNIA  
9/27/2018

Louis Berger  
1001 Wade Avenue, Suite 400  
Raleigh, NC 27605-3322  
NC COA No. F-0840

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

SHEET NO. S-4				
TOTAL SHEETS 63				

DRAWN BY : J. MYA DATE : 7/2018  
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DESIGN ENGINEER OF RECORD : F. ASEFNIA DATE : 8/2018

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REPAIR QUANTITY TABLE

TOP OF DECK REPAIR

	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	390.0 SY	
HYDRO-DEMOLITION OF BRIDGE DECK	390.0 SY	
CLASS II SURFACE PREPARATION	15.1 SY	
CLASS III SURFACE PREPARATION	0.5 SY *	
BRIDGE JOINT DEMOLITION	36.0 SF	
EPOXY RESIN INJECTION	0.0 LF	
CONCRETE FOR DECK REPAIR	3.0 CF	


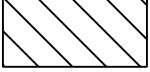

UNDERSIDE OF DECK REPAIR

SHOTCRETE REPAIRS	ESTIMATE		ACTUAL	
	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0.0	0.0		
OVERHANG DIAPHRAGMS	0.0	0.0		
UNDERSIDE OF OVERHANG	0.0	0.0		
INTERIOR DIAPHRAGMS	0.0	0.0		
			ESTIMATE	ACTUAL
UNDERSIDE EPOXY RESIN INJECTION			0.0 LF	

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

PAYMENT FOR CLASS II AND CLASS III SURFACE PREPARATION IS BASED ON THE SQUARE YARDS OF ADDITIONAL DEMOLITION REQUIRED FOLLOWING HYDRO-DEMOLITION OF THE BRIDGE DECK. SEE "OVERLAY SURFACE PREPARATION" SPECIAL PROVISION.

\* CLASS III SURFACE PREPARATION IS NOT ANTICIPATED. A TOKEN AMOUNT IS INDICATED FOR PRICING PURPOSES IN CASE UNANTICIPATED CLASS III SURFACE PREPARATION AREAS ARE ENCOUNTERED.

-  APPROX. CLASS II AREA
-  APPROX. CLASS III AREA
-  BRIDGE JOINT DEMOLITION
- ERI EPOXY RESIN INJECTION

PROJECT NO. 15BPR.28  
MADISON COUNTY  
 BRIDGE NO. 560093

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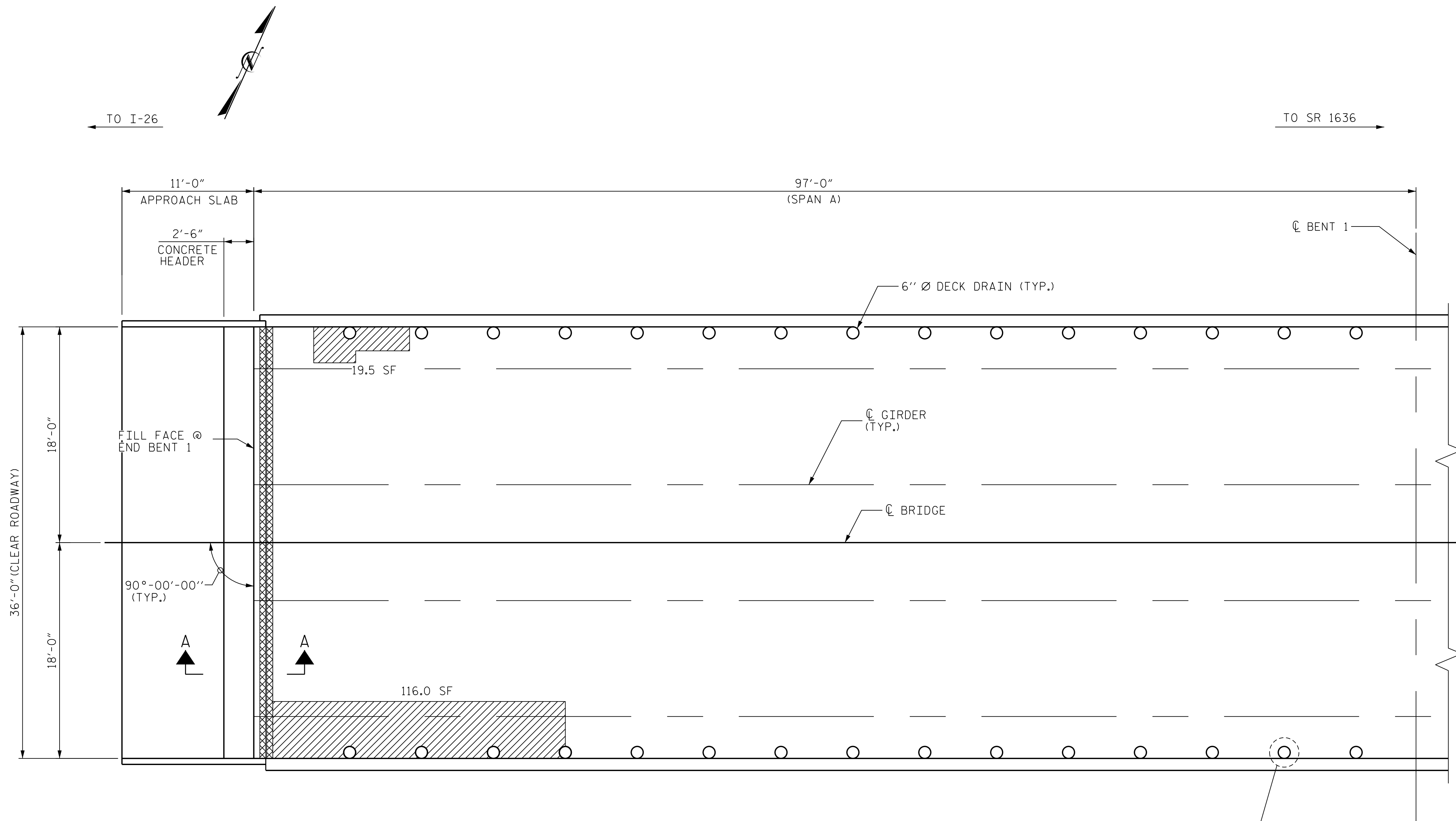
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

PLAN OF SPANS  
 SPAN A AND  
 APPROACH SLAB

REVISIONS

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

SHEET NO.  
 S-5  
 TOTAL SHEETS  
 63



PLAN

REPLACE MISSING DRAIN PIPE, SEE "MISCELLANEOUS DETAILS" SHEET

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 REPAIR QUANTITY TABLE.

CONCRETE COVER FOR TOP BARS IN THE DECK SLAB IS 2 1/2" PER THE EXISTING BRIDGE PLANS.

PRIOR TO THE PLACEMENT OF THE LMC-ES OVERLAY ACROSS THE CONTINUOUS DECK SPANS, THE CONTRACTOR SHALL SUBMIT A POUR SEQUENCE FOR APPROVAL BY THE ENGINEER.

FOR SECTION A-A, SEE "EXPANSION JOINT SEAL DETAILS" SHEET.

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DRAWN BY : J. MYA DATE : 7/2018  
 CHECKED BY : T. KIRSCHBAUM DATE : 7/2018  
 DESIGN ENGINEER OF RECORD : F. ASEFNIA DATE : 8/2018

Louis Berger  
 Prepared by: LOUIS BERGER  
 1001 Wade Avenue, Suite 400  
 Raleigh, NC 27605-3322  
 NC COA No. F-0840



REPAIR QUANTITY TABLE

TOP OF DECK REPAIR

	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	488.0 SY	
HYDRO-DEMOLITION OF BRIDGE DECK	488.0 SY	
CLASS II SURFACE PREPARATION	21.1 SY	
CLASS III SURFACE PREPARATION	0.6 SY	
BRIDGE JOINT DEMOLITION	0.0 SF	
EPOXY RESIN INJECTION	0.0 LF	
CONCRETE DECK REPAIR	3.0 CF	




UNDERSIDE OF DECK REPAIR

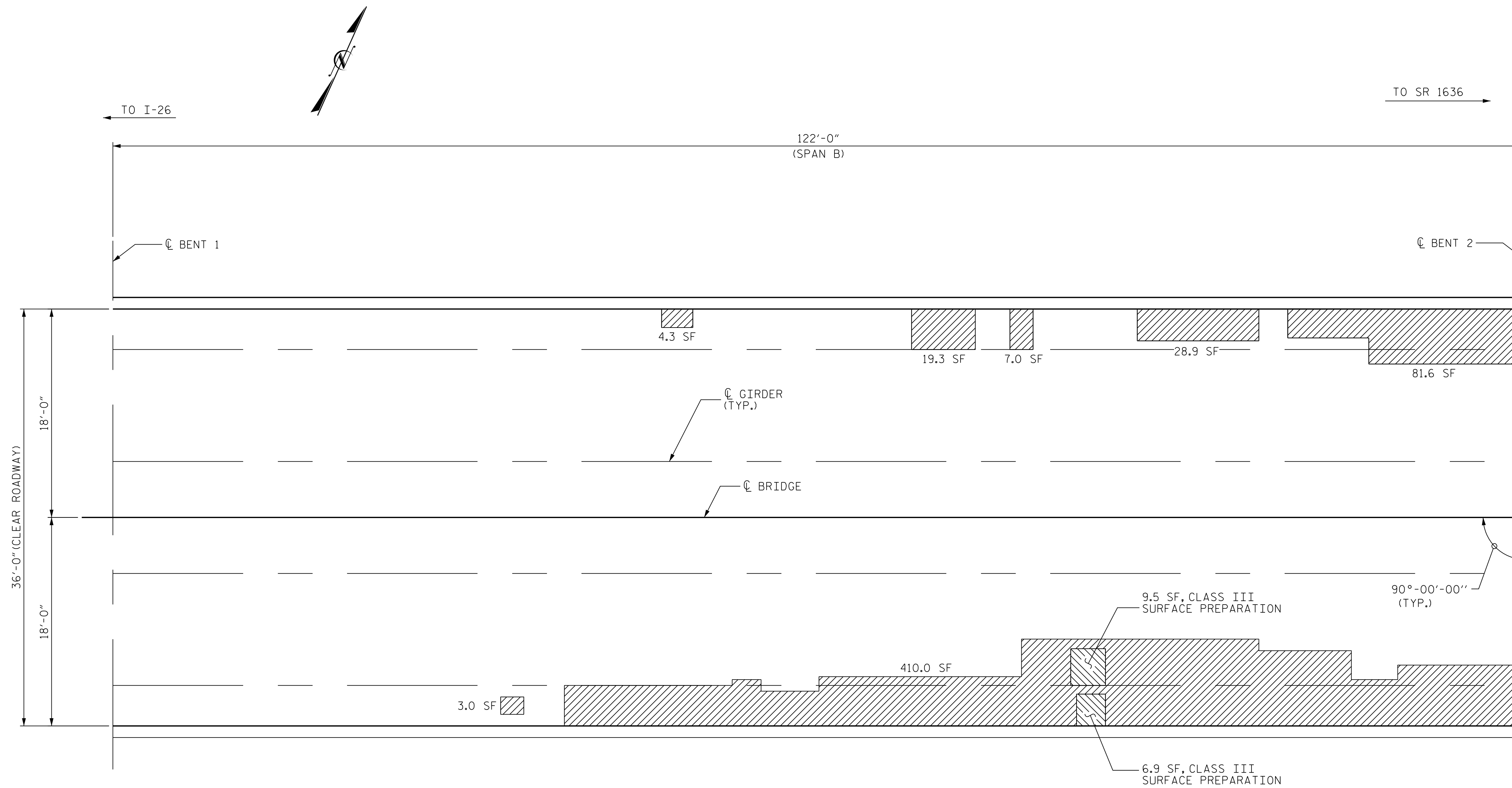
SHOTCRETE REPAIRS	ESTIMATE		ACTUAL	
	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0.0	0.0		
OVERHANG DIAPHRAGMS	0.0	0.0		
UNDERSIDE OF OVERHANG	0.0	0.0		
INTERIOR DIAPHRAGMS	0.0	0.0		

	ESTIMATE	ACTUAL
UNDERSIDE EPOXY RESIN INJECTION	0.0 LF	

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

PAYMENT FOR CLASS II AND CLASS III SURFACE PREPARATION IS BASED ON THE SQUARE YARDS OF ADDITIONAL DEMOLITION REQUIRED FOLLOWING HYDRO-DEMOLITION OF THE BRIDGE DECK. SEE "OVERLAY SURFACE PREPARATION" SPECIAL PROVISION.

-  APPROX. CLASS II AREA
-  APPROX. CLASS III AREA
-  BRIDGE JOINT DEMOLITION
- ERI EPOXY RESIN INJECTION



PLAN

NOTES

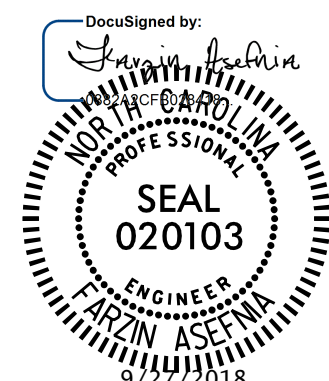
REPAIR LOCATIONS AND ESTIMATED QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATIONS AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES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

CONCRETE COVER FOR TOP BARS IN THE DECK SLAB IS 2 1/2" PER THE EXISTING BRIDGE PLANS.

PRIOR TO THE PLACEMENT OF THE LMC-ES OVERLAY ACROSS THE CONTINUOUS DECK SPANS, THE CONTRACTOR SHALL SUBMIT A POUR SEQUENCE FOR APPROVAL BY THE ENGINEER.

PROJECT NO. 15BPR.28  
MADISON COUNTY  
 BRIDGE NO. 560093

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DocuSigned by:  
  
 Louis Berger  
 Prepared by:  
 LOUIS BERGER  
 1001 Wade Avenue, Suite 400  
 Raleigh, NC 27605-3322  
 NC COA No. F-0840

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

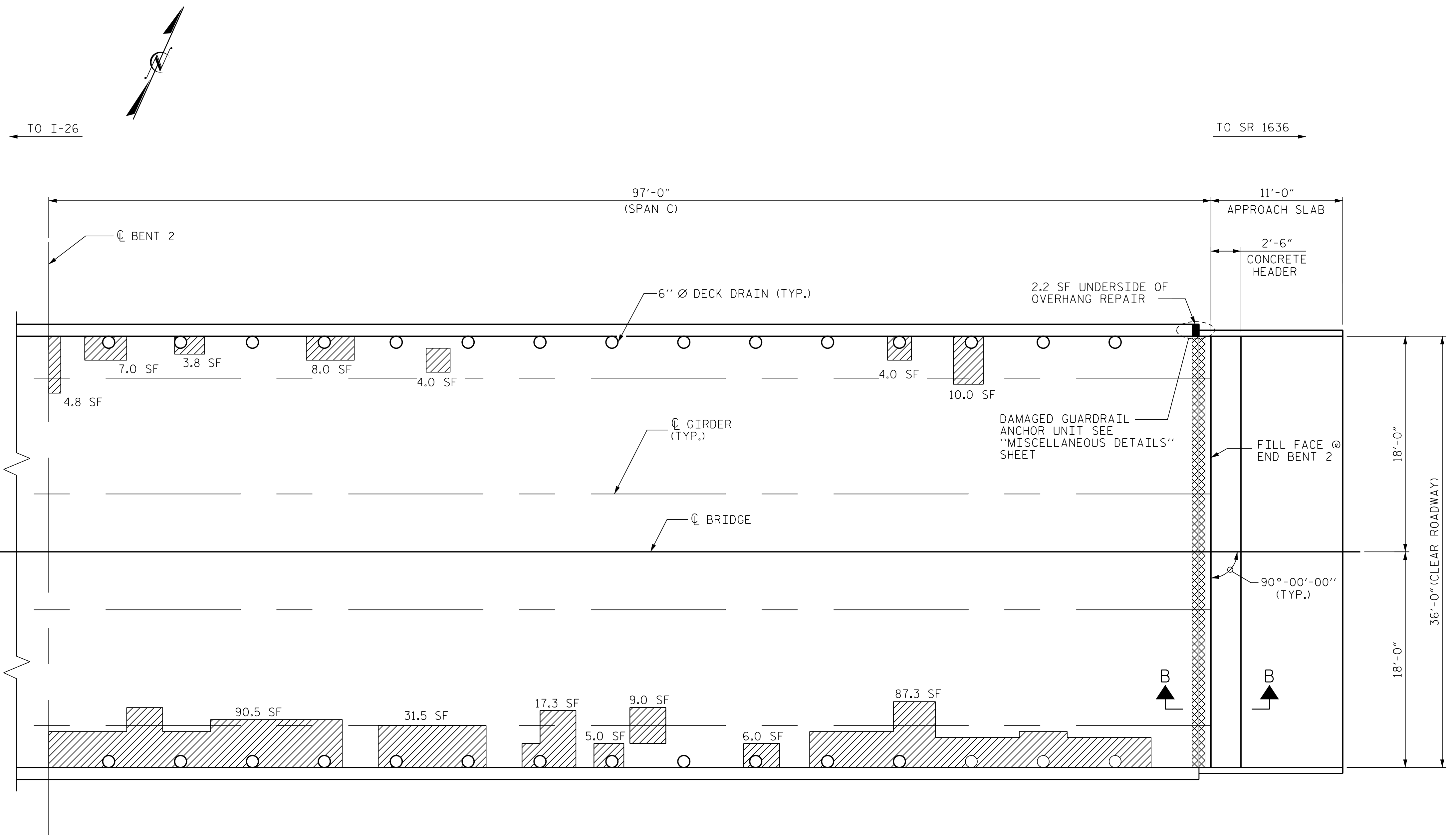
PLAN OF SPANS  
 SPAN B

REVISIONS

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2			4		

SHEET NO.  
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 TOTAL SHEETS  
 63

DRAWN BY :	J. MYA	DATE :	7/2018
CHECKED BY :	T. KIRSCHBAUM	DATE :	7/2018
DESIGN ENGINEER OF RECORD :	F. ASEFNIA	DATE :	8/2018



PLAN

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 REPAIR QUANTITY TABLE.

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PRIOR TO THE PLACEMENT OF THE LMC-ES OVERLAY ACROSS THE CONTINUOUS DECK SPANS, THE CONTRACTOR SHALL SUBMIT A POUR SEQUENCE FOR APPROVAL BY THE ENGINEER.

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

REPAIR QUANTITY TABLE				
TOP OF DECK REPAIR				
	ESTIMATE	ACTUAL		
SCARIFYING BRIDGE DECK	390.0 SY			
HYDRO-DEMOLITION OF BRIDGE DECK	390.0 SY			
CLASS II SURFACE PREPARATION	32.0 SY			
CLASS III SURFACE PREPARATION	0.5 SY *			
BRIDGE JOINT DEMOLITION	36.0 SF			
EPOXY RESIN INJECTION	0.0 LF			
CONCRETE DECK REPAIR	3.0 CF			
UNDERSIDE OF DECK REPAIR				
SHOTCRETE REPAIRS	ESTIMATE	ACTUAL		
	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0.0	0.0		
OVERHANG DIAPHRAGMS	0.0	0.0		
UNDERSIDE OF OVERHANG	2.2	0.6		
INTERIOR DIAPHRAGMS	0.0	0.0		
	ESTIMATE	ACTUAL		
UNDERSIDE EPOXY RESIN INJECTION	0.0 LF			

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

PAYMENT FOR CLASS II AND CLASS III SURFACE PREPARATION IS BASED ON THE SQUARE YARDS OF ADDITIONAL DEMOLITION REQUIRED FOLLOWING HYDRO-DEMOLITION OF THE BRIDGE DECK. SEE "OVERLAY SURFACE PREPARATION" SPECIAL PROVISION.

\* CLASS III SURFACE PREPARATION IS NOT ANTICIPATED. A TOKEN AMOUNT IS INDICATED FOR PRICING PURPOSES IN CASE UNANTICIPATED CLASS III SURFACE PREPARATION AREAS ARE ENCOUNTERED.

- APPROX. CLASS II AREA
- APPROX. CLASS III AREA
- BRIDGE JOINT DEMOLITION
- DECK UNDERSIDE REPAIR
- ERI EPOXY RESIN INJECTION

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MADISON COUNTY  
 BRIDGE NO. 560093

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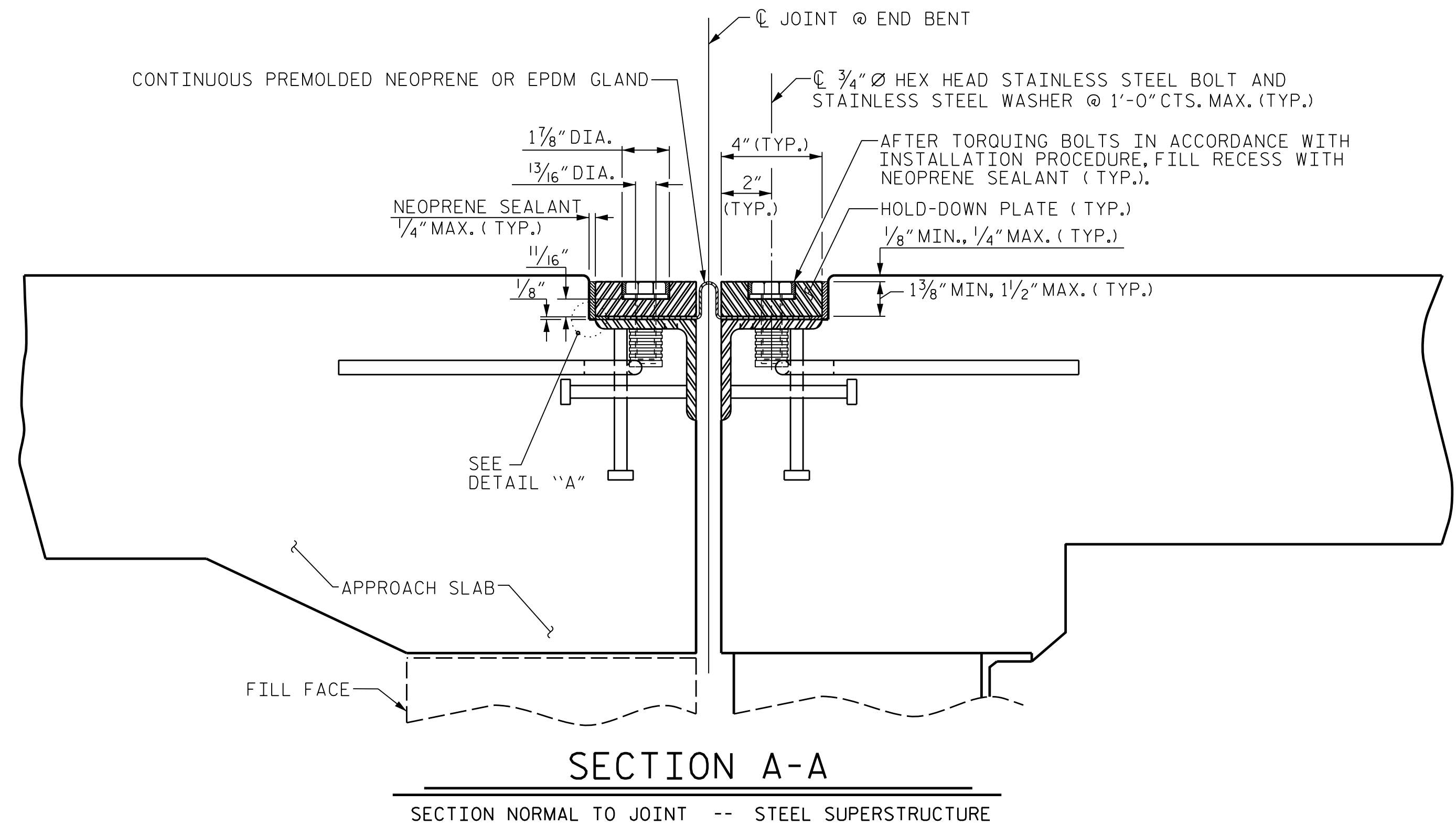
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 PLAN OF SPANS  
 SPAN C AND  
 APPROACH SLAB

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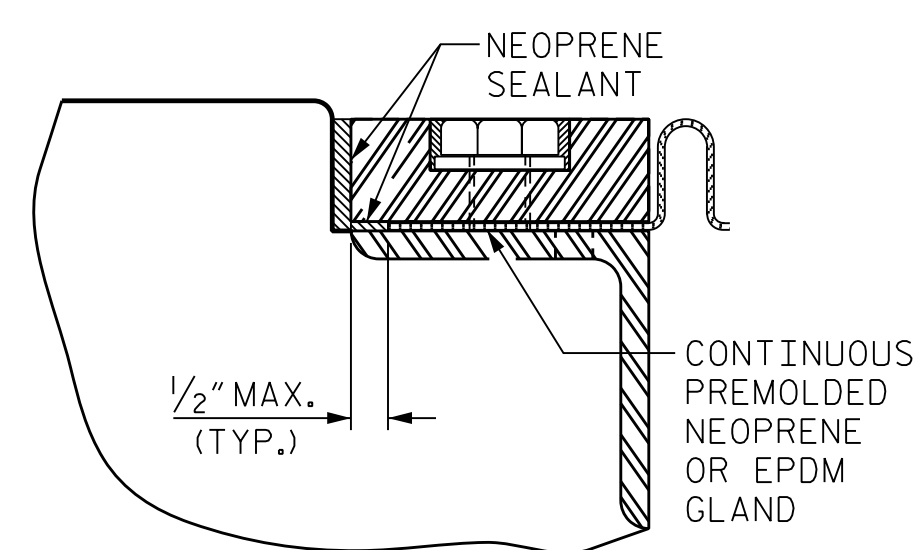
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DRAWN BY : J. MYA DATE : 7/2018  
 CHECKED BY : T. KIRSCHBAUM DATE : 7/2018  
 DESIGN ENGINEER OF RECORD : F. ASEFNIA DATE : 8/2018

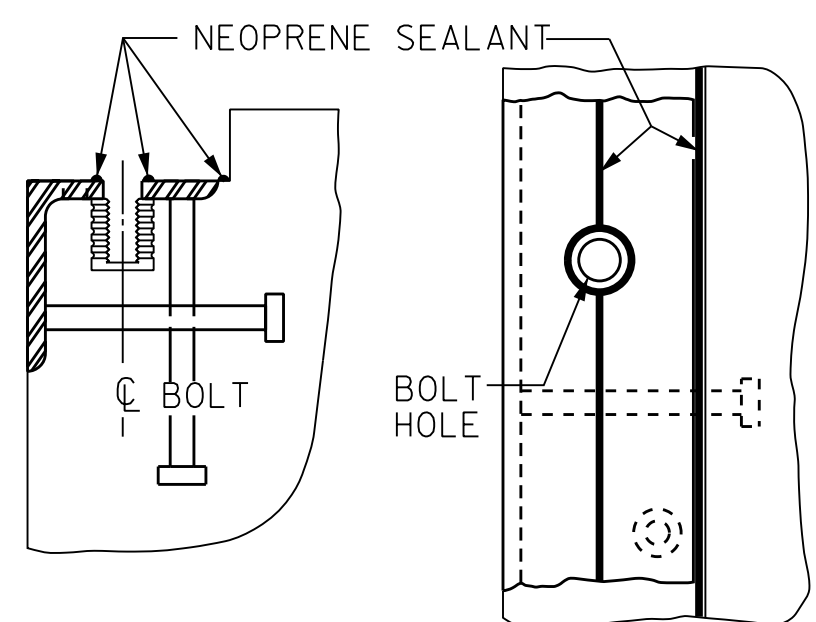
Prepared by:  
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 Raleigh, NC 27605-3322  
 NC COA No. F-0840



\*



DETAIL "A"



CROSS SECTION PLAN VIEW  
INSTALLATION SKETCH

GENERAL NOTES

ALL HOLD-DOWN BOLTS SHALL CONFORM TO ASTM F593 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL COFORM TO ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.

A PREMOLDED CORRUGATED OR NON-CORRUGATED GLAND SHALL BE USED FOR JOINTS SKEWED BETWEEN 50° THRU 130°.

THE FINISHED EXPANSION SEAL DEVICE SHALL BE A MINIMUM 1/8" AND A MAXIMUM OF 1/4" BELOW THE TOP OF SLAB.

FOR EXPANSION JOINT SEALS, SEE SPECIAL PROVISIONS.

NO SEPARATE PAYMENT WILL BE MADE FOR REMOVING AND REINSTALLING MEDIAN AND BARRIER RAIL COVER PLATES. THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR "EXPANSION JOINT SEALS".

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

REPAIR INSTALLATION PROCEDURE

LOOSEN THE EXISTING BOLTS AND HOLD DOWN PLATES TO REMOVE AND REPLACE THE EXISTING GLAND. REMOVE THE EXISTING NEOPRENE SEALANT AND CLEAN THE EXISTING BASE ANGLE OF OIL, GREASE AND OTHER LATENTS.

LAY THE NEW GLAND ON THE BASE ANGLE AND FIELD MARK THE NEW GLAND FOR THE BOLT HOLES. HOLES IN THE NEW GLAND SHALL BE PUNCHED 7/8" IN DIAMETER WITH A HAND PUNCH.

IN ORDER TO CHECK FOR PROPER ALIGNMENT, PLACE THE NEW GLAND AND HOLD-DOWN PLATES ON THE BASE ANGLE. DO NOT APPLY NEOPRENE SEALANT. BOLT THE HOLD-DOWN PLATES TO THE BASE ANGLE, BUT DO NOT TIGHTEN. THE ENGINEER WILL INSPECT THE JOINT SEAL DEVICE FOR PROPER ALIGNMENT.

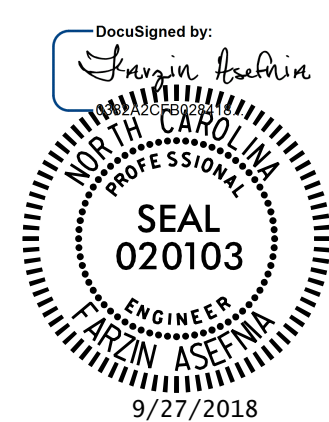
AFTER INSPECTION, REMOVE THE HOLD-DOWN PLATES AND NEW GLAND. APPLY NEW NEOPRENE SEALANT TO THE BASE ANGLE IN ACCORDANCE WITH THE "INSTALLATION SKETCH". PLACE NEW HOLD-DOWN PLATES ON THE BASE ANGLE. BOLT THE HOLD-DOWN PLATES TO THE BASE ANGLE ASSEMBLY AND TORQUE THE BOLTS TO 88 FT-LBS WITH A TORQUE WRENCH. CHECK THE TORQUE AFTER (3) HOURS AND, IF NECESSARY, RETIGHTEN TO 88 FT-LBS. A FINAL CHECK SHALL BE MADE AT SEVEN (7) DAYS. TORQUE SHALL NOT BE LESS THAN 80 FT-LBS AFTER SEVEN (7) DAYS.

AFTER PROPER TORQUING, CLEAN THE BOLT HOLE RECESSES AND THE RECESS BETWEEN THE JOINT SEAL DEVICE AND CONCRETE. COMPLETELY FILL THESE RECESSES WITH NEOPRENE SEALANT.

MOVEMENT AND SETTING AT JOINT					
LOCATION	SKEW ANGLE	TOTAL MOVEMENT (ALONG C RDWY)	PERPENDICULAR JOINT OPENING AT 45° F	PERPENDICULAR JOINT OPENING AT 60° F	PERPENDICULAR JOINT OPENING AT 90° F
END BENT 1	90°-00'-00"	2 1/2"	2 5/16"	2 5/16"	1 5/8"

PROJECT NO. 15BPR.28  
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 BRIDGE NO. 560093

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 RALEIGH

EXPANSION JOINT SEAL DETAILS

DRAWN BY : J. MYA DATE : 07/18  
 CHECKED BY : T. KIRSCHBAUM DATE : 07/18  
 DESIGN ENGINEER OF RECORD : F. ASEFNIA DATE : 8/2018

Prepared by: LOUIS BERGER  
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 NC COA No. F-0840

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**ELASTOMERIC CONCRETE**

END BENT 2	9.0 (CU. FT.)
TOTAL	9.0 (CU. FT.)

\*BASED ON THE MINIMUM BLOCKOUT SHOWN

**NOTES**

FOR JOINT EXCAVATION BELOW THE BOTTOM OF THE PLANNED ELASTOMERIC CONCRETE HEADER, CONCRETE FOR DECK REPAIR SHALL BE PLACED IN THE EXCAVATED AREA TO THE ELEVATION AT THE BOTTOM OF THE ELASTOMERIC CONCRETE.

FOR FOAM JOINT SEALS, SEE SPECIAL PROVISIONS.

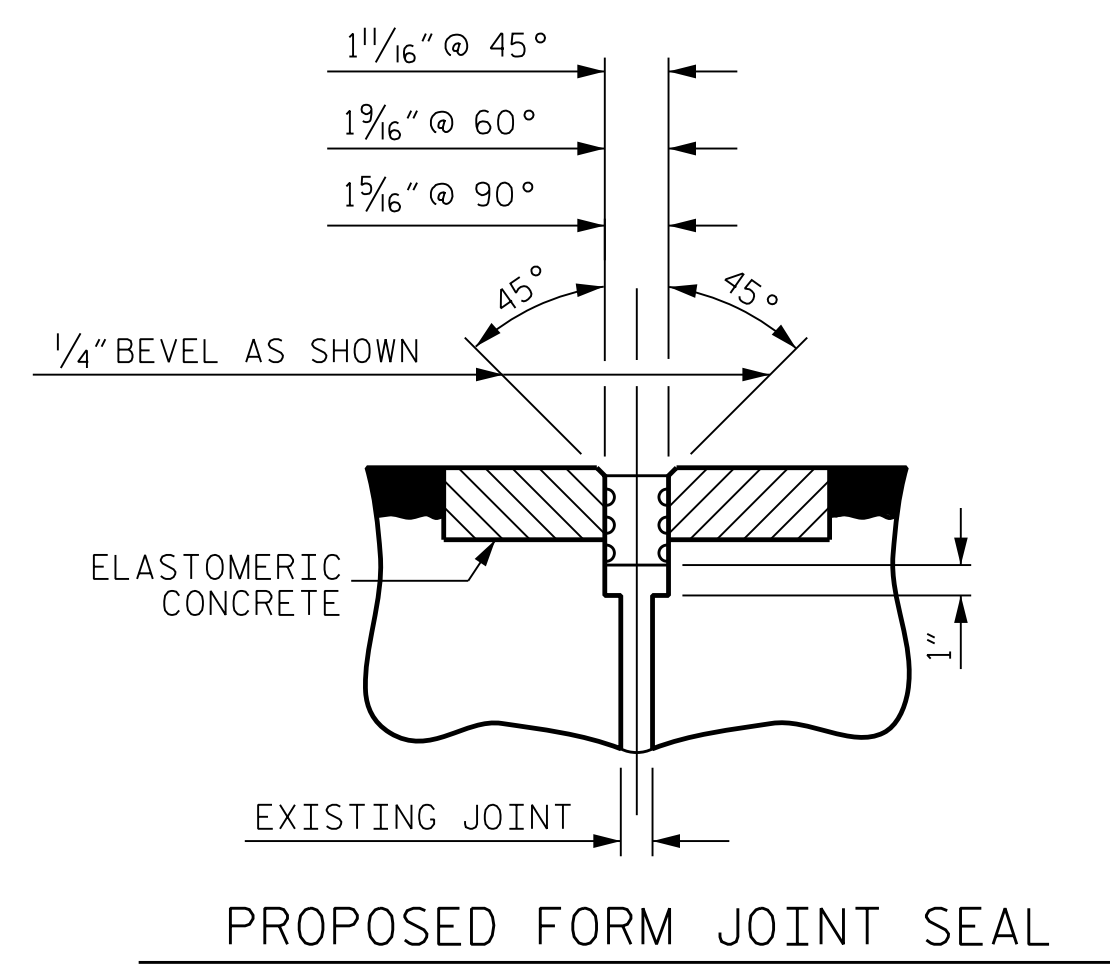
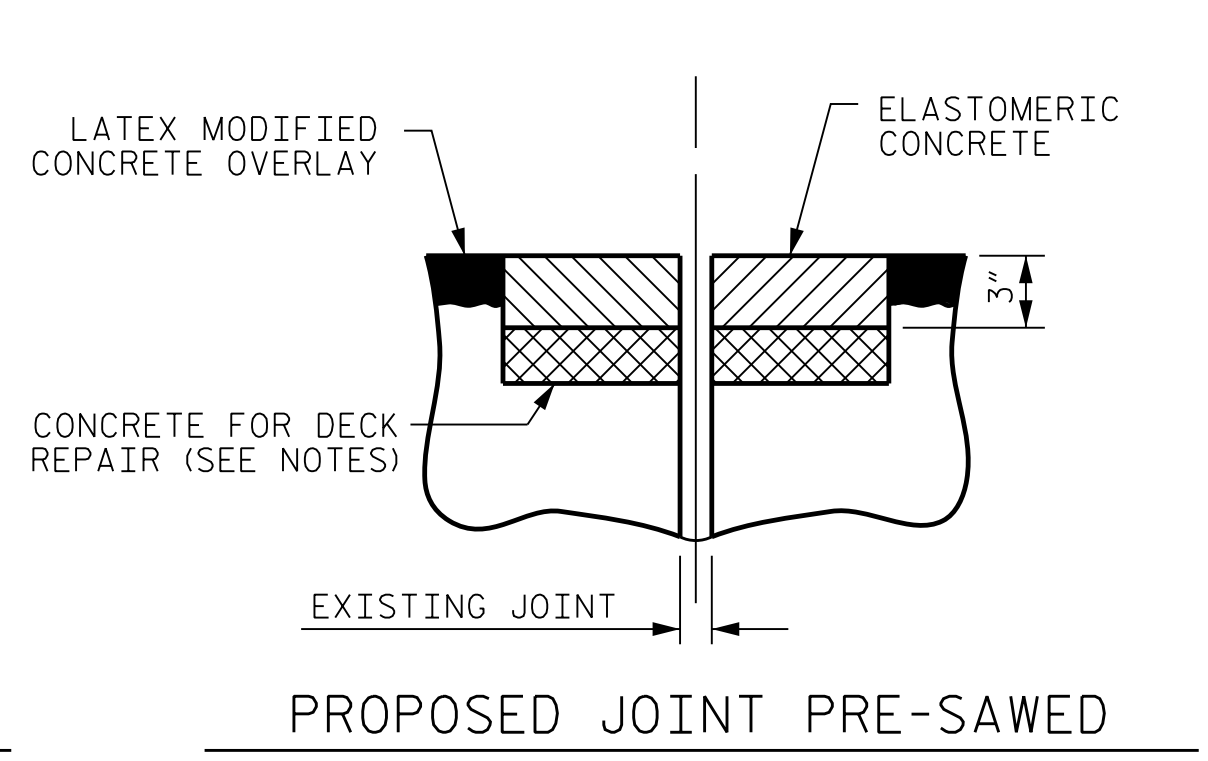
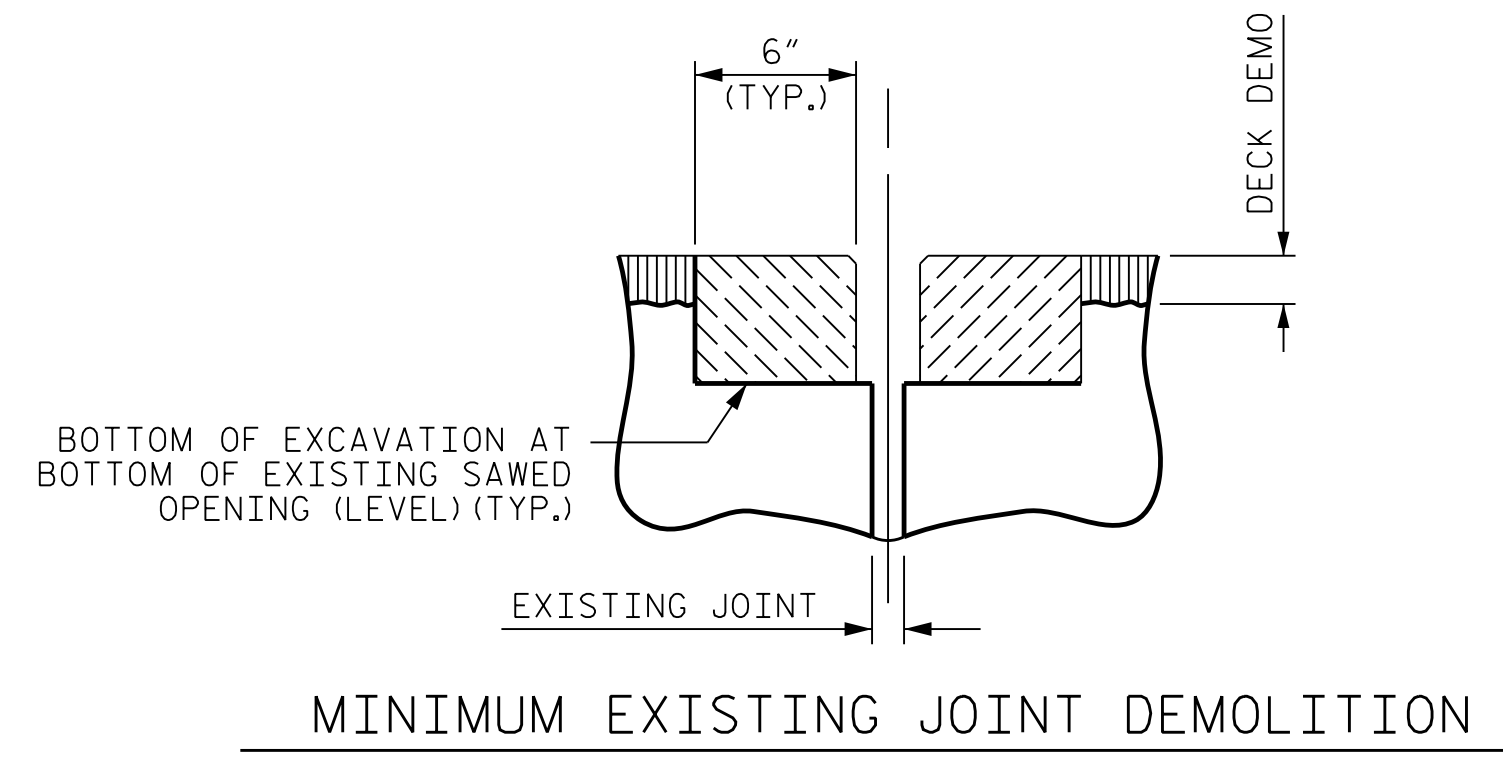
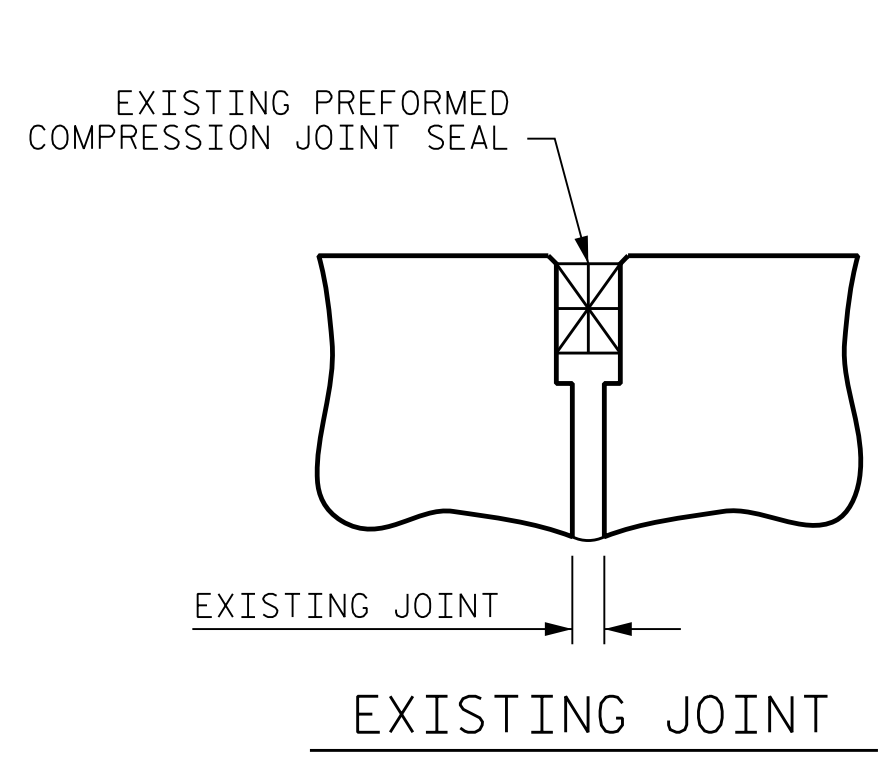
FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

THE INSTALLED FOAM JOINT SEALS SHALL BE WATERTIGHT.

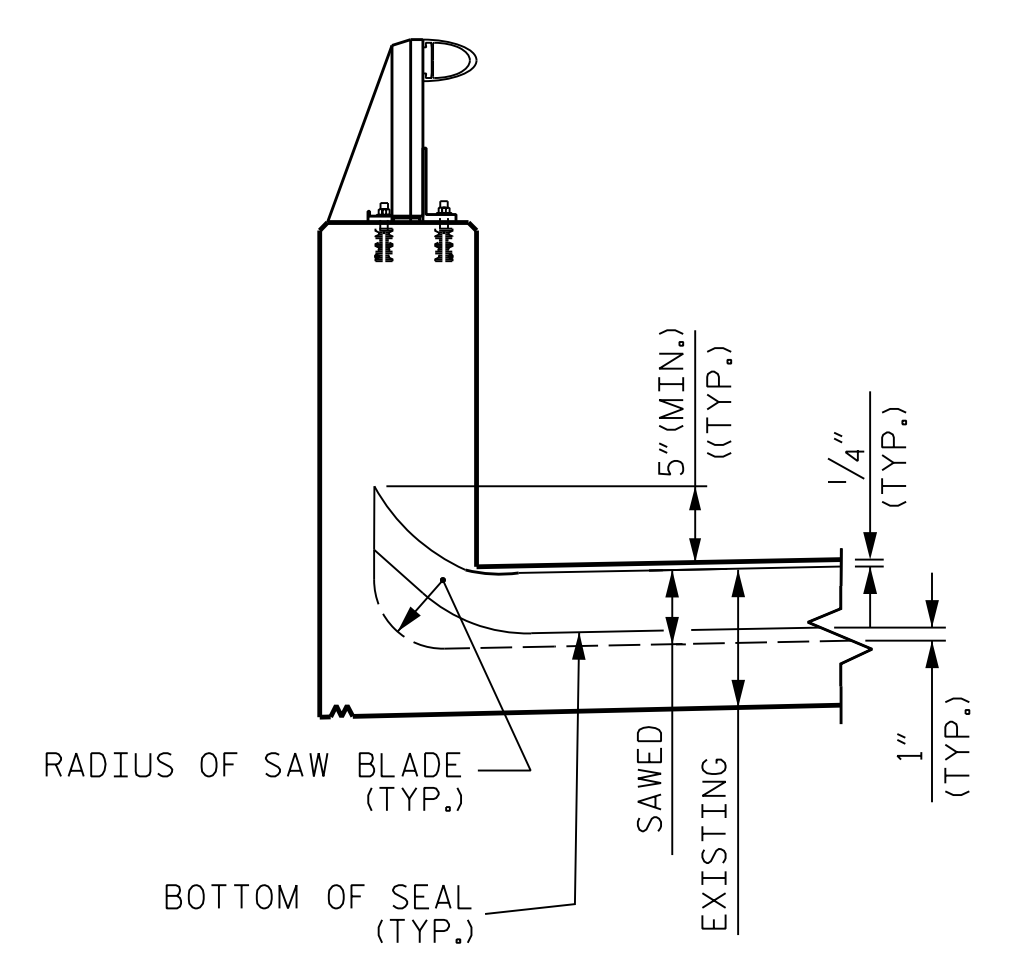
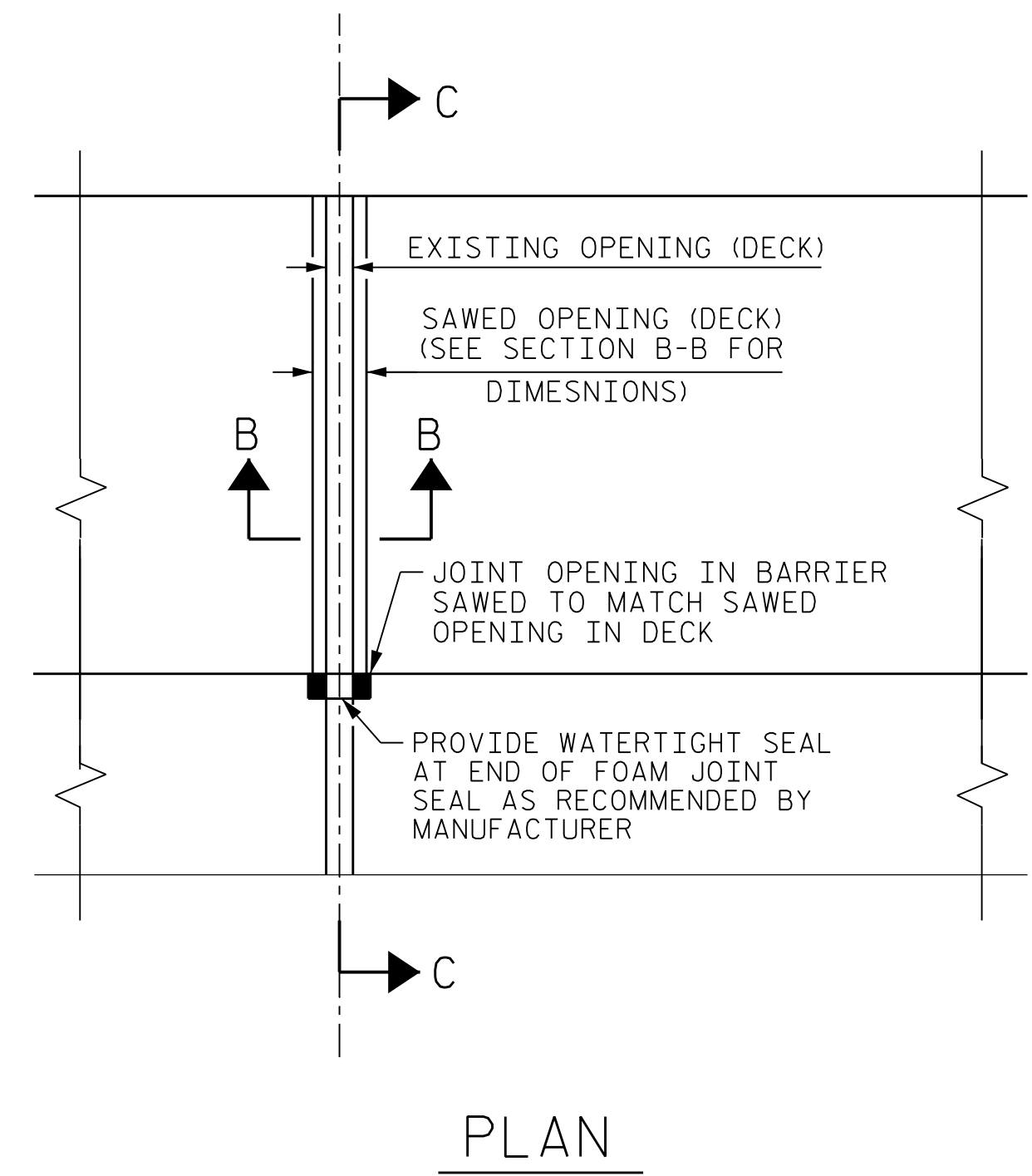
THE MANUFACTURER IS TO PROVIDE THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE FOAM JOINT SEAL BASED ON JOINT OPENINGS AT END BENT 2.

THE CONTRACTOR WILL NOT BE PERMITTED TO FORM THE JOINT FOR THE FOAM JOINT SEAL IN LIEU OF SAWING THE JOINT.

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



**SECTION A-A**



**SECTION C-C**

PROJECT NO. 15BPR.28  
MADISON COUNTY  
 BRIDGE NO. 560093

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STATE OF NORTH CAROLINA  
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 RALEIGH

**JOINT DETAILS**

REVISIONS

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2			4		

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TOTAL SHEETS  
63

DRAWN BY : J. MYA DATE : 08/2018  
 CHECKED BY : J. YANNAKONE DATE : 08/2018  
 DESIGN ENGINEER OF RECORD : F. ASEFNIA DATE : 8/2018

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**NOTES:**

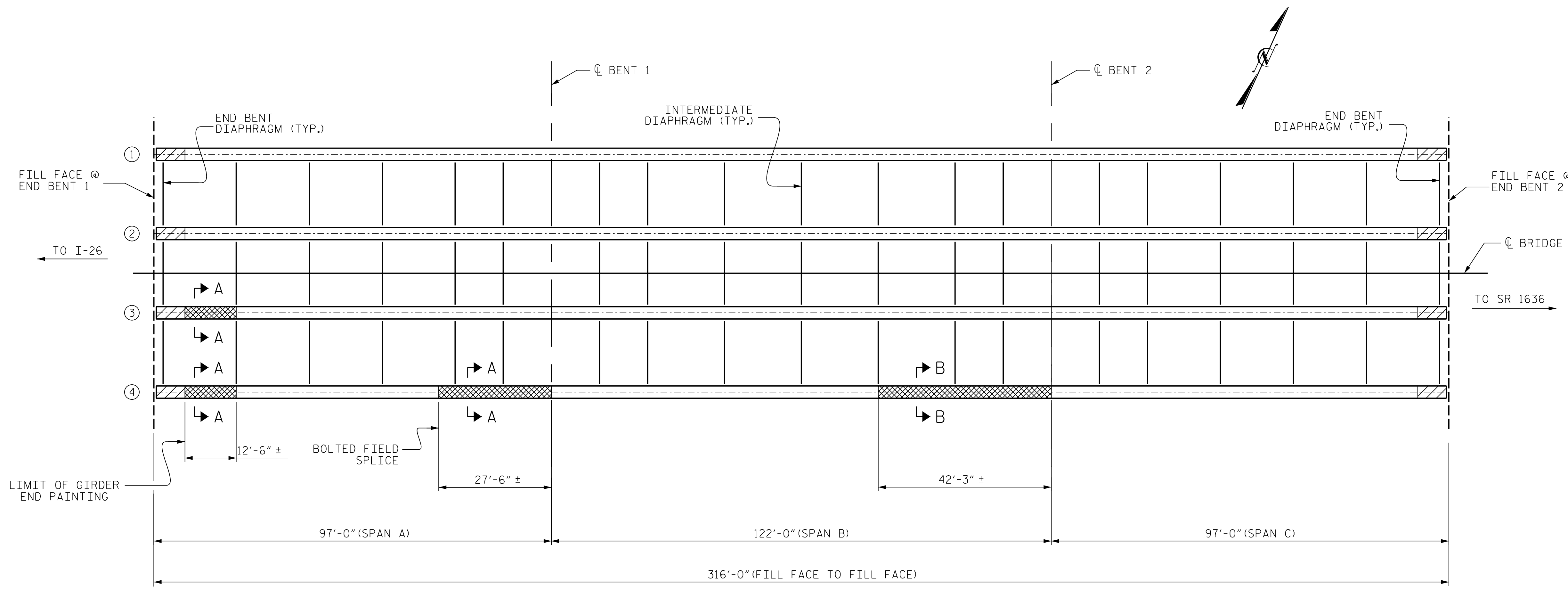
THE LOCATIONS AND DIMENSIONS OF THE ZONE PAINTING ARE BASED ON THE BEST INFORMATION AVAILABLE. THE CONTRACTOR, IN CONJUNCTION WITH THE ENGINEER, SHALL VERIFY THE LOCATION AND EXTENT OF ZONE PAINTING AREAS PRIOR TO BEGINNING WORK.

FOR GIRDER END PAINTING, SEE PAINTING EXISTING WEATHERING STEEL STRUCTURE SPECIAL PROVISIONS.

HORIZONTAL LIMITS OF ZONE PAINTING SHALL EXTEND 12" BEYOND THE MAXIMUM HORIZONTAL EXTENT OF WEB/FLANGE CORROSION.

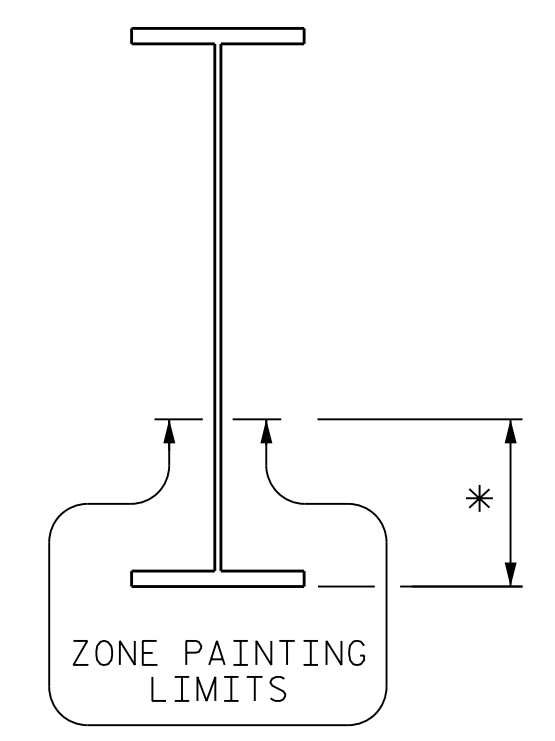
\* VERTICAL LIMITS OF ZONE PAINTING SHALL EXTEND 3" BEYOND THE MAXIMUM VERTICAL EXTENT OF WEB CORROSION OR 6" ABOVE THE TOP OF THE BOTTOM FLANGE, WHICHEVER IS GREATER.

- ① BEAM NUMBER
-  ZONE PAINTING LOCATIONS
-  GIRDER END PAINTING

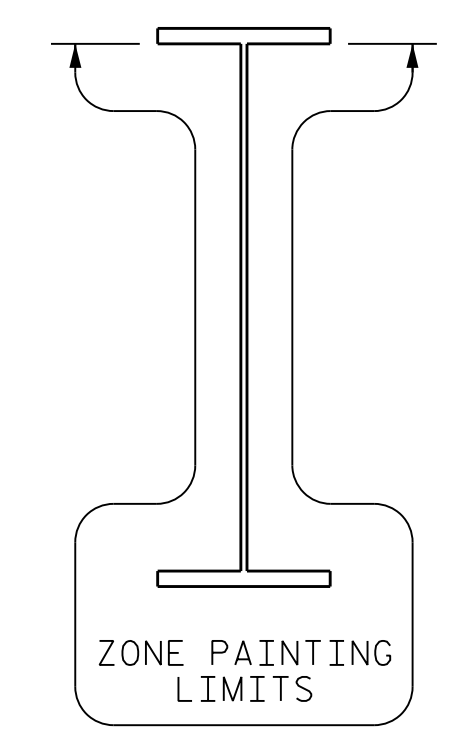


**ZONE PAINTING LOCATIONS**

(OTHER LOCATIONS MAY EXISTS, SEE NOTES)



**SECTION A-A**



**SECTION B-B**

PROJECT NO. 15BPR.28  
MADISON COUNTY  
 BRIDGE NO. 560093

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**ZONE PAINTING LOCATIONS**

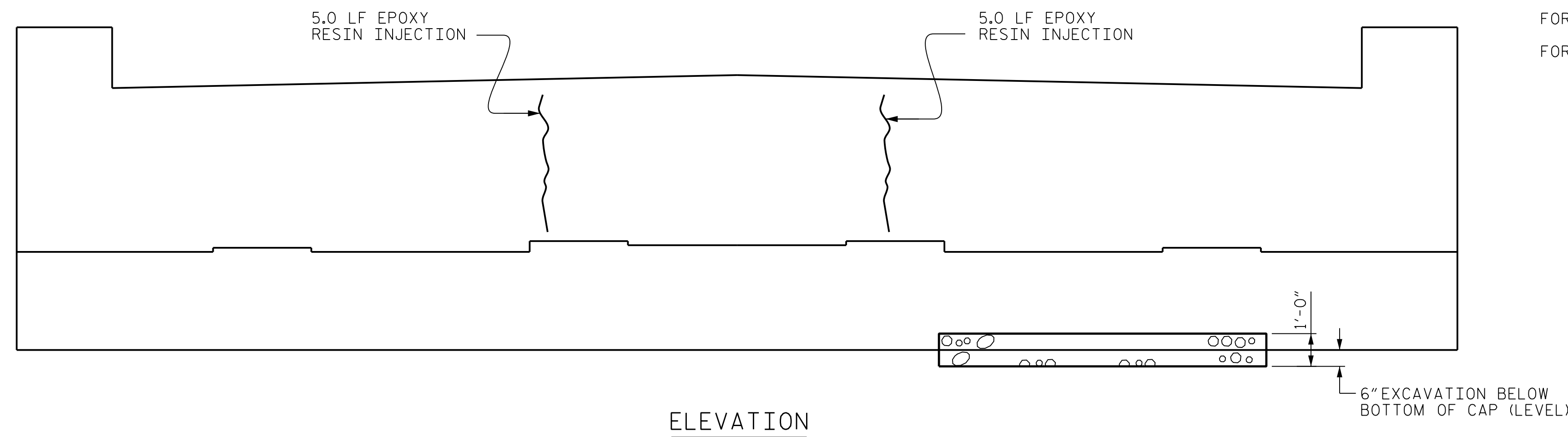
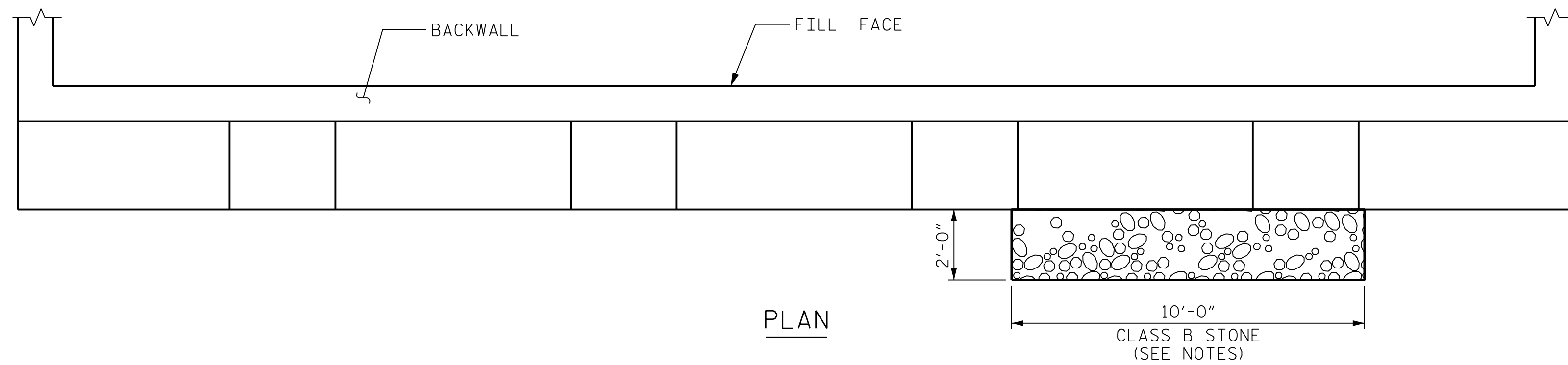
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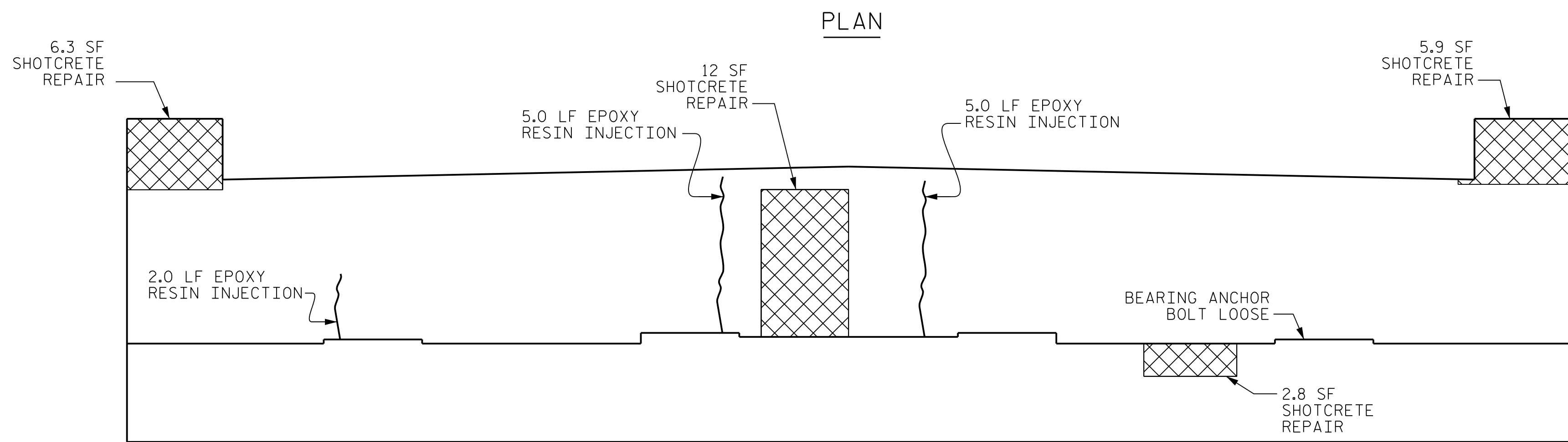
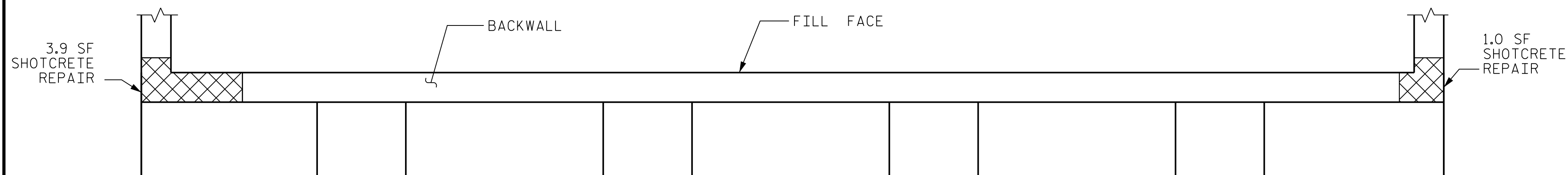
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DRAWN BY : J. MYA DATE : 7/2018  
 CHECKED BY : T. KIRSCHBAUM DATE : 7/2018  
 DESIGN ENGINEER OF RECORD : F. ASEFNIA DATE : 8/2018

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END BENT 1



END BENT 2

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 SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

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

CLEAN AND REMOVE DEBRIS FROM THE TOP OF THE 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 AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.

CLASS B STONE SHALL BE PLACED AT A DEPTH OF 1'-0" (MIN.) WITHIN THE LIMITS SHOWN AND A WIDTH OF 2'-0" (MIN.).

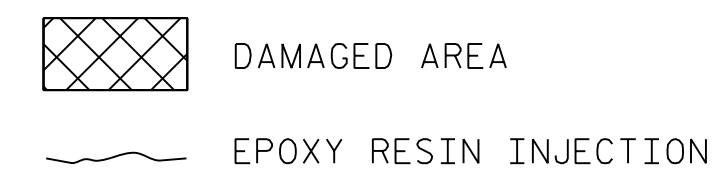
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

REPAIR QUANTITY TABLE

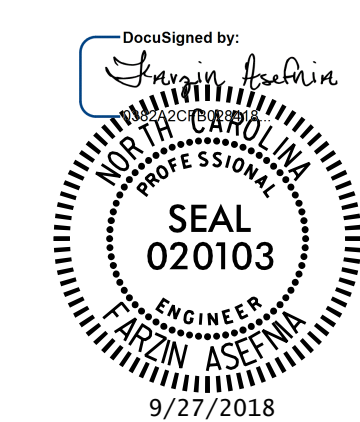
END BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
BACK WALL	0.0	0.0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
BACK WALL	0.0	0.0		
EPOXY RESIN INJECTION	LN. FT		LN. FT	
CAP	0.0			
BACK WALL	10.0			
EPOXY COATING	AREA SF		AREA SF	
TOP OF END BENT CAP	110.0			
STONE FOR EROSION CONTROL, CLASS B	WEIGHT TONS		WEIGHT TONS	
FACE OF END BENT CAP	1.0			
END BENT 2	QUANTITIES			
SHOTCRETE REPAIRS	ESTIMATE		ACTUAL	
	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	2.8	1.2		
BACK WALL	29.1	12.1		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
BACK WALL	0.0	0.0		
EPOXY RESIN INJECTION	LN. FT		LN. FT	
CAP	0.0			
BACK WALL	12.0			
EPOXY COATING	AREA SF		AREA SF	
TOP OF END BENT CAP	110.0			
STONE FOR EROSION CONTROL, CLASS B	WEIGHT TONS		WEIGHT TONS	
FACE OF END BENT CAP	0.0			

VALUES IN CHART REPRESENT ESTIMATED REPAIRS TOTALS AFTER REMOVAL OF SOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CLEAR TO SAW CUT. SEE REPAIR DETAILS.



PROJECT NO. 15BPR.28  
MADISON COUNTY  
BRIDGE NO. 560093

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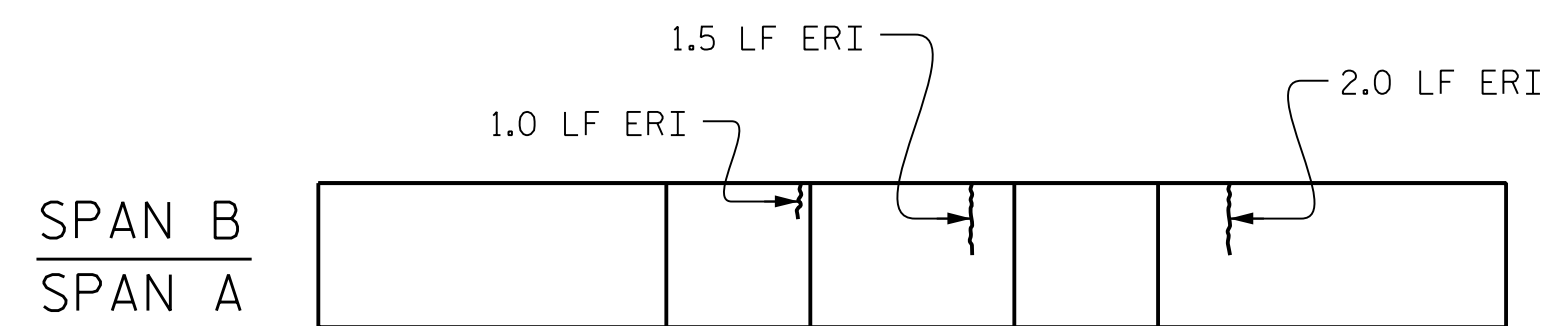
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DRAWN BY : J. MYA DATE : 7/2018  
CHECKED BY : T. KIRSCHBAUM DATE : 7/2018  
DESIGN ENGINEER OF RECORD : F. ASEFNIA DATE : 8/2018



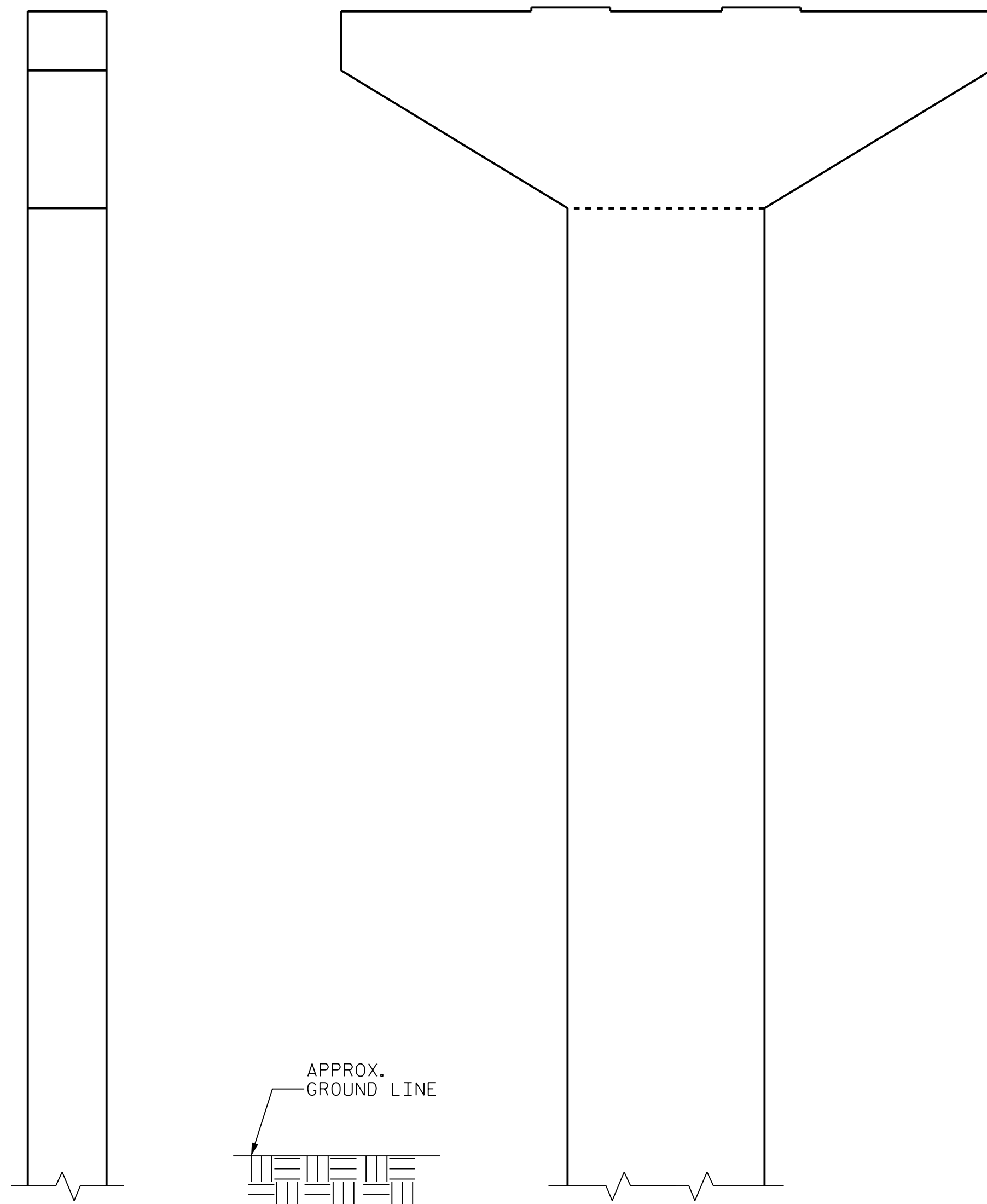
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TOP OF CAP

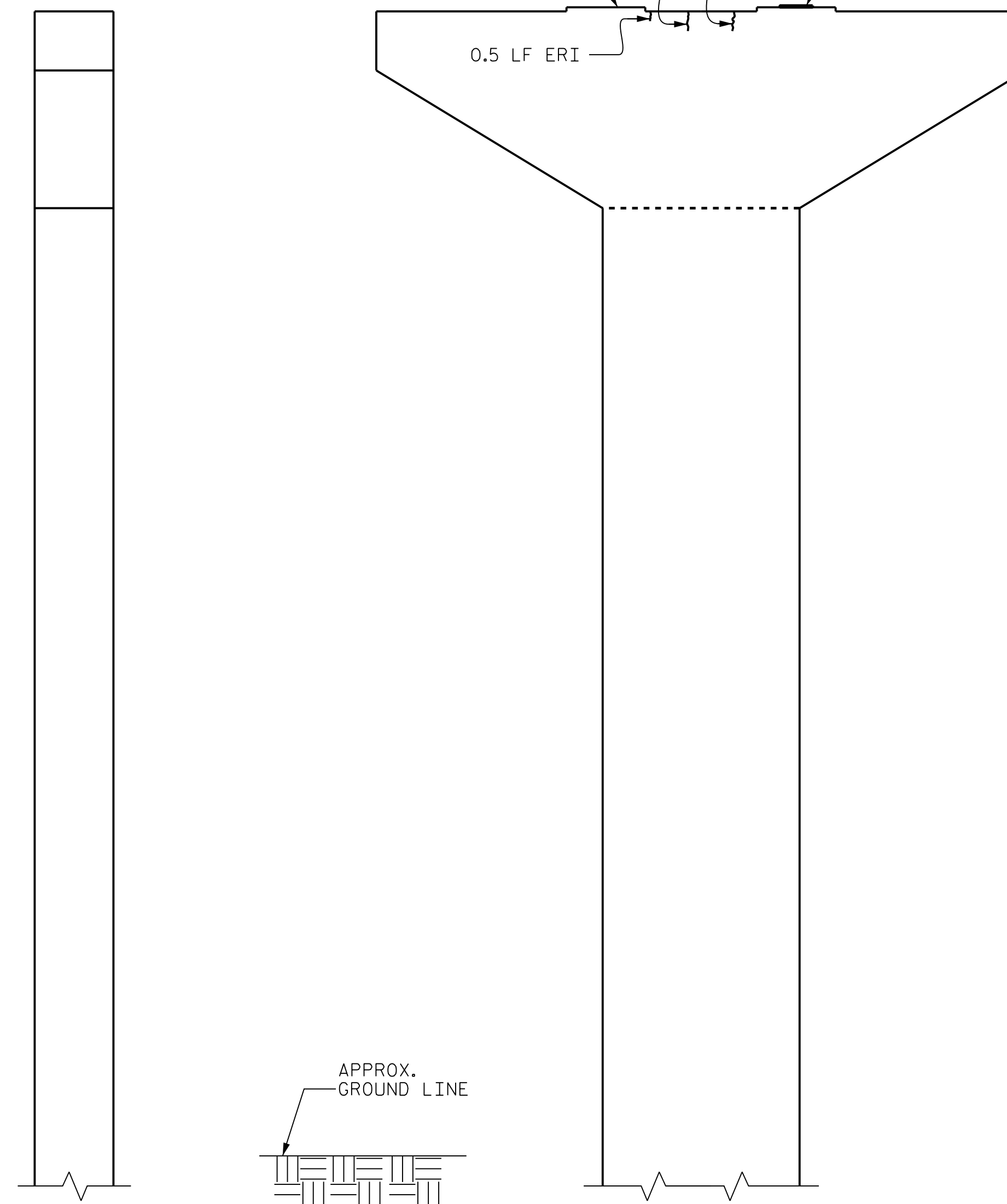
SPAN B      SPAN A



NORTH FACE

SPAN A FACE

SPAN A      SPAN B



SOUTH FACE

SPAN B FACE

REPAIR QUANTITY TABLE				
REPAIRS BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
COLUMN	0.0	0.0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
COLUMN	0.0	0.0		
EPOXY RESIN INJECTION	LN. FT		LN. FT	
CAP	7.0			
COLUMN	0.0			

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL TO SAWCUT. SEE REPAIR DETAILS.

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 SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

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

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

- DAMAGED AREA
- EPOXY RESIN INJECTION

PROJECT NO. 15BPR.28  
MADISON COUNTY  
 BRIDGE NO. 560093

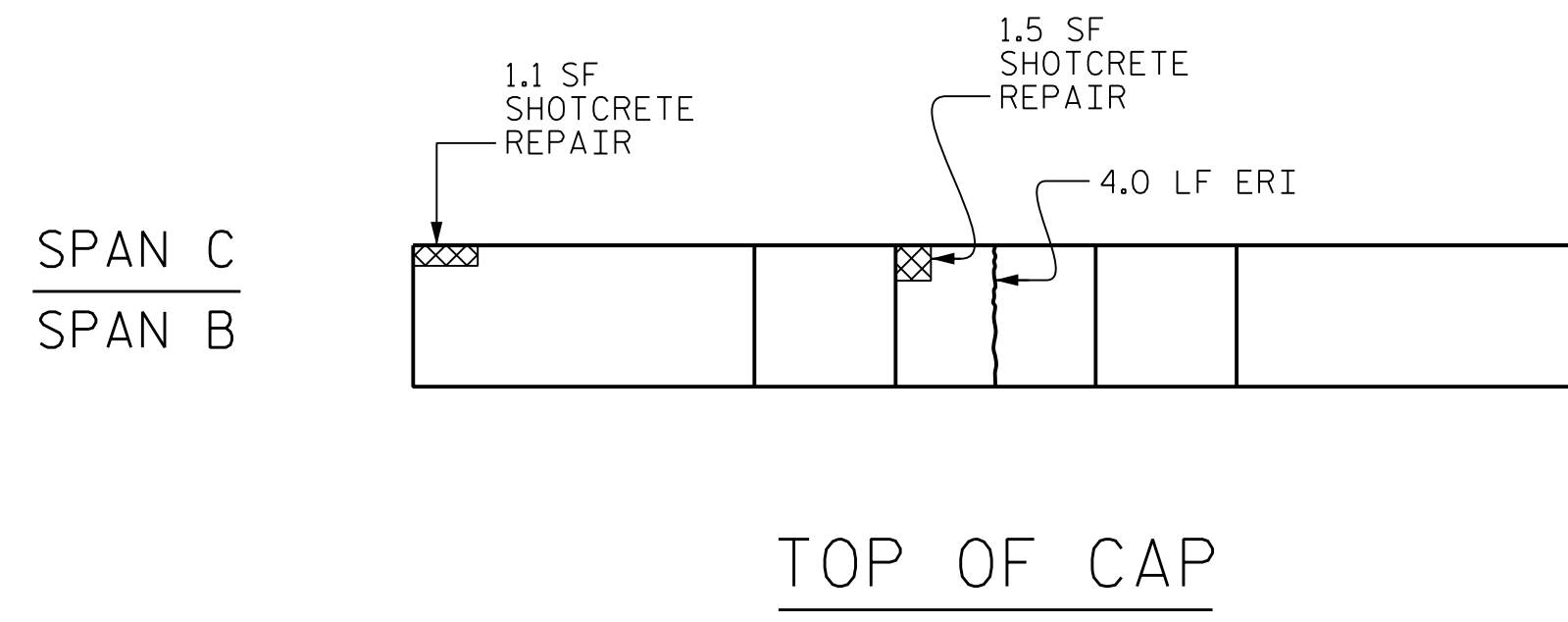
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DocuSigned by:  
  
 Louis Berger  
 Prepared by:  
 LOUIS BERGER  
 1001 Wade Avenue, Suite 400  
 Raleigh, NC 27605-3322  
 NC COA No. F-0840

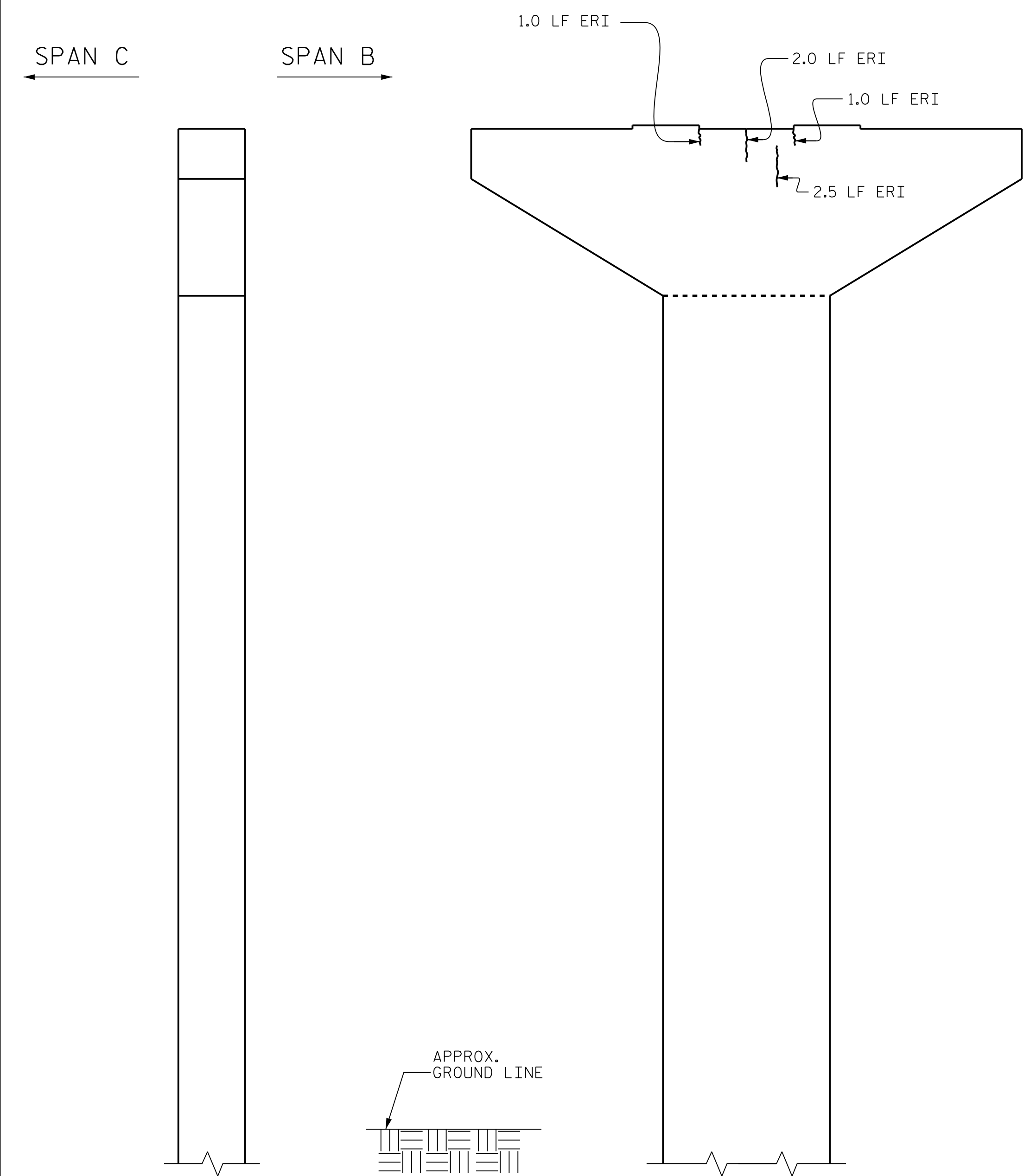
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BENT 1					
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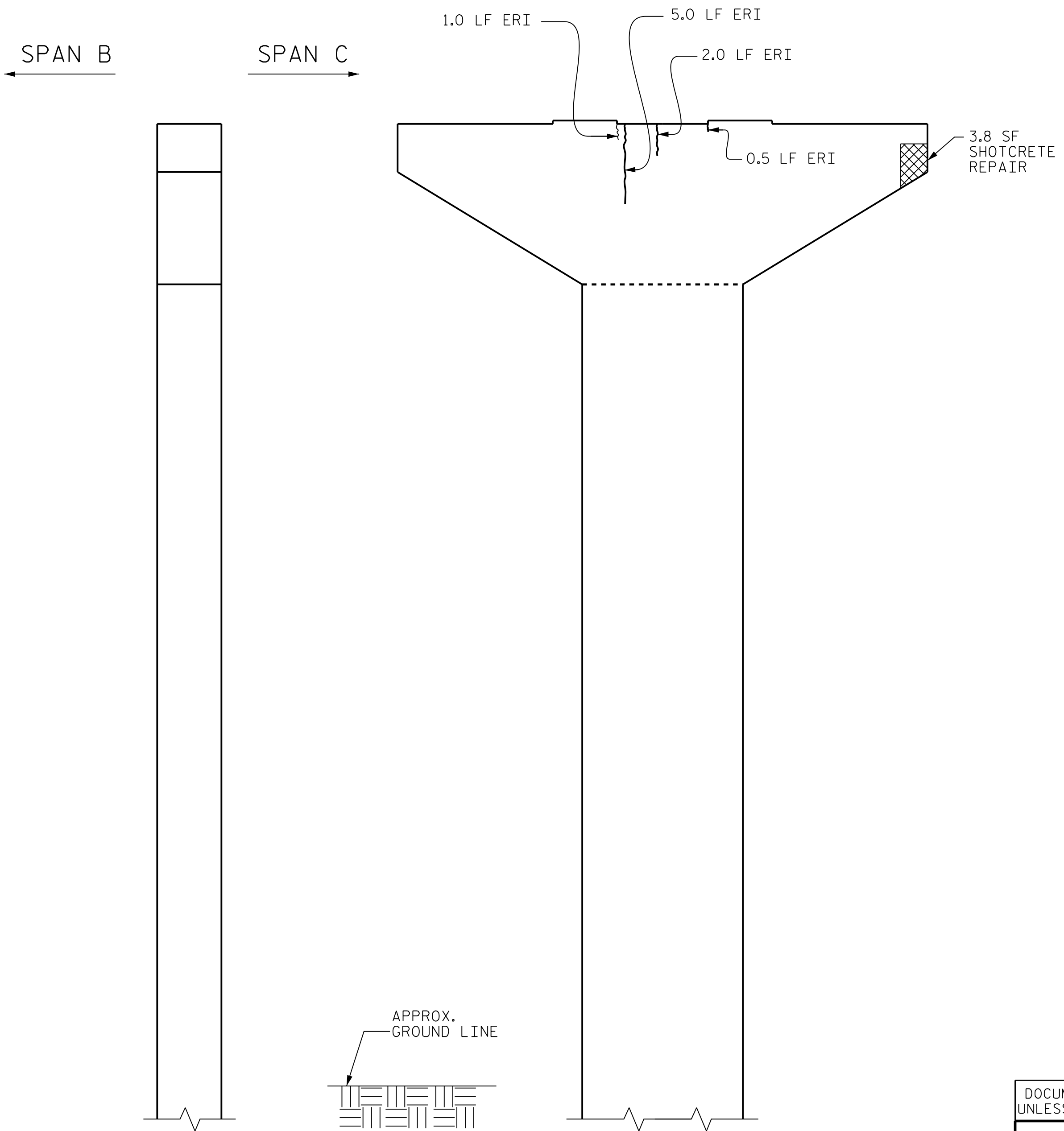
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 CHECKED BY : T. KIRSCHBAUM      DATE : 7/2018  
 DESIGN ENGINEER OF RECORD : F. ASEFNIA      DATE : 8/2018



TOP OF CAP



NORTH FACE



SOUTH FACE

SPAN C FACE

REPAIR QUANTITY TABLE				
REPAIRS BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	6.4	3.6		
COLUMN	0.0	0.0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
COLUMN	0.0	0.0		
EPOXY RESIN INJECTION	LN. FT		LN. FT	
CAP	18.0			
COLUMN	0.0			

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL TO SAWCUT. SEE REPAIR DETAILS.  
**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 SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

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

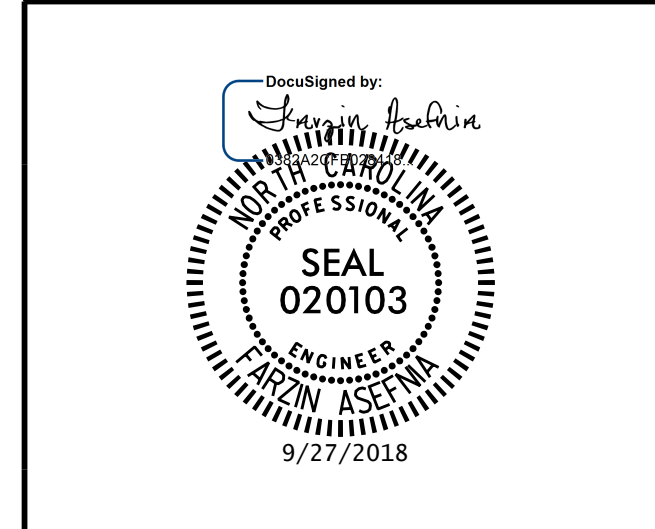
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

- DAMAGED AREA
- EPOXY RESIN INJECTION

PROJECT NO. 15BPR.28  
MADISON COUNTY  
 BRIDGE NO. 560093

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 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 BENT 2

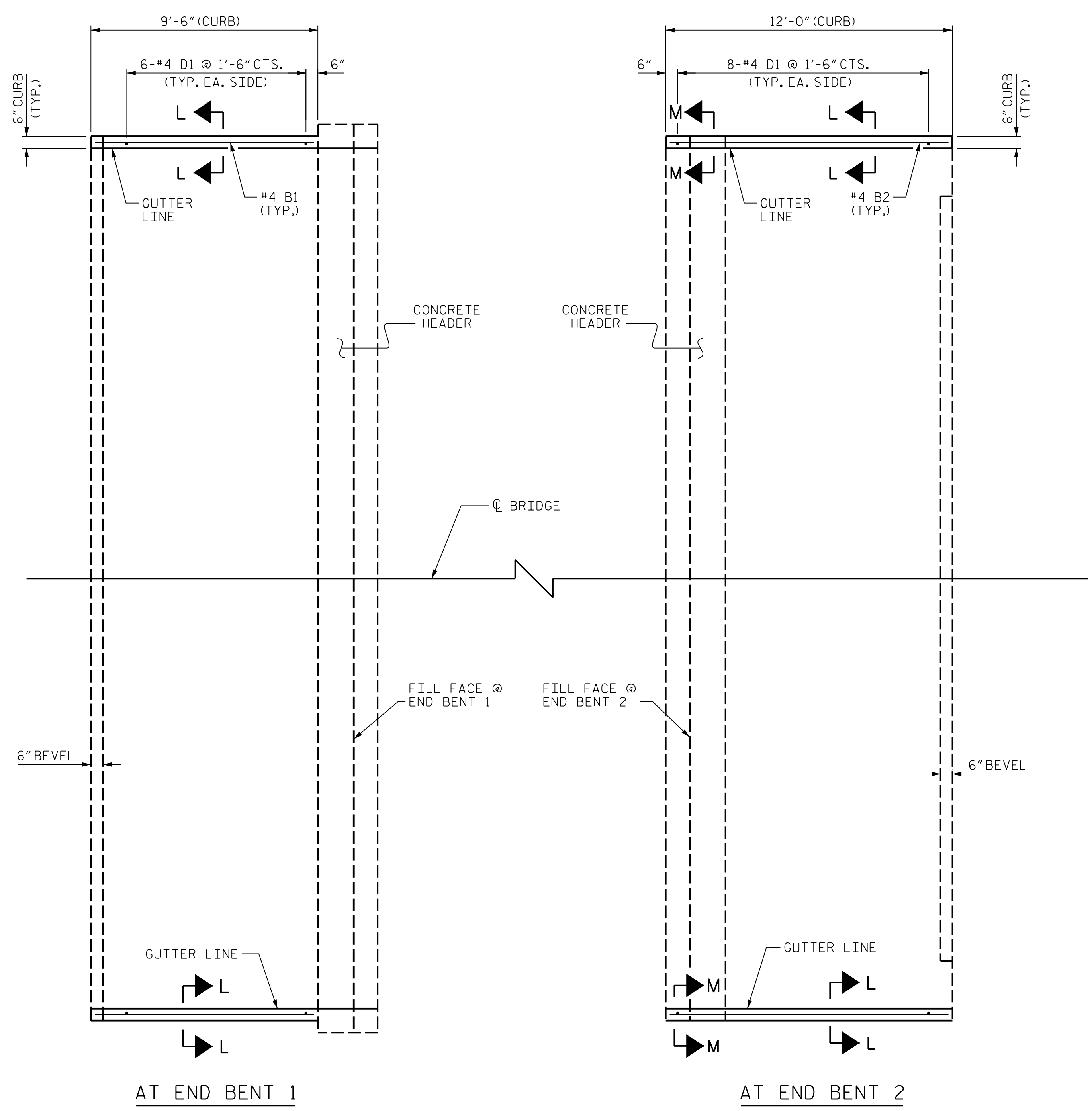
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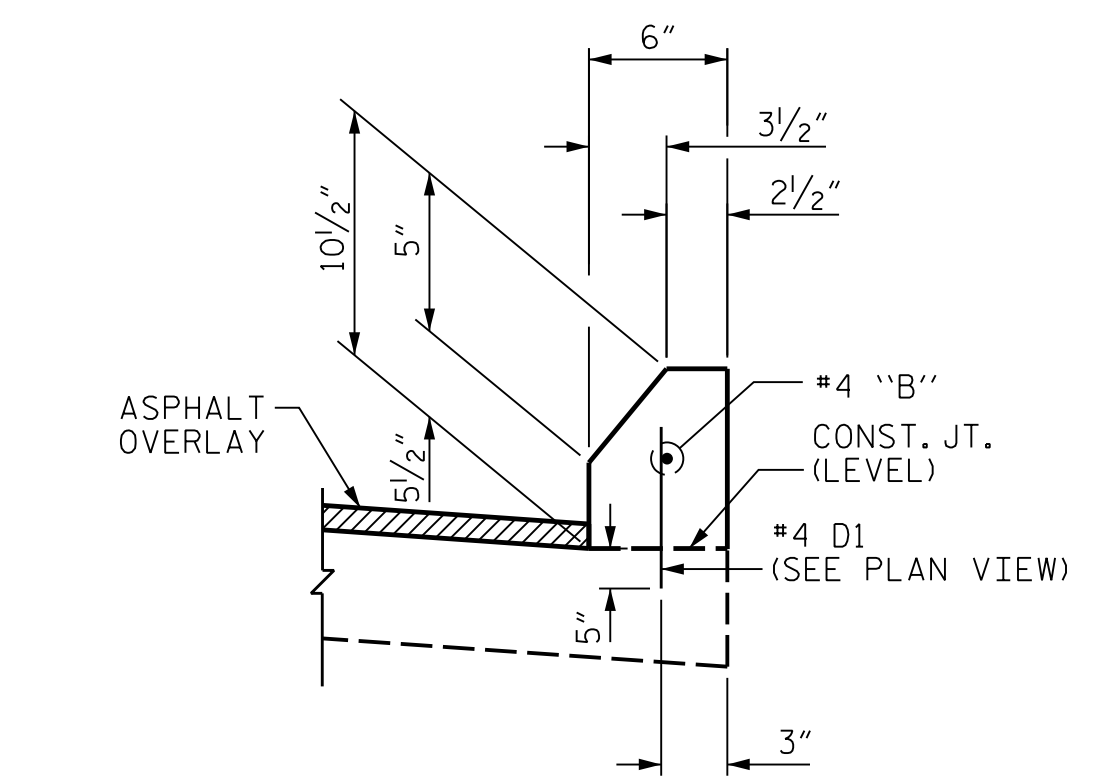
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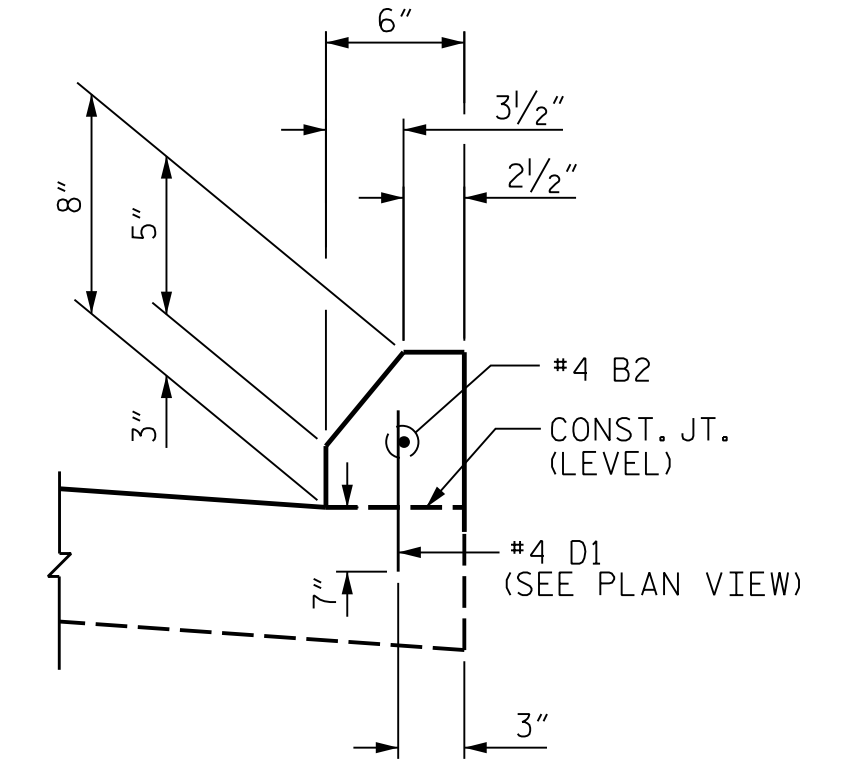
BILL OF MATERIAL					
APPROACH SLAB AT EB 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*B1	2	#4	STR	9'-2"	12
*D1	12	#4	STR	11"	7
* EPOXY COATED REINFORCING STEEL				LBS.	19
CLASS AA CONCRETE				C. Y.	0.3
APPROACH SLAB AT EB 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*B2	2	#4	STR	11'-8"	16
*D1	16	#4	STR	11"	10
* EPOXY COATED REINFORCING STEEL				LBS.	26
CLASS AA CONCRETE				C. Y.	0.3



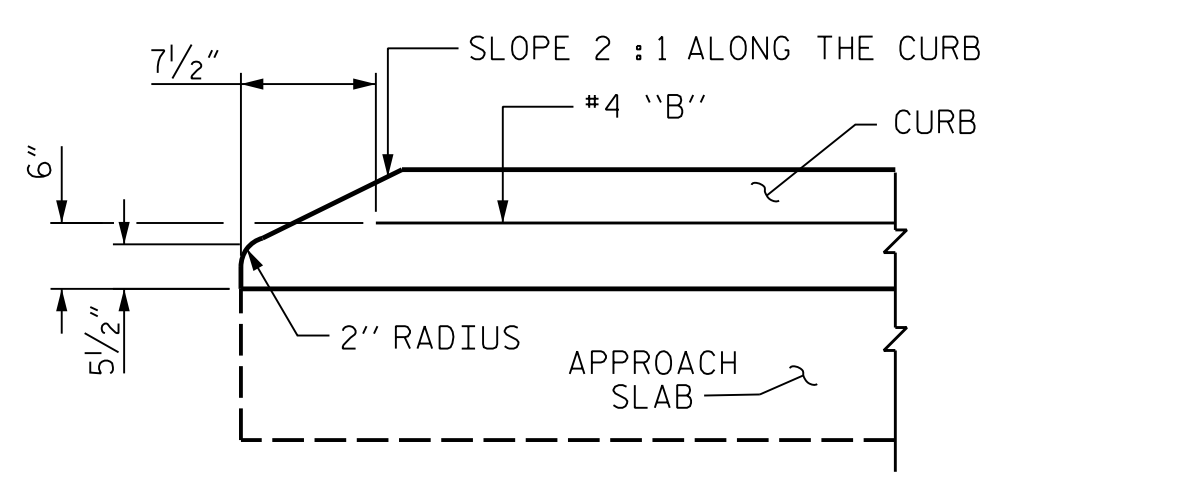
PLAN VIEW



SECTION L-L



SECTION M-M



DETAIL AT END OF CURB AT END BENT 1

**NOTES:**  
 THE EXISTING CONCRETE CURBS AND DOWELS SHALL BE REMOVED DOWN TO THE TOP OF APPROACH SLABS  
 THE APPROACH SLAB CURBS AT END BENT 2 SHALL HAVE A VERTICAL FACE AT THE THE LOCATION OF THE EXISTING FLUMES.  
 THE CONTRACTOR SHALL USE ADHESIVE ANCHORED DOWELS. NO FIELD TESTING IS REQUIRED. FOR ADHESIVE ANCHOR BOLTS OR DOWELS, SEE ARTICLE 420-13 OF THE STANDARD SPECIFICATIONS.  
 NO SEPARATE PAYMENT WILL BE MADE FOR FURNISHING, INSTALLING AND TESTING ADHESIVELY ANCHORED DOWELS. PAYMENT AT THE CONTRACT UNIT PRICES FOR THE VARIOUS PAY ITEMS WILL BE FULL COMPENSATION FOR ALL MATERIALS, TOOLS, LABOR AND INCIDENTALS NECESSARY TO COMPLETE THE WORK.

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MADISON COUNTY  
 BRIDGE NO. 590093

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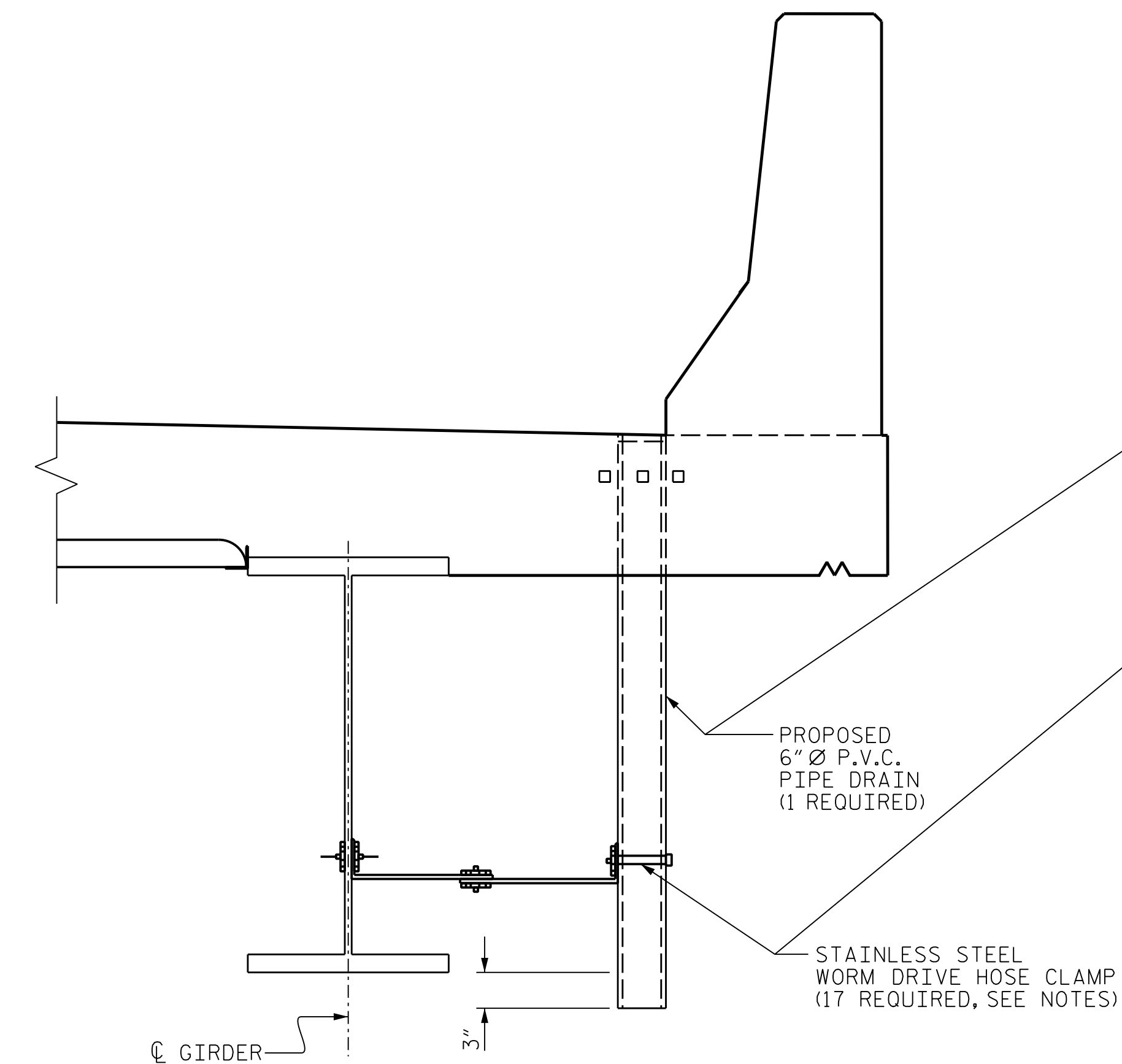
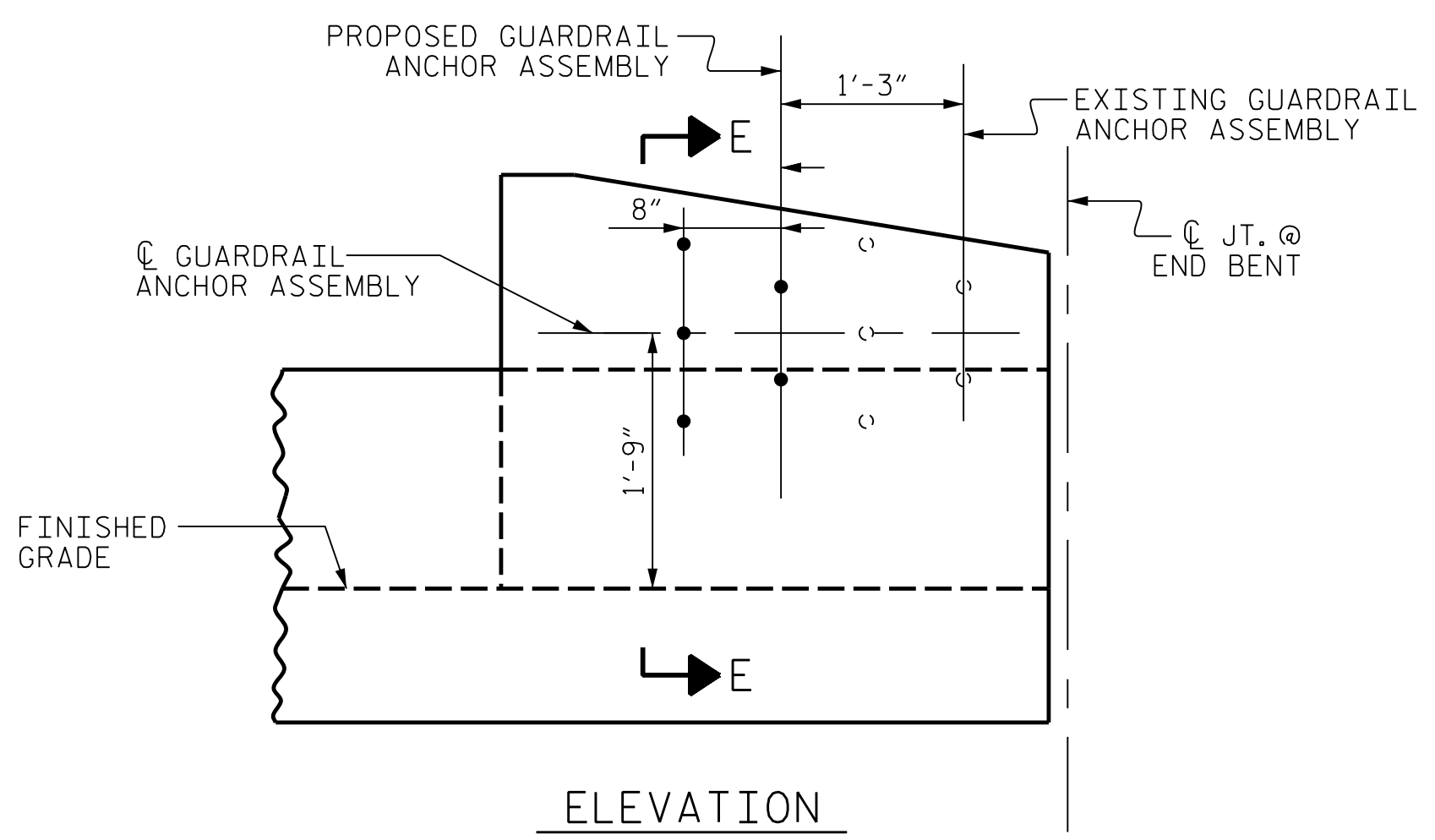
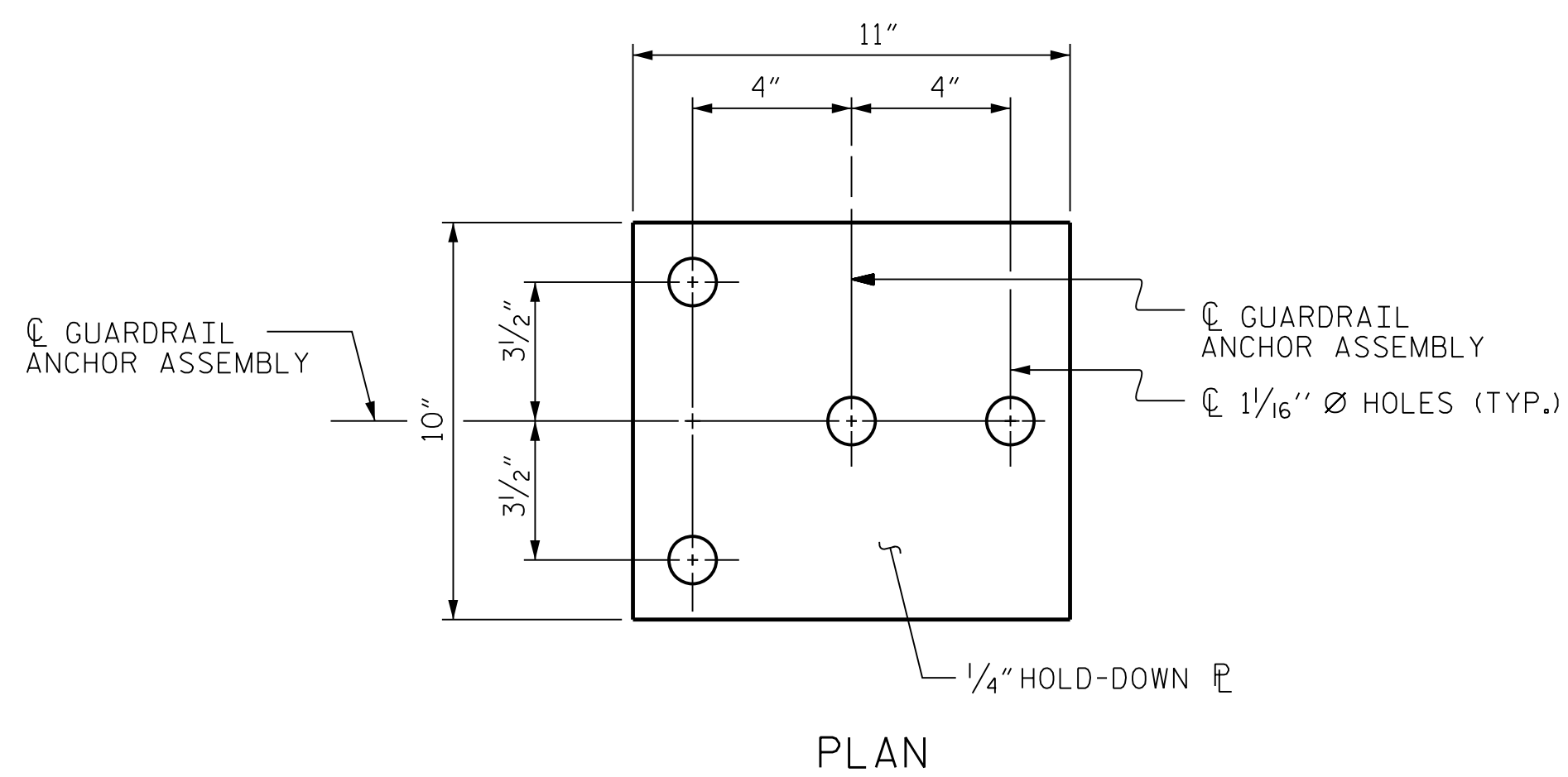


STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 BRIDGE APPROACH SLAB  
 REPAIR DETAIL

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**DRAIN CONNECTOR DETAIL**

**NOTES**

COUPLING IN DRAIN PIPE WILL BE PERMITTED AS APPROVED BY THE ENGINEER.

BOLT SIZE TO BE SAME AS DIAPHRAGM AND CROSSFRAME CONNECTIONS. STAINLESS STEEL WORM HOSE CLAMP SHALL BE COMMERCIAL QUALITY.

THE REPLACEMENT DRAIN PIPE SHALL BE PAINTED WITH TWO COATS OF BROWN PRIMER MEETING THE REQUIREMENTS OF ARTICLE 1080-11 OF THE STANDARD SPECIFICATIONS. EACH COAT SHALL BE 2 DRY MILS (0.050 MM) THICK. THE DECK DRAIN SHALL BE ROUGHENED PRIOR TO PAINTING. NO SEPARATE PAYMENT SHALL BE MADE FOR PAINTING THE PVC DECK DRAIN AS THIS IS CONSIDERED INCIDENTAL TO THE PAY ITEM FOR REPAIR OF EXISTING DECK DRAINS.

PIPE, AND ALL PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 STEEL OR APPROVED EQUAL. PIPE SHALL CONFORM TO ASTM A53, TYPE S. ALL HOLD-DOWN BOLTS AND NUTS SHALL BE AASHTO M164. WASHERS SHALL CONFORM TO AASHTO M293. ALL ANCHOR STUDS SHALL CONFORM TO AASHTO M169 GRADES 1010 THRU 1020 OR APPROVED EQUAL.

UPON COMPLETION OF SHOP FABRICATION, ALL STEEL PARTS, INCLUDING BOLTS AND WASHERS, SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

THE CONTRACTOR SHALL REPLACE ALL BROKEN HOSE CLAMPS. THE ESTIMATED NUMBER OF HOSE CLAMP REPLACEMENTS IS FROM THE BEST INFORMATION AVAILABLE.

**NOTES**

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

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

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

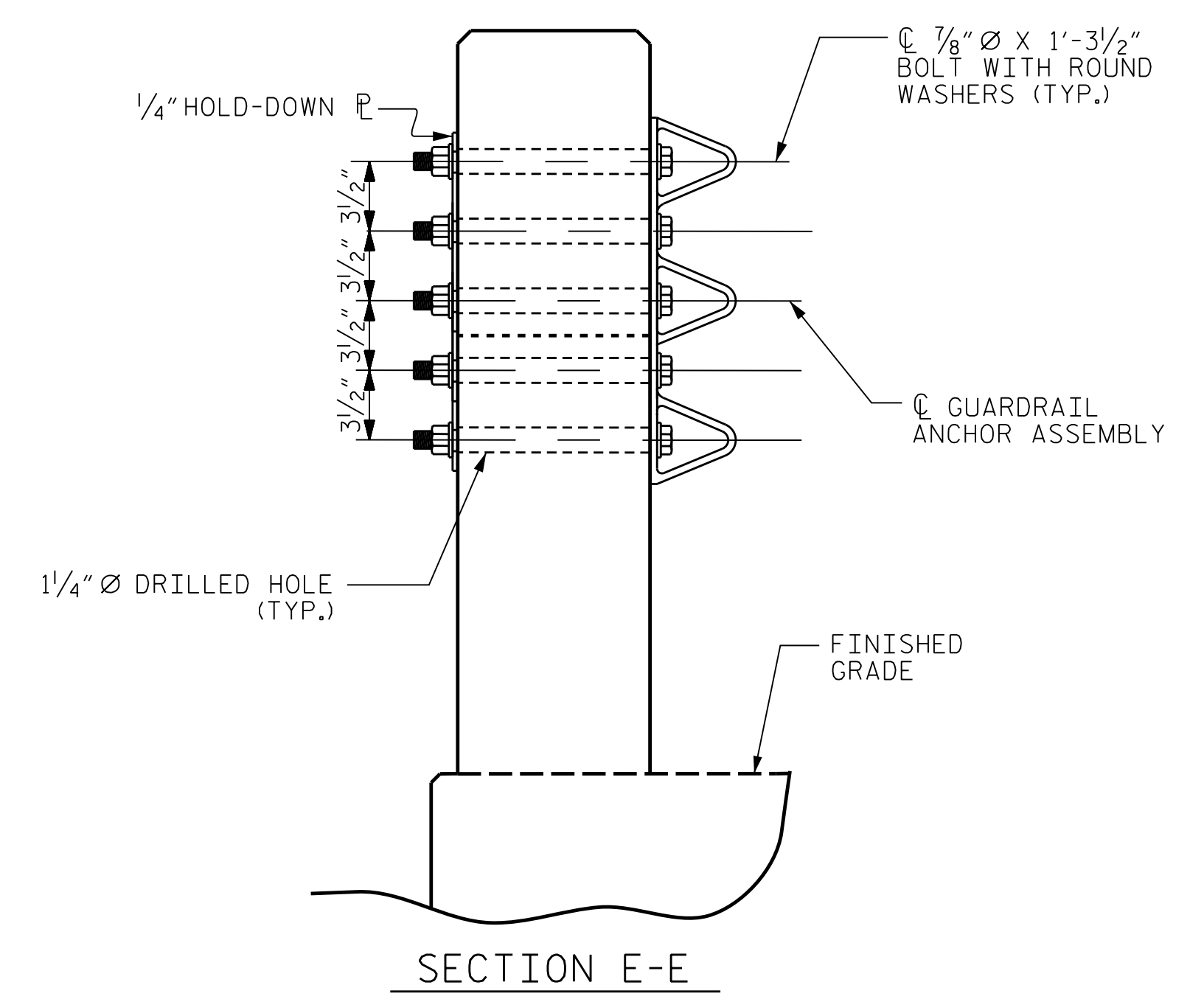
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE THE EXISTING APPROACH GUARDRAIL ATTACHMENT IS DAMAGED. FOR POINTS OF ATTACHMENT, SEE "PLAN OF SPAN" SHEETS.

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

THE 1 1/4" Ø HOLES SHALL BE DRILLED WITH A CORE BIT. THE DRILL BIT SHALL BE CAPABLE OF DRILLING THROUGH EXISTING REINFORCING BARS AND CONCRETE. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER AT NO ADDITIONAL COST TO THE DEPARTMENT.

CUT EXISTING GUARDRAIL ANCHOR ASSEMBLY BOLTS FLUSH WITH THE FACE OF THE CONCRETE BARRIER RAIL.

REPLACE THE END SHOE AT THE SOUTHEAST CORNER OF THE BRIDGE. PAYMENT FOR THE END SHOE AND ADDITIONAL GUARDRAIL WILL BE INCLUDED IN THE BID ITEM "GUARDRAIL ANCHOR UNIT REPAIR". SEE ROADWAY STANDARD 862.02 FOR DETAILS.



**SECTION E-E**

**GUARDRAIL ANCHOR ASSEMBLY DETAILS**

PROJECT NO. 15BPR.28  
MADISON COUNTY  
 BRIDGE NO. 560093

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Prepared by:  
LOUIS BERGER  
1001 Wade Avenue, Suite 400  
Raleigh, NC 27605-3322  
NC COA No. F-0840

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
MISCELLANEOUS DETAILS					
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					TOTAL SHEETS 63

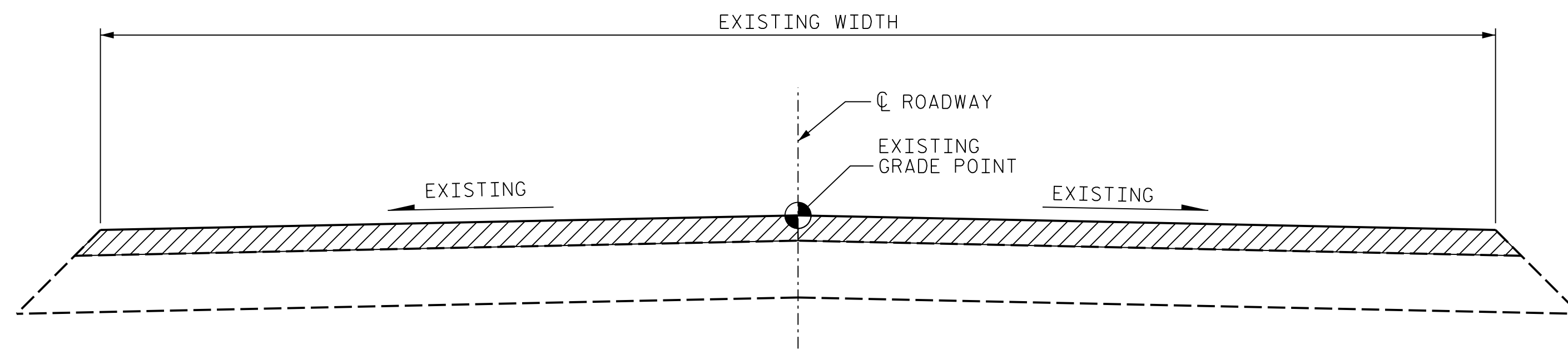
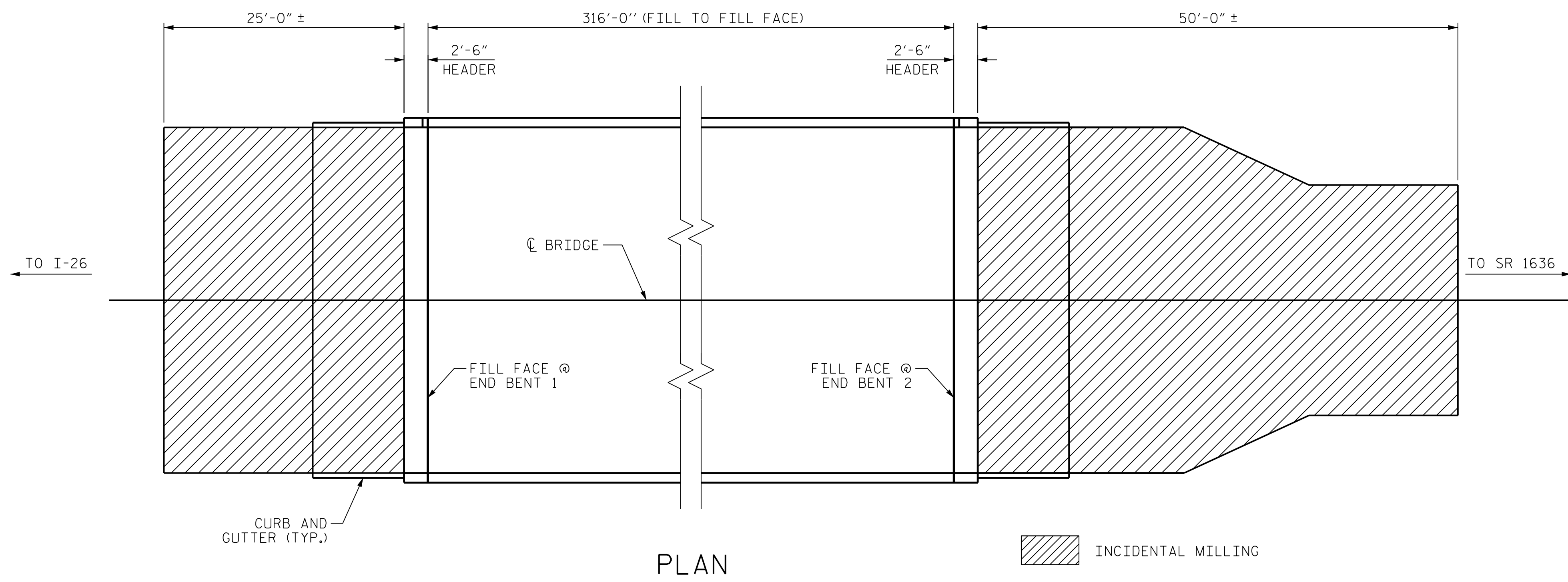
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DESIGN ENGINEER OF RECORD :	F. ASEFNIA	DATE :	8/2018



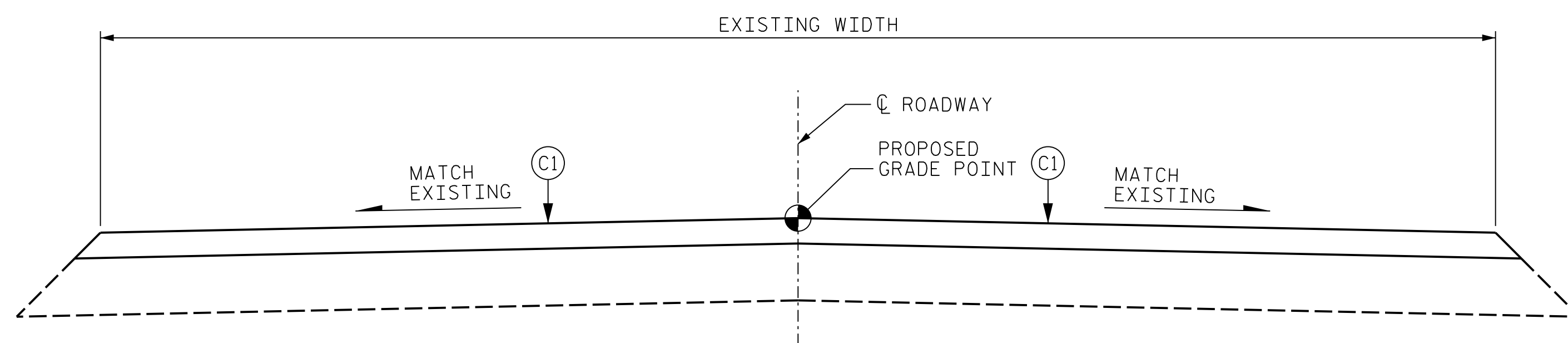
**NOTES:**

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.



**TYPICAL ROADWAY MILLING SECTION**

(MILL TO APPROX. 1/2" DEPTH)



**TYPICAL FINAL ROADWAY SECTION**

**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 QUANTITY		
	ESTIMATE	ACTUAL
INCIDENTAL MILLING	275 SQ. YDS.	
ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B	25 TONS	
ASPHALT BINDER FOR PLANT MIX	2 TONS	

PROJECT NO. 15BPR.28  
MADISON COUNTY  
 BRIDGE NO. 560093

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

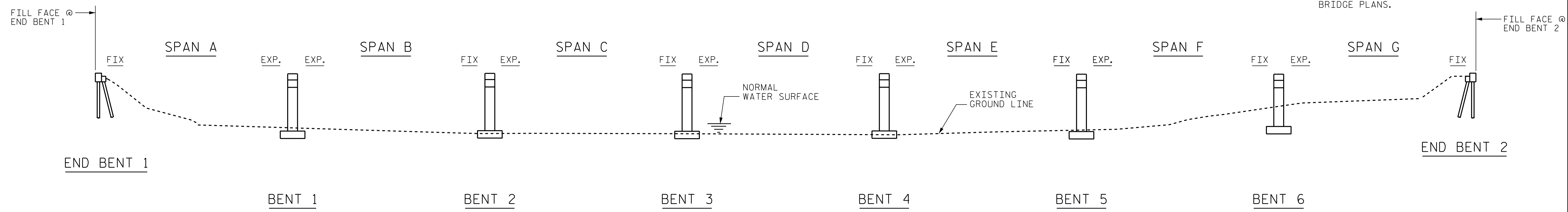


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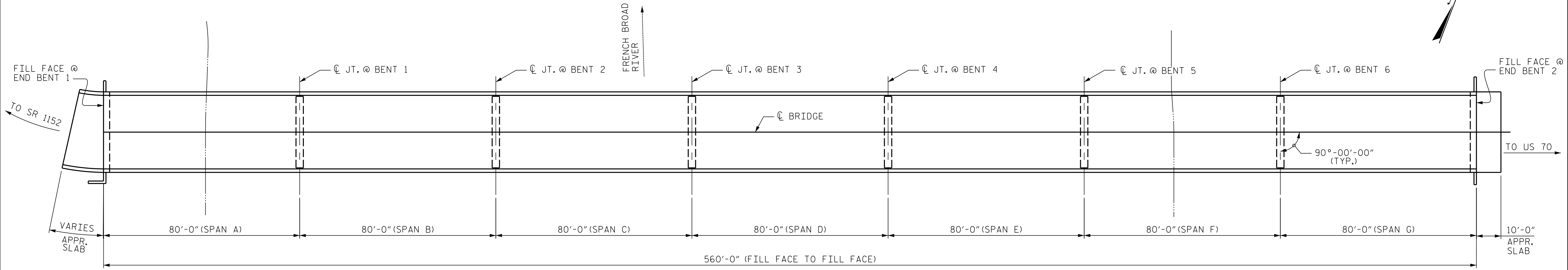
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**NOTES:**  
 PROFILE INFORMATION IS TAKEN FROM THE ORIGINAL PLANS AND THE ROUTINE INSPECTION REPORT DATED 05/25/2016.  
 BRIDGE ORIENTATION CONFORMS TO EXISTING BRIDGE PLANS.



**SECTION ALONG Q ROADWAY**



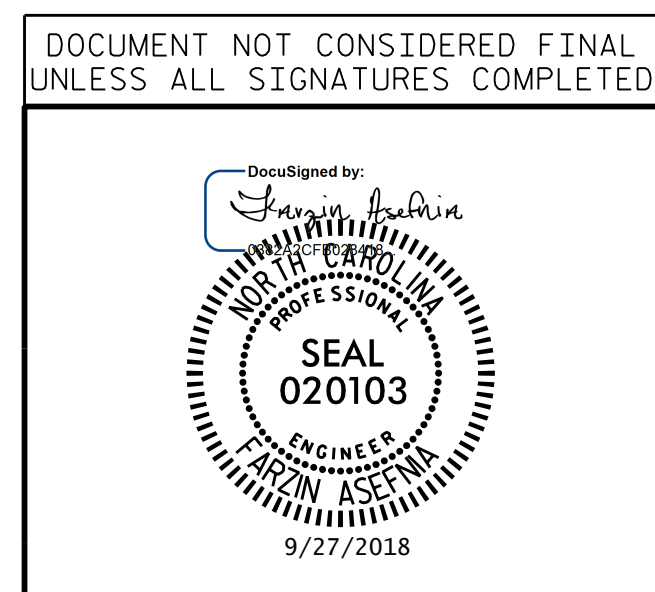
**PLAN**

**SCOPE OF WORK**

- PARTIALLY REMOVE BRIDGE DECK AND APPROACH SLAB HEADER CONCRETE BY SCARIFICATION AND HYDRODEMOLITION METHODS.
- DEMOLISH EXISTING BRIDGE DECK JOINTS.
- OVERLAY PREPARED BRIDGE DECK AND APPROACH SLAB HEADER WITH LATEX MODIFIED CONCRETE-EARLY STRENGTH.
- RECONSTRUCT BRIDGE JOINTS AND INSTALL JOINT SEALS.
- GROOVE LATEX MODIFIED CONCRETE-EARLY STRENGTH BRIDGE DECK AND APPROACH SLAB.
- CLEANING AND ZONE PAINTING OF WEATHERING STEEL GIRDERS.
- REMOVE DEBRIS FROM TOP OF END BENT AND BENT CAPS.
- EPOXY INJECTION OF CONCRETE CRACKS.
- CLEAN AND REPAIR REBAR IN CONCRETE REPAIR AREAS.
- PERFORM SHOTCRETE AND CONCRETE REPAIRS IN PREPARED AREAS.
- APPLY EPOXY COATING TO TOP OF BENT CAPS.
- MILL AND PAVE ASPHALT APPROACHES.

PROJECT NO. 15BPR.28  
MADISON COUNTY  
 BRIDGE NO. 560113

I hereby certify that this structure was rehabilitated according to these plans or as noted therein.  
 \_\_\_\_\_  
 Resident Engineer Date

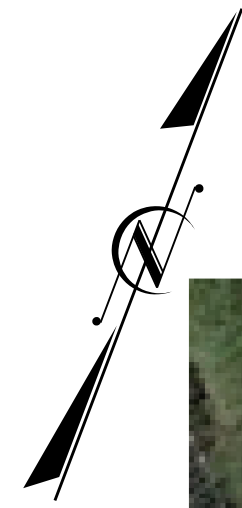


STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**GENERAL DRAWING**  
 FOR BRIDGE ON SR 1151  
 (BIG PINE ROAD) OVER  
 FRENCH BROAD RIVER

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**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 ASPECT THAT MAY BE NECESSARY TO PERFORM AND COMPLETE THE PROJECT.

**BRIDGE COORDINATES**

LATITUDE	LONGITUDE
35°50'20.34"	82°45'19.30"

**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.

EXISTING JOINTS AND DECK DRAINS SHALL BE SEALED PRIOR TO BEGINNING SURFACE PREPARATION OF BRIDGE DECK.

THE BEAM ENDS, BENT DIAPHRAGMS AND STIFFENERS AT ALL INTERMEDIATE BENTS SHALL BE PAINTED IN ACCORDANCE WITH THE SPECIAL PROVISION, PAINTING EXISTING WEATHERING STEEL STRUCTURE.

FOR PAINTING CONTAINMENT, SEE PAINTING EXISTING WEATHERING STEEL STRUCTURE SPECIAL PROVISION.

FOR POLLUTION CONTROL, SEE PAINTING EXISTING WEATHERING STEEL STRUCTURE SPECIAL PROVISION.

FOR OVERLAY OF BRIDGE WITH LATEX MODIFIED CONCRETE-EARLY STRENGTH, SEE SPECIAL PROVISIONS.

THE CONTRACTOR SHALL PROVIDE A METHOD OF HANDLING UNEXPECTED BLOW THROUGH OF THE DECK DURING HYDRO-DEMOLITION OPERATIONS.

FOR SCARIFYING BRIDGE DECK, HYDRO-DEMOLITION OF BRIDGE DECK, CLASS II SURFACE PREPARATION AND CLASS III SURFACE PREPARATION, SEE OVERLAY SURFACE PREPARATION SPECIAL PROVISIONS.

DURING CONSTRUCTION, BERMS OR APPROPRIATE MEASURES SHALL BE LOCATED ALONG THE CENTER LINE OR EDGE OF TRAVEL LANES TO CONTROL RUN-OFF OF HYDRO-DEMOLITION WATER FROM FLOWING OR MIGRATING INTO ACTIVE TRAVEL LANES.

THE CONTRACTOR MUST COLLECT, TREAT AND DISPOSE OF RUN-OFF WATER FROM THE HYDRO-DEMOLITION PROCESS, SEE OVERLAY SURFACE PREPARATION SPECIAL PROVISION.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSE WORK AND FORM WORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR BRIDGE JOINT DEMOLITION, SEE SPECIAL PROVISIONS.

FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

FOR FOAM JOINT SEALS, SEE SPECIAL PROVISIONS.

IT IS THE CONTRACTOR'S RESPONSIBILITY TO FOLLOW ALL STATE AND FEDERAL SAFETY REQUIREMENTS.

FOR CONTROL OF TRAFFIC AND LIMITS ON PHASING OF CONSTRUCTION, SEE TRANSPORTATION MANAGEMENT PLAN SHEETS.

LONGITUDINAL CONSTRUCTION JOINTS OF OVERLAYS SHALL BE LOCATED ALONG THE CENTERLINE OR EDGE OF TRAVEL LANES.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

FOR EPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.

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

FOR CONCRETE FOR DECK REPAIR, SEE SPECIAL PROVISIONS.

FOR VOLUMETRIC MIXER, SEE SPECIAL PROVISIONS.

PROJECT NO. 15BPR.28  
MADISON COUNTY  
 BRIDGE NO. 560113

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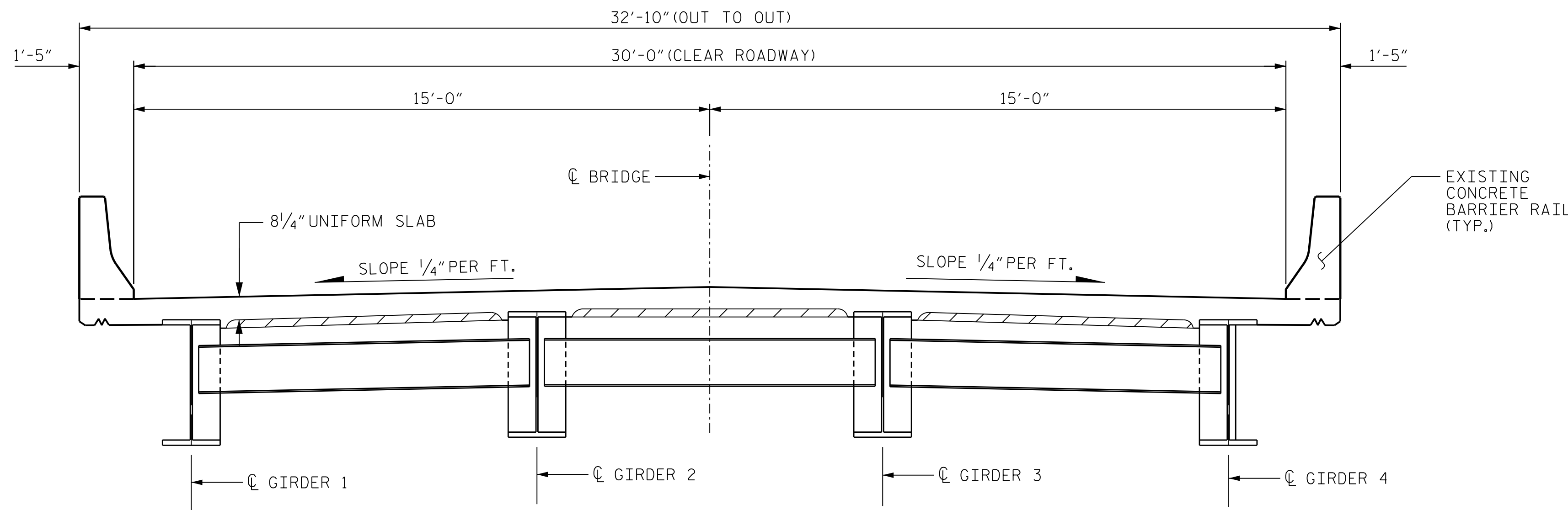


STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**GENERAL DRAWING**  
 FOR BRIDGE ON SR 1151  
 (BIG PINE ROAD) OVER  
 FRENCH BROAD RIVER

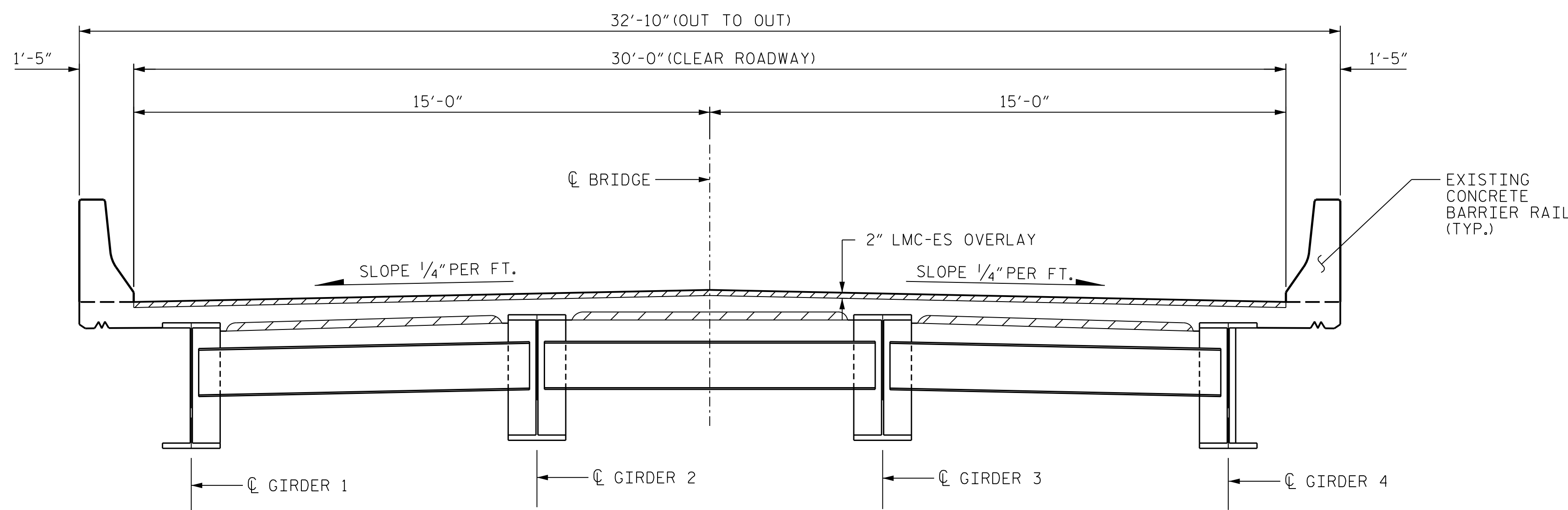


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TYPICAL SECTION  
(EXISTING)



TYPICAL SECTION  
(PROPOSED)

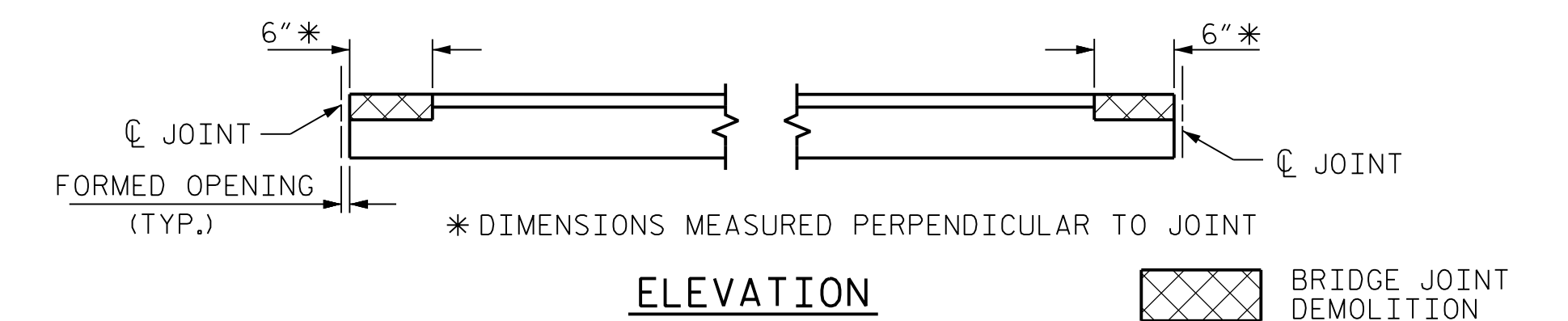
NOTES:

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

WHEN PREPARING THE SURFACE FOR LMC-ES OVERLAY ADJACENT TO A PREVIOUSLY PLACED LMC-ES STAGE, THE PREVIOUSLY PLACED LMC-ES SHALL BE REMOVED FOR A DISTANCE OF 4 INCHES FROM THE LMC-ES' 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-ES SHALL BE PLACED IN THE 4-INCH OVERLAP, AS PART OF THE NEW LMC-ES STAGE PLACEMENT.

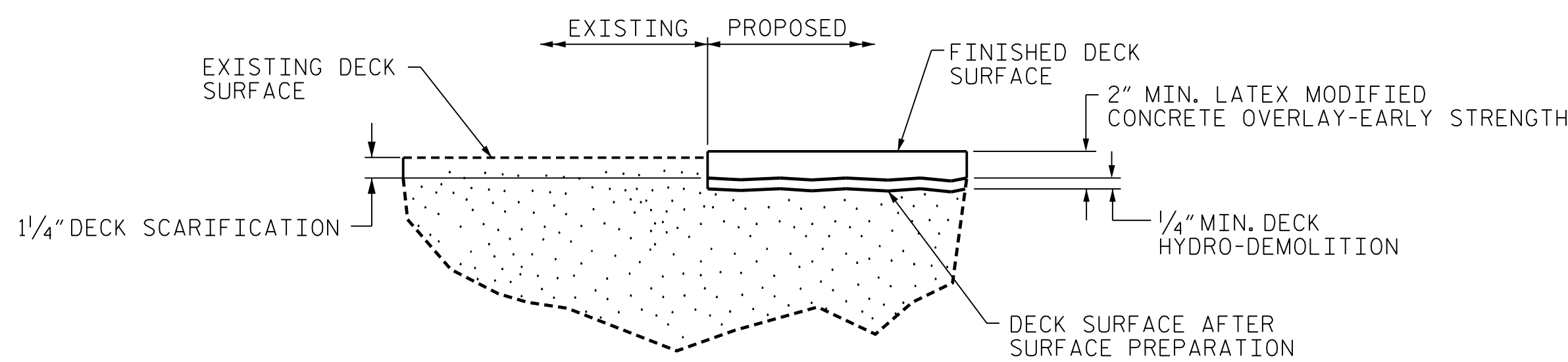


PLAN

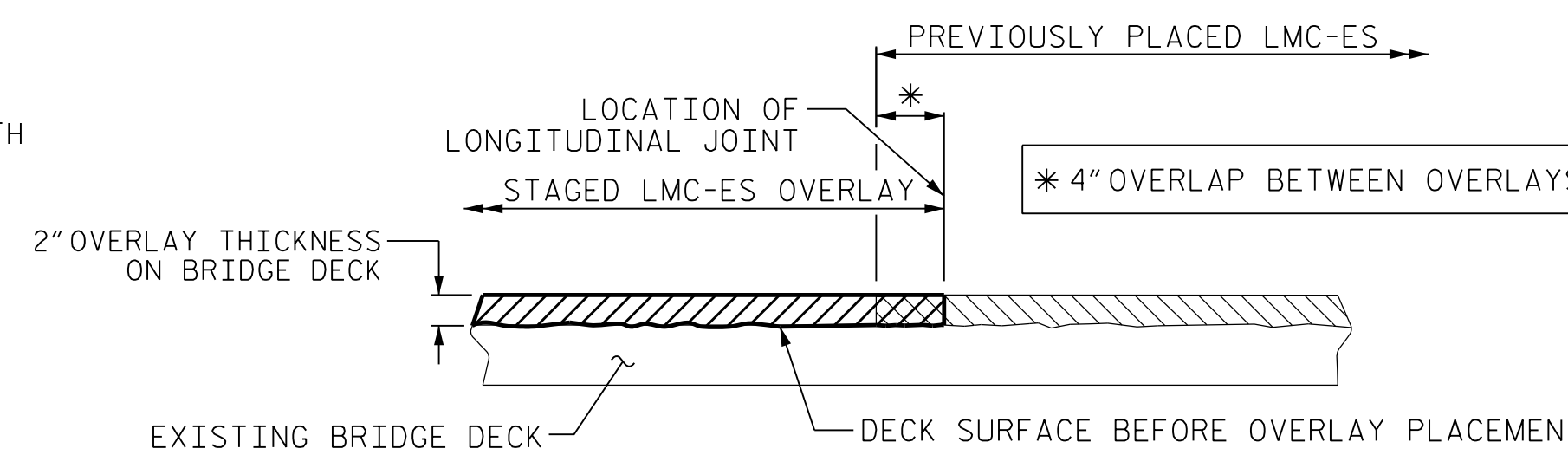


ELEVATION

PAY LIMITS FOR OVERLAY BID ITEMS



DETAIL FOR  
LMC-ES OVERLAY



SECTION THRU DECK  
STAGED LMC-ES OVERLAY JOINT  
(AS NEEDED)

PROJECT NO. 15BPR.28  
MADISON COUNTY  
BRIDGE NO. 560113

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UNLESS ALL SIGNATURES COMPLETED



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DEPARTMENT OF TRANSPORTATION  
RALEIGH

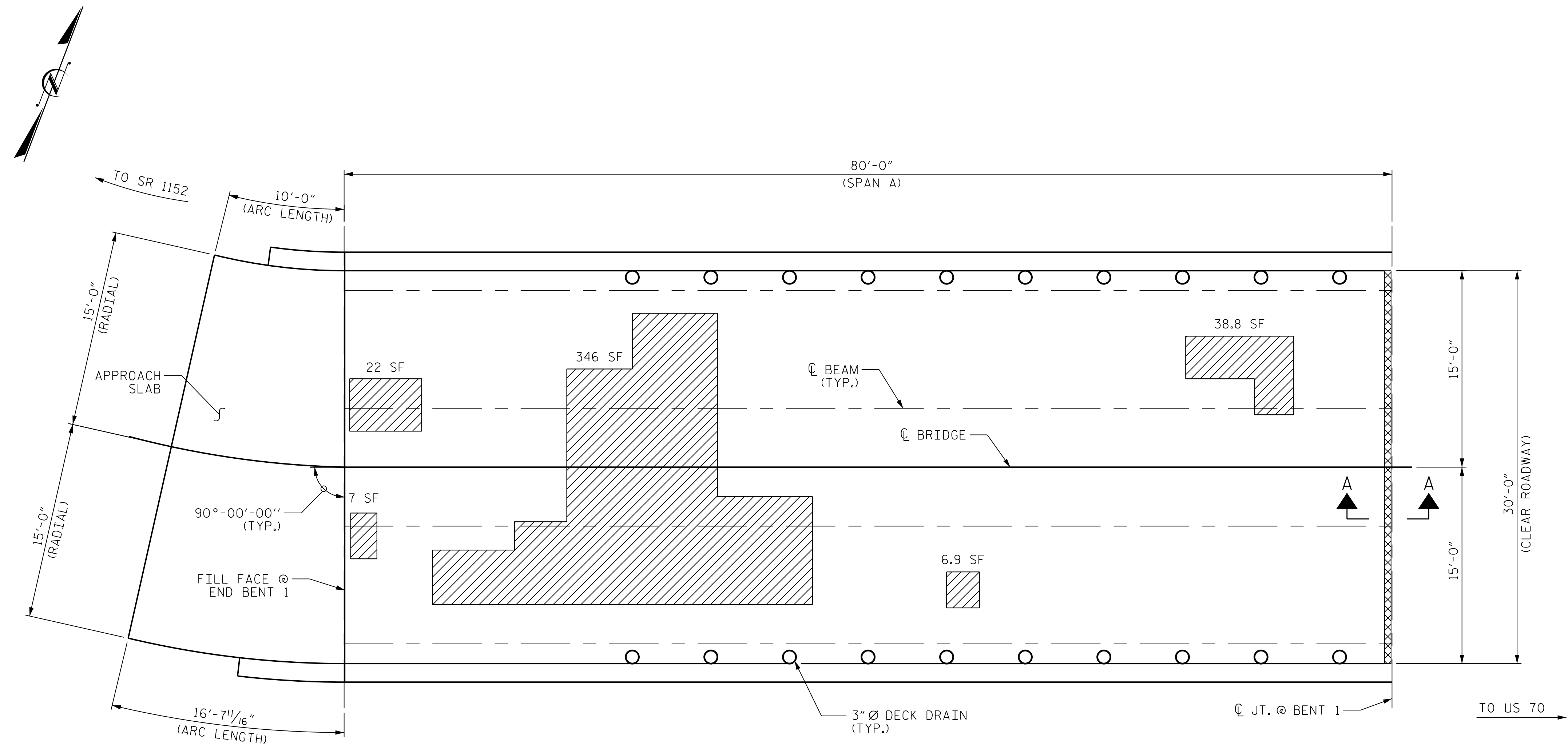
TYPICAL SECTION  
AND SURFACE  
PREPARATION DETAIL

DRAWN BY : M. HOGAN DATE : 7/2018  
CHECKED BY : J. YANNAKONE DATE : 8/2018  
DESIGN ENGINEER OF RECORD : F. ASEFNIA DATE : 8/2018

Prepared by:  
LOUIS BERGER  
1001 Wade Avenue, Suite 400  
Raleigh, NC 27605-3322  
NC COA No. F-0840

REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			63

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PLAN

REPAIR QUANTITY TABLE

TOP OF DECK REPAIR				
	ESTIMATE	ACTUAL		
SCARIFYING BRIDGE DECK	265 SY			
HYDRO-DEMOLITION OF BRIDGE DECK	265 SY			
CLASS II SURFACE PREPARATION	46.7 SY			
CLASS III SURFACE PREPARATION	0.5 SY *			
BRIDGE JOINT DEMOLITION	15 SF			
EPOXY RESIN INJECTION	0 LF			
CONCRETE FOR DECK REPAIR	3.0 CF			
UNDERSIDE OF DECK REPAIR				
SHOTCRETE REPAIRS	ESTIMATE		ACTUAL	
	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0.0	0.0		
OVERHANG DIAPHRAGMS	0.0	0.0		
UNDERSIDE OF OVERHANG	0.0	0.0		
INTERIOR DIAPHRAGMS	0.0	0.0		
			ESTIMATE	ACTUAL
UNDERSIDE EPOXY RESIN INJECTION			0.0 LF	

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

PAYMENT FOR CLASS II AND CLASS III SURFACE PREPARATION IS BASED ON THE SQUARE FEET OF ADDITIONAL DEMOLITION REQUIRED FOLLOWING HYDRO-DEMOLITION OF THE BRIDGE DECK. SEE "OVERLAY SURFACE PREPARATION" SPECIAL PROVISIONS.

\* CLASS III SURFACE PREPARATION IS NOT ANTICIPATED. A TOKEN AMOUNT IS INDICATED FOR PRICING PURPOSES, IN CASE UNANTICIPATED CLASS III SURFACE PREPARATION AREAS ARE ENCOUNTERED.

- APPROX. CLASS II AREA
- APPROX. CLASS III AREA
- BRIDGE JOINT DEMOLITION
- ERI EPOXY RESIN INJECTION

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.

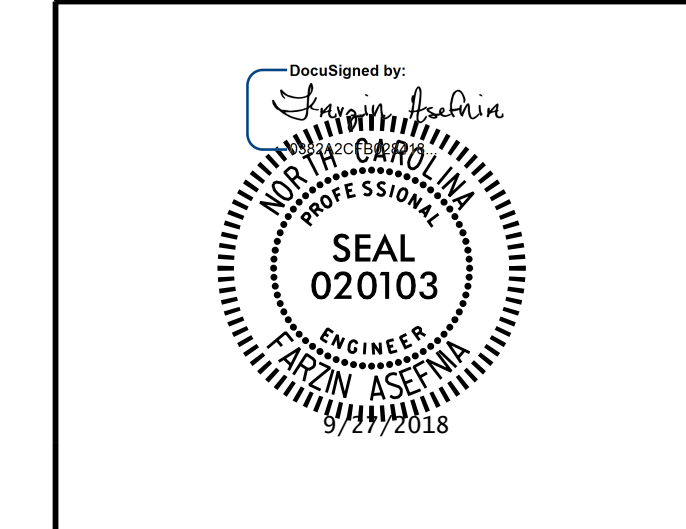
CONCRETE COVER FOR TOP BARS IN THE DECK SLAB IS 2" PER THE EXISTING BRIDGE PLANS.

PRIOR TO THE PLACEMENT OF THE LMC-ES OVERLAY ACROSS THE CONTINUOUS DECK SPANS, THE CONTRACTOR SHALL SUBMIT A POUR SEQUENCE FOR APPROVAL BY THE ENGINEER.

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

PROJECT NO. 15BPR.28  
MADISON COUNTY  
 BRIDGE NO. 560113

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

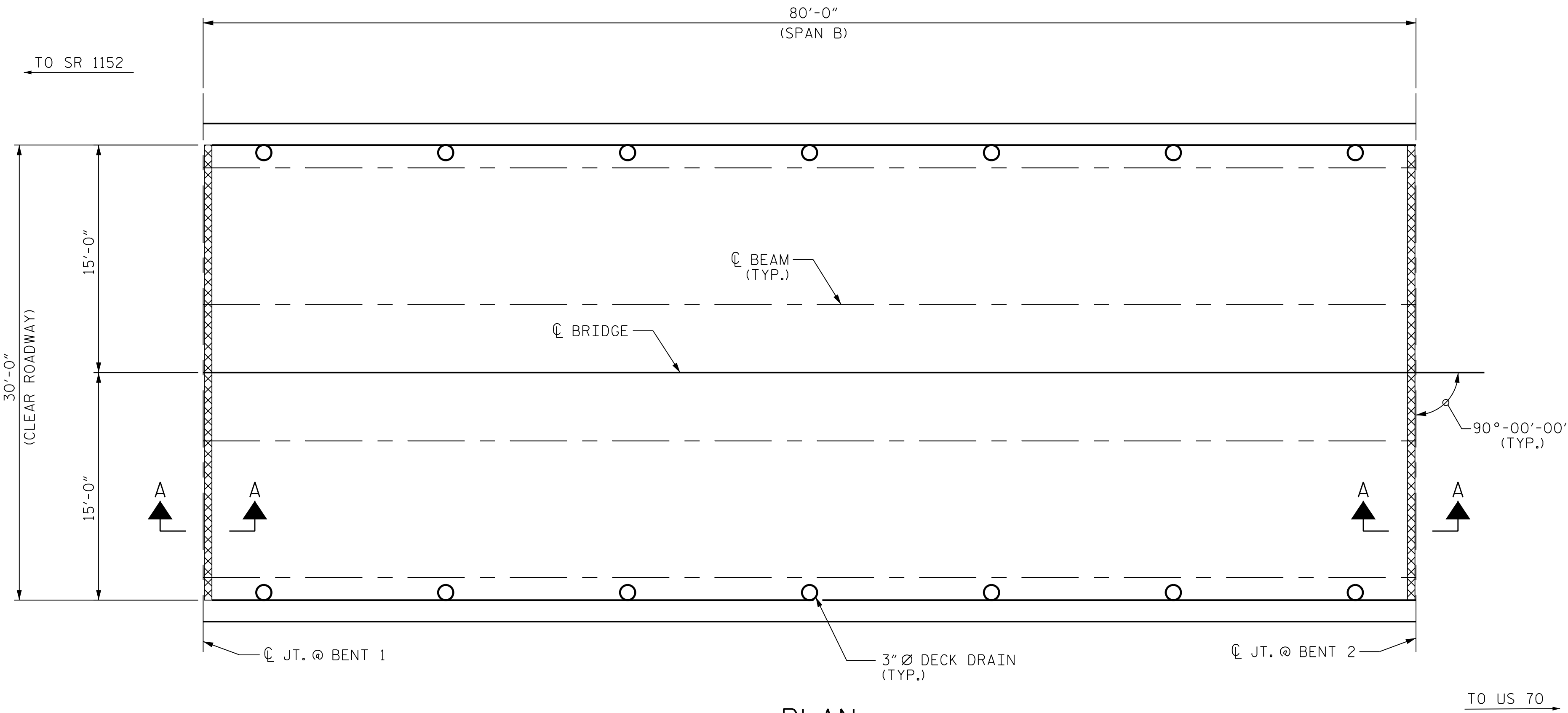
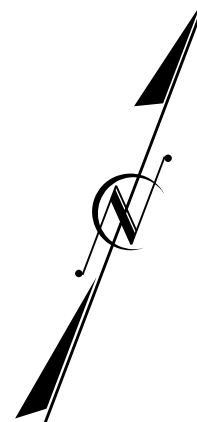
PLAN OF SPANS  
 SPAN A AND  
 APPROACH SLAB

REVISIONS						SHEET NO.
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DRAWN BY :	S. DHOLAKIA	DATE :	7/2018
CHECKED BY :	T. KIRSCHBAUM	DATE :	8/2018
DESIGN ENGINEER OF RECORD :	F. ASEFNIA	DATE :	8/2018

Prepared by:  
 LOUIS BERGER  
 1001 Wade Avenue, Suite 400  
 Raleigh, NC 27605-3322  
 NC COA No. F-0840



PLAN

REPAIR QUANTITY TABLE

TOP OF DECK REPAIR				
	ESTIMATE	ACTUAL		
SCARIFYING BRIDGE DECK	263 SY			
HYDRO-DEMOLITION OF BRIDGE DECK	263 SY			
CLASS II SURFACE PREPARATION	0 SY			
CLASS III SURFACE PREPARATION	0.5 SY *			
BRIDGE JOINT DEMOLITION	30 SF			
EPOXY RESIN INJECTION	0 LF			
CONCRETE FOR DECK REPAIR	3.0 CF			
UNDERSIDE OF DECK REPAIR				
SHOTCRETE REPAIRS	ESTIMATE		ACTUAL	
	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0.0	0.0		
OVERHANG DIAPHRAGMS	0.0	0.0		
UNDERSIDE OF OVERHANG	0.0	0.0		
INTERIOR DIAPHRAGMS	0.0	0.0		
	ESTIMATE		ACTUAL	
UNDERSIDE EPOXY RESIN INJECTION	0.0 LF			

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

PAYMENT FOR CLASS II AND CLASS III SURFACE PREPARATION IS BASED ON THE SQUARE FEET OF ADDITIONAL DEMOLITION REQUIRED FOLLOWING HYDRO-DEMOLITION OF THE BRIDGE DECK. SEE "OVERLAY SURFACE PREPARATION" SPECIAL PROVISIONS.

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- APPROX. CLASS II AREA
- APPROX. CLASS III AREA
- BRIDGE JOINT DEMOLITION
- ERI EPOXY RESIN INJECTION

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 REPAIR QUANTITY TABLE.

CONCRETE COVER FOR TOP BARS IN THE DECK SLAB IS 2" PER THE EXISTING BRIDGE PLANS.

PRIOR TO THE PLACEMENT OF THE LMC-ES OVERLAY ACROSS THE CONTINUOUS DECK SPANS, THE CONTRACTOR SHALL SUBMIT A POUR SEQUENCE FOR APPROVAL BY THE ENGINEER.

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

PROJECT NO. 15BPR.28  
MADISON COUNTY  
 BRIDGE NO. 560113

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SHEET 2 OF 7

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

PLAN OF SPANS  
SPAN B

REVISIONS						SHEET NO.
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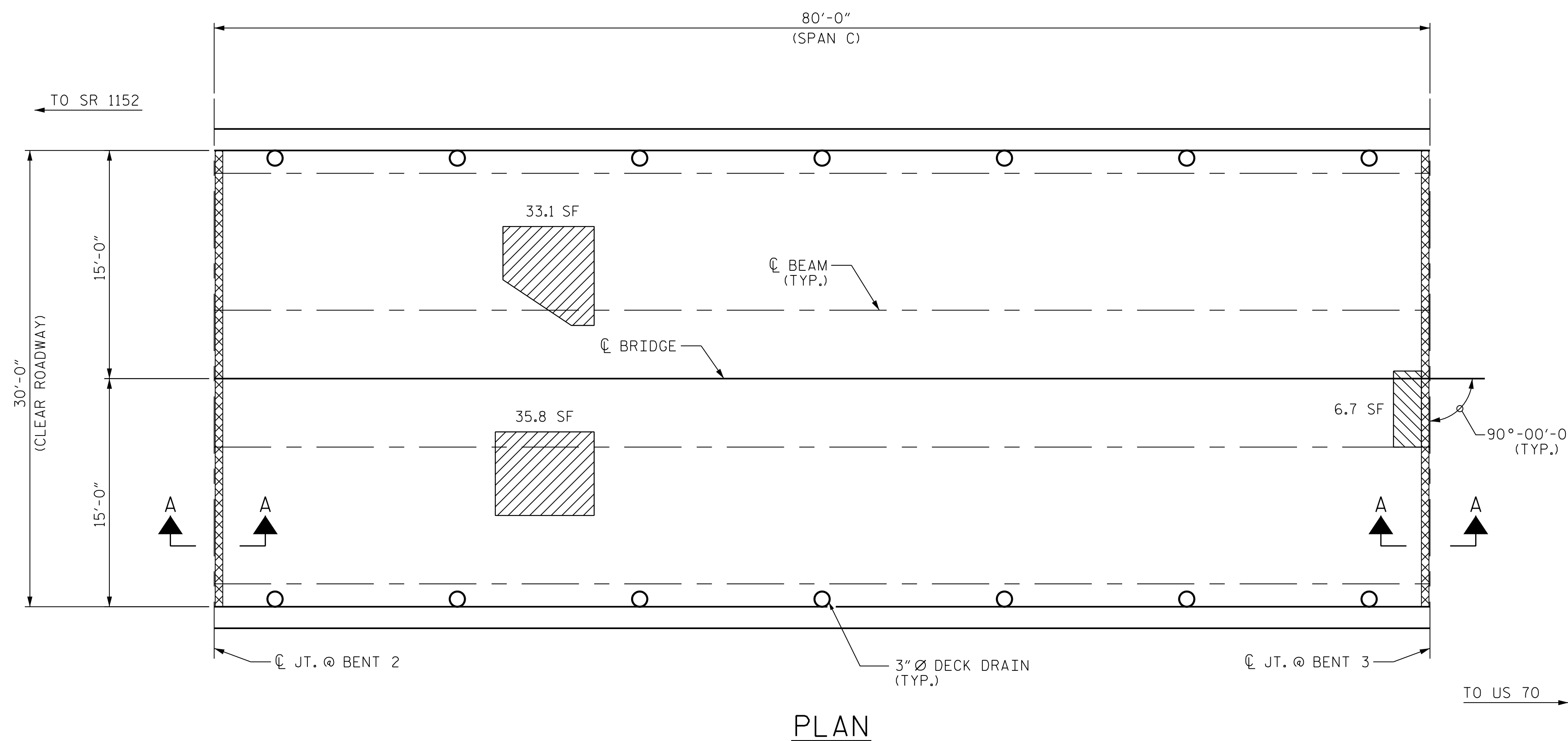
Prepared by: LOUIS BERGER  
 1001 Wade Avenue, Suite 400  
 Raleigh, NC 27605-3322  
 NC COA No. F-0840

**Louis Berger**

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CHECKED BY :	T. KIRSCHBAUM	DATE :	8/2018
DESIGN ENGINEER OF RECORD :	F. ASEFNIA	DATE :	8/2018





**NOTES**

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

**REPAIR QUANTITY TABLE**

TOP OF DECK REPAIR				
	ESTIMATE	ACTUAL		
SCARIFYING BRIDGE DECK	263 SY			
HYDRO-DEMOLITION OF BRIDGE DECK	263 SY			
CLASS II SURFACE PREPARATION	8.4 SY			
CLASS III SURFACE PREPARATION	0.5 SY *			
BRIDGE JOINT DEMOLITION	30 SF			
EPOXY RESIN INJECTION	0 LF			
CONCRETE FOR DECK REPAIR	3.0 CF			
UNDERSIDE OF DECK REPAIR				
SHOTCRETE REPAIRS	ESTIMATE		ACTUAL	
	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0.0	0.0		
OVERHANG DIAPHRAGMS	0.0	0.0		
UNDERSIDE OF OVERHANG	0.0	0.0		
INTERIOR DIAPHRAGMS	0.0	0.0		
			ESTIMATE	ACTUAL
UNDERSIDE EPOXY RESIN INJECTION			0.0 LF	

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

PAYMENT FOR CLASS II AND CLASS III SURFACE PREPARATION IS BASED ON THE SQUARE FEET OF ADDITIONAL DEMOLITION REQUIRED FOLLOWING HYDRO-DEMOLITION OF THE BRIDGE DECK. SEE "OVERLAY SURFACE PREPARATION" SPECIAL PROVISIONS.

\* CLASS III SURFACE PREPARATION IS NOT ANTICIPATED. A TOKEN AMOUNT IS INDICATED FOR PRICING PURPOSES. IN CASE UNANTICIPATED CLASS III SURFACE PREPARATION ARE ENCOUNTERED.

- APPROX. CLASS II AREA
- APPROX. CLASS III AREA
- BRIDGE JOINT DEMOLITION
- ERI EPOXY RESIN INJECTION

PROJECT NO. 15BPR.28  
MADISON COUNTY  
 BRIDGE NO. 560113

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SHEET 3 OF 7



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

**PLAN OF SPANS  
SPAN C**

REVISIONS

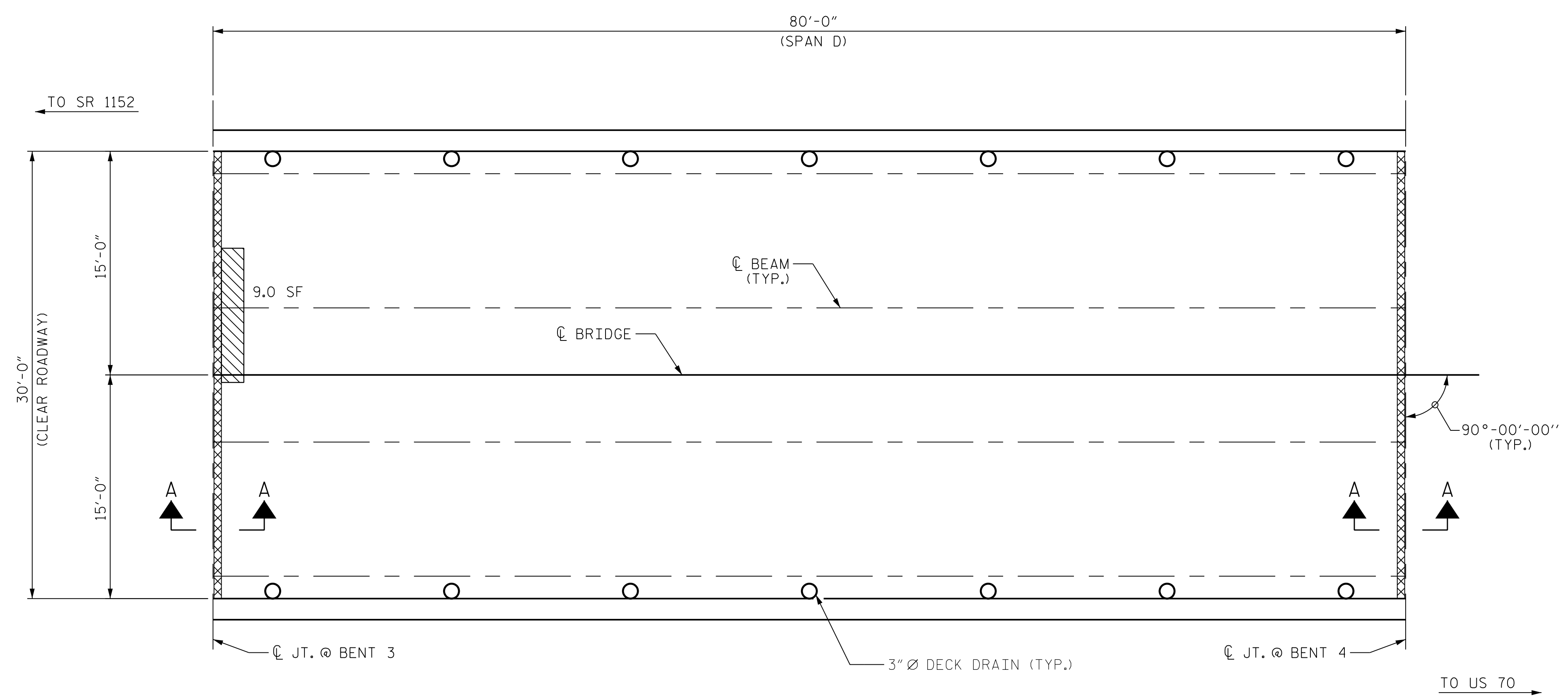
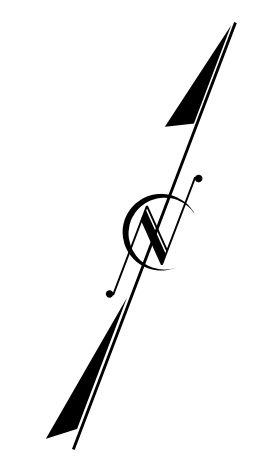
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TOTAL SHEETS  
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DRAWN BY : S. DHOLAKIA DATE : 7/2018  
 CHECKED BY : T. KIRSCHBAUM DATE : 8/2018  
 DESIGN ENGINEER OF RECORD : F. ASEFNIA DATE : 8/2018



PLAN

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 REPAIR QUANTITY TABLE.

CONCRETE COVER FOR TOP BARS IN THE DECK SLAB IS 2" PER THE EXISTING BRIDGE PLANS.

PRIOR TO THE PLACEMENT OF THE LMC-ES OVERLAY ACROSS THE CONTINUOUS DECK SPANS, THE CONTRACTOR SHALL SUBMIT A POUR SEQUENCE FOR APPROVAL BY THE ENGINEER.

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

REPAIR QUANTITY TABLE

TOP OF DECK REPAIR				
	ESTIMATE	ACTUAL		
SCARIFYING BRIDGE DECK	263 SY			
HYDRO-DEMOLITION OF BRIDGE DECK	263 SY			
CLASS II SURFACE PREPARATION	1.0 SY			
CLASS III SURFACE PREPARATION	0.5 SY *			
BRIDGE JOINT DEMOLITION	30 SF			
EPOXY RESIN INJECTION	0 LF			
CONCRETE FOR DECK REPAIR	3.0 CF			
UNDERSIDE OF DECK REPAIR				
SHOTCRETE REPAIRS	ESTIMATE		ACTUAL	
	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0.0	0.0		
OVERHANG DIAPHRAGMS	0.0	0.0		
UNDERSIDE OF OVERHANG	0.0	0.0		
INTERIOR DIAPHRAGMS	0.0	0.0		
			ESTIMATE	ACTUAL
UNDERSIDE EPOXY RESIN INJECTION			0.0 LF	

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

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- APPROX. CLASS II AREA
- APPROX. CLASS III AREA
- BRIDGE JOINT DEMOLITION
- ERI EPOXY RESIN INJECTION

PROJECT NO. 15BPR.28  
MADISON COUNTY  
 BRIDGE NO. 560113

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STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

PLAN OF SPANS  
SPAN D

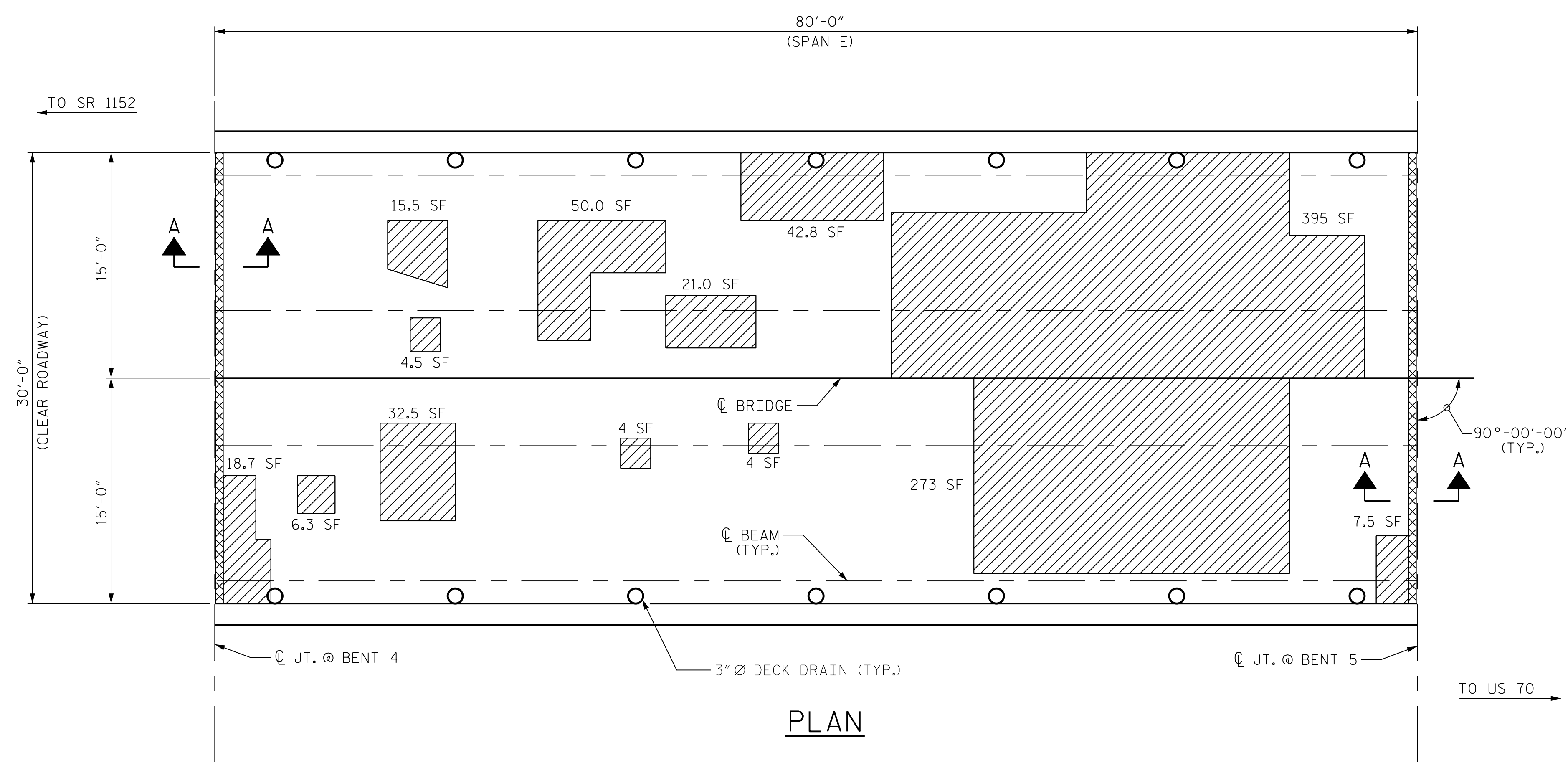
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Prepared by: LOUIS BERGER  
 1001 Wade Avenue, Suite 400  
 Raleigh, NC 27605-3322  
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**Louis Berger**

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CHECKED BY :	T. KIRSCHBAUM	DATE :	8/2018
DESIGN ENGINEER OF RECORD :	F. ASEFNIA	DATE :	8/2018



PLAN

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 REPAIR QUANTITY TABLE.

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PRIOR TO THE PLACEMENT OF THE LMC-ES OVERLAY ACROSS THE CONTINUOUS DECK SPANS, THE CONTRACTOR SHALL SUBMIT A POUR SEQUENCE FOR APPROVAL BY THE ENGINEER.

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

REPAIR QUANTITY TABLE

TOP OF DECK REPAIR				
	ESTIMATE	ACTUAL		
SCARIFYING BRIDGE DECK	263 SY			
HYDRO-DEMOLITION OF BRIDGE DECK	263 SY			
CLASS II SURFACE PREPARATION	97.2 SY			
CLASS III SURFACE PREPARATION	0.5 SY *			
BRIDGE JOINT DEMOLITION	30 SF			
EPOXY RESIN INJECTION	0 LF			
CONCRETE FOR DECK REPAIR	3.0 CF			
UNDERSIDE OF DECK REPAIR				
SHOTCRETE REPAIRS	ESTIMATE		ACTUAL	
	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0.0	0.0		
OVERHANG DIAPHRAGMS	0.0	0.0		
UNDERSIDE OF OVERHANG	0.0	0.0		
INTERIOR DIAPHRAGMS	0.0	0.0		
			ESTIMATE	ACTUAL
UNDERSIDE EPOXY RESIN INJECTION	0.0 LF			

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

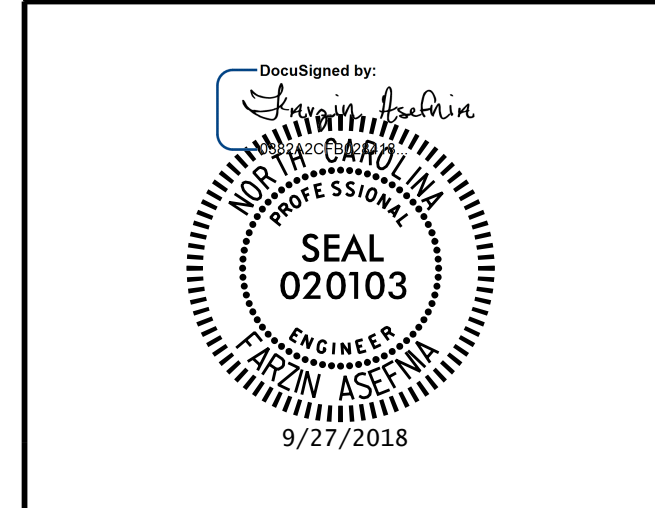
PAYMENT FOR CLASS II AND CLASS III SURFACE PREPARATION IS BASED ON THE SQUARE FEET OF ADDITIONAL DEMOLITION REQUIRED FOLLOWING HYDRO-DEMOLITION OF THE BRIDGE DECK. SEE "OVERLAY SURFACE PREPARATION" SPECIAL PROVISIONS.

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- APPROX. CLASS II AREA
- APPROX. CLASS III AREA
- BRIDGE JOINT DEMOLITION
- ERI EPOXY RESIN INJECTION

PROJECT NO. 15BPR.28  
MADISON COUNTY  
 BRIDGE NO. 560113

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SHEET 5 OF 7

STATE OF NORTH CAROLINA  
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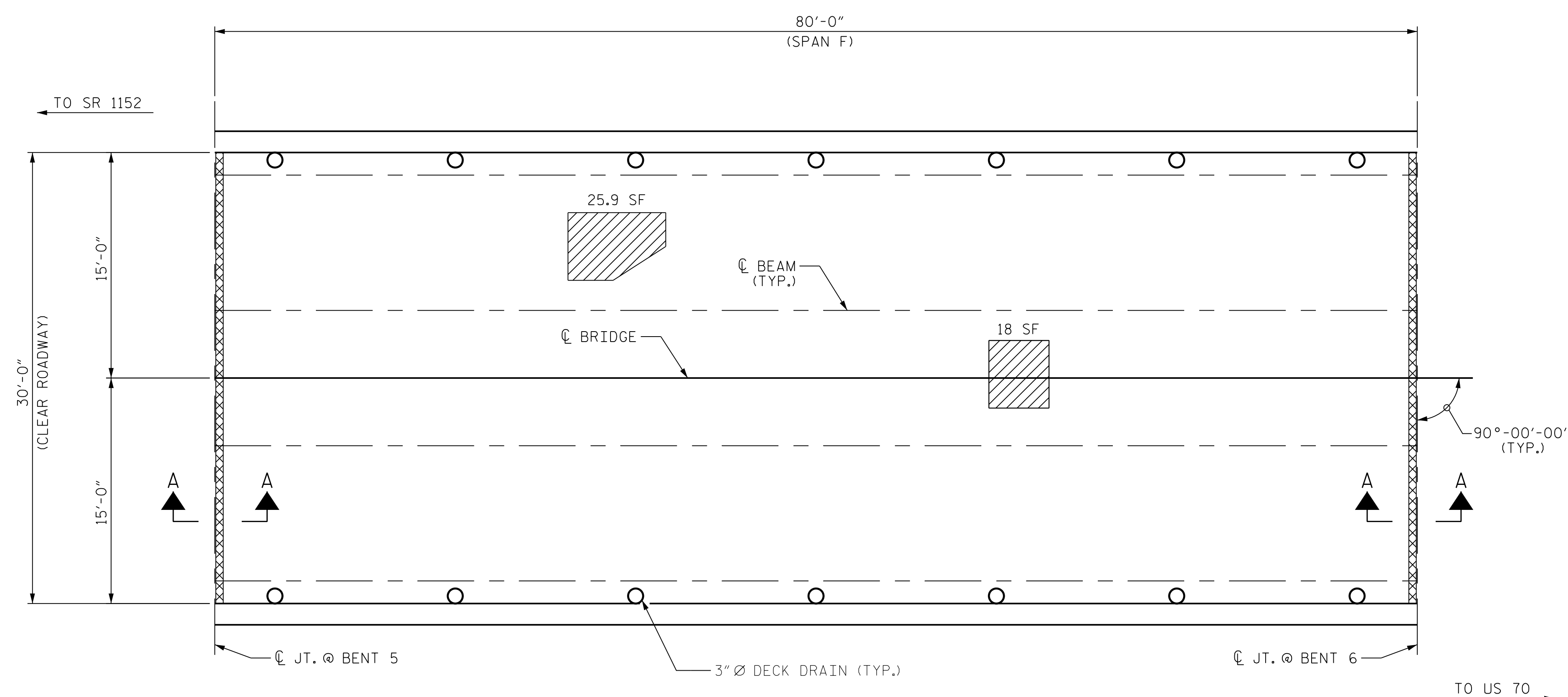
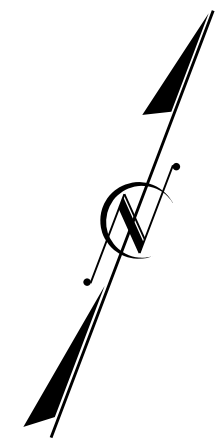
PLAN OF SPANS  
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DRAWN BY : S. DHOLAKIA DATE : 7/2018  
 CHECKED BY : T. KIRSCHBAUM DATE : 8/2018  
 DESIGN ENGINEER OF RECORD : F. ASEFNIA DATE : 8/2018



PLAN

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 REPAIR QUANTITY TABLE.

CONCRETE COVER FOR TOP BARS IN THE DECK SLAB IS 2" PER THE EXISTING BRIDGE PLANS.

PRIOR TO THE PLACEMENT OF THE LMC-ES OVERLAY ACROSS THE CONTINUOUS DECK SPANS, THE CONTRACTOR SHALL SUBMIT A POUR SEQUENCE FOR APPROVAL BY THE ENGINEER.

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

REPAIR QUANTITY TABLE

TOP OF DECK REPAIR				
	ESTIMATE	ACTUAL		
SCARIFYING BRIDGE DECK	263 SY			
HYDRO-DEMOLITION OF BRIDGE DECK	263 SY			
CLASS II SURFACE PREPARATION	4.9 SY			
CLASS III SURFACE PREPARATION	0.5 SY *			
BRIDGE JOINT DEMOLITION	30 SF			
EPOXY RESIN INJECTION	0 LF			
CONCRETE FOR DECK REPAIR	3.0 CF			
UNDERSIDE OF DECK REPAIR				
SHOTCRETE REPAIRS	ESTIMATE	ACTUAL		
	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0.0	0.0		
OVERHANG DIAPHRAGMS	0.0	0.0		
UNDERSIDE OF OVERHANG	0.0	0.0		
INTERIOR DIAPHRAGMS	0.0	0.0		
	ESTIMATE	ACTUAL		
UNDERSIDE EPOXY RESIN INJECTION	0.0 LF			

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

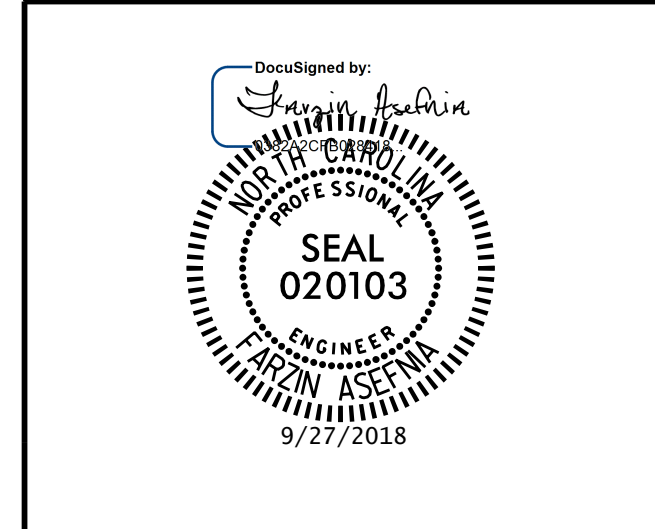
PAYMENT FOR CLASS II AND CLASS III SURFACE PREPARATION IS BASED ON THE SQUARE FEET OF ADDITIONAL DEMOLITION REQUIRED FOLLOWING HYDRO-DEMOLITION OF THE BRIDGE DECK. SEE "OVERLAY SURFACE PREPARATION" SPECIAL PROVISIONS.

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- APPROX. CLASS II AREA
- APPROX. CLASS III AREA
- BRIDGE JOINT DEMOLITION
- ERI EPOXY RESIN INJECTION

PROJECT NO. 15BPR.28  
MADISON COUNTY  
 BRIDGE NO. 560113

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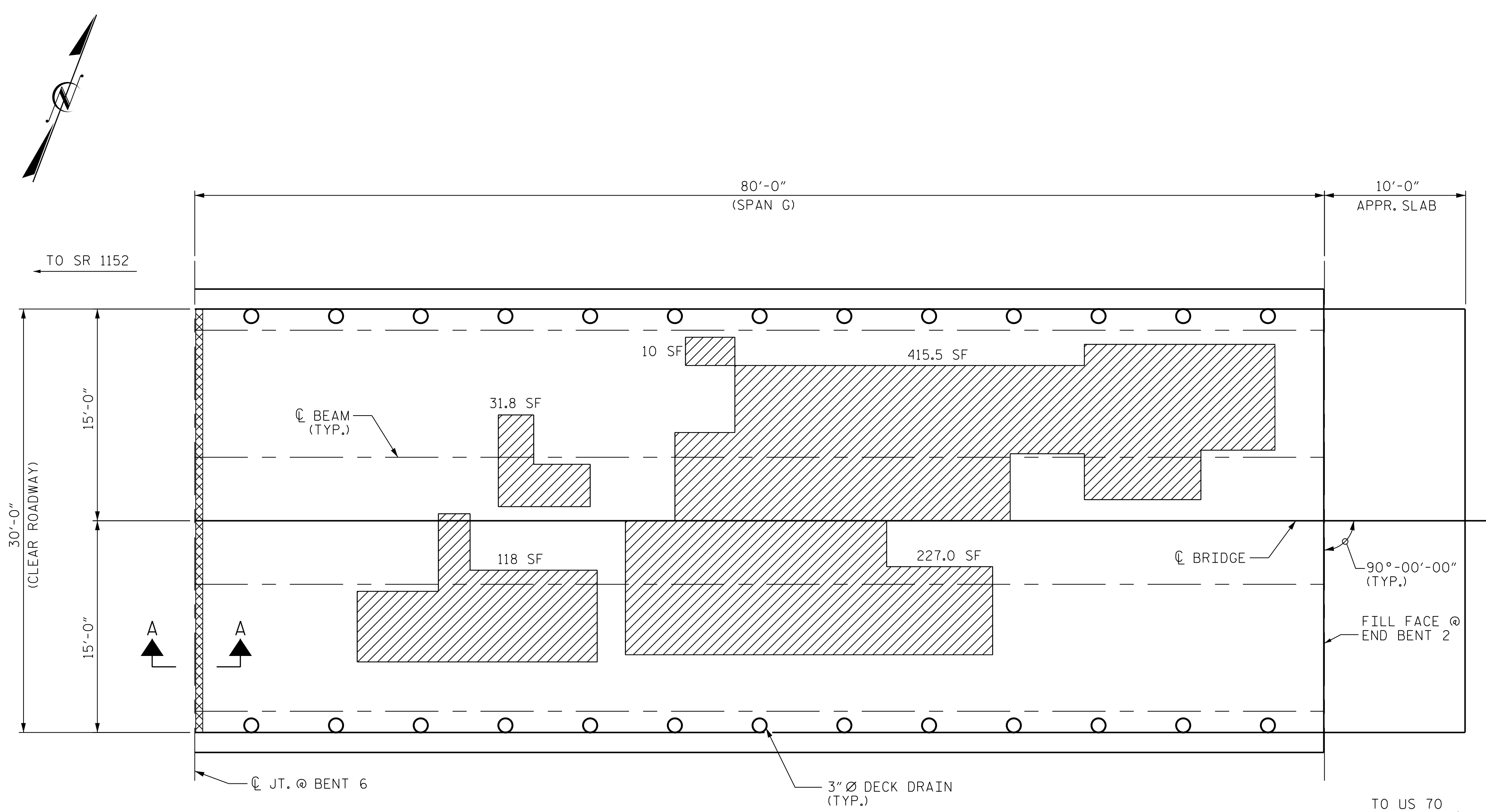
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DESIGN ENGINEER OF RECORD :	F. ASEFNIA	DATE :	8/2018



PLAN

NOTES

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PRIOR TO THE PLACEMENT OF THE LMC-ES OVERLAY ACROSS THE CONTINUOUS DECK SPANS, THE CONTRACTOR SHALL SUBMIT A POUR SEQUENCE FOR APPROVAL BY THE ENGINEER.

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

REPAIR QUANTITY TABLE				
TOP OF DECK REPAIR				
	ESTIMATE	ACTUAL		
SCARIFYING BRIDGE DECK	265 SY			
HYDRO-DEMOLITION OF BRIDGE DECK	265 SY			
CLASS II SURFACE PREPARATION	89.1 SY			
CLASS III SURFACE PREPARATION	0.5 SY *			
BRIDGE JOINT DEMOLITION	15 SF			
EPOXY RESIN INJECTION	0 LF			
CONCRETE FOR DECK REPAIR	3.0 CF			
UNDERSIDE OF DECK REPAIR				
SHOTCRETE REPAIRS	ESTIMATE	ACTUAL		
	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0.0	0.0		
OVERHANG DIAPHRAGMS	0.0	0.0		
UNDERSIDE OF OVERHANG	0.0	0.0		
INTERIOR DIAPHRAGMS	0.0	0.0		
	ESTIMATE	ACTUAL		
UNDERSIDE EPOXY RESIN INJECTION	0.0 LF			

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

PAYMENT FOR CLASS II AND CLASS III SURFACE PREPARATION IS BASED ON THE SQUARE FEET OF ADDITIONAL DEMOLITION REQUIRED FOLLOWING HYDRO-DEMOLITION OF THE BRIDGE DECK. SEE "OVERLAY SURFACE PREPARATION" SPECIAL PROVISIONS.

\* CLASS III SURFACE PREPARATION IS NOT ANTICIPATED. A TOKEN AMOUNT IS INDICATED FOR PRICING PURPOSES, IN CASE UNANTICIPATED CLASS III SURFACE PREPARATION AREAS ARE ENCOUNTERED.

- APPROX. CLASS II AREA
- APPROX. CLASS III AREA
- BRIDGE JOINT DEMOLITION
- ERI EPOXY RESIN INJECTION

PROJECT NO. 15BPR.28  
MADISON COUNTY  
 BRIDGE NO. 560113

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STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

PLAN OF SPANS  
 SPAN G AND  
 APPROACH SLAB

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-26
1			3			TOTAL SHEETS
2			4			63

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DESIGN ENGINEER OF RECORD :	F. ASEFNIA	DATE :	8/2018

ELASTOMERIC CONCRETE	
BENT 1	7.6 (CU. FT.)
BENT 2	7.6 (CU. FT.)
BENT 3	7.6 (CU. FT.)
BENT 4	7.6 (CU. FT.)
BENT 5	7.6 (CU. FT.)
BENT 6	7.6 (CU. FT.)
TOTAL	45.6 (CU. FT.)

\* BASED ON THE MINIMUM BLOCKOUT SHOWN

**NOTES**

FOR JOINT EXCAVATION BELOW THE BOTTOM OF THE PLANNED ELASTOMERIC CONCRETE HEADER, CONCRETE FOR DECK REPAIR SHALL BE PLACED IN THE EXCAVATED AREA TO THE ELEVATION AT THE BOTTOM OF THE ELASTOMERIC CONCRETE.

FOR FOAM JOINT SEALS, SEE SPECIAL PROVISIONS.

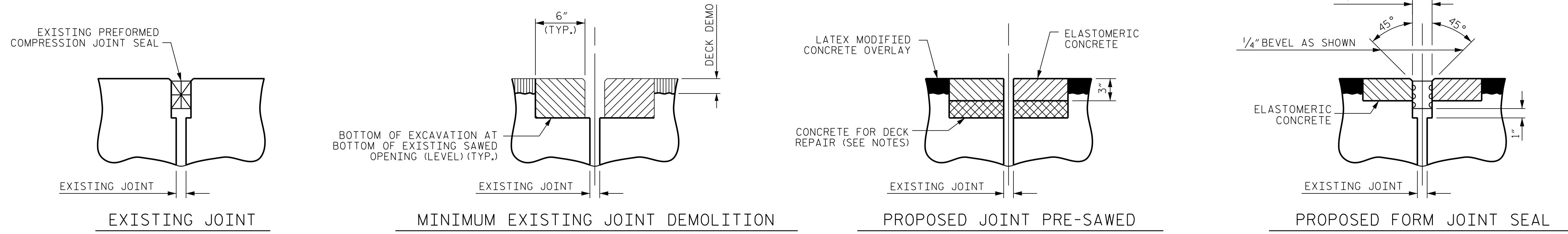
FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

THE INSTALLED FOAM JOINT SEALS SHALL BE WATERTIGHT.

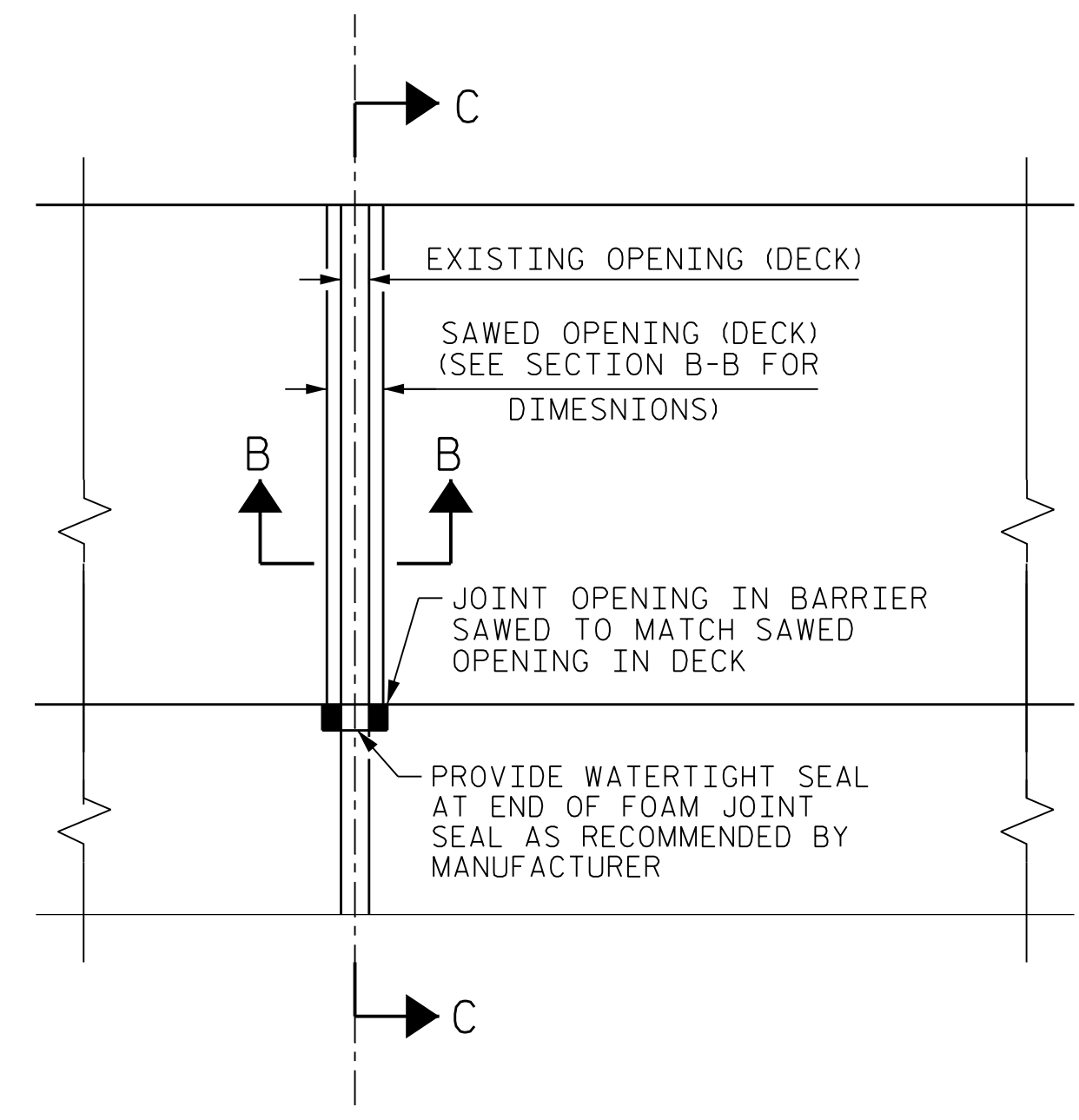
THE MANUFACTURER IS TO PROVIDE THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE FOAM JOINT SEAL BASED ON JOINT OPENINGS AT THE BENTS.

THE CONTRACTOR WILL NOT BE PERMITTED TO FORM THE JOINT FOR THE FOAM JOINT SEAL IN LIEU OF SAWING THE JOINT.

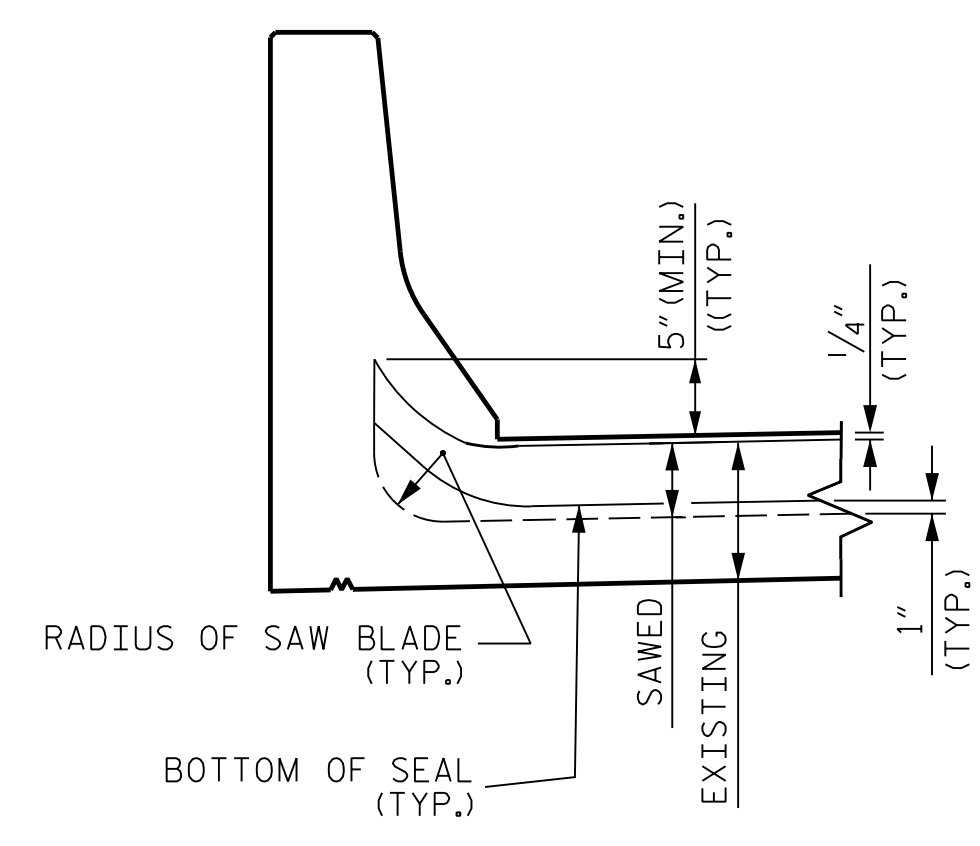
THE CONTRACTOR SHALL FIELD VERIFY THE EXISTING JOINT OPENING PRIOR TO ORDERING JOINT SEAL MATERIAL. IF THE ACTUAL JOINT OPENING VARIES FROM THE OPENING INDICATED IN THE DETAIL BY MORE THAN 1/4", NOTIFY THE ENGINEER. REVISION TO THE JOINT SEAL SIZE MIGHT BE NECESSARY.



**SECTION A-A**



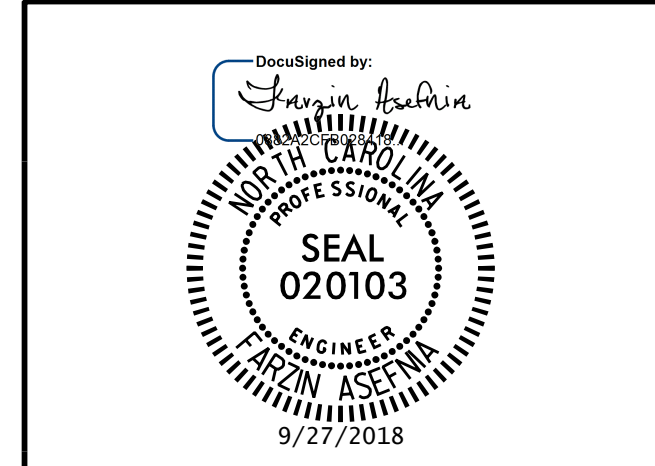
**PLAN**



**SECTION C-C**

PROJECT NO. 15BPR.28  
MADISON COUNTY  
 BRIDGE NO. 560113

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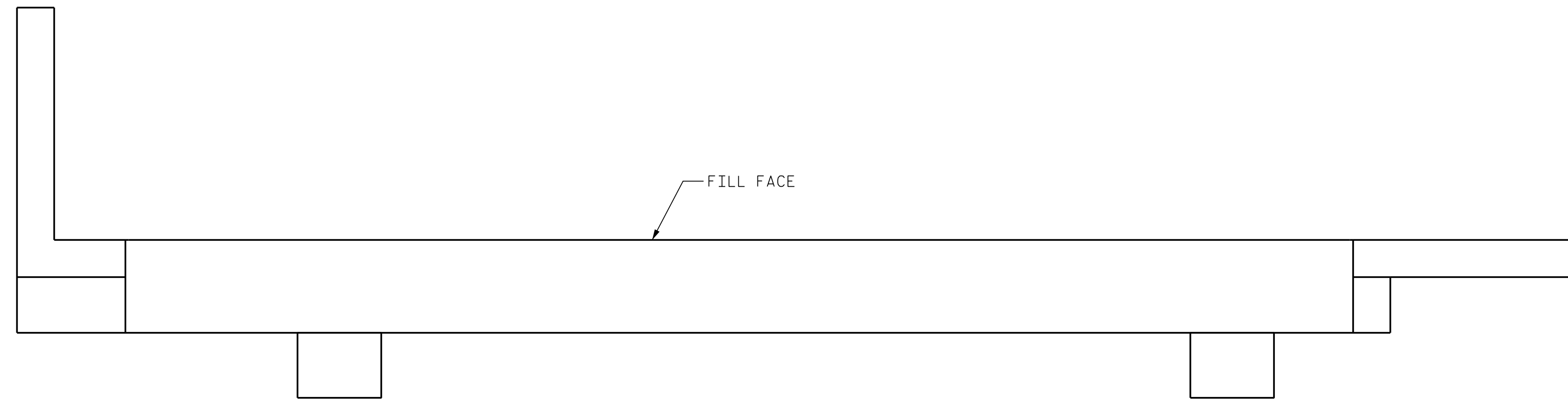
**JOINT DETAILS**

REVISIONS				SHEET NO.	
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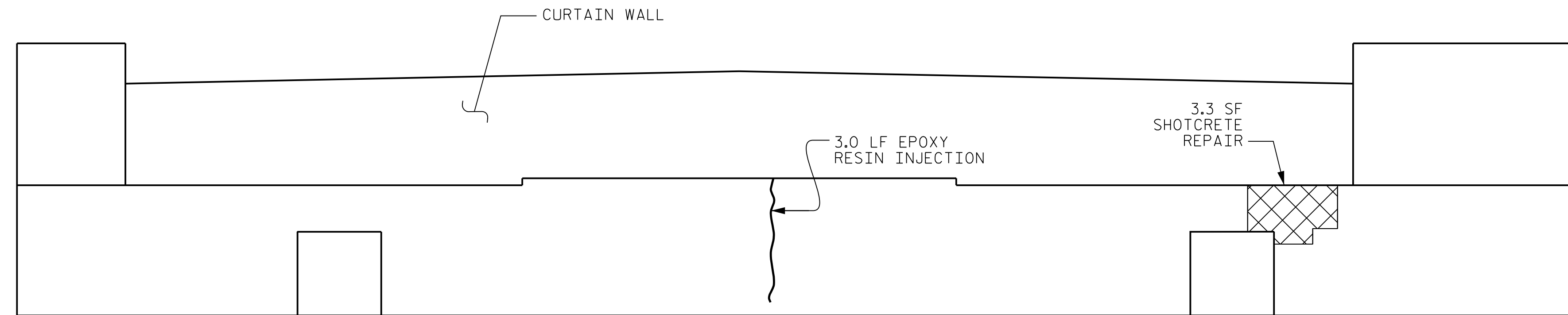
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 CHECKED BY : J. YANNAACONE DATE : 8/2018  
 DESIGN ENGINEER OF RECORD : F. ASEFNIA DATE : 8/2018



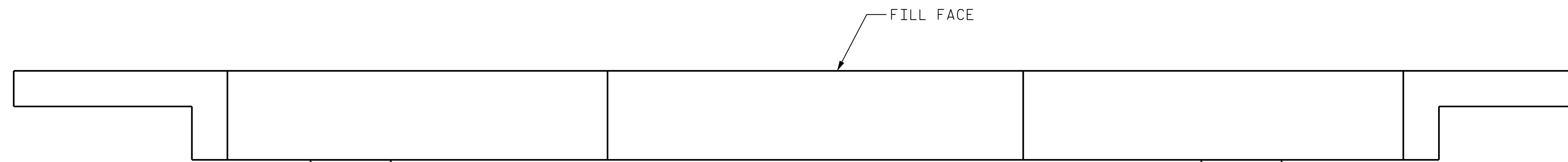
PLAN



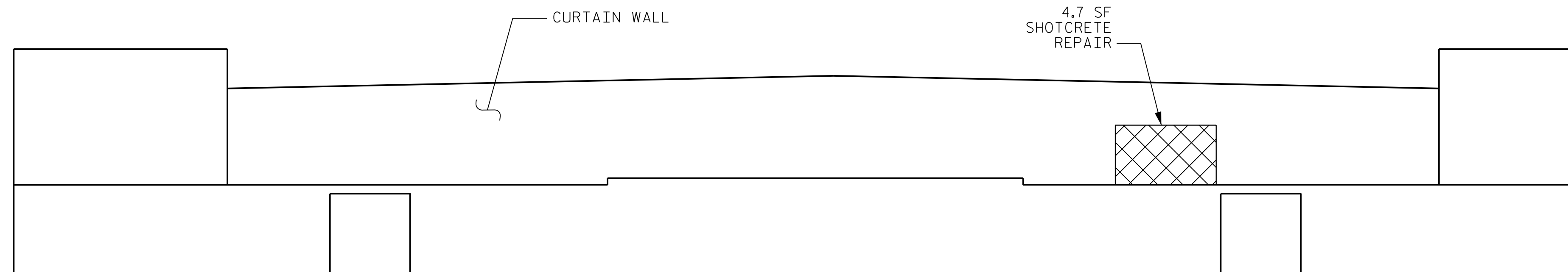
ELEVATION

END BENT 1

DAMAGED AREA  
 EPOXY RESIN INJECTION



PLAN



ELEVATION

END BENT 2

REPAIR QUANTITY TABLE

END BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	3.3	1.2		
CURTAIN WALL	0.0	0.0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
CURTAIN WALL	0.0	0.0		
EPOXY RESIN INJECTION	LN. FT		LN. FT	
CAP	3.0			
CURTAIN WALL	0.0			
EPOXY COATING	AREA SF		AREA SF	
TOP OF END BENT CAP	0.0			
END BENT 2	QUANTITIES			
SHOTCRETE REPAIRS	ESTIMATE		ACTUAL	
	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	4.7	1.8		
CURTAIN WALL	0.0	0.0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
CURTAIN WALL	0.0	0.0		
EPOXY RESIN INJECTION	LN. FT		LN. FT	
CAP	0.0			
CURTAIN WALL	0.0			
EPOXY COATING	AREA SF		AREA SF	
TOP OF END BENT CAP	0.0			

VALUES IN CHARTS REPRESENT ESTIMATED REPAIRS TOTALS AFTER REMOVAL OF SOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 1" CLEAR TO SAW CUT. SEE REPAIR DETAILS.

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.

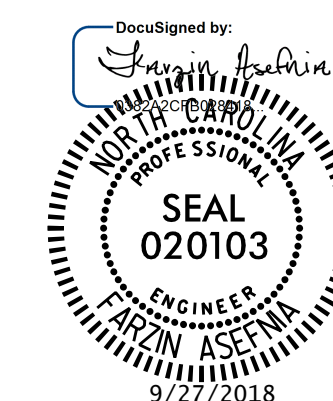
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

FOR REPAIRS, SEE "TYPICAL CAP AND COLUMN REPAIRS" SHEET.

PROJECT NO. 15BPR.28  
MADISON COUNTY  
 BRIDGE NO. 560113

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STATE OF NORTH CAROLINA  
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 RALEIGH

END BENT 1 & 2

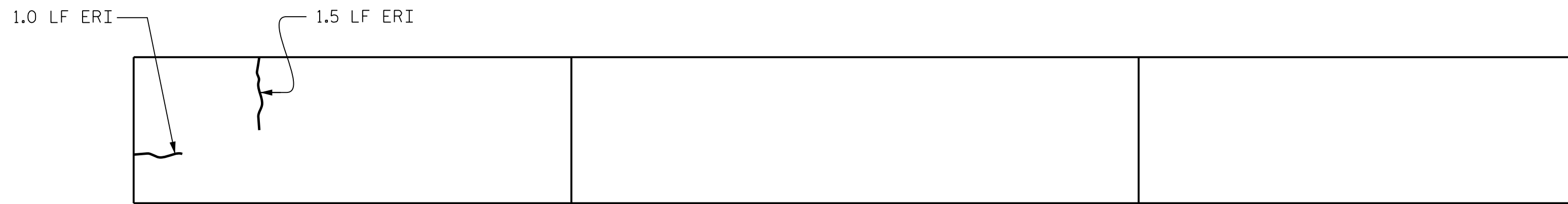
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1			3			S-28
2			4			TOTAL SHEETS 63

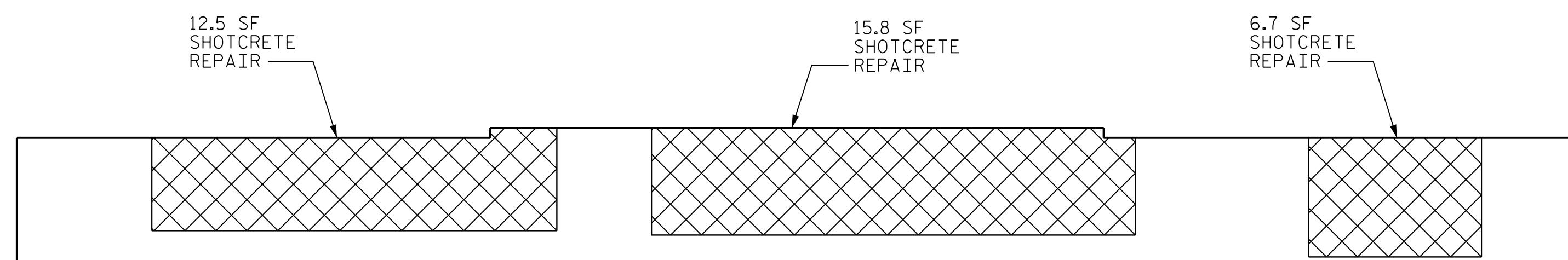


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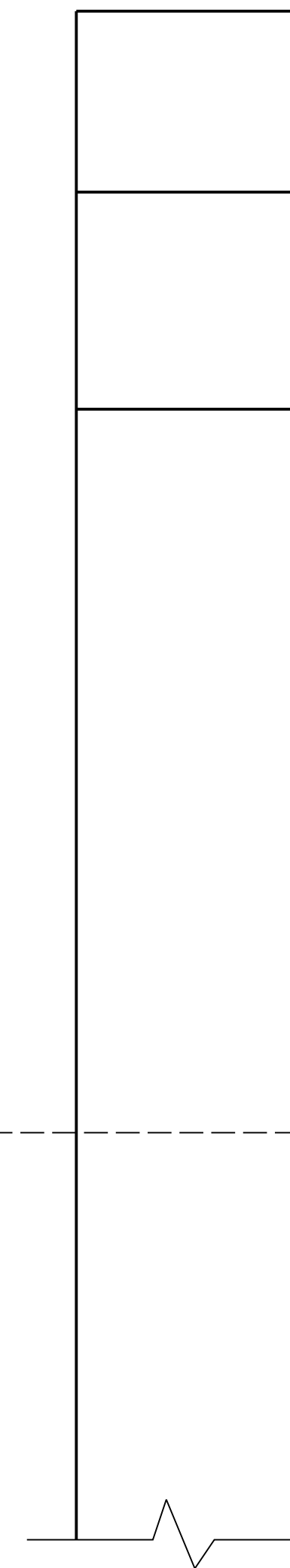


TOP OF CAP



ELEVATION

SPAN A      SPAN B



END VIEW

REPAIR QUANTITY TABLE

REPAIRS BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	74.4	32.9		
COLUMN	0.0	0.0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
COLUMN	0.0	0.0		
EPOXY RESIN INJECTION		LN. FT		LN. FT
CAP		6.0		
COLUMN		0.0		
EPOXY COATING		SQ. FT		SQ. FT
TOP OF BENT CAP		89.0		

VALUES IN CHARTS REPRESENT ESTIMATED REPAIRS TOTALS AFTER REMOVAL OF SOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CLEAR TO SAW CUT. SEE REPAIR DETAILS.

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 REPAIR QUANTITY TABLE.

FOR REPAIRS, SEE "TYPICAL CAP AND COLUMN REPAIRS" SHEET.

CLEAN AND REMOVE DEBRIS FROM THE TOP OF THE 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 AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

SHOTCRETE REPAIRS TO THE BENT CAP MAY REQUIRE BRIDGE JACKING. FOR BRIDGE JACKING, SEE SPECIAL PROVISIONS.

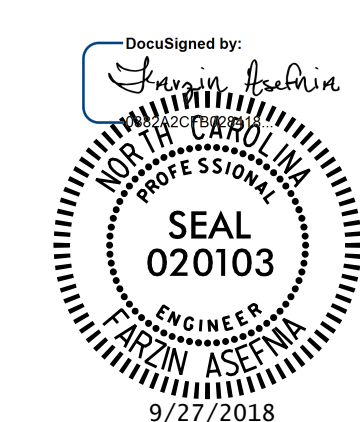
DAMAGED AREA

EPOXY RESIN INJECTION

PROJECT NO. 15BPR.28  
MADISON COUNTY  
 BRIDGE NO. 560113

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SHEET 1 OF 2



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
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BENT 1  
 SPAN A FACE

REVISIONS

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1			3		
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SHEET NO.  
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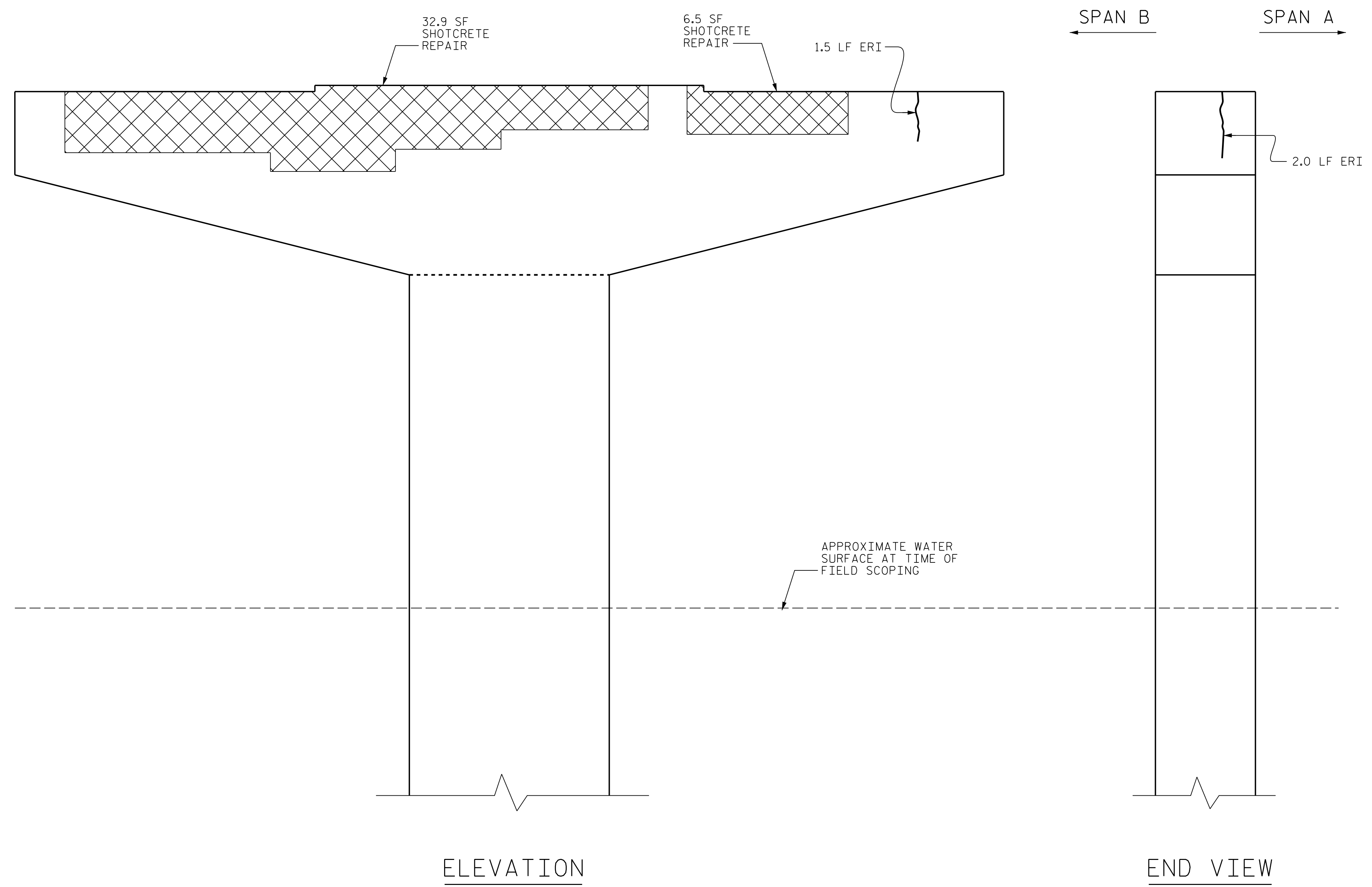


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 DAMAGED AREA  
 EPOXY RESIN INJECTION



ELEVATION

END VIEW

PROJECT NO. 15BPR.28  
MADISON COUNTY  
 BRIDGE NO. 560113

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SHEET 2 OF 2



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

BENT 1  
SPAN B FACE



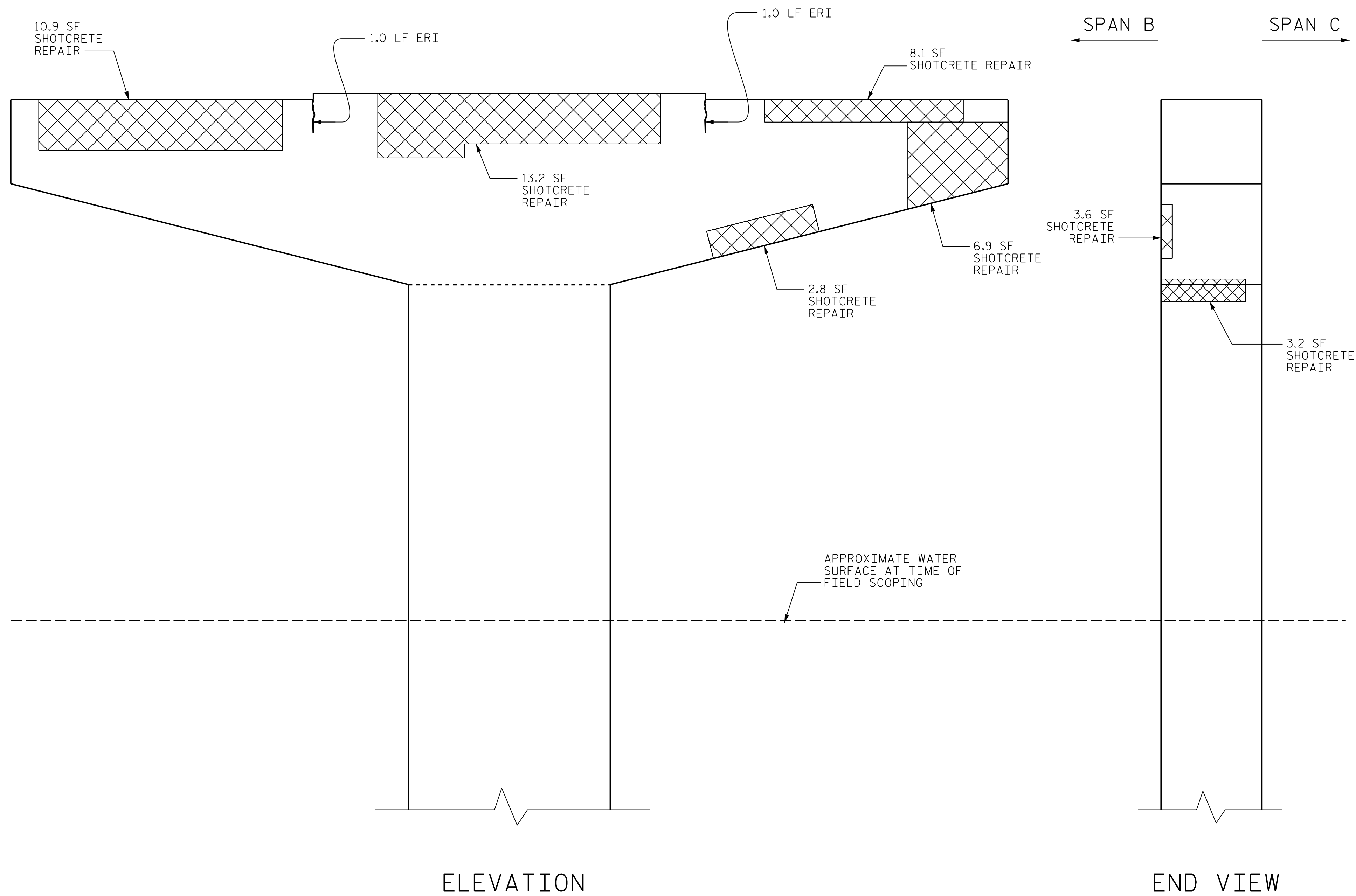
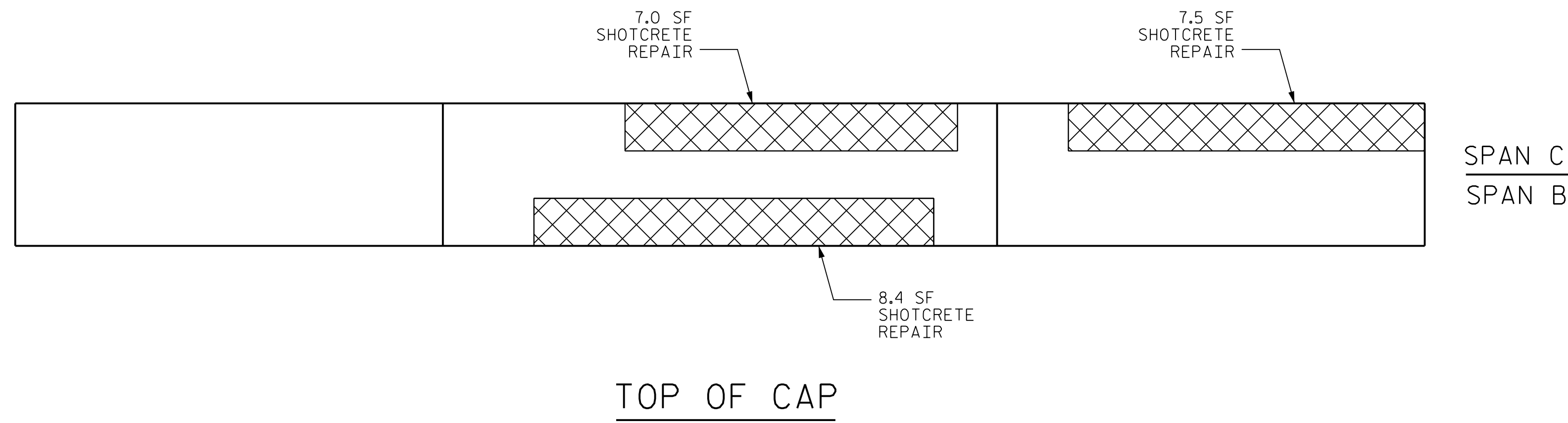
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S-30  
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REPAIR QUANTITY TABLE

REPAIRS BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	118.3	52.4		
COLUMN	6.0	2.6		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
COLUMN	0.0	0.0		
EPOXY RESIN INJECTION	LN. FT		LN. FT	
CAP	6.0			
COLUMN	0.0			
EPOXY COATING	SQ. FT		SQ. FT	
TOP OF BENT CAP	89.0			

VALUES IN CHARTS REPRESENT ESTIMATED REPAIRS TOTALS AFTER REMOVAL OF SOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CLEAR TO SAW CUT. SEE REPAIR DETAILS.

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 REPAIR QUANTITY TABLE.

FOR REPAIRS, SEE "TYPICAL CAP AND COLUMN REPAIRS" SHEET.

CLEAN AND REMOVE DEBRIS FROM THE TOP OF THE 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 AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

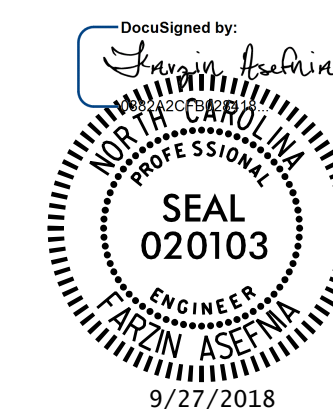
SHOTCRETE REPAIRS TO THE BENT CAP MAY REQUIRE BRIDGE JACKING. FOR BRIDGE JACKING, SEE SPECIAL PROVISIONS.

- DAMAGED AREA
- EPOXY RESIN INJECTION

PROJECT NO. 15BPR.28  
MADISON COUNTY  
 BRIDGE NO. 560113

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SHEET 1 OF 2



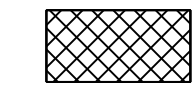

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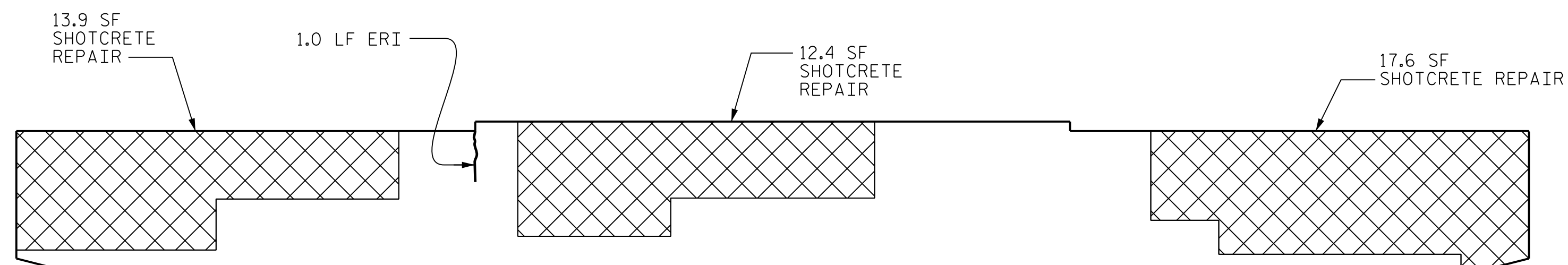
BENT 2  
 SPAN B FACE

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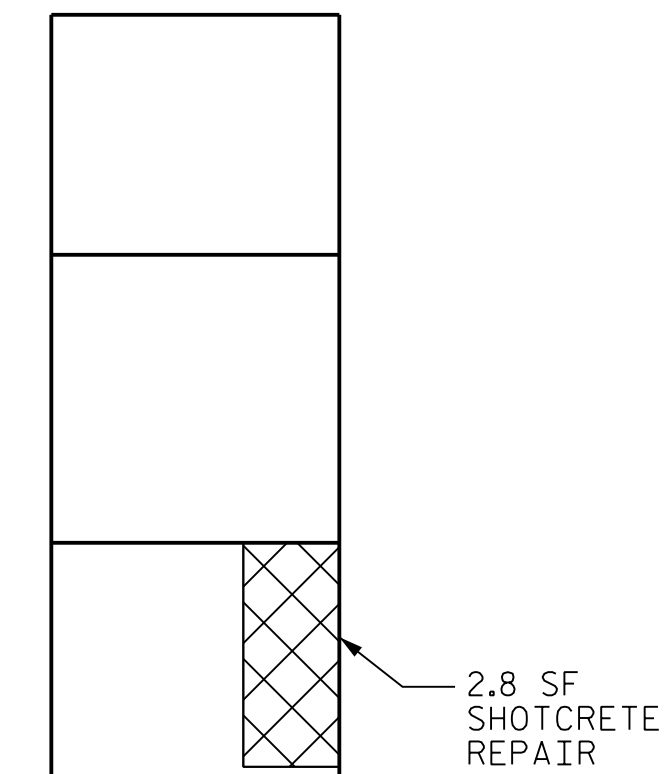


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1			3			TOTAL SHEETS
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 DAMAGED AREA  
 EPOXY RESIN INJECTION



← SPAN C      SPAN B →



APPROXIMATE WATER SURFACE AT TIME OF FIELD SCOPING

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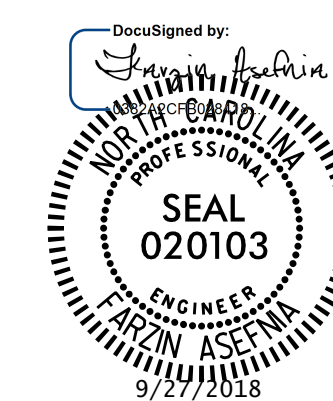
ELEVATION

END VIEW

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STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
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BENT 2  
SPAN C FACE

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 63



Louis Berger

Prepared by:  
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 DESIGN ENGINEER OF RECORD : F. ASEFNIA      DATE : 8/2018

### REPAIR QUANTITY TABLE

REPAIRS BENT 3	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	130.6	57.8		
COLUMN	0.0	0.0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
COLUMN	0.0	0.0		
EPOXY RESIN INJECTION	LN. FT		LN. FT	
CAP	5.5			
COLUMN	0.0			
EPOXY COATING	SQ. FT		SQ. FT	
TOP OF BENT CAP	89.0			

VALUES IN CHARTS REPRESENT ESTIMATED REPAIRS TOTALS AFTER REMOVAL OF SOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CLEAR TO SAW CUT. SEE REPAIR DETAILS.

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 REPAIR QUANTITY TABLE.

FOR REPAIRS, SEE "TYPICAL CAP AND COLUMN REPAIRS" SHEET.

CLEAN AND REMOVE DEBRIS FROM THE TOP OF THE 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 AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.

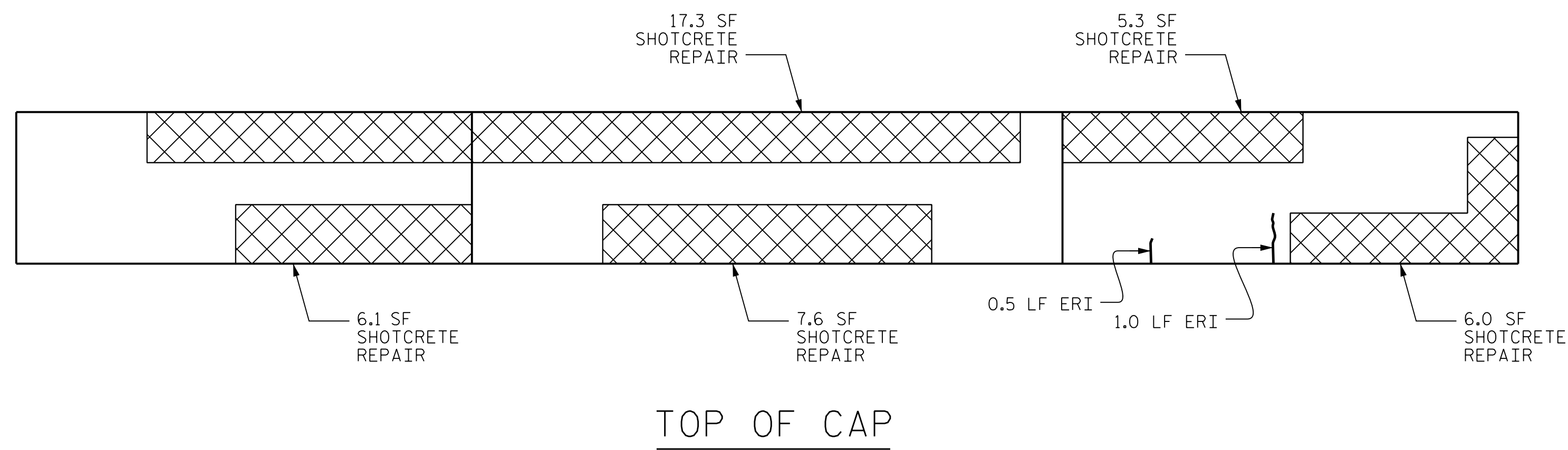
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

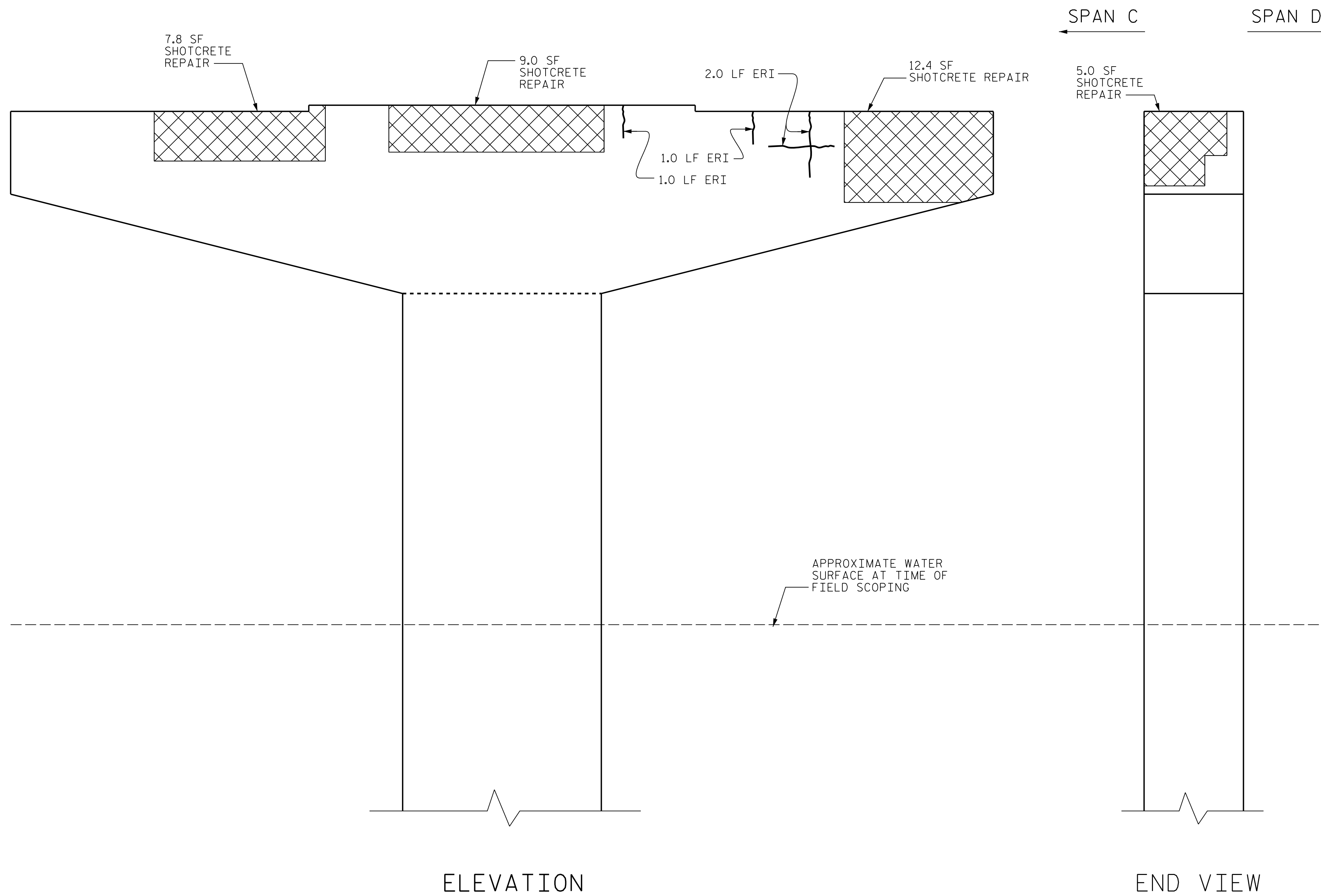
SHOTCRETE REPAIRS TO THE BENT CAP MAY REQUIRE BRIDGE JACKING. FOR BRIDGE JACKING, SEE SPECIAL PROVISIONS.

 DAMAGED AREA

 EPOXY RESIN INJECTION



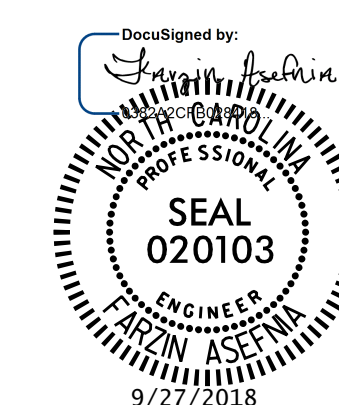
SPAN D  
SPAN C



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MADISON COUNTY  
 BRIDGE NO. 560113

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STATE OF NORTH CAROLINA  
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 RALEIGH

BENT 3  
 SPAN C FACE

REVISIONS



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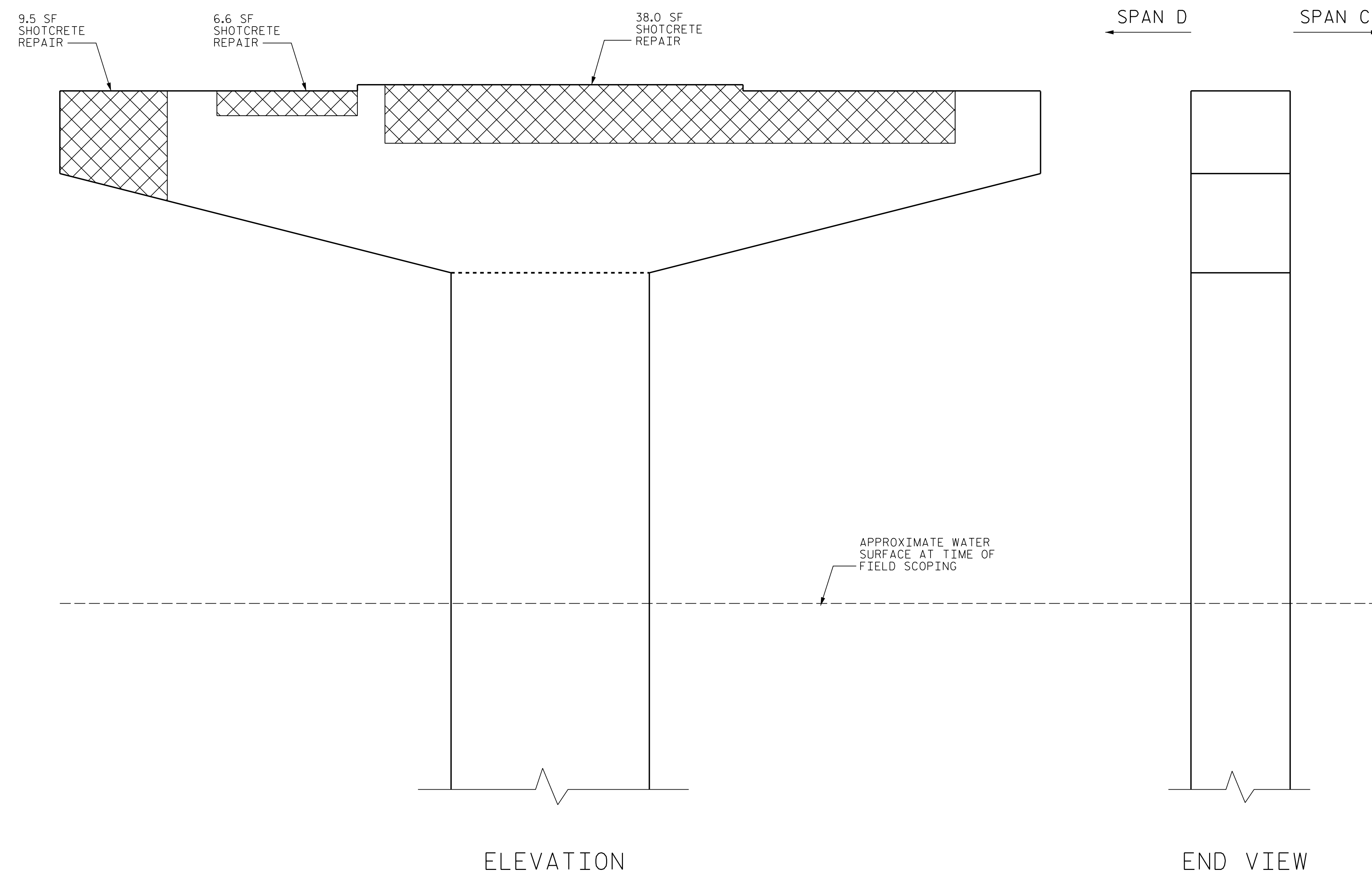
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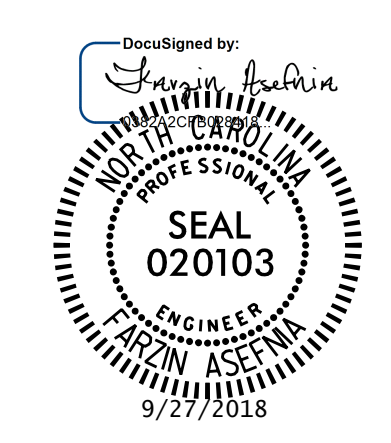
 DAMAGED AREA  
 EPOXY RESIN INJECTION



PROJECT NO. 15BPR.28  
MADISON COUNTY  
 BRIDGE NO. 560113

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SHEET 2 OF 2



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**BENT 3**  
**SPAN D FACE**

REVISIONS

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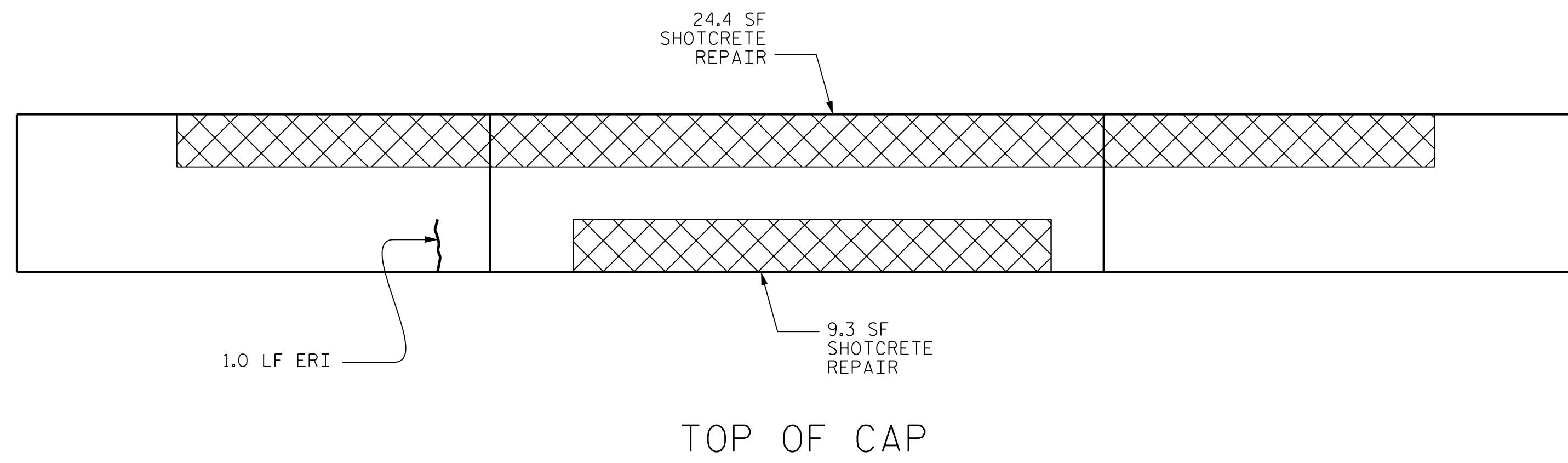
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 TOTAL SHEETS  
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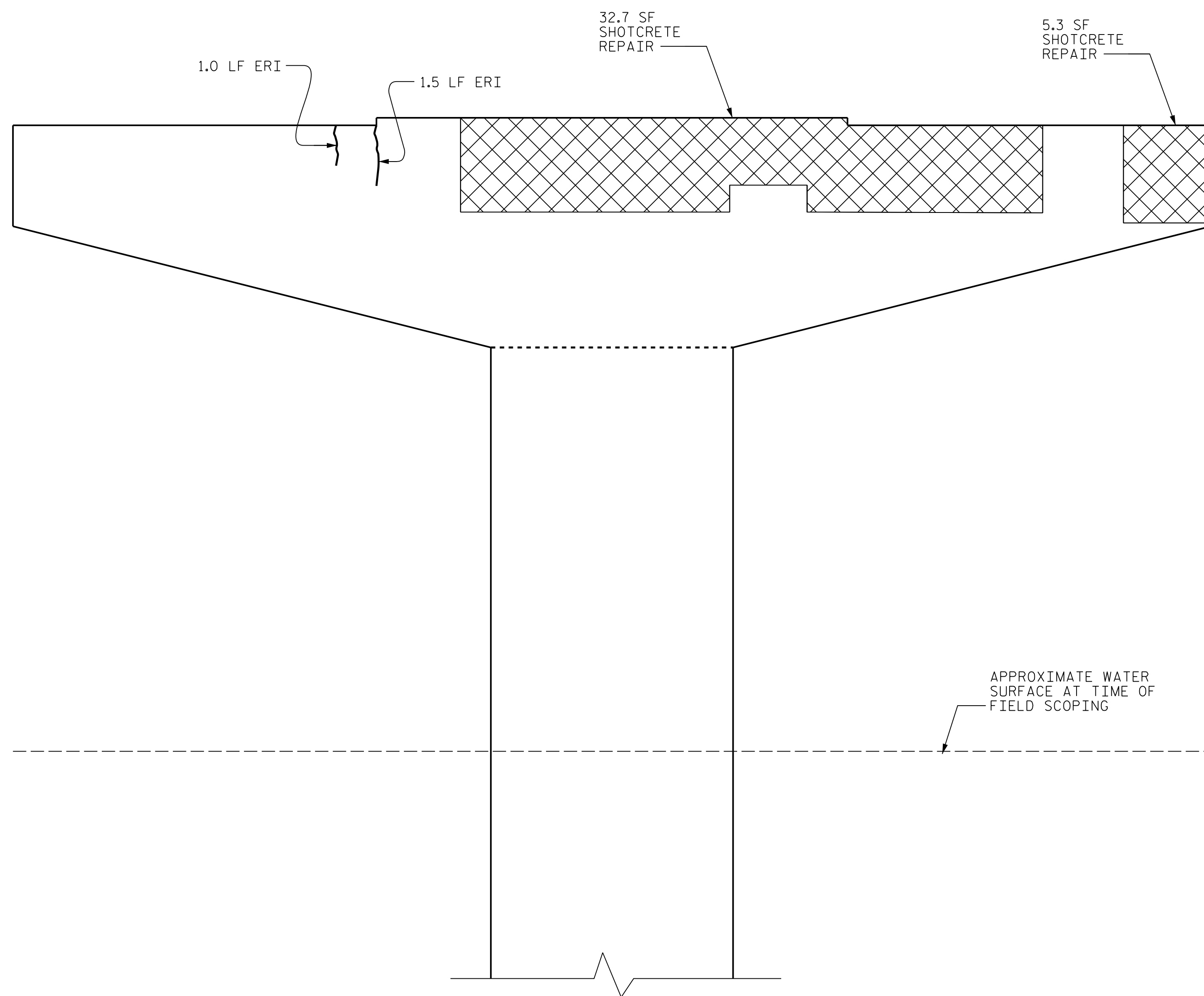
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SPAN E  
 SPAN D



ELEVATION

END VIEW

REPAIR QUANTITY TABLE

REPAIRS BENT 4	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	138.9	61.6		
COLUMN	6.0	2.6		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
COLUMN	0.0	0.0		
EPOXY RESIN INJECTION	LN. FT		LN. FT	
CAP	3.5			
COLUMN	0.0			
EPOXY COATING	SQ. FT		SQ. FT	
TOP OF BENT CAP	89.0			

VALUES IN CHARTS REPRESENT ESTIMATED REPAIRS TOTALS AFTER REMOVAL OF SOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CLEAR TO SAW CUT. SEE REPAIR DETAILS.

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 REPAIR QUANTITY TABLE.

FOR REPAIRS, SEE "TYPICAL CAP AND COLUMN REPAIRS" SHEET.

CLEAN AND REMOVE DEBRIS FROM THE TOP OF THE 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 AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

SHOTCRETE REPAIRS TO THE BENT CAP MAY REQUIRE BRIDGE JACKING. FOR BRIDGE JACKING, SEE SPECIAL PROVISIONS.

- DAMAGED AREA
- EPOXY RESIN INJECTION

PROJECT NO. 15BPR.28  
MADISON COUNTY  
 BRIDGE NO. 560113

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SHEET 1 OF 2

Designed by: *F. Asefnia*

Prepared by: **Louis Berger**  
 1001 Wade Avenue, Suite 400  
 Raleigh, NC 27605-3322  
 NC COA No. F-0840

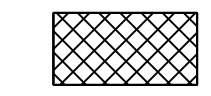

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

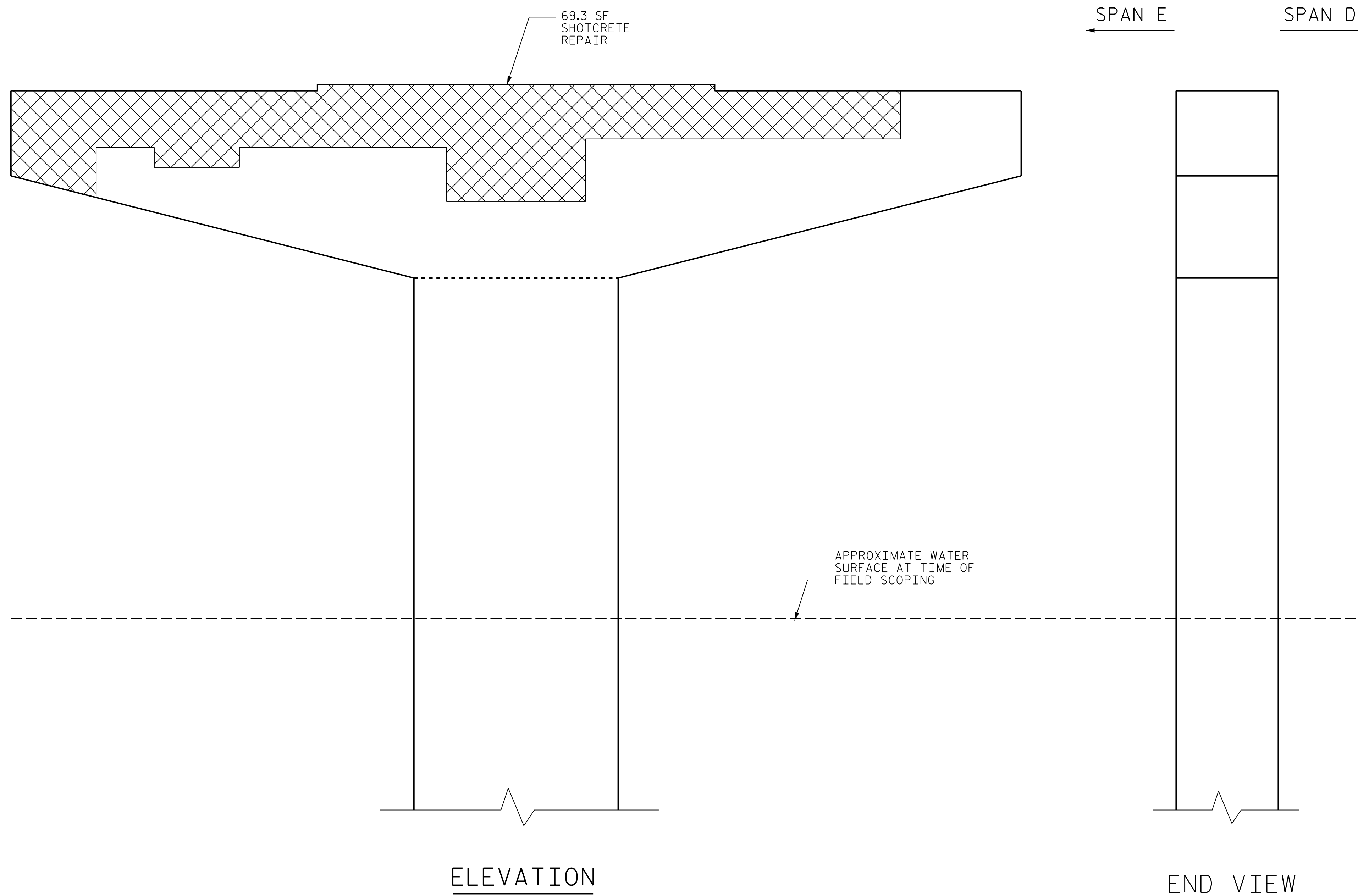
**BENT 4  
 SPAN D FACE**

REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
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SHEET NO. S-35  
 TOTAL SHEETS 63

DRAWN BY : J. MYA DATE : 7/2018  
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 DESIGN ENGINEER OF RECORD : F. ASEFNIA DATE : 8/2018

 DAMAGED AREA  
 EPOXY RESIN INJECTION



PROJECT NO. 15BPR.28  
MADISON COUNTY  
 BRIDGE NO. 560113

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SHEET 2 OF 2



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

BENT 4  
SPAN E FACE

REVISIONS

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SHEET NO.  
 S-36  
 TOTAL SHEETS  
 63



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 DESIGN ENGINEER OF RECORD : F. ASEFNIA DATE : 8/2018

### REPAIR QUANTITY TABLE

REPAIRS BENT 5	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	109.8	47.6		
COLUMN	0.0	0.6		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
COLUMN	0.0	0.0		
EPOXY RESIN INJECTION	LN. FT		LN. FT	
CAP	0.0			
COLUMN	0.0			
EPOXY COATING	SQ. FT		SQ. FT	
TOP OF BENT CAP	89.0			

VALUES IN CHARTS REPRESENT ESTIMATED REPAIRS TOTALS AFTER REMOVAL OF SOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CLEAR TO SAW CUT. SEE REPAIR DETAILS.

### 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 REPAIR QUANTITY TABLE.

FOR REPAIRS, SEE "TYPICAL CAP AND COLUMN REPAIRS" SHEET.

CLEAN AND REMOVE DEBRIS FROM THE TOP OF THE 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 AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.

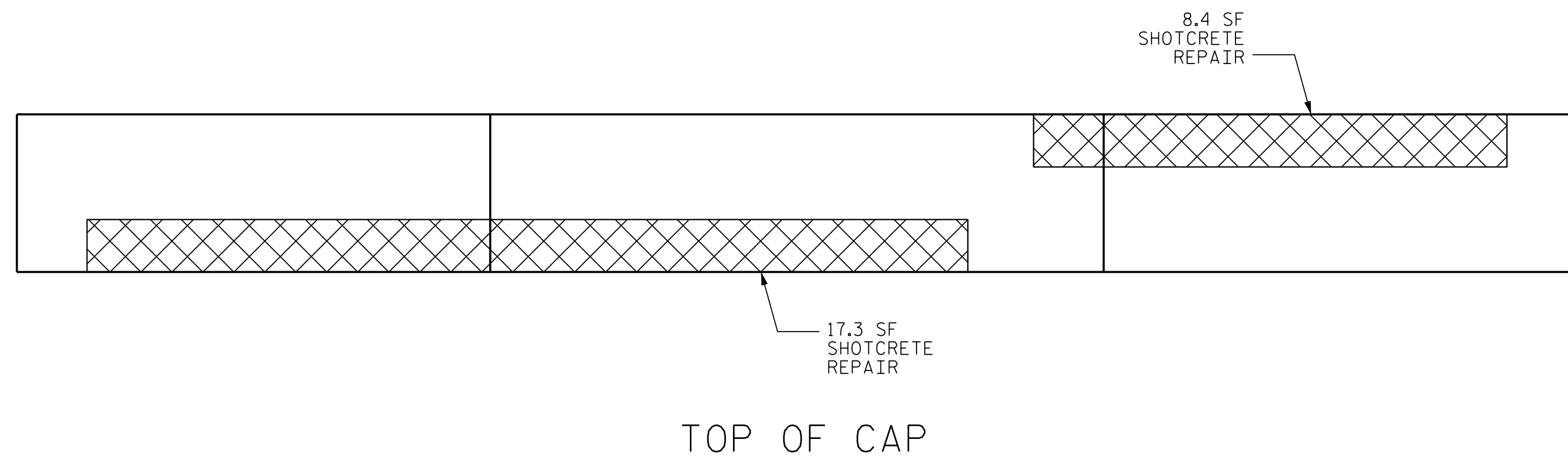
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

SHOTCRETE REPAIRS TO THE BENT CAP MAY REQUIRE BRIDGE JACKING. FOR BRIDGE JACKING, SEE SPECIAL PROVISIONS.

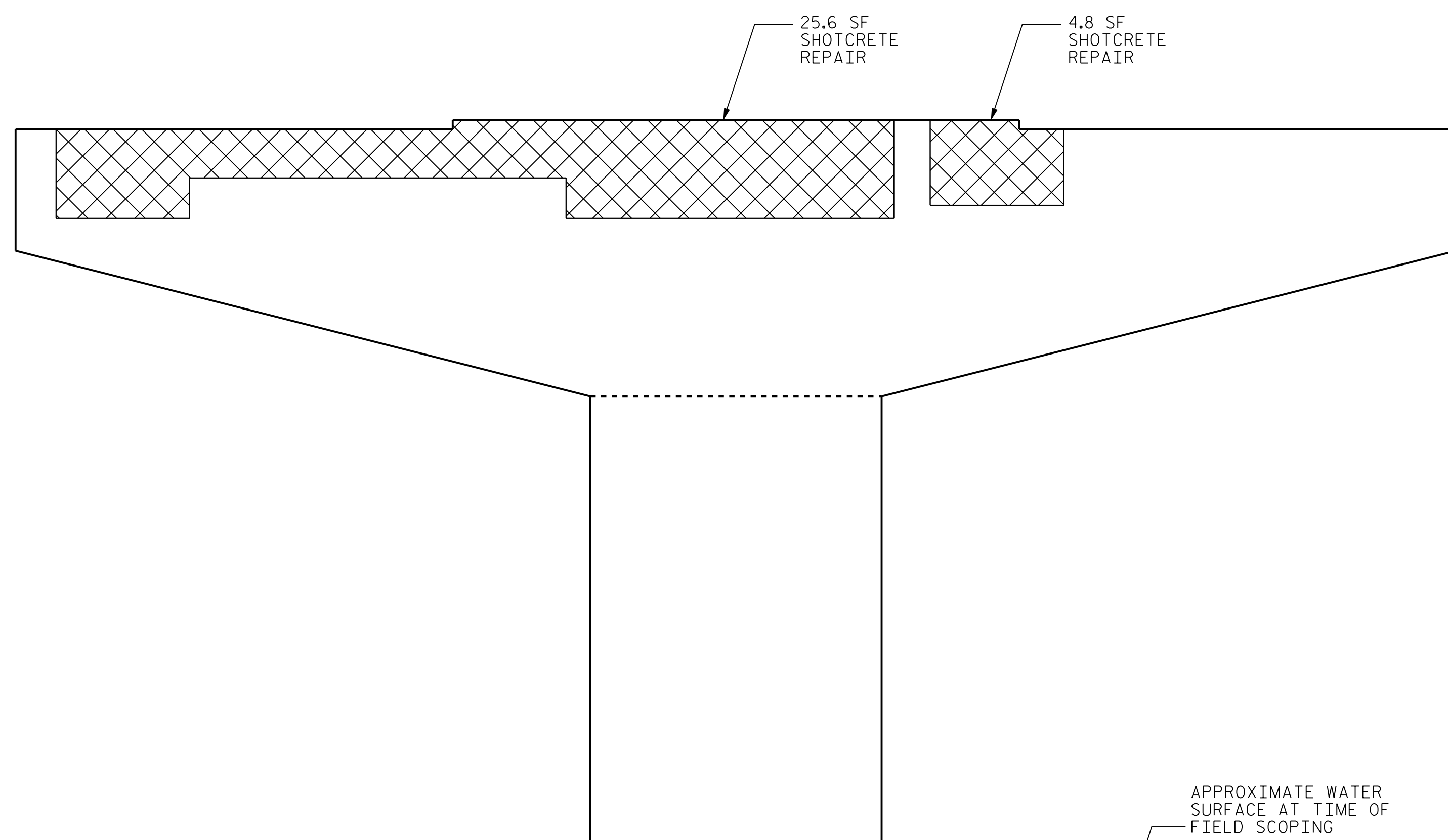
 DAMAGED AREA

 EPOXY RESIN INJECTION



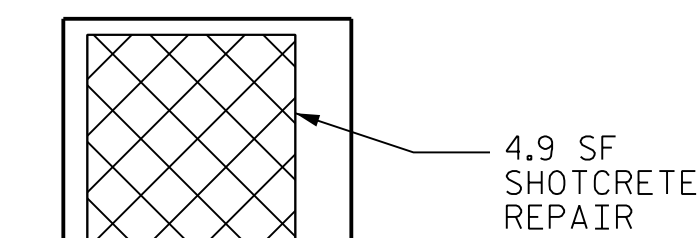
SPAN F

SPAN E



← SPAN E

→ SPAN F

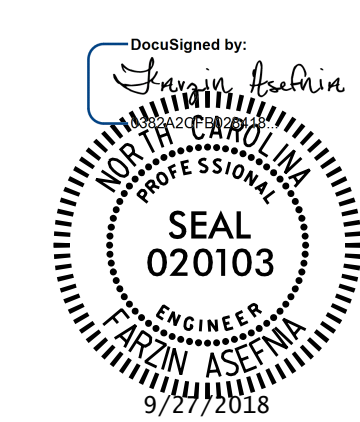


END VIEW

PROJECT NO. 15BPR.28  
MADISON COUNTY  
 BRIDGE NO. 560113

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SHEET 1 OF 2



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

BENT 5  
 SPAN E FACE

### REVISIONS

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 S-37  
 TOTAL SHEETS  
 63

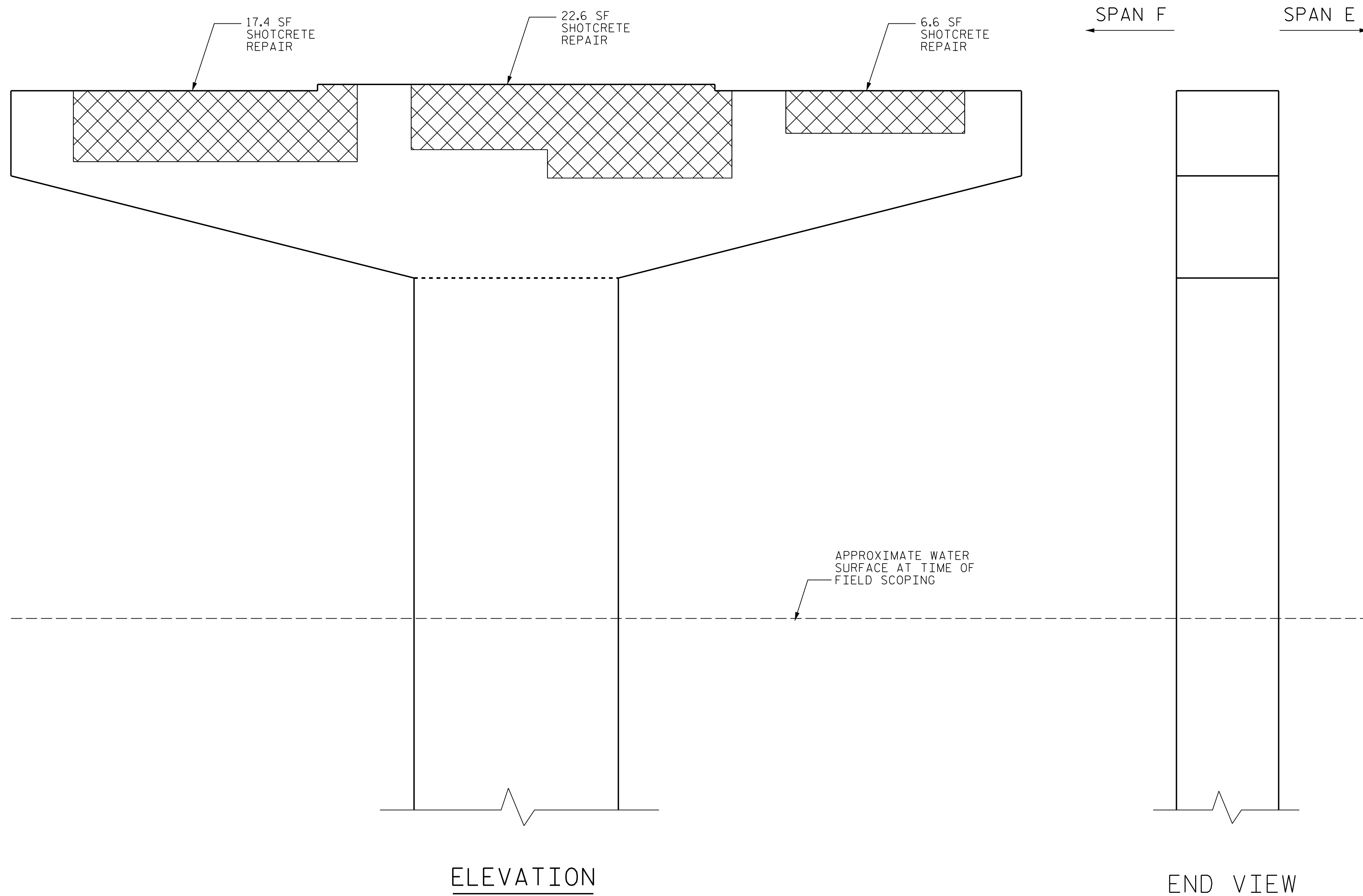


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 DAMAGED AREA  
 EPOXY RESIN INJECTION



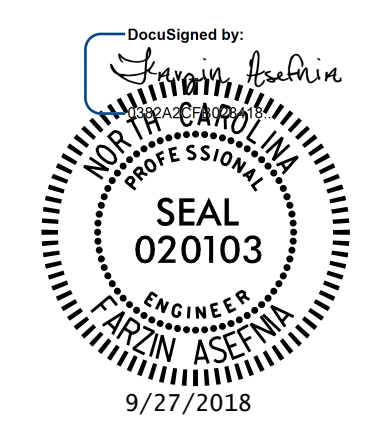
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PROJECT NO. 15BPR.28  
MADISON COUNTY  
 BRIDGE NO. 560113

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SHEET 2 OF 2



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

BENT 5  
SPAN F FACE



REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
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SHEET NO.  
 S-38  
 TOTAL SHEETS  
 63

### REPAIR QUANTITY TABLE

REPAIRS BENT 6	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	32.2	14.2		
COLUMN	0.0	0.0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
COLUMN	0.0	0.0		
EPOXY RESIN INJECTION		LN. FT		LN. FT
CAP		3.0		
COLUMN		0.0		
EPOXY COATING		SQ. FT		SQ. FT
TOP OF BENT CAP		89.0		

VALUES IN CHARTS REPRESENT ESTIMATED REPAIRS TOTALS AFTER REMOVAL OF SOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CLEAR TO SAW CUT. SEE REPAIR DETAILS.

### NOTES

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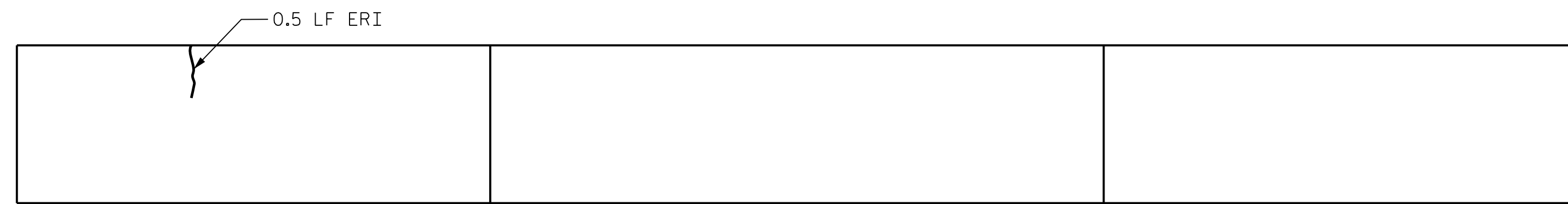
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

SHOTCRETE REPAIRS TO THE BENT CAP MAY REQUIRE BRIDGE JACKING. FOR BRIDGE JACKING, SEE SPECIAL PROVISIONS.

 DAMAGED AREA

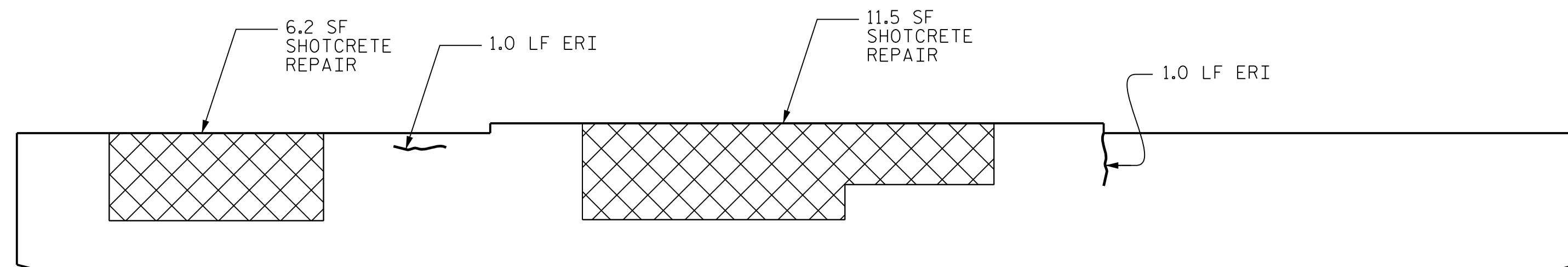
 EPOXY RESIN INJECTION



SPAN G

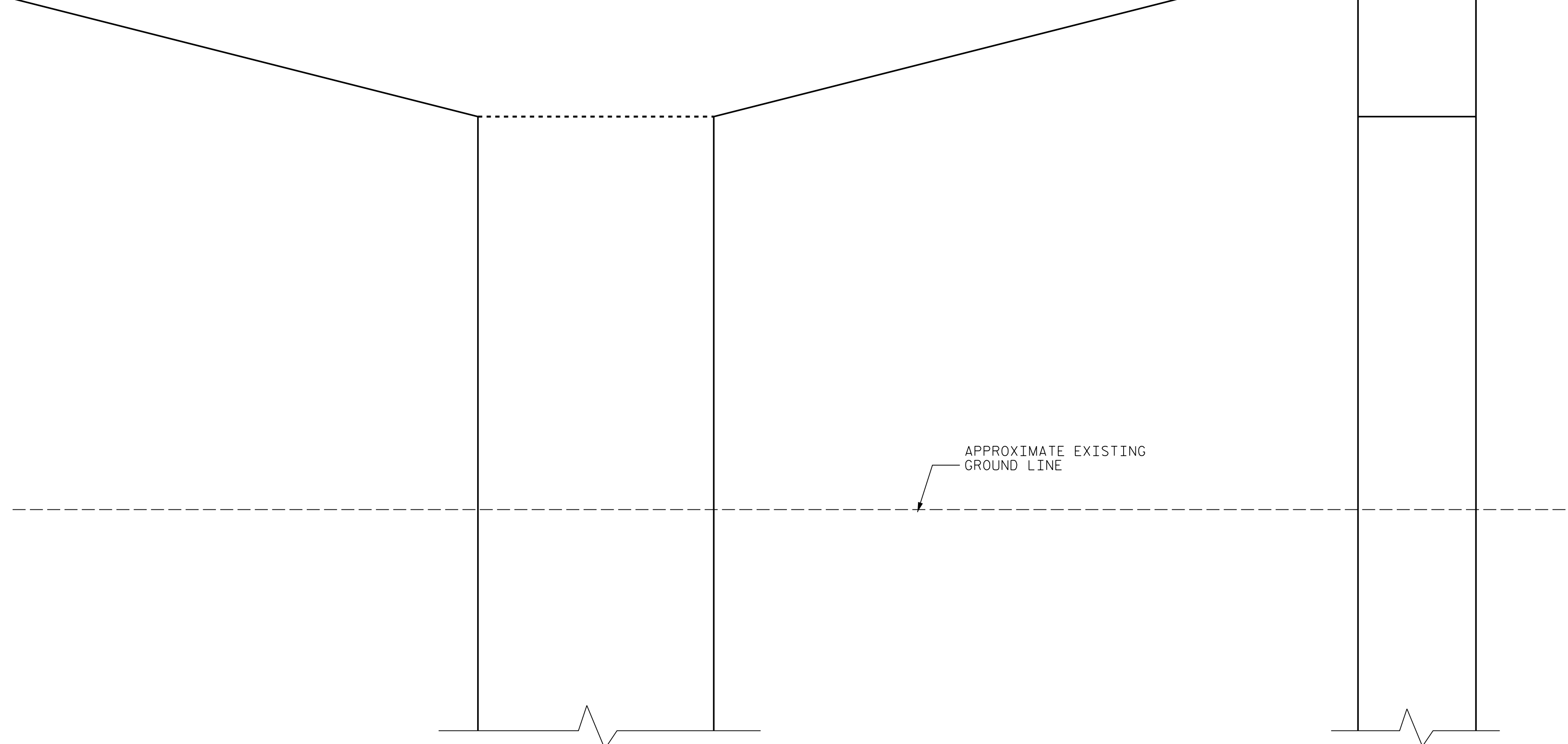
SPAN F

TOP OF CAP



SPAN F

SPAN G



APPROXIMATE EXISTING GROUND LINE

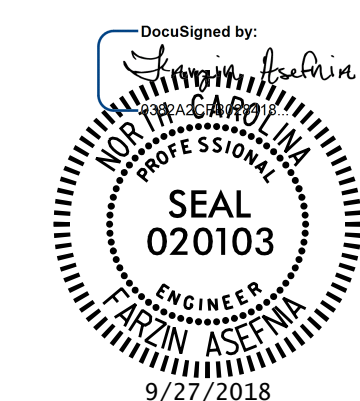
ELEVATION

END VIEW

PROJECT NO. 15BPR.28  
MADISON COUNTY  
 BRIDGE NO. 560113

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STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

BENT 6  
 SPAN F FACE

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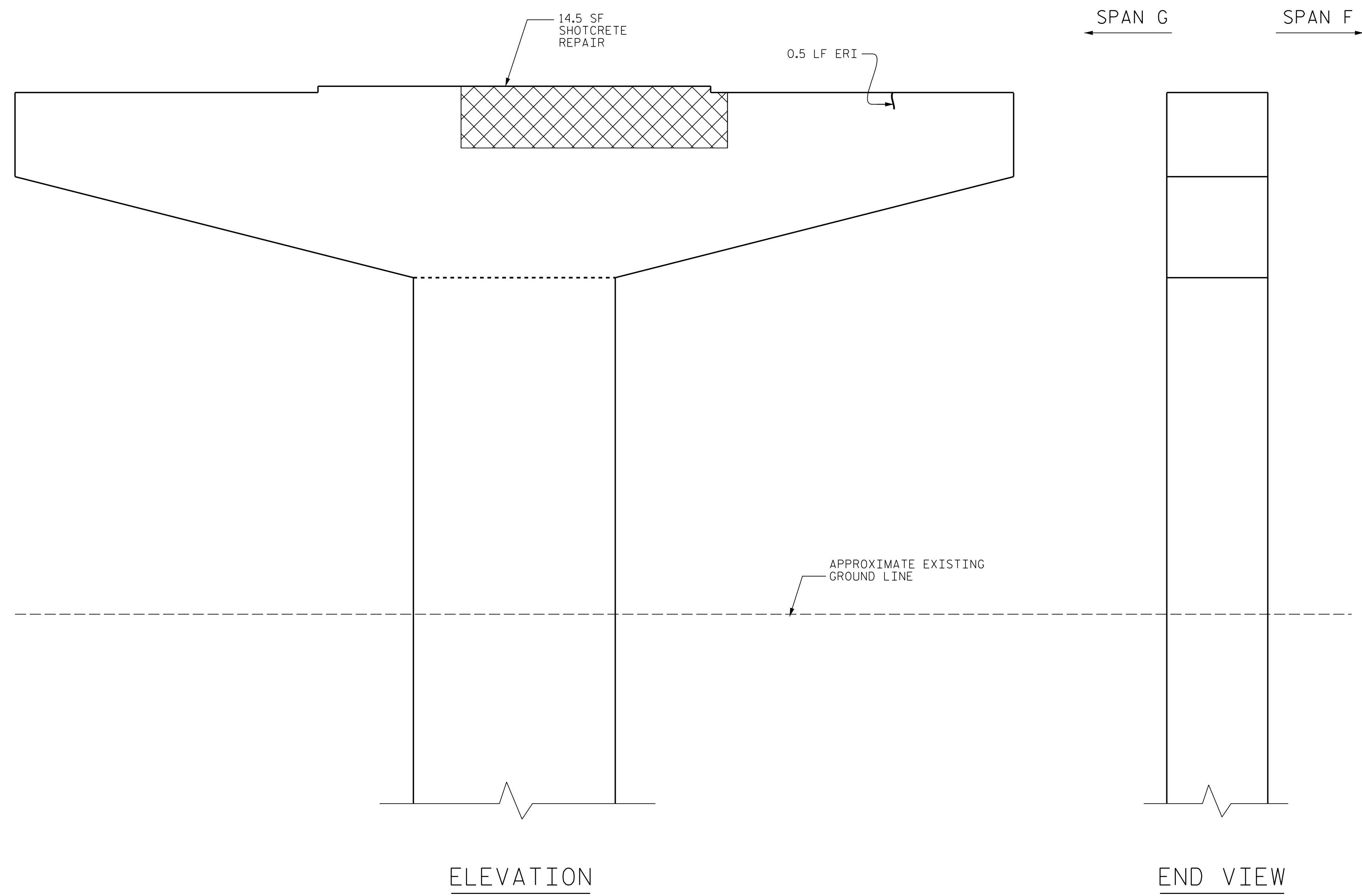
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 DAMAGED AREA  
 EPOXY RESIN INJECTION




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MADISON COUNTY  
 BRIDGE NO. 560113

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SHEET 2 OF 2



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**BENT 6  
 SPAN G FACE**

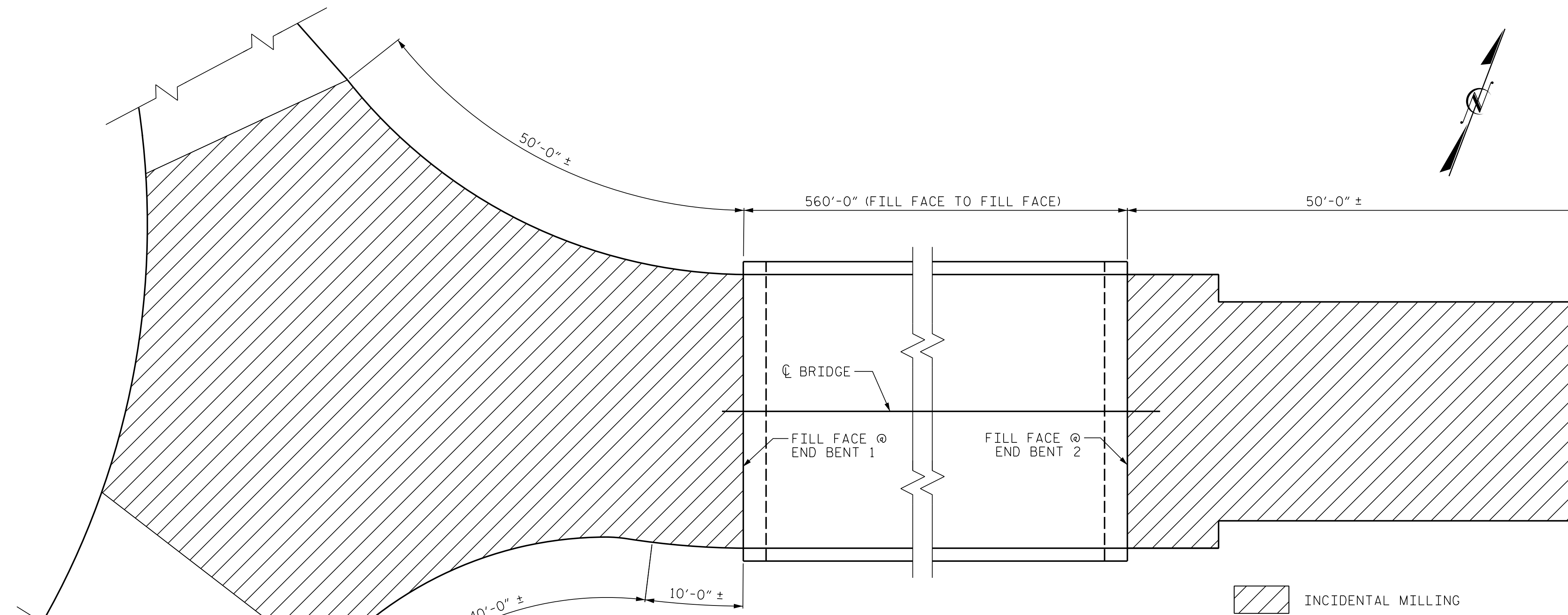
 Louis Berger Prepared by: LOUIS BERGER 1001 Wade Avenue, Suite 400 Raleigh, NC 27605-3322 NC COA No. F-0840	REVISIONS				SHEET NO.	
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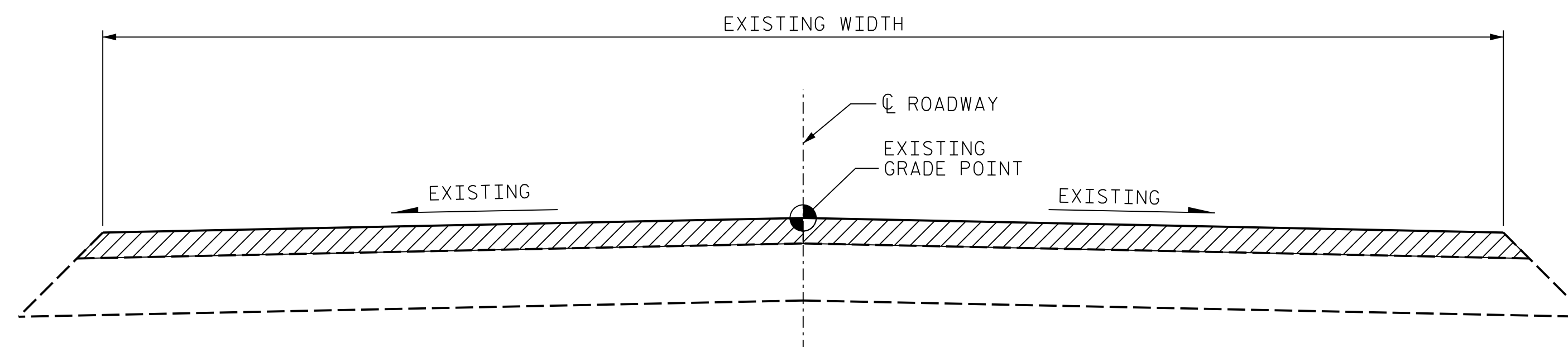
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CHECKED BY :	T.KIRSCHBAUM	DATE :	7/2018
DESIGN ENGINEER OF RECORD :	F. ASEFNIA	DATE :	8/2018

**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.

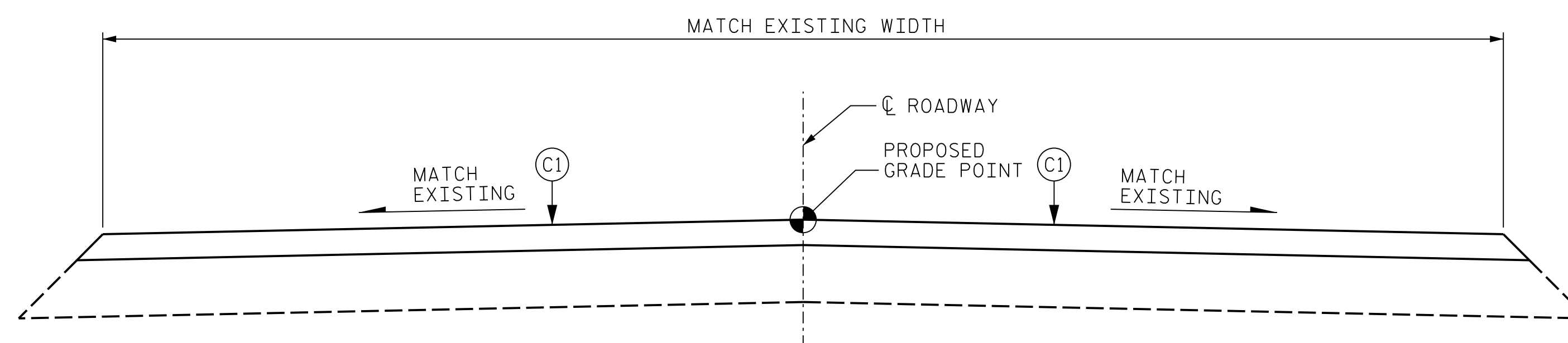


**PLAN**



**TYPICAL ROADWAY MILLING SECTION**

(MILL TO APPROX. 1/2" DEPTH)



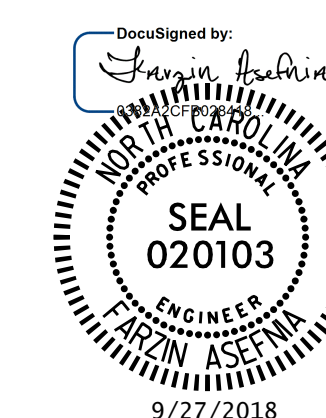
**TYPICAL FINAL ROADWAY SECTION**

**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	460 SQ. YDS.	
ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B	40 TONS	
ASPHALT BINDER FOR PLANT MIX	3 TONS	

PROJECT NO. 15BPR.28  
MADISON COUNTY  
 BRIDGE NO. 560113

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



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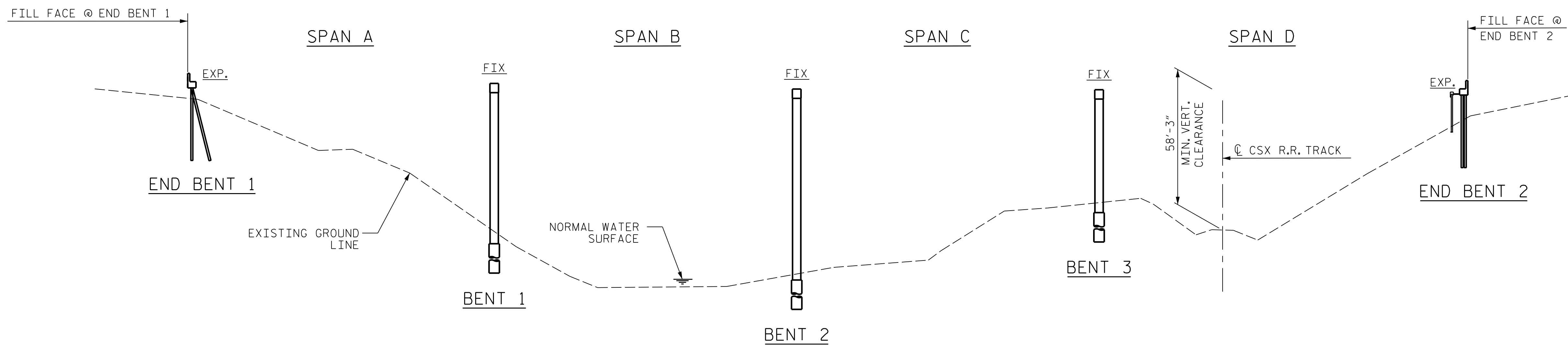
DRAWN BY : J.MYA DATE : 7/2018  
 CHECKED BY : T.KIRSCHBAUM DATE : 7/2018  
 DESIGN ENGINEER OF RECORD : F.ASEFNIA DATE : 8/2018

NOTES:  
 PROFILE INFORMATION IS TAKEN FROM THE ORIGINAL PLANS AND THE ROUTINE INSPECTION REPORT DATED 02/01/2016.

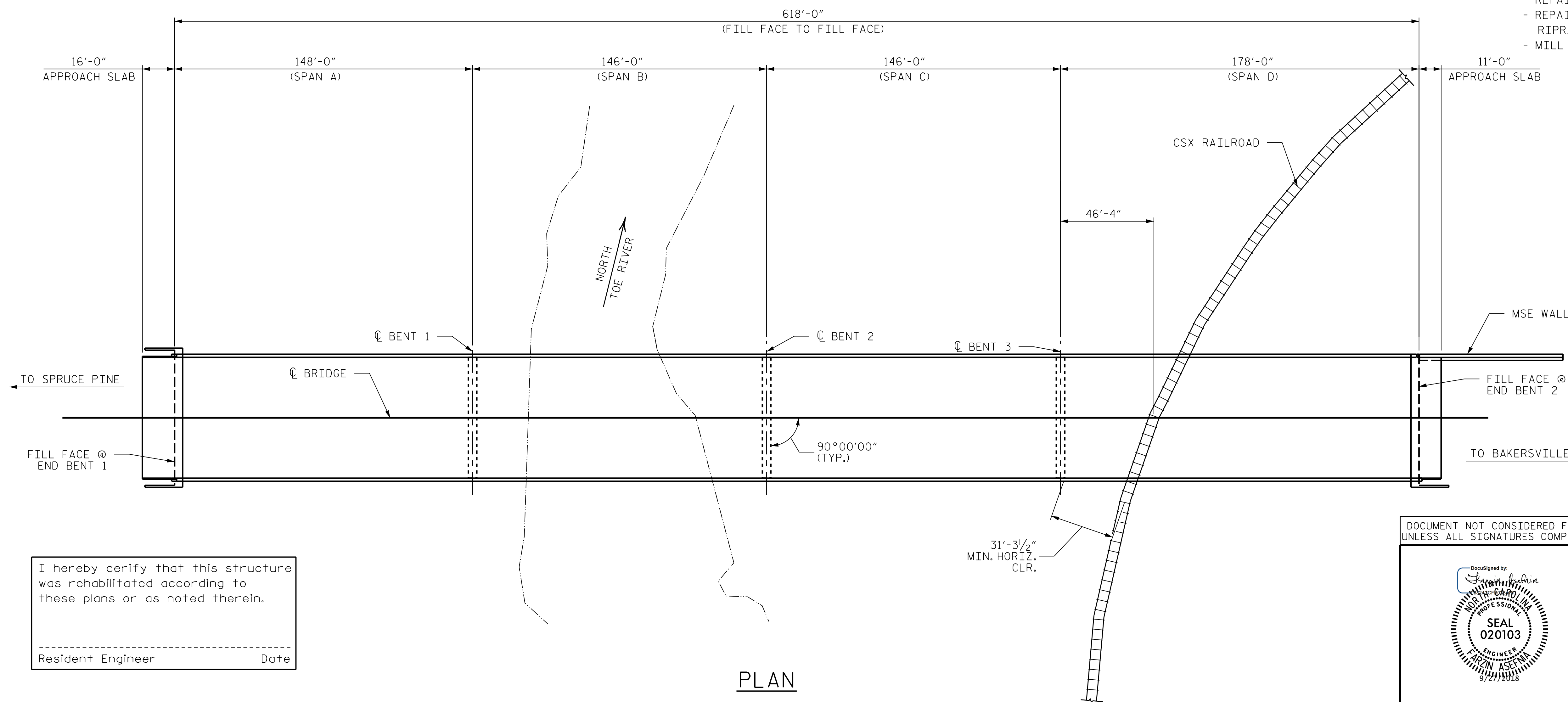
BRIDGE ORIENTATION CONFORMS TO EXISTING BRIDGE PLANS.

**SCOPE OF WORK**

- PARTIALLY REMOVE BRIDGE DECK AND APPROACH SLAB HEADER CONCRETE BY SCARIFICATION AND HYDRODEMOLITION METHODS.
- DEMOLISH EXISTING BRIDGE DECK JOINTS.
- OVERLAY PREPARED BRIDGE DECK AND APPROACH SLAB HEADER WITH LATEX MODIFIED CONCRETE-EARLY STRENGTH.
- RECONSTRUCT BRIDGE JOINTS AND INSTALL JOINT SEALS.
- GROOVE LATEX MODIFIED CONCRETE-EARLY STRENGTH BRIDGE DECK AND APPROACH SLAB.
- CLEANING AND ZONE PAINTING OF WEATHERING STEEL GIRDERS.
- REMOVE DEBRIS FROM TOP OF END BENT AND BENT CAPS.
- EPOXY INJECTION OF CONCRETE CRACKS.
- CLEAN AND REPAIR REBAR IN CONCRETE REPAIR AREAS.
- PERFORM SHOTCRETE AND CONCRETE REPAIRS IN PREPARED AREAS.
- APPLY EPOXY COATING TO TOP OF END BENT CAPS.
- TIGHTEN NUTS ON ANCHOR BOLTS AT BEARINGS.
- CLEAN AND REPAIR DECK DRAINS.
- REPAIR GUARDRAIL ANCHORAGES.
- REPAIR ERODED SLOPE AT BENT 3 WITH CLASS II RIPRAP.
- MILL AND PAVE ASPHALT APPROACHES.



**SECTION ALONG  $\bar{C}$  ROADWAY**



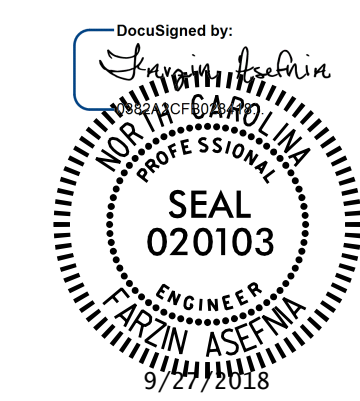
**PLAN**

I hereby certify that this structure was rehabilitated according to these plans or as noted therein.

Resident Engineer \_\_\_\_\_ Date \_\_\_\_\_

PROJECT NO. 15BPR.28  
MITCHELL COUNTY  
 BRIDGE NO. 600247

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STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**GENERAL DRAWING**  
 FOR BRIDGE ON NC 226  
 OVER NORTH TOE RIVER AND  
 CSX RAILROAD

REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
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DRAWN BY : S. DHOLAKIA DATE : 7/2018  
 CHECKED BY : T. KIRSCHBAUM DATE : 8/2018  
 DESIGN ENGINEER OF RECORD : F. ASEFNIA DATE : 8/2018

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**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.

BRIDGE COORDINATES	
LATITUDE	LONGITUDE
35°55'22.08"	82°05'10.20"

**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.
- EXISTING JOINTS AND DECK DRAINS SHALL BE SEALED PRIOR TO BEGINNING SURFACE PREPARATION OF BRIDGE DECK.
- FOR CLEANING AND PAINTING OF BRIDGE, SEE PAINTING EXISTING WEATHERING STEEL STRUCTURE SPECIAL PROVISION.
- FOR PAINTING CONTAINMENT, SEE PAINTING EXISTING WEATHERING STEEL STRUCTURE SPECIAL PROVISION.
- FOR POLLUTION CONTROL, SEE PAINTING EXISTING WEATHERING STEEL STRUCTURE SPECIAL PROVISION.
- FOR OVERLAY OF BRIDGE WITH LATEX MODIFIED CONCRETE. SEE SPECIAL PROVISIONS.
- THE CONTRACTOR SHALL PROVIDE A METHOD OF HANDLING UNEXPECTED BLOW THROUGH OF THE DECK DURING HYDRO-DEMOLITION OPERATIONS.
- FOR SCARIFYING BRIDGE DECK, HYDRO-DEMOLITION OF BRIDGE DECK, CLASS II SURFACE PREPARATION AND CLASS III SURFACE PREPARATION, SEE OVERLAY SURFACE PREPARATION SPECIAL PROVISIONS.
- DURING CONSTRUCTION, BERMS OR APPROPRIATE MEASURES SHALL BE LOCATED ALONG THE CENTER LINE OR EDGE OF TRAVEL LANES TO CONTROL RUN-OFF OF HYDRO-DEMOLITION WATER FROM FLOWING OR MIGRATING INTO ACTIVE TRAVEL LANES.
- THE CONTRACTOR MUST COLLECT, TREAT AND DISPOSE OF RUN-OFF WATER FROM THE HYDRO-DEMOLITION PROCESS, SEE OVERLAY SURFACE PREPARATION SPECIAL PROVISIONS.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSE WORK AND FORM WORK, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.
- FOR FOAM JOINT SEALS, SEE SPECIAL PROVISIONS
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO FOLLOW ALL STATE AND FEDERAL SAFETY REQUIREMENTS.
- FOR CONTROL OF TRAFFIC AND LIMITS ON PHASING OF CONSTRUCTION, SEE TRANSPORTATION MANAGEMENT PLAN SHEETS.
- LONGITUDINAL CONSTRUCTION JOINTS OF OVERLAYS SHALL BE LOCATED ALONG THE CENTERLINE OR EDGE OF TRAVEL LANES.
- FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.
- FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.
- FOR EPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.
- FOR REPAIR OF EXISTING DECK DRAINS, SEE SPECIAL PROVISIONS.
- FOR GUARDRAIL ANCHOR UNIT REPAIR, SEE SPECIAL PROVISIONS.
- FOR TYPE I AND TYPE II BRIDGE JACKING, SEE SPECIAL PROVISIONS
- FOR PREFORMED SILICONE RUBBER EXPANSION JOINT SEALS, SEE SPECIAL PROVISIONS.
- FOR CONCRETE FOR DECK REPAIR, SEE SPECIAL PROVISIONS.
- FOR VOLUMETRIC MIXER, SEE SPECIAL PROVISIONS.
- FOR CONCRETE WORK FOR JOINT REPLACEMENT, SEE SPECIAL PROVISIONS.
- FOR WORKING WITHIN RAILROAD RIGHT OF WAY, SEE RAILROAD GENERAL SPECIAL PROVISIONS-CSX TRANSPORTATION INC. SPECIAL PROVISION.

PROJECT NO. 15BPR.28  
MITCHELL COUNTY  
 BRIDGE NO. 600247

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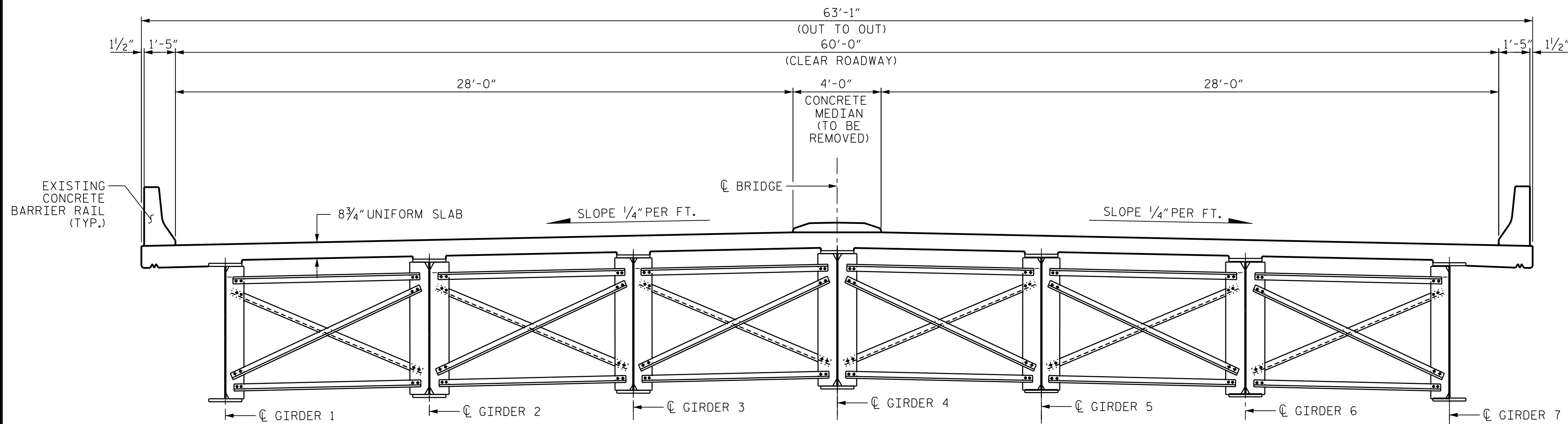
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**GENERAL DRAWING**  
 FOR BRIDGE ON NC 226  
 OVER NORTH TOE RIVER AND  
 CSX RAILROAD



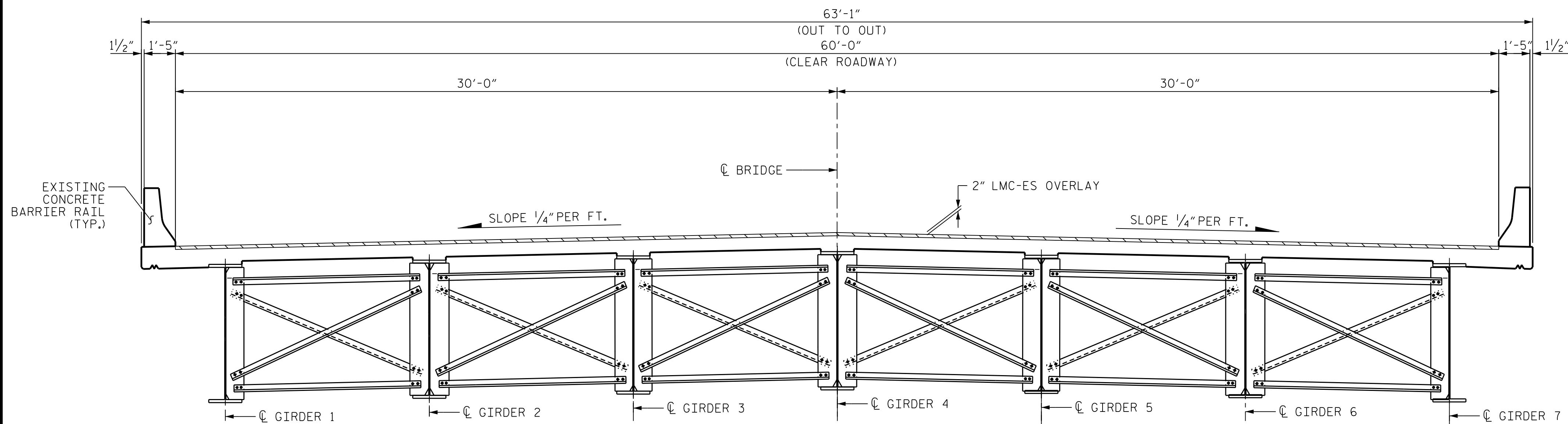
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-43
1			3			TOTAL SHEETS
2			4			63

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CHECKED BY :	T. KIRSCHBAUM	DATE :	7/2018
DESIGN ENGINEER OF RECORD :	F. ASEFNIA	DATE :	8/2018

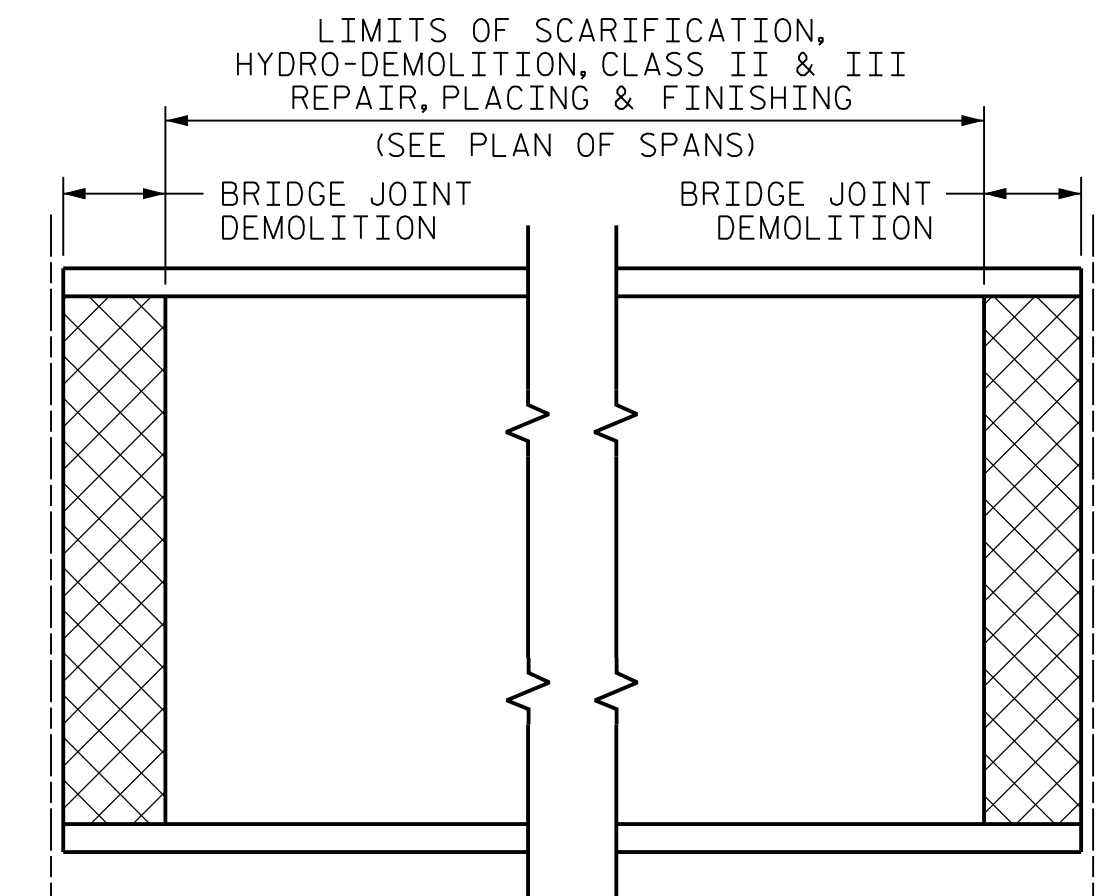


TYPICAL SECTION  
(EXISTING)

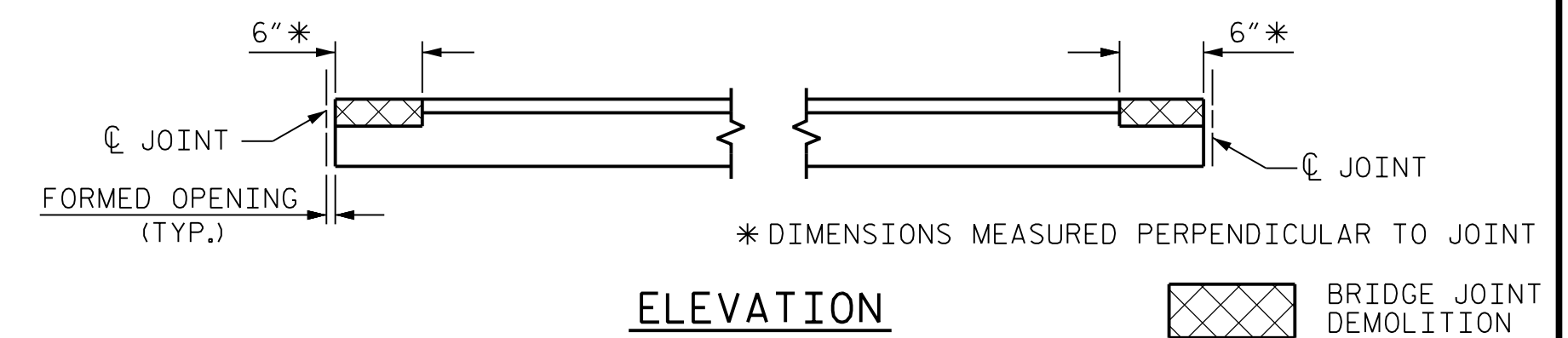


TYPICAL SECTION  
(PROPOSED)

**NOTES:**  
SEE TRAFFIC MANAGEMENT PLANS FOR LANE WIDTHS, SEQUENCING, AND OTHER TRAFFIC CONTROL MEASURES FOR STAGING OF OVERLAY SURFACE PREPARATION AND LMC-ES PLACEMENT.  
WHEN PREPARING THE SURFACE FOR LMC-ES OVERLAY ADJACENT TO A PREVIOUSLY PLACED LMC-ES STAGE, THE PREVIOUSLY PLACED LMC-ES SHALL BE REMOVED FOR A DISTANCE OF 4 INCHES FROM THE LMC-ES 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-ES SHALL BE PLACED IN THE 4-INCH OVERLAP, AS PART OF THE NEW LMC-ES STAGE PLACEMENT.

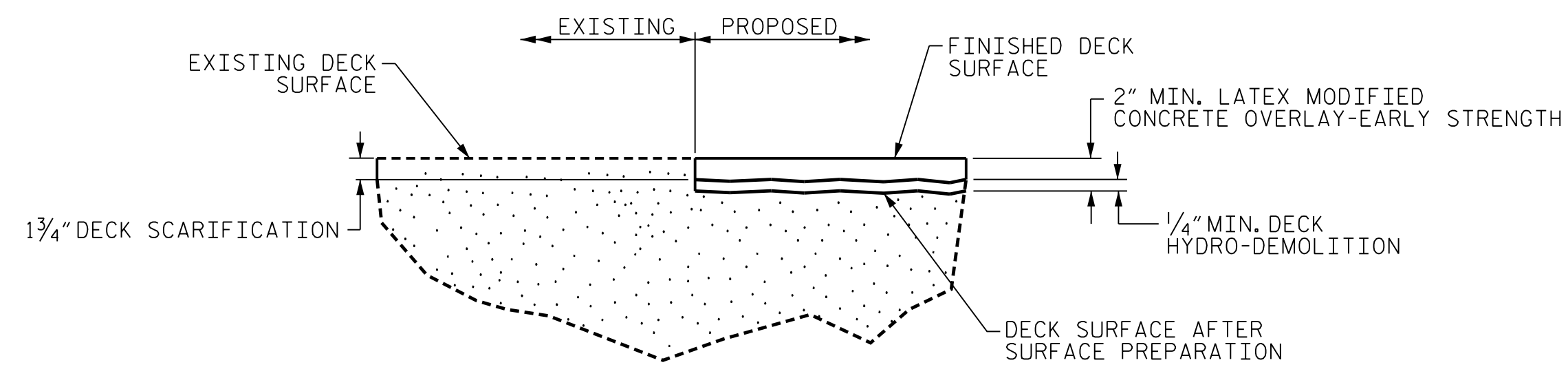


PLAN

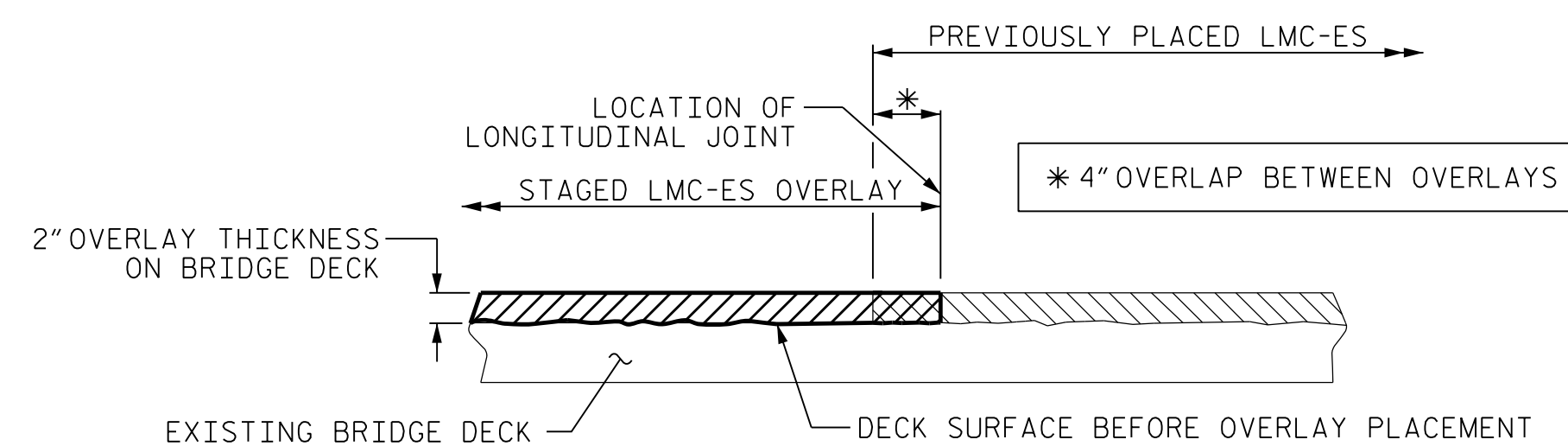


ELEVATION

PAY LIMITS FOR OVERLAY BID ITEMS



DETAIL FOR LMC-ES OVERLAY



SECTION THRU DECK  
STAGED LMC-ES OVERLAY JOINT  
(AS NEEDED)

PROJECT NO. 15BPR.28  
MITCHELL COUNTY  
BRIDGE NO. 600247

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

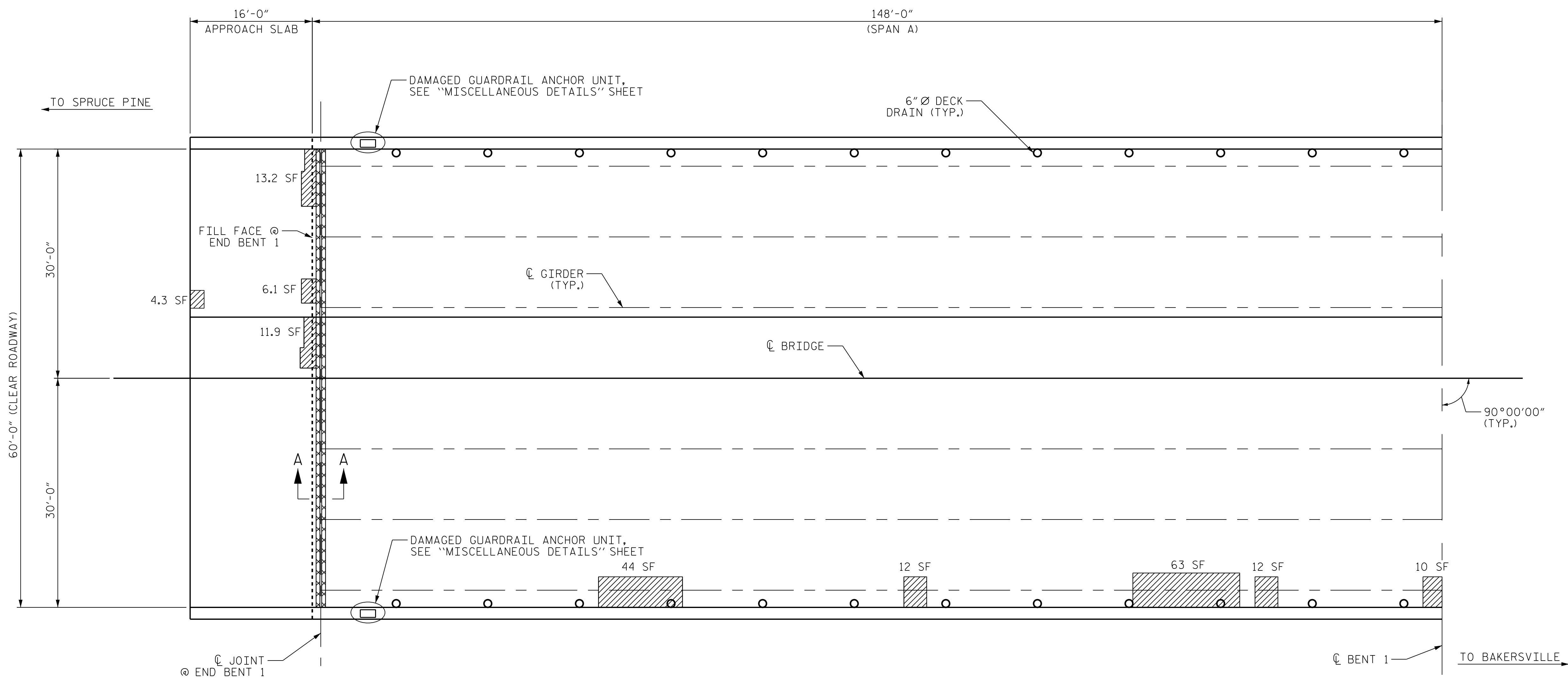
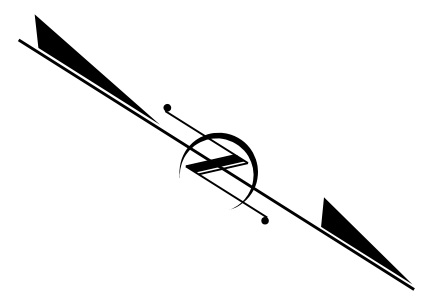
Louis Berger  
1001 Wade Avenue, Suite 400  
Raleigh, NC 27605-3322  
NC COA No. F-0840

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TOTAL SHEETS: 63

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DESIGN ENGINEER OF RECORD : F. ASEFNIA DATE : 8/2018



**PLAN**

**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 REPAIR QUANTITY TABLE.

CONCRETE COVER FOR TOP BARS IN THE DECK SLAB IS 2 1/2" PER THE EXISTING BRIDGE PLANS.

PRIOR TO THE PLACEMENT OF THE LMC-ES OVERLAY ACROSS THE CONTINUOUS DECK SPANS, THE CONTRACTOR SHALL SUBMIT A POUR SEQUENCE FOR APPROVAL BY THE ENGINEER.

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

**REPAIR QUANTITY TABLE**

TOP OF DECK REPAIR				
	ESTIMATE	ACTUAL		
SCARIFYING BRIDGE DECK	1086.0 SY			
HYDRO-DEMOLITION OF BRIDGE DECK	1086.0 SY			
CLASS II SURFACE PREPARATION	19.6 SY			
CLASS III SURFACE PREPARATION	0.5 SY *			
CONCRETE WORK FOR JOINT REPLACEMENT	120.0 SF			
EPOXY RESIN INJECTION	0.0 LF			
CONCRETE FOR DECK REPAIR	3.0 CF			
UNDERSIDE OF DECK REPAIR				
SHOTCRETE REPAIRS	ESTIMATE		ACTUAL	
	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0.0	0.0		
OVERHANG DIAPHRAGMS	0.0	0.0		
UNDERSIDE OF OVERHANG	0.0	0.0		
INTERIOR DIAPHRAGMS	0.0	0.0		
			ESTIMATE	
UNDERSIDE EPOXY RESIN INJECTION		0.0 LF		

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

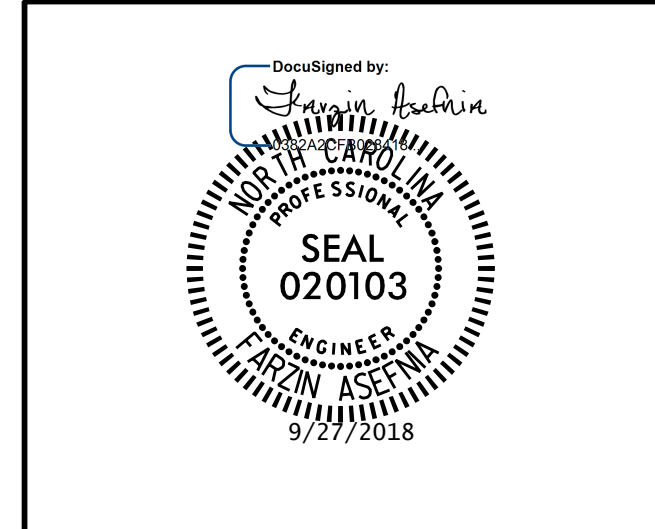
PAYMENT FOR CLASS II AND CLASS III SURFACE PREPARATION IS BASED ON THE SQUARE YARDS OF ADDITIONAL DEMOLITION REQUIRED FOLLOWING HYDRO-DEMOLITION OF THE BRIDGE DECK. SEE "OVERLAY SURFACE PREPARATION" SPECIAL PROVISION.

\* CLASS III SURFACE PREPARATION IS NOT ANTICIPATED. A TOKEN AMOUNT IS INDICATED FOR PRICING PURPOSES IN CASE UNANTICIPATED CLASS III SURFACE PREPARATION ARE ENCOUNTERED.

- APPROX. CLASS II AREA
- APPROX. CLASS III AREA
- CONCRETE WORK FOR JOINT REPLACEMENT
- ERI EPOXY RESIN INJECTION

PROJECT NO. 15BPR.28  
MITCHELL COUNTY  
 BRIDGE NO. 600247

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 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

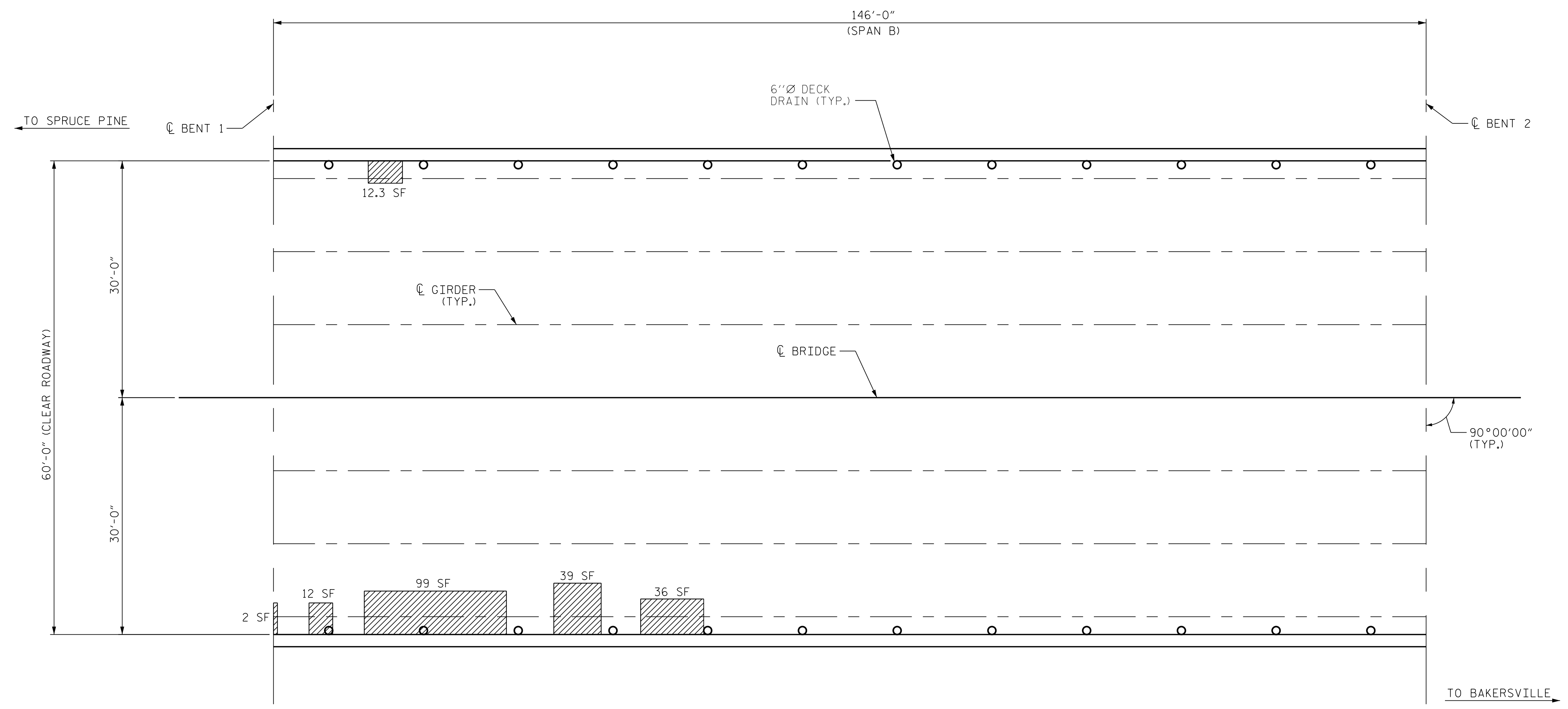
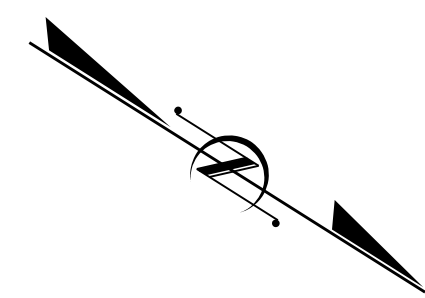
**PLAN OF SPANS  
 SPAN A AND  
 APPROACH SLAB**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-45
1			3			TOTAL SHEETS
2			4			63

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 DESIGN ENGINEER OF RECORD : F. ASEFNIA DATE : 8/2018





PLAN

NOTES

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REPAIR QUANTITY TABLE

TOP OF DECK REPAIR				
	ESTIMATE	ACTUAL		
SCARIFYING BRIDGE DECK	973.0 SY			
HYDRO-DEMOLITION OF BRIDGE DECK	973.0 SY			
CLASS II SURFACE PREPARATION	22.3 SY			
CLASS III SURFACE PREPARATION	0.5 SY *			
CONCRETE WORK FOR JOINT REPLACEMENT	0.0 SF			
EPOXY RESIN INJECTION	0.0 LF			
CONCRETE FOR DECK REPAIR	3.0 CF			
UNDERSIDE OF DECK REPAIR				
SHOTCRETE REPAIRS	ESTIMATE		ACTUAL	
	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0.0	0.0		
OVERHANG DIAPHRAGMS	0.0	0.0		
UNDERSIDE OF OVERHANG	0.0	0.0		
INTERIOR DIAPHRAGMS	0.0	0.0		
	ESTIMATE		ACTUAL	
UNDERSIDE EPOXY RESIN INJECTION	0.0 LF			

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

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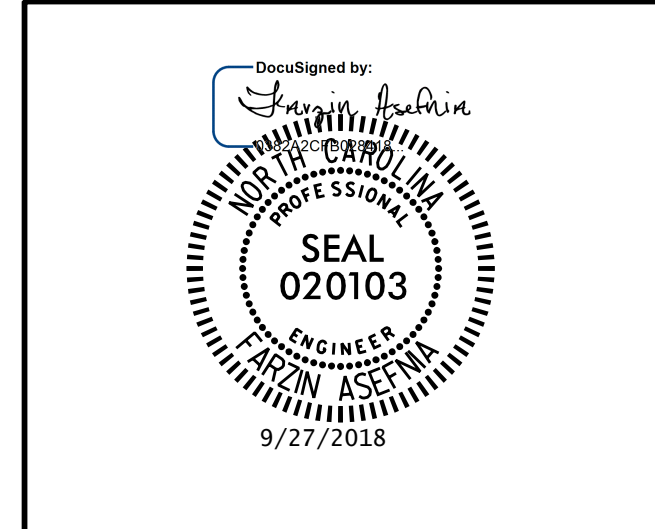
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- APPROX. CLASS II AREA
- APPROX. CLASS III AREA
- CONCRETE WORK FOR JOINT REPLACEMENT
- ERI EPOXY RESIN INJECTION

PROJECT NO. 15BPR.28  
MITCHELL COUNTY  
 BRIDGE NO. 600247

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SHEET 2 OF 4



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

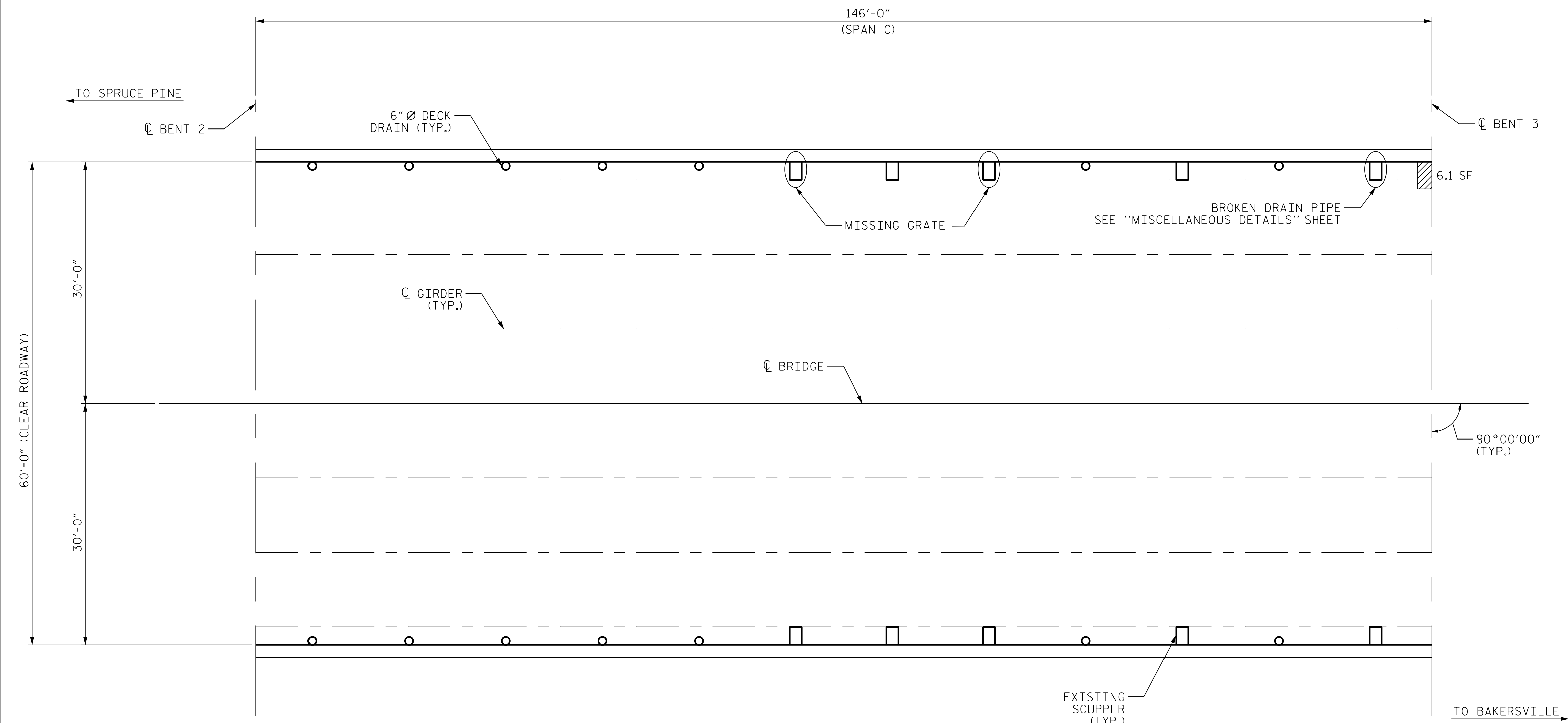
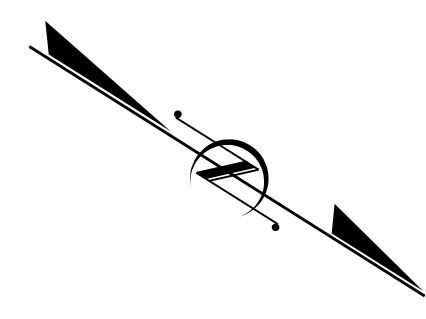
PLAN OF SPANS  
 SPAN B

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CHECKED BY :	T. KIRSCHBAUM	DATE :	7/2018
DESIGN ENGINEER OF RECORD :	F. ASEFNIA	DATE :	8/2018





PLAN

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REPAIR QUANTITY TABLE

TOP OF DECK REPAIR				
	ESTIMATE	ACTUAL		
SCARIFYING BRIDGE DECK	973 SY			
HYDRO-DEMOLITION OF BRIDGE DECK	973 SY			
CLASS II SURFACE PREPARATION	0.7 SY			
CLASS III SURFACE PREPARATION	0.5 SY *			
CONCRETE WORK FOR JOINT REPLACEMENT	0.0 SF			
EPOXY RESIN INJECTION	0.0 LF			
CONCRETE FOR DECK REPAIR	3.0 CF			
UNDERSIDE OF DECK REPAIR				
SHOTCRETE REPAIRS	ESTIMATE		ACTUAL	
	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0.0	0.0		
OVERHANG DIAPHRAGMS	0.0	0.0		
UNDERSIDE OF OVERHANG	0.0	0.0		
INTERIOR DIAPHRAGMS	0.0	0.0		
			ESTIMATE	ACTUAL
UNDERSIDE EPOXY RESIN INJECTION			0.0 LF	

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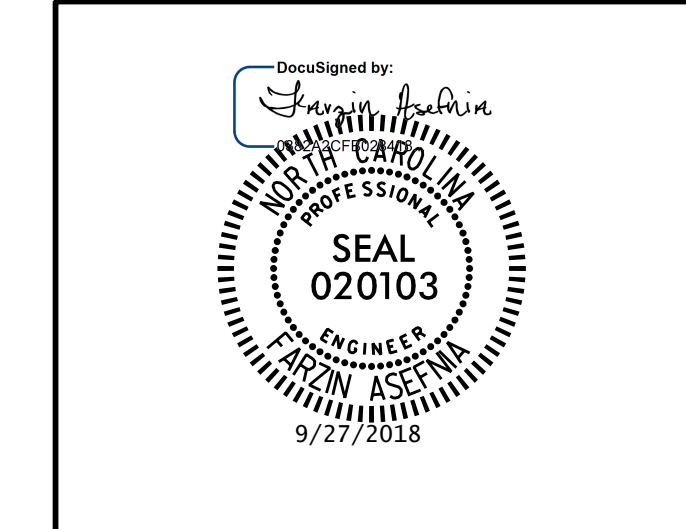
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- APPROX. CLASS II AREA
- APPROX. CLASS III AREA
- CONCRETE WORK FOR JOINT REPLACEMENT
- ERI EPOXY RESIN INJECTION

PROJECT NO. 15BPR.28  
MITCHELL COUNTY  
 BRIDGE NO. 600247

DOCUMENT NOT CONSIDERED FINAL  
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 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

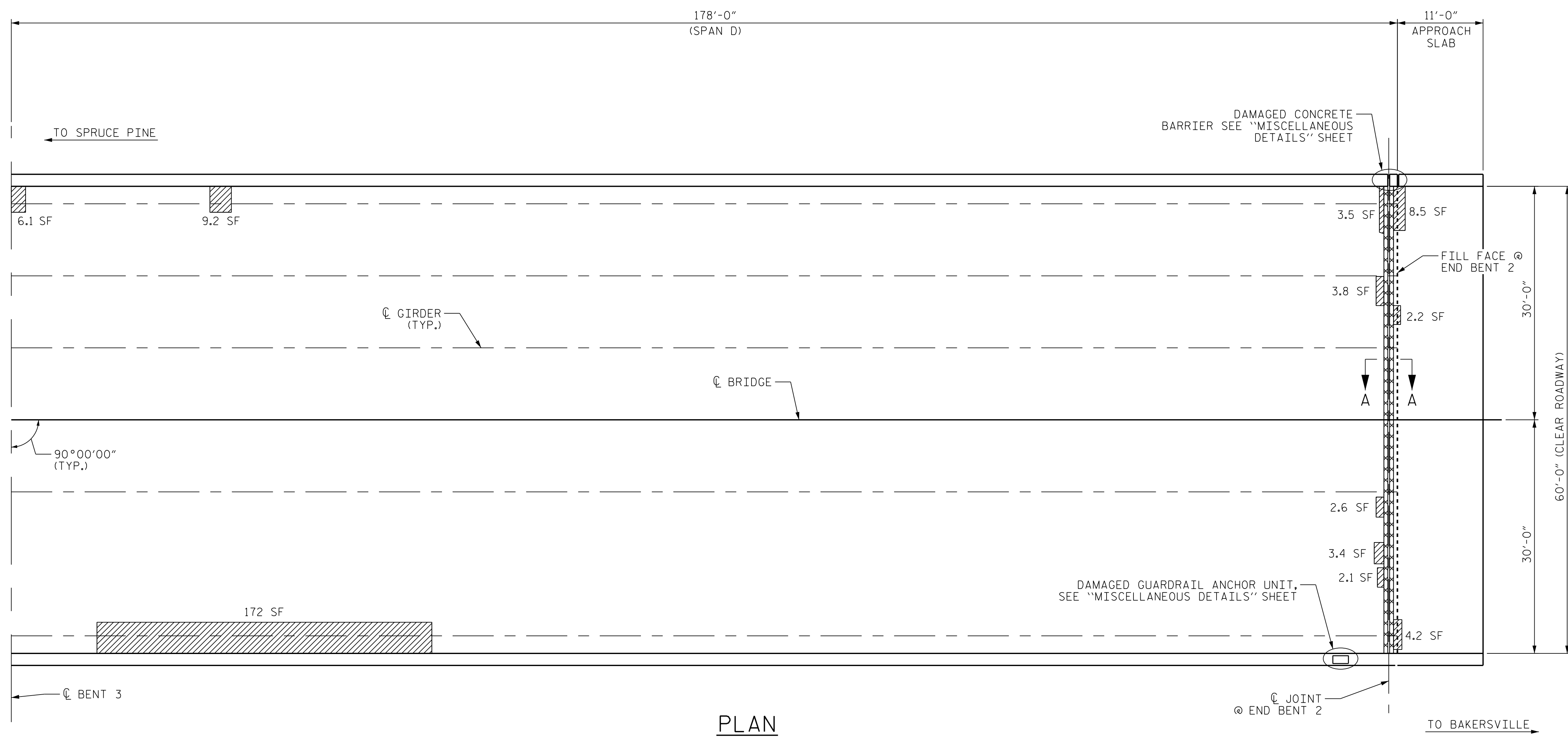
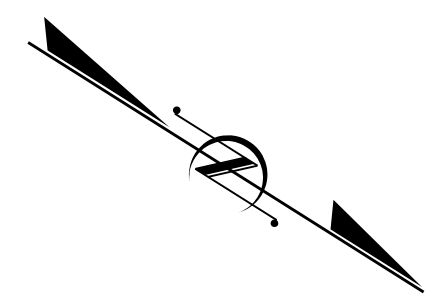
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CHECKED BY :	J. YANNAKONE	DATE :	7/2018
DESIGN ENGINEER OF RECORD :	F. ASEFNIA	DATE :	8/2018

Prepared by:  
 LOUIS BERGER  
 1001 Wade Avenue, Suite 400  
 Raleigh, NC 27605-3322  
 NC COA No. F-0840



PLAN

REPAIR QUANTITY TABLE

TOP OF DECK REPAIR		
	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	1253 SY	
HYDRO-DEMOLITION OF BRIDGE DECK	1253 SY	
CLASS II SURFACE PREPARATION	24.2 SY	
CLASS III SURFACE PREPARATION	0.5 SY *	
CONCRETE WORK FOR JOINT REPLACEMENT	120.0 SF	
EPOXY RESIN INJECTION	0.0 LF	
CONCRETE FOR DECK REPAIR	3.0 CF	
UNDERSIDE OF DECK REPAIR		
SHOTCRETE REPAIRS	ESTIMATE	ACTUAL
	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0.0	0.0
OVERHANG DIAPHRAGMS	0.0	0.0
UNDERSIDE OF OVERHANG	0.0	0.0
INTERIOR DIAPHRAGMS	0.0	0.0
	ESTIMATE	ACTUAL
UNDERSIDE EPOXY RESIN INJECTION	0.0 LF	

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

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- APPROX. CLASS II AREA
- APPROX. CLASS III AREA
- CONCRETE WORK FOR JOINT REPLACEMENT
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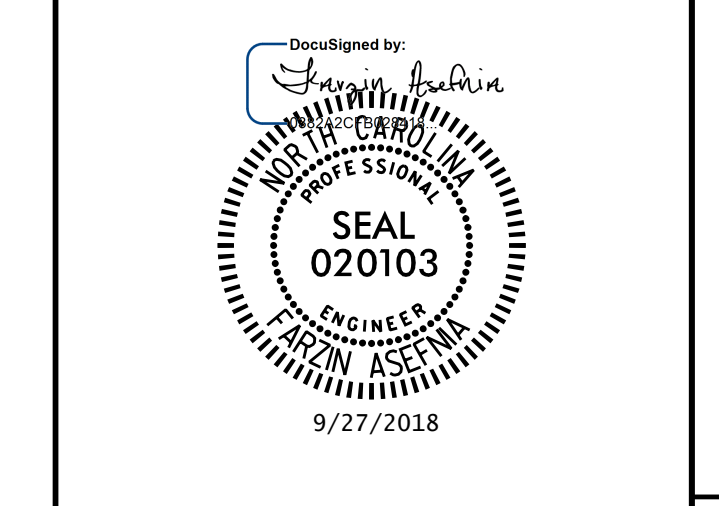
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FOR SECTION A-A, SEE "JOINT DETAILS" SHEET.

PROJECT NO. 15BPR.28  
MITCHELL COUNTY  
 BRIDGE NO. 600247

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 DEPARTMENT OF TRANSPORTATION  
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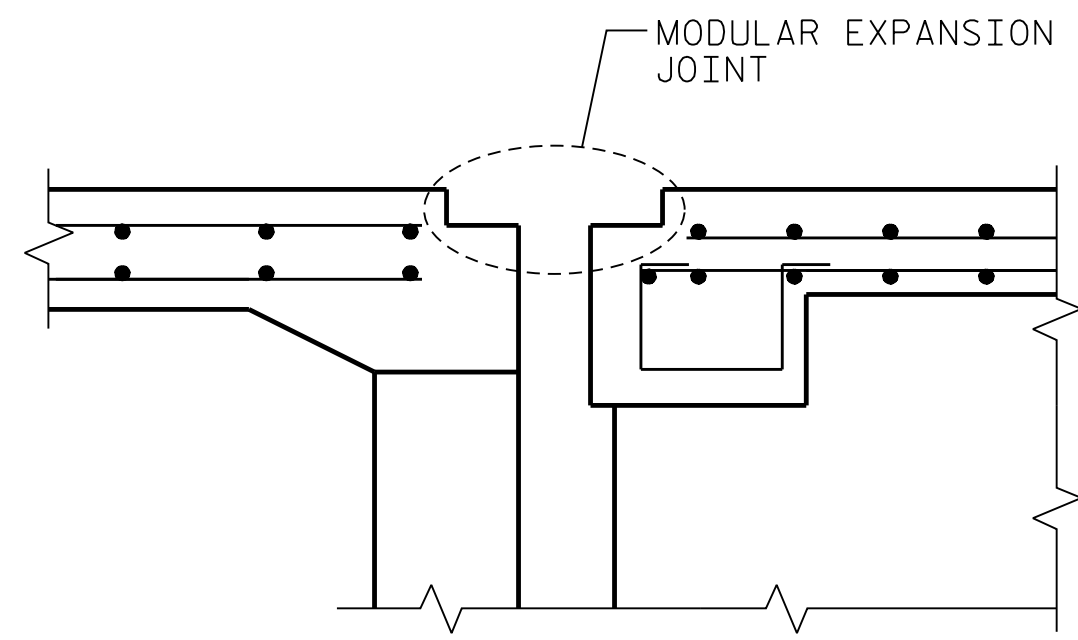
PLAN OF SPANS  
 SPAN D AND  
 APPROACH SLAB

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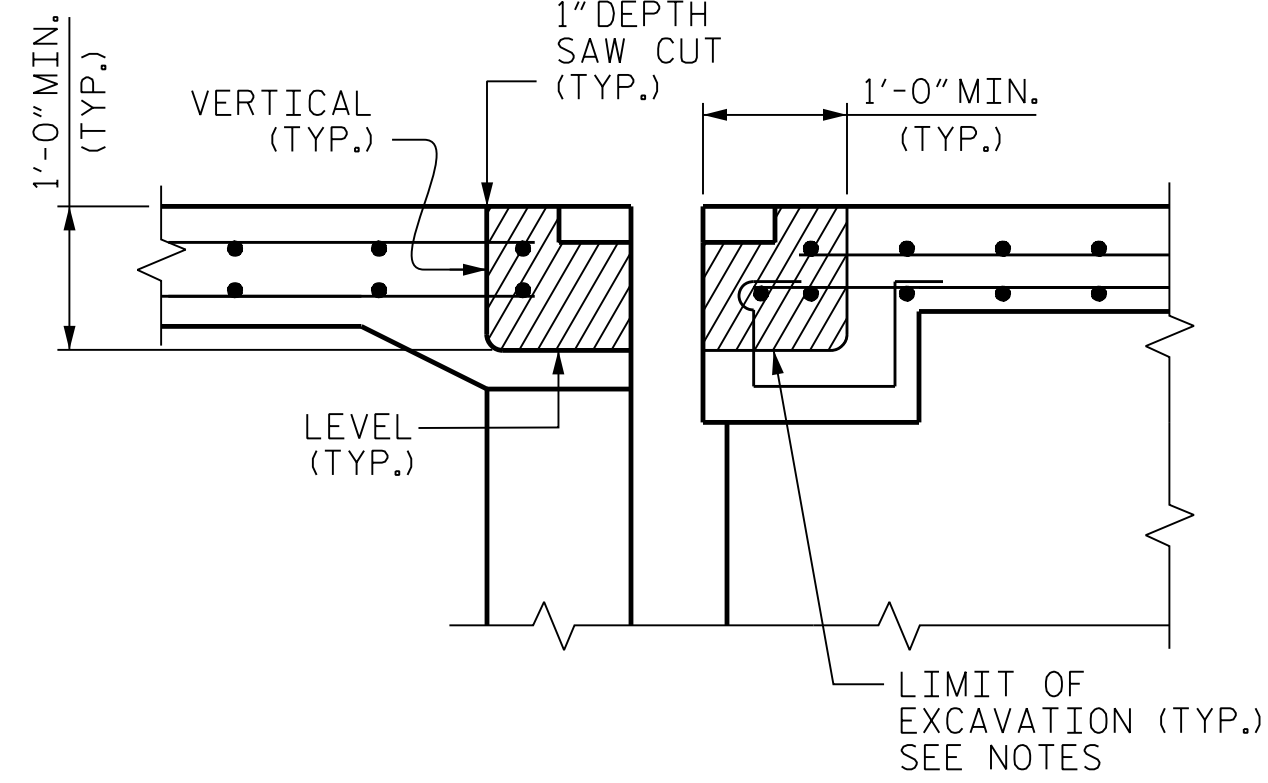
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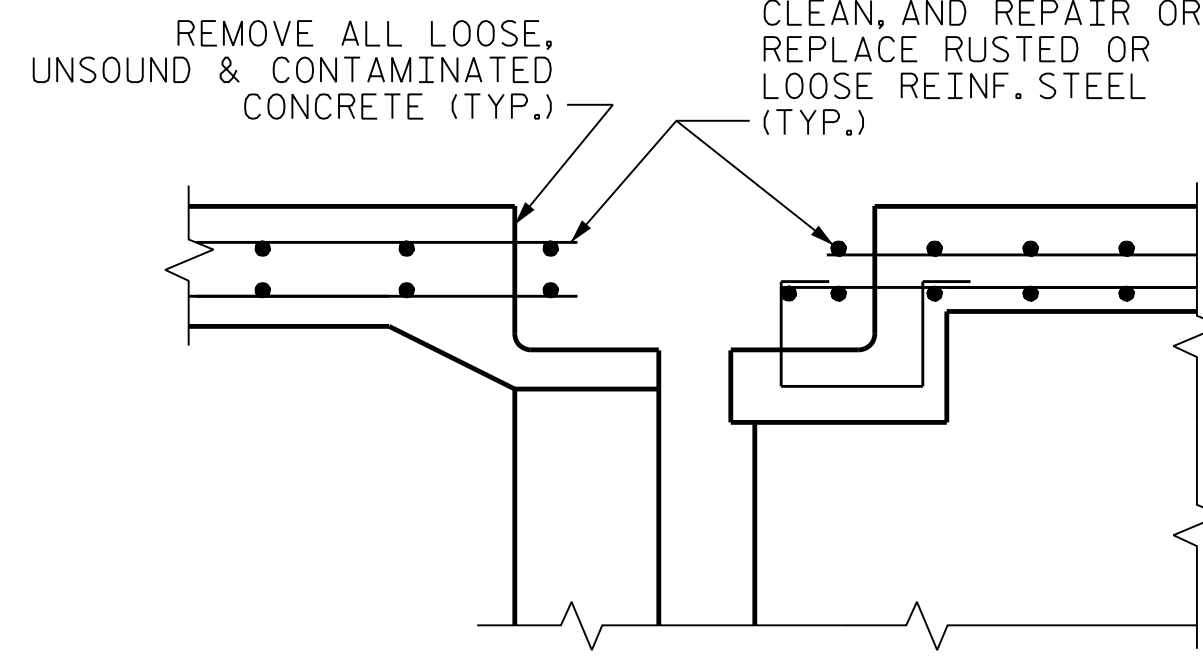
DRAWN BY :	S. DHOLAKIA	DATE :	7/2018
CHECKED BY :	T. KIRSCHBAUM	DATE :	7/2018
DESIGN ENGINEER OF RECORD :	F. ASEFNIA	DATE :	8/2018



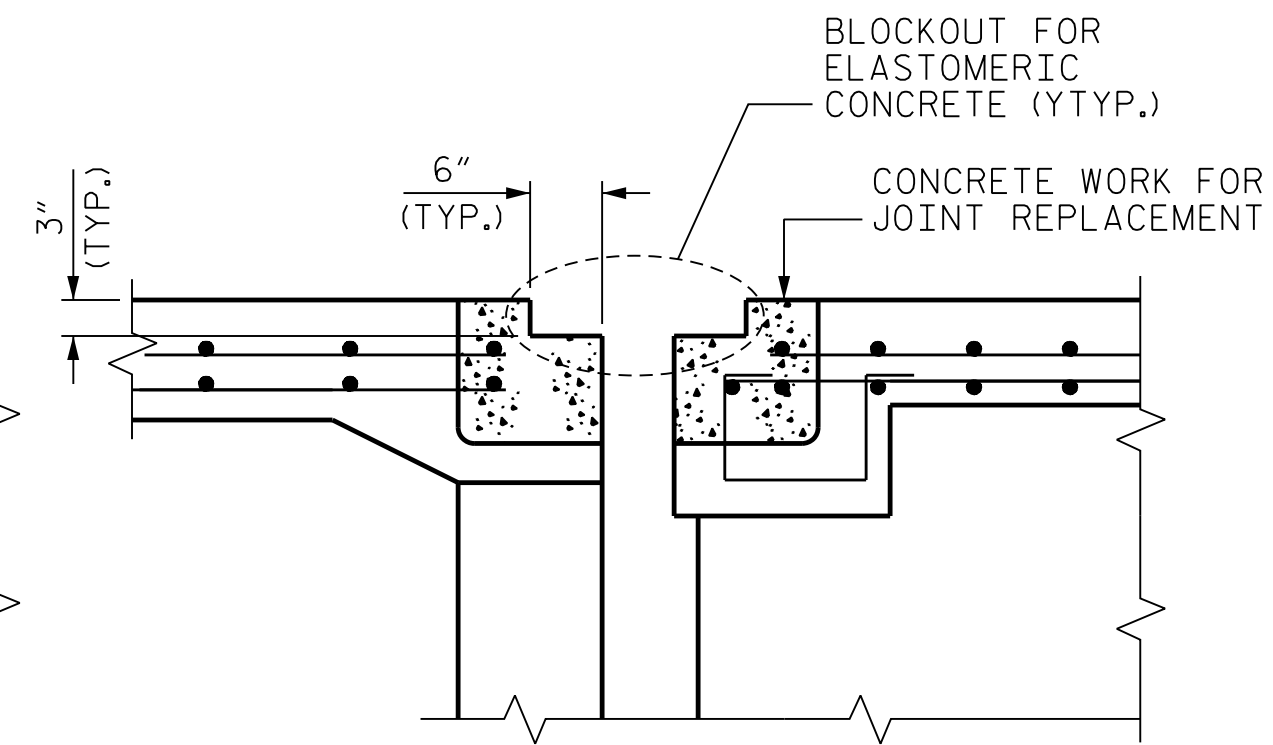
EXISTING JOINT  
(GLAND NOT SHOWN)



MINIMUM EXISTING JOINT DEMOLITION

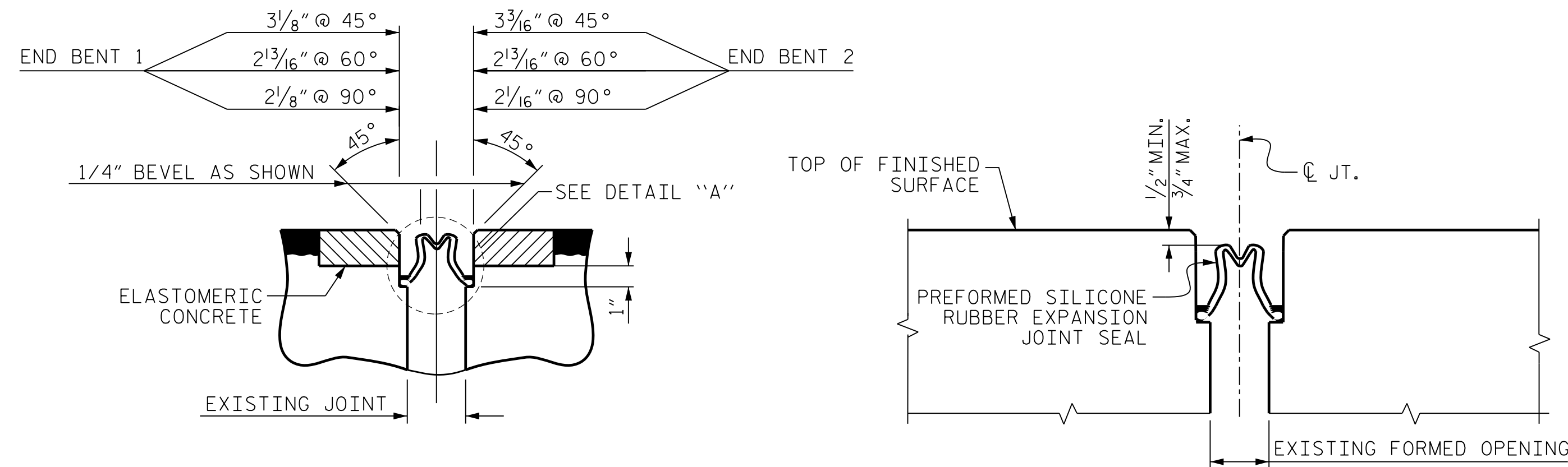


REINFORCING STEEL AFTER JOINT DEMOLITION



CONCRETE WORK FOR JOINT REPLACEMENT

SECTION A-A



PROPOSED PREFORMED SILICONE RUBBER EXPANSION JOINT SEAL

DETAIL A

SUMMARY OF QUANTITIES		
LOCATION	ELASTOMERIC CONCRETE *	CONCRETE WORK FOR JOINT REPLACEMENT **
END BENT 1	15.0 (CU. FT.)	120.0 (SQ. FT.)
END BENT 2	15.0 (CU. FT.)	120.0 (SQ. FT.)
TOTAL	30.0 (CU. FT.)	240.0 (SQ. FT.)

\* BASED ON THE MINIMUM BLOCKOUT SHOWN  
\*\* BASED ON THE MINIMUM DIMENSION SHOWN

NOTES

EXISTING INFORMATION ARE FROM THE BEST INFORMATION AVAILABLE. THE CONTRACTOR SHALL FIELD VERIFY THE INFORMATION SHOWN ON THE PLANS AND NOTIFY THE ENGINEER IF ACTUAL DIMENSIONS OR CONDITION DIFFER.

THE EXISTING MODULAR EXPANSION JOINT, INCLUDING THE CENTER BEAM, EDGE BEAMS, SUPPORT BOXES, AND SUPPORT BARS SPANNING THE JOINT OPENING, SHALL BE REMOVED. THE ANCHOR STUDS SHALL BE CUT FLUSH WITH THE FACE OF THE EXCAVATION, AND THE ENDS OF THE STUDS SHALL BE EPOXY COATED.

THE CONTRACTOR SHALL CONSTRUCT THE OPENING AND INSTALL THE PREFORMED SILICONE RUBBER EXPANSION JOINT SEAL ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.

THE INSTALLED PREFORMED SILICONE RUBBER EXPANSION JOINT SEALS SHALL BE WATERTIGHT.

THE CONTRACTOR WILL BE PERMITTED TO FORM THE JOINTS FOR THE JOINTS SEALS IN LIEU OF SAWING THE JOINTS.

THE FINISHED PREFORMED SILICONE RUBBER EXPANSION JOINT SEAL SHALL BE A MINIMUM 1/2" AND A MAXIMUM 3/4" BELOW THE FINISHED GRADE.

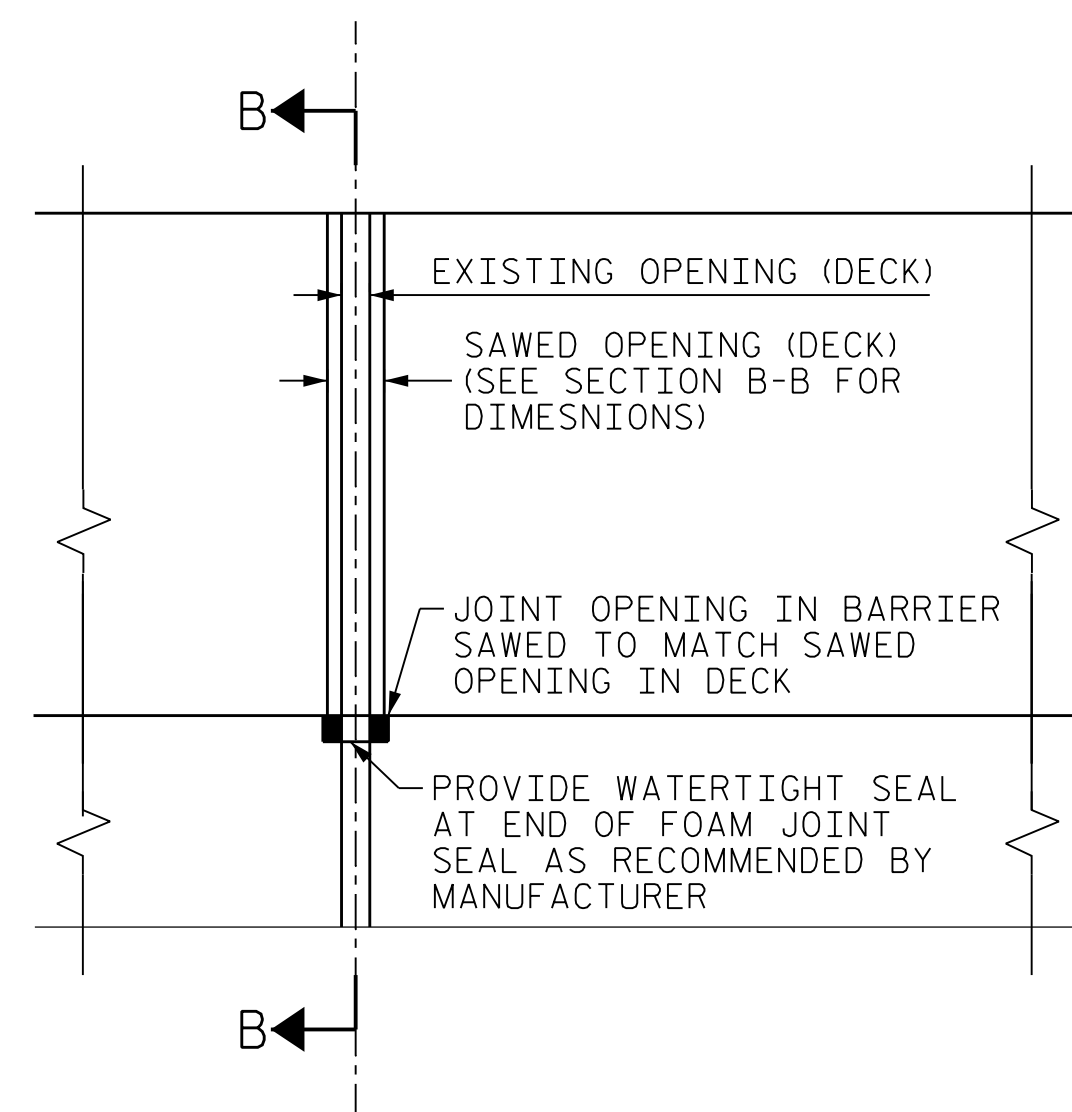
FOR PREFORMED SILICONE RUBBER EXPANSION JOINT SEALS, SEE SPECIAL PROVISIONS.

FOR ELASTOMERIC CONCRETE SEE SPECIAL PROVISIONS

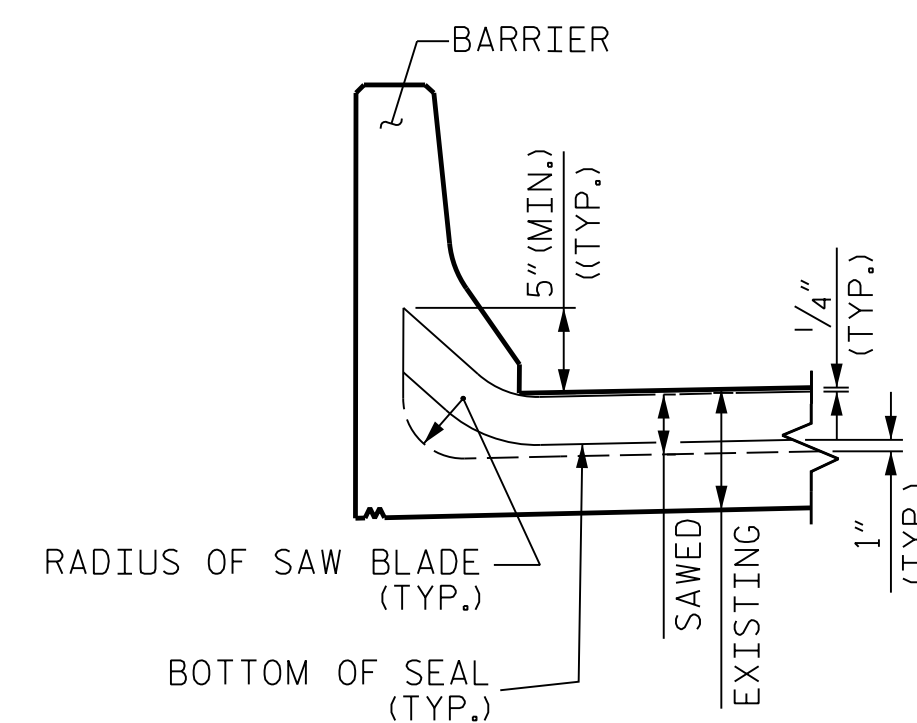
RETAIN ALL EXISTING REINFORCING STEEL. CLEAN AND REPAIR AS NEEDED.

FOR LOCATION OF SECTION A-A SEE "PLAN OF SPAN" SHEETS

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



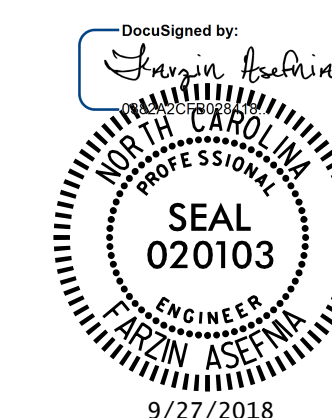
PLAN



SECTION B-B

PROJECT NO. 15BPR.28  
MITCHELL COUNTY  
BRIDGE NO. 600247

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STATE OF NORTH CAROLINA  
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RALEIGH

JOINT DETAILS

REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S-49
2			4			TOTAL SHEETS 63



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DRAWN BY : S. DHOLAKIA DATE : 7/2018  
CHECKED BY : J. YANACCONO DATE : 7/2018  
DESIGN ENGINEER OF RECORD : F. ASEFNIA DATE : 8/2018

**NOTES**

THE LOCATIONS AND DIMENSIONS OF THE ZONE PAINTING ARE BASED ON THE BEST INFORMATION AVAILABLE. THE CONTRACTOR, IN CONJUNCTION, WITH THE ENGINEER, SHALL VERIFY THE LOCATION AND EXTENT OF ZONE PAINTING AREAS PRIOR TO BEGINNING WORK.

FOR ZONE PAINTING, SEE PAINTING EXISTING WEATHERING STEEL STRUCTURE SPECIAL PROVISIONS.

HORIZONTAL LIMITS OF ZONE PAINTING SHALL EXTEND 12" BEYOND THE MAXIMUM HORIZONTAL EXTENT OF WEB/FLANGE CORROSION.

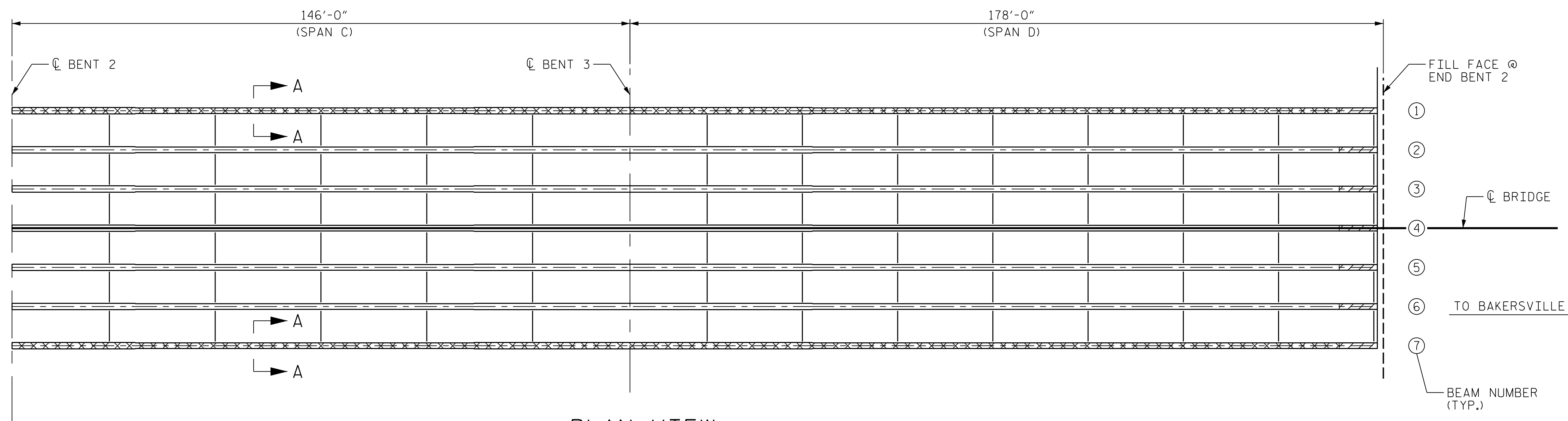
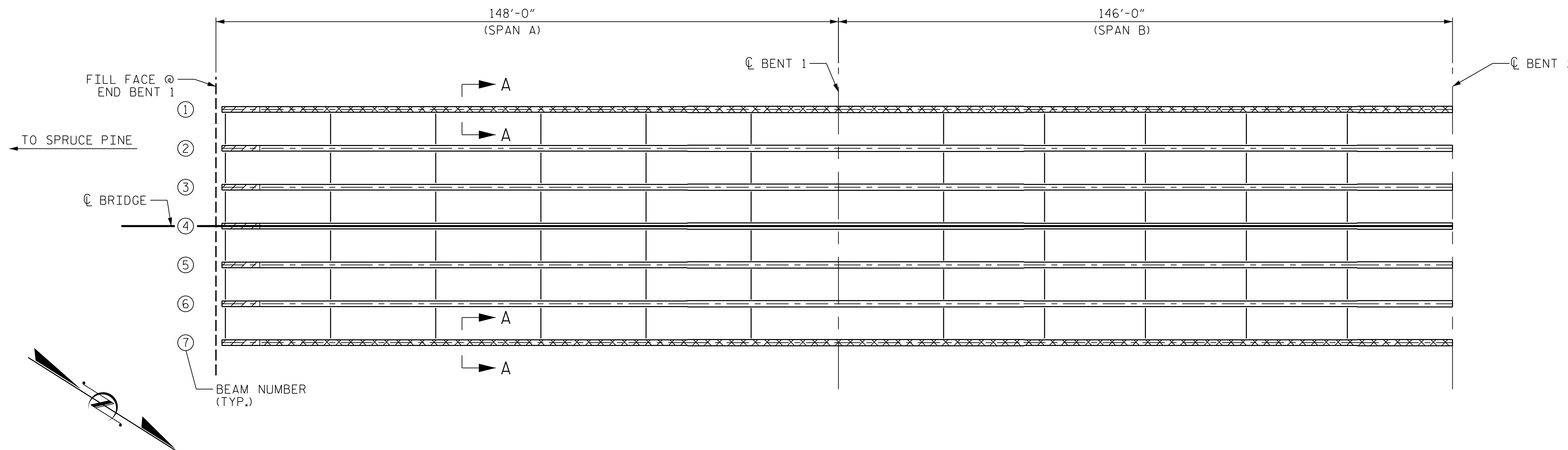
\* VERTICAL LIMITS OF ZONE PAINTING SHALL EXTEND 3" BEYOND THE MAXIMUM VERTICAL EXTENT OF WEB CORROSION OR 6" ABOVE THE TOP OF BOTTOM FLANGE, WHICHEVER IS GREATER.

AT ALL POINTS OF SUPPORT, ALL LOOSE ANCHOR BOLTS SHALL BE FINGER-TIGHTENED PLUS AN ADDITIONAL 1/4 TURN. THE THREAD OF THE NUT AND BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL. PAYMENT FOR THIS WORK WILL BE INCLUDED IN THE CONTRACT LUMP SUM PRICE FOR "CLEANING AND PAINTING EXISTING WEATHERING STEEL"

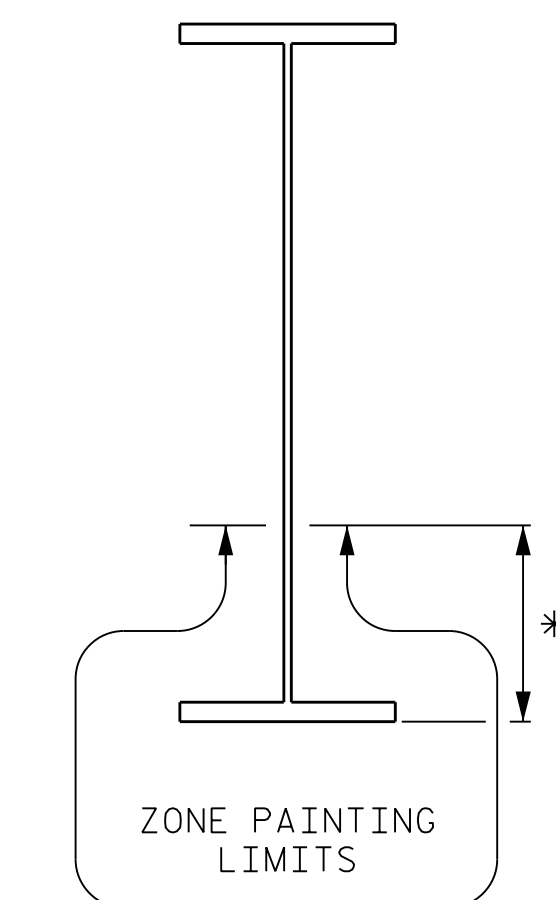
AT ALL POINTS OF SUPPORT, ALL LOOSE ANCHOR BOLTS SHALL BE FINGER-TIGHTENED PLUS AN ADDITIONAL 1/4 TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL. PAYMENT FOR THIS WORK WILL BE INCLUDED IN THE CONTRACT LUMP SUM PRICE FOR "CLEANING AND PAINTING EXISTING WEATHERING STEEL".

 EXTENT OF ZONE PAINTING

 GIRDER END PAINTING



**PLAN VIEW**  
(OTHER LOCATIONS MAY EXIST, SEE NOTES)



**SECTION A-A**

PROJECT NO. 15BPR.28  
MITCHELL COUNTY  
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STATE OF NORTH CAROLINA  
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RALEIGH

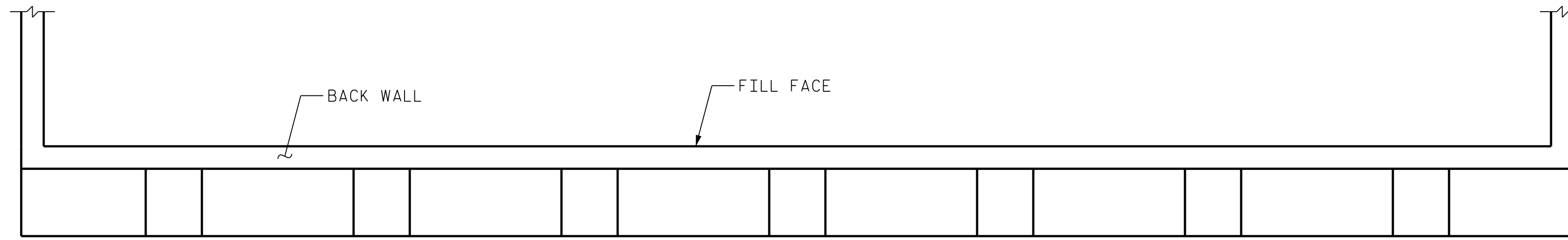
**ZONE PAINTING  
LOCATIONS**

Louis Berger  
1001 Wade Avenue, Suite 400  
Raleigh, NC 27605-3322  
NC COA No. F-0840

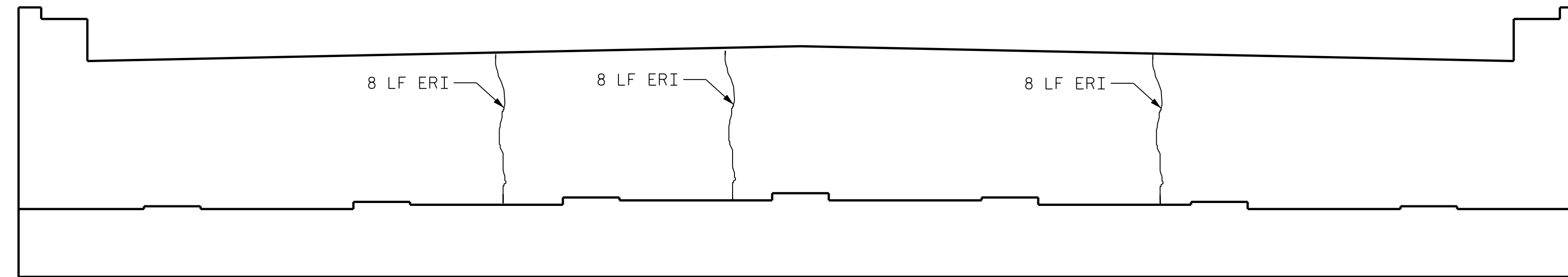
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-50
1			3			TOTAL SHEETS
2			4			63

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 DESIGN ENGINEER OF RECORD : F. ASEFNIA DATE : 8/2018

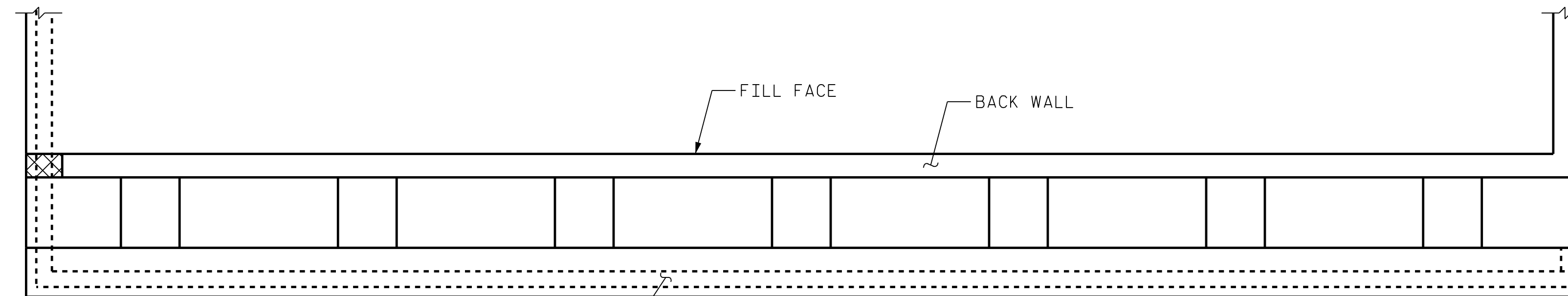


PLAN

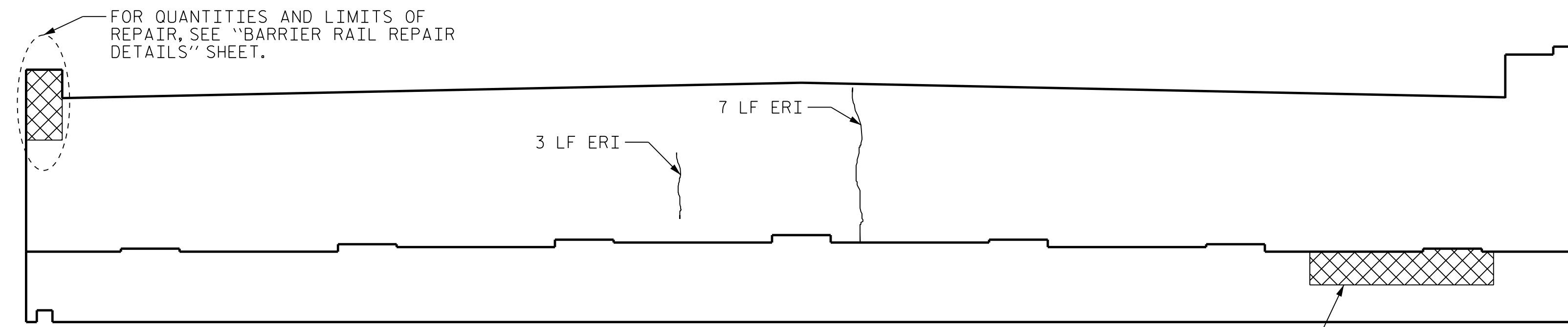


ELEVATION

END BENT 1

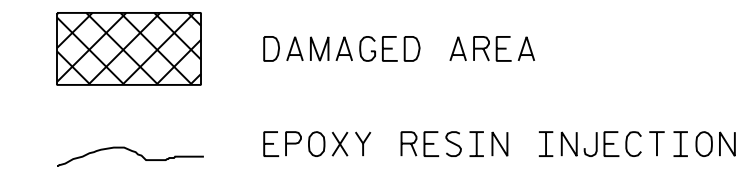


PLAN



ELEVATION

END BENT 2



REPAIR QUANTITY TABLE				
END BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
BACK WALL	0.0	0.0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
BACK WALL	0.0	0.0		
EPOXY RESIN INJECTION	LN. FT		LN. FT	
CAP	0.0			
BACK WALL	24.0			
EPOXY COATING	AREA SF		AREA SF	
TOP OF END BENT CAP	207			
END BENT 2	QUANTITIES			
SHOTCRETE REPAIRS	ESTIMATE		ACTUAL	
	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	11.1	4.5		
BACK WALL	0.0	0.0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
BACK WALL	0.0	0.0		
EPOXY RESIN INJECTION	LN. FT		LN. FT	
CAP	0.0			
BACK WALL	10.0			
EPOXY COATING	AREA SF		AREA SF	
TOP OF END BENT CAP	198			

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL TO SAWCUT. SEE REPAIR DETAILS.

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 SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

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

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 PAINT THE AREA OF THE CAP BENEATH THE MASONRY PLATES. FOR EPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.

THE CONTRACTOR SHALL REMOVE VEGETATION GROWING ON THE MSE WALL AT END BENT 2 DOWN TO THE GROUND LINE. NO SEPARATE PAYMENT WILL BE MADE FOR REMOVAL OF VEGETATION, AS PAYMENT IS INCLUDED IN THE CONTRACT UNIT PRICE BID FOR "EPOXY COATING AND DEBRIS REMOVAL".

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

PROJECT NO. 15BPR.28  
MITCHELL COUNTY  
 BRIDGE NO. 600247

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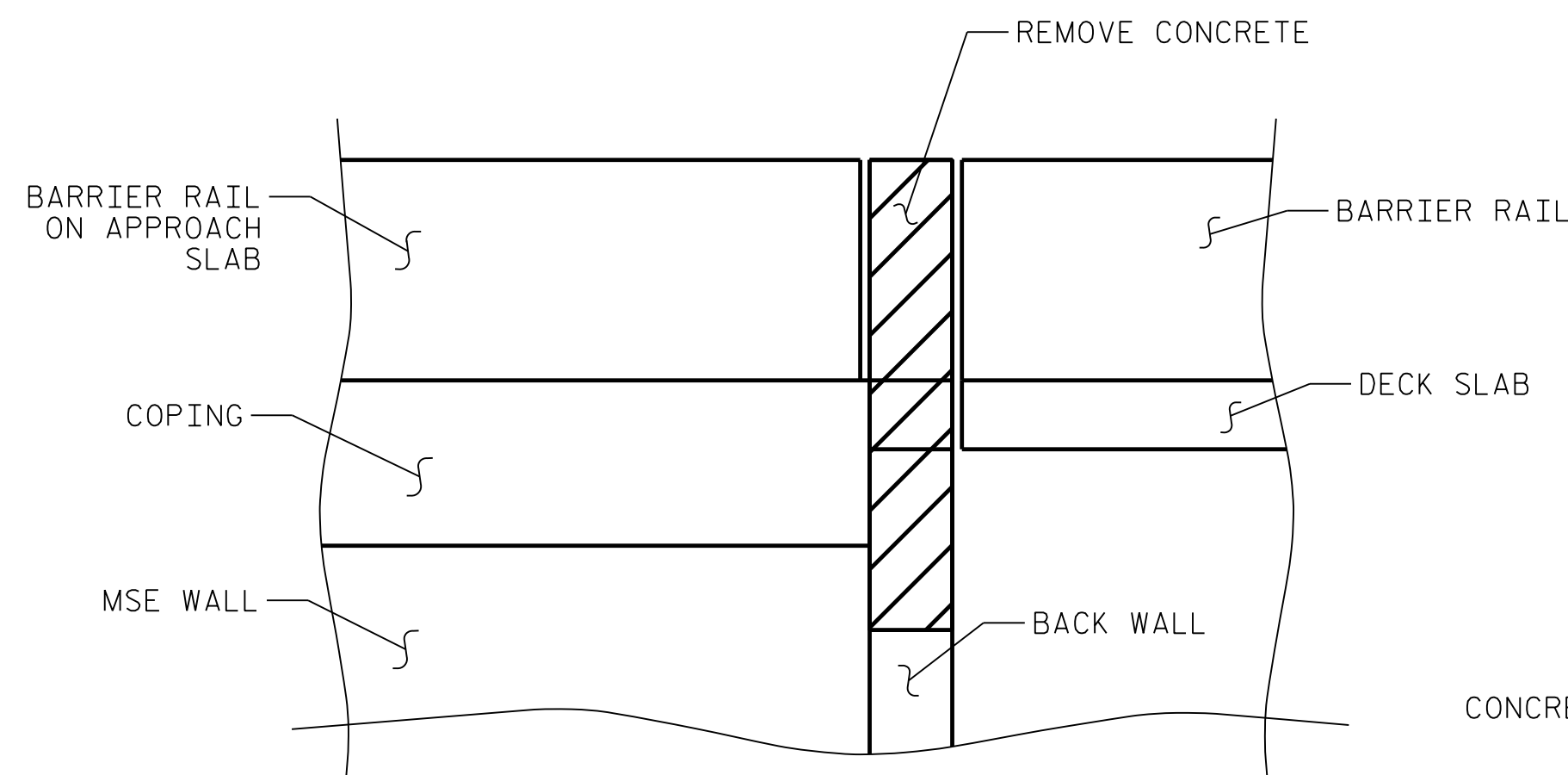
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

END BENT 1 & 2

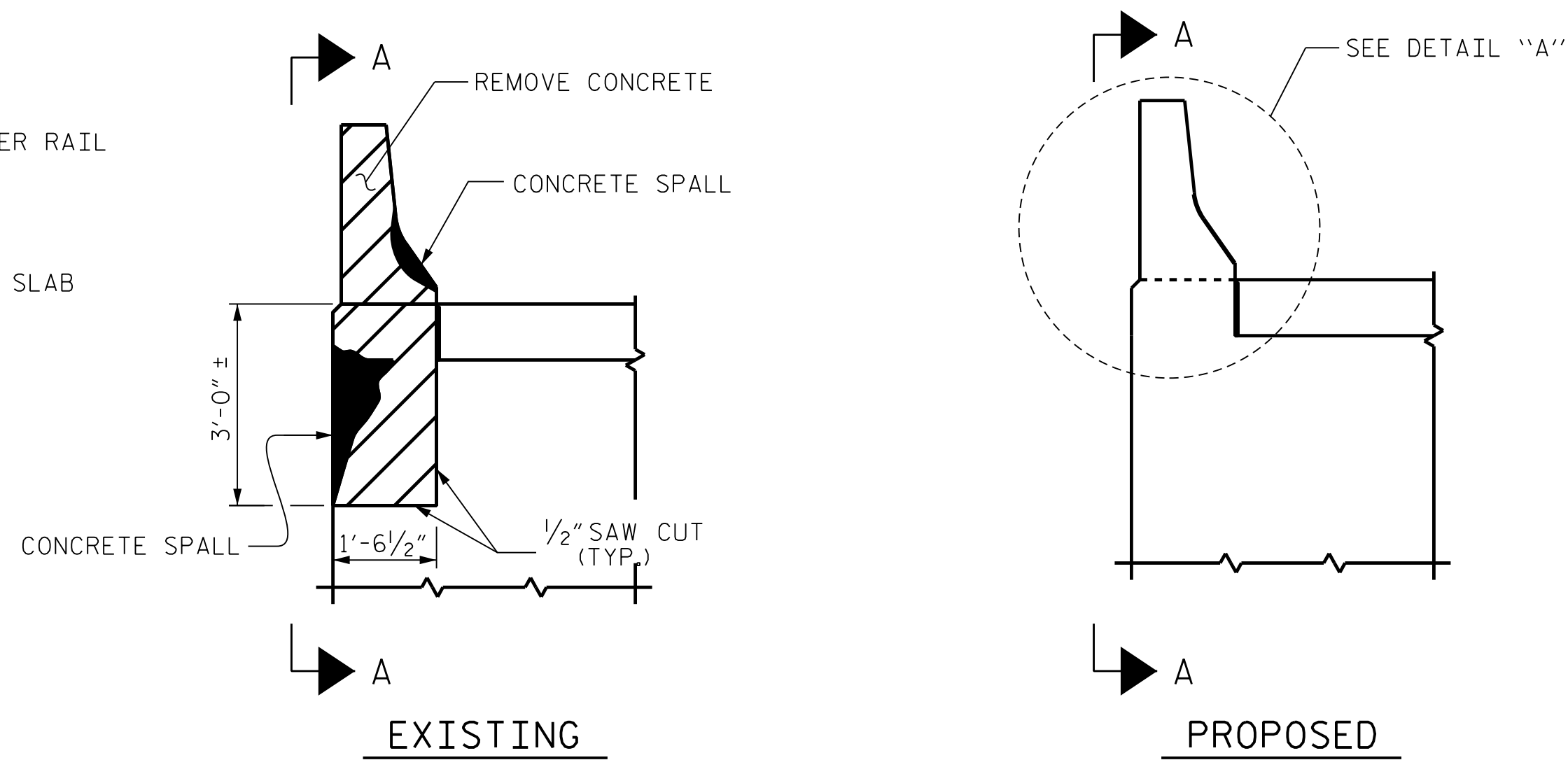
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-51
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2			4			63

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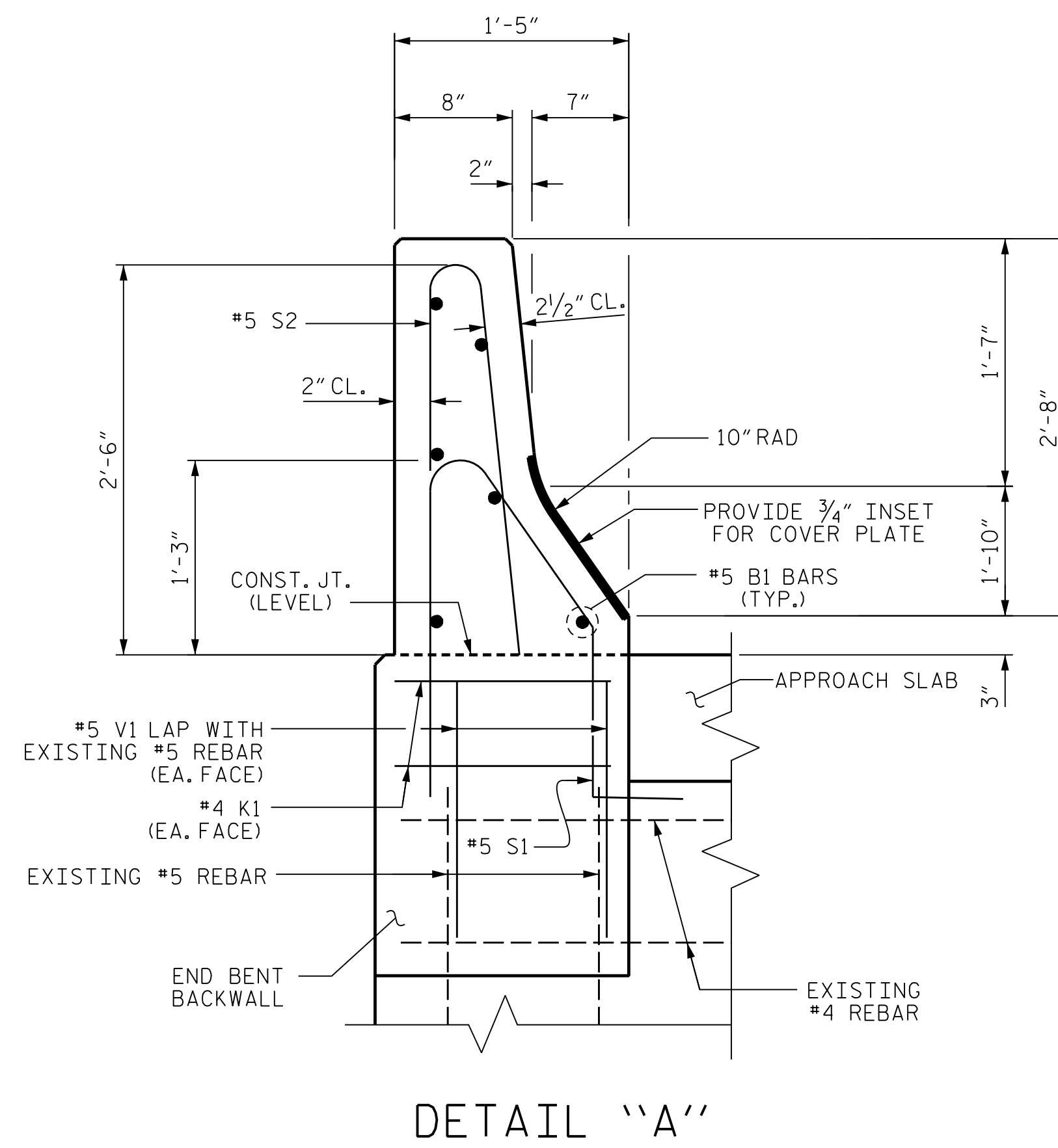
DRAWN BY : S. DHOLAKIA DATE : 7/2018  
 CHECKED BY : T. KIRSCHBAUM DATE : 7/2018  
 DESIGN ENGINEER OF RECORD : F. ASEFNIA DATE : 8/2018



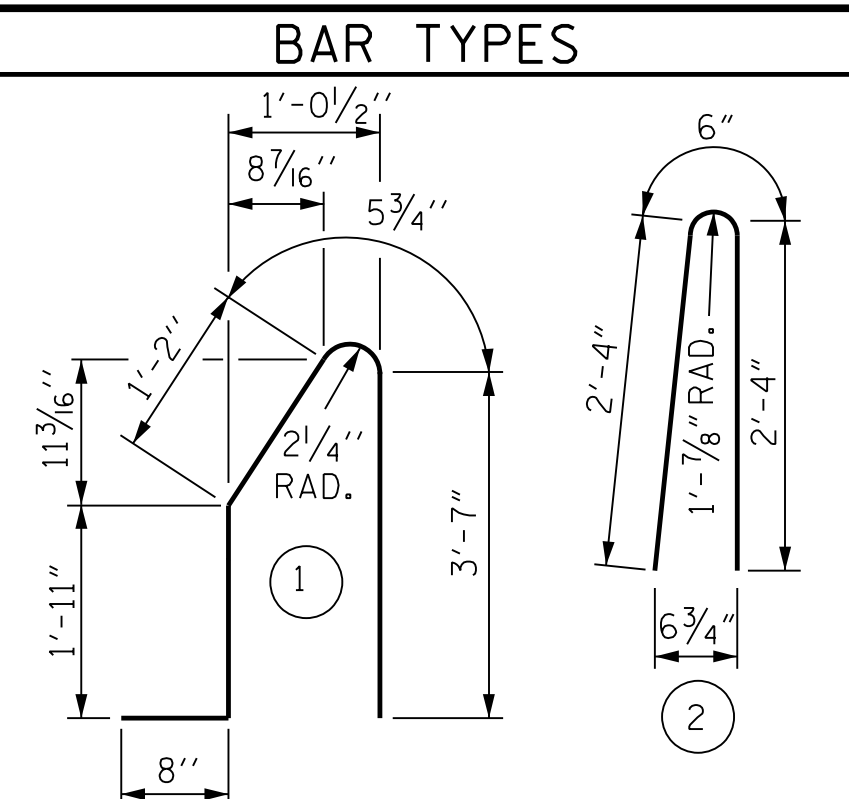
SECTION A-A



ELEVATION AT END BENT 2  
(LOOKING AT FRONT FACE OF BACKWALL)



DETAIL "A"

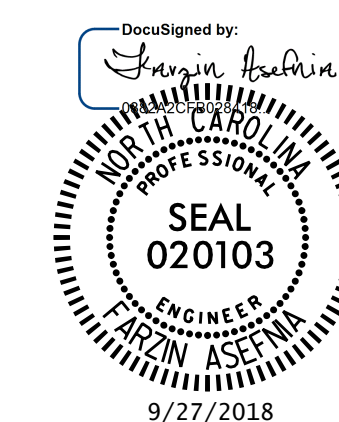


ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	6	#5	STR	8"	4
* K1	4	#4	STR	1'-2"	3
* S1	2	#5	1	7'-10"	16
* S2	2	#5	2	5'-2"	11
* V1	4	#5	STR	2'-10"	12
* EPOXY COATED REINFORCING STEEL					46 LBS.
CLASS AA CONCRETE					0.3 CU. YDS.

PROJECT NO. 15BPR.28  
MITCHELL COUNTY  
BRIDGE NO. 600247

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STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

BARRIER RAIL  
REPAIR DETAILS

REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S-52
2			4			TOTAL SHEETS 63

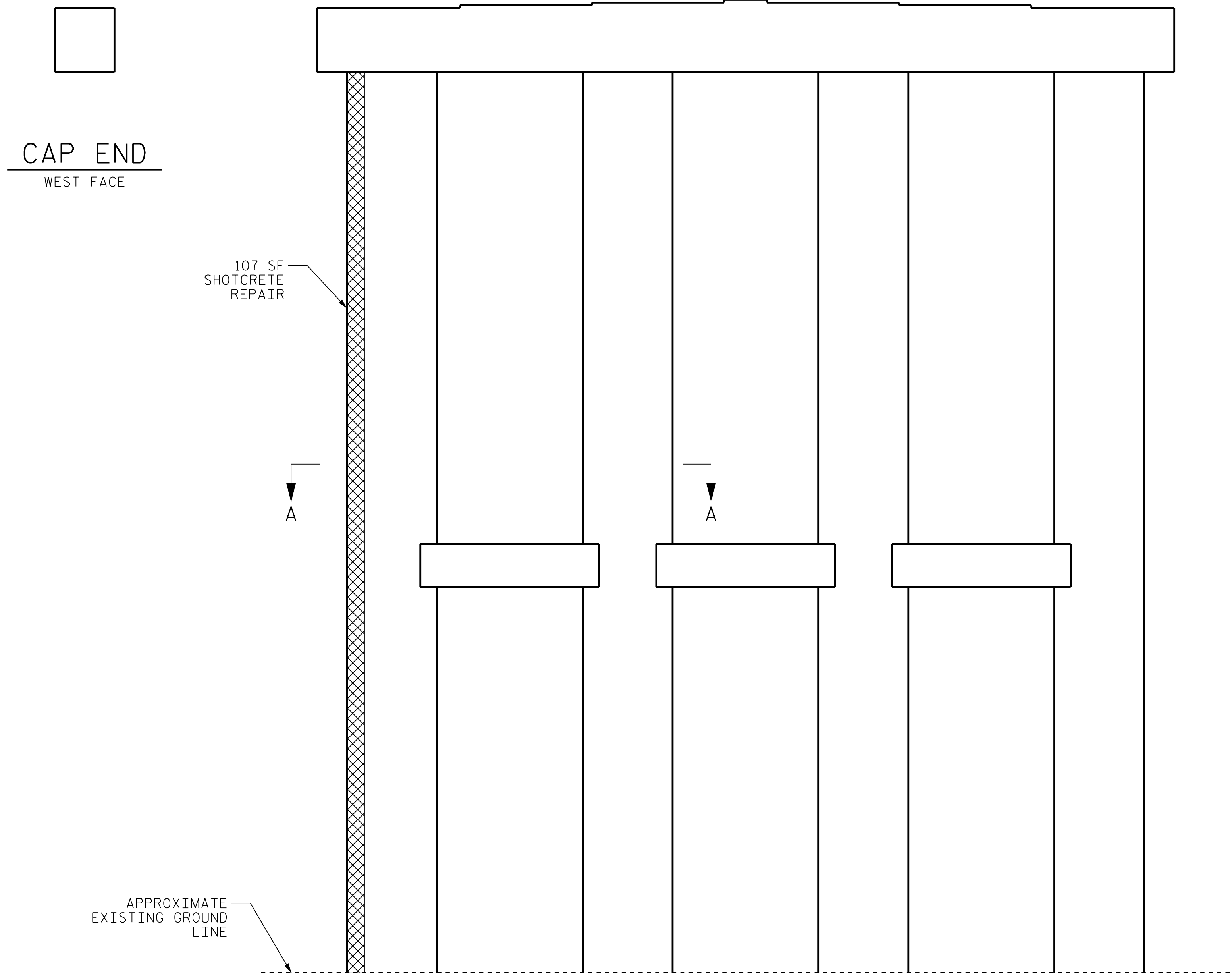


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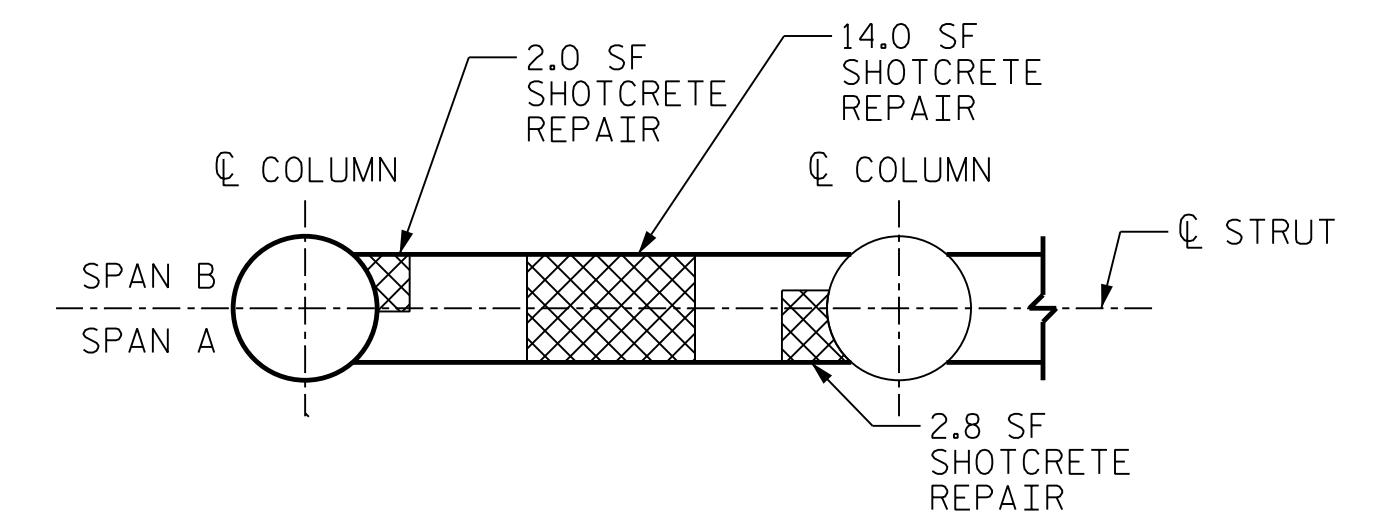
DRAWN BY : S. DHOLAKIA DATE : 8/2018  
CHECKED BY : J. YANNAKONE DATE : 8/2018  
DESIGN ENGINEER OF RECORD : F. ASEFNIA DATE : 8/2018



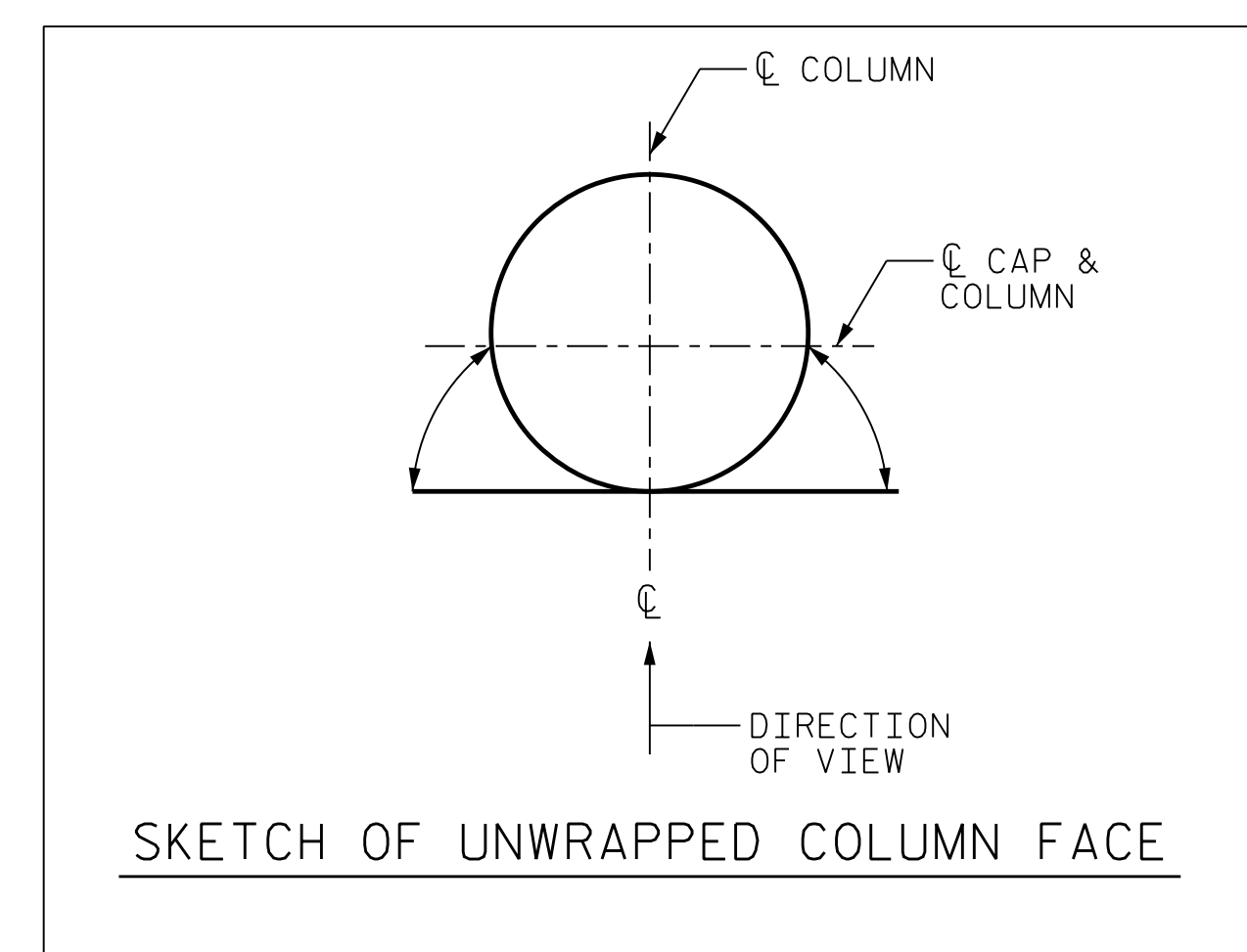
TOP OF CAP



ELEVATION  
(COLUMN FACE IS SHOWN UNWRAPPED FOR CLARITY)



SECTION A-A  
(COLUMN DAMAGE NOT SHOWN FOR CLARITY)



REPAIR QUANTITY TABLE				
REPAIRS BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	8.5	3.4		
COLUMN	591.2	255.6		
STRUT	18.8	7.7		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
COLUMN	0.0	0.0		
STRUT	0.0	0.0		
EPOXY RESIN INJECTION	LN. FT		LN. FT	
CAP	0.0			
COLUMN	0.0			
STRUT	0.0			

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL TO SAWCUT. SEE REPAIR DETAILS.

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 SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

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

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

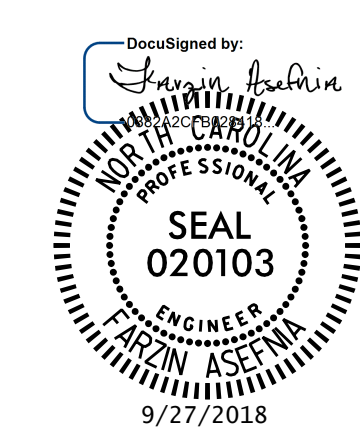
FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

- DAMAGED AREA
- EPOXY RESIN INJECTION

PROJECT NO. 15BPR.28  
MITCHELL COUNTY  
 BRIDGE NO. 600247

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SHEET 1 OF 2



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

**SUBSTRUCTURE  
BENT 1  
SPAN A FACE**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-53
1			3			TOTAL SHEETS
2			4			63

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 DESIGN ENGINEER OF RECORD : F. ASEFNIA DATE : 8/2018



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 SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

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

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

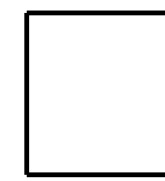
FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

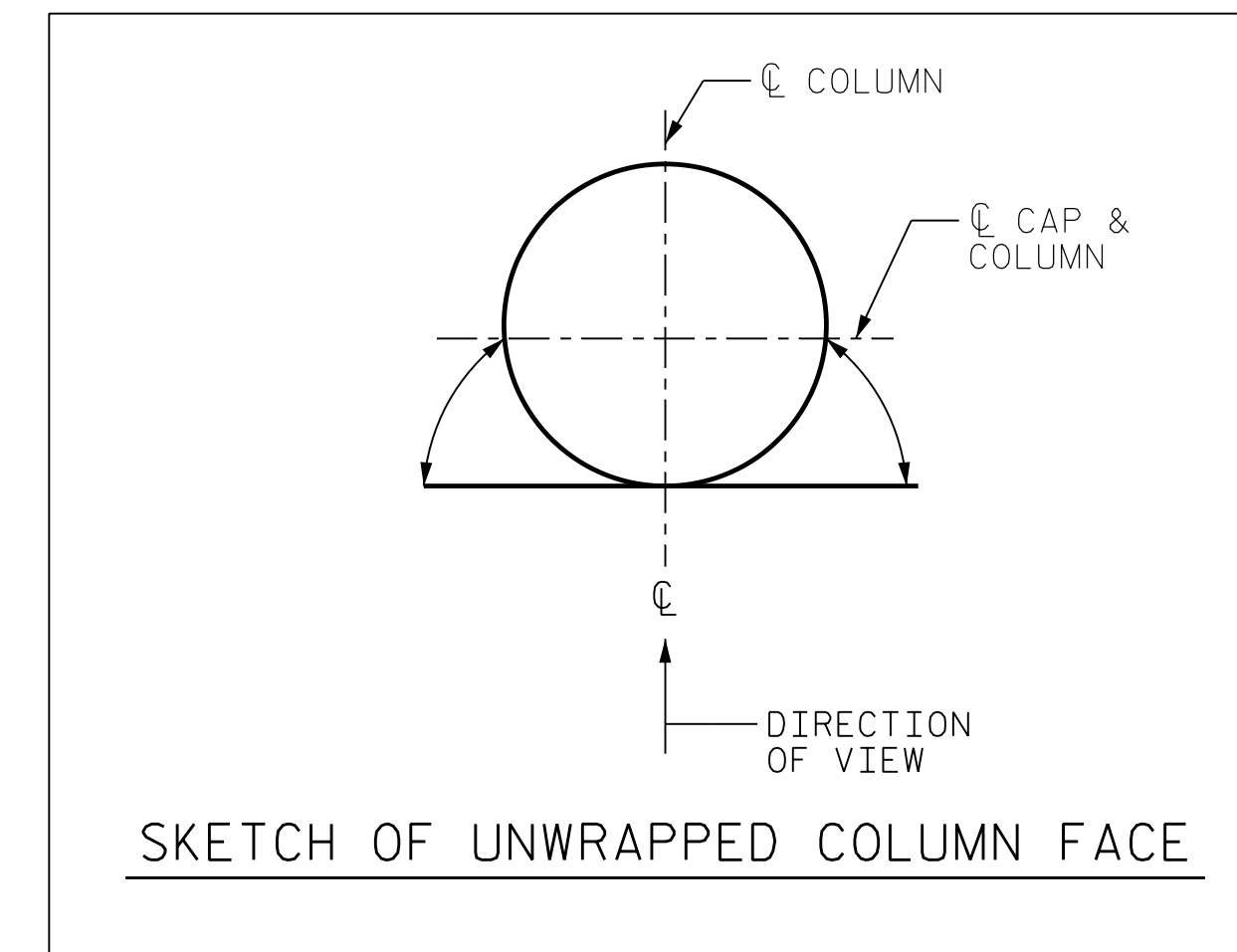
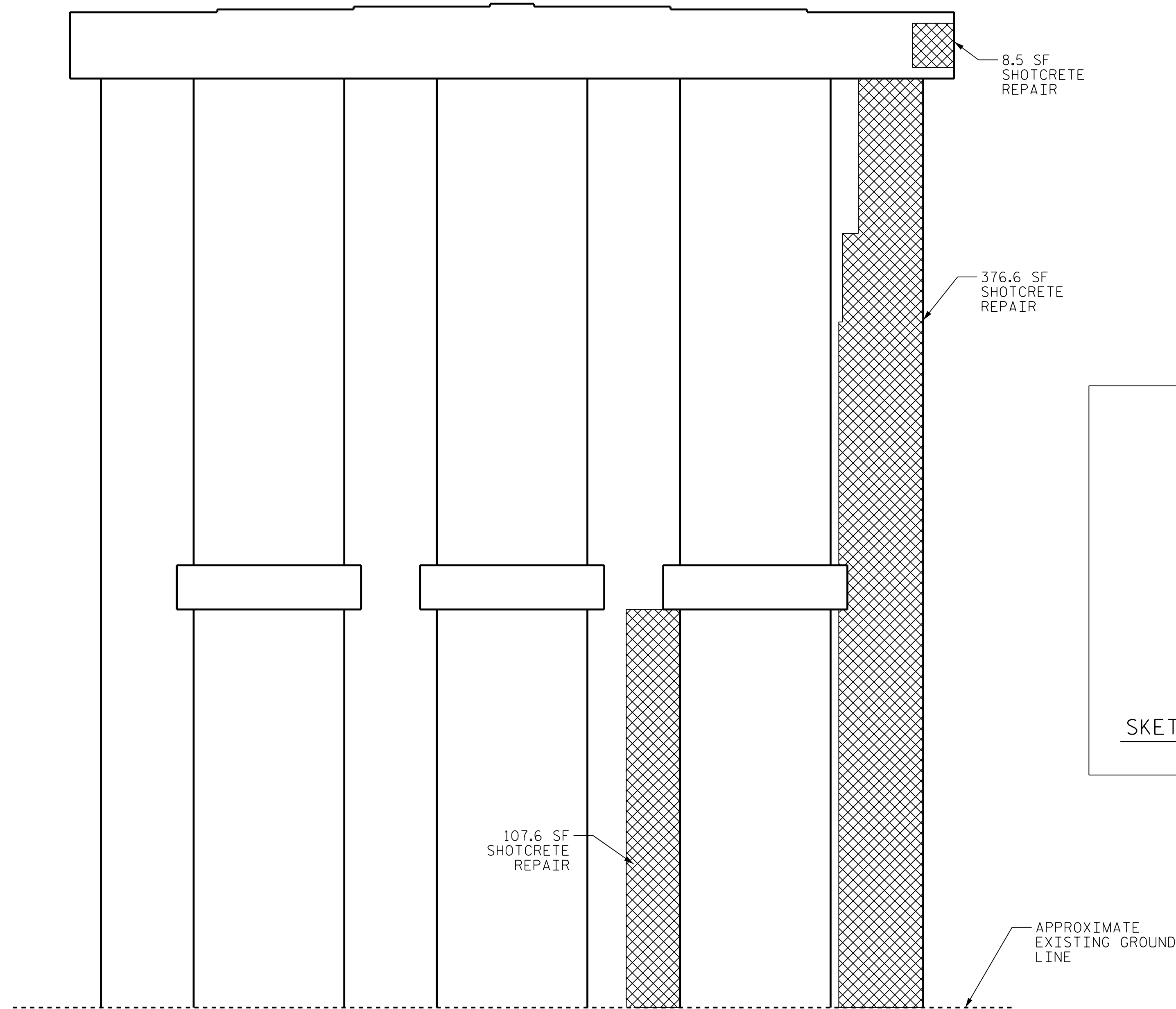
 DAMAGED AREA

 EPOXY RESIN INJECTION



BOTTOM OF CAP

  
CAP END  
EAST FACE



ELEVATION  
(COLUMN FACE IS SHOWN UNWRAPPED FOR CLARITY)

PROJECT NO. 15BPR.28  
MITCHELL COUNTY  
BRIDGE NO. 600247

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SHEET 2 OF 2



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE  
BENT 1  
SPAN B FACE

REVISIONS

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

SHEET NO.  
S-54  
TOTAL SHEETS  
63



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CHECKED BY : T. KIRSCHBAUM DATE : 7/2018  
DESIGN ENGINEER OF RECORD : F. ASEFNIA DATE : 8/2018



TOP OF CAP

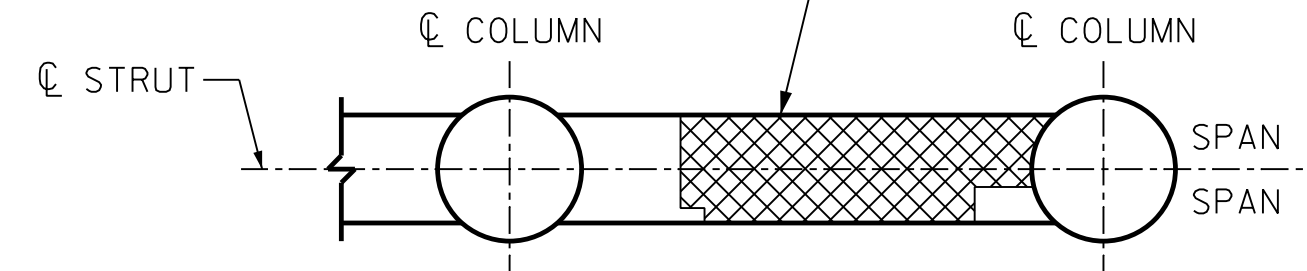
CAP END  
WEST FACE

193.3 SF SHOTCRETE REPAIR

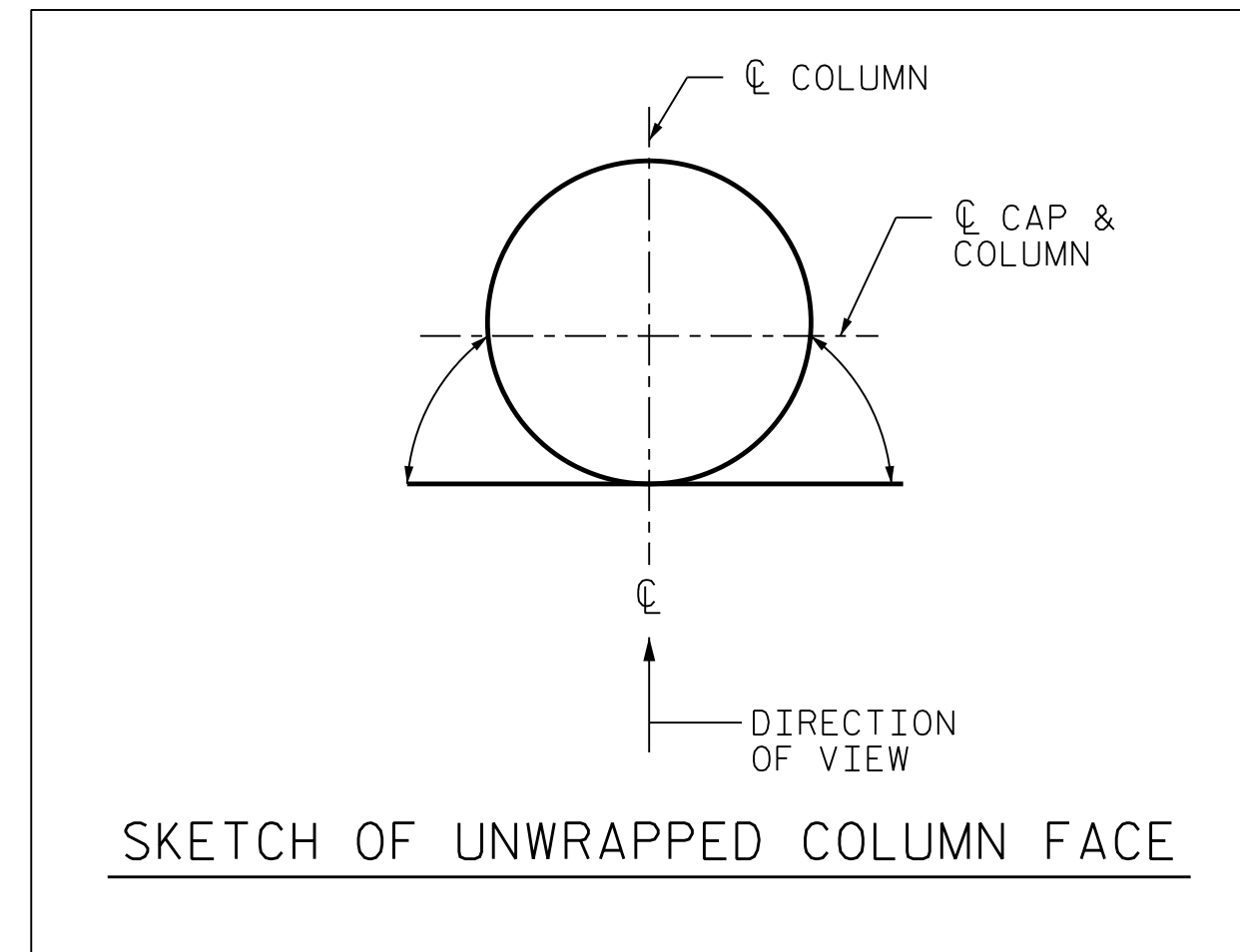
APPROXIMATE EXISTING GROUND LINE

VEGETATIVE COVER (TO BE REMOVED)

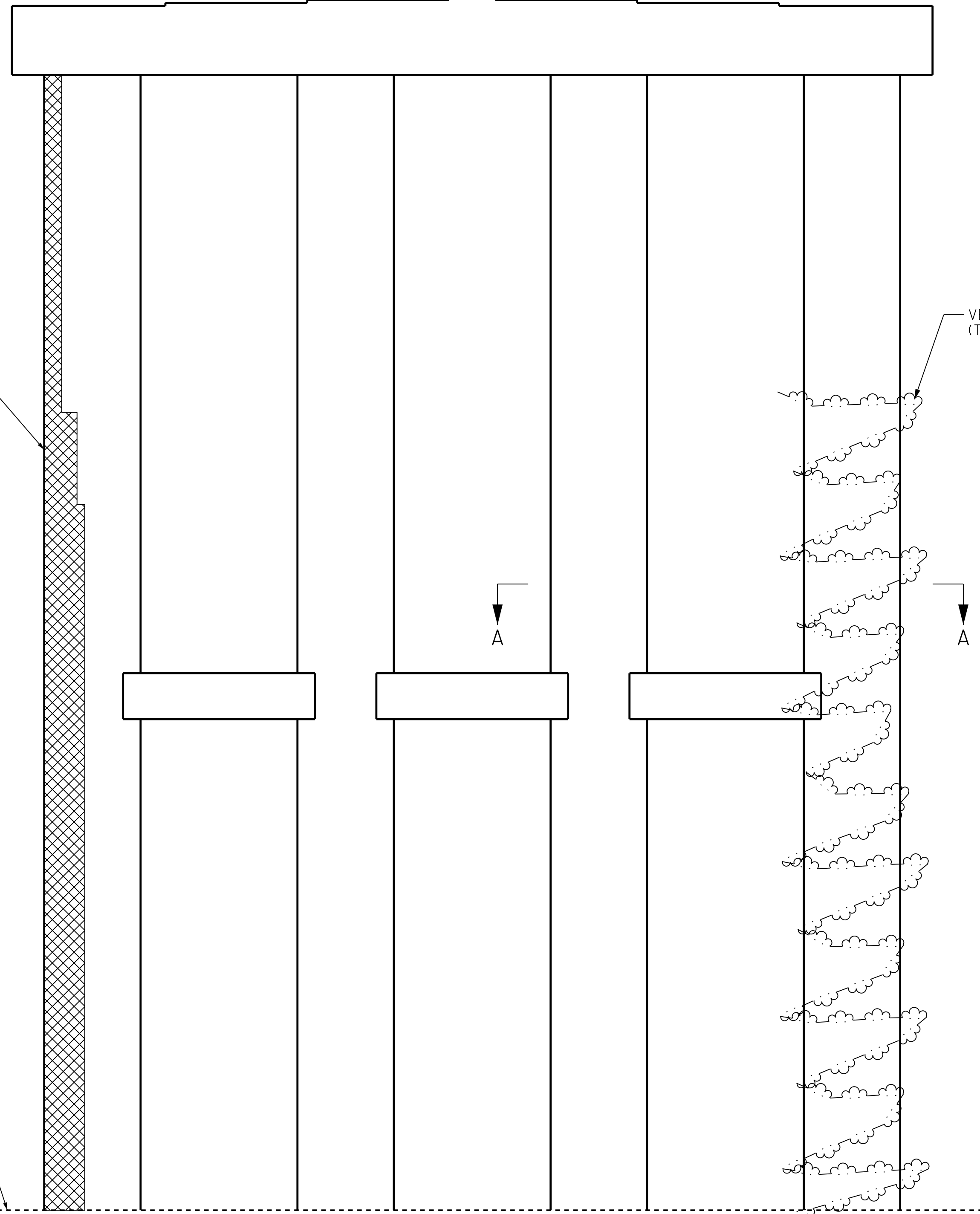
28.0 SF SHOTCRETE REPAIR



SECTION A-A



SKETCH OF UNWRAPPED COLUMN FACE



ELEVATION

(COLUMN FACE IS SHOWN UNWRAPPED FOR CLARITY)

REPAIR QUANTITY TABLE

REPAIRS BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	20.4	8.4		
COLUMN	737.7	319.0		
STRUT	28.0	11.5		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
COLUMN	0.0	0.0		
STRUT	0.0	0.0		
EPOXY RESIN INJECTION		LN. FT		LN. FT
CAP		0.0		
COLUMN		6.0		
STRUT		0.0		

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL TO SAWCUT. SEE REPAIR DETAILS.

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 SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

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

THE CONTRACTOR SHALL REMOVE THE VEGETATION GROWING ON THE COLUMN OF THE BENT DOWN TO THE GROUND LINE. NO SEPARATE PAYMENT WILL BE MADE FOR REMOVAL OF VEGETATION, AS PAYMENT IS INCLUDED IN THE CONTRACT UNIT PRICE BID FOR "EPOXY COATING AND DEBRIS REMOVAL"

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

DAMAGED AREA

EPOXY RESIN INJECTION

PROJECT NO. 15BPR.28  
MITCHELL COUNTY  
 BRIDGE NO. 600247

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SHEET 1 OF 2



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE  
BENT 2  
SPAN B FACE



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-55
1			3			TOTAL SHEETS
2			4			63

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 CHECKED BY : J. YANNAKONE DATE : 7/2018  
 DESIGN ENGINEER OF RECORD : F. ASEFNIA DATE : 8/2018

**NOTES**

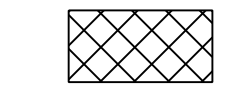
REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES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

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THE CONTRACTOR SHALL REMOVE THE VEGETATION GROWING ON THE COLUMN OF THE BENT DOWN TO THE GROUND LINE. NO SEPARATE PAYMENT WILL BE MADE FOR REMOVAL OF VEGETATION, AS PAYMENT IS INCLUDED IN THE CONTRACT UNIT PRICE BID FOR "EPOXY COATING AND DEBRIS REMOVAL"

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

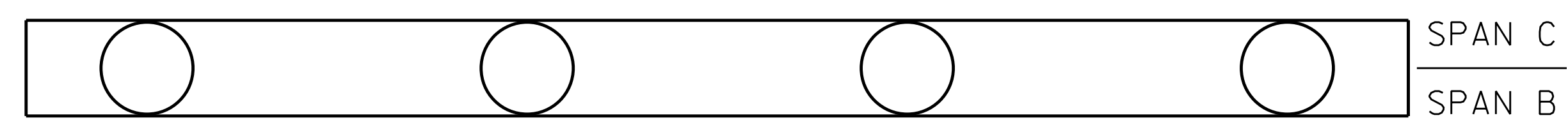
FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS,



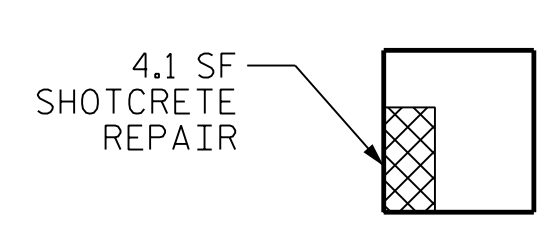
DAMAGED AREA



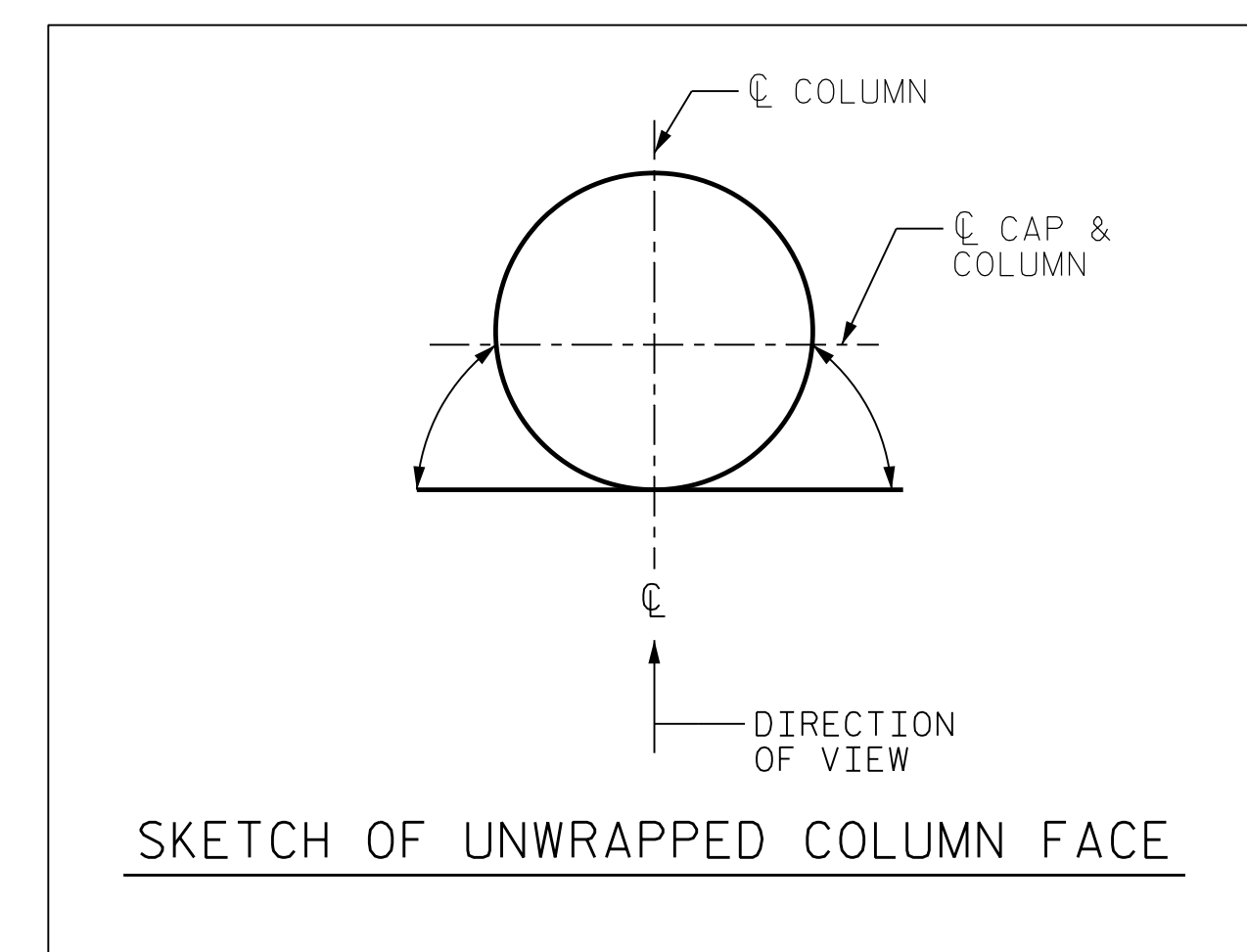
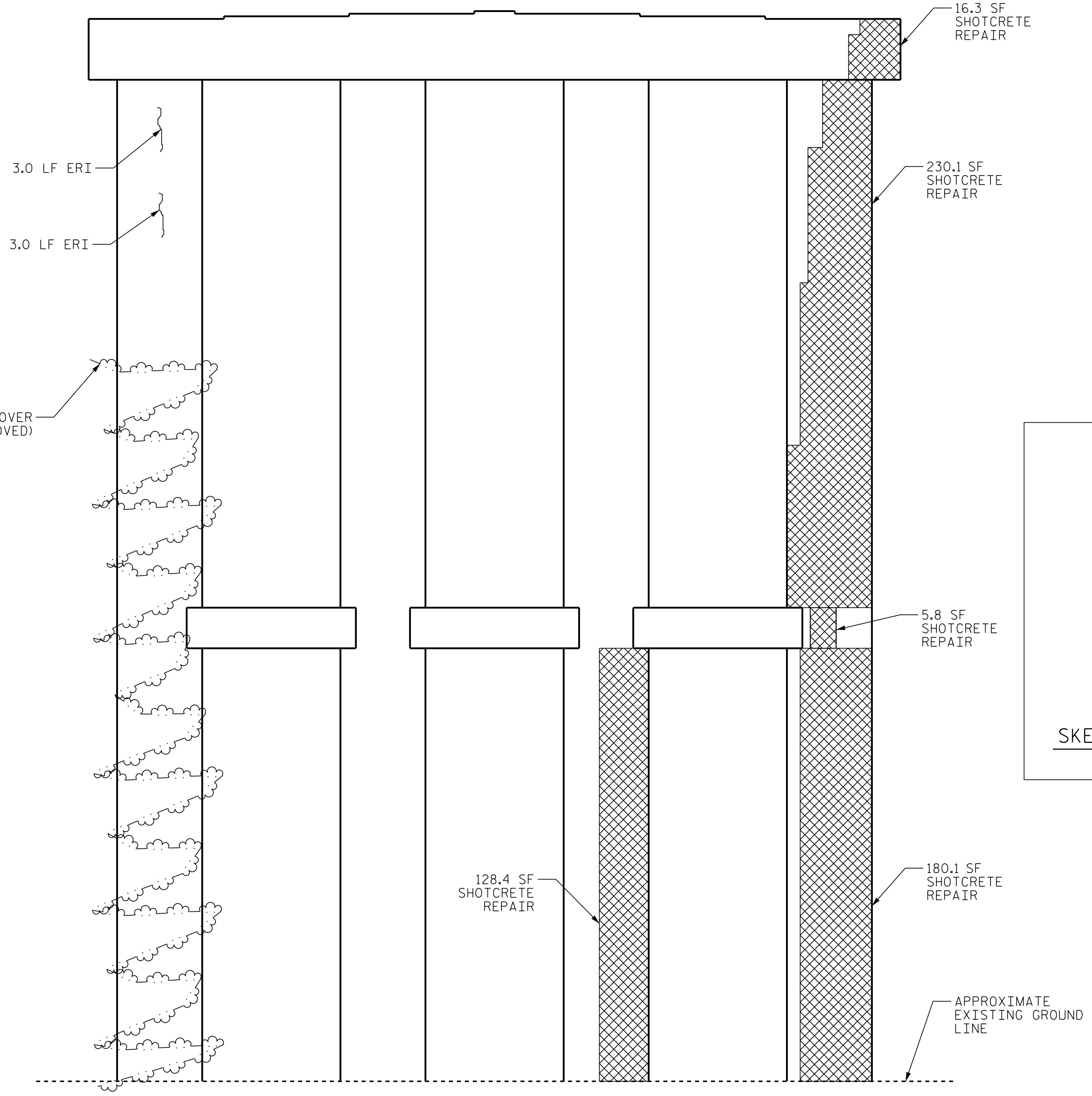
EPOXY RESIN INJECTION



BOTTOM OF CAP



CAP END  
EAST FACE

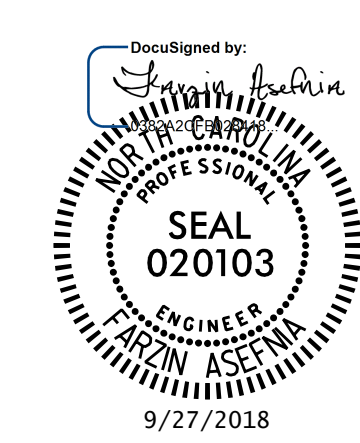


ELEVATION  
(COLUMN FACE IS SHOWN UNWRAPPED FOR CLARITY)

PROJECT NO. 15BPR.28  
MITCHELL COUNTY  
BRIDGE NO. 600247

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SHEET 2 OF 2



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE  
BENT 2  
SPAN C FACE

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



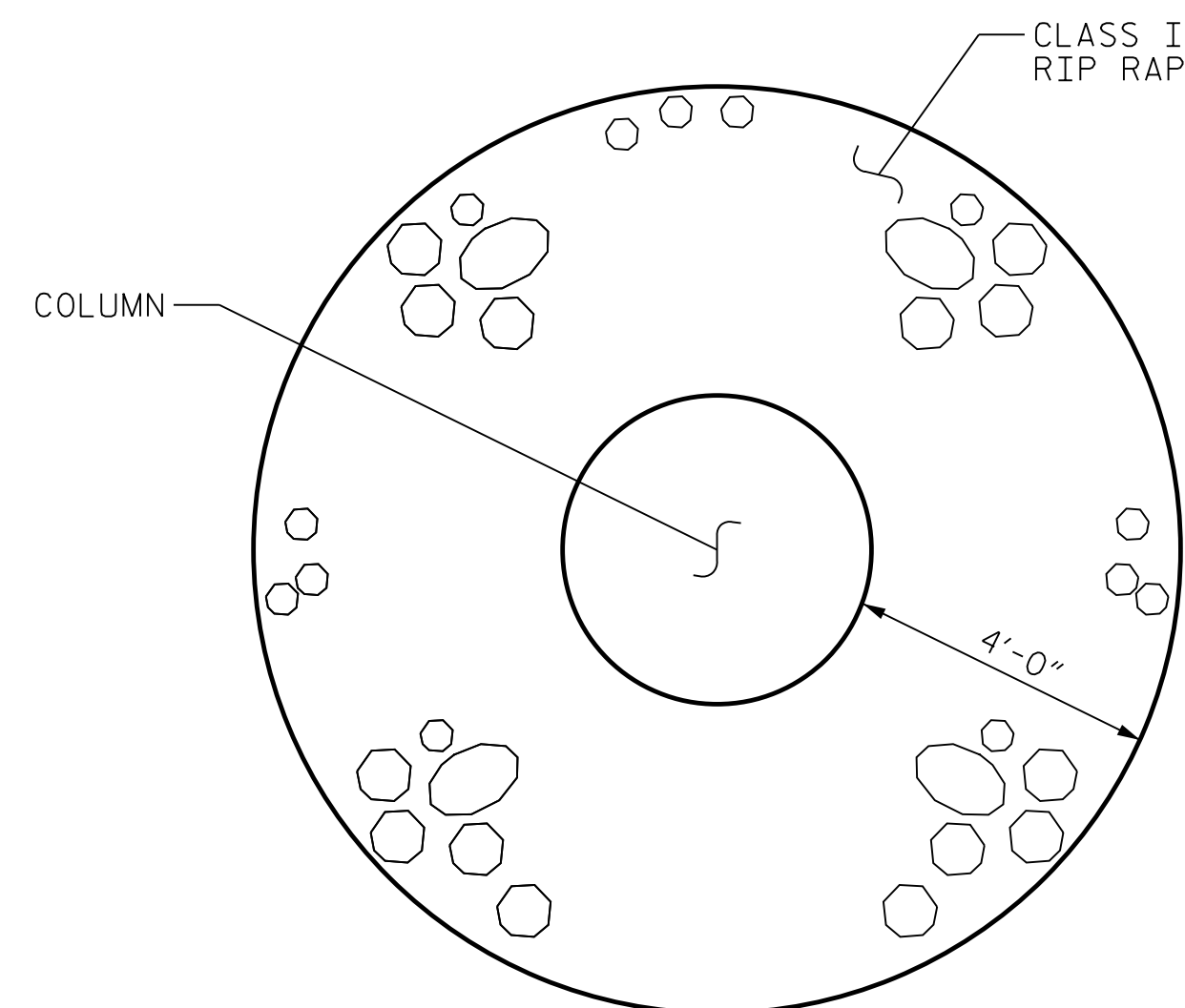
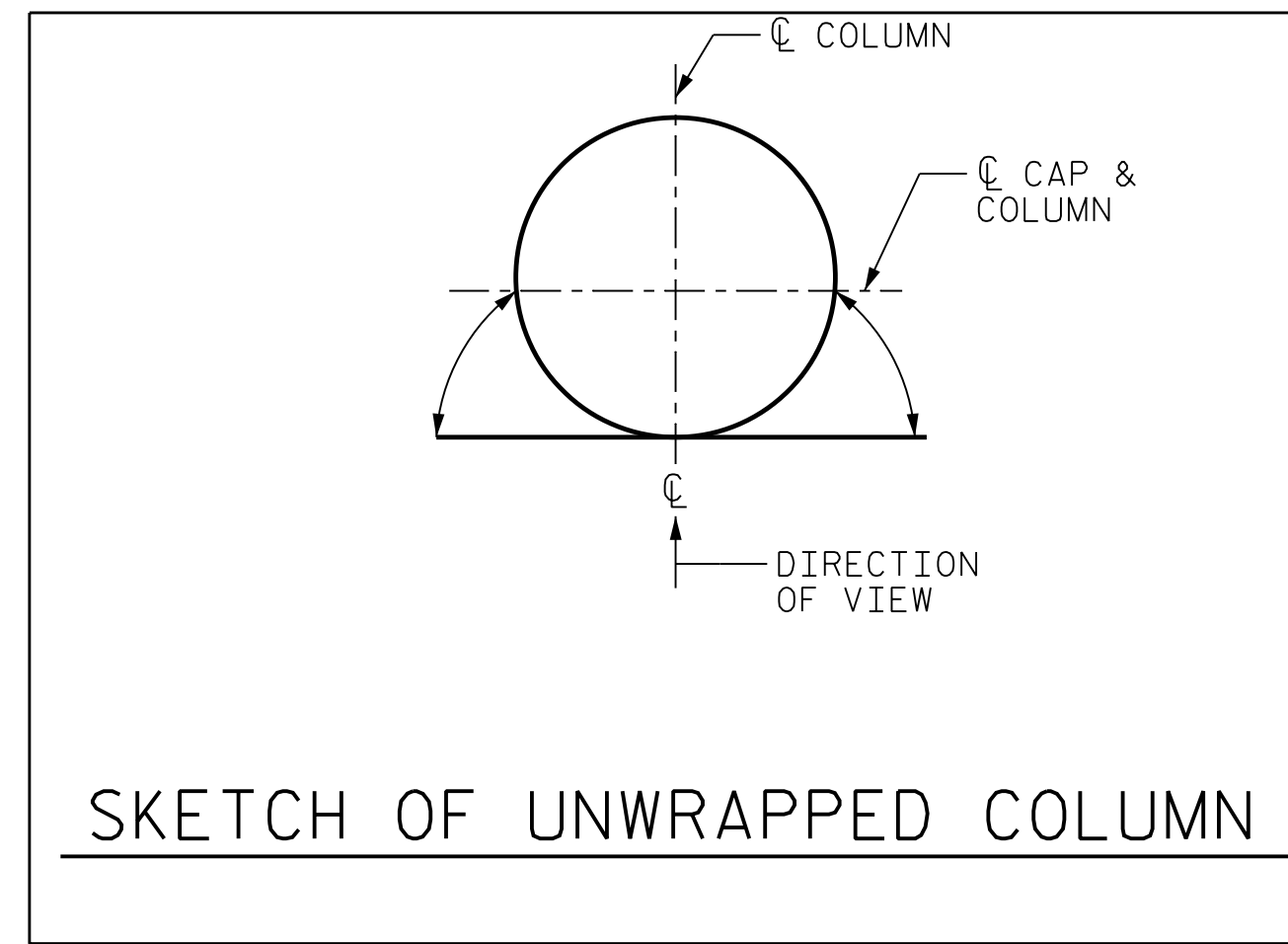
TOTAL SHEETS  
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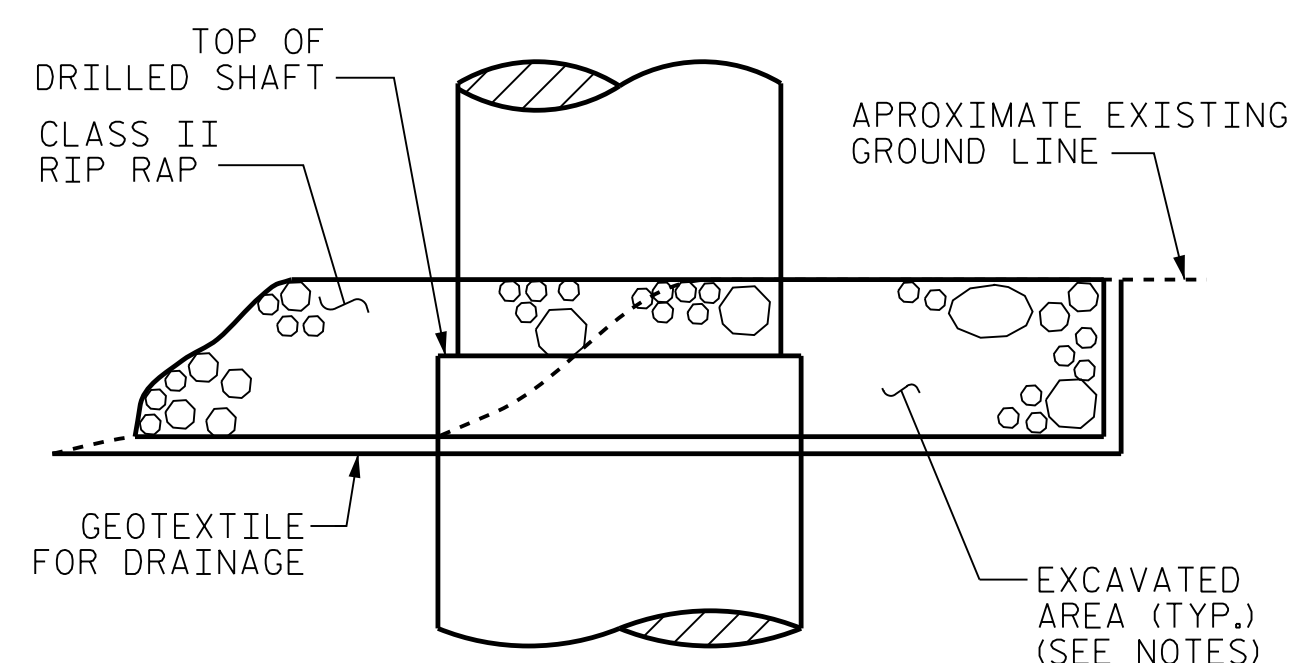
DRAWN BY : S. DHOLAKIA DATE : 7/2018  
CHECKED BY : J. YANNAACONE DATE : 7/2018  
DESIGN ENGINEER OF RECORD : F. ASEFNIA DATE : 8/2018



TOP OF CAP



SECTION A-A



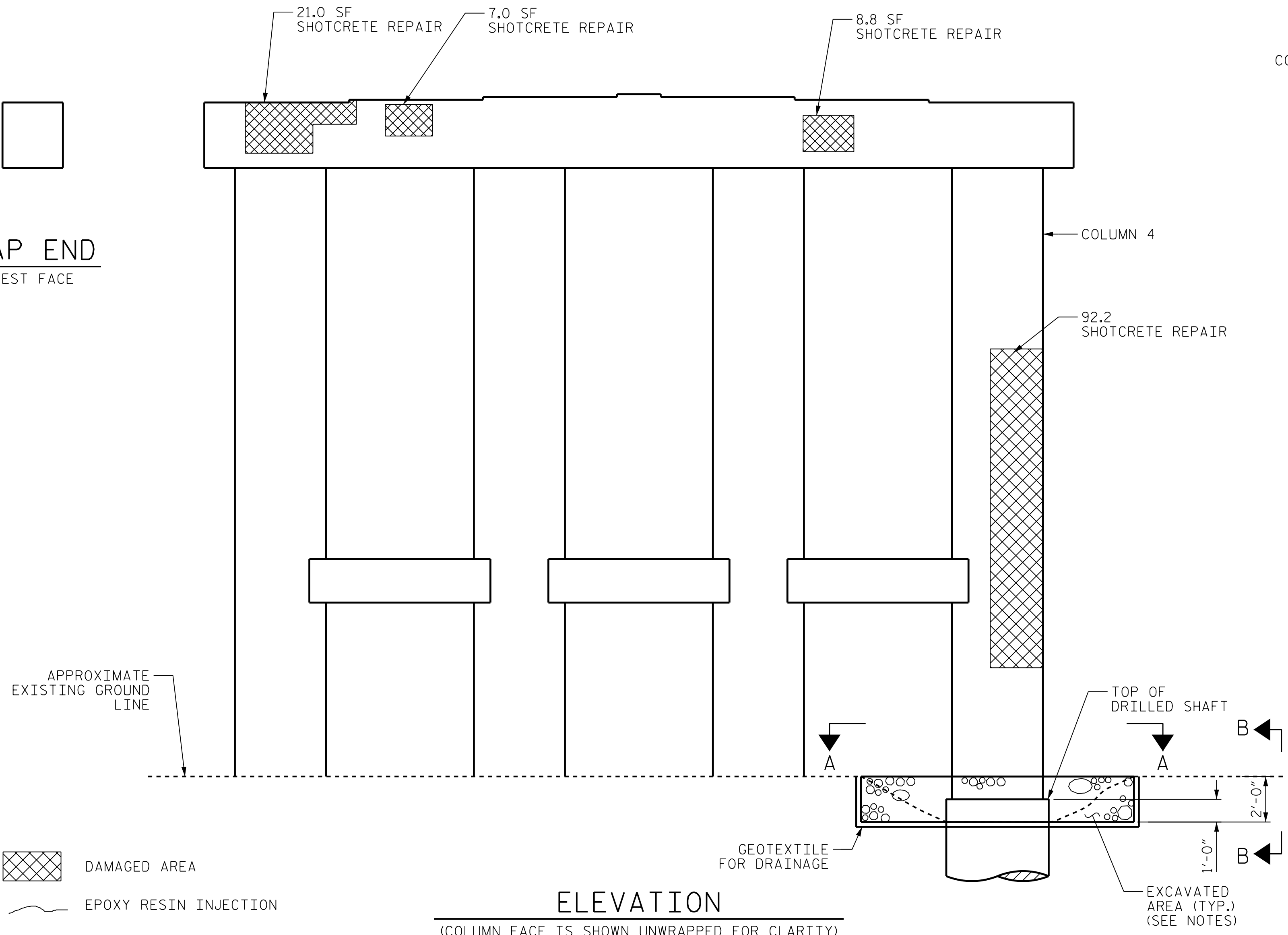
SECTION B-B

REPAIR QUANTITY TABLE				
REPAIRS BENT 3	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	36.8	14.8		
COLUMN	92.2	40.0		
STRUT	0.0	0.0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
COLUMN	0.0	0.0		
STRUT	0.0	0.0		
EPOXY RESIN INJECTION	LN. FT.		LN. FT.	
CAP	0.0			
COLUMN	3.0			
STRUT	0.0			
RIP RAP, CLASS II 2'-0" THICK	TONS		TONS	
COLUMN	10.0			
GEOTEXTILE FOR DRAINAGE	SQ. YDS.		SQ. YDS.	
COLUMN	11			

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL TO SAWCUT. SEE REPAIR DETAILS.

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 SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

FOR REPAIRS, SEE "TYPICAL CAP AND COLUMN REPAIR DETAILS" SHEET.  
REMOVE EXISTING SOIL AROUND COLUMN 4 AS SHOWN. BOTTOM OF EXCAVATION SHALL BE LEVEL. REPLACE WITH GEOTEXTILE AND CLASS II RIP RAP. PLACE GEOTEXTILE UNDER THE RIP RAP AS SHOWN IN THE ROADWAY STANDARD DRAWINGS.  
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.  
FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.



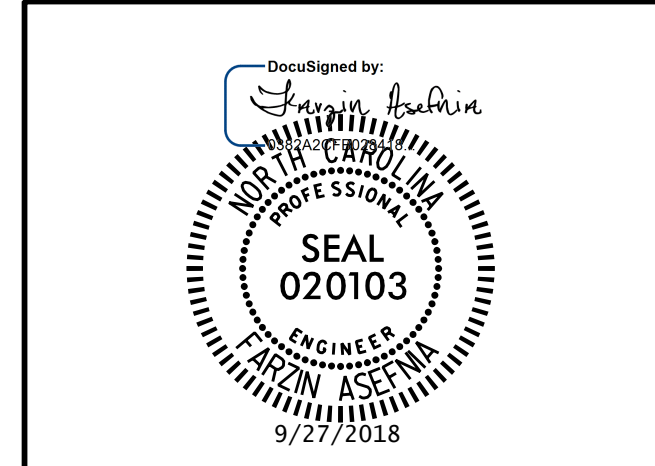
ELEVATION

(COLUMN FACE IS SHOWN UNWRAPPED FOR CLARITY)

DAMAGED AREA  
EPOXY RESIN INJECTION

PROJECT NO. 15BPR.28  
MITCHELL COUNTY  
BRIDGE NO. 600247

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STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
SUBSTRUCTURE  
BENT 3  
SPAN C FACE

REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			63

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DRAWN BY : S. DHOLAKIA DATE : 7/2018  
CHECKED BY : J. YANNAKONE DATE : 7/2018  
DESIGN ENGINEER OF RECORD : F. ASEFNIA DATE : 8/2018

NOTES

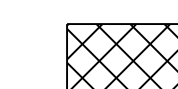
REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES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

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REMOVE EXISTING SOIL AROUND COLUMN 4 AS SHOWN. BOTTOM OF EXCAVATION SHALL BE LEVEL. REPLACE WITH GEOTEXTILE AND CLASS II RIP RAP. PLACE GEOTEXTILE UNDER THE RIP RAP AS SHOWN IN THE ROADWAY STANDARD DRAWINGS

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.



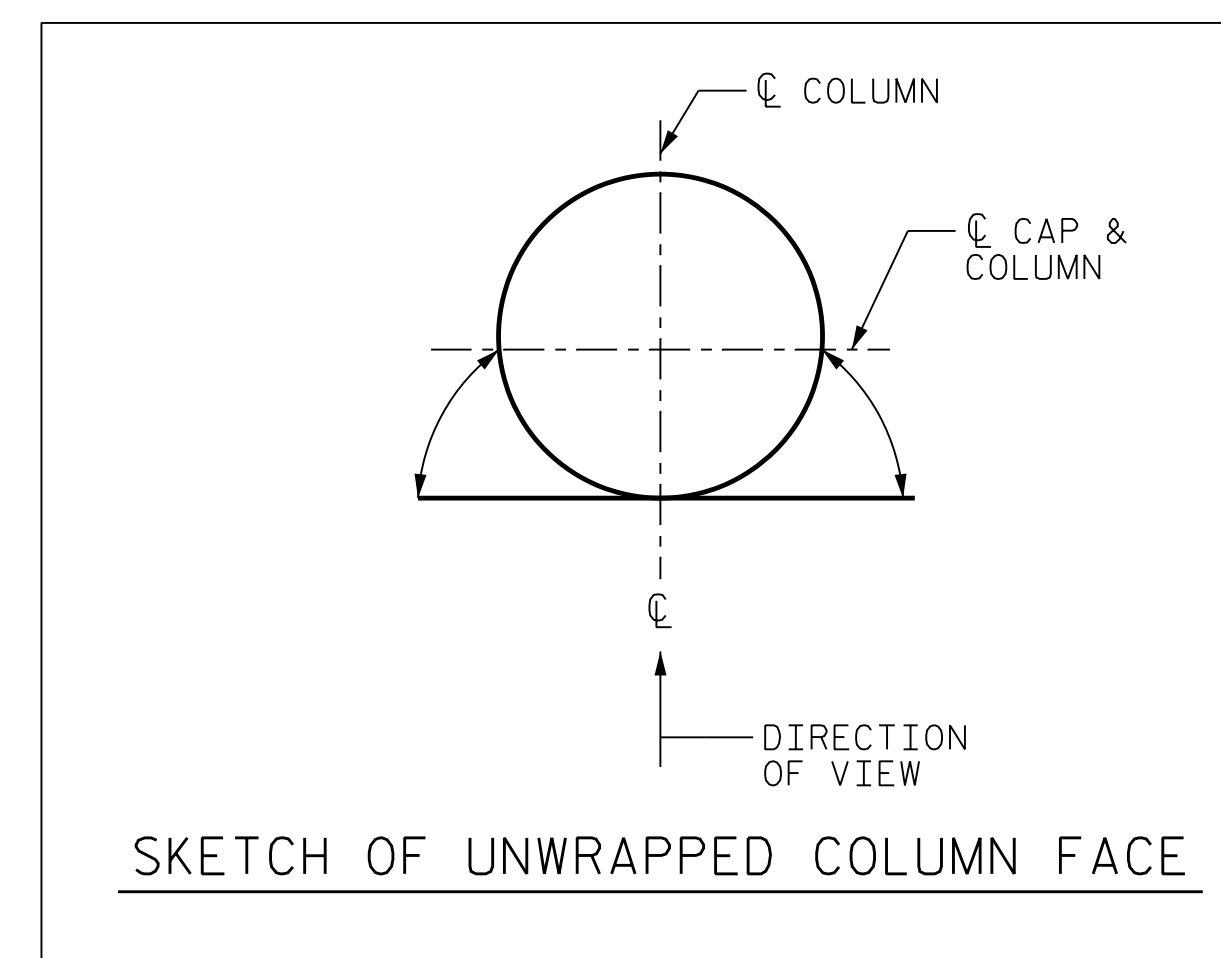
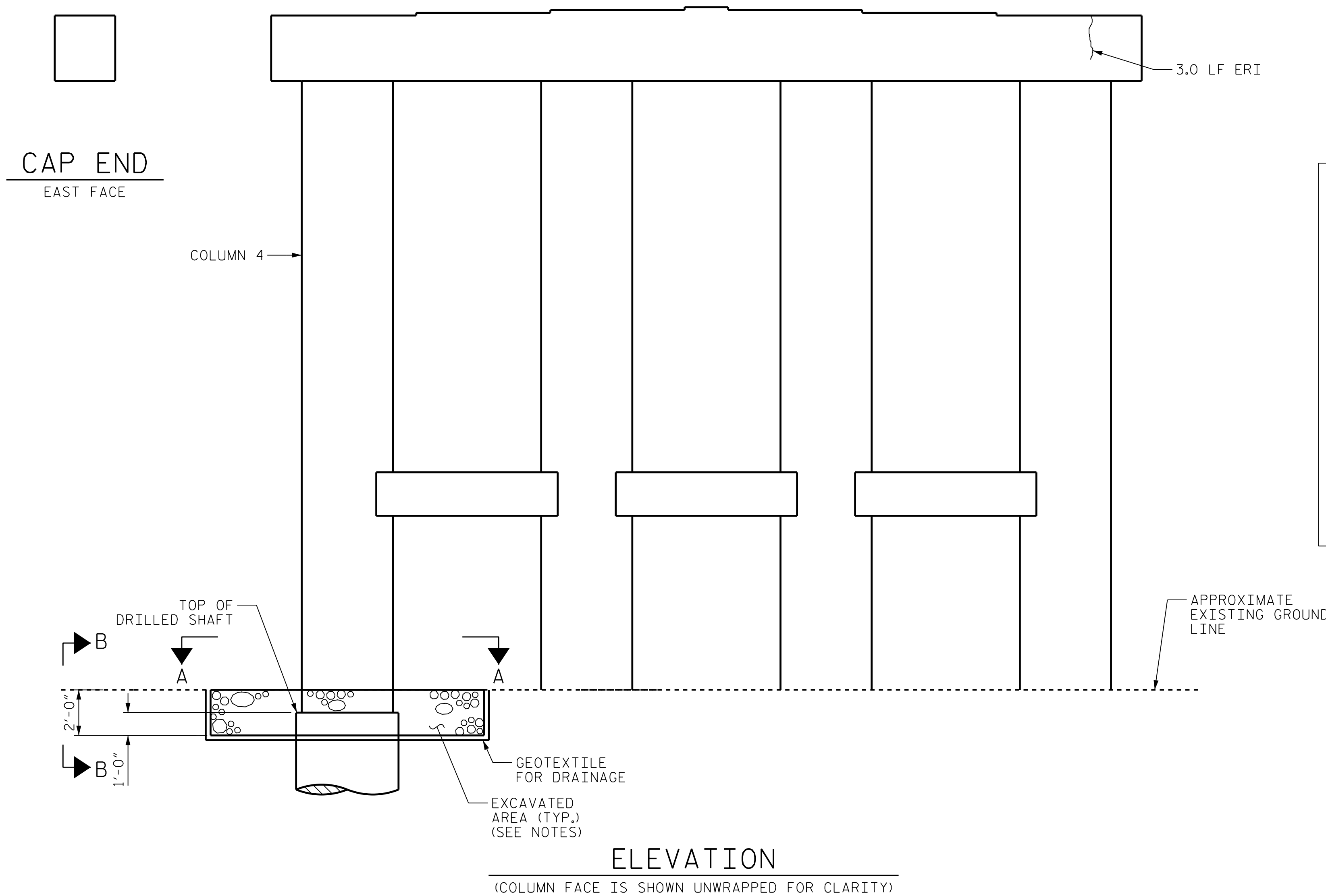
DAMAGED AREA



EPOXY RESIN INJECTION



BOTTOM OF CAP

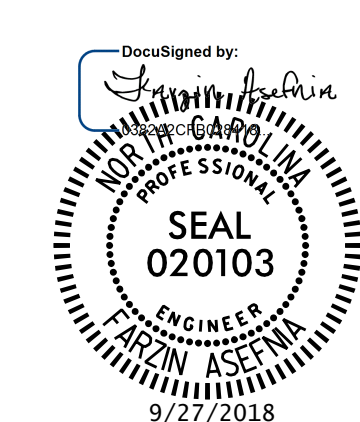


SKETCH OF UNWRAPPED COLUMN FACE

PROJECT NO. 15BPR.28  
MITCHELL COUNTY  
 BRIDGE NO. 600247

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SHEET 2 OF 2



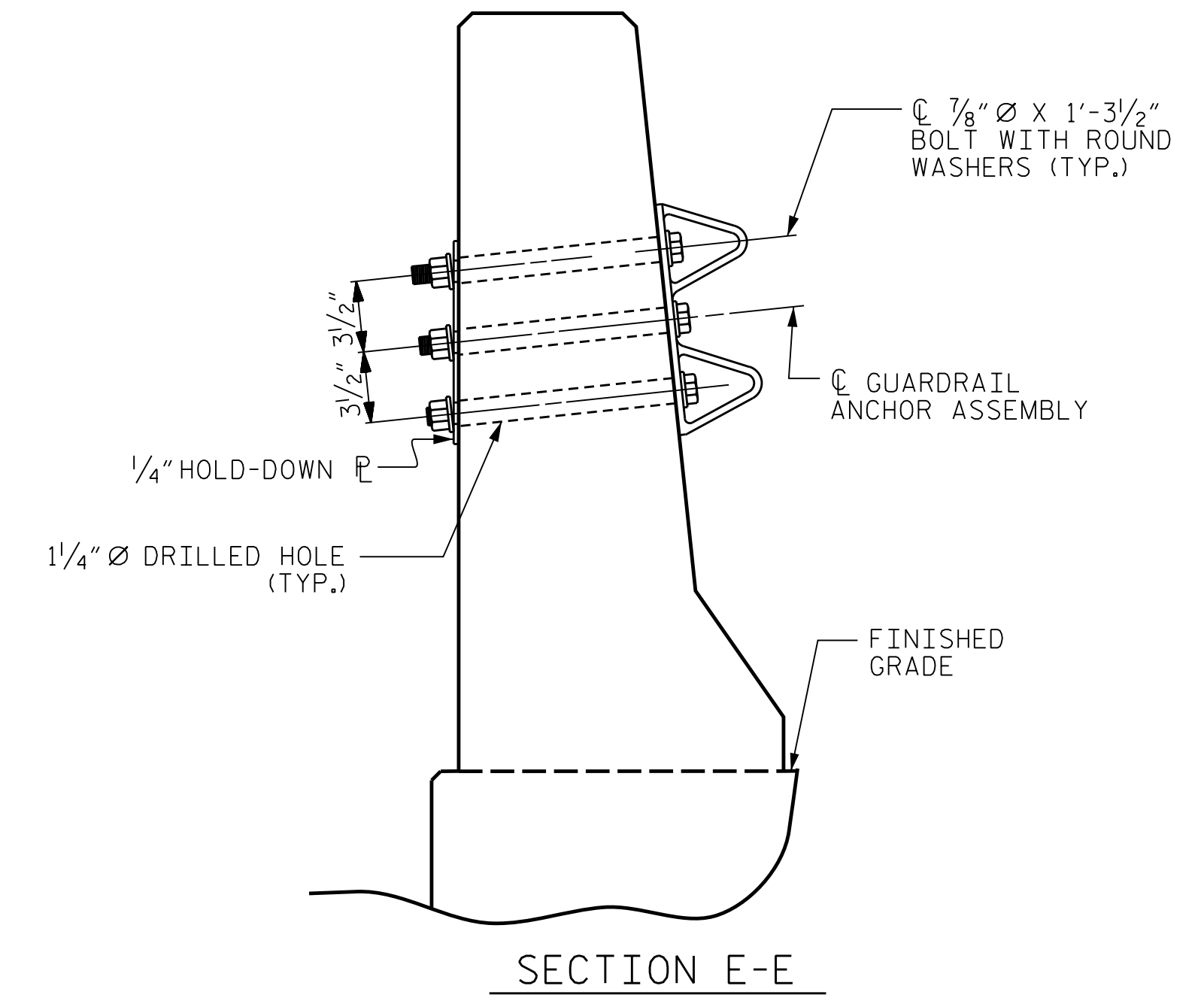
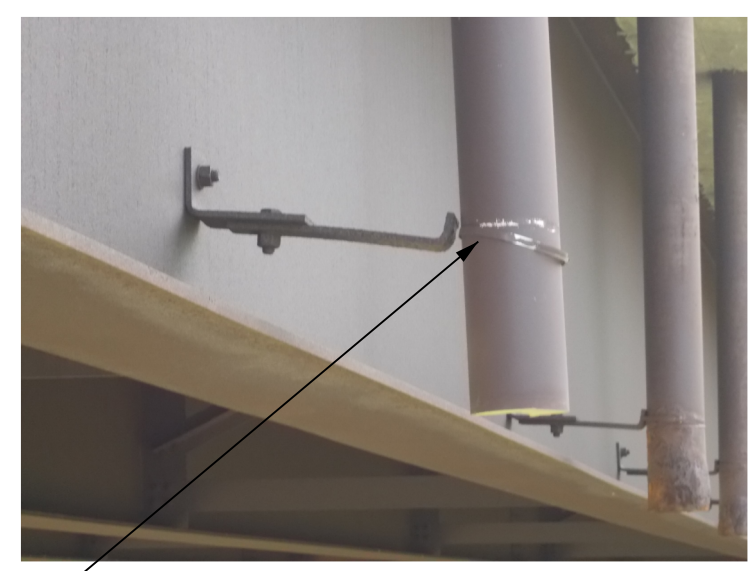
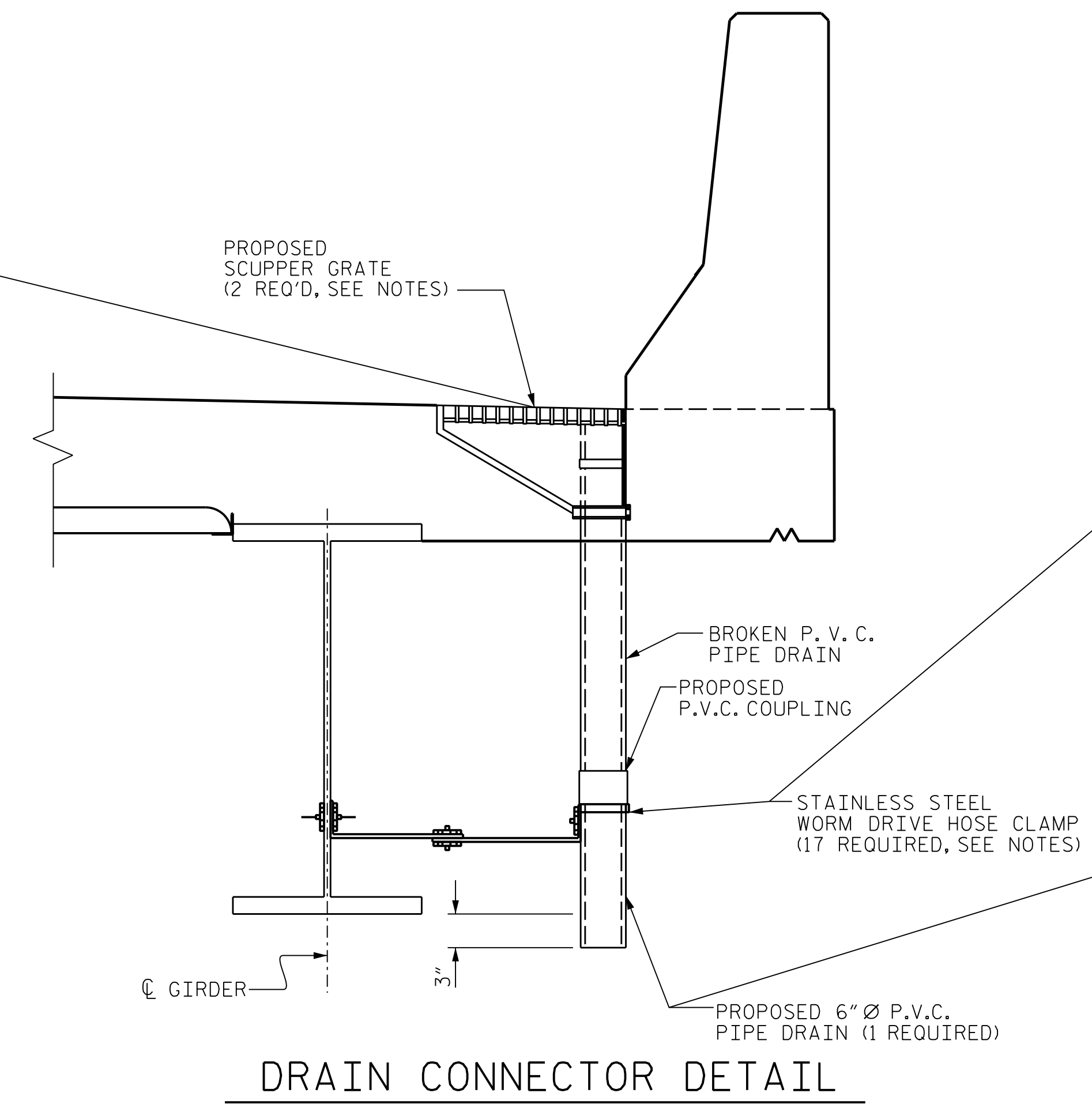
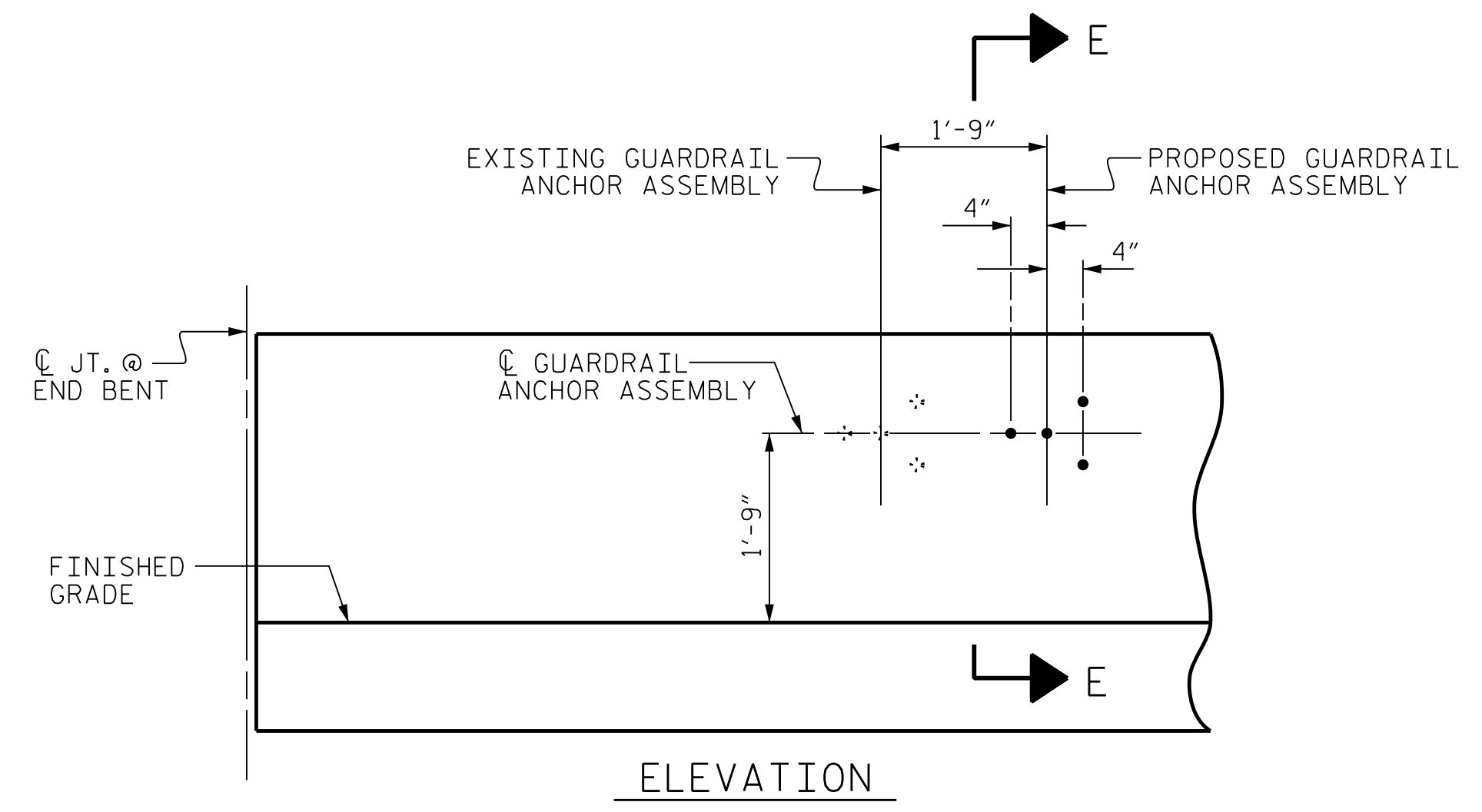
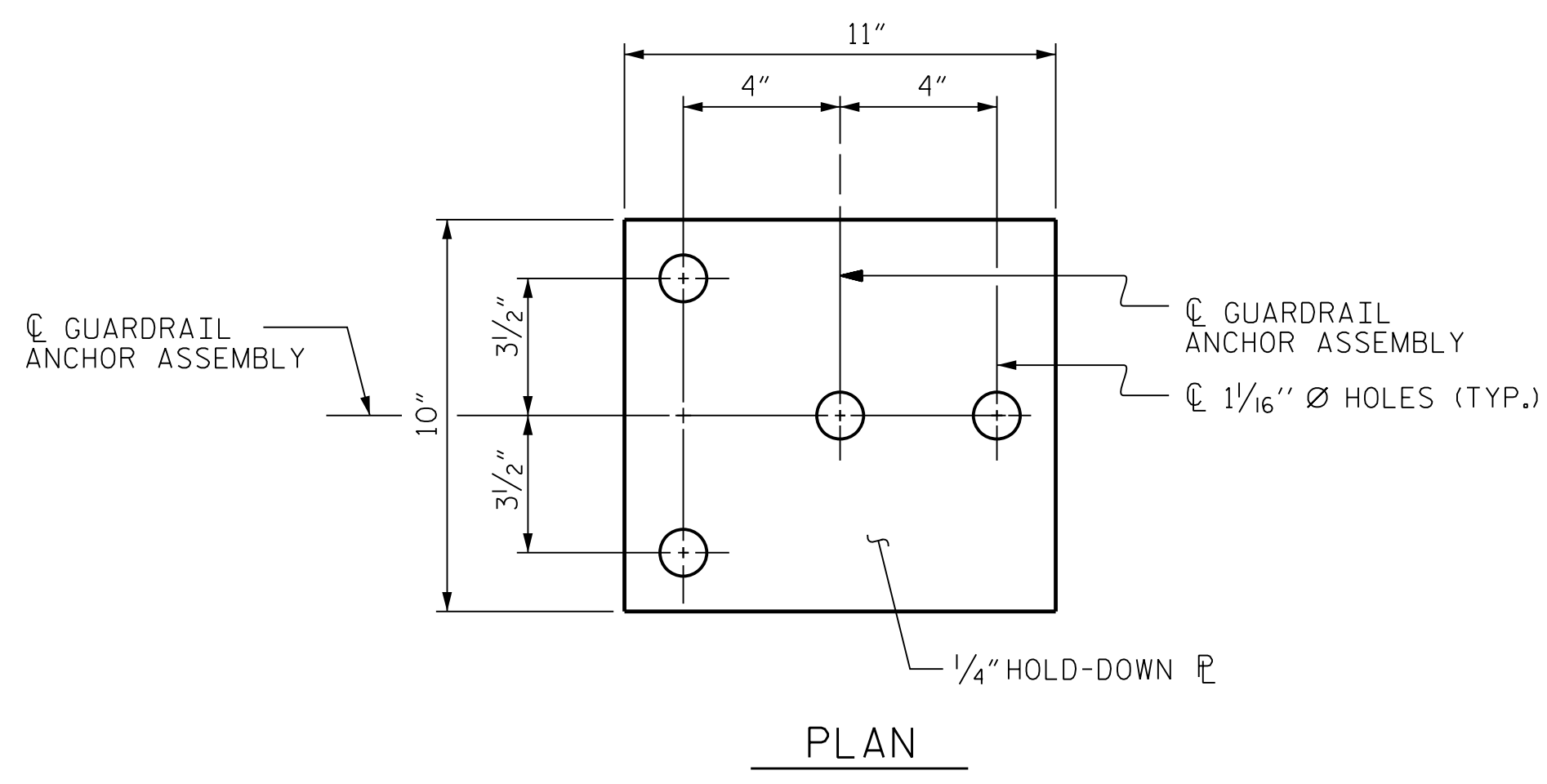
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 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 BENT 3  
 SPAN D FACE

REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
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NOTES

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

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

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

THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE THE EXISTING APPROACH GUARDRAIL ATTACHMENT IS DAMAGED. FOR POINTS OF ATTACHMENT, SEE "PLAN OF SPAN" SHEETS.

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

THE 1 1/4" Ø HOLES SHALL BE DRILLED WITH A CORE BIT. THE DRILL BIT SHALL BE CAPABLE OF DRILLING THROUGH EXISTING REINFORCING BARS AND CONCRETE. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER AT NO ADDITIONAL COST TO THE DEPARTMENT.

CUT EXISTING GUARDRAIL ANCHOR ASSEMBLY BOLTS FLUSH WITH THE FACE OF THE CONCRETE BARRIER RAIL.

REPLACE THE END SHOE AT THE SOUTHEAST CORNER OF THE BRIDGE. PAYMENT FOR THE END SHOE AND ADDITIONAL GUARDRAIL WILL BE INCLUDED IN THE BID ITEM "GUARDRAIL ANCHOR UNIT REPAIR". SEE ROADWAY STANDARD 862.02 FOR DETAILS.

GUARDRAIL ANCHOR ASSEMBLY DETAILS

PROJECT NO. 15BPR.28  
 MITCHELL COUNTY  
 BRIDGE NO. 600247

NOTES

BOLT SIZE TO BE SAME AS DIAPHRAGM AND CROSSFRAME CONNECTIONS. STAINLESS STEEL WORM HOSE CLAMP SHALL BE COMMERCIAL QUALITY.

THE REPLACEMENT PVC DRAIN PIPE SHALL BE PAINTED WITH TWO COATS OF BROWN PRIMER MEETING THE REQUIREMENTS OF ARTICLE 1080-11 OF THE STANDARD SPECIFICATIONS. EACH COAT SHALL BE 2 DRY MILS (0.050 MM) THICK. THE DECK DRAIN SHALL BE ROUGHENED PRIOR TO PAINTING. NO SEPARATE PAYMENT SHALL BE MADE FOR PAINTING THE PVC DECK DRAIN AS THIS IS CONSIDERED INCIDENTAL TO THE PAY ITEM FOR REPAIR OF EXISTING DECK DRAINS.

THE GRATE MEMBERS SHALL BE 7/16" WIDE X 2" DEEP AND SHALL BE SPACED TO PROVIDE A 1 9/16" CLEAR OPENING BETWEEN MEMBERS. THE 1 9/16" CLEAR OPENING SHALL BE MEASURED PERPENDICULAR TO THE CL OF BRIDGE.

CONTRACTOR TO FIELD VERIFY DRAIN INLET OPENINGS AND SUBMIT WORKING DRAWINGS OF PROPOSED GRATE MEMBERS FOR APPROVAL BY ENGINEER PRIOR TO ORDERING MATERIAL.

FRAME, GRATE, PIPE, AND ALL PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 STEEL OR APPROVED EQUAL. PIPE SHALL CONFORM TO ASTM A53, TYPE S. ALL HOLD-DOWN BOLTS AND NUTS SHALL BE AASHTO M164. WASHERS SHALL CONFORM TO AASHTO M293. ALL ANCHOR STUDS SHALL CONFORM TO AASHTO M169 GRADES 1010 THRU 1020 OR APPROVED EQUAL.

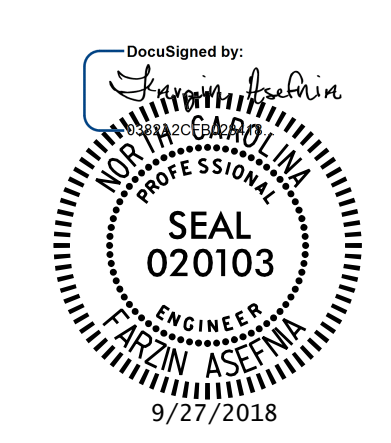
UPON COMPLETION OF SHOP FABRICATION, ALL STEEL PARTS, INCLUDING BOLTS AND WASHERS, SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

PRIOR TO PLACING THE GRATE, ALL DEBRIS SHALL BE CLEARED FROM FRAME IN ORDER TO ALLOW FOR PROPER SEATING OF THE GRATE AND ELIMINATE POTENTIAL ROCKING HAZARDS.

THE CONTRACTOR SHALL REPLACE ALL BROKEN HOSE CLAMPS AND MISSING GRATES.

THE ESTIMATED NUMBER OF HOSE CLAMP REPLACEMENTS AND GRATES IS FROM THE BEST INFORMATION AVAILABLE.

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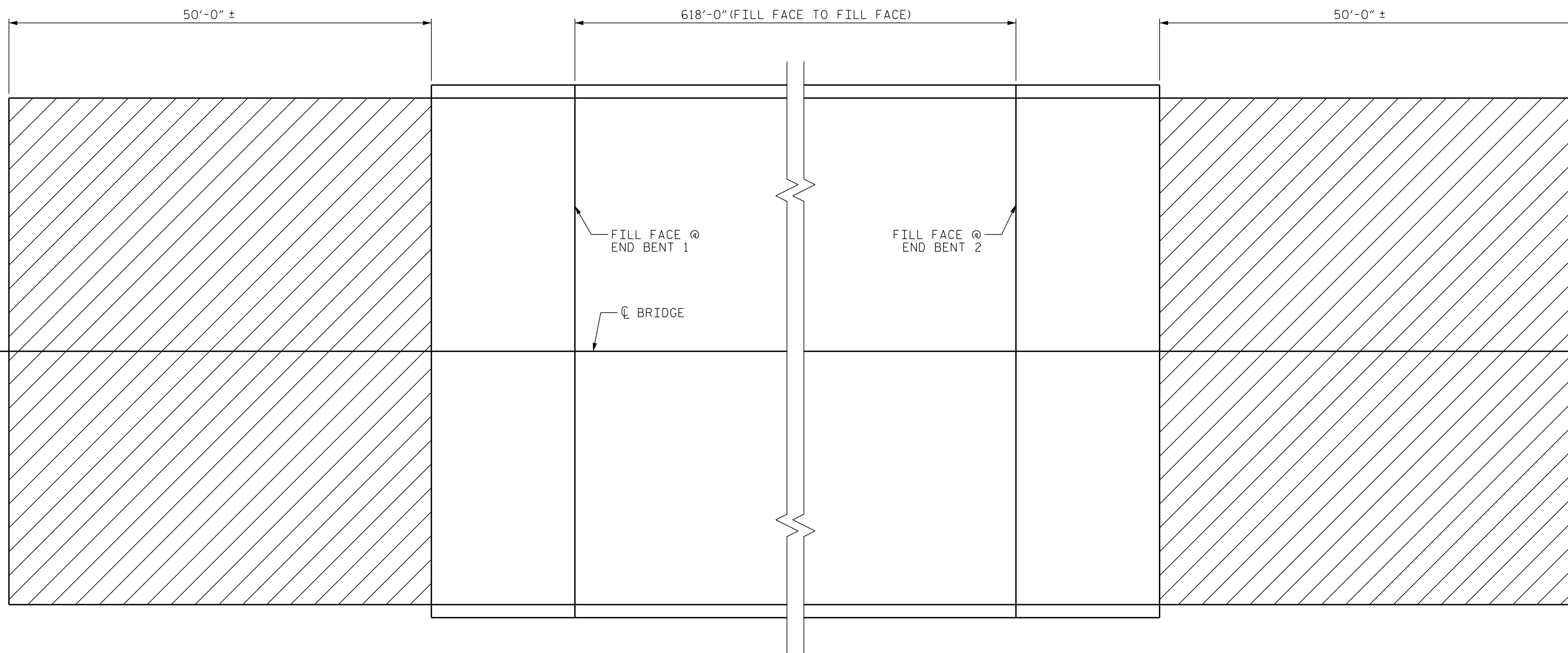
MISCELLANEOUS  
 DETAILS

REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			63


Prepared by:  
 LOUIS BERGER  
 1001 Wade Avenue, Suite 400  
 Raleigh, NC 27605-3322  
 NC COA No. F-0840

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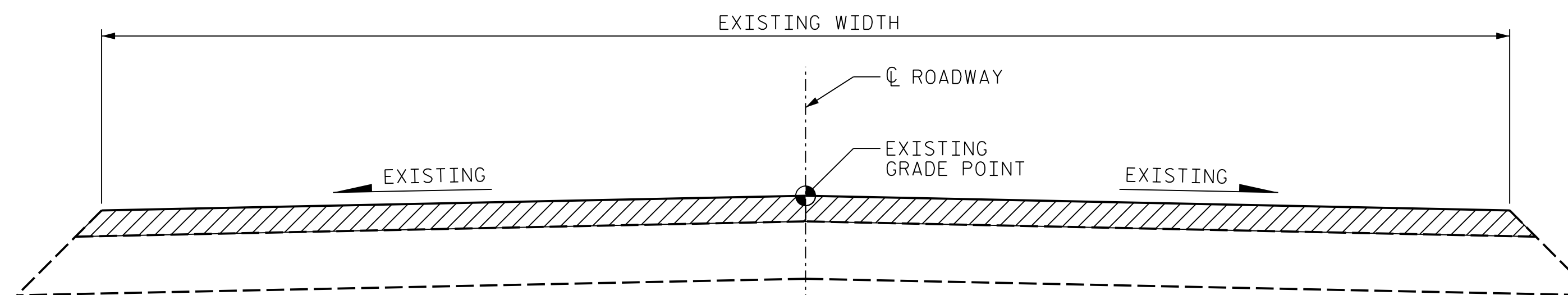


**NOTES:**  
 INCIDENTAL MILLING - EXISTING APPROACH ASPHALT PAVEMENT TO BE MILLED AS NECESSARY TO ATTAIN MINIMUM 1/2" DEPTH OF NEW ASPHALT PAVEMENT. NEW ASPHALT PAVEMENT SHALL BE OF THICKNESS NECESSARY TO PROVIDE A SMOOTH TRANSITION BETWEEN THE ROADWAY AND THE BRIDGE DECK. THE NEW ASPHALT PAVEMENT THICKNESS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

 INCIDENTAL MILLING

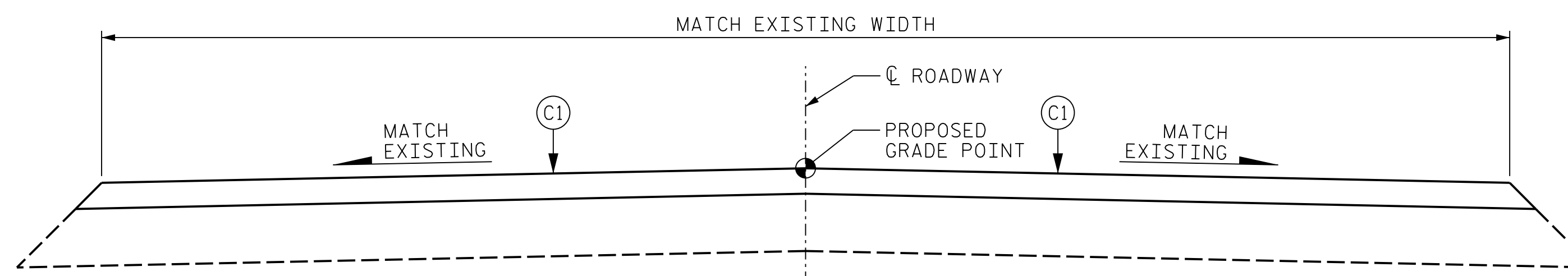
SUMMARY OF QUANTITIES		
	ESTIMATE	ACTUAL
INCIDENTAL MILLING	670 SQ. YDS.	
ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B	60 TONS	
ASPHALT BINDER FOR PLANT MIX	4.0 TONS	

PLAN



TYPICAL ROADWAY MILLING SECTION

(MILL TO APPROX. 1/2" DEPTH)



TYPICAL FINAL ROADWAY SECTION

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.
----	--

PROJECT NO. 15BPR.28  
MITCHELL COUNTY  
 BRIDGE NO. 600247

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APPROACH MILLING  
 AND TYPICAL ROADWAY  
 SECTIONS



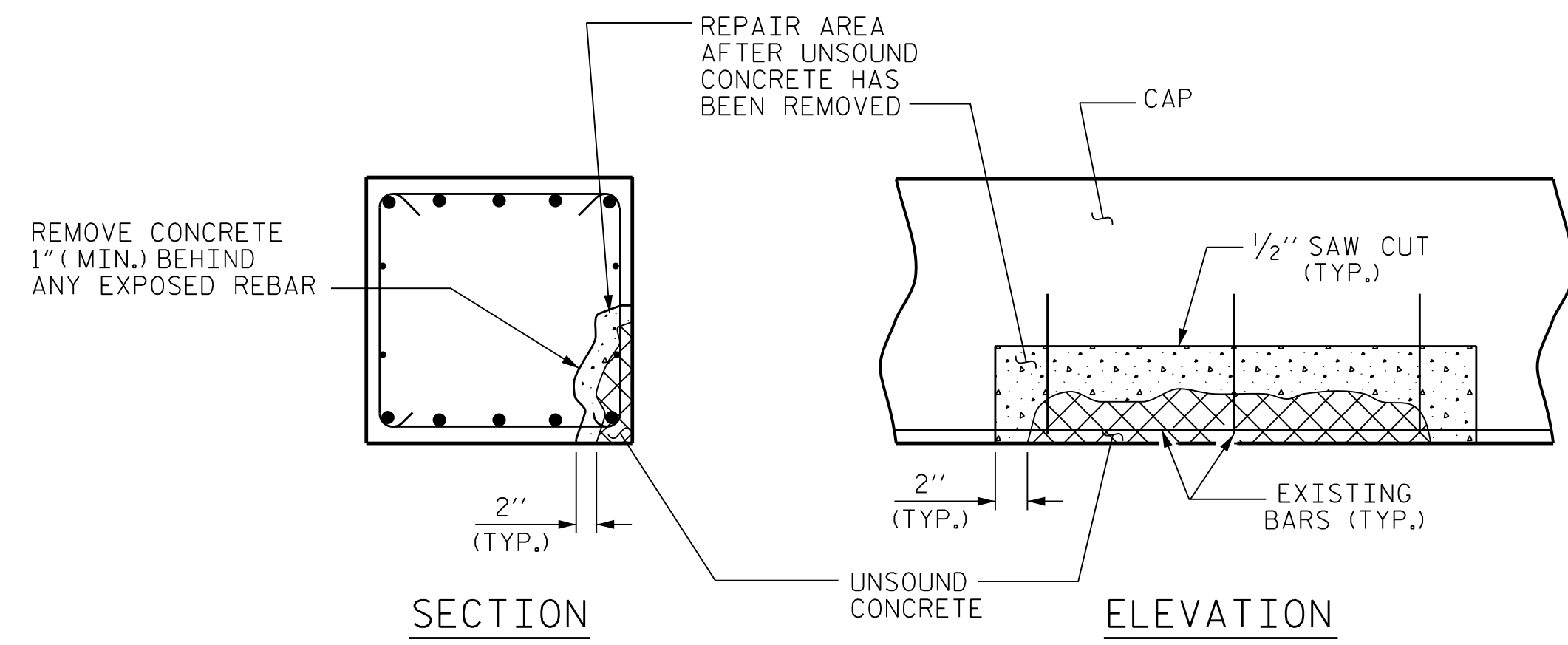
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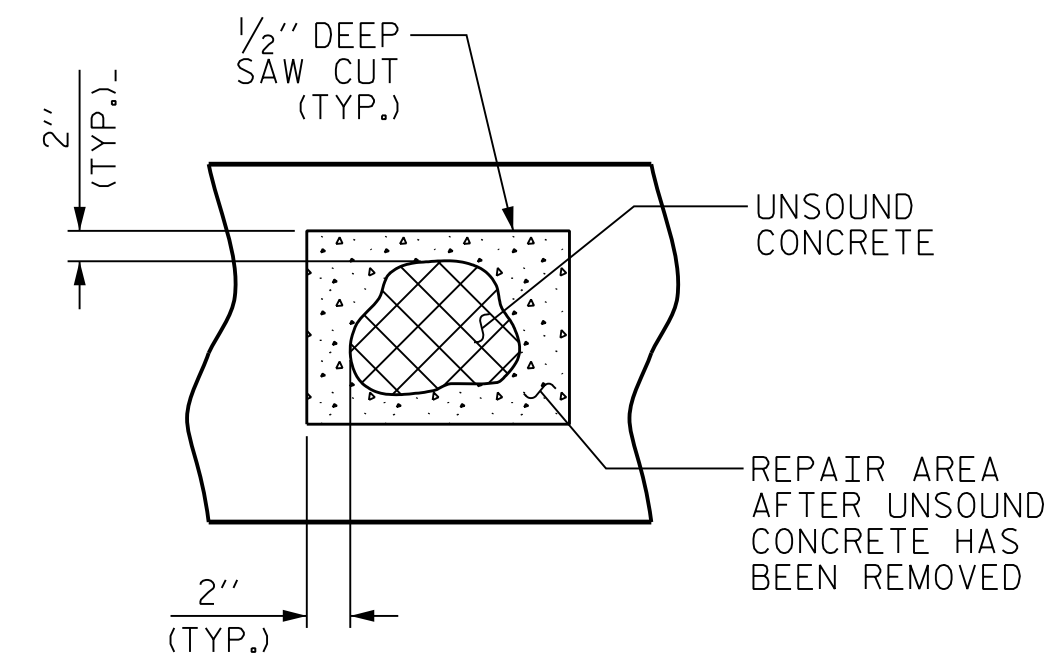
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**NOTES:**

- SOUND CONCRETE TO DETERMINE EXTENT OF REPAIR LOCATIONS.
- REMOVE SURFACE CONCRETE TO VERIFY THAT SAWCUT DEPTH WILL NOT DAMAGE EXISTING REINFORCING STEEL. SAW CUT AROUND REPAIR AREA TO A NOMINAL DEPTH OF 1/2".
- ALL UNSOUND CONCRETE MUST BE REMOVED.
- USE A WIRE BRUSH TO CLEAN ALL EXPOSED REINFORCING BARS. FOR BARS WITH MORE THAN 10% SECTION LOSS, SPLICE AND SECURELY TIE SUPPLEMENTAL REINFORCING BARS AS NEEDED.
- REMOVE ALL LOOSE OR WEAKENED MATERIAL THEN CLEAN THE AREA OF DIRT, GREASE, OIL AND FOREIGN MATTER.
- FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.
- FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

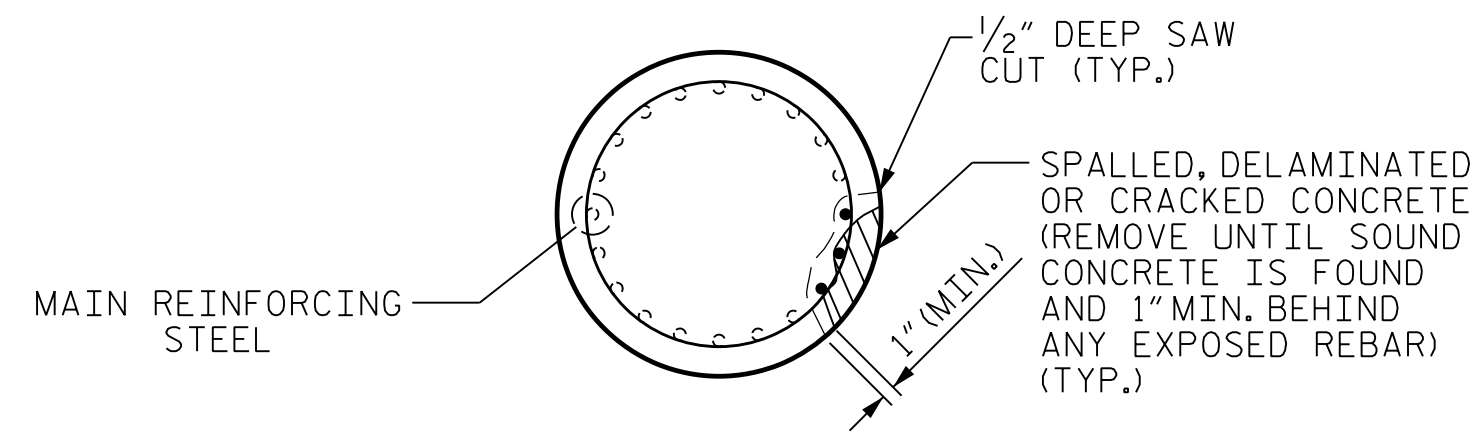


CORNER REPAIR

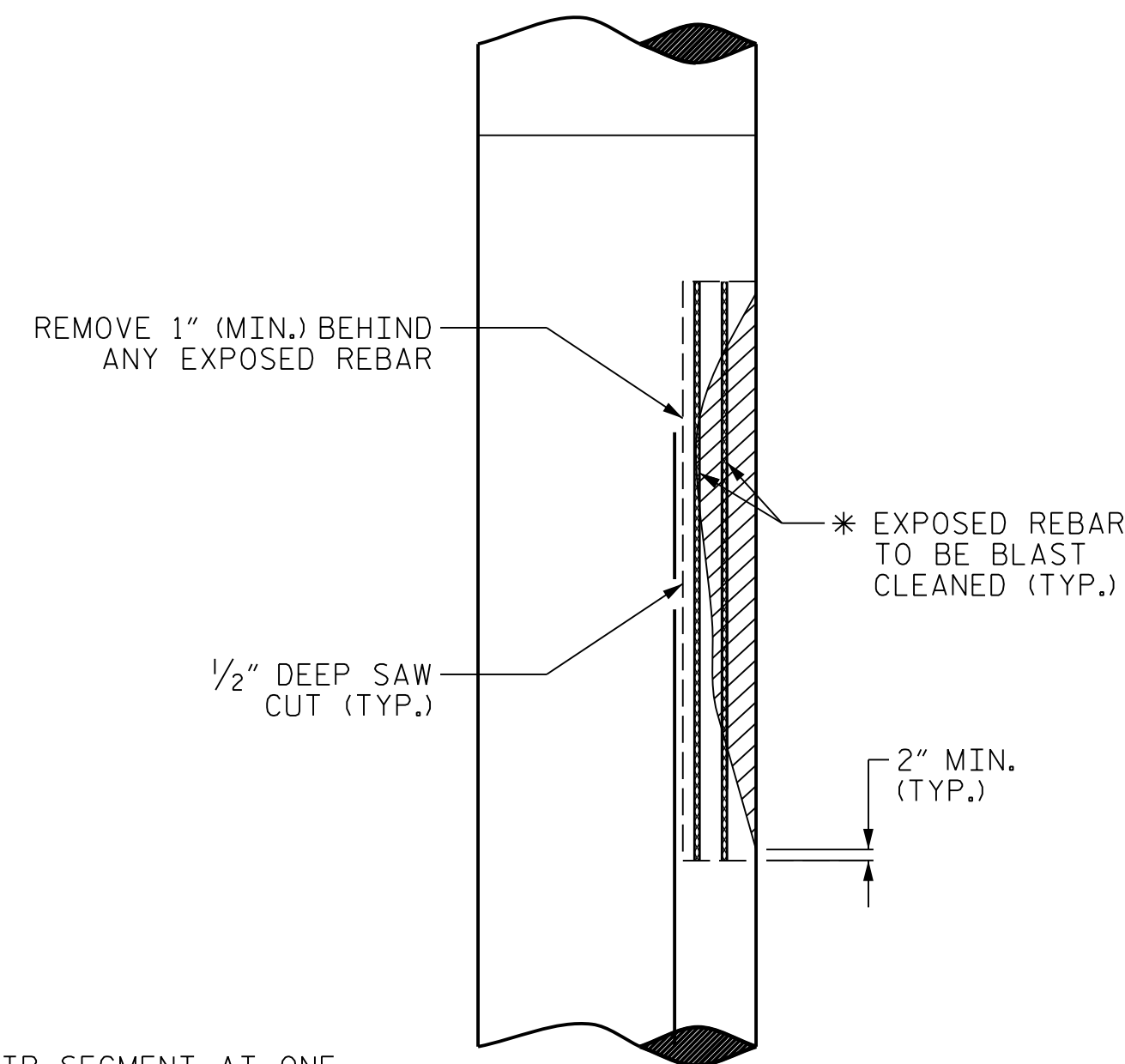


FACE REPAIR

CAP REPAIR



PLAN OF COLUMN



ELEVATION OF COLUMN

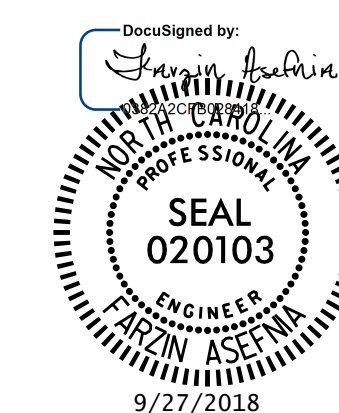
COLUMN REPAIR

(ROUND COLUMN SHOWN, HAMMERHEAD COLUMNS SIMILAR)

\* THE MAXIMUM LENGTH OF ANY ONE REPAIR SEGMENT AT ONE TIME SHALL NOT EXCEED 10 FEET. THE REMAINING REPAIR SEGMENTS SHALL BE ADDRESSED ONLY AFTER REPAIR OF THE FIRST SEGMENT IS COMPLETE.

PROJECT NO. 15BPR.28  
MADISON & MITCHELL COUNTY  
 BRIDGE NO. 560093, 560113,  
600247

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 RALEIGH

**TYPICAL CAP  
 AND COLUMN  
 REPAIR DETAILS**

REVISIONS

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1			3		
2			4		

SHEET NO.  
 S-61  
 TOTAL SHEETS  
 63



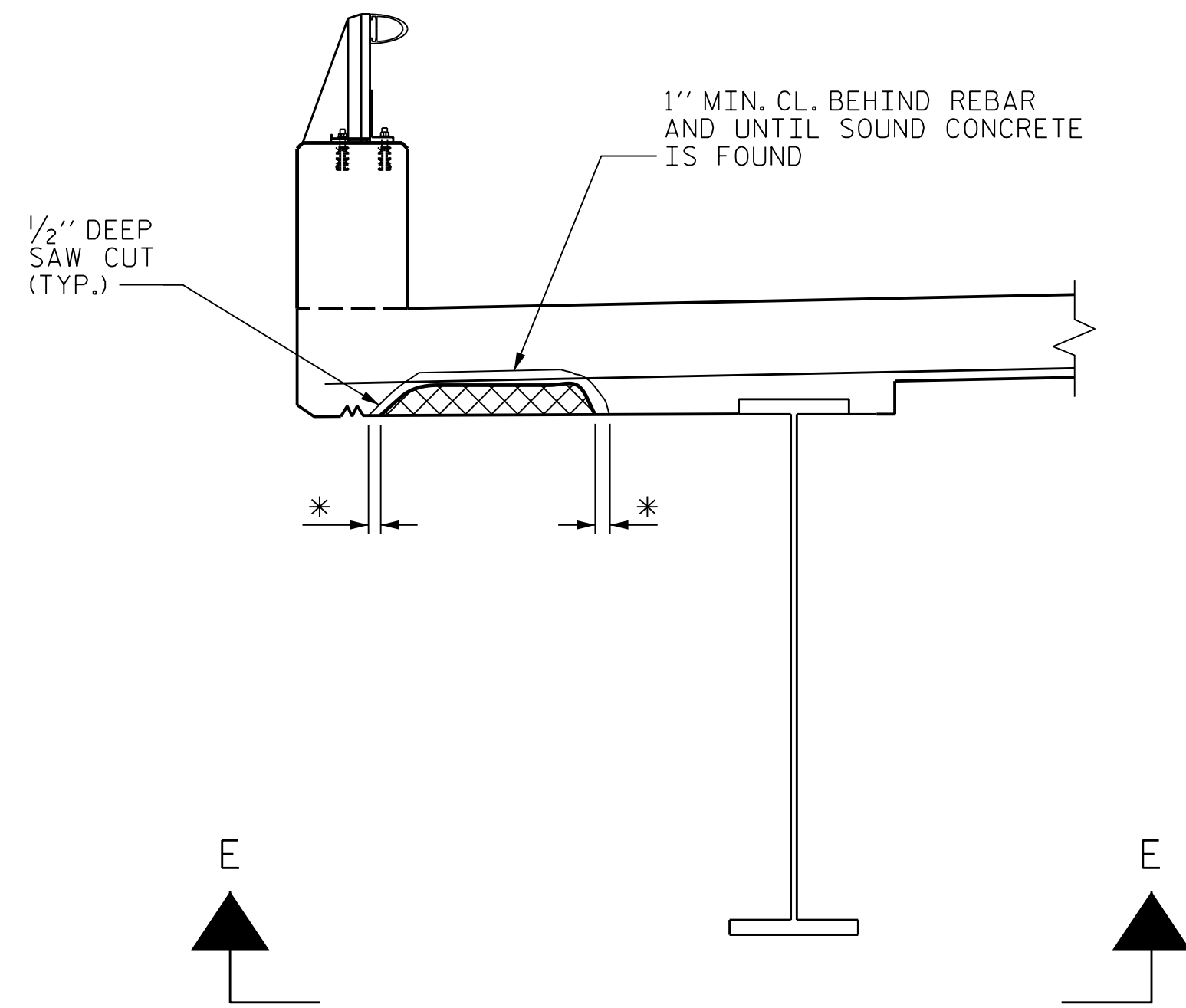
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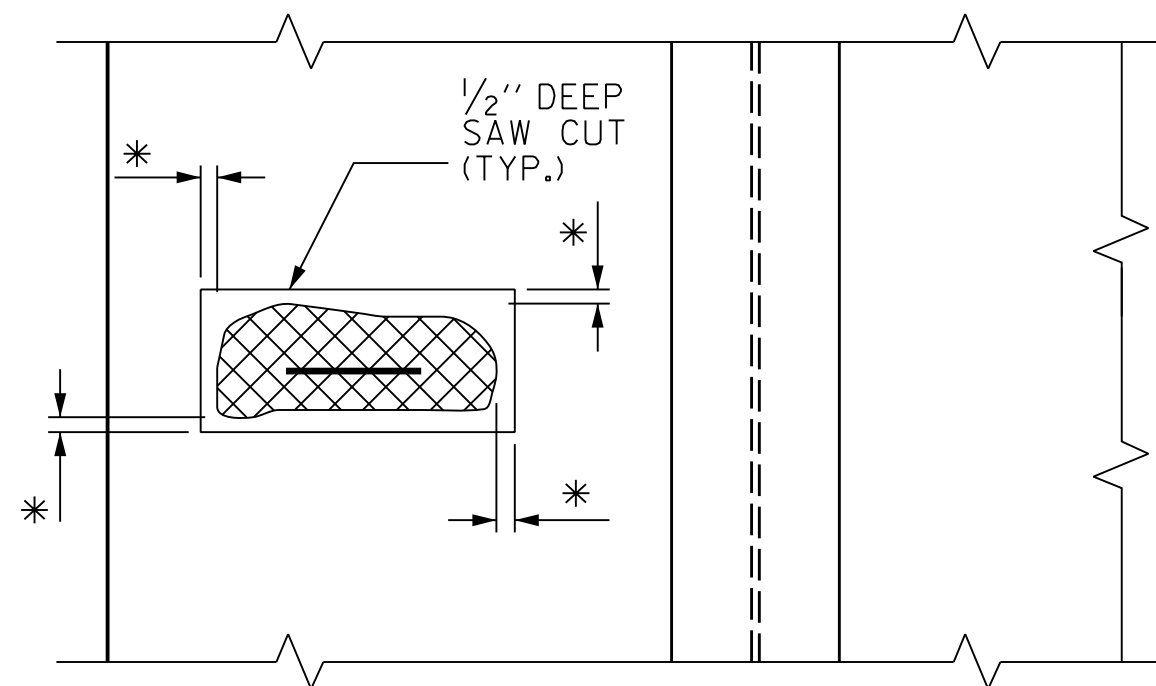
**NOTES:**

OVERHANG DIAPHRAGMS TO BE REMOVED AND REPLACED ARE SHOWN ON "PLAN OF SPANS" SHEETS. OVERHANG DIAPHRAGMS SHALL BE REMOVED PRIOR TO CLEANING AND PAINTING OF BEAMS AND REPLACED AFTER BEAM REPAIRS AND PAINTING ARE COMPLETE.



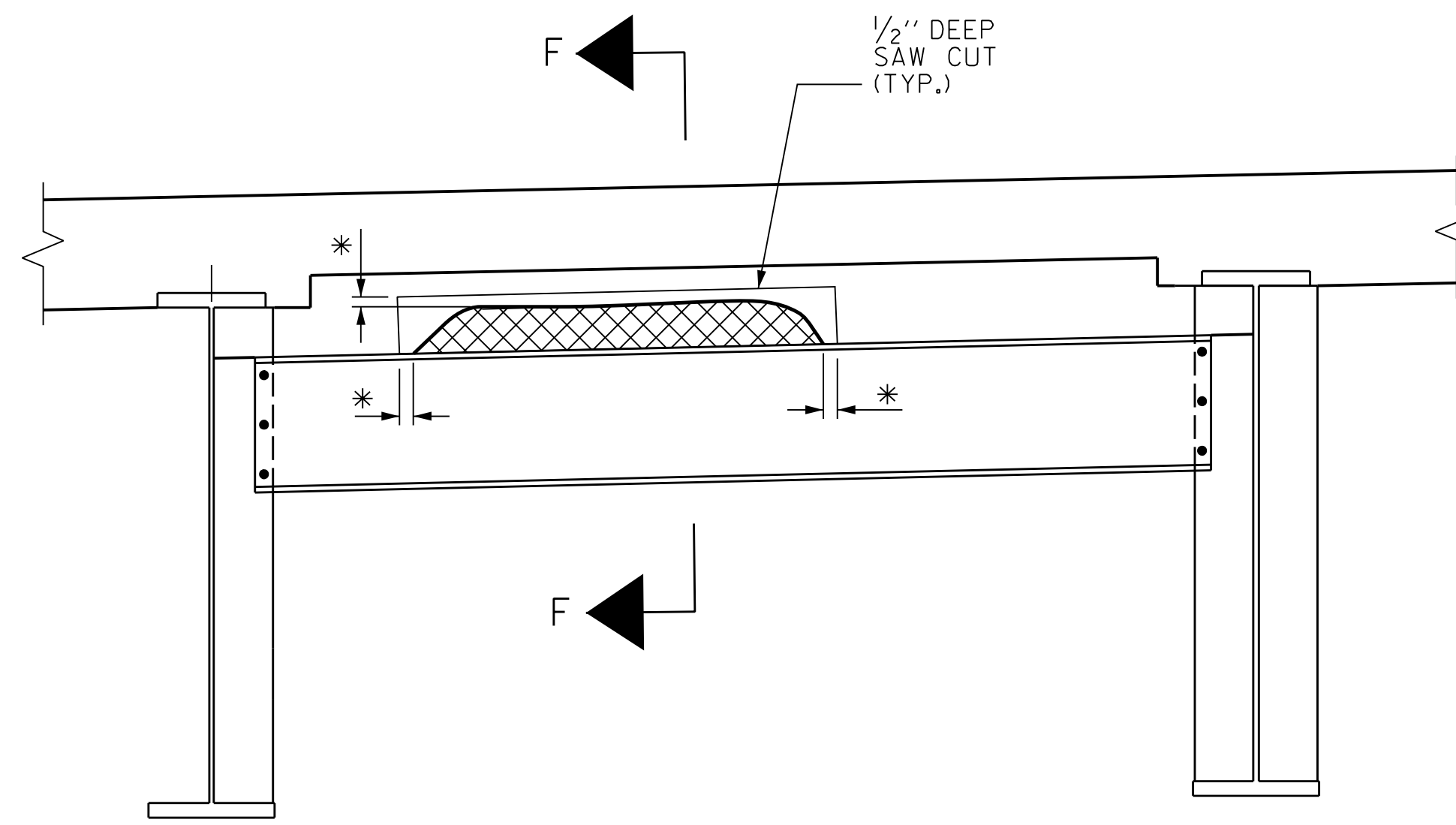
**TYPICAL SECTION**

\* REMOVE CONCRETE UNTIL SOUND CONCRETE IS FOUND (1" MIN. DEPTH)

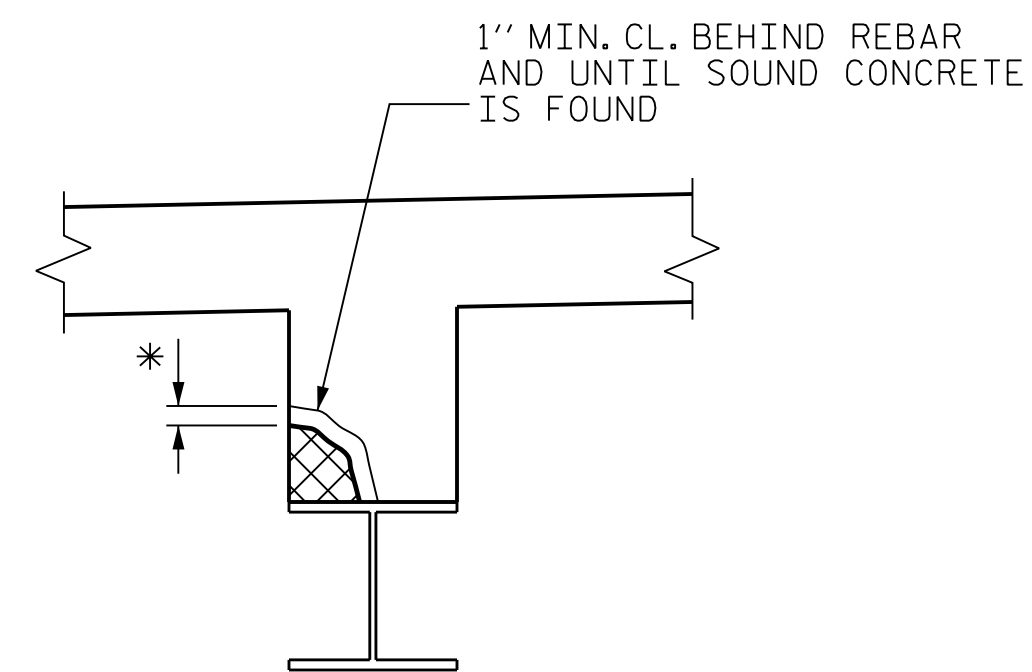


**SECTION E-E**

**OVERHANG DETAILS**



**TYPICAL SECTION**



**SECTION F-F**

**INTERIOR DIAPHRAGM REPAIR DETAILS**

\* REMOVE CONCRETE UNTIL SOUND CONCRETE IS FOUND (1" MIN. DEPTH)



DAMAGED AREA

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

PROJECT NO. 15BPR.28

MADISON & MITCHELL COUNTY

BRIDGE NO. 560093, 560113,  
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DEPARTMENT OF TRANSPORTATION  
RALEIGH

**OVERHANG &  
DIAPHRAGM  
REPAIR DETAILS**

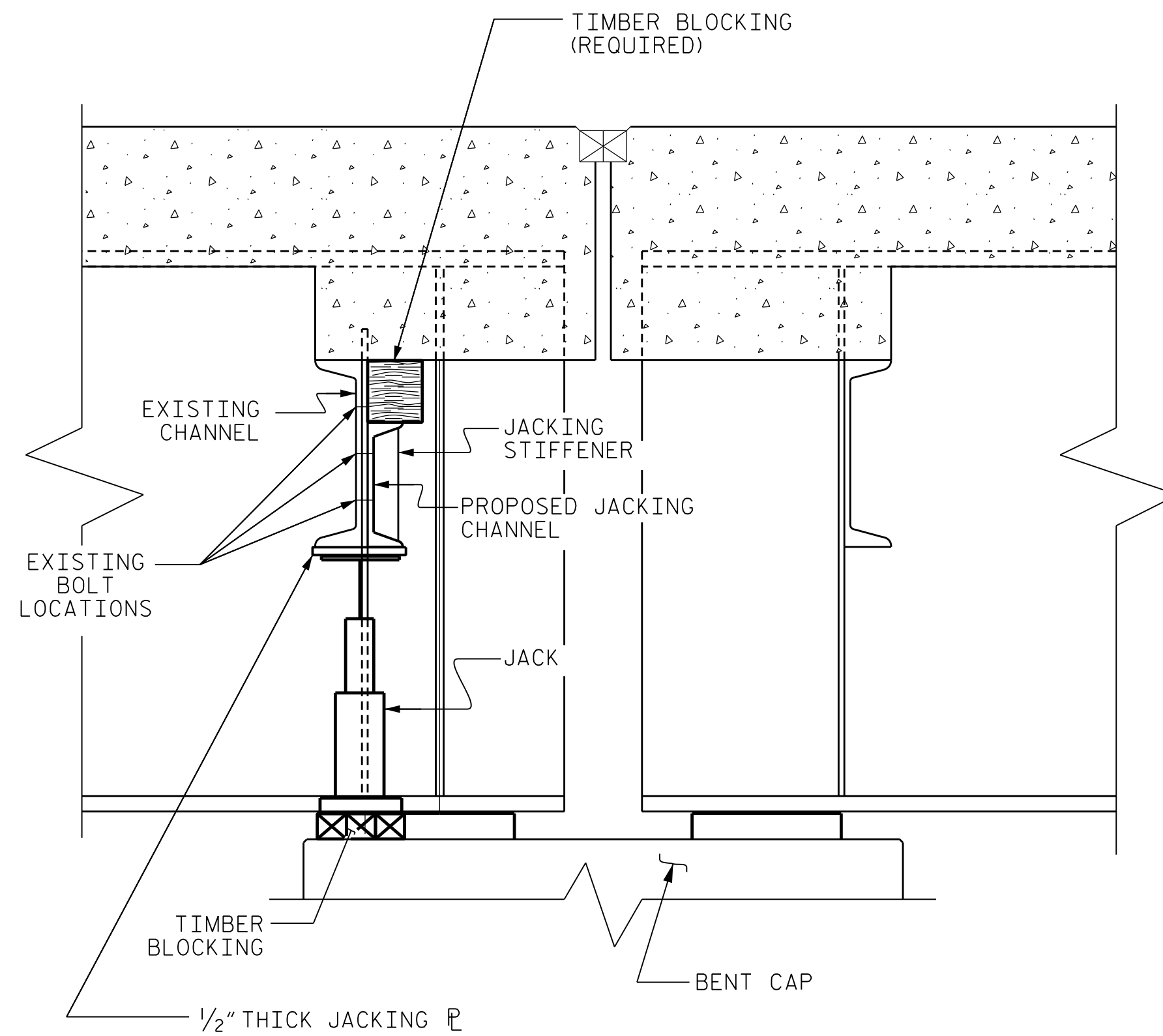
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**SECTION THRU BENT**

**NOTE:**  
 SKETCH IS PROVIDED AS AN ILLUSTRATIVE EXAMPLE, ONLY.  
 CONTRACTOR SHALL VERIFY EXISTING CONDITIONS, GEOMETRIES,  
 DIMENSIONS, ETC. AND SHALL DEVELOP JACKING PLAN FOR  
 INDIVIDUAL BRIDGES AND BENTS, AS NECESSARY BASED ON  
 EXISTING CONDITIONS AND REQUIRED AND ANTICIPATED LOADS.  
 CONTRACTOR SHALL SUBMIT JACKING PLAN FOR REVIEW AND  
 SHALL RECEIVE APPROVAL PRIOR TO ORDERING OR FABRICATING  
 JACKING MATERIAL.

**NOTES:**

THE CONTRACTOR SHALL SUBMIT PLANS AND CALCULATIONS FOR REVIEW AND APPROVAL PRIOR TO MATERIAL PURCHASE OR FABRICATION OF THE JACKING SYSTEM.

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 A METHOD TO SUPPORT THE BEAM FOR DEAD AND LIVE LOADS AND REMOVE THE JACK DURING THE REPAIR OPERATIONS. IF THE JACKS REMAIN IN PLACE DURING THE ENTIRE JACKING AND REPAIR OPERATION, THEY SHALL HAVE MECHANICAL LOCK OF 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.

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

ALL ADJACENT BEARINGS OF BEAMS NOT 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 1/8".

PROJECT NO. 15BPR.28  
 MADISON & MITCHELL COUNTY  
 BRIDGE NO. 560093, 560113,  
600247

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**JACKING DETAILS**

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 DESIGN ENGINEER OF RECORD : F. ASEFNIA DATE : 8/2018

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2			4			63

Louis Berger  
 Prepared by:  
 LOUIS BERGER  
 1001 Wade Avenue, Suite 400  
 Raleigh, NC 27605-3322  
 NC COA No. F-0840

## STANDARD NOTES

### DESIGN DATA:

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

### MATERIAL AND WORKMANSHIP:

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

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

### CONCRETE:

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

### CONCRETE CHAMFERS:

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

### DOWELS:

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

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

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

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

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

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

### REINFORCING STEEL:

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

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

### STRUCTURAL STEEL:

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

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

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

### HANDRAILS AND POSTS:

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

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

### SPECIAL NOTES:

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

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