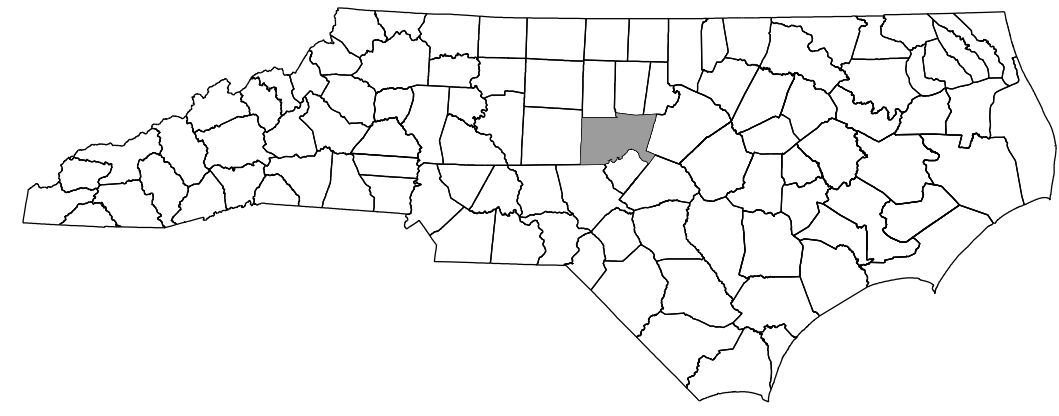


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**TIP PROJECT: 15BPR.36**

**CONTRACT: C204238**



STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS

**CHATHAM COUNTY**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	15BPR.36	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
-	-	P.E.	
-	-	CONSTRUCTION	

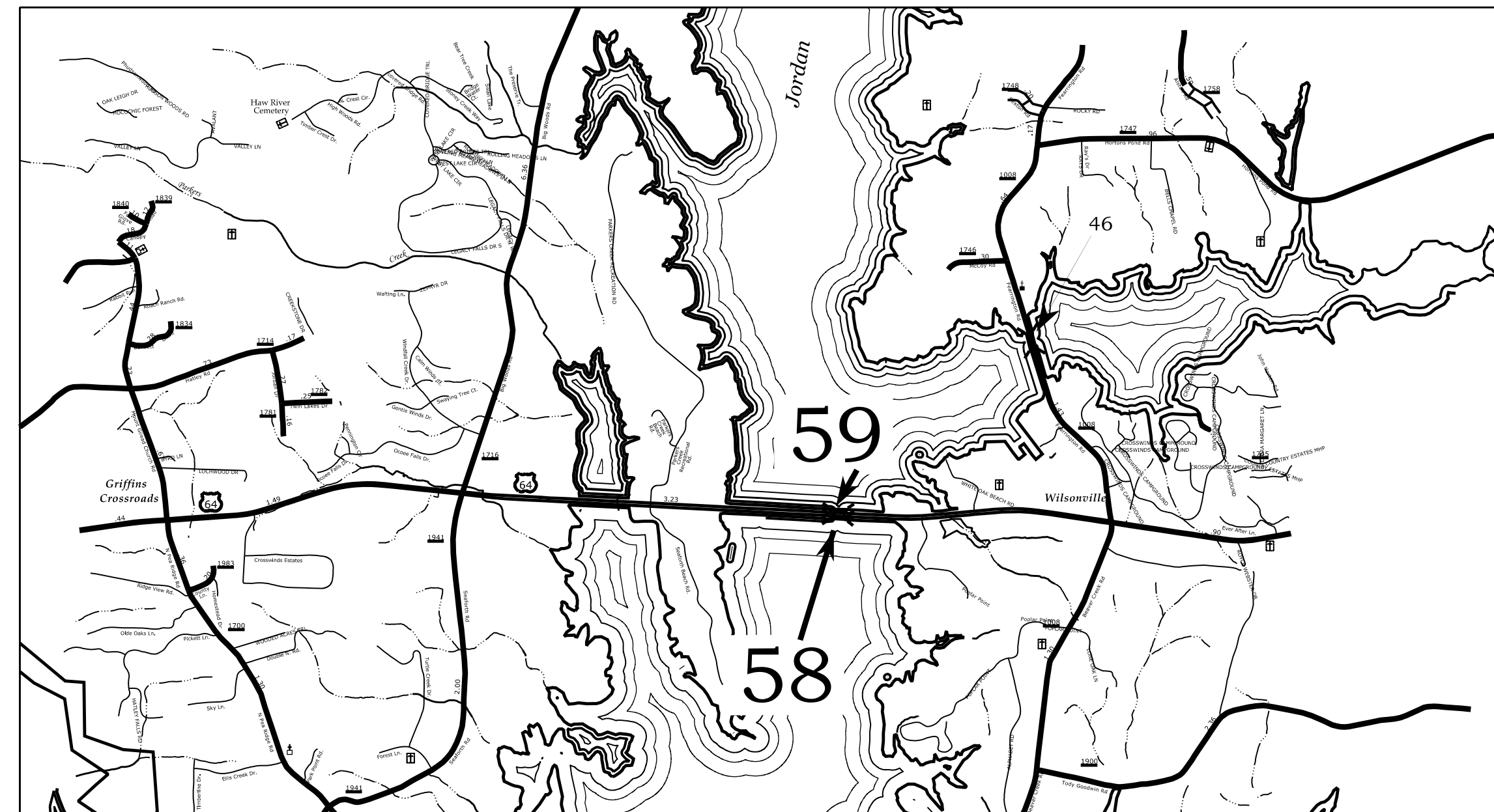
**LOCATION - CHATHAM COUNTY :**

**BRIDGE #58 ON US 64 EBL OVER JORDAN LAKE**

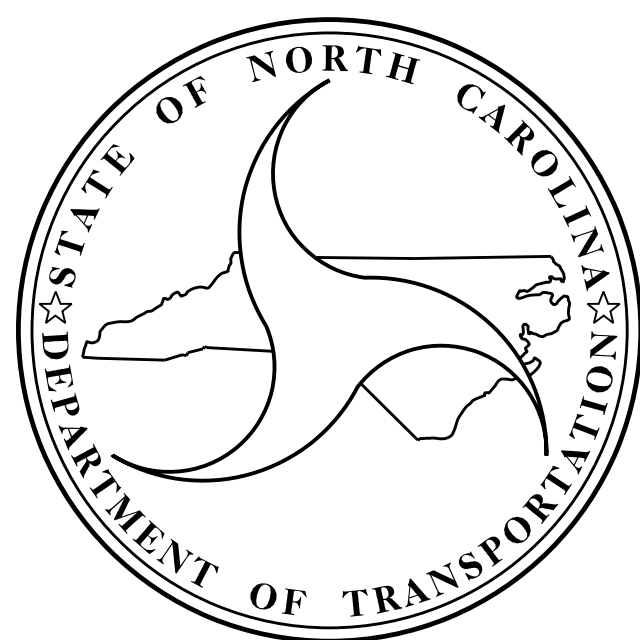
**BRIDGE #59 ON US 64 WBL OVER JORDAN LAKE**

**TYPE OF WORK:**

**BRIDGE PRESERVATION - DECK REPAIRS, LATEX MODIFIED OVERLAY, JOINT REPLACEMENTS, SUBSTRUCTURE REPAIR, AND GIRDER REPAIR OF EXISTING CONCRETE BRIDGE STRUCTURES.**



**VICINITY MAP - CHATHAM COUNTY**



**DESIGN DATA**

CHATHAM COUNTY

#58 ADT 2011 = 12,400

#59 ADT 2011 = 12,400

**PROJECT LENGTH**

CHATHAM COUNTY

- #58 = 0.10 MILES

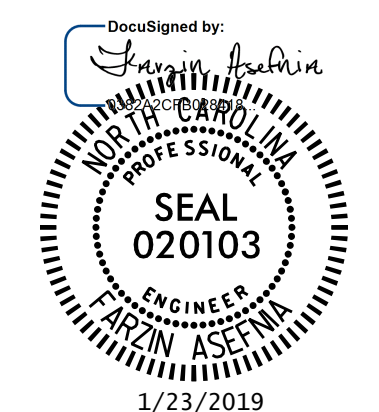
- #59 = 0.10 MILES



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

2018 STANDARD SPECIFICATIONS

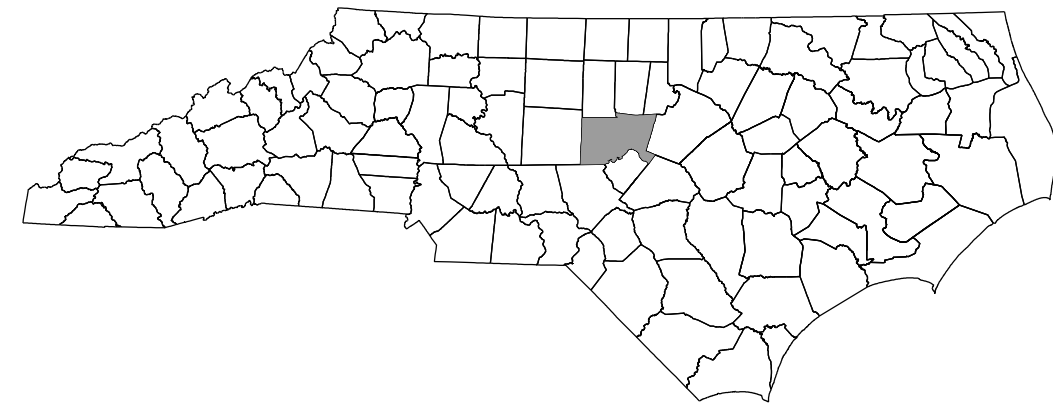
LETTING DATE :  
 MARCH 19, 2019



**FARZIN ASEFNIA, P.E.**

**CONTRACT: C204238**

**TIP PROJECT: 15BPR.36**



STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS

**CHATHAM COUNTY**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	15BPR.36	1A	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
-	-	P.E.	
-	-	CONSTRUCTION	

**LOCATION - CHATHAM COUNTY :**

**BRIDGE #58 ON US 64 EBL OVER JORDAN LAKE**

**BRIDGE #59 ON US 64 WBL OVER JORDAN LAKE**

**TYPE OF WORK: BRIDGE PRESERVATION - DECK REPAIRS, LATEX MODIFIED OVERLAY, JOINT REPLACEMENTS, SUBSTRUCTURE REPAIR, AND GIRDER REPAIR OF EXISTING CONCRETE 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-24</b>	<b>STRUCTURAL PLANS - CHATHAM COUNTY, BRIDGE NO. 58</b>
<b>S-25 THRU S-47</b>	<b>STRUCTURAL PLANS - CHATHAM COUNTY, BRIDGE NO. 59</b>
<b>S-48</b>	<b>OVERHANG AND DIAPHRAGM REPAIR DETAILS</b>
<b>S-49</b>	<b>PRESTRESSED GIRDER REPAIR DETAILS</b>
<b>S-50</b>	<b>TYPICAL CAP AND COLUMN REPAIR DETAILS</b>
<b>S-51</b>	<b>JACKING DETAILS</b>
<b>SN</b>	<b>STANDARD NOTES</b>

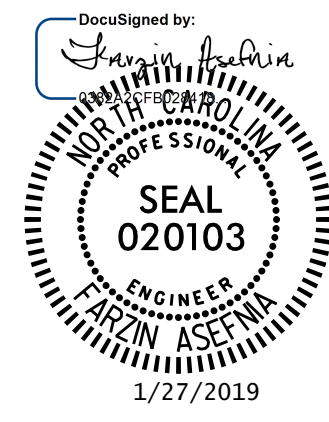
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TOTAL BILL OF MATERIAL											
BRIDGE NO.	INCIDENTAL MILLING	ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C	ASPHALT BINDER FOR PLANT MIX	GROOVING BRIDGE FLOORS	CLASS II, SURFACE PREPARATION	CLASS III, SURFACE PREPARATION	LATEX MODIFIED CONCRETE OVERLAY	PLACING AND FINISHING OF LATEX MODIFIED CONCRETE OVERLAY	CONCRETE REPAIRS	SHOTCRETE REPAIRS	EPOXY RESIN INJECTION
	SQ. YDS.	TONS	TONS	SQ. FT.	SQ. YDS.	SQ. YDS.	CU. YDS.	SQ. YDS.	CU. FT.	CU. FT.	LIN. FT.
180058	406	35	2	15,294	74.2	3.0	95.9	1,846	22.0	172.8	796.5
180059	406	35	2	15,294	73.6	3.0	95.9	1,846	4.1	44.0	1262.0
TOTAL	812	70	4	30,588	147.8	6.0	191.8	3,692	26.1	216.8	2058.5

TOTAL BILL OF MATERIAL											
BRIDGE NO.	FOAM JOINT SEALS FOR PRESERVATION	REPAIR OF EXISTING DECK DRAINS	VOLUMETRIC MIXER	CONCRETE FOR DECK REPAIR	REPAIRS TO PRESTRESSED CONCRETE GIRDERS	ELASTOMERIC CONCRETE FOR PRESERVATION	BRIDGE JOINT DEMOLITION	EPOXY COATING	SCARIFYING BRIDGE DECK	HYDRO-DEMOLITION OF BRIDGE DECK	TYPE I BRIDGE JACKING BRIDGE #---
	LIN. FT.	LUMP SUM	LUMP SUM	CU. FT.	CU. FT.	CU. FT.	SQ. FT.	SQ. FT.	SQ. YDS.	SQ. YDS.	EA.
180058	200.0	LUMP SUM	LUMP SUM	15.0	0.8	50.0	200	1,449	1,846	1,846	3
180059	200.0	LUMP SUM	LUMP SUM	15.0	2.0	50.0	200	1,449	1,846	1,846	9
TOTAL	400.0	LUMP SUM	LUMP SUM	30.0	2.8	100.0	400	2,898	3,692	3,692	12

PROJECT NO. 15BPR.36  
CHATHAM COUNTY  
 BRIDGE NO. 180058 & 180059

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 UNLESS ALL SIGNATURES COMPLETED

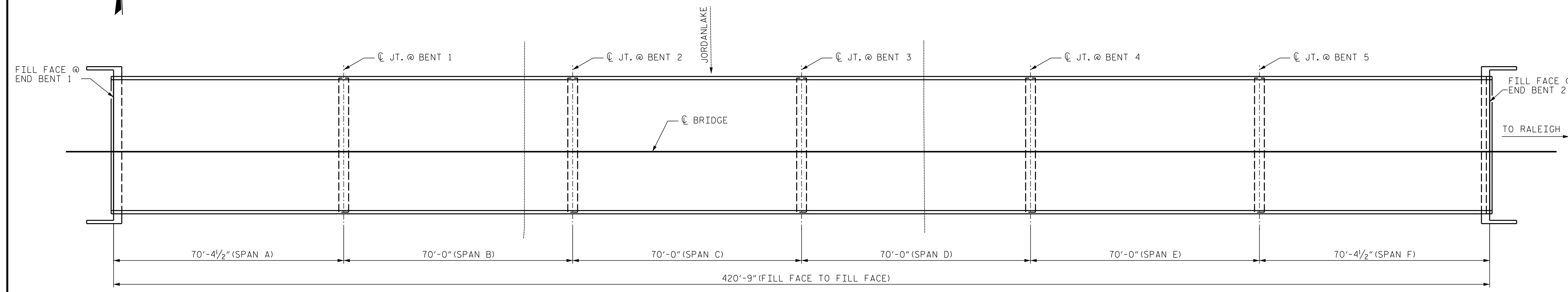
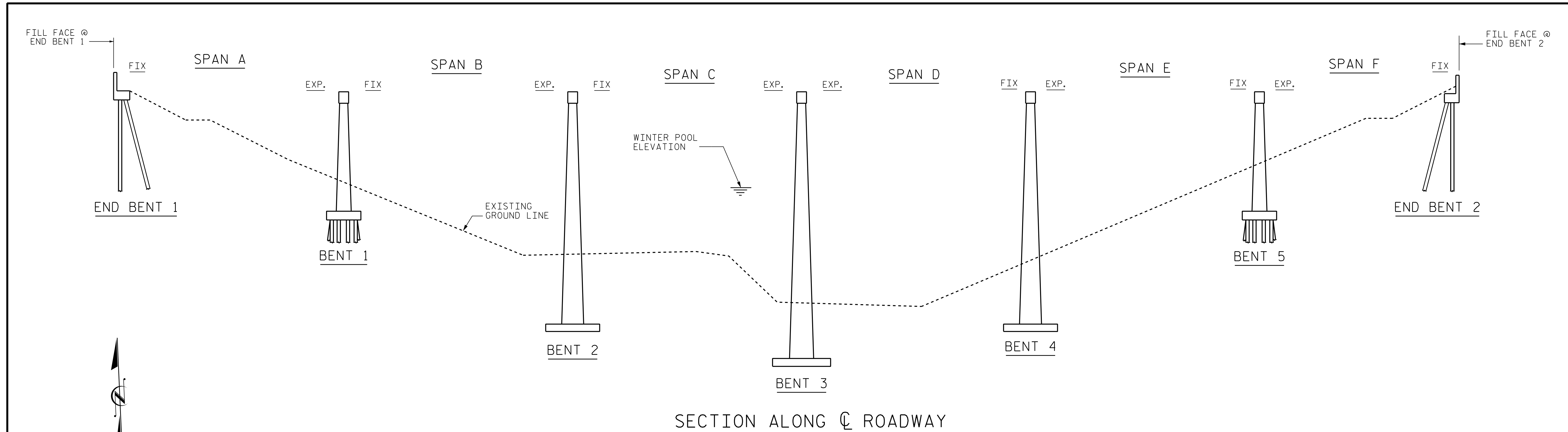
DocuSigned by:  
  
 Louis Berger  
 Prepared by:  
 LOUIS BERGER  
 1001 Wade Avenue, Suite 400  
 Raleigh, NC 27605-3322  
 NC COA No. F-0840

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

TOTAL BILL OF MATERIAL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S-1
2			4			TOTAL SHEETS 51

DRAWN BY : S. DHOLAKIA DATE : 11/2018  
 CHECKED BY : J. YANNAKONE DATE : 11/2018  
 DESIGN ENGINEER OF RECORD : F. ASEFNIA DATE : 11/2018



SECTION ALONG C ROADWAY

PLAN

PROJECT NO. 15BPR.36  
CHATHAM COUNTY  
 BRIDGE NO. 180058

NOTES:

PROFILE INFORMATION IS TAKEN FROM THE ORIGINAL PLANS AND THE ROUTINE INSPECTION REPORT DATED 11/13/2017.  
 BRIDGE ORIENTATION CONFORMS TO EXISTING BRIDGE PLANS.

SCOPE OF WORK

- PARTIALLY REMOVE BRIDGE DECK CONCRETE BY SCARIFICATION AND HYDRODEMOLITION METHODS.
- DEMOLISH EXISTING BRIDGE DECK JOINTS.
- OVERLAY PREPARED BRIDGE DECK WITH LATEX MODIFIED CONCRETE.
- RECONSTRUCT BRIDGE JOINTS AND INSTALL JOINT SEALS.
- GROOVE LATEX MODIFIED CONCRETE BRIDGE DECK.
- 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.
- CLEAN AND REPAIR DECK DRAINS.
- MILL AND PAVE ASPHALT APPROACHES.

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  
 US 64 EBL OVER  
 JORDAN LAKE

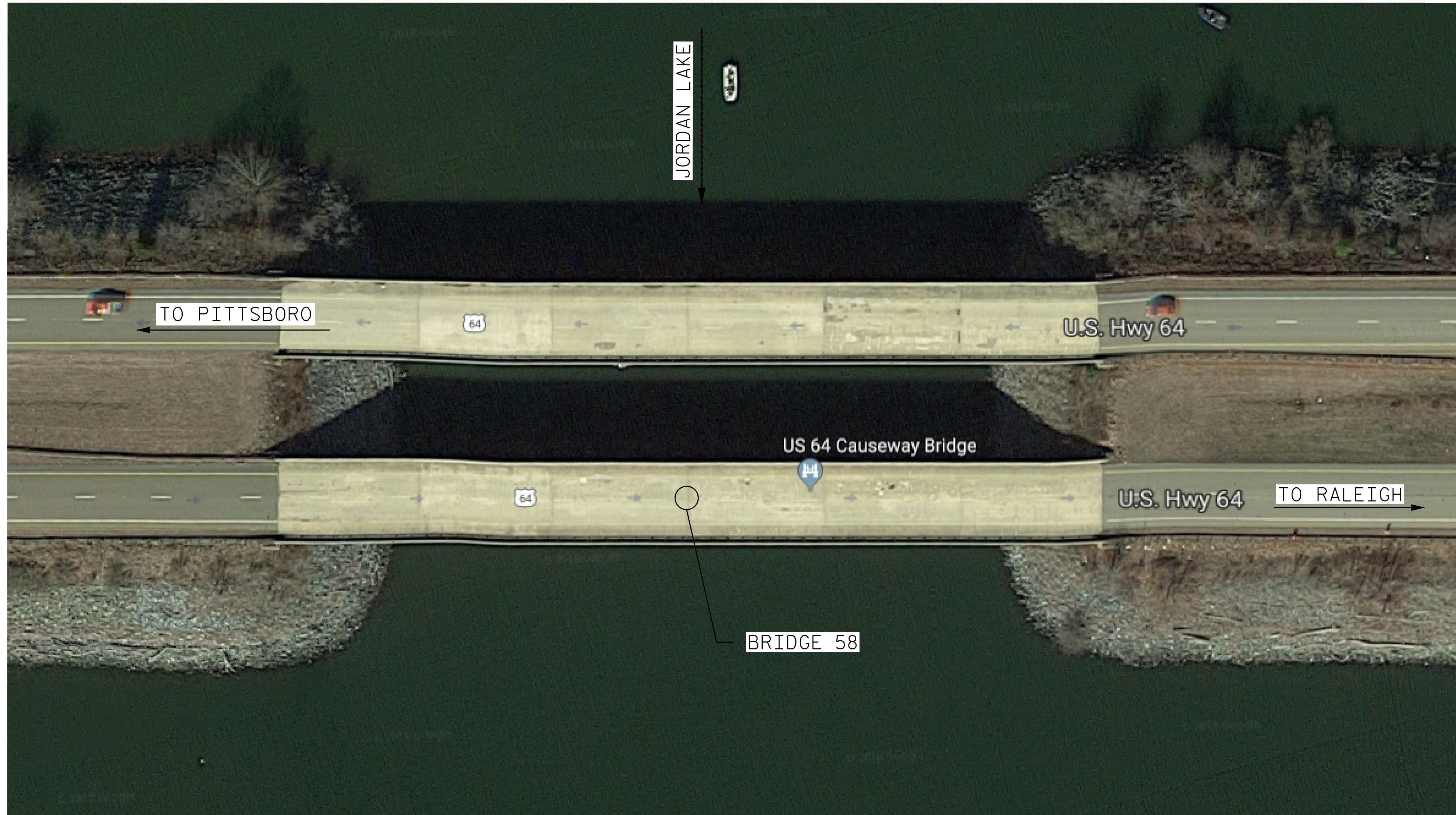
DRAWN BY :	J. MYA	DATE :	11/2018
CHECKED BY :	J. YANNAKONE	DATE :	11/2018
DESIGN ENGINEER OF RECORD :	F. ASEFNIA	DATE :	11/2018

Louis Berger  
 Prepared by: 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:
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2			4		

TOTAL SHEETS 51

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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°44'13.72"	79°01'27.88"

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 OVERLAY OF BRIDGE WITH LATEX MODIFIED CONCRETE, SEE SPECIAL PROVISIONS.

THE CONTRACTOR SHALL PROVIDE A METHOD OF HANDLING UNEXPECTED BLOW THROUGH 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.

ALL WORK SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER AND IN ACCORDANCE WITH SECTION 402 OF THE STANDARD SPECIFICATIONS.

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 FOR PRESERVATION, SEE SPECIAL PROVISIONS.

FOR FOAM JOINT SEALS FOR PRESERVATION, 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 PRESTRESSED CONCRETE GIRDER REPAIRS, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

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

FOR CLEANING AND PAINTING EXISTING BEARING PLATES, SEE SPECIAL PROVISIONS.

THE CONTRACTOR SHALL COORDINATE WORK ACTIVITIES WITH THE U.S. ARMY CORPS OF ENGINEERS NORTH CAROLINA DEPARTMENT OF NATURAL AND CULTURAL RESOURCES, AND ANY OTHER AGENCIES EXERCISING JURISDICTION OVER JORDAN LAKE.

PROJECT NO. 15BPR.36  
CHATHAM COUNTY  
 BRIDGE NO. 180058

DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED



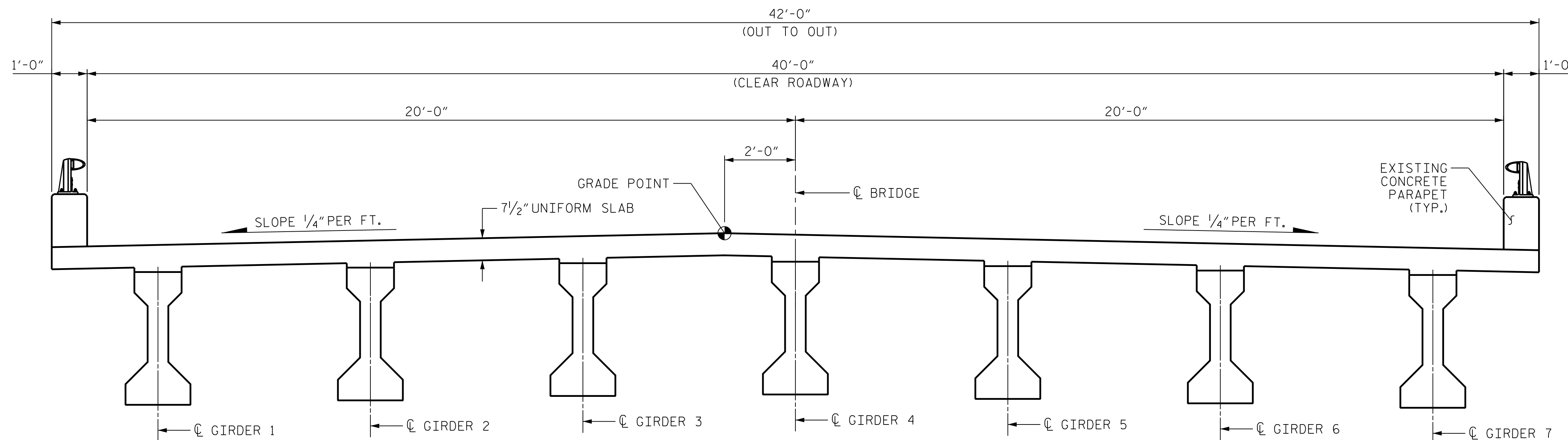
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 GENERAL DRAWING  
 FOR BRIDGE ON  
 US 64 EBL OVER  
 JORDAN LAKE

REVISIONS

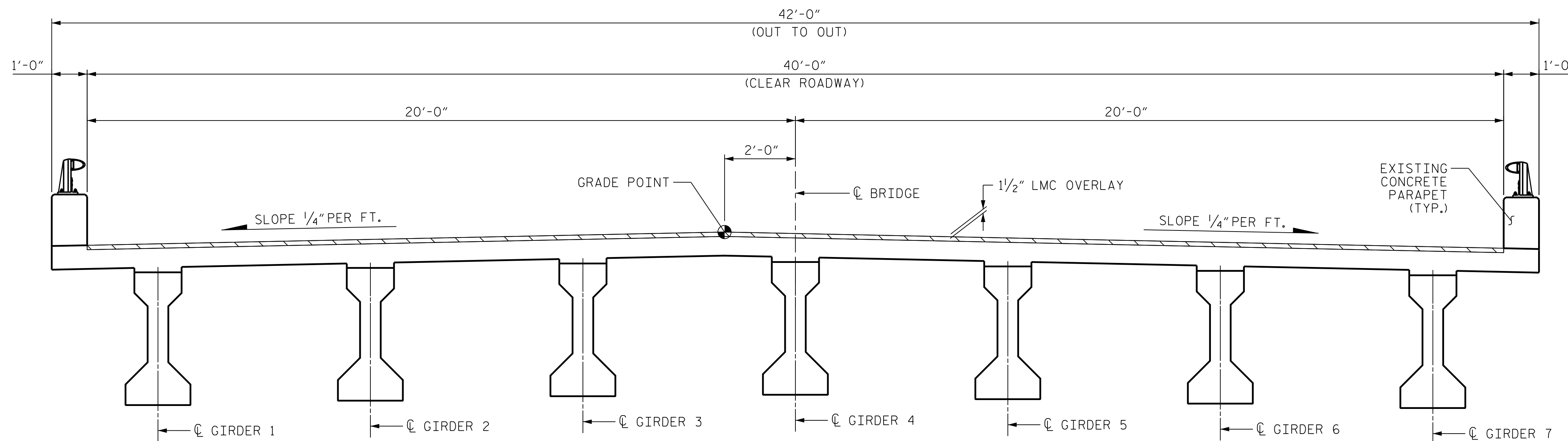
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 TOTAL SHEETS  
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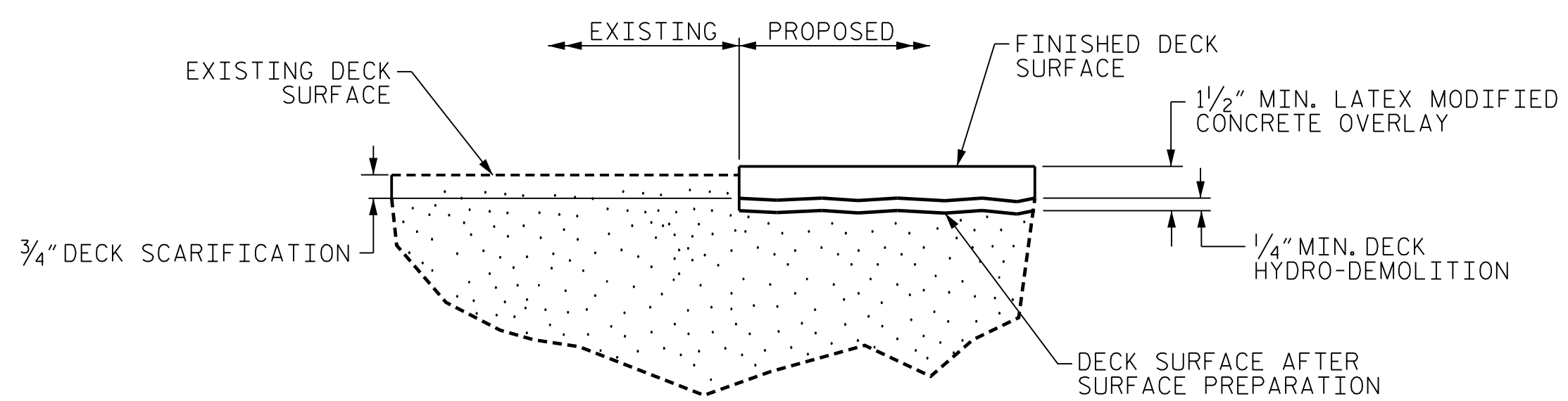
DRAWN BY : J. MYA DATE : 11/2018  
 CHECKED BY : J. YANACCONI DATE : 11/2018  
 DESIGN ENGINEER OF RECORD : F. ASEFNIA DATE : 11/2018



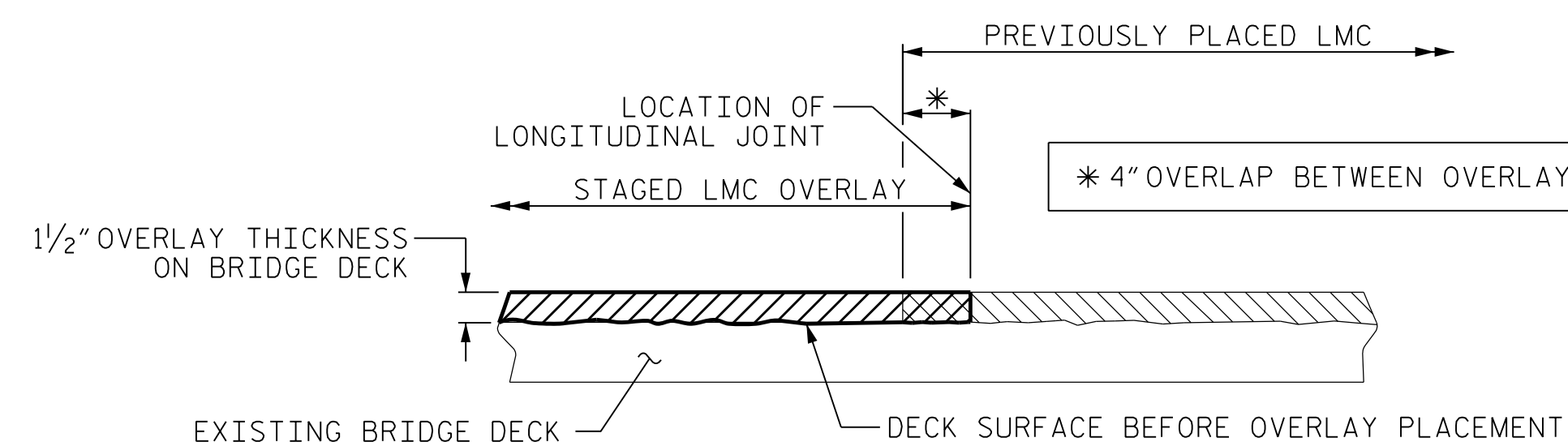
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(EXISTING)



TYPICAL SECTION  
(PROPOSED)



DETAIL FOR LMC OVERLAY

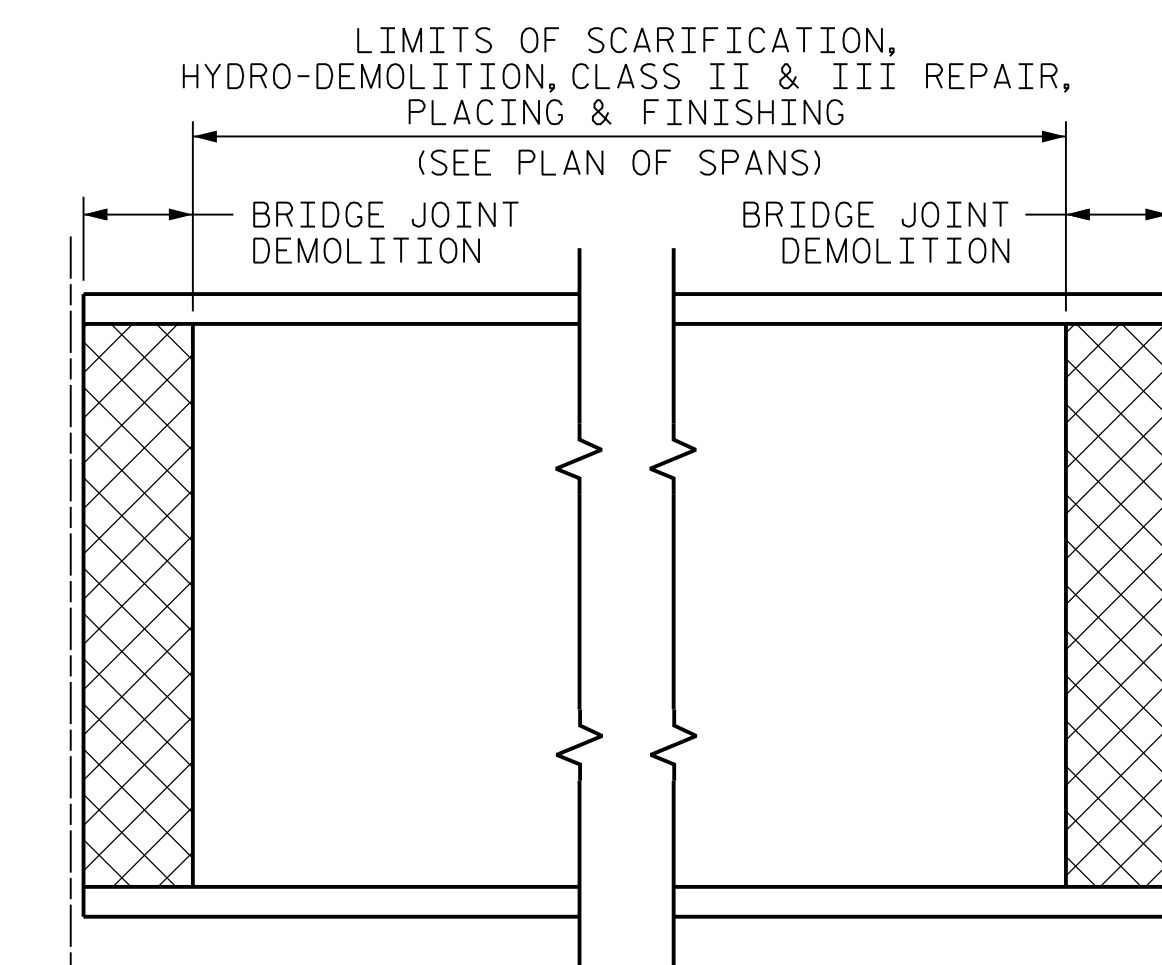


SECTION THRU DECK  
STAGED LMC OVERLAY JOINT  
(AS NEEDED)

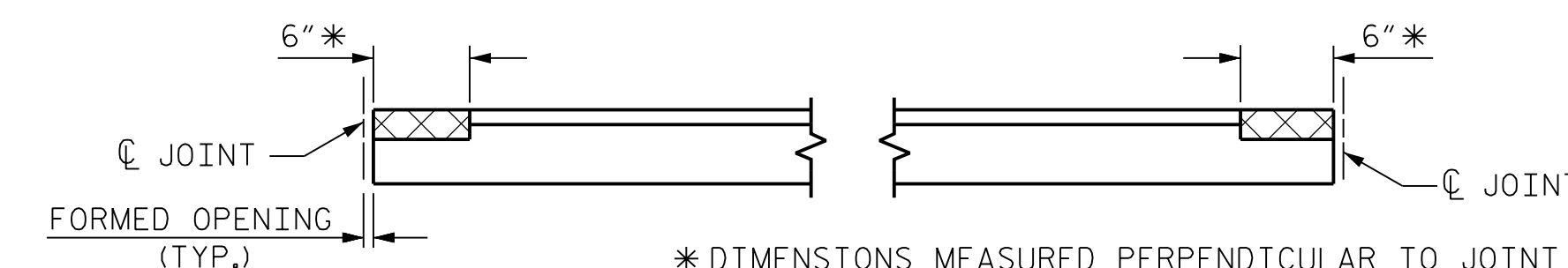
NOTES:

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

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



PLAN

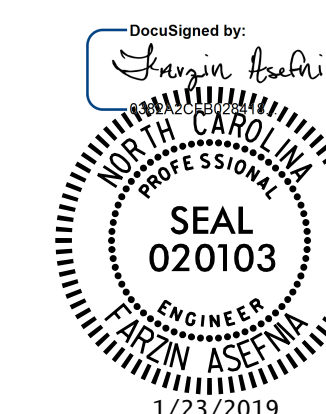


ELEVATION

PAY LIMITS FOR OVERLAY BID ITEMS

PROJECT NO. 15BPR.36  
CHATHAM COUNTY  
 BRIDGE NO. 180058

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

TYPICAL SECTION AND  
SURFACE PREPARATION  
DETAILS

DRAWN BY : S. DHOLAKIA DATE : 11/2018  
 CHECKED BY : J. YANNAKONE DATE : 11/2018  
 DESIGN ENGINEER OF RECORD : F. ASEFNIA DATE : 11/2018

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

TOTAL SHEETS 51

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### REPAIR QUANTITY TABLE

#### TOP OF DECK REPAIR

	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	306 SY	
HYDRO-DEMOLITION OF BRIDGE DECK	306 SY	
CLASS II SURFACE PREPARATION	0.0 SY	
CLASS III SURFACE PREPARATION	0.5 SY *	
BRIDGE JOINT DEMOLITION	40.0 SF	
EPOXY RESIN INJECTION	0.0 LF	
CONCRETE FOR DECK REPAIR	2.5 CF	
GROOVING BRIDGE FLOORS	2538 SF	

#### UNDERSIDE OF DECK REPAIR

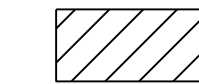
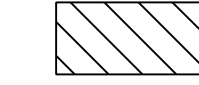
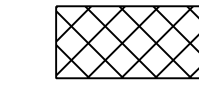
SHOTCRETE REPAIRS	ESTIMATE		ACTUAL	
	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0.0	0.0		
OVERHANG DIAPHRAGMS	0.0	0.0		
UNDERSIDE OF OVERHANG	0.0	0.0		
INTERIOR DIAPHRAGMS	0.0	0.0		

	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.

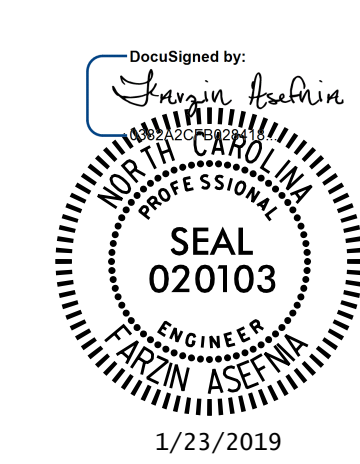
\* CLASS III SURFACE PREPARATION AND REPAIR IS NOT ANTICIPATED. A TOKEN AMOUNT IS INDICATED FOR PRICING PURPOSES IN CASE UNANTICIPATED CLASS III SURFACE PREPARATION AREAS ARE ENCOUNTERED.

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

PROJECT NO. 15BPR.36  
CHATHAM COUNTY  
 BRIDGE NO. 180058

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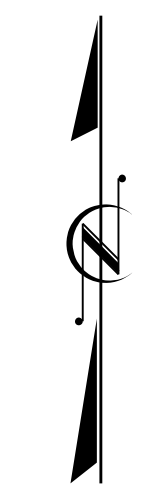
SHEET 2 OF 6



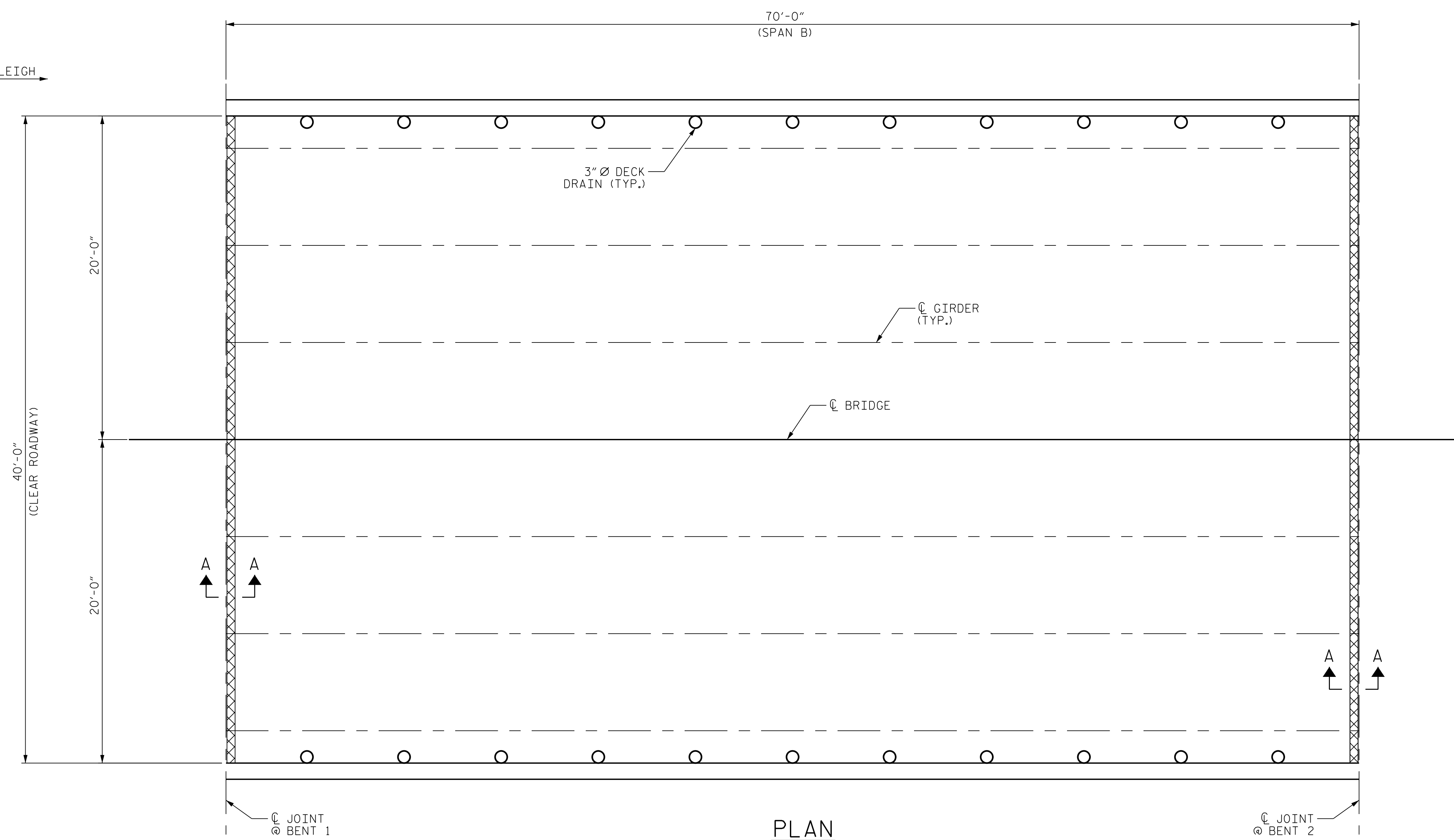
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

### PLAN OF SPANS SPAN B

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			51



TO RALEIGH



### 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 1 1/2" PER THE EXISTING BRIDGE PLANS.

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

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DRAWN BY :	S. DHOLAKIA	DATE :	11/2018
CHECKED BY :	J. YANNAKONE	DATE :	11/2018
DESIGN ENGINEER OF RECORD :	F. ASEFNIA	DATE :	11/2018



REPAIR QUANTITY TABLE

TOP OF DECK REPAIR

	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	306 SY	
HYDRO-DEMOLITION OF BRIDGE DECK	306 SY	
CLASS II SURFACE PREPARATION	26.8 SY	
CLASS III SURFACE PREPARATION	0.5 SY *	
BRIDGE JOINT DEMOLITION	40.0 SF	
EPOXY RESIN INJECTION	0.0 LF	
CONCRETE FOR DECK REPAIR	2.5 CF	
GROOVING BRIDGE FLOORS	2538 SF	

UNDERSIDE OF DECK REPAIR

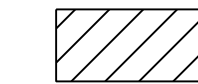
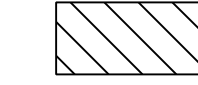
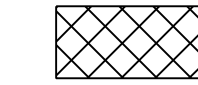
SHOTCRETE REPAIRS	ESTIMATE		ACTUAL	
	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0.0	0.0		
OVERHANG DIAPHRAGMS	0.0	0.0		
UNDERSIDE OF OVERHANG	0.0	0.0		
INTERIOR DIAPHRAGMS	0.0	0.0		

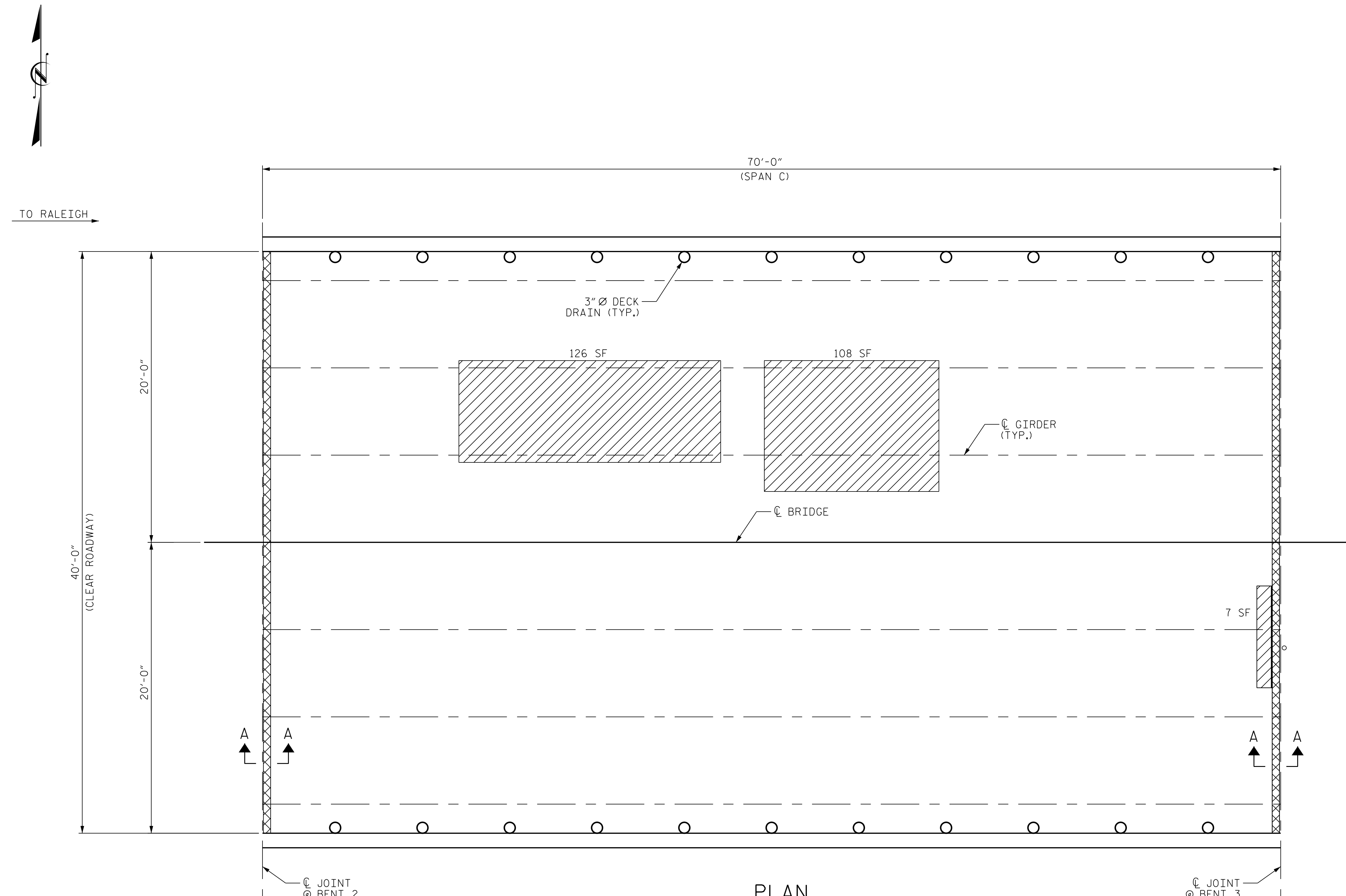
	ESTIMATE	ACTUAL
UNDERSIDE EPOXY RESIN INJECTION	0.0 LF	

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 AND REPAIR 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



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 1 1/2" PER THE EXISTING BRIDGE PLANS.

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

PROJECT NO. 15BPR.36  
CHATHAM COUNTY  
 BRIDGE NO. 180058

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SHEET 3 OF 6



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

PLAN OF SPANS  
 SPAN C

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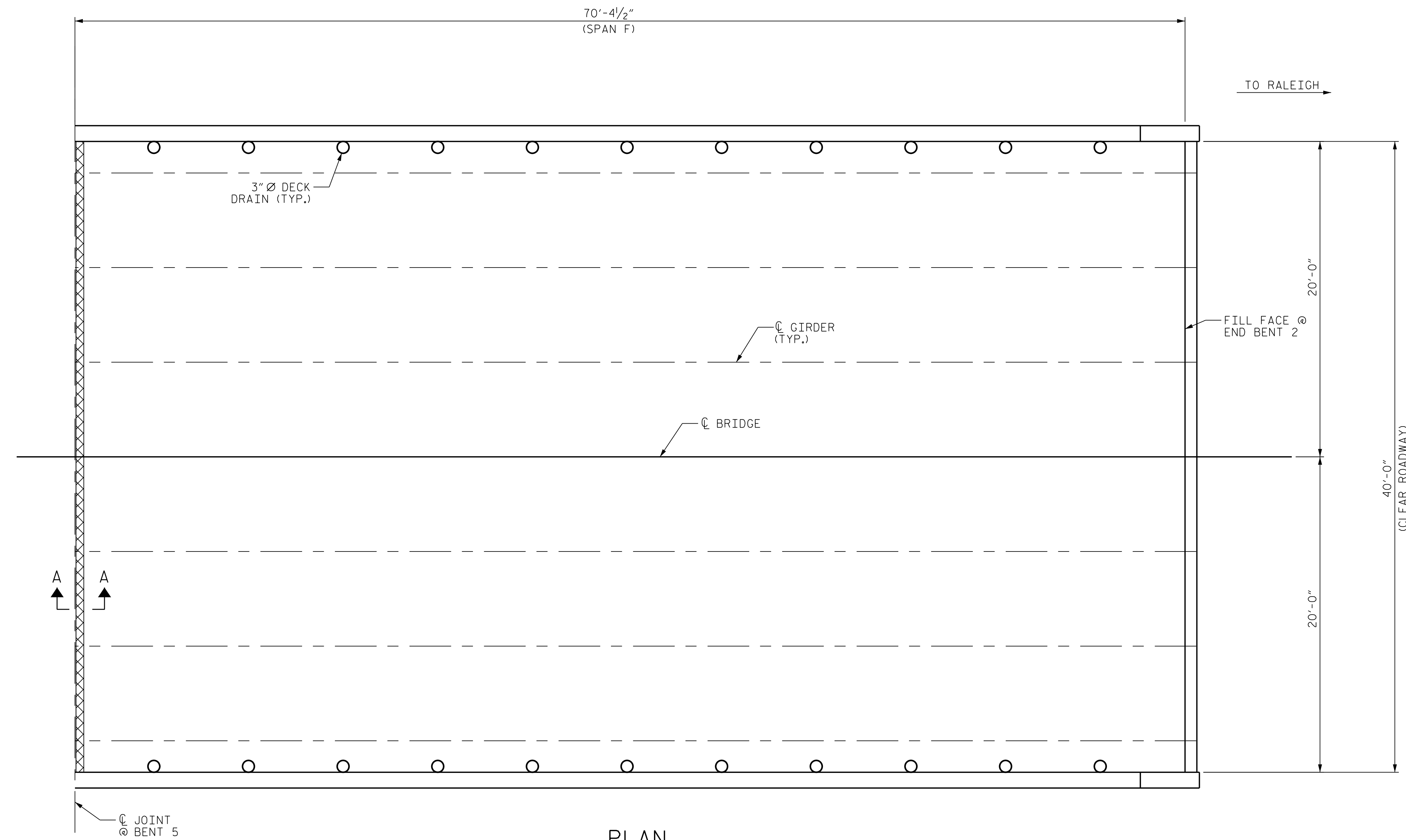


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 CHECKED BY : J. YANNAKONE DATE : 11/2018  
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PLAN

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 1/2" PER THE EXISTING BRIDGE PLANS.

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

REPAIR QUANTITY TABLE

TOP OF DECK REPAIR				
	ESTIMATE	ACTUAL		
SCARIFYING BRIDGE DECK	311 SY			
HYDRO-DEMOLITION OF BRIDGE DECK	311 SY			
CLASS II SURFACE PREPARATION	0.0 SY			
CLASS III SURFACE PREPARATION	0.5 SY *			
BRIDGE JOINT DEMOLITION	20.0 SF			
EPOXY RESIN INJECTION	0.0 LF			
CONCRETE FOR DECK REPAIR	2.5 CF			
GROOVING BRIDGE FLOORS	2571 SF			
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 AND REPAIR 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.36  
CHATHAM COUNTY  
 BRIDGE NO. 180058

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SHEET 6 OF 6



STATE OF NORTH CAROLINA  
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PLAN OF SPANS  
 SPAN F



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ELASTOMERIC CONCRETE FOR PRESERVATION	
BENT 1	10.0 (CU. FT.)
BENT 2	10.0 (CU. FT.)
BENT 3	10.0 (CU. FT.)
BENT 4	10.0 (CU. FT.)
BENT 5	10.0 (CU. FT.)
TOTAL	50.0 (CU. FT.)

\*BASED ON THE MINIMUM BLOCKOUT SHOWN

JOINT REPAIR QUANTITY TABLE		
	ESTIMATE	ACTUAL
FOAM JOINT SEALS FOR PRESERVATION	200 LF	

**NOTES**

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

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

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

FOAM JOINT SEALS SHALL BE INSTALLED AS PER THE MANUFACTURERS RECOMMENDATIONS.

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

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

THE INSTALLED FOAM JOINTS SHALL BE WATER TIGHT.

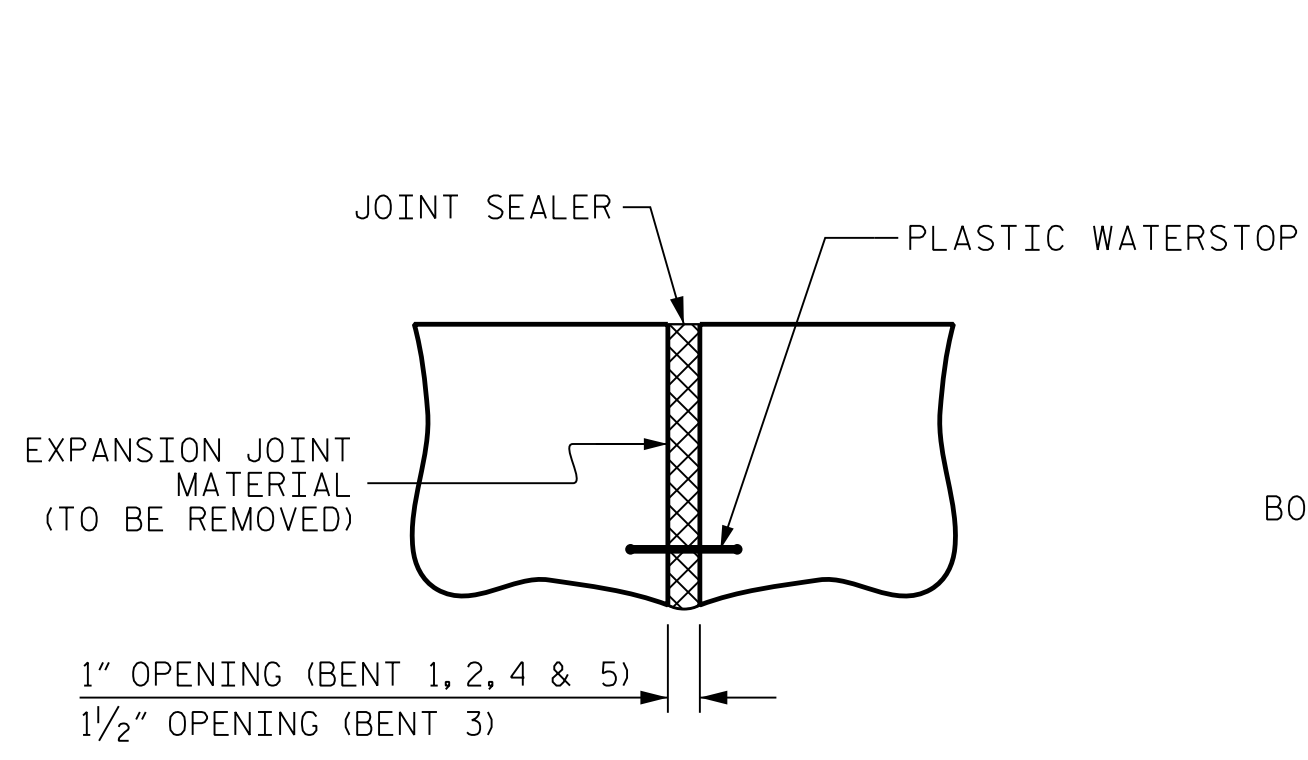
QUANTITIES SHOWN IN THE ELASTOMERIC CONCRETE FOR PRESERVATION TABLE ARE BASED ON THE MINIMUM JOINT DEMOLITION SHOWN.

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

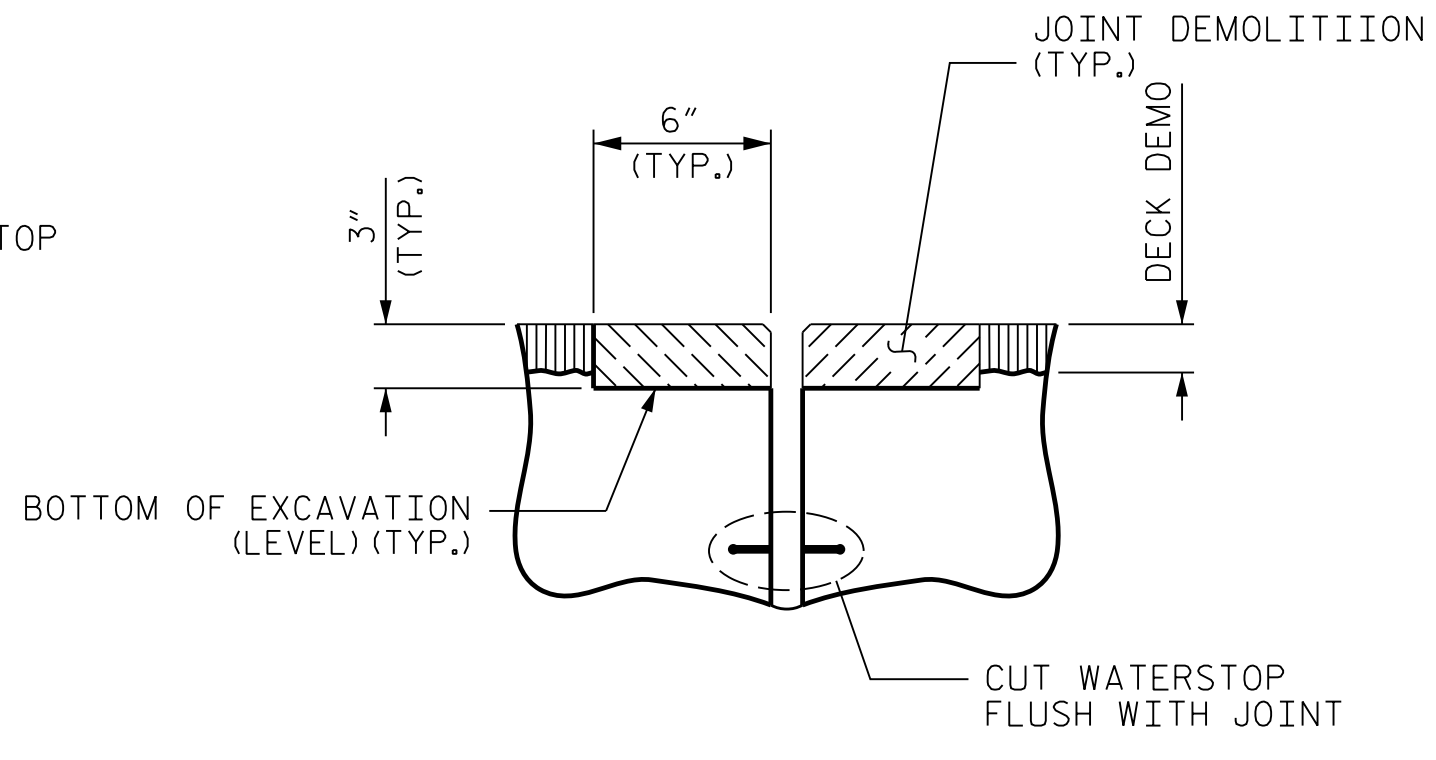
FOR JOINT DEMOLITION, SEE SPECIAL PROVISIONS.

FOR FOAM JOINT SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.

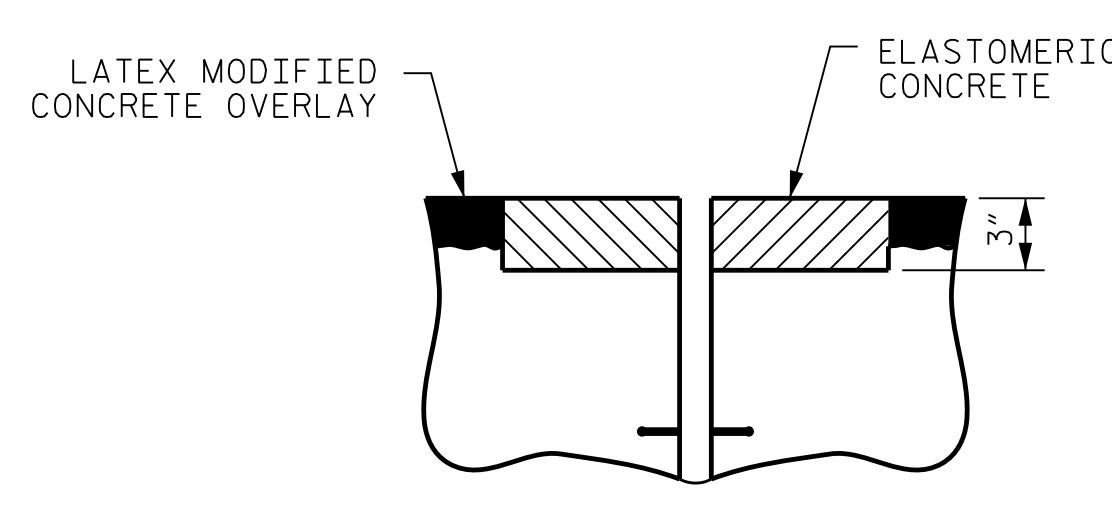
FOR ELASTOMERIC CONCRETE FOR PRESERVATION, SEE SPECIAL PROVISIONS.



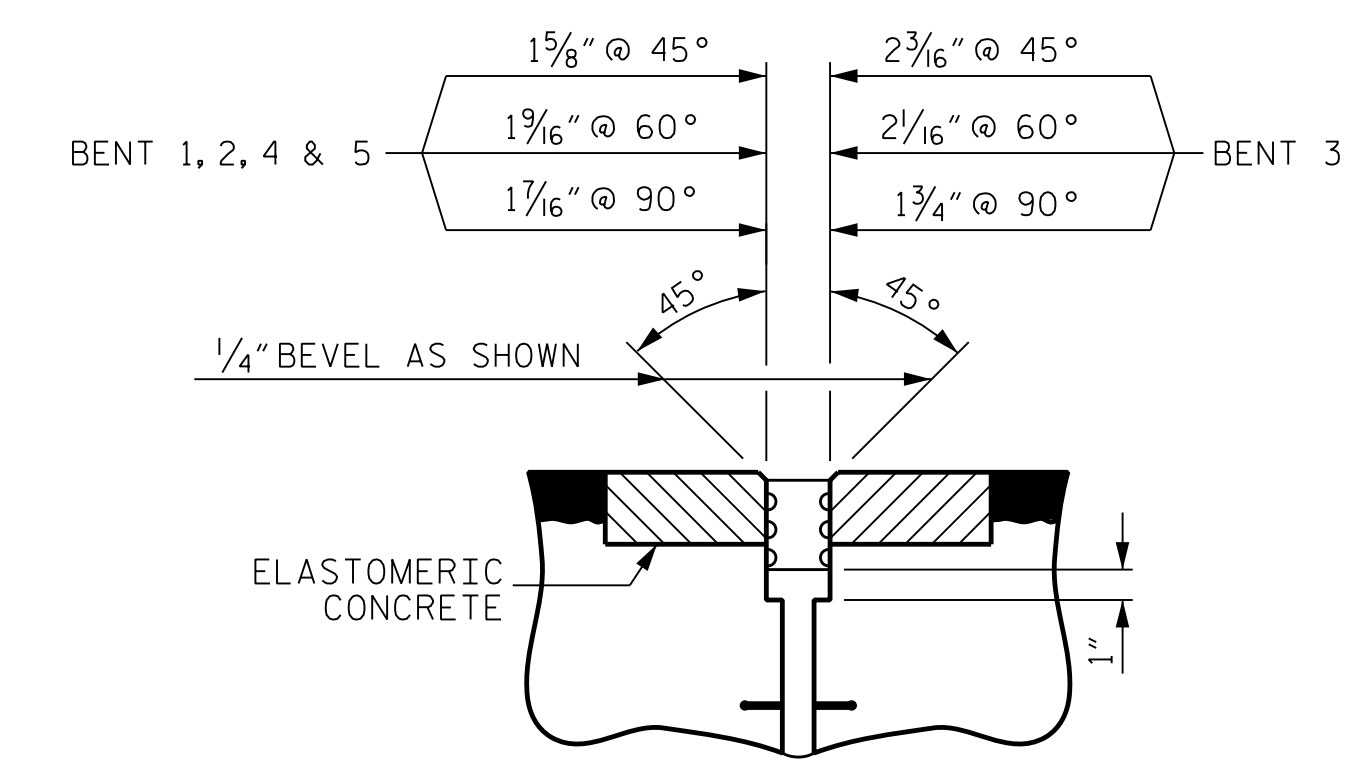
EXISTING JOINT



MINIMUM EXISTING JOINT DEMOLITION

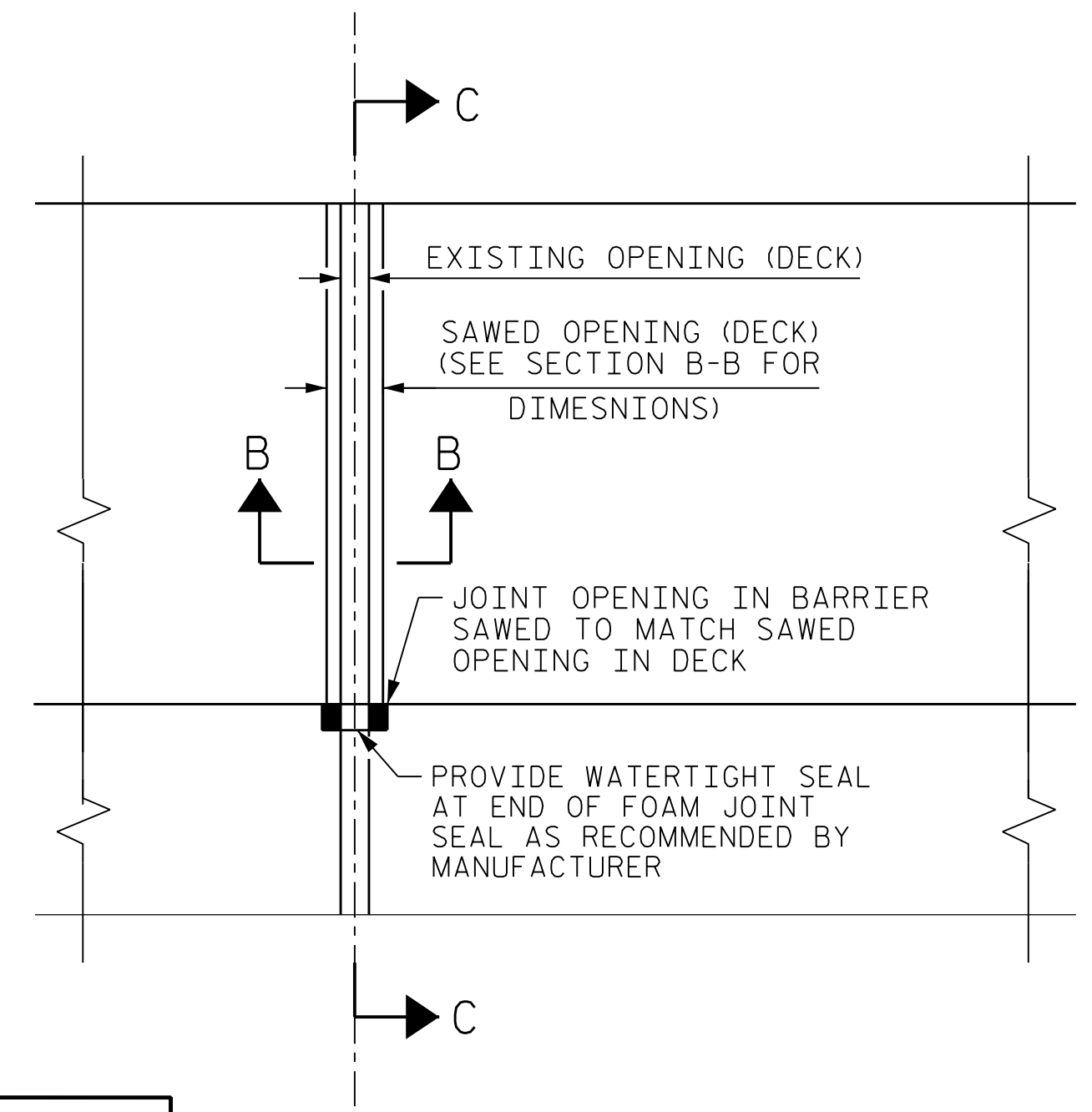


PROPOSED JOINT PRE-SAWED

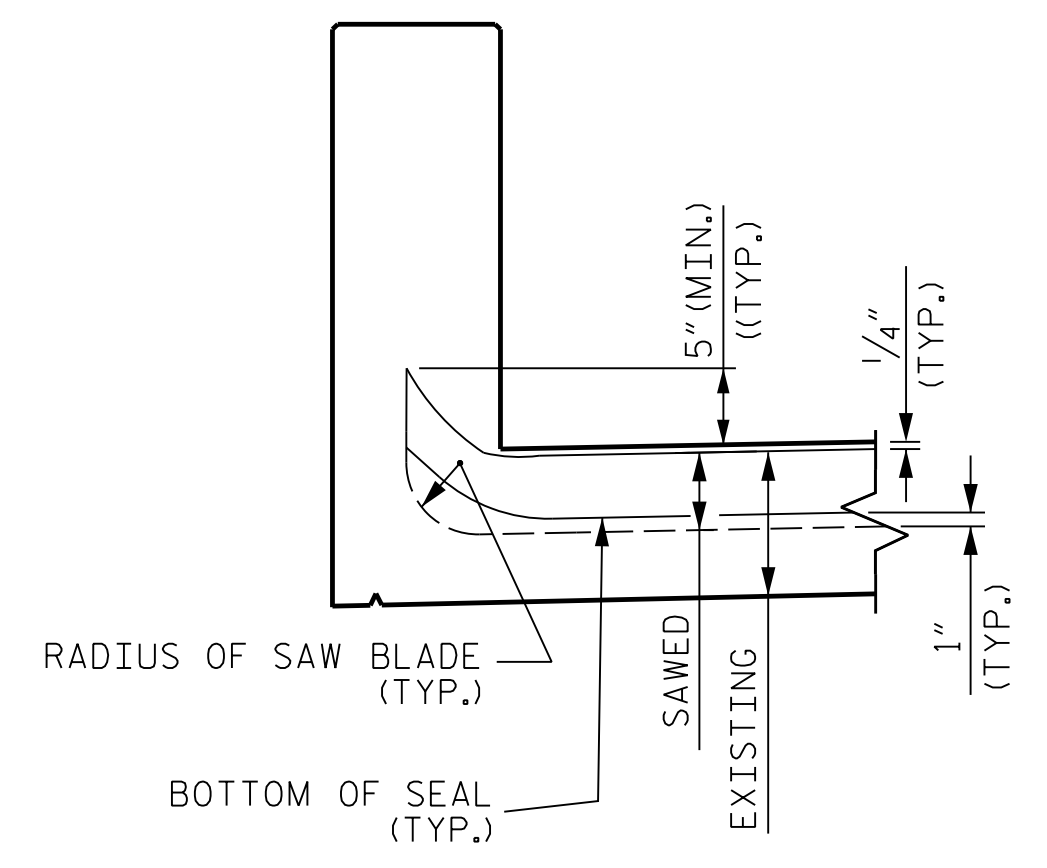


PROPOSED FOAM JOINT SEAL

**SECTION A-A**



PLAN



SECTION C-C

PROJECT NO. 15BPR.36  
CHATHAM COUNTY  
 BRIDGE NO. 180058

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**JOINT DETAILS**

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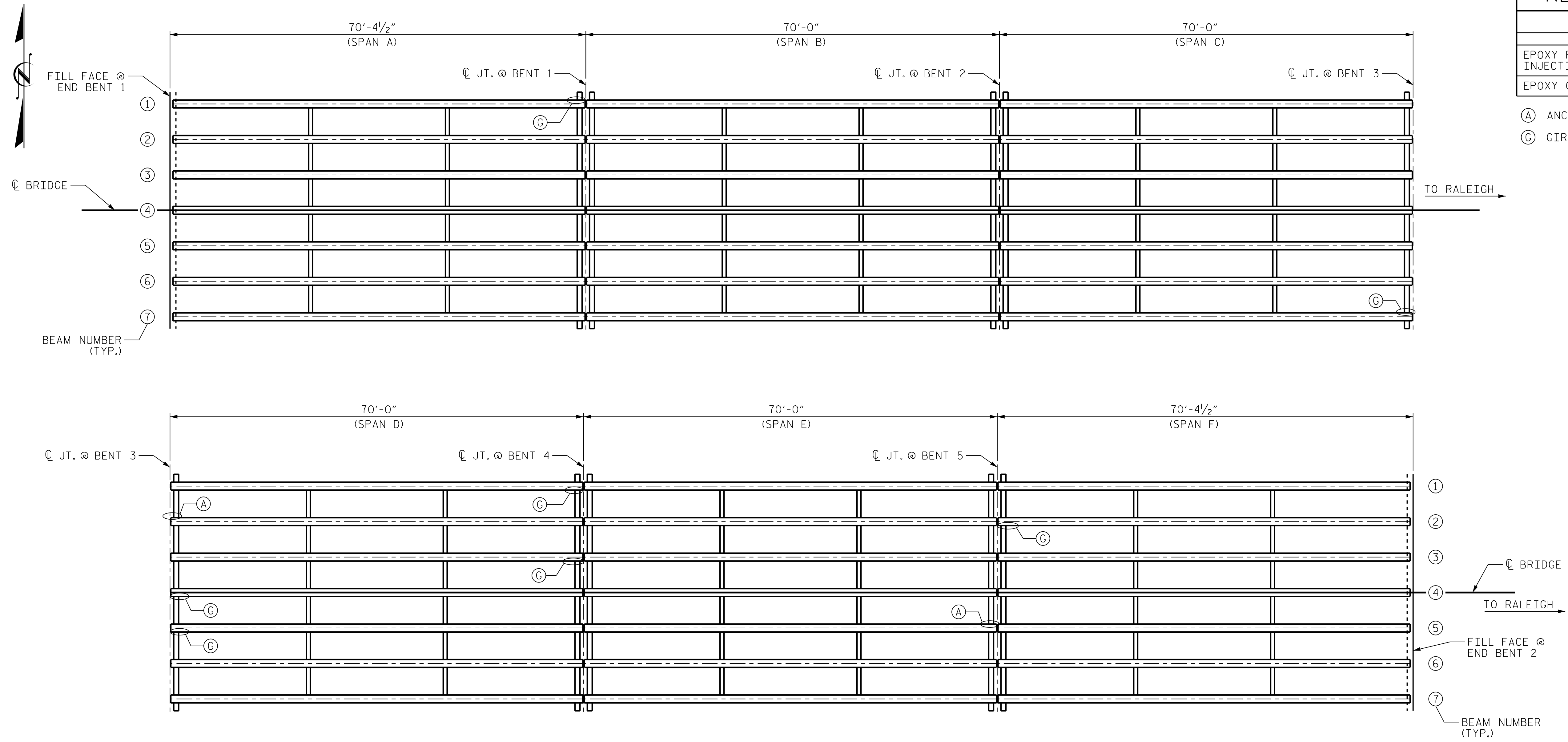
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 DESIGN ENGINEER OF RECORD : F. ASEFNIA DATE : 11/2018

### REPAIR QUANTITY TABLE

GIRDER REPAIR		
	ESTIMATE	ACTUAL
EPOXY RESIN INJECTION	0.5 LF	
EPOXY COATING	834 SF	

- (A) ANCHOR BOLT REPAIR (SEE NOTES)
- (G) GIRDER REPAIR



### GIRDER REPAIR LOCATIONS

(OTHER LOCATIONS MAY EXIST, SEE NOTES)

ANTICIPATED REPAIR LOCATIONS						
SPAN	GIRDER	LOCATION	DIM "A"	DIM "B"	DIM "D"	DIM "O"
A	1	BENT 1	8"	4"	—	0"
C	7	BENT 3	6"	4"	—	6"
D	2	BENT 5	TIGHTEN ANCHOR BOLT NUT (SEE NOTES)			
D	4	BENT 3	6"	4"	—	4"
D	5	BENT 3	7"	4"	—	4"
D	1	BENT 4	7"	4"	—	3"
D	3	BENT 4	6"	6"	—	0"
E	5	BENT 5	TIGHTEN ANCHOR BOLT NUT (SEE NOTES)			
F	2	BENT 5	9"	7"	—	0"

#### 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.

MINIMUM CONCRETE COVER FOR PRESTRESSING STRANDS IN THE GIRDERS IS 2" PER THE EXISTING BRIDGE PLANS.

ALL LOOSE NUTS ON 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 "REPAIRS TO PRESTRESSED CONCRETE GIRDERS".

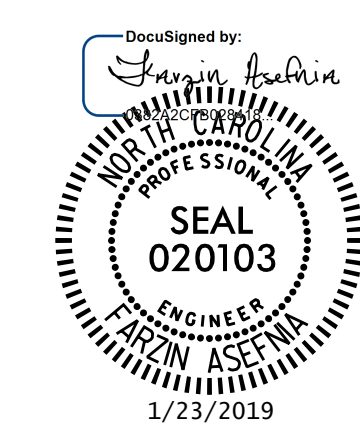
ALL GIRDER ENDS AT BENTS 1 THRU BENTS 5 SHALL BE EPOXY COATED AFTER GIRDER REPAIRS ARE COMPLETED. FOR EPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.

FOR GIRDER REPAIRS AND LIMITS OF EPOXY COATING, SEE "PRESTRESSED CONCRETE GIRDER REPAIR DETAILS" SHEET.

ALL BEARING PLATES SHALL BE CLEANED AND PAINTED. FOR CLEANING AND PAINTING EXISTING BEARING PLATES, SEE SPECIAL PROVISIONS.

PROJECT NO. 15BPR.36  
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### GIRDER REPAIR LOCATIONS

#### REVISIONS

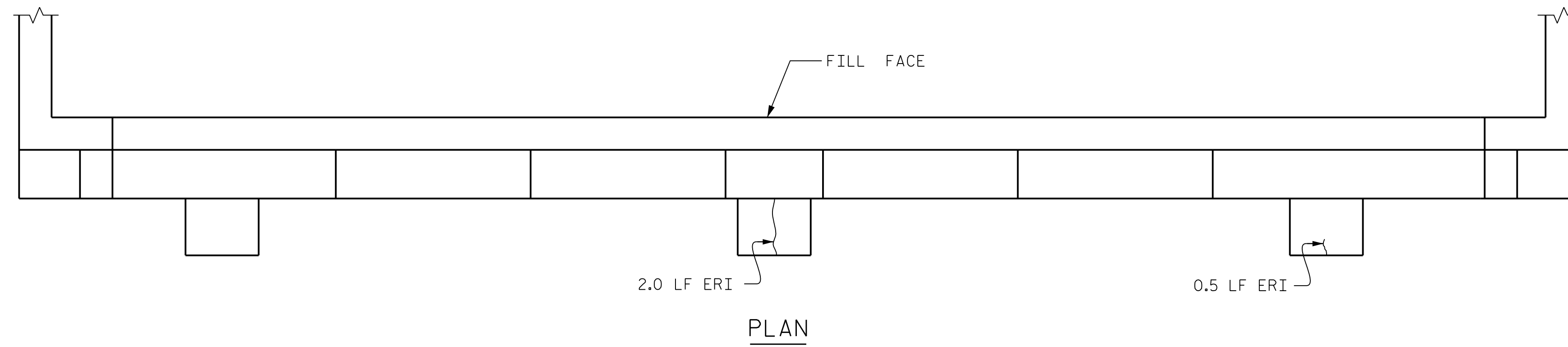
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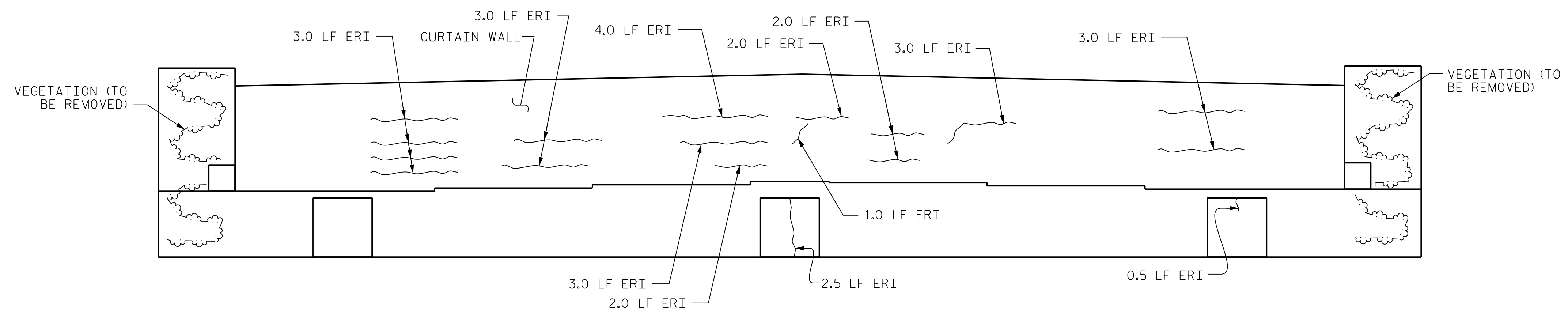
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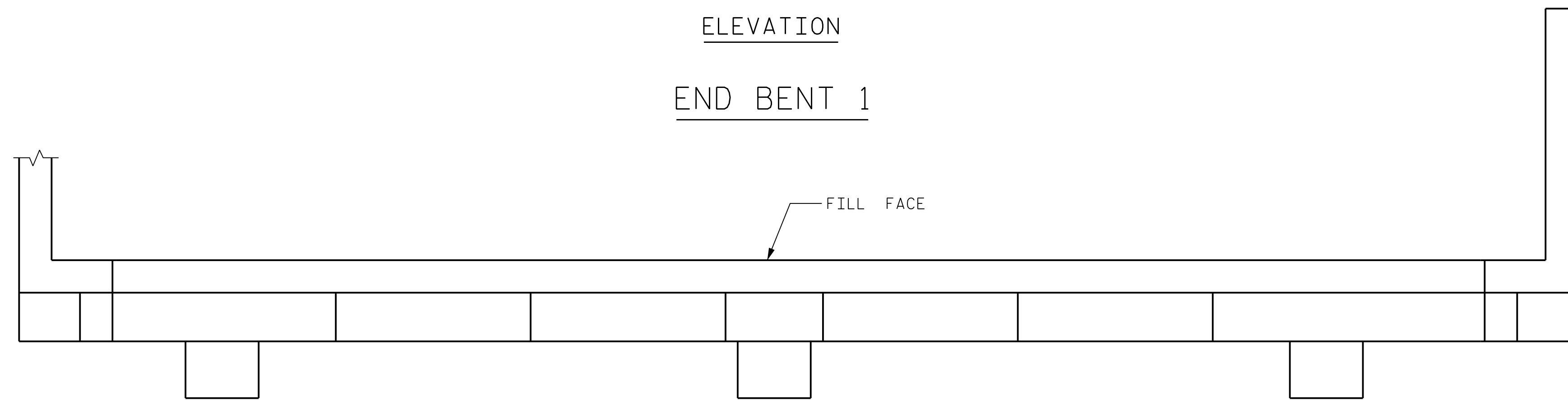
Louis Berger  
 Prepared by: LOUIS BERGER  
 1001 Wade Avenue, Suite 400  
 Raleigh, NC 27605-3322  
 NC COA No. F-0840



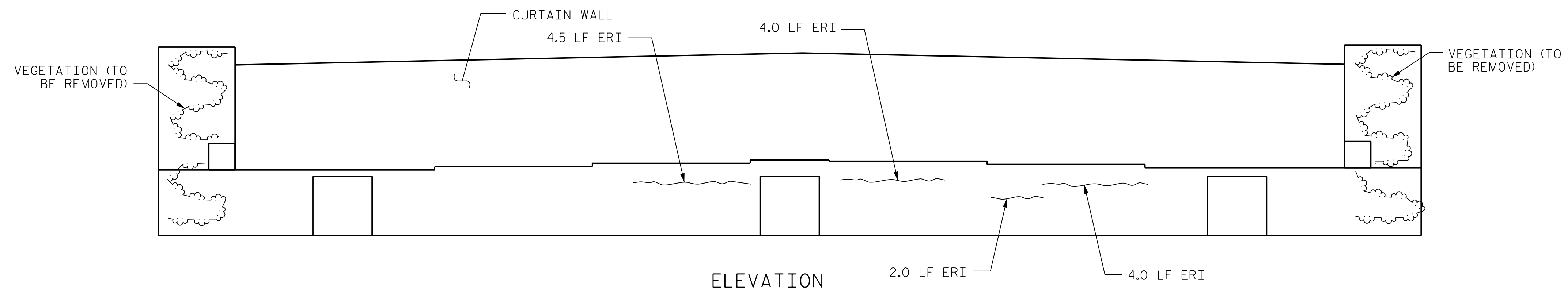
PLAN



ELEVATION  
END BENT 1



PLAN



ELEVATION  
END BENT 2

- SHOTCRETE REPAIR
- CONCRETE REPAIR
- EPOXY RESIN INJECTION

REPAIR QUANTITY TABLE				
END BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
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	5.5			
CURTAIN WALL	43.0			
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	0.0	0.0		
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	14.5			
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 LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

THE CONTRACTOR SHALL REMOVE VEGETATION GROWING ON THE END BENTS 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 EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

PROJECT NO. 15BPR.36  
CHATHAM COUNTY  
 BRIDGE NO. 180058

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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					
END BENT 1 & 2					
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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	54.4	22.8		
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		22.5		
COLUMN		99.5		
STRUT		5.0		
EPOXY COATING		SQ. FT		SQ. FT
TOP OF BENT CAP		123		

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

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

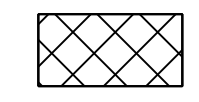
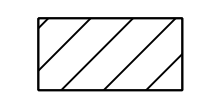

CLEAN AND REMOVE DEBRIS FROM THE TOP OF THE CAP AND APPLY EPOXY PROTECTIVE COATING. EPOXY COATING SHALL BE APPLIED TO THE TOP FACE OF THE CAP. THE CONTRACTOR SHALL NOT COAT THE AREA OF THE CAP BENEATH THE MASONRY PLATES. FOR EPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

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

-  SHOTCRETE REPAIR
-  CONCRETE REPAIR
-  EPOXY RESIN INJECTION

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CHATHAM COUNTY  
 BRIDGE NO. 180058

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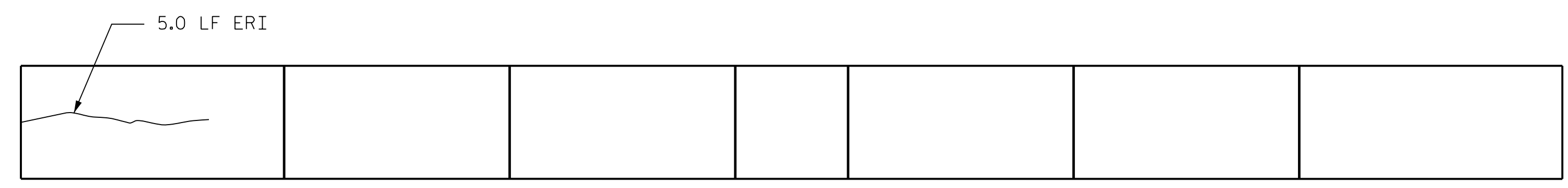
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 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 BENT 1  
 SPAN A FACE

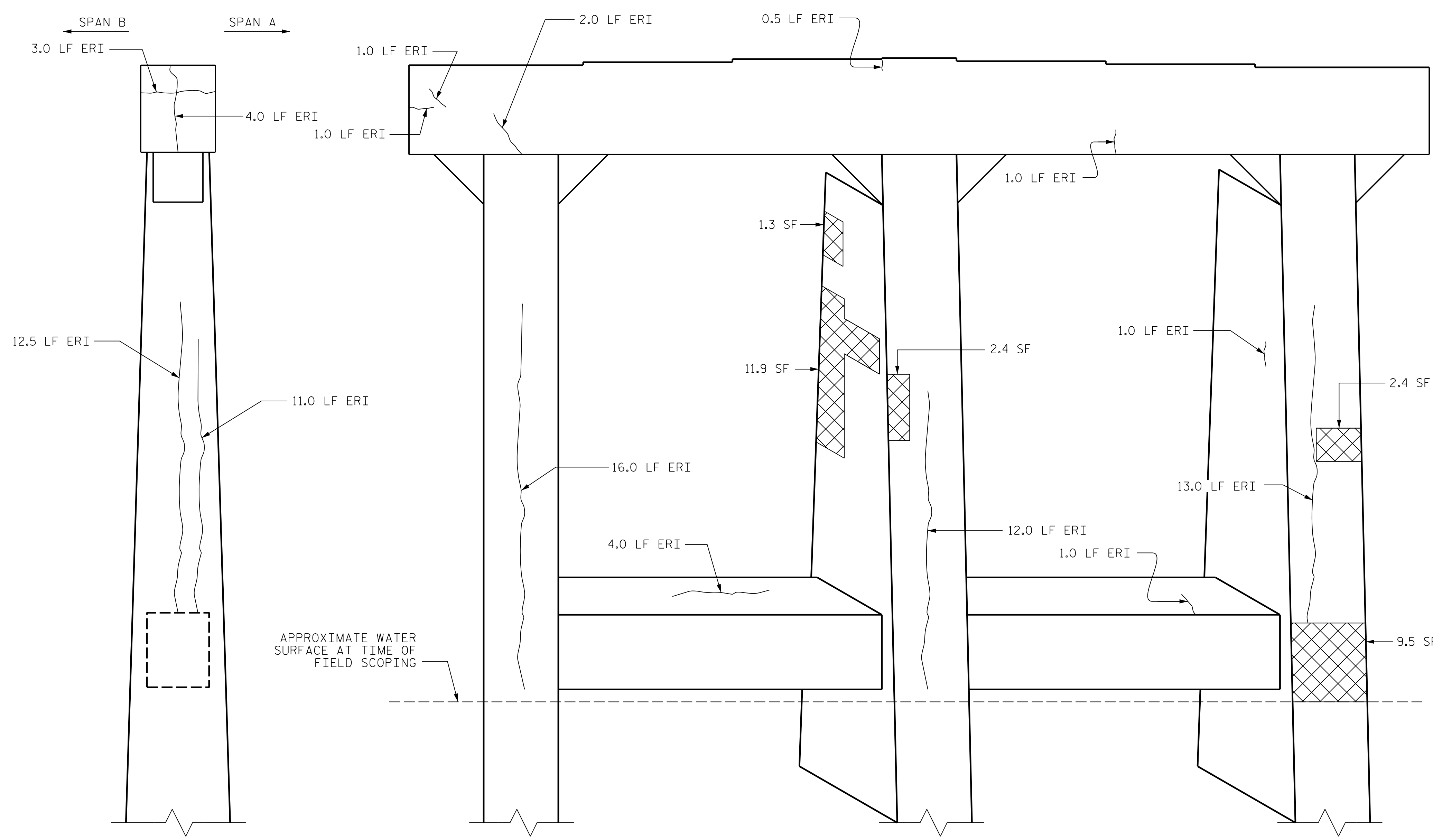
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TOP OF CAP



END VIEW

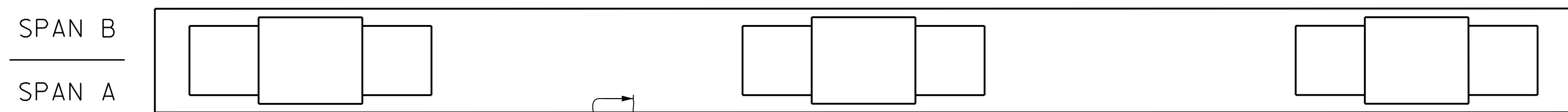
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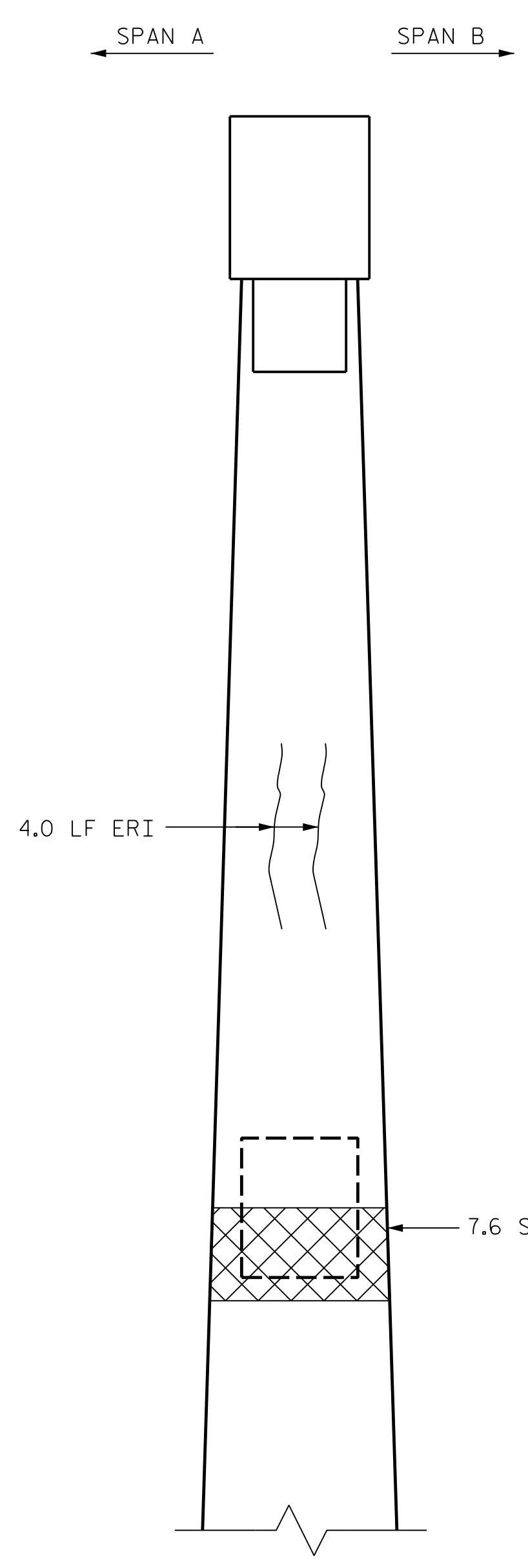
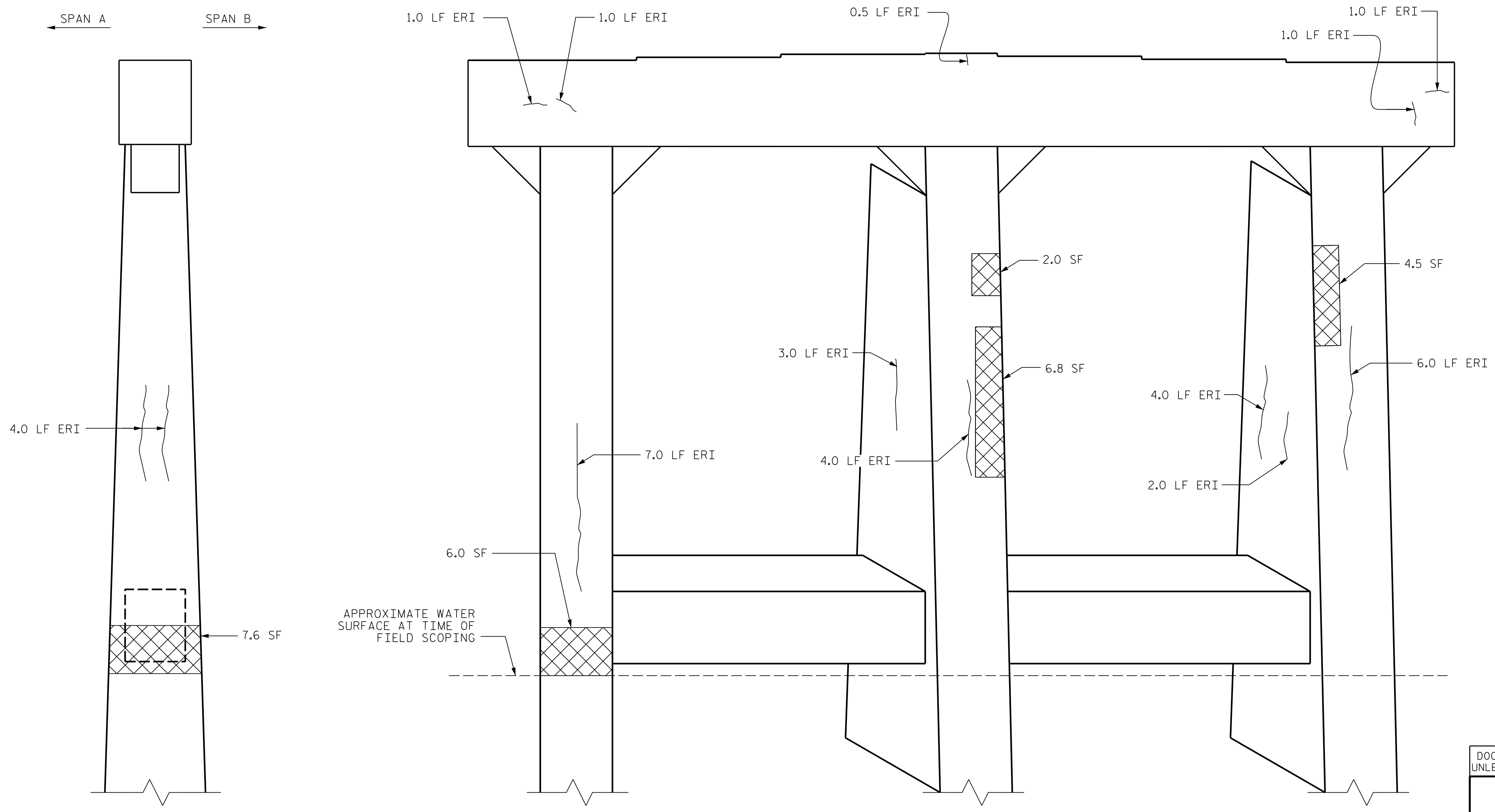
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 1001 Wade Avenue, Suite 400  
 Raleigh, NC 27605-3322  
 NC COA No. F-0840





BOTTOM OF CAP



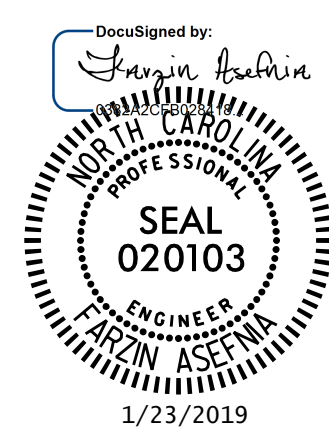
END VIEW

ELEVATION

- SHOTCRETE REPAIR
- CONCRETE REPAIR
- EPOXY RESIN INJECTION

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**SUBSTRUCTURE  
 BENT 1  
 SPAN B FACE**

REVISIONS

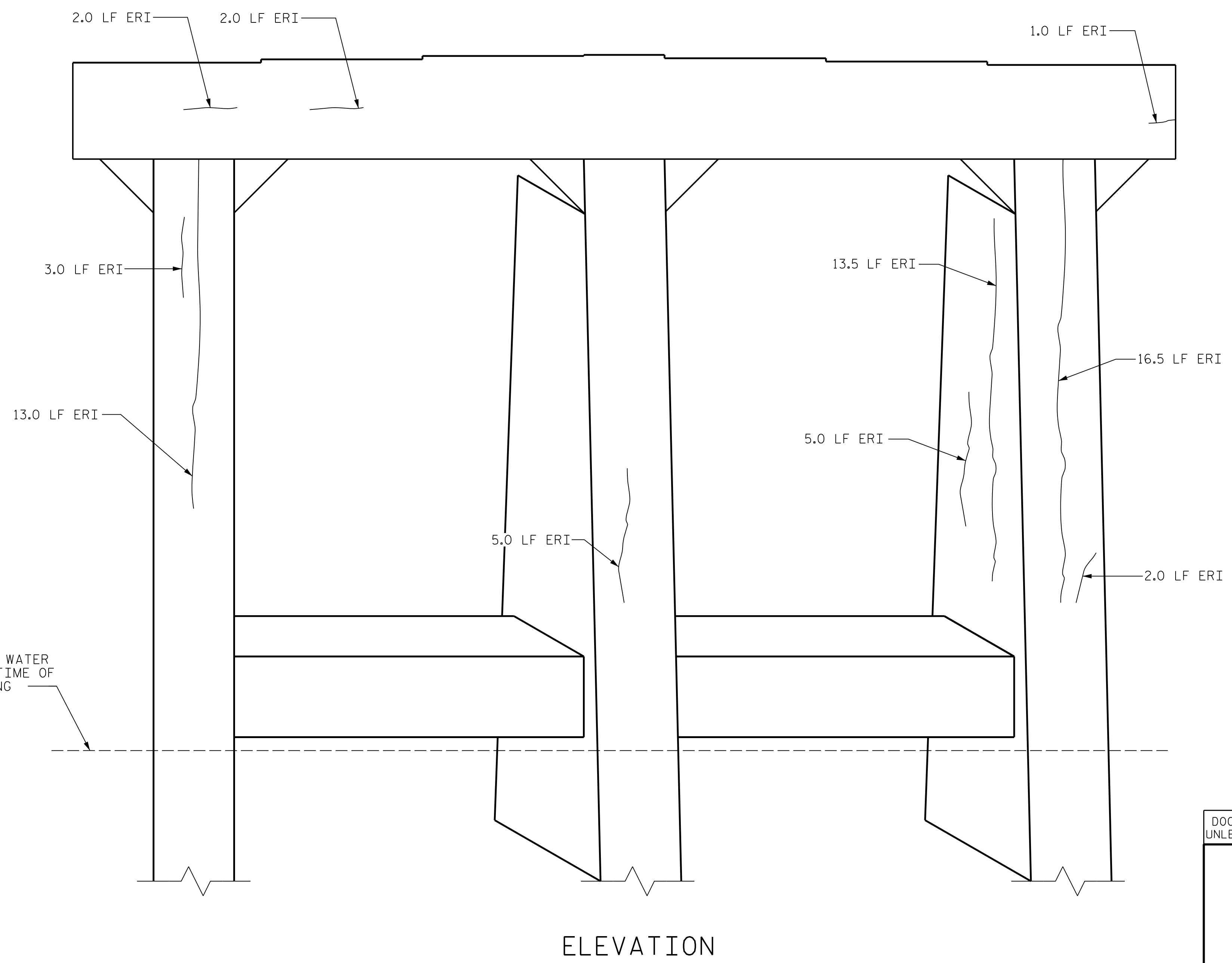
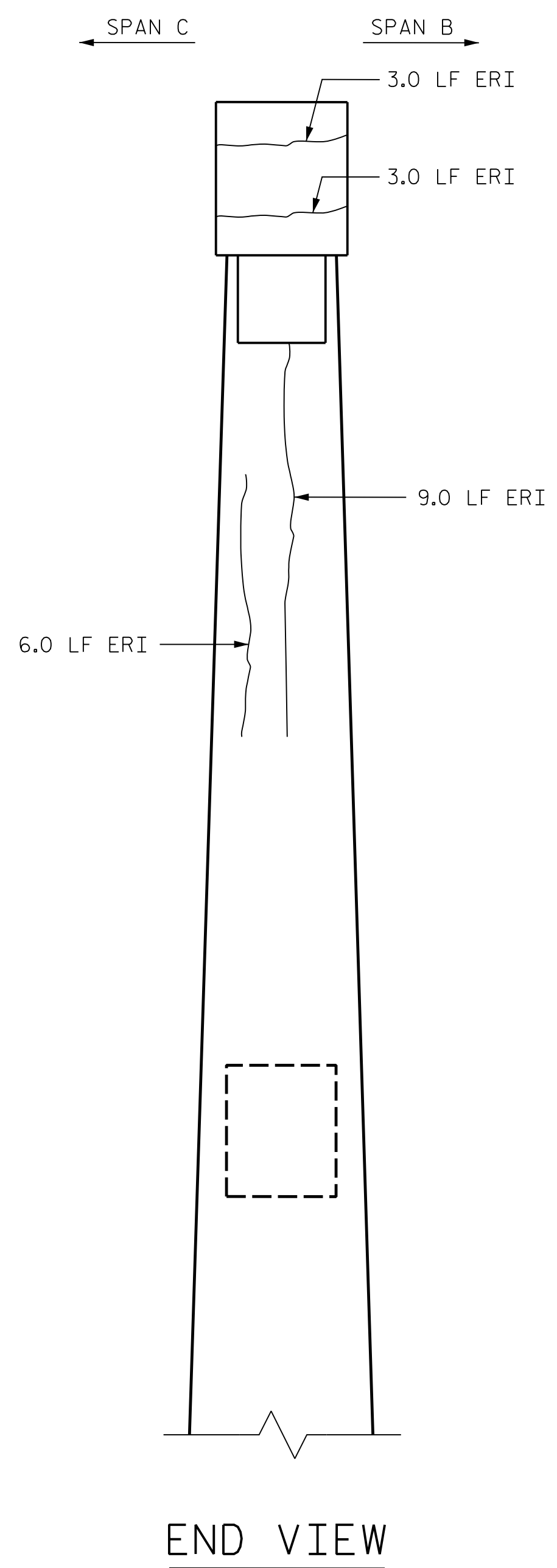
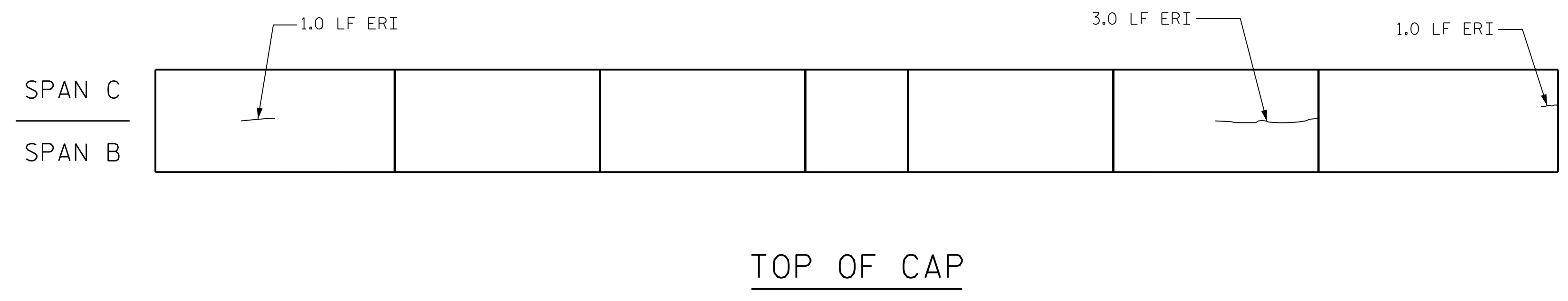
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REPAIR QUANTITY TABLE				
REPAIRS BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	2.3	0.9		
COLUMN	0.0	0.0		
STRUT	0.0	0.0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
COLUMN	0.0	0.0		
STRUT	0.0	0.0		
EPOXY RESIN INJECTION	LN. FT		LN. FT	
CAP	25.0			
COLUMN	168.5			
STRUT	0.0			
EPOXY COATING	SQ. FT		SQ. FT	
TOP OF BENT CAP	123			

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

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

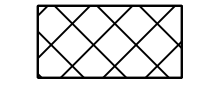


CLEAN AND REMOVE DEBRIS FROM THE TOP OF THE CAP AND APPLY EPOXY PROTECTIVE COATING. EPOXY COATING SHALL BE APPLIED TO THE TOP FACE OF THE CAP. THE CONTRACTOR SHALL NOT COAT THE AREA OF THE CAP BENEATH THE MASONRY PLATES. FOR EPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

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

-  SHOTCRETE REPAIR
-  CONCRETE REPAIR
-  EPOXY RESIN INJECTION

PROJECT NO. 15BPR.36  
CHATHAM COUNTY  
 BRIDGE NO. 180058

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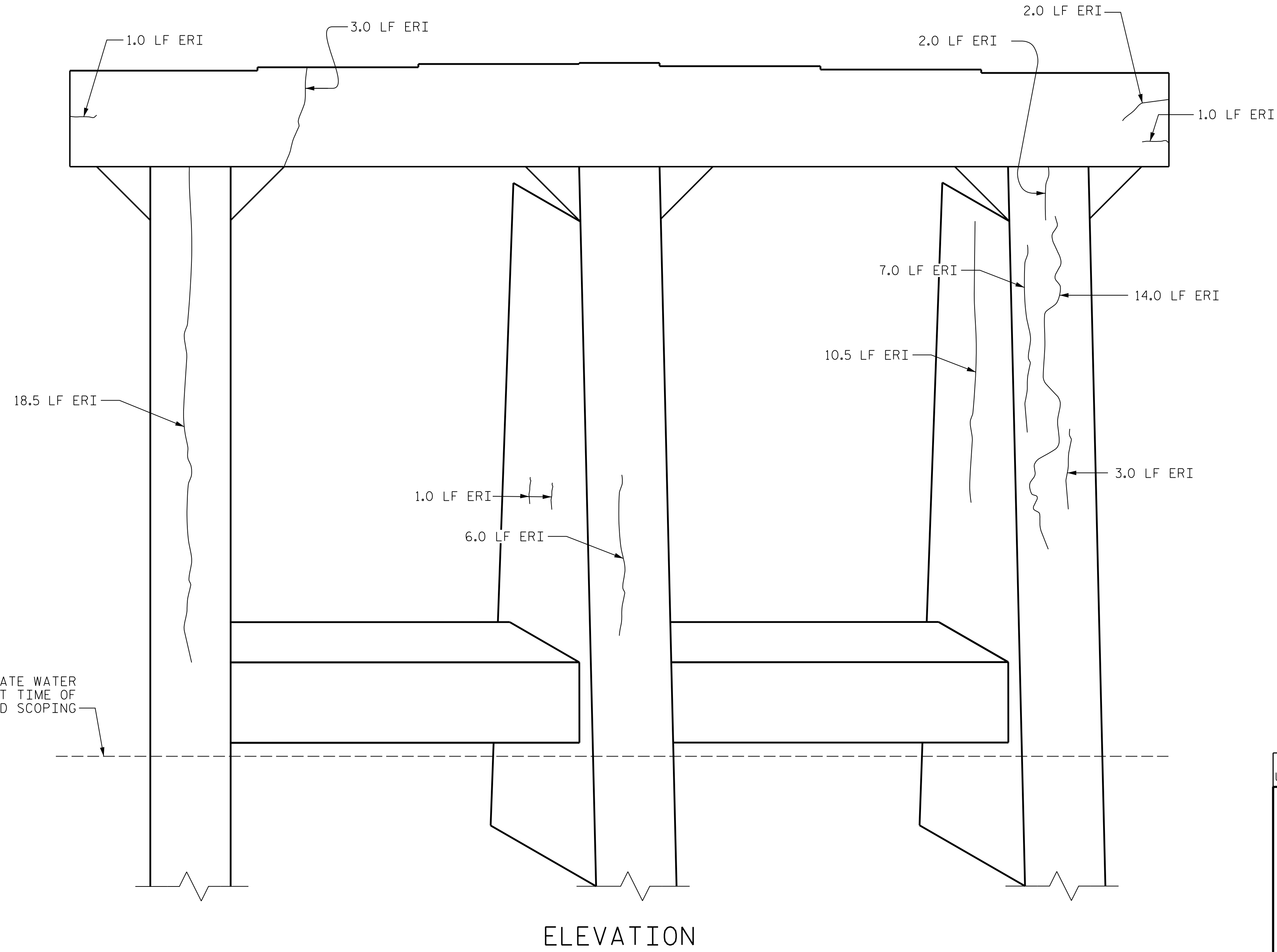
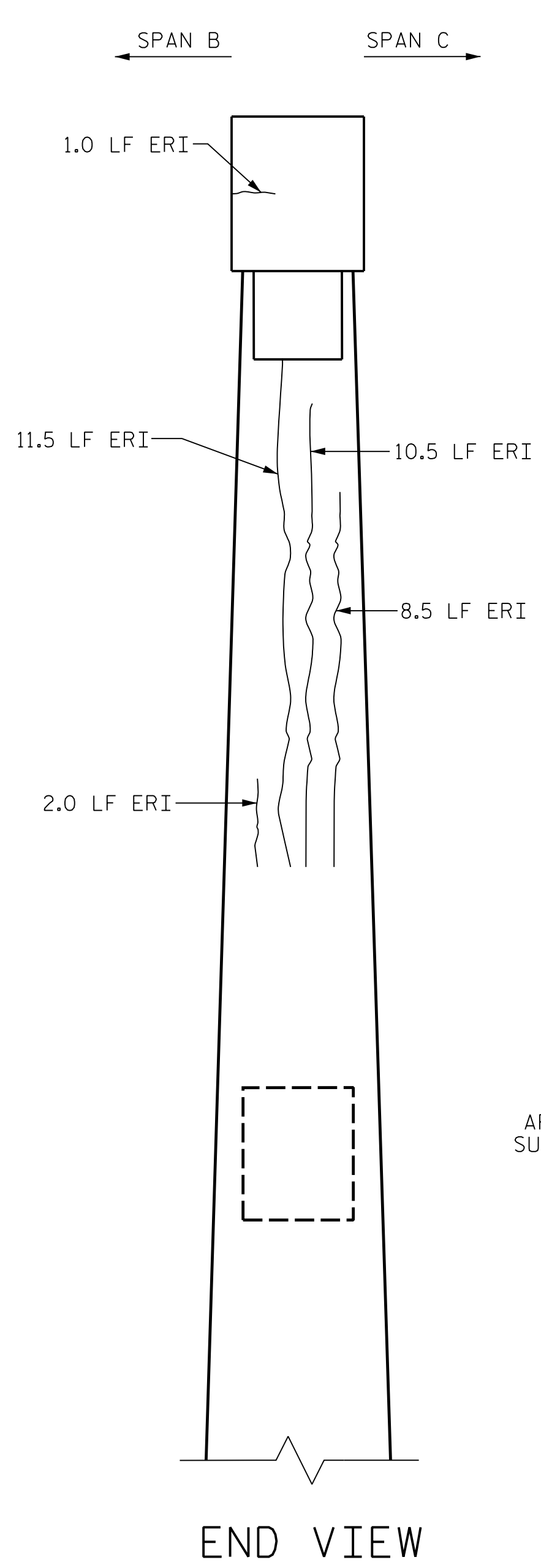
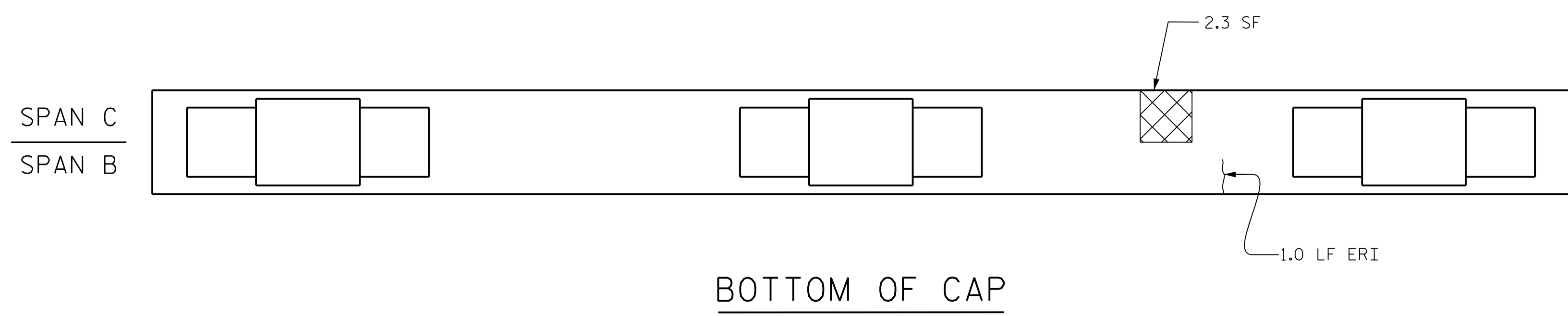
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 BENT 2  
 SPAN B FACE**

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 CHECKED BY : J.YANNACCONE DATE : 11/2018  
 DESIGN ENGINEER OF RECORD : F.ASEFNIA DATE : 11/2018

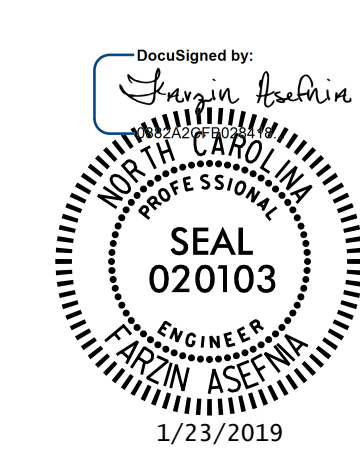
Prepared by:  
**LOUIS BERGER**  
 1001 Wade Avenue, Suite 400  
 Raleigh, NC 27605-3322  
 NC COA No. F-0840



- SHOTCRETE REPAIR
- CONCRETE REPAIR
- EPOXY RESIN INJECTION

PROJECT NO. 15BPR.36  
CHATHAM COUNTY  
 BRIDGE NO. 180058

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STATE OF NORTH CAROLINA  
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**SUBSTRUCTURE  
 BENT 2  
 SPAN C FACE**

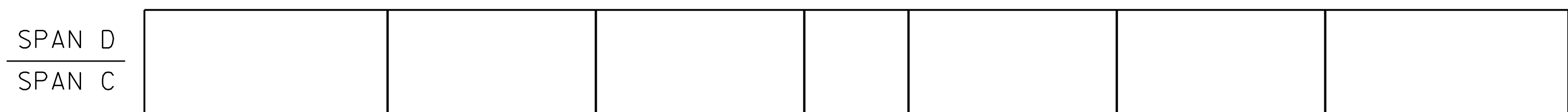
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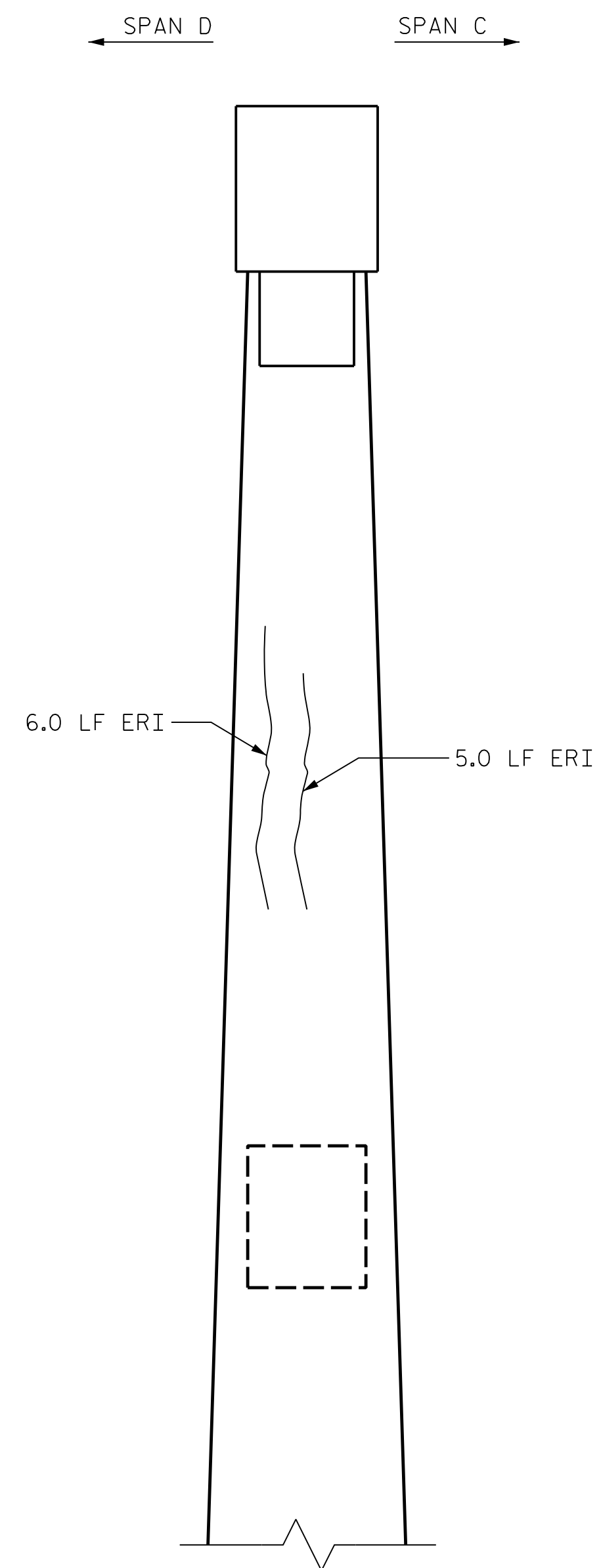
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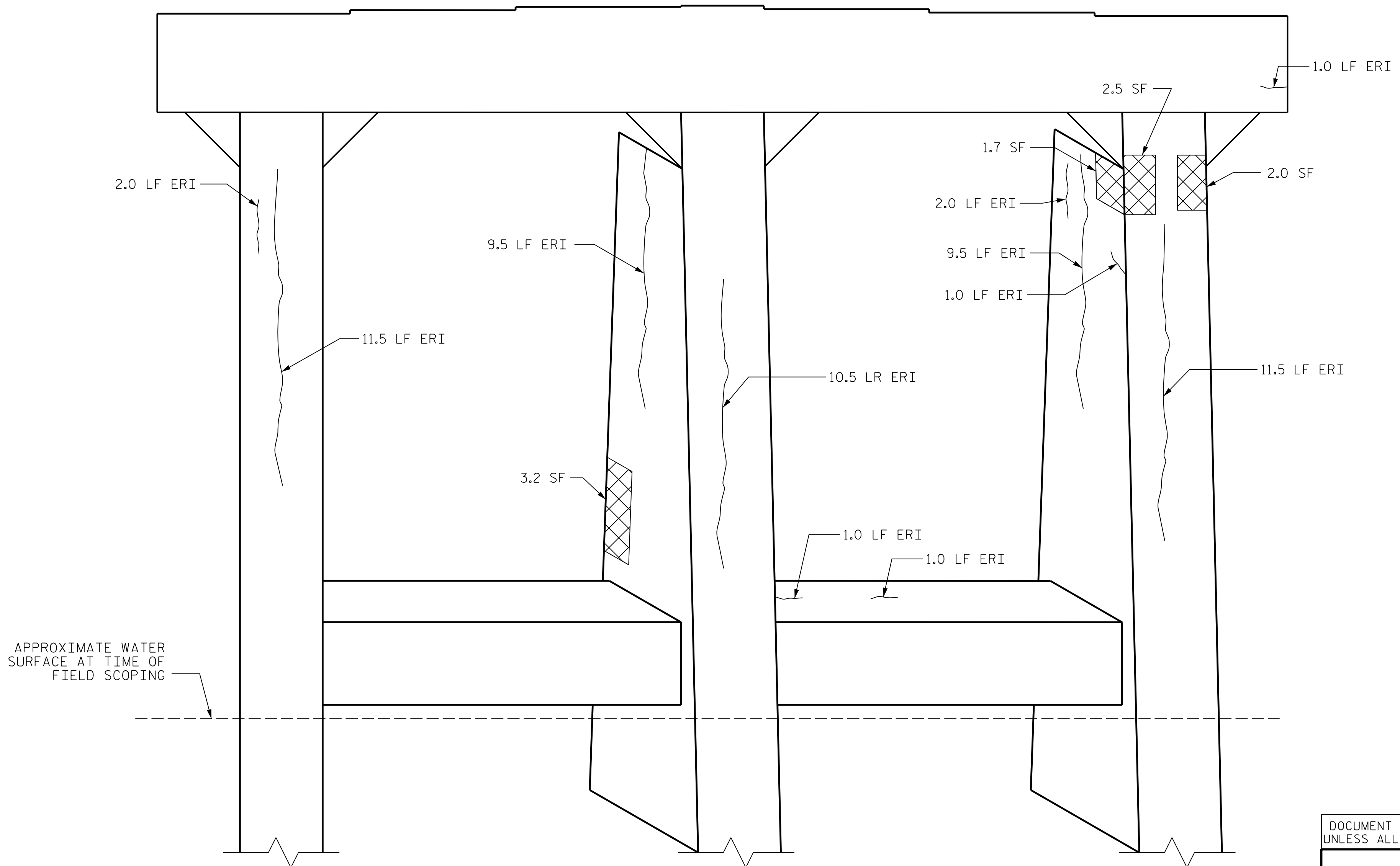
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TOP OF CAP



END VIEW



ELEVATION

REPAIR QUANTITY TABLE				
REPAIRS BENT 3	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
COLUMN	14.2	6.0		
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	3.0			
COLUMN	129.0			
STRUT	2.0			
EPOXY COATING	SQ. FT		SQ. FT	
TOP OF BENT CAP	123			

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

FOR 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.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.  
 FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.  
 FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.  
 CONCRETE REPAIRS MAY BE SUBSTITUTED IN PLACE OF SHOTCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

- SHOTCRETE REPAIR
- CONCRETE REPAIR
- EPOXY RESIN INJECTION

PROJECT NO. 15BPR.36  
CHATHAM COUNTY  
 BRIDGE NO. 180058

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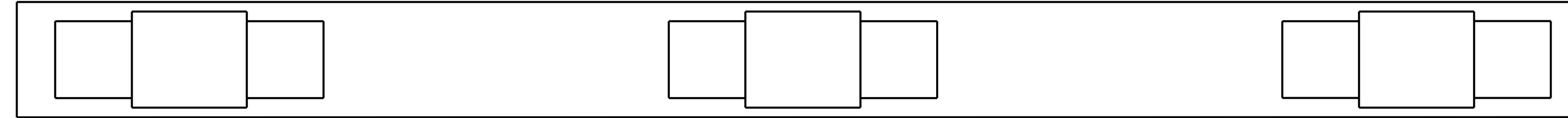
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**SUBSTRUCTURE  
 BENT 3  
 SPAN C FACE**

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CHECKED BY :	J.YANNACCONE	DATE :	11/2018
DESIGN ENGINEER OF RECORD :	F.ASEFNIA	DATE :	11/2018

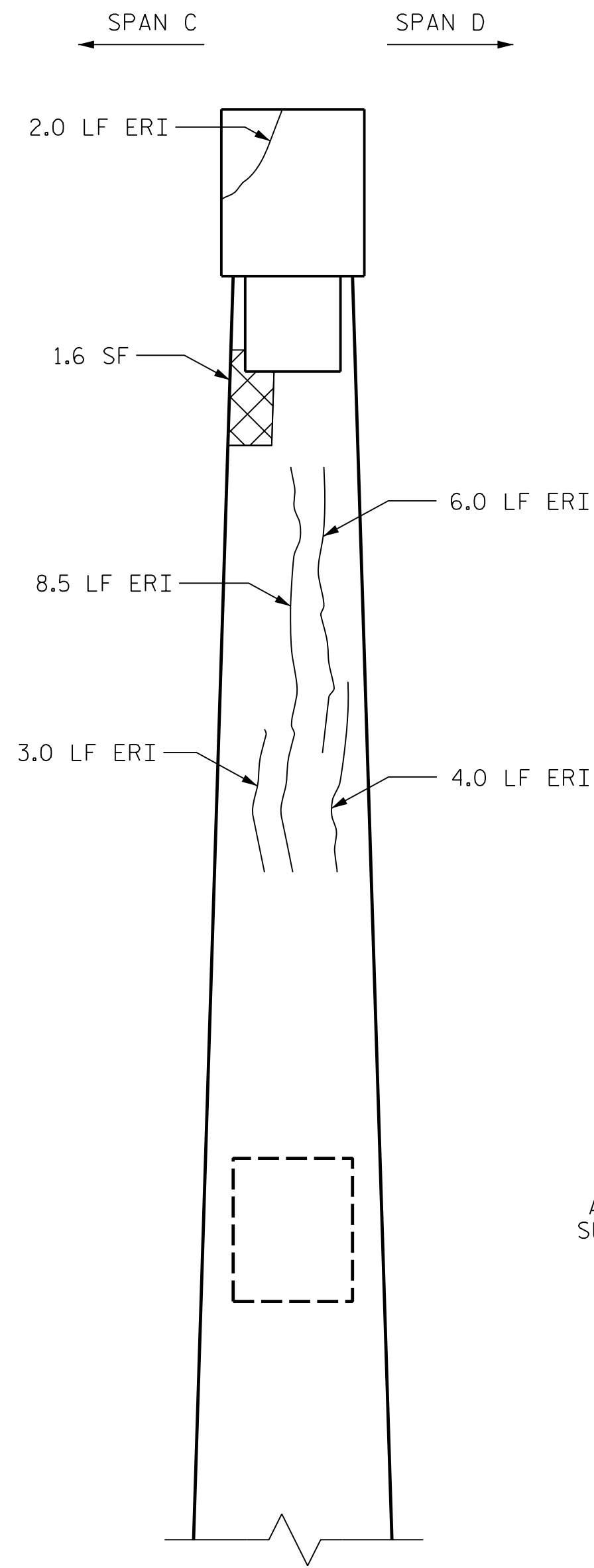
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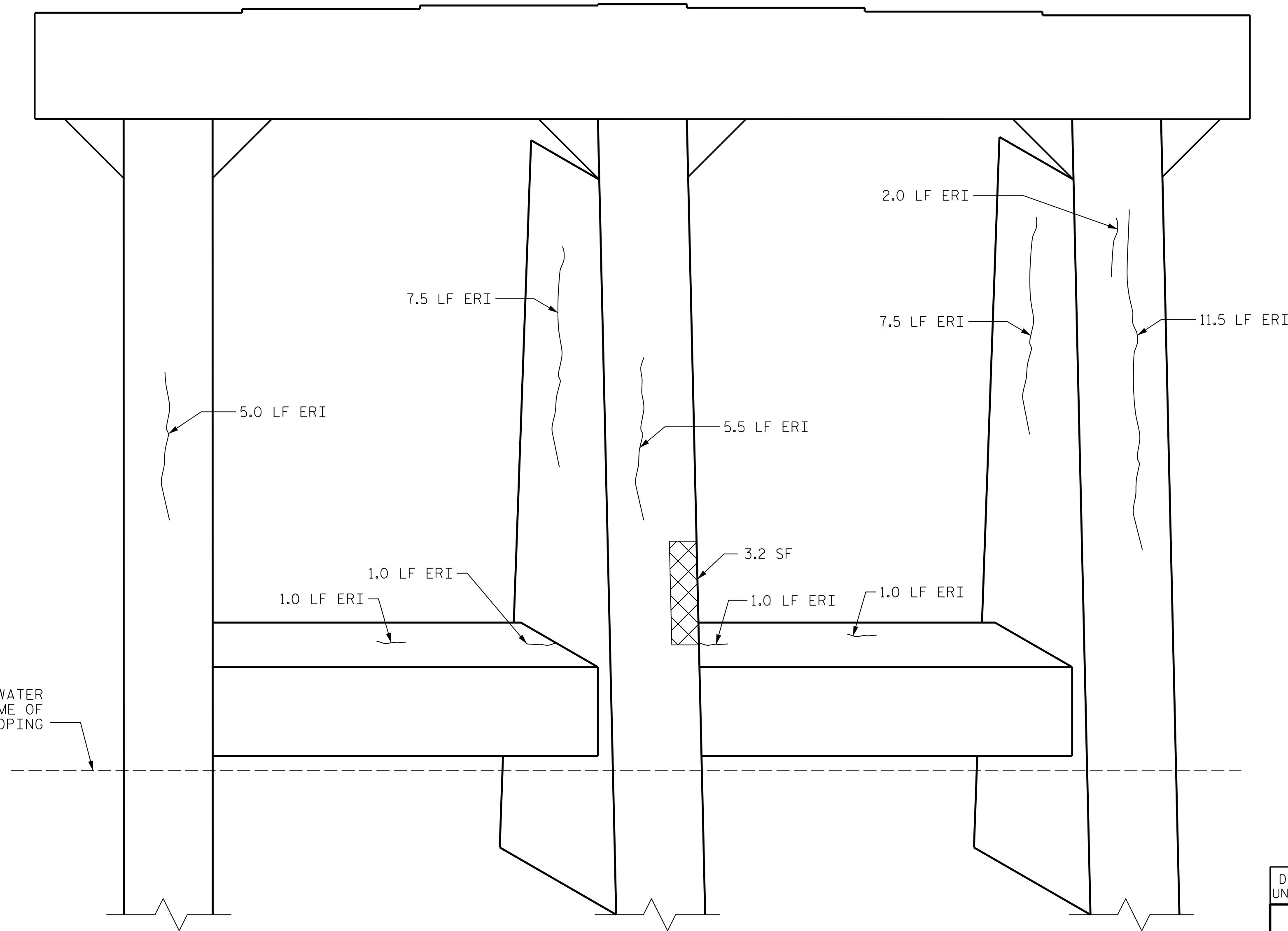
SPAN D  
SPAN C



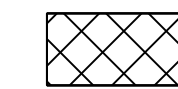
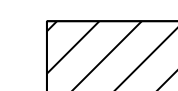

BOTTOM OF CAP



END VIEW



ELEVATION

-  SHOTCRETE REPAIR
-  CONCRETE REPAIR
-  EPOXY RESIN INJECTION

PROJECT NO. 15BPR.36  
CHATHAM COUNTY  
 BRIDGE NO. 180058

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 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**SUBSTRUCTURE  
 BENT 3  
 SPAN D FACE**

REVISIONS

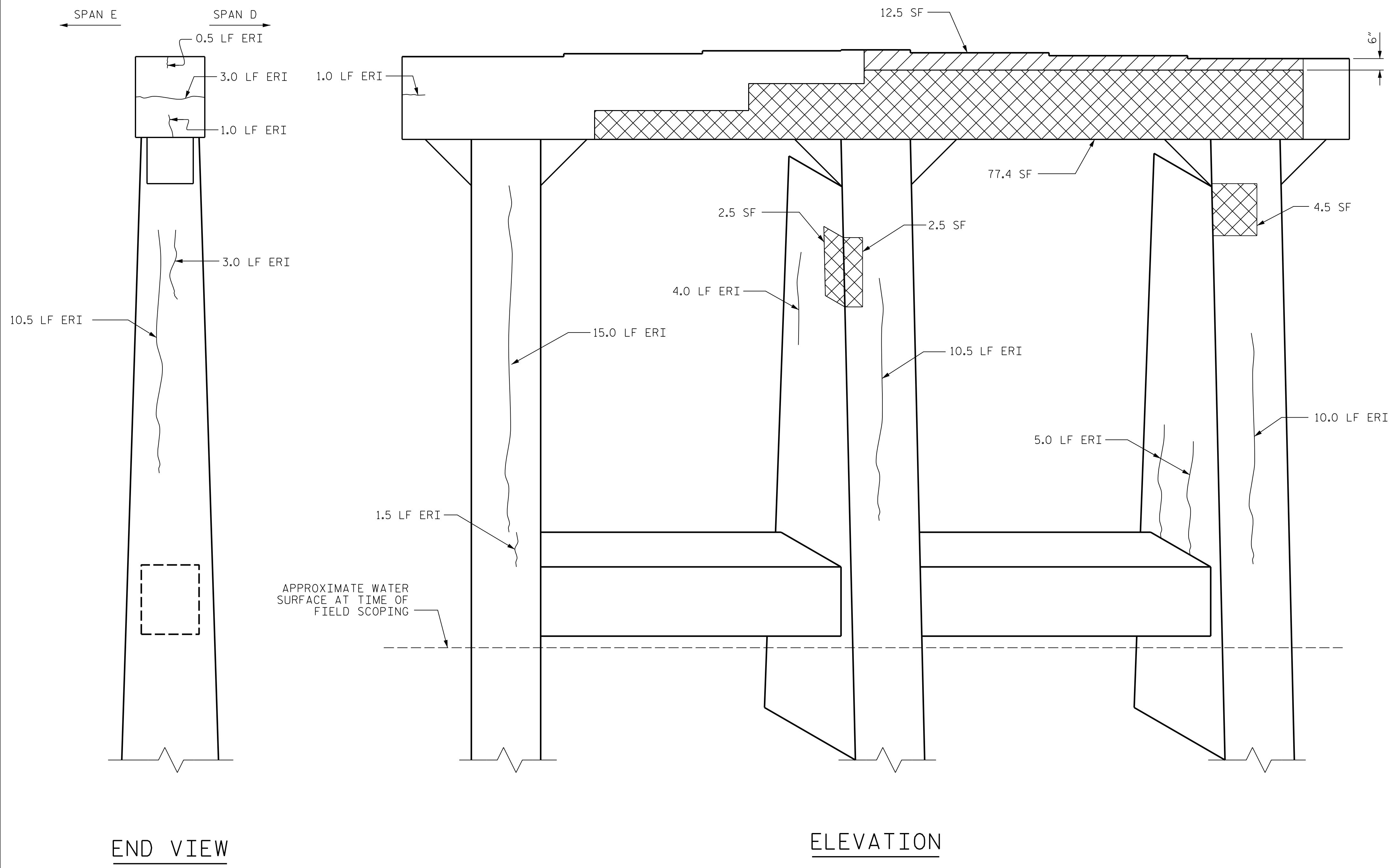
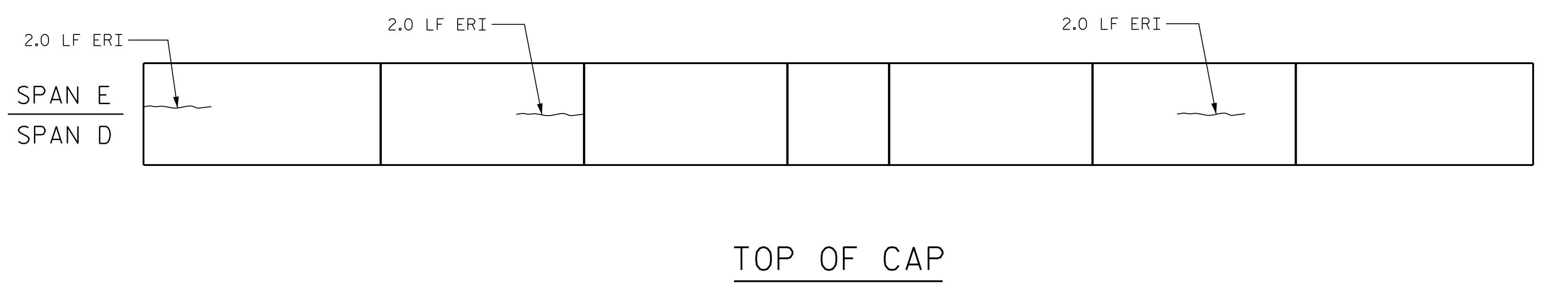
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 DESIGN ENGINEER OF RECORD : F.ASEFNIA DATE : 11/2018





### REPAIR QUANTITY TABLE

REPAIRS BENT 4	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	158.0	64.3		
COLUMN	12.5	5.2		
STRUT	0.0	0.0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	20.3	8.3		
COLUMN	0.0	0.0		
STRUT	0.0	0.0		
EPOXY RESIN INJECTION		LN. FT		LN. FT
CAP		17.0		
COLUMN		114.5		
STRUT		1.0		
EPOXY COATING		SO. FT		SO. FT
TOP OF BENT CAP		123		

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

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FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

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

CONCRETE REPAIR TO THE BENT CAP MAY REQUIRE BRIDGE JACKING, FOR BRIDGE JACKING SEE SPECIAL PROVISIONS.

- SHOTCRETE REPAIR
- CONCRETE REPAIR
- EPOXY RESIN INJECTION

PROJECT NO. 15BPR.36  
CHATHAM COUNTY  
 BRIDGE NO. 180058

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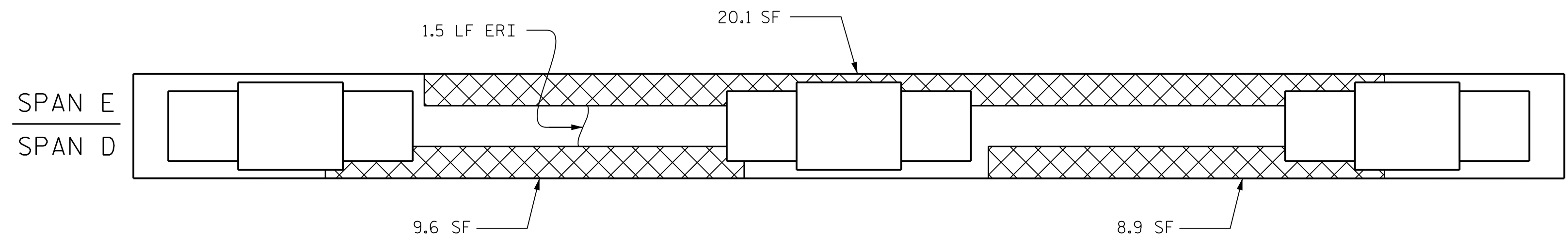
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 DEPARTMENT OF TRANSPORTATION  
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**SUBSTRUCTURE  
 BENT 4  
 SPAN D FACE**

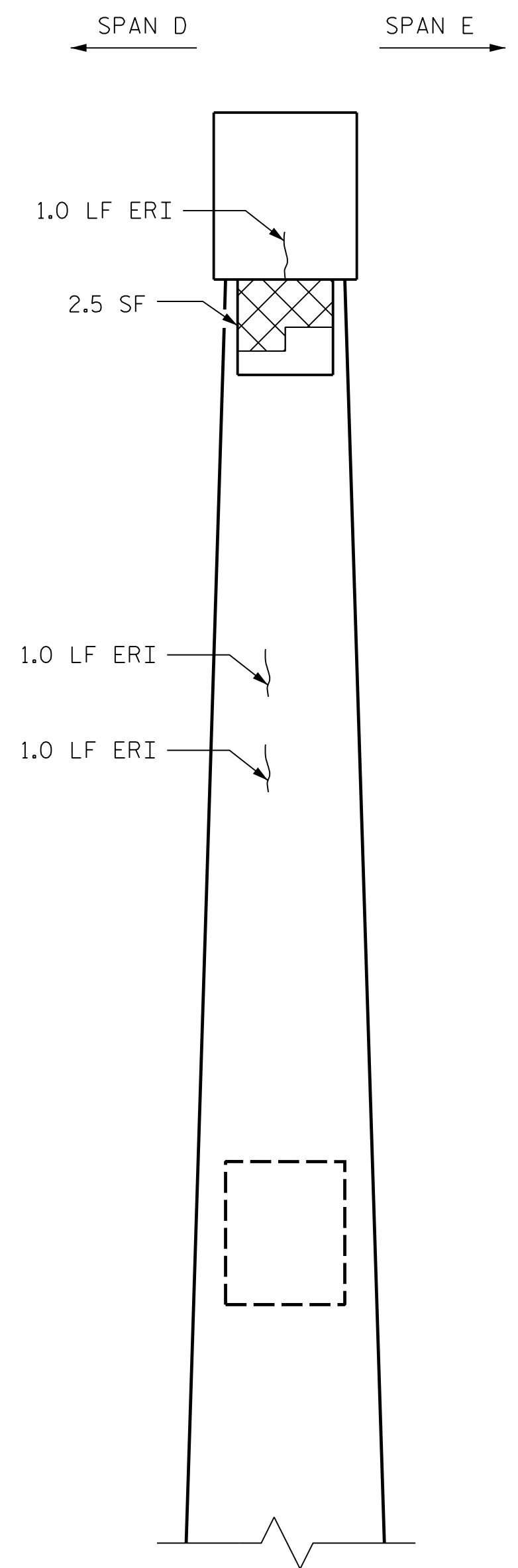
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 DESIGN ENGINEER OF RECORD : F.ASEFNIA      DATE : 11/2018

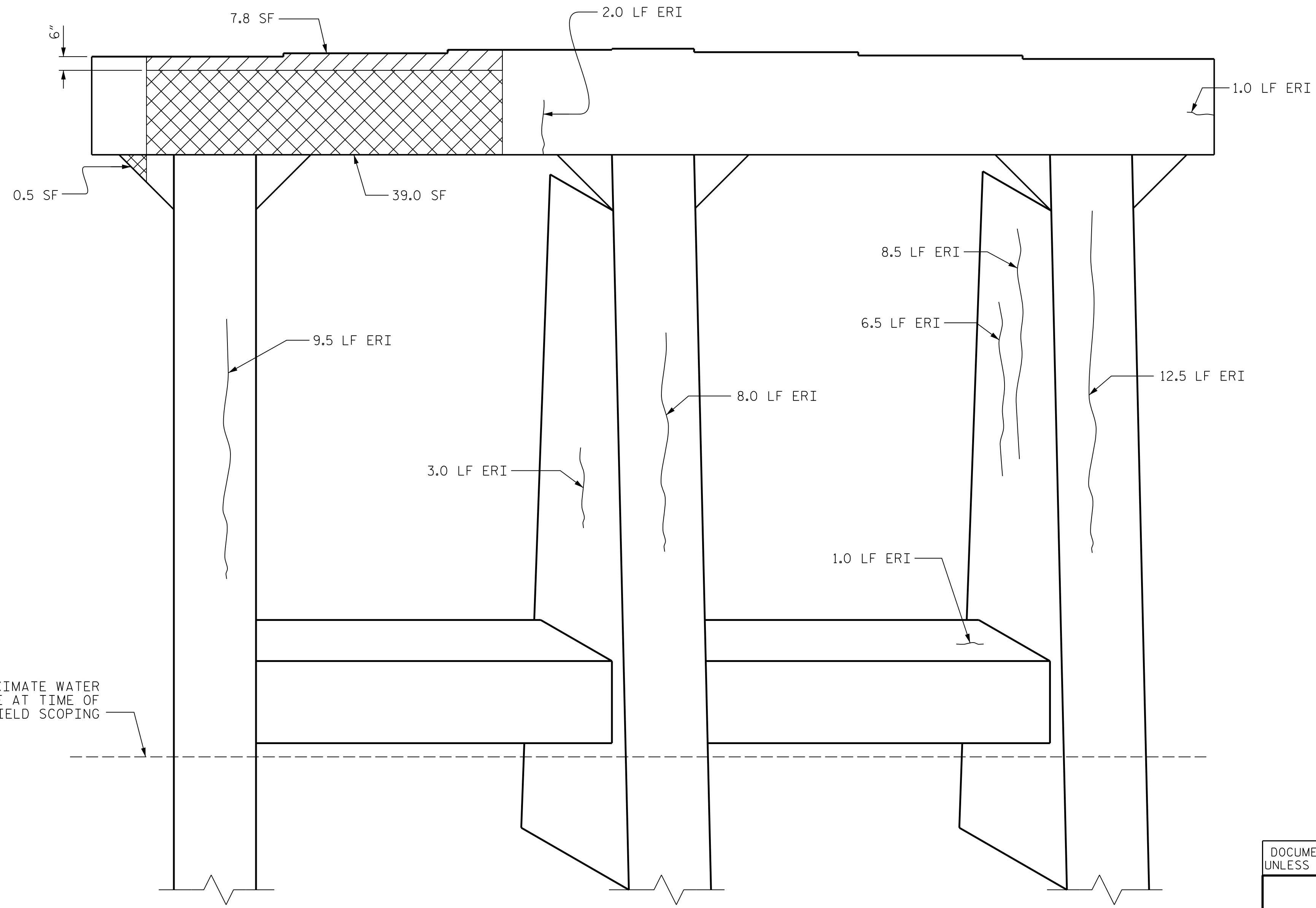
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BOTTOM OF CAP



END VIEW

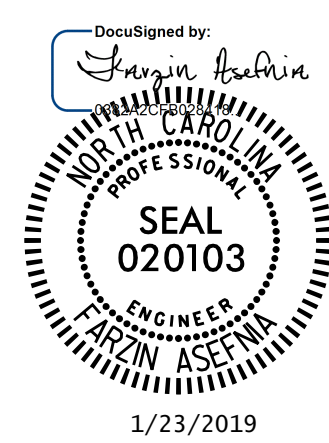


ELEVATION

- SHOTCRETE REPAIR
- CONCRETE REPAIR
- EPOXY RESIN INJECTION

PROJECT NO. 15BPR.36  
CHATHAM COUNTY  
 BRIDGE NO. 180058

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SUBSTRUCTURE  
 BENT 4  
 SPAN E FACE

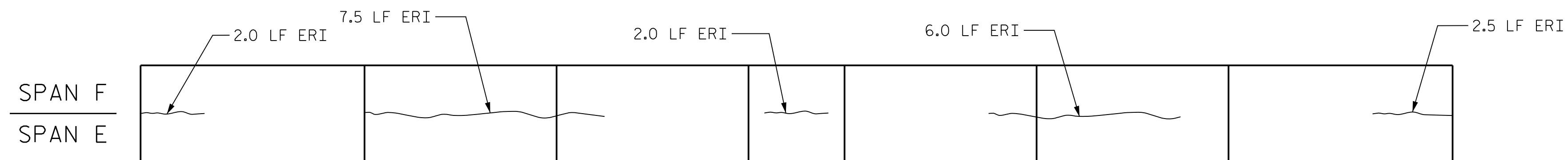
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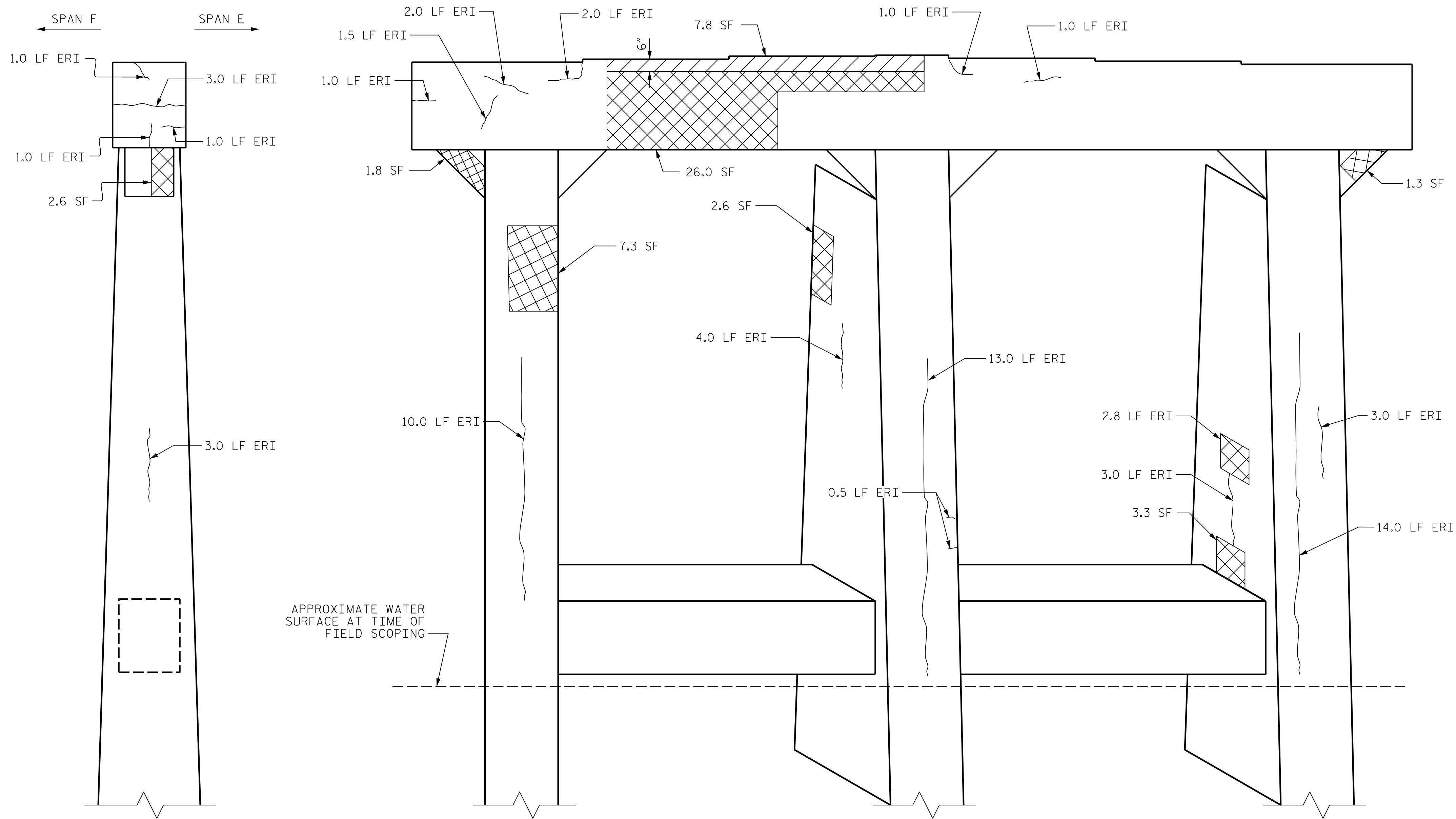
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TOP OF CAP



END VIEW

ELEVATION

THE UNDERWATER INSPECTION REPORT DATED 5/24/2016 IDENTIFIED 10 SQ.FT. OF DAMAGED CONCRETE ON THE BOTTOM FACE OF THE STRUT AT BENT 5. THE EXACT LOCATION WAS NOT PROVIDED. THE QUANTITY FOR THIS REPAIR IS REPORTED UNDER CONCRETE REPAIRS. IF THE CONTRACTOR CHOOSES AN ALTERNATE REPAIR METHOD, A REPAIR MATERIAL SUITABLE FOR OVERHEAD APPLICATIONS SHALL BE USED.

REPAIR QUANTITY TABLE

REPAIRS BENT 5	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	111.8	45.5		
COLUMN	68.1	28.1		
STRUT	0.0	0.0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	24.0	9.8		
COLUMN	0.0	0.0		
STRUT	10.0	3.9		
EPOXY RESIN INJECTION		LN. FT		LN. FT
CAP		46.5		
COLUMN		100.0		
STRUT		0.0		
EPOXY COATING		SO. FT		SO. FT
TOP OF BENT CAP		123		

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

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FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

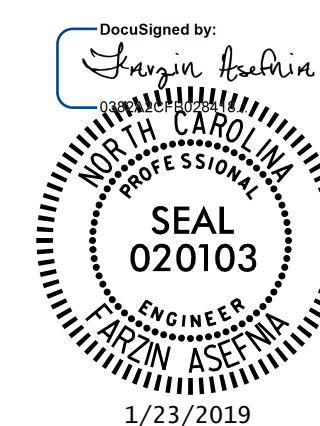
CONCRETE REPAIRS MAY BE SUBSTITUTED IN PLACE OF SHOTCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

CONCRETE REPAIR TO THE BENT CAP MAY REQUIRE BRIDGE JACKING, FOR BRIDGE JACKING SEE SPECIAL PROVISIONS.

- SHOTCRETE REPAIR
- CONCRETE REPAIR
- EPOXY RESIN INJECTION

PROJECT NO. 15BPR.36  
CHATHAM COUNTY  
 BRIDGE NO. 180058

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SUBSTRUCTURE  
 BENT 5  
 SPAN E FACE

REVISIONS

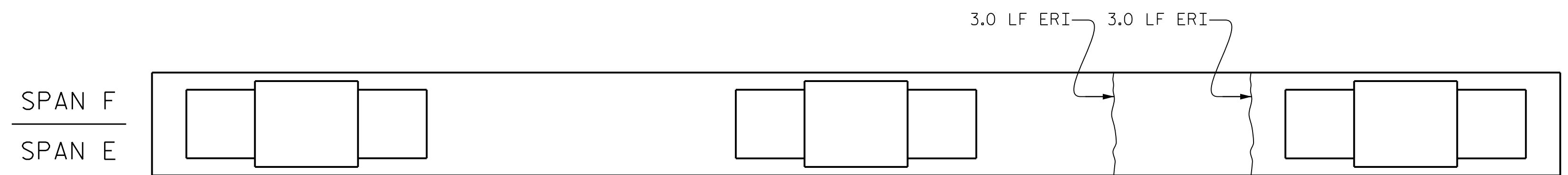
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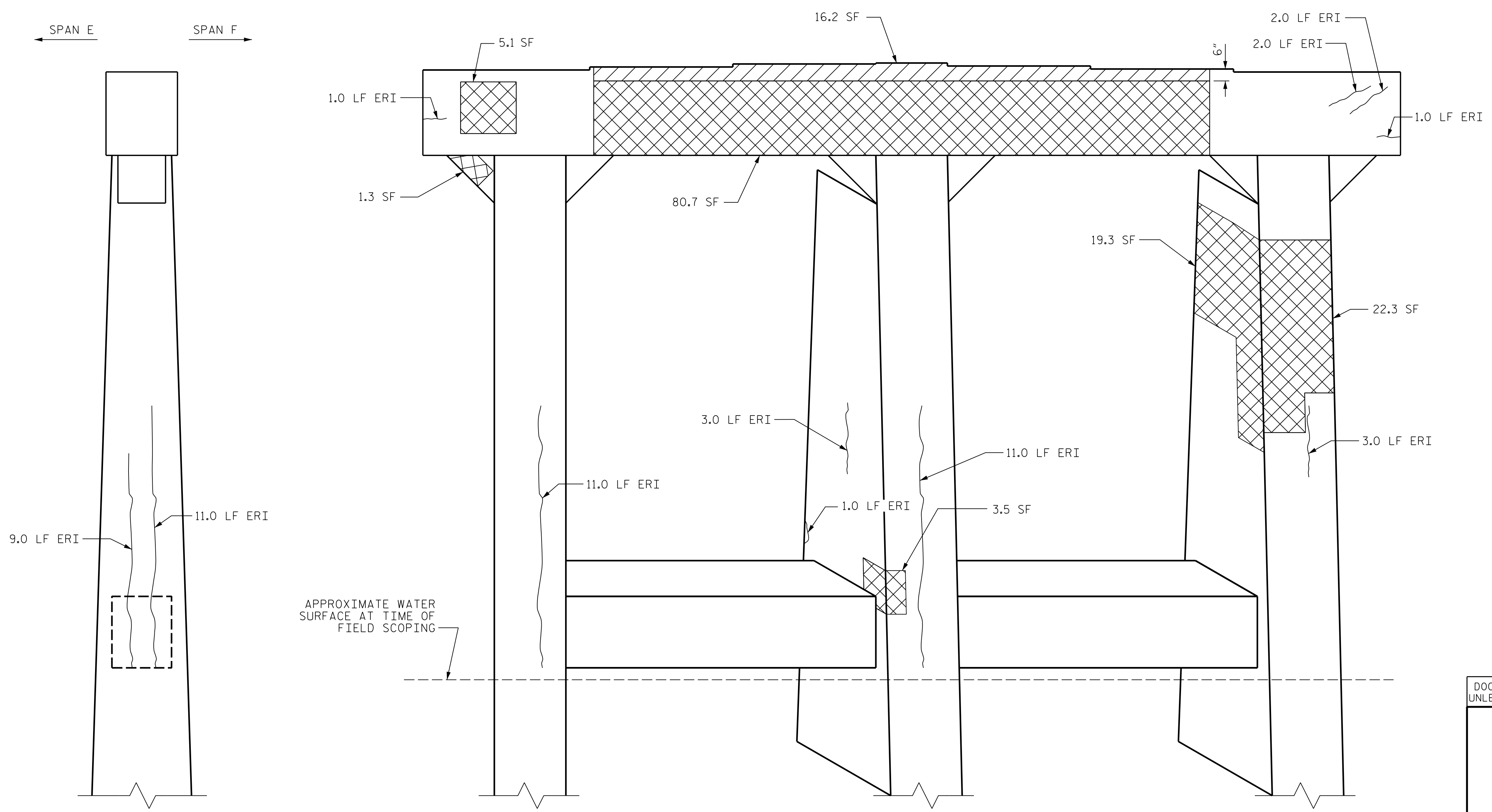
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 CHECKED BY : J.YANNACCONE DATE : 11/2018  
 DESIGN ENGINEER OF RECORD : F.ASEFNIA DATE : 11/2018

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BOTTOM OF CAP



← SPAN E      SPAN F →

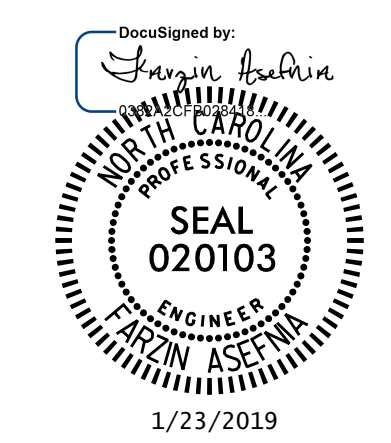
9.0 LF ERI      11.0 LF ERI

APPROXIMATE WATER SURFACE AT TIME OF FIELD SCOPING

- SHOTCRETE REPAIR
- CONCRETE REPAIR
- EPOXY RESIN INJECTION

PROJECT NO. 15BPR.36  
CHATHAM COUNTY  
 BRIDGE NO. 180058

DOCUMENT NOT CONSIDERED FINAL  
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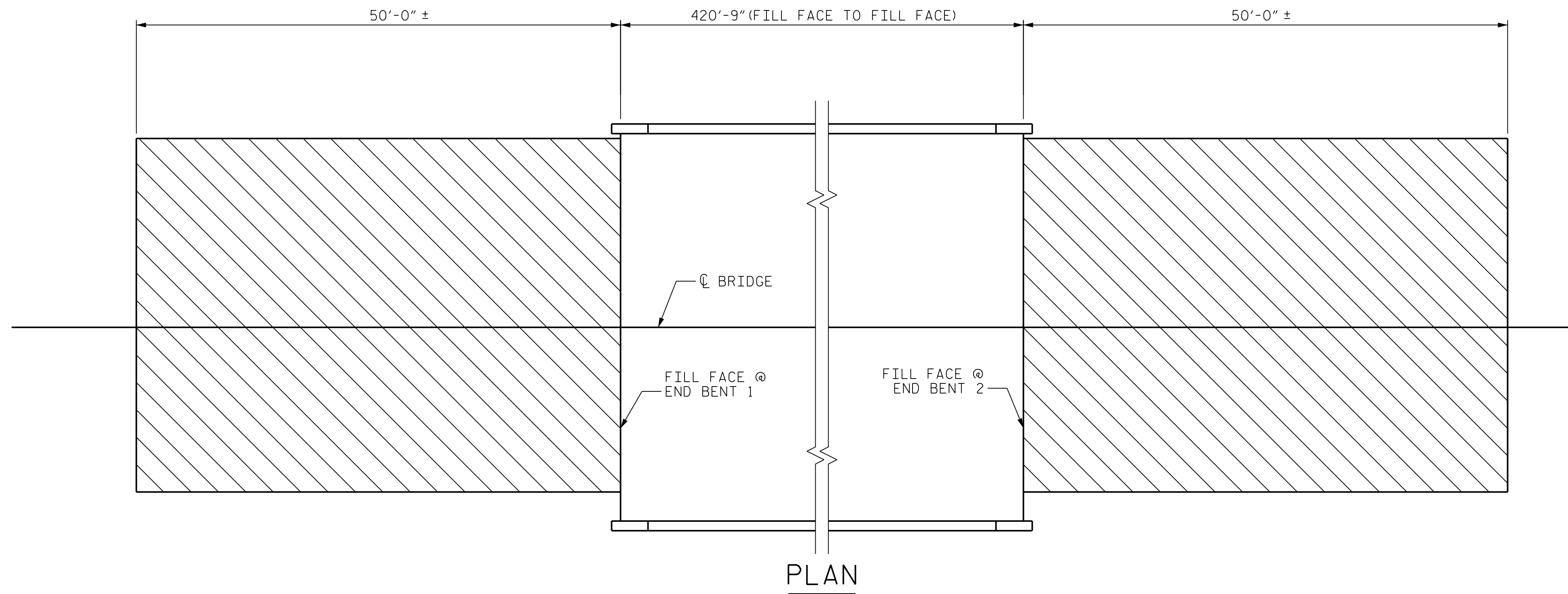
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**SUNSTRUCTURE  
 BENT 5  
 SPAN F FACE**

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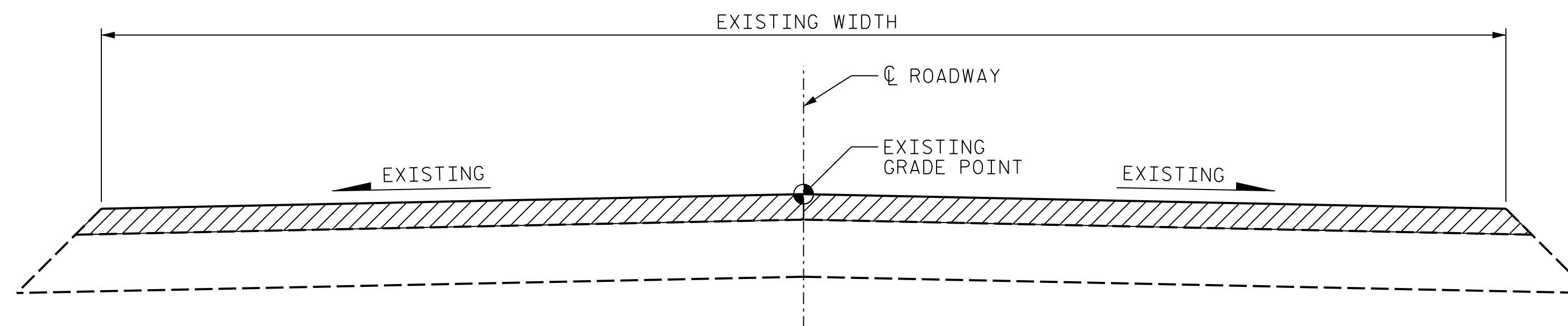




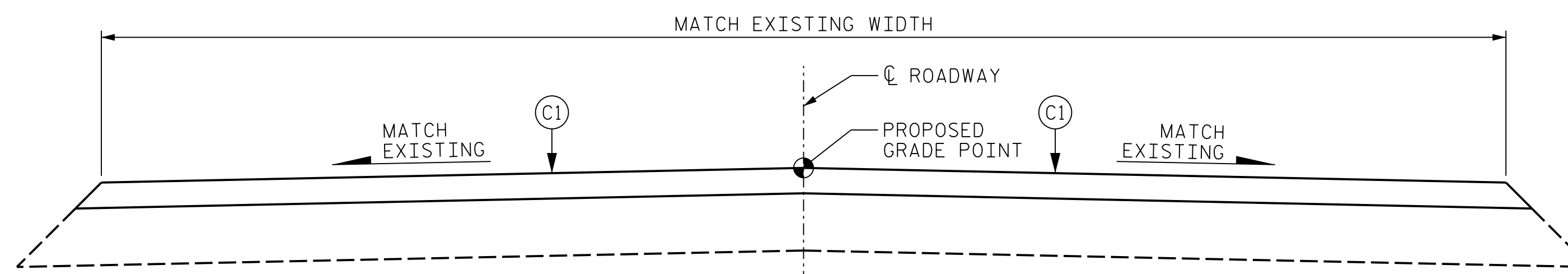
**NOTES:**  
 INCIDENTAL MILLING - EXISTING APPROACH ASPHALT PAVEMENT TO BE MILLED AS NECESSARY TO ATTAIN MINIMUM 1/2" DEPTH OF NEW ASPHALT PAVEMENT. NEW ASPHALT PAVEMENT SHALL BE OF THICKNESS NECESSARY TO PROVIDE A SMOOTH TRANSITION BETWEEN THE ROADWAY AND THE BRIDGE DECK. THE NEW ASPHALT PAVEMENT THICKNESS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

 INCIDENTAL MILLING

SUMMARY OF QUANTITIES		
	ESTIMATE	ACTUAL
INCIDENTAL MILLING	406 SQ. YDS.	
ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C	35 TONS	
ASPHALT BINDER FOR PLANT MIX	2 TONS	



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



**TYPICAL FINAL ROADWAY SECTION**

**C1** PROPOSED VARIABLE DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C 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.36  
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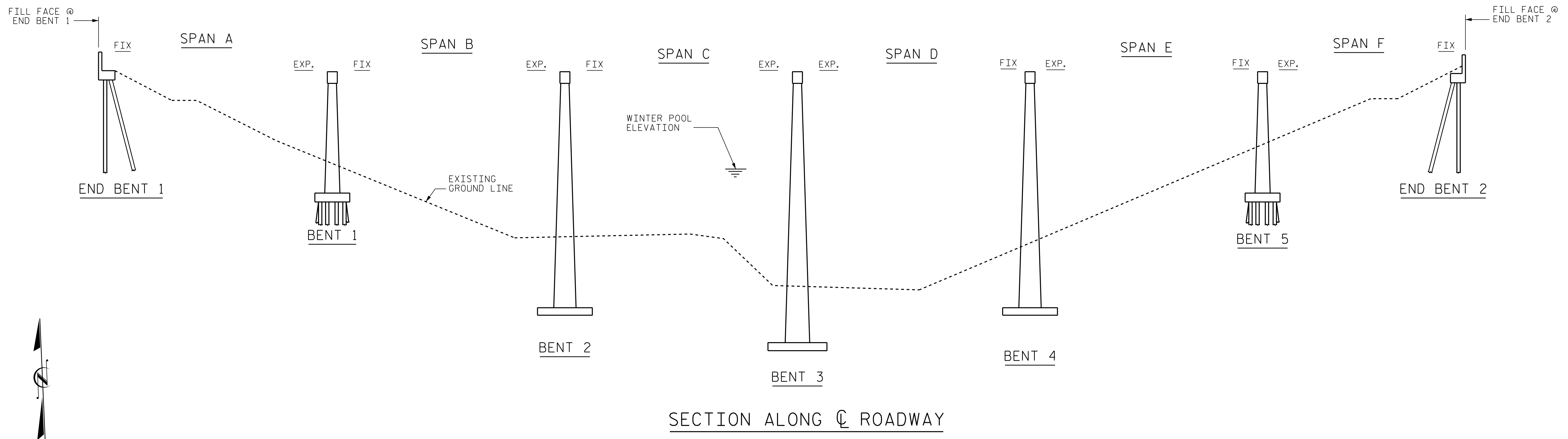
**APPROACH MILLING  
 AND TYPICAL ROADWAY  
 SECTIONS**



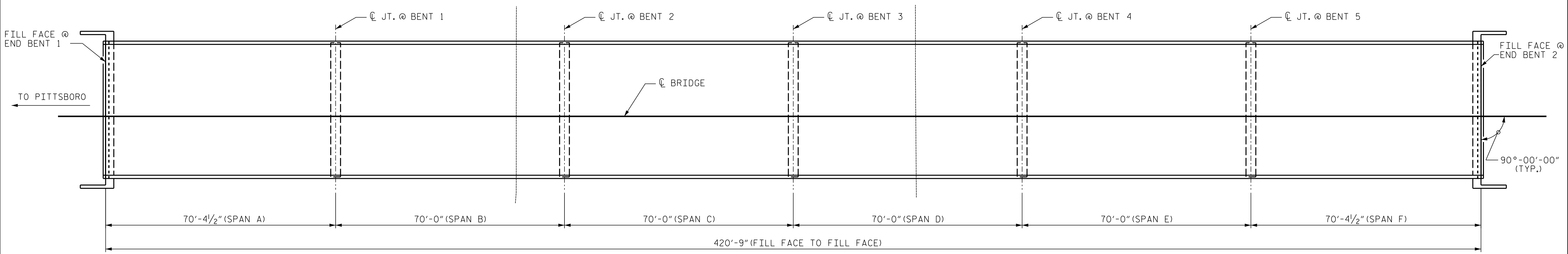
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 CHECKED BY : J. YANNAKONE DATE : 11/2018  
 DESIGN ENGINEER OF RECORD : F. ASEFNIA DATE : 11/2018



SECTION ALONG CL ROADWAY



PLAN

PROJECT NO. 15BPR.36  
CHATHAM COUNTY  
 BRIDGE NO. 180059

**NOTES:**

PROFILE INFORMATION IS TAKEN FROM THE ORIGINAL PLANS AND THE ROUTINE INSPECTION REPORT DATED 11/14/2017.

BRIDGE ORIENTATION CONFORMS TO EXISTING BRIDGE PLANS.

**SCOPE OF WORK**

- PARTIALLY REMOVE BRIDGE DECK CONCRETE BY SCARIFICATION AND HYDRODEMOLITION METHODS.
- DEMOLISH EXISTING BRIDGE DECK JOINTS.
- OVERLAY PREPARED BRIDGE DECK WITH LATEX MODIFIED CONCRETE.
- RECONSTRUCT BRIDGE JOINTS AND INSTALL JOINT SEALS.
- GROOVE LATEX MODIFIED CONCRETE BRIDGE DECK.
- 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.
- CLEAN AND REPAIR DECK DRAINS.
- MILL AND PAVE ASPHALT APPROACHES.

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  
 US 64 WBL OVER  
 JORDAN LAKE

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

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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°44'14.63"	79°01'27.82"

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 OVERLAY OF BRIDGE WITH LATEX MODIFIED CONCRETE, SEE SPECIAL PROVISIONS.

THE CONTRACTOR SHALL PROVIDE A METHOD OF HANDLING UNEXPECTED BLOW THROUGH 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.

ALL WORK SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER AND IN ACCORDANCE WITH SECTION 402 OF THE STANDARD SPECIFICATION.

AL WORK SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER AND IN ACCORDANCE WITH SECTION 402 OF THE STANDARD SPECIFICATIONS.

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 FOR PRESERVATION, SEE SPECIAL PROVISIONS.

FOR FOAM JOINT SEALS FOR PRESERVATION, 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 PRESTRESSED CONCRETE GIRDER REPAIRS, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

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

FOR CLEANING AND PAINTING EXISTING BEARING PLATES, SEE SPECIAL PROVISIONS.

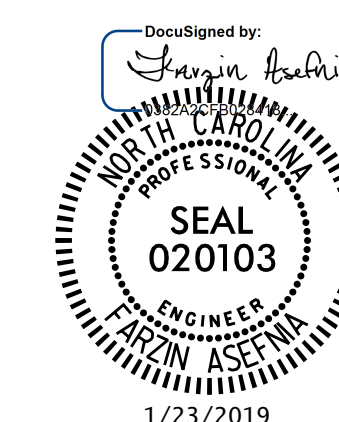
THE CONTRACTOR SHALL COORDINATE WORK ACTIVITIES WITH THE U.S. ARMY CORPS OF ENGINEERS, NORTH CAROLINA DEPARTMENT OF NATURAL AND CULTURAL RESOURCES, AND ANY OTHER AGENCIES EXERCISING JURISDICTION OVER JORDAN LAKE.

PROJECT NO. 15BPR.36

CHATHAM COUNTY

BRIDGE NO. 180059

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STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
GENERAL DRAWING  
FOR BRIDGE ON  
US 64 WBL OVER  
JORDAN LAKE

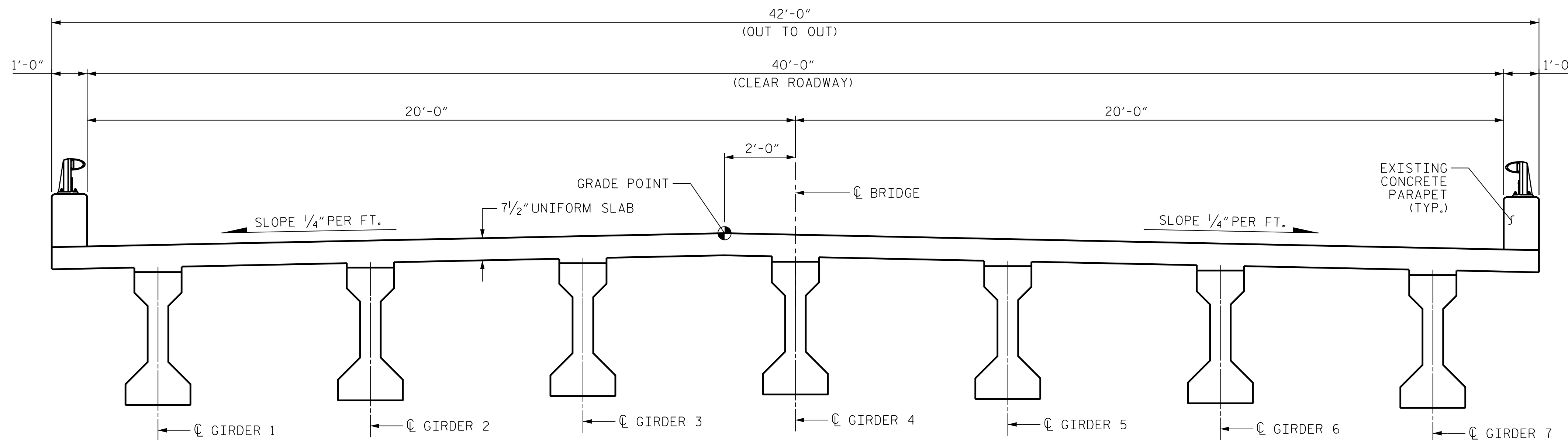
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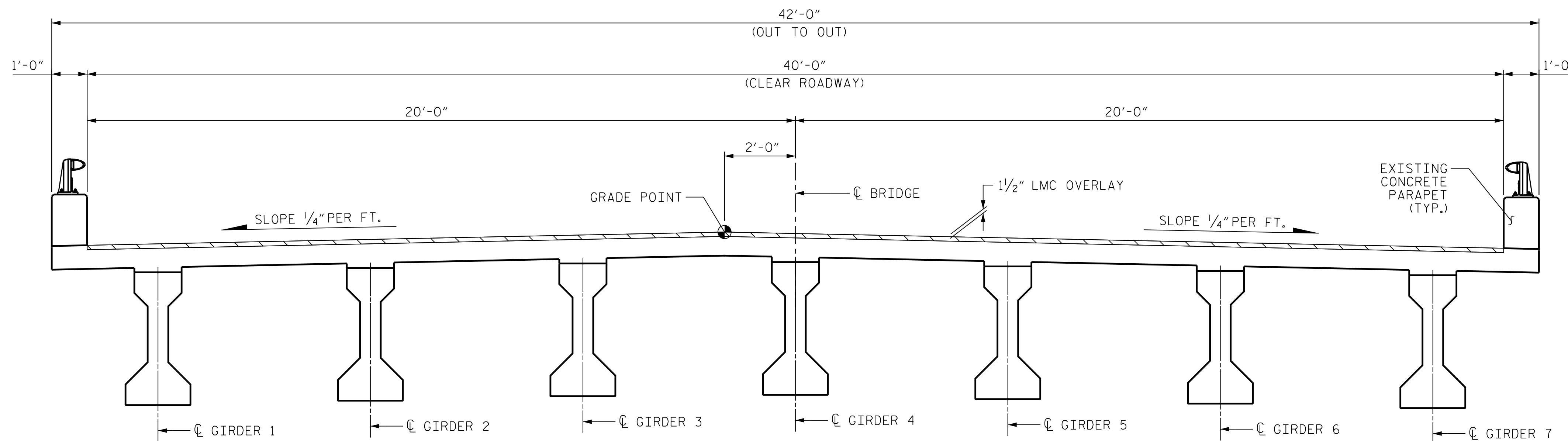
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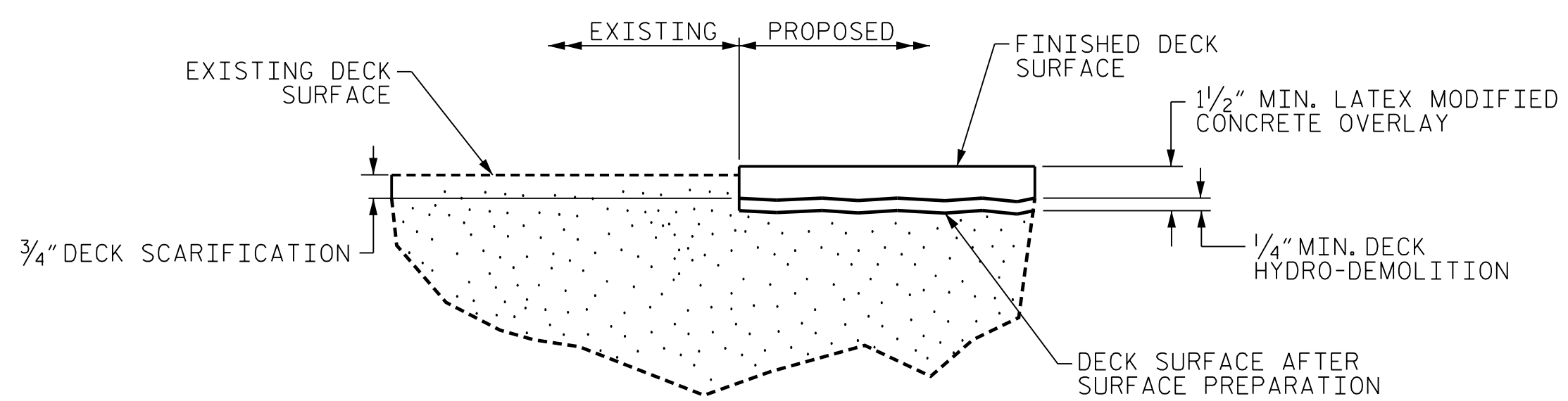
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DESIGN ENGINEER OF RECORD : F. ASEFNIA DATE : 11/2018



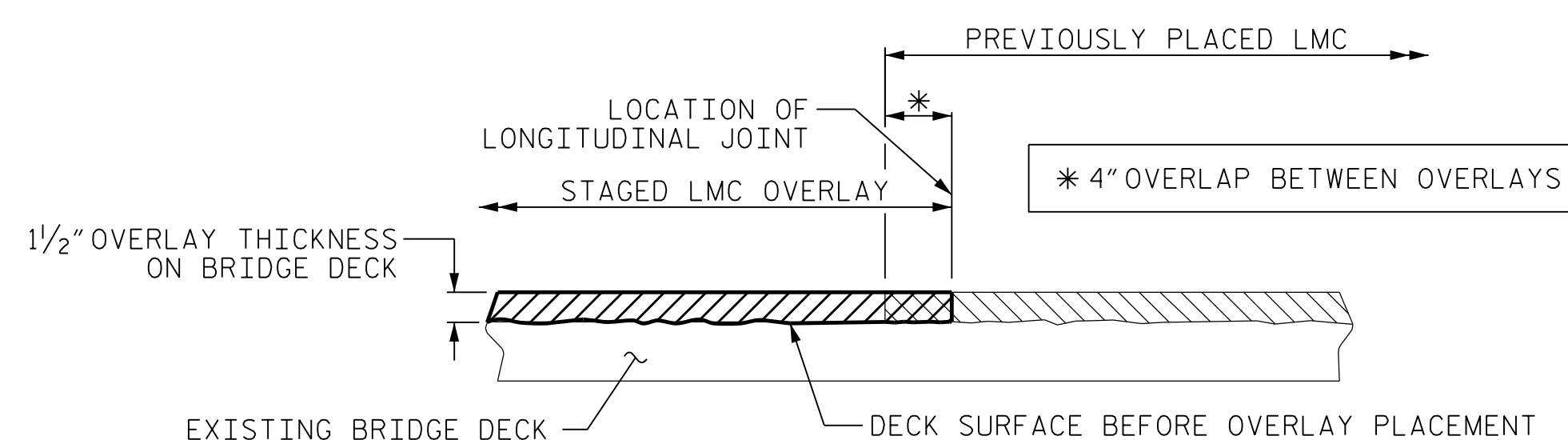
TYPICAL SECTION  
(EXISTING)



TYPICAL SECTION  
(PROPOSED)

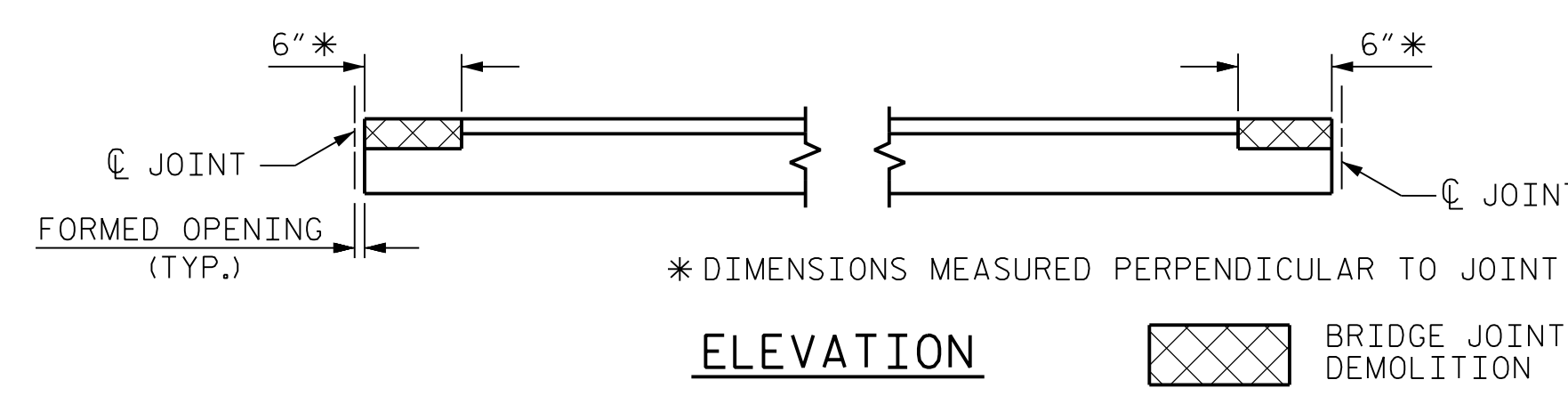
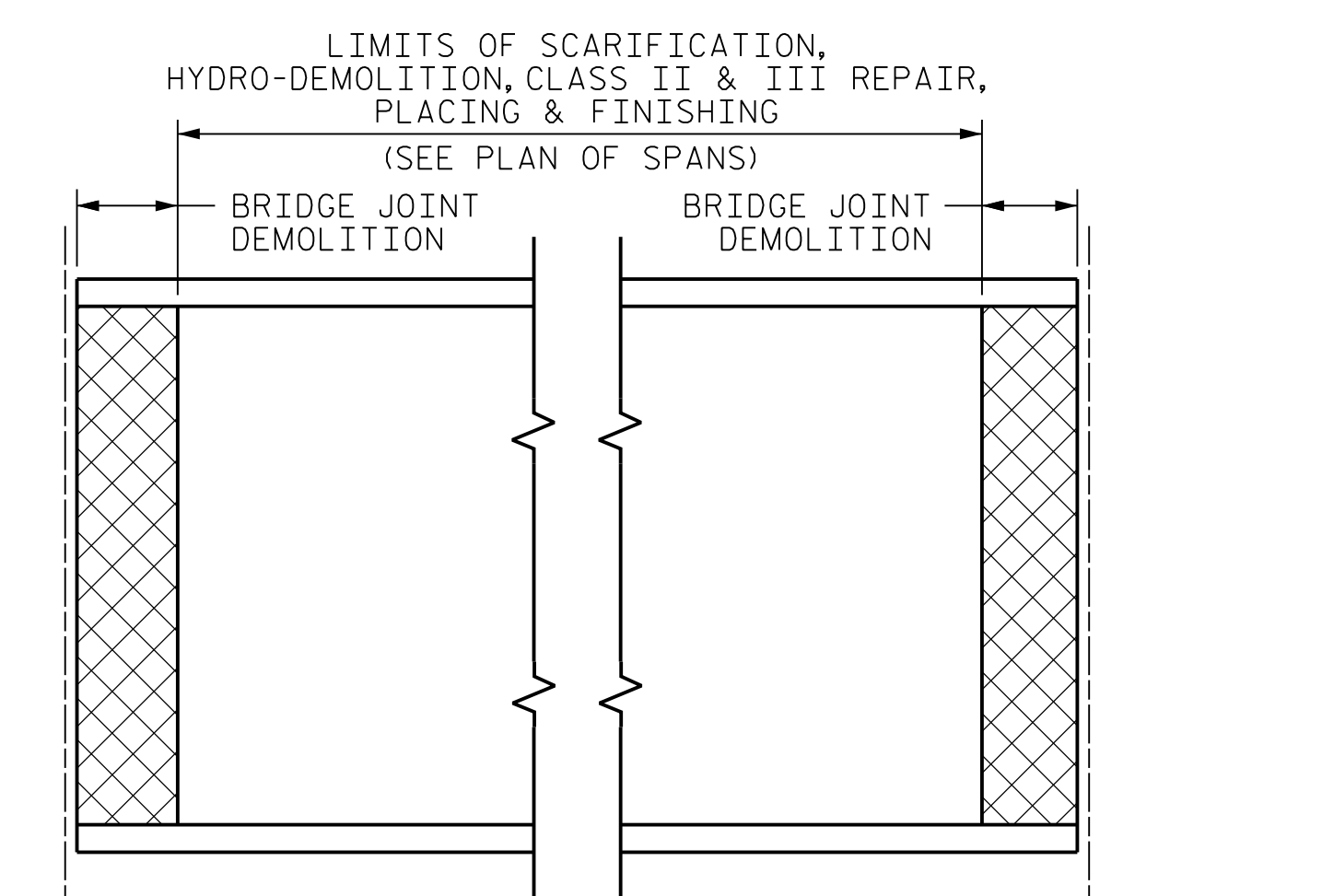


DETAIL FOR LMC OVERLAY



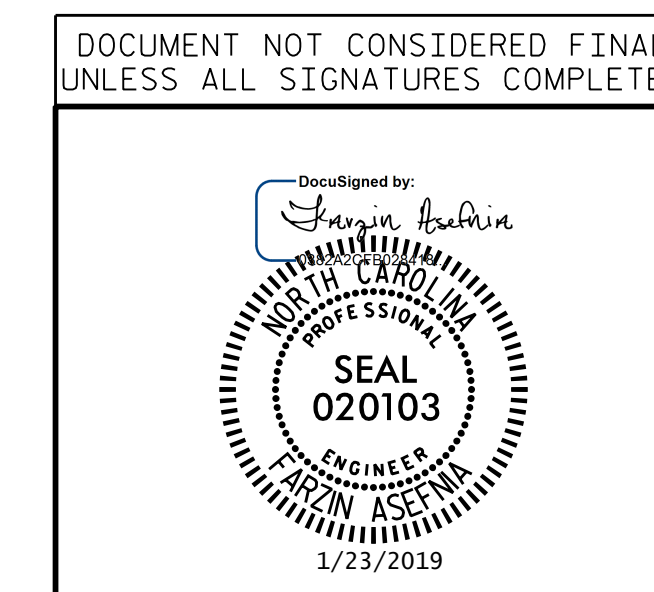
SECTION THRU DECK  
STAGED LMC OVERLAY JOINT  
(AS NEEDED)

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



PAY LIMITS FOR OVERLAY BID ITEMS

PROJECT NO. 15BPR.36  
CHATHAM COUNTY  
BRIDGE NO. 180059



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

DRAWN BY : S. DHOLAKIA DATE : 11/2018  
CHECKED BY : J. YANNAKONE DATE : 11/2018  
DESIGN ENGINEER OF RECORD : F. ASEFNIA DATE : 11/2018

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REPAIR QUANTITY TABLE

TOP OF DECK REPAIR

	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	306 SY	
HYDRO-DEMOLITION OF BRIDGE DECK	306 SY	
CLASS II SURFACE PREPARATION	37.5 SY	
CLASS III SURFACE PREPARATION	0.5 SY *	
BRIDGE JOINT DEMOLITION	40.0 SF	
EPOXY RESIN INJECTION	0.0 LF	
CONCRETE FOR DECK REPAIR	2.5 CF	
GROOVING BRIDGE FLOOR	2538 SF	

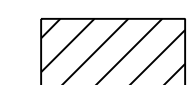
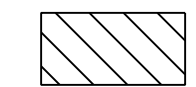

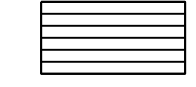
UNDERSIDE OF DECK REPAIR

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.

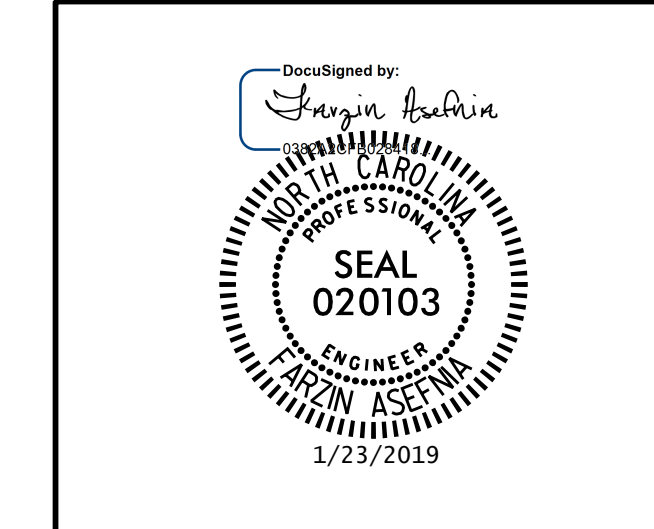
\* CLASS III SURFACE PREPARATION AND REPAIR IS NOT ANTICIPATED. A TOKEN AMOUNT IS INDICATED FOR PRICING PURPOSES IN CASE UNANTICIPATED CLASS III SURFACE PREPARATION AREAS ARE ENCOUNTERED.

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

PROJECT NO. 15BPR.36  
CHATHAM COUNTY  
 BRIDGE NO. 180059

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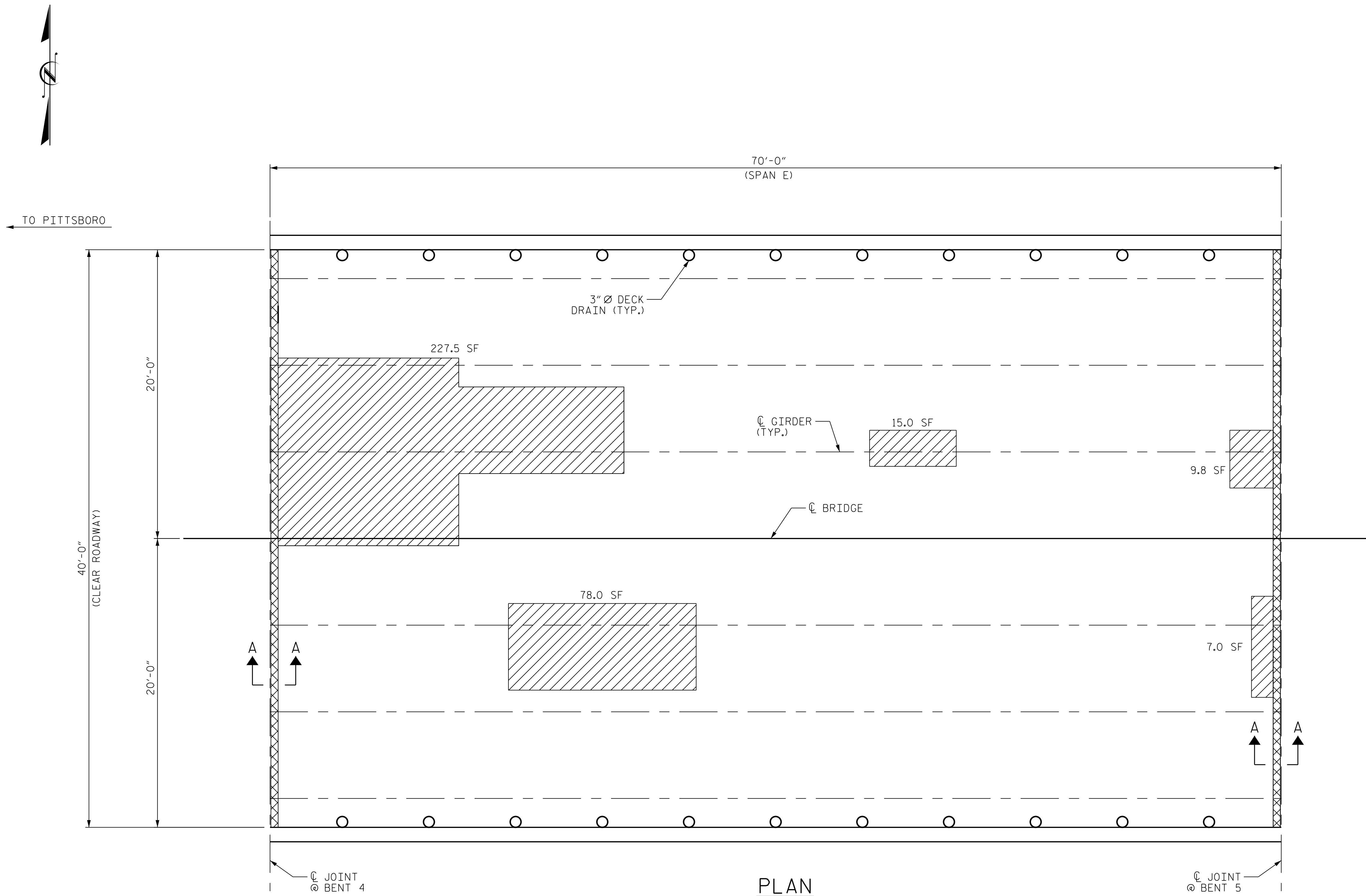
SHEET 5 OF 6



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

PLAN OF SPANS  
 SPAN E

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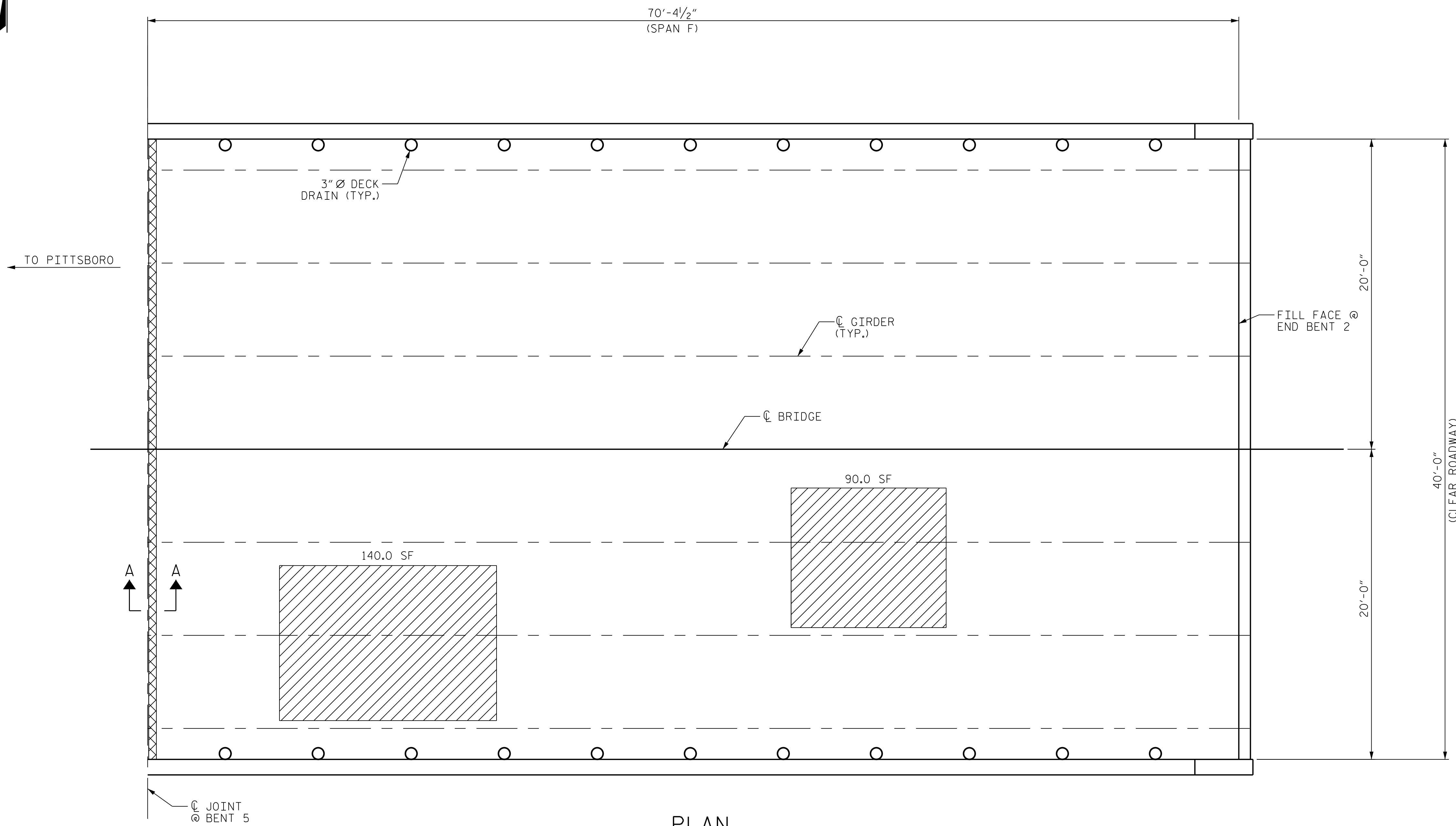
REPAIR LOCATIONS AND ESTIMATED QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATIONS AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES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

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

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

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DESIGN ENGINEER OF RECORD :	F. ASEFNIA	DATE :	11/2018



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 1/2" PER THE EXISTING BRIDGE PLANS.

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

REPAIR QUANTITY TABLE

TOP OF DECK REPAIR				
	ESTIMATE		ACTUAL	
SCARIFYING BRIDGE DECK	311 SY			
HYDRO-DEMOLITION OF BRIDGE DECK	311 SY			
CLASS II SURFACE PREPARATION	25.6 SY			
CLASS III SURFACE PREPARATION	0.5 SY *			
BRIDGE JOINT DEMOLITION	20.0 SF			
EPOXY RESIN INJECTION	0.0 LF			
CONCRETE FOR DECK REPAIR	2.5 CF			
GROOVING BRIDGE FLOORS	2571 SF			
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.

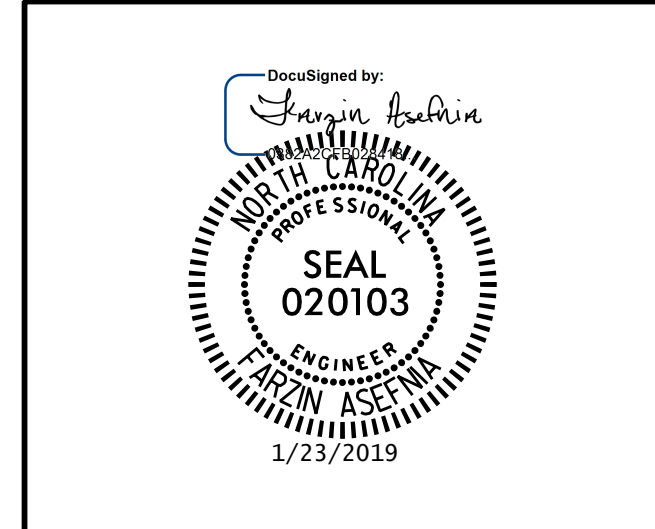
\* CLASS III SURFACE PREPARATION AND REPAIR IS NOT ANTICIPATED. A TOKEN AMOUNT IS INDICATED FOR PRICING PURPOSES IN CASE UNANTICIPATED CLASS III SURFACE PREPARATION AREAS ARE ENCOUNTERED.

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

PROJECT NO. 15BPR.36  
CHATHAM COUNTY  
 BRIDGE NO. 180059

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SHEET 6 OF 6



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

PLAN OF SPANS  
 SPAN F

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 DESIGN ENGINEER OF RECORD : F. ASEFNIA DATE : 11/2018



ELASTOMERIC CONCRETE FOR PRESERVATION	
BENT 1	10.0 (CU. FT.)
BENT 2	10.0 (CU. FT.)
BENT 3	10.0 (CU. FT.)
BENT 4	10.0 (CU. FT.)
BENT 5	10.0 (CU. FT.)
TOTAL	50.0 (CU. FT.)

\*BASED ON THE MINIMUM BLOCKOUT SHOWN

JOINT REPAIR QUANTITY TABLE		
	ESTIMATE	ACTUAL
FOAM JOINT SEALS FOR PRESERVATION	200 LF	

**NOTES**

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

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

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

FOAM JOINT SEALS SHALL BE INSTALLED AS PER THE MANUFACTURERS RECOMMENDATIONS.

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

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

THE INSTALLED FOAM JOINTS SHALL BE WATER TIGHT.

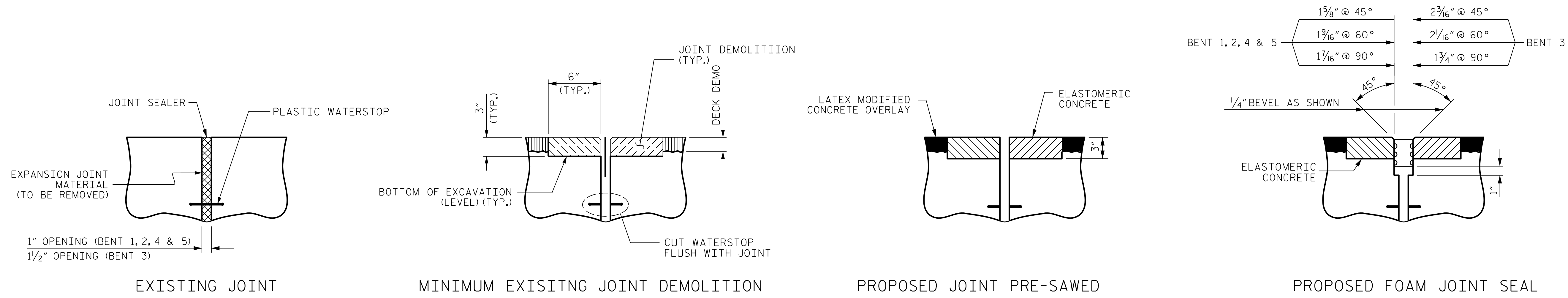
QUANTITIES SHOWN IN THE ELASTOMERIC CONCRETE FOR PRESERVATION TABLE ARE BASED ON THE MINIMUM JOINT DEMOLITION SHOWN.

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

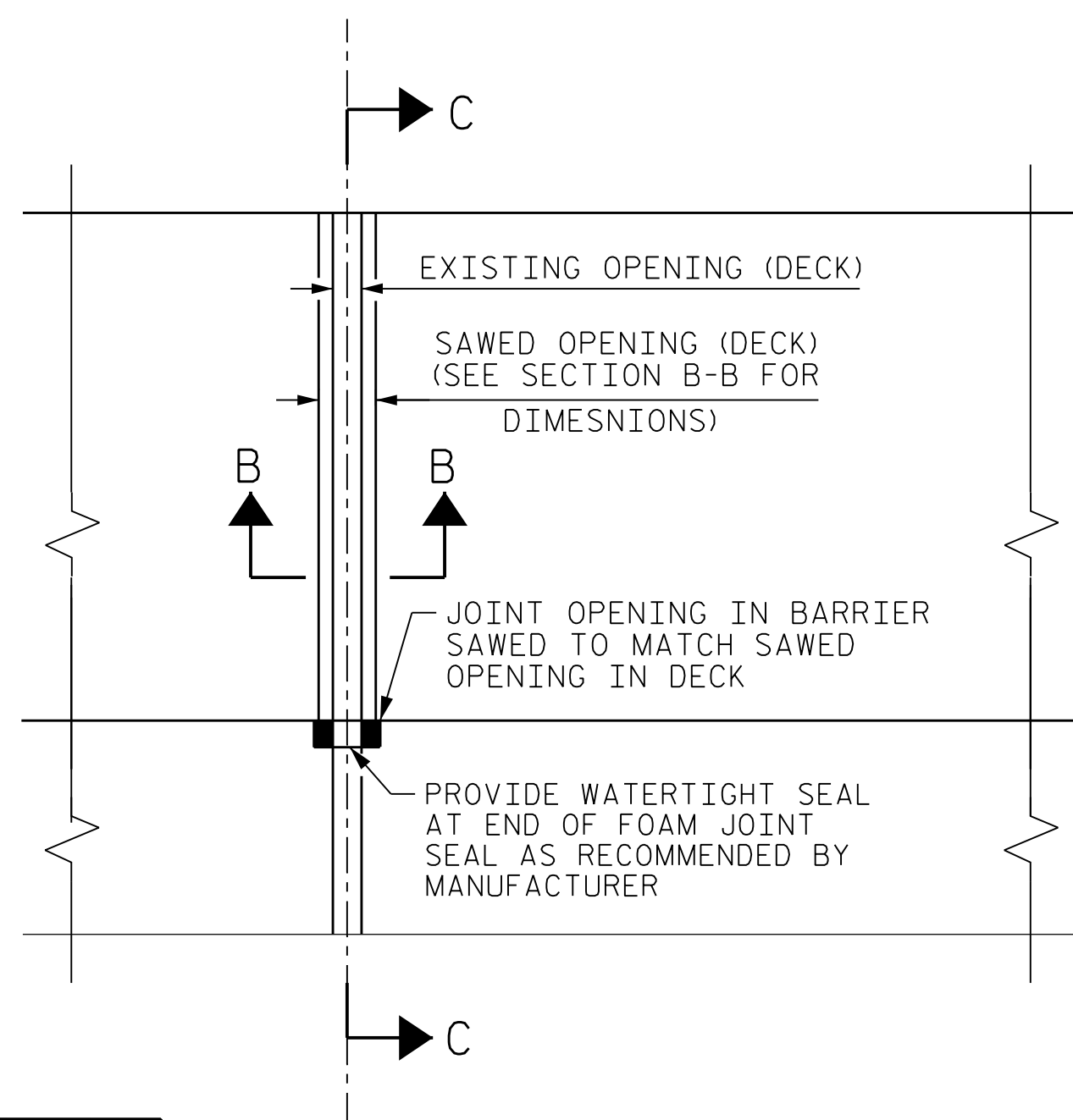
FOR JOINT DEMOLITION, SEE SPECIAL PROVISIONS.

FOR FOAM JOINT SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.

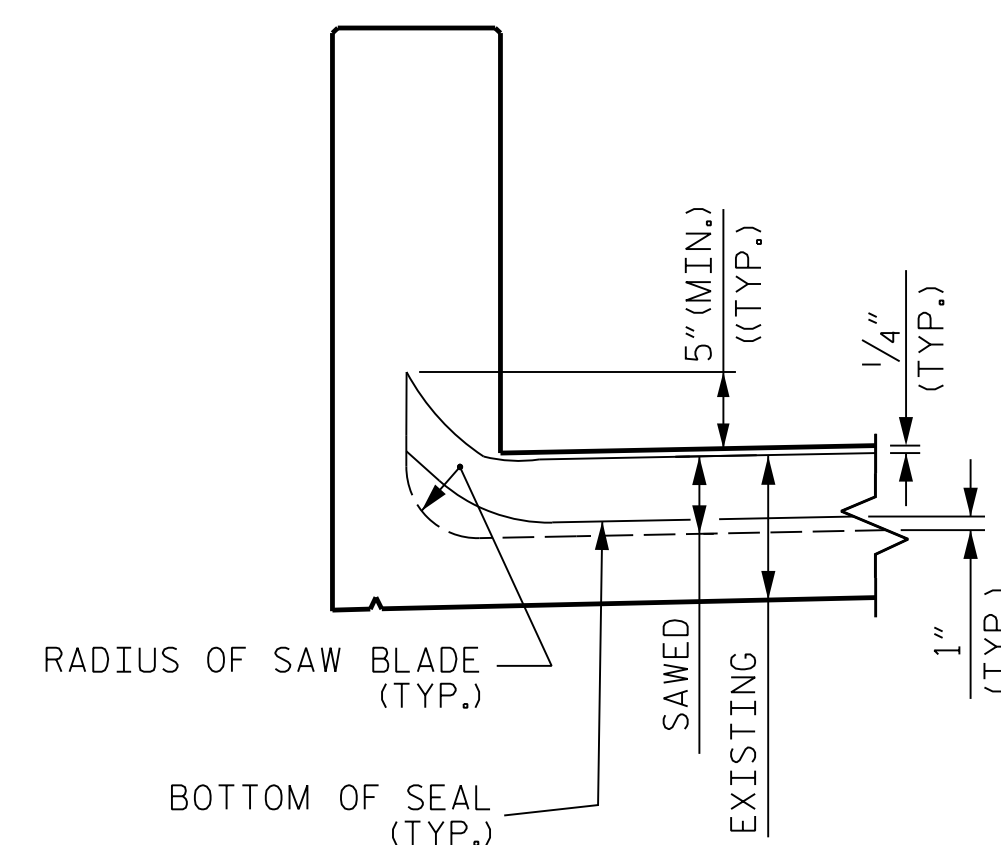
FOR ELASTOMERIC CONCRETE FOR PRESERVATION, SEE SPECIAL PROVISIONS.



**SECTION A-A**



**PLAN**



**SECTION C-C**

PROJECT NO. 15BPR.36  
CHATHAM COUNTY  
 BRIDGE NO. 180059

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STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**JOINT DETAILS**

DRAWN BY : S. DHOLAKIA DATE : 11/2018  
 CHECKED BY : J. YANNACCONE DATE : 11/2018  
 DESIGN ENGINEER OF RECORD : F. ASEFNIA DATE : 11/2018

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

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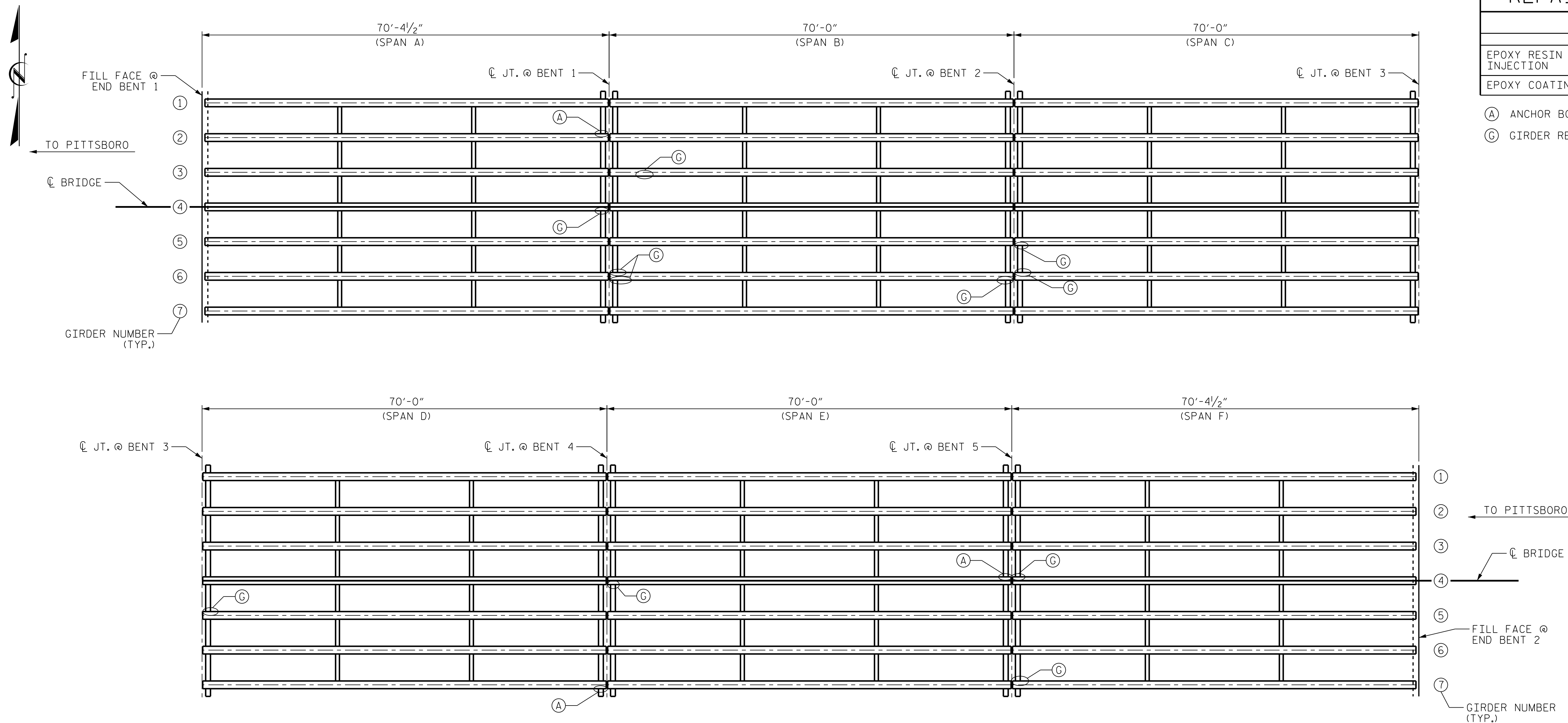
## REPAIR QUANTITY TABLE

### GIRDER REPAIR

	ESTIMATE	ACTUAL
EPOXY RESIN INJECTION	0.5 LF	
EPOXY COATING	834 SF	

(A) ANCHOR BOLT REPAIR (SEE NOTES)

(G) GIRDER REPAIR



## GIRDER REPAIR LOCATIONS

(OTHER LOCATIONS MAY EXIST, SEE NOTES)

### ANTICIPATED REPAIR LOCATIONS

SPAN	GIRDER	LOCATION	DIM "A"	DIM "B"	DIM "D"	DIM "O"
A	2	BENT 1	TIGHTEN ANCHOR BOLT NUT (SEE NOTES)			
A	4	BENT 1	8"	4"	—	8"
B	3	BENT 1	24"	—	12"	60"
B	6	BENT 1	11"	7"	—	0"
B	6	BENT 1	13"	5"	—	11"
B	6	BENT 2	11"	4"	—	—
C	5	BENT 2	12"	5"	—	—
C	6	BENT 2	8"	4"	—	—
D	5	BENT 3	10"	7"	—	—
D	7	BENT 4	TIGHTEN ANCHOR BOLT NUT (SEE NOTES)			
E	4	BENT 4	6" ERI AT END OF GIRDER			
E	4	BENT 5	TIGHTEN ANCHOR BOLT NUT (SEE NOTES)			
F	4	BENT 5	8"	7"	—	—
F	7	BENT 5	12"	3"	—	—

### 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.

MINIMUM CONCRETE COVER FOR PRESTRESSING STRANDS IN THE GIRDERS IS 2" PER THE EXISTING BRIDGE PLANS.

ALL LOOSE NUTS ON 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 "REPAIRS TO PRESTRESSED CONCRETE GIRDERS".

ALL GIRDER ENDS AT BENTS 1 THRU BENTS 5 SHALL BE EPOXY COATED AFTER GIRDER REPAIRS ARE COMPLETED. FOR EPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.

FOR GIRDER REPAIRS AND LIMITS OF EPOXY COATING, SEE "PRESTRESSED CONCRETE GIRDER REPAIR DETAILS" SHEET.

ALL BEARING PLATES SHALL BE CLEANED AND PAINTED. FOR CLEANING AND PAINTING EXISTING BEARING PLATES, SEE SPECIAL PROVISIONS.

PROJECT NO. 15BPR.36

CHATHAM COUNTY

BRIDGE NO. 180059

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## GIRDER REPAIR LOCATIONS

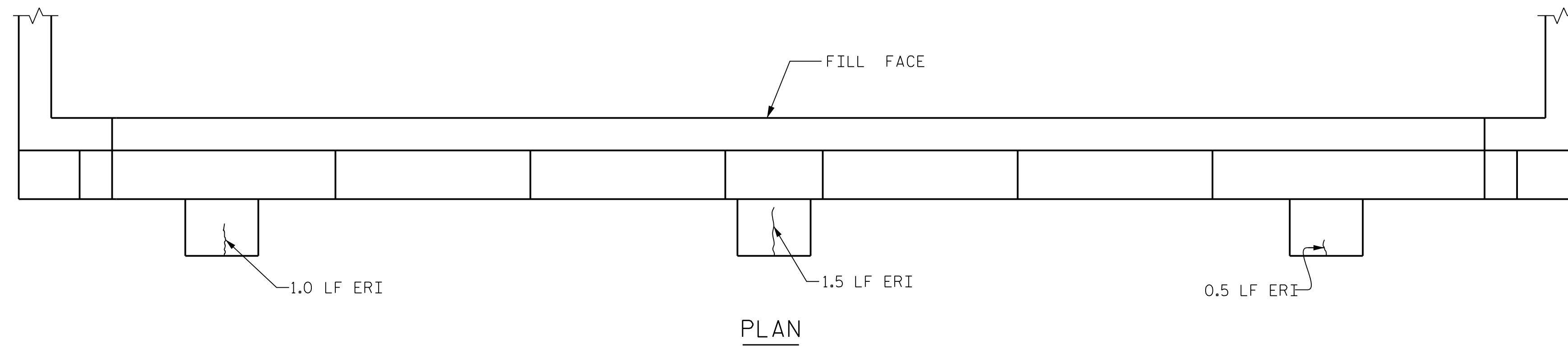
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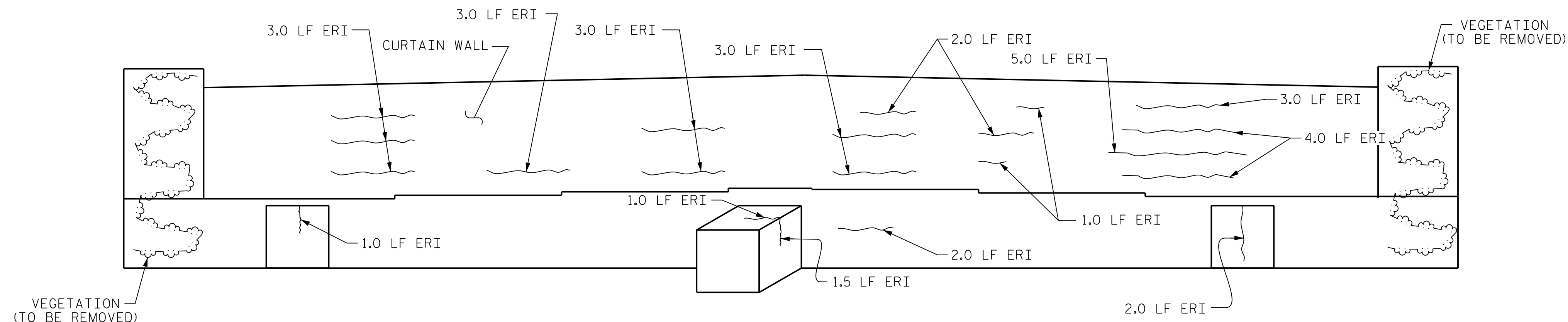
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TOTAL SHEETS  
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DRAWN BY : S. DHOLAKIA DATE : 11/2018  
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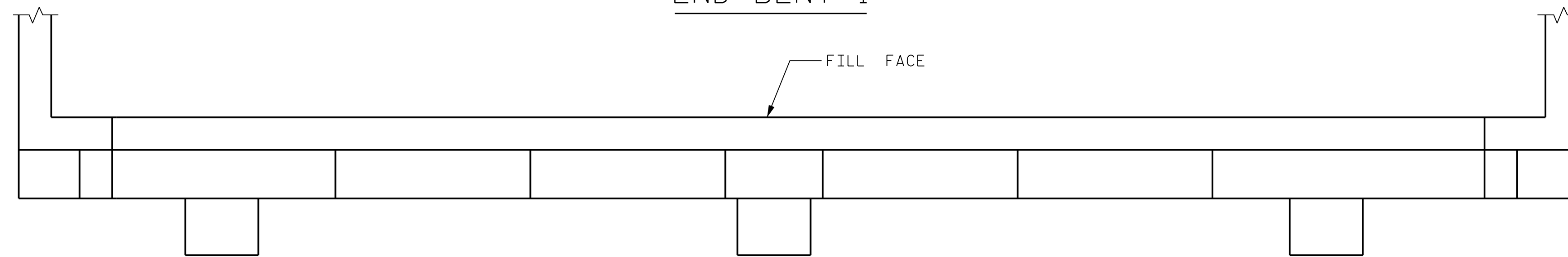
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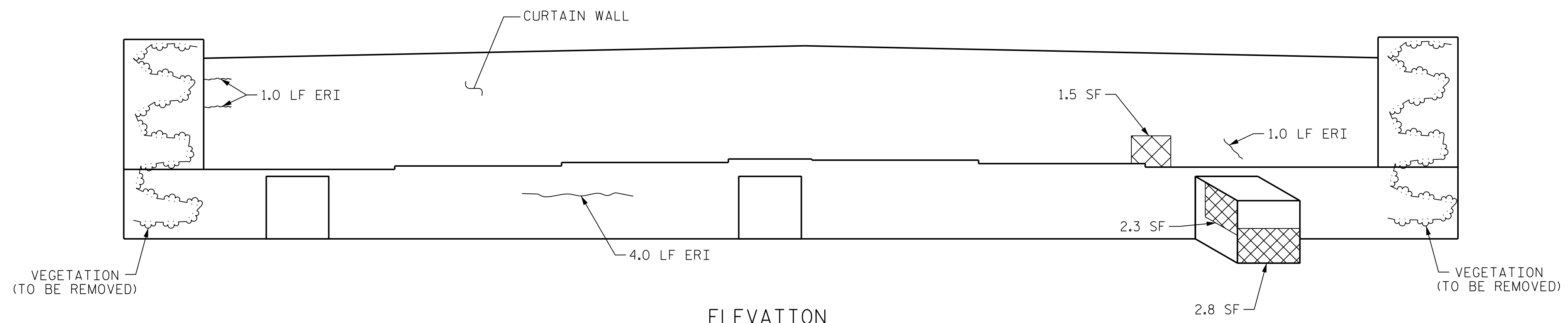
ELEVATION

END BENT 1

- SHOTCRETE REPAIR
- CONCRETE REPAIR
- 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	0.0	0.0		
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	10.5			
CURTAIN WALL	46.0			
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	5.1	1.6		
CURTAIN WALL	1.5	0.6		
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	4.0			
CURTAIN WALL	3.0			
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 LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

THE CONTRACTOR SHALL REMOVE VEGETATION GROWING ON THE END BENTS 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.

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

PROJECT NO. 15BPR.36  
CHATHAM COUNTY  
 BRIDGE NO. 180059

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RALEIGH

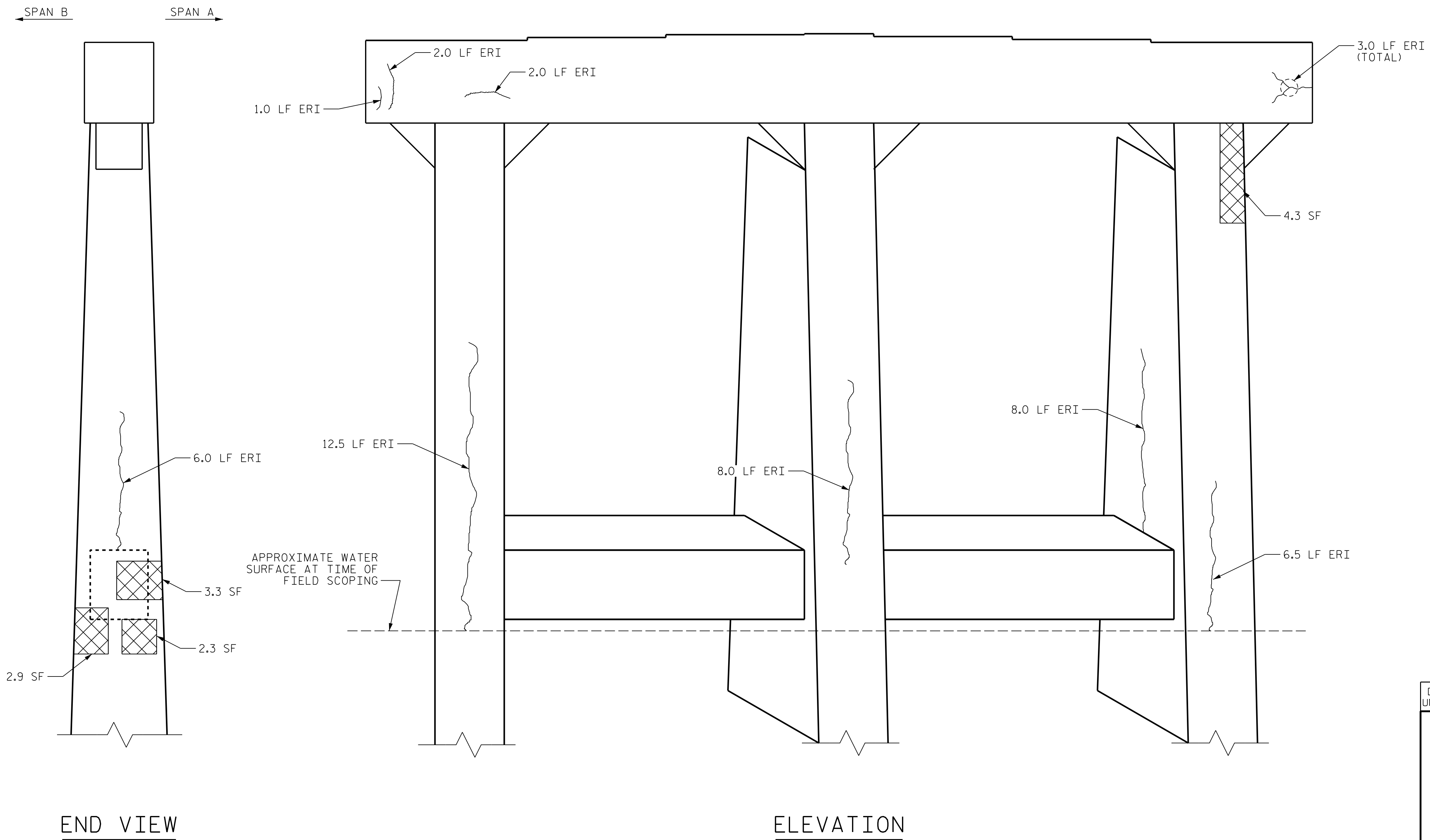
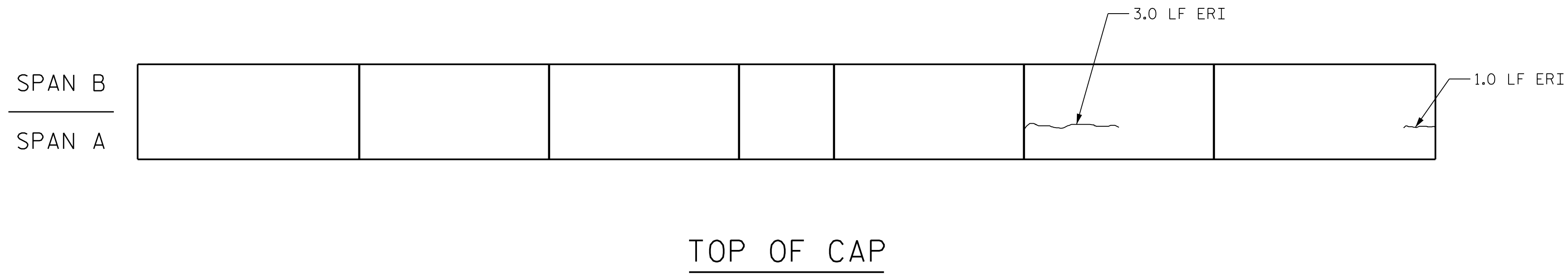
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END VIEW

ELEVATION

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	23.3	7.9		
STRUT	00	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	47.5			
COLUMN	79.5			
STRUT	0.0			
EPOXY COATING	AREA SF		AREA SF	
TOP OF BENT CAP	123 SF			

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

FOR 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.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

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

- SHOTCRETE REPAIR
- CONCRETE REPAIR
- EPOXY RESIN INJECTION

PROJECT NO. 15BPR.36  
CHATHAM COUNTY  
 BRIDGE NO. 180059

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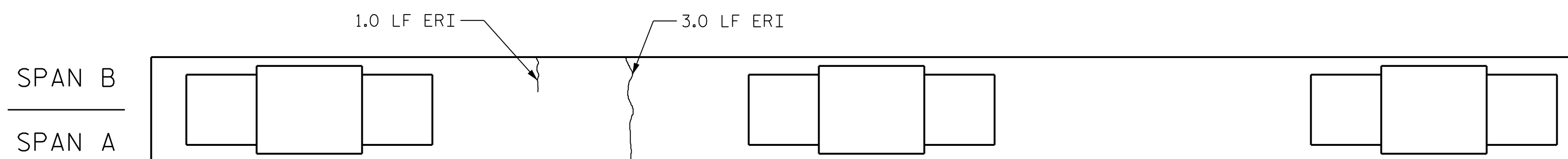


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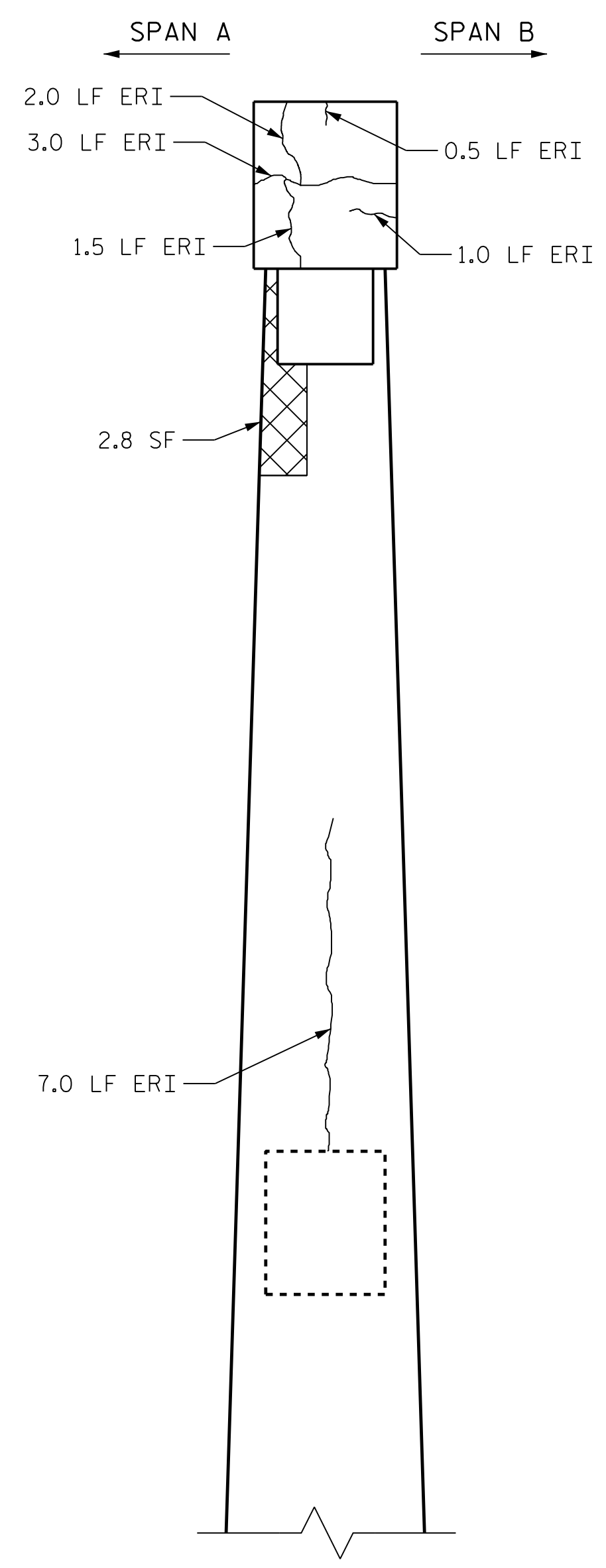
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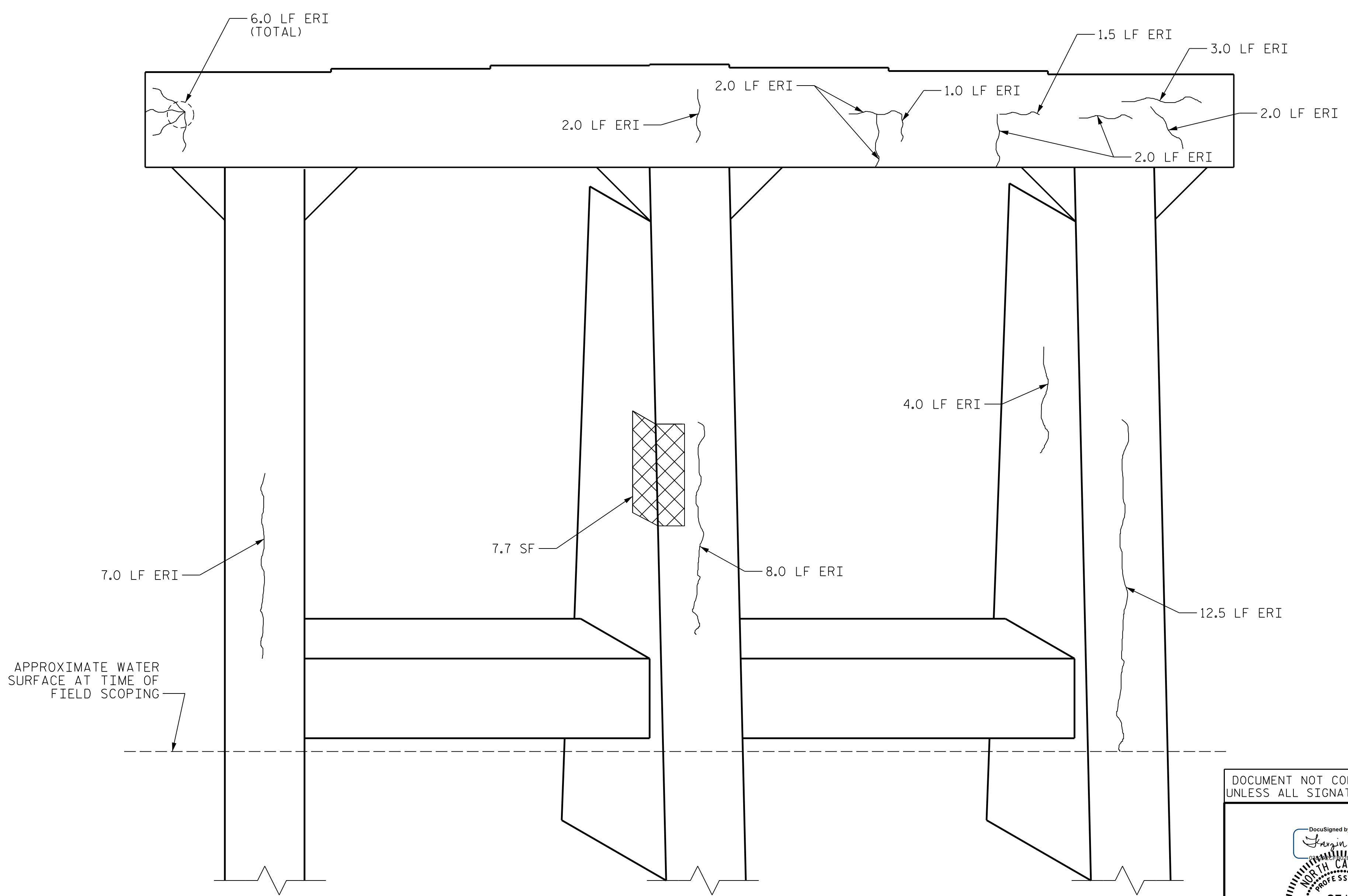
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BOTTOM OF CAP



END VIEW



ELEVATION

-  SHOTCRETE REPAIR
-  CONCRETE REPAIR
-  EPOXY RESIN INJECTION

PROJECT NO. 15BPR.36  
CHATHAM COUNTY  
 BRIDGE NO. 180059

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SUBSTRUCTURE  
 BENT 1  
 SPAN B FACE

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TOTAL SHEETS 51

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### REPAIR QUANTITY TABLE

REPAIRS BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	22.2	9.0		
COLUMN	0.0	0.0		
STRUT	0.0	0.0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	9.2	3.7		
COLUMN	0.0	0.0		
STRUT	0.0	0.0		
EPOXY RESIN INJECTION	LN. FT		LN. FT	
CAP	12.5			
COLUMN	172.5			
STRUT	0.0			
EPOXY COATING	AREA SF		AREA SF	
TOP OF BENT CAP	123 SF			

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

FOR 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.

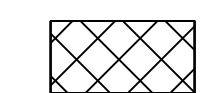
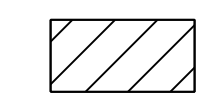

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

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

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

-  SHOTCRETE REPAIR
-  CONCRETE REPAIR
-  EPOXY RESIN INJECTION

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CHATHAM COUNTY  
 BRIDGE NO. 180059

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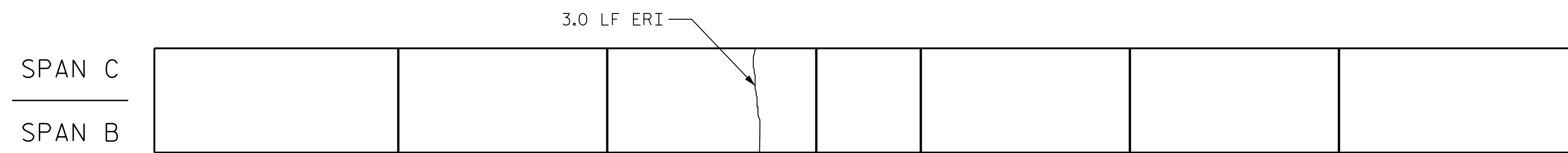
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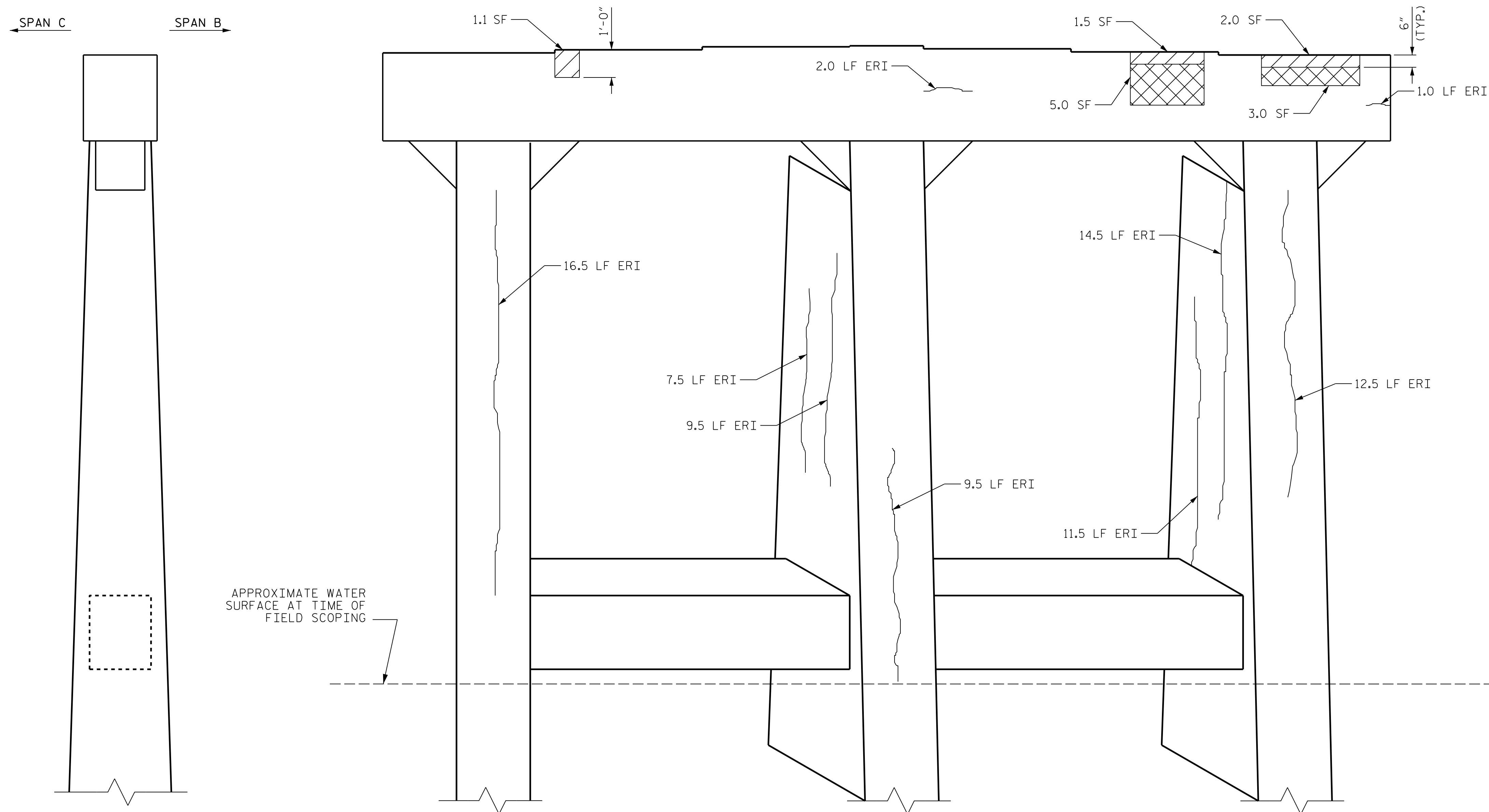
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### TOP OF CAP



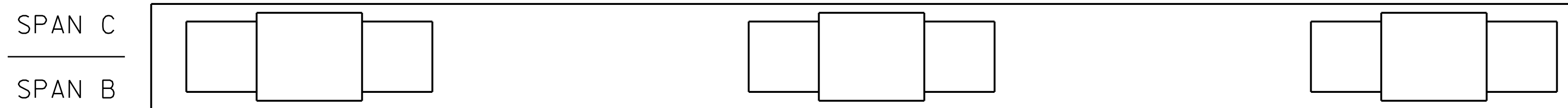
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### ELEVATION

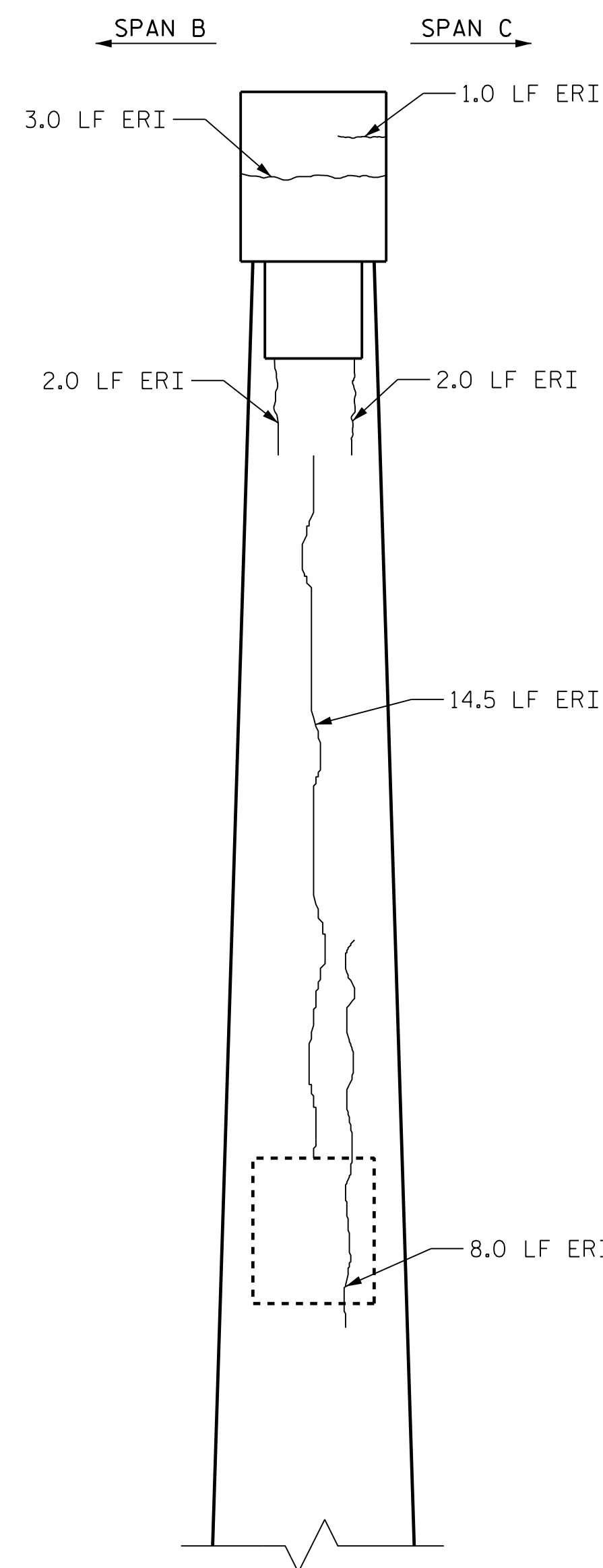
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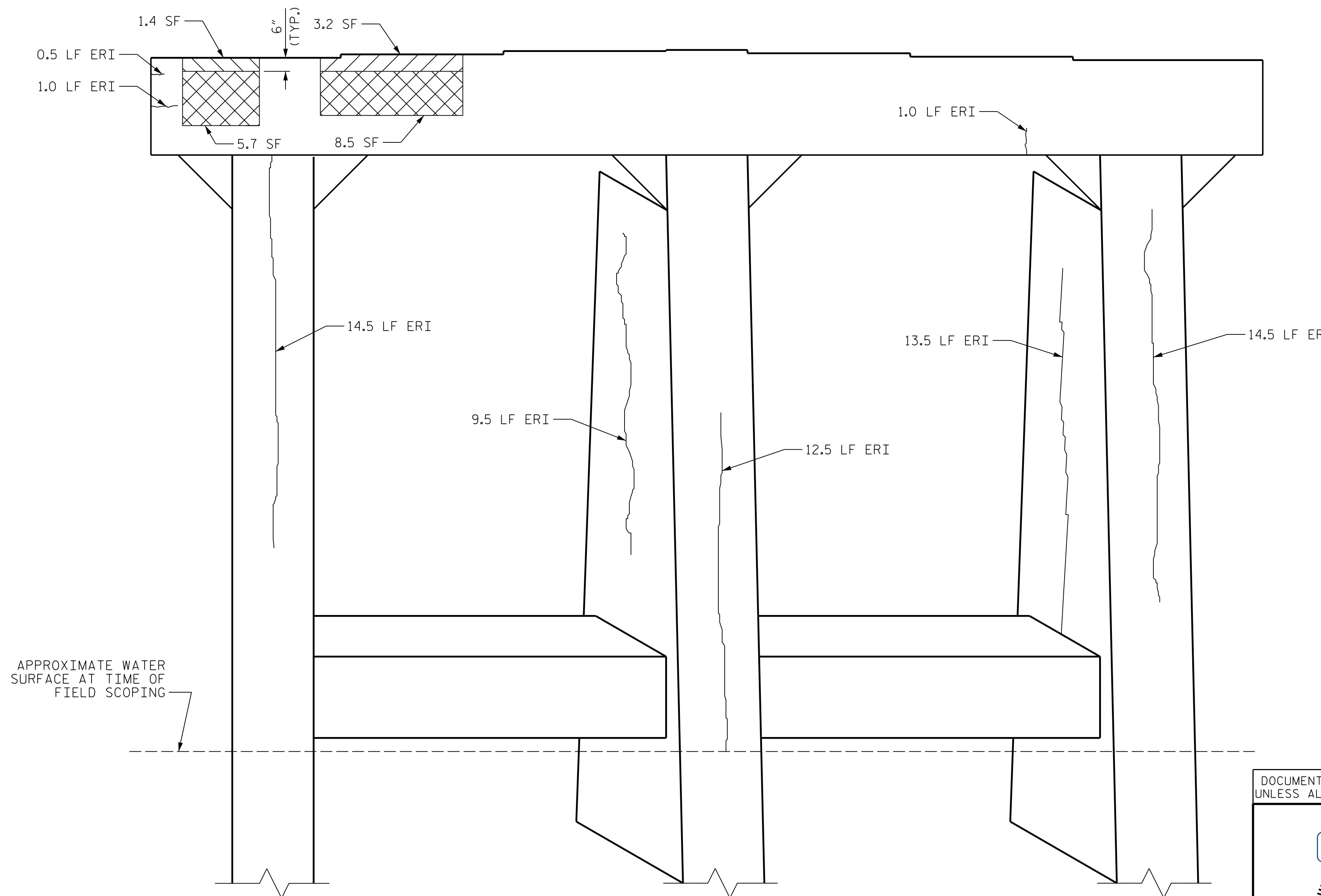
Prepared by:  
 LOUIS BERGER  
 1001 Wade Avenue, Suite 400  
 Raleigh, NC 27605-3322  
 NC COA No. F-0840



BOTTOM OF CAP



END VIEW

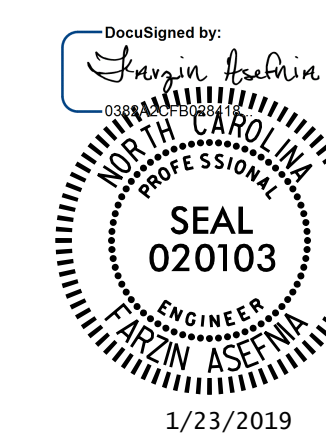


ELEVATION

- SHOTCRETE REPAIR
- CONCRETE REPAIR
- EPOXY RESIN INJECTION

PROJECT NO. 15BPR.36  
CHATHAM COUNTY  
 BRIDGE NO. 180059

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SUBSTRUCTURE  
 BENT 2  
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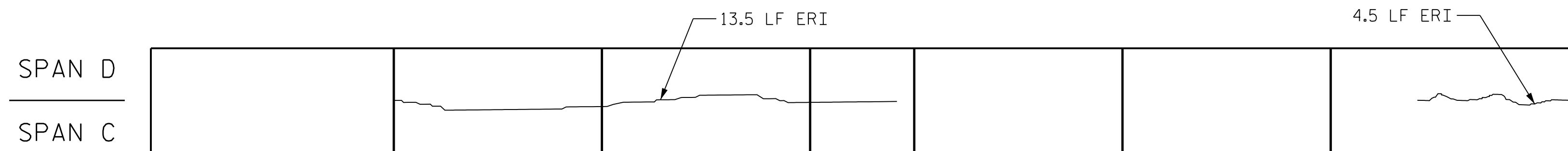
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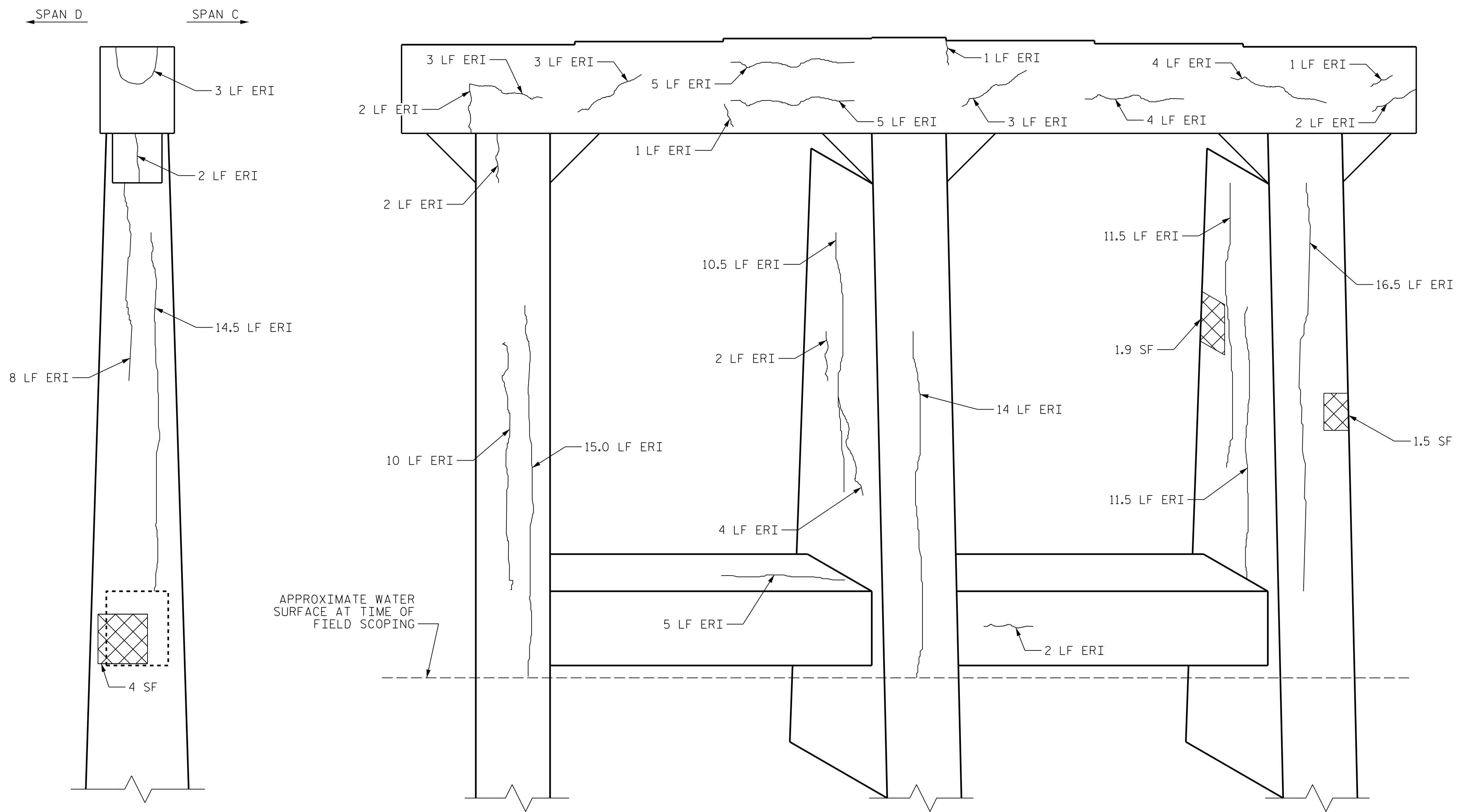
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TOP OF CAP



END VIEW

ELEVATION

REPAIR QUANTITY TABLE

REPAIRS BENT 3	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
COLUMN	23.7	9.9		
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	127.0			
COLUMN	236.0			
STRUT	10.0			
EPOXY COATING	AREA SF	AREA SF		
TOP OF BENT CAP	123 SF			

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

FOR 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.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

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

 SHOTCRETE REPAIR

 CONCRETE REPAIR

 EPOXY RESIN INJECTION

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SUBSTRUCTURE  
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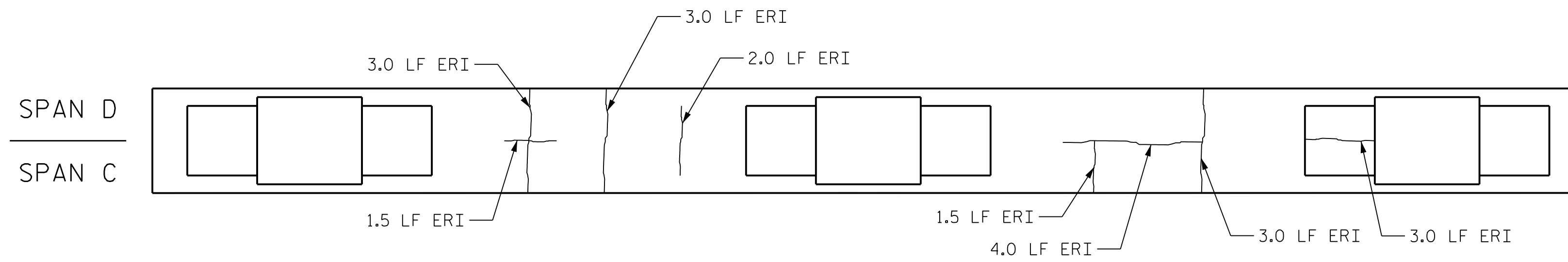
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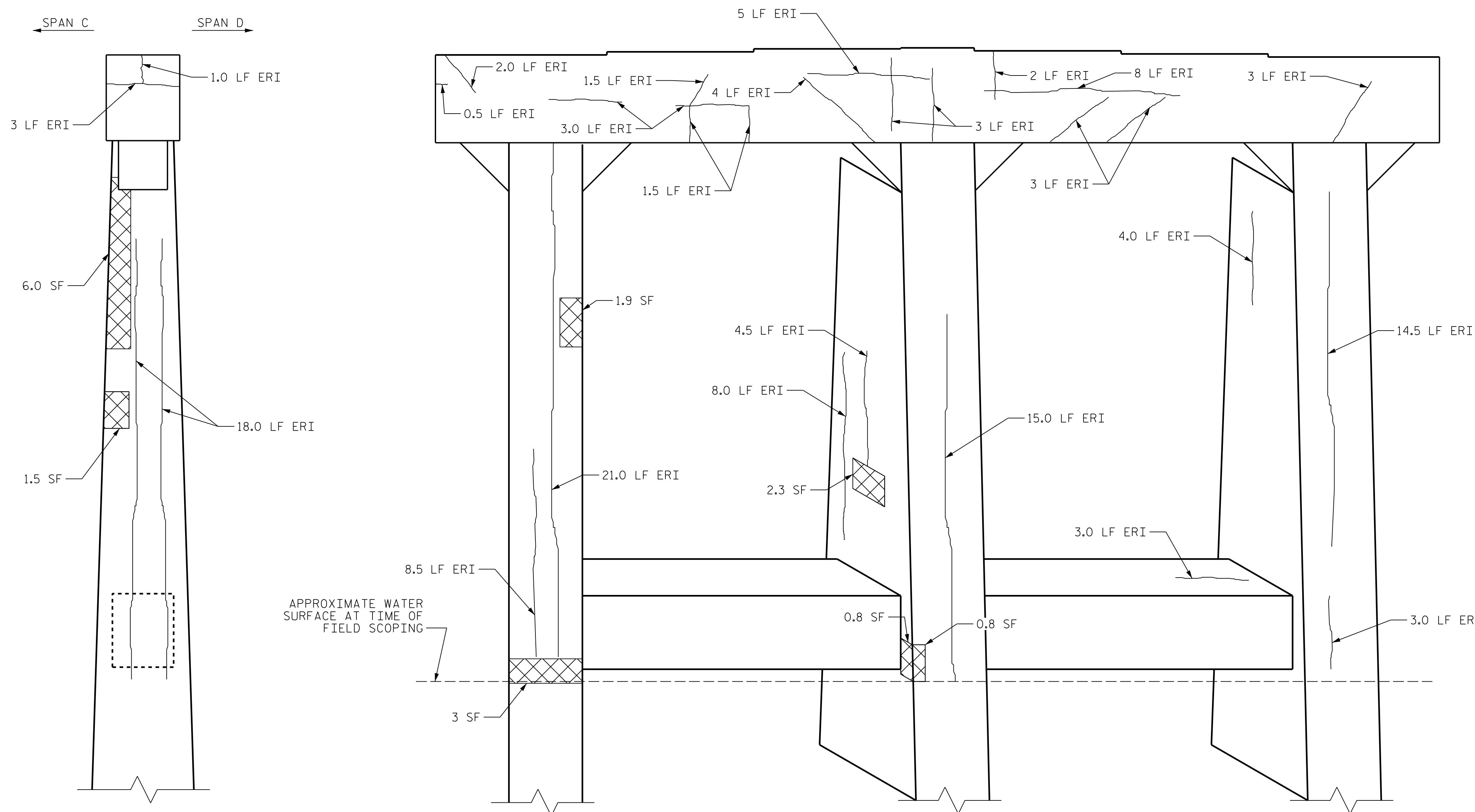
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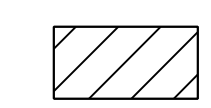

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BOTTOM OF CAP



-  SHOTCRETE REPAIR
-  CONCRETE REPAIR
-  EPOXY RESIN INJECTION

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### REPAIR QUANTITY TABLE

REPAIRS BENT 4	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	4.1	1.7		
COLUMN	11.1	4.7		
STRUT	0.0	0.0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	1.1	0.4		
COLUMN	0.0	0.0		
STRUT	0.0	0.0		
EPOXY RESIN INJECTION	LN. FT		LN. FT	
CAP	58.5			
COLUMN	246.5			
STRUT	12.0			
EPOXY COATING	AREA SF		AREA SF	
TOP OF BENT CAP	123 SF			


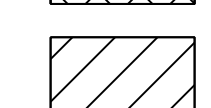

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL TO SAWCUT. SEE REPAIR DETAILS.

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

FOR 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.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.  
 FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.  
 FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

CONCRETE REPAIRS MAY BE SUBSTITUTED IN PLACE OF SHOTCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.  
 CONCRETE REPAIRS TO THE BENT CAP MAY REQUIRE BRIDGE JACKING. FOR BRIDGE JACKING, SEE SPECIAL PROVISIONS.

-  SHOTCRETE REPAIR
-  CONCRETE REPAIR
-  EPOXY RESIN INJECTION

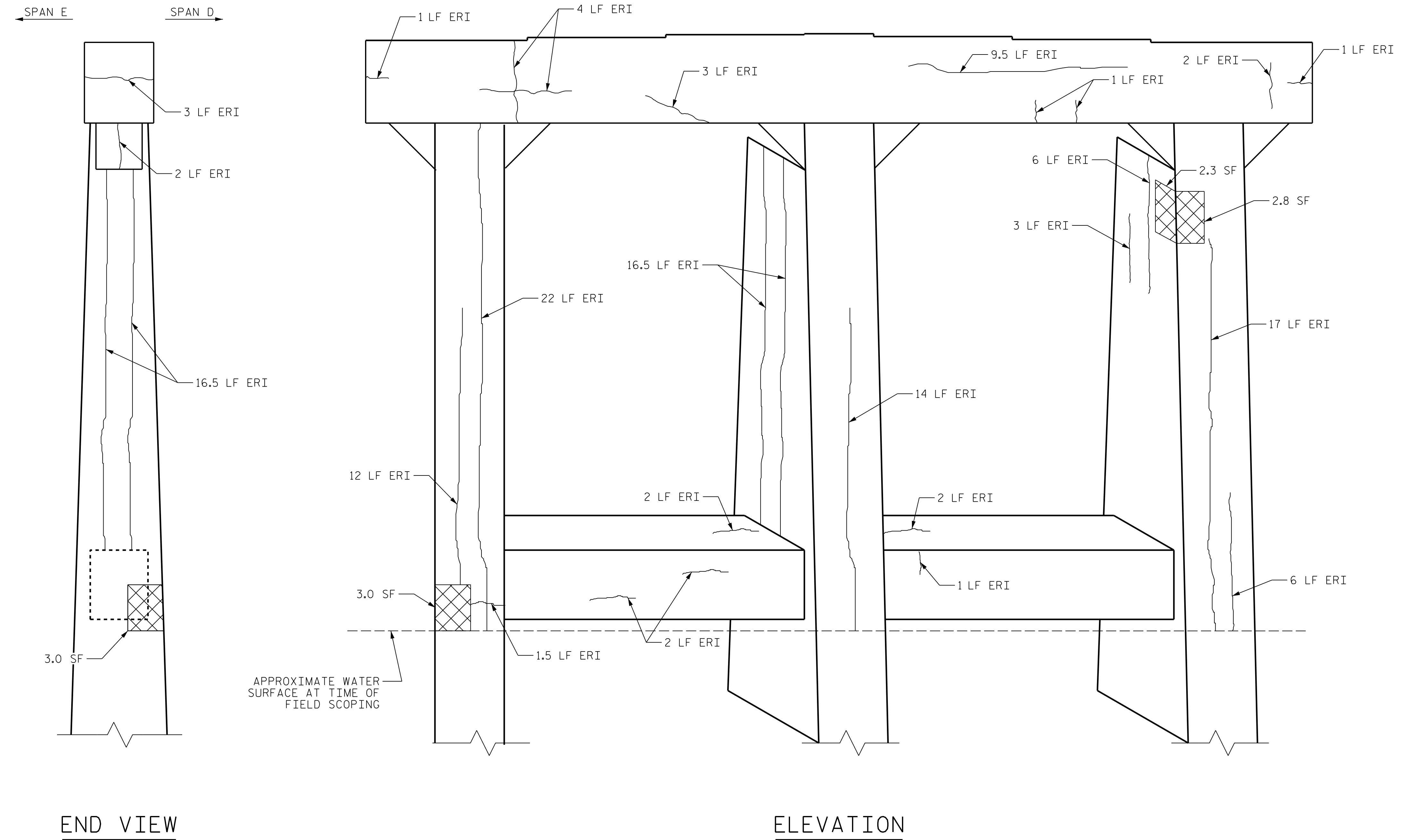
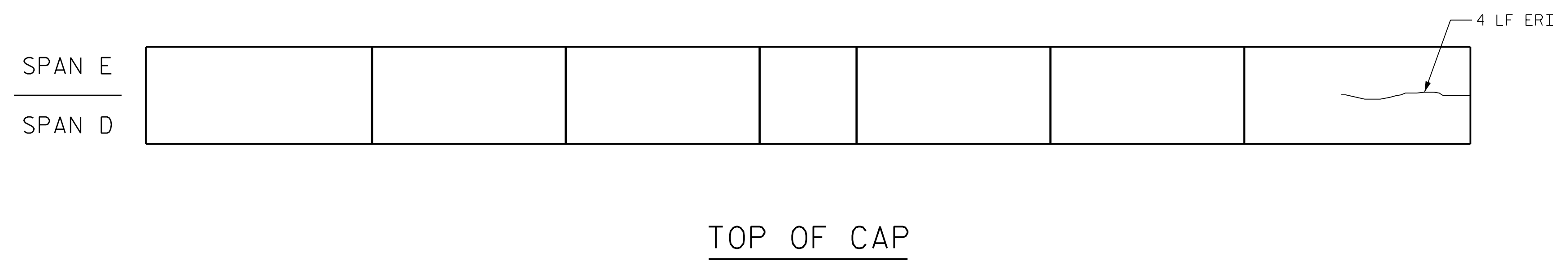
PROJECT NO. 15BPR.36  
CHATHAM COUNTY  
 BRIDGE NO. 180059

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**SUBSTRUCTURE  
 BENT 4  
 SPAN D FACE**

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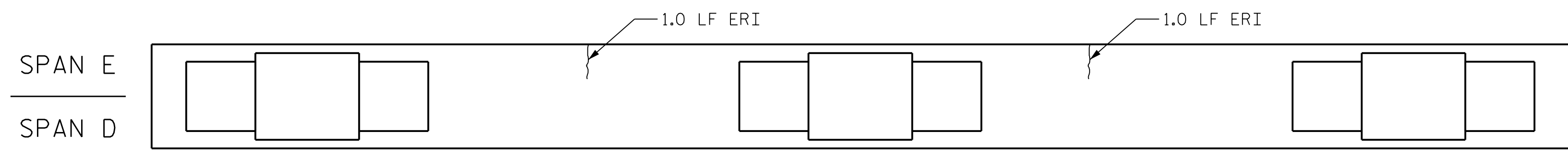
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**ELEVATION**

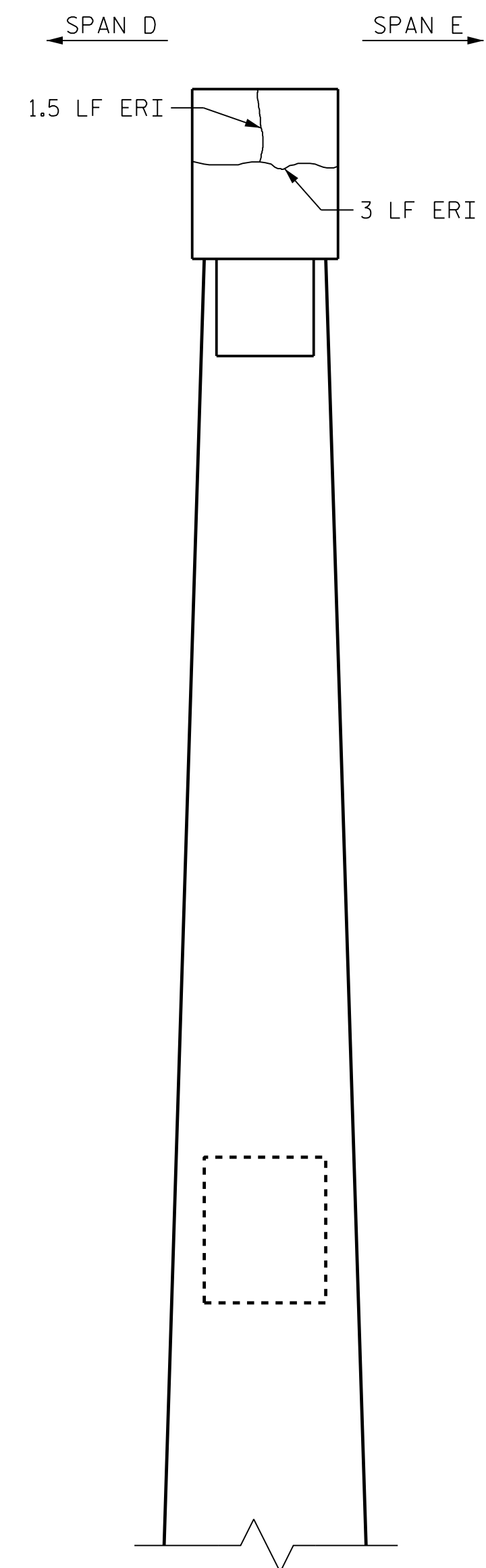
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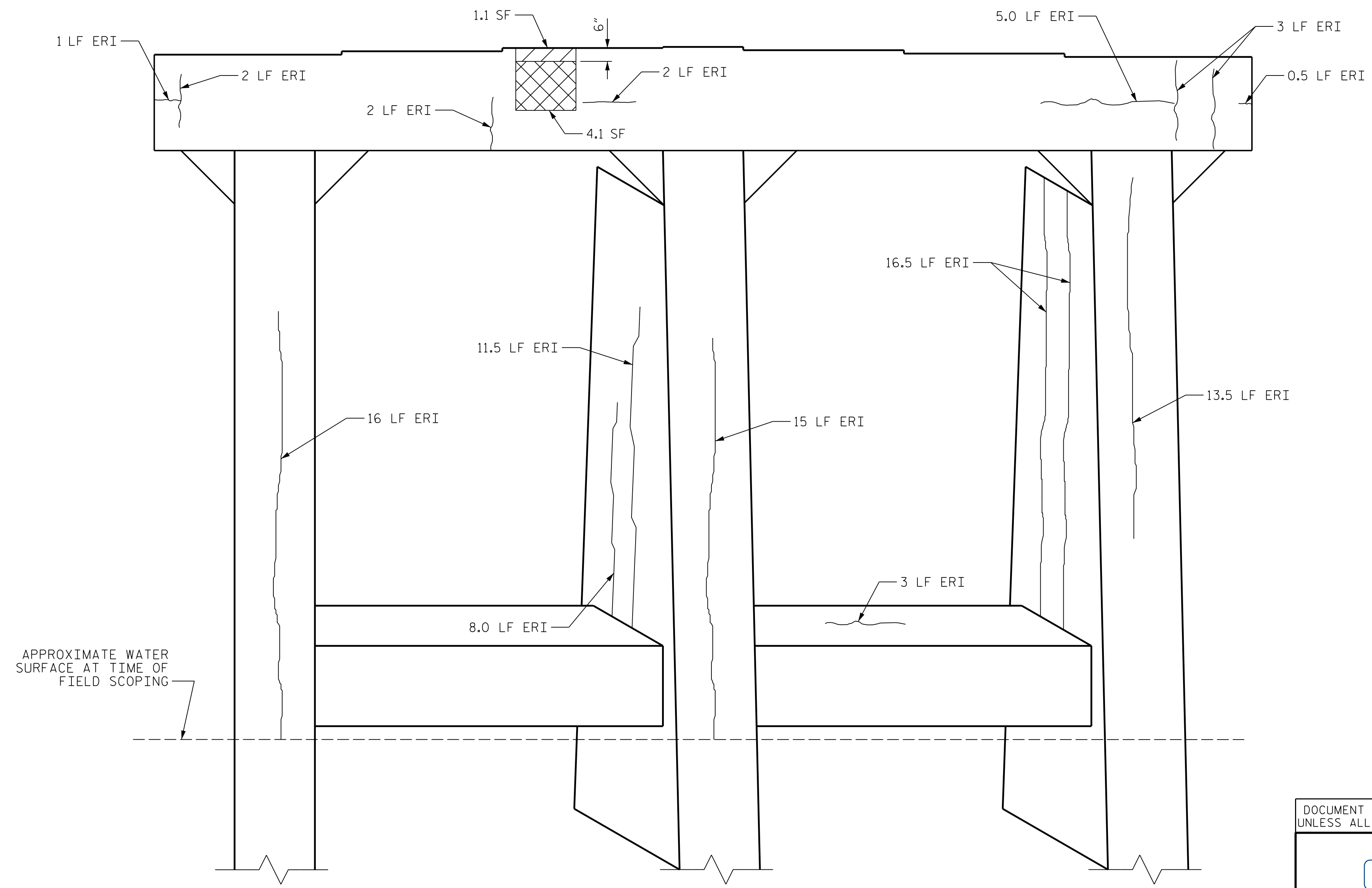







BOTTOM OF CAP



END VIEW



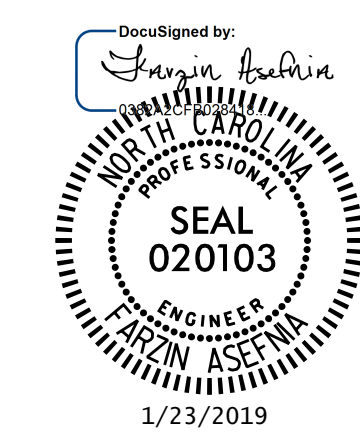
ELEVATION

-  SHOTCRETE REPAIR
-  CONCRETE REPAIR
-  EPOXY RESIN INJECTION

APPROXIMATE WATER SURFACE AT TIME OF FIELD SCOPING

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**SUBSTRUCTURE  
 BENT 4  
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REVISIONS

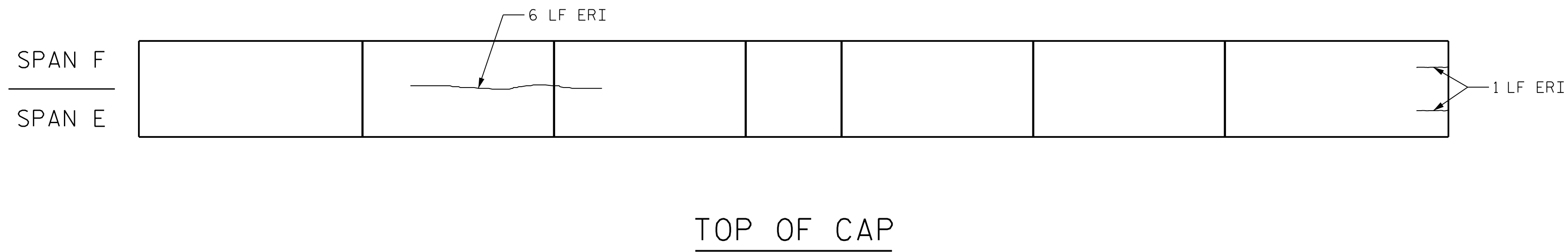
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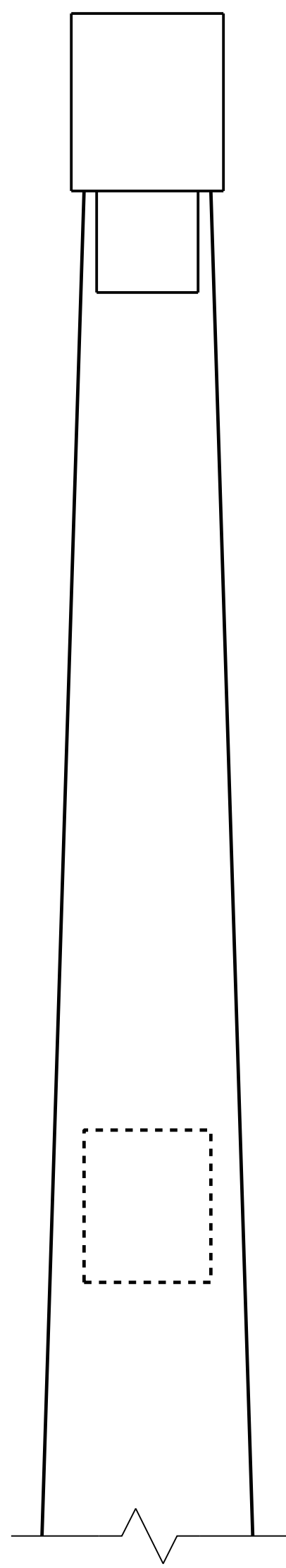
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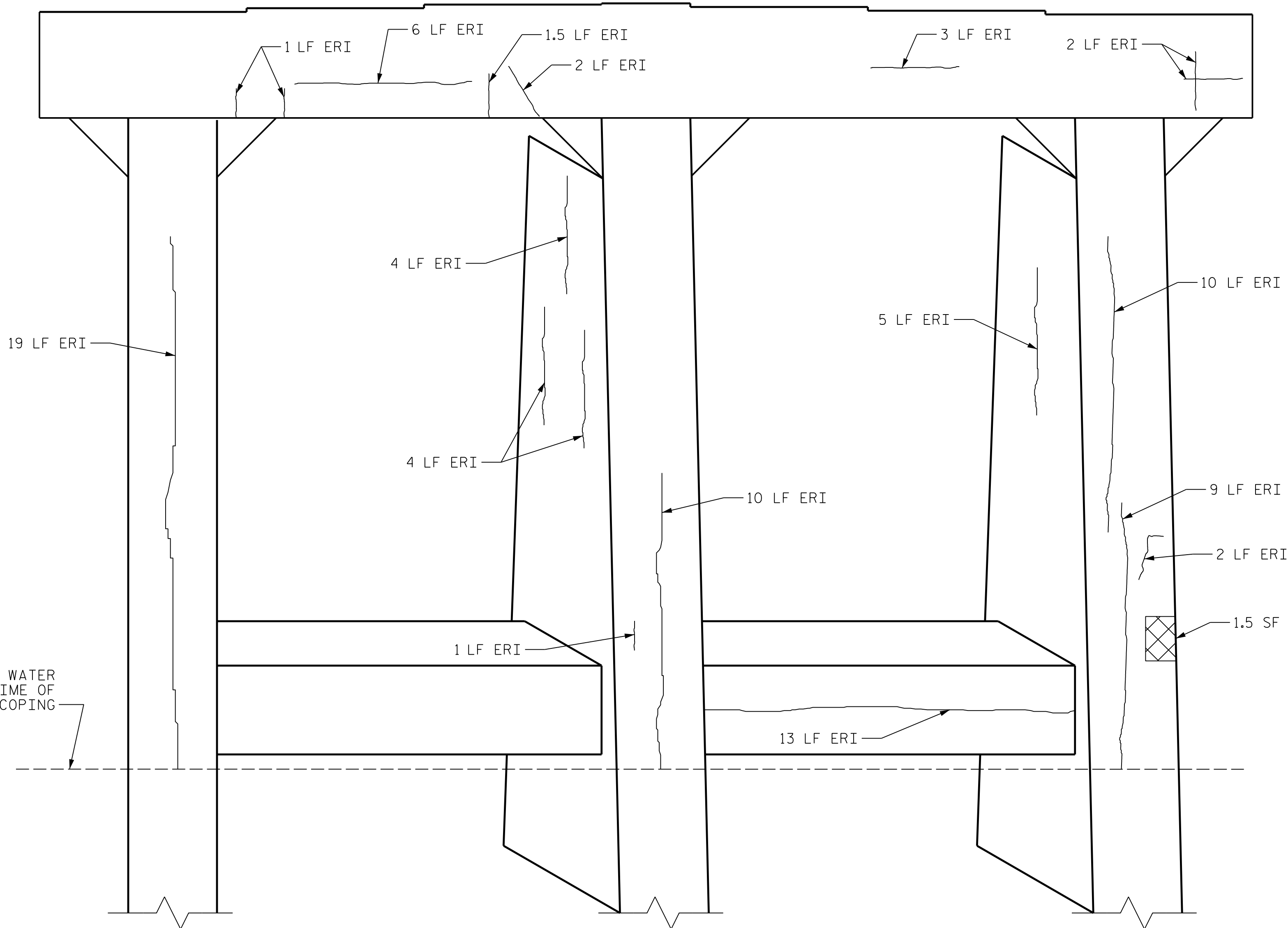




← SPAN F      SPAN E →



END VIEW



ELEVATION

**REPAIR QUANTITY TABLE**

REPAIRS BENT 5	QUANTITIES			
	ESTIMATE		ACTUAL	
<b>SHOTCRETE REPAIRS</b>	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	2.9	1.2		
COLUMN	3.0	1.3		
STRUT	0.0	0.0		
<b>CONCRETE REPAIRS</b>	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
COLUMN	0.0	0.0		
STRUT	0.0	0.0		
<b>EPOXY RESIN INJECTION</b>		LN. FT		LN. FT
CAP		47.0		
COLUMN		120.0		
STRUT		29.5		
<b>EPOXY COATING</b>	AREA SF		AREA SF	
TOP OF BENT CAP	123 SF			

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

FOR 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.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

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

- SHOTCRETE REPAIR
- CONCRETE REPAIR
- EPOXY RESIN INJECTION

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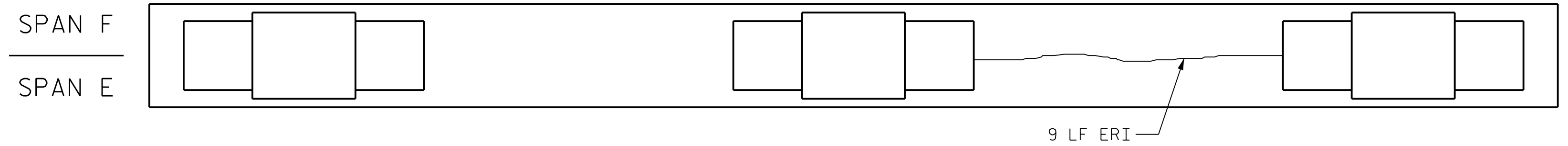
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**SUBSTRUCTURE  
 BENT 5  
 SPAN E FACE**

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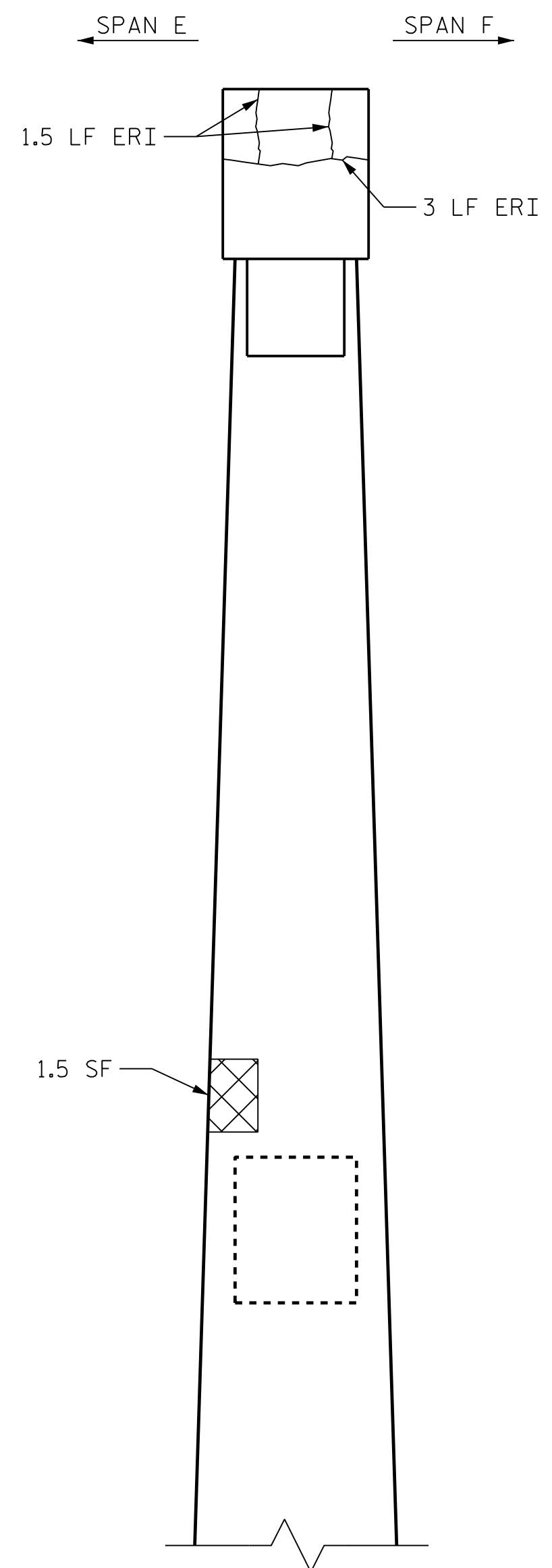
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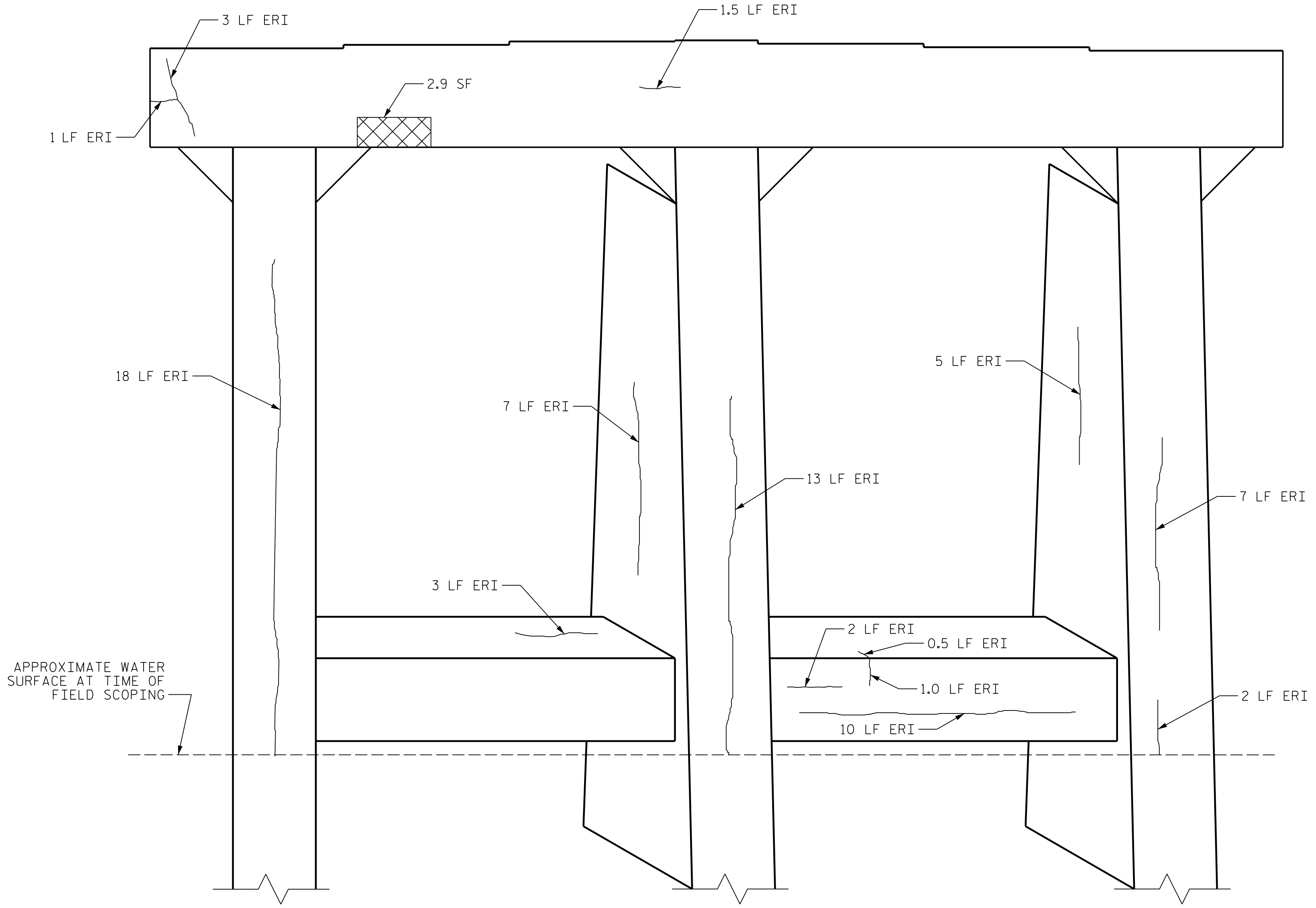




BOTTOM OF CAP



END VIEW



ELEVATION

- SHOTCRETE REPAIR
- CONCRETE REPAIR
- EPOXY RESIN INJECTION

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**SUBSTRUCTURE  
 BENT 5  
 SPAN F FACE**

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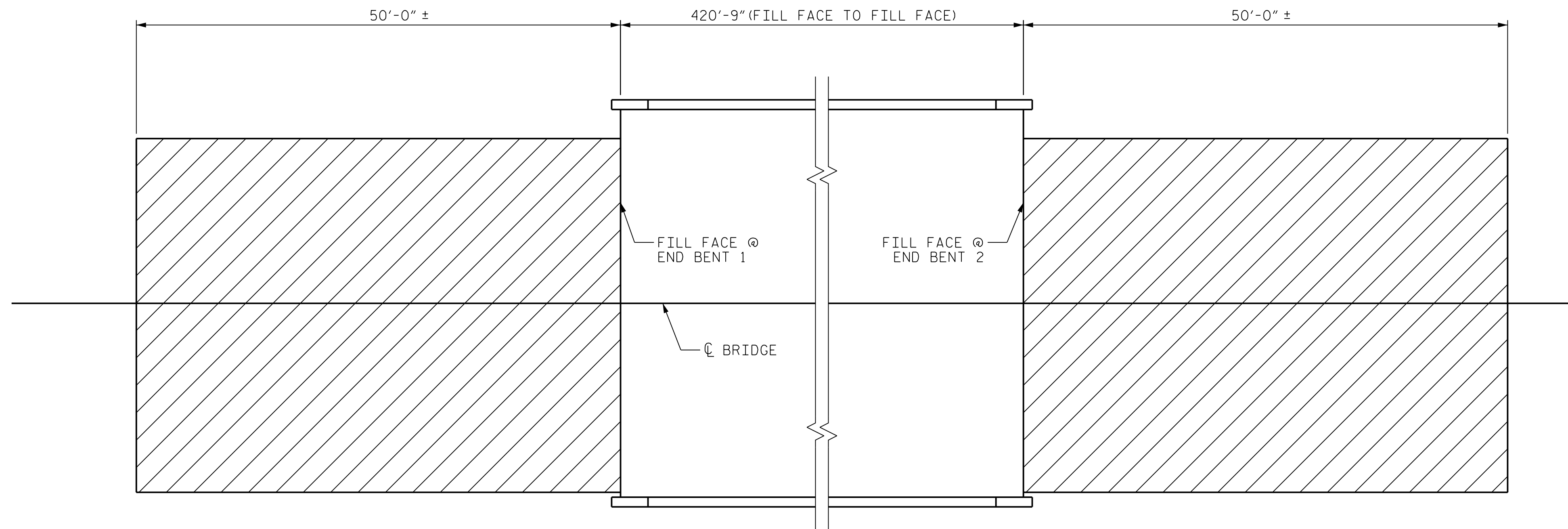
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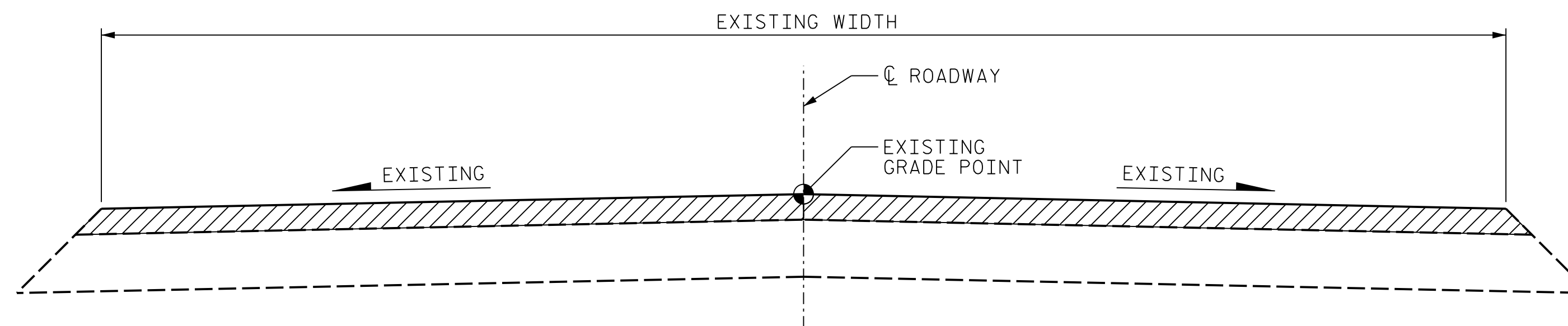


PLAN

**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.

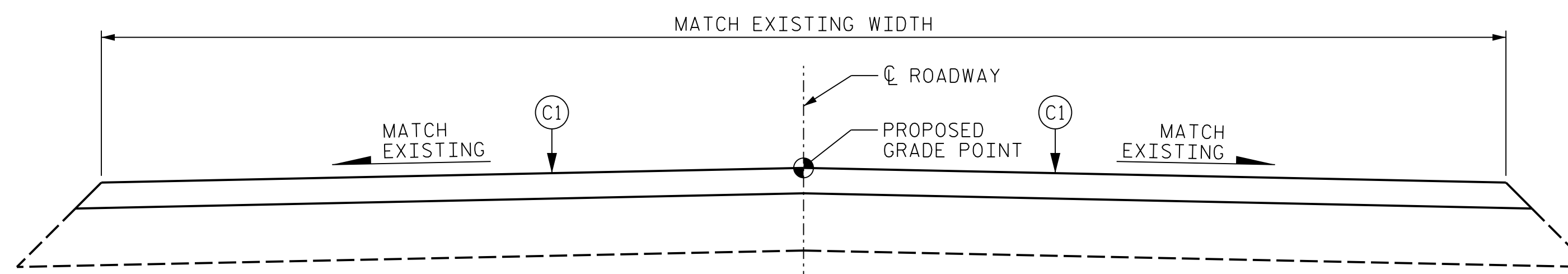
INCIDENTAL MILLING

SUMMARY OF QUANTITIES		
	ESTIMATE	ACTUAL
INCIDENTAL MILLING	406 SQ. YDS.	
ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C	35 TONS	
ASPHALT BINDER FOR PLANT MIX	2 TONS	



TYPICAL ROADWAY MILLING SECTION

(MILL TO APPROX. 1/2" DEPTH)

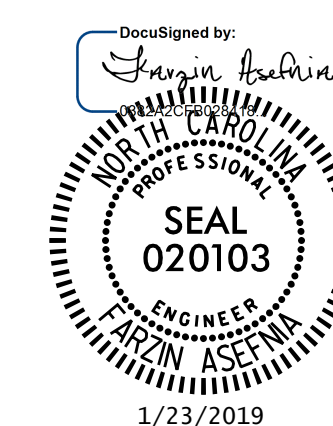


TYPICAL FINAL ROADWAY SECTION

C1	PROPOSED VARIABLE DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C 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.
----	--

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APPROACH MILLING  
 AND TYPICAL ROADWAY  
 SECTIONS

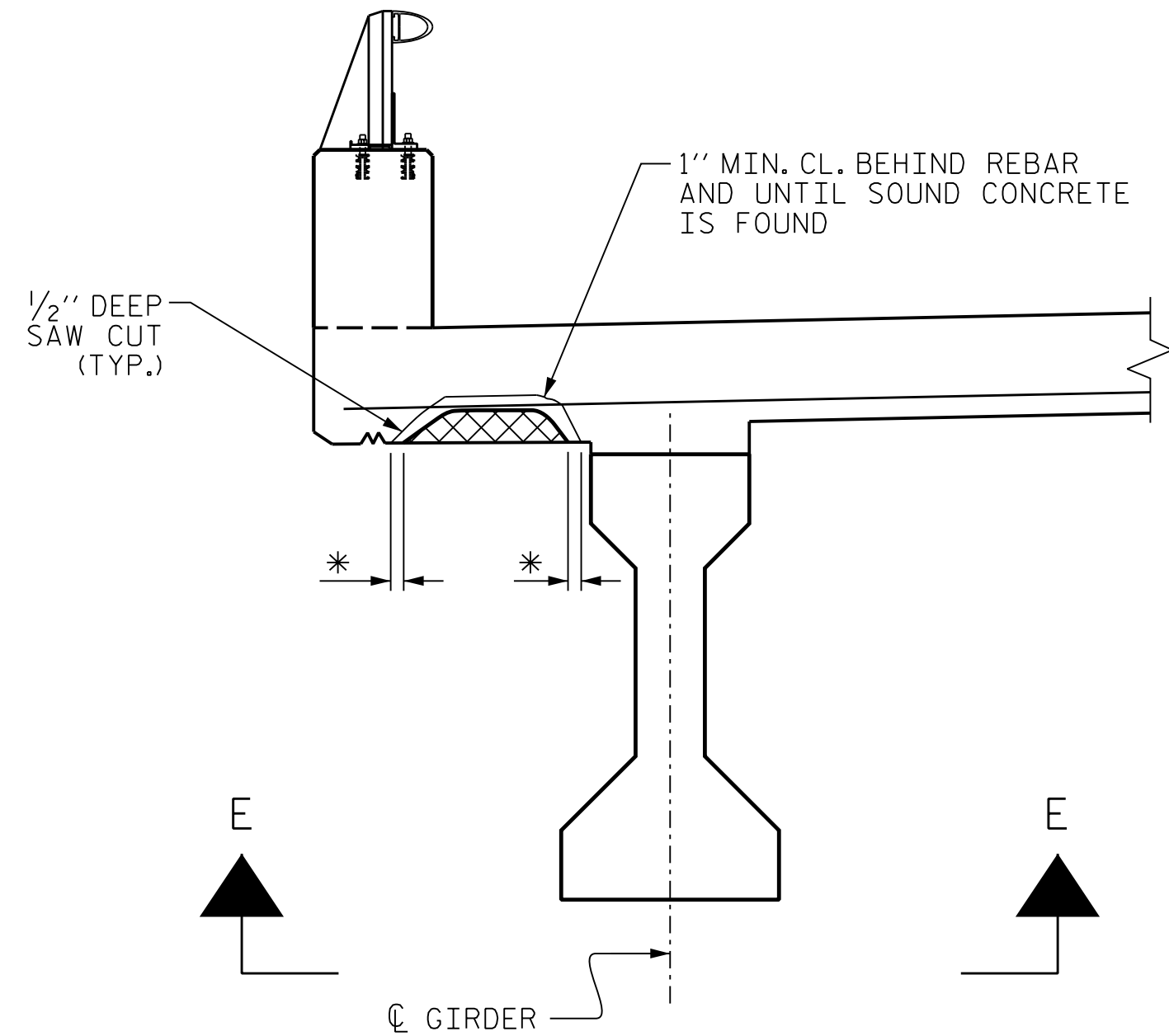
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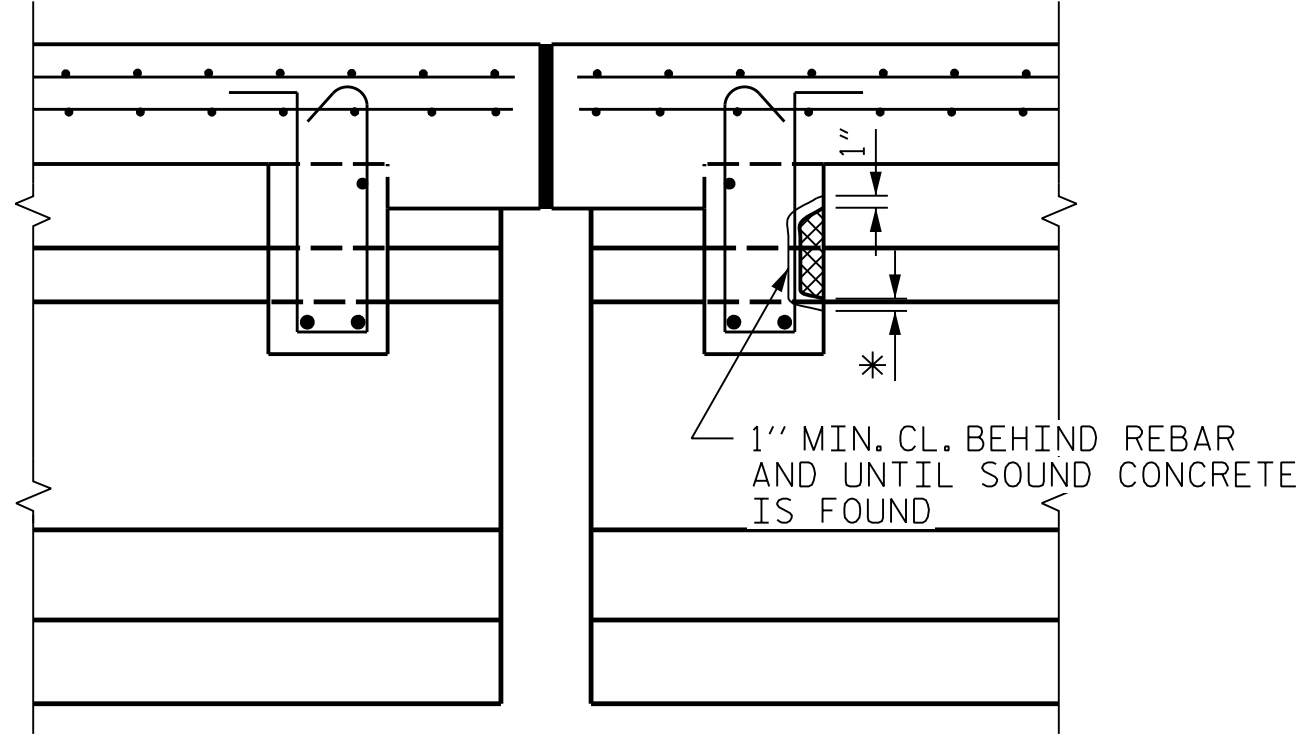


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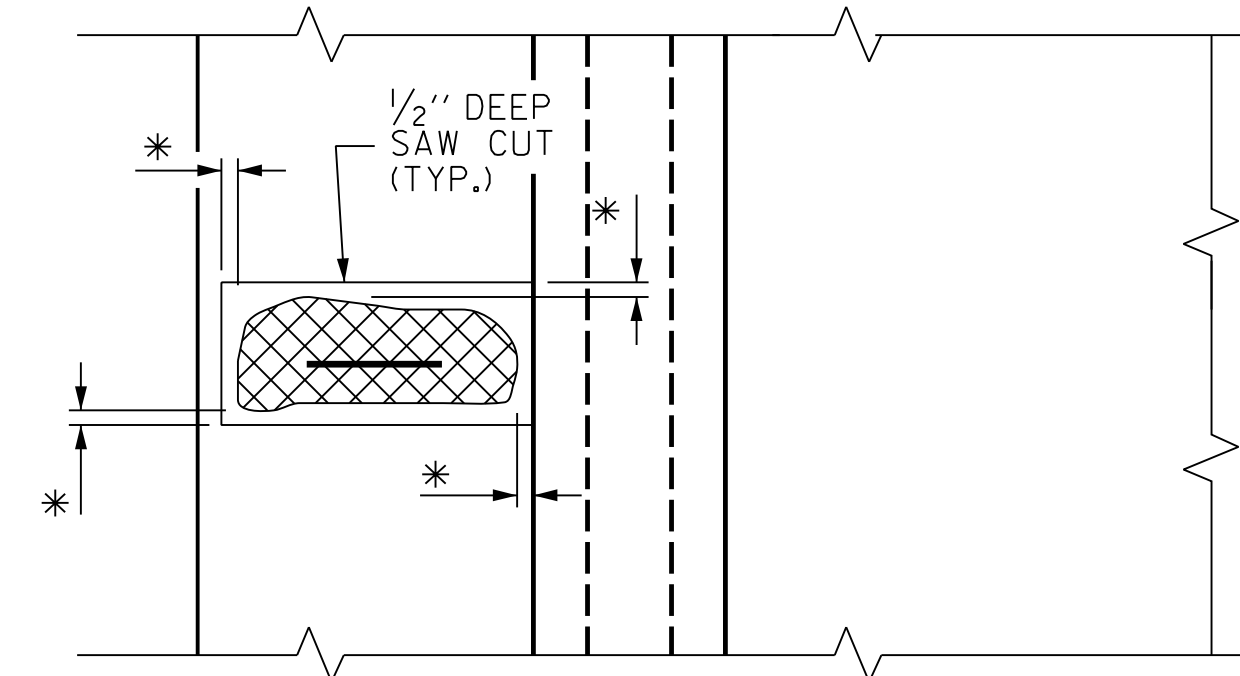
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**TYPICAL SECTION**  
 \* REMOVE CONCRETE UNTIL SOUND CONCRETE IS FOUND (1" MIN. DEPTH)

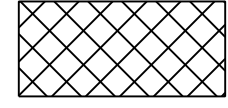


**TYPICAL SECTION AT EXPANSION JOINTS**



**SECTION E-E**  
**OVERHANG DETAILS**

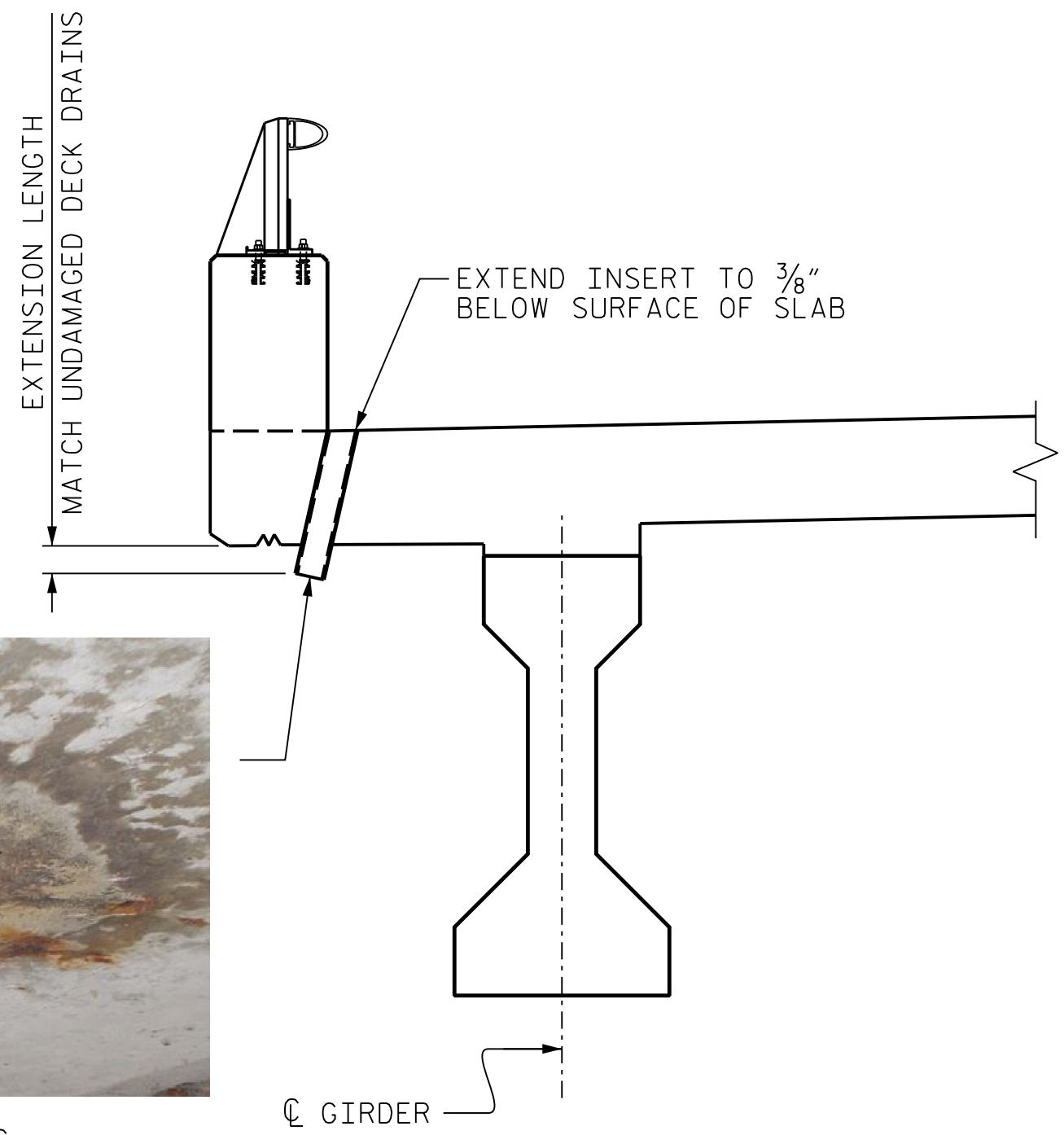
\* REMOVE CONCRETE UNTIL SOUND CONCRETE IS FOUND (1" MIN. DEPTH)

 DAMAGED AREA

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



BROKEN 3" Ø P. V. C. PIPE DRAIN



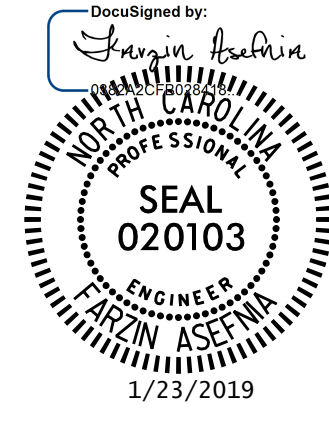
**DRAIN DETAIL**

**NOTES**

- CUT AND REMOVE THE DAMAGED PORTION OF THE DECK DRAIN DOWNSPOUT PIPE AND GRIND IT FLUSH WITH THE BOTTOM OF THE DECK SLAB.
- REMOVE ANY DEBRIS IN THE PIPE AND CLEAN THE PIPE SURFACE OF DIRT, GREASE, OIL AND OTHER FOREIGN MATERIALS.
- USE A PVC PIPE CLEANER AND CEMENT APPROVED BY THE ENGINEER.
- PREPARE THE PIPE SURFACE AND APPLY APPROVED MATERIAL ACCORDING TO THE MANUFACTURERS' RECOMMENDATIONS.
- THE REPLACEMENT PVC DRAIN PIPE SHALL HAVE AN OUTSIDE DIAMETER AS CLOSELY MATCHING THE INSIDE DIAMETER OF THE EXISTING PIPE AS POSSIBLE. INSERT THE REPLACEMENT PVC DRAIN INSIDE THE EXISTING PIPE AND SET THE ENDS OF THE REPLACEMENT PIPE AT THE LIMITS SHOWN ON THE PLANS.
- 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.
- FOR LOCATIONS OF DAMAGED DECK DRAINS, SEE "PLAN OF SPANS" SHEETS. THE CONTRACTOR SHALL VERIFY LOCATIONS AND COMPLETE ALL REPAIRS IF ADDITIONAL LOCATIONS ARE ENCOUNTERED.
- FOR REPAIR OF EXISTING DECK DRAINS, SEE SPECIAL PROVISIONS.

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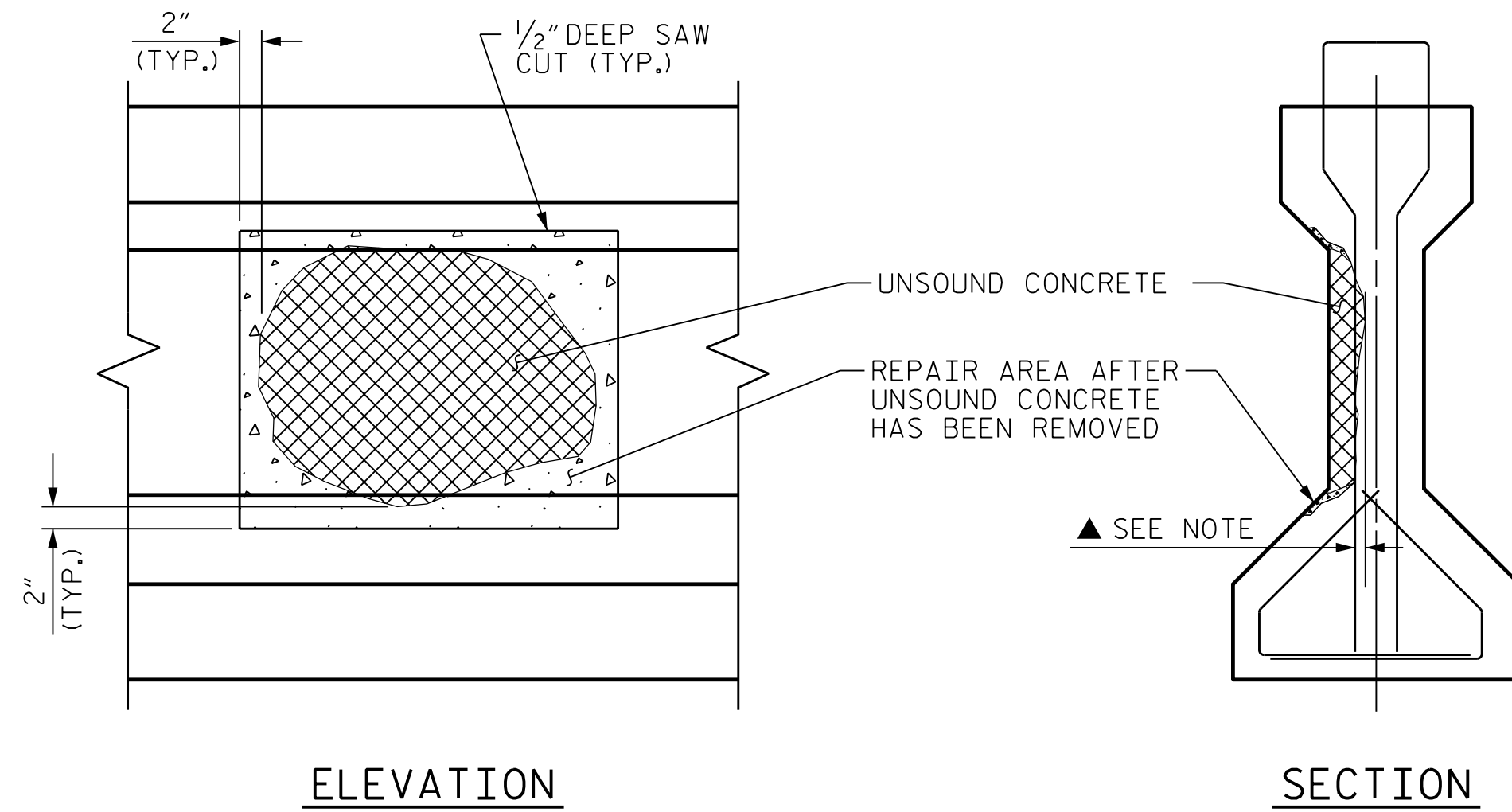
**OVERHANG & DIAPHRAGM REPAIR DETAILS**

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CHECKED BY :	J. YANNACCONO	DATE :	11/2018
DESIGN ENGINEER OF RECORD :	F. ASEFNIA	DATE :	11/2018

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

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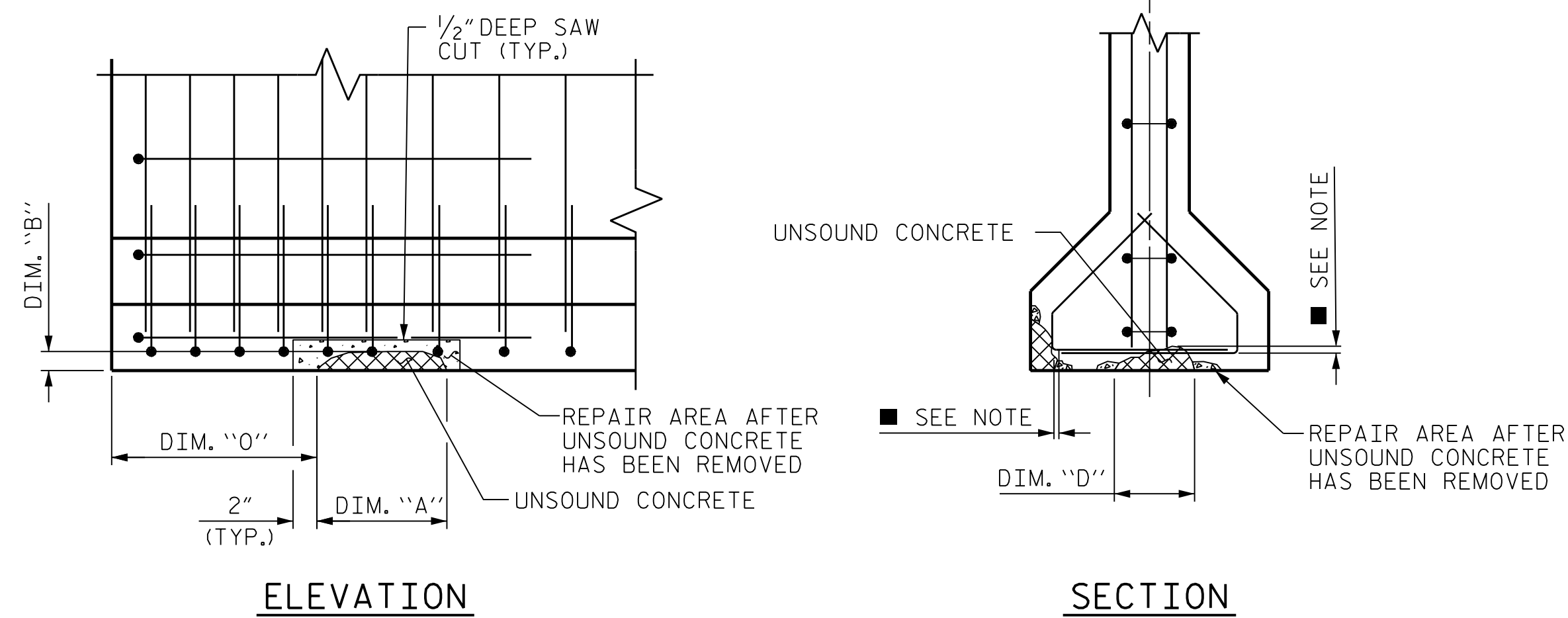
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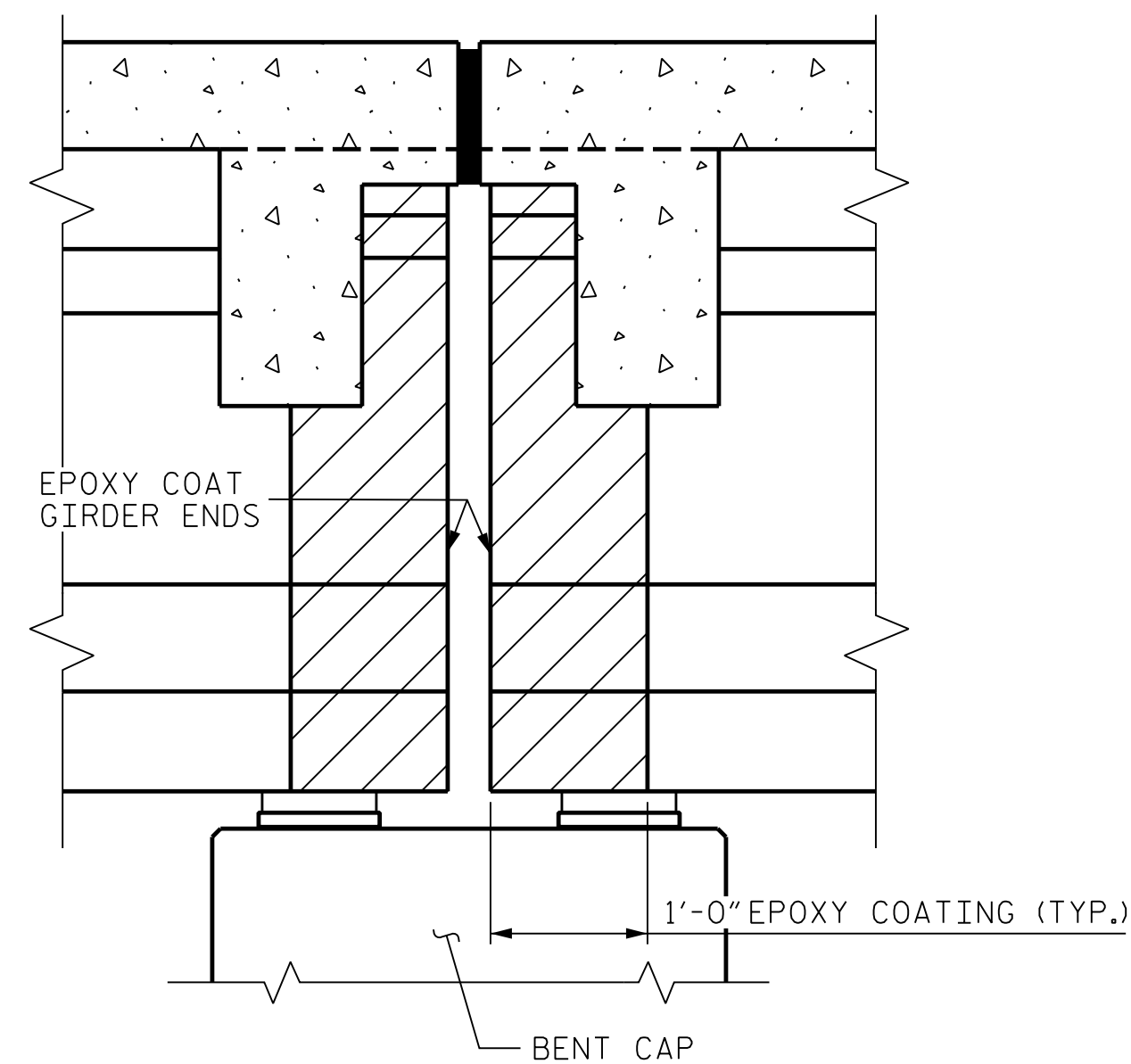
GIRDER WEB REPAIR

- PRESTRESSED GIRDER REPAIR SEQUENCE:**
1. SOUND CONCRETE TO DETERMINE EXTENTS OF REPAIR LOCATION.
  2. 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".
  3. REMOVE CONCRETE WITHIN A SAW CUT AREA TO MINIMUM 1/2" DEPTH. IF CONCRETE IS DAMAGED BEYOND THE ORIGINAL SAW CUT, A NEW SAW CUT IS REQUIRED.
  4. IF MORE THAN HALF THE CIRCUMFERENCE OF A REINFORCING BAR IS EXPOSED DURING THIS PROCESS, REMOVE ADDITIONAL CONCRETE TO 1" BEHIND THE BAR. THIS DOES NOT APPLY TO PRESTRESSED STRANDS.
  5. ALL UNSOUND CONCRETE MUST BE REMOVED, HOWEVER, PRESTRESSED STRANDS SHOULD NOT BE DISTURBED UNLESS ABSOLUTELY NECESSARY. USE EXTREME CARE TO NOT DAMAGE STRANDS.
  6. USE A WIRE BRUSH TO CLEAN ALL EXPOSED REINFORCING BARS AND PRESTRESSED STRANDS. FOR BARS WITH MORE THAN 10% SECTION LOSS, SPLICE AND SECURELY TIE SUPPLEMENTAL REINFORCING BARS AS NEEDED. NOTE AND PROVIDE DETAILED DOCUMENTATION, INCLUDING LOCATION AND SEVERITY, OF ALL DAMAGE TO PRESTRESSED STRANDS THAT EXCEEDS 10% SECTION LOSS. IF FIVE OR MORE STRANDS ARE DAMAGED, NOTIFY THE ENGINEER PRIOR PLACEMENT OF REPAIR MATERIAL.
  7. REMOVE ALL LOOSE OR WEAKENED MATERIAL THEN CLEAN THE REPAIR AREA OF DIRT, GREASE, OIL, AND FOREIGN MATTER.
  8. PREPARE SURFACE AND PLACE APPROVED MATERIAL ACCORDING TO MANUFACTURER'S RECOMMENDATIONS. MAXIMUM AGGREGATE SIZE FOR REPAIR MATERIAL SHALL NOT EXCEED 2/3 THE MINIMUM REPAIR DEPTH.

**NOTES:**  
 PREPACKAGED MATERIAL REQUIRED.  
 CONSULT WITH THE ENGINEER TO DETERMINE PRELOADING REQUIREMENTS WHEN REPAIR IS WITHIN THE CENTER REGION OF THE BEAM (0.25L TO 0.75 L).  
 FOR REPAIRS OVER TRAFFIC AND SHALLOW REPAIRS THAT DO NOT ENGAGE REINFORCEMENT, ANCHOR PATCH MATERIAL USING 1/4" GALVANIZED BOLTS, EPOXY ANCHORED WITH 2" EMBEDMENT. PLACE BOLTS IN A 6" GRID. USE A LATEX OR EPOXY PATCH MATERIAL FOR IMPROVED BOND. USE EXTREME CARE TO NOT DAMAGE STRANDS.



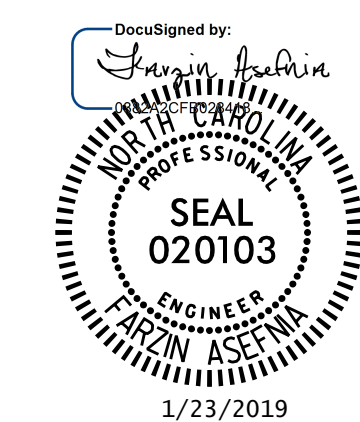
GIRDER FLANGE REPAIR



LIMITS OF PCG EPOXY COATING GIRDER ELEVATION  
 EPOXY COAT ALL FACES OF GIRDER ENDS WITHIN THE LIMITS SHOWN

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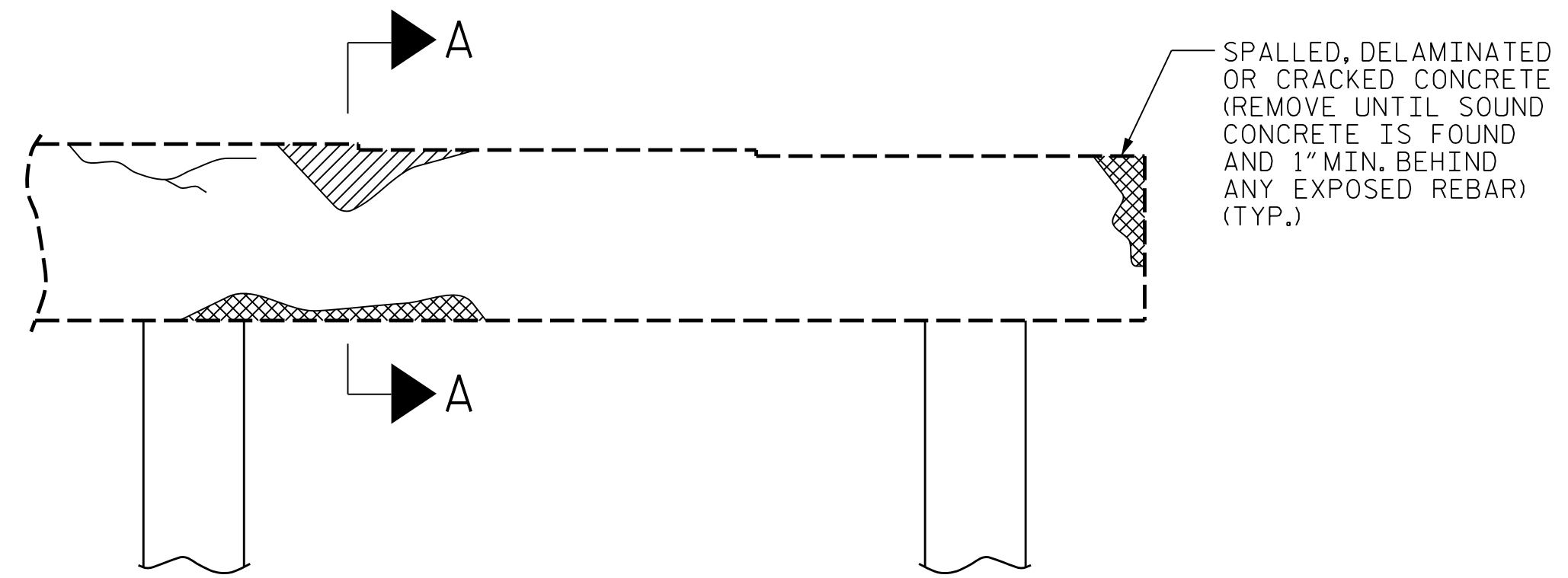
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 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**PRESTRESSED GIRDER REPAIR DETAILS**

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

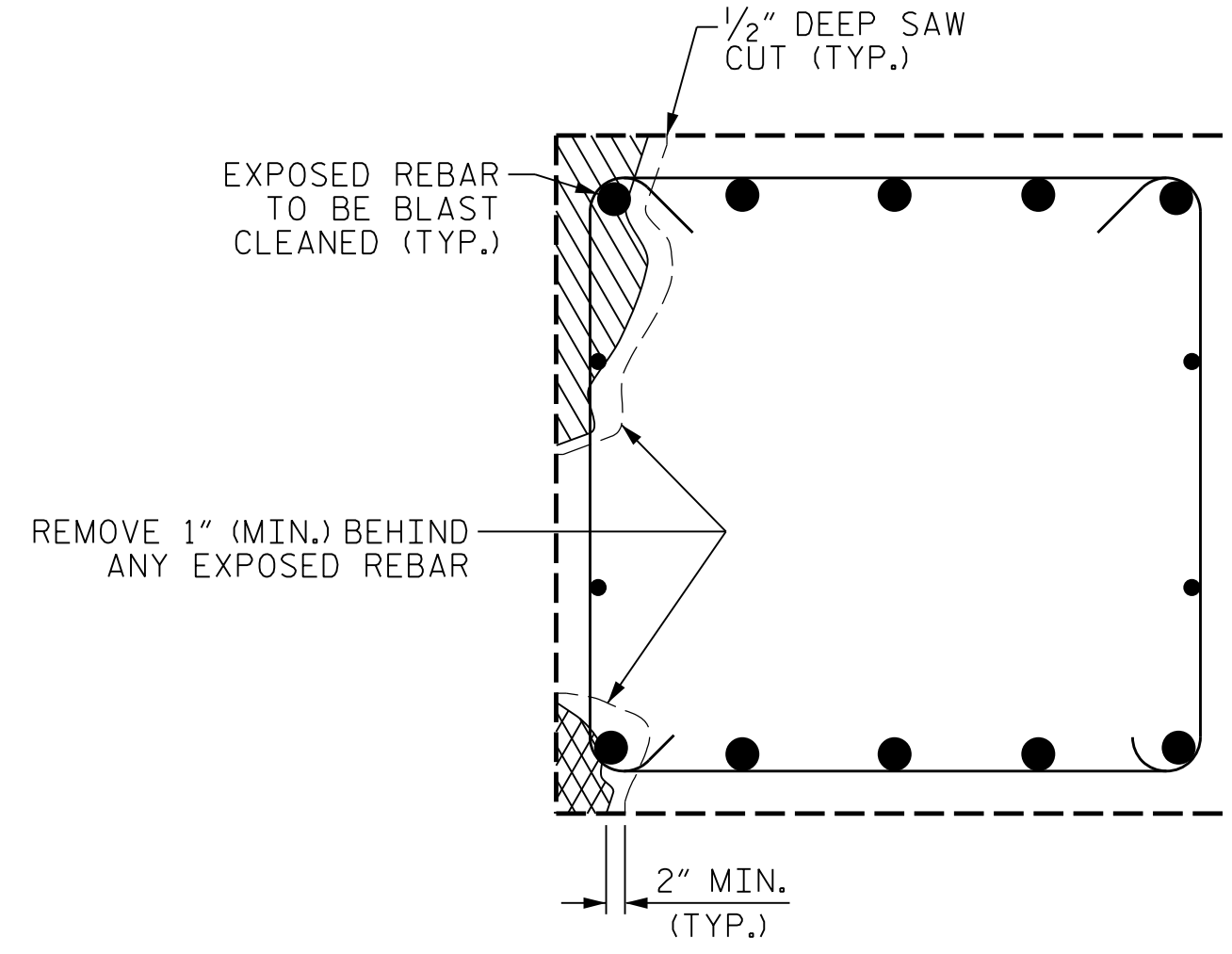
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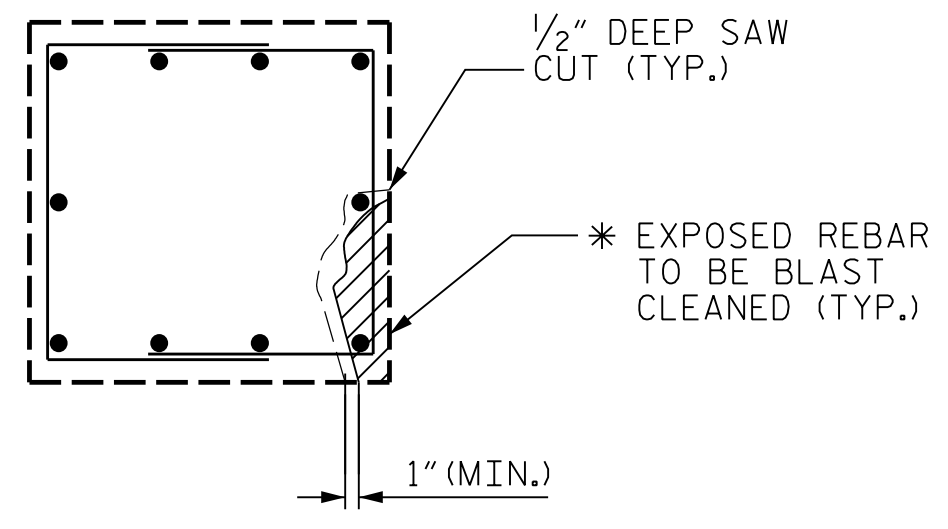
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**BENT CAP REPAIR**



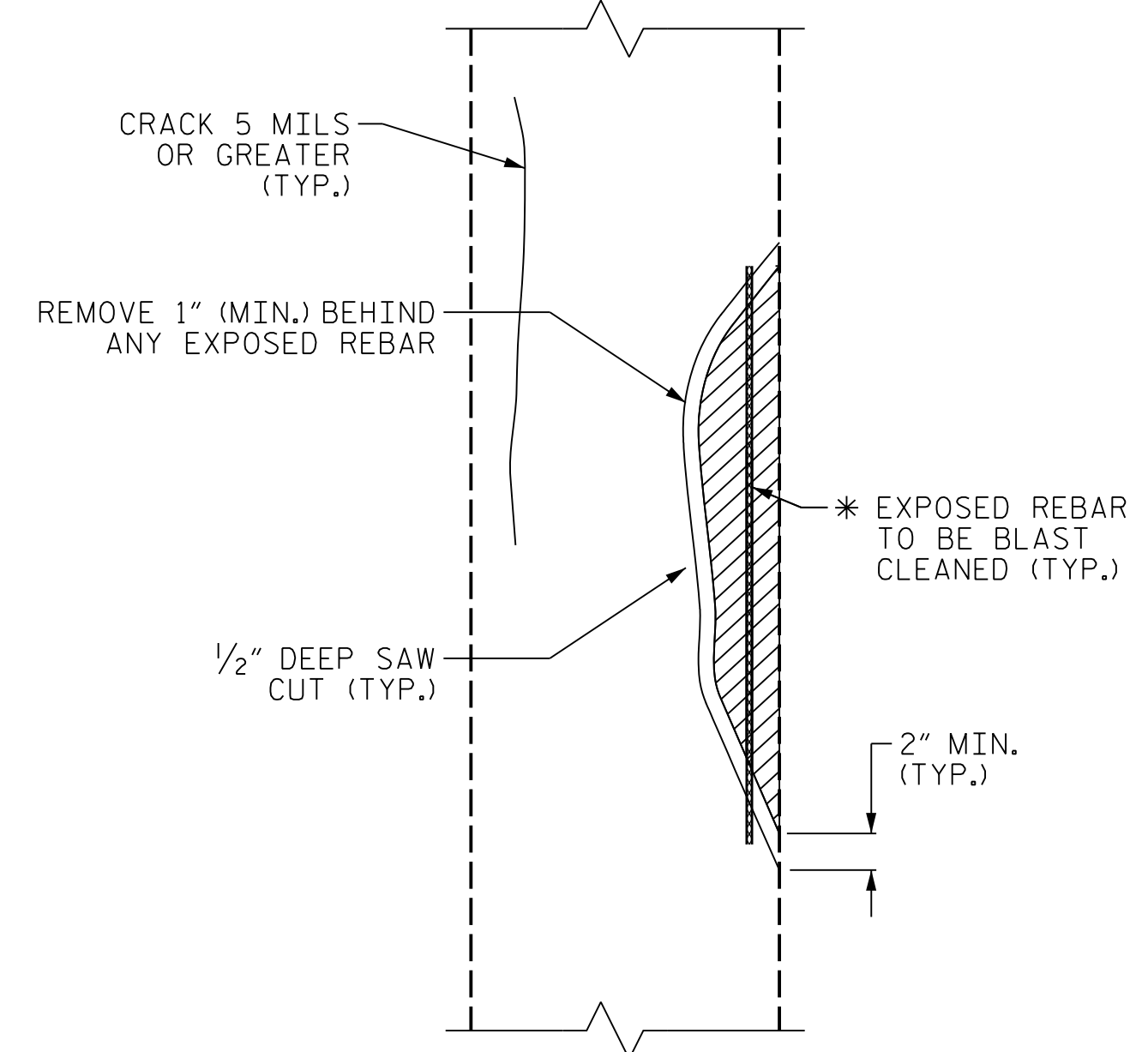
**SECTION A-A  
CAP REPAIR**



**PLAN OF COLUMN**

**REPAIR KEY**

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



**ELEVATION OF COLUMN  
COLUMN REPAIR**

**SPLICE LENGTH TABLE**

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

**NOTES:**

- TYPICAL BENT CAP REPAIRS ARE SHOWN. REPAIR DETAILS SIMILAR FOR END BENT CAPS AND STRUTS.
- SOUND CONCRETE TO DETERMINE EXTENT OF REPAIR LOCATIONS. THE METHOD USED TO DELINEATE THE AREAS OF THE UNSOUND CONCRETE TO BE REPAIRED SHALL NOT PERMANENTLY MARK THE CONCRETE, LEAVE ANY RESIDUE AFTER REMOVAL OR REQUIRE HARSH CHEMICALS TO REMOVE.
- THE CONTRACTOR SHALL REMOVE THE DETERIORATED CONCRETE IN ACCORDANCE WITH THE GUIDELINES SET IN THESE NOTES, IN THE SPECIAL PROVISIONS AND STANDARD SPECIFICATIONS.
- REMOVE ALL LOOSE OR WEAKENED MATERIAL THEN CLEAN THE AREA OF DIRT, GREASE, OIL AND FOREIGN MATTER.
- 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".
- REMOVE UNSOUND CONCRETE TO THE EXTENT NECESSARY, MINIMUM 1" BEHIND THE REBAR AND MINIMUM 2" CLEARANCE TO SAW CUT.
- NO MORE THAN ONE-THIRD OF THE CAP OR COLUMN CROSS SECTIONAL AREA SHALL BE REMOVED AT ONE TIME. SHOULD IT BECOME NECESSARY TO REMOVE MORE THAN 30% OF A CAP OR COLUMN CROSS SECTIONAL AREA, NOTIFY THE ENGINEER PRIOR TO PROCEEDING.
- SIMULTANEOUSLY REMOVAL OF UNSOUND CONCRETE MAY BE PERMITTED ON MORE THAN ONE FACE OF A CAP OR COLUMN. IF AREAS OF REMOVAL ARE NOT ADJACENT TO OR DIRECTLY OPPOSITE ONE ANOTHER. IF REMOVAL EXTENDS 1/2" BEHIND THE MAIN REINFORCING BARS, NOTIFY THE ENGINEER PRIOR TO PROCEEDING.
- CLEAN ALL EXPOSED REINFORCING BARS. FOR BARS WITH MORE THAN 10% SECTION LOSS, SPLICE AND SECURELY TIE SUPPLEMENTAL REINFORCING BARS AS NEEDED.
- REINFORCING STEEL WHICH IS DETERMINED BY THE ENGINEER TO BE REPLACED SHALL BE REMOVED TO A POINT WHERE IT IS SOUND. THE PATCH SHALL EXTEND A SUFFICIENT DISTANCE BEYOND THIS POINT TO DEVELOP A SPLICE LENGTH SPECIFIED IN THE TABLE ON THIS SHEET.
- FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS.
- COAT ALL SURFACE AREAS ON THE TOP OF CAPS. INCLUDING CHAMFER, WITH EPOXY PROTECTIVE COATING.
- FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.
- FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.
- FOR EPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.
- FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

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CHATHAM COUNTY  
 BRIDGE NO. 180058, 180059

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STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**TYPICAL CAP  
AND COLUMN  
REPAIR DETAILS**

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

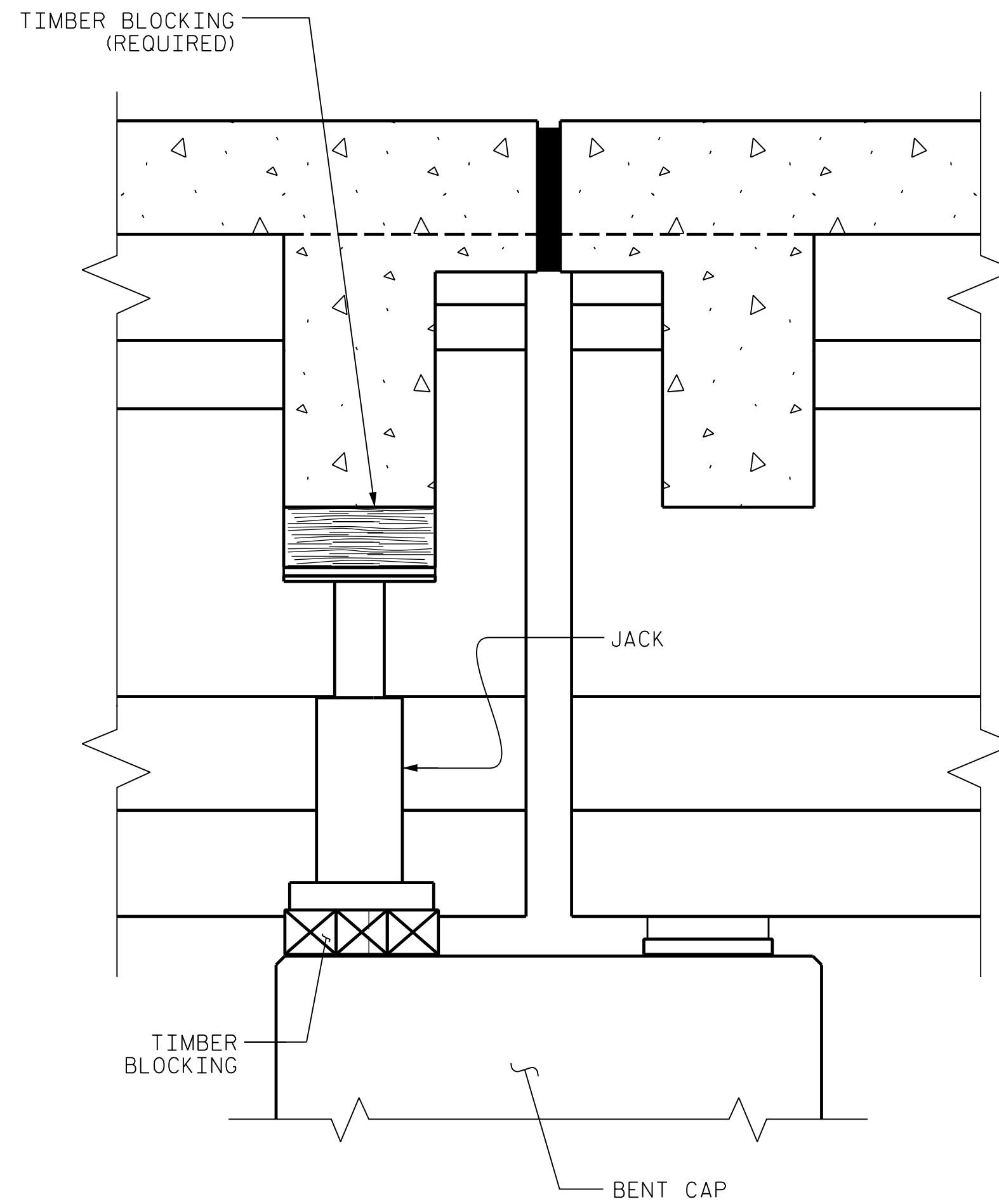
TOTAL SHEETS: 51

\* 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.

DRAWN BY : S. DHOLAKIA DATE : 11/2018  
 CHECKED BY : T. KIRSCHBAUM DATE : 11/2018  
 DESIGN ENGINEER OF RECORD : F. ASEFNIA DATE : 11/2018

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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.

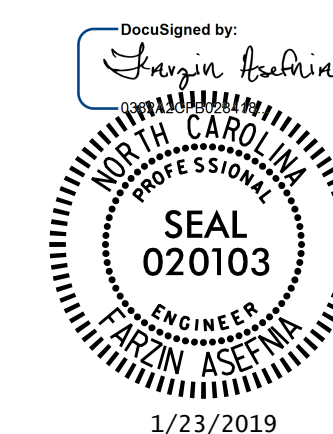
ALL ADJACENT BEARINGS OF BEAMS NOT BEING JACKED MAY BE LOOSENED TO DECREASE THE RESISTANCE OF THE DECK SLAB DURING JACKING. ALL BEARINGS LOOSENED SHALL BE TIGHTENED BACK AFTER REPAIR OPERATIONS ARE COMPLETED AND THE JACKS AND BLOCKING HAVE BEEN REMOVED.

THE MAXIMUM DIFFERENTIAL BETWEEN ADJACENT BEAMS THAT ARE BEING JACKED IS 1/8".

TYPE I BRIDGE JACKING IS NOT ANTICIPATED. A TOKEN AMOUNT IS INDICATED FOR PRICING PURPOSE IN CASE UNANTICIPATED TYPE I BRIDGE JACKING IS NECESSARY.

PROJECT NO. 15BPR.36  
CHATHAM COUNTY  
 BRIDGE NO. 180058, 180059

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STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**JACKING DETAILS**

DRAWN BY : J. MYA DATE : 11/2018  
 CHECKED BY : J. YANNACCONE DATE : 11/2018  
 DESIGN ENGINEER OF RECORD : F. ASEFNIA DATE : 11/2018

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-51
1			3			TOTAL SHEETS
2			4			51

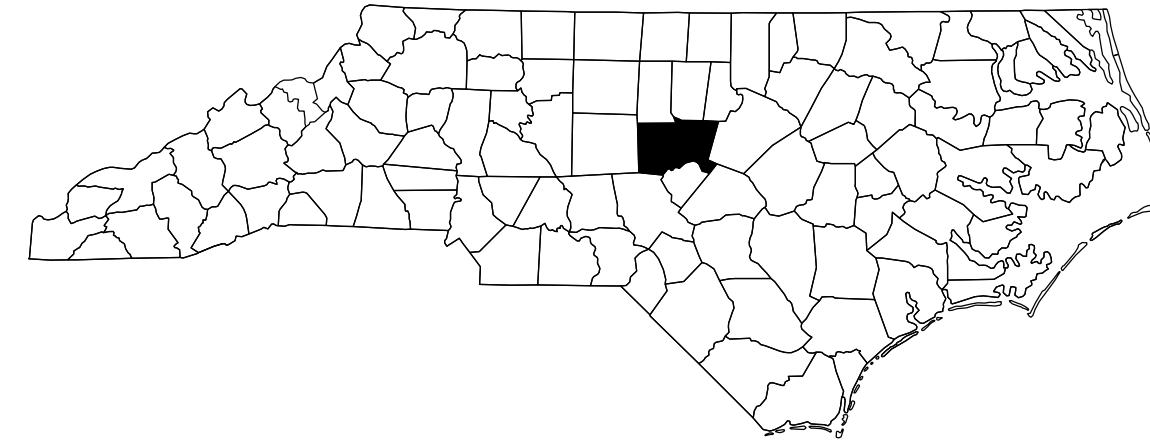




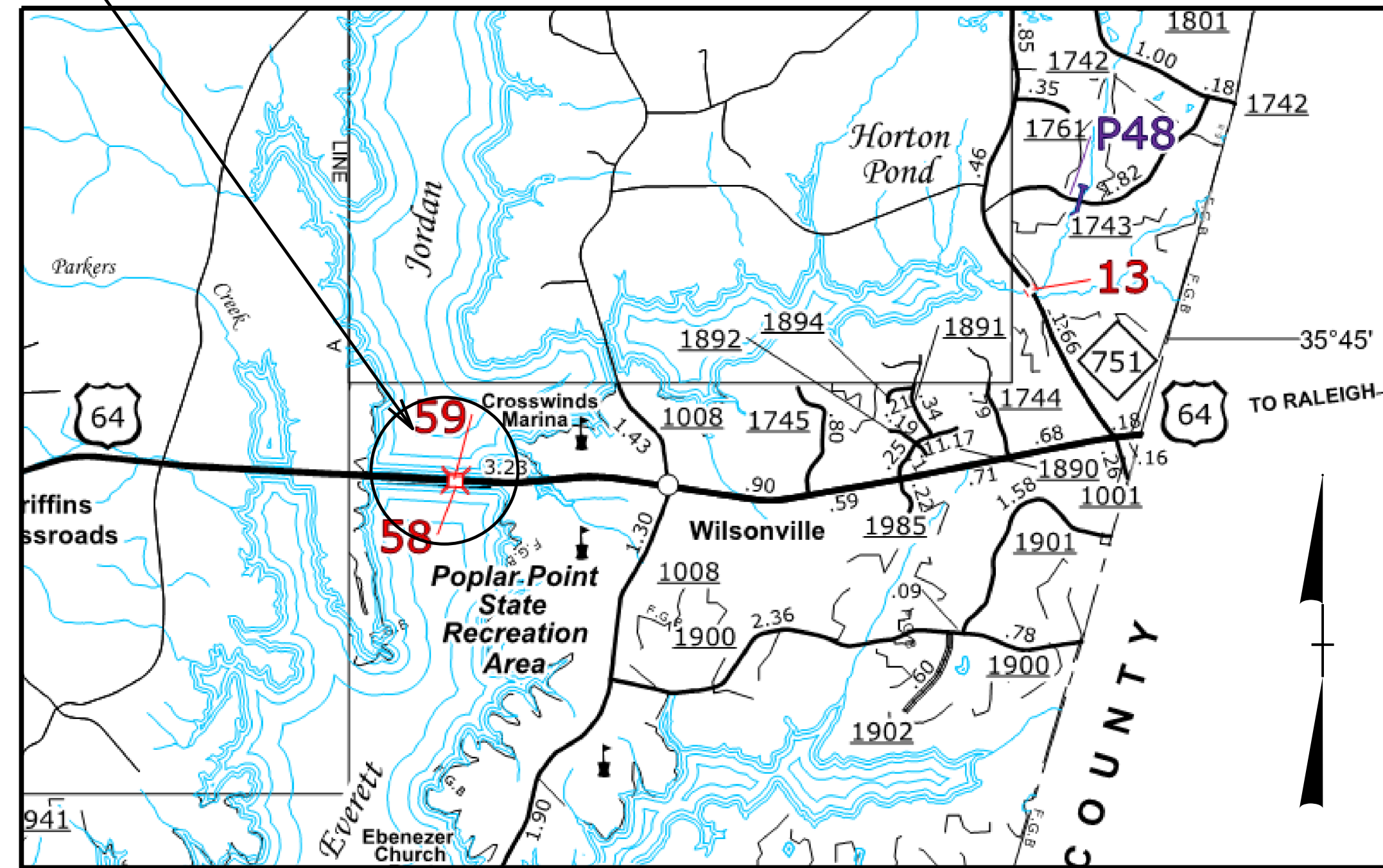
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**TRANSPORTATION MANAGEMENT PLAN**

**CHATHAM COUNTY**



PROJECT



VICINITY MAP NTS

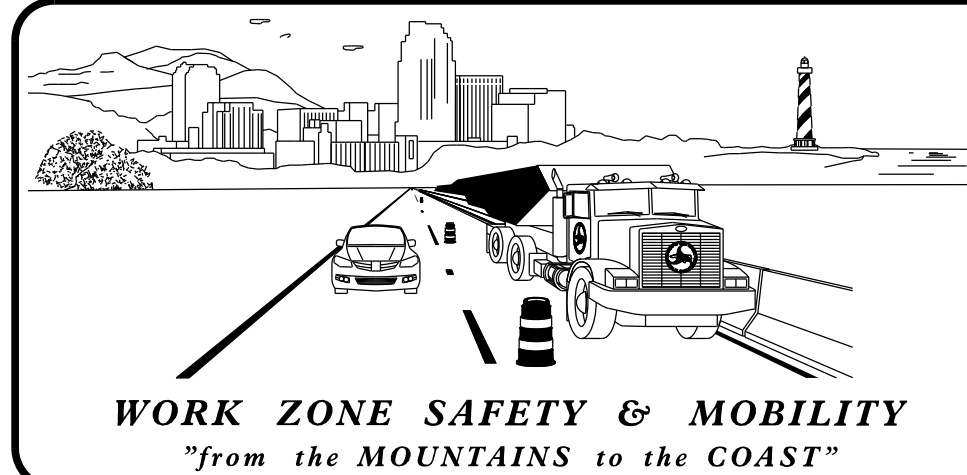
**BRIDGES #58 AND #59 ON US 64 OVER JORDAN LAKE  
BETWEEN PARKERS CREEK ROAD AND FARRINGTON ROAD**

**INDEX OF SHEETS**

SHEET NO.	TITLE
TMP-1	TITLE SHEET, VICINITY MAP AND INDEX OF SHEETS
TMP-2	ROADWAY STANDARD DRAWINGS AND LEGEND
TMP-3, 3A	TRANSPORTATION OPERATIONS PLAN: (MANAGEMENT STRATEGIES, GENERAL NOTES, AND LOCAL NOTES AND TEMPORARY TRAFFIC CONTROL PHASING)
TMP-4 THRU TMP-25	TEMPORARY TRAFFIC CONTROL PHASE 2 DETAILS

SHEET NO.  
TMP-1

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**N.C.D.O.T. WORK ZONE TRAFFIC CONTROL**  
1561 MAIL SERVICE CENTER (MSC) RALEIGH, NC 27699-1561  
750 N. GREENFIELD PARKWAY, GARNER, NC 27529 (DELIVERY)  
PHONE: (919) 773-2800 FAX: (919) 771-2745

JOSEPH E. HUMMER, PE STATE TRAFFIC MANAGEMENT ENGINEER  
GEORGE L. GETTIER, PE TRAFFIC CONTROL PROJECT ENGINEER  
GEORGE L. GETTIER, PE TRAFFIC CONTROL PROJECT DESIGN ENGINEER



Prepared In the Office of:  
**LOUIS BERGER**  
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**FARZIN ASEFNIA, PE**  
PROJECT ENGINEER

**GEORGE L. GETTIER, PE**  
PROJECT DESIGN ENGINEER

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APPROVED: \_\_\_\_\_  
DATE: \_\_\_\_\_

DocuSigned by:  
*George Gettier*  
E:1D5C8B35E34F4  
2/13/2019

SEAL

**WBS: 15BPR.36**



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PROJECT REFERENCE NO.	SHEET NO.
15BPR.36	TMP-2
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## LEGEND

# ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2018 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1115.01	FLASHING ARROW BOARDS
1130.01	DRUMS
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1160.01	TEMPORARY CRASH CUSHIONS
1165.01	TRUCK MOUNTED ATTENUATOR
1170.01	PORTABLE CONCRETE BARRIER
1180.01	SKINNY - DRUM
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTI-LANE ROADWAYS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - (PERMANENT AND TEMPORARY)

### GENERAL

- DIRECTION OF TRAFFIC FLOW
- EXIST. PVMT.
- NORTH ARROW
- PROPOSED PVMT.
- WORK AREA
- REMOVAL

### TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

### TRAFFIC CONTROL DEVICES

- BARRICADE (TYPE III)
- CONE
- DRUM
- TEMPORARY CRASH CUSHION
- FLASHING ARROW BOARD
- FLAGGER
- LAW ENFORCEMENT
- TRUCK MOUNTED ATTENUATOR (TMA)
- CHANGEABLE MESSAGE SIGN
- PORTABLE CONCRETE BARRIER
- BARRIER (PORTABLE, MOVEABLE, WATER-FILLED)

### PAVEMENT MARKING SYMBOLS

- PAVEMENT MARKING SYMBOLS

### PAVEMENT MARKERS

- CRYSTAL/CRYSTAL
- CRYSTAL/RED
- YELLOW/YELLOW

### TEMPORARY PAVEMENT MARKINGS

- (CA) - COLD APPLIED PLASTIC-TYPE IV - WHITE EDGELINE (4")
- (CB) - COLD APPLIED PLASTIC-TYPE IV - YELLOW EDGELINE (4")
- (PA) - PAINT - WHITE EDGELINE (4")
- (PB) - PAINT - YELLOW EDGELINE (4")
- (PC) - PAINT - 10FT, WHITE SKIP (4")

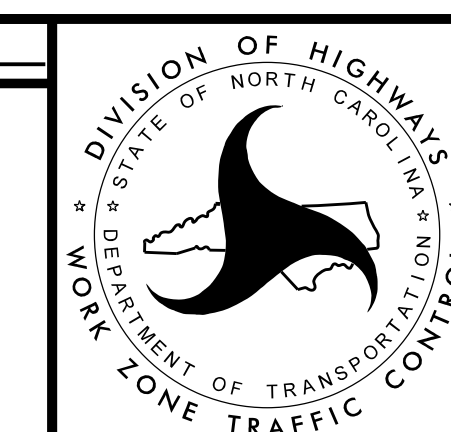
### FINAL PAVEMENT MARKINGS

- POLYUREA - WHITE EDGELINE (4"), 20 MILS
- POLYUREA - YELLOW EDGELINE (4"), 20 MILS
- POLYUREA - 10', WHITE SKIP (4"), 20 MILS
- SNOWPLOWABLE RAISED PAVEMENT MARKERS, CRYSTAL/RED

APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_

DocuSigned by:  
*George L. Gettier*  
E1D5C86355E  
2/13/2019

SEAL



**ROADWAY STANDARD  
DRAWINGS & LEGEND**

REVISIONS

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# GENERAL NOTES

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS IN THE DETAIL DRAWINGS, STANDARD DETAILS, AND ROADWAY DETAILS ARE NOT ATTAINABLE TO MEET FIELD CONDITIONS OR RESULT IN DUPLICATES OR UNDESIRED OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE; MOVING, SUPPLEMENTING, COVERING, OR REMOVAL OF DEVICES AS DIRECTED BY THE ENGINEER.

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT EXCEPT WHEN OTHERWISE NOTED IN THE PLAN OR DIRECTED BY THE ENGINEER

## TIME RESTRICTIONS

A) DO NOT CLOSE OR NARROW TRAVEL LANES DURING HOLIDAYS AND SPECIAL EVENTS AS FOLLOWS:

### ROAD NAME

US 64

### HOLIDAY

- 1) FOR ANY UNEXPECTED OCCURANCE THAT CREATES UNUSUALLY HIGH TRAFFIC VOLUMES, AS DIRECTED BY THE ENGINEER.
- 2) FOR NEW YEAR'S, BETWEEN THE HOURS OF 6:00 A.M. DECEMBER 31st TO 6:00 P.M. JANUARY 2nd. IF NEW YEAR'S DAY IS ON A FRIDAY, SATURDAY, SUNDAY, OR MONDAY THEN UNTIL 6:00 P.M. THE FOLLOWING TUESDAY.
- 3) FOR EASTER, BETWEEN THE HOURS OF 6:00 A.M. THURSDAY AND 6:00 P.M. MONDAY.
- 4) FOR MEMORIAL DAY, BETWEEN THE HOURS OF 6:00 A.M. FRIDAY TO 6:00 P.M. TUESDAY.
- 5) FOR INDEPENDENCE DAY, BETWEEN THE HOURS OF 6:00 A.M. THE DAY BEFORE INDEPENDENCE DAY AND 6:00 P.M. THE DAY AFTER INDEPENDENCE DAY. IF INDEPENDENCE DAY IS ON A FRIDAY, SATURDAY, SUNDAY OR MONDAY, THEN BETWEEN THE HOURS OF 6:00 A.M. THE THURSDAY BEFORE INDEPENDENCE DAY AND 6:00 P.M. THE TUESDAY AFTER INDEPENDENCE DAY.
- 6) FOR LABOR DAY, BETWEEN THE HOURS OF 6:00 A.M. FRIDAY AND 6:00 P.M. TUESDAY.
- 7) FOR THANKSGIVING DAY, BETWEEN THE HOURS OF 6:00 A.M. TUESDAY TO 6:00 P.M. MONDAY.
- 8) FOR CHRISTMAS, BETWEEN THE HOURS OF 6:00 A.M. THE FRIDAY BEFORE THE WEEK OF CHRISTMAS DAY AND 6:00 P.M. THE FOLLOWING TUESDAY AFTER THE WEEK OF CHRISTMAS

B) DO NOT STOP TRAFFIC AS FOLLOWS:

### ROAD NAME

US 64

### DAY AND TIME RESTRICTIONS

6:00 A.M. - 9:00 A.M. AND  
4:00 P.M. - 6:00 P.M. M - F

### DURATION AND OPERATION

15 MIN. FOR FLAGGING, TRAFFIC OPERATIONS, SHIFTING TRAFFIC

C) DO NOT CONDUCT ANY HAULING OPERATIONS AGAINST THE FLOW OF TRAFFIC OF AN OPEN TRAVELWAY UNLESS THE HAULING OPERATION IS PROTECTED BY BARRIER OR GUARDRAIL OR AS DIRECTED BY THE ENGINEER.

## LANE AND SHOULDER CLOSURE REQUIREMENTS

- D) REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED OR AS DIRECTED BY THE ENGINEER.
- E) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 15 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN SHOULDER USING ROADWAY STANDARD DRAWING NO. 1101.04 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL OR A LANE CLOSURE IS INSTALLED.
- F) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO A DIVIDED FACILITY AND WITHIN 5 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.
- G) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED OR DIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE TRAFFIC CONTROL PLANS, ROADWAY STANDARD DRAWINGS, OR AS DIRECTED BY THE ENGINEER. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.
- H) DO NOT WORK SIMULTANEOUSLY WITHIN 15 FT ON BOTH SIDES OF AN OPEN TRAVELWAY, RAMP, OR LOOP WITHIN THE SAME LOCATION UNLESS PROTECTED WITH GUARDRAIL OR BARRIER.
- I) PROVIDE TRAFFIC CONTROL FOR APPROPRIATE LANE CLOSURES FOR SURVEYING DONE BY THE DEPARTMENT.

## PAVEMENT EDGE DROP OFF REQUIREMENTS

- J) BACKFILL AT A 6:1 SLOPE UP TO THE EDGE AND ELEVATION OF EXISITING PAVEMENT IN AREAS ADJACENT TO AN EDGE OF PAVEMENT DROP-OFF AS FOLLOWS:
  - BACKFILL DROP-OFFS THAT EXCEED 2 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS OF 45 MPH OR GREATER.
  - BACKFILL DROP-OFFS THAT EXCEED 3 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS LESS THAN 45 MPH.
  - BACKFILL WITH SUITABLE COMPACTED MATERIAL, AS APPROVED BY THE ENGINEER, AT NO EXPENSE TO THE DEPARTMENT.
- K) DO NOT EXCEED A DIFFERENCE OF 2 INCHES IN ELEVATION BETWEEN OPEN LANES OF TRAFFIC FOR NOMINAL LIFTS OF 1.5 INCHES. INSTALL ADVANCE WARNING "UNEVEN LANES" SIGNS (W8-11) OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

## TRAFFIC PATTERN ALTERATIONS

L) NOTIFY THE ENGINEER THIRTY (30) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

## SIGNING

- M) INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.
- N) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

## TRAFFIC PATTERN

O) INSTALL BLACK ON ORANGE "DIP" SIGNS (W8-2) AND/OR "BUMP" (W8-1) SIGNS 200 FT. IN ADVANCE OF THE UNEVEN AREA, OR AS DIRECTED BY THE ENGINEER.

## TRAFFIC BARRIER

P) INSTALL TEMPORARY BARRIER ACCORDING TO THE TRANSPORTATION MANAGEMENT PLANS A MAXIMUM OF TWO (2) WEEKS PRIOR TO BEGINNING WORK IN ANY LOCATION. ONCE TEMPORARY BARRIER IS INSTALLED AT ANY LOCATION, PROCEED IN A CONTINUOUS MANNER TO COMPLETE THE PROPOSED WORK IN THAT LOCATION UNLESS OTHERWISE STATED IN THE TRANSPORTATION MANAGEMENT PLANS OR AS DIRECTED BY THE ENGINEER.

DO NOT PLACE BARRIER DIRECTLY ON ANY SURFACE OTHER THAN ASPHALT OR CONCRETE.

ONCE TEMPORARY BARRIER IS INSTALLED AT ANY LOCATION AND NO WORK IS PERFORMED BEHIND THE TEMPORARY BARRIER FOR A PERIOD LONGER THAN TWO (2) MONTHS, REMOVE/RESET TEMPORARY BARRIER AT NO COST TO THE DEPARTMENT UNLESS OTHERWISE STATED IN THE TRANSPORTATION MANAGEMENT PLANS, TEMPORARY BARRIER IS PROTECTING A HAZARD, OR AS DIRECTED BY THE ENGINEER.

INSTALL TEMPORARY BARRIER WITH THE TRAFFIC FLOW BEGINNING WITH THE UPSTREAM SIDE OF TRAFFIC. REMOVE TEMPORARY BARRIER AGAINST THE TRAFFIC FLOW BEGINNING WITH THE DOWNSTREAM SIDE OF TRAFFIC.

INSTALL AND SPACE DRUMS NO GREATER THAN TWICE THE POSTED SPEED LIMIT (MPH) TO CLOSE OR KEEP THE SECTION OF THE ROADWAY CLOSED UNTIL THE TEMPORARY BARRIER CAN BE PLACED OR AFTER THE TEMPORARY BARRIER IS REMOVED.

## TRAFFIC CONTROL DEVICES

- Q) WHEN LANE CLOSURES ARE NOT IN EFFECT SPACE CHANNELIZING DEVICES IN WORK AREAS NO GREATER IN FEET THAN TWICE THE POSTED SPEED LIMIT (MPH) EXCEPT 10 FT ON CENTER IN RADII, AND 3 FT OFF THE EDGE OF AN OPEN TRAVELWAY. REFER TO STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES SEE R.S.D. SECTIONS 1130 (DRUMS), 1135 (CONES) AND 1180 (SKINNY DRUMS) FOR ADDITIONAL REQUIREMENTS.
- R) PLACE ADDITIONAL SETS OF THREE CHANNELIZING DEVICES PERPENDICULAR TO THE EDGE OF TRAVELWAY ON 500 FT CENTERS WHEN UNOPENED LANES ARE CLOSED TO TRAFFIC.

## PAVEMENT MARKINGS AND MARKERS

S) INSTALL TEMPORARY PAVEMENT MARKINGS AND TEMPORARY MARKERS AS FOLLOWS:

### ROAD NAME

US 64

### MARKING

PAINT

### MARKER

N/A

- T) PLACE ONE APPLICATION OF PAINT FOR TEMPORARY TRAFFIC PATTERNS. PLACE A SECOND APPLICATION OF PAINT SIX (6) MONTHS AFTER THE INITIAL APPLICATION AND EVERY SIX MONTHS AS DIRECTED BY THE ENGINEER.
- U) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- V) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.

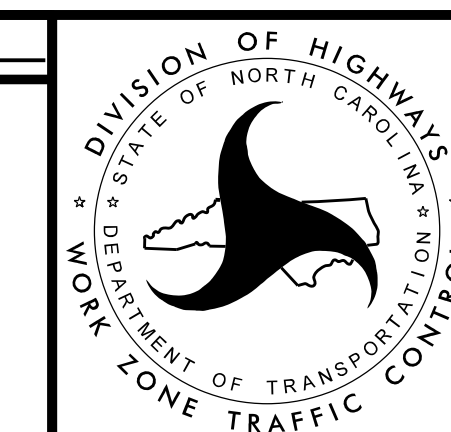
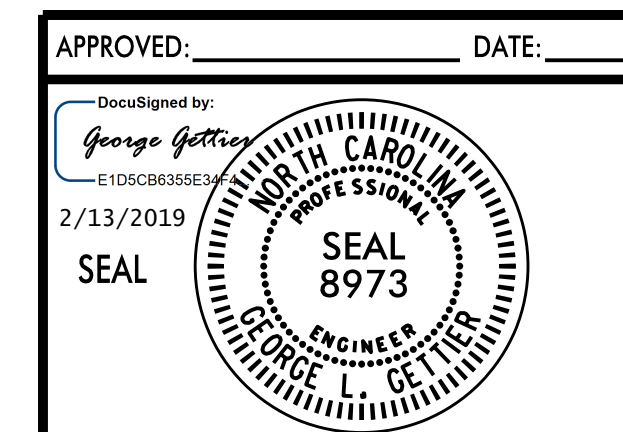
## MISCELLANEOUS

W) LAW ENFORCEMENT MAY BE USED TO MAINTAIN TRAFFIC THROUGH THE WORK AREA AND/OR INTERSECTIONS AS DIRECTED BY THE ENGINEER.

## PROJECT NOTES:

### FINAL PAVEMENT MARKINGS AND TEMPORARY MARKERS:

- CONTRACTOR SHALL INSTALL POLYUREA 4", 20 MILS, PAVEMENT MARKING LINES AND SNOWPLOWABLE RAISED PAVEMENT MARKERS IN ORIGINAL PATTERN AND LOCATIONS, TIEING INTO EXISTING MARKINGS.



TRAFFIC OPERATIONS  
PLAN



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## TRANSPORTATION OPERATIONS

### CONSTRUCTION

HYDRO-DEMOLITION AND REPAIRS TO BRIDGE DECKS, LATEX MODIFIED OVERLAY, OTHER REPAIRS TO STRUCTURES - JOINTS, BEARINGS, COLUMNS, GIRDERS, AND OTHER WORK AS SHOWN IN STRUCTURE PLANS.

### TMP DESIGN CONCEPT

INSTALL ADVANCE WARNING CONSTRUCTION SIGNING ALONG BOTH DIRECTIONS OF US64.

WORK MAY BE PERFORMED ON EITHER BRIDGE, CONSECUTIVELY OR SIMULTANEOUSLY.

CONTRACTOR MAY USE DRUMS OR SKINNY DRUMS TO CLOSE LANES TO PERFORM ANY WORK THAT WILL NOT INTERFERE WITH TRAFFIC IN ADJACENT LANE.

INSTALL PORTABLE CONCRETE BARRIER TO CLOSE ONE LANE. PERFORM ALL WORK REQUIRED BEHIND BARRIER (SUCH AS HYDRO-DEMOLITION), THAT WOULD INTERFERE WITH TRAFFIC IN ADJACENT LANE. REMOVE PORTABLE CONCRETE BARRIER LANE CLOSURE.

REPEAT PROCESS IN ADJACENT LANE.

PLACE FINAL PAVEMENT MARKINGS.

## TRAFFIC CONTROL PLAN PHASING

### TRAFFIC CONTROL PLAN PHASING

NOTE: PRIOR TO BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL PLACE ADVANCE WARNING SIGNS ALONG EXISTING US 64 (SEE ROADWAY STANDARD DRAWING (R.S.D.) NO. 1101.01, SHEET 2 OF 3).

CONTRACTOR MAY WORK ON EITHER STRUCTURE, CONSECUTIVELY OR SIMULTANEOUSLY.

CONTRACTOR MAY PERFORM ANY WORK AWAY FROM TRAFFIC AT ANY TIME.

### PHASE 1: (MINOR PRELIMINARY WORK)

#### STEP 1:

USING FLAGGERS AS NECESSARY, PLACE DRUMS OR SKINNY DRUMS TO CLOSE ONE LANE TO PERFORM ANY WORK WITHIN THE LANE THAT DOES NOT INTERFERE WITH TRAFFIC IN ADJACENT LANE. REMOVE LANE CLOSURE WHEN WORK IS COMPLETE. (SEE STRUCTURE PLANS, AND R.S.D. 1101.02, SHEET 3 OF 14).

#### STEP 2:

REPEAT PROCESS FOR ADJACENT LANE. (SEE STRUCTURE PLANS, AND R.S.D. 1101.02, SHEET 3 OF 14).

### PHASE 2:

#### STEP 1:

INSTALL STATIONARY SIGNS IN LIEU OF PORTABLE SIGNS PER R.S.D. 1101.02, SHEET 3 OF 14. USING FLAGGERS AS NECESSARY, PLACE PORTABLE CONCRETE BARRIER TO CLOSE ONE LANE TO PERFORM ANY WORK WITHIN THE LANE THAT WOULD INTERFERE WITH TRAFFIC IN ADJACENT LANE, SUCH AS HYDRO-DEMOLITION, AND LATEX OVERLAY. INSTALL TEMPORARY PAVEMENT MARKINGS, AND REMOVE CONFLICTING EXISTING MARKINGS FOR LANE SHIFTS. USE TEMPORARY PAINT ON ASPHALT AND BRIDGE. REMOVE LANE CLOSURE WHEN WORK IS COMPLETE. (SEE STRUCTURE PLANS, TMP 4-14, AND R.S.D. 1101.02, SHEET 3 OF 14).

#### STEP 2:

REPEAT PROCESS FOR ADJACENT LANE, RESETTING THE PORTABLE CONCRETE BARRIER FOR OPPOSITE LANE CLOSURE. USE COLD APPLIED PLASTIC, TYPE IV, ON NEWLY OVERLAID BRIDGE DECK. USE TEMPORARY PAINT ON ASPHALT. (SEE STRUCTURE PLANS, TMP 4-14, AND R.S.D. 1101.02, SHEET 3 OF 14).

### PHASE 3:

#### STEP 1:

MILL AND PAVE ASPHALT PAVEMENT 50' ON BOTH ENDS OF EACH BRIDGE. COMPLETE ALL REMAINING WORK. PLACE FINAL PAVEMENT MARKINGS AND MARKERS IN ORIGINAL 4 LANE DIVIDED PATTERN, TIEING INTO EXISTING PAVEMENT MARKINGS (FINAL PAVEMENT MARKINGS SHALL CONSIST OF 4" 20 MIL POLYUREA PAVEMENT MARKING LINES, AND SNOWPLOWABLE RAISED PAVEMENT MARKERS). (R.S.D. 1101.02 SHEETS 3 AND 12 OF 14, R.S.D. 1205.01 SHEETS 1 AND 2 OF 2, R.S.D. 1250.01 SHEETS 1 AND 2 OF 3, AND R.S.D. 1253.01).

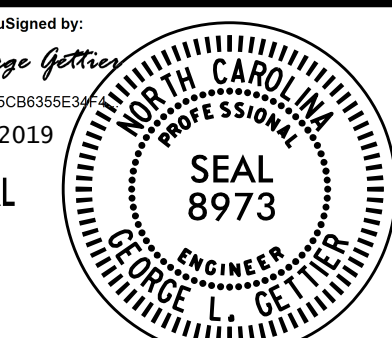
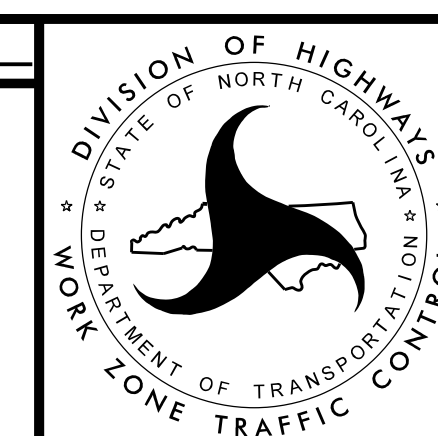
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TRAFFIC OPERATIONS  
PLAN



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PROJECT REFERENCE NO.

15BPR.36

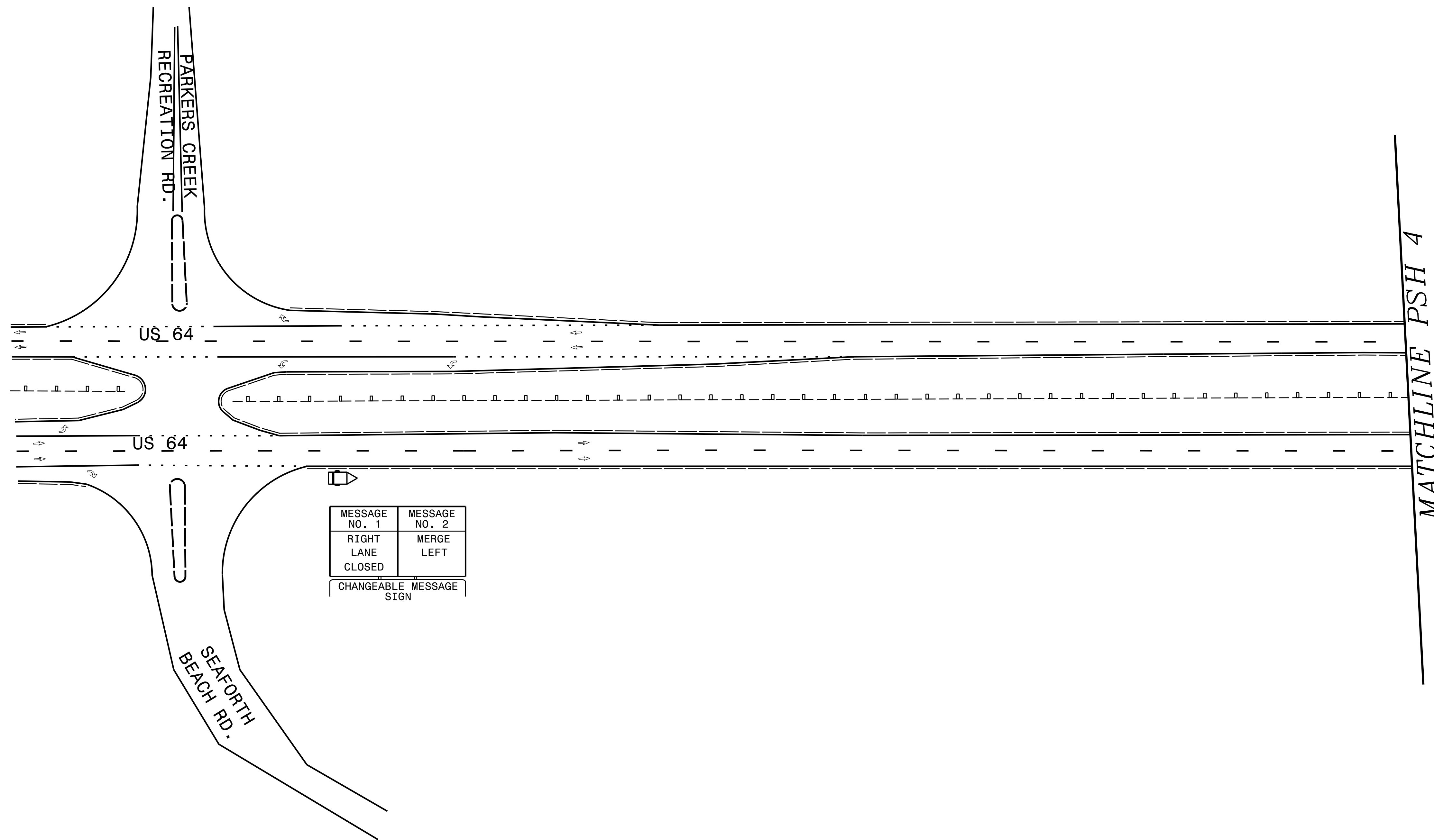
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TMP-4

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REVISIONS

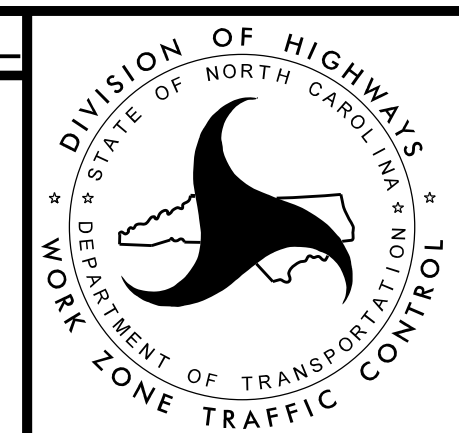
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E1D5C8B355E  
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**PHASE 2  
STEP 1**

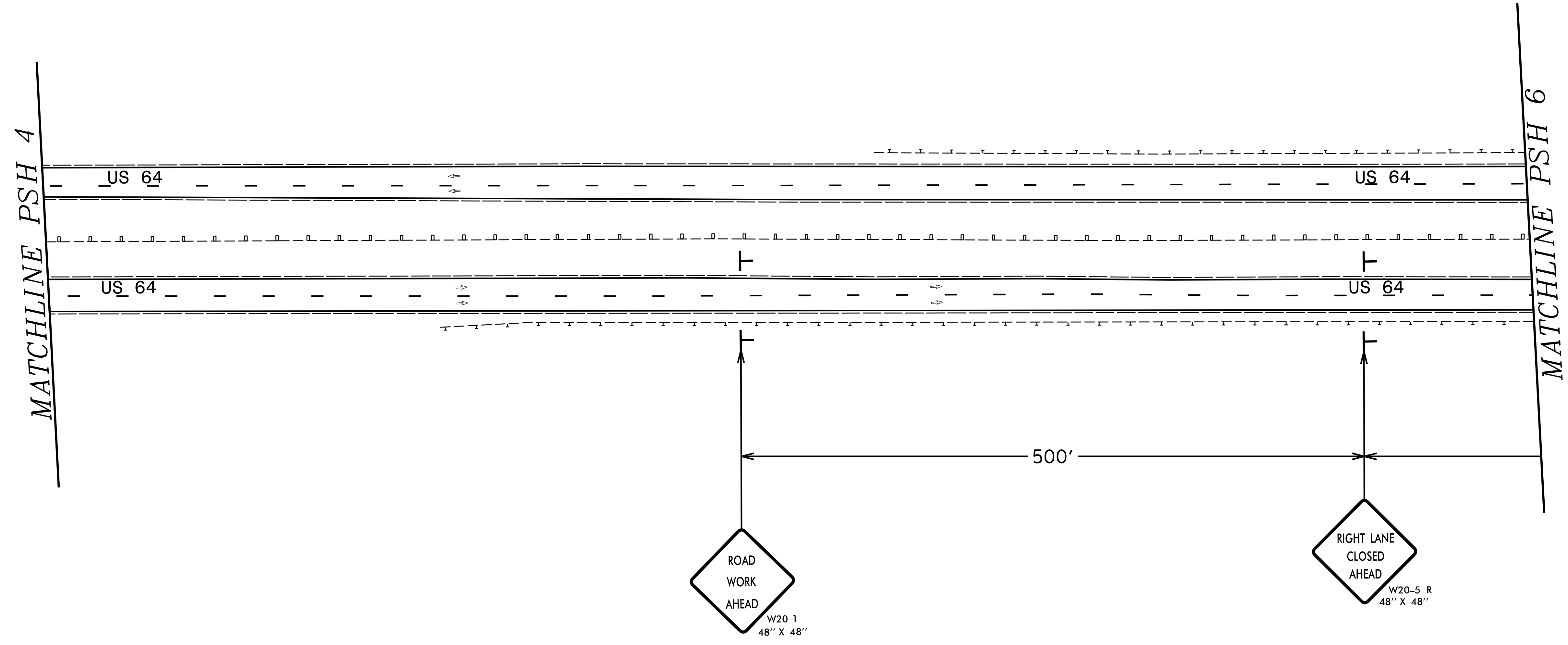


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PROJECT REFERENCE NO.	SHEET NO.
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REVISIONS

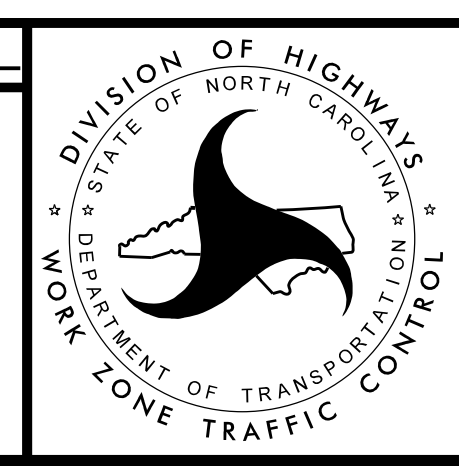
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E10508355E  
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**PHASE 2  
STEP 1**



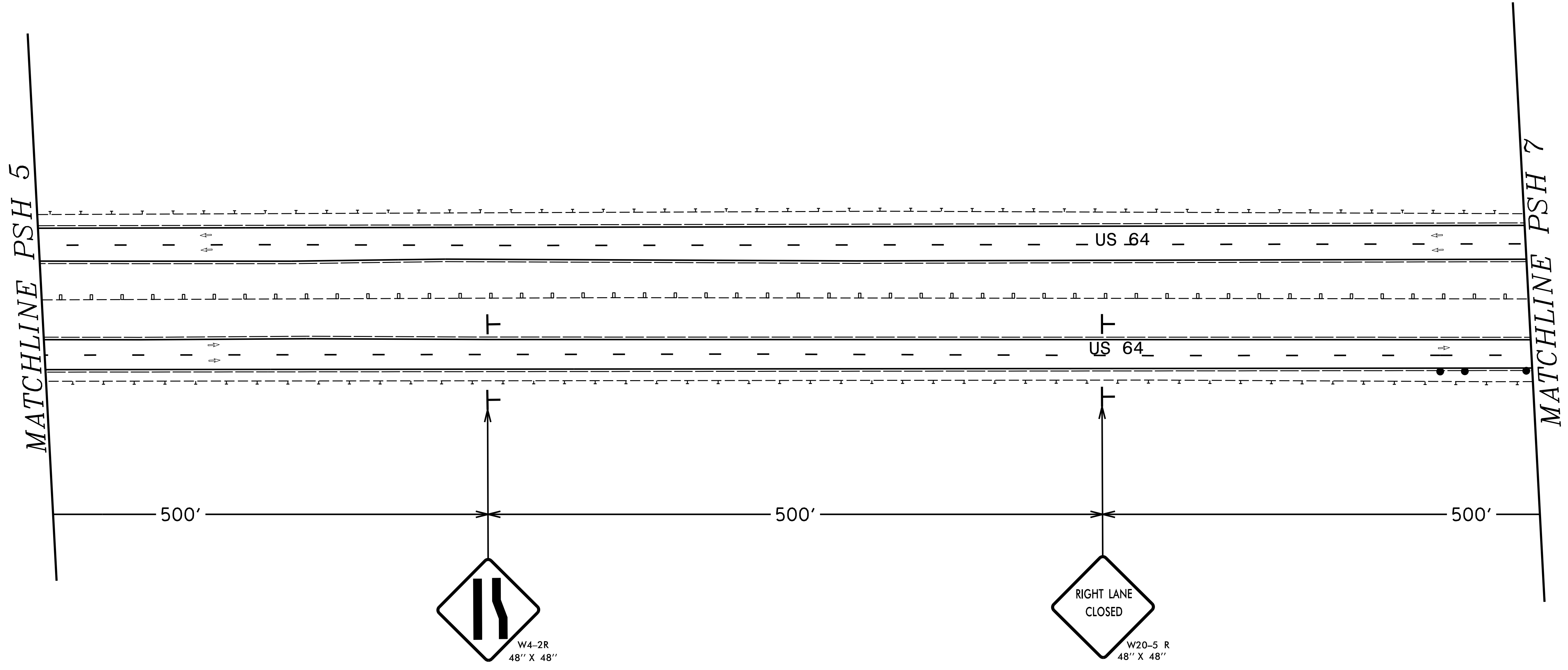
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PROJECT REFERENCE NO.	SHEET NO.
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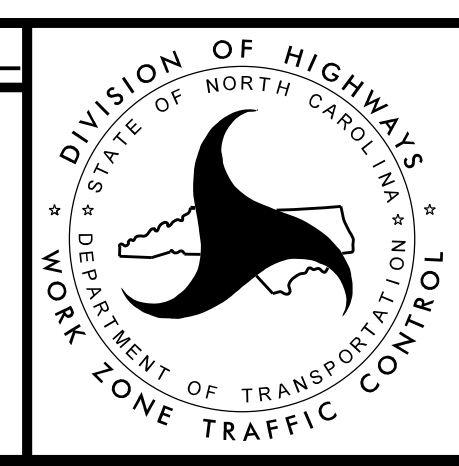
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PROJECT REFERENCE NO.	SHEET NO.
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REVISIONS

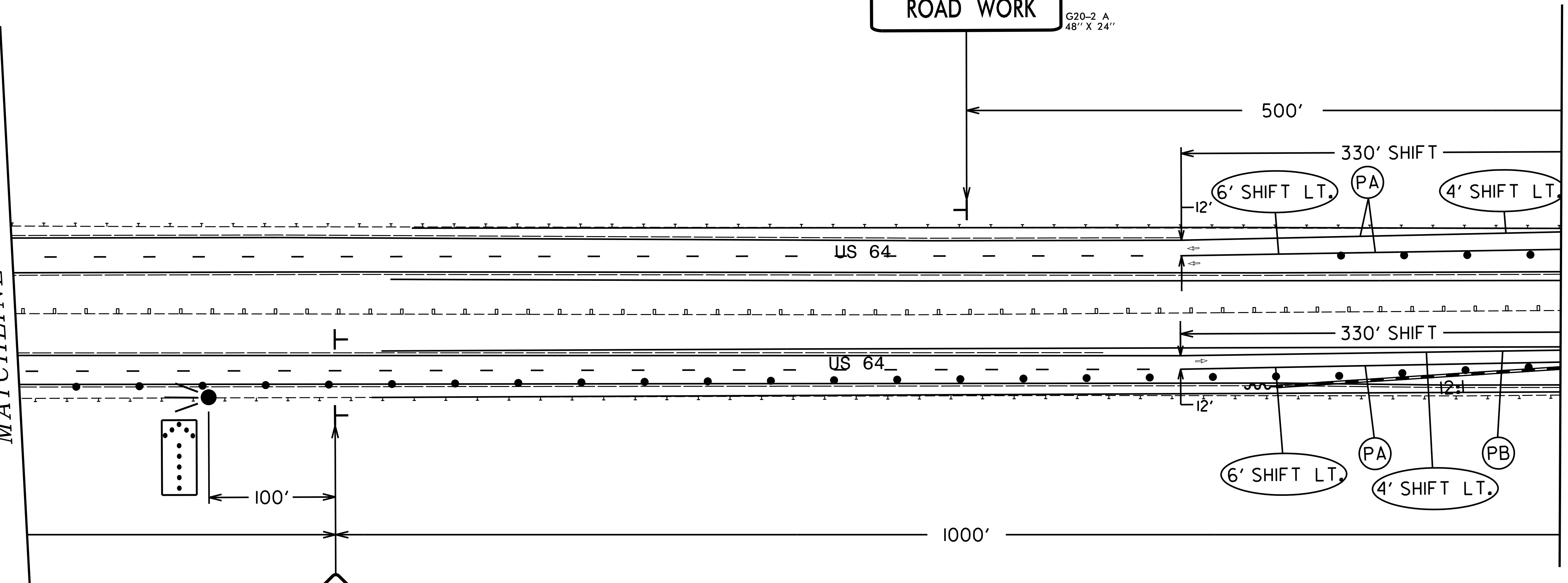
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MATCHLINE PSH 6

MATCHLINE PSH 8

END  
ROAD WORK  
G20-2 A  
48" X 24"

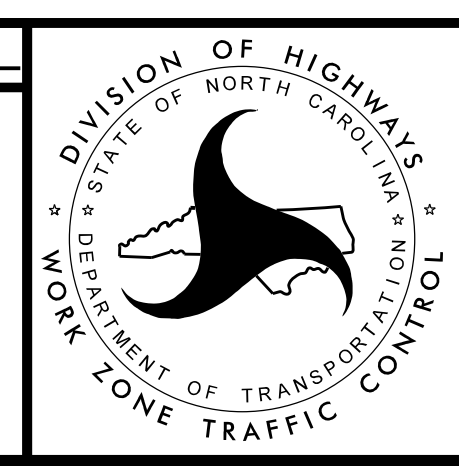
BEGIN  
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SP-11299  
48" X 48"



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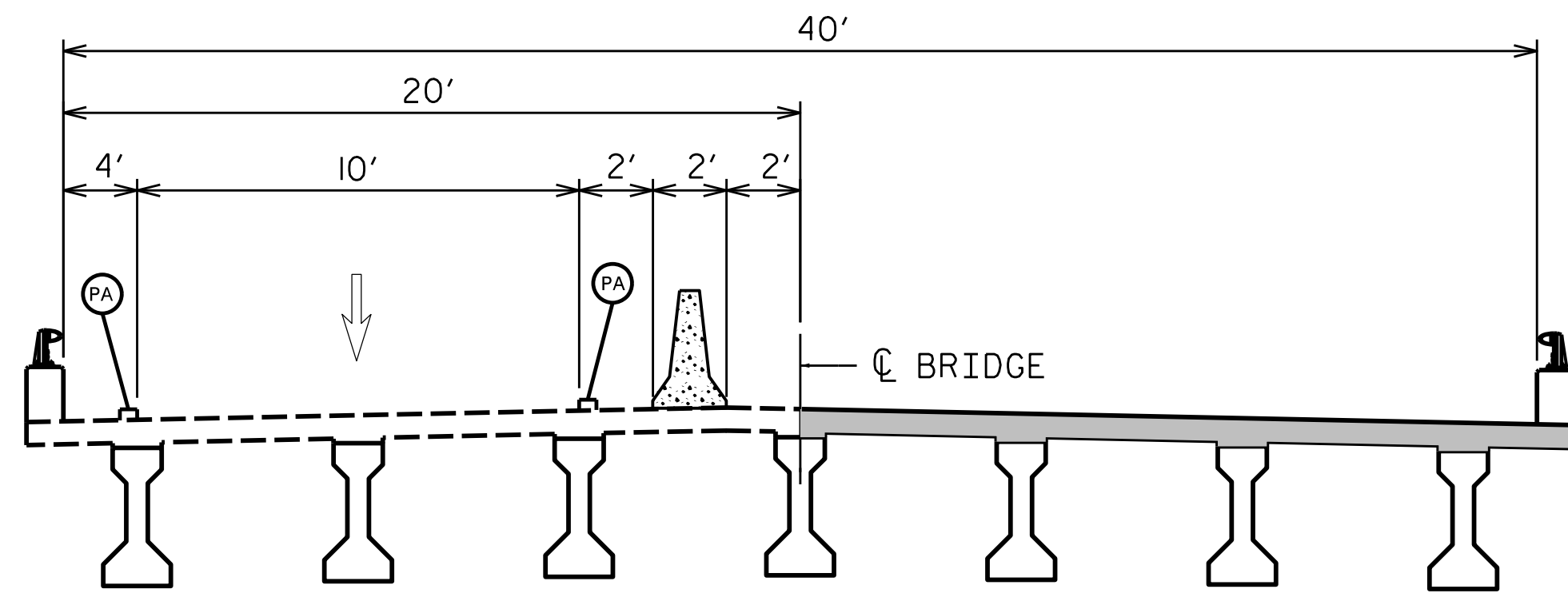


**PHASE 2  
STEP 1**

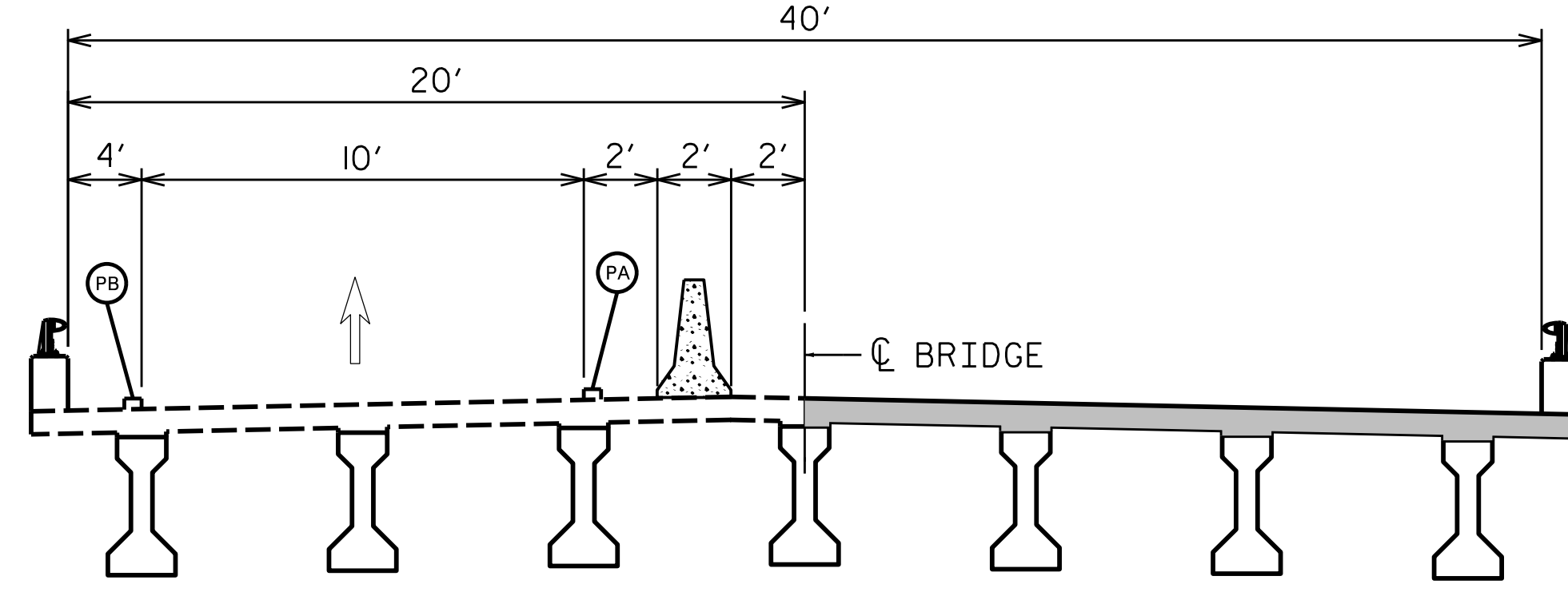
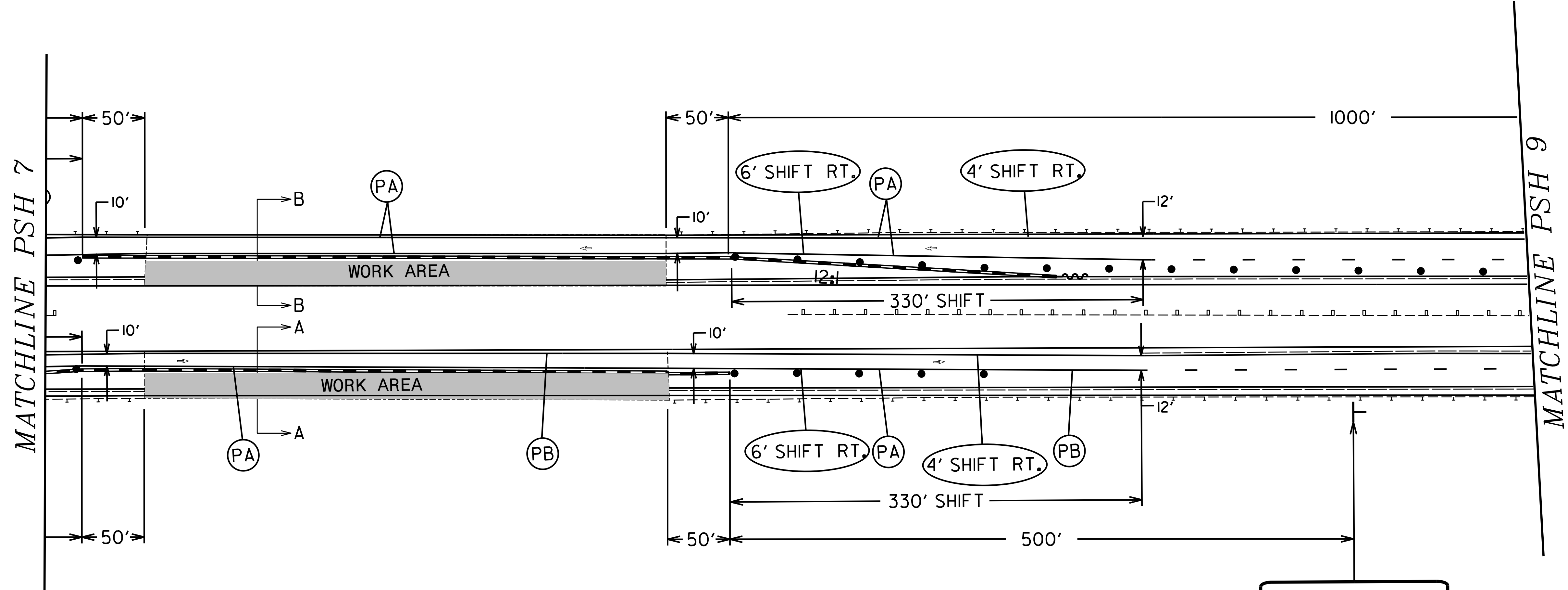


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SECTION B-B



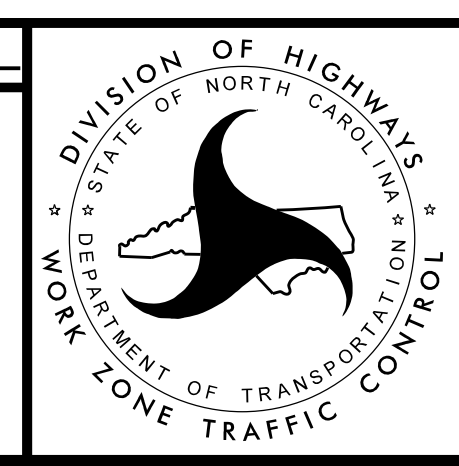
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2/13/2019

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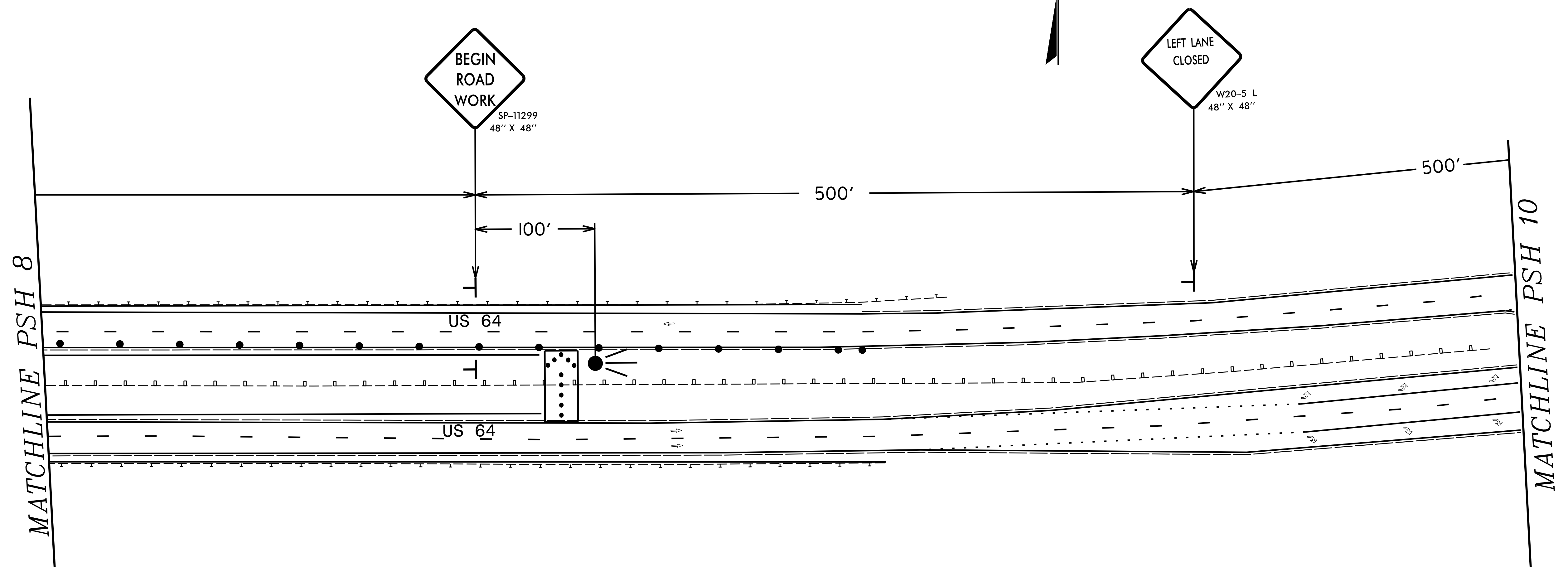
**PHASE 2  
STEP 1**

**END  
ROAD WORK**  
G20-2 A,  
48" X 24"



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PROJECT REFERENCE NO.	SHEET NO.
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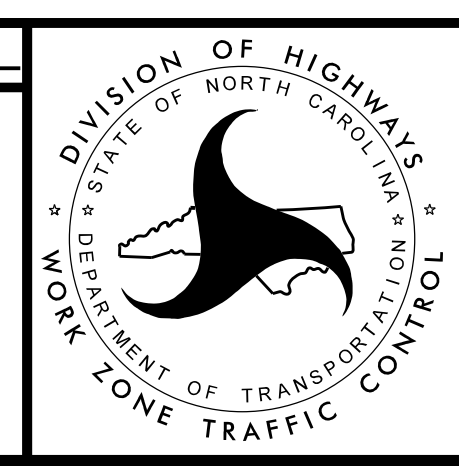
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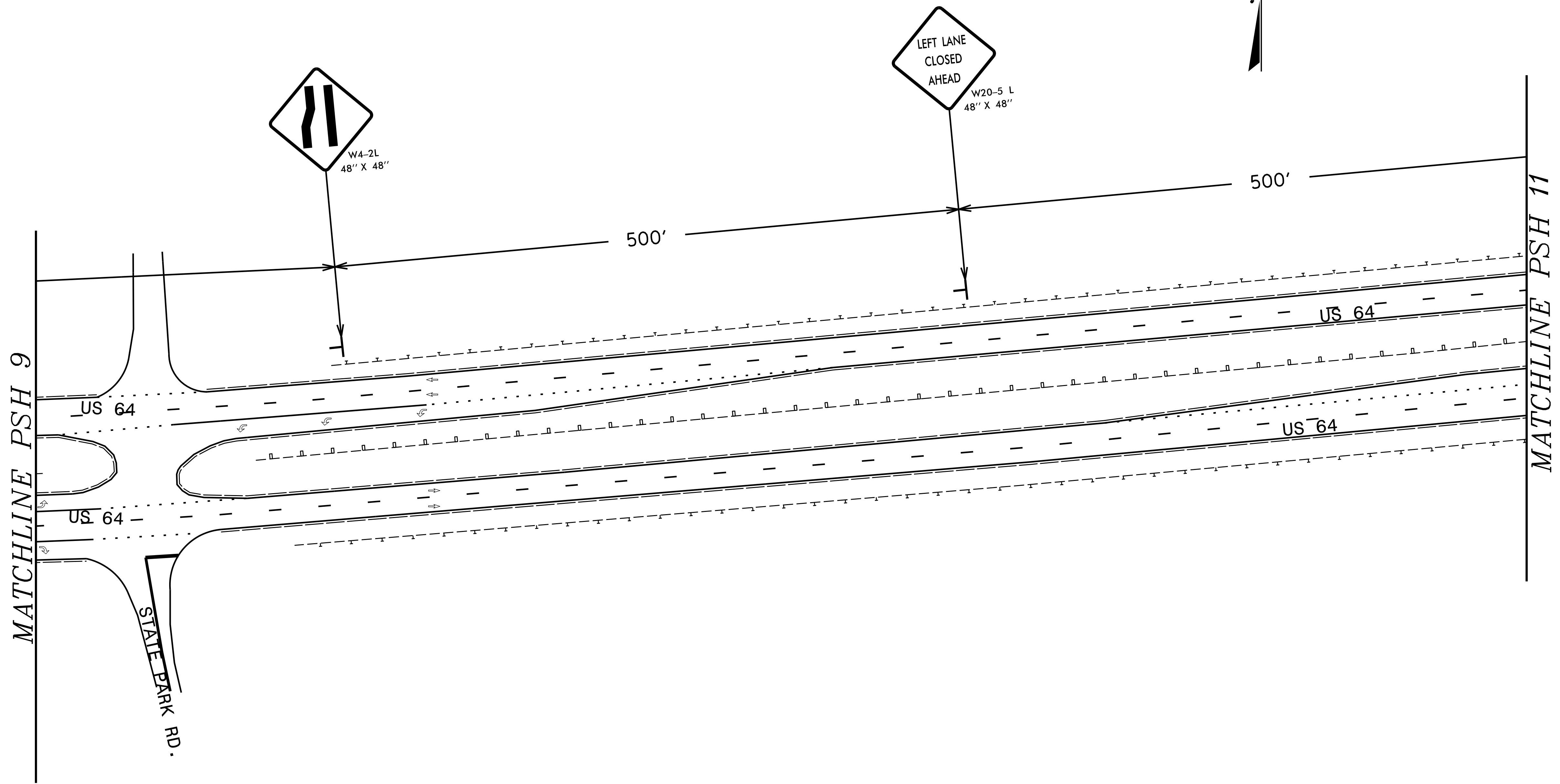
**PHASE 2  
STEP 1**





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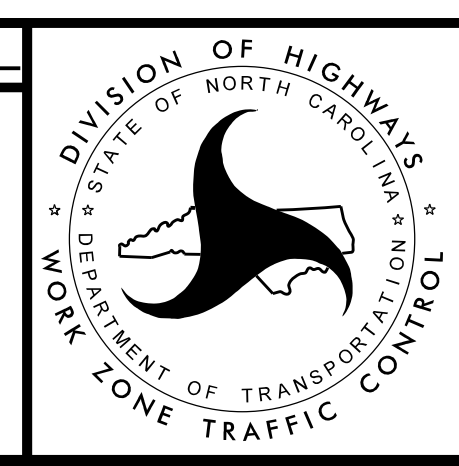
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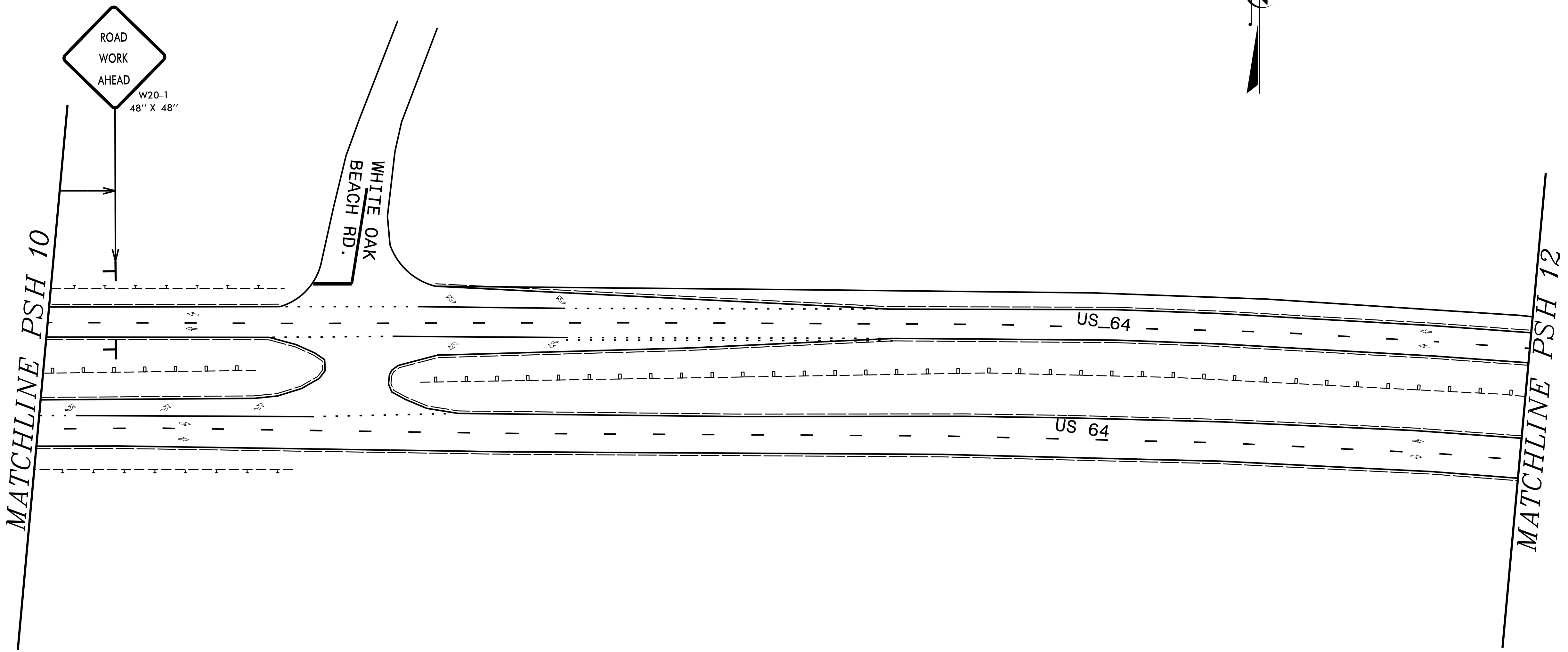


**PHASE 2  
STEP 1**



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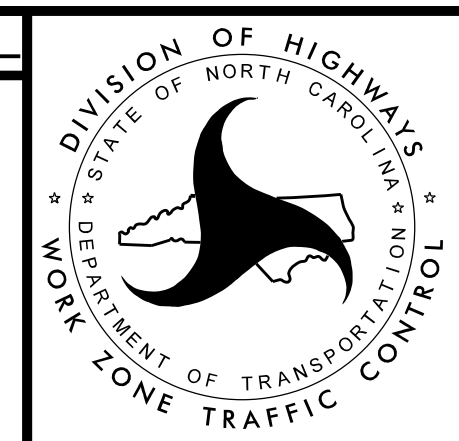
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**PHASE 2  
STEP 1**



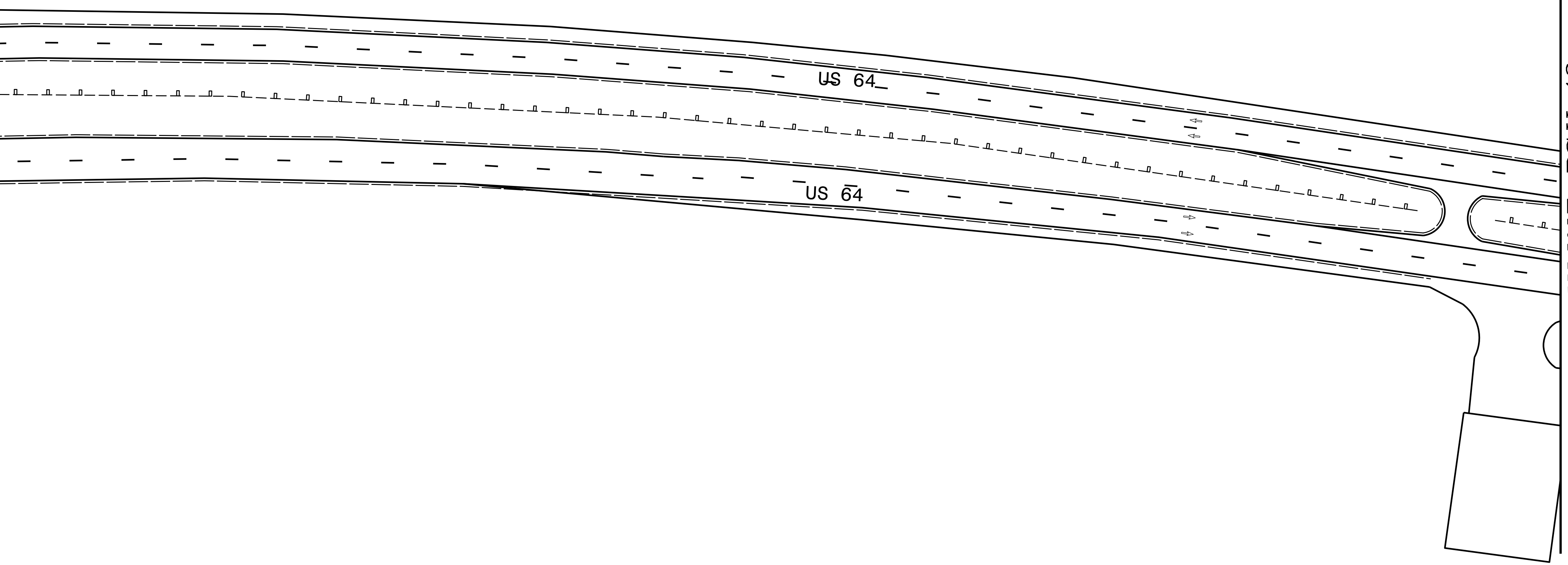
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PROJECT REFERENCE NO.	SHEET NO.
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MATCHLINE PSH 11

MATCHLINE PSH 13



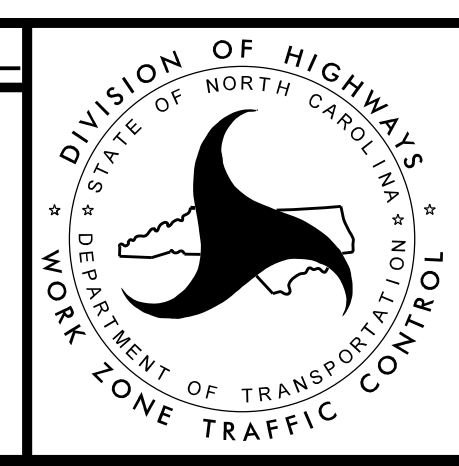
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APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_

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 E1D5CB635E33  
 2/13/2019

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PHASE 2  
STEP 1

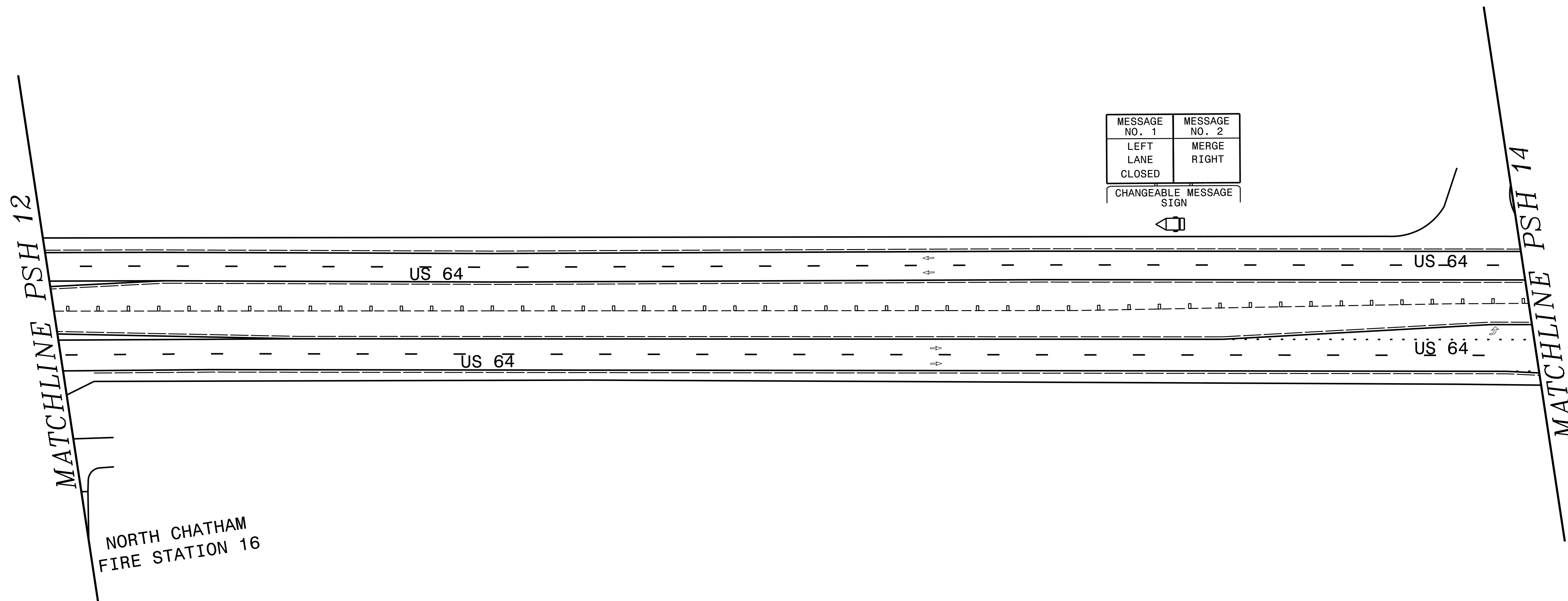


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CHANGEABLE MESSAGE SIGN



NORTH CHATHAM  
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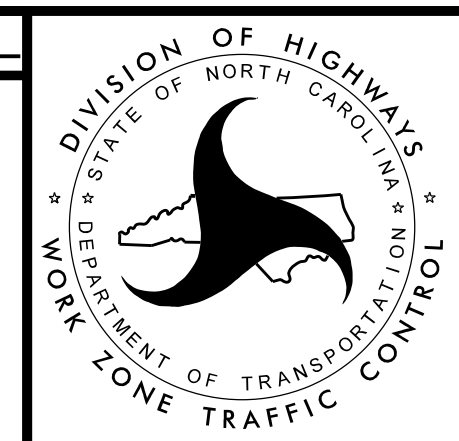
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APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_

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E10506835E3M  
2/13/2019

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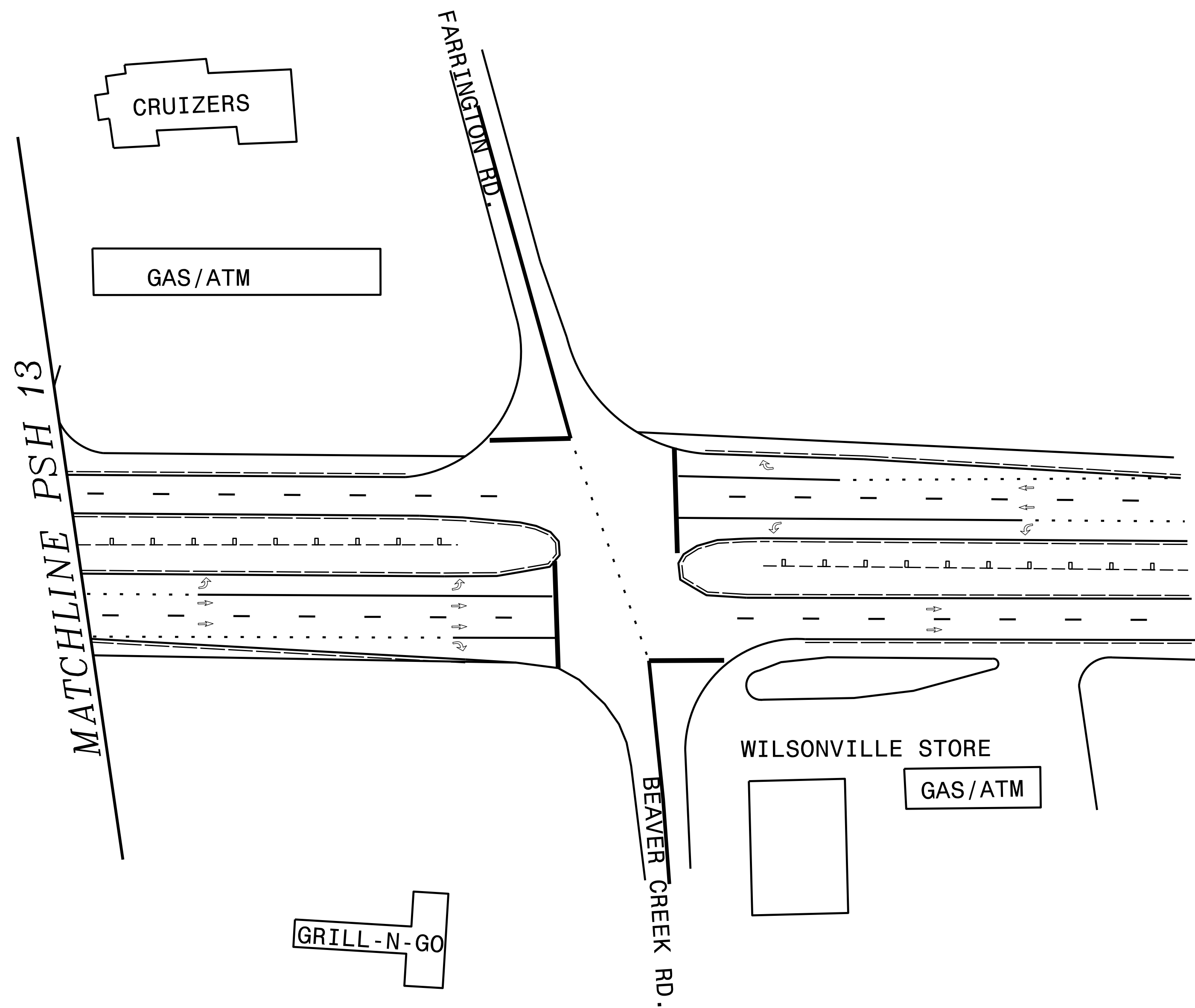


**PHASE 2  
STEP 1**



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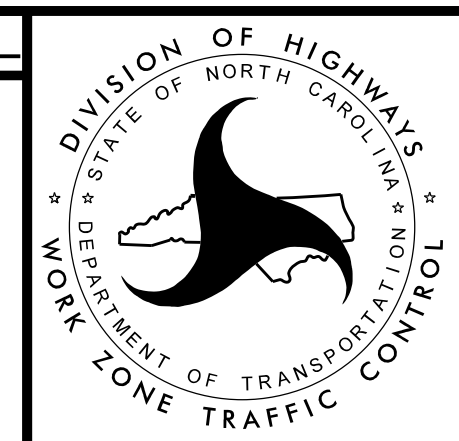
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APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_

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PHASE 2  
STEP 1



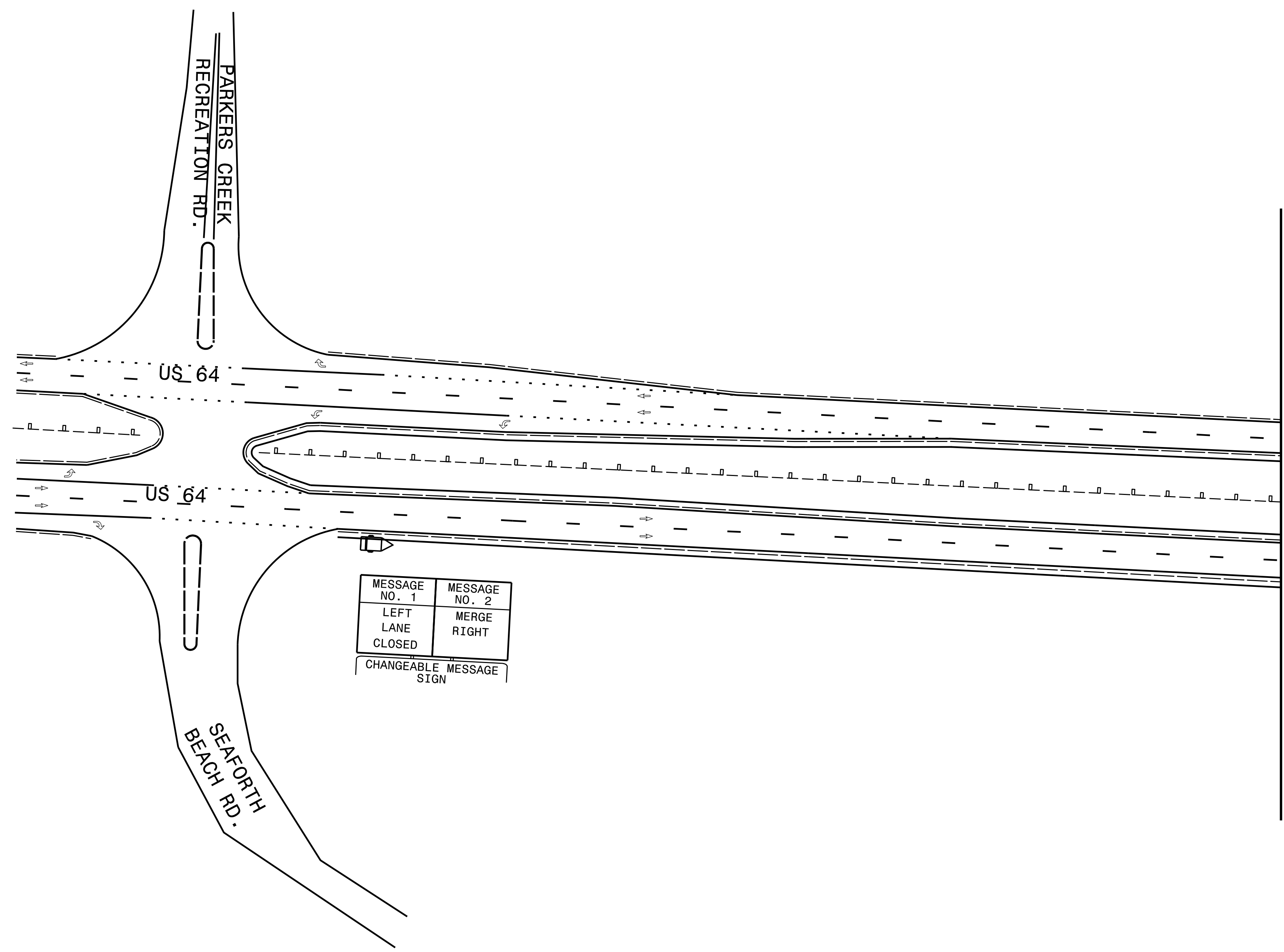
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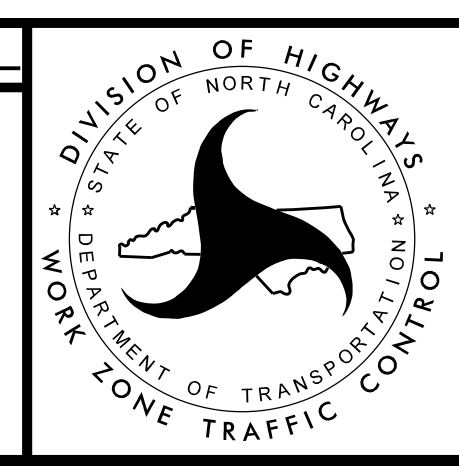


MESSAGE NO. 1	MESSAGE NO. 2
LEFT LANE CLOSED	MERGE RIGHT
CHANGEABLE MESSAGE SIGN	

APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_

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**PHASE 2  
STEP 2**



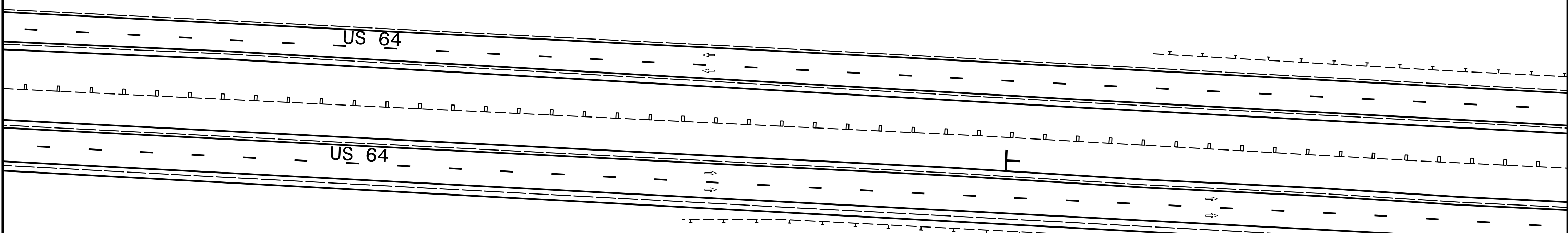
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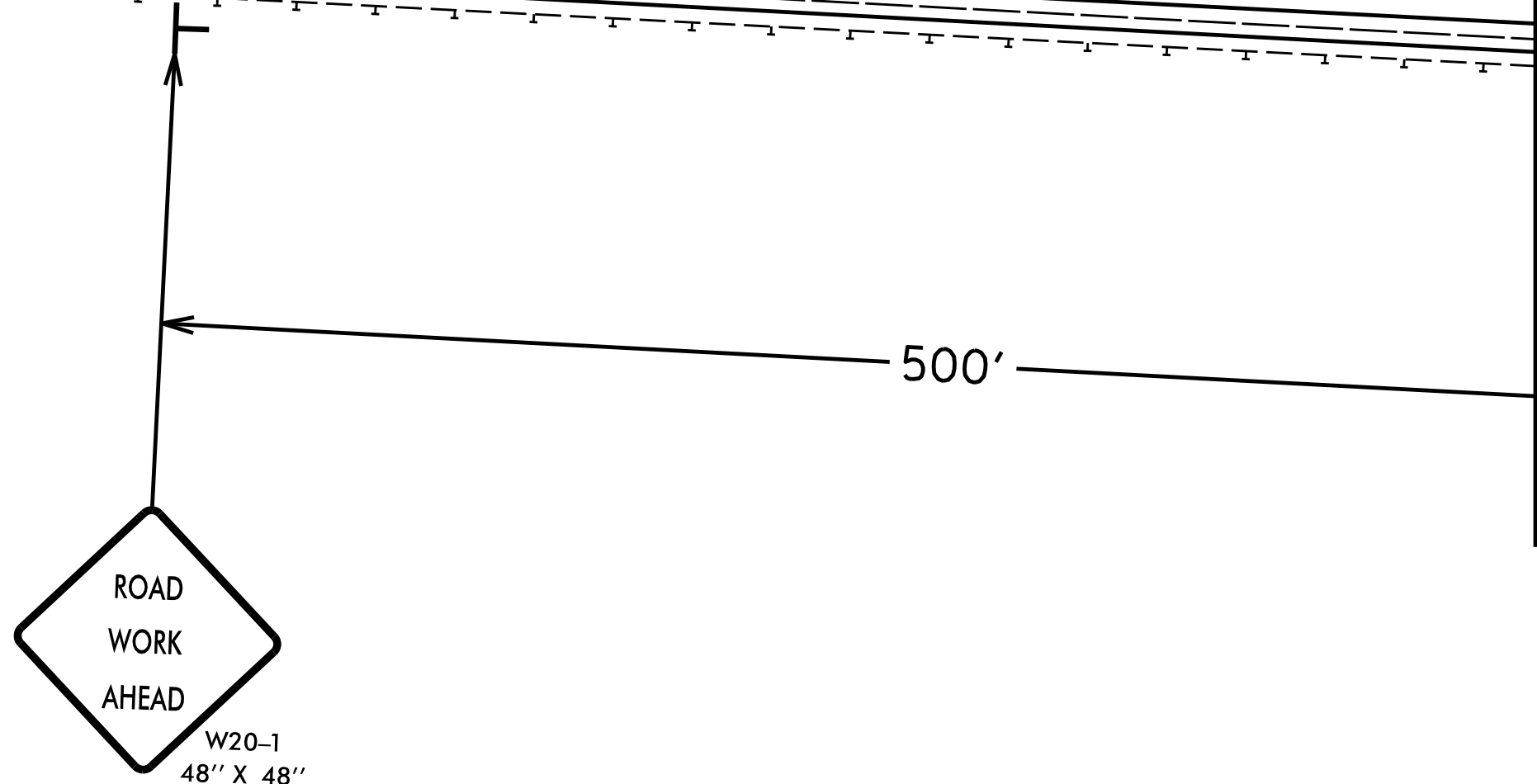
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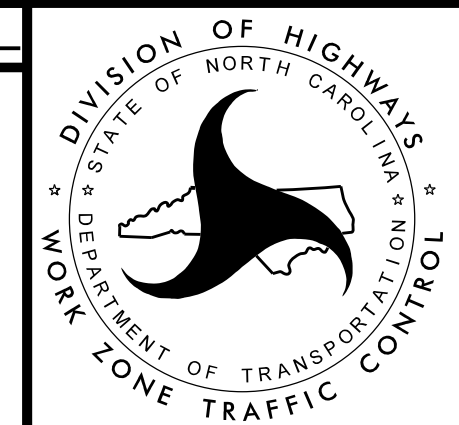
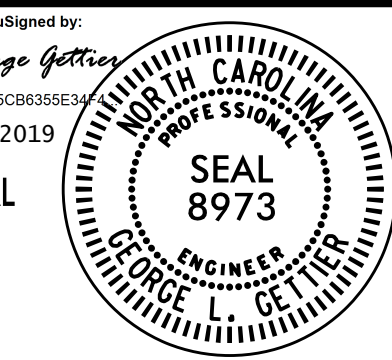
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MATCHLINE PSH 17



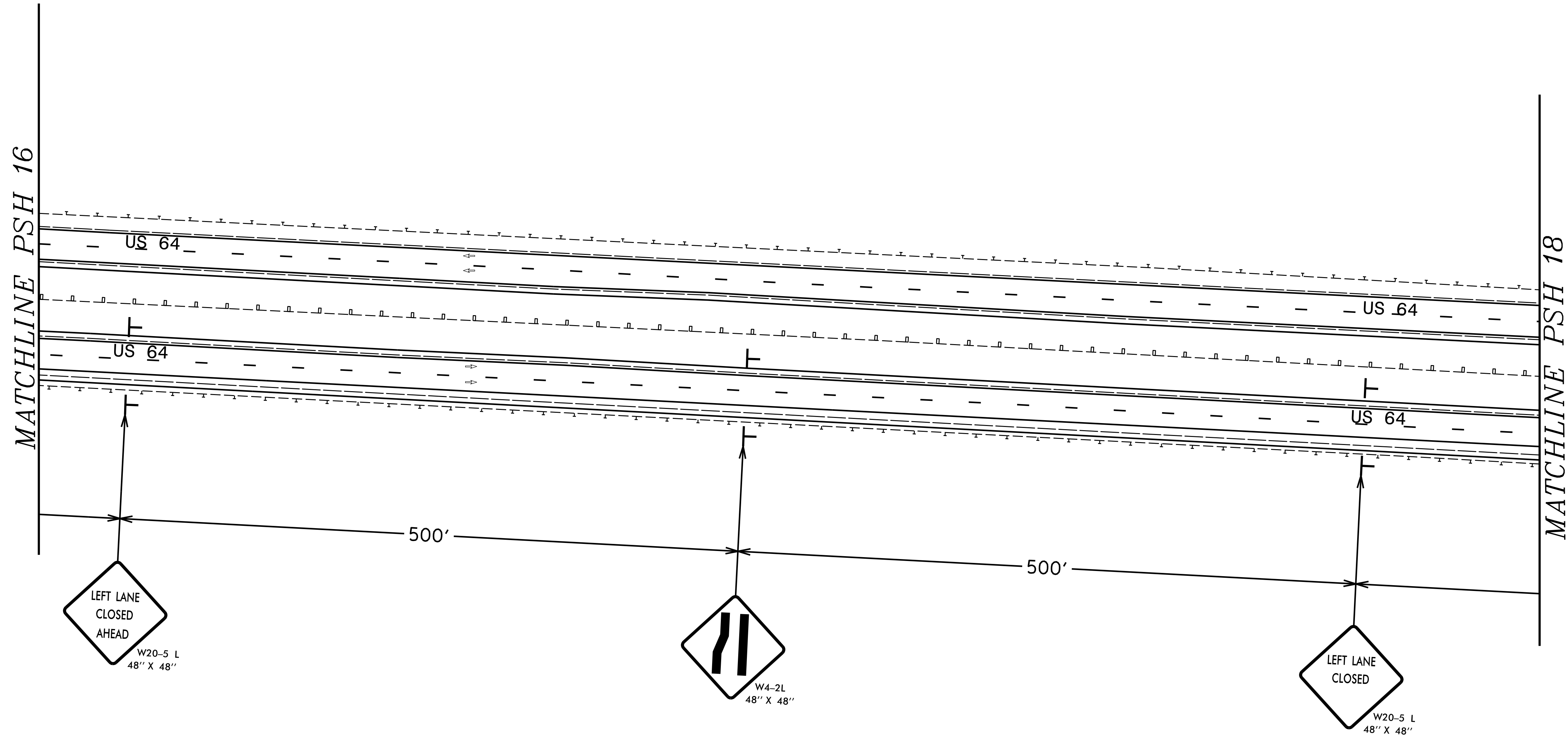
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 Documented by:  
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**PHASE 2  
STEP 2**

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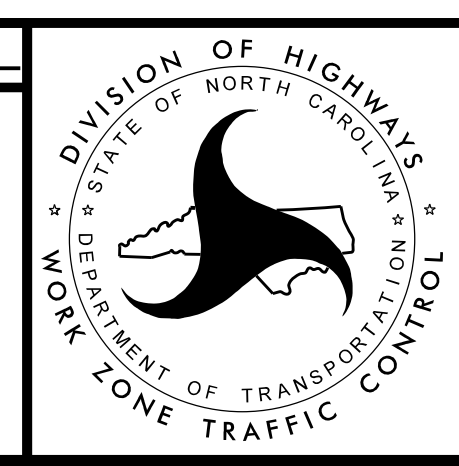
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PHASE 2  
STEP 2



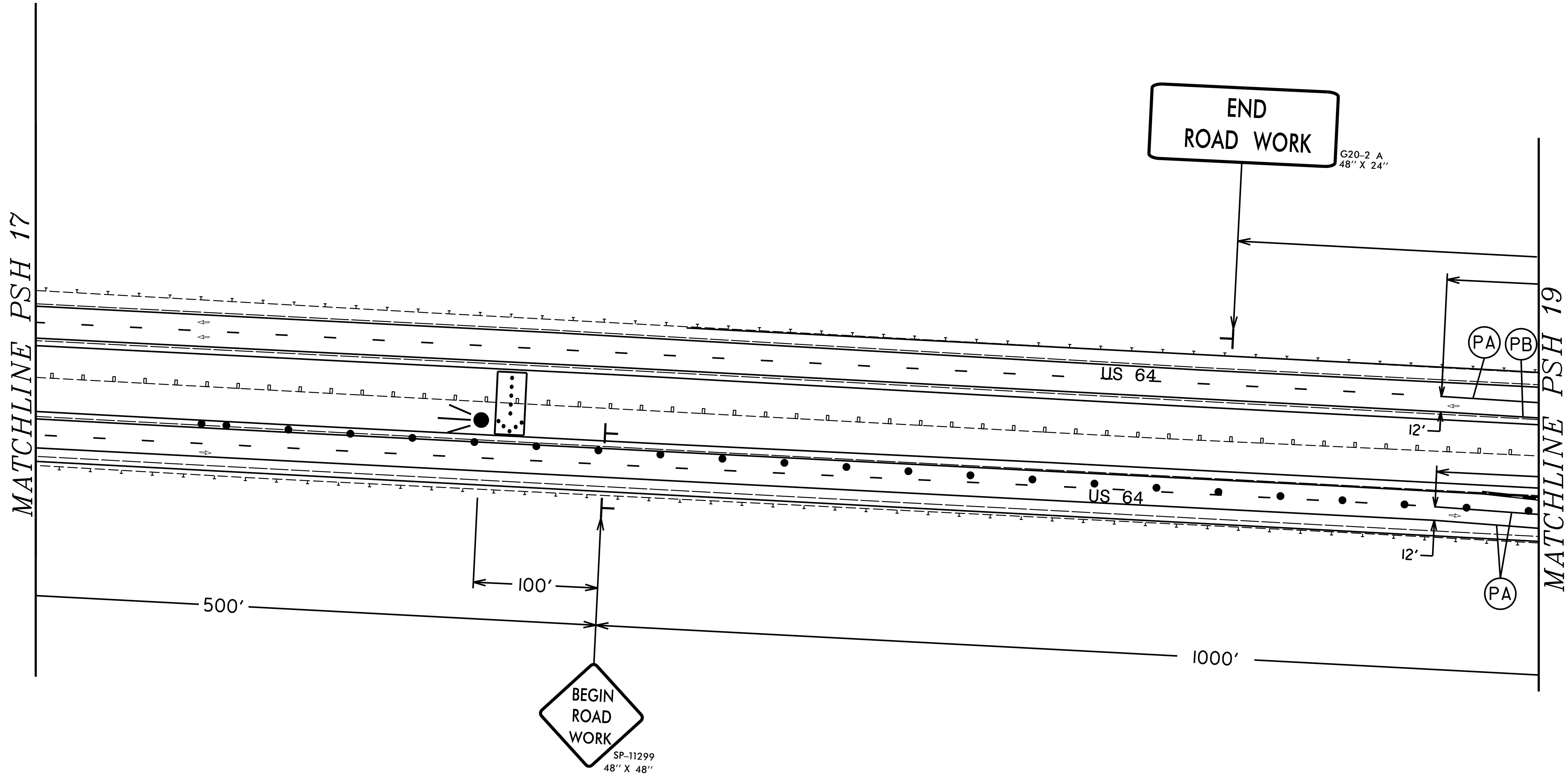
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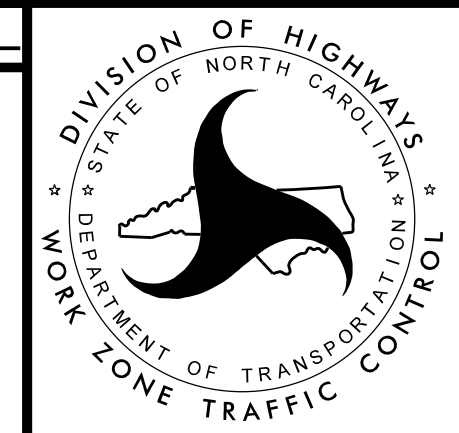
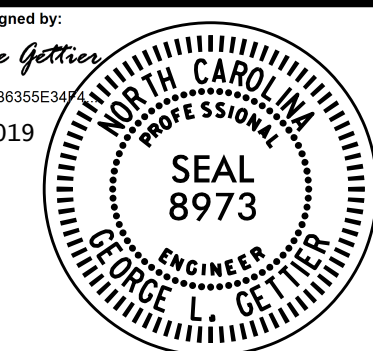


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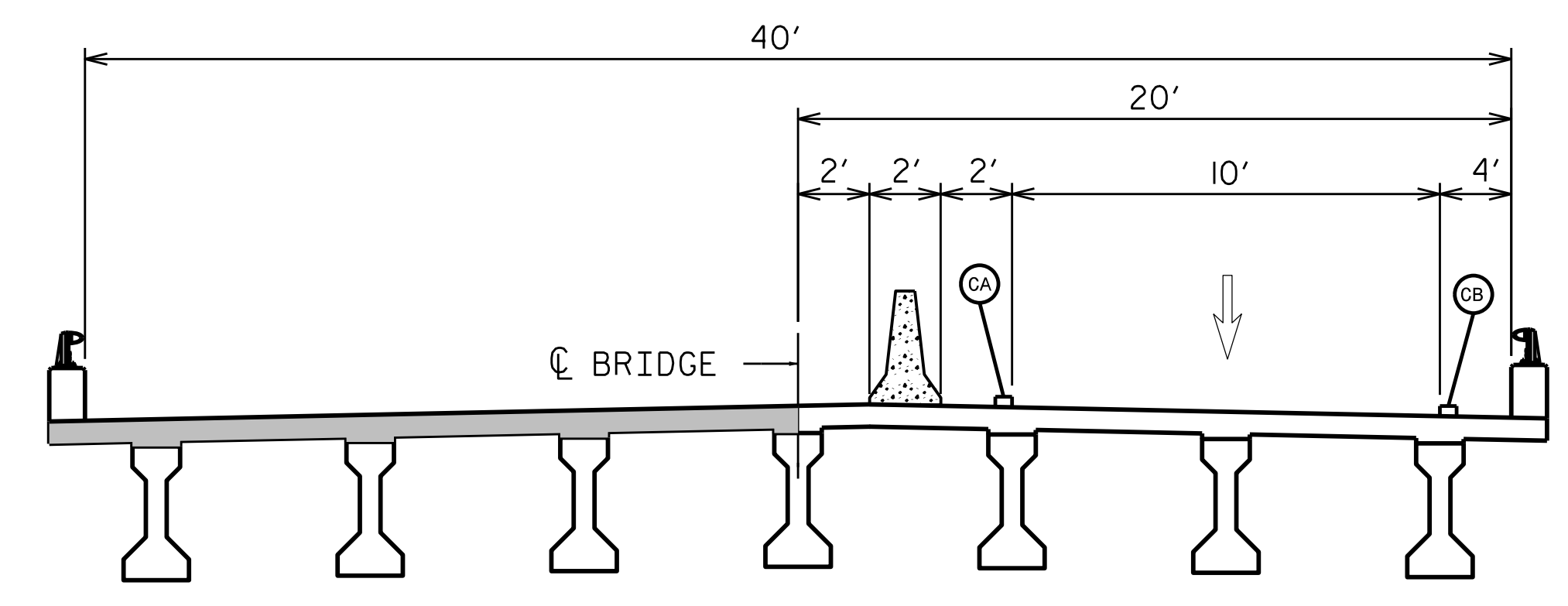
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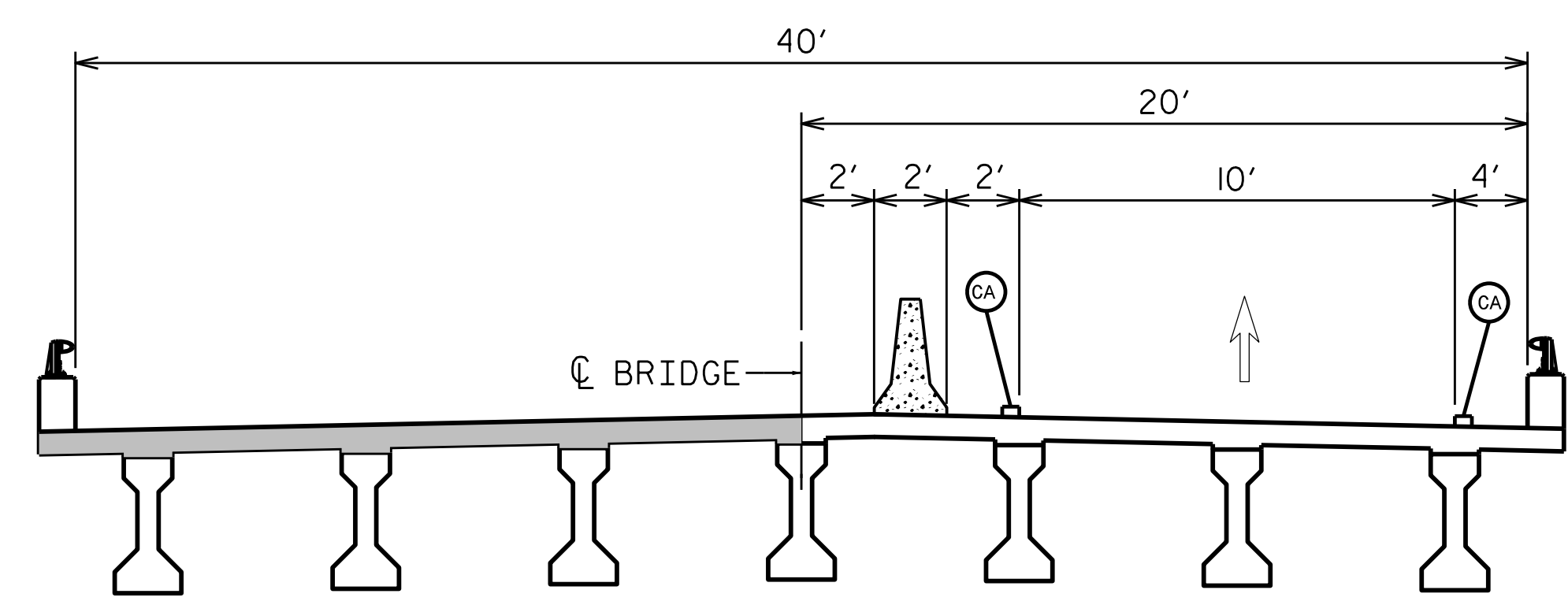
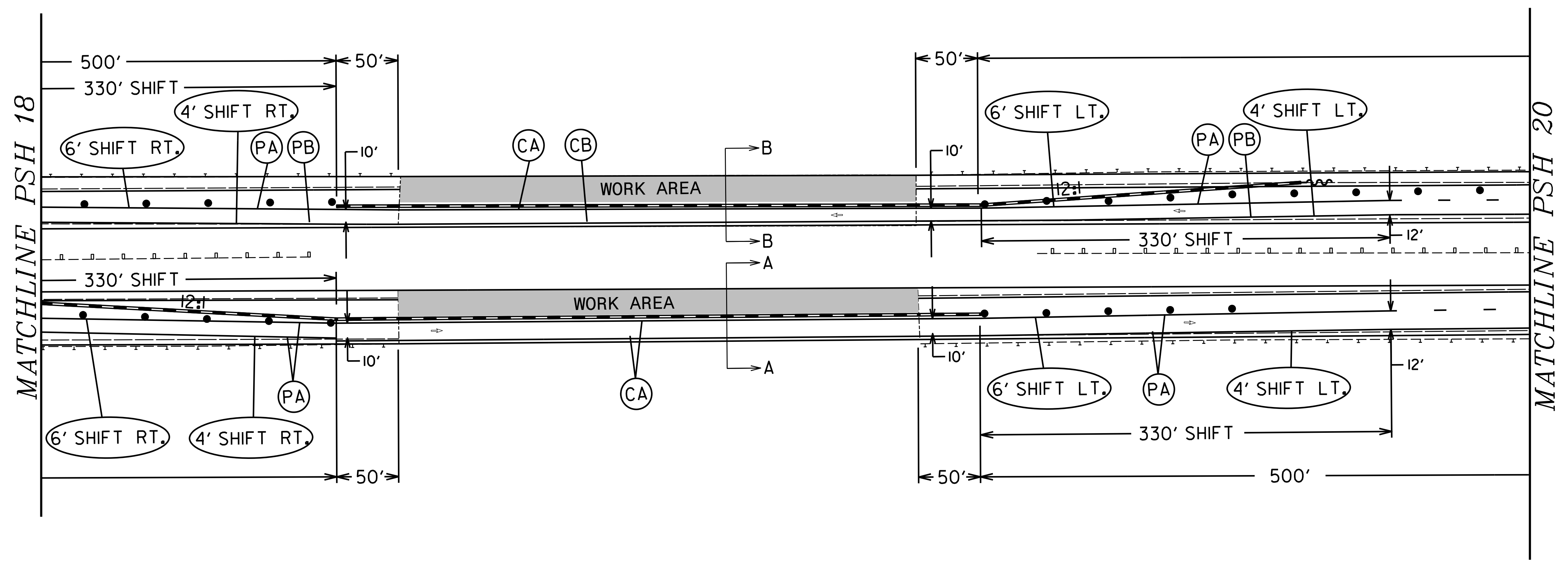
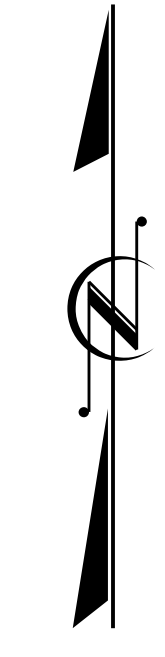
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 2/13/2019  
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**PHASE 2  
STEP 2**



SECTION B-B



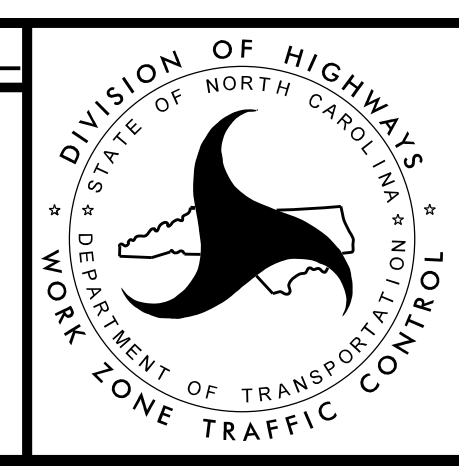
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APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_

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 George L. Gettier  
 E105C8635E3E  
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**PHASE 2  
STEP 2**

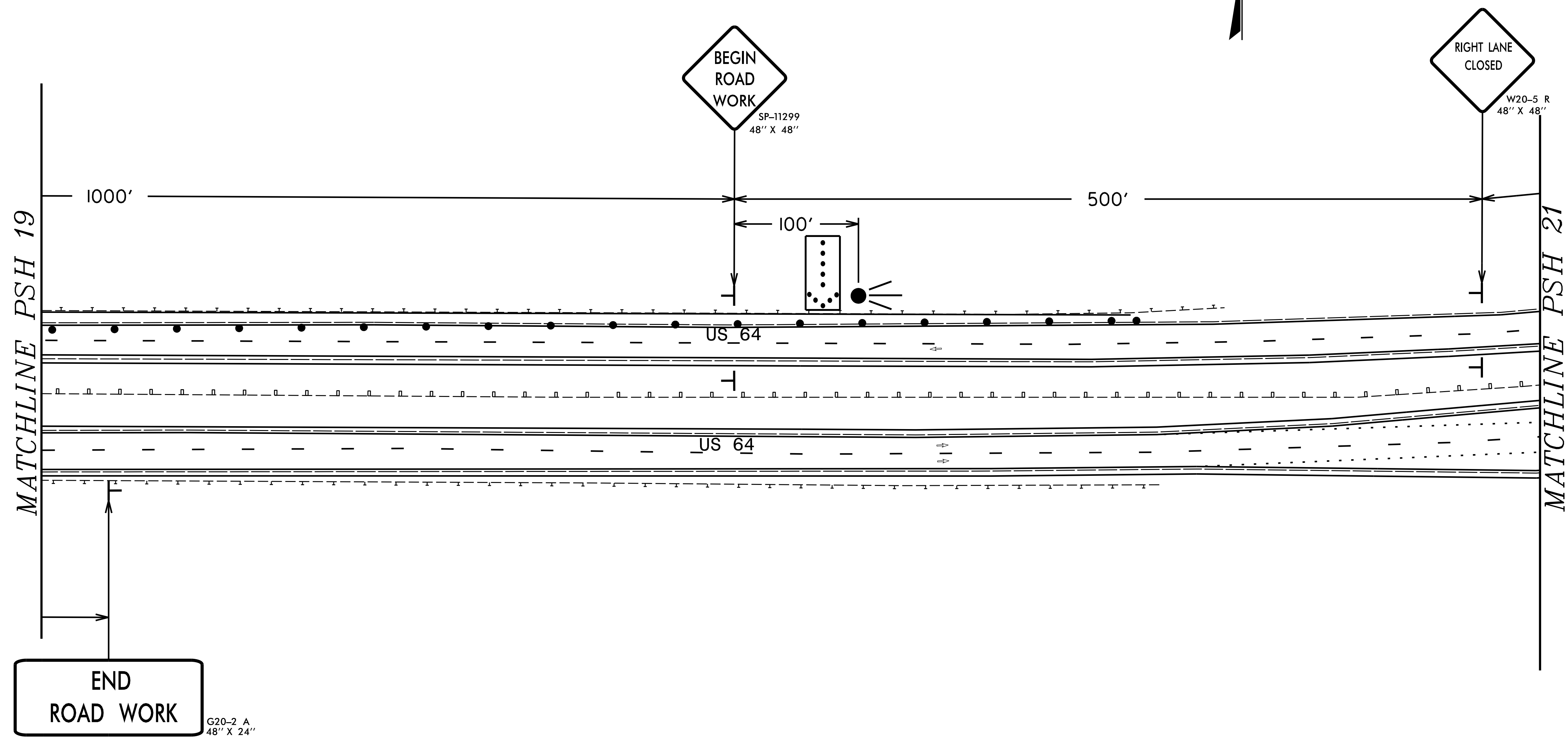


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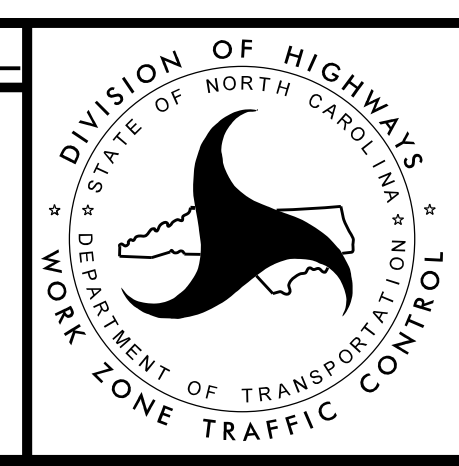
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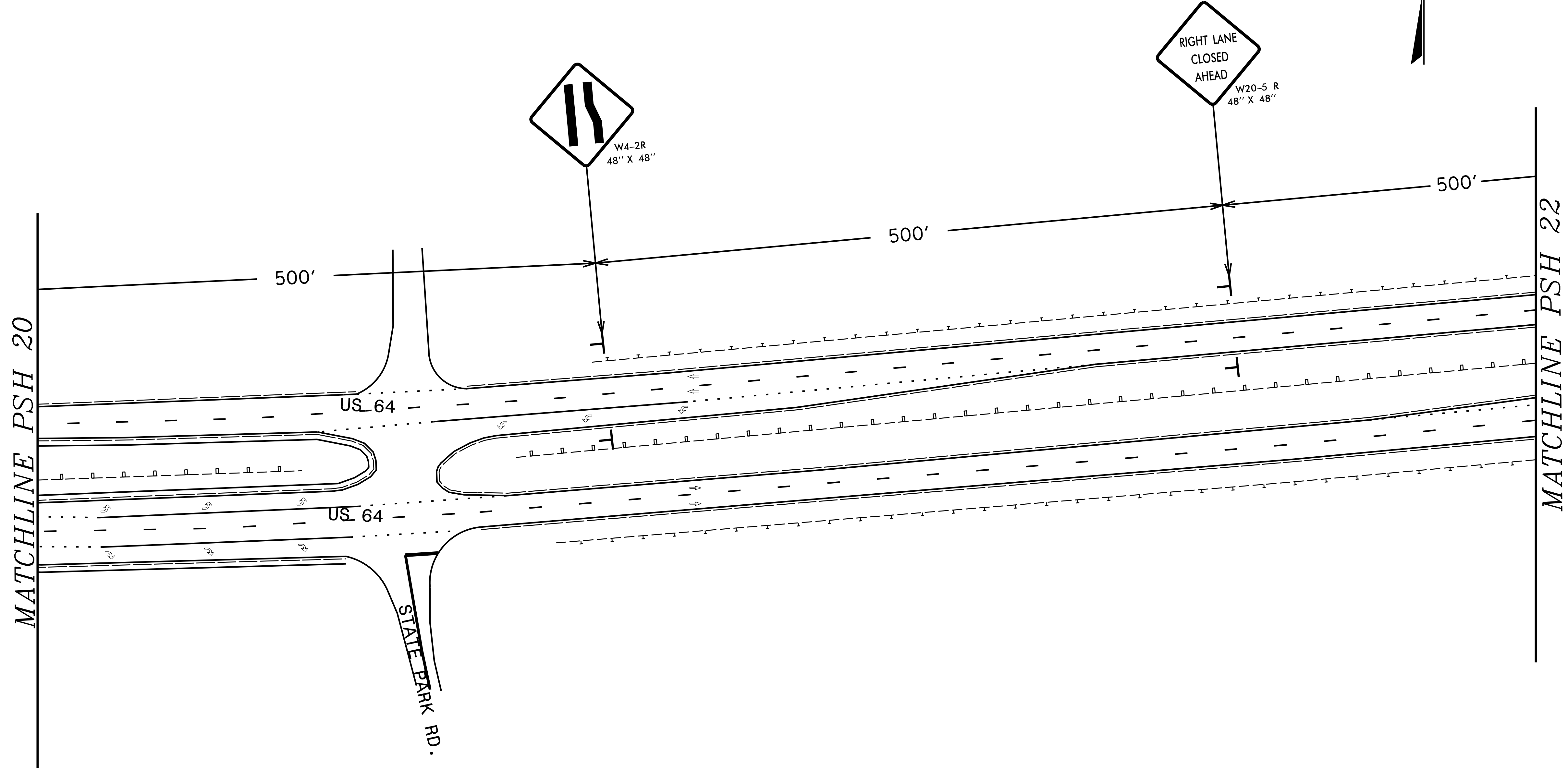
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**PHASE 2  
STEP 2**



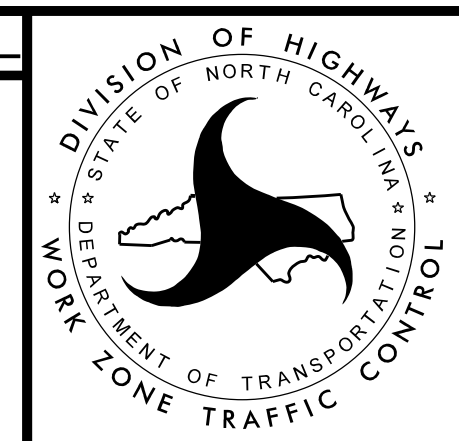
REVISIONS

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 G:\Projects\2042678 NCDOT Structures LSA\15BPR.36 (Chatham)\Traffic\15BPR.36CHATHAM\_WZTC\_PSH21.dgn  
 CKE\_rdy.tbl

APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_

DocuSigned by:  
 George Yetter  
 E1D5C8355E  
 2/13/2019

SEAL



**PHASE 2  
STEP 2**



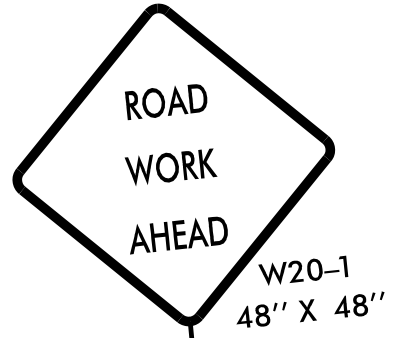
LOUIS BERGER  
1001 Wade Avenue, Suite 400  
Raleigh, NC 27605-3322  
License No.: F-0840

PROJECT REFERENCE NO.	SHEET NO.
15BPR.36	TMP-22
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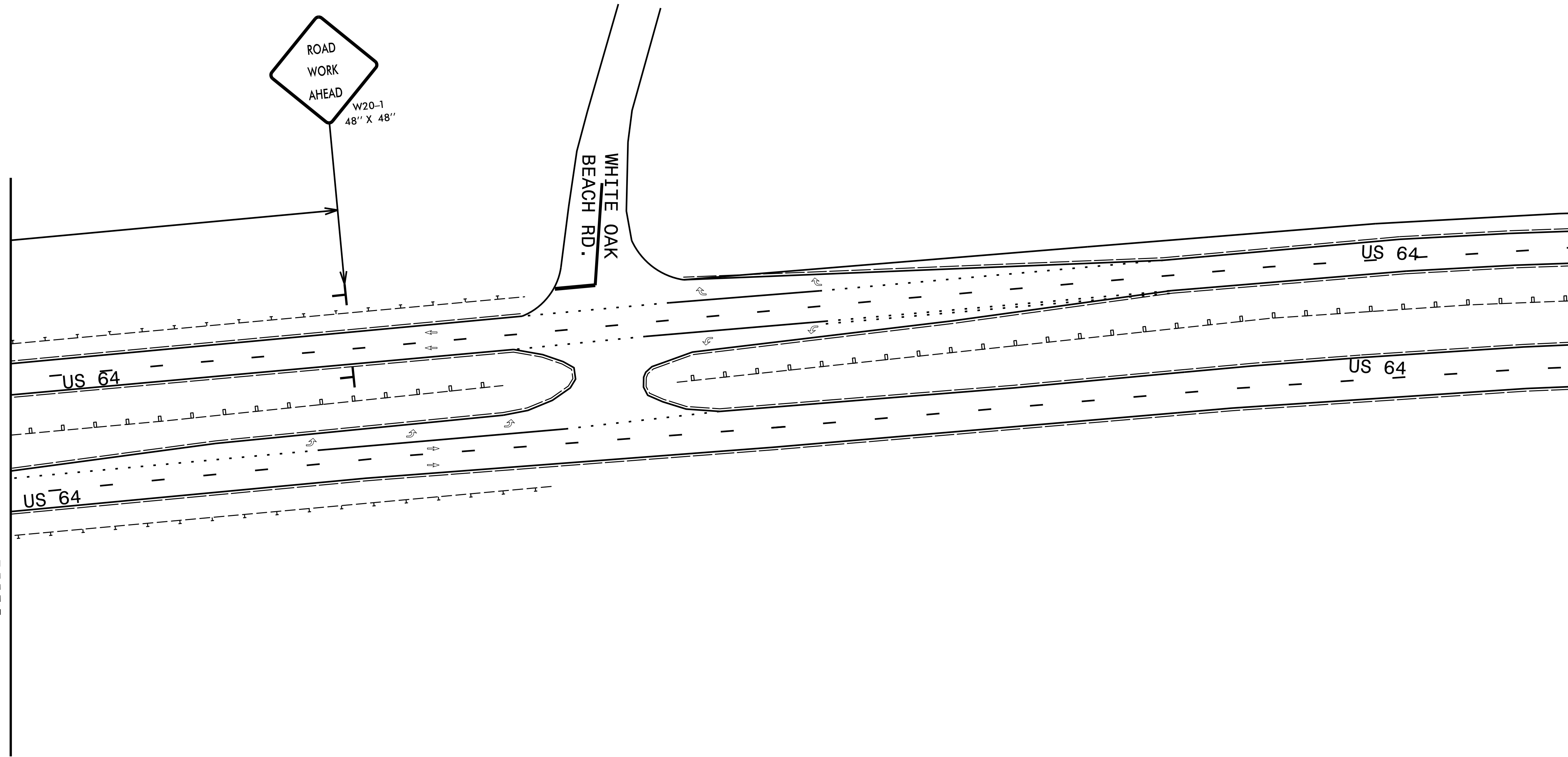
MATCHLINE PSH 21

MATCHLINE PSH 23



W20-1  
48" X 48"

WHITE OAK  
BEACH RD.



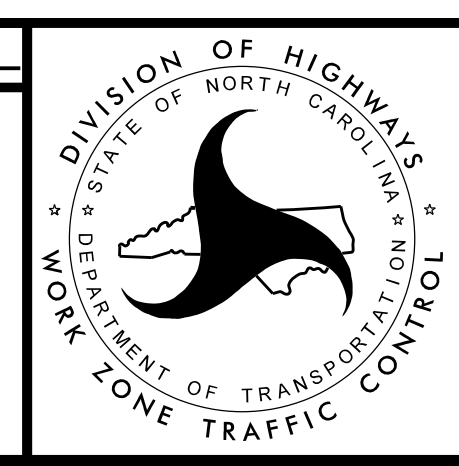
REVISIONS

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DocuSigned by:  
*George Gettier*  
E 1050CB855E3  
2/13/2019

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**PHASE 2  
STEP 2**

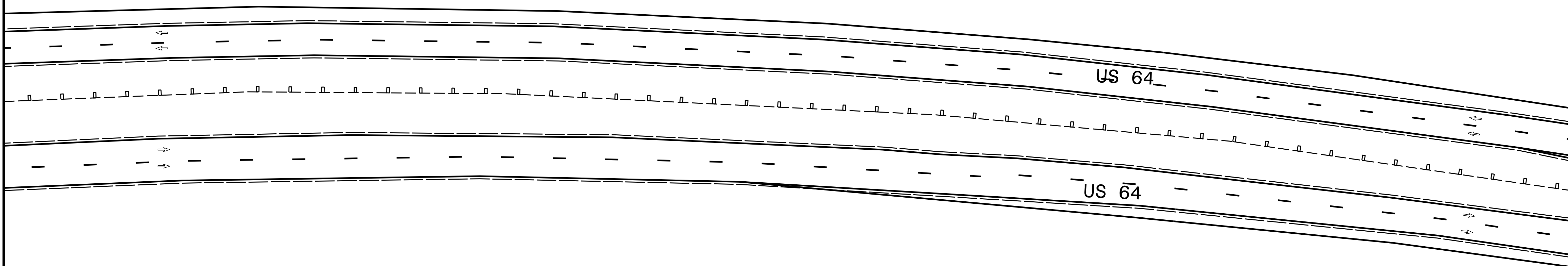


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MATCHLINE PSH 22



MATCHLINE PSH 24

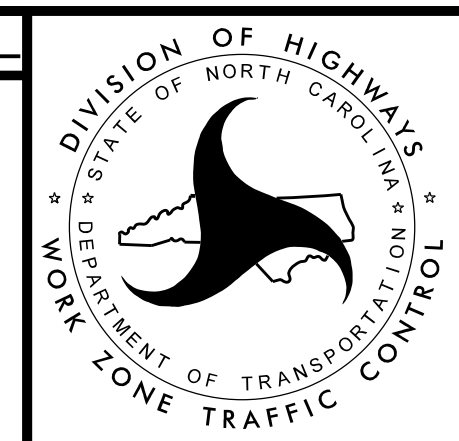
REVISIONS
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2/13/2019 6:38:34 PM  
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CKE\_rdy.tbl

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*George Gettier*  
E1050683563  
2/13/2019

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**PHASE 2  
STEP 2**



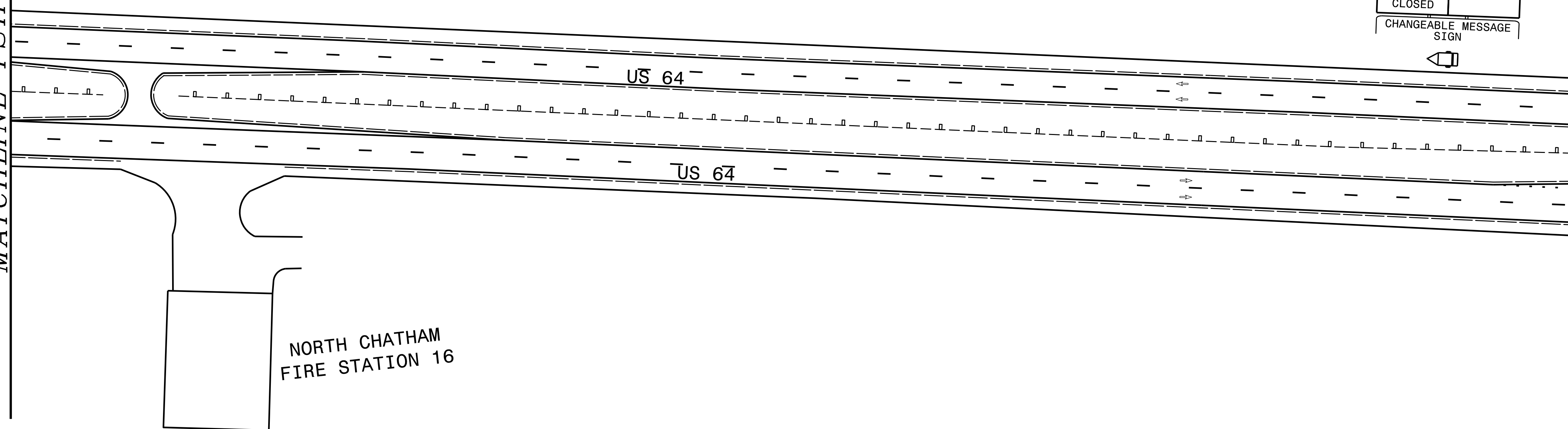
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15BPR.36	TMP-24
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MATCHLINE PSH 23

MATCHLINE PSH 25



MESSAGE NO. 1	MESSAGE NO. 2
RIGHT LANE CLOSED	MERGE LEFT
CHANGEABLE MESSAGE SIGN	



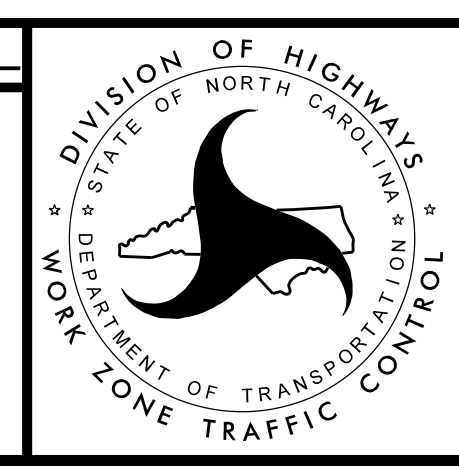
REVISIONS

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*George Gettier*  
E1D5CB355E  
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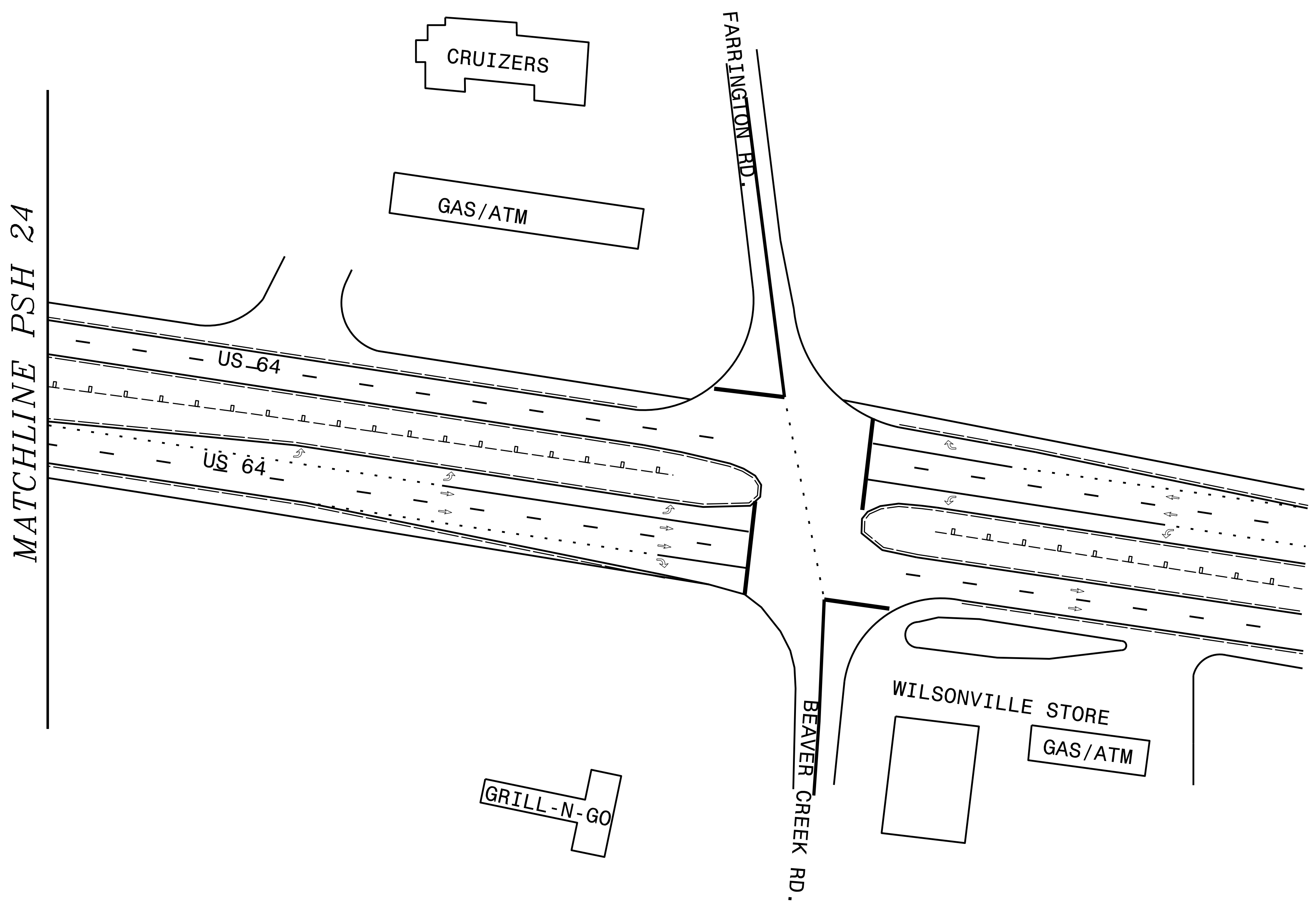


**PHASE 2  
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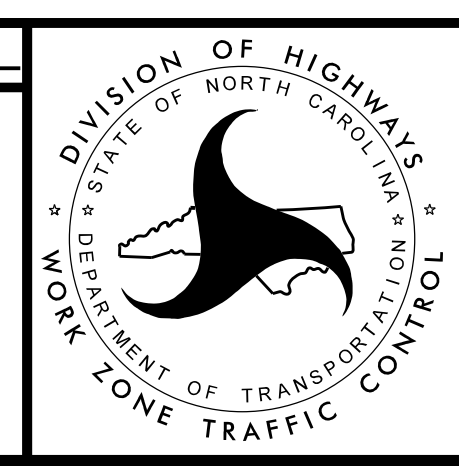
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 CKE\_rdy.tbl

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