

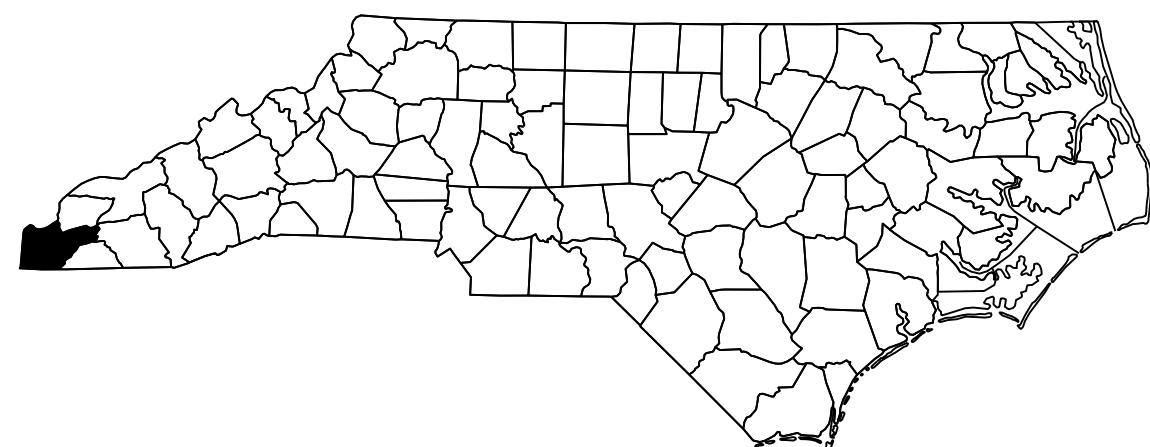
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PROJECT: 15BPR.29

CONTRACT: C204233



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CHEROKEE COUNTY

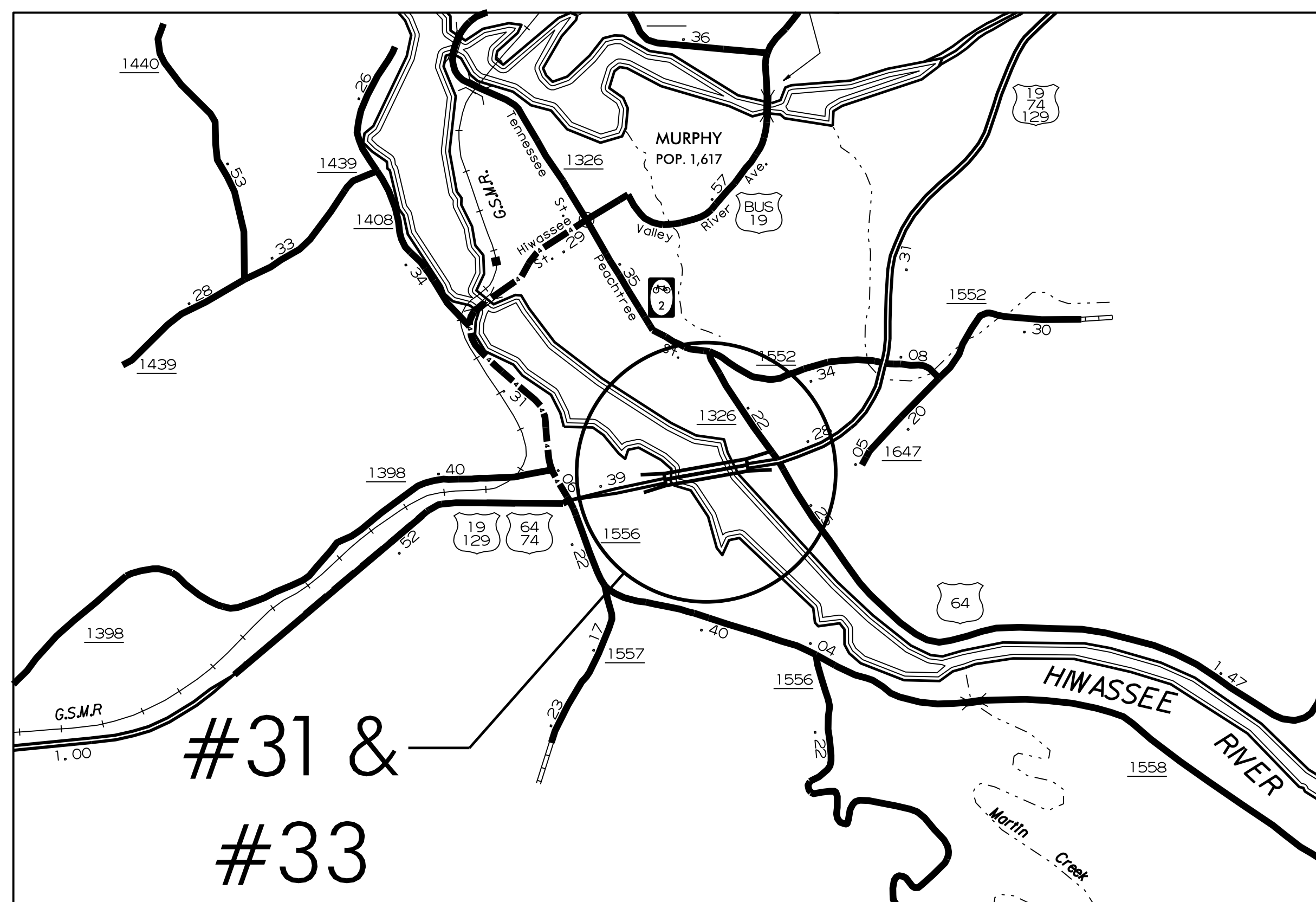
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	15BPR.29	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
15BPR.29	-	P.E.	
15BPR.29	-	CONST.	

LOCATION: CHEROKEE COUNTY

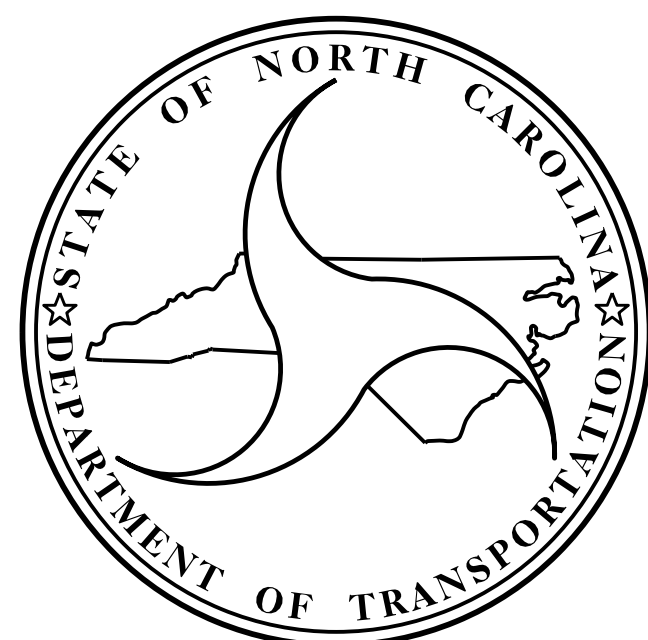
BRIDGE #31 ON U.S. 19, U.S. 129 NORTHBOUND, AND U.S. 64, U.S. 74 EASTBOUND OVER THE HIWASSEE RIVER.

BRIDGE #33 ON U.S. 19, U.S. 129 SOUTHBOUND, AND U.S. 64, U.S. 74 WESTBOUND OVER THE HIWASSEE RIVER.

TYPE OF WORK: BRIDGE PRESERVATION - LATEX MODIFIED CONCRETE OVERLAY, SILICONE JOINT SEALANT, FOAM JOINT SEALS, STEEL GIRDER REPAIRS, AND SUBSTRUCTURE REPAIRS.



VICINITY MAP - CHEROKEE CO.



DESIGN DATA

CHEROKEE COUNTY
#31 ADT 2013 = 6,500
#33 ADT 2013 = 6,500

PROJECT LENGTH

CHEROKEE COUNTY
- #31 = 0.102 MILE
- #33 = 0.102 MILE

Prepared in the Office of:
DIVISION OF HIGHWAYS
STRUCTURES MANAGEMENT UNIT
1000 BIRCH RIDGE DR.
RALEIGH, N.C. 27610

2018 STANDARD SPECIFICATIONS

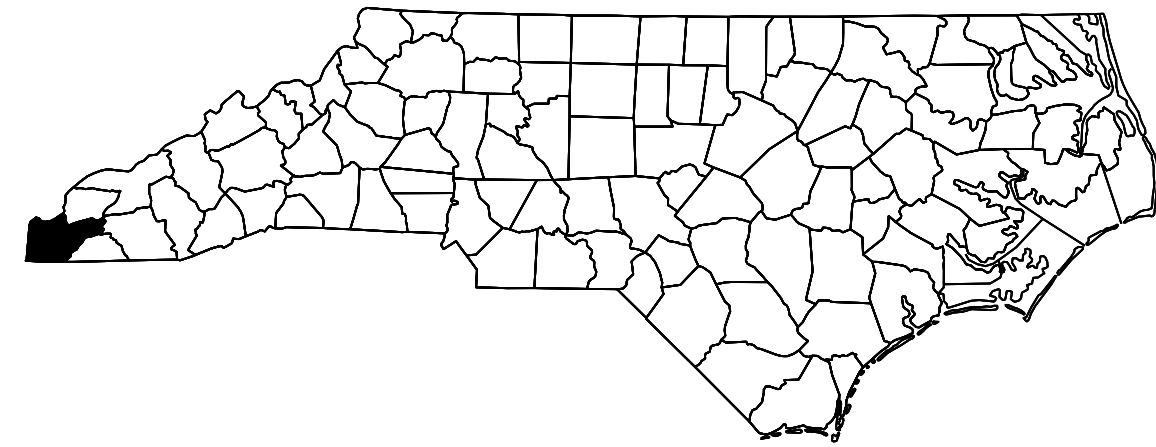
LETTING DATE :
DECEMBER 18, 2018

A. KEITH PASCHAL, P.E.
PROJECT ENGINEER

AMBER M. LEE, P.E.
PROJECT DESIGN ENGINEER

PROJECT: 15BPR.29

CONTRACT: C204233



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CHEROKEE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	15BPR.29	1A	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
15BPR.29		P.E.	
15BPR.29		CONST.	

LOCATION: CHEROKEE COUNTY

BRIDGE #31 ON U.S. 19, U.S. 129 NORTHBOUND, AND U.S. 64, U.S. 74 EASTBOUND OVER THE HIWASSEE RIVER.

BRIDGE #33 ON U.S. 19, U.S. 129 SOUTHBOUND, AND U.S. 64, U.S. 74 WESTBOUND OVER THE HIWASSEE RIVER.

**TYPE OF WORK: BRIDGE PRESERVATION - LATEX MODIFIED CONCRETE OVERLAY,
SILICONE JOINT SEALANT, FOAM JOINT SEALS, STEEL GIRDER REPAIRS,
AND SUBSTRUCTURE REPAIRS.**

INDEX OF SHEETS

1

1A

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S-2 THRU S-26

S-27 THRU S-51

S-52 THRU S-55

SN

TITLE SHEET

INDEX OF SHEETS

TOTAL BILL OF MATERIAL

STRUCTURAL PLANS - BRIDGE NO. 31

STRUCTURAL PLANS - BRIDGE NO. 33

STANDARD REPAIR DETAILS

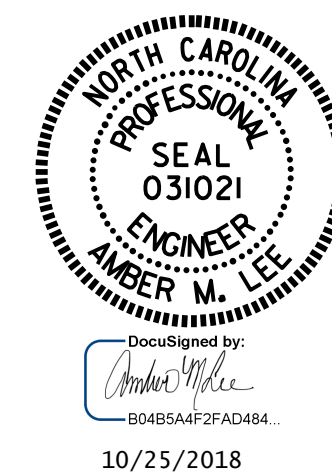
STANDARD NOTES

TOTAL BILL OF MATERIAL

BRIDGE	REMOVAL OF EXISTING ASPHALT PAVEMENT	BREAKING OF EXISTING ASPHALT PAVEMENT	INCIDENTAL MILLING	ASPHALT CONCRETE BASE COURSE TYPE B25.0C	ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B	ASPHALT BINDER FOR PLANT MIX	INDUCTIVE LOOP SAWCUT	LEAD IN CABLE	GROOVING BRIDGE FLOORS	POLLUTION CONTROL	CLASS II SURFACE PREPARATION	CLASS III SURFACE PREPARATION	LATEX MODIFIED CONCRETE OVERLAY	PLACING AND FINISHING LATEX MODIFIED CONCRETE OVERLAY	CONCRETE REPAIRS	SHOTCRETE REPAIRS
	SQ. YD.	SQ. YD.	SQ. YD.	TONS	TONS	TONS	LIN. FT.	LIN. FT.	SQ. FT.	LUMP SUM	SQ. YDS.	SQ. YDS.	CU. YDS.	SQ. YDS.	CU. FT.	CU. FT.
31	213.3	213.3	533.3	120.0	50.0	9.0	200.0	100.0	17452.0	LUMP SUM	20.3	2.5	79.3	2286.0	17.8	86.7
33	213.3	213.3	533.3	120.0	50.0	9.0			17452.0	LUMP SUM	2.5	2.5	79.3	2286.0	8.9	145.6
TOTAL	426.6	426.6	1066.6	240.0	100.0	18.0	200.0	100.0	34904.0	LUMP SUM	22.8	5.0	158.6	4572.0	26.7	232.3

BRIDGE	EPOXY RESIN INJECTION	VOLUMETRIC MIXER	CLEANING AND REPAINTING OF BRIDGE #	PAINTING CONTAINMENT FOR BRIDGE #	FOAM JOINT SEALS FOR PRESERVATION	POURABLE SILICONE JOINT SEALANT	CONCRETE FOR DECK REPAIR	ELASTOMERIC CONCRETE FOR PRESERVATION	BEAM REPAIR	EPOXY COATING	BRIDGE JOINT DEMOLITION	CONCRETE WORK FOR JOINT REPLACEMENT	SCARIFYING BRIDGE DECK	HYDRO-DEMOLITION OF BRIDGE DECK	TYPE I BRIDGE JACKING FOR BRIDGE #
	LIN. FT.	LUMP SUM	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	CU. FT.	CU. FT.	LBS.	SQ. FT.	SQ. FT.	SQ. FT.	SQ. YDS.	SQ. YDS.	EA.
31	85.0	LUMP SUM	LUMP SUM	LUMP SUM	92.4	92.4	75.9	23.2	601.3	1199.8	92.4	92.4	2286.0	2286.0	3
33	90.5	LUMP SUM	LUMP SUM	LUMP SUM	92.4	92.4	12.0	23.2	1274.6	1199.8	92.4	92.4	2286.0	2286.0	3
TOTAL	175.5	LUMP SUM	LUMP SUM	LUMP SUM	184.8	184.8	87.9	46.4	1875.9	2399.6	184.8	184.8	4572.0	4572.0	6

PROJECT NO. 15BPR.29
CHEROKEE COUNTY
BRIDGE NO. 31&33



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BILL OF MATERIAL

DRAWN BY : R.L.PUTEK DATE : 10/2018
CHECKED BY : A.M.LEE DATE : 10/2018

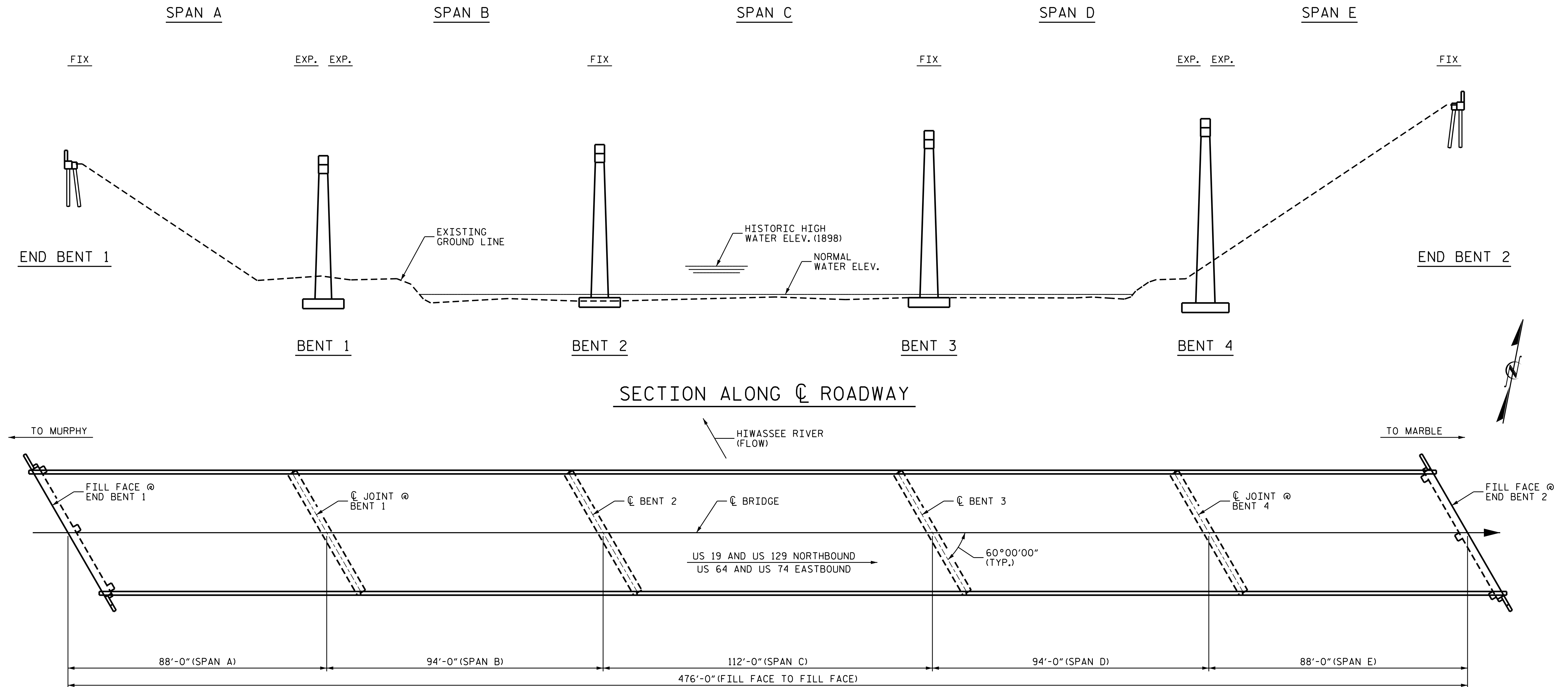
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SIGNATURES COMPLETED

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NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
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NOTES

GENERAL DRAWING INFORMATION IS TAKEN FROM THE ORIGINAL PLANS AND THE ROUTINE INSPECTION REPORT DATED 05/03/2018.

BRIDGE ORIENTATION CONFORMS TO EXISTING BRIDGE PLANS.



SECTION ALONG C ROADWAY

PLAN

SCOPE OF WORK

- CLEAN, REPAIR AND PAINT STEEL I-BEAMS.
- EPOXY INJECTION OF CONCRETE CRACKS.
- REMOVE UNSOUND CONCRETE AND PROPERLY PREPARE EXISTING END BENT AND BENT AREAS FOR SHOTCRETE AND CONCRETE REPAIR.
- PERFORM SHOTCRETE AND CONCRETE REPAIRS IN PREPARED AREAS.
- REMOVE DEBRIS FROM TOP OF EXISTING END BENTS, BENT CAPS, AND STRUTS, THEN APPLY EPOXY COATING.
- PARTIALLY REMOVE TOP OF BRIDGE DECK CONCRETE BY SCARIFICATION AND HYDRO-DEMOLITION METHODS.
- OVERLAY PREPARED TOP OF BRIDGE DECK WITH LATEX MODIFIED CONCRETE (LMC).
- GROOVE LATEX MODIFIED CONCRETE (LMC) BRIDGE DECK.
- REMOVE EXISTING RUBBER PLATE TYPE EXPANSION JOINT MATERIAL AND INSTALL FOAM JOINTS.
- INSTALL POURABLE SILICONE JOINT SEALANTS AT THE END BENTS.
- REMOVE EXISTING TRAFFIC CONTROL DETECTORS AND INSTALL TRAFFIC CONTROL LOOP DETECTORS.

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

RESIDENT ENGINEER _____ DATE _____



DocuSigned by:
A. Keith Paschal
10/22/2018

DocuSigned by:
Amber M. Lee
10/22/2018

PROJECT NO. 15BPR.29
CHEROKEE COUNTY
 BRIDGE NO. 31

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE ON
 US 19, US 129 NORTHBOUND,
 AND US 64, US 74 EASTBOUND
 OVER THE HIWASSEE RIVER

DRAWN BY : R.L.PUTEK DATE : 05/18
 CHECKED BY : A.M.LEE DATE : -

DOCUMENT NOT CONSIDERED
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 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
1			3			TOTAL SHEETS
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LATITUDE:35°04'52.39"; LONGITUDE:84°01'47.93"

LOCATION SKETCH

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

NOTES

- EXISTING DIMENSIONS AND BRIDGE CONDITION ARE FROM THE BEST INFORMATION AVAILABLE.
- THE CONTRACTOR SHALL FIELD VERIFY THE INFORMATION SHOWN ON THE PLANS AND NOTIFY THE ENGINEER IF ACTUAL DIMENSIONS AND CONDITIONS DIFFER.
- THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THAT SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO FOLLOW ALL STATE AND FEDERAL SAFETY REQUIREMENTS.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- FOR TRAFFIC CONTROL AND LIMITS OF PHASING OF CONSTRUCTION, SEE TRANSPORTATION MANAGEMENT PLANS.
- EXISTING JOINTS AND DECK DRAINS SHALL BE SEALED PRIOR TO BEGINNING SURFACE PREPARATION OF BRIDGE DECK.
- FOR SCARIFYING BRIDGE DECK, HYDRO-DEMOLITION OF BRIDGE DECK, CLASS II SURFACE PREPARATION AND CLASS III SURFACE PREPARATION, SEE LMC OVERLAY SURFACE PREPARATION SPECIAL PROVISION.
- THE CONTRACTOR SHALL PROVIDE A METHOD OF HANDLING UNEXPECTED BLOW THROUGH OF THE DECK DURING HYDRO-DEMOLITION OPERATIONS.
- FOR LATEX MODIFIED CONCRETE, SEE SPECIAL PROVISIONS.
- FOR BRIDGE JOINT DEMOLITION, SEE SPECIAL PROVISIONS.
- FOR CONCRETE WORK FOR JOINT REPLACEMENT, SEE SPECIAL PROVISIONS.
- FOR CONCRETE FOR DECK REPAIR, SEE SPECIAL PROVISIONS.
- FOR FOAM JOINT SEAL, SEE SPECIAL PROVISIONS.
- FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.
- FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.
- FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.
- FOR POLLUTION CONTROL AND PAINTING OF STEEL STRUCTURE, SEE PAINTING EXISTING STRUCTURE SPECIAL PROVISION.
- FOR EPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.
- FOR POURABLE SILICONE JOINT SEALANT, SEE SPECIAL PROVISIONS.
- FOR BRIDGE JACKING, SEE SPECIAL PROVISIONS.
- FOR BEAM REPAIR, SEE SPECIAL PROVISIONS.
- WORK ON BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL INTO WATER. THE CONTRACTOR SHALL SUBMIT PLANS FOR CONSTRUCTION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.
- LONGITUDINAL CONSTRUCTION JOINTS SHALL BE LOCATED ALONG THE CENTERLINE OR EDGE OF TRAVEL LANES.
- DURING CONSTRUCTION, BERMS OR APPROPRIATE MEASURES SHALL BE USED TO ENSURE HYDRO-DEMOLITION WATER DOES NOT MIGRATE INTO ACTIVE TRAVEL LANES.
- FOR VOLUMETRIC MIXER, SEE SPECIAL PROVISIONS.

PROJ. NO. 15BPR.29
CHEROKEE COUNTY
 BRIDGE NO. 31

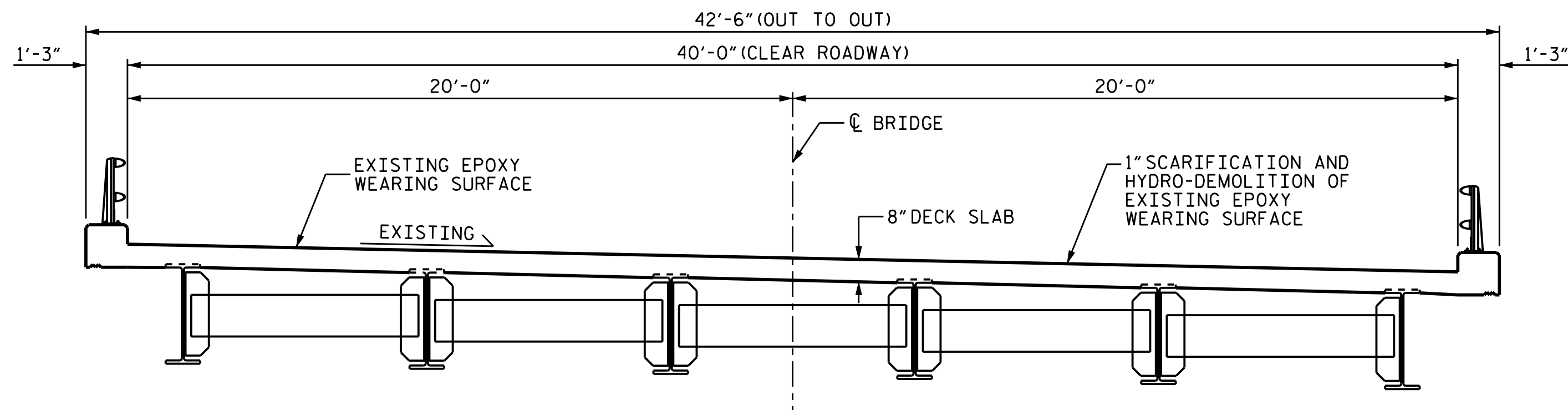
SHEET 2 OF 2



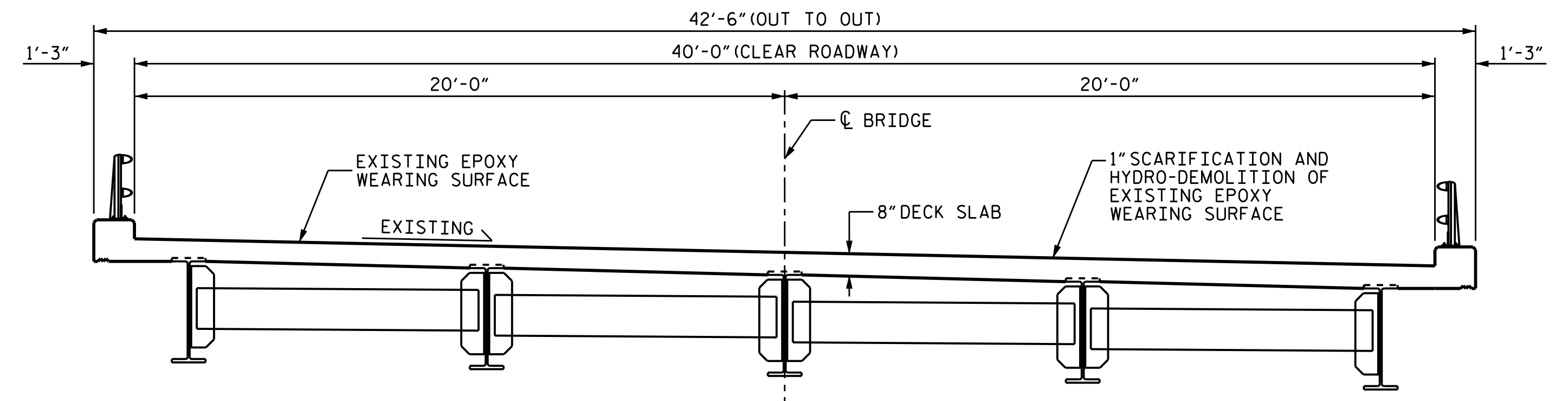
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 FOR BRIDGE ON
 US 19, US 129 NORTHBOUND,
 AND US 64, US 74 EASTBOUND
 OVER THE HIWASSEE RIVER

DRAWN BY : R.L.PUTEK DATE : 07/18
 CHECKED BY : A.M.LEE DATE : 08/18

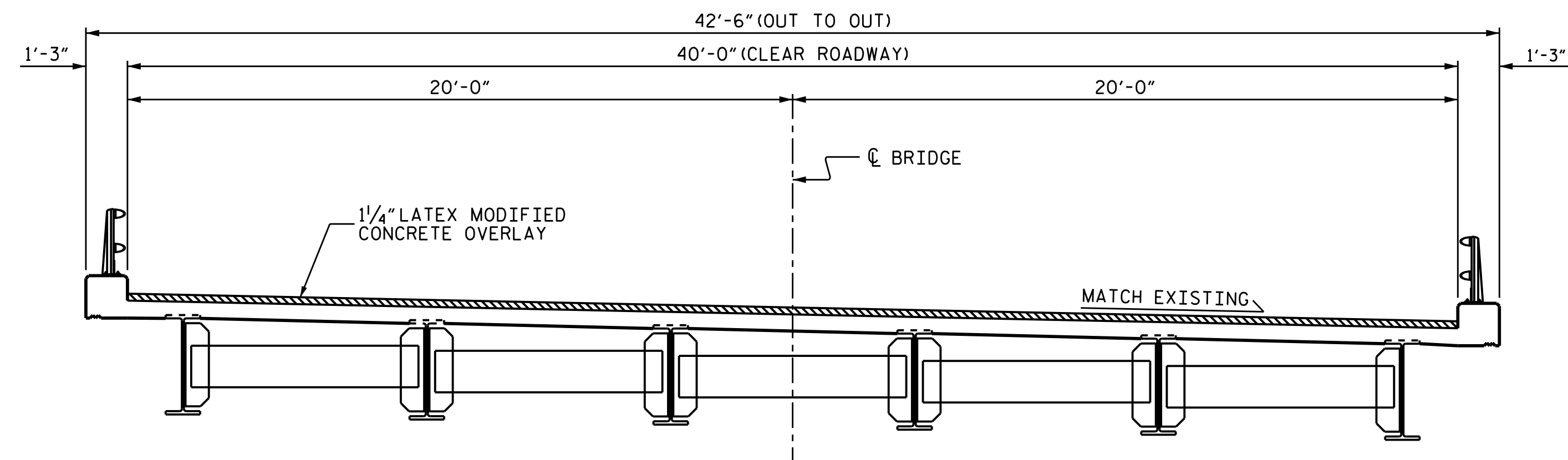
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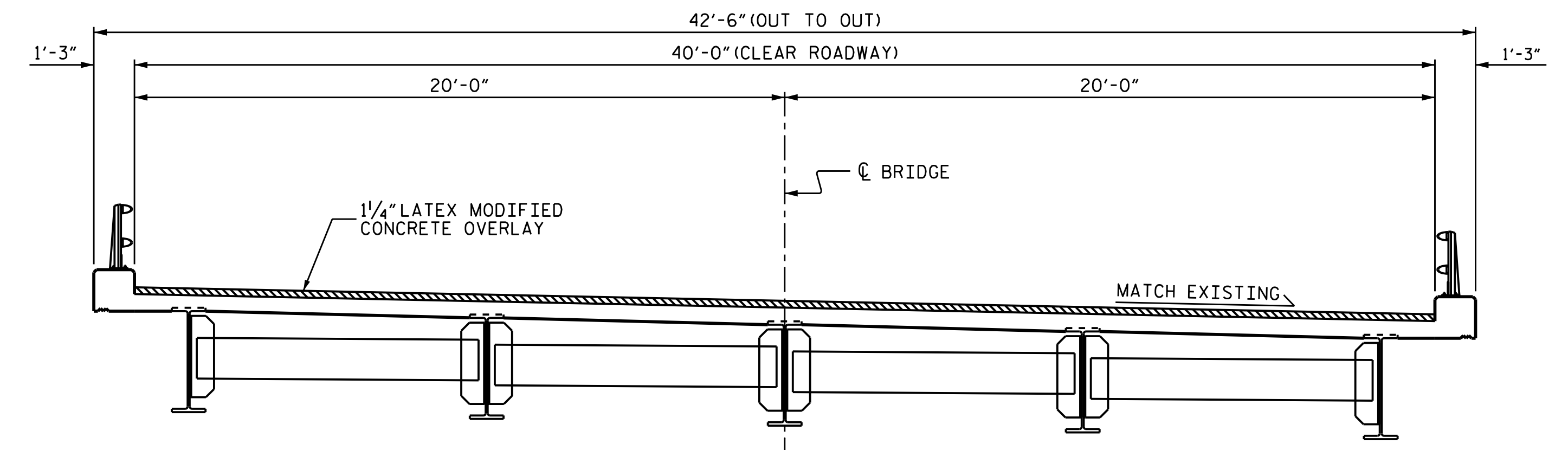
TYPICAL SECTION - SPANS A & E
(EXISTING EPOXY WEARING SURFACE)



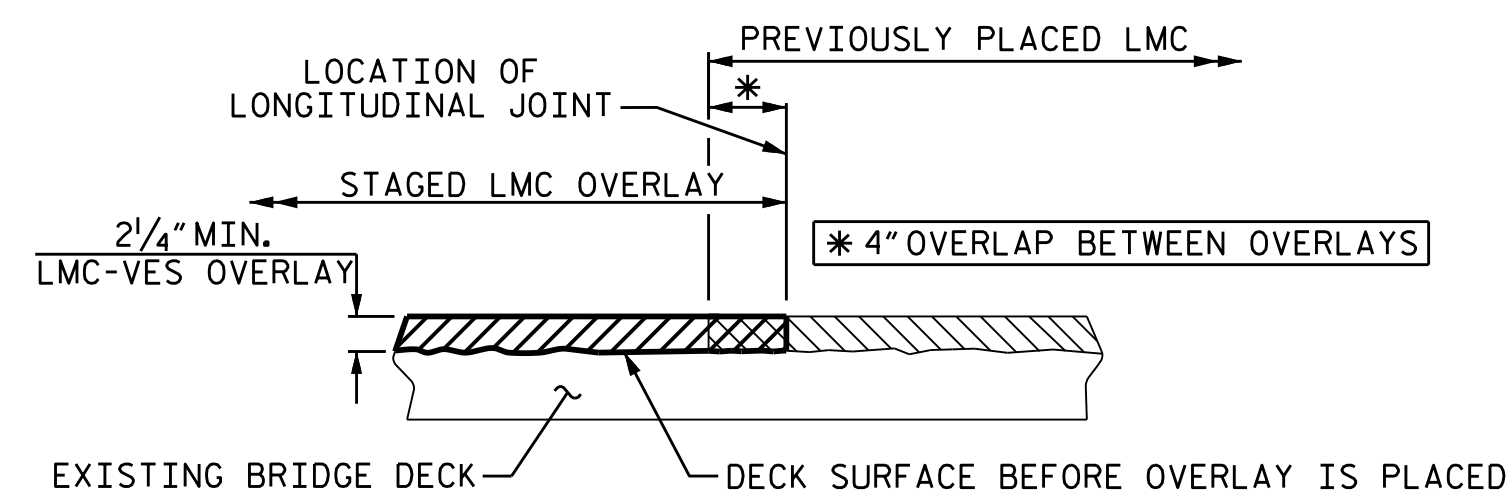
TYPICAL SECTION - SPANS B, C, & D
(EXISTING EPOXY WEARING SURFACE)



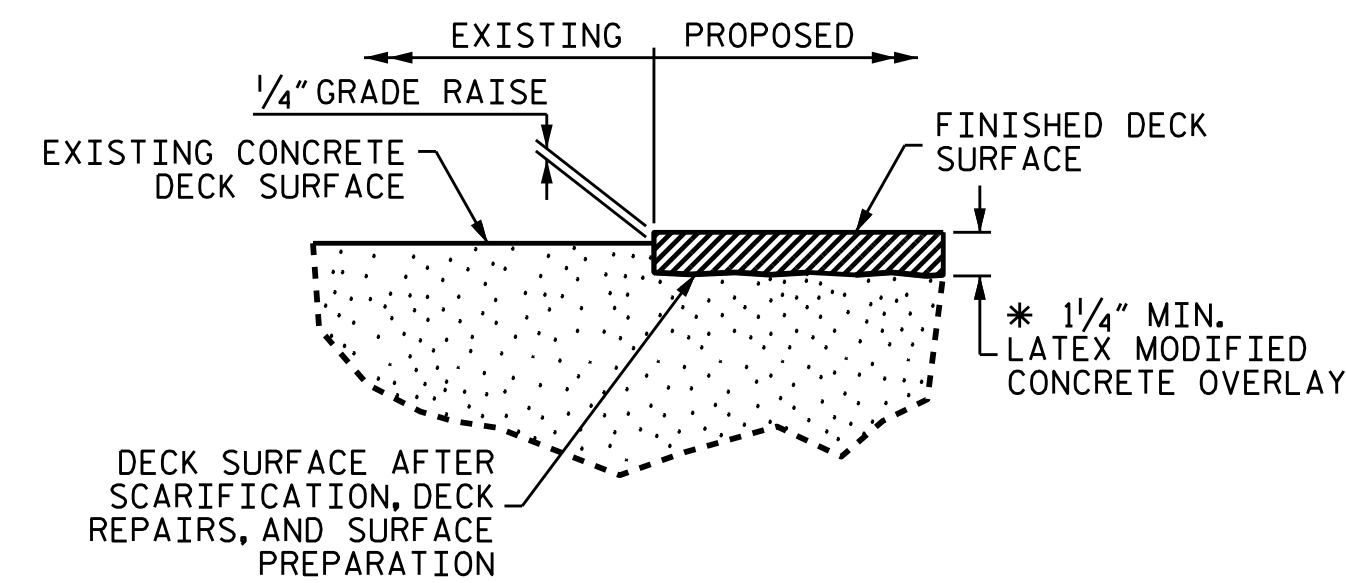
TYPICAL SECTION - SPANS A & E
(1/4" LATEX MODIFIED CONCRETE OVERLAY)



TYPICAL SECTION - SPANS B, C, & D
(1/4" LATEX MODIFIED CONCRETE OVERLAY)



SECTION THRU DECK
STAGED LMC OVERLAY JOINT
(AS NEEDED)



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

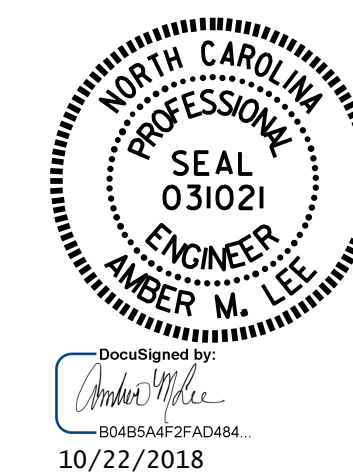
NOTES:

WHEN PREPARING THE SURFACE FOR LMC OVERLAY ADJACENT TO THE PREVIOUSLY PLACED LMC STAGE, THE PREVIOUSLY PLACED LMC SHALL BE SAW-CUT TO THE FULL DEPTH OF THE LMC AT THE CENTERLINE OF THE BRIDGE AND ALL LMC IN THE 4" OVERLAP SHALL BE REMOVED WITH HAND TOOLS PRIOR TO PLACEMENT OF LMC IN THE SECOND STAGE.

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

PROJECT NO. 15BPR.29
CHEROKEE COUNTY
BRIDGE NO. 31

SHEET 1 OF 2



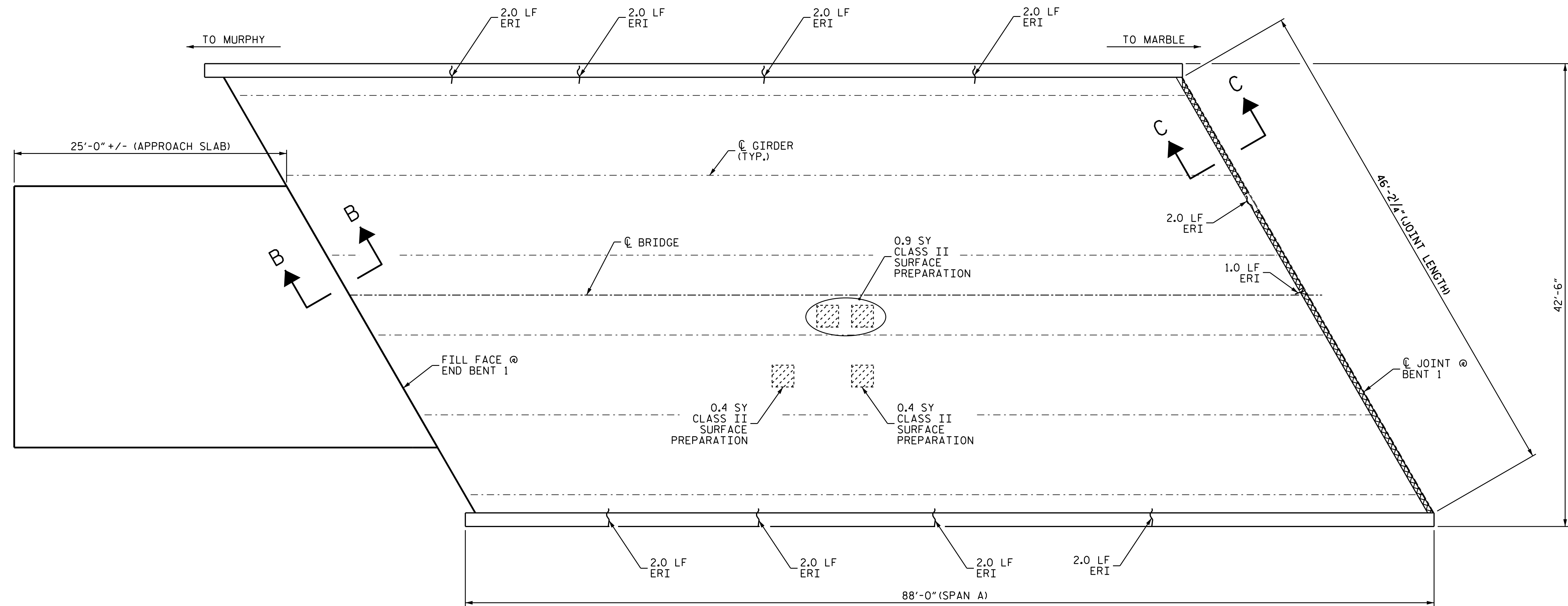
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION

DRAWN BY : R.L. PUTEK DATE : 08/18
CHECKED BY : A.M. LEE, PE DATE : 08/18

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REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			55



PLAN

AS-BUILT REPAIR QUANTITY TABLE

TOP OF DECK REPAIRS			APPROACH SLAB REPAIRS			UNDERSIDE OF DECK REPAIRS				
	ESTIMATE	ACTUAL		ESTIMATE	ACTUAL	SHOTCRETE REPAIRS		ESTIMATE		ACTUAL
						AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.	
SCARIFYING BRIDGE DECK	391 SQ. YDS.		SCARIFYING BRIDGE DECK	85 SQ. YDS.		UNDERSIDE OF DECK	0.0	0.0		
CLASS II SURFACE PREPARATION	1.7 SQ. YDS.		HYDRO-DEMOLITION OF BRIDGE DECK	85 SQ. YDS.		UNDERSIDE OF OVERHANG	0.0	0.0		
CLASS III SURFACE PREPARATION	0.5 SQ. YDS. *		LATEX MODIFIED CONCRETE OVERLAY	3.0 CU. YDS.		INTERIOR DIAPHRAGMS	0.0	0.0		
CONCRETE FOR DECK REPAIR	8.1 CU. FT.		PLACING AND FINISHING LMC OVERLAY	85 SQ. YDS.		OTHER REPAIRS		ESTIMATE	ACTUAL	
HYDRO-DEMOLITION OF BRIDGE DECK	391 SQ. YDS.		GROOVING BRIDGE FLOORS	652 SQ. FT.		OVERHANG EPOXY RESIN INJECTION	16.0 LIN. FT.			
LATEX MODIFIED CONCRETE OVERLAY	13.5 CU. YDS.					DIAPHRAGM EPOXY RESIN INJECTION	3.0 LIN. FT.			
PLACING AND FINISHING LMC OVERLAY	391 SQ. YDS.									
GROOVING BRIDGE FLOORS	3204 SQ. FT.									
BRIDGE JOINT DEMOLITION	23.1 SQ. FT.									
CONCRETE WORK FOR JOINT REPLACEMENT	23.1 SQ. FT.									
ELASTOMERIC CONCRETE	5.8 CU. FT.									

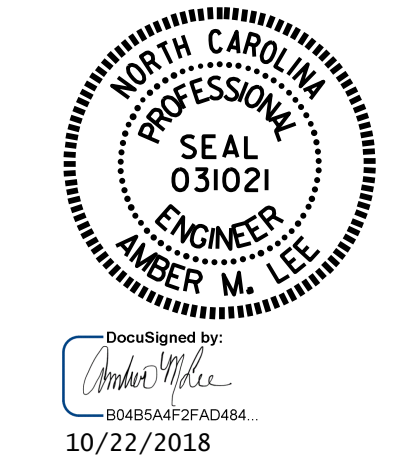
- APPROX. CLASS II SURFACE PREPARATION
- UNDERSIDE REPAIR
- DIAPHRAGM REPAIR
- EPOXY RESIN INJECTION (ERI)
- BRIDGE JOINT DEMOLITION

PROJECT NO. 15BPR.29
CHEROKEE COUNTY
 BRIDGE NO. 31

SHEET 1 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

PLAN OF SPANS
 SPAN A



NOTES

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

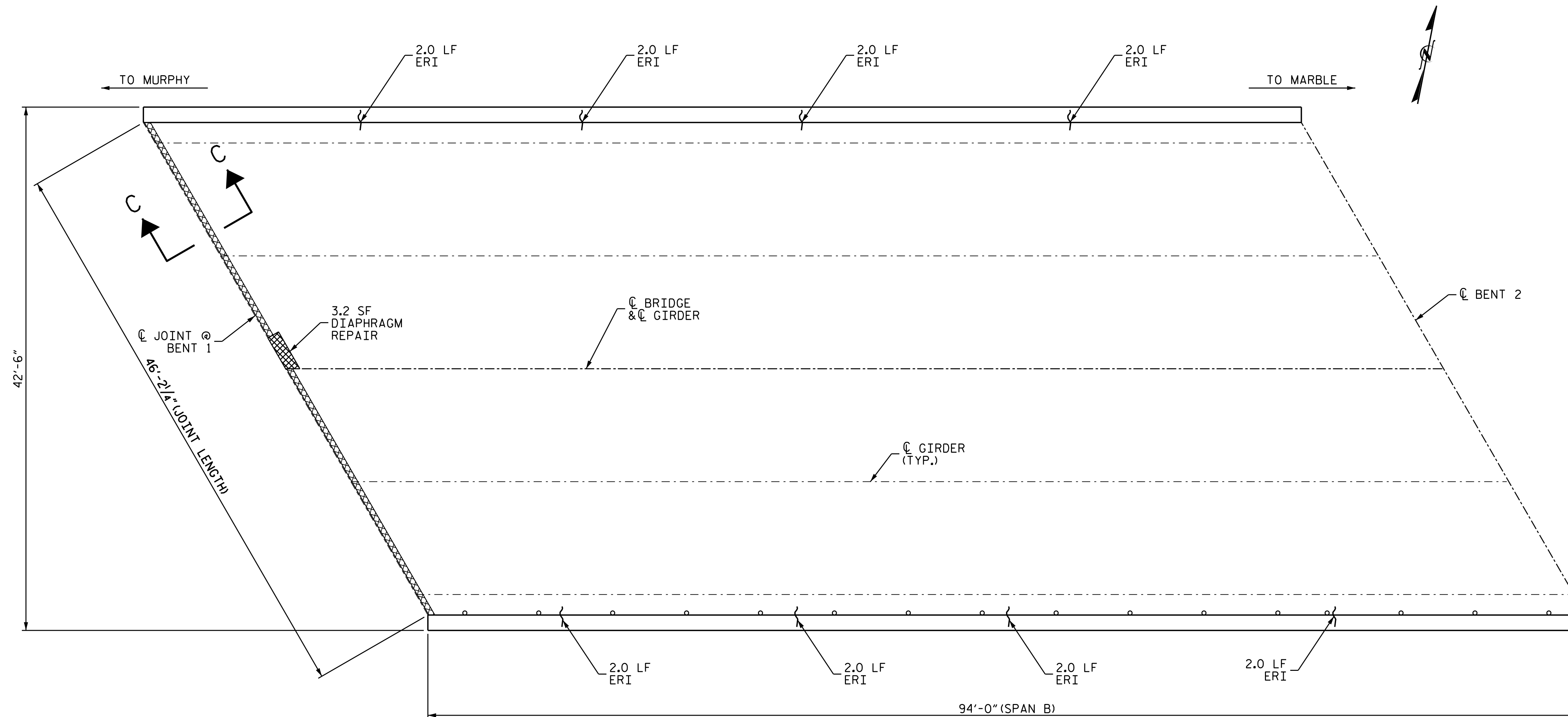
FOR SECTIONS B-B AND C-C, SEE "JOINT DETAILS" SHEETS.

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

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

DRAWN BY : R.L. PUTEK DATE : 08/18
 CHECKED BY : F. LEA, PE DATE : 08/18

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			55



PLAN

NOTES

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

FOR SECTION C-C, SEE "JOINT DETAILS" SHEETS.

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

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

- APPROX. CLASS II SURFACE PREPARATION
- UNDERSIDE REPAIR
- DIAPHRAGM REPAIR
- EPOXY RESIN INJECTION (ERI)
- BRIDGE JOINT DEMOLITION

AS-BUILT REPAIR QUANTITY TABLE							
TOP OF DECK REPAIRS			UNDERSIDE OF DECK REPAIRS				
	ESTIMATE	ACTUAL	SHOTCRETE REPAIRS		ESTIMATE	ACTUAL	
			AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.	
SCARIFYING BRIDGE DECK	418 SQ. YDS.						
CLASS II SURFACE PREPARATION	0.0 SQ. YDS.		UNDERSIDE OF DECK	0.0	0.0		
CLASS III SURFACE PREPARATION	0.5 SQ. YDS. *		UNDERSIDE OF OVERHANG	0.0	0.0		
CONCRETE FOR DECK REPAIRS	3.0 CU. FT. *		INTERIOR DIAPHRAGMS	3.2	1.1		
HYDRO-DEMOLITION OF BRIDGE DECK	418 SQ. YDS.		OTHER REPAIRS		ESTIMATE	ACTUAL	
LATEX MODIFIED CONCRETE OVERLAY	14.5 CU. YDS.		OVERHANG EPOXY RESIN INJECTION	16.0 LIN. FT.			
PLACING AND FINISHING LMC OVERLAY	418 SQ. YDS.		DIAPHRAGM EPOXY RESIN INJECTION	0.0 LIN. FT.			
GROOVING BRIDGE FLOORS	3450 SQ. FT.						
BRIDGE JOINT DEMOLITION	23.1 SQ. FT.						
CONCRETE WORK FOR JOINT REPLACEMENT	23.1 SQ. FT.						
ELASTOMERIC CONCRETE	5.8 CU. FT.						

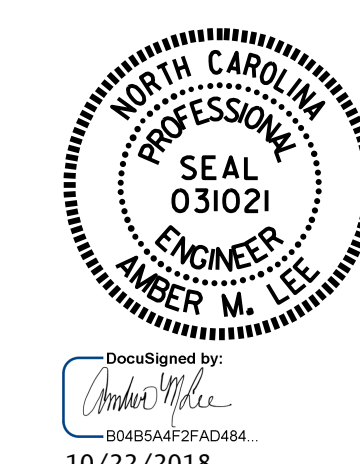
TOP OF DECK REPAIR QUANTITIES REPRESENT ESTIMATED VALUES OF CLASS II SURFACE PREPARATION AND CONCRETE DECK REPAIR FOR LMC OVERLAY AFTER REMOVAL OF UNSOUND CONCRETE. (MIN. 2" CLEAR TO SAWCUT). FOR LMC OVERLAY SURFACE PREPARATION, SEE SPECIAL PROVISIONS.

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

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

DRAWN BY : R.L. PUTEK DATE : 08/18
 CHECKED BY : F. LEA, PE DATE : 08/18

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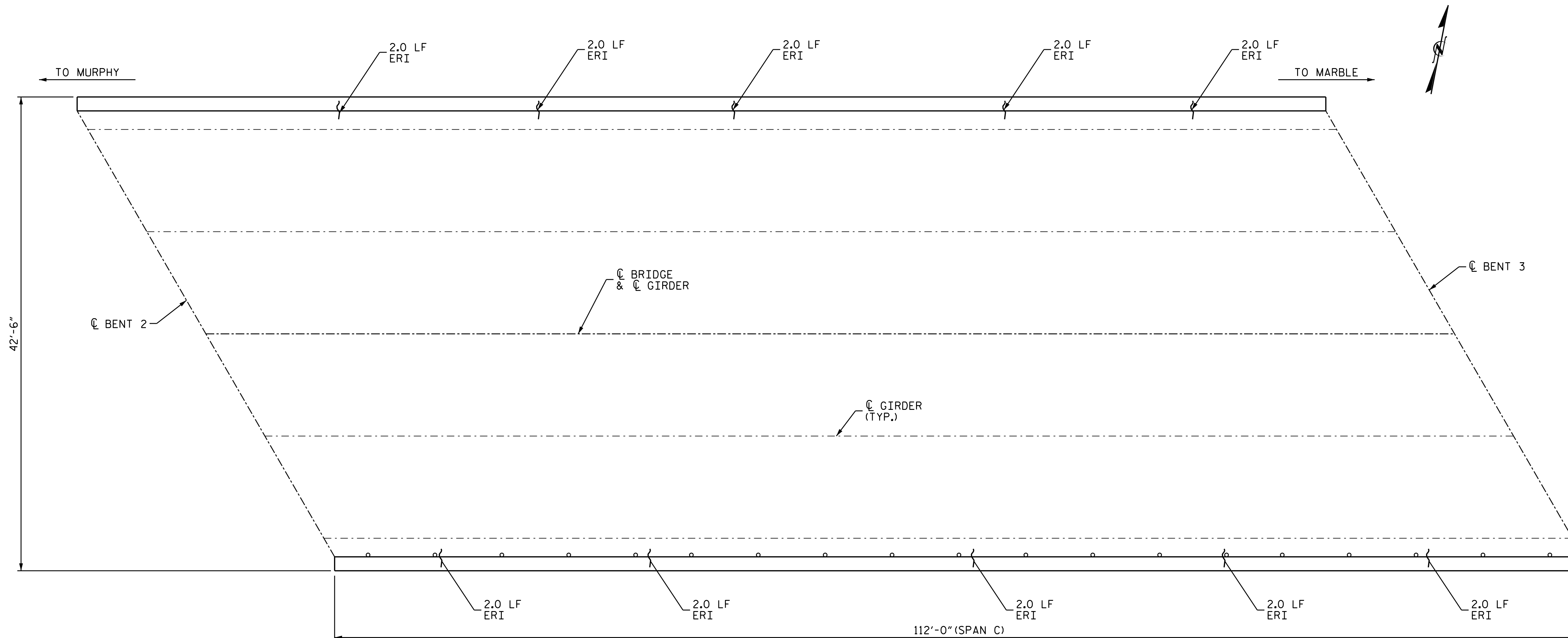


PROJECT NO. 15BPR.29
 CHEROKEE COUNTY
 BRIDGE NO. 31

SHEET 2 OF 5

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			55



PLAN

NOTES

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

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

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

- APPROX. CLASS II SURFACE PREPARATION
- UNDERSIDE REPAIR
- DIAPHRAGM REPAIR
- EPOXY RESIN INJECTION (ERI)

AS-BUILT REPAIR QUANTITY TABLE

TOP OF DECK REPAIRS			UNDERSIDE OF DECK REPAIRS			
	ESTIMATE	ACTUAL	SHOTCRETE REPAIRS		ESTIMATE	ACTUAL
			AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
SCARIFYING BRIDGE DECK	498 SQ. YDS.		UNDERSIDE OF DECK			
CLASS II SURFACE PREPARATION	0.0 SQ. YDS.		0.0	0.0		
CLASS III SURFACE PREPARATION	0.5 SQ. YDS. *		UNDERSIDE OF OVERHANG			
CONCRETE FOR DECK REPAIRS	3.0 CU. FT. *		0.0	0.0		
HYDRO-DEMOLITION OF BRIDGE DECK	498 SQ. YDS.		INTERIOR DIAPHRAGMS			
LATEX MODIFIED CONCRETE OVERLAY	17.3 CU. YDS.		OTHER REPAIRS		ESTIMATE	ACTUAL
PLACING AND FINISHING LMC OVERLAY	498 SQ. YDS.		OVERHANG EPOXY RESIN INJECTION		20.0 LIN. FT.	
GROOVING BRIDGE FLOORS	4144 SQ. FT.		DIAPHRAGM EPOXY RESIN INJECTION		0.0 LIN. FT.	

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

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

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

DRAWN BY : R.L. PUTEK DATE : 08/18
 CHECKED BY : F. LEA, PE DATE : 08/18

PROJECT NO. 15BPR.29
 CHEROKEE COUNTY
 BRIDGE NO. 31

SHEET 3 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
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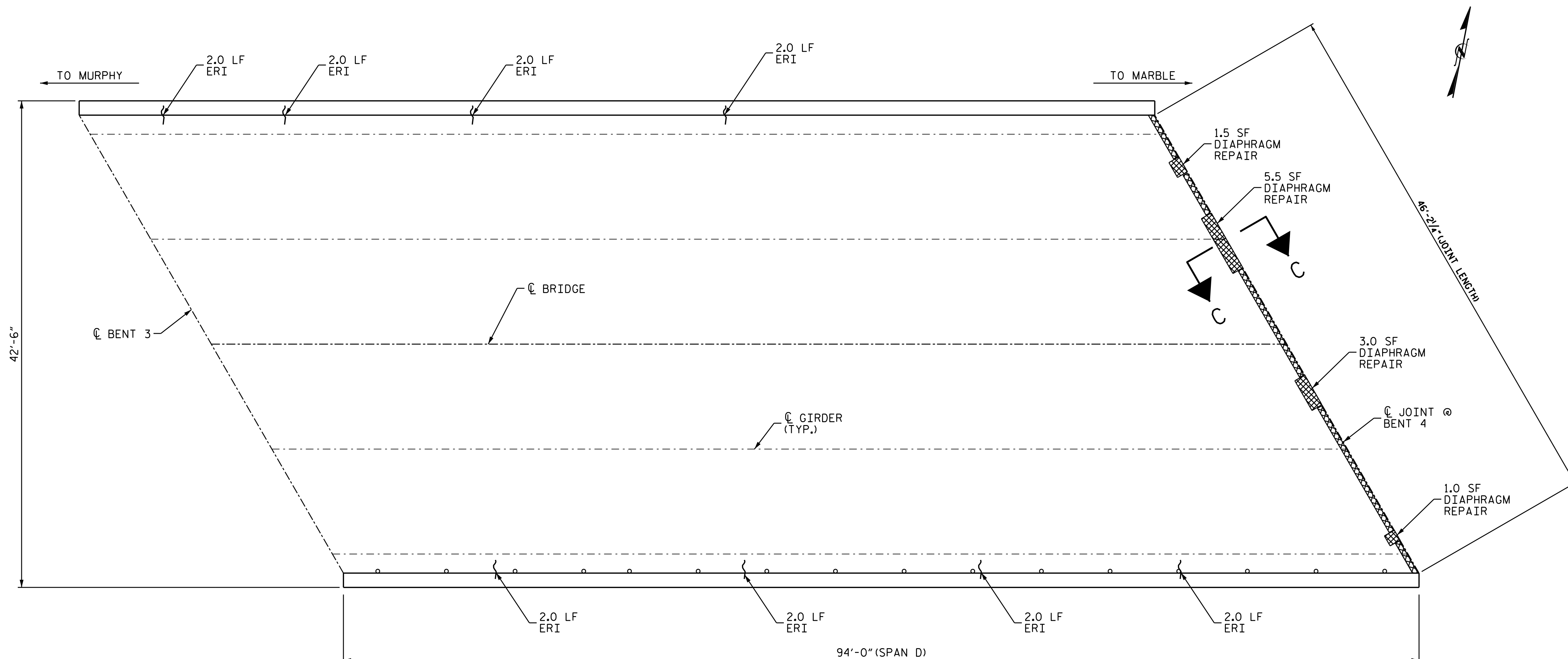
PLAN OF SPANS
 SPAN C



Discussed by
 Amber M. Lee
 BOARDS# 031021
 10/22/2018

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NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			55



PLAN

NOTES

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

FOR SECTIONS B-B AND C-C, SEE "JOINT DETAILS" SHEETS.

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

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

- APPROX. CLASS II SURFACE PREPARATION
- UNDERSIDE REPAIR
- DIAPHRAGM REPAIR
- EPOXY RESIN INJECTION (ERI)
- BRIDGE JOINT DEMOLITION

AS-BUILT REPAIR QUANTITY TABLE

TOP OF DECK REPAIRS			UNDERSIDE OF DECK REPAIRS			
	ESTIMATE	ACTUAL	SHOTCRETE REPAIRS		ESTIMATE	ACTUAL
			AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
SCARIFYING BRIDGE DECK	418 SQ. YDS.					
CLASS II SURFACE PREPARATION	0.0 SQ. YDS.		UNDERSIDE OF DECK	0.0	0.0	
CLASS III SURFACE PREPARATION	0.5 SQ. YDS. *		UNDERSIDE OF OVERHANG	0.0	0.0	
CONCRETE FOR DECK REPAIRS	3.0 CU. FT. *		INTERIOR DIAPHRAGMS	11.0	3.7	
HYDRO-DEMOLITION OF BRIDGE DECK	418 SQ. YDS.		OTHER REPAIRS		ESTIMATE	ACTUAL
LATEX MODIFIED CONCRETE OVERLAY	14.5 CU. YDS.		OVERHANG EPOXY RESIN INJECTION	16.0 LIN. FT.		
PLACING AND FINISHING LMC OVERLAY	418 SQ. YDS.		DIAPHRAGM EPOXY RESIN INJECTION	0.0 LIN. FT.		
GROOVING BRIDGE FLOORS	3450 SQ. FT.					
BRIDGE JOINT DEMOLITION	23.1 SQ. FT.					
CONCRETE WORK FOR JOINT REPLACEMENT	23.1 SQ. FT.					
ELASTOMERIC CONCRETE	5.8 CU. FT.					

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

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

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

DRAWN BY : R.L. PUTEK DATE : 08/18
 CHECKED BY : F. LEA, PE DATE : 08/18

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PROJECT NO. 15BPR.29
 CHEROKEE COUNTY
 BRIDGE NO. 31

SHEET 4 OF 5



10/22/2018

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 PLAN OF SPANS
 SPAN D

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			55

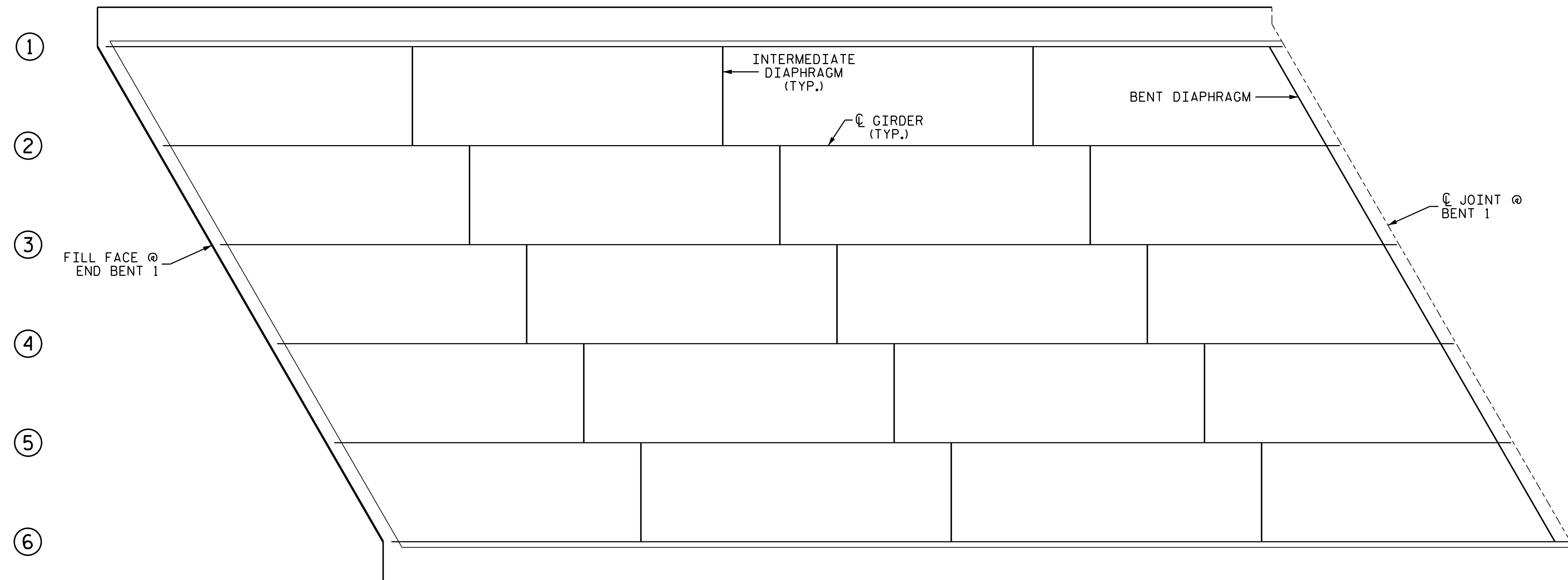
NOTES

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

FOR BRIDGE JACKING DETAILS, SEE "JACKING DETAILS" SHEET.

THE LOCATIONS AND DIMENSIONS OF THE AREAS FOR REPAIR ARE BASED ON THE BEST INFORMATION AVAILABLE. THE CONTRACTOR, IN CONJUNCTION WITH THE ENGINEER, SHALL VERIFY THE LOCATION AND EXTENT OF REPAIR AREAS PRIOR TO STEEL FABRICATION.

- ① BEAM NUMBER
- ⓑ BEAM END REPAIR AND BRIDGE JACKING
- Ⓟ PLATING REPAIR
- Ⓢ STIFFENER REPAIR
- ⓓ DIAPHRAGM REPAIR
- ⓗ HARDWARE REPAIR



BEAM REPAIR LOCATIONS

ANTICIPATED BEAM REPAIR LOCATIONS					
BEAM	LOCATION	DIM "A"	DIM "B"	DIM "C"	DIM "D"

BEAM REPAIR QUANTITY TABLE					
BEAM END REPAIR		BRIDGE JACKING		STIFFENER REPAIR	
LBS.		EA.		LBS.	
ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL
0		0		0	
DIAPHRAGM REPAIR		HARDWARE REPAIR			
LBS.		LBS.			
ESTIMATE	ACTUAL	ESTIMATE	ACTUAL		
0		0			

PROJECT NO. 15BPR.29
CHEROKEE COUNTY
 BRIDGE NO. 31

SHEET 1 OF 5



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 BO4848727AD484
 10/22/2018

STATE OF NORTH CAROLINA
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 RALEIGH
**BEAM REPAIR
 LOCATIONS
 SPAN A**

DRAWN BY : R.L.PUTEK DATE : 07/18
 CHECKED BY : F. LEA, PE DATE : 08/18

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2			4			55

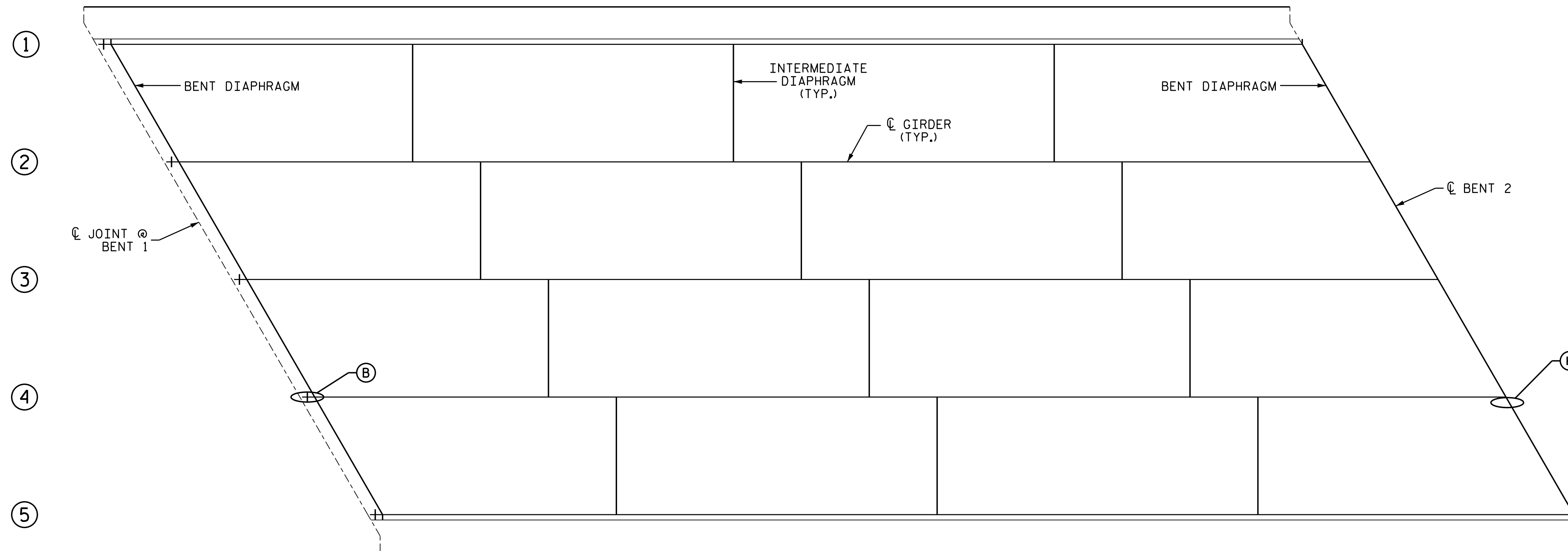
NOTES

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

FOR BRIDGE JACKING DETAILS, SEE "JACKING DETAILS" SHEET.

THE LOCATIONS AND DIMENSIONS OF THE AREAS FOR REPAIR ARE BASED ON THE BEST INFORMATION AVAILABLE. THE CONTRACTOR, IN CONJUNCTION WITH THE ENGINEER, SHALL VERIFY THE LOCATION AND EXTENT OF REPAIR AREAS PRIOR TO STEEL FABRICATION.

- ① BEAM NUMBER
- Ⓑ BEAM END REPAIR AND BRIDGE JACKING
- Ⓟ PLATING REPAIR
- Ⓢ STIFFENER REPAIR
- ⓓ DIAPHRAGM REPAIR
- ⓗ HARDWARE REPAIR



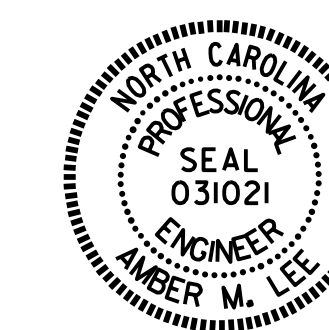
BEAM REPAIR LOCATIONS

ANTICIPATED BEAM REPAIR LOCATIONS					
BEAM	LOCATION	DIM "A"	DIM "B"	DIM "C"	DIM "D"
4	BENT 1	6"	19		

BEAM REPAIR QUANTITY TABLE					
BEAM END REPAIR		BRIDGE JACKING		STIFFENER REPAIR	
LBS.		EA.		LBS.	
ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL
151.0		1		0	
DIAPHRAGM REPAIR		HARDWARE REPAIR			
LBS.		LBS.			
ESTIMATE	ACTUAL	ESTIMATE	ACTUAL		
0		0.9			

PROJECT NO. 15BPR.29
CHEROKEE COUNTY
 BRIDGE NO. 31

SHEET 2 OF 5



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 BOARD # 27AD484
 10/22/2018

STATE OF NORTH CAROLINA
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 RALEIGH
**BEAM REPAIR
 LOCATIONS
 SPAN B**

DRAWN BY : R.L. PUTEK DATE : 07/18
 CHECKED BY : F. LEA, PE DATE : 08/18

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1			3			TOTAL SHEETS
2			4			55

NOTES

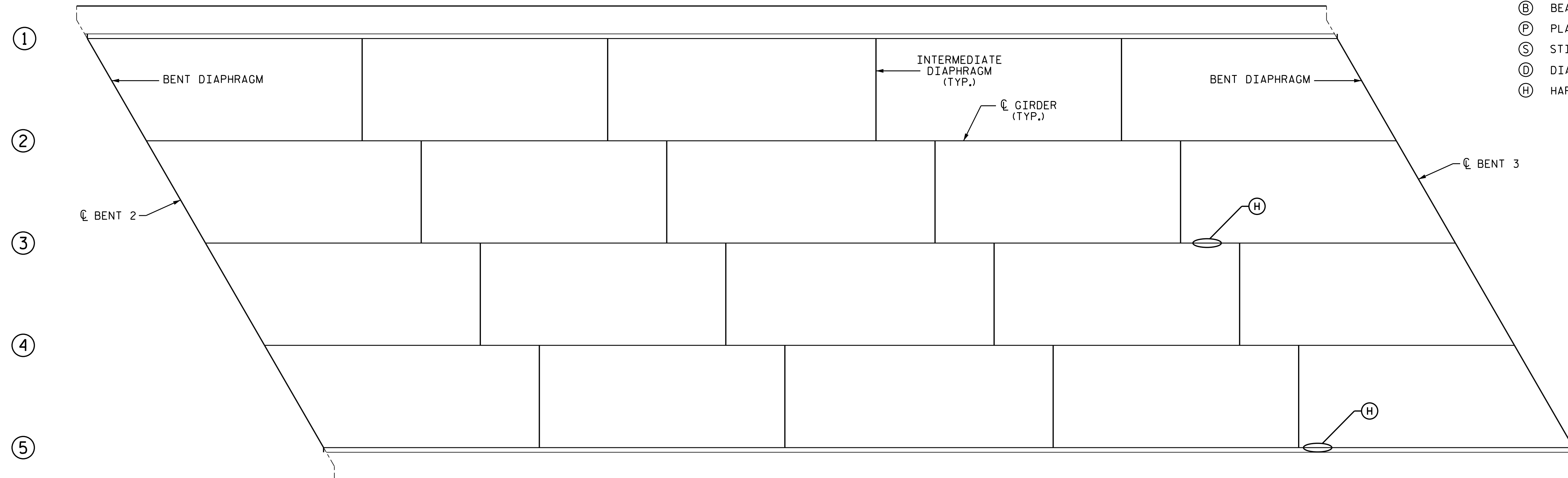
FOR BEAM REPAIR DETAILS, SEE "BEAM SECTION REPAIR DETAILS" SHEET.

FOR BRIDGE JACKING DETAILS, SEE "JACKING DETAILS" SHEET.

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- ① BEAM NUMBER
- ⓑ BEAM END REPAIR AND BRIDGE JACKING
- ⓐ PLATING REPAIR
- Ⓢ STIFFENER REPAIR
- ⓓ DIAPHRAGM REPAIR
- ⓗ HARDWARE REPAIR



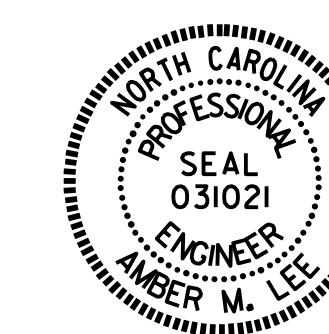
BEAM REPAIR LOCATIONS

ANTICIPATED BEAM REPAIR LOCATIONS					
BEAM	LOCATION	DIM "A"	DIM "B"	DIM "C"	DIM "D"

BEAM REPAIR QUANTITY TABLE					
BEAM END REPAIR		BRIDGE JACKING		STIFFENER REPAIR	
LBS.		EA.		LBS.	
ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL
0		0		0	
DIAPHRAGM REPAIR		HARDWARE REPAIR			
LBS.		LBS.			
ESTIMATE	ACTUAL	ESTIMATE	ACTUAL		
0		2.2			

PROJECT NO. 15BPR.29
CHEROKEE COUNTY
 BRIDGE NO. 31

SHEET 3 OF 5



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

DRAWN BY : R.L. PUTEK DATE : 07/18
 CHECKED BY : F. LEA, PE DATE : 08/18

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1			3			TOTAL SHEETS
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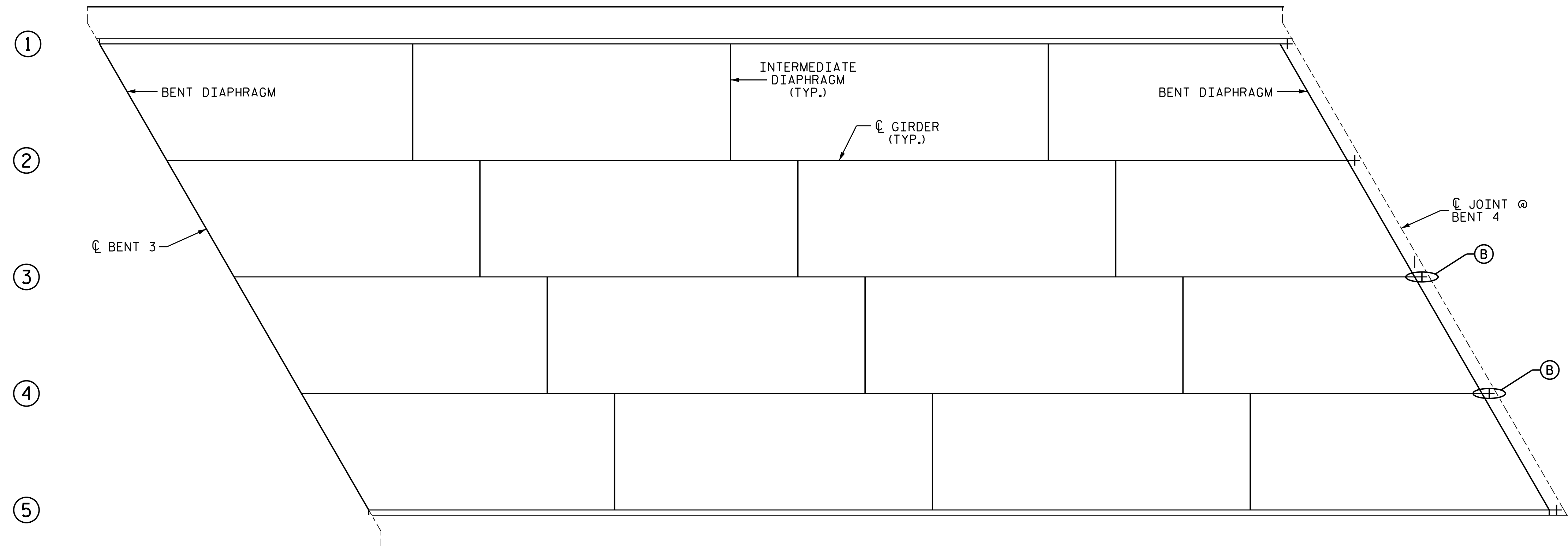
NOTES

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

FOR BRIDGE JACKING DETAILS, SEE "JACKING DETAILS" SHEET.

THE LOCATIONS AND DIMENSIONS OF THE AREAS FOR REPAIR ARE BASED ON THE BEST INFORMATION AVAILABLE. THE CONTRACTOR, IN CONJUNCTION WITH THE ENGINEER, SHALL VERIFY THE LOCATION AND EXTENT OF REPAIR AREAS PRIOR TO STEEL FABRICATION.

- ① BEAM NUMBER
- ⓑ BEAM END REPAIR AND BRIDGE JACKING
- Ⓟ PLATING REPAIR
- Ⓢ STIFFENER REPAIR
- ⓓ DIAPHRAGM REPAIR
- ⓗ HARDWARE REPAIR



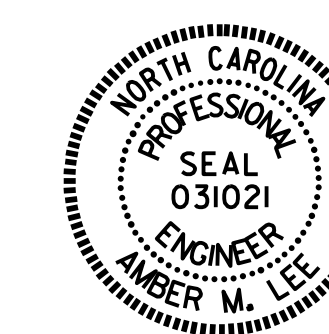
BEAM REPAIR LOCATIONS

ANTICIPATED BEAM REPAIR LOCATIONS					
BEAM	LOCATION	DIM "A"	DIM "B"	DIM "C"	DIM "D"
3	BENT 4	7"	1'-10"	1"	11"
4	BENT 4	5"	1'-10"	1"	1'-11"

BEAM REPAIR QUANTITY TABLE					
BEAM END REPAIR		BRIDGE JACKING		STIFFENER REPAIR	
LBS.		EA.		LBS.	
ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL
417.1		2		0	
DIAPHRAGM REPAIR		HARDWARE REPAIR			
LBS.		LBS.			
ESTIMATE	ACTUAL	ESTIMATE	ACTUAL		
0		0			

PROJECT NO. 15BPR.29
CHEROKEE COUNTY
 BRIDGE NO. 31

SHEET 4 OF 5



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 BOARD # 031021
 10/22/2018

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**BEAM REPAIR
 LOCATIONS
 SPAN D**

DRAWN BY : R.L.PUTEK DATE : 07/18
 CHECKED BY : F. LEA, PE DATE : 08/18

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1			3			TOTAL SHEETS
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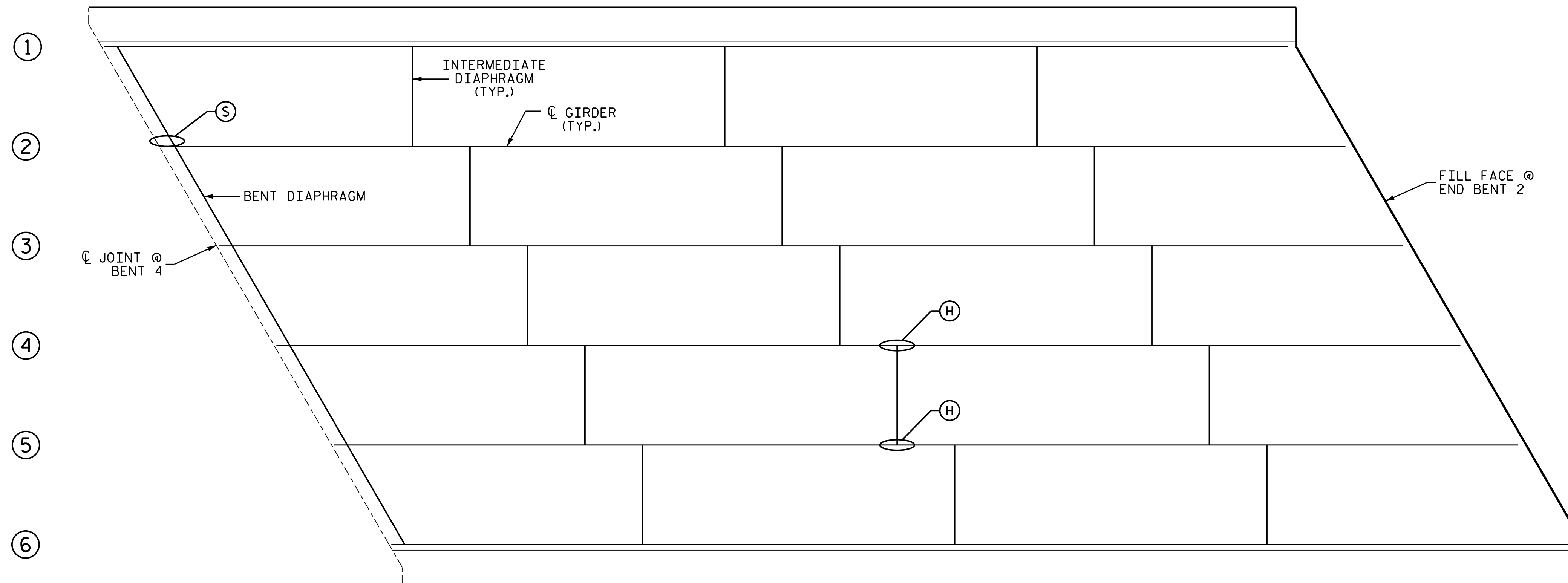
NOTES

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

FOR BRIDGE JACKING DETAILS, SEE "JACKING DETAILS" SHEET.

THE LOCATIONS AND DIMENSIONS OF THE AREAS FOR REPAIR ARE BASED ON THE BEST INFORMATION AVAILABLE. THE CONTRACTOR, IN CONJUNCTION WITH THE ENGINEER, SHALL VERIFY THE LOCATION AND EXTENT OF REPAIR AREAS PRIOR TO STEEL FABRICATION.

- ① BEAM NUMBER
- Ⓑ BEAM END REPAIR AND BRIDGE JACKING
- Ⓟ PLATING REPAIR
- Ⓢ STIFFENER REPAIR
- Ⓓ DIAPHRAGM REPAIR
- Ⓗ HARDWARE REPAIR



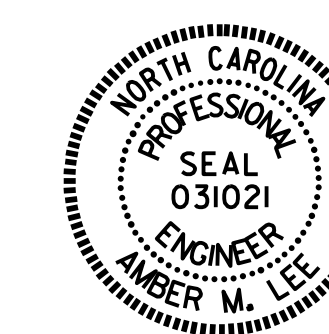
BEAM REPAIR LOCATIONS

ANTICIPATED BEAM REPAIR LOCATIONS					
BEAM	LOCATION	DIM "A"	DIM "B"	DIM "C"	DIM "D"
2	BENT 4	1'-5"			

BEAM REPAIR QUANTITY TABLE					
BEAM END REPAIR		BRIDGE JACKING		STIFFENER REPAIR	
LBS.		EA.		LBS.	
ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL
0		0		28.9	
DIAPHRAGM REPAIR		HARDWARE REPAIR			
LBS.		LBS.			
ESTIMATE	ACTUAL	ESTIMATE	ACTUAL		
0		1.2			

PROJECT NO. 15BPR.29
CHEROKEE COUNTY
 BRIDGE NO. 31

SHEET 5 OF 5



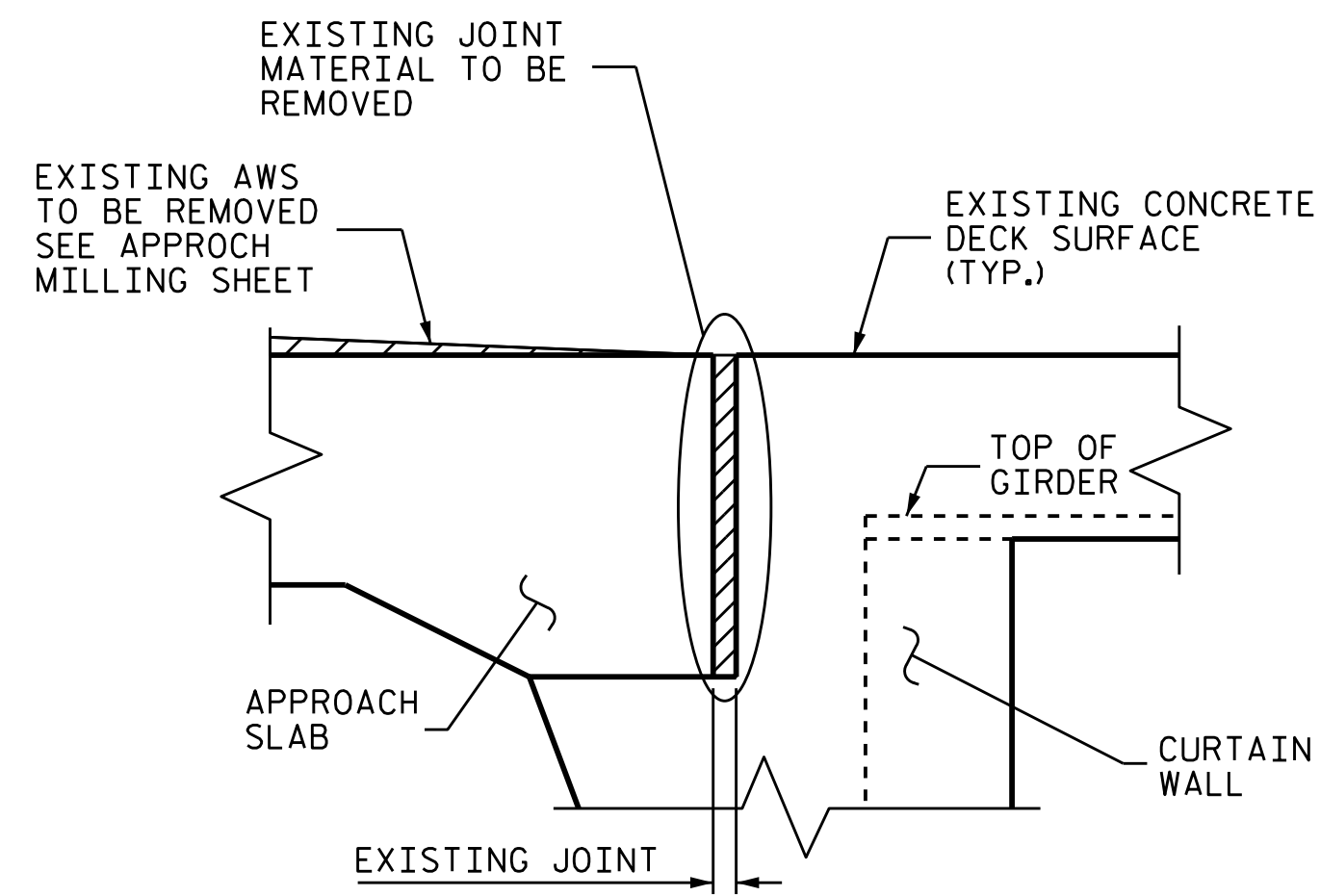
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 BO4854872FAD484
 10/22/2018

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**BEAM REPAIR
 LOCATIONS
 SPAN E**

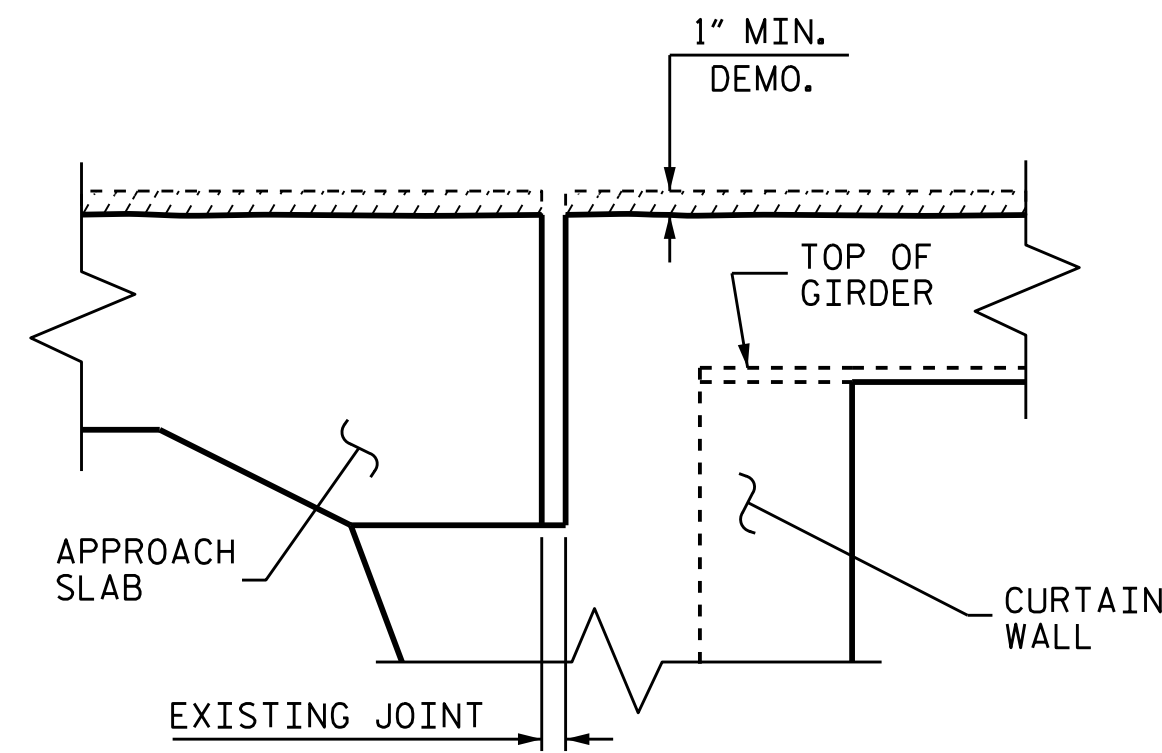
DRAWN BY : R.L. PUTEK DATE : 07/18
 CHECKED BY : F. LEA, PE DATE : 08/18

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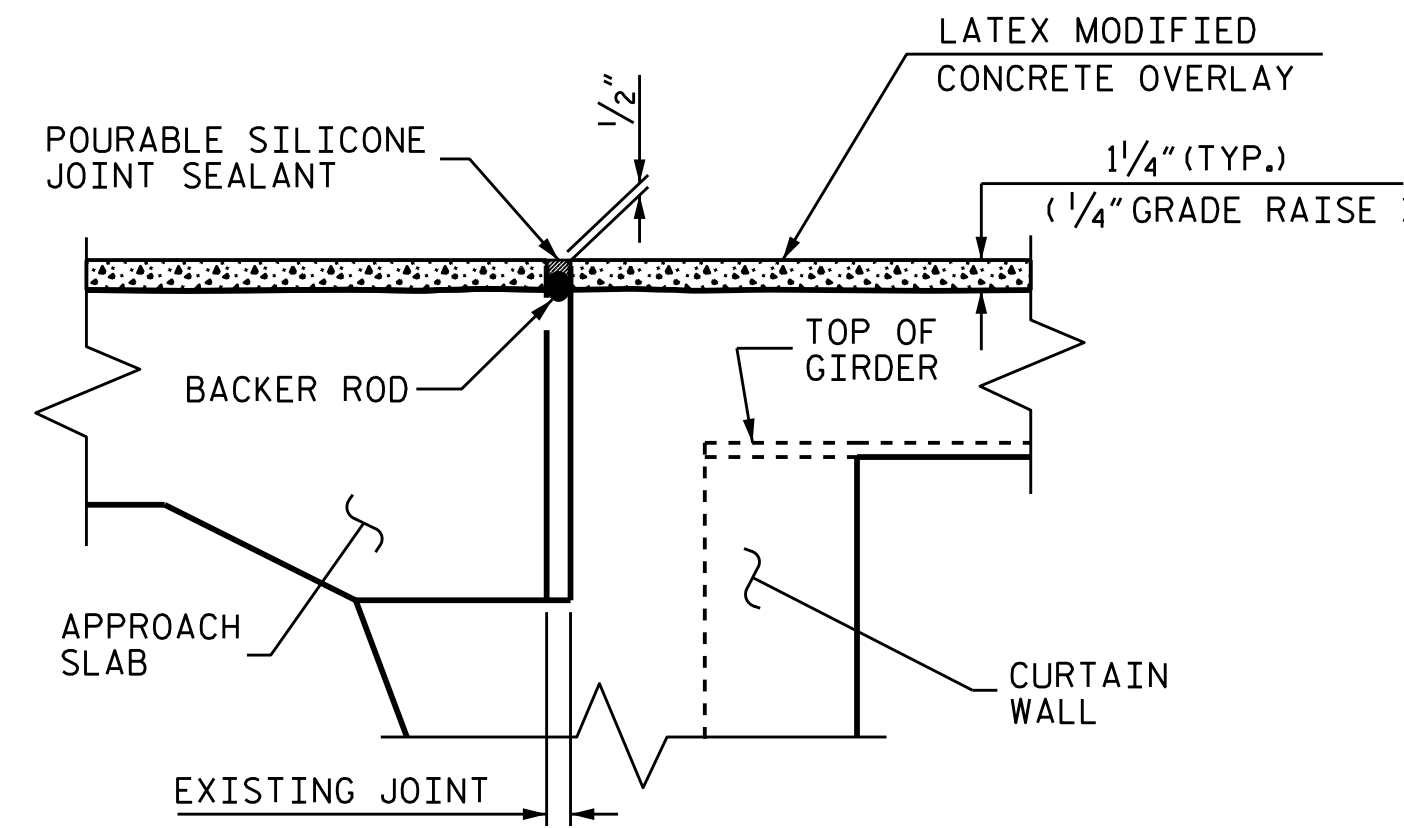
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			55



SECTION B-B
(EXISTING JOINT)



SECTION B-B
(MINIMUM EXISTING JOINT DEMOLITION)

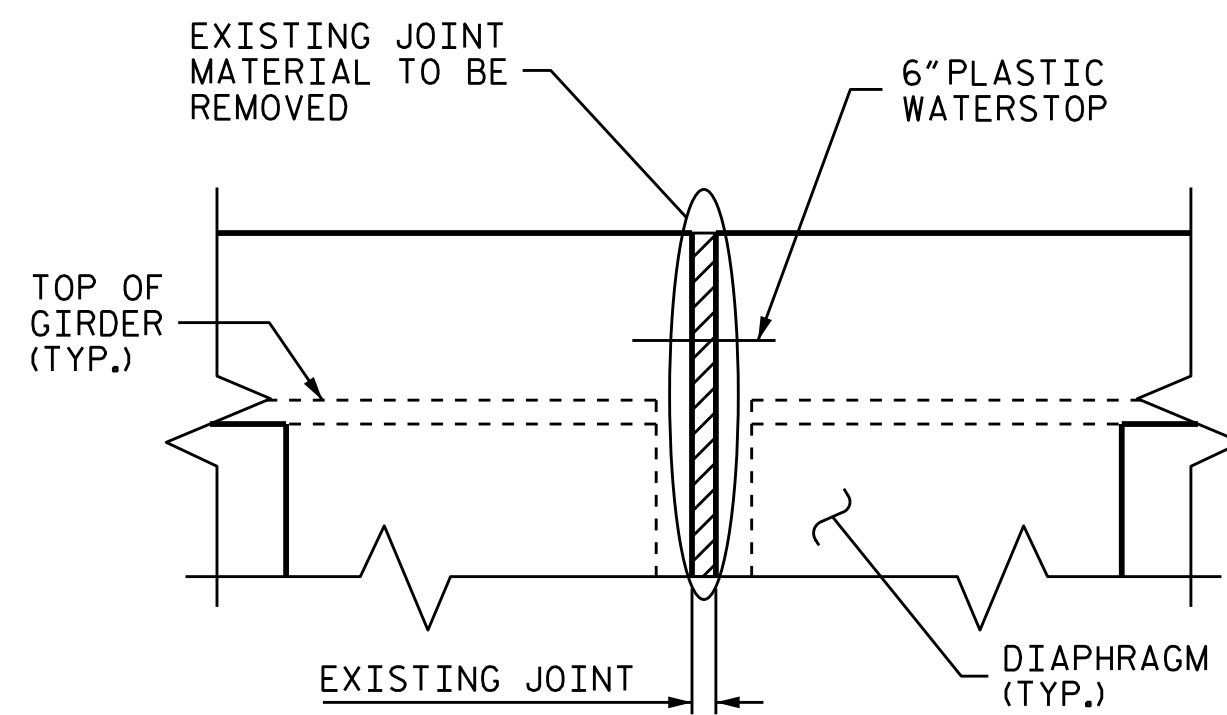


SECTION B-B
(PROPOSED JOINT)

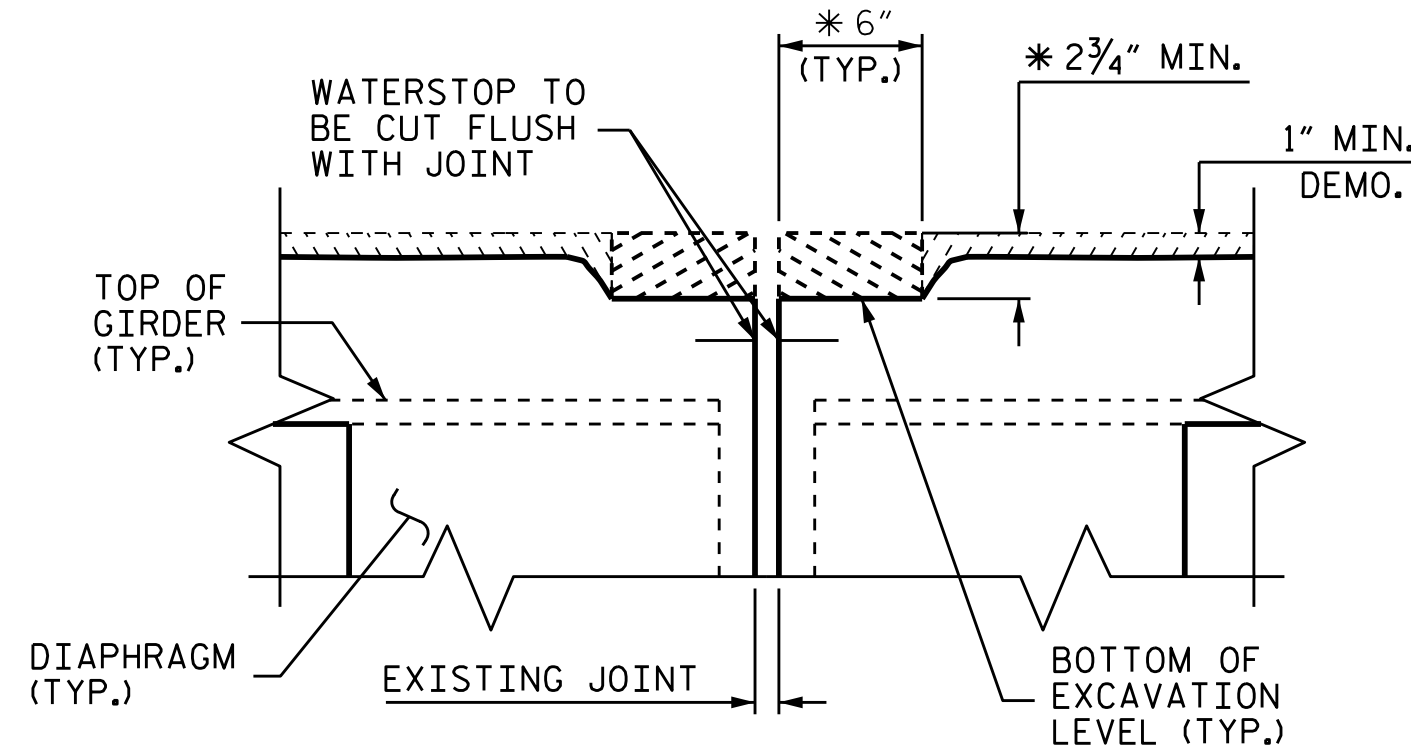
IF THE EMBEDDED PORTION OF THE EXISTING PLASTIC WATERSTOP IS EXPOSED DURING REMOVAL OF UNSOUND CONCRETE, OR IF UNSOUND CONCRETE IS REMOVED WITHIN 2" OF THE WATERSTOP, THE ENTIRE CONCRETE DEPTH TO THE WATERSTOP SHALL BE REMOVED. IF SUCH EXCAVATION EXTENDS MORE THAN 2" BELOW THE BOTTOM OF THE PLANNED ELASTOMERIC CONCRETE HEADER, AS SHOWN, APPROVED REPAIR CONCRETE SHALL BE PLACED IN THE EXCAVATED AREA TO THE ELEVATION AT THE BOTTOM OF THE ELASTOMERIC CONCRETE.

* THE 3" X 6" ELASTOMERIC CONCRETE HEADER FOR FOAM JOINT SEALS AT BENTS 1 AND 4 WAS USED FOR QUANTITIES, THE CONTRACTOR HAS THE OPTION TO USE THE 4" X 8" ELASTOMERIC CONCRETE HEADER TO ASSURE THAT ALL HARDWARE FROM THE EXISTING JOINTS HAS BEEN SUFFICIENTLY REMOVED.

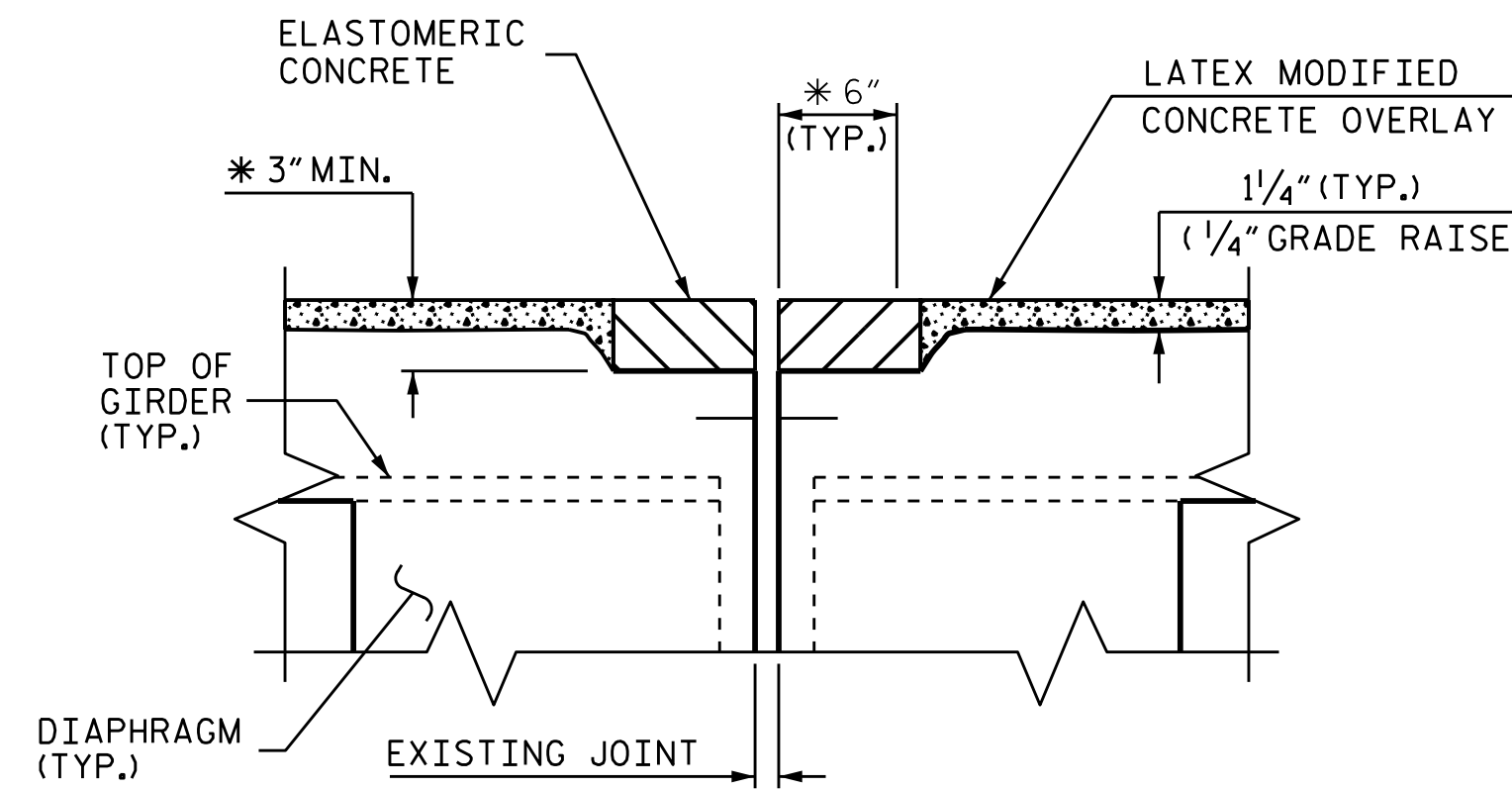
DEMOLISH BRIDGE JOINT AREA TO THE NECESSARY DEPTH, SUCH THAT ELASTOMERIC CONCRETE SHALL BE FOUNDED ON CONCRETE OR REPAIR CONCRETE SUBSTRATE, NOT LATEX MODIFIED CONCRETE.



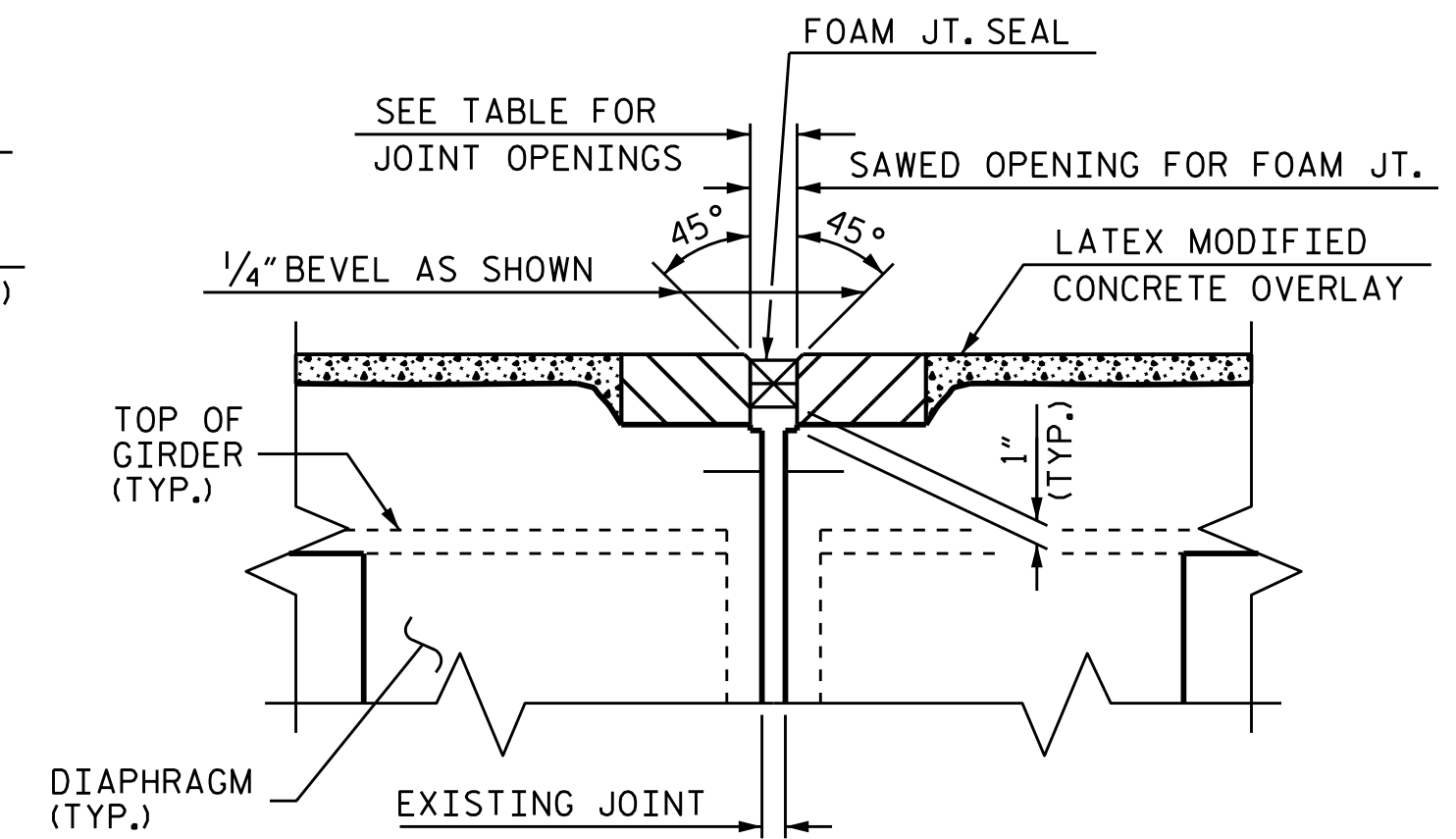
SECTION C-C
(EXISTING JOINT)



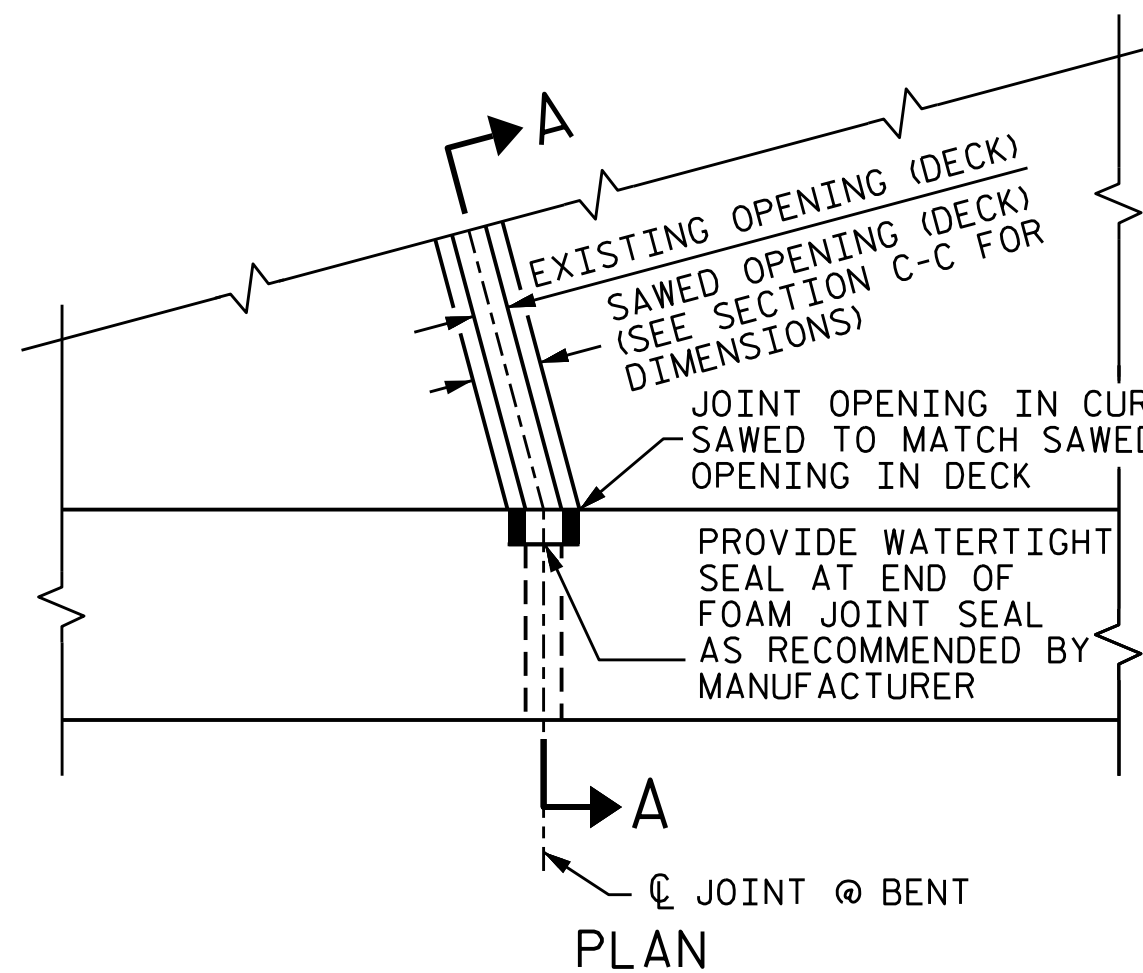
SECTION C-C
(MINIMUM EXISTING JOINT DEMOLITION)



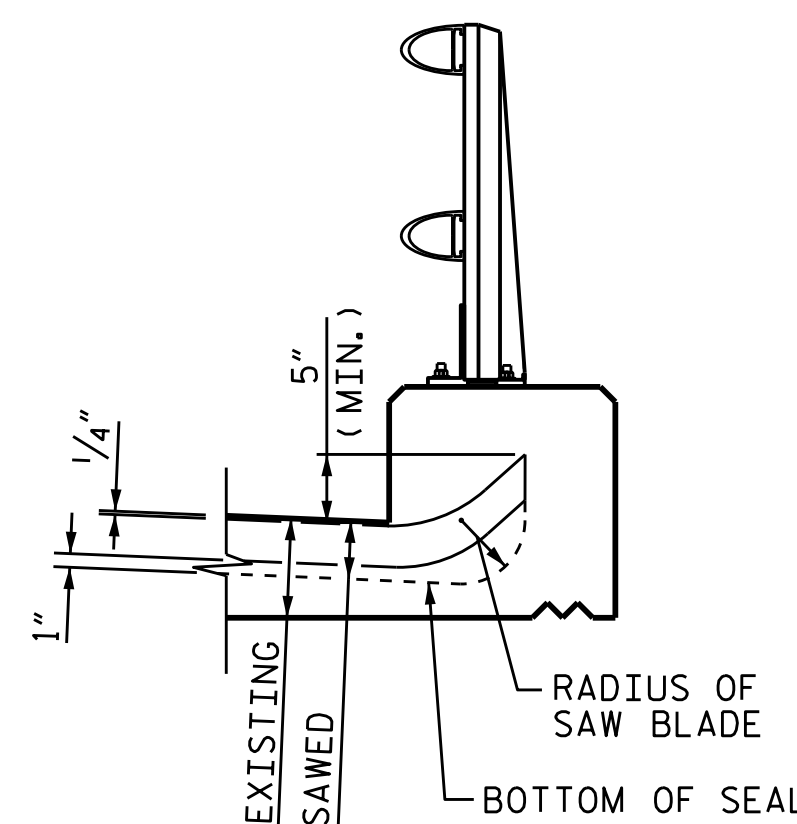
SECTION C-C
(PROPOSED JOINT PRE-SAWED)



SECTION B-B
(PROPOSED FOAM JOINT SEAL)



JOINT SEAL DETAILS



SECTION A-A

FOAM JOINT SEAL SHALL BE FACTORY FORMED OR CUT, HEAT WELDED AND TURNED UP PARALLEL TO FACE OF CURB.

LOCATION	SAWED JT. OPENING (PERPENDICULAR TO JT.)		
	AT 45°	AT 60°	AT 90°
BENT 1	1 7/16"	2"	2 9/16"
BENT 4	1 7/16"	2"	2 9/16"

NOTES

- THE FOAM JOINTS SHALL MEET THE MANUFACTURER'S RECOMMENDATION.
- THE FOAM JOINTS SHALL MEET THE MANUFACTURER'S RECOMMENDATION FOR THE SIZE OF OPENING ON THE PLANS, AND ACCOMMODATE THE MINIMUM EXPANSION SHOWN ON THE PLANS.
- CONTRACTOR SHALL FIELD VERIFY THE EXISTING JOINT OPENING PRIOR TO ORDERING JOINT SEAL MATERIAL. IF ACTUAL JOINT OPENING VARIES FROM OPENING INDICATED IN DETAIL BY MORE THAN 1/4", NOTIFY ENGINEER.
- THE INSTALLED FOAM JOINTS SHALL BE WATER TIGHT.
- FOR FOAM JOINT SEALS, SEE SPECIAL PROVISIONS.
- THE CONTRACTOR WILL NOT BE PERMITTED TO FORM THE JOINTS IN LIEU OF SAWING THE JOINT.
- FOR POURABLE SILICONE JOINT SEALANT, SEE SPECIAL PROVISIONS.
- CONTRACTOR SHALL FIELD VERIFY THE EXISTING JOINT OPENING PRIOR TO ORDERING THE BACKER ROD.
- THE BACKER ROD SHALL MEET THE MANUFACTURER'S RECOMMENDATION FOR THE SIZE OF THE JOINT OPENING.

DRAWN BY : CL BRIGHT DATE : 10/18
CHECKED BY : AMBER LEE DATE : 10/18



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PROJECT NO. 15BPR.29
CHEROKEE COUNTY
BRIDGE NO. 31

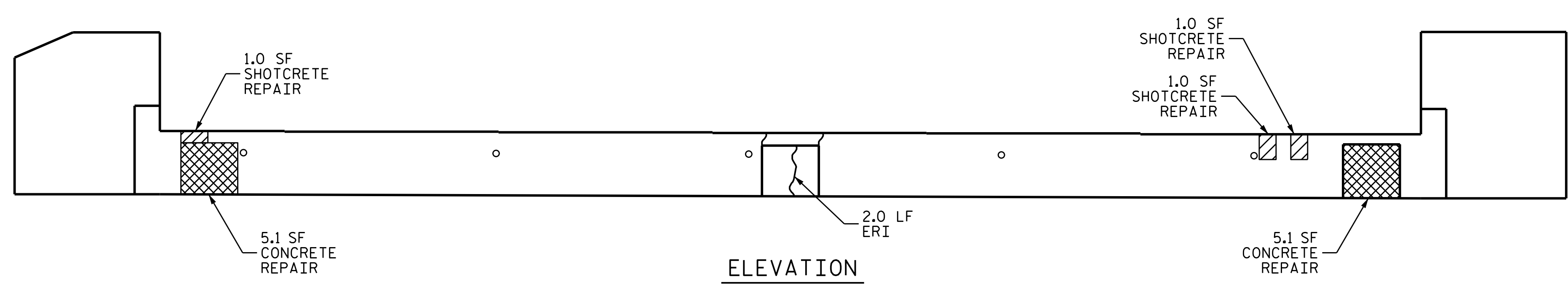
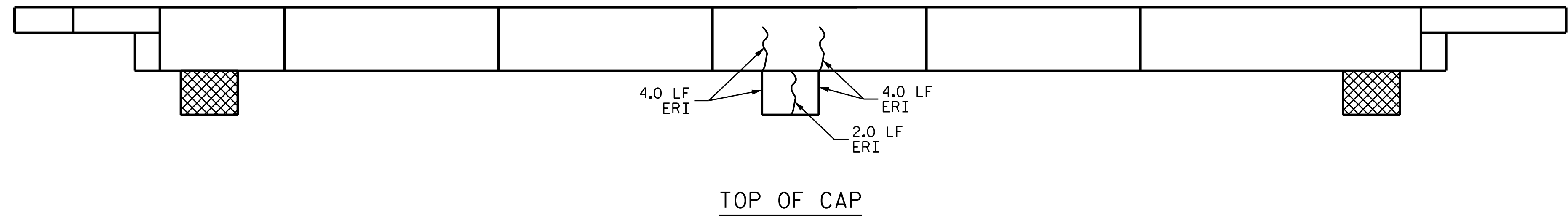
SHEET 1 OF 1

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

JOINT DETAILS

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			55



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

AS-BUILT REPAIR QUANTITY TABLE

END BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	3.0	1.5		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	10.2	17.8		
EPOXY RESIN INJECTION			LIN. FT.	LIN. FT.
CAP			12.0	
EPOXY COATING			SQ. FT.	SQ. FT.
TOP OF END BENT CAP			74.9	

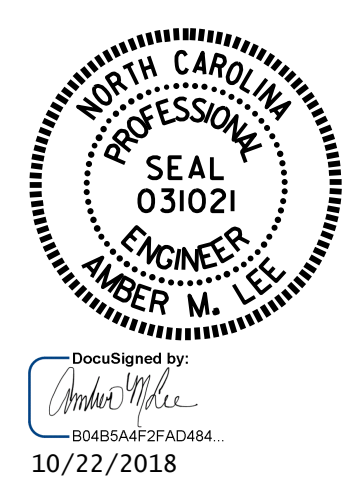
VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MINIMUM OF 1" BEHIND REBAR AND MINIMUM 2" CLEARANCE TO SAWCUT. SEE "TYPICAL CAP AND COLUMN REPAIR DETAILS" SHEET.

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

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

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

PROJECT NO. 15BPR.29
CHEROKEE COUNTY
 BRIDGE NO. 31



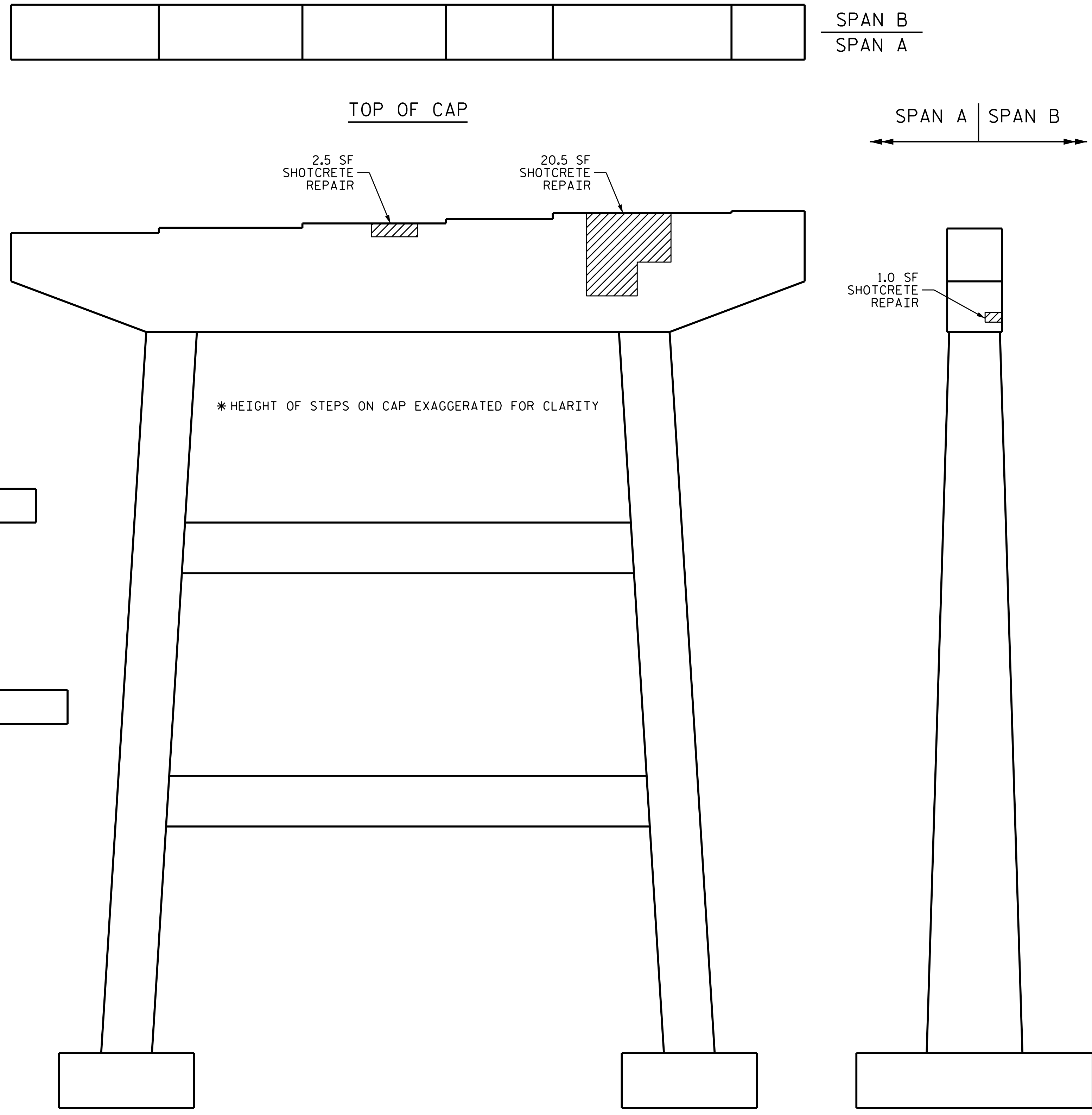
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

END BENT 1

DRAWN BY : R.L. PUTEK DATE : 05/2018
 CHECKED BY : A.M. LEE, PE DATE : 08/2018

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			55




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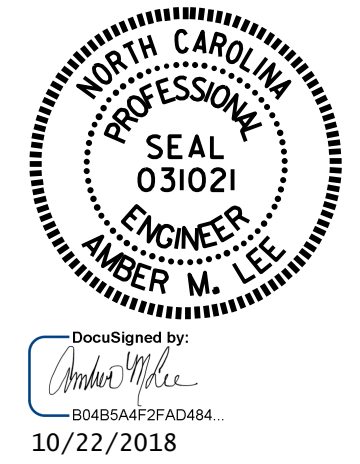
AS-BUILT REPAIR QUANTITY TABLE				
BENT 1 SPAN A FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	24.0	12.0		
COLUMN	0.0	0.0		
STRUTS	0.0	0.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.	LIN. FT.	
CAP	0.0			
COLUMN	0.0			
STRUTS	0.0			
EPOXY COATING		SO. FT.	SO. FT.	
TOP OF BENT CAP		153.0		
TOP OF STRUTS		109.0		

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

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 REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN BASED ON THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ENTER THE ACTUAL QUANTITIES INTO THE AS-BUILT REPAIR QUANTITY TABLE.
 CLEAN AND REMOVE DEBRIS FROM THE TOP OF THE CAP AND TOP OF STRUTS AND APPLY EPOXY PROTECTIVE COATING. EPOXY COATING SHALL BE APPLIED TO THE TOP SURFACE OF THE CAP. THE CONTRACTOR SHALL NOT COAT THE AREA OF THE CAP BENEATH THE MASONRY PLATES. FOR EPOXY COATING, SEE SPECIAL PROVISIONS.
 CONCRETE REPAIRS MAYBE SUBSTITUTED IN LIEU OF SHOTCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

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

PROJECT NO. 15BPR.29
CHEROKEE COUNTY
 BRIDGE NO. 31



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**BENT 1
 SPAN A FACE**

DRAWN BY : R.L.PUTEK DATE : .05/2018
 CHECKED BY : E.BAYISSA DATE : .08/2018

NO.	REVISIONS			SHEET NO.
	BY:	DATE:	NO.	
1			3	S-17
2			4	TOTAL SHEETS 55

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AS-BUILT REPAIR QUANTITY TABLE


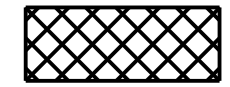

BENT 1 SPAN B FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SO. FT.	VOLUME CU. FT.	AREA SO. FT.	VOLUME CU. FT.
CAP	23.0	11.5		
COLUMN	2.0	1.0		
STRUTS	0.0	0.0		
CONCRETE REPAIRS	AREA SO. FT.	VOLUME CU. FT.	AREA SO. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	0.0			
COLUMN	0.0			
STRUTS	0.0			

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

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

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

PROJECT NO. 15BPR.29
CHEROKEE COUNTY
 BRIDGE NO. 31



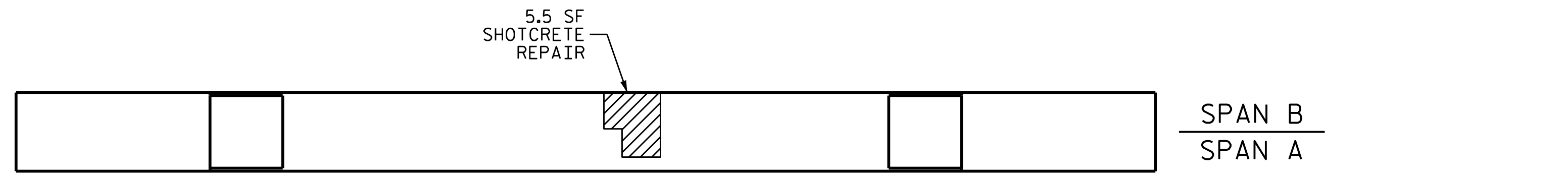
DocuSign by
 Amber M. Lee
 10/22/2018

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 DEPARTMENT OF TRANSPORTATION
 RALEIGH

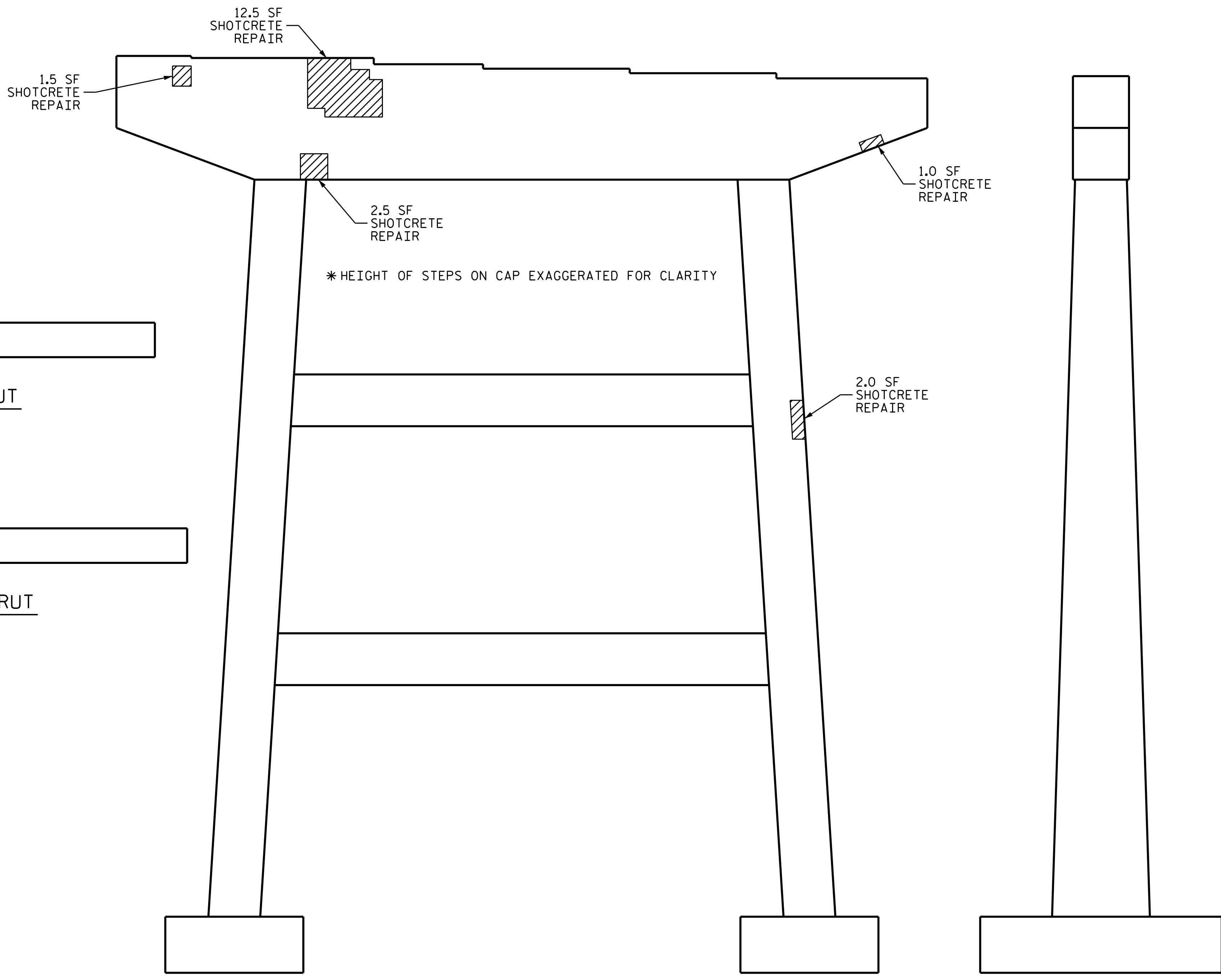
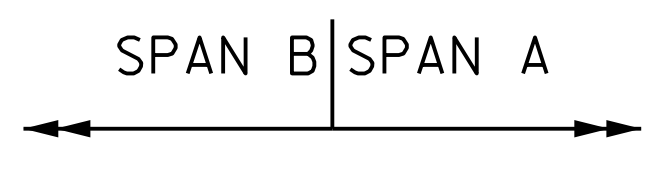
**BENT 1
 SPAN B FACE**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			55

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



BOTTOM OF CAP



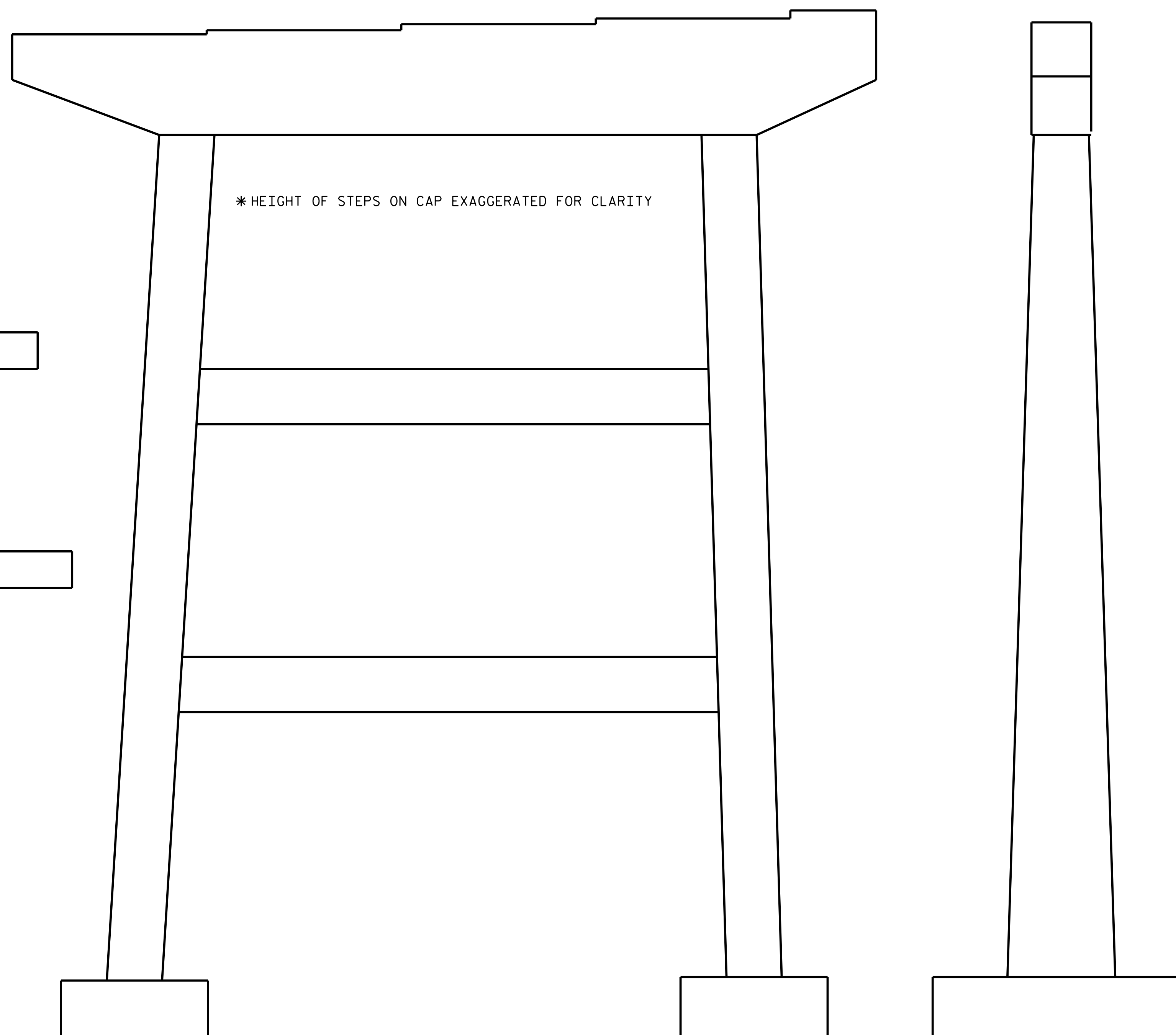
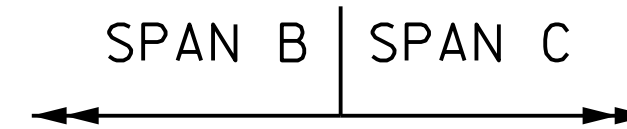
ELEVATION

END VIEW

DRAWN BY : R.L.PUTEK DATE : 05/2018
 CHECKED BY : E.BAYISSA DATE : 08/2018



TOP OF CAP



* HEIGHT OF STEPS ON CAP EXAGGERATED FOR CLARITY

TOP OF STRUT

TOP OF STRUT

ELEVATION

END VIEW

AS-BUILT REPAIR QUANTITY TABLE

BENT 2 SPAN B FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SO. FT.	VOLUME CU. FT.	AREA SO. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
COLUMN	0.0	0.0		
STRUTS	0.0	0.0		
CONCRETE REPAIRS	AREA SO. FT.	VOLUME CU. FT.	AREA SO. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.	LIN. FT.	
CAP	0.0			
COLUMN	0.0			
STRUTS	0.0			
EPOXY COATING		SO. FT.	SO. FT.	
TOP OF BENT CAP		153.0		
TOP OF STRUTS		109.5		


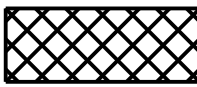

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MINIMUM OF 1" BEHIND REBAR AND MINIMUM 2" CLEARANCE TO SAWCUT. SEE "TYPICAL CAP AND COLUMN REPAIR DETAILS" SHEET.

NOTES:

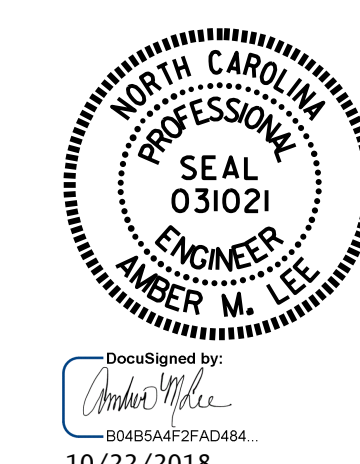
REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN BASED ON THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ENTER THE ACTUAL QUANTITIES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

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

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

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

PROJECT NO. 15BPR.29
CHEROKEE COUNTY
 BRIDGE NO. 31



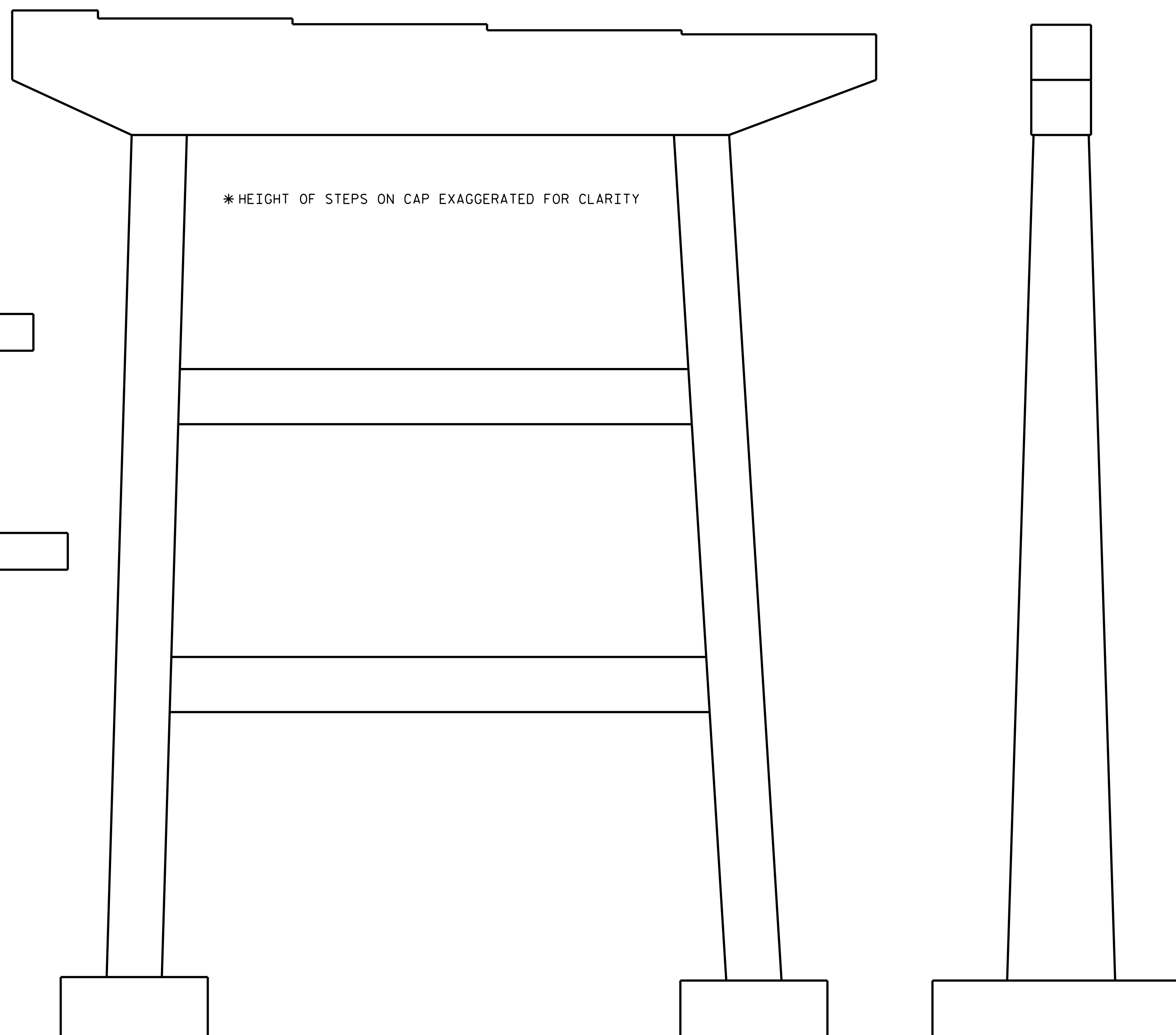
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**BENT 2
 SPAN B FACE**

DRAWN BY : R.L. PUTEK DATE : .05/2018
 CHECKED BY : E.BAYISSA DATE : .08/2018

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			55



BOTTOM OF CAP

SPAN C | SPAN B

BOTTOM OF STRUT

BOTTOM OF STRUT

* HEIGHT OF STEPS ON CAP EXAGGERATED FOR CLARITY

ELEVATION

END VIEW

AS-BUILT REPAIR QUANTITY TABLE


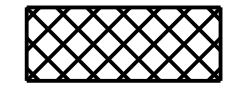

BENT 2 SPAN C FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SO. FT.	VOLUME CU. FT.	AREA SO. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
COLUMN	0.0	0.0		
STRUTS	0.0	0.0		
CONCRETE REPAIRS	AREA SO. FT.	VOLUME CU. FT.	AREA SO. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.	LIN. FT.	
CAP		0.0		
COLUMN		0.0		
STRUTS		0.0		

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

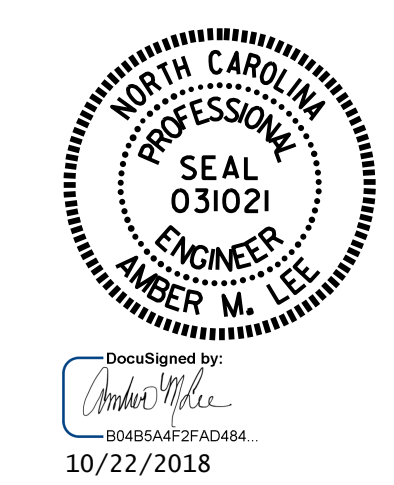
NOTES:

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

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

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

PROJECT NO. 15BPR.29
CHEROKEE COUNTY
 BRIDGE NO. 31



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**BENT 2
 SPAN C FACE**

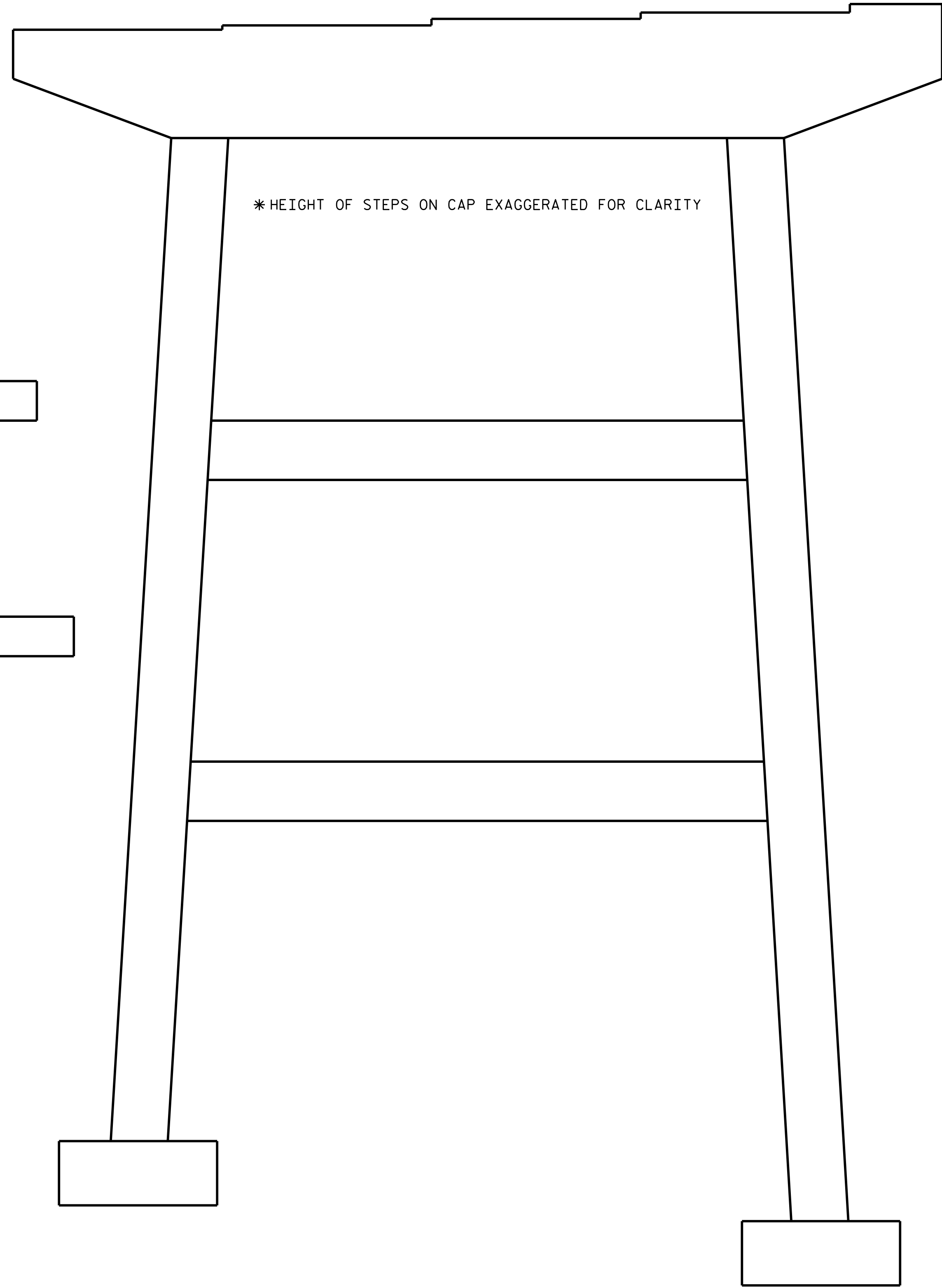
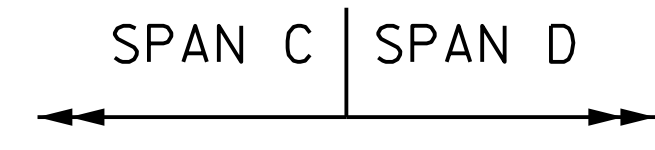
DRAWN BY : R.L.PUTEK DATE : .05/2018
 CHECKED BY : E.BAYISSA DATE : .08/2018

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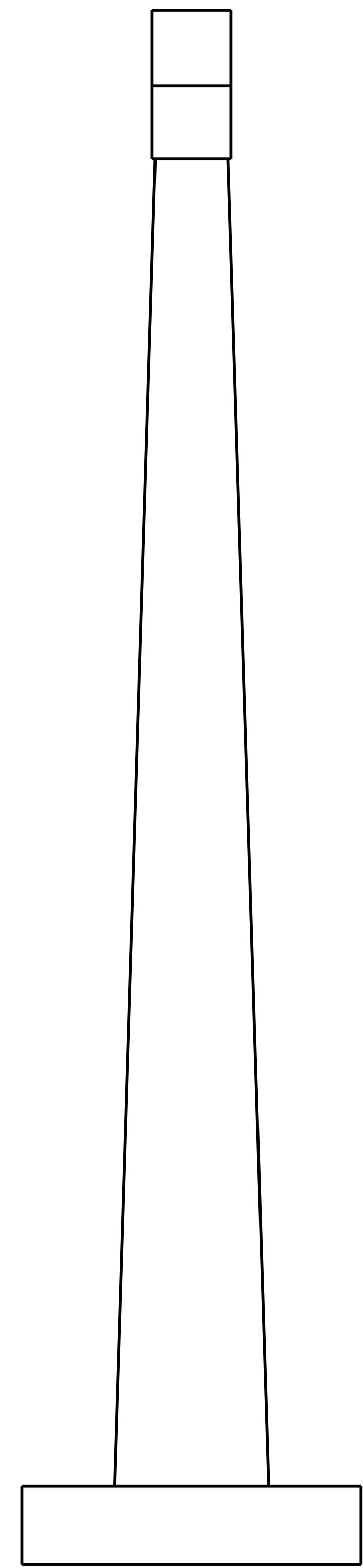
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS
2			4			55



TOP OF CAP



ELEVATION



END VIEW

AS-BUILT REPAIR QUANTITY TABLE

BENT 3 SPAN C FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SO. FT.	VOLUME CU. FT.	AREA SO. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
COLUMN	0.0	0.0		
STRUTS	0.0	0.0		
CONCRETE REPAIRS	AREA SO. FT.	VOLUME CU. FT.	AREA SO. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	0.0			
COLUMN	0.0			
STRUTS	0.0			
EPOXY COATING	SQ. FT.		SQ. FT.	
TOP OF BENT CAP	153.0			
TOP OF STRUTS	109.5			

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

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

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

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

PROJECT NO. 15BPR.29
CHEROKEE COUNTY
 BRIDGE NO. 31



DocuSign
 10/22/2018

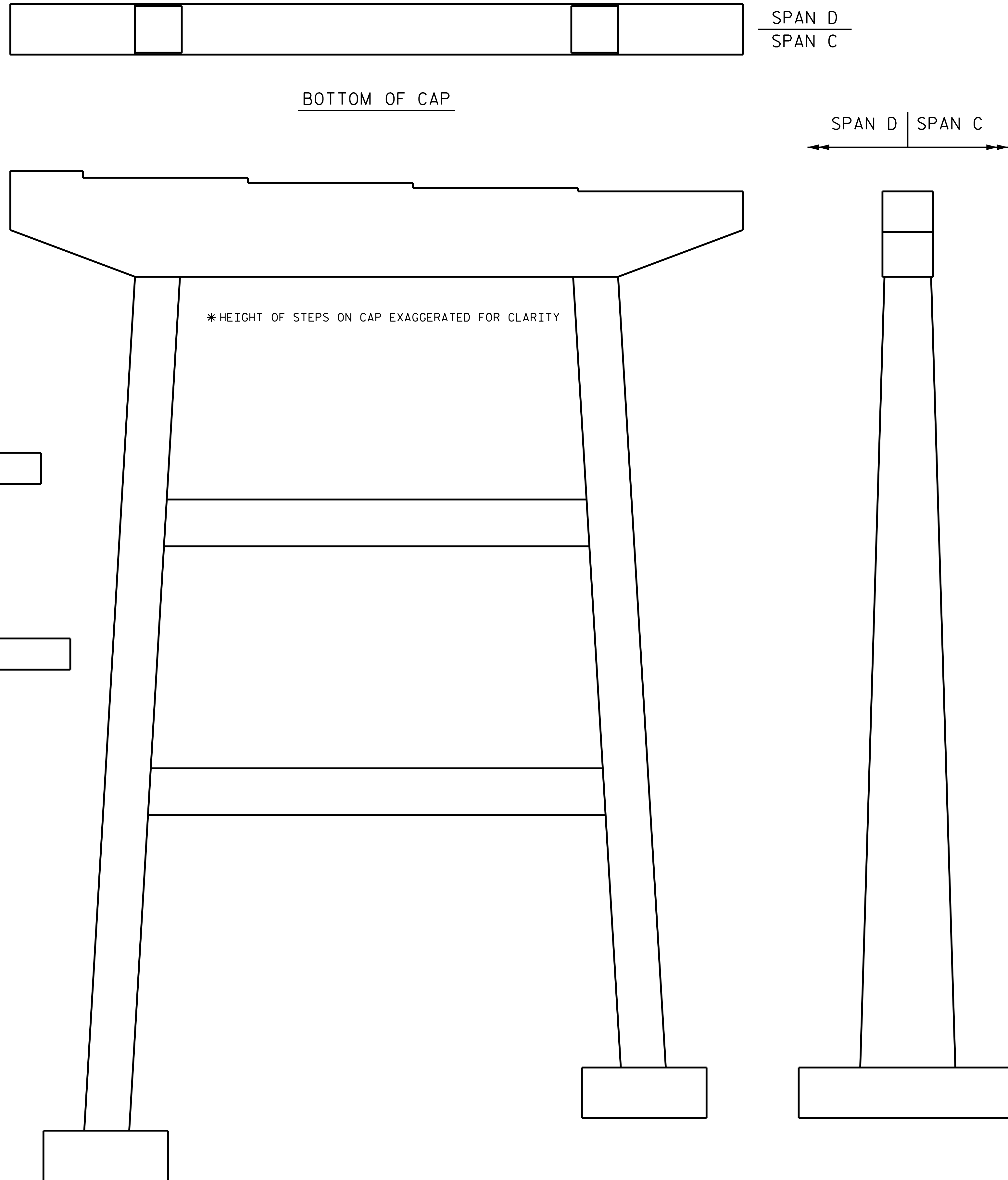
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**BENT 3
 SPAN C FACE**

DRAWN BY : R.L. PUTEK DATE : .05/2018
 CHECKED BY : E. BAYISSA DATE : .08/2018

DOCUMENT NOT CONSIDERED
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS
2			4			55



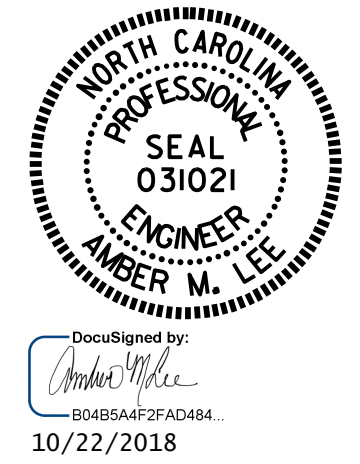
AS-BUILT REPAIR QUANTITY TABLE				
BENT 3 SPAN D FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SO. FT.	VOLUME CU. FT.	AREA SO. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
COLUMN	0.0	0.0		
STRUTS	0.0	0.0		
CONCRETE REPAIRS	AREA SO. FT.	VOLUME CU. FT.	AREA SO. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.	LIN. FT.	
CAP		0.0		
COLUMN		0.0		
STRUTS		0.0		

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

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

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

PROJECT NO. 15BPR.29
CHEROKEE COUNTY
 BRIDGE NO. 31



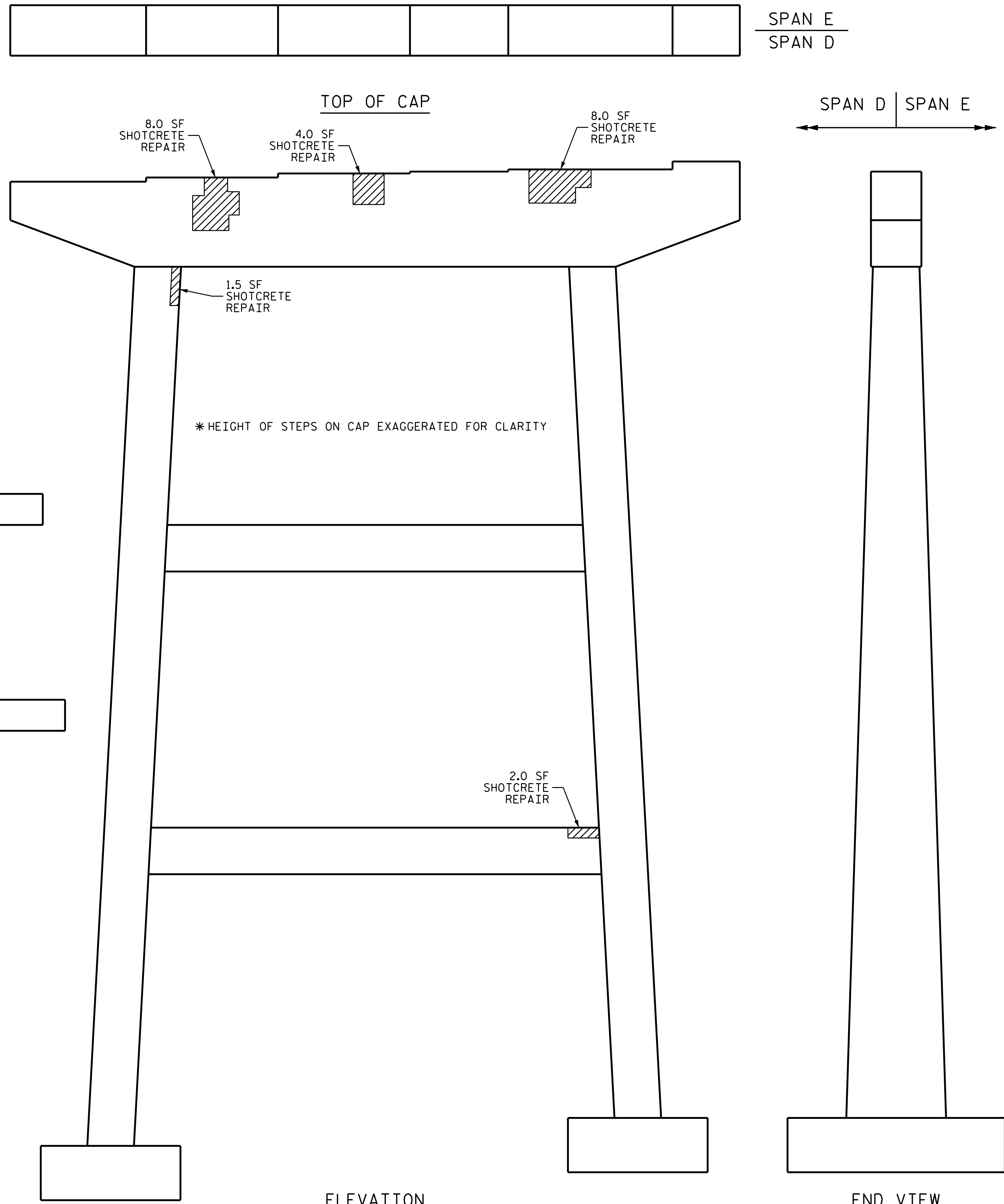
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**BENT 3
 SPAN D FACE**

DRAWN BY : R.L. PUTEK DATE : .05/2018
 CHECKED BY : E.BAYISSA DATE : .08/2018

NO.	REVISIONS			SHEET NO.
	BY:	DATE:	NO.	
1			3	S-22
2			4	TOTAL SHEETS 55

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



AS-BUILT REPAIR QUANTITY TABLE				
BENT 4 SPAN D FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	20.0	10.0		
COLUMN	1.5	0.8		
STRUTS	2.0	1.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.	LIN. FT.	
CAP		0.0		
COLUMN		0.0		
STRUTS		0.0		
EPOXY COATING		SQ. FT.	SQ. FT.	
TOP OF BENT CAP		153.0		
TOP OF STRUTS		109.5		

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

NOTES:

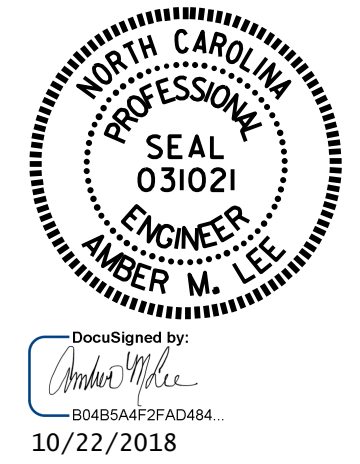
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CLEAN AND REMOVE DEBRIS FROM THE TOP OF THE CAP AND TOP OF STRUTS AND APPLY EPOXY PROTECTIVE COATING. EPOXY COATING SHALL BE APPLIED TO THE TOP SURFACE OF THE CAP. THE CONTRACTOR SHALL NOT COAT THE AREA OF THE CAP BENEATH THE MASONRY PLATES. FOR EPOXY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

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

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

PROJECT NO. 15BPR.29
CHEROKEE COUNTY
 BRIDGE NO. 31



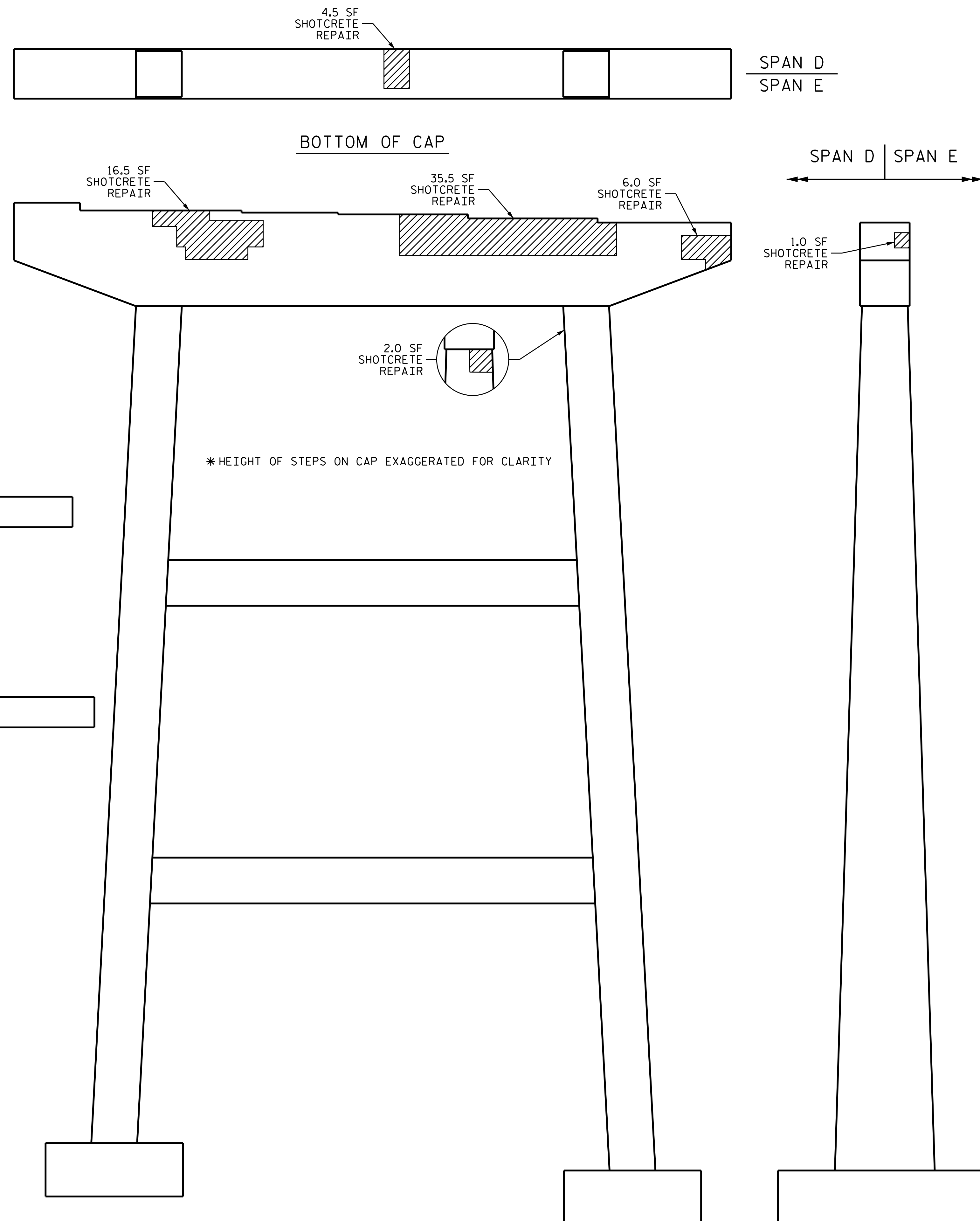
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**BENT 4
 SPAN D FACE**

DRAWN BY : R.L. PUTEK DATE : 05/2018
 CHECKED BY : E. BAYISSA DATE : 08/2018

NO.	REVISIONS			SHEET NO.
	BY:	DATE:	NO.	
1			3	S-23
2			4	TOTAL SHEETS 55

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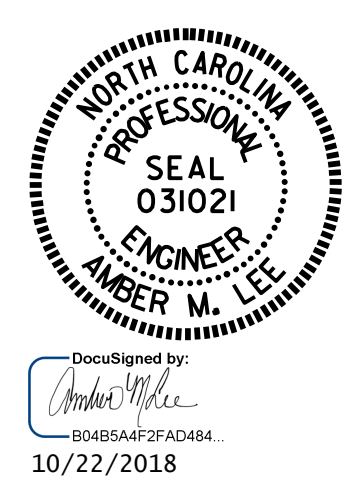
AS-BUILT REPAIR QUANTITY TABLE				
BENT 4 SPAN E FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SO. FT.	VOLUME CU. FT.	AREA SO. FT.	VOLUME CU. FT.
CAP	63.5	31.8		
COLUMN	2.0	1.0		
STRUTS	0.0	0.0		
CONCRETE REPAIRS	AREA SO. FT.	VOLUME CU. FT.	AREA SO. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.	LIN. FT.	
CAP		0.0		
COLUMN		0.0		
STRUTS		0.0		

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

NOTES:
 REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN BASED ON THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ENTER THE ACTUAL QUANTITIES INTO THE AS-BUILT REPAIR QUANTITY TABLE.
 CONCRETE REPAIRS MAYBE SUBSTITUTED IN LIEU OF SHOTCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

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

PROJECT NO. 15BPR.29
CHEROKEE COUNTY
 BRIDGE NO. 31



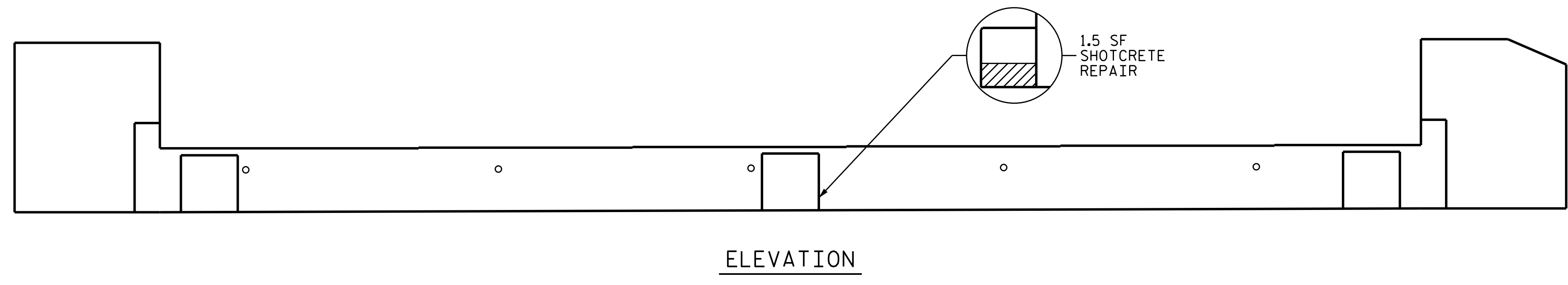
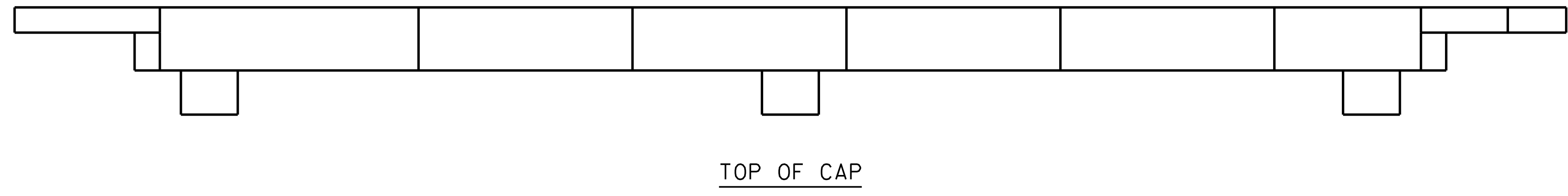
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**BENT 4
 SPAN E FACE**

DRAWN BY : R.L.PUTEK DATE : .05/2018
 CHECKED BY : E.BAYISSA DATE : .08/2018

NO.	REVISIONS			SHEET NO.
	BY:	DATE:	NO.	
1			3	S-24
2			4	TOTAL SHEETS 55

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AS-BUILT REPAIR QUANTITY TABLE

END BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SO. FT.	VOLUME CU. FT.	AREA SO. FT.	VOLUME CU. FT.
CAP	1.5	0.8		
CONCRETE REPAIRS	AREA SO. FT.	VOLUME CU. FT.	AREA SO. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.	LIN. FT.	
CAP		0.0		
EPOXY COATING		SO. FT.	SO. FT.	
TOP OF END BENT CAP		74.9		




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

NOTES:

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

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

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

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

PROJECT NO. 15BPR.29
CHEROKEE COUNTY
 BRIDGE NO. 31



DocuSign by
Amber M. Lee
 10/22/2018

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

END BENT 2

DRAWN BY : R.L.PUTEK DATE : .05/2018
 CHECKED BY : E.BAYISSA DATE : .08/2018

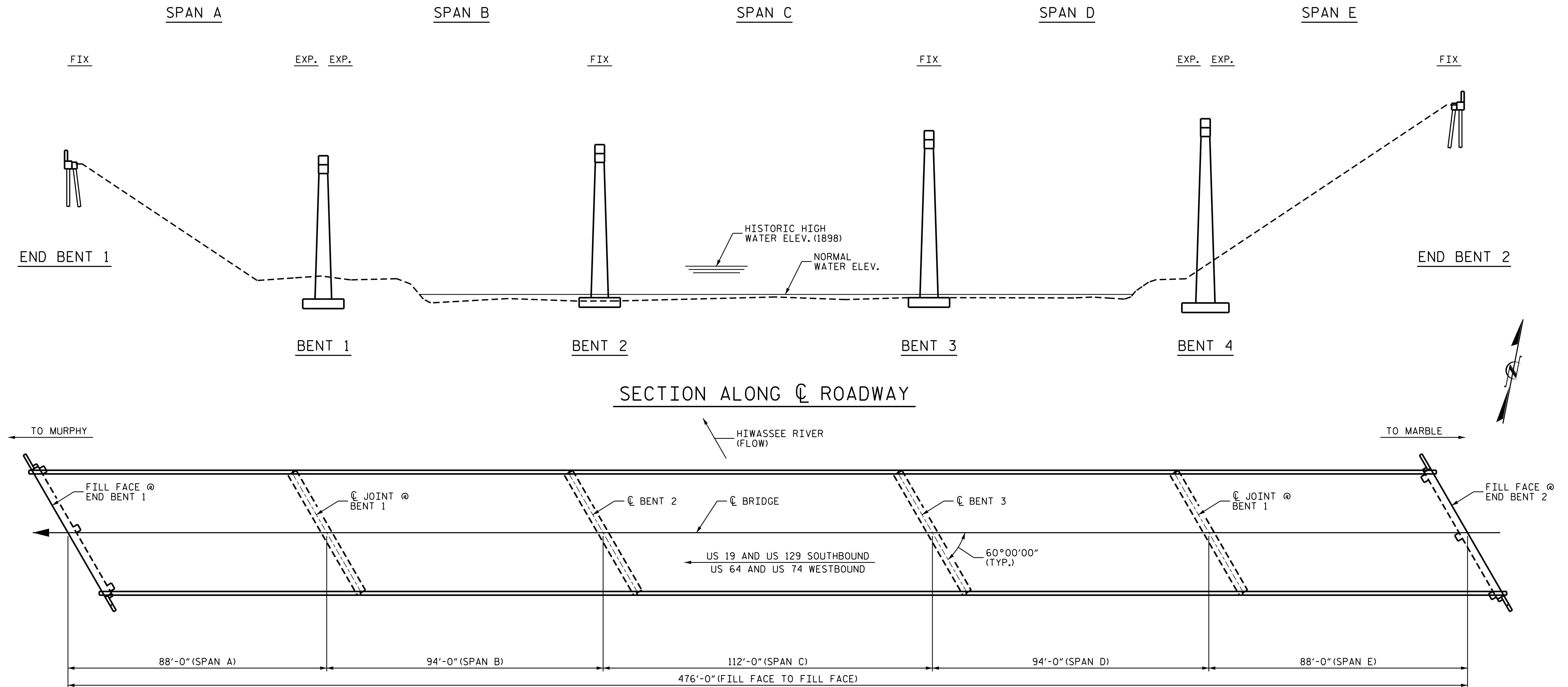
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	BY:	DATE:	NO.	
1			3	S-25
2			4	TOTAL SHEETS 55

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NOTES

GENERAL DRAWING INFORMATION IS TAKEN FROM THE ORIGINAL PLANS AND THE ROUTINE INSPECTION REPORT DATED 05/26/2016.

BRIDGE ORIENTATION CONFORMS TO EXISTING BRIDGE PLANS.



SECTION ALONG C ROADWAY

PLAN

SCOPE OF WORK

- CLEAN, REPAIR AND PAINT STEEL I-BEAMS.
- REPLACE EXISTING BEARINGS.
- EPOXY INJECTION OF CONCRETE CRACKS.
- REMOVE UNSOUND CONCRETE AND PROPERLY PREPARE EXISTING END BENT AND BENT AREAS FOR SHOTCRETE AND CONCRETE REPAIR.
- PERFORM SHOTCRETE AND CONCRETE REPAIRS IN PREPARED AREAS.
- REMOVE DEBRIS FROM TOP OF EXISTING END BENT AND BENT CAPS, AND APPLY EPOXY COATING.
- PARTIALLY REMOVE TOP OF BRIDGE DECK CONCRETE BY SCARIFICATION AND SHOTBLASTING METHODS.
- OVERLAY PREPARED TOP OF BRIDGE DECK WITH POLYESTER POLYMER CONCRETE (PPC).
- GROOVE POLYESTER POLYMER CONCRETE (PPC) BRIDGE DECK.
- REMOVE EXISTING JOINT MATERIAL AND INSTALL FOAM JOINTS.
- REPLACE EXISTING RUBBER PLATE TYPE EXPANSION JOINT WITH KIND.
- INSTALL POURABLE SILICONE JOINT SEALANTS.

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

RESIDENT ENGINEER _____ DATE _____



DocuSigned by:
A. Keith Paschal
10/22/2018

DocuSigned by:
Amber M. Lee
10/22/2018

PROJECT NO. 15BPR.29
CHEROKEE COUNTY
 BRIDGE NO. 33

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE ON
 US 19, US 129 SOUTHBOUND,
 AND US 64, US 74 WESTBOUND
 OVER THE HIWASSEE RIVER

DRAWN BY : R.L. PUTEK DATE : 05/18
 CHECKED BY : A.M. LEE, PE DATE : 09/18

DOCUMENT NOT CONSIDERED
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 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-27
1			3			TOTAL SHEETS
2			4			55



LOCATION SKETCH

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

NOTES

- EXISTING DIMENSIONS AND BRIDGE CONDITION ARE FROM THE BEST INFORMATION AVAILABLE.
- THE CONTRACTOR SHALL FIELD VERIFY THE INFORMATION SHOWN ON THE PLANS AND NOTIFY THE ENGINEER IF ACTUAL DIMENSIONS AND CONDITIONS DIFFER.
- THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THAT SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO FOLLOW ALL STATE AND FEDERAL SAFETY REQUIREMENTS.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- FOR TRAFFIC CONTROL AND LIMITS OF PHASING OF CONSTRUCTION, SEE TRANSPORTATION MANAGEMENT PLANS.
- EXISTING JOINTS AND DECK DRAINS SHALL BE SEALED PRIOR TO BEGINNING SURFACE PREPARATION OF BRIDGE DECK.
- FOR SCARIFYING BRIDGE DECK, HYDRO-DEMOLITION OF BRIDGE DECK, CLASS II SURFACE PREPARATION AND CLASS III SURFACE PREPARATION, SEE LMC OVERLAY SURFACE PREPARATION SPECIAL PROVISION.
- THE CONTRACTOR SHALL PROVIDE A METHOD OF HANDLING UNEXPECTED BLOW THROUGH OF THE DECK.
- FOR LATEX MODIFIED CONCRETE, SEE SPECIAL PROVISIONS.
- FOR BRIDGE JOINT DEMOLITION, SEE SPECIAL PROVISIONS.
- FOR CONCRETE WORK FOR JOINT REPLACEMENT, SEE SPECIAL PROVISIONS.
- FOR CONCRETE FOR DECK REPAIR, SEE SPECIAL PROVISIONS.
- FOR FOAM JOINT SEAL, SEE SPECIAL PROVISIONS.
- FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.
- FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.
- FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.
- FOR POLLUTION CONTROL AND PAINTING OF STEEL STRUCTURE, SEE PAINTING EXISTING STRUCTURE SPECIAL PROVISION.
- FOR EPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.
- FOR POURABLE SILICONE JOINT SEALANT, SEE SPECIAL PROVISIONS.
- FOR BRIDGE JACKING, SEE SPECIAL PROVISIONS.
- FOR BEAM REPAIR, SEE SPECIAL PROVISIONS.
- WORK ON BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL INTO WATER. THE CONTRACTOR SHALL SUBMIT PLANS FOR CONSTRUCTION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.
- LONGITUDINAL CONSTRUCTION JOINTS SHALL BE LOCATED ALONG THE CENTERLINE OR EDGE OF TRAVEL LANES.
- DURING CONSTRUCTION, BERMS OR APPROPRIATE MEASURES SHALL BE USED TO ENSURE HYDRO-DEMOLITION WATER DOES NOT MIGRATE INTO ACTIVE TRAVEL LANES.
- FOR VOLUMETRIC MIXER, SEE SPECIAL PROVISIONS.

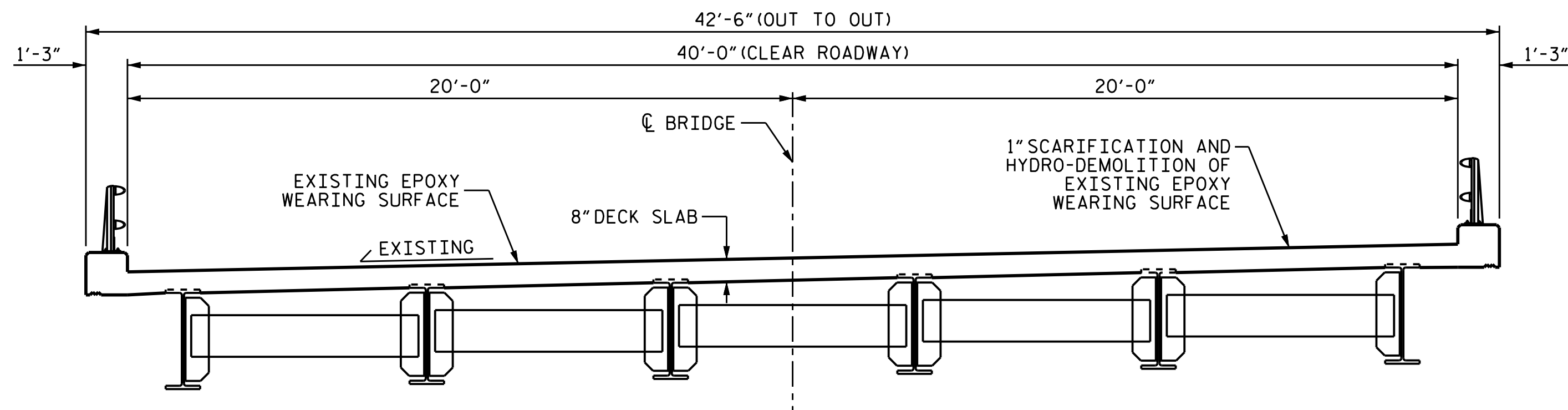
PROJ. NO. 15BPR.29
CHEROKEE COUNTY
 BRIDGE NO. 33



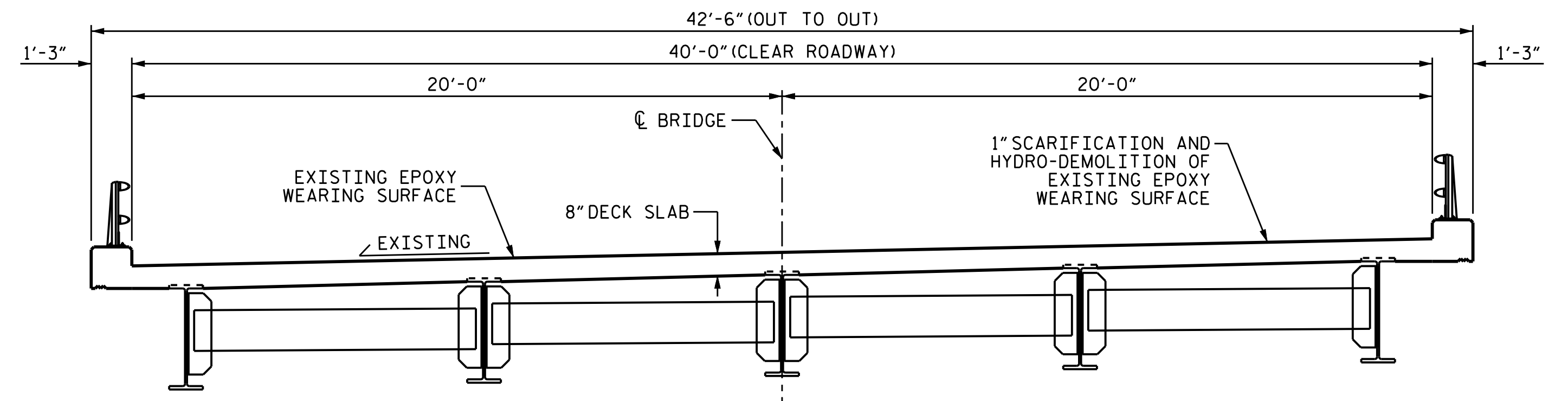
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 FOR BRIDGE ON
 US 19, US 129 SOUTHBOUND,
 AND US 64, US 74 WESTBOUND
 OVER THE HIWASSEE RIVER

DRAWN BY : R.L.PUTEK DATE : 07/18
 CHECKED BY : A.M.LEE DATE : 08/18

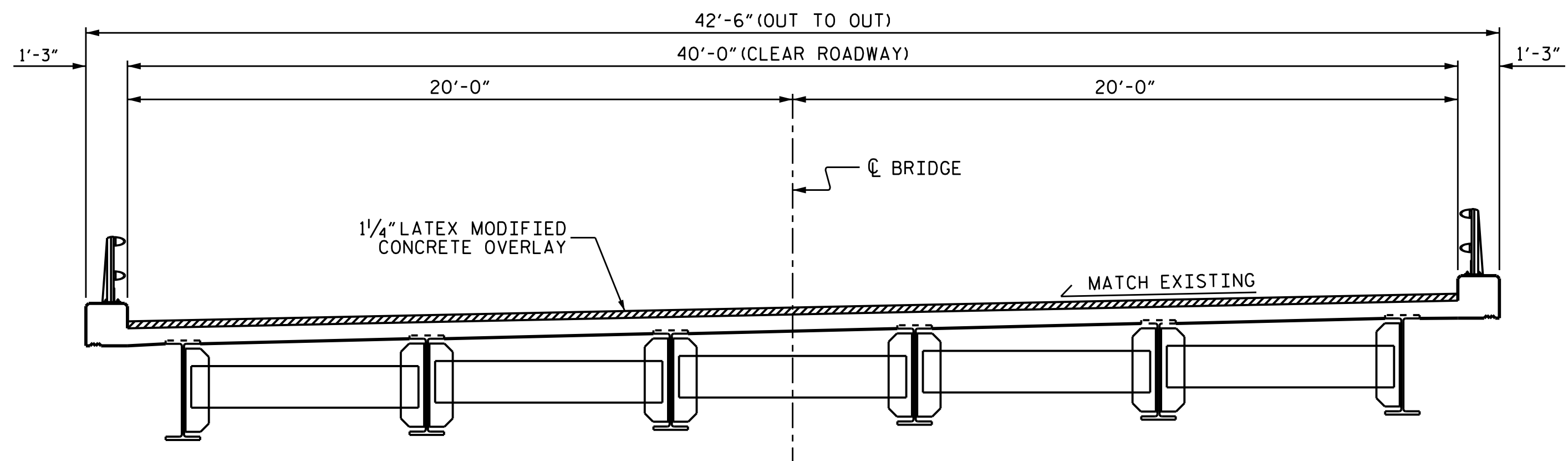
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NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
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2			4			55



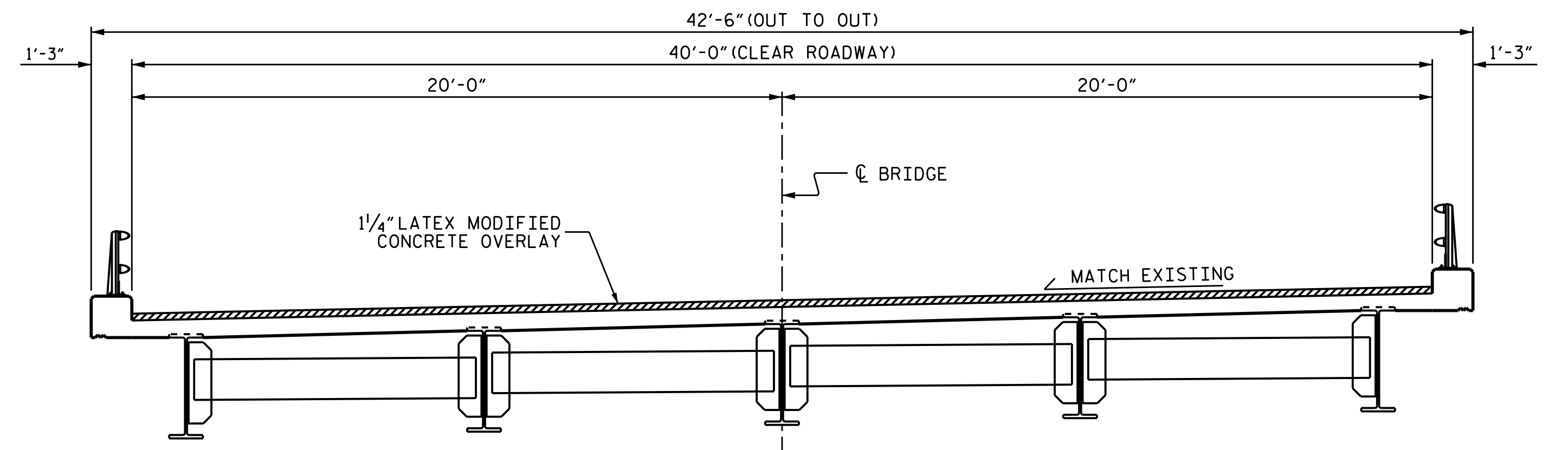
TYPICAL SECTION
(EXISTING EPOXY WEARING SURFACE)



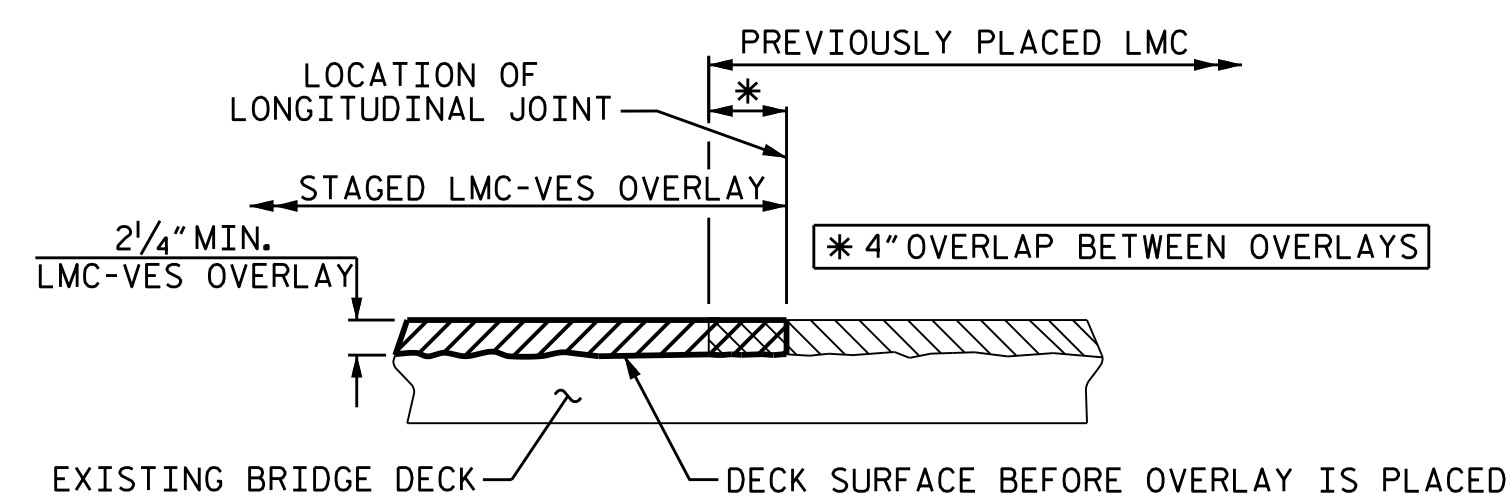
TYPICAL SECTION
(EXISTING EPOXY WEARING SURFACE)



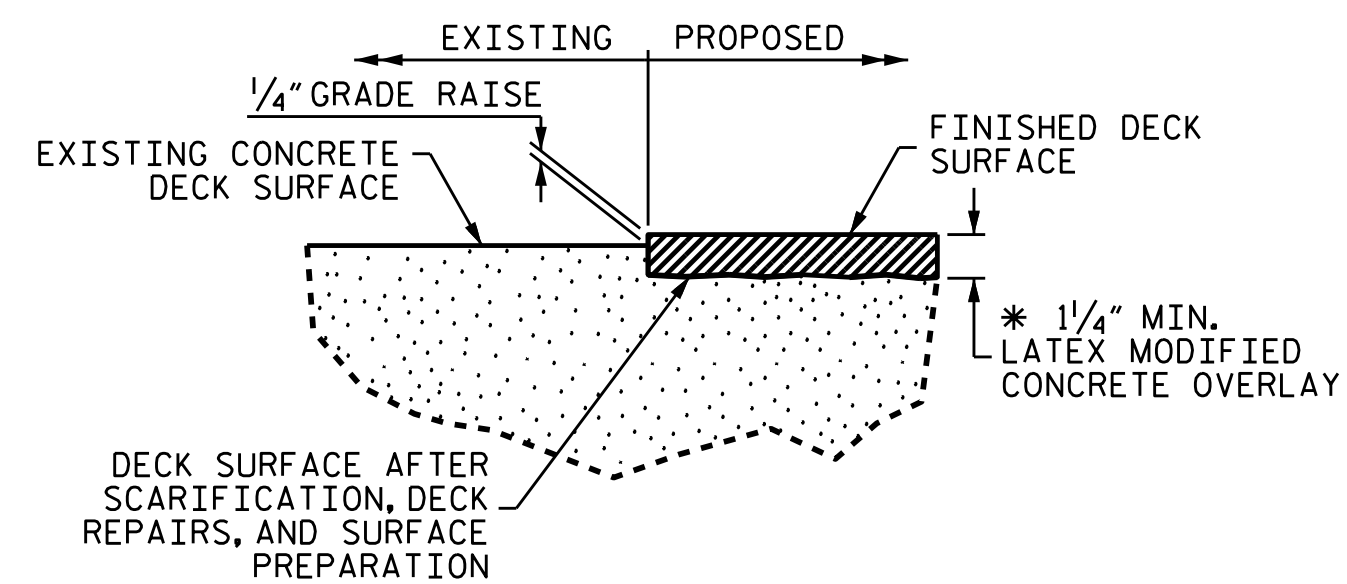
TYPICAL SECTION
(1/4" LATEX MODIFIED CONCRETE OVERLAY)



TYPICAL SECTION
(1/4" LATEX MODIFIED CONCRETE OVERLAY)



SECTION THRU DECK
STAGED LMC OVERLAY JOINT
(AS NEEDED)



DETAIL FOR LATEX
MODIFIED CONCRETE OVERLAY

(FINISHED SURFACE OF THE LATEX MODIFIED CONCRETE OVERLAY IS APPROXIMATE)

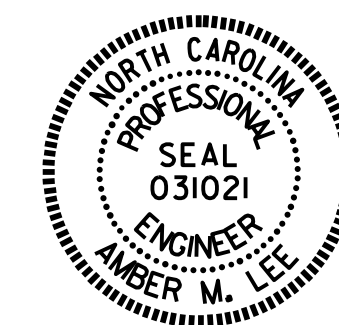
NOTES:

WHEN PREPARING THE SURFACE FOR LMC OVERLAY ADJACENT TO THE PREVIOUSLY PLACED LMC STAGE, THE PREVIOUSLY PLACED LMC SHALL BE SAW-CUT TO THE FULL DEPTH OF THE LMC AT THE CENTERLINE OF THE BRIDGE AND ALL LMC IN THE 4" OVERLAP SHALL BE REMOVED WITH HAND TOOLS PRIOR TO PLACEMENT OF LMC IN THE SECOND STAGE.

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

PROJECT NO. 15BPR.29
CHEROKEE COUNTY
BRIDGE NO. 33

SHEET 1 OF 2



DocuSign by
Amber M. Lee
BOARDS#07FAD484
10/22/2018

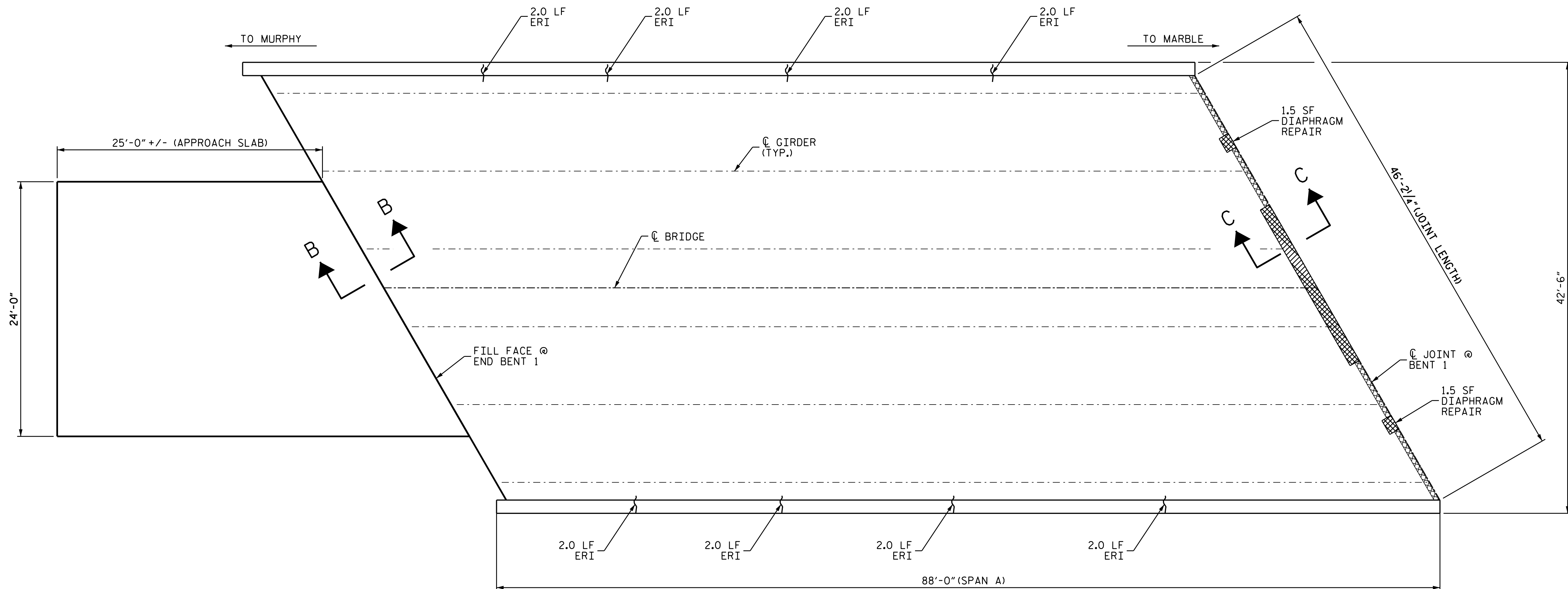
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION

DRAWN BY : R.L. PUTEK DATE : 08/18
CHECKED BY : A.M. LEE, PE DATE : 08/18

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1			3			TOTAL SHEETS
2			4			55



PLAN

AS-BUILT REPAIR QUANTITY TABLE

TOP OF DECK REPAIRS		APPROACH SLAB REPAIRS		UNDERSIDE OF DECK REPAIRS					
	ESTIMATE	ACTUAL		ESTIMATE	ACTUAL	SHOTCRETE REPAIRS			
						ESTIMATE	ACTUAL		
						AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
SCARIFYING BRIDGE DECK	391 SQ. YDS.		SCARIFYING BRIDGE DECK	85 SQ. YDS.		UNDERSIDE OF DECK	0.0	0.0	
CLASS II SURFACE PREPARATION	0.5 SQ. YDS. *		HYDRO-DEMOLITION OF BRIDGE DECK	85 SQ. YDS.		UNDERSIDE OF OVERHANG	0.0	0.0	
CLASS III SURFACE PREPARATION	0.5 SQ. YDS. *		LATEX MODIFIED CONCRETE OVERLAY	85 SQ. YDS.		INTERIOR DIAPHRAGMS	19.9	6.6	
CONCRETE FOR DECK REPAIRS	3.0 CU. FT. *		PLACING AND FINISHING LMC OVERLAY	2.9 CU. YDS.		OTHER REPAIRS		ESTIMATE	ACTUAL
HYDRO-DEMOLITION OF BRIDGE DECK	391 SQ. YDS.		GROOVING BRIDGE FLOORS	652 SQ. FT.		OVERHANG EPOXY RESIN INJECTION	16.0 LIN. FT.		
LATEX MODIFIED CONCRETE OVERLAY	13.5 CU. YDS.					DIAPHRAGM EPOXY RESIN INJECTION	0.0 LIN. FT.		
PLACING AND FINISHING LMC OVERLAY	391 SQ. YDS.								
GROOVING BRIDGE FLOORS	3204 SQ. FT.								
BRIDGE DECK DEMOLITION	23.1 SQ. FT.								
CONCRETE WORK FOR JOINT REPLACEMENT	23.1 SQ. FT.								
ELASTOMERIC CONCRETE	5.8 CU. FT.								

- APPROX. CLASS II SURFACE PREPARATION
- UNDERSIDE REPAIR
- DIAPHRAGM REPAIR
- EPOXY RESIN INJECTION (ERI)
- BRIDGE JOINT DEMOLITION

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

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

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

NOTES

REPAIR LOCATIONS AND ESTIMATED QUANTITIES ARE BASED ON THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATIONS AND DESCRIPTION OF THE REPAIRS AND ENTER THE ACTUAL QUANTITIES INTO THE AS-BUILT REPAIR QUANTITY TABLE. FOR SECTIONS B-B AND C-C, SEE "JOINT DETAILS" SHEETS.

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

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

PROJECT NO. 15BPR.29
CHEROKEE COUNTY
 BRIDGE NO. 33

SHEET 1 OF 5



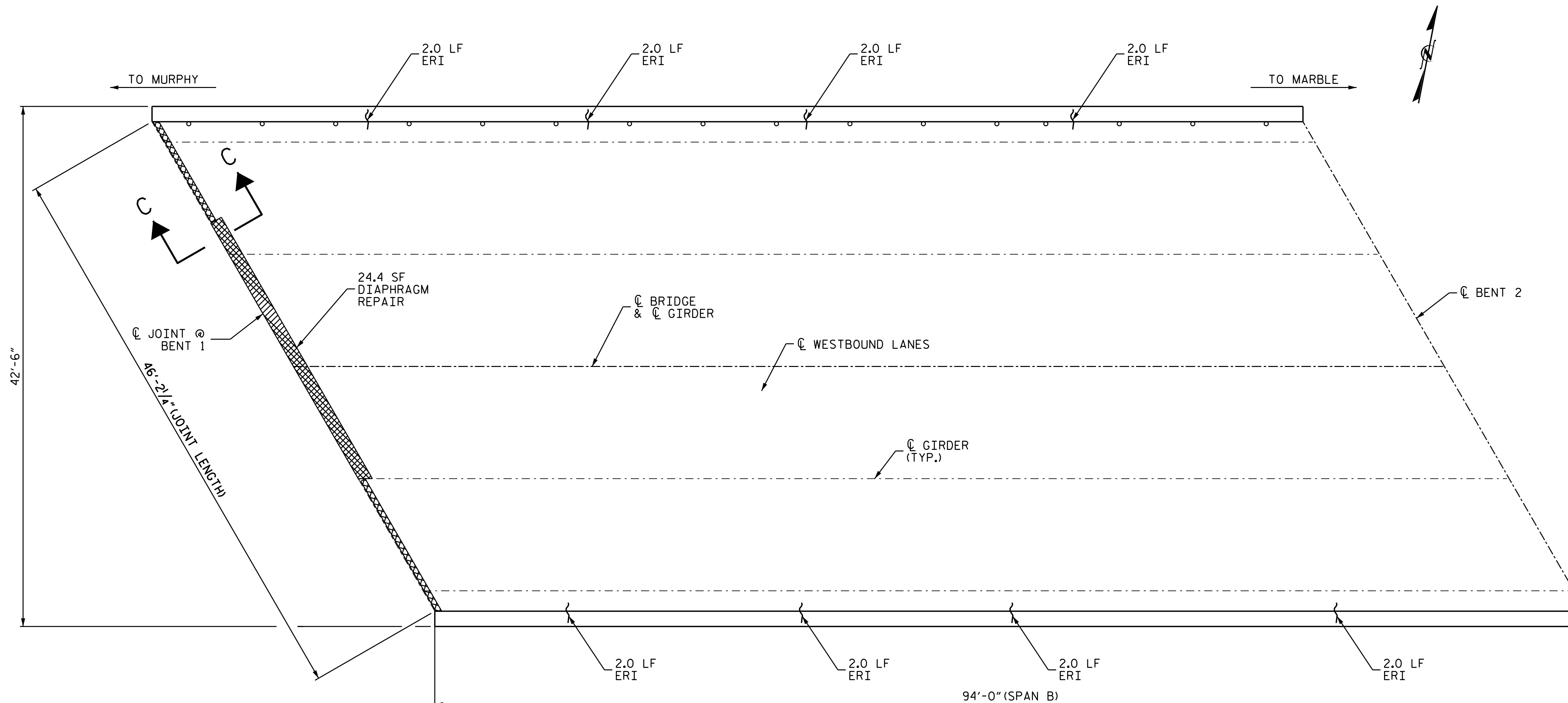
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

PLAN OF SPANS
 SPAN A

DRAWN BY : R.L. PUTEK DATE : 8/18
 CHECKED BY : F. LEA, PE DATE : 8/18

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-30
1			3			TOTAL SHEETS
2			4			55

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PLAN

NOTES:

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

FOR SECTIONS C-C, SEE "JOINT DETAILS" SHEETS.

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

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

- APPROX. CLASS II SURFACE PREPARATION
- UNDERSIDE REPAIR
- DIAPHRAGM REPAIR
- EPOXY RESIN INJECTION (ERI)
- BRIDGE JOINT DEMOLITION

AS-BUILT REPAIR QUANTITY TABLE							
TOP OF DECK REPAIRS				UNDERSIDE OF DECK REPAIRS			
	ESTIMATE	ACTUAL		ESTIMATE		ACTUAL	
				AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
SCARIFYING BRIDGE DECK	418 SQ. YDS.		SHOTCRETE REPAIRS				
CLASS II SURFACE PREPARATION	0.5 SQ. YDS. *		UNDERSIDE OF DECK	0.0	0.0		
CLASS III SURFACE PREPARATION	0.5 SQ. YDS. *		UNDERSIDE OF OVERHANG	0.0	0.0		
CONCRETE FOR DECK REPAIR	3.0 CU. FT. *		INTERIOR DIAPHRAGMS	24.4	8.1		
HYDRO-DEMOLITION OF BRIDGE DECK	418 SQ. YDS.		OTHER REPAIRS	ESTIMATE		ACTUAL	
LATEX MODIFIED CONCRETE OVERLAY	14.5 CU. YDS.		OVERHANG EPOXY RESIN INJECTION	16.0 LIN. FT.			
PLACING AND FINISHING LMC OVERLAY	418 SQ. YDS.		DIAPHRAGM EPOXY RESIN INJECTION	0.0 LIN. FT.			
GROOVING BRIDGE FLOORS	3450 SQ. FT.						
BRIDGE JOINT DEMOLITION	23.1 SQ. FT.						
CONCRETE WORK FOR JOINT REPLACEMENT	23.1 SQ. FT.						
ELASTOMERIC CONCRETE	5.8 CU. FT.						

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

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

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

DRAWN BY : R.L. PUTEK DATE : 08/18
 CHECKED BY : F. LEA, PE DATE : 08/18

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DocuSign by: Amber M. Lee
 BOARD # 031021
 10/22/2018

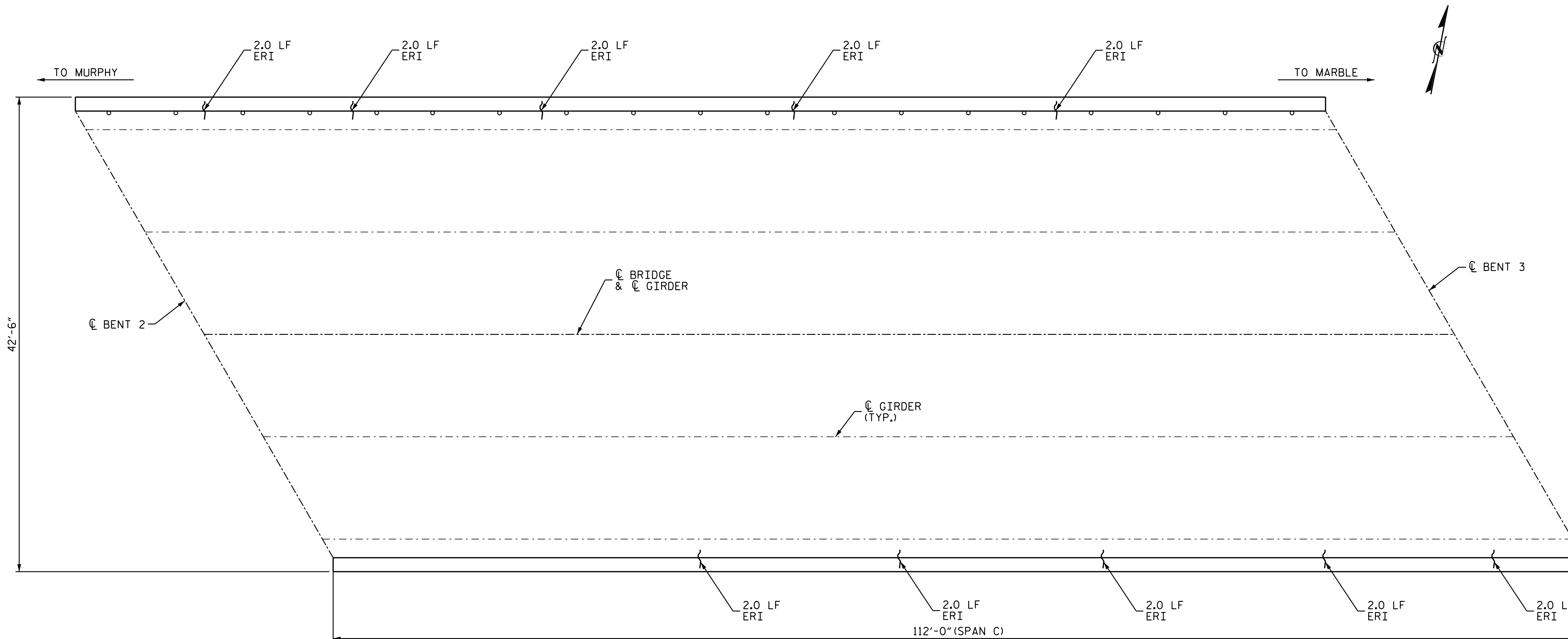
PROJECT NO. 15BPR.29
 CHEROKEE COUNTY
 BRIDGE NO. 33

SHEET 2 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

PLAN OF SPANS
 SPAN B

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-31
2			4			TOTAL SHEETS 55



PLAN

NOTES:

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

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

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

- APPROX. CLASS II SURFACE PREPARATION
- UNDERSIDE REPAIR
- DIAPHRAGM REPAIR
- EPOXY RESIN INJECTION (ERI)

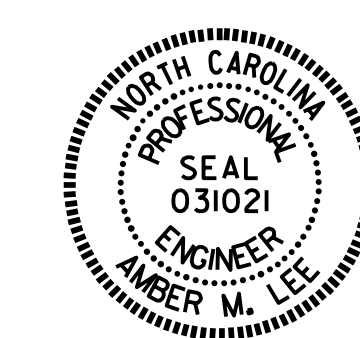
AS-BUILT REPAIR QUANTITY TABLE							
TOP OF DECK REPAIRS			UNDERSIDE OF DECK REPAIRS				
	ESTIMATE	ACTUAL	SHOTCRETE REPAIRS		ESTIMATE		ACTUAL
			AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.	
SCARIFYING BRIDGE DECK	498 SQ. YDS.		UNDERSIDE OF DECK		0.0	0.0	
CLASS II SURFACE PREPARATION	0.5 SQ. YDS. *		UNDERSIDE OF OVERHANG		0.0	0.0	
CLASS III SURFACE PREPARATION	0.5 SQ. YDS. *		INTERIOR DIAPHRAGMS		0.0	0.0	
CONCRETE FOR DECK REPAIRS	3.0 CU. FT. *		OTHER REPAIRS		ESTIMATE	ACTUAL	
HYDRO-DEMOLITION OF BRIDGE DECK	498 SQ. YDS.		OVERHANG EPOXY RESIN INJECTION		20.0 LIN. FT.		
LATEX MODIFIED CONCRETE OVERLAY	17.3 CU. YDS.		DIAPHRAGM EPOXY RESIN INJECTION		0.0 LIN. FT.		
PLACING AND FINISHING LMC OVERLAY	498 SQ. YDS.						
GROOVING BRIDGE FLOORS	4144 SQ. FT.						

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

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

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

DRAWN BY : R.L. PUTEK DATE : 08/18
 CHECKED BY : F. LEA, PE DATE : 08/18



PROJECT NO. 15BPR.29
 CHEROKEE COUNTY
 BRIDGE NO. 33

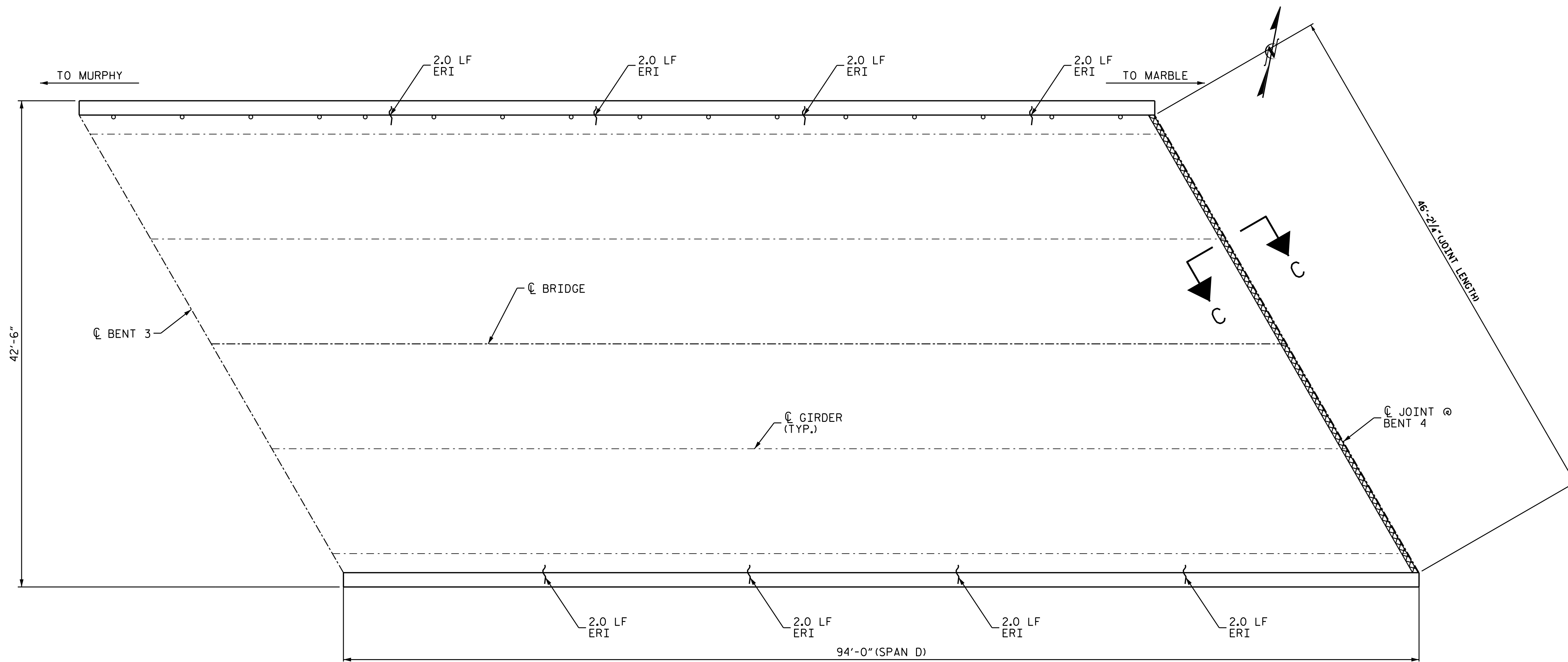
SHEET 3 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

PLAN OF SPANS
 SPAN C

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-32
1			3			TOTAL SHEETS
2			4			55

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PLAN

NOTES:

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

FOR SECTION C-C, SEE "JOINT DETAILS" SHEETS.

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

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

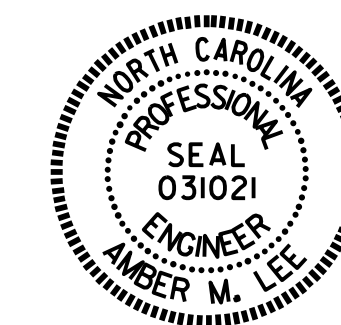
- APPROX. CLASS II SURFACE PREPARATION
- UNDERSIDE REPAIR
- DIAPHRAGM REPAIR
- EPOXY RESIN INJECTION (ERI)
- BRIDGE JOINT DEMOLITION

PROJECT NO. 15BPR.29
CHEROKEE COUNTY
 BRIDGE NO. 33

SHEET 4 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

PLAN OF SPANS
 SPAN D



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 Amber M. Lee
 BO4854872FAD484
 10/22/2018

AS-BUILT REPAIR QUANTITY TABLE							
TOP OF DECK REPAIRS				UNDERSIDE OF DECK REPAIRS			
	ESTIMATE	ACTUAL		ESTIMATE		ACTUAL	
			SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
SCARIFYING BRIDGE DECK	418 SQ. YDS.		UNDERSIDE OF DECK	0.0	0.0		
CLASS II SURFACE PREPARATION	0.5 SQ. YDS. *		UNDERSIDE OF OVERHANG	0.0	0.0		
CLASS III SURFACE PREPARATION	0.5 SQ. YDS. *		INTERIOR DIAPHRAGMS	0.0	0.0		
CONCRETE WORK DECK REPAIRS	3.0 CU. FT. *						
HYDRO-DEMOLITION OF BRIDGE DECK	418 SQ. YDS.		OTHER REPAIRS	ESTIMATE		ACTUAL	
LATEX MODIFIED CONCRETE OVERLAY	14.5 CU. YDS.		OVERHANG EPOXY RESIN INJECTION	16.0 LIN. FT.			
PLACING AND FINISHING LMC OVERLAY	418 SQ. YDS.		DIAPHRAGM EPOXY RESIN INJECTION	0.0 LIN. FT.			
GROOVING BRIDGE FLOORS	3450 SQ. FT.						
BRIDGE JOINT DEMOLITION	23.1 SQ. FT.						
CONCRETE WORK FOR JOINT REPLACEMENT	23.1 SQ. FT.						
ELASTOMERIC CONCRETE	5.8 CU. FT.						

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

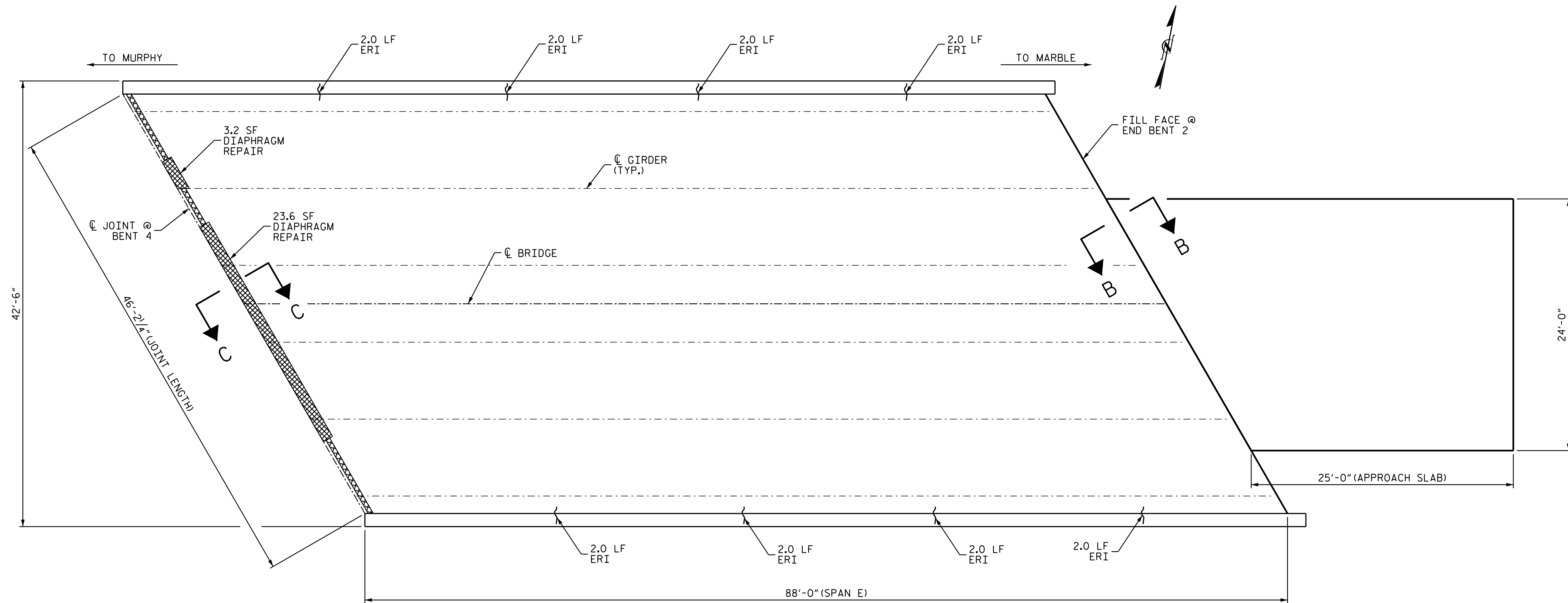
VALUES REPRESENT ESTIMATED UNDERSIDE OF DECK REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MINIMUM OF 1" BEHIND REBAR AND MINIMUM OF 2" CLEAR TO SAWCUT. SEE REPAIR DETAILS.

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

DRAWN BY : R.L. PUTEK DATE : 08/18
 CHECKED BY : F. LEA, PE DATE : 08/18

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1			3			TOTAL SHEETS
2			4			55



PLAN

AS-BUILT REPAIR QUANTITY TABLE									
TOP OF DECK REPAIRS			APPROACH SLAB REPAIRS			UNDERSIDE OF DECK REPAIRS			
	ESTIMATE	ACTUAL		ESTIMATE	ACTUAL	SHOTCRETE REPAIRS		OTHER REPAIRS	
						ESTIMATE	ACTUAL	ESTIMATE	ACTUAL
						AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
SCARIFYING BRIDGE DECK	391 SQ. YDS.		SCARIFYING BRIDGE DECK	85.0 SQ. YDS.		UNDERSIDE OF DECK	0.0	0.0	
CLASS II SURFACE PREPARATION	0.5 SQ. YDS. *		HYDRO-DEMOLITION OF BRIDGE DECK	85.0 SQ. YDS.		UNDERSIDE OF OVERHANG	0.0	0.0	
CLASS III SURFACE PREPARATION	0.5 SQ. YDS. *		LATEX MODIFIED CONCRETE OVERLAY	85.0 SQ. YDS.		INTERIOR DIAPHRAGMS	26.8	8.9	
CONCRETE FOR DECK REPAIRS	3.0 CU. FT. *		PLACING AND FINISHING LMC OVERLAY	85.0 SQ. YDS.					
HYDRO-DEMOLITION OF BRIDGE DECK	391 SQ. YDS.		GROOVING BRIDGE FLOORS	652 SQ. FT.					
LATEX MODIFIED CONCRETE OVERLAY	13.5 CU. YDS.								
PLACING AND FINISHING LMC OVERLAY	391 SQ. YDS.					OTHER REPAIRS	ESTIMATE	ACTUAL	
GROOVING BRIDGE FLOORS	3204 SQ. FT.					OVERHANG EPOXY RESIN INJECTION	16.0 LIN. FT.		
BRIDGE JOINT DEMOLITION	23.1 SQ. FT.					DIAPHRAGM EPOXY RESIN INJECTION	0.0 LIN. FT.		
CONCRETE WORK FOR JOINT REPLACEMENT	23.1 SQ. FT.								
ELASTOMERIC CONCRETE	5.8 CU. FT.								

- APPROX. CLASS II SURFACE PREPARATION
- UNDERSIDE REPAIR
- DIAPHRAGM REPAIR
- EPOXY RESIN INJECTION (ERI)
- BRIDGE JOINT DEMOLITION

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

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

NOTES

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

FOR SECTIONS B-B AND C-C, SEE "JOINT DETAILS" SHEETS.

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

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

PROJECT NO. 15BPR.29
CHEROKEE COUNTY
 BRIDGE NO. 33

SHEET 5 OF 5



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

PLAN OF SPANS
 SPAN E

DRAWN BY : R.L. PUTEK DATE : 08/18
 CHECKED BY : F. LEA, PE DATE : 08/18

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REVISIONS						SHEET NO.
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2			4			TOTAL SHEETS 55

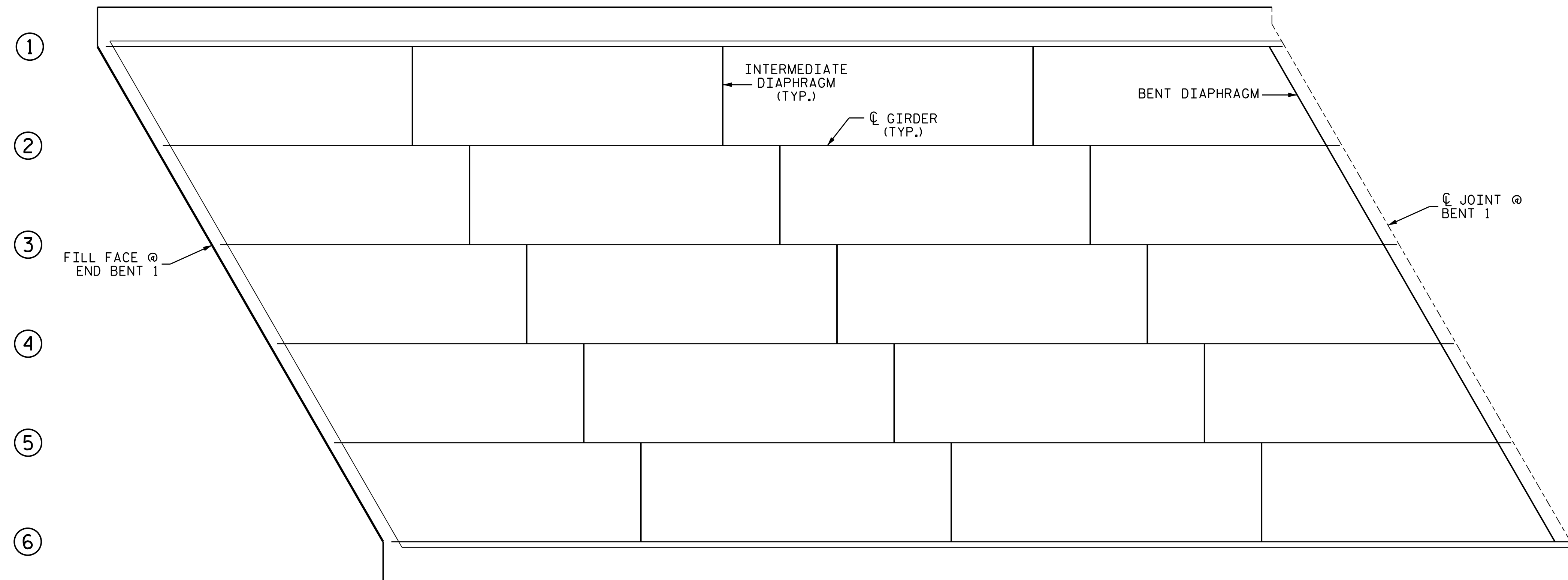
NOTES

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

FOR BRIDGE JACKING DETAILS, SEE "JACKING DETAILS" SHEET.

THE LOCATIONS AND DIMENSIONS OF THE AREAS FOR REPAIR ARE BASED ON THE BEST INFORMATION AVAILABLE. THE CONTRACTOR, IN CONJUNCTION WITH THE ENGINEER, SHALL VERIFY THE LOCATION AND EXTENT OF REPAIR AREAS PRIOR TO STEEL FABRICATION.

- ① BEAM NUMBER
- Ⓑ BEAM END REPAIR AND BRIDGE JACKING
- Ⓟ PLATING REPAIR
- Ⓢ STIFFENER REPAIR
- Ⓣ DIAPHRAGM REPAIR
- ⓗ HARDWARE REPAIR



BEAM REPAIR LOCATIONS

ANTICIPATED BEAM REPAIR LOCATIONS				
LOCATION	DIM "A"	DIM "B"	DIM "C"	DIM "D"

BEAM REPAIR QUANTITY TABLE					
BEAM END REPAIR		BRIDGE JACKING		STIFFENER REPAIR	
LBS.		EA.		LBS.	
ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL
0		0		0	
DIAPHRAGM REPAIR		HARDWARE REPAIR			
LBS.		LBS.			
ESTIMATE	ACTUAL	ESTIMATE	ACTUAL		
0		0			

PROJECT NO. 15BPR.29
CHEROKEE COUNTY
 BRIDGE NO. 33

SHEET 1 OF 5



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 10/22/2018

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**BEAM REPAIR
 LOCATIONS
 SPAN A**

DRAWN BY : R.L.PUTEK DATE : 07/18
 CHECKED BY : F.LEA, PE DATE : 08/18

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-35
1			3			TOTAL SHEETS
2			4			55

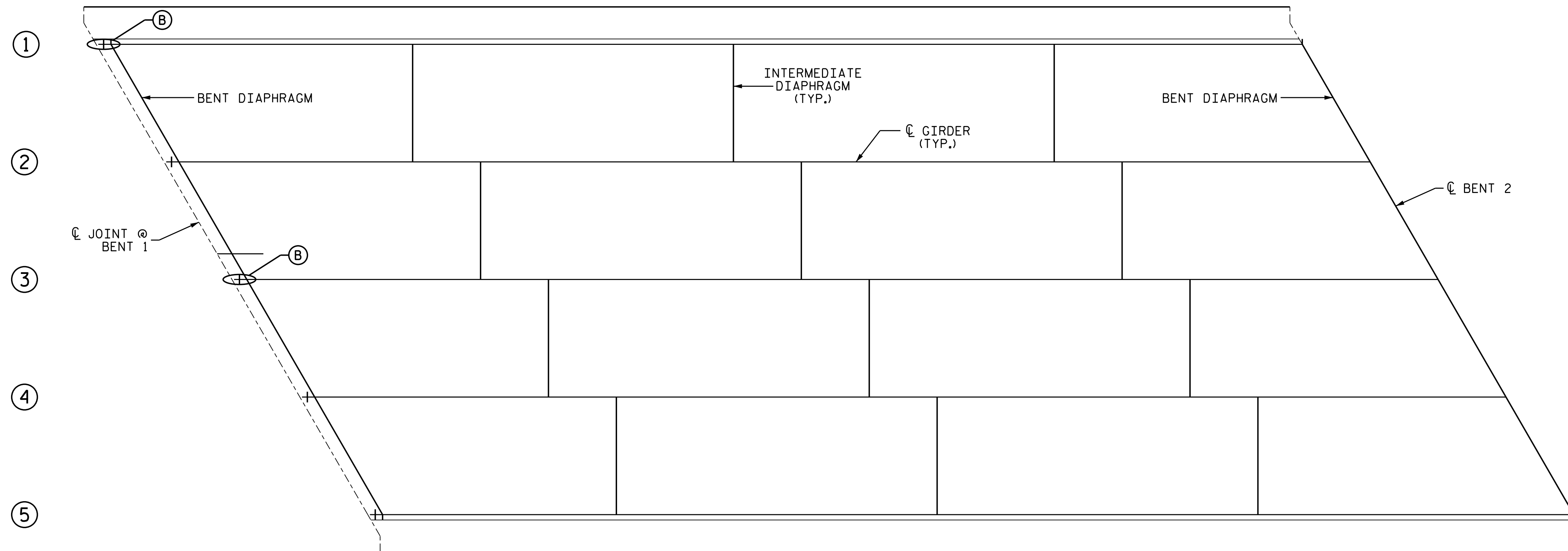
NOTES

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

FOR BRIDGE JACKING DETAILS, SEE "JACKING DETAILS" SHEET.

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- ① BEAM NUMBER
- ⓑ BEAM END REPAIR AND BRIDGE JACKING
- Ⓟ PLATING REPAIR
- Ⓢ STIFFENER REPAIR
- ⓓ DIAPHRAGM REPAIR
- ⓗ HARDWARE REPAIR



BEAM REPAIR LOCATIONS

ANTICIPATED BEAM REPAIR LOCATIONS					
BEAM	LOCATION	DIM "A"	DIM "B"	DIM "C"	DIM "D"
1	BENT 1	1"	2'-0"		
3	BENT 1	8"	2'-6"	15"	3"

BEAM REPAIR QUANTITY TABLE					
BEAM END REPAIR		BRIDGE JACKING		STIFFENER REPAIR	
LBS.		EA.		LBS.	
ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL
391.0		2		0	
DIAPHRAGM REPAIR		HARDWARE REPAIR			
LBS.		LBS.			
ESTIMATE	ACTUAL	ESTIMATE	ACTUAL		
0		0			

PROJECT NO. 15BPR.29
CHEROKEE COUNTY
 BRIDGE NO. 33

SHEET 2 OF 5



DocuSign by
 Amber M. Lee
 BO4854872FAD484
 10/22/2018

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**BEAM REPAIR
 LOCATIONS
 SPAN B**

DRAWN BY : R.L. PUTEK DATE : 07/18
 CHECKED BY : F. LEA, PE DATE : 08/18

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1			3			TOTAL SHEETS
2			4			55

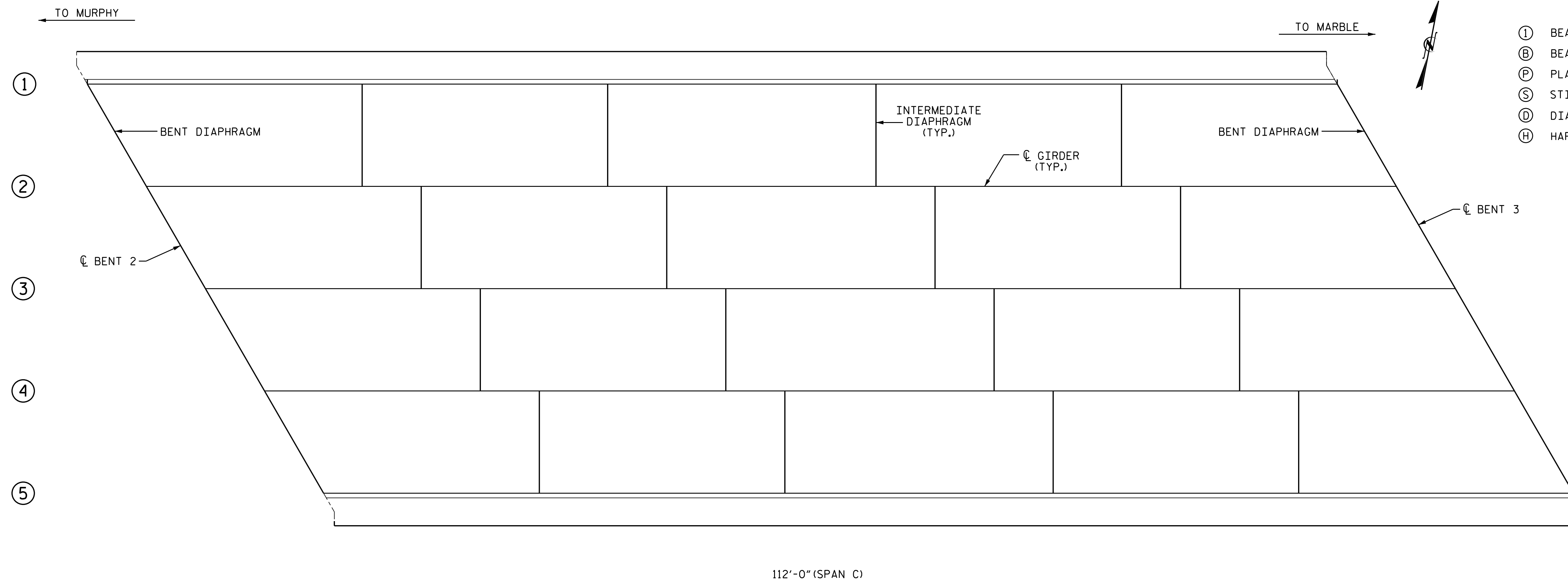
NOTES

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

FOR BRIDGE JACKING DETAILS, SEE "JACKING DETAILS" SHEET.

THE LOCATIONS AND DIMENSIONS OF THE AREAS FOR REPAIR ARE BASED ON THE BEST INFORMATION AVAILABLE. THE CONTRACTOR, IN CONJUNCTION WITH THE ENGINEER, SHALL VERIFY THE LOCATION AND EXTENT OF REPAIR AREAS PRIOR TO STEEL FABRICATION.

- ① BEAM NUMBER
- ⓑ BEAM END REPAIR AND BRIDGE JACKING
- ⓐ PLATING REPAIR
- Ⓢ STIFFENER REPAIR
- ⓓ DIAPHRAGM REPAIR
- ⓗ HARDWARE REPAIR



112'-0" (SPAN C)

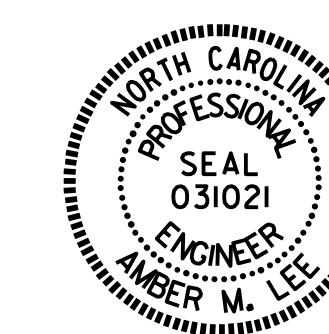
BEAM REPAIR LOCATIONS

ANTICIPATED BEAM REPAIR LOCATIONS					
BEAM	LOCATION	DIM "A"	DIM "B"	DIM "C"	DIM "D"

BEAM REPAIR QUANTITY TABLE					
BEAM END REPAIR		BRIDGE JACKING		STIFFENER REPAIR	
LBS.		EA.		LBS.	
ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL
0		0		0	
DIAPHRAGM REPAIR		HARDWARE REPAIR			
LBS.		LBS.			
ESTIMATE	ACTUAL	ESTIMATE	ACTUAL		
0		0			

PROJECT NO. 15BPR.29
CHEROKEE COUNTY
 BRIDGE NO. 33

SHEET 3 OF 5



Drawn by: *Amber M. Lee*
 10/22/2018

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

DRAWN BY : R.L. PUTEK DATE : 8/18
 CHECKED BY : F. LEA, PE DATE : 8/18

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1			3			TOTAL SHEETS
2			4			55

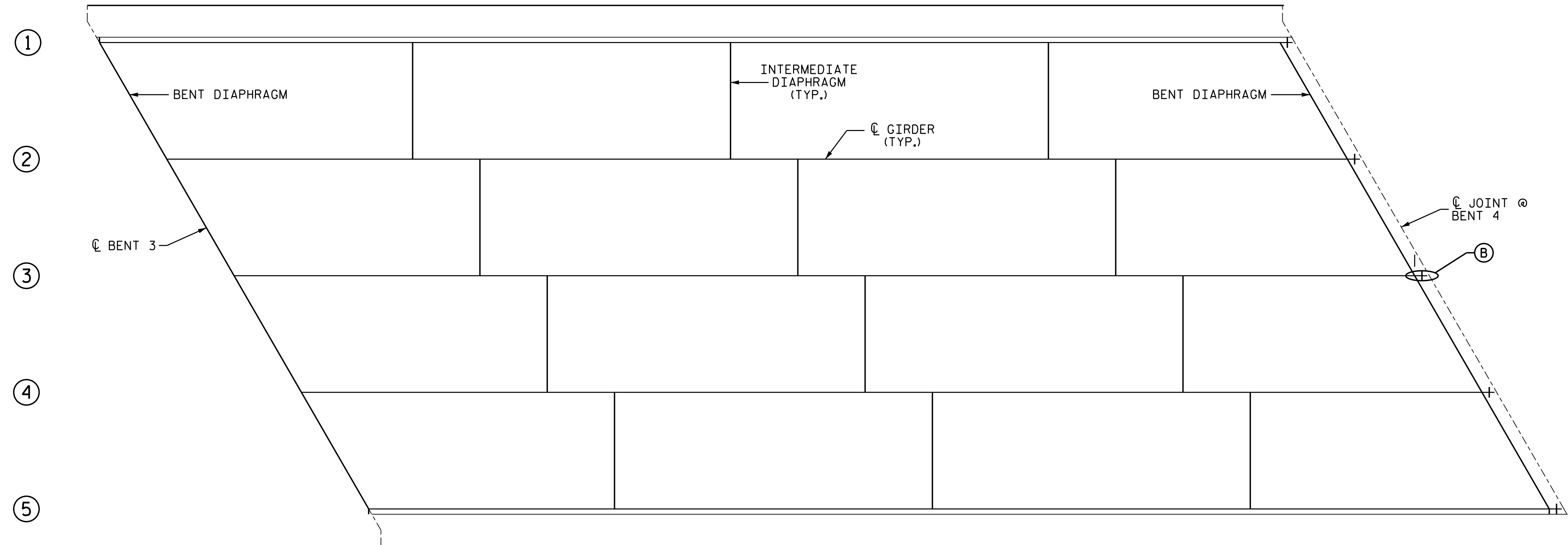
NOTES

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

FOR BRIDGE JACKING DETAILS, SEE "JACKING DETAILS" SHEET.

THE LOCATIONS AND DIMENSIONS OF THE AREAS FOR REPAIR ARE BASED ON THE BEST INFORMATION AVAILABLE. THE CONTRACTOR, IN CONJUNCTION WITH THE ENGINEER, SHALL VERIFY THE LOCATION AND EXTENT OF REPAIR AREAS PRIOR TO STEEL FABRICATION.

- ① BEAM NUMBER
- ⓑ BEAM END REPAIR AND BRIDGE JACKING
- Ⓟ PLATING REPAIR
- Ⓢ STIFFENER REPAIR
- ⓓ DIAPHRAGM REPAIR
- ⓗ HARDWARE REPAIR



BEAM REPAIR LOCATIONS

ANTICIPATED BEAM REPAIR LOCATIONS					
BEAM	LOCATION	DIM "A"	DIM "B"	DIM "C"	DIM "D"
4	BENT 4	3'-4"	1'-3"	1"	9'-9"

BEAM REPAIR QUANTITY TABLE					
BEAM END REPAIR		BRIDGE JACKING		STIFFENER REPAIR	
LBS.		EA.		LBS.	
ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL
883.6		1		0	
DIAPHRAGM REPAIR		HARDWARE REPAIR			
LBS.		LBS.			
ESTIMATE	ACTUAL	ESTIMATE	ACTUAL		
0		0			

PROJECT NO. 15BPR.29
CHEROKEE COUNTY
 BRIDGE NO. 33

SHEET 4 OF 5



DocuSigned by:
 Amber M. Lee
 BO485A8F7AD484
 10/22/2018

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**BEAM REPAIR
 LOCATIONS
 SPAN D**

DRAWN BY : R.L. PUTEK DATE : 07/18
 CHECKED BY : F. LEA, PE DATE : 08/18

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1			3			TOTAL SHEETS
2			4			55

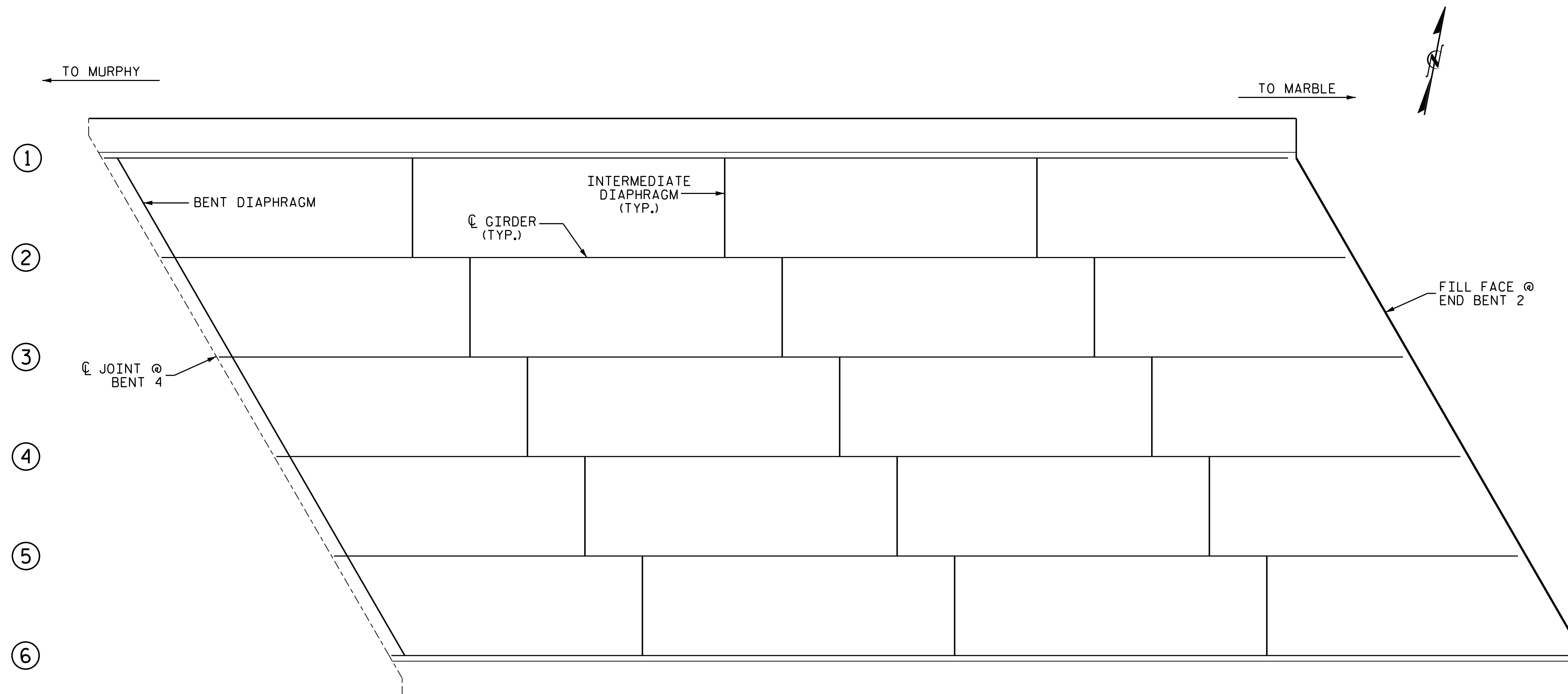
NOTES

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

FOR BRIDGE JACKING DETAILS, SEE "JACKING DETAILS" SHEET.

THE LOCATIONS AND DIMENSIONS OF THE AREAS FOR REPAIR ARE BASED ON THE BEST INFORMATION AVAILABLE. THE CONTRACTOR, IN CONJUNCTION WITH THE ENGINEER, SHALL VERIFY THE LOCATION AND EXTENT OF REPAIR AREAS PRIOR TO STEEL FABRICATION.

- ① BEAM NUMBER
- Ⓑ BEAM END REPAIR AND BRIDGE JACKING
- Ⓟ PLATING REPAIR
- Ⓢ STIFFENER REPAIR
- Ⓓ DIAPHRAGM REPAIR
- Ⓗ HARDWARE REPAIR



BEAM REPAIR LOCATIONS

ANTICIPATED BEAM REPAIR LOCATIONS					
BEAM	LOCATION	DIM "A"	DIM "B"	DIM "C"	DIM "D"

BEAM REPAIR QUANTITY TABLE					
BEAM END REPAIR		BRIDGE JACKING		STIFFENER REPAIR	
LBS.		EA.		LBS.	
ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL
0		0		0	
DIAPHRAGM REPAIR		HARDWARE REPAIR			
LBS.		LBS.			
ESTIMATE	ACTUAL	ESTIMATE	ACTUAL		
0		0			

PROJECT NO. 15BPR.29
CHEROKEE COUNTY
 BRIDGE NO. 33

SHEET 5 OF 5



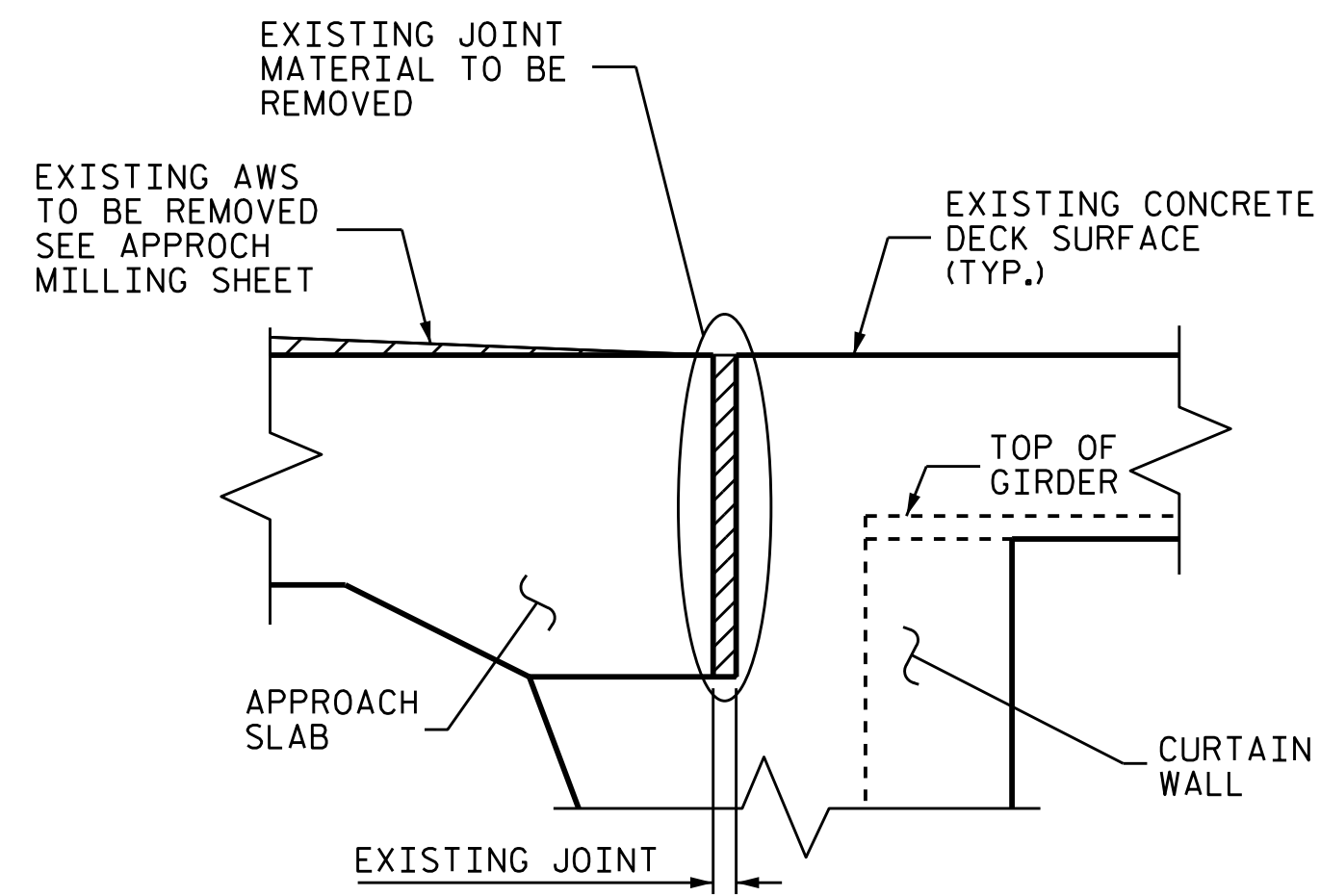
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 10/22/2018

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**BEAM REPAIR
 LOCATIONS
 SPAN E**

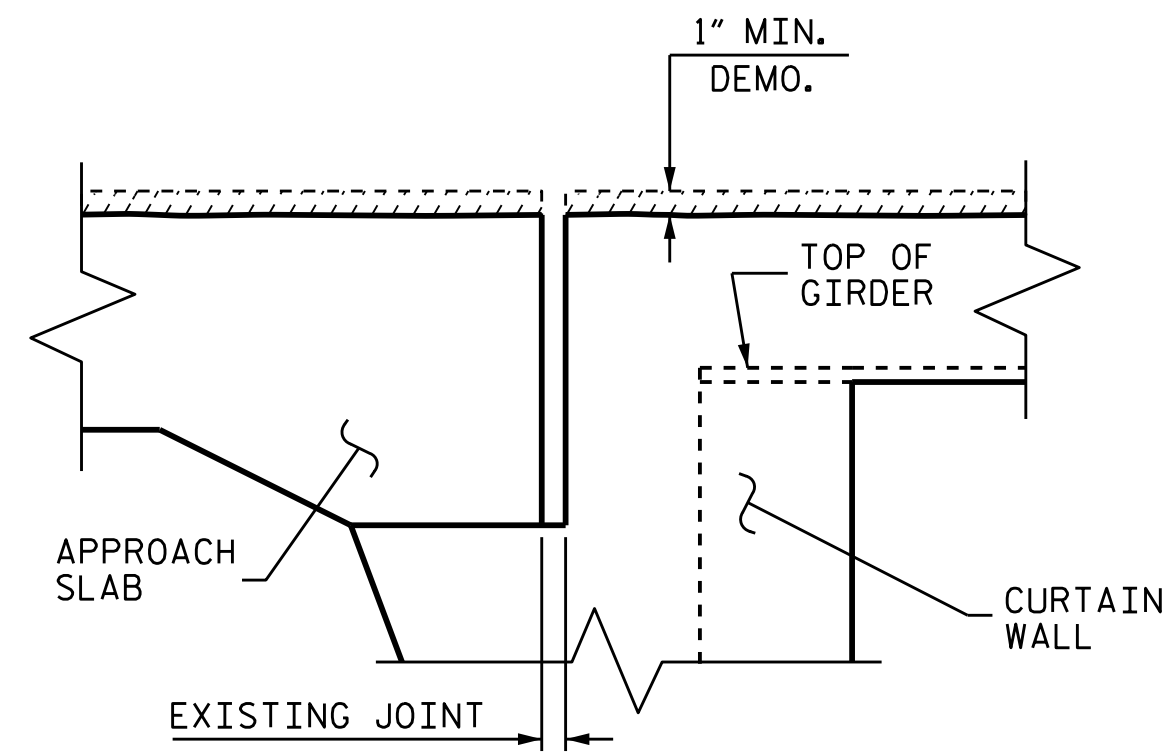
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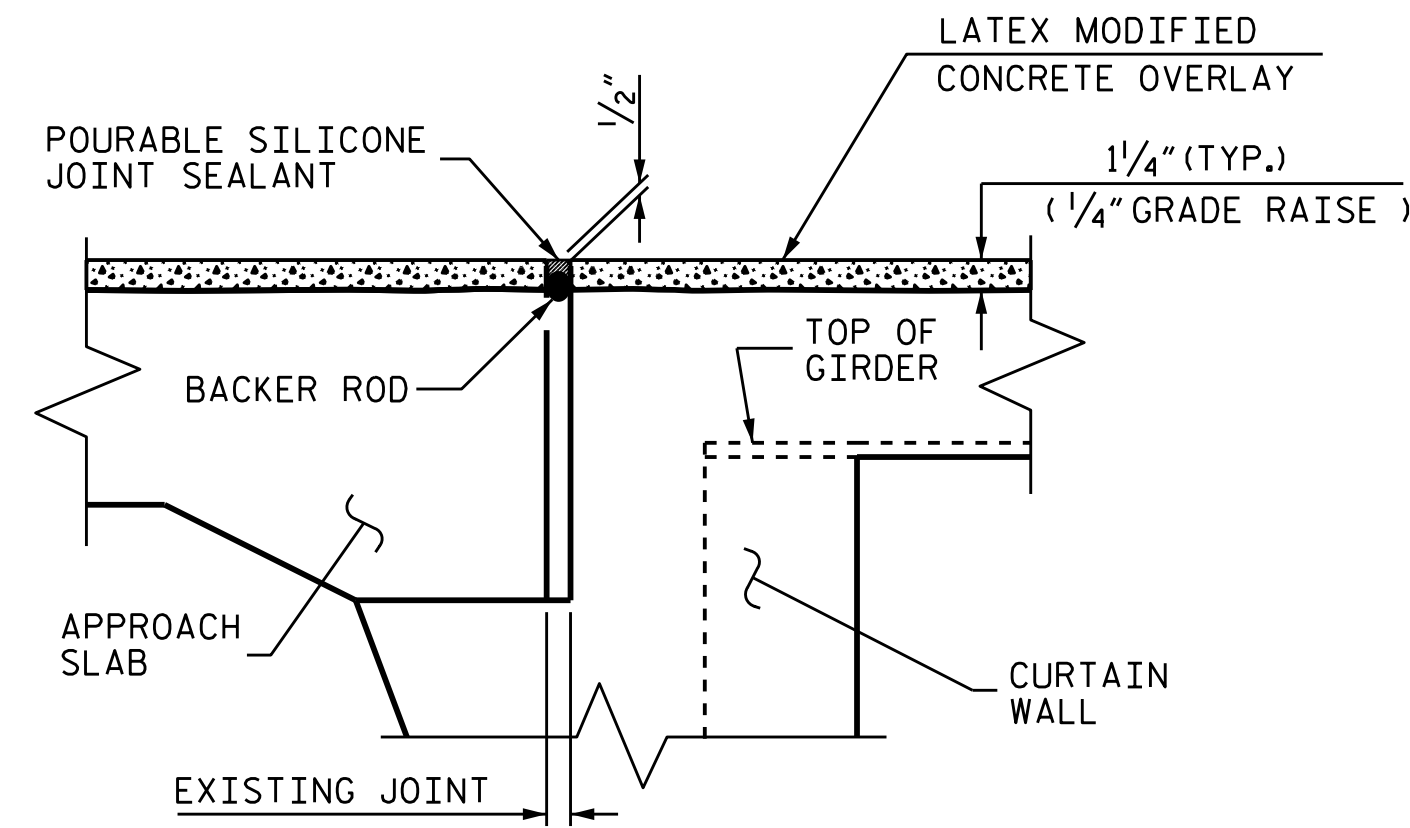
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-39
1			3			TOTAL SHEETS
2			4			55



SECTION B-B
(EXISTING JOINT)



SECTION B-B
(MINIMUM EXISTING
JOINT DEMOLITION)

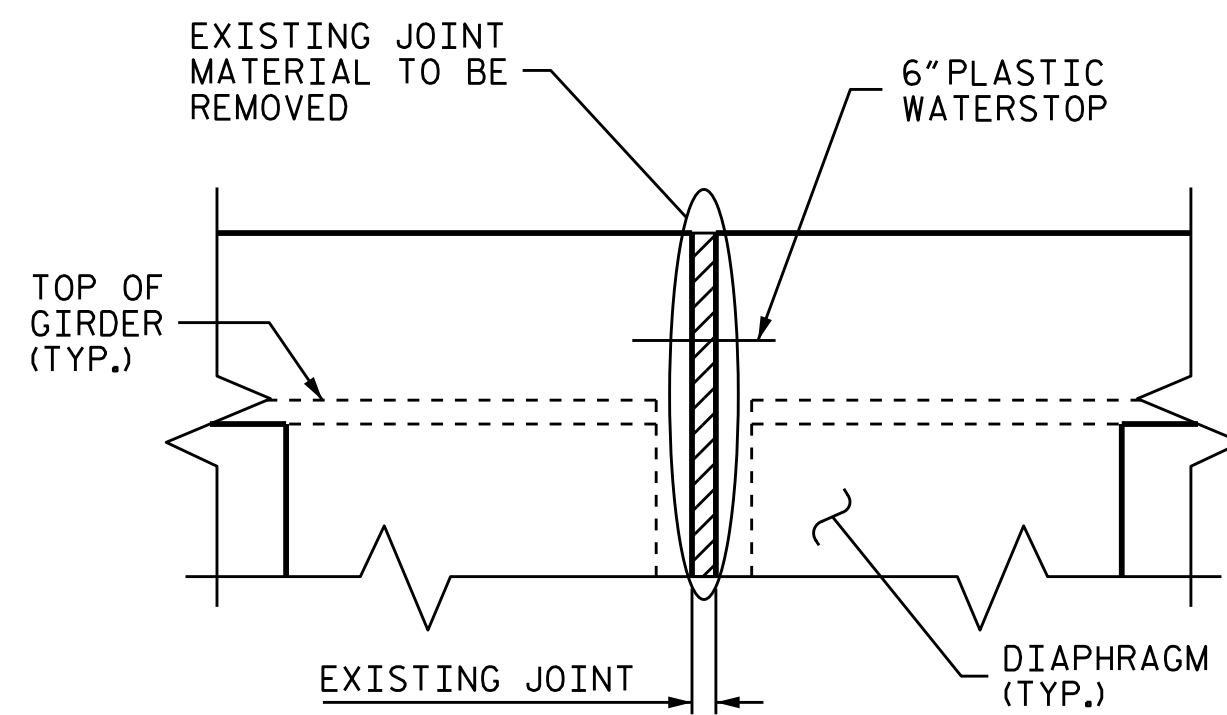


SECTION B-B
(PROPOSED JOINT)

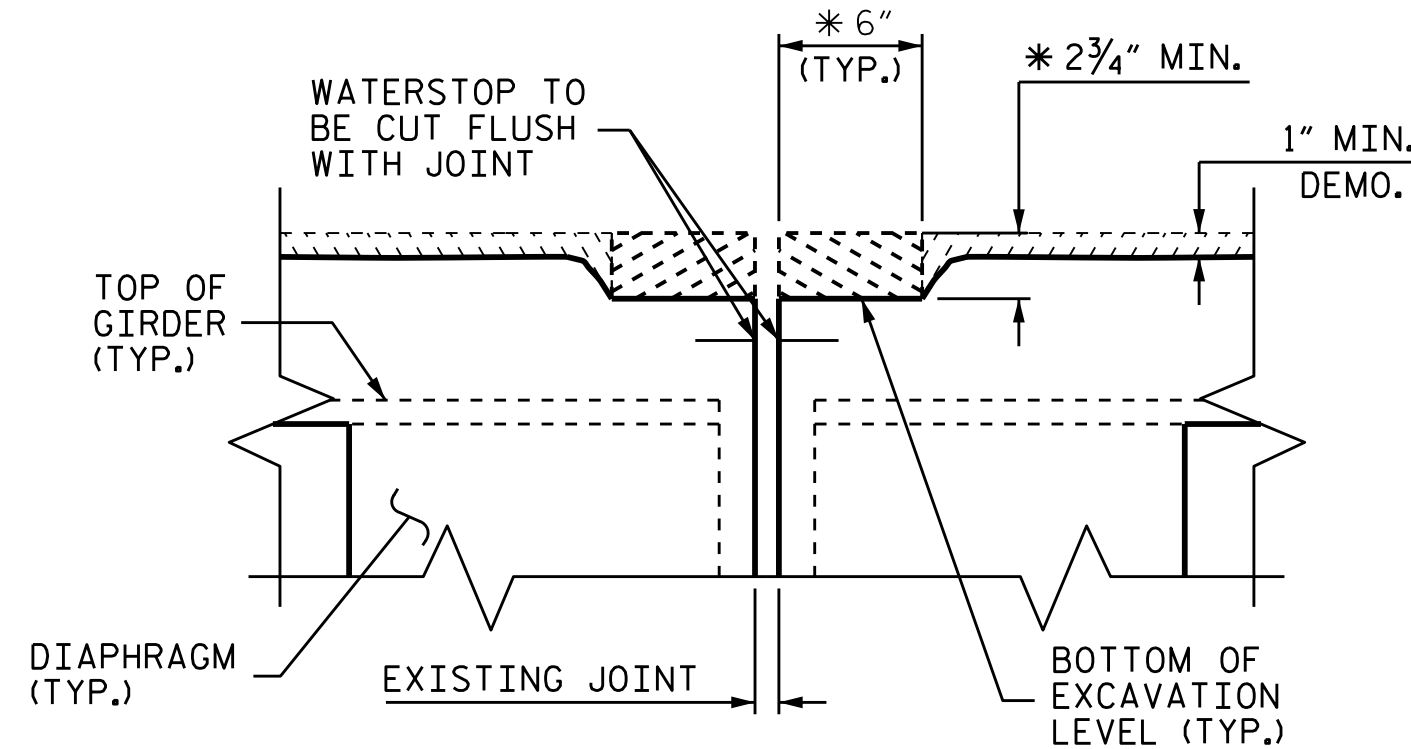
IF THE EMBEDDED PORTION OF THE EXISTING PLASTIC WATERSTOP IS EXPOSED DURING REMOVAL OF UNSOUND CONCRETE, OR IF UNSOUND CONCRETE IS REMOVED WITHIN 2" OF THE WATERSTOP, THE ENTIRE CONCRETE DEPTH TO THE WATERSTOP SHALL BE REMOVED. IF SUCH EXCAVATION EXTENDS MORE THAN 2" BELOW THE BOTTOM OF THE PLANNED ELASTOMERIC CONCRETE HEADER, AS SHOWN, APPROVED REPAIR CONCRETE SHALL BE PLACED IN THE EXCAVATED AREA TO THE ELEVATION AT THE BOTTOM OF THE ELASTOMERIC CONCRETE.

* THE 3" X 6" ELASTOMERIC CONCRETE HEADER FOR FOAM JOINT SEALS AT BENTS 1 AND 4 WAS USED FOR QUANTITIES, THE CONTRACTOR HAS THE OPTION TO USE THE 4" X 8" ELASTOMERIC CONCRETE HEADER TO ASSURE THAT ALL HARDWARE FROM THE EXISTING JOINTS HAS BEEN SUFFICIENTLY REMOVED.

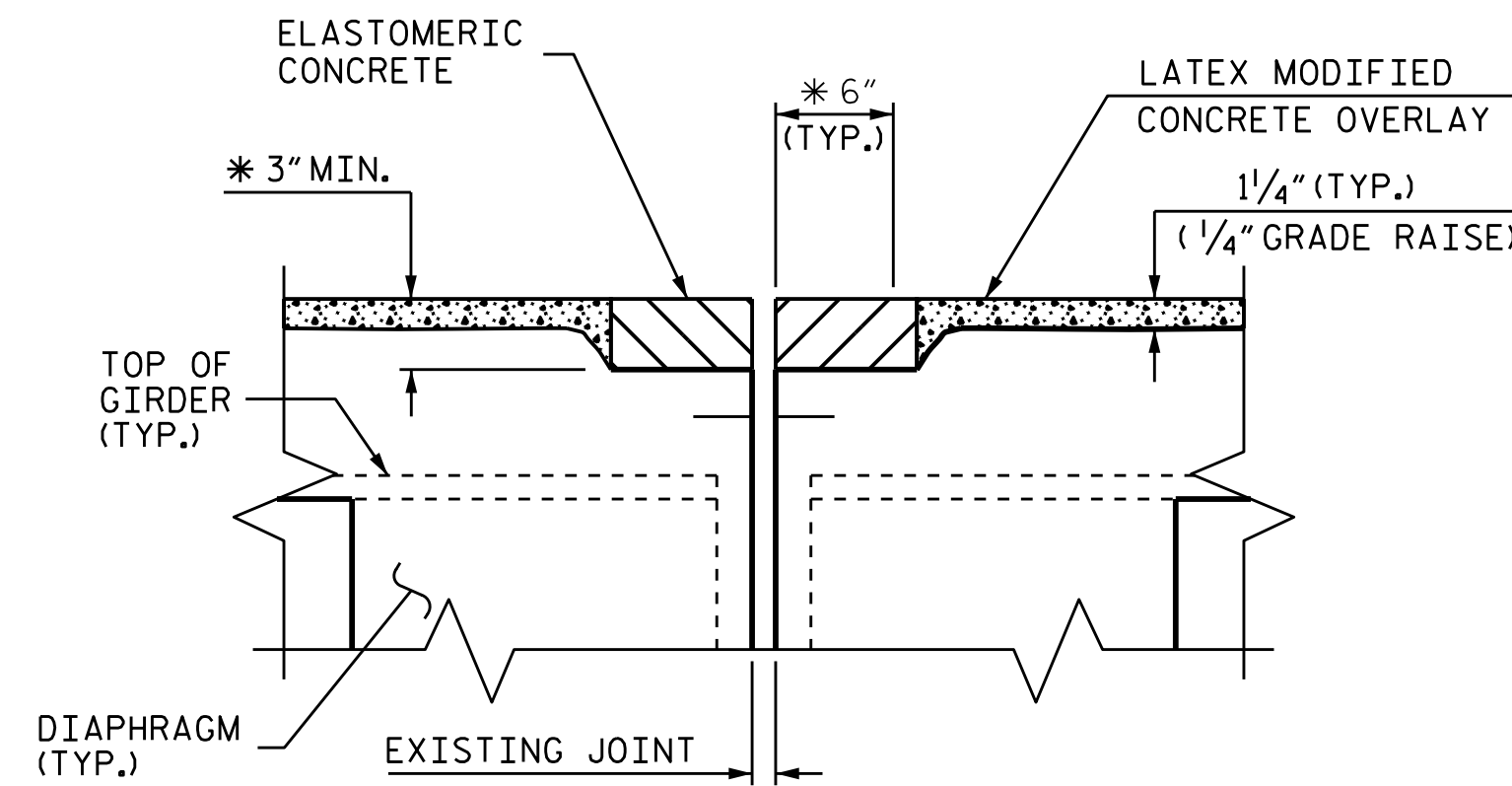
DEMOLISH BRIDGE JOINT AREA TO THE NECESSARY DEPTH, SUCH THAT ELASTOMERIC CONCRETE SHALL BE FOUNDED ON CONCRETE OR REPAIR CONCRETE SUBSTRATE, NOT LATEX MODIFIED CONCRETE.



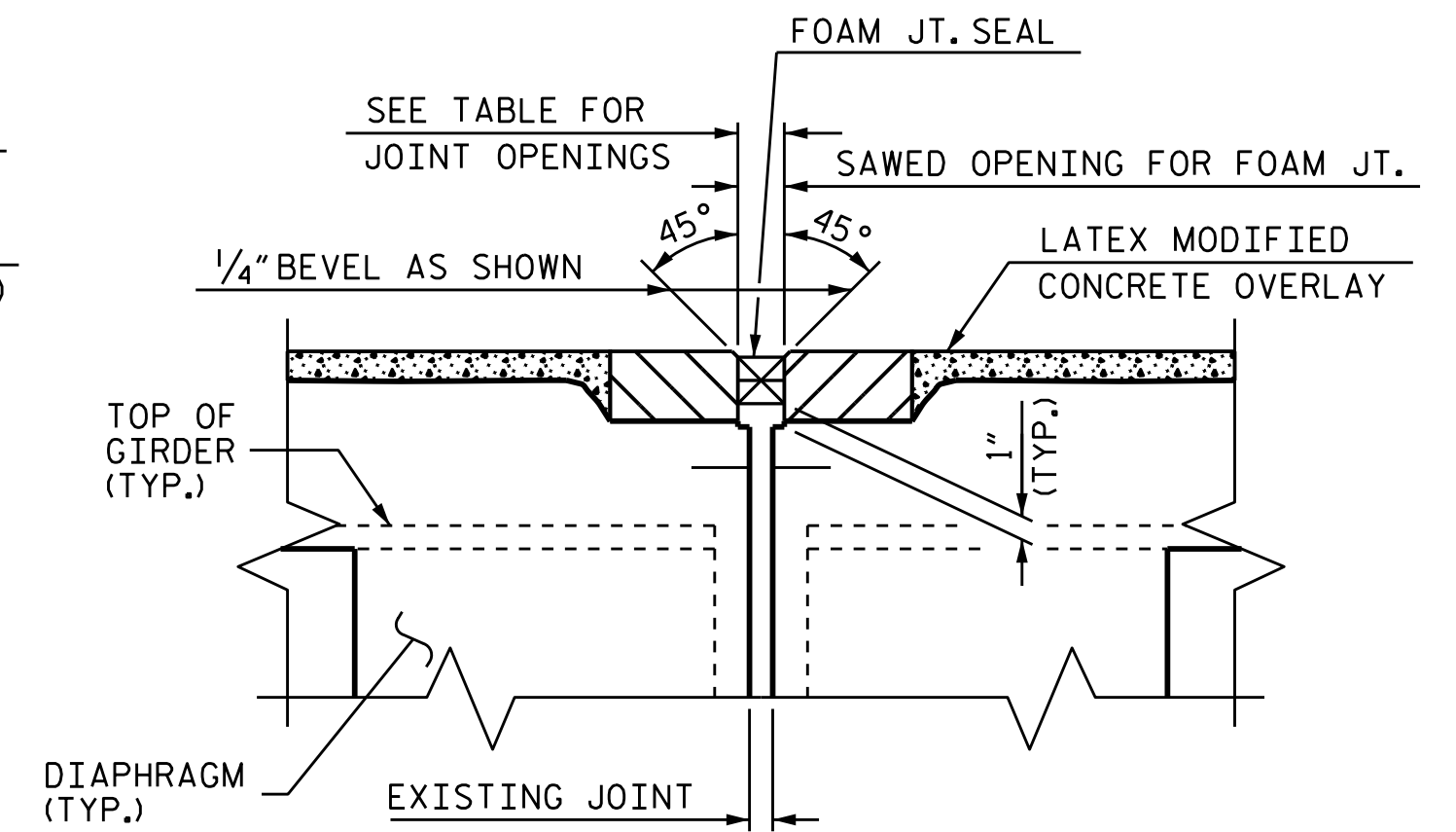
SECTION C-C
(EXISTING JOINT)



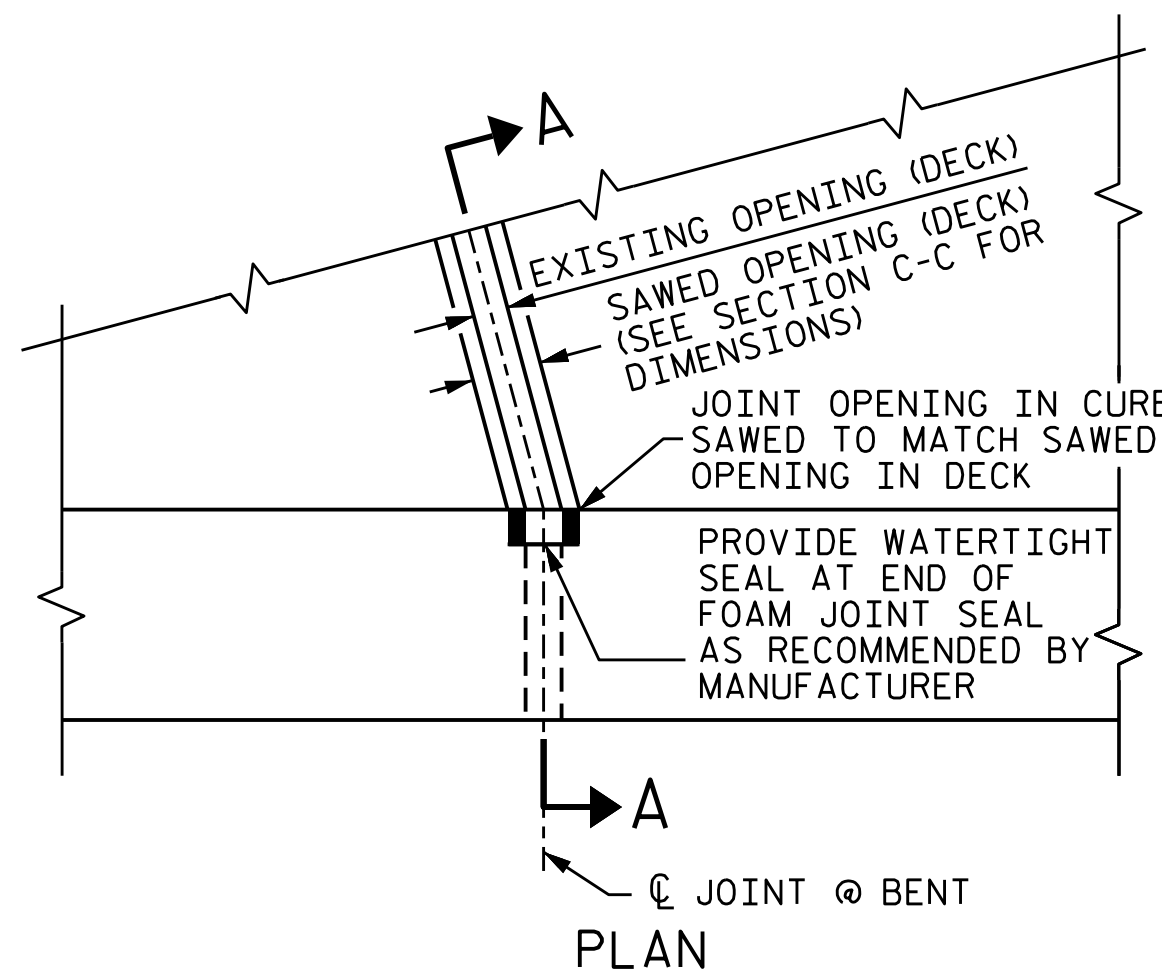
SECTION C-C
(MINIMUM EXISTING
JOINT DEMOLITION)



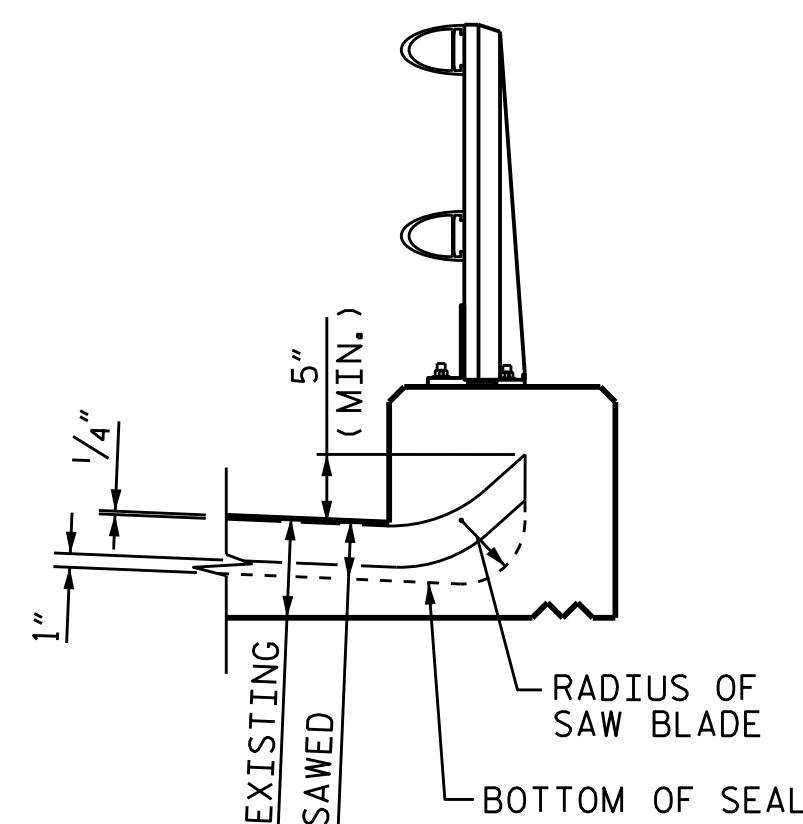
SECTION C-C
(PROPOSED JOINT
PRE-SAWED)



SECTION B-B
(PROPOSED FOAM
JOINT SEAL)



JOINT SEAL DETAILS



SECTION A-A

FOAM JOINT SEAL SHALL BE FACTORY FORMED OR CUT, HEAT WELDED AND TURNED UP PARALLEL TO FACE OF CURB.

LOCATION	SAWED JT. OPENING (PERPENDICULAR TO JT.)		
	AT 45°	AT 60°	AT 90°
BENT 1	1 7/16"	2"	2 9/16"
BENT 4	1 7/16"	2"	2 9/16"

NOTES

- THE FOAM JOINTS SHALL MEET THE MANUFACTURER'S RECOMMENDATION.
- THE FOAM JOINTS SHALL MEET THE MANUFACTURER'S RECOMMENDATION FOR THE SIZE OF OPENING ON THE PLANS, AND ACCOMMODATE THE MINIMUM EXPANSION SHOWN ON THE PLANS.
- CONTRACTOR SHALL FIELD VERIFY THE EXISTING JOINT OPENING PRIOR TO ORDERING JOINT SEAL MATERIAL. IF ACTUAL JOINT OPENING VARIES FROM OPENING INDICATED IN DETAIL BY MORE THAN 1/4", NOTIFY ENGINEER.
- THE INSTALLED FOAM JOINTS SHALL BE WATER TIGHT.
- FOR FOAM JOINT SEALS, SEE SPECIAL PROVISIONS.
- THE CONTRACTOR WILL NOT BE PERMITTED TO FORM THE JOINTS IN LIEU OF SAWING THE JOINT.
- FOR POURABLE SILICONE JOINT SEALANT, SEE SPECIAL PROVISIONS.
- CONTRACTOR SHALL FIELD VERIFY THE EXISTING JOINT OPENING PRIOR TO ORDERING THE BACKER ROD.
- THE BACKER ROD SHALL MEET THE MANUFACTURER'S RECOMMENDATION FOR THE SIZE OF THE JOINT OPENING.

DRAWN BY : CL BRIGHT DATE : 10/18
CHECKED BY : AMBER LEE DATE : 10/18



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PROJECT NO. 15BPR.29
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BRIDGE NO. 33

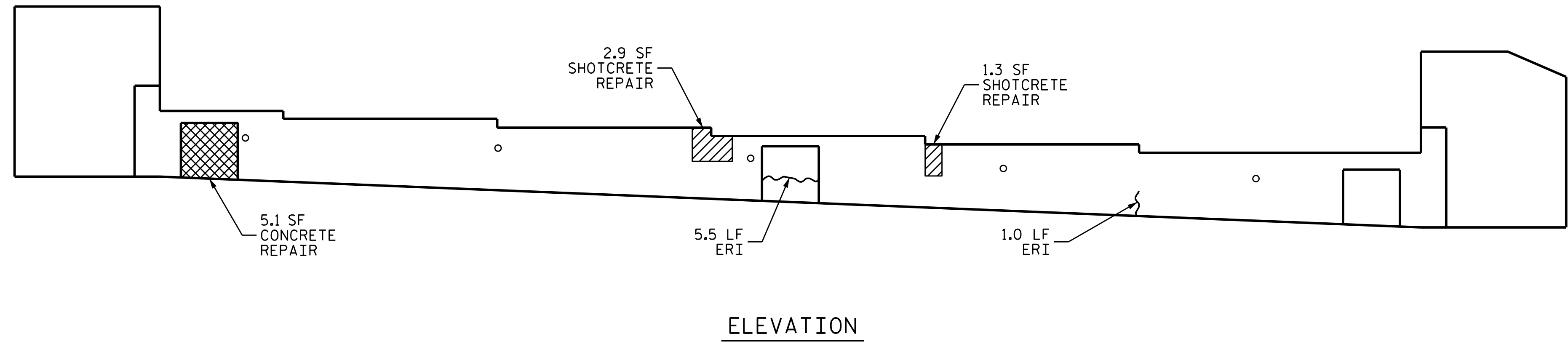
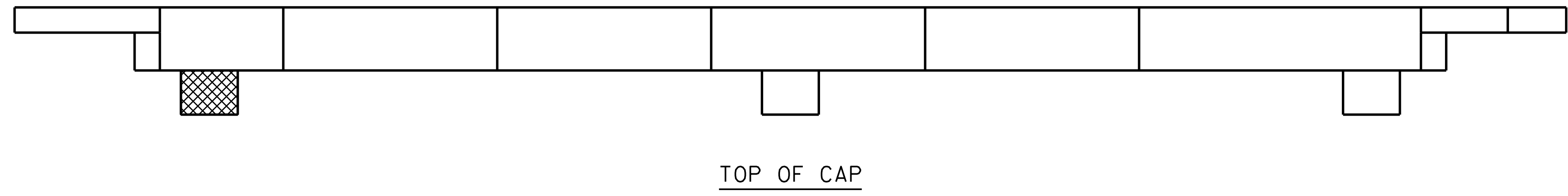
SHEET 1 OF 1

STATE OF NORTH CAROLINA
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JOINT DETAILS

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-40
1			3			TOTAL SHEETS
2			4			55



AS-BUILT REPAIR QUANTITY TABLE

END BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	4.2	2.1		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	5.1	8.9		
EPOXY RESIN INJECTION		LIN. FT.	LIN. FT.	
CAP		6.5		
EPOXY COATING		SQ. FT.	SQ. FT.	
TOP OF END BENT CAP		74.9		

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

NOTES:

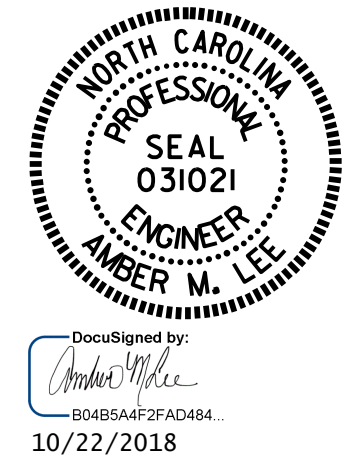
REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN BASED ON THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ENTER THE ACTUAL QUANTITIES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

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

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

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

PROJECT NO. 15BPR.29
CHEROKEE COUNTY
 BRIDGE NO. 33



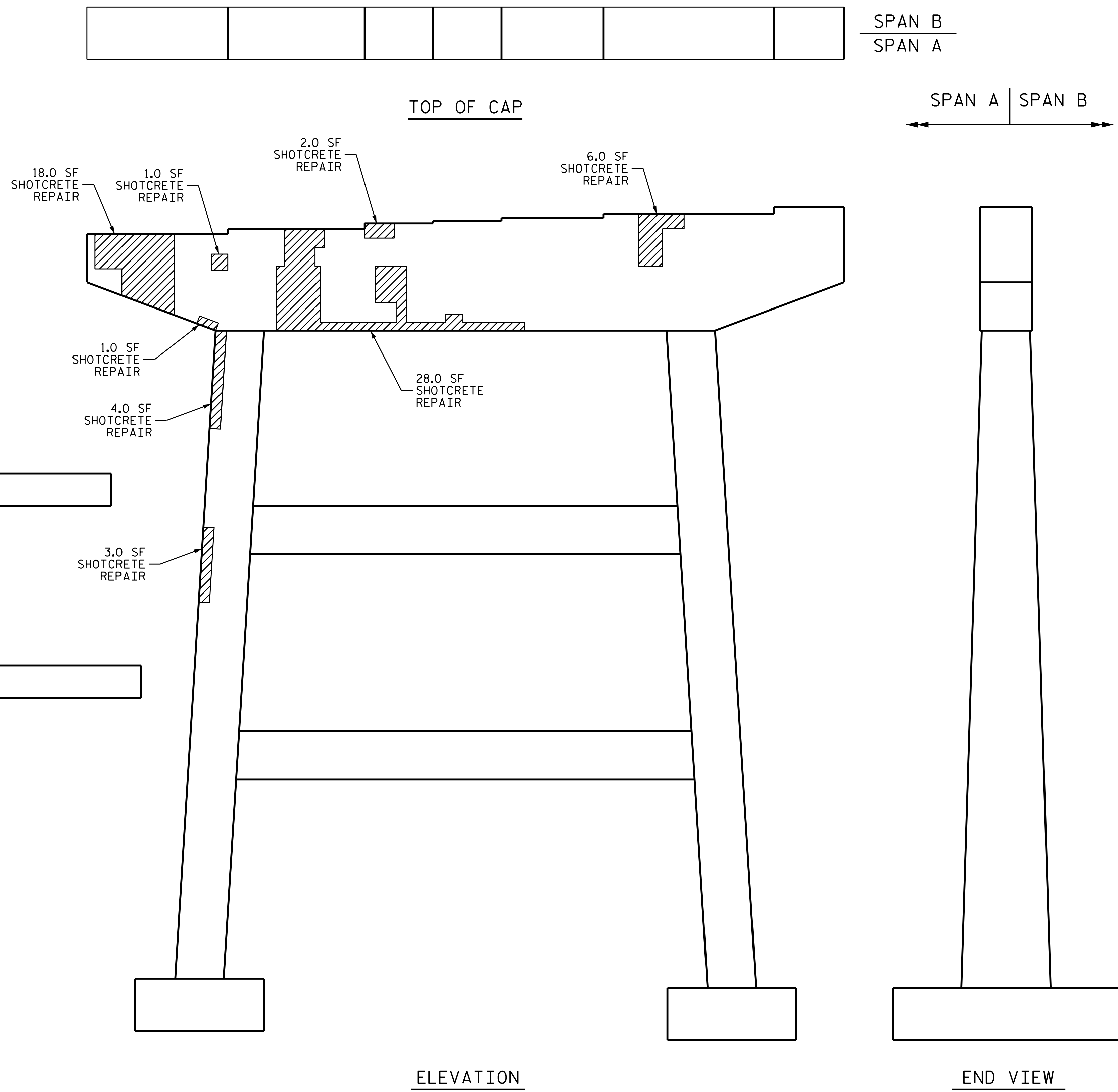
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

END BENT 1

DRAWN BY : R.L. PUTEK DATE : 05/2018
 CHECKED BY : A.M. LEE, PE DATE : 09/2018

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-41
1			3			TOTAL SHEETS
2			4			55

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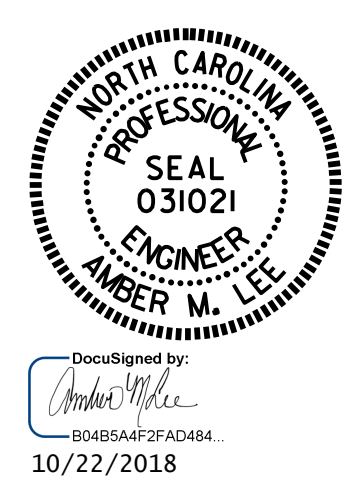
AS-BUILT REPAIR QUANTITY TABLE				
BENT 1 SPAN A FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	56.0	28.0		
COLUMN	7.0	3.5		
STRUTS	0.0	0.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
EPOXY RESIN INJECTION			LIN. FT.	LIN. FT.
CAP		0.0		
COLUMN		0.0		
STRUTS		0.0		
EPOXY COATING			SO. FT.	SO. FT.
TOP OF BENT CAP			153.0	
TOP OF STRUTS			109.0	

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

NOTES:
 REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN BASED ON THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ENTER THE ACTUAL QUANTITIES INTO THE AS-BUILT REPAIR QUANTITY TABLE.
 CLEAN AND REMOVE DEBRIS FROM THE TOP OF THE CAP AND TOP OF STRUTS AND APPLY EPOXY PROTECTIVE COATING. EPOXY COATING SHALL BE APPLIED TO THE TOP SURFACE OF THE CAP. THE CONTRACTOR SHALL NOT COAT THE AREA OF THE CAP BENEATH THE MASONRY PLATES. FOR EPOXY COATING, SEE SPECIAL PROVISIONS.
 CONCRETE REPAIRS MAYBE SUBSTITUTED IN LIEU OF SHOTCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

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

PROJECT NO. 15BPR.29
CHEROKEE COUNTY
 BRIDGE NO. 33

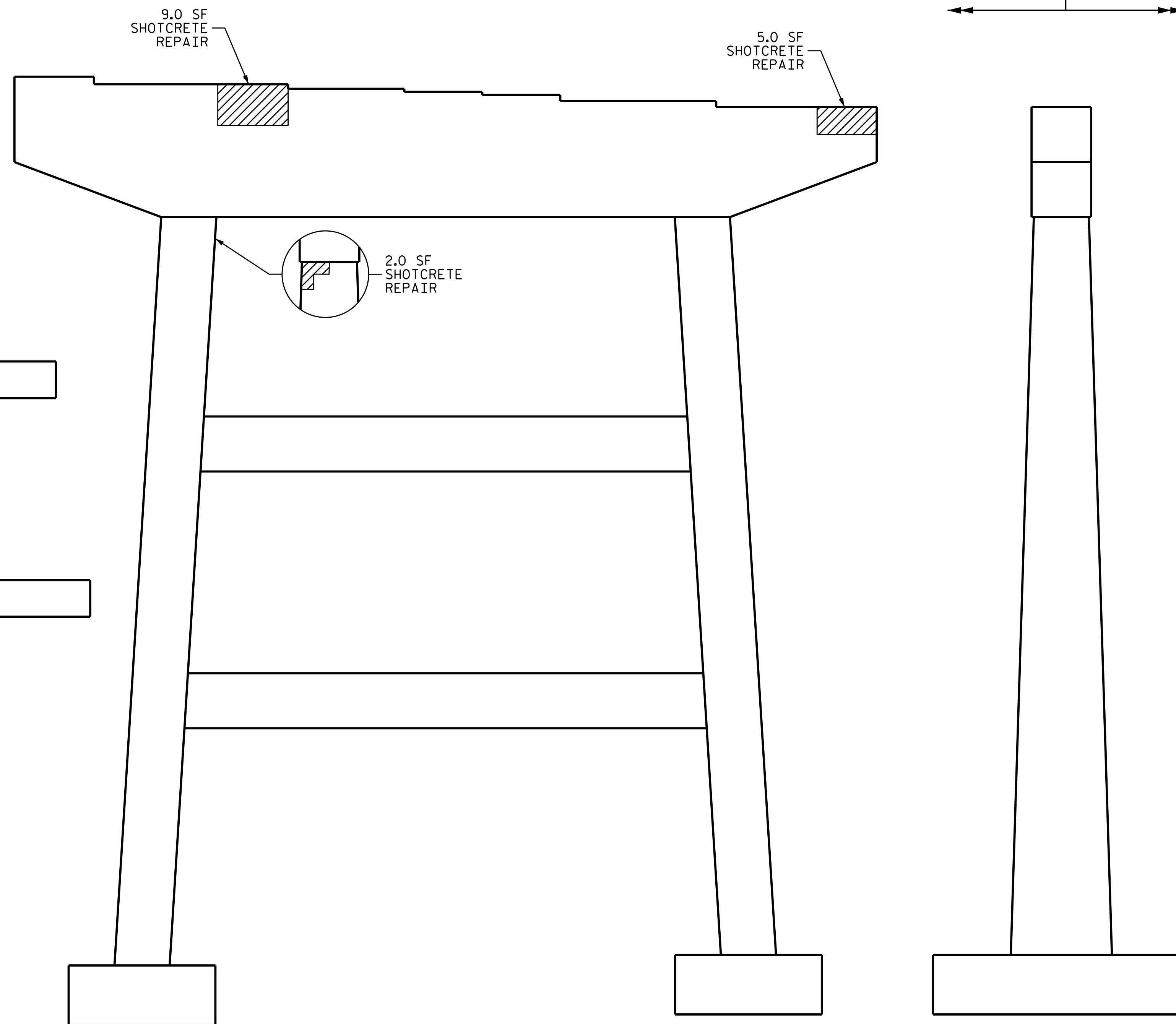
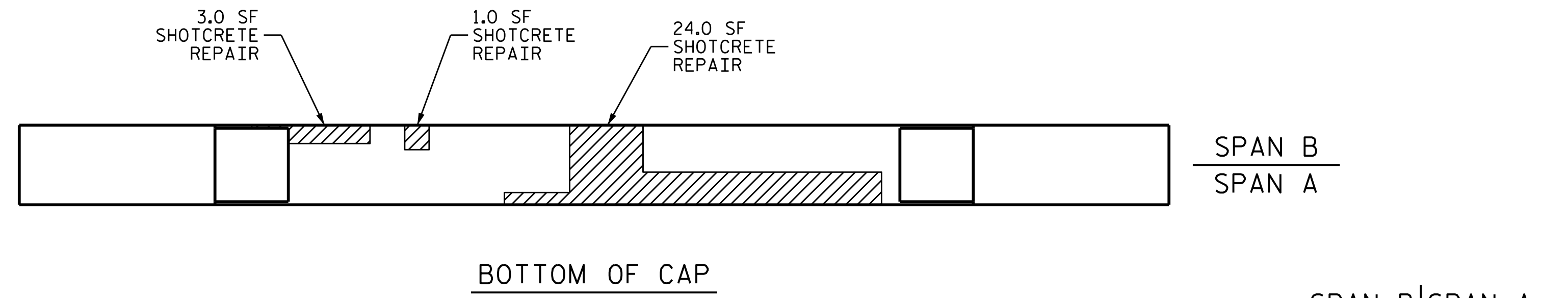


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 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**BENT 1
 SPAN A FACE**

DRAWN BY : R.L.PUTEK DATE : .05/2018
 CHECKED BY : E.BAYISSA DATE : .08/2018

NO.	REVISIONS			NO.	REVISIONS			SHEET NO.
	BY:	DATE:			BY:	DATE:		
1				3			S-42	
2				4			TOTAL SHEETS 55	

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AS-BUILT REPAIR QUANTITY TABLE				
BENT 1 SPAN B FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SO. FT.	VOLUME CU. FT.	AREA SO. FT.	VOLUME CU. FT.
CAP	42.0	21.0		
COLUMN	2.0	1.0		
STRUTS	0.0	0.0		
CONCRETE REPAIRS	AREA SO. FT.	VOLUME CU. FT.	AREA SO. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.	LIN. FT.	
CAP		0.0		
COLUMN		0.0		
STRUTS		0.0		

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

NOTES:

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

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

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

PROJECT NO. 15BPR.29
CHEROKEE COUNTY
 BRIDGE NO. 33



DocuSign by
 Amber M. Lee
 B04B5A8F7FAD484
 10/22/2018

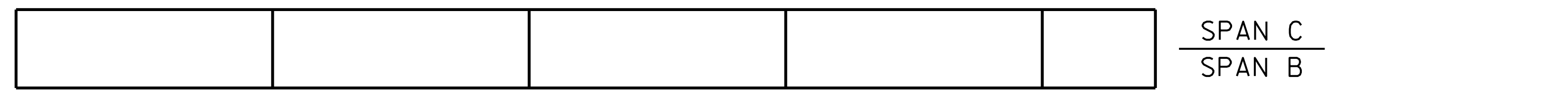
STATE OF NORTH CAROLINA
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**BENT 1
 SPAN B FACE**

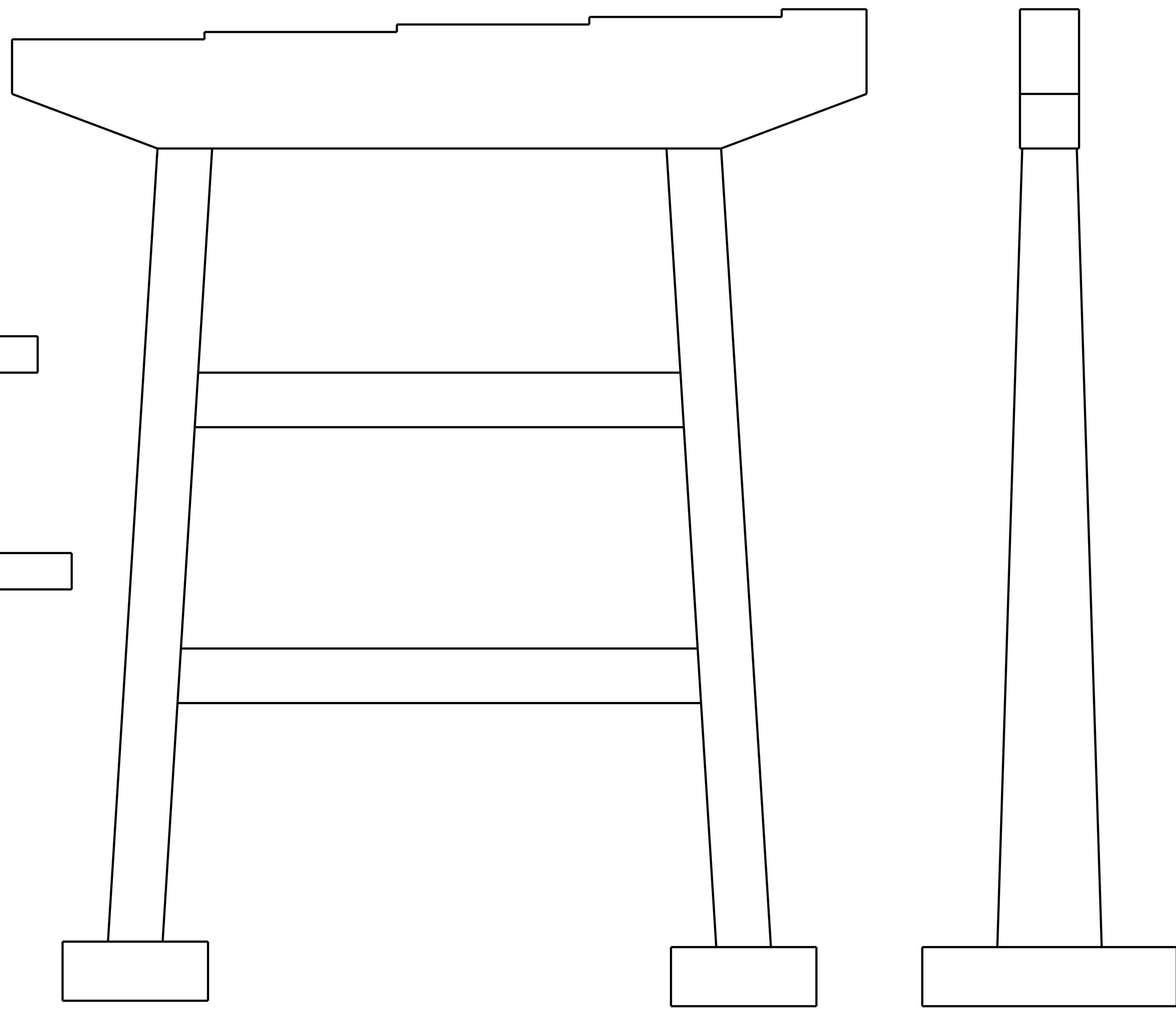
DRAWN BY : R.L.PUTEK DATE : .05/2018
 CHECKED BY : E.BAYISSA DATE : .08/2018

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-43
1			3			TOTAL SHEETS
2			4			55



TOP OF CAP



ELEVATION

END VIEW

AS-BUILT REPAIR QUANTITY TABLE

BENT 2 SPAN B FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SO. FT.	VOLUME CU. FT.	AREA SO. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
COLUMN	0.0	0.0		
STRUTS	0.0	0.0		
CONCRETE REPAIRS	AREA SO. FT.	VOLUME CU. FT.	AREA SO. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	0.0			
COLUMN	0.0			
STRUTS	0.0			
EPOXY COATING	SQ. FT.		SQ. FT.	
TOP OF BENT CAP	153.0			
TOP OF STRUTS	109.0			




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

NOTES:

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

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

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

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

PROJECT NO. 15BPR.29
CHEROKEE COUNTY
 BRIDGE NO. 33



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 BOARD#07FAD484
 10/22/2018

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**BENT 2
 SPAN B FACE**

DRAWN BY : R.L. PUTEK DATE : .05/2018
 CHECKED BY : E. BAYISSA DATE : .08/2018

NO.	REVISIONS			SHEET NO.
	BY:	DATE:	NO.	
1			3	S-44
2			4	TOTAL SHEETS 55

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AS-BUILT REPAIR QUANTITY TABLE


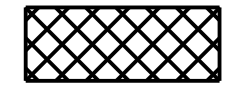

BENT 2 SPAN C FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SO. FT.	VOLUME CU. FT.	AREA SO. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
COLUMN	0.0	0.0		
STRUTS	0.0	0.0		
CONCRETE REPAIRS	AREA SO. FT.	VOLUME CU. FT.	AREA SO. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	0.0			
COLUMN	0.0			
STRUTS	0.0			

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

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

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

PROJECT NO. 15BPR.29
CHEROKEE COUNTY
 BRIDGE NO. 33



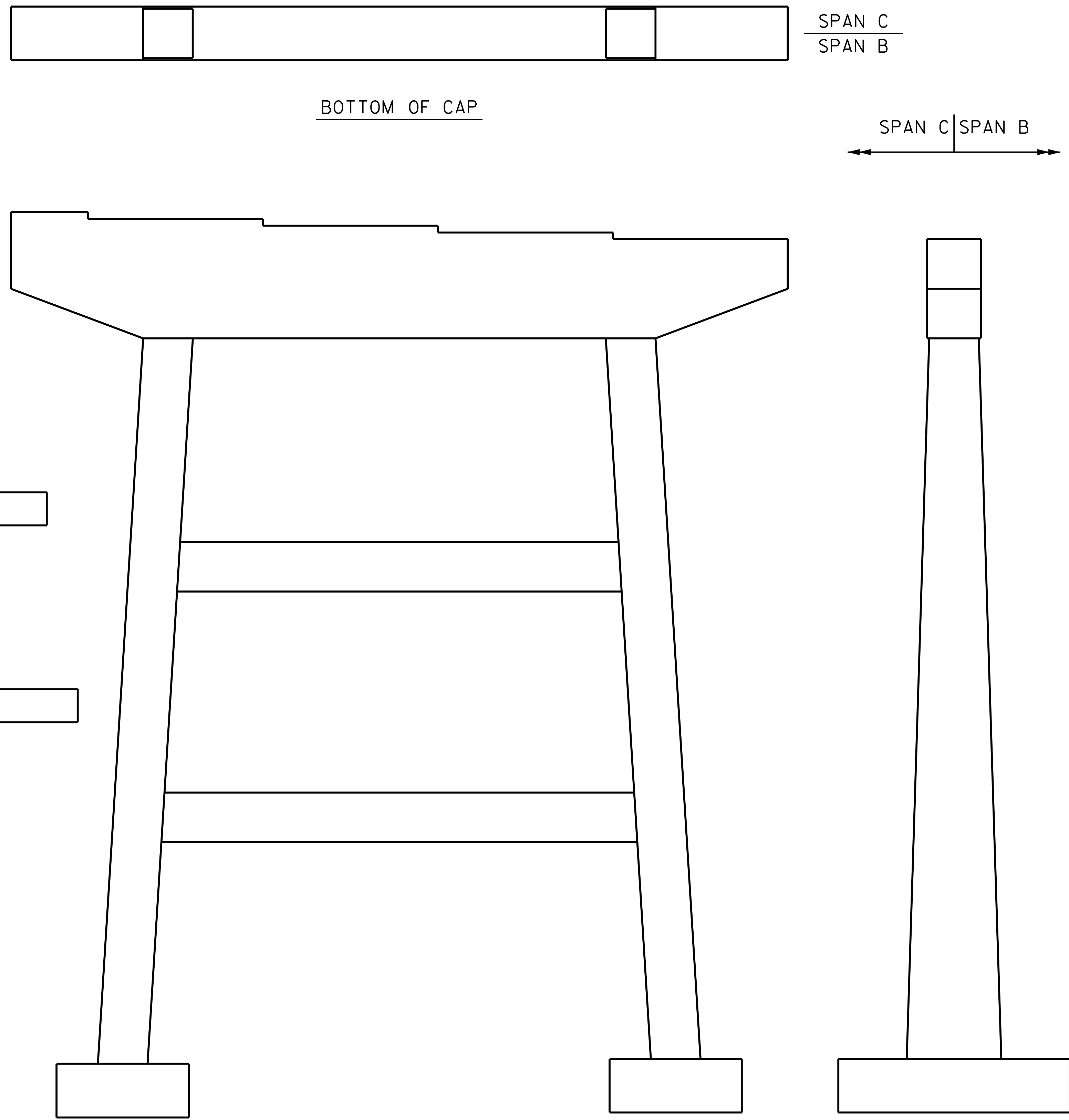
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**BENT 2
 SPAN C FACE**

REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			55

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ELEVATION

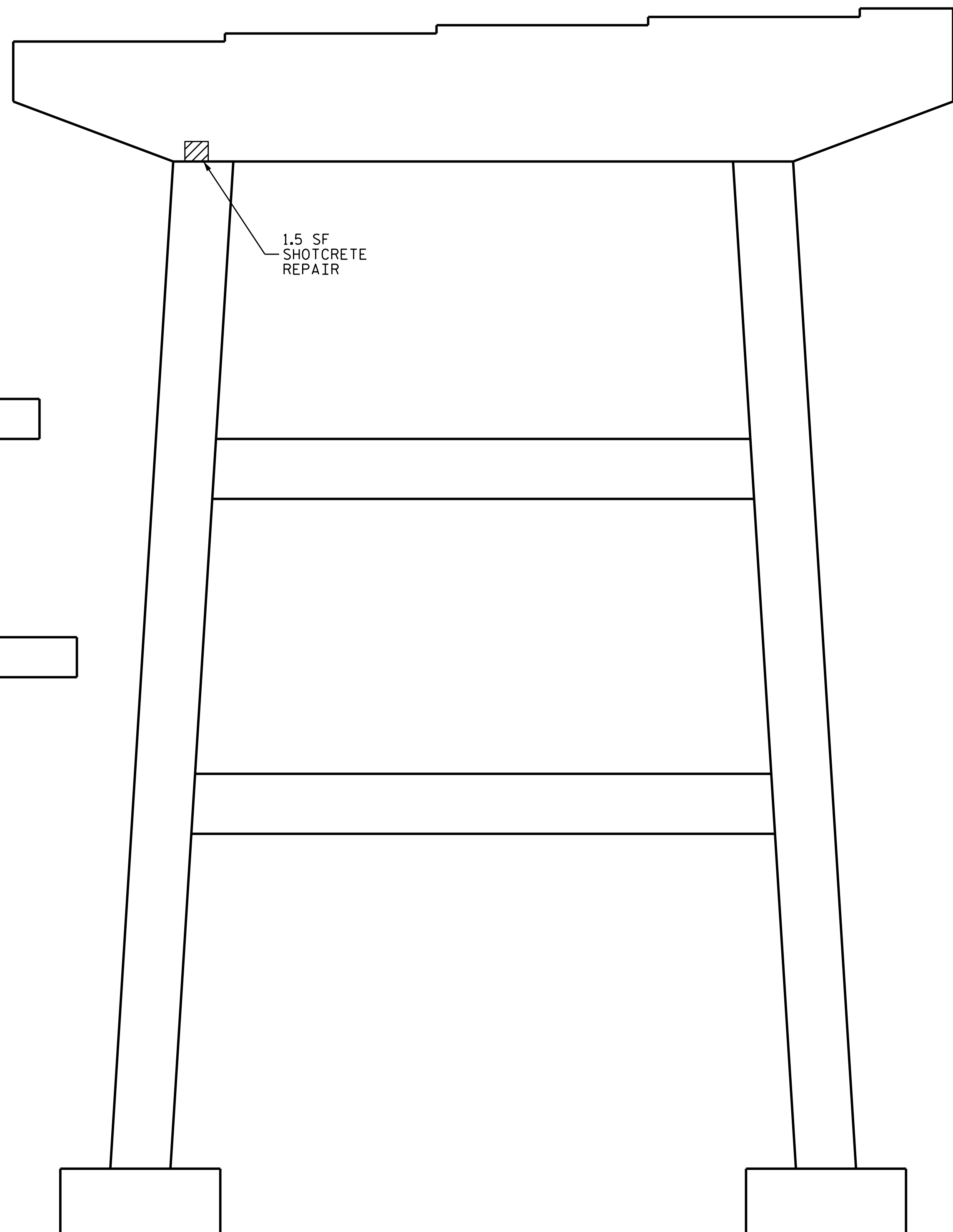
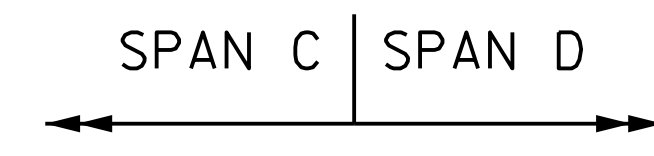
END VIEW

DRAWN BY : R.L.PUTEK DATE : 05/2018
 CHECKED BY : E.BAYISSA DATE : 08/2018



SPAN D
SPAN C

TOP OF CAP



1.5 SF
SHOTCRETE
REPAIR

TOP OF STRUT

TOP OF STRUT

ELEVATION

END VIEW

AS-BUILT REPAIR QUANTITY TABLE

BENT 3 SPAN C FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
SHOTCRETE REPAIRS				
CAP	1.5	0.8		
COLUMN	0.0	0.0		
STRUTS	0.0	0.0		
CONCRETE REPAIRS				
CAP	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.		LIN. FT.
CAP		0.0		
COLUMN		0.0		
STRUTS		0.0		
EPOXY COATING		SO. FT.		SO. FT.
TOP OF BENT CAP		153.0		
TOP OF STRUTS		109.0		


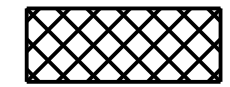

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MINIMUM OF 1" BEHIND REBAR AND MINIMUM 2" CLEARANCE TO SAWCUT. SEE "TYPICAL CAP AND COLUMN REPAIR DETAILS" SHEET.

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

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

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

PROJECT NO. 15BPR.29
CHEROKEE COUNTY
 BRIDGE NO. 33



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 B0485A87FAD484
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 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**BENT 3
 SPAN C FACE**

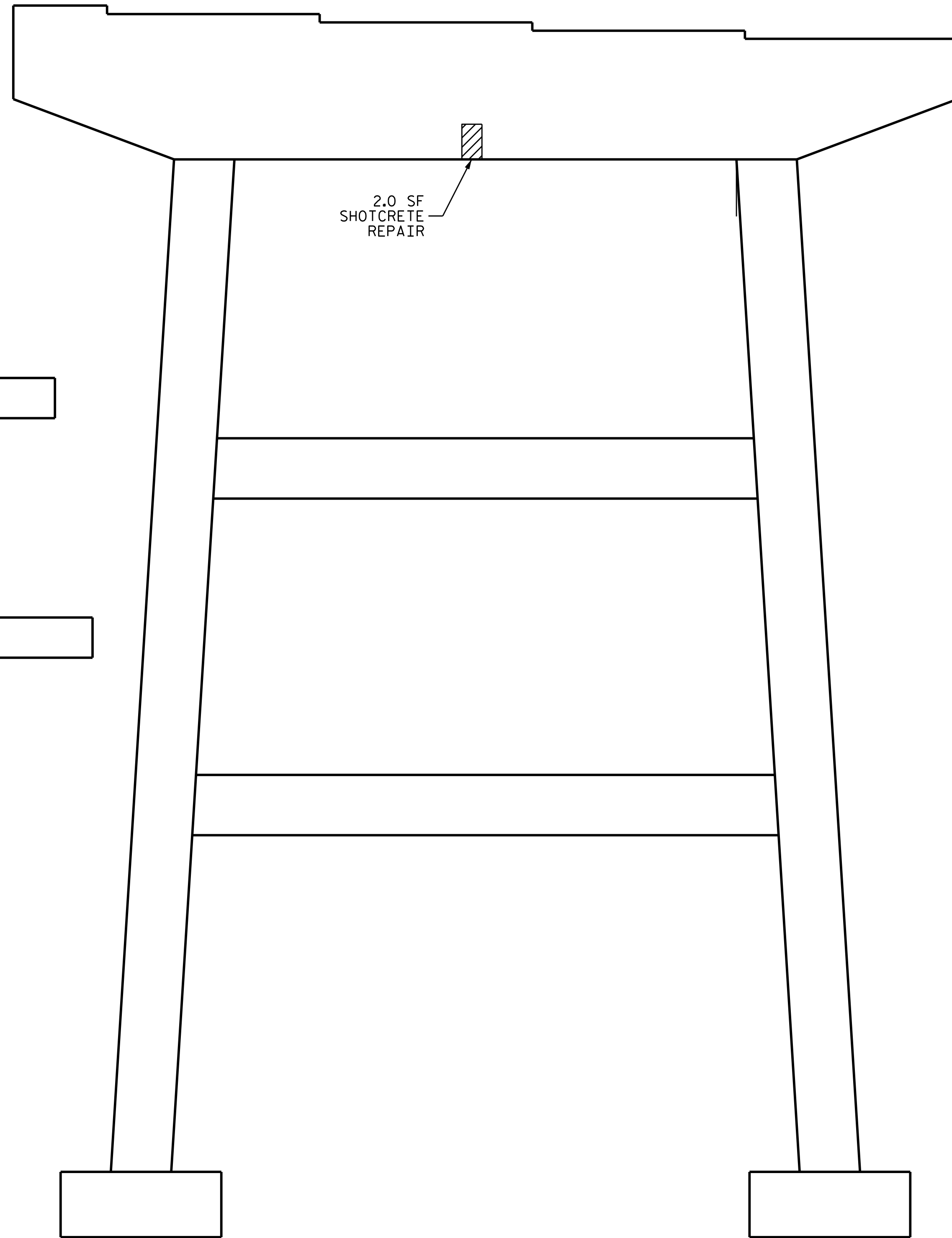
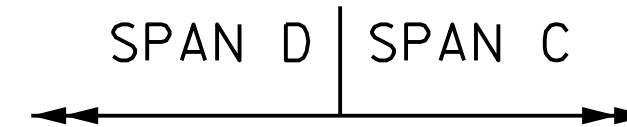
DRAWN BY : R.L.PUTEK DATE : .05/2018
 CHECKED BY : E.BAYISSA DATE : .08/2018

NO.	REVISIONS			SHEET NO.
	BY:	DATE:	NO.	
1			3	S-46
2			4	TOTAL SHEETS 55

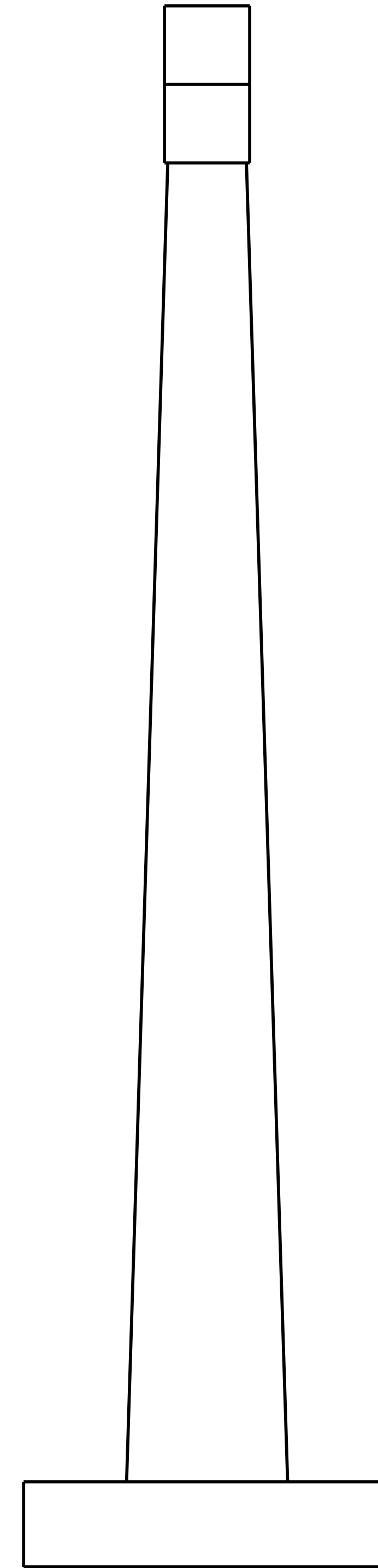
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BOTTOM OF CAP



ELEVATION



END VIEW

AS-BUILT REPAIR QUANTITY TABLE


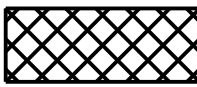
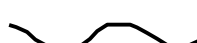
BENT 3 SPAN D FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SO. FT.	VOLUME CU. FT.	AREA SO. FT.	VOLUME CU. FT.
CAP	2.0	1.0		
COLUMN	0.0	0.0		
STRUTS	0.0	0.0		
CONCRETE REPAIRS	AREA SO. FT.	VOLUME CU. FT.	AREA SO. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.	LIN. FT.	
CAP		0.0		
COLUMN		0.0		
STRUTS		0.0		

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

NOTES:

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

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

PROJECT NO. 15BPR.29
CHEROKEE COUNTY
 BRIDGE NO. 33



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 Amber M. Lee
 10/22/2018

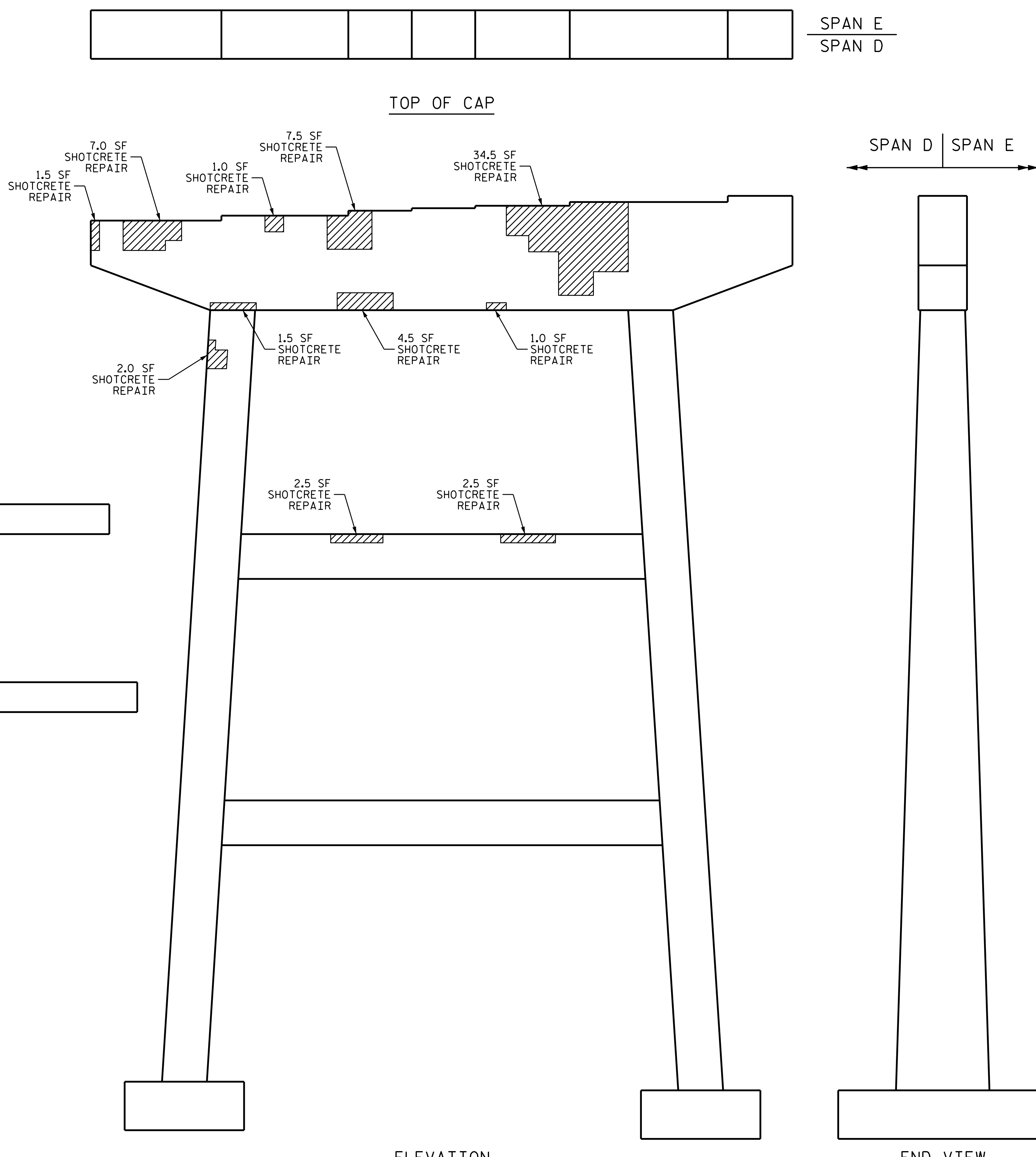
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**BENT 3
 SPAN D FACE**

DRAWN BY : R.L.PUTEK DATE : 05/2018
 CHECKED BY : E.BAYISSA DATE : 08/2018

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-47
1			3			TOTAL SHEETS
2			4			55



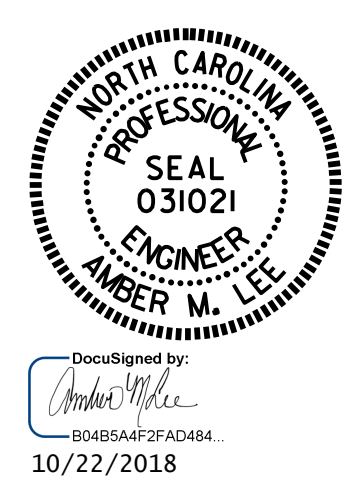
AS-BUILT REPAIR QUANTITY TABLE				
BENT 4 SPAN D FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	58.5	29.3		
COLUMN	2.0	1.0		
STRUTS	5.0	2.5		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.	LIN. FT.	
CAP		0.0		
COLUMN		0.0		
STRUTS		0.0		
EPOXY COATING		SO. FT.	SO. FT.	
TOP OF BENT CAP		153.0		
TOP OF STRUTS		109.0		

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

NOTES:
 REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN BASED ON THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ENTER THE ACTUAL QUANTITIES INTO THE AS-BUILT REPAIR QUANTITY TABLE.
 CLEAN AND REMOVE DEBRIS FROM THE TOP OF THE CAP AND TOP OF STRUTS AND APPLY EPOXY PROTECTIVE COATING. EPOXY COATING SHALL BE APPLIED TO THE TOP SURFACE OF THE CAP. THE CONTRACTOR SHALL NOT COAT THE AREA OF THE CAP BENEATH THE MASONRY PLATES. FOR EPOXY COATING, SEE SPECIAL PROVISIONS.
 CONCRETE REPAIRS MAYBE SUBSTITUTED IN LIEU OF SHOTCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

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

PROJECT NO. 15BPR.29
CHEROKEE COUNTY
 BRIDGE NO. 33



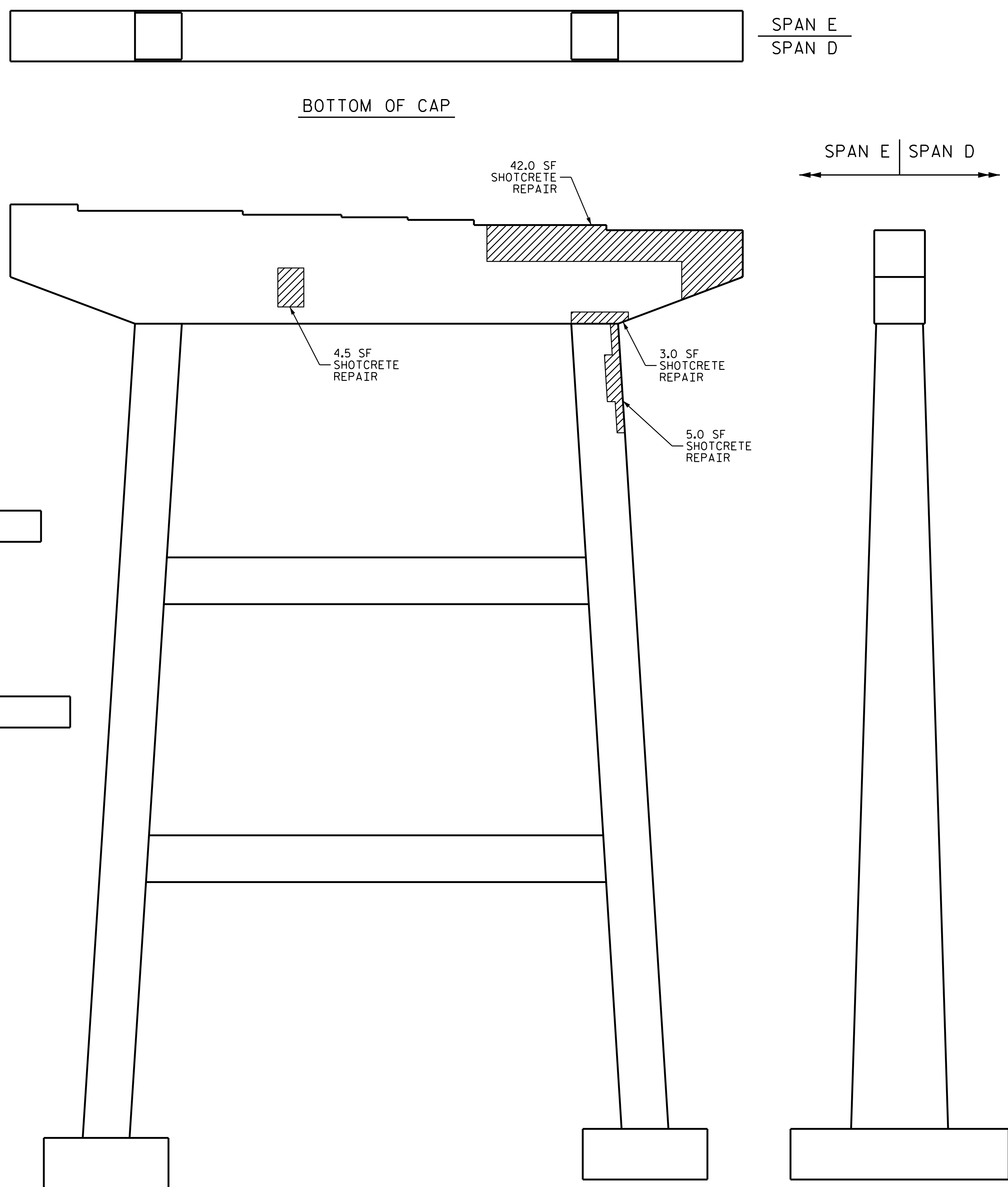
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**BENT 4
 SPAN D FACE**

DRAWN BY : R.L.PUTEK DATE : .05/2018
 CHECKED BY : E.BAYISSA DATE : .09/2018

NO.	REVISIONS			SHEET NO.
	BY:	DATE:	NO.	
1			3	S-48 TOTAL SHEETS 55
2			4	

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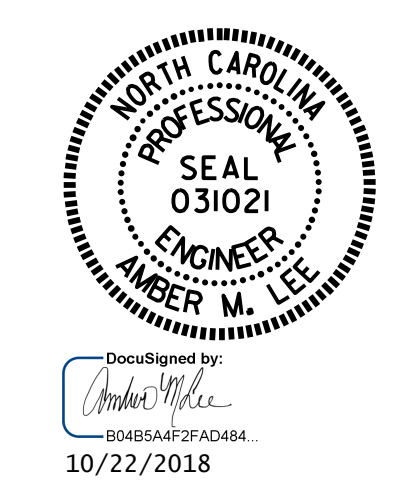
AS-BUILT REPAIR QUANTITY TABLE				
BENT 4 SPAN E FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SO. FT.	VOLUME CU. FT.	AREA SO. FT.	VOLUME CU. FT.
CAP	49.5	24.8		
COLUMN	5.0	2.5		
STRUTS	0.0	0.0		
CONCRETE REPAIRS	AREA SO. FT.	VOLUME CU. FT.	AREA SO. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.	LIN. FT.	
CAP		0.0		
COLUMN		0.0		
STRUTS		0.0		

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

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

PROJECT NO. 15BPR.29
CHEROKEE COUNTY
 BRIDGE NO. 33



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**BENT 4
 SPAN E FACE**

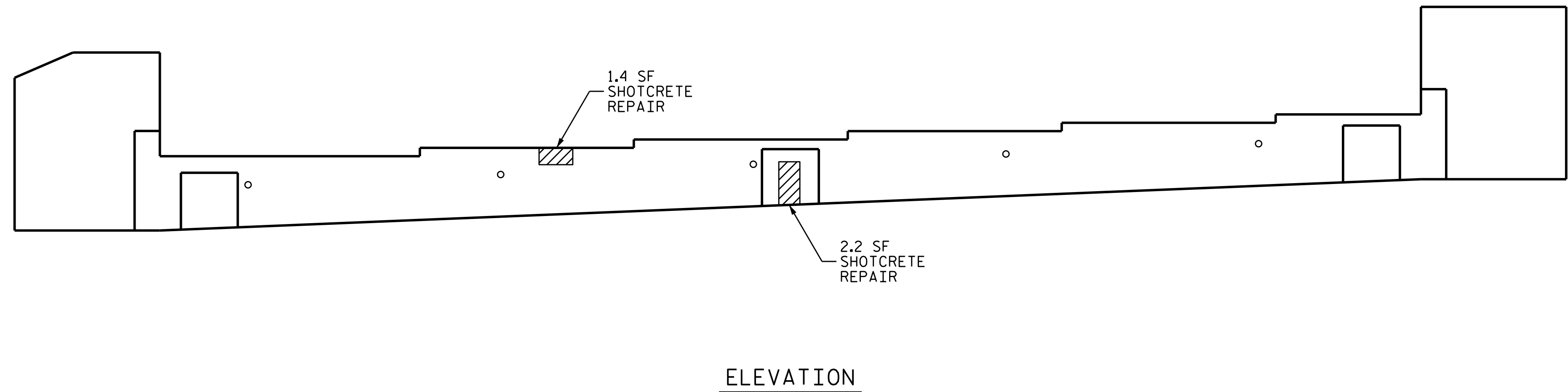
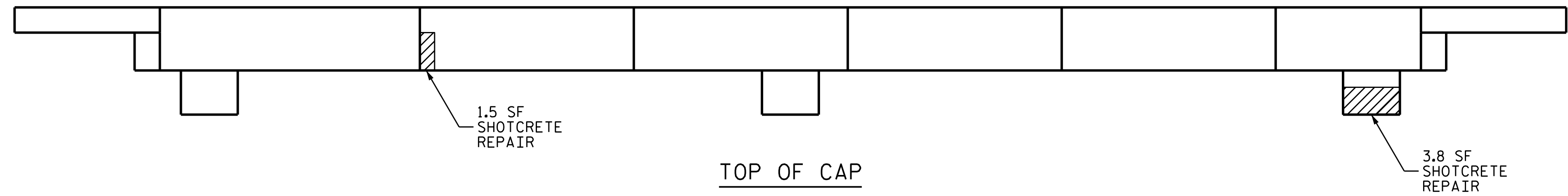
DRAWN BY : R.L.PUTEK DATE : .05/2018
 CHECKED BY : E.BAYISSA DATE : .08/2018

ELEVATION

END VIEW

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-49
1			3			TOTAL SHEETS
2			4			51



AS-BUILT REPAIR QUANTITY TABLE

END BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SO. FT.	VOLUME CU. FT.	AREA SO. FT.	VOLUME CU. FT.
CAP	8.9	4.5		
CONCRETE REPAIRS	AREA SO. FT.	VOLUME CU. FT.	AREA SO. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.		LIN. FT.
CAP		0.0		
EPOXY COATING		SO. FT.		SO. FT.
TOP OF END BENT CAP		74.9		

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

NOTES:

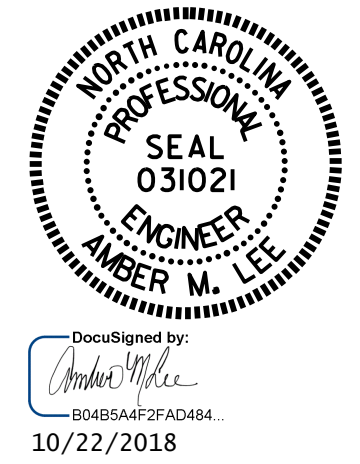
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- SHOTCRETE REPAIR AREA
- CONCRETE REPAIR AREA
- ERI - EPOXY RESIN INJECTION

PROJECT NO. 15BPR.29
CHEROKEE COUNTY
 BRIDGE NO. 33



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

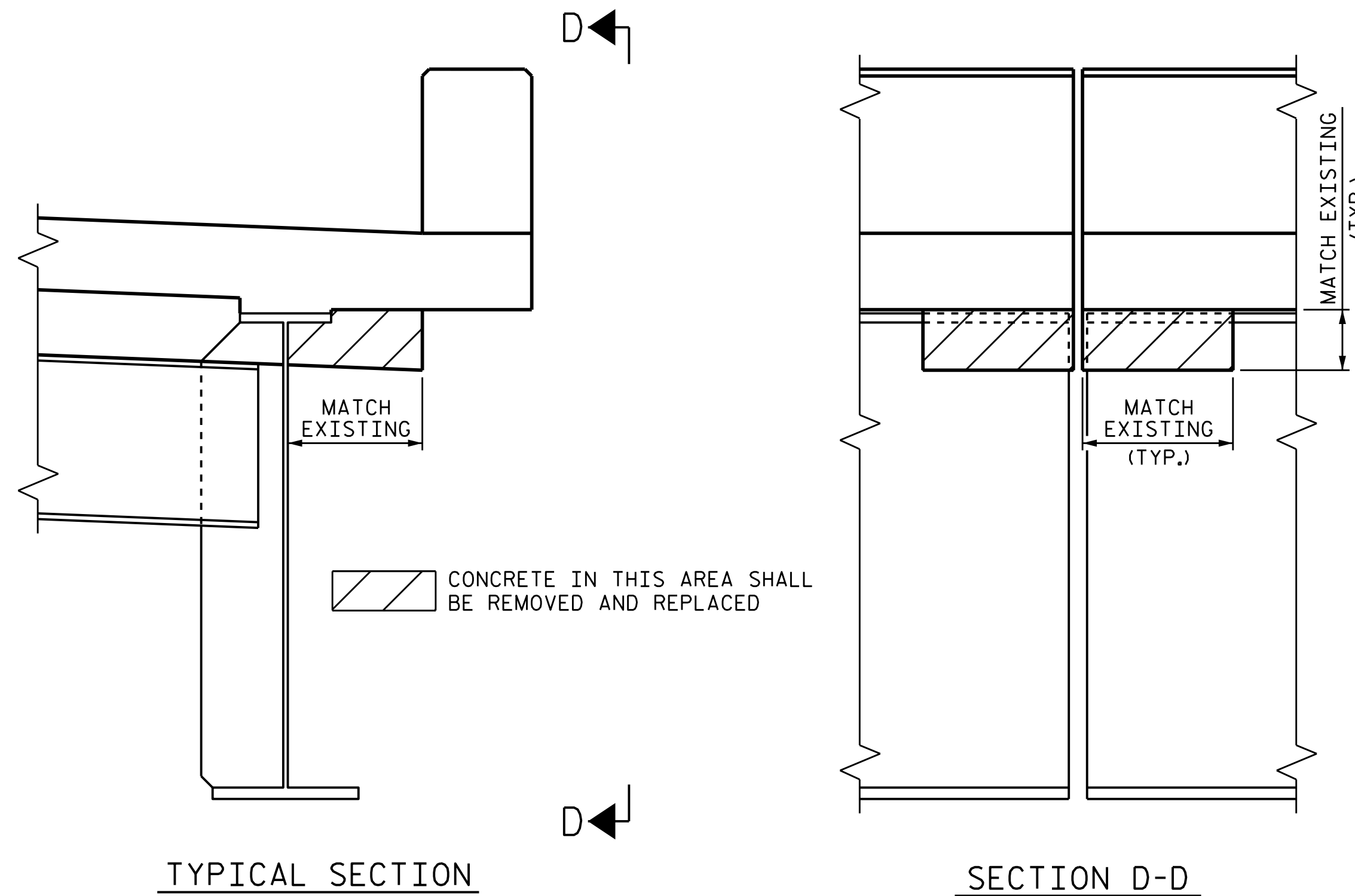
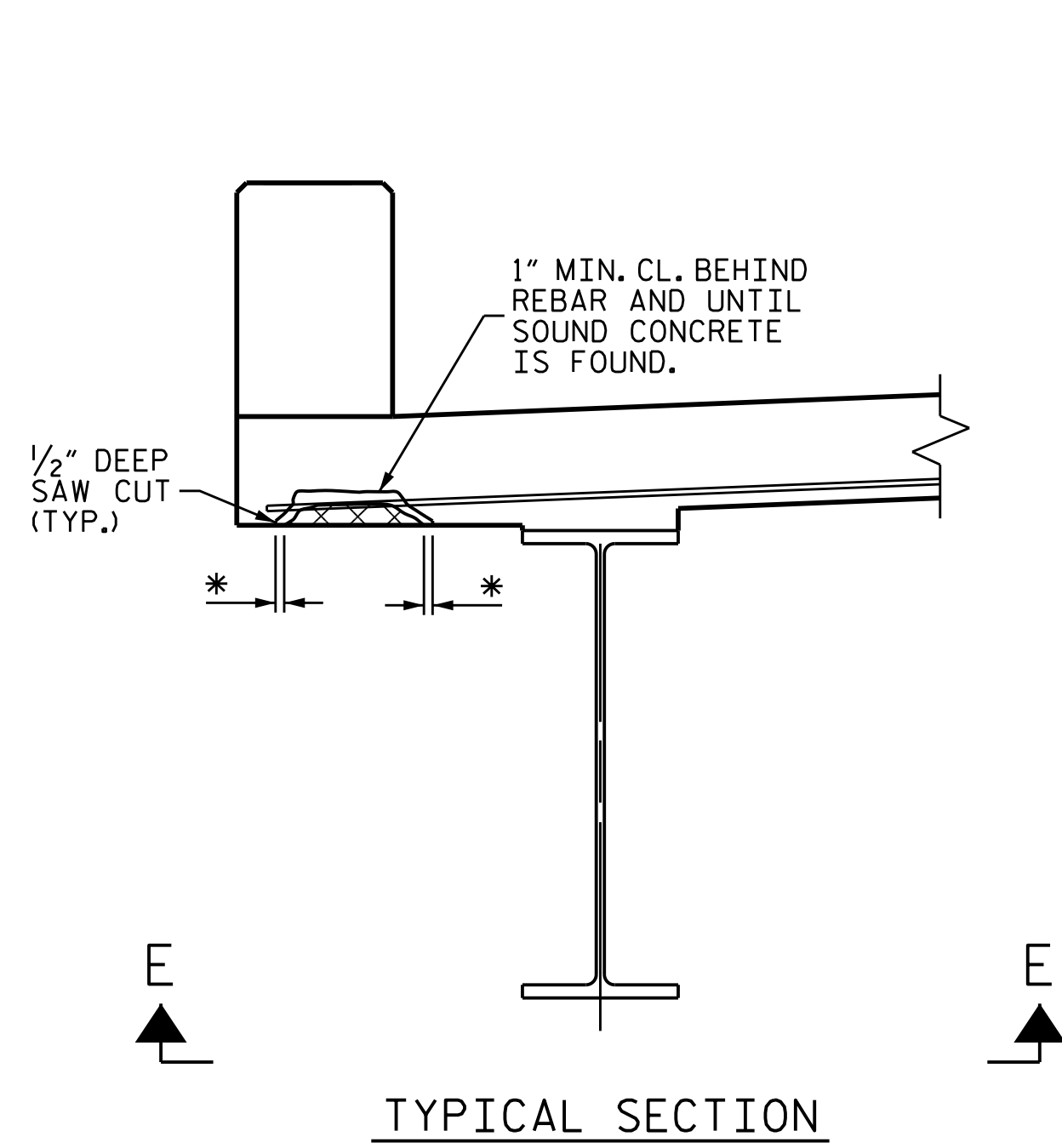
END BENT 2

DRAWN BY : R.L. PUTEK DATE : 05/2018
 CHECKED BY : E. BAYISSA DATE : 08/2018

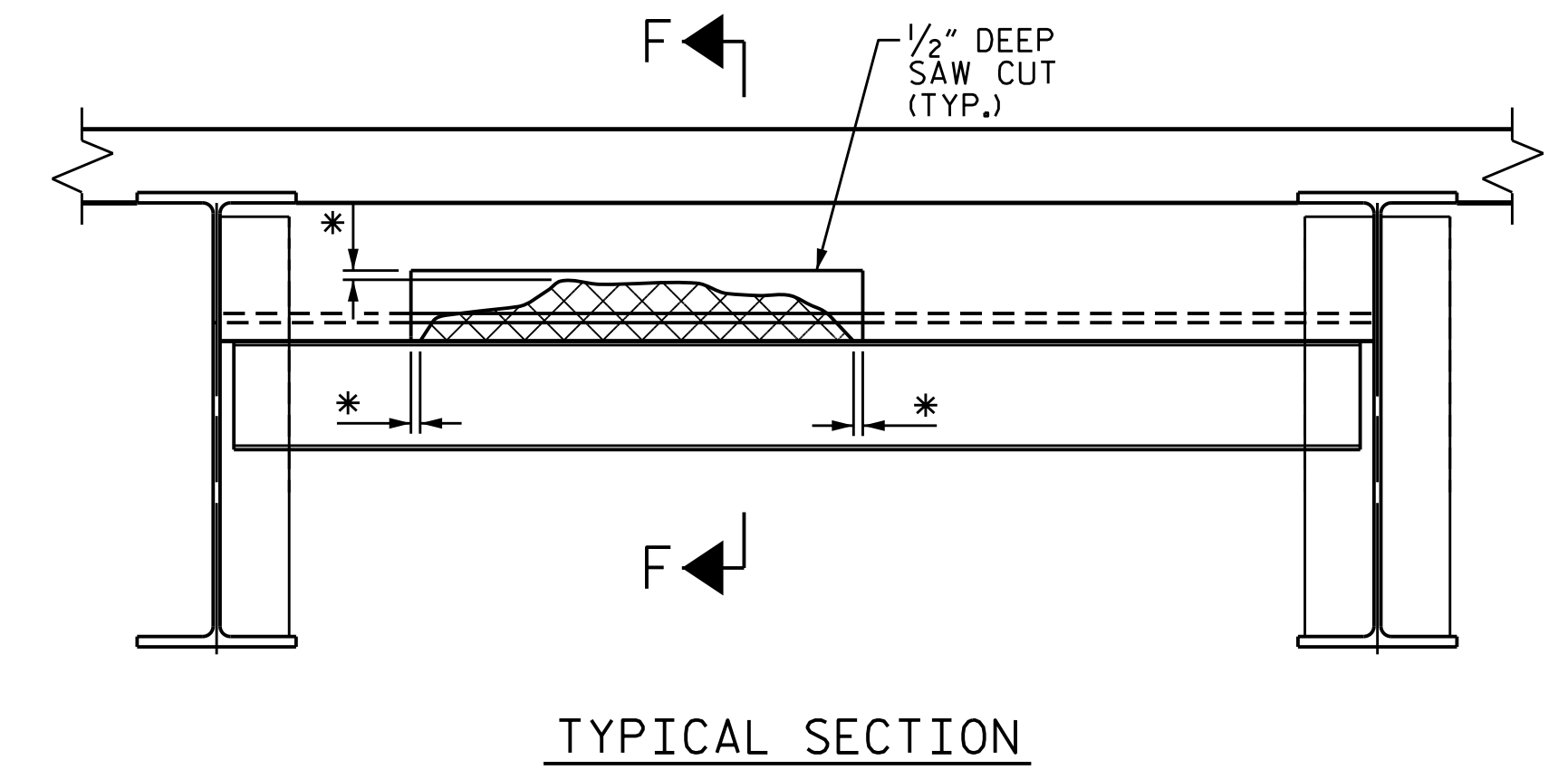
NO.	REVISIONS			SHEET NO.
	BY:	DATE:	NO.	
1			3	S-50
2			4	TOTAL SHEETS 55

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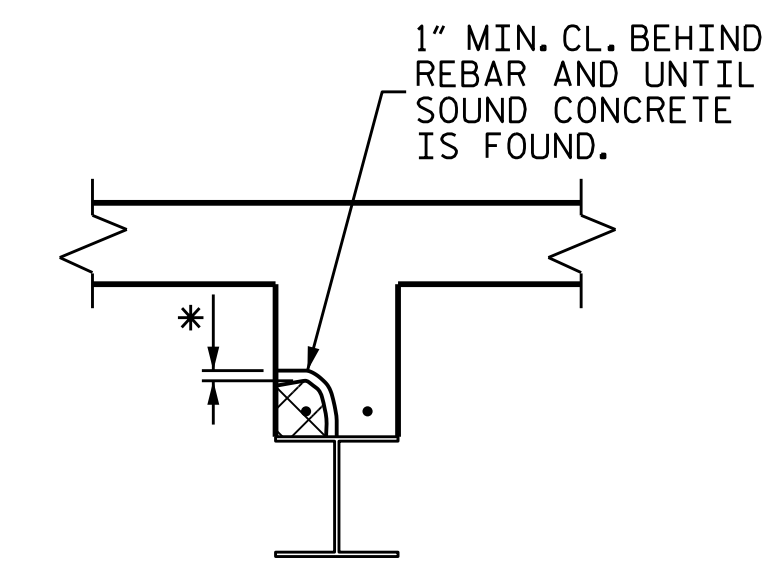
NOTE: OVERHANG DIAPHRAGMS TO BE REMOVED AND REPLACED, ARE SHOWN ON "PLAN OF SPAN" SHEETS. OVERHANG DIAPHRAGMS SHALL BE REMOVED PRIOR TO CLEANING AND PAINTING OF BEAMS AND REPLACED AFTER BEAM REPAIRS AND PAINTING ARE COMPLETE.



OVERHANG DIAPHRAGM REPLACEMENT DETAILS

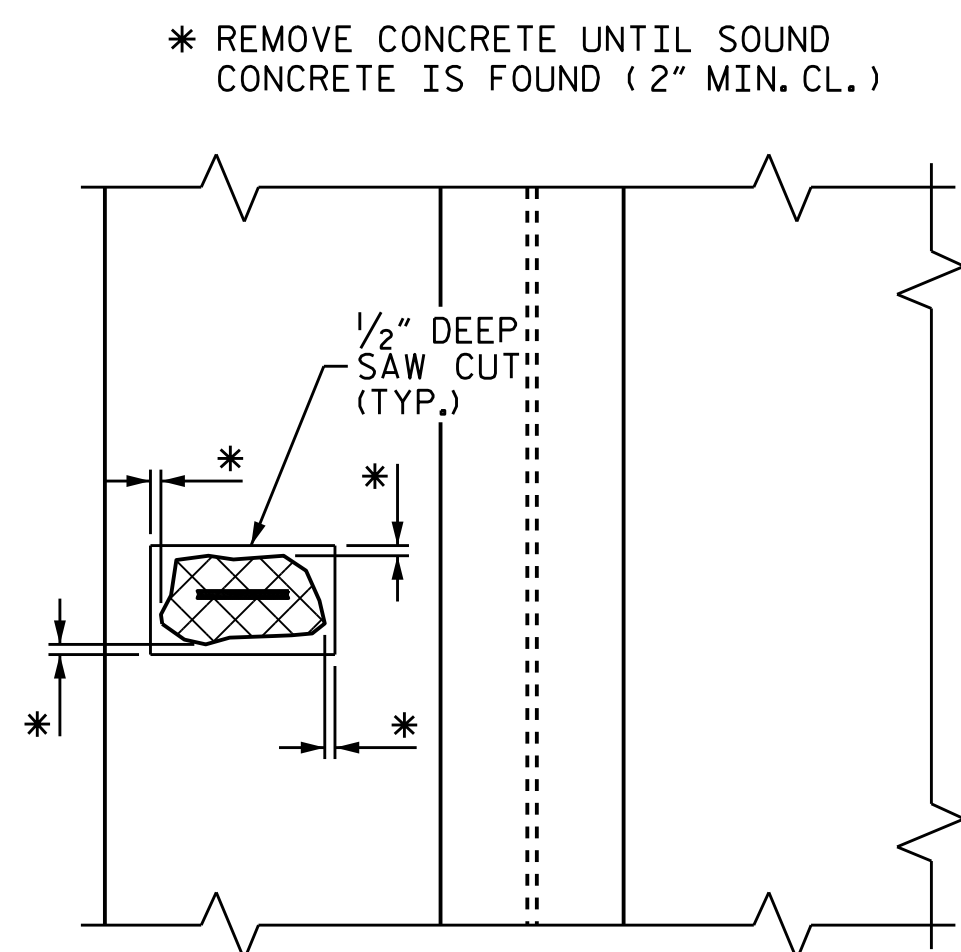


* REMOVE CONCRETE UNTIL SOUND CONCRETE IS FOUND (2" MIN. CL.)



SECTION F-F

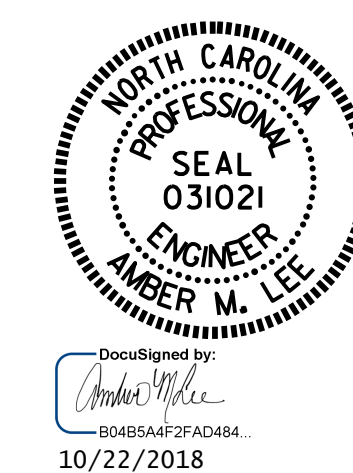
INTERIOR DIAPHRAGM REPAIR DETAILS



SECTION E-E

OVERHANG DETAILS

PROJ. NO. 15BPR.29
CHEROKEE COUNTY
 BRIDGE NO. 31 & 33

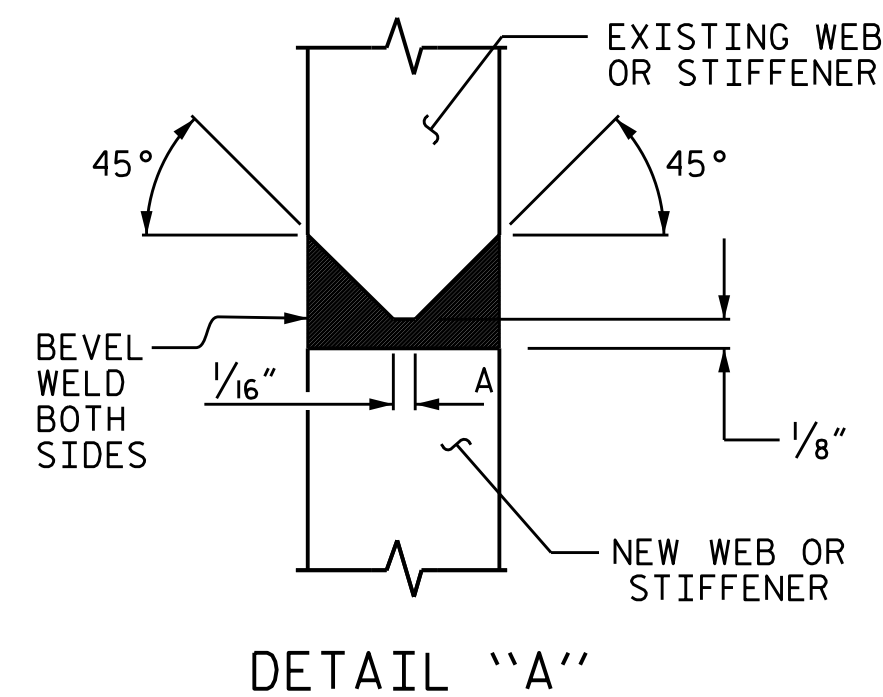
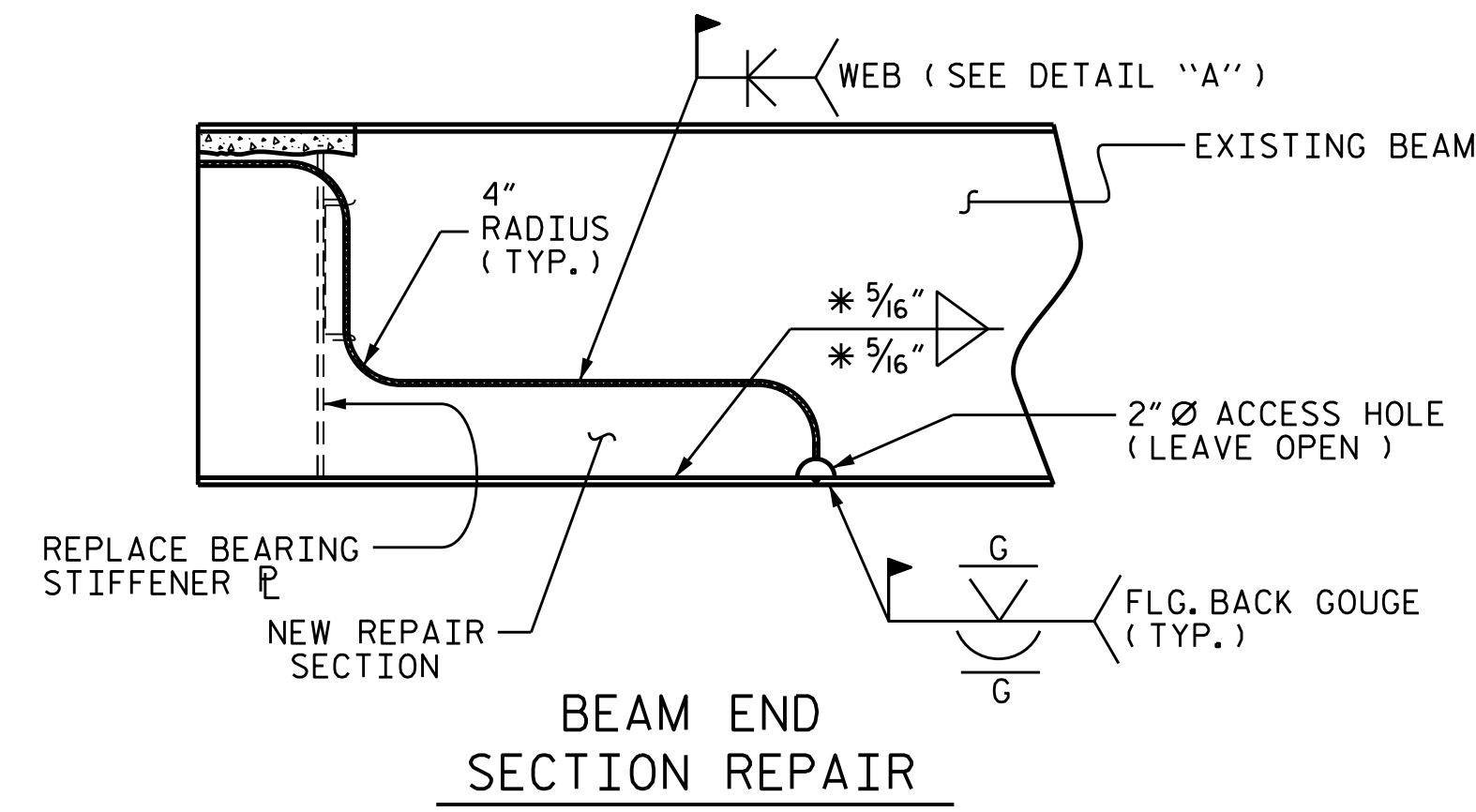
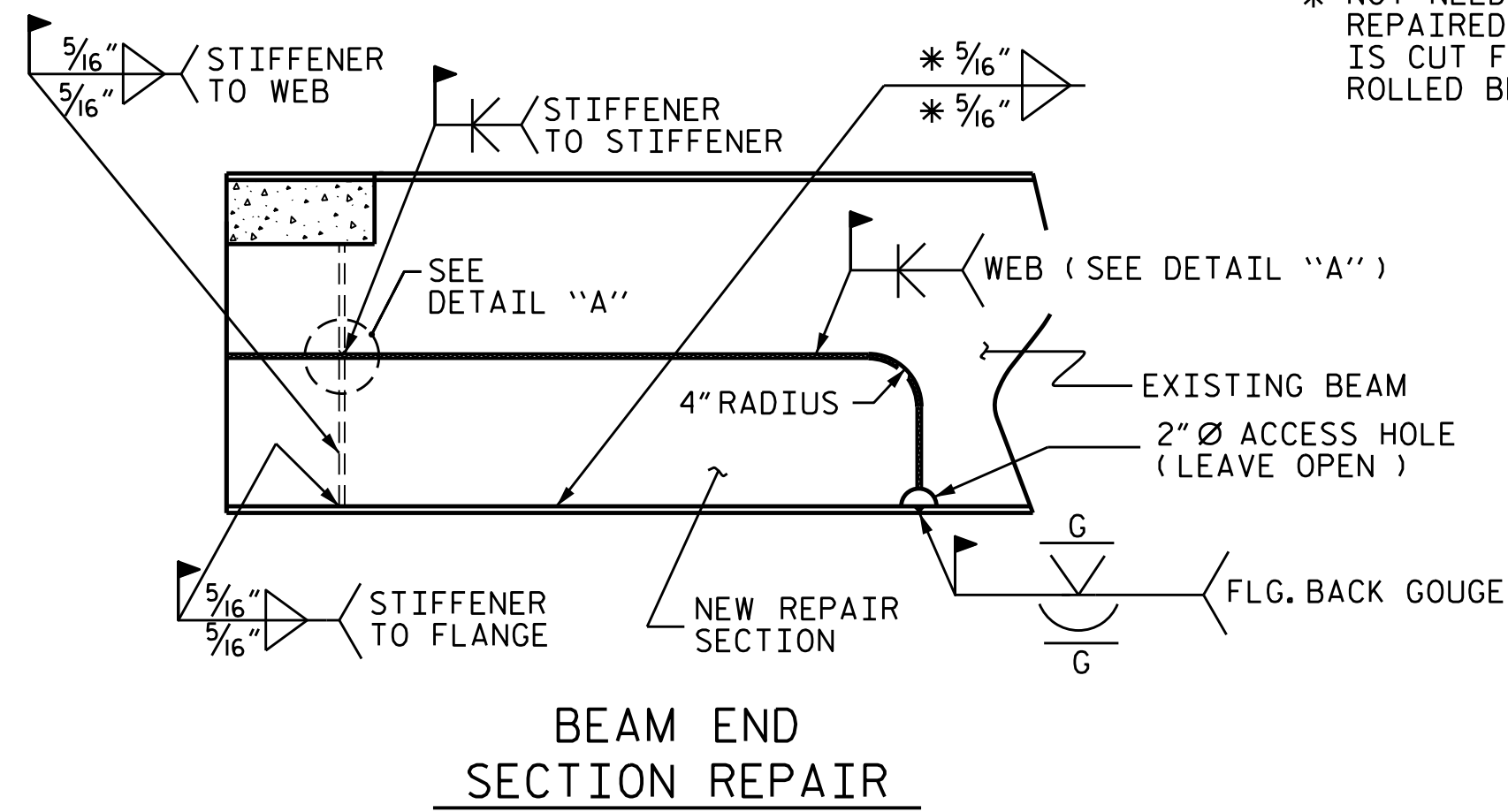
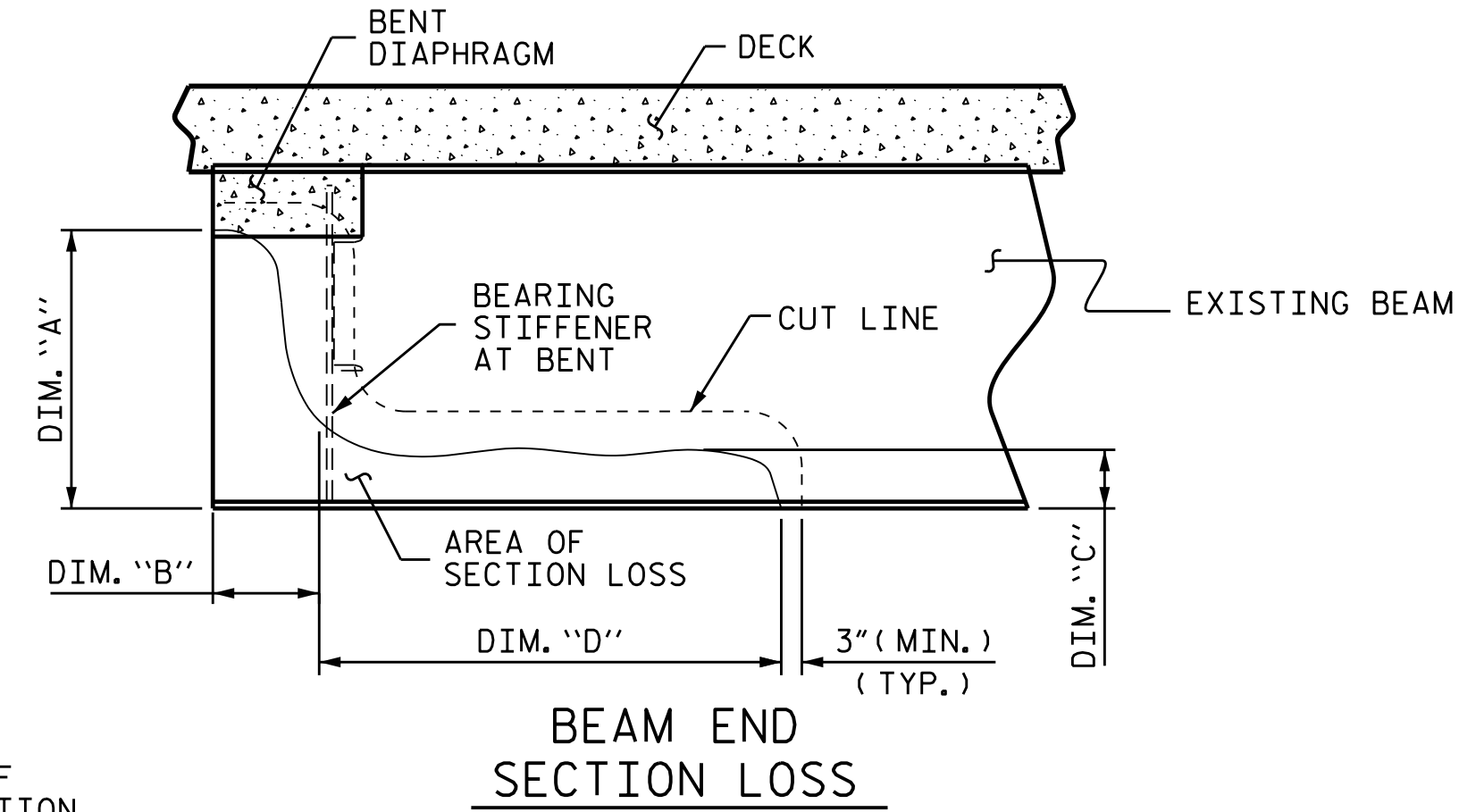
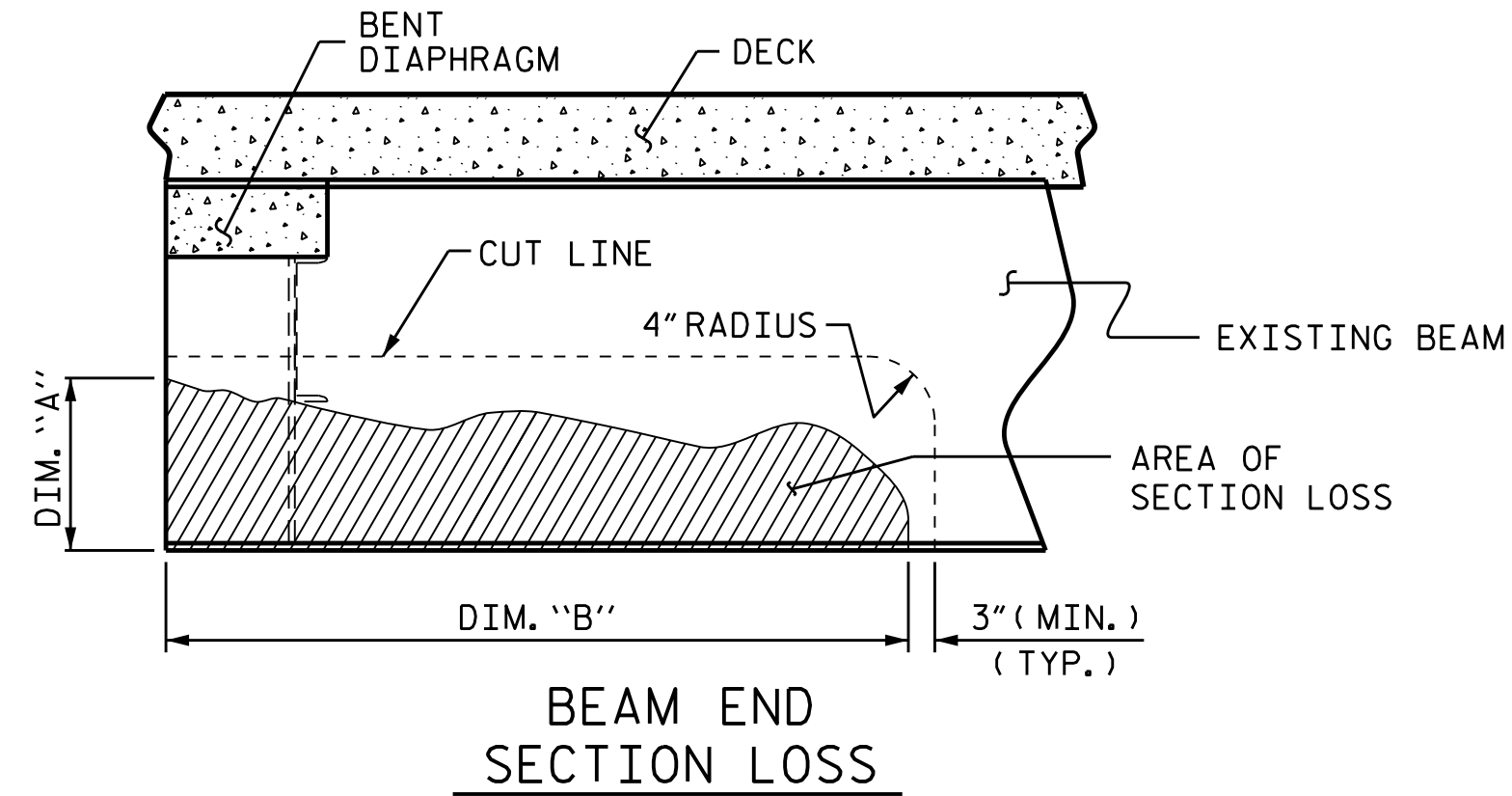


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 OVERHANG, DIAPHRAGM
 AND BRIDGE RAIL
 REPAIR DETAILS

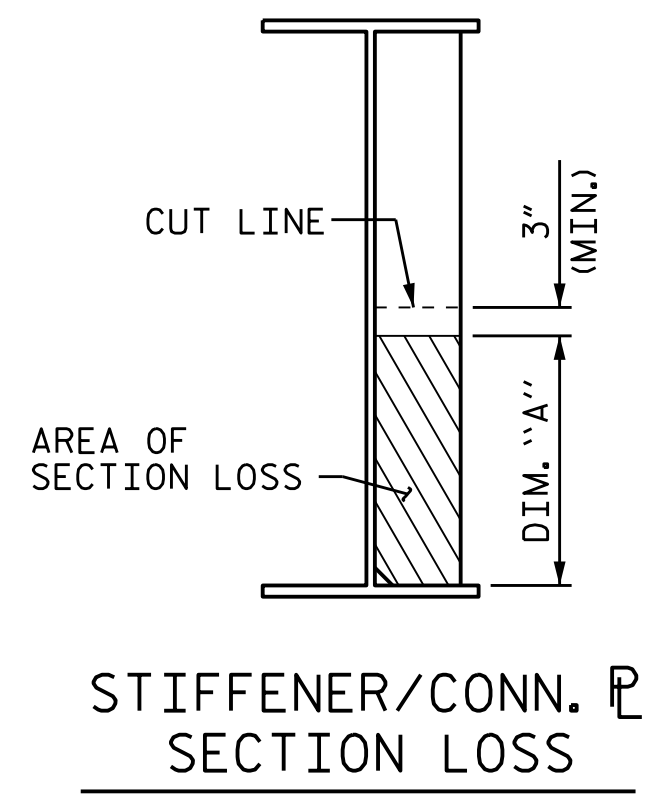
DRAWN BY : R.L. PUTEK DATE : 08/2018
 CHECKED BY : A.M. LEE, PE DATE : 08/2018

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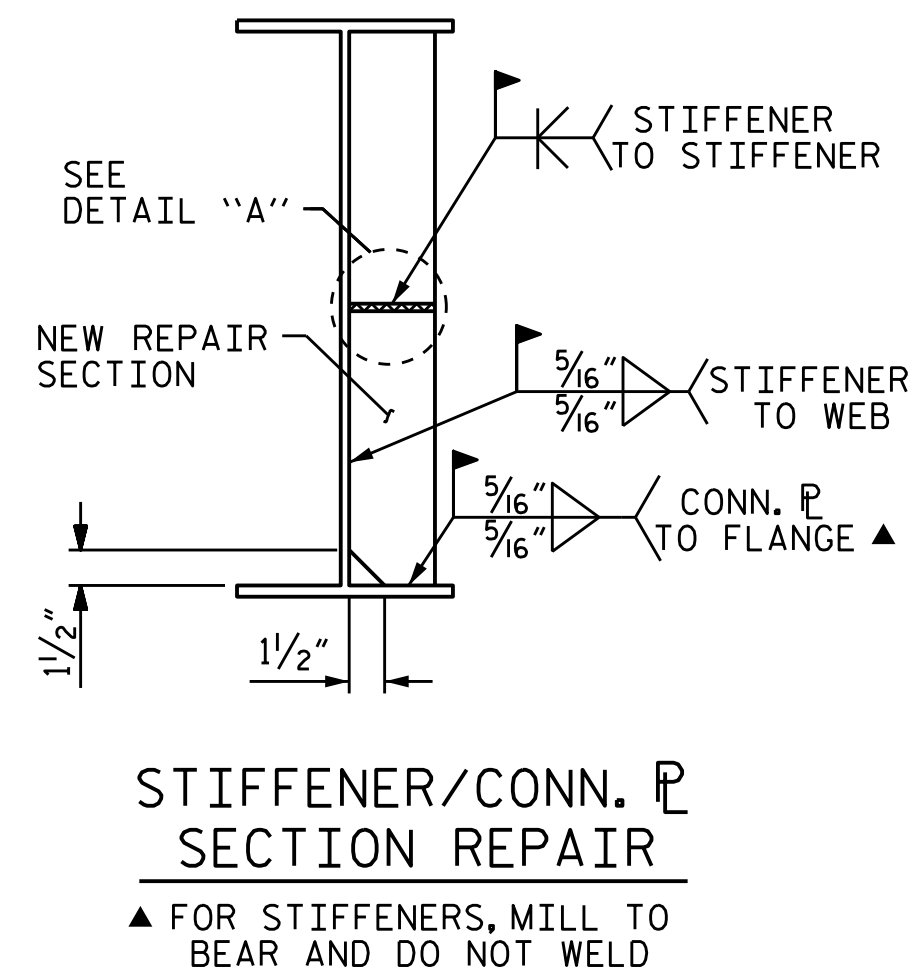
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-52
1			3			TOTAL SHEETS
2			4			55



DETAIL "A"



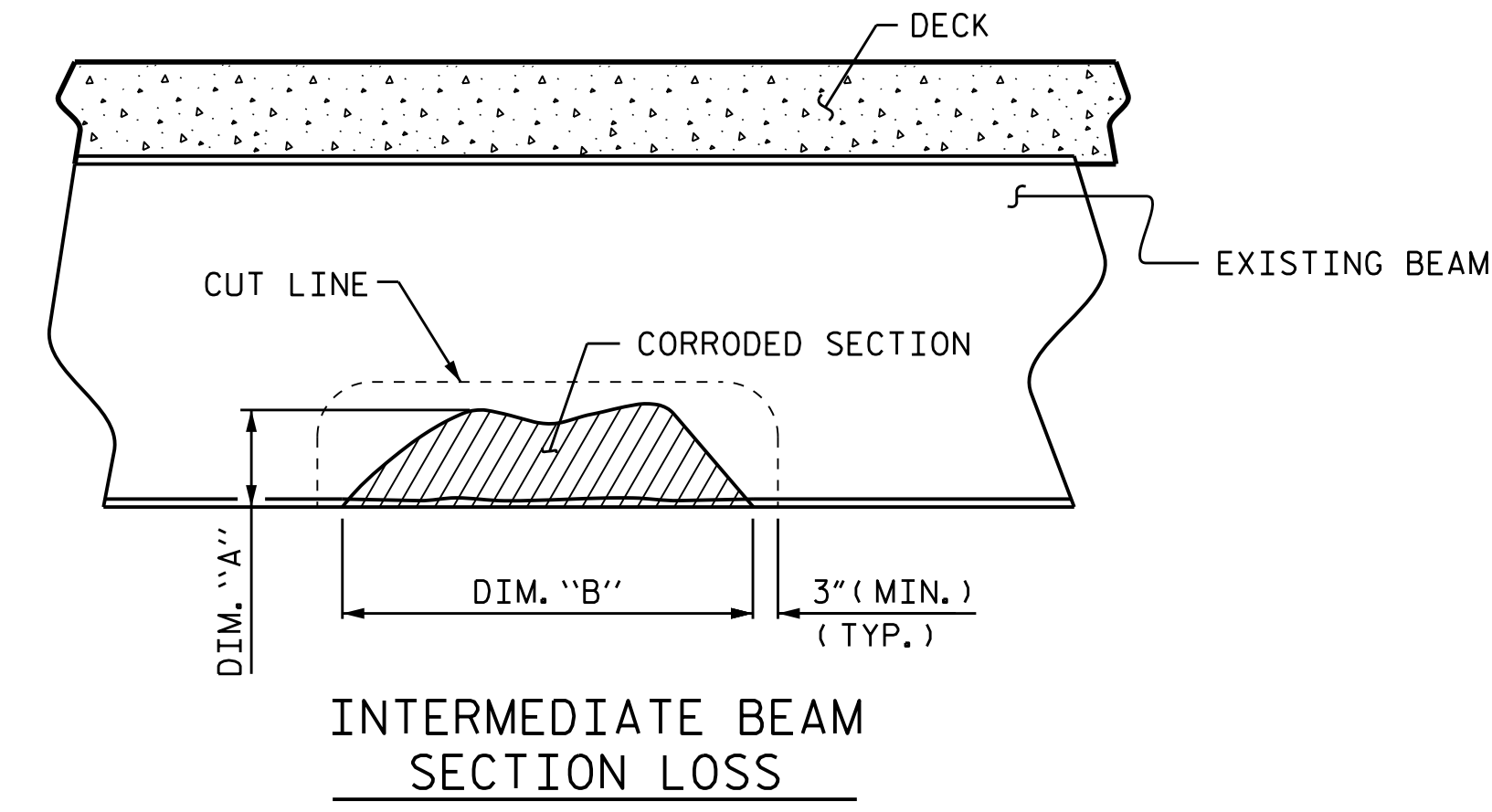
STIFFENER/CONNECTOR PLATE REPAIR



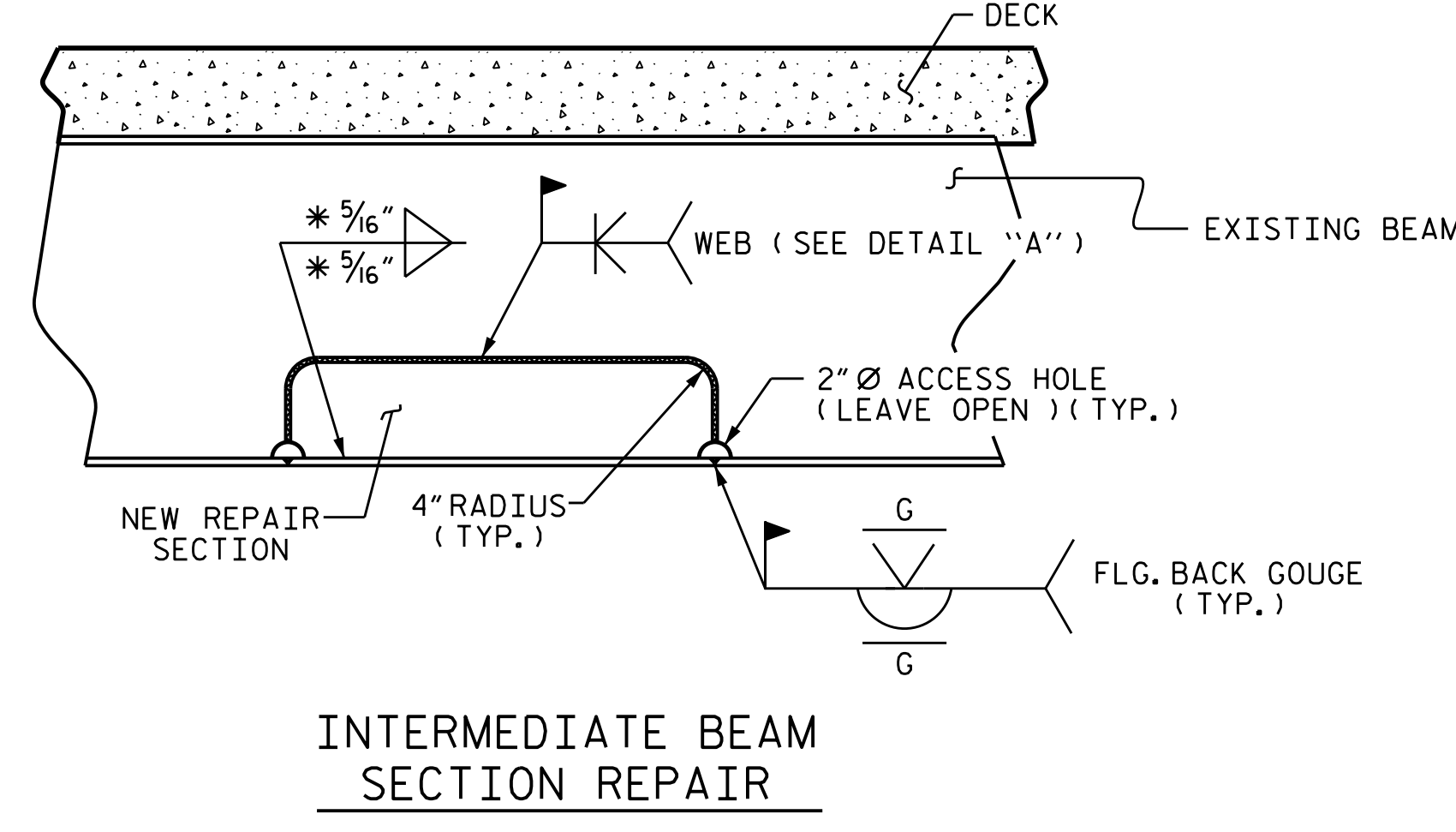
STIFFENER/CONN. PLATE SECTION REPAIR

▲ FOR STIFFENERS, MILL TO BEAR AND DO NOT WELD

BEAM END SECTION REPAIR



INTERMEDIATE BEAM SECTION LOSS



INTERMEDIATE BEAM SECTION REPAIR

INTERMEDIATE BEAM SECTION REPAIR

BEAM SECTION REPAIR NOTES

AFTER THE STRUCTURAL STEEL HAS BEEN BLASTED AND PRIMED, THE STRUCTURAL STEEL AND BEARING SHALL BE INSPECTED FOR EXCESSIVE SECTION LOSS. AREAS THAT EXHIBIT AN EXCESS OF 35% SECTION LOSS SHALL BE REVIEWED BY THE ENGINEER TO DETERMINE IF AREA OF SECTION LOSS SHOULD BE REPAIRED.

AS DETERMINED BY THE ENGINEER, AREAS WITH EXCESSIVE SECTION LOSS OR AREAS WITH TEMPORARY REPAIRS SHALL BE REMOVED AND THE BEAMS SHALL BE REPAIRED AS INDICATED ON THIS PLAN SHEET. CONTRACTOR AND ENGINEER TO DETERMINE ACTUAL DIMENSIONS OF AREA TO BE REMOVED AND REPLACED. REMOVE CONCRETE BENT DIAPHRAGMS AS NEEDED TO EVALUATE LIMITS OF REPAIR.

PAYMENT FOR THE SECTION REPAIR SHALL BE BASED ON THAT AMOUNT OF REPAIR ACTUALLY PERFORMED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER.

GOUGES AND INDENTIONS FROM IMPACT ON GIRDERS SHALL BE GROUND SMOOTH PRIOR TO BLASTING AND PAINTING OPERATION.

REPAIR SEQUENCE:

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

REMOVE DEAD LOAD FROM BEAM BY JACKING AND BLOCKING. CONTRACTOR SHALL SUBMIT JACKING PLAN FOR APPROVAL, PRIOR TO BEGINNING WORK. FOR BRIDGE JACKING, SEE SPECIAL PROVISIONS.

STEEL DIAPHRAGM CHANNELS AND/OR STIFFENERS MAY BE TEMPORARILY REMOVED, IF NECESSARY, AND RESET AFTER BEAM REPAIR.

IF BEAM DETERIORATION EXTENDS INTO THE CONCRETE DIAPHRAGM THEN CHIP AWAY CONCRETE TO DETERMINE THE EXTENT OF THE DAMAGE, CUT OUT BY APPROPRIATE MEANS THE DAMAGED BEAM AREA AND/OR BEARING STIFFENER.

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

REPLACEMENT CUT-TO-FIT BEAM SECTION SHALL BE NEW AND FROM SIMILAR SIZE ROLLED BEAM OR APPROVED EQUIVALENT PLATES. THE GRADE OF STEEL SHALL BE SAME GRADE OF EXISTING MEMBER OR BETTER.

INSTALL THE CUT-TO-FIT SECTION, FULLY WELD ALONG TOP AND SIDES OF PLATE USING FULL PENETRATION WELDS.

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

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

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

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

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

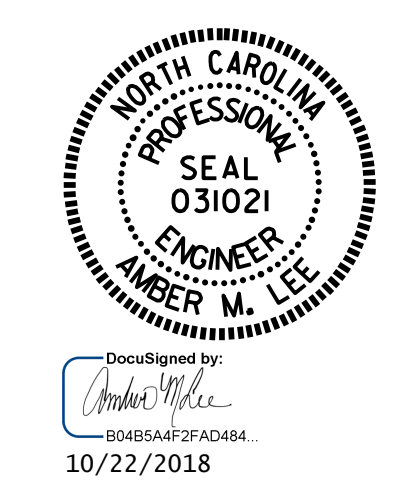
AFTER BEAMS ARE REPAIRED AND PAINTED, ANY CONCRETE REMOVED FROM THE BENT DIAPHRAGMS SHALL BE RECAST. ANY REINFORCING STEEL CUT DURING THE REMOVAL PROCESS SHALL BE SPICED WITH A SIMILAR SIZE BAR WITH AT LEAST A ONE FOOT SPLICE TO THE EXISTING STEEL. NO SEPARATE PAYMENT SHALL BE MADE FOR CONCRETE AND REINFORCING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

LOWER SPAN TO BEAR; CHECK FOR DISTRESS.

REMOVE JACKING EQUIPMENT AND TEMPORARY SUPPORTS.

REMOVE ALL TRAFFIC CONTROL DEVICES.

PROJ. NO. 15BPR.29
 CHEROKEE COUNTY
 BRIDGE NO. 31 & 33



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

BEAM SECTION REPAIR DETAILS

DRAWN BY : R.L. PUTEK DATE : 08/2018
 CHECKED BY : A.M. LEE, PE DATE : 08/2018

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1			3			TOTAL SHEETS
2			4			55

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JACKING NOTES:

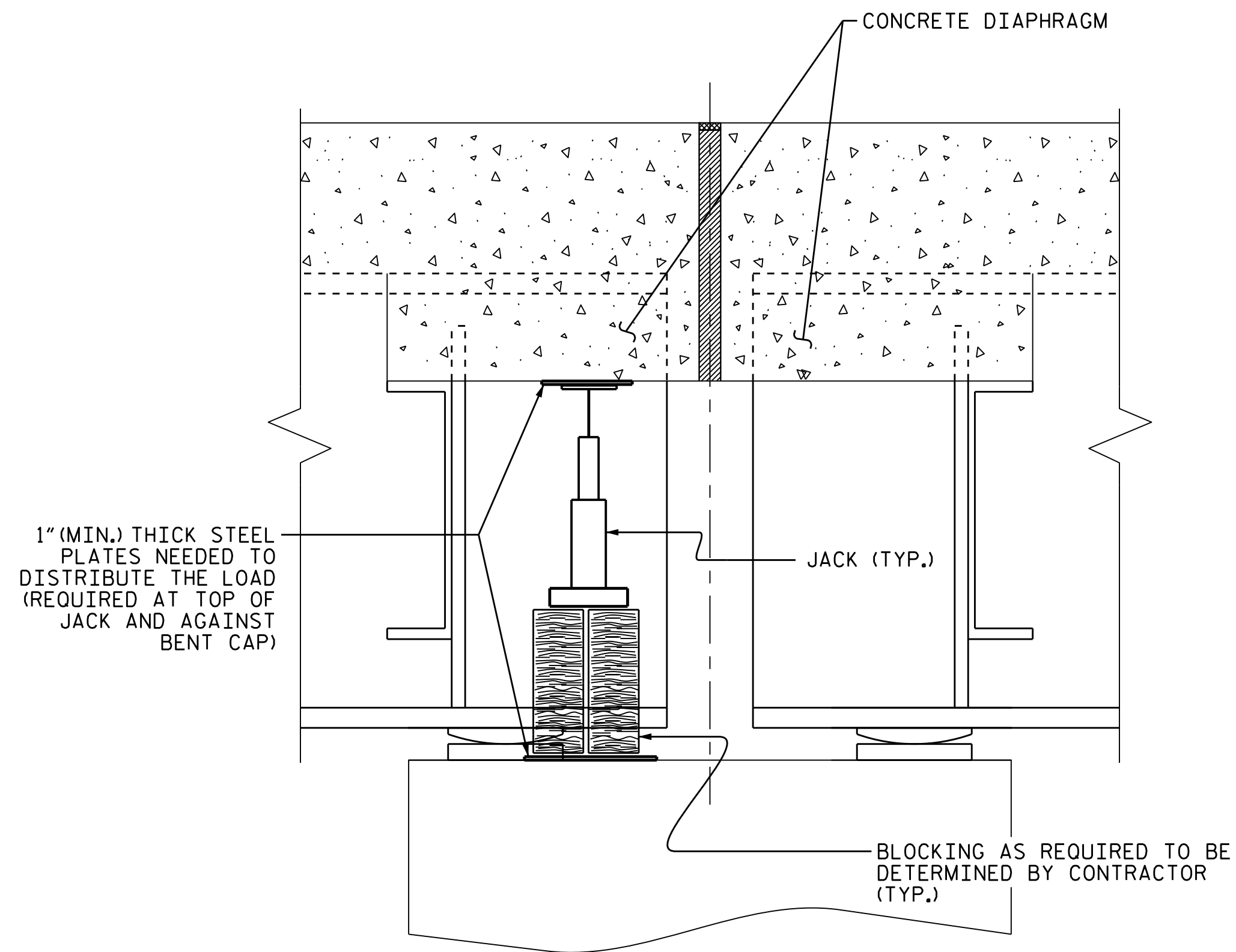
THE BEAM SHALL BE LIFTED ENOUGH THAT THE BEAM CLEARS THE BEARINGS AND ALL LOAD IS SUPPORTED BY THE JACKS. AFTER JACKING IS COMPLETE, THE CONTRACTOR SHALL PROVIDE FOR A METHOD TO REMOVE THE JACKS AND SUPPORT THE BEAM FOR DEAD AND LIVE LOAD DURING THE REPAIR OPERATIONS. IF THE JACKS REMAIN IN PLACE DURING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

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

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

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

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



SECTION THRU DIAPHRAGM

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

PROJ. NO. 15BPR.29
CHEROKEE COUNTY
 BRIDGE NO. 31 & 33



DocuSign by
 Amber M. Lee
 BOARD # 031021
 10/22/2018

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

JACKING DETAILS

DRAWN BY : R.L. PUTEK DATE : 08/2018
 CHECKED BY : A.M. LEE, PE DATE : 08/2018

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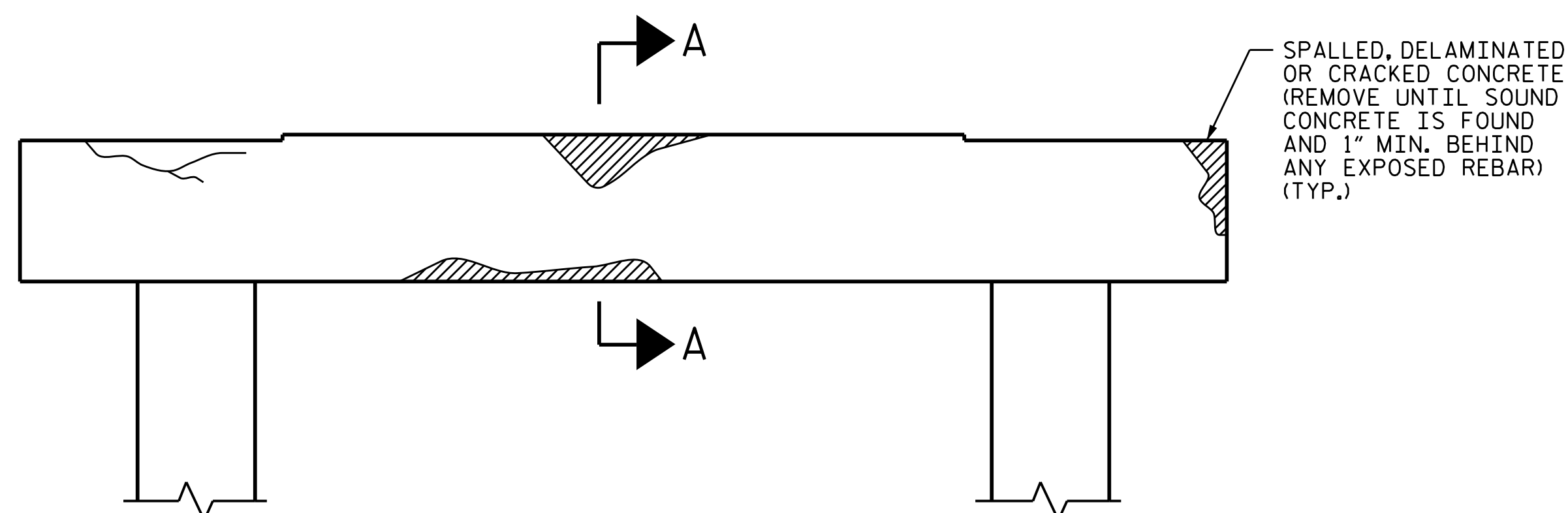
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2			4			

NOTES

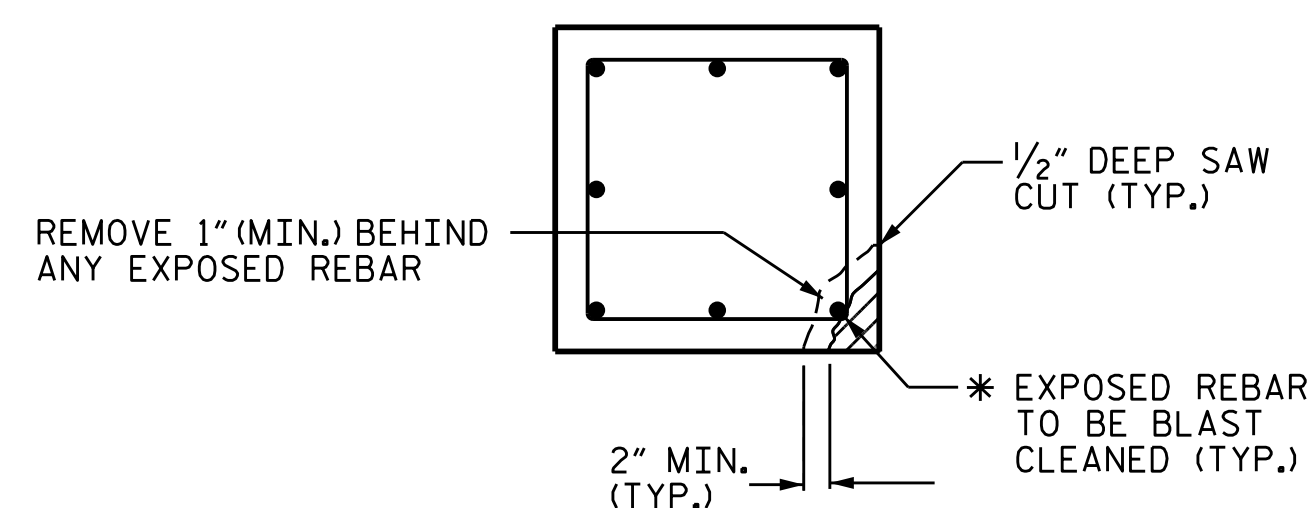
TYPICAL BENT CAP REPAIRS ARE SHOWN. REPAIR DETAILS SIMILAR FOR END BENT CAPS AND STRUTS.

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

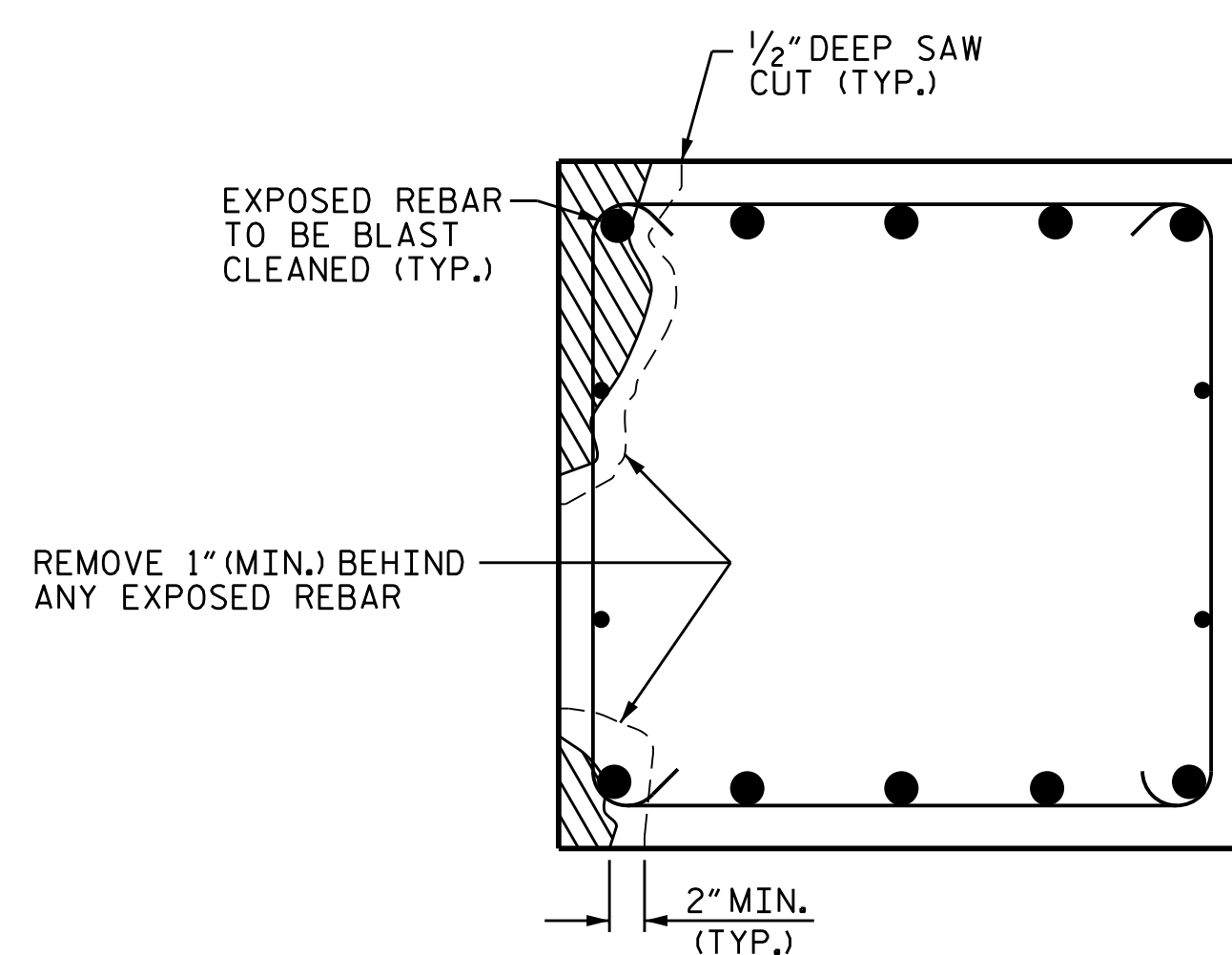
FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS.



BENT CAP REPAIRS

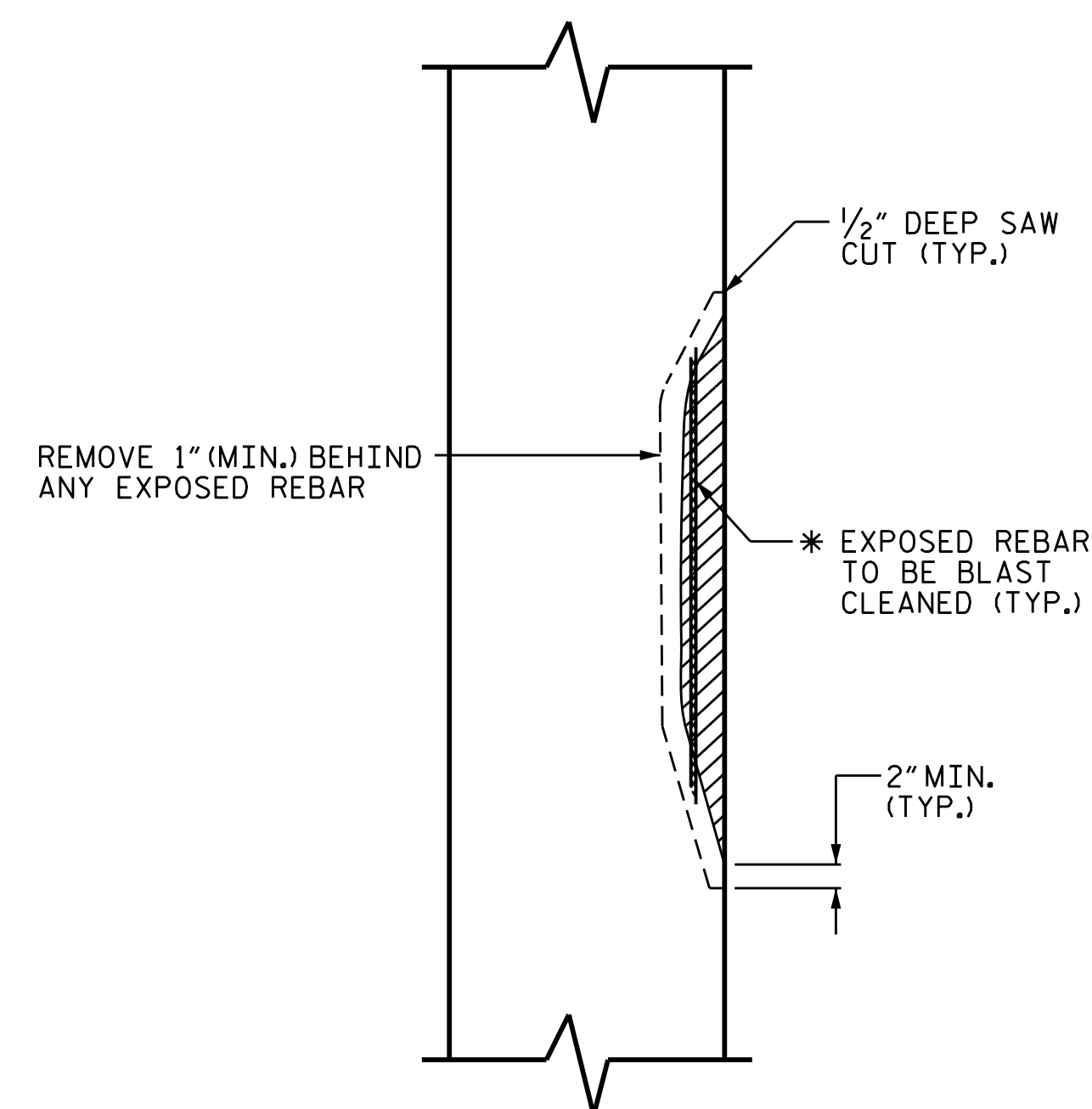


PLAN OF COLUMN



SECTION A-A

CAP REPAIR



ELEVATION OF COLUMN

COLUMN REPAIR

* REPAIR LENGTH SHALL NOT EXCEED 10 FEET.

PROJ. NO. 15BPR.29
CHEROKEE COUNTY
 BRIDGE NO. 31 & 33



DocuSigned by:
 Amber M. Lee
 B04B5A8F7FAD484
 10/22/2018

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

DRAWN BY : R.L. PUTEK DATE : 08/2018
 CHECKED BY : A.M. LEE, PE DATE : 08/2018

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

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

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

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

CONCRETE:

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

CONCRETE CHAMFERS:

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

DOWELS:

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

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

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

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

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

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

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

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

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST $\frac{3}{16}$ " IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

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

HANDRAILS AND POSTS:

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

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

SPECIAL NOTES:

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

ENGLISH

JANUARY, 1990

STD. NO. SN