PROJECT: 15BPR.40

PROJECT: C204304

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

BUNCOMBE COUNTY

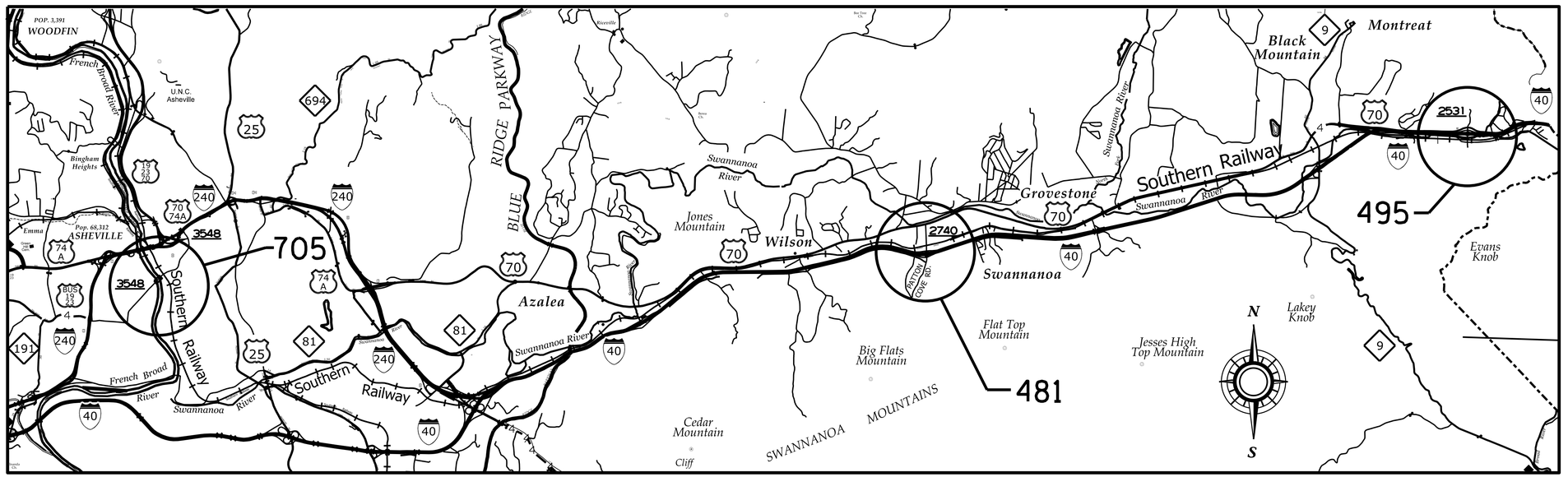
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	15BPR.40	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
15BPR.40	–	P.E.
15BPR.40	–	CONST.

LOCATION: BUNCOMBE COUNTY

BRIDGE #100481 ON SR 2740 (PATTON COVE RD.) OVER INTERSTATE 40
BRIDGE #100495 ON SR 2531 (DUNSMORE AVENUE) OVER INTERSTATE 40
BRIDGE #100705 ON SR 3548 (HAYWOOD RD.) OVER RIVERSIDE DRIVE, NORFOLK SOUTHERN RAIL ROAD, AND THE FRENCH BROAD RIVER

TYPE OF WORK: BRIDGE PRESERVATION – LATEX MODIFIED CONCRETE–EARLY STRENGTH (LMC–ES) OVERLAY, JOINT REPAIR, SUBSTRUCTURE REPAIR, STEEL GIRDER REPAIR, AND PAINTING OF EXISTING BRIDGE STRUCTURES.



VICINITY MAP – BUNCOMBE CO.

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DESIGN DATA

BUNCOMBE COUNTY
#481 ADT 2014 =2300
#495 ADT 2014 =1400
#705 ADT 2014 =8400

PROJECT LENGTH

BUNCOMBE COUNTY
– #481 = 0.044 MILE
– #495 = 0.042 MILE
– #705 = 0.180 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 : FEBRUARY 16, 2021

A. KEITH PASCHAL, P.E.
PROJECT ENGINEER

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

PROJECT: 15BPR.40

PROJECT: C204304

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

BUNCOMBE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	15BPR.40	1A	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
15BPR.40	–	P.E.
15BPR.40	–	CONST.

LOCATION: BUNCOMBE COUNTY

BRIDGE #100481 ON SR 2740 (PATTON COVE RD.) OVER INTERSTATE 40
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INDEX OF SHEETS

TOTAL BILL OF MATERIAL

BRIDGE NO.	INCIDENTAL MILLING	ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B	ASPHALT BINDER FOR PLANT MIX	INDUCTIVE LOOP SAWCUT	LEAD IN CABLE	GROOVING BRIDGE FLOORS	REINFORING STEEL	POLLUTION CONTROL	CLASS II, SURFACE PREPARATION	CLASS III, SURFACE PREPARATION	CONCRETE REPAIRS	SHOTCRETE REPAIRS	EPOXY RESIN INJECTION	MOLDED RUBBER SEGMENTAL EXPANSION JOINT	PAINTING CONTAINMENT FOR BRIDGE #--	SPOT PAINTING OF STEEL STRUCTURE REPAIR AREAS	CLEANING & REPAINTING OF BRIDGE #--
	SQ. YDS.	TONS	TONS	LIN. FT.	LIN. FT.	SQ. FT.	LBS.	LUMP SUM	SQ. YDS.	SQ. YDS.	CU. FT.	CU. FT.	LIN. FT.	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM
481	1067.0	100.0	7.0	200.0	100.0	14,034.8	40.0	LUMP SUM	643.6	--	--	73.5	21.5	--	LUMP SUM	LUMP SUM	--
495	682.2	60.0	5.0	--	--	15,181.6	--	LUMP SUM	169.3	--	1.5	125.3	29.0	--	LUMP SUM	--	--
705	--	--	--	--	--	50,571.0	--	LUMP SUM	0.9	14.9	10.1	120.7	737.8	LUMP SUM	LUMP SUM	--	LUMP SUM
TOTALS	1749.2	160.0	12.0	200.0	100.0	79,787.4	40.0	LUMP SUM	813.8	14.9	11.6	319.5	788.3	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM

BRIDGE NO.	CLEANING & PAINTING OF EXISTING WEATHERING STEEL FOR BRIDGE #--	VOLUMETRIC MIXER	POURABLE SILICONE JOINT SEALANT	FOAM JOINT SEALS FOR PRESERVATION	LATEX MODIFIED CONCRETE OVERLAY-EARLY STRENGTH	CONCRETE FOR DECK REPAIR	ELASTOMERIC CONCRETE FOR PRESERVATION	BEAM REPAIR	BOLTED BEAM REPAIR	BRIDGE JOINT DEMOLITION	JOINT REPAIR	EPOXY COATING	SCARIFYING BRIDGE DECK	HYDRO-DEMOLITION OF BRIDGE DECK	PLACING AND FINISHING LATEX MODIFIED CONCRETE OVERLAY-EARLY STRENGTH	TYPE I BRIDGE JACKING FOR BRIDGE NO. --
	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	CU. YDS.	CU. FT.	CU. FT.	LBS.	LBS.	SQ. FT.	SQ. FT.	SQ. FT.	SQ. YDS.	SQ. YDS.	SQ. YDS.	EA.
481	--	LUMP SUM	128.4	128.4	114.0	1327.4	31.2	173.1	126.5	131.2	--	852.9	1643.2	1643.2	1643.2	7
495	LUMP SUM	LUMP SUM	156.0	136.0	73.4	365.2	34.0	379.5	61.3	136.0	--	730.6	1798.5	1798.5	1798.5	2
705	--	LUMP SUM	--	306.9	246.8	79.7	69.9	192.5	38.3	263.2	373.0	2838.6	5941.5	5941.5	5941.5	--
TOTALS	LUMP SUM	LUMP SUM	284.4	571.3	434.2	1772.3	135.1	745.1	226.1	530.4	373.0	4422.1	9383.2	9383.2	9383.2	9

PROJECT NO. 15BPR.40

BUNCOMBE COUNTY

BRIDGE NO. 100481, 100495
100705

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

DocuSigned by:
Amber Lee
12/11/2020

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TOTAL BILL OF MATERIAL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			75

DRAWN BY : M. G. SHAIKH DATE : 03/2019
CHECKED BY : A.M. LEE, PE DATE : 03/2019

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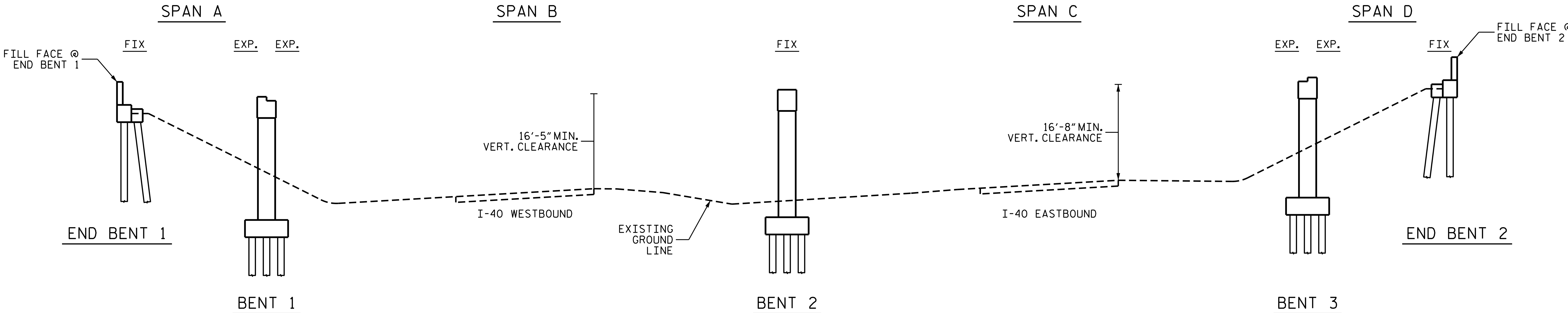
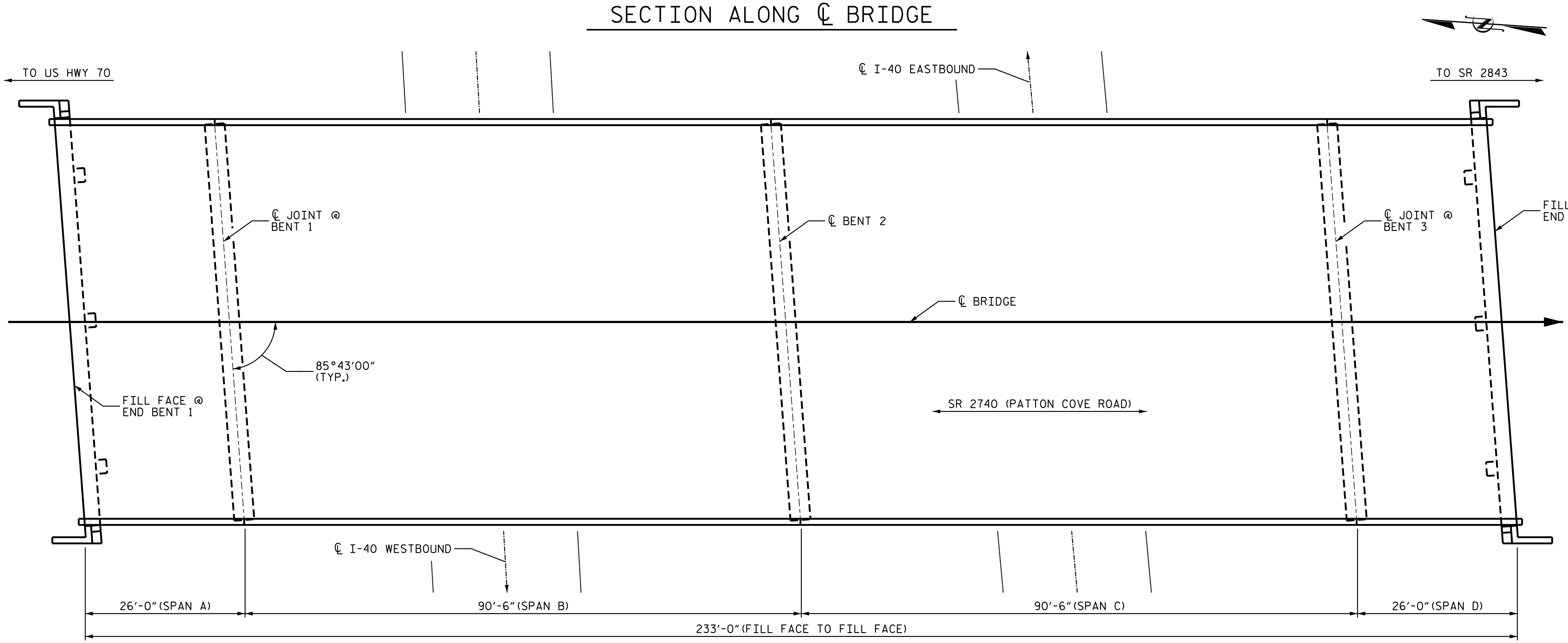


SECTION ALONG ℄ BRIDGE

NOTES

GENERAL DRAWING INFORMATION IS TAKEN FROM THE ORIGINAL PLANS AND THE ROUTINE INSPECTION REPORT DATED 11/15/2017.

BRIDGE ORIENTATION CONFORMS TO THE ORIGINAL BRIDGE PLANS.



PLAN

PROJECT NO. 15BPR.40

BUNCOMBE COUNTY

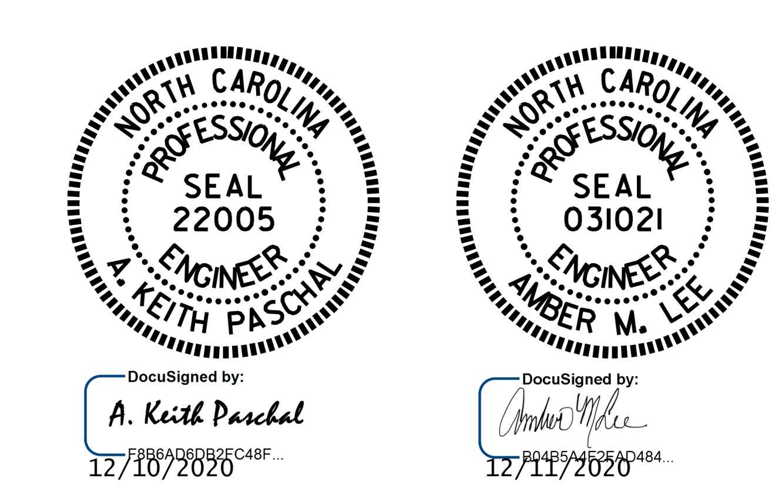
BRIDGE NO. 100481

SCOPE OF WORK

- REMOVE ASPHALT CONCRETE WEARING SURFACE FROM BRIDGE DECK AND APPROACHES.
- PARTIALLY REMOVE BRIDGE DECK CONCRETE BY SCARIFICATION AND HYDRO-DEMOLITION METHODS.
- OVERLAY PREPARED BRIDGE DECK WITH LATEX MODIFIED CONCRETE - EARLY STRENGTH (LMC-ES).
- GROOVE LMC-ES BRIDGE DECK.
- REMOVE EXISTING JOINT MATERIAL AND INSTALL FOAM JOINT SEALS OR POURABLE SILICONE JOINT SEALANT.
- EPOXY RESIN INJECTION OF CONCRETE CRACKS.
- REMOVE UNSOUND CONCRETE AND PROPERLY PREPARE SHOTCRETE AND CONCRETE REPAIR AREAS.
- PERFORM SHOTCRETE AND CONCRETE REPAIRS IN PREPARED AREAS.
- CLEAN, PLATE REPAIR AND SPOT REPAINT EXISTING STRUCTURAL STEEL.
- REMOVE DEBRIS FROM TOP OF END BENT AND BENT CAPS, AND APPLY EPOXY COATING.
- 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



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON
SR 2740 (PATTON COVE RD.)
OVER
INTERSTATE 40

REVISIONS								SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:			S1-01
1			3					TOTAL SHEETS
2			4					18

DRAWN BY : R.L.PUTEK DATE : 11/2018
CHECKED BY : A.M. LEE, PE DATE : 03/2019

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LOCATION SKETCH

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

BRIDGE COORDINATES

LAT: 35.594712
LONG: -82.402838

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.

WORK ON THE BRIDGES SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL BELOW. THE CONTRACTOR SHALL SUBMIT PLANS FOR CONSTRUCTION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS AND THE PROJECT SPECIAL PROVISIONS.

ANY DAMAGE TO EXISTING REINFORCING STEEL, DURING CONTRACTOR'S OPERATIONS, SHALL BE REPAIRED AS DIRECTED BY THE ENGINEER AND PERFORMED AT NO ADDITIONAL COST TO THE DEPARTMENT.

PRIOR TO BEGINNING WORK, THE CONTRACTOR SHALL SUBMIT FOR REVIEW AND APPROVAL A COMPLETE SEQUENCE OF TASK FOR EACH OPERATION AFFECTING THE BRIDGE SURFACE AND/OR TRAFFIC.

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, AND CLASS II SURFACE PREPARATION, SEE OVERLAY SURFACE PREPARATION SPECIAL PROVISION.

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

FOR PLACING AND FINISHING LATEX MODIFIED CONCRETE OVERLAY-EARLY STRENGTH (LMC-ES) AND LATEX MODIFIED CONCRETE-EARLY STRENGTH, SEE LATEX MODIFIED CONCRETE-EARLY STRENGTH SPECIAL PROVISIONS.

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

DURING CONSTRUCTION, BERMS OR APPRORIATE MEASURES SHALL BE USED TO ENSURE HYDRO-DEMOLITION WATER DOES NOT MIGRATE INTO ACTIVE TRAVEL LANES.

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

FOR BRIDGE JOINT DEMOLITION, SEE SPECIAL PROVISIONS.

FOR CONCRETE FOR DECK REPAIRS, SEE SPECIAL PROVISIONS.

FOR FOAM JOINT SEAL FOR PRESERVATION, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR SPOT PAINTING OF STEEL STRUCTURE REPAIR AREAS AND POLLUTION CONTROL, SEE SPOT PAINTING OF STEEL STRUCTURE REPAIR AREAS SPECIAL PROVISION.

FOR EPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.

FOR BEAM REPAIR, SEE SPECIAL PROVISIONS.

FOR BOLTED BEAM REPAIR, SEE SPECIAL PROVISIONS.

FOR VOLUMETRIC MIXER, SEE SPECIAL PROVISIONS.

FOR POURABLE SILICONE JOINT SEALANT, SEE SPECIAL PROVISIONS.

FOR ELASTOMERIC CONCRETE FOR PRESERVATION, SEE SPECIAL PROVISIONS.

FOR BRIDGE JACKING, SEE SPECIAL PROVISIONS.

PROJ. NO. 15BPR.40

BUNCOMBE COUNTY

BRIDGE NO. 100481

SHEET 2 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

Docusigned by: Amber Lee
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5/29/2019

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON SR 2740 (PATTON COVE RD.) OVER INTERSTATE 40

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-02
1			3			TOTAL SHEETS
2			4			18

DRAWN BY : R.L.PUTEK DATE : 12/2018
CHECKED BY : A.M.LEE DATE : 03/2019

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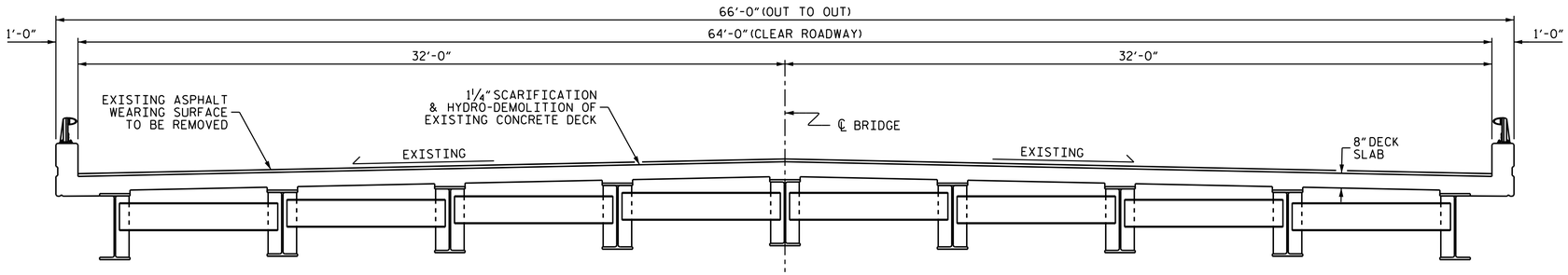
NOTES

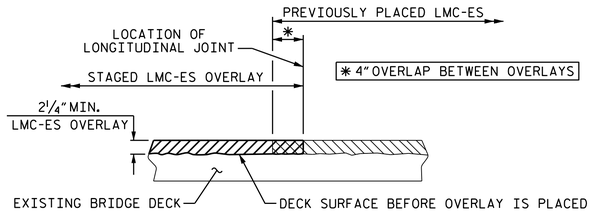
WHEN PREPARING THE SURFACE FOR LMC-ES OVERLAY ADJACENT TO THE PREVIOUSLY PLACED LMC-ES STAGE, THE PREVIOUSLY PLACED LMC-ES SHALL BE SAW-CUT TO THE FULL DEPTH OF THE LMC-ES AT THE CENTERLINE OF THE BRIDGE AND ALL LMC-ES IN THE 4"OVERLAP SHALL BE REMOVED WITH HAND TOOLS PRIOR TO PLACEMENT OF LMC-ES IN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

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



TYPICAL SECTION

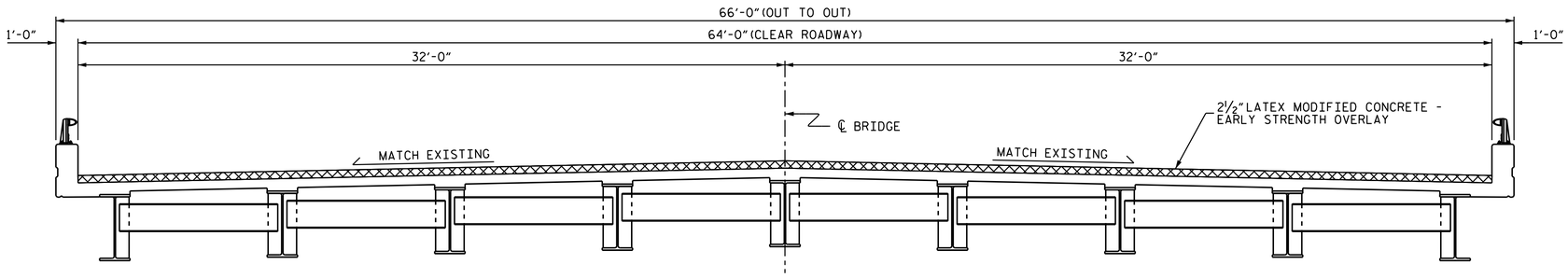
(EXISTING ASPHALT WEARING SURFACE)



SECTION THRU DECK

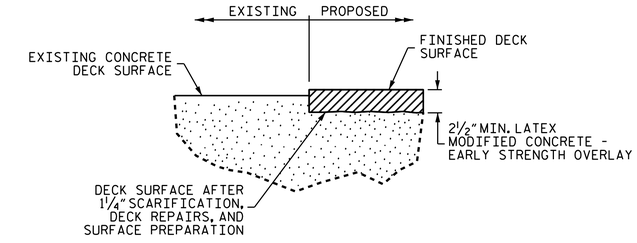
STAGED LMC-ES OVERLAY JOINT

(AS NEEDED)



TYPICAL SECTION

(PROPOSED LMC - ES WEARING SURFACE)



DETAIL FOR LMC - ES OVERLAY

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

PROJECT NO. 15BPR.40

BUNCOMBE COUNTY

BRIDGE NO. 100481

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

Docusigned by: Amber Lee
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5/29/2019

TYPICAL SECTION

DRAWN BY : R.L.PUTEK DATE : 01/2019

CHECKED BY : A.M.LEE DATE : 02/2019

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REVISIONS					
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1			3		
2			4		

SHEET NO. S1-03

TOTAL SHEETS 18

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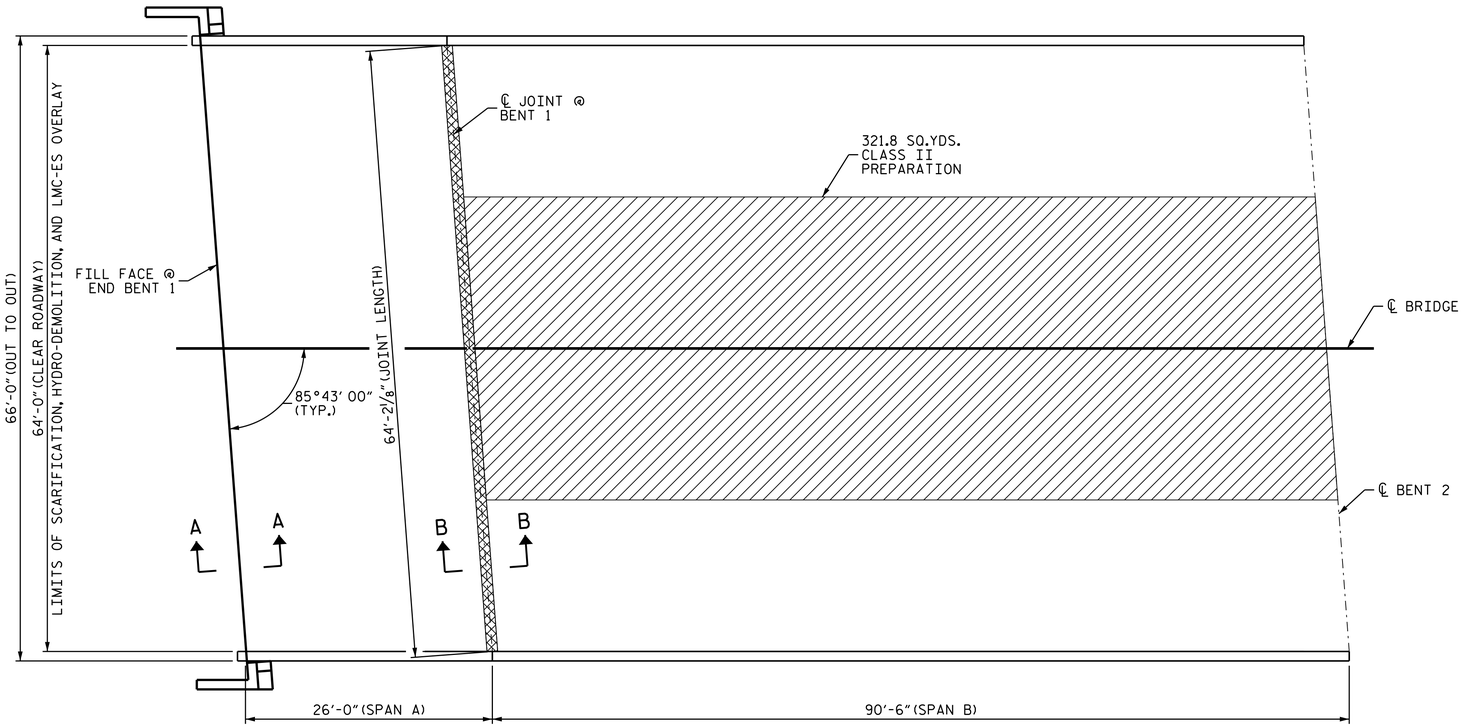

SPAN A

SPAN B

AS-BUILT REPAIR QUANITY TABLE

DECK SURFACE REPAIR SPAN A

	ESTIMATE	ACTUAL
CONCRETE FOR DECK REPAIR	0.0 CU. FT.	
CLASS II SURFACE PREPARATION	0.0 SQ. YDS.	
LMC-ES MATERIALS	12.6 CU. YDS.	
PLACING & FINISHING LMC-ES OVERLAY	181.5 SQ. YDS.	
SCARIFYING BRIDGE DECK	181.5 SQ. YDS.	
HYDRO-DEMOLITION OF BRIDGE DECK	181.5 SQ. YDS.	
GROOVING BRIDGE FLOORS	1536.3 SQ. FT.	
BRIDGE JOINT DEMOLITION	32.8 SQ. FT.	

AS-BUILT REPAIR QUANITY TABLE

DECK SURFACE REPAIR SPAN B

	ESTIMATE	ACTUAL
CONCRETE FOR DECK REPAIR	663.7 CU. FT.	
CLASS II SURFACE PREPARATION	321.8 SQ. YDS.	
LMC-ES MATERIALS	44.4 CU. YDS.	
PLACING & FINISHING LMC-ES OVERLAY	640.1 SQ. YDS.	
SCARIFYING BRIDGE DECK	640.1 SQ. YDS.	
HYDRO-DEMOLITION OF BRIDGE DECK	640.1 SQ. YDS.	
GROOVING BRIDGE FLOORS	5481.1 SQ. FT.	
BRIDGE JOINT DEMOLITION	32.8 SQ. FT.	

NOTES

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

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 A-A, AND B-B. SEE "JOINT DETAILS LMC OVERLAY", SHEET.

CLASS II SURFACE PREPARATION

BRIDGE JOINT DEMOLITION

PROJECT NO. 15BPR.40

BUNCOMBE COUNTY

BRIDGE NO. 100481

SHEET 1 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

DocuSigned by: Amber Lee
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5/29/2019

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK SURFACE REPAIR SPANS A & B

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-04
1			3			TOTAL SHEETS
2			4			18

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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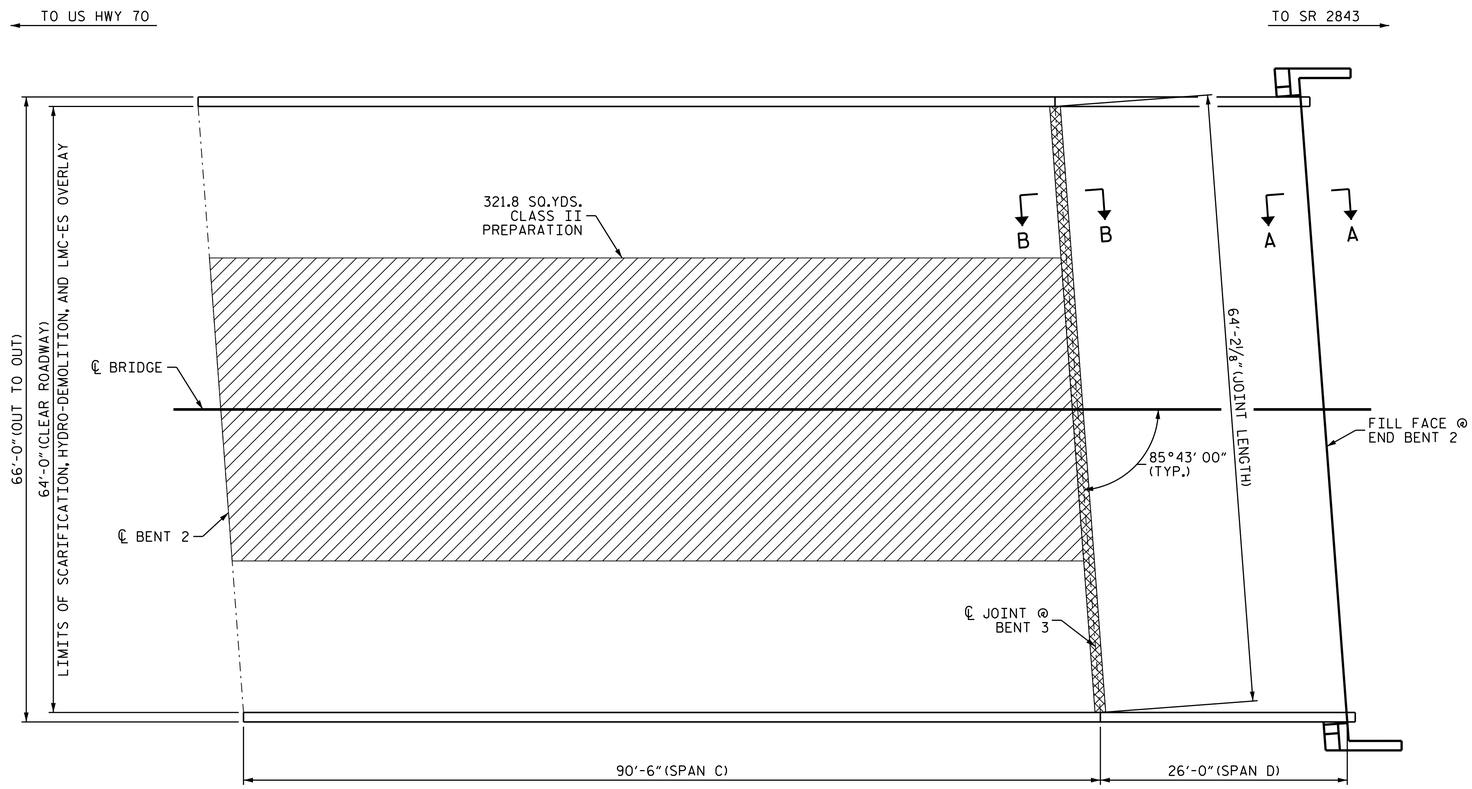

SPAN C

SPAN D

AS-BUILT REPAIR QUANITY TABLE

DECK SURFACE REPAIR SPAN C

	ESTIMATE	ACTUAL
CONCRETE FOR DECK REPAIR	663.7 CU. FT.	
CLASS II SURFACE PREPARATION	321.8 SQ. YDS.	
LMC-ES MATERIALS	44.4 CU. YDS.	
PLACING & FINISHING LMC-ES OVERLAY	640.1 SQ. YDS.	
SCARIFYING BRIDGE DECK	640.1 SQ. YDS.	
HYDRO-DEMOLITION OF BRIDGE DECK	640.1 SQ. YDS.	
GROOVING BRIDGE FLOORS	5481.1 SQ. FT.	
BRIDGE JOINT DEMOLITION	32.8 SQ. FT.	

AS-BUILT REPAIR QUANITY TABLE

DECK SURFACE REPAIR SPAN D

	ESTIMATE	ACTUAL
CONCRETE FOR DECK REPAIR	0.0 CU. FT.	
CLASS II SURFACE PREPARATION	0.0 SQ. YDS.	
LMC-ES MATERIALS	12.6 CU. YDS.	
PLACING & FINISHING LMC-ES OVERLAY	181.5 SQ. YDS.	
SCARIFYING BRIDGE DECK	181.5 SQ. YDS.	
HYDRO-DEMOLITION OF BRIDGE DECK	181.5 SQ. YDS.	
GROOVING BRIDGE FLOORS	1536.3 SQ. FT.	
BRIDGE JOINT DEMOLITION	32.8 SQ. FT.	

NOTES

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

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 A-A, AND B-B. SEE "JOINT DETAILS LMC OVERLAY", SHEET.

CLASS II SURFACE PREPARATION

BRIDGE JOINT DEMOLITION

PROJECT NO. 15BPR.40

BUNCOMBE COUNTY

BRIDGE NO. 100481

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK SURFACE REPAIR SPANS C & D

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

DocuSigned by: Amber Lee
B04B5A4F2FAD484...

5/29/2019

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-05
1			3			TOTAL SHEETS
2			4			18

DRAWN BY : R.L.PUTEK DATE : 01/2019
CHECKED BY : A.M.LEE DATE : 03/2019

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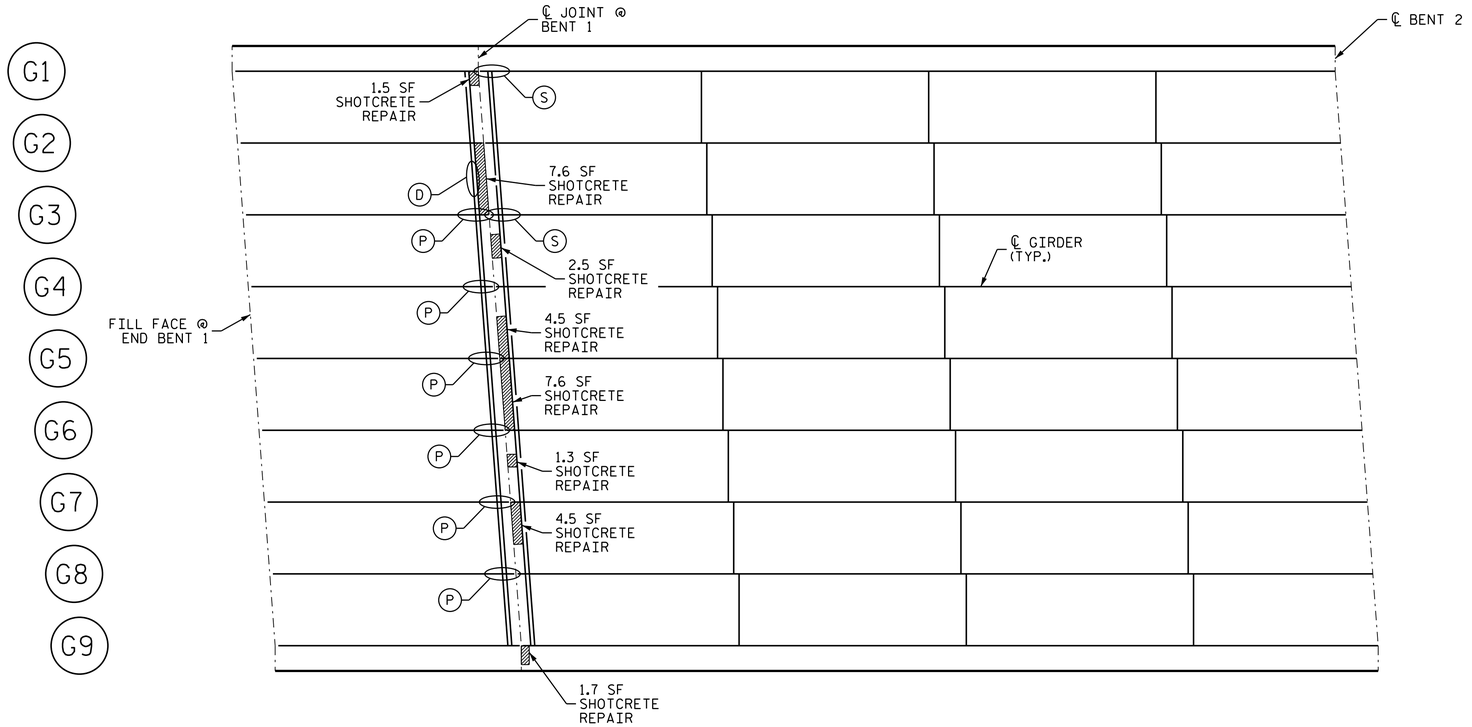

SPAN A

SPAN B

AS-BUILT REPAIR QUANTITY TABLE

DECK UNDERSIDE REPAIRS - SPAN A

	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
UNDERSIDE OF DECK	0.0	0.0		
CONCRETE DIAPHRAGM	9.1	4.6		
OVERHANG	0.0	0.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
UNDERSIDE OF DECK	0.0	0.0		
CONCRETE DIAPHRAGM	0.0	0.0		
OVERHANG	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.	LIN. FT.	
UNDERSIDE OF DECK		0.0		
CONCRETE DIAPHRAGM		0.0		
OVERHANG		0.0		

AS-BUILT REPAIR QUANTITY TABLE

DECK UNDERSIDE REPAIRS - SPAN B

	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
UNDERSIDE OF DECK	0.0	0.0		
CONCRETE DIAPHRAGM	20.4	10.2		
OVERHANG	1.7	0.6		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
UNDERSIDE OF DECK	0.0	0.0		
CONCRETE DIAPHRAGM	0.0	0.0		
OVERHANG	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.	LIN. FT.	
UNDERSIDE OF DECK		0.0		
CONCRETE DIAPHRAGM		0.0		
OVERHANG		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 "OVERHANG, DIAPHRAGM AND BRIDGE RAIL REPAIR DETAILS" SHEET.

NOTES

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

FOR OVERHANG REPAIRS. SEE "OVERHANG, DIAPHRAGM AND BRIDGE RAIL REPAIR DETAILS" SHEET.

FOR BEAM PLATING REPAIR. SEE "BEAM PLATING REPAIR DETAILS" SHEETS.

FOR BRIDGE JACKING. SEE "JACKING DETAILS" SHEET.

ANTICIPATED STEEL REPAIR LOCATIONS

SPAN	BEAM	LOCATION	DIM "A"	DIM "B"	DIM "E"	
A	G3	BENT 1		9½"	8"	
A	G4	BENT 1		9½"	8"	
A	G5	BENT 1		9½"	8"	
A	G6	BENT 1		9½"	8"	
A	G7	BENT 1		9½"	8"	
A	G8	BENT 1		9½"	22"	
B	G1	BENT 1	5"	-		
B	G3	BENT 1	6"	-		

BEAM REPAIR QUANTITY TABLE

STEEL PLATES		STIFFENER		STEEL DIAPHRAGM		BRIDGE JACKING	
LBS.		LBS.		LBS.		EA.	
ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL
113.1		17.8		155.3		6	

SHOTCRETE REPAIR AREA

ERI - EPOXY RESIN INJECTION

(1) BEAM NUMBER
(B) BEAM END REPAIR
(P) PLATING REPAIR
(S) STIFFENER REPAIR
(C) CONNECTOR PLATE REPAIR
(D) STEEL DIAPHRAGM REPLACEMENT
(F) BOTTOM FLANGE REPAIR

PROJECT NO. 15BPR.40
BUNCOMBE COUNTY
BRIDGE NO. 100481

SHEET 1 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

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RALEIGH

DECK UNDERSIDE REPAIRS SPANS A & B

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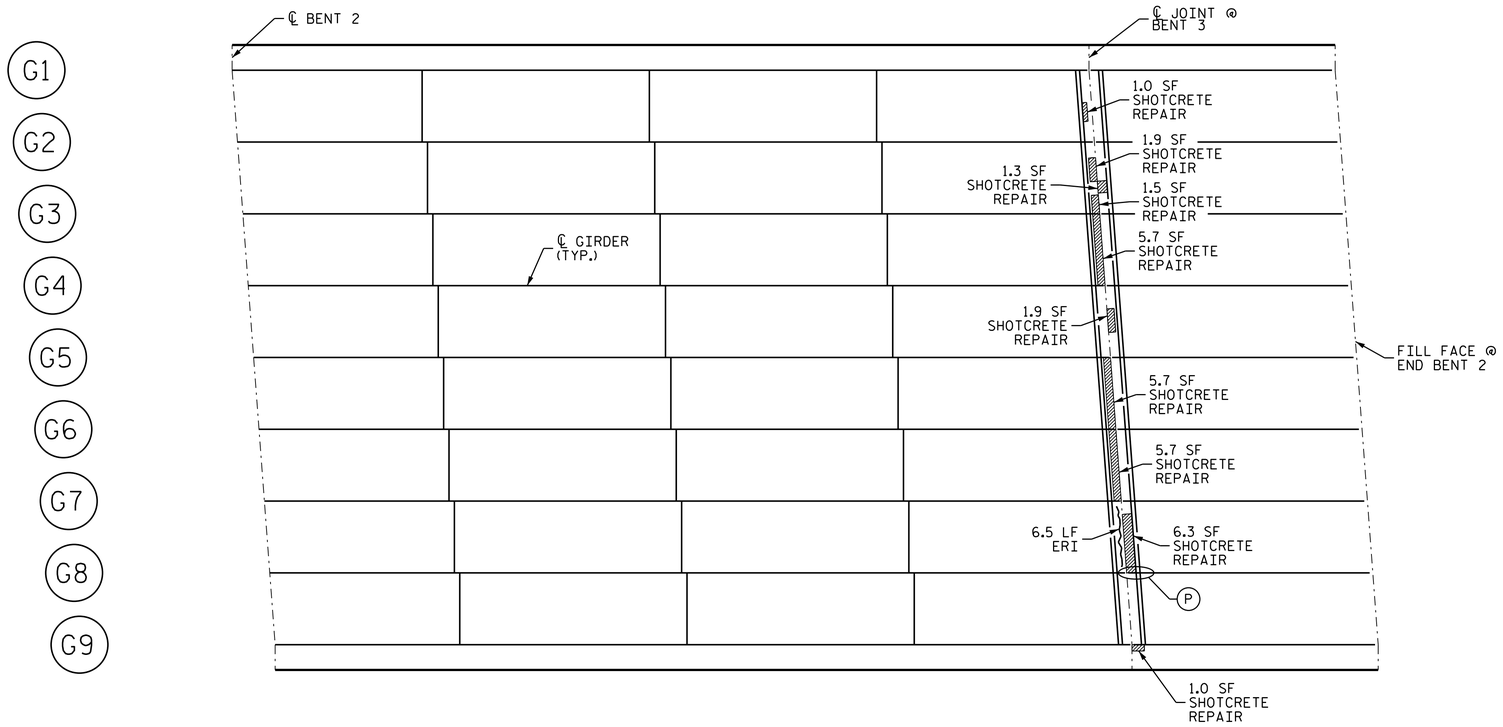

AS-BUILT REPAIR QUANTITY TABLE

DECK UNDERSIDE REPAIRS - SPAN C

	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
UNDERSIDE OF DECK	0.0	0.0		
CONCRETE DIAPHRAGM	21.5	10.8		
OVERHANG	0.0	0.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
UNDERSIDE OF DECK	0.0	0.0		
CONCRETE DIAPHRAGM	0.0	0.0		
OVERHANG	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.	LIN. FT.	
UNDERSIDE OF DECK		0.0		
CONCRETE DIAPHRAGM		6.5		
OVERHANG		0.0		

AS-BUILT REPAIR QUANTITY TABLE

DECK UNDERSIDE REPAIRS - SPAN D

	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
UNDERSIDE OF DECK	0.0	0.0		
CONCRETE DIAPHRAGM	9.5	4.8		
OVERHANG	1.0	0.5		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
UNDERSIDE OF DECK	0.0	0.0		
CONCRETE DIAPHRAGM	0.0	0.0		
OVERHANG	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.	LIN. FT.	
UNDERSIDE OF DECK		0.0		
CONCRETE DIAPHRAGM		0.0		
OVERHANG		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 "OVERHANG, DIAPHRAGM AND BRIDGE RAIL REPAIR DETAILS" SHEET.

NOTES

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

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FOR BEAM PLATING REPAIR. SEE "BEAM PLATING REPAIR DETAILS" SHEETS.

FOR BRIDGE JACKING. SEE "JACKING DETAILS" SHEET.

ANTICIPATED STEEL REPAIR LOCATIONS

SPAN	BEAM	LOCATION	DIM "A"	DIM "B"	DIM "E"	
D	G8	BENT 3		9½"	8"	

BEAM REPAIR QUANTITY TABLE

STEEL PLATES LBS.		STIFFENER LBS.		STEEL DIAPHRAGM LBS.		BRIDGE JACKING EA.	
ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL
13.4		0.0		0.0		1	

SHOTCRETE REPAIR AREA

ERI - EPOXY RESIN INJECTION

(1) BEAM NUMBER
(B) BEAM END REPAIR
(P) PLATING REPAIR
(S) STIFFENER REPAIR
(C) CONNECTOR PLATE REPAIR
(D) STEEL DIAPHRAGM REPLACEMENT
(F) BOTTOM FLANGE REPAIR

PROJECT NO. 15BPR.40
BUNCOMBE COUNTY
BRIDGE NO. 100481

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK UNDERSIDE REPAIRS SPANS C & D

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

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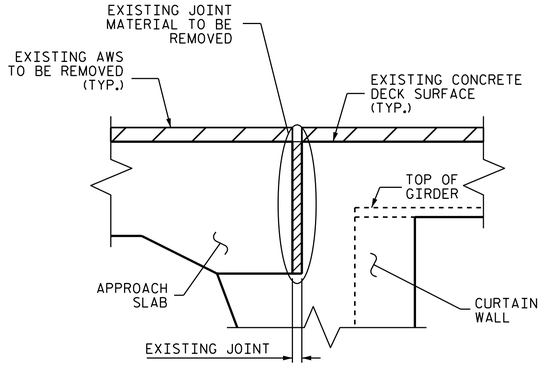
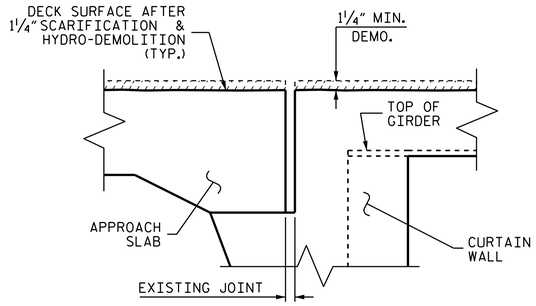
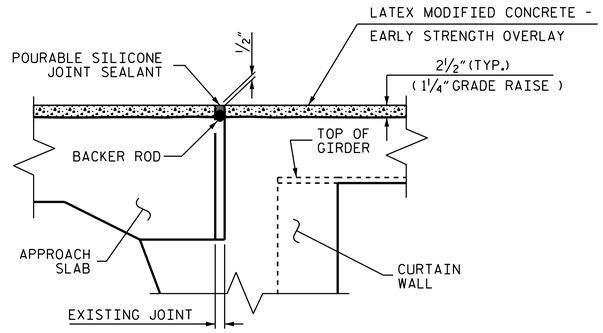


SECTION A-A
(EXISTING JOINT)



SECTION A-A
(MINIMUM EXISTING JOINT DEMOLITION)



SECTION A-A
(PROPOSED JOINT)

NOTES

THE FOAM JOINTS SHALL MEET THE MANUFACTURER'S RECOMMENDATION.

THE UNCOMPRESSED FOAM JOINT SEAL WIDTH 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 ¼", 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.

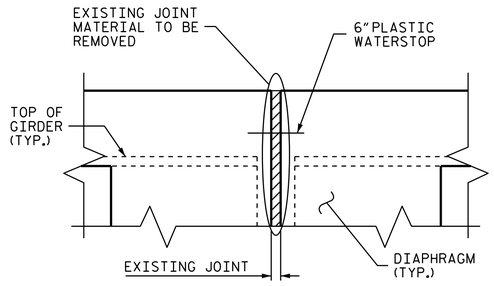
THE BACKER ROD SHALL MEET THE MANUFACTURER'S RECOMMENDATION FOR THE SIZE OF THE JOINT OPENING.

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.

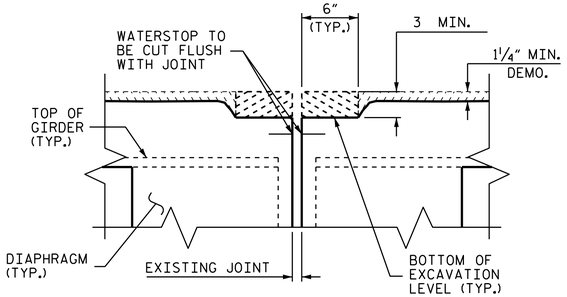
DEMOLISH BRIDGE JOINT AREA TO THE NECESSARY DEPTH, SUCH THAT ELASTOMERIC CONCRETE SHALL BE FOUNDED ON CONCRETE OR REPAIR CONCRETE SUBSTRATE, NOT LATEX MODIFIED CONCRETE.

SAWED JOINT OPENING TABLE

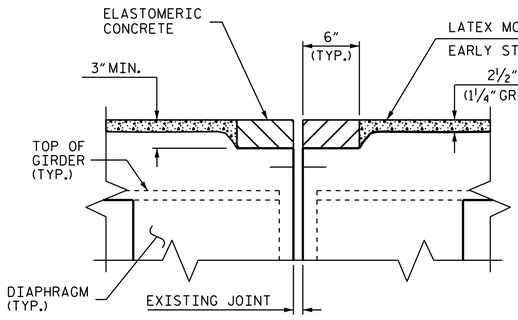
	SAWED JT. OPENING (PERPINDICULAR TO JT.)		
LOCATION	AT 45°	AT 60°	AT 90°
BENT 1	1 11/16"	1 9/16"	1 5/16"
BENT 3	1 11/16"	1 9/16"	1 5/16"



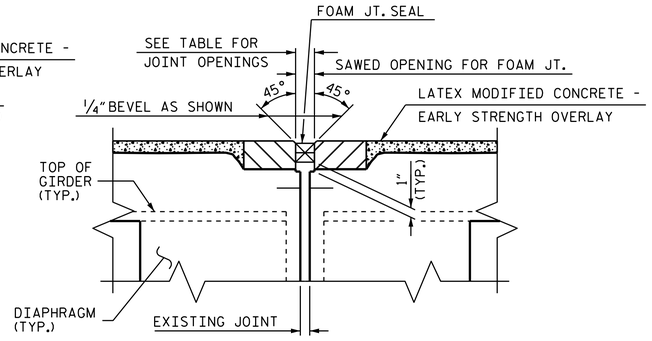
SECTION B-B
(EXISTING JOINT)



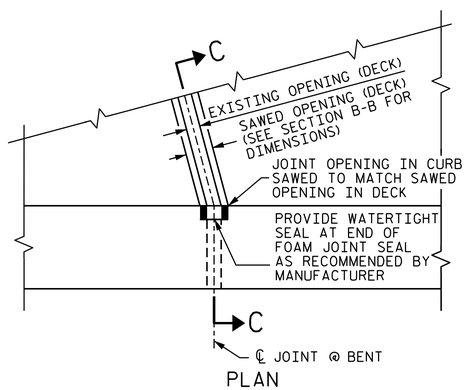
SECTION B-B
(MINIMUM EXISTING JOINT DEMOLITION)



SECTION B-B
(PROPOSED JOINT PRE-SAWED)

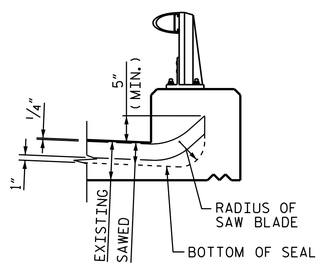


SECTION B-B
(PROPOSED FOAM JOINT SEAL)



PLAN

JOINT SEAL DETAILS



C-C

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

ELASTOMERIC CONCRETE FOR PRESERVATION

LOCATION	ESTIMATED CU.FT.	ACTUAL CU.FT.
BENT 1	15.6	
BENT 3	15.6	
TOTAL	31.2	

JOINT REPAIR QUANTITY TABLE

	ESTIMATED LIN. FT.	ACTUAL LIN. FT.
FOAM JOINT SEALS FOR PRESERVATION	128.4	
POURABLE SILICONE JOINT SEALANT	128.4	

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JOINT DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE
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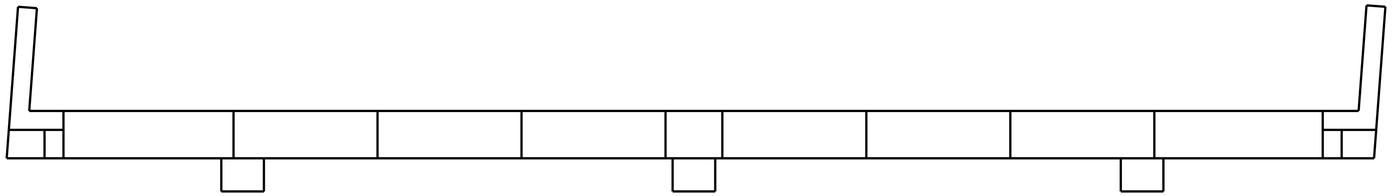
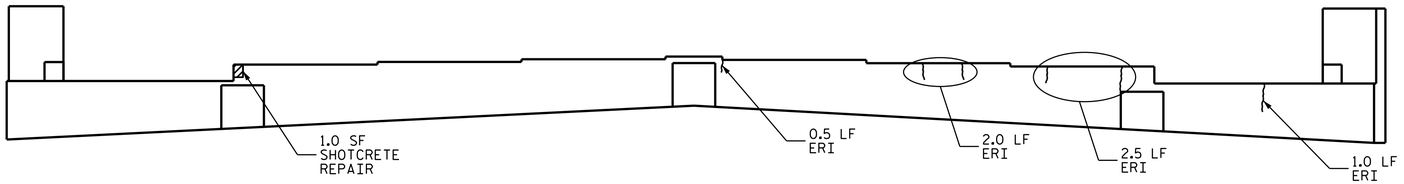


PLAN



ELEVATION

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	1.0	0.5		
CURTAIN WALL	0.0	0.0		
WING WALL	0.0	0.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
CURTAIN WALL	0.0	0.0		
WING WALL	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.	LIN. FT.	
CAP		6.0		
CURTAIN WALL		0.0		
WING WALL		0.0		
EPOXY COATING		SQ. FT.	SQ. FT.	
CAP		111.6		

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.

EPOXY COATING QUANTITIES INCLUDE THE TOP OF PILE CAPS.

SHOTCRETE REPAIR AREA

CONCRETE REPAIR AREA

ERI - EPOXY RESIN INJECTION

PROJECT NO. 15BPR.40

BUNCOMBE COUNTY

BRIDGE NO. 100481

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SUBSTRUCTURE REPAIR END BENT 1

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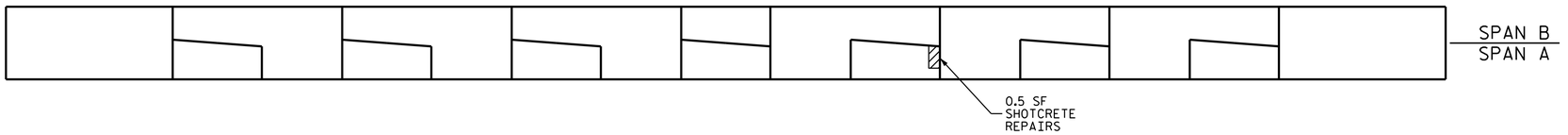
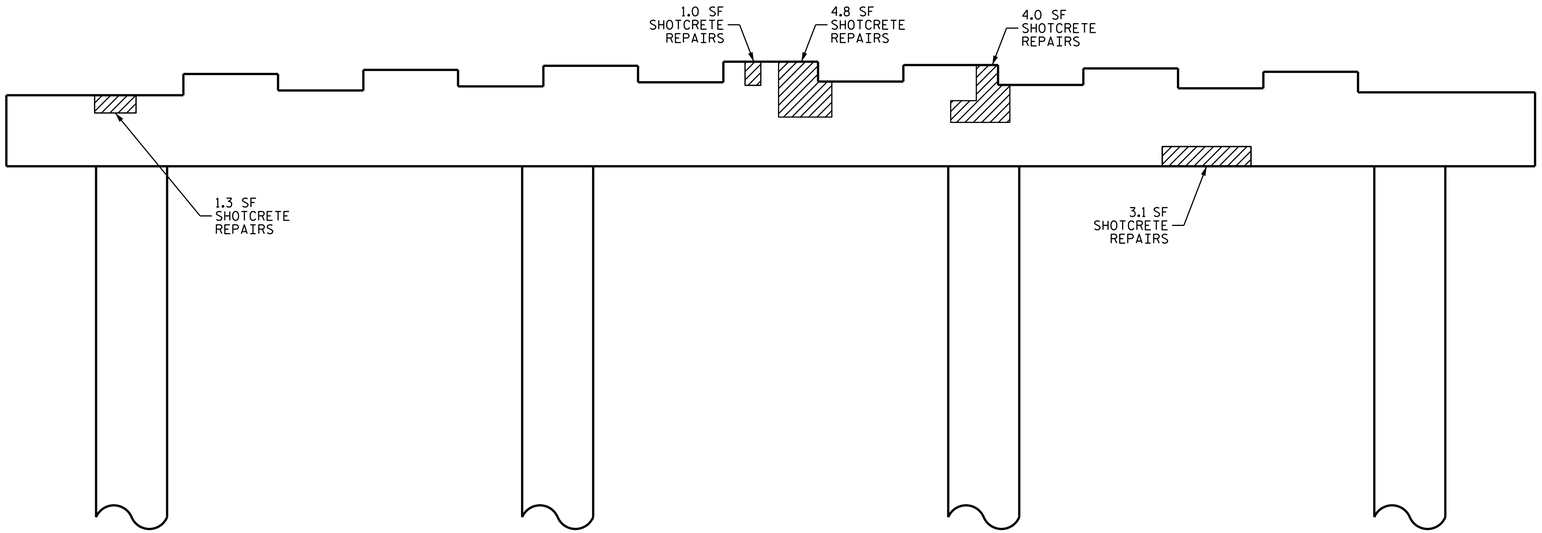


TOP OF CAP



ELEVATION

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	14.7	7.4		
COLUMN	0.0	0.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
COLUMN	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.	LIN. FT.	
CAP		0.0		
COLUMN		0.0		
EPOXY COATING		SQ. FT.	SQ. FT.	
TOP OF BENT CAP		209.9		

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.

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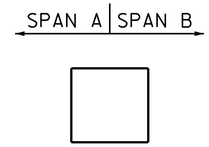
CONCRETE REPAIRS MAYBE SUBSTITUTED IN LIEU OF SHOTCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

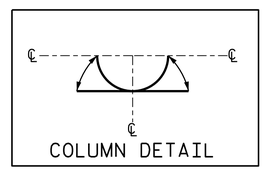


END VIEW

SHOTCRETE REPAIR AREA

CONCRETE REPAIR AREA

ERI - EPOXY RESIN INJECTION



COLUMN DETAIL

PROJECT NO. 15BPR.40

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BRIDGE NO. 100481

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

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

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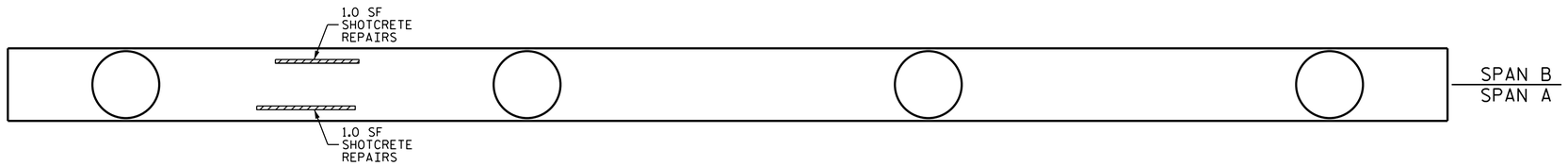

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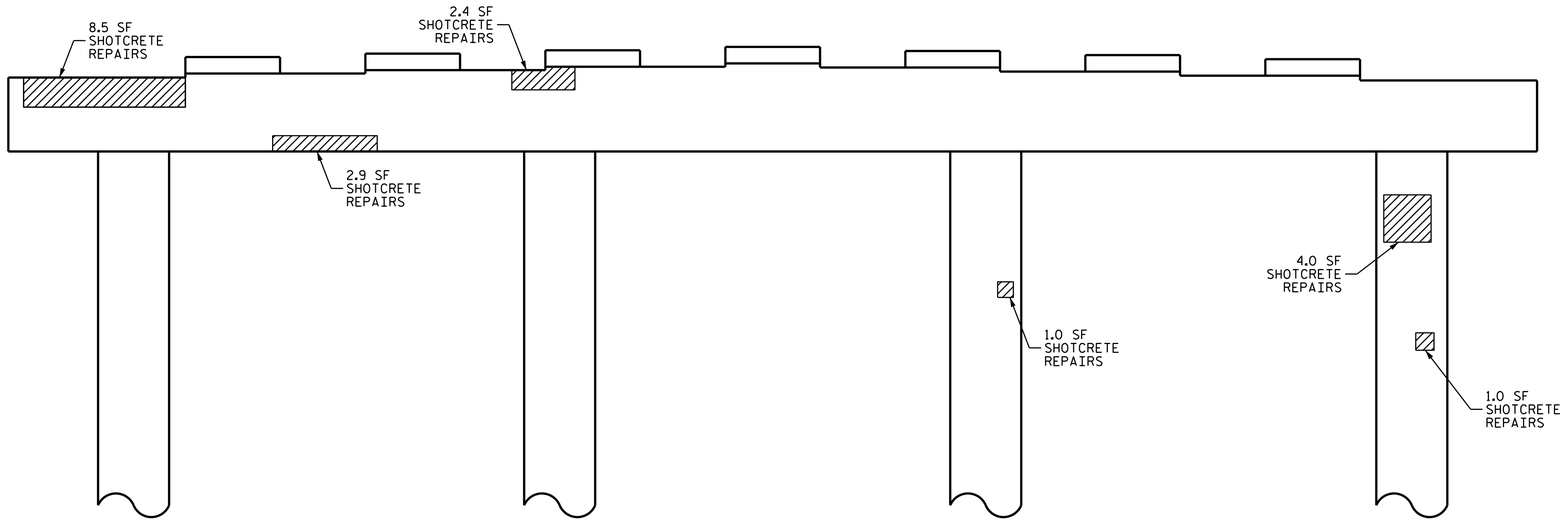

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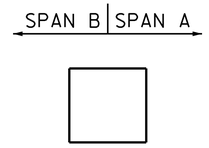


END VIEW

AS-BUILT REPAIR QUANTITY TABLE

BENT 1 SPAN B FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	15.8	7.9		
COLUMN	6.0	3.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
COLUMN	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.	LIN. FT.	
CAP		0.0		
COLUMN		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

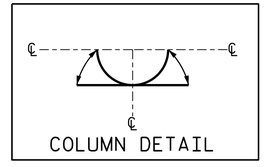
REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN BASED ON THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ENTER THE ACTUAL QUANTITIES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



COLUMN DETAIL

PROJECT NO. 15BPR.40

BUNCOMBE COUNTY

BRIDGE NO. 100481

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

DocuSigned by:
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5/29/2019

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIR BENT 1 SPAN B FACE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-11
1			3			TOTAL SHEETS
2			4			18

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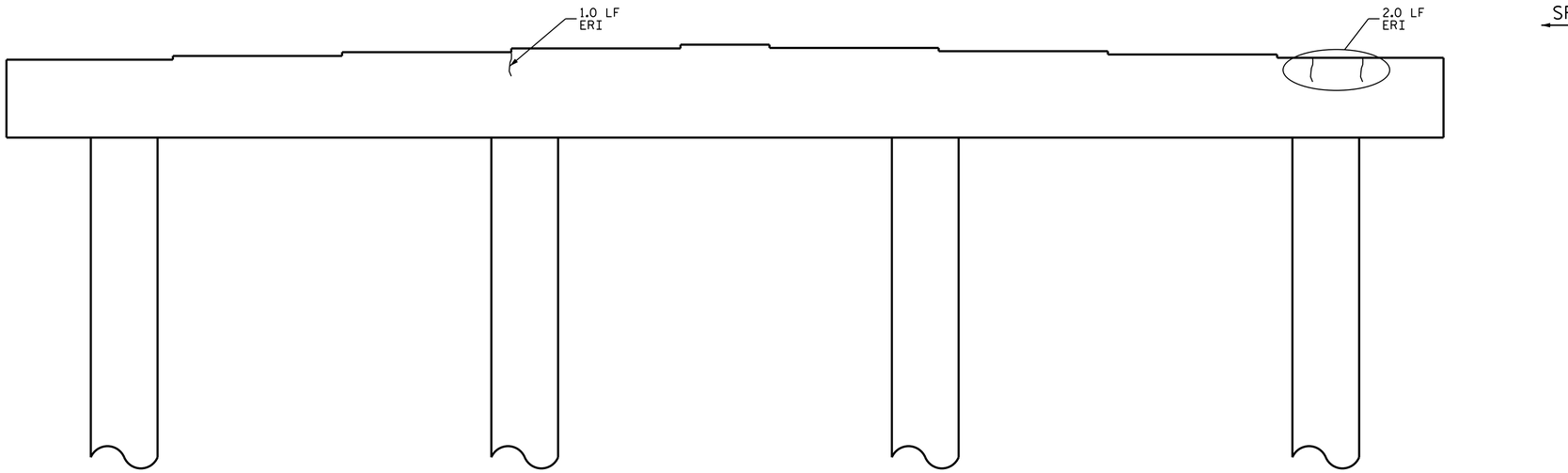
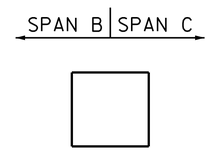
TOP OF CAP



ELEVATION



END VIEW

BENT 2 SPAN B FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
COLUMN	0.0	0.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
COLUMN	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.	LIN. FT.	
CAP		3.0		
COLUMN		0.0		
EPOXY COATING		SQ. FT.	SQ. FT.	
TOP OF BENT CAP		209.9		

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.

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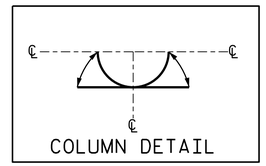
CLEAN AND REMOVE DEBRIS FROM THE TOP OF THE CAP AND APPLY EPOXY PROTECTIVE COATING. EPOXY COATING SHALL BE APPLIED TO THE TOP SURFACE OF THE CAP. THE CONTRACTOR SHALL NOT COAT THE AREA OF THE CAP BENEATH THE MASONRY PLATES. FOR EPOXY COATING, SEE SPECIAL PROVISIONS.

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



COLUMN DETAIL

PROJECT NO. 15BPR.40

BUNCOMBE COUNTY

BRIDGE NO. 100481

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

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5/29/2019

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIR BENT 2 SPAN B FACE

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CHECKED BY : A.M.LEE DATE : 03/2019

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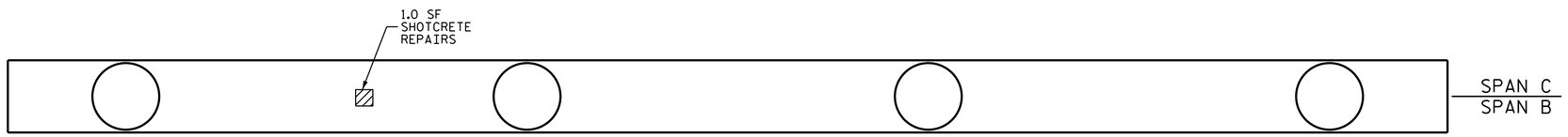

BOTTOM OF CAP

AS-BUILT REPAIR QUANTITY TABLE

BENT 2 SPAN C FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	1.0	0.5		
COLUMN	0.0	0.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
COLUMN	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.	LIN. FT.	
CAP		5.0		
COLUMN		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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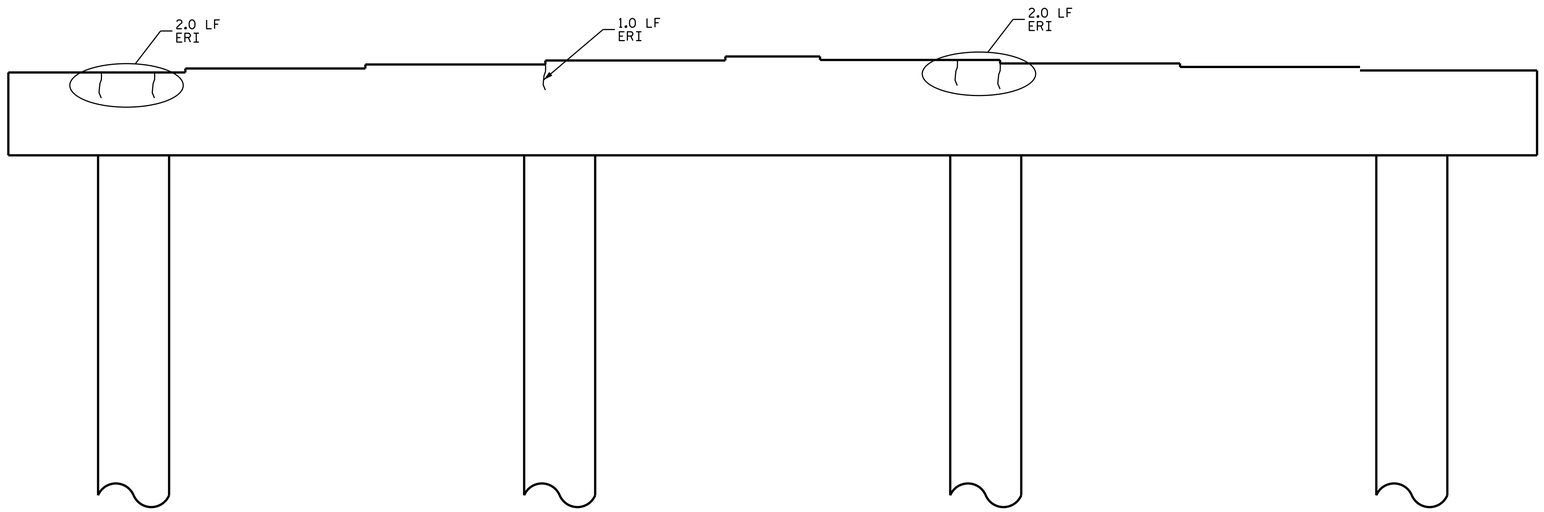

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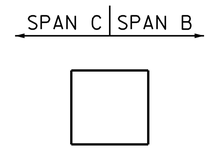
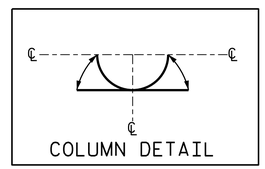


END VIEW

SHOTCRETE REPAIR AREA

CONCRETE REPAIR AREA

ERI - EPOXY RESIN INJECTION



COLUMN DETAIL

PROJECT NO. 15BPR.40

BUNCOMBE COUNTY

BRIDGE NO. 100481

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

Docusigned by:
Amber Lee
B04B5A4F2FAD484...

5/29/2019

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIR BENT 2 SPAN C FACE

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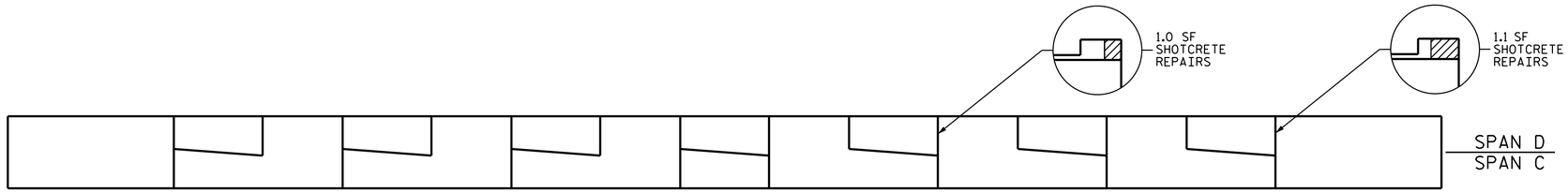
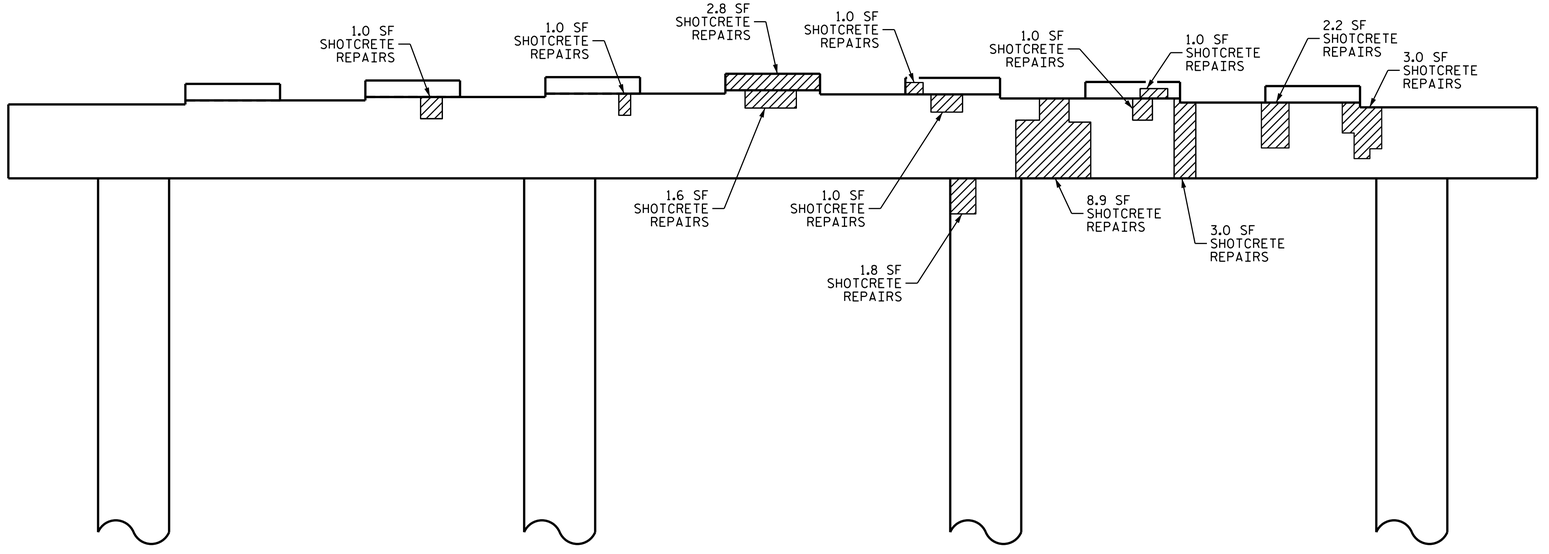


TOP OF CAP



ELEVATION

AS-BUILT REPAIR QUANTITY TABLE

BENT 3 SPAN C FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	29.6	14.8		
COLUMN	1.8	0.9		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
COLUMN	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.	LIN. FT.	
CAP		0.0		
COLUMN		0.0		
EPOXY COATING		SQ. FT.	SQ. FT.	
TOP OF BENT CAP		209.9		

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.

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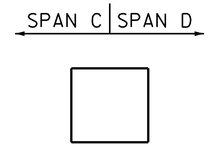
CONCRETE REPAIRS MAYBE SUBSTITUTED IN LIEU OF SHOTCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

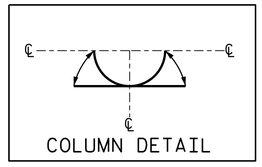


END VIEW

SHOTCRETE REPAIR AREA

CONCRETE REPAIR AREA

ERI - EPOXY RESIN INJECTION



COLUMN DETAIL

PROJECT NO. 15BPR.40

BUNCOMBE COUNTY

BRIDGE NO. 100481

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIR BENT 3 SPAN C FACE

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

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5/29/2019

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REVISIONS						SHEET NO.
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2			4			18

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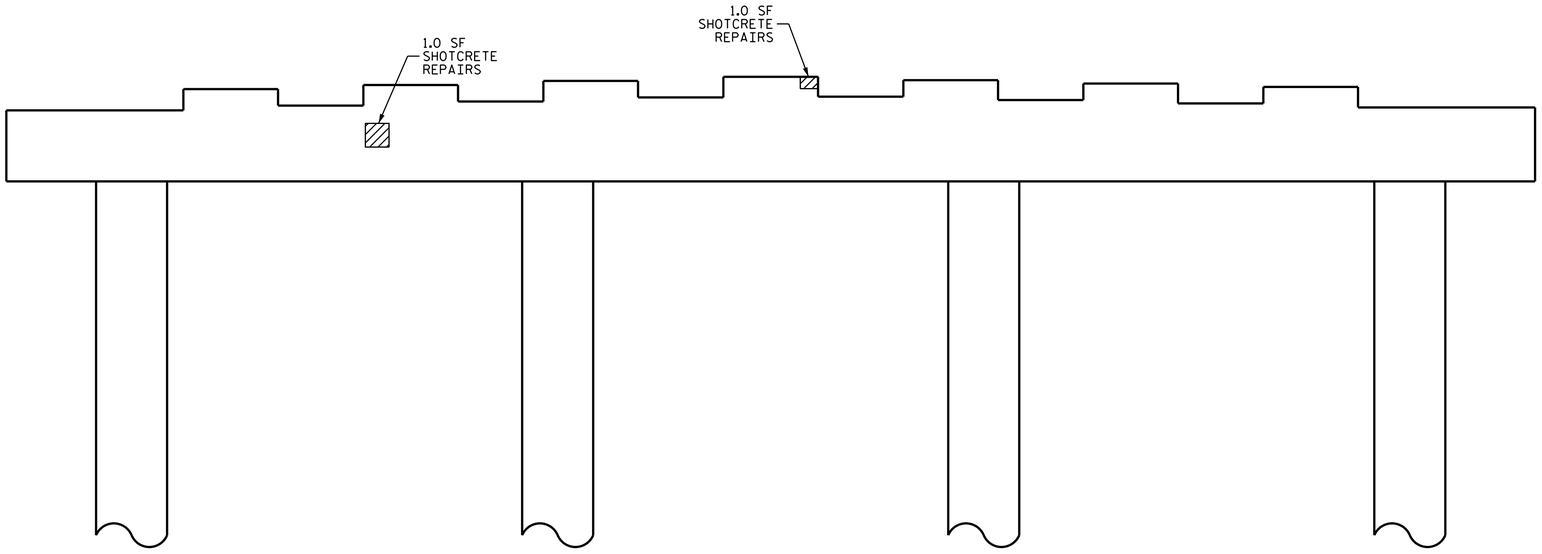
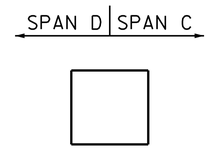
BOTTOM OF CAP



ELEVATION



END VIEW

AS-BUILT REPAIR QUANTITY TABLE

BENT 3 SPAN D FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	2.0	1.0		
COLUMN	0.0	0.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
COLUMN	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.	LIN. FT.	
CAP		0.0		
COLUMN		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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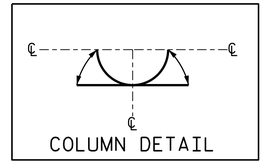
CONCRETE REPAIRS MAYBE SUBSTITUTED IN LIEU OF SHOTCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

SHOTCRETE REPAIR AREA

CONCRETE REPAIR AREA

ERI - EPOXY RESIN INJECTION



COLUMN DETAIL

PROJECT NO. 15BPR.40

BUNCOMBE COUNTY

BRIDGE NO. 100481

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

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5/29/2019

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIR BENT 3 SPAN D FACE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-15
1			3			TOTAL SHEETS
2			4			18

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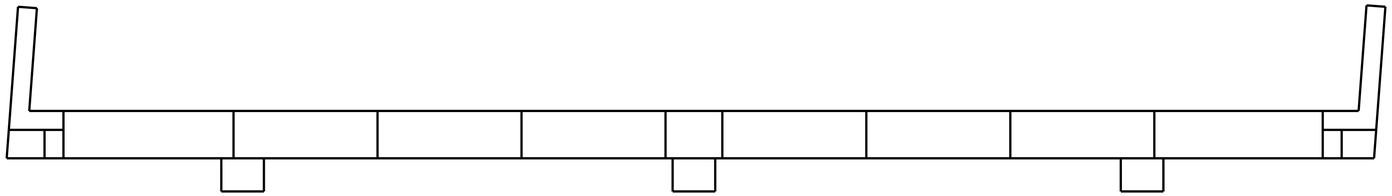

PLAN

ELEVATION

AS-BUILT REPAIR QUANTITY TABLE

END BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
CURTAIN WALL	0.0	0.0		
WING WALL	0.0	0.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
CURTAIN WALL	0.0	0.0		
WING WALL	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.	LIN. FT.	
CAP		1.0		
CURTAIN WALL		0.0		
WING WALL		0.0		
EPOXY COATING		SQ. FT.	SQ. FT.	
CAP		111.6		

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 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.

EPOXY COATING QUANTITIES INCLUDE THE TOP OF PILE CAPS.

SHOTCRETE REPAIR AREA

CONCRETE REPAIR AREA

ERI - EPOXY RESIN INJECTION

PROJECT NO. 15BPR.40

BUNCOMBE COUNTY

BRIDGE NO. 100481

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

DocuSigned by:
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5/29/2019

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIR END BENT 2

DRAWN BY : R.L.PUTEK DATE : 12/2018

CHECKED BY : A.M.LEE DATE : 03/2019

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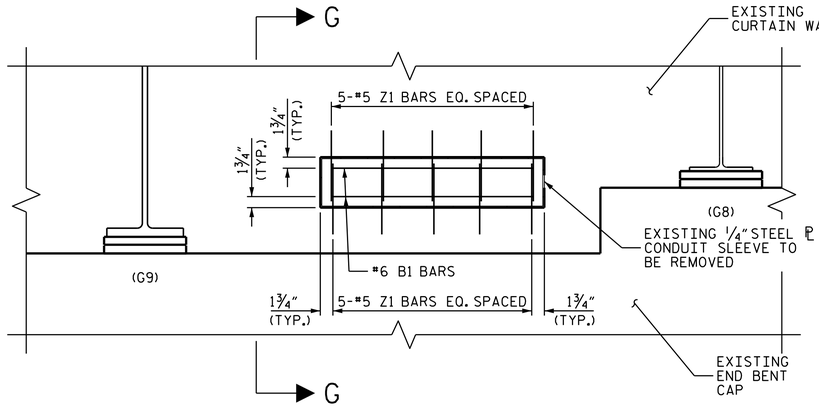
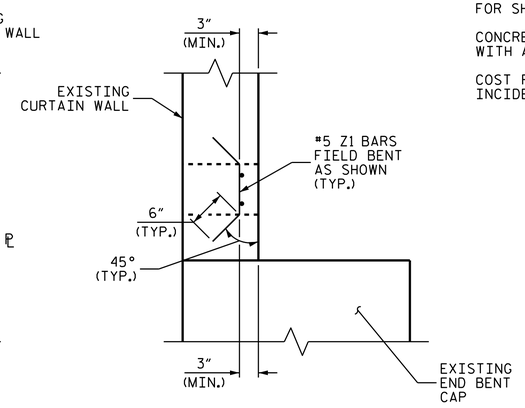


SEALING EXISTING ¼" STEEL ℄ CONDUIT SLEEVE

(BAY 8 @ END BENT 1 SHOWN, END BENT 2 SIMILAR)



SECTION G-G

NOTES

ALL DIMENSIONS AND LOCATIONS OF ¼" STEEL PLATE CONDUIT SLEEVE, AND 6" Ø STEEL PIPE SLEEVE TAKEN FROM ORIGINAL PLANS.

SEE STANDARD SPECIFICATIONS FOR ADHESIVELY ANCHORED Z1 BARS. FIELD TESTING IS NOT REQUIRED FOR THESE BARS.

ALL #5 Z1 BARS TO BE EMBEDDED 6" @ 45° AND FIELD BENT PARALLEL TO FACE OF CURTAIN WALL.

AFTER INSTALLITAION OF REINFORCING, CURTAIN WALL PENETRATIONS SHOWN SHALL BE REPAIRED WITH SHOTCRETE.

FOR SHOTCRETE REPAIR, SEE SPECIAL PROVISIONS.

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

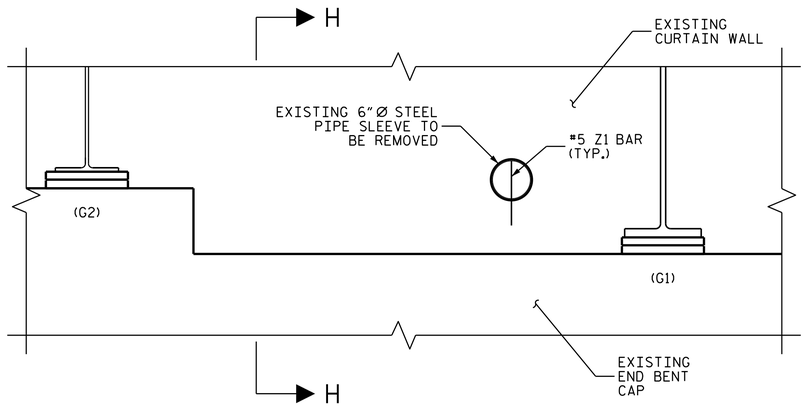
COST FOR REMOVAL OF EXISTING STEEL PLATE CONDUIT SLEEVE SHALL BE INCIDENTAL TO THE COSTS OF OTHER PAY ITEMS.

BILL OF MATERIAL
END BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	2	6	STR	2'-10"	9
Z1	11	5	STR	1'-0"	11
REINFORCING STEEL				LBS.	20
SHOTCRETE REPAIR				CU. FT.	3.0

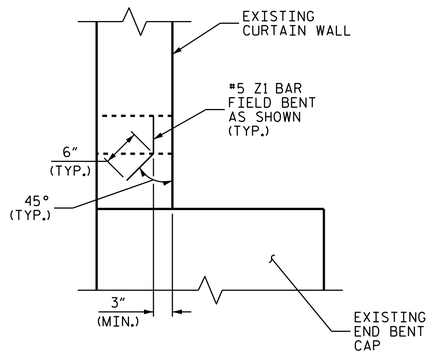
BILL OF MATERIAL
END BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	2	6	STR	2'-10"	9
Z1	11	5	STR	1'-0"	11
REINFORCING STEEL				LBS.	20
SHOTCRETE REPAIR				CU. FT.	3.0



SEALING EXISTING 6" Ø STEEL PIPE SLEEVE

(BAY 1 @ END BENT 1 SHOWN, END BENT 2 SIMILAR)



SECTION H-H

PROJECT NO. 15BPR.40

BUNCOMBE COUNTY

BRIDGE NO. 100481

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CURTAIN WALL REPAIR

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

DocuSigned by: Amber Miller B04B5A4F2FAD484...

5/29/2019

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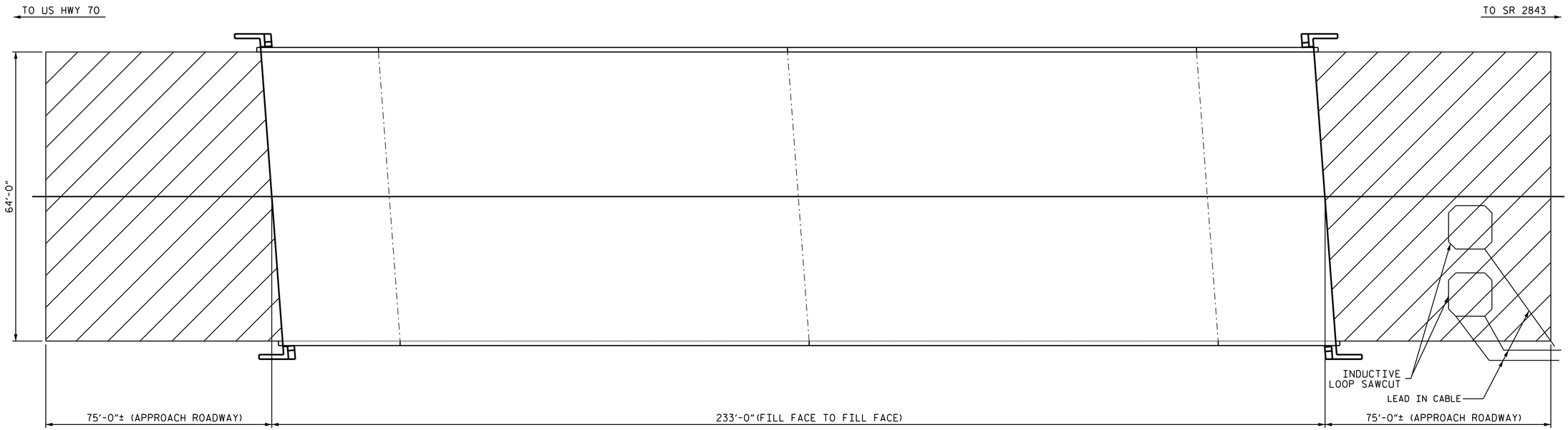
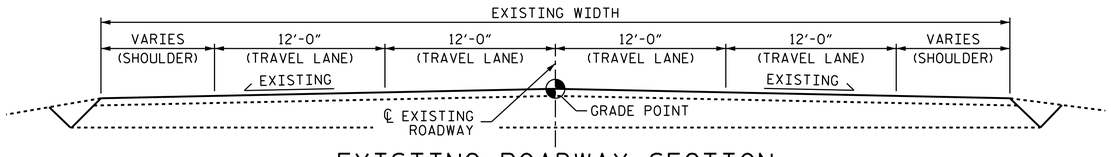
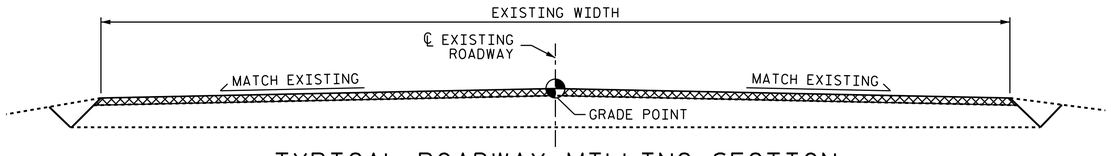
NOTES

INCIDENTAL MILLING - EXISTING APPROACH ASPHALT PAVEMENT TO BE MILLED AS NECESSARY TO ATTAIN MINIMUM 1½" DEPTH OF NEW ASPHALT PAVEMENT. NEW ASPHALT PAVEMENT SHALL BE OF THICKNESS NECESSARY TO PROVIDE A SMOOTH TRANSITION BETWEEN THE ROADWAY AND THE BRIDGE DECK. THE NEW ASPHALT PAVEMENT THICKNESS MAY EXCEED 1½" DUE TO SETTLEMENT OF THE EXISTING APPROACH.



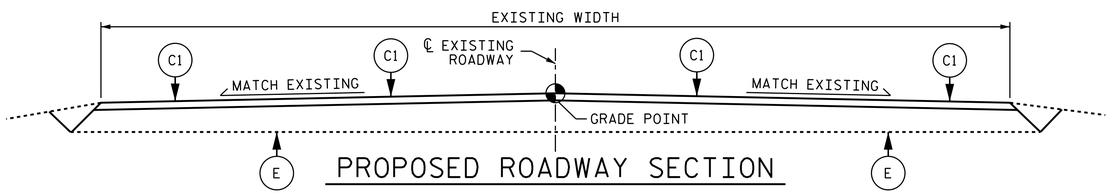


EXISTING ROADWAY SECTION



TYPICAL ROADWAY MILLING SECTION

(MILL TO 3"DEPTH)



PROPOSED ROADWAY SECTION

SUMMARY OF QUANTITIES		
	ESTIMATE	ACTUAL
INCIDENTAL MILLING	1067.0 SQ. YD.	
ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B	100.0 TONS	
ASPHALT BINDER FOR PLANT MIX	7.0 TONS	
INDUCTIVE LOOP SAWCUT	200.0 LIN. FT.	
LEAD IN CABLE	100.0 LIN. FT.	

C1	PROPOSED VARIABLE DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1½" IN DEPTH OR GREATER THAN 2" IN DEPTH.
E	EXISTING PAVEMENT

PROJECT NO. 15BPR.40

BUNCOMBE COUNTY

BRIDGE NO. 100481

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

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12/11/2020

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

INCIDENTAL MILLING & TYPICAL ROADWAY SECTIONS

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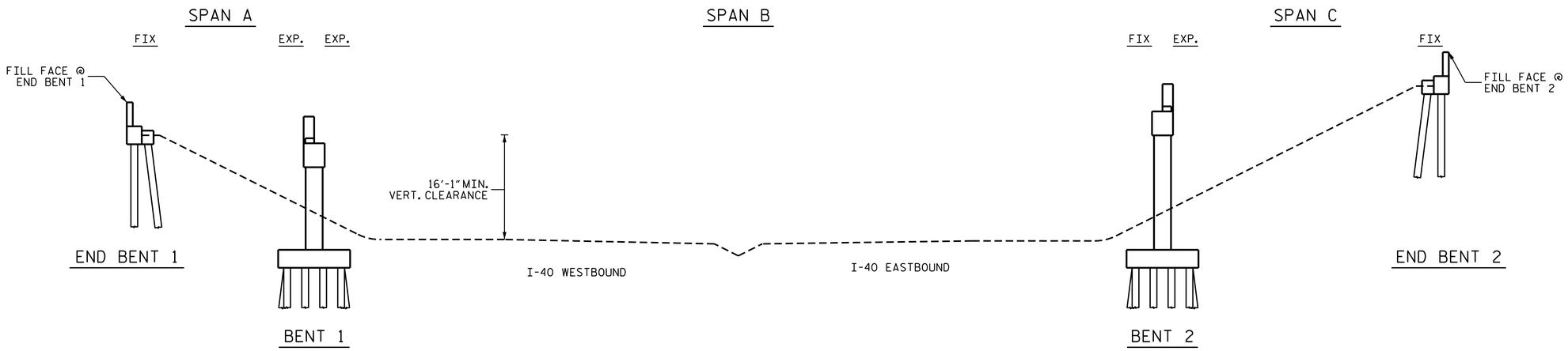
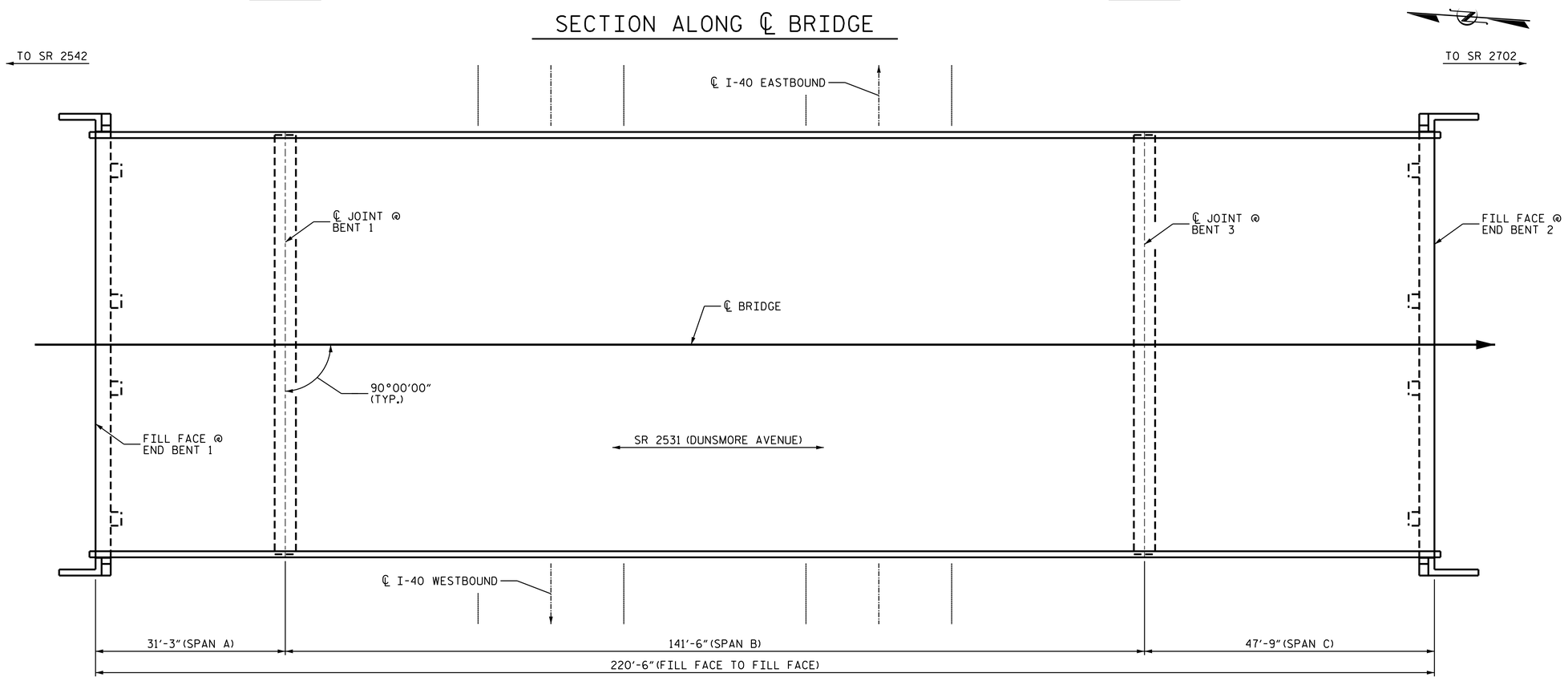


NOTES

GENERAL DRAWING INFORMATION IS TAKEN FROM THE ORIGINAL PLANS AND THE ROUTINE INSPECTION REPORT DATED 11/08/2017.

BRIDGE ORIENTATION CONFORMS TO THE ORIGINAL BRIDGE PLANS.

SECTION ALONG ℄ BRIDGE



PLAN

SCOPE OF WORK

- CLEAN, PLATE REPAIR AND SPOT REPAINT EXISTING WEATHERING STEEL.
- EPOXY RESIN INJECTION OF CONCRETE CRACKS.
- REMOVE UNSOUND CONCRETE AND PROPERLY PREPARE SHOTCRETE AND CONCRETE REPAIR AREAS.
- PERFORM SHOTCRETE AND CONCRETE REPAIRS IN PREPARED AREAS.
- PARTIALLY REMOVE BRIDGE DECK CONCRETE BY SCARIFICATION AND HYDRO-DEMOLITION METHODS.
- OVERLAY PREPARED BRIDGE DECK WITH LATEX MODIFIED CONCRETE (LMC).
- GROOVE LMC BRIDGE DECK.
- REMOVE EXISTING JOINT MATERIAL AND INSTALL FOAM JOINT SEALS AND POURABLE SILICONE JOINT SEALANTS.
- REMOVE DEBRIS FROM TOP OF END BENT AND BENT CAPS, AND APPLY EPOXY COATING.

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

RESIDENT ENGINEER DATE

NORTH CAROLINA PROFESSIONAL SEAL 22005 ENGINEER A. KEITH PASCHAL
DocuSigned by: A. Keith Paschal 12/10/2020

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE
DocuSigned by: 12/11/2020

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PROJECT NO. 15BPR.40
BUNCOMBE COUNTY
BRIDGE NO. 100495

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON SR 2531 (DUNSMORE AVENUE) OVER INTERSTATE 40

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LOCATION SKETCH

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

BRIDGE COORDINATES

LAT: 35.619149
LONG: -82.287097

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.

WORK ON THE BRIDGES SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL BELOW. THE CONTRACTOR SHALL SUBMIT PLANS FOR CONSTRUCTION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS AND THE PROJECT SPECIAL PROVISIONS.

ANY DAMAGE TO EXISTING REINFORCING STEEL, DURING CONTRACTOR'S OPERATIONS, SHALL BE REPAIRED AS DIRECTED BY THE ENGINEER AND PERFORMED AT NO ADDITIONAL COST TO THE DEPARTMENT.

PRIOR TO BEGINNING WORK, THE CONTRACTOR SHALL SUBMIT FOR REVIEW AND APPROVAL A COMPLETE SEQUENCE OF TASK FOR EACH OPERATION AFFECTING THE BRIDGE SURFACE AND/OR TRAFFIC.

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, AND CLASS II SURFACE PREPARATION, SEE OVERLAY SURFACE PREPARATION SPECIAL PROVISION.

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

FOR PLACING AND FINISHING LATEX MODIFIED CONCRETE OVERLAY-EARLY STRENGTH (LMC-ES) AND LATEX MODIFIED CONCRETE-EARLY STRENGTH, SEE LATEX MODIFIED CONCRETE-EARLY STRENGTH SPECIAL PROVISIONS.

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

DURING CONSTRUCTION, BERMS OR APPRORIATE MEASURES SHALL BE USED TO ENSURE HYDRO-DEMOLITION WATER DOES NOT MIGRATE INTO ACTIVE TRAVEL LANES.

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

FOR BRIDGE JOINT DEMOLITION, SEE SPECIAL PROVISIONS.

FOR CONCRETE FOR DECK REPAIRS, SEE SPECIAL PROVISIONS.

FOR FOAM JOINT SEAL FOR PRESERVATION, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR PAINTING EXISTING WEATHERING STEEL STRUCTURE, AREAS SPECIAL PROVISIONS.

FOR PAINTING CONTAINTMENT, POLLUTION CONTROL, AND CLEANING AND PAINTING EXISTING WEATHERING STEEL, SEE PAINTING EXISTING WEATHERING STEEL STRUCTURE SPECIAL PROVISIONS.

FOR EPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.

FOR BEAM REPAIR, SEE SPECIAL PROVISIONS.

FOR BOLTED BEAM REPAIR, SEE SPECIAL PROVISIONS.

FOR VOLUMETRIC MIXER, SEE SPECIAL PROVISIONS.

FOR POURABLE SILICONE JOINT SEALANT, SEE SPECIAL PROVISIONS.

FOR ELASTOMERIC CONCRETE FOR PRESERVATION, SEE SPECIAL PROVISIONS.

FOR BRIDGE JACKING, SEE SPECIAL PROVISIONS.

PROJ. NO. 15BPR.40

BUNCOMBE COUNTY

BRIDGE NO. 100495

SHEET 2 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON
SR 2531 (DUNSMORE AVENUE)
OVER
INTERSTATE 40

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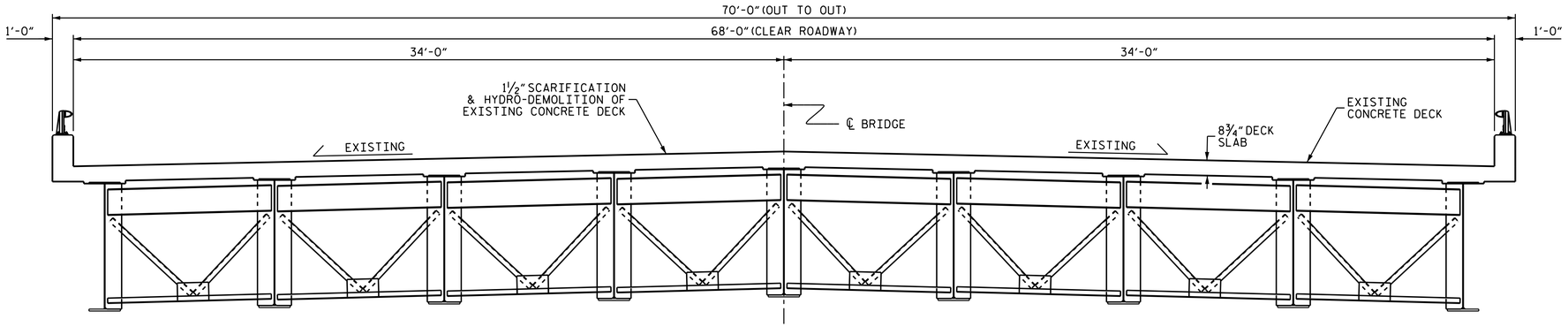
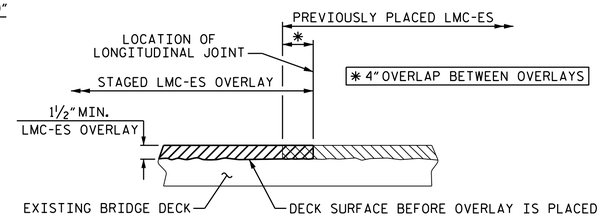
NOTES

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

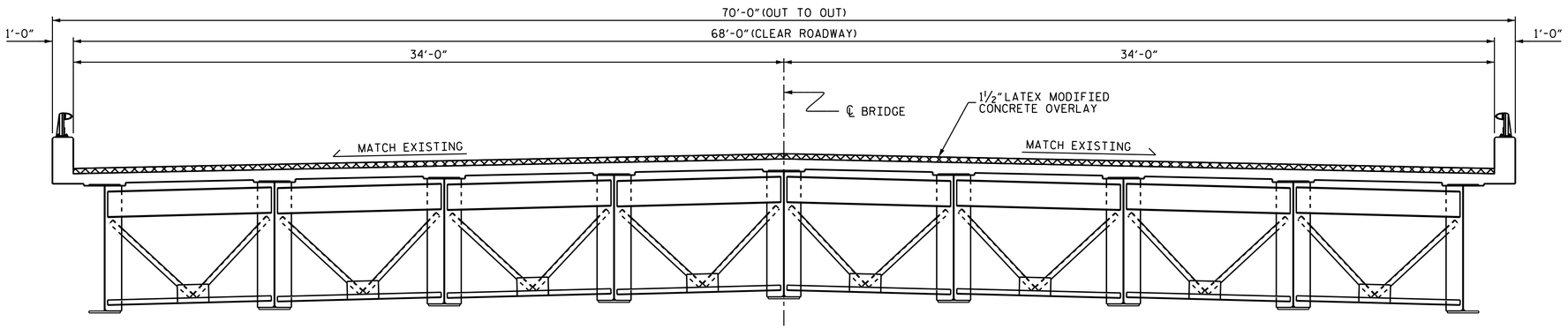
SEE TRAFFIC MANAGEMENT PLANS FOR LANE WIDTHS, SEQUENCING, AND OTHER TRAFFIC CONTROL MEASURES FOR STAGING OF OVERLAY SURFACE PREPARATION AND LMC-ES PLACEMENT.



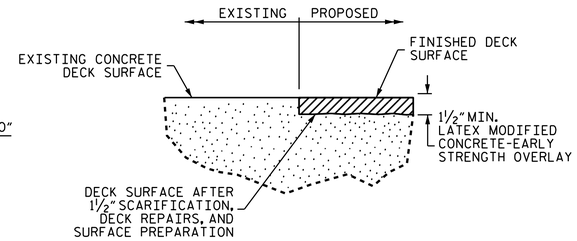
TYPICAL SECTION
(EXISTING CONCRETE DECK)



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



TYPICAL SECTION
(PROPOSED LMC WEARING SURFACE)



DETAIL FOR LMC-ES OVERLAY
(FINISHED SURFACE OF THE LATEX MODIFIED CONCRETE -EARLY STRENGTH OVERLAY IS APPROXIMATE)

PROJECT NO. 15BPR.40
BUNCOMBE COUNTY
BRIDGE NO. 100495

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION

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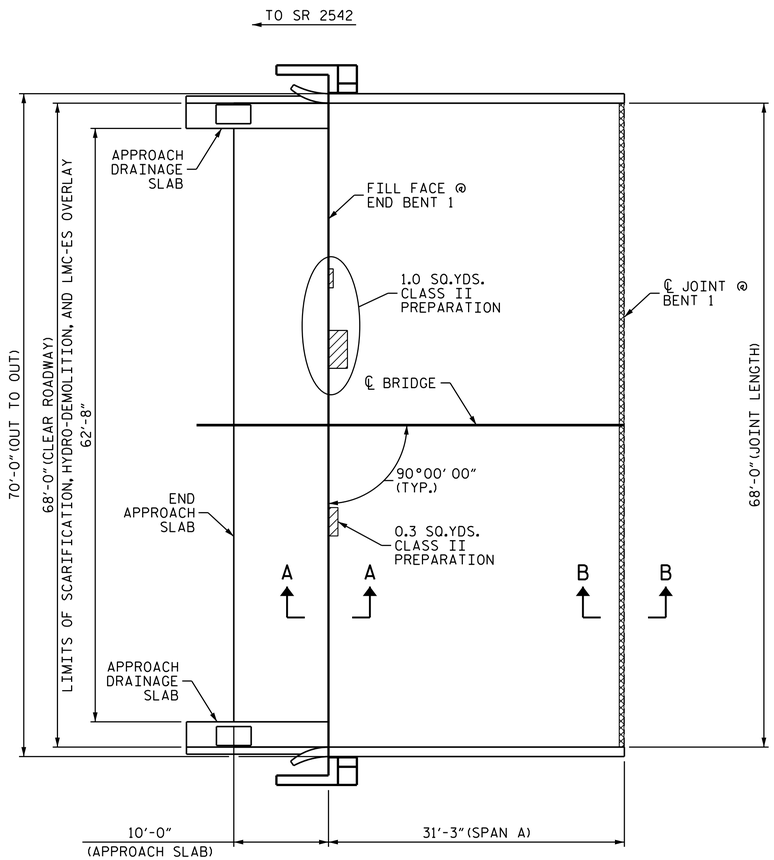
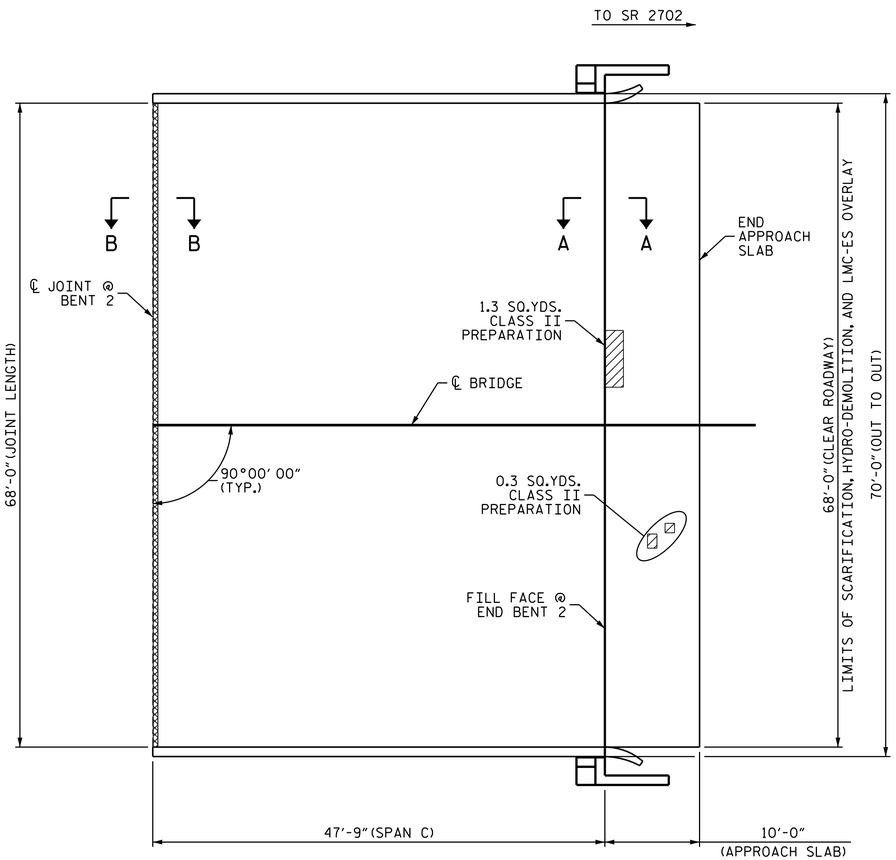


SPAN A



SPAN C

NOTES

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

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 A-A, AND B-B. SEE "JOINT DETAILS LMC OVERLAY", SHEET.

CLASS II SURFACE PREPARATION

BRIDGE JOINT DEMOLITION

AS-BUILT REPAIR QUANITY TABLE

DECK SURFACE REPAIR SPAN A

	ESTIMATE	ACTUAL
CONCRETE FOR DECK REPAIR	2.9 CU.FT.	
CLASS II SURFACE PREPARATION	1.3 SQ.YDS.	
LMC-ES MATERIALS	9.7 CU.YDS.	
PLACING & FINISHING LMC-ES OVERLAY	233.0 SQ.YDS.	
SCARIFYING BRIDGE DECK	233.0 SQ.YDS.	
HYDRO-DEMOLITION OF BRIDGE DECK	233.0 SQ.YDS.	
GROOVING BRIDGE FLOORS	1979.8 SQ.FT.	
BRIDGE JOINT DEMOLITION	34.0 SQ.FT.	

APPROACH SLAB

	ESTIMATE	ACTUAL
CONCRETE FOR DECK REPAIR	0.0 CU.FT.	
CLASS II SURFACE PREPARATION	0.0 SQ.YDS.	
LMC-ES MATERIALS	2.9 CU.YDS.	
PLACING & FINISHING LMC-ES OVERLAY	69.6 SQ.YDS.	
SCARIFYING BRIDGE DECK	69.6 SQ.YDS.	
HYDRO-DEMOLITION OF BRIDGE DECK	69.6 SQ.YDS.	
GROOVING BRIDGE FLOORS	571.8 SQ.FT.	

AS-BUILT REPAIR QUANITY TABLE

DECK SURFACE REPAIR SPAN C

	ESTIMATE	ACTUAL
CONCRETE FOR DECK REPAIR	0.0 CU.FT.	
CLASS II SURFACE PREPARATION	0.0 SQ.YDS.	
LMC-ES MATERIALS	14.9 CU.YDS.	
PLACING & FINISHING LMC-ES OVERLAY	357.6 SQ.YDS.	
SCARIFYING BRIDGE DECK	357.6 SQ.YDS.	
HYDRO-DEMOLITION OF BRIDGE DECK	357.6 SQ.YDS.	
GROOVING BRIDGE FLOORS	2863.8 SQ.FT.	
BRIDGE JOINT DEMOLITION	34.0 SQ.FT.	

APPROACH SLAB

	ESTIMATE	ACTUAL
CONCRETE FOR DECK REPAIR	3.5 CU.FT.	
CLASS II SURFACE PREPARATION	1.6 SQ.YDS.	
LMC-ES MATERIALS	3.1 CU.YDS.	
PLACING & FINISHING LMC-ES OVERLAY	75.5 SQ.YDS.	
SCARIFYING BRIDGE DECK	75.5 SQ.YDS.	
HYDRO-DEMOLITION OF BRIDGE DECK	75.5 SQ.YDS.	
GROOVING BRIDGE FLOORS	622.9 SQ.FT.	

PROJECT NO. 15BPR.40

BUNCOMBE COUNTY

BRIDGE NO. 100495

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK SURFACE REPAIR SPANS A & C WITH APPROACH SLABS

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

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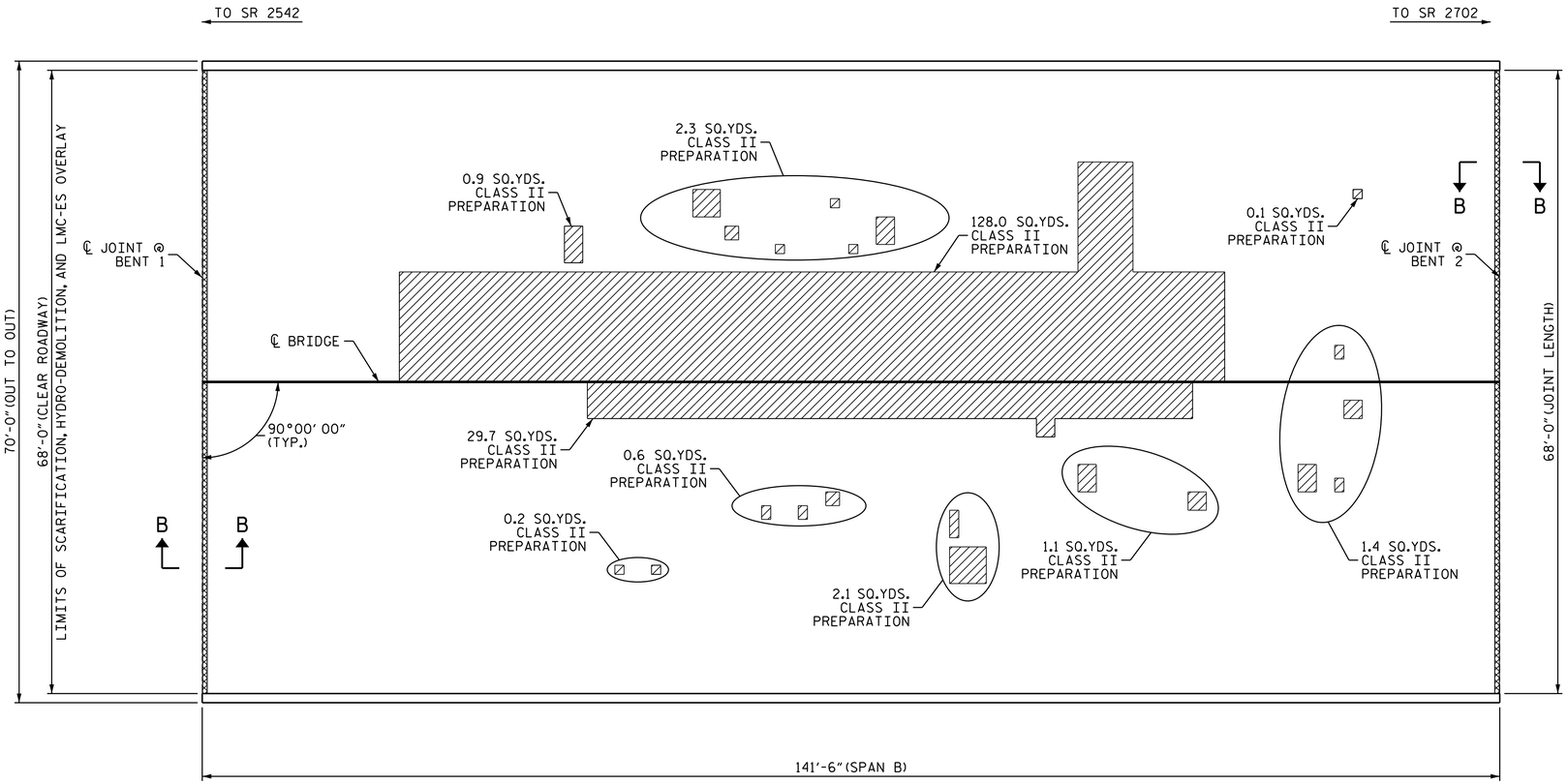

SPAN B

AS-BUILT REPAIR QUANITY TABLE

DECK SURFACE REPAIR SPAN B

	ESTIMATE	ACTUAL
CONCRETE FOR DECK REPAIR	358.8 CU. FT.	
CLASS II SURFACE PREPARATION	166.4 SQ. YDS.	
LMC-ES MATERIALS	44.3 CU. YDS.	
PLACING & FINISHING LMC-ES OVERLAY	1062.8 SQ. YDS.	
SCARIFYING BRIDGE DECK	1062.8 SQ. YDS.	
HYDRO-DEMOLITION OF BRIDGE DECK	1062.8 SQ. YDS.	
BRIDGE GROOVING FLOORS	9143.3 SQ. FT.	
BRIDGE JOINT DEMOLITION	68.0 SQ. FT.	

NOTES

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

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 B-B. SEE "JOINT DETAILS LMC OVERLAY", SHEET.

CLASS II SURFACE PREPARATION

BRIDGE JOINT DEMOLITION

PROJECT NO. 15BPR.40

BUNCOMBE COUNTY

BRIDGE NO. 100495

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK SURFACE REPAIR SPAN B

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

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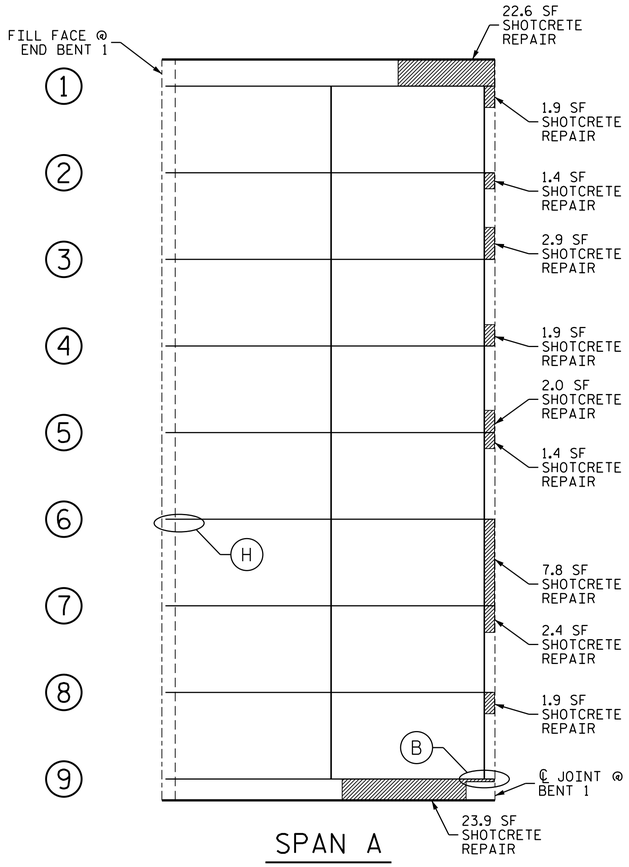
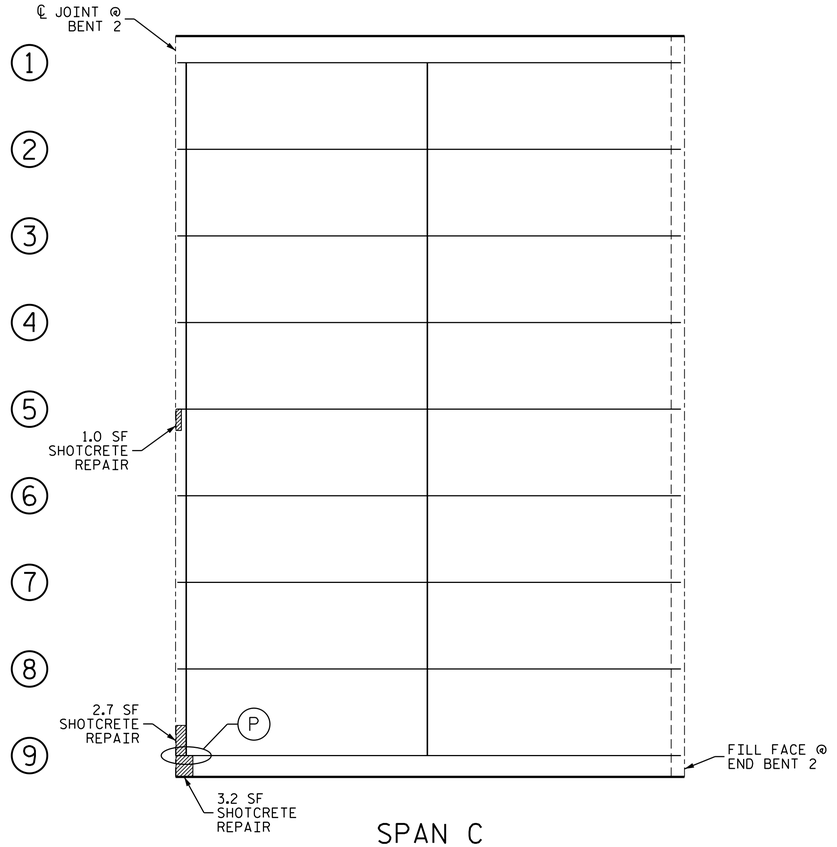


SPAN A

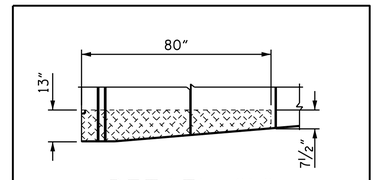


SPAN C

ANTICIPATED STEEL REPAIR LOCATIONS

SPAN	BEAM	LOCATION	DIM "A"	DIM "B"	DIM "E"	DIM "F"
A	9	BENT 1	✳13"	80"		
C	9	BENT 2	-	6½"	22"	

(✳ SEE DETAIL "A")



DETAIL "A"
BEAM END REPAIR

BEAM REPAIR QUANTITY TABLE

STEEL PLATES		BRIDGE JACKING		STIFFENER	
LBS.		EA.		LBS.	
ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL
23.0		2		0.0	
STEEL LATERAL BRACING		HARDWARE REPAIR		BEAM END REPAIR	
LBS.		LBS.		LBS.	
ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL
0.0		0.9		273.6	

AS-BUILT REPAIR QUANTITY TABLE

UNDERSIDE OF DECK REPAIRS - SPAN A

	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
UNDERSIDE OF DECK	0.0	0.0		
BENT DIAPHRAGM	23.6	11.8		
OVERHANG	46.5	15.5		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
UNDERSIDE OF DECK	0.0	0.0		
BENT DIAPHRAGM	0.0	0.0		
OVERHANG	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.	LIN. FT.	
UNDERSIDE OF DECK		0.0		
BENT DIAPHRAGM		0.0		
OVERHANG		0.0		

AS-BUILT REPAIR QUANTITY TABLE

UNDERSIDE OF DECK REPAIRS - SPAN C

	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
UNDERSIDE OF DECK	0.0	0.0		
BENT DIAPHRAGM	3.7	1.9		
OVERHANG	3.2	1.1		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
UNDERSIDE OF DECK	0.0	0.0		
BENT DIAPHRAGM	0.0	0.0		
OVERHANG	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.	LIN. FT.	
UNDERSIDE OF DECK		0.0		
BENT DIAPHRAGM		0.0		
OVERHANG		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 "OVERHANG, DIAPHRAGM AND BRIDGE RAIL REPAIR DETAILS" SHEET.

NOTES

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

FOR OVERHANG REPAIRS. SEE "OVERHANG, DIAPHRAGM AND BRIDGE RAIL REPAIR DETAILS" SHEET.

FOR GUSSET PLATE REPAIR, CONTRACTOR IS TO FIELD VERIFY DIMENSIONS OF EXISTING GUSSET PLATE AND REPLACE WITH LIKE KIND.

FOR BEAM PLATING REPAIR. SEE "BEAM PLATING REPAIR DETAILS" SHEETS.

FOR BRIDGE JACKING. SEE "JACKING DETAILS" SHEET.

- (1) BEAM NUMBER
- (B) BEAM END REPAIR
- (P) PLATING REPAIR
- (S) STIFFENER REPAIR
- (F) BOTTOM FLANGE REPAIR
- (H) HARDWARE REPAIR
- (G) GUSSET PLATE REPAIR
- (L) LATERAL BRACE REPAIR
- SHOTCRETE REPAIR AREA
- ERI - EPOXY RESIN INJECTION

PROJECT NO. 15BPR.40
BUNCOMBE COUNTY
BRIDGE NO. 100495

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK UNDERSIDE REPAIR SPANS A & C

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

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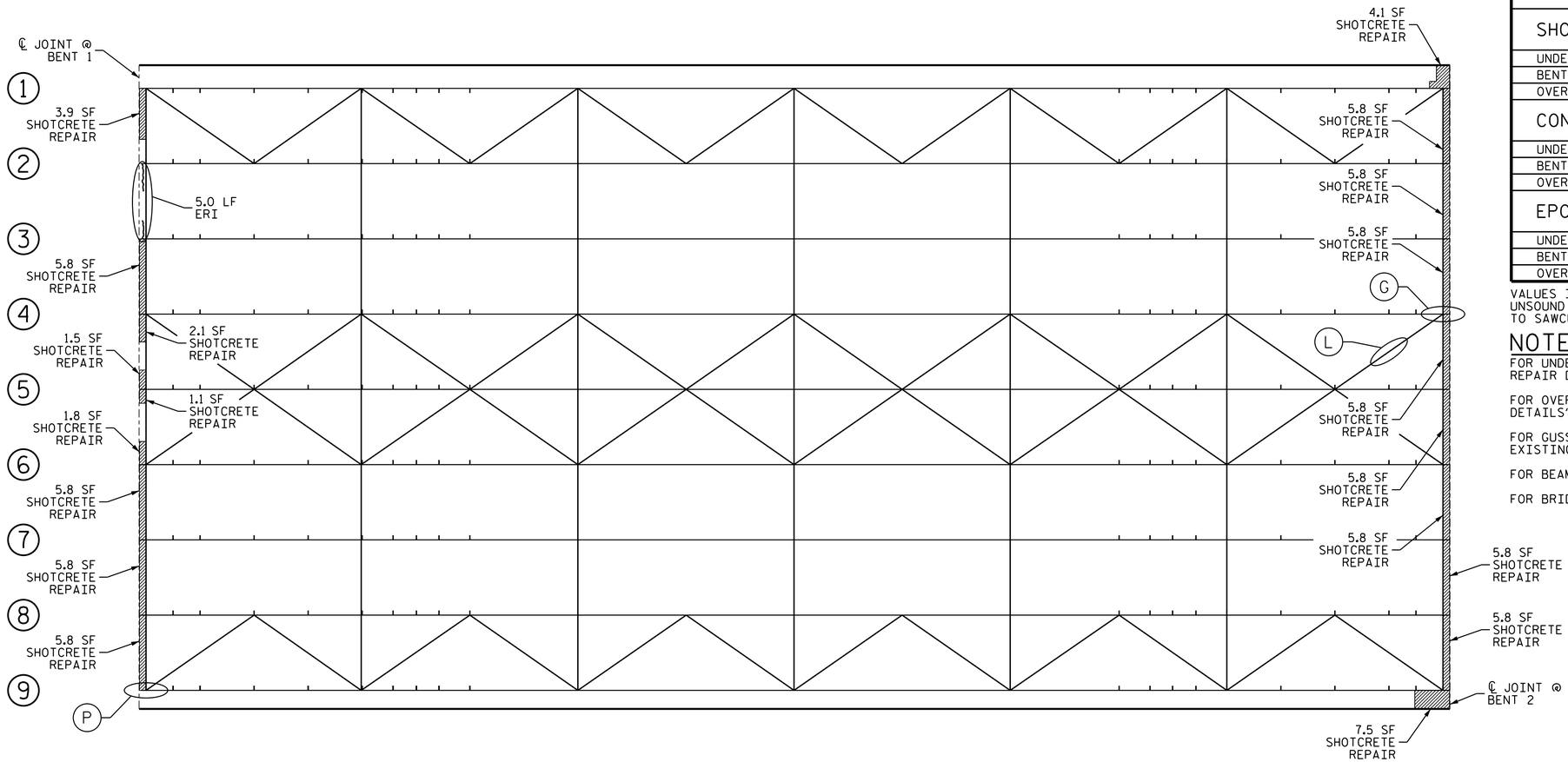

SPAN B

AS-BUILT REPAIR QUANTITY TABLE

UNDERSIDE OF DECK REPAIRS - SPAN B

	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
UNDERSIDE OF DECK	0.0	0.0		
BENT DIAPHRAGM	80.0	40.0		
OVERHANG	11.6	3.9		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
UNDERSIDE OF DECK	0.0	0.0		
BENT DIAPHRAGM	0.0	0.0		
OVERHANG	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.		LIN. FT.
UNDERSIDE OF DECK		0.0		
BENT DIAPHRAGM		5.0		
OVERHANG		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 "OVERHANG, DIAPHRAGM AND BRIDGE RAIL REPAIR DETAILS" SHEET.

NOTES

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

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FOR GUSSET PLATE REPAIR, CONTRACTOR IS TO FIELD VERIFY DIMENSIONS OF EXISTING GUSSET PLATE AND REPLACE WITH LIKE KIND.

FOR BEAM PLATING REPAIR. SEE "BEAM PLATING REPAIR DETAILS" SHEETS.

FOR BRIDGE JACKING. SEE "JACKING DETAILS" SHEET.

- (1) BEAM NUMBER
- (B) BEAM END REPAIR
- (P) PLATING REPAIR
- (S) STIFFENER REPAIR
- (F) BOTTOM FLANGE REPAIR
- (H) HARDWARE REPAIR
- (G) GUSSET PLATE REPAIR
- (L) LATERAL BRACE REPAIR
- (J) TYPE I BRIDGE JACKING

SHOTCRETE REPAIR AREA

ERI - EPOXY RESIN INJECTION

ANTICIPATED STEEL REPAIR LOCATIONS

SPAN	BEAM	LOCATION	DIM "A"	DIM "B"	DIM "E"	DIM "F"
B	G9	BENT 1	-	6½"	22"	

BEAM REPAIR QUANTITY TABLE

STEEL PLATES		BRIDGE JACKING		STIFFENER	
LBS.		EA.		LBS.	
ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL
38.3		0		0.0	
STEEL LATERAL BRACING		HARDWARE REPAIR		BEAM END REPAIR	
LBS.		LBS.		LBS.	
ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL
105.0		0.0		0.0	

PROJECT NO. 15BPR.40

BUNCOMBE COUNTY

BRIDGE NO. 100495

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK UNDERSIDE REPAIR SPAN B

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

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5/29/2019

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CHECKED BY : A.M.LEE DATE : 03/2019

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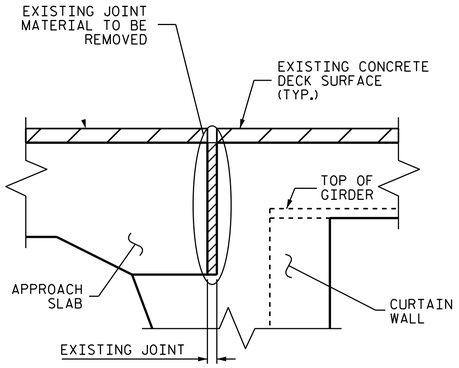
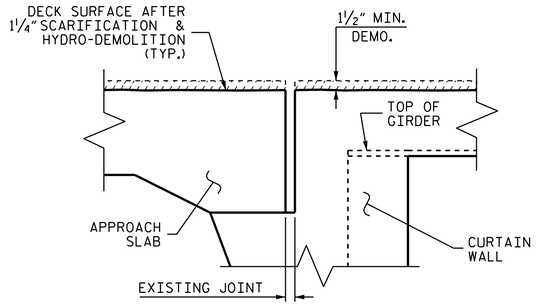
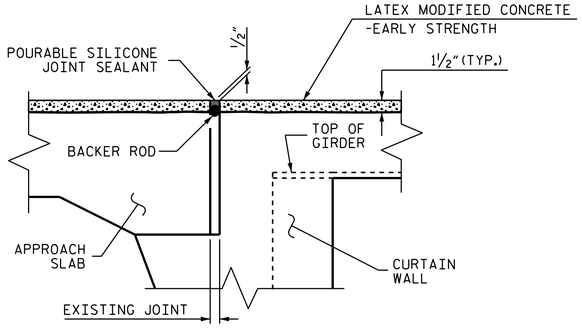


SECTION A-A
(EXISTING JOINT)



SECTION A-A
(MINIMUM EXISTING JOINT DEMOLITION)



SECTION A-A
(PROPOSED JOINT)

NOTES

THE FOAM JOINTS SHALL MEET THE MANUFACTURER'S RECOMMENDATION.

THE UNCOMPRESSED FOAM JOINT SEAL WIDTH 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 ¼", NOTIFY ENGINEER.

THE INSTALLED FOAM JOINTS SHALL BE WATER TIGHT.

FOR FOAM JOINT SEALS FOR PRESERVATION, 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.

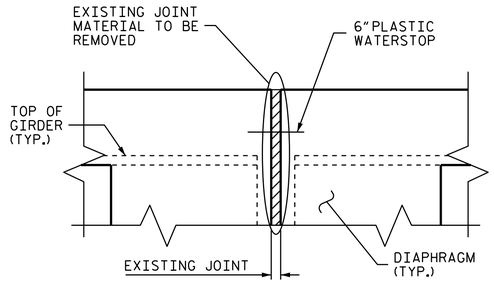
CONTRACTOR SHALL FIELD VERIFY THE EXISTING JOINT OPENING PRIOR TO ORDERING THE BACKER ROD.

THE BACKER ROD SHALL MEET THE MANUFACTURER'S RECOMMENDATION FOR THE SIZE OF THE JOINT OPENING.

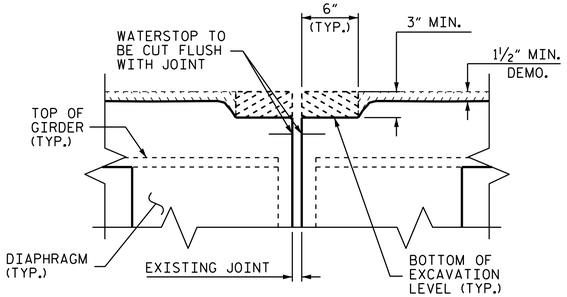
SAWED JOINT OPENING TABLE			
	SAWED JT. OPENING (PERPINDICULAR TO JT.)		
LOCATION	AT 45°	AT 60°	AT 90°
BENT 1	2½"	2⅝"	1⁵⁄₁₆"
BENT 2	1⅝"	1⅜"	1⅛"

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.

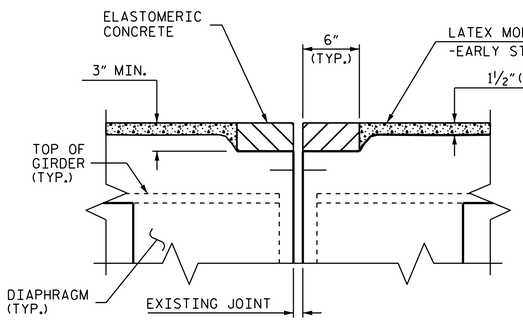
DEMOLISH BRIDGE JOINT AREA TO THE NECESSARY DEPTH, SUCH THAT ELASTOMERIC CONCRETE SHALL BE FOUNDED ON CONCRETE OR REPAIR CONCRETE SUBSTRATE, NOT LATEX MODIFIED CONCRETE.



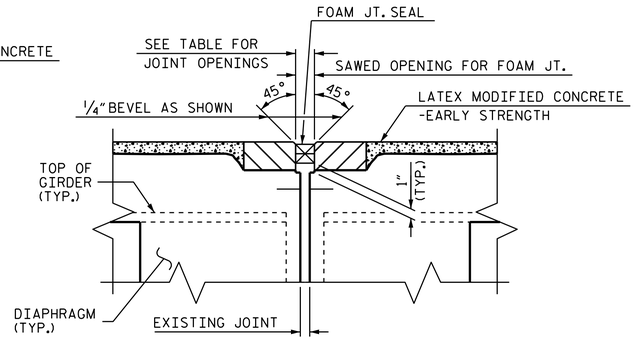
SECTION B-B
(EXISTING JOINT)



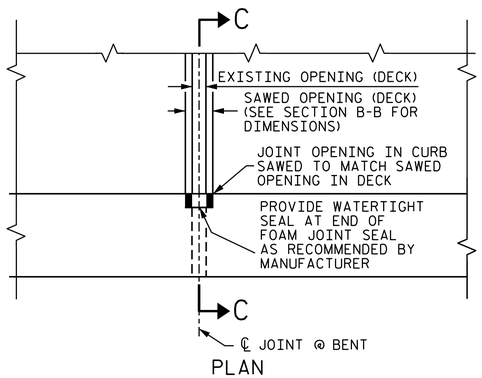
SECTION B-B
(MINIMUM EXISTING JOINT DEMOLITION)



SECTION B-B
(PROPOSED JOINT PRE-SAWED)



SECTION B-B
(PROPOSED FOAM JOINT SEAL)



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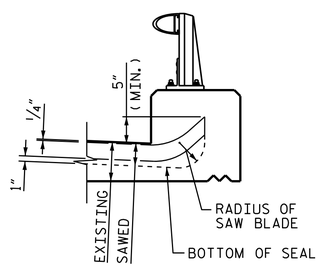

C-C

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

JOINT SEAL DETAILS

ELASTOMERIC CONCRETE FOR PRESERVATION		
LOCATION	ESTIMATED CU.FT.	ACTUAL CU.FT.
BENT 1	17.0	
BENT 2	17.0	
TOTAL	34.0	

JOINT REPAIR QUANTITY TABLE		
	ESTIMATED LIN. FT.	ACTUAL LIN. FT.
FOAM JOINT SEALS FOR PRESERVATION	136.0	
POURABLE SILICONE JOINT SEALANT	156.0	

PROJECT NO. 15BPR.40
BUNCOMBE COUNTY
BRIDGE NO. 100495

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

JOINT DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE
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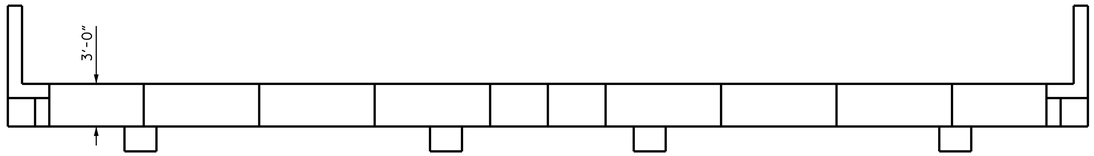
NOTES

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.

EPOXY COATING QUANTITIES INCLUDE THE TOP OF PILE CAPS.



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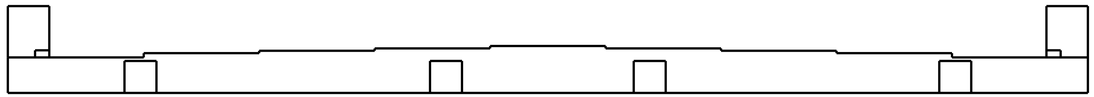
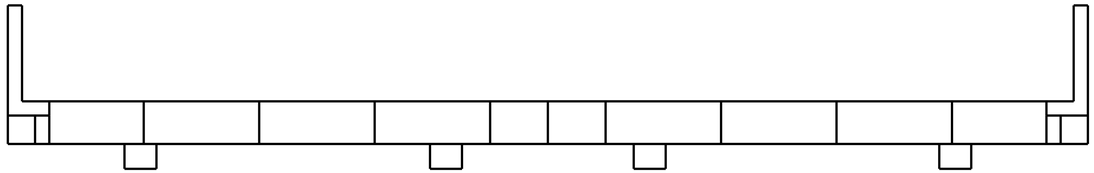


ELEVATION

END BENT 1



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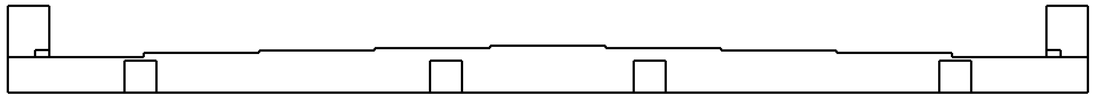

ELEVATION

END BENT 2

AS-BUILT REPAIR QUANTITY TABLE

END BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
CURTAIN WALL	0.0	0.0		
WING WALL	0.0	0.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
CURTAIN WALL	0.0	0.0		
WING WALL	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.	LIN. FT.	
CAP		0.0		
CURTAIN WALL		0.0		
WING WALL		0.0		
EPOXY COATING		SQ. FT.	SQ. FT.	
CAP		123.8		

END BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
CURTAIN WALL	0.0	0.0		
WING WALL	0.0	0.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
CURTAIN WALL	0.0	0.0		
WING WALL	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.	LIN. FT.	
CAP		0.0		
CURTAIN WALL		0.0		
WING WALL		0.0		
EPOXY COATING		SQ. FT.	SQ. FT.	
CAP		123.8		

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.

SHOTCRETE REPAIR AREA

CONCRETE REPAIR AREA

ERI - EPOXY RESIN INJECTION

PROJECT NO. 15BPR.40

BUNCOMBE COUNTY

BRIDGE NO. 100495

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

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SUBSTRUCTURE REPAIR END BENTS 1 & 2

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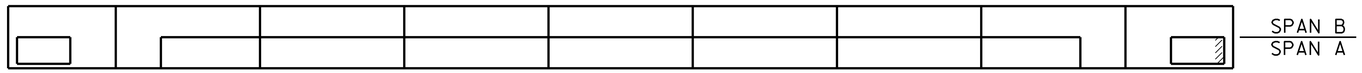
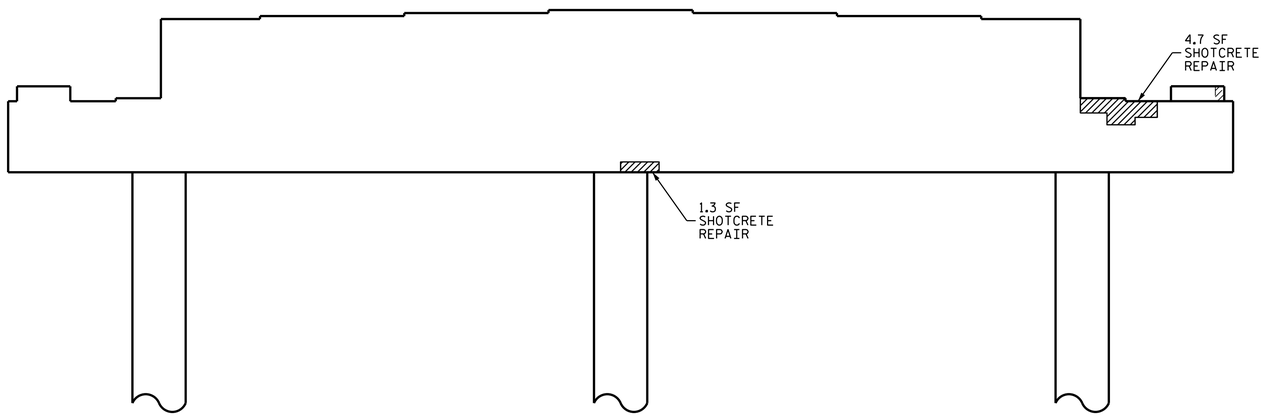
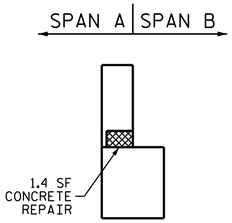


TOP OF CAP



ELEVATION



END VIEW

AS-BUILT REPAIR QUANTITY TABLE

BENT 1 SPAN A FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	7.4	3.7		
COLUMN	0.0	0.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
COLUMN	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.	LIN. FT.	
CAP		0.0		
COLUMN		0.0		
EPOXY COATING		SQ. FT.	SQ. FT.	
TOP OF BENT CAP		241.5		

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 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.

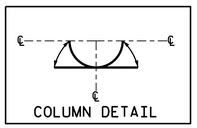
CONCRETE REPAIRS MAYBE SUBSTITUTED IN LIEU OF SHOTCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

SHOTCRETE REPAIR AREA

CONCRETE REPAIR AREA

AREA PREVIOUSLY ACCOUNTED FOR ON ADJACENT FACE

ERI - EPOXY RESIN INJECTION



COLUMN DETAIL

PROJECT NO. 15BPR.40

BUNCOMBE COUNTY

BRIDGE NO. 100495

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIR BENT 1 SPAN A FACE

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

DocuSigned by:
Amber Miller
B04B5A4F2FAD484...
5/29/2019

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS					
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SHEET NO. S2-10

TOTAL SHEETS 14

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CHECKED BY : A.M.LEE DATE : 03/2019

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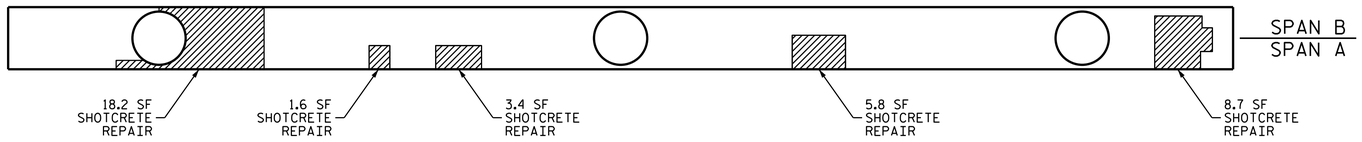

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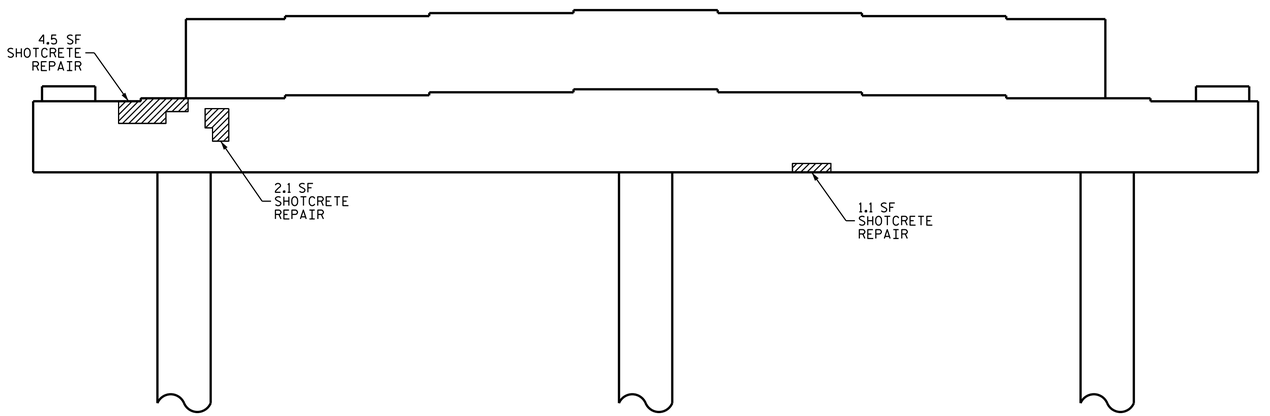

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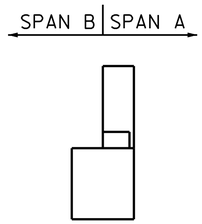


END VIEW

AS-BUILT REPAIR QUANTITY TABLE

BENT 1 SPAN B FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	45.4	22.7		
COLUMN	0.0	0.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
COLUMN	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.	LIN. FT.	
CAP		0.0		
COLUMN		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.

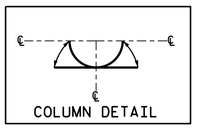
CONCRETE REPAIRS MAYBE SUBSTITUTED IN LIEU OF SHOTCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

SHOTCRETE REPAIR AREA

CONCRETE REPAIR AREA

AREA PREVIOUSLY ACCOUNTED FOR ON ADJACENT FACE

ERI - EPOXY RESIN INJECTION



COLUMN DETAIL

PROJECT NO. 15BPR.40

BUNCOMBE COUNTY

BRIDGE NO. 100495

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIR BENT 1 SPAN B FACE

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

DocuSigned by:
B04B5A4F2FAD484...

5/29/2019

DRAWN BY : R.L.PUTEK DATE : 12/2018
CHECKED BY : A.M.LEE DATE : 03/2019

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SHEET NO. S2-11

TOTAL SHEETS 14

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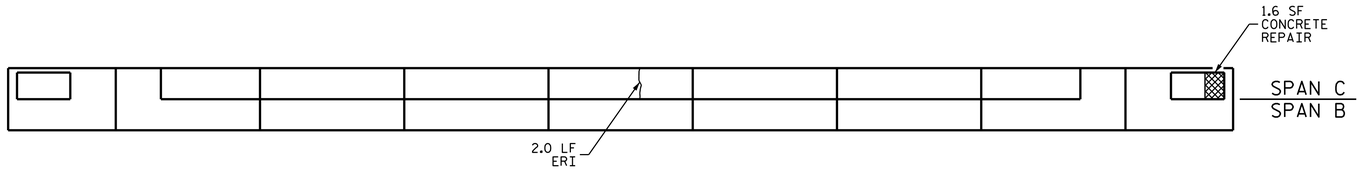
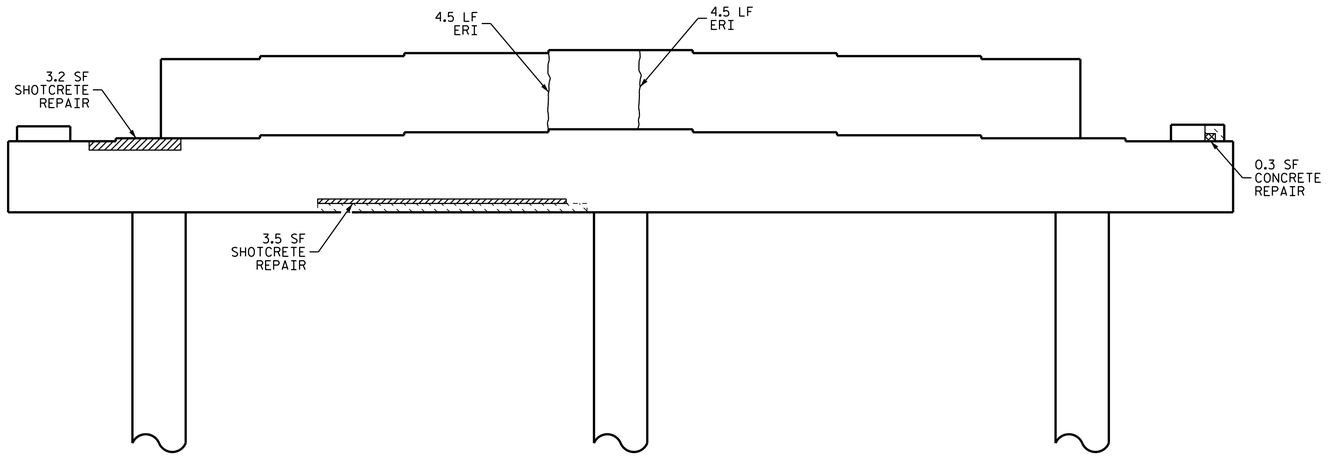


TOP OF CAP



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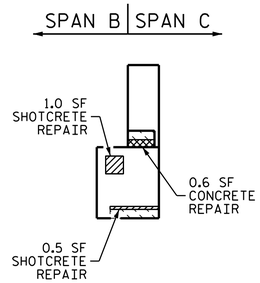


END VIEW

AS-BUILT REPAIR QUANTITY TABLE

BENT 2 SPAN B FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	8.2	4.1		
COLUMN	0.0	0.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	2.5	1.3		
COLUMN	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.	LIN. FT.	
CAP		11.0		
COLUMN		0.0		
EPOXY COATING		SQ. FT.	SQ. FT.	
TOP OF BENT CAP		241.5		

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 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.

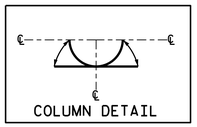
CONCRETE REPAIRS MAYBE SUBSTITUTED IN LIEU OF SHOTCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

SHOTCRETE REPAIR AREA

CONCRETE REPAIR AREA

AREA PREVIOUSLY ACCOUNTED FOR ON ADJACENT FACE

ERI - EPOXY RESIN INJECTION



PROJECT NO. 15BPR.40

BUNCOMBE COUNTY

BRIDGE NO. 100495

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

DocuSigned by: Amber Lee B04B5A4F2FAD484...

5/29/2019

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIR BENT 2 SPAN B FACE

DRAWN BY : R.L.PUTEK DATE : 12/2018

CHECKED BY : A.M.LEE DATE : 03/2019

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TOTAL SHEETS 14

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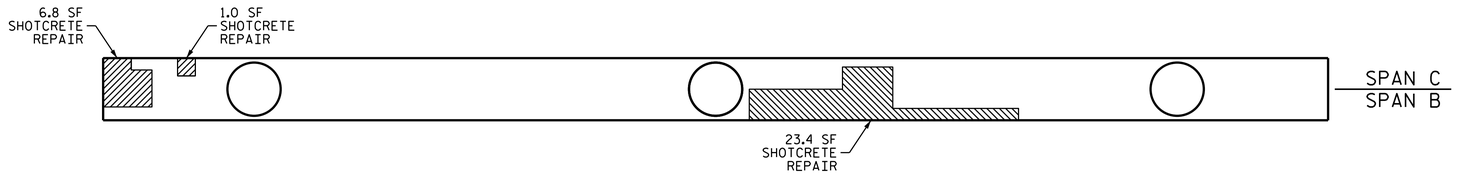

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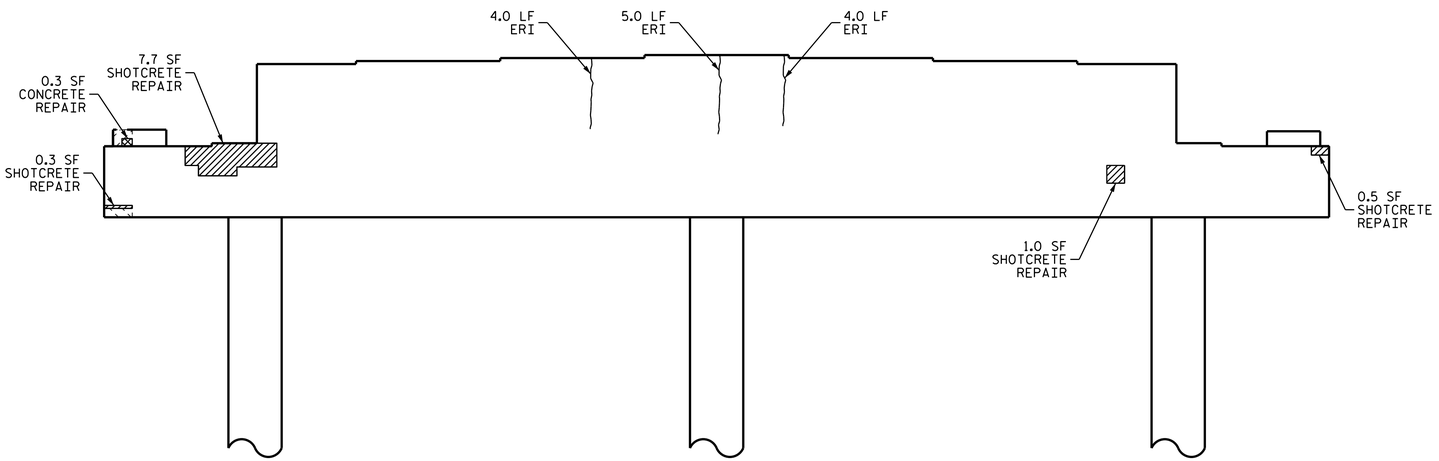

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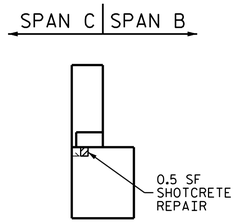

END VIEW

AS-BUILT REPAIR QUANTITY TABLE

BENT 2 SPAN C FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	41.2	20.6		
COLUMN	0.0	0.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	0.3	0.2		
COLUMN	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.	LIN. FT.	
CAP		13.0		
COLUMN		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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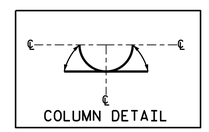
CONCRETE REPAIRS MAYBE SUBSTITUTED IN LIEU OF SHOTCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

SHOTCRETE REPAIR AREA

CONCRETE REPAIR AREA

AREA PREVIOUSLY ACCOUNTED FOR ON ADJACENT FACE

ERI - EPOXY RESIN INJECTION



COLUMN DETAIL

PROJECT NO. 15BPR.40

BUNCOMBE COUNTY

BRIDGE NO. 100495

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

DocuSigned by: Amber Lee B04B5A4F2FAD484...

5/29/2019

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIR BENT 2 SPAN C FACE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-13
1			3			TOTAL SHEETS
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DRAWN BY : R.L.PUTEK DATE : 12/2018
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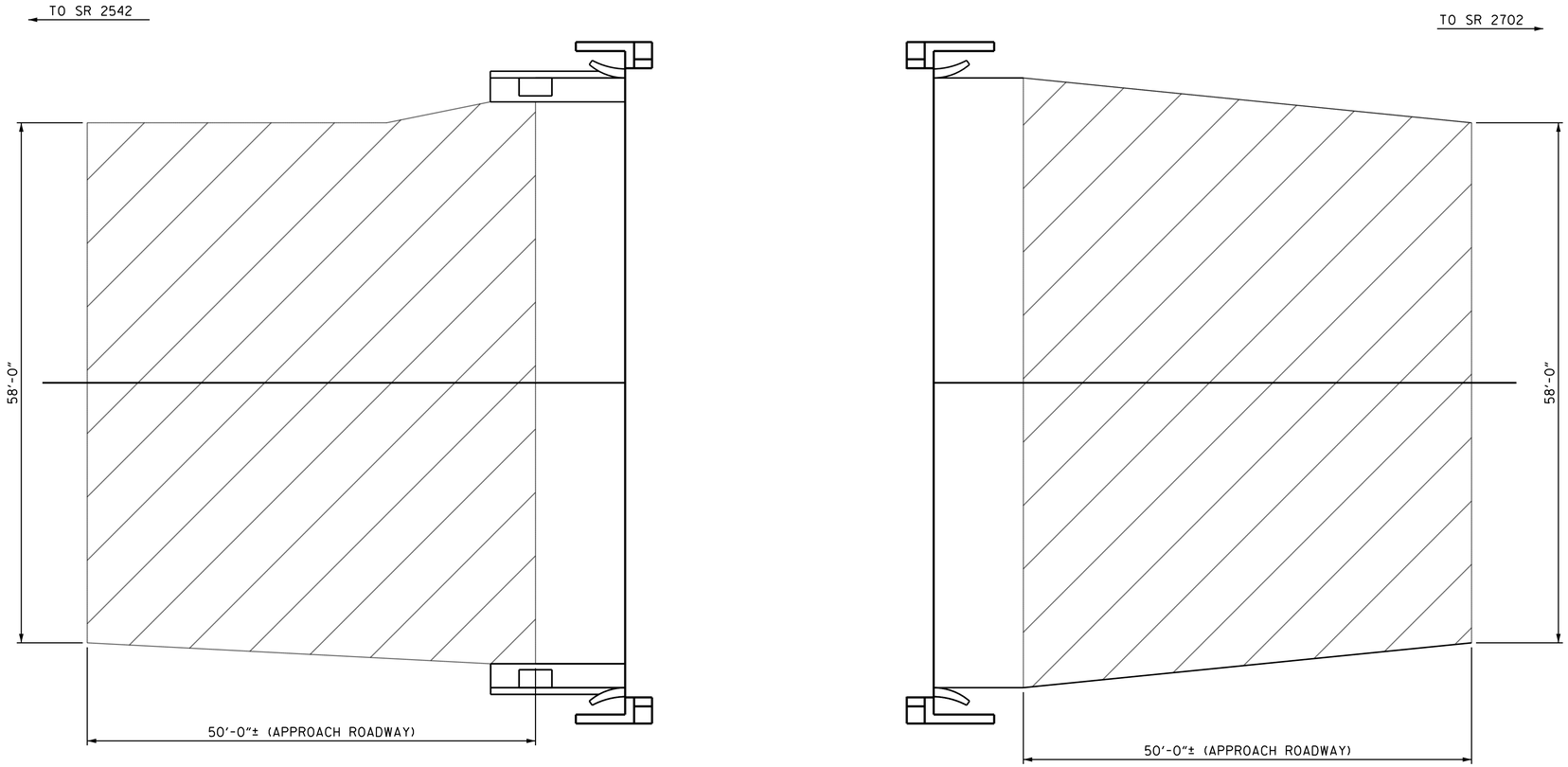
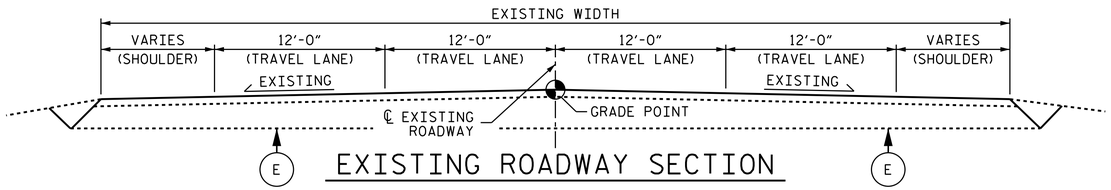
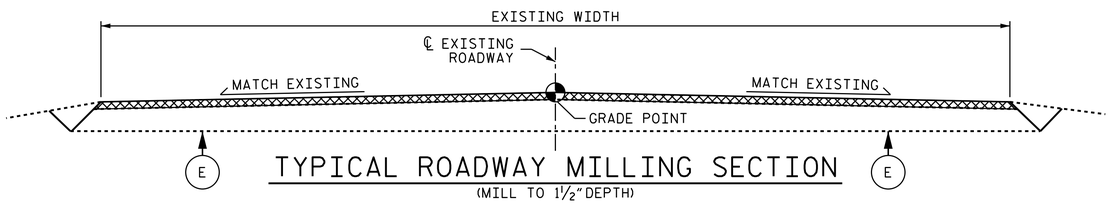


NOTES

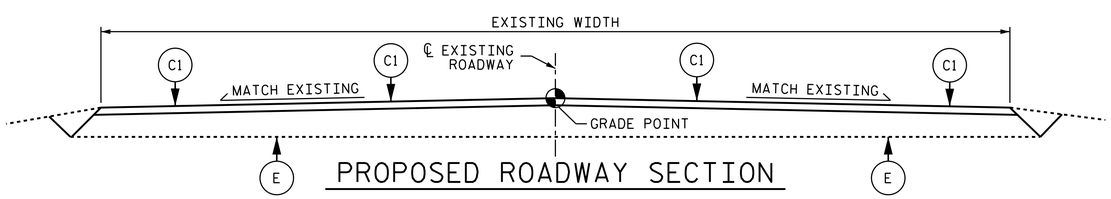
INCIDENTAL MILLING - EXISTING APPROACH ASPHALT PAVEMENT TO BE MILLED AS NECESSARY TO ATTAIN MINIMUM 1½" DEPTH OF NEW ASPHALT PAVEMENT. NEW ASPHALT PAVEMENT SHALL BE OF THICKNESS NECESSARY TO PROVIDE A SMOOTH TRANSITION BETWEEN THE ROADWAY AND THE BRIDGE DECK. THE NEW ASPHALT PAVEMENT THICKNESS MAY EXCEED 1½" DUE TO SETTLEMENT OF THE EXISTING APPROACH.



EXISTING ROADWAY SECTION



TYPICAL ROADWAY MILLING SECTION
(MILL TO 1½"DEPTH)



PROPOSED ROADWAY SECTION

SUMMARY OF QUANTITIES

	ESTIMATE	ACTUAL
INCIDENTAL MILLING	682.2 SQ. YD.	
ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B	60.0 TONS	
ASPHALT BINDER FOR PLANT MIX	5.0 TONS	

C1	PROPOSED VARIABLE DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1½" IN DEPTH OR GREATER THAN 2" IN DEPTH.
E	EXISTING PAVEMENT

PROJECT NO. 15BPR.40
BUNCOMBE COUNTY
BRIDGE NO. 100495

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

DocuSigned by: Amber Lee B04B5A4F2FAD484...

5/29/2019

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

INCIDENTAL MILLING & TYPICAL ROADWAY SECTIONS

DRAWN BY : R.L.PUTEK DATE : 02/2019
CHECKED BY : A.M.LEE DATE : 03/2019

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2			4			14

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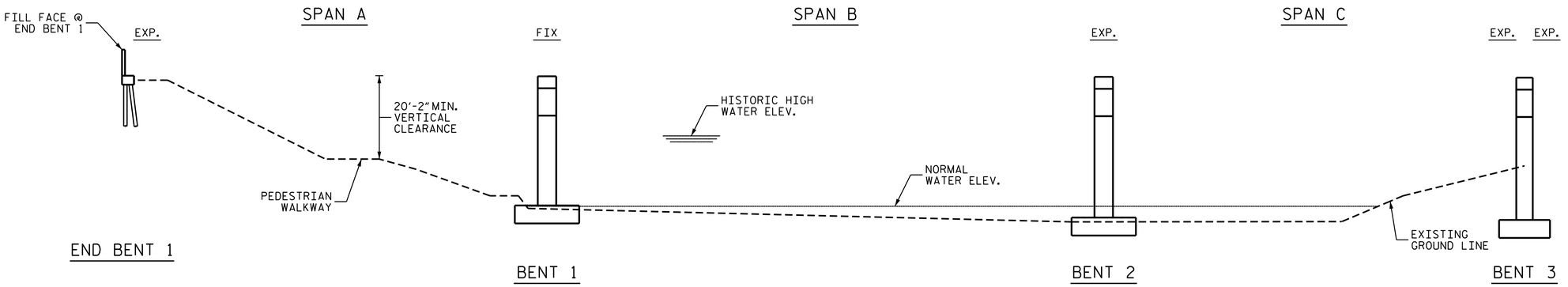
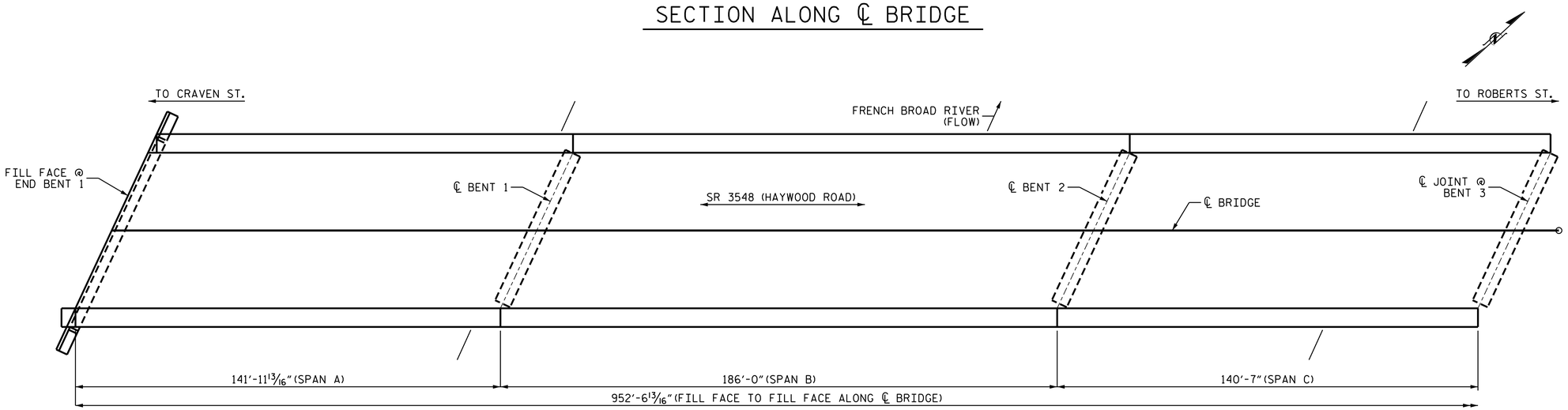
NOTES

GENERAL DRAWING INFORMATION IS TAKEN FROM THE ORIGINAL PLANS AND THE ROUTINE INSPECTION REPORT DATED 12/07/2017.

BRIDGE ORIENTATION CONFORMS TO EXISTING BRIDGE PLANS.



SECTION ALONG ℄ BRIDGE



PLAN

SCOPE OF WORK

- PARTIALLY REMOVE TOP OF BRIDGE DECK CONCRETE BY SCARIFICATION AND HYDRO-DEMOLITION METHODS.
- OVERLAY PREPARED TOP OF BRIDGE DECK WITH LATEX MODIFIED CONCRETE-EARLY STRENGTH (LMC-ES).
- GROOVE LATEX MODIFIED CONCRETE (LMC-ES) BRIDGE DECK.
- REPLACE EXISTING RUBBER PLATE TYPE EXPANSION JOINT MATERIAL AT BENT 3.
- REMOVE EXISTING JOINT MATERIAL AND INSTALL FOAM JOINTS.
- 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.

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

RESIDENT ENGINEER DATE

NORTH CAROLINA PROFESSIONAL SEAL 22005 ENGINEER A. KEITH PASCHAL
Docusigned by: A. Keith Paschal F8B6AD80B2FC48F...
5/29/2019

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE
Docusigned by: Amber Lee 9D4854AF2FAD484...
5/29/2019

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PROJECT NO. 15BPR.40
BUNCOMBE COUNTY
BRIDGE NO. 100705

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON SR 3548 (HAYWOOD RD.) OVER RIVERSIDE DR., NORFOLK SOUTHERN R.R., AND THE FRENCH BROAD RIVER

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-01
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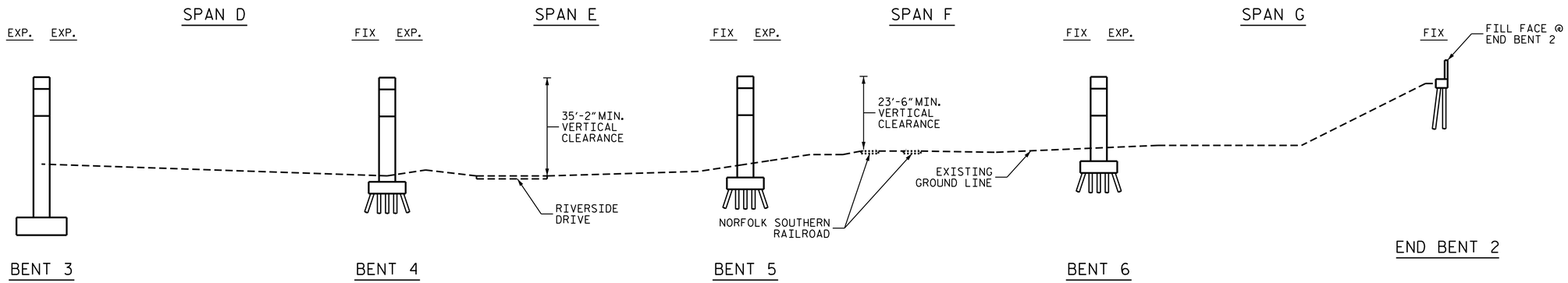
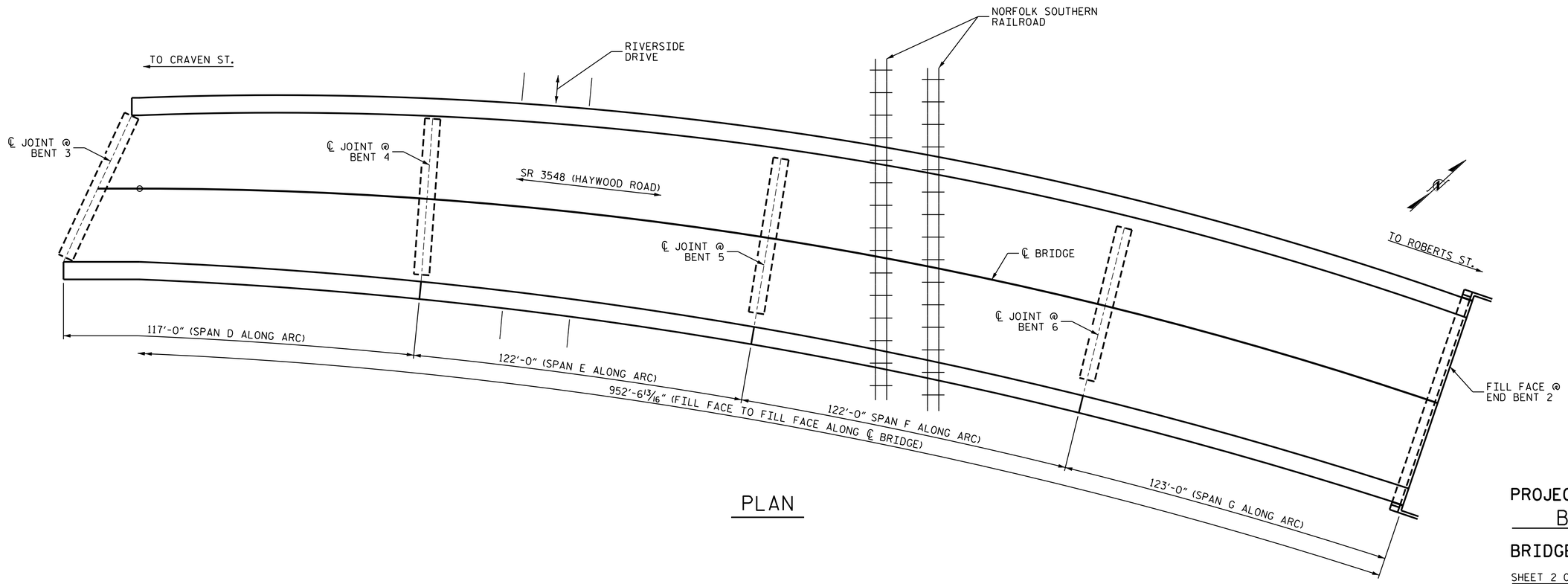


SECTION ALONG ℄ BRIDGE



PLAN

PROJECT NO. 15BPR.40

BUNCOMBE COUNTY

BRIDGE NO. 100705

SHEET 2 OF 3

NORTH CAROLINA PROFESSIONAL SEAL 22005 ENGINEER A. KEITH PASCHAL

Docusigned by: A. Keith Paschal F886AD6DB2FC48F...

5/29/2019

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

Docusigned by: Amber Lee 9D4B5A4F2FAD484...

5/29/2019

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON SR 3548 (HAYWOOD RD.) OVER RIVERSIDE DR., NORFOLK SOUTHERN R.R., AND THE FRENCH BROAD RIVER

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-02
1			3			TOTAL SHEETS
2			4			36

DRAWN BY : R.L.PUTEK DATE : 02/2019

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amlee

LOCATION SKETCH

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

BRIDGE COORDINATES

LAT: 35.585688
LONG: -82.568262

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.

WORK ON THE BRIDGES SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL BELOW. THE CONTRACTOR SHALL SUBMIT PLANS FOR CONSTRUCTION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS AND THE PROJECT SPECIAL PROVISIONS.

ANY DAMAGE TO EXISTING REINFORCING STEEL, DURING CONTRACTOR'S OPERATIONS, SHALL BE REPAIRED AS DIRECTED BY THE ENGINEER AND PERFORMED AT NO ADDITIONAL COST TO THE DEPARTMENT.

PRIOR TO BEGINNING WORK, THE CONTRACTOR SHALL SUBMIT FOR REVIEW AND APPROVAL A COMPLETE SEQUENCE OF TASK FOR EACH OPERATION AFFECTING THE BRIDGE SURFACE AND/OR TRAFFIC. 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, AND CLASS II SURFACE PREPARATION, AND CLASS III SURFACE PREPARATION. SEE OVERLAY SURFACE PREPARATION SPECIAL PROVISION.

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

FOR PLACING AND FINISHING LATEX MODIFIED CONCRETE OVERLAY-EARLY STRENGTH (LMC-ES) AND LATEX MODIFIED CONCRETE-EARLY STRENGTH, SEE LATEX MODIFIED CONCRETE-EARLY STRENGTH SPECIAL PROVISIONS.

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

DURING CONSTRUCTION, BERMS OR APPRORIATE MEASURES SHALL BE USED TO ENSURE HYDRO-DEMOLITION WATER DOES NOT MIGRATE INTO ACTIVE TRAVEL LANES.

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

FOR BRIDGE JOINT DEMOLITION, SEE SPECIAL PROVISIONS.

FOR CONCRETE FOR DECK REPAIRS, SEE SPECIAL PROVISIONS.

FOR FOAM JOINT SEAL FOR PRESERVATION, SEE SPECIAL PROVISIONS.

FOR JOINT REPAIR OF MOLDED RUBBER SEGMENTAL EXPANSION JOINT, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR PAINTING OF EXISTING STRUCTURE, SEE SPECIAL PROVISIONS.

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

FOR PAINTING CONTAINMENT, POLLUTION CONTROL, AND CLEANING AND REPAINTING EXISTING BRIDGE, SEE PAINTING EXISTING STRUCTURE SPECIAL PROVISION.

FOR EPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.

FOR BEAM REPAIR, SEE SPECIAL PROVISIONS.

FOR BOLTED BEAM REPAIR, SEE SPECIAL PROVISIONS.

FOR VOLUMETRIC MIXER, SEE SPECIAL PROVISIONS.

FOR ELASTOMERIC CONCRETE FOR PRESERVATION, SEE SPECIAL PROVISIONS.

PROJ. NO. 15BPR.40
BUNCOMBE COUNTY
BRIDGE NO. 100705

SHEET 3 OF 3

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

Docusigned by:
Amber Lee
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5/29/2019

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON
SR 3548 (HAYWOOD RD.)
OVER RIVERSIDE DR.,
NORFOLK SOUTHERN R.R., AND
THE FRENCH BROAD RIVER

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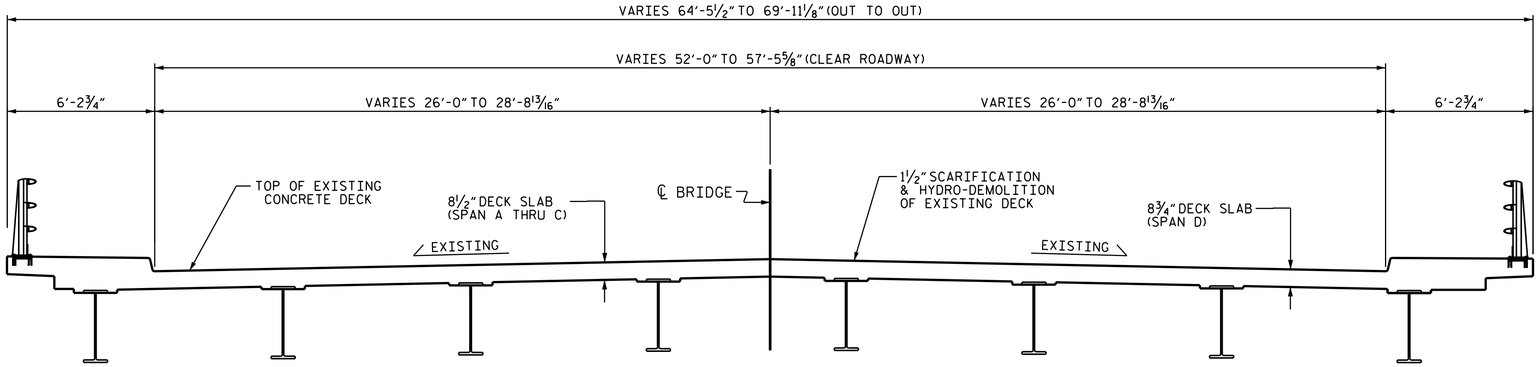
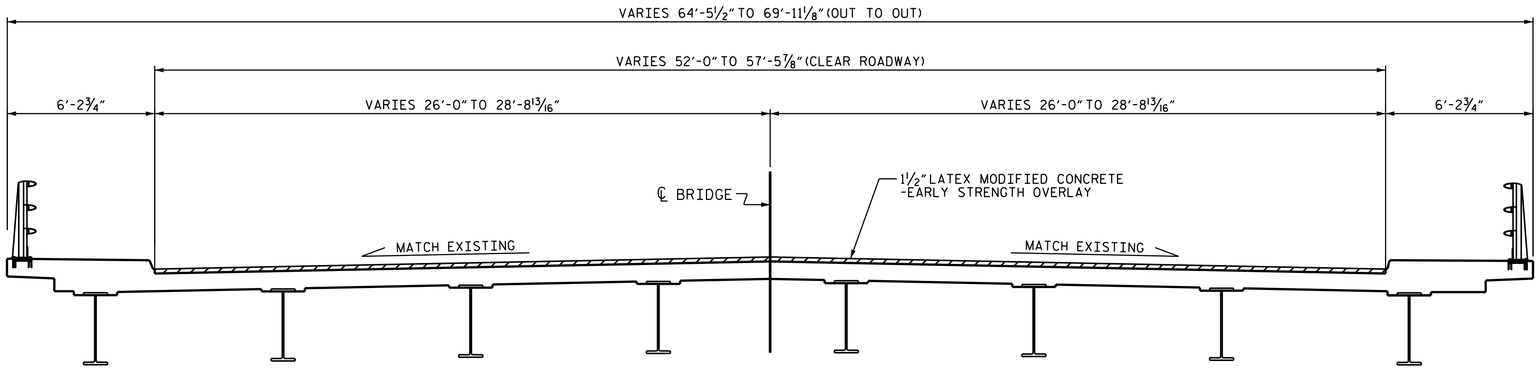


EXISTING TYPICAL SECTION - SPANS A THRU D

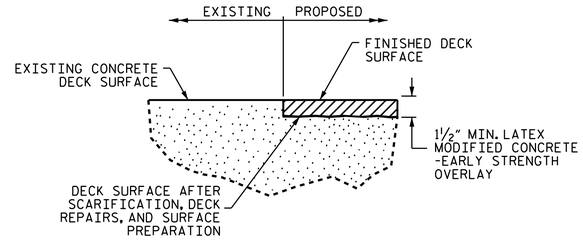


PROPOSED TYPICAL SECTION - SPANS A THRU D

NOTES

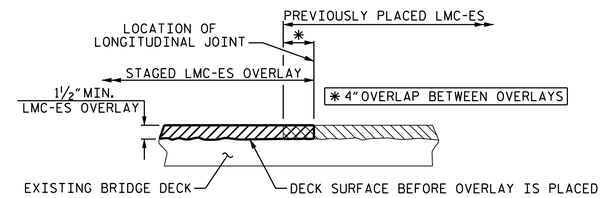
WHEN PREPARING THE SURFACE FOR LMC-ES OVERLAY ADJACENT TO THE PREVIOUSLY PLACED LMC-ES STAGE, THE PREVIOUSLY PLACED LMC-ES SHALL BE SAW-CUT TO THE FULL DEPTH OF THE LMC-ES AT THE CENTERLINE OF THE BRIDGE AND ALL LMC-ES IN THE 4" OVERLAP SHALL BE REMOVED WITH HAND TOOLS PRIOR TO PLACEMENT OF LMC-ES IN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

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



DETAIL FOR LMC-ES OVERLAY

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



SECTION THRU DECK

STAGED LMC-ES OVERLAY JOINT

(AS NEEDED)

PROJECT NO. 15BPR.40

BUNCOMBE COUNTY

BRIDGE NO. 100705

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

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5/29/2019

DRAWN BY : M. G. SHAIKH DATE : 02/2019
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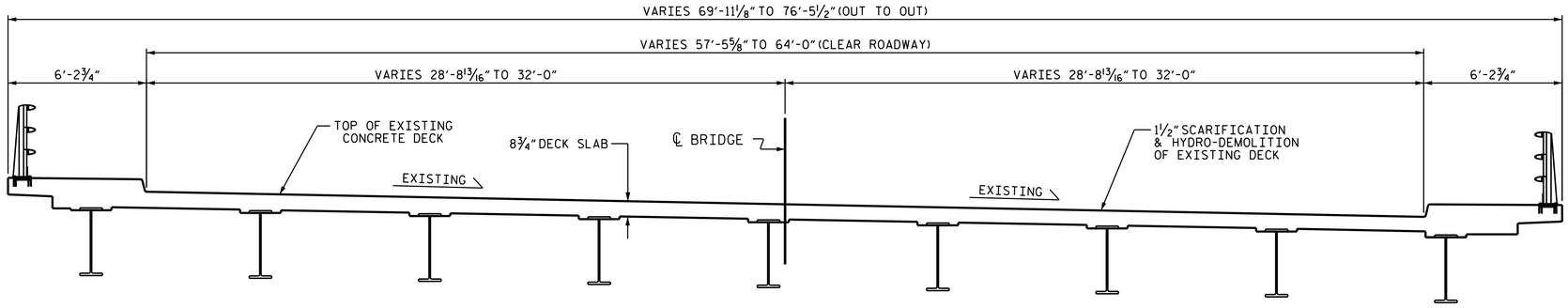

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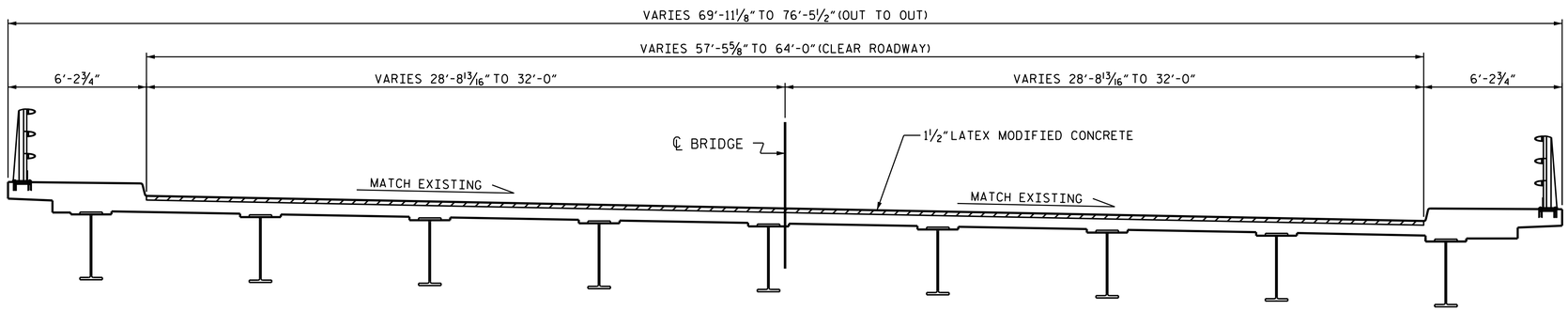
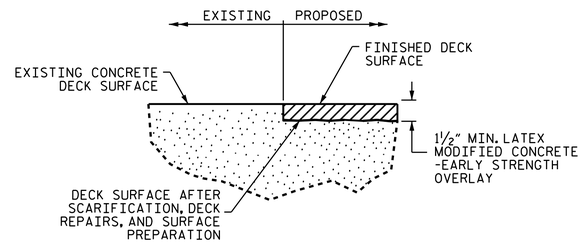


PROPOSED TYPICAL SECTION - SPANS E THRU G

NOTES

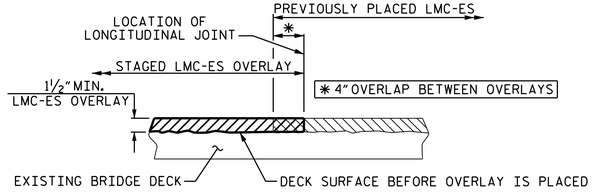
WHEN PREPARING THE SURFACE FOR LMC-ES OVERLAY ADJACENT TO THE PREVIOUSLY PLACED LMC-ES STAGE, THE PREVIOUSLY PLACED LMC-ES SHALL BE SAW-CUT TO THE FULL DEPTH OF THE LMC-ES AT THE CENTERLINE OF THE BRIDGE AND ALL LMC-ES IN THE 4" OVERLAP SHALL BE REMOVED WITH HAND TOOLS PRIOR TO PLACEMENT OF LMC-ES IN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

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



DETAIL FOR LMC-ES OVERLAY

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



SECTION THRU DECK

STAGED LMC-ES OVERLAY JOINT

(AS NEEDED)

PROJECT NO. 15BPR.40

BUNCOMBE COUNTY

BRIDGE NO. 100705

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

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5/29/2019

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NOTES

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

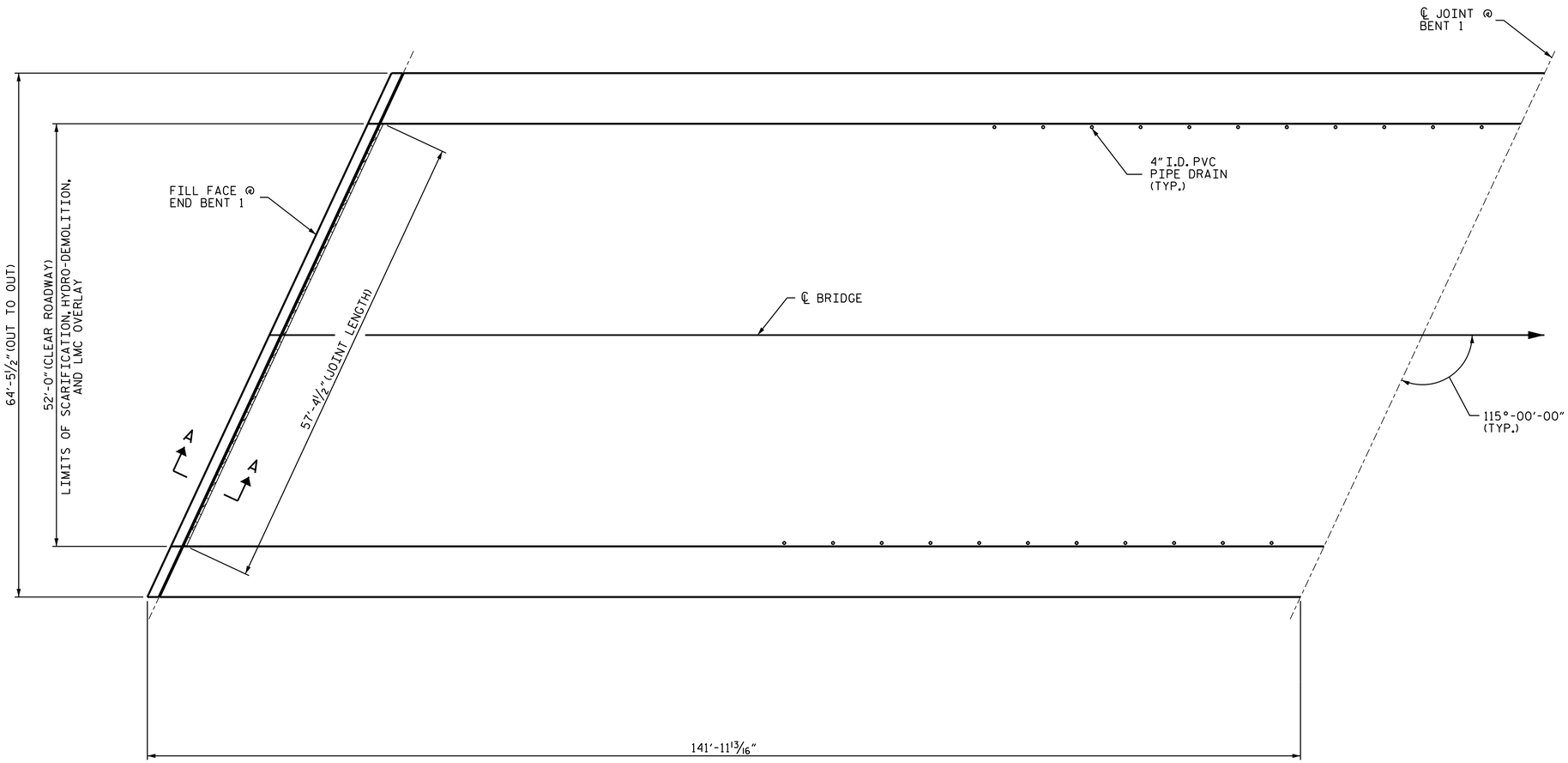
REPAIR LOCATIONS AND ESTIMATED QUANTITIES ARE BASED ON THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATIONS AND DESCRIPTION OF THE REPAIRS AND ENTER THE ACTUAL QUANTITIES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

FOR SECTION A-A, SEE "JOINT DETAILS LMC OVERLAY", SHEET 1 OF 3.

AS-BUILT REPAIR QUANITY TABLE

DECK SURFACE REPAIR SPAN A

	ESTIMATE	ACTUAL
CLASS II SURFACE PREPARATION	0.0 SQ. YDS.	
CLASS III SURFACE PREPARATION	0.0 SQ. YDS.	
LMC-ES MATERIALS	33.7 CU. YDS.	
PLACING & FINISHING LMC-ES OVERLAY	809.3 SQ. YDS.	
SCARIFYING BRIDGE DECK	809.3 SQ. YDS.	
HYDRO-DEMOLITION OF BRIDGE DECK	809.3 SQ. YDS.	
GROOVING BRIDGE FLOORS	6854.4 SQ. FT.	
BRIDGE JOINT DEMOLITION	23.9 SQ. FT.	
CONCRETE FOR DECK REPAIR	0.0 CU. FT.	



SPAN A

CLASS II SURFACE PREPARATION

BRIDGE JOINT DEMOLITION

PROJECT NO. 15BPR.40

BUNCOMBE COUNTY

BRIDGE NO. 100705

SHEET 1 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK SURFACE REPAIR SPAN A

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

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CRAVEN ST.

ROBERTS ST.

NOTES

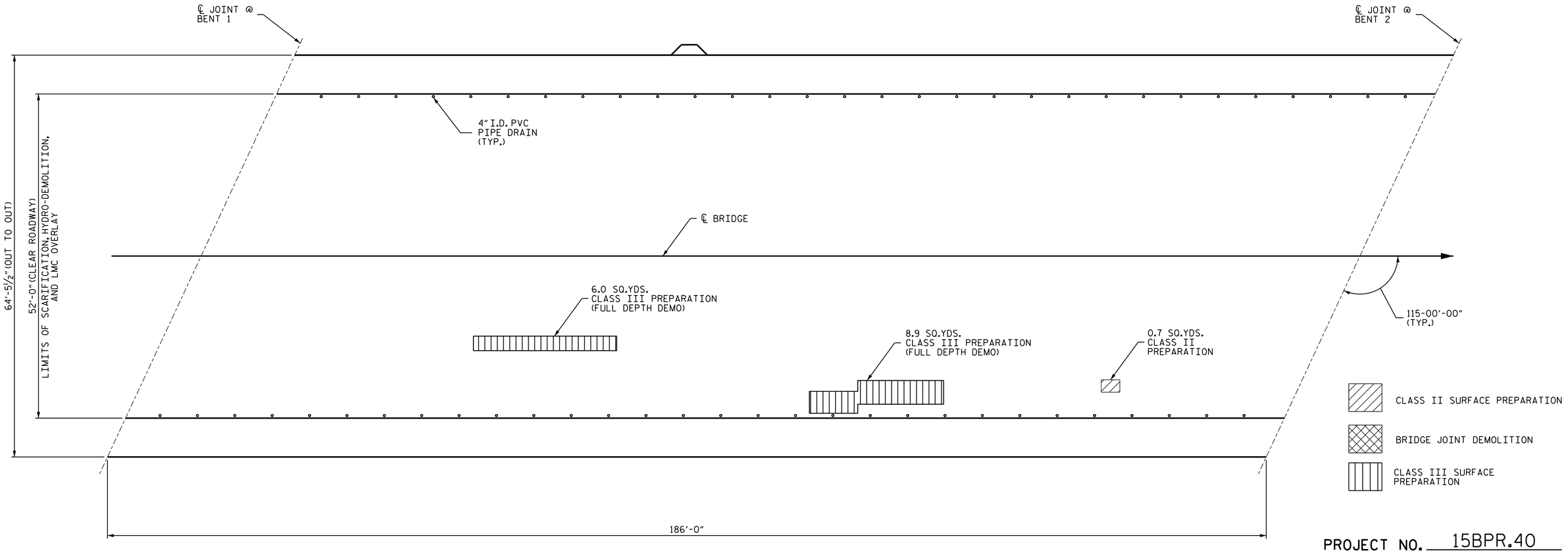
PAYMENT FOR CLASS II SURFACE PREPARATION IS BASED ON THE SQUARE FEET OF ADDITIONAL DEMOLITION REQUIRED FOLLOWING INITAL HYDRO-DEMOLITION OF THE BRIDGE DECK. SEE SPECIAL PROVISIONS.

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.

AS-BUILT REPAIR QUANITY TABLE

DECK SURFACE REPAIR SPAN B

	ESTIMATE	ACTUAL
CLASS II SURFACE PREPARATION	0.7 SQ. YDS.	
CLASS III SURFACE PREPARATION	14.9 SQ. YDS.	
LMC-ES MATERIALS	44.8 CU. YDS.	
PLACING & FINISHING LMC-ES OVERLAY	1074.7 SQ. YDS.	
SCARIFYING BRIDGE DECK	1074.7 SQ. YDS.	
HYDRO-DEMOLITION OF BRIDGE DECK	1074.7 SQ. YDS.	
GROOVING BRIDGE FLOORS	9114.0 SQ. FT.	
BRIDGE JOINT DEMOLITION	0.0 SQ. FT.	
CONCRETE FOR DECK REPAIR	79.7 CU. FT.	



SPAN B

PROJECT NO. 15BPR.40

BUNCOMBE COUNTY

BRIDGE NO. 100705

SHEET 2 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK SURFACE REPAIR SPAN B

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

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NOTES

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

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 D-D, SEE "JOINT DETAILS LMC OVERLAY", SHEET 2 OF 3.

CHECKERED EXPANSION PLATE ASSEMBLY SHALL BE REMOVED WHILE COMPLETING THE JOINT REPAIR. THE CHECKERED EXPANSION PLATE SHALL BE CLEANED AND REINSTALLED. THIS WORK SHALL BE INCIDENTAL TO THE JOINT REPAIR.

AS-BUILT REPAIR QUANITY TABLE

DECK SURFACE REPAIR SPAN C

	ESTIMATE	ACTUAL
CLASS II SURFACE PREPARATION	0.0 SQ. YDS.	
CLASS III SURFACE PREPARATION	0.0 SQ. YDS.	
LMC-ES MATERIALS	33.0 CU. YDS.	
PLACING & FINISHING LMC-ES OVERLAY	791.5 SQ. YDS.	
SCARIFYING BRIDGE DECK	791.5 SQ. YDS.	
HYDRO-DEMOLITION OF BRIDGE DECK	791.5 SQ. YDS.	
GROOVING BRIDGE FLOORS	6860.0 SQ. FT.	
CONCRETE FOR DECK REPAIR	0.0 CU. FT.	
JOINT REPAIR	186.5 SQ. FT.	

BILL OF MATERIAL

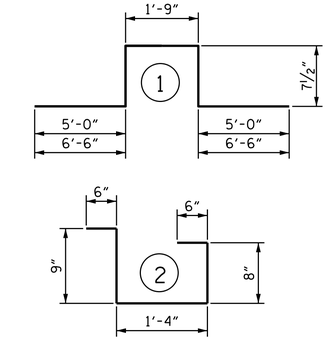
FOR JOINT REPAIR

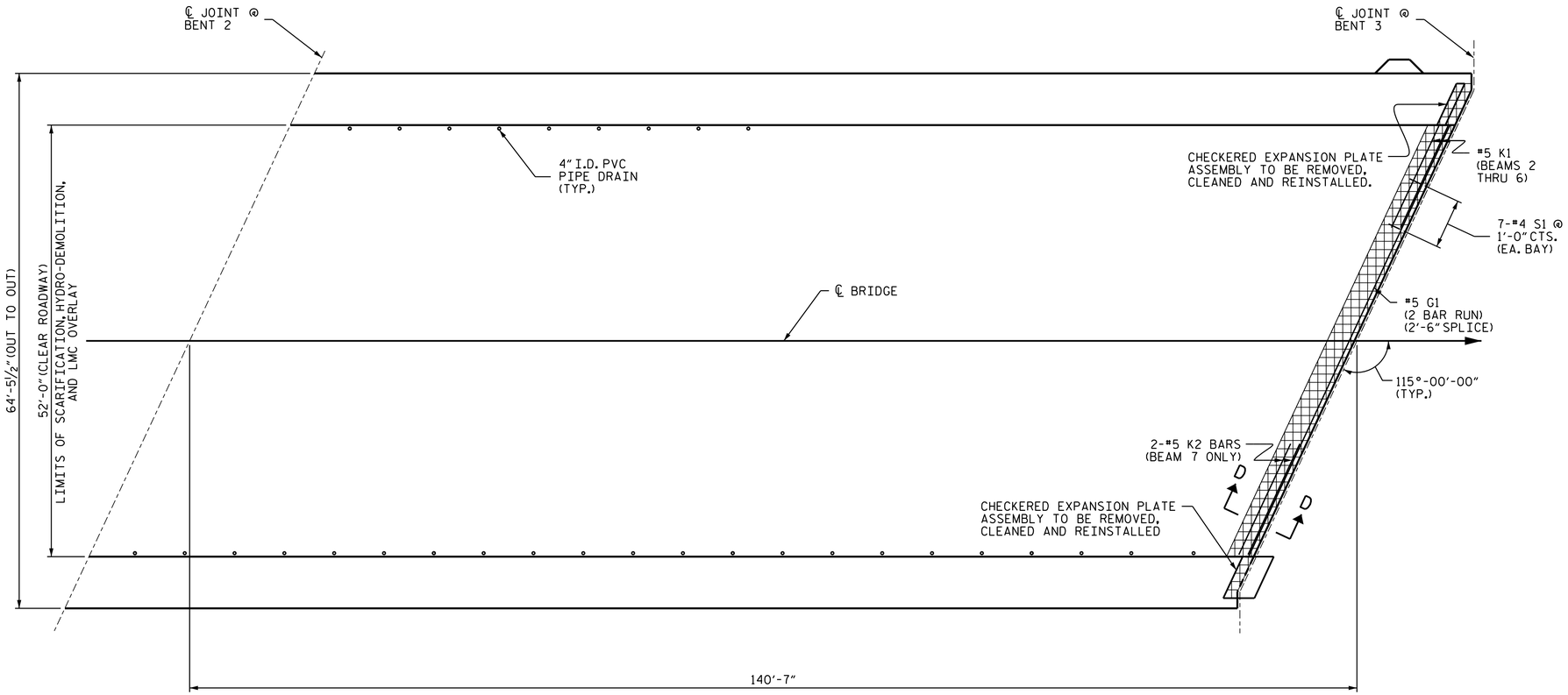
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳G1	2	#5	STR	30'-3"	63
✳K1	10	#5	1	13'-0"	136
✳K2	2	#5	1	16'-0"	33
✳S1	49	#4	2	3'-9"	123

✳EPOXY COATED REINFORCING STEEL	LBS.	355
CONCRETE FOR DECK REPAIR		171.3 C.F.

BAR TYPES

ALL BAR DIMENSIONS ARE OUT TO OUT





SPAN C

JOINT REPAIR

CLASS II SURFACE PREPARATION

BRIDGE JOINT DEMOLITION

CLASS III SURFACE PREPARATION

PROJECT NO. 15BPR.40

BUNCOMBE COUNTY

BRIDGE NO. 100705

SHEET 3 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK SURFACE REPAIR SPAN C

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

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NOTES

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

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.

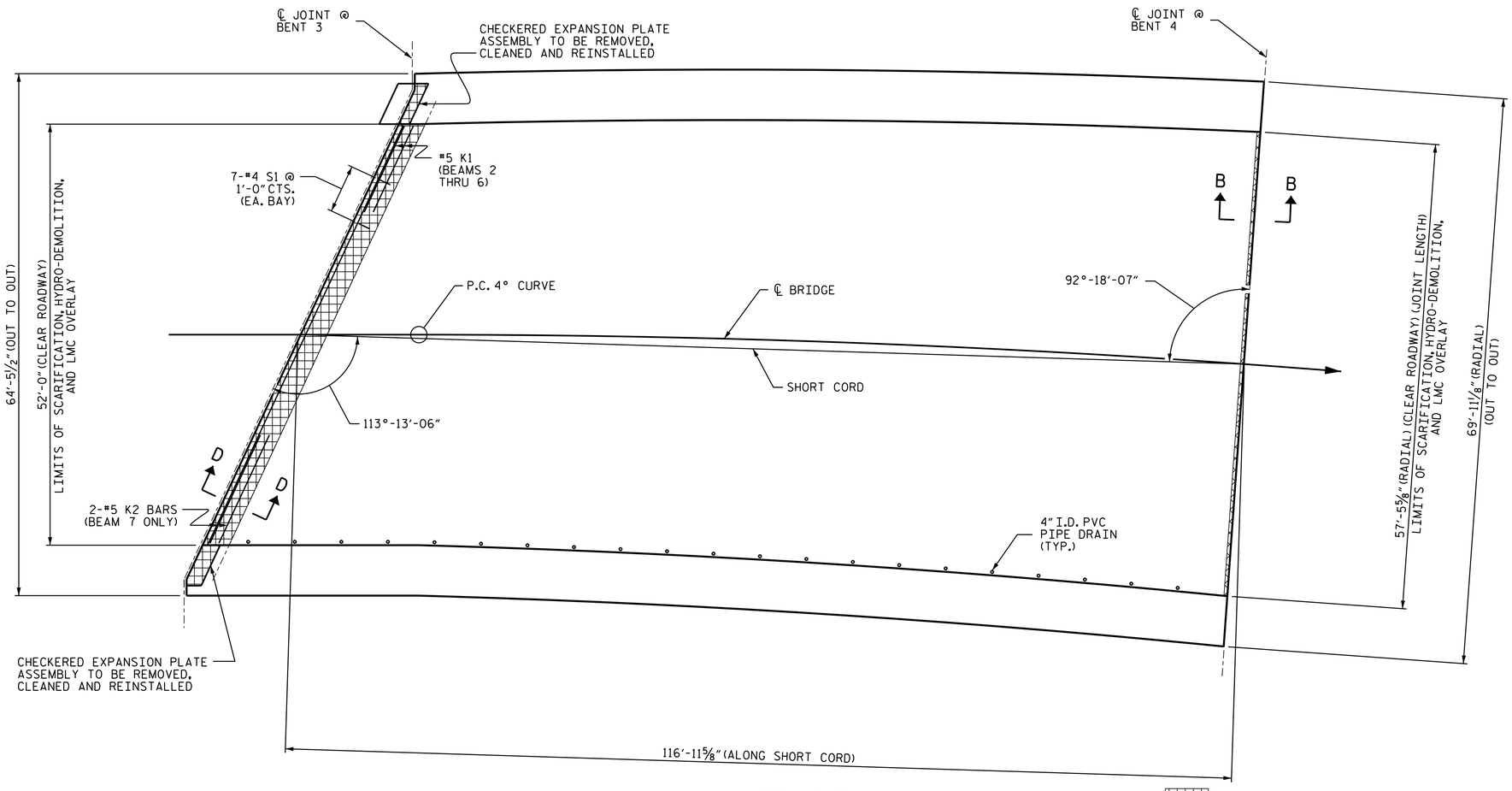
FOR SECTION D-D, SEE "JOINT DETAILS LMC OVERLAY", SHEET 2 OF 3.

CHECKERED EXPANSION PLATE ASSEMBLY SHALL BE REMOVED WHILE COMPLETING THE JOINT REPAIR. THE CHECKERED EXPANSION PLATE SHALL BE CLEANED AND REINSTALLED. THIS WORK SHALL BE INCIDENTAL TO THE JOINT REPAIR.

AS-BUILT REPAIR QUANITY TABLE

DECK SURFACE REPAIR SPAN D

	ESTIMATE	ACTUAL
CLASS II SURFACE PREPARATION	0.0 SQ. YDS.	
CLASS III SURFACE PREPARATION	0.0 SQ. YDS.	
LMC-ES MATERIALS	28.7 CU. YDS.	
PLACING & FINISHING LMC-ES OVERLAY	689.9 SQ. YDS.	
SCARIFYING BRIDGE DECK	689.9 SQ. YDS.	
HYDRO-DEMOLITION OF BRIDGE DECK	689.9 SQ. YDS.	
GROOVING BRIDGE FLOORS	5982.3 SQ. FT.	
BRIDGE JOINT DEMOLITION	28.7 SQ. FT.	
CONCRETE FOR DECK REPAIR	0.0 CU. FT.	
JOINT REPAIR	186.5 SQ. FT.	



SPAN D

JOINT REPAIR

CLASS II SURFACE PREPARATION

BRIDGE JOINT DEMOLITION

CLASS III SURFACE PREPARATION

BILL OF MATERIAL

FOR JOINT REPAIR

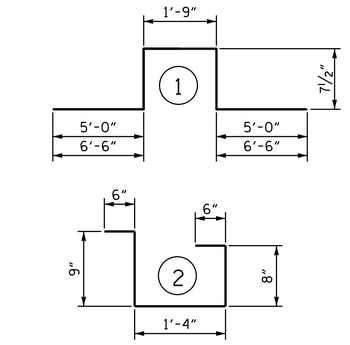
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳G1	2	#5	STR	30'-3"	63
✳K1	10	#5	1	13'-0"	136
✳K2	2	#5	1	16'-0"	33
✳S1	49	#4	2	3'-9"	123

✳EPOXY COATED REINFORCING STEEL LBS. 355

CONCRETE FOR DECK REPAIR 171.3 C.F.

BAR TYPES

ALL BAR DIMENSIONS ARE OUT TO OUT



PROJECT NO. 15BPR.40

BUNCOMBE COUNTY

BRIDGE NO. 100705

SHEET 4 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK SURFACE REPAIR SPAN D

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

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NOTES

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

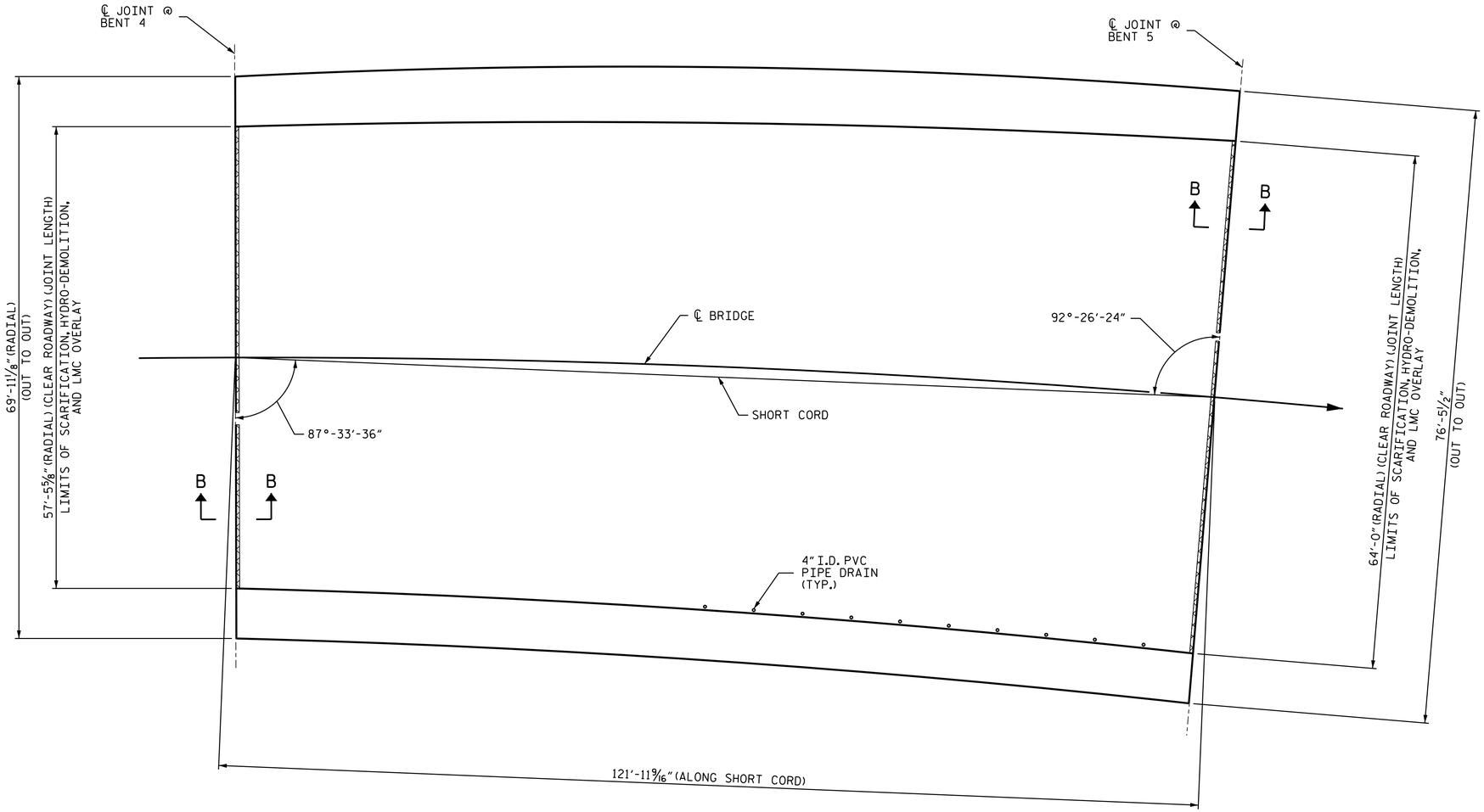
REPAIR LOCATIONS AND ESTIMATED QUANTITIES ARE BASED ON THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATIONS AND DESCRIPTION OF THE REPAIRS AND ENTER THE ACTUAL QUANTITIES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

FOR SECTION B-B, SEE "JOINT DETAILS LMC OVERLAY", SHEET 1 OF 3.

AS-BUILT REPAIR QUANITY TABLE

DECK SURFACE REPAIR SPAN E

	ESTIMATE	ACTUAL
CLASS II SURFACE PREPARATION	0.0 SQ. YDS.	
CLASS III SURFACE PREPARATION	0.0 SQ. YDS.	
LMC-ES MATERIALS	34.3 CU. YDS.	
PLACING & FINISHING LMC-ES OVERLAY	817.4 SQ. YDS.	
SCARIFYING BRIDGE DECK	817.4 SQ. YDS.	
HYDRO-DEMOLITION OF BRIDGE DECK	817.4 SQ. YDS.	
GROOVING BRIDGE FLOORS	6969.1 SQ. FT.	
BRIDGE JOINT DEMOLITION	50.6 SQ. FT.	
CONCRETE FOR DECK REPAIR	0.0 CU. FT.	



SPAN E

CLASS II SURFACE PREPARATION

BRIDGE JOINT DEMOLITION

CLASS III SURFACE PREPARATION

PROJECT NO. 15BPR.40

BUNCOMBE COUNTY

BRIDGE NO. 100705

SHEET 5 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK SURFACE REPAIR SPAN E

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

DocuSigned by: Amber Lee
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-10
1			3			TOTAL SHEETS
2			4			36

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NOTES

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

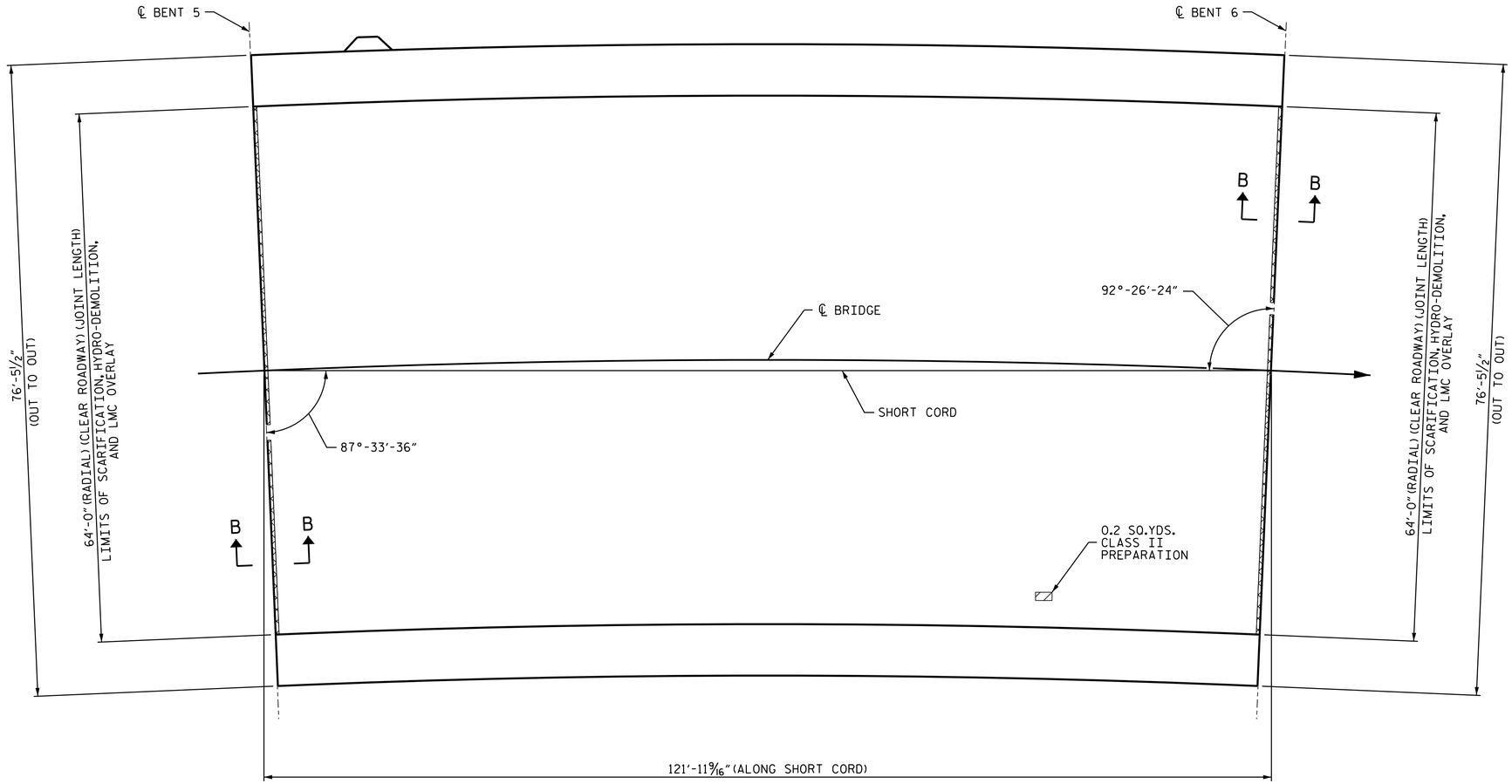
REPAIR LOCATIONS AND ESTIMATED QUANTITIES ARE BASED ON THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATIONS AND DESCRIPTION OF THE REPAIRS AND ENTER THE ACTUAL QUANTITIES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

FOR SECTION B-B, SEE "JOINT DETAILS LMC OVERLAY", SHEET 1 OF 3.

AS-BUILT REPAIR QUANITY TABLE

DECK SURFACE REPAIR SPAN F

	ESTIMATE	ACTUAL
CLASS II SURFACE PREPARATION	0.2 SQ. YDS.	
CLASS III SURFACE PREPARATION	0.0 SQ. YDS.	
LMC-ES MATERIALS	36.1 CU. YDS.	
PLACING & FINISHING LMC-ES OVERLAY	861.4 SQ. YDS.	
SCARIFYING BRIDGE DECK	861.4 SQ. YDS.	
HYDRO-DEMOLITION OF BRIDGE DECK	861.4 SQ. YDS.	
GROOVING BRIDGE FLOORS	7363.2 SQ. FT.	
BRIDGE JOINT DEMOLITION	64.0 SQ. FT.	
CONCRETE FOR DECK REPAIR	0.0 CU. FT.	



SPAN F

CLASS II SURFACE PREPARATION

BRIDGE JOINT DEMOLITION

CLASS III SURFACE PREPARATION

PROJECT NO. 15BPR.40

BUNCOMBE COUNTY

BRIDGE NO. 100705

SHEET 6 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK SURFACE REPAIR SPAN F

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

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NOTES

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

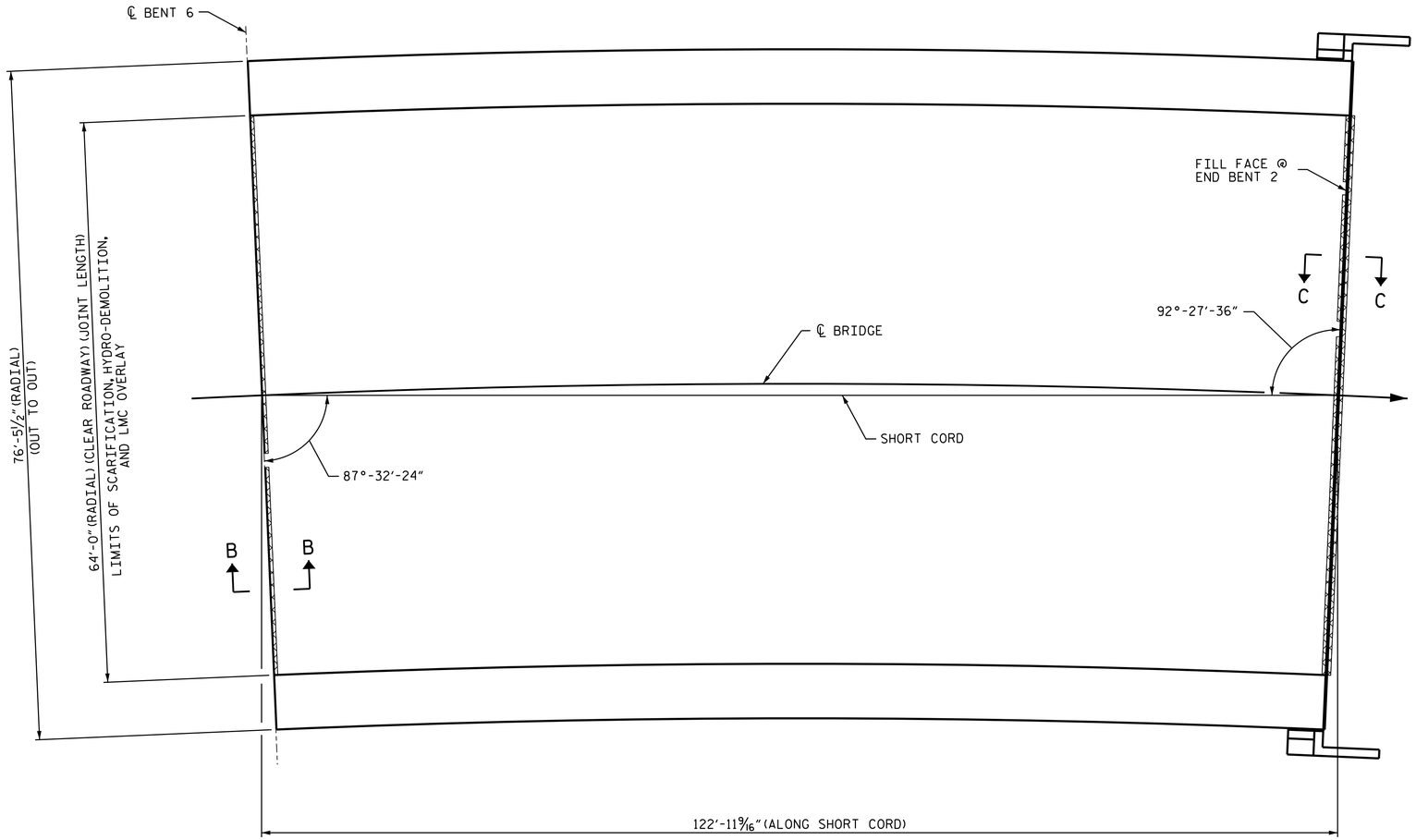
REPAIR LOCATIONS AND ESTIMATED QUANTITIES ARE BASED ON THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATIONS AND DESCRIPTION OF THE REPAIRS AND ENTER THE ACTUAL QUANTITIES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

FOR SECTION B-B AND C-C, SEE "JOINT DETAILS LMC OVERLAY", SHEET 1 OF 3.

AS-BUILT REPAIR QUANITY TABLE

DECK SURFACE REPAIR SPAN G

	ESTIMATE	ACTUAL
CLASS II SURFACE PREPARATION	0.0 SQ. YDS.	
CLASS III SURFACE PREPARATION	0.0 SQ. YDS.	
LMC-ES MATERIALS	36.2 CU. YDS.	
PLACING & FINISHING LMC-ES OVERLAY	868.3 SQ. YDS.	
SCARIFYING BRIDGE DECK	868.3 SQ. YDS.	
HYDRO-DEMOLITION OF BRIDGE DECK	868.3 SQ. YDS.	
GROOVING BRIDGE FLOORS	7428.0 SQ. FT.	
BRIDGE JOINT DEMOLITION	96.0 SQ. FT.	
CONCRETE FOR DECK REPAIR	0.0 CU. FT.	



SPAN G

CLASS II SURFACE PREPARATION

BRIDGE JOINT DEMOLITION

CLASS III SURFACE PREPARATION

PROJECT NO. 15BPR.40

BUNCOMBE COUNTY

BRIDGE NO. 100705

SHEET 7 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK SURFACE REPAIR SPAN G

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

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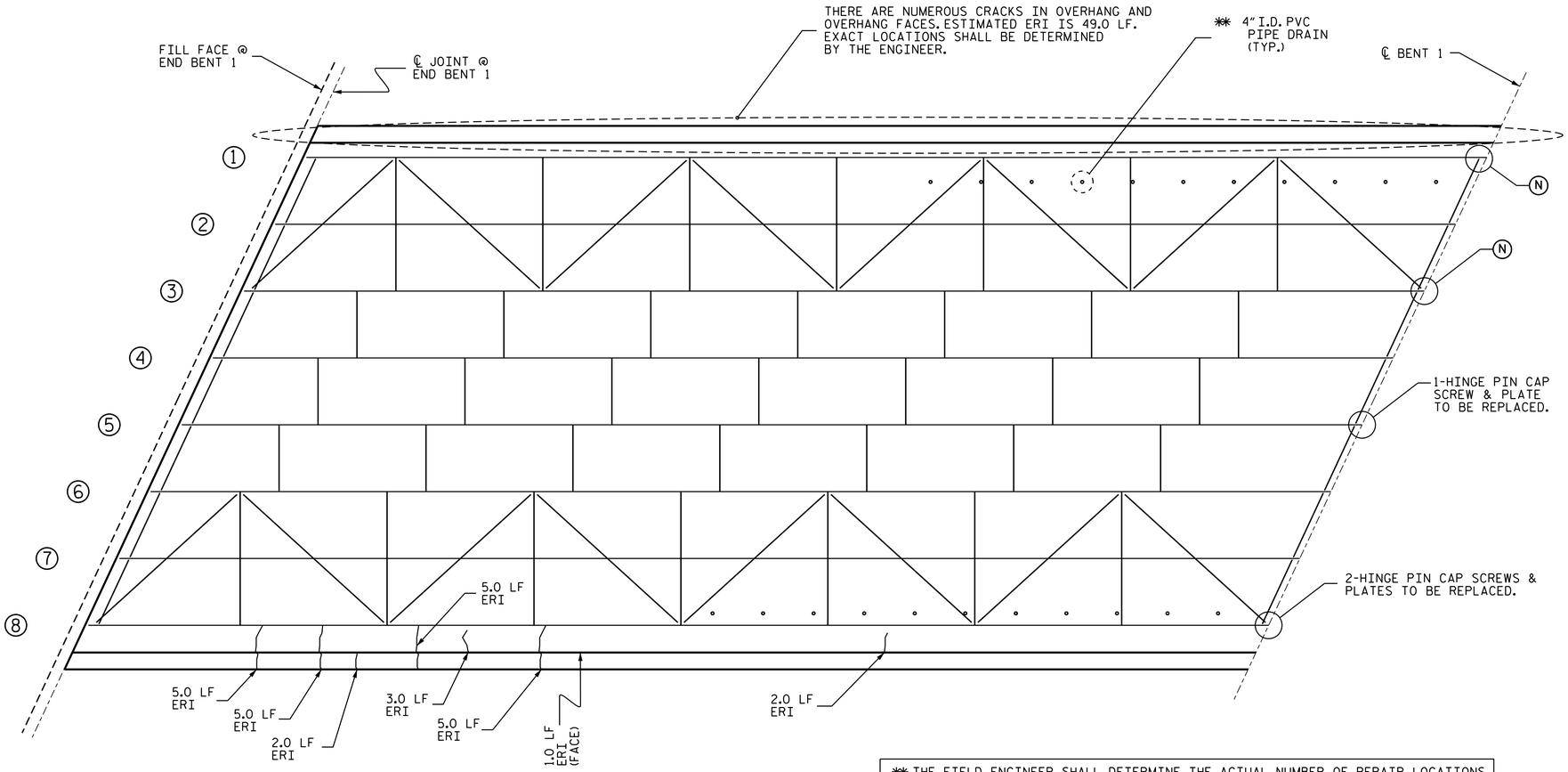

AS-BUILT REPAIR QUANTITY TABLE

DECK UNDERSIDE REPAIRS - SPAN A

	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
UNDERSIDE OF DECK	4.4	1.8		
CONCRETE DIAPHRAGM	0.0	0.0		
OVERHANG	0.0	0.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
UNDERSIDE OF DECK	0.0	0.0		
CONCRETE DIAPHRAGM	0.0	0.0		
OVERHANG	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.		LIN. FT.
UNDERSIDE OF DECK		0.0		
CONCRETE DIAPHRAGM		0.0		
OVERHANG		77.0		

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MINIMUM OF 1" BEHIND REBAR AND MINIMUM 2" CLEARANCE TO SAWCUT. SEE "OVERHANG, DIAPHRAGM AND BRIDGE RAIL REPAIR DETAILS" SHEET.

NOTES

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

FOR OVERHANG REPAIRS, SEE "OVERHANG, DIAPHRAGM AND BRIDGE RAIL REPAIR DETAILS" SHEET.

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

FOR BRIDGE JACKING, SEE "JACKING DETAILS" SHEET.

FOR REPLACEMENT OF HINGE PIN CAP SCREW AND WASHER, SEE SPECIAL PROVISIONS.

ALL MISSING ANCHOR BOLT NUTS SHALL BE REPLACED. ANTICIPATED LOCATIONS AND QUANTITIES ARE AS INDICATED ON PLAN SHEETS. THE CONTRACTOR SHALL FIELD VERIFY. NUTS SHALL BE ASTM A194, AS APPLICABLE, OR ASTM A563 AND SIZE AND THREADS SHALL MATCH EXISTING. COST OF REPLACEMENT OF ANCHOR BOLT NUTS SHALL BE CONSIDERED INCIDENTAL TO COST OF OTHER VARIOUS PAY ITEMS.

FOR HINGE PIN CAP SCREW & PLATE DETAILS, SEE SHEET S-48.

HINGE PIN CAP SCREW AND PLATE SHALL BE FABRICATED OR SUPPLIED TO MEET THE GEOMETRY AND DIMENSIONS INDICATED. THE CONTRACTOR SHALL FIELD VERIFY DIMENSIONS AND GEOMETRIES AND OTHER DETAILS. MATERIAL SHALL BE MINIMUM GRADE A36 STEEL FOR PLATE AND ASTM A307 FOR CAP SCREW. COST OF HINGE PIN CAP SCREW AND PLATE SHALL BE CONSIDERED INCIDENTAL TO COST OF OTHER VARIOUS PAY ITEMS.

** THE FIELD ENGINEER SHALL DETERMINE THE ACTUAL NUMBER OF REPAIR LOCATIONS. 4 LOCATIONS NOTED DURING FIELD EVALUATION. ESTIMATE QUANTITY, 1.1 CF OF SHOTCRETE EACH LOCATION ADDED TO "UNDERSIDE OF DECK" IN QUANTITY TABLE.

SPAN A
(UNDERSIDE OF DECK)

BEAM REPAIR QUANTITY TABLE

STEEL PLATES LBS.		STIFFENER LBS.		STEEL DIAPHRAGM LBS.		BRIDGE JACKING EA.		ANCHOR BOLT NUT EA.	
ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL
0.0		0.0		0.0		0		4	

ANTICIPATED STEEL REPAIR LOCATIONS

SPAN	BEAM	LOCATION	DIM "A"	DIM "B"	DIM "E"	DIM "F"

SHOTCRETE REPAIR AREA

ERI - EPOXY RESIN INJECTION

(1) BEAM NUMBER
(B) BEAM END REPAIR
(P) PLATING REPAIR
(S) STIFFENER REPAIR
(C) CONNECTOR PLATE REPAIR
(D) STEEL CROSSFRAME REPLACEMENT HORIZONAL ST4 WF8.5
(F) BOTTOM FLANGE REPAIR
(N) ANCHOR BOLT NUT REPLACEMENT
(K) STEEL ANGLE KEEPER ASSEMBLY

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

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5/29/2019

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PROJECT NO. 15BPR.40
BUNCOMBE COUNTY
BRIDGE NO. 100705

SHEET 1 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK UNDERSIDE REPAIRS SPAN A

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-13
1			3			TOTAL SHEETS
2			4			36

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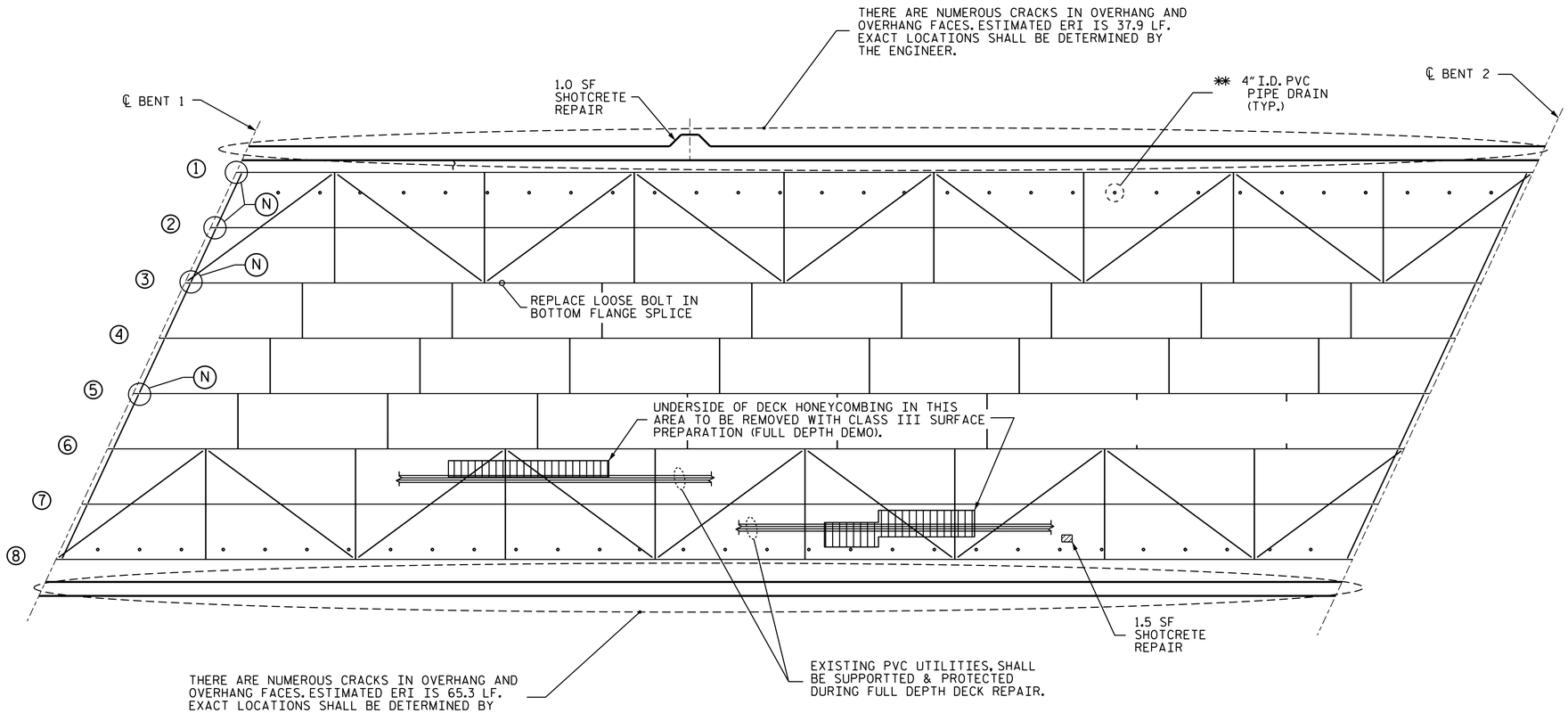

SPAN B
(UNDERSIDE OF DECK)

** THE FIELD ENGINEER SHALL DETERMINE THE ACTUAL NUMBER OF REPAIR LOCATIONS. 16 LOCATIONS NOTED DURING FIELD EVALUATION. ESTIMATE QUANTITY, 1.1 CF OF SHOTCRETE EACH LOCATION ADDED TO "UNDERSIDE OF DECK" IN QUANTITY TABLE.

AS-BUILT REPAIR QUANTITY TABLE

DECK UNDERSIDE REPAIRS - SPAN B

	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
UNDERSIDE OF DECK	17.6	7.3		
CONCRETE DIAPHRAGM	0.0	0.0		
OVERHANG	0.0	0.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
UNDERSIDE OF DECK	0.0	0.0		
CONCRETE DIAPHRAGM	0.0	0.0		
OVERHANG	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.		LIN. FT.
UNDERSIDE OF DECK		0.0		
CONCRETE DIAPHRAGM		0.0		
OVERHANG		103.2		

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MINIMUM OF 1" BEHIND REBAR AND MINIMUM 2" CLEARANCE TO SAWCUT. SEE "OVERHANG, DIAPHRAGM AND BRIDGE RAIL REPAIR DETAILS" SHEET.

NOTES

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

FOR OVERHANG REPAIRS, SEE "OVERHANG, DIAPHRAGM AND BRIDGE RAIL REPAIR DETAILS" SHEET.

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

FOR BRIDGE JACKING, SEE "JACKING DETAILS" SHEET.

FOR REPLACEMENT OF HINGE PIN CAP SCREW AND WASHER, SEE SPECIAL PROVISIONS.

ALL MISSING ANCHOR BOLT NUTS SHALL BE REPLACED. ANTICIPATED LOCATIONS AND QUANTITIES ARE AS INDICATED ON PLAN SHEETS. THE CONTRACTOR SHALL FIELD VERIFY. NUTS SHALL BE ASTM A194, AS APPLICABLE, OR ASTM A563 AND SIZE AND THREADS SHALL MATCH EXISTING. COST OF REPLACEMENT OF ANCHOR BOLT NUTS SHALL BE CONSIDERED INCIDENTAL TO COST OF OTHER VARIOUS PAY ITEMS.

FOR HINGE PIN CAP SCREW & PLATE DETAILS, SEE SHEET S-48.

HINGE PIN CAP SCREW AND PLATE SHALL BE FABRICATED OR SUPPLIED TO MEET THE GEOMETRY AND DIMENSIONS INDICATED. THE CONTRACTOR SHALL FIELD VERIFY DIMENSIONS AND GEOMETRIES AND OTHER DETAILS. MATERIAL SHALL BE MINIMUM GRADE A36 STEEL FOR PLATE AND ASTM A307 FOR CAP SCREW. COST OF HINGE PIN CAP SCREW AND PLATE SHALL BE CONSIDERED INCIDENTAL TO COST OF OTHER VARIOUS PAY ITEMS.

ANTICIPATED STEEL REPAIR LOCATIONS

SPAN	BEAM	LOCATION	DIM "A"	DIM "B"	DIM "E"	DIM "F"

BEAM REPAIR QUANTITY TABLE

STEEL PLATES		STIFFENER		STEEL DIAPHRAGM		BRIDGE JACKING		ANCHOR BOLT NUT	
LBS.		LBS.		LBS.		EA.		EA.	
ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL
0.0		0.0		0.0		0		9	

CLASS III PREPARATION (FULL DEPTH DEMO)

SHOTCRETE REPAIR AREA

ERI - EPOXY RESIN INJECTION

(1) BEAM NUMBER
(B) BEAM END REPAIR
(P) PLATING REPAIR
(S) STIFFENER REPAIR
(C) CONNECTOR PLATE REPAIR
(D) STEEL CROSSFRAME REPLACEMENT HORIZONAL ST4 WF8.5
(F) BOTTOM FLANGE REPAIR
(N) ANCHOR BOLT NUT REPALCEMENT
(K) STEEL ANGLE KEEPER ASSEMBLY

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

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BUNCOMBE COUNTY
BRIDGE NO. 100705

SHEET 2 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK UNDERSIDE REPAIRS SPAN B

REVISIONS						SHEET NO.
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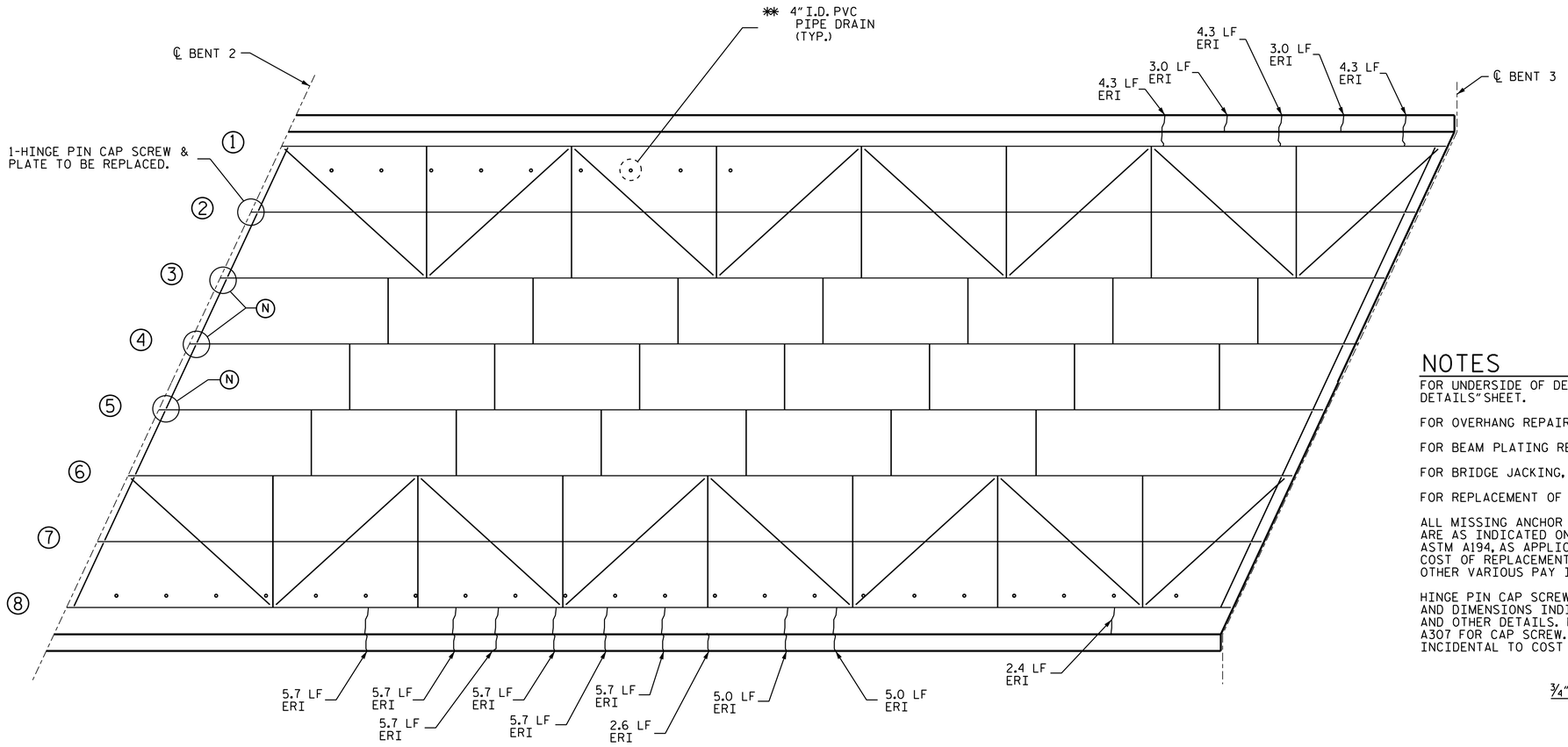
1			3			TOTAL SHEETS
2			4			36



SPAN C
(UNDERSIDE OF DECK)

** THE FIELD ENGINEER SHALL DETERMINE THE ACTUAL NUMBER OF REPAIR LOCATIONS. 11 LOCATIONS NOTED DURING FIELD EVALUATION. ESTIMATE QUANTITY, 1.1 CF OF SHOTCRETE EACH LOCATION ADDED TO "UNDERSIDE OF DECK" IN QUANTITY TABLE.

AS-BUILT REPAIR QUANTITY TABLE

DECK UNDERSIDE REPAIRS - SPAN C

	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
UNDERSIDE OF DECK	12.1	5.0		
CONCRETE DIAPHRAGM	0.0	0.0		
OVERHANG	0.0	0.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
UNDERSIDE OF DECK	0.0	0.0		
CONCRETE DIAPHRAGM	0.0	0.0		
OVERHANG	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.		LIN. FT.
UNDERSIDE OF DECK		0.0		
CONCRETE DIAPHRAGM		0.0		
OVERHANG		68.1		

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MINIMUM OF 1" BEHIND REBAR AND MINIMUM 2" CLEARANCE TO SAWCUT. SEE "OVERHANG, DIAPHRAGM AND BRIDGE RAIL REPAIR DETAILS" SHEET.

NOTES

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

FOR OVERHANG REPAIRS, SEE "OVERHANG, DIAPHRAGM AND BRIDGE RAIL REPAIR DETAILS" SHEET.

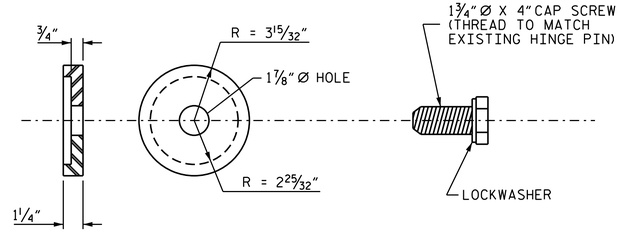
FOR BEAM PLATING REPAIR, SEE "BEAM PLATING REPAIR DETAILS" SHEETS.

FOR BRIDGE JACKING, SEE "JACKING DETAILS" SHEET.

FOR REPLACEMENT OF HINGE PIN CAP SCREW AND WASHER, SEE SPECIAL PROVISIONS.

ALL MISSING ANCHOR BOLT NUTS SHALL BE REPLACED. ANTICIPATED LOCATIONS AND QUANTITIES ARE AS INDICATED ON PLAN SHEETS. THE CONTRACTOR SHALL FIELD VERIFY. NUTS SHALL BE ASTM A194, AS APPLICABLE, OR ASTM A563 AND SIZE AND THREADS SHALL MATCH EXISTING. COST OF REPLACEMENT OF ANCHOR BOLT NUTS SHALL BE CONSIDERED INCIDENTAL TO COST OF OTHER VARIOUS PAY ITEMS.

HINGE PIN CAP SCREW AND PLATE SHALL BE FABRICATED OR SUPPLIED TO MEET THE GEOMETRY AND DIMENSIONS INDICATED. THE CONTRACTOR SHALL FIELD VERIFY DIMENSIONS AND GEOMETRIES AND OTHER DETAILS. MATERIAL SHALL BE MINIMUM GRADE A36 STEEL FOR PLATE AND ASTM A307 FOR CAP SCREW. COST OF HINGE PIN CAP SCREW AND PLATE SHALL BE CONSIDERED INCIDENTAL TO COST OF OTHER VARIOUS PAY ITEMS.



HINGE PIN CAP SCREW & PLATE DETAIL

BEAM REPAIR QUANTITY TABLE

STEEL PLATES		STIFFENER		STEEL DIAPHRAGM		BRIDGE JACKING		ANCHOR BOLT NUT	
LBS.		LBS.		LBS.		EA.		EA.	
ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL
0.0		0.0		0.0		0		4	

ANTICIPATED STEEL REPAIR LOCATIONS

SPAN	BEAM	LOCATION	DIM "A"	DIM "B"	DIM "E"	DIM "F"

SHOTCRETE REPAIR AREA

ERI - EPOXY RESIN INJECTION

(I) BEAM NUMBER
(B) BEAM END REPAIR
(P) PLATING REPAIR
(S) STIFFENER REPAIR
(C) CONNECTOR PLATE REPAIR
(D) STEEL CROSSFRAME REPLACEMENT HORIZONAL ST4 WF8.5
(F) BOTTOM FLANGE REPAIR
(N) ANCHOR BOLT NUT REPLACEMENT
(K) STEEL ANGLE KEEPER ASSEMBLY

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

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PROJECT NO. 15BPR.40
BUNCOMBE COUNTY
BRIDGE NO. 100705

SHEET 3 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK UNDERSIDE REPAIRS SPAN C

REVISIONS						SHEET NO.
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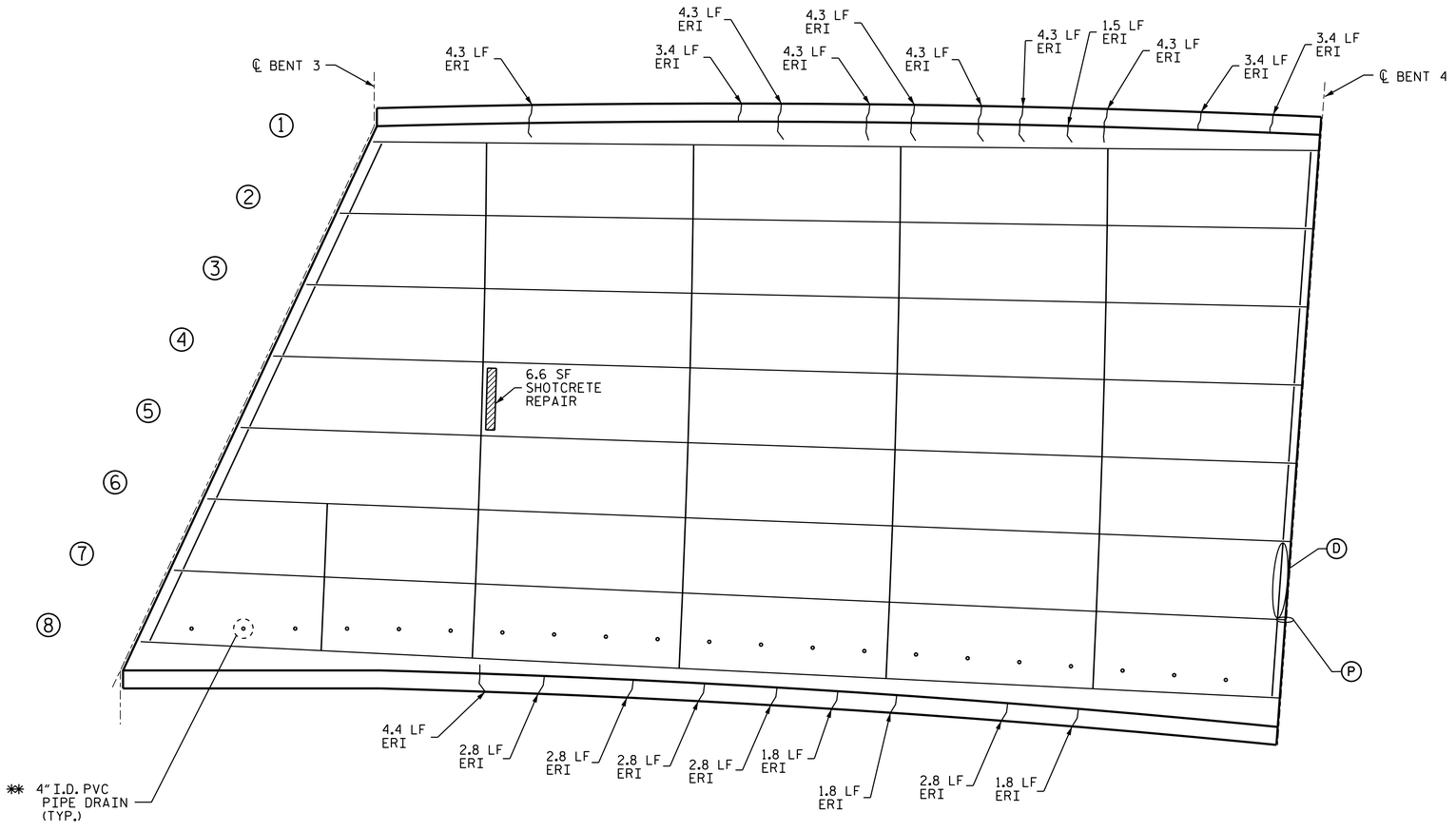
1			3			TOTAL SHEETS
2			4			36



SPAN D
(UNDERSIDE OF DECK)

✱✱ THE FIELD ENGINEER SHALL DETERMINE THE ACTUAL NUMBER OF REPAIR LOCATIONS. 16 LOCATIONS NOTED DURING FIELD EVALUATION. ESTIMATE QUANTITY, 1.1 CF OF SHOTCRETE EACH LOCATION ADDED TO "UNDERSIDE OF DECK" IN QUANTITY TABLE.

AS-BUILT REPAIR QUANTITY TABLE

DECK UNDERSIDE REPAIRS - SPAN D

	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
UNDERSIDE OF DECK	24.2	10.1		
CONCRETE DIAPHRAGM	0.0	0.0		
OVERHANG	0.0	0.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
UNDERSIDE OF DECK	0.0	0.0		
CONCRETE DIAPHRAGM	0.0	0.0		
OVERHANG	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.		LIN. FT.
UNDERSIDE OF DECK		0.0		
CONCRETE DIAPHRAGM		0.0		
OVERHANG		65.6		

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MINIMUM OF 1" BEHIND REBAR AND MINIMUM 2" CLEARANCE TO SAWCUT. SEE "OVERHANG, DIAPHRAGM AND BRIDGE RAIL REPAIR DETAILS" SHEET.

NOTES

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

FOR OVERHANG REPAIRS, SEE "OVERHANG, DIAPHRAGM AND BRIDGE RAIL REPAIR DETAILS" SHEET.

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

FOR BRIDGE JACKING, SEE "JACKING DETAILS" SHEET.

FOR REPLACEMENT OF HINGE PIN CAP SCREW AND WASHER, SEE SPECIAL PROVISIONS.

ALL MISSING ANCHOR BOLT NUTS SHALL BE REPLACED. ANTICIPATED LOCATIONS AND QUANTITIES ARE AS INDICATED ON PLAN SHEETS. THE CONTRACTOR SHALL FIELD VERIFY. NUTS SHALL BE ASTM A194, AS APPLICABLE, OR ASTM A563 AND SIZE AND THREADS SHALL MATCH EXISTING. COST OF REPLACEMENT OF ANCHOR BOLT NUTS SHALL BE CONSIDERED INCIDENTAL TO COST OF OTHER VARIOUS PAY ITEMS.

FOR HINGE PIN CAP SCREW & PLATE DETAILS, SEE SHEET S-48.

HINGE PIN CAP SCREW AND PLATE SHALL BE FABRICATED OR SUPPLIED TO MEET THE GEOMETRY AND DIMENSIONS INDICATED. THE CONTRACTOR SHALL FIELD VERIFY DIMENSIONS AND GEOMETRIES AND OTHER DETAILS. MATERIAL SHALL BE MINIMUM GRADE A36 STEEL FOR PLATE AND ASTM A307 FOR CAP SCREW. COST OF HINGE PIN CAP SCREW AND PLATE SHALL BE CONSIDERED INCIDENTAL TO COST OF OTHER VARIOUS PAY ITEMS.

ANTICIPATED STEEL REPAIR LOCATIONS

SPAN	BEAM	LOCATION	DIM "A"	DIM "B"	DIM "E"	DIM "F"
D	G7	BENT 4		4½"	5"	
D		BENT 4				

BEAM REPAIR QUANTITY TABLE

STEEL PLATES		STIFFENER		STEEL DIAPHRAGM		BRIDGE JACKING		ANCHOR BOLT NUT	
LBS.		LBS.		LBS.		EA.		EA.	
ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL
5.6		0.0		72.2		0		0	

SHOTCRETE REPAIR AREA

ERI - EPOXY RESIN INJECTION

(1) BEAM NUMBER
(B) BEAM END REPAIR
(P) PLATING REPAIR
(S) STIFFENER REPAIR
(C) CONNECTOR PLATE REPAIR
(D) STEEL CROSSFRAME REPLACEMENT HORIZONAL ST4 WF8.5
(F) BOTTOM FLANGE REPAIR
(N) ANCHOR BOLT NUT REPLACEMENT
(K) STEEL ANGLE KEEPER ASSEMBLY

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

DocuSigned by: Amber Lee B04B5A4F2FAD484...

5/29/2019

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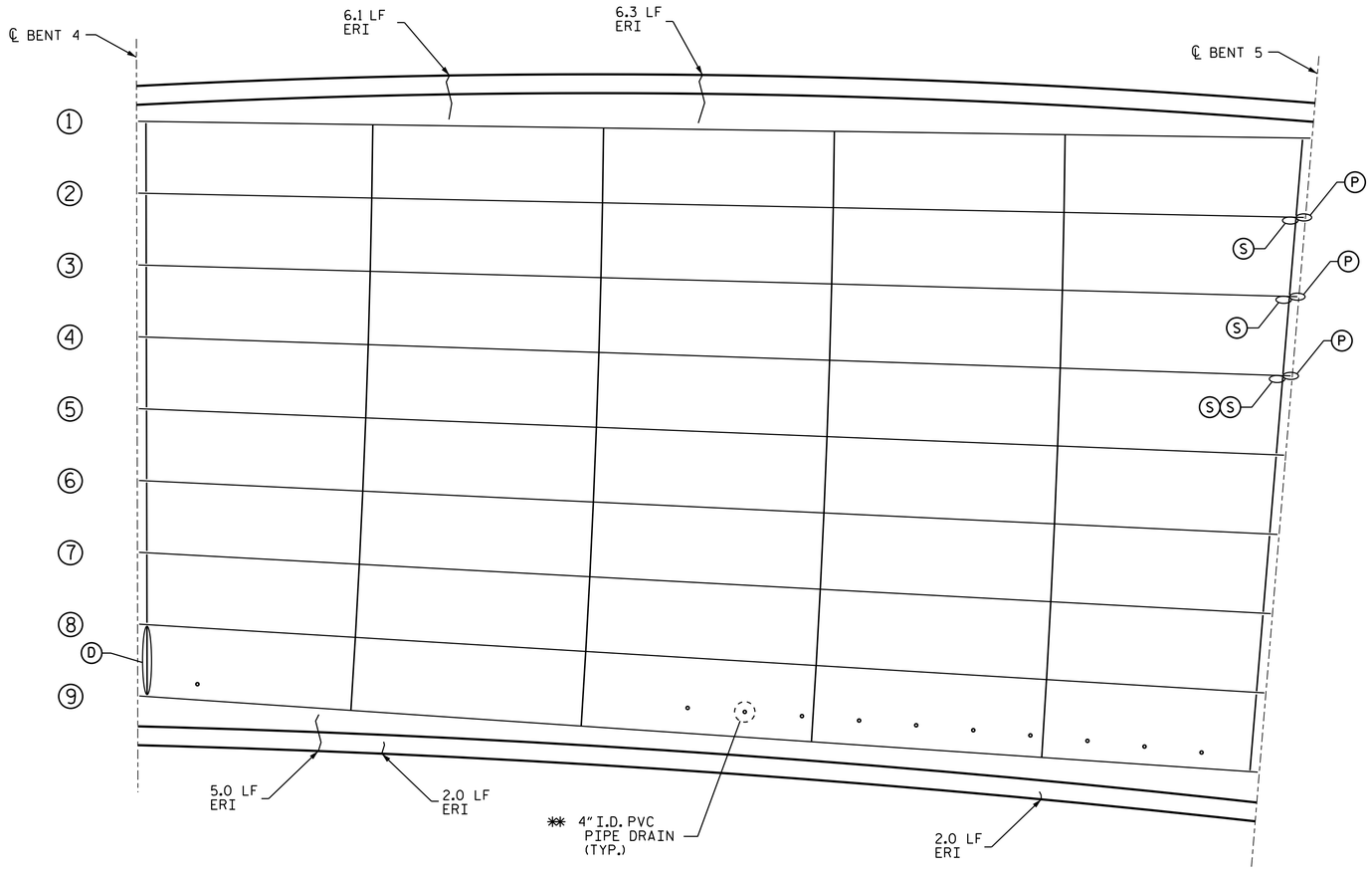
PROJECT NO. 15BPR.40
BUNCOMBE COUNTY
BRIDGE NO. 100705

SHEET 4 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK UNDERSIDE REPAIRS SPAN D

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-16
1			3			TOTAL SHEETS
2			4			36



SPAN E

(UNDERSIDE OF DECK)

✱✱ THE FIELD ENGINEER SHALL DETERMINE THE ACTUAL NUMBER OF REPAIR LOCATIONS. 7 LOCATIONS NOTED DURING FIELD EVALUATION. ESTIMATE QUANTITY, 1.1 CF OF SHOTCRETE EACH LOCATION ADDED TO "UNDERSIDE OF DECK" IN QUANTITY TABLE.

AS-BUILT REPAIR QUANTITY TABLE

DECK UNDERSIDE REPAIRS - SPAN E

	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
UNDERSIDE OF DECK	7.7	3.2		
CONCRETE DIAPHRAGM	0.0	0.0		
OVERHANG	0.0	0.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
UNDERSIDE OF DECK	0.0	0.0		
CONCRETE DIAPHRAGM	0.0	0.0		
OVERHANG	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.		LIN. FT.
UNDERSIDE OF DECK		0.0		
CONCRETE DIAPHRAGM		0.0		
OVERHANG		21.4		

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MINIMUM OF 1" BEHIND REBAR AND MINIMUM 2" CLEARANCE TO SAWCUT. SEE "OVERHANG, DIAPHRAGM AND BRIDGE RAIL REPAIR DETAILS" SHEET.

NOTES

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

FOR OVERHANG REPAIRS, SEE "OVERHANG, DIAPHRAGM AND BRIDGE RAIL REPAIR DETAILS" SHEET.

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

FOR BRIDGE JACKING, SEE "JACKING DETAILS" SHEET.

FOR REPLACEMENT OF HINGE PIN CAP SCREW AND WASHER, SEE SPECIAL PROVISIONS.

ALL MISSING ANCHOR BOLT NUTS SHALL BE REPLACED. ANTICIPATED LOCATIONS AND QUANTITIES ARE AS INDICATED ON PLAN SHEETS. THE CONTRACTOR SHALL FIELD VERIFY. NUTS SHALL BE ASTM A194, AS APPLICABLE, OR ASTM A563 AND SIZE AND THREADS SHALL MATCH EXISTING. COST OF REPLACEMENT OF ANCHOR BOLT NUTS SHALL BE CONSIDERED INCIDENTAL TO COST OF OTHER VARIOUS PAY ITEMS.

FOR HINGE PIN CAP SCREW & PLATE DETAILS, SEE SHEET S-48.

HINGE PIN CAP SCREW AND PLATE SHALL BE FABRICATED OR SUPPLIED TO MEET THE GEOMETRY AND DIMENSIONS INDICATED. THE CONTRACTOR SHALL FIELD VERIFY DIMENSIONS AND GEOMETRIES AND OTHER DETAILS. MATERIAL SHALL BE MINIMUM GRADE A36 STEEL FOR PLATE AND ASTM A307 FOR CAP SCREW. COST OF HINGE PIN CAP SCREW AND PLATE SHALL BE CONSIDERED INCIDENTAL TO COST OF OTHER VARIOUS PAY ITEMS.

ANTICIPATED STEEL REPAIR LOCATIONS

SPAN	BEAM	LOCATION	DIM "A"	DIM "B"	DIM "E"	DIM "F"
E		BENT 4				
E	G2	BENT 5		6½"		2"
E	G2	BENT 5		4½"	3"	
E	G3	BENT 5		6½"		2"
E	G3	BENT 5		4½"	3"	
E	G4	BENT 5		6½"		2"
E	G4	BENT 5	1'-3"	6½"		
E	G4	BENT 5		4½"	3"	

BEAM REPAIR QUANTITY TABLE

STEEL PLATES LBS.		STIFFENER LBS.		STEEL DIAPHRAGM LBS.		BRIDGE JACKING EA.		ANCHOR BOLT NUT EA.	
ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL
17.3		29.1		72.2		0		0	

SHOTCRETE REPAIR AREA

ERI - EPOXY RESIN INJECTION

(1) BEAM NUMBER
(B) BEAM END REPAIR
(P) PLATING REPAIR
(S) STIFFENER REPAIR
(C) CONNECTOR PLATE REPAIR
(D) STEEL CROSSFRAME REPLACEMENT HORIZONAL ST4 WF8.5
(F) BOTTOM FLANGE REPAIR
(N) ANCHOR BOLT NUT REPLACEMENT
(K) STEEL ANGLE KEEPER ASSEMBLY

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

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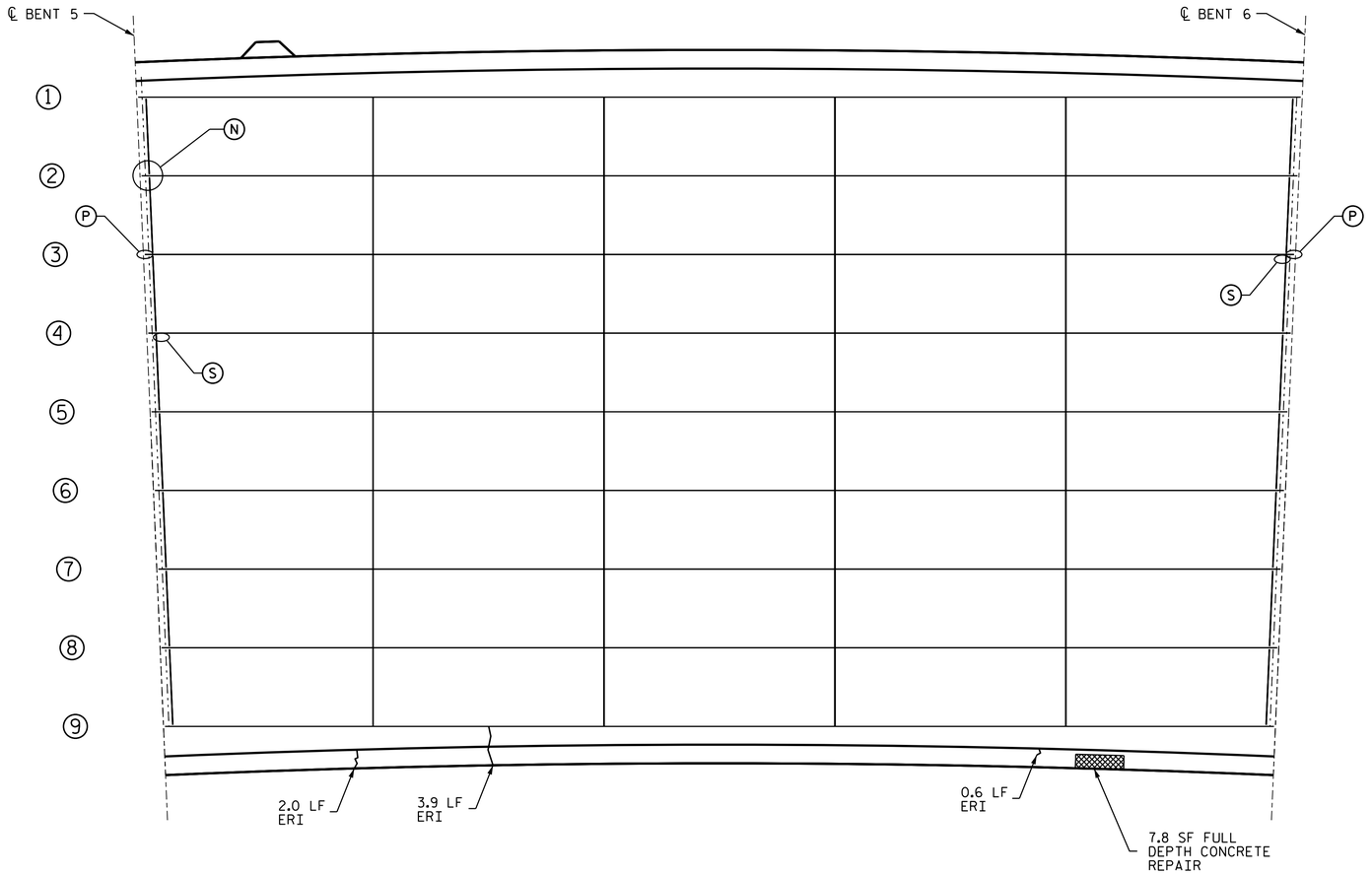
PROJECT NO. 15BPR.40
BUNCOMBE COUNTY
BRIDGE NO. 100705

SHEET 5 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK UNDERSIDE REPAIRS SPAN E

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-17
1			3			TOTAL SHEETS
2			4			36



SPAN F
(UNDERSIDE OF DECK)

AS-BUILT REPAIR QUANTITY TABLE

DECK UNDERSIDE REPAIRS - SPAN F

	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
UNDERSIDE OF DECK	0.0	0.0		
CONCRETE DIAPHRAGM	0.0	0.0		
OVERHANG	0.0	0.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
UNDERSIDE OF DECK	0.0	0.0		
CONCRETE DIAPHRAGM	0.0	0.0		
OVERHANG	7.8	5.9		
EPOXY RESIN INJECTION		LIN. FT.		LIN. FT.
UNDERSIDE OF DECK		0.0		
CONCRETE DIAPHRAGM		0.0		
OVERHANG		6.5		

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE. MINIMUM OF 1" BEHIND REBAR AND MINIMUM 2" CLEARANCE TO SAWCUT. SEE "OVERHANG, DIAPHRAGM AND BRIDGE RAIL REPAIR DETAILS" SHEET.

NOTES

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

FOR OVERHANG REPAIRS, SEE "OVERHANG, DIAPHRAGM AND BRIDGE RAIL REPAIR DETAILS" SHEET.

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

FOR BRIDGE JACKING, SEE "JACKING DETAILS" SHEET.

FOR REPLACEMENT OF HINGE PIN CAP SCREW AND WASHER, SEE SPECIAL PROVISIONS.

ALL MISSING ANCHOR BOLT NUTS SHALL BE REPLACED. ANTICIPATED LOCATIONS AND QUANTITIES ARE AS INDICATED ON PLAN SHEETS. THE CONTRACTOR SHALL FIELD VERIFY. NUTS SHALL BE ASTM A194, AS APPLICABLE, OR ASTM A563 AND SIZE AND THREADS SHALL MATCH EXISTING. COST OF REPLACEMENT OF ANCHOR BOLT NUTS SHALL BE CONSIDERED INCIDENTAL TO COST OF OTHER VARIOUS PAY ITEMS.

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BEAM REPAIR QUANTITY TABLE

STEEL PLATES		STIFFENER		STEEL DIAPHRAGM		BRIDGE JACKING		ANCHOR BOLT NUT	
LBS.		LBS.		LBS.		EA.		EA.	
ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL
15.4		19.0		0.0		0		1	

ANTICIPATED STEEL REPAIR LOCATIONS

SPAN	BEAM	LOCATION	DIM "A"	DIM "B"	DIM "E"	DIM "F"
F	G3	BENT 5		4½"	3"	
F	G4	BENT 5		6½"		4"
F	G3	BENT 6	5"	5"		
F	G3	BENT 6		6½"		5"

CONCRETE REPAIR AREA

SHOTCRETE REPAIR AREA

ERI - EPOXY RESIN INJECTION

(1) BEAM NUMBER
(B) BEAM END REPAIR
(P) PLATING REPAIR
(S) STIFFENER REPAIR
(C) CONNECTOR PLATE REPAIR
(D) STEEL CROSSFRAME REPLACEMENT HORIZONAL ST4 WF8.5
(F) BOTTOM FLANGE REPAIR
(N) ANCHOR BOLT NUT REPLACEMENT
(K) STEEL ANGLE KEEPER ASSEMBLY

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

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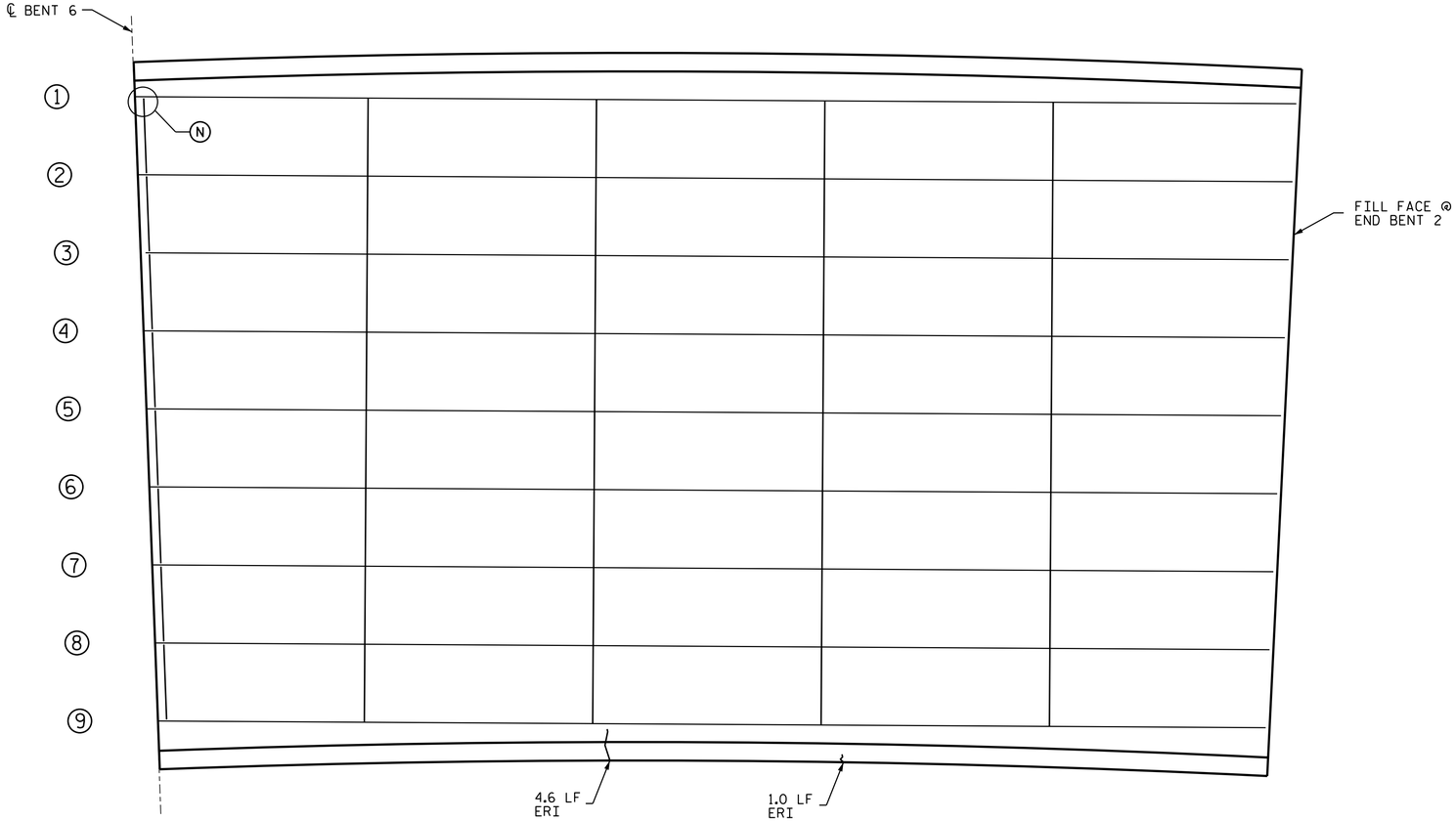
PROJECT NO. 15BPR.40
BUNCOMBE COUNTY
BRIDGE NO. 100705

SHEET 6 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK UNDERSIDE REPAIRS SPAN F

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-18
1			3			TOTAL SHEETS
2			4			36



SPAN G

(UNDERSIDE OF DECK)

AS-BUILT REPAIR QUANTITY TABLE

DECK UNDERSIDE REPAIRS - SPAN G

	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
UNDERSIDE OF DECK	0.0	0.0		
CONCRETE DIAPHRAGM	0.0	.0.		
OVERHANG	0.0	0.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
UNDERSIDE OF DECK	0.0	0.0		
CONCRETE DIAPHRAGM	0.0	0.0		
OVERHANG	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.	LIN. FT.	
UNDERSIDE OF DECK		0.0		
CONCRETE DIAPHRAGM		0.0		
OVERHANG		5.6		

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MINIMUM OF 1" BEHIND REBAR AND MINIMUM 2" CLEARANCE TO SAWCUT, SEE "OVERHANG, DIAPHRAGM AND BRIDGE RAIL REPAIR DETAILS" SHEET.

NOTES

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

FOR OVERHANG REPAIRS, SEE "OVERHANG, DIAPHRAGM AND BRIDGE RAIL REPAIR DETAILS" SHEET.

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

FOR BRIDGE JACKING, SEE "JACKING DETAILS" SHEET.

FOR REPLACEMENT OF HINGE PIN CAP SCREW AND WASHER, SEE SPECIAL PROVISIONS.

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BEAM REPAIR QUANTITY TABLE

STEEL PLATES		STIFFENER		STEEL DIAPHRAGM		BRIDGE JACKING		ANCHOR BOLT NUT	
LBS.		LBS.		LBS.		EA.		EA.	
ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL
0.0		0.0		0.0		0		1	

ANTICIPATED STEEL REPAIR LOCATIONS

SPAN	BEAM	LOCATION	DIM "A"	DIM "B"	DIM "E"	DIM "F"

CONCRETE REPAIR AREA

SHOTCRETE REPAIR AREA

ERI - EPOXY RESIN INJECTION

(1) BEAM NUMBER
(B) BEAM END REPAIR
(P) PLATING REPAIR
(S) STIFFENER REPAIR
(C) CONNECTOR PLATE REPAIR
(D) STEEL CROSSFRAME REPLACEMENT HORIZONAL ST4 WF8.5
(F) BOTTOM FLANGE REPAIR
(N) ANCHOR BOLT NUT REPLACMENT
(K) STEEL ANGLE KEEPER ASSEMBLY

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

DocuSigned by: Amber Lee
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amlee

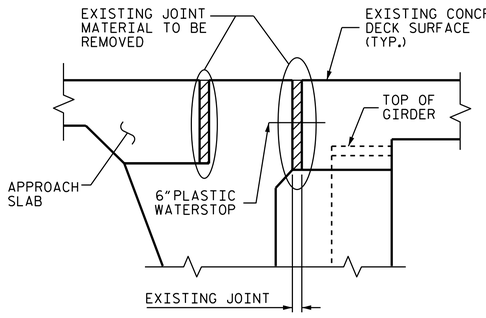
PROJECT NO. 15BPR.40
BUNCOMBE COUNTY
BRIDGE NO. 100705

SHEET 7 OF 7

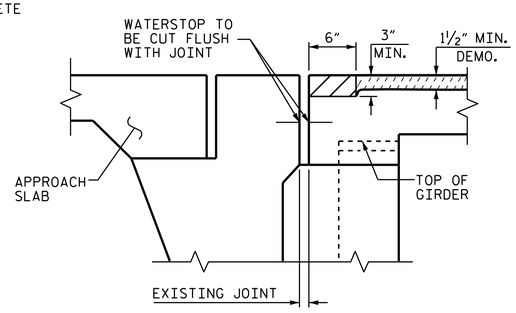
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK UNDERSIDE REPAIRS SPAN G

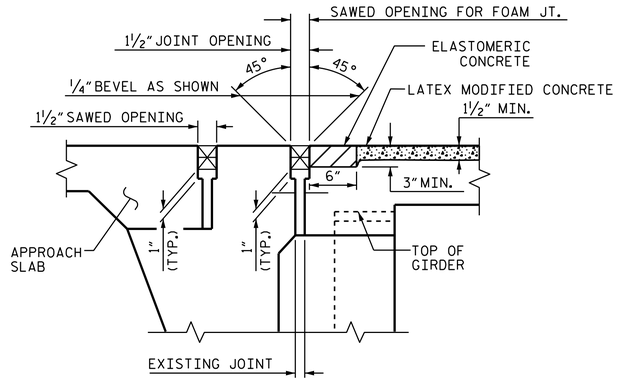
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-19
1			3			TOTAL SHEETS
2			4			36



SECTION A-A
(EXISTING JOINT)



SECTION A-A
(MINIMUM EXISTING JOINT DEMOLITION)



SECTION A-A
(PROPOSED FOAM JOINT SEAL)

NOTES

THE FOAM JOINTS SHALL MEET THE MANUFACTURER'S RECOMMENDATION.

THE UNCOMPRESSED FOAM JOINT SEAL WIDTH 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 ¼", NOTIFY ENGINEER.

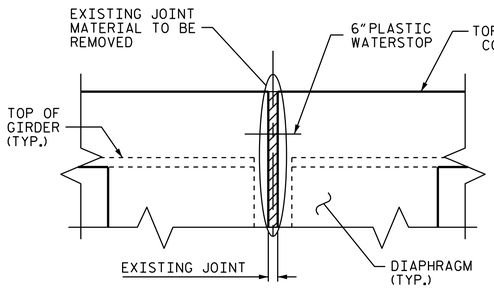
THE INSTALLED FOAM JOINTS SHALL BE WATER TIGHT.

FOR FOAM JOINT SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.

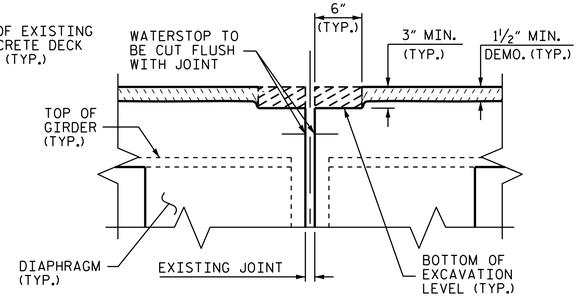
THE CONTRACTOR WILL NOT BE PERMITTED TO FORM THE JOINTS IN LIEU OF SAWING THE JOINT.

FOR SIDEWALK DETAILS, SEE SHEET 3 OF 3.

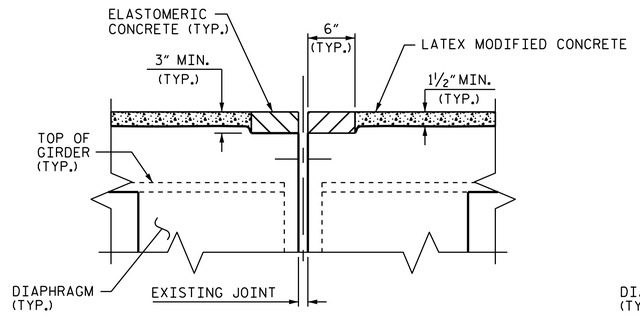
AT END BENT 1



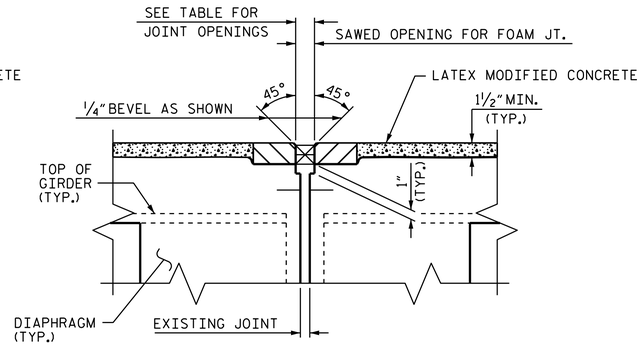
SECTION B-B
(EXISTING JOINT)



SECTION B-B
(MINIMUM EXISTING JOINT DEMOLITION)



SECTION B-B
(PROPOSED JOINT PRE-SAWED)

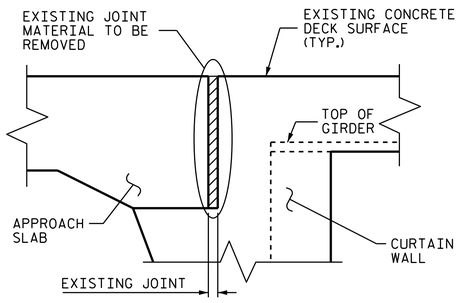


SECTION B-B
(PROPOSED FOAM JOINT SEAL)

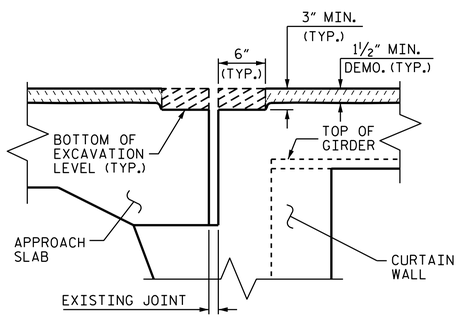
AT BENTS
(AT BENT 4, 5 & 6)

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.

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.

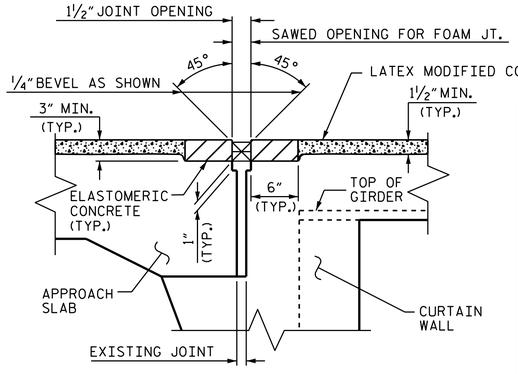


SECTION C-C
(EXISTING JOINT)



SECTION C-C
(MINIMUM EXISTING JOINT DEMOLITION)

AT END BENT 2



SECTION C-C
(PROPOSED FOAM JOINT SEAL)

SAWED JOINT OPENING TABLE			
	SAWED JT. OPENING (PERPINDICULAR TO JT.)		
LOCATION BRIDGE 705	AT 45°	AT 60°	AT 90°
END BENT 1	2⅛"	1 15/16"	1 9/16"
BENT 4	1 11/16"	1 9/16"	1¼"
BENT 5	1 11/16"	1 9/16"	1¼"
BENT 6	1 11/16"	1 9/16"	1¼"

JOINT REPAIR QUANTITY TABLE

	ESTIMATED LIN. FT.	ACTUAL LIN. FT.
FOAM JOINT SEALS FOR PRESERVATION	306.9	
POURABLE SILICONE JOINT SEALANT	0.0	

ELASTOMERIC CONCRETE FOR PRESERVATION

LOCATION	ESTIMATED CU.FT.	ACTUAL CU.FT.
END BENT 1	7.2	
BENT 4	14.4	
BENT 5	16.0	
BENT 6	16.0	
END BENT 2	16.0	
TOTAL	69.6	

PROJECT NO. 15BPR.40

BUNCOMBE COUNTY

BRIDGE NO. 100705

SHEET 1 OF 3

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

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5/29/2019

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

JOINT DETAILS LMC OVERLAY

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-20
1			3			TOTAL SHEETS
2			4			36

DRAWN BY : M. G. SHAIKH DATE : 02/2019

CHECKED BY : A. M. LEE DATE : 03/2019

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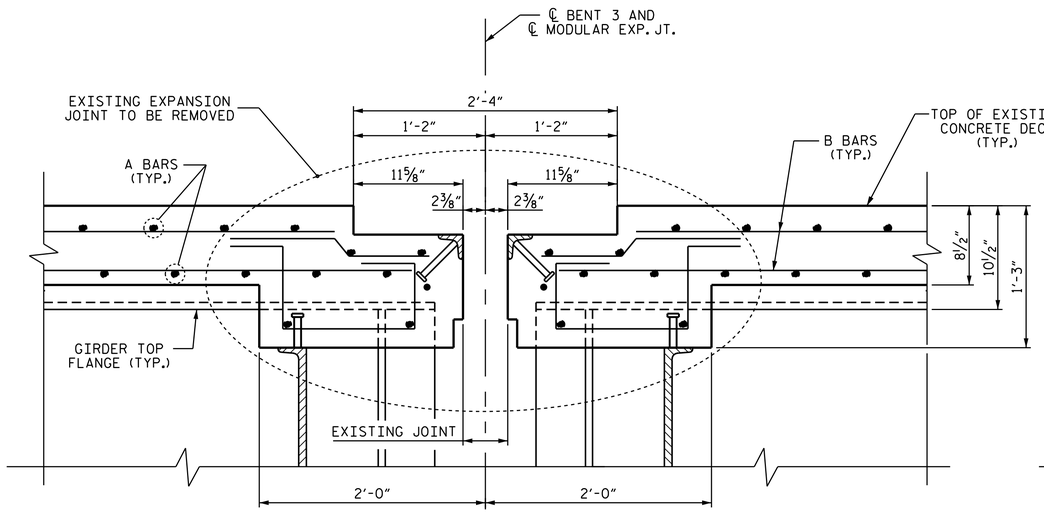
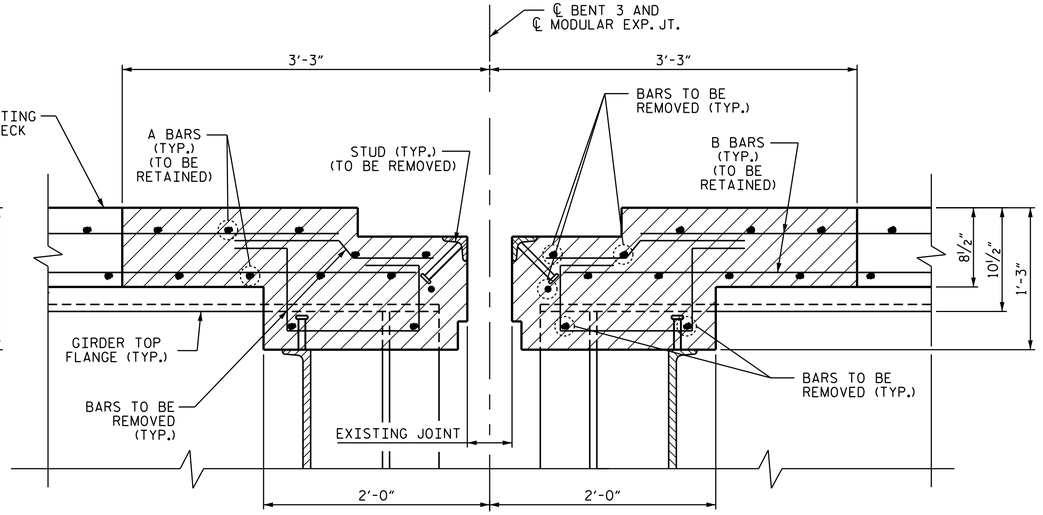


EXISTING MODULAR EXPANSION JOINT DETAIL AT ROADWAY
SECTION D-D



MODULAR EXPANSION JOINT DEMOLITION
SECTION D-D

NOTE

EXISTING MODULAR EXPANSION JOINT DETAIL ARE SHOWN FOR INFORMATION ONLY. ACTUAL FIELD CONDITIONS MAY VARY. THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT IF ACTUAL CONDITIONS VARY FROM WHAT IS SHOWN IN THESE PLANS.

THE CONTRACTOR SHALL HAVE A REPRESENTATIVE FROM THE JOINT MANUFACTURER PRESENT DURING INSTALLATION OF PROPOSED EXPANSION JOINT SEAL.

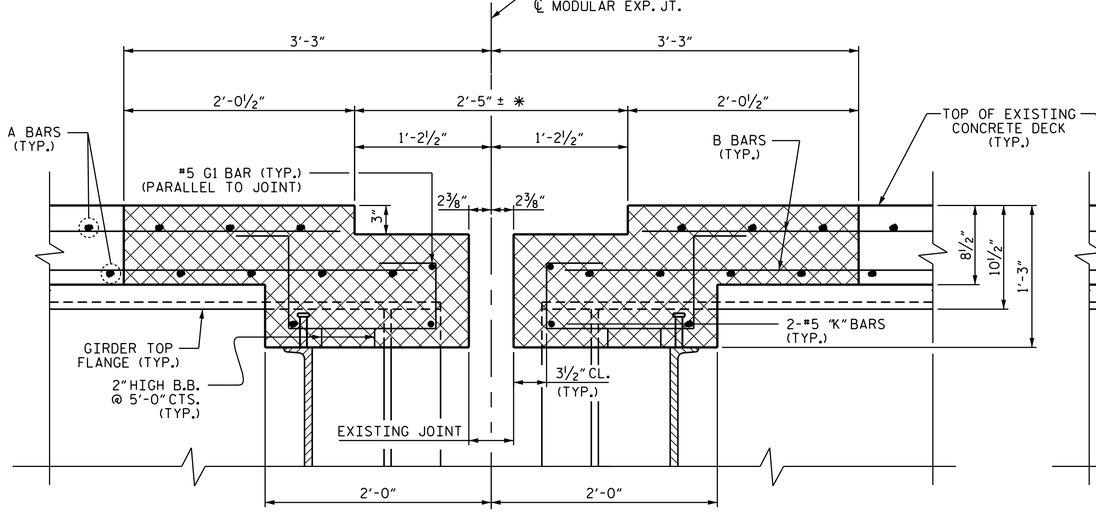
ALL EXPOSED ENDS OF CUT BARS SHALL BE COATED WITH EPOXY PRIOR TO THE NEW JOINT MATERIAL INSTALLATION.

THE CONTRACTOR SHALL PREPARE THE BOTTOM SURFACE OF BLOCKOUT TO BE PARALLEL WITH THE PLANE OF THE ROADWAY AND PROVIDE A UNIFORM SURFACE.

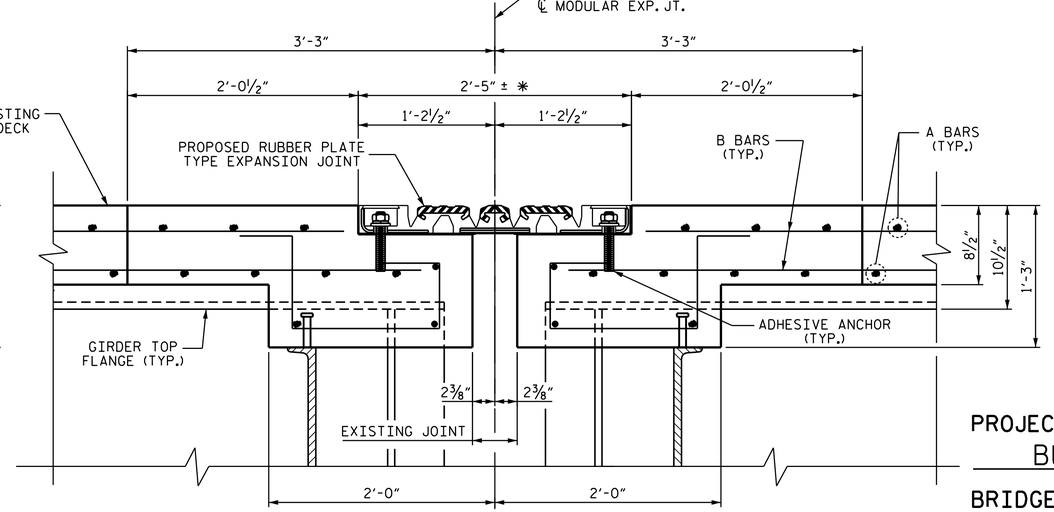
EXISTING CONCRETE TO BE REMOVED

NEW CONCRETE FOR DECK REPAIR

* TO BE VERIFIED BY MANUFACTURER



CONCRETE AND REINFORCING STEEL REPLACEMENT
SECTION D-D



PROPOSED MODULAR EXPANSION JOINT REPAIR
SECTION D-D

MOVEMENT AND SETTING AT JOINT					
BENT NO.	SKEW ANGLE	TOTAL MOVEMENT (ALONG ℄ RDWY)	PERPENDICULAR JOINT OPENING AT 45° F	PERPENDICULAR JOINT OPENING AT 60° F	PERPENDICULAR JOINT OPENING AT 90° F
3	105°	3/16"	3"	2 9/16"	1⅝"

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.

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

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PROJECT NO. 15BPR.40

BUNCOMBE COUNTY

BRIDGE NO. 100705

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

JOINT DETAILS
LMC OVERLAY

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-21
1			3			TOTAL SHEETS
2			4			36

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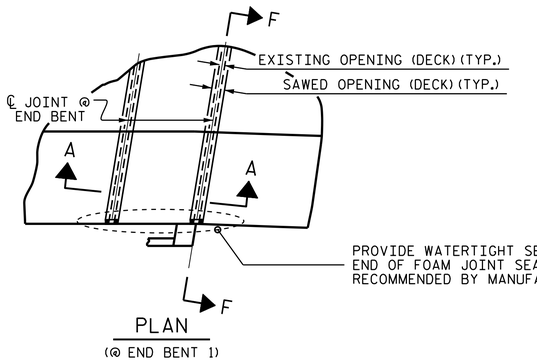
NOTES

EXISTING MODULAR EXPANSION JOINT DETAIL ARE SHOWN FOR INFORMATION ONLY. ACTUAL FIELD CONDITIONS MAY VARY. THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT IF ACTUAL CONDITIONS VARY FROM WHAT IS SHOWN IN THESE PLANS.

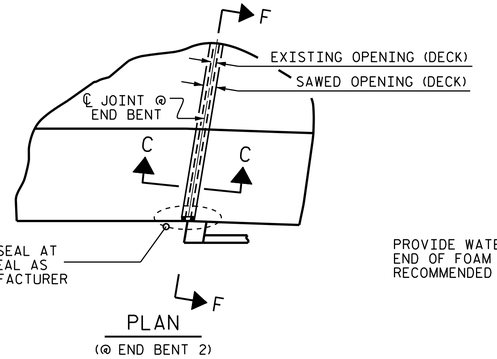
THE CONTRACTOR SHALL HAVE A REPRESENTATIVE FROM THE JOINT MANUFACTURER PRESENT DURING INSTALLATION OF PROPOSED EXPANSION JOINT SEAL.

ALL EXPOSED ENDS OF CUT BARS SHALL BE COATED WITH EPOXY PRIOR TO THE NEW JOINT MATERIAL INSTALLATION.

THE CONTRACTOR SHALL PREPARE THE BOTTOM SURFACE OF BLOCKOUT TO BE PARALLEL WITH THE PLANE OF THE ROADWAY AND PROVIDE A UNIFORM URFACE.



PLAN
(@ END BENT 1)



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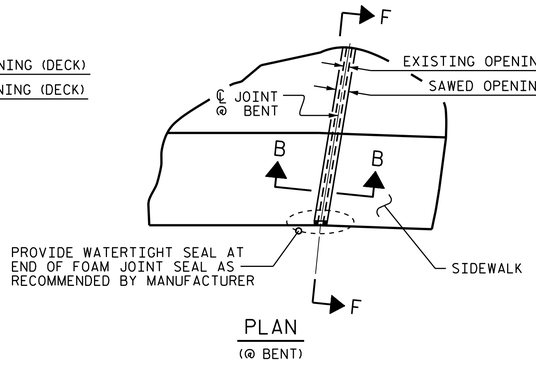
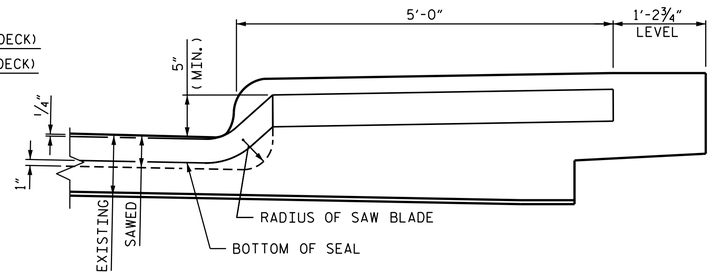


PLAN
(@ BENT)

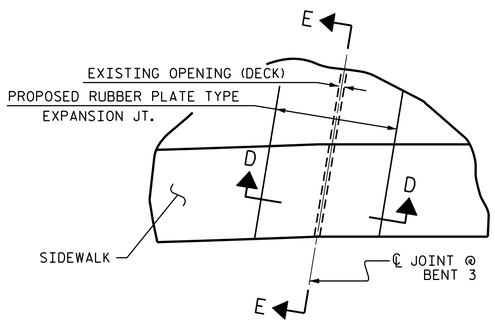


SECTION F-F

FOAM JOINT SEAL DETAILS THRU SIDEWALK

(FOR SECTION A-A, B-B AND C-C, SEE SHEET 1 OF 3)

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.



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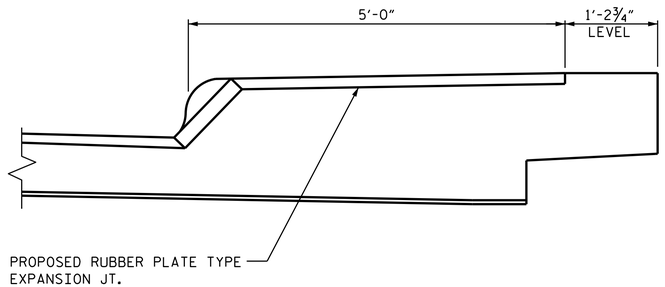

SECTION E-E

MODULAR JOINT SEAL DETAILS THRU SIDEWALK

(FOR SECTION D-D, SEE SHEET 2 OF 3)

PROJECT NO. 15BPR.40
BUNCOMBE COUNTY
BRIDGE NO. 100705

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

JOINT DETAILS LMC OVERLAY

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

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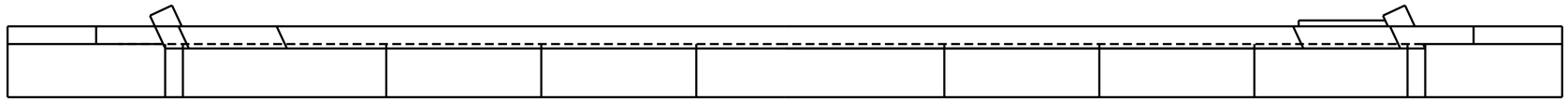

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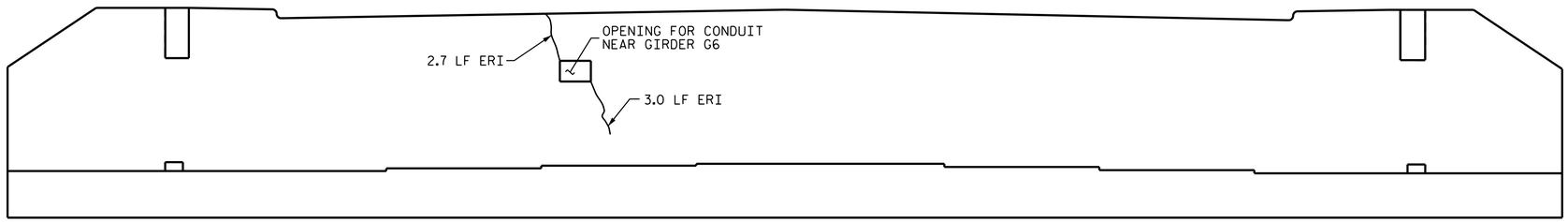

ELEVATION

AS-BUILT REPAIR QUANTITY TABLE

END BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
CURTAIN WALL	0.0	0.0		
WING WALL	0.0	0.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
CURTAIN WALL	0.0	0.0		
WING WALL	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.	LIN. FT.	
CAP		0.0		
CURTAIN WALL		5.7		
WING WALL		0.0		
EPOXY COATING		SQ. FT.	SQ. FT.	
CAP		263.3		

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.40

BUNCOMBE COUNTY

BRIDGE NO. 100705

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIR END BENT 1

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

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REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			36

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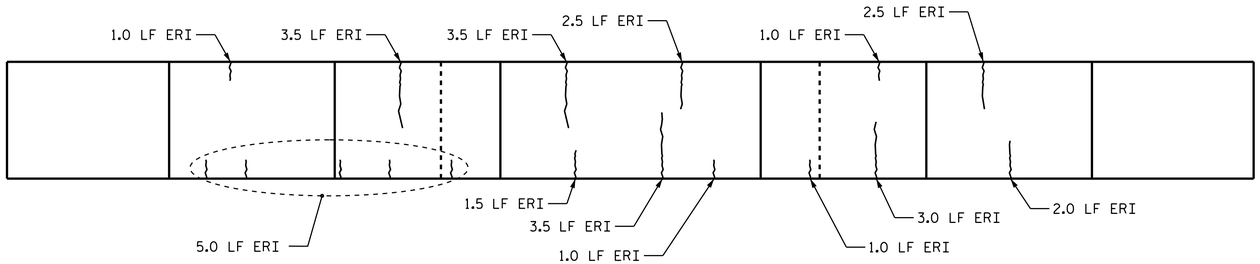
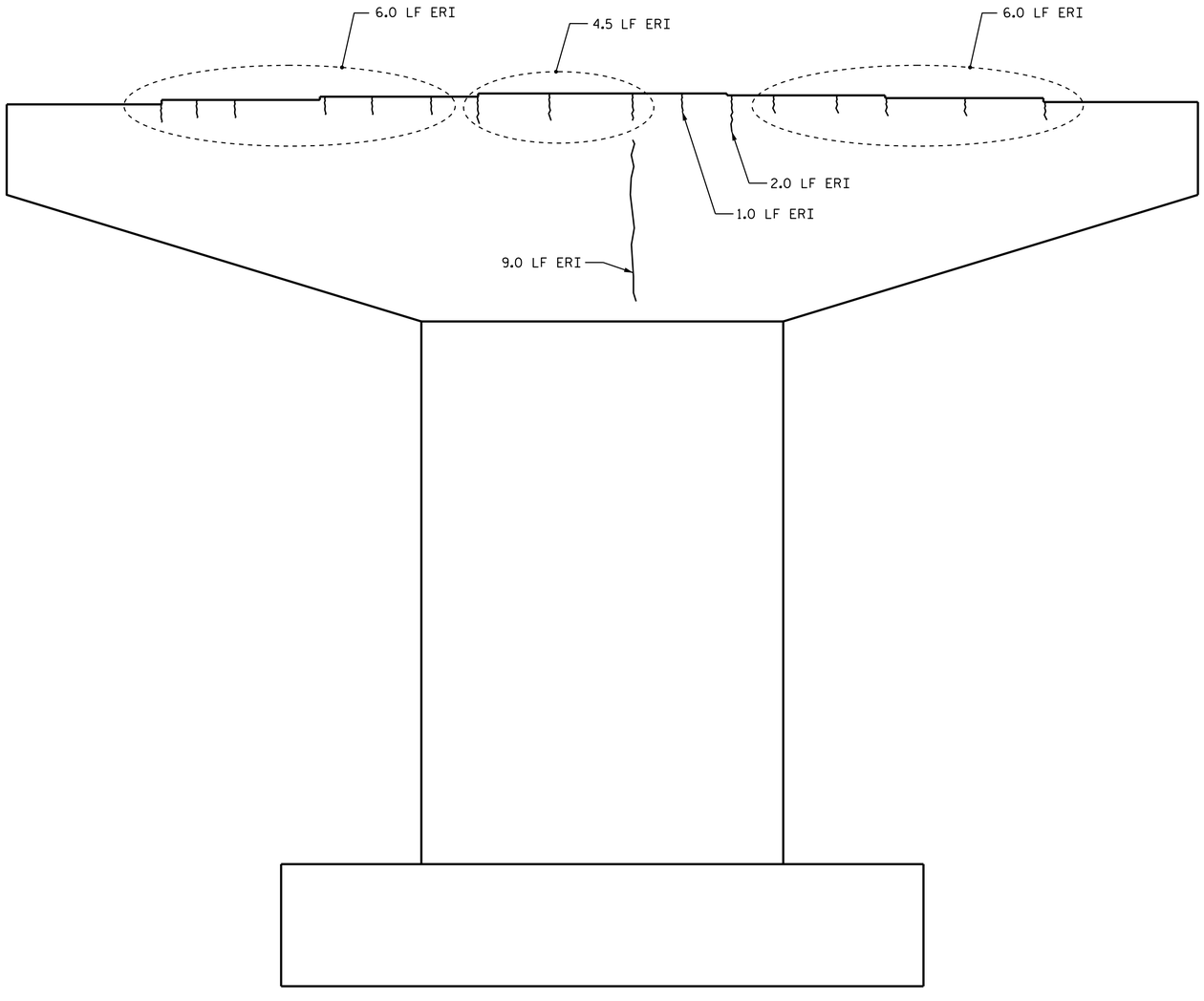


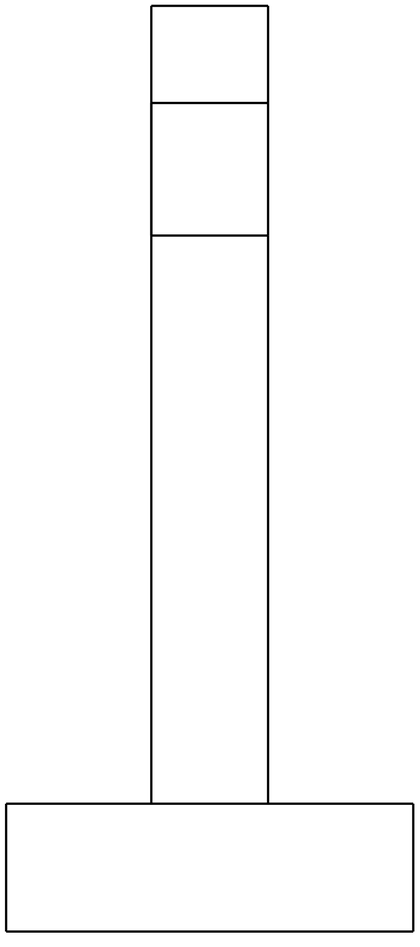
SPAN B
SPAN A

TOP OF CAP



ELEVATION

SPAN A | SPAN B



END VIEW

AS-BUILT REPAIR QUANTITY TABLE

BENT 1 SPAN A FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
COLUMN	0.0	0.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
COLUMN	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.	LIN. FT.	
CAP		59.5		
COLUMN		0.0		
EPOXY COATING		SQ. FT.	SQ. FT.	
TOP OF BENT CAP		406.0		

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 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.40

BUNCOMBE COUNTY

BRIDGE NO. 100705

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIR BENT 1 SPAN A FACE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-24
1			3			TOTAL SHEETS
2			4			36

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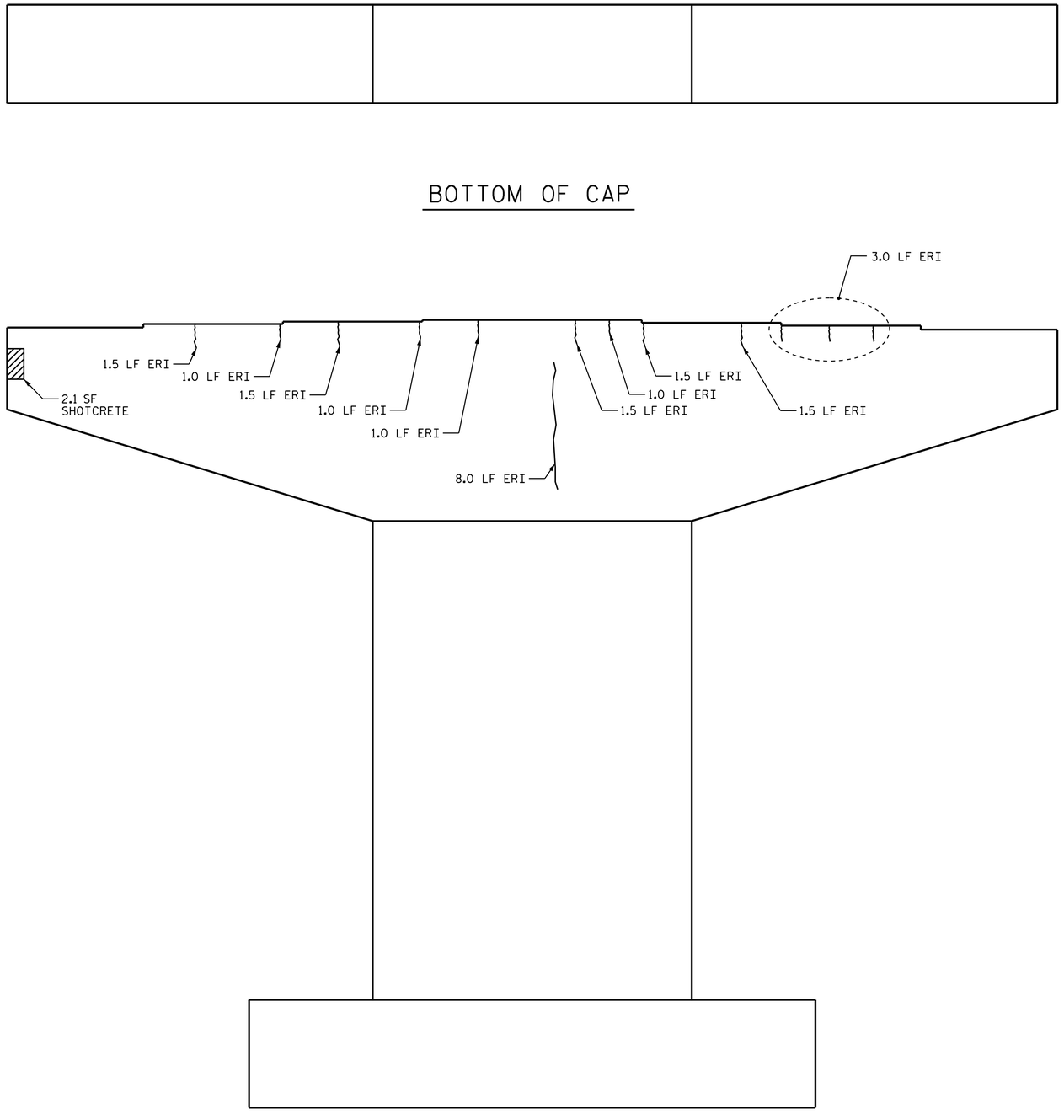
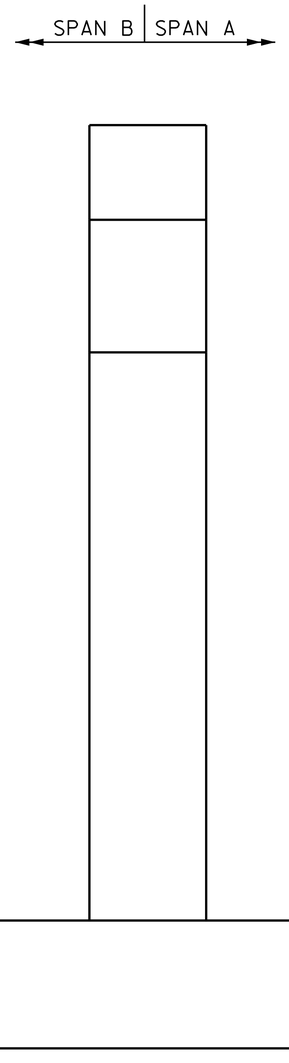


ELEVATION

SPAN B
SPAN A



END VIEW

AS-BUILT REPAIR QUANTITY TABLE

BENT 1 SPAN B FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	2.1	1.1		
COLUMN	0.0	0.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
COLUMN	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.	LIN. FT.	
CAP		22.5		
COLUMN		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.40

BUNCOMBE COUNTY

BRIDGE NO. 100705

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

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RALEIGH

SUBSTRUCTURE REPAIR BENT 1 SPAN B FACE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-25
1			3			TOTAL SHEETS
2			4			36

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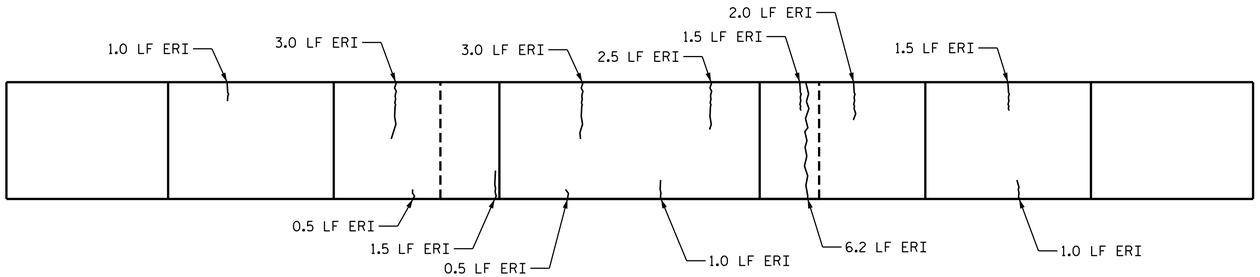
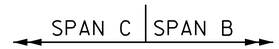
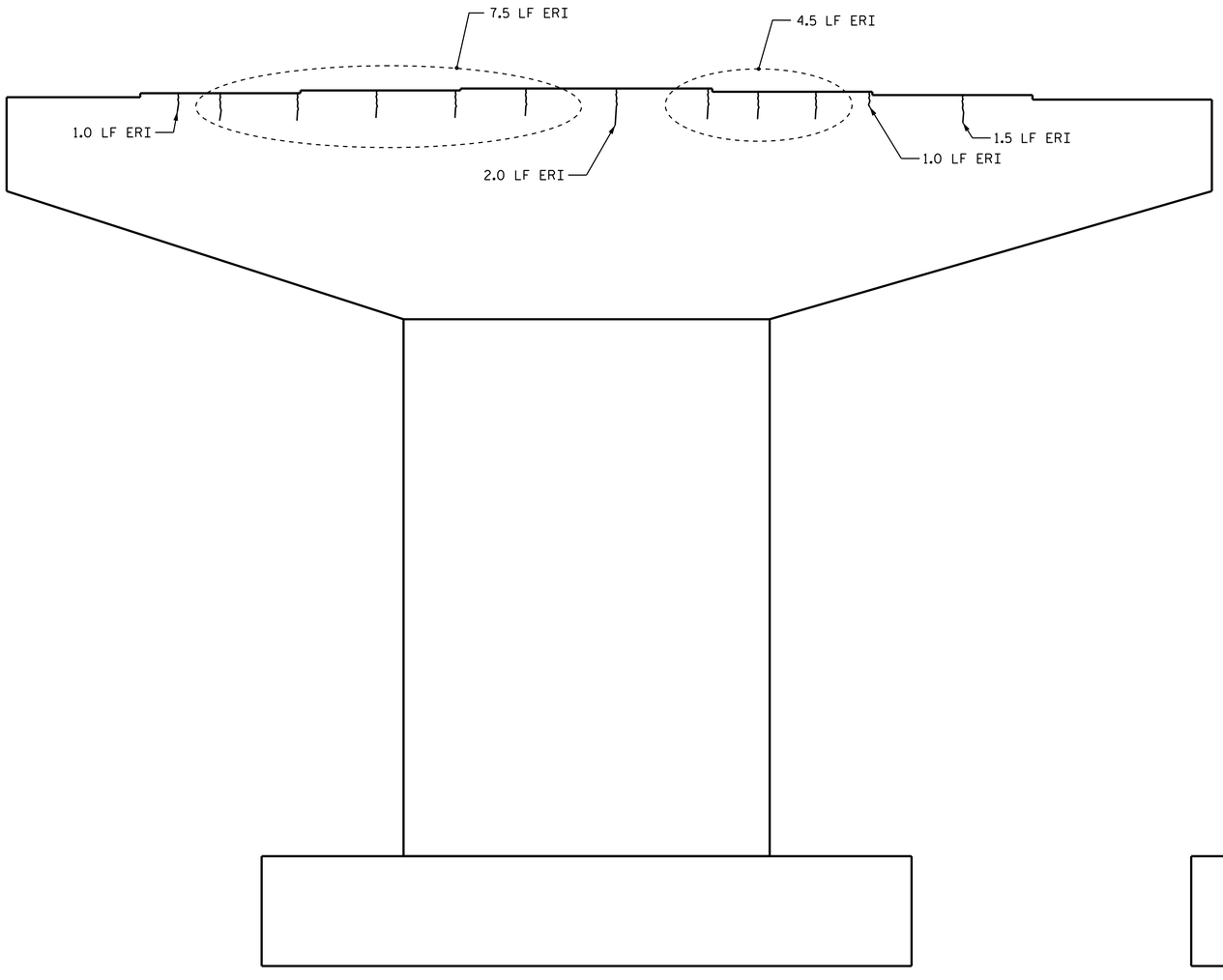


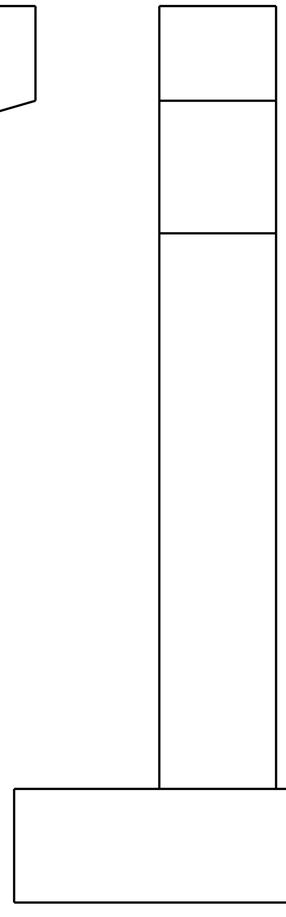
TOP OF CAP

SPAN C
SPAN B





ELEVATION



END VIEW

AS-BUILT REPAIR QUANTITY TABLE

BENT 2 SPAN B FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
COLUMN	0.0	0.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
COLUMN	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.	LIN. FT.	
CAP		42.7		
COLUMN		0.0		
EPOXY COATING		SQ. FT.	SQ. FT.	
TOP OF BENT CAP		406.0		

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 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.40

BUNCOMBE COUNTY

BRIDGE NO. 100705

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIR BENT 2 SPAN B FACE

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

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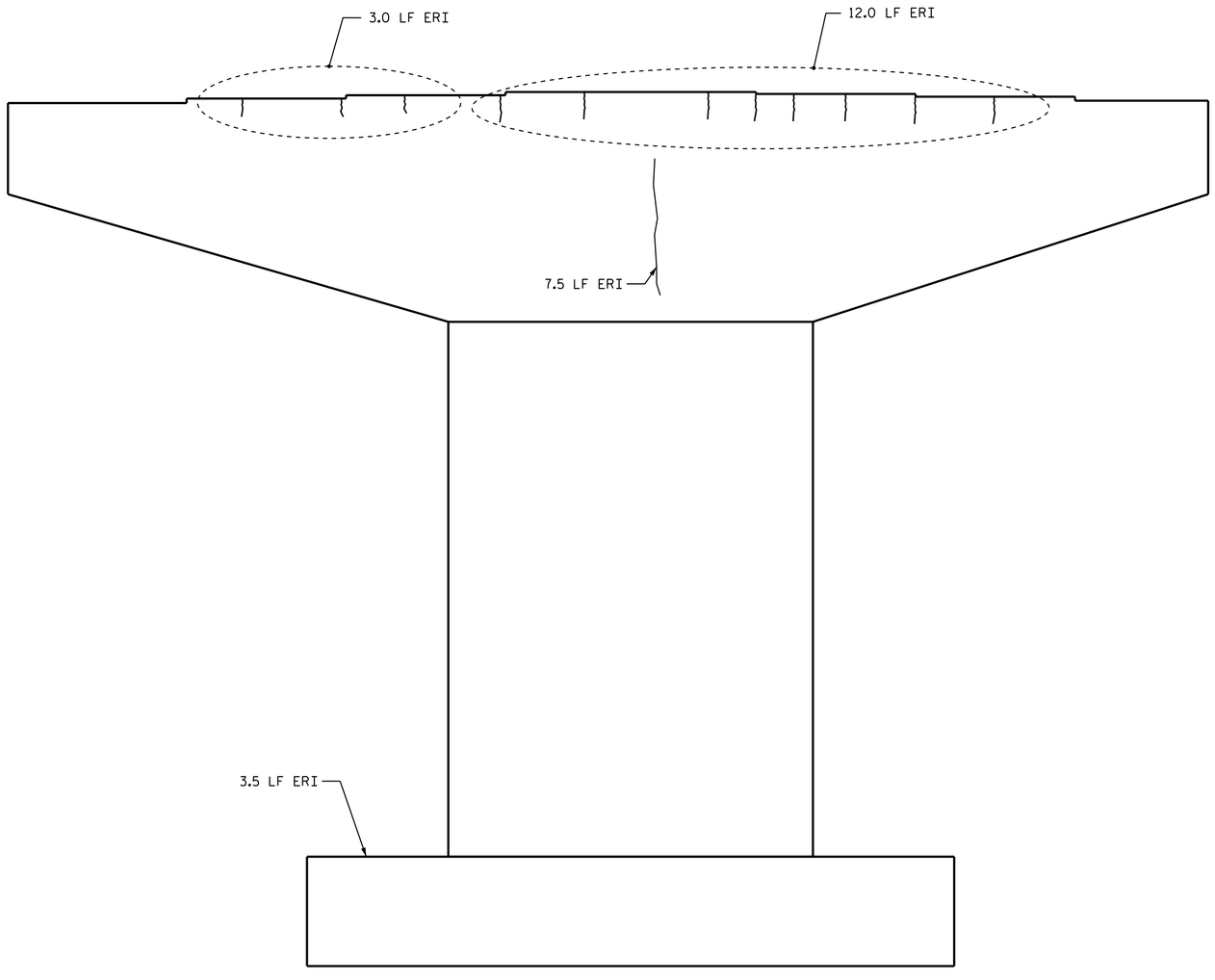
SPAN C
SPAN B

BOTTOM OF CAP



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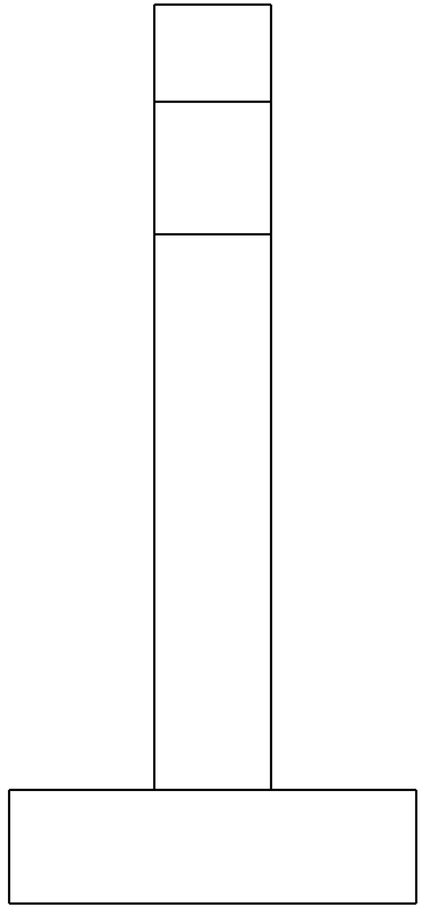
SPAN B | SPAN C



END VIEW

SHOTCRETE REPAIR AREA

CONCRETE REPAIR AREA

ERI - EPOXY RESIN INJECTION

AS-BUILT REPAIR QUANTITY TABLE

BENT 2 SPAN C FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
COLUMN	0.0	0.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
COLUMN	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.	LIN. FT.	
CAP		22.5		
COLUMN		0.0		
FOOTING		3.5		

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.

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

PROJECT NO. 15BPR.40
BUNCOMBE COUNTY
BRIDGE NO. 100705

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIR
BENT 2
SPAN C FACE

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

DocuSigned by:
Amber Lee
B04B5A4F2FAD484...
5/29/2019

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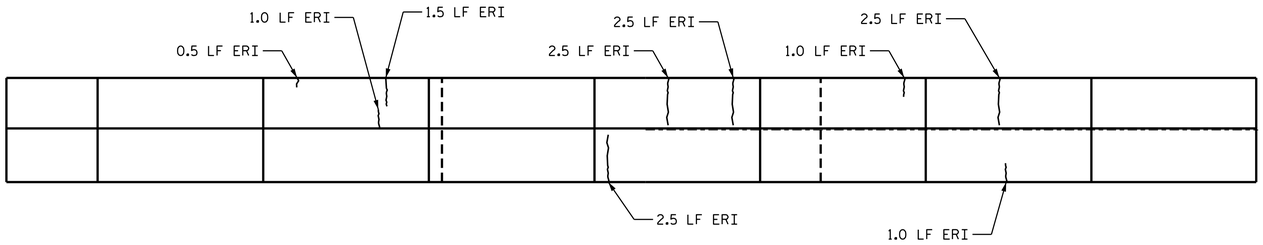
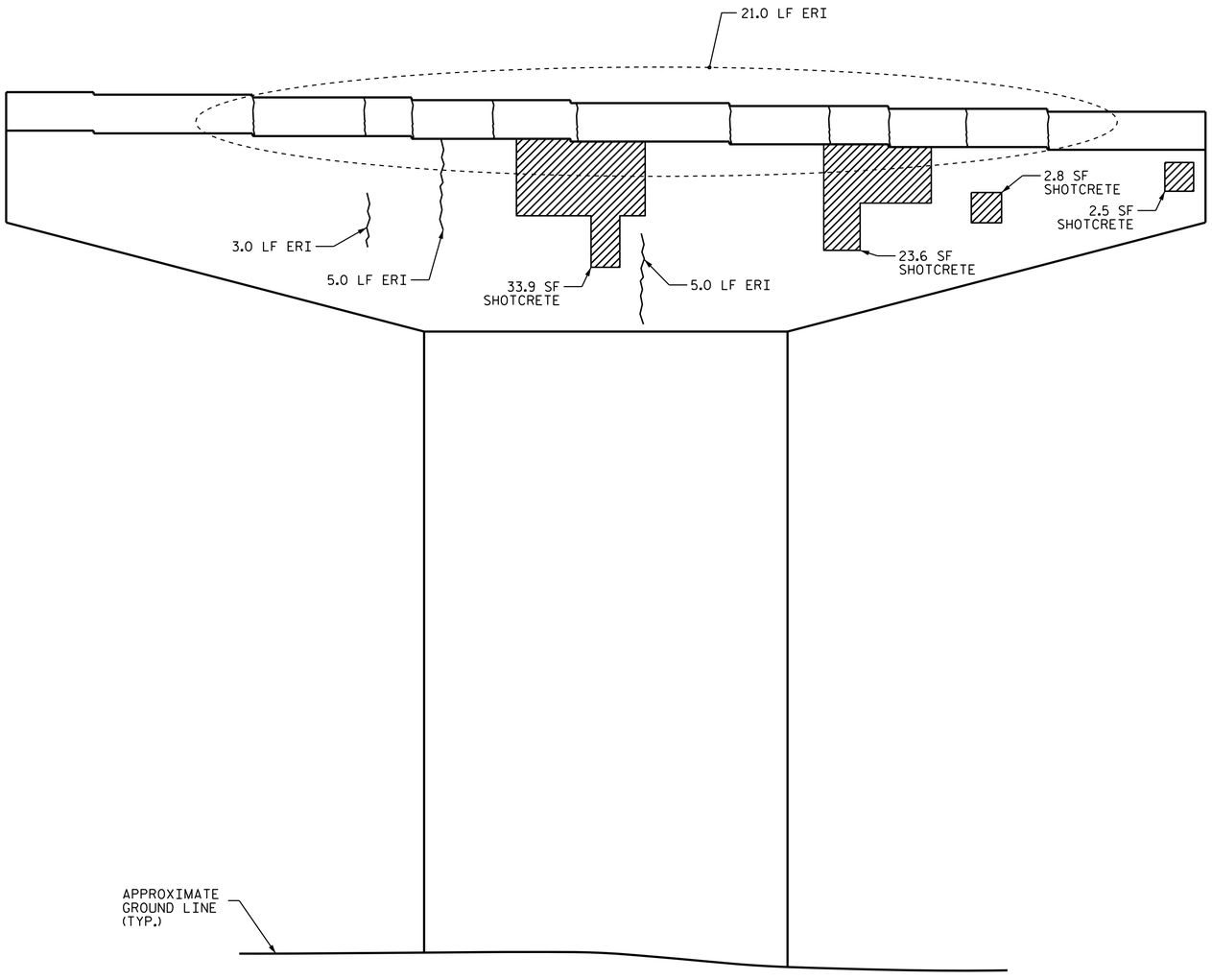


TOP OF CAP

SPAN D
SPAN C

SPAN C | SPAN D



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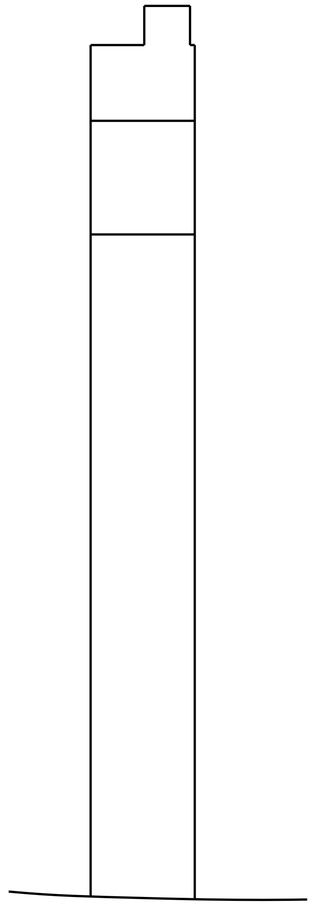

END VIEW

AS-BUILT REPAIR QUANTITY TABLE

BENT 3 SPAN C FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	62.8	31.4		
COLUMN	0.0	0.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
COLUMN	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.	LIN. FT.	
CAP		49.0		
COLUMN		0.0		
EPOXY COATING		SQ. FT.	SQ. FT.	
TOP OF BENT CAP		363.0		

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 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.40

BUNCOMBE COUNTY

BRIDGE NO. 100705

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

DocuSigned by: Amber Lee B04B5A4F2FAD484...

5/29/2019

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIR BENT 3 SPAN C FACE

REVISIONS						SHEET NO.
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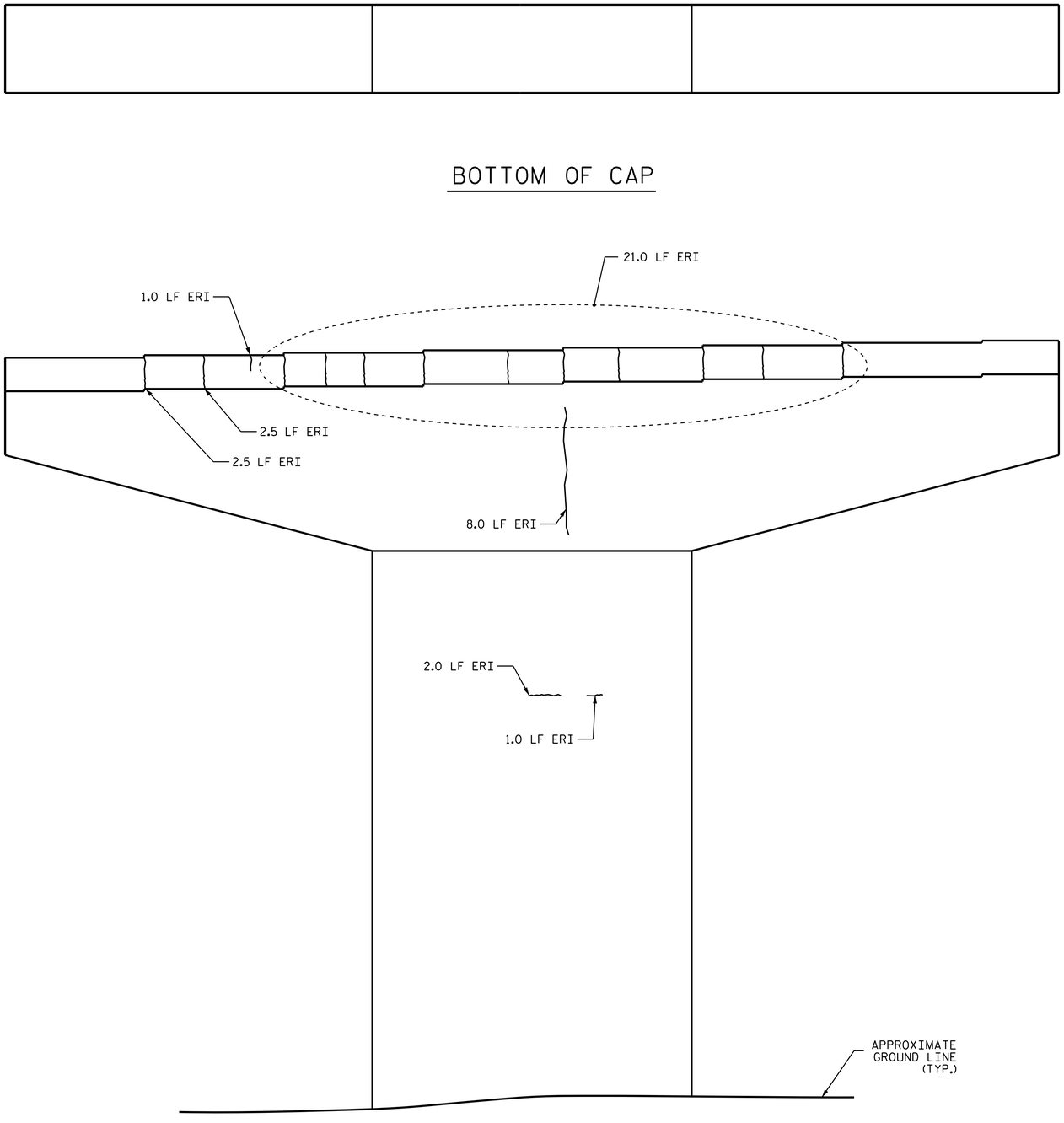

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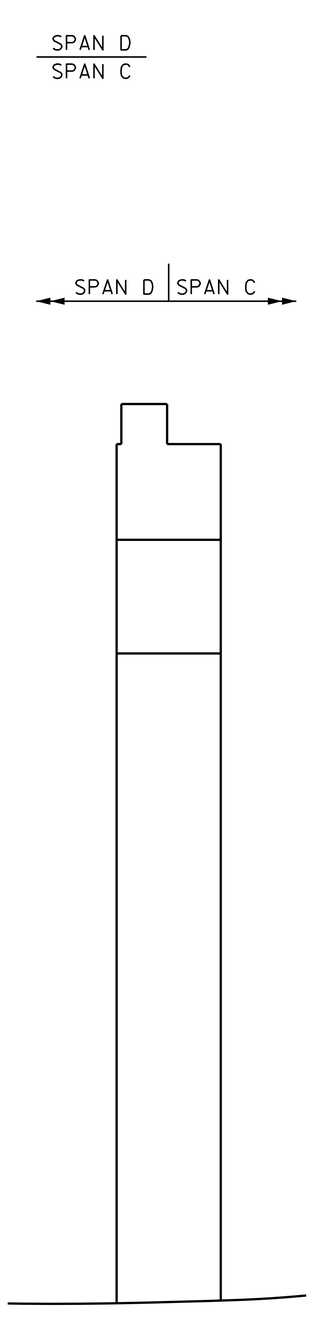

END VIEW

AS-BUILT REPAIR QUANTITY TABLE

BENT 3 SPAN D FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
COLUMN	0.0	0.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
COLUMN	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.	LIN. FT.	
CAP		35.0		
COLUMN		3.0		

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.40

BUNCOMBE COUNTY

BRIDGE NO. 100705

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

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5/29/2019

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIR BENT 3 SPAN D FACE

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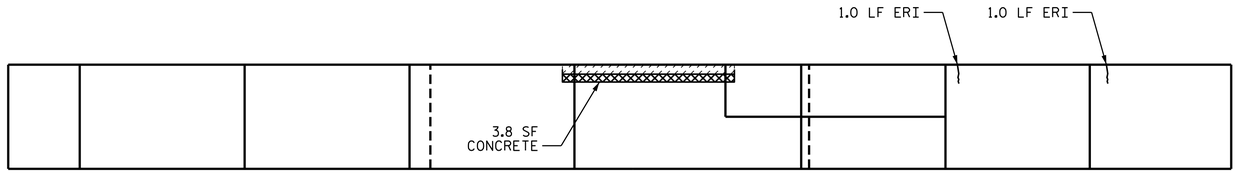
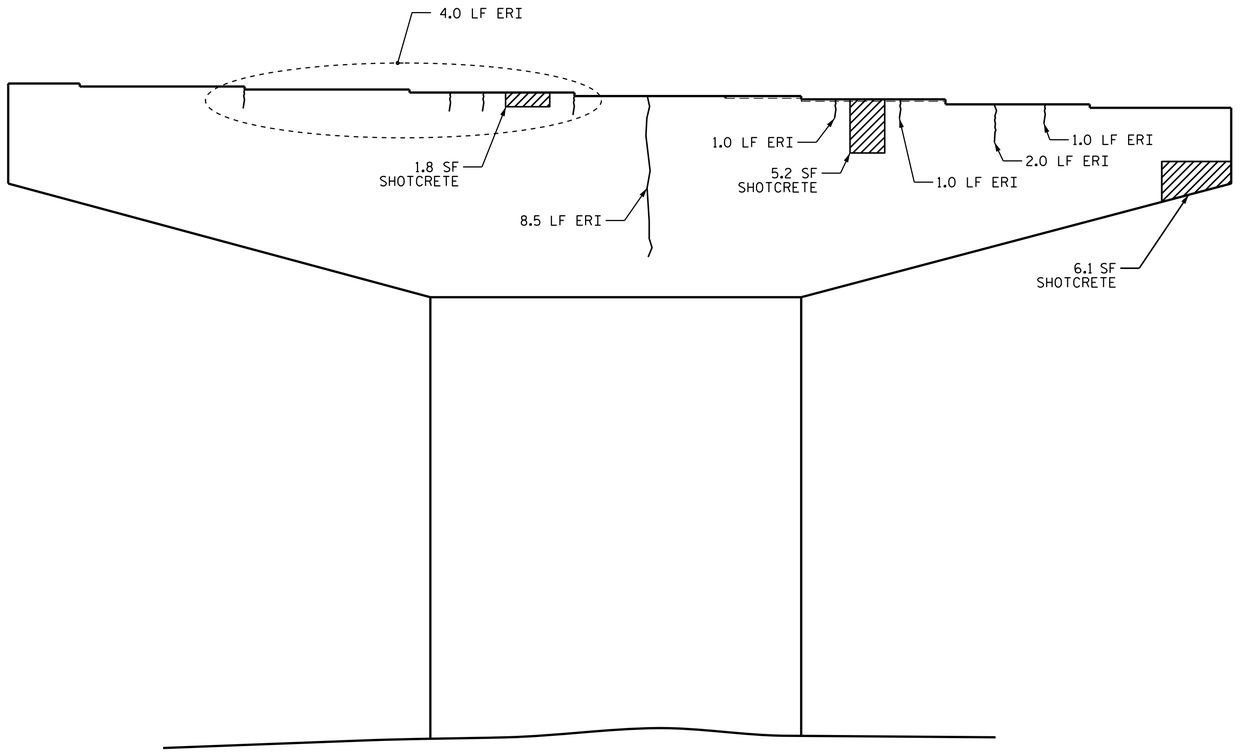


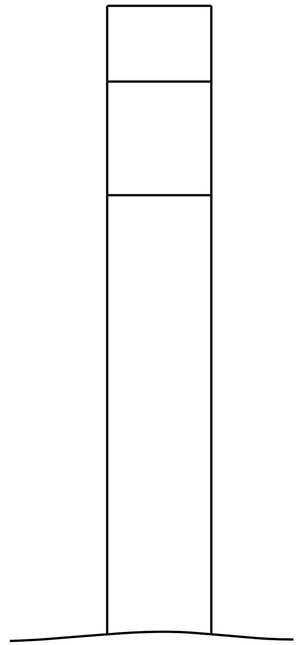
SPAN E
SPAN D

TOP OF CAP



ELEVATION

SPAN D | SPAN E



END VIEW

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	13.1	6.6		
COLUMN	0.0	0.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	3.8	1.9		
COLUMN	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.	LIN. FT.	
CAP		17.5		
COLUMN		0.0		
EPOXY COATING		SQ. FT.	SQ. FT.	
TOP OF BENT CAP		355.0		

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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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.40
BUNCOMBE COUNTY
BRIDGE NO. 100705

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

DocuSigned by:
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5/29/2019

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIR BENT 4 SPAN D FACE

REVISIONS						SHEET NO.
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2			4			36

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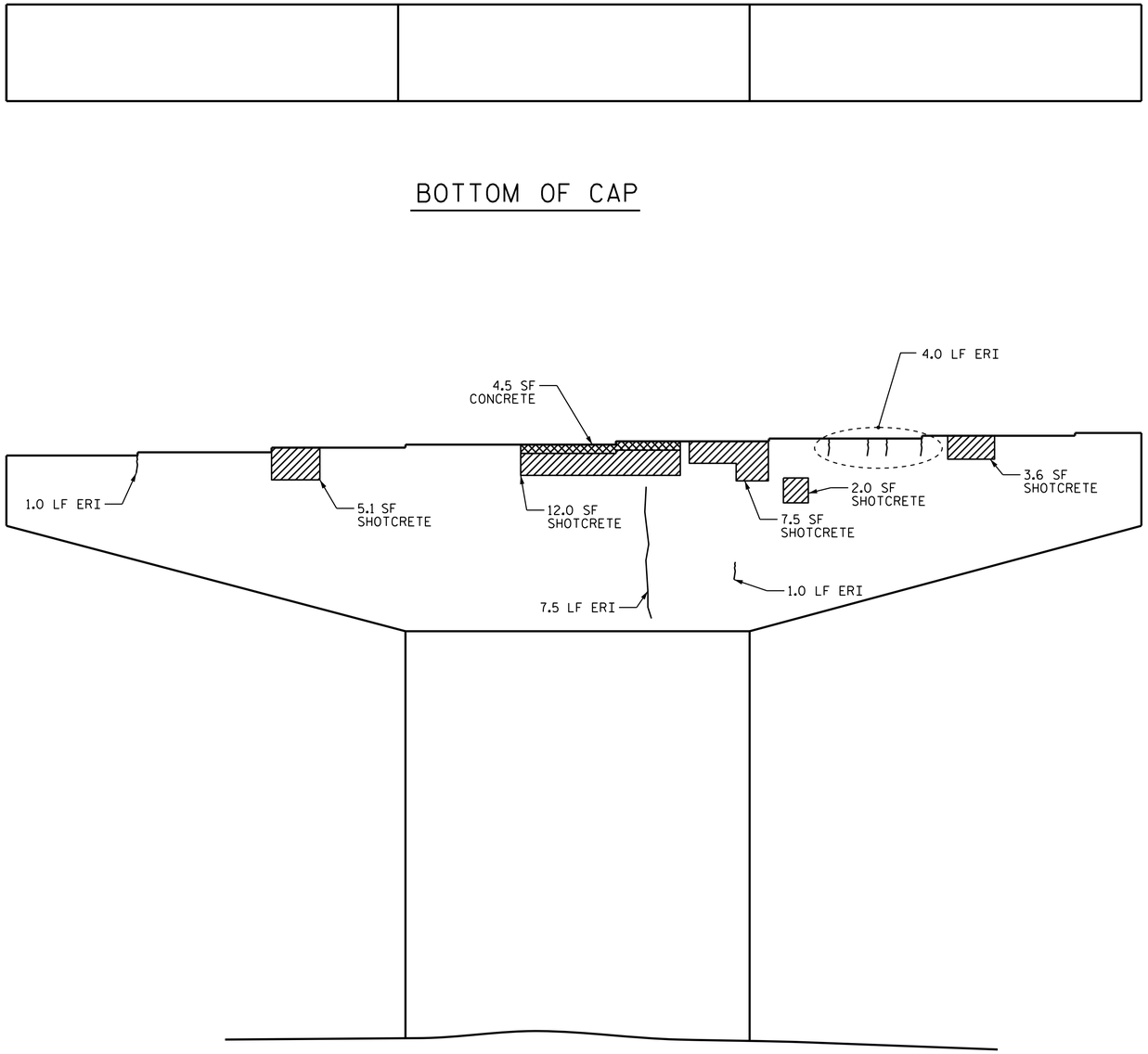
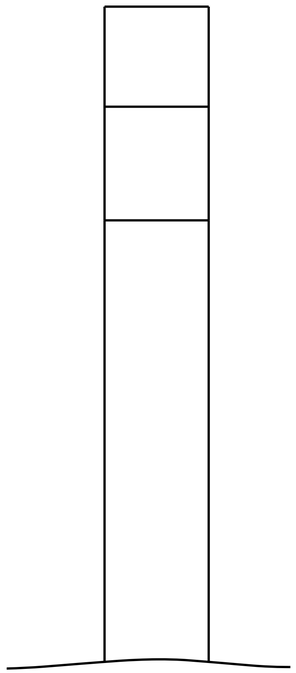


BOTTOM OF CAP

ELEVATION



END VIEW

AS-BUILT REPAIR QUANTITY TABLE

BENT 4 SPAN E FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	30.2	15.1		
COLUMN	0.0	0.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	4.5	2.3		
COLUMN	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.	LIN. FT.	
CAP		13.5		
COLUMN		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

AREA PREVIOUSLY ACCOUNTED FOR ON ADJACENT FACE

ERI - EPOXY RESIN INJECTION

PROJECT NO. 15BPR.40

BUNCOMBE COUNTY

BRIDGE NO. 100705

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

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5/29/2019

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIR BENT 4 SPAN E FACE

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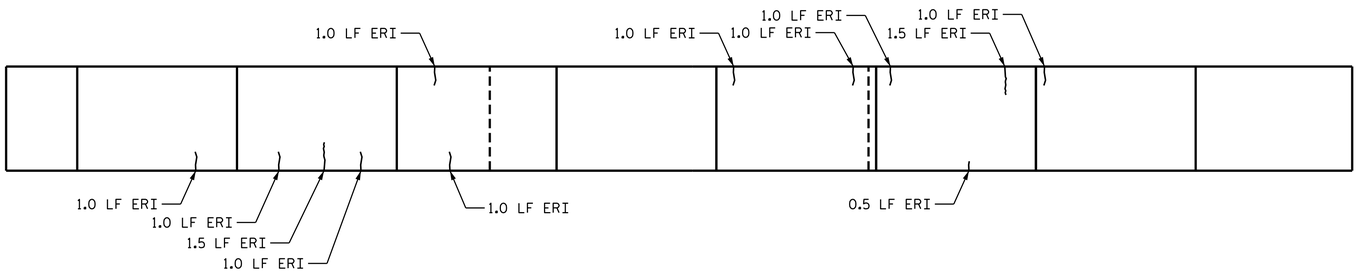
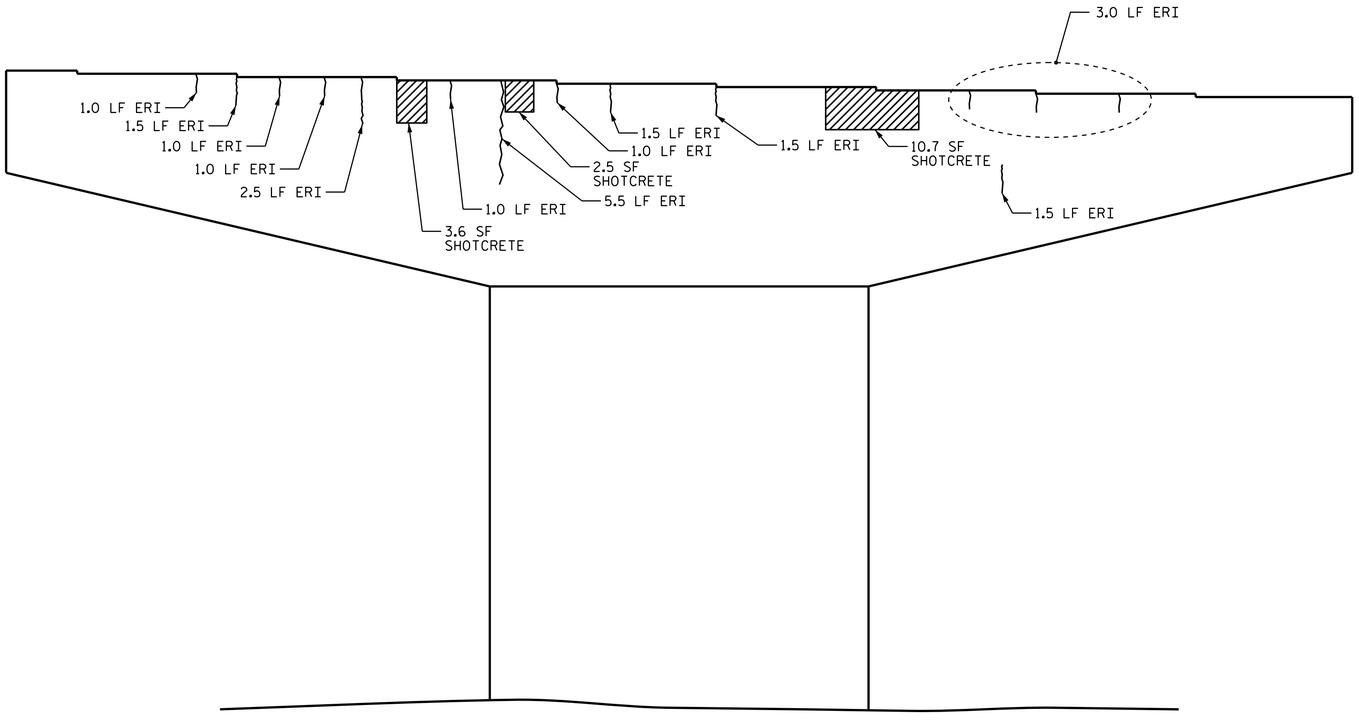


TOP OF CAP

SPAN F
SPAN E

SPAN E | SPAN F



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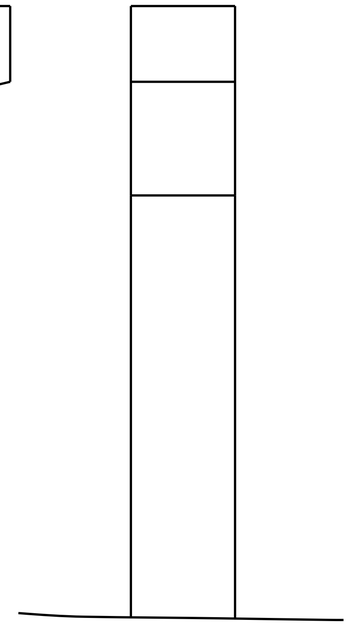

END VIEW

SHOTCRETE REPAIR AREA

CONCRETE REPAIR AREA

ERI - EPOXY RESIN INJECTION

AS-BUILT REPAIR QUANTITY TABLE

BENT 5 SPAN E FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	16.8	8.4		
COLUMN	0.0	0.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
COLUMN	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.	LIN. FT.	
CAP		34.5		
COLUMN		0.0		
EPOXY COATING		SQ. FT.	SQ. FT.	
TOP OF BENT CAP		391.0		

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 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.40
BUNCOMBE COUNTY
BRIDGE NO. 100705

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

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5/29/2019

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIR BENT 5 SPAN E FACE

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2			4			36

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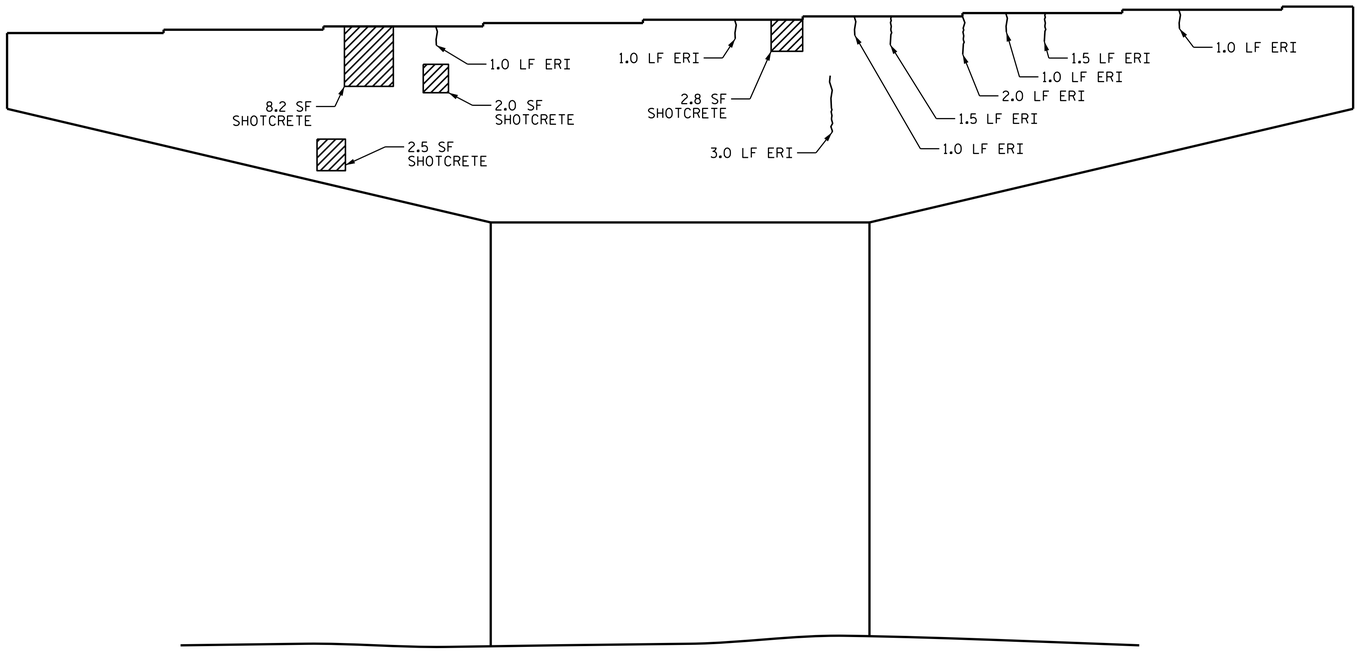
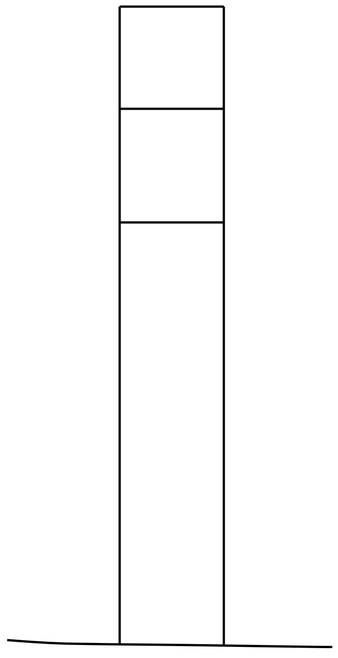
SPAN F
SPAN E

BOTTOM OF CAP



ELEVATION

SPAN F | SPAN E



END VIEW

AS-BUILT REPAIR QUANTITY TABLE

BENT 5 SPAN F FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	15.5	7.8		
COLUMN	0.0	0.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
COLUMN	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.	LIN. FT.	
CAP		13.0		
COLUMN		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.40
BUNCOMBE COUNTY
BRIDGE NO. 100705

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

DocuSigned by:
B04B5A4F2FAD484...
5/29/2019

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIR BENT 5 SPAN F FACE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-33
1			3			TOTAL SHEETS
2			4			36

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DRAWN BY : C. BRIGHT/M. G. SHAIKH DATE : 02/2019
CHECKED BY : A. M. LEE DATE : 03/2019

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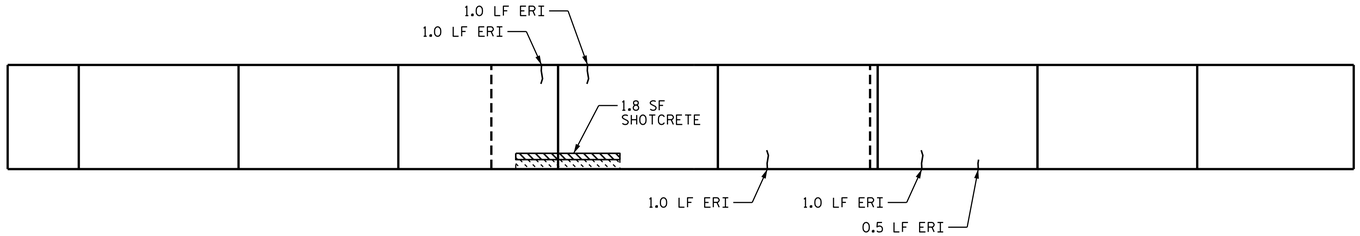
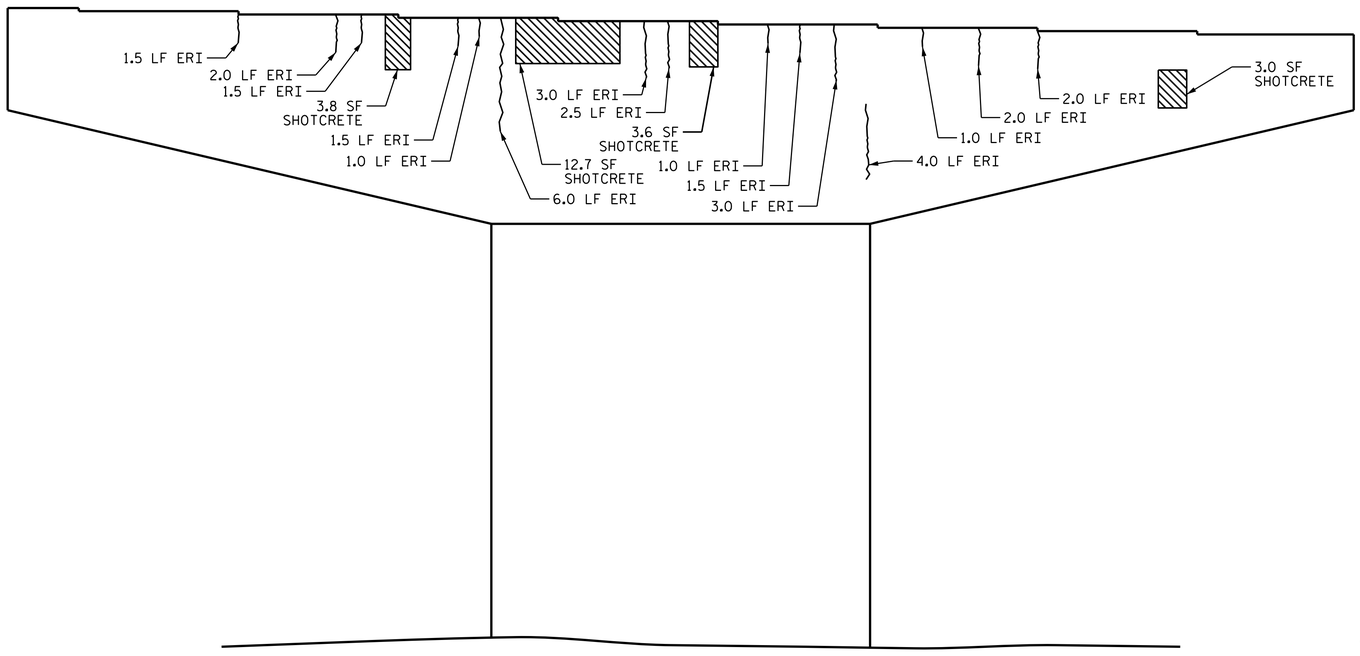


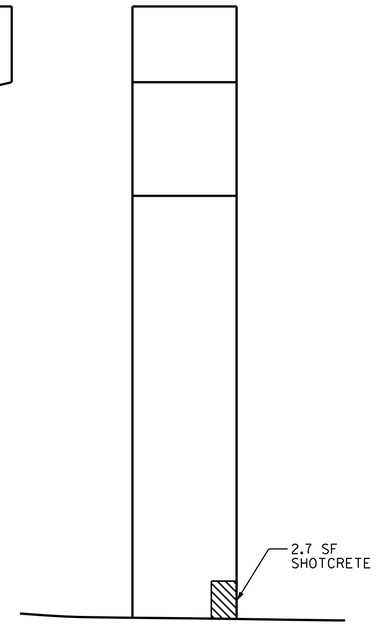
TOP OF CAP

SPAN G
SPAN F



ELEVATION

SPAN F | SPAN G



END VIEW

AS-BUILT REPAIR QUANTITY TABLE

BENT 6 SPAN F FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	24.9	12.5		
COLUMN	2.7	1.4		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
COLUMN	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.	LIN. FT.	
CAP		38.0		
COLUMN		0.0		
EPOXY COATING		SQ. FT.	SQ. FT.	
TOP OF BENT CAP		391.0		

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 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

AREA PREVIOUSLY ACCOUNTED FOR ON ADJACENT FACE

ERI - EPOXY RESIN INJECTION

PROJECT NO. 15BPR.40

BUNCOMBE COUNTY

BRIDGE NO. 100705

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

DocuSigned by: Amber Mckee B0485A8F2FAD484...

5/29/2019

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIR BENT 6 SPAN F FACE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-34
1			3			TOTAL SHEETS
2			4			36

DRAWN BY : C. BRIGHT/M. G. SHAIKH DATE : 02/2019
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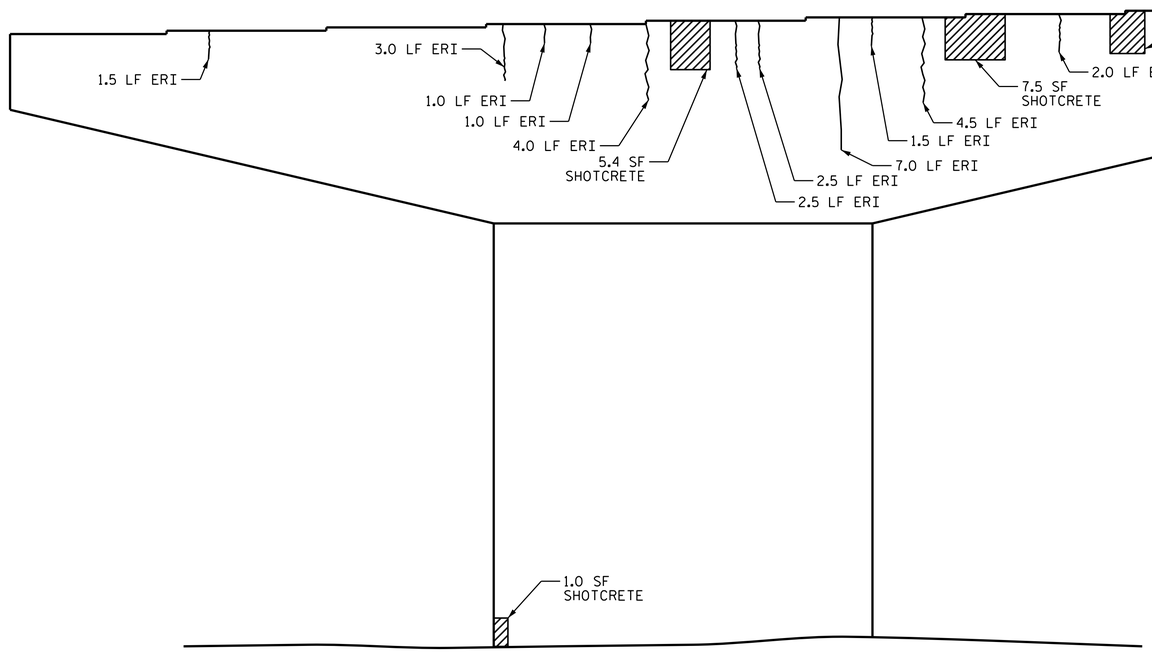
BOTTOM OF CAP



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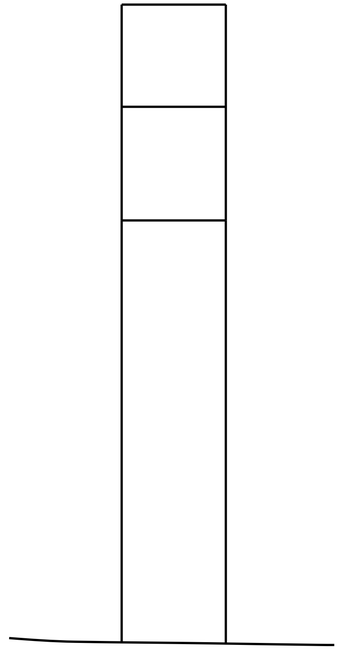

END VIEW

AS-BUILT REPAIR QUANTITY TABLE

BENT 6 SPAN G FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	16.9	8.5		
COLUMN	1.0	0.5		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
COLUMN	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.	LIN. FT.	
CAP		30.5		
COLUMN		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.40

BUNCOMBE COUNTY

BRIDGE NO. 100705

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

DocuSigned by: Amber Lee B04B5A4F2FAD484...

5/29/2019

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIR BENT 6 SPAN G FACE

REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			36

DRAWN BY : C. BRIGHT/M. G. SHAIKH DATE : 02/2019
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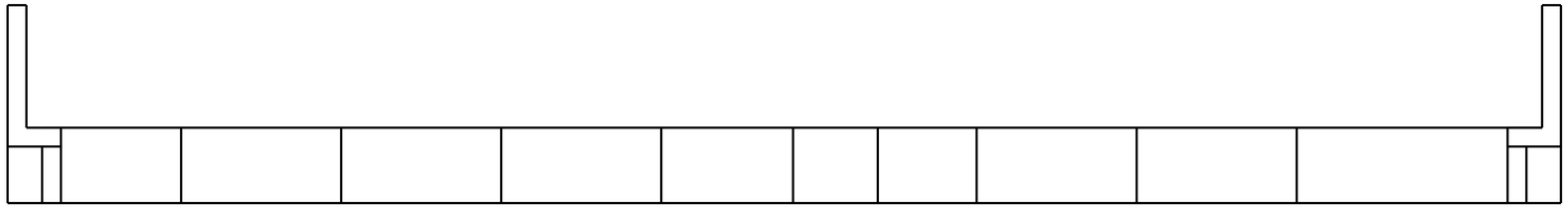

PLAN

ELEVATION

AS-BUILT REPAIR QUANTITY TABLE

END BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
CURTAIN WALL	0.0	0.0		
WING WALL	0.0	0.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
CURTAIN WALL	0.0	0.0		
WING WALL	0.0	0.0		
EPOXY RESIN INJECTION		LIN. FT.	LIN. FT.	
CAP		0.0		
CURTAIN WALL		0.0		
WING WALL		0.0		
EPOXY COATING		SQ. FT.	SQ. FT.	
CAP		263.3		

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 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.40

BUNCOMBE COUNTY

BRIDGE NO. 100705

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

DocuSigned by: Amber Lee B04B5A4F2FAD484...

5/29/2019

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIR END BENT 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-36
1			3			TOTAL SHEETS
2			4			36

DRAWN BY : M. G. SHAIKH DATE : 01/2019
CHECKED BY : A. M. LEE DATE : 03/2019

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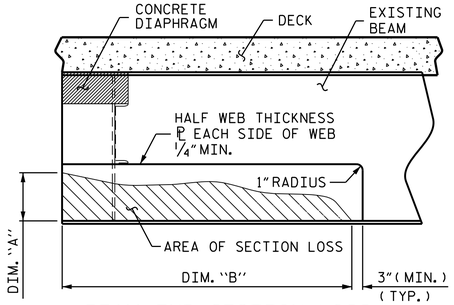
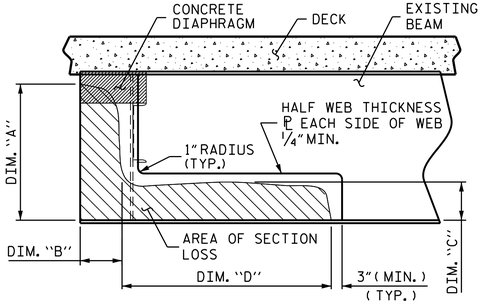


BEAM END SECTION LOSS AND PLATING REPAIR



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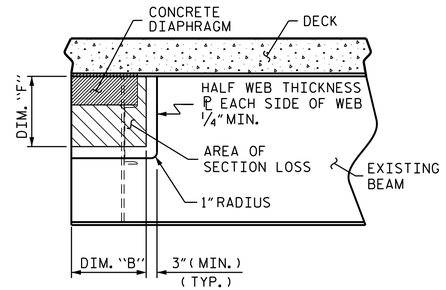
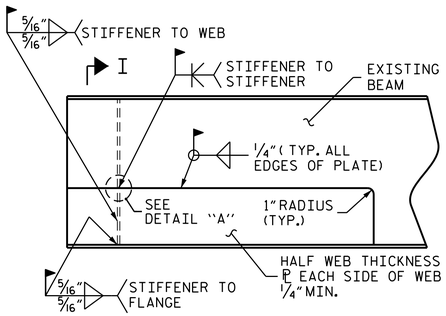


BEAM END SECTION LOSS AND PLATING REPAIR



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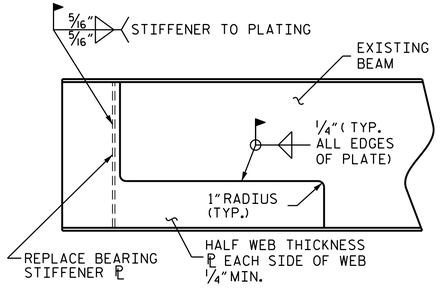

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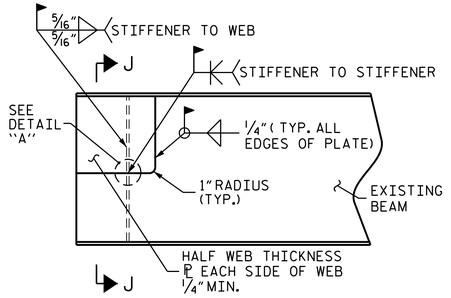
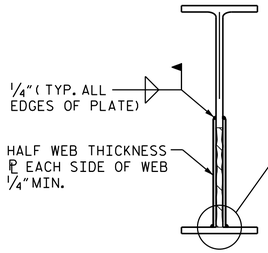
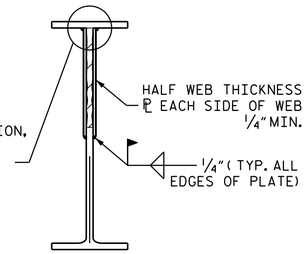


BEAM END PLATING REPAIR

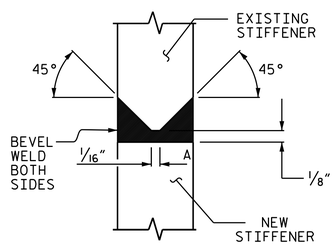
BEAM END PLATING REPAIR



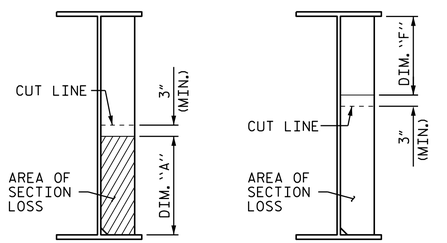
SECTION I-I



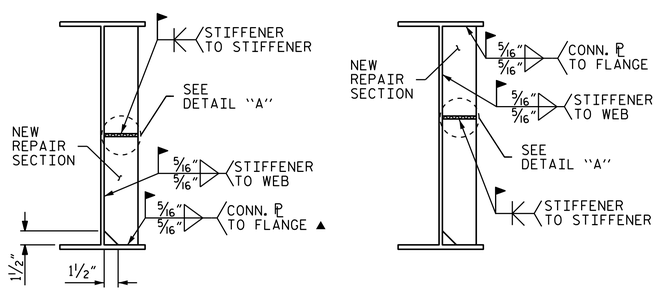
SECTION J-J



DETAIL "A"



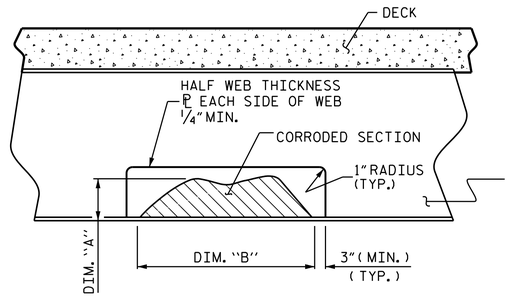
STIFFENER/CONN. ℄ SECTION LOSS



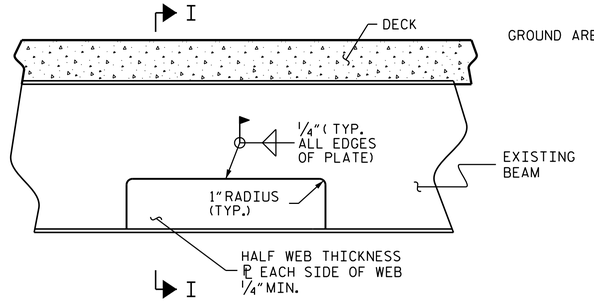
STIFFENER/CONN. ℄ SECTION REPAIR

▲ FOR STIFFENERS, MILL TO BEAR AND DO NOT WELD

STIFFENER/CONNECTOR PLATE REPAIR

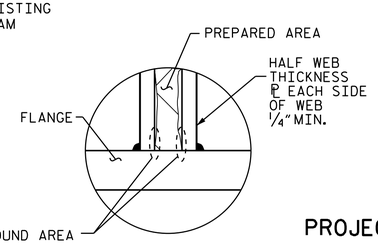


INTERMEDIATE SECTION LOSS BEAM PLATING REPAIR



INTERMEDIATE SECTION LOSS BEAM PLATING REPAIR

INTERMEDIATE BEAM PLATING REPAIR



DETAIL 'B'

BEAM PLATING REPAIR NOTES

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

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

REPAIR SEQUENCE:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

REMOVE ALL TRAFFIC CONTROL DEVICES.

PROJECT NO. 15BPR.40

BUNCOMBE COUNTY

BRIDGE NO. 100481, 100495 100705

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BEAM PLATING REPAIR DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

DocuSigned by: Amber Miller B04B5A4F2FAD484...

5/29/2019

DRAWN BY : CL BRIGHT DATE : 10/18

CHECKED BY : T. SHERRILL DATE : 10/18

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	SD-01
1			3			TOTAL SHEETS
2			4			6

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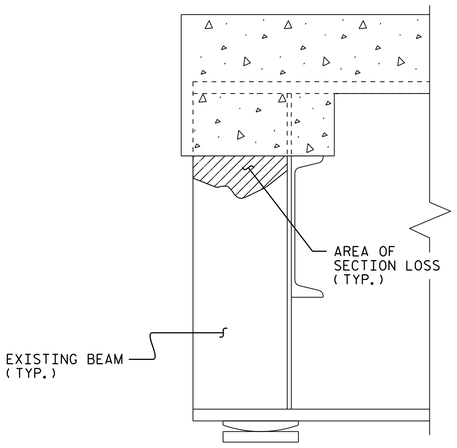
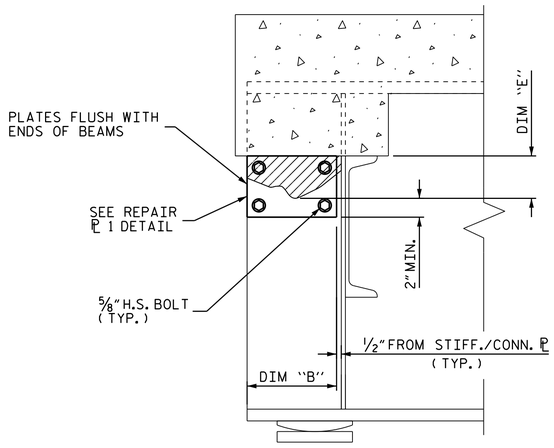
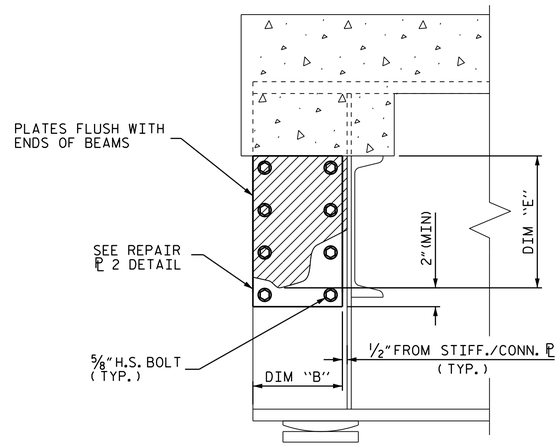


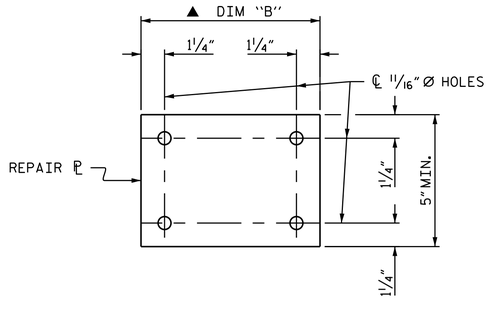
BEAM END SECTION LOSS
(EXISTING)



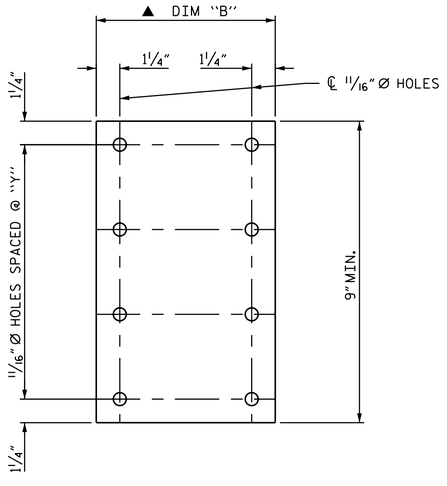
BEAM END SECTION LOSS PLATING REPAIR
(DIMENSION "E" 3" TO 6 1/2" USE REPAIR ℄ 1)



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



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



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

NOTES:

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

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

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

DIMENSION "Y" SHALL BE A MINIMUM OF 3 1/4" AND A MAXIMUM OF 6".

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

PLATES SHALL BE SHOP PRIMED PRIOR TO DELIVERY.

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

ALL BOLTS SHALL MEET ASTM A325.

ALL NUTS SHALL MEET ASTM A194.

ALL FLAT WASHERS SHALL MEET ASTM F436.

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

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

REPAIR SEQUENCE:

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

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

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

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

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

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

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

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

PROJECT NO. 15BPR.40

BUNCOMBE COUNTY

BRIDGE NO. 100481, 100495, 100705

SHEET 2 OF 3

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

DocuSigned by: Amber Lee B04B5A4F2FAD484...

5/29/2019

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BEAM PLATING REPAIR DETAILS

REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			6

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CHECKED BY : T. M. SHERRILL DATE : 9/2018

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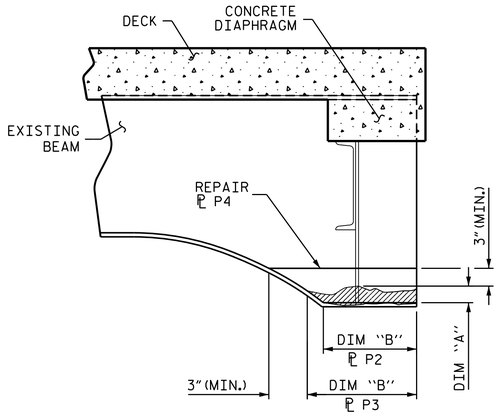
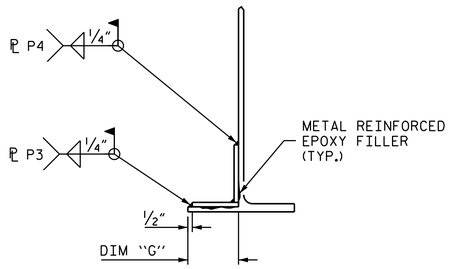


BEAM END SECTION LOSS AND PLATING REPAIR



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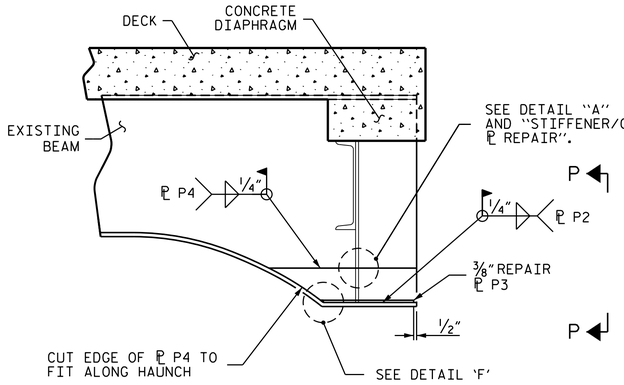
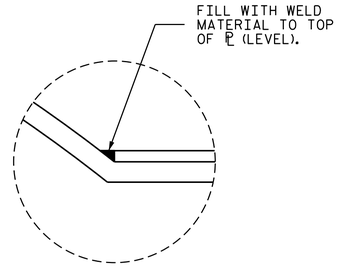


BEAM END PLATING REPAIR

BEAM END PLATING REPAIR



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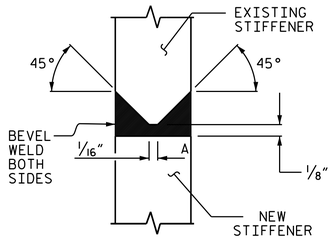

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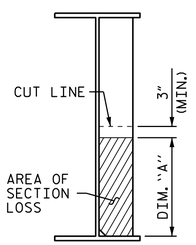
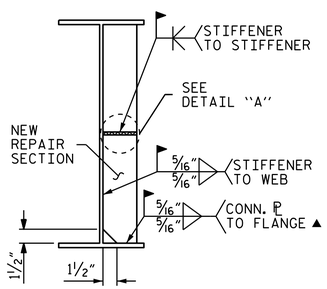


STIFFENER/CONN. ℄ SECTION LOSS



STIFFENER/CONN. ℄ SECTION REPAIR

▲ FOR STIFFENERS, MILL TO BEAR AND DO NOT WELD

STIFFENER/CONNECTOR PLATE REPAIR

BEAM PLATING REPAIR NOTES

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

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

REPAIR SEQUENCE:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

REMOVE ALL TRAFFIC CONTROL DEVICES.

PROJECT NO. 15BPR.40

BUNCOMBE COUNTY

BRIDGE NO. 100481, 100495, 100705

SHEET 3 OF 3

STATE OF NORTH CAROLINA
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RALEIGH

BEAM PLATING REPAIR DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

DocuSigned by: Amber Lee B04B5A4F2FAD484...

5/29/2019

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CHECKED BY : T. SHERRILL DATE : 10/2018

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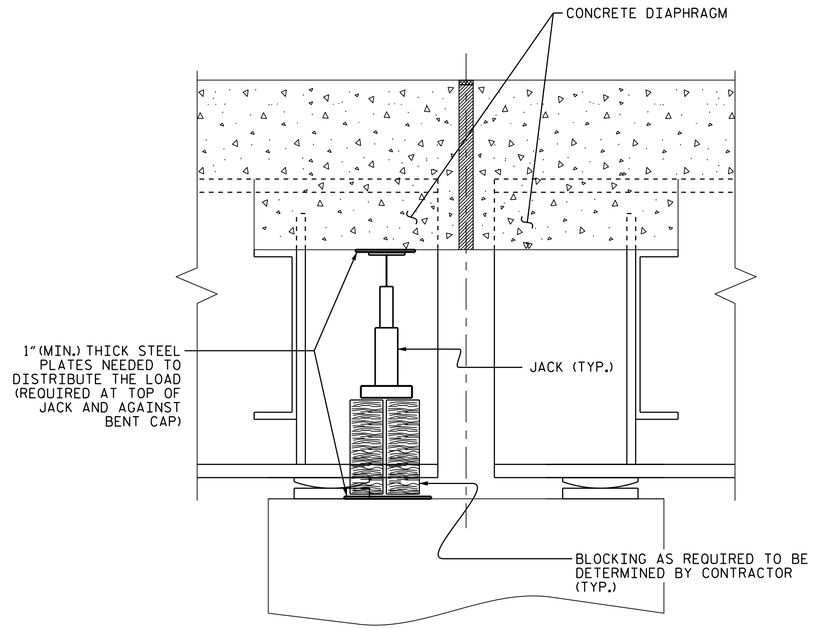

SECTION THRU DIAPHRAGM

BRIDGE JACKING NOTES:

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

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

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

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

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

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

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

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

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

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

FOR WORKING DRAWING SUBMITTALS, SEE SPECIAL PROVISIONS.

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

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

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

BRIDGE JACKING TABLE

STRUCTURE NUMBER	LOCATION	SPAN	BEAM(S)	BRIDGE JACKING TYPE	DEAD LOAD (DC+DW) (KIPS)
100481	BENT 1	A	3,4,5,6,7,8	TYPE I	16
100481	BENT 3	D	8	TYPE I	15
100495	BENT 1	A	9	TYPE I	17
100495	BENT 2	C	9	TYPE I	25

PROJ. NO. 15BPR.40

BUNCOMBE COUNTY

BRIDGE NO. 100481, 100495, 100705

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

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5/29/2019

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STANDARD

BRIDGE JACKING DETAILS

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DRAWN BY : NAP 08/18	
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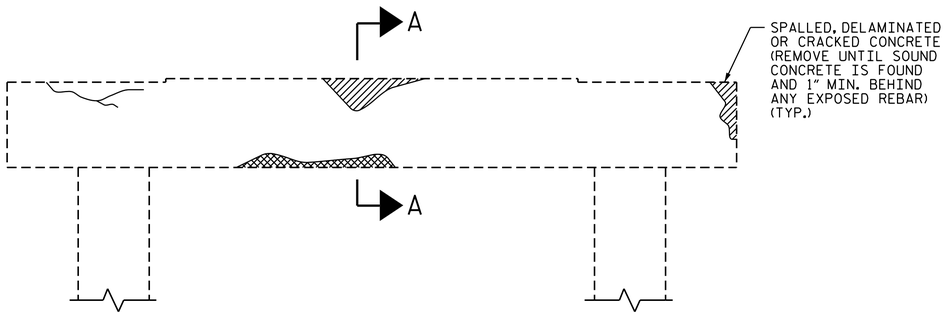
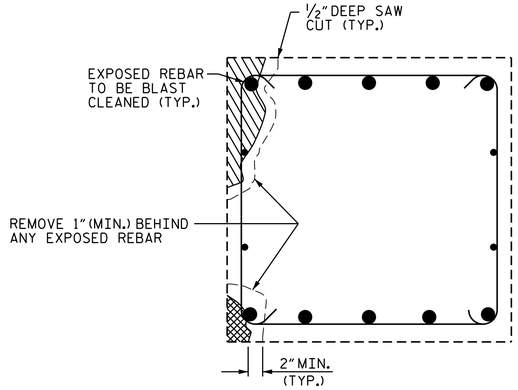
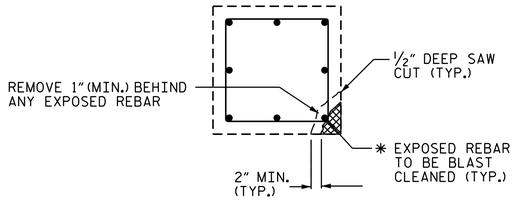


BENT CAP REPAIRS



SECTION A-A

CAP REPAIR



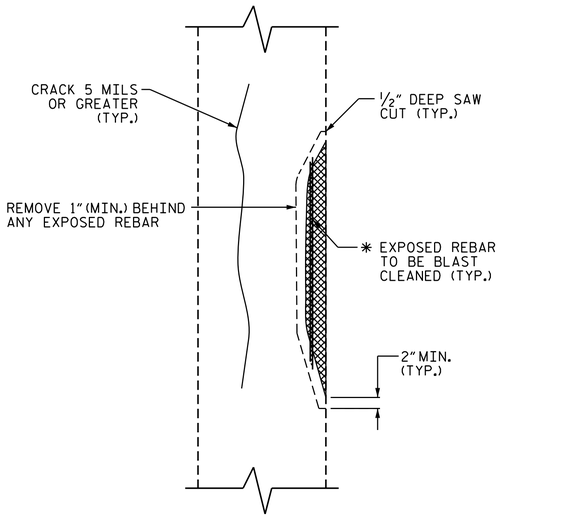
PLAN OF COLUMN

REPAIR KEY

CONCRETE REPAIR AREA (FORM AND POUR)

SHOTCRETE REPAIR AREA

EPOXY RESIN INJECTION (ERI)

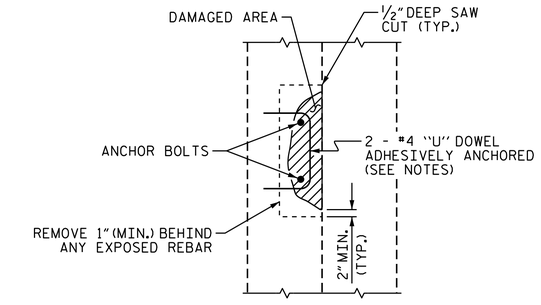


* REPAIR LENGTH SHALL NOT EXCEED 10 FEET.

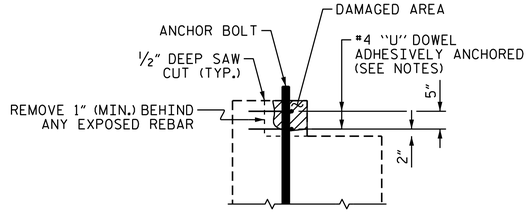
ELEVATION OF COLUMN

COLUMN REPAIR

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



PLAN



ELEVATION

PEDESTAL WALL REPAIR

NOTES

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

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

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

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

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

SIMULTANEOUS REMOVAL OF UNSOUND CONCRETE MAY BE PERMITTED ON MORE THAN ONE FACE OF A CAP AND/OR COLUMN, BUT NO MORE THAN ⅓ OF THE CIRCUMFERENCE SHALL BE REMOVED AT ONE TIME. IF REMOVAL EXTENDS MORE THAN 1½" BEHIND THE MAIN REINFORCING BARS, NOTIFY THE ENGINEER PRIOR TO PROCEEDING. ON COLUMNS AND PILES, NO MORE THAN 10 VERTICAL FEET MAY BE EXPOSED AT ONE TIME BEFORE PLACEMENT OF REPAIR CONCRETE.

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

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

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

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

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY PROTECTIVE COATING, SEE SPECIAL PROVISIONS.

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

CLEAN ALL EXPOSED REINFORCING BARS AND PRESTRESSED STRANDS IN ACCORDANCE WITH APPROPRIATE SPECIAL PROVISIONS. FOR BARS WITH MORE THAN 10% SECTION LOSS, SPLICE AND SECURELY TIE SUPPLEMENTAL REINFORCING BARS AS NEEDED. NOTE AND PROVIDE DETAILED DOCUMENTATION, INCLUDING LOCATION AND SEVERITY, OF ALL DAMAGE TO PRESTRESSED STRANDS THAT EXCEEDS 10% SECTION LOSS. IF FIVE OR MORE STRANDS ARE DAMAGED, NOTIFY THE ENGINEER PRIOR TO PLACEMENT OF REPAIR MATERIAL.

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NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

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5/29/2019

STATE OF NORTH CAROLINA
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STANDARD
TYPICAL CAP AND COLUMN REPAIR DETAILS

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DRAWN BY : NAP 8/18	
CHECKED BY :	

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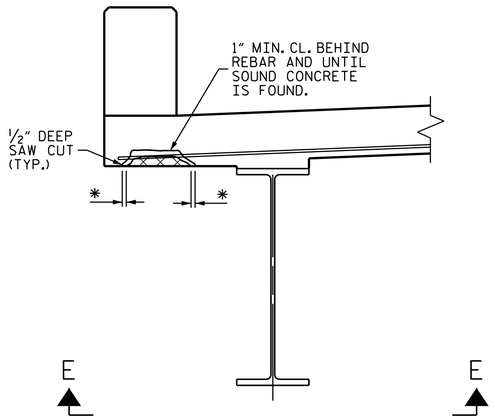
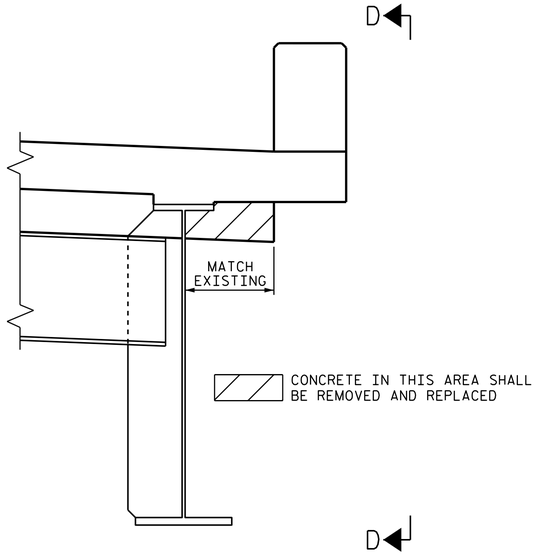
NOTE: OVERHANG DIAPHRAGMS TO BE REMOVED AND REPLACED, ARE SHOWN ON "PLAN OF SPAN" SHEETS. OVERHANG DIAPHRAGMS SHALL BE REMOVED PRIOR TO CLEANING AND PAINTING OF BEAMS AND REPLACED AFTER BEAM REPAIRS AND PAINTING ARE COMPLETE.



TYPICAL SECTION



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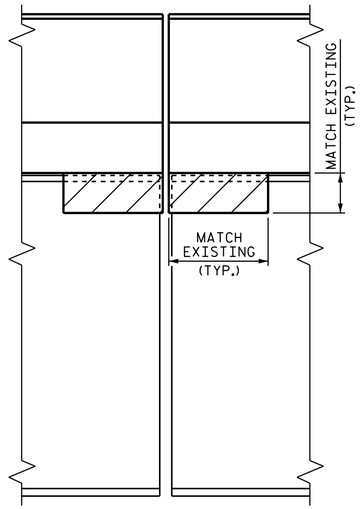
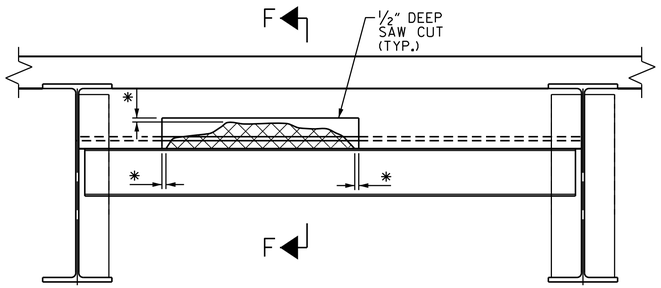


SECTION D-D

OVERHANG DIAPHRAGM REPLACEMENT DETAILS



TYPICAL SECTION

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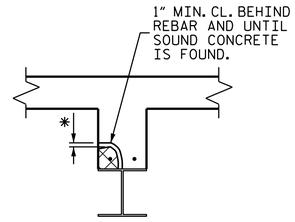


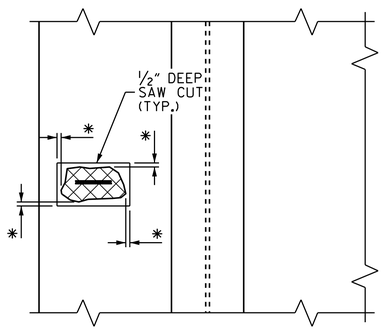
SECTION F-F

DAMAGED AREA

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

INTERIOR DIAPHRAGM REPAIR DETAILS

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



SECTION E-E

OVERHANG DETAILS

PROJ. NO. 15BPR.40

BUNCOMBE COUNTY

BRIDGE NO. 100481, 100495, 100705

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

OVERHANG, DIAPHRAGM AND BRIDGE RAIL REPAIR DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

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STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

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

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

CONCRETE:

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

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED ¾" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1½" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A ¼" 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 ¼" 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 ⅞" Ø SHEAR STUDS FOR THE ¾" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - ⅞" Ø STUDS FOR 4 - ¾" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF ⅞" Ø STUDS ALONG THE BEAM AS SHOWN FOR ¾" Ø STUDS BASED ON THE RATIO OF 3 - ⅞" Ø STUDS FOR 4 - ¾" Ø 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 5/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 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

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