

5/26/20

**PROJECT: 15BPR.49**

**CONTRACT NO: C204450**



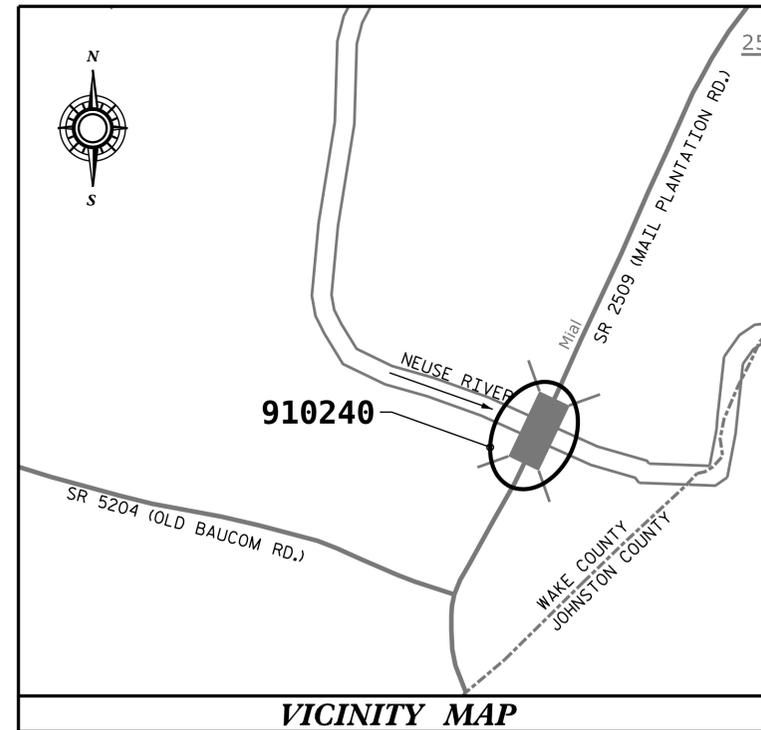
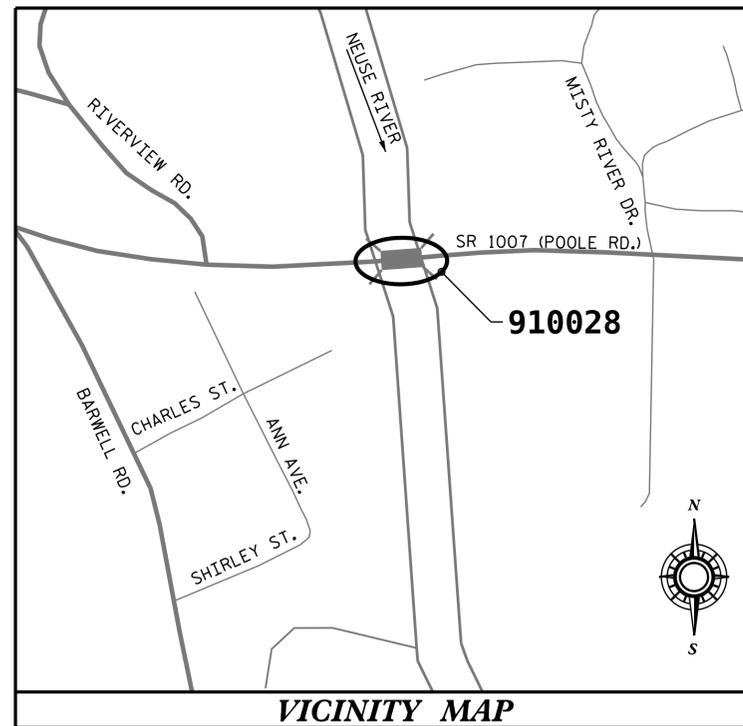
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**WAKE COUNTY**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	15BPR.49	1	76
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
15BPR.49		P.E.	
15BPR.49	—	CONST.	

**LOCATION:** BRIDGE #910028 ON SR 1007 (POOLE ROAD) OVER NEUSE RIVER  
BRIDGE #910240 ON SR 2509 (MIAL PLANTATION RD.) OVER NEUSE RIVER

**TYPE OF WORK:** BRIDGE PRESERVATION - ASPHALT MILLING & REPAVING, POLYMER CONCRETE OVERLAY, FOAM JOINT REPLACEMENT, LINK SLAB PLACEMENT, BARRIER RAIL REPAIR, BEAM PLATING AND REPAIR, CLEANING & ZONE PAINTING OF BEAMS, CLEANING & PAINTING EXISTING BEARINGS, BEARING REPLACEMENT, SHOTCRETE REPAIRS, EPOXY COAT TOP OF SUBSTRUCTURE CAPS, AND DRIFT REMOVAL



**DESIGN DATA**

BRIDGE #910028 - ADT 2015 - 14,000  
BRIDGE #910240 - ADT 2015 - 4,600

**PROJECT LENGTH**

BRIDGE #910028 - .07 MILE  
BRIDGE #910240 - .06 MILE

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

2018 STANDARD SPECIFICATIONS

MARCH 15, 2022

**KRISTY ALFORD, PE**  
PROJECT ENGINEER

**NICHOLAS A. PIERCE, PE**  
PROJECT DESIGN ENGINEER

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

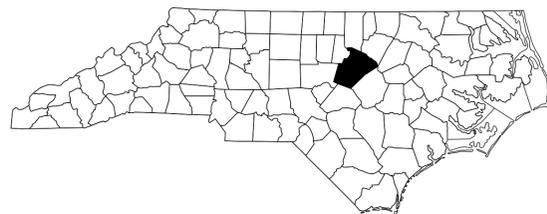
**WAKE COUNTY**

LOCATION: BRIDGE #910028 ON SR 1007 (POOLE ROAD) OVER NEUSE RIVER  
BRIDGE #910240 ON SR 2509 (MIAL PLANTATION RD.) OVER NEUSE RIVER

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	15BPR.49	1A	76
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
15BPR.49		P.E.	
15BPR.49	—	CONST.	

**INDEX OF STRUCTURES SHEETS**

<u>SHEET No.</u>	<u>DESCRIPTION</u>	<u>SHEET No.</u>	<u>DESCRIPTION</u>	<u>SHEET No.</u>	<u>DESCRIPTION</u>
1	TITLE SHEET	S1-27	BENT 4 SPAN D FACE	S2-23	BENT 1 SPAN A FACE
1A	INDEX OF SHEETS	S1-28	BENT 4 SPAN E FACE	S2-24	BENT 1 SPAN B FACE
S-1	LOCATION SKETCHES	S1-29	BENT 5 SPAN E FACE	S2-25	BENT 2 SPAN B FACE
S-2	TOTAL BILL OF MATERIALS	S1-30	BENT 5 SPAN F FACE	S2-26	BENT 2 SPAN C FACE
STRUCTURE No. 910028		S1-31	BENT 6 SPAN F FACE	S2-27	BENT 3 SPAN C FACE
S1-01	GENERAL DRAWING	S1-32	BENT 6 SPAN G FACE	S2-28	BENT 3 SPAN D FACE
S1-02	TYPICAL SECTION	S1-33	END BENT 2	S2-29	BENT 4 SPAN D FACE
S1-03	DECK SURFACE REPAIR SPAN A	S1-34	INCIDENTAL MILLING	S2-30	BENT 4 SPAN E FACE
S1-04	DECK SURFACE REPAIR SPAN B	STRUCTURE No. 910240		S2-31	BENT 5
S1-05	DECK SURFACE REPAIR SPAN C	S2-01	GENERAL DRAWING	S2-32	BENT 6
S1-06	DECK SURFACE REPAIR SPAN D	S2-02	TYPICAL SECTION	S2-33	END BENT 2
S1-07	DECK SURFACE REPAIR SPAN E	S2-03	DECK SURFACE REPAIR SPAN A	S2-34	INCIDENTAL MILLING
S1-08	DECK SURFACE REPAIR SPAN F	S2-04	DECK SURFACE REPAIR SPAN B	S2-35	DRIFT REMOVAL
S1-09	DECK SURFACE REPAIR SPAN G	S2-05	DECK SURFACE REPAIR SPAN C	STANDARD SHEETS	
S1-10	JOINT DETAILS	S2-06	DECK SURFACE REPAIR SPAN D	SD-01	OVERHANG & DIAPHRAGM REPAIR DETAILS
S1-11	BARRIER RAIL REPAIR DETAILS	S2-07	DECK SURFACE REPAIR SPAN E	SD-02	TYPICAL CAP AND COLUMN REPAIR DETAILS
S1-12	DECK UNDERSIDE REPAIR SPAN A	S2-08	DECK SURFACE REPAIR SPAN F	SN	NOTES
S1-13	DECK UNDERSIDE REPAIR SPAN B	S2-09	DECK SURFACE REPAIR SPAN G		
S1-14	DECK UNDERSIDE REPAIR SPAN C	S2-10	JOINT DETAILS		
S1-15	DECK UNDERSIDE REPAIR SPAN D	S2-11	JOINT DETAILS		
S1-16	DECK UNDERSIDE REPAIR SPAN E	S2-12	DECK UNDERSIDE REPAIR SPAN A		
S1-17	DECK UNDERSIDE REPAIR SPAN F	S2-13	DECK UNDERSIDE REPAIR SPAN B		
S1-18	DECK UNDERSIDE REPAIR SPAN G	S2-14	DECK UNDERSIDE REPAIR SPAN C		
S1-19	GIRDER REPAIR DETAILS	S2-15	DECK UNDERSIDE REPAIR SPAN D		
S1-20	END BENT 1	S2-16	DECK UNDERSIDE REPAIR SPAN E		
S1-21	BENT 1 SPAN A FACE	S2-17	DECK UNDERSIDE REPAIR SPAN F		
S1-22	BENT 1 SPAN B FACE	S2-18	DECK UNDERSIDE REPAIR SPAN G		
S1-23	BENT 2 SPAN B FACE	S2-19	GIRDER REPAIR DETAILS		
S1-24	BENT 2 SPAN C FACE	S2-20	BEARING REPLACEMENT		
S1-25	BENT 3 SPAN C FACE	S2-21	BRIDGE JACKING DETAILS		
S1-26	BENT 3 SPAN D FACE	S2-22	END BENT 1		



**TYPE OF WORK:**  
BRIDGE PRESERVATION – ASPHALT MILLING & REPAVING, POLYMER CONCRETE OVERLAY, FOAM JOINT REPLACEMENT, LINK SLAB PLACEMENT, BARRIER RAIL REPAIR, BEAM PLATING AND REPAIR, CLEANING & ZONE PAINTING OF BEAMS, CLEANING & PAINTING EXISTING BEARINGS, BEARING REPLACEMENT, SHOTCRETE REPAIRS, EPOXY COAT TOP OF SUBSTRUCTURE CAPS, AND DRIFT REMOVAL

**NOTES**

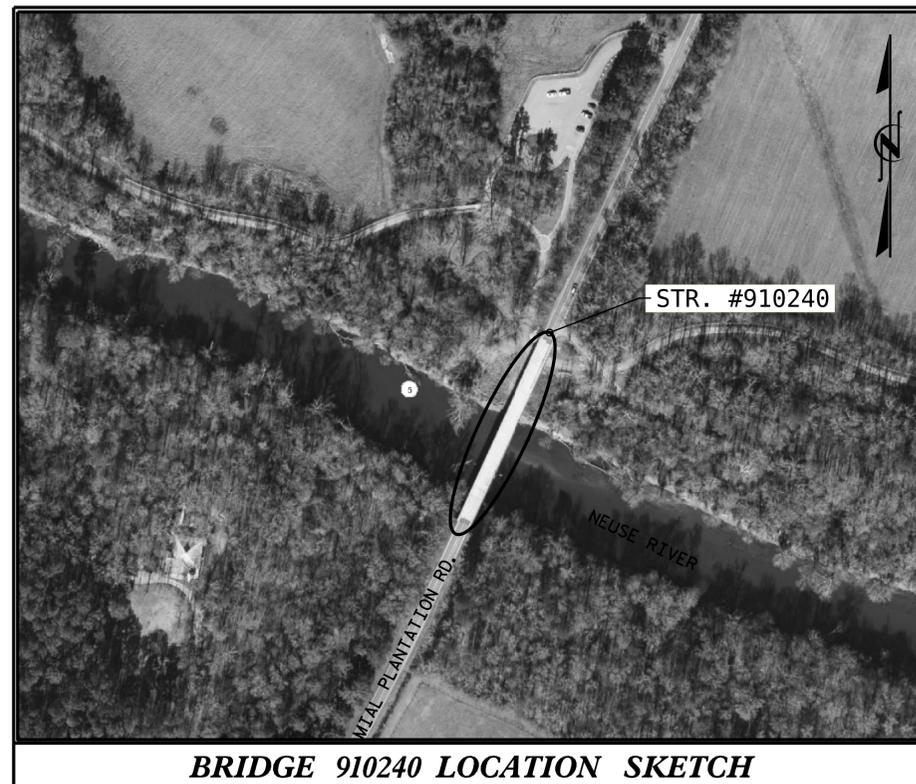
INFORMATION INDICATED ON THE LOCATION SKETCH SHALL BE CONSIDERED GENERAL INFORMATION ONLY. THE CONTRACTOR SHALL CONFIRM, THROUGH OTHER SOURCES, SPECIFIC INFORMATION REGARDING BRIDGES, ROADWAYS, UTILITIES, THE SURROUNDING AREA, AND ANY OTHER ASPECTS THAT MAY BE NECESSARY TO PERFORM AND COMPLETE THE PROJECT.

**BRIDGE COORDINATES**

BRIDGE No.	LATITUDE	LONGITUDE
910028	35°-45'-16.25"	78°-31'-55.76"
910240	35°-42'-9.3"	78°-28'-41.29"



**BRIDGE 910028 LOCATION SKETCH**



**BRIDGE 910240 LOCATION SKETCH**

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910028 & 910240**



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**LOCATION SKETCH**  
 FOR BRIDGE ON SR 1007  
 (POOLE RD.) AND BRIDGE ON  
 SR 2509 (MIAL PLANTATION RD.)  
 OVER NEUSE RIVER

DRAWN BY : N.A. PIERCE DATE : 05/2019  
 CHECKED BY : \_\_\_\_\_ DATE : \_\_\_\_\_  
 DESIGN ENGINEER OF RECORD: N.A. PIERCE DATE : 11/2021

DOCUMENT NOT CONSIDERED  
 FINAL UNLESS ALL  
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			73

TOTAL BILL OF MATERIAL																	
BRIDGE No.	INCIDENTAL MILLING	ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B	ASPHALT BINDER PLANT MIX	GROOVING BRIDGE FLOOR	POLLUTION CONTROL	CLASS II SURFACE PREPARATION	CONCRETE REPAIRS	SHOTCRETE REPAIRS	DRIFT REMOVAL	PAINTING CONTAINMENT FOR ZONE PAINTING	PAINTING CONTAINMENT FOR BRIDGE NO.	ZONE PAINTING OF EXISTING STRUCTURE	VOLUMETRIC MIXER	UNDER STRUCTURE WORK PLATFORM	PREFORMED MEMBRANE EXPANSION JOINT MATERIAL FOR PRESERVATION	POURABLE SILICONE JOINT SEALANT	FOAM JOINT SEALS FOR PRESERVATION
	SQ.YDS.	TON	TON	SQ.FT.	LUMP SUM	SQ.YDS.	CU.FT.	CU.FT.	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LIN.FT.	LIN.FT.	LIN.FT.
910028	623.0	200	40	-	LUMP SUM	28.8	6.7	35.6	-	LUMP SUM	-	LUMP SUM	LUMP SUM	LUMP SUM	168	-	-
910240	308.7	30	5	7294	LUMP SUM	4.2	6.0	57.8	LUMP SUM	-	LUMP SUM	-	-	-	-	36	158
TOTAL	931.7	230	45	7294	LUMP SUM	33.0	12.7	93.4	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	168	36	158



TOTAL BILL OF MATERIAL CONTINUED																	
BRIDGE No.	TYPE 11 CONCRETE BARRIER RAIL REPAIR	POLYESTER POLYMER CONCRETE MATERIALS	EPOXY POLYMER CONCRETE MATERIALS (ALTERNATE)	REPAIRS TO PRESTRESSED CONCRETE GIRDERS	BEAM REPAIR PLATING	EPOXY COATING	EPOXY COATING CONCRETE GIRDER ENDS	LINK SLAB FOR PRESERVATION	BRIDGE DECK WATERPROOFING MEMBRANE-SPRAY APPLIED	CONCRETE DECK REPAIR FOR POLYMER CONCRETE OVERLAY	PLACING & FINISHING POLYMER CONCRETE OVERLAY	SCARIFYING BRIDGE DECK	SHOTBLASTING BRIDGE DECK	BEARING REPLACEMENT	CLEANING & PAINTING EXISTING BEARINGS WITH HIGH RATIO CALCIUM SULFONATE	TYPE II BRIDGE JACKING BRIDGE #	
	LIN.FT.	CU.YDS.	CU.YDS.	CU.FT.	LBS.	SQ.FT.	SQ.FT.	SQ.FT.	SQ.YDS.	SQ.YDS.	SQ.YDS.	SQ.YDS.	SQ.YDS.	EACH	EACH	EACH	
910028	24.5	-	-	-	600	689.1	-	-	1089.2	-	-	1089.2	1089.2	-	-	-	
910240	-	36	36	4.3	-	708.5	80.5	720.0	-	4.2	933	933	933	48	8	12	
TOTAL	24.5	36	36	4.3	600	1397.6	80.5	720.0	1089.2	4.2	933	2022.2	2022.2	48	8	12	



**NOTES**

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

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 FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN WHAT IS SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

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

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

EXISTING JOINTS AND DECK DRAINS SHALL BE SEALED PRIOR TO BEGINNING SURFACE PREPARATIONS OF THE BRIDGE DECK. THE CONTRACTOR SHALL TAKE CARE THAT ANY CONSTRUCTION DEBRIS THAT COLLECTS IN THE DRAINS IS CONTAINED. DRAINS IN SHOULDERS OF ADJACENT TRAVEL LANE(S) SHALL BE KEPT FREE AND CLEAR OF DEBRIS.

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

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.

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

FOR FINAL PAVEMENT MARKINGS AND MARKERS, SEE TRANSPORTATION MANAGEMENT PLANS.

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 TASKS FOR EACH OPERATION AFFECTING THE BRIDGE SURFACE AND/OR TRAFFIC.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THERE ARE STREAM MONITORING DEVICES ATTACHED TO STRUCTURE 910240 THAT SHOULD NOT BE DISTURBED WITHOUT APPROVAL FROM THE ENGINEER.

AT THE TIME OF PREPARATION OF THESE PLANS, IT WAS NOT ANTICIPATED THAT THE FOLLOWING ITEM(S) LISTED WOULD BE REQUIRED. HOWEVER, IT MAY BE DETERMINED IN THE FIELD THAT THE FOLLOWING ITEM(S) LISTED, OR OTHER WORK WILL BE NECESSARY TO PROPERLY COMPLETE THE INTENDED BRIDGE PRESERVATION/REHABILITATION WORK. THE CONTRACTOR SHALL BE PREPARED TO PERFORM SUCH WORK IN A TIMELY MANNER, AS DETERMINED IN THE FIELD. SUCH WORK SHALL BE CONSIDERED EXTRA WORK AND SHALL BE ADDRESSED AS PER ARTICLE 104-7 OF THE STANDARD SPECIFICATIONS. PROJECT SPECIAL PROVISIONS THAT OUTLINE REQUIREMENTS FOR THESE POTENTIAL ADDITIONAL WORK ITEMS HAVE BEEN PROVIDED IN THE PROJECT DOCUMENTS, BUT NO QUANTITIES HAVE BEEN LISTED. ACTUAL PAY ITEMS, QUANTITIES, AND COSTS WILL BE ESTABLISHED, AS REQUIRED, IF EXTRA WORK IS ENCOUNTERED.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR POLLUTION CONTROL, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR FOAM JOINT SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.

FOR PREFORMED MEMBRANE EXPANSION JOINTS FOR PRESERVATION, SEE SPECIAL PROVISIONS.

FOR POURABLE SILICONE JOINT SEALANT, SPECIAL PROVISIONS.

FOR ZONE PAINTING OF EXISTING EXISTING STRUCTURE, SEE SPECIAL PROVISIONS.

FOR PAINTING CONTAINMENT FOR ZONE PAINTING, SEE SPECIAL PROVISIONS.

FOR CONCRETE DECK REPAIR FOR POLYMER CONCRETE, POLYMER CONCRETE MATERIALS, PLACING AND FINISHING POLYMER CONCRETE OVERLAY, SEE POLYMER CONCRETE BRIDGE DECK OVERLAY SPECIAL PROVISIONS.

FOR BRIDGE DECK WATERPROOFING MEMBRANE-SPRAY APPLIED, SEE SPECIAL PROVISIONS.

FOR PREFORMED MEMBRANE EXPANSION JOINT MATERIAL, SEE SPECIAL PROVISIONS.

FOR CLEANING AND PAINTING EXISTING BEARINGS WITH HRCSA, SEE SPECIAL PROVISIONS.

FOR PAINTING CONTAINMENT FOR BRIDGE NO., SEE CLEANING AND PAINTING EXISTING BEARINGS WITH HRCSA SPECIAL PROVISION.

FOR EPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.

FOR SCARIFYING AND SHOTBLASTING BRIDGE DECKS, SEE SPECIAL PROVISIONS.

FOR TYPE II BRIDGE JACKING, SEE SPECIAL PROVISIONS.

FOR DRIFT REMOVAL, SEE SPECIAL PROVISIONS.

FOR SECURING OF VESSELS, SEE SPECIAL PROVISIONS.

FOR BEAM REPAIR PLATING, SEE SPECIAL PROVISIONS.

FOR UNDER STRUCTURE WORK PLATFORM, SEE SPECIAL PROVISIONS.

FOR LINK SLAB FOR PRESERVATION, SEE SPECIAL PROVISIONS.

FOR BEARING REPLACEMENT, SEE SPECIAL PROVISIONS.

FOR CLASS II SURFACE PREPARATION, SEE SPECIAL PROVISIONS.

FOR EPOXY COATING CONCRETE GIRDER ENDS, SEE SPECIAL PROVISIONS.

FOR REPAIRS TO PRESTRESSED CONCRETE GIRDERS, SEE SPECIAL PROVISIONS.

FOR VOLUMETRIC MIXER, SEE SPECIAL PROVISIONS.

FOR TYPE 11 CONCRETE BARRIER RAIL REPAIR, SEE SPECIAL PROVISIONS.

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910028 & 910240**



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**GENERAL DRAWING**  
 NOTES AND TOTAL  
 BILL OF MATERIAL

DRAWN BY : N.A. PIERCE DATE : 05/2020  
 CHECKED BY : D.A. CANTRELL DATE : 11/2021  
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 11/2021

UNANTICIPATED ITEMS:	ITEM DESCRIPTION	UNIT
	SPlicing OF PRESTRESSING STRAND	EACH
	TYPE I BRIDGE JACKING	EACH
	BOLTED BEAM REPAIR	POUND
	BEAM REPAIR BEAM END CUT-OUT	POUND
	CLASS III SURFACE PREPARATION	SQ. YDS.

REVISED QUANTITIES  
 02/25/22

DOCUMENT NOT CONSIDERED  
 FINAL UNLESS ALL  
 SIGNATURES COMPLETED

REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	DATE:
1	NAP	02/25/22	3	
2			4	

S-2  
 TOTAL SHEETS  
 73

**NOTES**

GENERAL DRAWING INFORMATION IS TAKEN FROM THE ORIGINAL PLANS AND THE ROUTINE INSPECTION REPORT DATED 05/27/2021.

BRIDGE ORIENTATION CONFORMS TO THE EXISTING BRIDGE PLANS.

**SCOPE OF WORK**

MILL BRIDGE APPROACHES AND REMOVE ASPHALT WEARING SURFACE ON BRIDGE DECK BY SCARIFICATION METHODS.

REPLACE EXISTING BRIDGE JOINT SYSTEM WITH PREFORMED MEMBRANE EXPANSION JOINT MATERIAL.

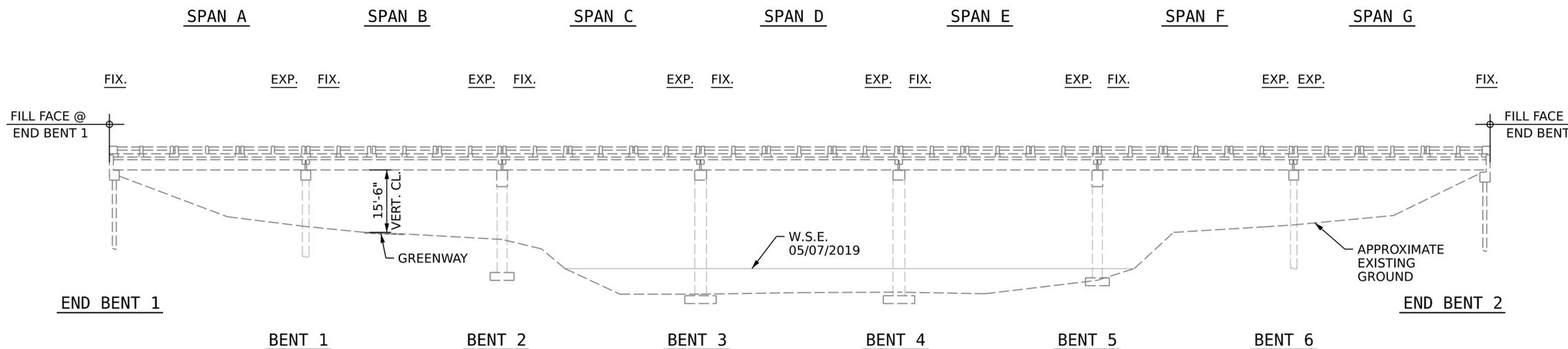
PLACE WATERPROOFING MEMBRANE AND ASPHALT WEARING SURFACE.

REPAIR DAMAGED SECTIONS OF BRIDGE RAILING.

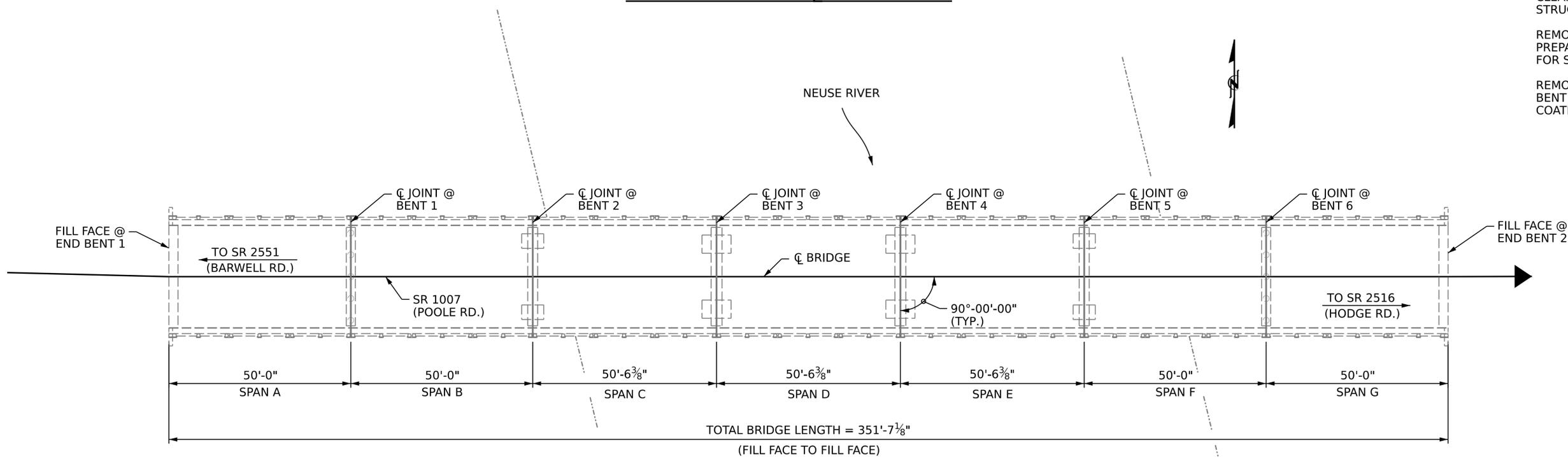
CLEAN, REPAIR AND ZONE PAINT EXISTING STRUCTURAL STEEL BEAMS.

REMOVE UNSOUND CONCRETE AND PROPERLY PREPARE EXISTING END BENT AND BENT AREAS FOR SHOTCRETE AND CONCRETE REPAIRS.

REMOVE DEBRIS FROM TOP OF EXISTING END BENT AND BENT CAPS AND APPLY EPOXY COATING.



**SECTION ALONG C OF BRIDGE**



**PLAN**

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

\_\_\_\_\_  
RESIDENT ENGINEER

\_\_\_\_\_  
DATE



DocuSigned by:  
Krissy W. Alford  
01/24/2022



DocuSigned by:  
Nicholas Pierce  
01/21/2022

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910028**

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**GENERAL DRAWING**  
 FOR BRIDGE ON SR 1007  
 (POOLE RD.)  
 OVER THE NEUSE RIVER

DRAWN BY : N.A. PIERCE DATE : 05/2020  
 CHECKED BY : D.A. CANTRELL DATE : 11/2021  
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 11/2021

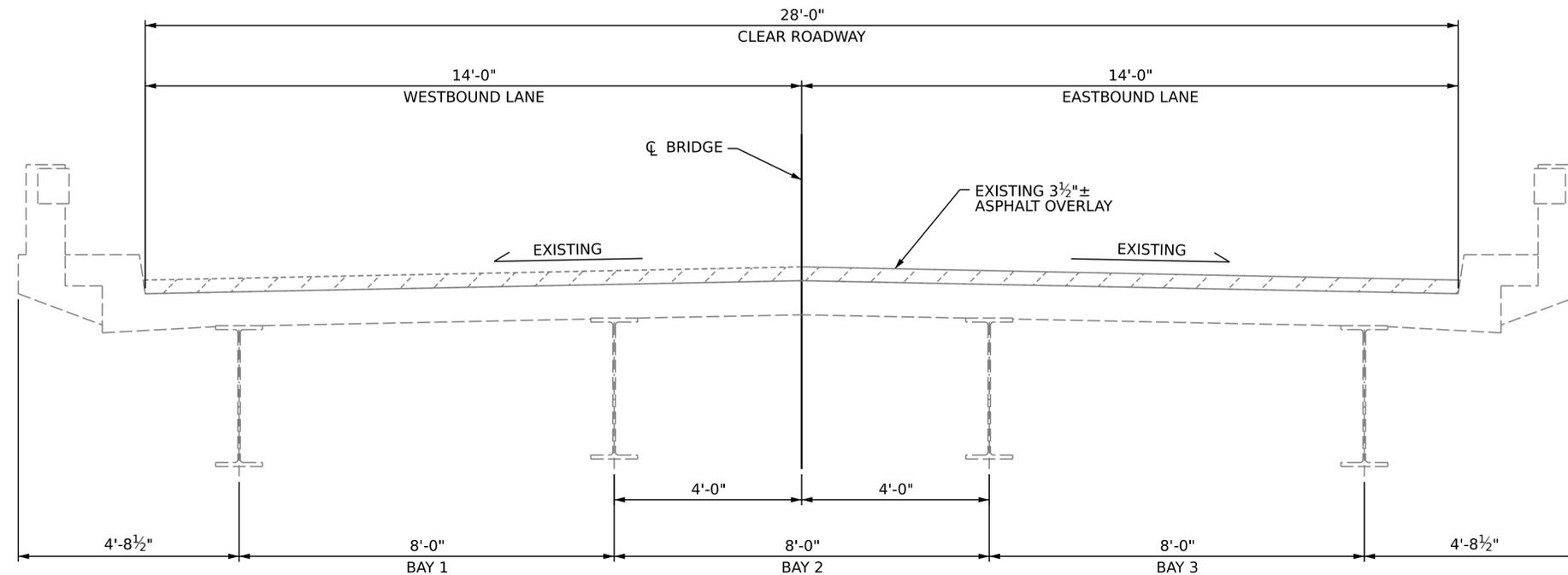
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO. S1-01 TOTAL SHEETS 73
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

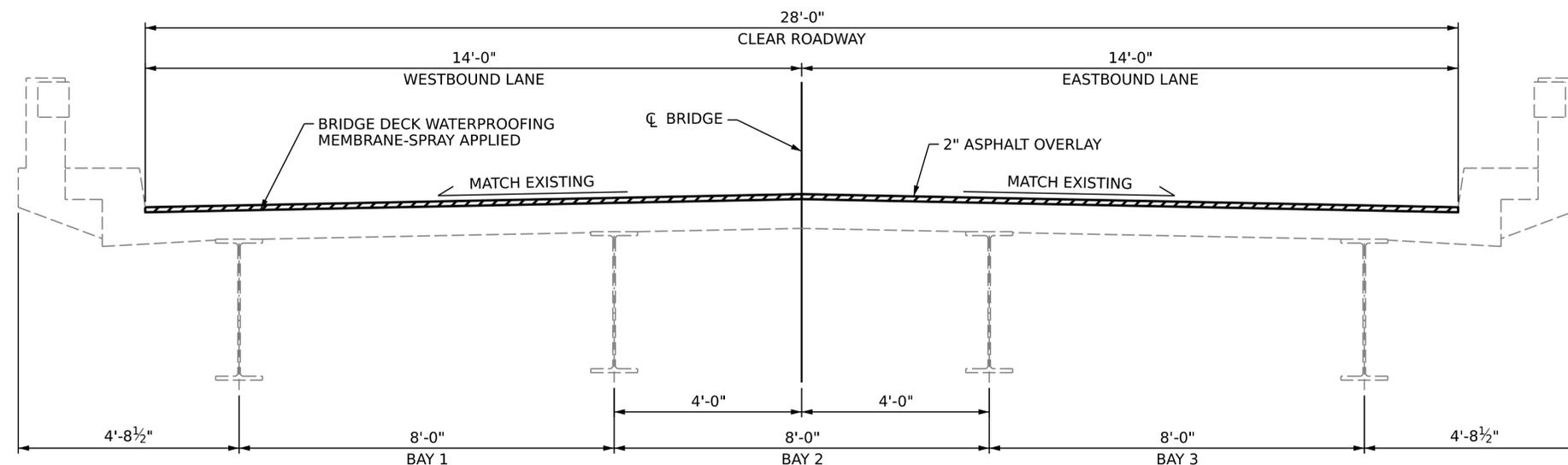
### NOTES

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

FOR BRIDGE DECK WATERPROOFING MEMBRANE-SPRAY APPLIED, SEE SPECIAL PROVISIONS.



**TYPICAL SECTION**  
EXISTING



**TYPICAL SECTION**  
PROPOSED

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
BRIDGE NO. **910028**



DocuSigned by:  
*Nicholas Pierce*  
15110840000485  
01/21/2022

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

### TYPICAL SECTION

DRAWN BY : N.A. PIERCE DATE : 05/2020  
CHECKED BY : D.A. CANTRELL DATE : 11/2021  
DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 11/2021

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-02
1			3			TOTAL SHEETS
2			4			73

8/26/21

### AS-BUILT REPAIR QUANTITY TABLE

#### DECK SURFACE REPAIR - SPAN A

	ESTIMATE	ACTUAL
CONCRETE DECK REPAIR	0.3 CU. FT	
CLASS II SURFACE PREPARATION	1.6 SQ. YDS.	
WATERPROOFING MEMBRANE	155.6 SQ. YDS.	
SCARIFYING BRIDGE DECK	155.6 SQ. YDS.	
SHOTBLASTING BRIDGE DECK	155.6 SQ. YDS.	
ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B	20.0 TONS	
ASPHALT BINDER FOR PLANT MIXER	5.0 TONS	
TYPE 11 CONCRETE BARRIER RAIL REPAIR	0.0 LIN. FT.	

#### NOTES

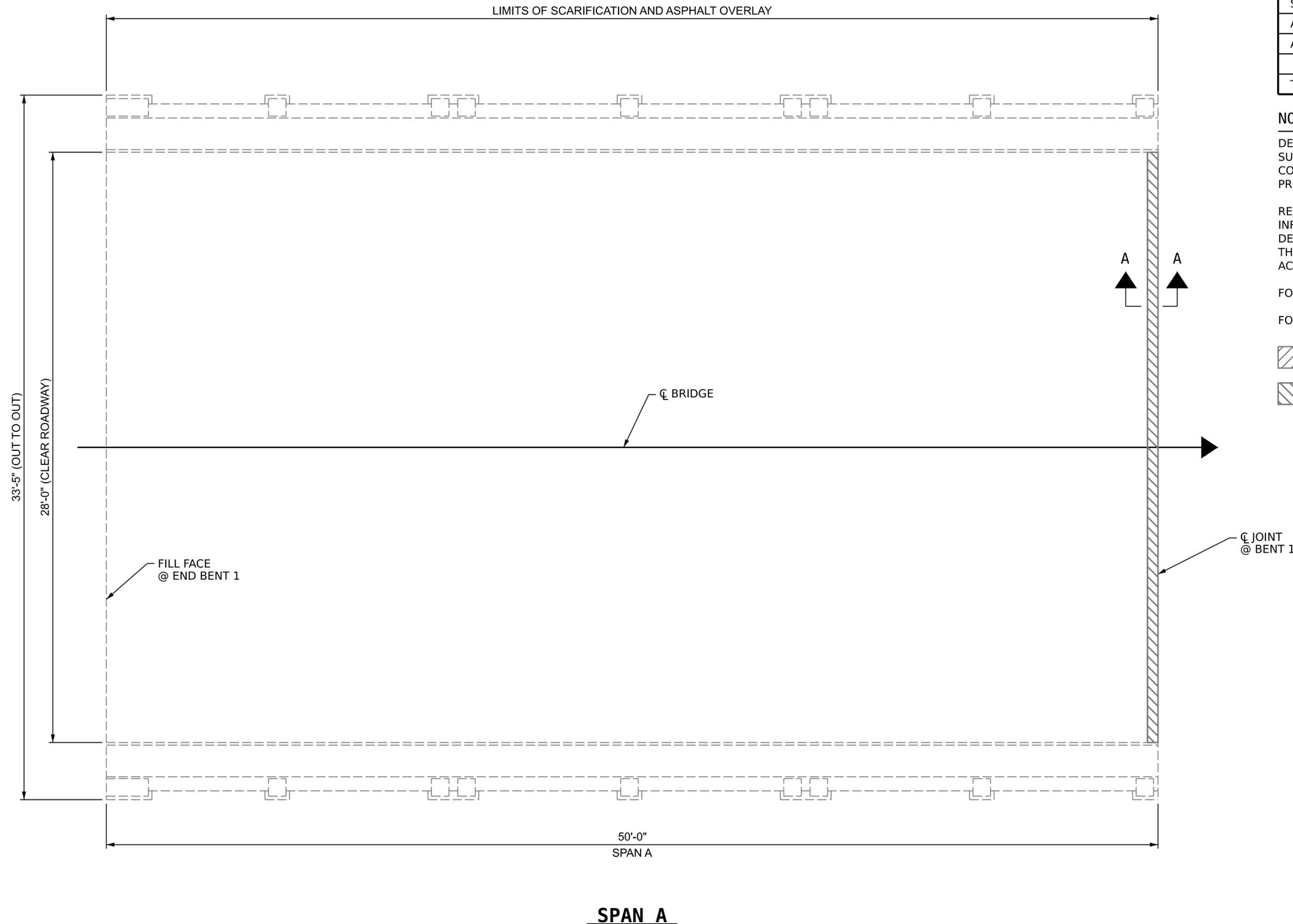
DECK SURFACE REPAIR QUANTITIES REPRESENT ESTIMATED VALUES OF CLASS II SURFACE PREPARATION AND CONCRETE DECK REPAIR AFTER REMOVAL OF UNSOUND CONCRETE. (MIN. 2" CLEAR TO SAWCUT). SEE CONCRETE FOR DECK REPAIR SPECIAL PROVISION.

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 "CONCRETE FOR DECK REPAIR", SEE SPECIAL PROVISIONS.

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

-  BARRIER RAIL REPAIR AREA
-  CLASS II SURFACE PREPARATION



PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910028**

SHEET 1 OF 7



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**DECK SURFACE REPAIR**  
**SPAN A**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			73
2			4			

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DRAWN BY : N.A. PIERCE DATE : 05/2020  
 CHECKED BY : D.A. CANTRELL DATE : 11/2021  
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 11/2021

8/26/21

### AS-BUILT REPAIR QUANTITY TABLE

#### DECK SURFACE REPAIR - SPAN B

	ESTIMATE	ACTUAL
CONCRETE DECK REPAIR	0.6 CU. FT	
CLASS II SURFACE PREPARATION	3.2 SQ. YDS.	
WATERPROOFING MEMBRANE	155.6 SQ. YDS.	
SCARIFYING BRIDGE DECK	155.6 SQ. YDS.	
SHOTBLASTING BRIDGE DECK	155.6 SQ. YDS.	
ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B	20.0 TONS	
ASPHALT BINDER FOR PLANT MIXER	5.0 TONS	
TYPE 11 CONCRETE BARRIER RAIL REPAIR	0.0 LIN. FT.	

#### NOTES

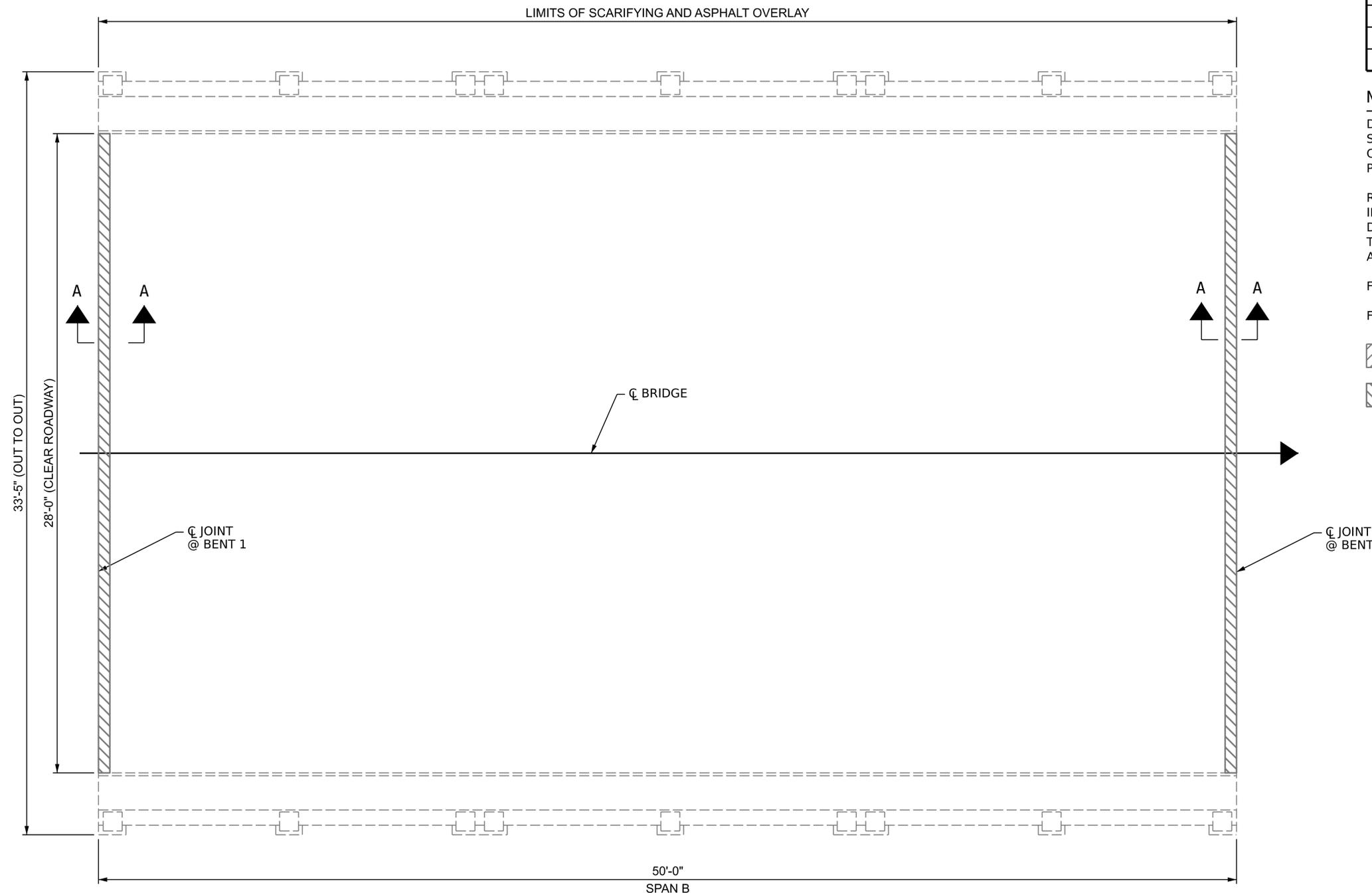
DECK SURFACE REPAIR QUANTITIES REPRESENT ESTIMATED VALUES OF CLASS II SURFACE PREPARATION AND CONCRETE DECK REPAIR AFTER REMOVAL OF UNSOUND CONCRETE. (MIN. 2" CLEAR TO SAWCUT). SEE CONCRETE FOR DECK REPAIR SPECIAL PROVISION.

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 "CONCRETE FOR DECK REPAIR", SEE SPECIAL PROVISIONS.

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

-  BARRIER RAIL REPAIR AREA
-  CLASS II SURFACE PREPARATION



**SPAN B**

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910028**

SHEET 2 OF 7



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**DECK SURFACE REPAIR**  
**SPAN B**

REVISIONS						SHEET NO.
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1			3			73
2			4			

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DRAWN BY : N.A. PIERCE DATE : 05/2020  
 CHECKED BY : D.A. CANTRELL DATE : 11/2021  
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 11/2021

### AS-BUILT REPAIR QUANTITY TABLE

#### DECK SURFACE REPAIR - SPAN C

	ESTIMATE	ACTUAL
CONCRETE DECK REPAIR	0.6 CU. FT	
CLASS II SURFACE PREPARATION	3.2 SQ. YDS.	
WATERPROOFING MEMBRANE	155.6 SQ. YDS.	
SCARIFYING BRIDGE DECK	155.6 SQ. YDS.	
SHOTBLASTING BRIDGE DECK	155.6 SQ. YDS.	
ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B	20.0 TONS	
ASPHALT BINDER FOR PLANT MIXER	5.0 TONS	
TYPE 11 CONCRETE BARRIER RAIL REPAIR	0.0 LIN. FT.	

#### NOTES

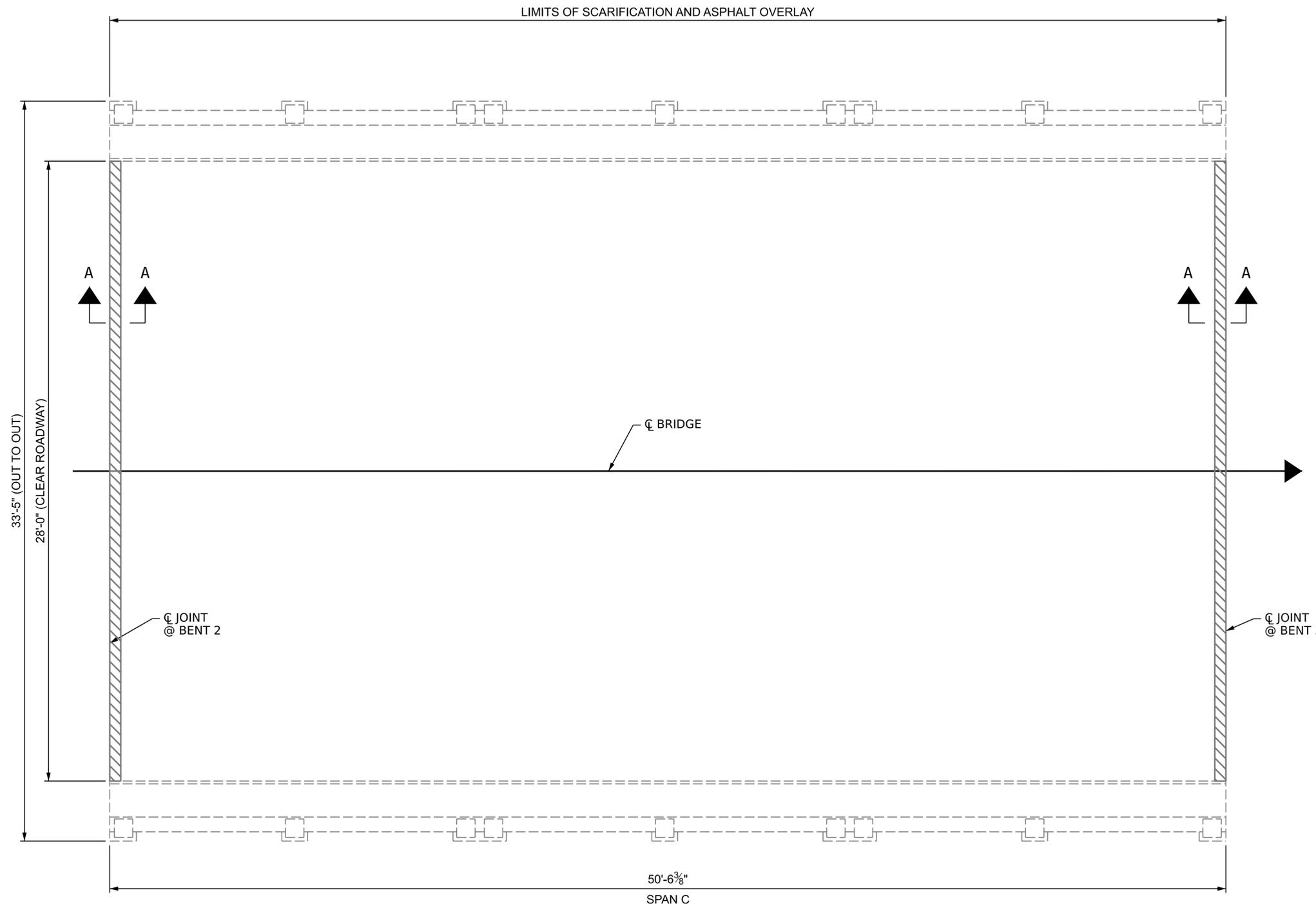
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REPAIR LOCATIONS AND ESTIMATED QUANTITIES ARE BASED ON THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATIONS AND DESCRIPTION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

FOR "CONCRETE FOR DECK REPAIR", SEE SPECIAL PROVISIONS.

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

-  BARRIER RAIL REPAIR AREA
-  CLASS II SURFACE PREPARATION



**SPAN C**

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910028**

SHEET 3 OF 7



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**DECK SURFACE REPAIR**  
**SPAN C**

REVISIONS						SHEET NO.
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2			4			

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 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 11/2021

### AS-BUILT REPAIR QUANTITY TABLE

#### DECK SURFACE REPAIR - SPAN D

	ESTIMATE	ACTUAL
CONCRETE DECK REPAIR	0.6 CU. FT	
CLASS II SURFACE PREPARATION	3.2 SQ. YDS.	
WATERPROOFING MEMBRANE	155.6 SQ. YDS.	
SCARIFYING BRIDGE DECK	155.6 SQ. YDS.	
SHOTBLASTING BRIDGE DECK	155.6 SQ. YDS.	
ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B	20.0 TONS	
ASPHALT BINDER FOR PLANT MIXER	5.0 TONS	
TYPE 11 CONCRETE BARRIER RAIL REPAIR	8.0 LIN. FT.	

#### NOTES

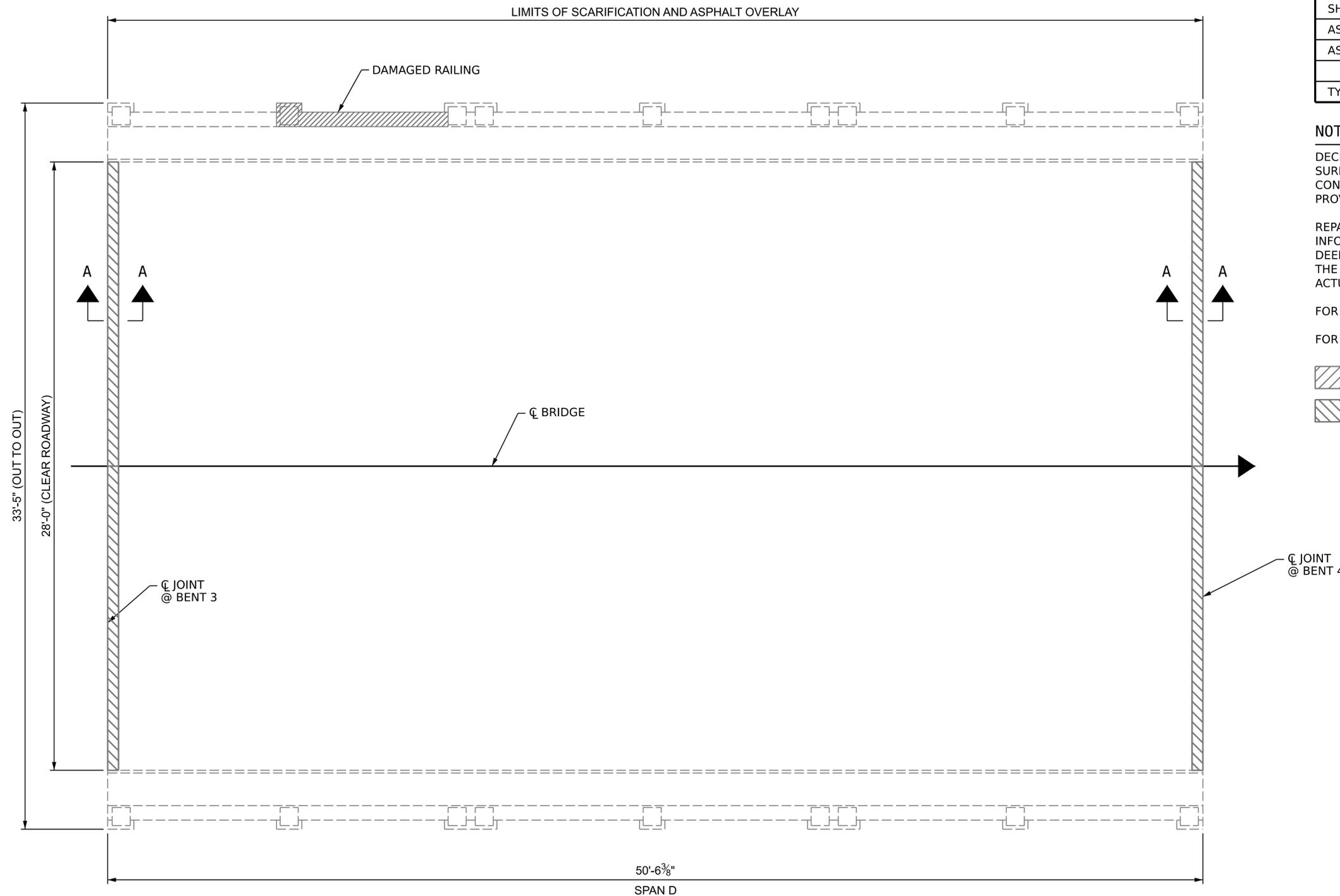
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FOR "CONCRETE FOR DECK REPAIR", SEE SPECIAL PROVISIONS.

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

-  BARRIER RAIL REPAIR AREA
-  CLASS II SURFACE PREPARATION



PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910028**

SHEET 4 OF 7

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

### DECK SURFACE REPAIR SPAN D



Designed by  
*Nicholas Pierce*  
 151108434028485.  
 01/21/2022

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2			4			TOTAL SHEETS 73

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### AS-BUILT REPAIR QUANTITY TABLE

#### DECK SURFACE REPAIR - SPAN E

	ESTIMATE	ACTUAL
CONCRETE DECK REPAIR	0.6 CU. FT	
CLASS II SURFACE PREPARATION	3.2 SQ. YDS.	
WATERPROOFING MEMBRANE	155.6 SQ. YDS.	
SCARIFYING BRIDGE DECK	155.6 SQ. YDS.	
SHOTBLASTING BRIDGE DECK	155.6 SQ. YDS.	
ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B	20.0 TONS	
ASPHALT BINDER FOR PLANT MIXER	5.0 TONS	
TYPE 11 CONCRETE BARRIER RAIL REPAIR	0.0 LIN. FT.	

#### NOTES

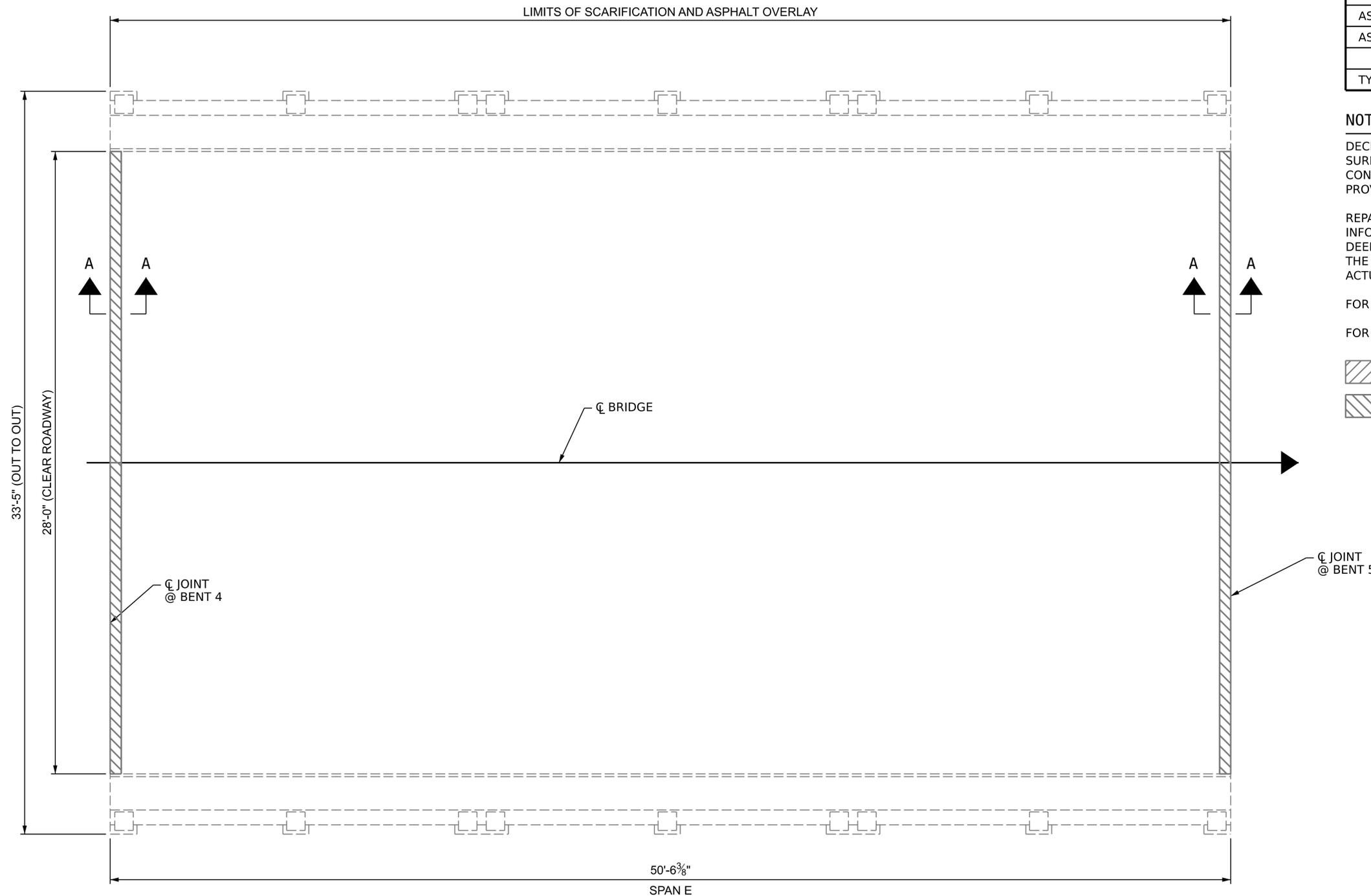
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REPAIR LOCATIONS AND ESTIMATED QUANTITIES ARE BASED ON THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATIONS AND DESCRIPTION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

FOR "CONCRETE FOR DECK REPAIR", SEE SPECIAL PROVISIONS.

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

-  BARRIER RAIL REPAIR AREA
-  CLASS II SURFACE PREPARATION



### SPAN E

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910028**

SHEET 5 OF 7



DocuSigned by:  
 Nicholas Pierce  
 151108434008485...  
 01/21/2022

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

## DECK SURFACE REPAIR

### SPAN E

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 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 11/2021

### AS-BUILT REPAIR QUANTITY TABLE

#### DECK SURFACE REPAIR - SPAN F

	ESTIMATE	ACTUAL
CONCRETE DECK REPAIR	0.6 CU. FT	
CLASS II SURFACE PREPARATION	3.2 SQ. YDS.	
WATERPROOFING MEMBRANE	155.6 SQ. YDS.	
SCARIFYING BRIDGE DECK	155.6 SQ. YDS.	
SHOTBLASTING BRIDGE DECK	155.6 SQ. YDS.	
ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B	20.0 TONS	
ASPHALT BINDER FOR PLANT MIXER	5.0 TONS	
TYPE 11 CONCRETE BARRIER RAIL REPAIR	0.0 LIN. FT.	

#### NOTES

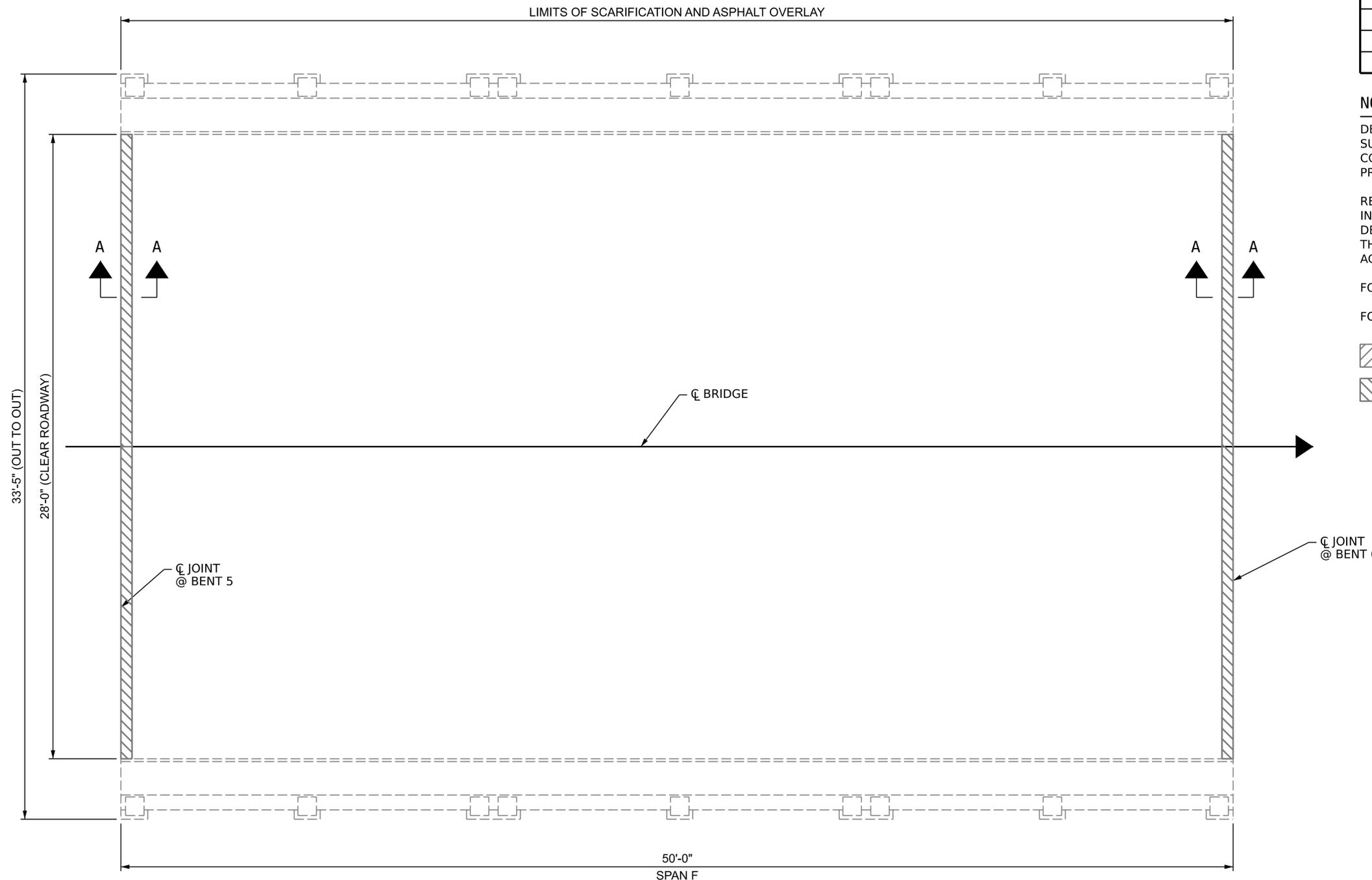
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FOR "CONCRETE FOR DECK REPAIR", SEE SPECIAL PROVISIONS.

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

-  BARRIER RAIL REPAIR AREA
-  CLASS II SURFACE PREPARATION



PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910028**

SHEET 6 OF 7



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

### DECK SURFACE REPAIR

### SPAN F

REVISIONS						SHEET NO.
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 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 11/2021

**SPAN F**

### AS-BUILT REPAIR QUANTITY TABLE

#### DECK SURFACE REPAIR - SPAN G

	ESTIMATE	ACTUAL
CONCRETE DECK REPAIR	0.3 CU. FT	
CLASS II SURFACE PREPARATION	1.6 SQ. YDS.	
WATERPROOFING MEMBRANE	155.6 SQ. YDS.	
SCARIFYING BRIDGE DECK	155.6 SQ. YDS.	
SHOTBLASTING BRIDGE DECK	155.6 SQ. YDS.	
ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B	20.0 TONS	
ASPHALT BINDER FOR PLANT MIXER	5.0 TONS	
TYPE 11 CONCRETE BARRIER RAIL REPAIR	16.5 LIN. FT.	

#### NOTES

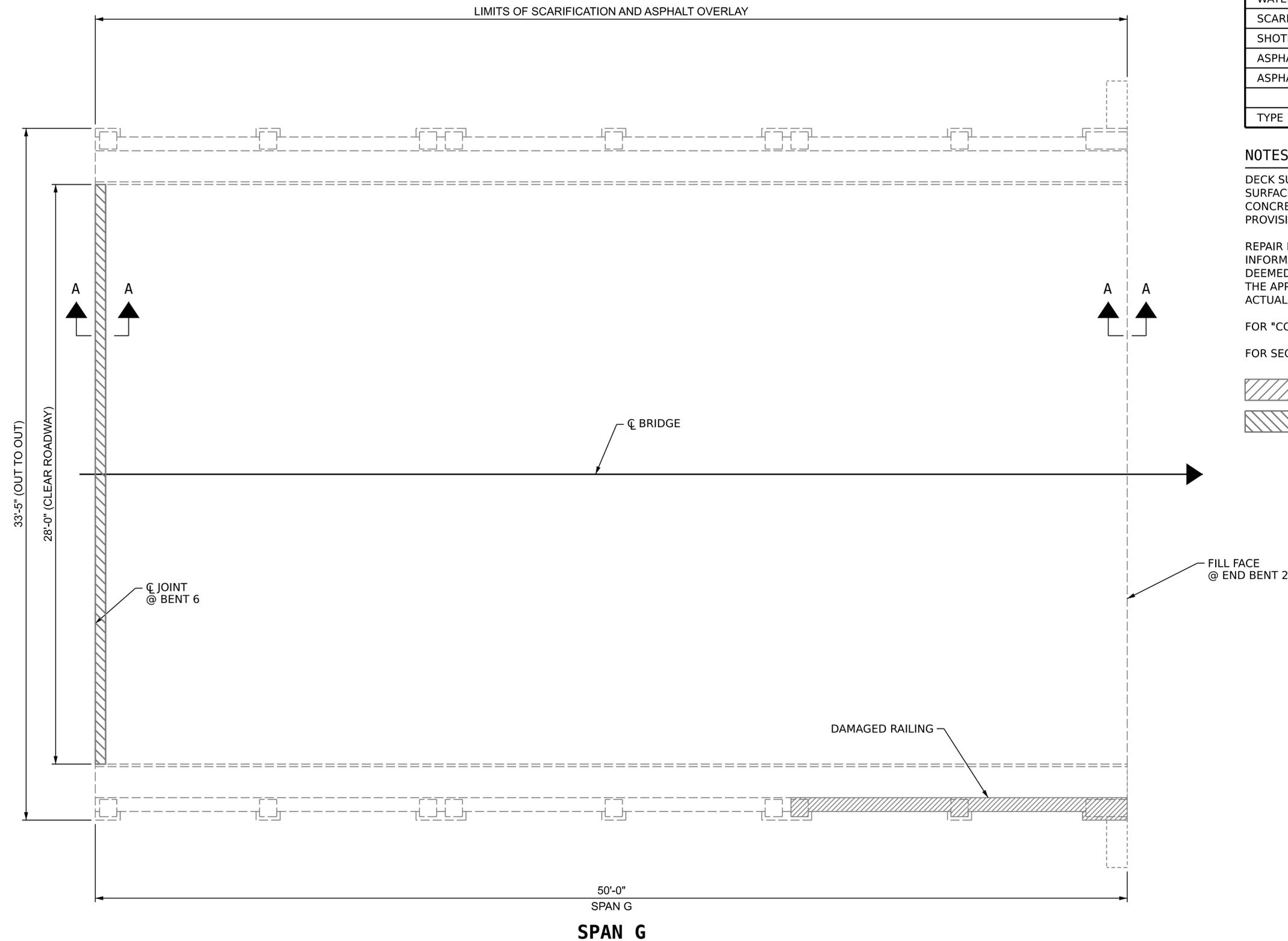
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FOR "CONCRETE FOR DECK REPAIR", SEE SPECIAL PROVISIONS.

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

-  BARRIER RAIL REPAIR AREA
-  CLASS II SURFACE PREPARATION



PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910028**

SHEET 7 OF 7



Designed by:  
 Nicholas Pierce  
 151106434008485  
 01/21/2022

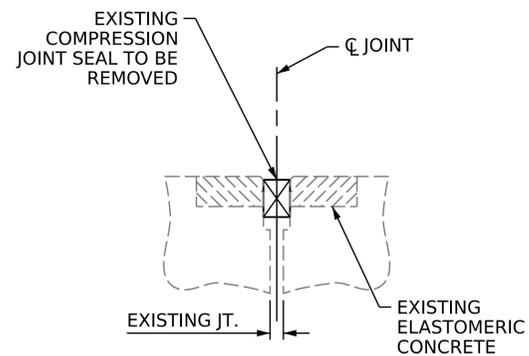
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

### DECK SURFACE REPAIR SPAN G

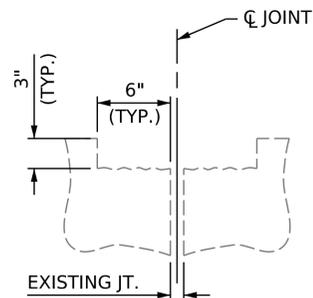
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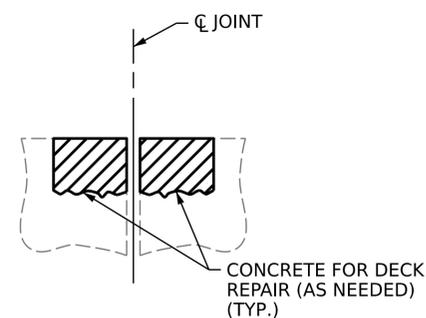
DRAWN BY : N.A. PIERCE DATE : 05/2020  
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EXISTING COMPRESSION JOINT SEAL



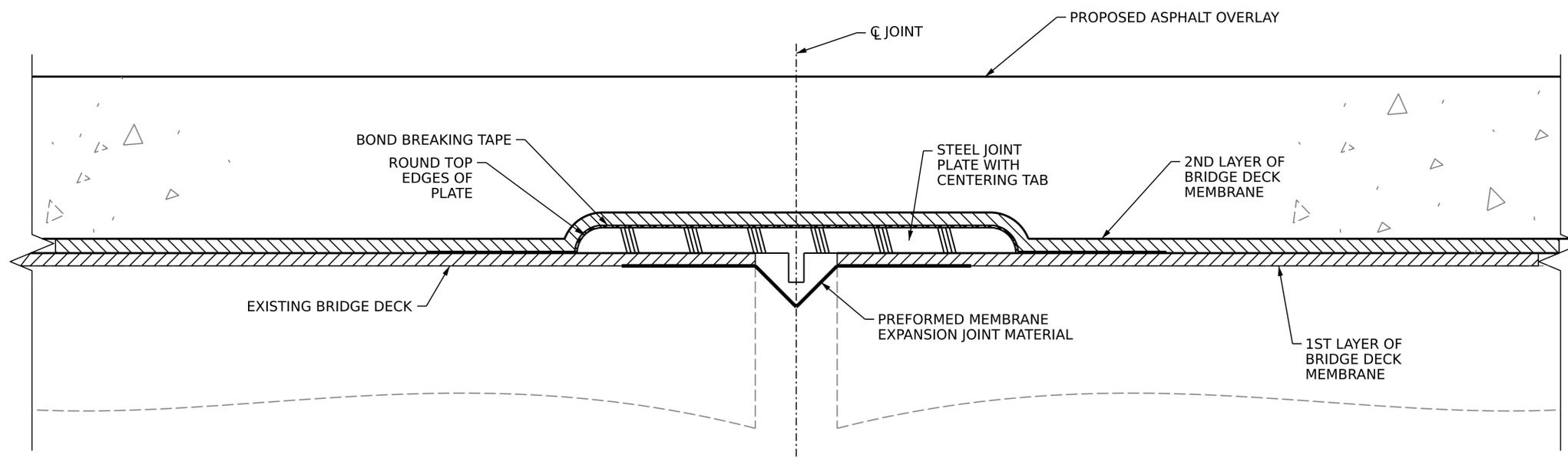
CLASS II SURFACE PREPARATION OF EXISTING JOINT AS NEEDED



PREPOSED JOINT PRIOR TO PLACING NEW JOINT MATERIAL

**SECTION A-A**

EXISTING



**SECTION A-A**

PROPOSED

**NOTES**

- THE CONTRACTOR SHALL FIELD VERIFY THE EXISTING JOINT OPENING PRIOR TO ORDERING JOINT MATERIALS.
- THE MANUFACTURER IS TO PROVIDE THE PREFORMED EXPANSION JOINT SEAL WIDTH FOR THE EXISTING JOINT SIZE AND ACCOMMODATE THE MINIMUM EXPANSION OPENING FIELD VERIFIED BY THE CONTRACTOR.
- ONLY PREFORMED MEMBRANE EXPANSION JOINT MATERIALS, STEEL JOINT PLATES AND BOND BREAKING TAPES THAT ARE RECOMMENDED BY THE BRIDGE DECK WATERPROOFING MEMBRANE MANUFACTURER SHALL BE USED.
- PREFORMED MEMBRANE EXPANSION JOINTS SHALL BE INSTALLED AS PER THE MANUFACTURER'S RECOMMENDATIONS.
- A MANUFACTURER'S CERTIFIED TRAINED REPRESENTATIVE SHALL BE PRESENT DURING THE INSTALLATION OF THE FIRST JOINT OF THE PROJECT, OR UNTIL THE ENGINEER IS SATISFIED WITH THE INSTALL PROCESS.
- THE CONTRACTOR SHALL TAKE CARE DURING JOINT REHAB OPERATIONS NOT TO ALLOW ANY MATERIAL FALL BELOW THE BRIDGE. ANY MATERIAL THAT FALLS BELOW THE BRIDGE SHALL BE CONTAINED, REMOVED AND DISPOSED OF BY THE CONTRACTOR AT NO EXTRA COST TO THE DEPARTMENT. IF THE ENGINEER DETERMINES THAT THE PROTECTIVE DEVICES ARE NOT ADEQUATE OR NOT BEING EMPLOYED, THE WORK SHALL BE SUSPENDED UNTIL ADEQUATE PROTECTION IS PROVIDED.
- THE CONTRACTOR SHALL NOT BE PERMITTED TO FORM THE JOINTS IN LIEU OF SAWING THE JOINT.
- THE CONTRACTOR SHALL REPAIR EXISTING BRIDGE DECK HEADERS AS NEEDED TO MEET TOLERANCES AS PER THE PREFORMED MEMBRANE EXPANSION JOINT MANUFACTURER'S RECOMMENDATIONS.
- FOR CONCRETE FOR BRIDGE DECK REPAIR, SEE SPECIAL PROVISIONS.
- THE STEEL BRIDGE PLATE SHALL BE A MINIMUM OF 36 KSI STEEL. THE STEEL BRIDGE PLATE THICKNESS SHALL BE A MINIMUM OF 1/4".

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910028**

JOINT REPAIR QUANTITY TABLE		
	ESTIMATED LIN. FT.	ACTUAL LIN. FT.
PREFORMED MEMBRANE EXPANSION JOINT MATERIAL	168.0	



Drawn/Signed by:  
 Nicholas Pierce  
 151108434008485...  
 01/21/2022

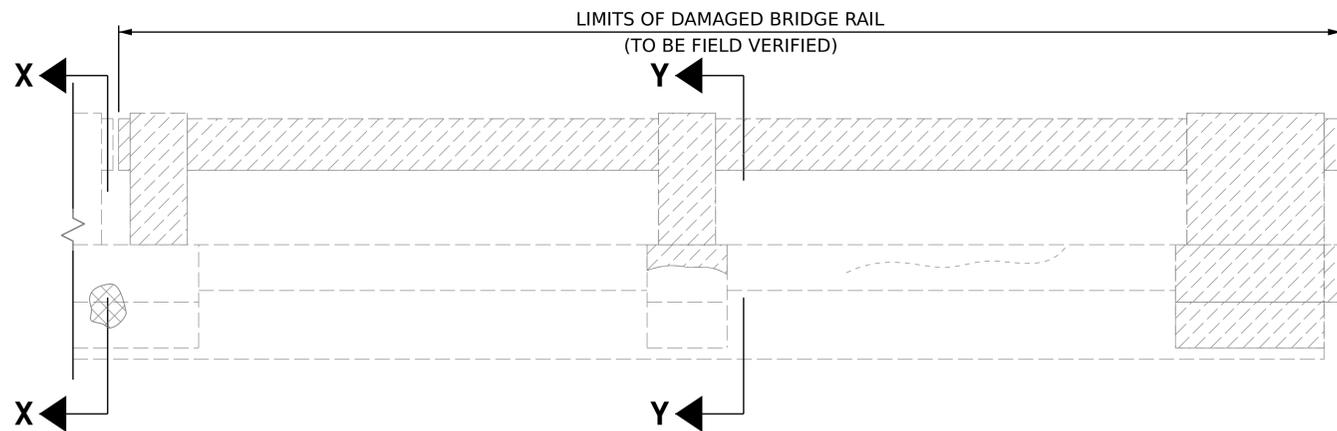
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**JOINT DETAILS**

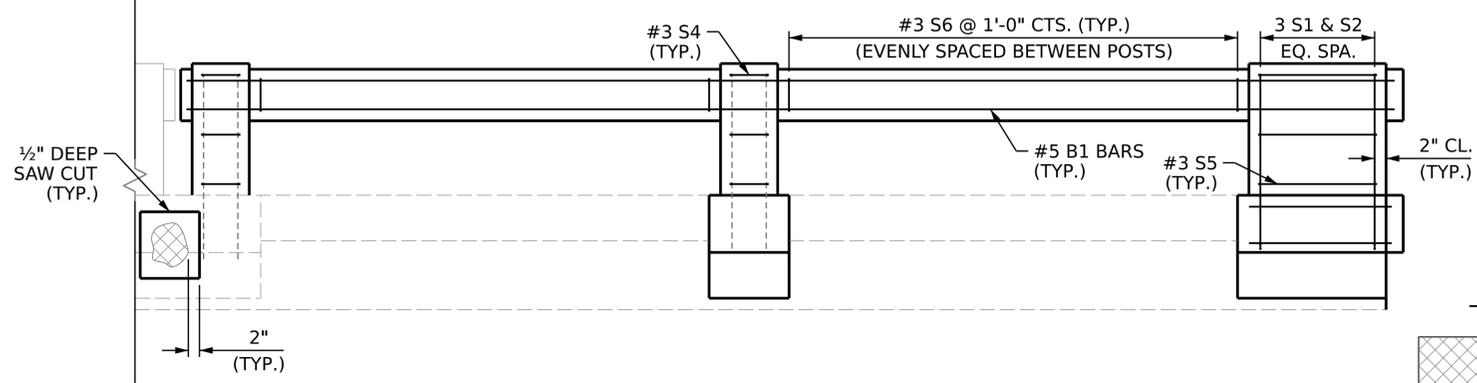
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1			3			S1-10
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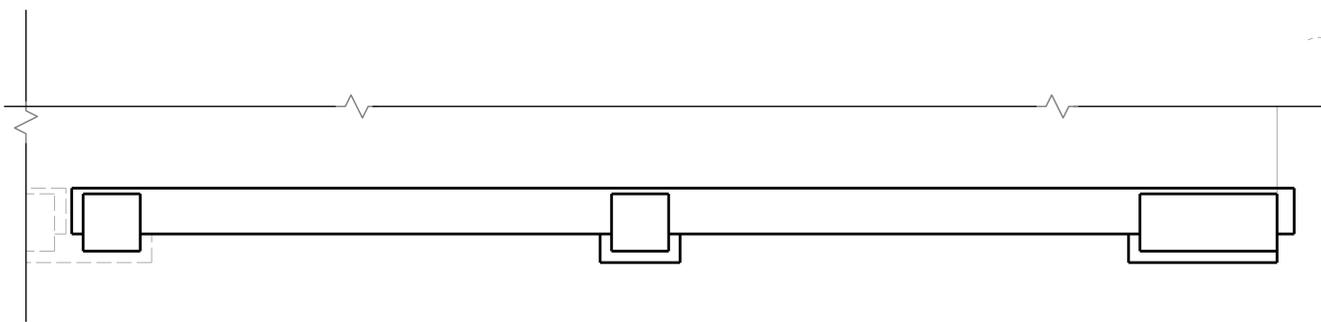
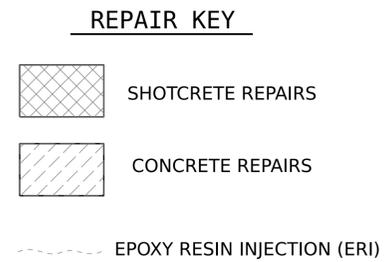
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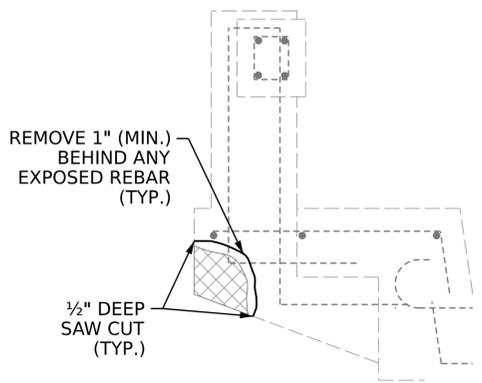
**EXISTING ELEVATION**



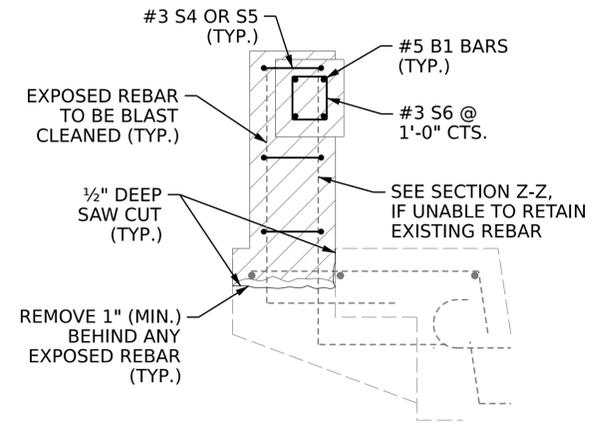
**PROPOSED ELEVATION**



**PLAN**



**SECTION X-X**



**SECTION Y-Y**

**NOTES**

REPAIR LOCATIONS AND ESTIMATE OF 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.

THE CONTRACTOR SHALL FIELD VERIFY THE EXACT DIMENSIONS OF THE SECTION(S) OF RAIL TO BE REPAIRED. REPAIRED SECTION(S) OF RAIL SHOULD MATCH EXISTING UNDAMAGED SECTIONS.

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

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

SAW CUT 1/2 INCH DEEP ALONG LAYOUT LINES INTO SOUND CONCRETE. CARE SHALL BE TAKEN NOT TO CUT OR DAMAGE REINFORCING STEEL DURING CONCRETE REMOVAL. ANY DAMAGED REINFORCING STEEL SHALL BE REPLACED WITH NEW REINFORCING STEEL AS DIRECTED BY THE ENGINEER.

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

ALL REINFORCING STEEL IN BARRIER RAILS SHALL MATCH EXISTING REINFORCING PLACEMENT, SIZE OR TYPE AND SHALL BE EPOXY COATED.

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

FOR BARRIER RAIL REPAIR QUANTITIES, SEE DECK SURFACE REPAIR SHEETS.

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

REMOVE ALL DAMAGED, LOOSE CONCRETE PRIOR TO PLACING FORMWORK.

THE CONTRACTOR MAY USE ADHESIVELY ANCHORED (ANCHOR BOLTS/DOWELS) IN PLACE OF REUSING EXISTING VERTICAL BARS. THE YIELD LOAD FOR THE #5 S1 AND S2 BARS IS 18.6 KIPS. FIELD TESTING FOR THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SECTION 420-13 OF THE STANDARD SPECIFICATIONS.

TEMPORARY BRIDGE RAILS SHALL BE DESIGNED FOR THE AASHTO LRFD TEST LEVEL 3 (TL-3) CRASH TEST CRITERIA. FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY BRIDGE RAILS, SEE SPECIAL PROVISIONS.

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

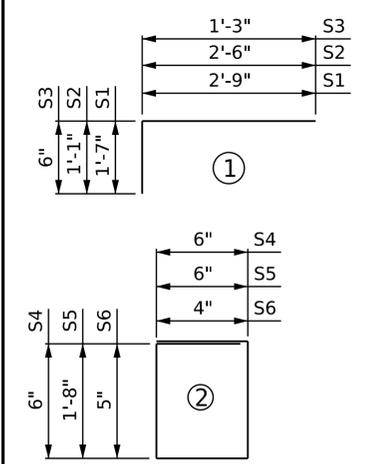
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

**SPLICE LENGTH TABLE**

BAR SIZE	MIN. SPLICE LENGTH
#4	2'-9"
#5	3'-5"
#6	4'-4"

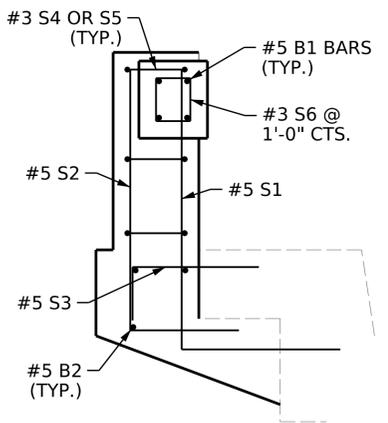
**BAR TYPES**



**BILL OF MATERIAL FOR BARS AS-NEEDED**

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
*S1	1	#5	1	4'-4"	5
*S2	1	#5	1	3'-7"	4
*S3	1	#5	1	1'-9"	2
*S4	1	#3	2	2'-0"	1
*S5	1	#3	2	4'-4"	2
*S6	1	#3	2	1'-6"	1

\* EPOXY COATED REINFORCING STEEL



**SECTION Z-Z**

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910028**

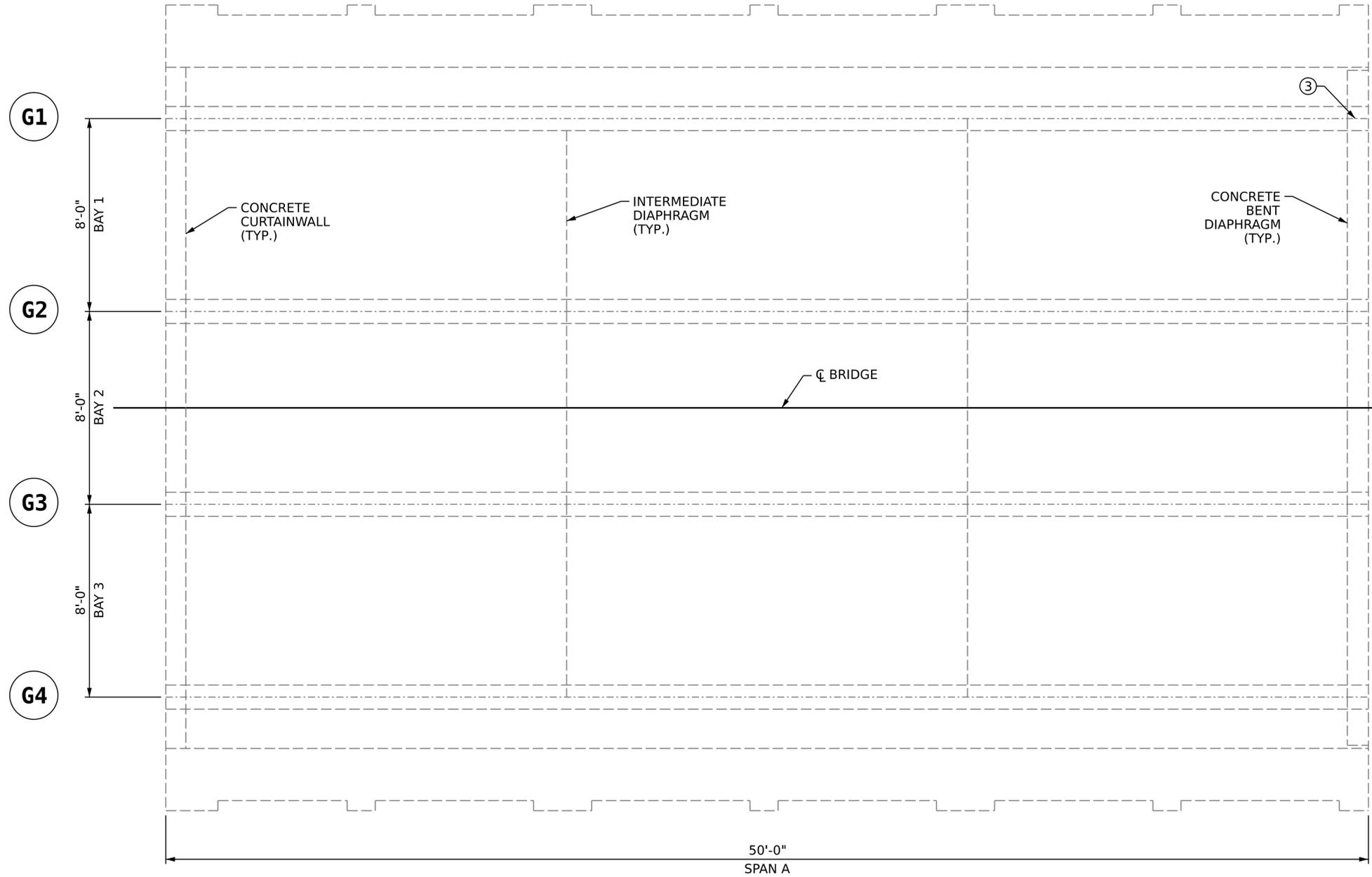


STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
**TYPE 11 CONCRETE BARRIER RAIL REPAIR DETAILS**

ASSEMBLED BY: N.A. PIERCE      DATE: 10/2020  
 CHECKED BY: D.A. CANTRELL      DATE: 11/2021  
 DRAWN BY:  
 CHECKED BY:

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1			3			S1-11
2			4			TOTAL SHEETS 74



AS-BUILT REPAIR QUANTITY TABLE				
DECK UNDERSIDE REPAIRS SPAN A	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0	0		
CONCRETE DIAPHRAGM	0	0		
OVERHANG	0	0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0	0		
CONCRETE DIAPHRAGM	0	0		
OVERHANG	0	0		
ZONE PAINTING		AREA SF		AREA SF
BEAM ENDS		316		

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

**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.

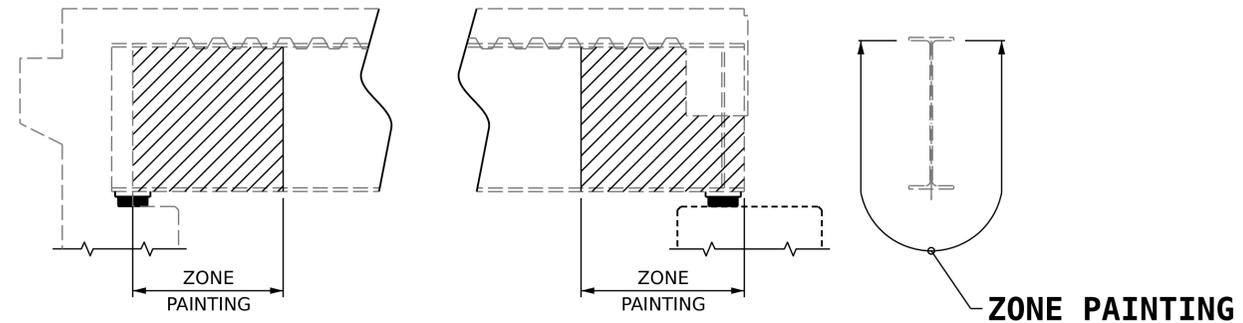
FOR "SHOTCRETE REPAIRS", SEE SPECIAL PROVISIONS.

FOR ZONE PAINTING BEAM ENDS, SEE SPECIAL PROVISIONS.

FOR BEAM REPAIRS, SEE PLATED BEAM REPAIR DETAILS SHEET.

**REPAIR LEGEND**

-  SHOTCRETE REPAIR AREA
-  CONCRETE REPAIR AREA
- ① - WEB REPAIR
- ② - STIFFENER REPAIR
- ③ - BOTTOM FLANGE REPAIR
- G# - GIRDER NUMBER



**LIMITS OF ZONE PAINTING**

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910028**

SHEET 1 OF 7

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**DECK UNDERSIDE REPAIRS**  
**SPAN A**



DocuSigned by:  
 Nicholas Pierce  
 151108434028455  
 01/21/2022

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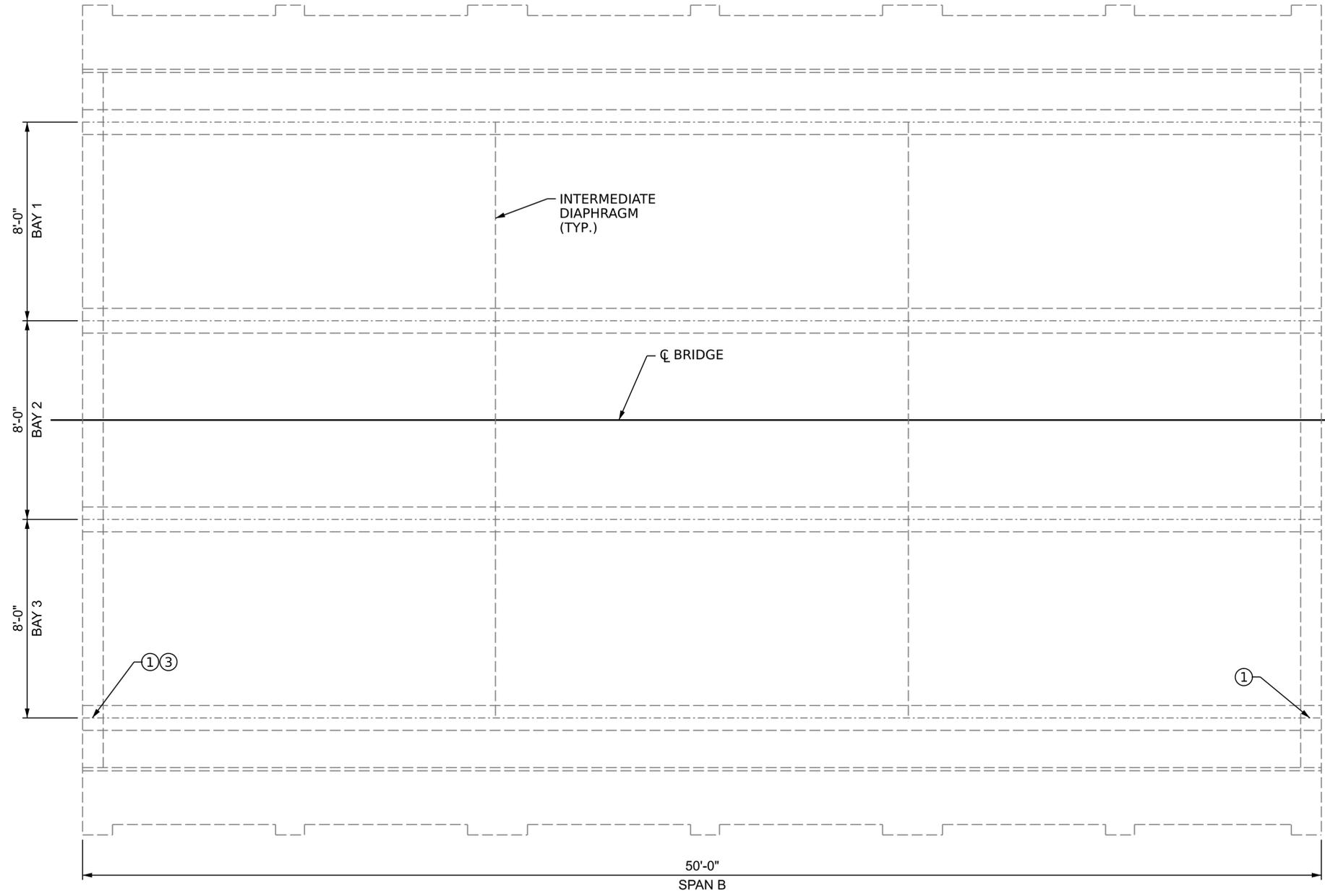
DRAWN BY : N.A. PIERCE DATE : 05/2020  
 CHECKED BY : D.A. CANTRELL DATE : 11/2021  
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 11/2021

G1

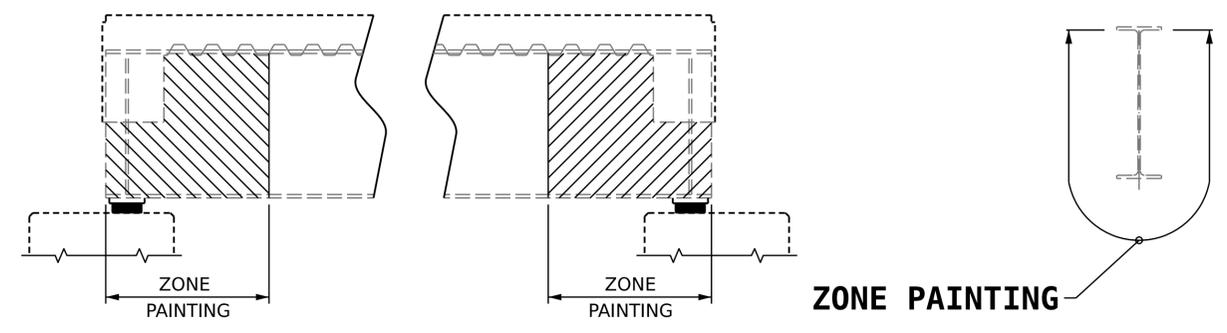
G2

G3

G4



**SPAN B**



**LIMITS OF ZONE PAINTING**

**AS-BUILT REPAIR QUANTITY TABLE**

DECK UNDERSIDE REPAIRS SPAN B	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0	0		
CONCRETE DIAPHRAGM	0	0		
OVERHANG	0	0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0	0		
CONCRETE DIAPHRAGM	0	0		
OVERHANG	0	0		
ZONE PAINTING		AREA SF		AREA SF
BEAM ENDS		316		

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

**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.

FOR "SHOTCRETE REPAIRS", SEE SPECIAL PROVISIONS.

FOR ZONE PAINTING BEAM ENDS, SEE SPECIAL PROVISIONS.

FOR BEAM REPAIRS, SEE PLATED BEAM REPAIR DETAILS SHEET.

**REPAIR LEGEND**

- SHOTCRETE REPAIR AREA
- CONCRETE REPAIR AREA
- ① - WEB REPAIR
- ② - STIFFENER REPAIR
- ③ - BOTTOM FLANGE REPAIR
- G# - GIRDER NUMBER

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910028**

SHEET 2 OF 7

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**DECK UNDERSIDE REPAIRS**  
**SPAN B**

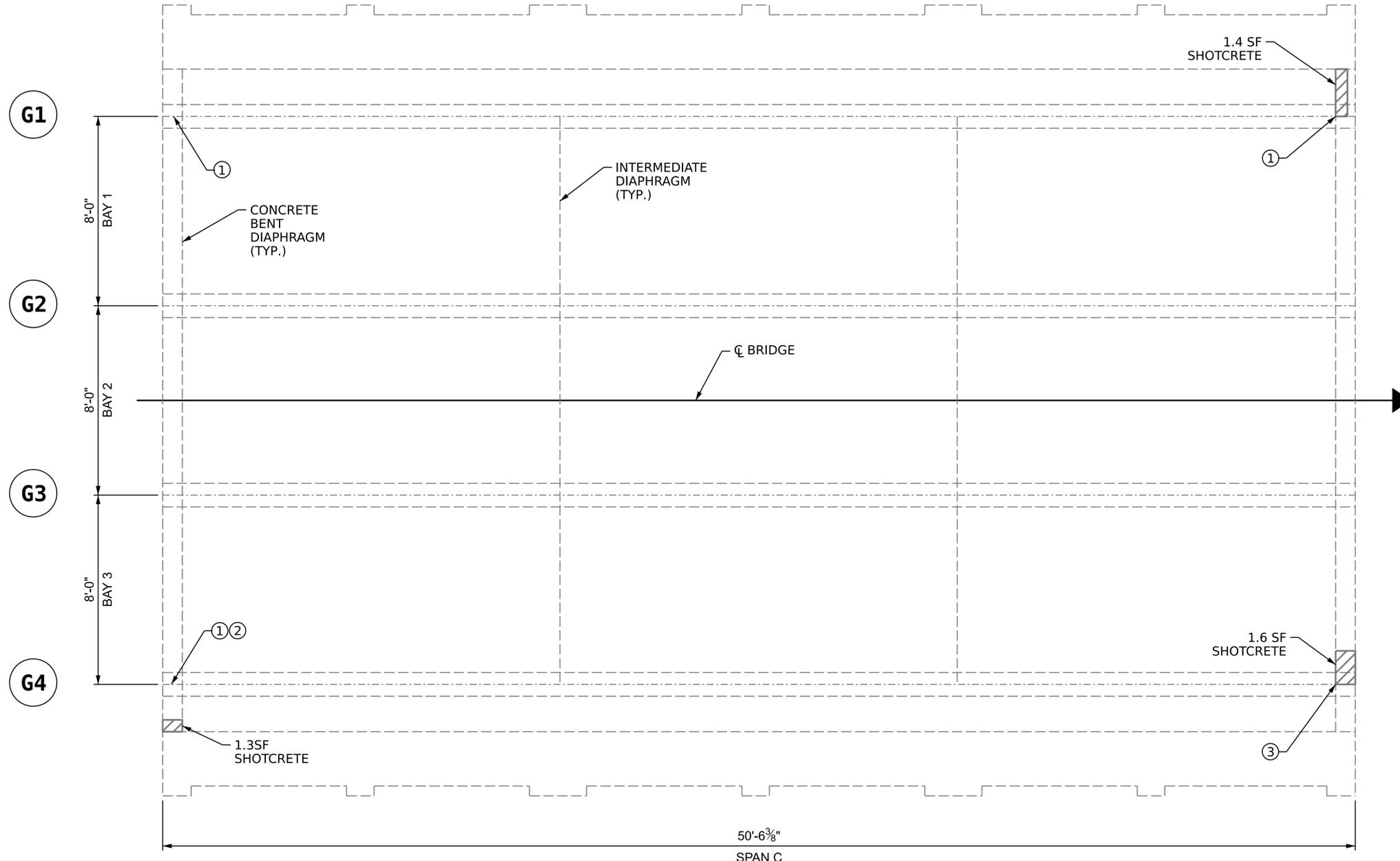


Drawn by: *Nicholas Pierce*  
 1/21/2022

REVISIONS						SHEET NO. S1-13 TOTAL SHEETS 73
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DRAWN BY : N.A. PIERCE DATE : 10/2020  
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 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 11/2021



AS-BUILT REPAIR QUANTITY TABLE				
DECK UNDERSIDE REPAIRS SPAN C	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0	0		
CONCRETE DIAPHRAGM	4.3	3.6		
OVERHANG	0	0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0	0		
CONCRETE DIAPHRAGM	0	0		
OVERHANG	0	0		
ZONE PAINTING		AREA SF		AREA SF
BEAM ENDS		316		

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

**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.

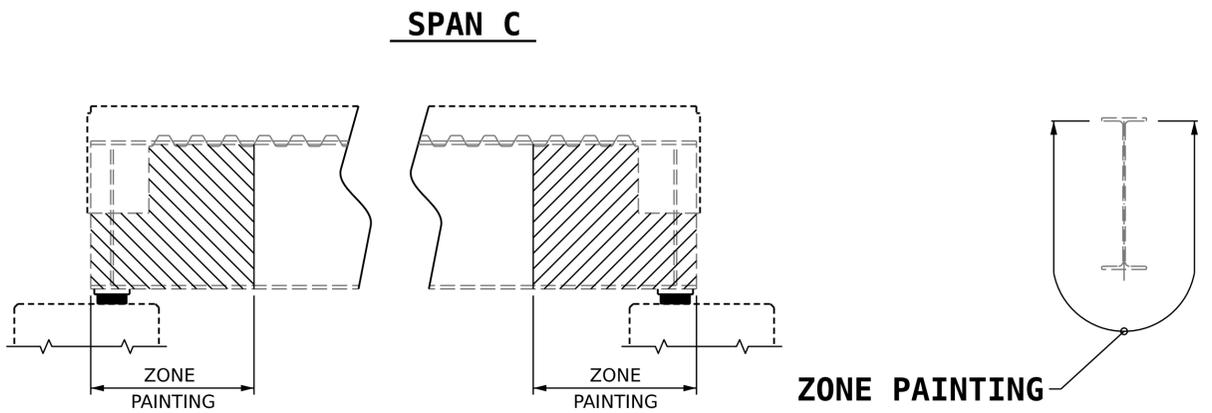
FOR "SHOTCRETE REPAIRS", SEE SPECIAL PROVISIONS.

FOR ZONE PAINTING BEAM ENDS, SEE SPECIAL PROVISIONS.

FOR BEAM REPAIRS, SEE PLATED BEAM REPAIR DETAILS SHEET.

**REPAIR LEGEND**

-  SHOTCRETE REPAIR AREA
-  CONCRETE REPAIR AREA
- ① - WEB REPAIR
- ② - STIFFENER REPAIR
- ③ - BOTTOM FLANGE REPAIR
- G# - GIRDER NUMBER



**LIMITS OF ZONE PAINTING**

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910028**

SHEET 3 OF 7

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**DECK UNDERSIDE REPAIRS**  
**SPAN C**

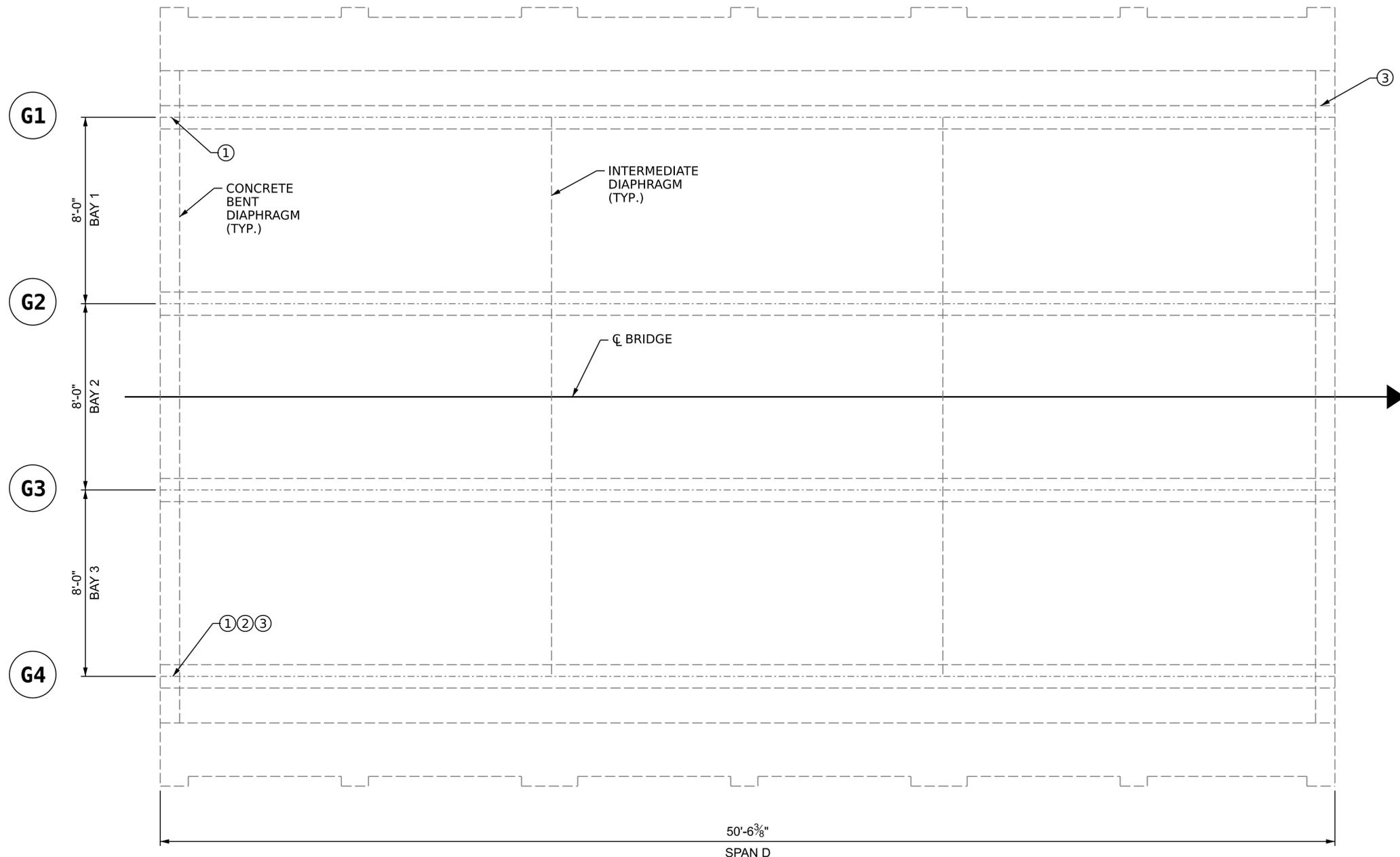


DocuSigned by:  
 Nicholas Pierce  
 151108A3400B485  
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REVISIONS						SHEET NO. S1-14 TOTAL SHEETS 73
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1			3			
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 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 11/2021



**AS-BUILT REPAIR QUANTITY TABLE**

DECK UNDERSIDE REPAIRS SPAN D	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0	0		
CONCRETE DIAPHRAGM	0	0		
OVERHANG	0	0		
<b>CONCRETE REPAIRS</b>	<b>AREA SF</b>	<b>VOLUME CF</b>	<b>AREA SF</b>	<b>VOLUME CF</b>
UNDERSIDE OF DECK	0	0		
CONCRETE DIAPHRAGM	0	0		
OVERHANG	0	0		
<b>ZONE PAINTING</b>		<b>AREA SF</b>		<b>AREA SF</b>
BEAM ENDS		316		

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

**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.

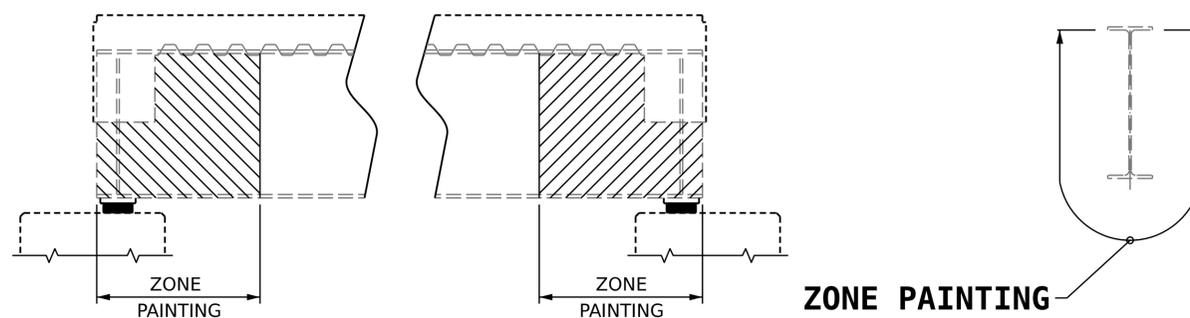
FOR "SHOTCRETE REPAIRS", SEE SPECIAL PROVISIONS.

FOR ZONE PAINTING BEAM ENDS, SEE SPECIAL PROVISIONS.

FOR BEAM REPAIRS, SEE PLATED BEAM REPAIR DETAILS SHEET.

**REPAIR LEGEND**

- SHOTCRETE REPAIR AREA
- CONCRETE REPAIR AREA
- ① - WEB REPAIR
- ② - STIFFENER REPAIR
- ③ - BOTTOM FLANGE REPAIR
- G# - GIRDER NUMBER



**LIMITS OF ZONE PAINTING**

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910028**

SHEET 4 OF 7

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**DECK UNDERSIDE REPAIRS**  
**SPAN D**



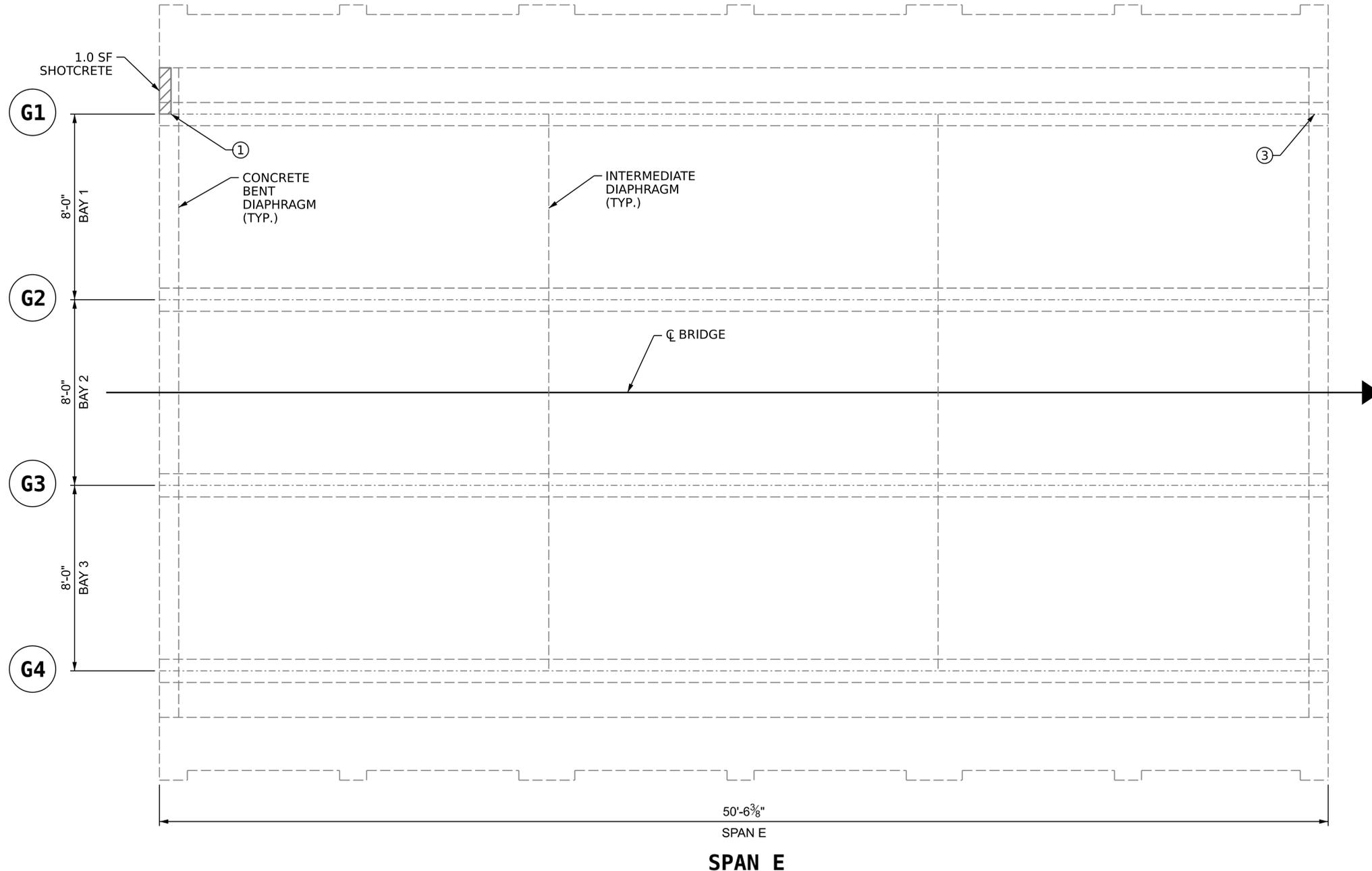
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 Nicholas Pierce  
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2			4			

DRAWN BY : N.A. PIERCE DATE : 05/2020  
 CHECKED BY : D.A. CANTRELL DATE : 11/2021  
 DESIGN ENGINEER OF RECORD: N.A. PIERCE DATE : 11/2021

8/26/21



**AS-BUILT REPAIR QUANTITY TABLE**

DECK UNDERSIDE REPAIRS SPAN E	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0	0		
CONCRETE DIAPHRAGM	1.0	0.5		
OVERHANG	0	0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0	0		
CONCRETE DIAPHRAGM	0	0		
OVERHANG	0	0		
ZONE PAINTING		AREA SF		AREA SF
BEAM ENDS		316		

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

**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.

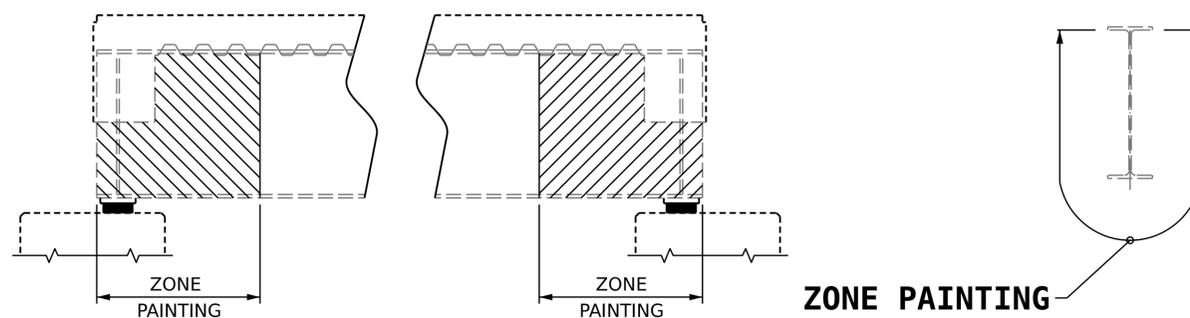
FOR "SHOTCRETE REPAIRS", SEE SPECIAL PROVISIONS.

FOR ZONE PAINTING BEAM ENDS, SEE SPECIAL PROVISIONS.

FOR BEAM REPAIRS, SEE PLATED BEAM REPAIR DETAILS SHEET.

**REPAIR LEGEND**

- SHOTCRETE REPAIR AREA
- CONCRETE REPAIR AREA
- ① - WEB REPAIR
- ② - STIFFENER REPAIR
- ③ - BOTTOM FLANGE REPAIR
- G# - GIRDER NUMBER



**LIMITS OF ZONE PAINTING**

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910028**

SHEET 5 OF 7

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**DECK UNDERSIDE REPAIRS**  
**SPAN E**

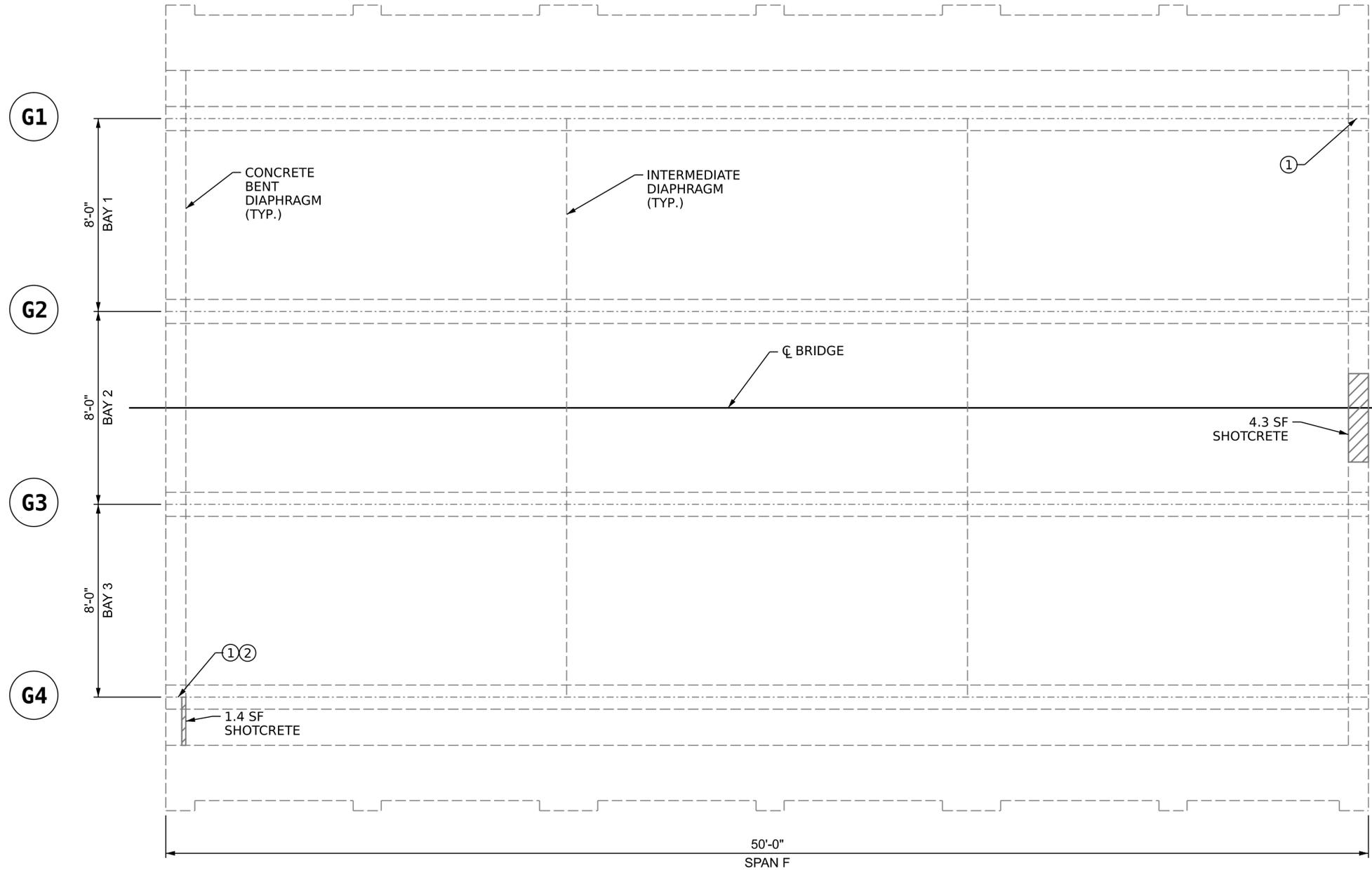


Designed by  
 Nicholas Pierce  
 151108434008485  
 01/21/2022

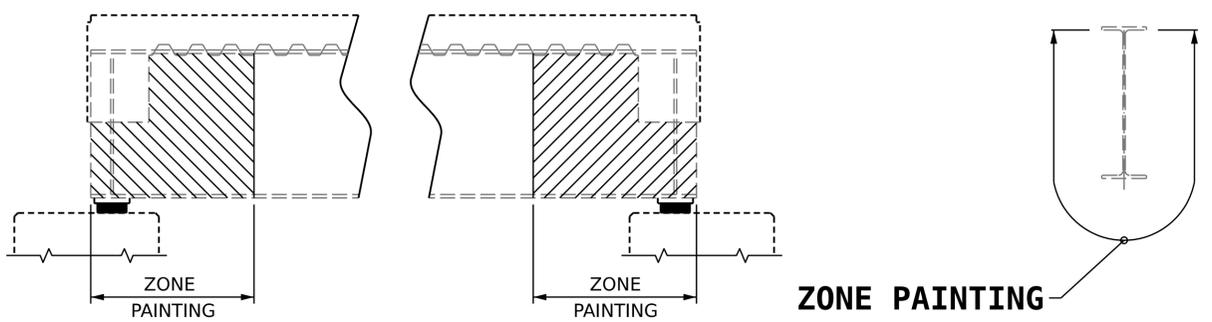
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**SPAN F**



**LIMITS OF ZONE PAINTING**

**AS-BUILT REPAIR QUANTITY TABLE**

DECK UNDERSIDE REPAIRS SPAN F	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0	0		
CONCRETE DIAPHRAGM	5.7	4.0		
OVERHANG	0	0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0	0		
CONCRETE DIAPHRAGM	0	0		
OVERHANG	0	0		
ZONE PAINTING		AREA SF		AREA SF
BEAM ENDS		316		

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

**NOTES**

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

FOR "SHOTCRETE REPAIRS", SEE SPECIAL PROVISIONS.

FOR ZONE PAINTING BEAM ENDS, SEE SPECIAL PROVISIONS.

FOR BEAM REPAIRS, SEE PLATED BEAM REPAIR DETAILS SHEET.

**REPAIR LEGEND**

- SHOTCRETE REPAIR AREA
- CONCRETE REPAIR AREA
- ① - WEB REPAIR
- ② - STIFFENER REPAIR
- ③ - BOTTOM FLANGE REPAIR
- G# - GIRDER NUMBER

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910028**

SHEET 6 OF 7



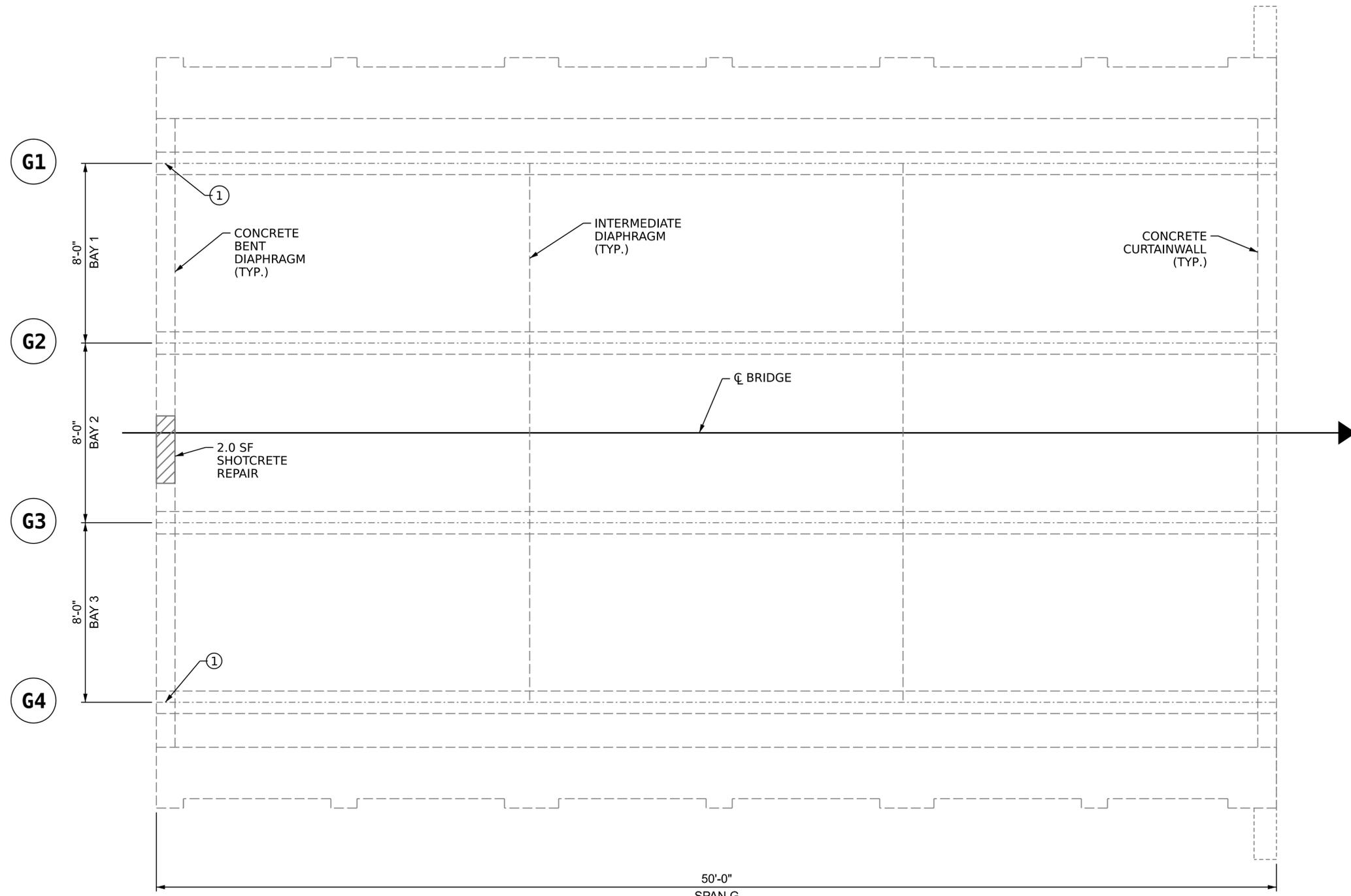
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**DECK UNDERSIDE REPAIRS**  
**SPAN F**

DRAWN BY : N.A. PIERCE DATE : 05/2020  
 CHECKED BY : D.A. CANTRELL DATE : 11/2021  
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 11/2021

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AS-BUILT REPAIR QUANTITY TABLE				
DECK UNDERSIDE REPAIRS SPAN G	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0	0		
CONCRETE DIAPHRAGM	2.0	1.7		
OVERHANG	0	0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0	0		
CONCRETE DIAPHRAGM	0	0		
OVERHANG	0	0		
ZONE PAINTING		AREA SF		AREA SF
BEAM ENDS		316		

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

**NOTES**

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

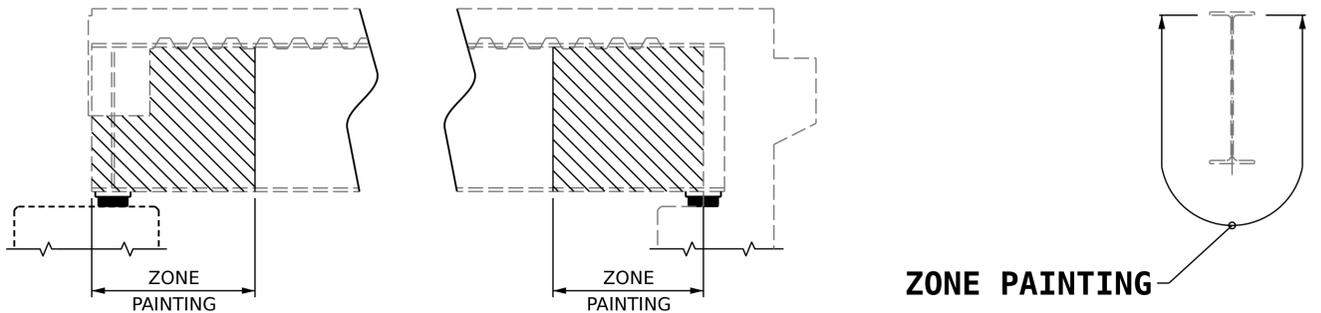
FOR "SHOTCRETE REPAIRS", SEE SPECIAL PROVISIONS.

FOR ZONE PAINTING BEAM ENDS, SEE SPECIAL PROVISIONS.

FOR BEAM REPAIRS, SEE PLATED BEAM REPAIR DETAILS SHEET.

**REPAIR LEGEND**

- SHOTCRETE REPAIR AREA
- CONCRETE REPAIR AREA
- ① - WEB REPAIR
- ② - STIFFENER REPAIR
- ③ - BOTTOM FLANGE REPAIR
- G# - GIRDER NUMBER



PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910028**  
 SHEET 7 OF 7



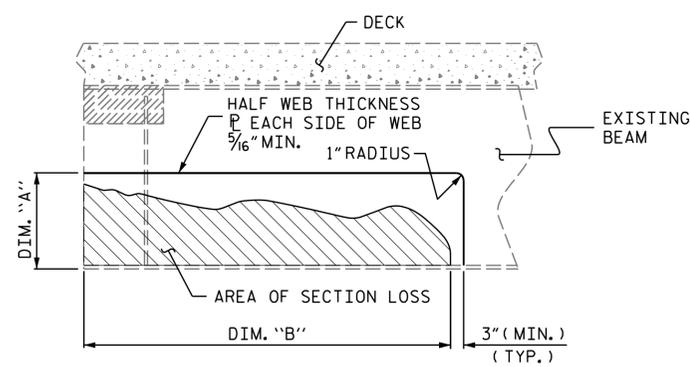
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**DECK UNDERSIDE REPAIRS**  
**SPAN G**

REVISIONS						SHEET NO. S1-18 TOTAL SHEETS 73
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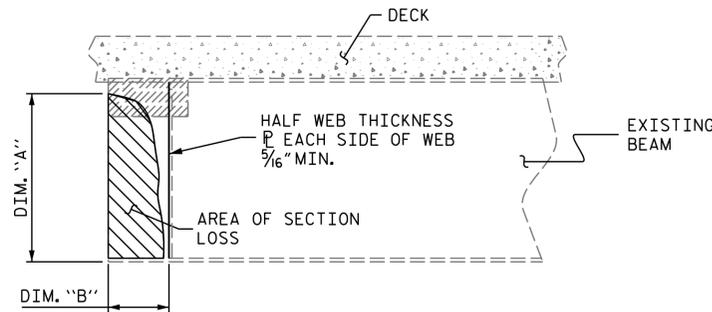
DRAWN BY : N.A. PIERCE DATE : 10/2020  
 CHECKED BY : D.A. CANTRELL DATE : 11/2021  
 DESIGN ENGINEER OF RECORD: N.A. PIERCE DATE : 11/2021

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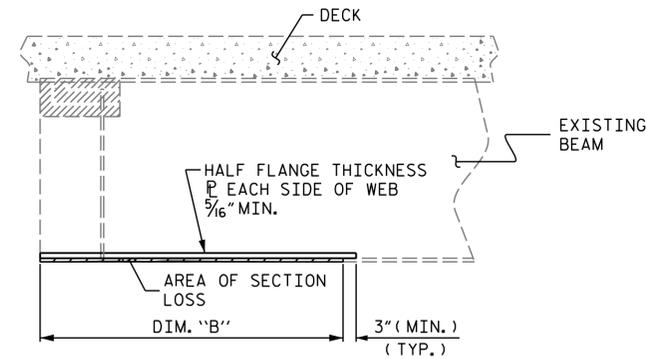
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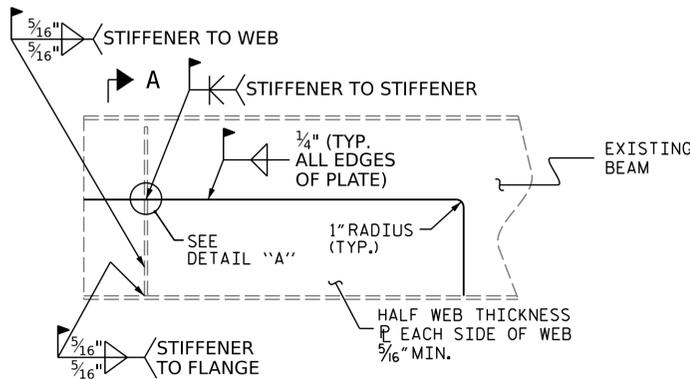
**BEAM END SECTION LOSS AND PLATING REPAIR**



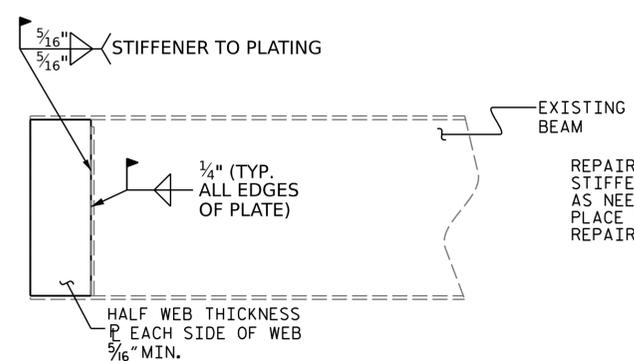
**BEAM END SECTION LOSS AND PLATING REPAIR**



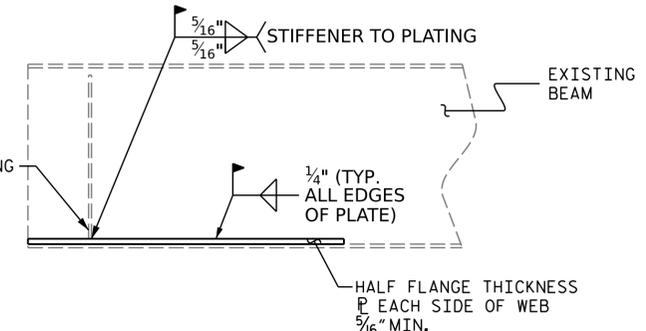
**BEAM END SECTION LOSS AND PLATING REPAIR**



**BEAM END PLATING REPAIR**



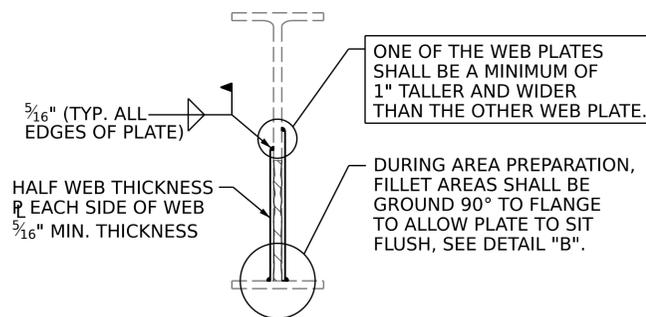
**BEAM END PLATING REPAIR**



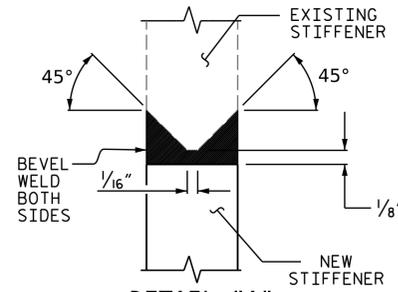
**INTERMEDIATE SECTION LOSS BEAM PLATING REPAIR**

**TYPE 3 WELDED FLANGE BEAM PLATING REPAIR**

**TYPE 1 WELDED BEAM END PLATING REPAIR**



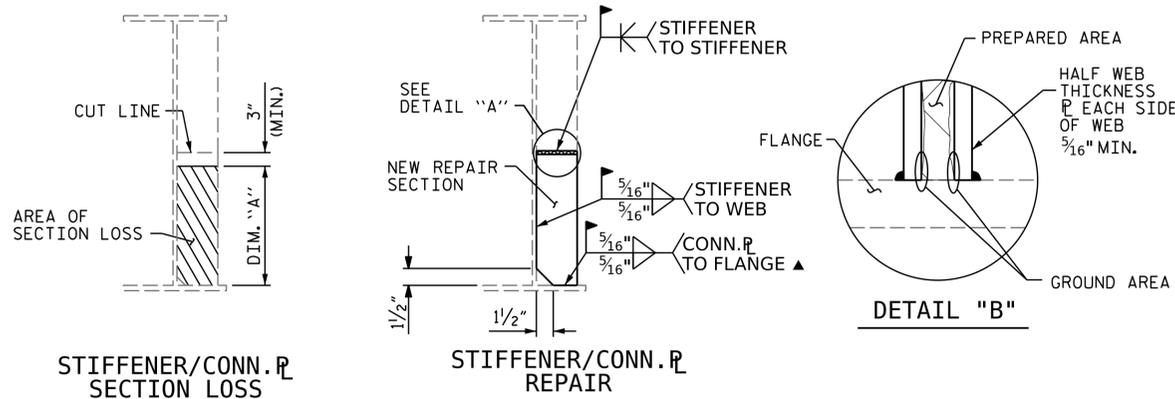
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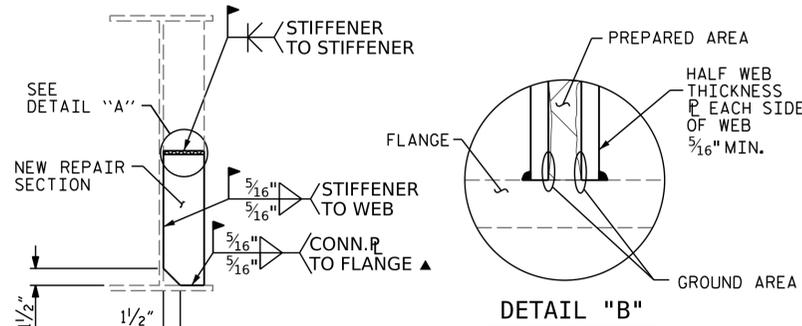
**DETAIL "A"**

**AS-BUILT BEAM REPAIR QUANTITY TABLE**

LOCATION/TYPE				QUANTITIES			
				ESTIMATE		ACTUAL	
SPAN	BENT	BEAM	TYPE	DIM. "A"	DIM. "B"	DIM. "A"	DIM. "B"
A	1	1	3	12"	70"		
B	1	4	1	10"	15"		
B	1	4	3	12"	15"		
B	2	4	1	10"	8 1/2"		
C	2	1	1	10"	8 1/2"		
C	2	4	1, 2	10"	24"		
C	3	1	1	10"	22"		
C	3	4	3	12"	15"		
D	3	1	1	10"	8 1/2"		
D	3	4	1, 2	10"	12"		
D	3	4	3	12"	15"		
D	4	1	1	12"	15"		
E	4	1	1	10"	8 1/2"		
E	5	1	3	12"	21"		
F	5	4	1, 2	10"	8 1/2"		
F	6	1	1	10"	8 1/2"		
G	6	1	1	10"	8 1/2"		
G	6	4	1	10"	8 1/2"		



**STIFFENER/CONN. PLATE REPAIR**



**STIFFENER/CONN. PLATE REPAIR**

**DETAIL "B"**

**TYPE 2 STIFFENER/CONNECTION PLATE REPAIR**

▲ FOR STIFFENERS, MILL TO BEAR AND DO NOT WELD

**WELDED BEAM PLATING REPAIR NOTES**

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

REPAIR PLATES SHALL BE MINIMUM 36 KSI STEEL.

**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.

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. ONE OF THE WEB PLATES SHALL BE A MINIMUM OF 1" TALLER AND WIDER THAN THE OTHER WEB PLATE TO OFFSET THE WEB PLATE WELDING LOCATIONS ON THE EXISTING BEAM WEB.

EACH PLATE SHALL BE APPROXIMATELY ONE-HALF THE ORIGINAL THICKNESS OF THE BEAM WEB, WITH A MINIMUM THICKNESS OF 5/16".

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 WEATHERING STEEL 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 "WELDED BEAM REPAIR PLATING". FOR BEAM REPAIR, SEE SPECIAL PROVISIONS.

REMOVE ALL TRAFFIC CONTROL DEVICES.

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
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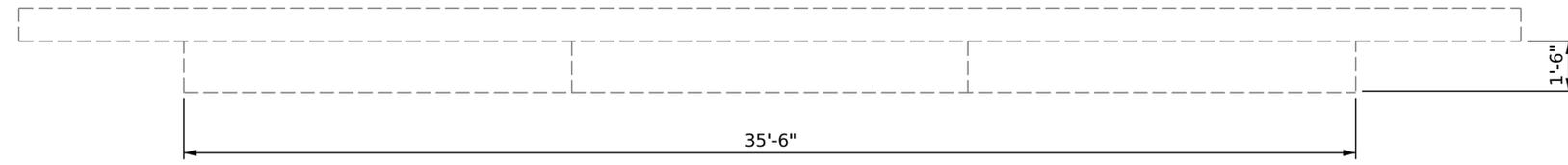
**PLATED BEAM REPAIR DETAILS**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-19
1			3			TOTAL SHEETS
2			4			73

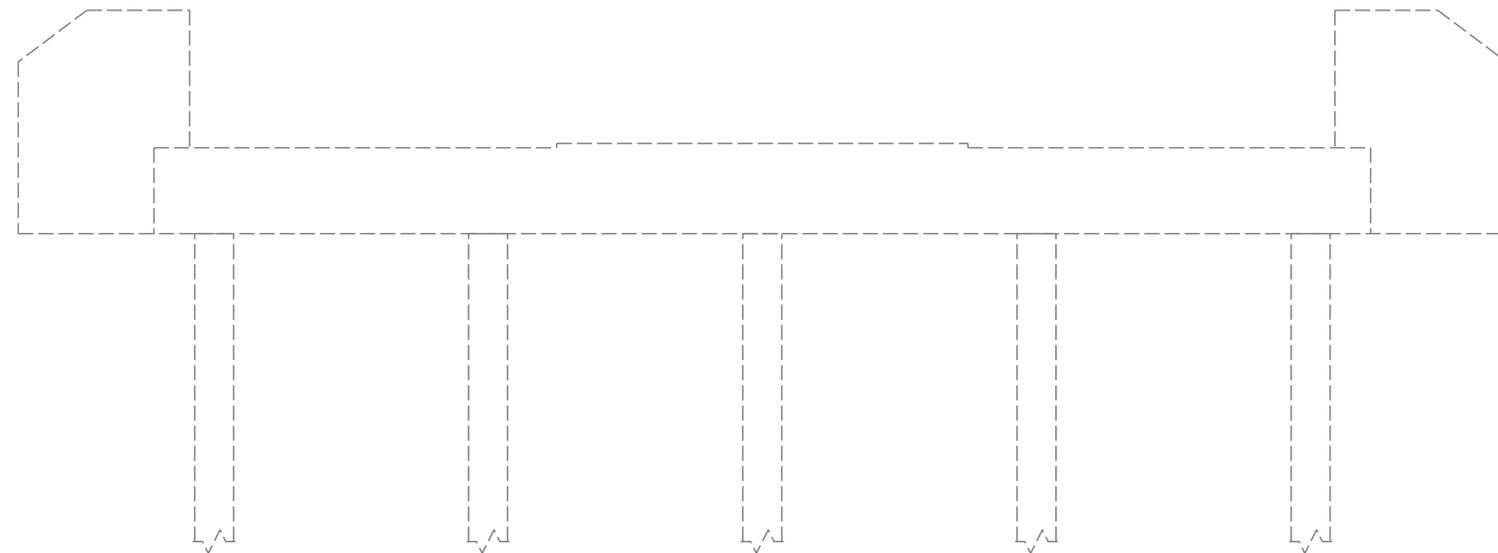
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DRAWN BY : N.A. PIERCE DATE : 05/2020  
 CHECKED BY : D.A. CANTRELL DATE : 11/2021  
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 11/2021

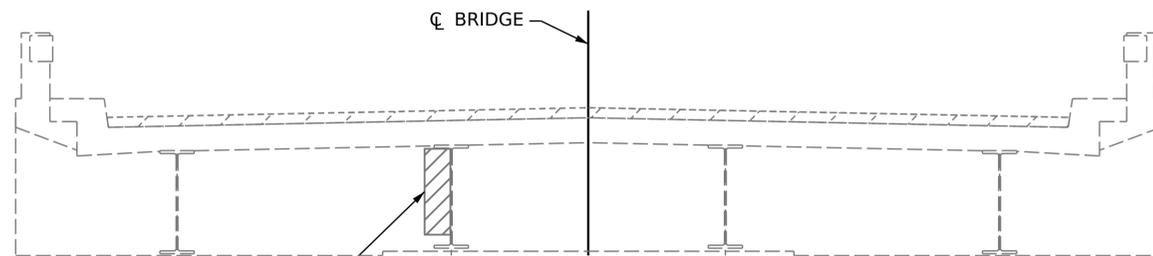
8/26/21



**TOP OF CAP**



**ELEVATION**



**TYPICAL SECTION**

**AS-BUILT REPAIR QUANTITY TABLE**

REPAIRS - END BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
CURTAIN WALL	2.0	1.0		
WINGWALL	0	0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
CURTAIN WALL	0	0		
WINGWALL	0	0		
EPOXY COATING		AREA SF		AREA SF
CAP		53.3		

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

**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.

FOR "SHOTCRETE REPAIRS", SEE SPECIAL PROVISIONS.

SHOTCRETE REPAIR AREA

CONCRETE REPAIR AREA

AREA PREVIOUSLY ACCOUNTED FOR ON ADJACENT FACE

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910028**

SHEET 1 OF 14

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUBSTRUCTURE REPAIRS**  
**END BENT 1**



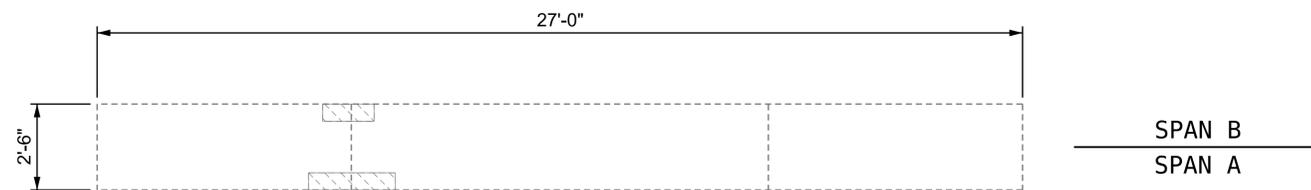
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 Nicholas Pierce  
 151108434208455  
 01/21/2022

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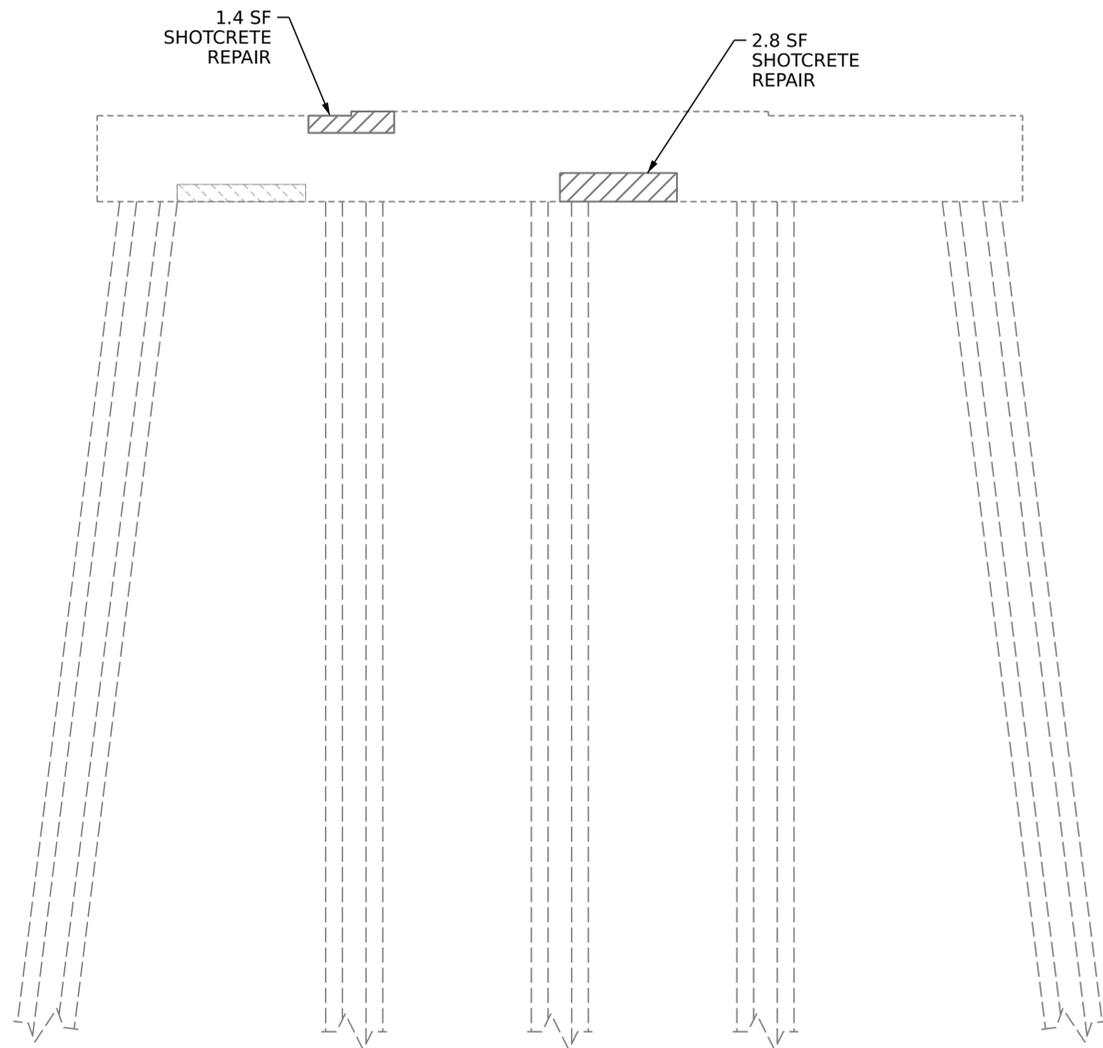
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NO.	BY:	DATE:	NO.	BY:	DATE:	S1-20
1			3			TOTAL SHEETS
2			4			73

DRAWN BY : R.L. PUTEK DATE : 05/2020  
 CHECKED BY : D.A. CANTRELL DATE : 11/2021  
 DESIGN ENGINEER OF RECORD: N.A. PIERCE DATE : 11/2021

8/26/21



TOP OF CAP



ELEVATION



END VIEW

**AS-BUILT REPAIR QUANTITY TABLE**

REPAIRS - BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	4.2	2.1		
COLUMN	0	0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
COLUMN	0	0		
EPOXY COATING		AREA SF		AREA SF
CAP		67.5		

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

**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.

FOR "SHOTCRETE REPAIRS", SEE SPECIAL PROVISIONS.

-  SHOTCRETE REPAIR AREA
-  CONCRETE REPAIR AREA
-  AREA PREVIOUSLY ACCOUNTED FOR ON ADJACENT FACE

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910028**

SHEET 2 OF 14



DocuSigned by:  
 Nicholas Pierce  
 151108434008485  
 01/21/2022

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

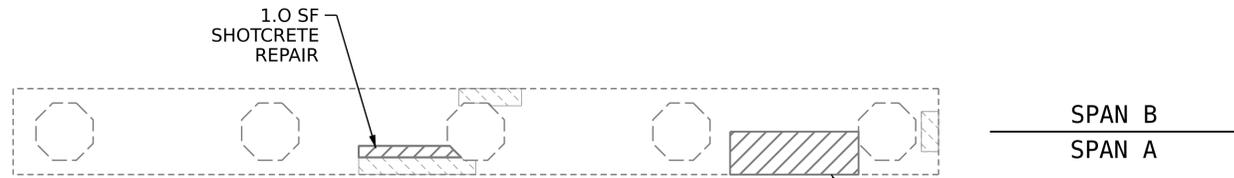
**SUBSTRUCTURE REPAIRS**

**BENT 1  
 SPAN A FACE**

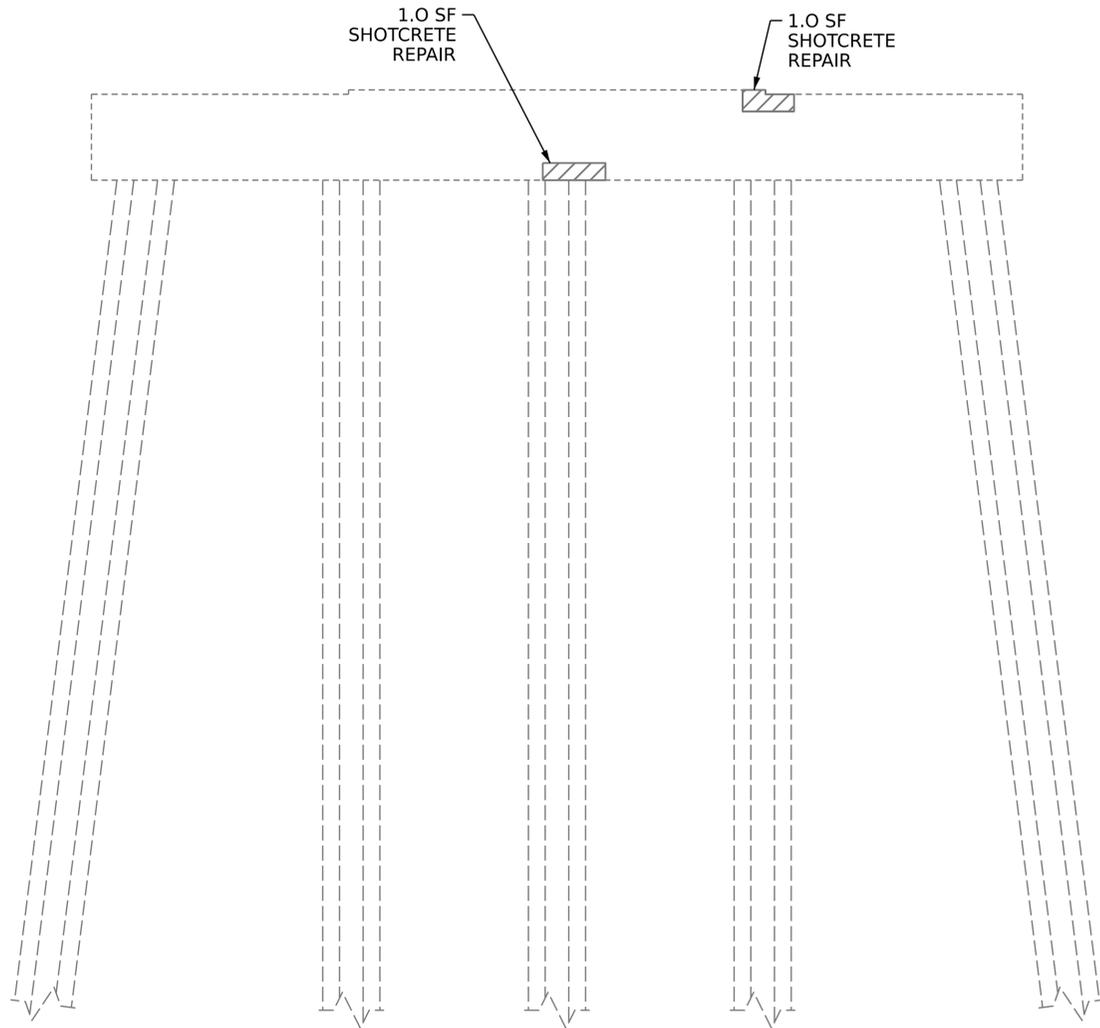
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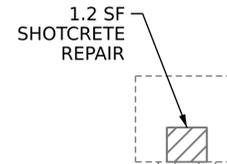
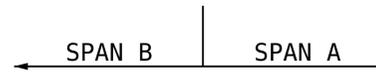
DRAWN BY : R.L. PUTEK DATE : 05/2020  
 CHECKED BY : D.A. CANTRELL DATE : 11/2021  
 DESIGN ENGINEER OF RECORD: N.A. PIERCE DATE : 11/2021



**BOTTOM OF CAP**



**ELEVATION**



**END VIEW**

**AS-BUILT REPAIR QUANTITY TABLE**

REPAIRS - BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	8.9	4.5		
COLUMN	0	0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
COLUMN	0	0		

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

**NOTES**

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

FOR "SHOTCRETE REPAIRS", SEE SPECIAL PROVISIONS.

- SHOTCRETE REPAIR AREA
- CONCRETE REPAIR AREA
- AREA PREVIOUSLY ACCOUNTED FOR ON ADJACENT FACE

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910028**

SHEET 3 OF 14



Designed by  
*Nicholas Pierce*  
 151108434020485  
 01/21/2022

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUBSTRUCTURE REPAIRS**

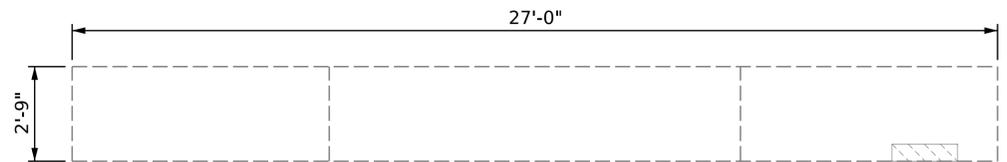
**BENT 1  
 SPAN B FACE**

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NO.	BY:	DATE:	NO.	BY:	DATE:	
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2			4			

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8/26/21

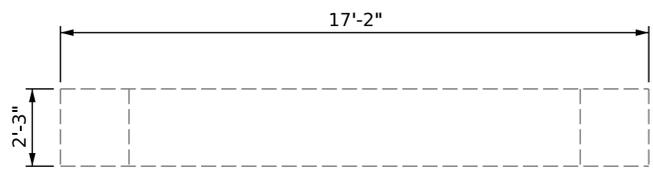
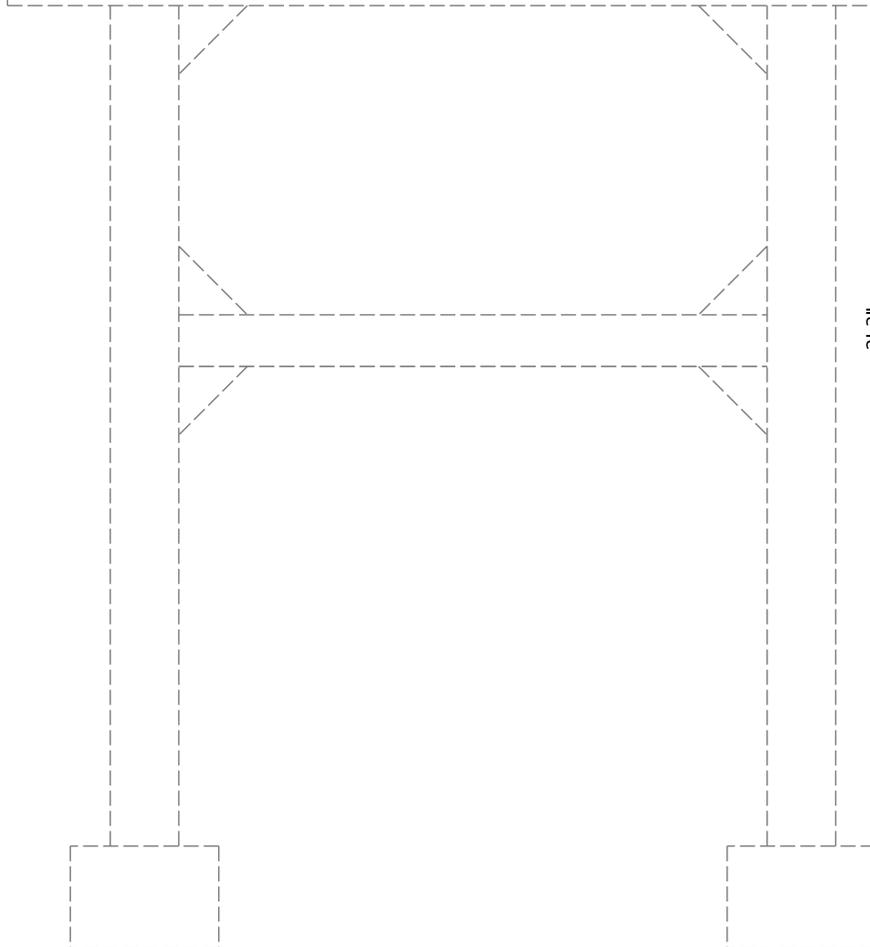


SPAN C  
SPAN B

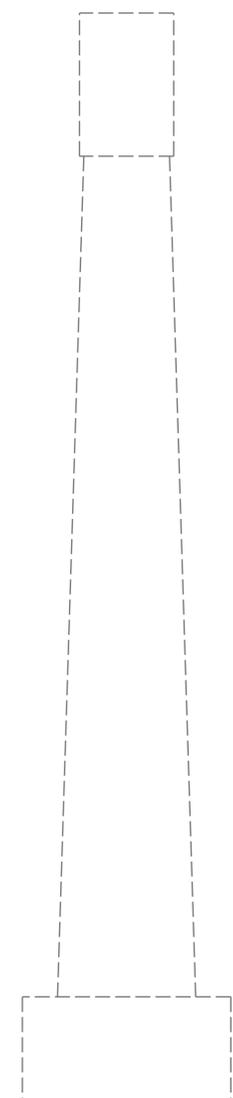
TOP OF CAP



1.5 SF  
SHOTCRETE  
REPAIR



TOP OF STRUT



END VIEW

ELEVATION

**AS-BUILT REPAIR QUANTITY TABLE**

REPAIRS - BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	1.5	0.8		
COLUMN	0	0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
COLUMN	0	0		
EPOXY COATING		AREA SF		AREA SF
CAP		74.7		
STRUT		47.9		

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

**NOTES**

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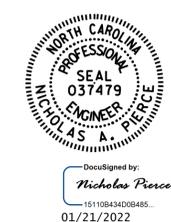
CONCRETE REPAIRS MAYBE SUBSTITUTED IN LIEU OF SHOTCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

FOR "SHOTCRETE REPAIRS", SEE SPECIAL PROVISIONS.

-  SHOTCRETE REPAIR AREA
-  CONCRETE REPAIR AREA
-  AREA PREVIOUSLY ACCOUNTED FOR ON ADJACENT FACE

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910028**

SHEET 4 OF 14



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**SUBSTRUCTURE REPAIRS**  
**BENT 2**  
**SPAN B FACE**

REVISIONS						SHEET NO. S1-23 TOTAL SHEETS 73
NO.	BY:	DATE:	NO.	BY:	DATE:	
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2			4			

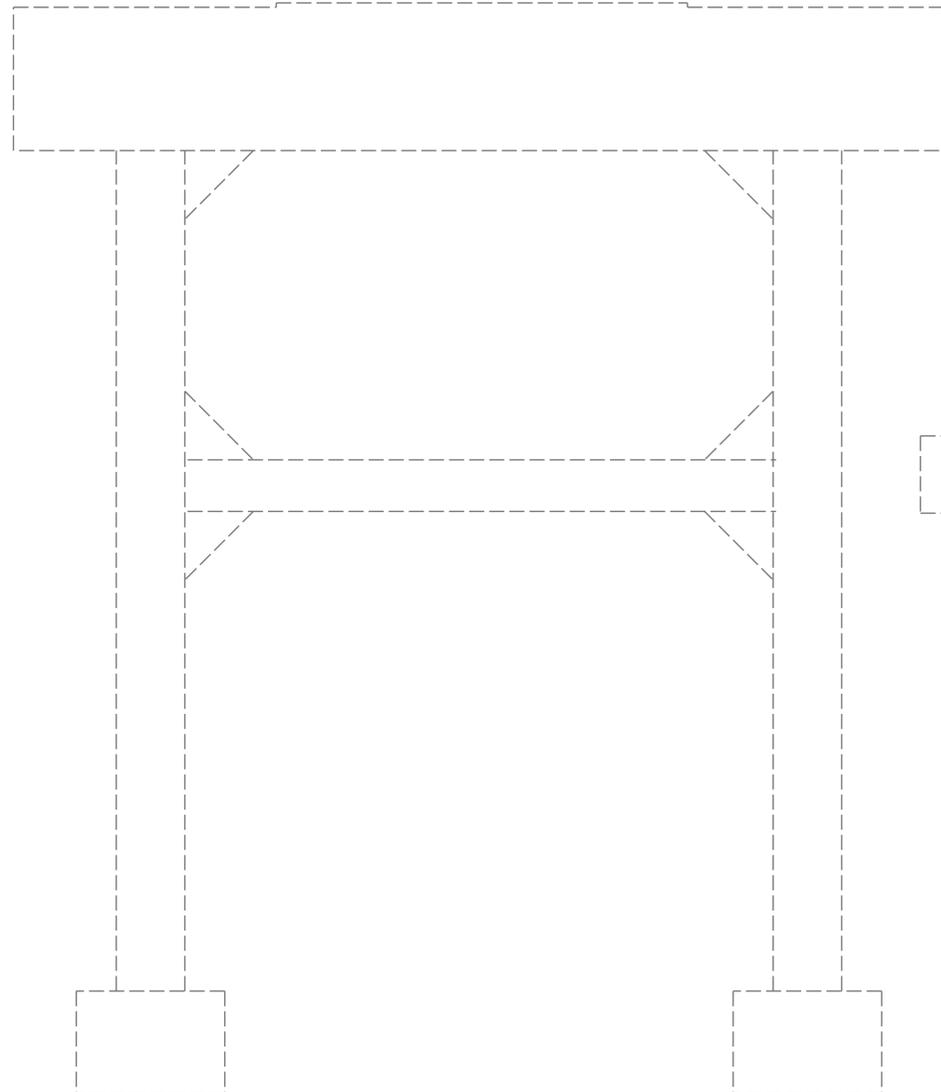
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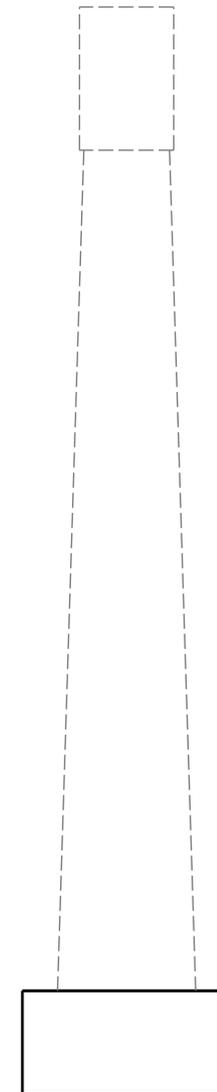


SPAN C  
SPAN B

BOTTOM OF CAP



BOTTOM OF STRUT



ELEVATION

END VIEW

**AS-BUILT REPAIR QUANTITY TABLE**

REPAIRS - BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
COLUMN	0	0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
COLUMN	0	0		

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

**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.

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-  SHOTCRETE REPAIR AREA
-  CONCRETE REPAIR AREA
-  AREA PREVIOUSLY ACCOUNTED FOR ON ADJACENT FACE

PROJECT NO. 15BPR.49  
WAKE COUNTY  
 BRIDGE NO. 910028

SHEET 5 OF 14



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUBSTRUCTURE REPAIRS**

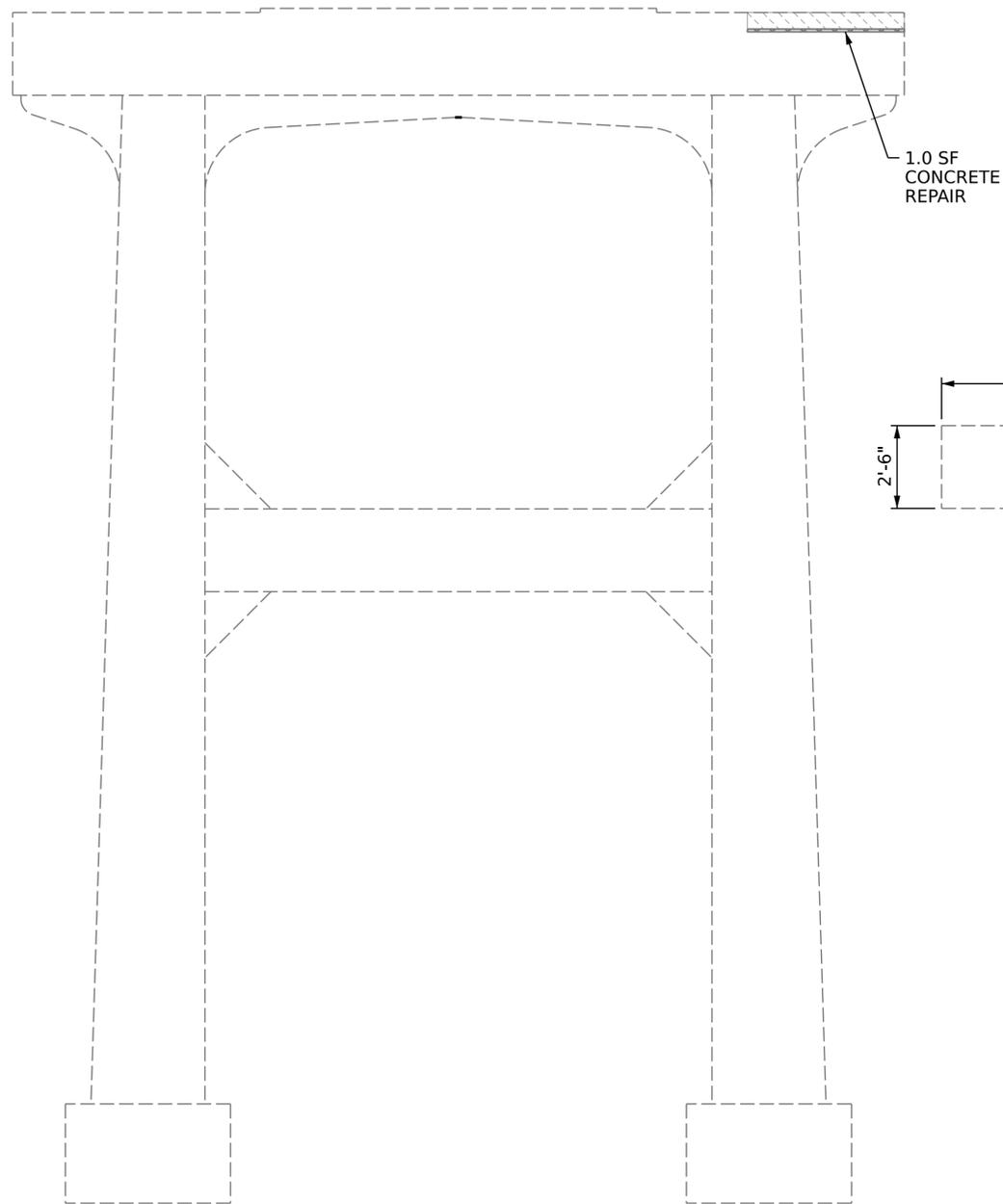
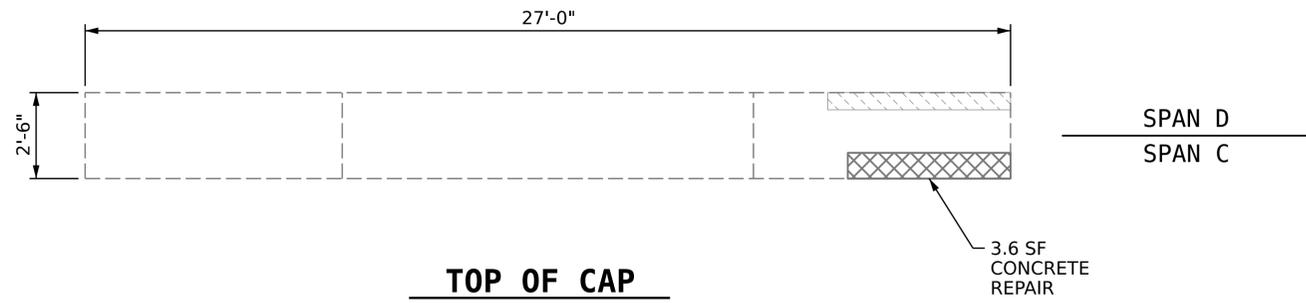
**BENT 2  
 SPAN C FACE**

NO.	BY:	DATE:	REVISIONS			SHEET NO.
			NO.	BY:	DATE:	
1			3			S1-24
2			4			TOTAL SHEETS 73

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DRAWN BY : R.L. PUTEK DATE : 05/2020  
 CHECKED BY : D.A. CANTRELL DATE : 11/2021  
 DESIGN ENGINEER OF RECORD: N.A. PIERCE DATE : 11/2021

8/26/21



**AS-BUILT REPAIR QUANTITY TABLE**

REPAIRS - BENT 3	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
COLUMN	0	0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	4.6	2.3		
COLUMN	0	0		
EPOXY COATING		AREA SF		AREA SF
CAP		67.5		
STRUT		38.3		

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

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FOR "SHOTCRETE REPAIRS", SEE SPECIAL PROVISIONS.

- SHOTCRETE REPAIR AREA
- CONCRETE REPAIR AREA
- AREA PREVIOUSLY ACCOUNTED FOR ON ADJACENT FACE

**ELEVATION**

**END VIEW**

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910028**

SHEET 6 OF 14



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
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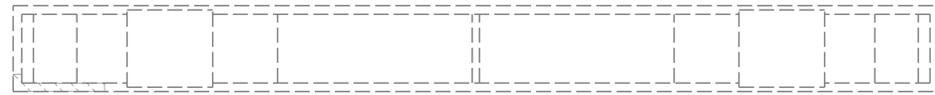
**SUBSTRUCTURE REPAIRS**

**BENT 3**  
**SPAN C FACE**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-25
1			3			TOTAL SHEETS
2			4			73

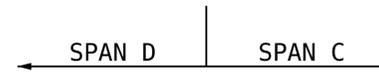
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DRAWN BY : R.L. PUTEK DATE : 05/2020  
 CHECKED BY : D.A. CANTRELL DATE : 11/2021  
 DESIGN ENGINEER OF RECORD: N.A. PIERCE DATE : 11/2021

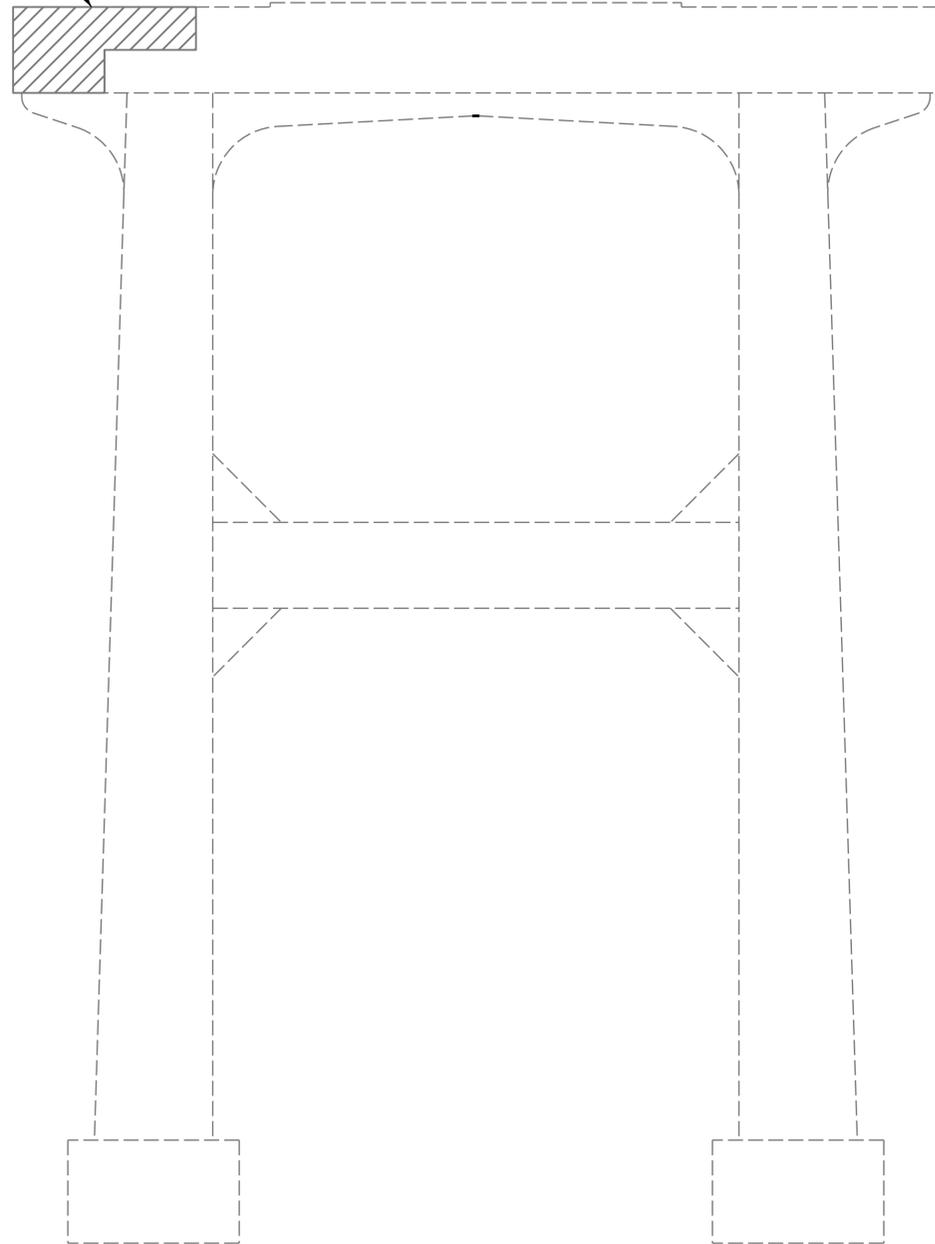


SPAN D  
SPAN C

**BOTTOM OF CAP**



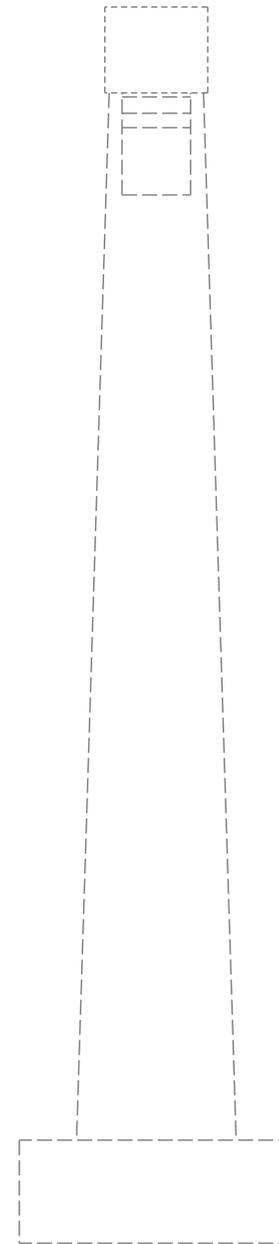
10.0 SF  
SHOTCRETE  
REPAIR



**ELEVATION**



**BOTTOM OF STRUT**



**END VIEW**

**AS-BUILT REPAIR QUANTITY TABLE**

REPAIRS - BENT 3	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	10.0	5.0		
COLUMN	0	0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
COLUMN	0	0		

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

**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.

FOR "SHOTCRETE REPAIRS", SEE SPECIAL PROVISIONS.

-  SHOTCRETE REPAIR AREA
-  CONCRETE REPAIR AREA
-  AREA PREVIOUSLY ACCOUNTED FOR ON ADJACENT FACE

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910028**

SHEET 7 OF 14



DocuSigned by:  
 Nicholas Pierce  
 151108434008455  
 01/21/2022

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

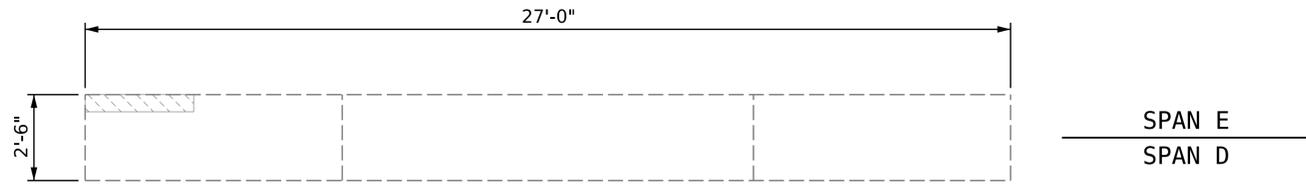
**SUBSTRUCTURE REPAIRS**

**BENT 3  
 SPAN D FACE**

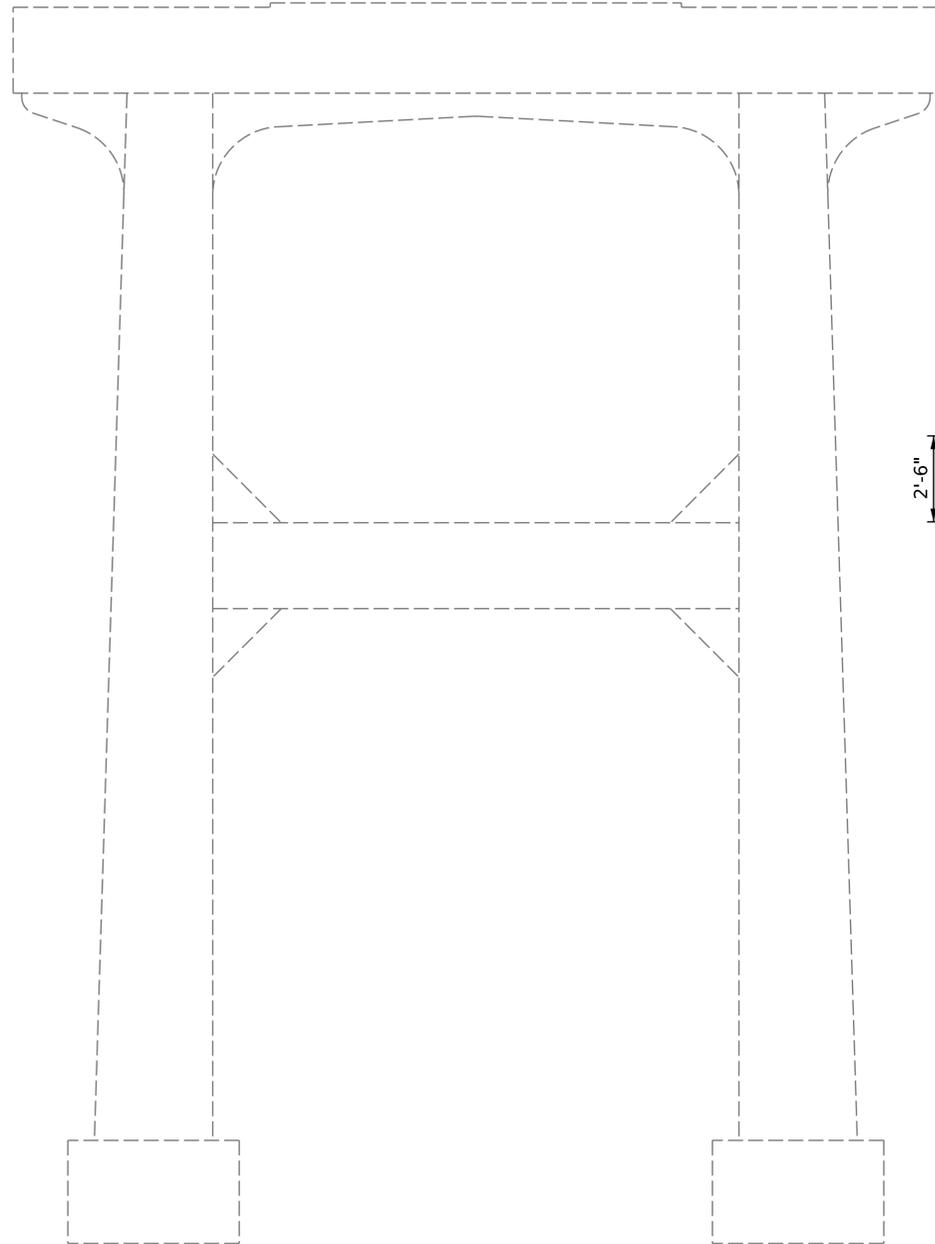
DRAWN BY : R.L. PUTEK DATE : 05/2020  
 CHECKED BY : D.A. CANTRELL DATE : 11/2021  
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 11/2021

REVISIONS						SHEET NO. S1-26 TOTAL SHEETS 73
NO.	BY:	DATE:	NO.	BY:	DATE:	
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2			4			

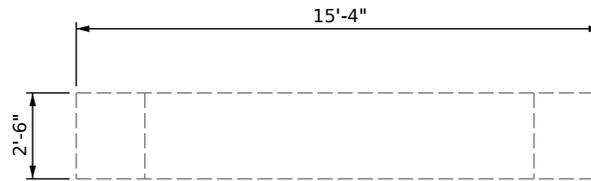
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



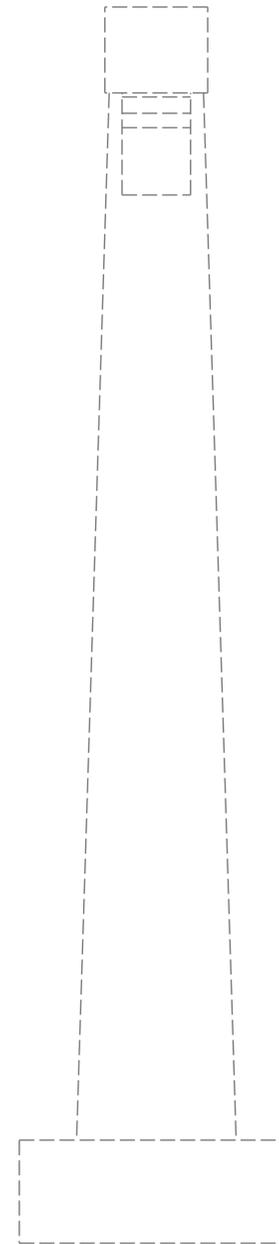
**TOP OF CAP**



**ELEVATION**



**TOP OF STRUT**



**END VIEW**

**AS-BUILT REPAIR QUANTITY TABLE**

REPAIRS - BENT 4	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
COLUMN	0	0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
COLUMN	0	0		
EPOXY COATING		AREA SF		AREA SF
CAP		67.5		
STRUT		38.3		

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

**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.

FOR "SHOTCRETE REPAIRS", SEE SPECIAL PROVISIONS.

-  SHOTCRETE REPAIR AREA
-  CONCRETE REPAIR AREA
-  AREA PREVIOUSLY ACCOUNTED FOR ON ADJACENT FACE

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910028**

SHEET 8 OF 14

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUBSTRUCTURE REPAIRS**

**BENT 4  
 SPAN D FACE**



Designed by  
*Nicholas Pierce*  
 15110843409485  
 01/21/2022

REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S1-27
2			4			TOTAL SHEETS 73

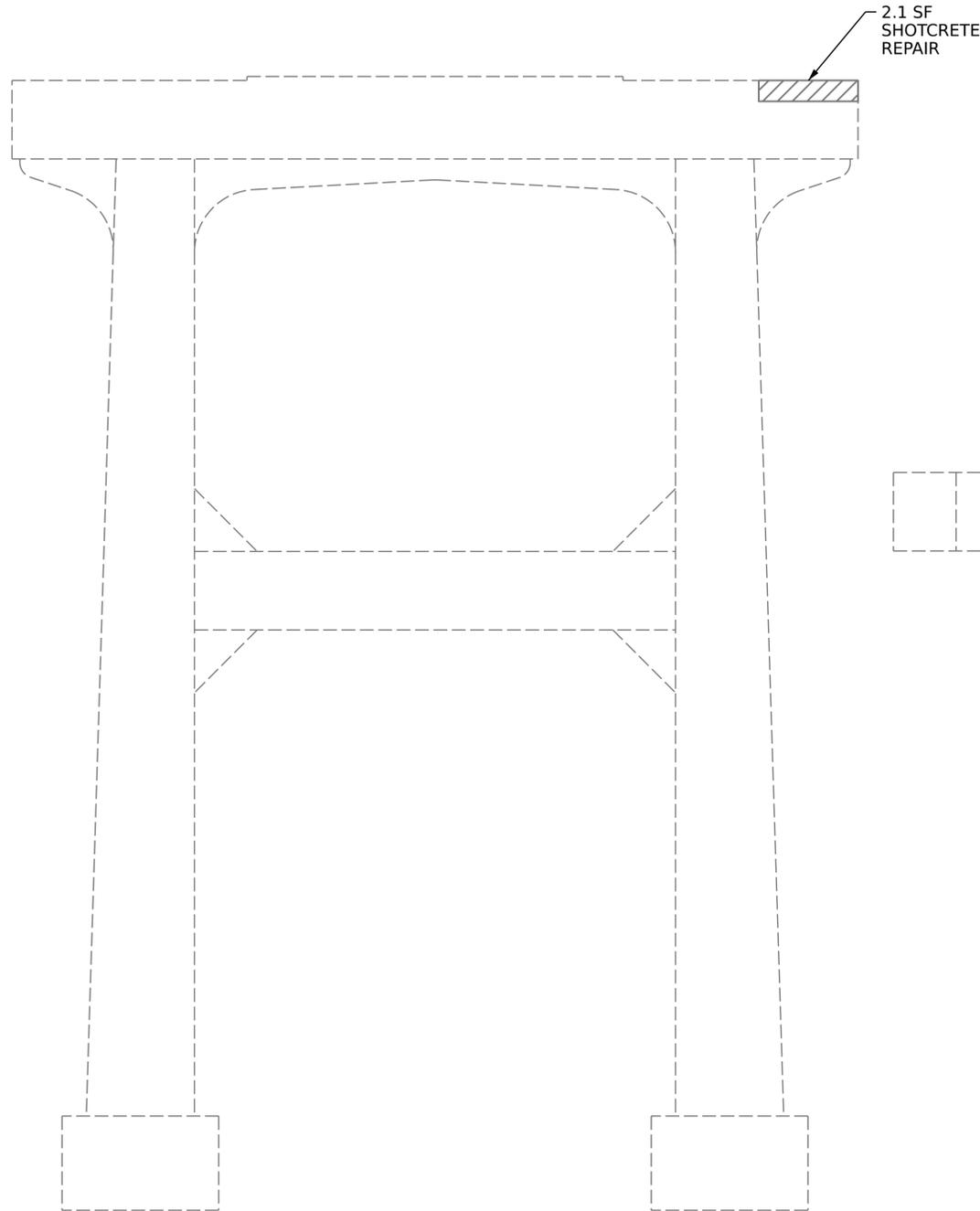
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DRAWN BY : R.L. PUTEK DATE : 05/2020  
 CHECKED BY : D.A. CANTRELL DATE : 11/2021  
 DESIGN ENGINEER OF RECORD: N.A. PIERCE DATE : 11/2021

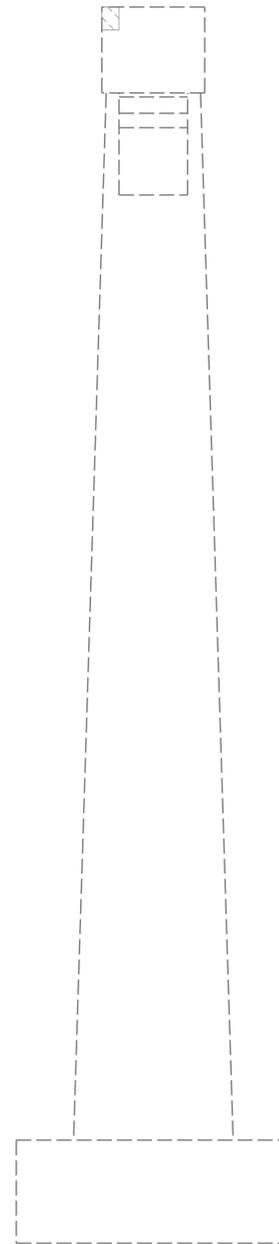


SPAN E  
SPAN D

**BOTTOM OF CAP**



**BOTTOM OF STRUT**



**END VIEW**

**ELEVATION**

**AS-BUILT REPAIR QUANTITY TABLE**

REPAIRS - BENT 4	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	2.8	1.4		
COLUMN	0	0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
COLUMN	0	0		

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

**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.

FOR "SHOTCRETE REPAIRS", SEE SPECIAL PROVISIONS.

- SHOTCRETE REPAIR AREA
- CONCRETE REPAIR AREA
- AREA PREVIOUSLY ACCOUNTED FOR ON ADJACENT FACE

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910028**

SHEET 9 OF 14



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

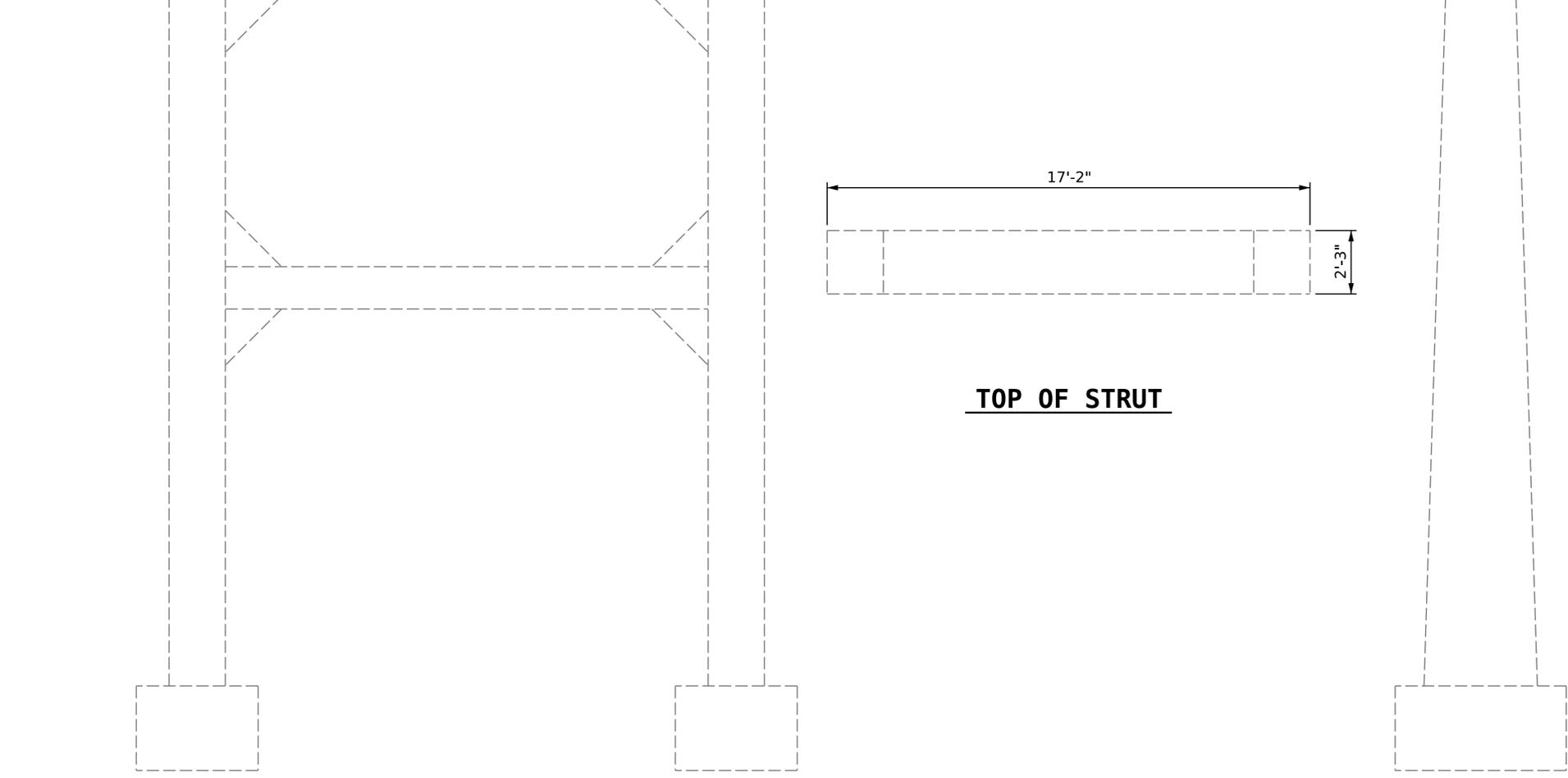
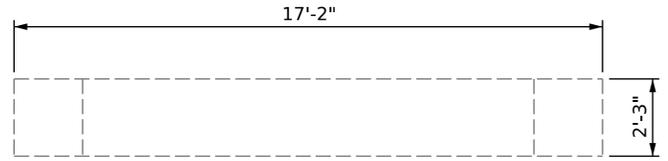
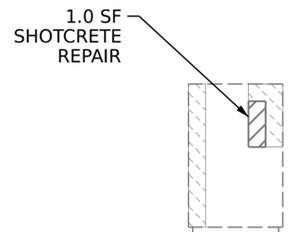
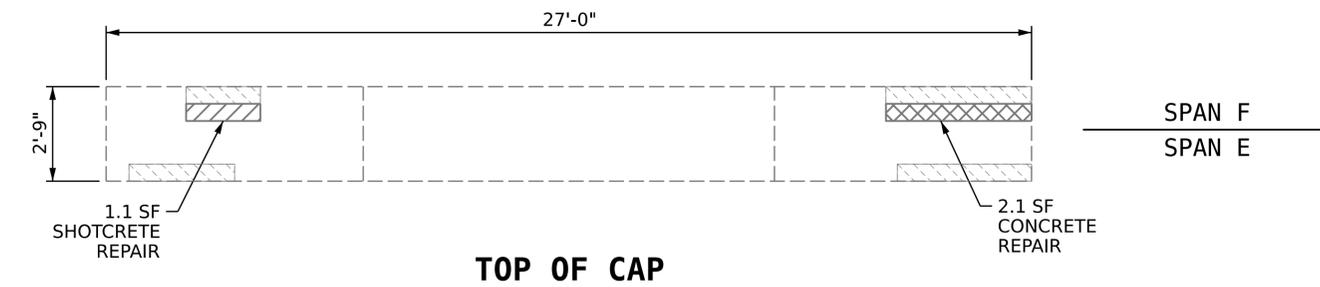
**SUBSTRUCTURE REPAIRS**

**BENT 4  
 SPAN E FACE**

NO.	BY:	DATE:	REVISIONS			SHEET NO.
			NO.	BY:	DATE:	
1			3			51-28
2			4			TOTAL SHEETS 73

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DRAWN BY : R.L. PUTEK DATE : 05/2020  
 CHECKED BY : D.A. CANTRELL DATE : 11/2021  
 DESIGN ENGINEER OF RECORD: N.A. PIERCE DATE : 11/2021



**AS-BUILT REPAIR QUANTITY TABLE**

REPAIRS - BENT 5	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	17.8	8.9		
COLUMN	0	0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	2.1	1.1		
COLUMN	0	0		
EPOXY COATING		AREA SF		AREA SF
CAP		74.3		
STRUT		38.6		

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

**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.

FOR "SHOTCRETE REPAIRS", SEE SPECIAL PROVISIONS.

- SHOTCRETE REPAIR AREA
- CONCRETE REPAIR AREA
- AREA PREVIOUSLY ACCOUNTED FOR ON ADJACENT FACE

**ELEVATION**

**END VIEW**

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910028**  
 SHEET 10 OF 14



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUBSTRUCTURE REPAIRS**

**BENT 5**  
**SPAN E FACE**

DRAWN BY : R.L. PUTEK DATE : 05/2020  
 CHECKED BY : D.A. CANTRELL DATE : 11/2021  
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 11/2021

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO. S1-29 TOTAL SHEETS 73
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

### AS-BUILT REPAIR QUANTITY TABLE

REPAIRS - BENT 5	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	1.1	0.6		
COLUMN	0	0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	4.1	2.1		
COLUMN	0	0		

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

#### 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.

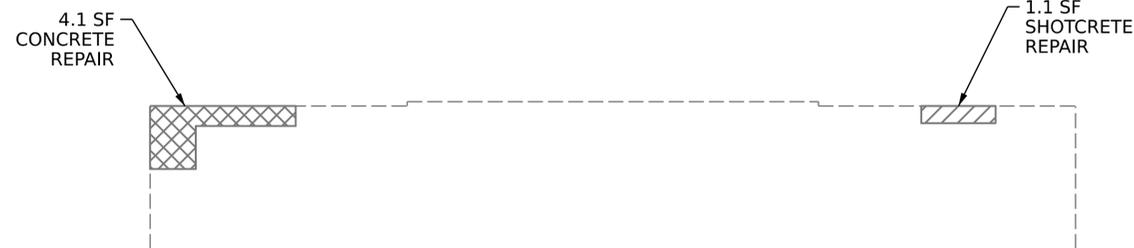
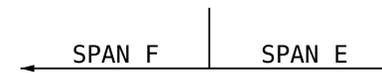
FOR "SHOTCRETE REPAIRS", SEE SPECIAL PROVISIONS.

-  SHOTCRETE REPAIR AREA
-  CONCRETE REPAIR AREA
-  AREA PREVIOUSLY ACCOUNTED FOR ON ADJACENT FACE

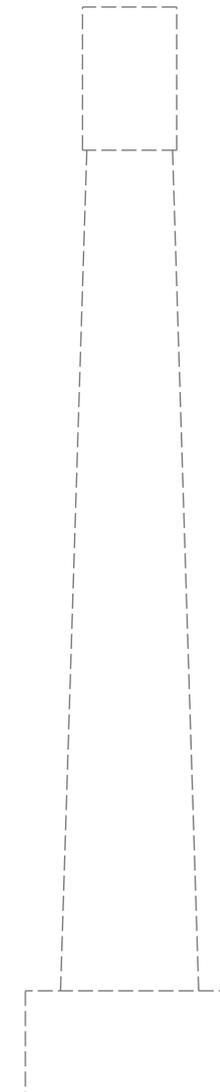


SPAN F  
SPAN E

**BOTTOM OF CAP**



**BOTTOM OF STRUT**



**END VIEW**

**ELEVATION**

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910028**

SHEET 11 OF 14



DocuSigned by:  
 Nicholas Pierce  
 151108434020485  
 01/21/2022

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

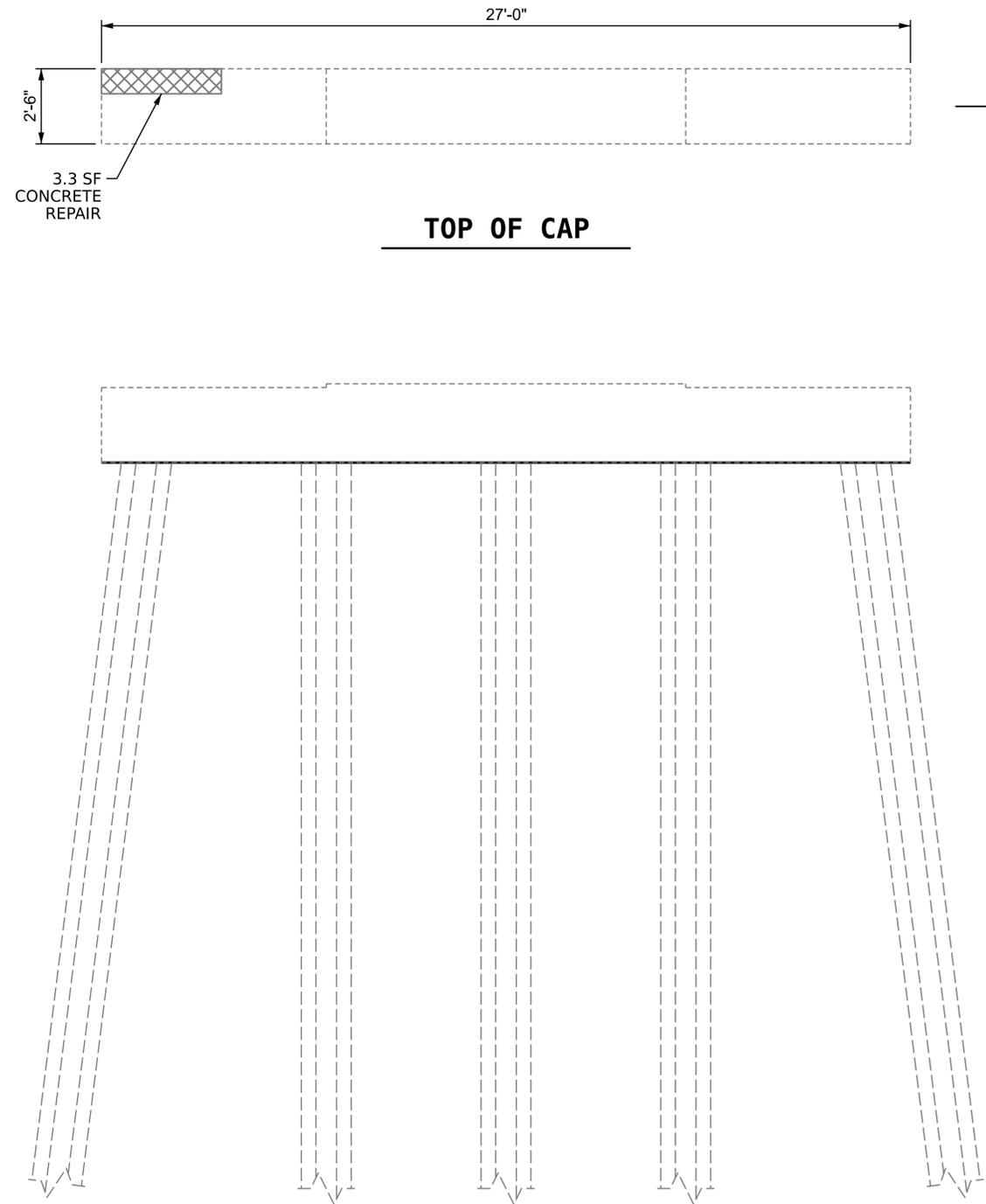
**SUBSTRUCTURE REPAIRS**

**BENT 5  
 SPAN F FACE**

NO.	BY:	DATE:	REVISIONS			SHEET NO.
			NO.	BY:	DATE:	
1			3			S1-30 TOTAL SHEETS 73
2			4			

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

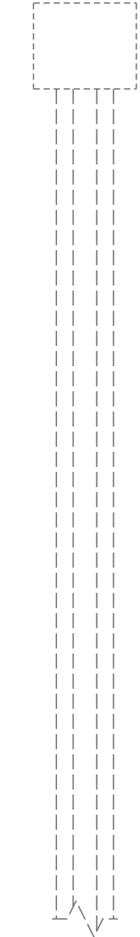
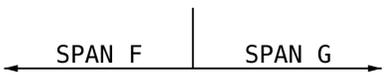
DRAWN BY : R.L.PUTEK DATE : 11/2021  
 CHECKED BY : D.A. CANTRELL DATE : 11/2021  
 DESIGN ENGINEER OF RECORD: N.A. PIERCE DATE : 11/2021



TOP OF CAP

ELEVATION

SPAN G  
SPAN F



END VIEW

**AS-BUILT REPAIR QUANTITY TABLE**

REPAIRS - BENT 6	QUANTITIES			
	ESTIMATE		ACTUAL	
	AREA SF	VOLUME CF	AREA SF	VOLUME CF
<b>SHOTCRETE REPAIRS</b>				
CAP	0	0		
COLUMN	0	0		
<b>CONCRETE REPAIRS</b>				
CAP	3.3	1.7		
COLUMN	0	0		
<b>EPOXY COATING</b>				
CAP		67.5		

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

**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.

FOR "SHOTCRETE REPAIRS", SEE SPECIAL PROVISIONS.

- SHOTCRETE REPAIR AREA
- CONCRETE REPAIR AREA
- AREA PREVIOUSLY ACCOUNTED FOR ON ADJACENT FACE

PROJECT NO. 15BPR.49  
WAKE COUNTY  
 BRIDGE NO. 910028

SHEET 12 OF 14



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

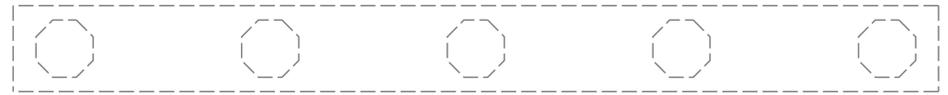
**SUBSTRUCTURE REPAIRS**

**BENT 6  
 SPAN F FACE**

DRAWN BY : R.L. PUTEK DATE : 05/2020  
 CHECKED BY : D.A. CANTRELL DATE : 11/2021  
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 11/2021

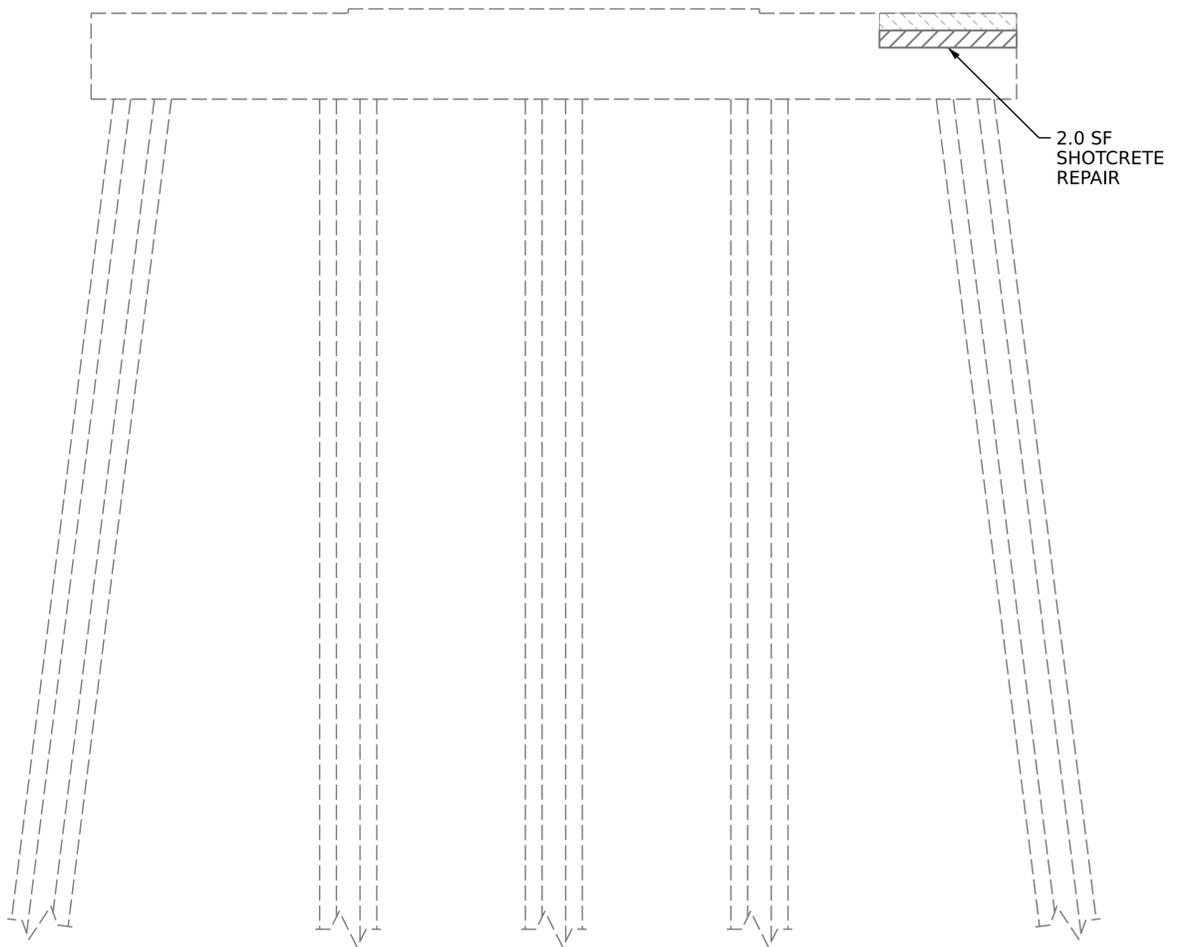
REVISIONS						SHEET NO. S1-31 TOTAL SHEETS 73
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2			4			

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

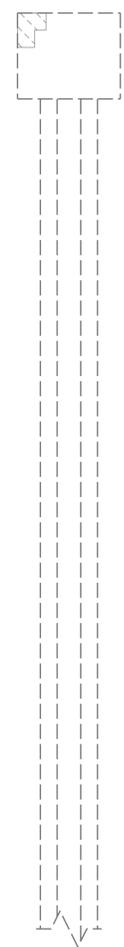


SPAN G  
SPAN F

**BOTTOM OF CAP**



**ELEVATION**



**END VIEW**

**AS-BUILT REPAIR QUANTITY TABLE**

REPAIRS - BENT 6	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	2.0	1.0		
COLUMN	0	0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
COLUMN	0	0		

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

**NOTES**

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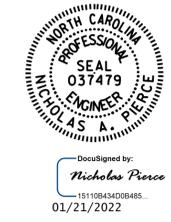
CONCRETE REPAIRS MAYBE SUBSTITUTED IN LIEU OF SHOTCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

FOR "SHOTCRETE REPAIRS", SEE SPECIAL PROVISIONS.

- SHOTCRETE REPAIR AREA
- CONCRETE REPAIR AREA
- AREA PREVIOUSLY ACCOUNTED FOR ON ADJACENT FACE

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910028**

SHEET 13 OF 14



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

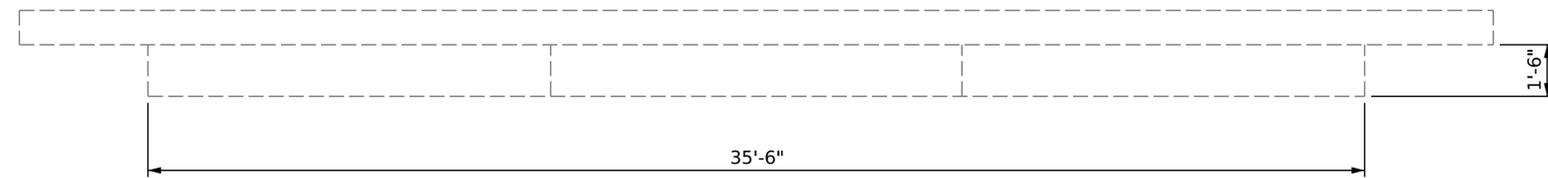
**SUBSTRUCTURE REPAIRS**

**BENT 6  
 SPAN G FACE**

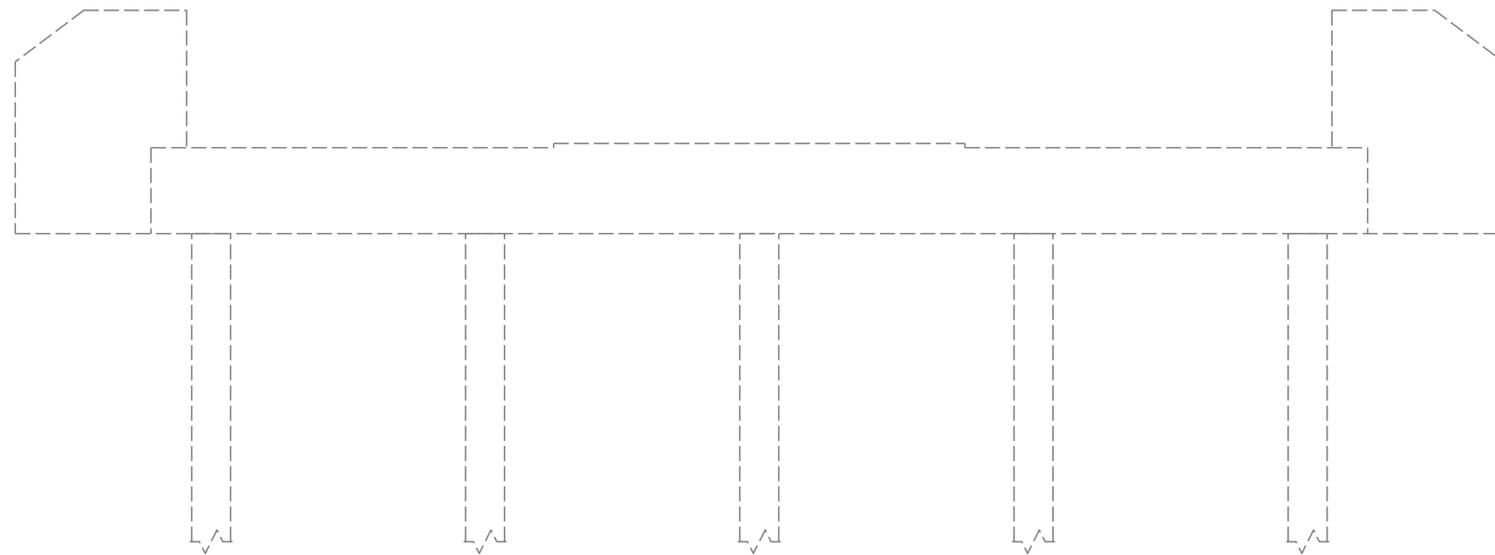
DRAWN BY : R.L. PUTEK DATE : 05/2020  
 CHECKED BY : D.A. CANTRELL DATE : 11/2021  
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 11/2021

REVISIONS						SHEET NO. S1-32 TOTAL SHEETS 73
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

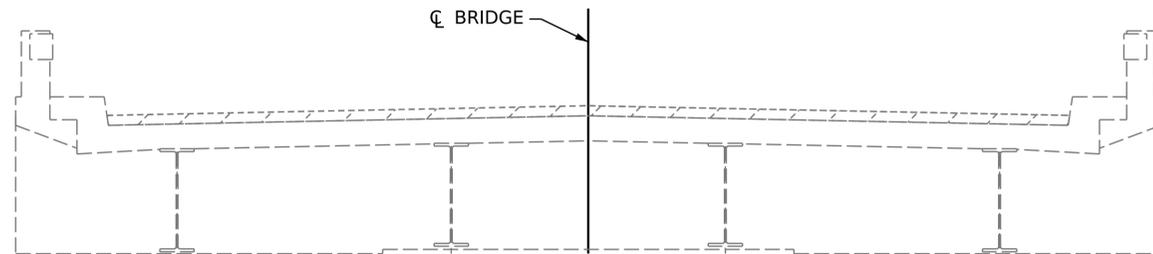
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



**TOP OF CAP**



**ELEVATION**



**TYPICAL SECTION**

**AS-BUILT REPAIR QUANTITY TABLE**

REPAIRS - END BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
CURTAIN WALL	0	0		
WINGWALL	0	0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
CURTAIN WALL	0	0		
WINGWALL	0	0		
EPOXY COATING		AREA SF		AREA SF
CAP		53.3		

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

**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.

FOR "SHOTCRETE REPAIRS", SEE SPECIAL PROVISIONS.

- SHOTCRETE REPAIR AREA
- CONCRETE REPAIR AREA
- AREA PREVIOUSLY ACCOUNTED FOR ON ADJACENT FACE

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910028**

SHEET 14 OF 14

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUBSTRUCTURE REPAIRS**  
**END BENT 2**



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 Nicholas Pierce  
 1511084340B485  
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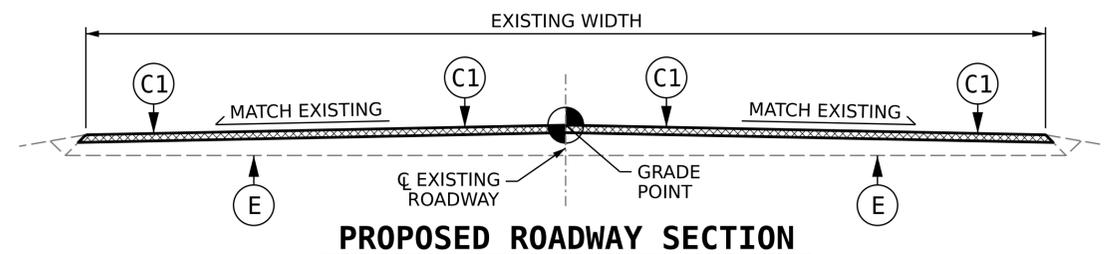
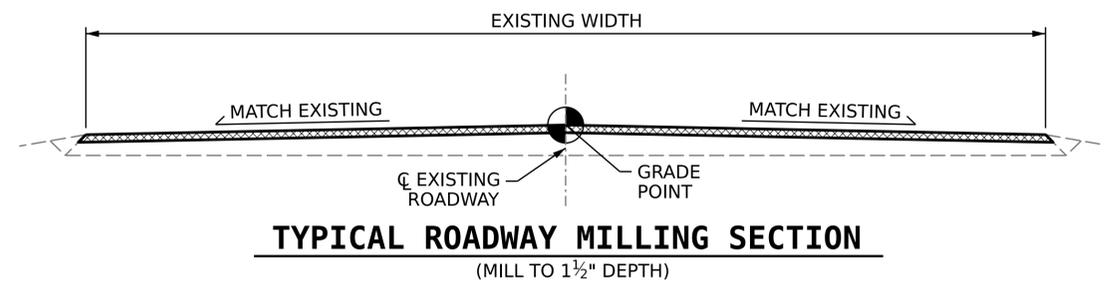
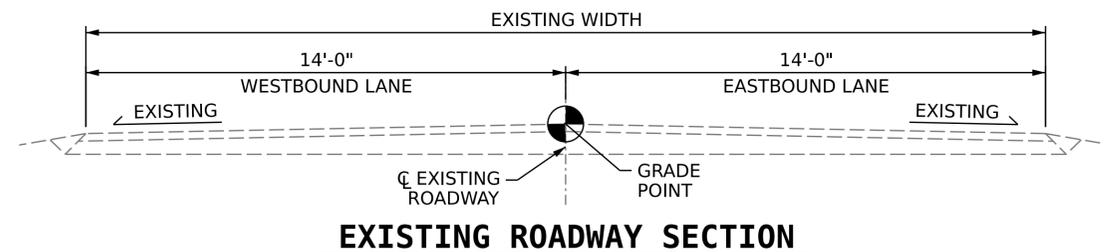
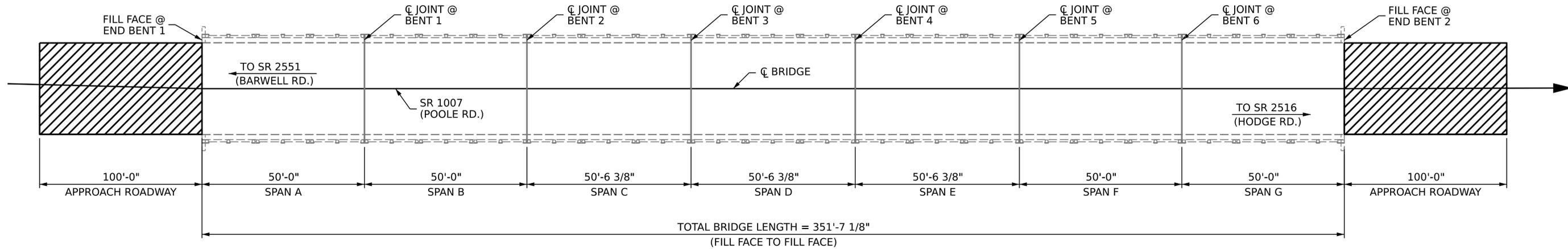
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1			3			TOTAL SHEETS
2			4			73

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 CHECKED BY : D.A. CANTRELL DATE : 11/2021  
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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.



SUMMARY OF QUANTITIES		
	ESTIMATE	ACTUAL
INCIDENTAL MILLING	623.0 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 S9.5B 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.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910028**



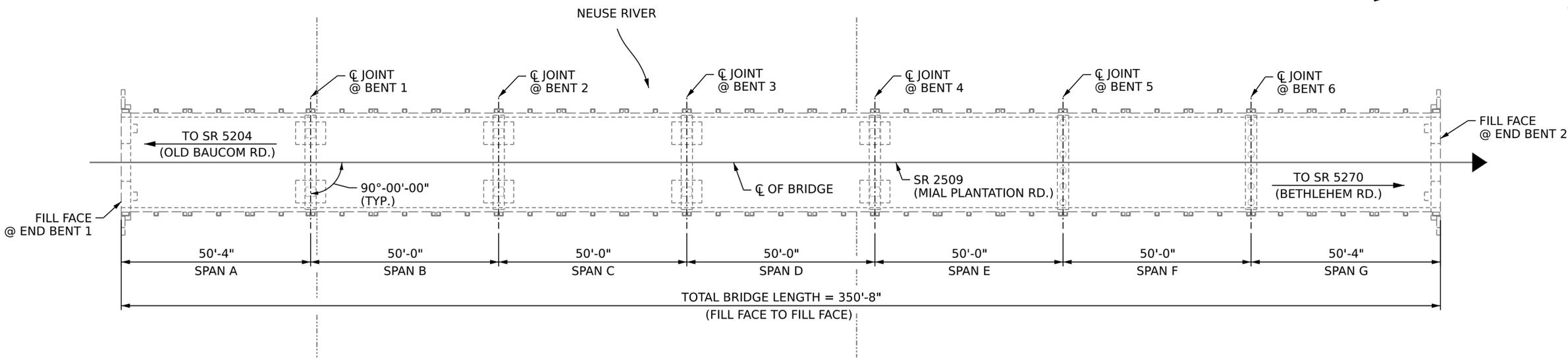
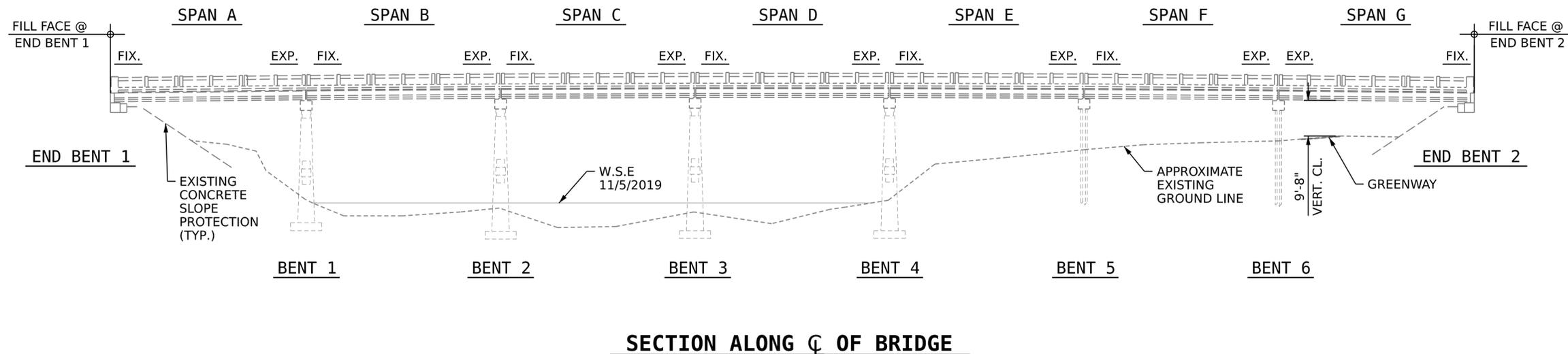
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 151108434D08485  
 01/21/2022

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

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1			3			51-34
2			4			73



**PLAN**

**NOTES**

GENERAL DRAWING INFORMATION IS TAKEN FROM THE ORIGINAL PLANS AND THE ROUTINE INSPECTION REPORT DATED 11/5/2019.

BRIDGE ORIENTATION CONFORMS TO EXISTING BRIDGE PLANS.

**SCOPE OF WORK**

- REMOVE DRIFT ACCUMULATION.
- REMOVE ASPHALT WEARING SURFACE AND PARTIALLY REMOVE TOP OF BRIDGE DECK CONCRETE BY SCARIFICATION AND SHOTBLASTING METHODS.
- REMOVE EXISTING JOINT MATERIAL AND INSTALL LINK SLABS AT BENTS 2, 3, 4, AND 5.
- OVERLAY PREPARED TOP OF BRIDGE DECK WITH POLYMER CONCRETE (PC).
- REMOVE EXISTING JOINT MATERIAL AND INSTALL FOAM JOINTS AT BENTS 1 AND 6.
- GROOVE PC BRIDGE DECK.
- CLEAN AND EPOXY COAT EXISTING PRESTRESSED CONCRETE GIRDER ENDS.
- CLEAN AND PAINT EXISTING STEEL BEARINGS AT END BENTS.
- REPLACE EXISTING BEARINGS ON INTERIOR BENTS.
- REMOVE UNSOUND CONCRETE AND PROPERLY PREPARE EXISTING END BENT AND BENT AREAS FOR SHOTCRETE AND CONCRETE REPAIR.
- PROPERLY PREPARE SPALLED AREAS IN EXISTING END BENT AND BENTS, AND PERFORM SHOTCRETE AND CONCRETE REPAIRS.
- REMOVE DEBRIS FROM TOP OF EXISTING END BENT AND BENT CAPS, AND APPLY EPOXY COATING.

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

\_\_\_\_\_  
RESIDENT ENGINEER

\_\_\_\_\_  
DATE



DocuSigned by:  
Nicholas W. Alford  
01/21/2022 10:48:48 AM



DocuSigned by:  
Nicholas Pierce  
151108434008485  
01/21/2022

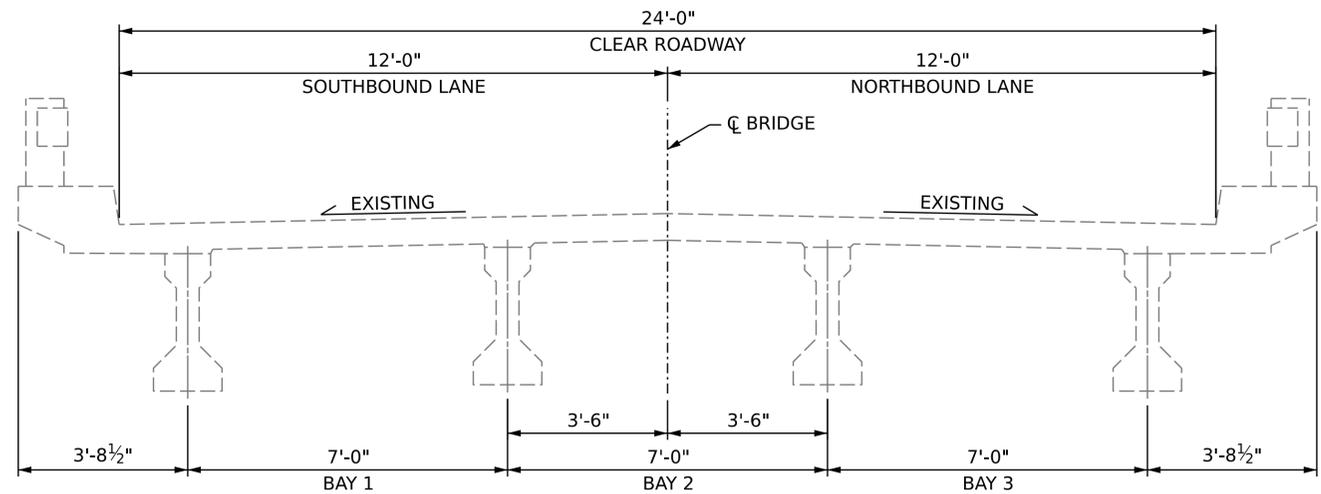
PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910240**

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**GENERAL DRAWING**  
 FOR BRIDGE ON SR 2509  
 (MIAL PLANTATION RD.)  
 OVER NEUSE RIVER

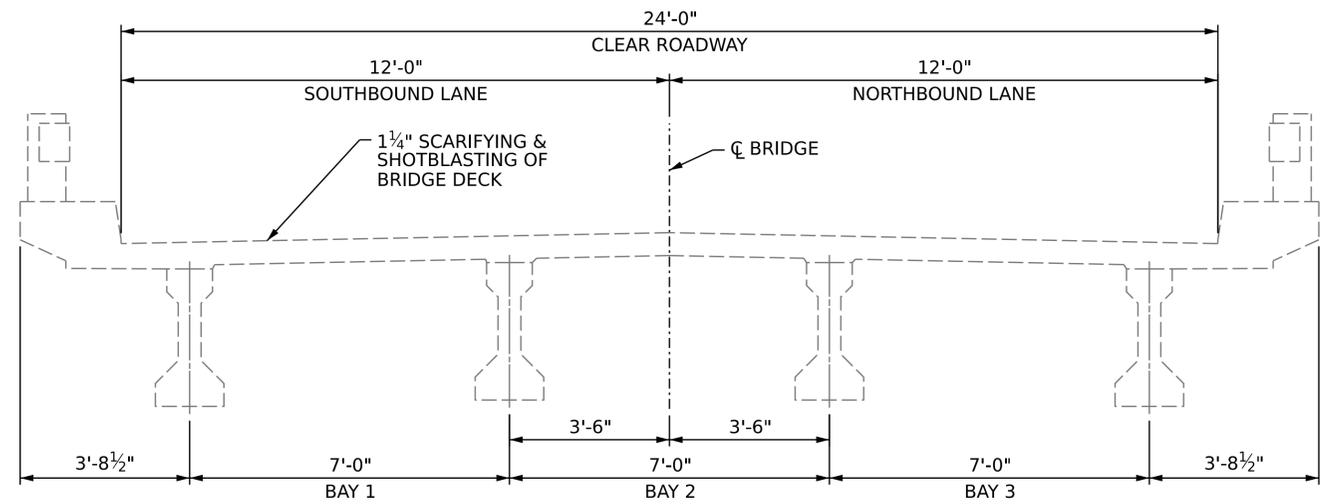
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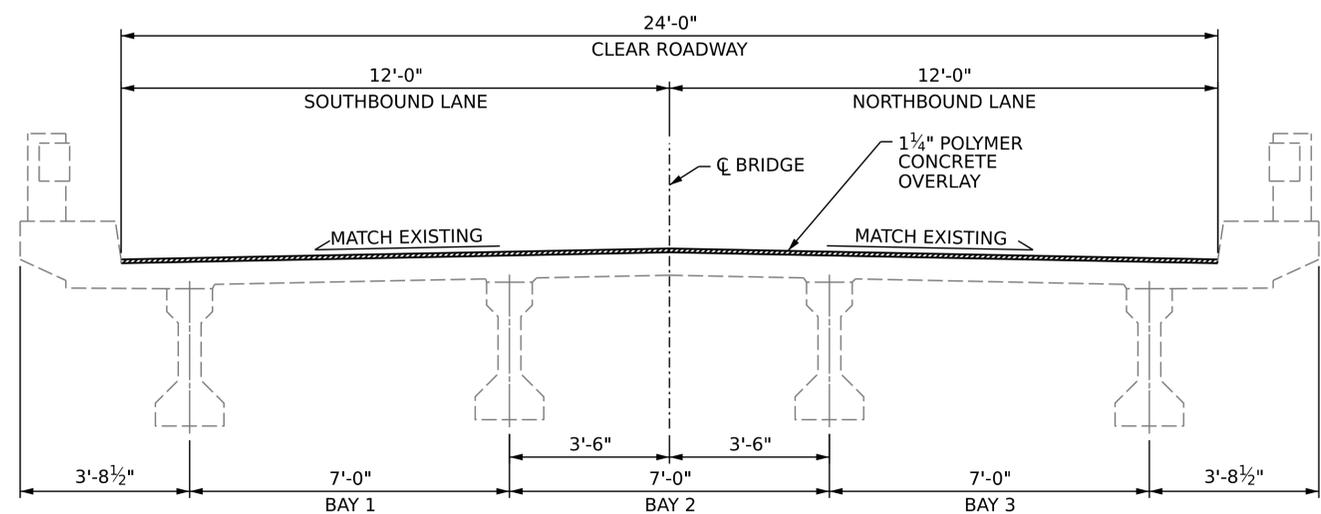
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**TYPICAL SECTION**  
EXISTING



**TYPICAL SECTION**  
PROPOSED

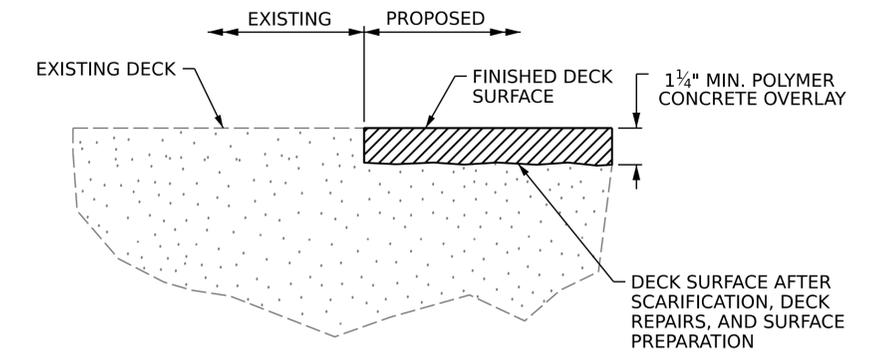


**TYPICAL SECTION**  
PROPOSED

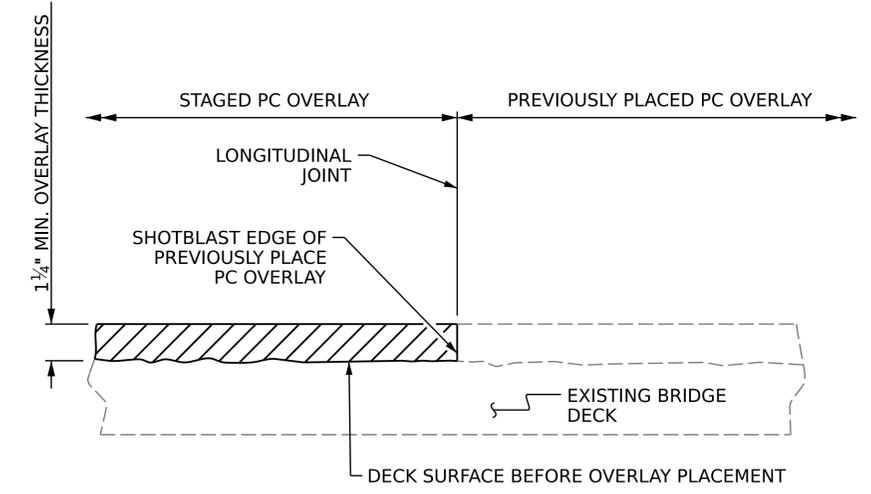
**NOTES**

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

GIRDERS ARE AASHTO TYPE II PRESTRESSED CONCRETE GIRDERS.



**DETAIL FOR POLYMER CONCRETE OVERLAY**



**STAGED PC OVERLAY JOINT**  
(AS NEEDED)

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910240**



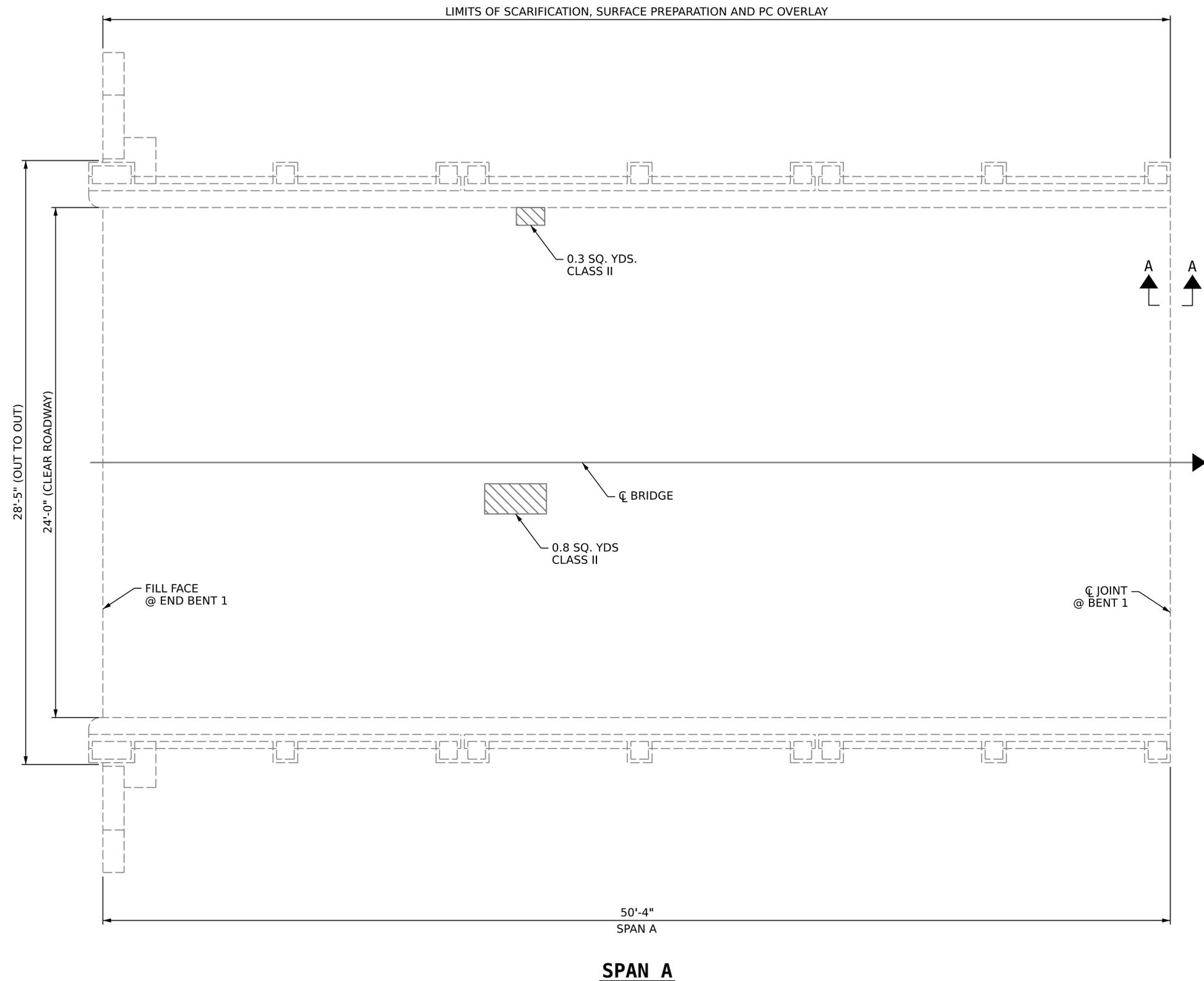
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**TYPICAL SECTION**  
 AND  
 PC OVERLAY  
 DETAILS

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1			3			
2			4			

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### AS-BUILT REPAIR QUANTITY TABLE

#### DECK SURFACE REPAIR - SPAN A

	ESTIMATE	ACTUAL
CONCRETE DECK REPAIR FOR PC OVERLAY	1.2 SQ. YDS.	
CLASS II SURFACE PREPARATION	1.2 SQ. YDS.	
SCARIFYING BRIDGE DECK	134 SQ. YDS.	
SHOTBLASTING BRIDGE DECK	134 SQ. YDS.	
PC MATERIALS	5.6 CU. YDS.	
PLACING AND FINISHING PC OVERLAY	134 SQ. YDS.	
GROOVE BRIDGE FLOORS	1047 SQ. FT.	

REPAIRS - SPAN A	QUANTITIES			
	ESTIMATE		ACTUAL	
	AREA SF	VOLUME CF	AREA SF	VOLUME CF
SHOTCRETE REPAIRS				
CONCRETE BARRIER RAIL	0	0		

#### NOTES

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

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 SCARIFYING BRIDGE DECK, SHOTBLASTING BRIDGE DECK AND CLASS II SURFACE PREPARATION, SEE OVERLAY SURFACE PREPARATION FOR POLYMER CONCRETE SPECIAL PROVISION.

FOR CONCRETE DECK REPAIR FOR PC OVERLAY, PC MATERIALS, AND PLACING AND FINISHING PC OVERLAY SEE POLYMER CONCRETE BRIDGE DECK OVERLAY SPECIAL PROVISION.

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

-  CLASS II SURFACE PREPARATION
-  SHOTCRETE REPAIR AREA
-  LINK SLAB AREA

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910240**

SHEET 1 OF 7



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STATE OF NORTH CAROLINA  
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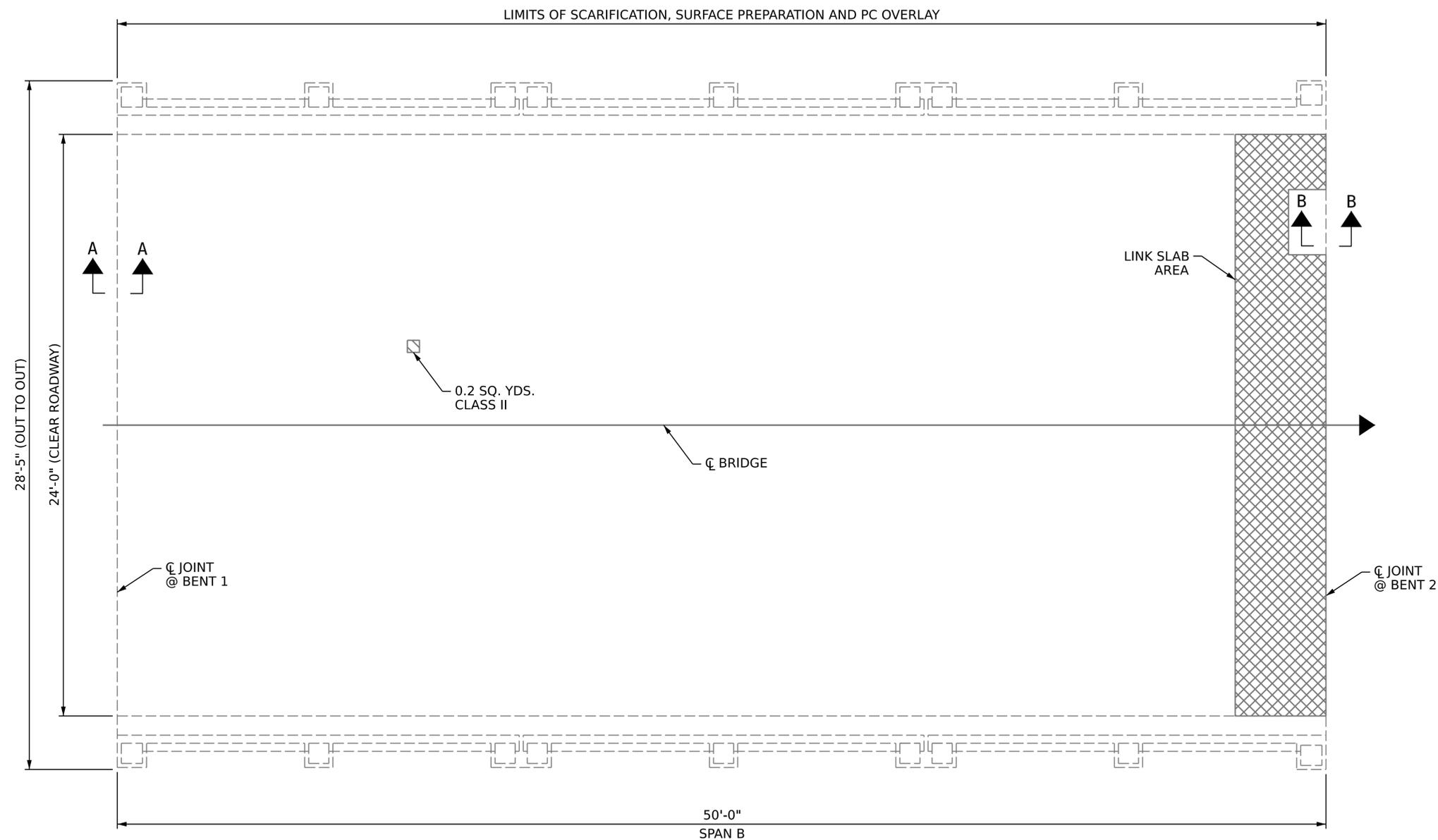
### DECK SURFACE REPAIRS SPAN A

REVISIONS						SHEET NO.
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1			3			52-03
2			4			73

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8/26/21



**AS-BUILT REPAIR QUANTITY TABLE**

**DECK SURFACE REPAIR - SPAN B**

	ESTIMATE	ACTUAL		
CONCRETE DECK REPAIR FOR PC OVERLAY	0.2 SQ. YDS.			
CLASS II SURFACE PREPARATION	0.2 SQ. YDS.			
SCARIFYING BRIDGE DECK	133 SQ. YDS.			
SHOTBLASTING BRIDGE DECK	133 SQ. YDS.			
PC MATERIALS	5.2 CU. YDS.			
PLACING AND FINISHING PC OVERLAY	124 SQ. YDS.			
GROOVE BRIDGE FLOORS	1040 SQ. FT.			
LINK SLAB FOR PRESERVATION	90 SQ. FT.			
REPAIRS - SPAN B	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CONCRETE BARRIER RAIL	0	0		

**NOTES**

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

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 SCARIFYING BRIDGE DECK, SHOTBLASTING BRIDGE DECK AND CLASS II SURFACE PREPARATION, SEE OVERLAY SURFACE PREPARATION FOR POLYMER CONCRETE SPECIAL PROVISION.

FOR CONCRETE DECK REPAIR FOR PC OVERLAY, PC MATERIALS, AND PLACING AND FINISHING PC OVERLAY SEE POLYMER CONCRETE BRIDGE DECK OVERLAY SPECIAL PROVISION.

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

FOR SECTION B-B, SEE "LINK SLAB FOR PRESERVATION DETAILS" SHEET.

-  CLASS II SURFACE PREPARATION
-  SHOTCRETE REPAIR AREA
-  LINK SLAB AREA

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910240**

SHEET 2 OF 7



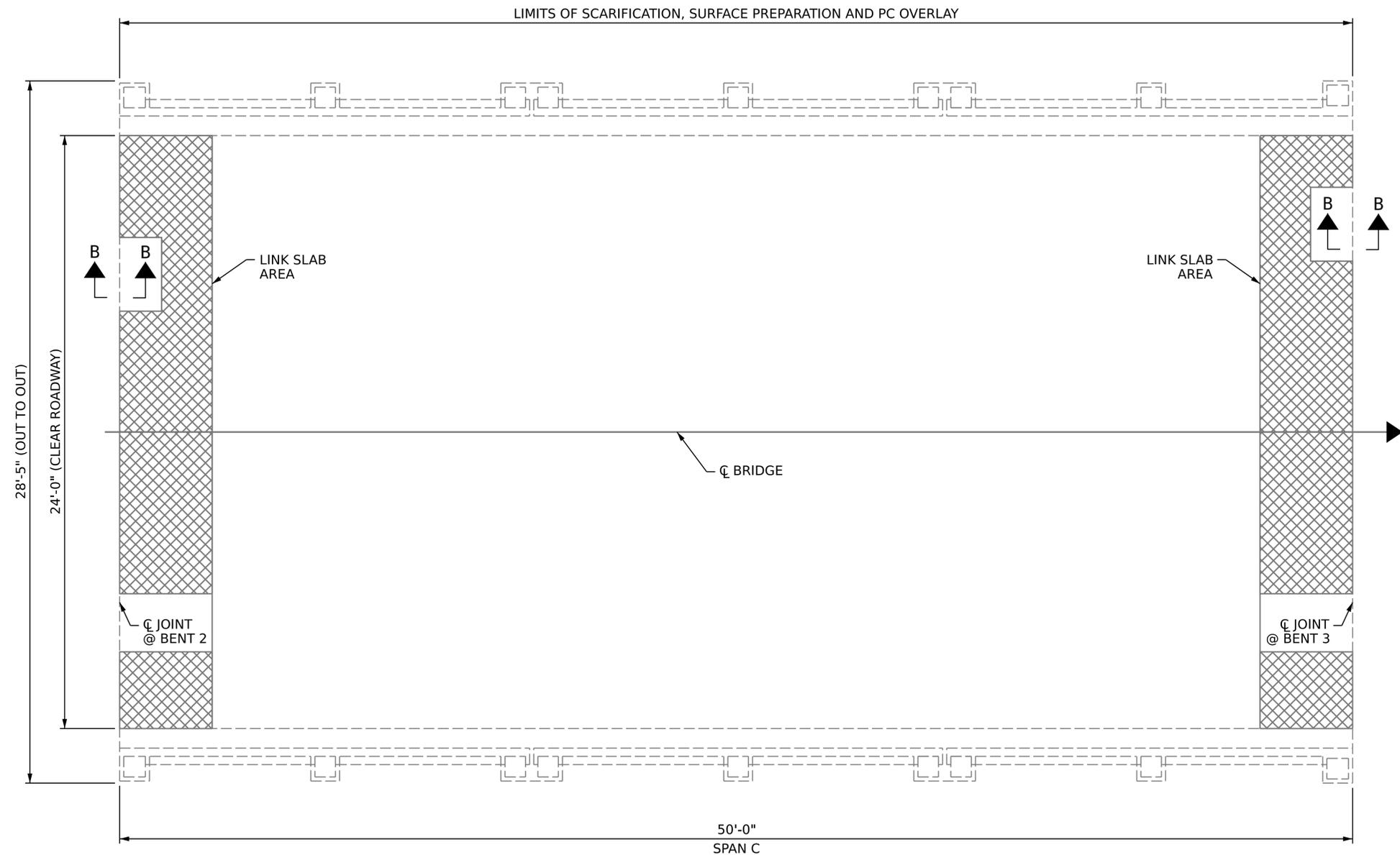
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 Nicholas P. Pierce  
 151108434D08485  
 01/21/2022

STATE OF NORTH CAROLINA  
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 RALEIGH  
**DECK SURFACE REPAIRS**  
**SPAN B**

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1			3			S2-04 TOTAL SHEETS 73
2			4			

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### AS-BUILT REPAIR QUANTITY TABLE

#### DECK SURFACE REPAIR - SPAN C

	ESTIMATE	ACTUAL		
CONCRETE DECK REPAIR FOR PC OVERLAY	0.0 SQ. YDS.			
CLASS II SURFACE PREPARATION	0.0 SQ. YDS.			
SCARIFYING BRIDGE DECK	133 SQ. YDS.			
SHOTBLASTING BRIDGE DECK	133 SQ. YDS.			
PC MATERIALS	4.8 CU. YDS.			
PLACING AND FINISHING PC OVERLAY	114 SQ. YDS.			
GROOVE BRIDGE FLOORS	1040 SQ. FT.			
LINK SLAB FOR PRESERVATION	180 SQ. FT.			
REPAIRS - SPAN C	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CONCRETE BARRIER RAIL	0	0		

#### NOTES

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

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 SCARIFYING BRIDGE DECK, SHOTBLASTING BRIDGE DECK AND CLASS II SURFACE PREPARATION, SEE OVERLAY SURFACE PREPARATION FOR POLYMER CONCRETE SPECIAL PROVISION.

FOR CONCRETE DECK REPAIR FOR PC OVERLAY, PC MATERIALS, AND PLACING AND FINISHING PC OVERLAY SEE POLYMER CONCRETE BRIDGE DECK OVERLAY SPECIAL PROVISION.

FOR SECTION B-B, SEE "LINK SLAB FOR PRESERVATION DETAILS" SHEET.

-  CLASS II SURFACE PREPARATION
-  SHOTCRETE REPAIR AREA
-  LINK SLAB AREA

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910240**

SHEET 3 OF 7



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 151108434008485  
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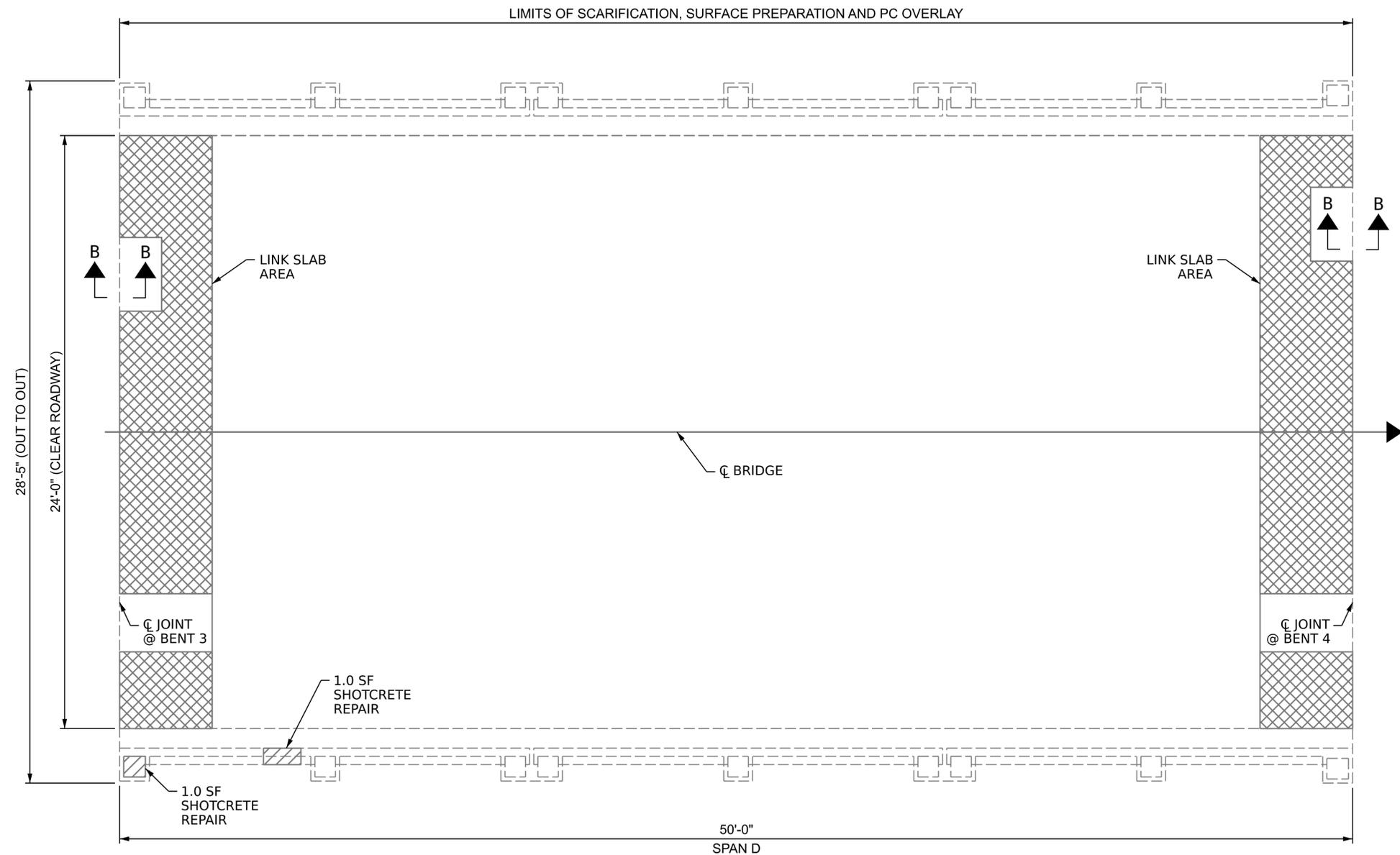
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 RALEIGH

## DECK SURFACE REPAIRS SPAN C

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1			3			S2-05
2			4			TOTAL SHEETS 73

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**AS-BUILT REPAIR QUANTITY TABLE**

**DECK SURFACE REPAIR - SPAN D**

	ESTIMATE	ACTUAL		
CONCRETE DECK REPAIR FOR PC OVERLAY	0.0 SQ. YDS.			
CLASS II SURFACE PREPARATION	0.0 SQ. YDS.			
SCARIFYING BRIDGE DECK	133 SQ. YDS.			
SHOTBLASTING BRIDGE DECK	133 SQ. YDS.			
PC MATERIALS	4.8 CU. YDS.			
PLACING AND FINISHING PC OVERLAY	114 SQ. YDS.			
GROOVE BRIDGE FLOORS	1040 SQ. FT.			
LINK SLAB FOR PRESERVATION	180 SQ. FT.			
REPAIRS - SPAN D	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CONCRETE BARRIER RAIL	2.0	1.0		

**NOTES**

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

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 SCARIFYING BRIDGE DECK, SHOTBLASTING BRIDGE DECK AND CLASS II SURFACE PREPARATION, SEE OVERLAY SURFACE PREPARATION FOR POLYMER CONCRETE SPECIAL PROVISION.

FOR CONCRETE DECK REPAIR FOR PC OVERLAY, PC MATERIALS, AND PLACING AND FINISHING PC OVERLAY SEE POLYMER CONCRETE BRIDGE DECK OVERLAY SPECIAL PROVISION.

FOR SECTION B-B, SEE "LINK SLAB FOR PRESERVATION DETAILS" SHEET.

- CLASS II SURFACE PREPARATION
- SHOTCRETE REPAIR AREA
- LINK SLAB AREA

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910240**

SHEET 4 OF 7



Designed by  
*Nicholas Pierce*  
 151108434020485.  
 01/21/2022

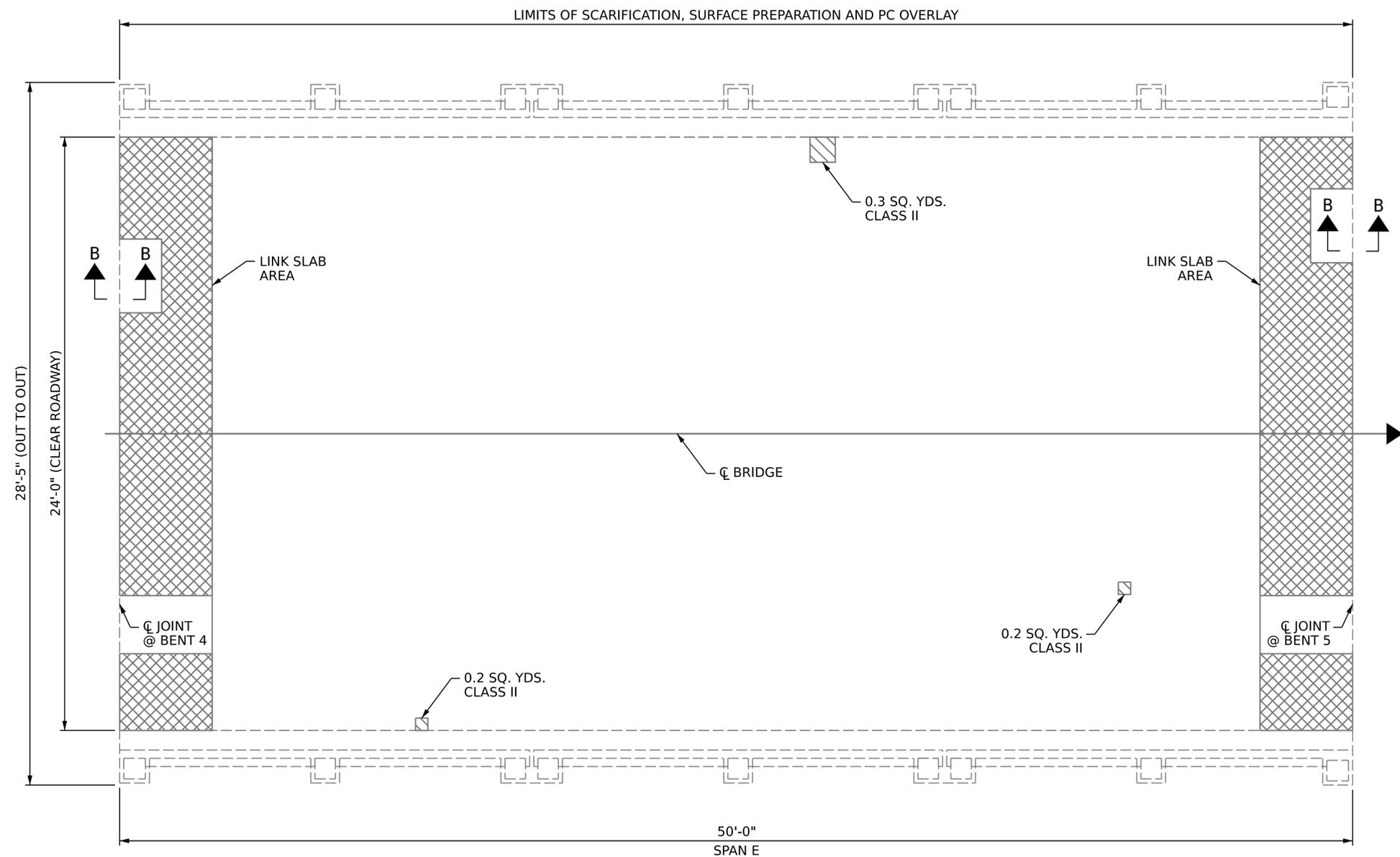
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 RALEIGH

**DECK SURFACE REPAIRS**  
**SPAN D**

NO.	BY:	DATE:	REVISIONS			SHEET NO.
			NO.	BY:	DATE:	
1			3			52-06
2			4			TOTAL SHEETS 73

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### AS-BUILT REPAIR QUANTITY TABLE

#### DECK SURFACE REPAIR - SPAN E

	ESTIMATE	ACTUAL		
CONCRETE DECK REPAIR FOR PC OVERLAY	0.7 SQ. YDS.			
CLASS II SURFACE PREPARATION	0.7 SQ. YDS.			
SCARIFYING BRIDGE DECK	133 SQ. YDS.			
SHOTBLASTING BRIDGE DECK	133 SQ. YDS.			
PC MATERIALS	4.8 CU. YDS.			
PLACING AND FINISHING PC OVERLAY	114 SQ. YDS.			
GROOVE BRIDGE FLOORS	1040 SQ. FT.			
LINK SLAB FOR PRESERVATION	180 SQ. FT.			
REPAIRS - SPAN E	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CONCRETE BARRIER RAIL	0	0		

#### NOTES

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

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 SCARIFYING BRIDGE DECK, SHOTBLASTING BRIDGE DECK AND CLASS II SURFACE PREPARATION, SEE OVERLAY SURFACE PREPARATION FOR POLYMER CONCRETE SPECIAL PROVISION.

FOR CONCRETE DECK REPAIR FOR PC OVERLAY, PC MATERIALS, AND PLACING AND FINISHING PC OVERLAY SEE POLYMER CONCRETE BRIDGE DECK OVERLAY SPECIAL PROVISION.

FOR SECTION B-B, SEE "LINK SLAB FOR PRESERVATION DETAILS" SHEET.

- CLASS II SURFACE PREPARATION
- SHOTCRETE REPAIR AREA
- LINK SLAB AREA

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910240**

SHEET 5 OF 7



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 151109434098485  
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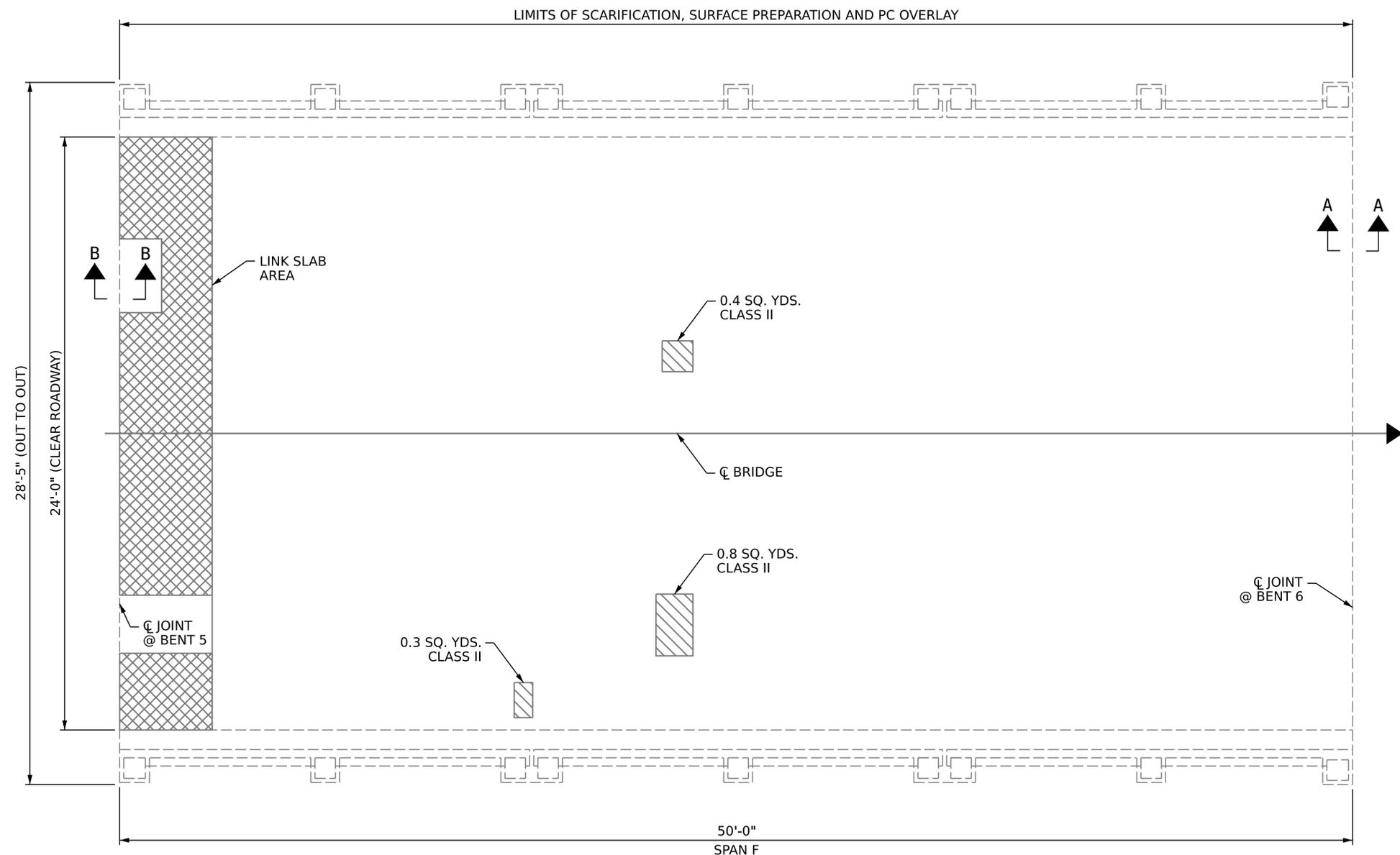
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### DECK SURFACE REPAIRS SPAN E

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1			3			S2-07 TOTAL SHEETS 73
2			4			

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### AS-BUILT REPAIR QUANTITY TABLE

#### DECK SURFACE REPAIR - SPAN F

	ESTIMATE	ACTUAL		
CONCRETE DECK REPAIR FOR PC OVERLAY	1.5 SQ. YDS.			
CLASS II SURFACE PREPARATION	1.5 SQ. YDS.			
SCARIFYING BRIDGE DECK	133 SQ. YDS.			
SHOTBLASTING BRIDGE DECK	133 SQ. YDS.			
PC MATERIALS	5.2 CU. YDS.			
PLACING AND FINISHING PC OVERLAY	124 SQ. YDS.			
GROOVE BRIDGE FLOORS	1040 SQ. FT.			
LINK SLAB FOR PRESERVATION	90 SQ. FT.			
REPAIRS - SPAN F	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CONCRETE BARRIER RAIL	0	0		

#### NOTES

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

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 SCARIFYING BRIDGE DECK, SHOTBLASTING BRIDGE DECK AND CLASS II SURFACE PREPARATION, SEE OVERLAY SURFACE PREPARATION FOR POLYMER CONCRETE SPECIAL PROVISION.

FOR CONCRETE DECK REPAIR FOR PC OVERLAY, PC MATERIALS, AND PLACING AND FINISHING PC OVERLAY SEE POLYMER CONCRETE BRIDGE DECK OVERLAY SPECIAL PROVISION.

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

FOR SECTION B-B, SEE "LINK SLAB FOR PRESERVATION DETAILS" SHEET.

- CLASS II SURFACE PREPARATION
- SHOTCRETE REPAIR AREA
- LINK SLAB AREA

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910240**

SHEET 6 OF 7



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 151108434008485  
 01/21/2022

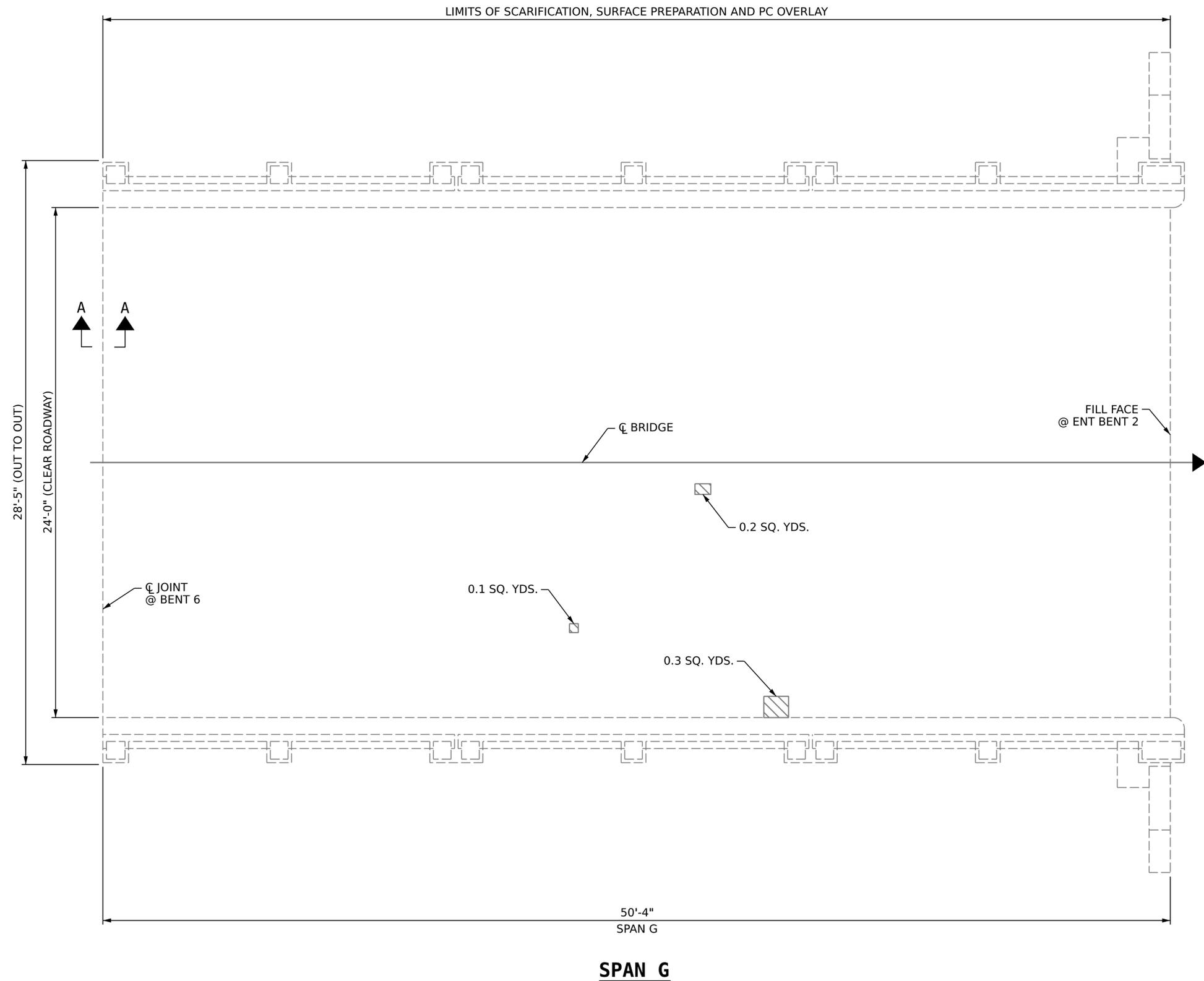
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 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

## DECK SURFACE REPAIRS SPAN F

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### AS-BUILT REPAIR QUANTITY TABLE

#### DECK SURFACE REPAIR - SPAN G

	ESTIMATE	ACTUAL
CONCRETE DECK REPAIR FOR PC OVERLAY	0.6 SQ. YDS.	
CLASS II SURFACE PREPARATION	0.6 SQ. YDS.	
SCARIFYING BRIDGE DECK	134 SQ. YDS.	
SHOTBLASTING BRIDGE DECK	134 SQ. YDS.	
PC MATERIALS	5.6 CU. YDS.	
PLACING AND FINISHING PC OVERLAY	134 SQ. YDS.	
GROOVE BRIDGE FLOORS	1047 SQ. FT.	

REPAIRS - SPAN G	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CONCRETE BARRIER RAIL	0	0		

#### NOTES

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

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 SCARIFYING BRIDGE DECK, SHOTBLASTING BRIDGE DECK AND CLASS II SURFACE PREPARATION, SEE OVERLAY SURFACE PREPARATION FOR POLYMER CONCRETE SPECIAL PROVISION.

FOR CONCRETE DECK REPAIR FOR PC OVERLAY, PC MATERIALS, AND PLACING AND FINISHING PC OVERLAY SEE POLYMER CONCRETE BRIDGE DECK OVERLAY SPECIAL PROVISION.

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

- CLASS II SURFACE PREPARATION
- SHOTCRETE REPAIR AREA
- LINK SLAB AREA

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910240**

SHEET 7 OF 7



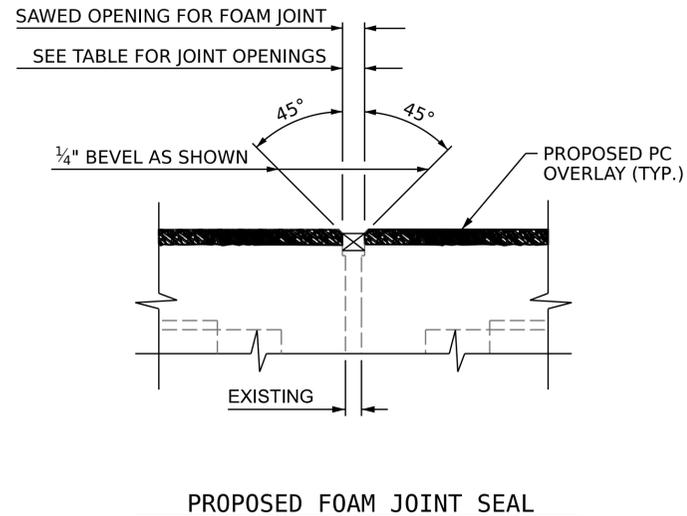
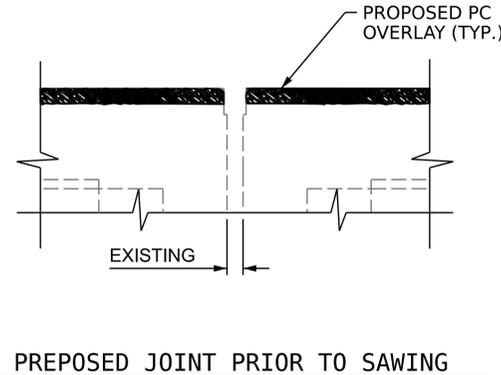
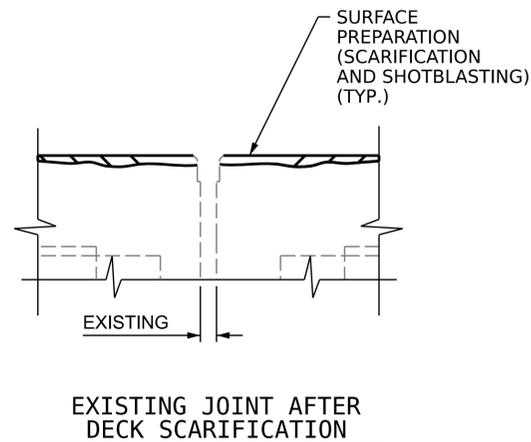
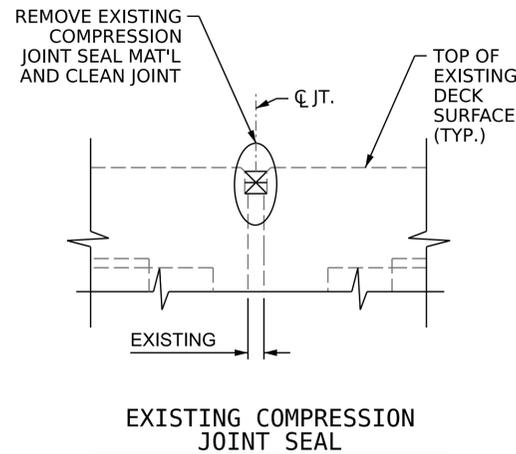
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 01/21/2022

STATE OF NORTH CAROLINA  
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**DECK SURFACE REPAIRS**  
**SPAN G**

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**SECTION A-A**  
(TYP. AT BENTS 1 AND 6)

JOINT REPAIR QUANTITY TABLE		
	ESTIMATED LIN. FT.	ACTUAL LIN. FT.
FOAM JOINT SEALS FOR PRESERVATION	61	

LOCATION	SAWED JT. OPENING (PERPENDICULAR TO JT.)		
	AT 45°	AT 60°	AT 90°
BENT 1	1 3/8"	1 1/16"	1 1/2"
BENT 6	1 5/8"	1 9/16"	1 3/8"

**NOTES**

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

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

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

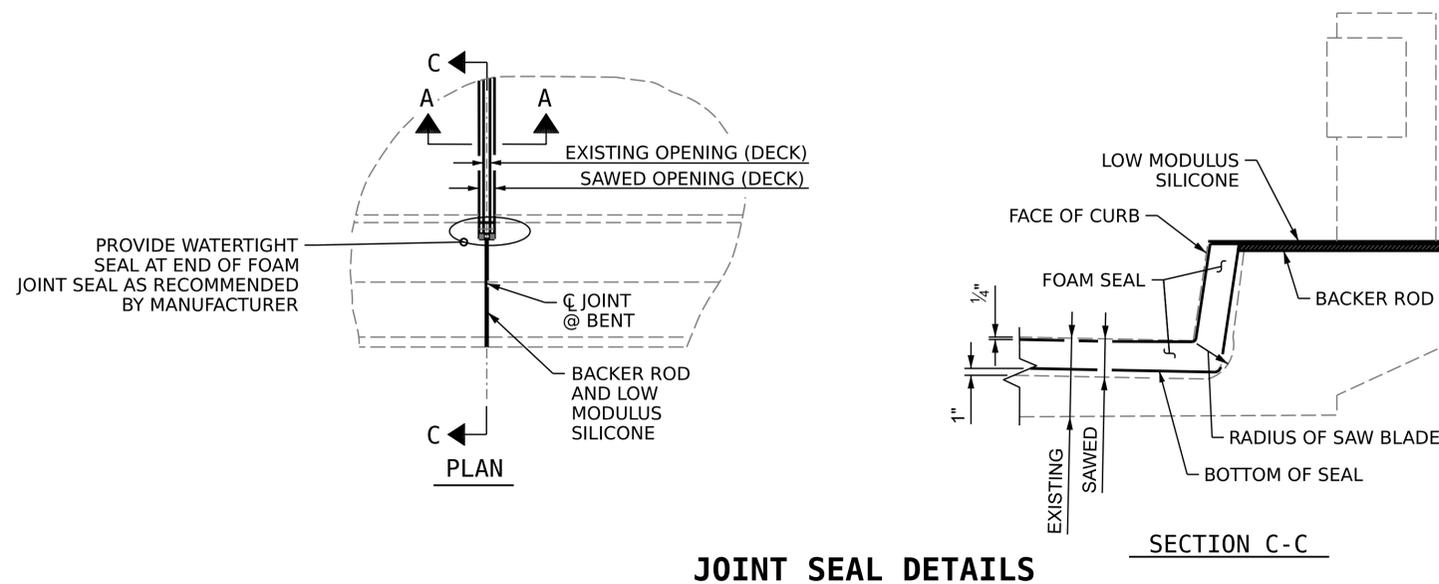
FOAM JOINTS SHALL BE INSTALLED AS PER THE MANUFACTURER'S RECOMMENDATIONS.

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

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

THE INSTALLED FOAM JOINTS SHALL BE WATER TIGHT.

FOR FOAM JOINT SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.



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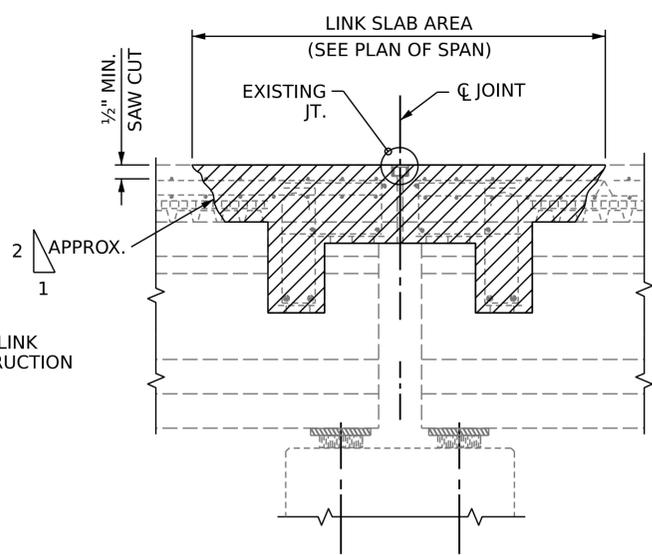
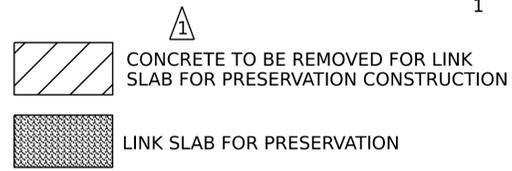
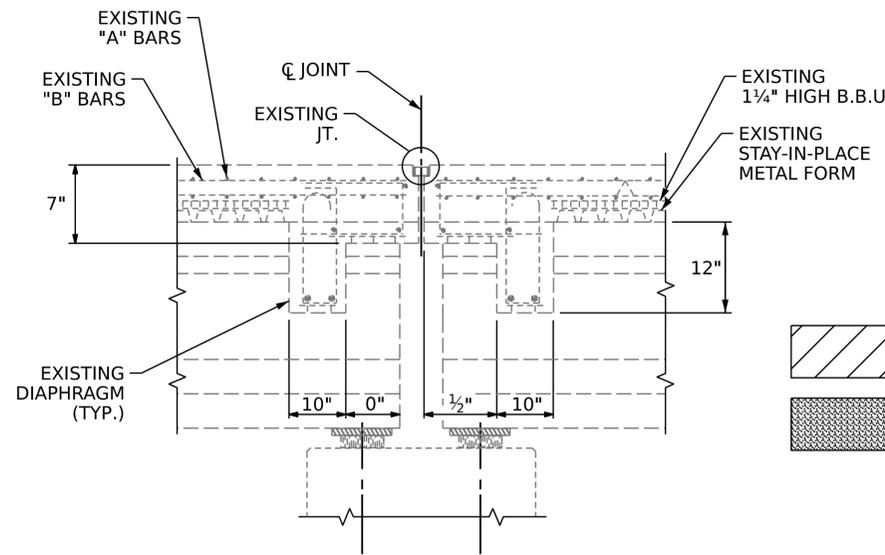
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**JOINT DETAILS**

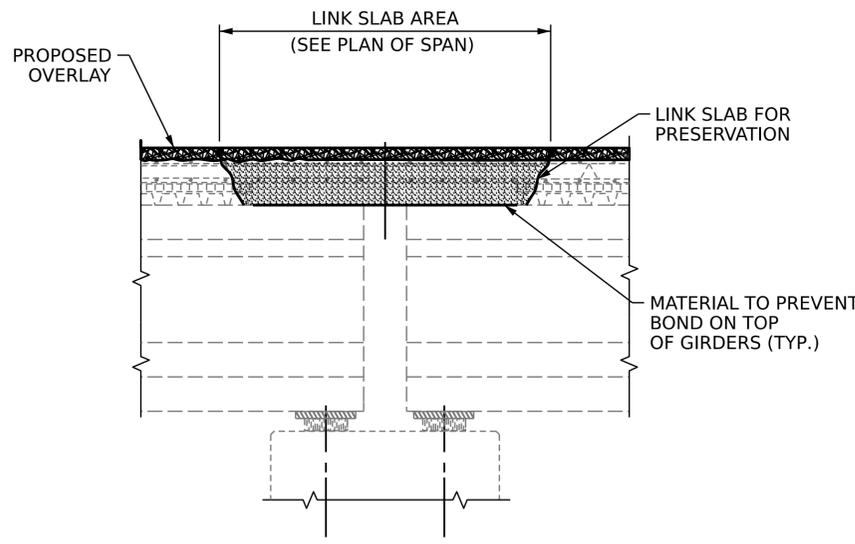
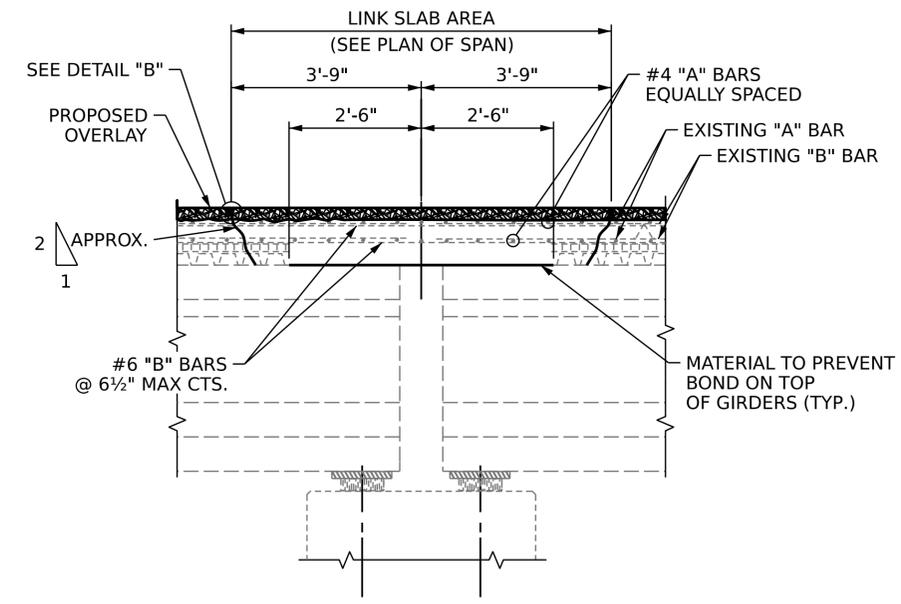
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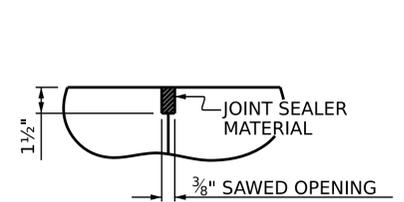
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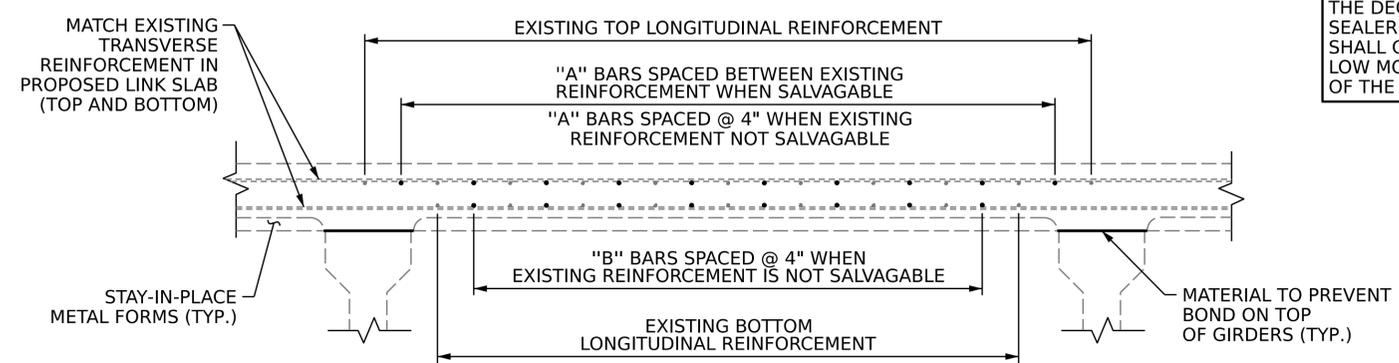
**EXISTING SECTION AT BENT**  
SECTION B-B



**PROPOSED SECTION AT BENT**  
SECTION B-B



**DETAIL "B"**



**REINFORCEMENT DETAILS**

A 1 1/2" DEEP CONTRACTION JOINT AT BENT CONTROL LINE SHALL BE SAWN WITHIN 24 HOURS OF POURING THE DECK. THE JOINT SHALL BE FILLED WITH JOINT SEALER MATERIAL. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF TYPE B LOW MODULUS SILICONE SEALANT. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

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

BILL OF MATERIAL					
FOR ONE LINK SLAB (4 REQ'D)					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A	15	#5	STR	24'-0"	376 LBS.
A	15	#5	STR	24'-0"	376 LBS.
* B	46	#6	STR	7'-6"	519 LBS.
B	46	#6	STR	7'-6"	519 LBS.
REINFORCING STEEL					895 LBS.
* EPOXY COATED REINFORCING STEEL					895 LBS.

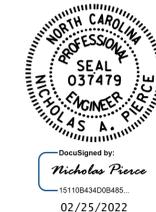
**NOTES**

- SEE TRAFFIC MANAGEMENT PLANS FOR LANE WIDTHS, SEQUENCING, AND OTHER TRAFFIC CONTROL MEASURES FOR STAGING OF JOINT REPAIR.
- FOR ESTIMATED LINK SLAB FOR PRESERVATION QUANTITIES, SEE PLAN OF SPAN SHEETS.
- FOR LINK SLAB FOR PRESERVATION, SEE SPECIAL PROVISIONS.

**CONSTRUCTION SEQUENCE**

- CLOSE WORK AREA ACCORDING TO TRAFFIC MANAGEMENT PLANS.
- MARK OUT PROPOSED LINK SLAB AREA AND REMOVE EXISTING JOINT MATERIAL.
- SAW CUT 1/2" DEEP PERIMETER OF PROPOSED LINK SLAB AREA.
- BEGIN FULL DEPTH DEMOLITION OF PROPOSED LINK SLAB AREA, BEING CAREFUL NOT TO DAMAGE EXISTING REINFORCING STEEL, BEAM FLANGES, OR STAY-IN-PLACE FORMS. DEMOLISH EDGES OF LINK SLAB AREA AT A 2:1 RATIO, AS SHOWN.
- REMOVE DEMILITIONED MATERIALS AND CLEAN LINK SLAB AREA.
- REMOVE SHEAR STUDS/STIRRUPS WITHIN THE 0.05L AREA.
- COAT AND/OR REPAIR EXISTING REINFORCING STEEL THAT WAS DAMAGED DURING DEMOLITION.
- PLACE BOND BREAKER MATERIAL WITHIN THE 0.05L AREA.
- PLACE ADDITIONAL REINFORCING STEEL AS SHOWN.
- PLACE NEW CONCRETE FOLLOWING THE CONCRETE WORK FOR JOINT REPLACEMENT SPECIAL PROVISION. AS AN ALTERNATIVE, THE CONTRACTOR CAN USE PC MATERIAL FOR THE LINK SLAB, FOLLOWING THE POLYMER CONCRETE BRIDGE DECK OVERLAY SPECIAL PROVISION.
- AFTER PROPOSED DECK OVERLAY WORK HAS CURED, SAW CUT CONTROL LINES AND FILL WITH SEALER MATERIAL.

PROJECT NO. **15BPR.49**  
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**LINK SLAB FOR PRESERVATION JOINT DETAILS**

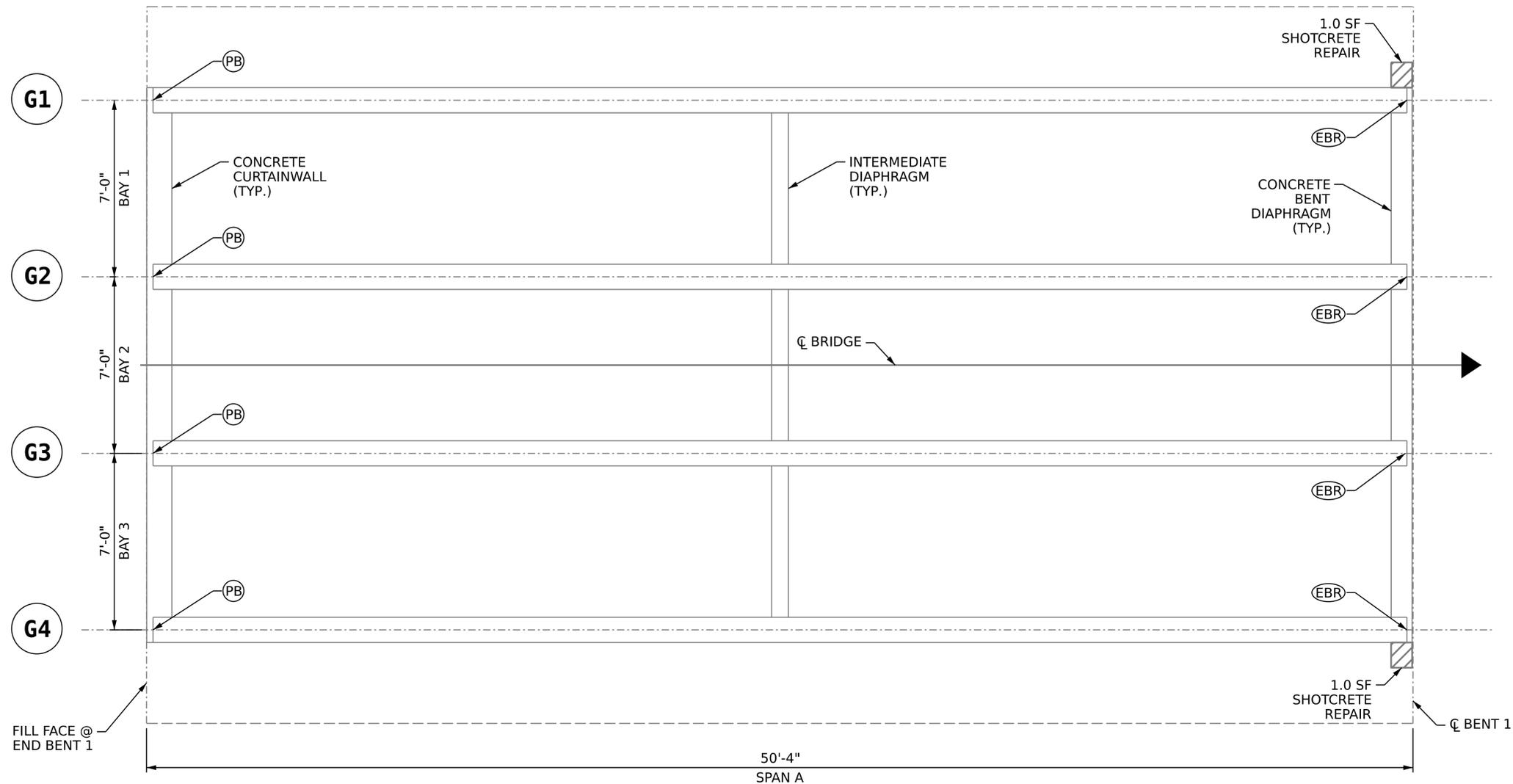
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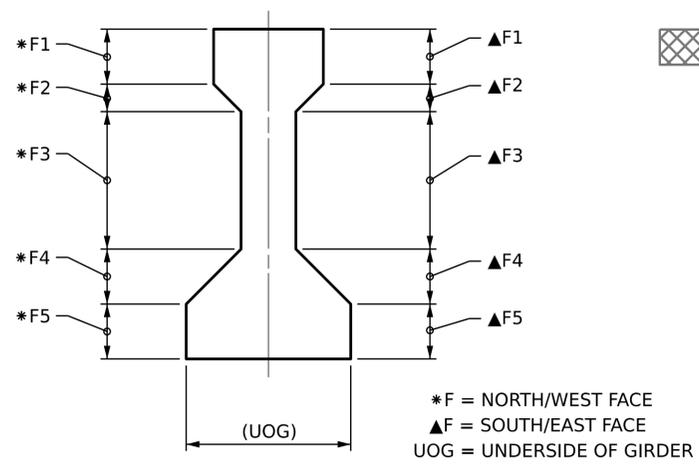
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**SPAN A**



**GIRDER SECTION**

GIRDER DAMAGE LOCATIONS

**AS-BUILT REPAIR QUANTITY TABLE**

DECK UNDERSIDE REPAIRS SPAN A	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0	0		
CONCRETE DIAPHRAGM	2.0	1.9		
OVERHANG	0	0		
CONCRETE GIRDER	0	0		
<b>CONCRETE REPAIRS</b>	<b>AREA SF</b>	<b>VOLUME CF</b>	<b>AREA SF</b>	<b>VOLUME CF</b>
UNDERSIDE OF DECK	0	0		
CONCRETE DIAPHRAGM	0	0		
OVERHANG	0	0		
CONCRETE GIRDER	0	0		
<b>EPOXY COATING</b>		<b>AREA SF</b>		<b>AREA SF</b>
CONCRETE GIRDER ENDS		137.6		

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

**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.

FOR "SHOTCRETE REPAIRS", SEE SPECIAL PROVISIONS.

FOR EPOXY COATING CONCRETE GIRDER ENDS, SEE SPECIAL PROVISIONS.

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

**REPAIR LEGEND**

- SHOTCRETE REPAIR AREA
- CONCRETE REPAIR AREA
- (G1)** - GIRDER NUMBER
- (PB)** - CLEAN & PAINT BEARING WITH HRSCA
- (EBR)** - EXPANSION BEARING REPLACEMENT
- (FBR)** - FIXED BEARING REPLACEMENT

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910240**

SHEET 1 OF 7

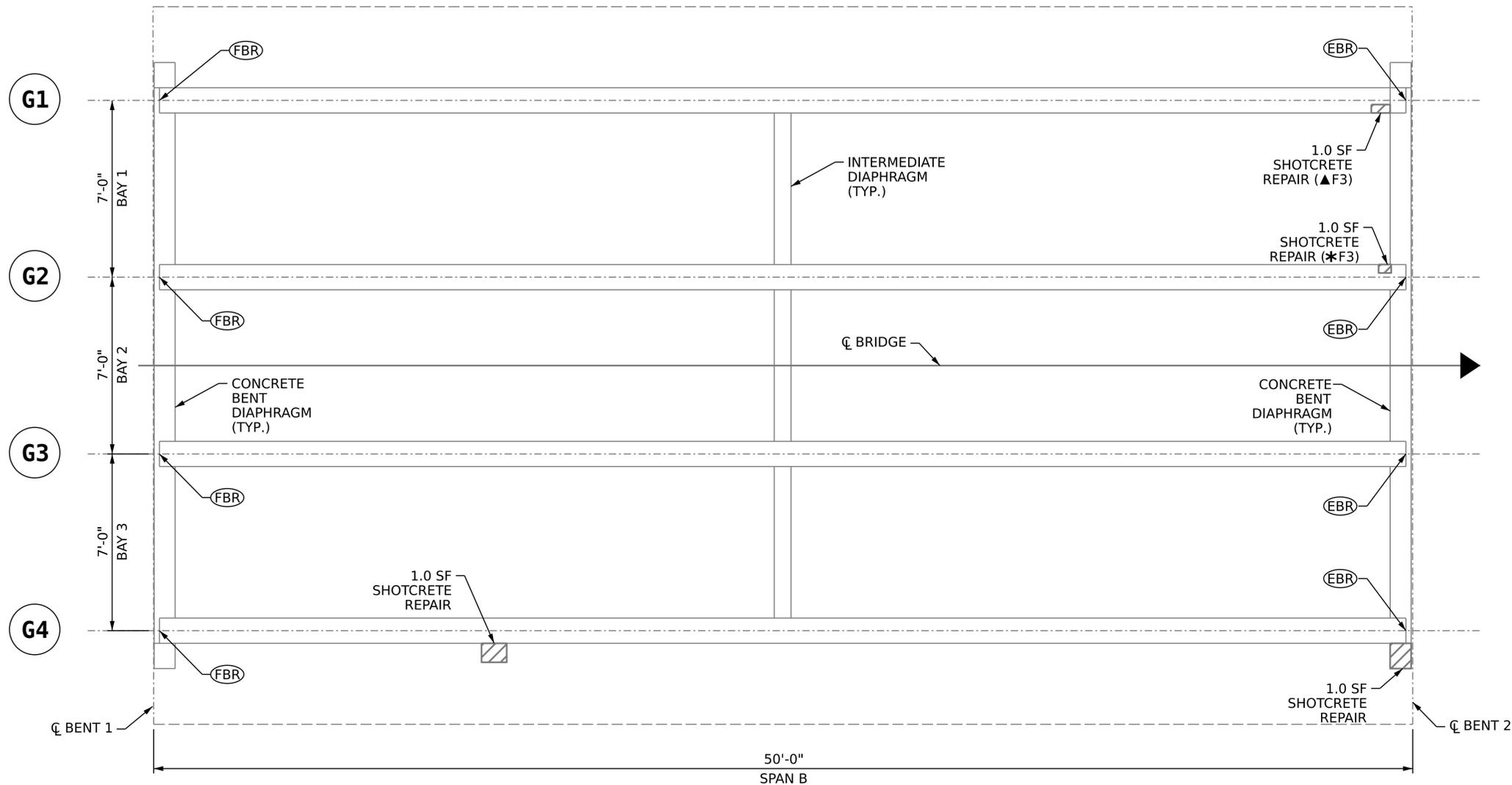


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 RALEIGH  
**DECK UNDERSIDE REPAIRS**  
**SPAN A**

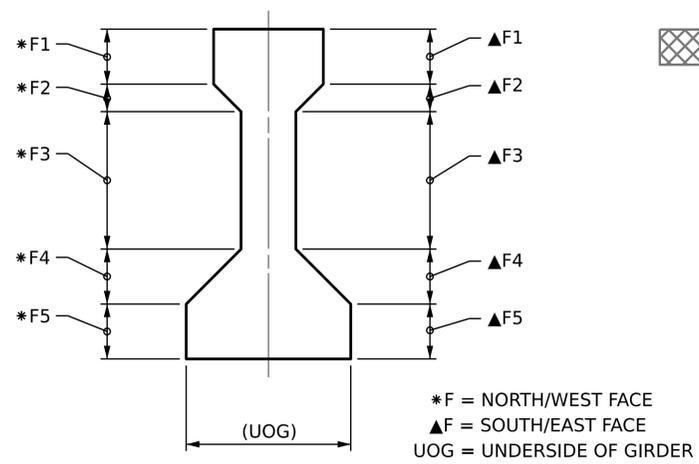
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 DESIGN ENGINEER OF RECORD: N.A. PIERCE DATE : 11/2021



**SPAN B**



**GIRDER SECTION**

GIRDER DAMAGE LOCATIONS

**AS-BUILT REPAIR QUANTITY TABLE**

DECK UNDERSIDE REPAIRS SPAN B	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	1.0	0.4		
CONCRETE DIAPHRAGM	1.0	0.5		
OVERHANG	0	0		
CONCRETE GIRDER	2.0	0.7		
<b>CONCRETE REPAIRS</b>	<b>AREA SF</b>	<b>VOLUME CF</b>	<b>AREA SF</b>	<b>VOLUME CF</b>
UNDERSIDE OF DECK	0	0		
CONCRETE DIAPHRAGM	0	0		
OVERHANG	0	0		
CONCRETE GIRDER	0	0		
<b>EPOXY COATING</b>		<b>AREA SF</b>		<b>AREA SF</b>
CONCRETE GIRDER ENDS		137.6		

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

**NOTES**

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

FOR "SHOTCRETE REPAIRS", SEE SPECIAL PROVISIONS.

FOR EPOXY COATING CONCRETE GIRDER ENDS, SEE SPECIAL PROVISIONS.

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

**REPAIR LEGEND**

- SHOTCRETE REPAIR AREA
- CONCRETE REPAIR AREA
- (G1)** - GIRDER NUMBER
- (PB)** - CLEAN & PAINT BEARING WITH HRSCA
- (EBR)** - EXPANSION BEARING REPLACEMENT
- (FBR)** - FIXED BEARING REPLACEMENT

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910240**

SHEET 2 OF 7

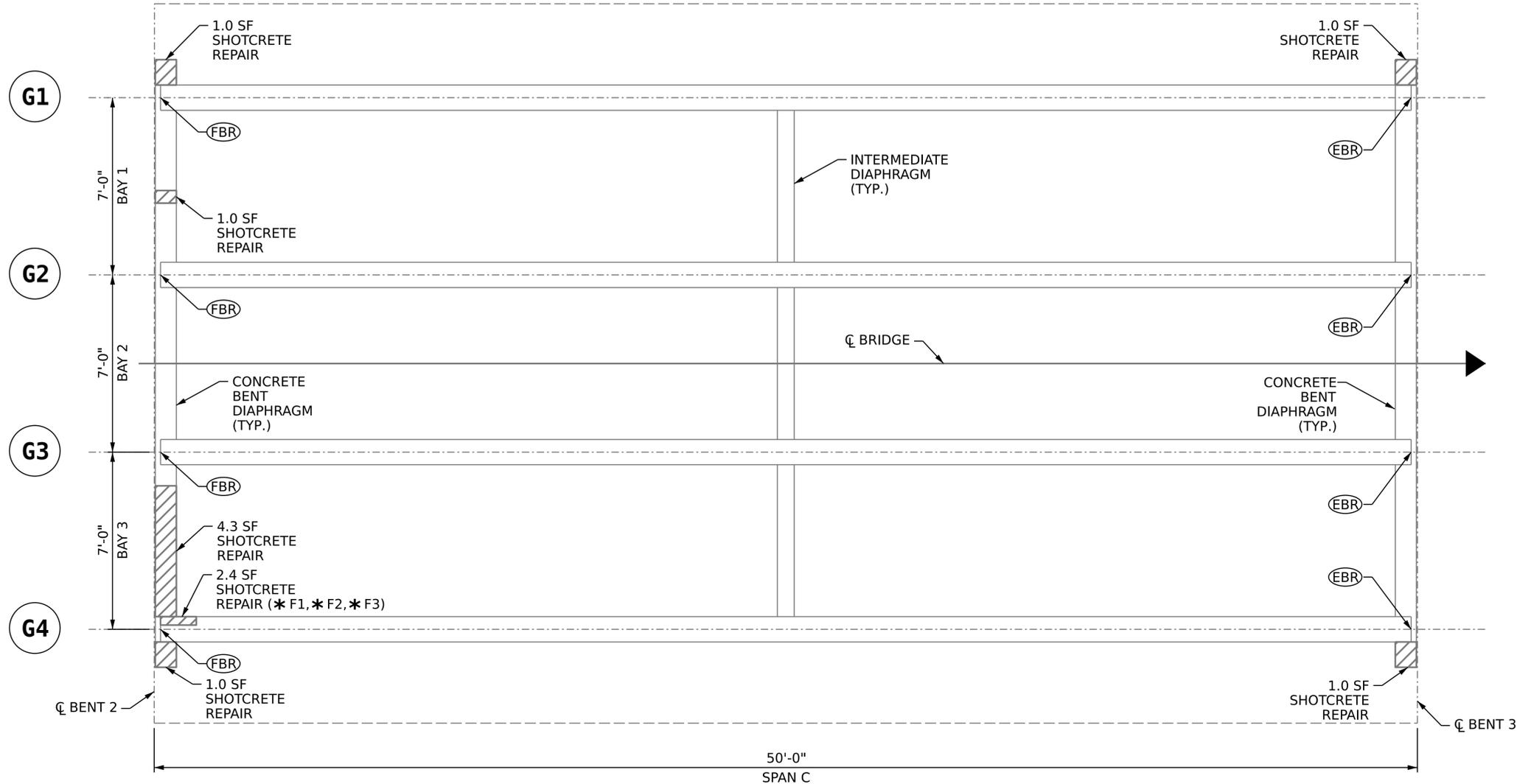


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**DECK UNDERSIDE REPAIRS**  
**SPAN B**

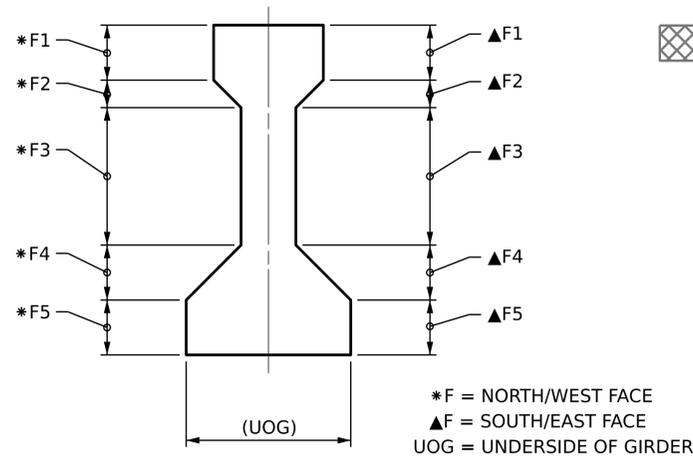
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 DESIGN ENGINEER OF RECORD: N.A. PIERCE DATE : 11/2021



**SPAN C**



**GIRDER SECTION**

GIRDER DAMAGE LOCATIONS

**AS-BUILT REPAIR QUANTITY TABLE**

DECK UNDERSIDE REPAIRS SPAN C	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0	0		
CONCRETE DIAPHRAGM	9.3	4.7		
OVERHANG	0	0		
CONCRETE GIRDER	2.4	0.8		
<b>CONCRETE REPAIRS</b>	<b>AREA SF</b>	<b>VOLUME CF</b>	<b>AREA SF</b>	<b>VOLUME CF</b>
UNDERSIDE OF DECK	0	0		
CONCRETE DIAPHRAGM	0	0		
OVERHANG	0	0		
CONCRETE GIRDER	0	0		
<b>EPOXY COATING</b>		<b>AREA SF</b>		<b>AREA SF</b>
CONCRETE GIRDER ENDS		137.6		

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

**NOTES**

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

FOR "SHOTCRETE REPAIRS", SEE SPECIAL PROVISIONS.

FOR EPOXY COATING CONCRETE GIRDER ENDS, SEE SPECIAL PROVISIONS.

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

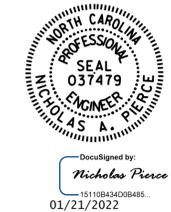
**REPAIR LEGEND**

- SHOTCRETE REPAIR AREA
- CONCRETE REPAIR AREA
- (G1)** - GIRDER NUMBER
- (PB)** - CLEAN & PAINT BEARING WITH HRSCA
- (EBR)** - EXPANSION BEARING REPLACEMENT
- (FBR)** - FIXED BEARING REPLACEMENT

PROJECT NO. **15BPR.49**  
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 BRIDGE NO. **910240**

SHEET 3 OF 7

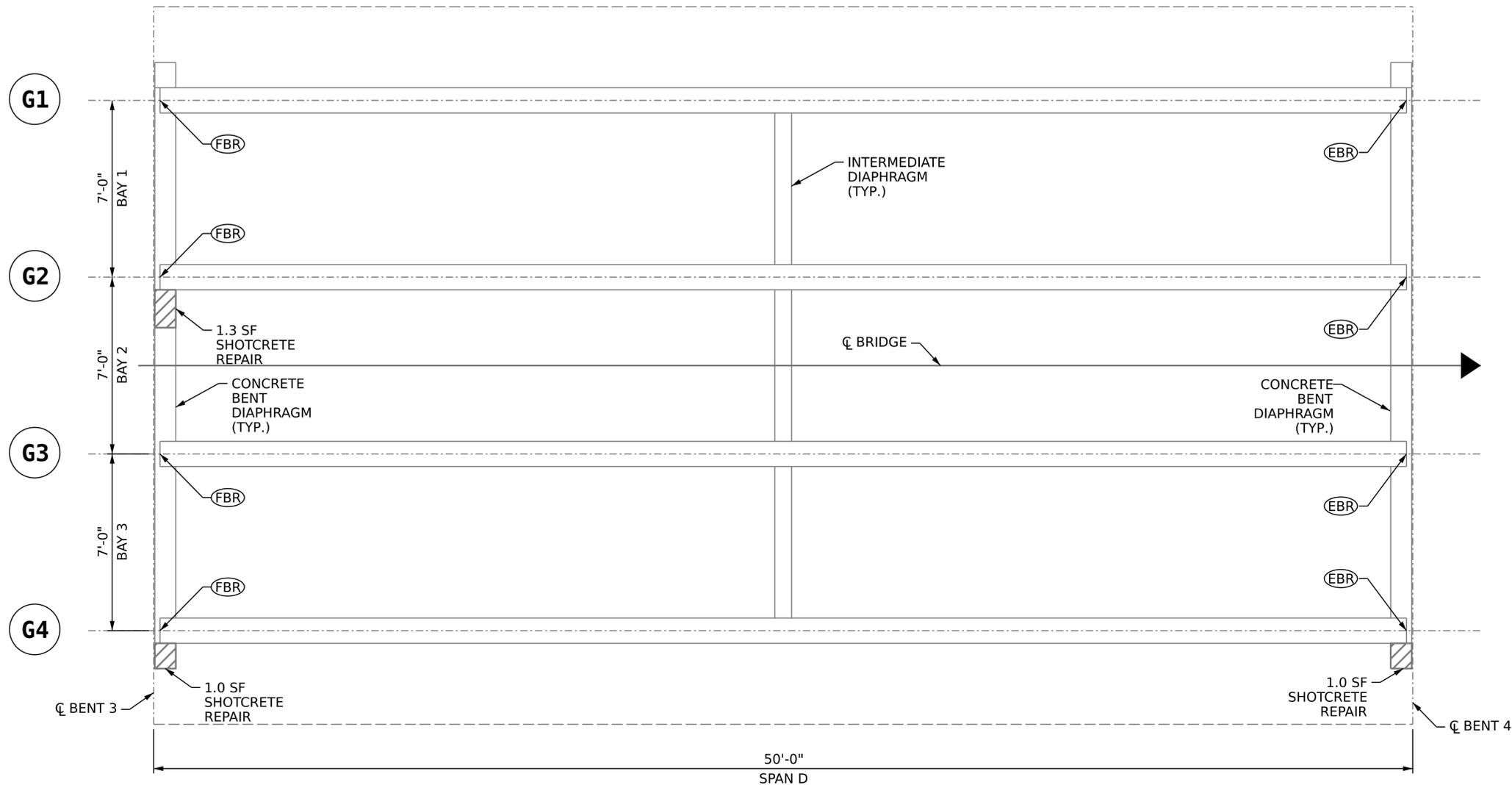
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 RALEIGH  
**DECK UNDERSIDE REPAIRS**  
**SPAN C**



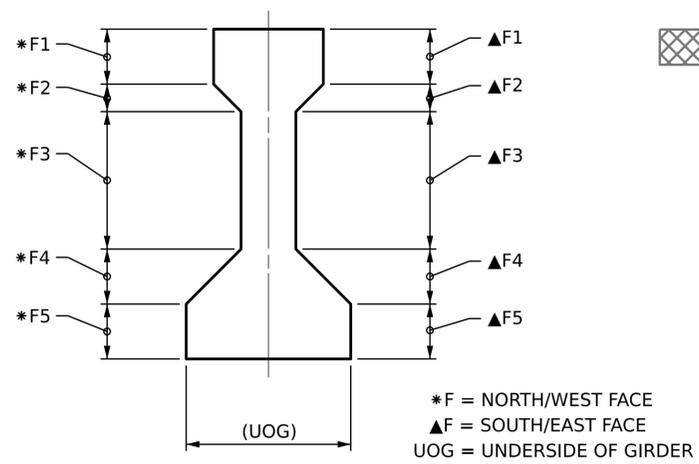
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DRAWN BY : D.A. CANTRELL DATE : 02/2019  
 CHECKED BY : N.A. PIERCE DATE : 05/2019  
 DESIGN ENGINEER OF RECORD: N.A. PIERCE DATE : 11/2021



**SPAN D**



**GIRDER SECTION**

GIRDER DAMAGE LOCATIONS

**AS-BUILT REPAIR QUANTITY TABLE**

DECK UNDERSIDE REPAIRS SPAN D	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0	0		
CONCRETE DIAPHRAGM	3.3	1.7		
OVERHANG	0	0		
CONCRETE GIRDER	2.0	0.7		
<b>CONCRETE REPAIRS</b>	<b>AREA SF</b>	<b>VOLUME CF</b>	<b>AREA SF</b>	<b>VOLUME CF</b>
UNDERSIDE OF DECK	0	0		
CONCRETE DIAPHRAGM	0	0		
OVERHANG	0	0		
CONCRETE GIRDER	0	0		
<b>EPOXY COATING</b>		<b>AREA SF</b>		<b>AREA SF</b>
CONCRETE GIRDER ENDS		137.6		

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

**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.

FOR "SHOTCRETE REPAIRS", SEE SPECIAL PROVISIONS.

FOR EPOXY COATING CONCRETE GIRDER ENDS, SEE SPECIAL PROVISIONS.

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

**REPAIR LEGEND**

- SHOTCRETE REPAIR AREA
- CONCRETE REPAIR AREA
- (G1)** - GIRDER NUMBER
- (PB)** - CLEAN & PAINT BEARING WITH HRSCA
- (EBR)** - EXPANSION BEARING REPLACEMENT
- (FBR)** - FIXED BEARING REPLACEMENT

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910240**

SHEET 4 OF 7

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**DECK UNDERSIDE REPAIRS**  
**SPAN D**

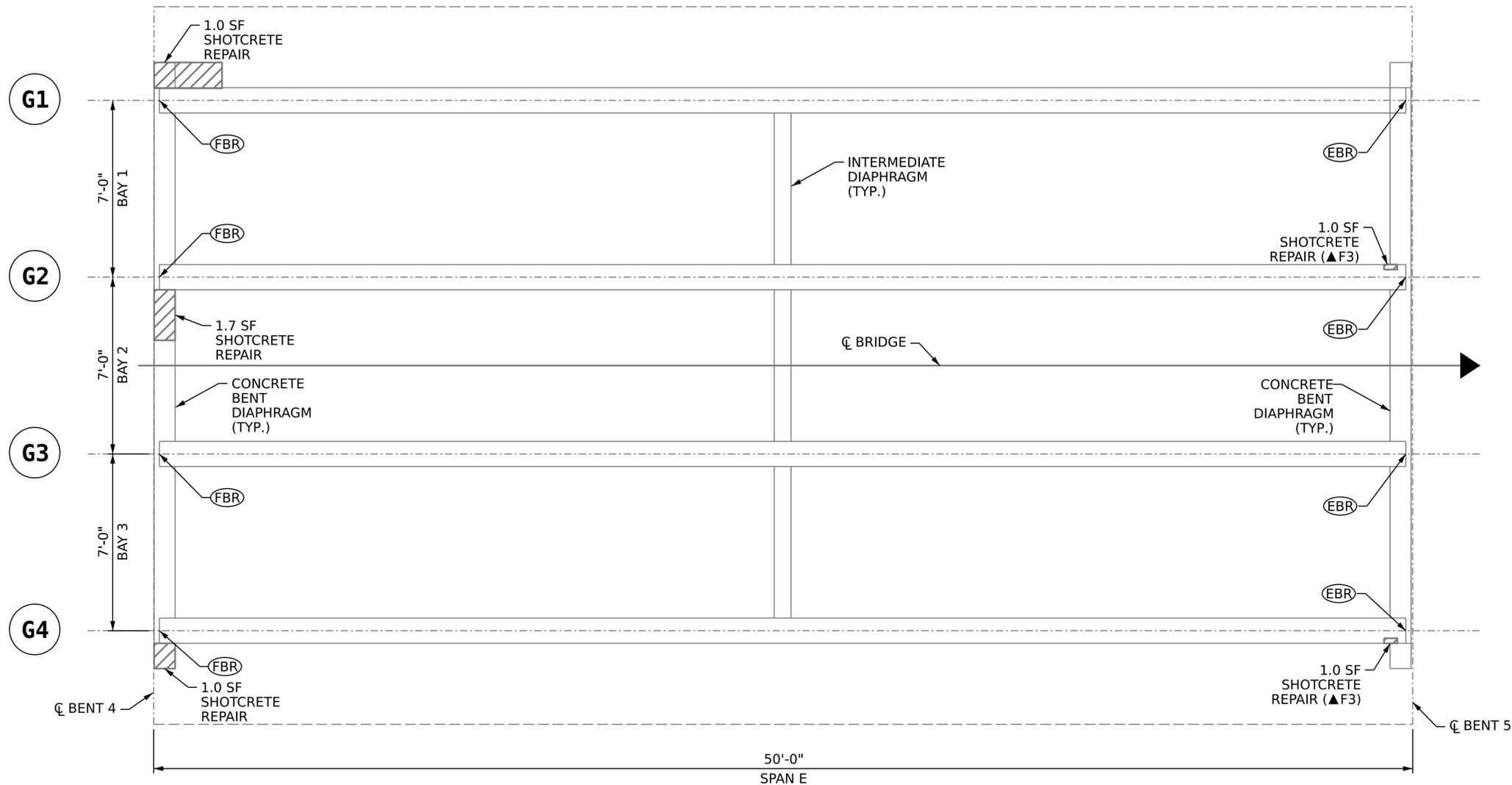


DocuSigned by:  
 Nicholas Pierce  
 15110843408465  
 01/21/2022

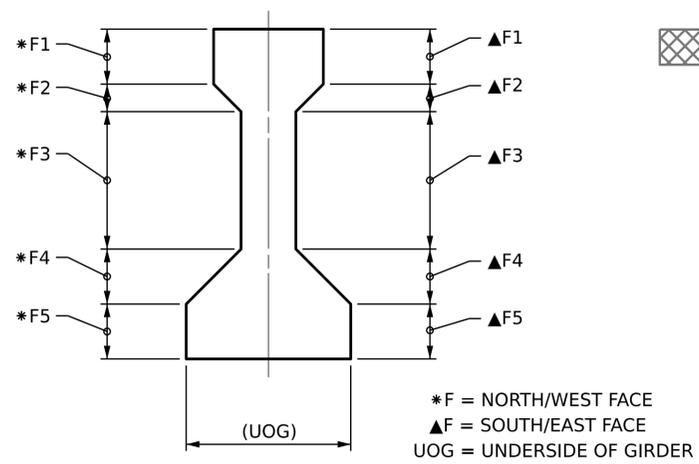
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DRAWN BY : D.A. CANTRELL DATE : 02/2019  
 CHECKED BY : N.A. PIERCE DATE : 05/2019  
 DESIGN ENGINEER OF RECORD: N.A. PIERCE DATE : 11/2021



**SPAN E**



**GIRDER SECTION**

GIRDER DAMAGE LOCATIONS

**AS-BUILT REPAIR QUANTITY TABLE**

DECK UNDERSIDE REPAIRS SPAN E	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0	0		
CONCRETE DIAPHRAGM	3.7	1.9		
OVERHANG	0	0		
CONCRETE GIRDER	2.0	0.7		
<b>CONCRETE REPAIRS</b>	<b>AREA SF</b>	<b>VOLUME CF</b>	<b>AREA SF</b>	<b>VOLUME CF</b>
UNDERSIDE OF DECK	0	0		
CONCRETE DIAPHRAGM	0	0		
OVERHANG	0	0		
CONCRETE GIRDER	0	0		
<b>EPOXY COATING</b>		<b>AREA SF</b>		<b>AREA SF</b>
CONCRETE GIRDER ENDS		137.6		

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

**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.

FOR "SHOTCRETE REPAIRS", SEE SPECIAL PROVISIONS.

FOR EPOXY COATING CONCRETE GIRDER ENDS, SEE SPECIAL PROVISIONS.

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

**REPAIR LEGEND**

- SHOTCRETE REPAIR AREA
- CONCRETE REPAIR AREA
- (G1) - GIRDER NUMBER
- (PB) - CLEAN & PAINT BEARING WITH HRSCA
- (EBR) - EXPANSION BEARING REPLACEMENT
- (FBR) - FIXED BEARING REPLACEMENT

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910240**  
 SHEET 5 OF 7

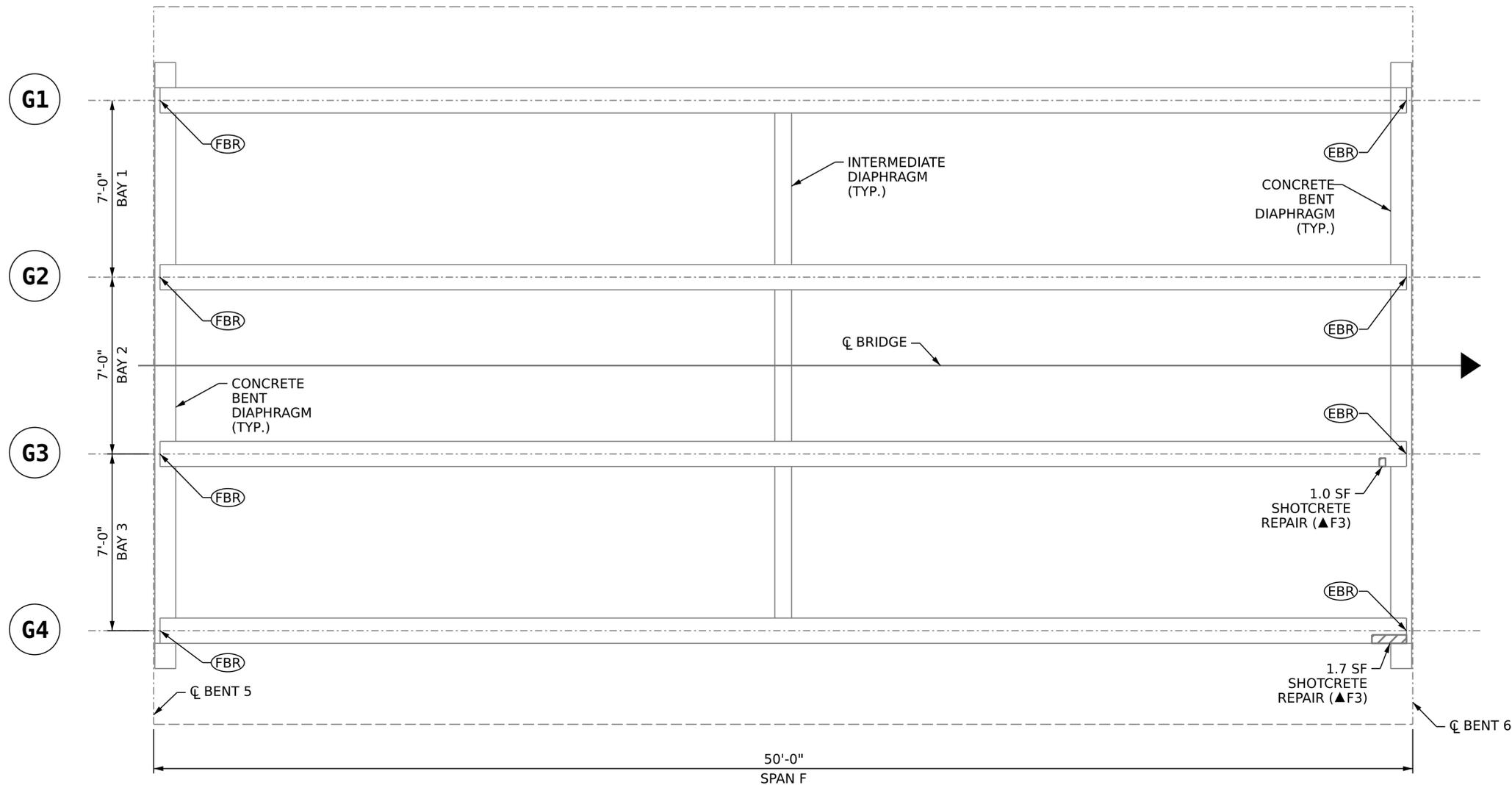


STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**DECK UNDERSIDE REPAIRS**  
**SPAN E**

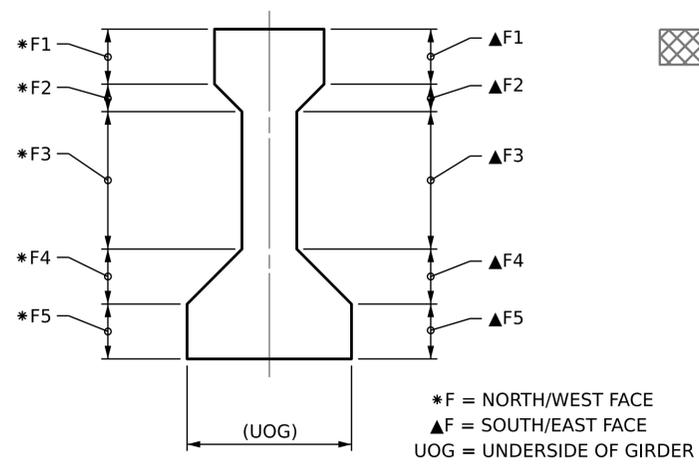
DRAWN BY : D.A. CANTRELL DATE : 02/2019  
 CHECKED BY : N.A. PIERCE DATE : 05/2019  
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 11/2021

REVISIONS						SHEET NO. S2-16 TOTAL SHEETS 73
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

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**SPAN F**



**GIRDER SECTION**

GIRDER DAMAGE LOCATIONS

**AS-BUILT REPAIR QUANTITY TABLE**

DECK UNDERSIDE REPAIRS SPAN F	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0	0		
CONCRETE DIAPHRAGM	0	0		
OVERHANG	0	0		
CONCRETE GIRDER	2.7	0.9		
<b>CONCRETE REPAIRS</b>	<b>AREA SF</b>	<b>VOLUME CF</b>	<b>AREA SF</b>	<b>VOLUME CF</b>
UNDERSIDE OF DECK	0	0		
CONCRETE DIAPHRAGM	0	0		
OVERHANG	0	0		
CONCRETE GIRDER	0	0		
<b>EPOXY COATING</b>		<b>AREA SF</b>		<b>AREA SF</b>
CONCRETE GIRDER ENDS		137.6		

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

**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.

FOR "SHOTCRETE REPAIRS", SEE SPECIAL PROVISIONS.

FOR EPOXY COATING CONCRETE GIRDER ENDS, SEE SPECIAL PROVISIONS.

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

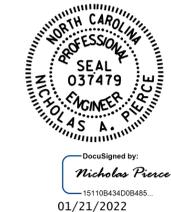
**REPAIR LEGEND**

-  SHOTCRETE REPAIR AREA
-  CONCRETE REPAIR AREA
-  - GIRDER NUMBER
-  - CLEAN & PAINT BEARING WITH HRSCA
-  - EXPANSION BEARING REPLACEMENT
-  - FIXED BEARING REPLACEMENT

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910240**

SHEET 6 OF 7

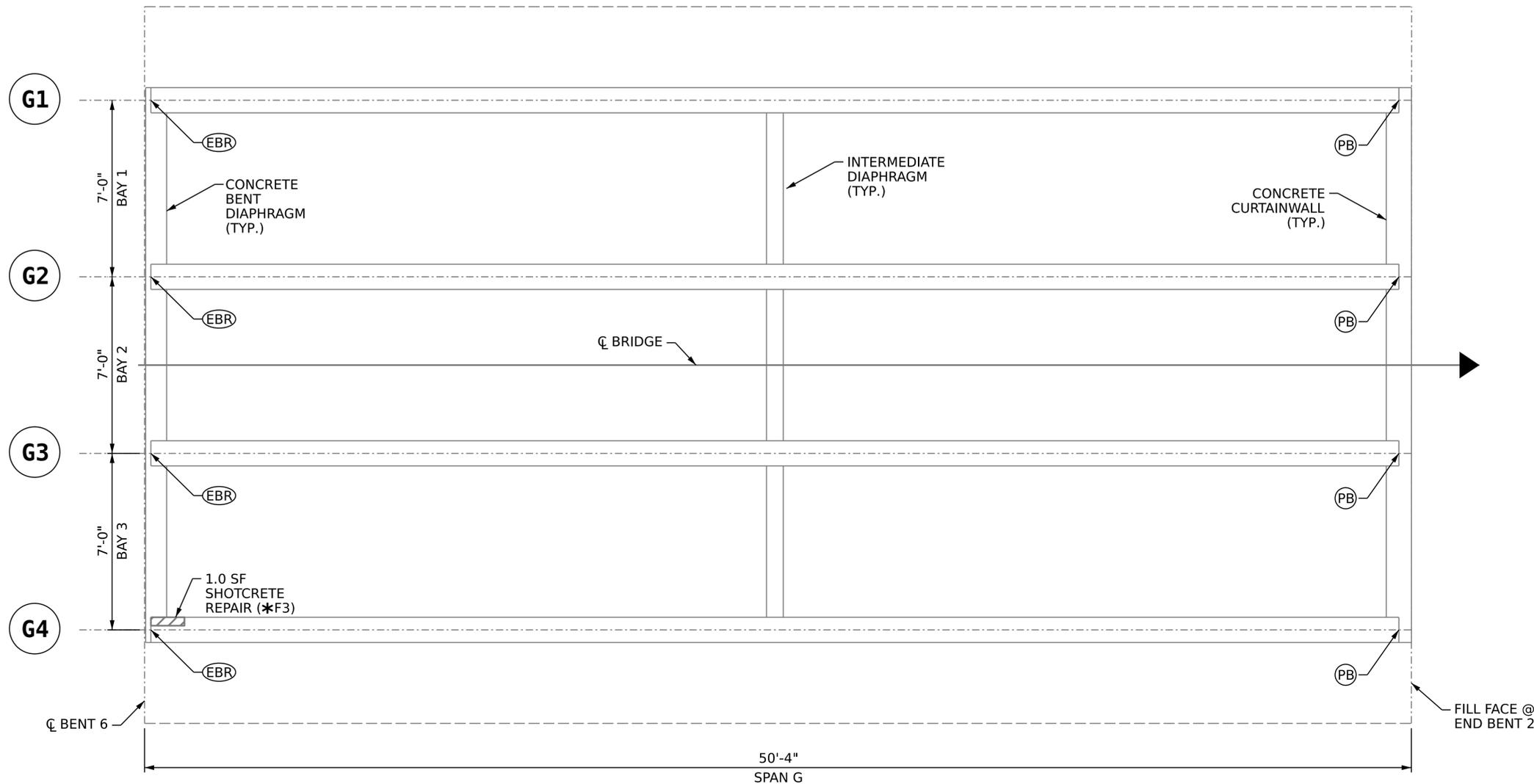
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**DECK UNDERSIDE REPAIRS**  
**SPAN F**



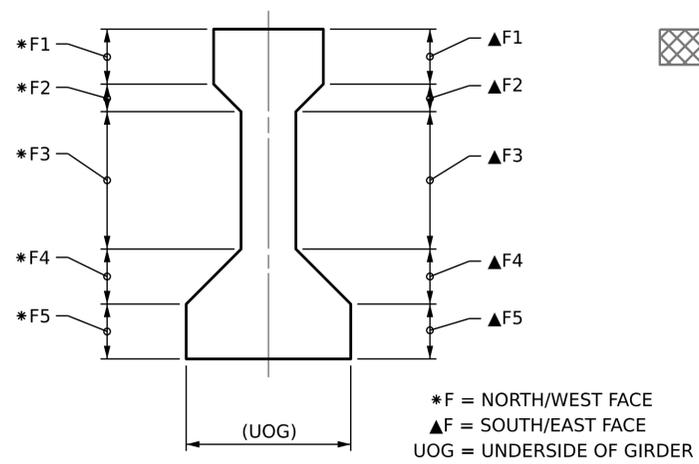
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REVISIONS						SHEET NO. S2-17 TOTAL SHEETS 73
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
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DRAWN BY : D.A. CANTRELL DATE : 02/2019  
 CHECKED BY : N.A. PIERCE DATE : 05/2019  
 DESIGN ENGINEER OF RECORD: N.A. PIERCE DATE : 11/2021



**SPAN G**



**GIRDER SECTION**

GIRDER DAMAGE LOCATIONS

**AS-BUILT REPAIR QUANTITY TABLE**

DECK UNDERSIDE REPAIRS SPAN G	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0	0		
CONCRETE DIAPHRAGM	0	0		
OVERHANG	0	0		
CONCRETE GIRDER	1.5	0.5		
<b>CONCRETE REPAIRS</b>	<b>AREA SF</b>	<b>VOLUME CF</b>	<b>AREA SF</b>	<b>VOLUME CF</b>
UNDERSIDE OF DECK	0	0		
CONCRETE DIAPHRAGM	0	0		
OVERHANG	0	0		
CONCRETE GIRDER	0	0		
<b>EPOXY COATING</b>		<b>AREA SF</b>		<b>AREA SF</b>
CONCRETE GIRDER ENDS		137.6		

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

**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.

FOR "SHOTCRETE REPAIRS", SEE SPECIAL PROVISIONS.

FOR EPOXY COATING CONCRETE GIRDER ENDS, SEE SPECIAL PROVISIONS.

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

**REPAIR LEGEND**

- SHOTCRETE REPAIR AREA
- CONCRETE REPAIR AREA
- (G1)** - GIRDER NUMBER
- (PB)** - CLEAN & PAINT BEARING WITH HRSCA
- (EBR)** - EXPANSION BEARING REPLACEMENT
- (FBR)** - FIXED BEARING REPLACEMENT

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910240**

SHEET 7 OF 7



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**DECK UNDERSIDE REPAIRS**  
**SPAN G**

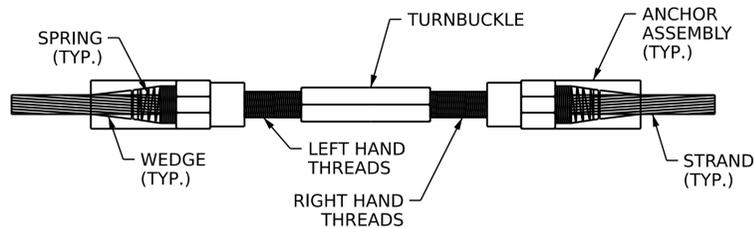
DRAWN BY : D.A. CANTRELL DATE : 02/2019  
 CHECKED BY : N.A. PIERCE DATE : 05/2019  
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 11/2021

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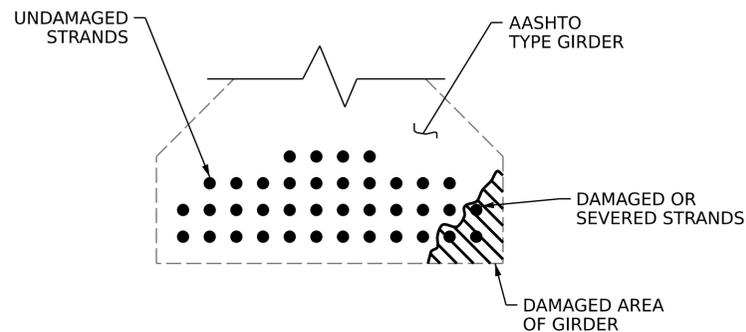
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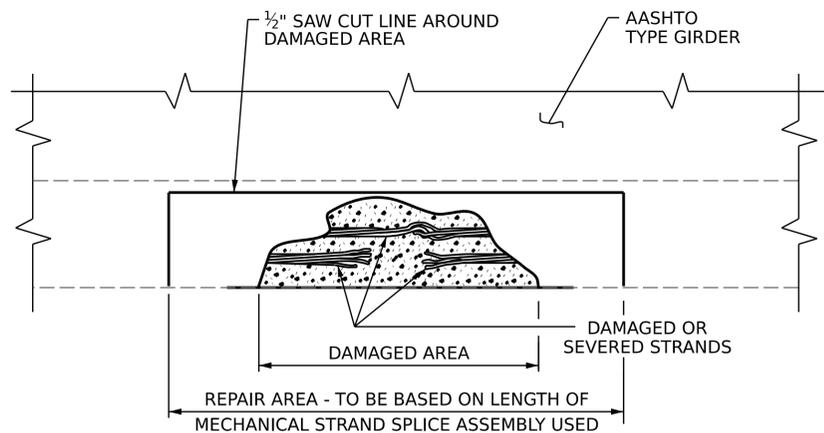
**MECHANICAL STRAND SPLICE ASSEMBLY**  
(ASSEMBLIES MAY VARY DEPENDING ON MANUFACTURER)



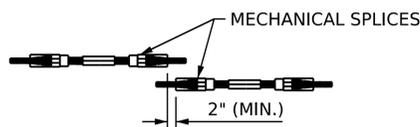
**STRAND SPLICE DETAIL**



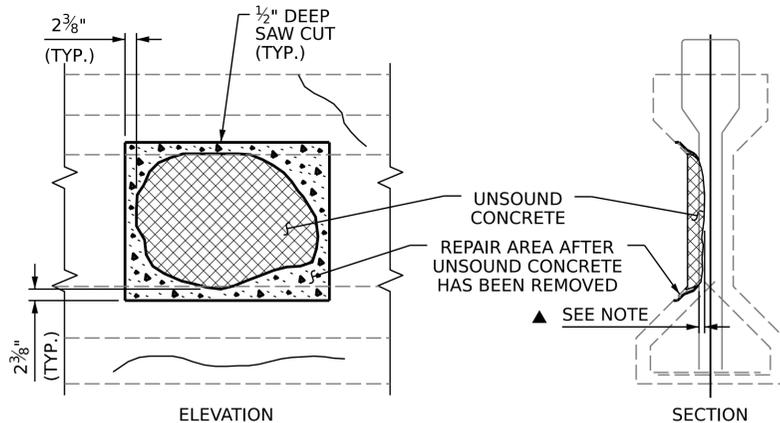
**SECTION VIEW OF DAMAGED GIRDER**



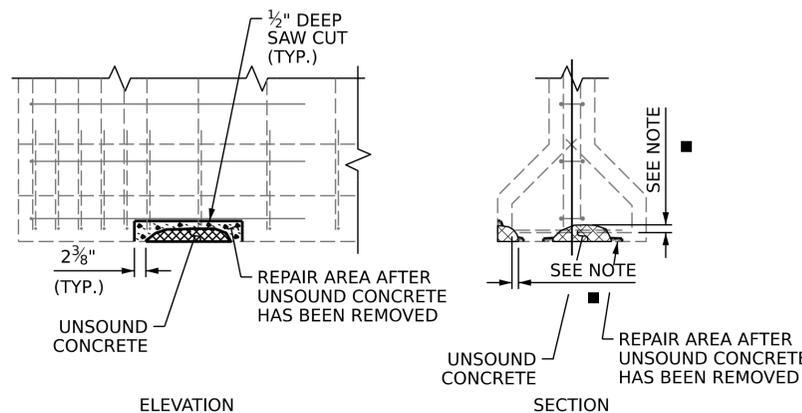
**ELEVATION VIEW OF DAMAGED GIRDER**



**STRAND REPAIR DETAILS**

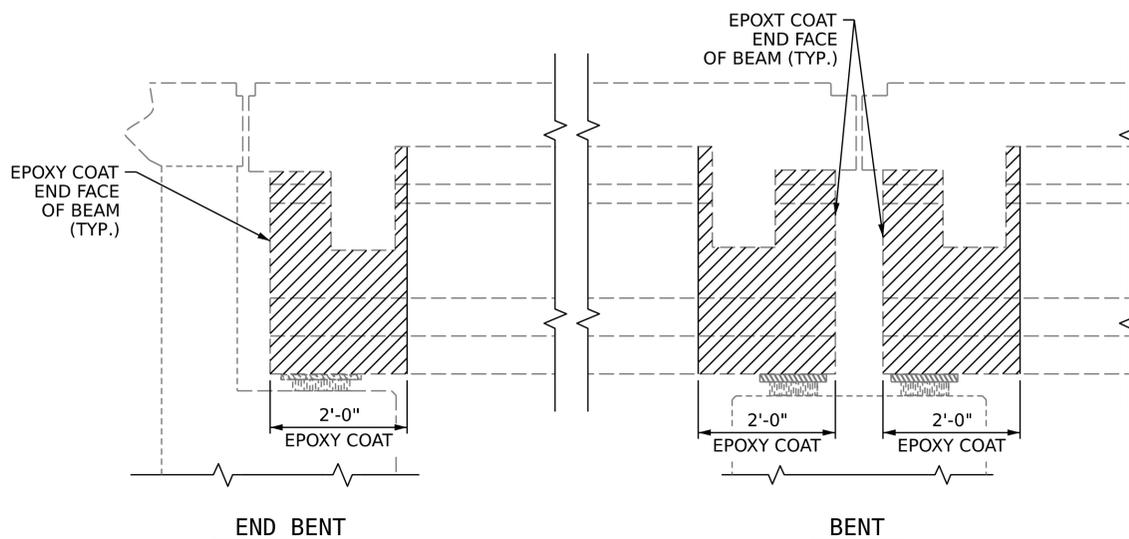
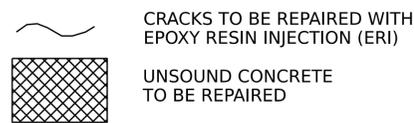


**GIRDER WEB REPAIR**



**GIRDER FLANGE REPAIR**

**PRESTRESSED GIRDER REPAIR**



**LIMITS OF EPOXY COATING**

**NOTES**

PREPACKAGED MATERIAL IS REQUIRED.

CONSULT WITH THE ENGINEER TO DETERMINE PRELOADING REQUIREMENTS WHEN REPAIR IS WITHIN THE CENTER REGION OF THE BEAM (0.25L TO 0.75L).

FOR REPAIRS OVER TRAFFIC AND SHALLOW REPAIRS THAT DO NOT ENGAGE REINFORCEMENT, ANCHOR PATCH MATERIAL USING 1/4\"/>

FOR PRESTRESSED CONCRETE GIRDER REPAIRS, SEE SPECIAL PROVISIONS.

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

FOR EPOXY COATING CONCRETE GIRDER ENDS, SEE SPECIAL PROVISIONS.

**PRESTRESSED GIRDER REPAIR SEQUENCE**

1. SOUND CONCRETE TO DETERMINE EXTENTS OF REPAIR LOCATION.
2. REMOVE SURFACE CONCRETE TO VERIFY THAT SAWCUT DEPTH WILL NOT DAMAGE EXISTING REINFORCING STEEL. SAW CUT AROUND REPAIR AREA TO A NOMINAL DEPTH OF 1/2\"/>

**PRESTRESSED GIRDER STRAND REPAIR SEQUENCE**

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

MEASURE OUT THE AREA NEEDED TO HAVE ADEQUATE ROOM TO SPLICE THE BROKEN OR DAMAGED STRAND. IF MULTIPLE STRANDS ARE BROKEN ADJACENT TO ONE ANOTHER THEN THE SPLICES SHALL BE STAGGERED, SEE "SPLICE OFFSET" ABOVE. AFTER YOU HAVE DETERMINED THE REPAIR AREA NEEDED, SAW CUT A MINIMUM OF 1/2\"/>

SPLICE STRANDS USING THE MECHANICAL SPLICE STRAND ASSEMBLY AND TENSION TO REQUIRED FORCE PER THE MANUFACTURER'S GUIDELINES.

PATCH REPAIR AREA USING NON SHRINK GROUT. PROFILE OF GIRDER MAY NEED TO BE INCREASED AROUND REPAIR AREA TO PROVIDE PROPER COVER.

AFTER GROUT HAS CURED PLACE TRAFFIC BACK ON BRIDGE OR REPAIRED AREA OF BRIDGE.

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910240**



Designed by  
 Nicholas Pierce  
 151108434020485.  
 01/21/2022

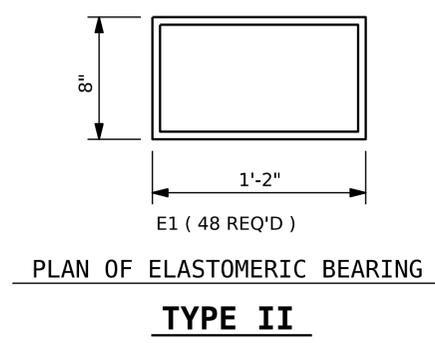
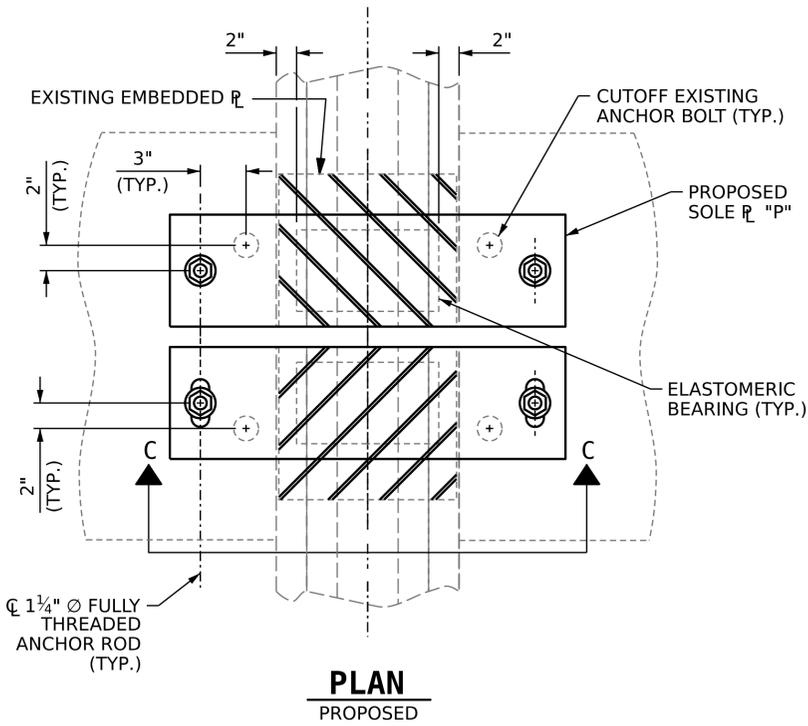
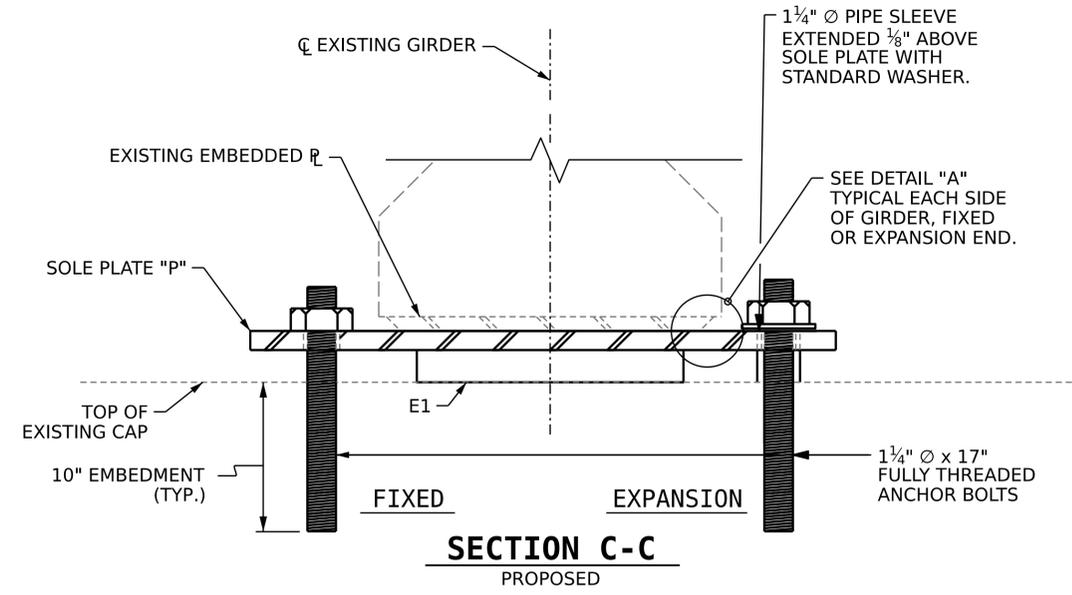
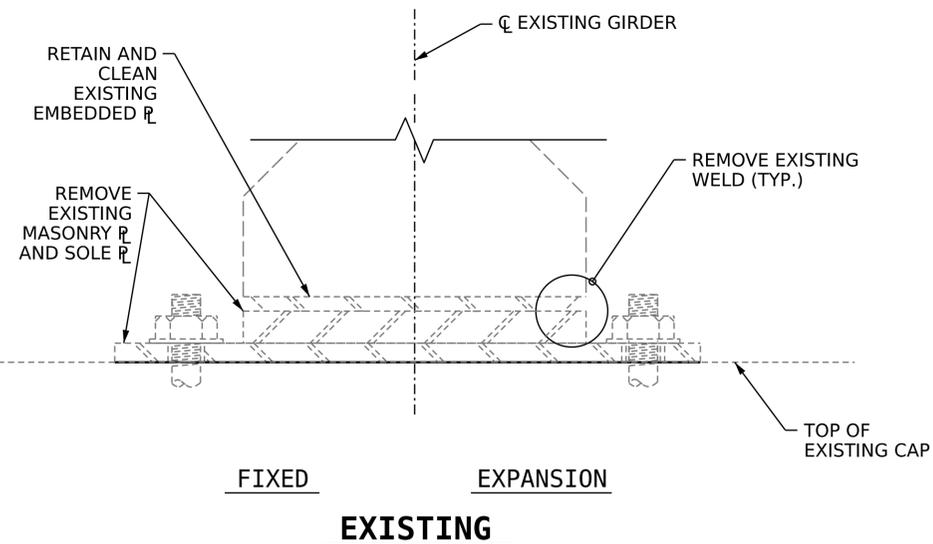
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
**PRESTRESSED CONCRETE  
 GIRDER REPAIR  
 DETAILS**

ASSEMBLED BY : N.A. PIERCE	DATE : 03/2019
CHECKED BY : D.A. CANTRELL	DATE : 11/2021
DRAWN BY :	
CHECKED BY :	

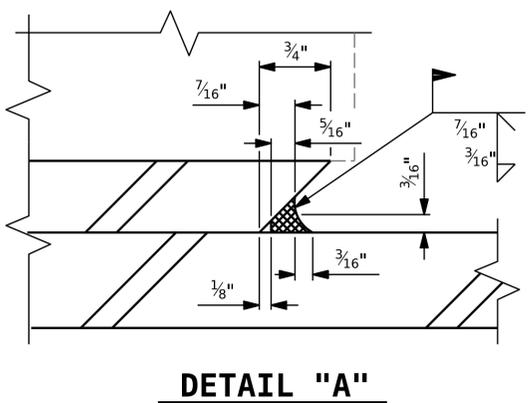
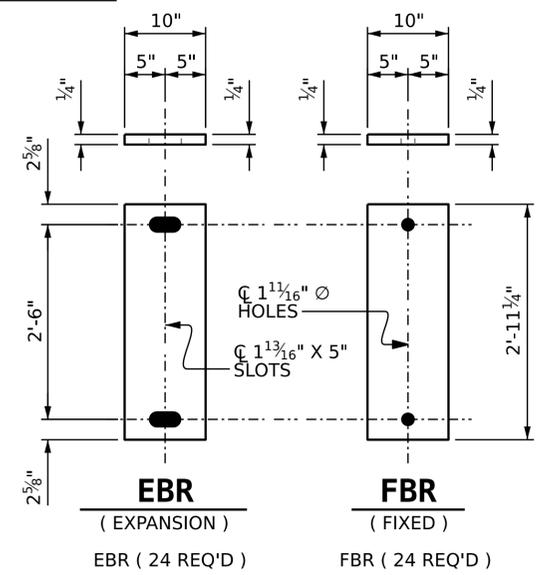
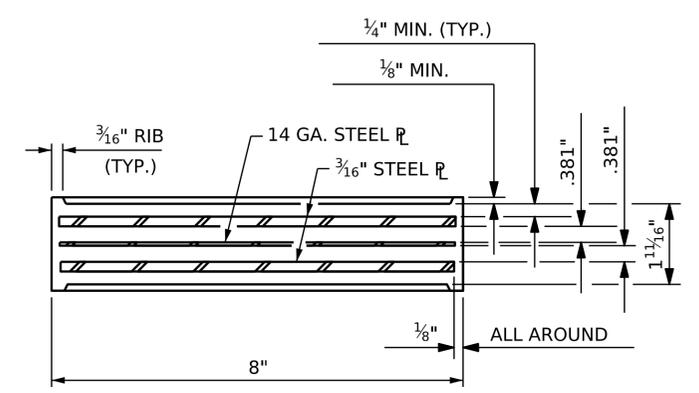
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REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	DATE:
1			3	
2			4	

TOTAL SHEETS: 74



MAXIMUM ALLOWABLE SERVICE LOADS	
D.L. + L.L. (NO IMPACT)	
TYPE II	145 K
TYPE III	205 K
TYPE IV	225 K



SOLE PLATE DETAILS ("P")

**NOTES**

AFTER REMOVING EXISTING BEARING PLATES, CUTOFF EXISTING ANCHOR BOLTS FLUSH WITH THE TOP OF THE CAP AND COAT AREA ABOVE CUTOFF WITH EPOXY COATING.

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

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

STEEL SOLE PLATES, ANCHOR BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

PRIOR TO WELDING, GRIND THE GALVANIZED SURFACE OF THE PORTION OF THE EMBEDDED PLATE AND SOLE PLATE THAT ARE TO BE WELDED. AFTER WELDING, DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

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

SOLE PLATE "P", BOLTS, NUTS, WASHERS, AND PIPE SLEEVE SHALL BE INCLUDED IN THE PAY ITEM FOR BEARING REPLACEMENT.

FULLY THREADED ANCHOR RODS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. SHOP DRAWINGS ARE REQUIRED FOR ANCHOR RODS, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

SUBMIT SELECTED ADHESIVELY ANCHOR ROD SYSTEM MANUFACTURER'S INFORMATION WITH SHOP DRAWINGS AS PER THE WORKING DRAWING SUBMITAL SPECIAL PROVISION.

CONTRACTOR SHALL FIELD VERIFY PROPOSED REPLACEMENT BEARING SYSTEM WILL WORK PRIOR TO ORDERING MATERIALS.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

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

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

ALL SOLE PLATES SHALL BE AASHTO M270 GRADE 36.

LEVEL ONE FIELD TESTING IS REQUIRED FOR ADHESIVELY ANCHORED BOLTS. THE REQUIRED PULLOUT STRENGTH IS 5 KIPS FOR THE SPECIFIED EMBEDMENT LENGTH.

SEE SPECIAL PROVISIONS FOR BRIDGE JACKING.

FOR BEARING REPLACEMENT LOCATIONS, SEE DECK UNDERSIDE REPAIR SHEETS.

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910240**

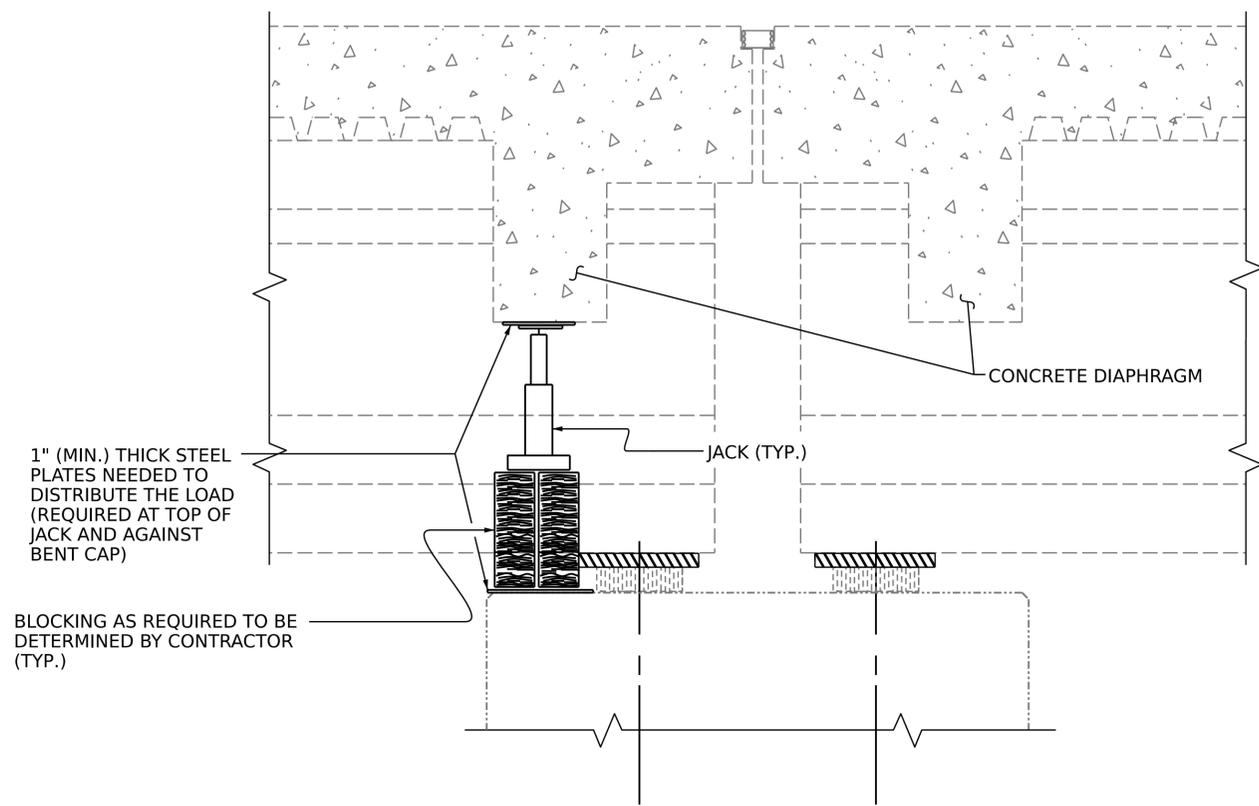


STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
**BEARING REPLACEMENT**

ASSEMBLED BY: N.A. PIERCE DATE: 4/2019  
 CHECKED BY: D.A. CANTRELL DATE: 5/2019  
 DRAWN BY:  
 CHECKED BY:

REVISIONS					SHEET NO. S2-20
NO.	BY:	DATE:	NO.	DATE:	
1			3		TOTAL SHEETS 74
2			4		

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



**SECTION THRU DIAPHRAGM**

**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 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.

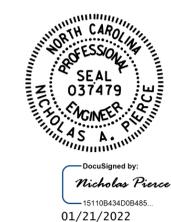
ANY STEEL THAT HAS BEEN WELDED TO THE EXISTING STRUCTURE SHALL REMAIN IN PLACE.

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.

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910240**

BRIDGE JACKING TABLE				
LOCATION	SPAN	BEAM(S)	BRIDGE JACKING TYPE	DEAD LOAD (DC+DW) (KIPS)
BENT 1	A-B	1, 2, 3, 4	TYPE II	107.3
BENT 2	B-C	1, 2, 3, 4	TYPE II	107.3
BENT 3	C-D	1, 2, 3, 4	TYPE II	107.3
BENT 4	D-E	1, 2, 3, 4	TYPE II	107.3
BENT 5	E-F	1, 2, 3, 4	TYPE II	107.3
BENT 6	F-G	1, 2, 3, 4	TYPE II	107.3

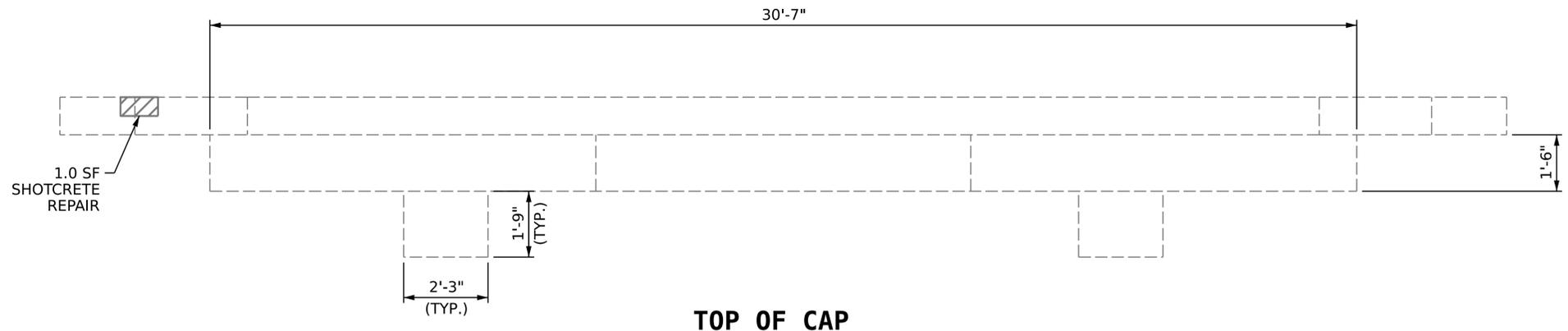


STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
**BRIDGE JACKING  
 DETAILS**

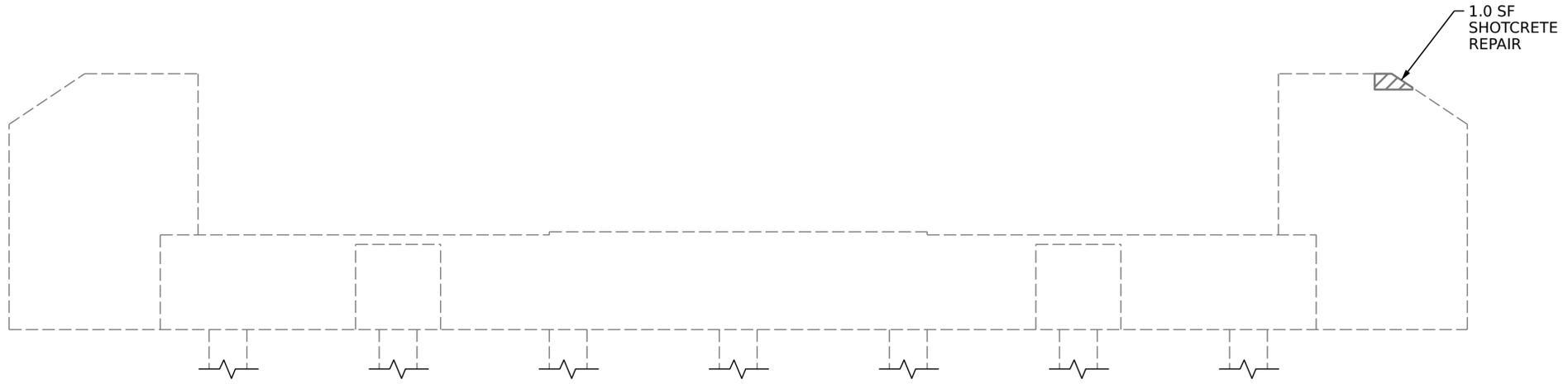
ASSEMBLED BY : N.A. PIERCE DATE : 02/2019  
 CHECKED BY : D.A. CANTRELL DATE : 05/2019  
 DRAWN BY :  
 CHECKED BY :

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-21
1			3			TOTAL SHEETS
2			4			74

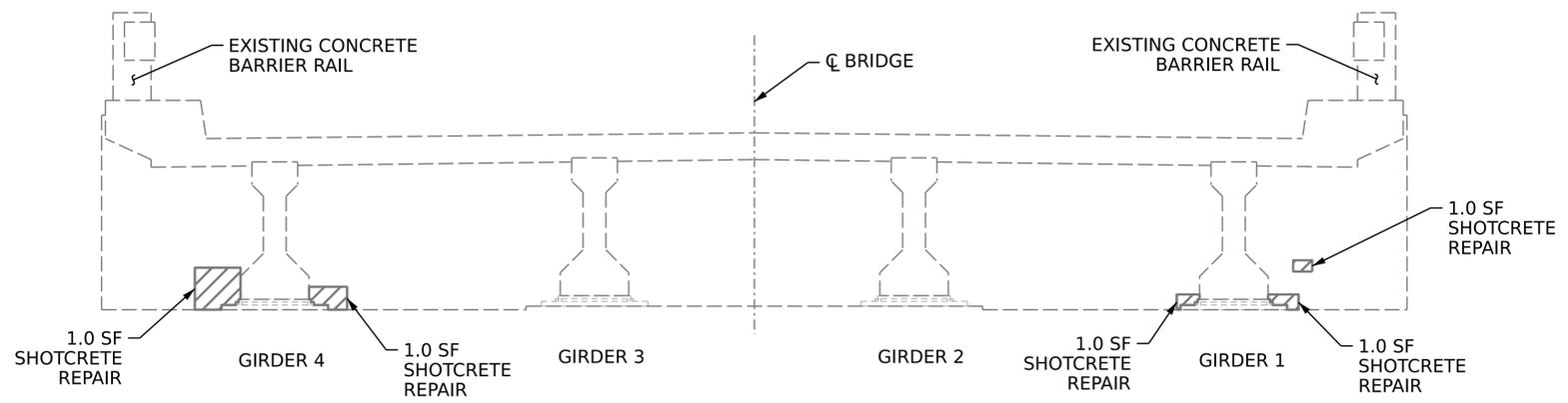
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



**TOP OF CAP**



**ELEVATION**



**TYPICAL SECTION**

**AS-BUILT REPAIR QUANTITY TABLE**

REPAIRS - END BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
CURTAIN WALL	5.0	2.5		
WINGWALL	2.0	1.0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
CURTAIN WALL	0	0		
WINGWALL				
EPOXY COATING		AREA SF		AREA SF
CAP		54		

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

**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.

FOR "SHOTCRETE REPAIRS", SEE SPECIAL PROVISIONS.

- SHOTCRETE REPAIR AREA
- CONCRETE REPAIR AREA

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910240**  
 SHEET 1 OF 12

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**SUBSTRUCTURE REPAIRS**  
**END BENT 1**



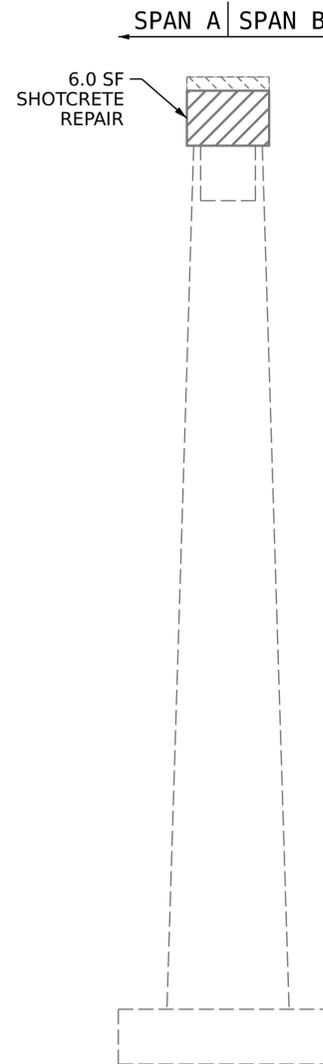
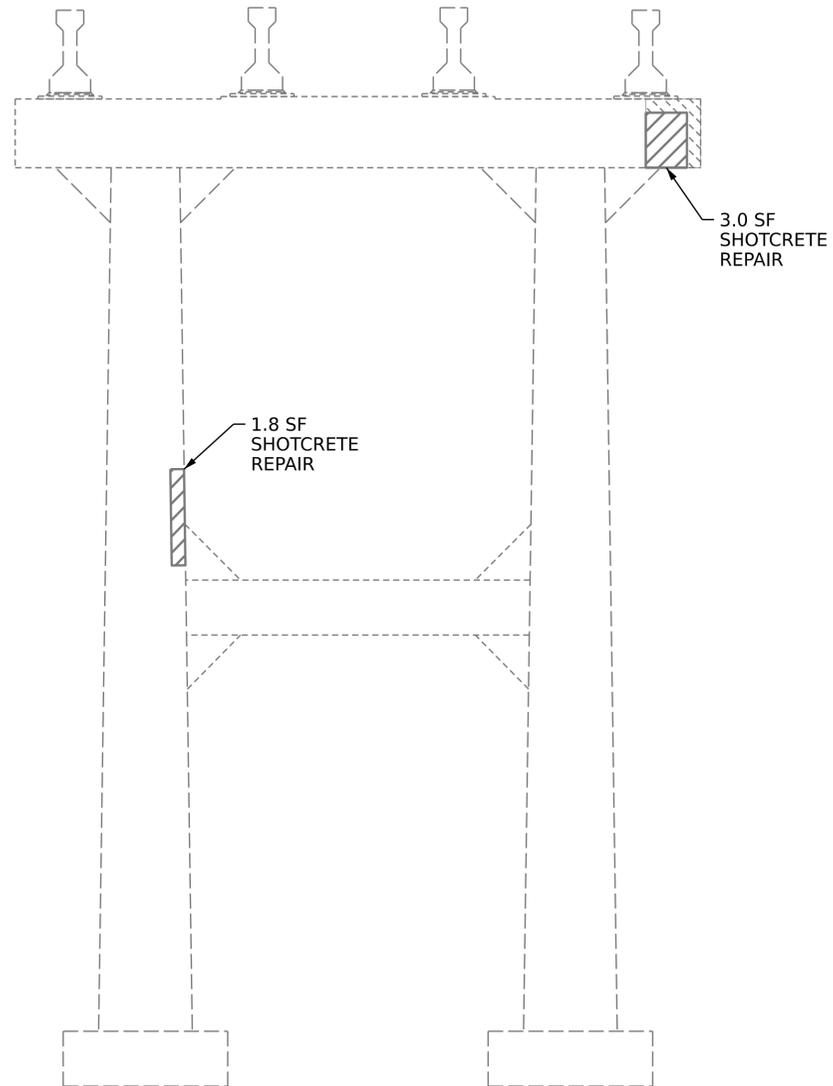
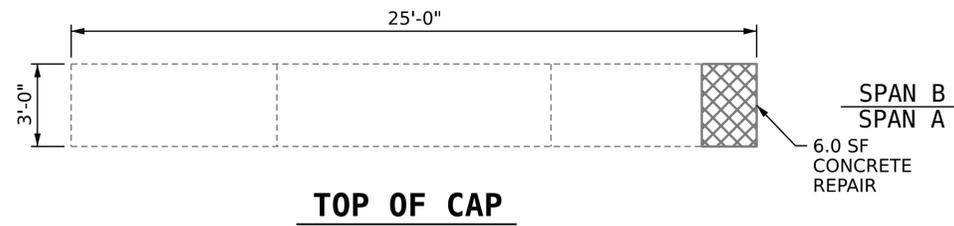
DocuSigned by:  
 Nicholas Pierce  
 01/21/2022

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-22
1			3			TOTAL SHEETS
2			4			73

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DRAWN BY : D.A. CANTRELL DATE : 2/2019  
 CHECKED BY : N.A. PIERCE DATE : 4/2019  
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 11/2021

8/26/21



**AS-BUILT REPAIR QUANTITY TABLE**

REPAIRS BENT 1 - SPAN A	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	9.0	4.5		
COLUMN	1.8	0.9		
STRUT	0	0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	6.0	3.0		
COLUMN	0	0		
STRUT	0	0		
EPOXY COATING		AREA SF		AREA SF
CAP		76		
STRUT		36		

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

**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.

FOR "SHOTCRETE REPAIRS", SEE SPECIAL PROVISIONS.

-  SHOTCRETE REPAIR AREA
-  CONCRETE REPAIR AREA
-  AREA PREVIOUSLY ACCOUNTED FOR ON ADJACENT FACE

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910240**

SHEET 2 OF 12

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUBSTRUCTURE REPAIRS**

**BENT 1  
 SPAN A FACE**



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 Nicholas Pierce  
 15110843008485  
 01/21/2022

REVISIONS						SHEET NO. S2-23 TOTAL SHEETS 73
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

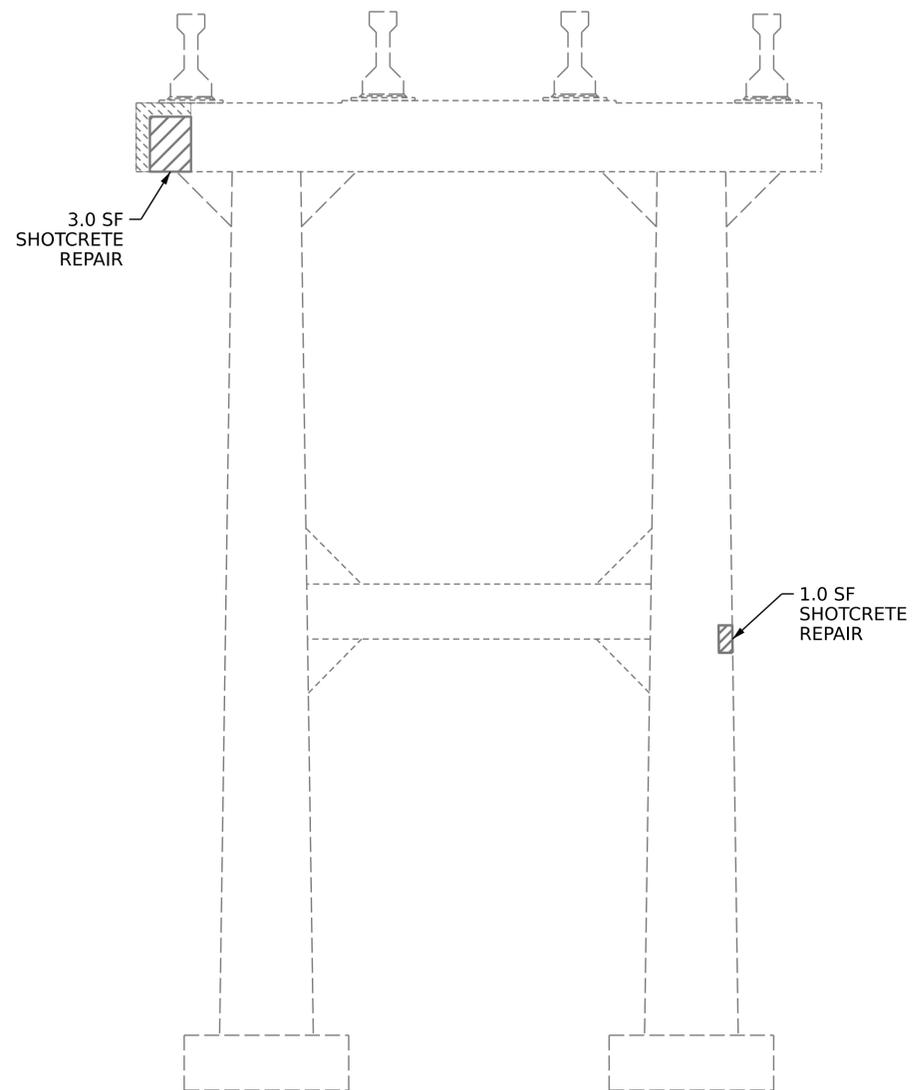
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DRAWN BY : D.A. CANTRELL DATE : 2/2019  
 CHECKED BY : N.A. PIERCE DATE : 4/2019  
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 11/2021



SPAN A  
SPAN B

**BOTTOM OF CAP**

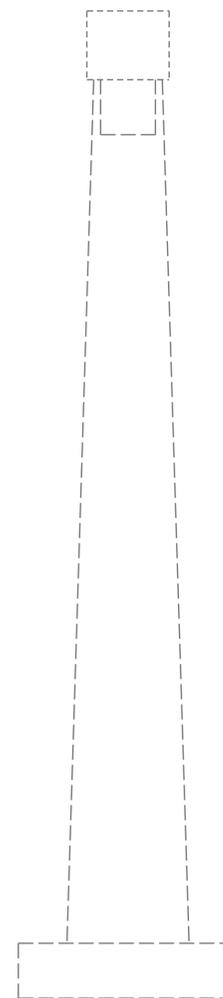


**ELEVATION**



**BOTTOM OF STRUT**

SPAN B | SPAN A



**END VIEW**

**AS-BUILT REPAIR QUANTITY TABLE**

REPAIRS BENT 1 - SPAN B	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	3.0	1.5		
COLUMN	1.0	0.5		
STRUT	0	0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
COLUMN	0	0		
STRUT	0	0		

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

**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.

FOR "SHOTCRETE REPAIRS", SEE SPECIAL PROVISIONS.

- SHOTCRETE REPAIR AREA
- CONCRETE REPAIR AREA
- AREA PREVIOUSLY ACCOUNTED FOR ON ADJACENT FACE

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910240**

SHEET 3 OF 12



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 Nicholas Pierce  
 151108434208485  
 01/21/2022

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUBSTRUCTURE REPAIRS**

**BENT 1  
 SPAN B FACE**

REVISIONS						SHEET NO. S2-24 TOTAL SHEETS 73
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

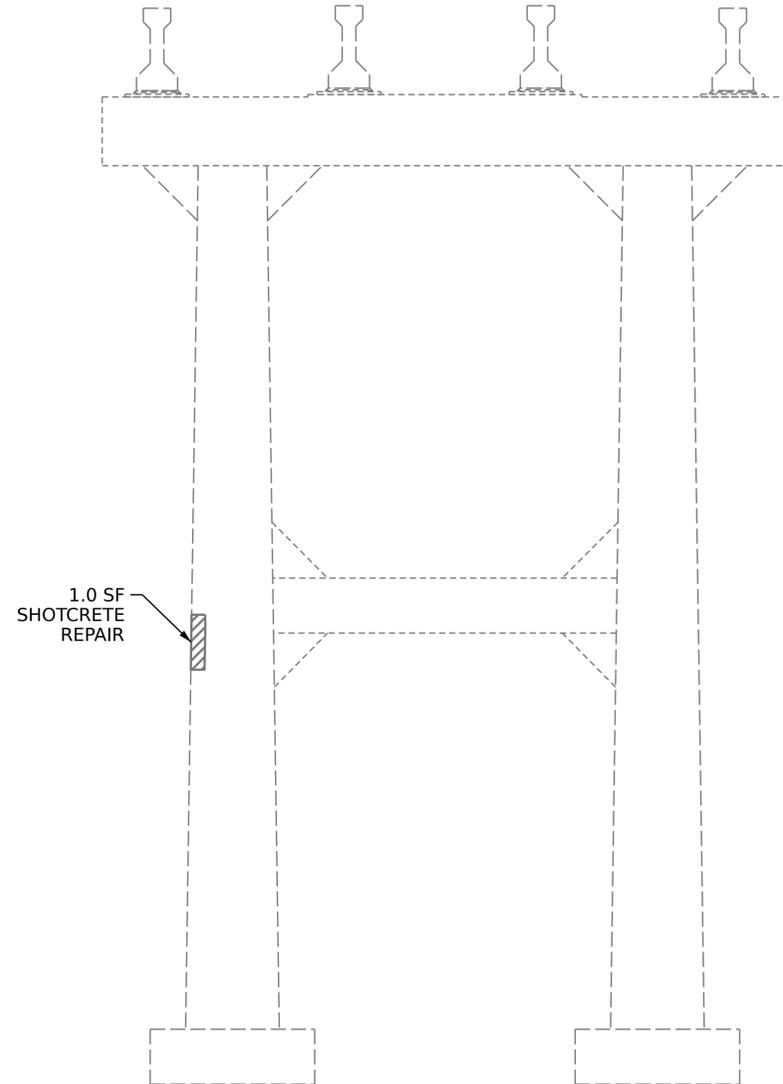
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DRAWN BY : D.A. CANTRELL DATE : 2/2019  
 CHECKED BY : N.A. PIERCE DATE : 4/2019  
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 11/2021

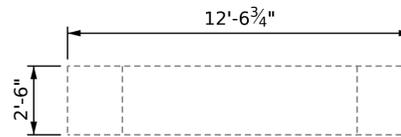


**TOP OF CAP**

SPAN C  
SPAN B

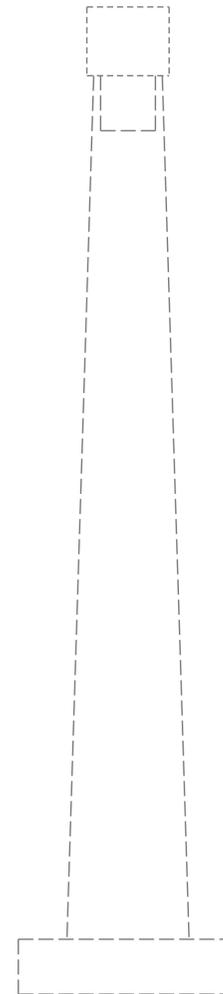


**ELEVATION**



**TOP OF STRUT**

SPAN B | SPAN C



**END VIEW**

**AS-BUILT REPAIR QUANTITY TABLE**

REPAIRS BENT 2 - SPAN B	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
COLUMN	1.0	0.5		
STRUT	0	0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
COLUMN	0	0		
STRUT	0	0		
EPOXY COATING		AREA SF		AREA SF
CAP		76		
STRUT		36		

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

**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.

FOR "SHOTCRETE REPAIRS", SEE SPECIAL PROVISIONS.

- SHOTCRETE REPAIR AREA
- CONCRETE REPAIR AREA
- AREA PREVIOUSLY ACCOUNTED FOR ON ADJACENT FACE

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910240**

SHEET 4 OF 12



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 Nicholas Pierce  
 151108434008465  
 01/21/2022

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUBSTRUCTURE REPAIRS**

**BENT 2  
 SPAN B FACE**

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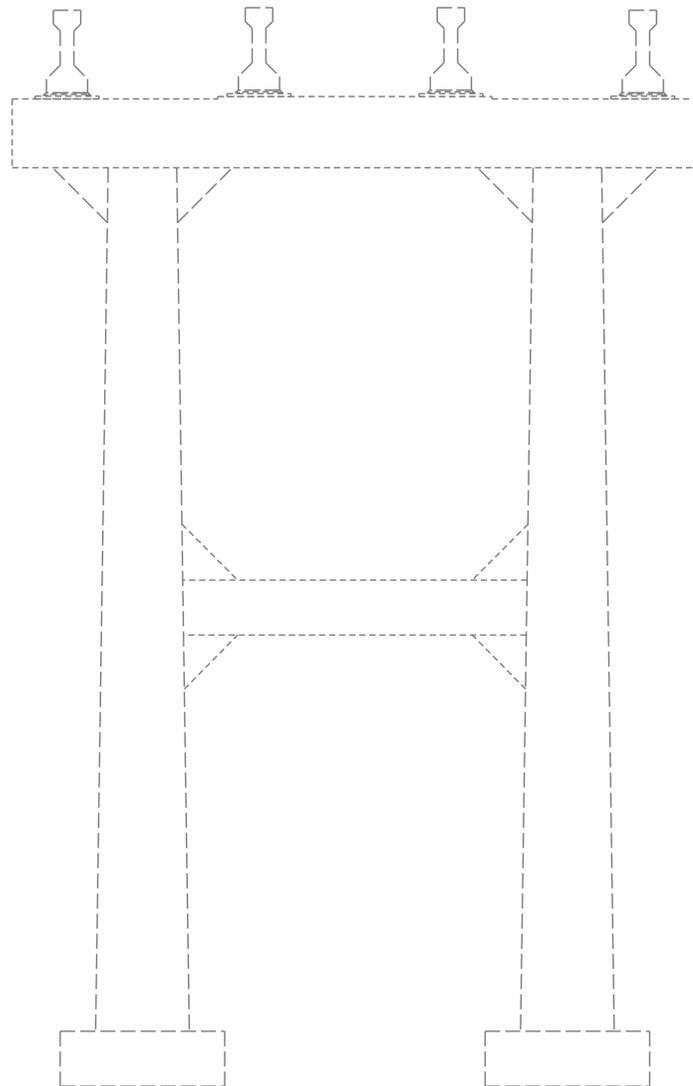
REVISIONS						SHEET NO. S2-25 TOTAL SHEETS 73
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

DRAWN BY : D.A. CANTRELL DATE : 2/2019  
 CHECKED BY : N.A. PIERCE DATE : 4/2019  
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 11/2021



SPAN B  
SPAN C

**BOTTOM OF CAP**

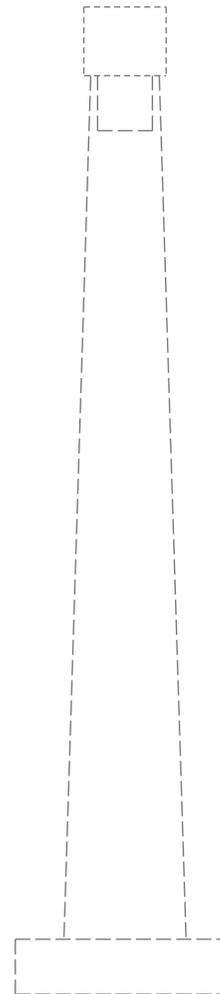


**ELEVATION**



**BOTTOM OF STRUT**

SPAN C | SPAN B



**END VIEW**

**AS-BUILT REPAIR QUANTITY TABLE**

REPAIRS BENT 2 - SPAN C	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
COLUMN	0	0		
STRUT	0	0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
COLUMN	0	0		
STRUT	0	0		

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

**NOTES**

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

FOR "SHOTCRETE REPAIRS", SEE SPECIAL PROVISIONS.

- SHOTCRETE REPAIR AREA
- CONCRETE REPAIR AREA
- AREA PREVIOUSLY ACCOUNTED FOR ON ADJACENT FACE

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910240**

SHEET 5 OF 12



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 Nicholas Pierce  
 151108434D08485  
 01/21/2022

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

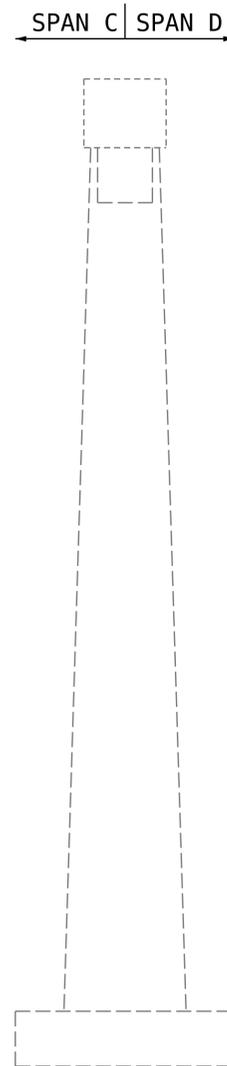
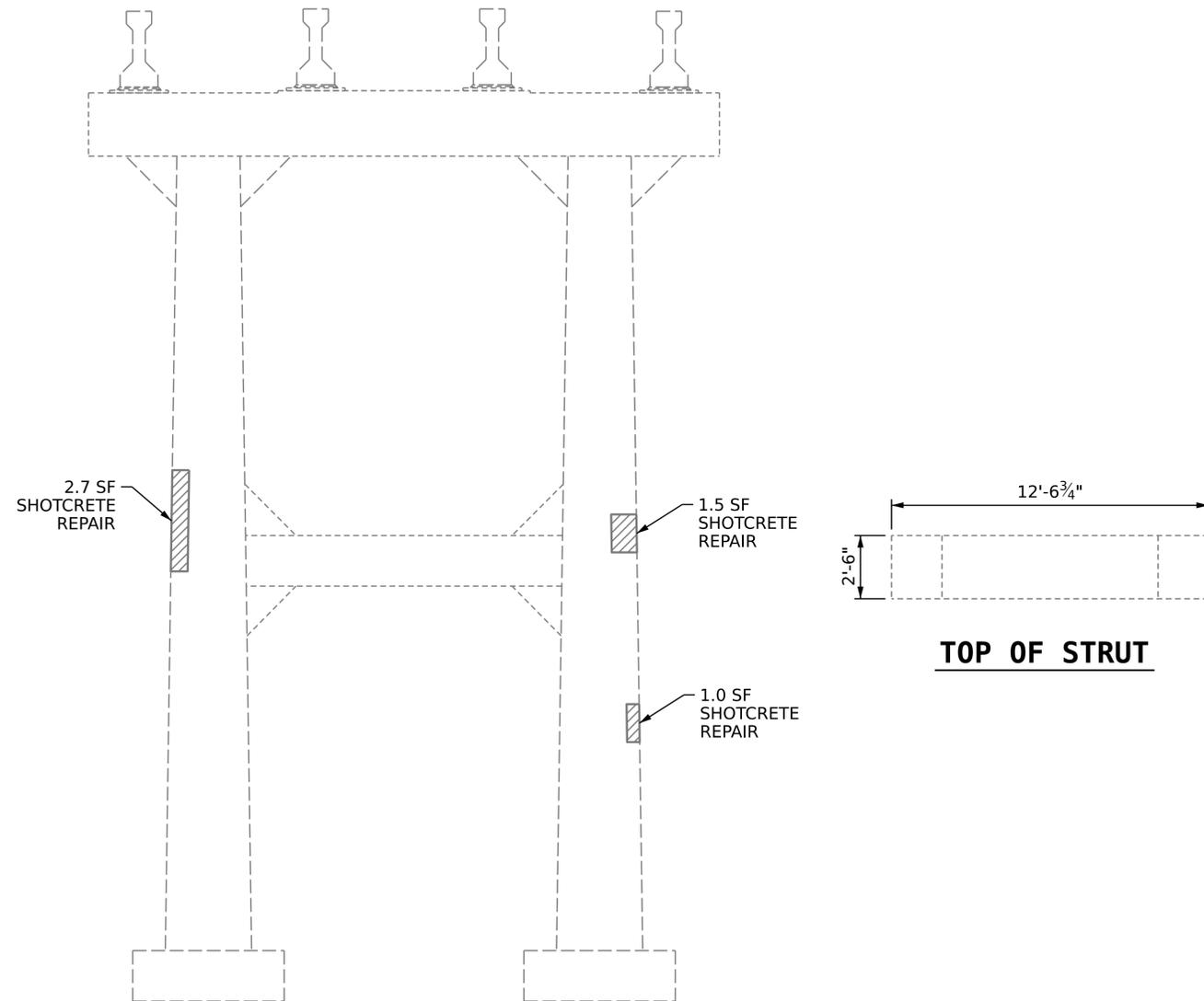
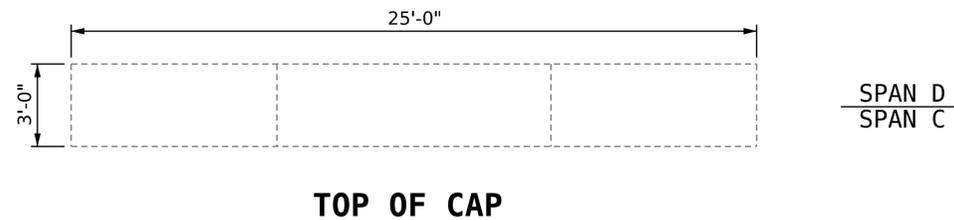
**SUBSTRUCTURE REPAIRS**

**BENT 2  
 SPAN C FACE**

NO.	BY:	DATE:	REVISIONS			SHEET NO.
			NO.	BY:	DATE:	
1			3			S2-26
2			4			TOTAL SHEETS 73

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DRAWN BY : D.A. CANTRELL DATE : 2/2019  
 CHECKED BY : N.A. PIERCE DATE : 4/2019  
 DESIGN ENGINEER OF RECORD: N.A. PIERCE DATE : 11/2021



**ELEVATION**

**END VIEW**

**AS-BUILT REPAIR QUANTITY TABLE**

REPAIRS BENT 3 - SPAN C	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
COLUMN	5.2	2.6		
STRUT	0	0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	6.0	3.0		
COLUMN	0	0		
STRUT	0	0		
EPOXY COATING		AREA SF		AREA SF
CAP		76		
STRUT		36		

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

**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.

FOR "SHOTCRETE REPAIRS", SEE SPECIAL PROVISIONS.

- SHOTCRETE REPAIR AREA
- CONCRETE REPAIR AREA
- AREA PREVIOUSLY ACCOUNTED FOR ON ADJACENT FACE

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910240**

SHEET 6 OF 12



Designed by  
*Nicholas Pierce*  
 15110B434020485  
 01/21/2022

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUBSTRUCTURE REPAIRS**

**BENT 3  
 SPAN C FACE**

DOCUMENT NOT CONSIDERED  
 FINAL UNLESS ALL  
 SIGNATURES COMPLETED

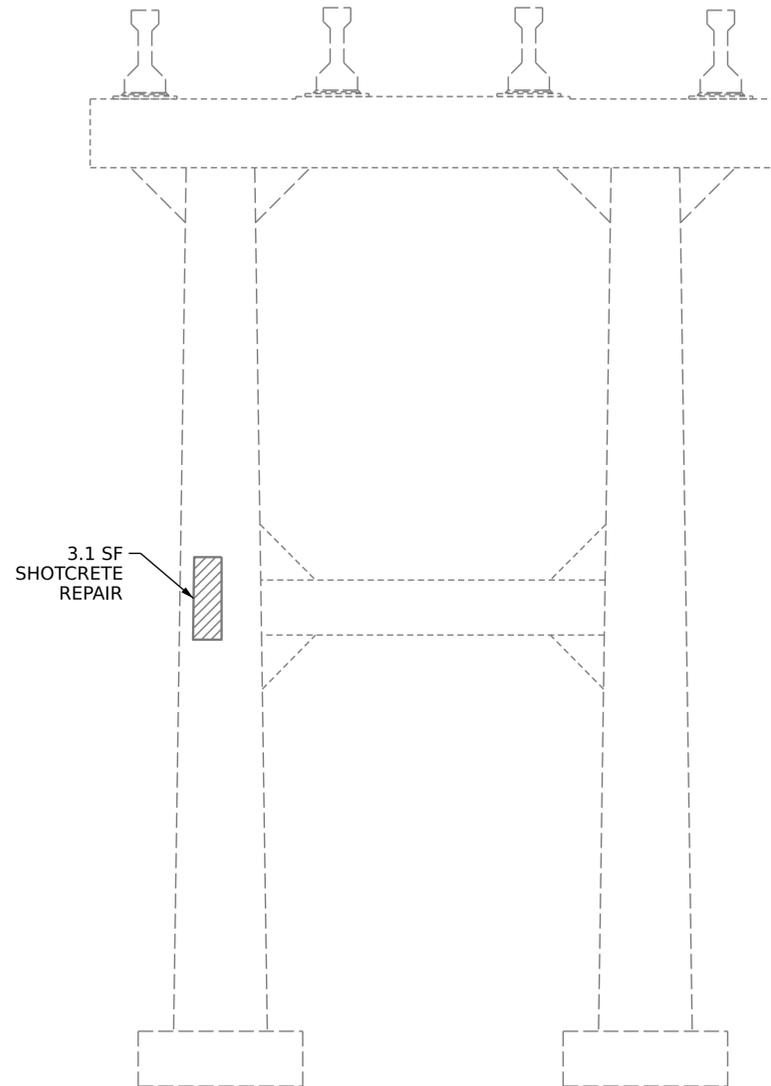
REVISIONS						SHEET NO. S2-27 TOTAL SHEETS 73
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

DRAWN BY : D.A. CANTRELL DATE : 2/2019  
 CHECKED BY : N.A. PIERCE DATE : 4/2019  
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 11/2021



SPAN C  
SPAN D

**BOTTOM OF CAP**

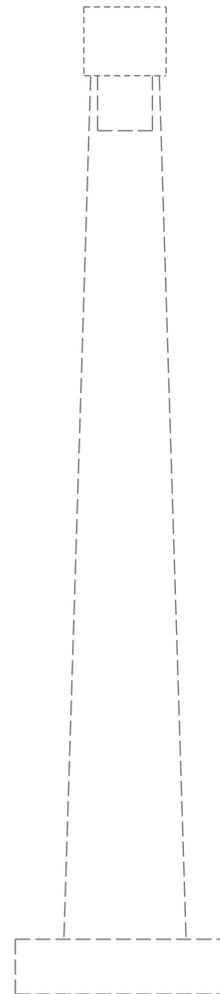


**ELEVATION**



**BOTTOM OF STRUT**

SPAN D | SPAN C



**END VIEW**

**AS-BUILT REPAIR QUANTITY TABLE**

REPAIRS BENT 3 - SPAN D	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
COLUMN	3.1	1.5		
STRUT	0	0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
COLUMN	0	0		
STRUT	0	0		

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

**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.

FOR "SHOTCRETE REPAIRS", SEE SPECIAL PROVISIONS.

- SHOTCRETE REPAIR AREA
- CONCRETE REPAIR AREA
- AREA PREVIOUSLY ACCOUNTED FOR ON ADJACENT FACE

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910240**

SHEET 7 OF 12



Designed by:  
*Nicholas Pierce*  
 151105434020485...  
 01/21/2022

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUBSTRUCTURE REPAIRS**

**BENT 3  
 SPAN D FACE**

NO.	BY:	DATE:	REVISIONS			SHEET NO.
			NO.	BY:	DATE:	
1			3			S2-28
2			4			TOTAL SHEETS 73

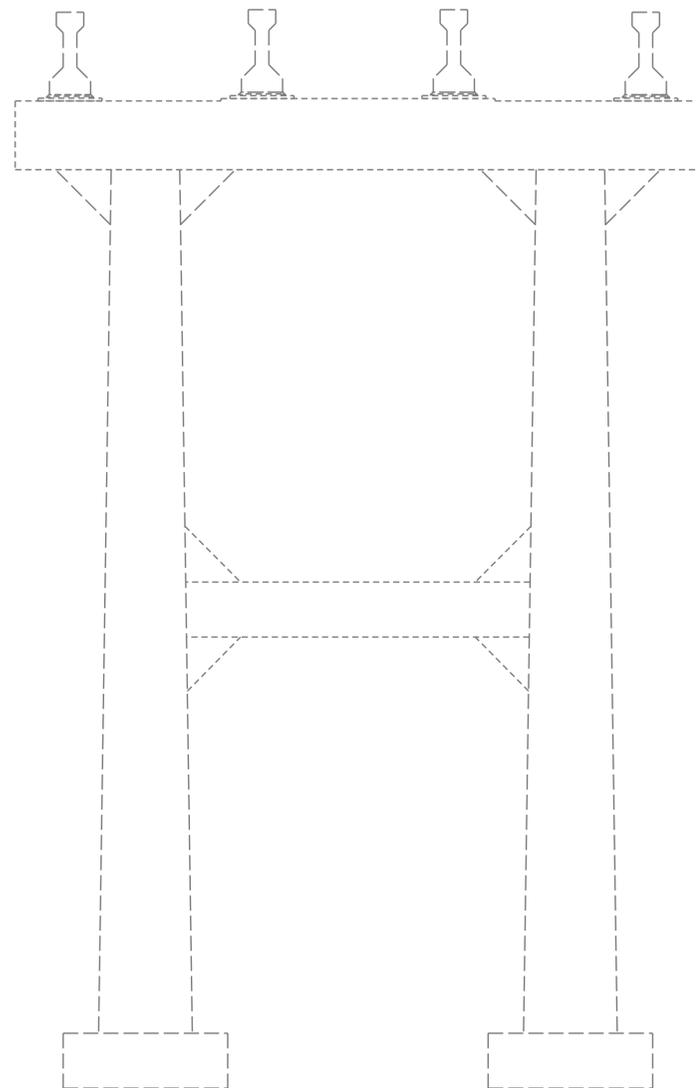
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DRAWN BY : D.A. CANTRELL DATE : 2/2019  
 CHECKED BY : N.A. PIERCE DATE : 4/2019  
 DESIGN ENGINEER OF RECORD: N.A. PIERCE DATE : 11/2021

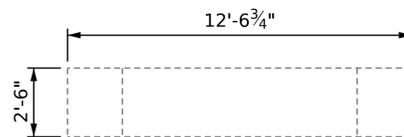


**TOP OF CAP**

SPAN E  
SPAN D

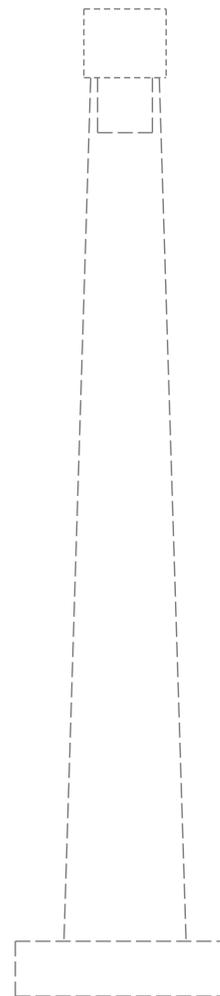


**ELEVATION**



**TOP OF STRUT**

SPAN D | SPAN E



**END VIEW**

**AS-BUILT REPAIR QUANTITY TABLE**

REPAIRS BENT 4 - SPAN D	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
COLUMN	0	0		
STRUT	0	0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
COLUMN	0	0		
STRUT	0	0		
EPOXY COATING		AREA SF		AREA SF
CAP		76		
STRUT		36		

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

**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.

FOR "SHOTCRETE REPAIRS", SEE SPECIAL PROVISIONS.

- SHOTCRETE REPAIR AREA
- CONCRETE REPAIR AREA
- AREA PREVIOUSLY ACCOUNTED FOR ON ADJACENT FACE

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910240**

SHEET 8 OF 12

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUBSTRUCTURE REPAIRS**

**BENT 4  
 SPAN D FACE**



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 Nicholas Pierce  
 151108434008485  
 01/21/2022

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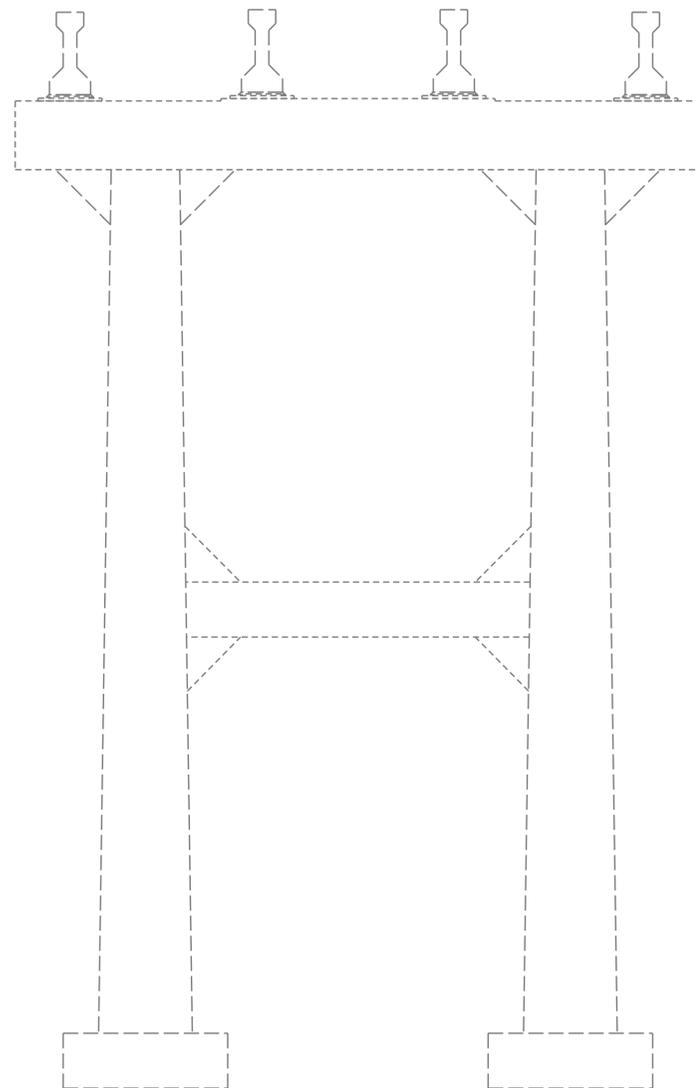
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2			4			

DRAWN BY : D.A. CANTRELL DATE : 2/2019  
 CHECKED BY : N.A. PIERCE DATE : 4/2019  
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 11/2021



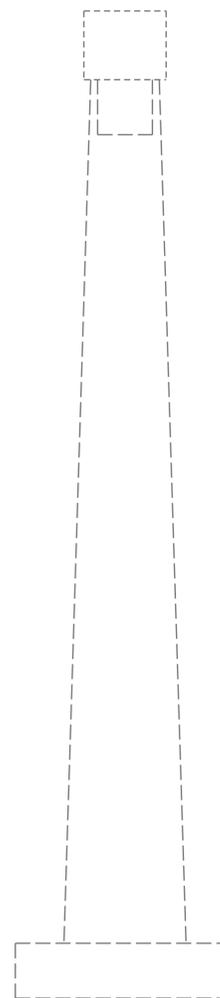
SPAN D  
SPAN E

**BOTTOM OF CAP**



**ELEVATION**

SPAN E | SPAN D



**END VIEW**



**BOTTOM OF STRUT**

**AS-BUILT REPAIR QUANTITY TABLE**

REPAIRS BENT 4 - SPAN E	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
COLUMN	0	0		
STRUT	0	0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
COLUMN	0	0		
STRUT	0	0		

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

**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.

FOR "SHOTCRETE REPAIRS", SEE SPECIAL PROVISIONS.

- SHOTCRETE REPAIR AREA
- CONCRETE REPAIR AREA
- AREA PREVIOUSLY ACCOUNTED FOR ON ADJACENT FACE

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910240**

SHEET 9 OF 12



Designed by:  
*Nicholas Pierce*  
 1511084340208485...  
 01/21/2022

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUBSTRUCTURE REPAIRS**

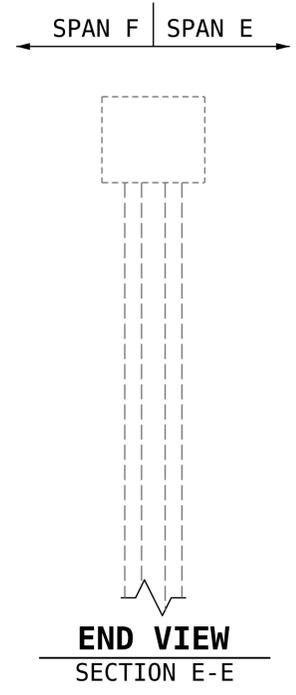
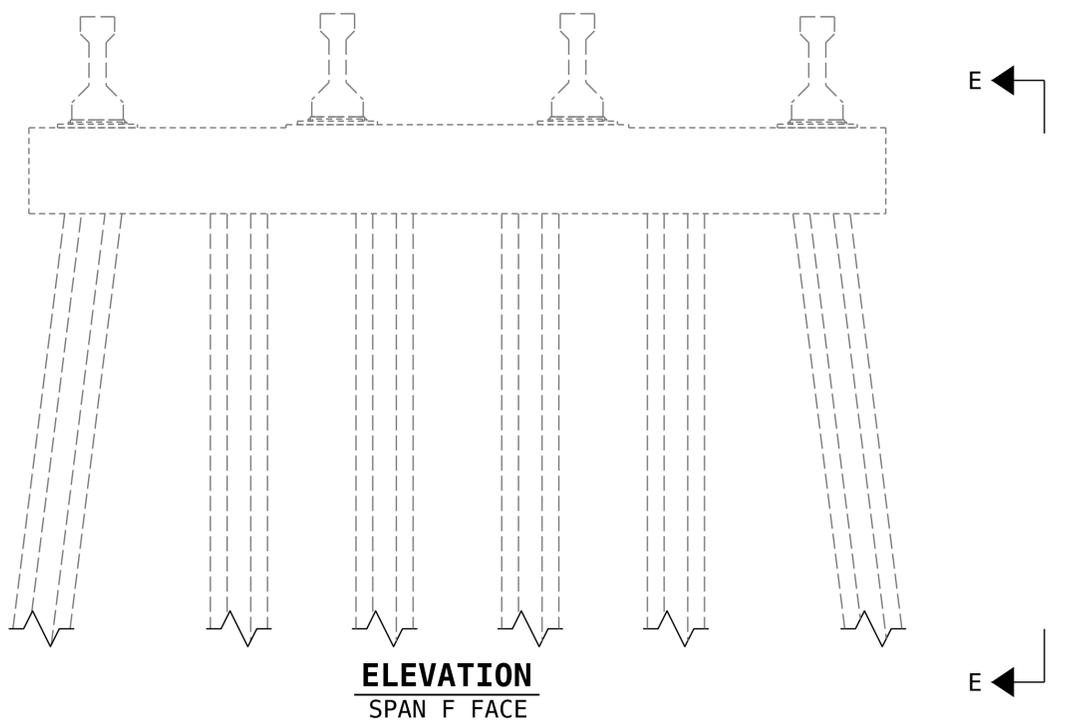
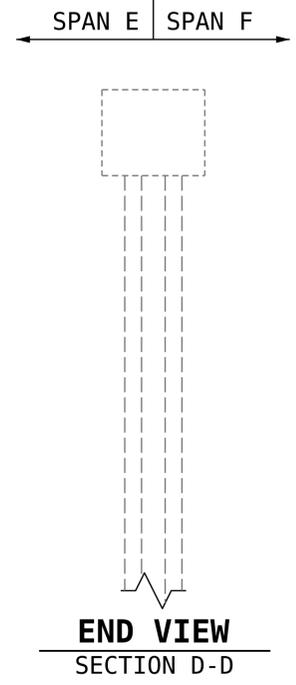
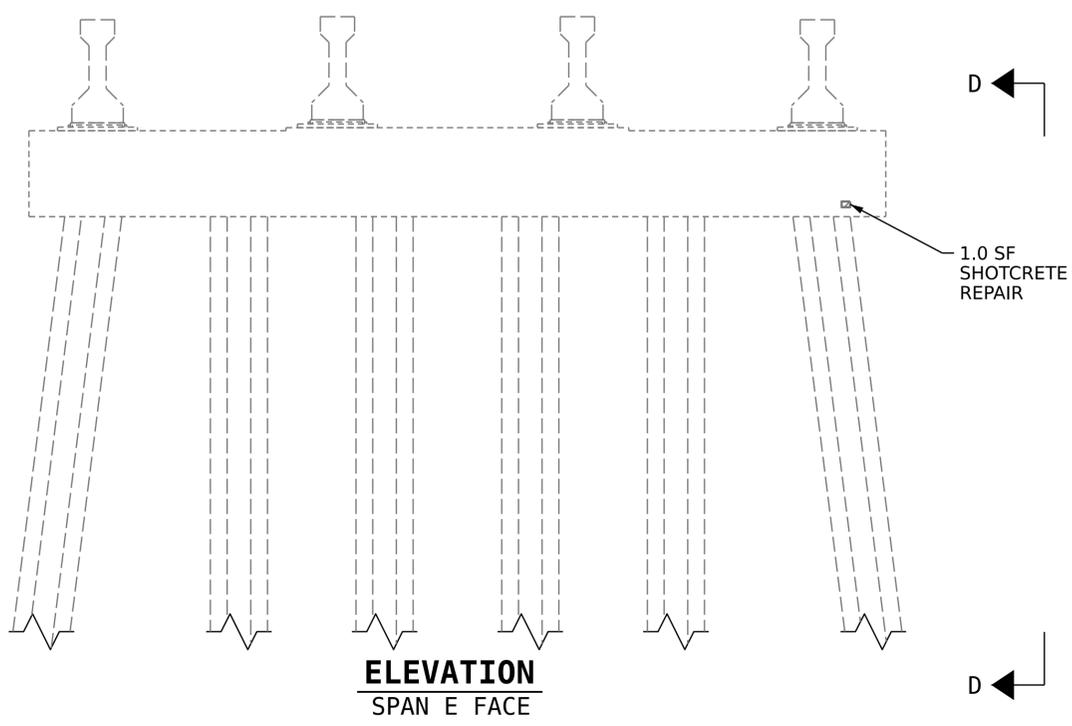
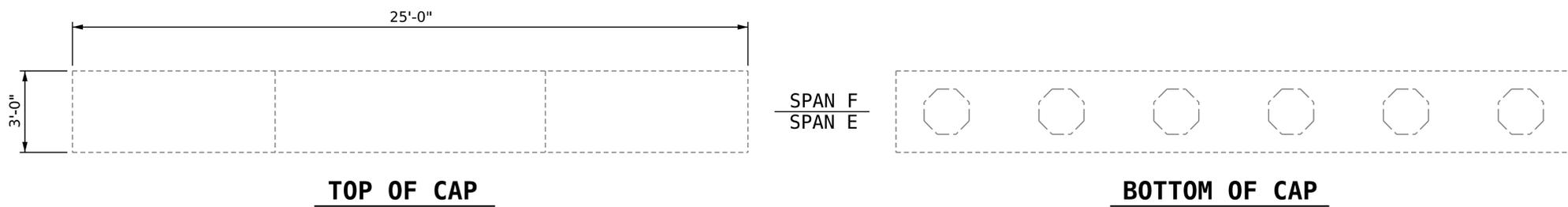
**BENT 4  
 SPAN E FACE**

NO.	BY:	DATE:	REVISIONS			SHEET NO.
			NO.	BY:	DATE:	
1			3			S2-30
2			4			TOTAL SHEETS 73

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 DESIGN ENGINEER OF RECORD: N.A. PIERCE DATE : 11/2021

8/26/21



**AS-BUILT REPAIR QUANTITY TABLE**

REPAIRS - BENT 5	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	1.0	0.5		
COLUMN	0	0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
COLUMN	0	0		
EPOXY COATING		AREA SF		AREA SF
CAP		76		

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

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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.

FOR "SHOTCRETE REPAIRS", SEE SPECIAL PROVISIONS.

- SHOTCRETE REPAIR AREA
- CONCRETE REPAIR AREA

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910240**

SHEET 10 OF 12



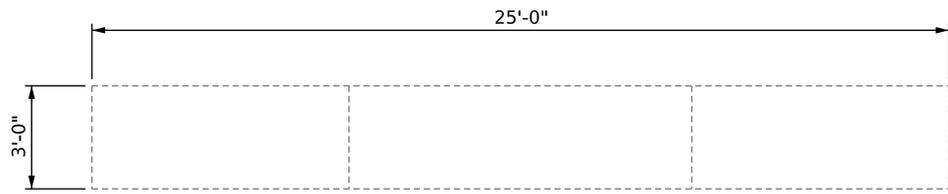
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**SUBSTRUCTURE REPAIRS**  
**BENT 5**

REVISIONS						SHEET NO. S2-31 TOTAL SHEETS 73
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

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 CHECKED BY : N.A. PIERCE DATE : 4/2019  
 DESIGN ENGINEER OF RECORD: N.A. PIERCE DATE : 11/2021

8/26/21

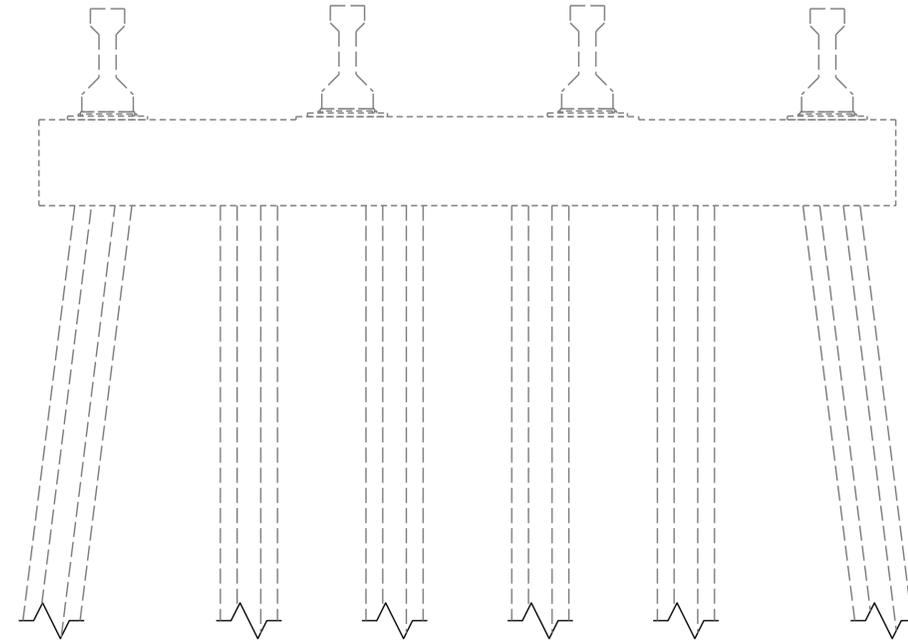


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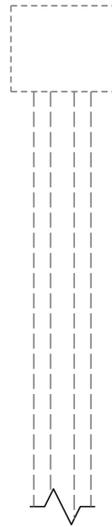
**BOTTOM OF CAP**

SPAN G  
SPAN F



**ELEVATION**  
SPAN F FACE

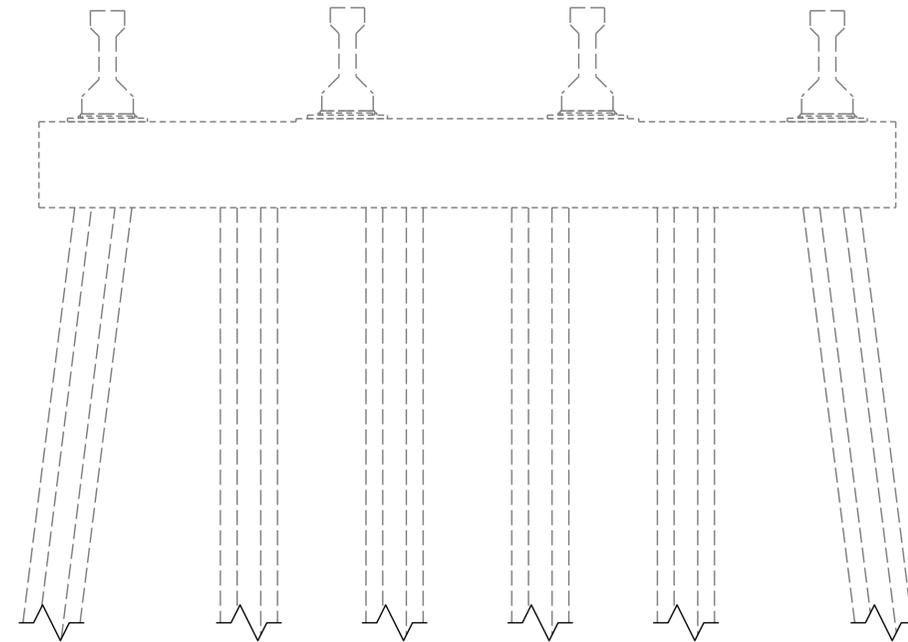
SPAN F | SPAN G



**END VIEW**  
SECTION F-F

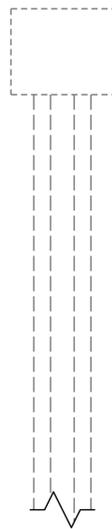
F ←

F ←



**ELEVATION**  
SPAN G FACE

SPAN G | SPAN F



**END VIEW**  
SECTION G-G

G ←

G ←

**AS-BUILT REPAIR QUANTITY TABLE**

REPAIRS - BENT 6	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
COLUMN	0	0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
COLUMN	0	0		
EPOXY COATING		AREA SF		AREA SF
CAP		76		

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

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

FOR "SHOTCRETE REPAIRS", SEE SPECIAL PROVISIONS.

 SHOTCRETE REPAIR AREA

 CONCRETE REPAIR AREA

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910240**

SHEET 11 OF 12

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUBSTRUCTURE REPAIRS**  
**BENT 6**

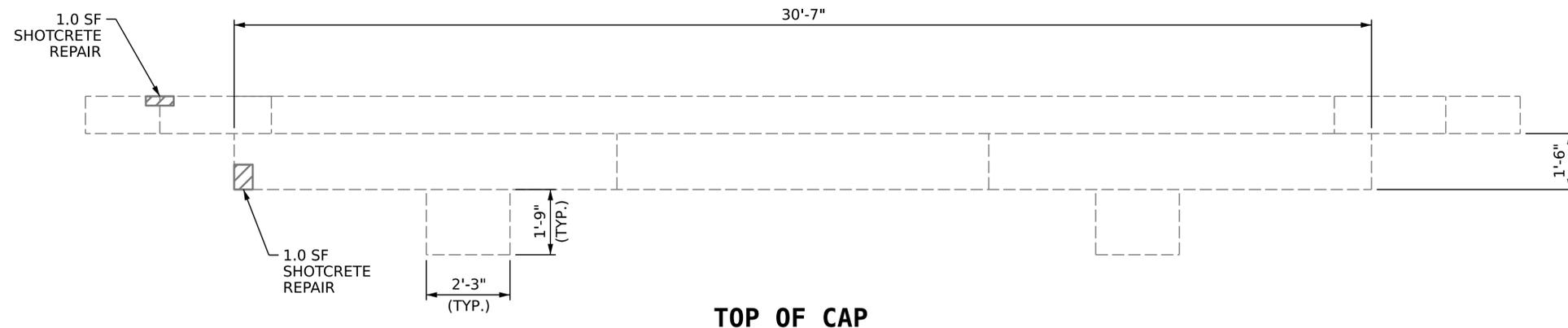


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 Nicholas Pierce  
 151108434D08485  
 01/21/2022

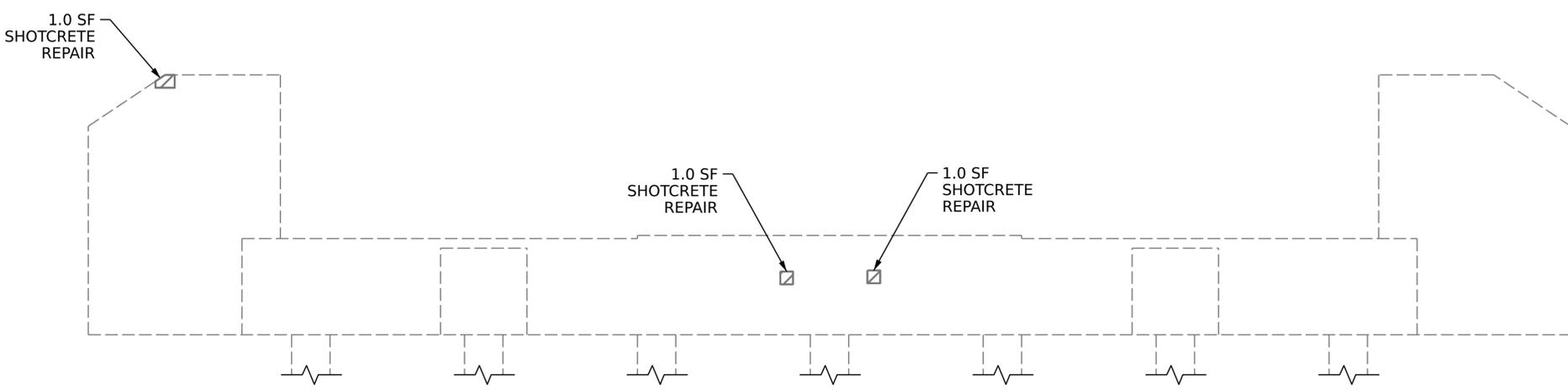
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
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2			4			73

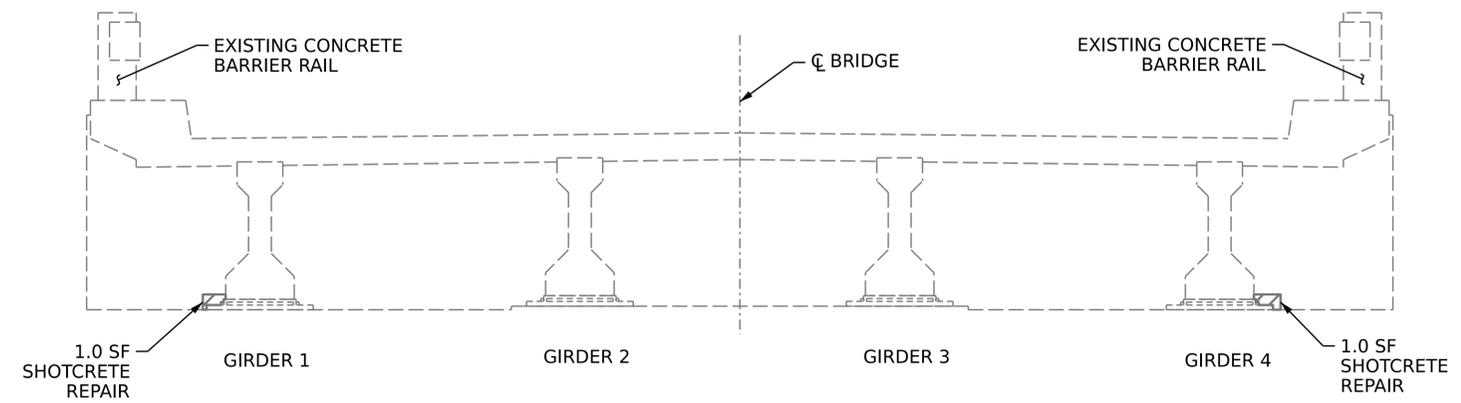
DRAWN BY : D.A. CANTRELL DATE : 2/2019  
 CHECKED BY : N.A. PIERCE DATE : 4/2019  
 DESIGN ENGINEER OF RECORD: N.A. PIERCE DATE : 11/2021



**TOP OF CAP**



**ELEVATION**



**TYPICAL SECTION**

**AS-BUILT REPAIR QUANTITY TABLE**

REPAIRS - END BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	3.0	1.5		
CURTAIN WALL	2.0	1.0		
WINGWALL	2.0	1.0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
CURTAIN WALL	0	0		
WINGWALL				
EPOXY COATING		AREA SF		AREA SF
CAP		54		

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

**NOTES**

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

FOR "SHOTCRETE REPAIRS", SEE SPECIAL PROVISIONS.

- SHOTCRETE REPAIR AREA
- CONCRETE REPAIR AREA

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910240**  
 SHEET 12 OF 12



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**SUBSTRUCTURE REPAIRS**  
**END BENT 2**

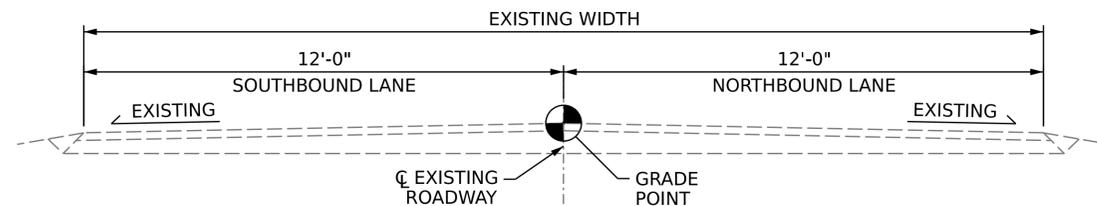
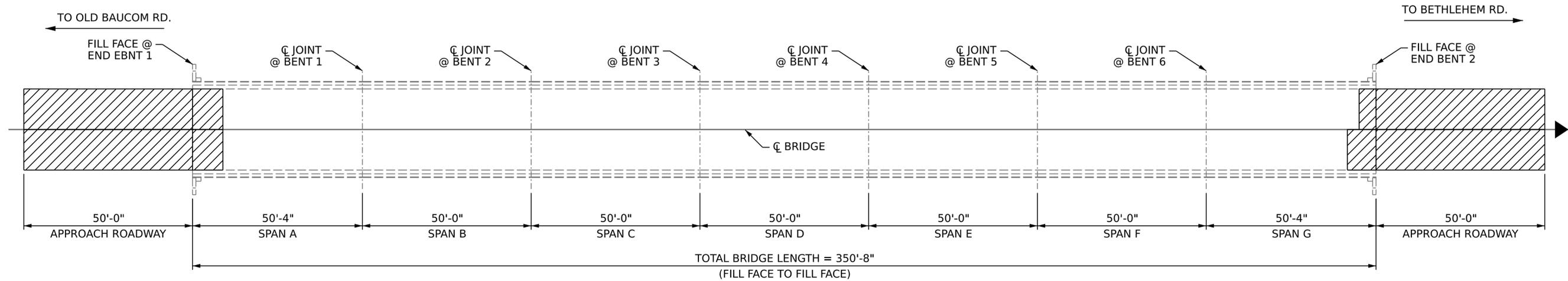
DRAWN BY : D.A. CANTRELL DATE : 2/2019  
 CHECKED BY : N.A. PIERCE DATE : 4/2019  
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 11/2021

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
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2			4			73

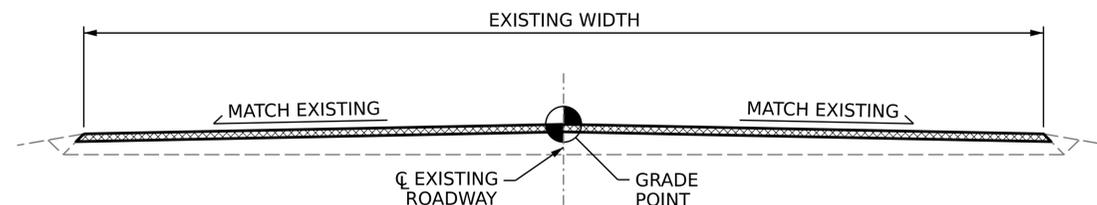
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

**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.

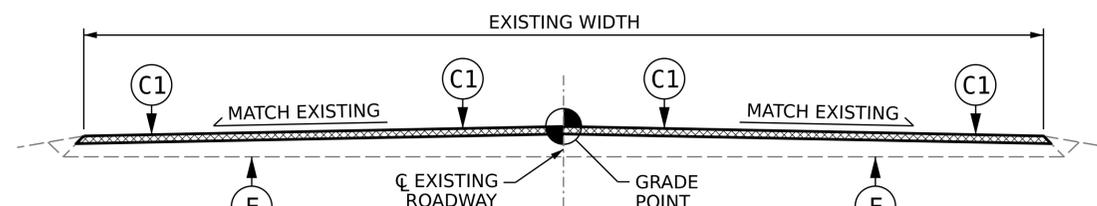


**EXISTING ROADWAY SECTION**



**TYPICAL ROADWAY MILLING SECTION**

(MILL TO 1½" DEPTH)



**PROPOSED ROADWAY SECTION**

SUMMARY OF QUANTITIES		
	ESTIMATE	ACTUAL
INCIDENTAL MILLING	308.7 SQ. YD.	
ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B	30.0 TONS	
ASPHALT BINDER FOR PLANT MIX	5.0 TONS	

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

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910240**



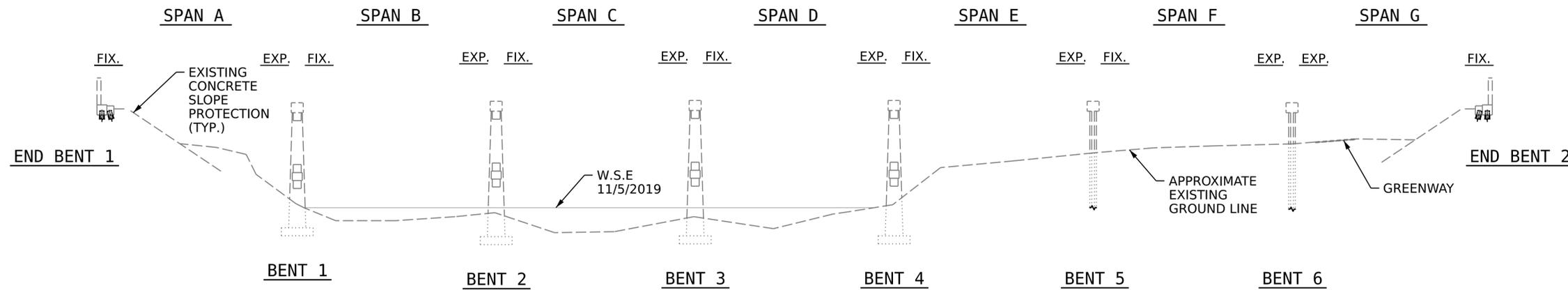
DocuSigned by:  
 Nicholas Pierce  
 15110843406485  
 01/21/2022

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

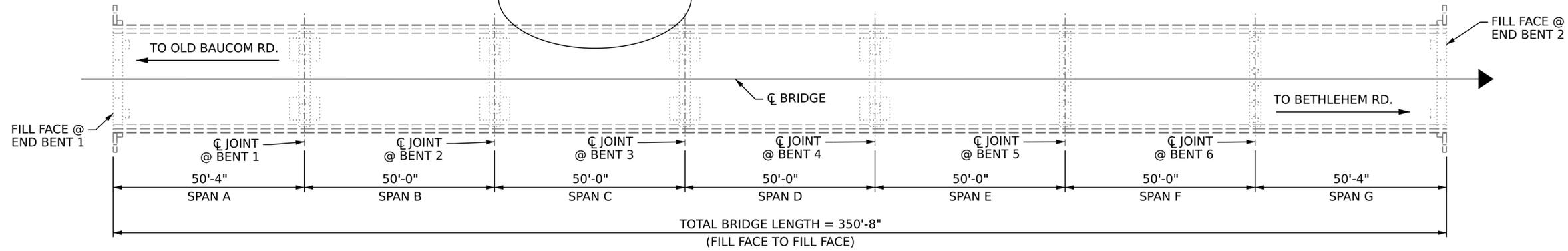
DRAWN BY : D.A. CANTRELL      DATE : 4/2019  
 CHECKED BY : N.A. PIERCE      DATE : 4/2019  
 DESIGN ENGINEER OF RECORD : N.A. PIERCE      DATE : 11/2021

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-34
1			3			TOTAL SHEETS
2			4			73



**SECTION ALONG C OF BRIDGE**



**PLAN**

**NOTES**

THE INFORMATION PROVIDED IS FROM THE DRIFT ACCUMULATION AS OF 11/19/2021, THE EXACT AMOUNT OF DRIFT VARIES DAILY.

REMOVAL OF DRIFT SHALL BE ACCESSED FROM THE TOP OF THE BRIDGE DECK. ASSISTANCE FROM BOATS IN THE RIVER MAY BE ALLOWED, BUT NO ACCESS TO THE DRIFT SHALL BE ALLOWED FROM THE RIVER BANK.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL OF ALL DRIFT MATERIALS PRIOR TO THE PROJECT'S END.

THE CONTRACTOR SHALL NOT ALLOW, AT ANY TIME, ANY DRIFT MATERIALS TO FLOW DOWNSTREAM OF THE PROJECT SITE.

THE CONTRACTOR SHALL CONTAIN AND DISPOSE OF COLLECTED DRIFT MATERIALS OFF SITE.

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910240**



Designed by  
 Nicholas Pierce  
 15110843408485...  
 01/21/2022

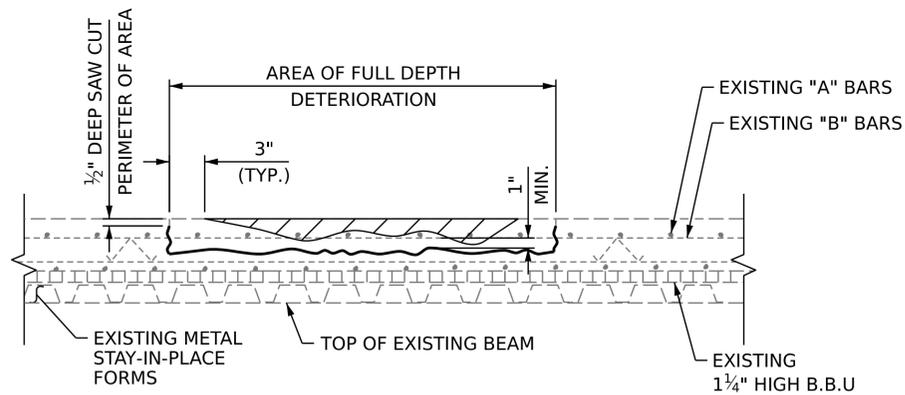
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**DRIFT REMOVAL**

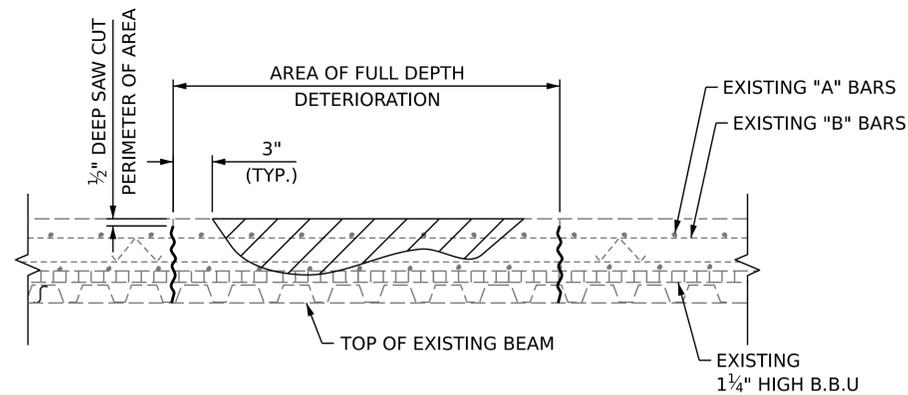
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 CHECKED BY : D.A. CANTRELL DATE : 5/2019  
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 11/2021

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 FINAL UNLESS ALL  
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
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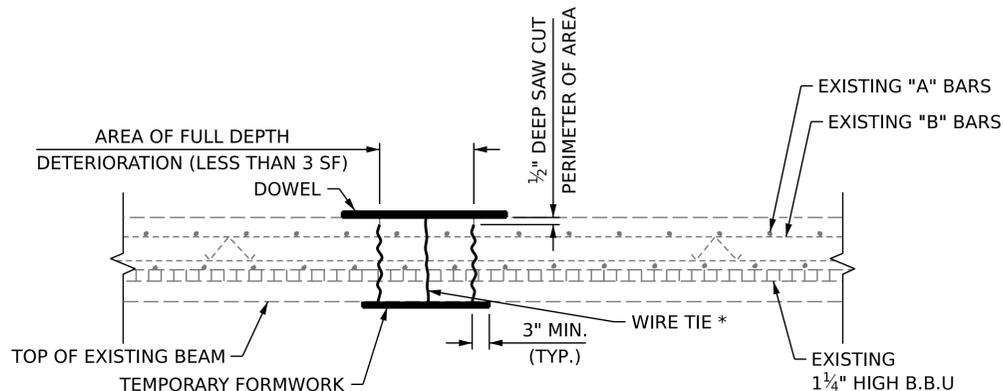
**CLASS II (PARTIAL DEPTH) REPIAR**



**CLASS III (FULL DEPTH) REPIAR**

**NOTES**

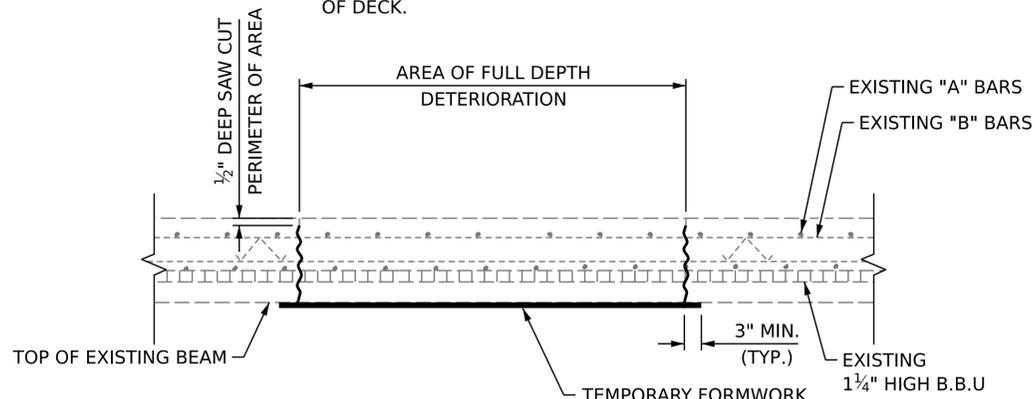
- FOR AREAS TO BE REPAIRED, SEE "PLAN OF SPAN" SHEETS.
- ALL DECK REPAIRS SHALL BE COMPLETED PRIOR TO PLACEMENT OF OVERLAY.
- FOR CLASS II AND CLASS III SURFACE PREPARATION, SEE "OVERLAY SURFACE PREPARATIONS" SPECIAL PROVISION.
- FOR CONCRETE FOR DECK REPAIR, SEE SPECIAL PROVISIONS.
- FOR SHOTCRETE REPAIR, SEE SPECIAL PROVISIONS.
- THE CONTRACTOR SHALL SUBMIT WORKING DRAWINGS TO THE ENGINEER FOR APPROVAL PRIOR TO STARTING WORK FOR TEMPORARY FORMWORK. FOR SUBMITTALS OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- UPON REMOVAL OF TEMPORARY FORMWORK, ALL VOIDS AND HONEYCOMBS ON THE UNDERSIDE OF DECK SURFACE SHALL BE FILLED WITH THE SAME MATERIAL AS USED FOR THE PATCH, AND FINISHED TO CONFORM TO THE SURROUNDING CONCRETE SURFACE.
- NO FORMWORK SHALL BE LEFT IN PLACE.



**FULL DEPTH REPAIR WITH TEMPORARY FORMWORK**

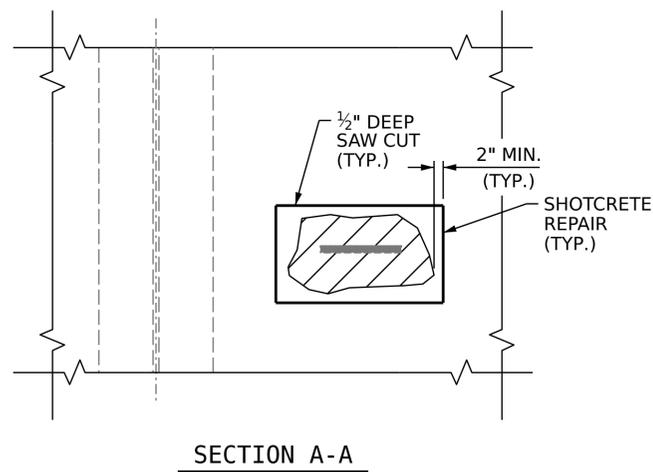
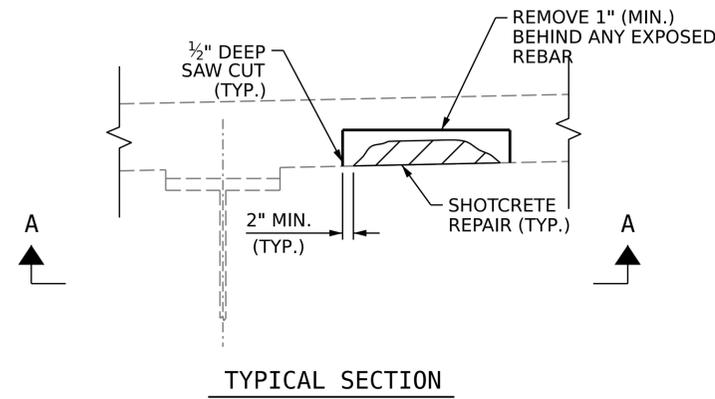
(FOR AREAS OF DETERIORATION LESS THAN OR EQUAL TO 3 SF)

\* WIRE TIE TO BE KNOTTED BELOW TEMPORARY FORMWORK AND ATTACHED TO DOWEL THAT IS WIDER THAN FORMED FULL DEPTH HOLE. ROTATE DOWEL TO TIGHTEN FORMWORK AGAINST BOTTOM OF DECK.



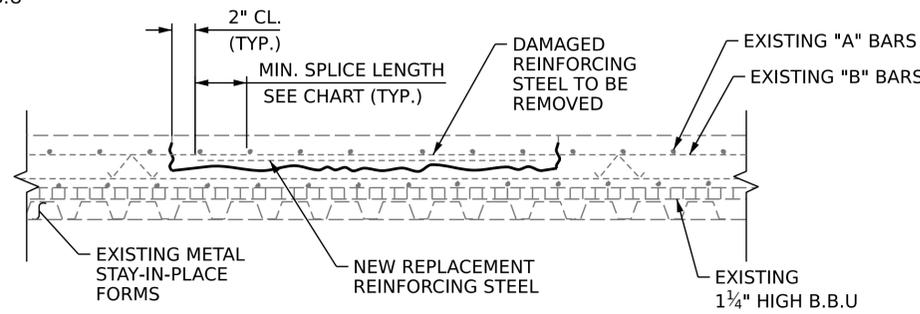
**FULL DEPTH REPAIR WITH TEMPORARY FORMWORK**

(FOR AREAS OF DETERIORATION GREATER THAN 3 SF)



**UNDERSIDE OF DECK REPAIR**

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



**REINFORCING STEEL REPAIR**

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910028 & 910240**



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
**DECK REPAIR  
 DETAILS**

ASSEMBLED BY : N.A. PIERCE	DATE : 05/20
CHECKED BY :	DATE :
DRAWN BY : NAP 09/18	
CHECKED BY :	

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	
1			3	SD-01
2			4	
TOTAL SHEETS				74

**NOTES**

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

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

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

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

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

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

REINFORCING STEEL WHICH IS DETERMINED BY THE ENGINEER TO BE REPLACED, SHALL BE REMOVED TO A POINT WHERE IT IS SOUND. THE REPAIR AREA 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.

PROJECT NO. **15BPR.49**  
**WAKE** COUNTY  
 BRIDGE NO. **910028 & 910240**

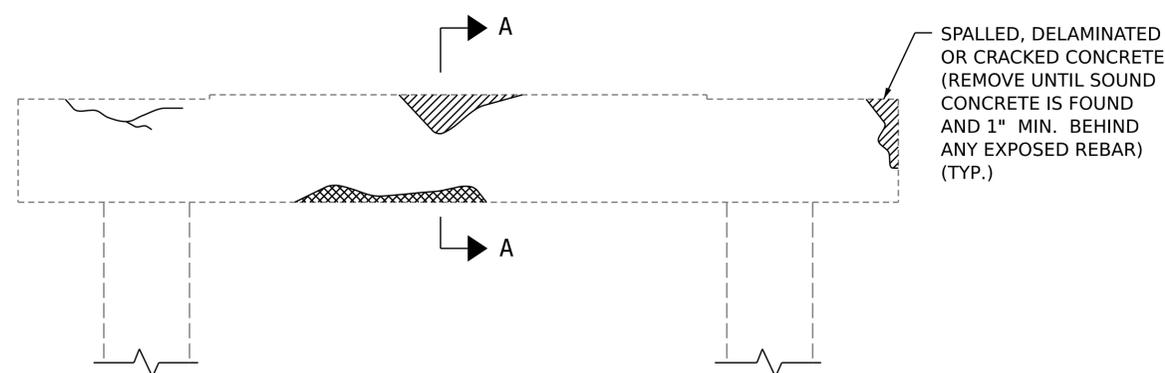
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
**TYPICAL  
 CAP AND COLUMN  
 REPAIR DETAILS**



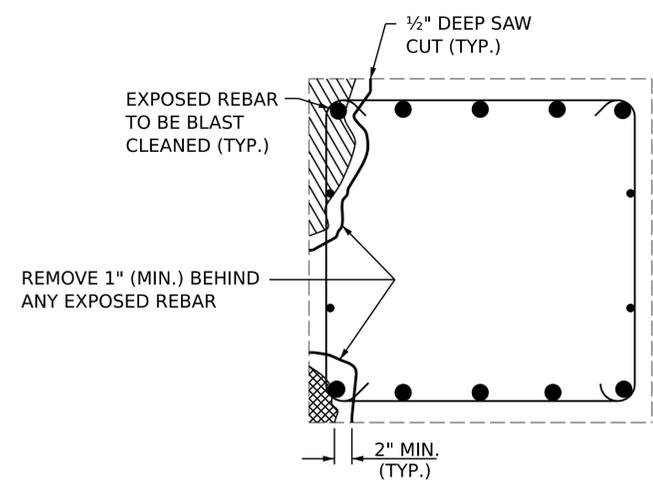
DocuSigned by:  
 Nicholas Pearce  
 15110843408485  
 01/21/2022

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	SD-02
1			3			TOTAL SHEETS
2			4			74

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



**BENT CAP REPAIRS**



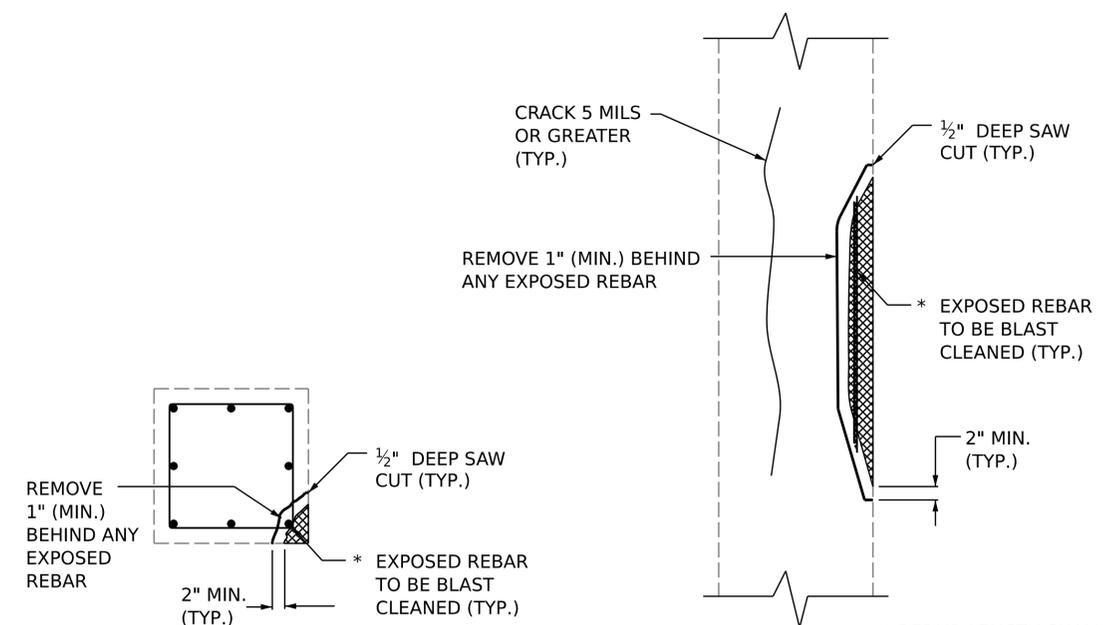
**SECTION A-A**

**CAP REPAIR**

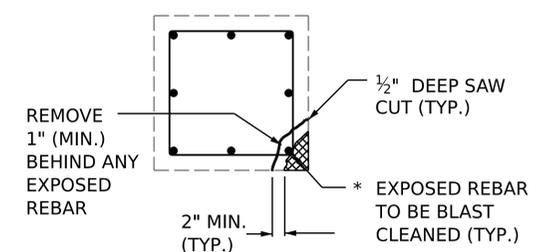
BAR SIZE	MIN. SPLICE LENGTH
#4	2'-4"
#5	2'-9"
#6	4'-0"
#7	5'-3"
#8	6'-9"
#9	8'-6"
#10	10'-11"
#11	13'-4"

**REPAIR KEY**

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

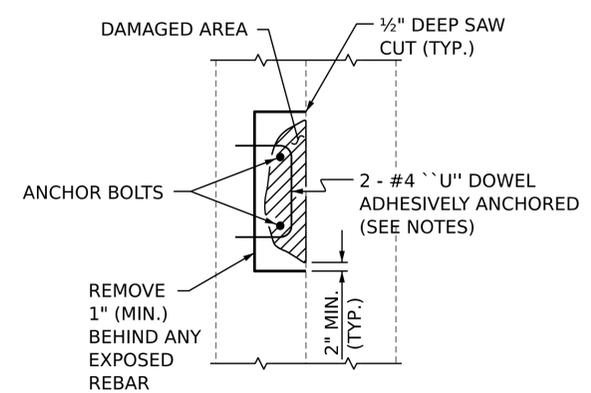


**ELEVATION OF COLUMN**



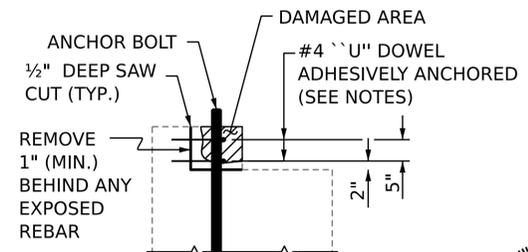
**PLAN OF COLUMN**

**COLUMN REPAIR**



**PLAN**

**PEDESTAL WALL REPAIR**



**ELEVATION**

ASSEMBLED BY :	DATE :
CHECKED BY :	DATE :
DRAWN BY : NAP 8/18	
CHECKED BY :	

## STANDARD NOTES

### DESIGN DATA:

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

### MATERIAL AND WORKMANSHIP:

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

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

### CONCRETE:

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

### CONCRETE CHAMFERS:

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

### DOWELS:

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

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

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

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

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

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

### REINFORCING STEEL:

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

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

### STRUCTURAL STEEL:

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

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

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

### HANDRAILS AND POSTS:

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

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

### SPECIAL NOTES:

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

ENGLISH

JANUARY, 1990

STD. NO. SN