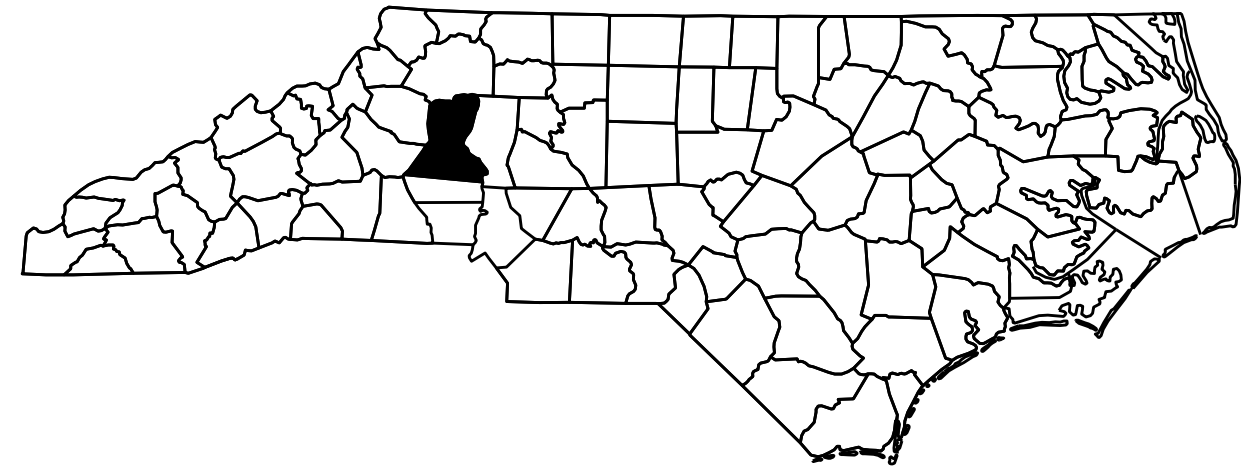


TIP PROJECT: 15BPR.119

CONTRACT: C204977



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

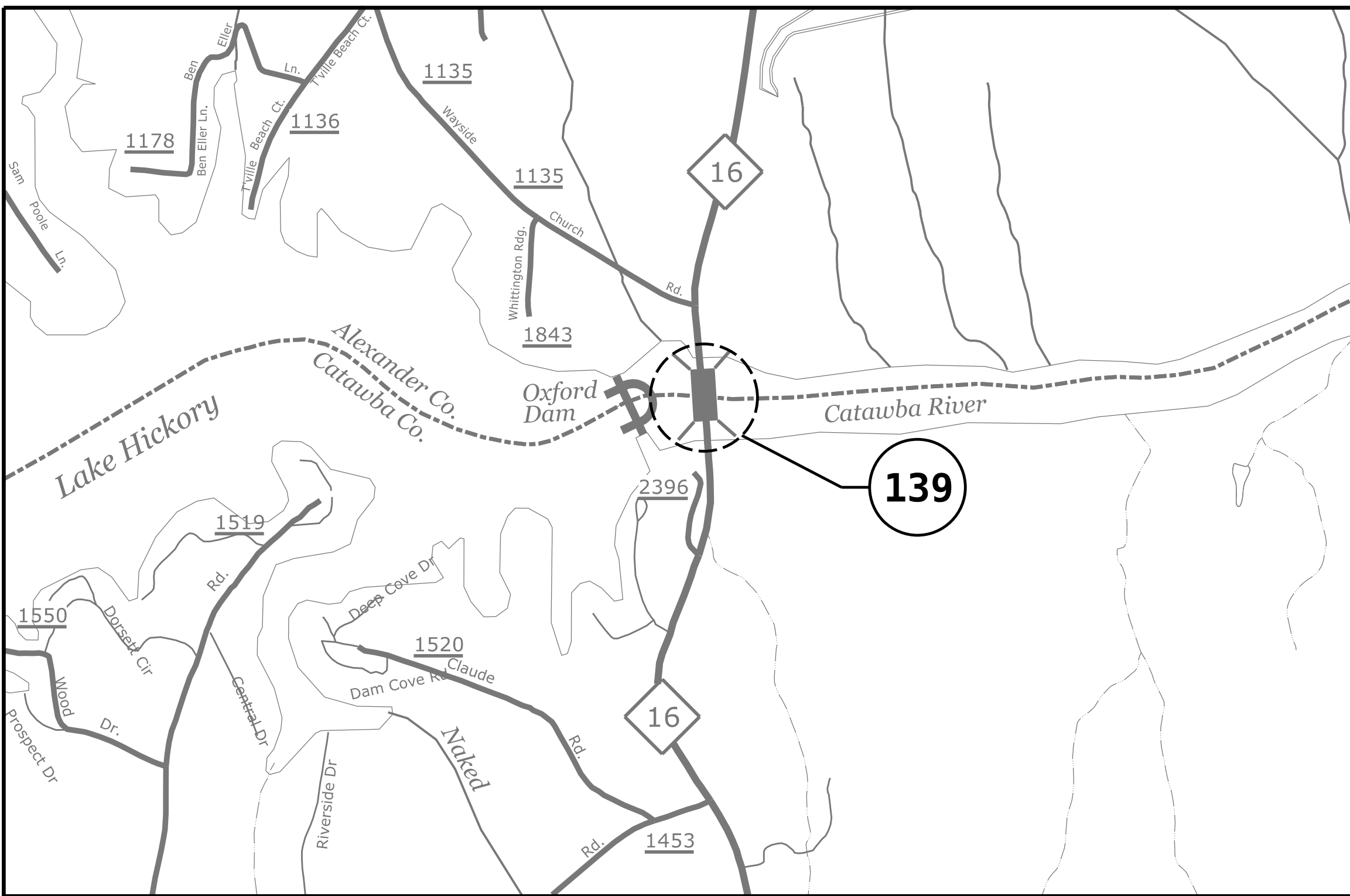
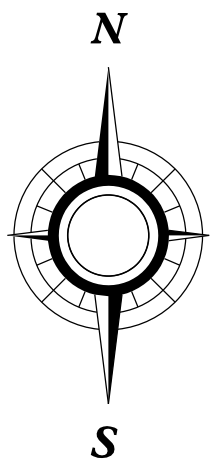
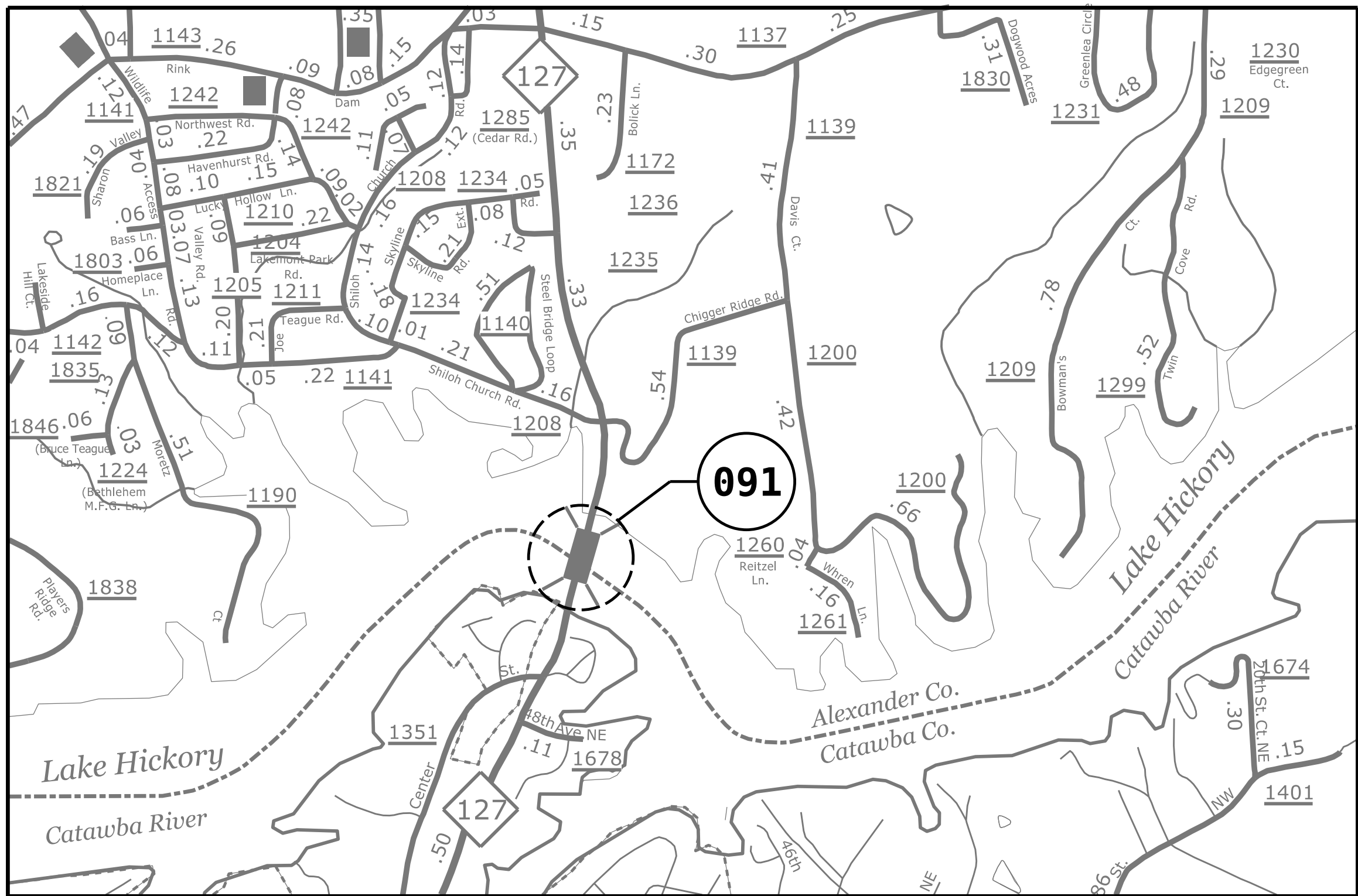
CATAWBA & ALEXANDER COUNTIES

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	15BPR.119	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
15BPR.119.1	-	P.E.	
15BPR.119.3	-	CONST.	

LOCATION: BRIDGE No. 170091 ON NC-127 OVER CATAWBA RIVER

BRIDGE No. 170139 ON NC-16 OVER CATAWBA RIVER

TYPE OF WORK: BRIDGE PRESERVATION – POLYMER CONCRETE (PC) OVERLAY,
DECK SEALANT, POURABLE SILICONE JOINT SEALANT,
FOAM JOINT SEALS FOR PRESERVATION, MODULAR JOINT SEALS
FOR PRESERVATION, EPOXY COATING CONCRETE GIRDER ENDS,
STEEL BEAM PLATING REPAIR, STEEL BEAM SPOT PAINTING,
SILANE BARRIER RAIL TREATMENT, SILANE SUBSTRUCTURE
TREATMENT, CAP EPOXY COATING AND DEBRIS REMOVAL,
AND SUBSTRUCTURE REPAIR.



DESIGN DATA

BRIDGE No. 170091 ADT (2022) = 19,500
BRIDGE No. 170139 ADT (2023) = 13,500

PROJECT LENGTH

BRIDGE No. 170091 = 0.18 MILE
BRIDGE No. 170139 = 0.15 MILE

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

2024 STANDARD SPECIFICATIONS

LETTING DATE :
AUGUST 19, 2025

ADAM COLE, P.E.
PROJECT ENGINEER

SAMUEL MEGAHED, P.E.
PROJECT DESIGN ENGINEER

TIP PROJECT: 15BPR.119

CONTRACT: C204977

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

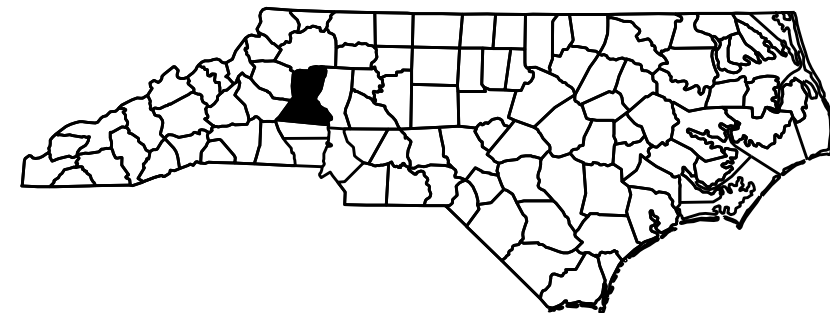
CATAWBA & ALEXANDER COUNTIES

LOCATION: BRIDGE No.170091 ON NC-127 OVER CATAWBA RIVER
BRIDGE No.170139 ON NC-16 OVER CATAWBA RIVER

INDEX OF STRUCTURE SHEETS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	15BPR.119	1A	
STATE PROJ.NO.	F.A. PROJ.NO.	DESCRIPTION	
15BPR.119.1	-	P.E.	
15BPR.119.3	-	CONST.	

<u>SHEET No.</u>	<u>DESCRIPTION</u>	<u>SHEET No.</u>	<u>DESCRIPTION</u>	<u>SHEET No.</u>	<u>DESCRIPTION</u>	<u>SHEET No.</u>	<u>DESCRIPTION</u>
1	TITLE SHEET	STRUCTURE No.170091		STRUCTURE No.170139		S-70	PRESTRESSED GIRDER AND DIAPGRAGM
1A	INDEX OF SHEETS	SI-01	GENERAL DRAWING	S2-01	GENERAL DRAWING		REPAIR DETAILS
S-1	TOTAL BILL OF MATERIALS	SI-02	LOCATION SKETCH	S2-02	LOCATION SKETCH	S-71	BEAM PLATING
		SI-03	TYPICAL SECTION	S2-03	TYPICAL SECTION		REPAIR DETAILS
		SI-04 THRU SI-08	DECK SURFACE REPAIR	S2-04 THRU S2-12	DECK SURFACE REPAIR	S-72	TYPICAL CAP AND COLUMN REPAIR
		SI-09	JOINT DETAILS	S2-13	JOINT DETAILS		DETAILS
		SI-10 THRU SI-14	DECK UNDERSIDE REPAIR	S2-14 THRU S2-22	DECK UNDERSIDE REPAIR	S-73	DECK REPAIR DETAILS
		SI-15	END BENT 1	S2-23	END BENT 1		
		SI-16 THRU SI-27	INTERIOR BENTS	S2-24 THRU S2-39	INTERIOR BENTS		
		SI-28	END BENT 2	S2-40	END BENT 2		
		BSP-01	BOATER SAFETY PLAN (BSP) LOCATION SKETCH			SN	NOTES
		BSP-02	BSP PHASE 1				
		BSP-03	BSP PHASE 2				
		BSP-04	FLOATING TURBIDITY CURTAIN & BOATER SAFETY BARRIER				
		BSP-05	ISOLATED DANGER MARKS & TYPICAL WORK BOAT ACCESS				



TYPE OF WORK:
BRIDGE PRESERVATION - POLYMER CONCRETE (PC) OVERLAY, DECK SEALANT, POURABLE SILICONE JOINT SEALANT, FOAM JOINT SEALS FOR PRESERVATION, MODULAR JOINT SEALS FOR PRESERVATION, EPOXY COATING CONCRETE GIRDER ENDS, STEEL BEAM PLATING REPAIR, STEEL BEAM SPOT PAINTING, SILANE BARRIER RAIL TREATMENT, SILANE SUBSTRUCTURE TREATMENT, CAP EPOXY COATING AND DEBRIS REMOVAL, AND SUBSTRUCTURE REPAIR.

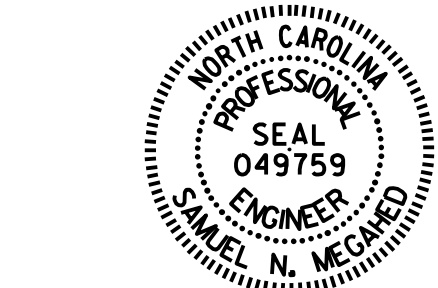
Prepared In the Office of:
DIVISION OF HIGHWAYS
STRUCTURES MANAGEMENT UNIT
1000 BIRCH RIDGE DR.
RALEIGH, N.C. 27610

TOTAL BILL OF MATERIALS										
BRIDGE NO.	GROOVING BRIDGE FLOOR	BOATER SAFETY PLAN	PAINT CONTAINMENT FOR BRIDGE #170091	POLLUTION CONTROL	CLASS II SURFACE PREPARATION	CONCRETE REPAIRS	SHOTCRETE REPAIRS	SPOT PAINTING OF STEEL STRUCTURE REPAIR AREAS	FOAM JOINT SEALS FOR PRESERVATION	MOLDED RUBBER SEGMENTAL EXPANSION JOINT
	SQ.FT.	LUMP SUM	LUMP SUM	LUMP SUM	SQ.YDS.	CU.FT.	CU.FT.	LUMP SUM	LN.FT.	LN.FT.
170091	--	LUMP SUM	LUMP SUM	LUMP SUM	--	2.5	245.2	LUMP SUM	148.0	68.0
170139	30571.5	--	--	--	17.6	0.0	4.6	--	160.0	0.00
TOTALS	30571.5	LUMP SUM	LUMP SUM	LUMP SUM	17.6	2.5	249.8	LUMP SUM	308.0	68.0

TOTAL BILL OF MATERIALS CONTINUED									
BRIDGE NO.	POURABLE SILICONE JOINT SEALANT	EPOXY POLYMER CONCRETE MATERIALS (ALTERNATE)	POLYESTER POLYMER CONCRETE MATERIALS	BEAM REPAIR PLATING	CONCRETE DECK REPAIR FOR BRIDGE DECK CRACK SEALING	EPOXY COATING	EPOXY COATING CONCRETE GIRDER ENDS	SILANE BARRIER RAIL TREATMENT	SILANE SUBSTRUCTURE TREATMENT
	LN.FT.	CU.YDS.	CU.YDS.	LBS.	SQ.FT.	SQ.FT.	SQ.FT.	SQ.FT.	SQ.FT.
170091	170.0	--	--	78.3	3.1	826.0	--	5083.6	--
170139	--	129.2	129.2	--	--	1875.4	897.0	6413.6	3745.0
TOTALS	170.0	129.2	129.2	78.3	3.1	2701.4	897.0	11497.2	3745.0

TOTAL BILL OF MATERIALS CONTINUED								
BRIDGE NO.	SURFACE PREPARATION FOR CONCRETE BARRIER RAIL	SURFACE PREPARATION FOR CONCRETE SUBSTRUCTURE	CONCRETE BRIDGE DECK CRACK SEALING	CONCRETE DECK REPAIR FOR POLYMER CONCRETE OVERLAY	PLACING & FINISHING POLYMER CONCRETE OVERLAY	SCARIFYING BRIDGE DECK	SHOTBLASTING BRIDGE DECK	OVERHANG DIAPHRAGM REMOVAL
	SQ.FT.	SQ.FT.	SQ.YDS.	SQ.YDS.	SQ.YDS.	SQ.YDS	SQ.YDS.	EACH
170091	5083.6	--	3525.1	--	--	--	3525.1	24
170139	6413.6	3745.0	--	17.6	3694.7	3694.7	3694.7	--
TOTALS	11497.2	3745.0	3525.1	17.6	3694.7	3694.7	7219.8	24

PROJECT NO. 15BPR.119
CATAWBA COUNTY
BRIDGE NO. 170091,170139

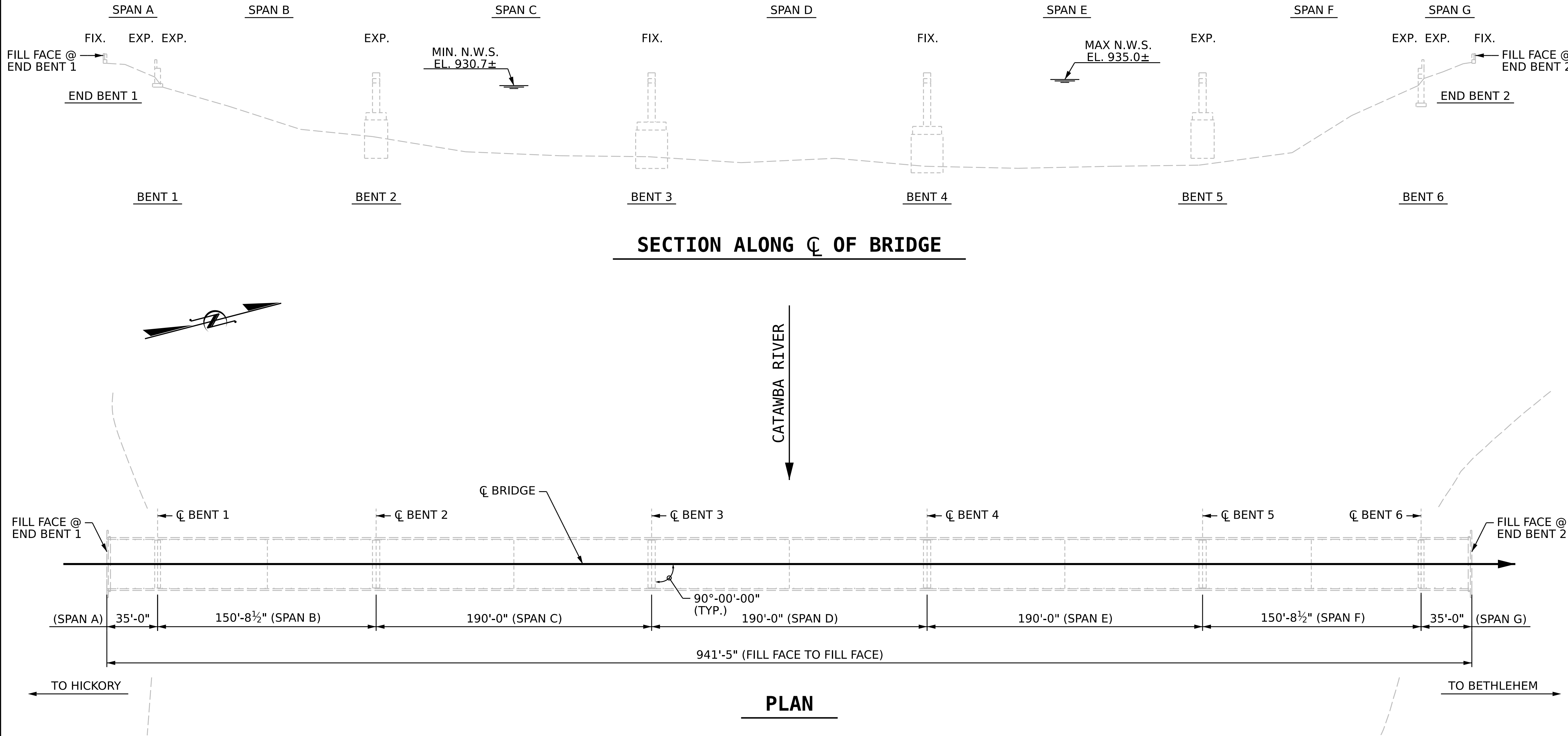


DocuSigned by:
Samuel Megahed
00E85644B74ED
07/03/2025

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S-1
TOTAL BILL OF MATERIALS						TOTAL SHEETS 78
REVISIONS						
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

DRAWN BY : HRS DATE : 12/24
CHECKED BY : A. SORSENGINH DATE : 12/24
DESIGN ENGINEER OF RECORD: S. MEGAHED DATE : 12/24



NOTES

GENERAL DRAWING INFORMATION IS TAKEN FROM THE ORIGINAL PLANS AND THE ROUTINE INSPECTION REPORT DATED 02/11/2023.

BRIDGE ORIENTATION CONFORMS TO THE EXISTING BRIDGE PLANS/ROUTINE INSPECTION.

SCOPE OF WORK

APPLY DECK SEALANT TO PREPARED TOP OF BRIDGE DECK.

REMOVE AND REPLACE EXISTING JOINTS IN KIND OR WITH APPROVED EQUIVALENT.

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

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

PROPERLY PREPARE SPALLED AREAS IN EXISTING END BENT AND BENTS AND PERFORM SHOTCRETE AND CONCRETE REPAIRS.

REPAIR AND SPOT PAINT STRUCTURAL STEEL BEAMS.

PROJECT NO. **15BPR.119**

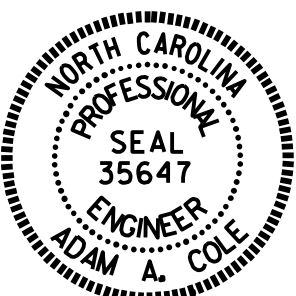
CATAWBA COUNTY

BRIDGE NO. **170091**

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON NC-127
OVER CATAWBA RIVER



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

RESIDENT ENGINEER DATE

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS	78
1			3				
2			4				

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

DRAWN BY : HRS DATE : 10/24
CHECKED BY : A. SORSENGINH DATE : 11/24
DESIGN ENGINEER OF RECORD: S. MEGAHED DATE : 12/24



BRIDGE 170091 LOCATION SKETCH

BRIDGE COORDINATES

BRIDGE No.	LATITUDE	LONGITUDE
170091	35° 48' 8.66"	-81° 18' 15.98"

BILL OF MATERIALS

BRIDGE NO. 170091	POLLUTION CONTROL	BOATER SAFETY PLAN	CONCRETE REPAIRS	SHOTCRETE REPAIRS	SPOT PAINTING OF STEEL STRUCTURE REPAIR AREAS	PAINT CONTAINMENT FOR BRIDGE #170091	FOAM JOINT SEALS FOR PRESERVATION	POURABLE SILICONE JOINT SEALANT	
	LUMP SUM	LUMP SUM	CU.FT.	CU.FT.	LUMP SUM	LUMP SUM	LN.FT.	LN.FT.	
TOTALS	LUMP SUM	LUMP SUM	2.5	245.2	LUMP SUM	LUMP SUM	148.0	170.0	
	MOLDED RUBBER SEGMENTAL EXPANSION JOINT	BEAM-REPAIR PLATING	SURFACE PREPARATION FOR CONCRETE BARRIER RAIL	SILANE BARRIER RAIL TREATMENT	EPOXY COATING	CONCRETE DECK REPAIR FOR BRIDGE DECK CRACK SEALING	CONCRETE BRIDGE DECK CRACK SEALING	SHOTBLASTING BRIDGE DECK	OVERHANG DIAPHRAGM REMOVAL
	LN.FT.	LBS.	SQ.FT.	SQ. FT.	SQ.FT.	SQ.FT.	SQ.YDS.	SQ.YDS.	EACH
TOTALS	68.0	78.3	5083.6	5083.6	826.0	3.1	3525.1	3525.1	24

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.

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 OF ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN WHAT IS SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

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

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.

PRIOR TO BEGINNING WORK, CONTRACTORS SHALL SUBMIT FOR APPROVAL ALL MATERIAL AND EQUIPMENT TO BE USED FOR THE BOATER SAFETY PLAN. ALL REQUIREMENTS FOR BOATER SAFETY PLAN SHALL BE INSTALLED AND APPROVED PRIOR TO BEGINNING WORK.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

WORK ON THE BRIDGE(S) SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL BELOW, EXCEPT WHERE THE CONTRACTOR'S PLAN USE PLATFORMS, NETS, SCREENS OR OTHER PROTECTIVE DEVICES TO CATCH THE MATERIAL. THE CONTRACTOR SHALL SUBMIT PLANS FOR CONSTRUCTION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS AND THE PROJECT SPECIAL PROVISIONS.

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.

FOR CONTROL OF TRAFFIC AND LIMITS ON PHASING OF CONSTRUCTION, SEE CONTRACT DOCUMENTS.

SHOTCRETE REPAIRS MAY BE REPLACED WITH CONCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

FOR SHOTBLASTING BRIDGE DECK, CLASS II SURFACE PREPARATION, CONCRETE DECK REPAIR, AND CONCRETE BRIDGE DECK CRACK SEALING, SEE CONCRETE BRIDGE DECK CRACK SEALING SPECIAL PROVISION.

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

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

FOR EPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.

FOR FOAM JOINT SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.

FOR MOLDED RUBBER SEGMENTAL EXPANSION JOINT, SEE SPECIAL PROVISIONS.

FOR POURABLE SILICONE JOINT SEALANT, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR POLLUTION CONTROL, SEE SPECIAL PROVISIONS.

FOR BOATER SAFETY PLAN, SEE SPECIAL PROVISIONS.

FOR OVERHANG DIAPHRAGM REMOVAL, SEE SPECIAL PROVISIONS.

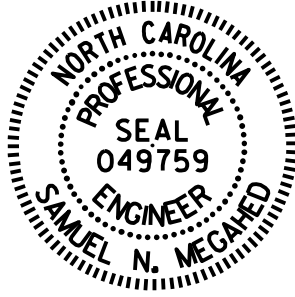
ANY DAMAGE TO EXISTING REINFORCING STEEL, DURING CONTRACTOR'S OPERATIONS, SHALL BE REPAIRED AS DIRECTED BY THE ENGINEER AND PERFORMED AT NO ADDITIONAL COST TO THE DEPARTMENT.

AT THE TIME OF PREPARATION OF THESE PLANS, IT WAS NOT ANTICIPATED THAT ITEM(S) LISTED BELOW 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 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 COST WILL BE ESTABLISHED, AS REQUIRED, IF EXTRA WORK IS ENCOUNTERED. UNANTICIPATED ITEMS:

CONCRETE WORK FOR JOINT REPLACEMENT (SQUARE FEET)

EPOXY RESIN INJECTION (LINEAR FEET)

PROJECT NO. **15BPR.119**
CATAWBA COUNTY
BRIDGE NO. **170091**



DocuSigned by:
Samuel Megahed
90E55644B474ED...
07/03/2025

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

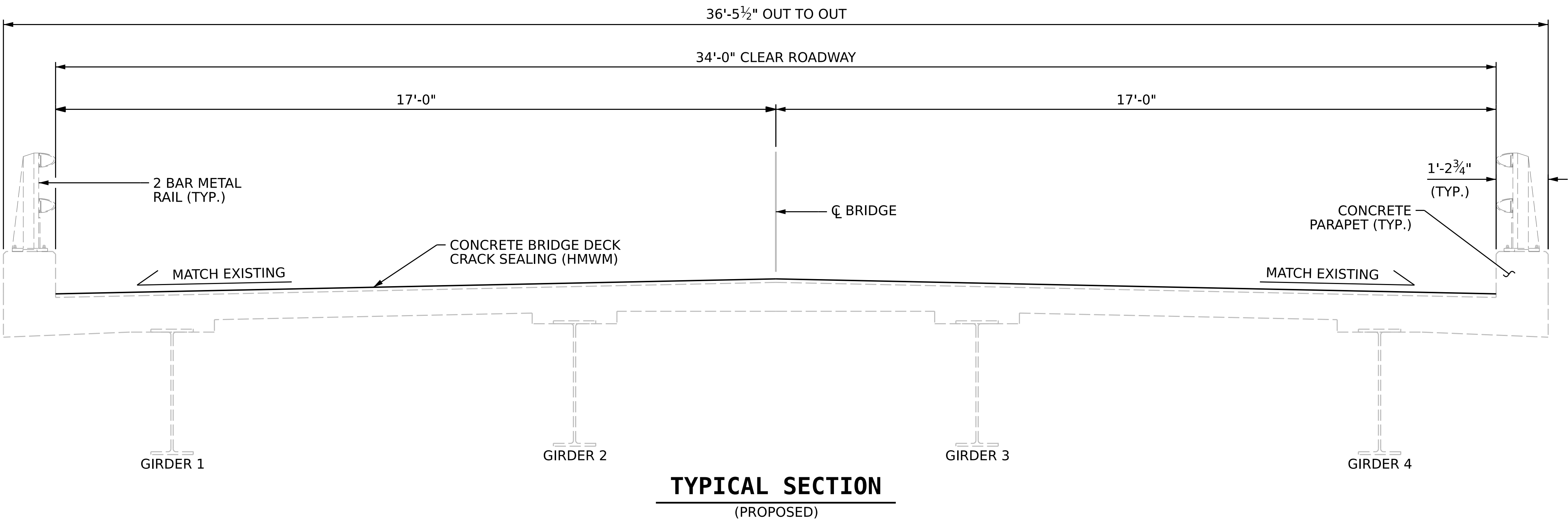
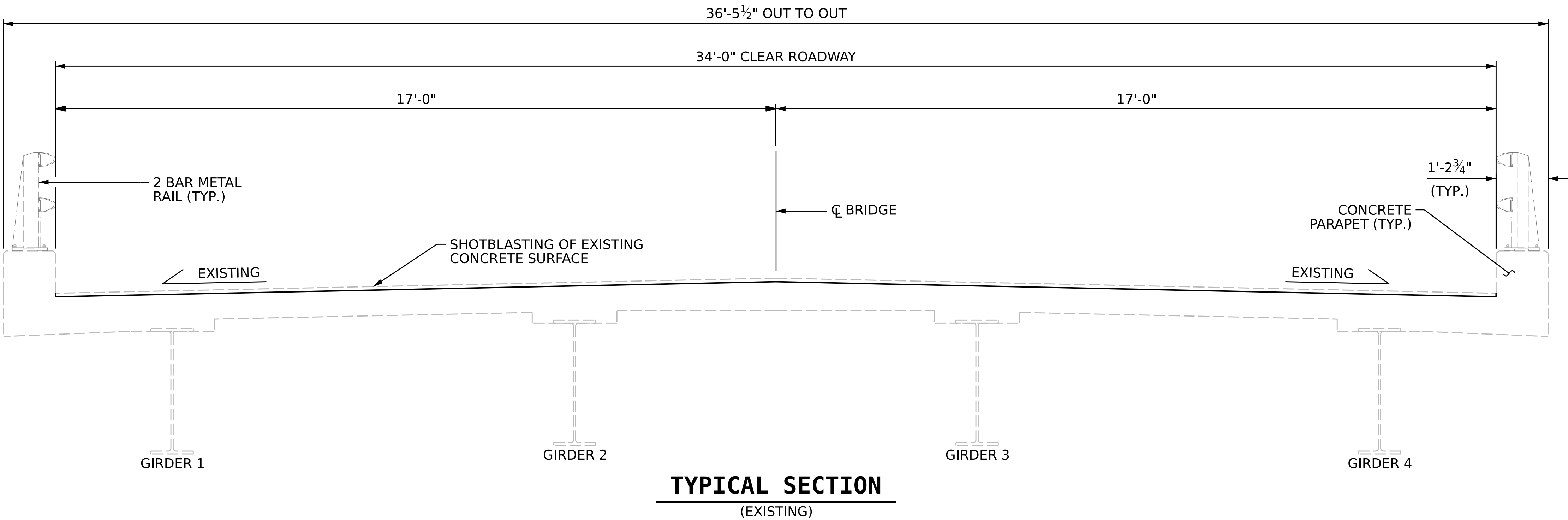
LOCATION SKETCH

DRAWN BY : HRS DATE : 11/24
CHECKED BY : A. SORSENGINH DATE : 11/24
DESIGN ENGINEER OF RECORD: S. MEGAHED DATE : 12/24

REVISIONS						SHEET NO. S1-02
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 78
2			4			

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

NOTES
FOR CONCRETE BRIDGE DECK CRACK SEALING, SEE
SPECIAL PROVISIONS.



PROJECT NO. **15BPR.119**
CATAWBA COUNTY
BRIDGE NO. **170091**

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION



DocuSigned by:
Samuel Megahed
06/27/2025 10:25:00

DRAWN BY : HRS DATE : 09/24
CHECKED BY : A. SORSENGINH DATE : 11/24
DESIGN ENGINEER OF RECORD: S. MEGAHE DATE : 12/24

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

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

SHEET NO.
S1-03
TOTAL
SHEETS
78

NOTES

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

SHOTCRETE REPAIRS MAY BE REPLACED WITH CONCRETE REPAIRS WITH APPROVAL OF THE ENGINEER.

FOR SHOTBLASTING BRIDGE DECK AND CONCRETE BRIDGE DECK CRACK SEALING, SEE CONCRETE BRIDGE DECK CRACK SEALING SPECIAL PROVISION.

FOR SECTIONS A-A, B-B, AND C-C, SEE "JOINT DETAIL SHEET".

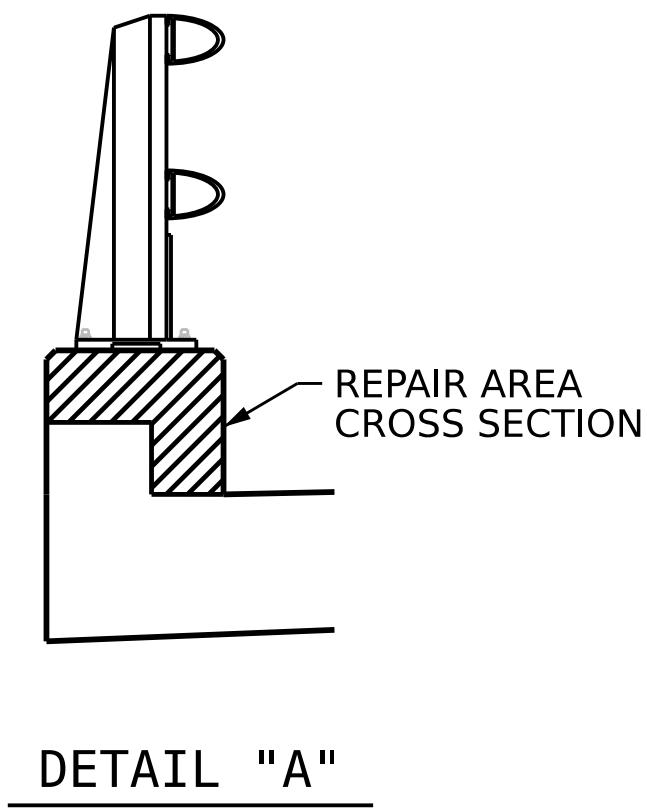
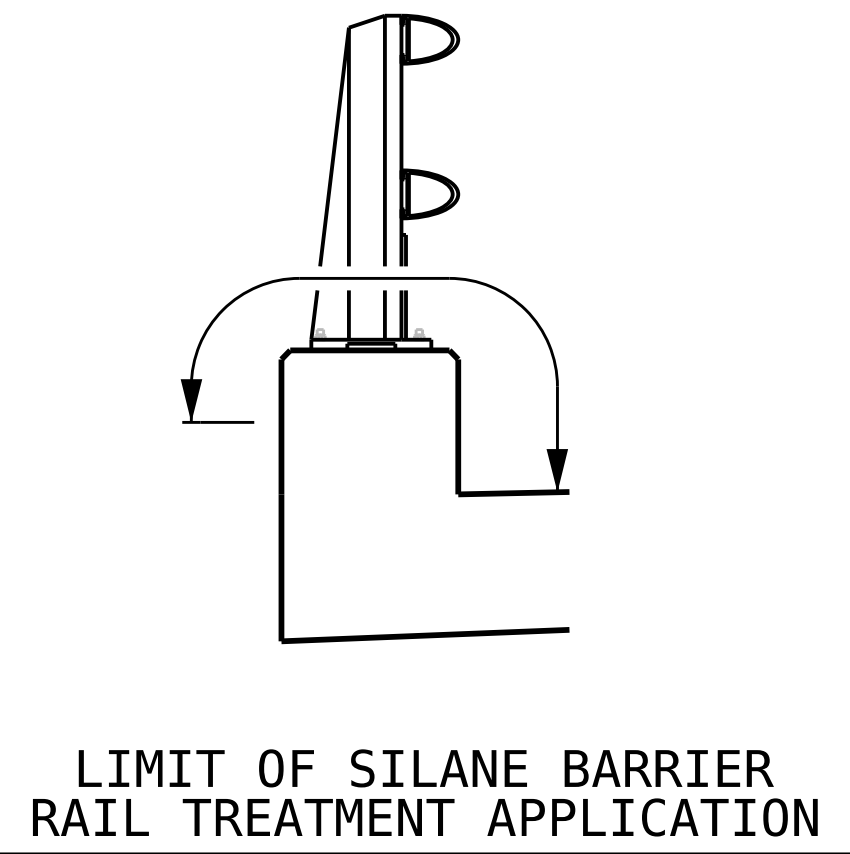
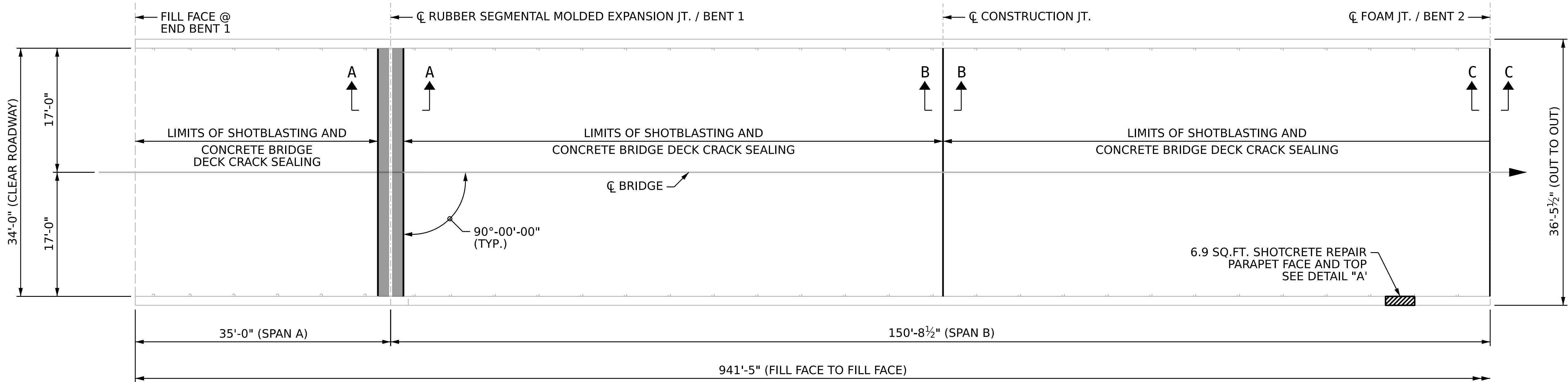
FOR CONCRETE WORK FOR JOINT REPLACEMENT, SEE SPECIAL PROVISIONS.

FOR CONCRETE DECK REPAIR FOR CONCRETE BRIDGE DECK CRACK SEALING, SEE SPECIAL PROVISION.

REVIEW AND, WHERE NECESSARY, REPAIR DECK CORE SAMPLE LOCATIONS WITH CONCRETE DECK REPAIR FOR DECK CRACK SEALING.

FOR SURFACE PREPARATION FOR CONCRETE BARRIER AND SILANE BARRIER RAIL TREATMENT, SEE SILANE BARRIER RAIL TREATMENT SPECIAL PROVISION.

AS-BUILT REPAIR QUANTITY TABLE			AS-BUILT REPAIR QUANTITY TABLE		
DECK SURFACE REPAIR - SPAN A			DECK SURFACE REPAIR - SPAN B		
	ESTIMATE	ACTUAL		ESTIMATE	ACTUAL
SHOTCRETE REPAIR	0.0 SQ.FT. / 0.0 CU.FT.		SHOTCRETE REPAIR	6.9 SQ.FT. / 3.5 CU.FT.	
SHOTBLASTING BRIDGE DECK	125.5 SQ.YDS.		SHOTBLASTING BRIDGE DECK	562.0 SQ.YDS.	
CONCRETE DECK REPAIR FOR DECK CRACK SEALING	0.0 SQ.FT.		CONCRETE DECK REPAIR FOR DECK CRACK SEALING	0.0 SQ.FT.	
CONCRETE BRIDGE DECK CRACK SEALING	125.5 SQ.YDS.		CONCRETE BRIDGE DECK CRACK SEALING	562.0 SQ.YDS.	
SURFACE PREPARATION FOR CONCRETE BARRIER	189.0 SQ.FT		SURFACE PREPARATION FOR CONCRETE BARRIER	813.8 SQ.FT	
SILANE BARRIER RAIL TREATMENT	189.0 SQ.FT.		SILANE BARRIER RAIL TREATMENT	813.8 SQ.FT.	



SPANS A & B



SHOTCRETE REPAIR AREA



CONCRETE DECK REPAIR

PROJECT NO. **15BPR.119**

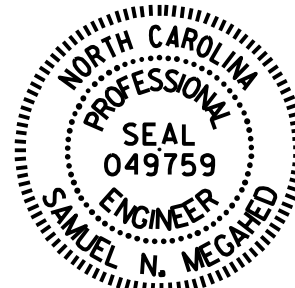
CATAWBA COUNTY

BRIDGE NO. **170091**

SHEET 1 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**DECK SURFACE REPAIR
SPANS A & B**



DocuSigned by:
Samuel Megahed
06/17/2025

DRAWN BY : HRS DATE : 10/24
CHECKED BY : A. SORSENGINH DATE : 11/24
DESIGN ENGINEER OF RECORD: S. MEGAHED DATE : 12/24

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

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

TOTAL
SHEETS
78

NOTES

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

SHOTCRETE REPAIRS MAY BE REPLACED WITH CONCRETE REPAIRS WITH APPROVAL OF THE ENGINEER.

FOR SHOTBLASTING BRIDGE DECK AND CONCRETE BRIDGE DECK CRACK SEALING, SEE CONCRETE BRIDGE DECK CRACK SEALING SPECIAL PROVISION.

FOR SECTIONS B-B AND C-C, SEE "JOINT DETAIL SHEET".

FOR CONCRETE WORK FOR JOINT REPLACEMENT, SEE SPECIAL PROVISIONS.

FOR CONCRETE DECK REPAIR FOR DECK CRACK SEALING TREATMENT, SEE SPECIAL PROVISION.

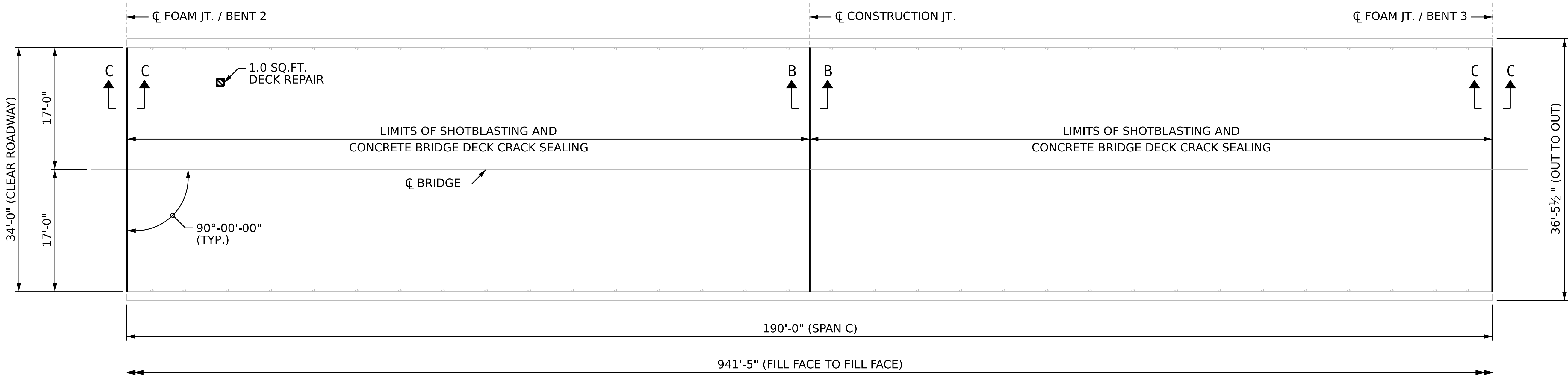
REVIEW AND, WHERE NECESSARY, REPAIR DECK CORE SAMPLE LOCATIONS WITH CONCRETE DECK REPAIR FOR DECK CRACK SEALING.

FOR SURFACE PREPARATION FOR CONCRETE BARRIER AND SILANE BARRIER RAIL TREATMENT, SEE SILANE BARRIER RAIL TREATMENT SPECIAL PROVISION.

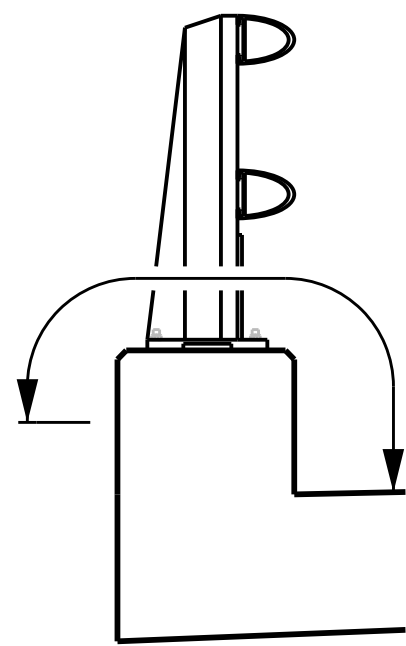
DECK SURFACE REPAIR QUANTITIES REPRESENT ESTIMATED VALUES OF CLASS II SURFACE PREPARATION AND CONCRETE DECK REPAIR FOR DECK CRACK SEALING AFTER REMOVAL OF UNSOUND CONCRETE (MIN. 2" CLEAR TO SAWCUT). SEE CONCRETE FOR DECK CRACK SEALING SPECIAL PROVISION.

AS-BUILT REPAIR QUANTITY TABLE

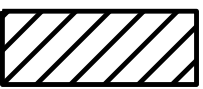
DECK SURFACE REPAIR - SPAN C		
	ESTIMATE	ACTUAL
SHOTCRETE REPAIR	0.0 SQ.FT. / 0.0 CU.FT.	
SHOTBLASTING BRIDGE DECK	716.7 SQ.YDS.	
CONCRETE DECK REPAIR FOR DECK CRACK SEALING	1.0 SQ.FT.	
CONCRETE BRIDGE DECK CRACK SEALING	716.7 SQ.YDS.	
SURFACE PREPARATION FOR CONCRETE BARRIER	1026.0 SQ.FT	
SILANE BARRIER RAIL TREATMENT	1026.0 SQ.FT.	



SPAN C



LIMIT OF SILANE BARRIER RAIL TREATMENT APPLICATION



SHOTCRETE REPAIR AREA



CONCRETE DECK REPAIR

PROJECT NO. 15BPR.119

CATAWBA COUNTY

BRIDGE NO. 170091

SHEET 2 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK SURFACE REPAIR
SPAN C



DocuSigned by:
Samuel Megahed
06/17/2025

DRAWN BY : HRS	DATE : 10/24
CHECKED BY : A. SORSENGINH	DATE : 11/24
DESIGN ENGINEER OF RECORD: S. MEGAHED	DATE : 12/24

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

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

SHEET NO. S1-05
TOTAL SHEETS 78

NOTES

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

SHOTCRETE REPAIRS MAY BE REPLACED WITH CONCRETE REPAIRS WITH APPROVAL OF THE ENGINEER.

FOR SHOTBLASTING BRIDGE DECK AND CONCRETE BRIDGE DECK CRACK SEALING, SEE CONCRETE BRIDGE DECK CRACK SEALING SPECIAL PROVISION.

FOR SECTIONS B-B AND C-C, SEE "JOINT DETAIL SHEET".

FOR CONCRETE WORK FOR JOINT REPLACEMENT, SEE SPECIAL PROVISIONS.

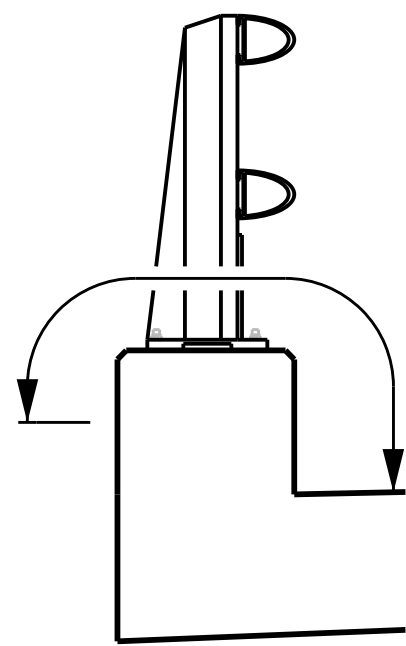
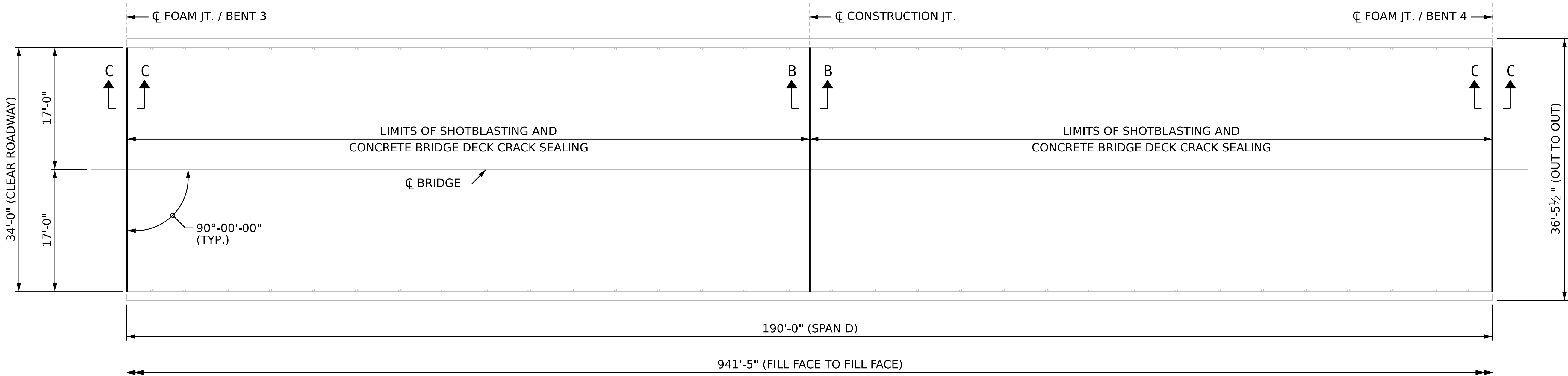
FOR CONCRETE DECK REPAIR FOR DECK CRACK SEALING TREATMENT, SEE SPECIAL PROVISION.

REVIEW AND, WHERE NECESSARY, REPAIR DECK CORE SAMPLE LOCATIONS WITH CONCRETE DECK REPAIR FOR DECK CRACK SEALING.

FOR SURFACE PREPARATION FOR CONCRETE BARRIER AND SILANE BARRIER RAIL TREATMENT, SEE SILANE BARRIER RAIL TREATMENT SPECIAL PROVISION.

AS-BUILT REPAIR QUANTITY TABLE

DECK SURFACE REPAIR - SPAN D		
	ESTIMATE	ACTUAL
SHOTCRETE REPAIR	0.0 SQ.FT. / 0.0 CU.FT.	
SHOTBLASTING BRIDGE DECK	716.7 SQ.FT.	
CONCRETE DECK REPAIR FOR DECK CRACK SEALING	0.0 SQ.YDS.	
CONCRETE BRIDGE DECK CRACK SEALING	716.7 SQ.YDS.	
SURFACE PREPARATION FOR CONCRETE BARRIER	1026.0 SQ.FT	
SILANE BARRIER RAIL TREATMENT	1026.0 SQ.FT.	



LIMIT OF SILANE BARRIER RAIL TREATMENT APPLICATION

SPAN D



SHOTCRETE REPAIR AREA



CONCRETE DECK REPAIR

PROJECT NO. 15BPR.119

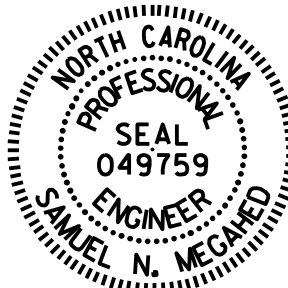
CATAWBA COUNTY

BRIDGE NO. 170091

SHEET 3 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK SURFACE REPAIR
SPAN D



Signed by:
Samuel Megahed
06/17/2025

DRAWN BY : HRS DATE : 10/24
CHECKED BY : A. SORSENGINH DATE : 11/24
DESIGN ENGINEER OF RECORD: S. MEGAHED DATE : 12/24

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

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

SHEET NO.
S1-06
TOTAL
SHEETS
78

AS-BUILT REPAIR QUANTITY TABLE		
DECK SURFACE REPAIR - SPAN E		
	ESTIMATE	ACTUAL
SHOTCRETE REPAIR	0.0 SQ.FT. / 0.0 CU.FT.	
SHOTBLASTING BRIDGE DECK	716.7 SQ.YDS.	
CONCRETE DECK REPAIR FOR DECK CRACK SEALING	2.1 SQ.FT.	
CONCRETE BRIDGE DECK CRACK SEALING	716.7 SQ.YDS.	
SURFACE PREPARATION FOR CONCRETE BARRIER	1026.0 SQ.FT	
SILANE BARRIER RAIL TREATMENT	1026.0 SQ.FT.	

NOTES

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

SHOTCRETE REPAIRS MAY BE REPLACED WITH CONCRETE REPAIRS WITH APPROVAL OF THE ENGINEER.

FOR SHOTBLASTING BRIDGE DECK AND CONCRETE BRIDGE DECK CRACK SEALING, SEE CONCRETE BRIDGE DECK CRACK SEALING SPECIAL PROVISION.

FOR SECTIONS B-B AND C-C, SEE "JOINT DETAIL SHEET".

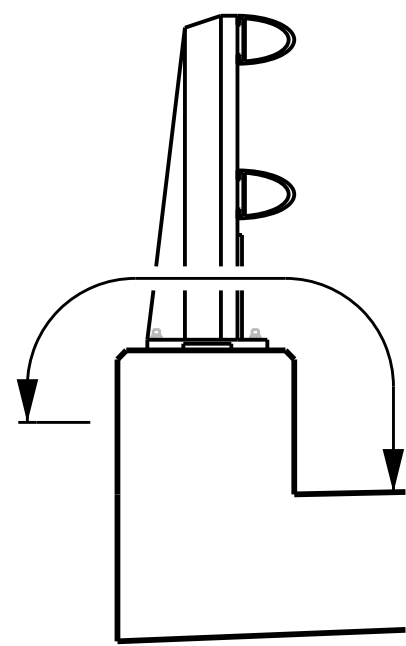
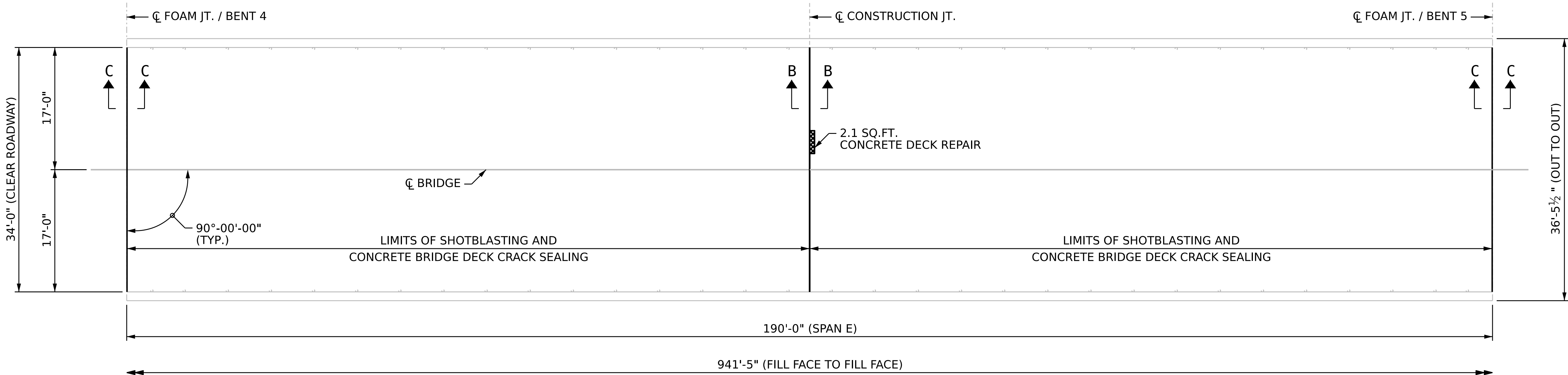
FOR CONCRETE WORK FOR JOINT REPLACEMENT, SEE SPECIAL PROVISIONS.

FOR CONCRETE DECK REPAIR FOR DECK CRACK SEALING TREATMENT, SEE SPECIAL PROVISION.

REVIEW AND, WHERE NECESSARY, REPAIR DECK CORE SAMPLE LOCATIONS WITH CONCRETE DECK REPAIR FOR DECK CRACK SEALING.

FOR SURFACE PREPARATION FOR CONCRETE BARRIER AND SILANE BARRIER RAIL TREATMENT, SEE SILANE BARRIER RAIL TREATMENT SPECIAL PROVISION.

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



LIMIT OF SILANE BARRIER RAIL TREATMENT APPLICATION

SPAN E



SHOTCRETE REPAIR AREA



CONCRETE DECK REPAIR

PROJECT NO. **15BPR.119**

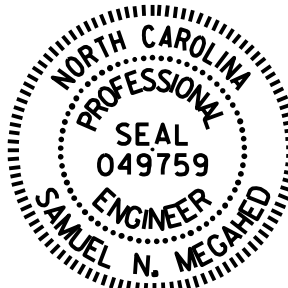
CATAWBA COUNTY

BRIDGE NO. **170091**

SHEET 4 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK SURFACE REPAIR
SPAN E



DocuSigned by:
Samuel Megahed
06/17/2025

DRAWN BY : HRS DATE : 10/24
CHECKED BY : A. SORSENGINH DATE : 11/24
DESIGN ENGINEER OF RECORD: S. MEGAHED DATE : 12/24

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

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

SHEET NO.
S1-07
TOTAL
SHEETS
78

NOTES

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

SHOTCRETE REPAIRS MAY BE REPLACED WITH CONCRETE REPAIRS WITH APPROVAL OF THE ENGINEER.

FOR SHOTBLASTING BRIDGE DECK AND CONCRETE BRIDGE DECK CRACK SEALING, SEE CONCRETE BRIDGE DECK CRACK SEALING SPECIAL PROVISION.

FOR SECTIONS A-A, B-B, AND C-C, SEE "JOINT DETAIL SHEET".

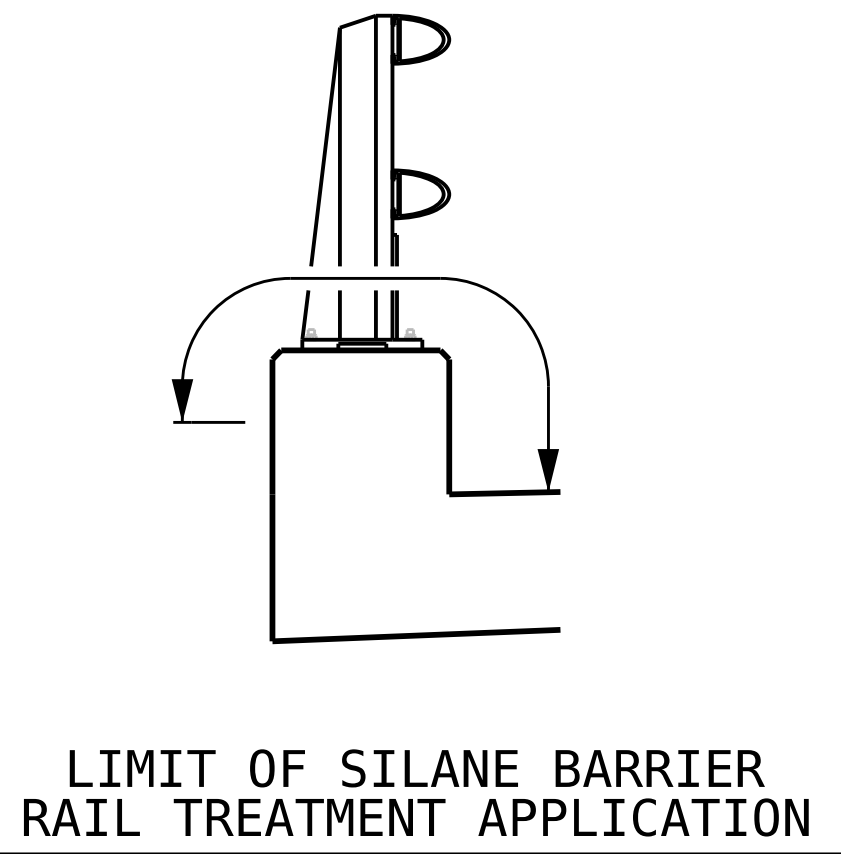
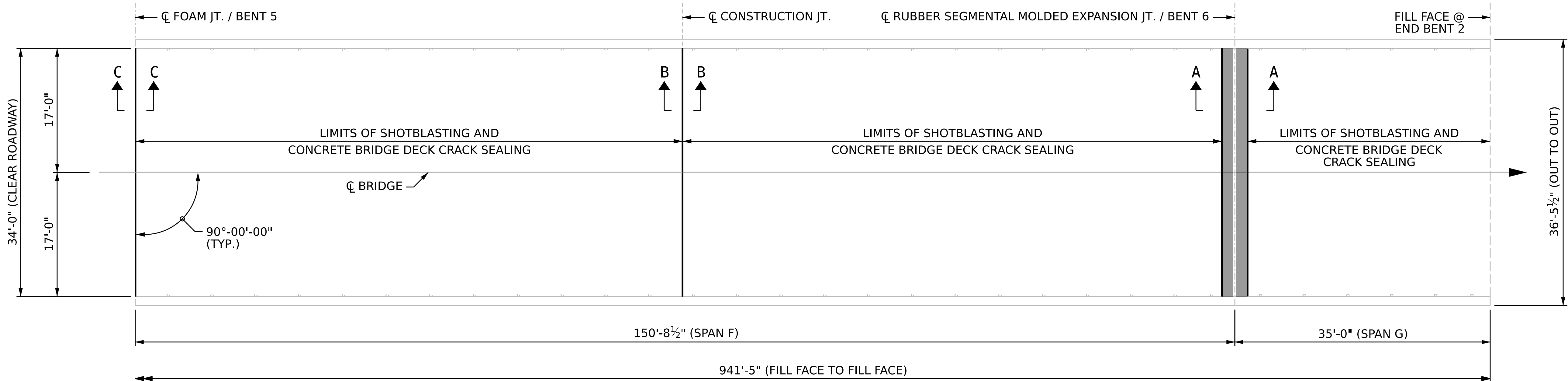
FOR CONCRETE WORK FOR JOINT REPLACEMENT, SEE SPECIAL PROVISIONS.

FOR CONCRETE DECK REPAIR FOR DECK CRACK SEALING TREATMENT, SEE SPECIAL PROVISION.

REVIEW AND, WHERE NECESSARY, REPAIR DECK CORE SAMPLE LOCATIONS WITH CONCRETE DECK REPAIR FOR DECK CRACK SEALING.

FOR SURFACE PREPARATION FOR CONCRETE BARRIER AND SILANE BARRIER RAIL TREATMENT, SEE SILANE BARRIER RAIL TREATMENT SPECIAL PROVISION.

AS-BUILT REPAIR QUANTITY TABLE			AS-BUILT REPAIR QUANTITY TABLE		
DECK SURFACE REPAIR - SPAN F			DECK SURFACE REPAIR - SPAN G		
	ESTIMATE	ACTUAL		ESTIMATE	ACTUAL
SHOTCRETE REPAIR	0.0 SQ.FT. / 0.0 CU.FT.		SHOTCRETE REPAIR	0.0 SQ.FT. / 0.0 CU.FT.	
SHOTBLASTING BRIDGE DECK	562.0 SQ.YDS.		SHOTBLASTING BRIDGE DECK	125.5 SQ.YDS.	
CONCRETE DECK REPAIR FOR DECK CRACK SEALING	0.0 SQ.FT.		CONCRETE DECK REPAIR FOR DECK CRACK SEALING	0.0 SQ.FT.	
CONCRETE BRIDGE DECK CRACK SEALING	562.0 SQ.YDS.		CONCRETE BRIDGE DECK CRACK SEALING	125.5 SQ.YDS.	
SURFACE PREPARATION FOR CONCRETE BARRIER	813.8 SQ.FT		SURFACE PREPARATION FOR CONCRETE BARRIER	189.0 SQ.FT	
SILANE BARRIER RAIL TREATMENT	813.8 SQ.FT.		SILANE BARRIER RAIL TREATMENT	189.0 SQ.FT.	



SPANS F & G

- SHOTCRETE REPAIR AREA
- CONCRETE DECK REPAIR

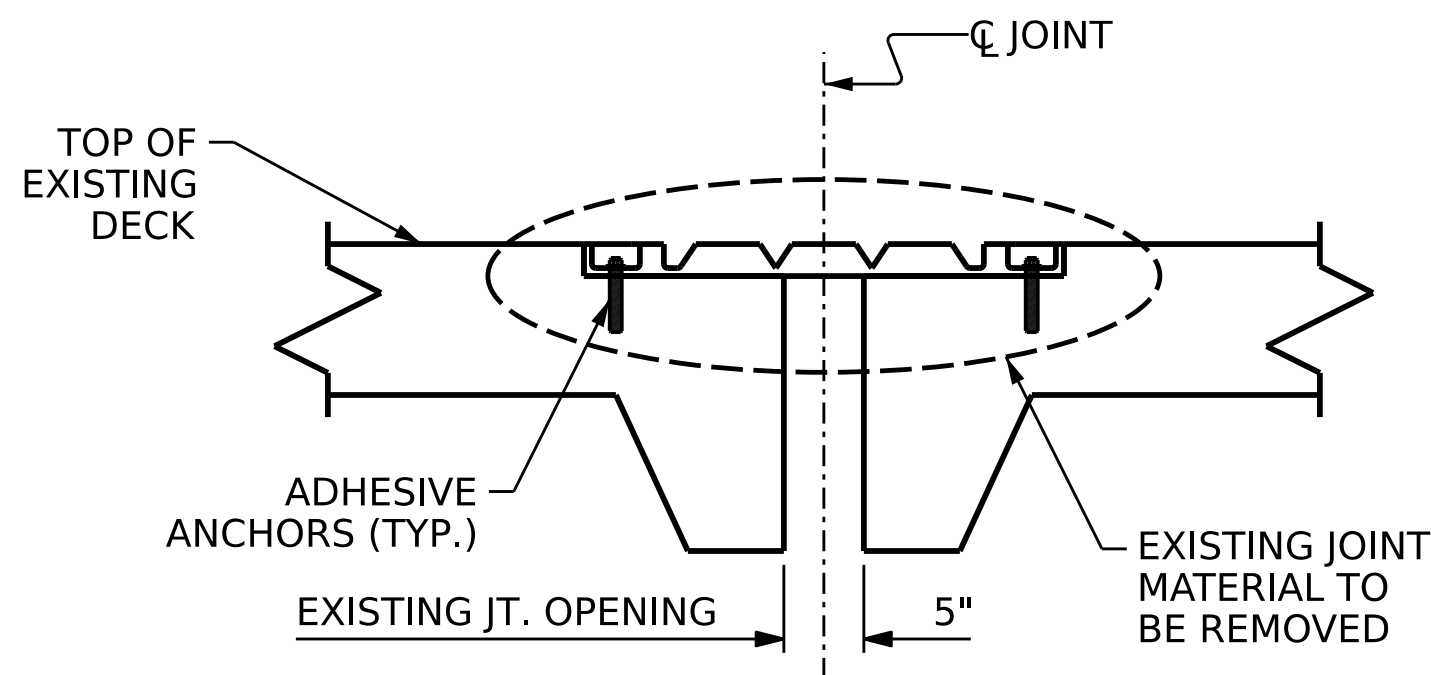
PROJECT NO. **15BPR.119**
COUNTY **CATAWBA**
BRIDGE NO. **170091**

SHEET 5 OF 5
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

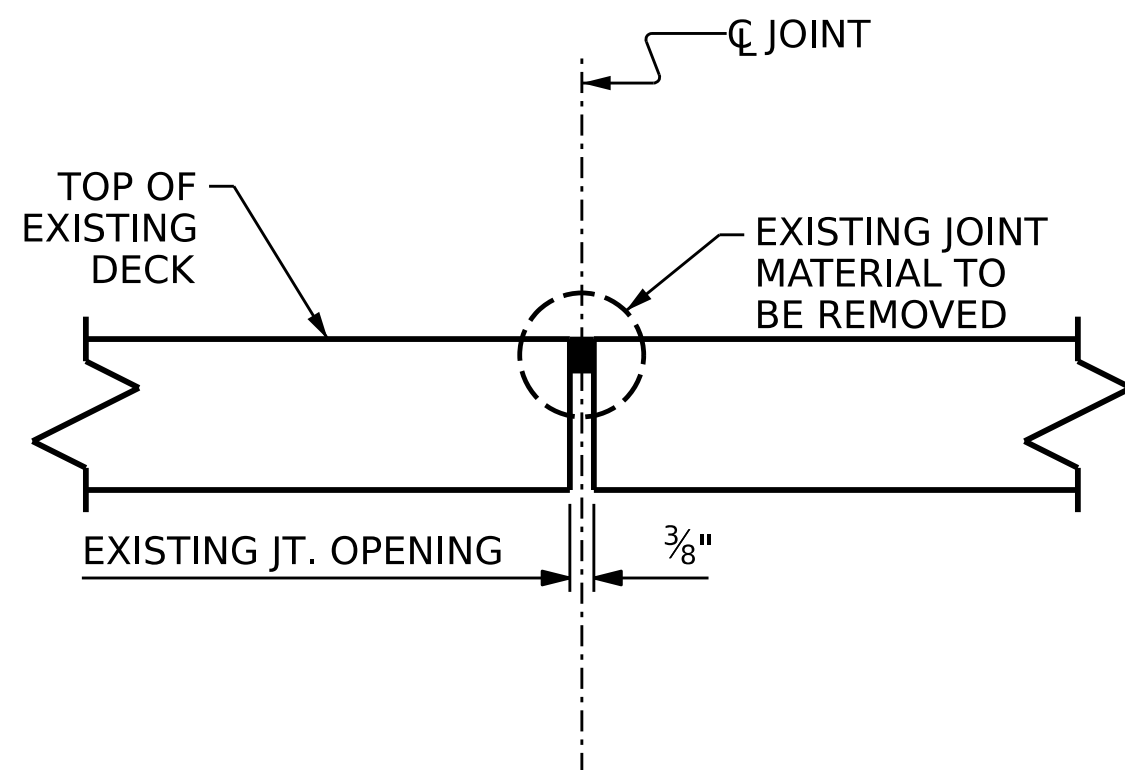
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			78
2			4			

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

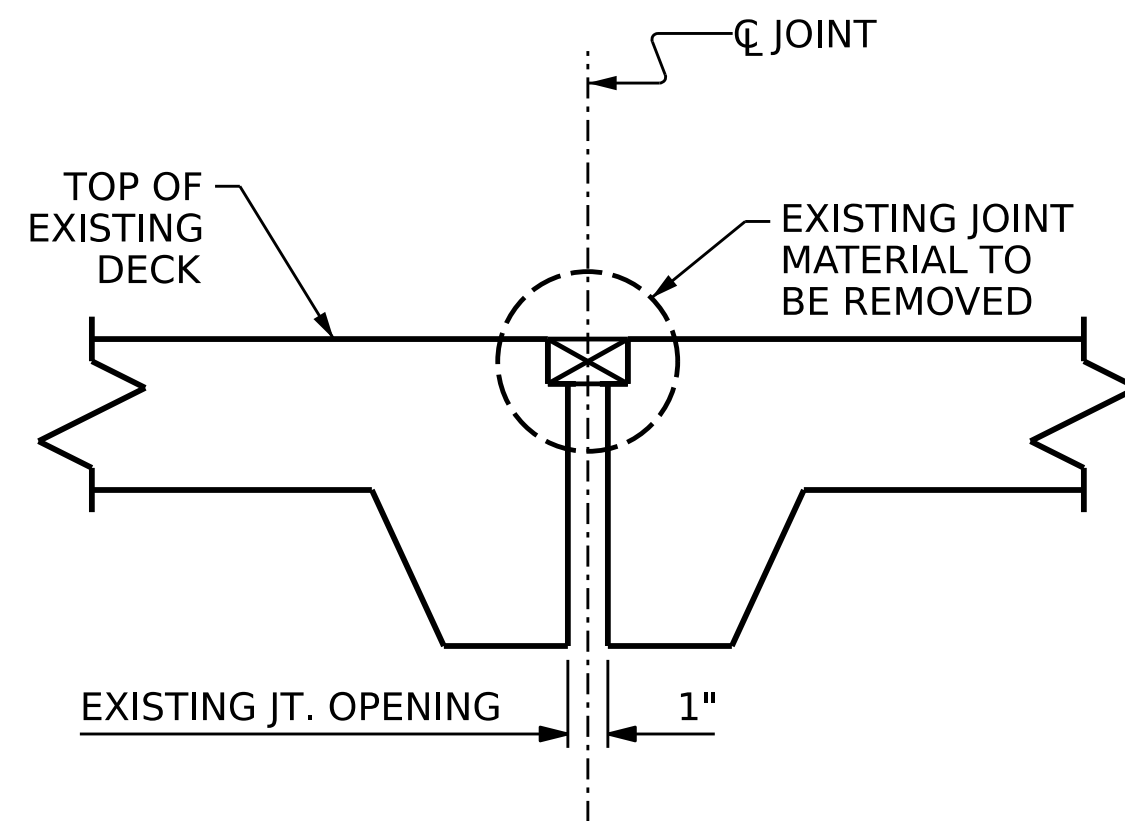
DRAWN BY : **HRS** DATE : **10/24**
CHECKED BY : **A. SORSENGINH** DATE : **11/24**
DESIGN ENGINEER OF RECORD: **S. MEGAHED** DATE : **12/24**



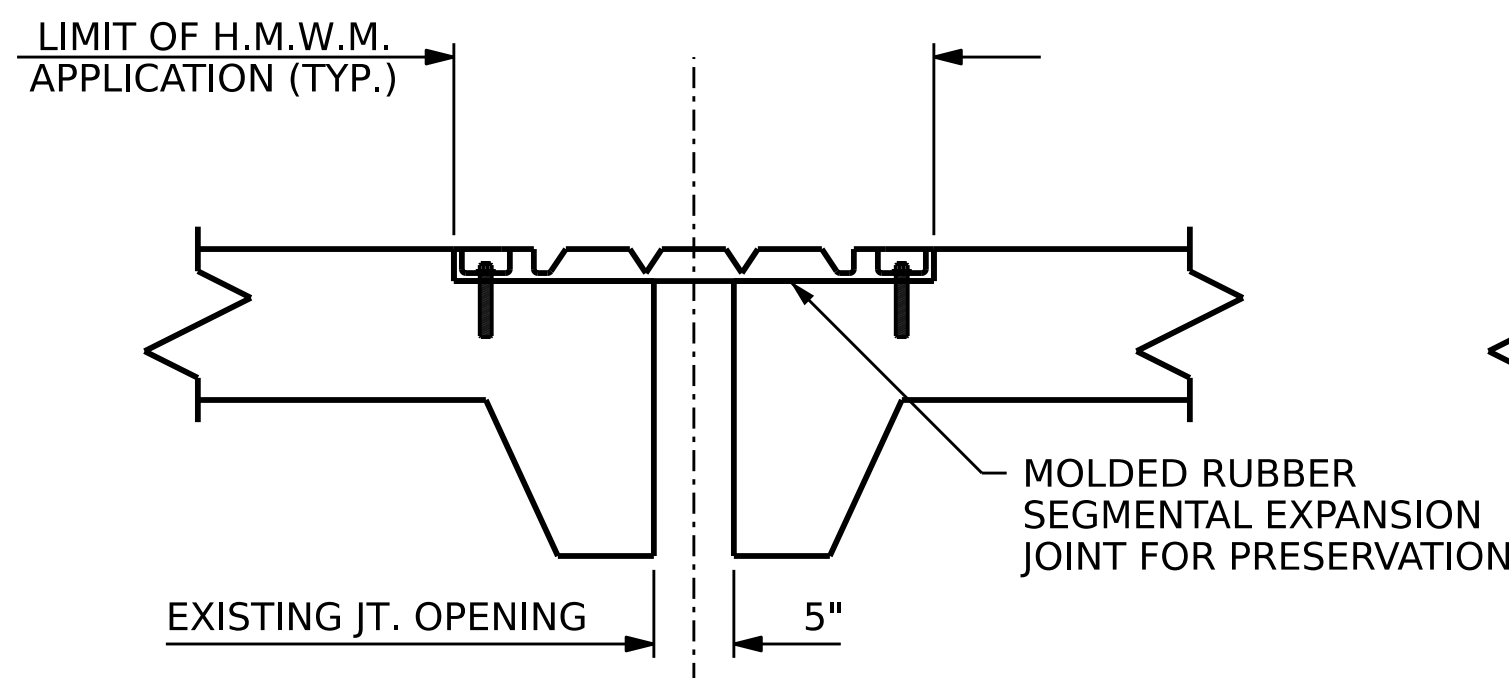
SECTION A-A
EXISTING JOINT REMOVAL



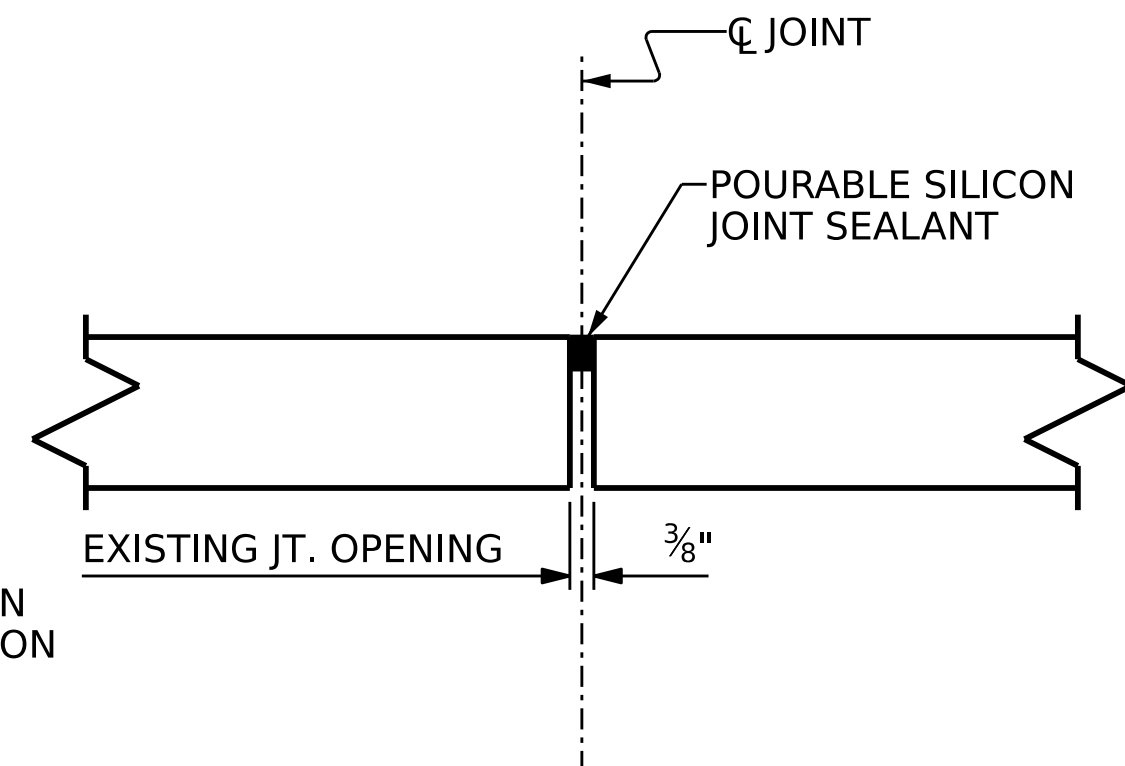
SECTION B-B
EXISTING JOINT REMOVAL



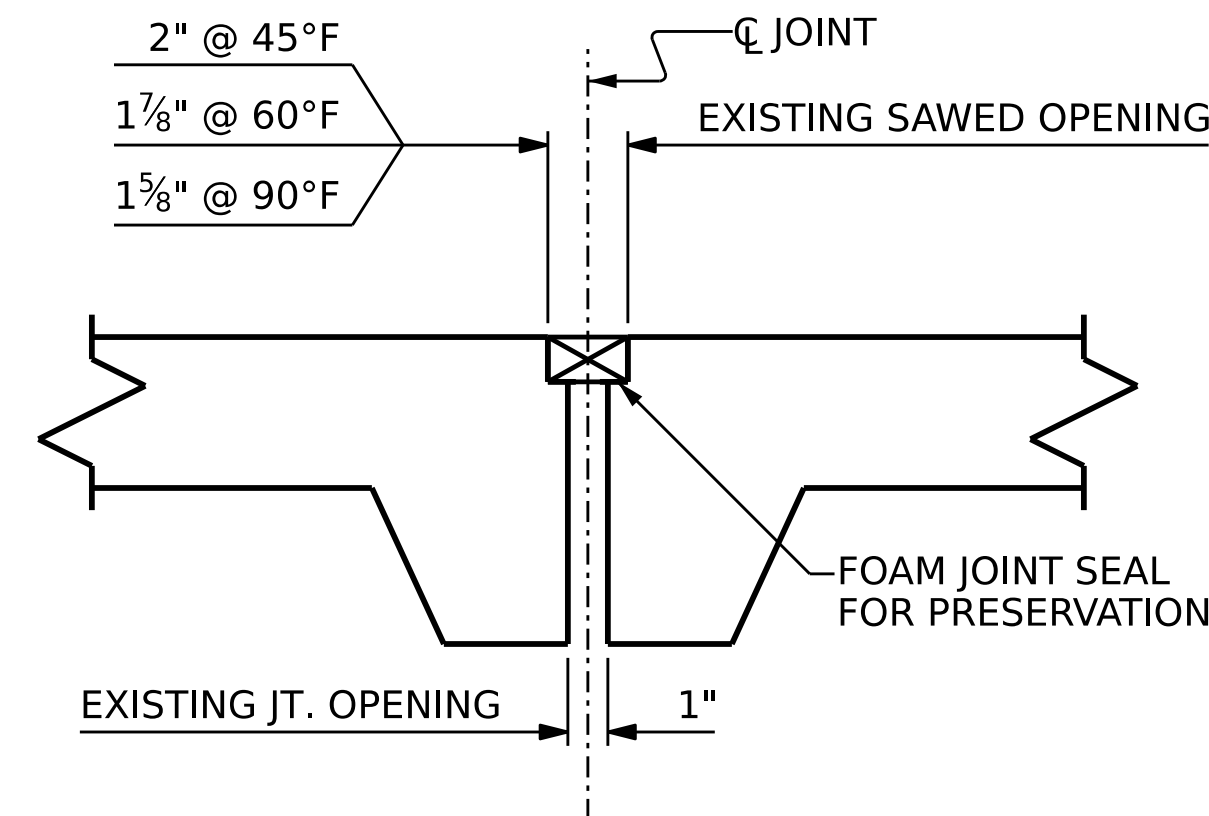
SECTION C-C
EXISTING JOINT REMOVAL



SECTION A-A
PROPOSED MOLDED RUBBER
SEGMENTAL EXPANSION
JOINT REPLACEMENT



SECTION B-B
PROPOSED SILICON
JOINT REPLACEMENT



SECTION C-C
PROPOSED FOAM
JOINT REPLACEMENT

MOLDED RUBBER SEGMENTAL EXPANSION JOINT QUANTITY TABLE		
	ESTIMATE	ACTUAL
BENT 1	34.0 L.F.	
BENT 6	34.0 L.F.	
TOTAL	68.0 L.F.	

POURABLE SILICONE JOINT SEALANT QUANTITY TABLE		
	ESTIMATE	ACTUAL
SPAN B	34.0 L.F.	
SPAN C	34.0 L.F.	
SPAN D	34.0 L.F.	
SPAN E	34.0 L.F.	
SPAN F	34.0 L.F.	
TOTAL	170.0 L.F.	

FOAM JOINT SEAL FOR PRESERVATION QUANTITY TABLE		
	ESTIMATE	ACTUAL
BENT 2	37.0 L.F.	
BENT 3	37.0 L.F.	
BENT 4	37.0 L.F.	
BENT 5	37.0 L.F.	
TOTAL	148.0 L.F.	

NOTES

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

FINAL JOINT SEALS SHALL NOT BE INSTALLED UNTIL THE DECK TREATMENT IS COMPLETE.

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 INSTALLATION OF THE JOINT SEAL SHALL BE WATERTIGHT.

FOR FOAM JOINT SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.

FOAM JOINT SEALS FOR PRESERVATION SHALL BE INSTALLED AS PER THE MANUFACTURER'S RECOMMENDATIONS.

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 THAT ACCOMMODATE THE MINIMUM EXPANSION SHOWN ON THE PLANS.

FOR MOLDED RUBBER SEGMENTAL EXPANSION JOINTS FOR PRESERVATION, SEE SPECIAL PROVISIONS.

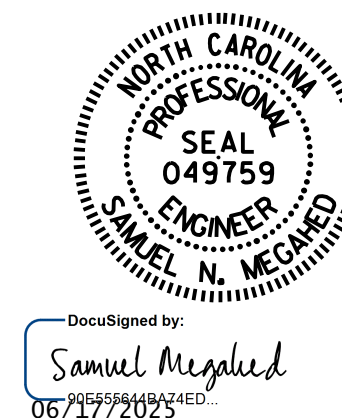
MOLDED RUBBER SEGMENTAL EXPANSION JOINTS SHALL BE INSTALLED AS PER THE MANUFACTURER'S RECOMMENDATIONS.

FOR POURABLE SILICONE JOINT SEALANT, SEE SPECIAL PROVISION.

DURING THE JOINT INSTALLATION PROCEDURE, THE JOINT AND SURROUNDING AREA SHALL BE KEPT CLEAN AND FREE OF DEBRIS.

THE CONTRACTOR SHALL TAKE CARE DURING JOINT REHAB OPERATIONS NOT TO DROP ANY MATERIAL BELOW THE BRIDGE WITHOUT PROTECTIVE 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.

PROJECT NO. **15BPR.119**
CATAWBA COUNTY
 BRIDGE NO. **170091**



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

JOINT DETAILS

DRAWN BY : HRS DATE : 10/24
 CHECKED BY : A. SORSENGINH DATE : 11/24
 DESIGN ENGINEER OF RECORD: S. MEGAHED DATE : 12/24

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO. S2-09
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 78
2			4			

NOTES

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

CONTRACTOR SHALL SAWCUT TO A NOMINAL DEPTH OF ½" BUT REINFORCING STEEL SHALL NOT BE DAMAGED.

OVERHANG DIAPHRAGM REMOVAL SHALL BE PERFORMED PRIOR TO SPOT PAINTING OF STEEL STRUCTURE REPAIR AREAS. AT THE LOCATIONS FOR OVERHANG DIAPHRAGM REMOVAL, THE REMAINING EXPOSED AREA OF THE STEEL BEAMS OR GIRDERS SHALL BE PREPARED AND PAINTED IN ACCORDANCE WITH SPOT PAINTING OF STEEL STRUCTURE REPAIR AREAS.

SHOTCRETE REPAIRS MAY BE REPLACED WITH CONCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

FOR SPOT PAINTING OF STEEL STRUCTURE REPAIR AREAS, SPECIAL PROVISIONS

FOR BEAM AND STIFFENER REPAIR, SEE "BEAM PLATING REPAIR DETAILS" SHEET.

FOR BEAM REPAIR - PLATING, SEE SPECIAL PROVISIONS.

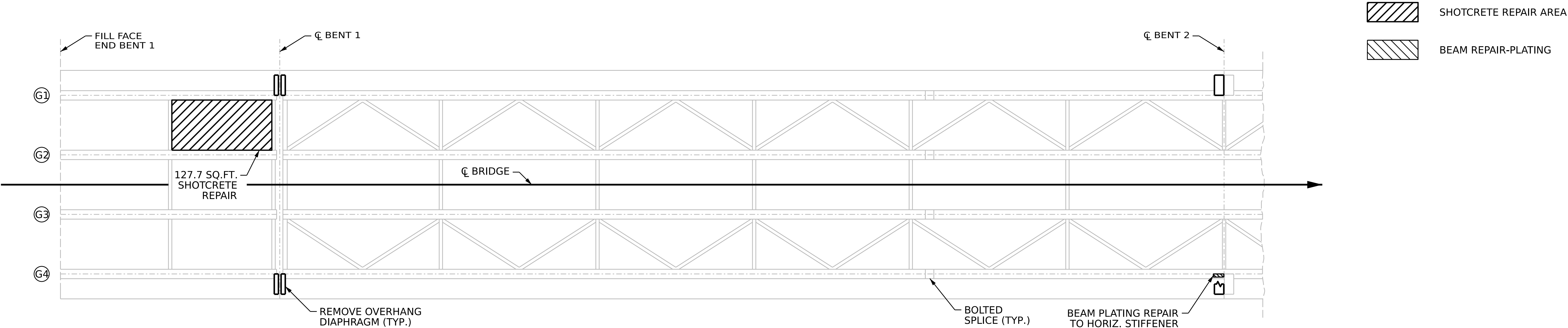
FOR SHOTCRETE REPAIR, SEE SPECIAL PROVISIONS.

FOR OVERHANG DIAPHRAGM REMOVAL, SEE SPECIAL PROVISIONS.

ESTIMATED BEAM REPAIR MEASUREMENTS						
SPAN	BEAM	LOCATION	LENGTH	WIDTH	REPAIR PLATE THICKNESS	NUMBER OF PLATES
B	4	BENT 2	20"	6"	¼"	1

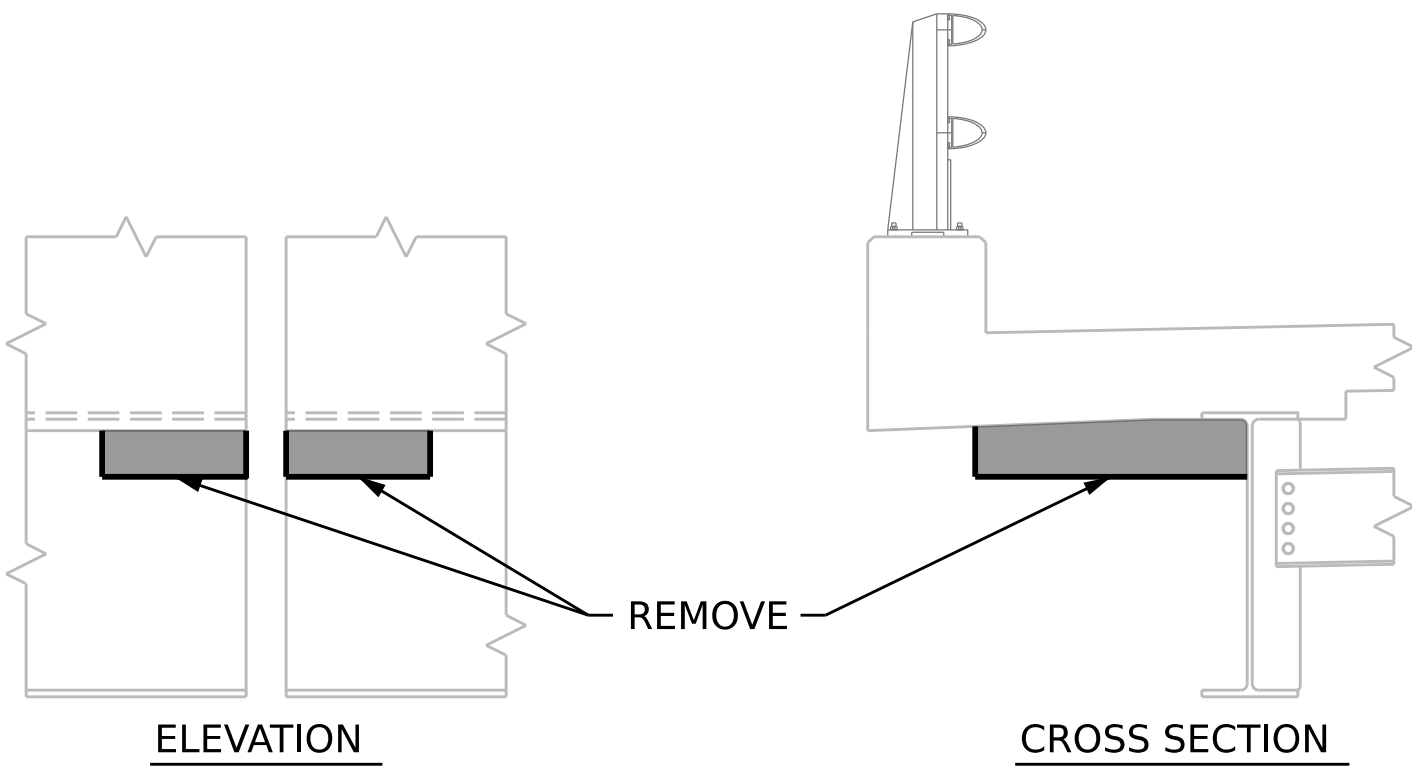
AS-BUILT REPAIR QUANTITY TABLE				
DECK UNDERSIDE REPAIR - SPANS A & B				
SHOTCRETE REPAIRS	ESTIMATE		ACTUAL	
	AREA (SQ.FT.)	VOLUME (CU.FT.)	AREA (SQ.FT.)	VOLUME (CU.FT.)
UNDERSIDE OF DECK	127.7	63.9		
DIAPHRAGMS	0.0	0.0		
OVERHANG	0.0	0.0		
BEAM REPAIR-PLATING		LBS.		LBS.
GIRDER				
STIFFENER		8.5		
DIAPHRAGM				
OVERHANG DIAPHRAGM REMOVAL		EA.		EA.
DIAPHRAGMS		6		

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



SPAN A

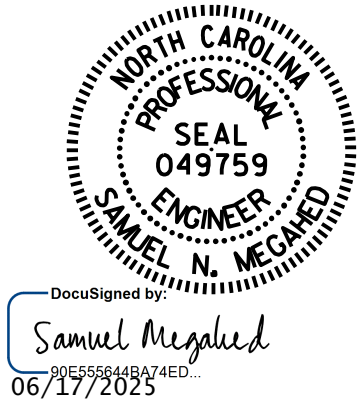
SPAN B



OVERHANG DIAPHRAGM REMOVAL DETAILS

PROJECT NO. **15BPR.119**
CATAWBA COUNTY
BRIDGE NO. **170091**

SHEET 1 OF 5



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK UNDERSIDE REPAIR
SPANS A & B

REVISIONS					SHEET NO. S1-10
NO.	BY:	DATE:	NO.	BY:	
1			3		TOTAL SHEETS 78
2			4		

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

DRAWN BY :	HRS	DATE :	11/24
CHECKED BY :	A. SORSENGINH	DATE :	11/24
DESIGN ENGINEER OF RECORD:	S. MEGAHED	DATE :	12/24

NOTES

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

CONTRACTOR SHALL SAWCUT TO A NOMINAL DEPTH OF ½" BUT REINFORCING STEEL SHALL NOT BE DAMAGED.

OVERHANG DIAPHRAGM REMOVAL SHALL BE PERFORMED PRIOR TO SPOT PAINTING OF STEEL STRUCTURE REPAIR AREAS. AT THE LOCATIONS FOR OVERHANG DIAPHRAGM REMOVAL, THE REMAINING EXPOSED AREA OF THE STEEL BEAMS OR GIRDERS SHALL BE PREPARED AND PAINTED IN ACCORDANCE WITH SPOT PAINTING OF STEEL STRUCTURE REPAIR AREAS.

SHOTCRETE REPAIRS MAY BE REPLACED WITH CONCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

FOR SPOT PAINTING OF STEEL STRUCTURE REPAIR AREAS, SPECIAL PROVISIONS

FOR BEAM AND STIFFENER REPAIR, SEE "BEAM PLATING REPAIR DETAILS" SHEET.

FOR BEAM REPAIR - PLATING, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIR, SEE SPECIAL PROVISIONS.

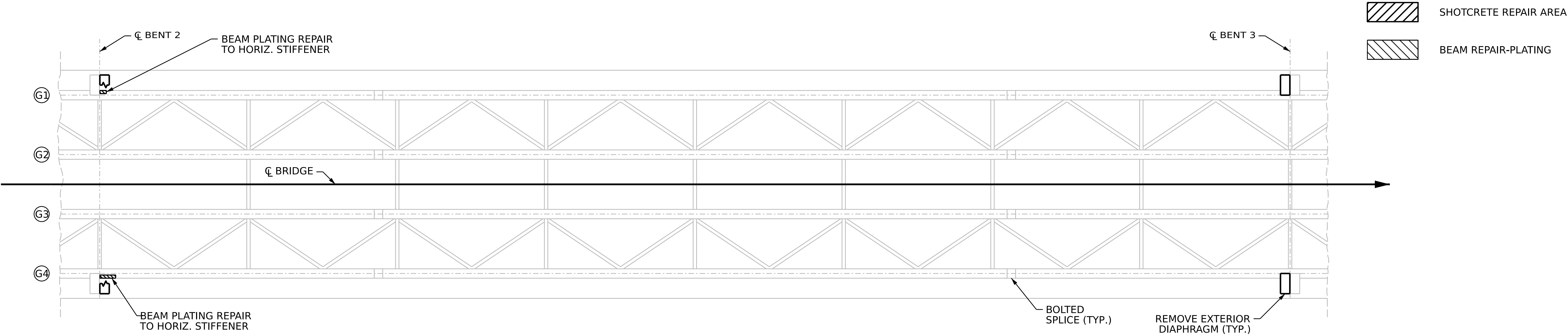
FOR OVERHANG DIAPHRAGM REMOVAL, SEE SPECIAL PROVISIONS.

ESTIMATED BEAM REPAIR MEASUREMENTS						
SPAN	BEAM	LOCATION	LENGTH	WIDTH	REPAIR PLATE THICKNESS	NUMBER OF PLATES
C	1	BENT 2	12"	6"	¼"	1
C	4	BENT 2	30"	6"	¼"	1

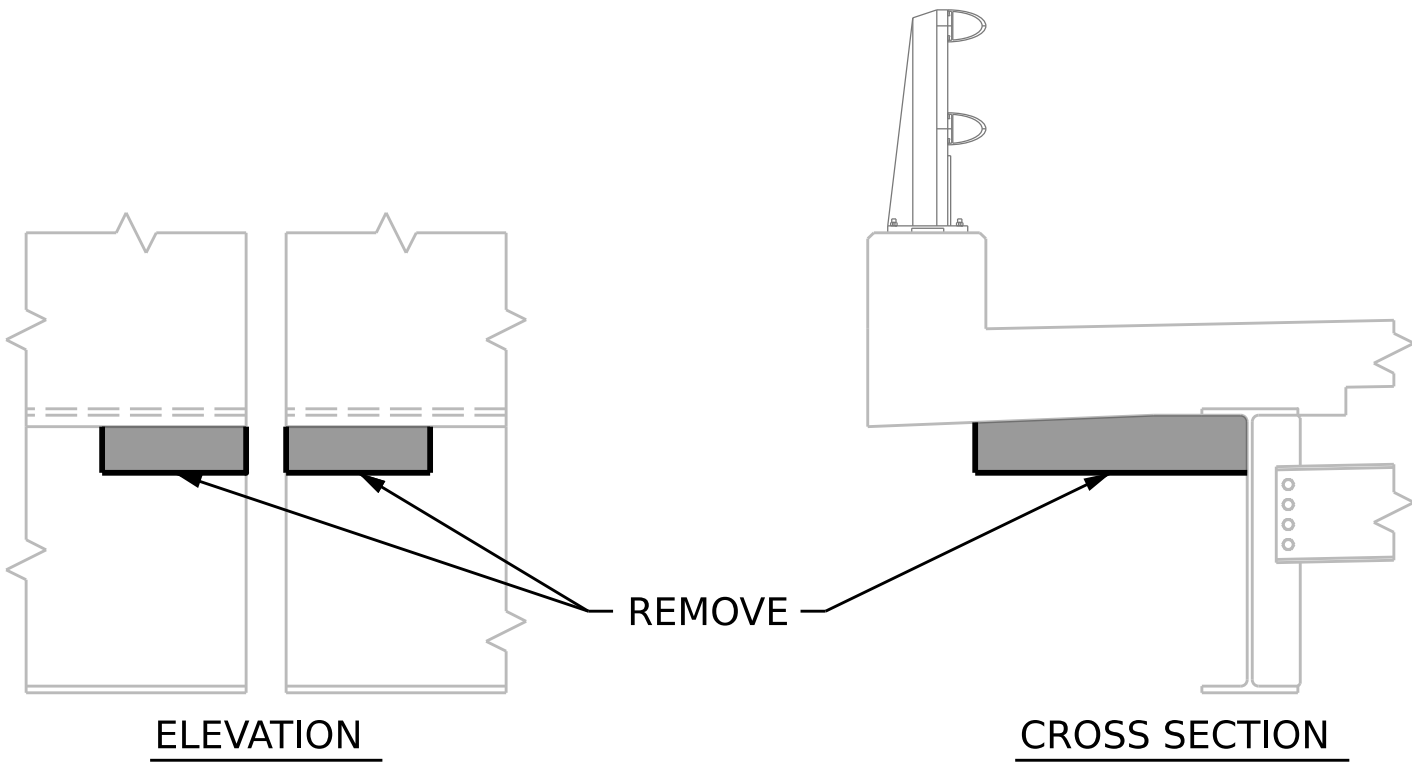
AS-BUILT REPAIR QUANTITY TABLE

DECK UNDERSIDE REPAIR - SPAN C				
SHOTCRETE REPAIRS	ESTIMATE		ACTUAL	
	AREA (SQ.FT.)	VOLUME (CU.FT.)	AREA (SQ.FT.)	VOLUME (CU.FT.)
UNDERSIDE OF DECK	0.0	0.0		
DIAPHRAGMS	0.0	0.0		
OVERHANG	0.0	0.0		
BEAM REPAIR-PLATING		LBS.		LBS.
GIRDER		0.0		
STIFFENER		17.9		
DIAPHRAGM		0.0		
OVERHANG DIAPHRAGM REMOVAL		EA.		EA.
DIAPHRAGMS		4		

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



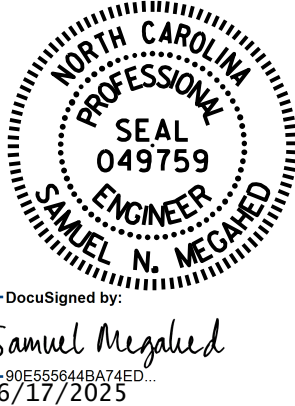
SPAN C



OVERHANG DIAPHRAGM REMOVAL DETAILS

DRAWN BY : HRS DATE : 11/24
CHECKED BY : A. SORSENGINH DATE : 11/24
DESIGN ENGINEER OF RECORD: S. MEGAHED DATE : 12/24

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED



PROJECT NO. 15BPR.119
CATAWBA COUNTY
BRIDGE NO. 170091

SHEET 2 OF 5

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					REVISIONS			SHEET NO.
					NO.	BY:	DATE:	S1-11
					1			TOTAL SHEETS
					2			78

NOTES

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

CONTRACTOR SHALL SAWCUT TO A NOMINAL DEPTH OF ½" BUT REINFORCING STEEL SHALL NOT BE DAMAGED.

OVERHANG DIAPHRAGM REMOVAL SHALL BE PERFORMED PRIOR TO SPOT PAINTING OF STEEL STRUCTURE REPAIR AREAS. AT THE LOCATIONS FOR OVERHANG DIAPHRAGM REMOVAL, THE REMAINING EXPOSED AREA OF THE STEEL BEAMS OR GIRDERS SHALL BE PREPARED AND PAINTED IN ACCORDANCE WITH SPOT PAINTING OF STEEL STRUCTURE REPAIR AREAS.

SHOTCRETE REPAIRS MAY BE REPLACED WITH CONCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

FOR SPOT PAINTING OF STEEL STRUCTURE REPAIR AREAS, SPECIAL PROVISIONS

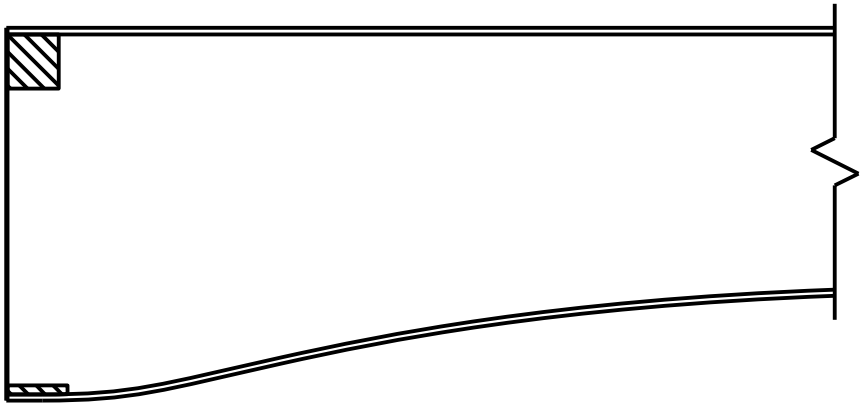
FOR BEAM AND STIFFENER REPAIR, SEE "BEAM PLATING REPAIR DETAILS" SHEET.

FOR BEAM REPAIR - PLATING, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIR, SEE SPECIAL PROVISIONS.

FOR OVERHANG DIAPHRAGM REMOVAL, SEE SPECIAL PROVISIONS.

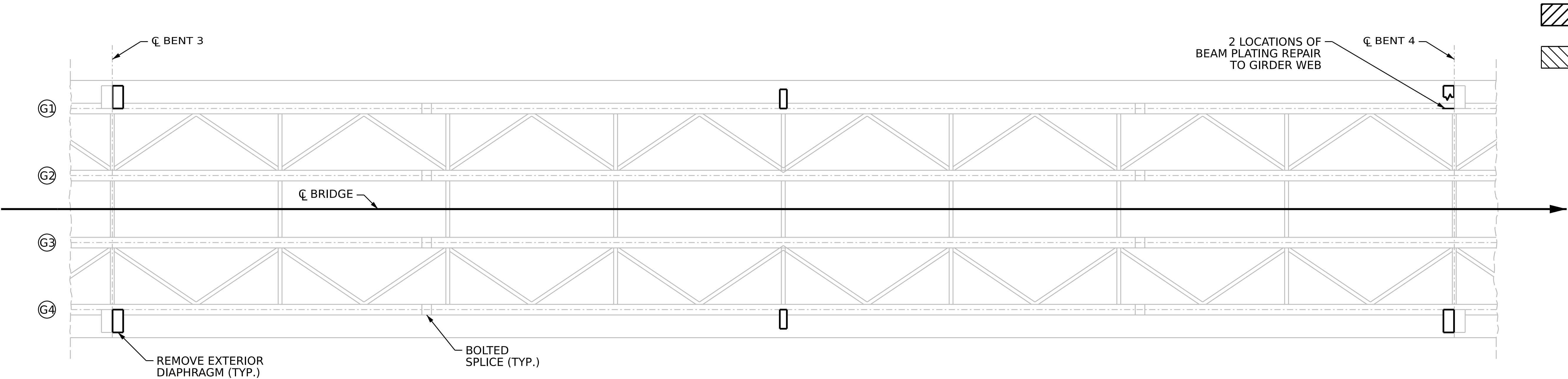
ESTIMATED BEAM REPAIR MEASUREMENTS						
SPAN	BEAM	LOCATION	LENGTH	HEIGHT	REPAIR PLATE THICKNESS	NUMBER OF PLATES
D	1 (TOP)	BENT 4	17"	18"	¼"	2
D	1 (BOT.)	BENT 4	20"	3"	¼"	2



GIRDER REPAIR LOCATION
EXTERIOR FACE SHOWN. REPAIR PLATES
SIMILAR ON INTERIOR BEAM FACE.

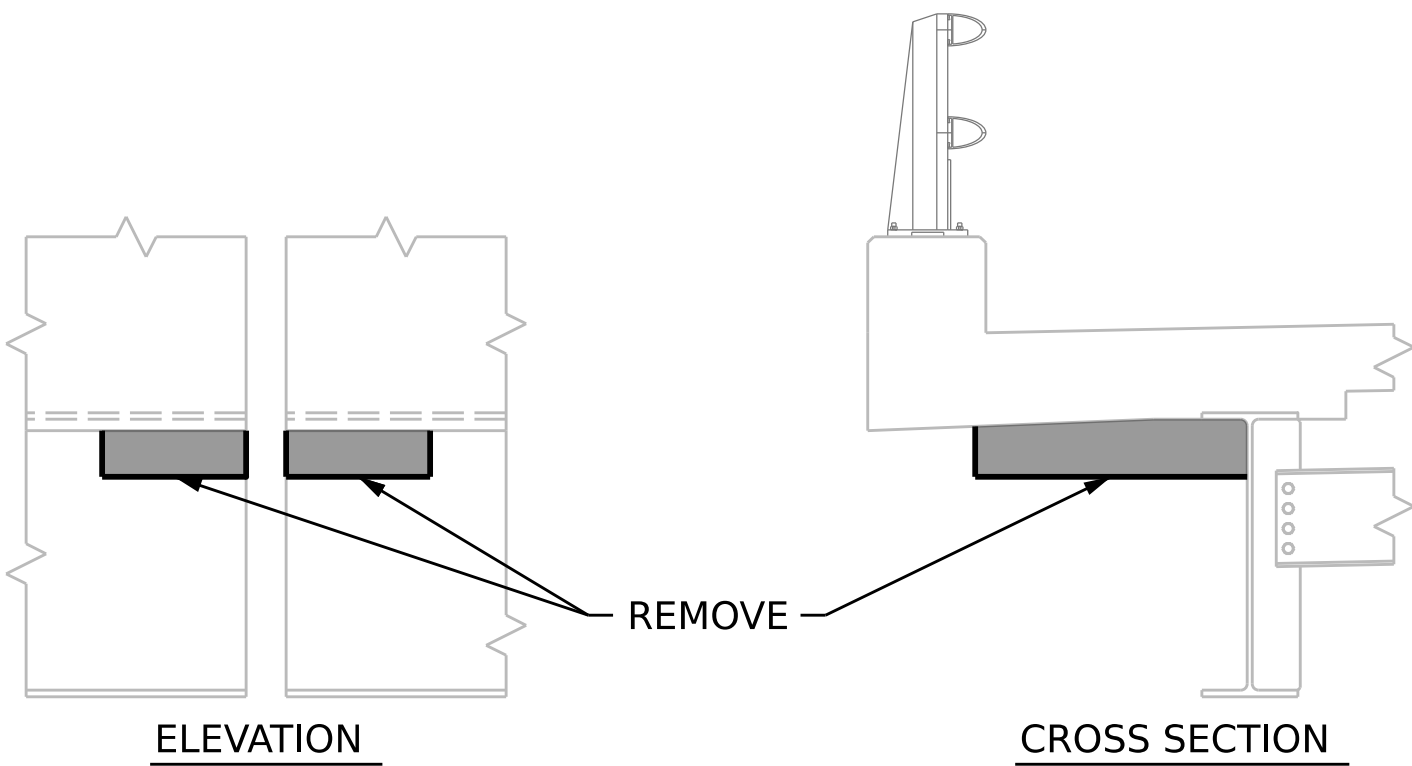
AS-BUILT REPAIR QUANTITY TABLE				
DECK UNDERSIDE REPAIR - SPAN D				
SHOTCRETE REPAIRS	ESTIMATE		ACTUAL	
	AREA (SQ.FT.)	VOLUME (CU.FT.)	AREA (SQ.FT.)	VOLUME (CU.FT.)
UNDERSIDE OF DECK	0.0	0.0		
DIAPHRAGMS	0.0	0.0		
OVERHANG	0.0	0.0		
BEAM REPAIR-PLATING		LBS.		LBS.
GIRDER		51.9		
STIFFENER		0.0		
DIAPHRAGM		0.0		
OVERHANG DIAPHRAGM REMOVAL		EA.		EA.
DIAPHRAGMS		4		

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



-
- SHOTCRETE REPAIR AREA

SPAN D



OVERHANG DIAPHRAGM REMOVAL DETAILS

PROJECT NO. **15BPR.119**
CATAWBA COUNTY
BRIDGE NO. **170091**

SHEET 3 OF 5



DocuSigned by:
Samuel Megahed
06/17/2025

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
**DECK UNDERSIDE REPAIR
SPANS D**

DRAWN BY : HRS DATE : 11/24
CHECKED BY : A. SORSENGINH DATE : 11/24
DESIGN ENGINEER OF RECORD: S. MEGAHED DATE : 12/24

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

REVISIONS						SHEET NO. S1-12
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 78
2			4			

NOTES

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CONTRACTOR SHALL SAWCUT TO A NOMINAL DEPTH OF ½" BUT REINFORCING STEEL SHALL NOT BE DAMAGED.

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SHOTCRETE REPAIRS MAY BE REPLACED WITH CONCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

FOR SPOT PAINTING OF STEEL STRUCTURE REPAIR AREAS, SPECIAL PROVISIONS

FOR BEAM AND STIFFENER REPAIR, SEE "BEAM PLATING REPAIR DETAILS" SHEET.

FOR BEAM REPAIR - PLATING, SEE SPECIAL PROVISIONS.

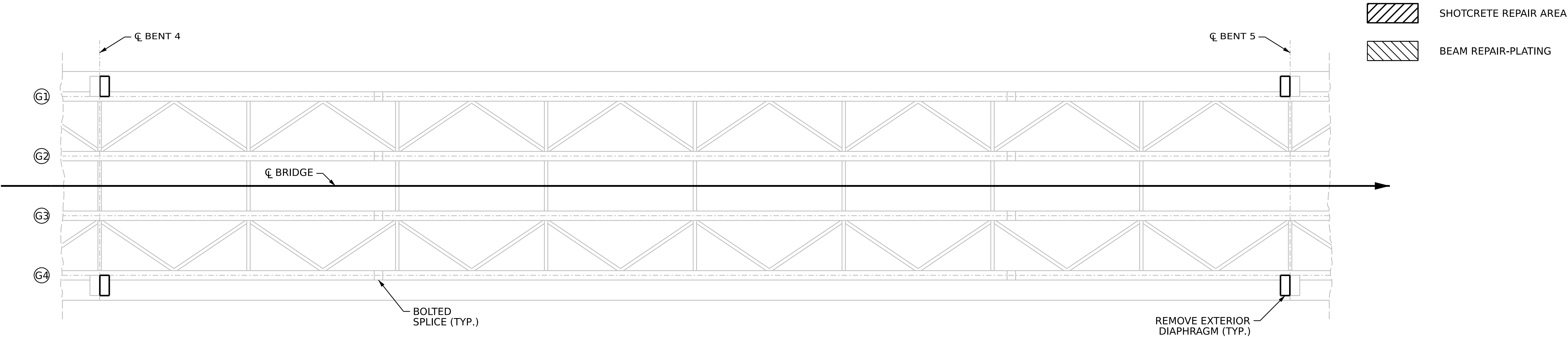
FOR SHOTCRETE REPAIR, SEE SPECIAL PROVISIONS.

FOR OVERHANG DIAPHRAGM REMOVAL, SEE SPECIAL PROVISIONS.

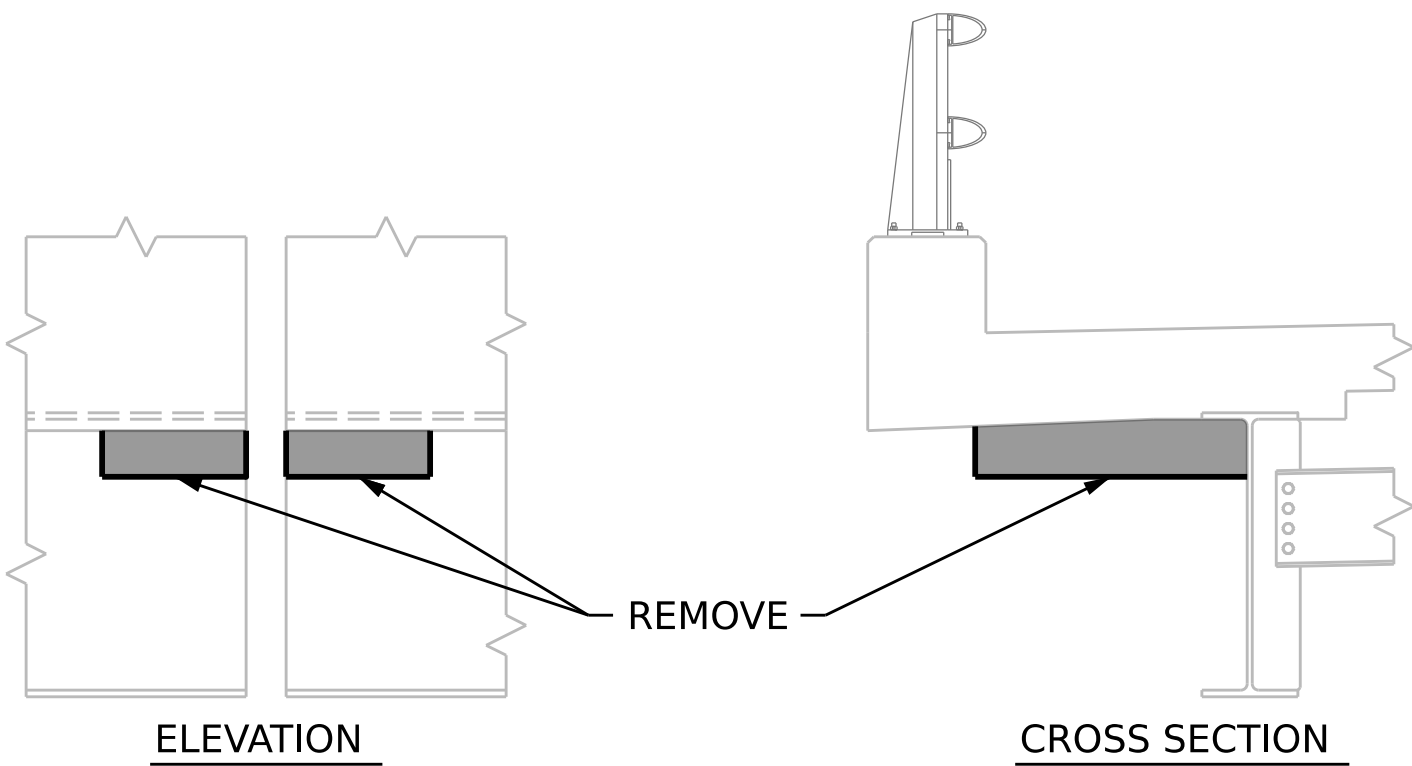
AS-BUILT REPAIR QUANTITY TABLE

DECK UNDERSIDE REPAIR - SPAN E				
SHOTCRETE REPAIRS	ESTIMATE		ACTUAL	
	AREA (SQ.FT.)	VOLUME (CU.FT.)	AREA (SQ.FT.)	VOLUME (CU.FT.)
UNDERSIDE OF DECK	0.0	0.0		
DIAPHRAGMS	0.0	0.0		
OVERHANG	0.0	0.0		
BEAM REPAIR-PLATING		LBS.		LBS.
GIRDER		0.0		
STIFFENER		0.0		
DIAPHRAGM		0.0		
OVERHANG DIAPHRAGM REMOVAL		EA.		EA.
DIAPHRAGMS		4		

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



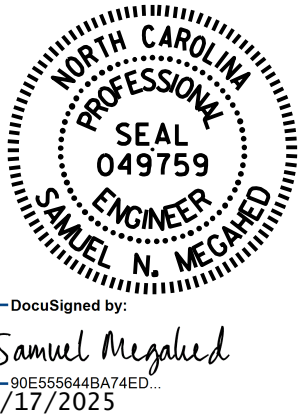
SPAN E



OVERHANG DIAPHRAGM REMOVAL DETAILS

DRAWN BY :	HRS	DATE :	11/24
CHECKED BY :	A. SORSENGINH	DATE :	11/24
DESIGN ENGINEER OF RECORD:	S. MEGAHER	DATE :	12/24

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



PROJECT NO. 15BPR.119
CATAWBA COUNTY
BRIDGE NO. 170091

SHEET 4 OF 5

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					SHEET NO. S1-13		
DECK UNDERSIDE REPAIR SPANS E					TOTAL SHEETS 78		
REVISIONS							
NO.	BY:	DATE:	NO.	BY:	DATE:		
1			3				
2			4				

NOTES

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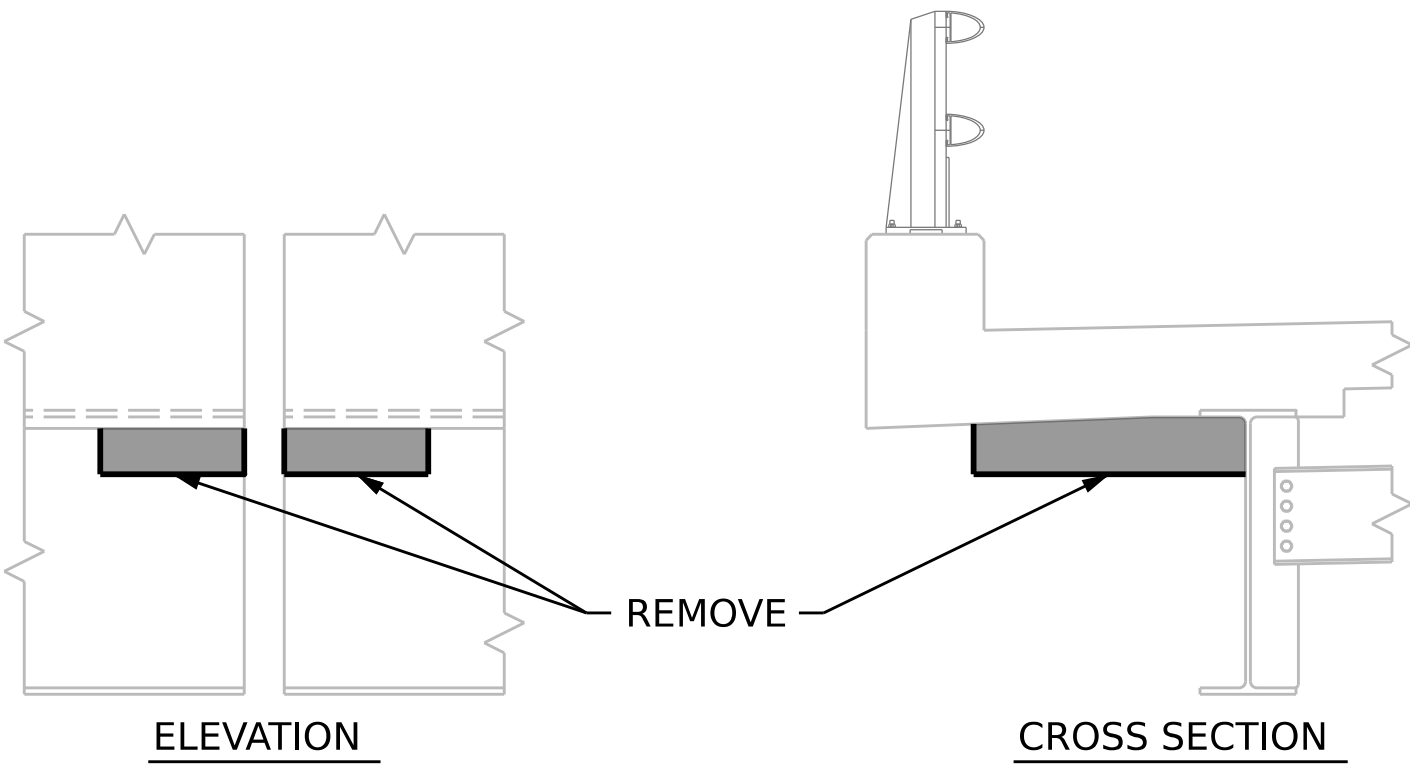
FOR SPOT PAINTING OF STEEL STRUCTURE REPAIR AREAS, SPECIAL PROVISIONS

FOR BEAM AND STIFFENER REPAIR, SEE "BEAM PLATING REPAIR DETAILS" SHEET.

FOR BEAM REPAIR - PLATING, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIR, SEE SPECIAL PROVISIONS.

FOR OVERHANG DIAPHRAGM REMOVAL, SEE SPECIAL PROVISIONS.



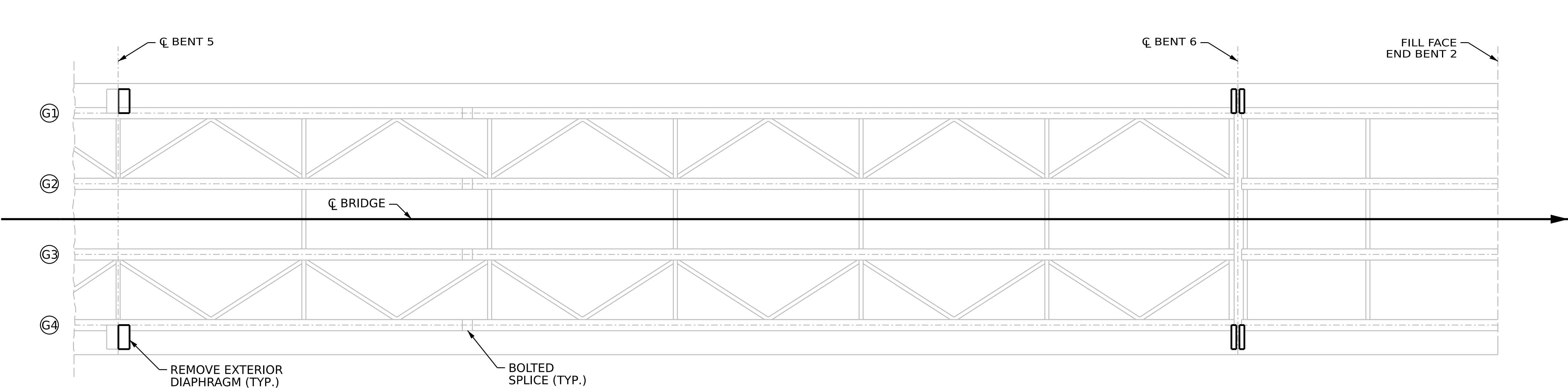
OVERHANG DIAPHRAGM REMOVAL DETAILS

AS-BUILT REPAIR QUANTITY TABLE

DECK UNDERSIDE REPAIR - SPANS F & G

SHOTCRETE REPAIRS	ESTIMATE		ACTUAL	
	AREA (SQ.FT.)	VOLUME (CU.FT.)	AREA (SQ.FT.)	VOLUME (CU.FT.)
UNDERSIDE OF DECK	0.0	0.0		
DIAPHRAGMS	0.0	0.0		
OVERHANG	0.0	0.0		
BEAM REPAIR-PLATING		LBS.		LBS.
GIRDER		0.0		
STIFFENER		0.0		
DIAPHRAGM		0.0		
OVERHANG DIAPHRAGM REMOVAL		EA.		EA.
DIAPHRAGMS		4		

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



SPAN F

SPAN G

PROJECT NO. **15BPR.119**
CATAWBA COUNTY
BRIDGE NO. **170091**

SHEET 5 OF 5



DocuSigned by:
Samuel Megahed
06/11/2025

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK UNDERSIDE REPAIR
SPANS F & G

DRAWN BY : HRS DATE : 11/24
CHECKED BY : A. SORSENGINH DATE : 11/24
DESIGN ENGINEER OF RECORD: S. MEGAHED DATE : 12/24

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

REVISIONS						SHEET NO. S1-14
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 78
2			4			

AS-BUILT REPAIR QUANTITY TABLE				
END BENT 1				
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA (SQ.FT.)	VOLUME (CU.FT.)	AREA (SQ.FT.)	VOLUME (CU.FT.)
CAP	11.5	5.8		
CURTAINWALL	13.3	6.7		
CONCRETE REPAIRS	AREA (SQ.FT.)	VOLUME (CU.FT.)	AREA (SQ.FT.)	VOLUME (CU.FT.)
CAP	0.0	0.0		
CURTAINWALL	0.0	0.0		

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



NOTES

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SHOTCRETE REPAIRS MAY BE REPLACED WITH CONCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

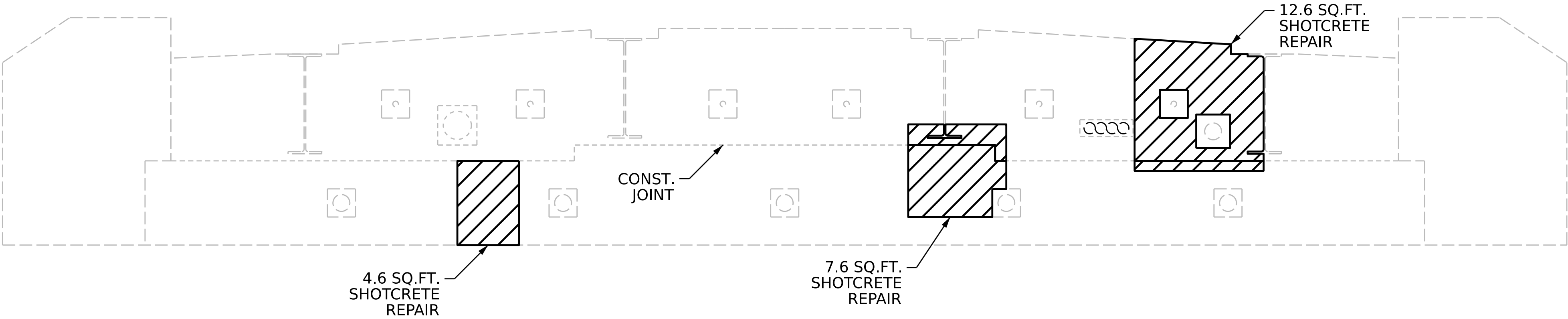
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

-  SHOTCRETE REPAIR AREA
-  CONCRETE REPAIR AREA



PLAN



ELEVATION

PROJECT NO. **15BPR.119**
CATAWBA COUNTY
BRIDGE NO. **170091**

SHEET 1 OF 14



Signed by:
Samuel Megahed
06/17/2025

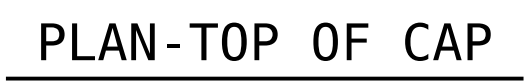
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**SUBSTRUCTURE REPAIRS
END BENT 1**

DRAWN BY : HRS DATE : 09/24
CHECKED BY : A. SORSENGINH DATE : 11/24
DESIGN ENGINEER OF RECORD: S. MEGAHED DATE : 12/24

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

REVISIONS						SHEET NO. S1-15
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 78
2			4			



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

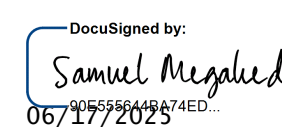
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CLEAN AND REMOVE DEBRIS FROM THE TOP OF THE CAP AND APPLY EPOXY PROTECTIVE COATING. EPOXY COATING SHALL BE APPLIED TO THE TOP SURFACE OF THE CAP. THE CONTRACTOR SHALL NOT COAT THE AREA OF THE CAP BENEATH THE MASONRY PLATES. FOR EPOXY COATING, SEE SPECIAL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

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

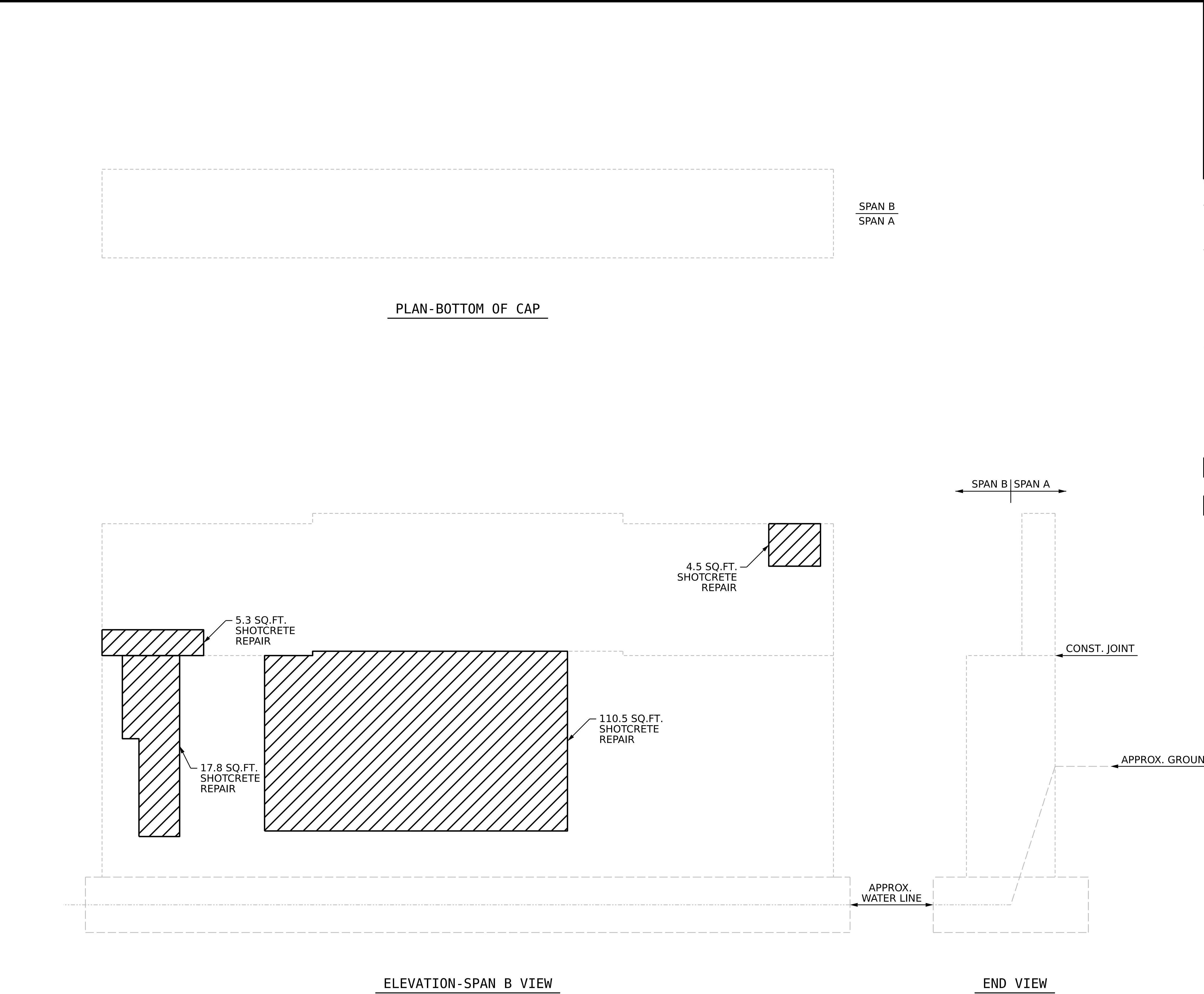


SHEET 2 OF 14



DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

DRAWN BY : HRS DATE : 09/24
 CHECKED BY : A. SORSENGINH DATE : 11/24
 DESIGN ENGINEER OF RECORD: S. MEGAHED DATE : 12/24



AS-BUILT REPAIR QUANTITY TABLE				
BENT 1 SPAN B FACE				
	ESTIMATE		ACTUAL	
	AREA (SQ.FT.)	VOLUME (CU.FT.)	AREA (SQ.FT.)	VOLUME (CU.FT.)
SHOTCRETE REPAIRS				
CAP	9.8	4.9		
COLUMN	128.3	64.2		
CONCRETE REPAIRS				
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. OF 2" CLEAR TO SAWCUT. SEE REPAIR DETAILS.

NOTES

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FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

DRAWN BY : HRS DATE : 09/24
CHECKED BY : A. SORSENGINH DATE : 11/24
DESIGN ENGINEER OF RECORD: S. MEGAHED DATE : 12/24

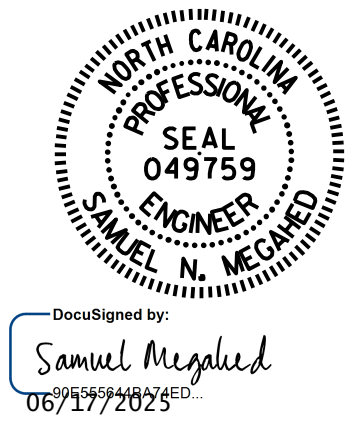
REVISIONS					SHEET NO. 51-17
NO.	BY:	DATE:	NO.	BY:	
1			3		TOTAL SHEETS 78
2			4		

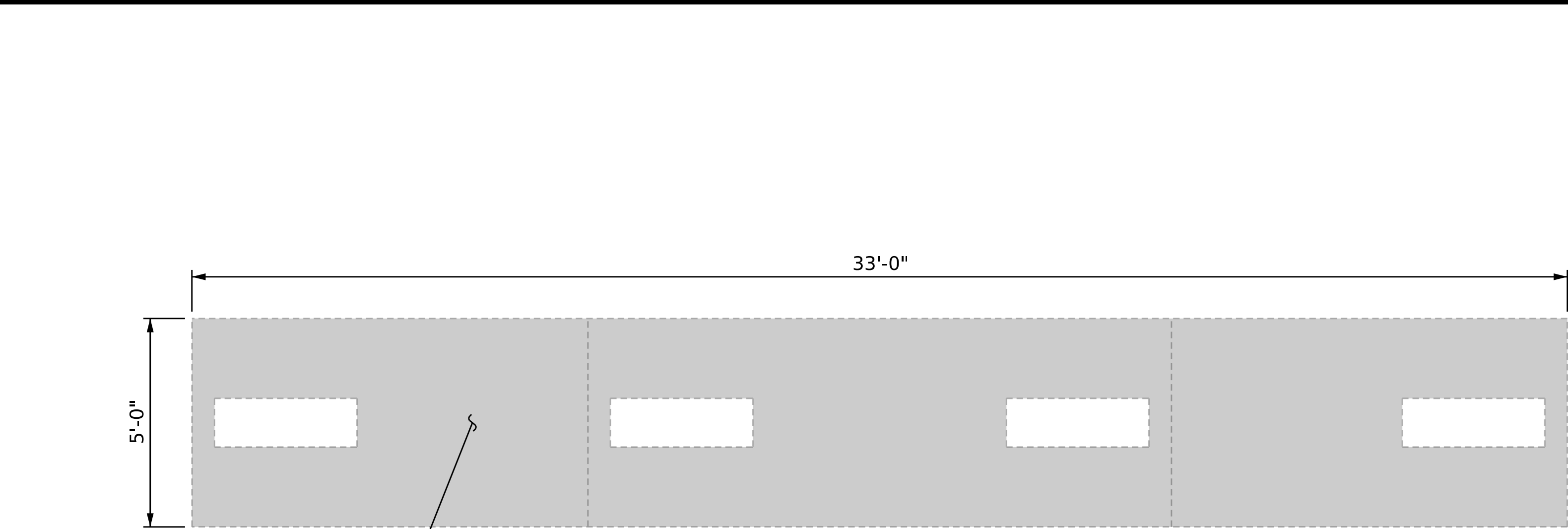
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. 15BPR.119
CATAWBA COUNTY
BRIDGE NO. 170091
SHEET 3 OF 14

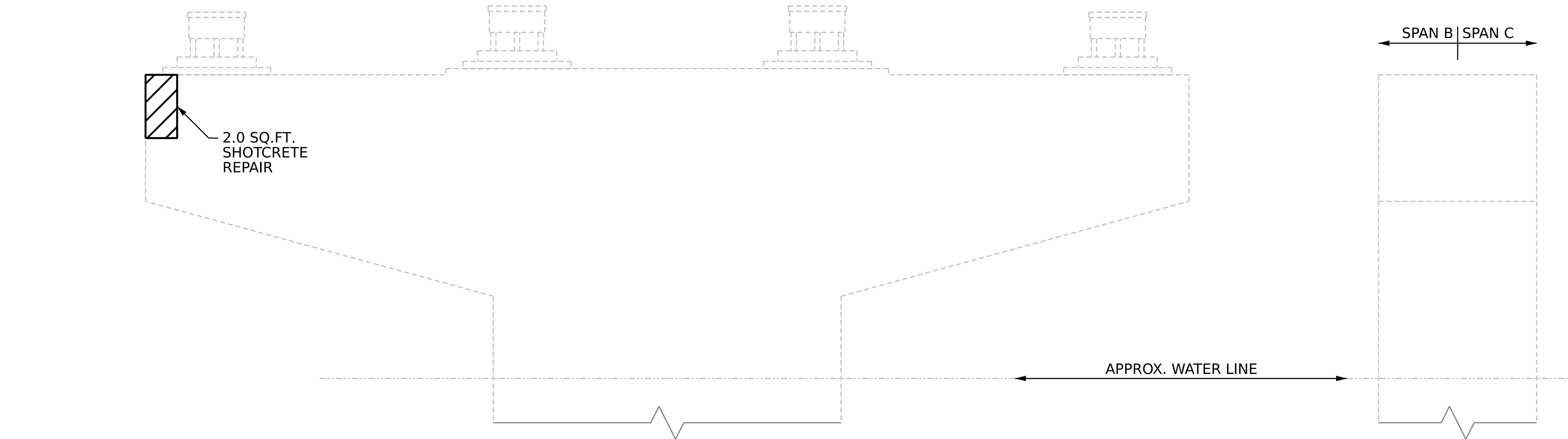
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIRS
BENT 1
SPAN B FACE



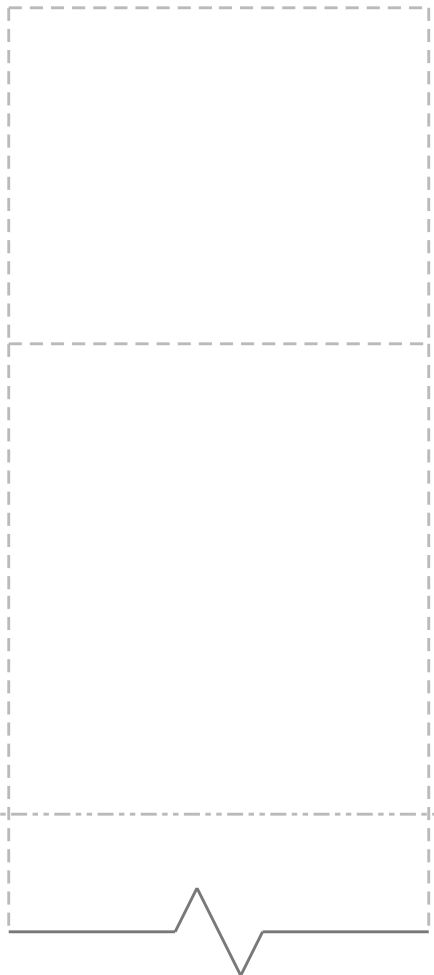


PLAN-TOP OF CAP



ELEVATION-SPAN B VIEW

SPAN B | SPAN C



END VIEW

AS-BUILT REPAIR QUANTITY TABLE				
BENT 2 SPAN B FACE				
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA (SQ.FT.)	VOLUME (CU.FT.)	AREA (SQ.FT.)	VOLUME (CU.FT.)
CAP	2.0	1.0		
COLUMN	0.0	0.0		
CONCRETE REPAIRS				
CAP	0.0			
COLUMN	0.0			
EPOXY COATING				
TOP OF BENT CAP	151.0			

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

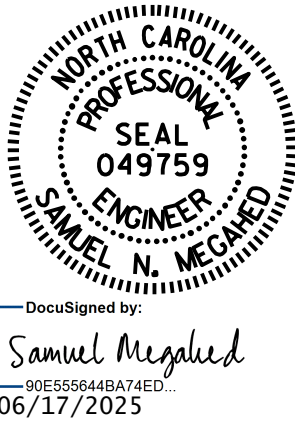
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

-  SHOTCRETE REPAIR AREA
-  CONCRETE REPAIR AREA

DRAWN BY : HRS DATE : 09/24
CHECKED BY : A. SORSENGINH DATE : 11/24
DESIGN ENGINEER OF RECORD: S. MEGAHED DATE : 12/24

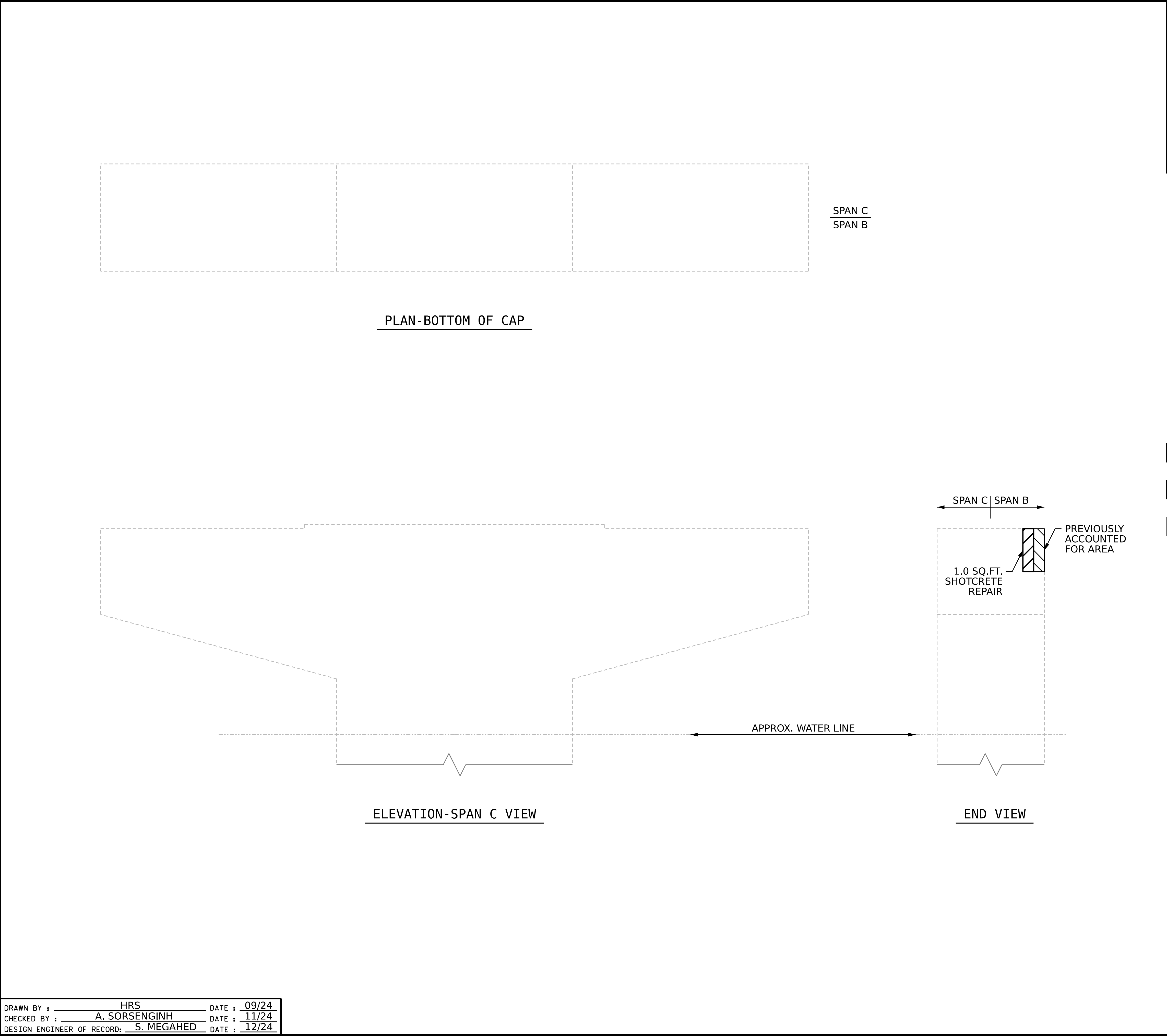
DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED



PROJECT NO. 15BPR.119
CATAWBA COUNTY
BRIDGE NO. 170091

SHEET 4 OF 14

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			78
2			4			



AS-BUILT REPAIR QUANTITY TABLE				
BENT 2 SPAN C FACE				
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA (SQ.FT.)	VOLUME (CU.FT.)	AREA (SQ.FT.)	VOLUME (CU.FT.)
CAP	1.0	0.5		
COLUMN	0.0	0.0		
CONCRETE REPAIRS				
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. OF 2" CLEAR TO SAWCUT. SEE REPAIR DETAILS.

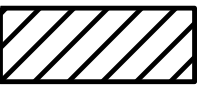


NOTES

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FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

-  SHOTCRETE REPAIR AREA
-  CONCRETE REPAIR AREA
-  PREVIOUSLY ACCOUNTED FOR AREA

PROJECT NO. **15BPR.119**

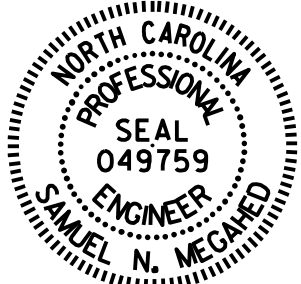
CATAWBA COUNTY

BRIDGE NO. **170091**

SHEET 5 OF 14

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIRS
BENT 2
SPAN C FACE

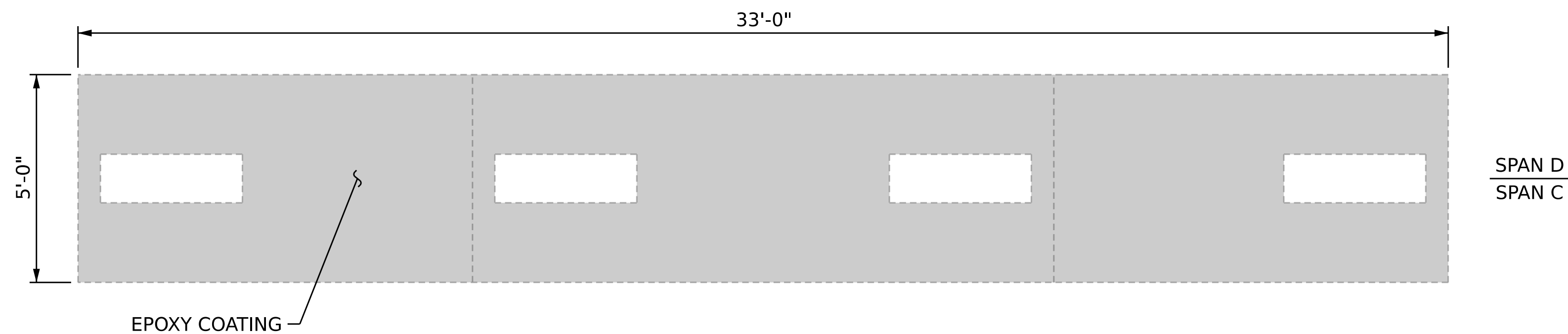


DocuSigned by:
Samuel Megahed
06/17/2025

DRAWN BY : HRS DATE : 09/24
CHECKED BY : A. SORSENGINH DATE : 11/24
DESIGN ENGINEER OF RECORD: S. MEGAHED DATE : 12/24

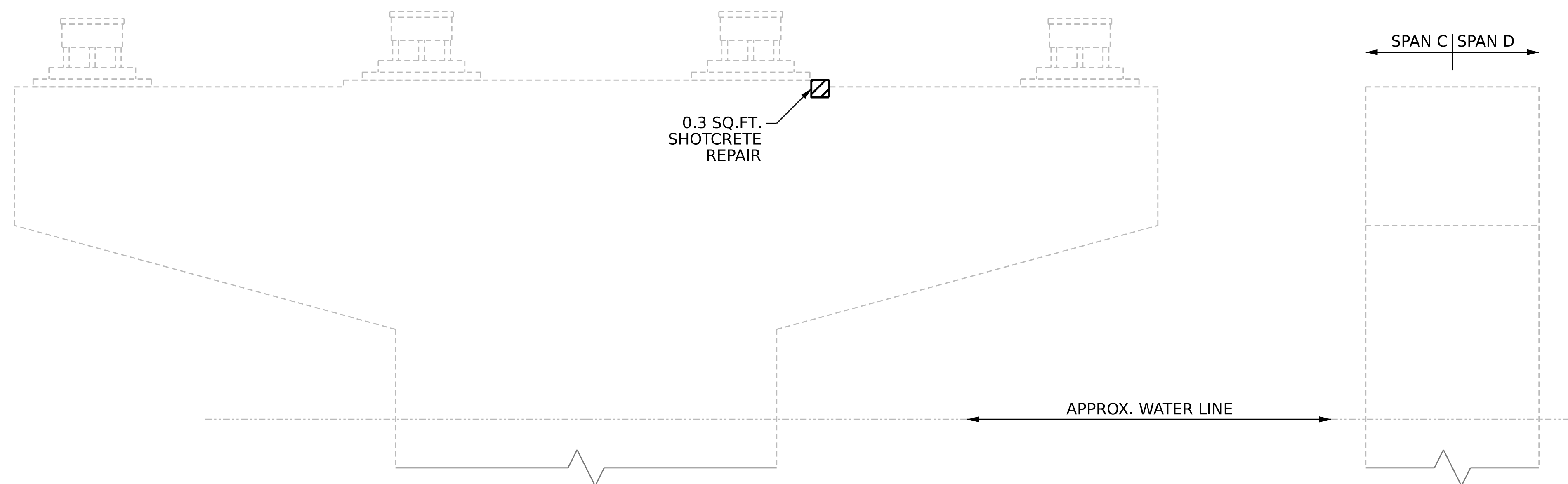
REVISIONS						SHEET NO. S1-19
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 78
2			4			

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$$\frac{\text{SPAN D}}{\text{SPAN C}}$$

EPOXY COATING

PLAN-TOP OF CAP



SPAN C | SPAN D

APPROX. WATER LINE

ELEVATION-SPAN C VIEW

END VIEW

AS-BUILT REPAIR QUANTITY TABLE

BENT 3 SPAN C FACE

	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA (SQ.FT.)	VOLUME (CU.FT.)	AREA (SQ.FT.)	VOLUME (CU.FT.)
CAP	0.3	0.2		
COLUMN	0.0	0.0		

CONCRETE REPAIRS				
CAP	0.0			
COLUMN	0.0			

EPOXY COATING	AREA (SQ.FT.)		AREA (SQ.FT.)	
TOP OF BENT CAP	151.0			

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

NOTES

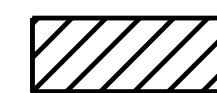
REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE BASED ON THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATIONS AND DESCRIPTION OF THE REPAIRS AND ENTER THE ACTUAL QUANTITIES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

SHOTCRETE REPAIRS MAY BE REPLACED WITH CONCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

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.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.



SHOTCRETE REPAIR AREA



CONCRETE REPAIR AREA

PROJECT NO. **15BPR.119**

CATAWBA **COUNTY**

BRIDGE NO. 170091

SHEET 6 OF 14

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIRS

BENT 3

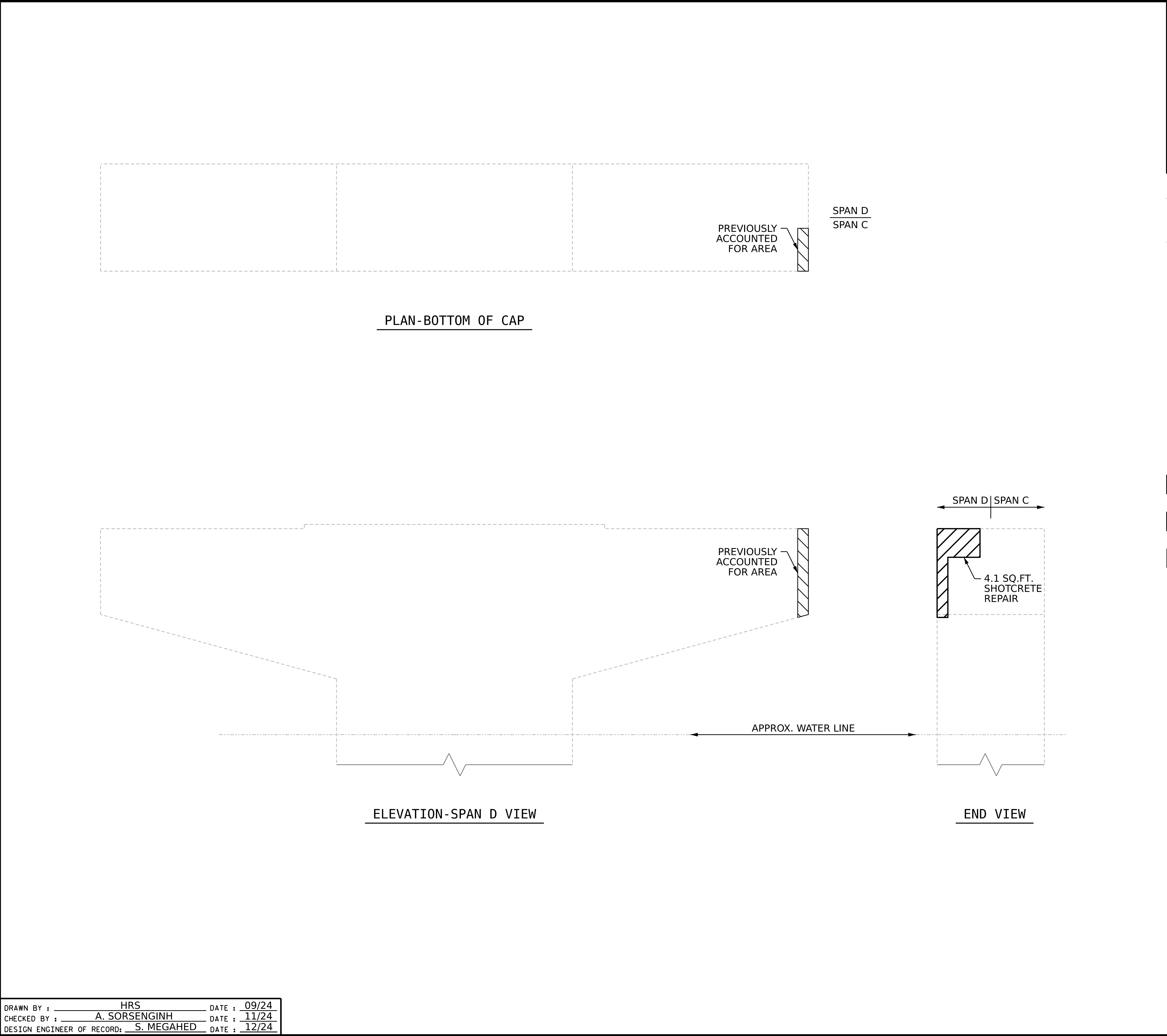
SPAN C FACE

REVISED						SHEET NO.	
REVISED						S1-20	
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS	
1			3			78	
2			4				

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Samuel Megaloo
90E555844BA74ED...
06/17/2025

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 CHECKED BY : A. SORSENGINH DATE : 11/24
 DESIGN ENGINEER OF RECORD: S. MEGAHD DATE : 12/24



AS-BUILT REPAIR QUANTITY TABLE				
BENT 3 SPAN D FACE				
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA (SQ.FT.)	VOLUME (CU.FT.)	AREA (SQ.FT.)	VOLUME (CU.FT.)
CAP	4.1	2.1		
COLUMN	0.0	0.0		
CONCRETE REPAIRS				
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. OF 2" CLEAR TO SAWCUT. SEE REPAIR DETAILS.

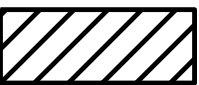

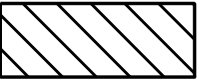
NOTES

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FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

-  SHOTCRETE REPAIR AREA
-  CONCRETE REPAIR AREA
-  PREVIOUSLY ACCOUNTED FOR AREA

DRAWN BY : HRS

CHECKED BY : A. SORSENGINH

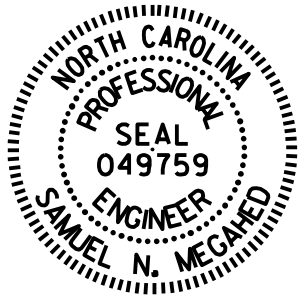
DESIGN ENGINEER OF RECORD: S. MEGAHERD

DATE : 09/24

DATE : 11/24

DATE : 12/24

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

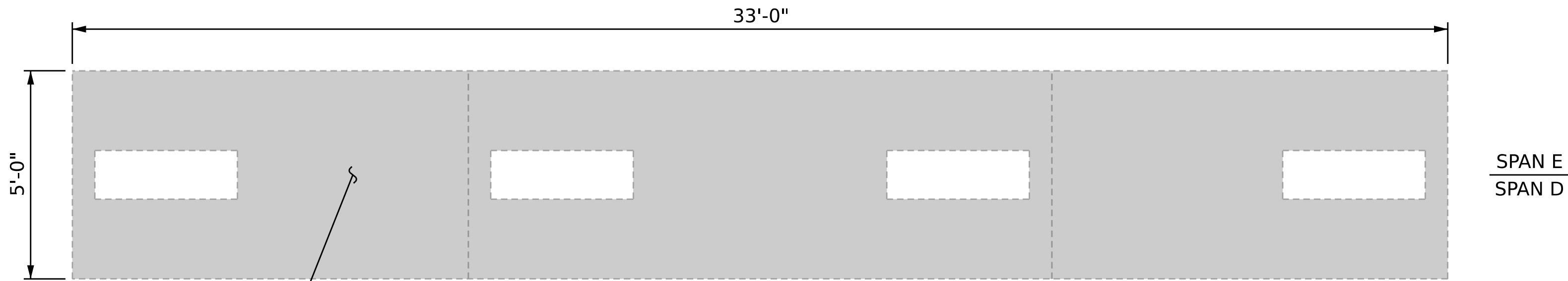


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Samuel Megahed
06/17/2025

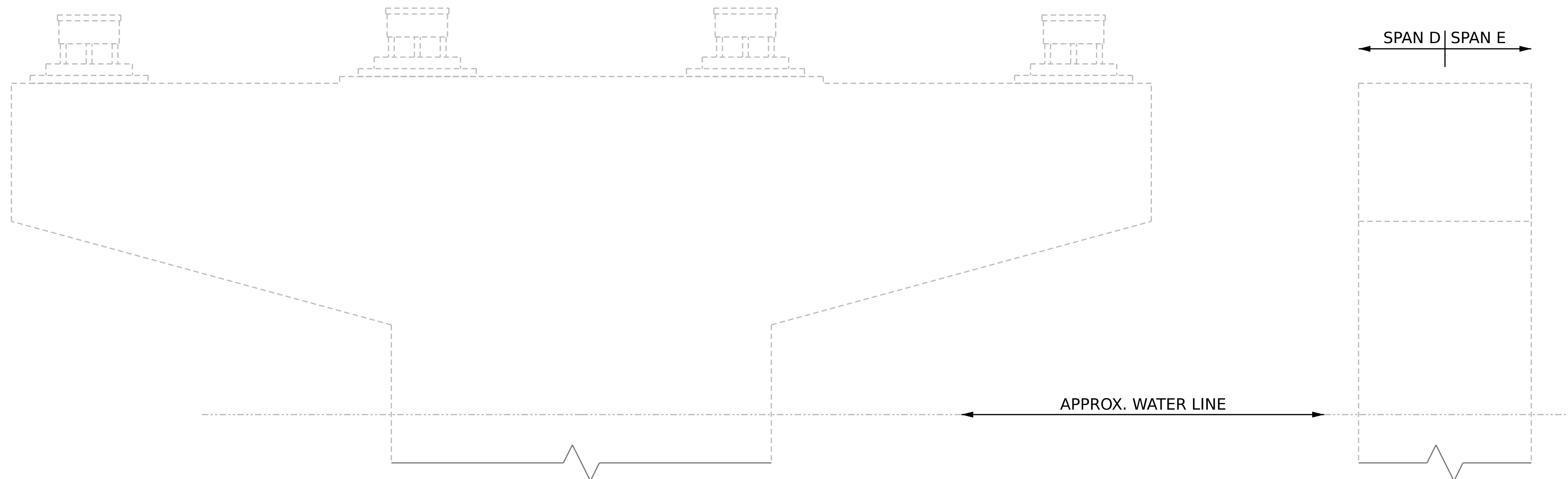
PROJECT NO. 15BPR.119
CATAWBA COUNTY
BRIDGE NO. 170091

SHEET 7 OF 14

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO.	
SUBSTRUCTURE REPAIRS BENT 3 SPAN D FACE						S1-21	
REVISIONS						TOTAL SHEETS	
NO.	BY:	DATE:	NO.	BY:	DATE:	78	
1			3				
2			4				



PLAN-TOP OF CAP



ELEVATION-SPAN D VIEW

SPAN D | SPAN E



END VIEW

AS-BUILT REPAIR QUANTITY TABLE				
BENT 4 SPAN D FACE				
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA (SQ.FT.)	VOLUME (CU.FT.)	AREA (SQ.FT.)	VOLUME (CU.FT.)
CAP	0.0	0.0		
COLUMN	0.0	0.0		
CONCRETE REPAIRS				
CAP	0.0			
COLUMN	0.0			
EPOXY COATING	AREA (SQ.FT.)		AREA (SQ.FT.)	
TOP OF BENT CAP	151.0			

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

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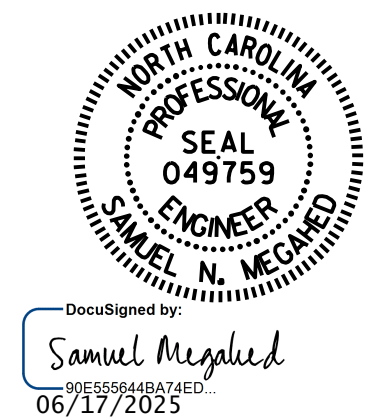
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

- SHOTCRETE REPAIR AREA
- CONCRETE REPAIR AREA

PROJECT NO. 15BPR.119
CATAWBA COUNTY
BRIDGE NO. 170091

SHEET 8 OF 14



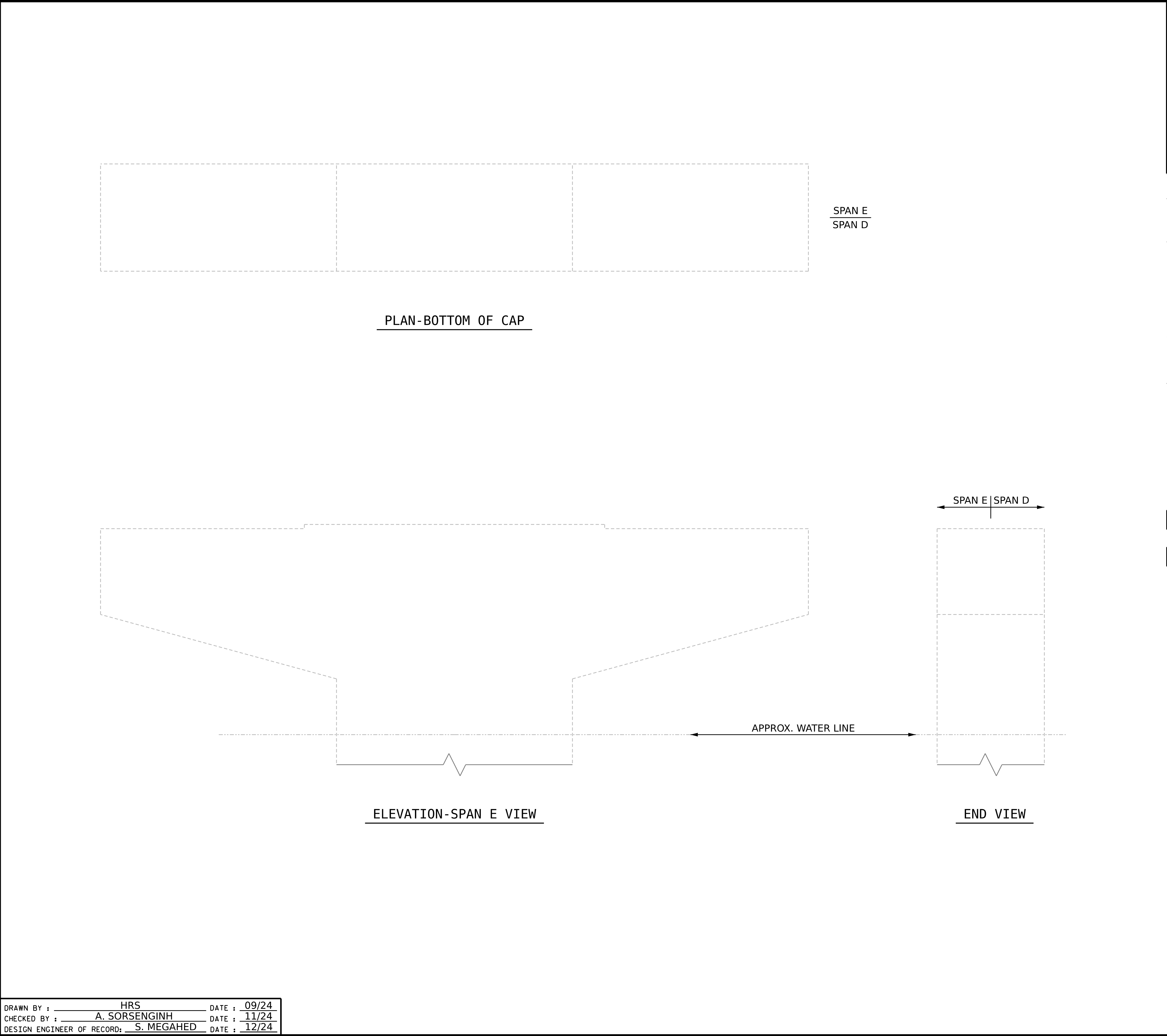
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIRS
BENT 4
SPAN D FACE

DOCUMENT NOT CONSIDERED
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SIGNATURES COMPLETED

REVISIONS						SHEET NO. S1-22
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 78
2			4			

DRAWN BY : HRS DATE : 09/24
CHECKED BY : A. SORSENGINH DATE : 11/24
DESIGN ENGINEER OF RECORD: S. MEGAHED DATE : 12/24



AS-BUILT REPAIR QUANTITY TABLE				
BENT 4 SPAN E FACE				
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA (SQ.FT.)	VOLUME (CU.FT.)	AREA (SQ.FT.)	VOLUME (CU.FT.)
CAP	0.0	0.0		
COLUMN	0.0	0.0		
CONCRETE REPAIRS				
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. OF 2" CLEAR TO SAWCUT. SEE REPAIR DETAILS.

NOTES

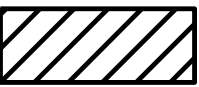

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FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

-  SHOTCRETE REPAIR AREA
-  CONCRETE REPAIR AREA

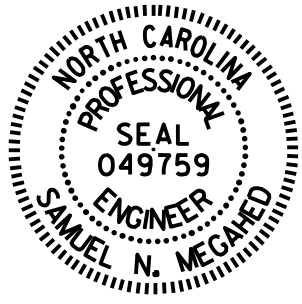
PROJECT NO. **15BPR.119**
CATAWBA COUNTY
BRIDGE NO. **170091**

SHEET 9 OF 14

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIRS
BENT 4
SPAN E FACE

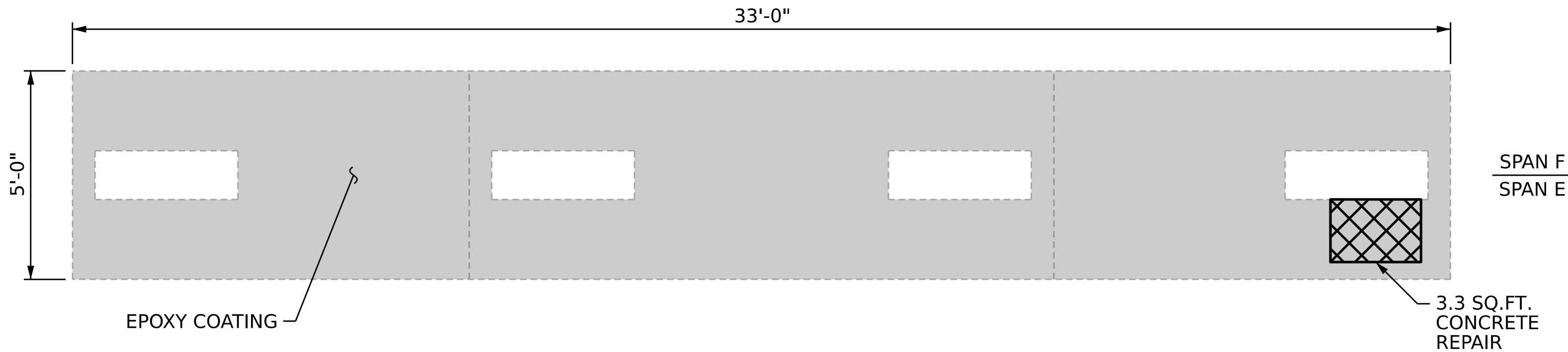
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NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			51-23
2			4			78



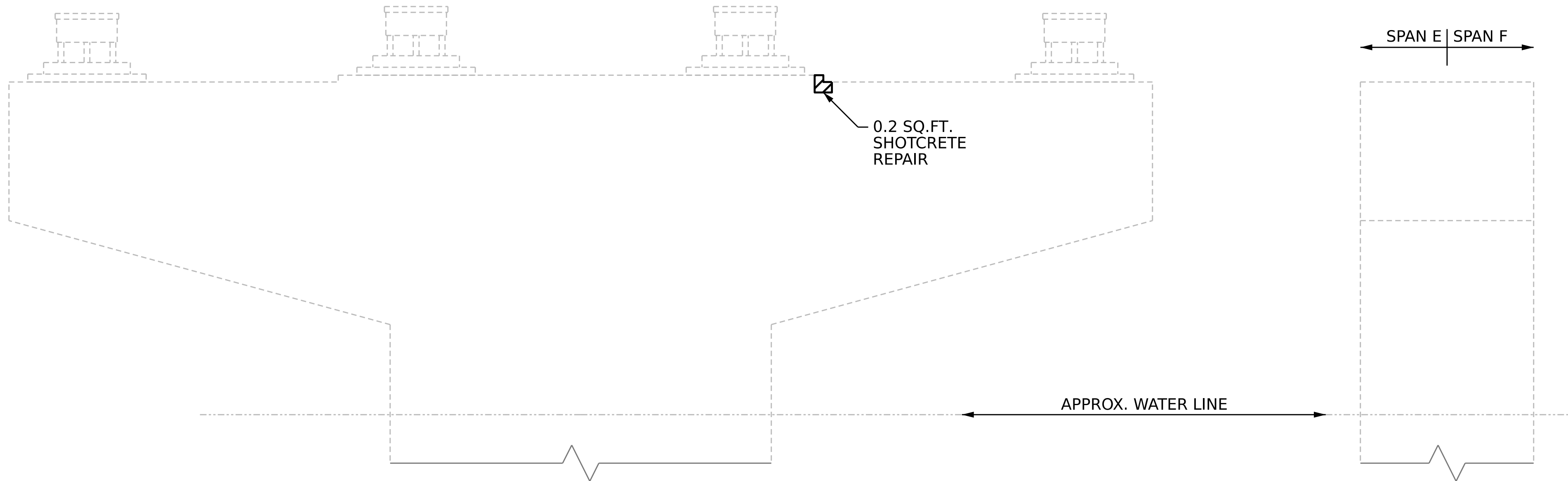
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DESIGN ENGINEER OF RECORD: S. MEGAHED DATE : 12/24



PLAN-TOP OF CAP



END VIEW

AS-BUILT REPAIR QUANTITY TABLE

BENT 5 SPAN E FACE

	ESTIMATE		ACTUAL	
	AREA (SQ.FT.)	VOLUME (CU.FT.)	AREA (SQ.FT.)	VOLUME (CU.FT.)
SHOTCRETE REPAIRS				
CAP	0.2	0.1		
COLUMN	0.0	0.0		
CONCRETE REPAIRS				
CAP	3.3	1.7		
COLUMN	0.0			
EPOXY COATING	AREA (SQ.FT.)		AREA (SQ.FT.)	
TOP OF BENT CAP	151.0			

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

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FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

- SHOTCRETE REPAIR AREA
- CONCRETE REPAIR AREA

PROJECT NO. 15BPR.119

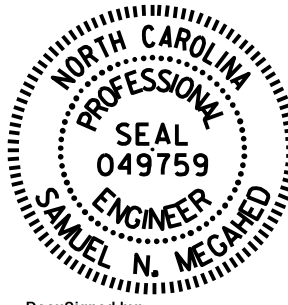
CATAWBA COUNTY

BRIDGE NO. 170091

SHEET 10 OF 14

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIRS
BENT 5
SPAN E FACE

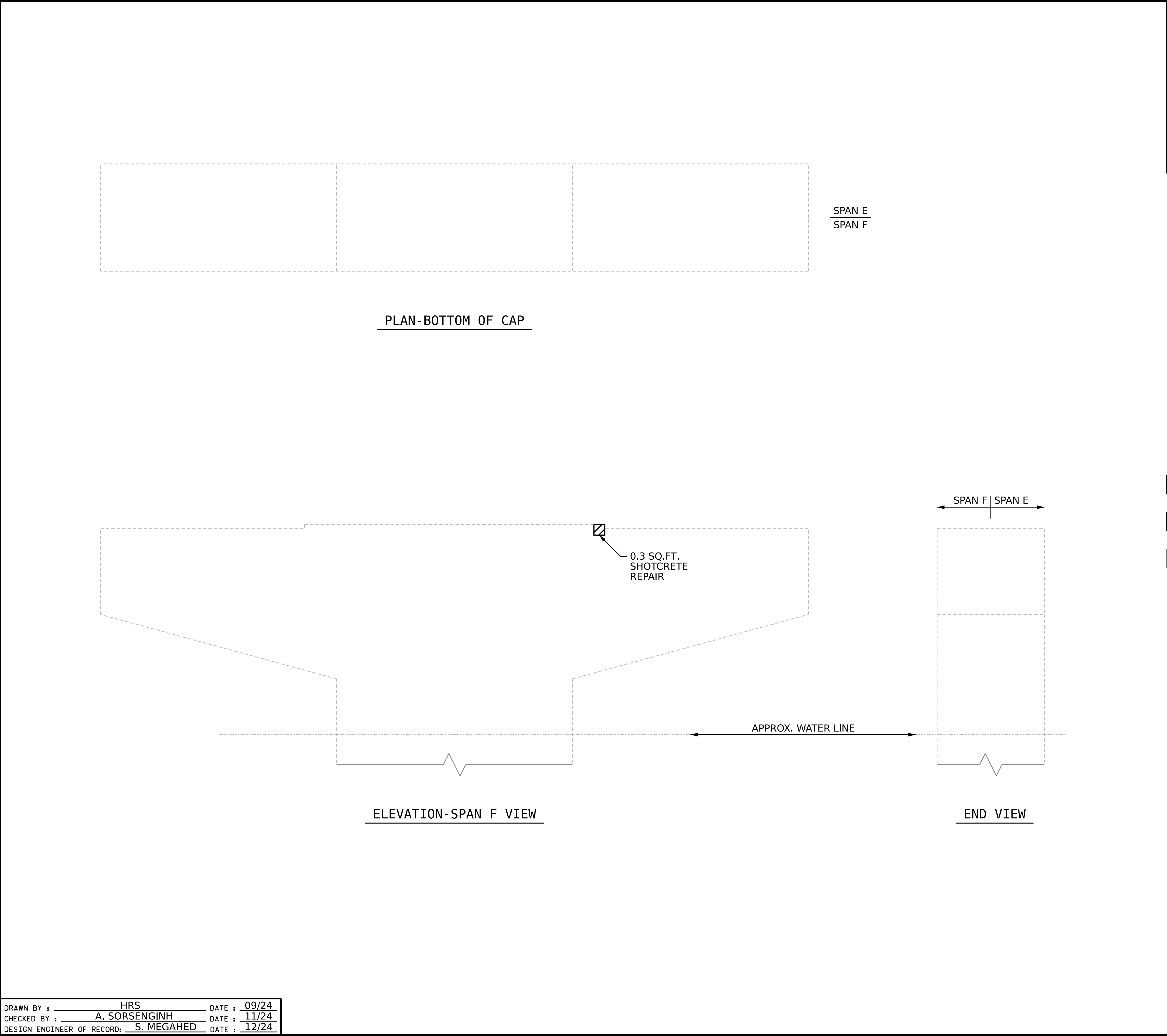


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06/17/2025

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REVISIONS						SHEET NO. S1-24
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 78
2			4			

DRAWN BY : HRS DATE : 09/24
CHECKED BY : A. SORSENGINH DATE : 11/24
DESIGN ENGINEER OF RECORD: S. MEGAHED DATE : 12/24



AS-BUILT REPAIR QUANTITY TABLE				
BENT 5 SPAN F FACE				
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA (SQ.FT.)	VOLUME (CU.FT.)	AREA (SQ.FT.)	VOLUME (CU.FT.)
CAP	0.3	0.2		
COLUMN	0.0	0.0		
CONCRETE REPAIRS				
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. OF 2" CLEAR TO SAWCUT. SEE REPAIR DETAILS.

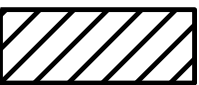

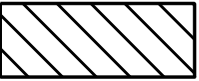
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FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

-  SHOTCRETE REPAIR AREA
-  CONCRETE REPAIR AREA
-  PREVIOUSLY ACCOUNTED FOR AREA

DRAWN BY : HRS

CHECKED BY : A. SORSENGINH

DESIGN ENGINEER OF RECORD: S. MEGAHED

DATE : 09/24

DATE : 11/24

DATE : 12/24

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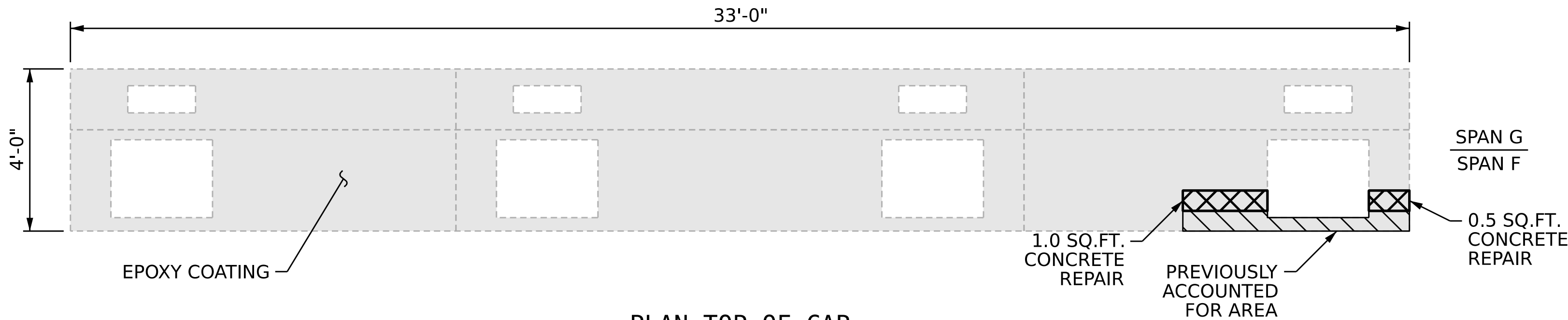


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Samuel Megahed
06/17/2025

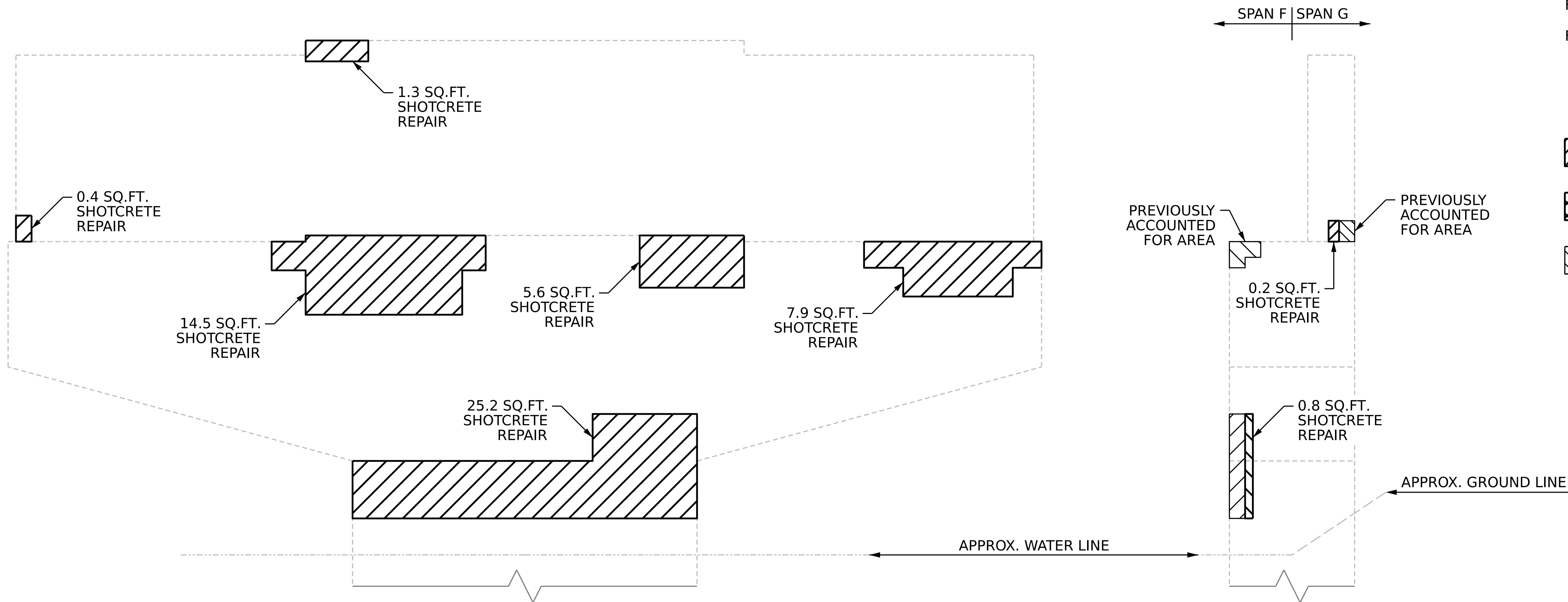
PROJECT NO. 15BPR.119
CATAWBA COUNTY
BRIDGE NO. 170091

SHEET 11 OF 12

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						
SUBSTRUCTURE REPAIRS BENT 5 SPAN F FACE						
REVISIONS						SHEET NO. S1-25
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 78
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2			4			



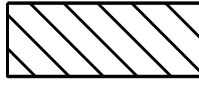


PLAN-TOP OF CAP



ELEVATION-SPAN F VIEW

END VIEW

-  SHOTCRETE REPAIR AREA
-  CONCRETE REPAIR AREA
-  PREVIOUSLY ACCOUNTED FOR AREA

AS-BUILT REPAIR QUANTITY TABLE

BENT 6 SPAN F FACE				
SHOTCRETE REPAIRS	ESTIMATE		ACTUAL	
	AREA (SQ.FT.)	VOLUME (CU.FT.)	AREA (SQ.FT.)	VOLUME (CU.FT.)
CAP	35.4	17.7		
COLUMN	20.6	10.3		
CONCRETE REPAIRS				
CAP	1.5	0.8		
COLUMN	0.0			
EPOXY COATING				
TOP OF BENT CAP	111.0			

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

NOTES

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FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

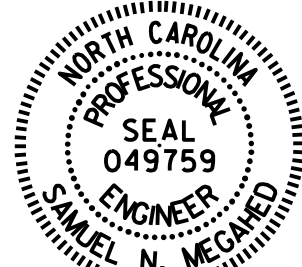
FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

PROJECT NO. 15BPR.119

CATAWBA COUNTY

BRIDGE NO. 170091

SHEET 12 OF 14



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Samuel Megahed
06/17/2025 4:00 PM

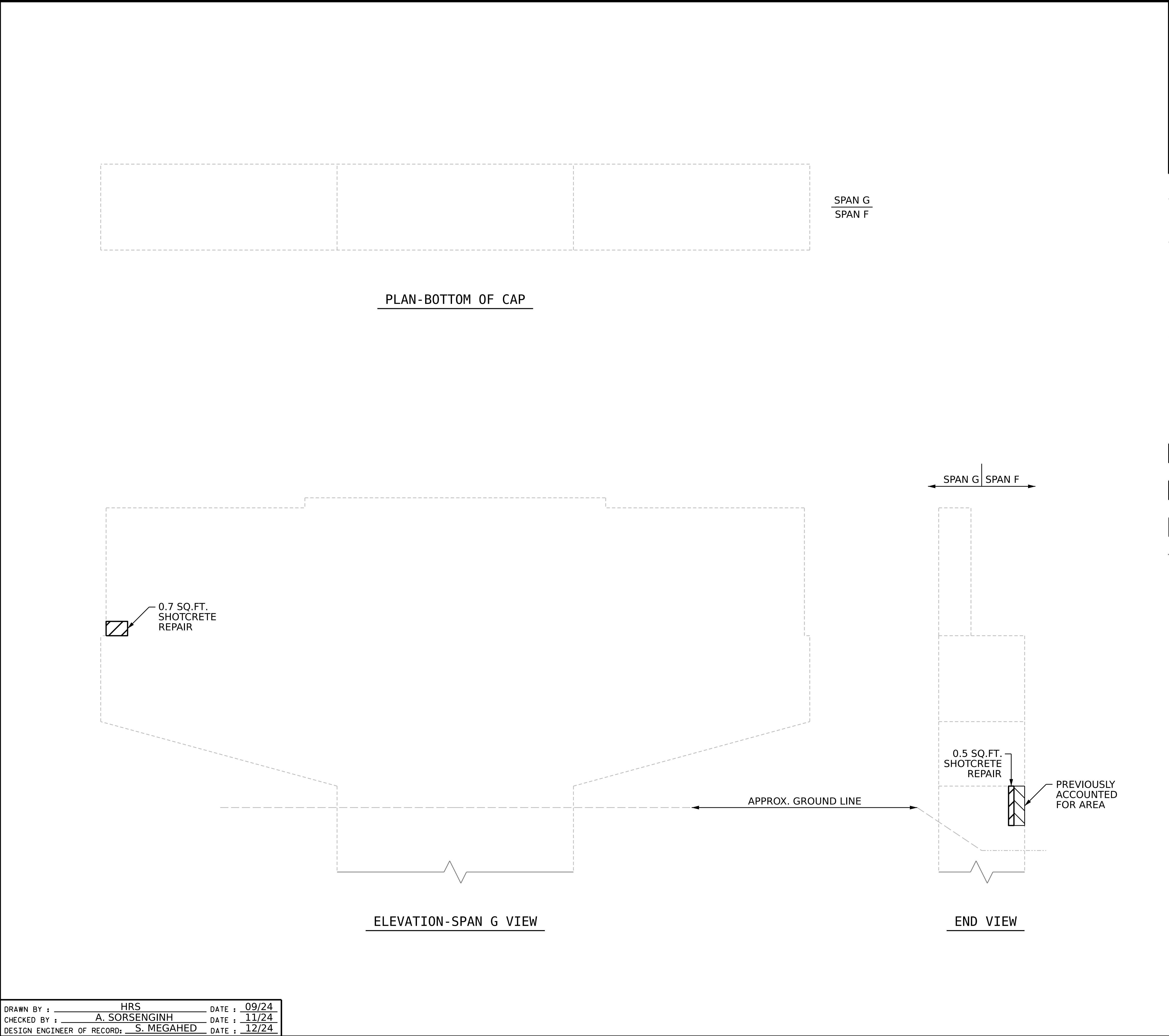
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIRS
BENT 6
SPAN F FACE

REVISIONS						SHEET NO. S1-26
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 78
2			4			

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

DRAWN BY : HRS DATE : 09/24
CHECKED BY : A. SORSENGINH DATE : 11/24
DESIGN ENGINEER OF RECORD: S. MEGAHED DATE : 12/24



AS-BUILT REPAIR QUANTITY TABLE				
BENT 6 SPAN G FACE				
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA (SQ.FT.)	VOLUME (CU.FT.)	AREA (SQ.FT.)	VOLUME (CU.FT.)
CAP	0.7	0.4		
COLUMN	0.5	0.3		
CONCRETE REPAIRS				
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. OF 2" CLEAR TO SAWCUT. SEE REPAIR DETAILS.

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FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

- SHOTCRETE REPAIR AREA
- CONCRETE REPAIR AREA
- PREVIOUSLY ACCOUNTED FOR AREA
- EPOXY RESIN INJECTION

PROJECT NO. **15BPR.119**

CATAWBA COUNTY

BRIDGE NO. **170091**

SHEET 13 OF 14

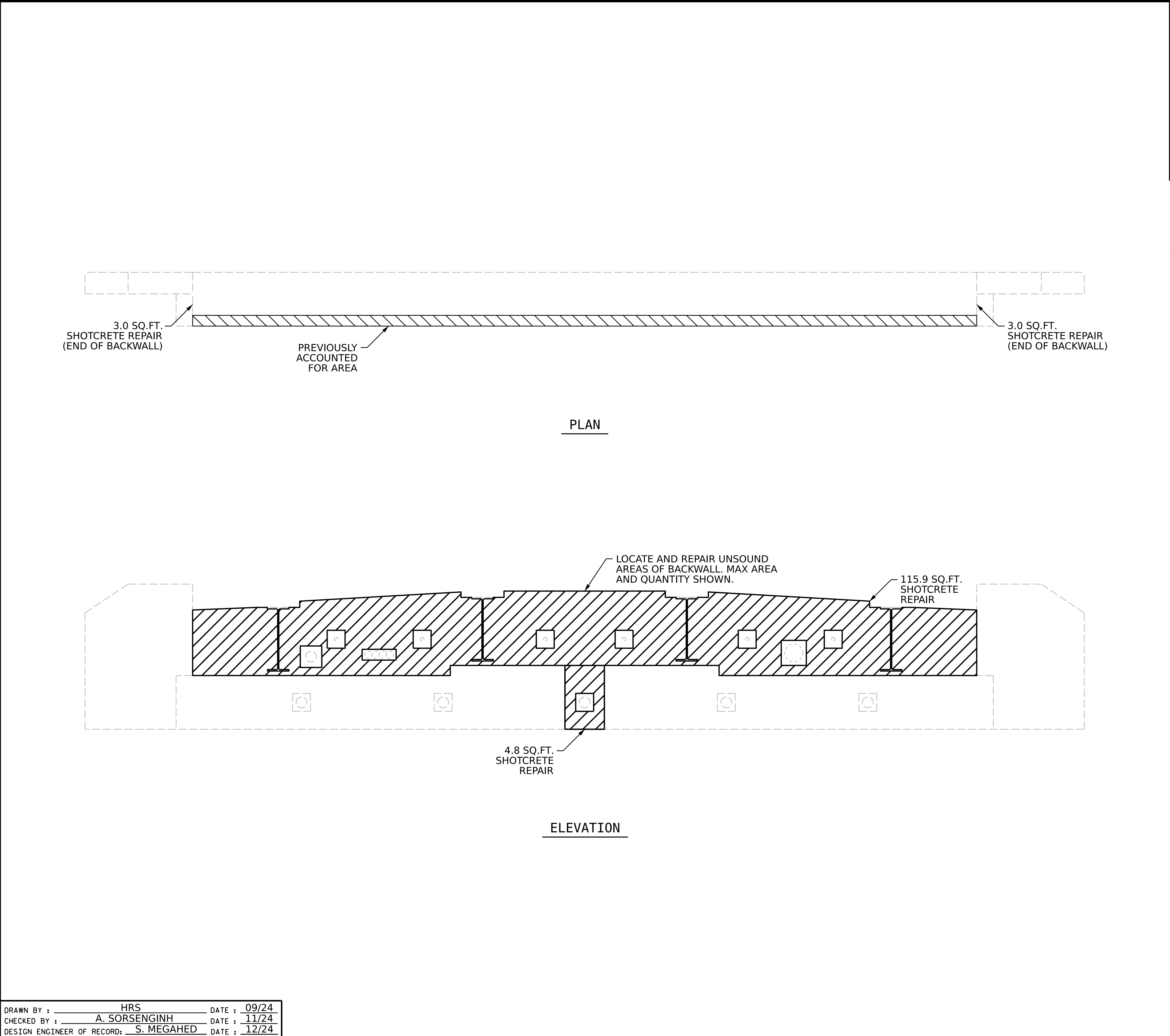
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIRS
BENT 6
SPAN G FACE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	51-27
1			3			TOTAL SHEETS
2			4			78

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Samuel Megahed
06/17/2025

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SIGNATURES COMPLETED



AS-BUILT REPAIR QUANTITY TABLE				
END BENT 2				
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA (SQ.FT.)	VOLUME (CU.FT.)	AREA (SQ.FT.)	VOLUME (CU.FT.)
CAP	4.8	2.4		
CURTAINWALL	121.9	61.0		
CONCRETE REPAIRS	AREA (SQ.FT.)	VOLUME (CU.FT.)	AREA (SQ.FT.)	VOLUME (CU.FT.)
CAP	0.0	0.0		
CURTAINWALL	0.0	0.0		

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

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.

SHOTCRETE REPAIRS MAY BE REPLACED WITH CONCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

PROJECT NO. **15BPR.119**
CATAWBA COUNTY
BRIDGE NO. **170091**

SHEET 14 OF 14

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIR
END BENT 2

REVISIONS					SHEET NO. S1-28
NO.	BY:	DATE:	NO.	BY:	
1			3		TOTAL SHEETS 78
2			4		

DocuSigned by:
Samuel Megahed
06/17/2023

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

DRAWN BY : HRS DATE : 09/24
CHECKED BY : A. SORSENGINH DATE : 11/24
DESIGN ENGINEER OF RECORD: S. MEGAHED DATE : 12/24