PROJECT: 15BPR.159

CONTRACT: C204993

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SWAIN COUNTY

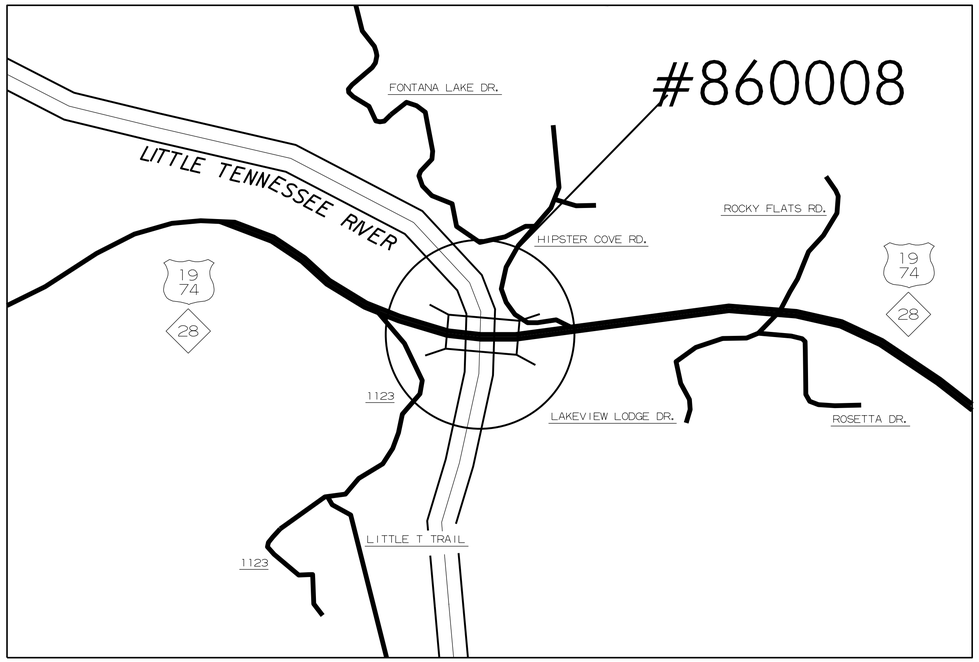
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	15BPR.159	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
15BPR.159.1	–	P.E.
15BPR.159.3	–	CONST.

LOCATION: SWAIN COUNTY

BRIDGE #860008 ON U.S. 19, U.S. 74, AND N.C. 28 OVER THE LITTLE TENNESSEE RIVER.

TYPE OF WORK: BRIDGE PRESERVATION – BRIDGE DECK SPALL REPAIR, PLACE AND REPLACE FOAM JOINT SEALS FOR PRESERVATION, SILICONE JOINT SEALANT, SILANE BARRIER RAIL TREATMENT, PRESTRESSED CONCRETE GIRDER REPAIRS, SUBSTRUCTURE REPAIRS, CLEAN AND PAINT CATWALK RAILS, AND EPOXY COATING OF PRESTRESSED CONCRETE GIRDER ENDS AND BENT CAPS.



VICINITY MAP – SWAIN CO.

DESIGN DATA

SWAIN COUNTY
#8 ADT 2022 = 11,500

PROJECT LENGTH

SWAIN COUNTY
#860008 = 0.152 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 :

SEPTEMBER 16, 2025

ADAM A. COLE, P.E.
PROJECT ENGINEER

SAMUEL MEGAHED, P.E.
PROJECT DESIGN ENGINEER

TIP PROJECT: 15BPR.159

CONTRACT: C204993

STATE OF NORTH CAROLINA

DIVISION OF HIGHWAYS

SWAIN COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	15BPR.159	1A	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
15BPR.159.1	–	P.E.
15BPR.159.3	–	CONST.

LOCATION: BRIDGE No. 860008 ON US–19, US–74, AND NC–28 OVER LITTLE TENNESSEE RIVER.

INDEX OF STRUCTURE SHEETS

TYPE OF WORK:

BRIDGE PRESERVATION – BRIDGE DECK SPALL REPAIR, PLACE AND REPLACE FOAM JOINT SEALS FOR PRESERVATION, SILICONE JOINT SEALANT, SILANE BARRIER RAIL TREATMENT, PRESTRESSED CONCRETE GIRDER REPAIRS, SUBSTRUCTURE REPAIRS,CLEAN AND PAINT CATWALK RAILS, AND EPOXY COATING OF PRESTRESSED CONCRETE GIRDER ENDS AND BENT CAPS.

Prepared In the Office of:

DIVISION OF HIGHWAYS

STRUCTURES MANAGEMENT UNIT

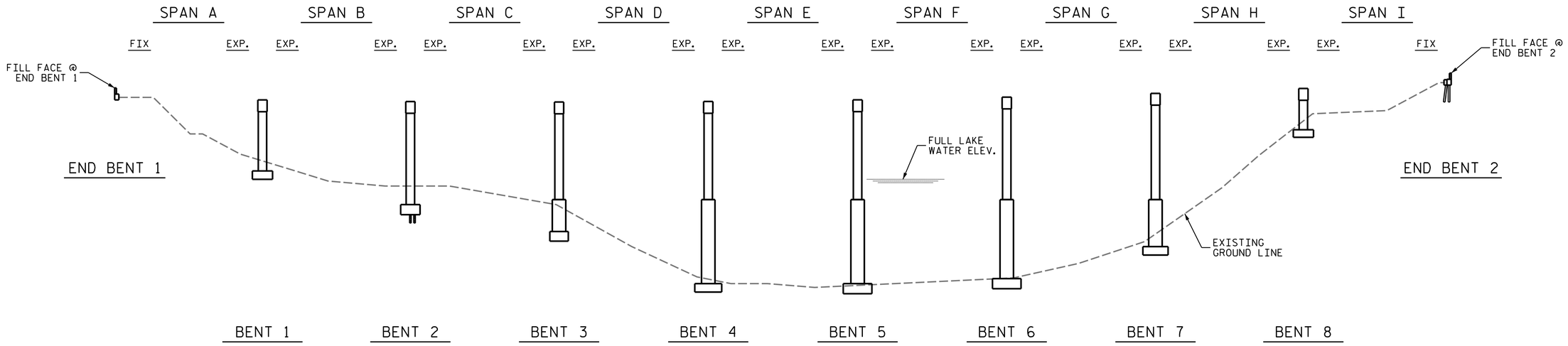
1000 BIRCH RIDGE DR.

RALEIGH, N.C. 27610

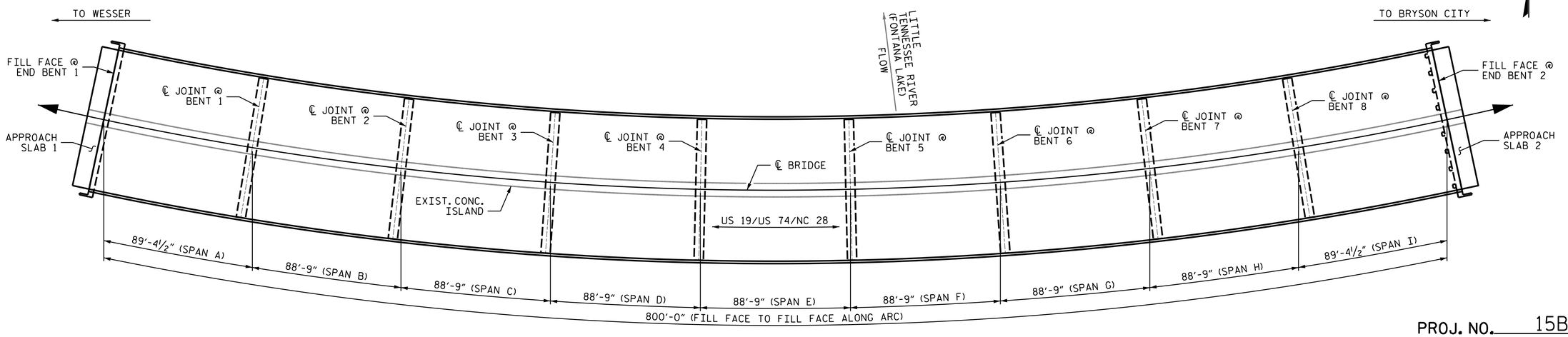
NOTES

GENERAL DRAWING INFORMATION IS TAKEN FROM THE ORIGINAL PLANS AND THE ROUTINE INSPECTION REPORT DATED 08/10/2023.

BRIDGE ORIENTATION CONFORMS TO EXISTING BRIDGE PLANS.



SECTION ALONG ℄ OF ROADWAY



SCOPE OF WORK

- PREPARE AND REPAIR BRIDGE DECK POLYESTER POLYMER CONCRETE OVERLAY SPALL AREAS.
- REMOVE AND REPLACE EXISTING FOAM JOINT SEALS.
- PLACE NEW FOAM JOINT SEALS IN EXISTING OPEN JOINTS.
- REMOVE AND REPLACE SILICONE JOINT SEALANT AT THE END BENTS.
- PREPARE BARRIER SURFACE FOR SILANE BARRIER RAIL TREATMENT.
- APPLY SILANE BARRIER RAIL TREATMENT.
- PREPARE AND REPAIR PRESTRESSED CONCRETE GIRDER REPAIR AREAS.
- EPOXY RESIN INJECTION OF CONCRETE CRACKS.
- REMOVE UNSOUND CONCRETE AND PROPERLY PREPARE SHOTCRETE AND CONCRETE REPAIR AREAS.
- PERFORM SHOTCRETE AND CONCRETE REPAIRS IN PREPARED AREAS.
- REMOVE DEBRIS FROM TOP OF BENT CAPS AND APPLY EPOXY COATING.
- PREPARE AND EPOXY COAT PRESTRESSED CONCRETE GIRDER ENDS.
- CLEAN AND PAINT CATWALK RAILS.

PLAN

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

RESIDENT ENGINEER DATE

NORTH CAROLINA PROFESSIONAL SEAL 35647 ENGINEER ADAM A. COLE

DocuSigned by: 02EE939F4B674C5...
07/25/2025

NORTH CAROLINA PROFESSIONAL SEAL 049759 ENGINEER SAMUEL N. MEGANCO

DocuSigned by: Samuel Megahed 90E556644BA74ED...
07/25/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJ. NO. 15BPR.159

SWAIN COUNTY

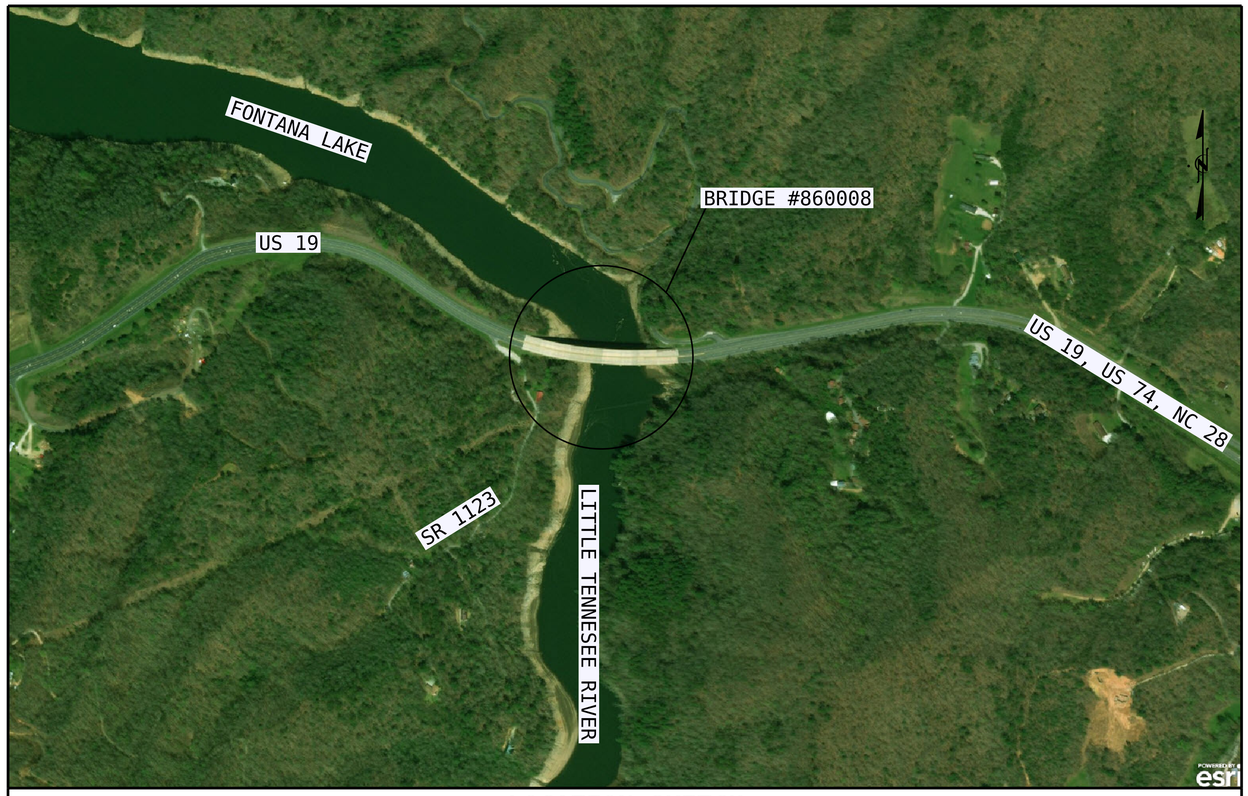
BRIDGE NO. 860008

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON
US 19, US 74, & NC 28 OVER
LITTLE TENNESSEE RIVER
(FONTANA LAKE)

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

DRAWN BY : R.L.PUTEK / HRS DATE : 03/24
CHECKED BY : A.A. COLE DATE : 09/24



LOCATION SKETCH

BRIDGE COORDINATES

LATITUDE	LONGITUDE
35° 22' 27.90"	-83° 31' 12.49"

TOTAL BILL OF MATERIALS

POLLUTION CONTROL	POLYESTER POLYMER CONCRETE OVERLAY REPAIR	CONCRETE REPAIRS	SHOTCRETE REPAIRS	EPOXY RESIN INJECTION	BAT EXCLUSION MEASURES	CLEANING & REPAINTING EXISTING CATWALK RAILS	PAINTING CONTAINMENT FOR EXISTING CATWALK RAILS
LUMP SUM	SQ.FT.	CU.FT.	CU.FT.	LIN.FT.	LUMP SUM	LUMP SUM	LUMP SUM
LUMP SUM	4.5	179.2	1684.3	7581.2	LUMP SUM	LUMP SUM	LUMP SUM

FOAM JOINT SEALS FOR PRESERVATION	POURABLE SILICONE JOINT SEALANT	REPAIRS TO PRESTRESSED CONCRETE GIRDERS	EPOXY COATING	EPOXY COATING CONCRETE GIRDER ENDS	SILANE BARRIER RAIL TREATMENT	SURFACE PREPARATION FOR CONCRETE BARRIER RAIL
LIN.FT.	LIN.FT.	CU.FT.	SQ.FT.	SQ.FT.	SQ.FT.	SQ.FT.
694.7	173.7	16.1	4078.4	5900.4	6320.0	6320.0

DRAWN BY : HRS DATE : 5/25
CHECKED BY : T. SHERRILL DATE : 5/25
DESIGN ENGINEER OF RECORD: S. MEGAHED DATE : 5/25

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.

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

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

EXISTING JOINTS AND DECK DRAINS SHALL BE SEALED PRIOR TO BEGINNING REPAIR OF BRIDGE DECKS.

FOR CLASS II SURFACE PREPARATION, SEE POLYESTER POLYMER CONCRETE OVERLAY REPAIR SPECIAL PROVISION.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

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.

WORK ON BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL SUBMIT PLANS FOR CONSTRUCTION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

FOR CLEANING AND REPAINTING OF EXISTING CATWALK RAILS, SEE SPECIAL PROVISIONS.

FOR POLLUTION CONTROL AND PAINTING CONTAINMENT, SEE CLEANING AND PAINTING EXISTING CATWALK RAILS SPECIAL PROVISIONS.

FOR REPAIRS TO PRESTRESSED CONCRETE GIRDERS, SEE SPECIAL PROVISIONS.

FOR EPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.

FOR EPOXY COATING COATING CONCRETE GIRDER ENDS, SEE SPECIAL PROVISIONS.

FOR SILANE BARRIER RAIL TREATMENT, SEE SPECIAL PROVISIONS.

FOR FOAM JOINT SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.

FOR POURABLE SILICONE JOINT SEALANT, SEE SPECIAL PROVISIONS.

NOTES FOR POTENTIAL BAT INTERACTIONS

FOR BAT EXCLUSION MEASURES, SEE PROJECT SPECIAL PROVISIONS. NO WORK SHALL BEGIN UNTIL AFTER BAT EXCLUSION MEASURES HAVE BEEN INSTALLED BETWEEN JANUARY 15 AND FEBRUARY 15.

CONTRACTOR SHALL AVOID BRIDGE DECK JOINT WORK, WORK ON DECK BENT DIAPHRAGMS, AND WORK NEAR CONCRETE BARRIER RAIL JOINTS DURING PUP SEASON, WHEN BATS ARE UNABLE TO FLY (MAY 15 - JULY 31).

ANY WORK ON THE BRIDGE SHALL PROGRESS IN AN EASTWARD FASHION: WORK SHALL BEGIN ON THE WEST END OF THE BRIDGE (END BENT 1) AND PROGRESS TOWARD THE EAST END OF THE BRIDGE (END BENT 2). INDIVIDUAL SUBCONTRACTORS ARE NOT REQUIRED TO WAIT FOR THE NEXT TRADE TO BE COMPLETED AT A PARTICULAR BENT OR OTHER LOCATION BEFORE THEY CAN CONTINUE WORKING WESTERLY THEMSELVES.

FEDERALLY LISTED BATS COULD BE ROOSTING IN THE OPEN AREA ON THE EAST AND WEST ENDS OF THE BRIDGE - BENEATH THE DECK - DURING WORK. CONTRACTORS SHALL VISUALLY SURVEY THESE AREAS BEFORE UNDERTAKING BAT-DISTURBING ACTIVITIES SUCH AS SANDING, CUTTING, SHOTCRETE APPLICATION, PAINTING, ETC. IF BATS ARE PRESENT IN THE WORK AREA, THE CONTRACTOR SHALL GENTLY DISTURB THE BAT TO ENCOURAGE IT TO FLUSH. THIS WILL INVOLVE USING A BLUNT (NOT SHARP) STICK - SUCH AS A YARD STICK - TO GENTLY NUDGE THE ANIMAL FROM THE SIDE OF ITS BODY UNTIL IT EXITS THE WORK AREA. DO NOT JAB OR POKE THE ANIMAL. BATS SHALL NOT BE HANDLED/REMOVED BY HAND BY CONTRACTORS. IF THE BAT WILL NOT FLUSH, OR IS INJURED OR KILLED, CONTACT NCDOT DIVISION 14 ENVIRONMENTAL SPECIALISTS AND THE NCDOT CENTRAL BIOLOGICAL SURVEYS GROUP, WHO WILL THEN NOTIFY THE U.S. FISH AND WILDLIFE SERVICE AND NORTH CAROLINA WILDLIFE RESOURCES COMMISSION.

PROJECT NO. 15BPR.159
SWAIN COUNTY
BRIDGE NO. 860008

NORTH CAROLINA PROFESSIONAL SEAL 049759 ENGINEER SAMUEL N. MEGAHED

DocuSigned by: Samuel Megahed 90E555644BA74ED...
07/25/2025

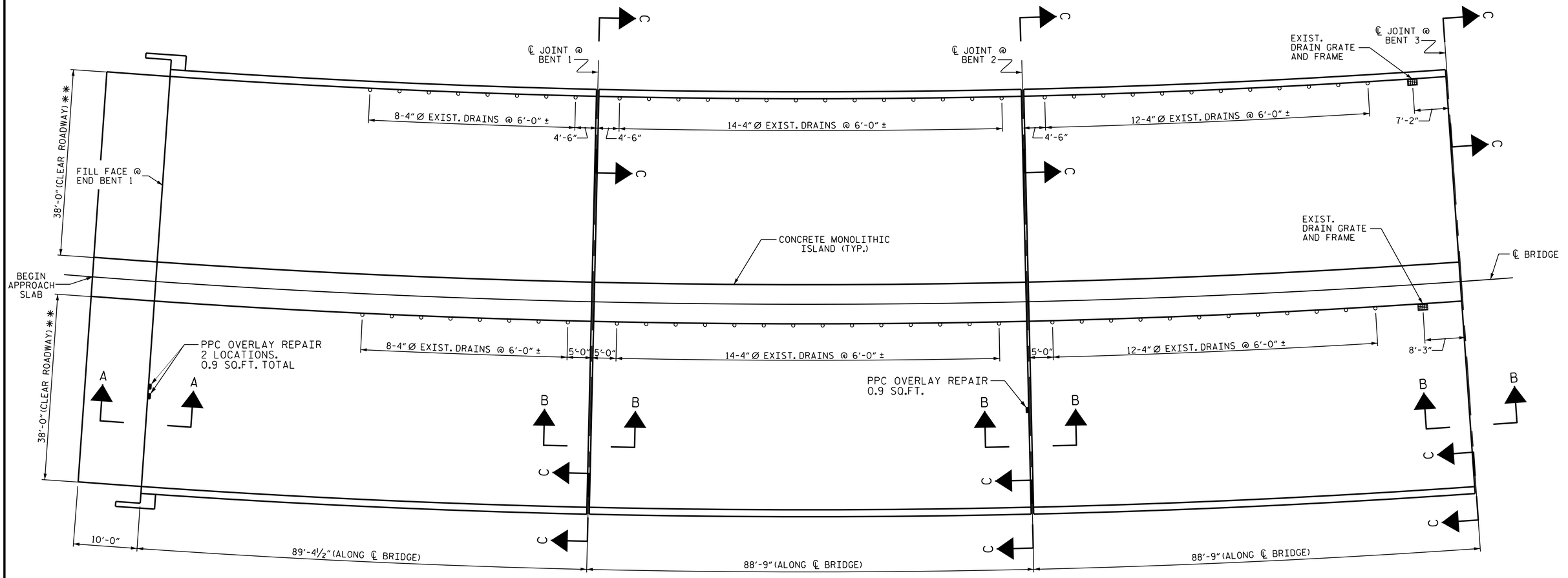
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

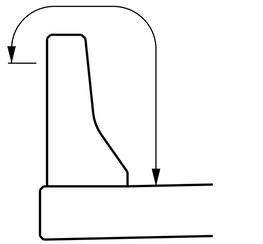
FOR BRIDGE ON
US 19, US 74, & NC 28 OVER
LITTLE TENNESSEE RIVER
(FONTANA LAKE)

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



PLAN OF SPANS

** RADIAL DIMENSION



LIMIT OF SILANE BARRIER RAIL TREATMENT APPLICATION

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.

FOR SECTION A-A, SECTION B-B, AND SECTION C-C, SEE "JOINT DETAILS" SHEET.

FOR UNDERSIDE OF DECK, GIRDER, AND DIAPHRAGM REPAIRS, SEE "FRAMING PLAN" SHEET 1 OF 3.

FOR POLYESTER POLYMER CONCRETE OVERLAY REPAIR, SEE SPECIAL PROVISION.

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

FOR FOAM JOINT SEALS FOR PRESERVATIONS, SEE SPECIAL PROVISION.

FOR POURABLE SILICONE JOINT SEALANT, SEE SPECIAL PROVISION.

APPROX. CLASS II SURFACE PREPARATION

EPOXY RESIN INJECTION (ERI)

AS-BUILT REPAIR QUANTITY TABLE

TOP OF DECK REPAIRS - SPANS A, B, & C

	ESTIMATE	ACTUAL
PPC OVERLAY REPAIR	1.8 SQ. FT.	
FOAM JOINT SEALS FOR PRESERVATION	260.5 LIN. FT.	
POURABLE SILICONE JOINT SEALANT	86.8 LIN. FT.	
SURFACE PREPARATION FOR CONCRETE BARRIER	2108.3 SQ.FT.	
SILANE BARRIER RAIL TREATMENT	2108.3 SQ.FT.	

TOP OF DECK REPAIR QUANTITIES REPRESENT ESTIMATED VALUES OF CLASS II SURFACE PREPARATION (MIN. 2" CLEAR TO SAWCUT). SEE PPC OVERLAY REPAIR SPECIAL PROVISION.

NORTH CAROLINA PROFESSIONAL SEAL 049759 ENGINEER SAMUEL N. MEGALED

DocuSigned by: Samuel Megaled 90E555648AB74ED...

07/25/2025

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PROJECT NO. 15BPR.159

SWAIN COUNTY

BRIDGE NO.: 860008

SHEET 1 OF 3

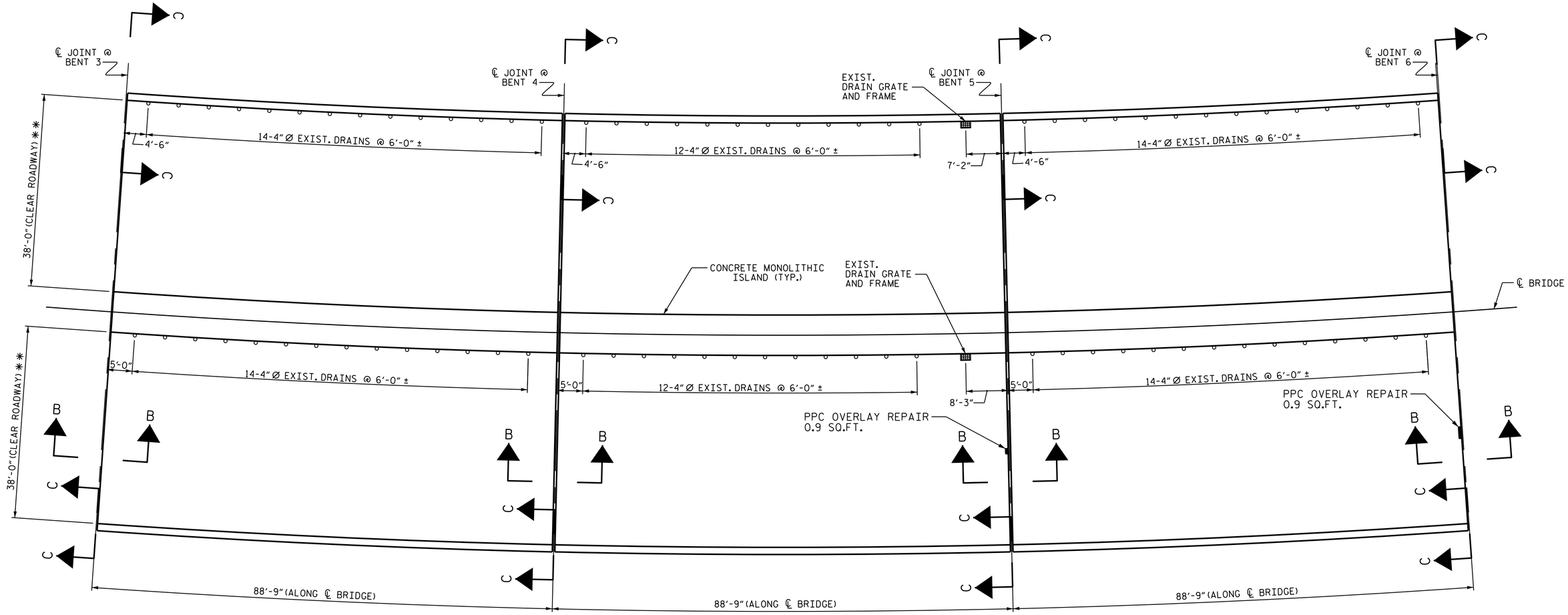
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF SPANS
SPAN A, B, & C

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

DRAWN BY : D.V. JOYNER / HRS DATE : 5/2024

CHECKED BY : T. SHERRILL DATE : 5/2024



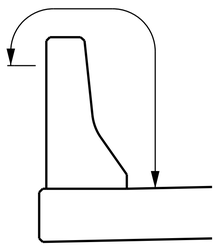
SPAN D

SPAN E

SPAN F

PLAN OF SPANS

** RADIAL DIMENSION



LIMIT OF SILANE BARRIER RAIL TREATMENT APPLICATION

NOTES:

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FOR SECTION A-A, SECTION B-B, AND SECTION C-C, SEE "JOINT DETAILS" SHEET.

FOR UNDERSIDE OF DECK, GIRDER, AND DIAPHRAGM REPAIRS, SEE "FRAMING PLAN" SHEET 2 OF 3.

FOR POLYESTER POLYMER CONCRETE OVERLAY REPAIRS, SEE SPECIAL PROVISION.

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

FOR FOAM JOINT SEALS FOR PRESERVATIONS, SEE SPECIAL PROVISION.

FOR POURABLE SILICONE JOINT SEALANT, SEE SPECIAL PROVISION.

APPROX. CLASS II SURFACE PREPARATION

EPOXY RESIN INJECTION (ERI)

AS-BUILT REPAIR QUANTITY TABLE

TOP OF DECK REPAIRS - SPANS D, E, & F

	ESTIMATE	ACTUAL
PPC OVERLAY REPAIR	1.8 SQ. FT.	
FOAM JOINT SEALS FOR PRESERVATION	260.5 LIN. FT.	
SURFACE PREPARATION FOR CONCRETE BARRIER	2103.4 SQ.FT.	
SILANE BARRIER RAIL TREATMENT	2103.4 SQ.FT.	

TOP OF DECK REPAIR QUANTITIES REPRESENT ESTIMATED VALUES OF CLASS II SURFACE PREPARATION. (MIN. 2" CLEAR TO SAWCUT). SEE PPC OVERLAY REPAIR SPECIAL PROVISION.

PROJECT NO. 15BPR.159

SWAIN COUNTY

BRIDGE NO.: 860008

SHEET 2 OF 3

NORTH CAROLINA PROFESSIONAL SEAL 049759 ENGINEER SAMUEL N. MEGALED

DocuSigned by: Samuel Megaled 90E555644BA74ED...

07/25/2025

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF SPANS
SPAN D, E, & F

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

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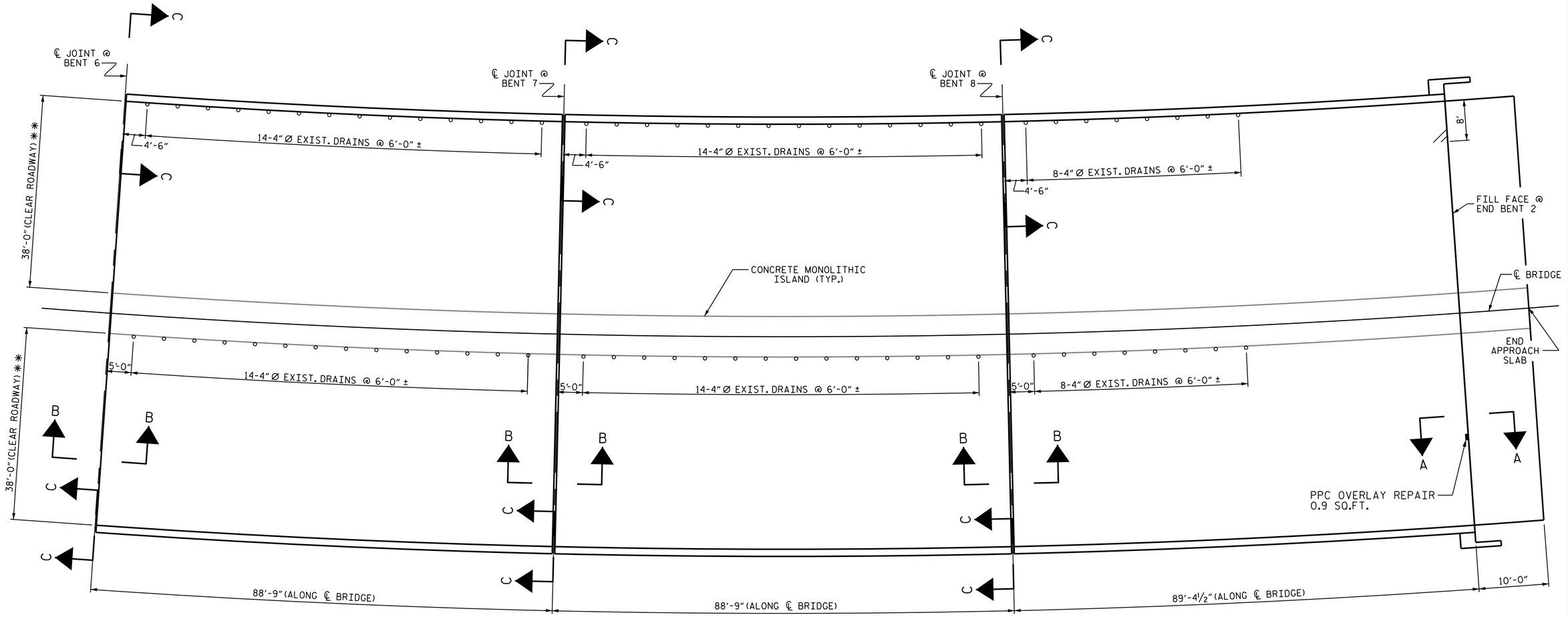
CHECKED BY : T. SHERRILL DATE : 5/2024



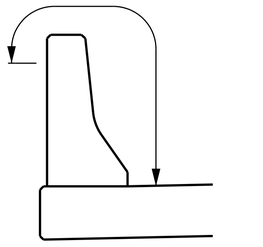
SPAN G

SPAN H

SPAN I

PLAN OF SPANS

** RADIAL DIMENSION



LIMIT OF SILANE BARRIER RAIL TREATMENT APPLICATION

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.

FOR SECTION A-A, SECTION B-B, AND SECTION C-C, SEE "JOINT DETAILS" SHEET.

FOR UNDERSIDE OF DECK, GIRDER, AND DIAPHRAGM REPAIRS, SEE "FRAMING PLAN" SHEET 3 OF 3.

FOR POLYESTER POLYMER CONCRETE OVERLAY REPAIRS, SEE SPECIAL PROVISION.

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

FOR FOAM JOINT SEALS FOR PRESERVATIONS, SEE SPECIAL PROVISION.

FOR POURABLE SILICONE JOINT SEALANT, SEE SPECIAL PROVISION.

APPROX. CLASS II SURFACE PREPARATION

EPOXY RESIN INJECTION (ERI)

AS-BUILT REPAIR QUANTITY TABLE

TOP OF DECK REPAIRS - SPANS G, H, & I

	ESTIMATE	ACTUAL
PPC OVERLAY REPAIR	0.9 SQ. FT.	
FOAM JOINT SEALS FOR PRESERVATION	173.7 LIN. FT.	
POURABLE SILICONE JOINT SEALANT	86.8 LIN. FT.	
SURFACE PREPARATION FOR CONCRETE BARRIER	2108.3 SQ.FT.	
SILANE BARRIER RAIL TREATMENT	2108.3 SQ.FT.	

TOP OF DECK REPAIR QUANTITIES REPRESENT ESTIMATED VALUES OF CLASS II SURFACE PREPARATION (MIN. 2" CLEAR TO SAWCUT). SEE PPC OVERLAY REPAIR SPECIAL PROVISION.

NORTH CAROLINA PROFESSIONAL SEAL 049759 ENGINEER SAMUEL N. MEGALED

DocuSigned by: Samuel Megaled 90E555644BA74ED...
07/25/2025

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PROJECT NO. 15BPR.159

SWAIN COUNTY

BRIDGE NO.: 860008

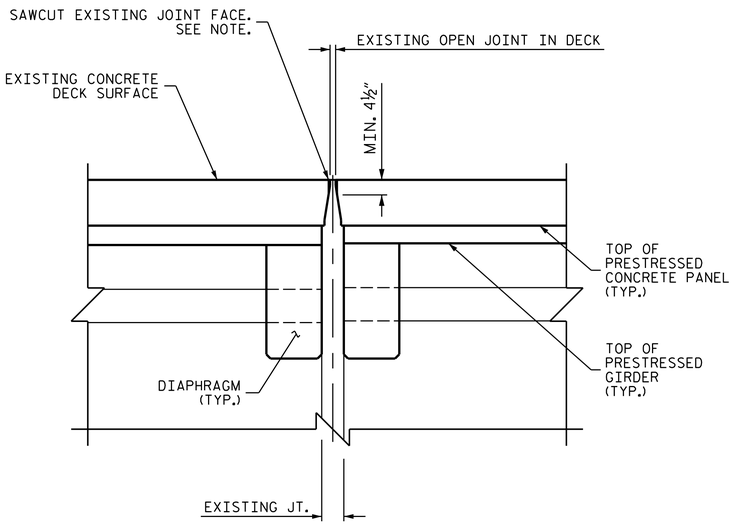
SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

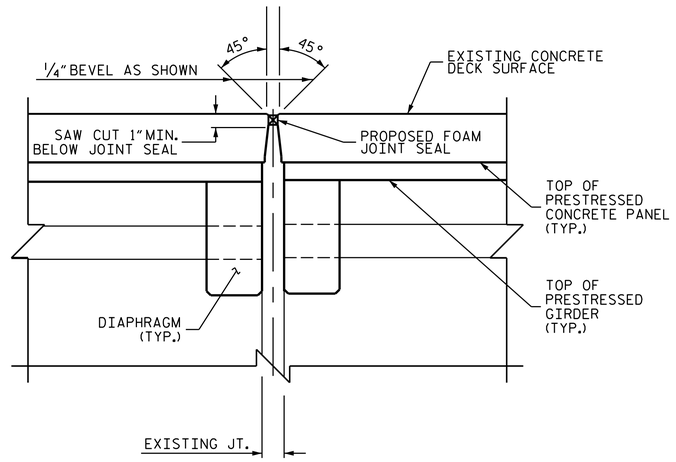
PLAN OF SPANS
SPAN G, H, & I

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			31

DRAWN BY : D.V. JOYNER / HRS DATE : 5/2024
CHECKED BY : T. SHERRILL DATE : 5/2024



EXISTING JOINT



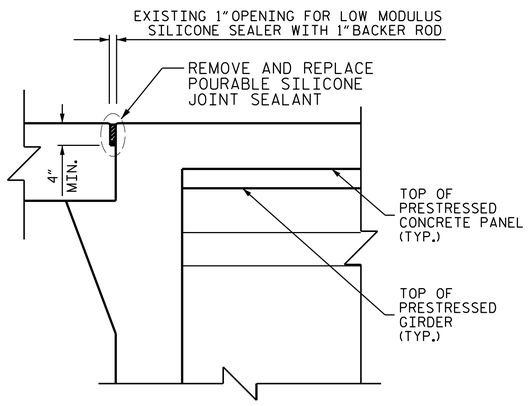
PROPOSED FOAM JOINT SEAL

NOTES

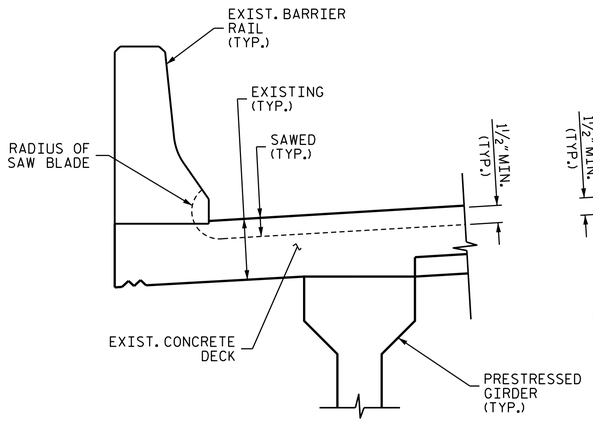
JOINTS AT BENTS 2 - 7 ARE CURRENTLY OPEN AND THE EXISTING JOINT OPENING DIMENSION VARIES. THE SAWED OPENING AND EXPANSION MOVEMENT INDICATED IS BASED ON A FORMED OPENING OF 1". EACH FACE OF THE JOINT SHALL BE SAWCUT, SUCH THAT THERE WILL BE A MINIMUM VERTICAL FACE OF 4½" (OR SUFFICIENT DEPTH TO PROPERLY ADHERE THE FOAM SEAL, AS PER THE MANUFACTURER) FOR PLACEMENT OF THE FOAM SEAL. IT IS ESTIMATED THAT EACH SIDE OF THE JOINT WILL REQUIRE CUTTING ⅝" FROM THE CURRENT JOINT FACE TO ATTAIN THIS VERTICAL DIMENSION. THIS SHALL BE VERIFIED AND ADJUSTED IN THE FIELD, AS NECESSARY. THE MANUFACTURER IS TO PROVIDE THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE FOAM JOINT SEAL FOR THE RESULTING SIZE OF THE REQUIRED SAWED OPENING AND ACCOMMODATE THE MINIMUM EXPANSION MOVEMENT INDICATED.

JOINT OPENING TABLE			
	SAWED JT. OPENING (PERPENDICULAR TO JT.)		
LOCATION	AT 45°F	AT 60°F	AT 90°F
BETNS 2 THRU 7	1-11/16"	1-9/16"	1-3/8"

SECTION B-B

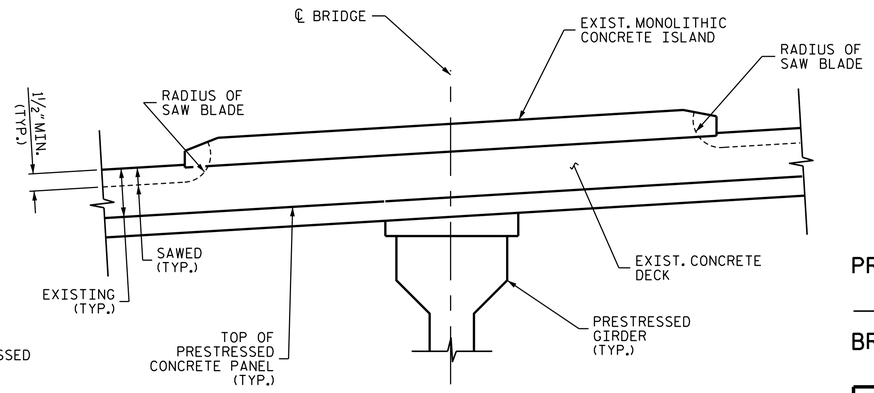


SECTION A-A



SECTION C-C

(LEFT BARRIER RAIL SHOWN, RIGHT BARRIER RAIL SIMILAR)



MEDIAN DETAIL

PROJECT NO. 15BPR.159

SWAIN COUNTY

BRIDGE NO. 860008

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

JOINT DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 049759 ENGINEER SAMUEL N. MEGALED

DocuSigned by: Samuel Megaled 90E555644BA74ED...

07/25/2025

DRAWN BY : R.L.PUTEK / HRS DATE : 05/25

CHECKED BY : T. SHERRILL DATE : 05/25

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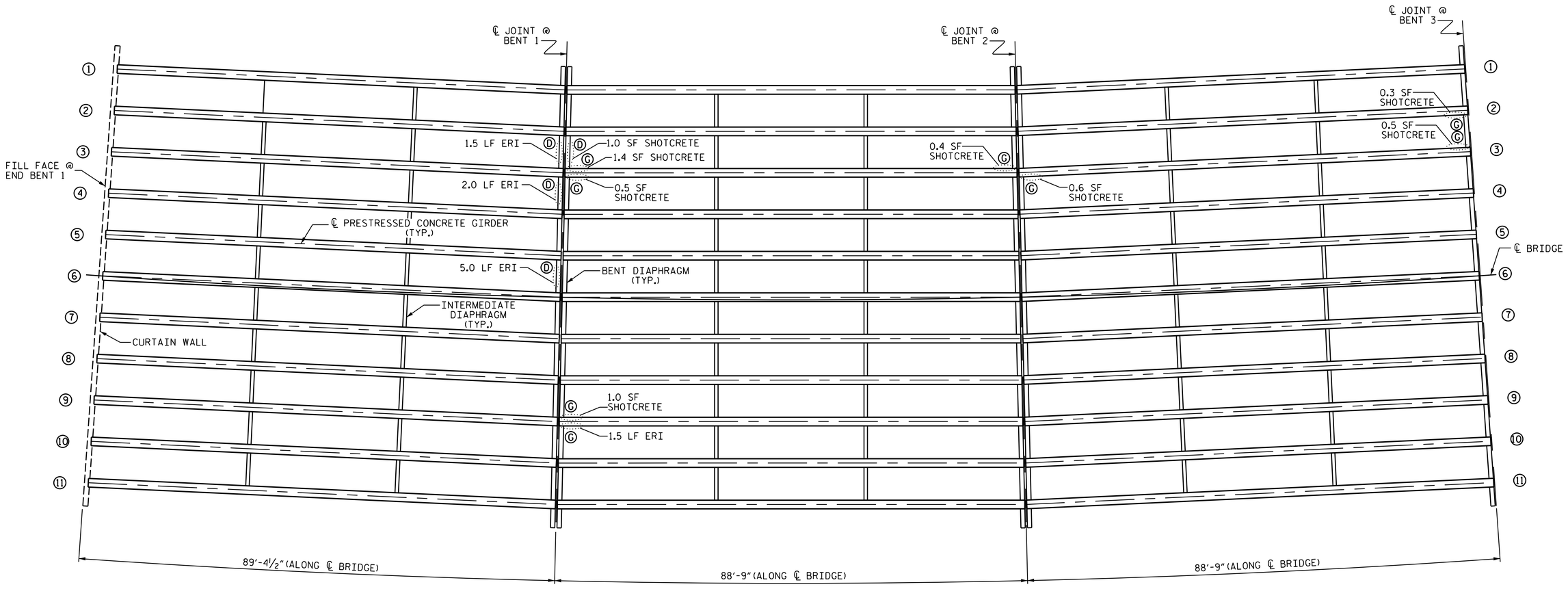
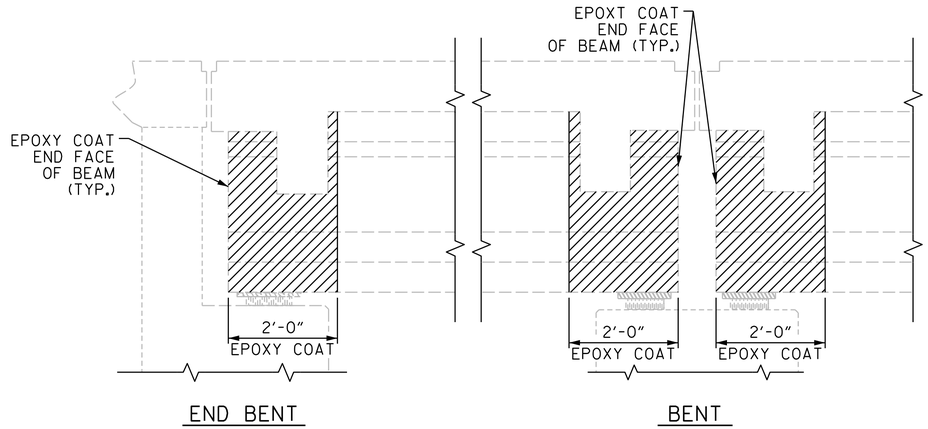
2			4			31



FRAMING PLAN



LIMITS OF EPOXY COATING

EPOXY COAT ALL GIRDER ENDS

AS-BUILT REPAIR QUANTITY TABLE

SPANS A, B, & C	QUANTITIES			
	ESTIMATE		ACTUAL	
GIRDER REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
SHOTCRETE	4.7	2.4		
EPOXY COATING CONC. GIRDER ENDS	1966.8	--		--
	LIN. FT.		LIN. FT.	
EPOXY RESIN INJECTION	1.5			
DIAPHRAGM REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
SHOTCRETE	1.0	0.5		
	LIN. FT.		LIN. FT.	
EPOXY RESIN INJECTION	8.5			
UNDERSIDE OF DECK REPAIRS	LIN. FT.		LIN. FT.	
EPOXY RESIN INJECTION	0.0			

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

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.

FOR EPOXY COATING CONCRETE GIRDER ENDS, SEE SPECIAL PROVISION.

FOR PRESTRESSED CONCRETE GIRDER REPAIRS AND DIAPHRAGM REPAIRS, SEE "PRESTRESSED GIRDER & DIAPHRAGM REPAIR DETAILS" SHEET.

- ① BEAM NUMBER
- Ⓖ GIRDER REPAIR
- Ⓓ DIAPHRAGM REPAIR
- EPOXY RESIN INJECTION (ERI)

PROJECT NO. 15BPR.159

SWAIN COUNTY

BRIDGE NO.: 860008

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FRAMING PLAN
SPAN A, B, & C

NORTH CAROLINA PROFESSIONAL SEAL 049759 ENGINEER SAMUEL N. MEGALED

DocuSigned by: Samuel Megaled 30E555644BA74ED...
07/25/2025

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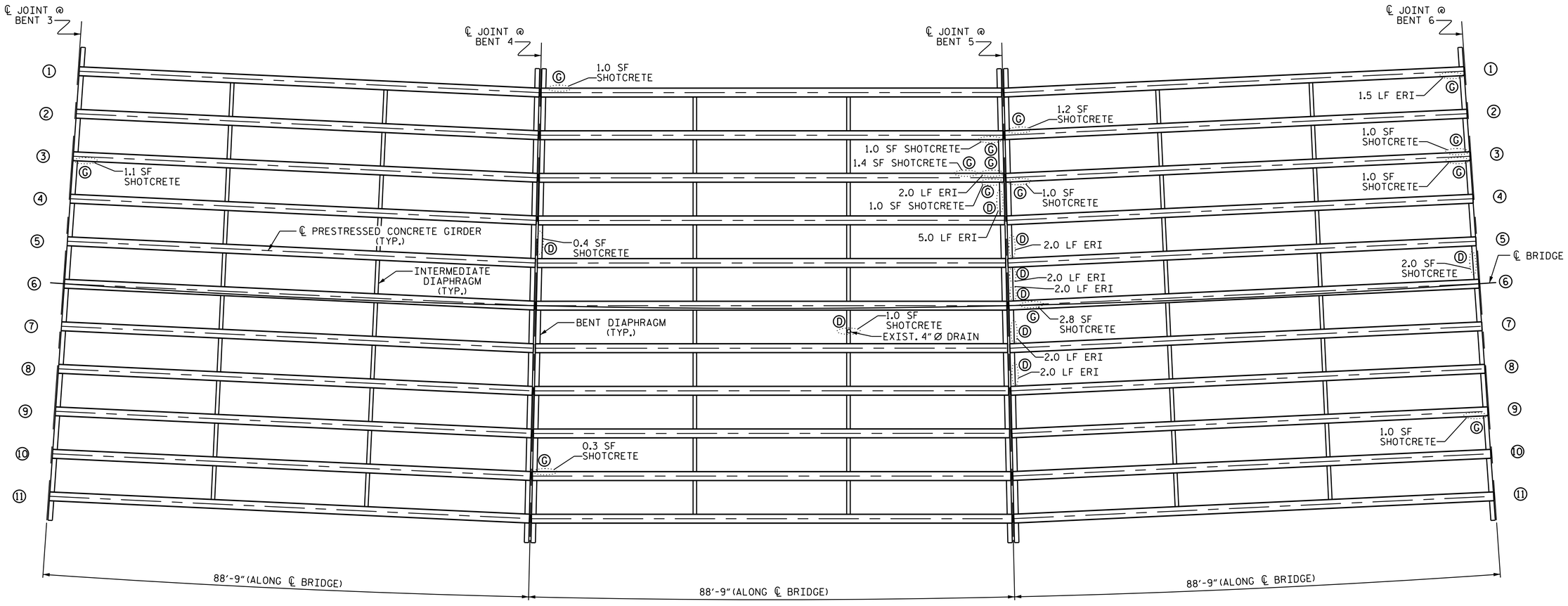
DRAWN BY : D.V. JOYNER / HRS DATE : 05/25
CHECKED BY : T. SHERRILL DATE : 05/25



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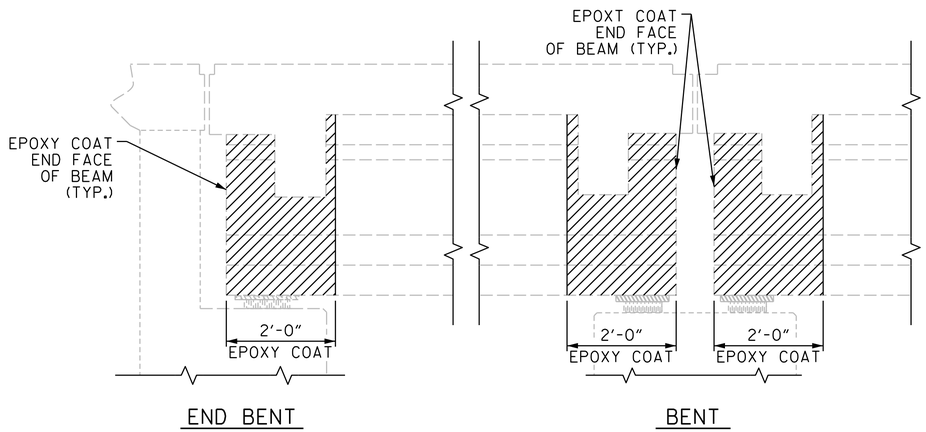

LIMITS OF EPOXY COATING

EPOXY COAT ALL GIRDER ENDS

AS-BUILT REPAIR QUANTITY TABLE

SPANS D, E, & F	QUANTITIES			
	ESTIMATE		ACTUAL	
GIRDER REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
SHOTCRETE	13.8	6.9		
EPOXY COATING CONC. GIRDER ENDS	1966.8	--		--
	LIN. FT.		LIN. FT.	
EPOXY RESIN INJECTION	3.5			
DIAPHRAGM REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
SHOTCRETE	3.4	1.7		
	LIN. FT.		LIN. FT.	
EPOXY RESIN INJECTION	15.0			
UNDERSIDE OF DECK REPAIRS	LIN. FT.		LIN. FT.	
EPOXY RESIN INJECTION	0.0			

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

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FOR EPOXY COATING CONCRETE GIRDER ENDS, SEE SPECIAL PROVISION.

FOR PRESTRESSED CONCRETE GIRDER REPAIRS AND DIAPHRAGM REPAIRS, SEE "PRESTRESSED GIRDER & DIAPHRAGM REPAIR DETAILS" SHEET.

① BEAM NUMBER
Ⓖ GIRDER REPAIR
Ⓓ DIAPHRAGM REPAIR
EPOXY RESIN INJECTION (ERI)

PROJECT NO. 15BPR.159
SWAIN COUNTY
BRIDGE NO.: 860008

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FRAMING PLAN
SPAN D, E, & F

NORTH CAROLINA PROFESSIONAL SEAL 049759 ENGINEER SAMUEL N. MEGALED

DocuSigned by: Samuel Megaled 90E5556448A74ED...
07/25/2025

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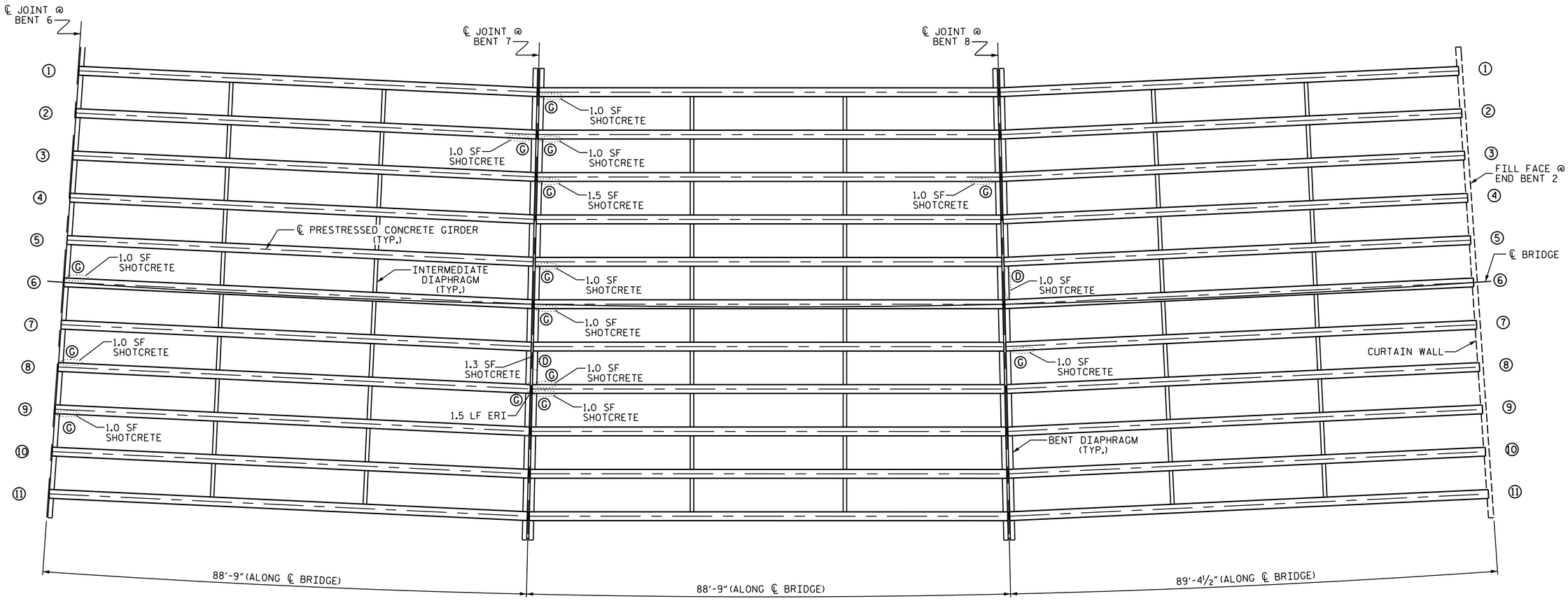
2			4			31

DRAWN BY : D.V. JOYNER / HRS DATE : 05/25
CHECKED BY : T. SHERRILL DATE : 05/25



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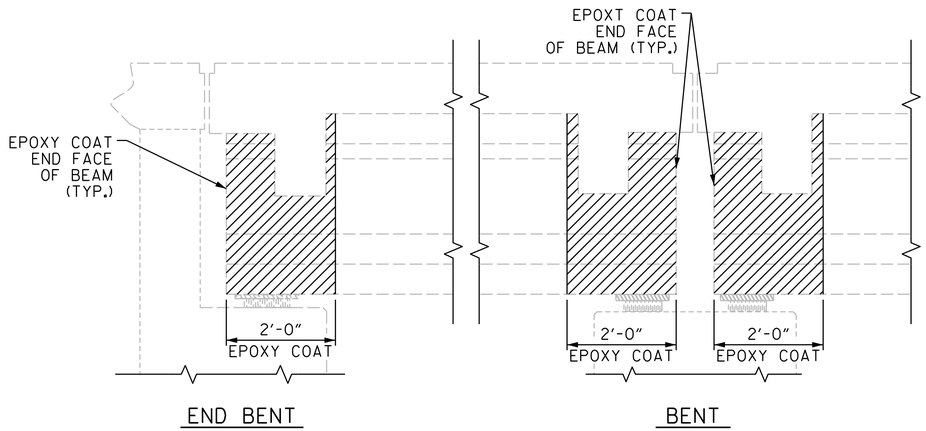

LIMITS OF EPOXY COATING

EPOXY COAT ALL GIRDER ENDS

AS-BUILT REPAIR QUANTITY TABLE

SPANS G, H, & I	QUANTITIES			
	ESTIMATE		ACTUAL	
GIRDER REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
SHOTCRETE	13.5	6.8		
EPOXY COATING GIRDER ENDS	1966.8	--		--
	LIN. FT.		LIN. FT.	
EPOXY RESIN INJECTION	1.5			
DIAPHRAGM REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
SHOTCRETE	2.3	1.2		
	LIN. FT.		LIN. FT.	
EPOXY RESIN INJECTION	0.0			
UNDERSIDE OF DECK REPAIRS	LIN. FT.		LIN. FT.	
EPOXY RESIN INJECTION	0.0			

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

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FOR PRESTRESSED CONCRETE GIRDER REPAIRS AND DIAPHRAGM REPAIRS, SEE "PRESTRESSED GIRDER & DIAPHRAGM REPAIR DETAILS" SHEET.

① BEAM NUMBER
Ⓖ GIRDER REPAIR
Ⓓ DIAPHRAGM REPAIR
EPOXY RESIN INJECTION (ERI)

PROJECT NO. 15BPR.159
SWAIN COUNTY
BRIDGE NO.: 860008
SHEET 3 OF 3

NORTH CAROLINA PROFESSIONAL SEAL 049759 ENGINEER SAMUEL N. MEGAHED
DocuSigned by: Samuel Megahed
07/25/2025

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FRAMING PLAN
SPAN G, H, & I

DRAWN BY : D.V. JOYNER / HRS DATE : 05/25
CHECKED BY : T. SHERRILL DATE : 05/25

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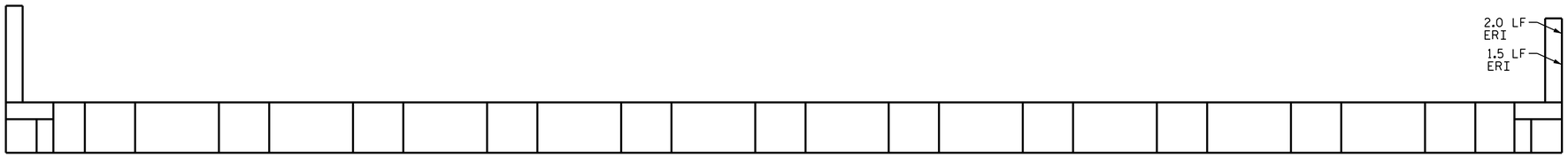
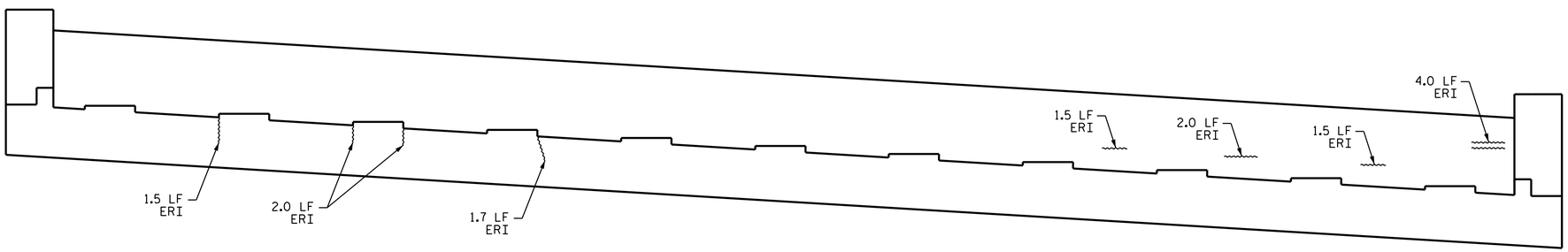
2			4			31



PLAN



ELEVATION

AS-BUILT REPAIR QUANTITY TABLE

END BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
CURTAIN WALL	0.0	0.0		
WING WALL	0.0	0.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	5.2			
CURTAIN WALL	9.0			
WING WALL	3.5			
EPOXY COATING	SQ. FT.		SQ. FT.	
TOP OF END BENT CAP	190			

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

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 LOCATION AND DESCRIPTION OF THE REPAIRS AND ENTER THE ACTUAL QUANTITIES INTO THE AS-BUILT REPAIR QUANTITY TABLE.

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

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

SHOTCRETE REPAIR AREA

CONCRETE REPAIR AREA

ERI - EPOXY RESIN INJECTION

PROJECT NO. 15BPR.159

SWAIN COUNTY

BRIDGE NO. 860008

SHEET 1 OF 17

NORTH CAROLINA PROFESSIONAL SEAL 049759 ENGINEER SAMUEL N. MEGANED

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07/25/2025

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

END BENT 1

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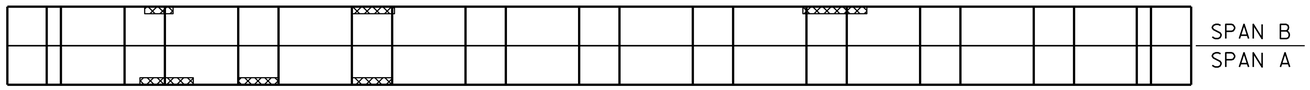
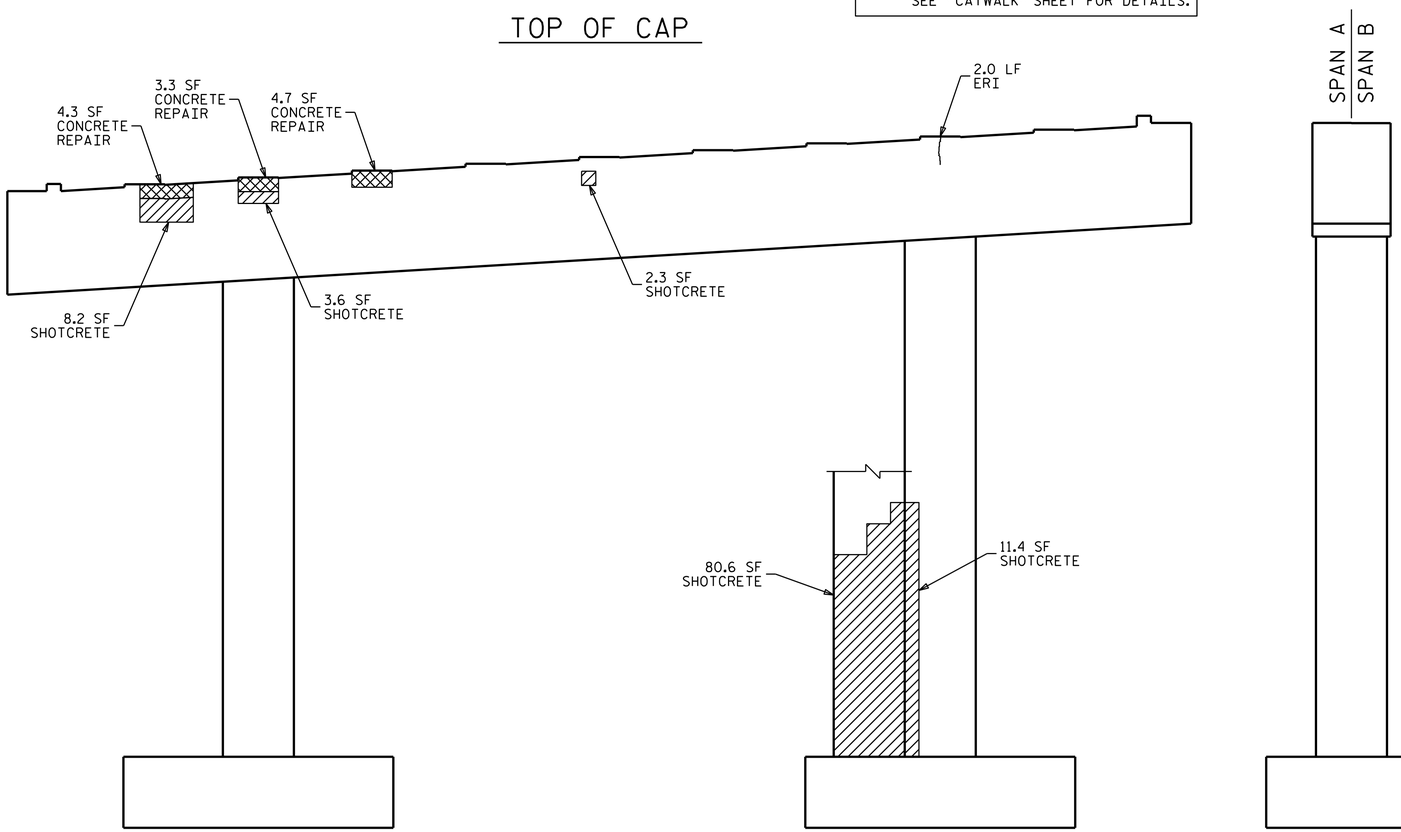
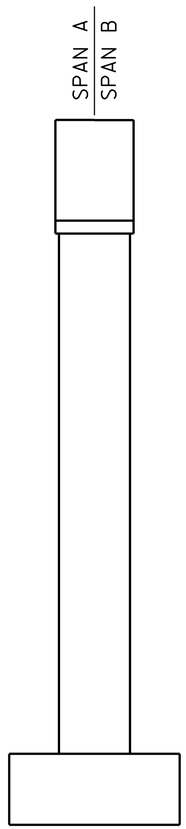


NOTE: CATWALK REMOVED FOR CLARITY.
SEE "CATWALK" SHEET FOR DETAILS.



ELEVATION
SPAN A FACE



END VIEW

AS-BUILT REPAIR QUANTITY TABLE

BENT 1 SPAN A	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	14.1	7.1		
COLUMN	92.0	46.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	12.3	6.2		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	2.0			
COLUMN	0.0			
EPOXY COATING	SQ. FT.		SQ. FT.	
TOP OF CAP	458.3			

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

NOTES:

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

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

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

SHOTCRETE REPAIR AREA

CONCRETE REPAIR AREA

ERI - EPOXY RESIN INJECTION

PROJECT NO. 15BPR.159

SWAIN COUNTY

BRIDGE NO. 860008

SHEET 2 OF 17

NORTH CAROLINA PROFESSIONAL SEAL 049759 ENGINEER SAMUEL N. MEGALED

DocuSigned by: Samuel Megaled 90E5556644BA74ED...
07/25/2025

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 1
SPAN A FACE

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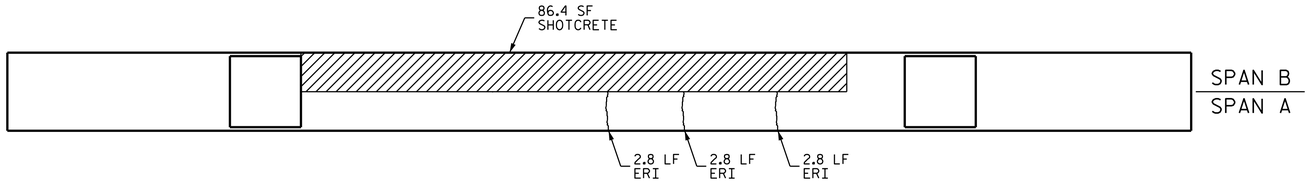
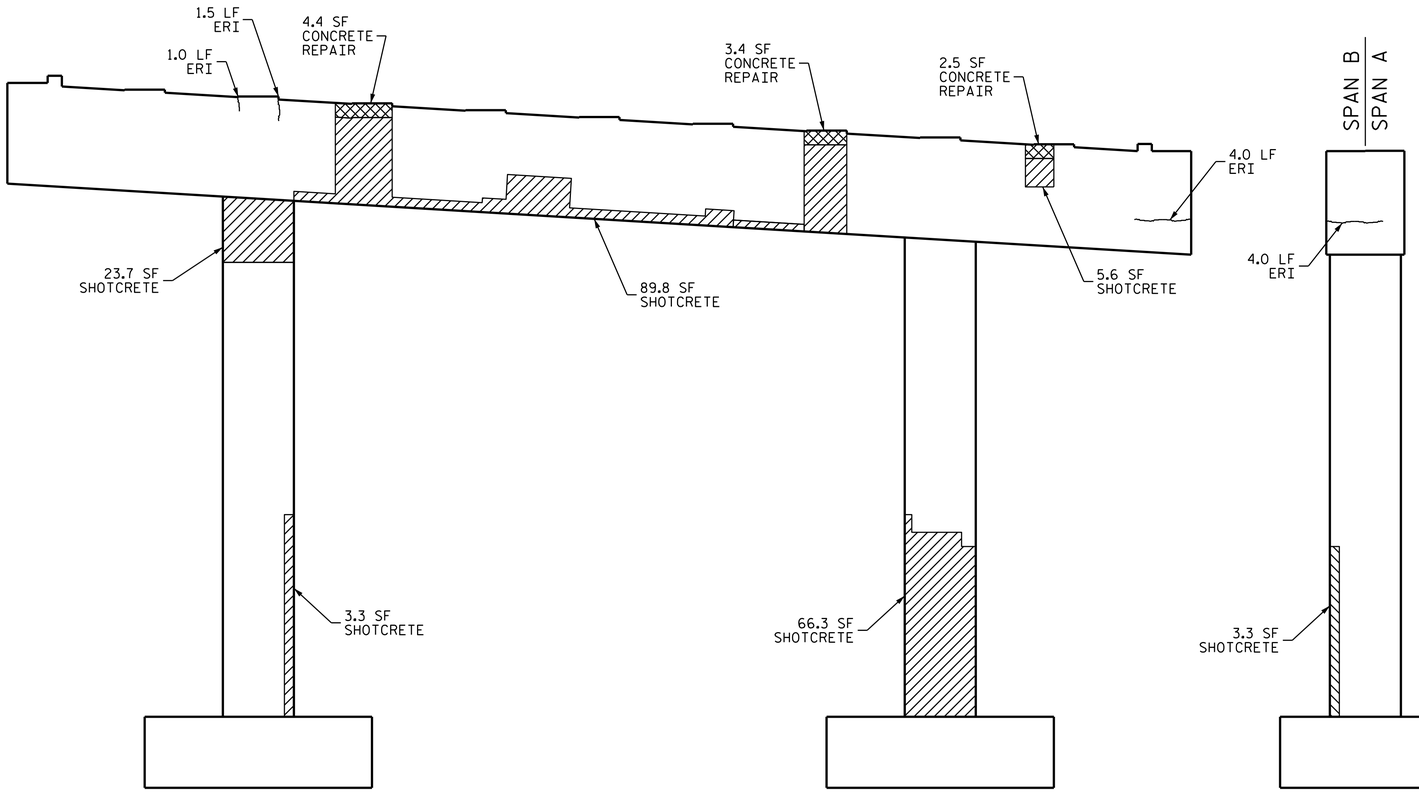


BOTTOM OF CAP



ELEVATION
SPAN B FACE

END VIEW

AS-BUILT REPAIR QUANTITY TABLE

BENT 1 SPAN B	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	181.8	90.9		
COLUMN	96.6	48.3		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	10.3	5.2		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	18.9			
COLUMN	0.0			

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

NOTES:

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

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

SHOTCRETE REPAIR AREA

CONCRETE REPAIR AREA

ERI - EPOXY RESIN INJECTION

PROJECT NO. 15BPR.159

SWAIN COUNTY

BRIDGE NO. 860008

SHEET 3 OF 17

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 1
SPAN B FACE

NORTH CAROLINA PROFESSIONAL SEAL 049759 ENGINEER SAMUEL N. MEGALIED

DocuSigned by: Samuel Megalied 07/25/2025

DRAWN BY : D.V. JOYNER / HRS DATE : 03/24
CHECKED BY : A.A. COLE DATE : 09/24

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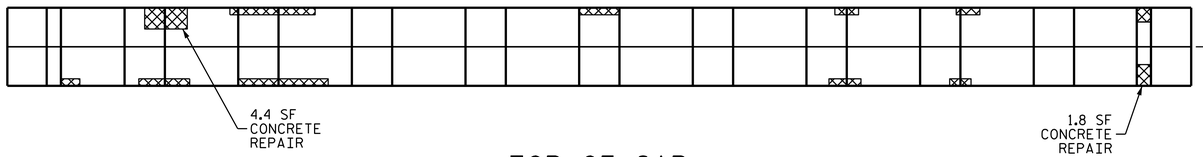
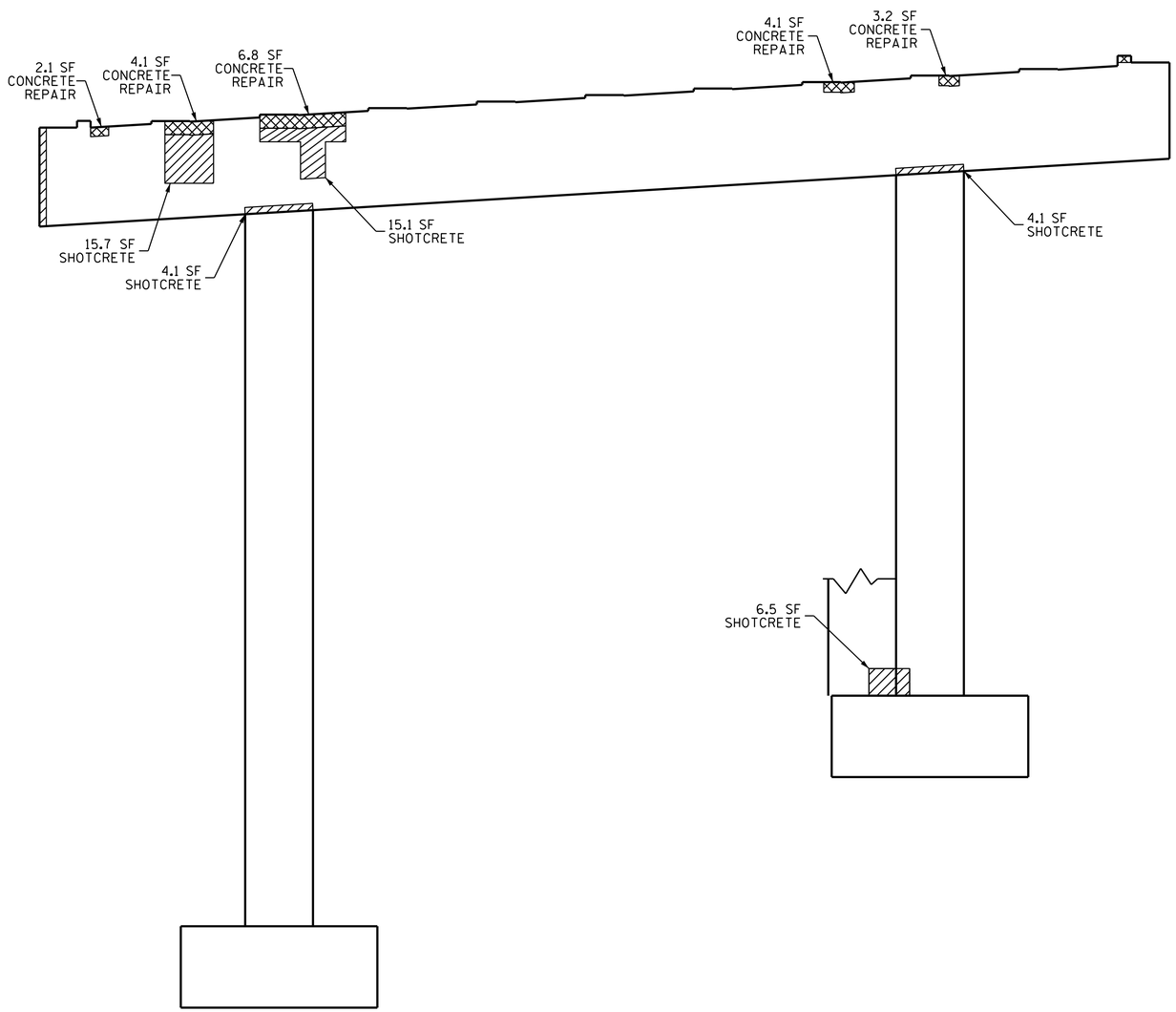
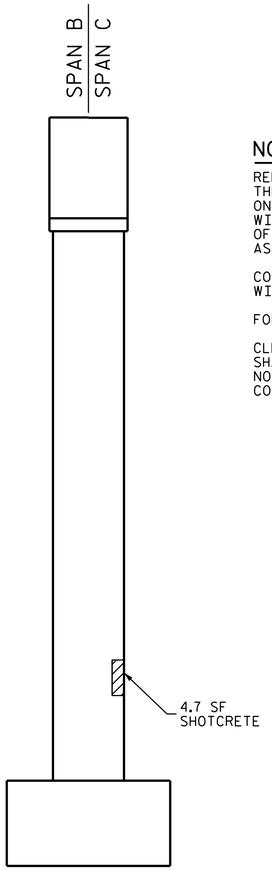


TOP OF CAP

NOTE: CATWALK REMOVED FOR CLARITY.
SEE "CATWALK" SHEET FOR DETAILS.



ELEVATION
SPAN B FACE



END VIEW

AS-BUILT REPAIR QUANTITY TABLE				
BENT 2 SPAN B	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	39.0	19.5		
COLUMN	11.2	5.6		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	26.5	13.3		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	0.0			
COLUMN	0.0			
EPOXY COATING	SQ. FT.		SQ. FT.	
TOP OF CAP	458.3			

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

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

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

SHOTCRETE REPAIR AREA

CONCRETE REPAIR AREA

ERI - EPOXY RESIN INJECTION

PROJECT NO. 15BPR.159

SWAIN COUNTY

BRIDGE NO. 860008

SHEET 4 OF 12

NORTH CAROLINA PROFESSIONAL SEAL 049759 ENGINEER SAMUEL N. MEGALED

DocuSigned by: Samuel Megaled 90E555644BA74ED...

07/25/2025

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 2
SPAN B FACE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			31

DRAWN BY : D.V. JOYNER / HRS DATE : 03/24
CHECKED BY : A.A. COLE DATE : 09/24

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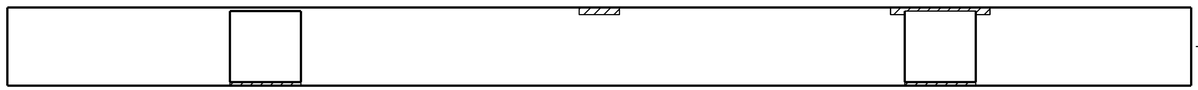

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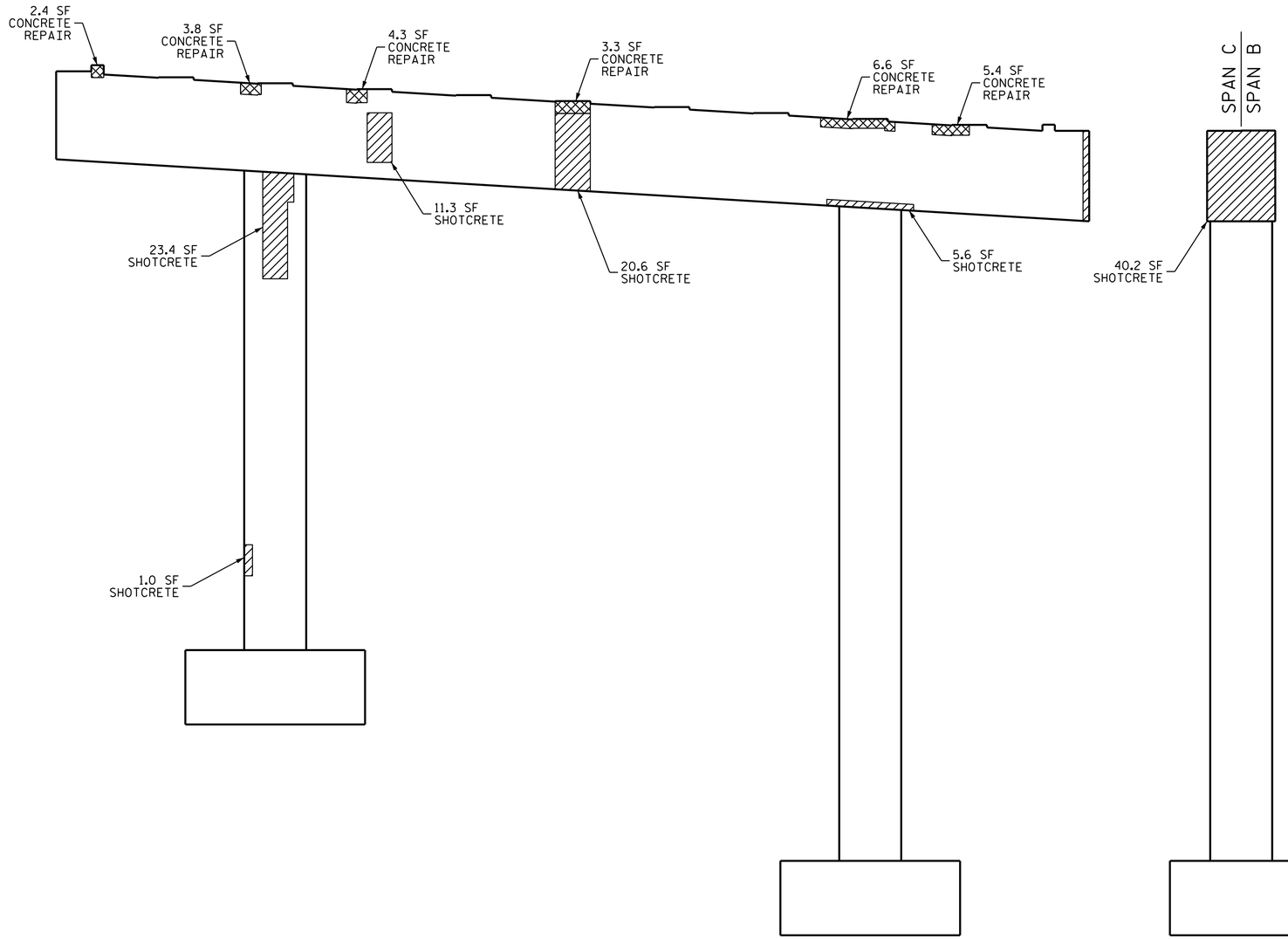

ELEVATION
SPAN C FACE

END VIEW

AS-BUILT REPAIR QUANTITY TABLE

BENT 2 SPAN C	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	77.7	38.9		
COLUMN	24.4	12.2		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	25.8	12.9		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	0.0			
COLUMN	0.0			

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MINIMUM OF 1" BEHIND REBAR AND MINIMUM 2" CLEARANCE TO SAWCUT. SEE 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 WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE AS-BUILT REPAIR QUANTITY TABLE.

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

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

SHOTCRETE REPAIR AREA

CONCRETE REPAIR AREA

ERI - EPOXY RESIN INJECTION

NORTH CAROLINA PROFESSIONAL SEAL 049759 ENGINEER SAMUEL N. MEGALED

DocuSigned by: Samuel Megaled 90E555644BA74ED...

07/25/2025

DRAWN BY : D.V. JOYNER / HRS DATE : 03/24
CHECKED BY : A.A. COLE DATE : 09/24

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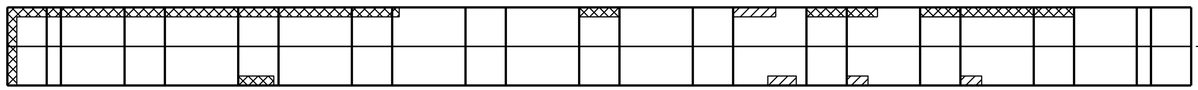
PROJECT NO. 15BPR.159
SWAIN COUNTY
BRIDGE NO. 860008

SHEET 5 OF 17

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

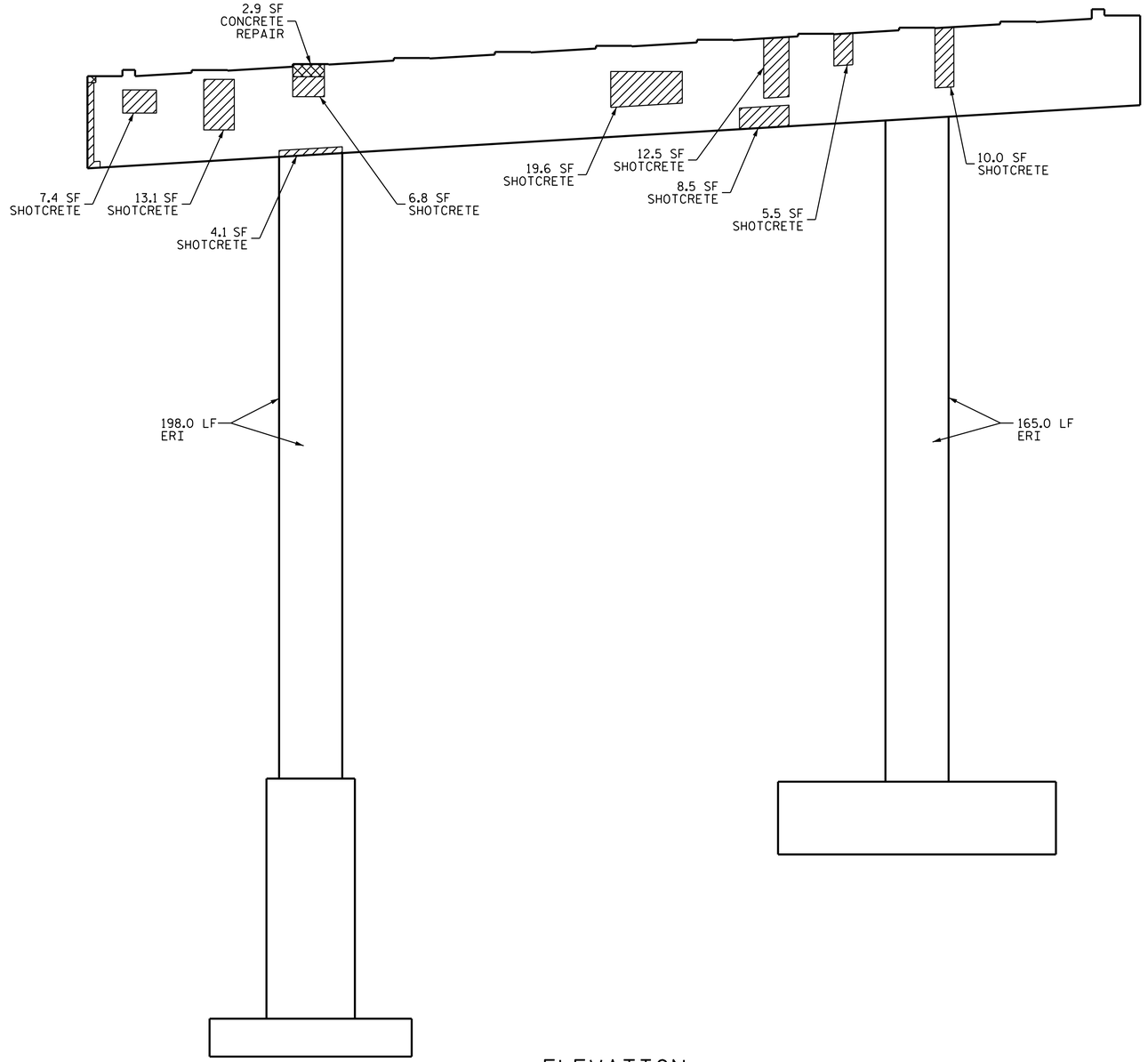
BENT 2
SPAN C FACE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			31



TOP OF CAP

NOTE: CATWALK REMOVED FOR CLARITY.
SEE "CATWALK" SHEET FOR DETAILS.



ELEVATION
SPAN C FACE

END VIEW

AS-BUILT REPAIR QUANTITY TABLE

BENT 3 SPAN C	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	87.5	43.8		
COLUMN	0.0	0.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	2.9	1.5		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	0.0			
COLUMN	363.0			
EPOXY COATING	SQ. FT.		SQ. FT.	
TOP OF CAP	458.3			

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

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

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

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

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

SHOTCRETE REPAIR AREA

CONCRETE REPAIR AREA

ERI - EPOXY RESIN INJECTION

PROJECT NO. 15BPR.159

SWAIN COUNTY

BRIDGE NO. 860008

SHEET 6 OF 17

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 3
SPAN C FACE

NORTH CAROLINA PROFESSIONAL SEAL 049759 ENGINEER SAMUEL N. MEGALED

DocuSigned by:
Samuel Megaled
90E555644BA74ED...
07/25/2025

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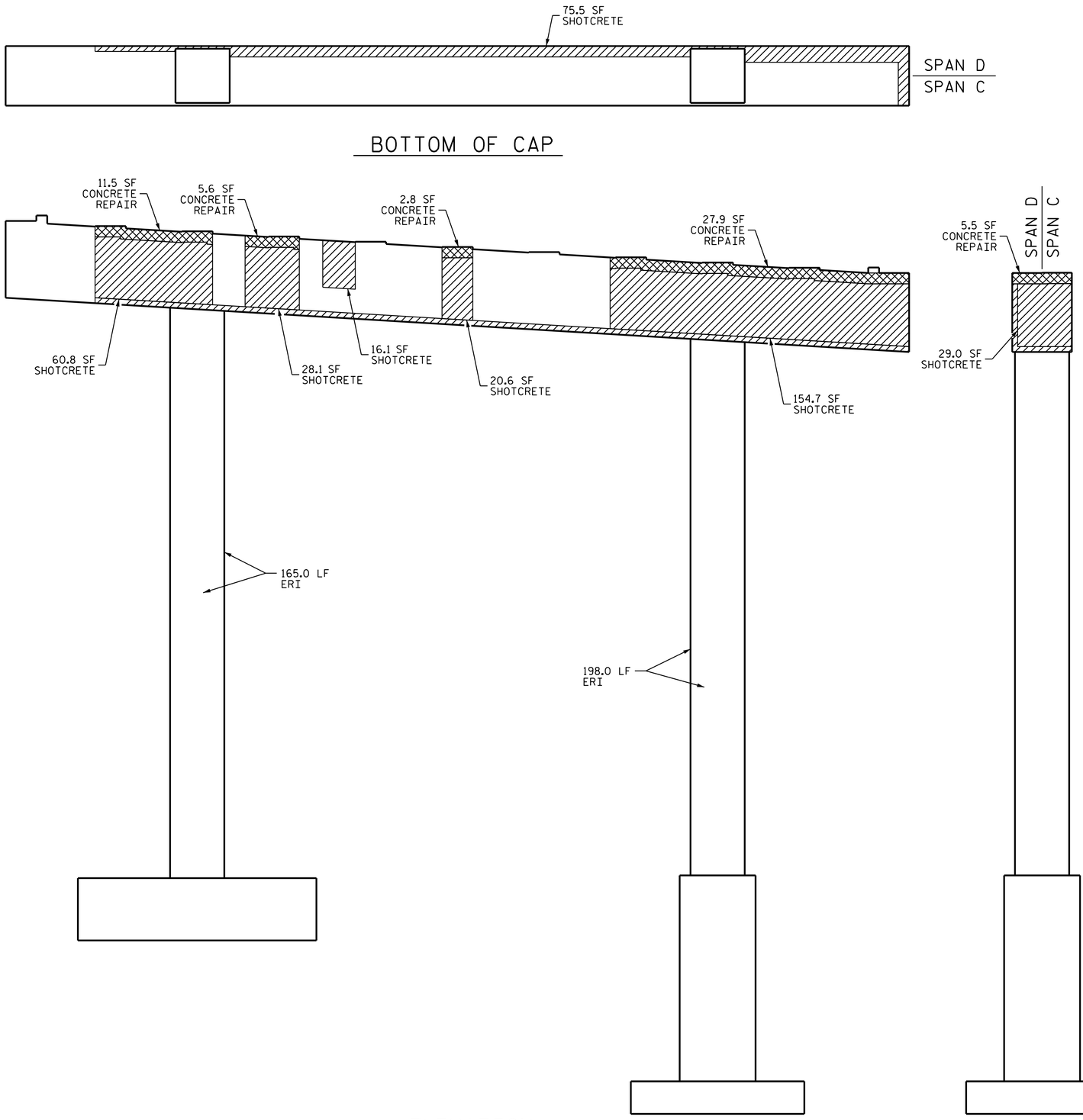
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			31

DRAWN BY : D.V. JOYNER / HRS DATE : 03/24
CHECKED BY : A.A. COLE DATE : 09/24



ELEVATION
SPAN D FACE

END VIEW

AS-BUILT REPAIR QUANTITY TABLE				
BENT 3 SPAN D	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	384.8	192.4		
COLUMN	0.0	0.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	53.3	26.7		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	0.0			
COLUMN	363.0			

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MINIMUM OF 1" BEHIND REBAR AND MINIMUM 2" CLEARANCE TO SAWCUT. SEE 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 WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE AS-BUILT REPAIR QUANTITY TABLE.

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

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

SHOTCRETE REPAIR AREA

CONCRETE REPAIR AREA

ERI - EPOXY RESIN INJECTION

PROJECT NO. 15BPR.159

SWAIN COUNTY

BRIDGE NO. 860008

SHEET 7 OF 17

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 3
SPAN D FACE

NORTH CAROLINA PROFESSIONAL SEAL 049759 ENGINEER SAMUEL N. MEGALED

DocuSigned by:
Samuel Megaled
90E555644BA74ED...
07/25/2025

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			31

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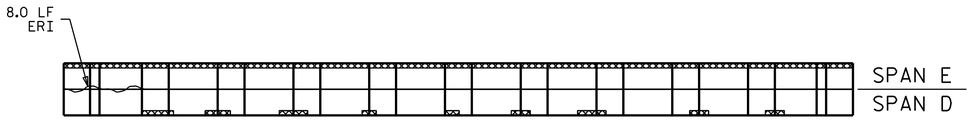
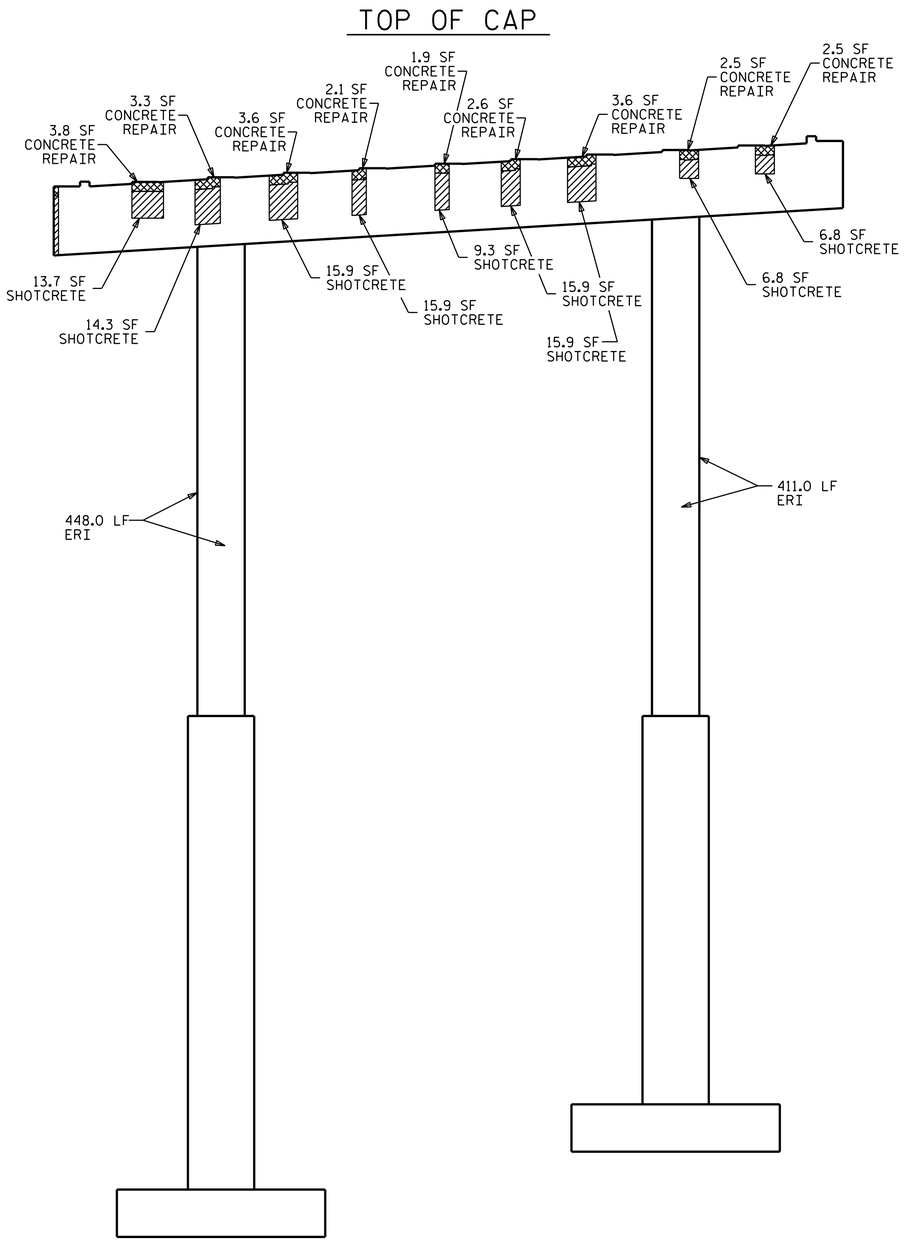
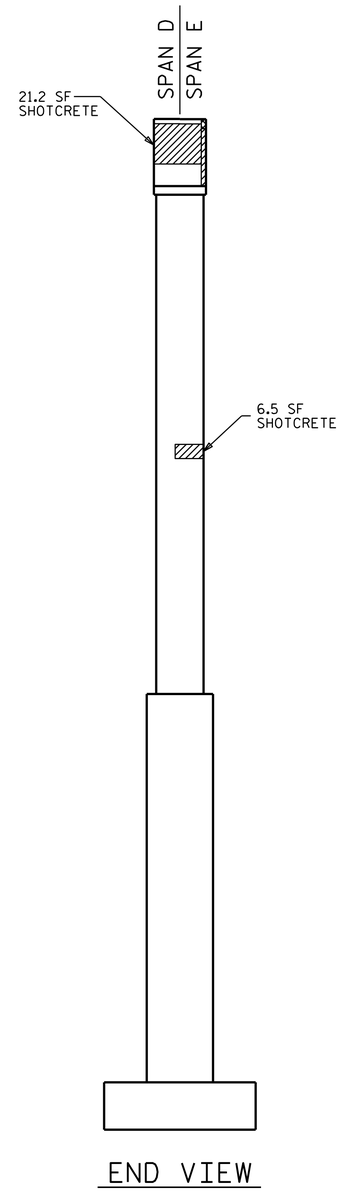
CHECKED BY : A.A. COLE DATE : 09/24



NOTE: CATWALK REMOVED FOR CLARITY.
SEE "CATWALK" SHEET FOR DETAILS.



ELEVATION
SPAN D FACE



END VIEW

AS-BUILT REPAIR QUANTITY TABLE

BENT 4 SPAN D	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	135.7	67.9		
COLUMN	6.5	3.3		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	25.9	13.0		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	8.0			
COLUMN	859.0			
EPOXY COATING	SQ. FT.		SQ. FT.	
TOP OF CAP	458.3			

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

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

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

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

SHOTCRETE REPAIR AREA

CONCRETE REPAIR AREA

ERI - EPOXY RESIN INJECTION

PROJECT NO. 15BPR.159

SWAIN COUNTY

BRIDGE NO. 860008

SHEET 8 OF 17

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 4
SPAN D FACE

NORTH CAROLINA PROFESSIONAL SEAL 049759 ENGINEER SAMUEL N. MEGALIED

DocuSigned by:
Samuel Megalied
9DE555644BA74ED...
07/25/2025

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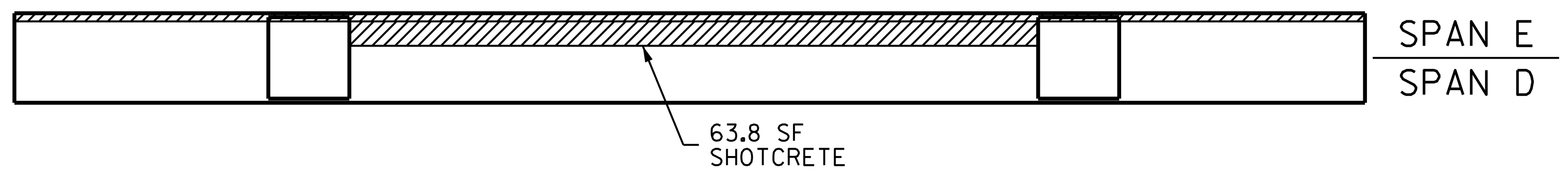
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			31

DRAWN BY : D.V. JOYNER / HRS DATE : 03/24
CHECKED BY : A.A. COLE DATE : 09/24



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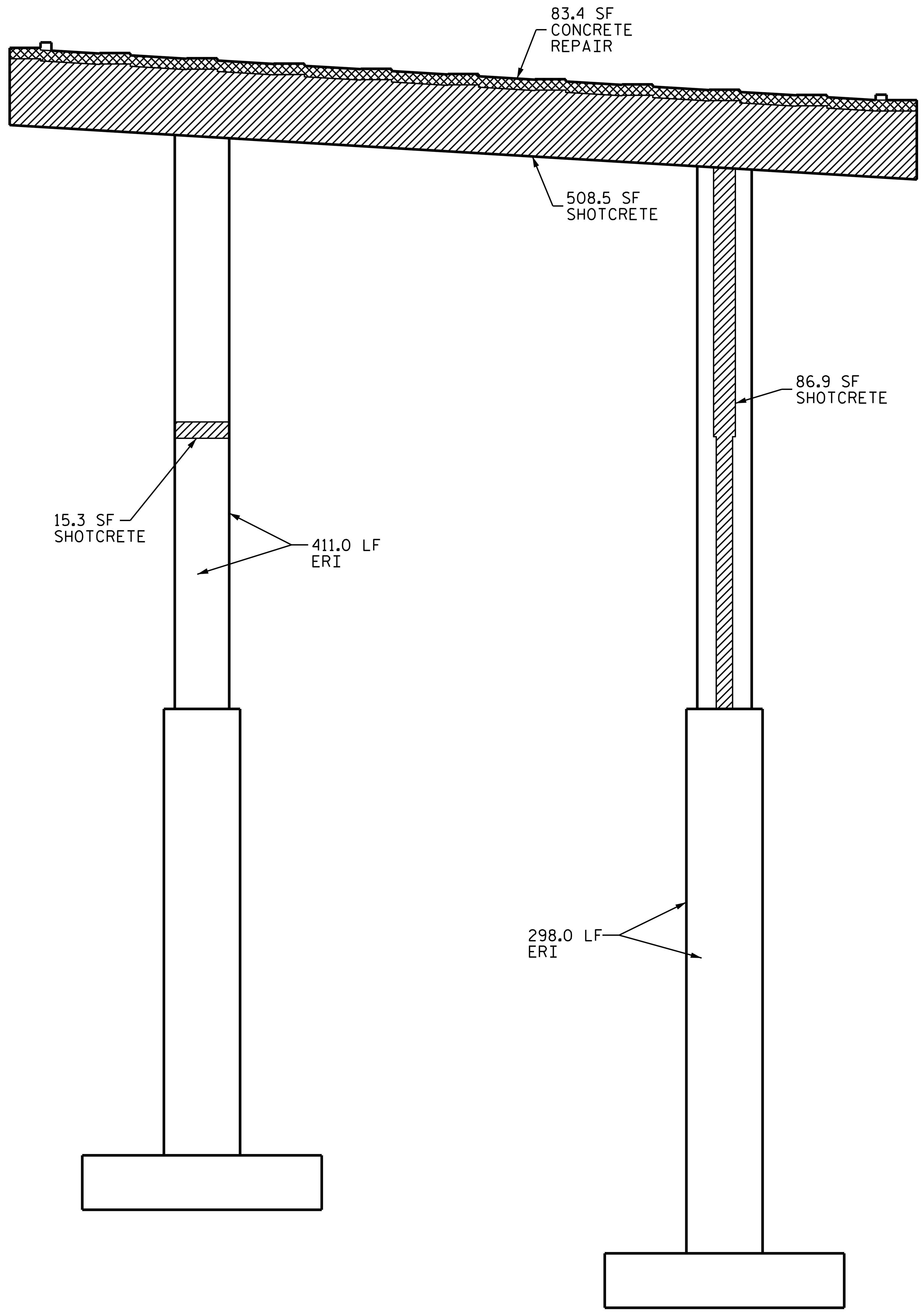
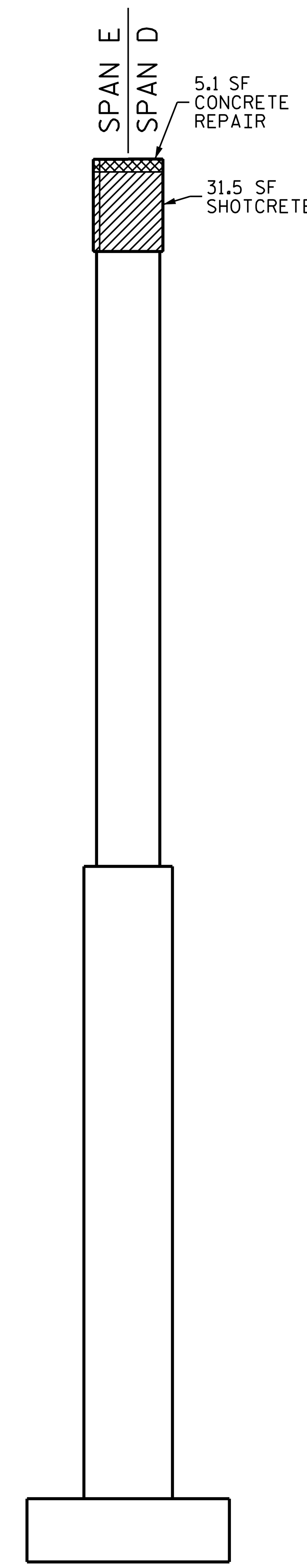


ELEVATION
SPAN E FACE



END VIEW

AS-BUILT REPAIR QUANTITY TABLE

BENT 4 SPAN E	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	603.8	301.9		
COLUMN	102.2	51.1		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	88.5	44.3		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	0.0			
COLUMN	709.0			

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

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

SHOTCRETE REPAIR AREA

CONCRETE REPAIR AREA

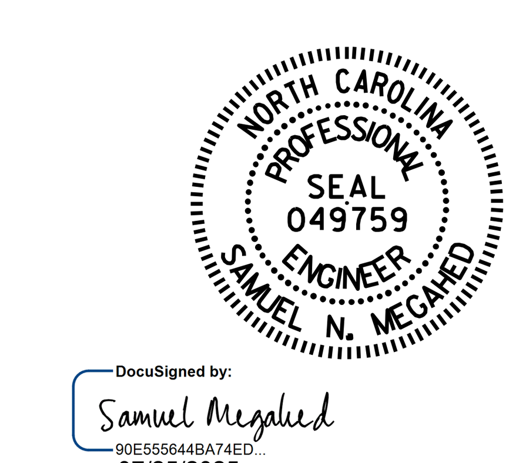
ERI - EPOXY RESIN INJECTION

PROJECT NO. 15BPR.159

SWAIN COUNTY

BRIDGE NO. 860008

SHEET 9 OF 17



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 4
SPAN E FACE

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			31

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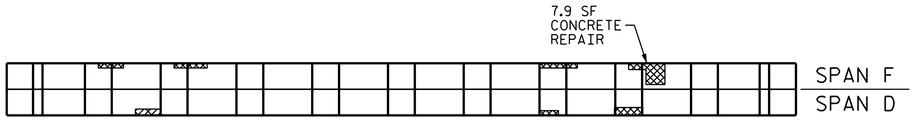
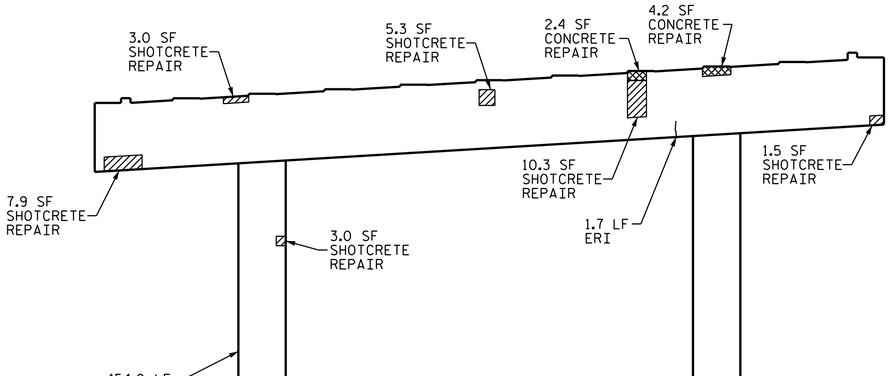
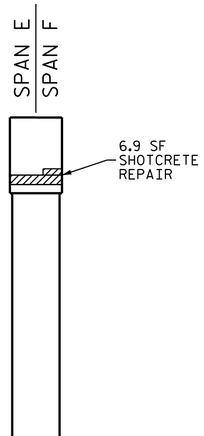


NOTE: CATWALK REMOVED FOR CLARITY.
SEE "CATWALK" SHEET FOR DETAILS.

TOP OF CAP



ELEVATION
SPAN E FACE



END VIEW

AS-BUILT REPAIR QUANTITY TABLE				
BENT 5 SPAN E	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	34.9	17.5		
COLUMN	3.0	1.5		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	14.5	7.3		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	1.7			
COLUMN	925.0			
EPOXY COATING	SQ. FT.		SQ. FT.	
TOP OF CAP	458.3			

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

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

SHOTCRETE REPAIR AREA

CONCRETE REPAIR AREA

ERI - EPOXY RESIN INJECTION

PROJECT NO. 15BPR.159

SWAIN COUNTY

BRIDGE NO. 860008

SHEET 10 OF 17

NORTH CAROLINA PROFESSIONAL SEAL 049759 ENGINEER SAMUEL N. MEGALED

DocuSigned by: Samuel Megaled 10E555644BA74ED... 07/25/2025

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 5
SPAN E FACE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			31

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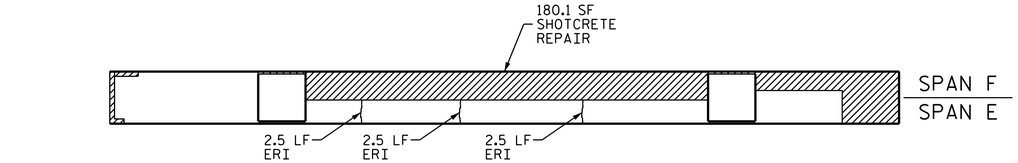
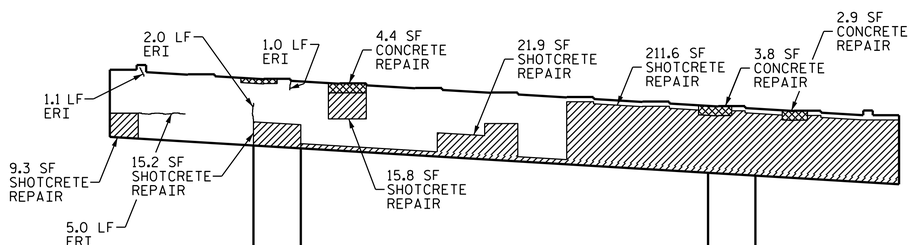
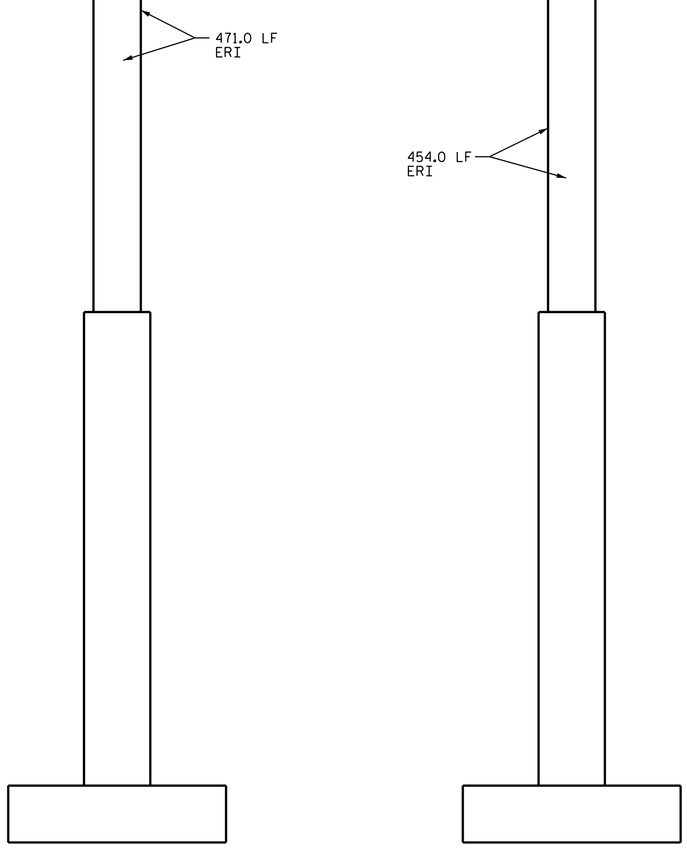
DRAWN BY : D.V. JOYNER / HRS DATE : 03/24
CHECKED BY : A.A. COLE DATE : 09/24

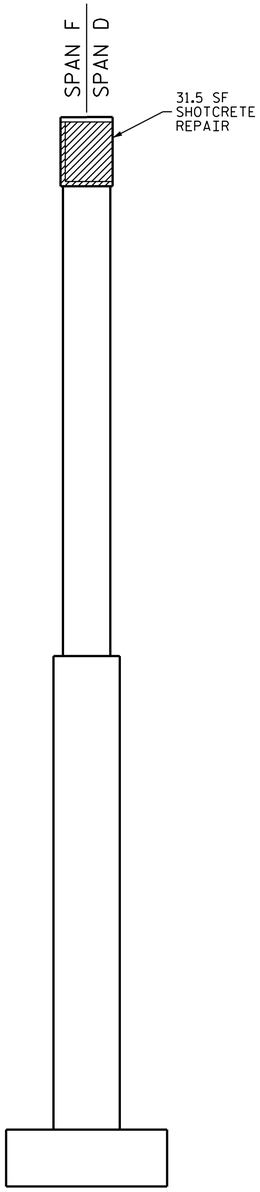


BOTTOM OF CAP





ELEVATION
SPAN F FACE



END VIEW

AS-BUILT REPAIR QUANTITY TABLE

BENT 5 SPAN F	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	485.4	242.7		
COLUMN	0.0	0.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	11.1	5.6		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	16.6			
COLUMN	925.0			

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

NOTES:

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

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

SHOTCRETE REPAIR AREA

CONCRETE REPAIR AREA

ERI - EPOXY RESIN INJECTION

NORTH CAROLINA PROFESSIONAL SEAL 049759 ENGINEER SAMUEL N. MECARTER

DocuSigned by: Samuel Mecarter 30E550644BA74ED

07/25/2025

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PROJECT NO. 15BPR.159

SWAIN COUNTY

BRIDGE NO. 860008

SHEET 11 OF 17

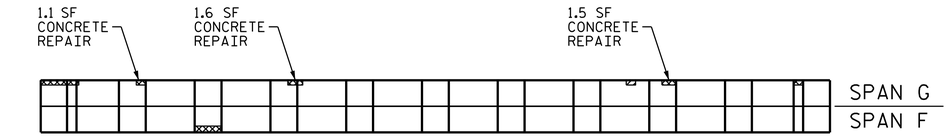
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 5
SPAN F FACE

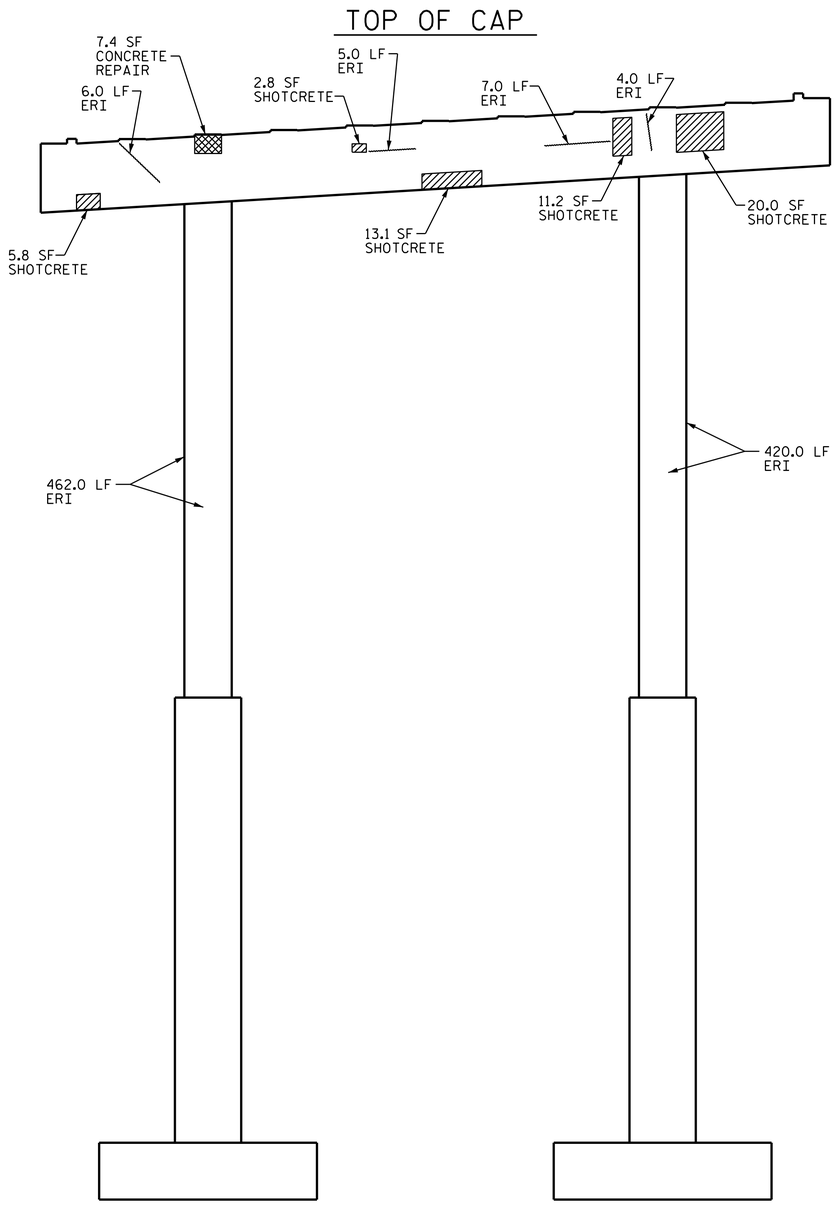
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS
2			4			31

DRAWN BY : D.V. JOYNER / HRS DATE : 03/24

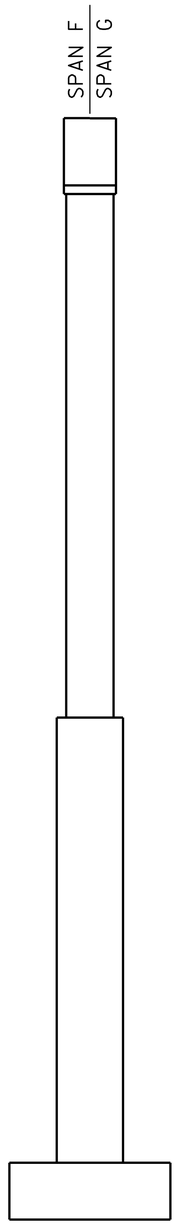
CHECKED BY : A.A. COLE DATE : 09/24



NOTE: CATWALK REMOVED FOR CLARITY. SEE "CATWALK" SHEET FOR DETAILS.



ELEVATION
SPAN F FACE



END VIEW

AS-BUILT REPAIR QUANTITY TABLE

BENT 6 SPAN F	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	52.9	26.5		
COLUMN	0.0	0.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	11.6	5.8		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	22.0			
COLUMN	882.0			
EPOXY COATING	SQ. FT.		SQ. FT.	
TOP OF CAP	458.3			

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MINIMUM OF 1" BEHIND REBAR AND MINIMUM 2" CLEARANCE TO SAWCUT. SEE 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 WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE AS-BUILT REPAIR QUANTITY TABLE.

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

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

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

SHOTCRETE REPAIR AREA

CONCRETE REPAIR AREA

ERI - EPOXY RESIN INJECTION

PROJECT NO. 15BPR.159

SWAIN COUNTY

BRIDGE NO. 860008

SHEET 12 OF 17

NORTH CAROLINA PROFESSIONAL SEAL 049759 ENGINEER SAMUEL N. MEGALED

DocuSigned by: Samuel Megaled 90E555644BA74ED...

07/25/2025

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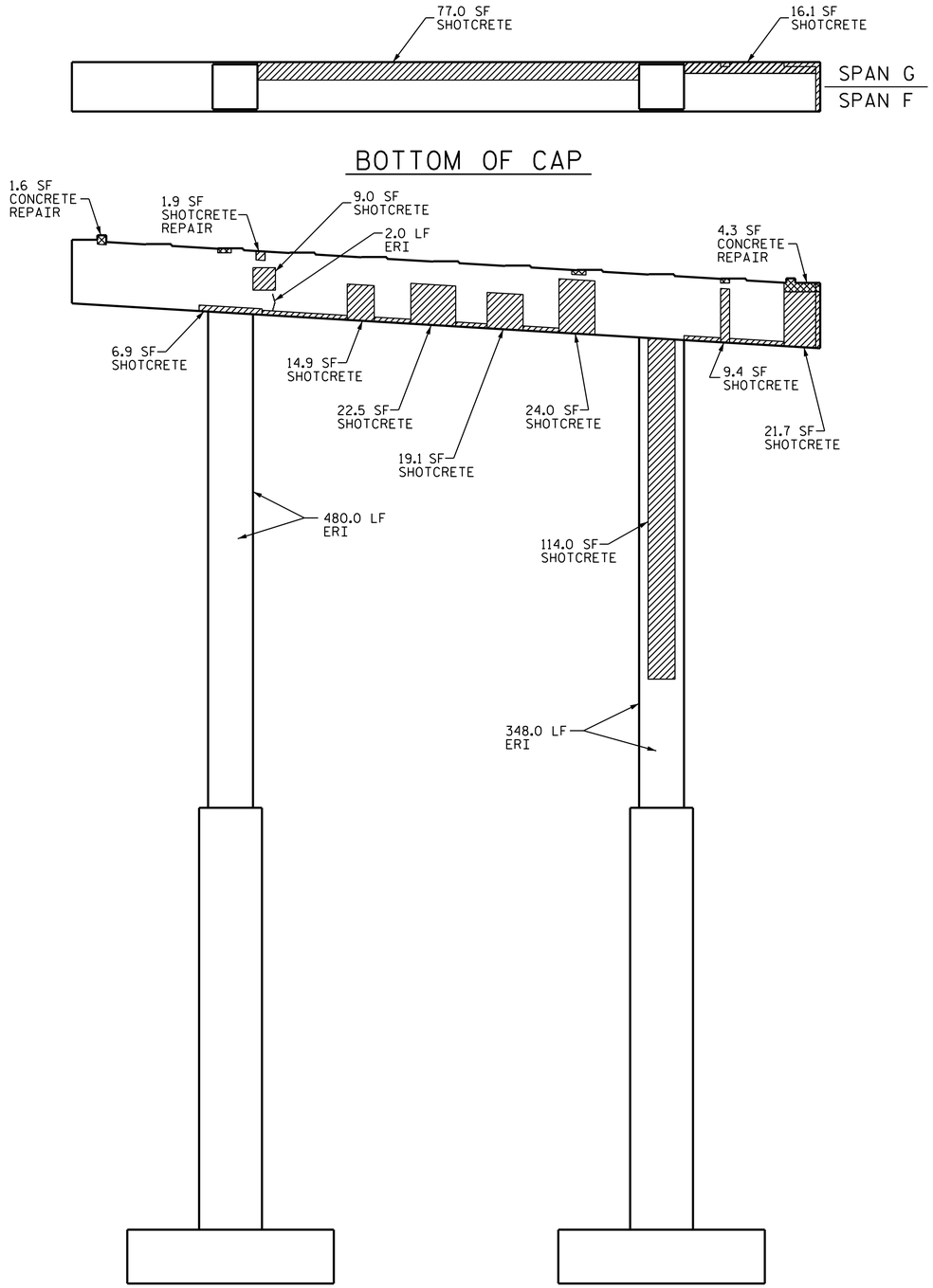
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

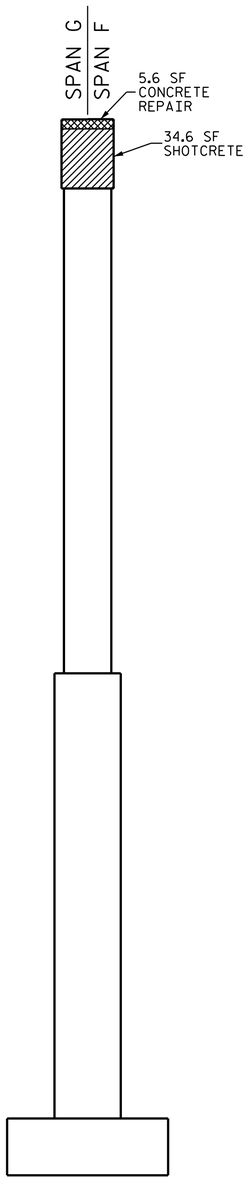
BENT 6
SPAN F FACE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS
2			4			31

DRAWN BY : D.V. JOYNER / HRS DATE : 03/24
CHECKED BY : A.A. COLE DATE : 09/24



ELEVATION
SPAN G FACE



END VIEW

AS-BUILT REPAIR QUANTITY TABLE

BENT 6 SPAN G	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	257.1	128.6		
COLUMN	114.0	57.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	11.5	5.2		
EPOXY RESIN INJECTION		LIN. FT.		LIN. FT.
CAP		2.0		
COLUMN		828.0		

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MINIMUM OF 1" BEHIND REBAR AND MINIMUM 2" CLEARANCE TO SAWCUT. SEE 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 WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE AS-BUILT REPAIR QUANTITY TABLE.

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

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

SHOTCRETE REPAIR AREA

CONCRETE REPAIR AREA

ERI - EPOXY RESIN INJECTION

NORTH CAROLINA PROFESSIONAL SEAL 049759 ENGINEER SAMUEL N. MEGALED

DocuSigned by: Samuel Megaled 90E555644BA74ED...

07/25/2025

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PROJECT NO. 15BPR.159

SWAIN COUNTY

BRIDGE NO. 860008

SHEET 13 OF 17

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 6
SPAN G FACE

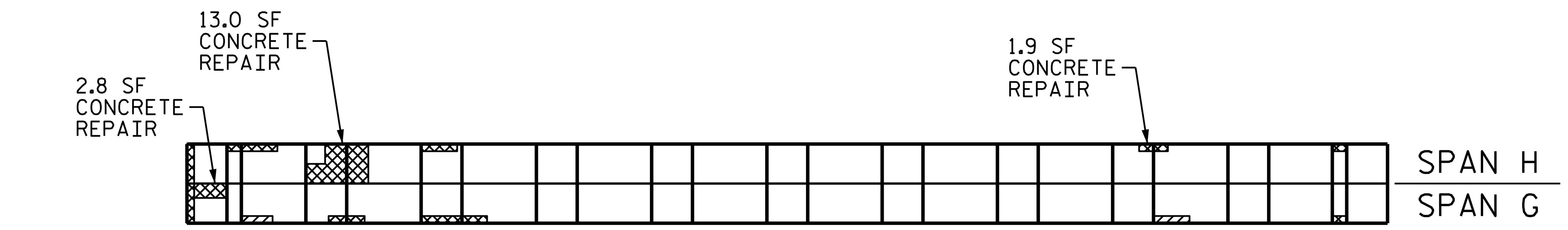
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
1			3			TOTAL SHEETS
2			4			31

DRAWN BY : D.V. JOYNER / HRS DATE : 03/24
CHECKED BY : A.A. COLE DATE : 09/24

AS-BUILT REPAIR QUANTITY TABLE

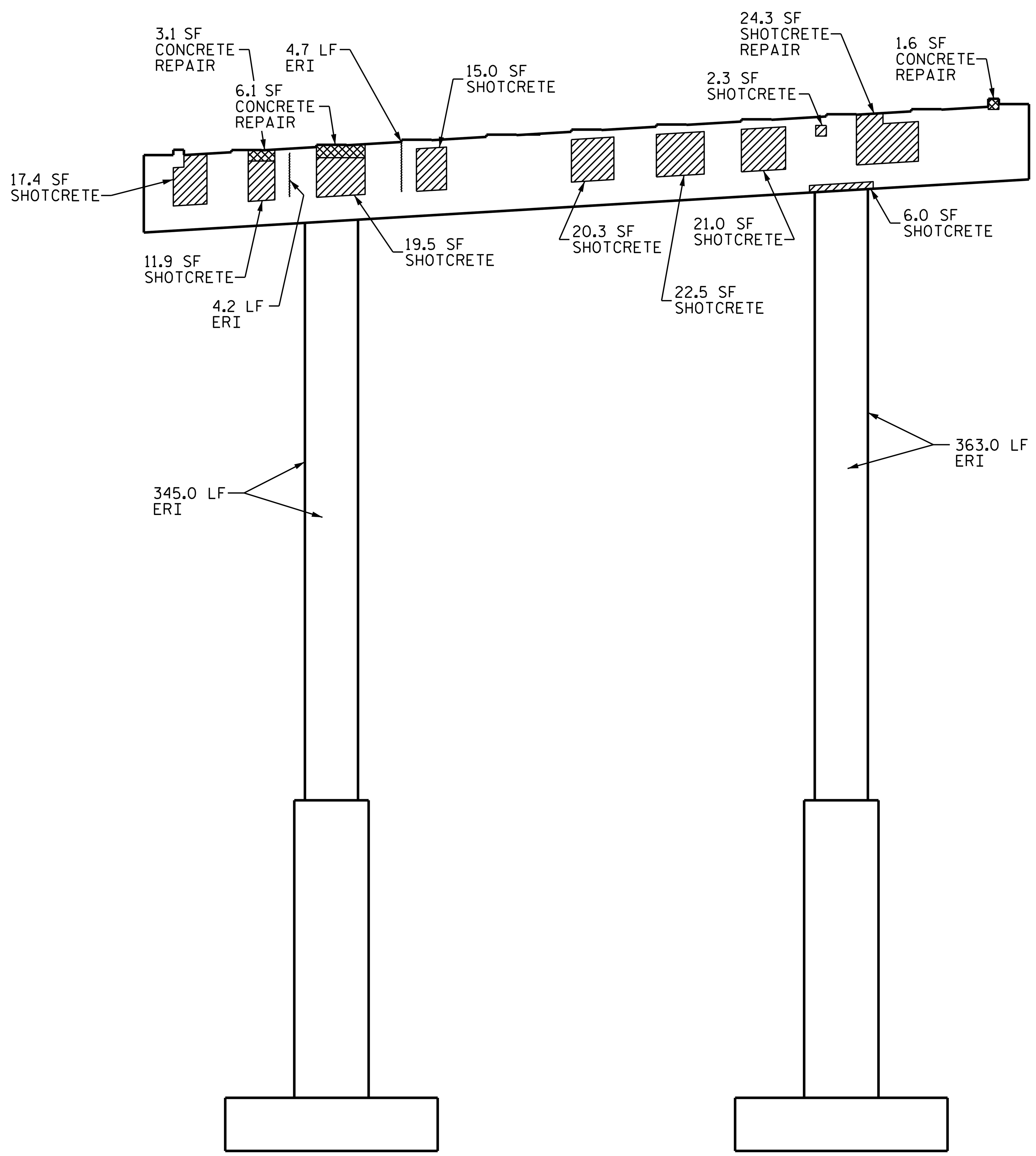
BENT 7 SPAN G	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ.FT.	VOLUME CU.FT.	AREA SQ.FT.	VOLUME CU.FT.
CAP	160.2	80.1		
COLUMN	0.0	0.0		
CONCRETE REPAIRS	AREA SQ.FT.	VOLUME CU.FT.	AREA SQ.FT.	VOLUME CU.FT.
CAP	28.5	14.3		
EPOXY RESIN INJECTION	LIN.FT.		LIN.FT.	
CAP	8.7			
COLUMN	708.0			
EPOXY COATING	SQ.FT.		SQ.FT.	
TOP OF CAP	458.3			

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

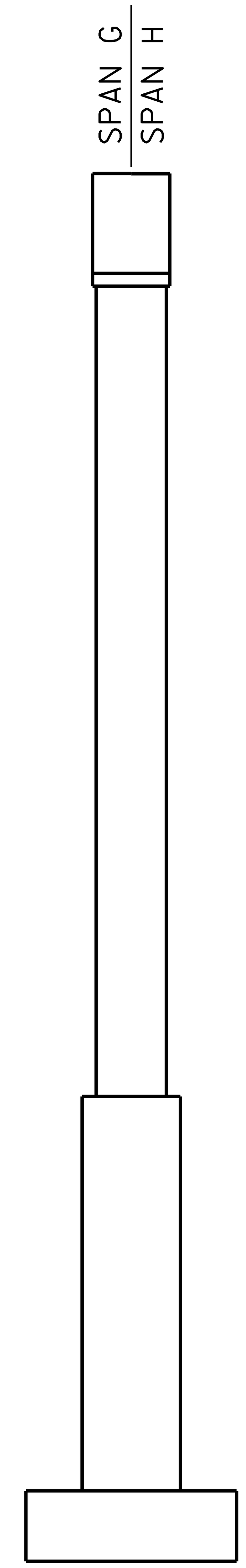


TOP OF CAP

NOTE: CATWALK REMOVED FOR CLARITY. SEE "CATWALK" SHEET FOR DETAILS.



ELEVATION
SPAN G FACE



END VIEW

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

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

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

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

SHOTCRETE REPAIR AREA

CONCRETE REPAIR AREA

ERI - EPOXY RESIN INJECTION

PROJECT NO. 15BPR.159

SWAIN COUNTY

BRIDGE NO. 860008

SHEET 14 OF 17

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 049759 SAMUEL N. MEGAHED

DocuSigned by: Samuel Megahed
90E550644B74ED...
07/25/2025

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 7
SPAN G FACE

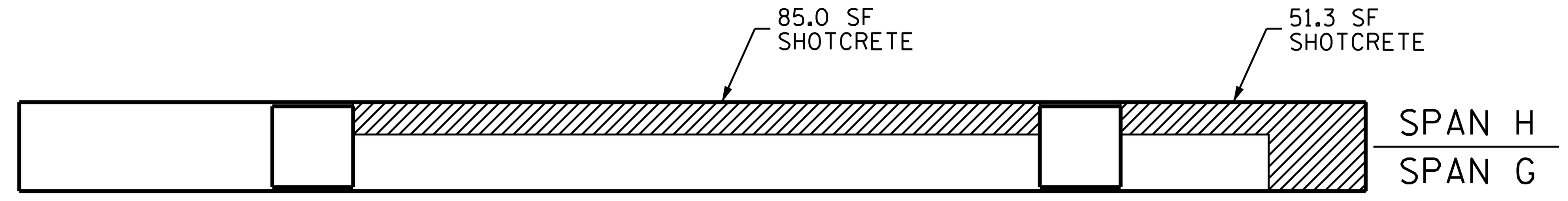
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-23
1			3			TOTAL SHEETS
2			4			31

DRAWN BY : D.V. JOYNER / HRS DATE : 03/24
CHECKED BY : A.A. COLE DATE : 09/24

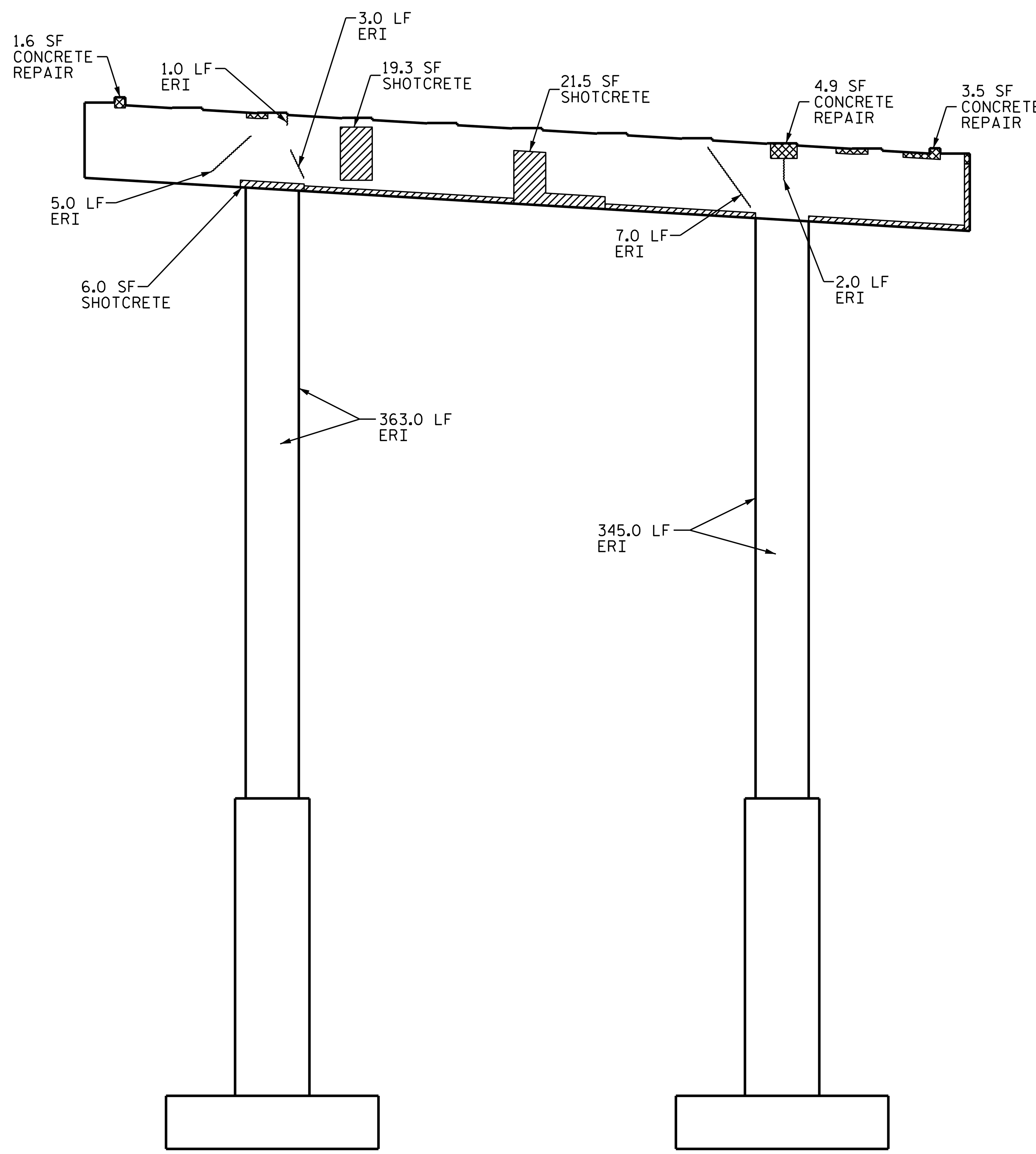
AS-BUILT REPAIR QUANTITY TABLE

BENT 7 SPAN H	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	217.8	108.9		
COLUMN	0.0	0.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	15.4	7.7		
EPOXY RESIN INJECTION		LIN. FT.		LIN. FT.
CAP		18.0		
COLUMN		708.0		

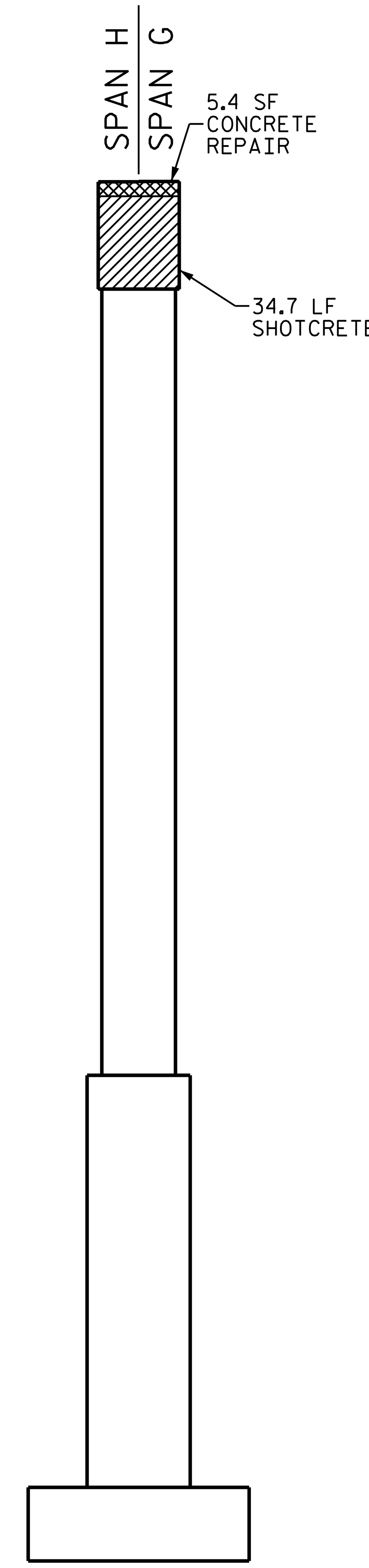
VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE. MINIMUM OF 1" BEHIND REBAR AND MINIMUM 2" CLEARANCE TO SAWCUT. SEE REPAIR DETAILS.



BOTTOM OF CAP



ELEVATION
SPAN H FACE



END VIEW

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

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

SHOTCRETE REPAIR AREA

CONCRETE REPAIR AREA

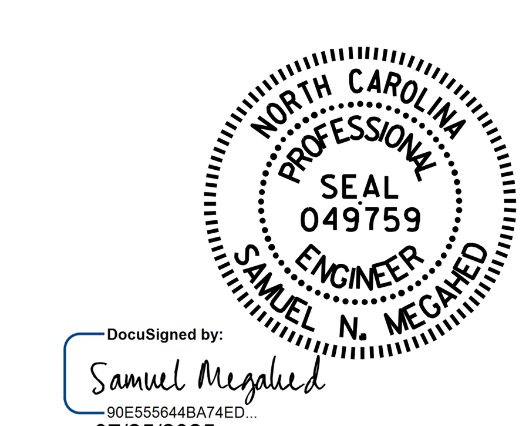
ERI - EPOXY RESIN INJECTION

PROJECT NO. 15BPR.159

SWAIN COUNTY

BRIDGE NO. 860008

SHEET 15 OF 17



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 7
SPAN H FACE

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-24
1			3			TOTAL SHEETS
2			4			31

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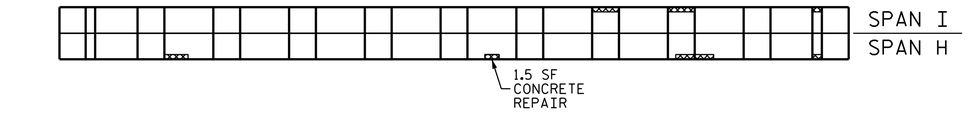
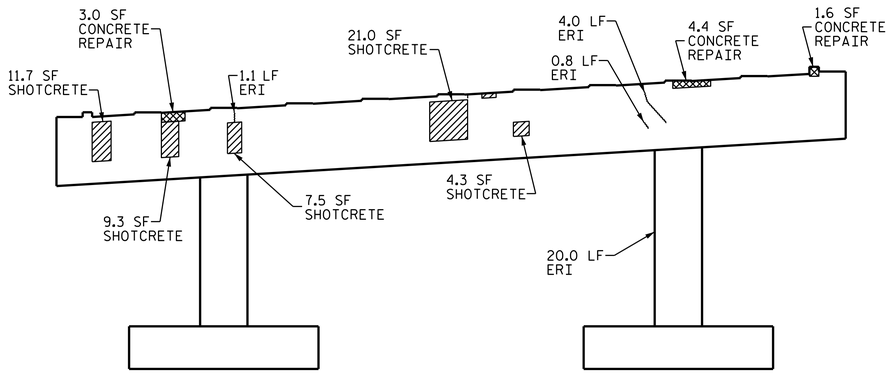
CHECKED BY : A.A. COLE DATE : 09/24

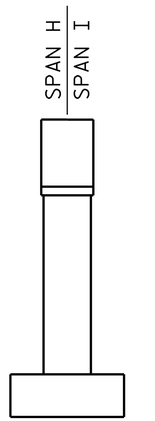


TOP OF CAP

NOTE: CATWALK REMOVED FOR CLARITY.
SEE "CATWALK" SHEET FOR DETAILS.



ELEVATION
SPAN H FACE



END VIEW

AS-BUILT REPAIR QUANTITY TABLE				
BENT 8	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	145.2	72.6		
COLUMN	0.0	0.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	20.3	10.2		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	13.4			
COLUMN	20.0			
EPOXY COATING	SQ. FT.		SQ. FT.	
TOP OF CAP	458.3			

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

NOTES:

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

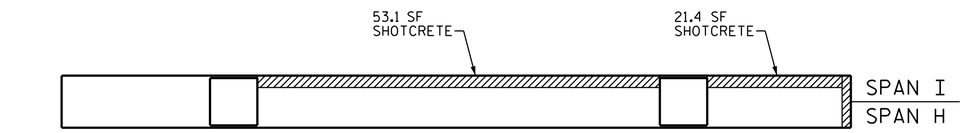
FOR CAP REPAIRS, SEE "TYPICAL CAP AND COLUMN REPAIR DETAILS" SHEET.

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

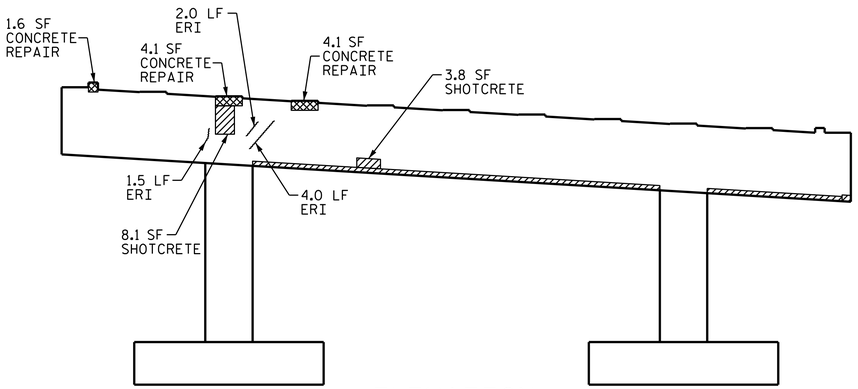
SHOTCRETE REPAIR AREA

CONCRETE REPAIR AREA

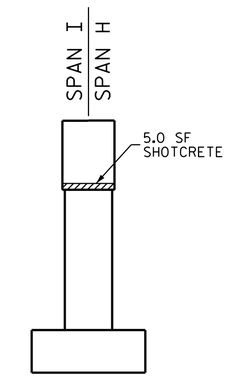
ERI - EPOXY RESIN INJECTION



BOTTOM OF CAP



ELEVATION
SPAN I FACE



END VIEW

PROJECT NO. 15BPR.159

SWAIN COUNTY

BRIDGE NO. 860008

SHEET 16 OF 17

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 8
SPAN H & I FACES

NORTH CAROLINA PROFESSIONAL SEAL 049759 ENGINEER SAMUEL N. MEGALED

DocuSigned by: Samuel Megaled 90E5506448A74ED...

07/25/2025

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-25
1			3			TOTAL SHEETS
2			4			31

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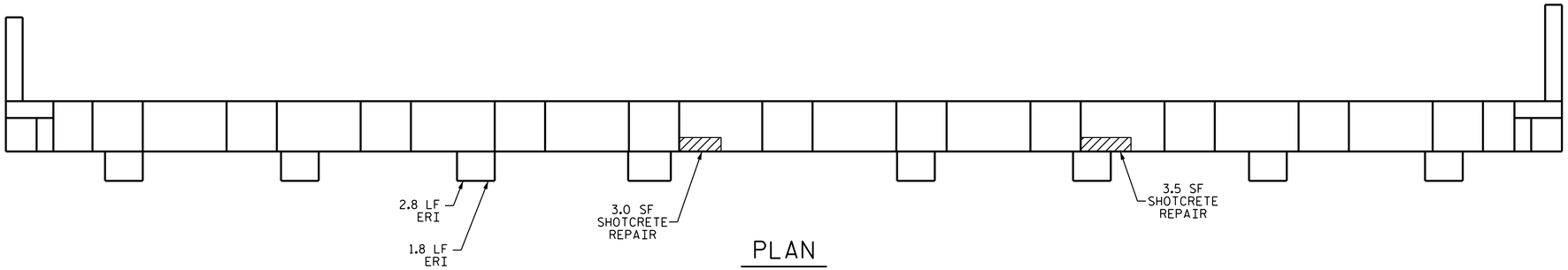
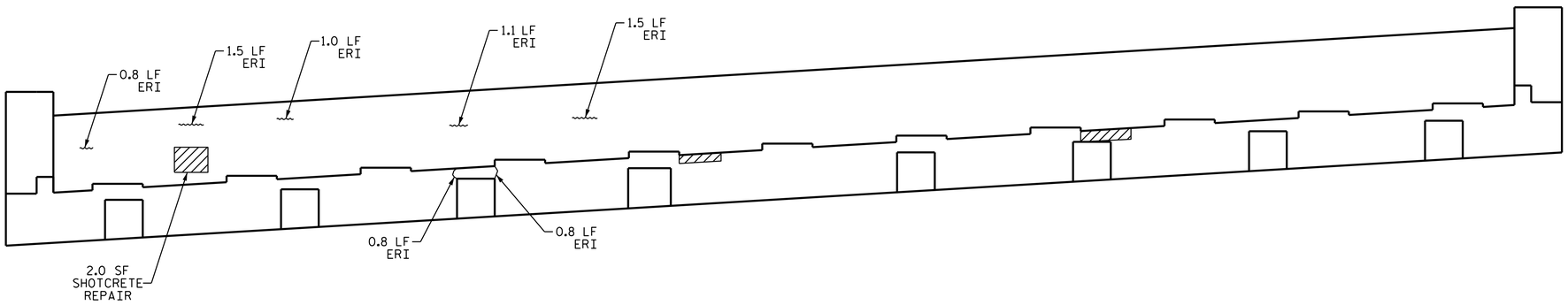
CHECKED BY : A.A. COLE DATE : 09/24



PLAN



ELEVATION

AS-BUILT REPAIR QUANTITY TABLE

END BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	6.5	3.3		
CURTAIN WALL	2.0	1.0		
WING WALL	0.0	0.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	0.0	0.0		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	6.2			
CURTAIN WALL	5.9			
EPOXY COATING	SQ. FT.		SQ. FT.	
TOP OF END BENT CAP	222			

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

NOTES

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

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

SHOTCRETE REPAIR AREA

CONCRETE REPAIR AREA

ERI - EPOXY RESIN INJECTION

PROJECT NO. 15BPR.159

SWAIN COUNTY

BRIDGE NO. 860008

SHEET 17 OF 17

NORTH CAROLINA PROFESSIONAL SEAL 049759 ENGINEER SAMUEL M. MCCARD

DocuSigned by: Samuel McCard 90E555644BA74ED...

07/25/2025

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

END BENT 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-26
1			3			TOTAL SHEETS
2			4			31

DRAWN BY : D.V. JOYNER / HRS DATE : 03/24

CHECKED BY : A.A. COLE DATE : 09/24

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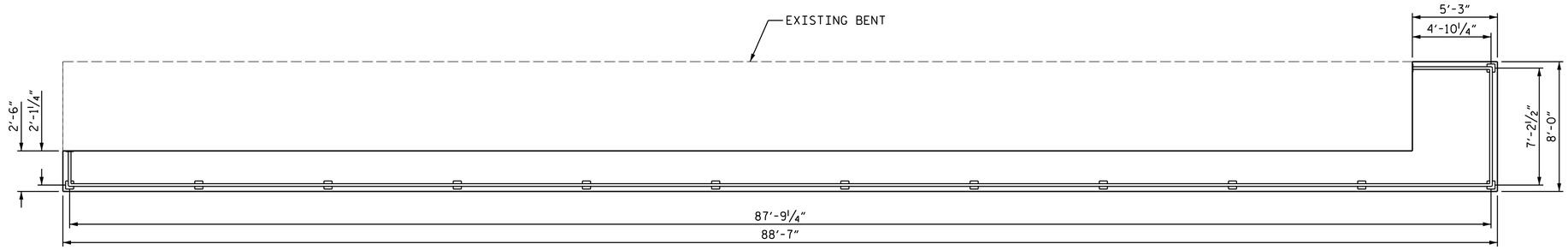
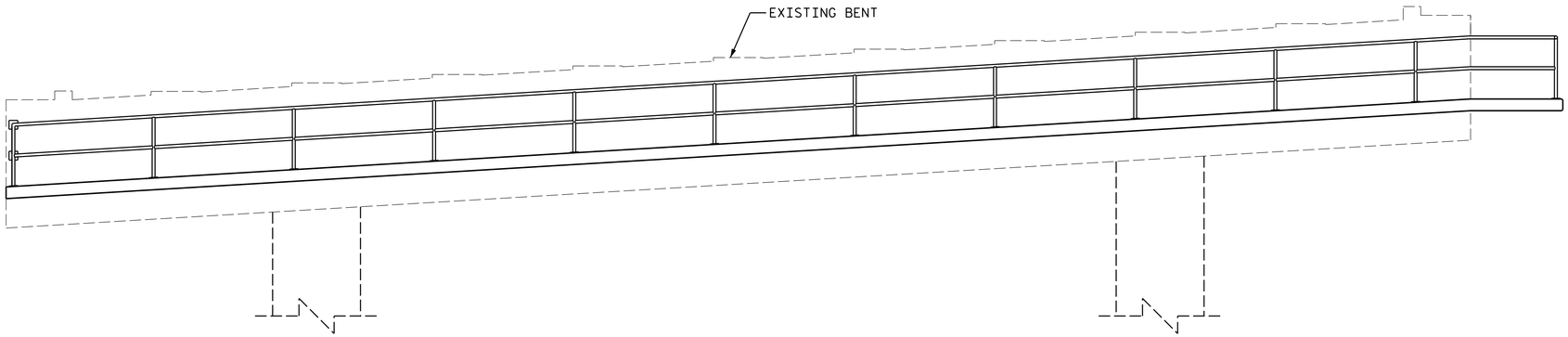
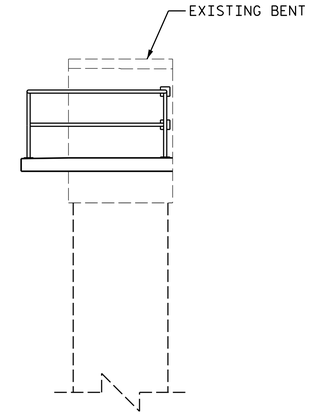


PLAN OF BENT CATWALK



ELEVATION



END VIEW

PROJECT NO. 15BPR.159

SWAIN COUNTY

BRIDGE NO. 860008

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CATWALK

NORTH CAROLINA PROFESSIONAL SEAL 049759 ENGINEER SAMUEL N. MEGALED

DocuSigned by:
Samuel Megaled
90E555644BA74ED...
07/25/2025

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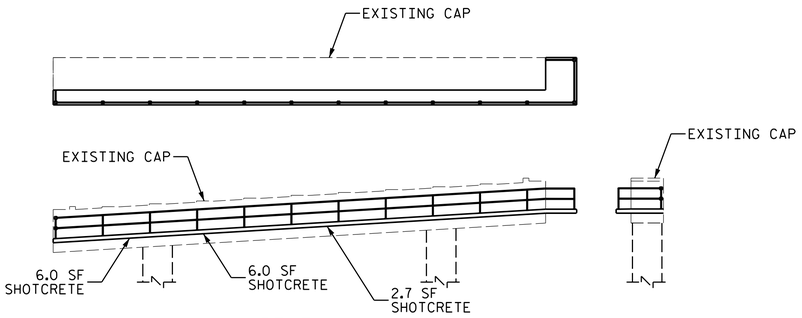
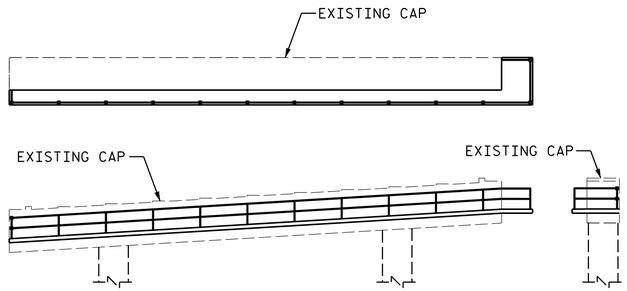
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-27
1			3			TOTAL SHEETS
2			4			31

DRAWN BY : R.L.PUTEK / HRS DATE : 03/24
CHECKED BY : A.A. COLE DATE : 09/24



BENT 1



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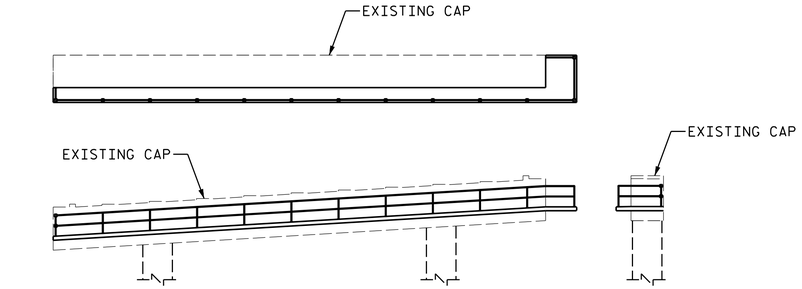

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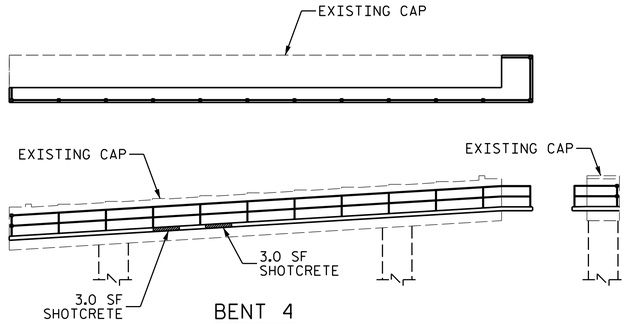

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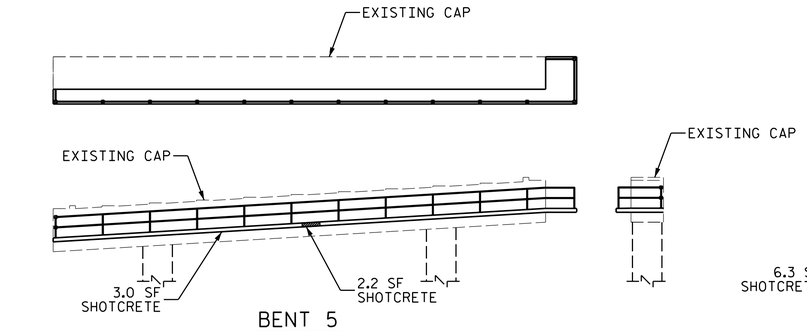

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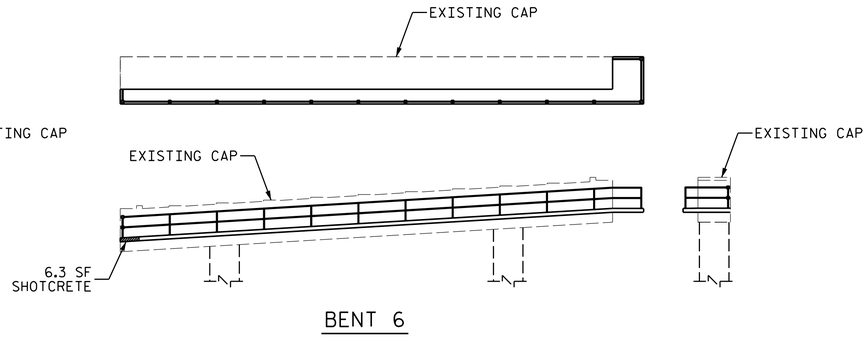

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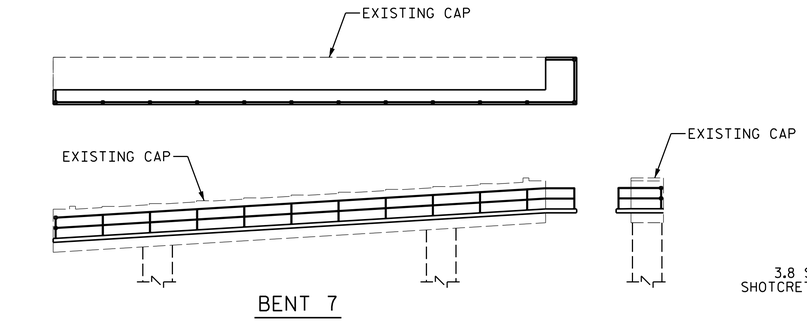

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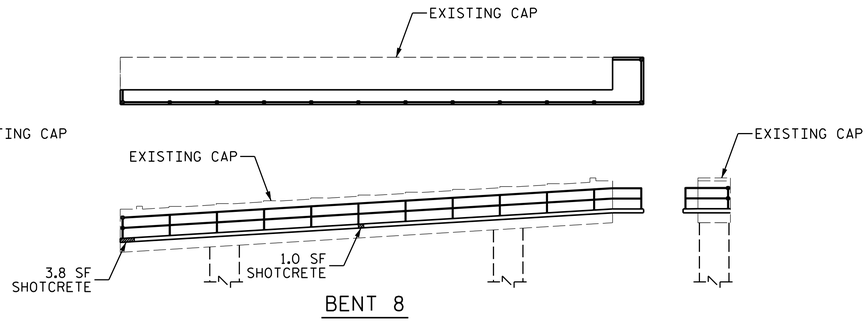

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AS-BUILT REPAIR QUANTITY TABLE

SHOTCRETE REPAIRS

	ESTIMATE		ACTUAL	
	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
BENT 1	14.7	4.9		
BENT 2	0.0	0.0		
BENT 3	0.0	0.0		
BENT 4	6.0	2.0		
BENT 5	5.2	1.7		
BENT 6	6.3	2.1		
BENT 7	0.0	0.0		
BENT 8	4.8	1.6		

EPOXY RESIN INJECTION

	LIN. FT.	LIN. FT.
BENT 1	6.0	
BENT 2	7.3	
BENT 3	20.0	
BENT 4	20.0	
BENT 5	25.0	
BENT 6	25.0	
BENT 7	12.8	
BENT 8	5.7	

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

SHOTCRETE REPAIR AREA

DRAWN BY : R. L. PUTEK / HRS DATE : 03/24
CHECKED BY : A. A. COLE DATE : 09/24

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NORTH CAROLINA PROFESSIONAL SEAL 049759 ENGINEER SAMUEL N. MEGAHED

DocuSigned by: Samuel Megahed 90E555644BA74ED...

07/25/2025

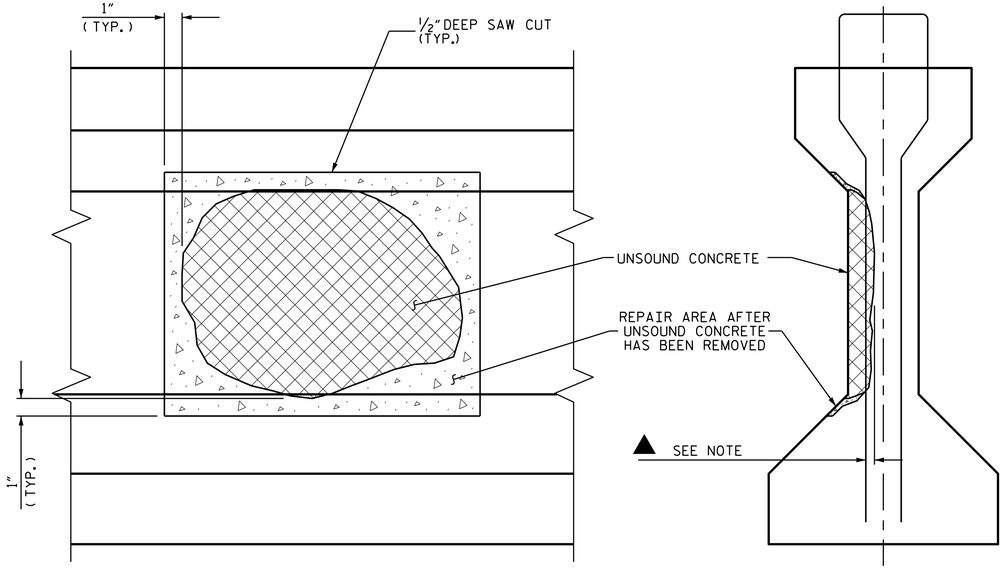
PROJECT NO. 15BPR.159
SWAIN COUNTY
BRIDGE NO. 860008

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

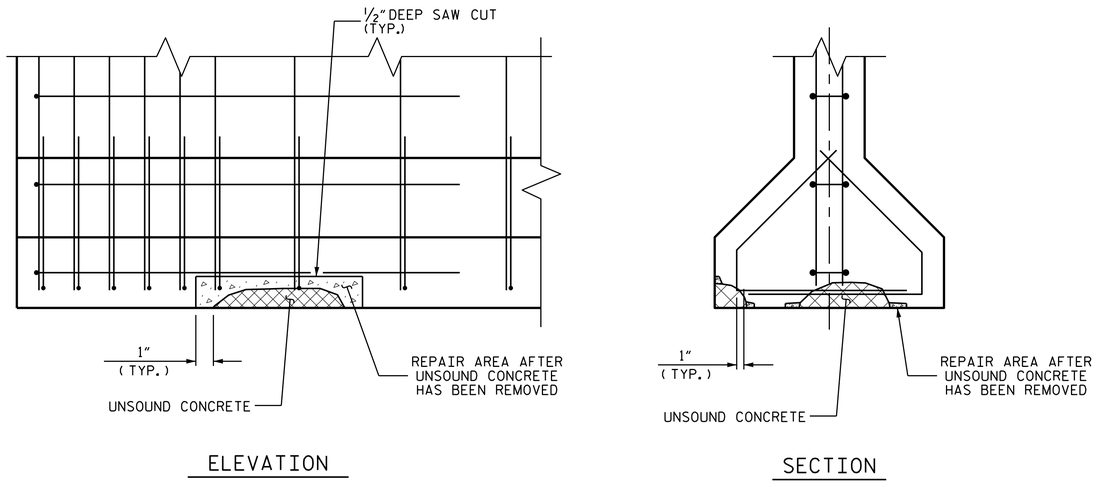
CATWALK REPAIR

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-28
1			3			TOTAL SHEETS
2			4			31



ELEVATION SECTION

GIRDER WEB REPAIR



ELEVATION SECTION

GIRDER FLANGE REPAIR

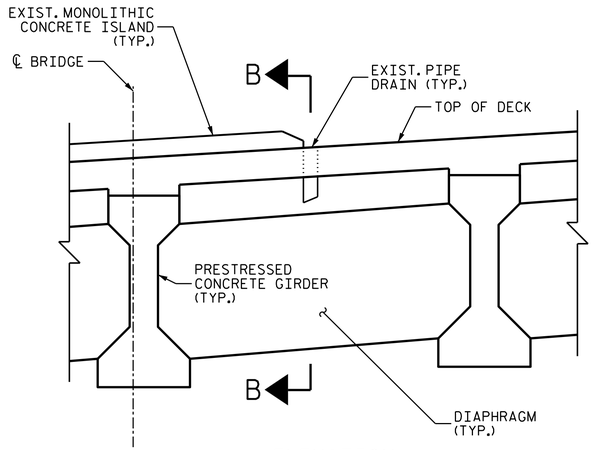
NOTES

FOR REPAIRS TO PRESTRESSED CONCRETE GIRDERS, SEE SPECIAL PROVISIONS.

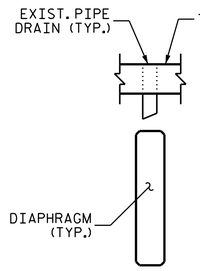
▲ ALL UNSOUND CONCRETE MUST BE REMOVED, HOWEVER, PRESTRESSED STRANDS SHOULD NOT BE DISTURBED UNLESS ABSOLUTELY NECESSARY. THE CONTRACTOR SHALL USE EXTREME CARE TO NOT DAMAGE STRANDS.

EXTEND PIPE DRAIN WHEN PIPE DRAIN IS ABOVE THE CONCRETE DIAPRAHGM.

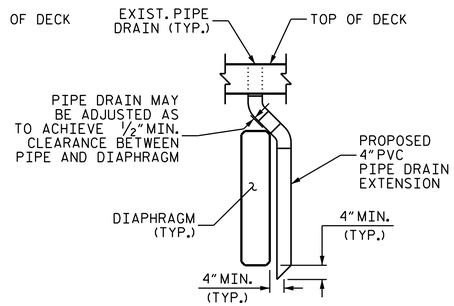
NO SEPARATE PAYMENT WILL BE MADE FOR PIPE DRAIN EXTENSIONS. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE DIAPHRAGM REPAIRS.



ELEVATION



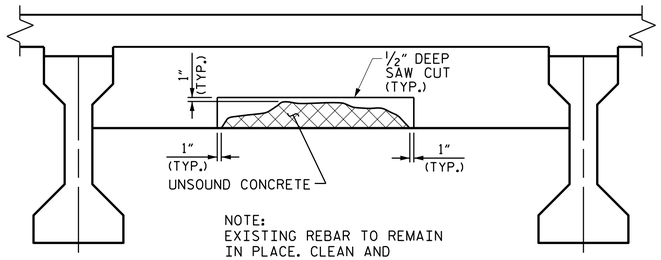
EXISTING PIPE DRAIN



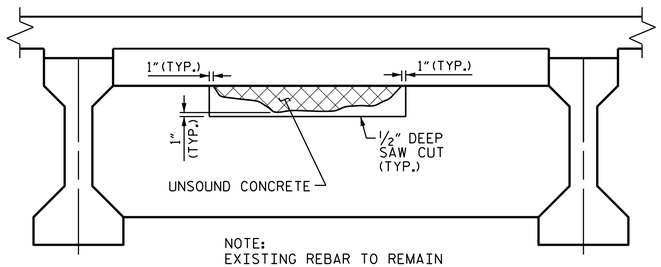
PROPOSED PIPE DRAIN

SECTION B-B

PIPE DRAIN EXTENSION



BENT DIAPHRAGM REPAIR



INTERMEDIATE DIAPHRAGM REPAIR

PROJECT NO. 15BPR.159

SWAIN COUNTY

BRIDGE NO. 860008

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PRESTRESSED GIRDER & DIAPHRAGM REPAIR DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 049759 ENGINEER SAMUEL N. MEGALED

DocuSigned by: Samuel Megaled 90E555644BA74ED...
07/25/2025

DRAWN BY : R.L.PUTEK / HRS DATE : 03/24
CHECKED BY : A.A.COLE DATE : 09/24

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REVISIONS						SHEET NO.
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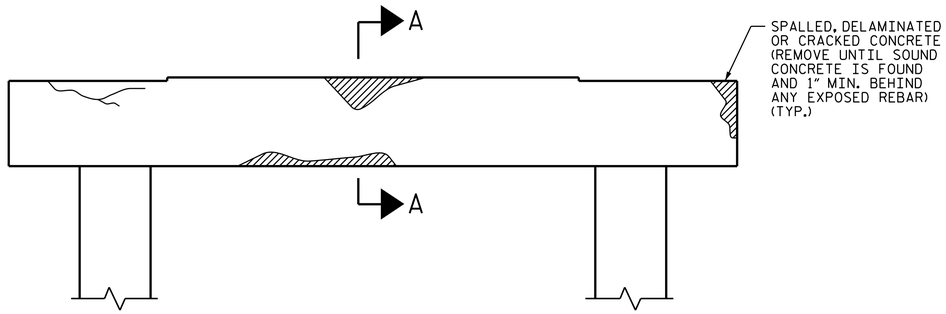
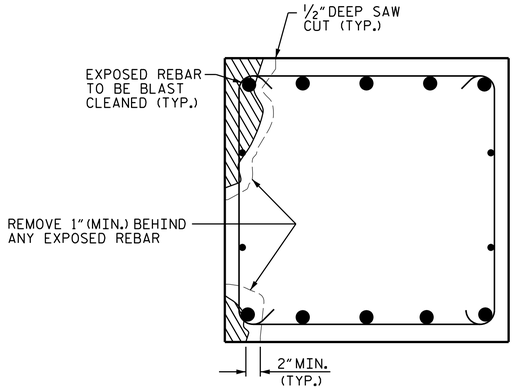
1			3			TOTAL SHEETS
2			4			31

NOTES

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

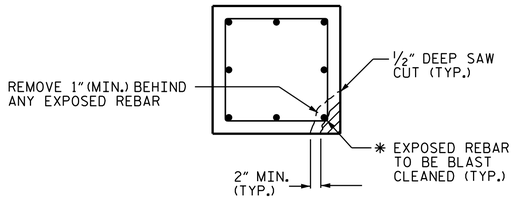


BENT CAP REPAIRS

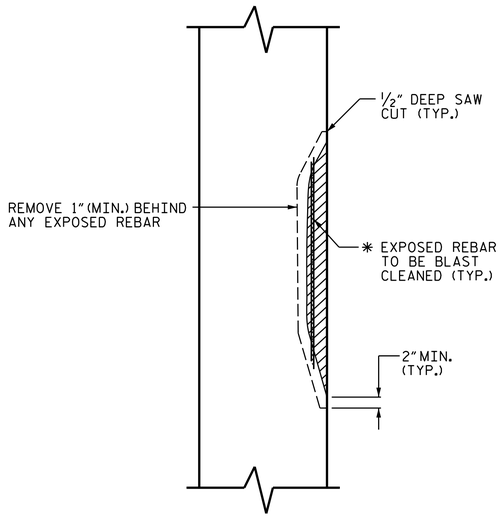


SECTION A-A

CAP REPAIR



PLAN OF COLUMN



* REPAIR LENGTH SHALL NOT EXCEED 10 FEET.

ELEVATION OF COLUMN

COLUMN REPAIR

PROJ. NO. 15BPR.159

SWAIN COUNTY

BRIDGE NO. 860008

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL CAP AND COLUMN REPAIR DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 049759 ENGINEER SAMUEL N. MEGALIED

DocuSigned by: Samuel Megalied 90E555644BA74ED...

07/25/2025

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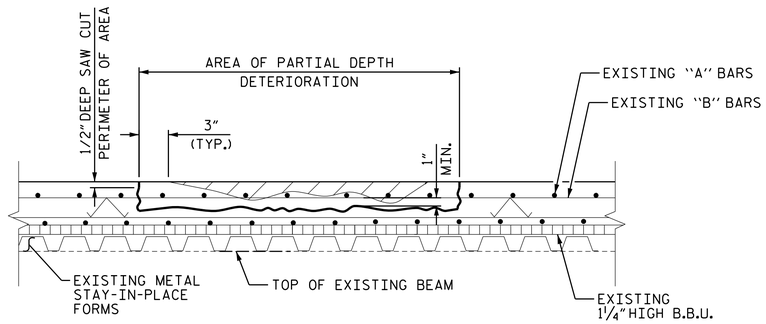
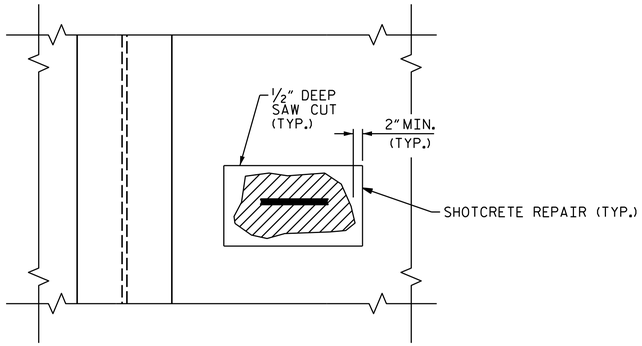
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-30
1			3			TOTAL SHEETS
2			4			31

DRAWN BY : R.L.PUTEK / HRS DATE : 03/24

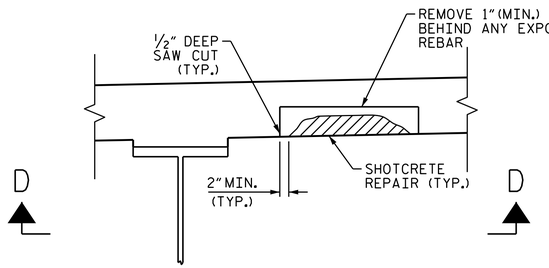
CHECKED BY : A.A. COLE DATE : 09/24



CLASS II (PARTIAL DEPTH) REPAIR



SECTION D-D



TYPICAL SECTION

UNDERSIDE OF DECK REPAIR

NOTES

FOR AREAS TO BE REPAIRED, SEE "PLAN OF SPAN" SHEETS.

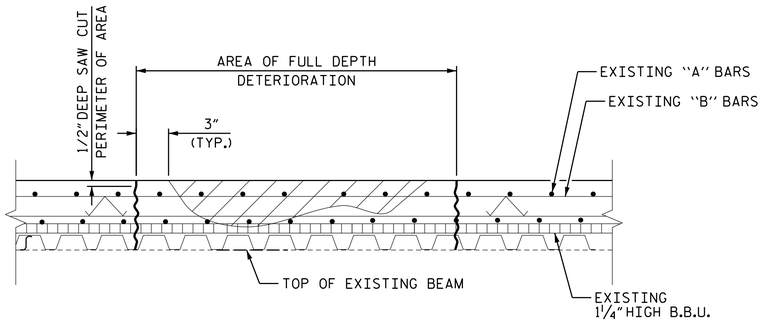
ALL DECK REPAIRS SHALL BE COMPLETED PRIOR TO PLACEMENT OF OVERLAY.

FOR CLASS II AND CLASS III SURFACE PREPARATION, SEE "BRIDGE DECK REPAIRS" SPECIAL PROVISION.

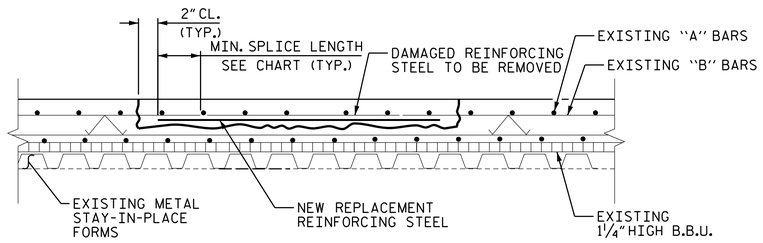
FOR CONCRETE FOR DECK REPAIR, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIR, SEE SPECIAL PROVISIONS.

SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS					
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"			



CLASS III (FULL DEPTH) REPAIR



REINFORCING STEEL REPAIR

AREA OF DETERIORATION

PROJECT NO. 15BPR.159

SWAIN COUNTY

BRIDGE NO. 860008

NORTH CAROLINA PROFESSIONAL SEAL 049759 ENGINEER SAMUEL N. MEGALED

DocuSigned by: Samuel Megaled 90E555644BA74ED...

07/25/2025

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

DECK REPAIR DETAILS

ASSEMBLED BY : HRS	DATE : 5/25
CHECKED BY : T. SHERRILL	DATE : 5/25
DRAWN BY : NAP 9/18	
CHECKED BY :	

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

SHEET NO. S-31

TOTAL SHEETS 31

STANDARD NOTES

DESIGN DATA:

SPECIFICATIONS	AASHTO (CURRENT)
LIVE LOAD	SEE PLANS
IMPACT ALLOWANCE	SEE AASHTO
STRESS IN EXTREME FIBER OF STRUCTURAL STEEL - AASHTO M270 GRADE 36	20,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50W	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION - GRADE 60	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR	SEE AASHTO
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 2024 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

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

CONCRETE:

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

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED ¾" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1½" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A ¼" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A ¼" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

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

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

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

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

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

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

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE ⅞" ∅ SHEAR STUDS FOR THE ¾" ∅ STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - ⅞" ∅ STUDS FOR 4 - ¾" ∅ STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF ⅞" ∅ STUDS ALONG THE BEAM AS SHOWN FOR ¾" ∅ STUDS BASED ON THE RATIO OF 3 - ⅞"∅ STUDS FOR 4 - ¾" ∅ STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 5/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16" 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.