PROJECT: 15BPR.122.3

CONTRACT NO: C205011

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

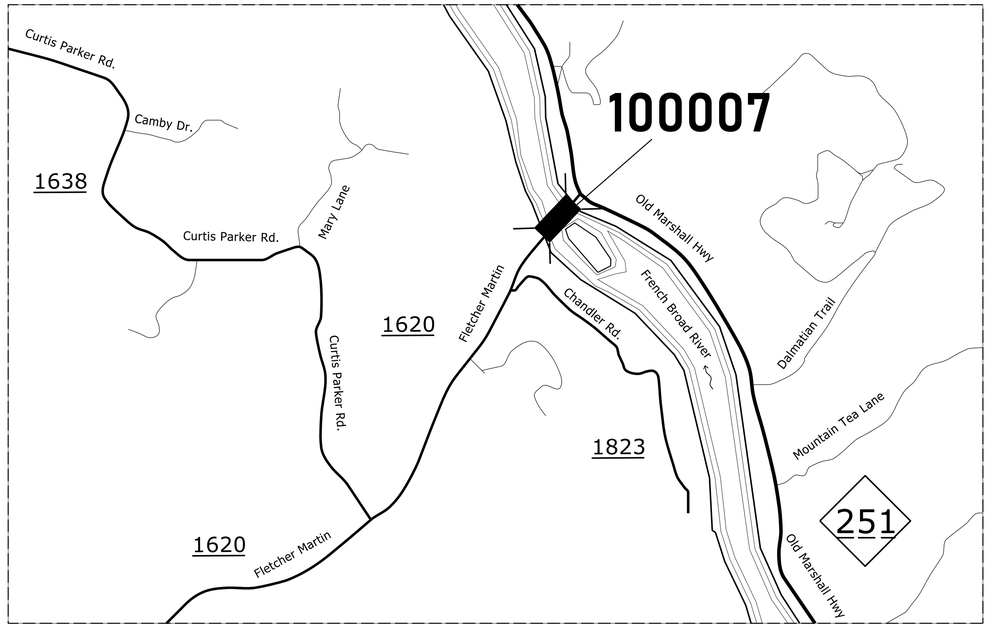
BUNCOMBE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	15BPR.122.3	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
15BPR.122.1	-	PE
15BPR.122.3	-	CONST.

LOCATION: BRIDGE #100007 ON SR 1620 (FLETCHER MARTIN ROAD) OVER FRENCH BROAD RIVER AND NORFOLK SOUTHERN RAILROAD.

TYPE OF WORK: BRIDGE PRESERVATION— DECK REPAIR, SCARIFICATION, HYDRO–DEMOLITION, LATEX MODIFIED CONCRETE – VERY EARLY STRENGTH, MILLING, PAVING, JOINT DEMOLITION, PAINTING OF STRUCTURAL STEEL, STRUCTURAL STEEL BEAM END REPAIR, REPLACEMENT OF BEARINGS AND SUBSTRUCTURE REPAIR



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DESIGN DATA

BRIDGE #100007 ADT 2022 = 4,400

PROJECT LENGTH

BRIDGE #100007 = 0.09 MILE

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1 Glenwood Avenue
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Tel:919.789.9977
Fax:919.789.9591
License: F-0453

RAJIT RAMKUMAR, P.E.
PROJECT ENGINEER

2024 STANDARD SPECIFICATIONS

LETTING DATE:
10/21/2025

Signed by: Farzin Asefnia
08D0F2A2E9954F6...
NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARZIN ASEFNIA
8/8/2025

FARZIN ASEFNIA, P.E.
PROJECT DESIGN ENGINEER

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	15BPR.122.3	1A	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
15BPR.122.1	-	PE
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STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

BUNCOMBE COUNTY

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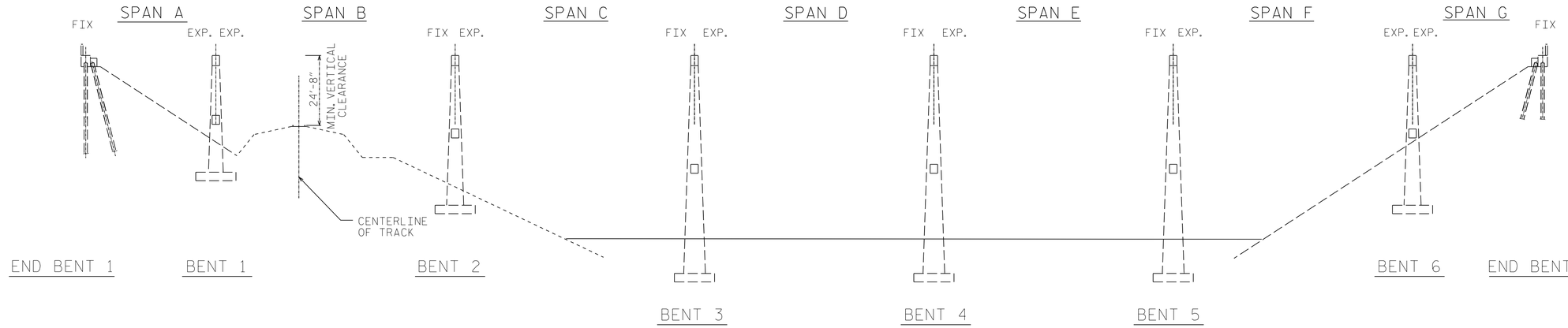
PROJECT: 15BPR.122.3

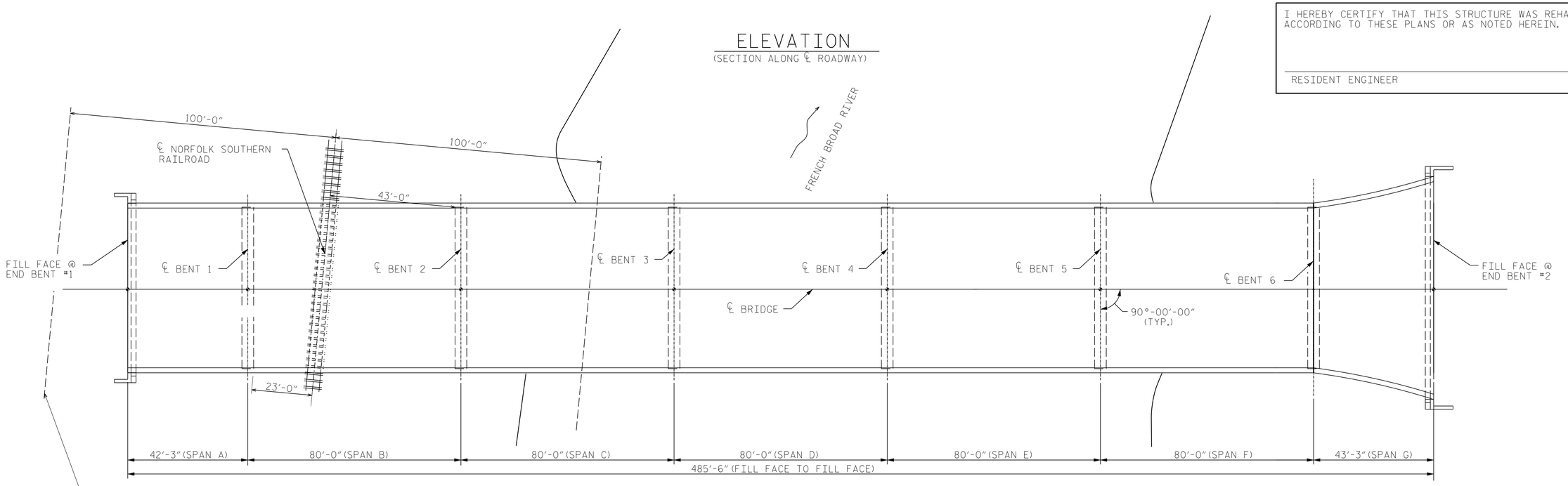
CONTRACT NO: C205011

INDEX OF SHEETS



ELEVATION

(SECTION ALONG ℄ ROADWAY)



SCOPE OF WORK

REPAIR THE ENDS OF GIRDERS AND REPLACE THE BEARINGS AS DETAILED IN CONTRACT PLANS. ALL STRUCTURAL STEEL WORK REQUIRING JACKING MUST BE COMPLETED PRIOR TO DOING ANY OVERLAY AND JOINT WORK.

PARTIALLY REMOVE TOP OF BRIDGE DECK CONCRETE BY SCARIFICATION AND SHOTBLASTING METHODS.

PREPARE AND REPAIR CLASS II AND CLASS III IN AREAS OF THE BRIDGE DECK.

OVERLAY PREPARED TOP OF BRIDGE DECK WITH LATEX MODIFIED CONCRETE- VERY EARLY STRENGTH (LMC-VES).

GROOVE THE LATEX MODIFIED CONCRETE- VERY EARLY STRENGTH (LMC-VES) DECK.

REMOVE EXISTING JOINT MATERIAL AT BENTS AND INSTALL FOAM JOINTS.

PREPARE THE CONCRETE BARRIER RAIL FRONT AND TOP SURFACE FOR SILANE TREATMENT.

REPAIR THE DAMAGED AREAS OF THE BARRIER AS INDICATED.

APPLY SILANE SEALER TO THE FRONT AND TOP SURFACE OF THE CONCRETE BARRIER SECTIONS.

INJECT CONCRETE CRACKS WITH EPOXY RESIN.

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

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

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

CLEAN AND PAINT ALL STRUCTURAL STEEL BEAMS AND COMPONENTS.

PLAN

(COLUMNS AND FOOTINGS NOT SHOWN FOR CLARITY)

NOTES

GENERAL DRAWING INFORMATION IS TAKEN FROM THE ORIGINAL PLANS AND THE ROUTINE INSPECTION REPORT DATED 02/16/2024

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

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

RESIDENT ENGINEER DATE

PROJECT NO. 15BPR.122.3

BUNCOMBE COUNTY

BRIDGE NO. 100007

SHEET 1 OF 2

DRAWN BY : N. DIAZ MORILLO DATE : 6/2024
CHECKED BY : D. COMANICIU DATE : 6/2024
DESIGN ENGINEER OF RECORD: F. ASEFNIA DATE : 6/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Signed by: Farzin Asefnia
NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARZIN ASEFNIA
8/8/2025

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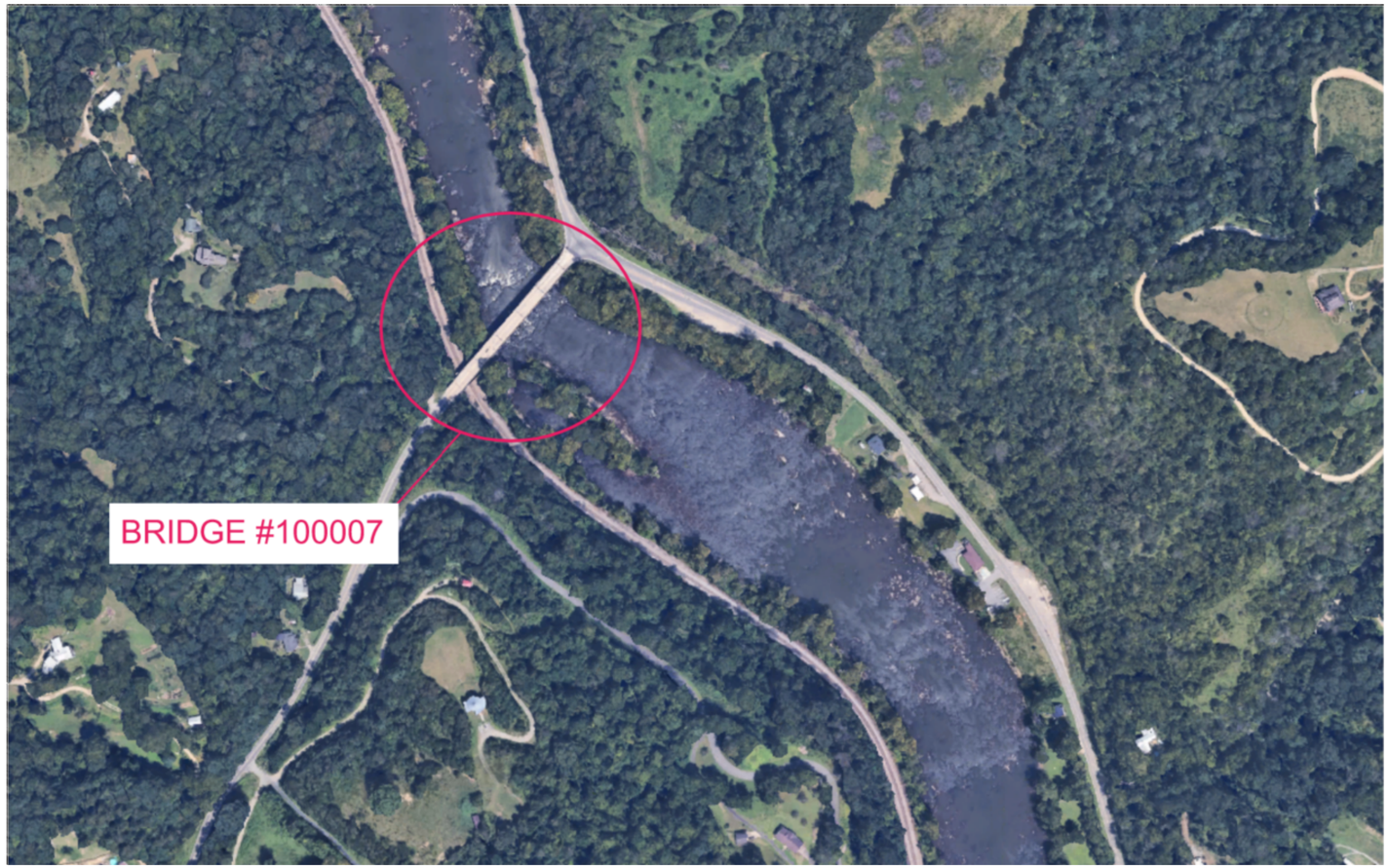
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING FOR BRIDGE ON SR 1620 OVER FRENCH BROAD RIVER AND NORFOLK SOUTHERN RAILROAD

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



LOCATION SKETCH

BRIDGE COORDINATES

LATITUDE: 35° 42' 31.5"
LONGITUDE: 82° 37' 19.72"

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 PLAN 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.

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

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

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

FOR FOAM JOINT SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR PAINTING EXISTING STRUCTURE, SEE SPECIAL PROVISIONS.

FOR PAINTING CONTAINMENT AND POLLUTION CONTROL, SEE PAINTING EXISTING STRUCTURE SPECIAL PROVISIONS.

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 AS PER ARTICLE 104-7 OF THE STANDARD SPECIFICATIONS. PROJECT SPECIAL PROVISIONS THAT OUTLINE REQUIREMENTS FOR THESE POTENTIAL ADDITIONAL WORK ITEMS HAVE BEEN PROVIDED IN THE PROJECT DOCUMENTS, BUT NO QUANTITIES HAVE BEEN LISTED. ACTUAL PAY ITEMS, QUANTITIES, AND COSTS WILL BE ESTABLISHED, AS REQUIRED, IF EXTRA WORK IS ENCOUNTERED. UNANTICIPATED ITEMS:

TYPE I BRIDGE JACKING FOR BRIDGE NO. 100007.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR BRIDGE DECK HYDRODEMOLITION, CLASS II AND CLASS III SURFACE PREPARATION, SEE OVERLAY SURFACE PREPARATION FOR LATEX MODIFIED CONCRETE- VERY EARLY STRENGTH SPECIAL PROVISION.

THE CONTRACTOR SHALL PERFORM ALL WORK WITH CARE SO THAT THE EXISTING STRUCTURE WHICH IS TO REMAIN IN PLACE WILL NOT BE DAMAGED. IF THE CONTRACTOR DAMAGES ANY PART OF THE EXISTING STRUCTURE WHICH IS TO REMAIN IN PLACE, THE DAMAGED AREA SHALL BE REPAIRED OR REPLACED IN A MANNER SATISFACTORY TO THE ENGINEER AT NO ADDITIONAL COST TO THE DEPARTMENT.

FOR CONCRETE FOR DECK REPAIR, SEE SPECIAL PROVISIONS.

FOR LATEX MODIFIED CONCRETE OVERLAY, PLACING AND FINISHING OF LATEX MODIFIED CONCRETE OVERLAY AND GROOVING BRIDGE FLOORS, SEE "LATEX MODIFIED CONCRETE - VERY EARLY STRENGTH OVERLAY" SPECIAL PROVISIONS.

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

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.

FOR SILANE BARRIER RAIL TREATMENT, SEE SPECIAL PROVISIONS.

THE EXISTING BRIDGE DECK SHALL BE REPAIRED AS SHOWN ON THE PLANS OR AS DETERMINED BY THE ENGINEER AFTER SCARIFICATION AND PRIOR TO THE SURFACE PREPARATION AND APPLICATION OF THE LMC OVERLAY. UNLESS OTHERWISE APPROVED, SUCH LOCATIONS SHALL BE REPAIRED WITH CONCRETE.

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

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.

FOR EPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.

THE CONTRACTOR SHALL REPAIR ALL BEAM ENDS AND REPLACE THE ELASTOMERIC BEARINGS PRIOR TO PLACEMENT OF THE MILLING, PAVING, HYDRODEMOLITION OR ANY OTHER CONSTRUCTION EQUIPMENT ON THE DECK

REPAIR AREAS INACCESSIBLE BY POWER TOOLS SHALL BE CLEANED WITH HAND TOOLS.

BILL OF MATERIAL

BRIDGE NO. 100007	CLEANING & REPAINTING OF BRIDGE No. 100007	PAINTING CONTAINMENT FOR BRIDGE No. 100007	POLLUTION CONTROL	CLASS II SURFACE PREPARATION	CLASS III SURFACE PREPARATION	LATEX MODIFIED CONCRETE OVERLAY - VERY EARLY STRENGTH	PLACING & FINISHING LMC-VES OVERLAY	HYDRO-DEMOLITION OF BRIDGE DECK	GROOVING BRIDGE FLOORS	SHOTCRETE REPAIRS	CONCRETE REPAIRS	EPOXY RESIN INJECTION	FOAM JOINT SEALS FOR PRESERVATION	BRIDGE JOINT DEMOLITION	VOLUMETRIC MIXER
	LUMP SUM	LUMP SUM	LUMP SUM	SQ. YDS.	SQ. YDS.	CU. YDS.	SQ. YDS.	SQ. YDS.	SQ. FT.	CU. FT.	CU. FT.	LN. FT.	LN. FT.	SQ. FT.	LUMP SUM
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	277	2.9	88.5	1,823.8	1,823.8	16,264.5	861.2	20	18.5	234	370	LUMP SUM

BILL OF MATERIAL CONT.

BRIDGE NO. 100007	EPOXY COATING	ELASTOMERIC CONCRETE FOR PRESERVATION	POURABLE SILICONE JOINT SEALANT	FLOWABLE FILL	BEAM REPAIR CUT OUT	INCIDENTAL MILLING	SCARIFYING BRIDGE DECK	ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B	ASPHALT BINDER FOR PLANT MIX	SURFACE PREPARATION FOR CONCRETE BARRIER RAIL	SILANE BARRIER RAIL TREATMENT	TYPE II BRIDGE JACKING FOR BRIDGE NO. 100007	BEARING REPLACEMENT	RAILROAD CONTRACTOR PROTECTIVE SERVICES
	SQ. FT.	CU. FT.	LN. FT.	CU. YDS.	LBS.	SQ. YDS.	SQ. YDS.	TONS	TONS	SQ. FT.	SQ. FT.	EACH	EACH	DAY
TOTAL	538.6	51	97	0.5	6,650	375	1,823.8	11	5	1,628	1,628	12	60	60

DRAWN BY : N. DIAZ MORILLO DATE : 6/2024
CHECKED BY : D. COMANICIU DATE : 10/2024
DESIGN ENGINEER OF RECORD: F. ASEFNIA DATE : 10/2024

PROJECT NO. 15BPR.122.3
BUNCOMBE COUNTY
BRIDGE NO. 100007

SHEET 2 OF 2

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Signed by: Farzin Asefnia
NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARZIN ASEFNIA
8/8/2025

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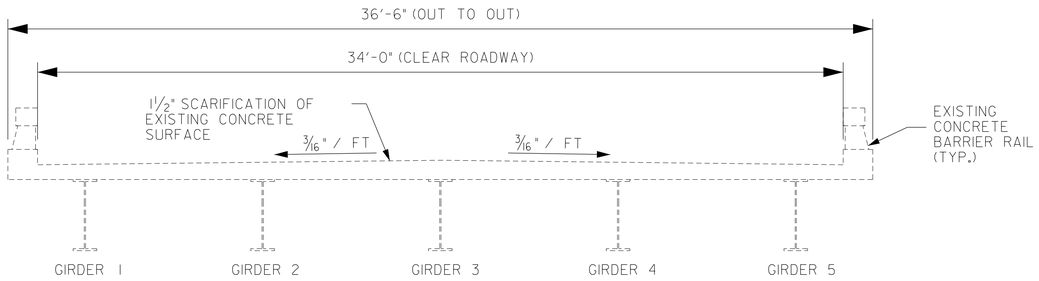
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

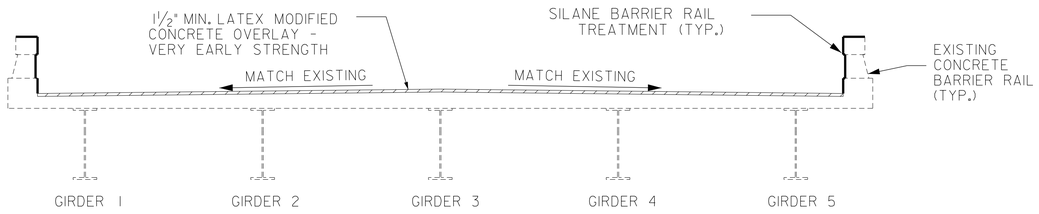
GENERAL DRAWING FOR BRIDGE ON SR1620 OVER FRENCH BROAD RIVER AND NORFOLK SOUTHERN RAILROAD

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

SHEET NO. S-2
TOTAL SHEETS 28



TYPICAL SECTION - SPAN A-F
(EXISTING)



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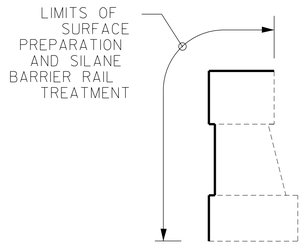
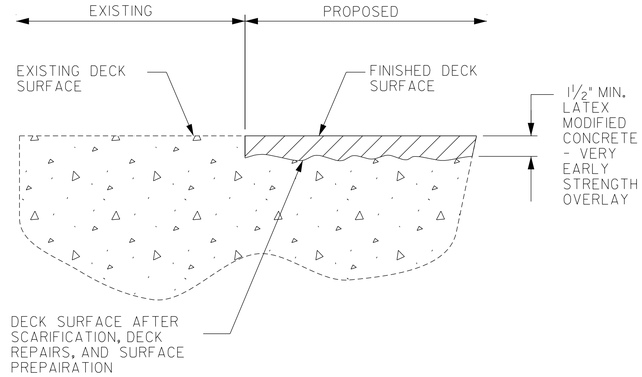
(PROPOSED)



DETAIL FOR SILANE BARRIER RAIL TREATMENT

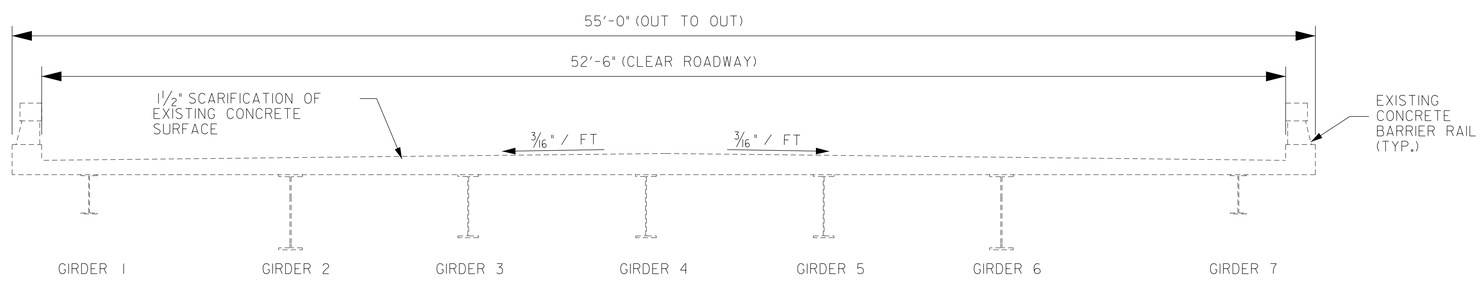
NOTES:

SEE ELSEWHERE IN THE CONTRACT DOCUMENTS FOR LANE WIDTHS, SEQUENCING, AND OTHER TRAFFIC CONTROL MEASURES FOR STAGING OF LATEX MODIFIED CONCRETE - VERY EARLY STRENGTH (LMC-VES) OVERLAY SYSTEM AND SURFACE PREPARATION.



DETAILS FOR LATEX MODIFIED CONCRETE - VERY EARLY STRENGTH OVERLAY

FINISHED SURFACE ELEVATION SHALL MATCH EXISTING CONCRETE SURFACE ELEVATIONS. ACTUAL THICKNESS OF LMC-VES OVERLAY MAY VARY.



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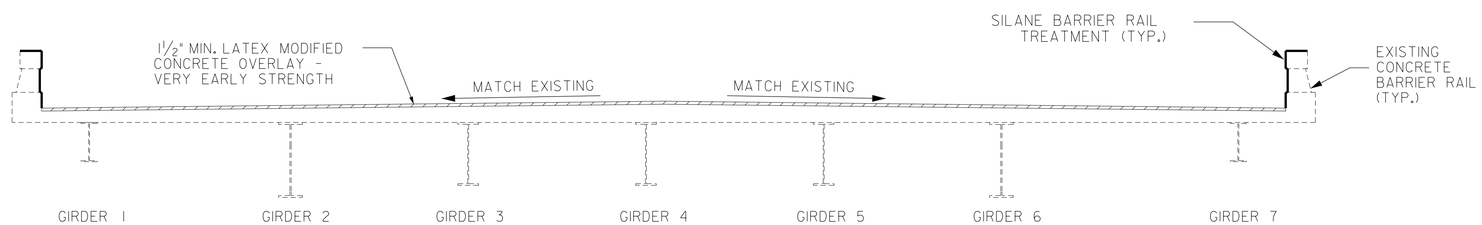
(EXISTING)



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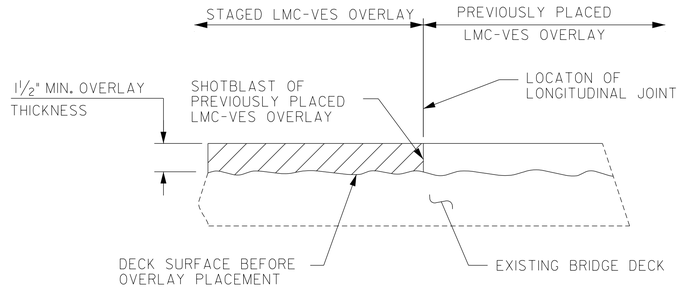
(PROPOSED)



STAGED LMC-VES OVERLAY JOINT

PROJECT NO. 15BPR.122.3

BUNCOMBE COUNTY

BRIDGE NO. 100007

DRAWN BY : N. DIAZ MORILLO DATE : 6/2024
CHECKED BY : D. COMANICIU DATE : 9/2024
DESIGN ENGINEER OF RECORD: F. ASEFNIA DATE : 9/2024

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Signed by: Farzin Asefnia

NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARZIN ASEFNIA

8/8/2025

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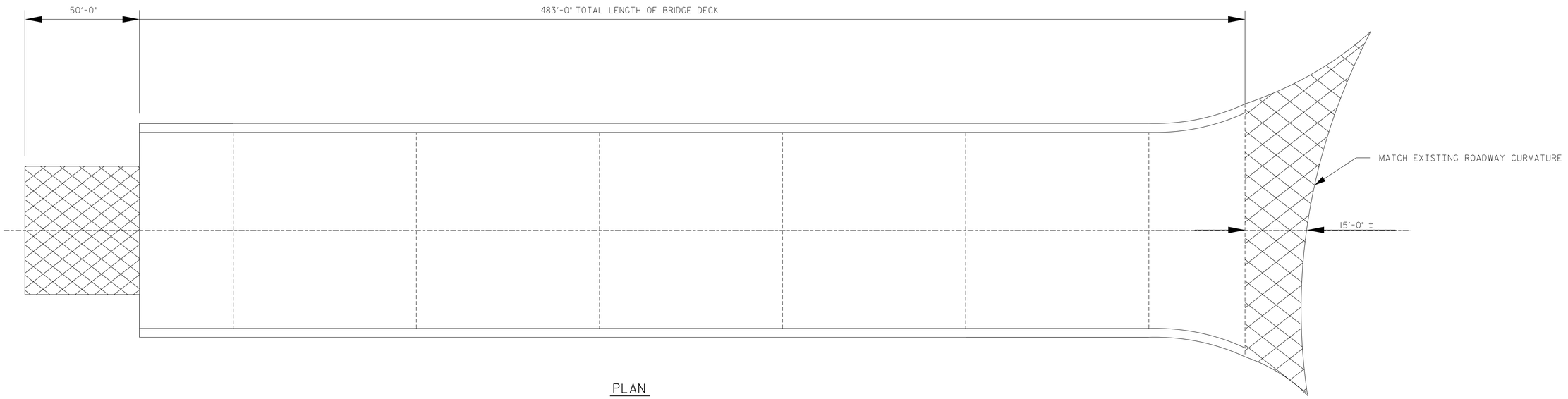
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION & LMC-VES OVERLAY DETAILS

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

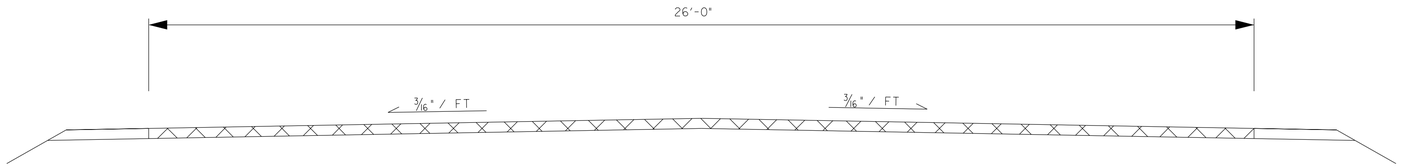
SHEET NO. S-3

TOTAL SHEETS 28

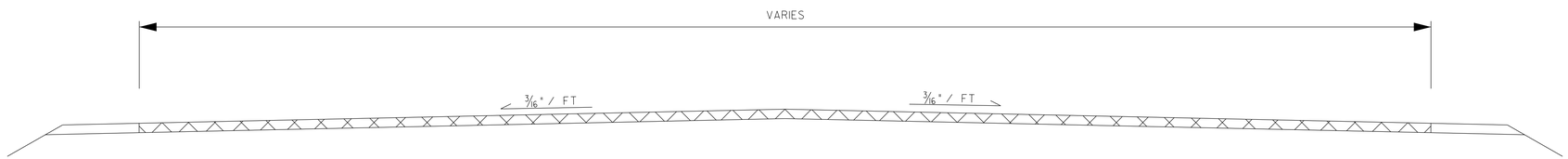


PLAN

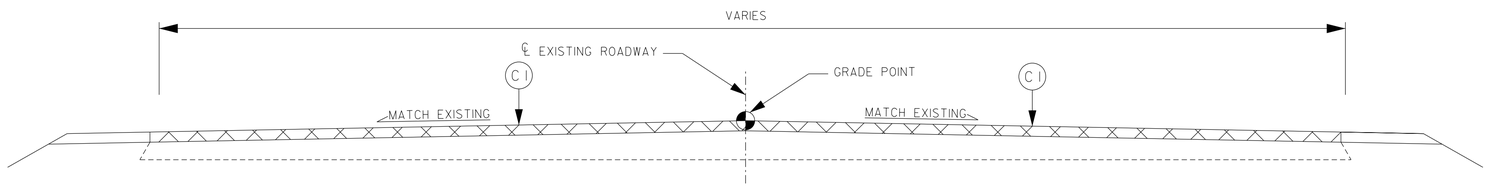
MILL AND REPAVE TO MATCH DECK CONCRETE



APPROACH 1 ROADWAY MILLING SECTION



APPROACH 2 ROADWAY MILLING SECTION



TYPICAL ROADWAY SECTION

NOTES:

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

C1	PROPOSED VARIABLE DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF 9.5B AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1" IN DEPTH OR GREATER THAN 1½" IN DEPTH.

PROJECT NO. 15BPR.122.3

BUNCOMBE COUNTY

BRIDGE NO. 100007

DRAWN BY : N. DIAZ MORILLO DATE : 10/2024

CHECKED BY : D. COMANICIU DATE : 10/2024

DESIGN ENGINEER OF RECORD: F. ASEFNIA DATE : 10/2024

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Signed by: Farzin Asefnia

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL ROADWAY SECTION AND MILLING DETAILS

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

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 B-B, SEE "JOINT DETAILS" SHEETS.

FOR DECK HYDRO-DEMOLITION, CLASS II, AND CLASS III SURFACE PREPARATION, SEE OVERLAY SURFACE PREPARATION FOR LATEX MODIFIED CONCRETE SPECIAL PROVISIONS.

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

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE FOR DECK REPAIR, SEE SPECIAL PROVISIONS.

FOR LMC-VES MATERIALS AND PLACING AND FINISHING LMC-VES OVERLAY, SEE LATEX MODIFIED CONCRETE BRIDGE DECK OVERLAY SPECIAL PROVISIONS.

ALL DECK REPAIRS, DECK OVERLAY, JOINT DEMOLITION, AND JOINT REPLACEMENT SHALL COMMENCE AFTER THE JACKING AND END OF THE BEAM SECTION REPLACEMENTS ARE CONCLUDED.

CLASS II APPROX. SURFACE PREPARATION AREA

CLASS III APPROX. SURFACE PREPARATION AREA

CONCRETE REPAIR (CR)

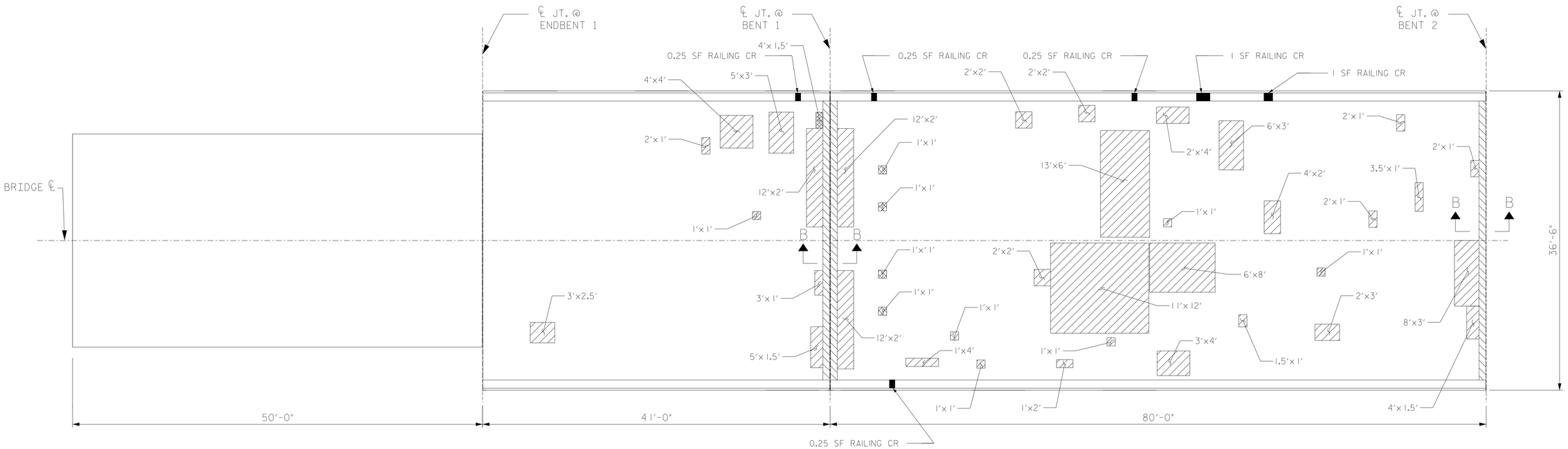
BRIDGE JOINT DEMOLITION

AS-BUILT REPAIR QUANTITY TABLE

TOP OF DECK REPAIRS

	ESTIMATE	ACTUAL
BRIDGE JOINT DEMOLITION	85.0 SF	
CLASS II SURFACE PREPARATION	57.6 SY	
CLASS III SURFACE PREPARATION	1.1 SY	
SHOTBLASTING BRIDGE DECK	462.2 SY	
LMC-VES MATERIALS	22.0 CY	
PLACING AND FINISHING LMC OVERLAY	452.7 SY	
GROOVING BRIDGE FLOORS	4000.7 SF	
OVERHANG SHOTCRETE REPAIR AT DECK DRAINS	5.0 CF	
SILANE PREP. FOR CONCRETE BARRIER	378.2 SF	
SILANE BARRIER RAIL TREATMENT	378.2 SF	

CONCRETE REPAIRS	ESTIMATE		ACTUAL	
	AREA SF.	VOLUME CF	AREA SF.	VOLUME CF
CONCRETE CURB AND RAIL	3.0	0.8		



APPROACH 1 | SPAN A | SPAN B

PROJECT NO. 15BPR.122.3

BUNCOMBE COUNTY

BRIDGE NO. 100007

SHEET 1 OF 4

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Signed by: Farzin Asefnia
08D1812A7E8462...

NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARZIN ASEFNIA

8/8/2025

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK SURFACE REPAIR
SPAN A & B

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			28

DRAWN BY : N. DIAZ MORILLO DATE : 6/2024
CHECKED BY : D. COMANICIU DATE : 9/2024
DESIGN ENGINEER OF RECORD: F. ASEFNIA DATE : 9/2024

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 B-B, SEE "JOINT DETAILS" SHEETS.

FOR DECK HYDRO-DEMOLITION, CLASS II, AND CLASS III SURFACE PREPARATION, SEE OVERLAY SURFACE PREPARATION FOR LATEX MODIFIED CONCRETE SPECIAL PROVISIONS.

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

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE FOR DECK REPAIR, SEE SPECIAL PROVISIONS.

FOR LMC-VES MATERIALS AND PLACING AND FINISHING LMC-VES OVERLAY, SEE LATEX MODIFIED CONCRETE BRIDGE DECK OVERLAY SPECIAL PROVISIONS.

ALL DECK REPAIRS, DECK OVERLAY, JOINT DEMOLITION, AND JOINT REPLACEMENT SHALL COMMENCE AFTER THE JACKING AND END OF THE BEAM SECTION REPLACEMENTS ARE CONCLUDED.

CLASS II APPROX. SURFACE PREPARATION AREA

CLASS III APPROX. SURFACE PREPARATION AREA

CONCRETE REPAIR (CR)

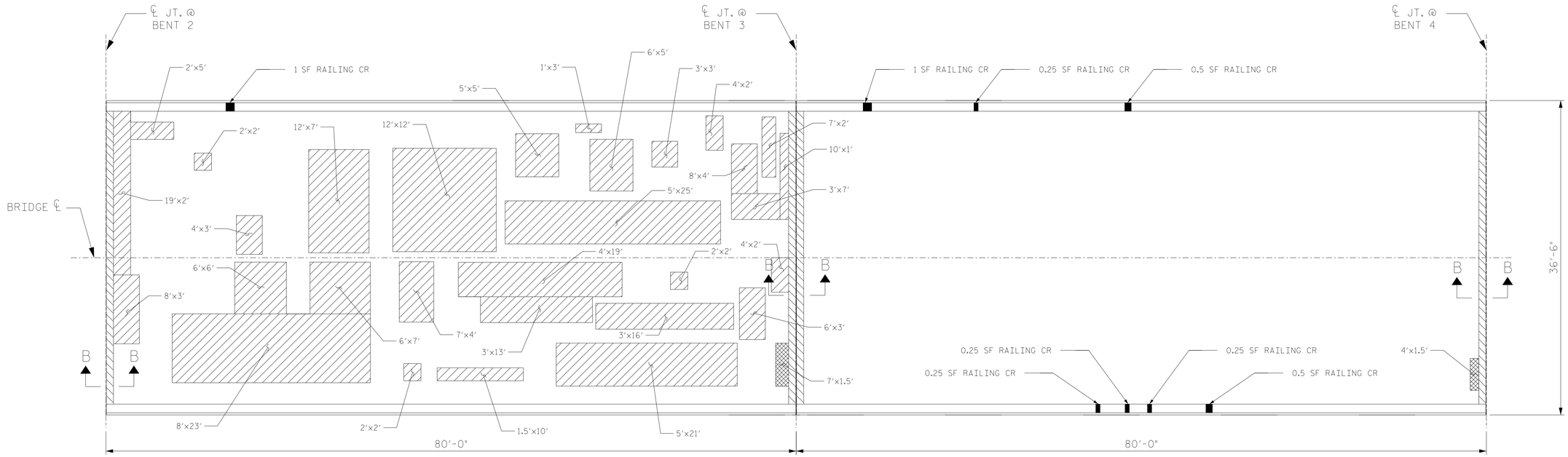
BRIDGE JOINT DEMOLITION

AS-BUILT REPAIR QUANTITY TABLE

TOP OF DECK REPAIRS

	ESTIMATE	ACTUAL
BRIDGE JOINT DEMOLITION	113.3 SF	
CLASS II SURFACE PREPARATION	133.0 SY	
CLASS III SURFACE PREPARATION	1.8 SY	
SHOTBLASTING BRIDGE DECK	604.5 SY	
LMC-VES MATERIALS	28.7 CY	
PLACING AND FINISHING LMC OVERLAY	591.9 SY	
GROOVING BRIDGE FLOORS	5298.4 SF	
OVERHANG SHOTCRETE REPAIR AT DECK DRAINS	20.0 CF	
SILANE PREP. FOR CONCRETE BARRIER	500.0 SF	
SILANE BARRIER RAIL TREATMENT	500.0 SF	

CONCRETE REPAIRS	ESTIMATE		ACTUAL	
	AREA SF.	VOLUME CF	AREA SF.	VOLUME CF
CONCRETE CURB AND RAIL	4.0	1.0		



SPAN C

SPAN D

PROJECT NO. 15BPR.122.3

BUNCOMBE COUNTY

BRIDGE NO. 100007

SHEET 2 OF 4

DRAWN BY : N. DIAZ MORILLO DATE : 6/2024

CHECKED BY : D. COMANICIU DATE : 9/2024

DESIGN ENGINEER OF RECORD: F. ASEFNIA DATE : 9/2024

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Signed by: Farzin Asefnia
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NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARZIN ASEFNIA

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DECK SURFACE REPAIR

SPAN C & D

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			28

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 B-B, SEE "JOINT DETAILS" SHEETS.

FOR DECK HYDRO-DEMOLITION, CLASS II, AND CLASS III SURFACE PREPARATION, SEE OVERLAY SURFACE PREPARATION FOR LATEX MODIFIED CONCRETE SPECIAL PROVISIONS.

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

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE FOR DECK REPAIR, SEE SPECIAL PROVISIONS.

FOR LMC-VES MATERIALS AND PLACING AND FINISHING LMC-VES OVERLAY, SEE LATEX MODIFIED CONCRETE BRIDGE DECK OVERLAY SPECIAL PROVISIONS.

ALL DECK REPAIRS, DECK OVERLAY, JOINT DEMOLITION, AND JOINT REPLACEMENT SHALL COMMENCE AFTER THE JACKING AND END OF THE BEAM SECTION REPLACEMENTS ARE CONCLUDED.

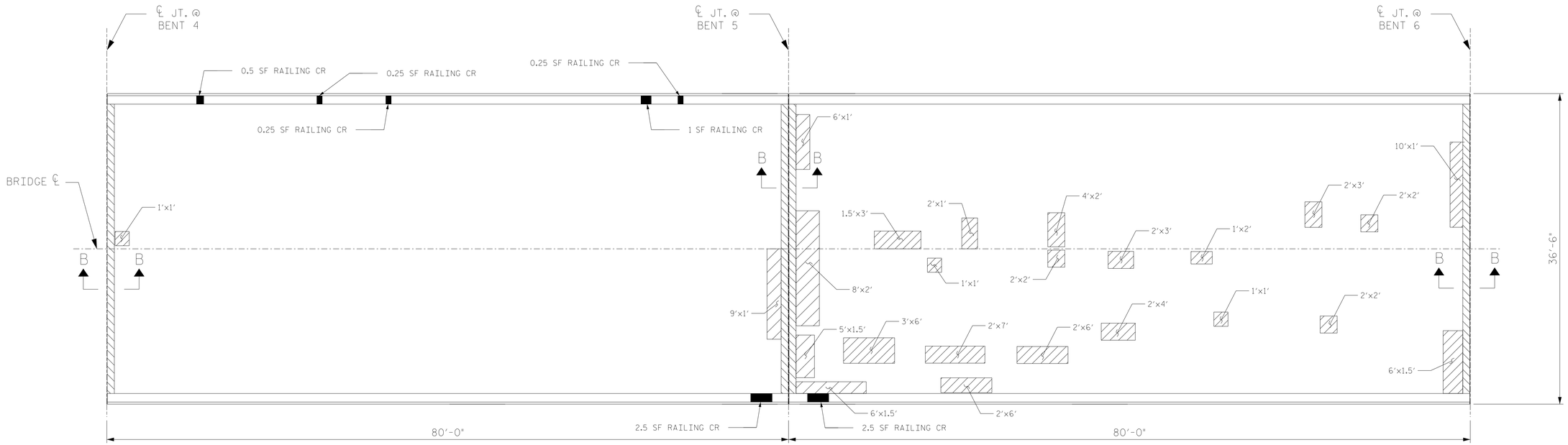
- CLASS II APPROX. SURFACE PREPARATION AREA
- CLASS III APPROX. SURFACE PREPARATION AREA
- CONCRETE REPAIR (CR)
- BRIDGE JOINT DEMOLITION

AS-BUILT REPAIR QUANTITY TABLE

TOP OF DECK REPAIRS

	ESTIMATE	ACTUAL
BRIDGE JOINT DEMOLITION	113.4 SF	
CLASS II SURFACE PREPARATION	19.3 SY	
CLASS III SURFACE PREPARATION	0.0 SY	
SHOTBLASTING BRIDGE DECK	604.5 SY	
LMC-VES MATERIALS	28.7 CY	
PLACING AND FINISHING LMC OVERLAY	591.9 SY	
GROOVING BRIDGE FLOORS	5298.4 SF	
OVERHANG SHOTCRETE REPAIR AT DECK DRAINS	20.0 CF	
SILANE PREP. FOR CONCRETE BARRIER	500.0 SF	
SILANE BARRIER RAIL TREATMENT	500.0 SF	

CONCRETE REPAIRS	ESTIMATE		ACTUAL	
	AREA SF.	VOLUME CF	AREA SF.	VOLUME CF
CONCRETE CURB AND RAIL	7.25	1.8		



SPAN E

SPAN F

PROJECT NO. 15BPR.122.3

BUNCOMBE COUNTY

BRIDGE NO. 100007

SHEET 3 OF 4

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Signed by: Farzin Asefnia
DocuSigned by:
NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARZIN ASEFNIA
8/8/2025

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK SURFACE REPAIR

SPAN E & F

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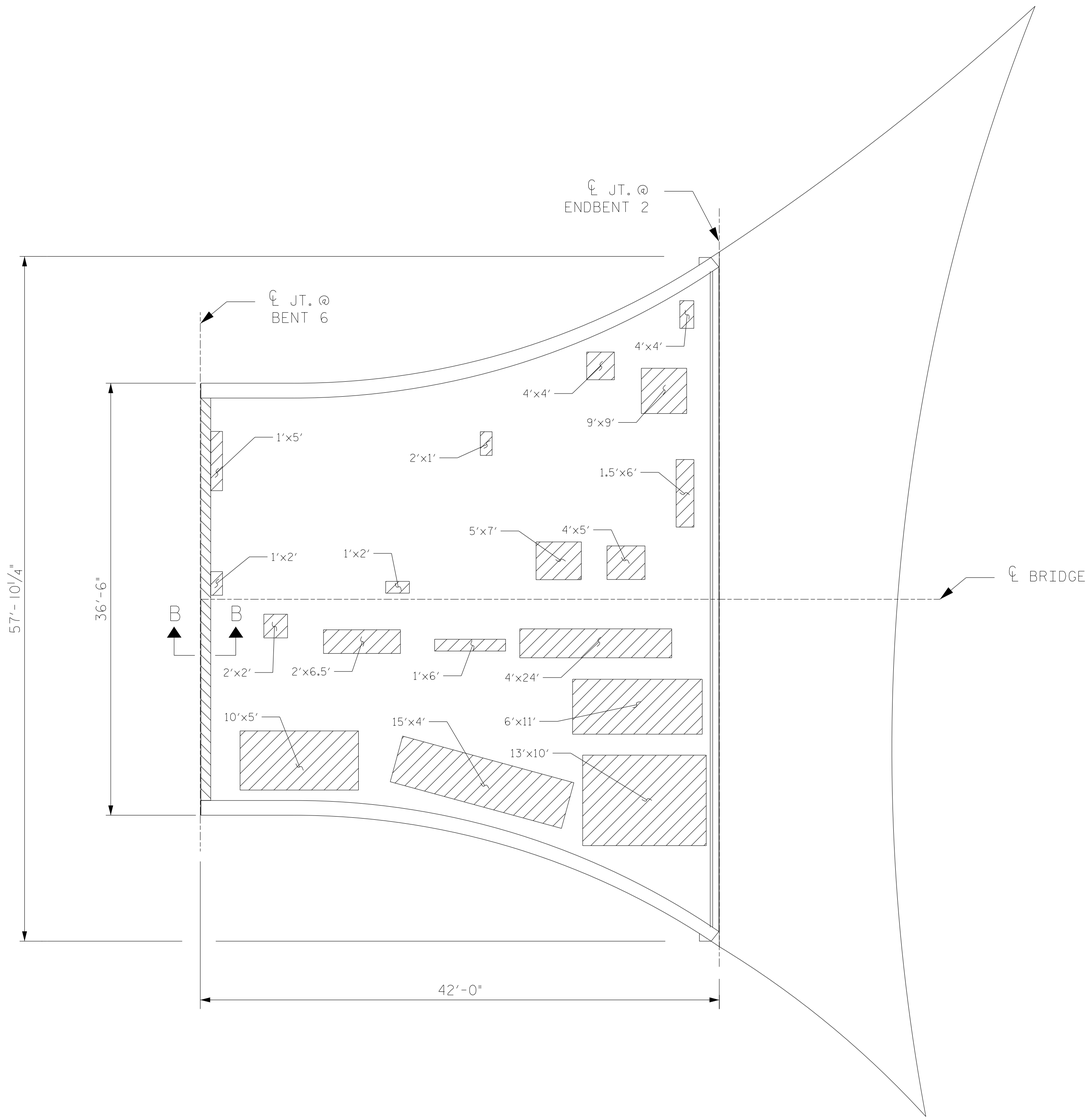
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			28

DRAWN BY : N. DIAZ MORILLO DATE : 6/2024
CHECKED BY : D. COMANICIU DATE : 9/2024
DESIGN ENGINEER OF RECORD: F. ASEFNIA DATE : 9/2024



SPAN G

APPROACH 2

AS-BUILT REPAIR QUANTITY TABLE

TOP OF DECK REPAIRS

	ESTIMATE	ACTUAL
BRIDGE JOINT DEMOLITION	58.5 SF	
CLASS II SURFACE PREPARATION	66.5 SY	
CLASS III SURFACE PREPARATION	0.0 SY	
SHOTBLASTING BRIDGE DECK	193.8 SY	
LATEX MODIFIED CONCRETE MATERIALS	9.1 CY	
PLACING AND FINISHING LMC OVERLAY	187.3 SY	
GROOVING BRIDGE FLOORS	1667.0 SF	
SILANE PREP. FOR CONCRETE BARRIER	250.0 SF	
SILANE BARRIER RAIL TREATMENT	250.0 SF	

CONCRETE REPAIRS	ESTIMATE		ACTUAL	
	AREA SF.	VOLUME CF	AREA SF.	VOLUME CF
CONCRETE CURB AND RAIL	0.0	0.0		

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 B-B, SEE "JOINT DETAILS" SHEETS.

FOR DECK HYDRO-DEMOLITION, CLASS II, AND CLASS III SURFACE PREPARATION, SEE OVERLAY SURFACE PREPARATION FOR LATEX MODIFIED CONCRETE SPECIAL PROVISIONS.

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

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE FOR DECK REPAIR, SEE SPECIAL PROVISIONS.

FOR LMC-VES MATERIALS AND PLACING AND FINISHING LMC-VES OVERLAY, SEE LATEX MODIFIED CONCRETE BRIDGE DECK OVERLAY SPECIAL PROVISIONS.

ALL DECK REPAIRS, DECK OVERLAY, JOINT DEMOLITION, AND JOINT REPLACEMENT SHALL COMMENCE AFTER THE JACKING AND END OF THE BEAM SECTION REPLACEMENTS ARE CONCLUDED.

CLASS II APPROX. SURFACE PREPARATION AREA

CLASS III APPROX. SURFACE PREPARATION AREA

CONCRETE REPAIR (CR)

BRIDGE JOINT DEMOLITION

PROJECT NO. 15BPR.122.3

BUNCOMBE COUNTY

BRIDGE NO. 100007

SHEET 4 OF 4

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Signed by: Fanon Aseenia
DocuSigned by:

NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FANON ASEENIA

8/8/2025

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK SURFACE REPAIR
SPAN G

DRAWN BY : N. DIAZ MORILLO DATE : 6/2024
CHECKED BY : D. COMANICIU DATE : 9/2024
DESIGN ENGINEER OF RECORD: F. ASEENIA DATE : 9/2024

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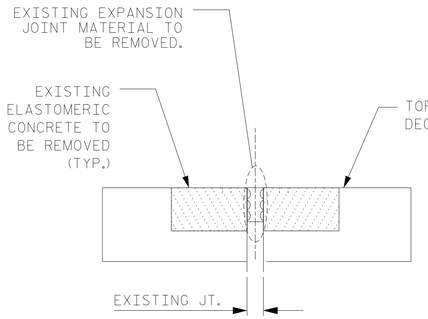
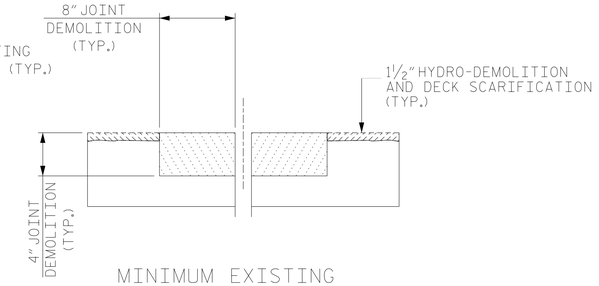
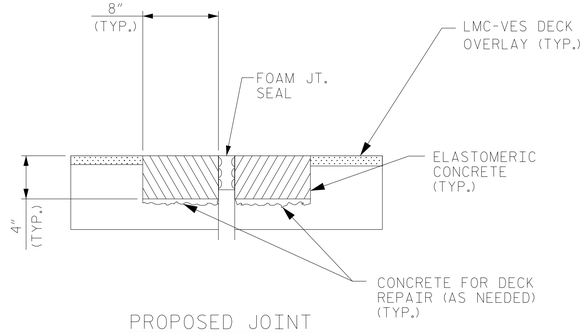
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			28



EXISTING JOINT



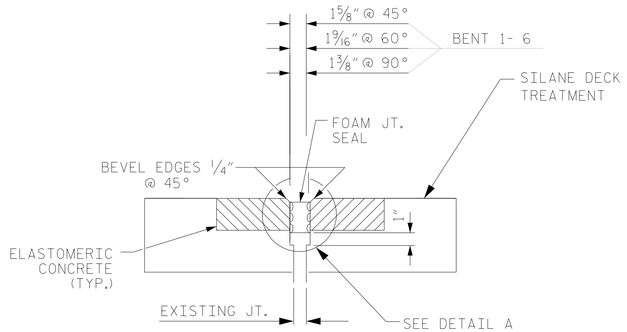
MINIMUM EXISTING JOINT DEMOLITION



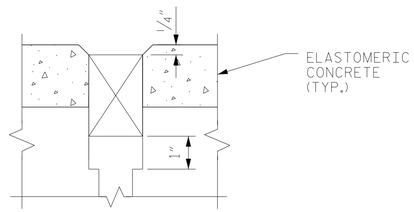
PROPOSED JOINT

JOINT INSTALLATION SEQUENCE AT BENTS 1-6

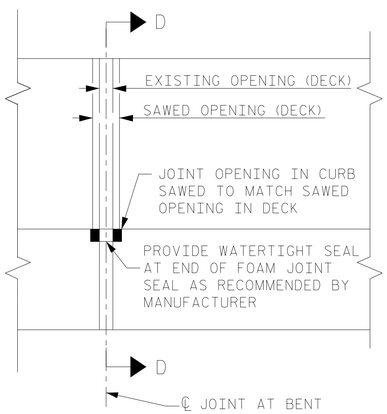
SECTION B-B



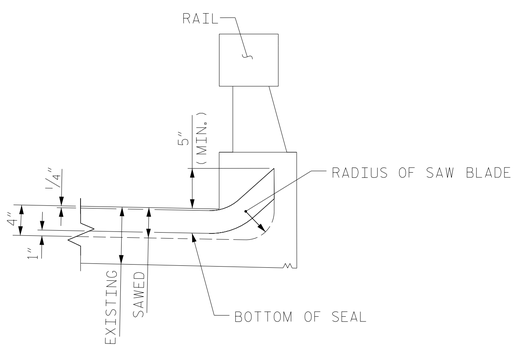
PROPOSED FOAM JOINT SEAL EXPANSION



DETAIL "A"



PLAN



SECTION D-D

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 OVERLAY IS COMPLETE.

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

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

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

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

FINAL SURFACE OF THE JOINT DEMOLITION AREA PRIOR TO PLACEMENT OF CONCRETE REPAIR MATERIAL SHOULD BE REASONABLY FLAT AND LEVEL. ENGINEER SHALL DETERMINE THE ACCEPTABILITY OF THE SURFACE PRIOR TO PLACEMENT OF REPAIR CONCRETE.

THE INSTALLATION OF THE JOINT SEAL SHALL BE WATERTIGHT.

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 INSTALLATION PROCESS.

JOINT REPAIR QUANTITY TABLE		
FOAM JOINT SEALS FOR PRESERVATION	ESTIMATED LIN. FT.	ACTUAL LIN. FT.
BENT 1	39.0	
BENT 2	39.0	
BENT 3	39.0	
BENT 4	39.0	
BENT 5	39.0	
BENT 6	39.0	
TOTAL	234.0	

POURABLE SILICONE JOINT SEALANT		
FOAM JOINT SEALS FOR PRESERVATION	ESTIMATED LIN. FT.	ACTUAL LIN. FT.
END BENT 1	39.0	
END BENT 2	58.0	
TOTAL	97.0	

PROJECT NO. 15BPR.122.3

BUNCOMBE COUNTY

BRIDGE NO. 100007

DRAWN BY : N. DIAZ MORILLO DATE : 10/2024

CHECKED BY : D. COMANICIU DATE : 10/2024

DESIGN ENGINEER OF RECORD: F. ASEFNIA DATE : 10/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Signed by: Farzin Asefnia
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NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARZIN ASEFNIA

8/8/2025

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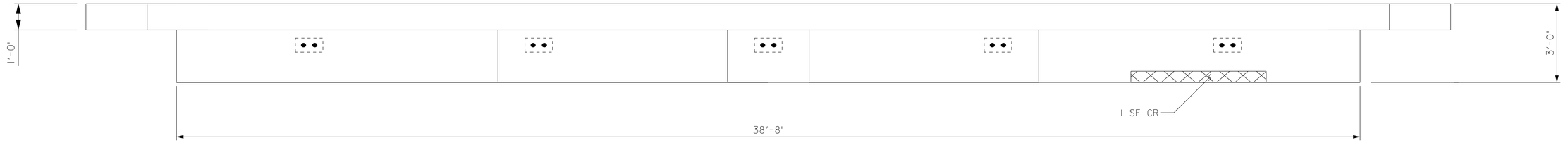
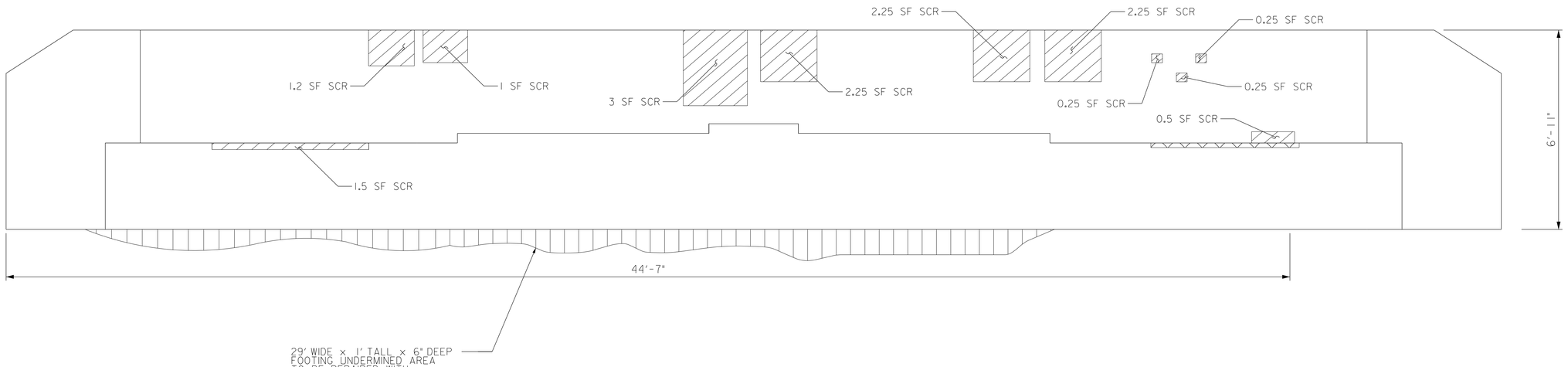
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE JOINT DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			28



PLAN



ELEVATION

AS-BUILT REPAIR QUANTITY TABLE				
END BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	14.7	7.4		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	1.0	0.5		
FLOWABLE FILL		VOLUME CY		VOLUME CY
END BENT 1		0.5		
EPOXY RESIN INJECTION		LN. FT.		LN. FT.
CAP		0.0		
EPOXY COATING		SQ. FT.		LN. FT.
TOP OF END BENT CAP		67.4		

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.

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 ELASTOMERIC PAD. FOR EPOXY COATING, SEE SPECIAL PROVISIONS.

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

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

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

FOR FLOWABLE FILL, SEE SPECIAL PROVISIONS.

SHOTCRETE REPAIR (SCR)

CONCRETE REPAIR (CR)

EPOXY RESIN INJECTION (ERI)

FLOWABLE FILL

PROJECT NO. 15BPR.122.3

BUNCOMBE COUNTY

BRIDGE NO. 100007

SHEET 1 OF 14

DRAWN BY : N. DIAZ MORILLO DATE : 5/2024

CHECKED BY : D. COMANICIU DATE : 9/2024

DESIGN ENGINEER OF RECORD: F. ASEFNIA DATE : 9/2024

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Signed by: Farzin Asefnia

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STATE OF NORTH CAROLINA

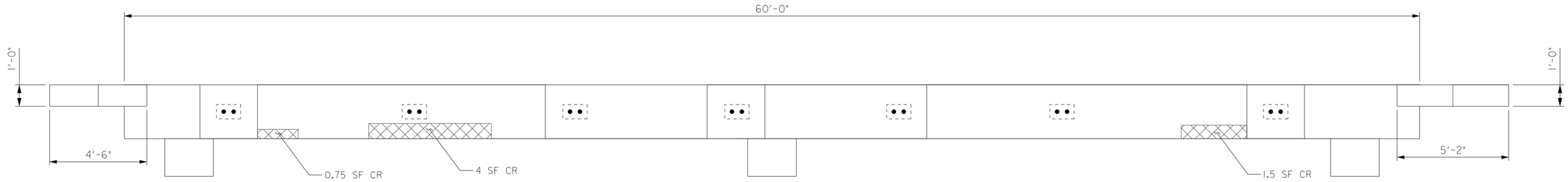
DEPARTMENT OF TRANSPORTATION

RALEIGH

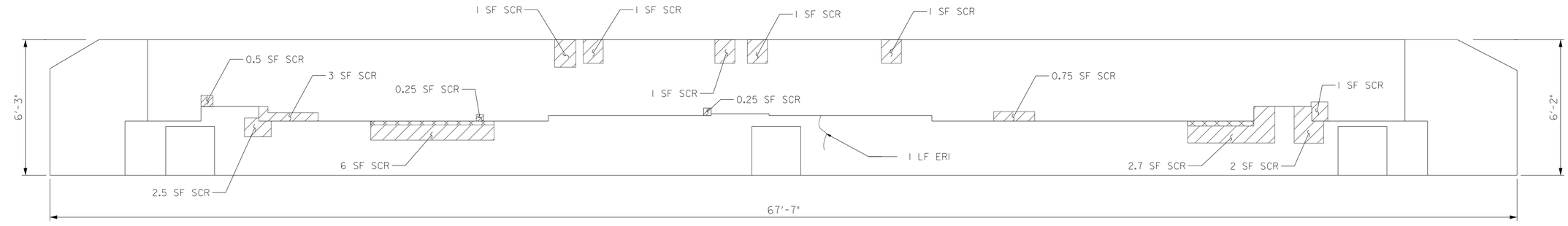
SUBSTRUCTURE REPAIR

END BENT 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			28



PLAN



ELEVATION

AS-BUILT REPAIR QUANTITY TABLE				
END BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	23.7	11.9		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	6.25	3.2		
FLOWABLE FILL		VOLUME CY		VOLUME CY
END BENT 2		0.0		
EPOXY RESIN INJECTION		LN. FT.		LN. FT.
CAP		1.0		
EPOXY COATING		SQ. FT.		LN. FT.
TOP OF END BENT CAP		146		

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.

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 ELASTOMERIC PAD. FOR EPOXY COATING, SEE SPECIAL PROVISIONS.

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

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

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

FOR FLOWABLE FILL, SEE SPECIAL PROVISIONS.

SHOTCRETE REPAIR (SCR)

CONCRETE REPAIR (CR)

EPOXY RESIN INJECTION (ERI)

FLOWABLE FILL

PROJECT NO. 15BPR.122.3

BUNCOMBE COUNTY

BRIDGE NO. 100007

SHEET 2 OF 14

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Signed by: Fazin Asefnia
DEPARTMENT OF TRANSPORTATION

NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FAZIN ASEFNIA

8/8/2025

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIR

END BENT 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			28

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1 Glenwood Avenue
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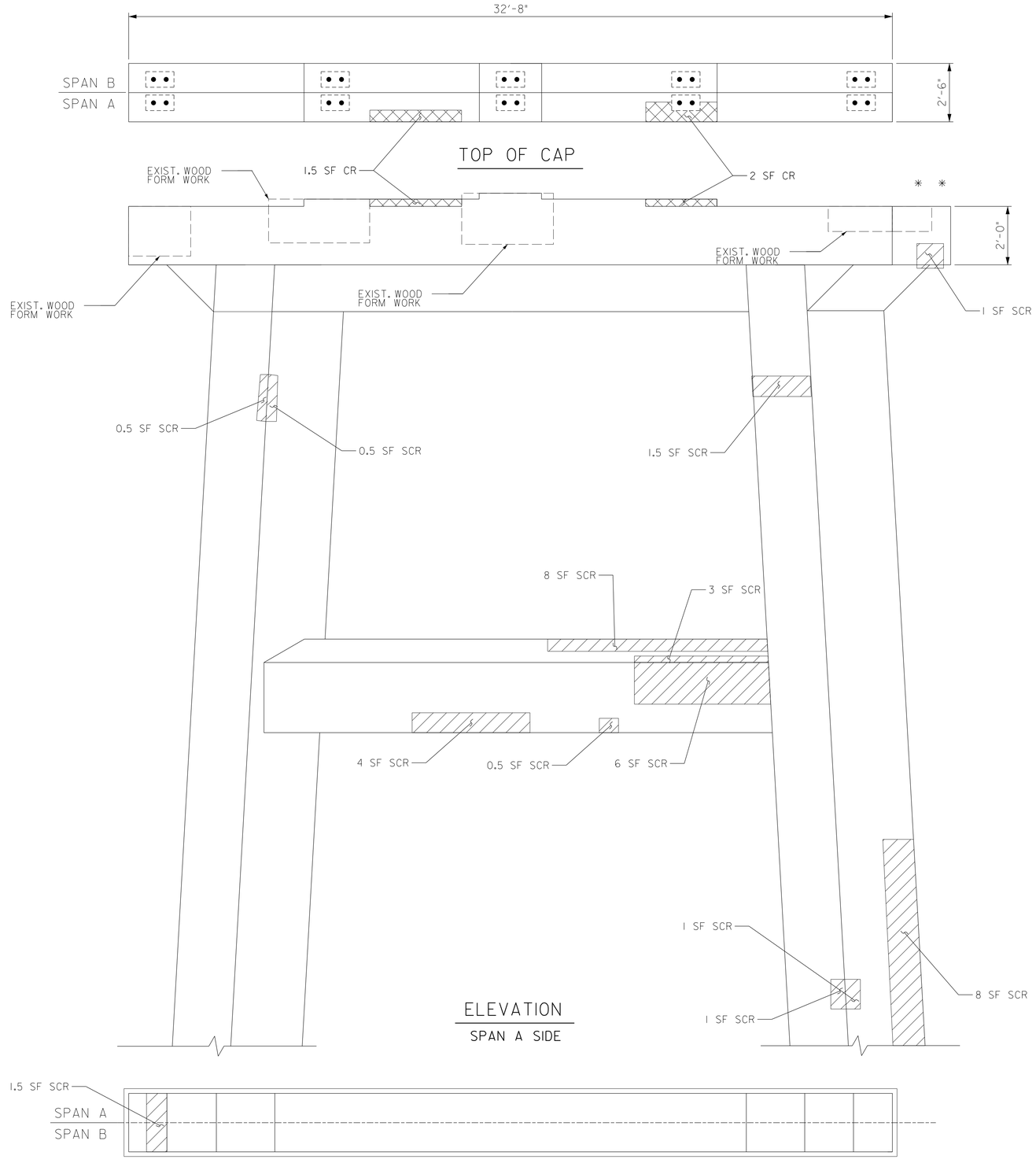
DRAWN BY : N. DIAZ MORILLO DATE : 5/2024
CHECKED BY : D. COMANICIU DATE : 9/2024
DESIGN ENGINEER OF RECORD: F. ASEFNIA DATE : 9/2024



AS-BUILT REPAIR QUANTITY TABLE

BENT 1 SPAN A FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	2.5	1.3		
COLUMN	12.5	6.3		
STRUT	21.5	10.8		
END DIAPHRAGMS	1.0	0.5		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	3.5	1.8		
EPOXY RESIN INJECTION		LN. FT.		LN. FT.
CAP		0.0		
COLUMN		0.0		
STRUT		0.0		
EPOXY COATING		SQ. FT.		SQ. FT.
TOP OF BENT CAP		61.7		

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.

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 ELASTOMERIC PAD. FOR EPOXY COATING, SEE SPECIAL PROVISIONS.

THE CONTRACTOR SHALL REMOVE ALL EXISTING WOODEN FORM WORK AND THOROUGHLY INSPECT AND ASSESS THE AFFECTED COVERED CONCRETE SECTION. HE SHALL CONSULT WITH THE ENGINEER IF ANY ADDITIONAL REPAIR IS NEEDED AND REVISE THE QUANTITY TABLE ACCORDINGLY.

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

FOR CAP, COLUMN, DIAPHRAGM AND END DIAPHRAGM REPAIRS, SEE SHEET S-28.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

* * LOCATION OF DAMAGED END DIAPHRAGMS.

SHOTCRETE REPAIR (SCR)

CONCRETE REPAIR (CR)

EPOXY RESIN INJECTION (ERI)

PROJECT NO. 15BPR.122.3

BUNCOMBE COUNTY

BRIDGE NO. 100007

SHEET 3 OF 14

DRAWN BY : N. DIAZ MORILLO DATE : 5/2024
CHECKED BY : D. COMANICIU DATE : 9/2024
DESIGN ENGINEER OF RECORD: F. ASEFNIA DATE : 9/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Signed by: Farzin Asefnia

NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARZIN ASEFNIA

8/8/2025

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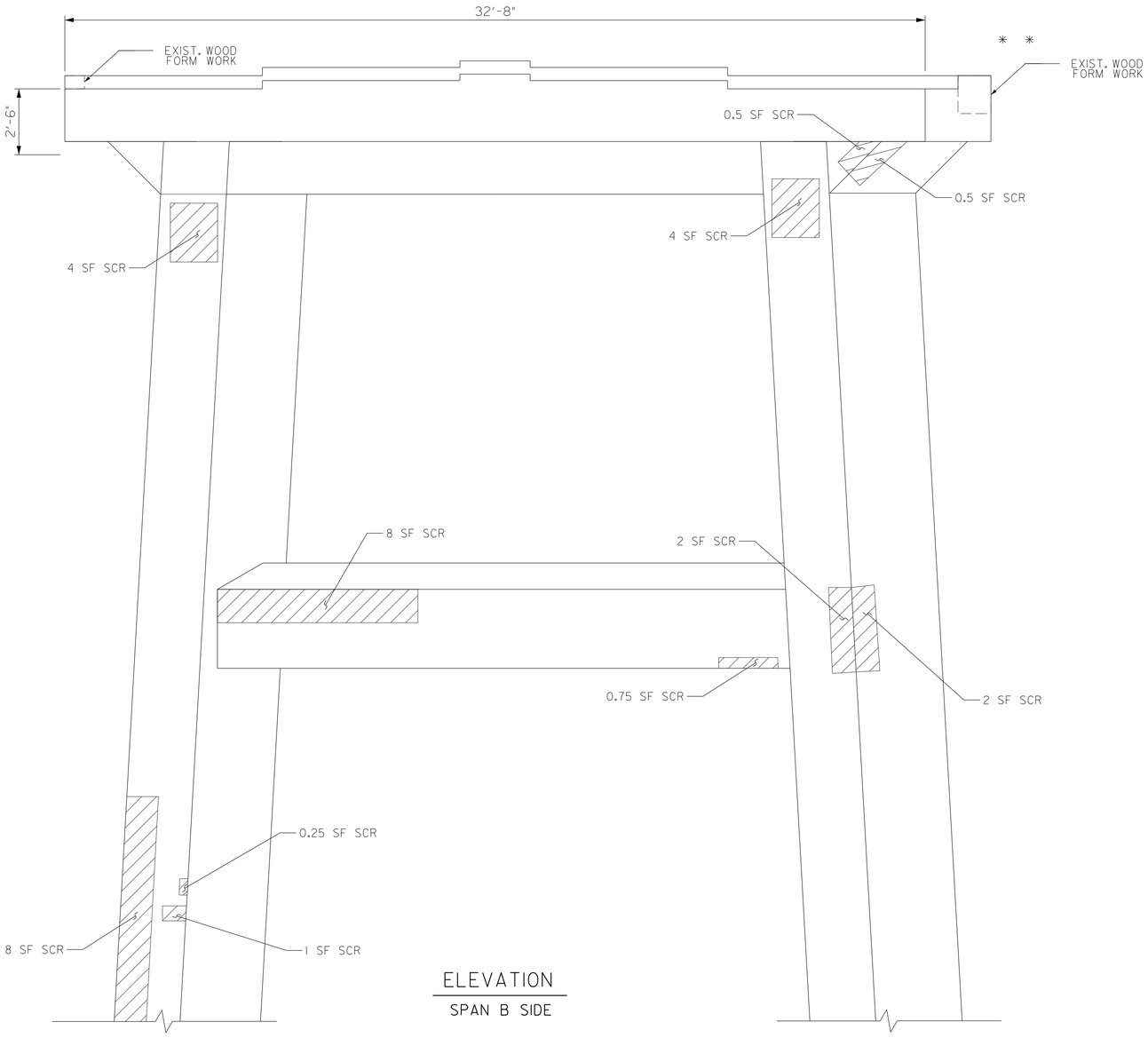
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIR

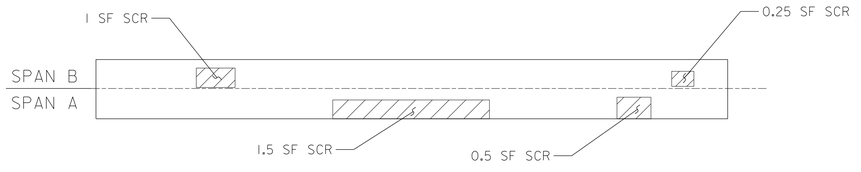
BENT 1
SPAN A SIDE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			28



ELEVATION

SPAN B SIDE



BOTTOM OF STRUT

AS-BUILT REPAIR QUANTITY TABLE				
BENT 1 SPAN B FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	1.0	0.5		
COLUMN	21.3	10.7		
STRUT	12.0	6.0		
END DIAPHRAGMS	4.0	2.0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
EPOXY RESIN INJECTION		LN. FT.		LN. FT.
CAP		0.0		
COLUMN		0.0		
STRUT		0.0		

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.

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 ELASTOMERIC PAD. FOR EPOXY COATING, SEE SPECIAL PROVISIONS.

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FOR CAP, COLUMN, DIAPHRAGM AND END DIAPHRAGM REPAIRS, SEE SHEET S-28.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

* * LOCATION OF DAMAGED END DIAPHRAGMS.

SHOTCRETE REPAIR (SCR)

CONCRETE REPAIR (CR)

EPOXY RESIN INJECTION (ERI)

PROJECT NO. 15BPR.122.3

BUNCOMBE COUNTY

BRIDGE NO. 100007

DRAWN BY : N. DIAZ MORILLO DATE : 5/2024
CHECKED BY : D. COMANICIU DATE : 9/2024
DESIGN ENGINEER OF RECORD: F. ASEFNIA DATE : 9/2024

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Signed by: Farzin Asefnia
NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARZIN ASEFNIA
8/8/2025

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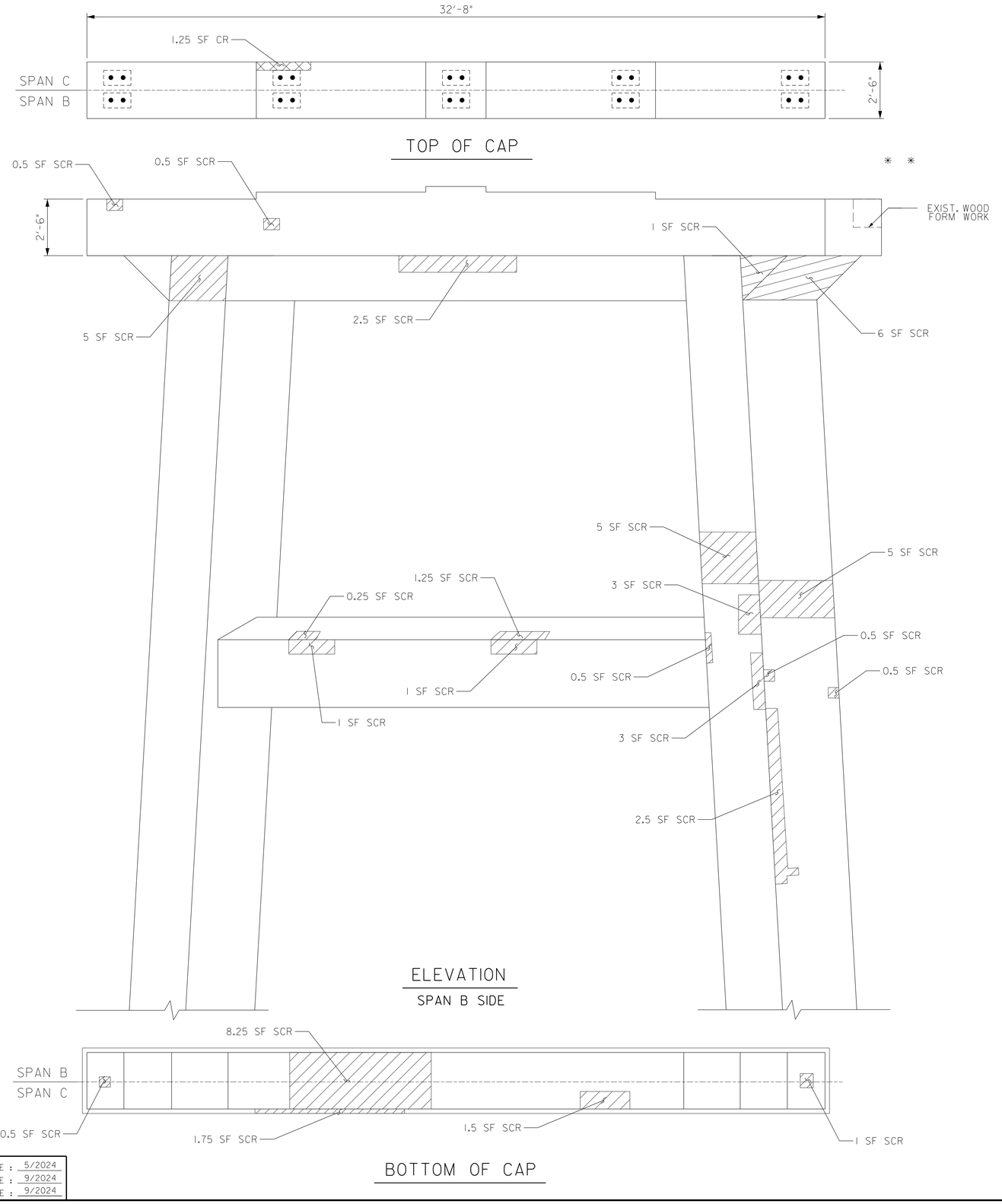
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIR

BENT 1
SPAN B SIDE

REVISIONS							SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:		S-13
1			3				TOTAL SHEETS
2			4				28



AS-BUILT REPAIR QUANTITY TABLE

BENT 2 SPAN B FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	23.5	11.8		
COLUMN	25.0	12.5		
STRUT	3.5	1.8		
END DIAPHRAGMS	1.0	0.5		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	1.3	0.7		
EPOXY RESIN INJECTION		LN. FT.		LN. FT.
CAP		0.0		
COLUMN		0.0		
STRUT		0.0		
EPOXY COATING		SQ. FT.		SQ. FT.
TOP OF BENT CAP		61.7		

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.

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FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

* * LOCATION OF DAMAGED END DIAPHRAGMS.

SHOTCRETE REPAIR (SCR)

CONCRETE REPAIR (CR)

EPOXY RESIN INJECTION (ERI)

PROJECT NO. 15BPR.122.3

BUNCOMBE COUNTY

BRIDGE NO. 100007

SHEET 5 OF 14

DRAWN BY : N. DIAZ MORILLO DATE : 5/2024
CHECKED BY : D. COMANICIU DATE : 9/2024
DESIGN ENGINEER OF RECORD: F. ASEFNIA DATE : 9/2024

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Signed by: Farzin Asefnia

NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARZIN ASEFNIA

8/8/2025

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

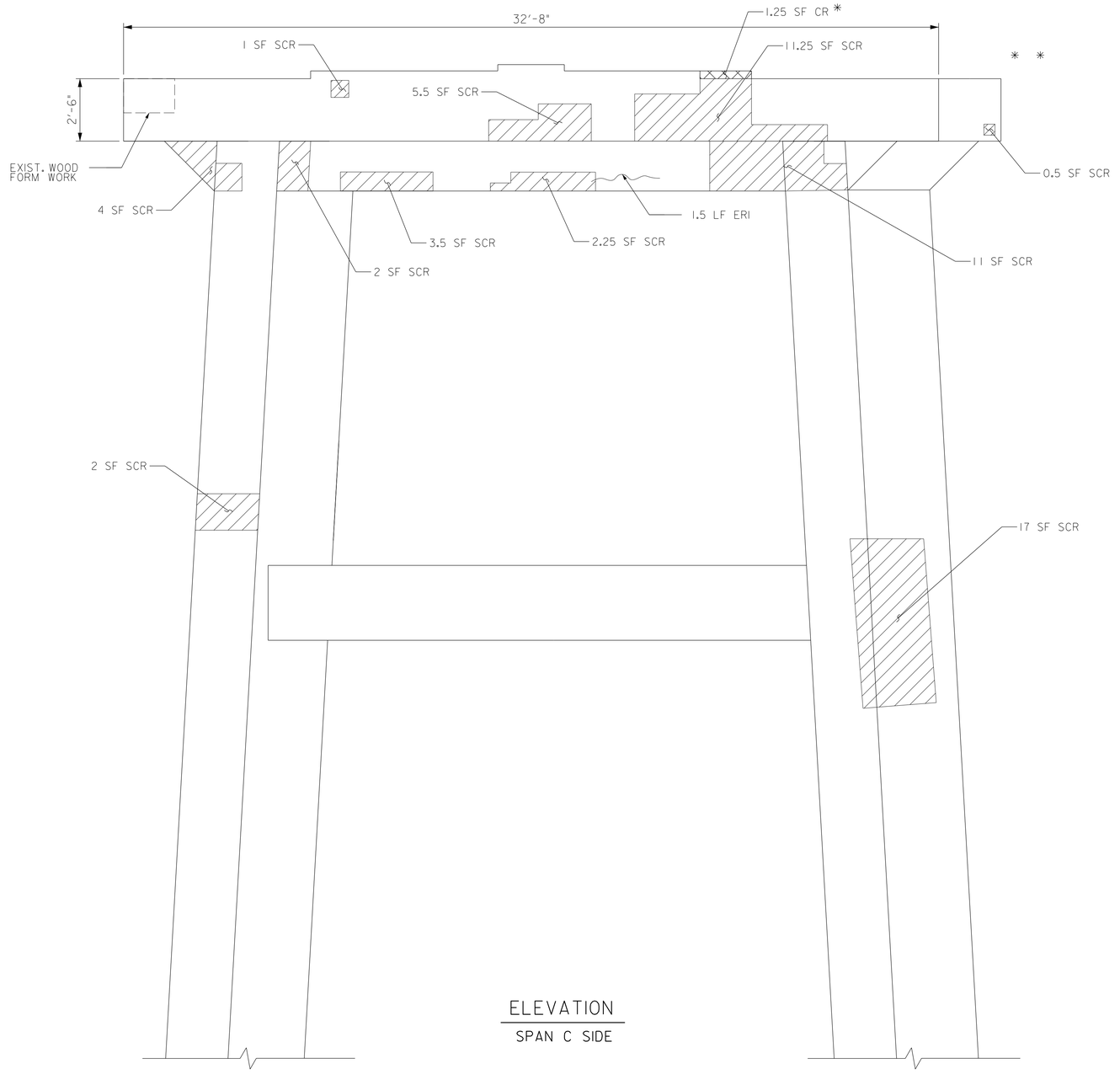
SUBSTRUCTURE REPAIR

BENT 2
SPAN B SIDE

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

SHEET NO. S-14

TOTAL SHEETS 28



ELEVATION
SPAN C SIDE

BOTTOM OF STRUT

* THE QUANTITY INCLUDED IN BENT 2, SPAN B SIDE CAP

AS-BUILT REPAIR QUANTITY TABLE

BENT 2 SPAN C FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	41.0	20.5		
COLUMN	19.0	9.5		
STRUT	0.0	0.0		
END DIAPHRAGMS	1.5	0.8		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
EPOXY RESIN INJECTION		LN. FT.		LN. FT.
CAP		1.5		
COLUMN		0.0		
STRUT		0.0		

NOTES:

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FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

* * LOCATION OF DAMAGED END DIAPHRAGMS.

SHOTCRETE REPAIR (SCR)

CONCRETE REPAIR (CR)

EPOXY RESIN INJECTION (ERI)

PROJECT NO. 15BPR.122.3

BUNCOMBE COUNTY

BRIDGE NO. 100007

SHEET 6 OF 14

DRAWN BY : N. DIAZ MORILLO DATE : 5/2024
CHECKED BY : D. COMANICIU DATE : 9/2024
DESIGN ENGINEER OF RECORD: F. ASEFNIA DATE : 9/2024

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Signed by: Farzin Asefnia

NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARZIN ASEFNIA

8/8/2025

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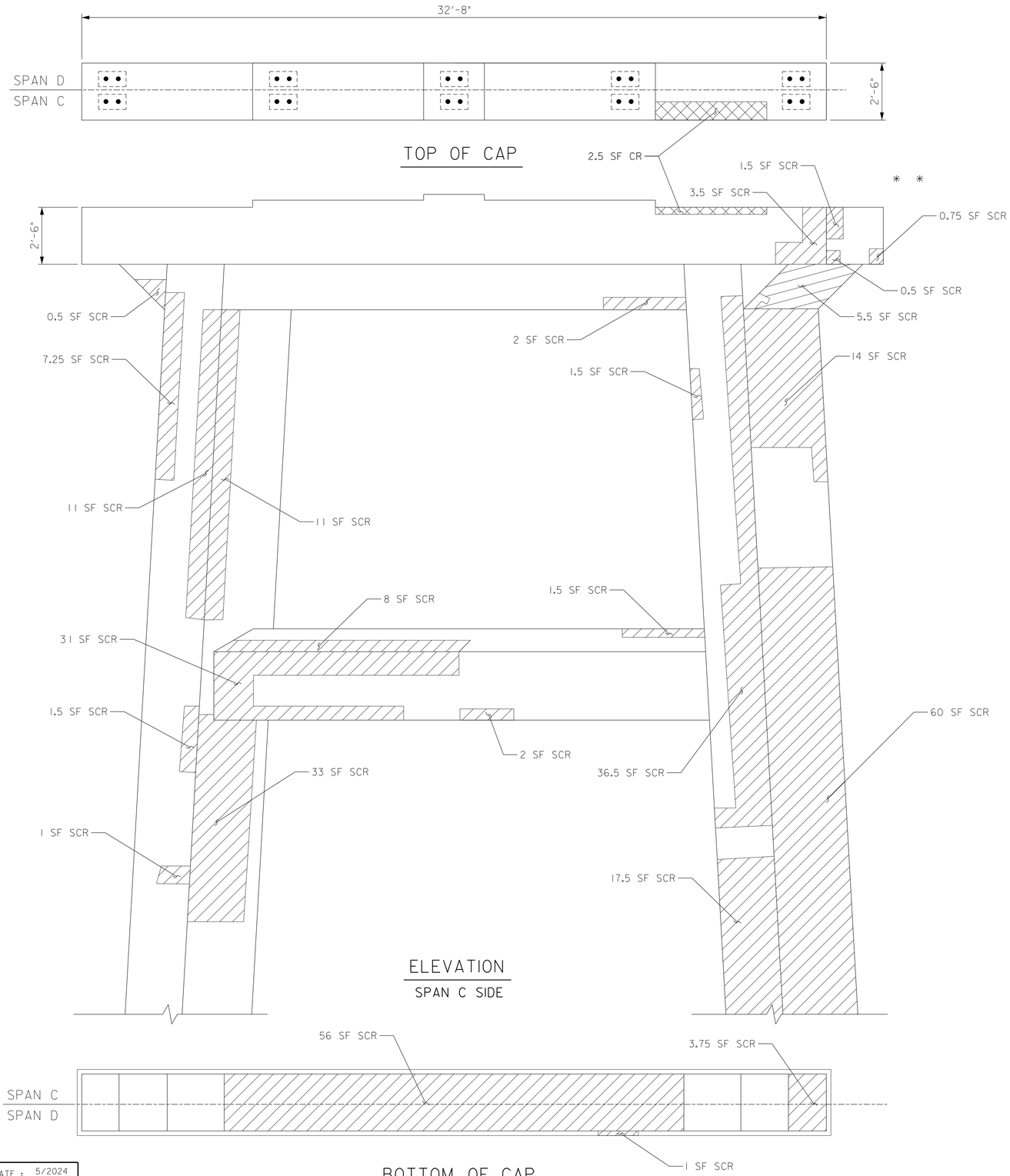
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIR

BENT 2
SPAN C SIDE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			28



AS-BUILT REPAIR QUANTITY TABLE

BENT 3 SPAN C FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	75	37.5		
COLUMN	194.3	97.2		
STRUT	42.5	21.3		
END DIAPHRAGMS	3.5	1.8		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	2.5	1.3		
EPOXY RESIN INJECTION		LN. FT.		LN. FT.
CAP		0.0		
COLUMN		0.0		
STRUT		0.0		
EPOXY COATING		SQ. FT.		SQ. FT.
TOP OF BENT CAP		61.7		

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.

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FOR CAP, COLUMN, DIAPHRAGM AND END DIAPHRAGM REPAIRS, SEE SHEET S-28.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

* * LOCATION OF DAMAGED END DIAPHRAGMS.

SHOTCRETE REPAIR (SCR)

CONCRETE REPAIR (CR)

EPOXY RESIN INJECTION (ERI)

PROJECT NO. 15BPR.122.3

BUNCOMBE COUNTY

BRIDGE NO. 100007

SHEET 7 OF 14

DRAWN BY : N. DIAZ MORILLO DATE : 5/2024
CHECKED BY : D. COMANICIU DATE : 9/2024
DESIGN ENGINEER OF RECORD: F. ASEFNIA DATE : 9/2024

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Signed by: Farzin Asefnia
NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARZIN ASEFNIA
8/8/2025

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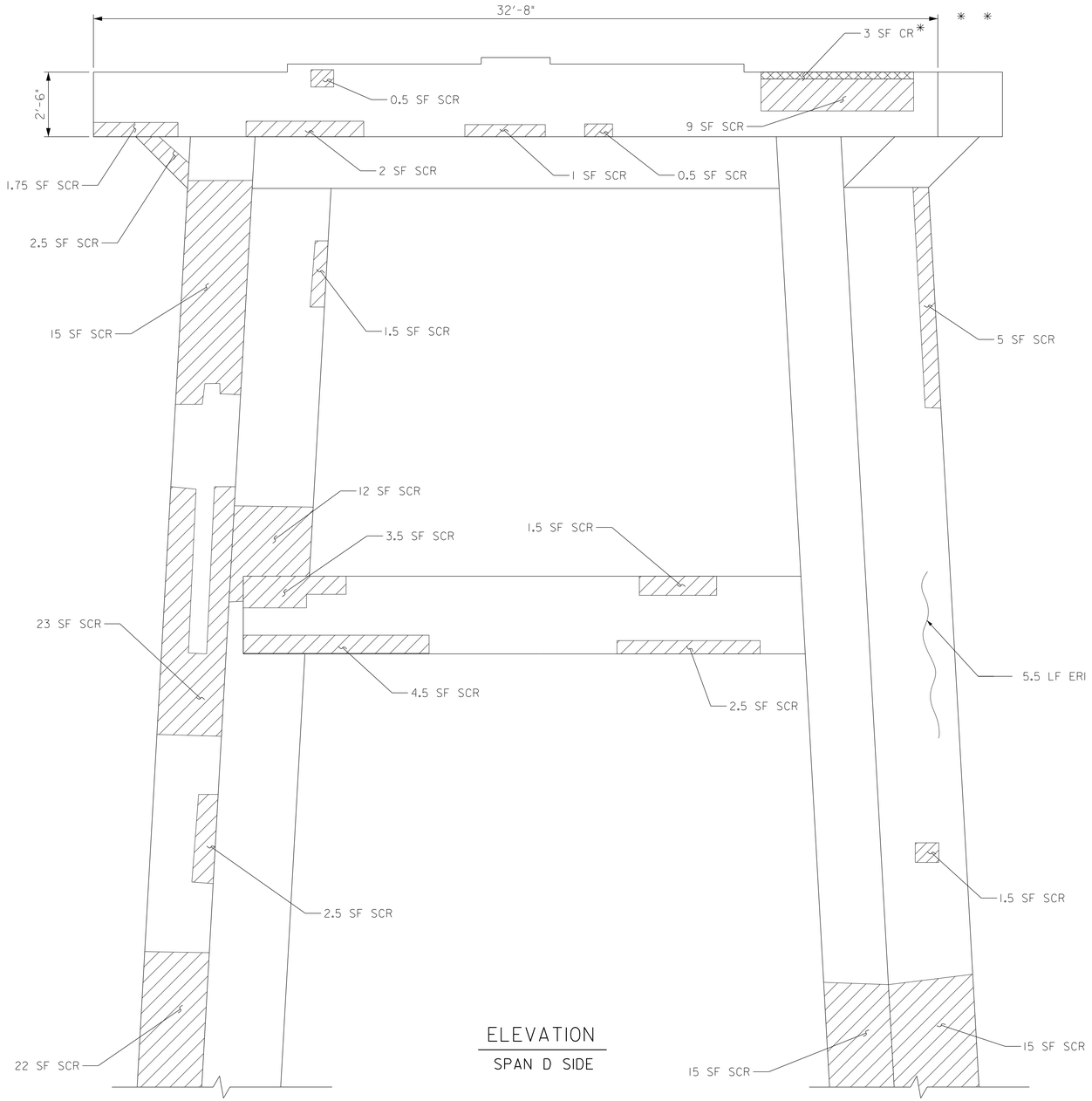
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIR

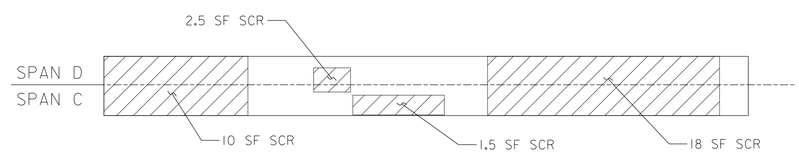
BENT 3
SPAN C SIDE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			28



ELEVATION

SPAN D SIDE



BOTTOM OF STRUT

* THE QUANTITY INCLUDED IN BENT 3, SPAN C SIDE CAP

AS-BUILT REPAIR QUANTITY TABLE

BENT 3 SPAN D FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	17.3	8.6		
COLUMN	112.5	56.3		
STRUT	44.0	22.0		
END DIAPHRAGMS	2.0	1.0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	3.0	1.5		
EPOXY RESIN INJECTION		LN. FT.		LN. FT.
CAP		0.0		
COLUMN		5.5		
STRUT		0.0		

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FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

* * LOCATION OF DAMAGED END DIAPHRAGMS.

SHOTCRETE REPAIR (SCR)

CONCRETE REPAIR (CR)

EPOXY RESIN INJECTION (ERI)

PROJECT NO. 15BPR.122.3

BUNCOMBE COUNTY

BRIDGE NO. 100007

SHEET 8 OF 14

DRAWN BY : N. DIAZ MORILLO DATE : 5/2024
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DESIGN ENGINEER OF RECORD: F. ASEFNIA DATE : 9/2024

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Signed by:

NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARZIN ASEFNIA

8/8/2025

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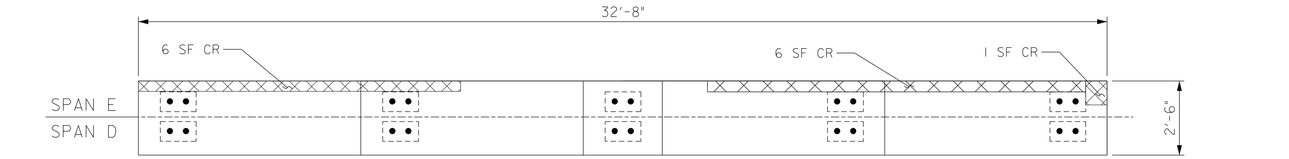
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

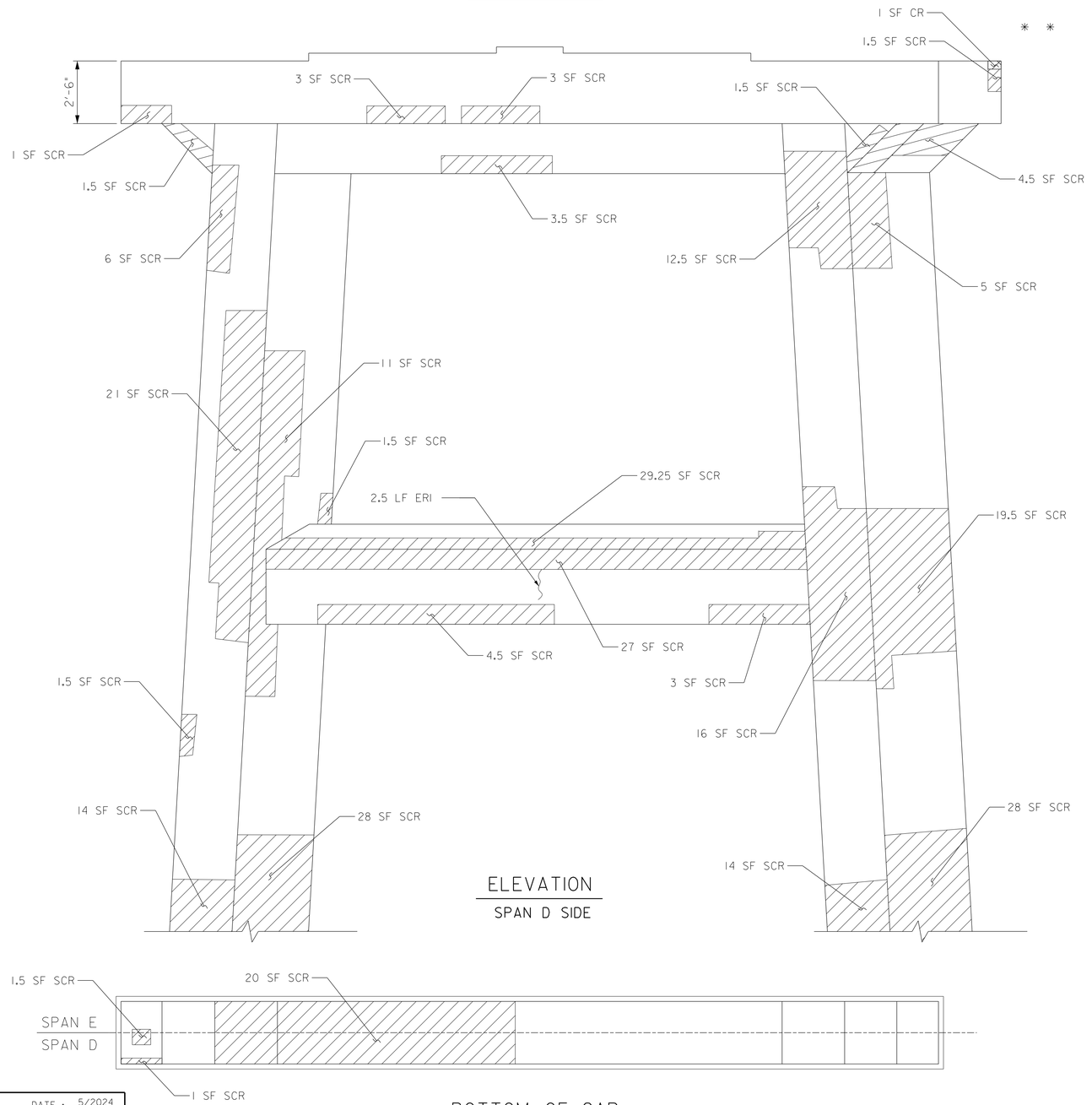
SUBSTRUCTURE REPAIR

BENT 3
SPAN D SIDE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			28



TOP OF CAP



ELEVATION

SPAN D SIDE

BOTTOM OF CAP

AS-BUILT REPAIR QUANTITY TABLE				
BENT 4 SPAN D FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	42.0	21.0		
COLUMN	178.0	89.0		
STRUT	63.8	31.9		
END DIAPHRAGMS	2.0	1.0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	13.0	6.5		
EPOXY RESIN INJECTION		LN. FT.		LN. FT.
CAP		0.0		
COLUMN		0.0		
STRUT		2.5		
EPOXY COATING		SQ. FT.		SQ. FT.
TOP OF BENT CAP		61.7		

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.

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 ELASTOMERIC PAD. FOR EPOXY COATING, SEE SPECIAL PROVISIONS.

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

FOR CAP, COLUMN, DIAPHRAGM AND END DIAPHRAGM REPAIRS, SEE SHEET S-28.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

* * LOCATION OF DAMAGED END DIAPHRAGMS.

SHOTCRETE REPAIR (SCR)

CONCRETE REPAIR (CR)

EPOXY RESIN INJECTION (ERI)

PROJECT NO. 15BPR.122.3

BUNCOMBE COUNTY

BRIDGE NO. 100007

SHEET 9 OF 14

DRAWN BY : N. DIAZ MORILLO DATE : 5/2024
CHECKED BY : D. COMANICIU DATE : 9/2024
DESIGN ENGINEER OF RECORD: F. ASEFNIA DATE : 9/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Signed by: Farzin Asefnia
DocuSigned by:
NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARZIN ASEFNIA
8/8/2025

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License: F-0453

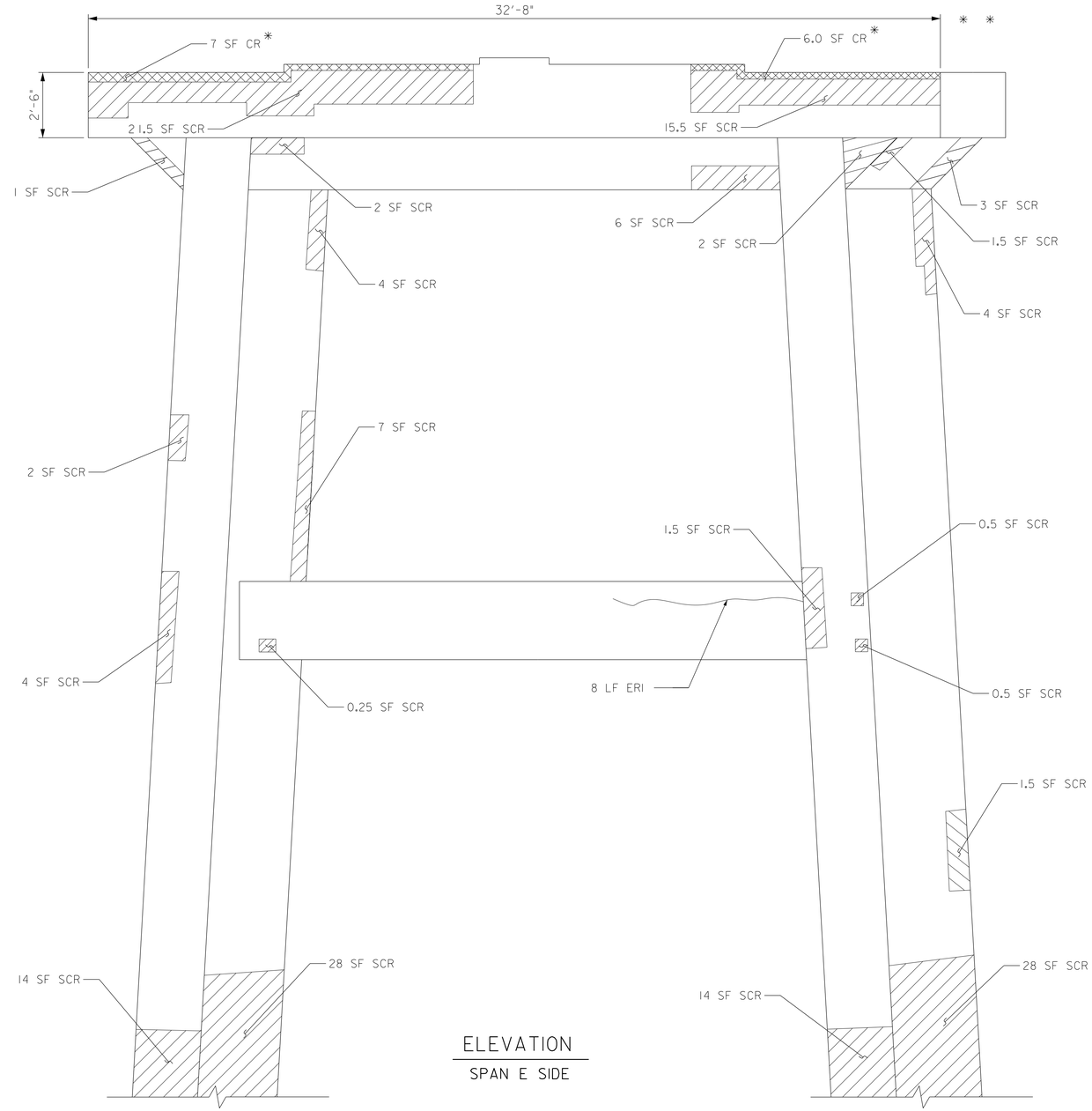
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIR

BENT 4
SPAN D SIDE

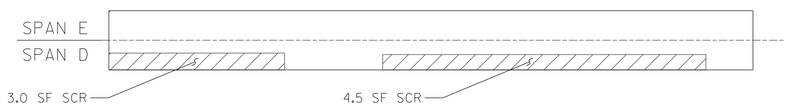
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			28

* THE QUANTITY INCLUDED IN BENT 4, SPAN D SIDE CAP



ELEVATION

SPAN E SIDE



BOTTOM OF STRUT

AS-BUILT REPAIR QUANTITY TABLE

BENT 4 SPAN E FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	52.5	26.3		
COLUMN	109.0	54.5		
STRUT	7.75	3.9		
END DIAPHRAGMS	2.0	1.0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
EPOXY RESIN INJECTION		LN. FT.		LN. FT.
CAP		0.0		
COLUMN		0.0		
STRUT		8.0		

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.

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 ELASTOMERIC PAD. FOR EPOXY COATING, SEE SPECIAL PROVISIONS.

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

FOR CAP, COLUMN, DIAPHRAGM AND END DIAPHRAGM REPAIRS, SEE SHEET S-28.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

* * LOCATION OF DAMAGED END DIAPHRAGMS.

SHOTCRETE REPAIR (SCR)

CONCRETE REPAIR (CR)

EPOXY RESIN INJECTION (ERI)

PROJECT NO. 15BPR.122.3

BUNCOMBE COUNTY

BRIDGE NO. 100007

SHEET 10 OF 14

DRAWN BY : N. DIAZ MORILLO DATE : 5/2024
CHECKED BY : D. COMANICIU DATE : 9/2024
DESIGN ENGINEER OF RECORD: F. ASEFNIA DATE : 9/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Signed by: Fasefnia

NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARZIN ASEFNIA

8/8/2025

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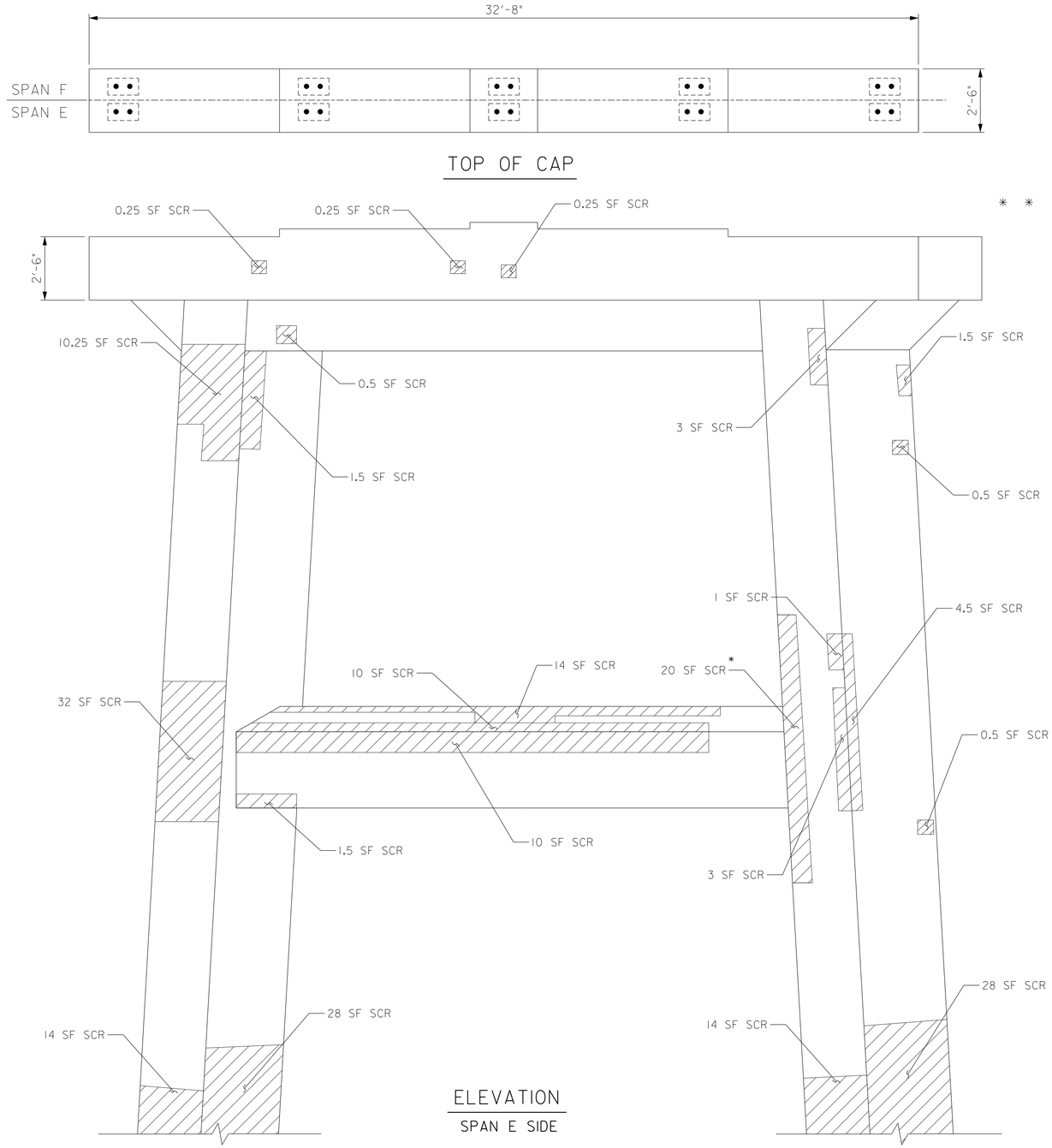
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIR

BENT 4
SPAN E SIDE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			28



AS-BUILT REPAIR QUANTITY TABLE

BENT 5 SPAN E FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	1.3	0.7		
COLUMN	161.8	81.0		
STRUT	35.5	17.8		
END DIAPHRAGMS	5.0	2.5		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
EPOXY RESIN INJECTION		LN. FT.		LN. FT.
CAP		0.0		
COLUMN		0.0		
STRUT		0.0		
EPOXY COATING		SQ. FT.		SQ. FT.
TOP OF BENT CAP		61.7		

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.

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 ELASTOMERIC PAD. FOR EPOXY COATING, SEE SPECIAL PROVISIONS.

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

FOR CAP, COLUMN, DIAPHRAGM AND END DIAPHRAGM REPAIRS, SEE SHEET S-28.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

* * LOCATION OF DAMAGED END DIAPHRAGMS.

* THE CONTRACTOR SHALL REPAIR THE SEVERED EXPOSED #11 VERTICAL COLUMN REBAR WITH SPLICING A 12 FOOT LONG, REBAR AS INDICATED IN SHEET S-28. THE SPLICE LENGTHS AT BOTH ENDS SHALL BE A MINIMUM OF 4'-0" AND HAVE A MINIMUM OF 3" CONCRETE COVER. THE COST OF THE REBAR REPAIR IS INCIDENTAL TO THE SHOTCRETE UNIT PRICE PAY ITEM.

PROJECT NO. 15BPR.122.3

BUNCOMBE COUNTY

BRIDGE NO. 100007

SHEET 11 OF 14

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Signed by: Fanzin Asefnia

NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FANZIN ASEFNIA

8/8/2025

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

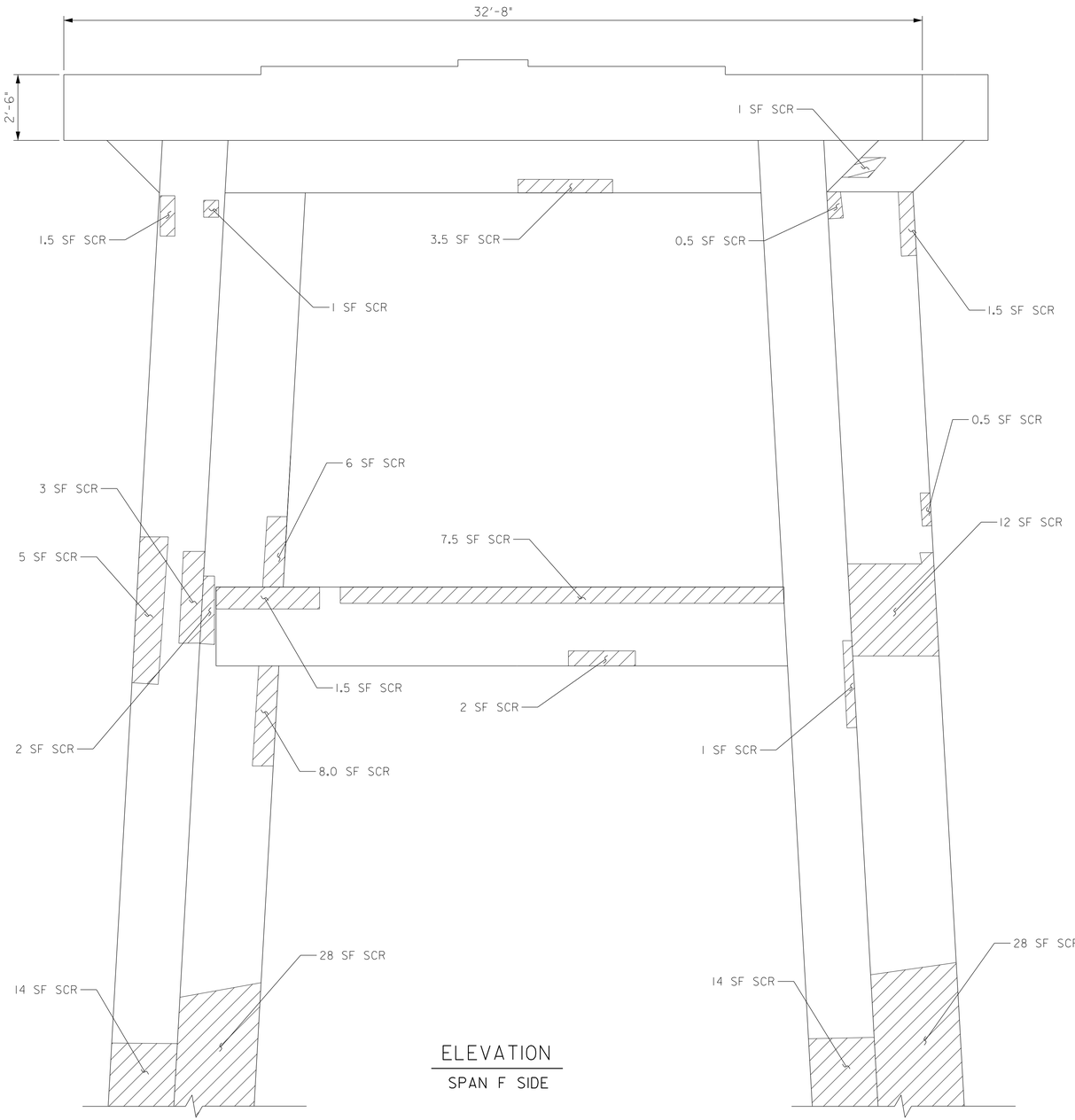
SUBSTRUCTURE REPAIR

BENT 5
SPAN E SIDE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS
2			4			28

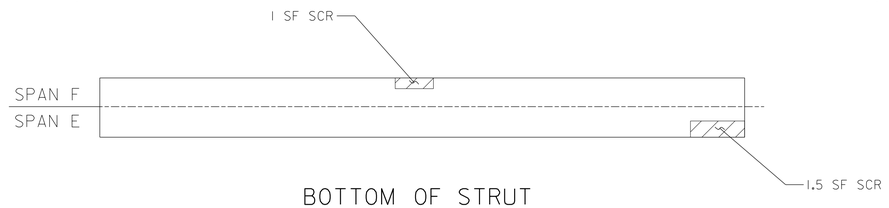
TRANSYSTEMS 1 Glenwood Avenue Raleigh, NC 27603 Tel:919.780.9977 Fax:919.789.9591 License: F-0453

DRAWN BY : N. DIAZ MORILLO DATE : 5/2024
CHECKED BY : D. COMANICIU DATE : 9/2024
DESIGN ENGINEER OF RECORD: F. ASEFNIA DATE : 9/2024



ELEVATION

SPAN F SIDE



BOTTOM OF STRUT

AS-BUILT REPAIR QUANTITY TABLE

BENT 5 SPAN F FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	4.5	2.3		
COLUMN	126.0	63.0		
STRUT	13.5	6.8		
END DIAPHRAGMS	0.0	0.0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
EPOXY RESIN INJECTION		LN. FT.		LN. FT.
CAP		0.0		
COLUMN		0.0		
STRUT		0.0		

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.

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 ELASTOMERIC PAD. FOR EPOXY COATING, SEE SPECIAL PROVISIONS.

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

FOR CAP, COLUMN, DIAPHRAGM AND END DIAPHRAGM REPAIRS, SEE SHEET S-28.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

* * LOCATION OF DAMAGED DIAPHRAGMS.

SHOTCRETE REPAIR (SCR)

CONCRETE REPAIR (CR)

EPOXY RESIN INJECTION (ERI)

PROJECT NO. 15BPR.122.3

BUNCOMBE COUNTY

BRIDGE NO. 100007

SHEET 12 OF 14

DRAWN BY : N. DIAZ MORILLO DATE : 5/2024

CHECKED BY : D. COMANICIU DATE : 9/2024

DESIGN ENGINEER OF RECORD: F. ASEFNIA DATE : 9/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Signed by: Fasil Asefnia

NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FASIL ASEFNIA

8/8/2025

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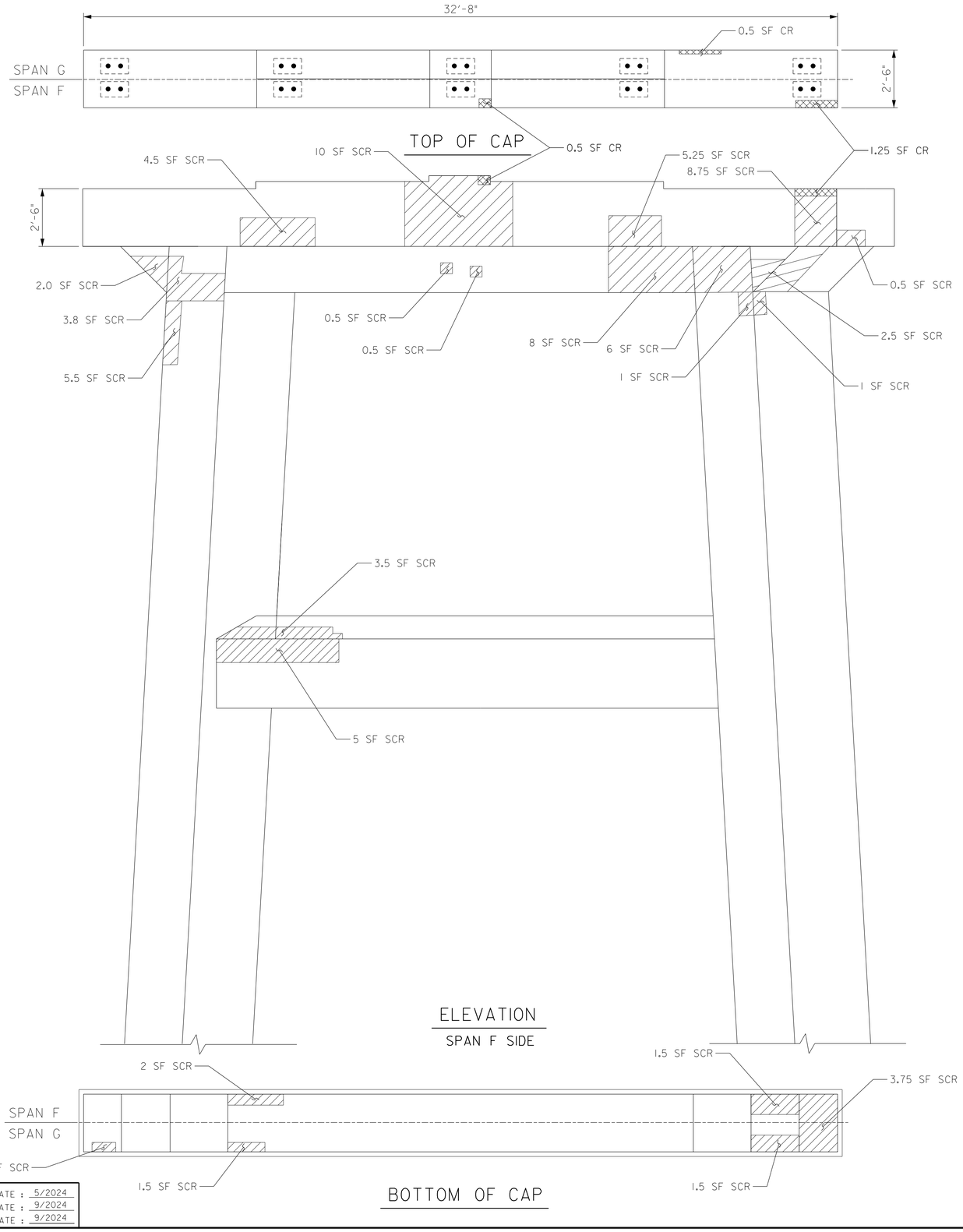
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIR

BENT 5
SPAN F SIDE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS
2			4			28



AS-BUILT REPAIR QUANTITY TABLE

BENT 6 SPAN F FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	53.8	26.9		
COLUMN	17.3	8.7		
STRUT	8.5	4.3		
END DIAPHRAGMS	0.0	0.0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	2.3	1.2		
EPOXY RESIN INJECTION		LN. FT.		LN. FT.
CAP		0.0		
COLUMN		0.0		
STRUT		0.0		
EPOXY COATING		SQ. FT.		SQ. FT.
TOP OF BENT CAP		61.7		

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.

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 ELASTOMERIC PAD. FOR EPOXY COATING, SEE SPECIAL PROVISIONS.

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

FOR CAP, COLUMN, DIAPHRAGM AND END DIAPHRAGM REPAIRS, SEE SHEET S-28.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

* * LOCATION OF DAMAGED END DIAPHRAGMS.

SHOTCRETE REPAIR (SCR)

CONCRETE REPAIR (CR)

EPOXY RESIN INJECTION (ERI)

PROJECT NO. 15BPR.122.3

BUNCOMBE COUNTY

BRIDGE NO. 100007

SHEET 13 OF 14

DRAWN BY : N. DIAZ MORILLO DATE : 5/2024
CHECKED BY : D. COMANICIU DATE : 9/2024
DESIGN ENGINEER OF RECORD: F. ASEFNIA DATE : 9/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Signed by: Farzin Asefnia
NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARZIN ASEFNIA
8/8/2025

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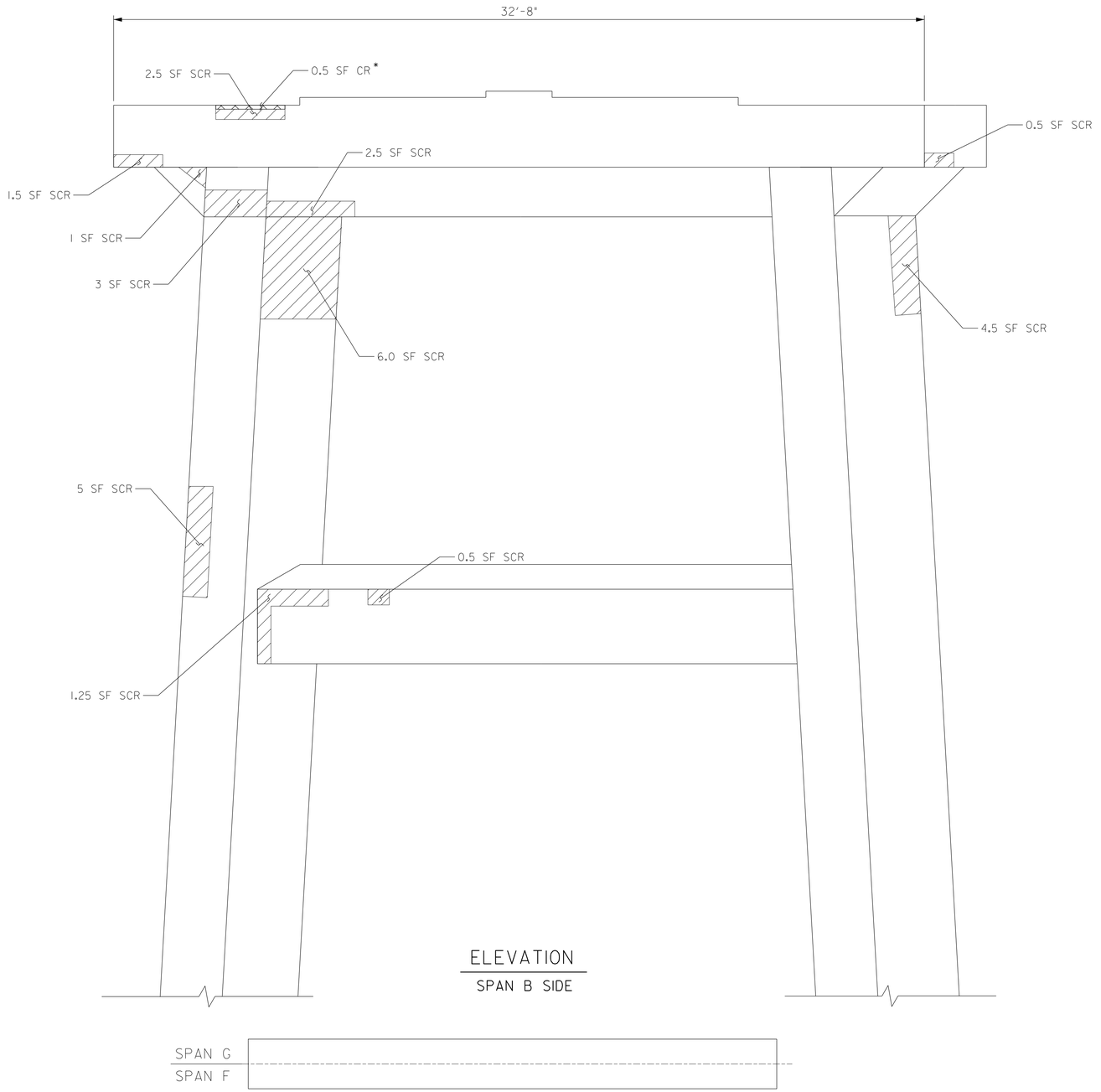
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIR

BENT 6
SPAN F SIDE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
1			3			TOTAL SHEETS
2			4			28

* THE QUANTITY INCLUDED IN BENT 6, SPAN F SIDE CAP



ELEVATION
SPAN B SIDE

BOTTOM OF STRUT

AS-BUILT REPAIR QUANTITY TABLE

BENT 6 SPAN G FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	8.0	4.0		
COLUMN	18.5	9.3		
STRUT	1.8	0.9		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
EPOXY RESIN INJECTION		LN. FT.		LN. FT.
CAP		0.0		
COLUMN		0.0		
STRUT		0.0		

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.

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 ELASTOMERIC PAD. FOR EPOXY COATING, SEE SPECIAL PROVISIONS.

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

FOR CAP, COLUMN, DIAPHRAGM AND END DIAPHRAGM REPAIRS, SEE SHEET S-28.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

* * LOCATION OF DAMAGED END DIAPHRAGMS.

SHOTCRETE REPAIR (SCR)

CONCRETE REPAIR (CR)

EPOXY RESIN INJECTION (ERI)

PROJECT NO. 15BPR.122.3

BUNCOMBE COUNTY

BRIDGE NO. 100007

DRAWN BY : N. DIAZ MORILLO DATE : 5/2024
CHECKED BY : D. COMANICIU DATE : 9/2024
DESIGN ENGINEER OF RECORD: F. ASEFNIA DATE : 9/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Signed by: Farzin Asefnia
NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARZIN ASEFNIA
8/8/2025

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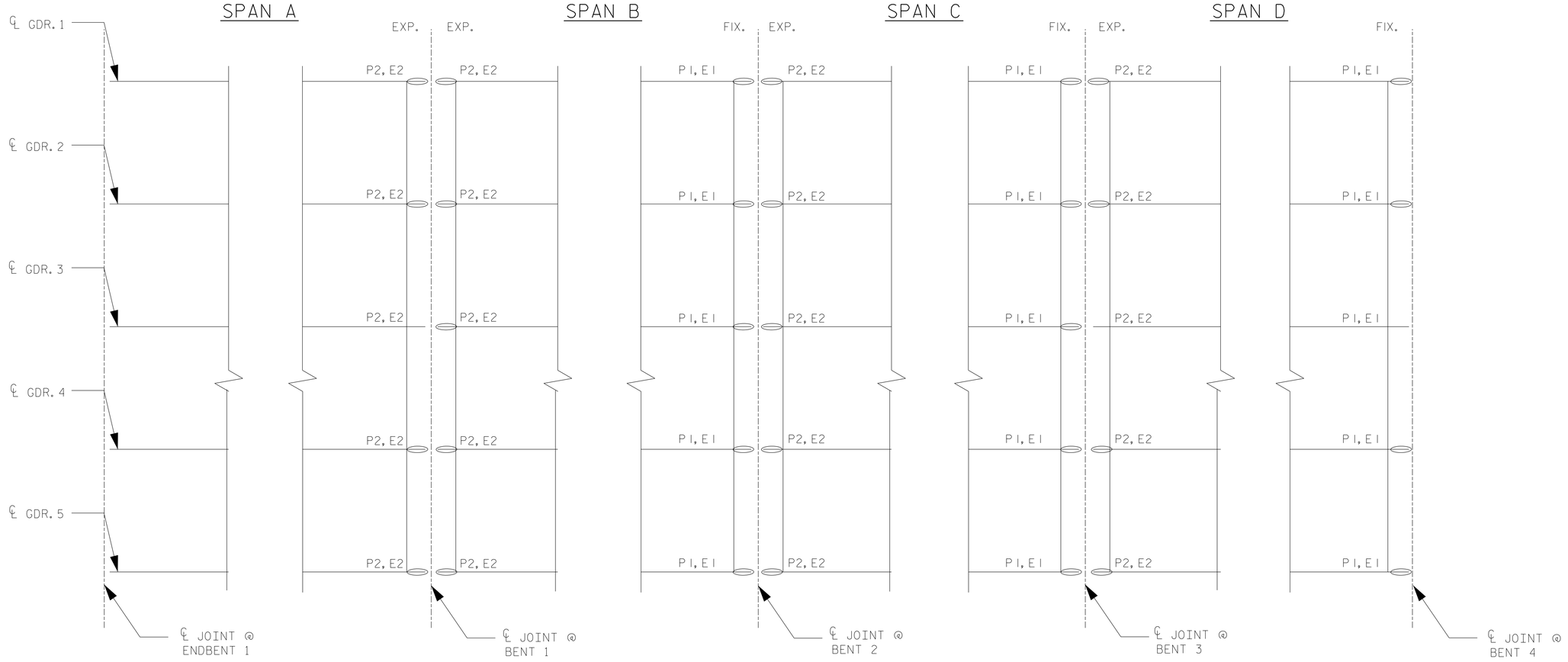
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIR

BENT 6
SPAN G SIDE

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

SHEET NO. S-23
TOTAL SHEETS 28



GIRDER, CONNECTION PLATE AND END DIAPHRAGM REPAIR.

NOTES:

FOR BEAM REPAIR DETAILS, SEE "BEAM END REPAIR DETAIL" SHEET.

ALL WELDING SHALL BE IN ACCORDANCE WITH CURRENT APPLICABLE AWS AND NCDOT SPECIFICATIONS. WELD MATERIAL SHALL BE E70XX.

BEAM END SECTION SIZES ARE BASED ON BEST INFORMATION AVAILABLE. ENGINEER SHALL VERIFY EXTENTS OF REPAIR AND VERIFY THEIR SIZES BEFORE FABRICATION.

CONTRACTOR SHALL CLEAN EXISTING STEEL SURFACES IN REPAIR AREA BEFORE PERFORMING REPAIRS.

ANTICIPATED BEAM REPAIR LOCATIONS

SPAN	BEAM	LOCATION	DIM "A"	DIM "B"
A	1	BENT 1	24	18
A	2	BENT 1	15	24
A	4	BENT 1	15	18
A	5	BENT 1	12	18
B	1	BENT 1	24	24
B	2	BENT 1	12	28
B	3	BENT 1	35	18
B	4	BENT 1	15	24
B	5	BENT 1	12	30
B	1	BENT 2	12	28
B	2	BENT 2	12	18
B	3	BENT 2	12	18
B	4	BENT 2	12	28
B	5	BENT 2	16	30
C	1	BENT 2	12	48
C	2	BENT 2	12	60

ANTICIPATED BEAM REPAIR LOCATIONS

SPAN	BEAM	LOCATION	DIM "A"	DIM "B"
C	3	BENT 2	12	28
C	4	BENT 2	12	40
C	5	BENT 2	12	52
C	1	BENT 3	12	34
C	2	BENT 3	16	30
C	3	BENT 3	12	24
C	5	BENT 3	12	52
D	1	BENT 3	12	40
D	2	BENT 3	12	18
D	4	BENT 3	12	18
D	5	BENT 3	12	40
D	1	BENT 4	18	40
D	2	BENT 4	12	18
D	4	BENT 4	12	16
D	5	BENT 4	12	20

ANTICIPATED CONNECTION PLATE REPAIR LOCATIONS

SPAN	BEAM	LOCATION	DIM "A"	QYT
A	2	BENT 1	20	1
B	2	BENT 2	26	2
B	4	BENT 2	26	2
B	5	BENT 2	26	2
C	2	BENT 2	12	2
C	2	BENT 3	12	2
C	3	BENT 2	12	2
C	3	BENT 3	12	2
C	4	BENT 2	26	2
C	4	BENT 3	26	2
D	1	BENT 3	12	1
D	2	BENT 3	12	2
D	4	BENT 3	26	2
D	5	BENT 3	26	2

PROJECT NO. 15BPR.122.3

BUNCOMBE COUNTY

BRIDGE NO. 100007

SHEET 1 OF 2

DRAWN BY : N. DIAZ MORILLO DATE : 6/2024
CHECKED BY : D. COMANICIU DATE : 9/2024
DESIGN ENGINEER OF RECORD: F. ASEFNIA DATE : 9/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Signed by: Farzin Asefnia

NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARZIN ASEFNIA

8/8/2025

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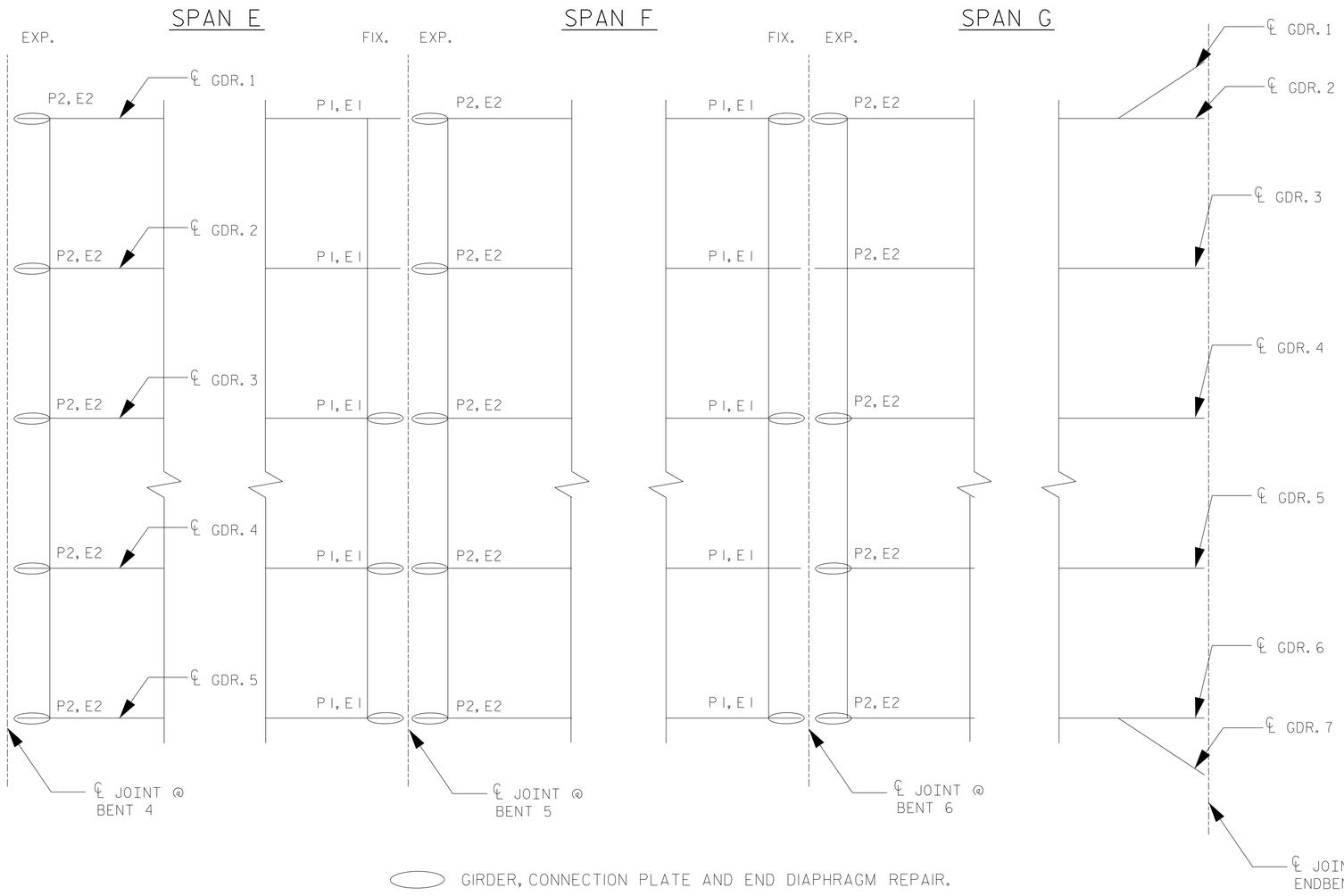
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GIRDER ENDS REPAIR LOCATION
SPANS A, B, C & D

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-24
1			3			TOTAL SHEETS
2			4			28



GIRDER, CONNECTION PLATE AND END DIAPHRAGM REPAIR.

ANTICIPATED CONNECTION PLATE REPAIR LOCATIONS				
SPAN	BEAM	LOCATION	DIM "A"	QYT
E	1	BENT 4	12	1
E	4	BENT 4	12	1
E	4	BENT 5	12	1
E	5	BENT 5	12	1
F	1	BENT 6	12	1
F	2	BENT 5	12	2
F	3	BENT 6	12	1
F	5	BENT 5	12	1
F	5	BENT 6	12	1
F	6	BENT 6	12	1

BEAM REPAIR QUANTITY TABLE	
BEAM END REPAIR	
LBS.	
ESTIMATE	ACTUAL
6150	
CONNECTION PLATE REPAIR	
LBS.	
ESTIMATE	ACTUAL
500	

NOTES:

FOR BEAM REPAIR DETAILS, SEE "BEAM END REPAIR DETAIL" SHEET.

ALL WELDING SHALL BE IN ACCORDANCE WITH CURRENT APPLICABLE AWS AND NCDOT SPECIFICATIONS. WELD MATERIAL SHALL BE E70XX.

BEAM END SECTION SIZES ARE BASED ON BEST INFORMATION AVAILABLE. ENGINEER SHALL VERIFY EXTENTS OF REPAIR AND VERIFY THEIR SIZES BEFORE FABRICATION.

CONTRACTOR SHALL CLEAN EXISTING STEEL SURFACES IN REPAIR AREA BEFORE PERFORMING REPAIRS.

ANTICIPATED BEAM REPAIR LOCATIONS				
SPAN	BEAM	LOCATION	DIM "A"	DIM "B"
E	1	BENT 4	32	20
E	2	BENT 4	12	12
E	3	BENT 4	12	12
E	4	BENT 4	12	12
E	5	BENT 4	12	18
E	3	BENT 5	12	12
F	1	BENT 5	12	28
F	3	BENT 5	12	12
F	4	BENT 5	12	12
F	1	BENT 6	12	24

ANTICIPATED BEAM REPAIR LOCATIONS				
SPAN	BEAM	LOCATION	DIM "A"	DIM "B"
F	3	BENT 6	12	12
F	5	BENT 6	35	30
G	2	BENT 6	12	15
G	4	BENT 6	12	12
G	4	BENT 6	12	12

PROJECT NO. 15BPR.122.3

BUNCOMBE COUNTY

BRIDGE NO. 100007

SHEET 2 OF 2

DRAWN BY : N. DIAZ MORILLO DATE : 6/2024
CHECKED BY : D. COMANICIU DATE : 9/2024
DESIGN ENGINEER OF RECORD: F. ASEFNIA DATE : 9/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Signed by: Farzin Asefnia

NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARZIN ASEFNIA

8/8/2025

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

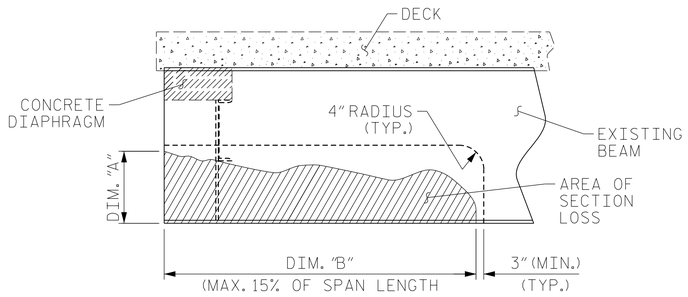
GIRDER ENDS REPAIR LOCATION

SPANS E, F & G

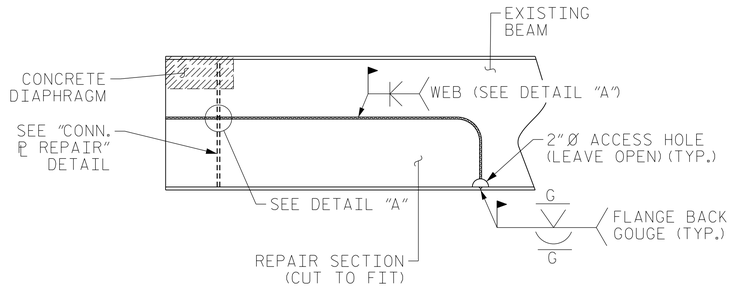
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S-25

TOTAL SHEETS 28



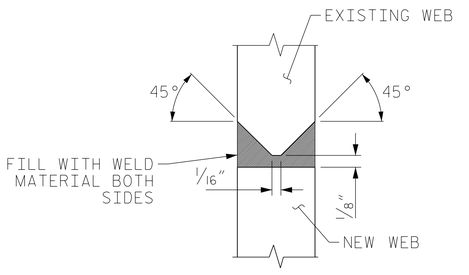
SECTION LOSS REMOVAL



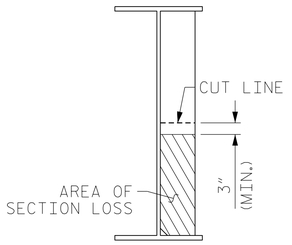
SECTION REPAIR

ROLLED BEAM END REPAIR SEQUENCE:

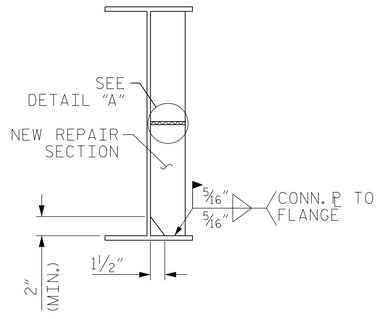
1. REMOVE LIVE LOAD FROM REPAIR AREA BY EITHER CLOSING BRIDGE TO TRAFFIC OR SHIFTING TRAFFIC AWAY FROM REPAIR AREA.
2. REMOVE DEAD LOAD FROM BEAM BY JACKING AND BLOCKING. CONTRACTOR SHALL SUBMIT JACKING PLAN FOR APPROVAL, PRIOR TO BEGINNING WORK. SEE BRIDGE JACKING SPECIAL PROVISIONS.
3. STEEL DIAPHRAGM CHANNELS MAY BE TEMPORARILY REMOVED, IF NECESSARY, AND REPLACED AFTER BEAM REPAIR.
4. IF BEAM DETERIORATION EXTENDS INTO THE CONCRETE DIAPHRAGM THEN CHIP AWAY CONCRETE TO DETERMINE THE EXTENT OF THE DAMAGE. CUT OUT BY APPROPRIATE MEANS THE DAMAGED BEAM AREA.
5. IF PAINTING THE STEEL, CLEAN AND PRIME STEEL AS REQUIRED, PRIOR TO PERFORMING STEEL REPAIRS. OTHERWISE, MECHANICALLY CLEAN RUST, SCALE, AND EXISTING PAINT TO AT LEAST 3" BEYOND REPAIR AREA.
6. INSTALL NEW CUT-TO-FIT SECTION. REPLACEMENT CUT-TO-FIT BEAM SECTION SHALL BE NEW AND FROM SIMILAR SIZE ROLLED BEAM OR APPROVED EQUIVALENT PLATES. THE GRADE OF STEEL SHALL BE AASHTO M270, GRADE 36 OR BETTER. FULLY WELD ALONG NEW BEAM SECTION AS SHOWN.
7. ALL WELDING SHALL BE IN ACCORDANCE WITH CURRENT APPLICABLE AWS AND NCDOT STANDARD SPECIFICATIONS.
8. ALL WELDS SHALL BE INSPECTED AND TESTED BY THE NCDOT MATERIALS AND TEST UNIT IN ACCORDANCE WITH THE CURRENT AWS BRIDGE WELDING CODE AND STANDARD SPECIFICATIONS.
9. IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS, AFTER REPAIR, GRIND ALL GROOVE WELDS FLUSH, THOROUGHLY CLEAN REPAIR AREA TO REMOVE DEBRIS AND OILS.
10. CLEANING AND PAINTING OF REPAIRED STRUCTURAL STEEL SHALL BE PERFORMED AS PART OF THE OVERALL CLEANING AND PAINTING CONTRACT.
11. FOR CLEANING AND PAINTING, SEE PROJECT SPECIAL PROVISIONS.
12. AFTER GIRDERS ARE REPAIRED AND PAINTED, ANY CONCRETE REMOVED FROM THE BENT DIAPHRAGMS SHALL BE CAST BACK. ANY REINFORCING STEEL CUT DURING THE REMOVAL PROCESS SHALL BE SPLICED WITH A SIMILAR SIZE BAR WITH AT LEAST A ONE FOOT SPLICE TO THE EXISTING STEEL. NO SEPARATE PAYMENT SHALL BE MADE FOR CONCRETE AND REINFORCING STEEL AS THIS IS CONSIDERED INCIDENTAL TO THE PAY ITEM ''BEAM REPAIR CUT-OUT.''
13. COMPLETE BEARING REPLACEMENT WORK.
14. LOWER SPAN TO BEAR; CHECK FOR DISTRESS.
15. REMOVE JACKING EQUIPMENT AND TEMPORARY SUPPORTS.
16. REMOVE ALL TRAFFIC CONTROL DEVICES.



DETAIL "A"



CONNECTOR ℄ REMOVAL



CONNECTOR ℄ REPAIR

NOTES:

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

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

AREAS OF EXCESSIVE SECTION LOSS, IN ADDITION TO THOSE INDICATED ON PLAN SHEETS, MIGHT BE ENCOUNTERED. THE CONTRACTOR SHALL HAVE ADDITIONAL REPAIR MATERIALS ON HAND OR READILY AVAILABLE, SO ADDITIONAL AREAS OF EXCESSIVE SECTION LOSS MAY BE REPAIRED IN A TIMELY MANNER.

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

PROVIDE RUN-OFF WELD TABS, WHERE APPLICABLE, TO PROVIDE PROPER WELD START AND TERMINATION. SEE NCDOT M&T FIELD WELD MANUAL AND AWS D1.5 SECTION 3.12.

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

DRAWN BY : N. DIAZ MORILLO DATE : 10/2024
CHECKED BY : D. COMANICIU DATE : 11/2024
DESIGN ENGINEER OF RECORD: F. ASEFNIA DATE : 11/2024

PROJECT NO. 15BPR.122.3
BUMCOMBE COUNTY
BRIDGE NO. 100007
SHEET 3 OF 4

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Signed by: Farzin Asefnia
Digitally signed by Farzin Asefnia
NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARZIN ASEFNIA
8/8/2025

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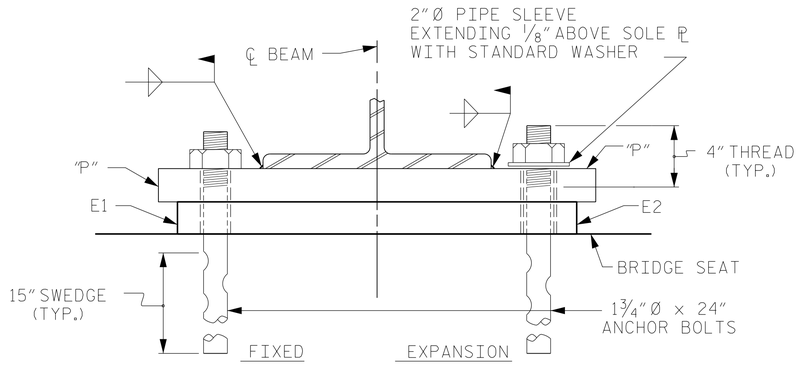
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

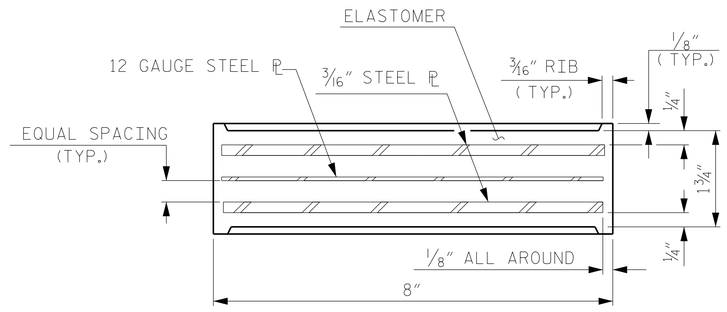
STANDARD

BEAM END REPAIR DETAIL

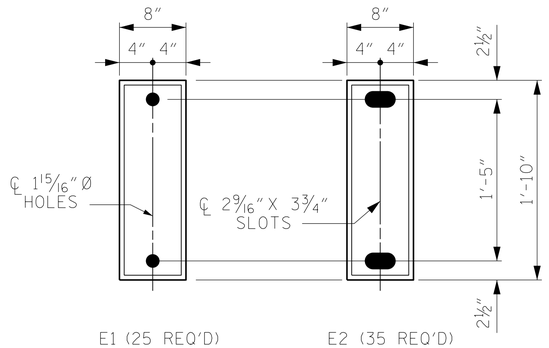
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-26
1			3			TOTAL SHEETS
2			4			28



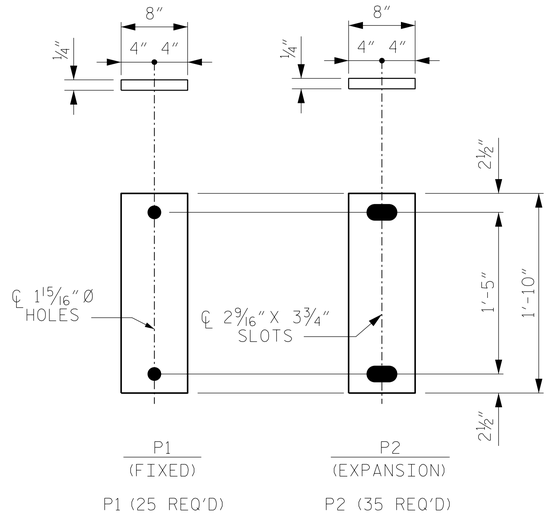
END VIEW



TYPICAL SECTION OF ELASTOMERIC BEARINGS

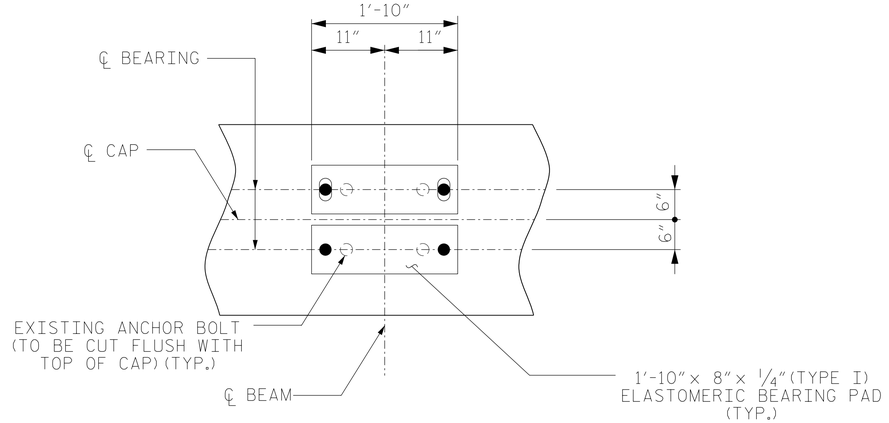


PLAN VIEW OF ELASTOMERIC BEARING



SOLE PLATE DETAILS ("P")

BENT #	NEAR		FAR	
1	EXP	5 E2 5 P2	EXP	5 E2 5 P2
2	FIX	5 E1 5 P1	EXP	5 E2 5 P2
3	FIX	5 E1 5 P1	EXP	5 E2 5 P2
4	FIX	5 E1 5 P1	EXP	5 E2 5 P2
5	FIX	5 E1 5 P1	EXP	5 E2 5 P2
6	FIX	5 E1 5 P1	EXP	5 E2 5 P2



TYPICAL ANCHOR BOLT LAYOUT

NOTES

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

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

THE PAYMENT FOR THE PIPE SLEEVES SHALL BE INCLUDED IN THE SEVERAL PAY ITEMS.

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

ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF ASTM A194. WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F436. SHOP DRAWINGS ARE NOT REQUIRED FOR ANCHOR BOLTS, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

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

REMOVE GALVANIZING OR ANY OTHER COATING AT THE LOCATION OF FIELD WELDS AND PREPARE THE WELD AREAS AS PER ARTICLE 440-7 OF THE STANDARD SPECIFICATION.

AFTER COMPLETION OF FIELD WELDING, THE WELDS AND AREAS WHERE GALVANIZING HAS BEEN REMOVED OR DAMAGED SHALL BE REPAIRED IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1072-3.

PRIOR TO INSTALLATION OF THE NEW BEARING PLATES, THE EXISTING ANCHOR BOLTS SHALL BE CUT FLUSH WITH THE TOP OF THE BRIDGE SEATS, AND TOUCHED UP WITH EPOXY PAINT.

ANCHOR BOLT LENGTHS HAVE BEEN ASSUMED ON THE BASIS OF A 18" MINIMUM EMBEDMENT IN EXISTING CONCRETE CAPS. THIS EMBEDMENT REQUIREMENT MAY BE REDUCED TO BE IN COMPLIANCE WITH MINIMUM EMDEDMENT SPECIFIED BY THE MANUFACTURER OF THE EPOXY ADHESIVE BONDING SYSTEM.

THE CONTRACTOR SHALL CORE INTO THE EXISTING BENT CAPS TO INSTALL THE 1¾"Ø ANCHOR BOLTS USING AN ADHESIVE ANCHORING SYSTEM. THE YIELD LOAD OF THE ANCHOR BOLTS IS 10 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS. ADHESIVE FOR PROPOSED ANCHOR BOLTS SHALL BE A NCDOT-APPROVED PRODUCT. FIELD TEST WILL NOT BE REQUIRED FOR INSTALLATION OF ADHESIVELY ANCHORED ANCHOR BOLTS.

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

FOR BEARING REPLACEMENT, SEE SPECIAL PROVISIONS.

PROJECT NO. 15BPR.122.3

BUNCOMBE COUNTY

BRIDGE NO. 100007

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Signed by: Farzin Asefnia
DocuSigned by:

NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARZIN ASEFNIA

8/8/2025

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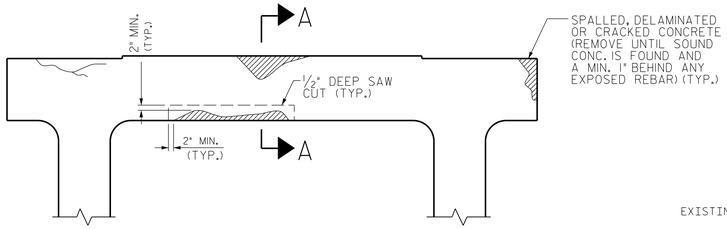
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

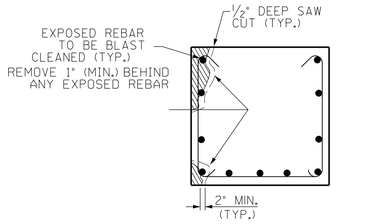
BEARING REPLACEMENT DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-27
1			3			TOTAL SHEETS
2			4			28

DRAWN BY : N. DIAZ MORILLO DATE : 10/2024
CHECKED BY : D. COMANICIU DATE : 10/2024
DESIGN ENGINEER OF RECORD: F. ASEFNIA DATE : 10/2024



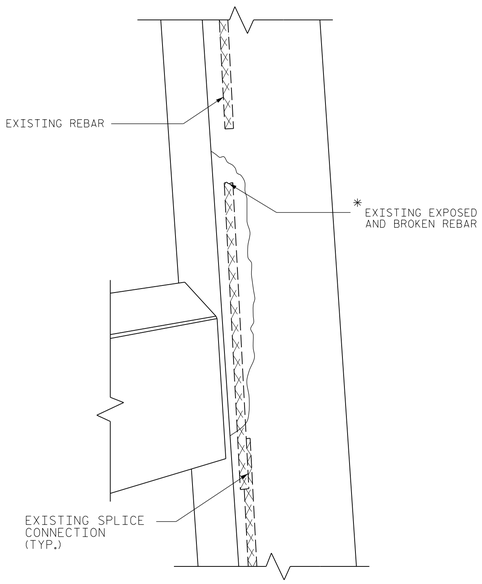
BENT CAP REPAIR



SECTION THRU CAP

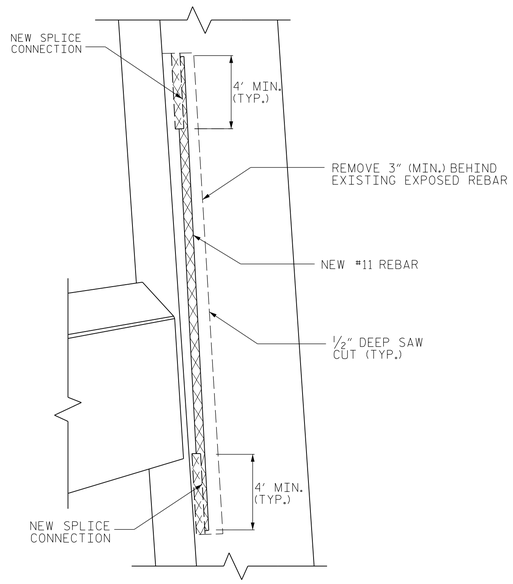
(EXAMPLE ONLY. ACTUAL REBAR SIZES & LOCATIONS MAY VARY)

CAP REPAIR



EXISTING

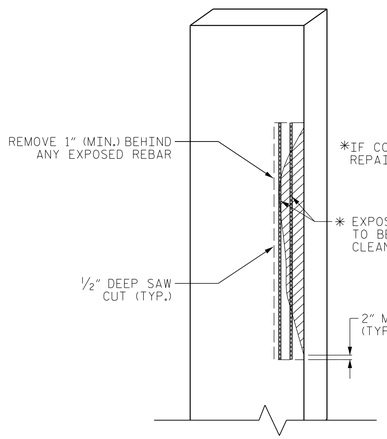
* EXISTING EXPOSED AND BROKEN REBAR TO BE REMOVED AND REPLACED TO PROVIDE A MIN. OF 4'-0" SPLICE LAP LENGTH WITH THE EXISTING REBAR AT BOTH ENDS



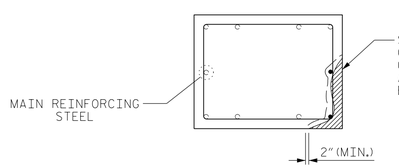
REPAIR

REBAR REPAIR

(BENT 5 - SPAN E - COLUMN 2)



ELEVATION OF COLUMN



PLAN OF COLUMN

(EXAMPLE ONLY. ACTUAL REBAR SIZES & LOCATIONS MAY VARY)

COLUMN REPAIR

NOTE

CONTRACTOR SHALL SAW CUT TO A NOMINAL DEPTH OF 1/2" BUT REINFORCING STEEL SHALL NOT BE DAMAGED.

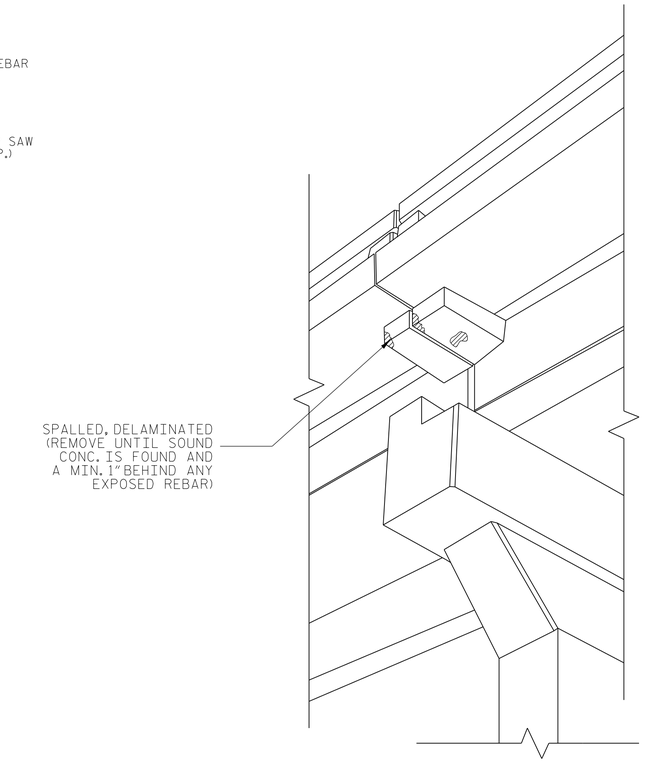
CONTRACTOR SHALL REMOVE SURFACE CONCRETE TO VERIFY THAT SAWCUT DEPTH WILL NOT DAMAGE EXISTING REINFORCING STEEL.

CONTRACTOR SHALL SAW CUT THE REPAIR AREAS SO THAT THE CORNERS ARE SQUARE AS INDICATED ON THE DETAILS.

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

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.



ISOMETRIC VIEW OF OVERHANG END DIAPHRAGM

(TYP.)

PROJECT NO. 15BPR.122.3

BUMCOMBE COUNTY

BRIDGE NO. 100007

DRAWN BY : N. DIAZ MORILLO DATE : 10/2024

CHECKED BY : D. COMANICIU DATE : 11/2024

DESIGN ENGINEER OF RECORD: F. ASEFNIA DATE : 11/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Signed by: Farzin Asefnia

NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARZIN ASEFNIA

8/8/2025

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STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

RALEIGH

SUBSTRUCTURE

TYPICAL CAP, COLUMN, DIAPHRAGM AND END DIAPHRAGM REPAIR DETAILS

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

NOTES:

REFER TO NORFOLK SOUTHERN (NS) PUBLIC PROJECTS MANUAL FOR POLICIES, CRITERIA, AND STANDARDS FOR DESIGN AND CONSTRUCTION OF PROJECTS OVER, UNDER, OR ADJACENT TO NS. THE PUBLIC PROJECTS MANUAL IS LOCATED AT:
https:/www.nscorp.com/content/dam/nscorp/ship/shipping-tools/Public_Projects_Manual.pdf.

FOR WORK OVER OR NEAR NSRR RIGHT OF WAY, SEE SPECIAL PROVISIONS

ALL E-MAIL CORRESPONDENCE WITH NS SHOULD USE THE SUBJECT LINE "SUBJECT -ASHEVILLE, NC - BR00 13985 - MP NS 153.12, CROSSING 730304F (15BPR.122.3)." FAILURE TO USE THIS SUBJECT LINE MAY RESULT IN DELAYED HANDLING OF SUBMISSIONS. THE NS CONSTRUCTION ENGINEERING REPRESENTATIVE SHOULD BE ELECTRONICALLY COPIED ON ALL E-MAIL CORRESPONDENCE. ELECTRONIC COPY PROJECT ENGINEER.

THE CONTRACTOR WILL NOT BE PERMITTED TO STORE ANY EQUIPMENT ON NS PROPERTY WITHOUT PERMISSION FROM THE NS RAILROAD ENGINEER IN ACCORDANCE WITH SECTION E.5.K.1 OF THE NS PUBLIC PROJECTS MANUAL.

THE CONTRACTOR IS PROHIBITED FROM COMMENCING ANY WORK ON RAILROAD RIGHTS-OF-WAY UNTIL THE CONTRACTOR HAS SIGNED AND RECEIVED A FULLY EXECUTED COPY OF THE REQUIRED NS CONTRACTOR RIGHT OF ENTRY AGREEMENT.

THE CONTRACTOR SHALL SUBMIT FOR APPROVAL AND INSTALL OVERHEAD OR VERTICAL DEMOLITION DEBRIS SHIELD(S) PRIOR TO DEMOLITION OF THE BRIDGE DECK, OTHER RELEVANT PORTIONS OF THE SUPERSTRUCTURE OVER THE TRACK AREA, AND SUBSTRUCTURE REMOVALS IN CLOSE PROXIMITY TO THE RAILROAD'S TRACK AND OTHER FACILITIES, AS DETERMINED BY RAILROAD ENGINEER, TO CATCH ALL FALLING DEBRIS.

THE CONTRACTOR SHALL SUBMIT FOR APPROVAL AND INSTALL PROPOSED BALLAST PROTECTION SYSTEM AT THE START OF THE PROJECT. APPROVED AND INSTALLED BALLAST SYSTEM SHALL BE CONTINUOUSLY MAINTAINED TO PREVENT ALL CONTAMINANTS FROM ENTERING THE BALLAST SECTION OF ALL TRACKS FOR THE ENTIRE DURATION OF THE PROJECT.

PROJECT NO. 15BPR.122.3

BUNCOMBE COUNTY

BRIDGE NO. 100007

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

NOTES FOR WORKING OVER NORFOLK SOUTHERN RAILROAD RIGHT OF WAY

DRAWN BY : N. DIAZ MORILLO DATE : 12/2024
CHECKED BY : D. COMANICIU DATE : 12/2024
DESIGN ENGINEER OF RECORD: F. ASEFNIA DATE : 12/2024

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

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

DOWELS:

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

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

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

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

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

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

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

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

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST $\frac{5}{16}$" 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 $\frac{1}{16}$" 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.