PROJECT: 15BPR.128.3

CONTRACT: 204454

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

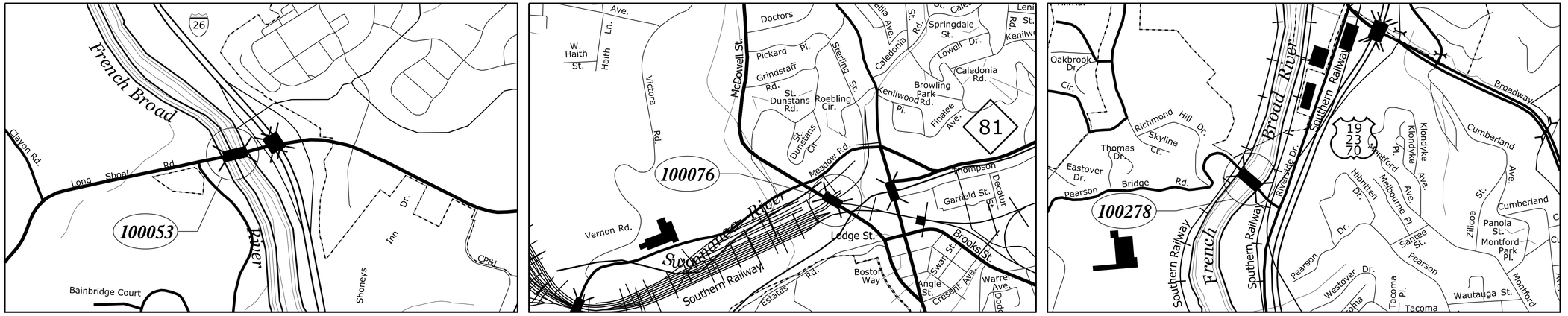
BUNCOMBE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	15BPR.128	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
15BPR.128.1	–	P.E.
15BPR.128.3	–	CONST.

LOCATION: ***BRIDGE #100053 ON NC 146 OVER FRENCH BROAD RIVER***
BRIDGE #100076 ON US 25 OVER SR 3556, SOUTHERN RAILROAD AND SWANNANOA RIVER
BRIDGE #100278 ON SR 1348 OVER FRENCH BROAD RIVER AND SOUTHERN RAILROAD

TYPE OF WORK: ***BRIDGE PRESERVATION – DECK REPAIR, SHOTBLASTING, SILANE DECK TREATMENT, LATEX MODIFIED CONCRETE OVERLAY–VERY EARLY STRENGTH, JOINT REHABILITATION, CONCRETE MEDIAN REPLACEMENT, DRAINAGE CLEANOUT AND REPAIR, STRUCTURAL STEEL REPAIRS, CLEANING AND PAINTING STRUCTURAL STEEL, CLEANING AND PAINTING BEARINGS, SUBSTRUCTURE REPAIRS AND ROADWAY APPROACH MILLING.***



VICINITY MAP – BUNCOMBE CO.

DESIGN DATA

BUNCOMBE COUNTY

#100053 ADT 2014 = 19,000
#100076 ADT 2021 = 22,500
#100278 ADT 2018 = 4,900

PROJECT LENGTH

BUNCOMBE COUNTY

#100053 = 0.085 MILE
#100076 = 0.025 MILE
#100278 = 0.011 MILE

Prepared in the Office of:

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

for the North Carolina Department of Transportation

2024 STANDARD SPECIFICATIONS	*MI ENGINEERING CONTACT*
LETTING DATE: JUNE 17, 2025	MORRIS ISRAELNAIM, P.E. *PROJECT ENGINEER*
	NCDOT CONTACT
	TIMOTHY M. SHERRILL, P.E. *PROJECT ENGINEER*

NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON
4/1/2025

BYRON E. ATKINSON, P.E.
PROJECT DESIGN ENGINEER

4/1/2025
10:16:06 AM
User: blanning
Filename: N:\NC Bridges\W21001.38.15BPR.52.(3) Buncombe Co. Br. Rehab\Structures\401.001.15BPR128.SMU.COV1.dgn

PROJECT: 15BPR.128.3

CONTRACT: 204454

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

BUNCOMBE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	15BPR.128	1A	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
15BPR.128.1	–	P.E.
15BPR.128.3	–	CONST.

LOCATION: ***BRIDGE #100053 ON NC 146 OVER FRENCH BROAD RIVER***
BRIDGE #100076 ON US 25 OVER SR 3556, SOUTHERN RAILROAD AND SWANNANOA RIVER
BRIDGE #100278 ON SR 1348 OVER FRENCH BROAD RIVER AND SOUTHERN RAILROAD

TYPE OF WORK: ***BRIDGE PRESERVATION – DECK REPAIR, SHOTBLASTING, SILANE DECK TREATMENT, LATEX MODIFIED CONCRETE OVERLAY–VERY EARLY STRENGTH, JOINT REHABILITATION, CONCRETE MEDIAN REPLACEMENT, DRAINAGE CLEANOUT AND REPAIR, STRUCTURAL STEEL REPAIRS, CLEANING AND PAINTING STRUCTURAL STEEL, CLEANING AND PAINTING BEARINGS, SUBSTRUCTURE REPAIRS AND ROADWAY APPROACH MILLING.***

INDEX OF SHEETS

NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON
1/2/2025

1/2/2025
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User: blanning
Filename: N:\NC Bridges\M2100\38.15BPR.52.(3) Buncombe Co. Br. Rehab\Structures\401.003.15BPR128.SMU.IDX1.dgn

TOTAL BILL OF MATERIAL

BRIDGE NO.	INCIDENTAL MILLING	ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B	ASPHALT BINDER FOR PLANT MIX	GROOVING BRIDGE FLOORS	EPOXY COATED REINFORCING STEEL	CONCRETE WORK FOR MEDIAN REPLACEMENT	CLASS II SURFACE PREPARATION	LATEX MODIFIED CONCRETE OVERLAY-VERY EARLY STRENGTH	PLACING AND FINISHING OF LATEX MODIFIED CONCRETE OVERLAY-VERY EARLY STRENGTH	SCARIFYING BRIDGE DECK	HYDRO-DEMOLITION OF BRIDGE DECK
	SQ. YDS.	TONS	TONS	SQ. FT.	LBS.	SQ. FT.	SQ. YDS.	CU. YDS.	SQ. YDS.	SQ. YDS.	SQ. YDS.
100053	---	---	---	---	---	527	---	---	---	---	---
100076	---	---	---	---	4,796	---	---	---	---	---	---
100278	134	11	1	16,834	---	---	80.8	114.3	2,055	2,055	2,055
TOTAL	134	11	1	16,834	4,796	527	80.8	114.3	2,055	2,055	2,055

TOTAL BILL OF MATERIAL

BRIDGE NO.	CONCRETE REPAIRS	SHOTCRETE REPAIRS	EPOXY RESIN INJECTION	FOAM JOINT SEALS FOR PRESERVATION	STRIP SEALS FOR PRESERVATION	EXPANSION JOINT SEALS FOR PRESERVATION	MODULAR JOINT REPAIR	MOLDED RUBBER SEGMENTAL EXPANSION JOINT	ELASTOMERIC CONCRETE FOR PRESERVATION	BRIDGE JOINT DEMOLITION	CONCRETE DECK REPAIR FOR SILANE DECK TREATMENT	CONCRETE WORK FOR JOINT REPLACEMENT	POLLUTION CONTROL
	CU. FT.	CU. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	SQ. FT.	LUMP SUM	CU. FT.	SQ. FT.	SQ. FT.	SQ. FT.	LUMP SUM
100053	---	---	---	357.0	---	---	---	---	81.0	299.0	---	---	---
100076	---	---	---	---	99.7	84.0	1,043	LUMP SUM	---	---	19.0	499	LUMP SUM
100278	1.6	103.5	66.0	266.0	---	---	---	---	73.5	252.0	---	---	LUMP SUM
TOTAL	1.6	103.5	66.0	623.0	99.7	84.0	1,043	LUMP SUM	154.5	551.0	19.0	499	LUMP SUM

TOTAL BILL OF MATERIAL

BRIDGE NO.	EPOXY COATING	BEAM REPAIR PLATING	SHOTBLASTING BRIDGE DECK	SILANE DECK TREATMENT	CLEANING AND REPAINTING OF BRIDGE NO. ---	PAINTING CONTAINMENT FOR BRIDGE NO. ---	CLEANING AND PAINTING OF EXISTING BEARINGS WITH HIGH RATIO CALCIUM SULFONATE	BRIDGE DRAINAGE CLEANOUT AND REPAIR	RAILROAD CONTRACTOR PROTECTIVE SERVICES
	SQ. FT.	LBS.	SQ. YDS.	SQ. YDS.	LUMP SUM	LUMP SUM	EACH	LUMP SUM	DAY
100053	---	---	5,175	5,175	---	---	---	---	---
100076	---	---	9,862	9,862	---	---	---	LUMP SUM	60
100278	605.5	1,172	---	---	LUMP SUM	LUMP SUM	80	---	60
TOTAL	605.5	1,172	15,037	15,037	LUMP SUM	LUMP SUM	80	LUMP SUM	120

NOTE:

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

ITEM	DESCRIPTION	UNIT
1	CLASS III SURFACE PREPARATION	SY
2	CONCRETE FOR DECK REPAIR	
3	VOLUMETRIC MIXER	LS

PROJECT NO. 15BPR.128.3

BUNCOMBE COUNTY

BRIDGE NO. 100053, 100076
100278

NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON

DocuSigned by: Byron E. Atkinson 418D0E0A2417...

2/11/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TOTAL BILL OF MATERIAL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			48

DRAWN BY : B.E. LANNING DATE : 07/2022
CHECKED BY : B.E. ATKINSON DATE : 07/2022
DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 12/2024

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User: blanning
Filename: N:\NC Bridges\M2100\38.15BPR.52.(3) Buncombe Co. Br. Rehab\Structures\401.005.15BPR128.SMU.TBOM1.dgn

NOTES:

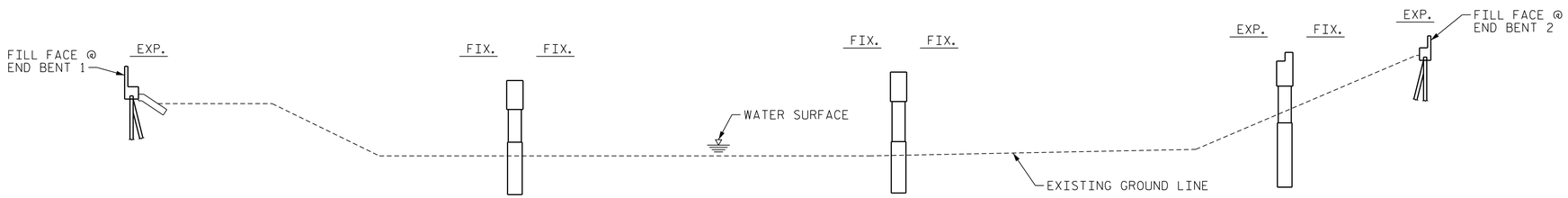
PROFILE INFORMATION IS TAKEN FROM THE ORIGINAL PLANS AND THE ROUTINE INSPECTION REPORT DATED 11/04/2022.

BRIDGE ORIENTATION CONFORMS TO ROUTINE INSPECTION REPORT.

SCOPE OF WORK:

- DEMOLISH EXISTING BRIDGE DECK JOINTS AND CONCRETE MEDIAN.
- REPAIR CONCRETE DECK AREA.
- SHOTBLAST EXISTING CONCRETE DECK AND SIDEWALK
- APPLY SILANE DECK TREATMENT.
- INSTALL FOAM JOINT SEALS.
- REPLACE CONCRETE MEDIAN.

SPAN A | SPAN B | SPAN C | SPAN D

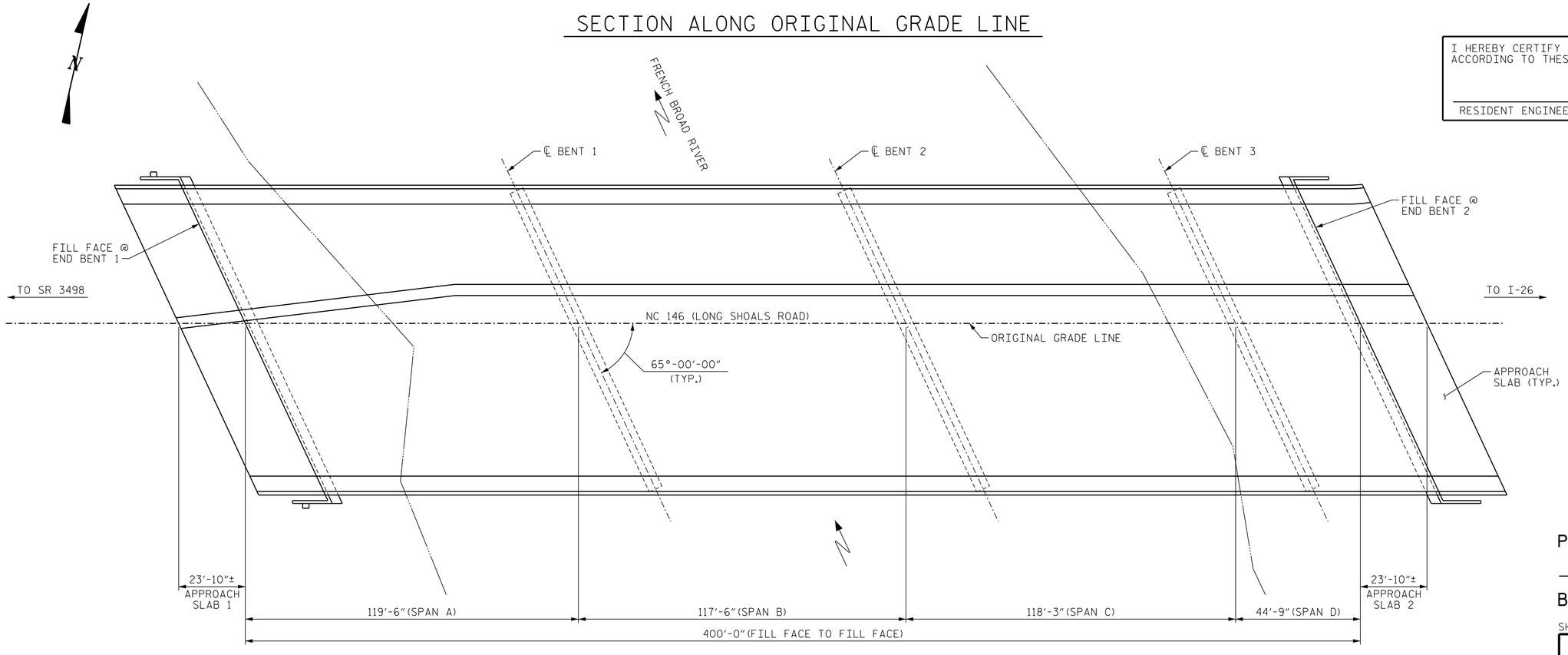


END BENT 1 | BENT 1 | BENT 2 | BENT 3 | END BENT 2

SECTION ALONG ORIGINAL GRADE LINE

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

RESIDENT ENGINEER DATE



PLAN

Document ID: 24189838643
NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON
1/2/2025

PROJECT NO. 15BPR.128.3
BUNCOMBE COUNTY
BRIDGE NO. 100053

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON NC 146
OVER FRENCH BROAD RIVER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-1
1			3			TOTAL SHEETS
2			4			48

DRAWN BY :	B.E. LANNING	DATE :	05/2022
CHECKED BY :	B.E. ATKINSON	DATE :	05/2022
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LOCATION SKETCH

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

BRIDGE COORDINATES	
LATITUDE	LONGITUDE
35°-28'-54.19"	82°-33'-28.64"

NOTES:

EXISTING DIMENSIONS AND BRIDGE CONDITION ARE FROM THE BEST INFORMATION AVAILABLE. THE CONTRACTOR SHALL FIELD VERIFY THE INFORMATION SHOWN ON THE PLANS AND NOTIFY THE ENGINEER IF ACTUAL DIMENSIONS AND CONDITIONS DIFFER.

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

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

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

FOR CONCRETE DECK REPAIR FOR SILANE DECK TREATMENT, SEE SPECIAL PROVISIONS.

FOR SHOTBLASTING BRIDGE DECK AND SILANE DECK TREATMENT, SEE SILANE DECK TREATMENT SPECIAL PROVISIONS.

FOR BRIDGE JOINT DEMOLITION, SEE SPECIAL PROVISIONS.

FOR ELASTOMERIC CONCRETE FOR PRESERVATIONS, SEE SPECIAL PROVISIONS.

FOR FOAM JOINT SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.

FOR CONCRETE WORK FOR MEDIAN REPLACEMENT, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS,

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

PROJECT NO. 15BPR.128.3

BUNCOMBE COUNTY

BRIDGE NO. 100053

SHEET 2 OF 2

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 24939 BYRON E. ATKINSON

1/2/2025

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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON NC 146
OVER FRENCH BROAD RIVER

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-2
1			3			TOTAL SHEETS
2			4			48

DRAWN BY : B.E. LANNING DATE : 05/2022
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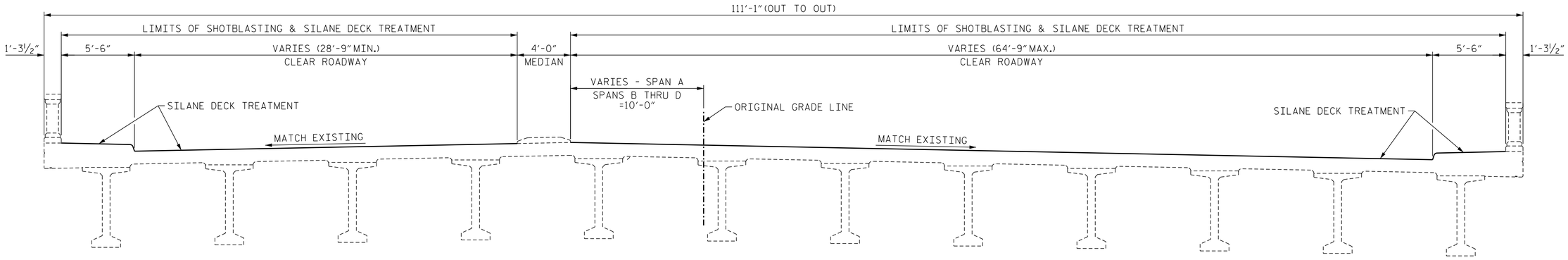
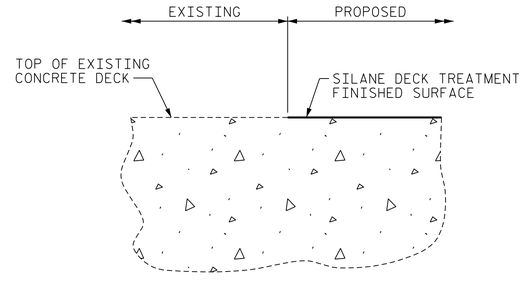
NOTES:

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



TYPICAL SECTION



DETAIL OF SILANE DECK TREATMENT

PROJECT NO. 15BPR.128.3

BUNCOMBE COUNTY

BRIDGE NO. 100053

NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON

1/2/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION AND SILANE DECK TREATMENT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-3
1			3			TOTAL SHEETS
2			4			48

DRAWN BY :	B.E. LANNING	DATE : 05/2022
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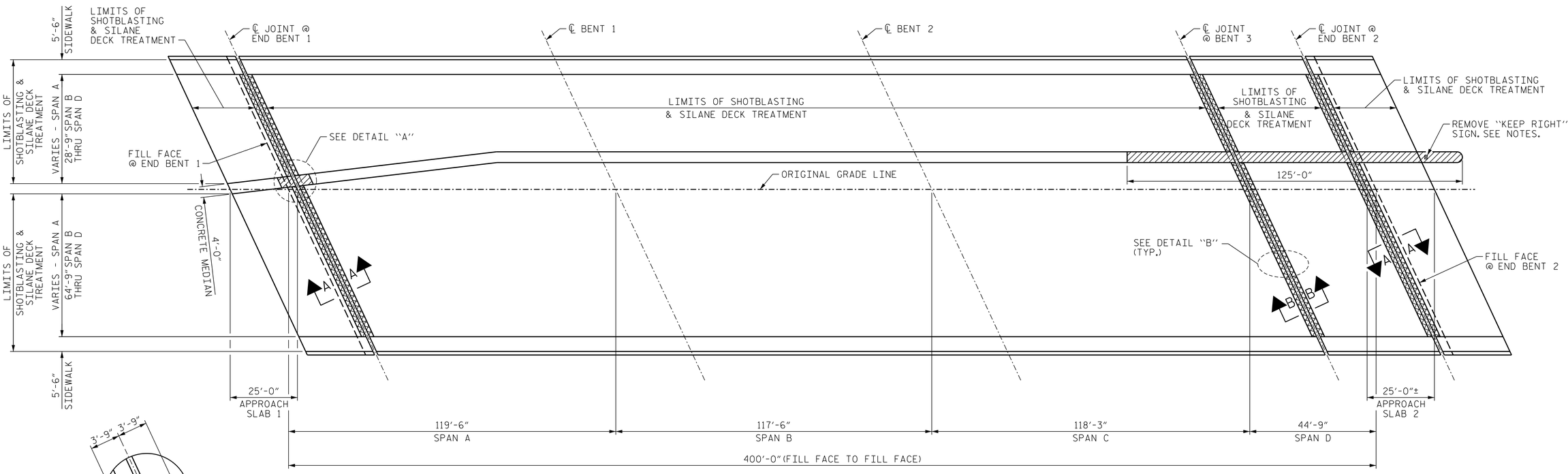
NOTES:

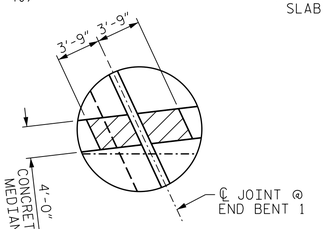
REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE BASED ON THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATIONS AND DESCRIPTION OF THE REPAIRS AND ENTER THE ACTUAL QUANTITIES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

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

REMOVE "KEEP RIGHT" SIGN DURING DEMOLITION OF CONCRETE MEDIAN AND PLACE BACK IN SERVICE DURING CONCRETE MEDIAN REPLACEMENT. PAYMENT FOR THE REMOVAL AND REPLACEMENT OF "KEEP RIGHT" SIGN SHALL BE INCIDENTAL TO OTHER PAY ITEMS.

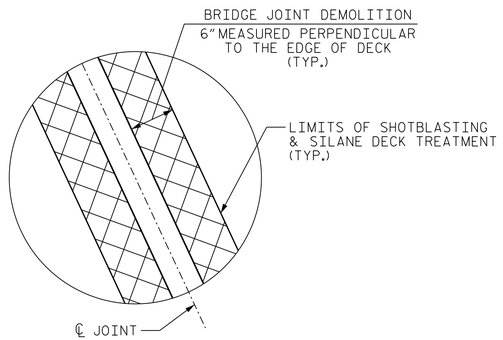


PLAN OF SPANS A, B, C & D



DETAIL "A"

CONCRETE MEDIAN DEMOLITION AT END BENT 1



DETAIL "B"

AS-BUILT REPAIR QUANTITY TABLE TOP OF DECK REPAIRS		
APPROACH SLAB 1 & 2		
	ESTIMATE	ACTUAL
SHOTBLASTING BRIDGE DECK	572 SY	
SILANE DECK TREATMENT	572 SY	
SPANS A, B, C & D		
	ESTIMATE	ACTUAL
BRIDGE JOINT DEMOLITION	299 SF	
✳CONCRETE WORK FOR MEDIAN REPLACEMENT	527 SF	
CONCRETE DECK REPAIR FOR SILANE DECK TREATMENT	0.0 SF	
SHOTBLASTING BRIDGE DECK	4,603 SY	
SILANE DECK TREATMENT	4,603 SY	

✳CONCRETE WORK FOR MEDIAN REPLACEMENT INCLUDES THE DEMOLITION AND REPLACEMENT OF CONCRETE MEDIAN ON BRIDGE DECK. APPROACH SLABS AND ROADWAY APPROACH AT APPROACH SLAB 2. FOR REPLACEMENT DETAILS, SEE SHEET S1-5.

SILANE DECK TREATMENT

BRIDGE JOINT DEMOLITION

CONCRETE MEDIAN DEMOLITION

PROJECT NO. 15BPR.128.3

BUNCOMBE COUNTY

BRIDGE NO. 100053

Docusigned by: NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON
241B8[illegible]8C437
1/2/2025

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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

SILANE DECK TREATMENT AND CONCRETE MEDIAN DEMOLITION

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-4
1			3			TOTAL SHEETS
2			4			48

DRAWN BY : B.E. LANNING DATE : 05/2022
CHECKED BY : B.E. ATKINSON DATE : 05/2022
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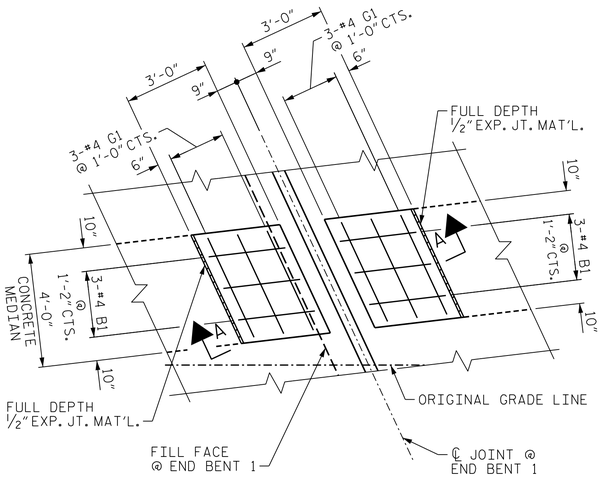
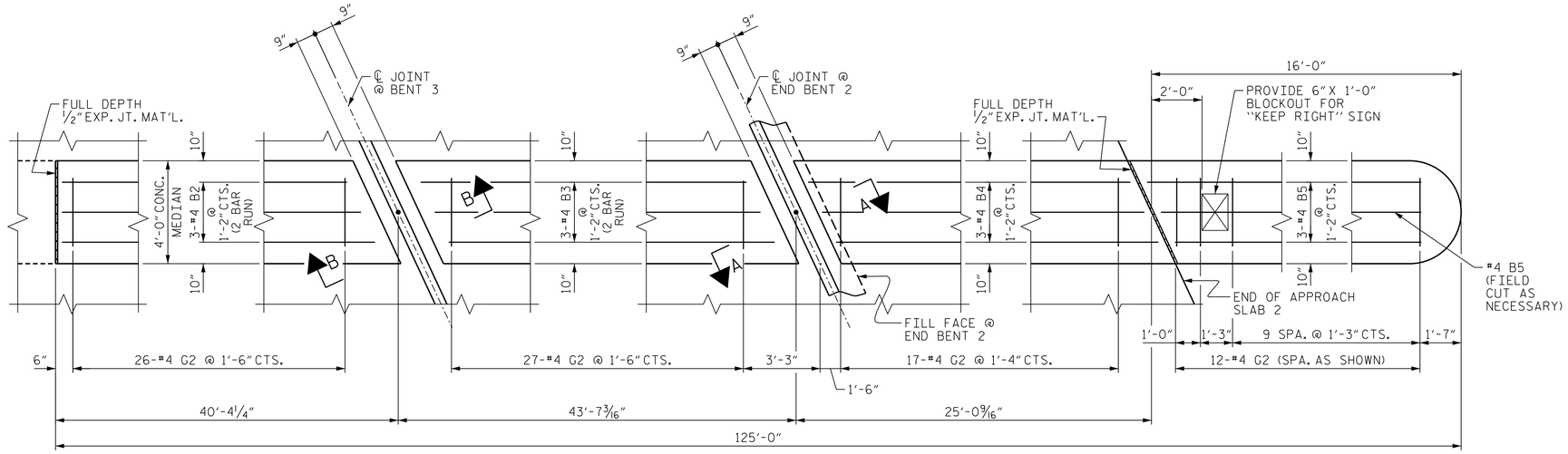


AT END BENT 1

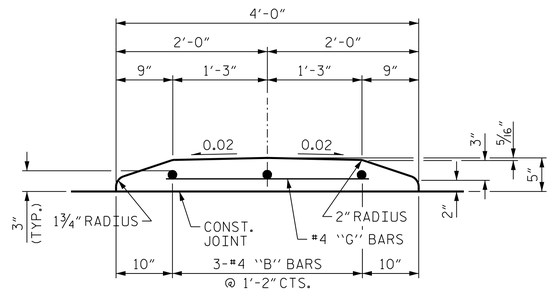


AT BENT 3

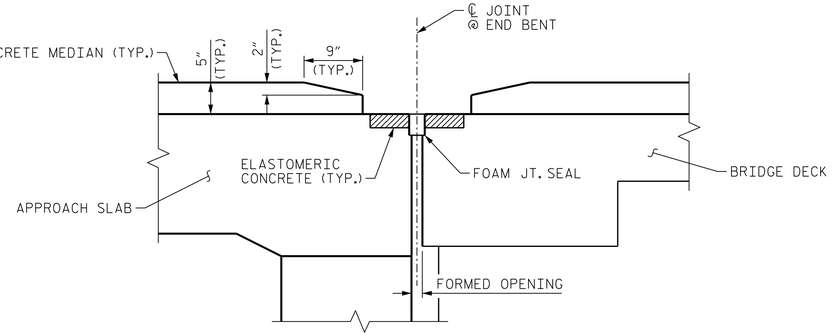
AT END BENT 2

AT END OF MEDIAN

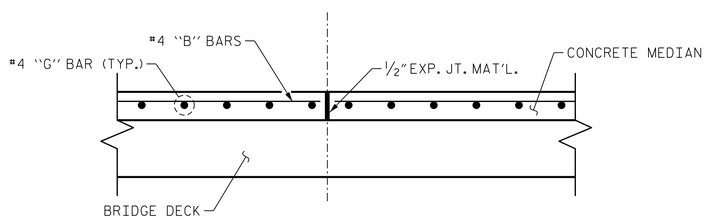
PLAN OF CONCRETE MEDIAN



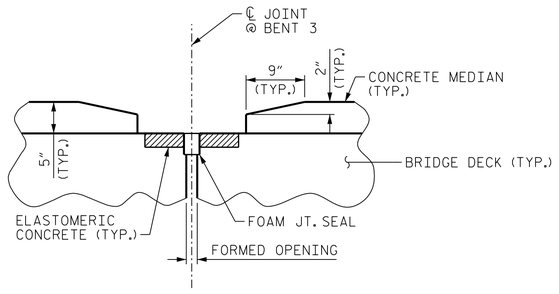
SECTION THRU CONCRETE MEDIAN



SECTION A-A



DETAIL AT EXPANSION JOINT MATERIAL



SECTION B-B

BILL OF MATERIAL

CONCRETE MEDIAN

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳B1	6	#4	STR	2'-1"	8
✳B2	6	#4	STR	20'-8"	83
✳B3	6	#4	STR	21'-1"	85
✳B4	3	#4	STR	23'-1"	46
✳B5	6	#4	STR	9'-0"	36
✳G1	6	#4	STR	2'-9"	11
✳G2	82	#4	STR	2'-8"	146
✳EPOXY COATED REINFORCING STEEL					415 LBS
CLASS AA CONCRETE					7.1 CY

NOTES:

FOR CONCRETE WORK FOR MEDIAN REPLACEMENT, SEE SPECIAL PROVISIONS.

GROOVED CONTRACTION JOINTS ½" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF CONCRETE MEDIAN IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINTS SHALL BE LOCATED AT A SPACING OF 8 FEET TO 10 FEET BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINTS WILL BE REQUIRED FOR SEGMENTS LESS THAN 10 FEET IN LENGTH.

ALL REINFORCING STEEL IN CONCRETE MEDIAN SHALL BE EPOXY COATED.

PROJECT NO. 15BPR.128.3

BUNCOMBE COUNTY

BRIDGE NO. 100053

Digitally signed by BYRON E. ATKINSON
NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON
1/2/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

CONCRETE MEDIAN REPLACEMENT DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-5
1			3			TOTAL SHEETS
2			4			48

DRAWN BY : B.E. LANNING DATE : 05/2022
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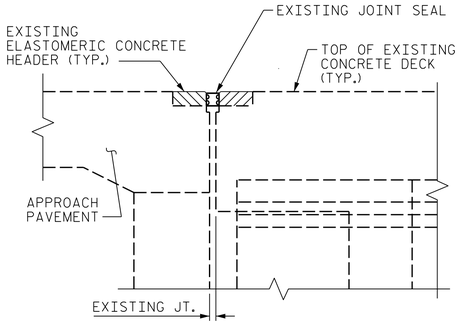
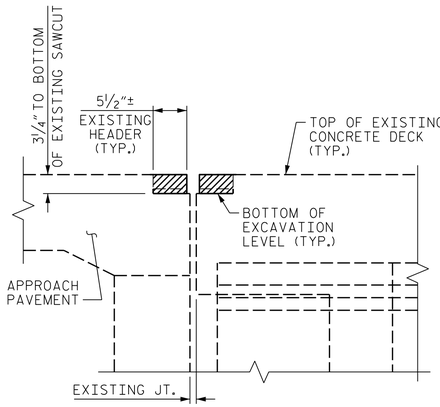
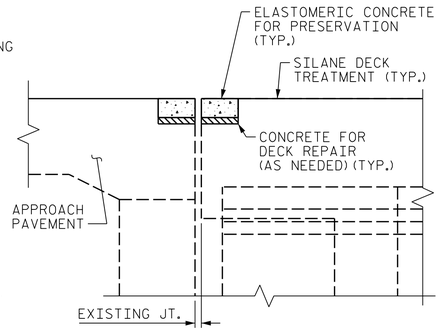


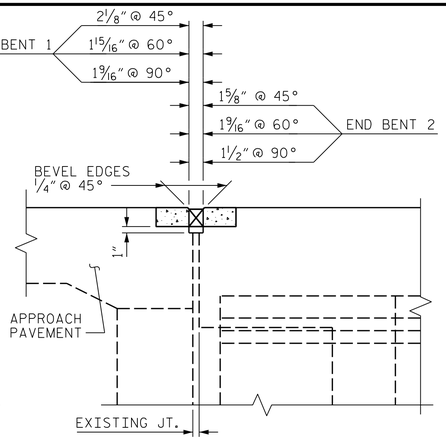
EXISTING JOINT AT END BENTS



MINIMUM EXISTING JOINT DEMOLITION AT END BENTS



PROPOSED JOINT PRE-SAWED DIMENSIONS



PROPOSED JOINT

NOTES:

FINAL JOINT SEALS SHALL NOT BE INSTALLED UNTIL THE OVERLAY OR SEALANT WORK IS COMPLETE.

THE CONTRACTOR SHALL FIELD VERIFY THE EXISTING JOINT OPENING PRIOR TO ORDERING JOINT SEAL MATERIAL. IF THE ACTUAL JOINT OPENING VARIES FROM THE OPENING INDICATED IN THE DETAILS BY MORE THAN ¼", NOTIFY THE ENGINEER.

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

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

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

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

THE INSTALLED FOAM JOINT SEALS SHALL BE WATER TIGHT.

THE CONTRACTOR SHALL SAW CUT TO A NOMINAL DEPTH OF ½" BUT REINFORCING STEEL SHALL NOT BE DAMAGED. CONTRACTOR SHALL REMOVE SURFACE CONCRETE TO VERIFY THAT SAWCUT DEPTH WILL NOT DAMAGE EXISTING REINFORCING STEEL.

QUANTITIES SHOWN FOR ELASTOMERIC CONCRETE FOR PRESERVATION ARE BASED ON THE MINIMUM JOINT DEMOLITION SHOWN.

FOR EXCAVATION BELOW THE BOTTOM OF THE PLANNED JOINT DEMOLITION, CONCRETE FOR DECK REPAIR SHALL BE PLACED IN THE EXCAVATED AREA TO THE ELEVATION AT BOTTOM OF THE PROPOSED ELASTOMERIC CONCRETE FOR PRESERVATION HEADERS SHOWN.

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

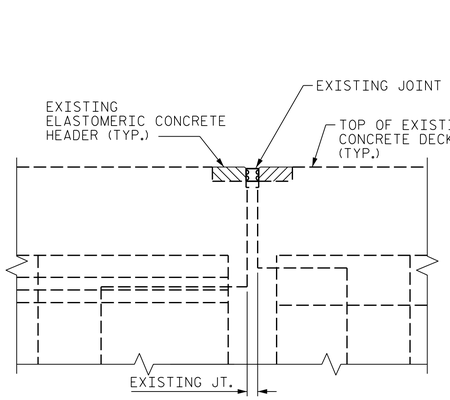
FOR BRIDGE JOINT DEMOLITION, SEE SPECIAL PROVISIONS.

FOR CONCRETE FOR DECK REPAIR, SEE SPECIAL PROVISIONS.

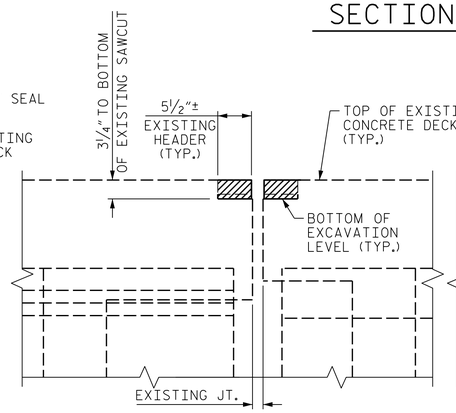
FOR FOAM JOINT SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.

FOR ELASTOMERIC CONCRETE FOR PRESERVATION, SEE SPECIAL PROVISIONS.

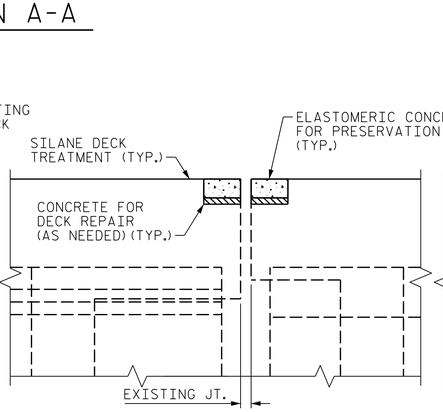
SECTION A-A



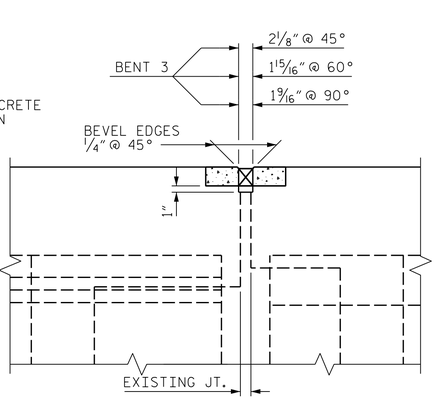
EXISTING JOINT AT BENT 3



MINIMUM EXISTING JOINT DEMOLITION AT BENT 3

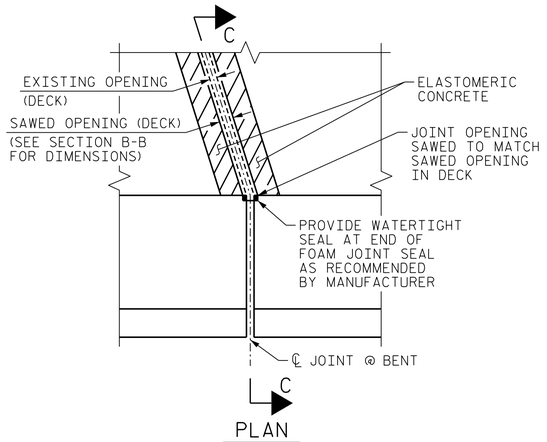


PROPOSED JOINT PRE-SAWED DIMENSIONS

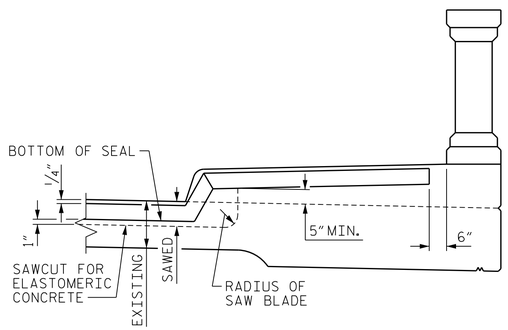


PROPOSED FOAM JOINT SEAL EXPANSION

SECTION B-B



PLAN



SECTION C-C

JOINT DETAILS AT CURB

JOINT REPAIR QUANTITY TABLE		
	ESTIMATED	ACTUAL
FOAM JOINT SEALS FOR PRESERVATION	357.0 LF	

ELASTOMERIC CONCRETE FOR PRESERVATION		
END BENT 1	27.0	CF
BENT 3	27.0	CF
END BENT 2	27.0	CF
* TOTAL	81.0	CF

* BASED ON MINIMUM BLOCKOUT SHOWN.

PROJECT NO. 15BPR.128.3
BUNCOMBE COUNTY
BRIDGE NO. 100053

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
JOINT DETAILS

Documents originally issued and sealed by BYRON E. ATKINSON, NORTH CAROLINA PROFESSIONAL ENGINEER, SEAL 24939, on 1/2/2025. Electronic Seal 24939 BEA 1/2/2025

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MI ENGINEERING
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RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-6
1			3			TOTAL SHEETS
2			4			48

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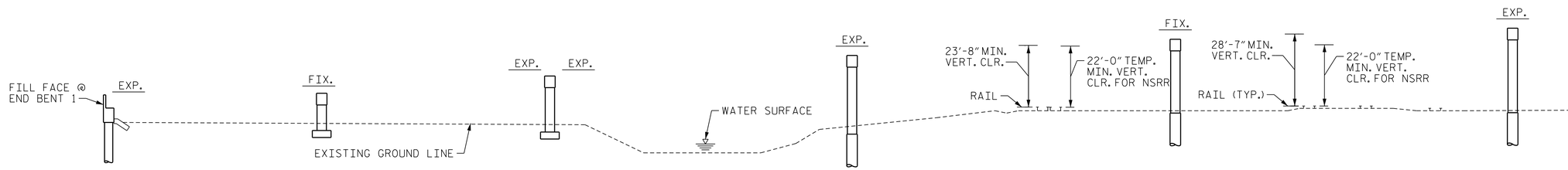
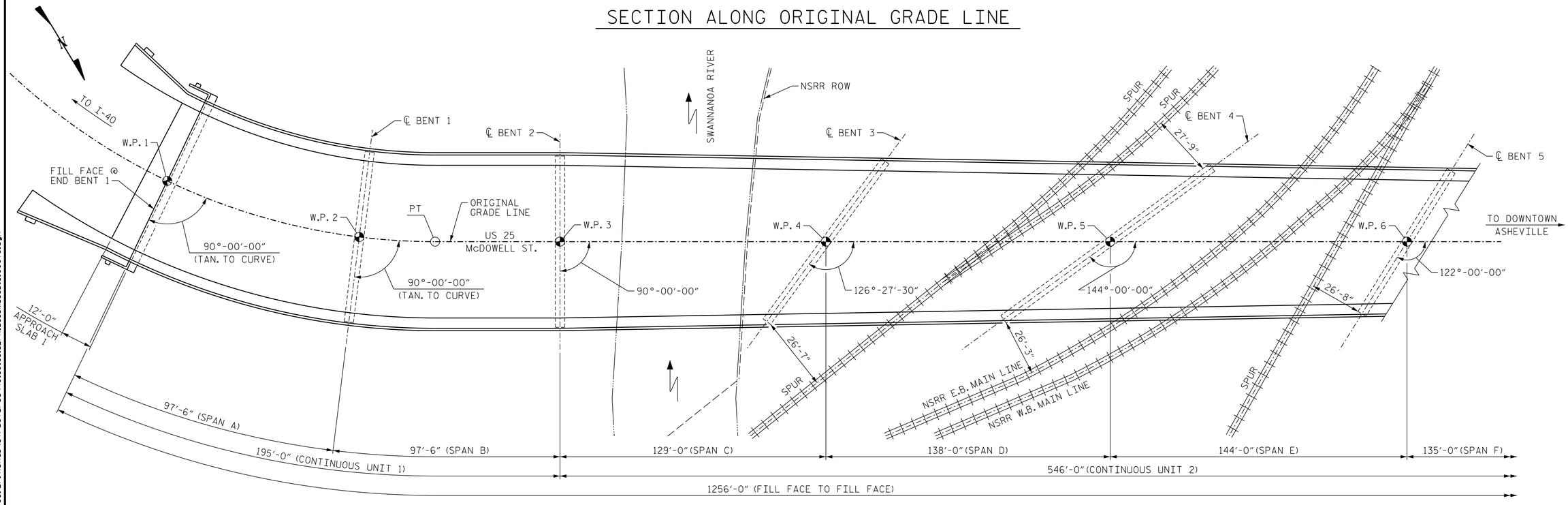


SECTION ALONG ORIGINAL GRADE LINE



PLAN

PROJECT NO. 15BPR.128.3

BUNCOMBE COUNTY

BRIDGE NO. 100076

SHEET 1 OF 3

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

RESIDENT ENGINEER DATE

NOTES:

PROFILE INFORMATION IS TAKEN FROM THE ORIGINAL PLANS AND THE ROUTINE INSPECTION REPORT DATED 02/27/2023.

BRIDGE ORIENTATION CONFORMS TO ROUTINE INSPECTION REPORT.

SCOPE OF WORK:

- DEMOLISH OF EXISTING BRIDGE DECK JOINTS.
- REPAIR CONCRETE DECK AREA AND SIDEWALK.
- SHOTBLAST EXISTING CONCRETE DECK AND SIDEWALK
- APPLY SILANE DECK TREATMENT.
- REPLACE EXPANSION JOINT SEAL GLAND.
- REPLACE MODULAR JOINT.
- UNCLOG, CLEANOUT AND REPAIR BRIDGE DRAINAGE SYSTEM.

Document not considered final for bidding or construction
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 24939 BYRON E. ATKINSON
1/2/2025

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FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON US 25 OVER SR 3556 (MEADOW RD.), NORFOLK SOUTHERN RAILROAD AND SWANNANOA RIVER

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-1
1			3			TOTAL SHEETS
2			4			48

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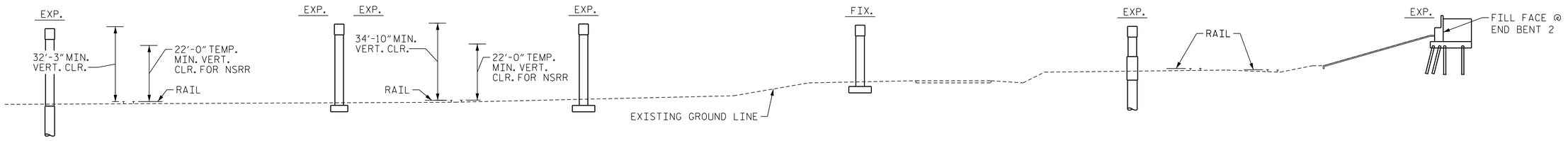

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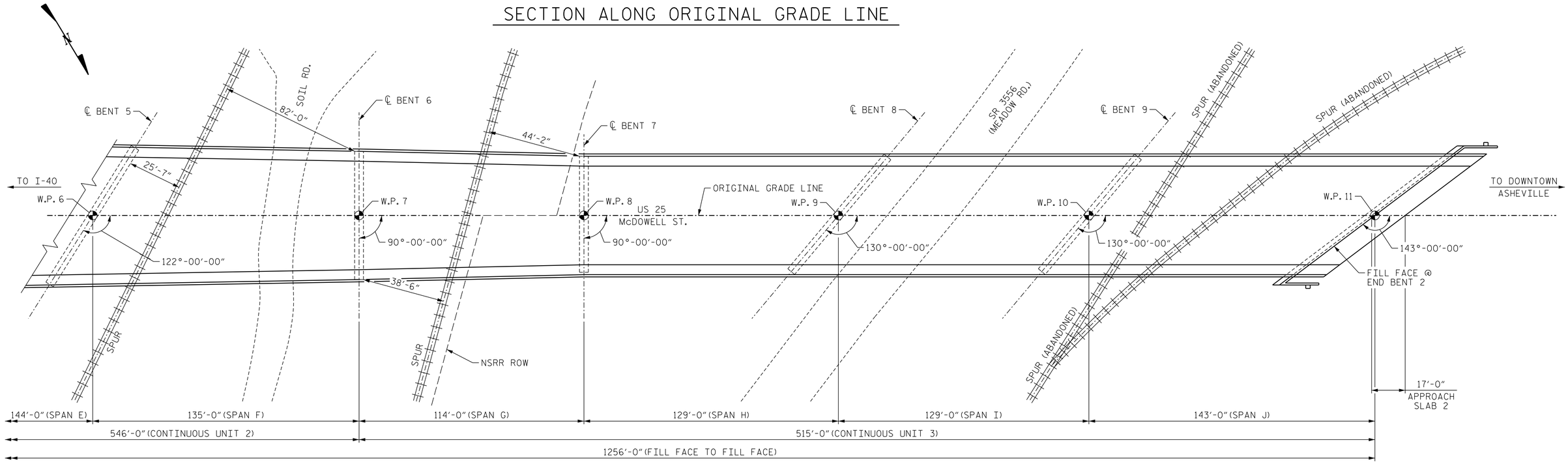

PLAN

PROJECT NO. 15BPR.128.3

BUNCOMBE COUNTY

BRIDGE NO. 100076

SHEET 2 OF 3

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NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON
1/2/2025

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON US 25
OVER SR 3556 (MEADOW RD.),
NORFOLK SOUTHERN RAILROAD
AND SWANNANOA RIVER

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-2
1			3			TOTAL SHEETS
2			4			48

DRAWN BY : B.E. LANNING DATE : 05/2022
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LOCATION SKETCH

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

BRIDGE COORDINATES	
LATITUDE	LONGITUDE
35°-34'-7.83"	82°-32'-52.76"

NOTES:

EXISTING DIMENSIONS AND BRIDGE CONDITION ARE FROM THE BEST INFORMATION AVAILABLE. THE CONTRACTOR SHALL FIELD VERIFY THE INFORMATION SHOWN ON THE PLANS AND NOTIFY THE ENGINEER IF ACTUAL DIMENSIONS AND CONDITIONS DIFFER.

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

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

THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THAT SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

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

FOR BRIDGE DRAINAGE CLEANOUT AND REPAIR, SEE SPECIAL PROVISIONS.

FOR CONCRETE DECK REPAIR FOR SILANE DECK TREATMENT, SEE SPECIAL PROVISIONS.

FOR SHOTBLASTING BRIDGE DECK AND SILANE DECK TREATMENT, SEE SILANE DECK TREATMENT SPECIAL PROVISIONS.

FOR BRIDGE JOINT DEMOLITION, SEE SPECIAL PROVISIONS.

FOR CONCRETE WORK FOR JOINT REPLACEMENT, SEE SPECIAL PROVISIONS.

FOR STRIP SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.

FOR EXPANSION JOINT SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.

FOR MODULAR JOINT REPAIR, SEE SPECIAL PROVISIONS.

EXISTING MODULAR JOINT AND DECK REINFORCING STEEL SHOWN IS BASED ON BEST INFORMATION AVAILABLE.

ALL PROPOSED EXPANSION JOINT DIMENSIONS, OPENINGS AND BLOCKOUTS ARE SHOWN AT 60° F. CONTRACTOR SHALL FOLLOW MANUFACTURER'S INSTALLATION GUIDELINES AND MAKE ANY NECESSARY ADJUSTMENTS.

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

CONTRACTOR SHALL DETERMINE EXTENT OF WORKING AREA, STAGING PROCESS, AND INSTALL COVER PLATE ASSEMBLY AS NECESSARY TO MEET THE REQUIREMENTS OF TRAFFIC MANAGEMENT PLANS.

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

CONTRACTOR SHALL HAVE A REPRESENTIVE FROM THE JOINT MANUFACTURER PRESENT DURING INSTALLATION OF PROPOSED RUBBER PLATE TYPE EXPANSION JOINT.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS,

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR NOTES ON WORKING OVER NSRR RIGHT OF WAY, SEE SHEET NSN.

PROJECT NO. 15BPR.128.3

BUNCOMBE COUNTY

BRIDGE NO. 100076

SHEET 3 OF 3

NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON

1/2/2025

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FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON US 25 OVER SR 3556 (MEADOW RD.), NORFOLK SOUTHERN RAILROAD AND SWANNANOA RIVER

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-3
1			3			TOTAL SHEETS
2			4			48

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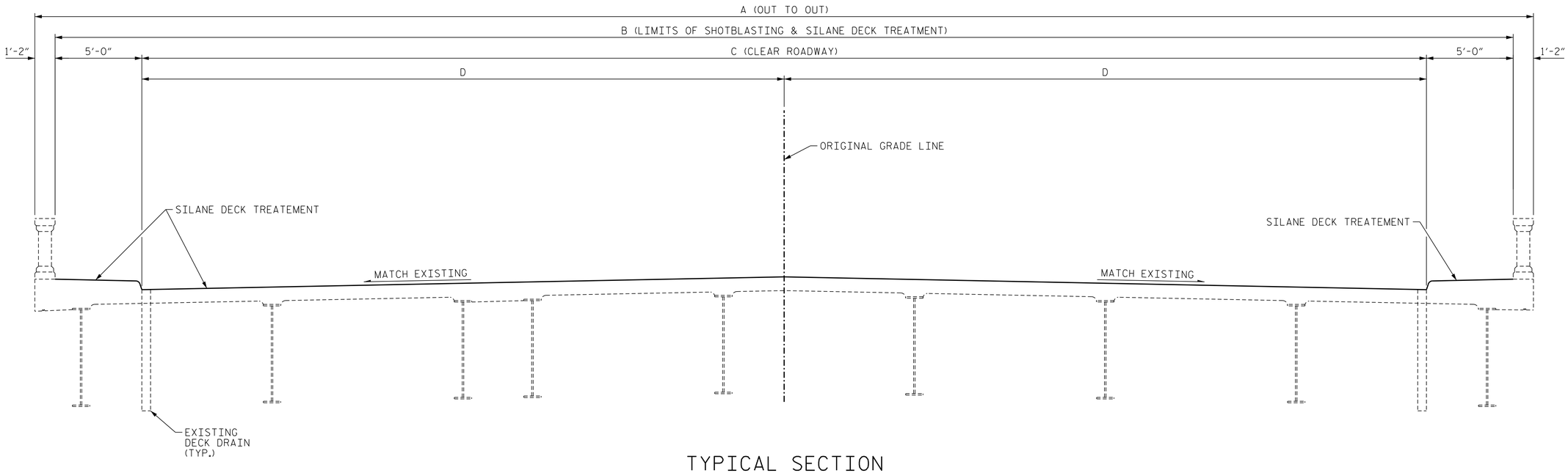
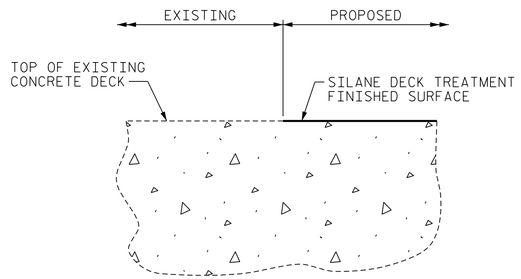
NOTES:

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



TYPICAL SECTION

TABLE OF DIMENSIONS				
LOCATION	A	B	C	D
W.P. 1 (FILL FACE @ END BENT 1)	86'-4"	84'-0"	74'-0"	37'-0"
W.P. 2 (℄ BENT 1)	86'-4"	84'-0"	74'-0"	37'-0"
W.P. 3 (℄ BENT 2)	86'-4"	84'-0"	74'-0"	37'-0"
W.P. 4 (℄ BENT 3)	81'-10"	79'-6"	69'-6"	34'-9"
W.P. 5 (℄ BENT 4)	77'-0"	74'-8"	64'-8"	32'-4"
W.P. 6 (℄ BENT 5)	72'-0"	69'-8"	59'-8"	29'-10"
W.P. 7 (℄ BENT 6)	67'-4"	65'-0"	55'-0"	27'-6"
W.P. 8 (℄ BENT 7)	62'-4"	60'-0"	50'-0"	25'-0"
W.P. 9 (℄ BENT 8)	62'-4"	60'-0"	50'-0"	25'-0"
W.P. 10 (℄ BENT 9)	62'-4"	60'-0"	50'-0"	25'-0"
W.P. 11 (FILL FACE @ END BENT 2)	62'-4"	60'-0"	50'-0"	25'-0"



DETAIL OF SILANE DECK TREATMENT

PROJECT NO. 15BPR.128.3

BUNCOMBE COUNTY

BRIDGE NO. 100076

NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON

1/2/2025

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION AND SILANE DECK TREATMENT

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

SHEET NO. S2-4

TOTAL SHEETS 48

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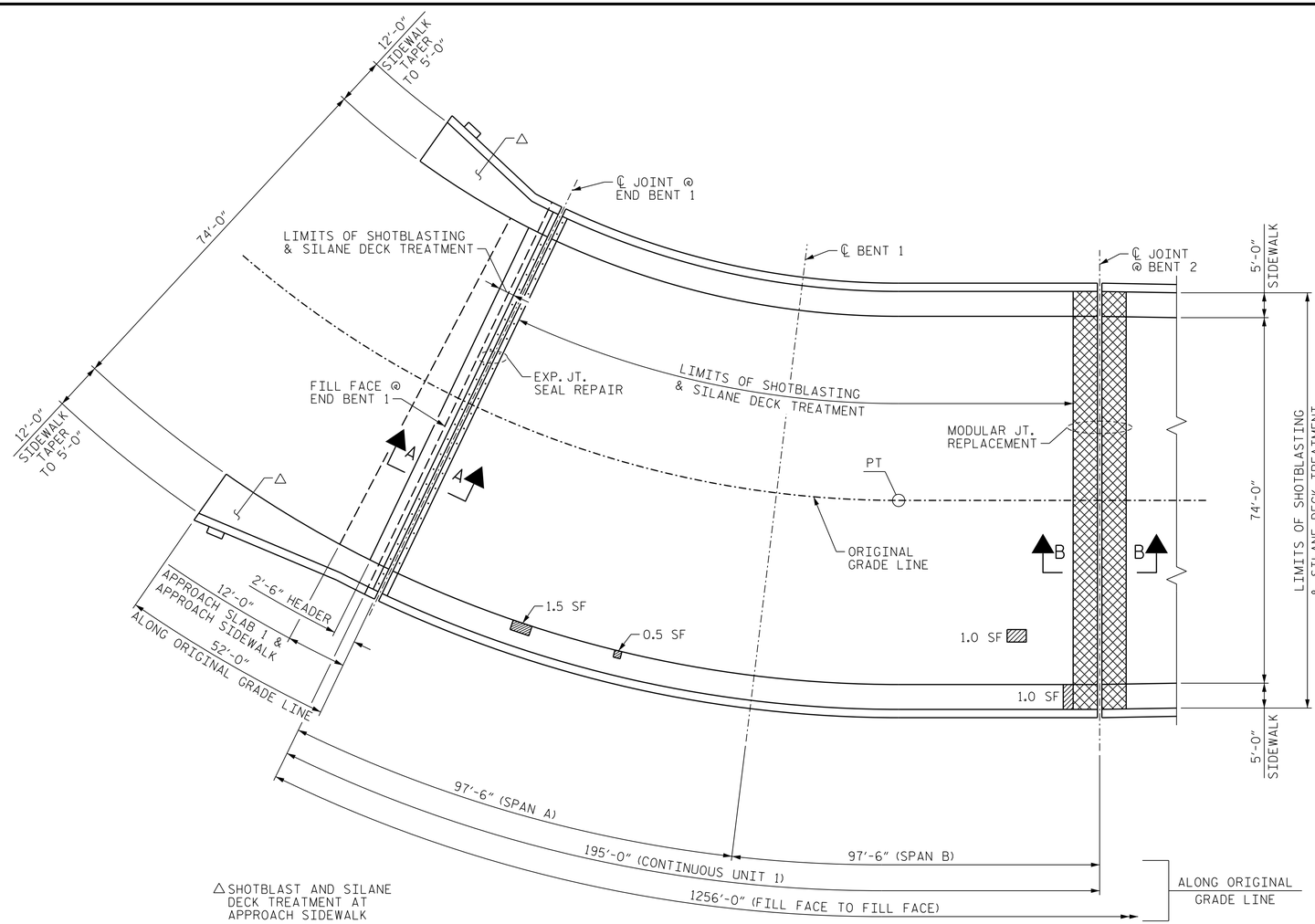

PLAN OF SPANS A & B

AS-BUILT REPAIR QUANTITY TABLE TOP OF DECK REPAIRS		
** APPROACH SLAB 1		
	ESTIMATE	ACTUAL
SHOTBLASTING BRIDGE DECK	107 SY	
SILANE DECK TREATMENT	107 SY	
SPANS A & B		
	ESTIMATE	ACTUAL
MODULAR JOINT REPAIR	588 SF	
CONCRETE DECK REPAIR FOR SILANE DECK TREATMENT	4.0 SF	
SHOTBLASTING BRIDGE DECK	1776 SY	
SILANE DECK TREATMENT	1776 SY	

** QUANTITY INCLUDES APPROACH SLAB SIDEWALK AND APPROACH SLAB HEADER.

NOTES:

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

FOR SECTION A-A, SEE "EXPANSION JOINT SEAL REPAIR DETAILS" SHEETS.

FOR SECTION B-B, SEE "MODULAR EXPANSION JOINT DETAILS" SHEETS.

SILANE DECK TREATMENT

MODULAR JOINT REPAIR

CONCRETE DECK REPAIR FOR SILANE DECK TREATMENT

PROJECT NO. 15BPR.128.3

BUNCOMBE COUNTY

BRIDGE NO. 100076

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

SILANE DECK TREATMENT APPROACH SLAB 1 SPANS A & B

NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON
1/2/2025

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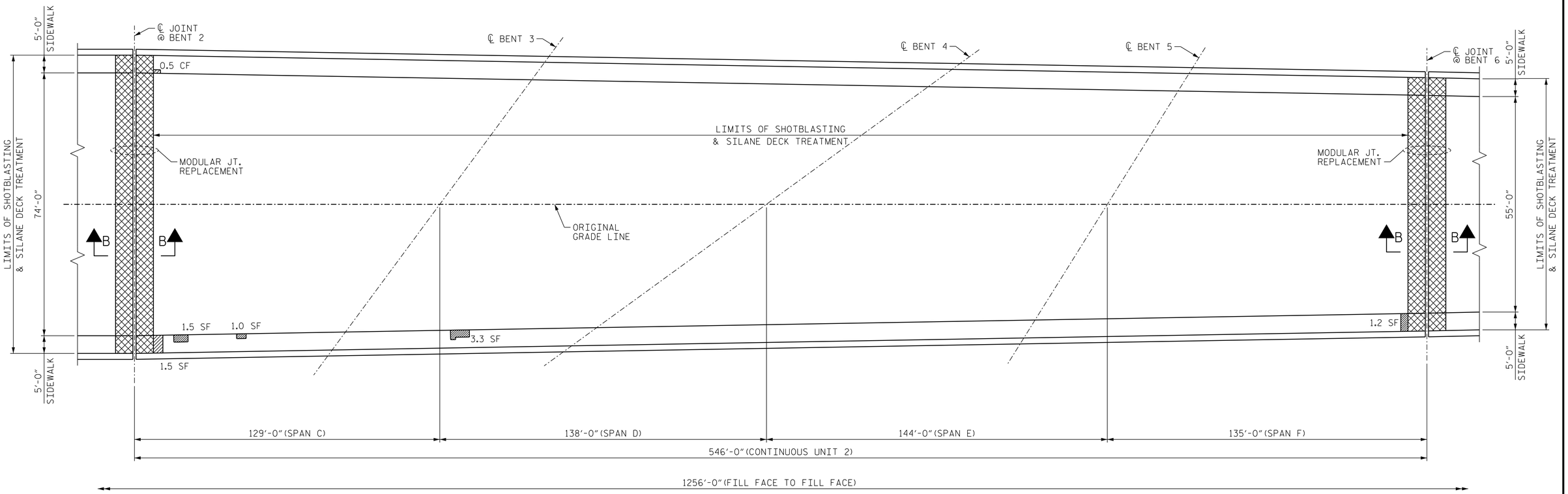
DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 12/2024

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 "MODULAR EXPANSION JOINT DETAILS" SHEETS.



PLAN OF SPANS C, D, E & F

AS-BUILT REPAIR QUANTITY TABLE TOP OF DECK REPAIRS SPANS C, D, E & F		
	ESTIMATE	ACTUAL
MODULAR JOINT REPAIR	455 SF	
CONCRETE DECK REPAIR FOR SILANE DECK TREATMENT	9.0 SF	
SHOTBLASTING BRIDGE DECK	4462 SY	
SILANE DECK TREATMENT	4462 SY	

SILANE DECK TREATMENT

MODULAR JOINT REPAIR

CONCRETE DECK REPAIR FOR SILANE DECK TREATMENT

PROJECT NO. 15BPR.128.3

BUNCOMBE COUNTY

BRIDGE NO. 100076

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

SILANE DECK TREATMENT
SPANS C, D, E & F

Docusigned by: NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON
241B8B8C437...
1/2/2025

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MI ENGINEERING
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RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

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2			4			48

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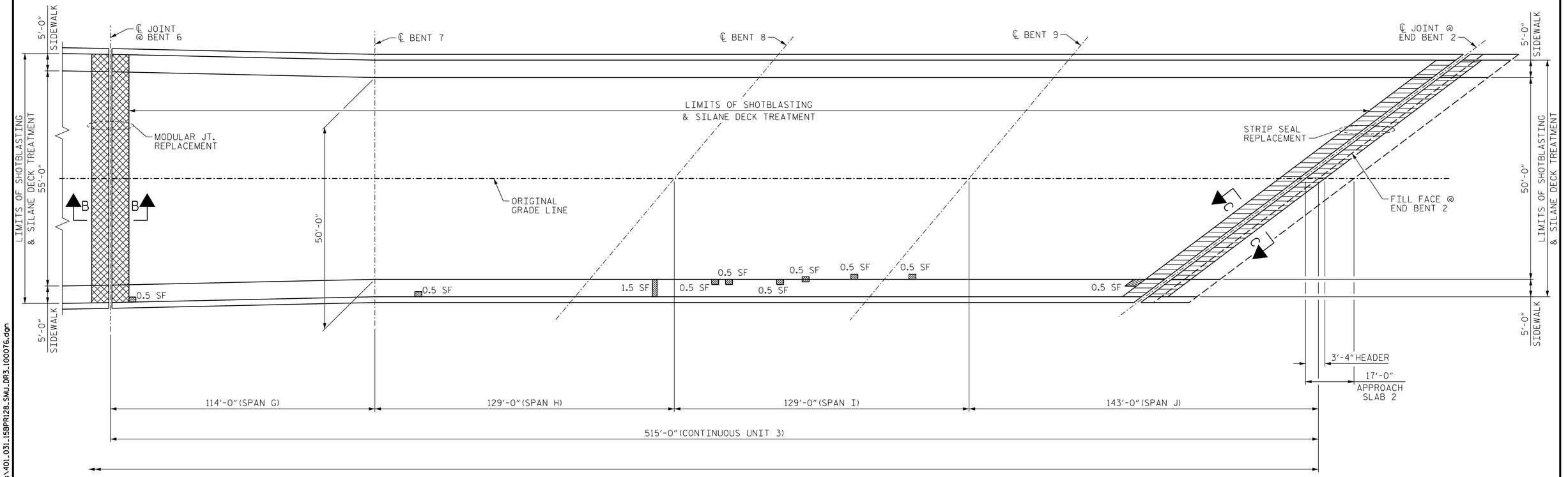
NOTES:

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 "MODULAR EXPANSION JOINT DETAILS" SHEET.

FOR SECTION C-C, SEE "STRIP SEAL EXPANSION JOINT DETAILS" SHEET.



PLAN OF SPANS G, H, I & J

AS-BUILT REPAIR QUANTITY TABLE
TOP OF DECK REPAIRS

**** APPROACH SLAB 2**

	ESTIMATE	ACTUAL
SHOTBLASTING BRIDGE DECK	0 SY	
SILANE DECK TREATMENT	0 SY	

SPANS G, H, I & J

	ESTIMATE	ACTUAL
CONCRETE WORK FOR JOINT REPLACEMENT (END BENT 2)	499 SF	
CONCRETE DECK REPAIR FOR SILANE DECK TREATMENT	6.0 SF	
SHOTBLASTING BRIDGE DECK	3517 SY	
SILANE DECK TREATMENT	3517 SY	

** NO ADDITIONAL WORK ANTICIPATED BEYOND MODULAR JOINT REPLACEMENT FOR APPROACH SLAB SIDEWALK AND APPROACH SLAB HEADER.

SILANE DECK TREATMENT

MODULAR JOINT REPAIR

CONCRETE DECK REPAIR FOR SILANE DECK TREATMENT

CONCRETE WORK FOR JOINT REPLACEMENT

NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON
1/2/2025

PROJECT NO. 15BPR.128.3
BUNCOMBE COUNTY
BRIDGE NO. 100076
SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

SILANE DECK TREATMENT SPANS G, H, I & J APPROACH SLAB 2

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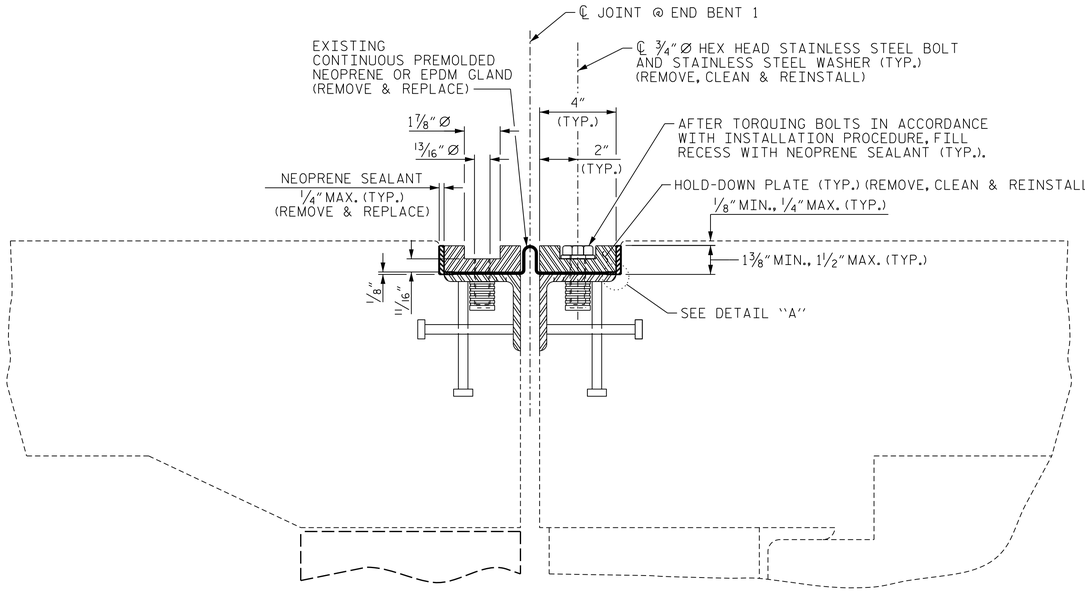


SECTION A-A

EXPANSION JOINT DETAILS

(SECTION NORMAL TO JOINT - STEEL SUPERSTRUCTURE)

SUGGESTED REPAIR INSTALLATION PROCEDURE

1. LOOSEN THE EXISTING BOLTS AND HOLD-DOWN PLATES TO REMOVE AND REPLACE THE EXISTING GLAND.
2. REMOVE EXISTING BOLTS, COVER-PLATES, HOLD-DOWN PLATES AND GLAND AND CLEAN EXISTING BOLTS AND HOLD-DOWN PLATES FOR RE-USE.
3. REMOVE EXISTING NEOPRENE SEALANT AND CLEAN THE EXISTING BASE ANGLE AND BOLT HOLES OF OIL, GREASE AND OTHER LATENTS.
4. LAY THE NEW GLAND ON THE BASE ANGLE AND FIELD MARK THE NEW GLAND FOR THE BOLT HOLES, HOLES IN THE NEW GLAND SHALL BE PUNCHED ⅞" IN DIAMETER WITH A HAND PUNCH.
5. IN ORDER TO CHECK FOR PROPER ALIGNMENT, PLACE THE NEW GLAND AND HOLD-DOWN PLATES ON THE BASE ANGLE. DO NOT APPLY NEW NEOPRENE SEALANT. BOLT THE HOLD-DOWN PLATES TO THE BASE ANGLE, BUT DO NOT TIGHTEN. THE ENGINEER WILL INSPECT THE JOINT SEAL DEVICE FOR PROPER ALIGNMENT.
6. AFTER INSPECTION, REMOVE THE HOLD-DOWN PLATES AND NEW GLAND. APPLY NEW NEOPRENE SEALANT TO THE BASE ANGLE IN ACCORDANCE WITH THE "INSTALLATION SKETCH". PLACE NEW GLAND AND HOLD-DOWN PLATES ON THE BASE ANGLE. BOLT THE HOLD-DOWN PLATES TO THE BASE ANGLE ASSEMBLY AND TORQUE THE BOLTS TO 88 FT-LBS WITH A TORQUE WRENCH, CHECK THE TORQUE AFTER THREE (3) HOURS AND, IF NECESSARY, RETIGHTEN TO 88 FT-LBS. A FINAL CHECK SHALL BE MADE AT SEVEN (7) DAYS. TORQUE SHALL NOT BE LESS THAN 80 FT-LBS AFTER SEVEN (7) DAYS.
7. AFTER PROPER TORQUING, CLEAN THE BOLT HOLE RECESSES AND THE RECESS BETWEEN THE JOINT SEAL DEVICE AND CONCRETE, COMPLETELY FILL THESE RECESSES WITH NEW NEOPRENE SEALANT.
8. CONDUCT WATER-TIGHTNESS TEST.

GENERAL NOTES

CONTRACTOR SHALL FIELD VERIFY THE EXISTING JOINT OPENING PRIOR TO ORDERING JOINT SEAL MATERIAL. IF THE ACTUAL JOINT OPENING VARIES FROM THE OPENING INDICATED IN THE DETAILS BY MORE THAN ¼", NOTIFY THE ENGINEER.

THE MANUFACTURER IS TO PROVIDE THE NOMINAL GLAND SIZE BASED ON EXISTING JOINT OPENINGS AND ANTICIPATED MOVEMENTS.

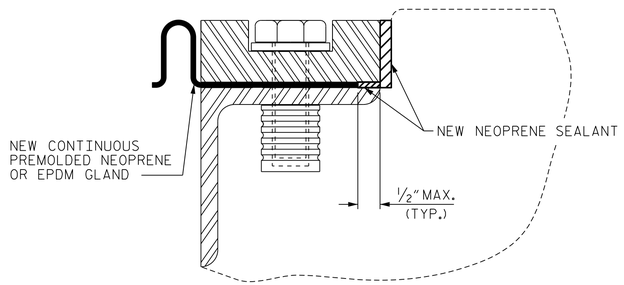
THE CONTRACTOR SHALL TAKE CARE DURING JOINT REHAB OPERATIONS NOT TO DROP ANY MATERIAL BELOW THE BRIDGE, WITHOUT PROTECTIVE DEVICES BELOW TO CATCH THE MATERIAL. ANY MATERIAL THAT FALLS BELOW THE BRIDGE SHALL BE CONTAINED, REMOVED AND DISPOSED OF DEPARTMENT. IF THE ENGINEER DETERMINES THAT THE PROTECTIVE DEVICES ARE NOT ADEQUATE OR NOT BEING EMPLOYED, THE WORK SHALL BE SUSPENDED UNTIL ADEQUATE IS PROVIDED.

RETAIN ALL EXISTING HOLD-DOWN PLATES AND HARDWARE. CLEAN AND REPAIR AS NEEDED. CONTRACTOR SHALL REPLACE DAMAGED HOLD-DOWN PLATES AND/OR HARDWARE AS NEEDED OR DIRECTED BY THE ENGINEER AT NO EXTRA COST TO THE DEPARTMENT.

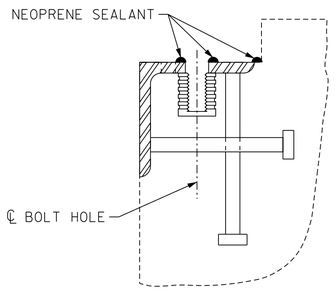
ALL HOLD-DOWN BOLTS SHALL CONFORM TO ASTM F593 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL CONFORM TO ASTM F844 EXCEPT THEY SHALL BE MADE FORM ALLOY 304 STAINLESS STEEL.

FOR EXPANSION JOINT SEAL FOR PRESERVATION, SEE SPECIAL PROVISIONS.

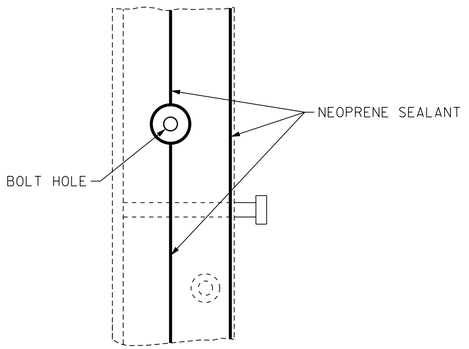
NO SEPARATE PAYMENT WILL BE MADE FOR REMOVING AND REINSTALLING SIDEWALK AND RAIL COVER PLATES, THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE LINEAR FEET PRICE BID FOR "EXPANSION JOINT SEALS FOR PRESERVATION".



DETAIL "A"



CROSS SECTION



PLAN VIEW

MOVEMENT AND SETTING AT JOINT					
LOCATION	SKEW ANGLE	TOTAL MOVEMENT (ALONG ℄ RDWY)	PERPENDICULAR JOINT OPENING AT 45° F	PERPENDICULAR JOINT OPENING AT 60° F	PERPENDICULAR JOINT OPENING AT 90° F
END BENT 1	94°-37'-53"	¾"	1¹¹⁄₁₆"	1⁹⁄₁₆"	1⅝"

JOINT REPAIR QUANTITY TABLE		
	ESTIMATED	ACTUAL
EXPANSION JOINT SEALS FOR PRESERVATION	84.0 LF	

INSTALLATION SKETCH

PROJECT NO. 15BPR.128.3

BUNCOMBE COUNTY

BRIDGE NO. 100076

SHEET 1 OF 2

1/2/2025

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FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

EXPANSION JOINT SEAL REPAIR DETAILS AT END BENT 1

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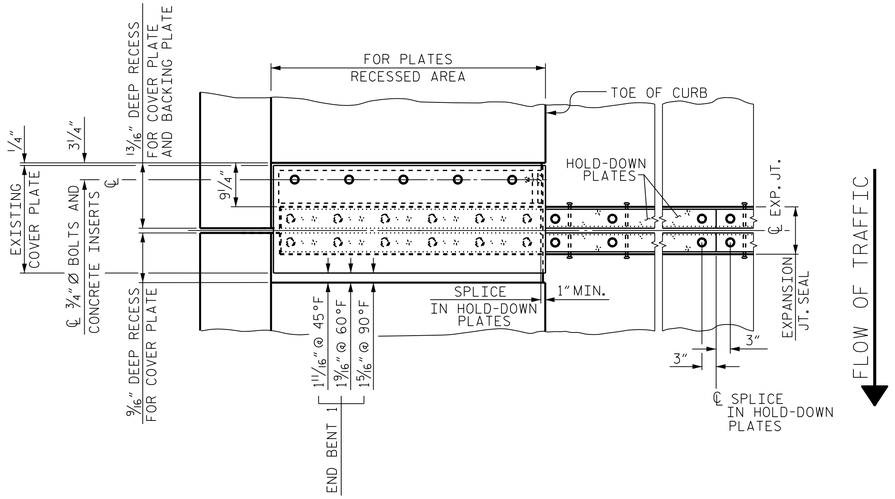
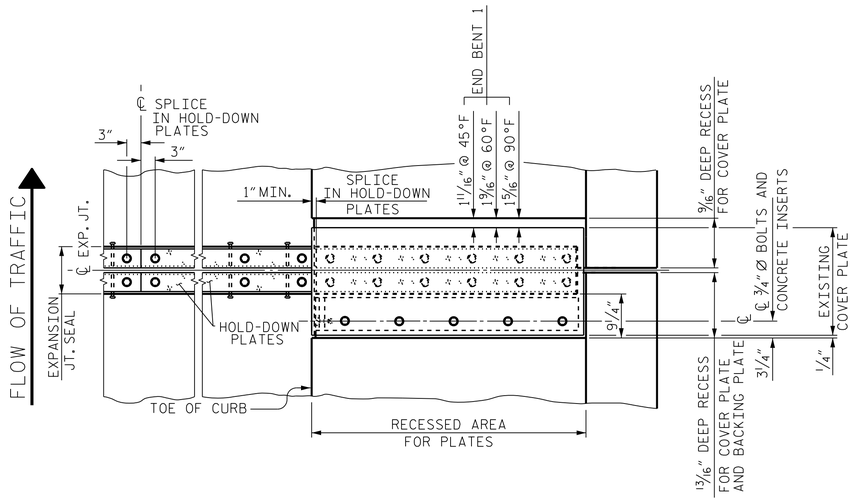
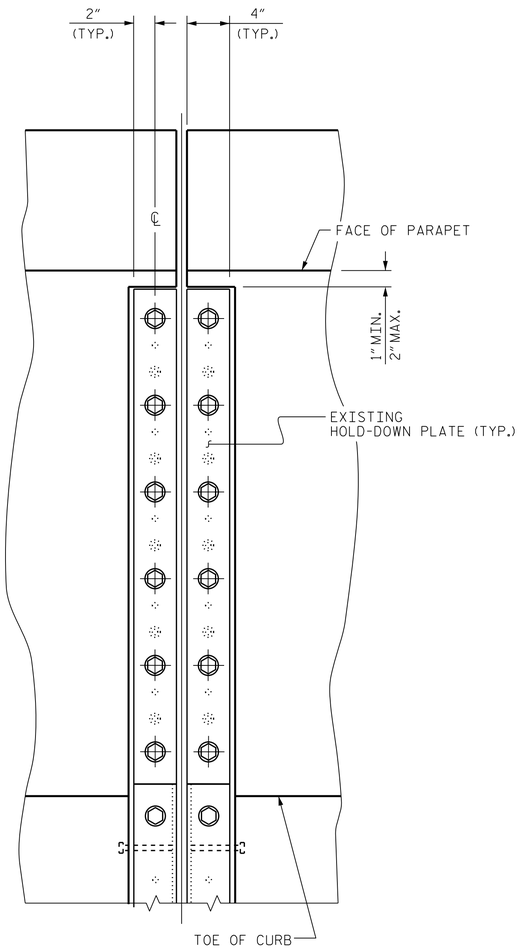
DIMENSIONS AND DETAILS SHOWN ARE TYPICAL FOR EXPANSION JOINT SEAL ASSEMBLY.
FIELD VERIFY DIMENSIONS AND EXISTING CONDITIONS.



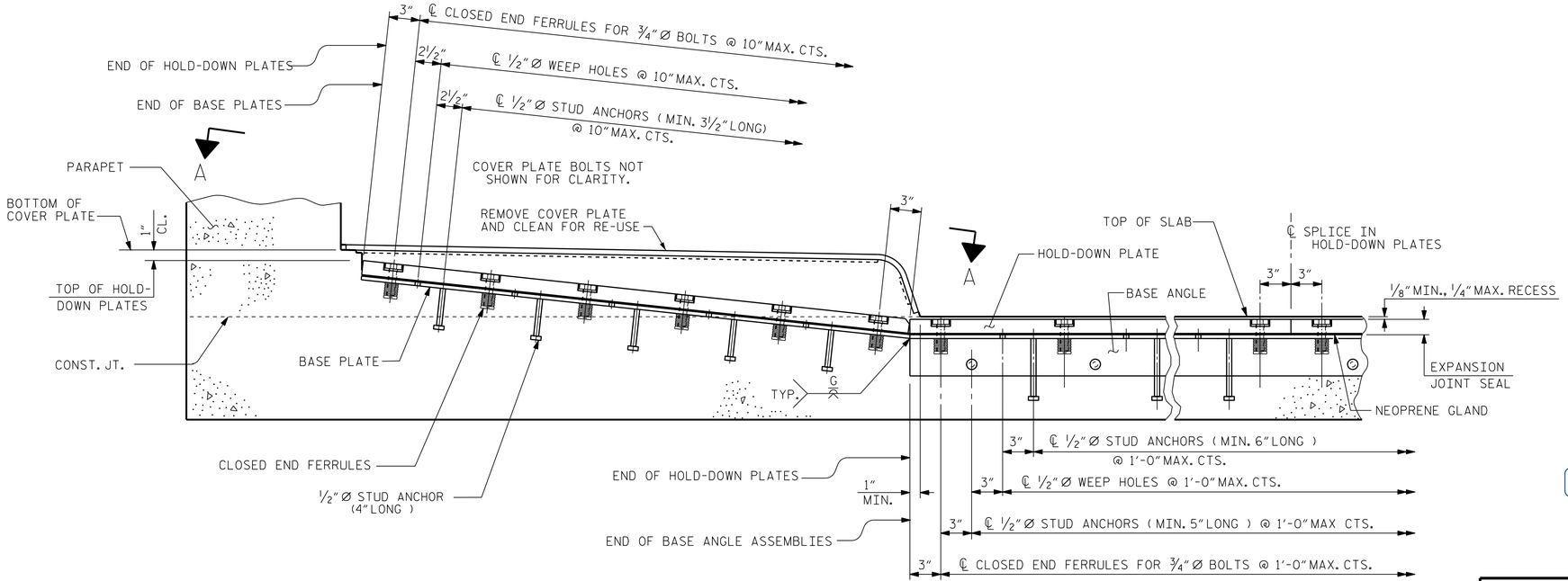
PLAN OF EXPANSION JOINT SEAL - LEFT SIDE



PLAN OF EXPANSION JOINT SEAL - RIGHT SIDE



SECTION A-A



SECTION THRU SIDEWALK NORMAL TO JOINT

PROJECT NO. 15BPR.128.3
BUNCOMBE COUNTY
BRIDGE NO. 100076

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

EXPANSION JOINT SEAL REPAIR DETAILS AT END BENT 1

NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON
1/2/2025

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2			4		

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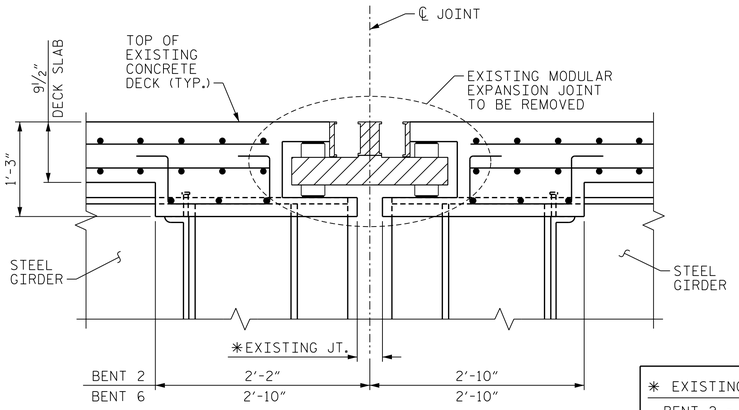
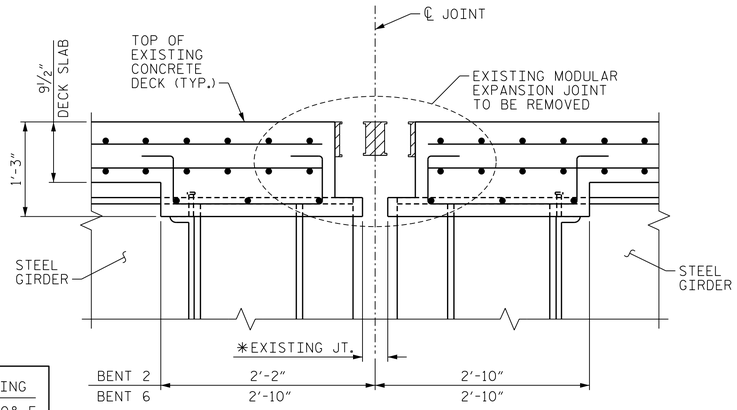
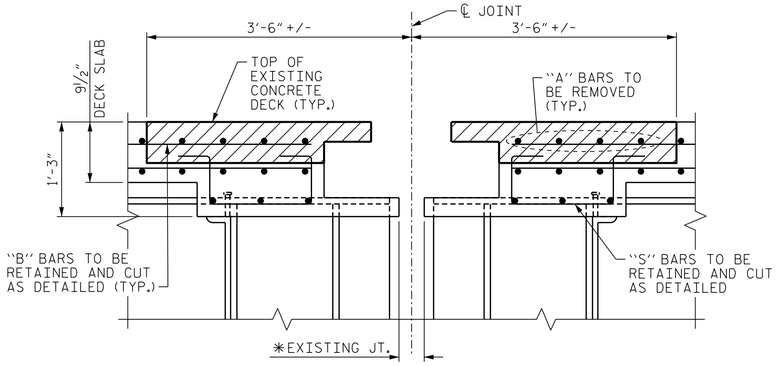


EXISTING MODULAR JOINT

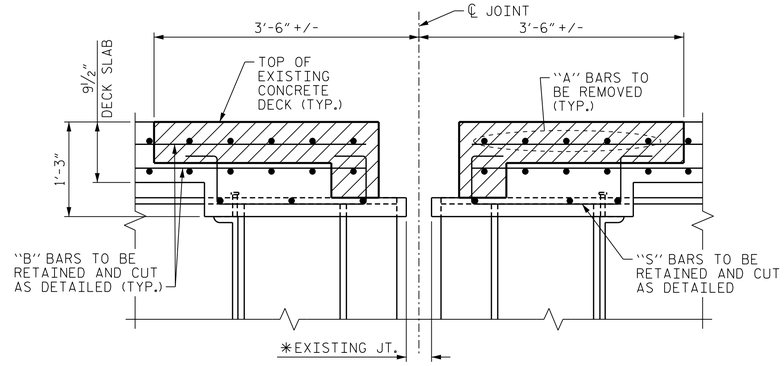


EXISTING MODULAR JOINT

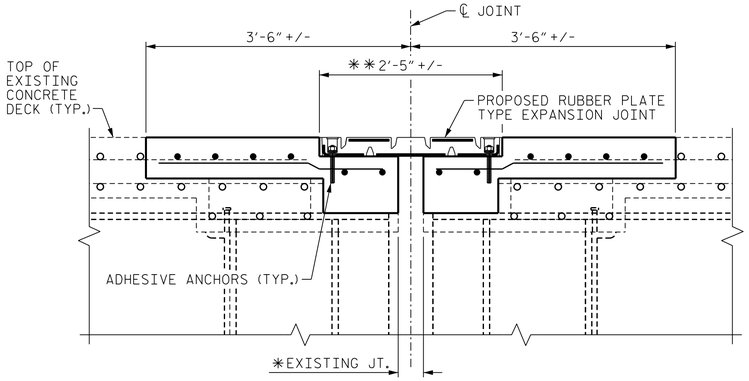
✳ EXISTING PLAN OPENING
BENT 2 - $3\frac{1}{8}$" +/- @ 60° F
BENT 6 - $4\frac{1}{16}$" +/- @ 60° F



EXISTING JOINT DEMOLITION

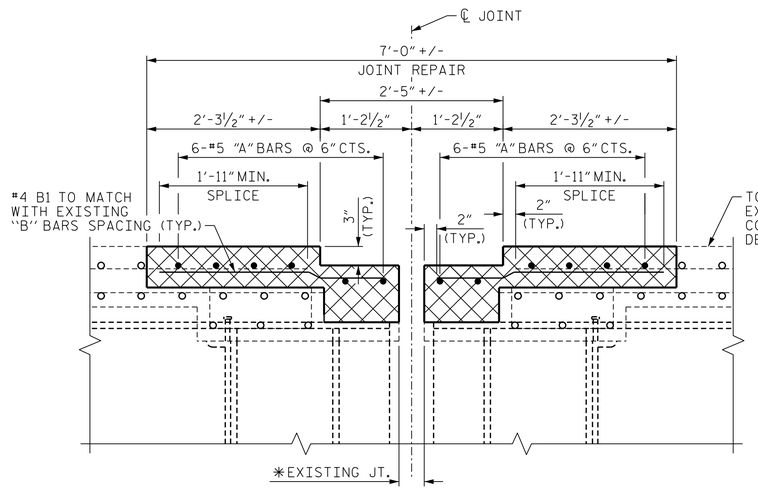


EXISTING JOINT DEMOLITION



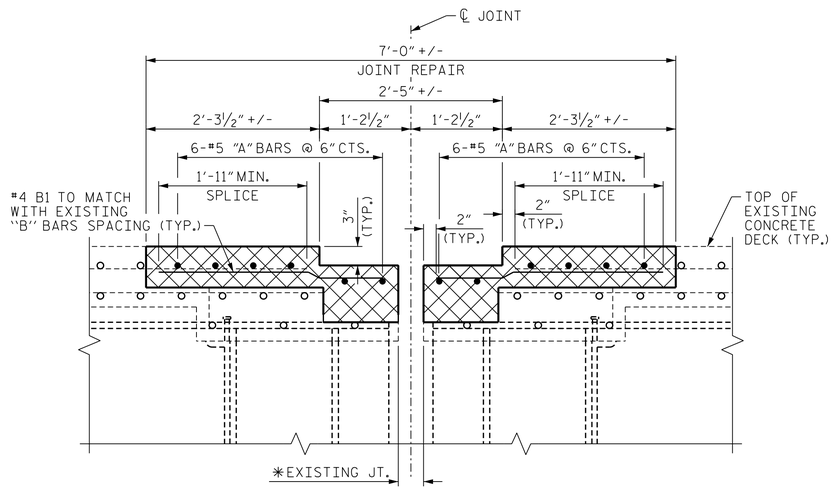
PROPOSED JOINT REPAIR

✳✳TO BE VERIFIED BY THE MANUFACTURER



PROPOSED CONCRETE AND REBAR

AT MODULAR JOINT BOXES



PROPOSED CONCRETE AND REBAR

BETWEEN MODULAR JOINT BOXES

SECTION B-B

NOTES:

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

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

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

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

FOR ADHESIVE ANCHORED BOLTS OR DOWELS, SEE ARTICLE 420-13 OF THE STANDARD SPECIFICATIONS. PERFORM LEVEL 1 FIELD TESTING AT A TEST LOAD OF 10,000 LBS.

ADHESIVE ANCHOR BOLTS AND HARDWARE FOR THE PROPOSED EXPANSION JOINT SHALL BE GALVANIZED PER ASTM A153 AND INSTALLED PER THE MANUFACTURER'S RECOMMENDATIONS

REINFORCING STEEL MAY BE SHIFTED SLIGHTLY.

FOR MODULAR JOINT REPAIR, SEE SPECIAL PROVISIONS.

JOINT REPAIR QUANTITY TABLE		
	ESTIMATED	ACTUAL
MODULAR JOINT REPAIR	1,043 SF	

EXISTING CONCRETE TO BE REMOVED

NEW CONCRETE FOR DECK REPAIR

PROJECT NO. 15BPR.128.3

BUNCOMBE COUNTY

BRIDGE NO. 100076

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

MODULAR EXPANSION JOINT DETAILS AT BENTS 2 & 6

NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON
1/2/2025

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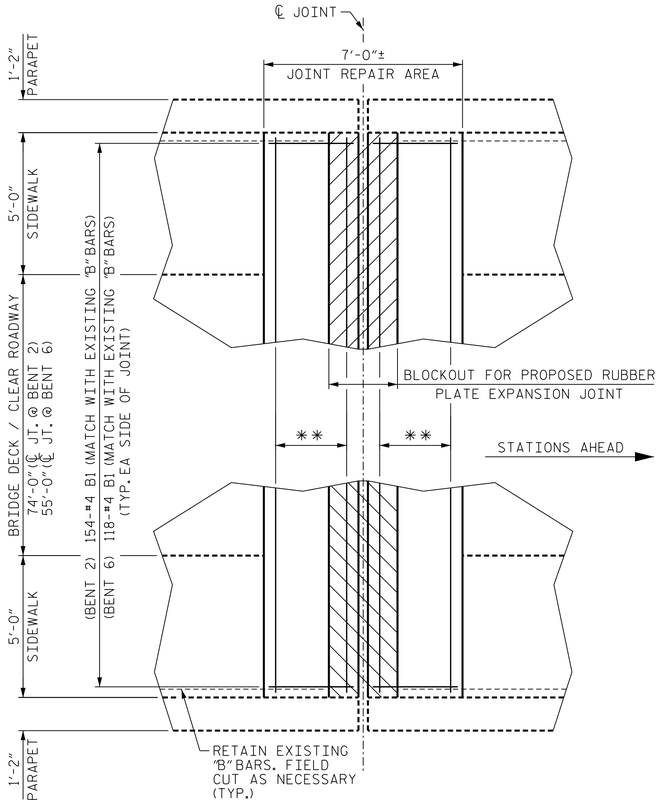
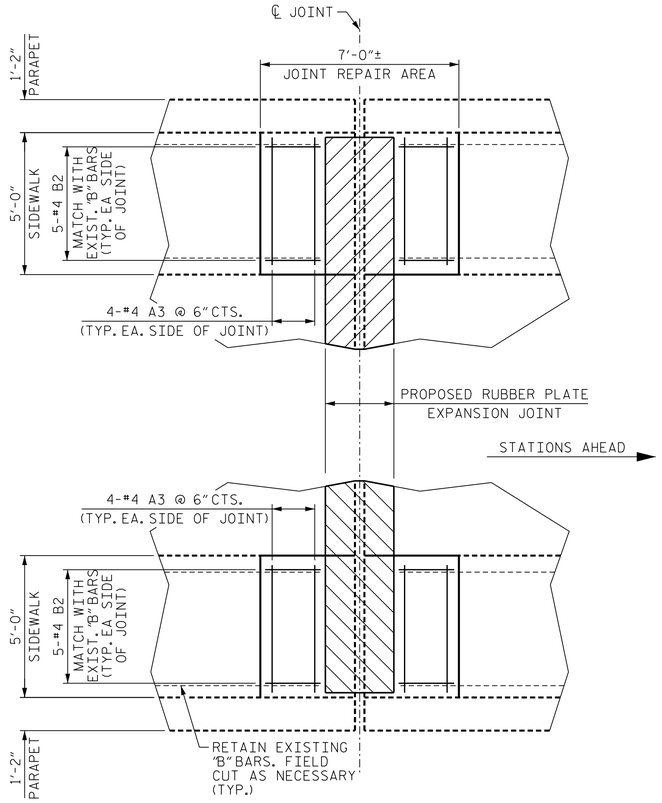
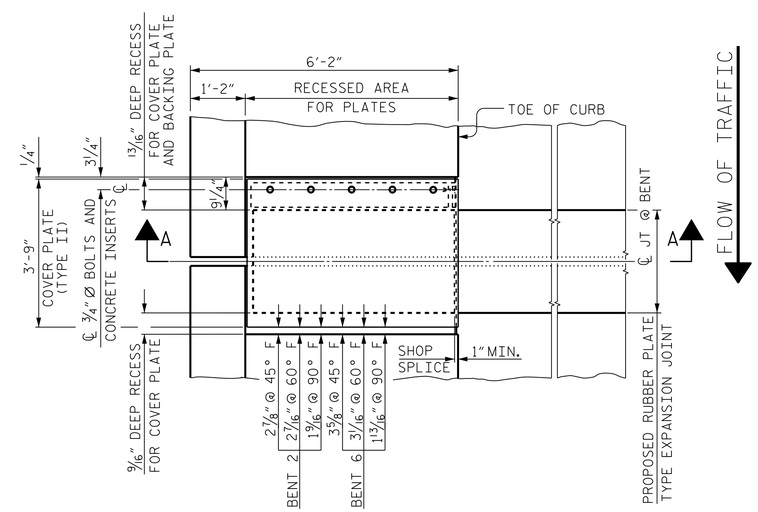


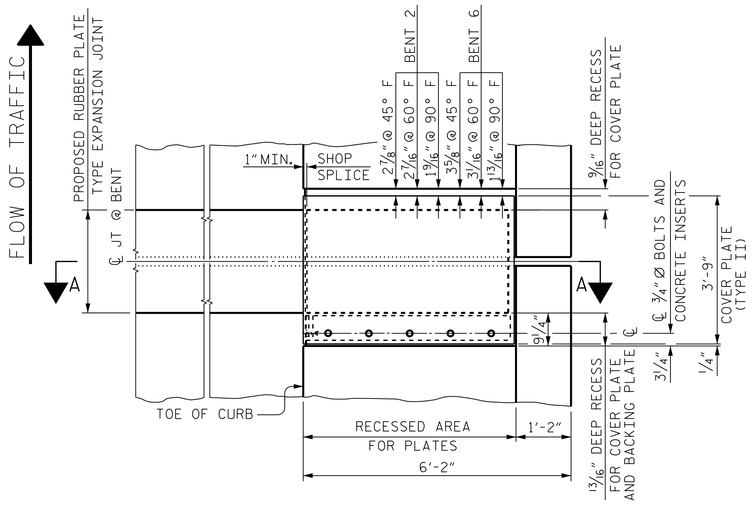
DECK REINFORCING PLAN AT JOINT

** (BENT 2) 6-#5 A1 (4 BAR RUN)
(BENT 6) 6-#5 A2 (3 BAR RUN)
(SEE NOTES)

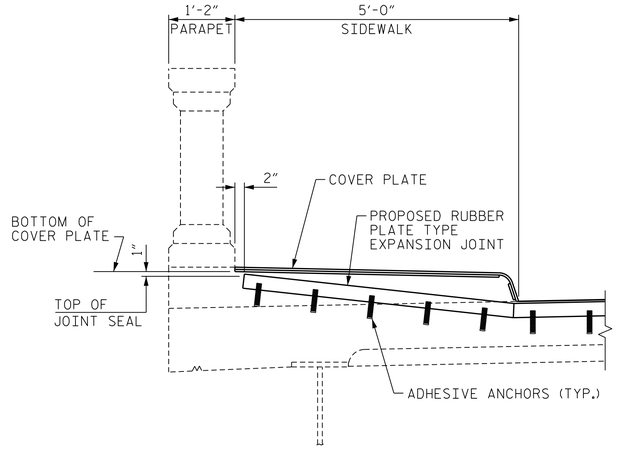


SIDEWALK REINFORCING PLAN AT JOINT





PLAN OF RUBBER PLATE TYPE EXPANSION JOINT



SECTION A-A

BILL OF MATERIAL

AT BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✱A1	48	#5	STR	22-9"	1139
✱A3	16	#4	STR	4'-6"	48
✱B1	308	#4	1	3'-0"	617
✱B2	20	#4	STR	1'-11"	26

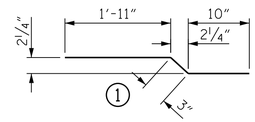
✱EPOXY COATED REINFORCING STEEL	1830	LBS
CONCRETE FOR DECK REPAIR	367	CF
JOINT REPAIR	588	SF

AT BENT 6

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✱A2	36	#5	STR	23'-2"	870
✱A3	16	#4	STR	4'-6"	48
✱B1	236	#4	1	3'-0"	473
✱B2	20	#4	STR	1'-11"	26

✱EPOXY COATED REINFORCING STEEL	1417	LBS
CONCRETE FOR DECK REPAIR	284	CF
JOINT REPAIR	455	SF

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

NOTES:

THE CONTRACTOR SHALL SUBMIT REINFORCING PLANS FOR APPROVAL BEFORE FABRICATION OF REBARS. COORDINATE WITH TRAFFIC MANAGEMENT PLANS FOR PLACEMENT OF TRANSVERSE BARS WITH RESPECT TO PHASING AND SPLICING OF BARS.

TOP LONGITUNDINAL BARS IN DECK AND SIDEWALK SHALL BE RETAINED. FIELD CUT AS NECESSARY FOR PLACEMENT OF THE PROPOSED RUBBER PLATE JOINT SEAL (2'-5"+/-). ALL EXPOSED ENDS OF CUT BARS SHALL BE COATED WITH EPOXY PRIOR TO THE NEW JOINT MATERIAL INSTALLATION.

REINFORCING STEEL MAY BE SHIFTED SLIGHTLY.

SPLICE LENGTHS

BAR SIZE	EPOXY COATED
#4	1'-11"
#5	2'-5"

PROJECT NO. 15BPR.128.3
BUNCOMBE COUNTY
BRIDGE NO. 100076
SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

MODULAR EXPANSION JOINT DETAILS AT BENTS 2 & 6

Digitally signed by BYRON E. ATKINSON
NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON
1/2/2025

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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-11
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2			4			48

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CHECKED BY :	B.E. ATKINSON	DATE : 07/2022
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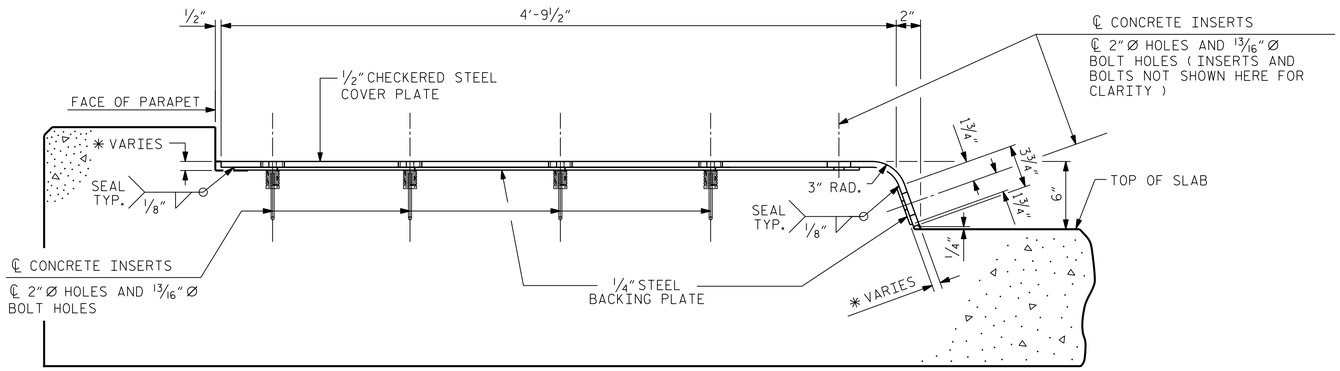


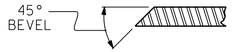
END VIEW

(NORMAL TO SIDEWALK)

* CONCRETE RECESS DIMENSIONS:

13/16" FOR THE SIDE OF THE JOINT HAVING THE 1/2" COVER PLATE WITH A 1/4" BACKING PLATE.

9/16" FOR THE SIDE OF THE JOINT HAVING ONLY THE 1/2" COVER PLATE.



SECTION B-B

NOTES:

FOR MODULAR JOINT REPAIR, SEE SPECIAL PROVISIONS.

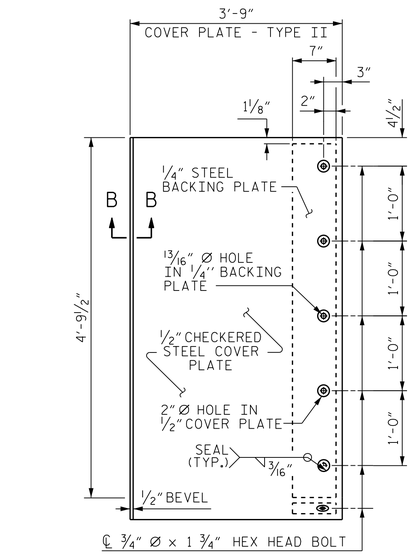
THE STEEL PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 OR APPROVED EQUAL AND BE PAINTED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. AT THE CONTRACTOR'S OPTION, THE PLATES MAY BE METALLIZED AFTER FABRICATION. SEE SPECIAL PROVISIONS FOR THERMAL SPRAYED COATINGS (METALLIZATION).

THE 3/4"Ø HEX HEAD BOLTS SHALL CONFORM TO ASTM F593 ALLOY 304 STAINLESS STEEL.

THE 3/4" CONCRETE INSERTS SHALL BE CLOSED-END FERRULES WITH LOOPED WIRE STRUTS ATTACHED TO THEM. THE INSERTS SHALL CONFORM TO AASHTO M169, GRADE 12L14 AND SHALL HAVE A TENSILE WORKING LOAD CAPACITY OF 3000 LBS.

NO SEPARATE PAYMENT WILL BE MADE FOR FURNISHING AND INSTALLING THE COVER PLATE. THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE FOR "MODULAR JOINT REPAIR".

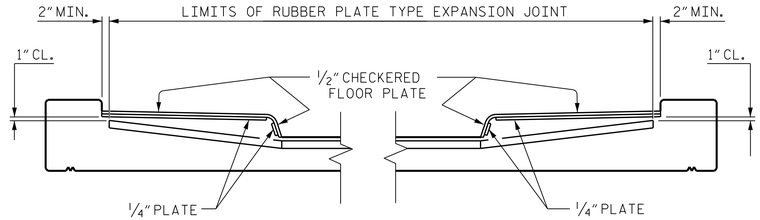
	SKEW ANGLE	TOTAL MOVEMENT ALONG ℄ ROADWAY
BENT 2	90°-00'-00"	2 13/16"
BENT 6	90°-00'-00"	4 1/16"



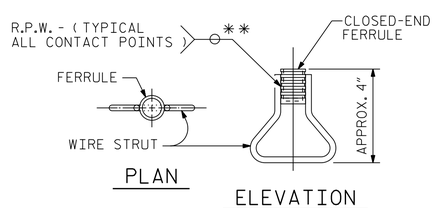
TYPE II - PLAN VIEW

(AT BENT 2 AND BENT 6)

COVER PLATE DETAILS



SKETCH SHOWING LIMITS OF RUBBER PLATE TYPE EXPANSION JOINT-SIDEWALK



CONCRETE INSERT

** EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.

PROJECT NO. 15BPR.128.3

BUNCOMBE COUNTY

BRIDGE NO. 100076

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

MODULAR EXPANSION JOINT DETAILS AT BENTS 2 AND 6

NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON
1/2/2025

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1/2/2025
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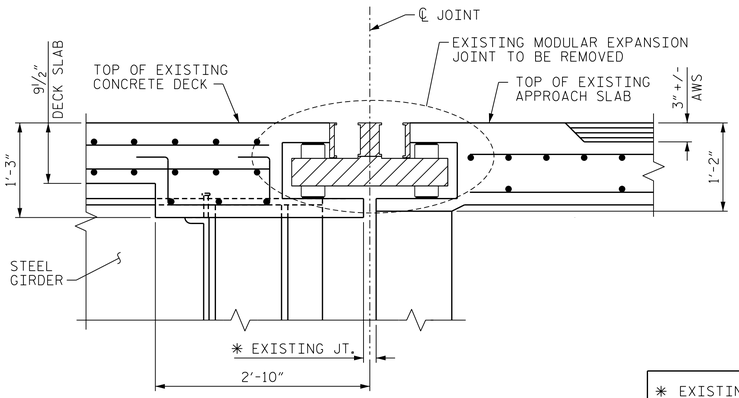
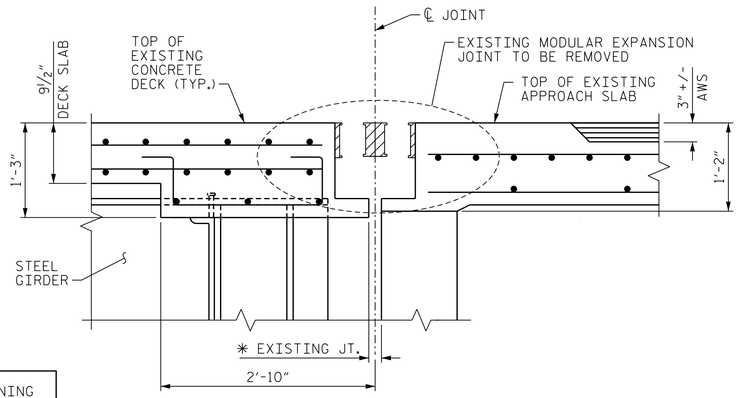
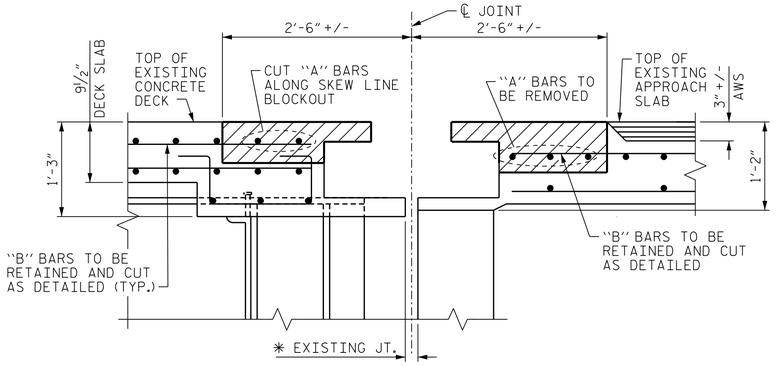


EXISTING MODULAR JOINT

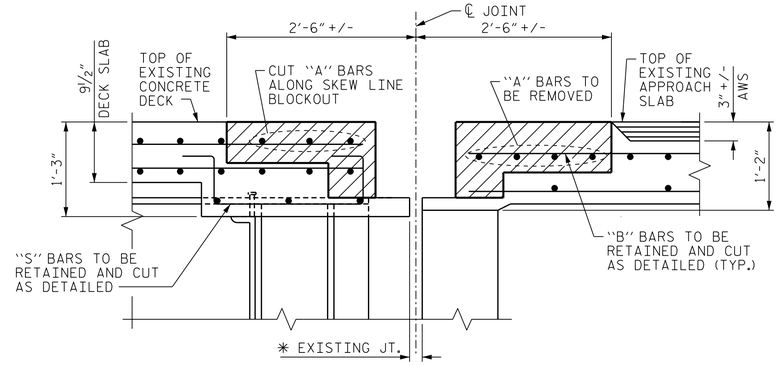


EXISTING MODULAR JOINT

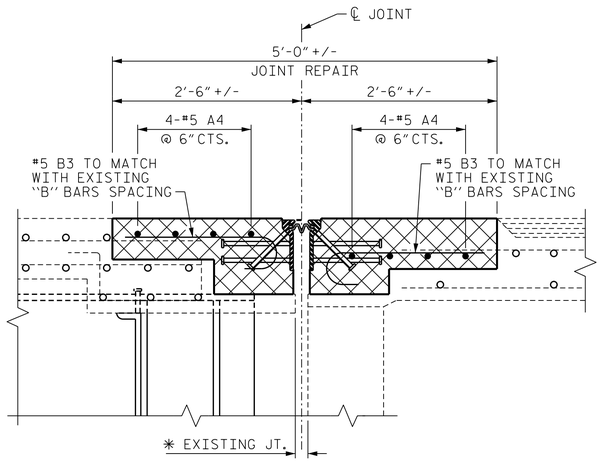
✱ EXISTING PLAN OPENING
END BENT 2 - 2"+/- @ 60° F



EXISTING JOINT DEMOLITION

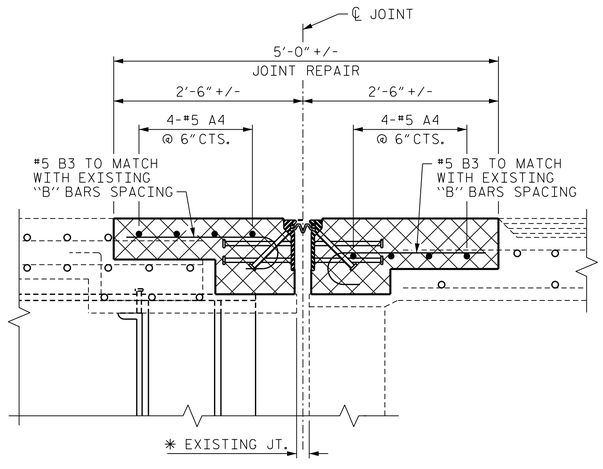


EXISTING JOINT DEMOLITION



PROPOSED CONCRETE AND REBAR

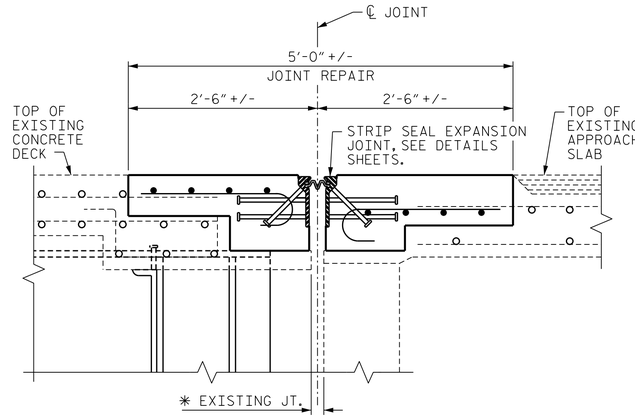
AT MODULAR JOINT BOXES



PROPOSED CONCRETE AND REBAR

BETWEEN MODULAR JOINT BOXES

SECTION B-B



PROPOSED JOINT REPAIR

NOTES:

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

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

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

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

REINFORCING STEEL MAY BE SHIFTED SLIGHTLY.

FOR STRIP SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.

FOR CONCRETE WORK FOR JOINT REPLACEMENT, SEE SPECIAL PROVISIONS.

JOINT REPAIR QUANTITY TABLE		
	ESTIMATED	ACTUAL
STRIP SEALS FOR PRESERVATION	99.7 LF	
CONCRETE WORK FOR JOINT REPLACEMENT	499 SF	

EXISTING CONCRETE TO BE REMOVED

NEW CONCRETE FOR DECK REPAIR

PROJECT NO. 15BPR.128.3

BUNCOMBE COUNTY

BRIDGE NO. 100076

SHEET 1 OF 4

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NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON
1/2/2025

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STRIP SEAL EXPANSION JOINT DETAILS AT END BENT 2

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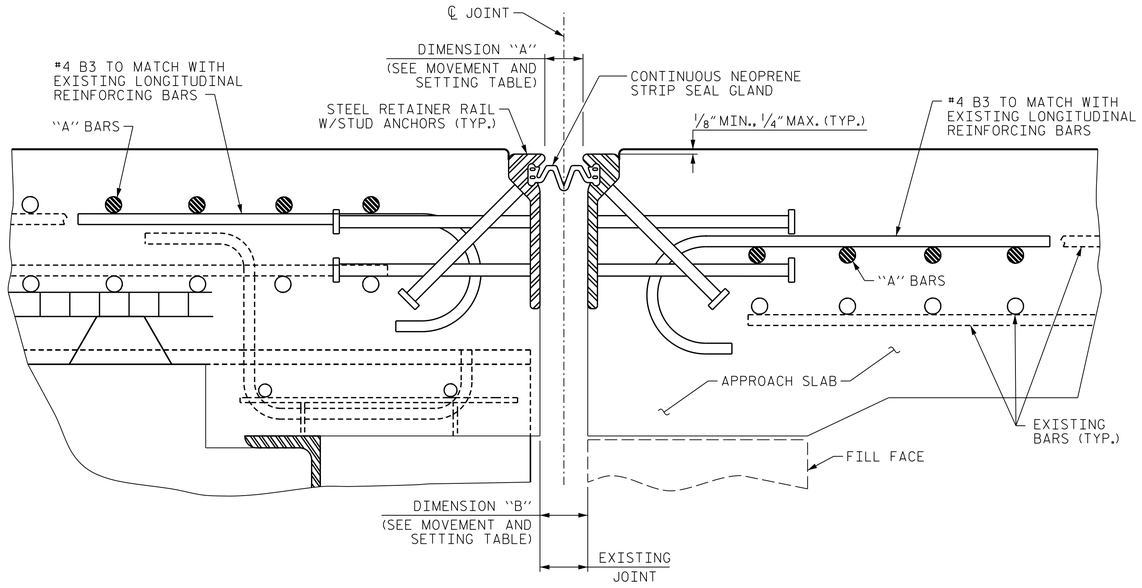


STRIP SEAL EXPANSION JOINT DETAILS

(AT END BENT 2)

JOINT INSTALLATION PROCEDURE:

1. INSTALL THE STRIP SEAL EXPANSION JOINT AS RECOMMENDED BY THE MANUFACTURER.
2. A MANUFACTURER'S REPRESENTATIVE SHALL BE PRESENT DURING INSTALLATION OF THE JOINT.
3. PLACE STEEL RETAINER RAILS IN JOINT OPENING. PROPERLY ALIGN THE RAILS BOTH HORIZONTALLY AND VERTICALLY. DO NOT WELD SUPPORT SYSTEM TO THE METALLIZED SURFACES OF THE STEEL RETAINER RAILS.
4. CONFLICTING REINFORCING STEEL MAY BE SHIFTED SLIGHTLY WHEN NECESSARY.
5. DECK SLAB CONCRETE PLACEMENT OPERATIONS SHALL COMMENCE PER THE POURING SEQUENCE AFTER FINAL JOINT ALIGNMENT IS SET.
6. PROTECT THE STEEL RETAINER RAILS FROM BEING FOULED BY CONCRETE SPILLOVER DURING THE DECK POUR.
7. LOOSEN THE STEEL RETAINER RAIL SUPPORT SYSTEM TO ALLOW MOVEMENT WHILE CONCRETE CURES.
8. RE-LEVEL AND RE-ALIGN STEEL RETAINER RAIL AS REQUIRED ON OPPOSITE SIDE OF JOINT.
9. PLACE APPROACH/DECK SLAB CONCRETE.
10. ONCE THE CONCRETE HAS HARDENED SUFFICIENTLY ON BOTH SIDES OF JOINT, STEEL RETAINER RAILS SHALL BE CLEANED THOROUGHLY AND SEAL CHANNELS SHALL BE INSPECTED TO ASCERTAIN THE ABSENCE OF CONCRETE AND DEBRIS.
11. COAT THE STRIP SEAL LUGS WITH LUBRICANT-ADHESIVE AND INSTALL THE NEOPRENE STRIP SEAL GLAND AS RECOMMENDED BY THE STRIP SEAL EXPANSION JOINT MANUFACTURER.

GENERAL NOTES

FOR STRIP SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.

STEEL RETAINER RAILS AND COVER PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 OR GRADE 50 STEEL. ALL STUD ANCHORS SHALL CONFORM TO AASHTO M169, GRADES 1010 THRU 1020 OR APPROVED EQUAL. ALL CONCRETE INSERTS SHALL BE CLOSED END AND SHALL CONFORM TO AASHTO M169, GRADE 12L14. TENSILE CAPACITY SHALL BE 3000 LBS. MIN.

ONLY STEEL RETAINER RAILS OF ONE-PIECE CONSTRUCTION ARE PERMITTED. STEEL RETAINER RAILS CONSISTING OF TWO OR MORE COMPONENTS WELDED TOGETHER TO OBTAIN THEIR FINAL CROSS-SECTIONAL SHAPE ARE NOT PERMITTED.

STUD ANCHORS SHALL BE SHOP WELDED AND SHALL BE ELECTRIC ARC END WELDED WITH COMPLETE FUSION.

SURFACES COMING IN CONTACT WITH STRIP SEAL GLAND SHALL BE GROUND SMOOTH PRIOR TO METALLIZING.

UPON COMPLETION OF SHOP FABRICATION, THE STEEL RETAINER RAILS SHALL BE METALLIZED AS SHOWN IN THE "METALLIZING DETAIL". SEE SPECIAL PROVISIONS FOR THERMAL SPRAYED COATINGS (METALLIZATION).

INSTALLED STEEL RETAINER RAILS SHALL FOLLOW THE ROADWAY SLOPE.

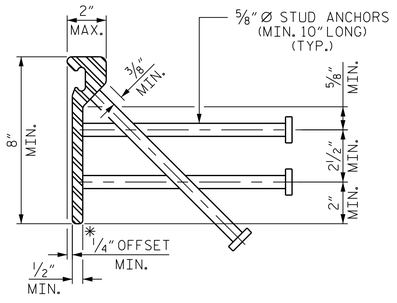
FIELD SPLICES OF THE RETAINER RAILS SHALL BE KEPT TO A MINIMUM. CONTRACTOR SHALL FURNISH DETAILED PLANS SHOWING PROPOSED SPLICE LOCATIONS FOR APPROVAL. FINISHED WELDS SHALL BE REPAIRED IN ACCORDANCE WITH THE SPECIAL PROVISION FOR THERMAL SPRAYED COATINGS (METALLIZATION).

NEOPRENE STRIP SEAL GLAND SHALL BE CONTINUOUS THROUGHOUT THE JOINT AND SHALL BE COMPATIBLE WITH THE STEEL RETAINER RAILS. FIELD SPLICING THE GLAND IS NOT PERMITTED.

NO ALTERNATE JOINT DETAILS SHALL BE PERMITTED IN LIEU OF THOSE SHOWN ON THESE PLANS.

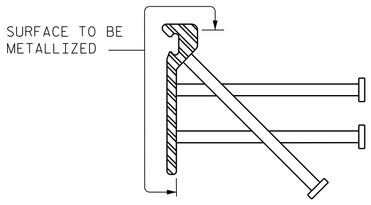
THE COVER PLATES SHALL BE GALVANIZED OR METALLIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

THE CONTRACTOR MAY, AT HIS OPTION, USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF CONCRETE INSERTS FOR COVER PLATES. THE YIELD LOAD OF THE 3/4" Ø BOLT IS 10 KIPS. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

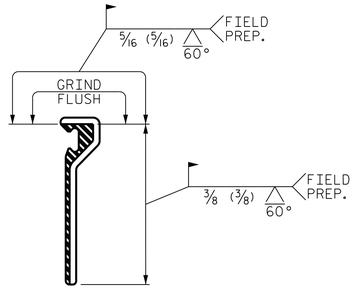


TYPICAL SECTION
STEEL RETAINER RAIL

* DIMENSION "B" BASED ON STEEL RETAINER RAIL TOP OFFSET TO FACE OF RAIL OF 1 #4" MINIMUM. IF ACTUAL OFFSET IS GREATER ADJUST DIMENSION "B" AS REQUIRED.



METALLIZING DETAIL



STEEL RETAINER RAIL
(FIELD SPLICE DETAIL)

MOVEMENT AND SETTING AT JOINT								
LOCATION	SKEW ANGLE	TOTAL MOVEMENT (ALONG ℄ RDWY)	DIMENSION "A"			DIMENSION "B"		
			PERPENDICULAR JOINT OPENING AT 45° F	PERPENDICULAR JOINT OPENING AT 60° F	PERPENDICULAR JOINT OPENING AT 90° F	PERPENDICULAR JOINT OPENING AT 45° F	PERPENDICULAR JOINT OPENING AT 60° F	PERPENDICULAR JOINT OPENING AT 90° F
END BENT 2	143°-00'-00"	2 1/8"	1 11/16"	1 1/2"	1 1/8"	2 3/16"	* 2"	1 5/8"

* FROM EXISTING PLANS

PROJECT NO. 15BPR.128.3
BUNCOMBE COUNTY
BRIDGE NO. 100076

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STRIP SEAL EXPANSION JOINT DETAILS AT END BENT 2

NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON
1/2/2025

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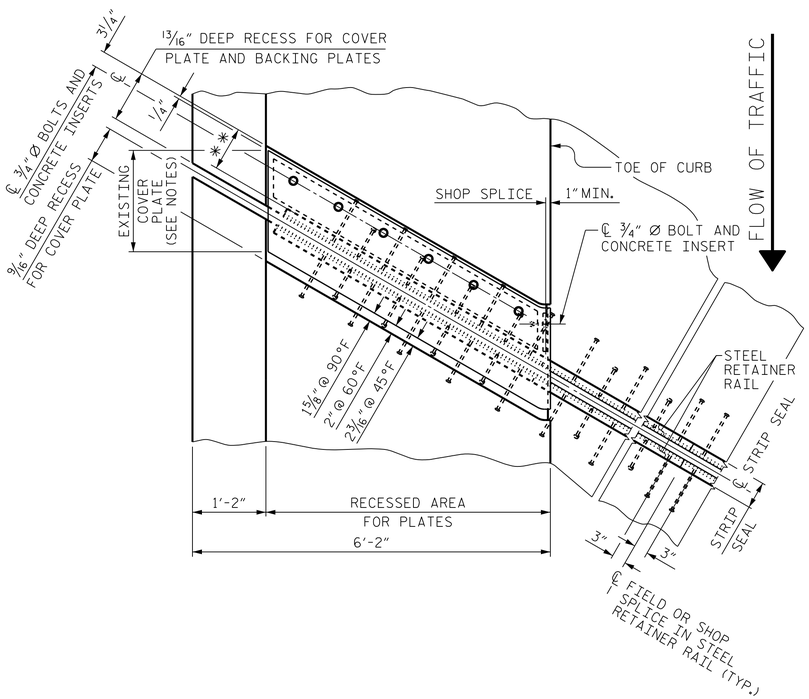
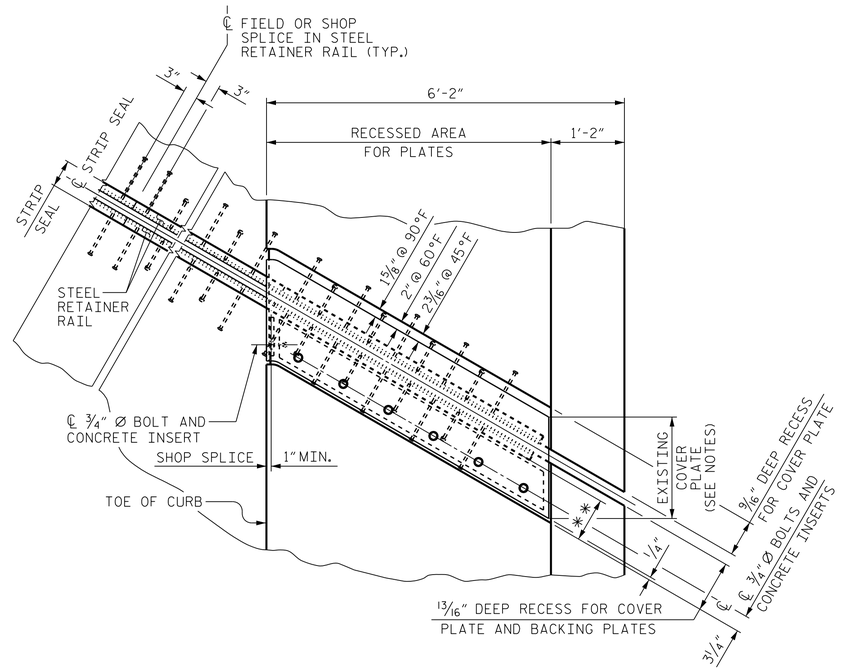




NOTES:

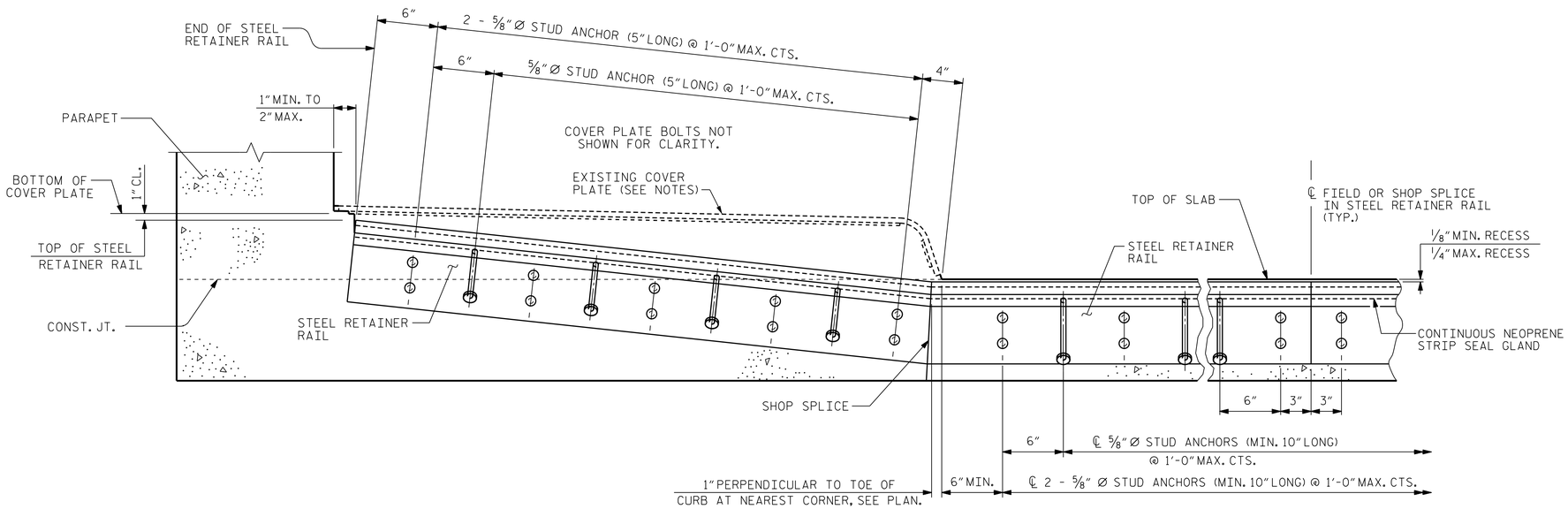
CONTRACTOR SHALL CLEAN AND PAINT EXISTING SIDEWALK COVER PLATE TO INSTALL OVER NEW STRIP SEAL JOINT INSTALLATION.

CONTRACTOR SHALL VERIFY LAYOUT AND CONSTRUCTION OF NEW SIDEWALK SECTION FOR PROPER FIT UP OF COVER PLATE.

FOR DETAILS AND NOTES OF CONCRETE INSERT REQUIRED FOR COVER PLATE INSTALLATION, SEE "MODULAR EXPANSION JOINT DETAILS AT BENTS 2 AND 6, SHEET 3 OF 3".

PLAN OF STRIP SEAL EXPANSION JOINT

** 9¼" MINIMUM (SEE NOTES)



PLAN OF STRIP SEAL EXPANSION JOINT

PROJECT NO. 15BPR.128.3

BUNCOMBE COUNTY

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SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
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STRIP SEAL EXPANSION JOINT DETAILS AT END BENT 2

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1/2/2025

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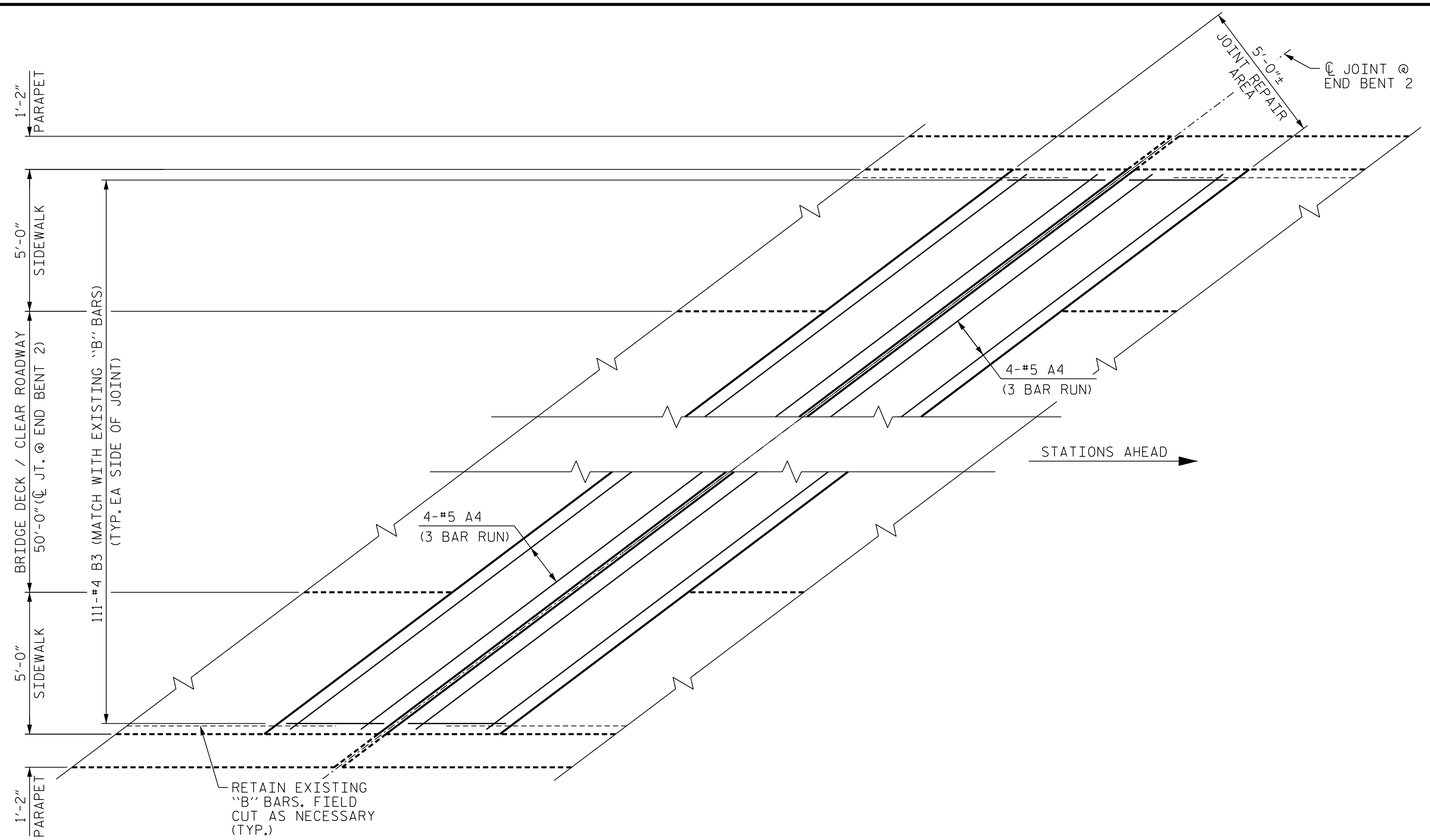
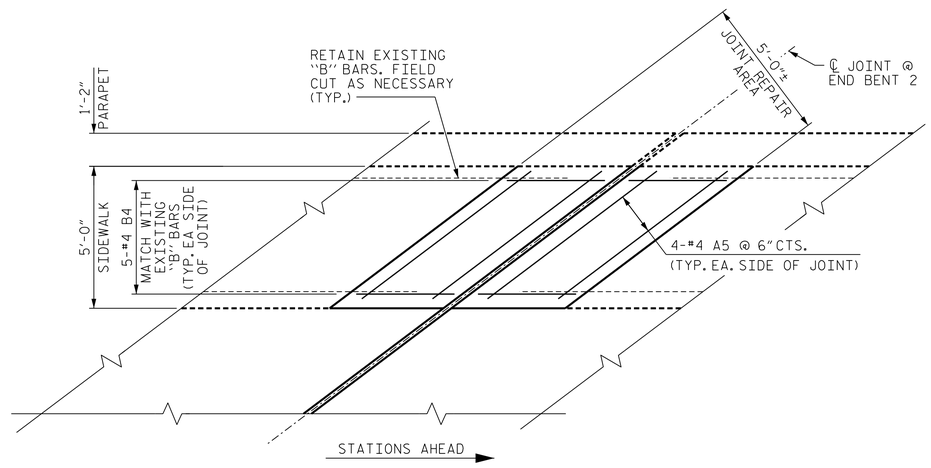


DECK REINFORCING PLAN AT JOINT



SIDEWALK REINFORCING PLAN AT JOINT

(TYP. EA. SIDE OF BRIDGE)

NOTES:

THE CONTRACTOR SHALL SUBMIT REINFORCING PLANS FOR APPROVAL BEFORE FABRICATION OF REBARS. COORDINATE WITH TRAFFIC MANAGEMENT PLANS FOR PLACEMENT OF TRANSVERSE BARS WITH RESPECT TO PHASING AND SPLICING OF BARS.

TOP LONGITUNDINAL BARS IN DECK AND SIDEWALK SHALL BE RETAINED. FIELD CUT AS NECESSARY FOR PLACEMENT OF THE PROPOSED STRIP SEAL EXPANSION JOINT. ALL EXPOSED ENDS OF CUT BARS SHALL BE COATED WITH EPOXY PRIOR TO THE NEW JOINT MATERIAL INSTALLATION.

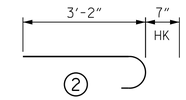
REINFORCING STEEL MAY BE SHIFTED SLIGHTLY.

BILL OF MATERIAL
AT END BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳A4	24	#5	STR	34'-8"	868
✳A5	16	#4	STR	7'-5"	79
✳B3	222	#4	2	3'-9"	556
✳B4	20	#4	STR	3'-5"	46

✳EPOXY COATED REINFORCING STEEL	1549	LBS
CONCRETE FOR DECK REPAIR	407	CF
JOINT REPAIR	499	SF

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

SPLICE LENGTHS

BAR SIZE	EPOXY COATED
#4	1'-11"
#5	2'-5"

PROJECT NO. 15BPR.128.3

BUNCOMBE COUNTY

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SHEET 4 OF 4

STATE OF NORTH CAROLINA
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STRIP SEAL EXPANSION JOINT DETAILS AT END BENT 2

NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON

1/2/2025

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CHECKED BY : B.E. ATKINSON DATE : 07/2022
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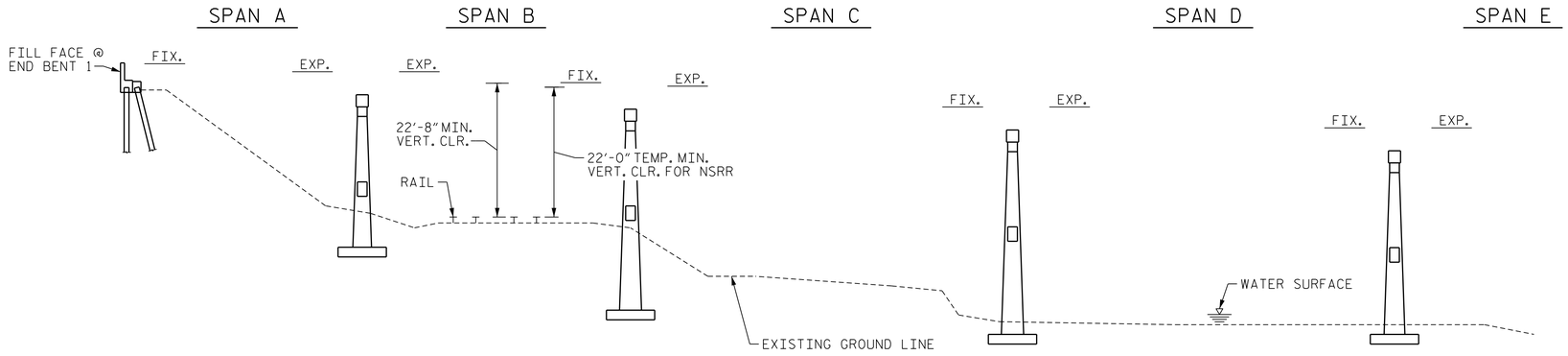
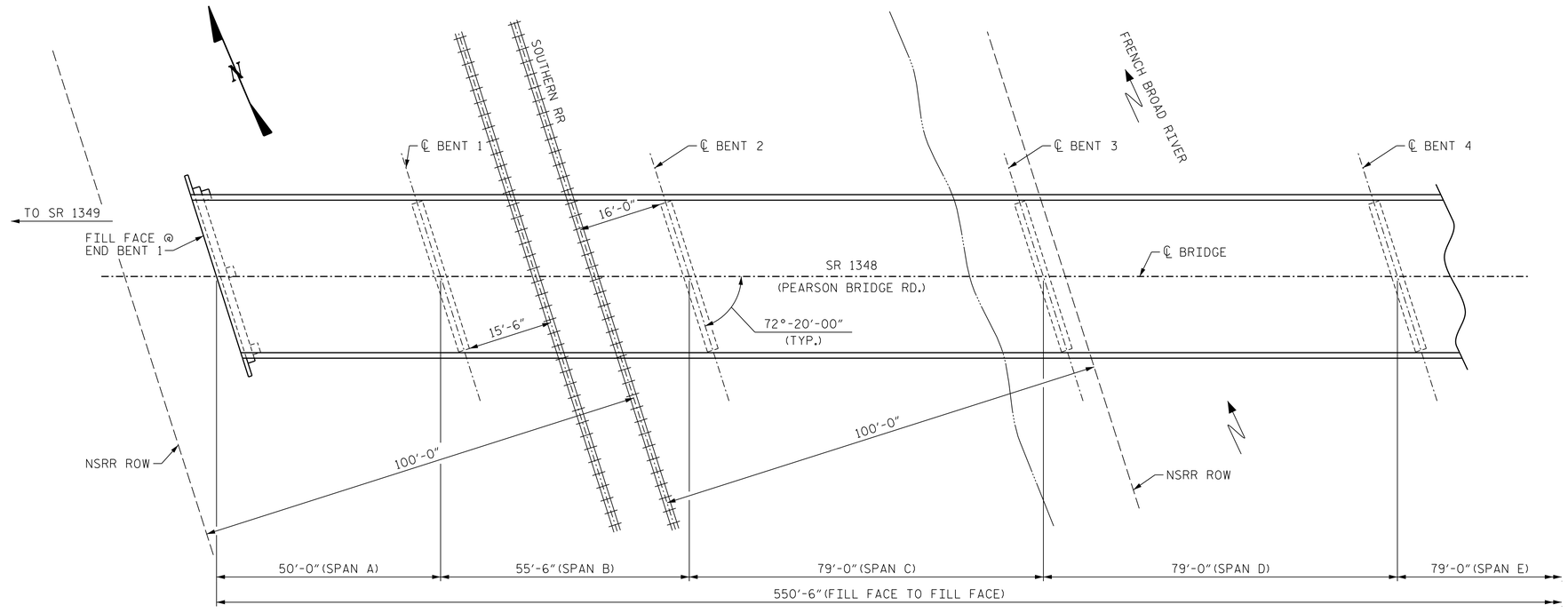


SECTION ALONG ℄ BRIDGE



PLAN

(COLUMNS AND FOOTINGS NOT SHOWN FOR CLARITY)

NOTES:

PROFILE INFORMATION IS TAKEN FROM THE ORIGINAL PLANS AND THE ROUTINE INSPECTION REPORT DATED 02/16/2022.

BRIDGE ORIENTATION CONFORMS TO ROUTINE INSPECTION REPORT.

SCOPE OF WORK:

- PARTIALLY REMOVE BRIDGE DECK CONCRETE USING SCARIFICATION AND HYDRO-DEMOLITION METHODS.
- PERFORM CLASS II SURFACE PREPARATION.
- OVERLAY PREPARED BRIDGE DECK WITH LATEX MODIFIED CONCRETE - VERY EARLY STRENGTH (LMC-VES).
- RECONSTRUCT BRIDGE DECK JOINTS AND INSTALL JOINT SEALS.
- GROOVE LMC-VES BRIDGE DECK.
- SUBSTRUCTURE REPAIRS USING EPOXY RESIN INJECTION AND SHOTCRETE.
- EPOXY COATING OF TOP OF CAPS.
- STRUCTURAL STEEL REPAIRS.
- CLEAN AND PAINT STEEL BEAMS.
- CLEAN AND PAINT BEARINGS WITH HRCSA.
- MILL AND REPAVE APPROACHES.

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

RESIDENT ENGINEER DATE

PROJECT NO. 15BPR.128.3

BUNCOMBE COUNTY

BRIDGE NO. 100278

SHEET 1 OF 3

1/2/2025

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON SR 1348
OVER SOUTHERN RAILROAD
AND FRENCH BROAD RIVER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-1
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2			4			48

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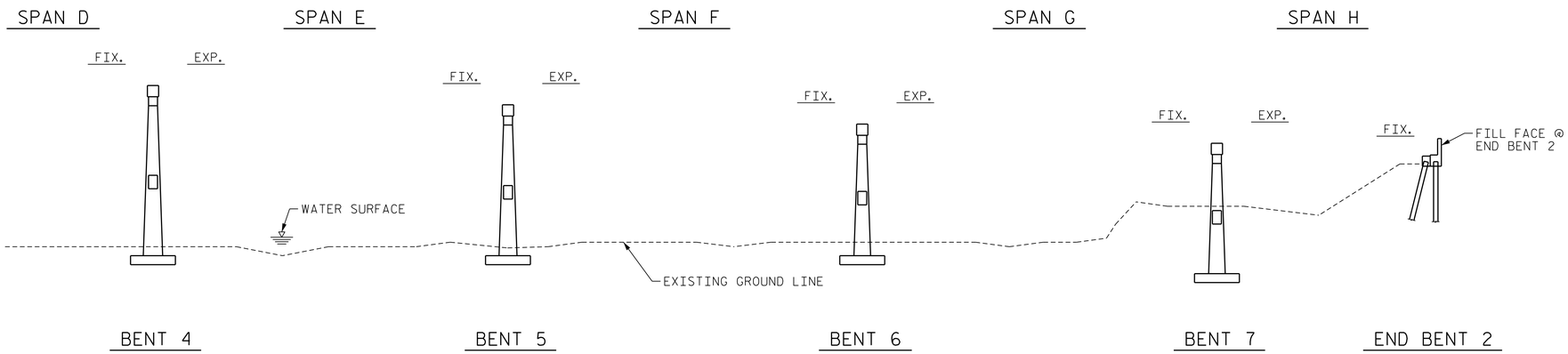
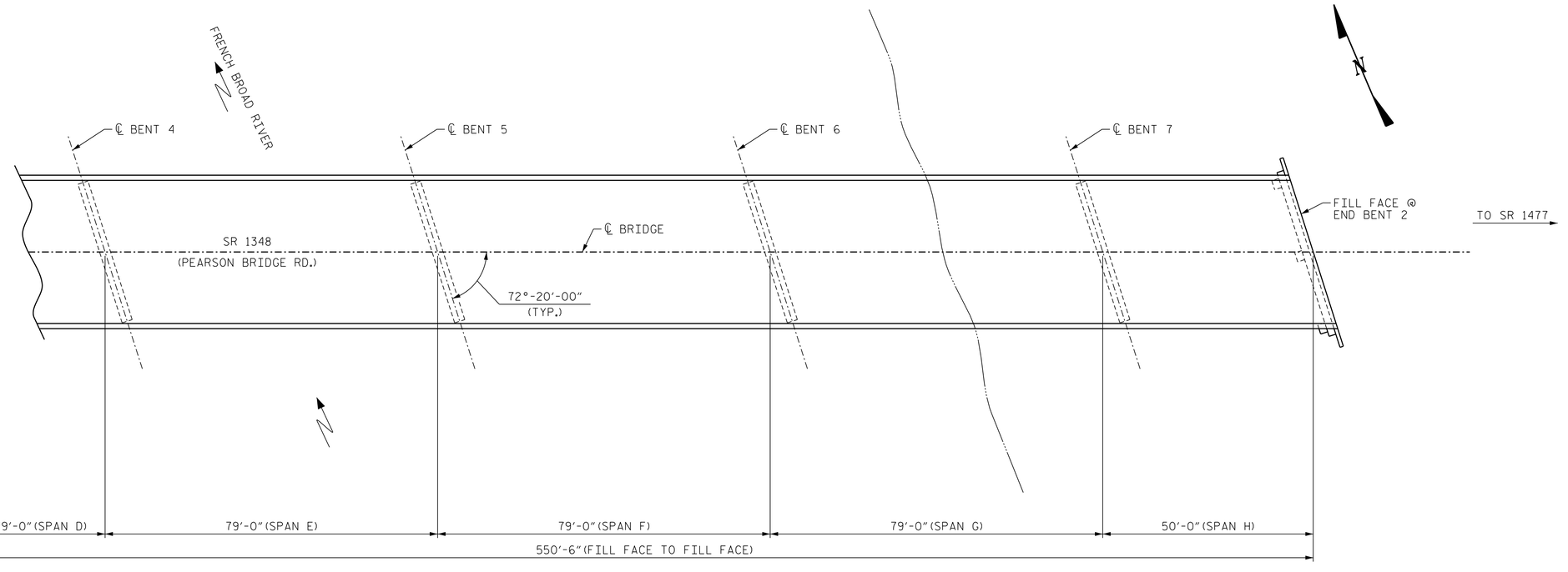


SECTION ALONG ℄ BRIDGE



PLAN

(COLUMNS AND FOOTINGS NOT SHOWN FOR CLARITY)

PROJECT NO. 15BPR.128.3

BUNCOMBE COUNTY

BRIDGE NO. 100278

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON SR 1348
OVER SOUTHERN RAILROAD
AND FRENCH BROAD RIVER

NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON
1/2/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-2
1			3			TOTAL SHEETS
2			4			48

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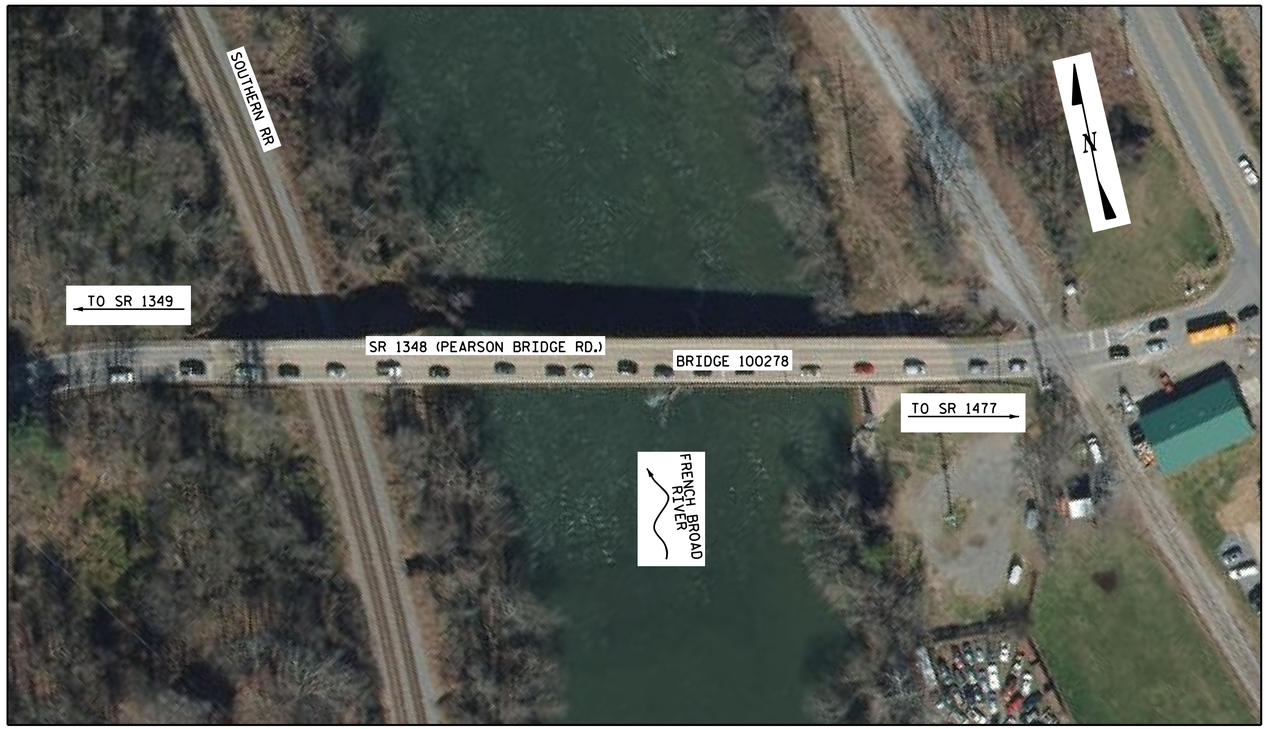

LOCATION SKETCH

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

BRIDGE COORDINATES	
LATITUDE	LONGITUDE
35°-36'-34.23"	82°-34'-42.8"

NOTES:

EXISTING DIMENSIONS AND BRIDGE CONDITION ARE FROM THE BEST INFORMATION AVAILABLE. THE CONTRACTOR SHALL FIELD VERIFY THE INFORMATION SHOWN ON THE PLANS AND NOTIFY THE ENGINEER IF ACTUAL DIMENSIONS AND CONDITIONS DIFFER.

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

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

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

EXISTING JOINTS AND DECK DRAINS SHALL BE SEALED PRIOR TO BEGINNING SURFACE PREPARATION OF BRIDGE DECK.

FOR CLASS II SURFACE PREPARATION, SCARIFYING BRIDGE DECK AND HYDRO-DEMOLITION OF BRIDGE DECK, SEE LMC OVERLAY SURFACE PREPARATION SPECIAL PROVISIONS.

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

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

FOR BRIDGE JOINT DEMOLITION, SEE SPECIAL PROVISIONS.

FOR LATEX MODIFIED CONCRETE OVERLAY-VERY EARLY STRENGTH, SEE SPECIAL PROVISIONS.

FOR FOAM JOINT SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.

FOR ELASTOMERIC CONCRETE FOR PRESERVATION, SEE SPECIAL PROVISIONS.

FOR VOLUMETRIC MIXER, SEE SPECIAL PROVISIONS.

FOR CONCRETE FOR DECK REPAIR, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

FOR EPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.

WORK ON BRIDGE SHALL BE PREFORMED SO AS NOT TO ALLOW DEBRIS TO FALL BELOW. THE CONTRACTOR SHALL SUBMIT PLANS FOR CONSTRUCTION IN ACCORDANCE TO THE PROJECT SPECIAL PROVISION.

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

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

FOR POLLUTION CONTROL, SEE SPECIAL PROVISIONS.

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

FOR BEAM REPAIR PLATING, SEE SPECIAL PROVISIONS.

FOR CLEANING AND REPAINTING OF BRIDGE, AND PAINTING CONTAINMENT FOR BRIDGE, SEE "PAINTING EXISTING STRUCTURE" SPECIAL PROVISION.

PROJECT NO. 15BPR.128.3

BUNCOMBE COUNTY

BRIDGE NO. 100278

SHEET 3 OF 3

NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON

1/2/2025

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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON SR 1348
OVER SOUTHERN RAILROAD
AND FRENCH BROAD RIVER

REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			48

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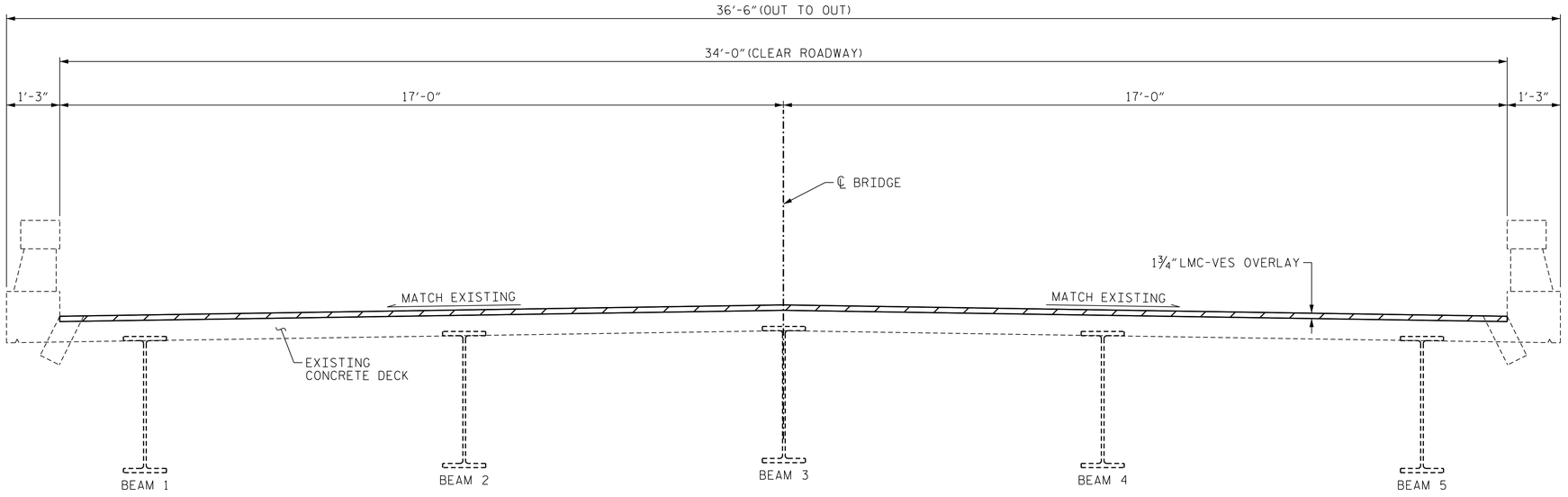
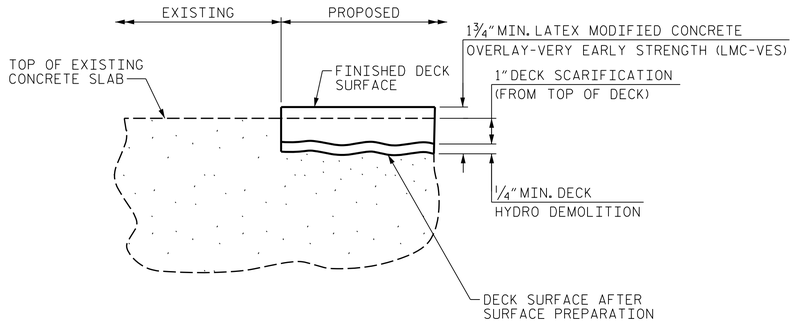
NOTES:

WHEN PREPARING THE SURFACE FOR LMC OVERLAY-VES ADJACENT TO A PREVIOUSLY PLACED LMC-VES STAGE, THE PREVIOUSLY PLACED LMC-VES SHALL BE REMOVED FOR A DISTANCE OF 4-INCHES FROM THE LMC-VES EDGE. THE SURFACE OF THE NEW STAGE AREA, ALONG WITH THE 4 INCH OVERLAY AREA, SHALL BE PREPARED AS PER THE LMC OVERLAY SURFACE PREPARATION SPECIAL PROVISIONS. NEW LMC-VES SHALL BE PLACED IN THE 4-INCH OVERLAP, AS PART OF NEW LMC-VES STAGE PLACEMENT.

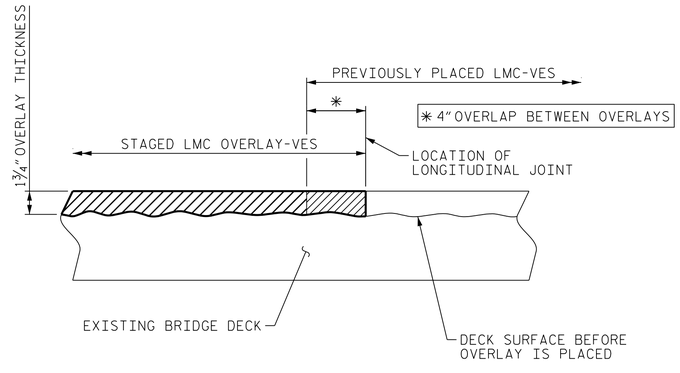
SEE TRAFFIC MANAGEMENT PLANS FOR LANE WIDTHS, SEQUENCING, AND OTHER TRAFFIC CONTROL MEASURES FOR STAGING OF OVERLAY SURFACE PREPARATION AND LMC-VES PLACEMENT.



TYPICAL SECTION



DETAIL FOR LMC-VES OVERLAY



SECTION THRU DECK

STAGED LMC-VES OVERLAY JOINT

PROJECT NO. 15BPR.128.3

BUNCOMBE COUNTY

BRIDGE NO. 100278

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION & LATEX MODIFIED CONCRETE - VES DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON
1/2/2025

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MI ENGINEERING
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(919) 851-6606
FIRM PE NUMBER : P-0671

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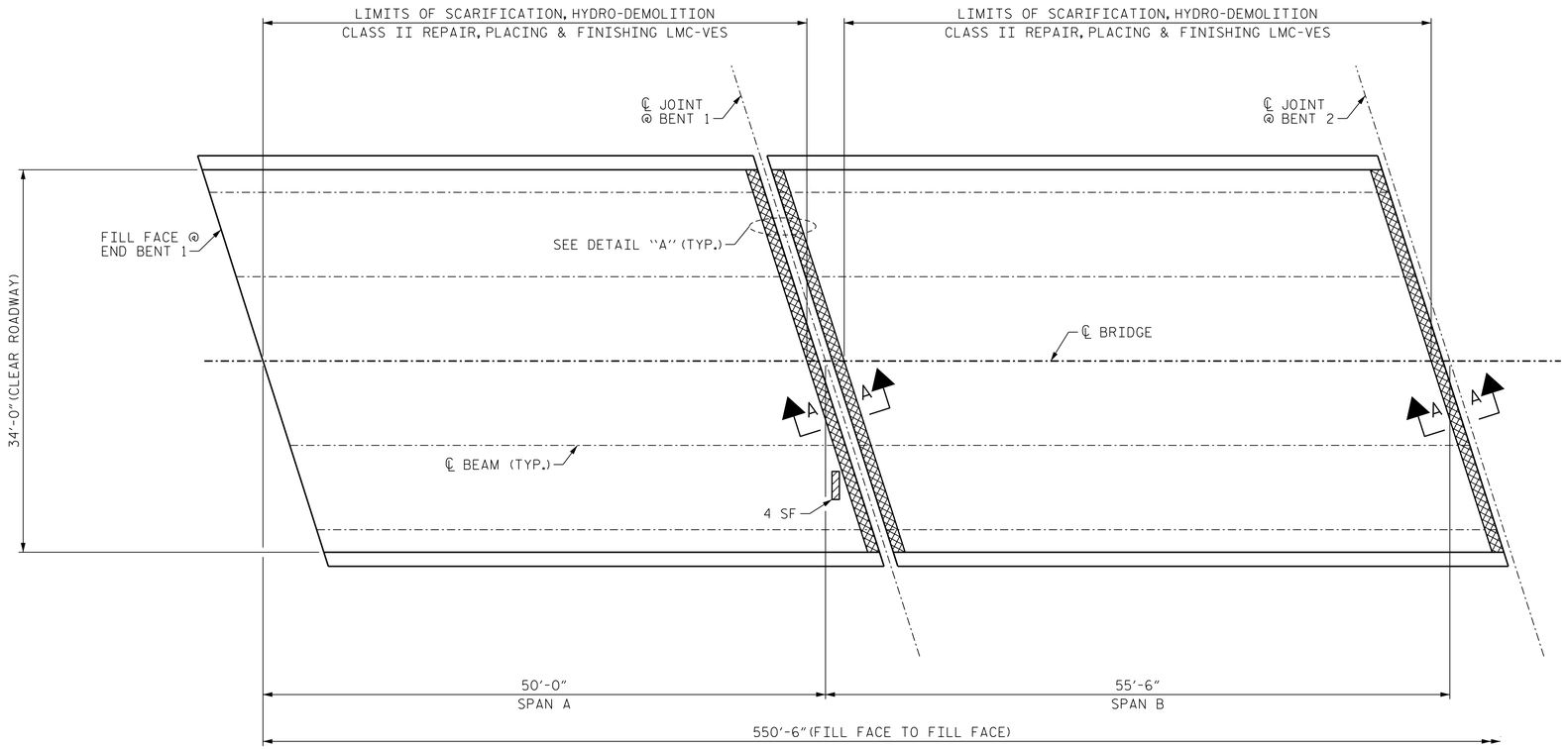
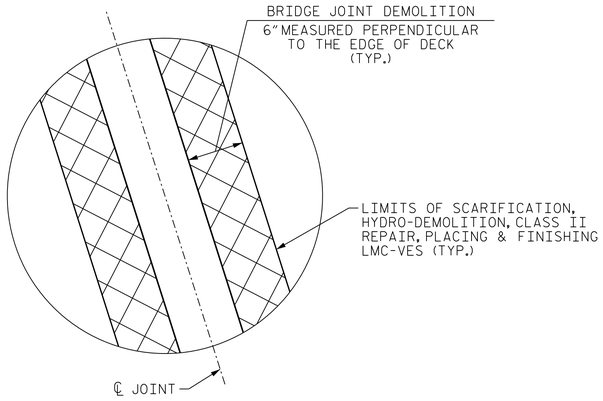


PLAN OF SPANS A & B

BRIDGE JOINT DEMOLITION

CLASS II SURFACE PREPARATION

DECK SCARIFICATION, HYDRO-DEMOLITION AND LATEX MODIFIED CONCRETE OVERLAY-VES



DETAIL "A"

AS-BUILT REPAIR QUANTITY TABLE
SPANS A AND B

TOP OF DECK REPAIRS

	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	393.0 SY	
HYDRO-DEMOLITION OF BRIDGE DECK	393.0 SY	
CLASS II SURFACE PREPARATION	0.5 SY	
LATEX MODIFIED CONCRETE OVERLAY-VERY EARLY STRENGTH	21.9 CY	
PLACING & FINISHING LMC-VES OVERLAY	393.0 SY	
BRIDGE JOINT DEMOLITION	54.0 SF	
GROOVING BRIDGE FLOORS	3201 SF	

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.

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

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

PROJECT NO. 15BPR.128.3

BUNCOMBE COUNTY

BRIDGE NO. 100278

SHEET 1 OF 4

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 24939 BYRON E. ATKINSON
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

SURFACE PREPARATION SPANS A & B

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

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NOTES:

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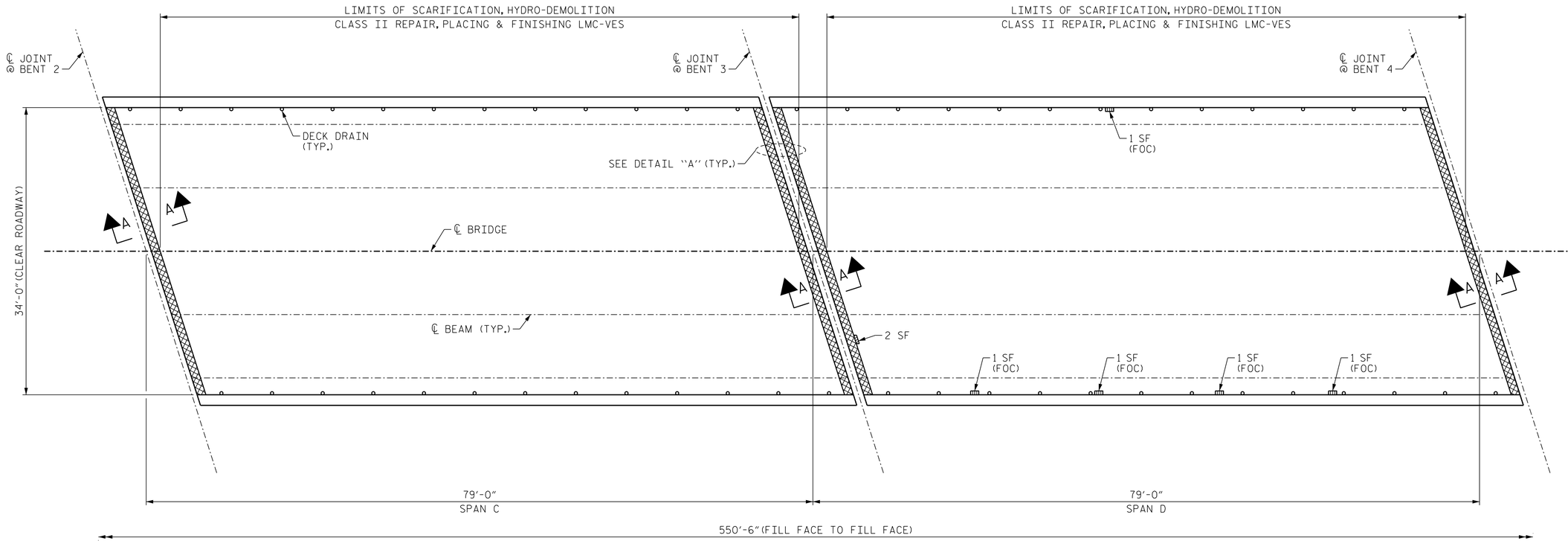
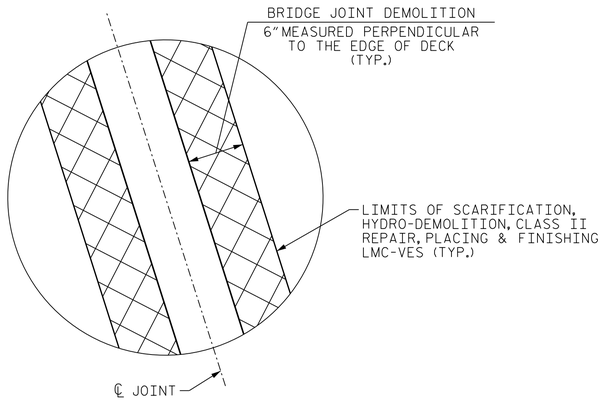
PAYMENT FOR CLASS II SURFACE PREPARATION IS BASED ON THE SQUARE FEET OF ADDITIONAL DEMOLITION REQUIRED FOLLOWING HYDRO-DEMOLITION OF THE BRIDGE DECK. SEE "LMC OVERLAY SURFACE PREPARATION" SPECIAL PROVISIONS.

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

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



PLAN OF SPANS C & D



DETAIL "A"

AS-BUILT REPAIR QUANTITY TABLE SPANS C AND D		
TOP OF DECK REPAIRS		
	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	590.0 SY	
HYDRO-DEMOLITION OF BRIDGE DECK	590.0 SY	
CLASS II SURFACE PREPARATION	0.3 SY	
LATEX MODIFIED CONCRETE OVERLAY-VERY EARLY STRENGTH	32.8 CY	
PLACING & FINISHING LMC-VES OVERLAY	590.0 SY	
BRIDGE JOINT DEMOLITION	72.0 SF	
GROOVING BRIDGE FLOORS	4844 SF	
CONCRETE REPAIRS	1.3 CF	

BRIDGE JOINT DEMOLITION

CLASS II SURFACE PREPARATION

DECK SCARIFICATION, HYDRO-DEMOLITION AND LATEX MODIFIED CONCRETE OVERLAY-VES

CONCRETE REPAIR

FOC FACE OF CURB

PROJECT NO. 15BPR.128.3

BUNCOMBE COUNTY

BRIDGE NO. 100278

SHEET 2 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON

1/2/2025

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

SURFACE PREPARATION SPANS C & D

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(919) 851-6606
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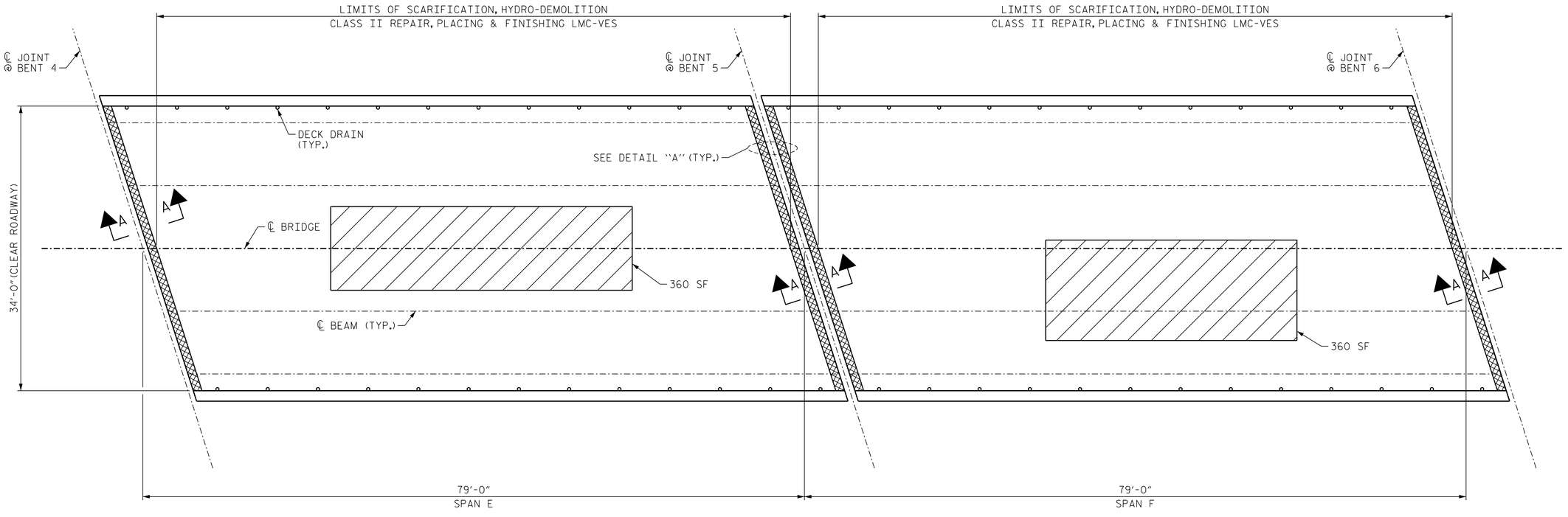
PAYMENT FOR CLASS II SURFACE PREPARATION IS BASED ON THE SQUARE FEET OF ADDITIONAL DEMOLITION REQUIRED FOLLOWING HYDRO-DEMOLITION OF THE BRIDGE DECK. SEE "LMC OVERLAY SURFACE PREPARATION" SPECIAL PROVISIONS.

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

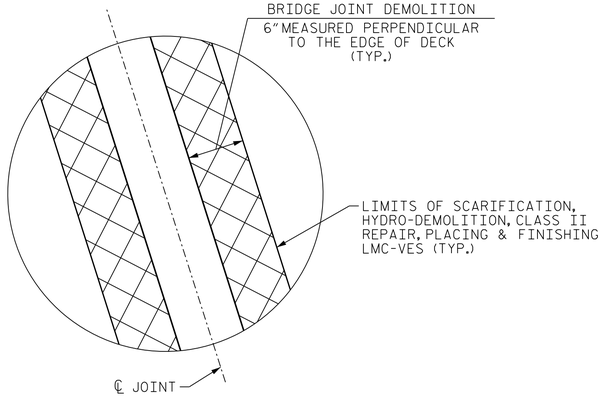


PLAN OF SPANS E & F

BRIDGE JOINT DEMOLITION

CLASS II SURFACE PREPARATION

DECK SCARIFICATION, HYDRO-DEMOLITION AND LATEX MODIFIED CONCRETE OVERLAY-VES



DETAIL "A"

AS-BUILT REPAIR QUANTITY TABLE SPANS E AND F

TOP OF DECK REPAIRS

	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	590.0 SY	
HYDRO-DEMOLITION OF BRIDGE DECK	590.0 SY	
CLASS II SURFACE PREPARATION	80.0 SY	
LATEX MODIFIED CONCRETE OVERLAY-VERY EARLY STRENGTH	32.8 CY	
PLACING & FINISHING LMC-VES OVERLAY	590.0 SY	
BRIDGE JOINT DEMOLITION	72.0 SF	
GROOVING BRIDGE FLOORS	4844 SF	

NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON
1/2/2025

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MI ENGINEERING
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FIRM PE NUMBER : P-0671

PROJECT NO. 15BPR.128.3
BUNCOMBE COUNTY
BRIDGE NO. 100278

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

SURFACE PREPARATION SPANS E & F

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-7
1			3			TOTAL SHEETS
2			4			48

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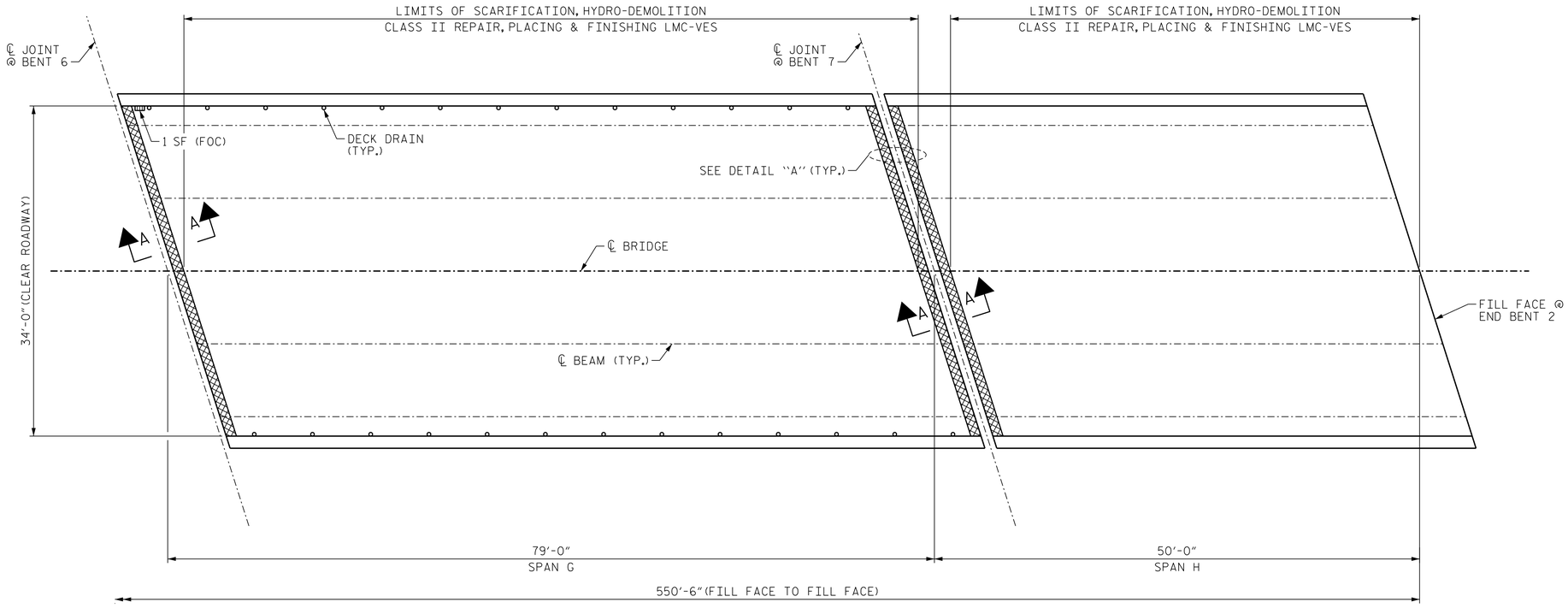
REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE BASED ON THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATIONS AND DESCRIPTION OF THE REPAIRS AND ENTER THE ACTUAL QUANTITIES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

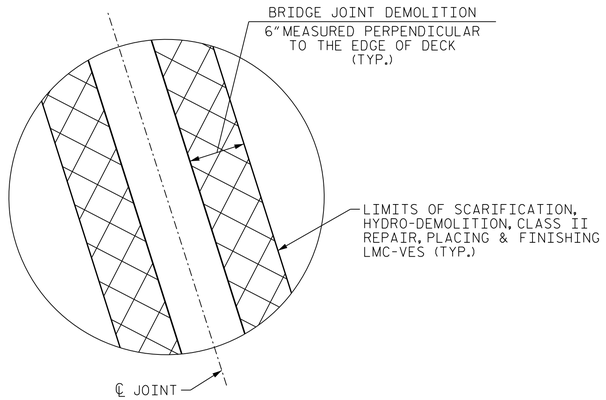
PAYMENT FOR CLASS II SURFACE PREPARATION IS BASED ON THE SQUARE FEET OF ADDITIONAL DEMOLITION REQUIRED FOLLOWING HYDRO-DEMOLITION OF THE BRIDGE DECK. SEE "LMC OVERLAY SURFACE PREPARATION" SPECIAL PROVISIONS.

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

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



PLAN OF SPANS G & H



DETAIL "A"

BRIDGE JOINT DEMOLITION

CLASS II SURFACE PREPARATION

DECK SCARIFICATION, HYDRO-DEMOLITION AND LATEX MODIFIED CONCRETE OVERLAY-VES

CONCRETE REPAIR

FOC FACE OF CURB

AS-BUILT REPAIR QUANTITY TABLE
SPANS G AND H

TOP OF DECK REPAIRS

	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	482.0 SY	
HYDRO-DEMOLITION OF BRIDGE DECK	482.0 SY	
CLASS II SURFACE PREPARATION	0.0 SY	
LATEX MODIFIED CONCRETE OVERLAY-VERY EARLY STRENGTH	26.8 CY	
PLACING & FINISHING LMC-VES OVERLAY	482.0 SY	
BRIDGE JOINT DEMOLITION	54.0 SF	
GROOVING BRIDGE FLOORS	3945 SF	
CONCRETE REPAIRS	0.3 CF	

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NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON
1/2/2025

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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

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1			3			TOTAL SHEETS
2			4			48

PROJECT NO. 15BPR.128.3
BUNCOMBE COUNTY
BRIDGE NO. 100278

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

SURFACE PREPARATION
SPANS G & H

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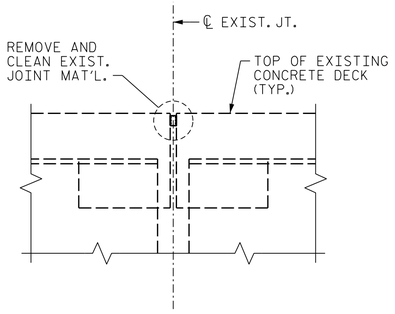
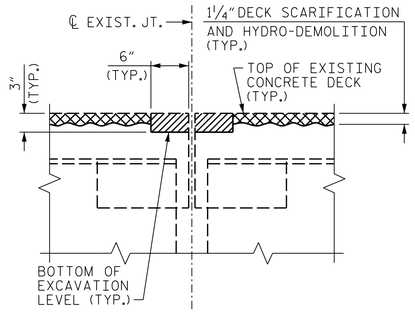
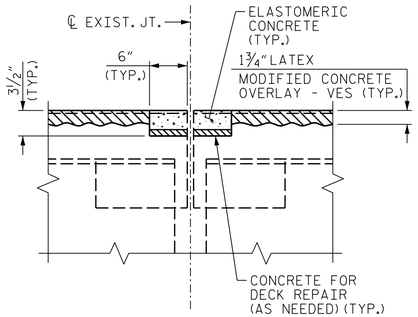


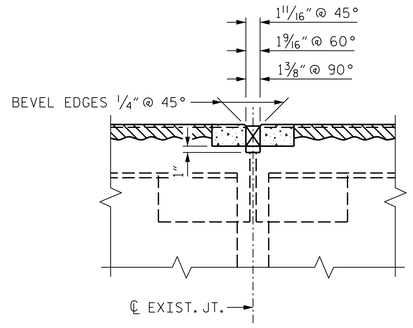
EXISTING JOINT



MINIMUM EXISTING JOINT DEMOLITION AT BENT

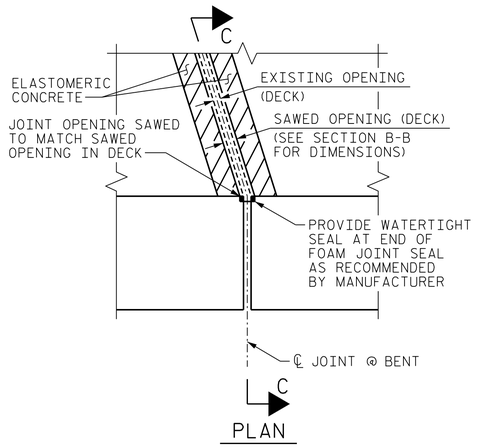


PROPOSED JOINT PRE-SAWED DIMENSIONS

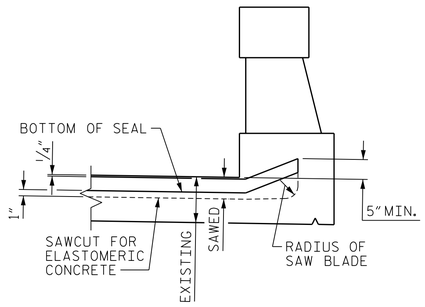


PROPOSED FOAM JOINT SEAL EXPANSION

SECTION A-A



PLAN



SECTION C-C

JOINT DETAILS AT CURB

JOINT REPAIR QUANTITY TABLE		
	ESTIMATED	ACTUAL
FOAM JOINT SEALS FOR PRESERVATION	266.0 LF	

ELASTOMERIC CONCRETE FOR PRESERVATION		
BENT 1	10.5	CF
BENT 2	10.5	CF
BENT 3	10.5	CF
BENT 4	10.5	CF
BENT 5	10.5	CF
BENT 6	10.5	CF
BENT 7	10.5	CF
✳ TOTAL	73.5	CF

✳ BASED ON MINIMUM BLOCKOUT SHOWN.

NOTES:

RETAIN ALL EXISTING REINFORCING STEEL. CLEAN AND REPAIR AS NEEDED.

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

THE CONTRACTOR SHALL FIELD VERIFY THE EXISTING JOINT OPENING PRIOR TO ORDERING JOINT SEAL MATERIAL. IF THE ACTUAL JOINT OPENING VARIES FROM THE OPENING INDICATED IN THE DETAILS BY MORE THAN ¼", NOTIFY THE ENGINEER.

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

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

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

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

THE INSTALLED FOAM JOINT SEALS SHALL BE WATER TIGHT.

QUANTITIES SHOWN FOR ELASTOMERIC CONCRETE FOR PRESERVATION ARE BASED ON THE MINIMUM JOINT DEMOLITION SHOWN.

FOR EXCAVATION BELOW THE BOTTOM OF THE PLANNED JOINT DEMOLITION, CONCRETE FOR DECK REPAIR SHALL BE PLACED IN THE EXCAVATED AREA TO THE ELEVATION AT BOTTOM OF THE PROPOSED ELASTOMERIC CONCRETE FOR PRESERVATION HEADERS SHOWN.

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

FOR BRIDGE JOINT DEMOLITION, SEE SPECIAL PROVISIONS.

FOR FOAM JOINT SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.

FOR ELASTOMERIC CONCRETE FOR PRESERVATION, SEE SPECIAL PROVISIONS.

FOR CONCRETE FOR DECK REPAIR, SEE SPECIAL PROVISIONS.

PROJECT NO. 15BPR.128.3

BUNCOMBE COUNTY

BRIDGE NO. 100278

1/2/2025

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MI ENGINEERING
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FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

JOINT DETAILS

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1			3			TOTAL SHEETS
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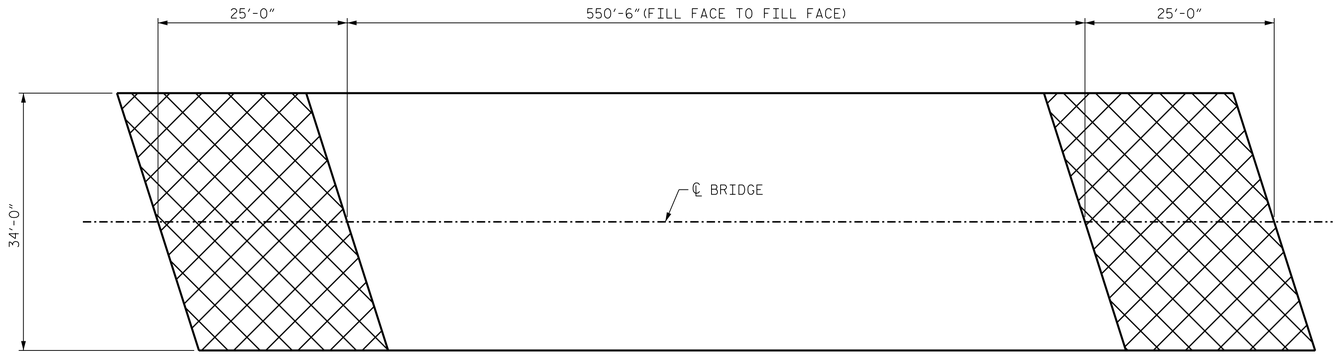
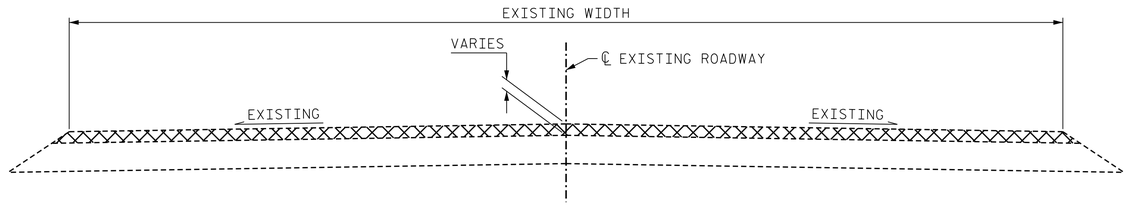
NOTES:

EXISTING APPROACH ASPHALT PAVING TO BE MILLED AS NECESSARY TO ATTAIN MINIMUM 1½"DEPTH OF NEW ASPHALT PAVING. PROVIDE NEW ASPHALT PAVING THICKNESS TO CREATE A SMOOTH TRANSITION TO THE ROADWAY AS SHOWN. NEW ASPHALT PAVING THICKNESS MAY EXCEED 1½"DUE TO SETTLEMENT OF THE EXISTING APPROACH ASPHALT PAVING.



PLAN

INCIDENTAL MILLING

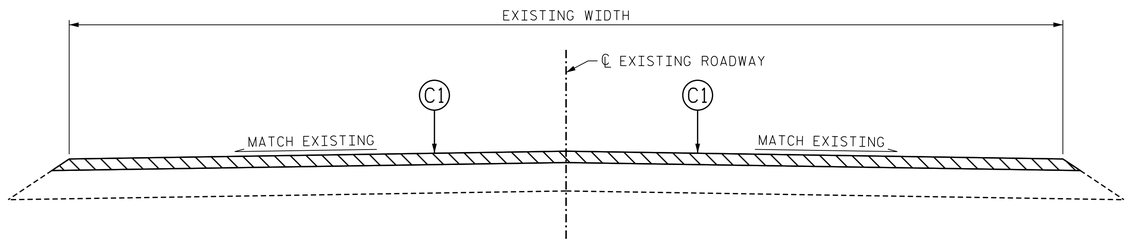


TYPICAL ROADWAY MILLING SECTION

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

SUMMARY OF QUANTITIES

	ESTIMATE	ACTUAL
INCIDENTAL MILLING	134 SQ. YDS.	
ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B	11 TONS	
ASPHALT BINDER FOR PLANT MIX	1 TONS	



TYPICAL ROADWAY SECTION

PROJECT NO. 15BPR.128.3

BUNCOMBE COUNTY

BRIDGE NO. 100278

NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON
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MI ENGINEERING
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FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

APPROACH MILLING

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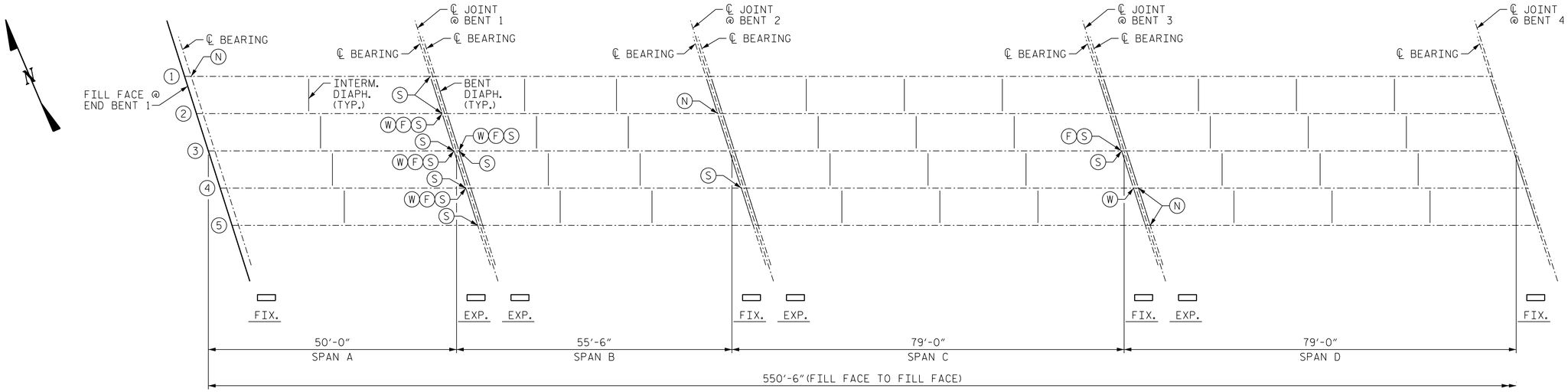

FRAMING PLAN - SPANS A THRU D

KEY	
#	BEAM NUMBER
W	WEB PLATING REPAIR
S	STIFFENER REPAIR
F	BOTTOM FLANGE PLATING REPAIR
N	ANCHOR BOLT NUT REPLACEMENT

NOTES:

REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER AFTER THE STRUCTURAL STEEL HAS BEEN CLEANED, BLASTED, AND PRIMED, THE CONTRACTOR AND ENGINEER SHALL REVIEW THE STEEL TO VERIFY NOTED REPAIR LOCATIONS AND TO IDENTIFY ANY ADDITIONAL REPAIR LOCATIONS. THE ENGINEER SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

FOR REPAIR DETAILS, SEE ''BEAM REPAIR PLATING DETAILS'' SHEET.

THE LOCATIONS AND DIMENSIONS OF THE AREAS FOR STEEL BEAM REPAIR ARE BASED ON THE BEST INFORMATION AVAILABLE. THE CONTRACTOR, IN CONJUNCTION WITH THE ENGINEER, SHALL VERIFY THE LOCATION AND EXTENTS OF REPAIR AREAS PRIOR TO STEEL FABRICATION.

PAYMENT FOR ANCHOR BOLT NUT AND WASHER REPLACEMENT IS CONSIDERED INCIDENTAL TO OTHER PAY ITEMS.

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

STRUCTURAL STEEL REPAIRS SHALL BE COMPLETED BEFORE FINAL CLEANING AND PAINTING OF STRUCTURAL STEEL.

FOR BEAM REPAIR PLATING, SEE SPECIAL PROVISIONS.

NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-0H OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. SHOP DRAWINGS ARE NOT REQUIRED FOR NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

THE CONTRACTOR SHALL ENSURE THAT EXISTING UTILITIES UNDER THE BRIDGE ARE NOT DAMAGED DURING THE REPAIR OPERATIONS.

BEAM REPAIR QUANTITY TABLE
SPANS A THRU H

STEEL PLATES		STIFFENER REPAIR		ANCHOR BOLT NUT REPLACEMENT	
LBS.		LBS.		EA.	
ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL
1005		167		9	

ANTICIPATED BEAM REPAIR LOCATIONS

SPAN	BEAM	LOCATION	DETAIL TYPE	DIM. ''A''	DIM. ''B''
A	1	BENT 1	C	4″	—
A	2	BENT 1	A	9″	36″
A	3	BENT 1	A	6″	36″
A	4	BENT 1	A	6″	36″
A	5	BENT 1	C	6″	—
B	3	BENT 1	B	33.875″	12″
B	3	BENT 1	A	—	36″
B	4	BENT 2	C	6″	—
C	3	BENT 3	A	3″	24″
C	4	BENT 3	B	12″	8″

PROJECT NO. 15BPR.128.3
BUNCOMBE COUNTY
BRIDGE NO. 100278

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

BEAM REPAIR LOCATIONS SPANS A THRU D

NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON
1/2/2025

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(919) 851-6606
FIRM PE NUMBER : P-0671

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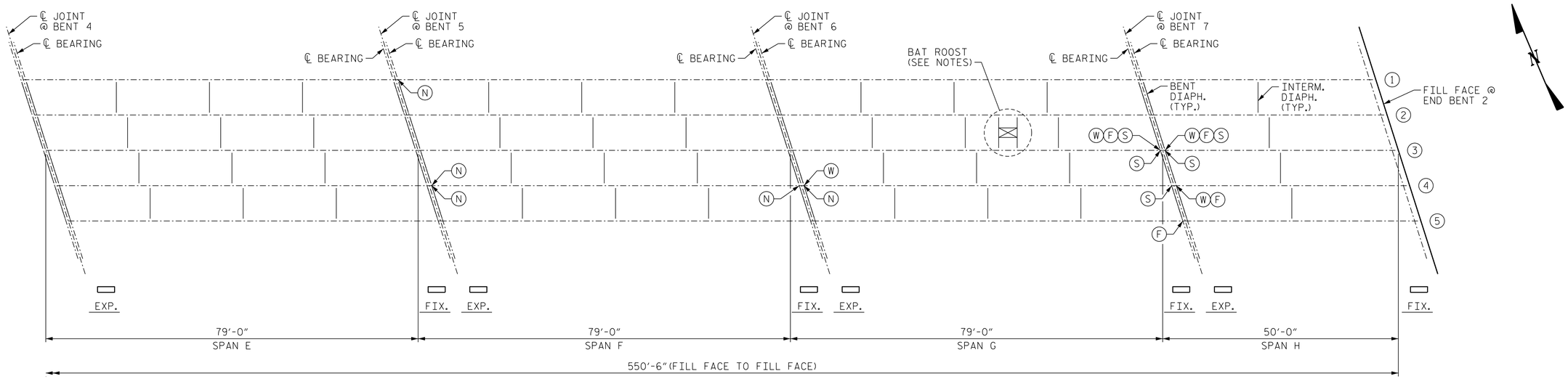

FRAMING PLAN - SPANS E THRU H

KEY

- (#) BEAM NUMBER
- (W) WEB PLATING REPAIR
- (S) STIFFENER REPAIR
- (F) BOTTOM FLANGE PLATING REPAIR
- (N) ANCHOR BOLT NUT REPLACEMENT

NOTES:

FOR NOTES AND QUANTITIES, SEE SHEET 1 OF 2.

BAT ROOST TO BE REMOVED AND SAFELY STORED DURING BEAM REPAIR AND PAINTING.

AS SOON AS IS PRACTICAL AFTER COMPLETION OF THE STEEL CLEANING AND PAINTING, THE BAT ROOST SHALL BE REPLACED AT THE EXISTING LOCATION. ALL WORK TO REMOVE, STORE, AND REPLACE THE BAT ROOST SHALL BE CONSIDERED INCIDENTAL TO CLEANING AND PAINTING OF THE STRUCTURAL STEEL.

SPECIAL CARE SHALL BE TAKEN DURING REMOVAL, HANDLING, STORAGE, AND REPLACEMENT OF THE BAT ROOST. ANY DAMAGES AND NECESSARY REPAIRS SHALL BE DONE TO THE SATISFACTION OF THE ENGINEER AT NO COST TO THE DEPARTMENT.

ANTICIPATED BEAM REPAIR LOCATIONS

SPAN	BEAM	LOCATION	DETAIL TYPE	DIM. "A"	DIM. "B"
G	4	BENT 6	A	4"	96"
G	3	BENT 7	A	6"	18"
G	4	BENT 7	C	6"	—
G	5	BENT 7	A	—	36"
H	3	BENT 7	A	8"	18"
H	4	BENT 7	A	6"	48"

PROJECT NO. 15BPR.128.3

BUNCOMBE COUNTY

BRIDGE NO. 100278

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

BEAM REPAIR LOCATIONS SPANS E THRU H

NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON

1/2/2025

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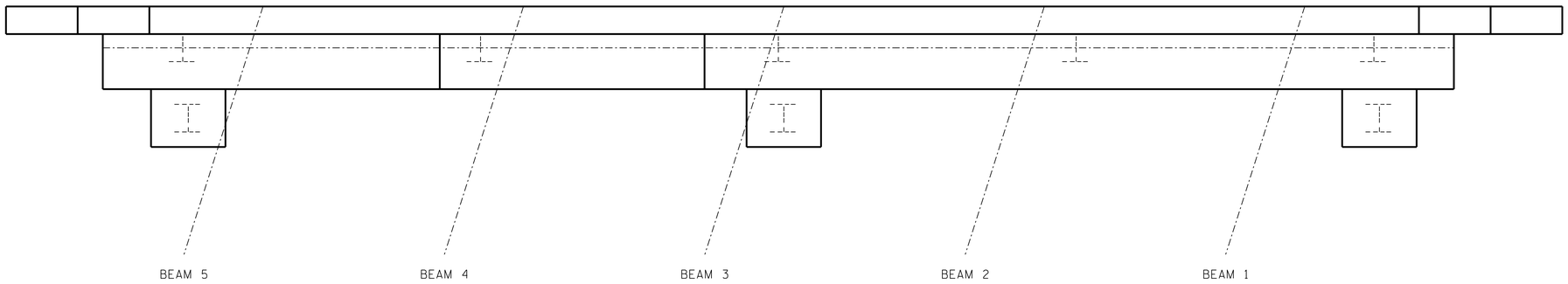
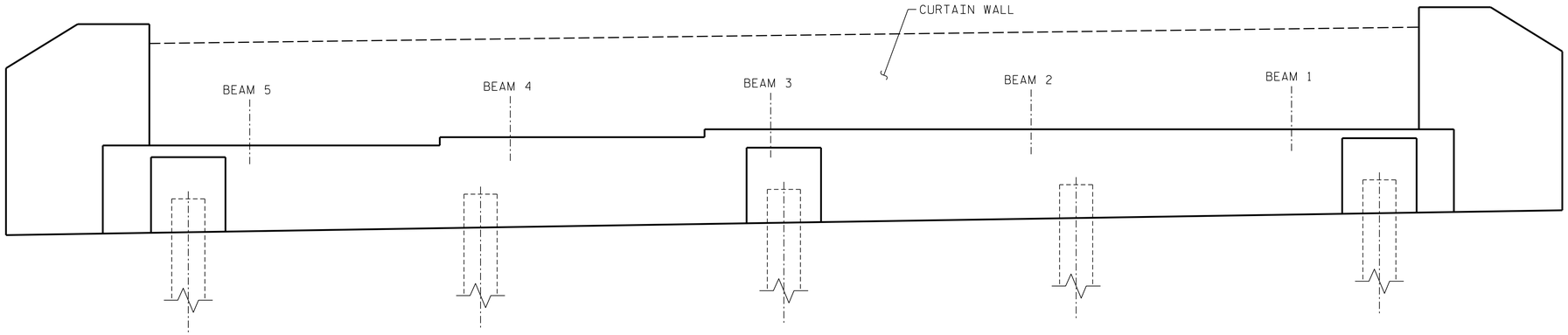


PLAN

END BENT 1



ELEVATION

END BENT 1

AS-BUILT REPAIR QUANTITY TABLE

END BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	0.0	0.0		
CAP (HORIZONTAL FACE)	0.0	0.0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	0.0			
CURTAIN WALL	0.0			
EPOXY COATING	AREA SF		AREA SF	
TOP OF CAP	0.0			

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

NOTES:

REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE INSPECTOR OR ENGINEER THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

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

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

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

KEY

- SHOTCRETE REPAIR
- ERI EPOXY RESIN INJECTION
- CONCRETE REPAIR

Digitally signed by BYRON E. ATKINSON
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NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON
1/2/2025

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PROJECT NO. 15BPR.128.3

BUNCOMBE COUNTY

BRIDGE NO. 100278

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 1

REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			48

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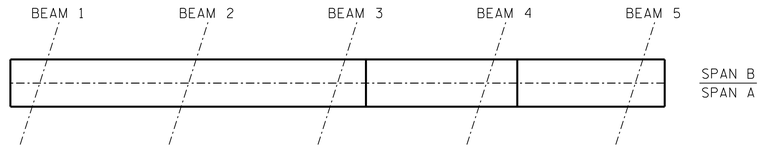


PLAN

TOP OF CAP

NOTES:

REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE INSPECTOR OR ENGINEER THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

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

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

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

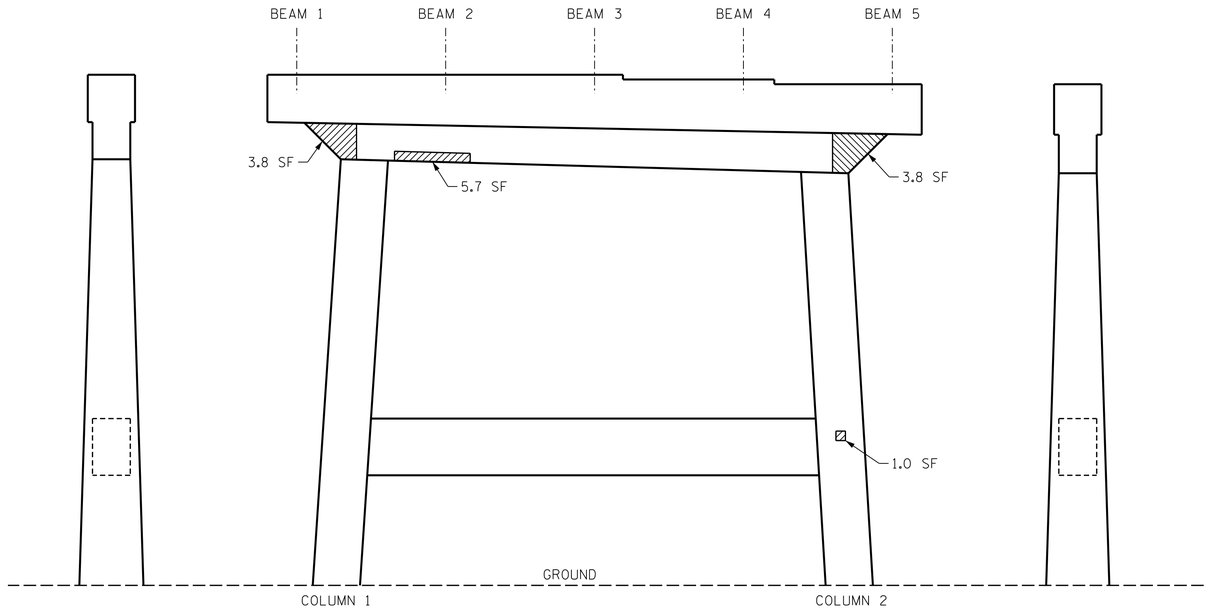
FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

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

AS-BUILT REPAIR QUANTITY TABLE

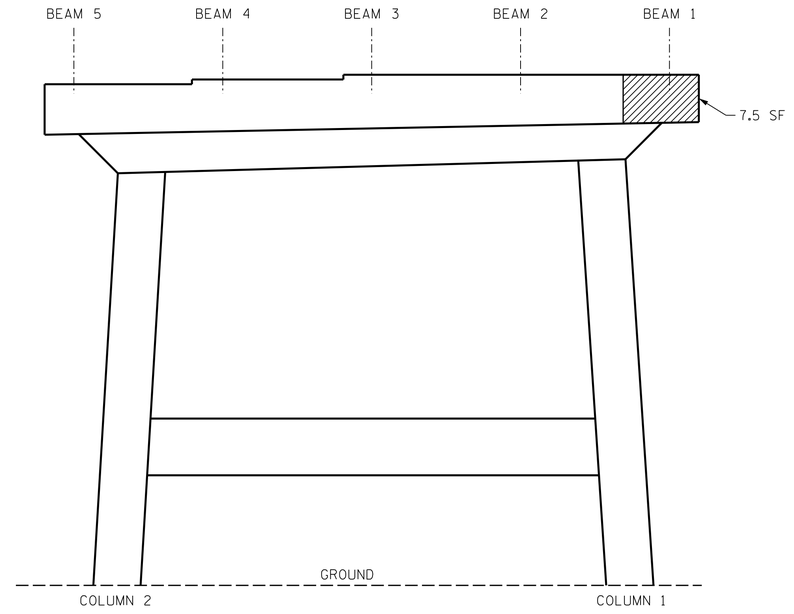
BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	20.8	10.4		
CAP (HORIZONTAL FACE)	0.0	0.0		
COLUMN	1.0	0.5		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	0.0			
COLUMN	0.0			
EPOXY COATING	AREA SF		AREA SF	
TOP OF CAP	86.5			

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



ELEVATION

SPAN A



ELEVATION

SPAN B

PLAN

BOTTOM OF CAP
(LOOKING UP)

KEY

- SHOTCRETE REPAIR
- ERI EPOXY RESIN INJECTION
- CONCRETE REPAIR

PROJECT NO. 15BPR.128.3

BUNCOMBE COUNTY

BRIDGE NO. 100278

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 1

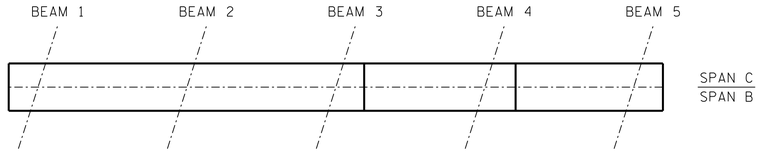
NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON
1/2/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-14
1			3			TOTAL SHEETS
2			4			48

DRAWN BY : B.E. LANNING DATE : 05/2022
CHECKED BY : B.E. ATKINSON DATE : 06/2022
DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 12/2024



PLAN

TOP OF CAP

NOTES:

REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE INSPECTOR OR ENGINEER THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

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

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

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

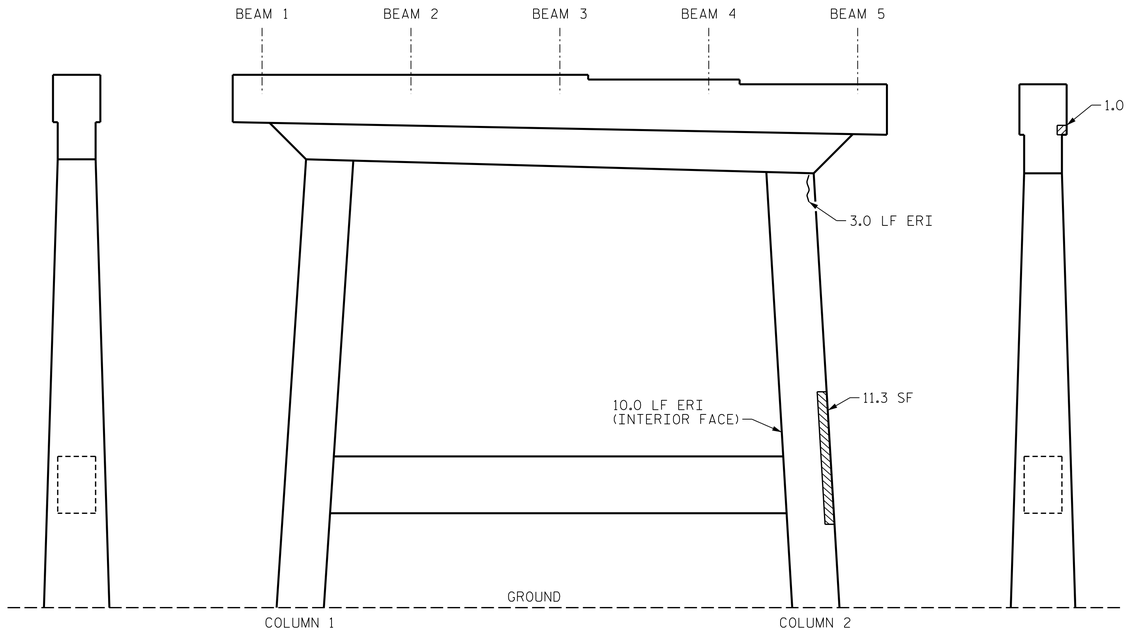
FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

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

AS-BUILT REPAIR QUANTITY TABLE

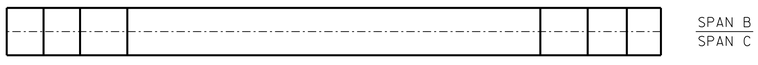
BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	12.0	6.0		
CAP (HORIZONTAL FACE)	0.0	0.0		
COLUMN	11.3	5.7		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	1.0			
COLUMN	13.0			
EPOXY COATING	AREA SF		AREA SF	
TOP OF CAP	86.5			

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



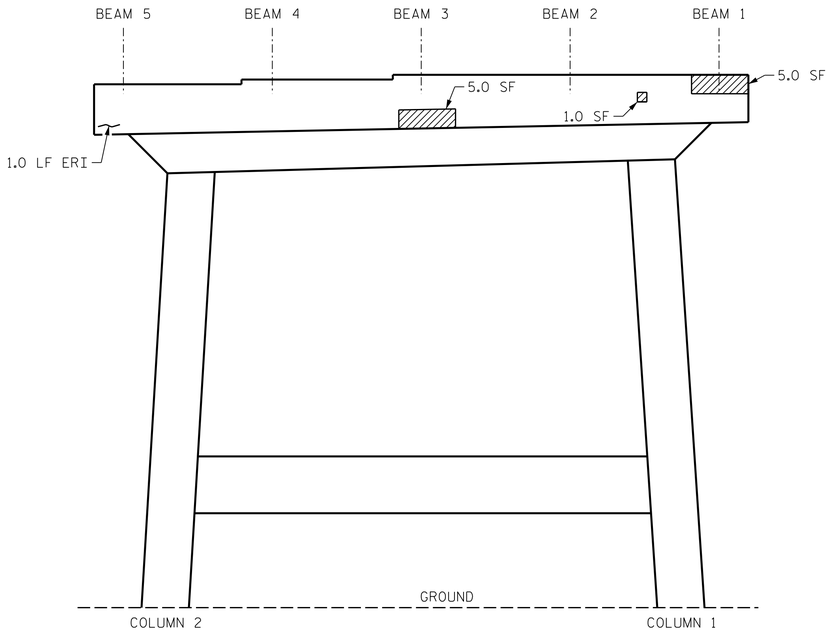
ELEVATION

SPAN B



PLAN

BOTTOM OF CAP
(LOOKING UP)



ELEVATION

SPAN C

KEY

SHOTCRETE REPAIR

ERI EPOXY RESIN INJECTION

CONCRETE REPAIR

NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON
1/2/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

PROJECT NO. 15BPR.128.3

BUNCOMBE COUNTY

BRIDGE NO. 100278

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

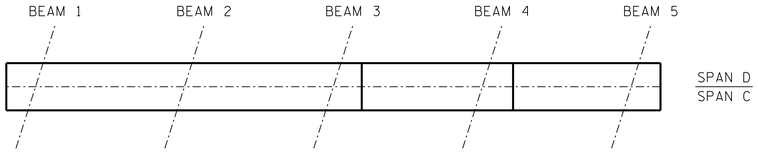
SUBSTRUCTURE

BENT 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-15
1			3			TOTAL SHEETS
2			4			48

DRAWN BY : B.E. LANNING DATE : 05/2022
CHECKED BY : B.E. ATKINSON DATE : 06/2022
DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 12/2024

1/2/2025
10:41:31 AM
User: blanning
Filename: N:\NC Bridges\M2100138.15BPR.52.(3) Buncombe Co. Br. Rehab\Structures\401.079.15BPR128.SMU.BT2.100278.dgn



PLAN

TOP OF CAP

NOTES:

REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE INSPECTOR OR ENGINEER THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

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FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

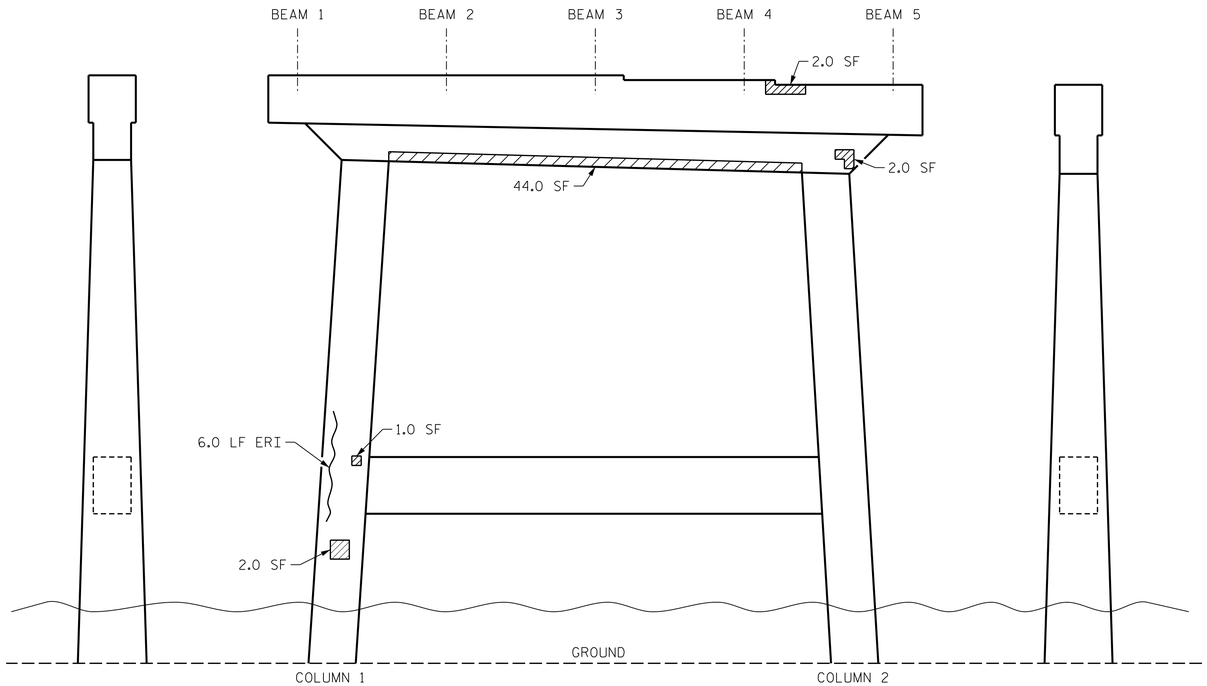
FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

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

AS-BUILT REPAIR QUANTITY TABLE

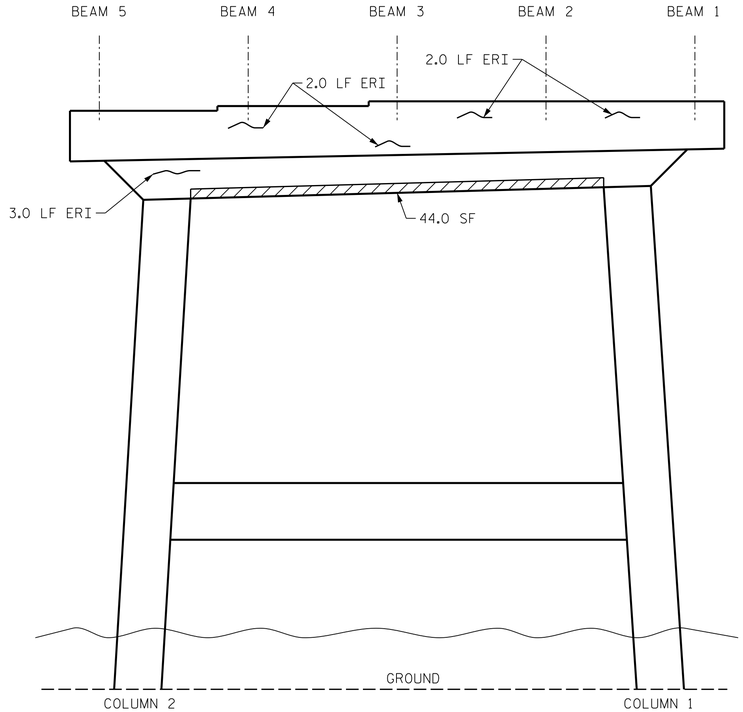
BENT 3	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	48.0	24.0		
CAP (HORIZONTAL FACE)	0.0	0.0		
COLUMN	3.0	1.5		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	11.0			
COLUMN	6.0			
EPOXY COATING	AREA SF		AREA SF	
TOP OF CAP	86.5			

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



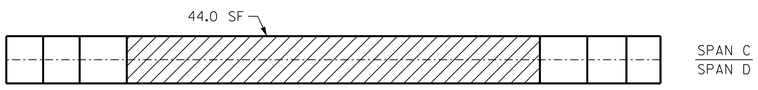
ELEVATION

SPAN C



ELEVATION

SPAN D



PLAN

BOTTOM OF CAP
(LOOKING UP)

KEY

- SHOTCRETE REPAIR
- ERI EPOXY RESIN INJECTION
- CONCRETE REPAIR

NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON
1/2/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

PROJECT NO. 15BPR.128.3

BUNCOMBE COUNTY

BRIDGE NO. 100278

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 3

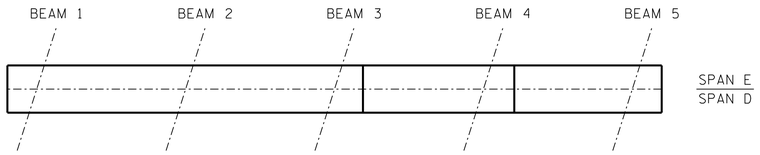
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S3-16

TOTAL SHEETS 48

DRAWN BY : B.E. LANNING DATE : 05/2022
CHECKED BY : B.E. ATKINSON DATE : 06/2022
DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 12/2024

1/2/2025
10:41:32 AM
User: blanning
Filename: N:\NC Bridges\M21001.38.15BPR.52.(3) Buncombe Co. Br. Rehab\Structures\401_081.15BPR128_SMU_BT3_100278.dgn



PLAN

TOP OF CAP

NOTES:

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FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

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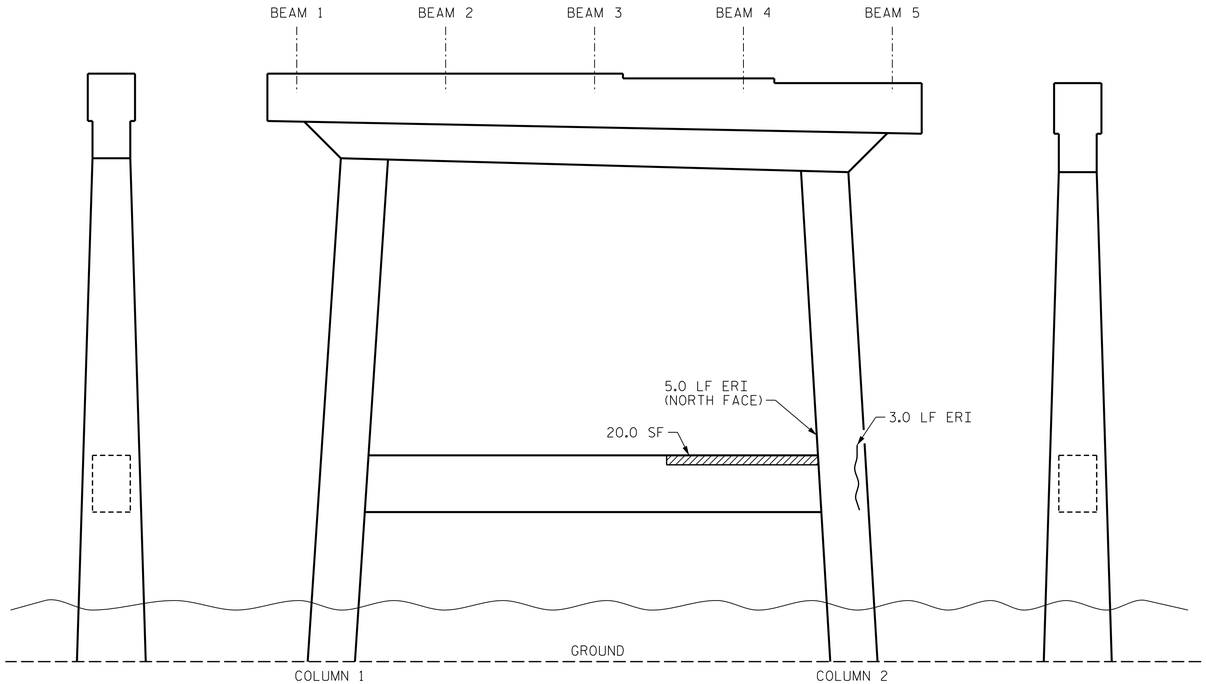
AS-BUILT REPAIR QUANTITY TABLE

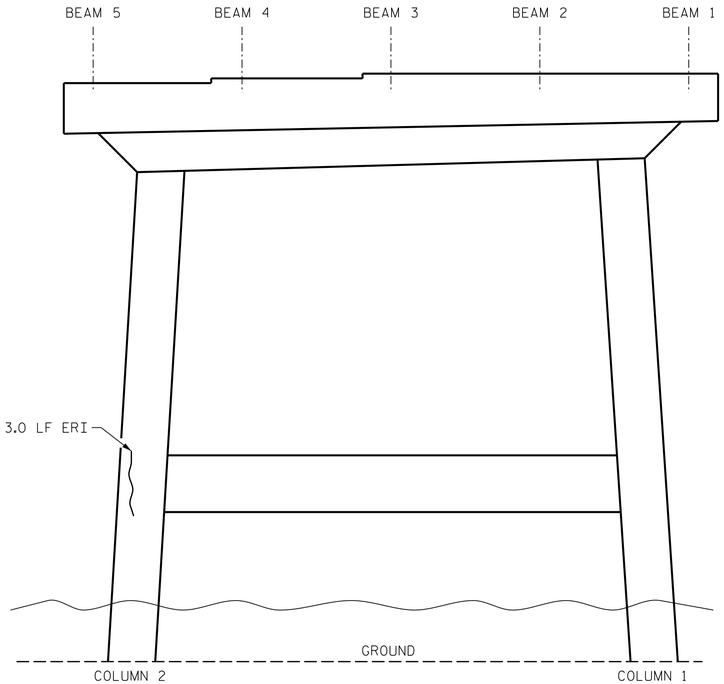
BENT 4	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	0.0	0.0		
CAP (HORIZONTAL FACE)	0.0	0.0		
COLUMN	0.0	0.0		
STRUT	20.0	10.0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	0.0			
COLUMN	11.0			
EPOXY COATING	AREA SF		AREA SF	
TOP OF CAP	86.5			

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



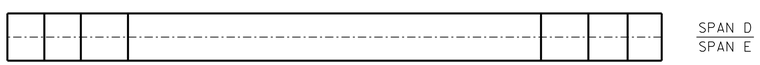
ELEVATION

SPAN D



ELEVATION

SPAN E



PLAN

BOTTOM OF CAP
(LOOKING UP)

KEY

- SHOTCRETE REPAIR
- ERI EPOXY RESIN INJECTION
- CONCRETE REPAIR

NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON
1/2/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

PROJECT NO. 15BPR.128.3

BUNCOMBE COUNTY

BRIDGE NO. 100278

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 4

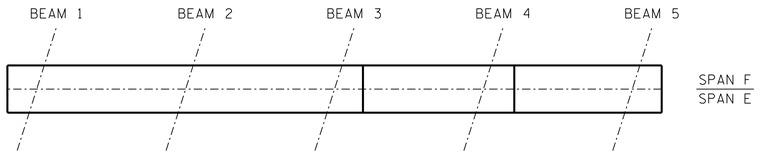
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S3-17

TOTAL SHEETS 48

DRAWN BY : B.E. LANNING DATE : 05/2022
CHECKED BY : B.E. ATKINSON DATE : 06/2022
DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 12/2024

1/2/2025
10:41:34 AM
User: blanning
Filename: N:\NC Bridges\M21001.38.15BPR.52.(3) Buncombe Co. Br. Rehab\Structures\401.083.15BPR128.SMU.BT4.100278.dgn



PLAN

TOP OF CAP

NOTES:

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FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

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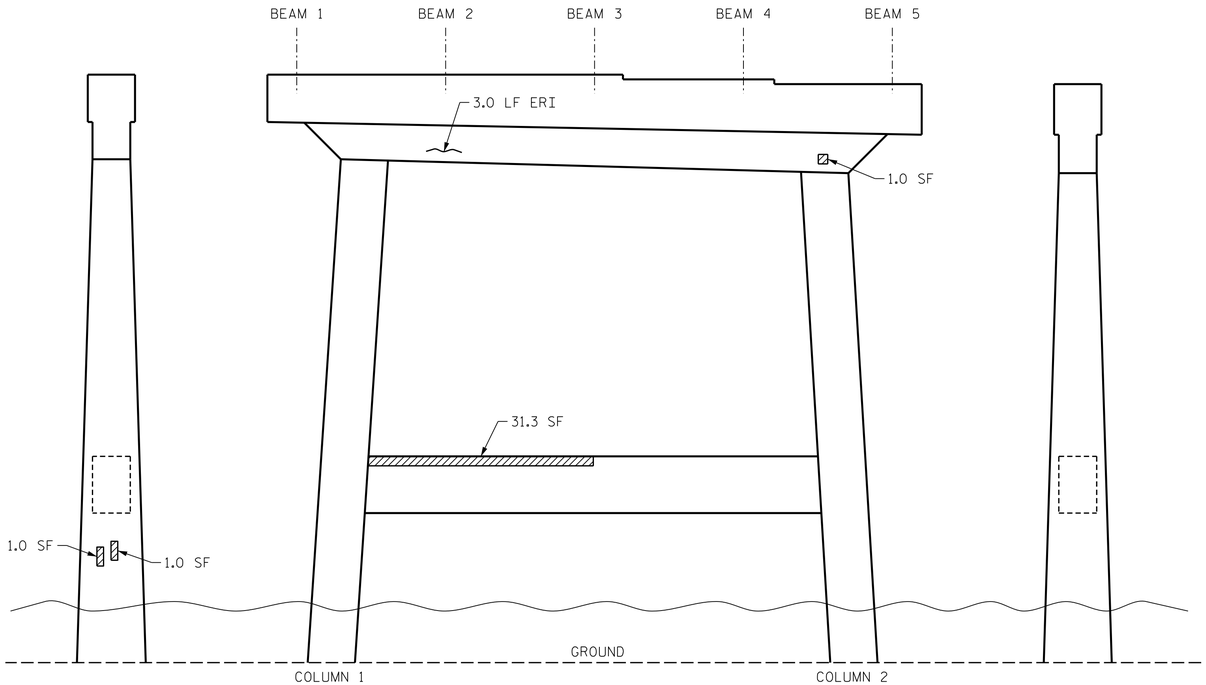
AS-BUILT REPAIR QUANTITY TABLE

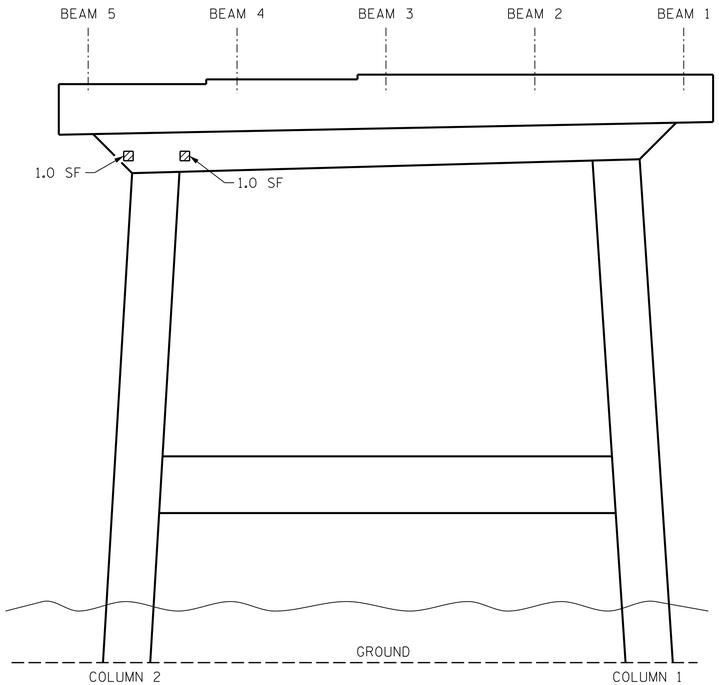
BENT 5	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	3.0	1.5		
CAP (HORIZONTAL FACE)	0.0	0.0		
COLUMN	2.0	1.0		
STRUT	31.3	15.7		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	3.0			
COLUMN	0.0			
EPOXY COATING	AREA SF		AREA SF	
TOP OF CAP	86.5			

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



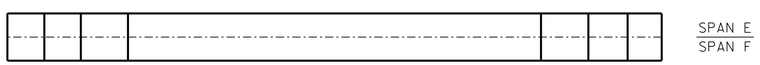
ELEVATION

SPAN E



ELEVATION

SPAN F



PLAN

BOTTOM OF CAP
(LOOKING UP)

KEY

- SHOTCRETE REPAIR
- ERI EPOXY RESIN INJECTION
- CONCRETE REPAIR

NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON
1/2/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

PROJECT NO. 15BPR.128.3

BUNCOMBE COUNTY

BRIDGE NO. 100278

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

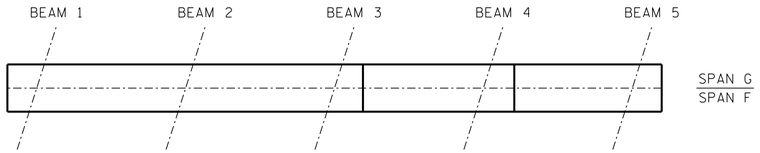
SUBSTRUCTURE
BENT 5

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

SHEET NO. S3-18
TOTAL SHEETS 48

DRAWN BY : B.E. LANNING DATE : 05/2022
CHECKED BY : B.E. ATKINSON DATE : 06/2022
DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 12/2024

1/2/2025
10:41:35 AM
User: blanning
Filename: N:\NC Bridges\W2100138.15BPR.52.(3) Buncombe Co. Br. Rehab\Structures\401.085.15BPR128.SMU.BT5.100278.dgn



PLAN

TOP OF CAP

NOTES:

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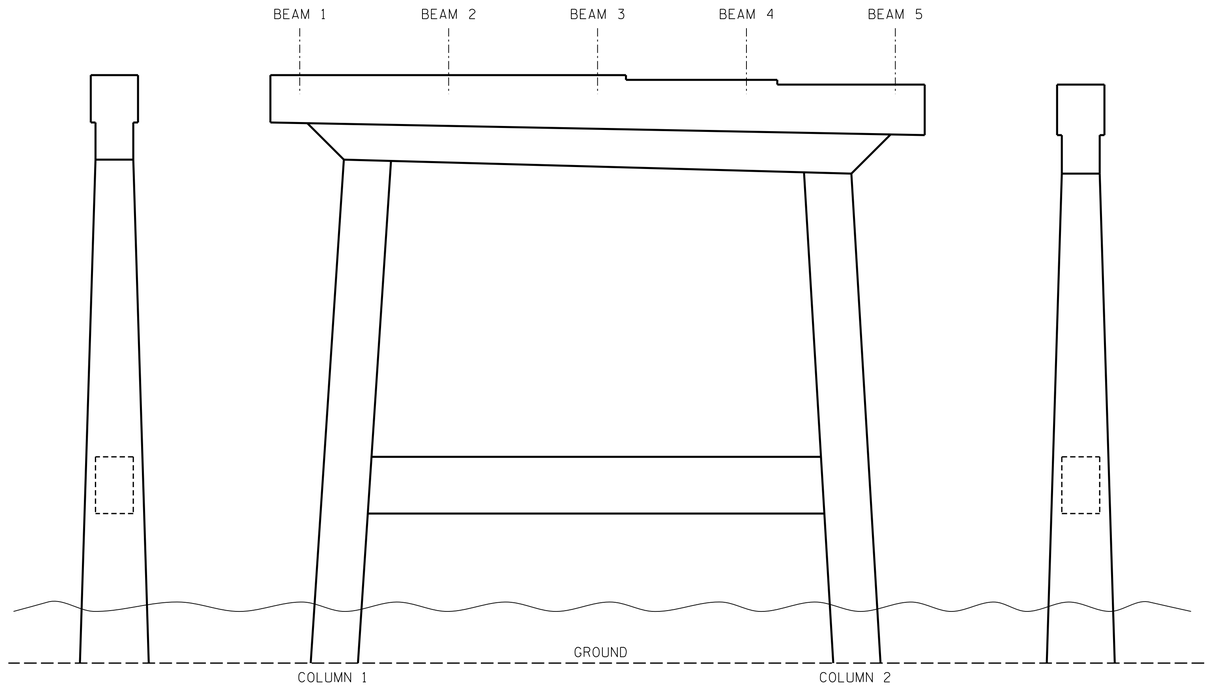
CLEAN AND REMOVE DEBRIS FROM THE TOP OF THE CAP AND APPLY EPOXY PROTECTIVE COATING TO THE TOP SURFACES OF THE CAP. THE CONTRACTOR SHALL NOT COAT THE AREA OF THE CAP BENEATH THE MASONRY PLATES. FOR EPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.

AS-BUILT REPAIR QUANTITY TABLE

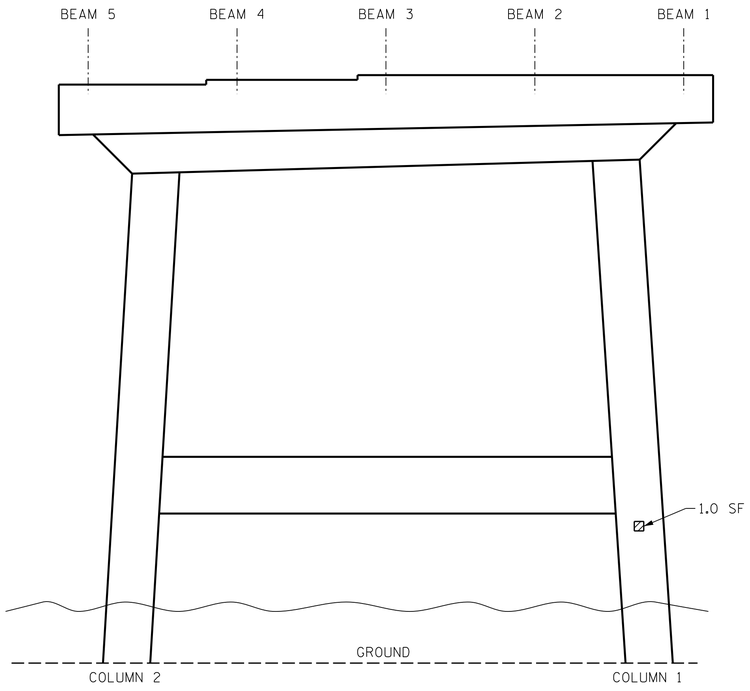
BENT 6	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	0.0	0.0		
CAP (HORIZONTAL FACE)	0.0	0.0		
COLUMN	1.0	0.5		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	0.0			
COLUMN	0.0			
EPOXY COATING	AREA SF		AREA SF	
TOP OF CAP	86.5			

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



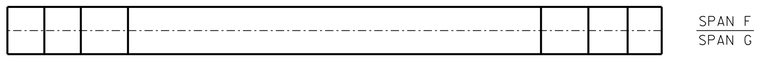
ELEVATION

SPAN F



ELEVATION

SPAN G



PLAN

BOTTOM OF CAP
(LOOKING UP)

KEY

- SHOTCRETE REPAIR
- ERI EPOXY RESIN INJECTION
- CONCRETE REPAIR

PROJECT NO. 15BPR.128.3

BUNCOMBE COUNTY

BRIDGE NO. 100278

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 6

NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON
1/2/2025

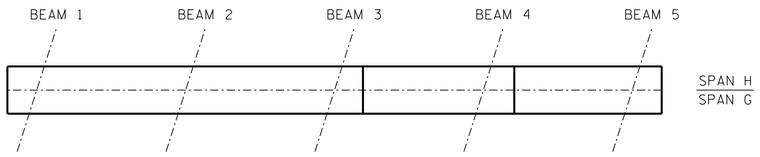
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-19
1			3			TOTAL SHEETS
2			4			48

DRAWN BY : B.E. LANNING DATE : 05/2022
CHECKED BY : B.E. ATKINSON DATE : 06/2022
DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 12/2024

1/2/2025
10:41:36 AM
User: blanning
Filename: N:\NC Bridges\M2100138_15BPR.52.(3) Buncombe Co. Br. Rehab\Structures\401_087_15BPR128_SMU_BT6_100278.dgn



PLAN

TOP OF CAP

NOTES:

REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE INSPECTOR OR ENGINEER THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

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

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

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

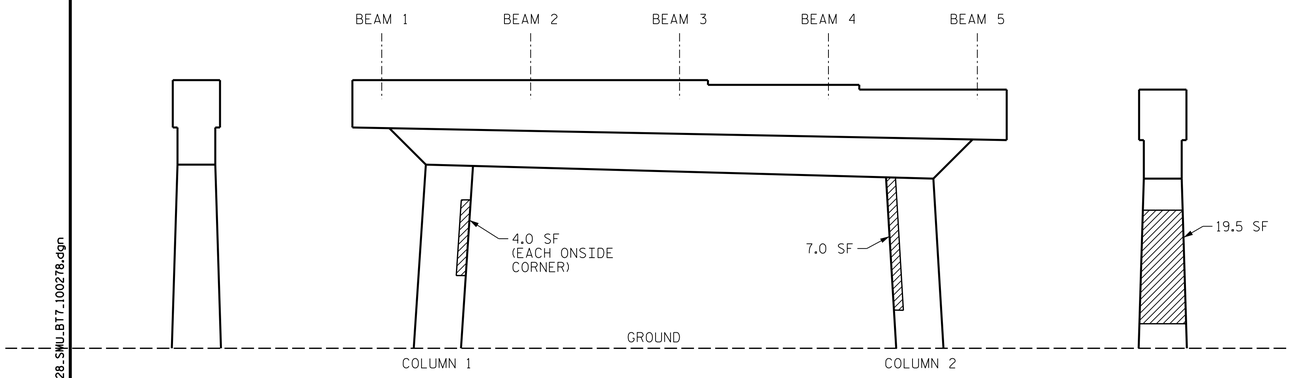
FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

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

AS-BUILT REPAIR QUANTITY TABLE

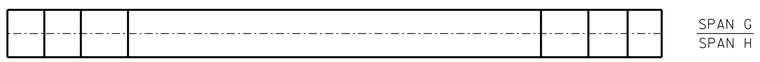
BENT 7	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	7.2	3.6		
CAP (HORIZONTAL FACE)	0.0	0.0		
COLUMN	34.5	17.3		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	21.0			
COLUMN	0.0			
EPOXY COATING	AREA SF		AREA SF	
TOP OF CAP	86.5			

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



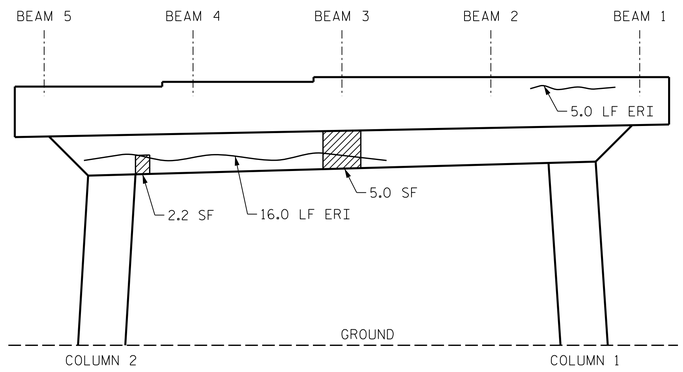
ELEVATION

SPAN G



PLAN

BOTTOM OF CAP
(LOOKING UP)



ELEVATION

SPAN H

KEY

SHOTCRETE REPAIR

ERI EPOXY RESIN INJECTION

CONCRETE REPAIR

PROJECT NO. 15BPR.128.3

BUNCOMBE COUNTY

BRIDGE NO. 100278

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 7

NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON
1/2/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

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

SHEET NO. S3-20

TOTAL SHEETS 48

DRAWN BY : B.E. LANNING DATE : 05/2022
CHECKED BY : B.E. ATKINSON DATE : 06/2022
DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 12/2024

1/2/2025
10:41:37 AM
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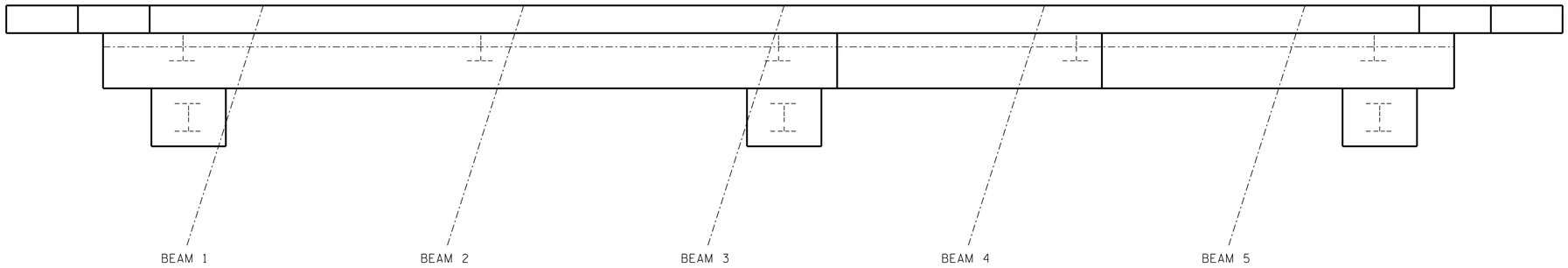
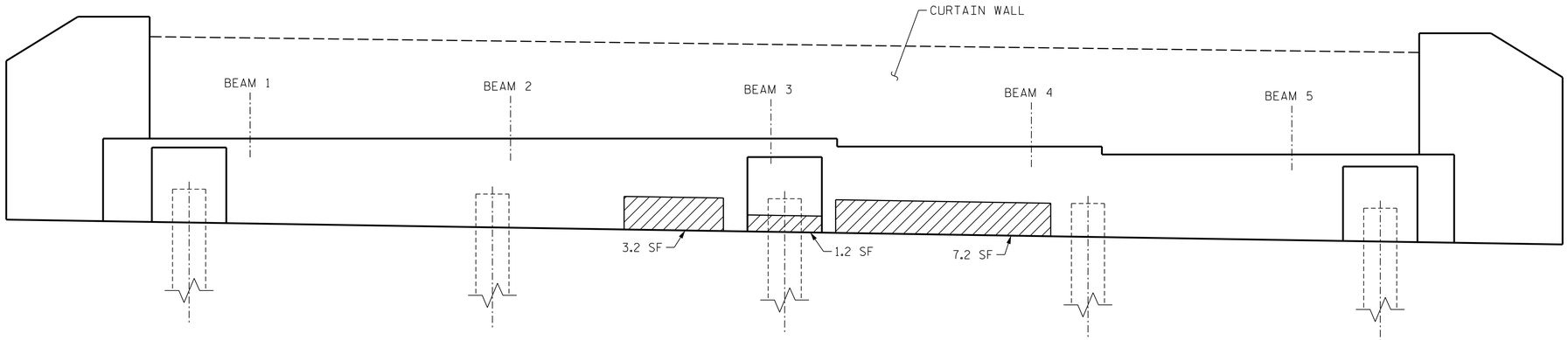


PLAN

END BENT 2



ELEVATION

END BENT 2

AS-BUILT REPAIR QUANTITY TABLE

END BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	11.6	5.8		
CAP (HORIZONTAL FACE)	0.0	0.0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	0.0			
CURTAIN WALL	0.0			
EPOXY COATING	AREA SF		AREA SF	
TOP OF CAP	0.0			

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

NOTES:

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

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

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

KEY

- SHOTCRETE REPAIR
- ERI — EPOXY RESIN INJECTION
- CONCRETE REPAIR

PROJECT NO. 15BPR.128.3

BUNCOMBE COUNTY

BRIDGE NO. 100278

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 2

NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON
1/2/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-21
1			3			TOTAL SHEETS
2			4			48

DRAWN BY :	B.E. LANNING	DATE : 05/2022
CHECKED BY :	B.E. ATKINSON	DATE : 06/2022
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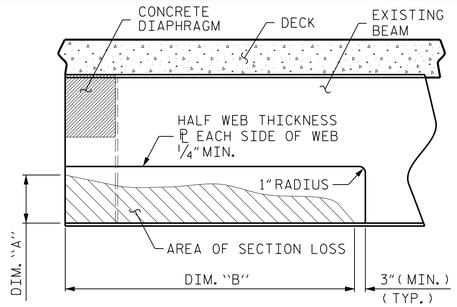
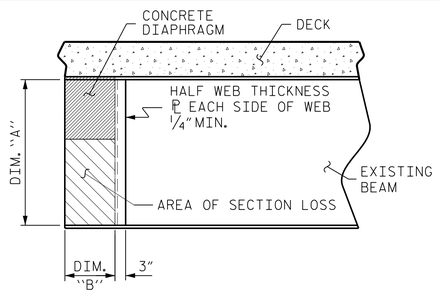


BEAM END SECTION LOSS



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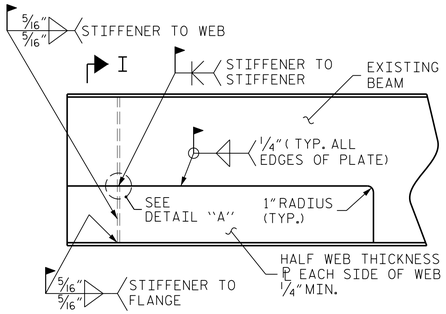
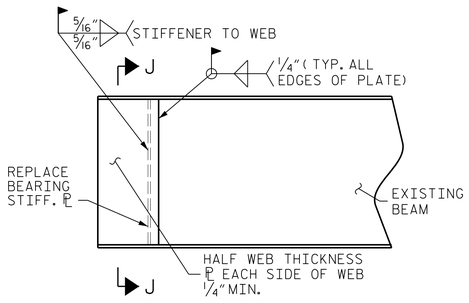


BEAM END PLATING REPAIR

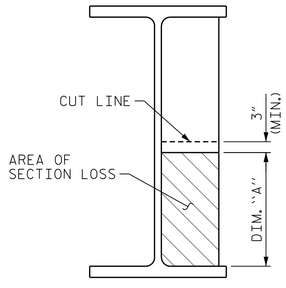
TYPE "A"



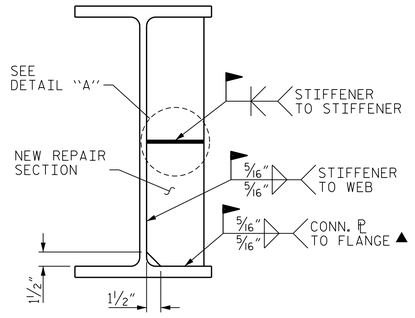
BEAM END PLATING REPAIR

TYPE "B"

BEAM END PLATING REPAIR



STIFFENER/CONN. ℄ SECTION LOSS

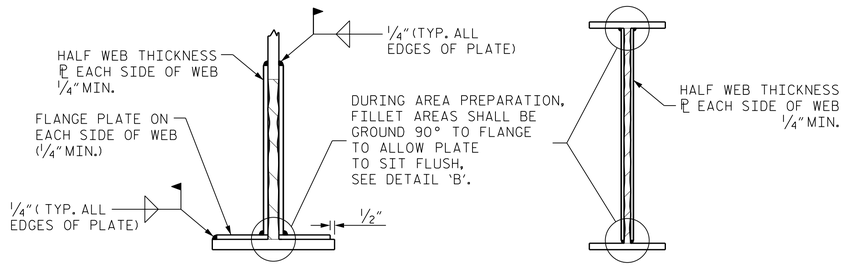


STIFFENER/CONN. ℄ SECTION REPAIR

▲FOR STIFFENERS, MILL TO BEAR AND DO NOT WELD

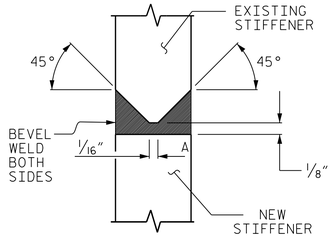
TYPE "C"

STIFFENER/CONNECTOR PLATE REPAIR

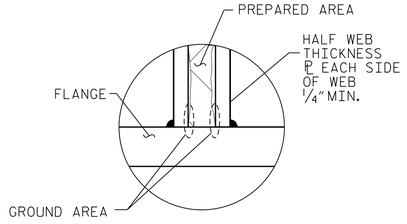


SECTION I-I

SECTION J-J



DETAIL 'A'



DETAIL 'B'

BEAM REPAIR PLATING NOTES:

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

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

REPAIR SEQUENCE:

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

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

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

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

CLEAN, BLAST AND PRIME STEEL AS REQUIRED, PRIOR TO PERFORMING STEEL REPAIRS.

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

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

FULLY WELD ALONG ALL SIDES OF THE PLATES AS SHOWN.

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

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

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

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

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

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

REMOVE ALL TRAFFIC CONTROL DEVICES.

PROJECT NO. 15BPR.128.3

BUNCOMBE COUNTY

BRIDGE NO. 100278

1/2/2025

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

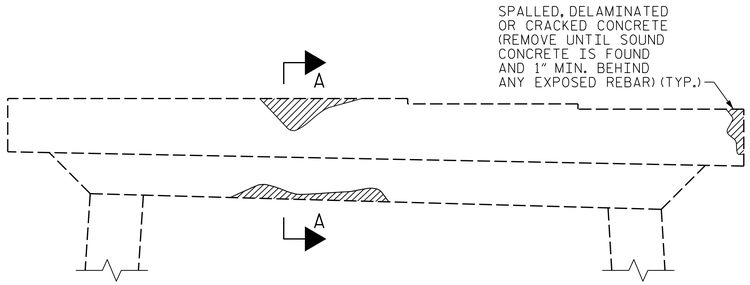
BEAM REPAIR PLATING DETAILS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

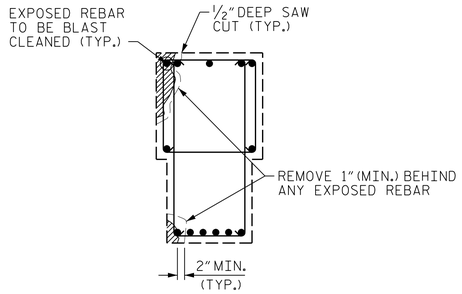
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-22
1			3			TOTAL SHEETS
2			4			48

DRAWN BY :	B.E. LANNING	DATE :	05/2022
CHECKED BY :	B.E. ATKINSON	DATE :	06/2022
DESIGN ENGINEER OF RECORD :	B.E. ATKINSON	DATE :	12/2024

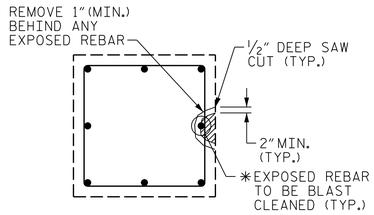


BENT CAP REPAIRS

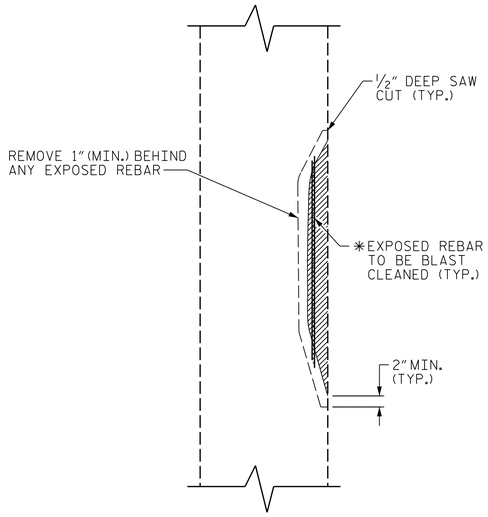


SECTION A-A

CAP REPAIR



PLAN OF COLUMN



✳ REPAIR LENGTH SHALL NOT EXCEED 10 FEET.

ELEVATION OF COLUMN

COLUMN REPAIR

NOTES:

CONTRACTOR SHALL SAW CUT TO A NOMINAL DEPTH OF ½" 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.

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

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

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

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

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

SIMULTANEOUS REMOVAL OF UNSOUND CONCRETE MAY BE PERMITTED ON MORE THAN ONE FACE OF A CAP AND/OR COLUMN, IF THE AREAS OF REMOVAL ARE NOT ADJACENT TO OR DIRECTLY OPPOSITE ONE ANOTHER. IF REMOVAL EXTENDS MORE THAN 11"2" BEHIND THE MAIN REINFORCING BARS, NOTIFY THE ENGINEER PRIOR TO PROCEEDING.

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

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

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

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY PROTECTIVE COATING, SEE EPOXY COATING AND DEBRIS REMOVAL SPECIAL PROVISIONS.

PROJECT NO. 15BPR.128.3

BUNCOMBE COUNTY

BRIDGE NO. 100278

1/2/2025

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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL CAP AND COLUMN REPAIR DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-23
1			3			TOTAL SHEETS
2			4			48

DRAWN BY :	B.E. LANNING	DATE : 05/2022
CHECKED BY :	B.E. ATKINSON	DATE : 06/2022
DESIGN ENGINEER OF RECORD :	B.E. ATKINSON	DATE : 12/2024

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:
http:/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 BRO011539/BR14043 - BLUE RIDGE DIV. MP 139.35 (CROSSING 720471C) & GULF DIV. MP 143.32, (CROSSING 730299L) (15BPR.128.3)." FAILURE TO USE THIS SUBJECT LINE MAY RESULT IN DELAYED HANDLING OF SUBMISSIONS.

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 THE 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.128.3
BUNCOMBE COUNTY
BRIDGE NO. 100076, 100278

Docusigned by:
NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON
02418B0D0C427...
1/2/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

NOTES FOR WORKING OVER NORFOLK SOUTHERN RAILROAD RIGHT OF WAY

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

DRAWN BY :	B.E. LANNING	DATE : 01/2024
CHECKED BY :	B.E. ATKINSON	DATE : 01/2024
DESIGN ENGINEER OF RECORD :	B.E. ATKINSON	DATE : 12/2024

1/2/2025
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User: blanning
Filename: N:\NC Bridges\W21001.38.15BPR.52.(3) Buncombe Co. Br. Rehab\Structures\499.097.15BPR128.SMU.NSN.dgn

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2024 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

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

CONCRETE:

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

CONCRETE CHAMFERS:

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

DOWELS:

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

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

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

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

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

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

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

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

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