PROJECT: 15BPR.133

CONTRACT NO: C204567

STATE OF NORTH CAROLINA
DIVISION OF TRANSPORTATION

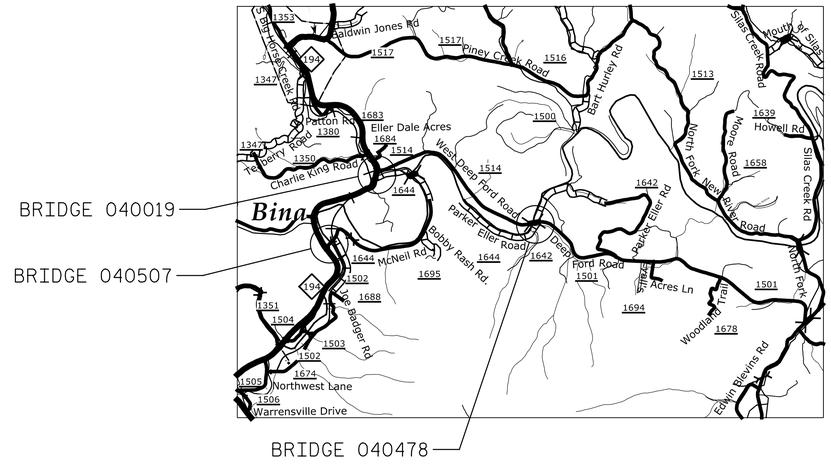
ASHE COUNTY

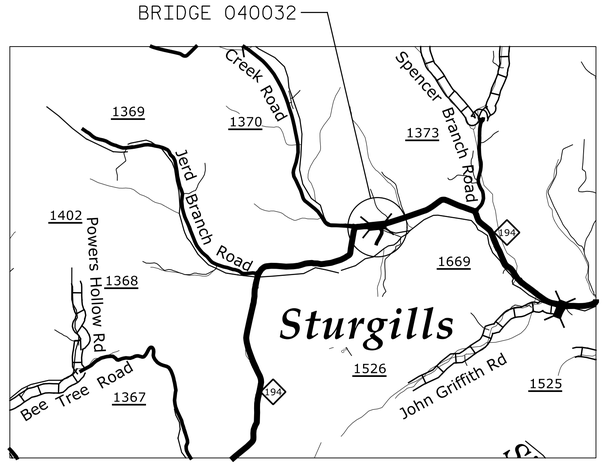
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	15BPR.133	1	87

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
15BPR.133.1	–	P.E.
15BPR.133.3	–	CONSTRUCTION

LOCATION: ***BRIDGE #040019 ON NC 194 OVER BIG HORSE CREEK***
BRIDGE #040032 ON NC 194 OVER HELTON CREEK
BRIDGE #040478 ON SR 1514 (WEST DEEP FORD ROAD) OVER NORTH FORK NEW RIVER
BRIDGE #040507 ON SR 1644 (MCNEIL ROAD) OVER NORTH FORK NEW RIVER

TYPE OF WORK: ***BRIDGE PRESERVATION – DECK REPAIRS, LATEX MODIFIED CONCRETE AND LATEX MODIFIED CONCRETE–VERY EARLY STRENGTH OVERLAY, LINK SLAB CONSTRUCTION, POURABLE SILICONE JOINT SEALANT, BEARING REPLACEMENTS, CLEANING AND PAINTING BEARINGS WITH HRCSA, PRESTRESSED CONCRETE GIRDER REPAIR, FIBER REINFORCED POLYMER (FRP) REPAIR OF PRESTRESSED CONCRETE GIRDERS, EPOXY COATING ENDS OF PRESTRESSED GIRDERS, STEEL BEAM REPAIR, SUBSTRUCTURE REPAIR, CLEANING AND PAINTING OF EXISTING STEEL BRIDGE STRUCTURES***





VICINITY MAPS – ASHE COUNTY

DESIGN DATA
ASHE COUNTY

040019 ADT 2019 = 5,200
040032 ADT 2019 = 800
040478 ADT 2021 = 1,300
040507 ADT 2015 = 130

PROJECT LENGTH
ASHE COUNTY

040019 = 0.044 MILES
040032 = 0.080 MILES
040478 = 0.090 MILES
040507 = 0.063 MILES

GANNETT FLEMING
One Glenwood Avenue
Suite 900
Raleigh, NC 27603
919-4207660
NC Lic.No.F-0270

TIMOTHY M. SHERRILL, P.E.
NCDOT PROJECT ENGINEER

2024 STANDARD SPECIFICATIONS

LETTING DATE:
APRIL 15, 2025

NORTH CAROLINA PROFESSIONAL SEAL 020208 ENGINEER ERIC B. NELSON JR.

DocuSigned by: Eric B. Nelson Jr. 12/31/2024
ACB80821190F4CD...

RICK NELSON, P.E.
PROJECT DESIGN ENGINEER

PROJECT: 15BPR.133

CONTRACT NO: C204567

STATE OF NORTH CAROLINA
DIVISION OF TRANSPORTATION

ASHE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	15BPR.133	1A	87

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INDEX OF DRAWINGS

SHEET NO.	DESCRIPTION
1	TITLE SHEET
1A	INDEX OF SHEETS
S–1	TOTAL BILL OF MATERIAL

STRUCTURE No. 040019

S1–1 TO S1–2	GENERAL DRAWINGS
S1–3	TYPICAL SECTION AND SURFACE PREPARATION DETAILS
S1–4 TO S1–6	DECK REPAIRS
S1–7	POURABLE SILICONE JOINT SEALANT DETAILS
S1–8 TO S1–10	LINK SLAB DETAILS
S1–11	FRAMING PLAN
S1–12	PRESTRESSED CONCRETE GIRDER REPAIR DETAILS
S1–13 TO S1–15	SUBSTRUCTURE REPAIRS
S1–16	APPROACH MILLING AND TYPICAL ROADWAY SECTIONS

STRUCTURE No. 040032

S2–1 TO S2–2	GENERAL DRAWINGS
S2–3	TYPICAL SECTION AND SURFACE PREPARATION DETAILS
S2–4 TO S2–7	DECK REPAIRS
S2–8	POURABLE SILICONE JOINT SEALANT DETAILS
S2–9 TO S2–11	LINK SLAB DETAILS
S2–12	FRAMING PLAN
S2–13	PRESTRESSED CONCRETE GIRDER REPAIR DETAILS
S2–14	PRESTRESSED CONCRETE GIRDER FRP DETAILS
S2–15	LATERAL GUIDE REMOVAL AND REPAIR DETAILS
S2–16 TO S2–19	SUBSTRUCTURE REPAIRS
S2–20	APPROACH MILLING AND TYPICAL ROADWAY SECTIONS

STRUCTURE No. 040478

S3–1 TO S3–2	GENERAL DRAWINGS
S3–3	TYPICAL SECTION AND SURFACE PREPARATION DETAILS
S3–4 TO S3–9	DECK REPAIRS
S3–10	POURABLE SILICONE JOINT SEALANT DETAILS
S3–11	FRAMING PLAN
S3–12 TO S3–13	BEARING DETAILS
S3–14 TO S3–24	SUBSTRUCTURE REPAIRS
S3–25	APPROACH MILLING AND TYPICAL ROADWAY SECTIONS

STRUCTURE No. 040507

S4–1 TO S4–2	GENERAL DRAWINGS
S4–3	TYPICAL SECTION AND SURFACE PREPARATION DETAILS
S4–4 TO S4–7	DECK REPAIRS
S4–8	POURABLE SILICONE JOINT SEALANT DETAILS
S4–9	FRAMING PLAN
S4–10 TO S4–11	BEARING DETAILS
S4–12 TO S4–18	SUBSTRUCTURE REPAIRS
S4–19	APPROACH MILLING AND TYPICAL ROADWAY SECTIONS

STANDARD SHEETS

SD–1	BEAM REPAIR CUT–OUT DETAILS
SD–2	OVERHANG AND DIAPHRAGM REPAIR DETAILS
SD–3	TYPICAL CAP AND COLUMN REPAIR DETAILS
SD–4	BRIDGE JACKING DETAILS
SN	STANDARD NOTES

TOTAL BILL OF MATERIAL

BRIDGE NO.	INCIDENTAL MILLING	ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B	ASPHALT BINDER FOR PLANT MIX	GROOVING BRIDGE FLOORS	CONCRETE BARRIER RAIL	EPOXY COATED REINFORCING STEEL	CLASS II SURFACE PREPARATION	CLASS III SURFACE PREPARATION	LATEX MODIFIED CONCRETE OVERLAY	LATEX MODIFIED CONCRETE OVERLAY -VERY EARLY STRENGTH	PLACING & FINISHING OF LATEX MODIFIED CONCRETE OVERLAY	PLACING & FINISHING OF LATEX MODIFIED CONCRETE OVERLAY -VERY EARLY STRENGTH	CONCRETE REPAIRS	SHOTCRETE REPAIRS	EPOXY RESIN INJECTION	FIELD MEASURING	CLEANING AND REPAINTING OF BRIDGE #__
	SQ. YDS	TONS	TONS	SQ. FT.	LIN. FT.	LBS.	SQ. YDS.	SQ. YDS.	CU. YDS.	CU. YDS.	SQ. YDS.	SQ. YDS.	CU. FT.	CU. FT.	LIN. FT.	LUMP SUM	LUMP SUM
040019	163	14	1	4,732	12.0	1,521	0.2	21.8	50.5	-	569.7	-	16.8	31.0	1.5	-	-
040032	334	28	2	9,762	21.4	1,104	39.2	-	103.4	-	1,154.7	-	36.6	68.6	5.0	-	-
040478	544	75	5	6,404	-	-	-	-	-	54.0	-	785.2	23.5	170.3	6.0	LUMP SUM	LUMP SUM
040507	220	28	2	5,180	-	-	-	-	-	38.9	-	634.0	0.5	90.3	-	LUMP SUM	LUMP SUM
TOTAL	1,261	145	10	26,078	33.4	2,625	39.4	21.8	153.9	92.9	1,724.4	1,419.2	77.4	360.2	12.5	LUMP SUM	LUMP SUM

TOTAL BILL OF MATERIAL

BRIDGE NO.	PAINTING CONTAINMENT FOR BRIDGE #__	POLLUTION CONTROL	VOLUMETRIC MIXER	POURABLE SILICONE JOINT SEALANT	VERY HIGH PERFORMANCE CONCRETE	ELASTOMERIC CONCRETE FOR PRESERVATION	REPAIRS TO PRESTRESSED CONCRETE GIRDERS FOR BRIDGE #040019	REPAIRS TO PRESTRESSED CONCRETE GIRDERS FOR BRIDGE #040032	BEAM REPAIR CUT-OUT	BRIDGE JOINT DEMOLITION	EPOXY COATING CONCRETE GIRDER ENDS	FRP STRENGTHENING SYSTEM	EPOXY COATING	HYDRO-DEMOLITION OF BRIDGE DECK	SCARIFYING BRIDGE DECK	CLEANING AND PAINTING EXISTING BEARINGS WITH HIGH RATIO CALCIUM SULFONATE	ELASTOMERIC BEARING, MODIFIED	TYPE I BRIDGE JACKING BRIDGE NO. _	TYPE II BRIDGE JACKING BRIDGE NO. _
	LUMP SUM	LUMP SUM	LUMP SUM	LIN. FT.	CU. FT.	CU. FT.	CU. FT.	CU. FT.	LBS.	SQ. FT.	SQ. FT.	SQ. FT.	SQ. FT.	SQ. YDS.	SQ. YDS.	EA.	EA.	EA.	EA.
040019	-	-	LUMP SUM	109.5	-	26.1	21.3	-	-	103.8	346	-	100	569.7	569.7	-	-	3	2
040032	-	-	LUMP SUM	210.0	169.4	51.0	-	162.3	-	209.6	-	1,956	196	1,154.7	1,154.7	-	-	-	6
040478	LUMP SUM	LUMP SUM	LUMP SUM	150.0	-	35.0	-	-	7,155	139.0	-	-	340	785.2	785.2	8	40	40	-
040507	LUMP SUM	LUMP SUM	LUMP SUM	81.0	-	18.6	-	-	3,195	74.4	-	-	183	634.0	634.0	8	24	24	-
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	550.5	169.4	130.7	21.3	162.3	10,350	526.8	346	1,956	819	3,143.6	3,143.6	16	64	67	8

NOTE:

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

UNANTICIPATED ITEMS:
SPLICING OF PRESTRESSING STRAND

PROJECT NO. 15BPR.133

ASHE COUNTY

BRIDGE NO. 040019,040032
040478,040507

NORTH CAROLINA PROFESSIONAL SEAL 020208 ENGINEER ERIC B. NELSON JR.

DocuSigned by: Eric B. Nelson Jr. 1/29/2025
ACB80821190744CD...

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TOTAL BILL OF MATERIAL

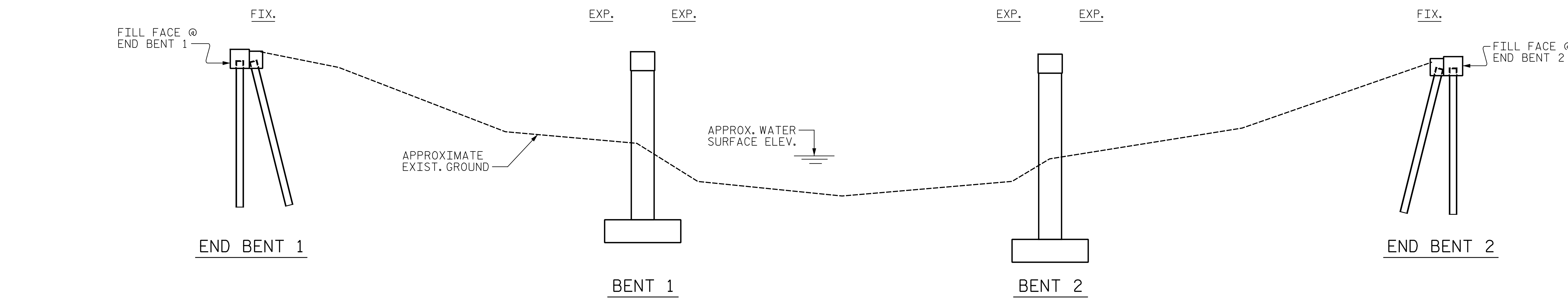
GANNETT FLEMING

One Glenwood Avenue
Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic.No.F-0270

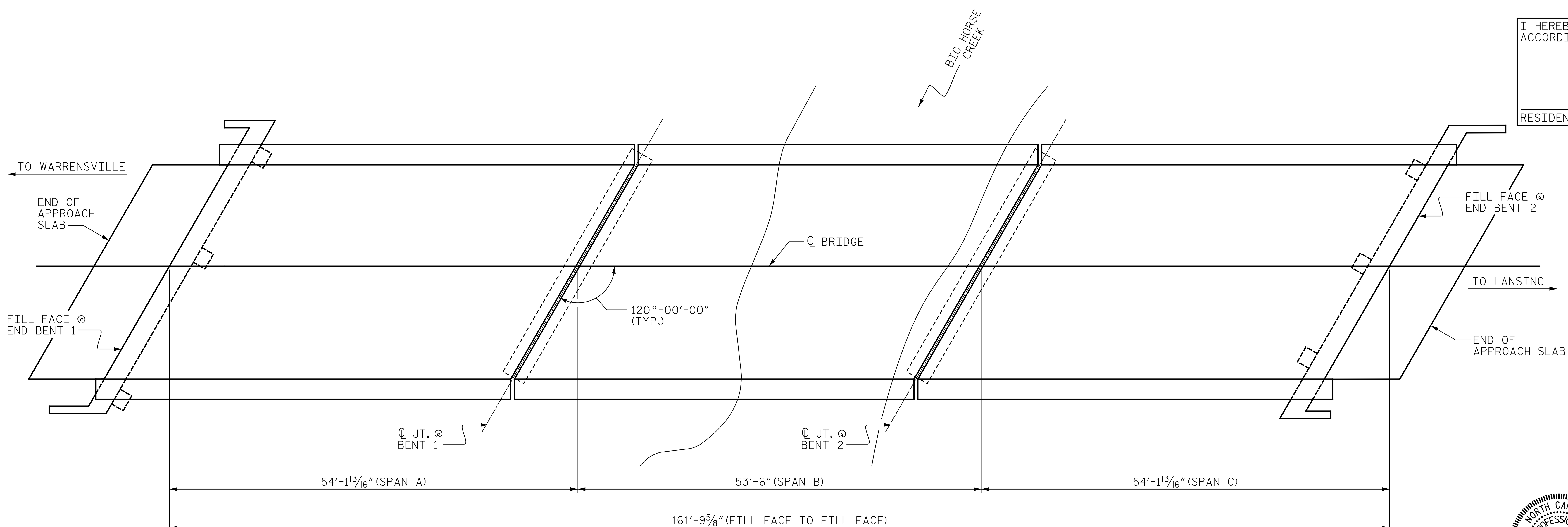
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			87

DRAWN BY : J.HARRIS DATE : 03/2022
CHECKED BY : J. YANNACCONE DATE : 03/2022



SECTION ALONG ℄ BRIDGE
(SECTION AT BENTS AND END BENTS ARE AT RIGHT ANGLES)



PLAN
(PILES NOT SHOWN FOR CLARITY)

NOTES:
GENERAL DRAWING INFORMATION IS TAKEN FROM THE ORIGINAL PLANS AND THE ROUTINE INSPECTION REPORT DATED 5/22/2024.

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

SCOPE OF WORK
REMOVE EPOXY OVERLAY AND PARTIALLY REMOVE TOP OF BRIDGE DECK CONCRETE BY SCARIFICATION AND HYDRO-DEMOLITION.

CONSTRUCT BRIDGE DECK LINK SLAB AT JOINT LOCATION INDICATED IN THE PLANS.

OVERLAY PREPARED TOP OF BRIDGE DECK WITH LATEX MODIFIED CONCRETE (LMC).

REMOVE EXISTING JOINT MATERIAL AND INSTALL POURABLE SILICONE JOINT SEALS WITH ELASTOMETRIC CONCRETE HEADERS.

GROOVE LMC BRIDGE DECK.

MILL AND REPAVE ASPHALT APPROACH ROADWAYS.

REPAIR PRESTRESSED CONCRETE GIRDERS.

CLEAN AND EPOXY COAT EXISTING PRESTRESSED CONCRETE GIRDER ENDS.

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

REMOVE UNSOUND CONCRETE AT EXISTING END BENT AND BENT AREAS AND PERFORM SHOTCRETE AND CONCRETE REPAIRS.

CONSTRUCTION SEQUENCE
ALL WORK REQUIRING BRIDGE JACKING AND SUPPORT OF GIRDERS SHALL BE COMPLETED PRIOR TO PERFORMING ANY DECK AND JOINT REPAIR WORK, INCLUDING LINK SLAB CONSTRUCTION, DECK OVERLAYS, AND JOINT REPLACEMENTS.

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

RESIDENT ENGINEER   DATE

PROJECT NO. 15BPR.133

ASHE COUNTY

BRIDGE NO. 040019

SHEET 1 OF 2

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 020208 ERIC B. NELSON JR.

DocuSigned by: 12/17/2024

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON NC 194 OVER BIG HORSE CREEK

GANNETT FLEMING
One Glenwood Avenue
Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

SHEET NO. S1-1
TOTAL SHEETS 87

DRAWN BY : R. LEON/J. HARRIS DATE : 03/2022
CHECKED BY : J. FARNHAM DATE : 03/2022

LOCATION SKETCH

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

BRIDGE COORDINATES	
LATITUDE	LONGITUDE
36°-29'-7.7''	81°-29'-55.38''

GENERAL NOTES

SEE CONTRACT DOCUMENTS FOR LANE WIDTHS, SEQUENCING AND OTHER TRAFFIC CONTROL MEASURES FOR STAGING OF OVERLAY SURFACE PREPARATION AND LATEX MODIFIED CONCRETE (LMC) PLACEMENT AND LINK SLAB CONSTRUCTION.

FOR NEW ASPHALT PLACEMENT, SEE STANDARD SPECIFICATIONS.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT DUE TO THE NATURE OF PRESERVATION PROJECTS, THE EXTENT OF WORK CANNOT ALWAYS BE ACCURATELY DETERMINED PRIOR TO COMMENCEMENT OF WORK. REPAIR LOCATIONS AND ESTIMATES OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS.

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

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

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

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

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

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

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

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

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CONCRETE FOR DECK REPAIR, SEE SPECIAL PROVISIONS.

FOR VOLUMETRIC MIXER, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

ALL PAVEMENT MARKING WILL BE IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

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

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

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

FOR LATEX MODIFIED CONCRETE AND PLACING AND FINISHING OF LATEX MODIFIED CONCRETE OVERLAY, SEE LATEX MODIFIED CONCRETE OVERLAY SPECIAL PROVISION.

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

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 PROTECTIVE DEVICES ARE NOT ADEQUATE OR NOT BEING EMPLOYED, THE WORK SHALL BE SUSPENDED UNTIL ADEQUATE PROTECTION IS PROVIDED.

FOR ELASTOMERIC CONCRETE FOR PRESERVATION, SEE SPECIAL PROVISIONS.

FOR BRIDGE JOINT DEMOLITION, SEE SPECIAL PROVISIONS.

FOR POURABLE SILICONE JOINT SEALANT, SEE SPECIAL PROVISIONS.

FOR BRIDGE JACKING, SEE SPECIAL PROVISIONS.

FOR REPAIRS TO PRESTRESSED CONCRETE GIRDERS FOR BRIDGE #040019, SEE SPECIAL PROVISIONS.

FOR EPOXY COATING CONCRETE GIRDER ENDS, SEE SPECIAL PROVISIONS.

FOR EPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

PROJECT NO. 15BPR.133

ASHE COUNTY

BRIDGE NO. 040019

SHEET 2 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 020208 ENGINEER ERIC B. NELSON

DocuSigned by: Eric B Nelson Jr 12/17/2024 ACB80821190740D...

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON
NC 194 OVER
BIG HORSE CREEK

GANNETT FLEMING

One Glenwood Avenue
Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic.No.F-0270

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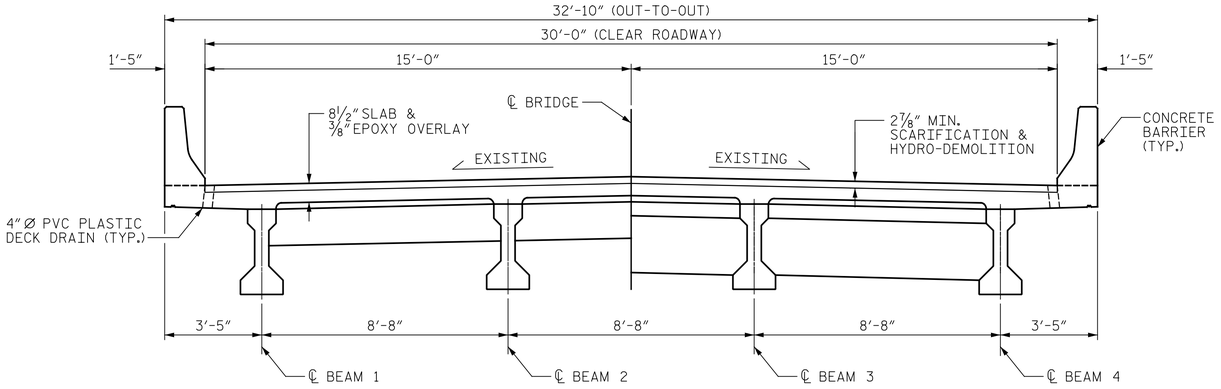
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-2
1			3			TOTAL SHEETS
2			4			87

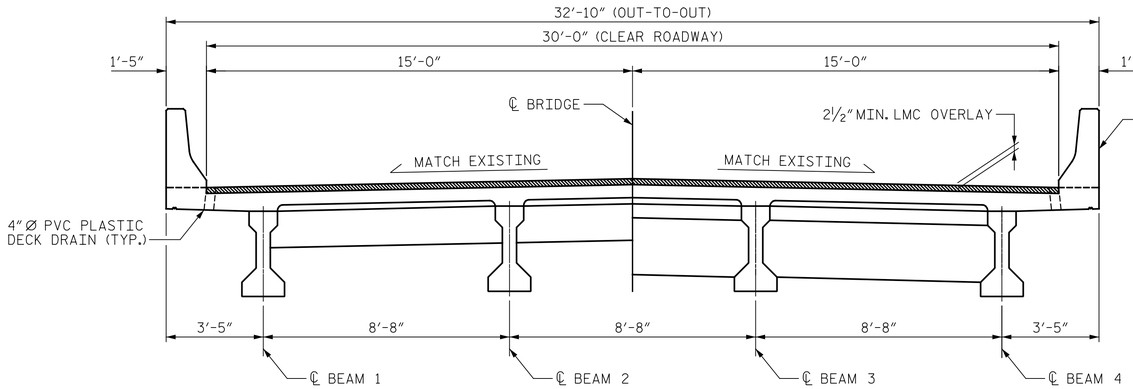
DRAWN BY : R. LEON/J. HARRIS DATE : 03/2022
CHECKED BY : J. FARNHAM DATE : 03/2022



HALF SECTION AT BENT DIAPHRAGM

HALF SECTION AT INTERMEDIATE DIAPHRAGM

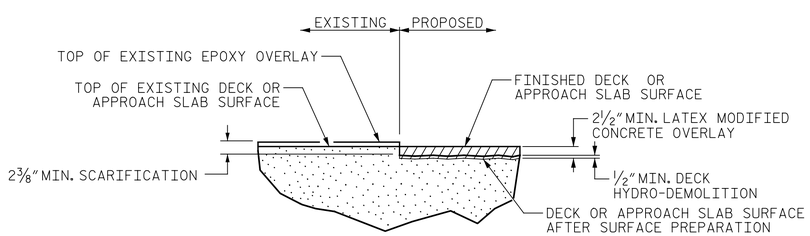
TYPICAL SECTION
(EXISTING)



HALF SECTION AT BENT DIAPHRAGM
(FOR TYPICAL SECTION AT LINK SLAB, SEE "LINK SLAB DETAILS" SHEET 1 OF 4)

HALF SECTION AT INTERMEDIATE DIAPHRAGM

TYPICAL SECTION
(PROPOSED)

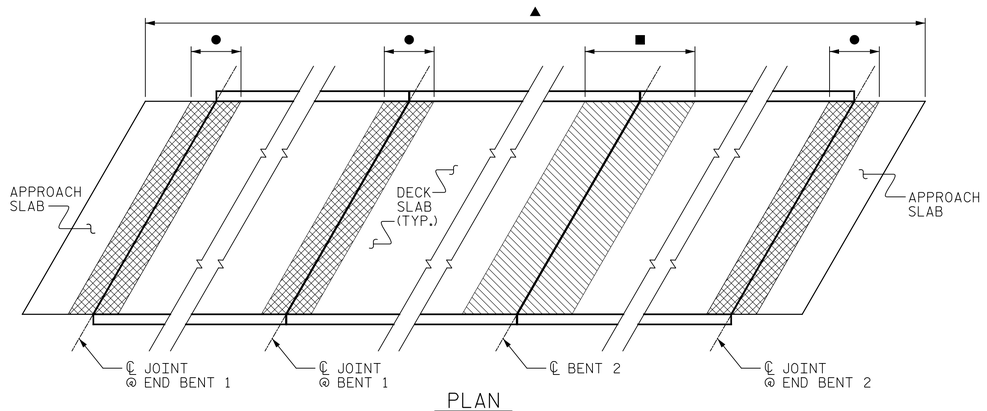


DETAIL FOR LMC OVERLAY

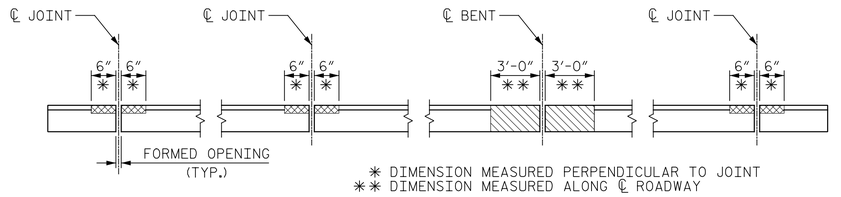
NOTES:

SEE CONTRACT DOCUMENTS FOR LANE WIDTHS, SEQUENCING, AND OTHER TRAFFIC CONTROL MEASURES FOR STAGING OF OVERLAY SURFACE PREPARATION AND LMC PLACEMENT.

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



PLAN



∗ DIMENSION MEASURED PERPENDICULAR TO JOINT
∗∗ DIMENSION MEASURED ALONG ℄ ROADWAY

ELEVATION

ELASTOMERIC CONCRETE FOR PRESERVATION

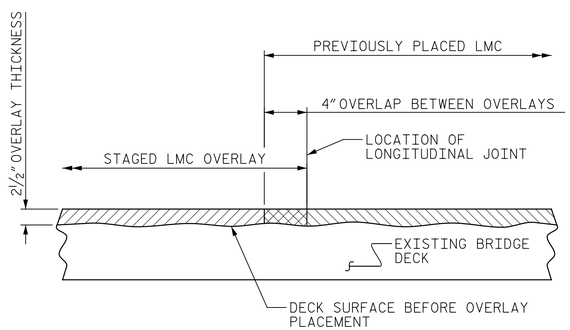
LATEX MODIFIED CONCRETE FOR LINK SLAB

▲ LIMITS OF SCARIFICATION, HYDRO-DEMOLITION, CLASS II SURFACE PREPARATION, PLACING & FINISHING LMC OVERLAY (SEE PLAN OF SPANS)

● BRIDGE JOINT DEMOLITION

■ LIMITS OF CLASS III SURFACE PREPARATION (LINK SLAB)

PAY LIMITS FOR OVERLAY BID ITEMS



STAGED LMC OVERLAY CONSTRUCTION JOINT
(AS NEEDED)

PROJECT NO. 15BPR.133

ASHE COUNTY

BRIDGE NO. 040019

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION AND SURFACE PREPARATION DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 020208 ENGINEER ERIC B. NELSON JR.

DocuSigned by: Eric B. Nelson Jr. ACB8082119D74CD... 12/17/2024

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DRAWN BY : J. HARRIS DATE : 03/2022
CHECKED BY : J. YANNACCONE DATE : 03/2022

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-3
1			3			TOTAL SHEETS
2			4			87

NOTES:

REPAIR LOCATIONS AND ESTIMATED QUANTITIES ARE GIVEN WITH 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 ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

PAYMENT FOR CLASS II SURFACE PREPARATION, IS BASED UPON SQUARE FEET OF ADDITIONAL DEMOLITION REQUIRED FOLLOWING SCARIFICATION OF BRIDGE DECK. SEE "LMC OVERLAY SURFACE PREPARATION" SPECIAL PROVISION.

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

AS-BUILT REPAIR QUANTITY TABLE

APPROACH SLAB @ END BENT 1

	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	29.0 SY	
HYDRO-DEMOLITION OF BRIDGE DECK	29.0 SY	
CLASS II SURFACE PREPARATION	0.0 SY	
CLASS III SURFACE PREPARATION	0.0 SY	
BRIDGE JOINT DEMOLITION	17.3 SF	
LATEX MODIFIED CONCRETE OVERLAY	2.2 CY	
PLACING & FINISHING LMC OVERLAY	29.0 SY	
GROOVING BRIDGE FLOORS	225 SF	

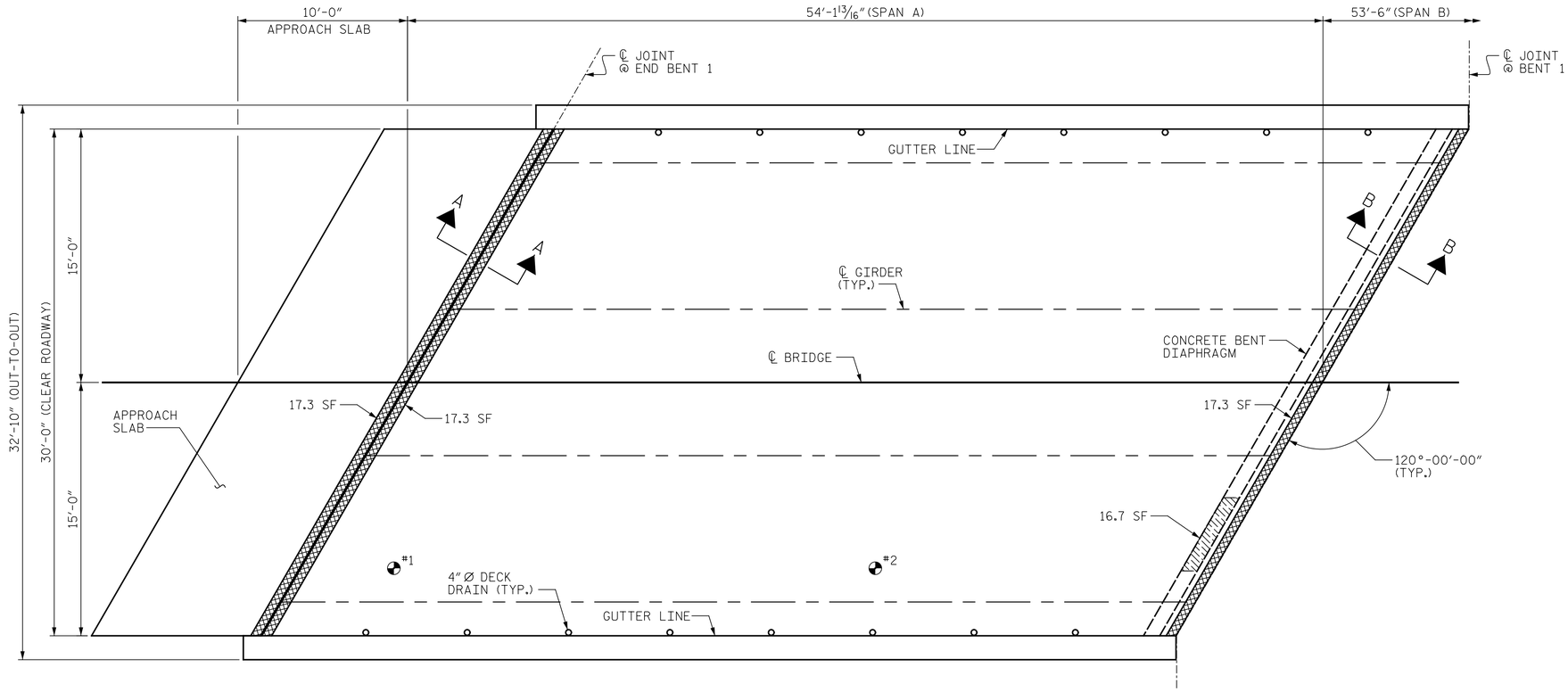
AS-BUILT REPAIR QUANTITY TABLE

SPAN A TOP OF DECK REPAIRS

	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	176.7 SY	
HYDRO-DEMOLITION OF BRIDGE DECK	176.7 SY	
CLASS II SURFACE PREPARATION	0.0 SY	
CLASS III SURFACE PREPARATION	0.0 SY	
BRIDGE JOINT DEMOLITION	34.6 SF	
LATEX MODIFIED CONCRETE OVERLAY	13.5 CY	
PLACING & FINISHING LMC OVERLAY	176.7 SY	
GROOVING BRIDGE FLOORS	1419 SF	

SPAN A UNDERSIDE OF DECK REPAIRS

SHOTCRETE REPAIRS	ESTIMATE		ACTUAL	
	AREA SF	VOL CF	AREA SF	VOL CF
UNDERSIDE OF DECK	0.0	0.0		
CONCRETE DIAPHRAGMS	16.7	8.3		



SCARIFYING AND HYDRO-DEMOLITION OF BRIDGE DECK

APPROX. AREA CLASS II SURFACE PREPARATION

APPROX. AREA CLASS III SURFACE PREPARATION

BRIDGE JOINT DEMOLITION

UNDERSIDE OF DECK REPAIR

#1 TEST LOCATION

APPROACH SLAB @ END BENT 1

SPAN A

TEST LOCATION	CONCRETE STRENGTH (PSI)
#1	✳ 7500
#2	✳ 8700

INFORMATION IN CHART TAKEN FROM DECK EVALUATION DATED 6/21/2019.

✳ READINGS TAKEN ON EPOXY OVERLAY

PROJECT NO. 15BPR.133

ASHE COUNTY

BRIDGE NO. 040019

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK REPAIRS
SPAN A
&
APPROACH SLAB

NORTH CAROLINA PROFESSIONAL SEAL 020208 ENGINEER ERIC B. NELSON JR.

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CHECKED BY : J. FARNHAM DATE : 03/2022

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FOR SECTION B-B, SEE "POURABLE SILICONE JOINT SEALANT DETAILS" SHEET.

FOR SECTION C-C & CONCRETE BARRIER RAIL REPAIR, SEE "LINK SLAB DETAILS" SHEET 3 OF 3.

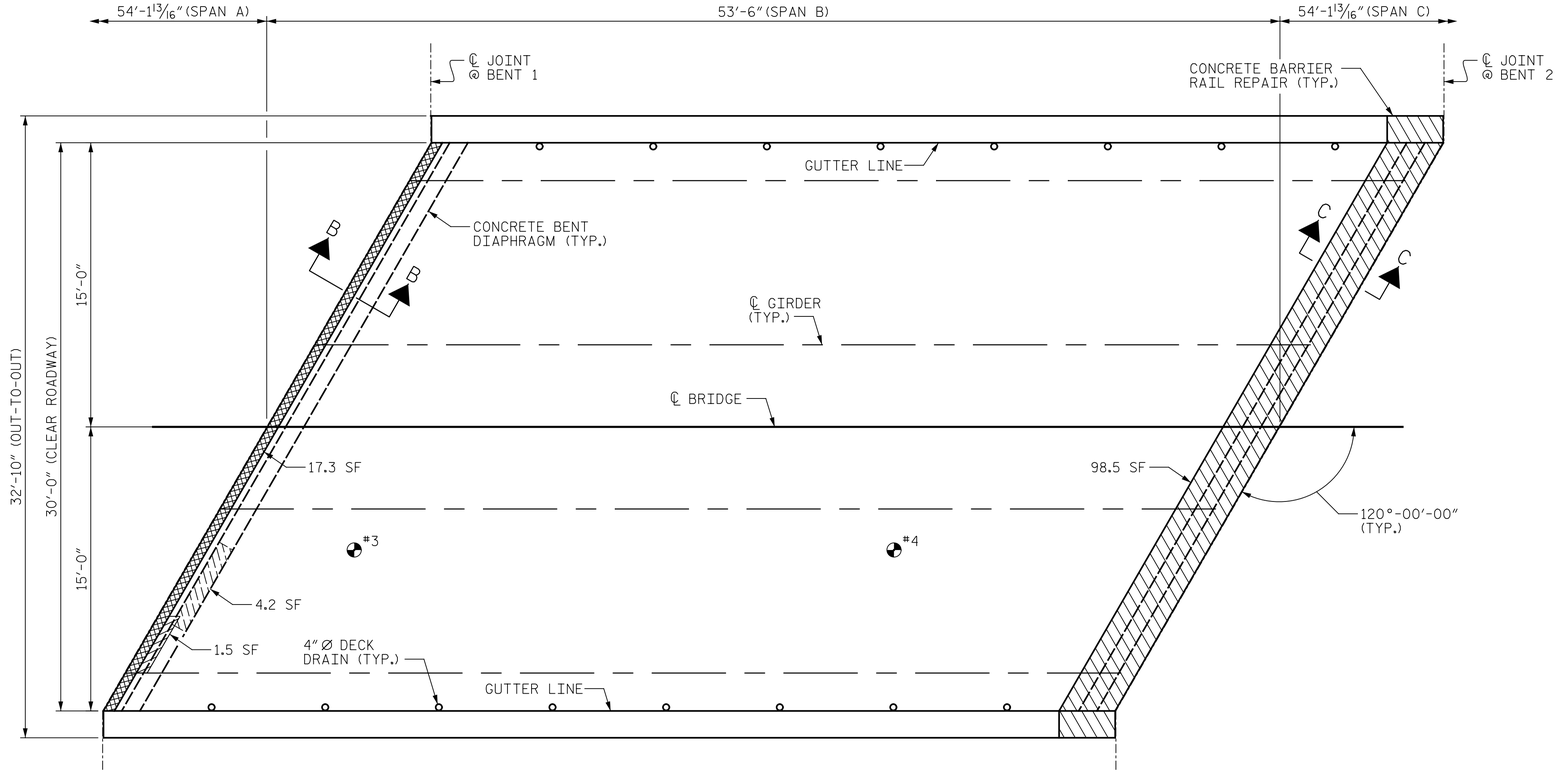
AS-BUILT REPAIR QUANTITY TABLE

SPAN B TOP OF DECK REPAIRS

	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	166.4 SY	
HYDRO-DEMOLITION OF BRIDGE DECK	166.4 SY	
CLASS II SURFACE PREPARATION	0.2 SY	
CLASS III SURFACE PREPARATION	10.9 SY	
BRIDGE JOINT DEMOLITION	17.3 SF	
LATEX MODIFIED CONCRETE OVERLAY	16.2 CY	
PLACING & FINISHING LMC OVERLAY	176.4 SY	
GROOVING BRIDGE FLOORS	1422 SF	

SPAN B UNDERSIDE OF DECK REPAIRS

SHOTCRETE REPAIRS	ESTIMATE		ACTUAL	
	AREA SF	VOL CF	AREA SF	VOL CF
UNDERSIDE OF DECK	0.0	0.0		
CONCRETE DIAPHRAGMS	4.2	2.1		



- SCARIFYING AND HYDRO-DEMOLITION OF BRIDGE DECK
- APPROX. AREA CLASS II SURFACE PREPARATION
- APPROX. AREA CLASS III SURFACE PREPARATION
- BRIDGE JOINT DEMOLITION
- UNDERSIDE OF DECK REPAIR
- #1 TEST LOCATION

SPAN B

TEST LOCATION	CONCRETE STRENGTH (PSI)
#3	✳ 8200
#4	✳ 7950

INFORMATION IN CHART TAKEN FROM DECK EVALUATION DATED 6/21/2019.

✳ READINGS TAKEN ON EPOXY OVERLAY

PROJECT NO. 15BPR.133

ASHE COUNTY

BRIDGE NO. 040019

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK REPAIRS

SPAN B

NORTH CAROLINA PROFESSIONAL SEAL 020208 ENGINEER ERIC B. NELSON

DocuSigned by: Eric Nelson 12/17/2024
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FOR SECTION A-A, SEE "POURABLE SILICONE JOINT SEALANT DETAILS" SHEET.

FOR SECTION C-C & CONCRETE BARRIER RAIL REPAIR, SEE "LINK SLAB DETAILS" SHEET 3 OF 3.

AS-BUILT REPAIR QUANTITY TABLE

SPAN C TOP OF DECK REPAIRS

	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	168.6 SY	
HYDRO-DEMOLITION OF BRIDGE DECK	168.6 SY	
CLASS II SURFACE PREPARATION	0.0 SY	
CLASS III SURFACE PREPARATION	10.9 SY	
BRIDGE JOINT DEMOLITION	17.3 SF	
LATEX MODIFIED CONCRETE OVERLAY	16.4 CY	
PLACING & FINISHING LMC OVERLAY	178.6 SY	
GROOVING BRIDGE FLOORS	1441 SF	

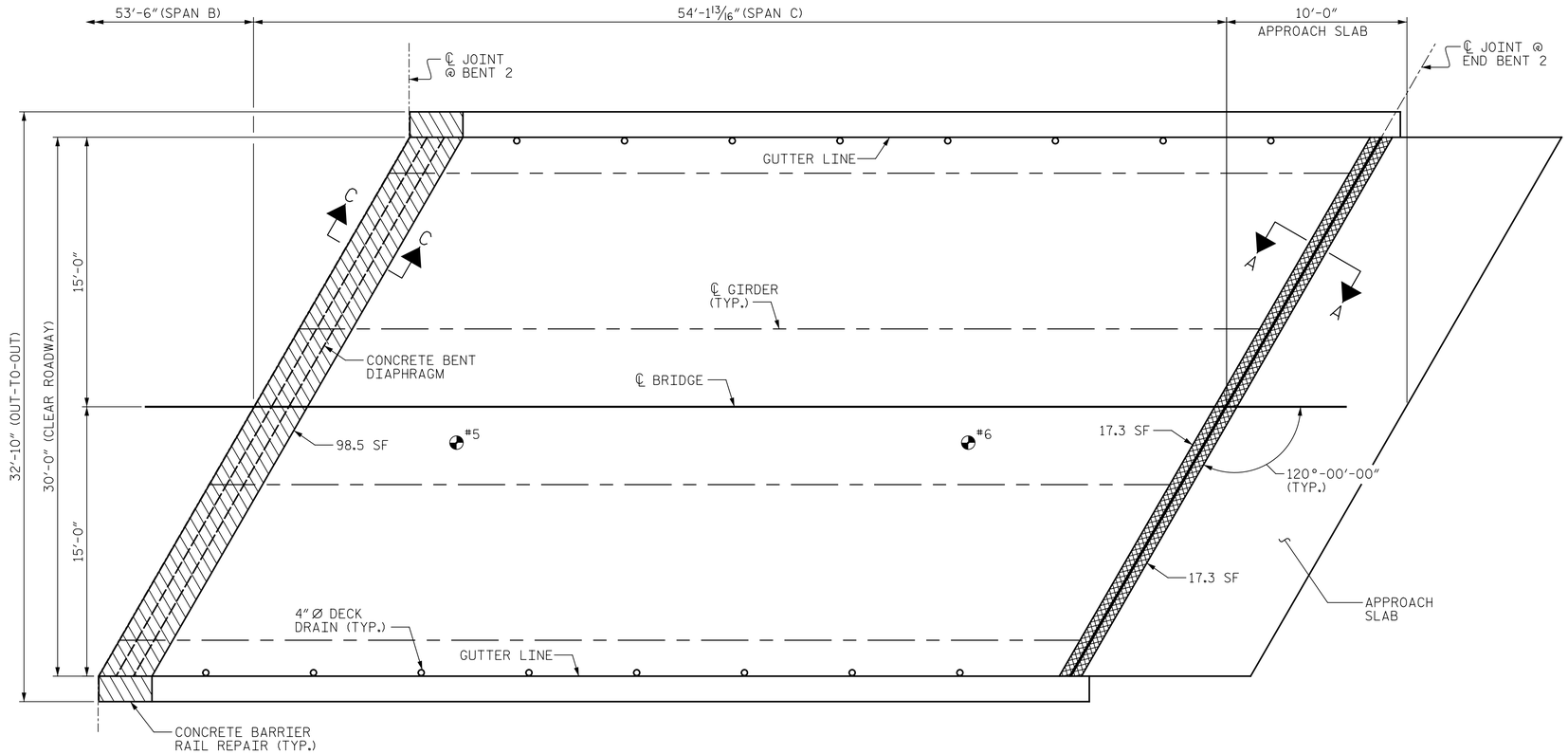
SPAN C UNDERSIDE OF DECK REPAIRS

SHOTCRETE REPAIRS	ESTIMATE		ACTUAL	
	AREA SF	VOL CF	AREA SF	VOL CF
UNDERSIDE OF DECK	0.0	0.0		
CONCRETE DIAPHRAGMS	0.0	0.0		

AS-BUILT REPAIR QUANTITY TABLE

APPROACH SLAB @ END BENT 2

	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	29.0 SY	
HYDRO-DEMOLITION OF BRIDGE DECK	29.0 SY	
CLASS II SURFACE PREPARATION	0.0 SY	
CLASS III SURFACE PREPARATION	0.0 SY	
BRIDGE JOINT DEMOLITION	17.3 SF	
LATEX MODIFIED CONCRETE OVERLAY	2.2 CY	
PLACING & FINISHING LMC OVERLAY	29.0 SY	
GROOVING BRIDGE FLOORS	225 SF	



SPAN C

TEST LOCATION	CONCRETE STRENGTH (PSI)
#5	✳ 8200
#6	✳ 7700

INFORMATION IN CHART TAKEN FROM DECK EVALUATION DATED 6/21/2019.

✳ READINGS TAKEN ON EPOXY OVERLAY

APPROACH SLAB @ END BENT 2

NORTH CAROLINA PROFESSIONAL SEAL 020208 ENGINEER ERIC B. NELSON JR.

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PROJECT NO. 15BPR.133
ASHE COUNTY
BRIDGE NO. 040019
SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK REPAIRS
SPAN C
&
APPROACH SLAB

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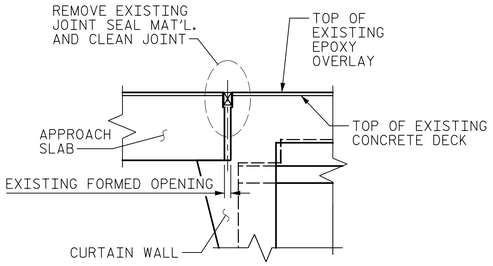

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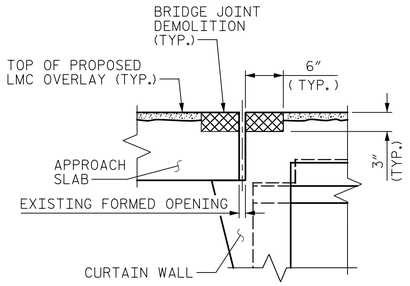
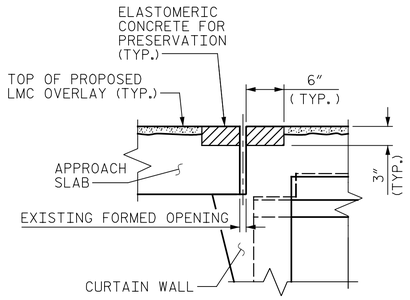
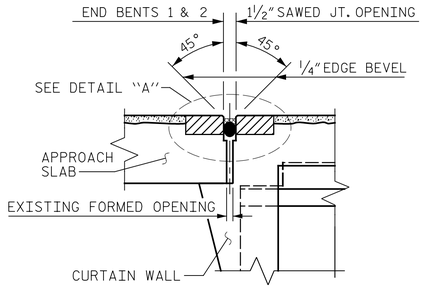


MINIMUM JOINT DEMOLITION

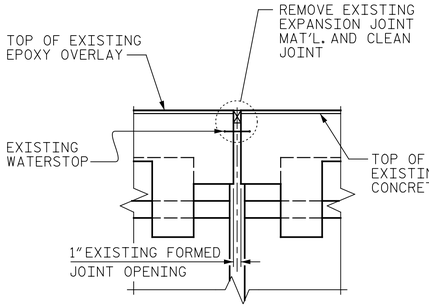


PROPOSED JOINT PRE-SAWED DIMENSIONS

SECTION A-A



PROPOSED POURABLE SILICONE JOINT SEALANT



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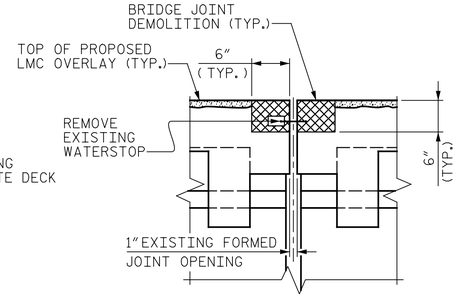
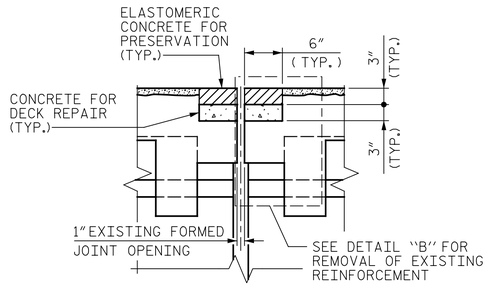
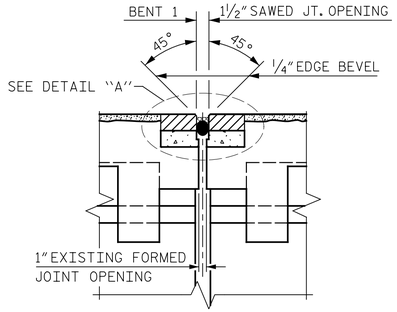


MINIMUM JOINT DEMOLITION



PROPOSED JOINT PRE-SAWED DIMENSIONS

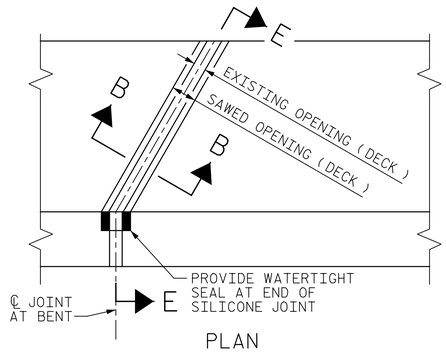
SECTION B-B



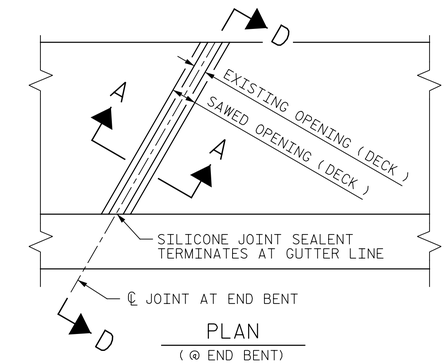
PROPOSED POURABLE SILICONE JOINT SEALANT

LOCATION	POURABLE SILICONE JOINT SEALANT	ELASTOMERIC CONCRETE FOR PRESERVATION	CONCRETE FOR DECK REPAIR
	LIN. FT.	CU. FT.	CU. FT.
END BENT 1	36.5	8.7	-
BENT 1	36.5	8.7	8.7
END BENT 2	36.5	8.7	-
✳ TOTAL	109.5	26.1	8.7

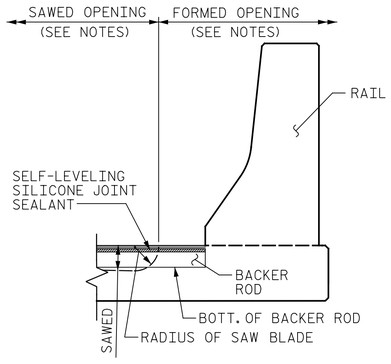
✳ BASED ON MINIMUM BLOCKOUT SHOWN



PLAN
(@ BENT)



PLAN
(@ END BENT)



SECTION D-D
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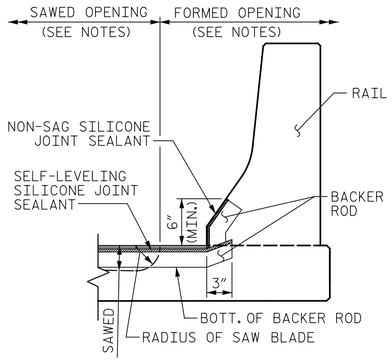
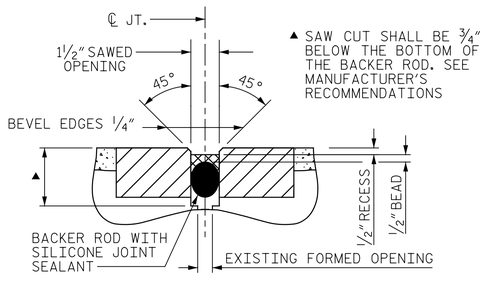
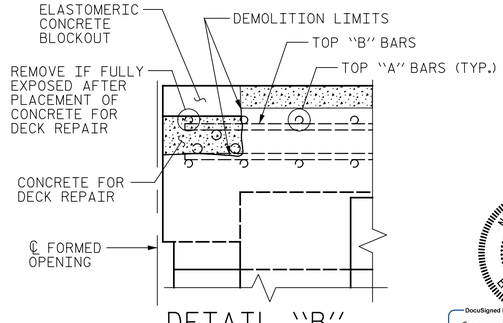


SECTION E-E
(@ BENT)

JOINT SEAL DETAILS



DETAIL "A"
(PROPOSED JOINT WITH SAWED DIMENSIONS)



DETAIL "B"

NOTES:

CONTRACTOR SHALL FIELD VERIFY THE EXISTING FORMED OPENING PRIOR TO OBTAINING JOINT MATERIAL. IF ACTUAL JOINT OPENING VARIES FROM THE OPENING INDICATED IN DETAIL MORE THAN ¼" NOTIFY THE ENGINEER. REVISION TO THE JOINT SEAL SIZE MAY BE NECESSARY.

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 BE PERMITTED TO FORM THE JOINT WITH 6" OF THE GUTTERLINE AND UP THE FACE OF THE BARRIER RAIL. IN ALL OTHER SECTIONS OF THE JOINT, THE CONTRACTOR WILL NOT BE PERMITTED TO FORM THE JOINT IN LIEU OF SAWING THE JOINT.

THE NOMINAL SAW CUT DEPTH FOR BRIDGE JOINT DEMOLITION IS 1½" BUT REINFORCING STEEL SHALL NOT BE DAMAGED.

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

FOR EXCAVATION BELOW THE BOTTOM OF THE PLANNED JOINT DEMOLITION, CONCRETE FOR DECK REPAIR SHALL BE PLACED IN THE EXCAVATED AREA UP TO THE PLANNED BOTTOM ELEVATION OF THE ELASTOMERIC CONCRETE.

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

PRIOR TO PLACEMENT OF ELASTOMERIC CONCRETE REMOVE ANY TOP "A" OR "B" BARS THAT ARE FULLY EXPOSED IN THE ELASTOMERIC CONCRETE BLOCKOUT REGION.

THE CONTRACTOR WILL NOT BE PERMITTED TO CUT EXISTING BOTTOM "A", BOTTOM "B" BARS, OR "G" BARS. EXPOSED BOTTOM REINFORCING SHALL BE CLEANED AND REPAIRED IF DAMAGED.

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

POURABLE SILICONE JOINT SEALANT AND BACKER ROD SHALL BE INSTALLED AS PER THE MANUFACTURER'S RECOMMENDATIONS.

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

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

THE CONTRACTOR WILL NOT BE PERMITTED TO INSTALL POURABLE SILICONE JOINT SEALANT AT BENT 1 UNTIL ALL BRIDGE JACKING IS COMPLETED AT THAT BENT.

THE INSTALLATION OF JOINT SEAL SHALL BE WATERTIGHT.

FOR BRIDGE JOINT DEMOLITION, SEE SPECIAL PROVISIONS.

FOR CONCRETE FOR DECK REPAIR, SEE SPECIAL PROVISIONS.

FOR VOLUMETRIC MIXER, SEE SPECIAL PROVISIONS.

FOR POURABLE SILICONE JOINT SEALANT, SEE SPECIAL PROVISIONS.

PROJECT NO. 15BPR.133

ASHE COUNTY

BRIDGE NO. 040019

NORTH CAROLINA PROFESSIONAL SEAL 020208 ENGINEER ERIC B. NELSON JR.

DocuSigned by: Eric B. Nelson Jr. 12/17/2024
ACB8082119D74CD...

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

POURABLE SILICONE JOINT SEALANT DETAILS

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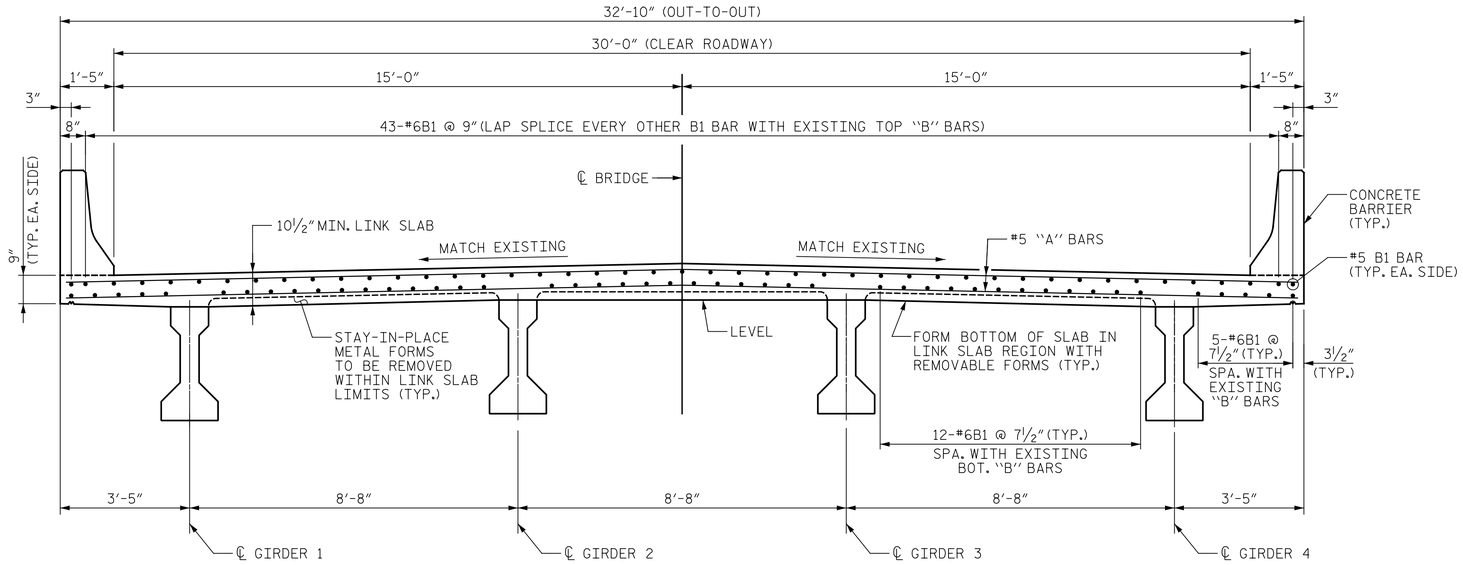
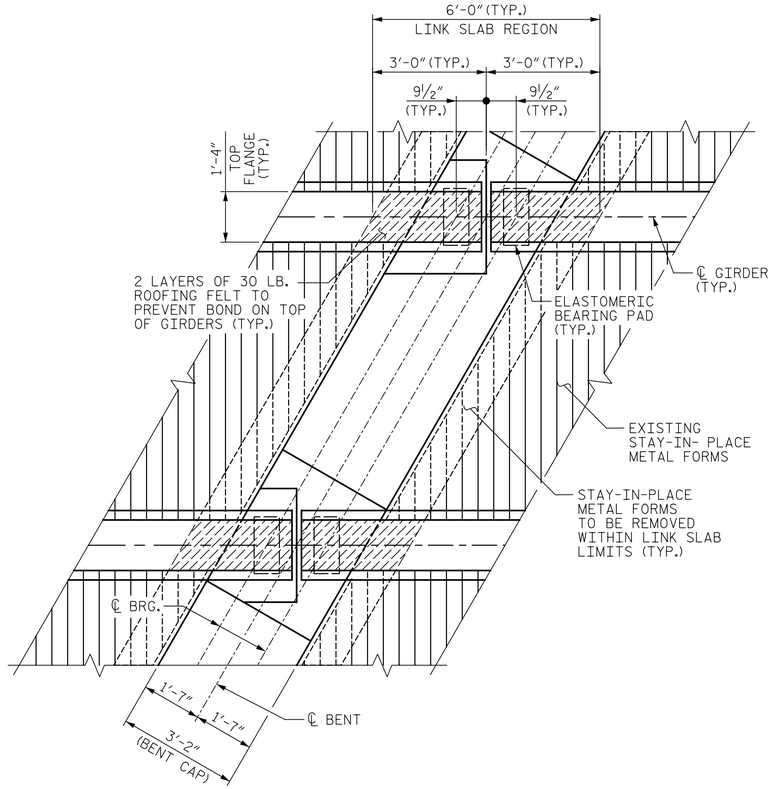


TYPICAL SECTION AT LINK SLAB



PLAN OF GIRDERS AT BENT

(TYPICAL LINK SLAB BAY)

NOTES:

SEE CONTRACT DOCUMENTS FOR LANE WIDTHS, SEQUENCING, AND OTHER TRAFFIC CONTROL MEASURES FOR STAGING OF JOINT REPAIR.

FOR CLASS III SURFACE PREPARATION, SEE LMC OVERLAY SURFACE PREPARATION SPECIAL PROVISION.

FOR LMC FOR LINK SLAB, SEE DECK REPAIR SHEETS.

THE CONTRACTOR SHALL TAKE CARE DURING LINK SLAB DEMOLITION AND CONSTRUCTION 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.

SEE SHEET 3 OF 3 FOR BILL OF MATERIAL.

CONSTRUCTION SEQUENCE:

1. CLOSE WORK AREA ACCORDING TO CONTRACT DOCUMENTS.
2. MARK OUT PROPOSED LINK SLAB AREA AND REMOVE EXISTING JOINT MATERIAL.
3. SAW CUT PERIMETER OF PROPOSED LINK SLAB AREA. THE NOMINAL SAW CUT DEPTH ALLOWED FOR DEMOLITION IS 1½″ BUT REINFORCTING STEEL SHALL NOT BE DAMAGED. CONTRACTOR SHALL REMOVE SURFACE CONCRETE TO VERIFY THAT SAWCUT DEPTH WILL NOT DAMAGE EXISTING REINFORCING STEEL.
4. BEGIN FULL DEPTH DEMOLITION OF PROPOSED LINK SLAB AREA, BEING CAREFUL NOT TO DAMAGE EXISTING REINFORCING STEEL, GIRDER FLANGES, OR STAY-IN-PLACE FORMS. PROVIDE AN EXPOSED AGGREGATE SURFACE (AMPLITUDE OF ⅛″ MIN. TO ¼″ MAX.) FOR VERTICAL DECK EDGE SURFACES.
5. REMOVE DEMOLISHED MATERIALS AND CLEAN LINK SLAB AREA.
6. REMOVE STIRRUPS FROM FLANGE OF GIRDERS WITHIN THE LINK SLAB AREA.
7. COAT AND/OR REPAIR EXISTING LONGITUDINAL REINFORCING STEEL THAT WAS DAMAGED DURING DEMOLITION.
8. PLACE REMOVABLE FORMS. FORMS SHALL BE TREATED TO NOT ABSORB MOISTURE.
9. PLACE ROOFING FELT AS INDICATED.
10. PLACE ADDITIONAL REINFORCING STEEL AS SHOWN.
11. LMC SHALL BE PLACED IN FULL-DEPTH CONCRETE LINK SLAB AND PROPERLY CONSOLIDATED TO PREVENT VOIDS IN CONCRETE.
12. IF LMC IN LINK SLAB IS NOT PLACED MONOLITHICALLY WITH OVERLAY, PLACE LMC CONCRETE FROM BOTTOM OF LINK SLAB TO TOP OF BRIDGE DECK THAT HAS BEEN PROPERLY PREPARED FOR LMC OVERLAY. RAKE THE TOP SURFACE OF LINK SLAB RECEIVING LMC OVERLAY TO A DEPTH OF ⅜″. RAKE TINE SPACING SHALL BE 1″ OR LESS. PLACE LMC OVERLAY OVER ENTIRE BRIDGE DECK AND LINK SLAB.
13. AFTER FINAL SURFACE OF LMC IS PLACED, SAW CUT CONTROL JOINT, AS INDICATED, IN LINK SLAB.

PROJECT NO. 15BPR.133

ASHE COUNTY

BRIDGE NO. 040019

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

LINK SLAB DETAILS
(BENT 2)

NORTH CAROLINA PROFESSIONAL SEAL 020208 ENGINEER ERIC B. NELSON JR.

DocuSigned by: Eric B. Nelson Jr. 12/17/2024
ACB8082119D74CD...

DRAWN BY : M. SPENCER DATE : 03/2022
CHECKED BY : J. FARNHAM DATE : 03/2022

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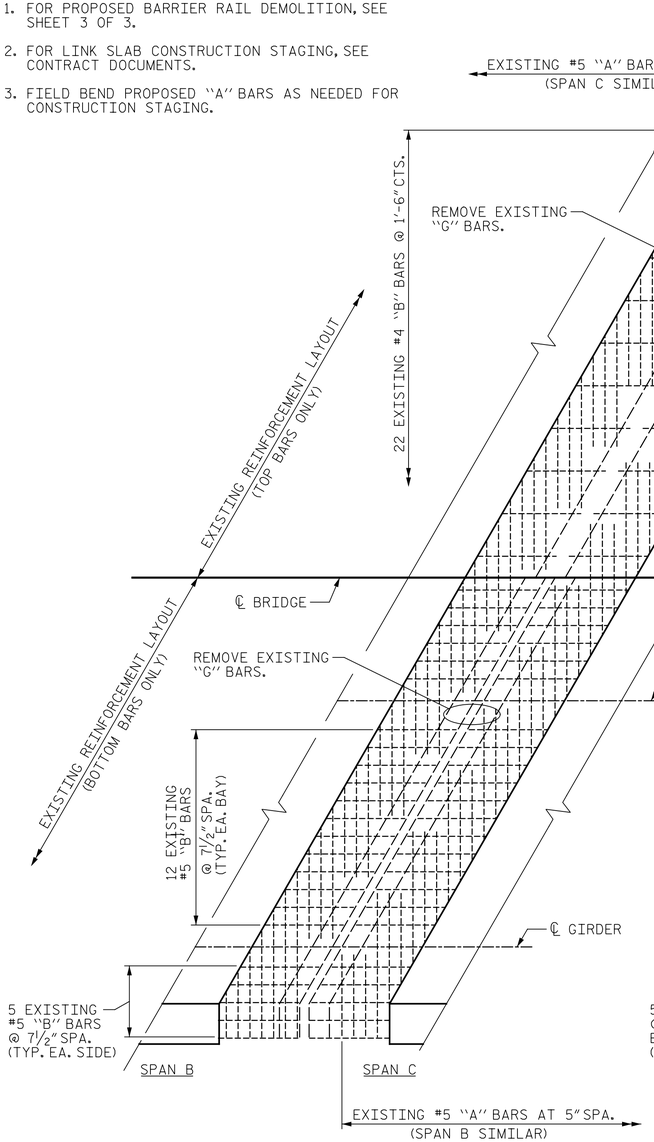
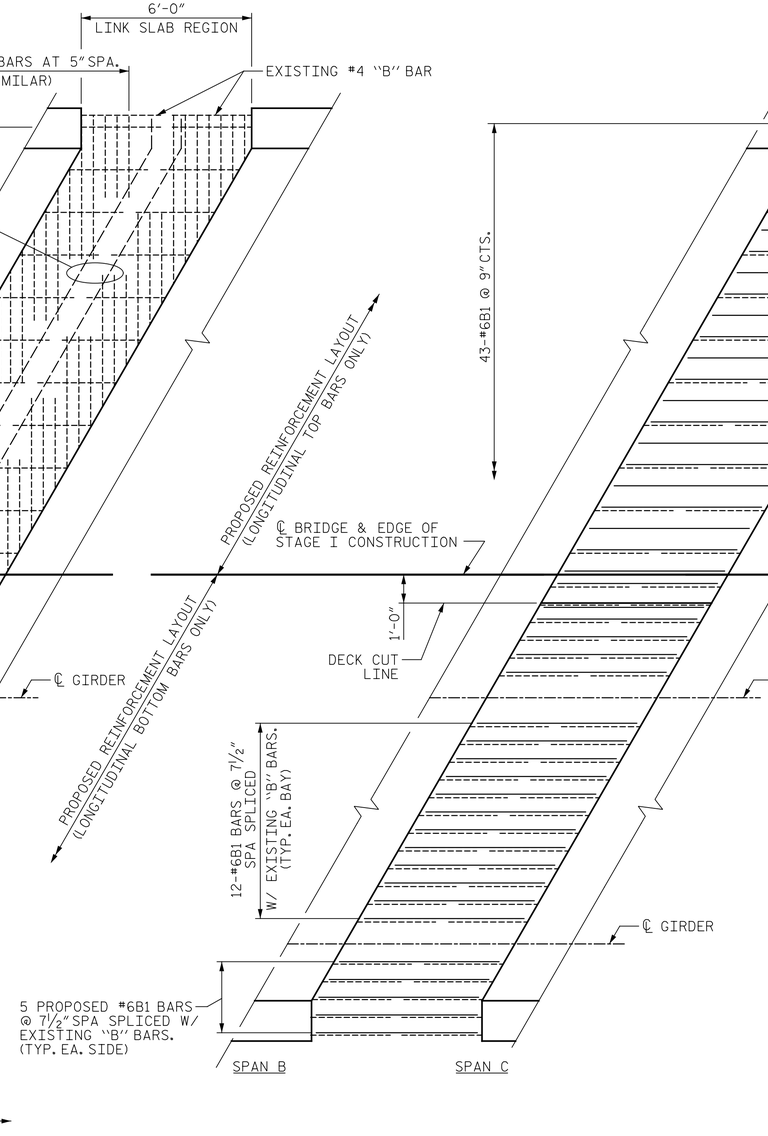
2			4			87

NOTES:

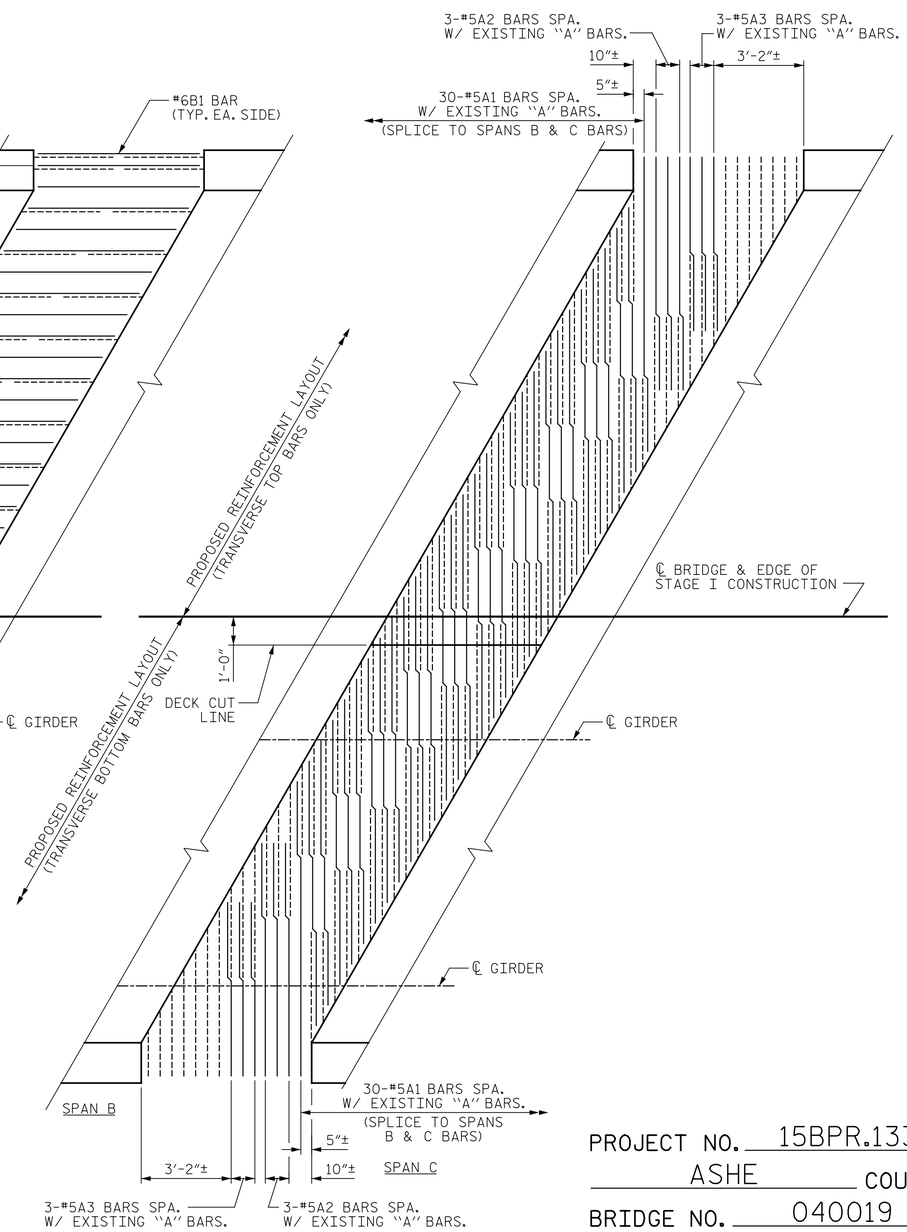
1. FOR PROPOSED BARRIER RAIL DEMOLITION, SEE SHEET 3 OF 3.
2. FOR LINK SLAB CONSTRUCTION STAGING, SEE CONTRACT DOCUMENTS.
3. FIELD BEND PROPOSED "A" BARS AS NEEDED FOR CONSTRUCTION STAGING.



EXISTING REINFORCEMENT



PROPOSED LONGITUDINAL REINFORCEMENT
(TRANSVERSE BARS NOT SHOWN FOR CLARITY)



PROPOSED TRANSVERSE REINFORCEMENT
(LONGITUDINAL BARS NOT SHOWN FOR CLARITY)

LINK SLAB REINFORCEMENT
(REINFORCEMENT SYMMETRICAL ABOUT ℄ BRIDGE)

DRAWN BY : M. SPENCER DATE : 03/2022
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NORTH CAROLINA PROFESSIONAL SEAL 020208 ENGINEER ERIC B. NELSON

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PROJECT NO. 15BPR.133
ASHE COUNTY
BRIDGE NO. 040019

SHEET 2 OF 3

STATE OF NORTH CAROLINA
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RALEIGH

LINK SLAB DETAILS
(BENT 2)

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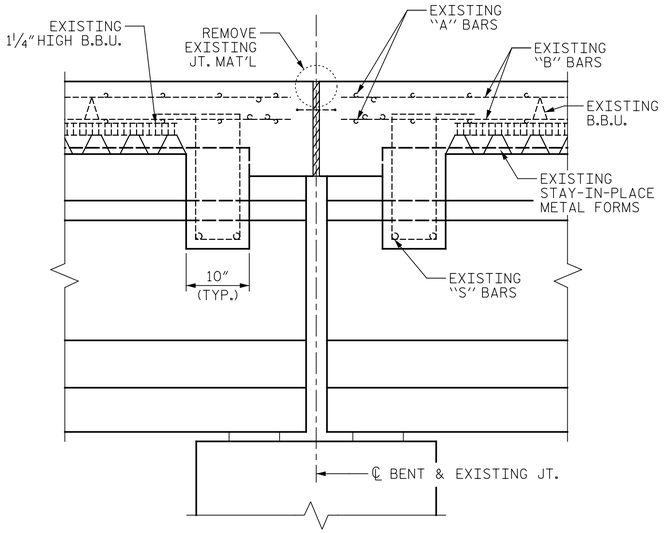
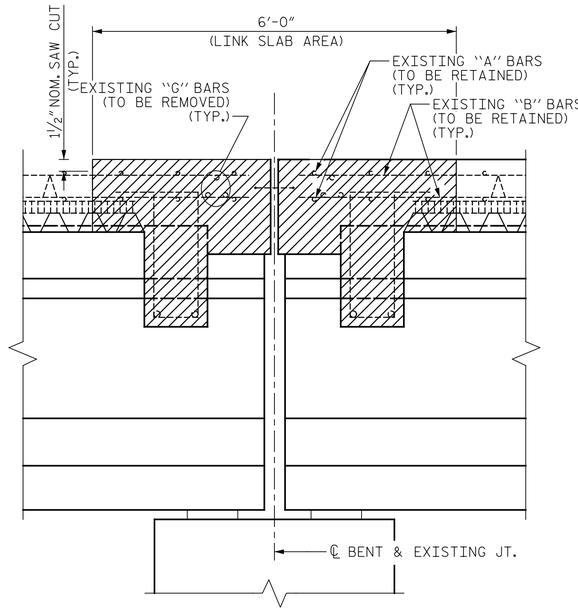
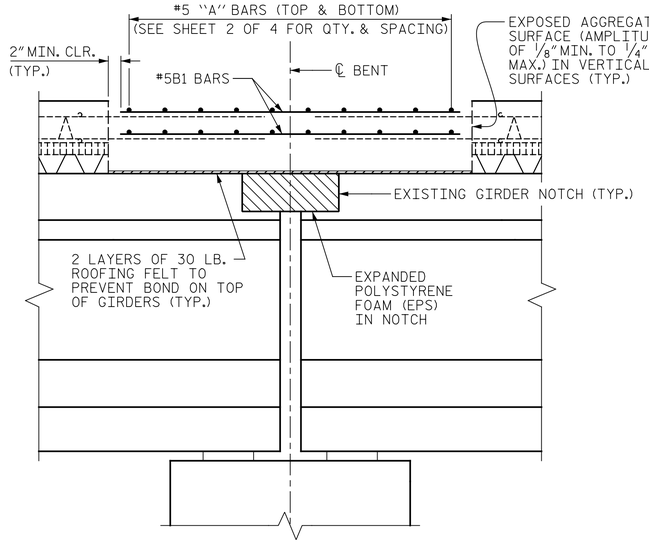


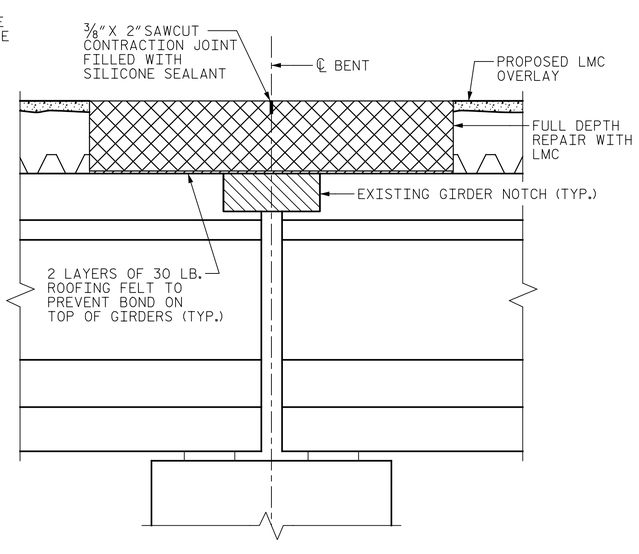
EXISTING DECK AT BENT JOINT



MINIMUM EXISTING
DECK DEMOLITION



PROPOSED LINK SLAB CONSTRUCTION



PROPOSED LINK SLAB
WITH LMC OVERLAY

CLASS III SURFACE PREPARATION FOR LINK SLAB CONSTRUCTION

LATEX MODIFIED CONCRETE FOR LINK SLAB CONSTRUCTION

NOTE: FALSEWORK, FORMWORK, EPS, ROOFING FELT, CAULKING MATERIAL, AND CONTRACTION JOINT ARE CONSIDERED INCIDENTAL TO THE VARIOUS PAY ITEMS FOR LINK SLAB CONSTRUCTION

SECTION C-C

LINK SLAB SECTIONS

NOTES

THE BARRIER RAIL IN EACH SPAN SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT SPAN HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

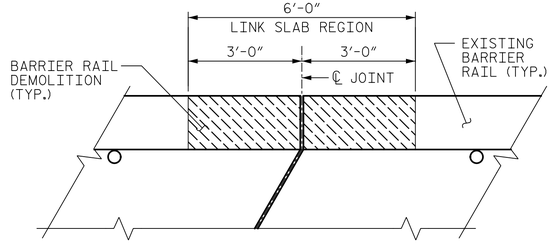
ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

FOR LMC FOR LINK SLAB AND LOCATION OF SECTION C-C, SEE DECK REPAIR SHEETS.

THE COST TO REMOVE THE EXISTING BARRIER RAIL SHALL BE INCLUDED IN THE PAY ITEM FOR "CONCRETE BARRIER RAIL".

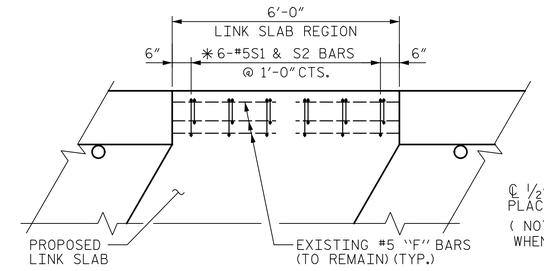
THE TOP OF GIRDER IN THE REGION OF THE LINK SLAB SHALL SMOOTH (NOT RAKED) AND FREE OF STIRRUPS/STUDS, ANCHOR STUDS, DECK FORMWORK ATTACHMENTS, AND OVERHANG FALSEWORK/FORMWORK ATTACHMENTS.

A 1½" DEEP, ⅜" WIDE CONTRACTION JOINT AT BENT CENTERLINE SHALL BE SAWN WITHIN 24 HOURS OF POURING THE LINK SLAB. THE JOINT SHALL BE FILLED WITH JOINT SEALER MATERIAL. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1028-3 OF THE STANDARD SPECIFICATIONS.



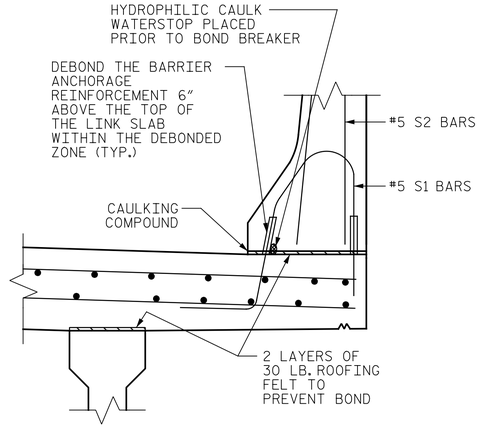
PROPOSED BARRIER RAIL DEMOLITION

(FOR PROPOSED REINFORCEMENT AND ELEVATION OF BARRIER RAIL AT LINK SLAB, SEE SHEET 2 OF 3)

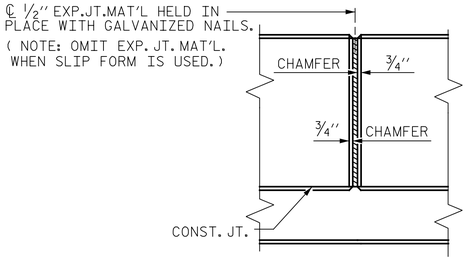


PROPOSED BARRIER RAIL REINFORCEMENT

✳ EXISTING "E" BARS TO BE REMOVED AND REPLACED BY S1 & S2 BARS.



ELEVATION OF BARRIER
RAIL AT LINK SLAB

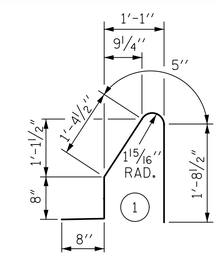


ELEVATION AT EXPANSION JOINTS

BILL OF MATERIAL
(REINFORCEMENT PER LINK SLAB)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ A1	60	#5	STR	9'-4"	584
✳ A2	12	#5	STR	8'-0"	100
✳ A3	12	#5	STR	5'-11"	74
✳ B1	91	#6	STR	5'-7"	763
✳ EPOXY COATED REINFORCING STEEL					1,521 LBS.

BARRIER RAIL BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL
(BARRIER RAIL REINFORCEMENT PER LINK SLAB)

FOR CONCRETE BARRIER RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ S1	12	#5	1	4'-10"	60
✳ S2	12	#5	2	5'-1"	64
✳ EPOXY COATED REINFORCING STEEL					124 LBS.
CLASS AA CONCRETE					1.1 CU. YDS.
CONCRETE BARRIER RAIL					12.0 LIN. FT.

PROJECT NO. 15BPR.133

ASHE COUNTY

BRIDGE NO. 040019

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

LINK SLAB DETAILS
(BENT 2)

NORTH CAROLINA PROFESSIONAL SEAL 020208 ENGINEER ERIC B. NELSON JR.

DocuSigned by: Eric B. Nelson Jr. 12/17/2024
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CHECKED BY : J. FARNHAM DATE : 03/2022

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NOTES

REPAIR LOCATIONS AND ESTIMATED QUANTITIES ARE GIVEN WITH 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 ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

MINIMUM CONCRETE COVER FOR PRESTRESSING STRANDS IN THE GIRDERS IS 1¾" PER THE EXISTING BRIDGE PLANS.

ALL GIRDERS ENDS AT BENT 1 SHALL BE EPOXY COATED AFTER GIRDER REPAIRS ARE COMPLETED. FOR EPOXY COATED CONCRETE GIRDER ENDS, SEE SPECIAL PROVISIONS.

FOR LIMITS OF EPOXY COATING GIRDER ENDS, SEE "PRESTRESSED CONCRETE GIRDER REPAIR DETAILS" SHEET.

FOR REPAIRS TO PRESTRESSED CONCRETE GIRDERS, SEE SPECIAL PROVISIONS AND "PRESTRESSED CONCRETE GIRDER REPAIR DETAILS" SHEET.

AS-BUILT REPAIR QUANTITY TABLE

GIRDER REPAIR

	ESTIMATE	ACTUAL
REPAIR TO PRESTRESSED CONCRETE GIRDERS FOR BRIDGE #040019	21.3 CF	
GIRDER END EPOXY COATING	346 SF	

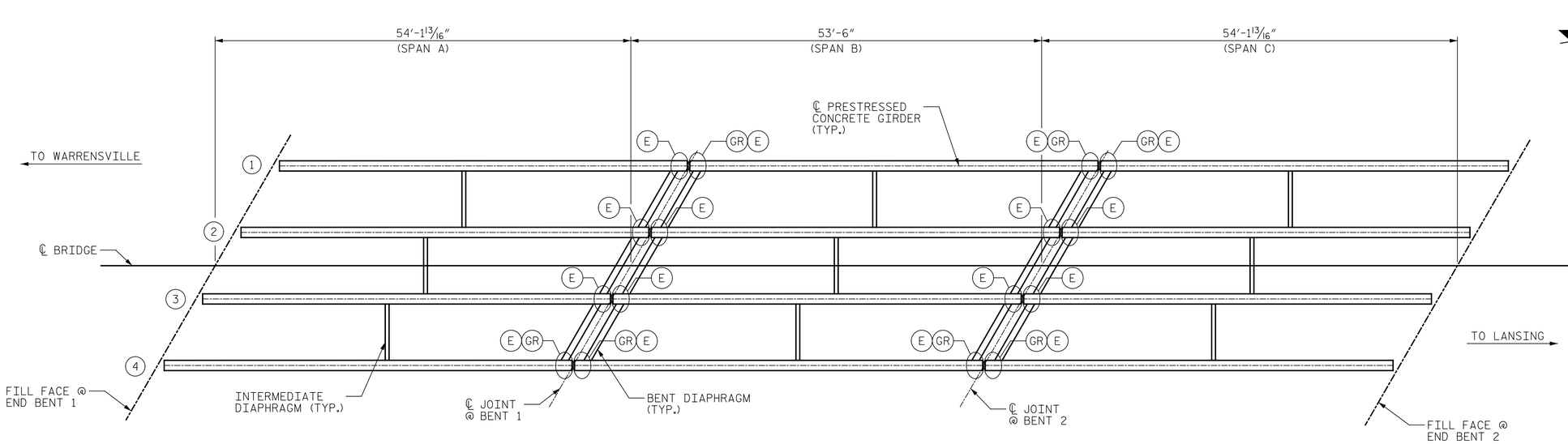
LEGEND

(#) BEAM NUMBER

(GR) P/S CONCRETE GIRDER REPAIR

(E) GIRDER END EPOXY COATING

TYPICAL PCG DEFECTS



GIRDER REPAIR LOCATIONS

(OTHER LOCATIONS MAY EXIST, SEE NOTES)

ANTICIPATED GIRDER REPAIR LOCATIONS

SPAN	GIRDER	LOCATION	DESCRIPTION
A	4	BENT 1	DELAMINATION 12"X FULL HEIGHT WEB ON LEFT SIDE AND FULL WIDTH OF BOTTOM FLANGE x 6'-0"LONG
B	1	BENT 1	WEB DELAMINATED 12"X12"ON LEFT SIDE / BOTTOM FLANGE SPALL 6'-0"LONG x 10"HIGH ON LEFT SIDE
B	1	BENT 2	DELAMINATION TOP FLANGE AND WEB x 10"LONG ON RIGHT SIDE
B	4	BENT 1	SPALL FULL WIDTH OF GIRDER 3'-0"LONG x FULL GIRDER HEIGHT
B	4	BENT 2	SPALL 20"LONG x FULL HEIGHT TOP FLANGE AND WEB / 14"LONG x FULL HEIGHT BOTTOM FLANGE ON RIGHT SIDE
C	1	BENT 2	DELAMINATION 8"x FULL WEB HEIGHT ON RIGHT SIDE
C	1	BENT 2	SPALL 5'-0"x FULL HEIGHT OF BOTTOM FLANGE ON LEFT SIDE
C	4	BENT 2	DELAMINATION 18"x FULL HEIGHT WEB / SPALL 18"x FULL HEIGHT BOTTOM FLANGE / BOTTOM OF BOTTOM FLANGE DELAMINATED 14" WIDE x 24"LONG

PROJECT NO. 15BPR.133

ASHE COUNTY

BRIDGE NO. 040019

NORTH CAROLINA PROFESSIONAL SEAL 020208 ENGINEER ERIC B. NELSON JR.

DocuSigned by: Eric B Nelson Jr 12/17/2024 ACB8082119D74CD...

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FRAMING PLAN

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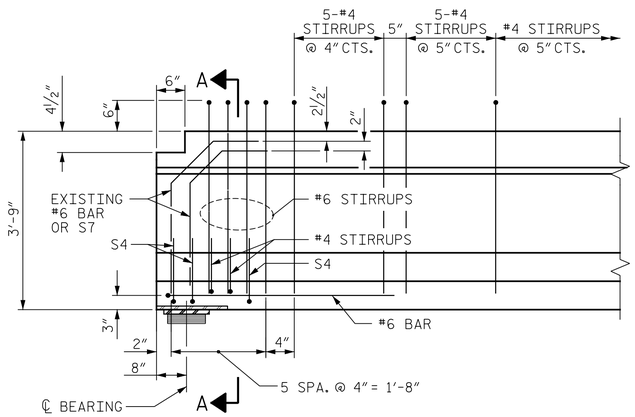
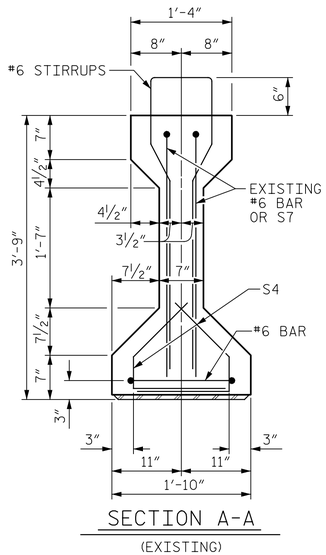


END ELEVATION
(EXISTING)



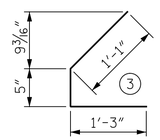
SECTION A-A
(EXISTING)

REINFORCING STEEL FOR REPAIRS

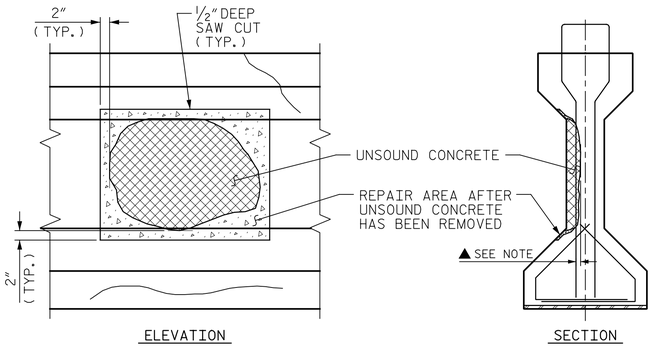
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S4	30	#4	3	2'-9"	55
S7	20	#6	STR.	2'-4"	70

BAR TYPES

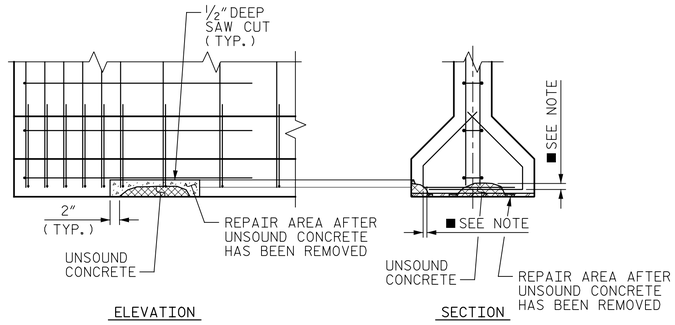
ALL BAR DIMENSIONS ARE OUT-TO-OUT



EXISTING GIRDER DETAILS



GIRDER WEB REPAIR

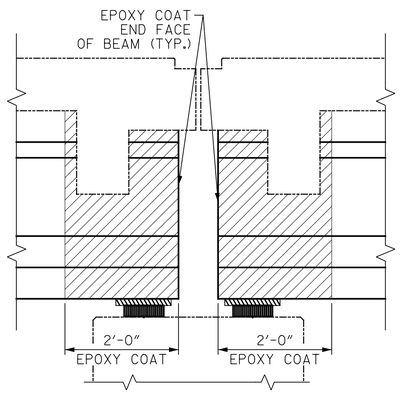


GIRDER FLANGE REPAIR

GIRDER REPAIR DETAILS

CRACKS TO BE REPAIRED WITH EPOXY RESIN INJECTION (ERI)

UNSOUND CONCRETE TO BE REPAIRED



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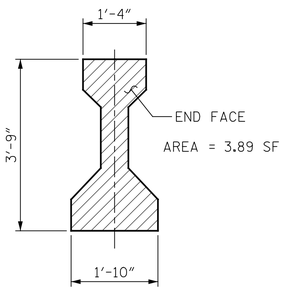

TYPE III PCG

LIMITS OF EPOXY COATING

NOTES:

PREPACKAGED MATERIAL IS REQUIRED.

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

WHEN REQUIRED IN THE PLANS PROVIDE JACKING FOR REPAIRS AT GIRDER ENDS. GIRDERS SHALL REMAIN IN THE JACKED POSITION UNTIL GIRDER REPAIR MATERIAL HAS ACHIEVED THE DESIGN STRENGTH.

FOR REPAIRS OVER TRAFFIC AND SHALLOW REPAIRS THAT DO NOT ENGAGE REINFORCEMENT, ANCHOR PATCH MATERIAL USING ¼" GALVANIZED BOLTS, EPOXY ANCHORED WITH 2" EMBEDMENT. PLACE BOLTS IN A 6" GRID. USE A LATEX OR EPOXY PATCH MATERIAL FOR IMPROVED BOND. USE EXTREME CARE TO NOT DAMAGE STRANDS.

FOR REPAIRS TO PRESTRESSED CONCRETE GIRDERS FOR BRIDGE #040019, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

FOR EPOXY COATING CONCRETE GIRDER ENDS, SEE SPECIAL PROVISIONS.

FOR BRIDGE JACKING, SEE SPECIAL PROVISIONS.

PRESTRESSED GIRDER REPAIR SEQUENCE:

1. SOUND CONCRETE TO DETERMINE EXTENTS OF REPAIR LOCATION.
2. REMOVE SURFACE CONCRETE TO VERIFY THAT SAWCUT DEPTH WILL NOT DAMAGE EXISTING REINFORCING STEEL. SAW CUT AROUND REPAIR AREA TO A NOMINAL DEPTH OF ½".
3. REMOVE CONCRETE WITHIN SAW CUT AREA TO MINIMUM ½" DEPTH. IF CONCRETE IS DAMAGED BEYOND THE ORIGINAL SAW CUT, A NEW SAW CUT IS REQUIRED.
4. ▲ IF MORE THAN HALF THE CIRCUMFERENCE OF A REINFORCING BAR IS EXPOSED DURING THIS PROCESS, REMOVE ADDITIONAL CONCRETE TO 1" BEHIND THE BAR. THIS DOES NOT APPLY TO PRESTRESSED STRANDS.
5. ■ ALL UNSOUND CONCRETE MUST BE REMOVED, HOWEVER, PRESTRESSED STRANDS SHOULD NOT BE DISTRUBED UNLESS ABSOLUTELY NECESSARY. USE EXTREME CARE TO NOT DAMAGE STRANDS.
6. CLEAN ALL EXPOSED REINFORCING BARS AND PRESTRESSED STRANDS AS PER THE SPECIAL PROVISIONS. FOR BARS WITH MORE THAN 10% SECTION LOSS, SPLICE AND SECURELY TIE SUPPLEMENTAL REINFORCING BARS AS NEEDED. NOTE AND PROVIDE DETAILED DOCUMENTATION, INCLUDING LOCATION AND SEVERITY, OF ALL DAMAGE TO PRESTRESSED STRANDS THAT EXCEEDS 10% SECTION LOSS. IF FIVE OR MORE STRANDS ARE DAMAGED, NOTIFY THE ENGINEER PRIOR TO PLACEMENT OF REPAIR MATERIAL.
7. REMOVE ALL LOOSE OR WEAKENED MATERIAL THEN CLEAN THE REPAIR AREA OF DIRT, GREASE, OIL, AND FOREIGN MATTER.
8. PREPARE SURFACE AND PLACE APPROVED REPAIR MATERIAL ACCORDING TO MANUFACTURER'S RECOMMENDATIONS. MAXIMUM AGGREGATE SIZE FOR REPAIR MATERIAL SHALL NOT EXCEED 2/3 THE MINIMUM REPAIR DEPTH.

PROJECT NO. 15BPR.133
ASHE COUNTY
BRIDGE NO. 040019

STATE OF NORTH CAROLINA
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RALEIGH

PRESTRESSED CONCRETE GIRDER REPAIR DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 020208 ENGINEER ERIC A. NELSON

DocuSigned by: Eric Back Jr 12/17/2024
ACB80821190740D...

DRAWN BY : M. SPENCER DATE : 03/2022
CHECKED BY : J. YANNACCONE DATE : 03/2022

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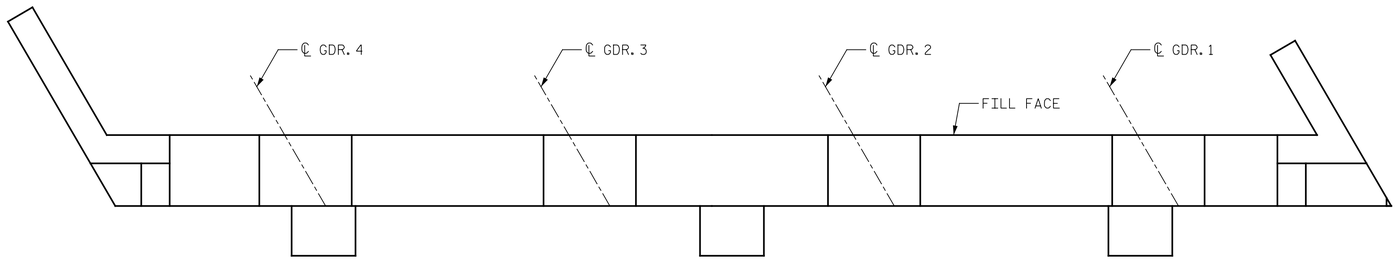

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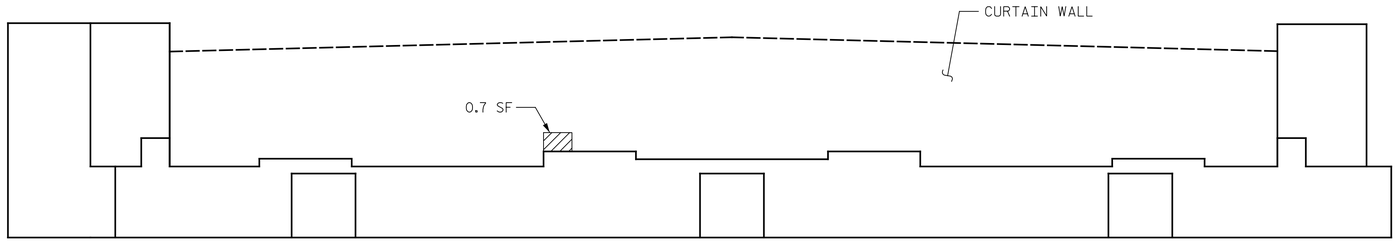


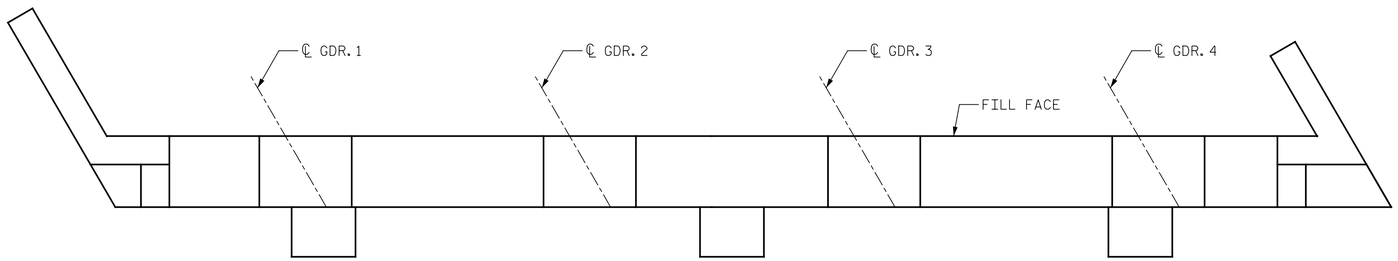
ELEVATION

END BENT 1

CONCRETE REPAIR (FORM & POUR)

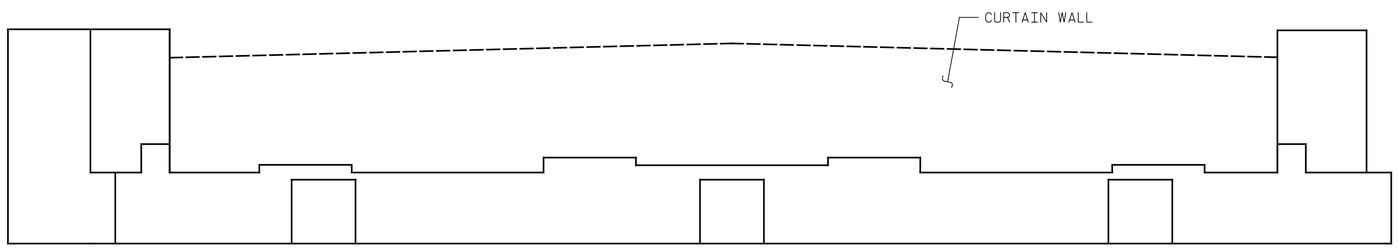
SHOTCRETE REPAIR

ERI - EPOXY RESIN INJECTION



NO REPAIRS NOTED FOR END BENT 2 DURING FIELD SCOPING. THE CONTRACTOR AND ENGINEER SHALL INSPECT END BENT 2 PRIOR TO BEGINNING WORK.

TOP OF CAP



ELEVATION

END BENT 2

AS-BUILT REPAIR QUANTITY TABLE

END BENT 1 REPAIRS	QUANTITIES				
	ESTIMATE		ACTUAL		
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	DEPTH FT	VOLUME CF
CAP	0.0	0.0			
CURTAIN WALL	0.7	0.4			
CONCRETE REPAIRS	0.0	0.0			
EPOXY RESIN INJECTION		LENGTH LF		LENGTH LF	
CAP		0.0			
CURTAIN WALL		0.0			
EPOXY COATING		SQ. FT		SQ. FT	
TOP OF BENT CAP		0			

END BENT 2 REPAIRS	QUANTITIES				
	ESTIMATE		ACTUAL		
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	DEPTH FT	VOLUME CF
CAP	0.0	0.0			
CURTAIN WALL	0.0	0.0			
CONCRETE REPAIRS	0.0	0.0			
EPOXY RESIN INJECTION		LENGTH LF		LENGTH LF	
CAP		0.0			
CURTAIN WALL		0.0			
EPOXY COATING		SQ. FT		SQ. FT	
TOP OF BENT CAP		0			

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

NOTES:

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

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

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

CONCRETE REPAIRS TO THE BENT CAP MAY REQUIRE BRIDGE JACKING. FOR BRIDGE JACKING, SEE SPECIAL PROVISIONS AND "BRIDGE JACKING DETAILS" SHEET.

PROJECT NO. 15BPR.133

ASHE COUNTY

BRIDGE NO. 040019

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIRS

END BENT 1 & 2

NORTH CAROLINA PROFESSIONAL SEAL 020208 ENGINEER ERIC B. NELSON

DocuSigned by: Eric B. Nelson 12/17/2024
AC88082119D74CD...

DRAWN BY : R. LEON/J. HARRIS DATE : 03/2022
CHECKED BY : J. FARNHAM DATE : 03/2022

GANNETT FLEMING
One Glenwood Avenue
Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

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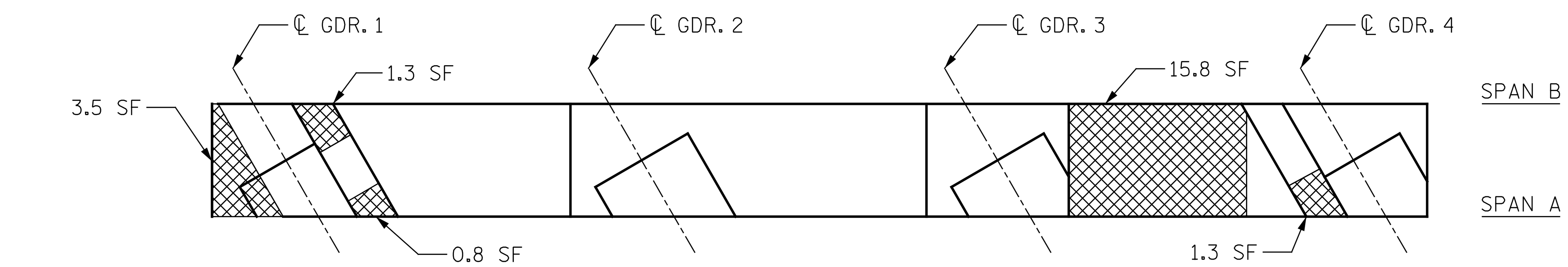
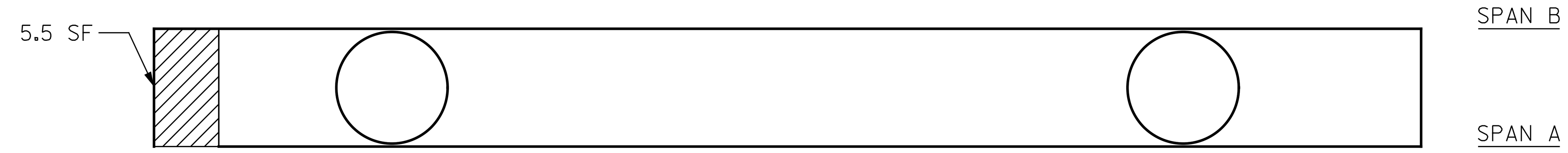
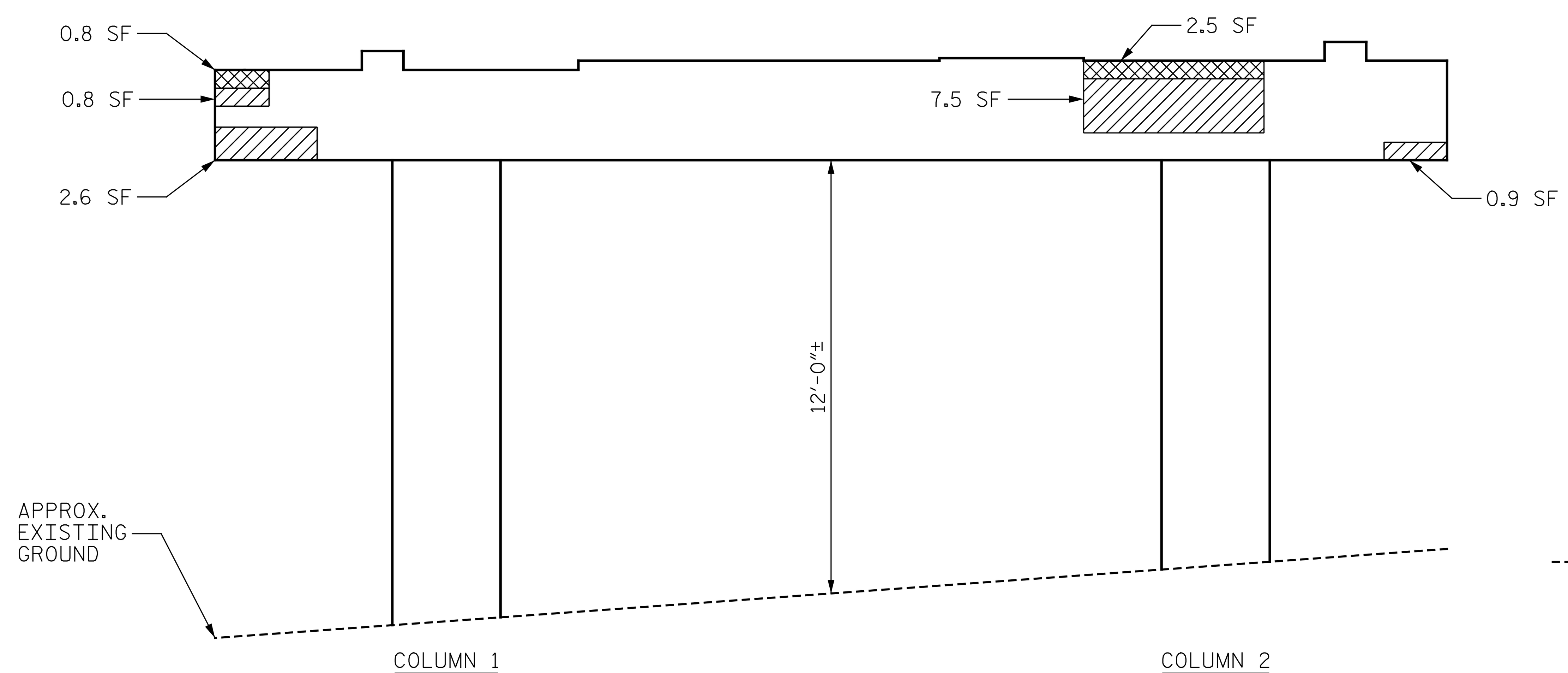
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-13
1			3			TOTAL SHEETS
2			4			87



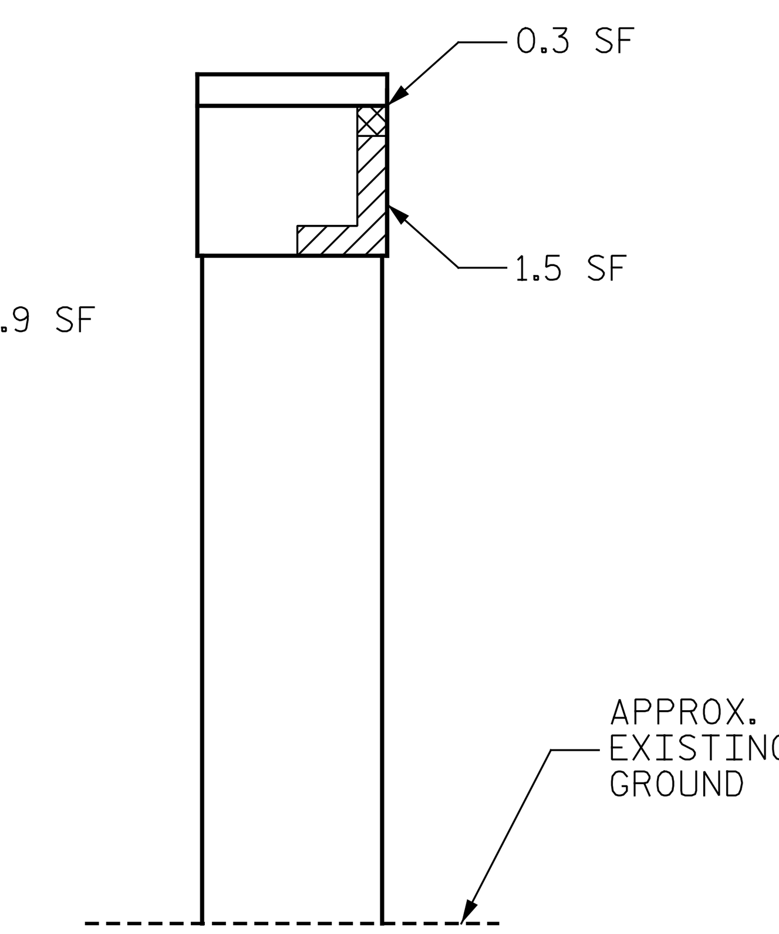
TOP OF CAP



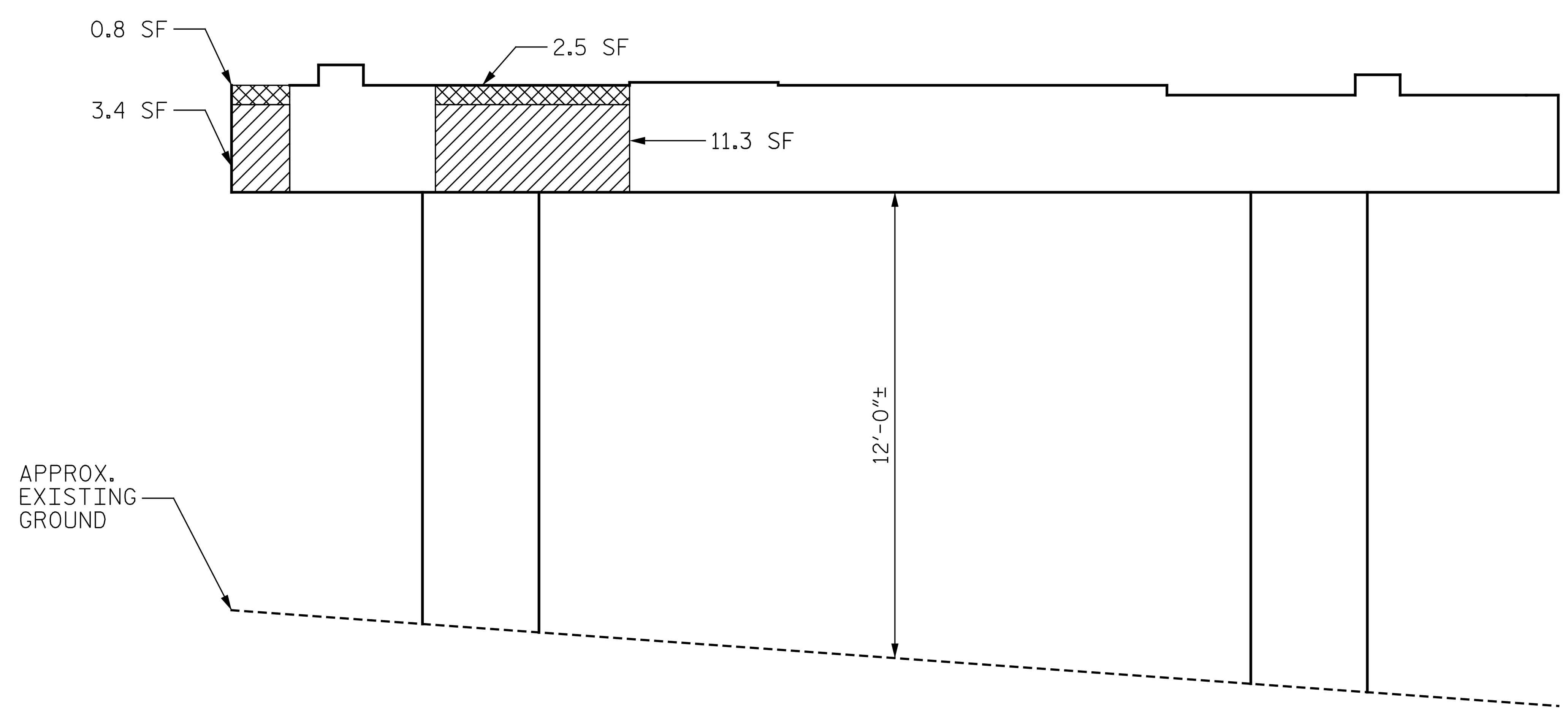
BOTTOM OF CAP



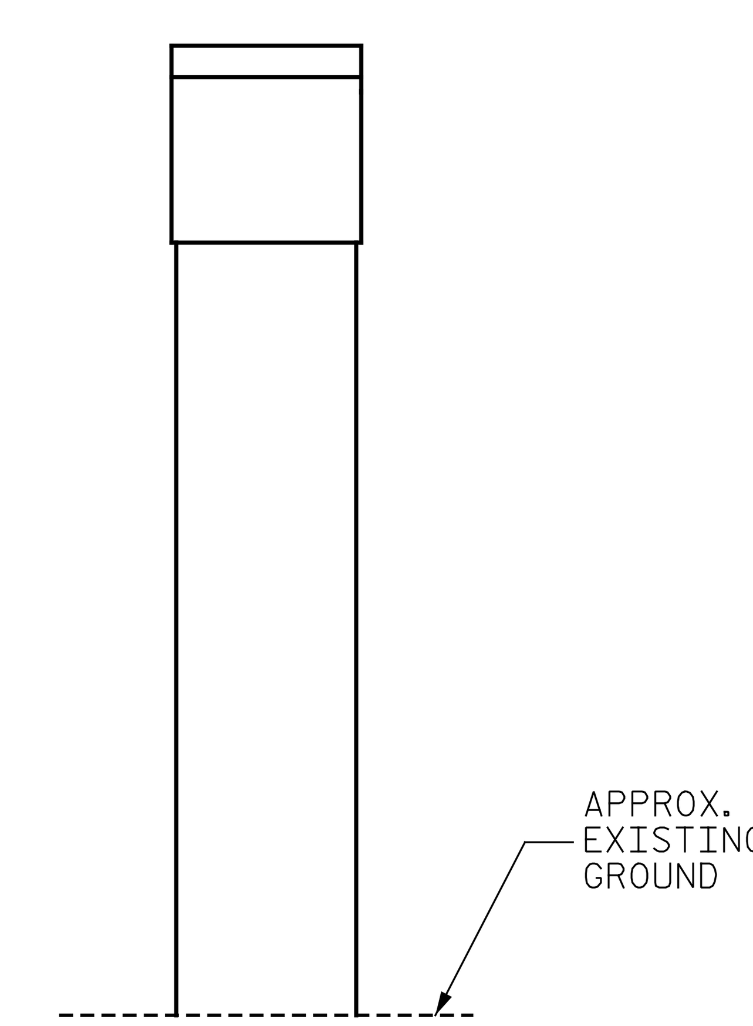
ELEVATION
(SPAN A SIDE)



END VIEW
(COLUMN 2)



ELEVATION
(SPAN B SIDE)



END VIEW
(COLUMN 1)

AS-BUILT REPAIR QUANTITY TABLE

BENT 1 REPAIRS	QUANTITIES				
	ESTIMATE		ACTUAL		
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	DEPTH FT	VOLUME CF
CAP	33.5	16.8			
COLUMN	0.0	0.0			
CONCRETE REPAIRS	29.6	14.8			
EPOXY RESIN INJECTION		LENGTH LF	LENGTH LF		
CAP		0.0			
COLUMN		0.0			
EPOXY COATING		SQ. FT	SQ. FT		
TOP OF BENT CAP		100			

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

NOTES:

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

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

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

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

CONCRETE REPAIRS TO THE BENT CAP MAY REQUIRE BRIDGE JACKING. FOR BRIDGE JACKING, SEE SPECIAL PROVISIONS AND "BRIDGE JACKING DETAILS" SHEET.

CONCRETE REPAIR (FORM & POUR)

SHOTCRETE REPAIR

ERI - EPOXY RESIN INJECTION

PROJECT NO. 15BPR.133

ASHE COUNTY

BRIDGE NO. 040019

SHEET 2 OF 3

NORTH CAROLINA PROFESSIONAL SEAL 020208 ENGINEER ERIC B. NELSON JR.

DocuSigned by: 12/17/2024

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIRS

BENT 1

GANNETT FLEMING
One Glenwood Avenue
Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

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1				3			
2				4			

SHEET NO. S1-14
TOTAL SHEETS 87

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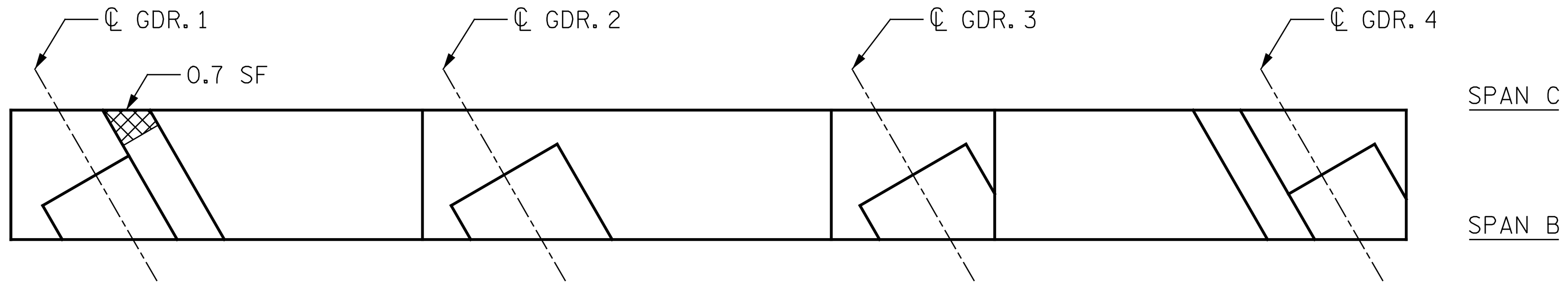
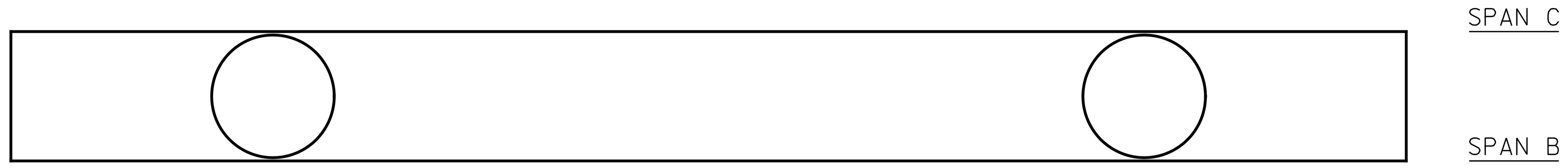
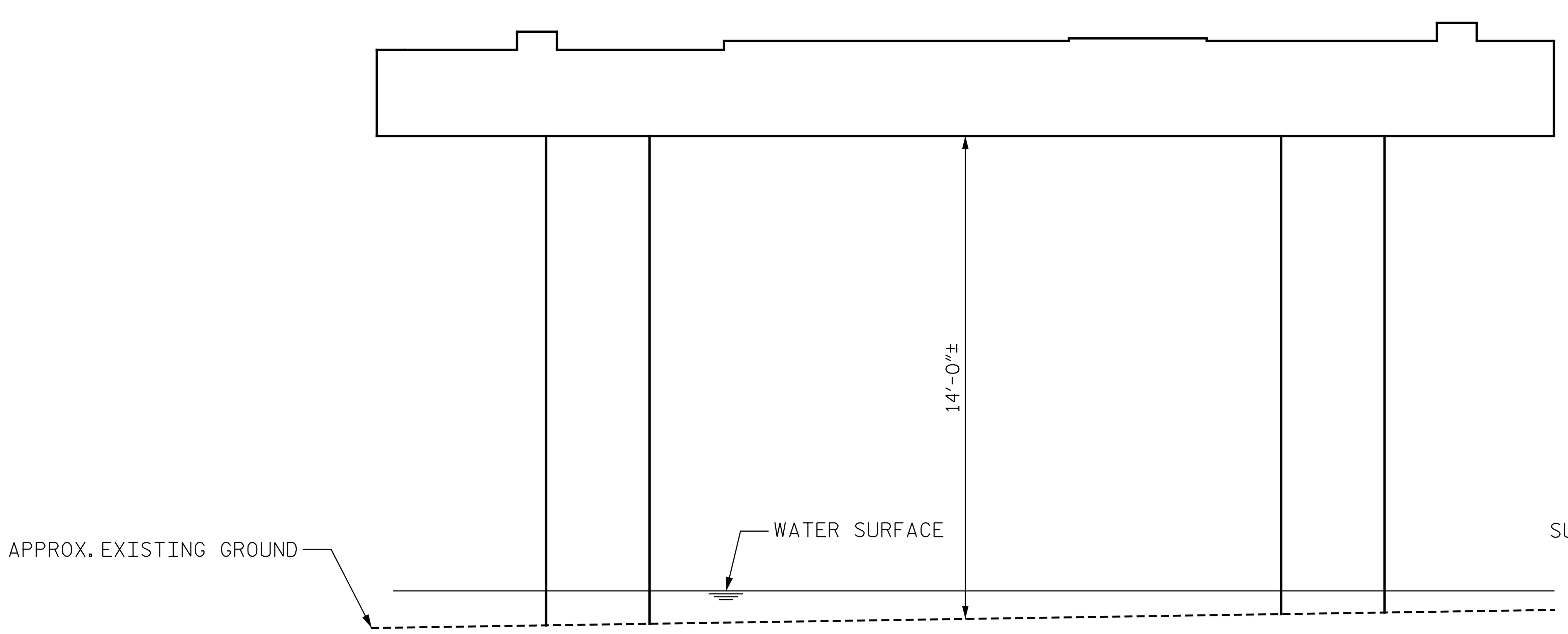


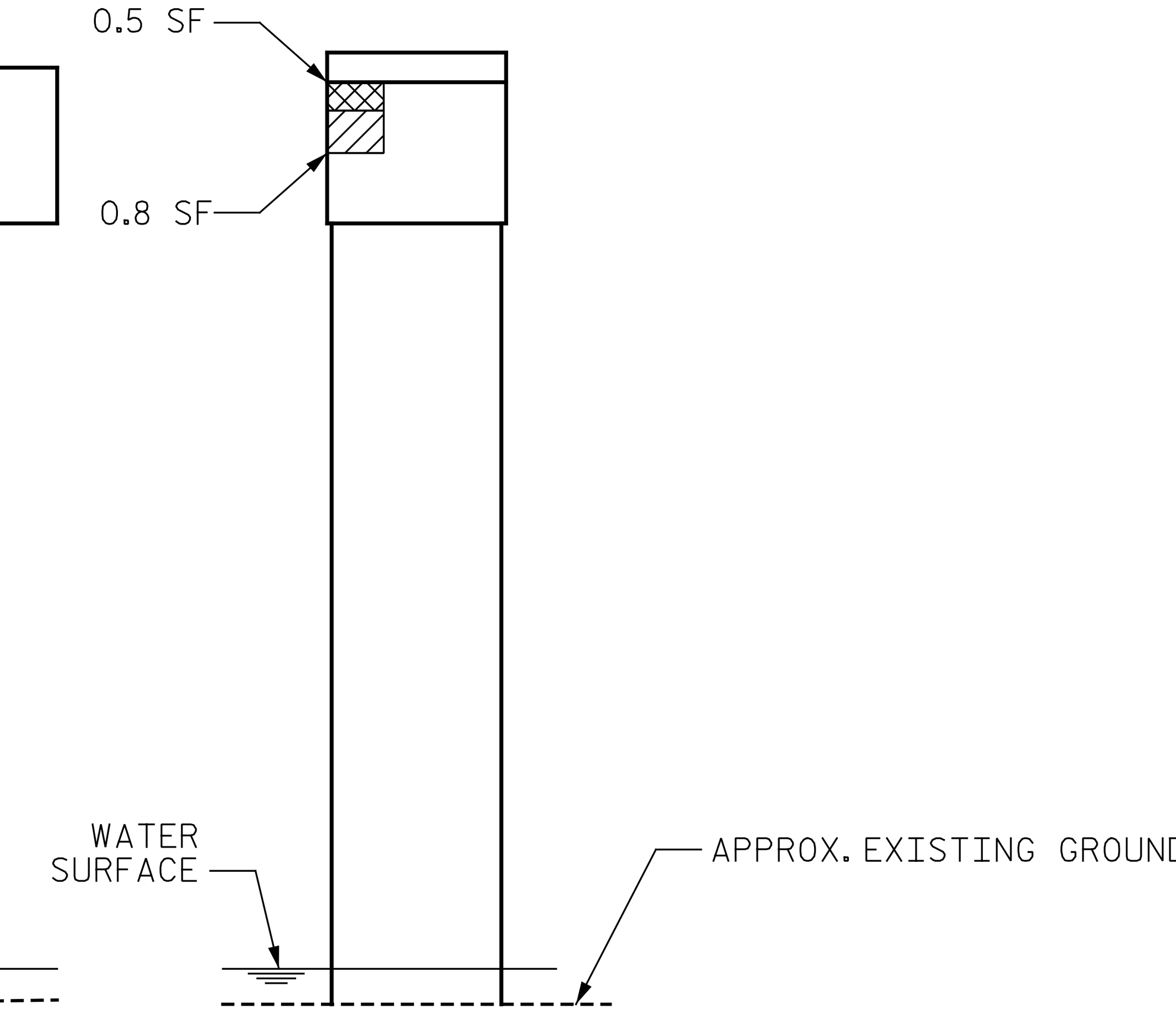
TOP OF CAP



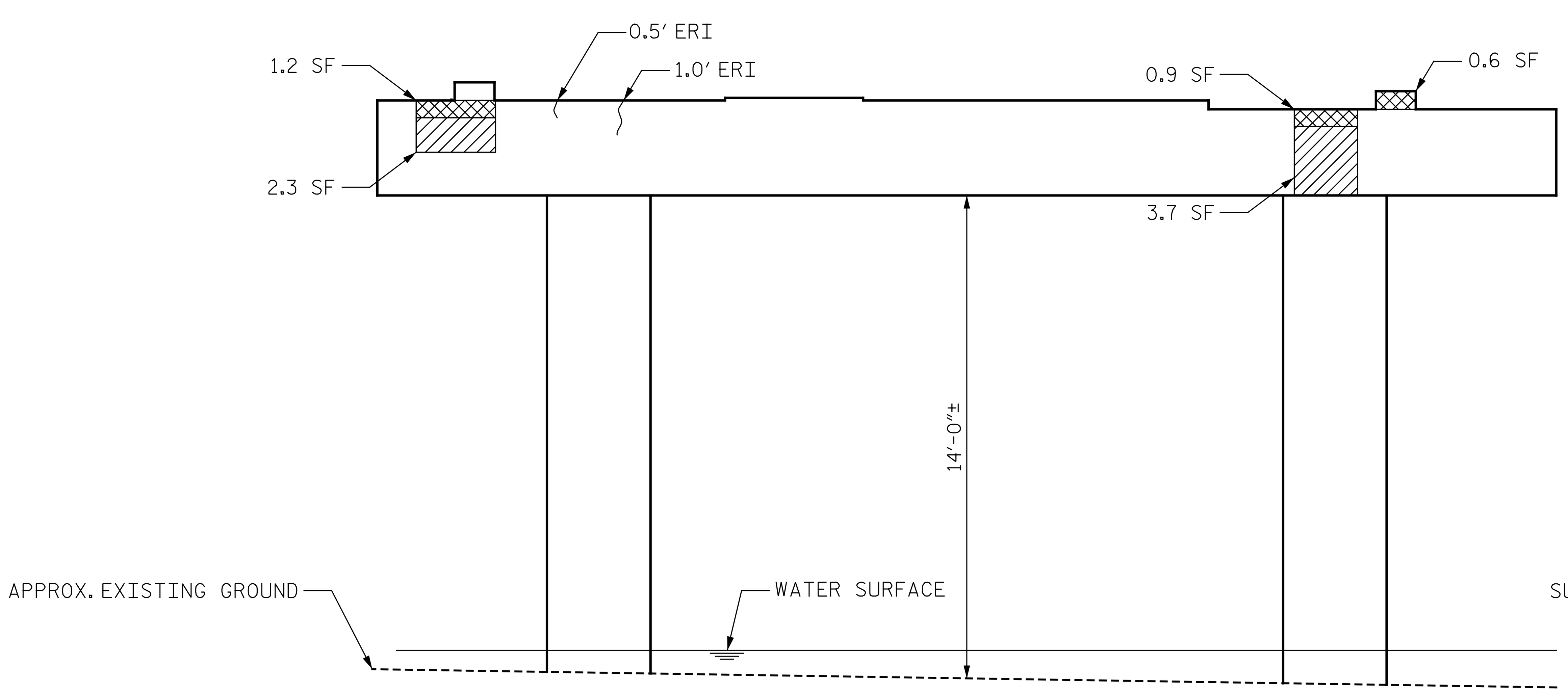
BOTTOM OF CAP



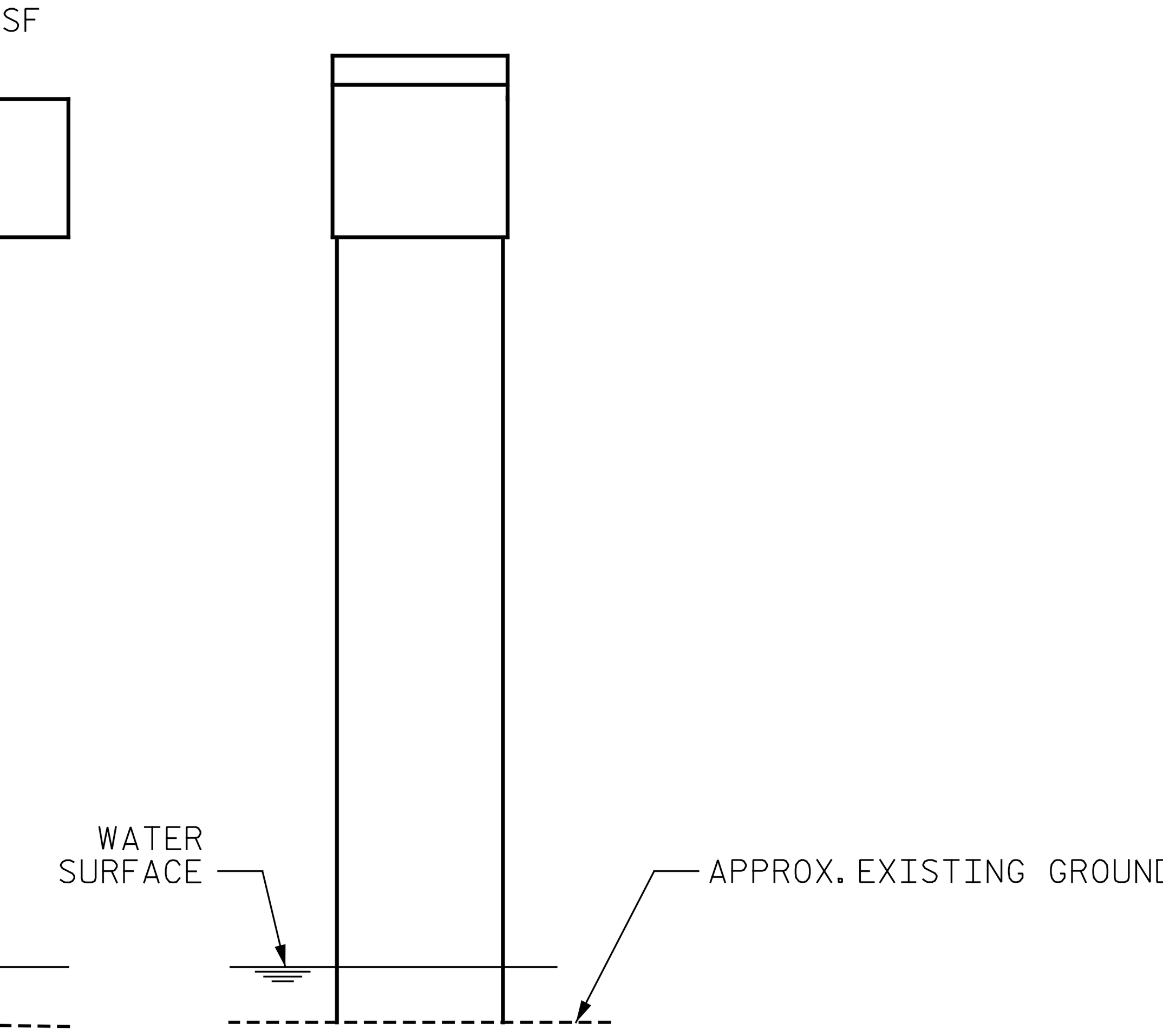
ELEVATION
(SPAN B SIDE)



END VIEW
(COLUMN 2)



ELEVATION
(SPAN C SIDE)



END VIEW
(COLUMN 1)

AS-BUILT REPAIR QUANTITY TABLE

BENT 2 REPAIRS	QUANTITIES				
	ESTIMATE		ACTUAL		
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	DEPTH FT	VOLUME CF
CAP	6.8	3.4			
COLUMN	0.0	0.0			
CONCRETE REPAIRS	3.9	2.0			
EPOXY RESIN INJECTION		LENGTH LF	LENGTH LF		
CAP		1.5			
COLUMN		0.0			
EPOXY COATING		SQ. FT	SQ. FT		
TOP OF BENT CAP		0			

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

NOTES:

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FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

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

CONCRETE REPAIRS TO THE BENT CAP MAY REQUIRE BRIDGE JACKING. FOR BRIDGE JACKING, SEE SPECIAL PROVISIONS AND "BRIDGE JACKING DETAILS" SHEET.

CONCRETE REPAIR (FORM & POUR)

SHOTCRETE REPAIR

ERI - EPOXY RESIN INJECTION

PROJECT NO. 15BPR.133

ASHE COUNTY

BRIDGE NO. 040019

SHEET 3 OF 3

NORTH CAROLINA PROFESSIONAL SEAL 020208 ENGINEER ERIC B. NELSON JR.

DocuSigned by: 12/17/2024

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIRS

BENT 2

REVISIONS							
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.	S1-15
1			3			TOTAL SHEETS	87
2			4				

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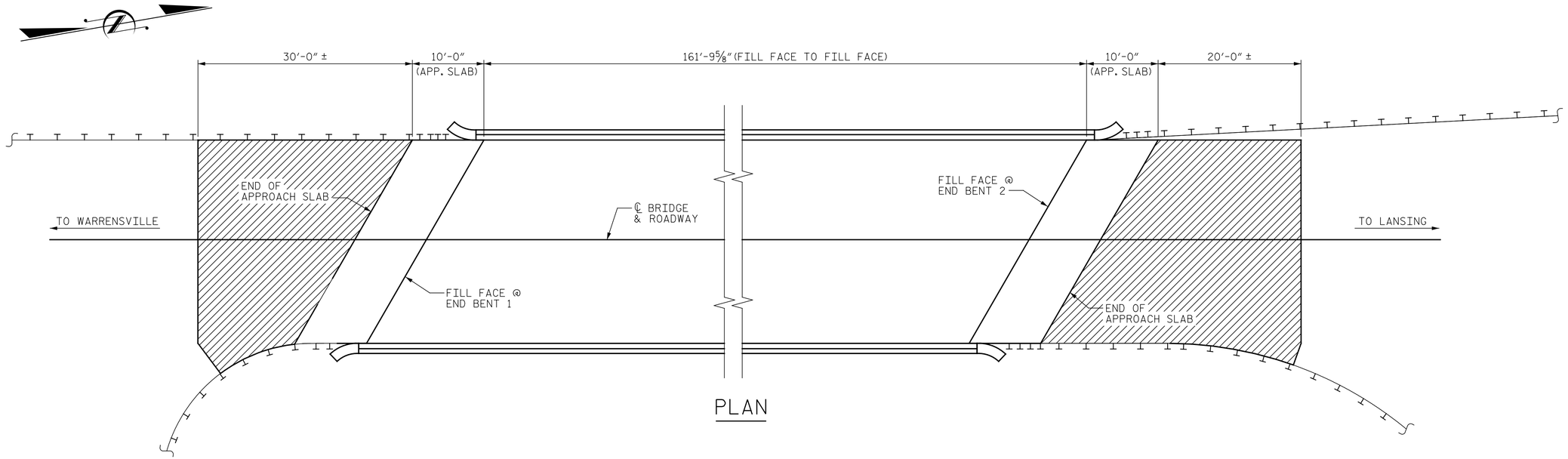
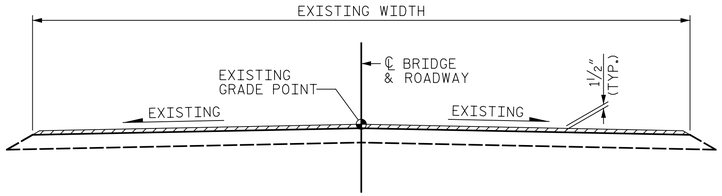
CHECKED BY : J. FARNHAM DATE : 03/2022

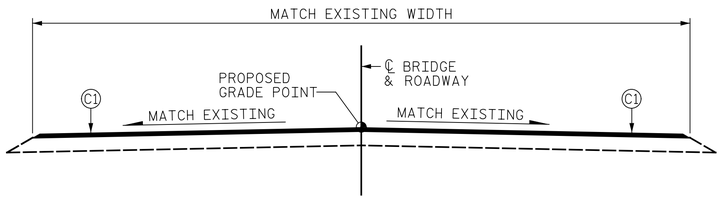


PLAN



TYPICAL ROADWAY MILLING SECTION

(MILL TO APPROX. 1½" DEPTH)



TYPICAL FINAL ROADWAY SECTION

AS-BUILT REPAIR QUANTITY TABLE		
DESCRIPTION	ESTIMATE	ACTUAL
INCIDENTAL MILLING	163 SY	
ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B	14 TONS	
ASPHALT BINDER FOR PLANT MIX	1 TONS	

NOTES:

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

▨ - INCIDENTAL MILLING

C1	PROPOSED VARIABLE DEPTH ASPHALT CONCRETE SURFACE COURSE. TYPE S9.5B AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1½" IN DEPTH OR GREATER THAN 2" IN DEPTH.

PROJECT NO. 15BPR.133

ASHE COUNTY

BRIDGE NO. 040019

NORTH CAROLINA PROFESSIONAL SEAL 020208 ENGINEER ERIC B. NELSON JR.

DocuSigned by: Eric B Nelson Jr 12/17/2024 ACB8082119D74CD...

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

APPROACH MILLING AND TYPICAL ROADWAY SECTIONS

GANNETT FLEMING

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DRAWN BY : J. HARRIS DATE : 03/2022

CHECKED BY : J. YANNACCONE DATE : 03/2022

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REVISIONS						SHEET NO.
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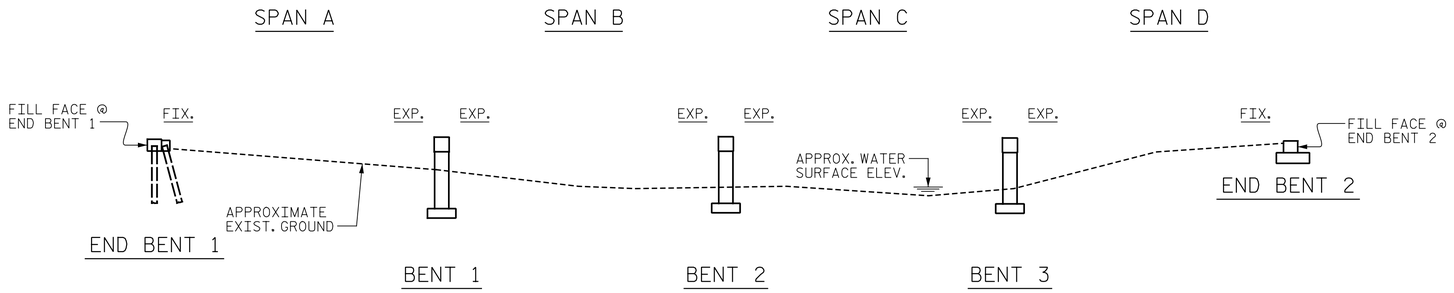
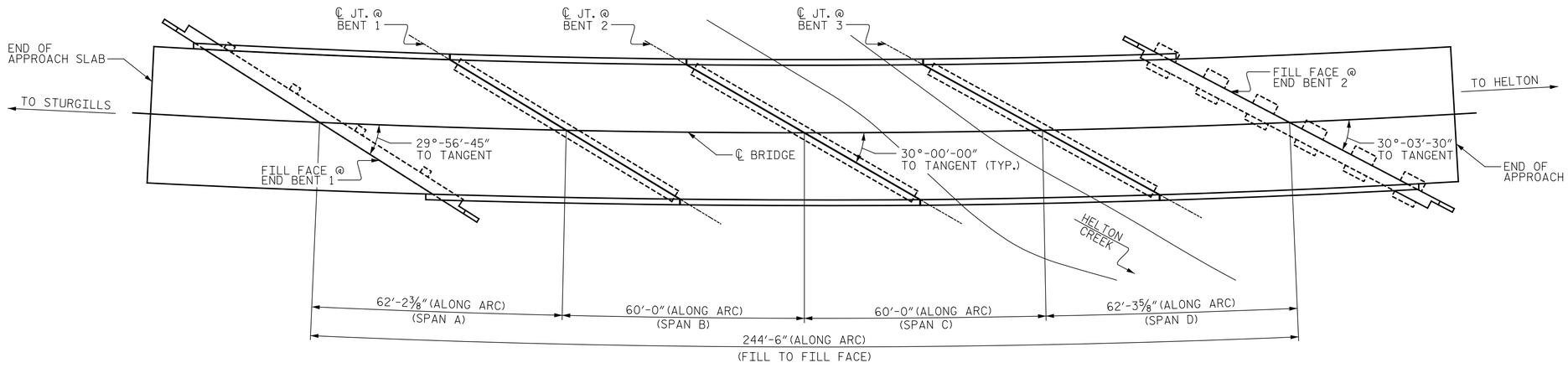
1			3			TOTAL SHEETS
2			4			87



SECTION ALONG ℄ BRIDGE

(SECTION AT BENTS AND END BENTS ARE AT RIGHT ANGLES)



PLAN

(PILES NOT SHOWN FOR CLARITY)

NOTES:

GENERAL DRAWING INFORMATION IS TAKEN FROM THE ORIGINAL PLANS AND THE ROUTINE INSPECTION REPORT DATED 5/29/2024.

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

SCOPE OF WORK

REMOVE EPOXY OVERLAY AND PARTIALLY REMOVE TOP OF BRIDGE DECK CONCRETE BY SCARIFICATION AND HYDRO-DEMOLITION.

CONSTRUCT BRIDGE DECK LINK SLAB AT JOINT LOCATIONS INDICATED IN THE PLANS.

OVERLAY PREPARED TOP OF BRIDGE DECK WITH LATEX MODIFIED CONCRETE (LMC).

REMOVE EXISTING JOINT MATERIAL AND INSTALL POURABLE SILICONE JOINT SEALS WITH ELASTOMERIC CONCRETE HEADERS.

GROOVE LMC BRIDGE DECK.

MILL AND REPAVE ASPHALT APPROACH ROADWAYS.

REPAIR PRESTRESSED CONCRETE GIRDERS AND APPLY FRP WRAP.

CLEAN AND EPOXY COAT EXISTING PRESTRESSED CONCRETE GIRDER ENDS.

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

REMOVE UNSOUND CONCRETE AT EXISTING END BENT AND BENT AREAS AND PERFORM SHOTCRETE AND CONCRETE REPAIRS.

CONSTRUCTION SEQUENCE:

ALL WORK REQUIRING BRIDGE JACKING AND SUPPORT OF GIRDERS SHALL BE COMPLETED PRIOR TO PERFORMING ANY DECK AND JOINT REPAIR WORK, INCLUDING LINK SLAB CONSTRUCTION, DECK OVERLAYS, AND JOINT REPLACEMENTS.

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

RESIDENT ENGINEER DATE

PROJECT NO. 15BPR.133

ASHE COUNTY

BRIDGE NO. 040032

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON
NC 194 OVER
HELTON CREEK

NORTH CAROLINA PROFESSIONAL SEAL 020208 ENGINEER ERIC B. NELSON

DocuSigned by: Eric Nelson 12/17/2024 ACB80821190D74CD...

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-1
1			3			TOTAL SHEETS
2			4			87

DRAWN BY : R. LEON/J. HARRIS DATE : 03/2022
CHECKED BY : J. FARNHAM DATE : 03/2022

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LOCATION SKETCH

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

BRIDGE COORDINATES	
LATITUDE	LONGITUDE
36°-33'-20.10''	81°-29'-47.91''

GENERAL NOTES

SEE CONTRACT DOCUMENTS PLANS FOR LANE WIDTHS, SEQUENCING AND OTHER TRAFFIC CONTROL MEASURES FOR STAGING OF OVERLAY SURFACE PREPARATION AND LATEX MODIFIED CONCRETE (LMC) PLACEMENT AND LINK SLAB CONSTRUCTION.

FOR NEW ASPHALT PLACEMENT, SEE STANDARD SPECIFICATIONS.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT DUE TO THE NATURE OF PRESERVATION PROJECTS, THE EXTENT OF WORK CANNOT ALWAYS BE ACCURATELY DETERMINED PRIOR TO COMMENCEMENT OF WORK. REPAIR LOCATIONS AND ESTIMATES OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS.

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

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

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

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

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

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

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

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

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR LINK SLAB WITH VHPC, SEE SPECIAL PROVISIONS.

FOR CONCRETE FOR DECK REPAIR, SEE SPECIAL PROVISIONS.

FOR VOLUMETRIC MIXER, SEE SPECIAL PROVISIONS.

ALL PAVEMENT MARKING WILL BE IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

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

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

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

FOR LATEX MODIFIED CONCRETE AND PLACING AND FINISHING OF LATEX MODIFIED CONCRETE OVERLAY, SEE LATEX MODIFIED CONCRETE OVERLAY SPECIAL PROVISION.

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

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 PROTECTIVE DEVICES ARE NOT ADEQUATE OR NOT BEING EMPLOYED, THE WORK SHALL BE SUSPENDED UNTIL ADEQUATE PROTECTION IS PROVIDED.

FOR ELASTOMERIC CONCRETE FOR PRESERVATION, SEE SPECIAL PROVISIONS.

FOR BRIDGE JOINT DEMOLITION, SEE SPECIAL PROVISIONS.

FOR POURABLE SILICONE JOINT SEALANT, SEE SPECIAL PROVISIONS.

FOR BRIDGE JACKING, SEE SPECIAL PROVISIONS.

FOR REPAIRS TO PRESTRESSED CONCRETE GIRDERS FOR BRIDGE #040032, SEE SPECIAL PROVISIONS.

FOR EPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR PRESTRESSED GIRDER FRP PROTECTION SYSTEM, SEE SPECIAL PROVISIONS.

FOR VERY HIGH PERFORMANCE CONCRETE, SEE SPECIAL PROVISIONS.

PROJECT NO. 15BPR.133

ASHE COUNTY

BRIDGE NO. 040032

SHEET 2 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 020208 ENGINEER ERIC B. NELSON JR.

DocuSigned by: Eric B Nelson Jr 12/17/2024
ACB8082119D74CD...

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON
NC 194 OVER
HELTON CREEK

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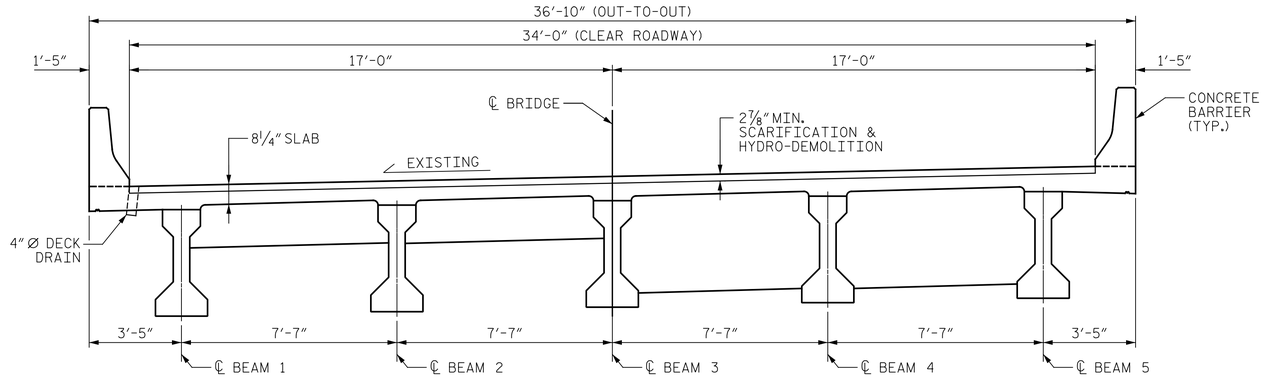
DRAWN BY : R. LEON/J. HARRIS DATE : 03/2022
CHECKED BY : J. FARNHAM DATE : 03/2022

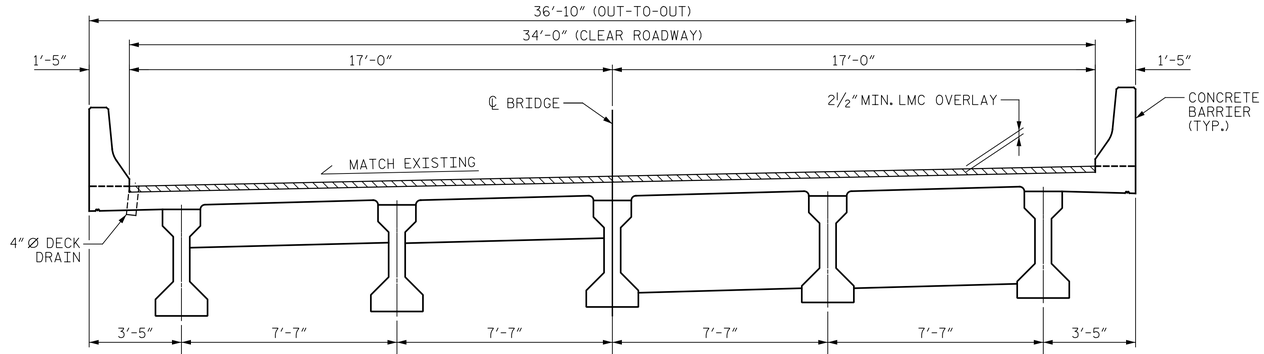


HALF SECTION AT BENT DIAPHRAGM

HALF SECTION AT INTERMEDIATE DIAPHRAGM

TYPICAL SECTION

(EXISTING)



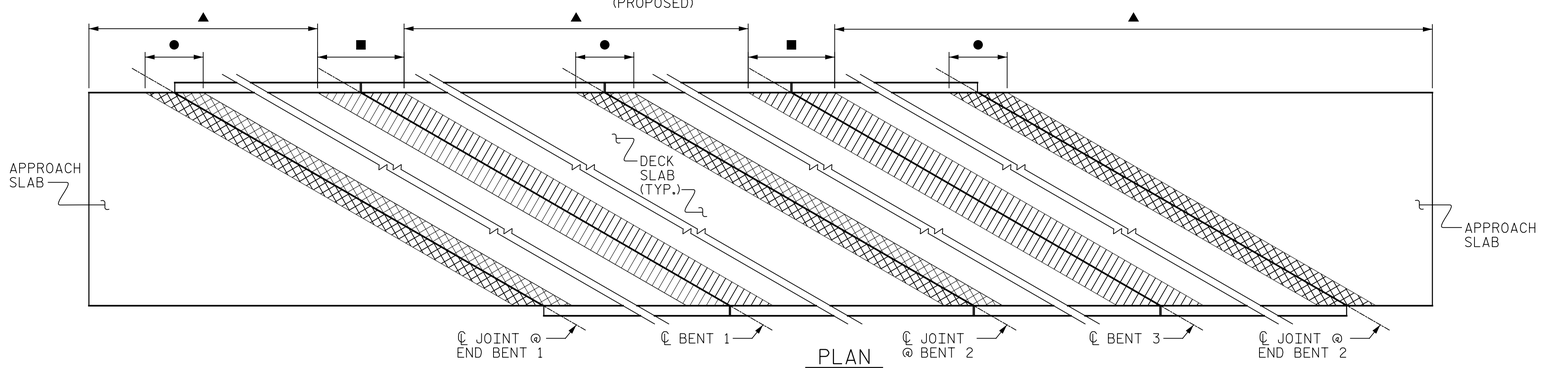
HALF SECTION AT BENT DIAPHRAGM

HALF SECTION AT INTERMEDIATE DIAPHRAGM

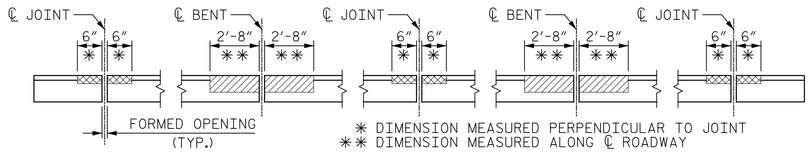
TYPICAL SECTION

(PROPOSED)

(FOR TYPICAL SECTION AT LINK SLAB SEE "LINK SLAB DETAILS" SHEET 1 OF 3)



PLAN



ELEVATION

ELASTOMERIC CONCRETE FOR PRESERVATION

VERY HIGH PERFORMANCE CONCRETE (VHPC)

▲ LIMITS OF SCARIFICATION, HYDRO-DEMOLITION, CLASS II & III SURFACE PREPARATION, PLACING & FINISHING LMC OVERLAY (SEE PLAN OF SPAN)

● BRIDGE JOINT DEMOLITION

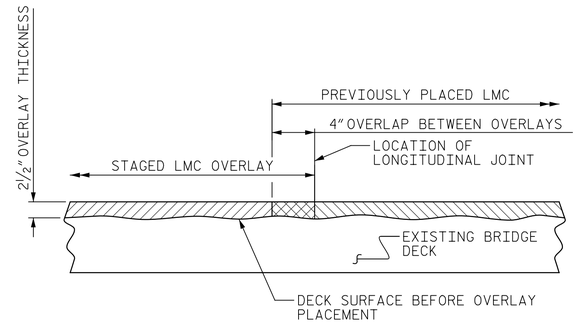
■ LIMITS OF CLASS II SURFACE PREPARATION (LINK SLAB)

PAY LIMITS FOR OVERLAY BID ITEMS

NOTES:

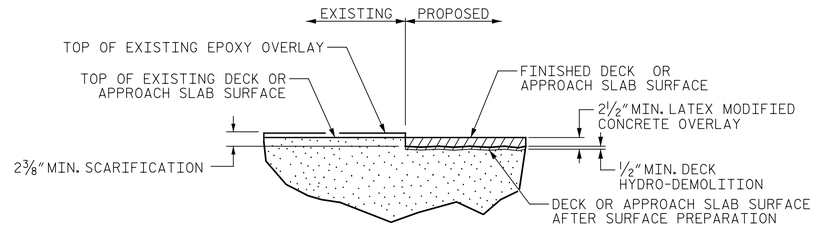
SEE CONTRACT DOCUMENTS FOR LANE WIDTHS, SEQUENCING, AND OTHER TRAFFIC CONTROL MEASURES FOR STAGING OF OVERLAY SURFACE PREPARATION AND LMC PLACEMENT.

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



STAGED LMC OVERLAY CONSTRUCTION JOINT

(AS NEEDED)



DETAIL FOR LMC OVERLAY

PROJECT NO. 15BPR.133

ASHE COUNTY

BRIDGE NO. 040032

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION AND SURFACE PREPARATION DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 020208 ENGINEER ERIC B. NELSON

DocuSigned by: Eric B Nelson Jr 12/17/2024
ACB80821190740D...

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CHECKED BY : J. FARNHAM DATE : 03/2022

NOTES:

REPAIR LOCATIONS AND ESTIMATED QUANTITIES ARE GIVEN WITH 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 ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

PAYMENT FOR CLASS II SURFACE PREPARATION, IS BASED UPON SQUARE FEET OF ADDITIONAL DEMOLITION REQUIRED FOLLOWING SCARIFICATION OF BRIDGE DECK. SEE "LMC OVERLAY SURFACE PREPARATION" SPECIAL PROVISION.

FOR SECTION A-A, SEE "POURABLE SILICONE JOINT SEALANT DETAILS" SHEET.

FOR SECTION C-C & CONCRETE BARRIER RAIL REPAIR, SEE "LINK SLAB DETAILS" SHEET 3 OF 3.

AS-BUILT REPAIR QUANTITY TABLE

APPROACH SLAB @ END BENT 1

	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	157.7 SY	
HYDRO-DEMOLITION OF BRIDGE DECK	157.7 SY	
CLASS II SURFACE PREPARATION	0.0 SY	
CLASS III SURFACE PREPARATION	0.0 SY	
BRIDGE JOINT DEMOLITION	36.8 SF	
LATEX MODIFIED CONCRETE OVERLAY	12.0 CY	
PLACING & FINISHING LMC OVERLAY	157.7 SY	
GROOVING BRIDGE FLOORS	1266 SF	

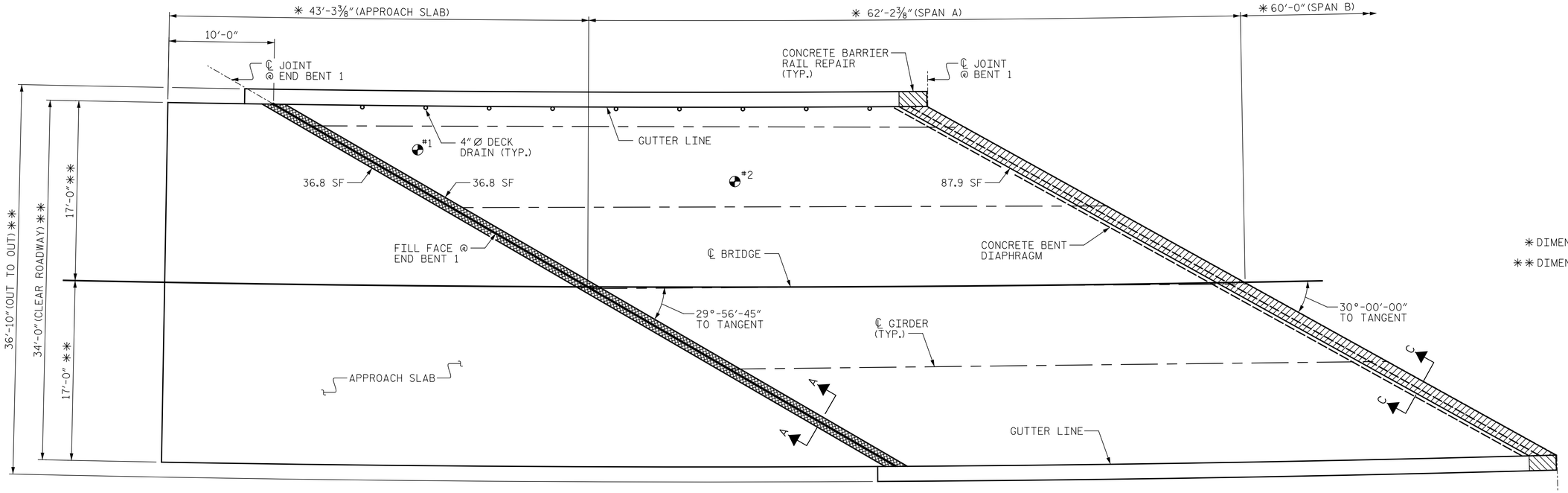
AS-BUILT REPAIR QUANTITY TABLE

SPAN A TOP OF DECK REPAIRS

	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	217.8 SY	
HYDRO-DEMOLITION OF BRIDGE DECK	217.8 SY	
CLASS II SURFACE PREPARATION	9.8 SY	
CLASS III SURFACE PREPARATION	0.0 SY	
BRIDGE JOINT DEMOLITION	36.8 SF	
LATEX MODIFIED CONCRETE OVERLAY	20.4 CY	
PLACING & FINISHING LMC OVERLAY	217.8 SY	
GROOVING BRIDGE FLOORS	1872 SF	

SPAN A UNDERSIDE OF DECK REPAIRS

SHOTCRETE REPAIRS	ESTIMATE		ACTUAL	
	AREA SF	VOL CF	AREA SF	VOL CF
UNDERSIDE OF DECK	0.0	0.0		
CONCRETE DIAPHRAGMS	0.0	0.0		



✳DIMENSIONS MEASURED ALONG ARC

✳✳DIMENSIONS MEASURED RADIAL

APPROACH SLAB @ END BENT 1

SPAN A

SCARIFYING AND HYDRO-DEMOLITION OF BRIDGE DECK

APPROX. AREA CLASS II SURFACE PREPARATION

APPROX. AREA CLASS III SURFACE PREPARATION

BRIDGE JOINT DEMOLITION

UNDERSIDE OF DECK REPAIR

#1 TEST LOCATION

TEST LOCATION	CONCRETE STRENGTH (PSI)
#1	✳5700
#2	✳6700

INFORMATION IN CHART TAKEN FROM DECK EVALUATION DATED 6/21/2019.

✳READINGS TAKEN ON EPOXY OVERLAY

NORTH CAROLINA PROFESSIONAL SEAL 020208 ENGINEER ERIC B. NELSON

DocuSigned by: Eric B. Nelson 12/17/2024 ACB80821190D74CD...

PROJECT NO. 15BPR.133

ASHE COUNTY

BRIDGE NO. 040032

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK REPAIRS
SPAN A
&
APPROACH SLAB

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FOR SECTION B-B, SEE "POURABLE SILICONE JOINT SEALANT DETAILS" SHEET.

FOR SECTION C-C & CONCRETE BARRIER RAIL REPAIR, SEE "LINK SLAB DETAILS" SHEET 3 OF 3.

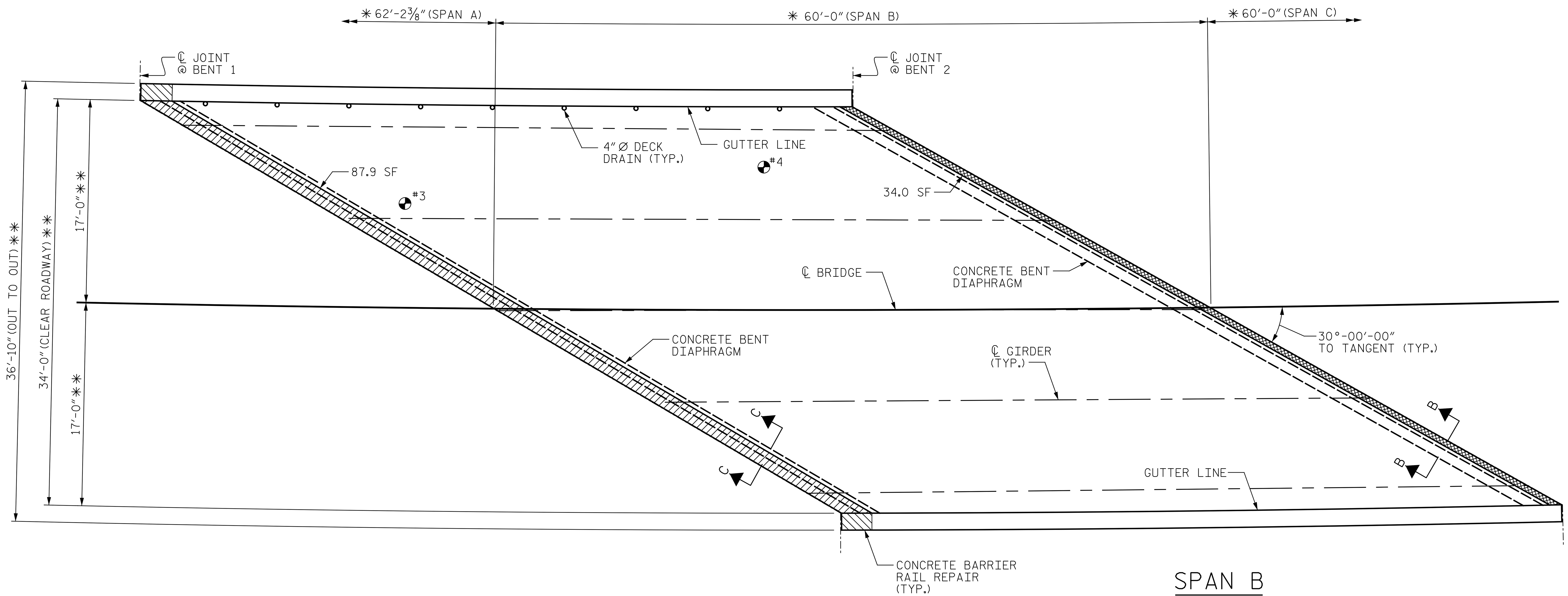
AS-BUILT REPAIR QUANTITY TABLE

SPAN B TOP OF DECK REPAIRS

	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	209.3 SY	
HYDRO-DEMOLITION OF BRIDGE DECK	209.3 SY	
CLASS II SURFACE PREPARATION	9.8 SY	
CLASS III SURFACE PREPARATION	0.0 SY	
BRIDGE JOINT DEMOLITION	34.0 SF	
LATEX MODIFIED CONCRETE OVERLAY	19.8 CY	
PLACING & FINISHING LMC OVERLAY	209.3 SY	
GROOVING BRIDGE FLOORS	1803 SF	

SPAN B UNDERSIDE OF DECK REPAIRS

SHOTCRETE REPAIRS	ESTIMATE AREA SF	ESTIMATE VOL CF	ACTUAL AREA SF	ACTUAL VOL CF
UNDERSIDE OF DECK	0.0	0.0		
CONCRETE DIAPHRAGMS	0.0	0.0		



SPAN B

✳ DIMENSIONS MEASURED ALONG ARC

✳✳ DIMENSIONS MEASURED RADIAL

SCARIFYING AND HYDRO-DEMOLITION OF BRIDGE DECK

APPROX. AREA CLASS II SURFACE PREPARATION

APPROX. AREA CLASS III SURFACE PREPARATION

BRIDGE JOINT DEMOLITION

UNDERSIDE OF DECK REPAIR

#1 TEST LOCATION

TEST LOCATION	CONCRETE STRENGTH (PSI)
#3	✳ 6100
#4	✳ 6100

INFORMATION IN CHART TAKEN FROM DECK EVALUATION DATED 6/21/2019.

✳ READINGS TAKEN ON EPOXY OVERLAY

PROJECT NO. 15BPR.133

ASHE COUNTY

BRIDGE NO. 040032

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK REPAIRS

SPAN B

NORTH CAROLINA PROFESSIONAL SEAL 020208 ENGINEER ERIC B. NELSON JR.

DocuSigned by: 12/17/2024

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FOR SECTION C-C & CONCRETE BARRIER RAIL REPAIR, SEE "LINK SLAB DETAILS" SHEET 3 OF 3.

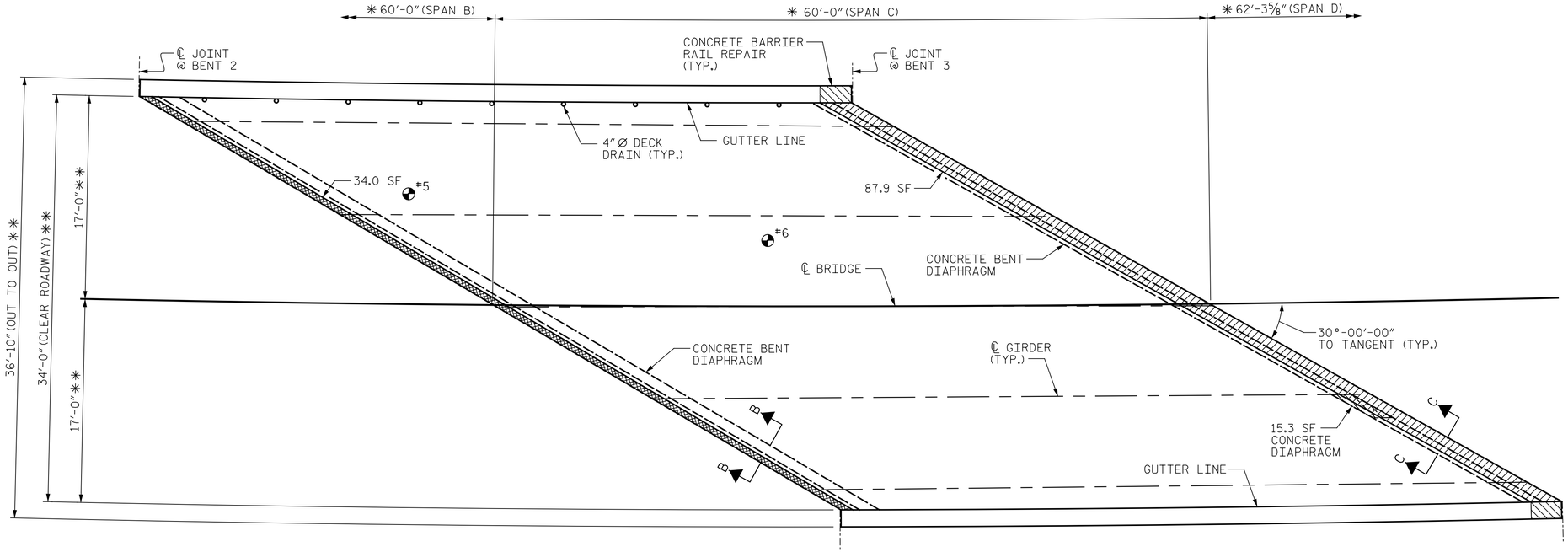
AS-BUILT REPAIR QUANTITY TABLE

SPAN C TOP OF DECK REPAIRS

	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	209.3 SY	
HYDRO-DEMOLITION OF BRIDGE DECK	209.3 SY	
CLASS II SURFACE PREPARATION	9.8 SY	
CLASS III SURFACE PREPARATION	0.0 SY	
BRIDGE JOINT DEMOLITION	34.0 SF	
LATEX MODIFIED CONCRETE OVERLAY	19.8 CY	
PLACING & FINISHING LMC OVERLAY	209.3 SY	
GROOVING BRIDGE FLOORS	1803 SF	

SPAN C UNDERSIDE OF DECK REPAIRS

SHOTCRETE REPAIRS	ESTIMATE		ACTUAL	
	AREA SF	VOL CF	AREA SF	VOL CF
UNDERSIDE OF DECK	0.0	0.0		
CONCRETE DIAPHRAGMS	15.3	7.7		



SPAN C

✳ DIMENSIONS MEASURED ALONG ARC

✳✳ DIMENSIONS MEASURED RADIAL

SCARIFYING AND HYDRO-DEMOLITION OF BRIDGE DECK

APPROX. AREA CLASS II SURFACE PREPARATION

APPROX. AREA CLASS III SURFACE PREPARATION

BRIDGE JOINT DEMOLITION

UNDERSIDE OF DECK REPAIR

#1 TEST LOCATION

TEST LOCATION	CONCRETE STRENGTH (PSI)
#5	✳ 6900
#6	✳ 6200

INFORMATION IN CHART TAKEN FROM DECK EVALUATION DATED 6/21/2019.

✳ READINGS TAKEN ON EPOXY OVERLAY

NORTH CAROLINA PROFESSIONAL SEAL 020208 ENGINEER ERIC B. NELSON JR.

DocuSigned by: Eric B Nelson Jr ACB80821190740D... 12/17/2024

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PROJECT NO. 15BPR.133

ASHE COUNTY

BRIDGE NO. 040032

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK REPAIRS

SPAN C

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FOR SECTION C-C & CONCRETE BARRIER RAIL REPAIR, SEE "LINK SLAB DETAILS" SHEET 3 OF 3.

AS-BUILT REPAIR QUANTITY TABLE

SPAN D TOP OF DECK REPAIRS

	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	218.4 SY	
HYDRO-DEMOLITION OF BRIDGE DECK	218.0 SY	
CLASS II SURFACE PREPARATION	9.8 SY	
CLASS III SURFACE PREPARATION	0.0 SY	
BRIDGE JOINT DEMOLITION	34.0 SF	
LATEX MODIFIED CONCRETE OVERLAY	20.5 CY	
PLACING & FINISHING LMC OVERLAY	218.4 SY	
GROOVING BRIDGE FLOORS	1878 SF	

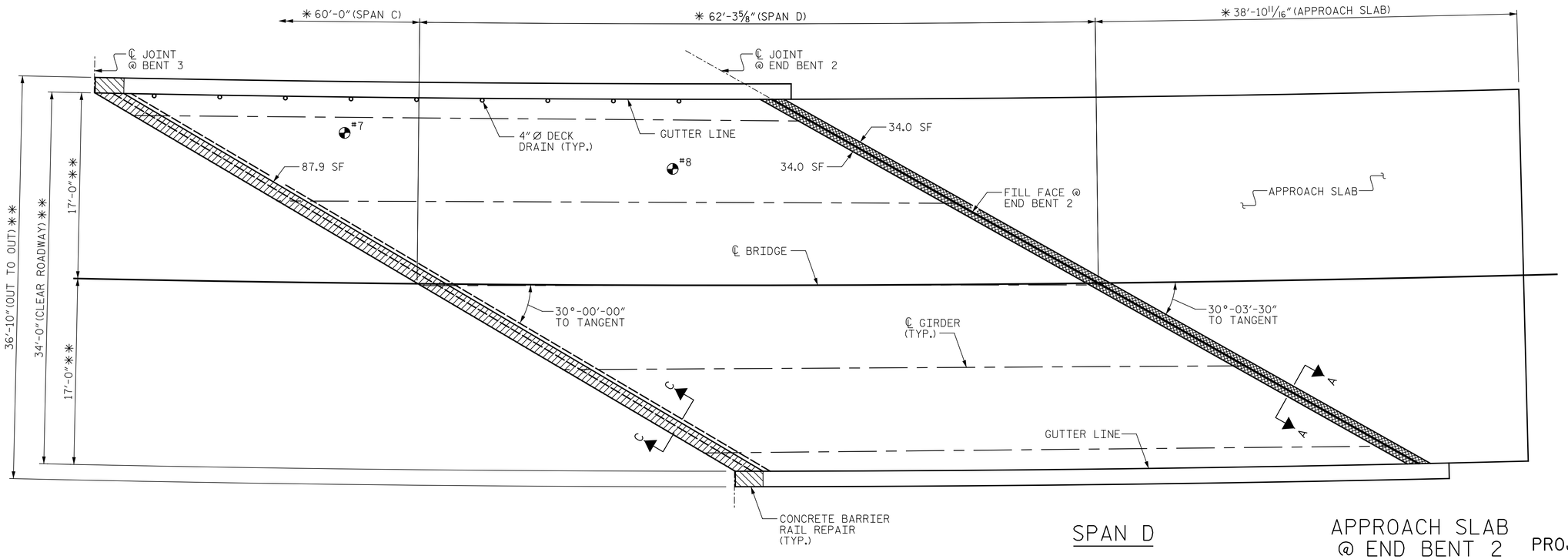
SPAN D UNDERSIDE OF DECK REPAIRS

SHOTCRETE REPAIRS	ESTIMATE		ACTUAL	
	AREA SF	VOL CF	AREA SF	VOL CF
UNDERSIDE OF DECK	0.0	0.0		
CONCRETE DIAPHRAGMS	0.0	0.0		

AS-BUILT REPAIR QUANTITY TABLE

APPROACH SLAB @ END BENT 2

	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	142.2 SY	
HYDRO-DEMOLITION OF BRIDGE DECK	142.2 SY	
CLASS II SURFACE PREPARATION	0.0 SY	
CLASS III SURFACE PREPARATION	0.0 SY	
BRIDGE JOINT DEMOLITION	34.0 SF	
LATEX MODIFIED CONCRETE OVERLAY	10.9 CY	
PLACING & FINISHING LMC OVERLAY	142.2 SY	
GROOVING BRIDGE FLOORS	1140 SF	



✳ DIMENSIONS MEASURED ALONG ARC

✳✳ DIMENSIONS MEASURED RADIAL

SPAN D

APPROACH SLAB @ END BENT 2

SCARIFYING AND HYDRO-DEMOLITION OF BRIDGE DECK

APPROX. AREA CLASS II SURFACE PREPARATION

APPROX. AREA CLASS III SURFACE PREPARATION

BRIDGE JOINT DEMOLITION

UNDERSIDE OF DECK REPAIR

#1 TEST LOCATION

TEST LOCATION	CONCRETE STRENGTH (PSI)
#7	✳6700
#8	✳6900

INFORMATION IN CHART TAKEN FROM DECK EVALUATION DATED 6/21/2019.

✳ READINGS TAKEN ON EPOXY OVERLAY

NORTH CAROLINA PROFESSIONAL SEAL 020208 ENGINEER ERIC B. NELSON

DocuSigned by: Eric Black Jr. 12/17/2024 ACB80211907 4CD...

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PROJECT NO. 15BPR.133

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SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK REPAIRS SPAN D & APPROACH SLAB

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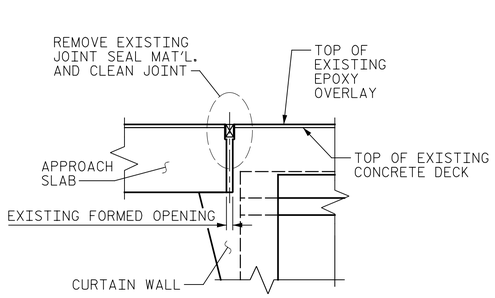

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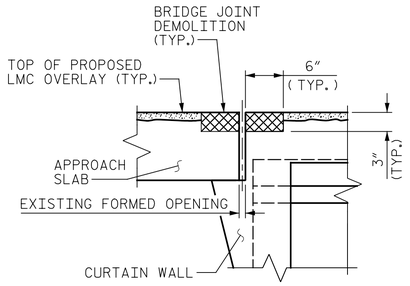
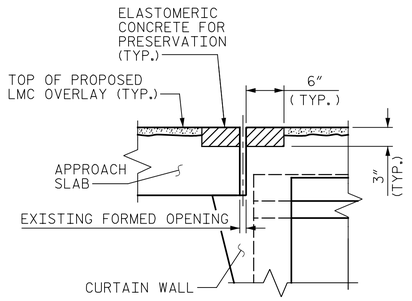
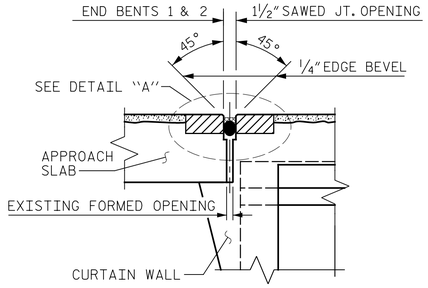


MINIMUM JOINT DEMOLITION

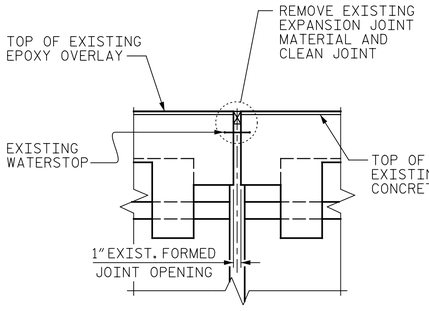


PROPOSED JOINT PRE-SAWED DIMENSIONS

SECTION A-A



PROPOSED POURABLE SILICONE JOINT SEALANT



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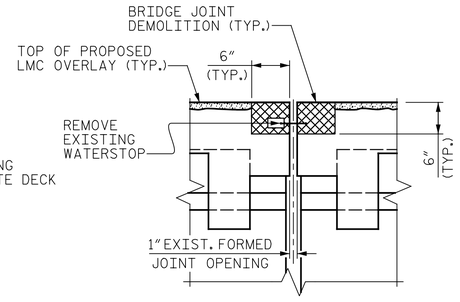
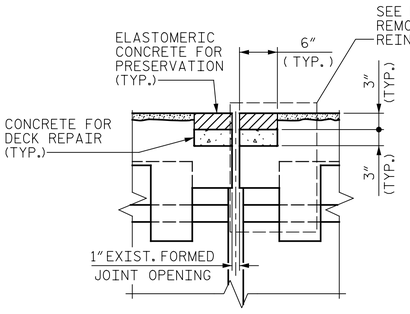
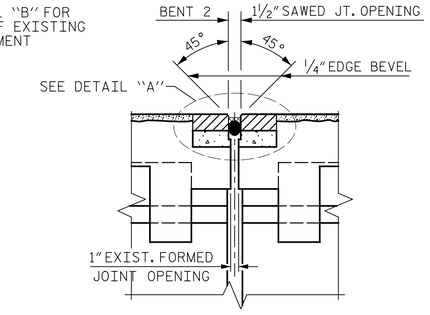


MINIMUM JOINT DEMOLITION

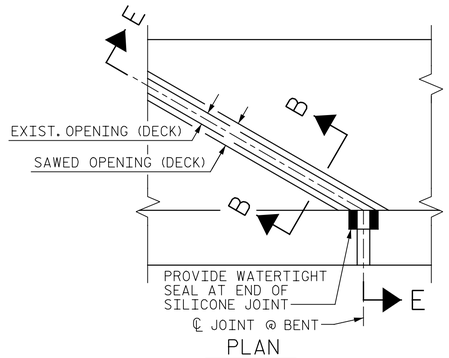


PROPOSED JOINT PRE-SAWED DIMENSIONS

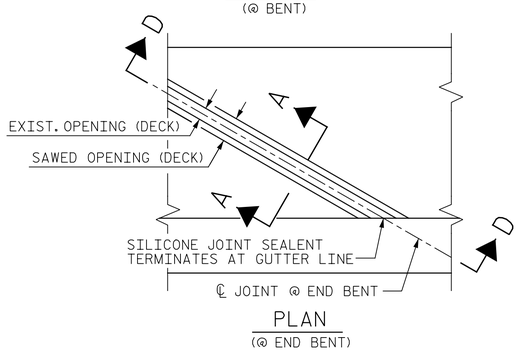
SECTION B-B



PROPOSED POURABLE SILICONE JOINT SEALANT



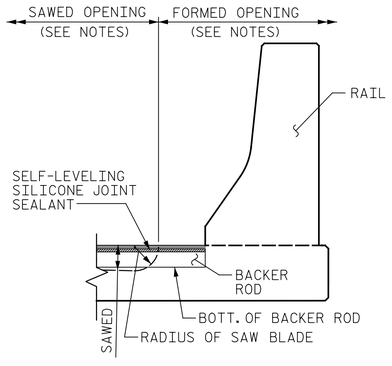
PLAN
(@ BENT)



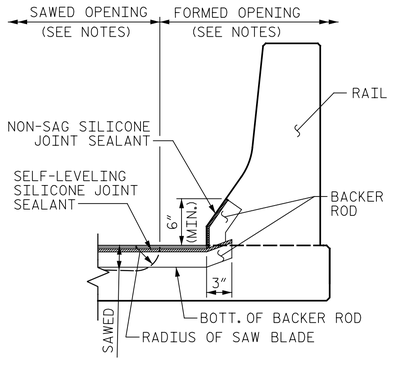
PLAN
(@ END BENT)

LOCATION	POURABLE SILICONE JOINT SEALANT	ELASTOMERIC CONCRETE FOR PRESERVATION	CONCRETE FOR DECK REPAIR
	LIN. FT.	CU. FT.	CU. FT.
END BENT 1	70.0	17.0	-
BENT 2	70.0	17.0	17.0
END BENT 2	70.0	17.0	-
✳ TOTAL	210.0	51.0	17.0

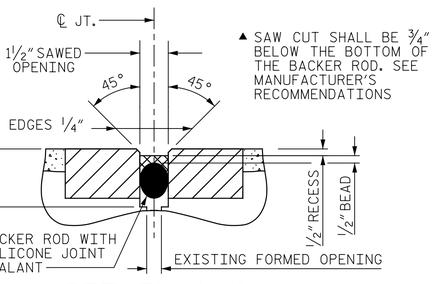
✳ BASED ON MINIMUM BLOCKOUT SHOWN



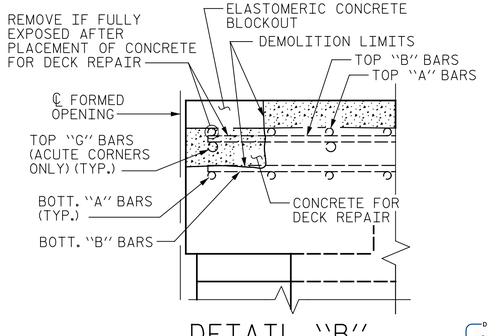
SECTION D-D
(@ END BENT)



SECTION E-E
(@ BENT)



DETAIL "A"
(PROPOSED JOINT WITH SAWED DIMENSIONS)



DETAIL "B"

JOINT SEAL DETAILS

NOTES:

CONTRACTOR SHALL FIELD VERIFY THE EXISTING FORMED OPENING PRIOR TO OBTAINING JOINT MATERIAL. IF ACTUAL JOINT OPENING VARIES FROM THE OPENING INDICATED IN DETAIL MORE THAN ¼" NOTIFY THE ENGINEER. REVISION TO THE JOINT SEAL SIZE MAY BE NECESSARY.

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 BE PERMITTED TO FORM THE JOINT WITH 6" OF THE GUTTERLINE AND UP THE FACE OF THE BARRIER RAIL. IN ALL OTHER SECTIONS OF THE JOINT, THE CONTRACTOR WILL NOT BE PERMITTED TO FORM THE JOINT IN LIEU OF SAWING THE JOINT.

THE NOMINAL SAW CUT DEPTH FOR BRIDGE JOINT DEMOLITION IS 1½" BUT REINFORCING STEEL SHALL NOT BE DAMAGED.

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

FOR EXCAVATION BELOW THE BOTTOM OF THE PLANNED JOINT DEMOLITION, CONCRETE FOR DECK REPAIR SHALL BE PLACED IN THE EXCAVATED AREA UP TO THE PLANNED BOTTOM ELEVATION OF THE ELASTOMERIC CONCRETE.

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

PRIOR TO PLACEMENT OF ELASTOMERIC CONCRETE REMOVE ANY TOP "A" OR "B" BARS THAT ARE FULLY EXPOSED IN THE ELASTOMERIC CONCRETE BLOCKOUT REGION.

THE CONTRACTOR WILL NOT BE PERMITTED TO CUT EXISTING BOTTOM "A" OR "B" BARS. EXPOSED BOTTOM REINFORCING SHALL BE CLEANED AND REPAIRED IF DAMAGED.

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

POURABLE SILICONE JOINT SEALANT AND BACKER ROD SHALL BE INSTALLED AS PER THE MANUFACTURER'S RECOMMENDATIONS.

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

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

THE CONTRACTOR WILL NOT BE PERMITTED TO INSTALL POURABLE SILICONE JOINT SEALANT AT BENT 2 UNTIL ALL BRIDGE JACKING IS COMPLETED AT THAT BENT.

THE INSTALLATION OF JOINT SEAL SHALL BE WATERTIGHT.

FOR BRIDGE JOINT DEMOLITION, SEE SPECIAL PROVISIONS.

FOR CONCRETE FOR DECK REPAIR, SEE SPECIAL PROVISIONS.

FOR VOLUMETRIC MIXER, SEE SPECIAL PROVISIONS.

FOR POURABLE SILICONE JOINT SEALANT, SEE SPECIAL PROVISIONS.

PROJECT NO. 15BPR.133

ASHE COUNTY

BRIDGE NO. 040032

DRAWN BY : J. HARRIS DATE : 03/2022

CHECKED BY : J. FARNHAM DATE : 03/2022

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NORTH CAROLINA PROFESSIONAL SEAL 020208 ENGINEER ERIC B. NELSON JR.

DocuSigned by: Eric B Nelson Jr. ACB8082119D74CD... 12/17/2024

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

POURABLE SILICONE JOINT SEALANT DETAILS

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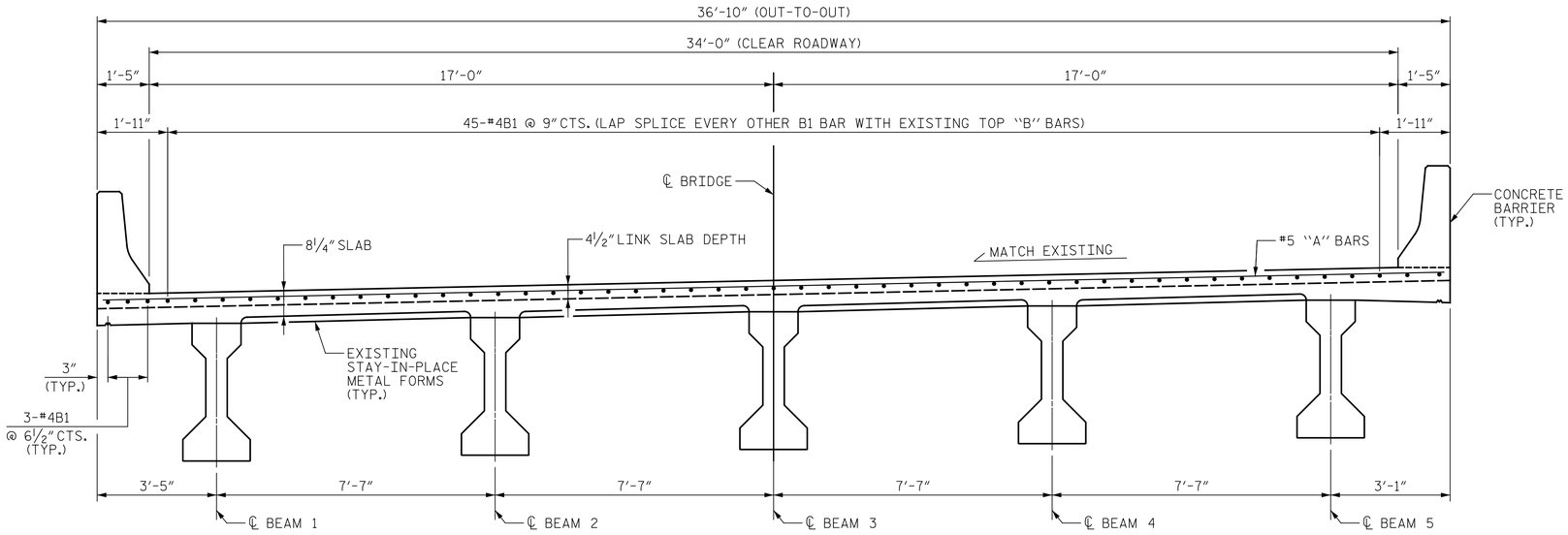
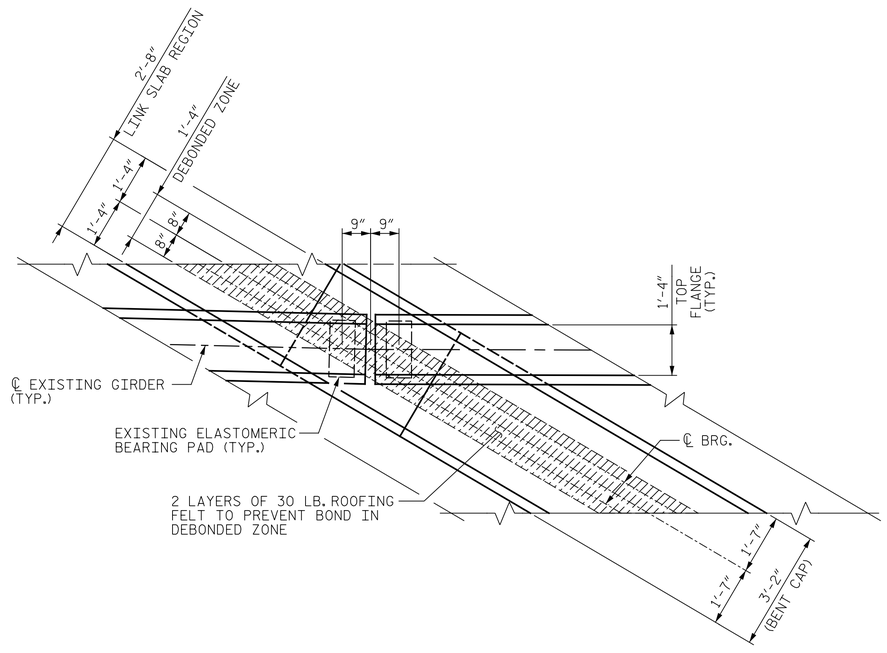
1			3			TOTAL SHEETS
2			4			87



TYPICAL SECTION AT LINK SLAB

(SECTION SHOWN NORMAL TO GIRDERS, BARS SHOWN ALONG SKEW)
(EXISTING BARS NOT SHOWN FOR CLARITY)
(ALL HORIZ. DIMENSIONS RADIAL)



PLAN OF GIRDERS AT BENTS 1 & 3

(TYPICAL LINK SLAB BAY)

NOTES:

SEE CONTRACT DOCUMENTS FOR LANE WIDTHS, SEQUENCING, AND OTHER TRAFFIC CONTROL MEASURES FOR STAGING OF JOINT REPAIR.

FOR ESTIMATED DEMOLITION WORK FOR JOINT REPLACEMENT QUANTITIES, SEE DECK REPAIR SHEETS.

CLASS II SURFACE PREPARATION, SEE LMC OVERLAY SURFACE PREPARATION SPECIAL PROVISIONS.

THE CONTRACTOR SHALL TAKE CARE DURING LINK SLAB DEMOLITION AND CONSTRUCTION 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 PROTECTIVE DEVICES ARE NOT ADEQUATE OR NOT BEING EMPLOYED, THE WORK SHALL BE SUSPENDED UNTIL ADEQUATE PROTECTION IS PROVIDED.

SEE SHEET 3 OF 3 FOR BILL OF MATERIAL.

FOR VERY HIGH PERFORMANCE CONCRETE (VHPC), SEE SPECIAL PROVISIONS.

CONSTRUCTION SEQUENCE:

1. CLOSE WORK AREA ACCORDING TO CONTRACT DOCUMENTS.
2. MARK OUT PROPOSED LINK SLAB AREA AND REMOVE EXISTING JOINT MATERIAL.
3. THE NOMINAL SAW CUT DEPTH ALLOWED FOR DEMOLITION IS 1-1½" BUT REINFORCING STEEL SHALL NOT BE DAMAGED. CONTRACTOR SHALL REMOVE SURFACE CONCRETE TO VERIFY THAT SAWCUT DEPTH WILL NOT DAMAGE EXISTING REINFORCING STEEL.
4. BEGIN DEMOLITION OF PROPOSED LINK SLAB REGION, BEING CAREFUL NOT TO DAMAGE EXISTING LONGITUDINAL OR TRANSVERSE REINFORCING STEEL, BEAM FLANGES, OR STAY-IN-PLACE FORMS. EXISTING "G" BARS ALONG JOINTS AT LINK SLAB CAN BE REMOVED.
5. REMOVE DEMOLISHED MATERIALS AND CLEAN LINK SLAB REGION.
6. COAT AND/OR REPAIR EXISTING LONGITUDINAL REINFORCING STEEL THAT WAS DAMAGED DURING DEMOLITION.
7. PLACE ROOFING FELT AS INDICATED.
8. PLACE ADDITIONAL REINFORCING STEEL AS SHOWN.
9. VHPC SHALL BE PLACED AND PROPERLY CONSOLIDATED TO PREVENT VOIDS IN CONCRETE.
10. GROOVE LINK SLAB AREA IN CONJUCTION WITH LMC OVERLAY.
11. PROVIDE AN EXPOSED AGGREGATE SURFACE (AMPLITUDE OF ⅛" MIN. TO ¼" MAX.) FOR ALL SURFACES OUTSIDE OF LINK SLAB DEBONDED ZONE.

PROJECT NO. 15BPR.133
ASHE COUNTY
BRIDGE NO. 040032

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

LINK SLAB DETAILS
(BENTS 1 & 3)

NORTH CAROLINA PROFESSIONAL SEAL 020208 ENGINEER ERIC B. NELSON

DocuSigned by: Eric Nelson 12/17/2024
ACB8082119D74CD...

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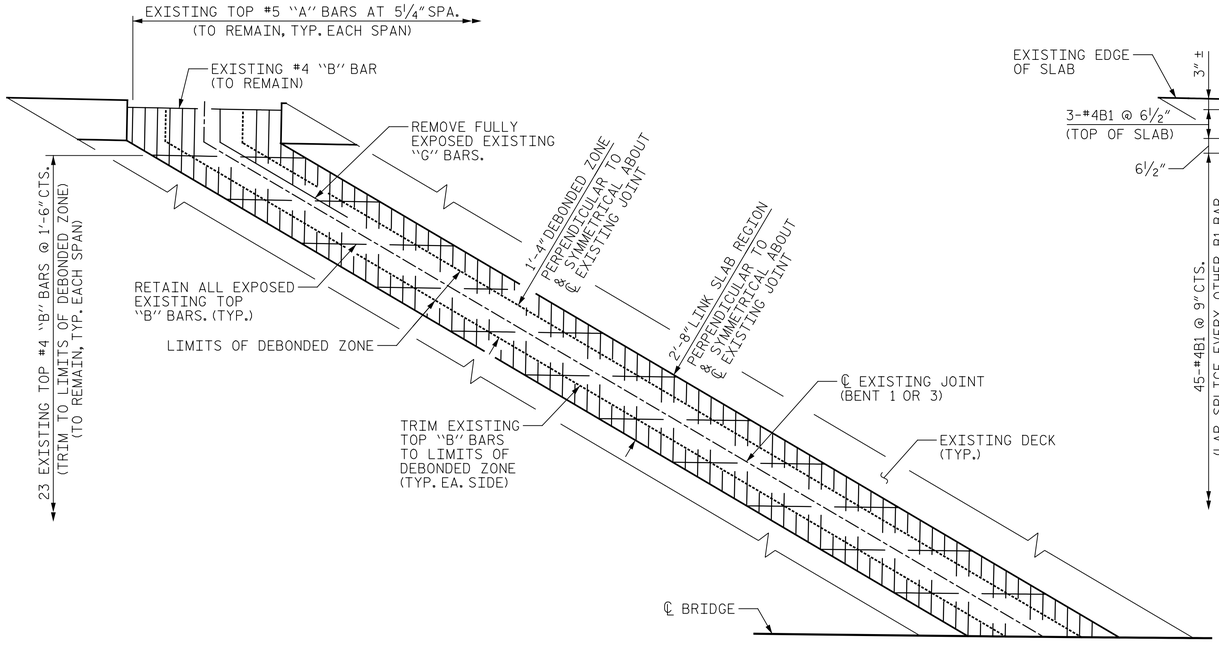
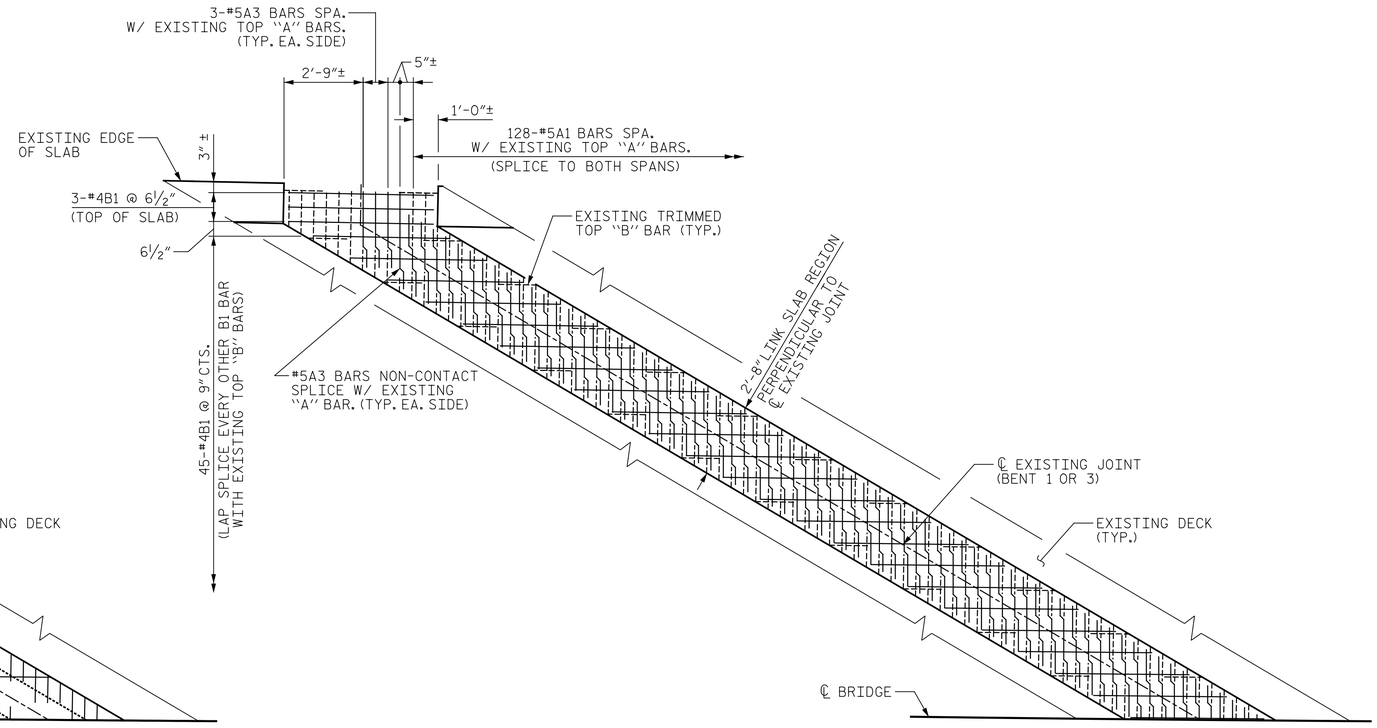
NOTES:

1. SEE SHEET 3 OF 3 FOR BILL OF MATERIAL.
2. ALL CONTACT AND NON-CONTACT LAP SPLICES IN LINK SLAB SHALL BE A MINIMUM OF 6" IN LENGTH.



EXISTING REINFORCEMENT

(LEFT SIDE SHOWN, REINFORCEMENT SIMILAR ABOUT ℄ BRIDGE)



PROPOSED REINFORCEMENT

(LEFT SIDE SHOWN, REINFORCEMENT SIMILAR ABOUT ℄ BRIDGE)

LINK SLAB REINFORCEMENT PLAN

(TOP BARS ONLY)

PROJECT NO. 15BPR.133

ASHE COUNTY

BRIDGE NO. 040032

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

LINK SLAB DETAILS

(BENTS 1 & 3)

NORTH CAROLINA PROFESSIONAL SEAL 020208 ENGINEER ERIC B. NELSON JR.

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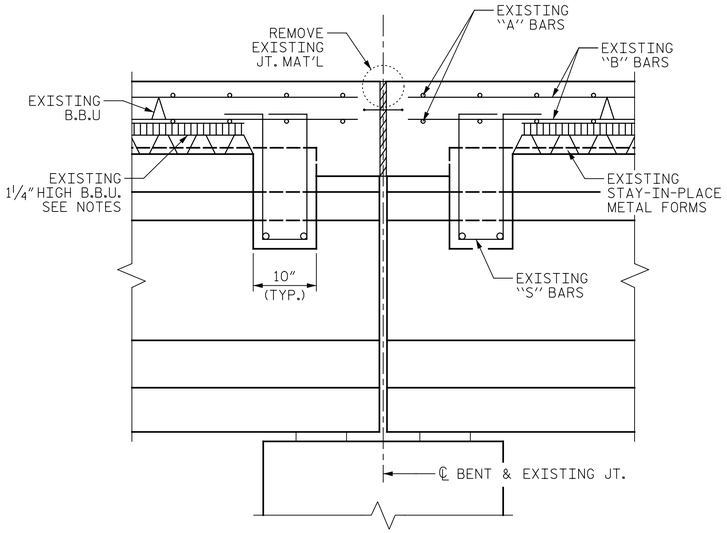
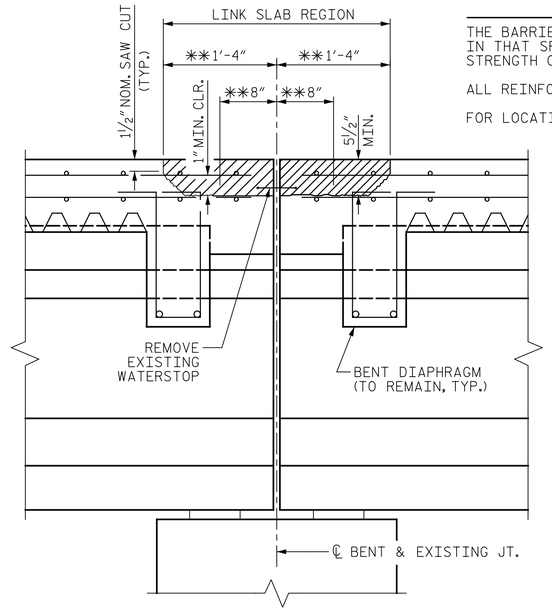


EXISTING JOINT



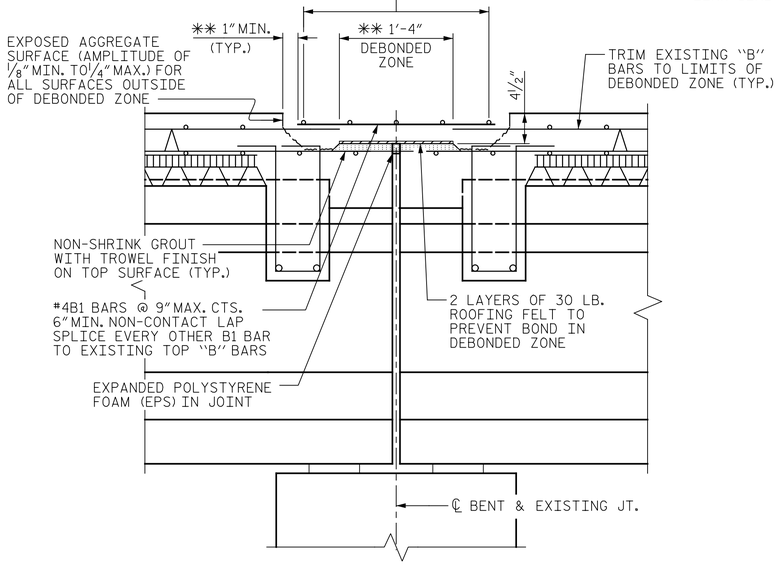
MINIMUM EXISTING JOINT DEMOLITION

**DIMENSIONS NORMAL TO JOINT

DEMOLITION OF EXISTING CONCRETE FOR LINK SLAB CONSTRUCTION

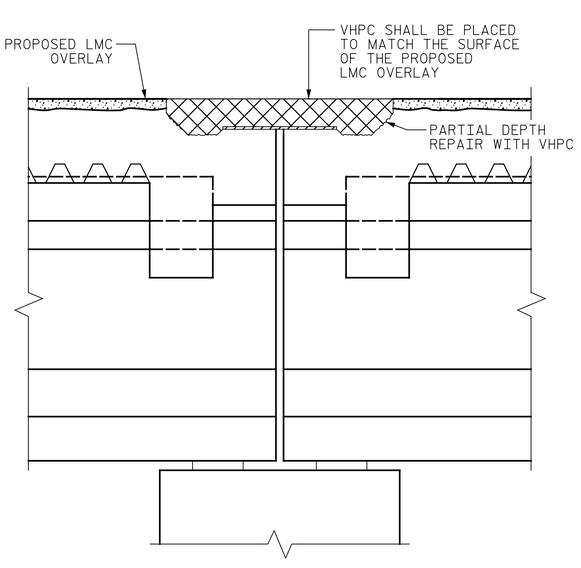
(CLASS II SURFACE PREPARATION) VHPC FOR LINK SLAB CONSTRUCTION

NON-SHRINK GROUT, EPS, ROOFING FELT, AND CAULKING MATERIAL ARE CONSIDERED INCIDENTAL TO THE VARIOUS PAY ITEMS FOR LINK SLAB CONSTRUCTION



PROPOSED LINK SLAB CONSTRUCTION

**DIMENSIONS NORMAL TO JOINT



PROPOSED LINK SLAB WITH LMC OVERLAY

SECTION C-C

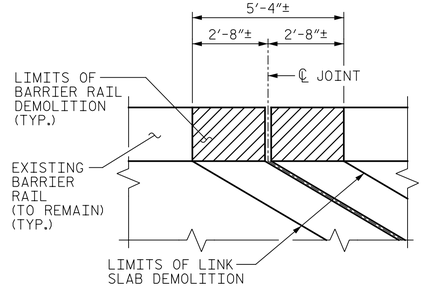
LINK SLAB SECTIONS

NOTES

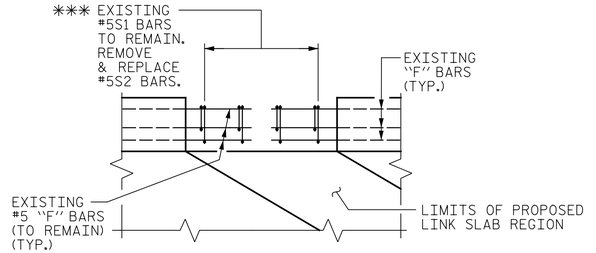
THE BARRIER RAIL IN EACH SPAN SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT SPAN HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

FOR LOCATION OF SECTION C-C, SEE DECK REPAIR SHEETS.

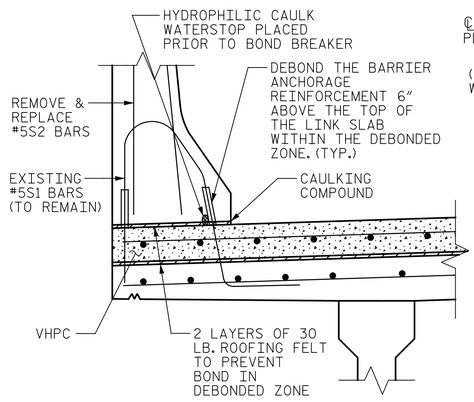


PROPOSED DEMOLITION

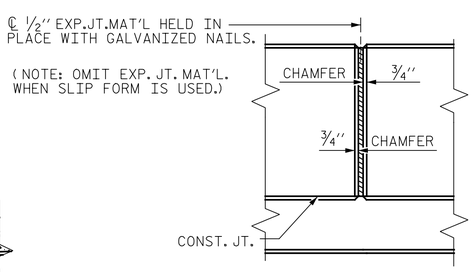


PROPOSED REINFORCEMENT

***SEE "PARTIAL SECTION OF BARRIER RAIL AT LINK SLAB", THIS SHEET.



PARTIAL SECTION OF BARRIER RAIL AT LINK SLAB



ELEVATION AT EXPANSION JOINTS

BARRIER RAIL DETAILS

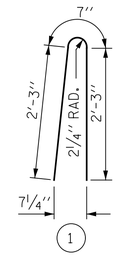
BILL OF MATERIAL (PER LINK SLAB)

(REINFORCEMENT)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	128	#5	STR	2'-9"	367
* A2	2	#5	STR	3'-4"	7
* A3	6	#5	STR	2'-7"	16
* B1	51	#4	STR	4'-9"	162

* EPOXY COATED REINFORCING STEEL	552 LBS.
VERY HIGH PERFORMANCE CONCRETE (VHPC)	3.2 C. Y.

BARRIER RAIL BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

(BARRIER RAIL REINFORCEMENT PER LINK SLAB)

FOR CONCRETE BARRIER RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* S2	8	#5	1	5'-1"	42

* EPOXY COATED REINFORCING STEEL	42 LBS.
CLASS AA CONCRETE	1.0 CU. YDS.
CONCRETE BARRIER RAIL	10.7 LIN. FT.

PROJECT NO. 15BPR.133

ASHE COUNTY

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SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

LINK SLAB DETAILS

(BENTS 1 & 3)

NORTH CAROLINA PROFESSIONAL SEAL 020208 ENGINEER ERIC B. NELSON

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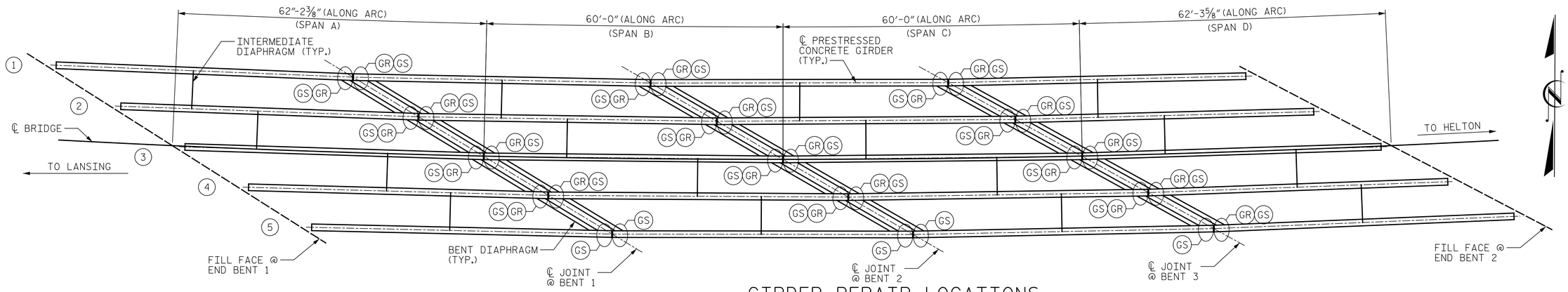

GIRDER REPAIR LOCATIONS

(OTHER LOCATIONS MAY EXIST, SEE NOTES)

ANTICIPATED GIRDER REPAIR LOCATIONS

SPAN	GIRDER	LOCATION	DESCRIPTION	SHOTCRETE C.F.
A	1	BENT 1	SPALLING AND DELAMINATION 6'-0"X FULL HEIGHT GIRDER ON LEFT SIDE DELAMINATION 3'-3"X FULL HEIGHT GIRDER ON RIGHT SIDE	8.6
A	2	BENT 1	DELAMINATION 2'-6"X FULL HEIGHT WEB / DELAMINATION 3"HIGH X 1'-6"LONG BOTTOM FLANGE ON LEFT SIDE DELAMINATION 4'-3"X FULL HEIGHT WEB ON RIGHT SIDE	3.0
A	3	BENT 1	DELAMINATION 3'-0"X FULL HEIGHT TOP FLANGE AND WEB / DELAMINATION 6"X FULL HEIGHT BOTTOM FLANGE ON LEFT SIDE DELAMINATION 1'-9"X FULL HEIGHT GIRDER ON RIGHT SIDE	4.4
A	4	BENT 1	DELAMINATION 2'-9"X FULL HEIGHT TOP FLANGE AND WEB / DELAMINATION 3'-6"X FULL HEIGHT BOTTOM FLANGE ON LEFT SIDE SPALL AND DELAMINATION 3'-6"X FULL HEIGHT GIRDER ON RIGHT SIDE	7.3
B	1	BENT 1	DELAMINATION 2'-0"X FULL HEIGHT GIRDER ON LEFT SIDE DELAMINATION 4'-0"X FULL HEIGHT TOP FLANGE AND WEB / DELAMINATION 4'-9"X FULL HEIGHT BOTTOM FLANGE ON RIGHT SIDE	6.7
B	1	BENT 2	DELAMINATION 3'-6"X FULL HEIGHT GIRDER ON LEFT SIDE DELAMINATION 8'-0"X FULL HEIGHT GIRDER ON RIGHT SIDE	13.0
B	2	BENT 1	DELAMINATION 3'-9"X FULL HEIGHT WEB / DELAMINATION 7"HIGH X 4'-0"LONG BOTTOM FLANGE ON LEFT SIDE DELAMINATION 4'-0"X FULL HEIGHT TOP FLANGE AND WEB / DELAMINATION 6'-3"X FULL HEIGHT BOTTOM FLANGE ON RIGHT SIDE	7.6
B	2	BENT 2	DELAMINATION 2'-3"X FULL HEIGHT TOP FLANGE AND WEB / DELAMINATION 5'-0"X FULL HEIGHT BOTTOM FLANGE ON LEFT SIDE DELAMINATION 6"X FULL HEIGHT GIRDER ON RIGHT SIDE	4.2
B	3	BENT 1	DELAMINATION 2'-0"X FULL HEIGHT WEB / DELAMINATION 3"HIGH X 12"LONG BOTTOM FLANGE ON LEFT SIDE DELAMINATION 7'-0"X FULL HEIGHT GIRDER ON RIGHT SIDE	8.8
B	3	BENT 2	DELAMINATION 2'-6"X FULL HEIGHT TOP FLANGE AND WEB / DELAMINATION 5'-0"X FULL HEIGHT BOTTOM FLANGE ON LEFT SIDE DELAMINATION 3'-0"X FULL HEIGHT TOP FLANGE AND WEB / DELAMINATION 7"HIGH X 1'-6"LONG BOTTOM FLANGE ON RIGHT SIDE	5.4
B	4	BENT 1	DELAMINATION 1'-9"X FULL HEIGHT TOP FLANGE AND WEB ON LEFT SIDE DELAMINATION 4'-0"X FULL HEIGHT TOP FLANGE AND WEB ON RIGHT SIDE	4.2
B	4	BENT 2	DELAMINATION 2'-3"X FULL HEIGHT TOP FLANGE AND WEB / DELAMINATION 7'-0"X FULL HEIGHT BOTTOM FLANGE ON LEFT SIDE DELAMINATION 2'-9"X FULL HEIGHT TOP FLANGE AND WEB / DELAMINATION 12"X FULL HEIGHT BOTTOM FLANGE ON RIGHT SIDE	5.7
C	1	BENT 2	DELAMINATION 4'-0"X FULL HEIGHT TOP FLANGE AND WEB / DELAMINATION 6'-0"X FULL HEIGHT BOTTOM FLANGE ON LEFT SIDE SPALL 4'-0"X FULL HEIGHT TOP FLANGE AND WEB / DELAMINATION 6'-0"X FULL HEIGHT BOTTOM FLANGE ON RIGHT SIDE	10.6
C	1	BENT 3	DELAMINATION 2'-9"X FULL HEIGHT TOP FLANGE AND WEB / DELAMINATION 5'-0"X FULL HEIGHT BOTTOM FLANGE ON LEFT SIDE DELAMINATION 2'-0"X FULL HEIGHT GIRDER ON RIGHT SIDE	6.3
C	2	BENT 2	DELAMINATION 4'-0"X FULL HEIGHT GIRDER ON LEFT SIDE DELAMINATION 3'-9"X FULL HEIGHT TOP FLANGE AND WEB / DELAMINATION 4'-6"FULL HEIGHT BOTTOM FLANGE ON RIGHT SIDE	9.0
C	2	BENT 3	DELAMINATION 2'-9"X FULL HEIGHT TOP FLANGE AND WEB / DELAMINATION 7"HIGH X 4'-0"LONG BOTTOM FLANGE ON LEFT SIDE DELAMINATION 2'-6"X FULL HEIGHT TOP FLANGE AND WEB ON RIGHT SIDE	4.5
C	3	BENT 2	DELAMINATION 3'-0"X FULL HEIGHT TOP FLANGE AND WEB / DELAMINATION 3"X FULL HEIGHT BOTTOM FLANGE ON LEFT SIDE DELAMINATION 2'-6"X FULL HEIGHT TOP FLANGE AND WEB / DELAMINATION 6'-0"X FULL HEIGHT BOTTOM FLANGE ON RIGHT SIDE	6.4
C	3	BENT 3	DELAMINATION 2'-6"X FULL HEIGHT TOP FLANGE AND WEB / DELAMINATION 4'-6"X FULL HEIGHT BOTTOM FLANGE ON LEFT SIDE DELAMINATION 3'-0"X FULL HEIGHT TOP FLANGE AND WEB / DELAMINATION 7"HIGH X 4'-0"LONG X BOTTOM FLANGE ON RIGHT SIDE	6.1
C	4	BENT 2	DELAMINATION 6'-0"X FULL HEIGHT TOP FLANGE AND WEB / SPALL 8'-0"X FULL HEIGHT BOTTOM FLANGE ON RIGHT SIDE	7.6
C	4	BENT 3	DELAMINATION 6'-0"X FULL HEIGHT TOP FLANGE AND WEB / DELAMINATION 7"HIGH X 4'-3"LONG BOTTOM FLANGE ON LEFT SIDE DELAMINATION 6'-0"X FULL HEIGHT TOP FLANGE AND WEB / DELAMINATION 12"X FULL HEIGHT BOTTOM FLANGE ON RIGHT SIDE	9.8
D	1	BENT 3	DELAMINATION 2'-0"X FULL HEIGHT GIRDER ON LEFT SIDE DELAMINATION 2'-6"X FULL HEIGHT TOP FLANGE AND WEB / DELAMINATION 5'-6"X FULL HEIGHT BOTTOM FLANGE ON RIGHT SIDE	6.3
D	2	BENT 3	DELAMINATION 2'-9"X FULL HEIGHT TOP FLANGE AND WEB / DELAMINATION 4'-0"X FULL HEIGHT BOTTOM FLANGE ON LEFT SIDE DELAMINATION 1'-3"X FULL HEIGHT TOP FLANGE AND WEB / SPALL 5'-9"X FULL HEIGHT BOTTOM FLANGE ON RIGHT SIDE	6.5
D	3	BENT 3	DELAMINATION 2'-0"X FULL HEIGHT TOP FLANGE AND WEB ON LEFT SIDE DELAMINATION 2'-9"X FULL HEIGHT TOP FLANGE AND WEB / SPALL 6'-9"X FULL HEIGHT BOTTOM FLANGE ON RIGHT SIDE	5.2
D	4	BENT 3	DELAMINATION 2'-0"X FULL HEIGHT GIRDER ON LEFT SIDE DELAMINATION 6"X FULL HEIGHT TOP FLANGE AND WEB / DELAMINATION 5'-0"X FULL HEIGHT BOTTOM FLANGE ON RIGHT SIDE	4.6
D	5	BENT 3	SPALL 6"X FULL HEIGHT TOP FLANGE AND WEB ON LEFT SIDE	0.4

AS-BUILT REPAIR QUANTITY TABLE

GIRDER REPAIR

		ESTIMATE	ACTUAL
REPAIRS TO PRESTRESSED CONCRETE GIRDERS FOR BRIDGE #040032		162.3 CF	
FRP STRENGTHENING SYSTEM			
BENT 1	LONGITUDINAL	49 SF	
	VERTICAL	577 SF	
BENT 2	LONGITUDINAL	127 SF	
	VERTICAL	577 SF	
BENT 3	LONGITUDINAL	49 SF	
	VERTICAL	577 SF	

LEGEND

(#) BEAM NUMBER

(GR) P/S GIRDER REPAIR

(GS) FRP STRENGTHENING SYSTEM

NOTES

REPAIR LOCATIONS AND ESTIMATED QUANTITIES ARE GIVEN WITH 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 ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

MINIMUM CONCRETE COVER FOR PRESTRESSING STRANDS IN THE GIRDERS IS 1¾" PER THE EXISTING BRIDGE PLANS.

FOR REPAIRS TO PRESTRESSED CONCRETE GIRDERS FOR BRIDGE #040032, SEE SPECIAL PROVISIONS AND "PRESTRESSED CONCRETE GIRDER REPAIR DETAILS" SHEET.

AFTER GIRDER REPAIRS ARE MADE, ALL GIRDERS AT BENTS 1,2 AND 3 SHALL BE WRAPPED WITH FIBER REINFORCED POLYMER (FRP).

FOR FRP STRENGTHENING SYSTEM, SEE "PRESTRESSED CONCRETE GIRDER FRP DETAILS" SHEET.

PROJECT NO. 15BPR.133

ASHE COUNTY

BRIDGE NO. 040032

NORTH CAROLINA PROFESSIONAL SEAL 020208 ENGINEER ERIC B. NELSON JR.

DocuSigned by: Eric B. Nelson Jr. 12/17/2024
AC8B0821190740D...

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FRAMING PLAN

DRAWN BY : R. LEON/J. HARRIS DATE : 03/2022
CHECKED BY : J. FARNHAM DATE : 03/2022

GANNETT FLEMING
One Glenwood Avenue
Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

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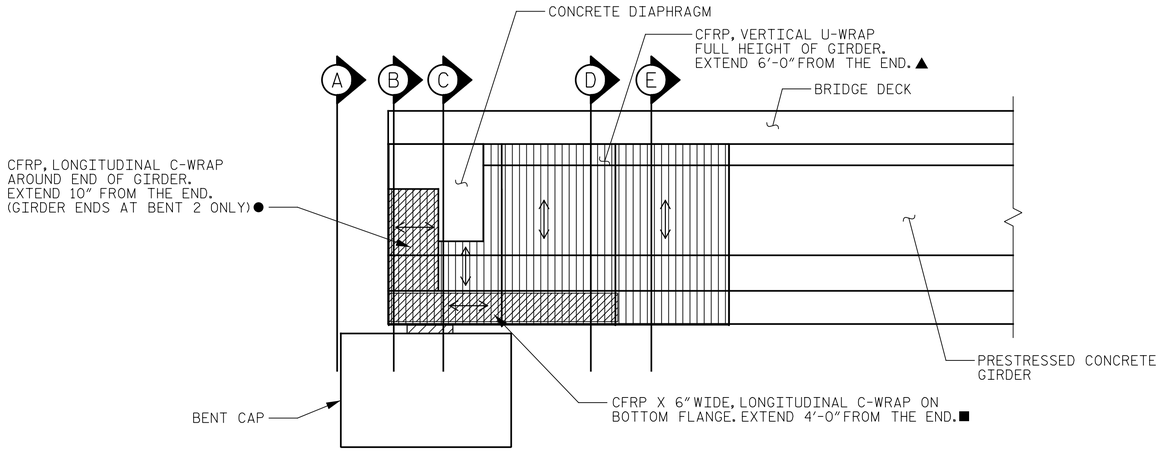
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-12
1			3			TOTAL SHEETS
2			4			87



PARTIAL GIRDER ELEVATION AT END

GENERAL NOTES:

MANUFACTURER OF PROPOSED FRP SYSTEMS SHALL PROVIDE THE DESIGN VALUES OF THE TENSILE STRENGTH, TENSILE MODULUS OF ELASTICITY AND TENSILE STRAIN AT MAXIMUM LOAD FOR FRP SYSTEM AS COMPUTED IN ACCORDANCE WITH ASTM D7290 (A MINIMUM OF 30 SPECIMENS SHALL BE TESTED AS PER ASTM D3039). SUBMIT STAMPED CALCULATIONS BASED ON PROJECT PERFORMANCE CRITERIA.

INSTALLATIONS SHALL BE PERFORMED BY CERTIFIED APPLICATORS ONLY. CERTIFIED APPLICATORS SHALL HAVE WRITTEN VERIFICATION FROM THE MANUFACTURER THAT THEY HAVE RECEIVED THE REQUIRED CERTIFICATIONS AND TRAINING. AT A MINIMUM, THE ONSITE SUPERVISOR AND/OR FOREMAN AND SATURATION/MIXING TECHNICIAN SHALL PROVIDE WRITTEN VERIFICATION FROM THE MATERIAL MANUFACTURER AS BEING FULLY TRAINED AND CERTIFIED TO INSTALL THE PROPOSED SYSTEM. THE CERTIFICATIONS SHALL BE CURRENT (DATED WITHIN ONE-YEAR OF THE PROJECT SCHEDULE). THE CONTRACTOR SHALL SUPPLY A WRITTEN DESCRIPTION OF THE TRAINING COURSE PROVIDED BY THE MANUFACTURER.

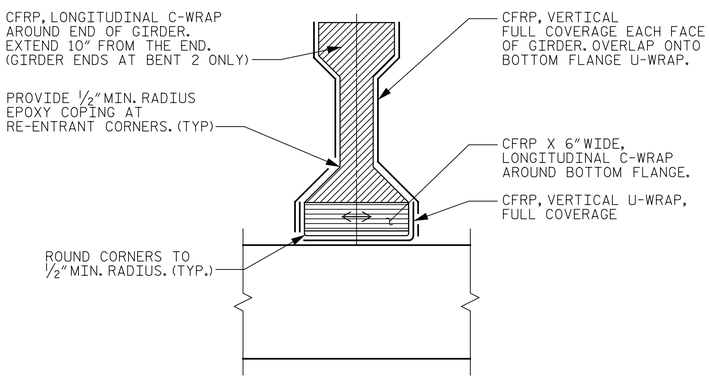
COMPOSITE SYSTEM APPLICATOR SHALL SUBMIT WITNESS PANELS PREPARED AT THE JOBSITE FOR MATERIALS TESTING (ASTM D7565 AND/OR ASTM D3039). THE TESTING (AT THE DEPARTMENT'S DISCRETION) SHALL BE DONE BY AN INDEPENDENT TESTING LABORATORY TO VERIFY ALL SUBMITTED DESIGN PROPERTIES. TESTING SHALL BE PAID FOR BY THE DEPARTMENT. FIELD TEST RESULTS THAT ARE LOWER THAN THE DESIGN PROPERTIES SUBMITTED SHALL REQUIRE THE CONTRACTOR TO PAY FOR REMEDIAL MEASURES TO BE APPROVED BY THE ENGINEER-OF-RECORD.

FOR ALL SUBMITTAL AND PROCEDURAL REQUIREMENTS, SEE PRESTRESSED CONCRETE GIRDER FRP STRENGTHENING SYSTEM SPECIAL PROVISION.

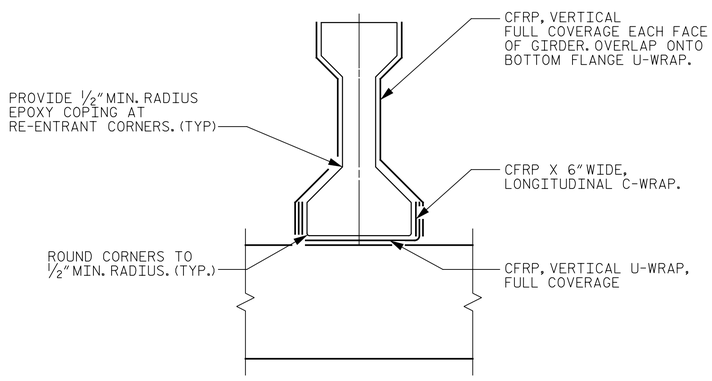
■ (TOTAL FACTORED TENSION RESISTANCE OF 3 KIPS; PROVIDE OVER DIMENSIONS SPECIFIED)

● (CORROSION PROTECTION ONLY; NO STRENGTHENING REQUIRED)

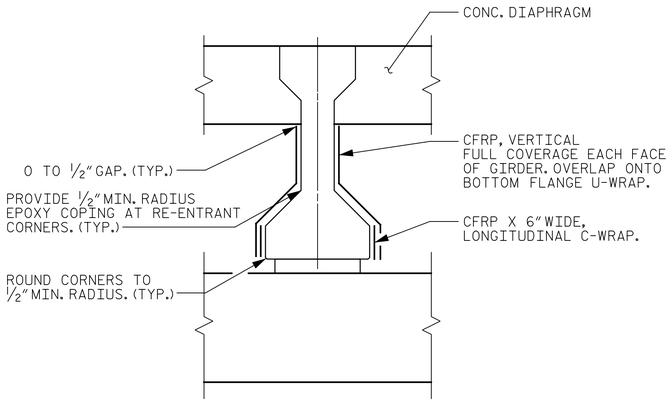
▲ (TOTAL FACTORED SHEAR RESISTANCE OF 20 KIPS/FT MEASURED ALONG LENGTH OF BEAM)



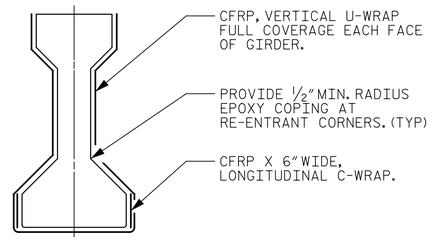
SECTION A AT END OF GIRDER



SECTION B

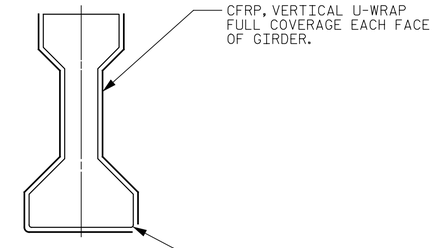


SECTION C @ BEARING & DIAPHRAGM



SECTION D

NOTE: (2) L-WRAPS MAY BE OVERLAPPED ON UNDERSIDE OF GIRDER IN LIEU OF (1) U-WRAP DUE TO POTENTIAL SKEWED GIRDER CONFIGURATION.



SECTION E

NOTE: (2) L-WRAPS MAY BE OVERLAPPED ON UNDERSIDE OF GIRDER IN LIEU OF (1) U-WRAP DUE TO POTENTIAL SKEWED GIRDER CONFIGURATION.

NORTH CAROLINA PROFESSIONAL SEAL 020208 ENGINEER ERIC B. NELSON

DocuSigned by: Eric B Nelson Jr 12/17/2024
ACB8082119D74CD...

PROJECT NO. 15BPR.133

ASHE COUNTY

BRIDGE NO. 040032

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PRESTRESSED CONCRETE GIRDER FRP DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-14
1			3			TOTAL SHEETS
2			4			87

DRAWN BY : J. HARRIS DATE : 03/2022
CHECKED BY : J. YANNACCONE DATE : 03/2022

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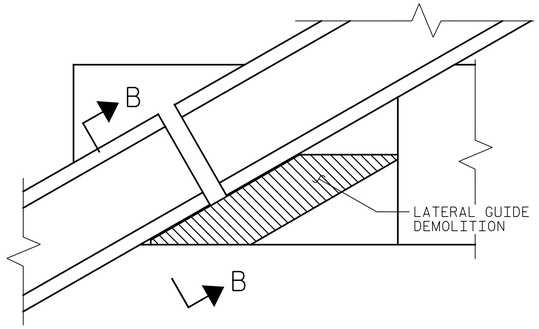
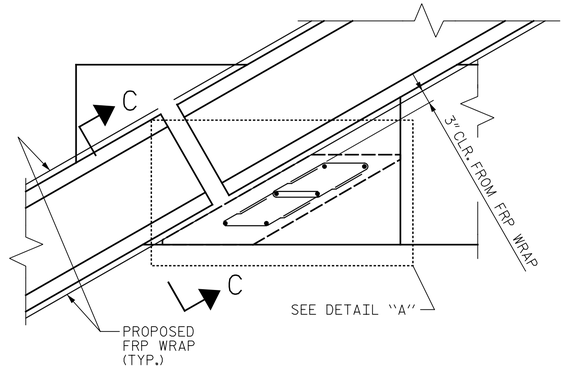
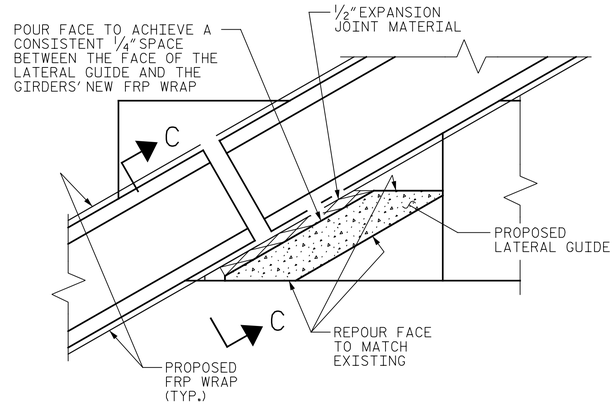


MINIMUM DEMOLITION PLAN





PROPOSED PLAN

NOTE:

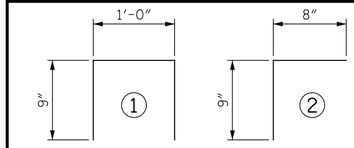
NO SEPARATE PAYMENT SHALL BE MADE FOR EXPANSION JOINT MATERIAL AS PART OF THE REMOVAL AND REPLACEMENT OF LATERAL GUIDES. CONCRETE AND REINFORCING STEEL ARE TO BE MEASURED AND PAID FOR AS CONCRETE REPAIRS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

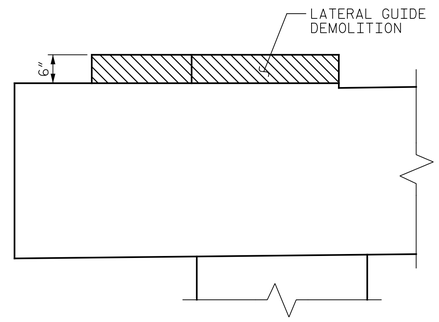
REBAR SCHEDULE (PER LATERAL GUIDE)

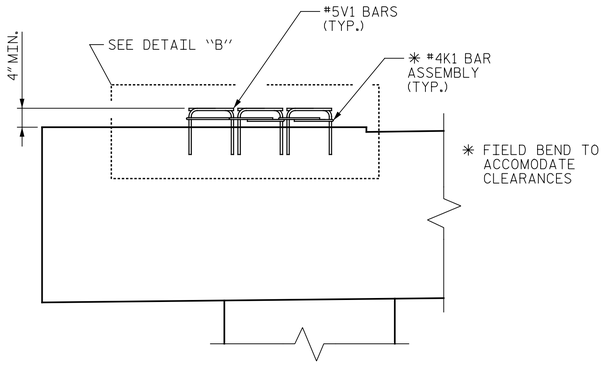
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
K1	6	#4	1	2'-6"	10 LBS
V1	4	#5	2	1'-5"	6 LBS
REINFORCING STEEL					16 LBS
CONCRETE REPAIRS					3.2 CF

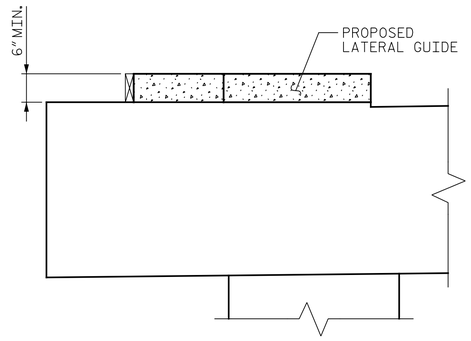
BAR TYPES



DIMENSIONS ARE OUT TO OUT

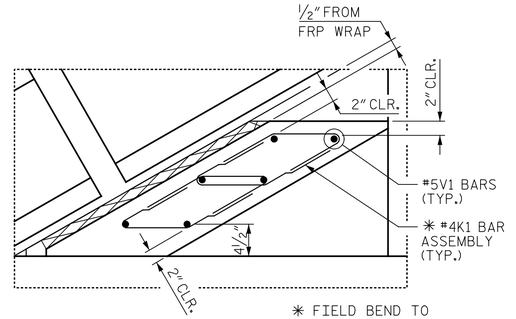




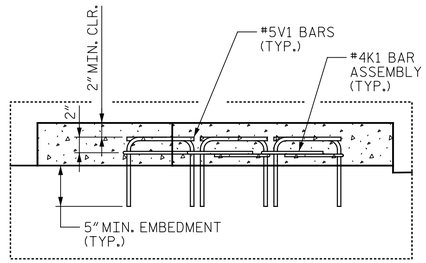


MINIMUM DEMOLITION ELEVATION

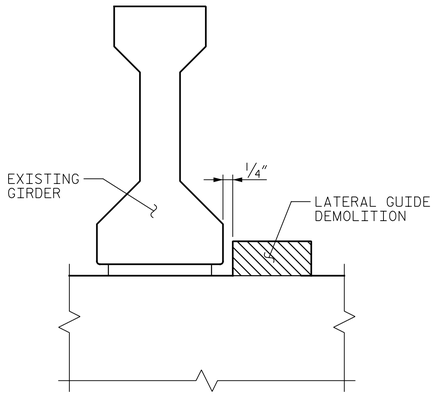
PROPOSED ELEVATION



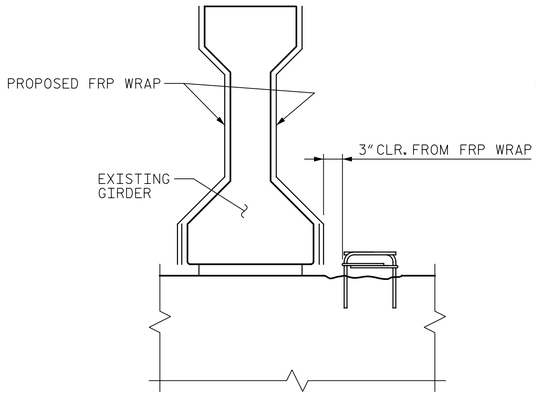
DETAIL "A"

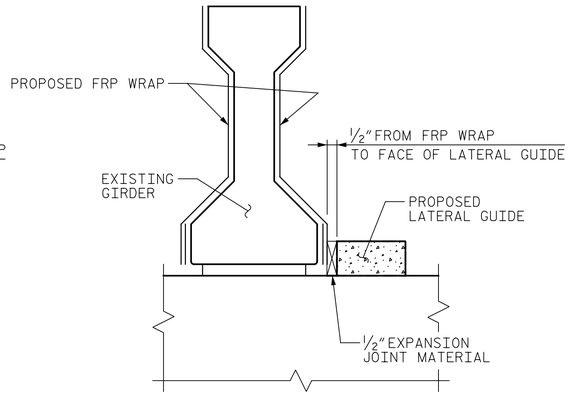


DETAIL "B"



SECTION B-B





SECTION C-C

LATERAL GUIDE DETAILS

PROJECT NO. 15BPR.133

ASHE COUNTY

BRIDGE NO. 040032

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

LATERAL GUIDE REMOVAL AND REPAIR DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 020208 ENGINEER ERIC B. NELSON

DocuSigned by: Eric B Nelson Jr. 12/17/2024
ACB8082119D74CD...

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-15
1			3			TOTAL SHEETS
2			4			87

DRAWN BY : M. SPENCER DATE : 03/2022
CHECKED BY : J. FARNHAM DATE : 03/2022

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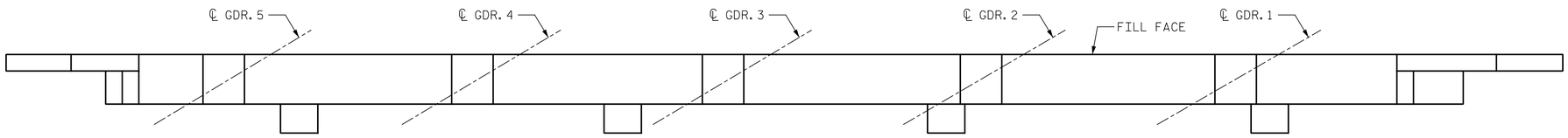


TOP OF CAP

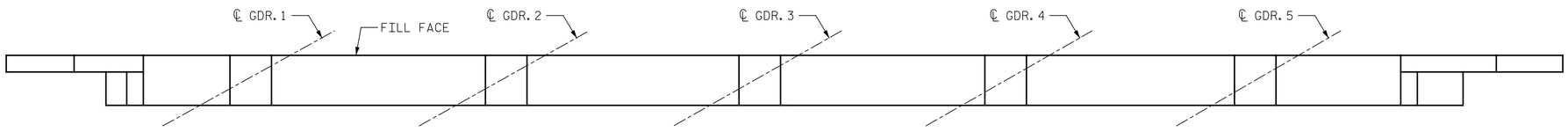
ELEVATION

END BENT 1

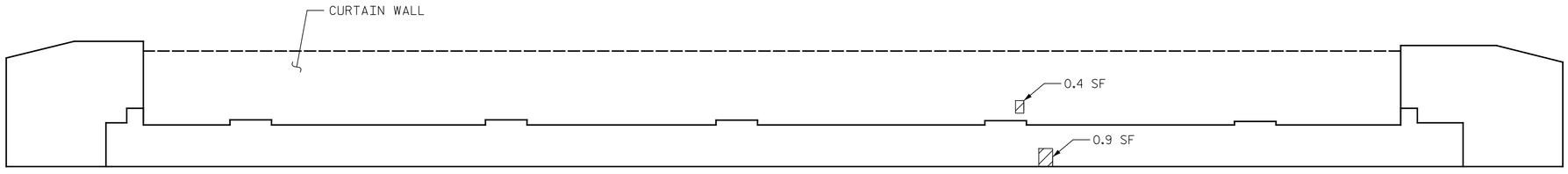
CONCRETE REPAIR (FORM & POUR)

SHOTCRETE REPAIR

ERI - EPOXY RESIN INJECTION



TOP OF CAP



ELEVATION

END BENT 2

AS-BUILT REPAIR QUANTITY TABLE

END BENT 1 REPAIRS	QUANTITIES				
	ESTIMATE		ACTUAL		
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	DEPTH FT	VOLUME CF
CAP	0.0	0.0			
CURTAIN WALL	0.0	0.0			
CONCRETE REPAIRS	0.0	0.0			
EPOXY RESIN INJECTION		LENGTH LF		LENGTH LF	
CAP		0.0			
CURTAIN WALL		5.0			
EPOXY COATING		SQ. FT		SQ. FT	
TOP OF BENT CAP		0			

END BENT 2 REPAIRS	QUANTITIES				
	ESTIMATE		ACTUAL		
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	DEPTH FT	VOLUME CF
CAP	0.9	0.5			
CURTAIN WALL	0.4	0.2			
CONCRETE REPAIRS	0.0	0.0			
EPOXY RESIN INJECTION		LENGTH LF		LENGTH LF	
CAP		0.0			
CURTAIN WALL		0.0			
EPOXY COATING		SQ. FT		SQ. FT	
TOP OF BENT CAP		0			

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

NOTES:

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

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

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

CONCRETE REPAIRS TO THE BENT CAP MAY REQUIRE BRIDGE JACKING. FOR BRIDGE JACKING, SEE SPECIAL PROVISIONS AND "BRIDGE JACKING DETAILS" SHEET.

PROJECT NO. 15BPR.133

ASHE COUNTY

BRIDGE NO. 040032

SHEET 1 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 020208 ENGINEER ERIC B. NELSON JR.

DocuSigned by: Eric B. Nelson Jr. 12/17/2024 ACB80821190740D...

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIRS

END BENT 1 & 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-16
1			3			TOTAL SHEETS
2			4			87

DRAWN BY : R. LEON/J. HARRIS DATE : 03/2022
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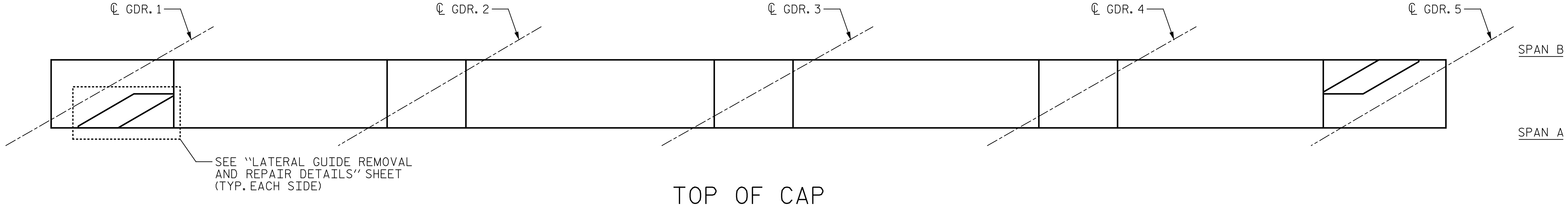

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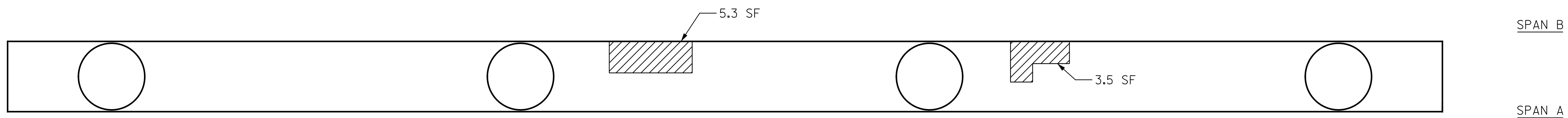
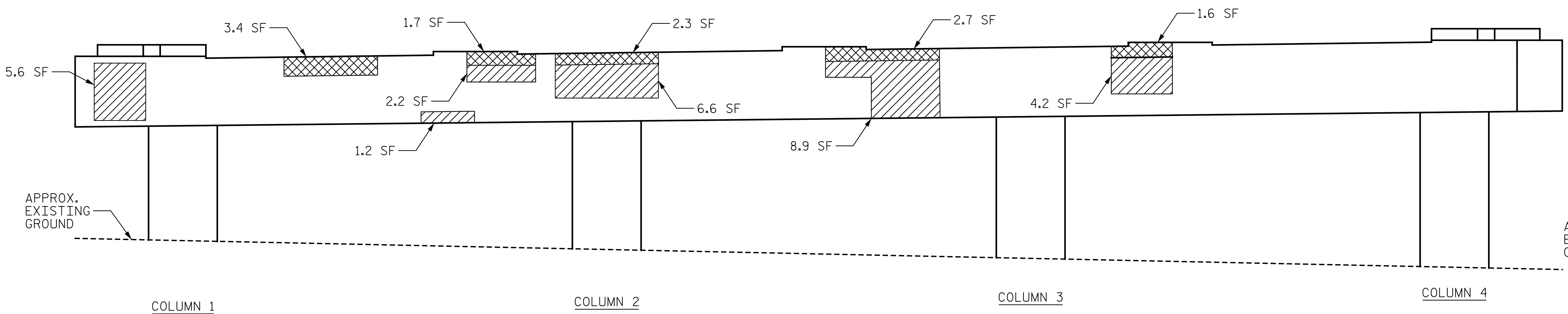
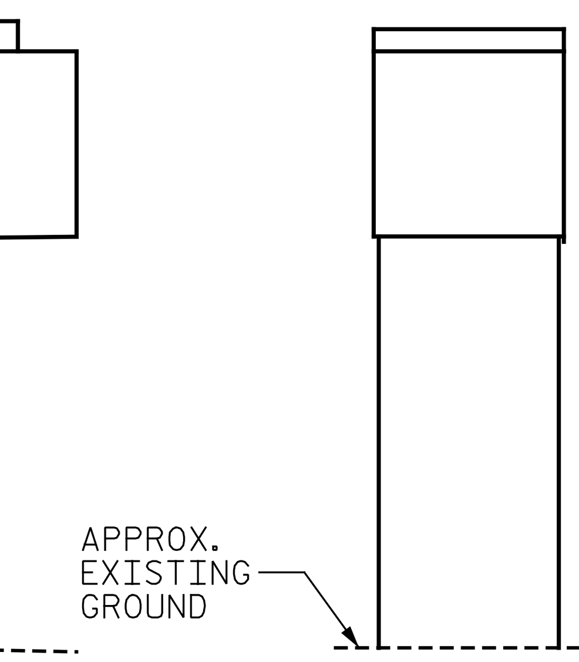


BOTTOM OF CAP

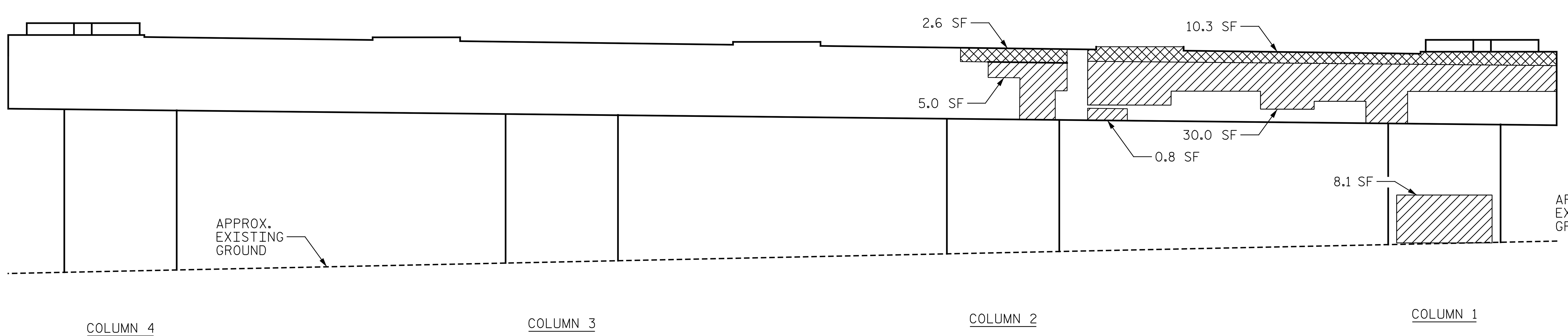
(crosshatch)	CONCRETE REPAIR (FORM & POUR)
(hatch)	SHOTCRETE REPAIR
~	ERI - EPOXY RESIN INJECTION



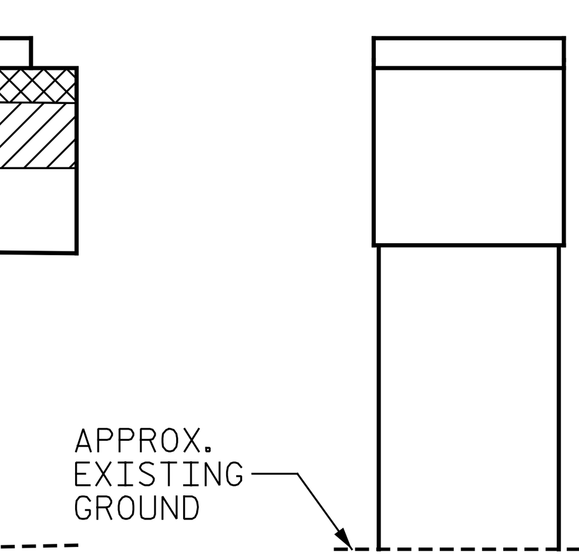
ELEVATION
(SPAN A SIDE)



END VIEW
(COLUMN 4)



ELEVATION
(SPAN B SIDE)



END VIEW
(COLUMN 1)

AS-BUILT REPAIR QUANTITY TABLE

BENT 1 REPAIRS	QUANTITIES ESTIMATE		ACTUAL		
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	DEPTH FT	VOLUME CF
CAP	73.3	36.7			
COLUMN	8.1	4.1			
CONCRETE REPAIRS	24.6	12.3			
EPOXY RESIN INJECTION		LENGTH LF	LENGTH LF		
CAP		0.0			
COLUMN		0.0			
EPOXY COATING		SQ. FT	SQ. FT		
TOP OF BENT CAP		0			

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

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FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

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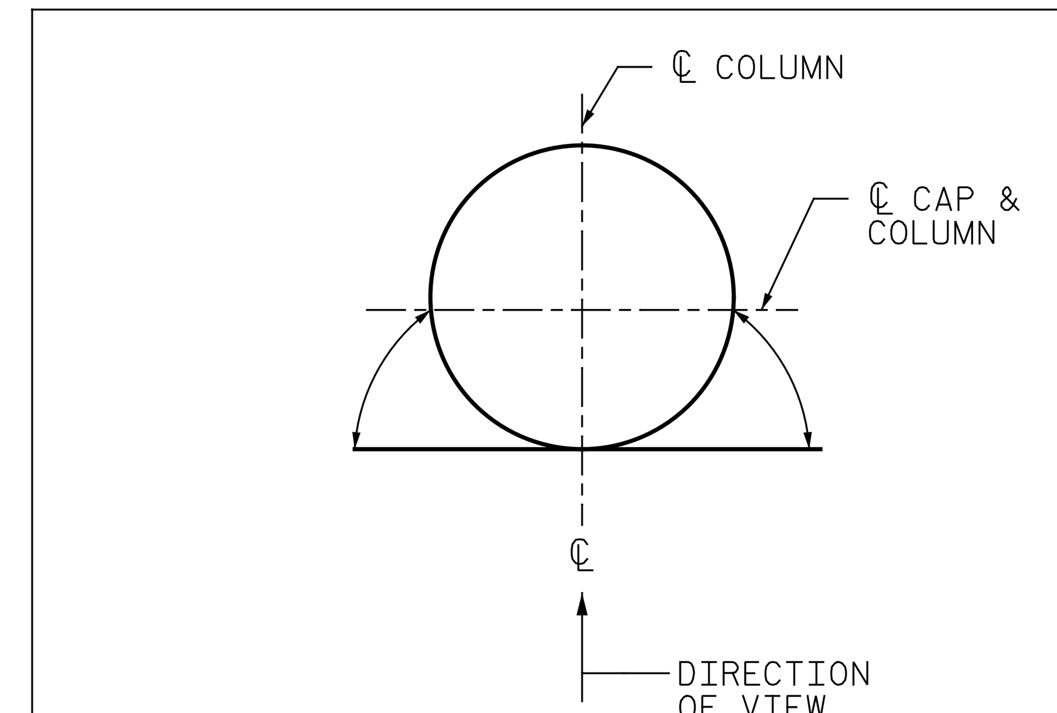
CONCRETE REPAIRS TO THE BENT CAP MAY REQUIRE BRIDGE JACKING. FOR BRIDGE JACKING, SEE SPECIAL PROVISIONS AND "BRIDGE JACKING DETAILS" SHEET.



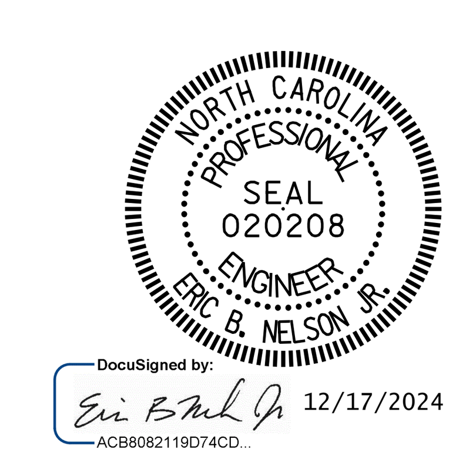
SKETCH OF UNWRAPPED COLUMN FACE

PROJECT NO. 15BPR.133

ASHE COUNTY

BRIDGE NO. 040032

SHEET 2 OF 4



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIRS

BENT 1

REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
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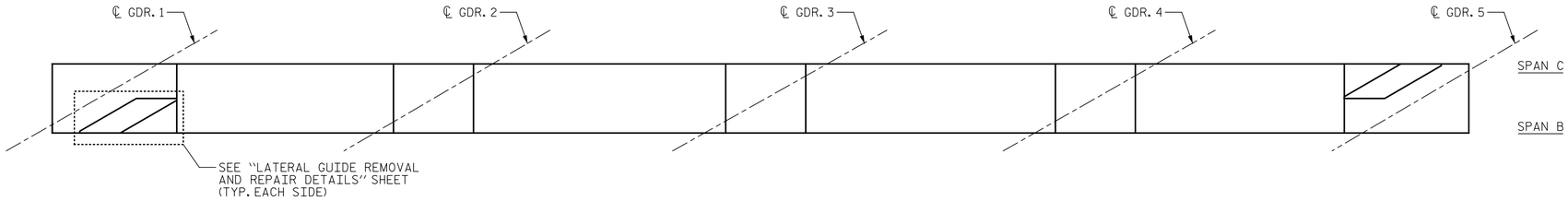
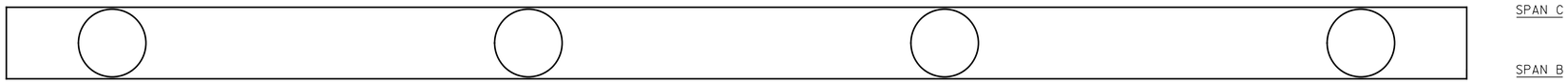


TOP OF CAP



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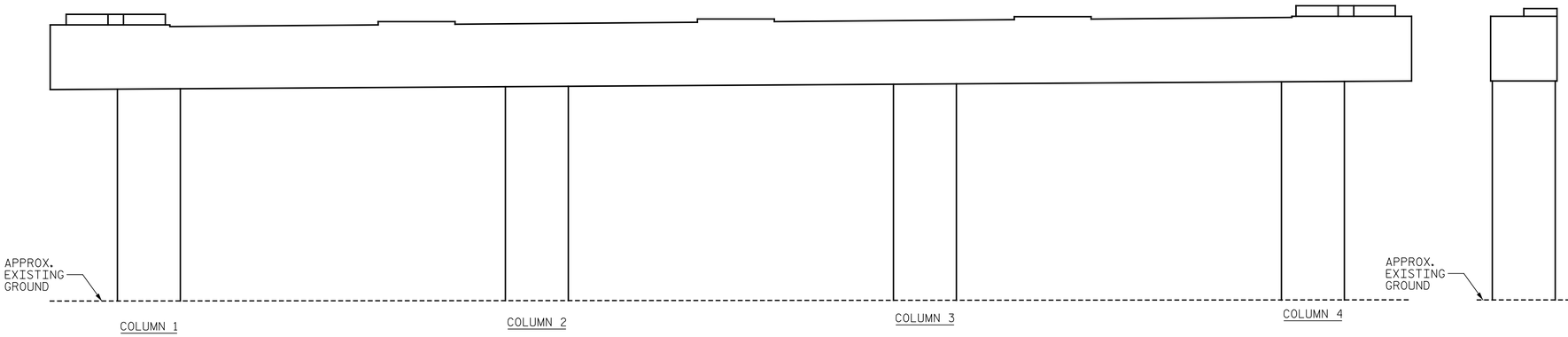
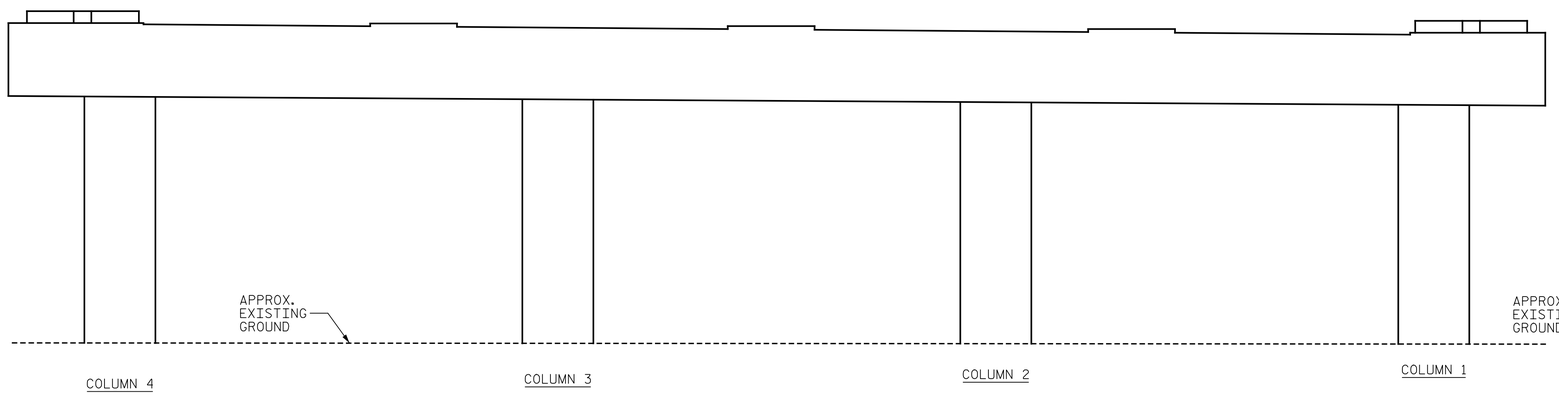


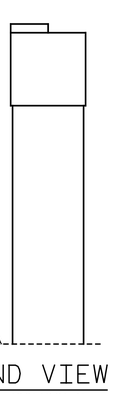
ELEVATION
(SPAN B SIDE)

END VIEW
(COLUMN 4)

NO REPAIRS NOTED FOR END BENT 2 DURING FIELD SCOPING. THE CONTRACTOR AND ENGINEER SHALL INSPECT END BENT 2 PRIOR TO BEGINNING WORK.



ELEVATION
(SPAN C SIDE)



END VIEW
(COLUMN 1)

AS-BUILT REPAIR QUANTITY TABLE

BENT 2 REPAIRS	QUANTITIES				
	ESTIMATE		ACTUAL		
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	DEPTH FT	VOLUME CF
CAP	0.0	0.0			
COLUMN	0.0	0.0			
CONCRETE REPAIRS	0.0	0.0			
EPOXY RESIN INJECTION		LENGTH LF		LENGTH LF	
CAP		0.0			
COLUMN		0.0			
EPOXY COATING		SQ. FT		SQ. FT	
TOP OF BENT CAP		196			

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

NOTES:

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

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

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

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

CONCRETE REPAIRS TO THE BENT CAP MAY REQUIRE BRIDGE JACKING. FOR BRIDGE JACKING, SEE SPECIAL PROVISIONS AND "BRIDGE JACKING DETAILS" SHEET.

CONCRETE REPAIR (FORM & POUR)

SHOTCRETE REPAIR

ERI - EPOXY RESIN INJECTION

PROJECT NO. 15BPR.133

ASHE COUNTY

BRIDGE NO. 040032

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIRS

BENT 2

NORTH CAROLINA PROFESSIONAL SEAL 020208 ENGINEER ERIC B. NELSON JR.

DocuSigned by: Eric Bak Jr 12/17/2024
ACB80821190740D...

DRAWN BY : R. LEON/J. HARRIS DATE : 03/2022
CHECKED BY : J. FARNHAM DATE : 03/2022

GANNETT FLEMING
One Glenwood Avenue
Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

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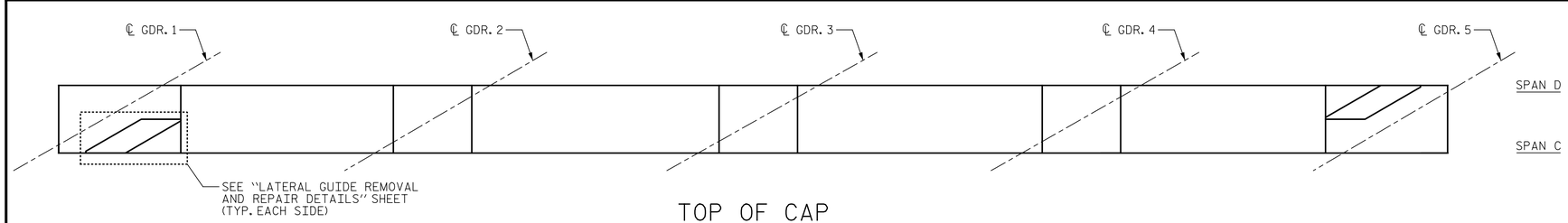
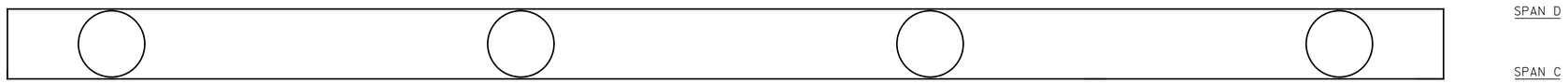
2			4			87



TOP OF CAP

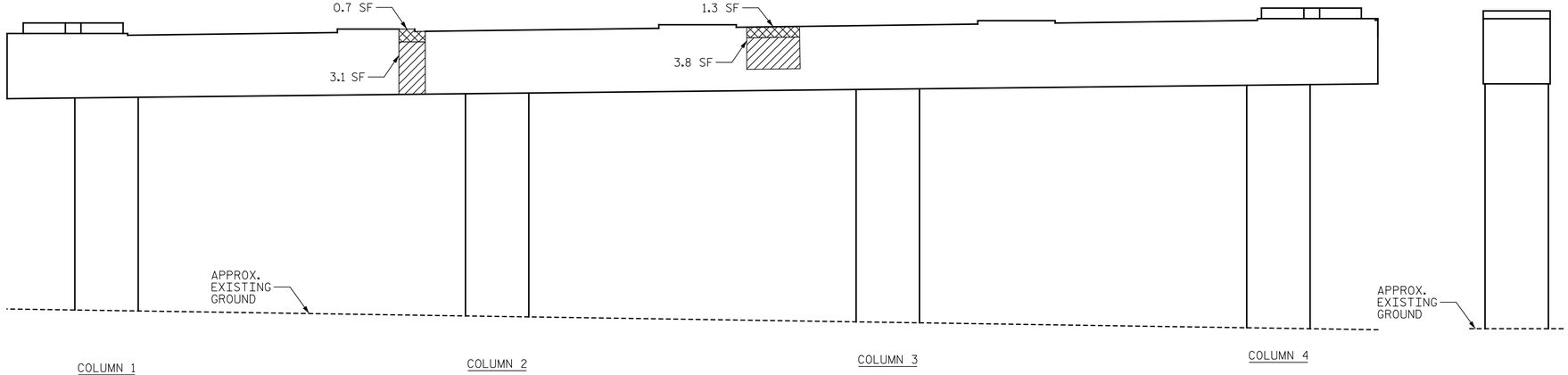


BOTTOM OF CAP

CONCRETE REPAIR (FORM & POUR)

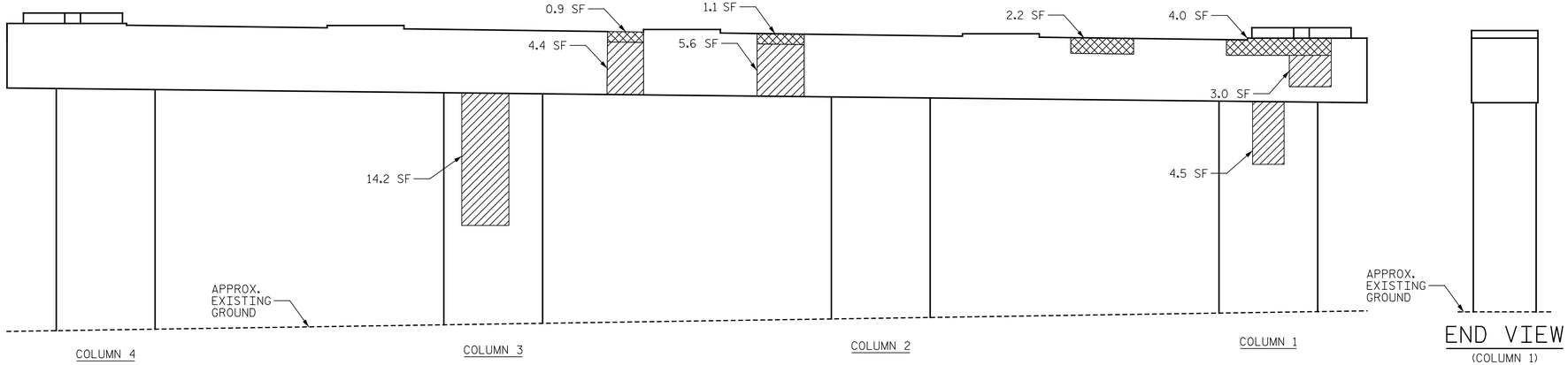
SHOTCRETE REPAIR

ERI - EPOXY RESIN INJECTION



ELEVATION
(SPAN C SIDE)

END VIEW
(COLUMN 4)



ELEVATION
(SPAN D SIDE)

END VIEW
(COLUMN 1)

AS-BUILT REPAIR QUANTITY TABLE

BENT 3 REPAIRS	QUANTITIES				
	ESTIMATE		ACTUAL		
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	DEPTH FT	VOLUME CF
CAP	19.9	10.0			
COLUMN	18.7	9.4			
CONCRETE REPAIRS	10.2	5.1			
EPOXY RESIN INJECTION		LENGTH LF		LENGTH LF	
CAP		0.0			
COLUMN		0.0			
EPOXY COATING		SQ. FT		SQ. FT	
TOP OF BENT CAP		0			

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

NOTES:

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

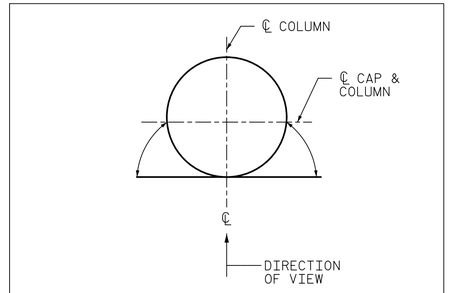
FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

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

CONCRETE REPAIRS TO THE BENT CAP MAY REQUIRE BRIDGE JACKING. FOR BRIDGE JACKING, SEE SPECIAL PROVISIONS AND "BRIDGE JACKING DETAILS" SHEET.



SKETCH OF UNWRAPPED COLUMN FACE

PROJECT NO. 15BPR.133

ASHE COUNTY

BRIDGE NO. 040032

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIRS

BENT 3

NORTH CAROLINA PROFESSIONAL SEAL 020208 ENGINEER ERIC B. NELSON

DocuSigned by: Eric B. Nelson Jr. 12/17/2024
ACB80821190D74CD...

REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			87

DRAWN BY : R. LEON/J. HARRIS DATE : 03/2022
CHECKED BY : J. FARNHAM DATE : 03/2022

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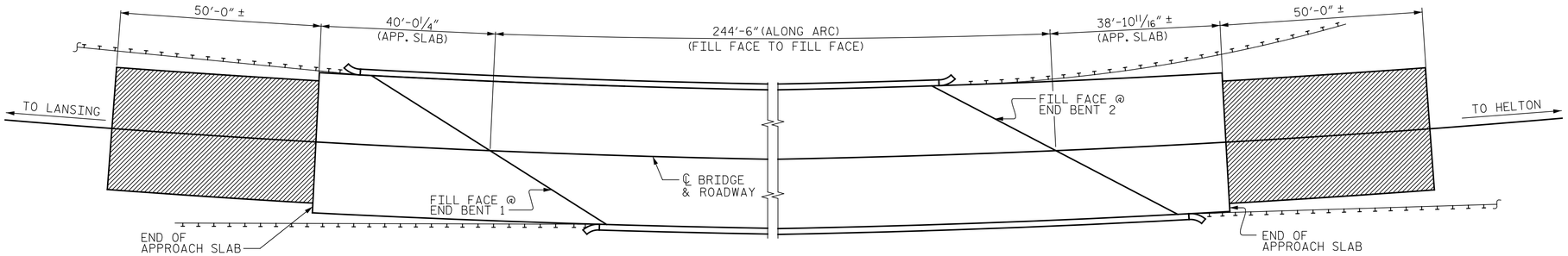
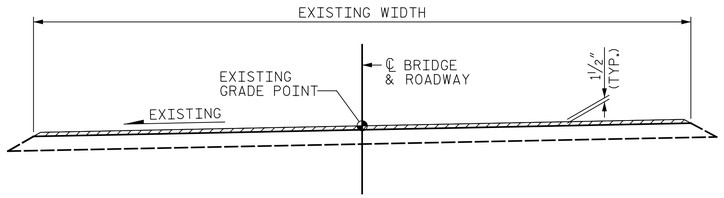
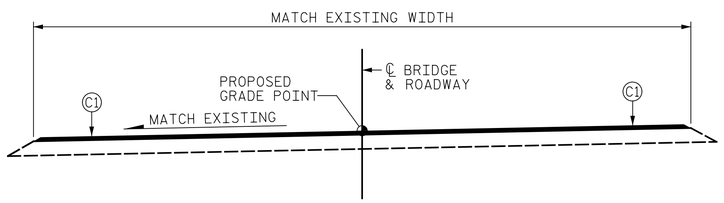


PLAN



TYPICAL ROADWAY MILLING SECTION

(MILL TO APPROX. 1½" DEPTH)



TYPICAL FINAL ROADWAY SECTION

AS-BUILT REPAIR QUANTITY TABLE		
DESCRIPTION	ESTIMATE	ACTUAL
INCIDENTAL MILLING	334 SY	
ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B	28 TONS	
ASPHALT BINDER FOR PLANT MIX	2 TONS	

NOTES:

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

▨ - INCIDENTAL MILLING

C1	PROPOSED VARIABLE DEPTH ASPHALT CONCRETE SURFACE COURSE. TYPE S9.5B AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1½" IN DEPTH OR GREATER THAN 2" IN DEPTH.

PROJECT NO. 15BPR.133

ASHE COUNTY

BRIDGE NO. 040032

NORTH CAROLINA PROFESSIONAL SEAL 020208 ENGINEER ERIC B. NELSON

DocuSigned by: Eric Back Jr. 12/17/2024 ACB80821190D74CD...

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

APPROACH MILLING AND TYPICAL ROADWAY SECTIONS

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DRAWN BY : J. HARRIS DATE : 03/2022

CHECKED BY : J. YANNACCONE DATE : 03/2022

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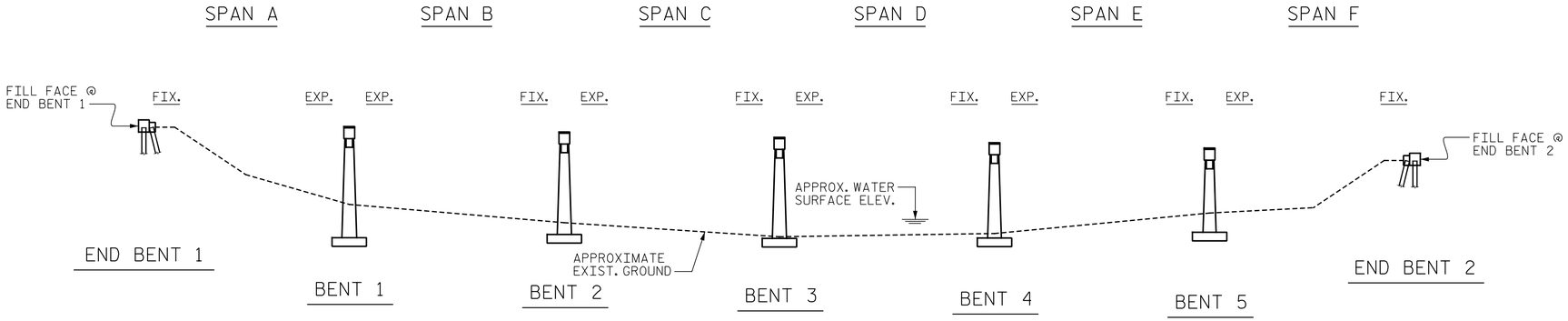
2			4		

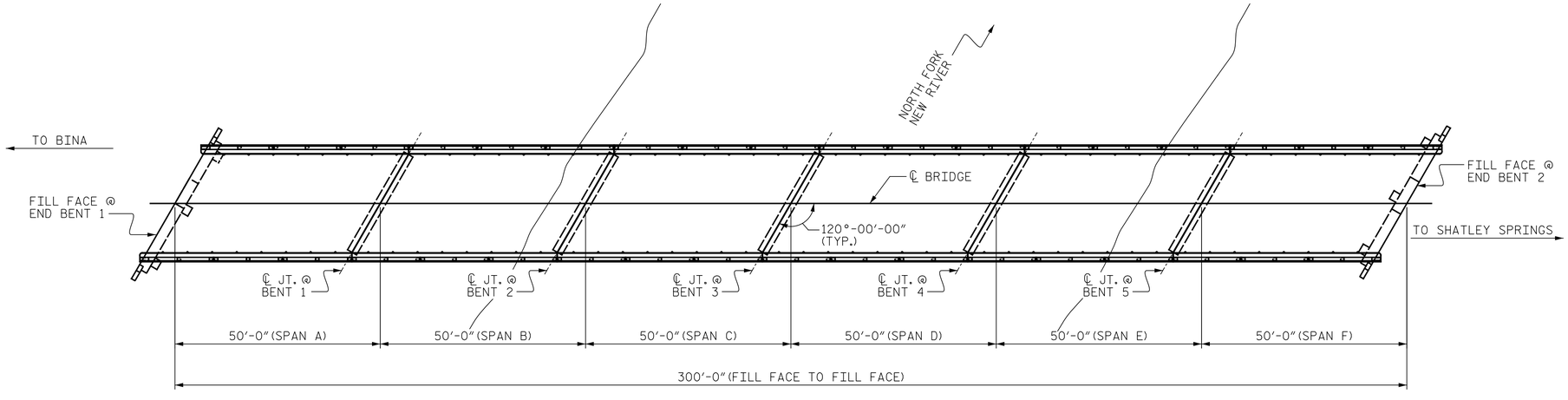
SHEET NO. S2-20

TOTAL SHEETS 87



SECTION ALONG ℄ BRIDGE

(SECTION AT BENTS AND END BENTS ARE AT RIGHT ANGLES)



PLAN

(PILES NOT SHOWN FOR CLARITY)

NOTE:

GENERAL DRAWING INFORMATION IS TAKEN FROM THE ORIGINAL PLANS AND THE ROUTINE INSPECTION REPORT DATED 5/14/2024.

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

SCOPE OF WORK

REMOVE ASPHALT WEARING SURFACE AND PARTIALLY REMOVE TOP OF BRIDGE DECK CONCRETE BY SCARIFICATION AND HYDRO-DEMOLITION.

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

REMOVE EXISTING JOINT MATERIAL AND INSTALL POURABLE SILICONE JOINT SEALS WITH ELASTOMERIC CONCRETE HEADERS.

GROOVE LMC-VES BRIDGE DECK.

MILL AND REPAVE ASPHALT APPROACH ROADWAYS.

CLEAN, REPAIR AND PAINT EXISTING STRUCTURAL STEEL BEAMS

REPLACE EXISTING BEARINGS.

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

REMOVE UNSOUND CONCRETE AT EXISTING END BENT AND BENT AREAS AND PERFORM SHOTCRETE AND CONCRETE REPAIRS.

CONSTRUCTION SEQUENCE

ALL BEAM END REPAIR AND BEARING REPLACEMENT WORK SHALL BE COMPLETED PRIOR TO DECK SURFACE PREPARATION AND PLACEMENT OF LMC-VES OVERLAY.

ALL WORK REQUIRING TEMPORARY JACKING AND SUPPORT OF BEAMS SHALL BE COMPLETED PRIOR TO INSTALLATION OF EXPANSION JOINTS.

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

RESIDENT ENGINEER DATE

PROJECT NO. 15BPR.133

ASHE COUNTY

BRIDGE NO. 040478

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON SR 1514
(WEST DEEP FORD ROAD)
OVER NORTH FORK NEW RIVER

NORTH CAROLINA PROFESSIONAL SEAL 020208 ENGINEER ERIC B. NELSON JR.

DocuSigned by: Eric Nelson Jr. 12/17/2024
AC88082119D74CD...

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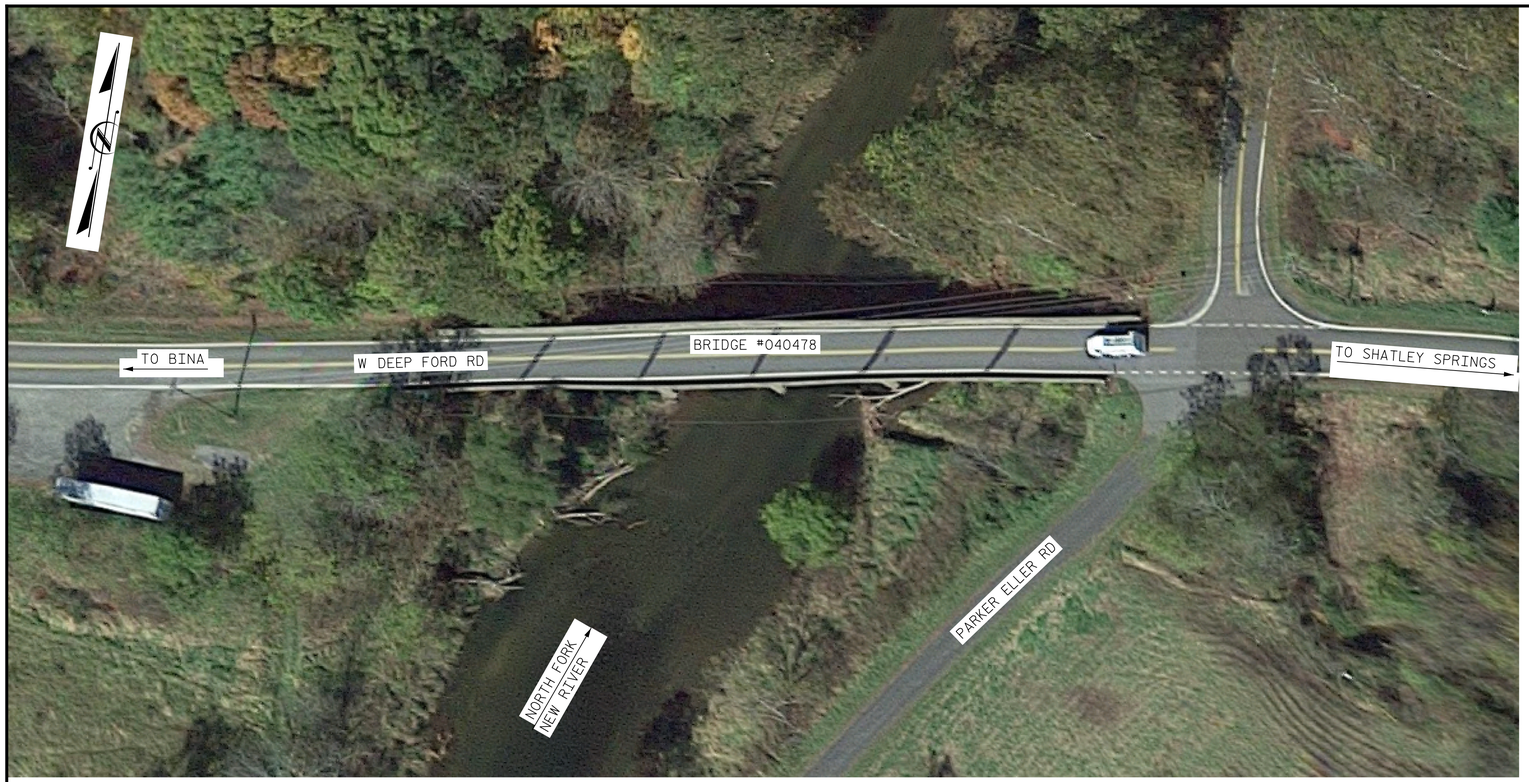
DRAWN BY : R. LEON/J. HARRIS DATE : 03/2022
CHECKED BY : J. FARNHAM DATE : 03/2022



LOCATION SKETCH

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

BRIDGE COORDINATES	
LATITUDE	LONGITUDE
36°-28'-49.49''	81°-28'-37.34''

GENERAL NOTES

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

FOR NEW ASPHALT PLACEMENT, SEE STANDARD SPECIFICATIONS.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT DUE TO THE NATURE OF PRESERVATION PROJECTS, THE EXTENT OF WORK CANNOT ALWAYS BE ACCURATELY DETERMINED PRIOR TO COMMENCEMENT OF WORK. REPAIR LOCATIONS AND ESTIMATES OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS.

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

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

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

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

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

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

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

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

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

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.

FOR CONCRETE FOR DECK REPAIR, SEE SPECIAL PROVISIONS.

FOR VOLUMETRIC MIXER, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

ALL PAVEMENT MARKING WILL BE IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

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

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

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

FOR LATEX MODIFIED CONCRETE OVERLAY-VERY EARLY STRENGTH AND PLACING AND FINISHING OF LATEX MODIFIED CONCRETE-VERY EARLY STRENGTH OVERLAY, SEE LATEX MODIFIED CONCRETE-VERY EARLY STRENGTH SPECIAL PROVISION.

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

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 PROTECTIVE DEVICES ARE NOT ADEQUATE OR NOT BEING EMPLOYED, THE WORK SHALL BE SUSPENDED UNTIL ADEQUATE PROTECTION IS PROVIDED.

FOR ELASTOMERIC CONCRETE FOR PRESERVATION, SEE SPECIAL PROVISIONS.

FOR BRIDGE JOINT DEMOLITION, SEE SPECIAL PROVISIONS.

FOR POURABLE SILICONE JOINT SEALANT, SEE SPECIAL PROVISIONS.

FOR FIELD MEASURING, SEE SPECIAL PROVISIONS.

FOR BEAM REPAIR-CUT OUT, SEE SPECIAL PROVISIONS.

FOR MODIFIED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

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

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

FOR PAINTING EXISTING STRUCTURE, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR BRIDGE JACKING, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

FOR EPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.

PROJECT NO. 15BPR.133

ASHE COUNTY

BRIDGE NO. 040478

SHEET 2 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 020208 ENGINEER ERIC B. NELSON

DocuSigned by: Eric Nelson Jr. 12/17/2024
ACB80821190740D...

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON SR 1514
(WEST DEEP FORD ROAD)
OVER NORTH FORK NEW RIVER

DRAWN BY : R. LEON/J. HARRIS DATE : 03/2022
CHECKED BY : J. YANNACCONE DATE : 03/2022

GANNETT FLEMING

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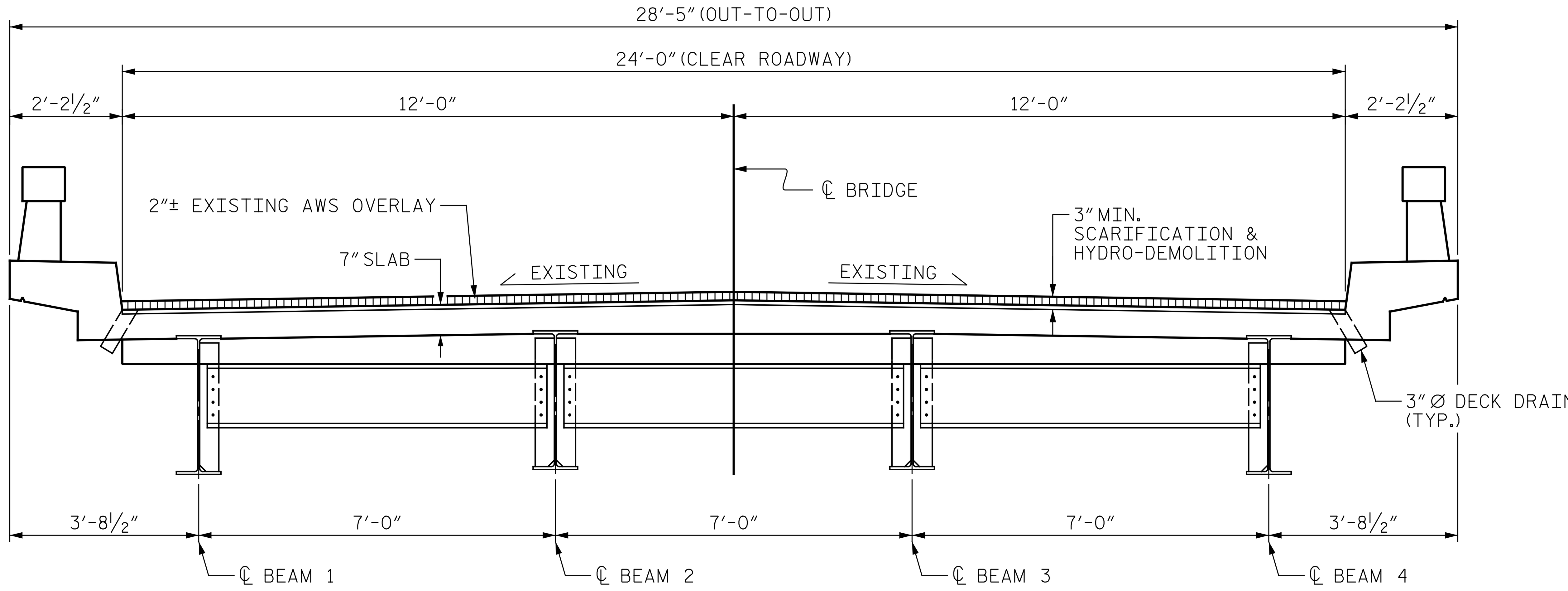
1			3			TOTAL SHEETS
2			4			87

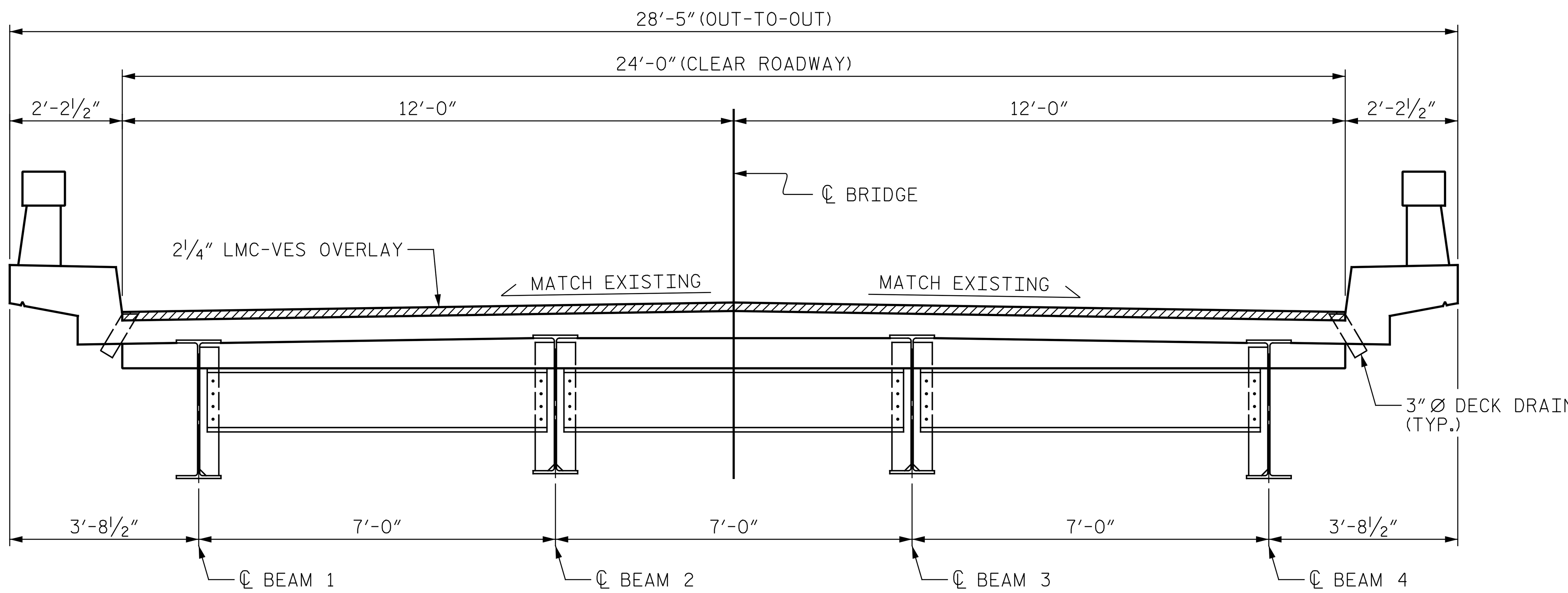
NOTES:

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

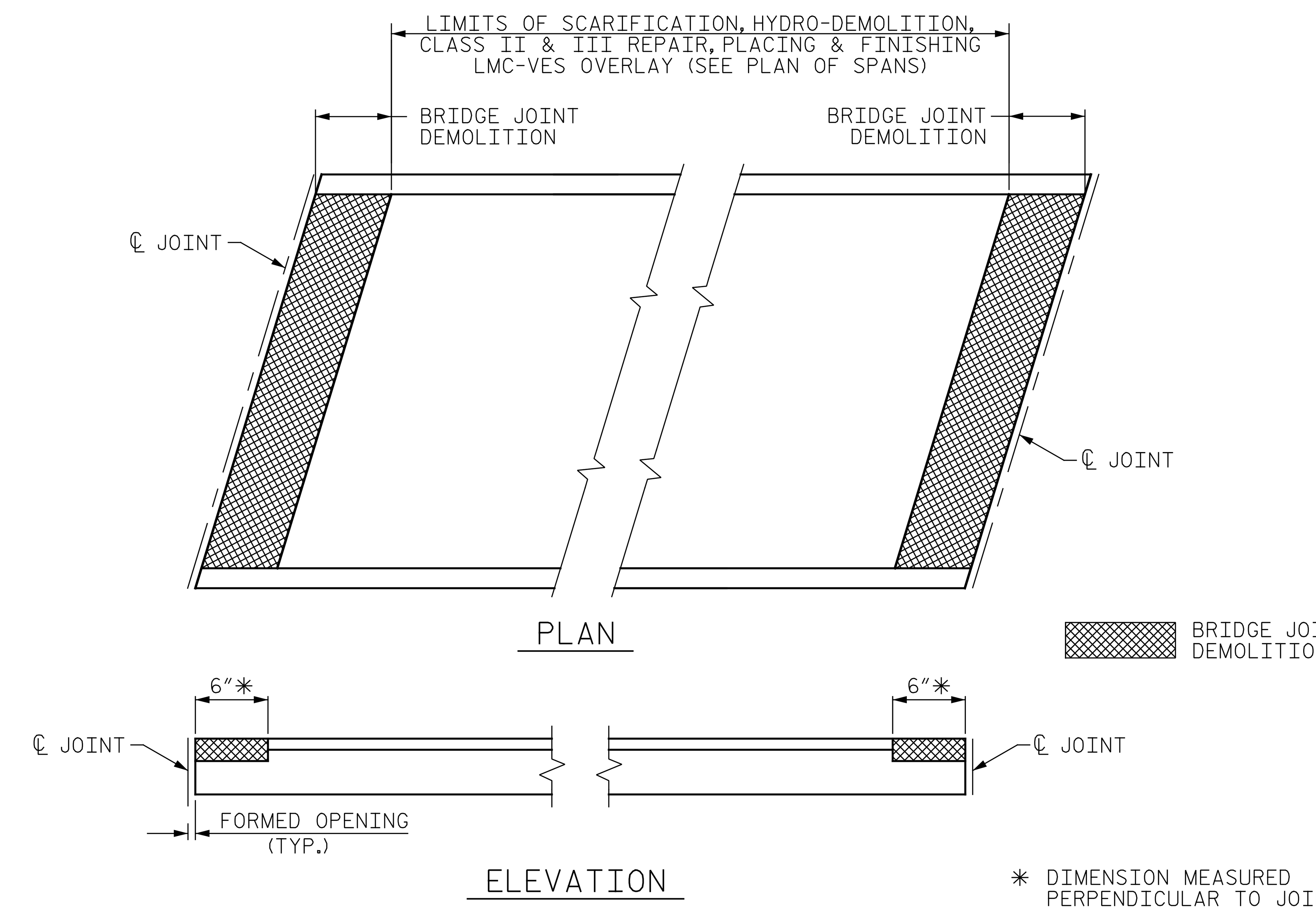
WHEN PREPARING THE SURFACE FOR LMC-VES OVERLAY ADJACENT TO A PREVIOUSLY PLACED LMC-VES STAGE, THE PREVIOUSLY PLACED LMC-VES SHALL BE REMOVED FOR A DISTANCE OF 4-INCHES FROM THE LMC-VES EDGE. THE SURFACE OF THE NEW STAGE AREA, ALONG WITH THE 4-INCH OVERLAY AREA, SHALL BE PREPARED AS PER THE OVERLAY SURFACE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



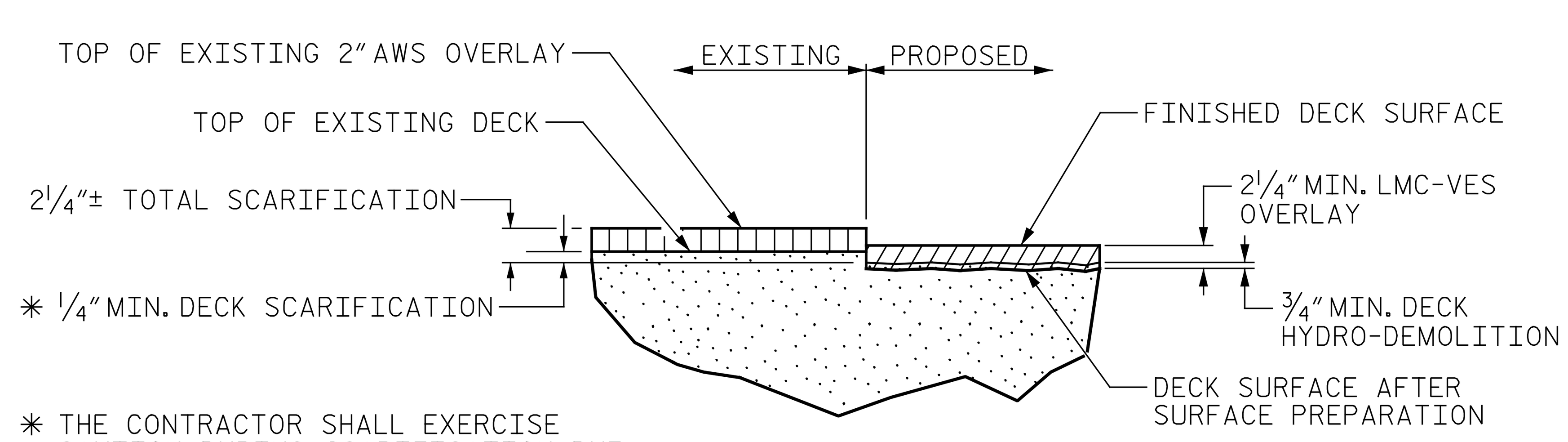
TYPICAL SECTION
(EXISTING)



TYPICAL SECTION
(PROPOSED)

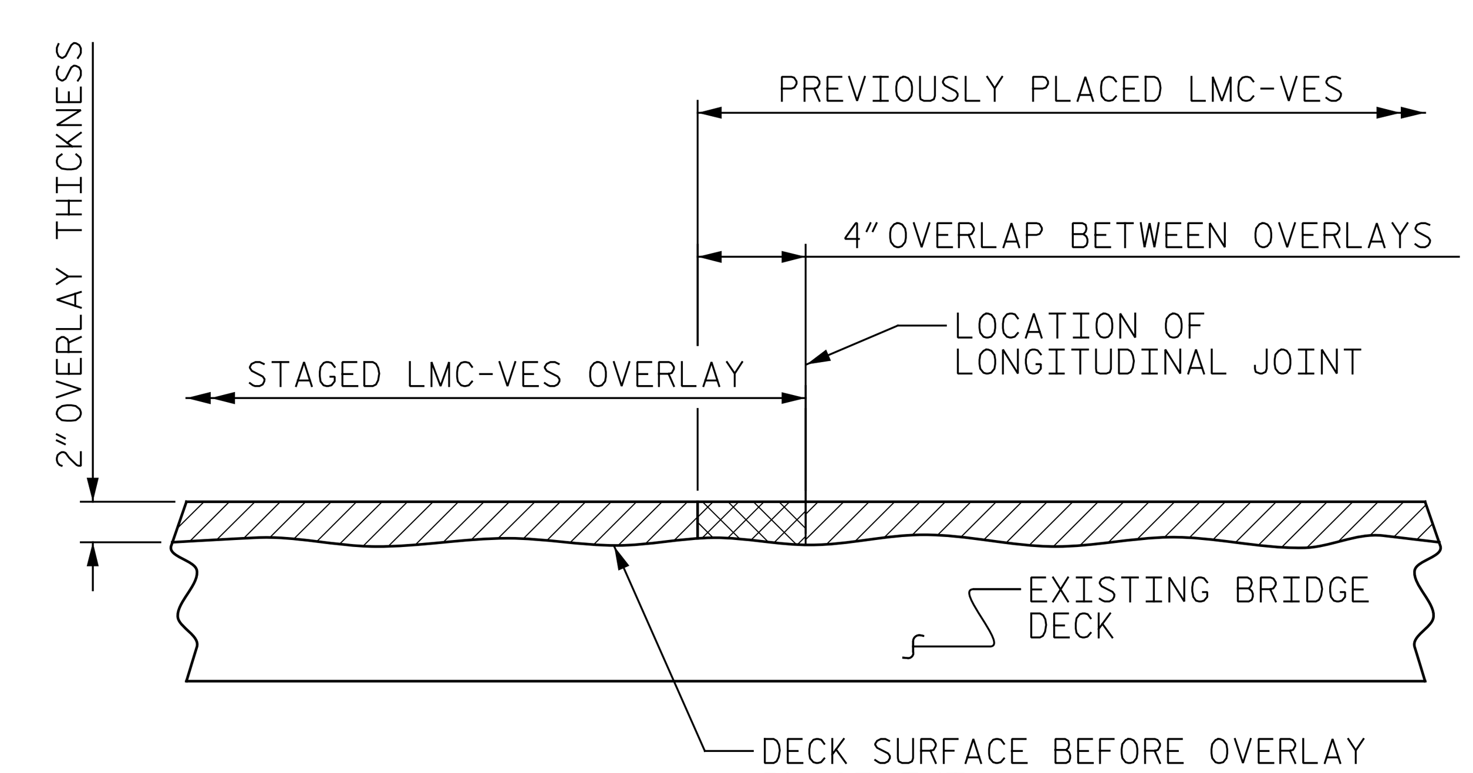


PAY LIMITS FOR OVERLAY BID ITEMS



* THE CONTRACTOR SHALL EXERCISE CAUTION DURING SCARIFICATION DUE TO SHALLOW DECK REBAR. SEE PHOTOS ON "DECK REPAIRS" SHEETS.

DETAIL FOR LMC-VES OVERLAY



STAGED LMC-VES OVERLAY CONSTRUCTION JOINT
(AS NEEDED)

PROJECT NO. 15BPR.133
ASHE COUNTY
BRIDGE NO. 040478

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION AND SURFACE PREPARATION DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 020208 ENGINEER ERIC B. NELSON JR.
DocuSigned by: 12/17/2024

GANNETT FLEMING
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REVISIONS							
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.	S3-3
1			3			TOTAL SHEETS	87
2			4				

DRAWN BY : M. SPENCER DATE : 03/2022
CHECKED BY : J. YANNACCONE DATE : 03/2022

NOTES:

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

THE EXISTING BRIDGE DECK HAS AN ASPHALT WEARING SURFACE (AWS). THE BOUNDARIES OF AREAS IDENTIFIED FOR CLASS II (PARTIAL DEPTH) SURFACE PREPARATION ARE APPROXIMATE AND MAY NOT REFLECT ACTUAL CONDITIONS THAT WILL BE ENCOUNTERED AT THE PROJECT SITE. THE ACTUAL LOCATIONS AND QUANTITY SHALL BE CONFIRMED AFTER SCARIFICATION OF THE BRIDGE DECK.

PAYMENT FOR CLASS II SURFACE PREPARATION IS BASED UPON SQUARE FEET OF ADDITIONAL DEMOLITION REQUIRED FOLLOWING SCARIFICATION OF THE BRIDGE DECK. SEE "LMC OVERLAY SURFACE PREPARATION" SPECIAL PROVISION.

FOR UNDERSIDE OF DECK REPAIRS, CONTRACTOR SHALL SAWCUT 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.

FOR SECTION A-A, SEE "POURABLE SILICONE JOINT SEALANT DETAILS" SHEET.

SPAN A CONDITION PHOTOS FROM 2016 INSPECTION REPORT

AS-BUILT REPAIR QUANTITY TABLE

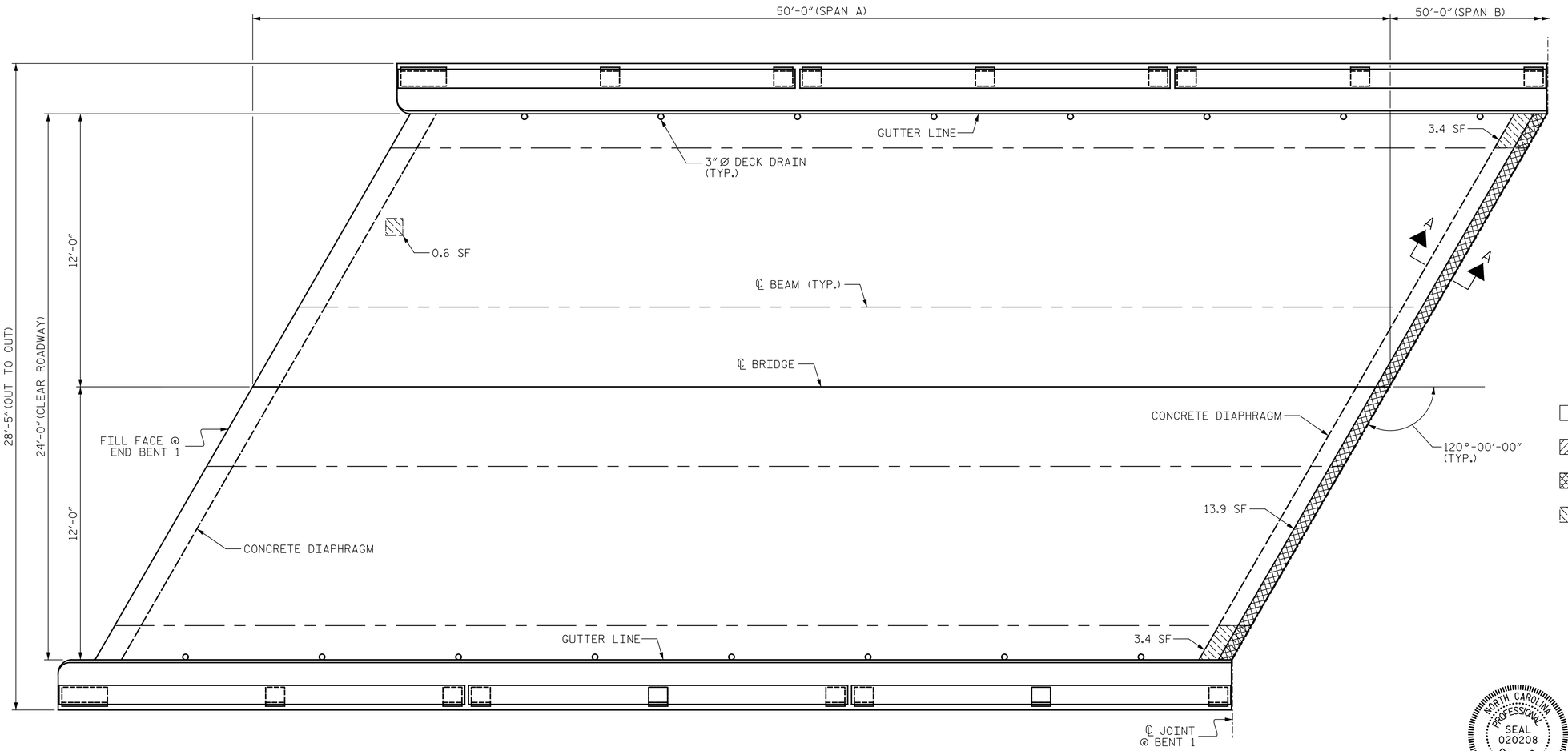
SPAN A TOP OF DECK REPAIRS

	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	132.0 SY	
HYDRO-DEMOLITION OF BRIDGE DECK	132.0 SY	
CLASS II SURFACE PREPARATION	0.0 SY	
BRIDGE JOINT DEMOLITION	13.9 SF	
LMC-VES OVERLAY	9.0 CY	
PLACING & FINISHING OF LMC-VES OVERLAY	132.0 SY	
GROOVING BRIDGE FLOORS	1078 SF	

SPAN A UNDERSIDE OF DECK REPAIRS

SHOTCRETE REPAIRS	ESTIMATE		ACTUAL	
	AREA SF	VOL CF	AREA SF	VOL CF
UNDERSIDE OF DECK	0.6	0.3		
CONCRETE DIAPHRAGMS	6.8	3.4		

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



SPAN A

SCARIFYING AND HYDRO-DEMOLITION OF BRIDGE DECK

APPROX. AREA CLASS II SURFACE PREPARATION

BRIDGE JOINT DEMOLITION

UNDERSIDE OF DECK REPAIR

PROJECT NO. 15BPR.133

ASHE COUNTY

BRIDGE NO. 040478

SHEET 1 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK REPAIRS

SPAN A

NORTH CAROLINA PROFESSIONAL SEAL 020208 ENGINEER ERIC B. NELSON

DocuSigned by: Eric B Nelson Jr 12/17/2024
ACB8082119D74CD...

DRAWN BY : R. LEON/J. HARRIS DATE : 03/2022
CHECKED BY : J. YANNACCONE DATE : 03/2022

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FOR SECTION A-A, SEE "POURABLE SILICONE JOINT SEALANT DETAILS" SHEET.

SPAN B CONDITION PHOTOS FROM 2016 INSPECTION REPORT

AS-BUILT REPAIR QUANTITY TABLE

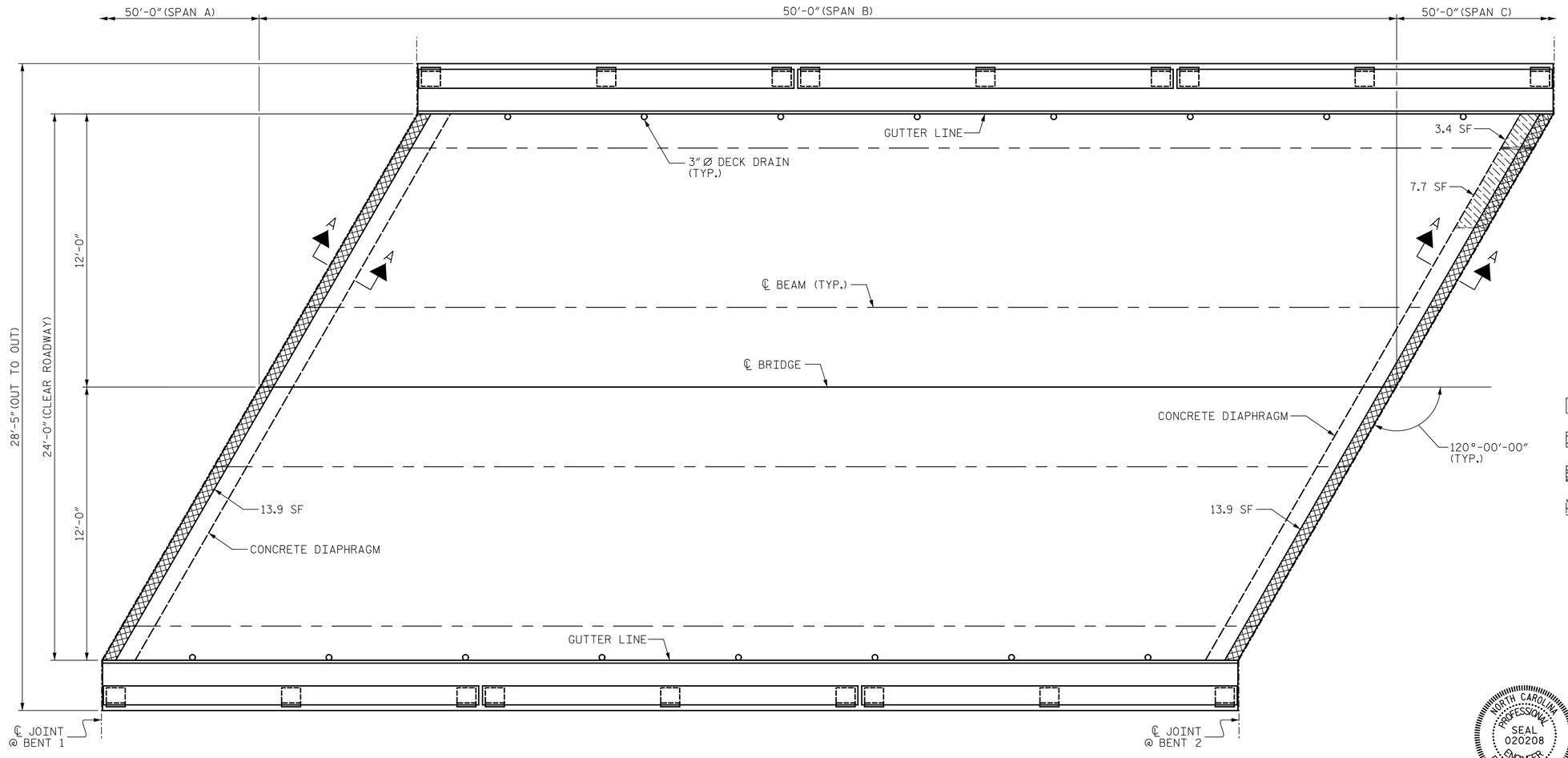
SPAN B TOP OF DECK REPAIRS

	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	130.3 SY	
HYDRO-DEMOLITION OF BRIDGE DECK	130.3 SY	
CLASS II SURFACE PREPARATION	0.0 SY	
BRIDGE JOINT DEMOLITION	27.8 SF	
LMC-VES OVERLAY	9.0 CY	
PLACING & FINISHING OF LMC-VES OVERLAY	130.3 SY	
GROOVING BRIDGE FLOORS	1062 SF	

SPAN B UNDERSIDE OF DECK REPAIRS

SHOTCRETE REPAIRS	ESTIMATE		ACTUAL	
	AREA SF	VOL CF	AREA SF	VOL CF
UNDERSIDE OF DECK	0.0	0.0		
CONCRETE DIAPHRAGMS	11.1	5.6		

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



SPAN B

SCARIFYING AND HYDRO-DEMOLITION OF BRIDGE DECK

APPROX. AREA CLASS II SURFACE PREPARATION

BRIDGE JOINT DEMOLITION

UNDERSIDE OF DECK REPAIR

PROJECT NO. 15BPR.133

ASHE COUNTY

BRIDGE NO. 040478

SHEET 2 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK REPAIRS

SPAN B

NORTH CAROLINA PROFESSIONAL SEAL 020208 ENGINEER ERIC B. NELSON JR.

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