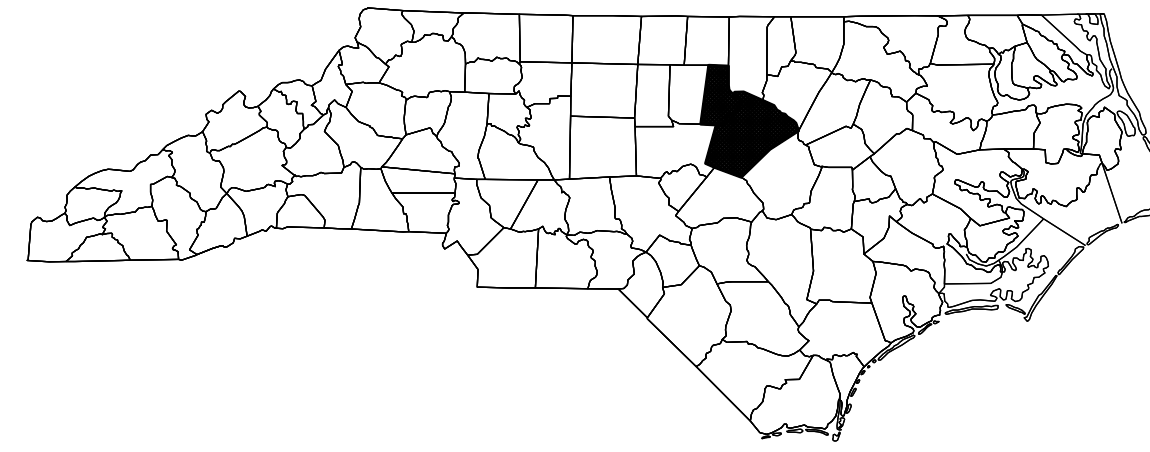


STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

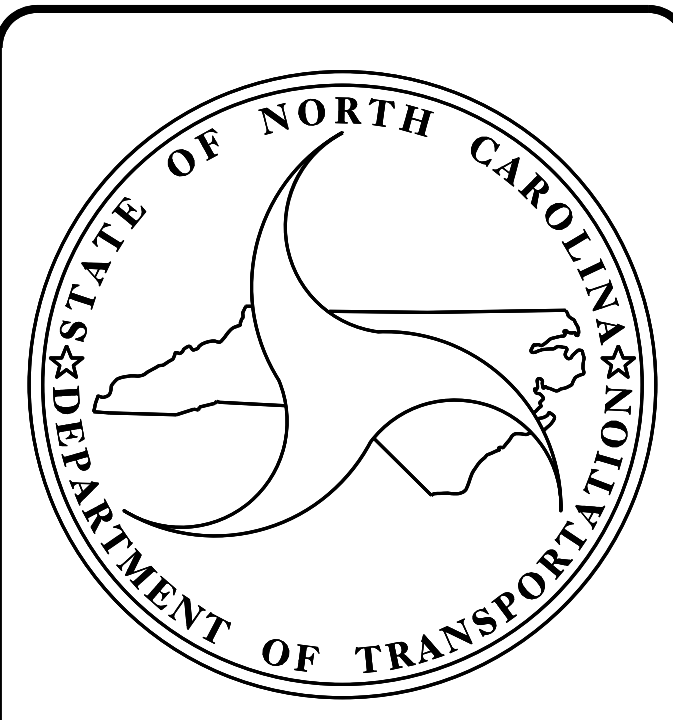
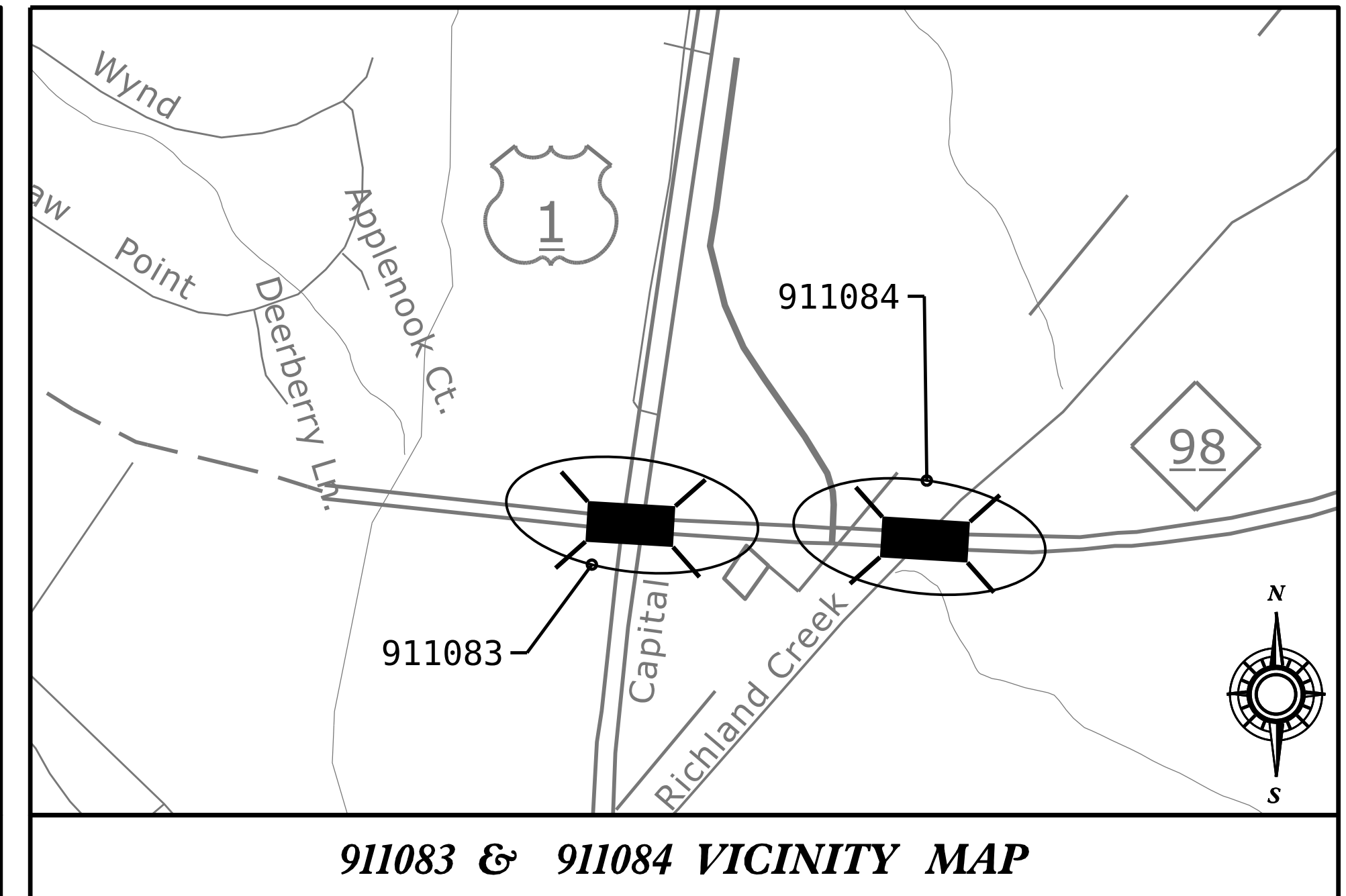
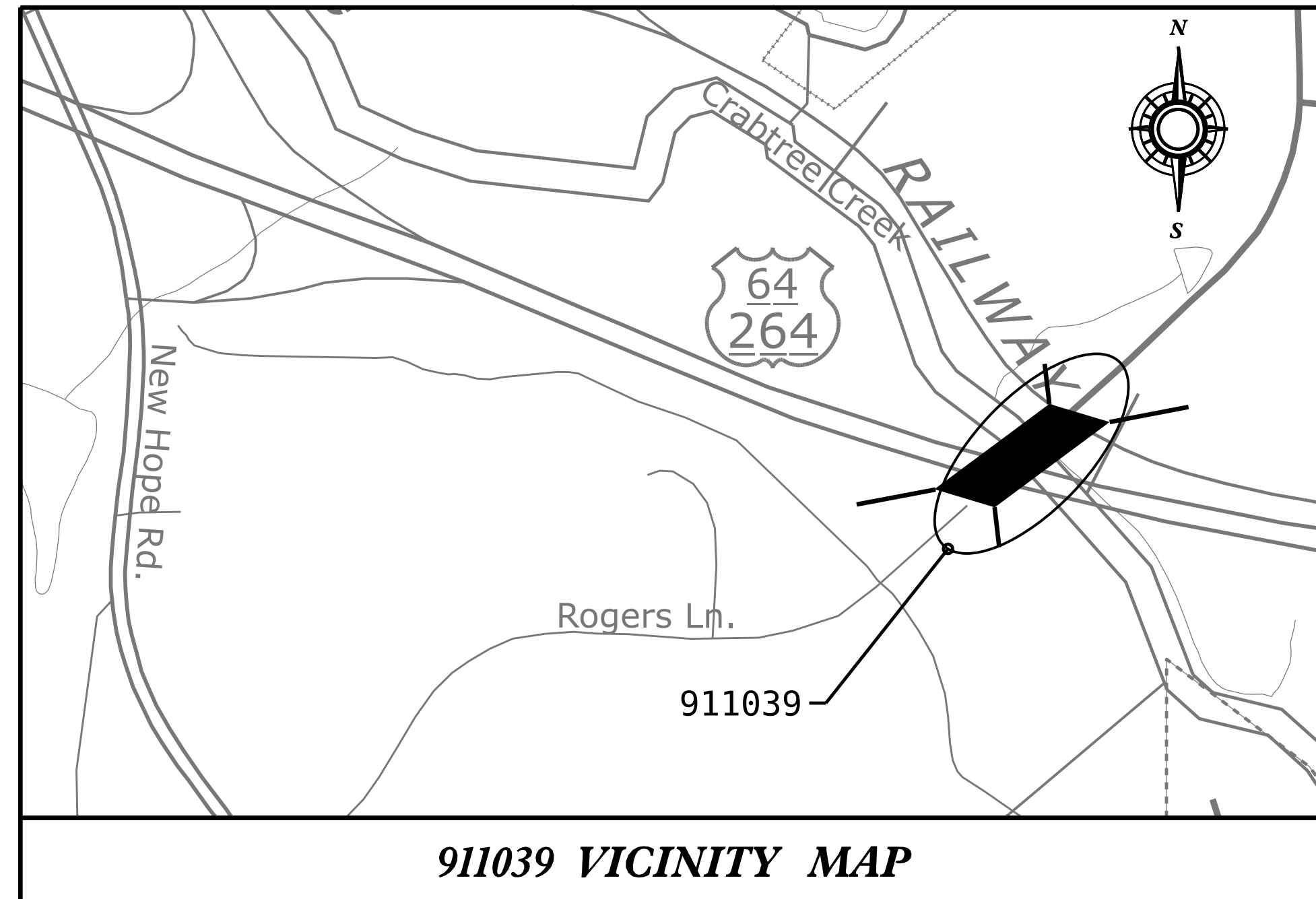
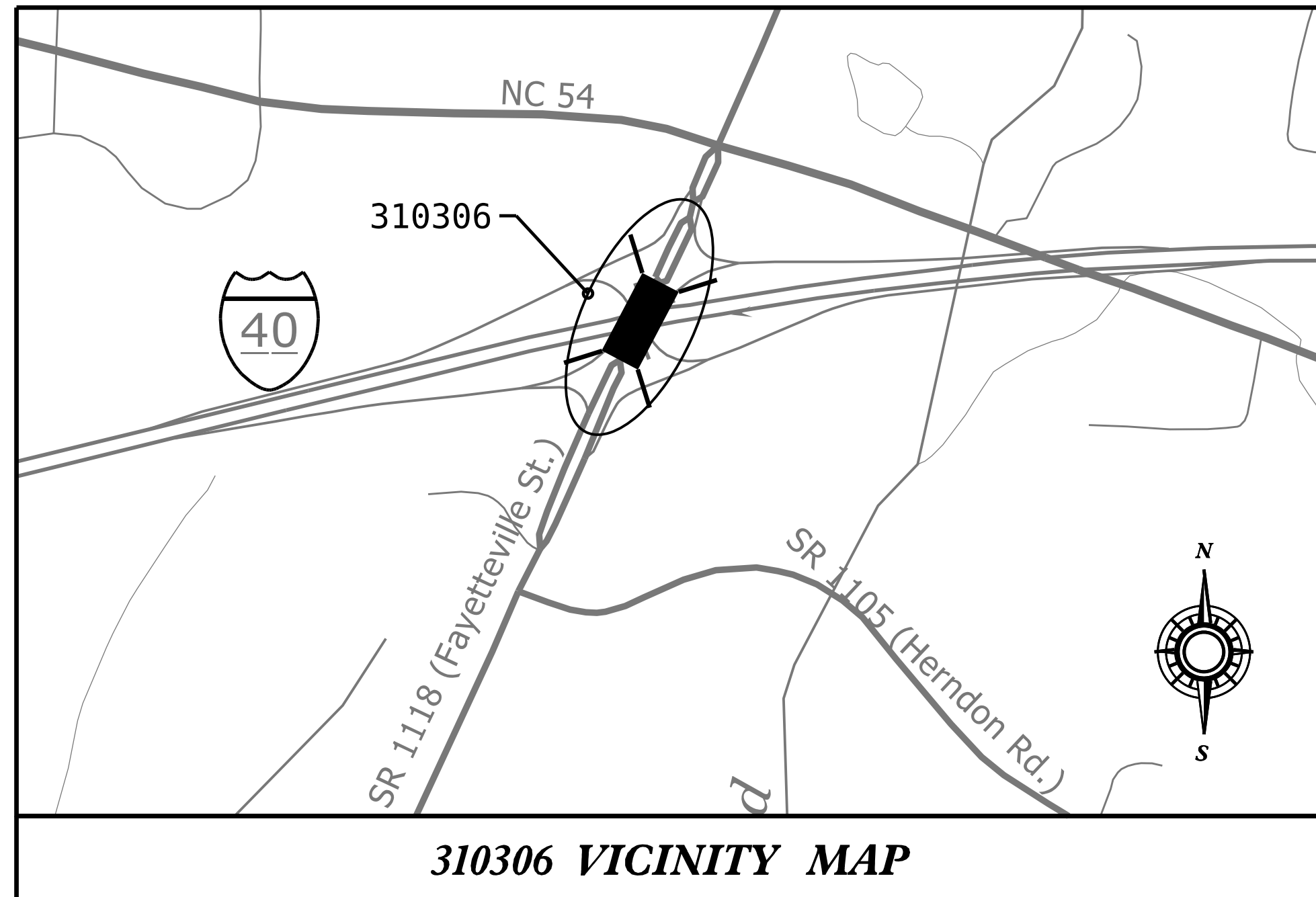


DURHAM & WAKE COUNTIES

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	15BPR.59	1	73
STATE PROJ. NO.	P.A. PROJ. NO.	DESCRIPTION	
15BPR.59		P.E.	
15BPR.59	—	CONST.	

LOCATION: BRIDGE #310306 ON SR 1118 (FAYETTEVILLE RD.) OVER I-40
 BRIDGE #911039 ON SR 2517 (ROGERS LN.) OVER I-87/US64/US264, CRABTREE CREEK AND NS RAILROAD
 BRIDGE #911083 ON NC-98 OVER US-1 (CAPITAL BLVD.)
 BRIDGE #911084 ON NC-98 OVER RICHLAND CREEK

TYPE OF WORK: BRIDGE PRESERVATION - MILLING AND REPAVING APPROACH ROADWAYS, DIAMOND GRINDING APPROACH SLAB, SHOTBLASTING AND SILANE DECK TREATMENT, FOAM JOINT REPLACEMENT, EXPANSION JOINT GLAND REPLACEMENT, MODULAR EXPANSION JOINT GLAND REPLACEMENT, SHOTBLASTING AND SILANE BARRIER RAIL TREATMENT, SAW CUTTING OF BARRIER RAIL, 3-BAR METAL RAIL SECTION REPLACEMENTS, CONCRETE MEDIAN ISLAND REPAIR, CLEANING AND PAINTING EXISTING STRUCTURE, CLEANING AND PAINTING EXISTING WEATHERING STEEL, CLEANING AND EPOXY COATING PRESTRESSED GIRDER ENDS, SHOTCRETE REPAIRS, CLEANING AND EPOXY COATING SUBSTRUCTURE CAPS, SLOPE PROTECTION VOID FILLING AND REPAIR.



DESIGN DATA

BRIDGE #310306 - ADT 34,000 - 2019
BRIDGE #911039 - ADT 10,000 - 2019
BRIDGE #911083 - ADT 30,000 - 2018
BRIDGE #911084 - ADT 30,000 - 2018

PROJECT LENGTH

BRIDGE #310306 - 0.04 MILE
BRIDGE #911039 - 0.11 MILE
BRIDGE #911083 - 0.03 MILE
BRIDGE #911084 - 0.08 MILE

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

2018 STANDARD SPECIFICATIONS

FEBRUARY 21, 2023
 LETTING DATE

KRISTY W. ALFORD, P.E.
 PROJECT ENGINEER

NICHOLAS A. PIERCE, P.E.
 PROJECT DESIGN ENGINEER

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

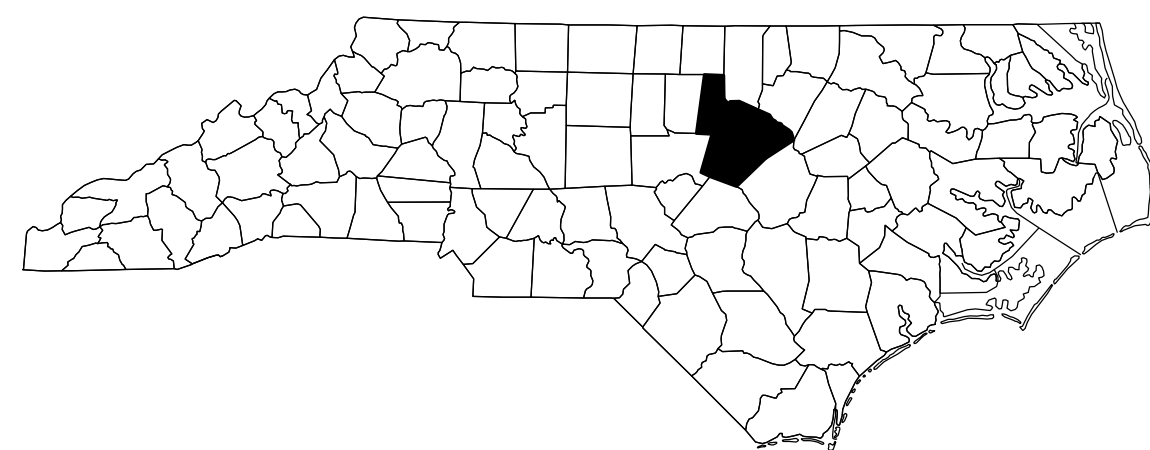
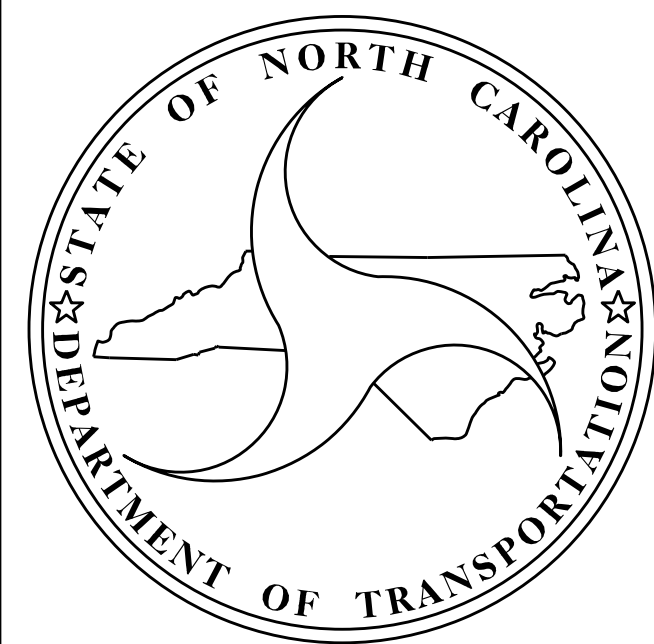
DURHAM & WAKE COUNTIES

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	15BPR.59	1A	73
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
15BPR.59		P.E.	
15BPR.59	—	CONST.	

LOCATION: BRIDGE #310306 ON SR 1118 (FAYETTEVILLE RD.) OVER I-40
 BRIDGE #911039 ON SR 2517 (ROGERS LN.) OVER I-87/US64/US264, CRABTREE CREEK AND NS RAILROAD
 BRIDGE #911083 ON NC-98 OVER US-1 (CAPITAL BLVD.)
 BRIDGE #911084 ON NC-98 OVER RICHLAND CREEK

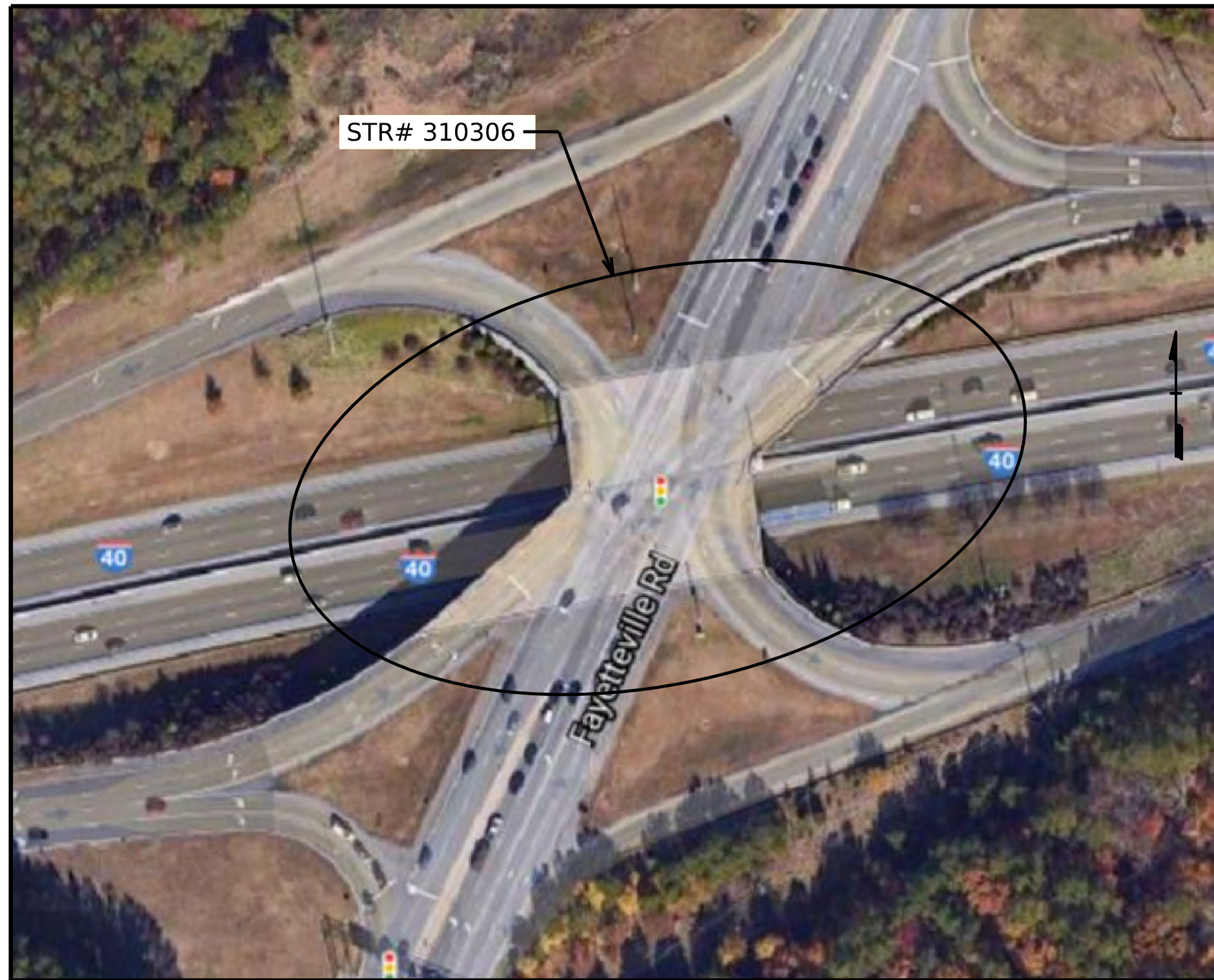
INDEX OF STRUCTURES SHEETS

<u>SHEET No.</u>	<u>DESCRIPTION</u>	<u>SHEET No.</u>	<u>DESCRIPTION</u>	<u>SHEET No.</u>	<u>DESCRIPTION</u>
1	TITLE SHEET	S2-06	EXPANSION JOINT SEAL REPAIR SHEET 1	STRUCTURE No. 911084	
1A	INDEX OF SHEETS	S2-07	EXPANSION JOINT SEAL REPAIR SHEET 2	S4-01	GENERAL DRAWING
S-01	LOCATION SKETCHES	S2-08	MODULAR EXPANSION JOINT REPAIR	S4-02	TYPICAL SECTION
S-02	TOTAL BILL OF MATERIALS	S2-09	3 BAR METAL RAIL REPAIR SHEET 1	S4-03	DECK SURFACE REPAIR - SPAN A
STRUCTURE No. 310306		S2-10	3 BAR METAL RAIL REPAIR SHEET 2	S4-04	DECK SURFACE REPAIR - SPAN B
S1-01	GENERAL DRAWING	S2-11	3 BAR METAL RAIL REPAIR SHEET 3	S4-05	DECK SURFACE REPAIR - SPAN C
S1-02	TYPICAL SECTION	S2-12	DECK UNDERSIDE REPAIR - SPAN A	S4-06	DECK SURFACE REPAIR - SPAN D
S1-03	DECK SURFACE REPAIR - SPAN A	S2-13	DECK UNDERSIDE REPAIR - SPAN B	S4-07	FOAM JOINT REPAIR
S1-04	DECK SURFACE REPAIR - SPAN B	S2-14	DECK UNDERSIDE REPAIR - SPAN C	S4-08	DECK UNDERSIDE REPAIR - SPAN A
S1-05	FOAM JOINT REPAIR	S2-15	END BENT 1	S4-09	DECK UNDERSIDE REPAIR - SPAN B
S1-06	EXPANSION JOINT SEAL REPAIR	S2-16	BENT 1	S4-10	DECK UNDERSIDE REPAIR - SPAN C
S1-07	EXPANSION JOINT SEAL REPAIR SHEET 2	S2-17	BENT 2	S4-11	DECK UNDERSIDE REPAIR - SPAN D
S1-08	EXPANSION JOINT SEAL REPAIR SHEET 3	S2-18	END BENT 2	S4-12	END BENT 1
S1-09	CONCRETE BARRIER RAIL REPAIR	STRUCTURE No. 911083		S4-13	BENT 1 - SPAN A FACE
S1-10	DECK UNDERSIDE REPAIR	S3-01	GENERAL DRAWING	S4-14	BENT 1 - SPAN B FACE
S1-11	END BENT 1	S3-02	TYPICAL SECTION	S4-15	BENT 2 - SPAN B FACE
S1-12	BENT 1 - SPAN A FACE	S3-03	DECK SURFACE REPAIR - SPAN A	S4-16	BENT 2 - SPAN C FACE
S1-13	BENT 1 - SPAN B FACE	S3-04	DECK SURFACE REPAIR - SPAN B	S4-17	BENT 3 - SPAN C FACE
S1-14	END BENT 2	S3-05	FOAM JOINT REPAIR	S4-18	BENT 3 - SPAN D FACE
S1-15	INCIDENTAL MILLING	S3-06	CONCRETE BARRIER RAIL REPAIR	S4-19	END BENT 2
STRUCTURE No. 911039		S3-07	DECK UNDERSIDE REPAIR	S4-20	SLOPE PROTECTION REPAIR
S2-01	GENERAL DRAWING	S3-08	END BENT 1	S4-21	INCIDENTAL MILLING
S2-02	TYPICAL SECTION	S3-09	BENT 1 - SPAN A FACE	STANDARD SHEETS	
S2-03	DECK SURFACE REPAIR - SPAN A	S3-10	BENT 1 - SPAN B FACE	S-03	CAP AND COLUMN REPAIR DETAILS
S2-04	DECK SURFACE REPAIR - SPAN B	S3-11	END BENT 2	S-04	PRESTRESSED GIRDER REPAIR DETAILS
S2-05	DECK SURFACE REPAIR - SPAN C	S3-12	INCIDENTAL MILLING	SN	STANDARD NOTES



TYPE OF WORK:
 BRIDGE PRESERVATION - MILLING AND REPAVING APPROACH ROADWAYS, DIAMOND GRINDING APPROACH SLAB, SHOTBLASTING AND SILANE DECK TREATMENT, FOAM JOINT REPLACEMENT, EXPANSION JOINT GLAND REPLACEMENT, MODULAR EXPANSION JOINT GLAND REPLACEMENT, SHOTBLASTING AND SILANE BARRIER RAIL TREATMENT, SAW CUTTING OF BARRIER RAIL, 3-BAR METAL RAIL SECTION REPLACEMENTS, CONCRETE MEDIAN ISLAND REPAIR, CLEANING AND PAINTING EXISTING STRUCTURE, CLEANING AND PAINTING EXISTING WEATHERING STEEL, CLEANING AND EPOXY COATING PRESTRESSED GIRDER ENDS, SHOTCRETE REPAIRS, CLEANING AND EPOXY COATING SUBSTRUCTURE CAPS, SLOPE PROTECTION VOID FILLING AND REPAIR.

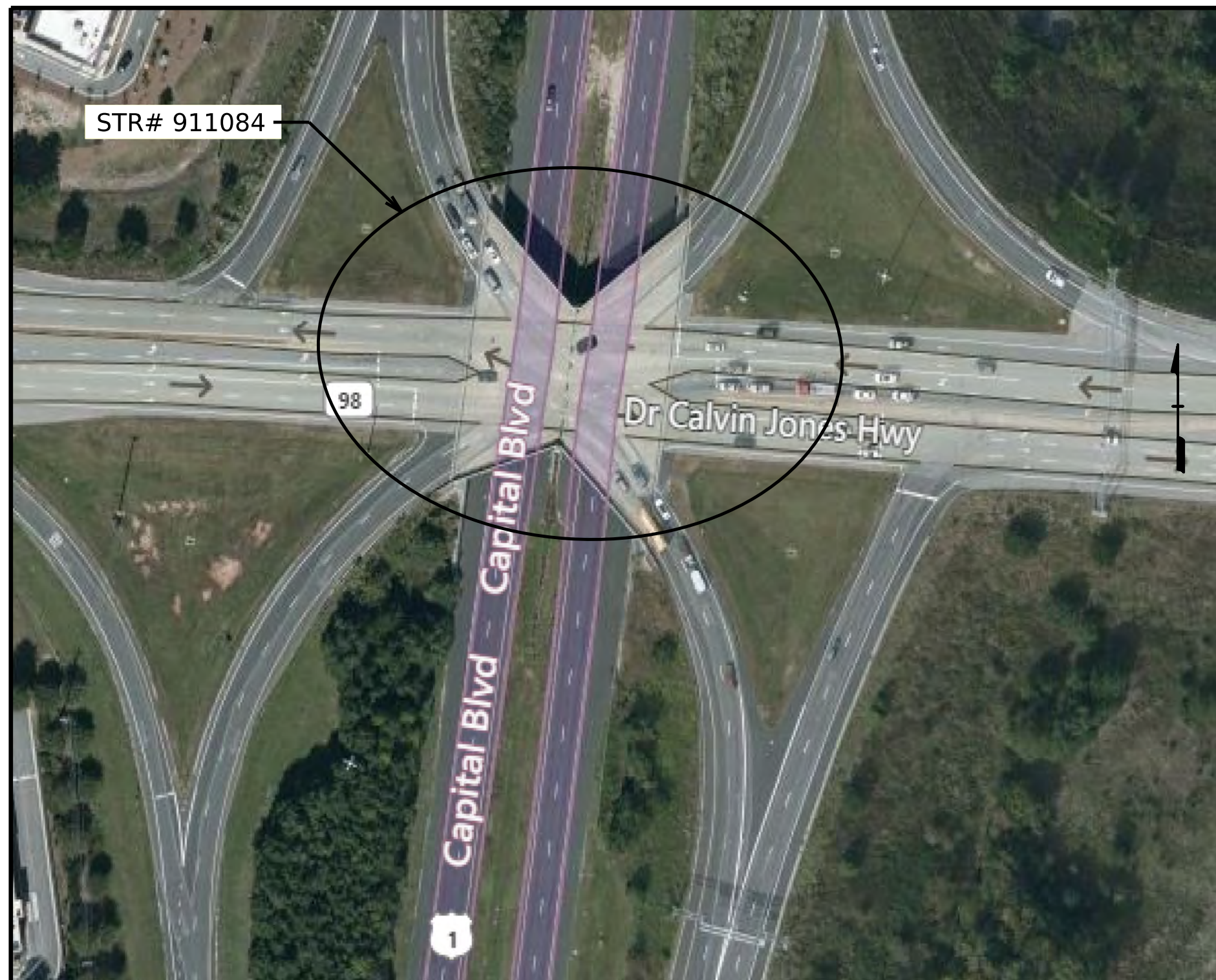
Prepared in the Office of:
DIVISION OF HIGHWAYS
 STRUCTURES MANAGEMENT UNIT
 1000 BIRCH RIDGE DR.
 RALEIGH, N.C. 27610



BRIDGE 310306 LOCATION SKETCH



BRIDGE 911039 LOCATION SKETCH



BRIDGE 911083 LOCATION SKETCH



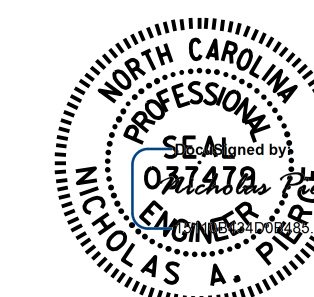
BRIDGE 911084 LOCATION SKETCH

NOTES

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

BRIDGE COORDINATES		
BRIDGE No.	LATITUDE	LONGITUDE
310306	35°-54' - 31.47"	78°-56' - 8.67"
911039	35°-46' - 26.39"	78°-32' - 56.61"
911083	35°-57' - 55.17"	78°-32' - 30.55"
911084	35°-57' - 54.40"	78°-32' - 17.67"

PROJECT NO. **15BPR.59**
DURHAM/WAKE COUNTY
 BRIDGE NO. **310306, 911039, 911083, 911084**



12/08/2022

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 LOCATION SKETCH

DRAWN BY : D.A. CANTRELL DATE : 03/2022
 CHECKED BY : A.Y. GODFREY DATE : 10/2022
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 12/2022

12/17/2022
 R:\S1ructures\Plans\400_003_15BPR.59_SMU.LS.dgn
 napierce

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-01
1			3			TOTAL SHEETS
2			4			73

TOTAL BILL OF MATERIAL																
BRIDGE No.	INCIDENTAL MILLING	ASPHALT CONC SURFACE COURSE TYPE S9.5B	ASPHALT BINDER PLANT MIX	INDUCTIVE LOOP SAWCUT	LEAD IN CABLE	POLLUTION CONTROL	RIP RAP CLASS B	GEOTEXTILE FOR DRAINAGE	CONCRETE REPAIRS	SHOTCRETE REPAIRS	PAINTING CONTAINMENT FOR BRIDGE #__	CLEANING AND REPAINTING OF BRIDGE #__	CLEANING AND PAINTING EXISTING WEATHERING STEEL FOR BRIDGE #__	EXPANSION JOINT SEALS FOR PRESERVATION	FOAM JOINT SEALS FOR PRESERVATION	MODULAR EXPANSION JOINT SEALS FOR PRESERVATION
	SQ.YDS.	TON	TON	LIN. FT.	LIN. FT.	LUMP SUM	TONS	SQ.YDS.	CU.FT.	CU.FT.	LUMP SUM	LUMP SUM	LUMP SUM	LIN.FT.	LIN.FT.	LIN.FT.
310306	2848.4	240	20	1,600	400	LUMP SUM	-	-	-	5.0	LUMP SUM	LUMP SUM	-	138.8	531.9	-
911039	-	-	-	-	-	LUMP SUM	-	-	-	-	LUMP SUM	-	LUMP SUM	73.4	-	73.4
911083	1969.8	170	15	1,600	400	LUMP SUM	-	-	-	-	LUMP SUM	-	LUMP SUM	-	513.0	-
911084	1698.4	140	10	1,200	200	-	180	200	9.5	13.3	-	-	-	-	325.0	-
TOTAL	6,516.6	550	45	4,400	1,000	LUMP SUM	180	200	9.5	18.3	LUMP SUM	LUMP SUM	LUMP SUM	212.2	1,369.9	73.4

TOTAL BILL OF MATERIAL															
BRIDGE No.	POURABLE SILICONE JOINT SEALANT	3 BAR METAL RAIL REPAIR	ELASTOMERIC CONCRETE FOR PRESERVATION	SLOPE PROTECTION VOID FILLING	BRIDGE JOINT DEMOLITION	EPOXY COATING	EPOXY COATING CONCRETE GIRDER ENDS	SURFACE PREPARATION FOR CONCRETE BARRIER	SILANE BARRIER RAIL TREATMENT	DIAMOND GRINDING CONCRETE APPROACH SLAB	SHOTBLASTING BRIDGE DECK	SILANE DECK TREATMENT	SAW CUTTING CONCRETE BARRIER RAIL		
	LIN.FT.	LIN.FT.	CU.FT.	LBS.	SQ.FT.	SQ.FT.	SQ.FT.	SQ.FT.	SQ.FT.	SQ.YDS.	SQ.YDS.	SQ.YDS.	EA.		
310306	1260.0	-	281.2	-	1017.2	3029.0	-	1940.4	1940.4	-	3701.2	3701.2	2		
911039	-	60.0	-	-	-	1448.0	-	-	-	-	4824.2	4824.2	-		
911083	898.0	-	141.1	-	567.7	2406.0	-	1861.3	1861.3	-	3023.6	3023.6	2		
911084	-	-	81.4	1260	293.6	2912.7	1664	3448.0	3448.0	210	4766.6	4766.6	-		
TOTAL	2,158.0	60.0	503.7	1,260	1,878.5	9,795.7	1,664	7,249.7	7,249.7	210	16,315.6	16,315.6	4		

NOTES

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.

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.

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

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

FOR FINAL PAVEMENT MARKINGS AND MARKERS, SEE TRANSPORTATION MANAGEMENT PLANS.

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

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.

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR FOAM JOINT SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.

FOR ELASTOMERIC CONCRETE FOR PRESERVATION, SEE SPECIAL PROVISIONS.

FOR EXPANSION JOINT SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.

FOR MODULAR EXPANSION JOINT SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.

FOR BRIDGE JOINT DEMOLITION, SEE SPECIAL PROVISIONS.

FOR PAINTING EXISTING STRUCTURE, SEE SPECIAL PROVISIONS.

FOR CLEANING AND PAINTING EXISTING WEATHERING STEEL FOR BRIDGE, SEE THE "PAINTING EXISTING WEATHERING STEEL STRUCTURE" SPECIAL PROVISION.

FOR PAINTING CONTAINMENT FOR BRIDGE AND POLLUTION CONTROL, SEE "PAINTING EXISTING WEATHERING STEEL STRUCTURE" AND "PAINTING EXISTING STRUCTURE" SPECIAL PROVISIONS.

FOR SAW CUTTING CONCRETE BARRIER RAIL, SEE SPECIAL PROVISIONS.

FOR SLOPE PROTECTION VOID FILLING, SEE SPECIAL PROVISIONS.

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

FOR EPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.

FOR SHOTBLASTING BRIDGE DECK AND SILANE DECK TREATMENT, SEE "SILANE DECK TREATMENT" SPECIAL PROVISION.

FOR DIAMOND GRINDING CONCRETE APPROACH SLABS, SEE SPECIAL PROVISIONS.

FOR EPOXY COATING CONCRETE GIRDER ENDS, SEE SPECIAL PROVISIONS.

FOR VOLUMETRIC MIXER, SEE SPECIAL PROVISIONS.

FOR 3 BAR METAL RAIL REPAIR, SEE SPECIAL PROVISIONS.

FOR POURABLE SILICONE JOINT SEALANT, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

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

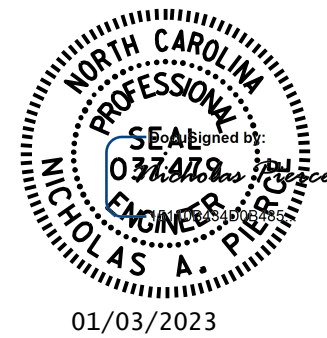
FOR REPAIRS TO PRESTRESSED CONCRETE GIRDERS, SEE SPECIAL PROVISIONS.

FOR THERMAL SPRAYED COATING, SEE SPECIAL PROVISIONS.

UNANTICIPATED ITEMS:

ITEM DESCRIPTION	UNIT
VOLUMETRIC MIXER	LUMP SUM
CONCRETE DECK REPAIR FOR SILANE DECK TREATMENT	SQ.FT.
EPOXY RESIN INJECTION	LIN. FT.
REPAIRS TO PRESTRESSED CONCRETE GIRDERS	CU. FT.

PROJECT NO. **15BPR.59**
DURHAM/WAKE COUNTY
 BRIDGE NO. **310306, 911039**
911083, 911084



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

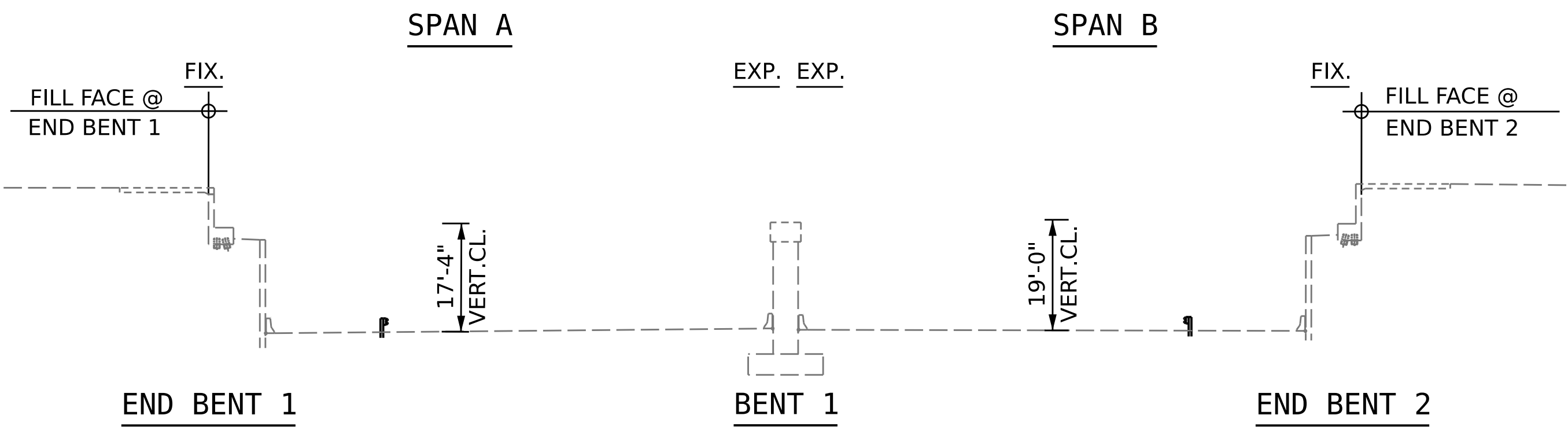
GENERAL DRAWING
 BILL OF MATERIAL

DRAWN BY : N.A. PIERCE DATE : 10/2022
 CHECKED BY : J.D. HAWK DATE : 10/2022
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 12/2022

REVISIONS						SHEET NO. 5-02 TOTAL SHEETS 73
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

8/26/21



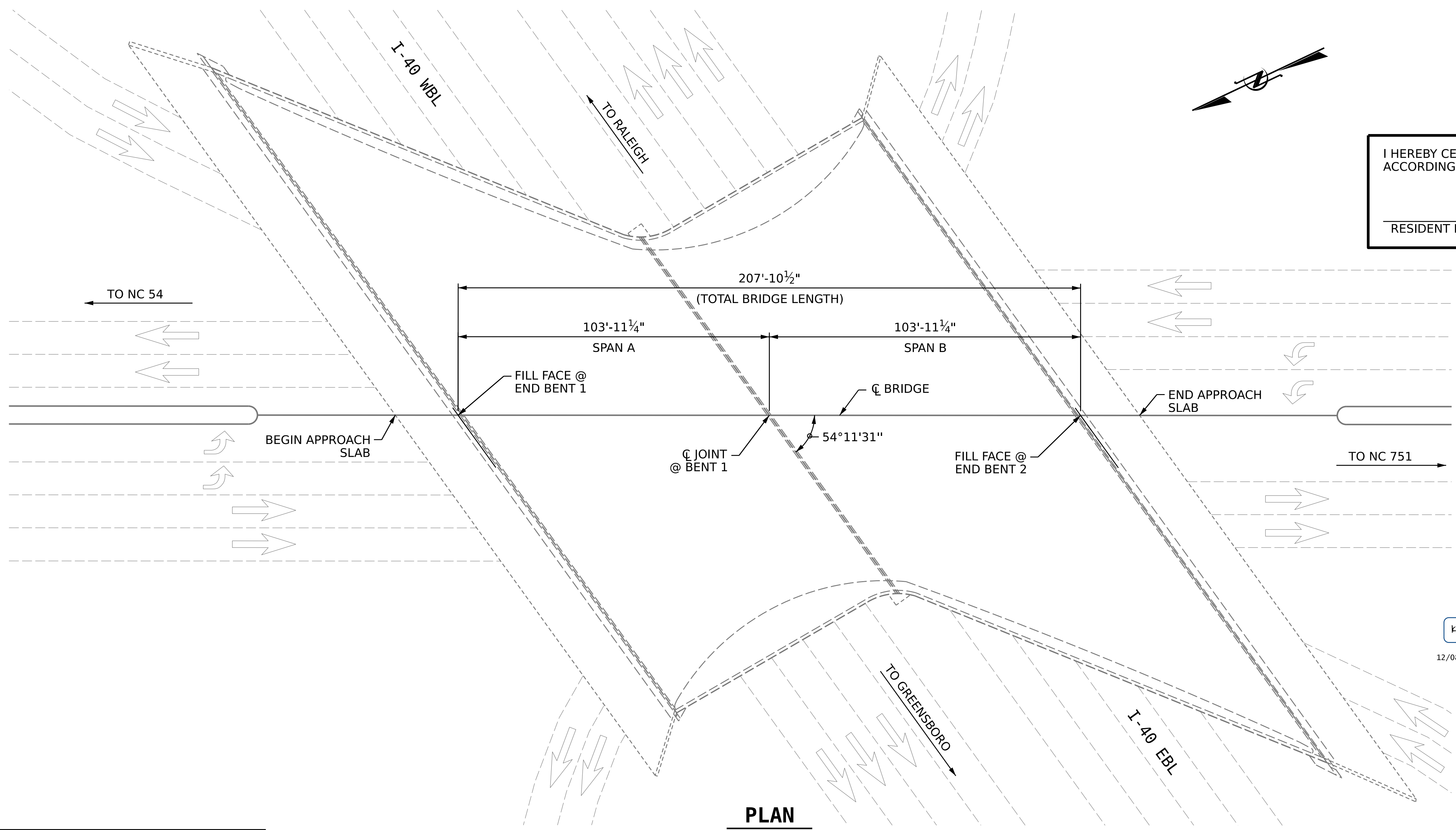
NOTES

GENERAL DRAWING INFORMATION IS TAKEN FROM THE ORIGINAL PLANS AND THE ROUTINE INSPECTION REPORT DATED 08/05/2021.

BRIDGE ORIENTATION CONFORMS TO THE EXISTING BRIDGE PLANS.

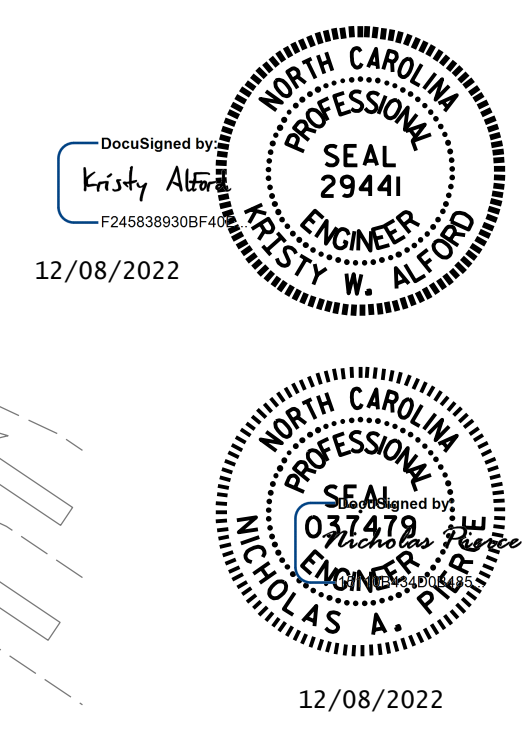
SCOPE OF WORK

- SAW CUT EXISTING BARRIER RAIL AND DECK.
- SHOTBLAST BRIDGE DECK AND BARRIER RAILS.
- APPLY SILANE DECK SEALANT TO PREPARED TOP OF BRIDGE DECK.
- APPLY SILANE BARRIER TREATMENT TO BARRIER RAILS.
- REMOVE EXISTING JOINT MATERIAL AND INSTALL FOAM JOINTS.
- REPLACE EXISTING JOINT GLAND OF EXPANSION JOINT SEAL.
- CLEAN AND PAINT STRUCTURAL STEEL.
- REMOVE DEBRIS FROM TOP OF EXISTING END BENT & BENT CAPS AND APPLY EPOXY COATING.
- REMOVE EXISTING SLOPE PROTECTION EXPANSION JOINT MATERIAL AND INSTALL POURABLE SILICONE JOINT SEALANT.



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

RESIDENT ENGINEER _____ DATE _____



PROJECT NO. **15BPR.59**
 DURHAM COUNTY
 BRIDGE NO. **310306**

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE ON SR 1118
 (FAYETTEVILLE ROAD)
 OVER I-40 BETWEEN
 NC 54 AND NC 751

DRAWN BY : N.A. PIERCE DATE : 03/2022
 CHECKED BY : A.Y. GODFREY DATE : 10/2022
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 12/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

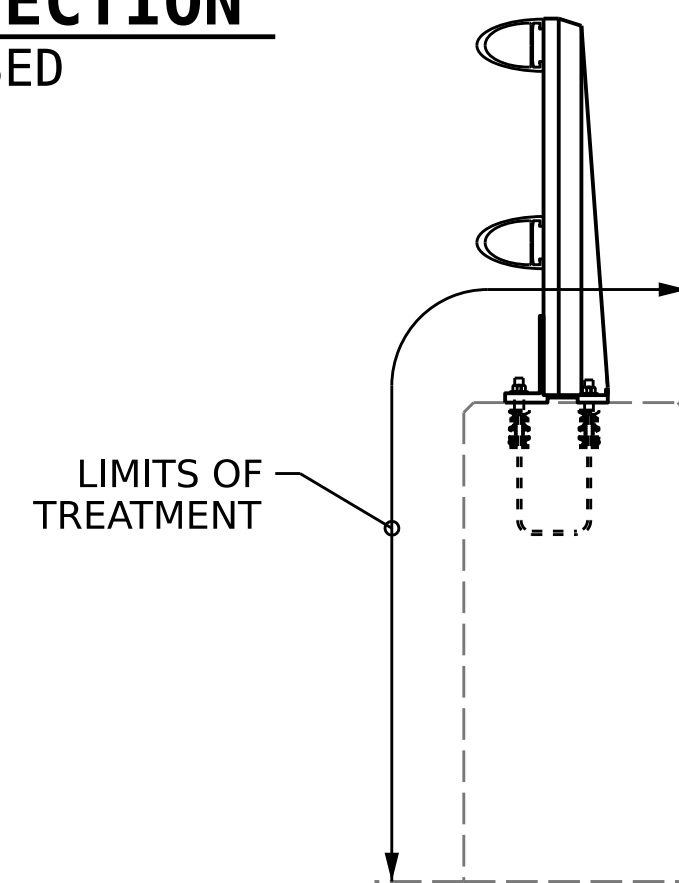
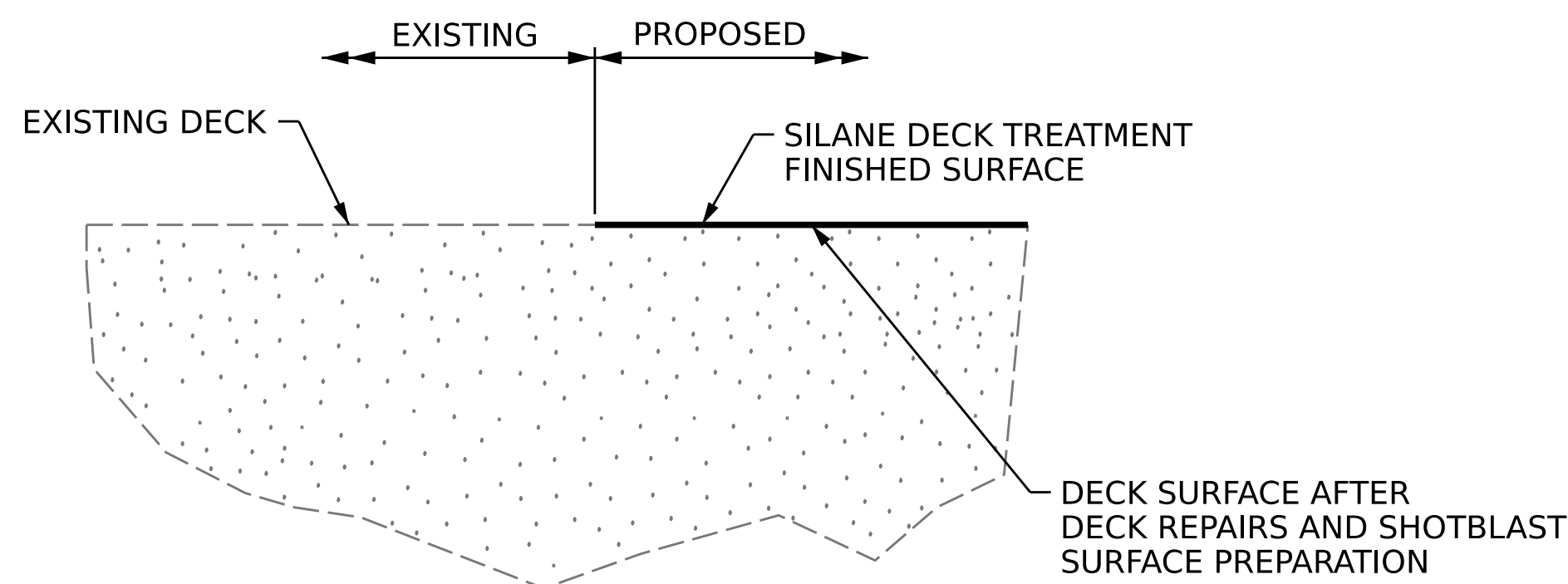
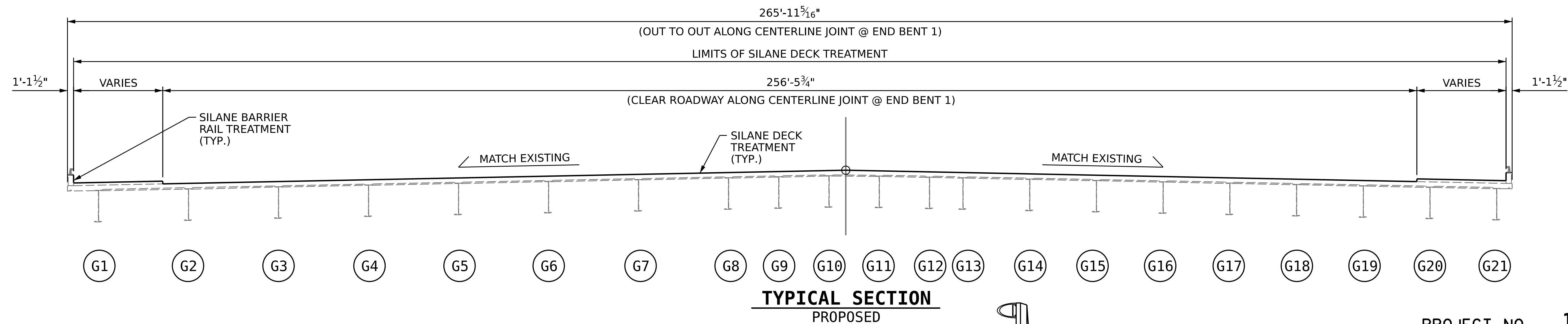
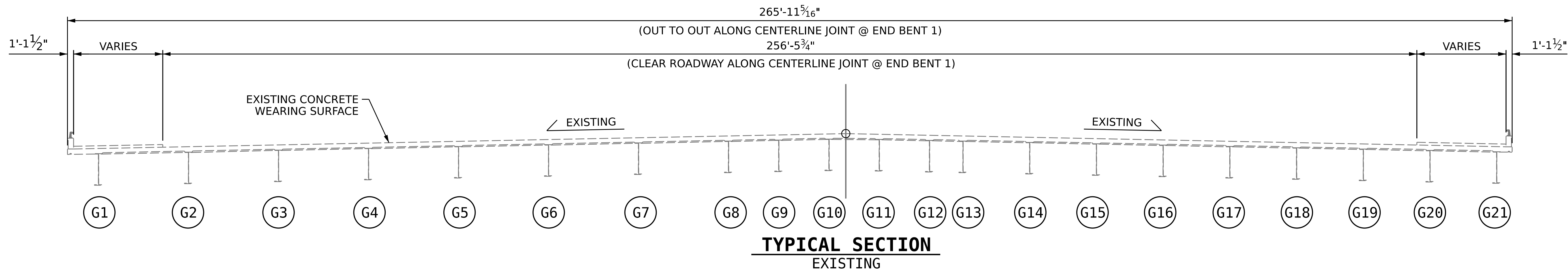
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-01
1			3			TOTAL SHEETS
2			4			15

NOTES

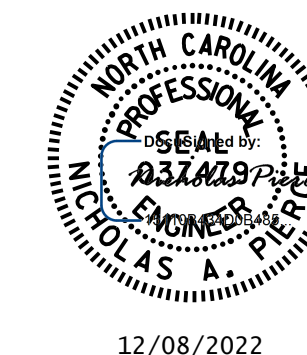
SEE TRAFFIC MANAGEMENT PLANS FOR LANE WIDTHS, SEQUENCING, AND OTHER TRAFFIC CONTROL MEASURES FOR SURFACE PREPARATION AND SILANE DECK TREATMENT APPLICATION.

DIMENSIONS SHOWN ARE ALONG CENTERLINE OF JOINT AT END BENT 1.

DIMENSIONS VARY ALONG BRIDGE LENGTH.



PROJECT NO. **15BPR.59**
DURHAM COUNTY
 BRIDGE NO. **310306**



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

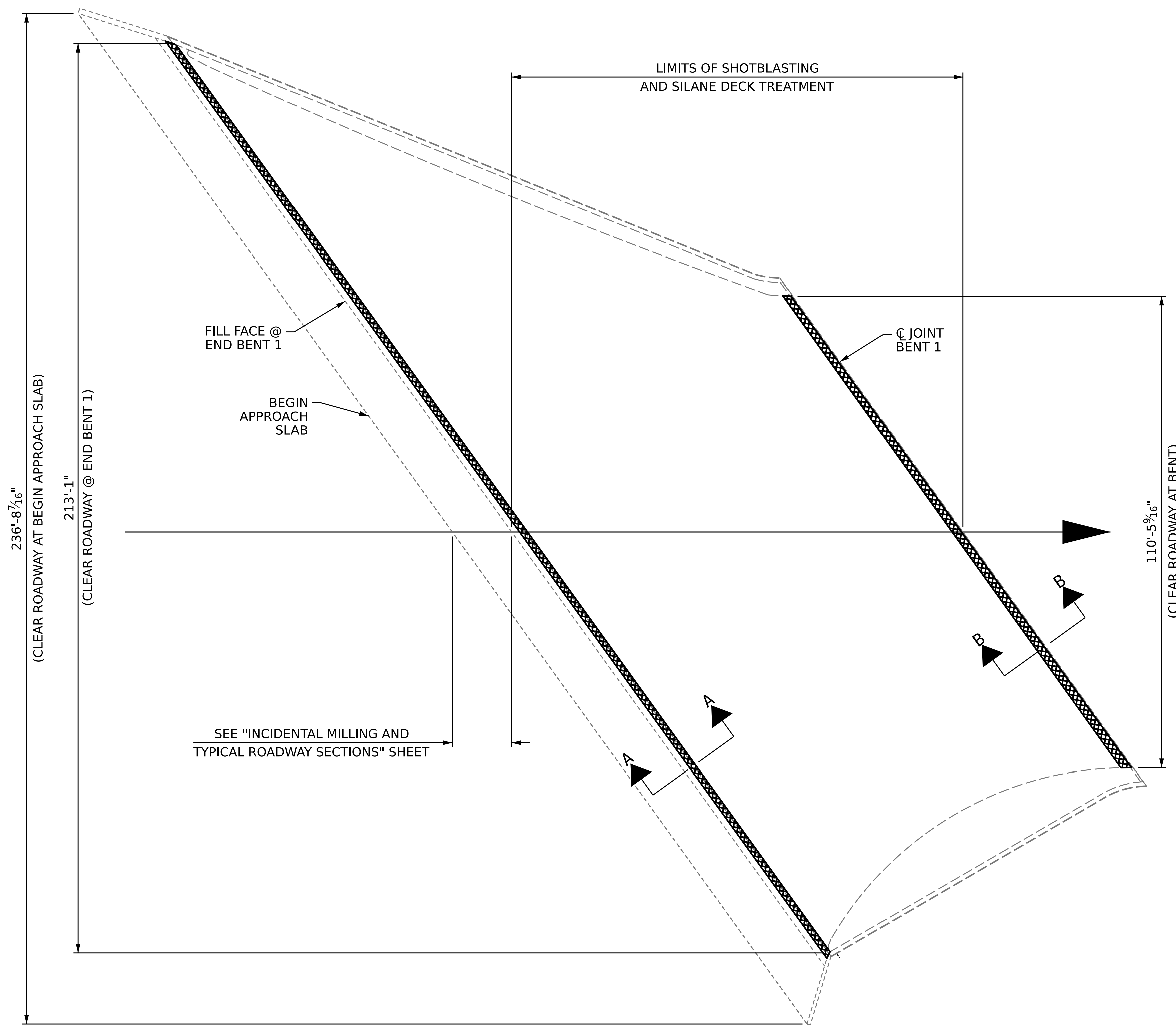
TYPICAL SECTION

DRAWN BY : N.A. PIERCE DATE : 03/2022
 CHECKED BY : A.Y.GODFREY DATE : 10/2022
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 12/2022

12/17/2022
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2			4			



DECK SURFACE REPAIR QUANTITY TABLE

SPAN A		
	ESTIMATE	ACTUAL
CONCRETE DECK REPAIR	0.0 CU. FT	
SURFACE PREPARATION FOR CONCRETE BARRIER	754.2 SQ. FT.	
SILANE BARRIER RAIL TREATMENT	754.2 SQ. FT.	
SHOTBLASTING BRIDGE DECK	1424.6 SQ. YDS.	
SILANE DECK TREATMENT	1424.6 SQ. YDS.	
BRIDGE JOINT DEMOLITION	222.4 SQ. FT.	
APPROACH SLAB A		
	ESTIMATE	ACTUAL
CONCRETE DECK REPAIR	0.0 CU. FT	
SURFACE PREPARATION FOR CONCRETE BARRIER	216.0 SQ. FT.	
SILANE BARRIER RAIL TREATMENT	216.0 SQ. FT.	
SHOTBLASTING BRIDGE DECK	426.0 SQ. YDS.	
SILANE DECK TREATMENT	426.0 SQ. YDS.	
BRIDGE JOINT DEMOLITION	286.2 SQ. FT.	

NOTES

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

REPAIR LOCATIONS AND ESTIMATED 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 DECK SURFACE REPAIR QUANTITY TABLE.

FOR SECTION A-A, SEE "FOAM JOINT SEALS FOR PRESERVATION DETAILS" SHEET.

FOR SECTION B-B, SEE "EXPANSION JOINT SEAL REPAIR DETAILS" SHEET 1 OF 2.

- SHOTCRETE REPAIR AREA
- BRIDGE JOINT DEMOLITION

PROJECT NO. **15BPR.59**
DURHAM COUNTY
 BRIDGE NO. **310306**

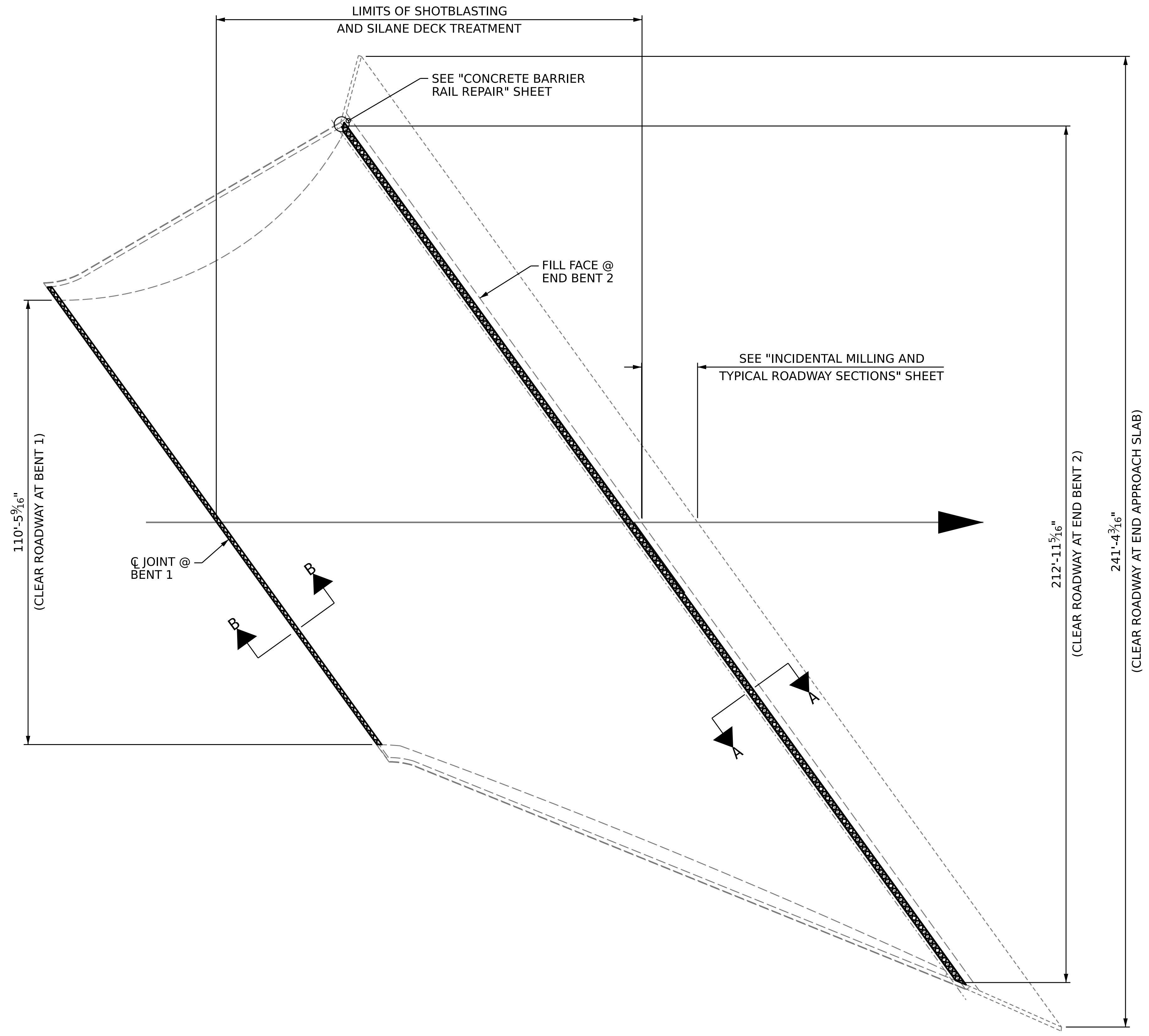


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 DECK SURFACE REPAIR
**SPAN A AND
 APPROACH SLAB A**

DRAWN BY : N.A. PIERCE DATE : 03/2022
 CHECKED BY : A.Y.GODFREY DATE : 10/2022
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 12/2022

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2			4			TOTAL SHEETS 15

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SPAN B

APPROACH SLAB B

DECK SURFACE REPAIR QUANTITY TABLE

SPAN B		
	ESTIMATE	ACTUAL
CONCRETE DECK REPAIR	0.0 CU. FT	
SURFACE PREPARATION FOR CONCRETE BARRIER	754.2 SQ. FT.	
SILANE BARRIER RAIL TREATMENT	754.2 SQ. FT.	
SHOTBLASTING BRIDGE DECK	1424.6 SQ. YDS.	
SILANE DECK TREATMENT	1424.6 SQ. YDS.	
BRIDGE JOINT DEMOLITION	222.4 SQ. FT.	
APPROACH SLAB B		
	ESTIMATE	ACTUAL
CONCRETE DECK REPAIR	0.0 CU. FT	
SURFACE PREPARATION FOR CONCRETE BARRIER	216.0 SQ. FT.	
SILANE BARRIER RAIL TREATMENT	216.0 SQ. FT.	
SHOTBLASTING BRIDGE DECK	426.0 SQ. YDS.	
SILANE DECK TREATMENT	426.0 SQ. YDS.	
BRIDGE JOINT DEMOLITION	286.2 SQ. FT.	

NOTES

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

REPAIR LOCATIONS AND ESTIMATED 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 DECK SURFACE REPAIR QUANTITY TABLE.

FOR SECTION A-A, SEE "FOAM JOINT SEALS FOR PRESERVATION DETAILS" SHEET.

FOR SECTION B-B, SEE "EXPANSION JOINT SEAL REPAIR DETAILS" SHEET 1 OF 2.

- SHOTCRETE REPAIR AREA
- BRIDGE JOINT DEMOLITION

PROJECT NO. **15BPR.59**
DURHAM COUNTY
 BRIDGE NO. **310306**

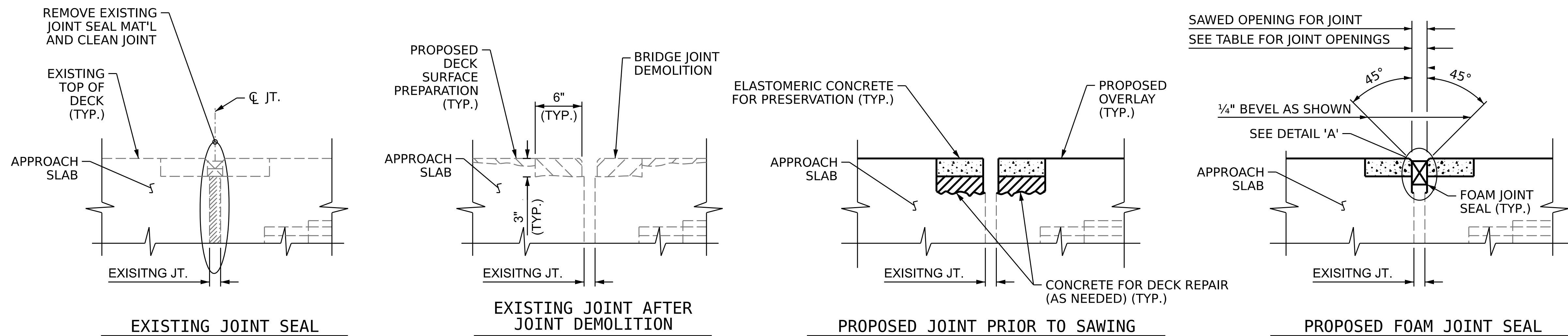


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 DECK SURFACE REPAIR
SPAN B AND APPROACH SLAB B

DRAWN BY : N.A. PIERCE DATE : 03/2022
 CHECKED BY : A.Y.GODFREY DATE : 10/2022
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 12/2022

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1			3			S1-04
2			4			TOTAL SHEETS 15



SECTION A-A AT END BENTS

NOTES

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

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

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

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

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

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

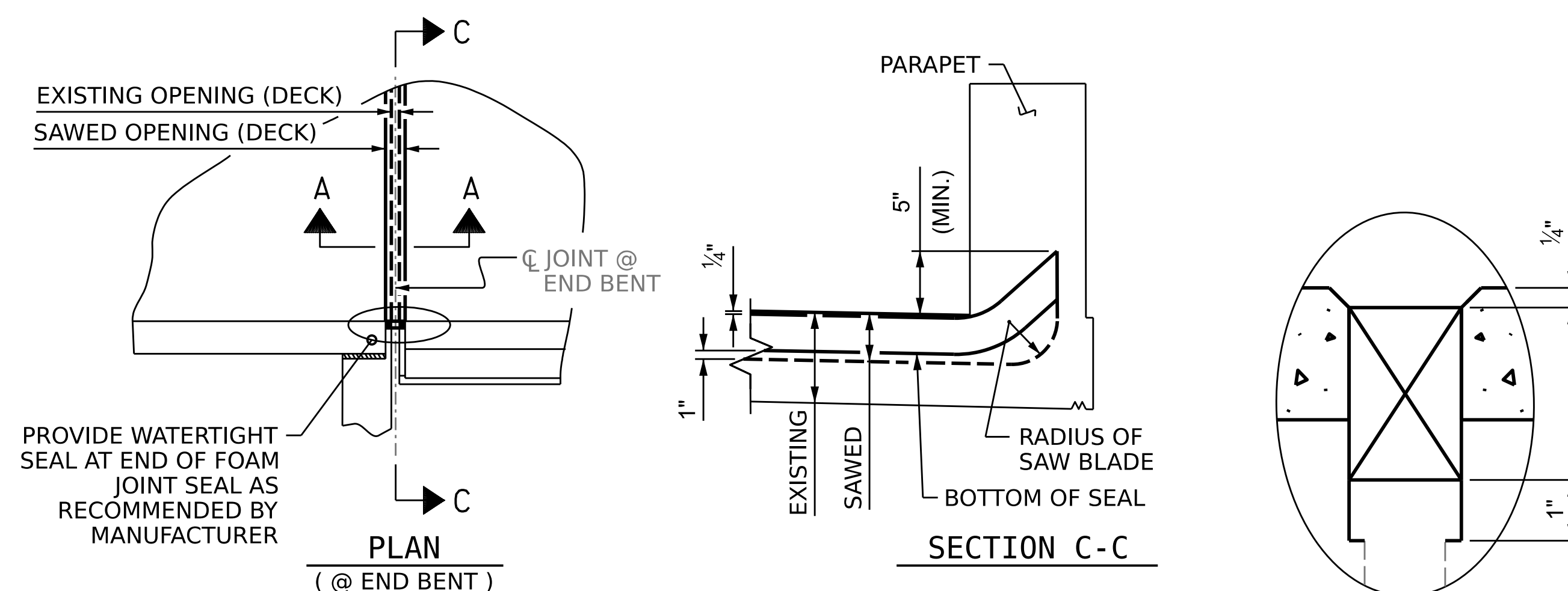
THE INSTALLED FOAM JOINTS SHALL BE WATER TIGHT.

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

JOINT REPAIR QUANTITY TABLE		
	ESTIMATED	ACTUAL
FOAM JOINT SEALS FOR PRESERVATION	531.9 LIN.FT.	

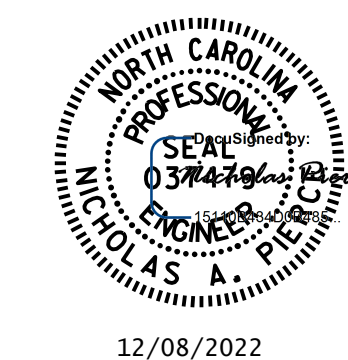
LOCATION	SAWED JT. OPENING (PERPENDICULAR TO JT.)		
	AT 45°	AT 60°	AT 90°
END BENT 1	1 3/8"	1 3/16"	1 11/16"
END BENT 2	1 3/8"	1 3/16"	1 11/16"

ELASTOMERIC CONCRETE FOR PRESERVATION		
LOCATION	ESTIMATED (CU.FT.)	ACTUAL (CU.FT.)
END BENT 1	133.0	
END BENT 2	133.0	
TOTAL	266.0	



JOINT SEAL DETAILS

PROJECT NO. **15BPR.59**
DURHAM COUNTY
 BRIDGE NO. **310306**

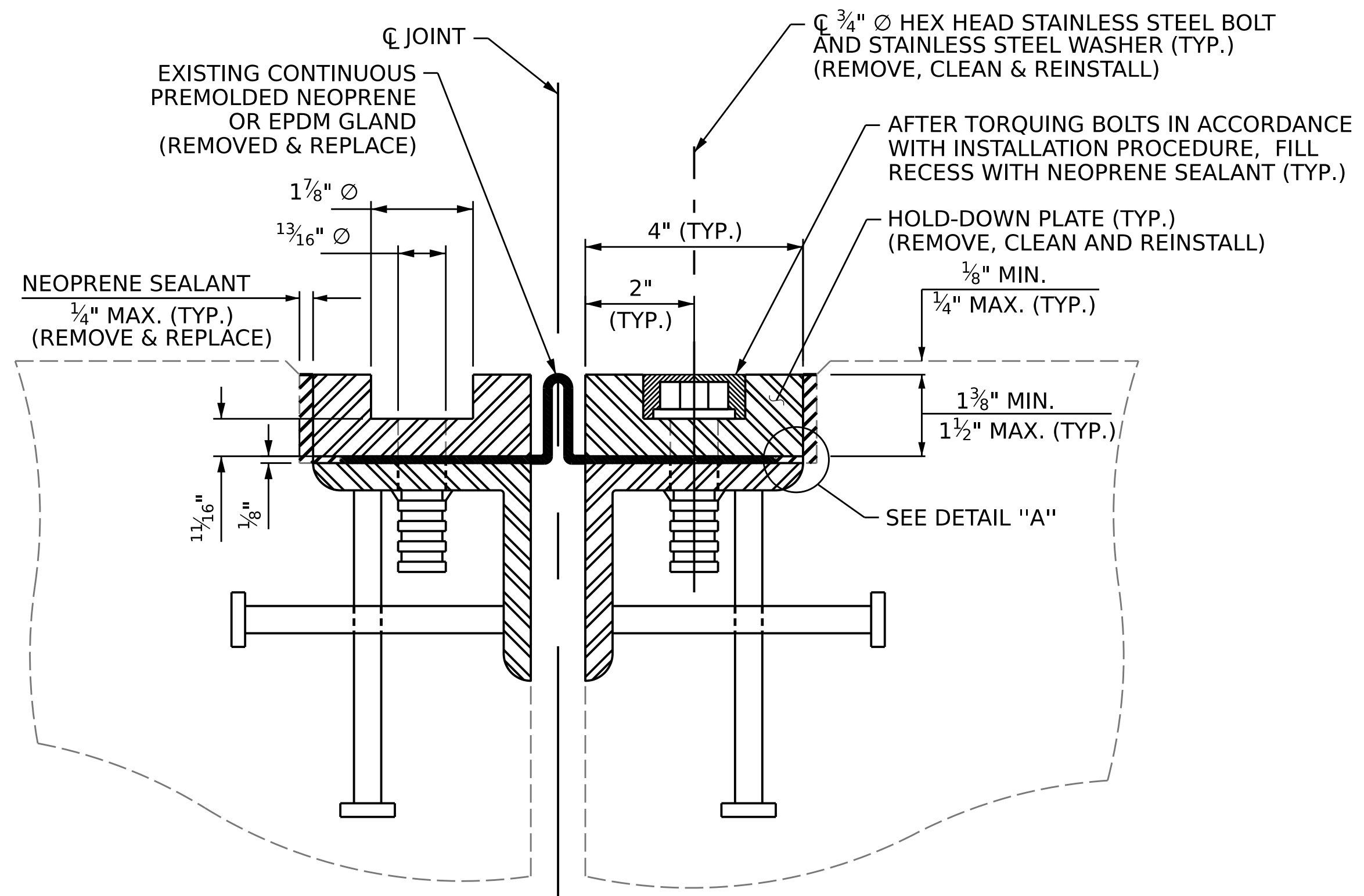


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
FOAM JOINT SEALS FOR PRESERVATION DETAILS

DRAWN BY : N.A. PIERCE DATE : 09/2020
 CHECKED BY : A.Y.GODFREY DATE : 10/2022
 DESIGN ENGINEER OF RECORD: N.A. PIERCE DATE : 12/2022

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1			3			TOTAL SHEETS
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**EXPANSION JOINT DETAILS
SECTION B-B AT BENT 1**

SUGGESTED REPAIR INSTALLATION PROCEDURE

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

GENERAL NOTES

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

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

THE CONTRACTOR SHALL TAKE CARE DURING JOINT REHAB OPERATIONS NOT TO DROP ANY MATERIAL BELOW THE BRIDGE, WITHOUT PROTECTIVE DEVICES BELOW TO CATCH THE MATERIAL. ANY MATERIAL THAT FALLS BELOW THE BRIDGE SHALL BE CONTAINED, REMOVED AND DISPOSED OF 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.

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

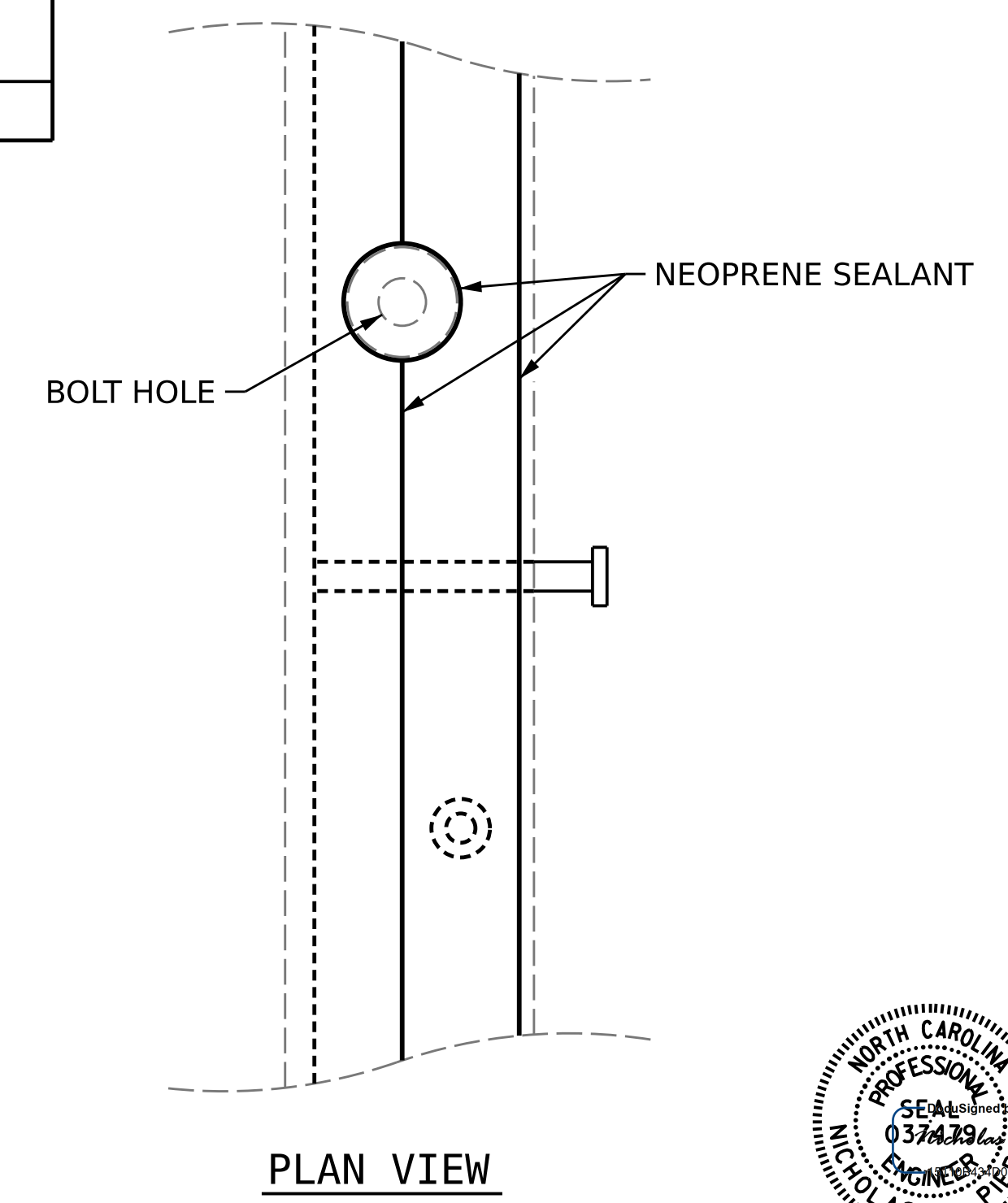
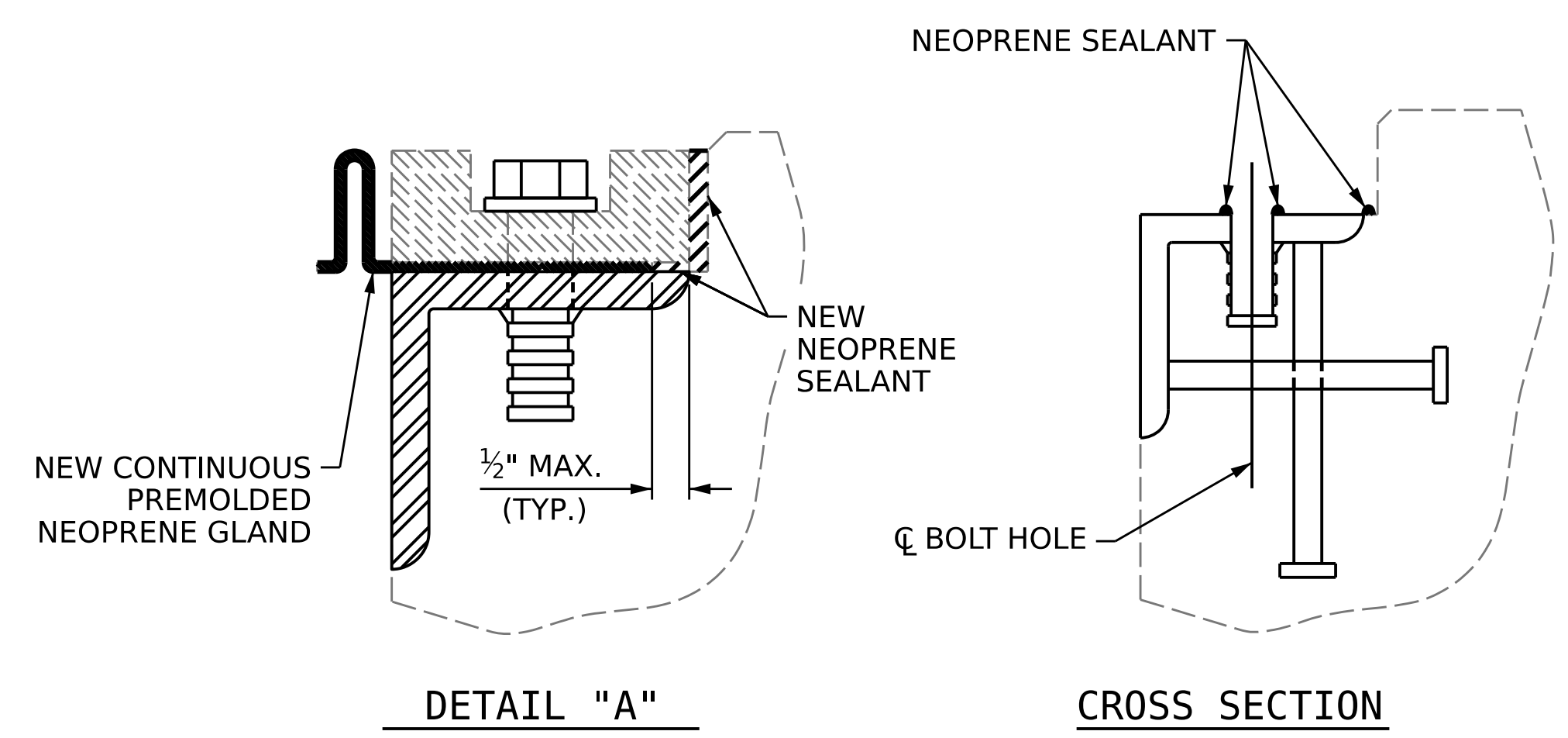
ALL HOLD-DOWN BOLTS SHALL CONFORM TO ASTM F593 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL CONFORM TO ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.

FOR EXPANSION JOINT SEAL FOR PRESERVATION, SEE SPECIAL PROVISIONS.

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

MOVEMENT AND SETTING AT JOINT					
LOCATION	SKREW ANGLE	TOTAL MOVEMENT (ALONG C RDWY)	PERPENDICULAR JOINT OPENING AT 30°F	PERPENDICULAR JOINT OPENING AT 60°F	PERPENDICULAR JOINT OPENING AT 90°F
BENT 1	54°11'31"	2 3/8"	3 1/2"	3"	2 1/2"

JOINT REPAIR QUANTITY TABLE		
	ESTIMATED	ACTUAL
EXPANSION JOINT SEALS FOR PRESERVATION	138.8 LIN. FT.	



INSTALLATION SKETCH

PROJECT NO. **15BPR.59**
 DURHAM COUNTY
 BRIDGE NO. **310306**
 SHEET 1 OF 3

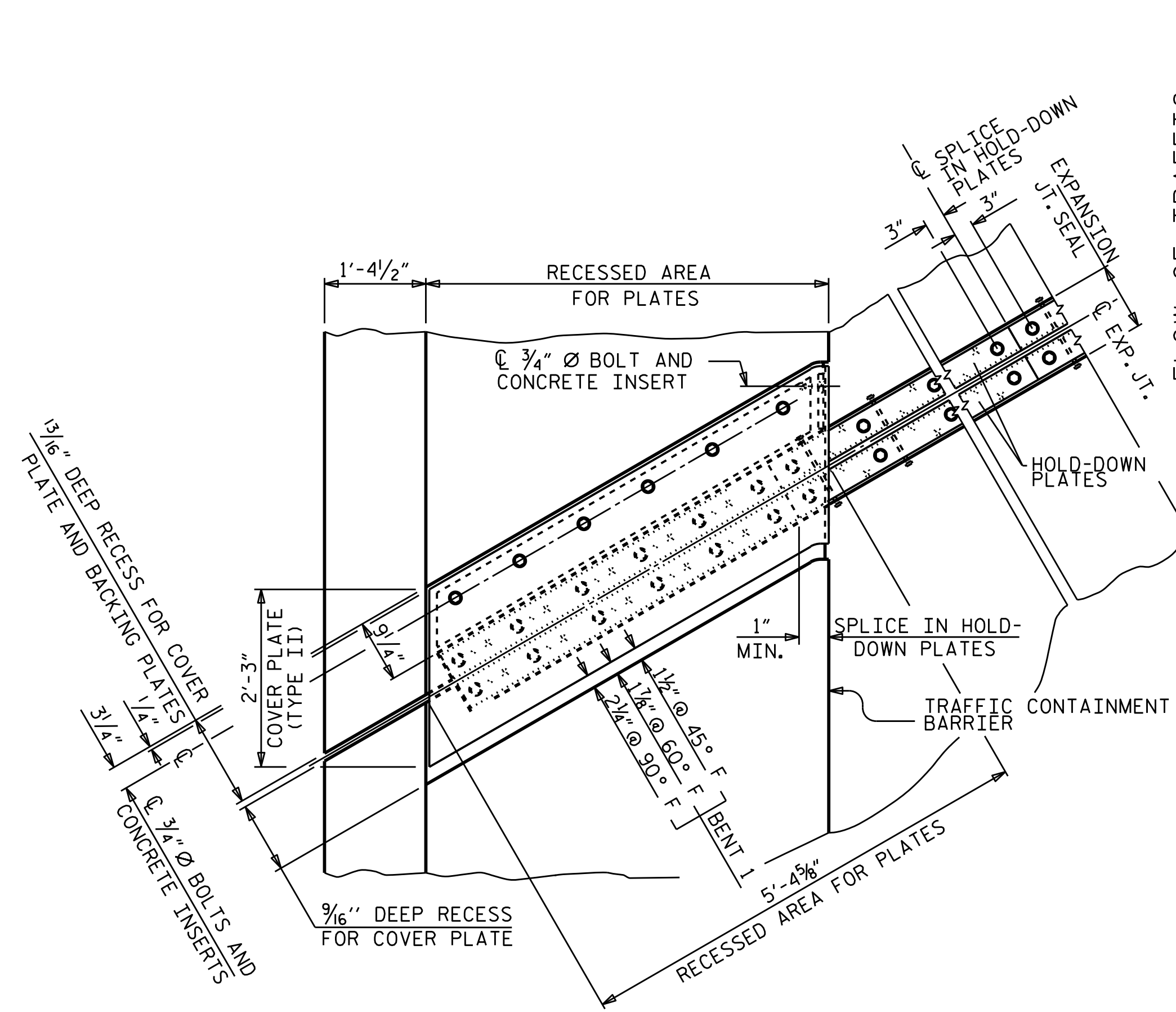


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
EXPANSION JOINT SEAL REPAIR DETAILS

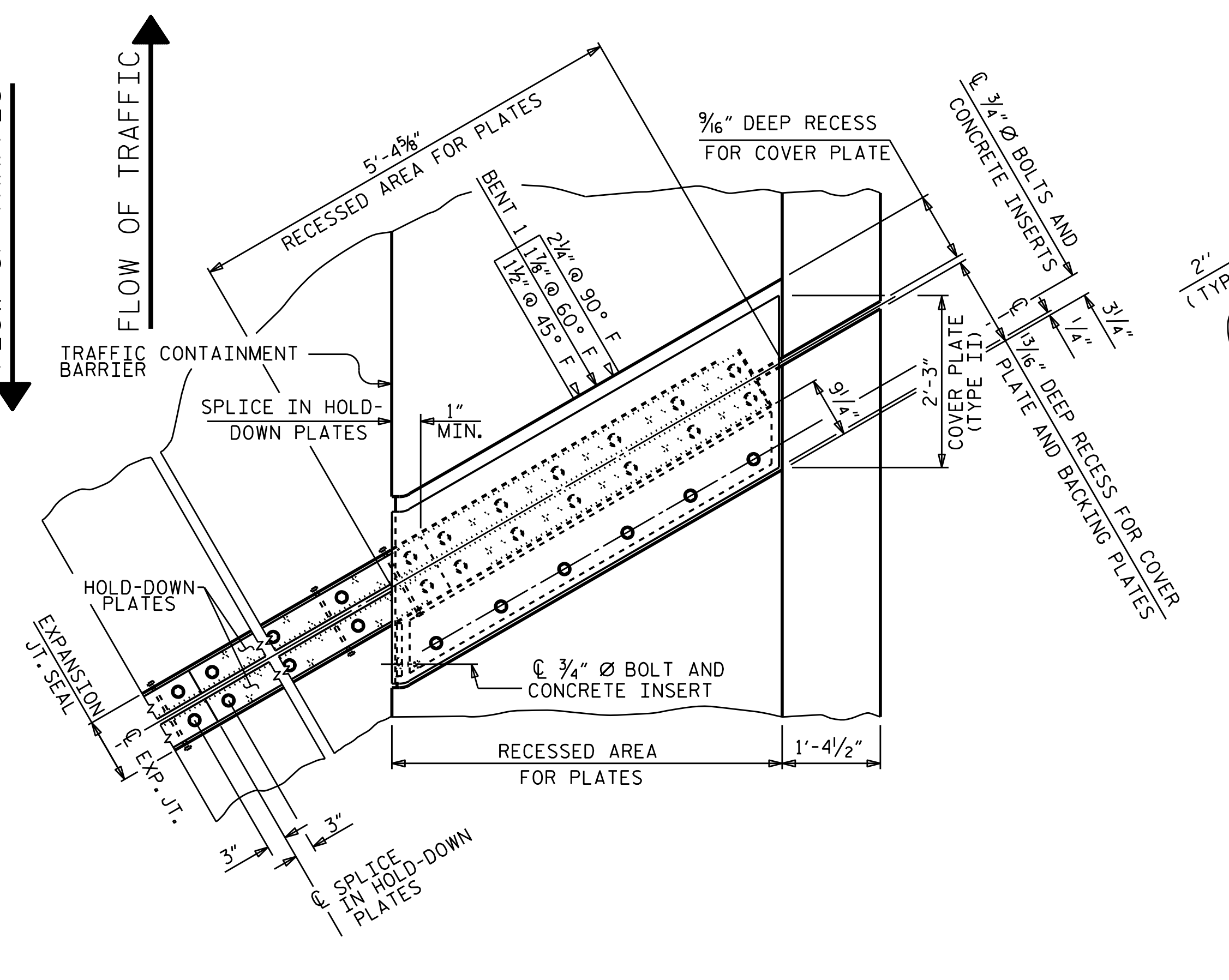
DRAWN BY : N.A. PIERCE DATE : 03/2022
 CHECKED BY : A.Y.GODFREY DATE : 10/2022
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 12/2022

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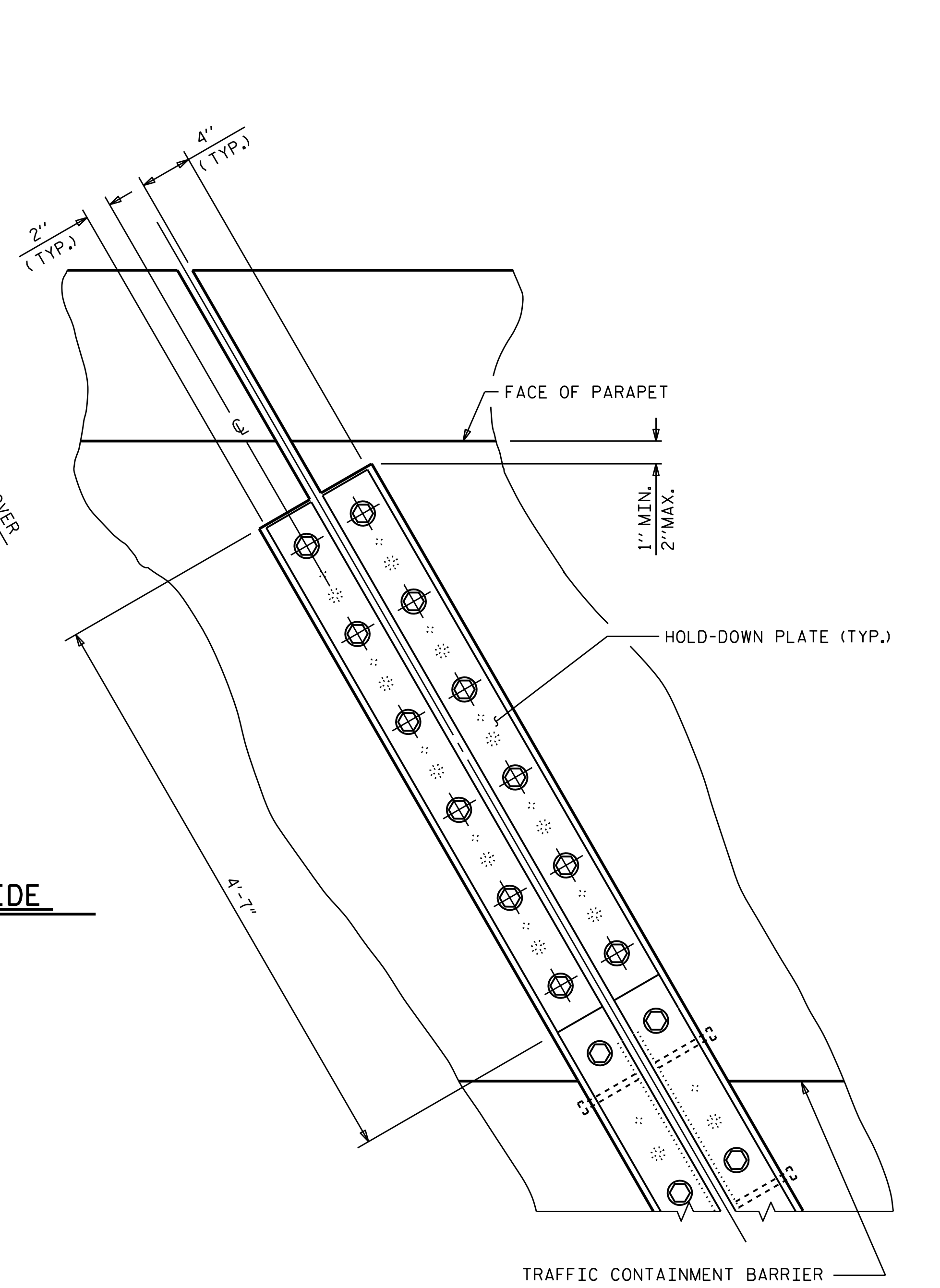
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2			4			TOTAL SHEETS 15



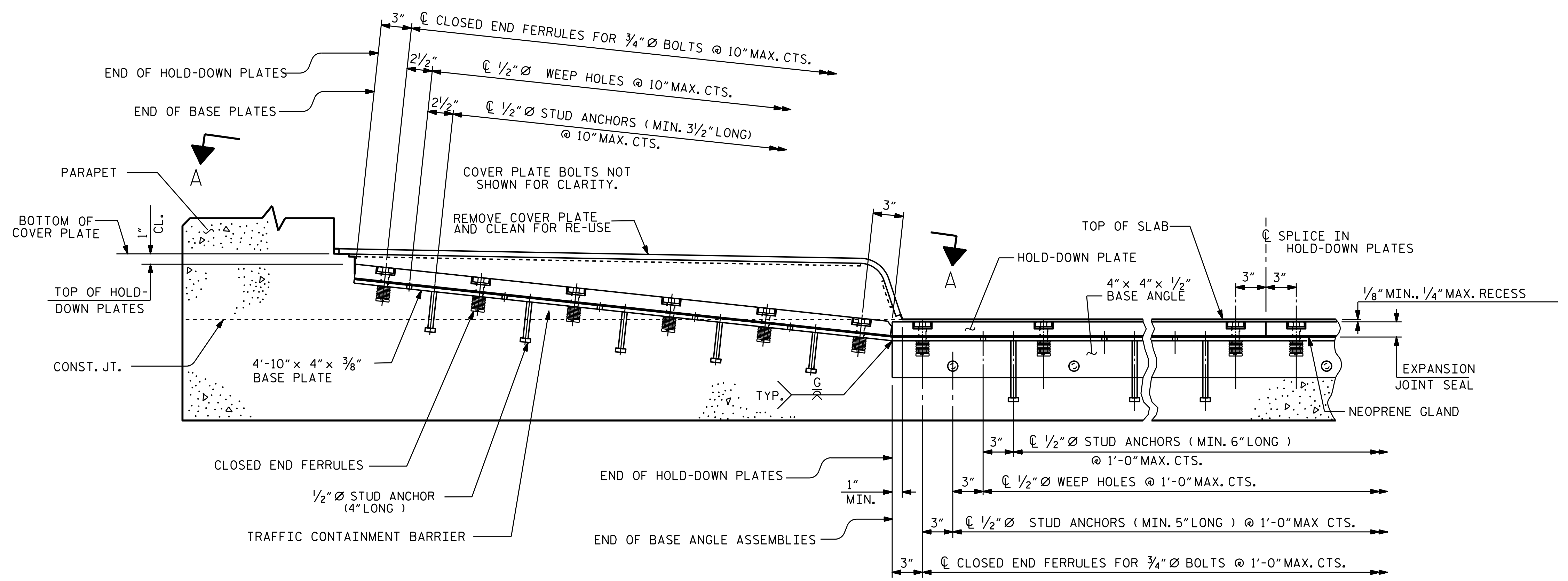
PLAN OF EXPANSION JOINT SEAL - LEFT SIDE



PLAN OF EXPANSION JOINT SEAL - RIGHT SIDE

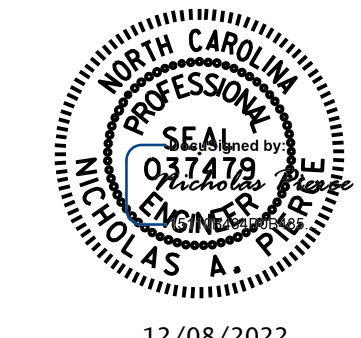


SECTION A - A



SECTION THRU TRAFFIC CONTAINMENT BARRIER NORMAL TO JOINT

PROJECT NO. **15BPR.59**
DURHAM COUNTY
 BRIDGE NO. **310306**
 SHEET 2 OF 3

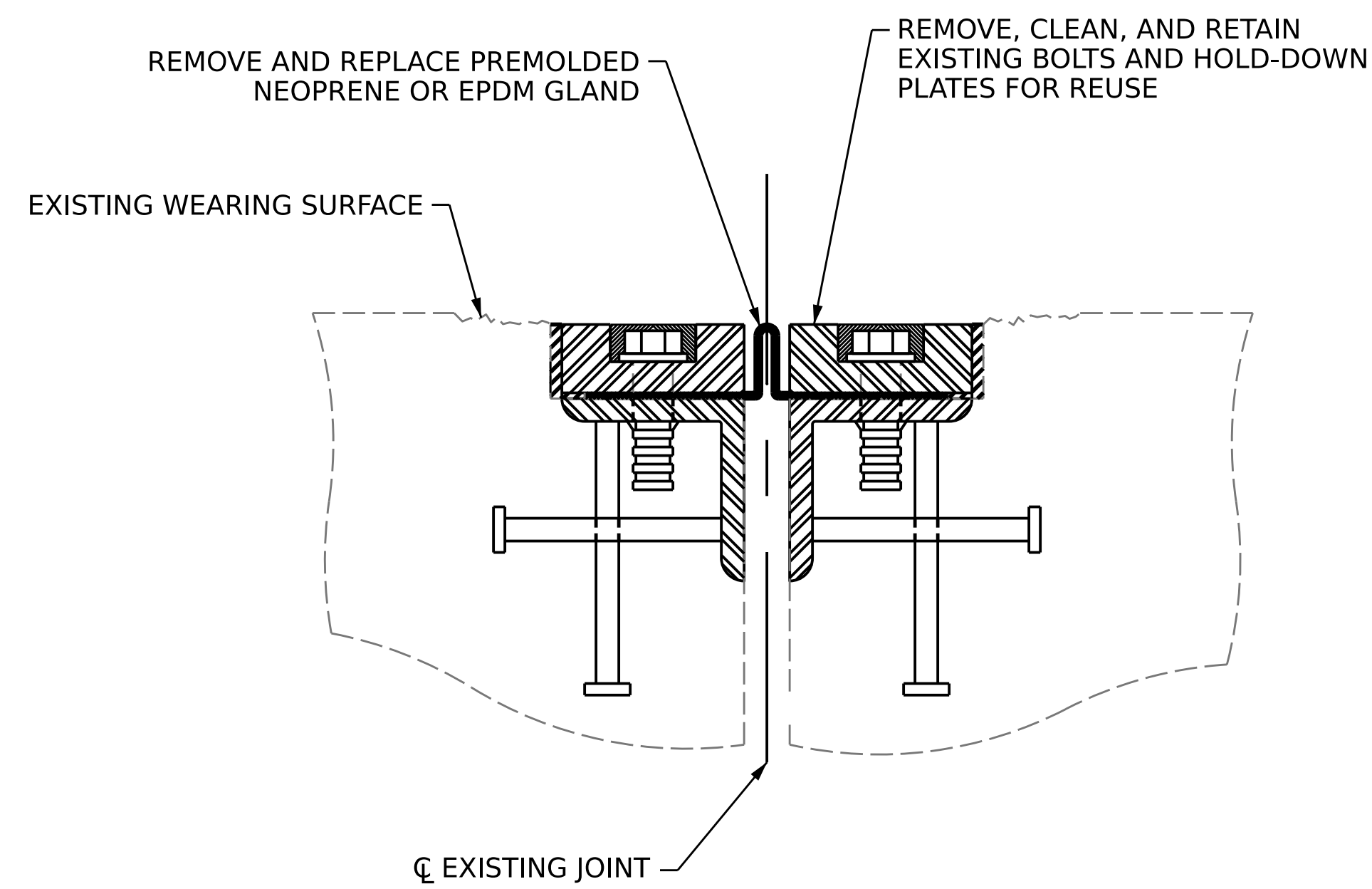


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
**EXPANSION JOINT SEAL
 REPAIR DETAILS**

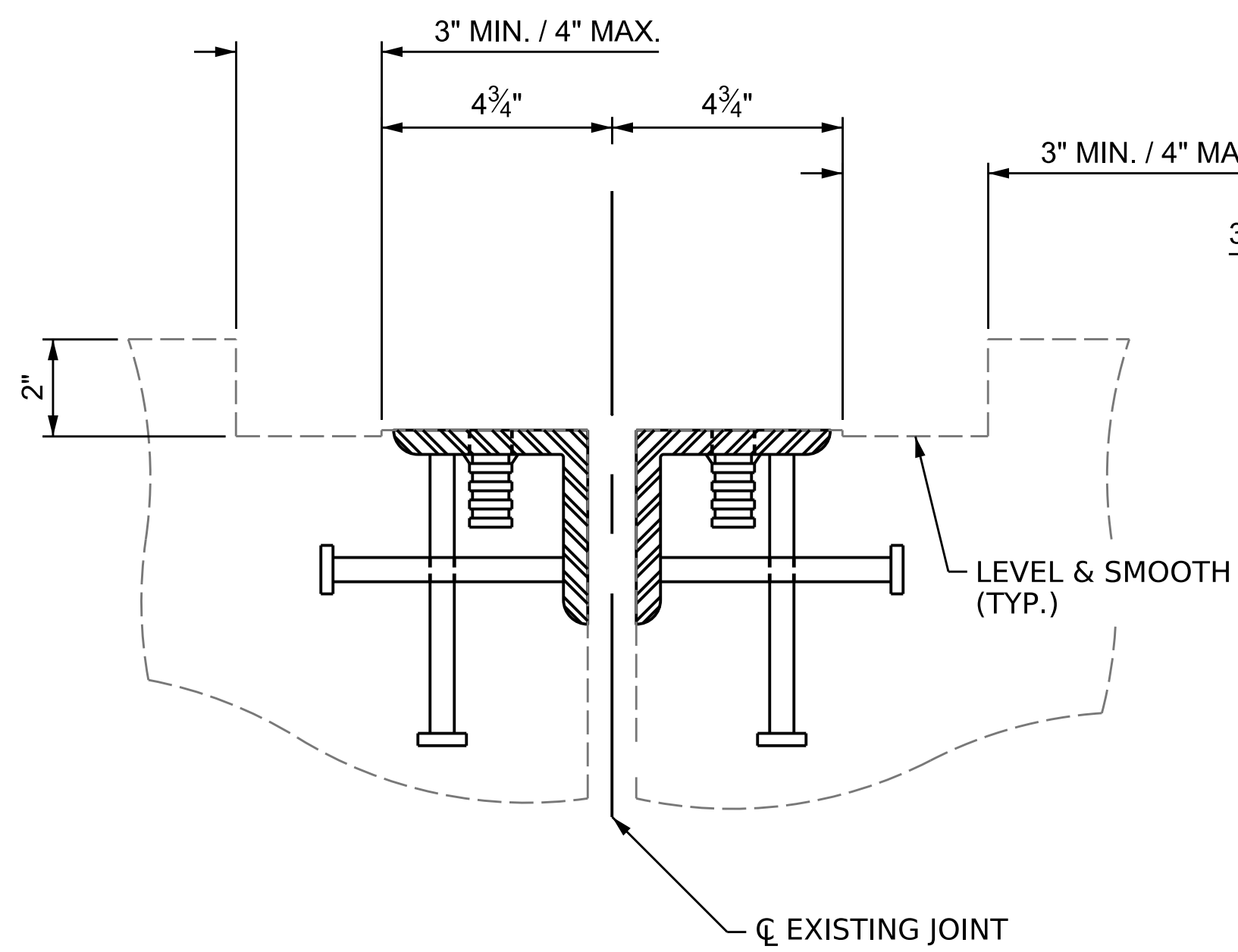
DRAWN BY : R.L.PUTEK DATE: 11/2022
 CHECKED BY : A.V.GODFREY DATE: 11/2022
 DESIGN ENGINEER OF RECORD: N.A. PIERCE DATE: 12/2022

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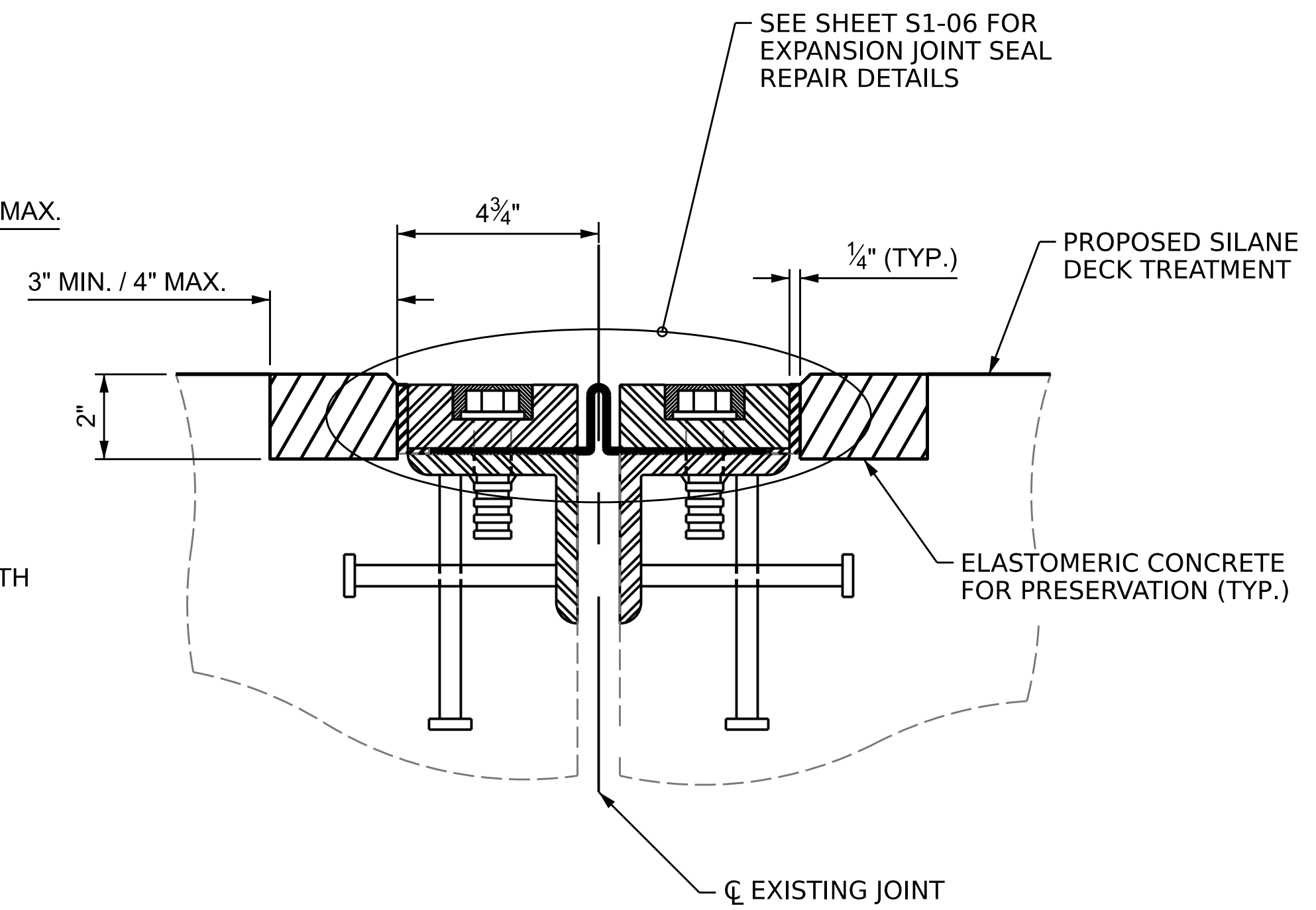
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1			3			
2			4			



EXISTING EXPANSION JOINT SEAL



EXISTING JOINT AFTER DEMOLITION



PROPOSED EXPANSION JOINT SEAL

ELASTOMERIC CONCRETE FOR PRESERVATION

LOCATION	ESTIMATED (CU.FT.)	ACTUAL (CU.FT.)
BENT 1	15.2	
TOTAL	15.2	

NOTES:

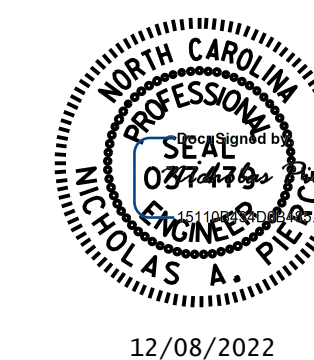
MAKE CONTINUOUS PARALLEL SAW CUTS 2" DEEP ALONG EACH SIDE OF EXISTING JOINT.

EACH SAW CUT SHALL MEASURE A MINIMUM OF 7 3/4" FROM C/J JOINT TO A MAXIMUM OF 8 3/4" FROM C/J JOINT.

CONCRETE REMOVAL SHALL CREATE A CLEAN AND SMOOTH VOID AS SHOWN FOR THE LENGTH OF THE JOINT BETWEEN TRAFFIC CONTROL ISLANDS FOR THE PLACEMENT OF ELASTOMERIC CONCRETE FOR PRESERVATION.

PROJECT NO. **15BPR.59**
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 BRIDGE NO. **310306**

SHEET 3 OF 3



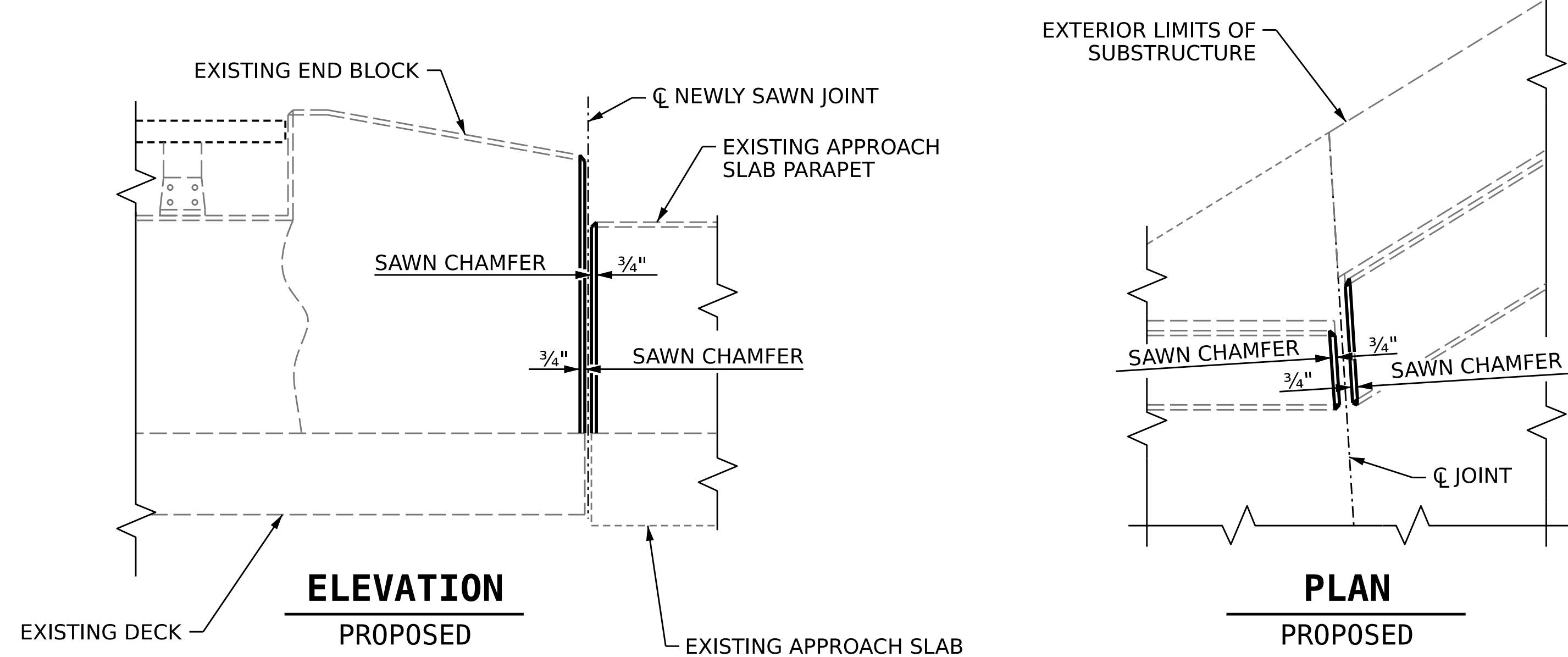
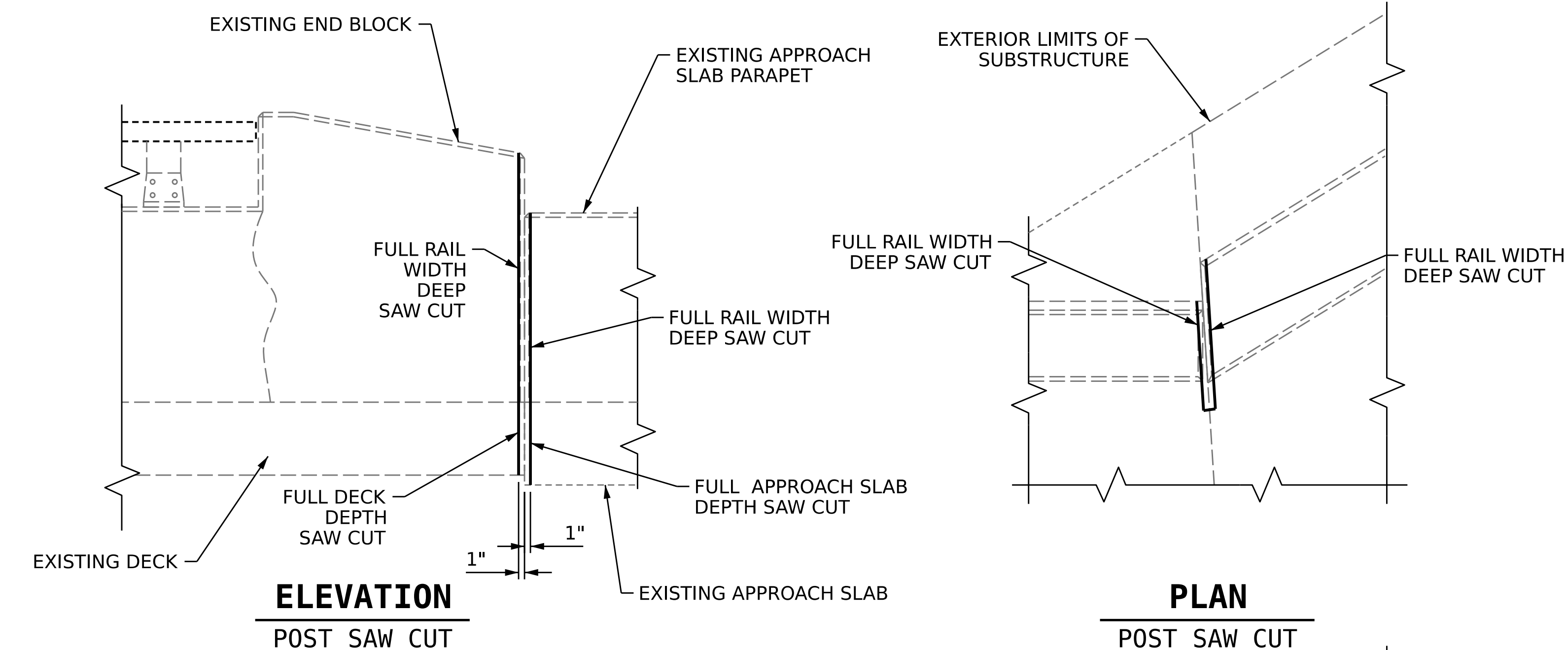
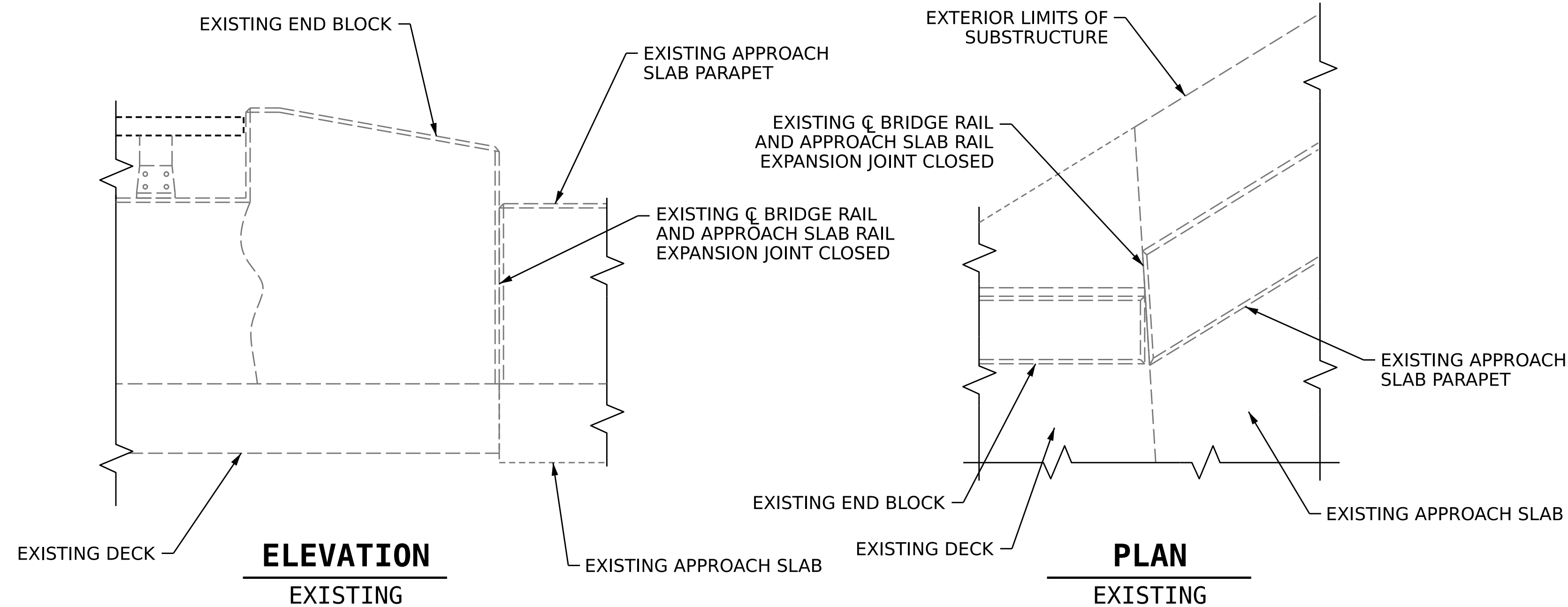
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

EXPANSION JOINT SEAL REPAIR DETAILS

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 CHECKED BY : A.Y.GODFREY DATE : 10/2022
 DESIGN ENGINEER OF RECORD: N.A. PIERCE DATE : 12/2022



NOTES

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

THE CONTRACTOR SHALL TAKE CARE DURING BARRIER RAIL REHAB OPERATIONS NOT TO DROP ANY MATERIAL BELOW THE BRIDGE, WITHOUT PROTECTIVE DEVICES BELOW TO CATCH THE MATERIAL. ANY MATERIAL THAT FALL 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 BEING EMPLOYED, THE WORK SHALL BE SUSPENDED UNTIL ADEQUATE PROTECTION IS PROVIDED.

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

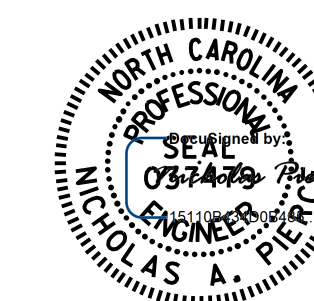
SAW CUT 1 INCH MEASURED FROM THE ENDS OF THE EXISTING END BLOCK OR PARAPET AS SHOWN ON THE PLANS. CARE SHALL BE TAKEN NOT TO CUT OR DAMAGE REINFORCING STEEL DURING CONCRETE REMOVAL. ANY DAMAGED OR EXPOSED REINFORCING STEEL SHALL BE EPOXY COATED AS DIRECTED BY THE ENGINEER AND SHALL BE INCIDENTAL TO THE CONCRETE BARRIER RAIL REPAIR.

SAW CUT 3/4 INCH CHAMFERS ON ALL EXPOSED FACES OF THE BARRIER RAILS ON FRESHLY CUT EXPANSION JOINTS.

FOR CONCRETE BARRIER REPAIR LOCATIONS, SEE DECK SURFACE REPAIR SHEETS.

SAW CUTTING CONCRETE BARRIER RAIL	
DESCRIPTION	QUANTITY
FULL RAIL WIDTH DEEP AND FULL DECK DEPTH SAW CUT	1 EA.
FULL RAIL WIDTH DEEP AND APPROACH SLAB FULL DEPTH SAW CUT	1 EA.

PROJECT NO. **15BPR.59**
DURHAM COUNTY
 BRIDGE NO. **310306**



12/08/2022

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 RALEIGH

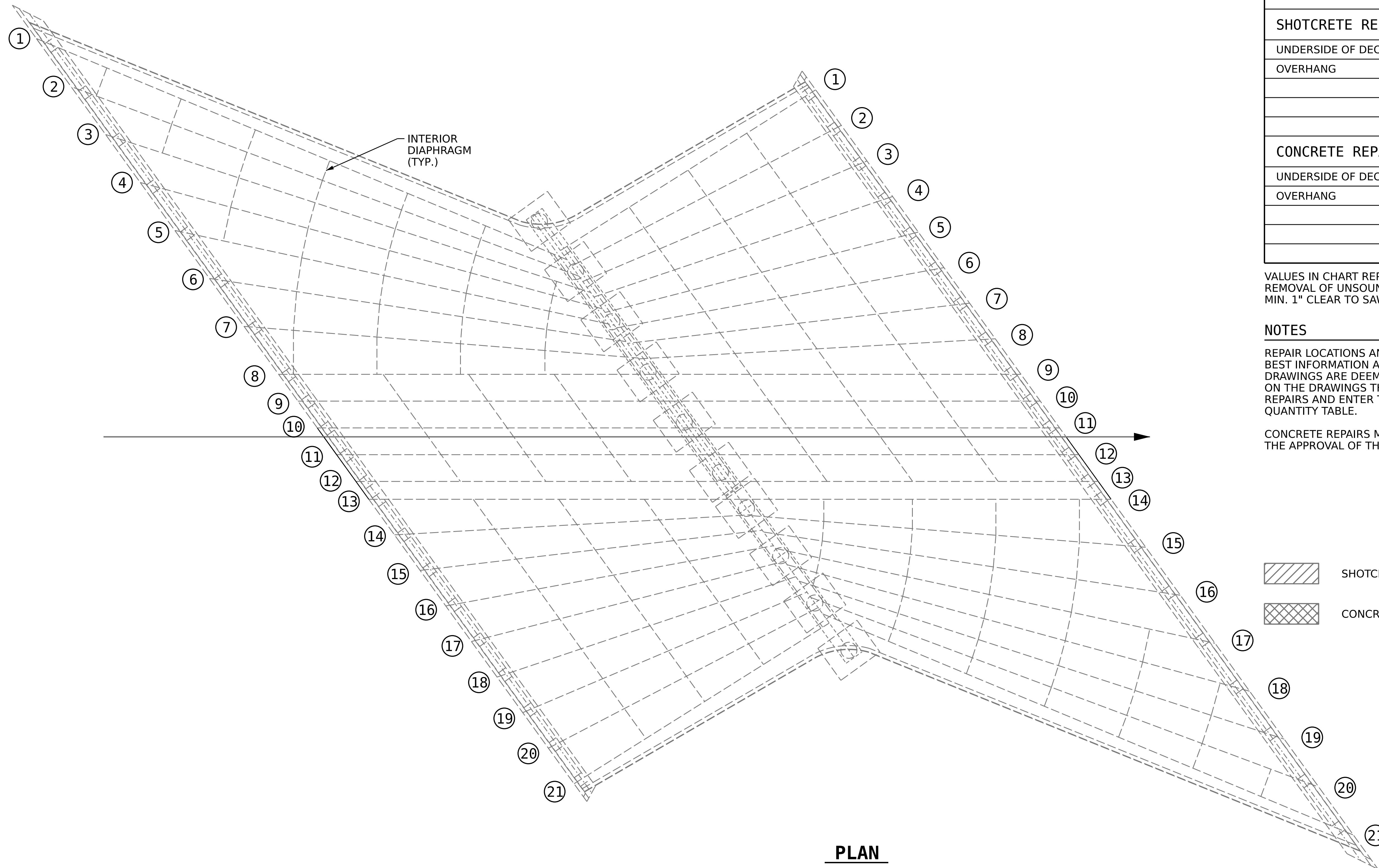
CONCRETE BARRIER RAIL REPAIR

DRAWN BY : N.A. PIERCE / R.L. PUTEK DATE : 09/2022
 CHECKED BY : A.Y. GODFREY DATE : 10/2022
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 12/2022

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1			3			TOTAL SHEETS
2			4			15

8/26/21



INTERIOR
DIAPHRAGM
(TYP.)

PLAN

DECK UNDERSIDE REPAIR QUANTITY TABLE

SPAN A & SPAN B	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0	0		
OVERHANG	0	0		
	0	0		
	0	0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0	0		
OVERHANG	0	0		
	0	0		
	0	0		

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

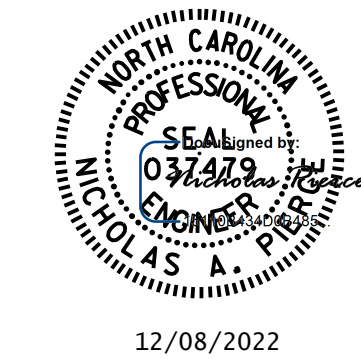
NOTES

REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN BASED ON THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ENTER THE ACTUAL QUANTITIES INTO THE DECK UNDERSIDE REPAIR QUANTITY TABLE.

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

- SHOTCRETE REPAIR AREA
- CONCRETE REPAIR AREA

PROJECT NO. **15BPR.59**
DURHAM COUNTY
 BRIDGE NO. **310306**



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 DECK UNDERSIDE REPAIR
SPAN A & SPAN B

DRAWN BY : N.A. PIERCE DATE : 03/2022
 CHECKED BY : A.Y.GODFREY DATE : 10/2022
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 12/2022

REVISIONS						SHEET NO. S1-10 TOTAL SHEETS 15
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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 SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ENTER THE ACTUAL QUANTITIES INTO THE SUBSTRUCTURE REPAIR QUANTITY TABLE.


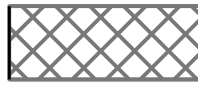

CLEAN AND REMOVE DEBRIS FROM THE TOP OF THE CAP AND APPLY EPOXY PROTECTIVE COATING. EPOXY COATING SHALL BE APPLIED TO THE TOP SURFACE OF THE CAP. THE CONTRACTOR SHALL NOT COAT THE AREA OF THE CAP BENEATH THE MASONRY PLATES.

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

REMOVAL OF DEBRIS AND DISPOSAL OF EXISTING JOINT SEALANT MATERIAL FROM SLOPE PROTECTION PRIOR TO PLACEMENT OF BACKER ROD AND POURABLE SILICONE JOINT SEALANT SHALL BE CONSIDERED INCIDENTAL TO CONSTRUCTION.

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

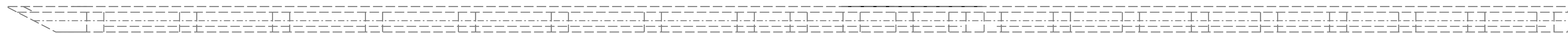
THE INSTALLED POURABLE SILICONE JOINT SEALANT SHALL BE WATER TIGHT.

-  SHOTCRETE REPAIR AREA
-  CONCRETE REPAIR AREA
-  EPOXY RESIN INJECTION

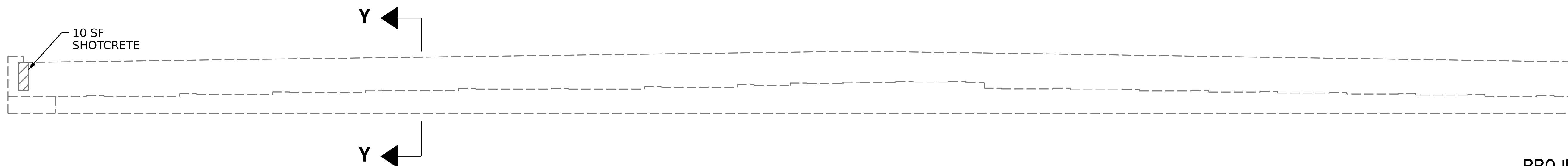
SUBSTRUCTURE REPAIR QUANTITY TABLE

END BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
BACKWALL	10	5		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
BACKWALL	0	0		
EPOXY RESIN INJECTION		LINEAR FT		LINEAR FT
CAP		0		
BACKWALL		0		
EPOXY COATING		AREA SF		AREA SF
CAP		1050		
POURABLE SILICONE JT. SEALANT		LINEAR FT		LINEAR FT
JOINT		630		

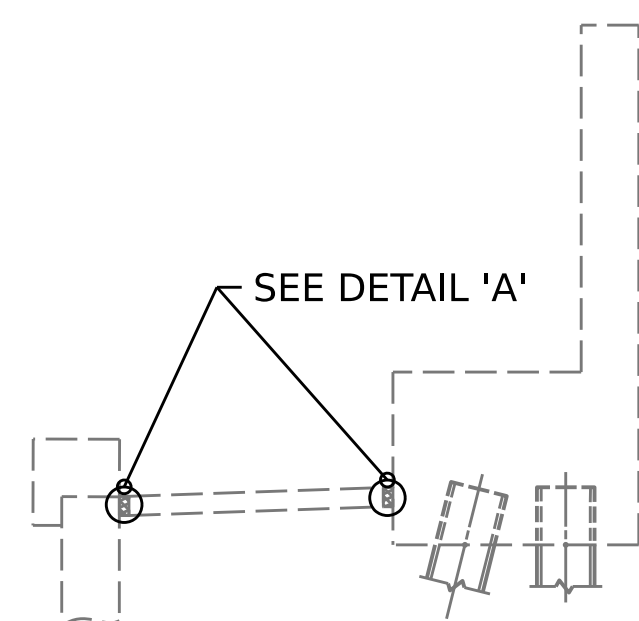
VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 1" CLEAR TO SAWCUT. SEE REPAIR DETAILS.



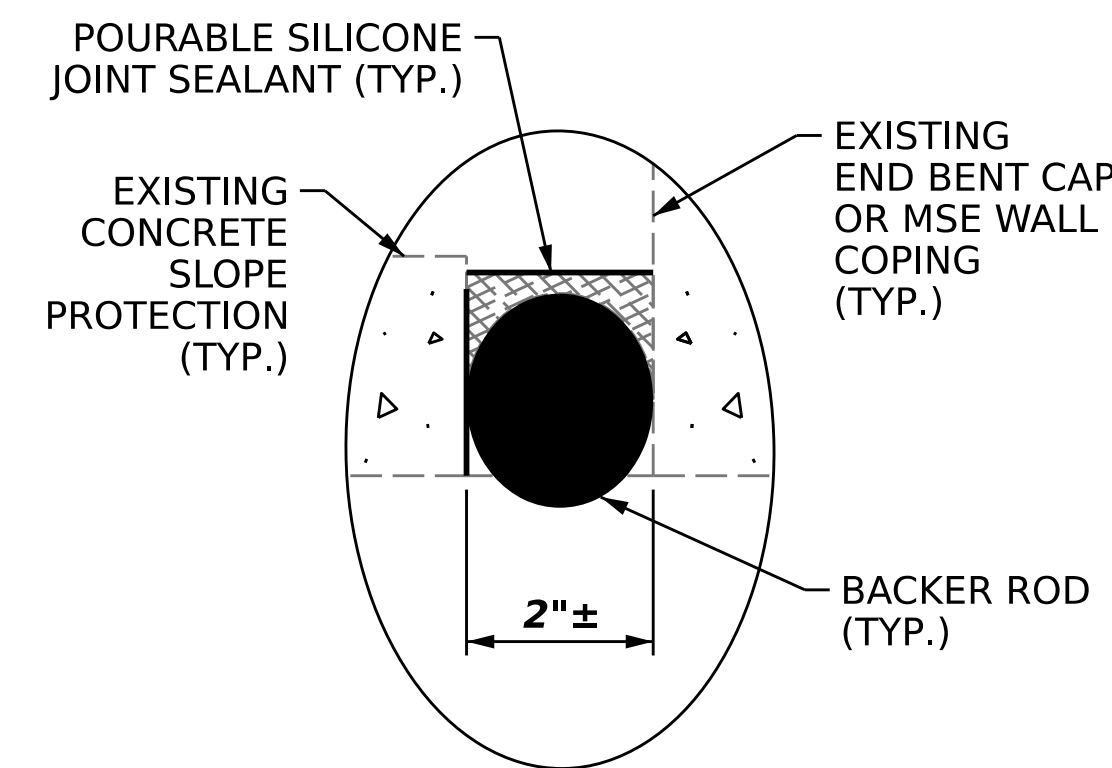
PLAN



ELEVATION

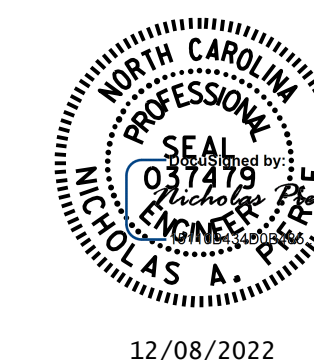


SECTION Y-Y



DETAIL 'A'

PROJECT NO. **15BPR.59**
DURHAM COUNTY
 BRIDGE NO. **310306**



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE REPAIR
END BENT 1

REVISIONS						SHEET NO. S1-11 TOTAL SHEETS 15
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DRAWN BY : N.A. PIERCE DATE : 04/2022
 CHECKED BY : A.Y.GODFREY DATE : 10/2022
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 12/2022

SUBSTRUCTURE REPAIR QUANTITY TABLE				
BENT 1 - SPAN A FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
COLUMN	0	0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
COLUMN	0	0		
EPOXY RESIN INJECTION		LINEAR FT		LINEAR FT
CAP		0		
COLUMN		0		
EPOXY COATING		AREA SF		AREA SF
CAP		927		

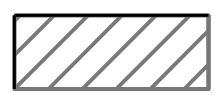
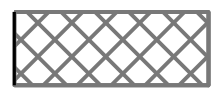

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE MIN. OF 1" BEHIND REBAR AND MIN. 1" CLEAR TO SAWCUT. SEE REPAIR DETAILS.

NOTES

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

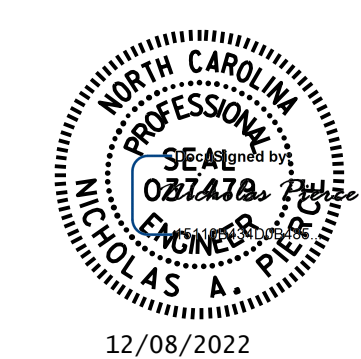
CLEAN AND REMOVE DEBRIS FROM THE TOP OF THE CAP AND APPLY EPOXY PROTECTIVE COATING. EPOXY COATING SHALL BE APPLIED TO THE TOP SURFACE OF THE CAP. THE CONTRACTOR SHALL NOT COAT THE AREA OF THE CAP BENEATH THE MASONRY PLATES. FOR EPOXY COATING, SEE SPECIAL PROVISIONS.

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

-  SHOTCRETE REPAIR AREA
-  CONCRETE REPAIR AREA
-  EPOXY RESIN INJECTION

PROJECT NO. **15BPR.59**
DURHAM COUNTY
 BRIDGE NO. **310306**

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE REPAIR
**BENT 1
 SPAN A FACE**



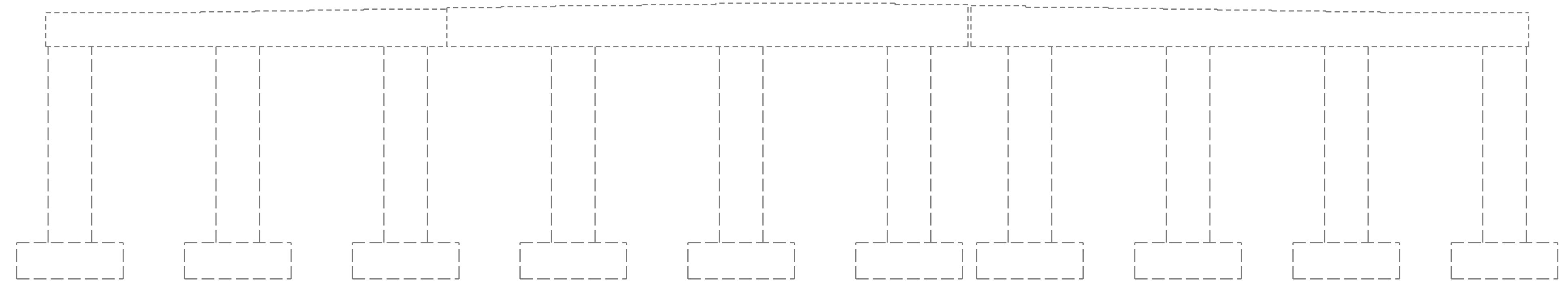
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

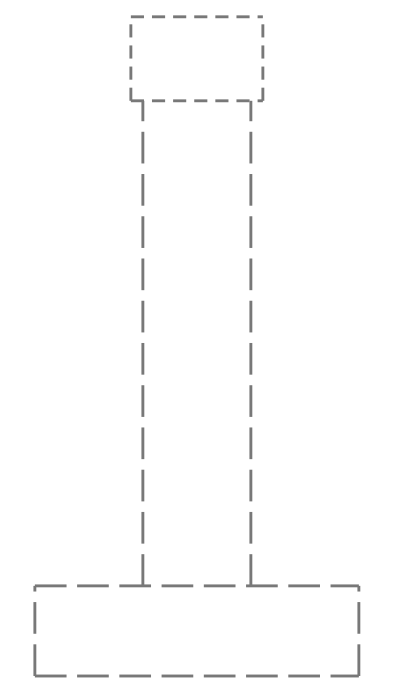
TOTAL SHEETS	15
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PLAN



ELEVATION



WEST END

DRAWN BY : N.A. PIERCE DATE : 04/2022
 CHECKED BY : A.Y.GODFREY DATE : 10/2022
 DESIGN ENGINEER OF RECORD: N.A. PIERCE DATE : 12/2022

SUBSTRUCTURE REPAIR QUANTITY TABLE				
BENT 1 - SPAN B FACE	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
COLUMN	0	0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
COLUMN	0	0		
EPOXY RESIN INJECTION		LINEAR FT		LINEAR FT
CAP		0		
COLUMN		0		

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

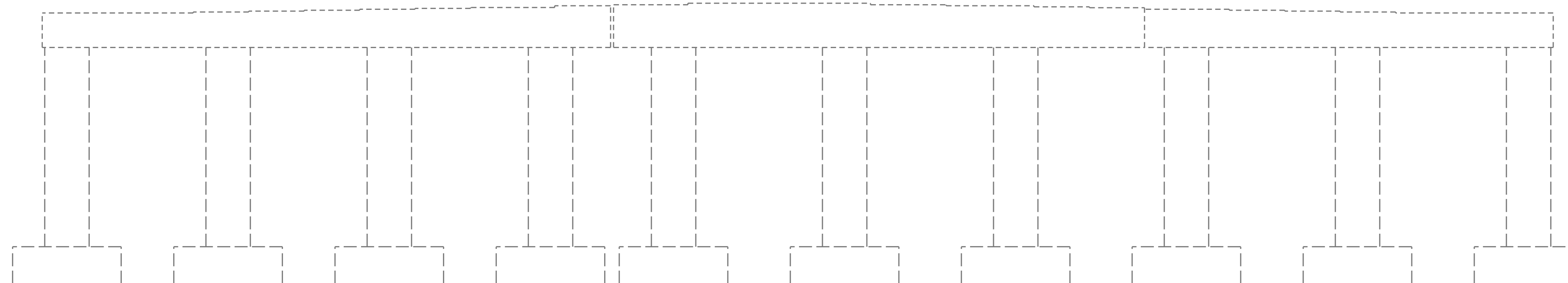
NOTES

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

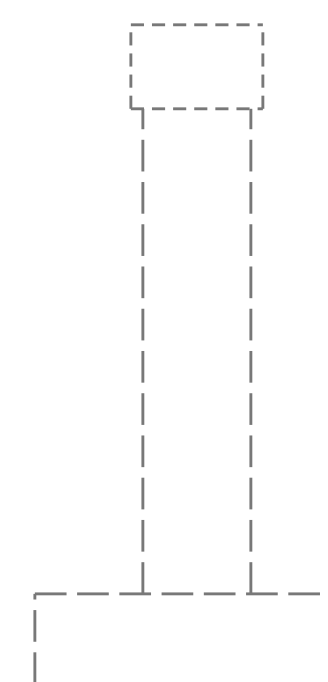
CONCRETE REPAIRS MAYBE SUBSTITUTED IN LIEU OF SHOTCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.




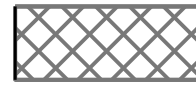

BOTTOM OF CAP



ELEVATION



EAST END

-  SHOTCRETE REPAIR AREA
-  CONCRETE REPAIR AREA
-  EPOXY RESIN INJECTION

PROJECT NO. **15BPR.59**
DURHAM COUNTY
 BRIDGE NO. **310306**



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE REPAIR
**BENT 1
 SPAN B FACE**

DRAWN BY : N.A. PIERCE DATE : 04/2022
 CHECKED BY : A.Y.GODFREY DATE : 10/2022
 DESIGN ENGINEER OF RECORD: N.A. PIERCE DATE : 12/2022

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS					SHEET NO. S1-13 TOTAL SHEETS 15
NO.	BY:	DATE:	NO.	BY:	
1			3		
2			4		

NOTES

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

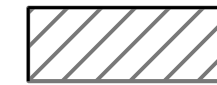


CLEAN AND REMOVE DEBRIS FROM THE TOP OF THE CAP AND APPLY EPOXY PROTECTIVE COATING. EPOXY COATING SHALL BE APPLIED TO THE TOP SURFACE OF THE CAP. THE CONTRACTOR SHALL NOT COAT THE AREA OF THE CAP BENEATH THE MASONRY PLATES.

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

REMOVAL OF DEBRIS AND DISPOSAL OF EXISTING JOINT SEALANT MATERIAL FROM SLOPE PROTECTION PRIOR TO PLACEMENT OF BACKER ROD AND POURABLE SILICONE JOINT SEALANT SHALL BE CONSIDERED INCIDENTAL TO CONSTRUCTION.

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

THE INSTALLED POURABLE SILICONE JOINT SEALANT SHALL BE WATER TIGHT.

-  SHOTCRETE REPAIR AREA
-  CONCRETE REPAIR AREA
-  EPOXY RESIN INJECTION

SUBSTRUCTURE REPAIR QUANTITY TABLE

END BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
BACKWALL	0	0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
BACKWALL	0	0		
EPOXY RESIN INJECTION		LINEAR FT		LINEAR FT
CAP		0		
BACKWALL		0		
EPOXY COATING		AREA SF		AREA SF
CAP		1052		
POURABLE SILICONE JT. SEALANT		LINEAR FT		LINEAR FT
JOINT		630		

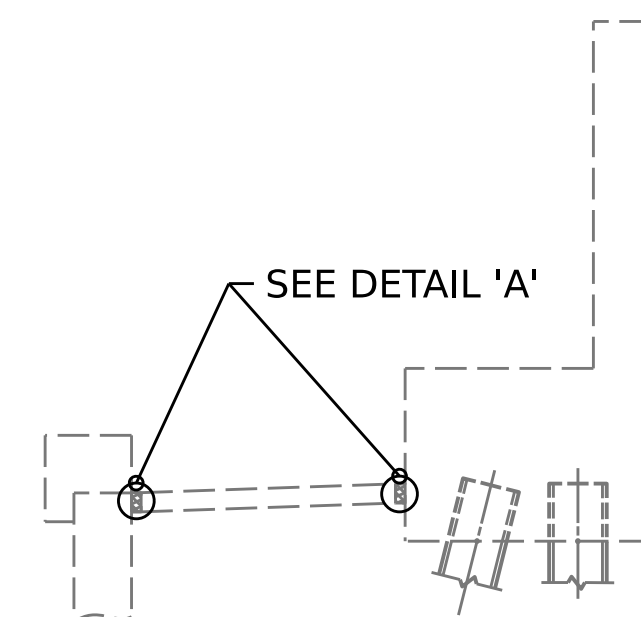
VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 1" CLEAR TO SAWCUT. SEE REPAIR DETAILS.



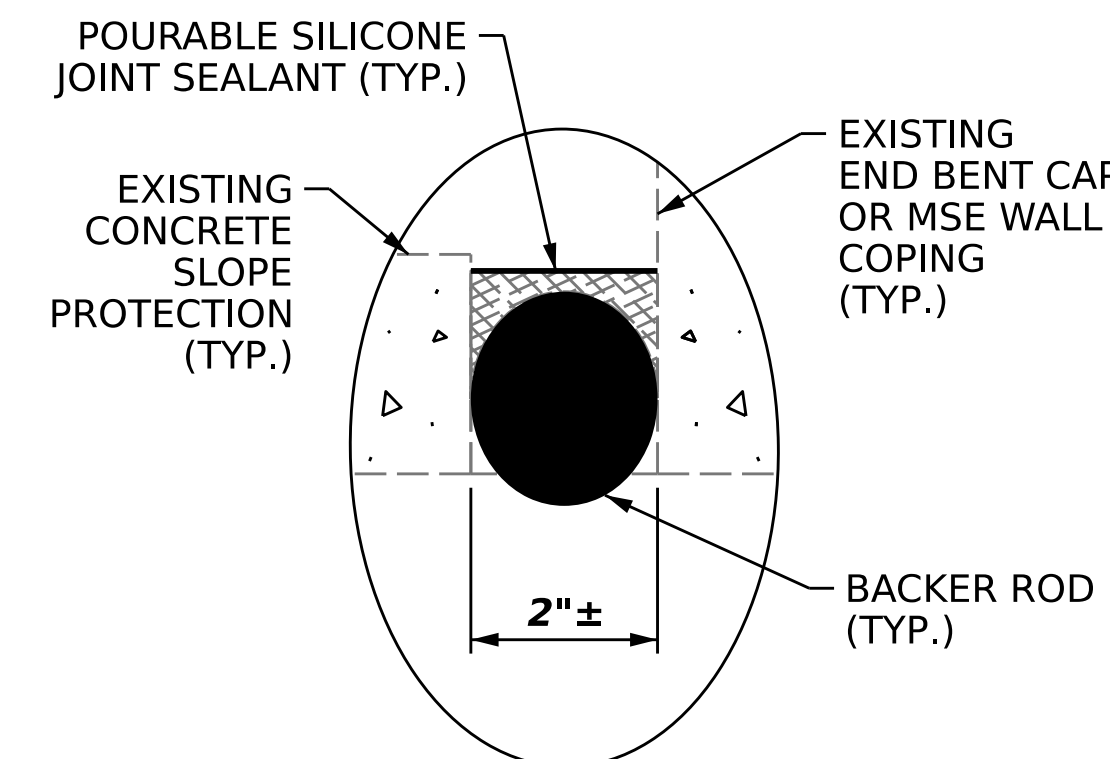
PLAN



ELEVATION

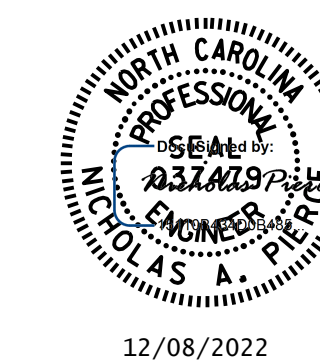


SECTION X-X



DETAIL 'A'

PROJECT NO. 15BPR.59
DURHAM COUNTY
BRIDGE NO. 310306



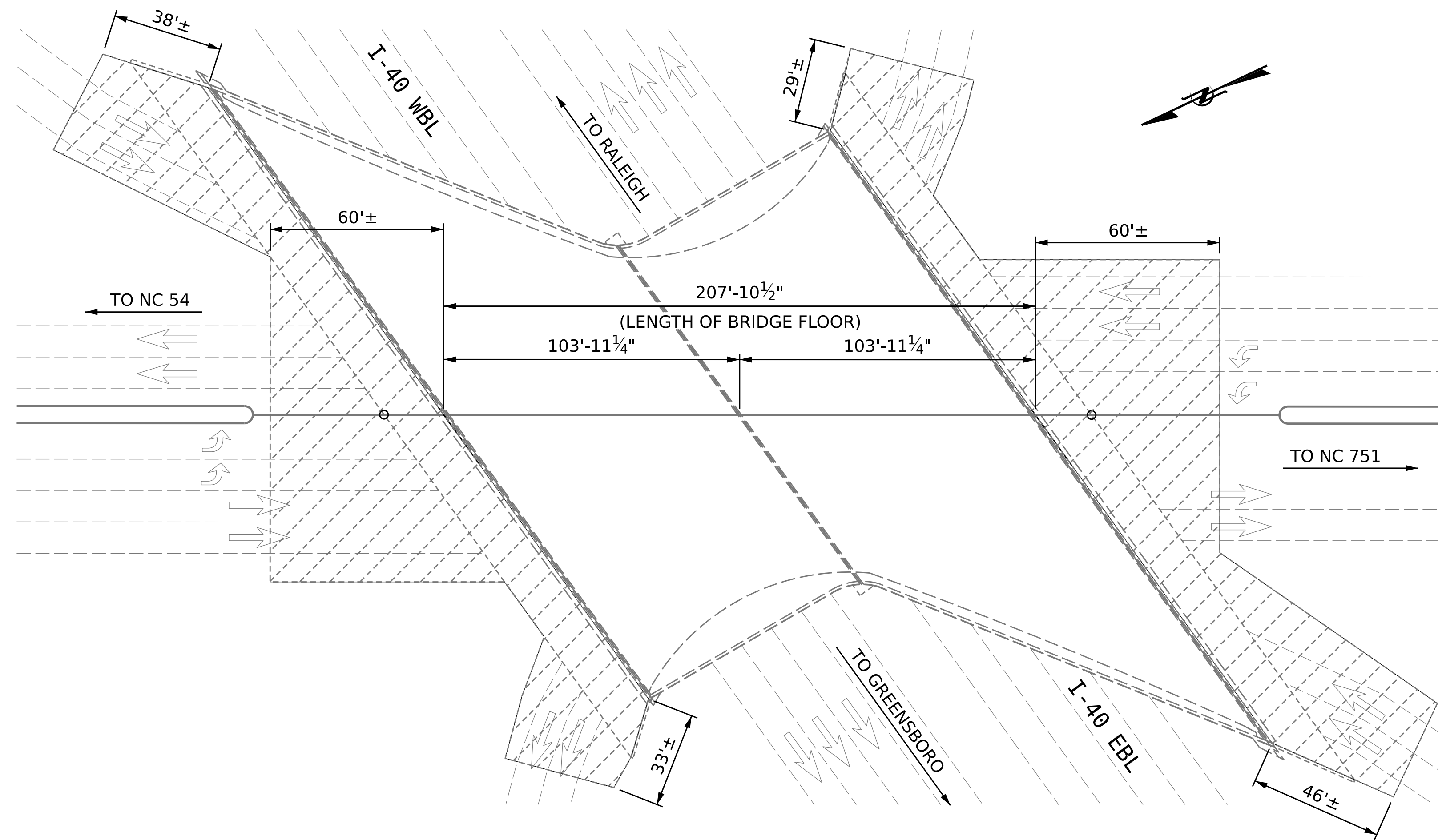
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE REPAIR

END BENT 2

DRAWN BY : N.A. PIERCE DATE : 04/2022
CHECKED BY : A.Y.GODFREY DATE : 10/2022
DESIGN ENGINEER OF RECORD: N.A. PIERCE DATE : 12/2022

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

REVISIONS						SHEET NO. S1-14 TOTAL SHEETS 15
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			



NOTES

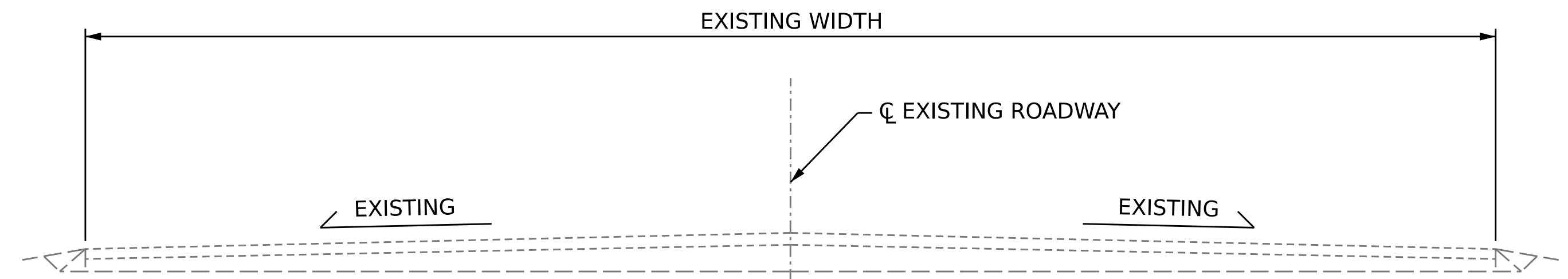
EXISTING APPROACH ASPHALT PAVEMENT SHALL BE MILLED AS NECESSARY TO ATTAIN MINIMUM 1 1/2" DEPTH OF NEW ASPHALT PAVEMENT. NEW ASPHALT PAVEMENT SHALL BE OF THICKNESS NECESSARY TO PROVIDE A SMOOTH TRANSITION BETWEEN THE ROADWAY AND THE BRIDGE DECK. THE NEW ASPHALT PAVEMENT THICKNESS MAY EXCEED 1 1/2" DUE TO SETTLEMENT OF THE EXISTING APPROACH.

EXISTING INDUCTIVE LOOPS ARE ANTICIPATED TO FALL WITHIN THE LIMITS OF APPROACH MILLING AT VARIOUS LOCATIONS. EXISTING INDUCTIVE LOOPS THAT ARE REMOVED OR DAMAGED DURING THE MILLING PROCESS ARE TO BE REPLACED IN ACCORDANCE WITH THE 2018 NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES SECTION 1098-8 AND 1098-9 ALONG WITH NCDOT STANDARD ROADWAY DRAWING 1725.01.

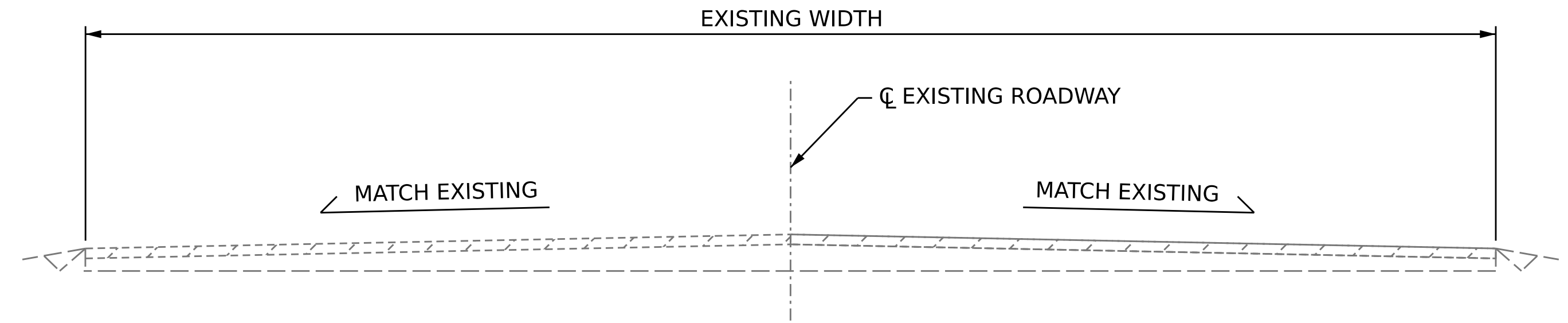
SUMMARY OF QUANTITIES		
	ESTIMATE	ACTUAL
INCIDENTAL MILLING	2848.4 SQ.YD.	
ASPHALT CONC SURFACE COURSE, TYPE S9.5B	240.0 TONS	
ASPHALT BINDER FOR PLANT MIX	20 TONS	
INDUCTIVE LOOP SAWCUT	1600 LIN. FT.	
LEAD IN CABLE	400 LIN. FT.	

C1	PROPOSED VARIABLE DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1 1/2" IN DEPTH OR GREATER THAN 2" IN DEPTH.
E	EXISTING PAVEMENT

INCIDENTAL MILLING

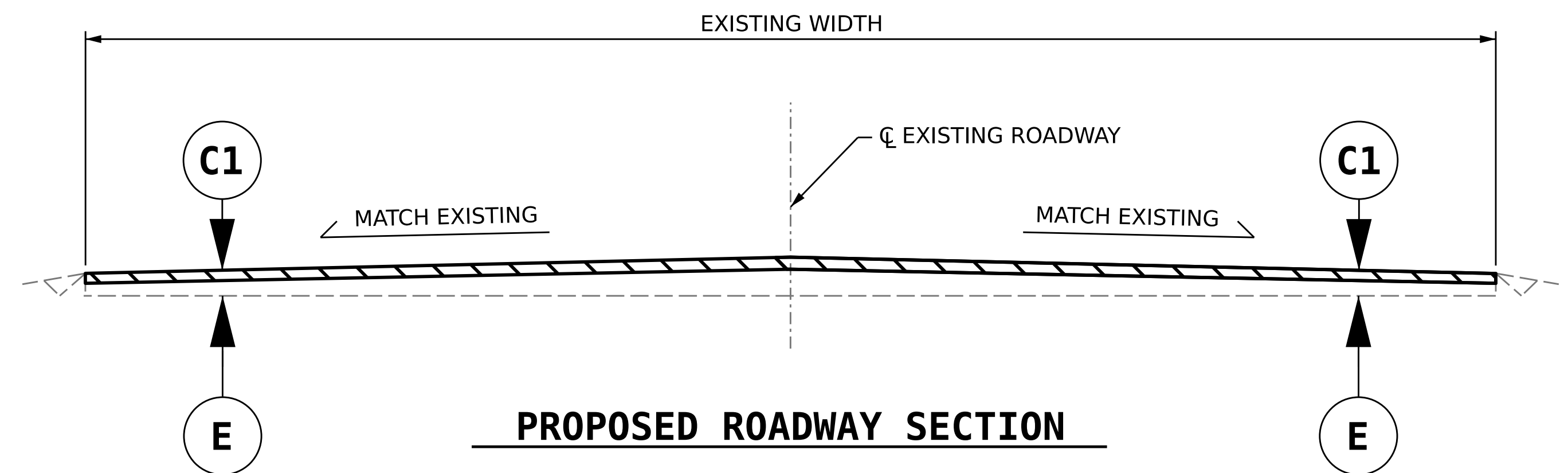


EXISTING ROADWAY SECTION



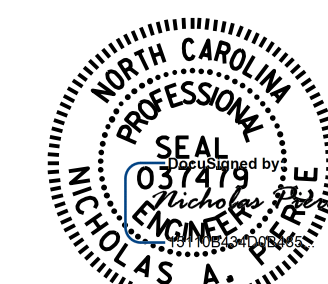
TYPICAL ROADWAY MILLING SECTION

(MILL TO 1 1/2" DEPTH)



PROPOSED ROADWAY SECTION

PROJECT NO. **15BPR.59**
DURHAM COUNTY
 BRIDGE NO. **310306**



12/08/2022

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

INCIDENTAL MILLING AND TYPICAL ROADWAY SECTIONS

DRAWN BY : R.L.PUTEK DATE : 10/2022
 CHECKED BY : A.Y.GODFREY DATE : 10/2022
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 12/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

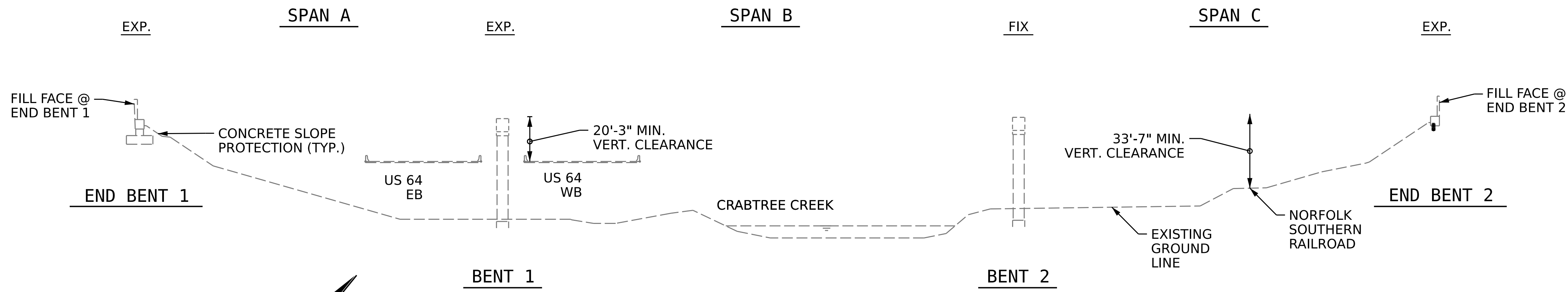
NOTES

GENERAL DRAWING INFORMATION IS TAKEN FROM THE ORIGINAL PLANS AND THE ROUTINE INSPECTION REPORT DATED 03/08/2021.

BRIDGE ORIENTATION CONFORMS TO THE EXISTING BRIDGE PLANS.

SCOPE OF WORK

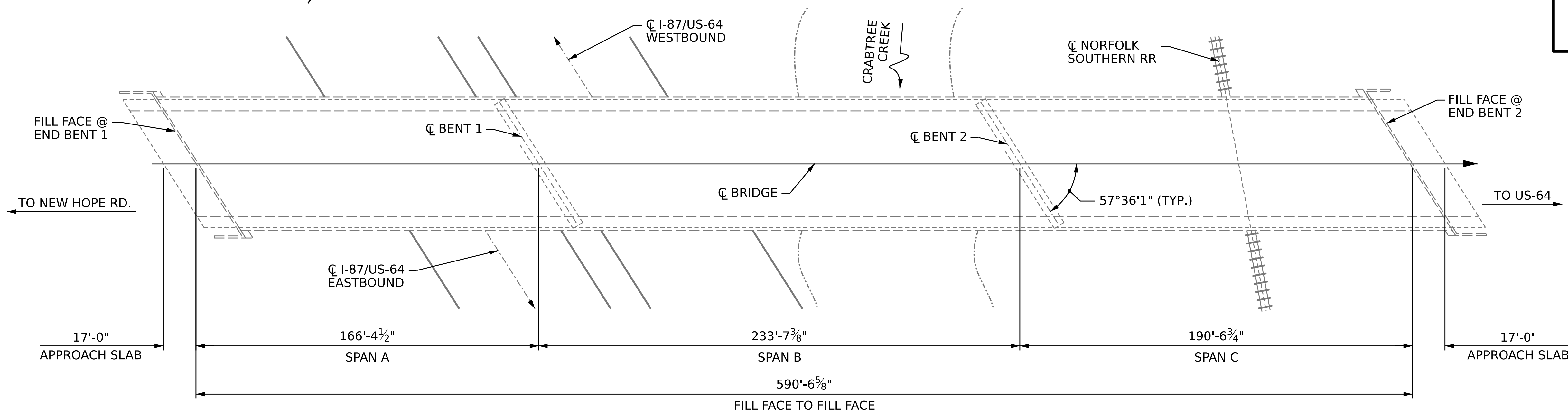
- SHOTBLAST BRIDGE DECK AND BARRIER RAILS.
- APPLY SILANE DECK TREATMENT TO PREPARED TOP OF BRIDGE DECK.
- APPLY SILANE BARRIER TREATMENT TO BARRIER RAILS.
- REPLACE EXISTING JOINT GLAND OF MODULAR EXPANSION JOINT.
- REPLACE EXISTING JOINT GLAND OF EXPANSION JOINT SEAL.
- REPLACE DAMAGED SECTIONS OF 3 BAR METAL RAIL.
- CLEAN AND PAINT WEATHERING STEEL.
- REMOVE DEBRIS FROM TOP OF EXISTING END BENT & BENT CAPS AND APPLY EPOXY COATING.



SECTION ALONG CL BRIDGE

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

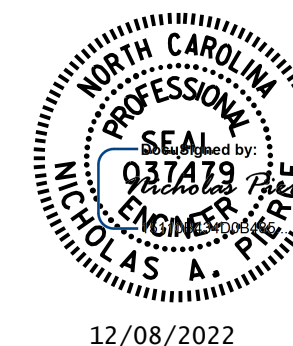
RESIDENT ENGINEER _____ DATE _____



PLAN

PROJECT NO. 15BPR.59
WAKE COUNTY
 BRIDGE NO. 911039

Drawn/Checked by:
 Kristy Alford
 12/08/2022



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE ON SR 2517
 (ROGERS LANE) OVER I-87,
 US64/264, CRABTREE CREEK
 AND NS RAILROAD

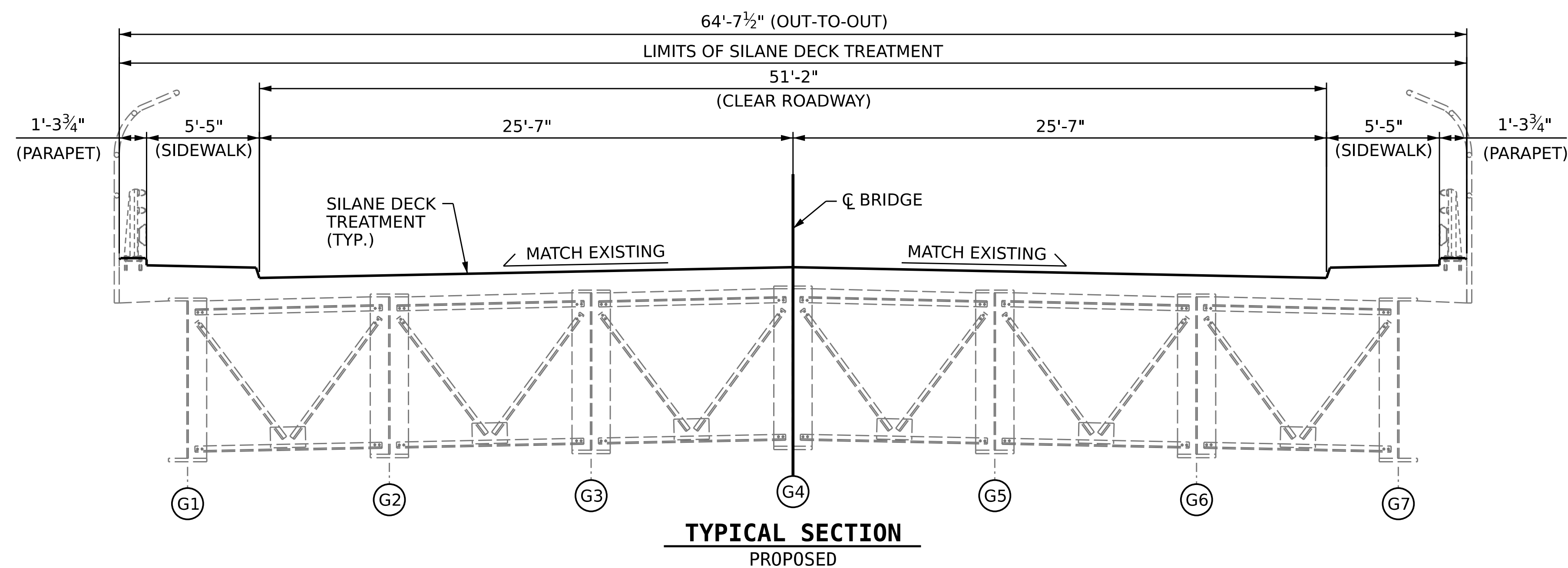
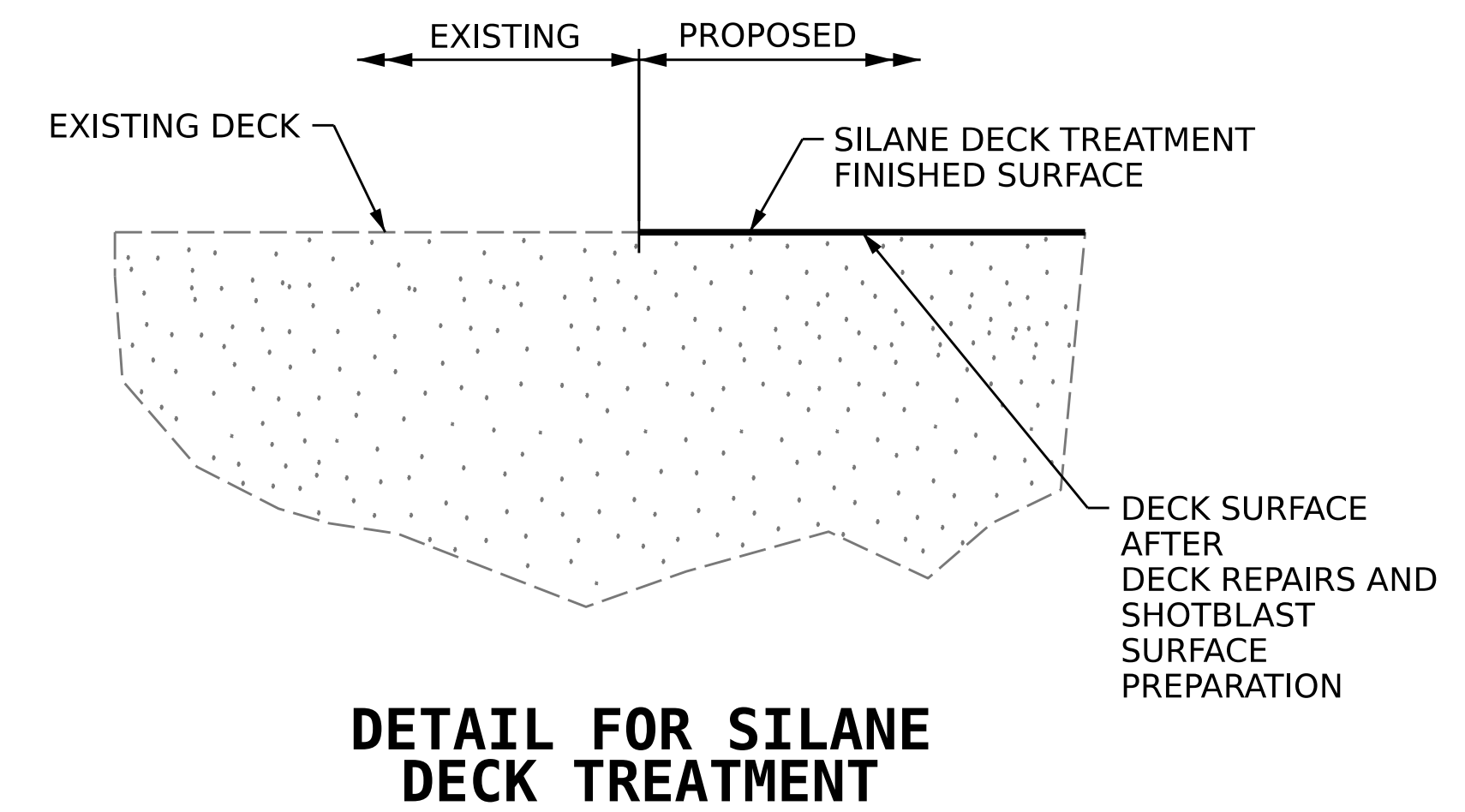
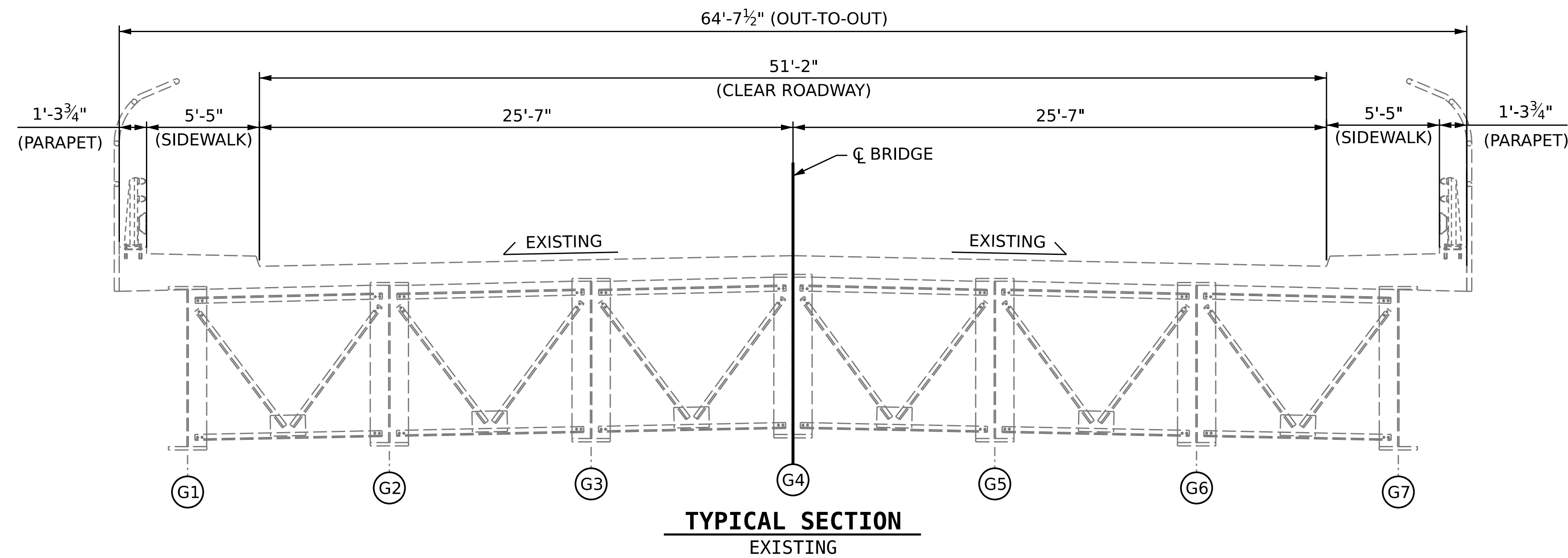
DRAWN BY : D.A. CANTRELL/A.Y. GODFREY DATE : 09/2022
 CHECKED BY : N.A. PIERCE DATE : 10/2022
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 12/2022

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

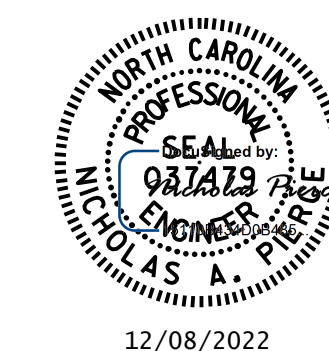
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-01
1			3			TOTAL SHEETS
2			4			18

NOTES

SEE TRAFFIC MANAGEMENT PLANS FOR LANE WIDTHS, SEQUENCING, AND OTHER TRAFFIC CONTROL MEASURES FOR SURFACE PREPARATION AND SILANE DECK TREATMENT APPLICATION.



PROJECT NO. **15BPR.59**
 WAKE COUNTY
 BRIDGE NO. **911039**



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

TYPICAL SECTION

DRAWN BY : D.A. CANTRELL/A.Y. GODFREY DATE : 09/2022
 CHECKED BY : N.A. PIERCE DATE : 10/2022
 DESIGN ENGINEER OF RECORD: N.A. PIERCE DATE : 12/2022

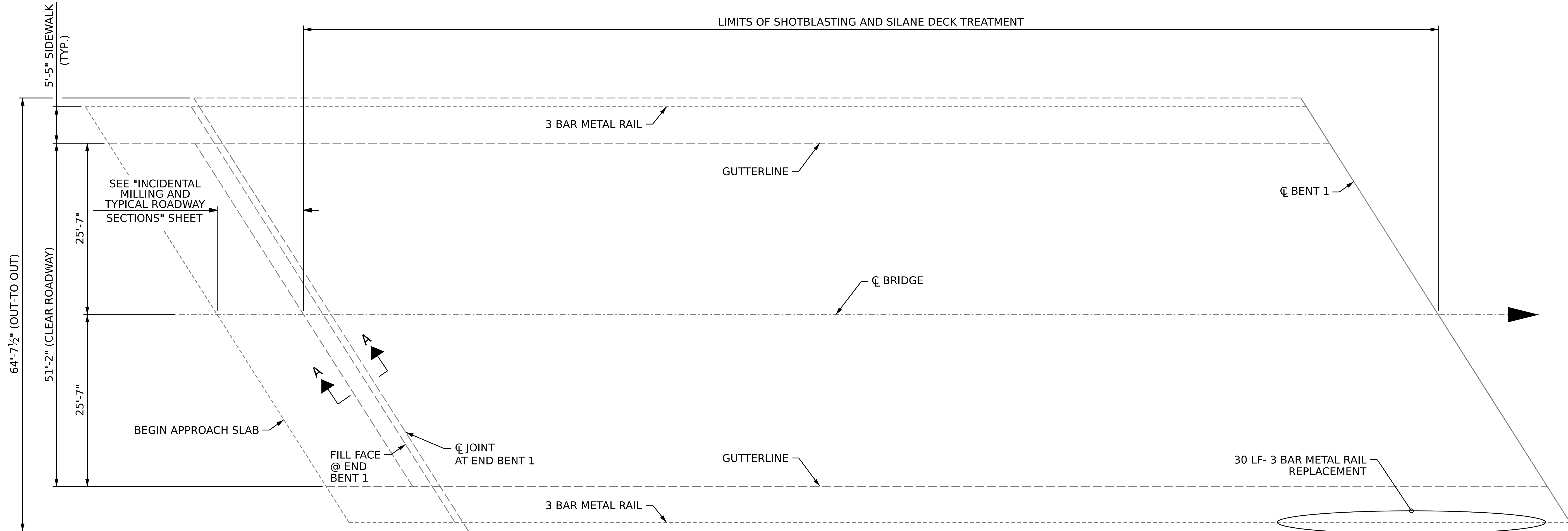
DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO. S2-02 TOTAL SHEETS 18
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

8/26/21

DECK SURFACE REPAIR QUANTITY TABLE

APPROACH SLAB A			SPAN A		
	ESTIMATE	ACTUAL		ESTIMATE	ACTUAL
3 BAR METAL RAIL REPLACEMENT	0.0 L.F.		3 BAR METAL RAIL REPLACEMENT	30.0 L.F.	
SHOTBLASTING BRIDGE DECK	19.7 SQ. YDS.		SHOTBLASTING BRIDGE DECK	1,348.0 SQ. YDS.	
SILANE DECK TREATMENT	19.7 SQ. YDS.		SILANE DECK TREATMENT	1,348.0 SQ. YDS.	
CONCRETE DECK REPAIR FOR SILANE TREATMENT	0.0 SQ. FT.		CONCRETE DECK REPAIR FOR SILANE TREATMENT	0.0 SQ. FT.	



APPROACH SLAB A

SPAN A

NOTES

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

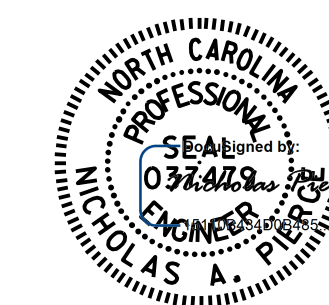
FOR SECTION A-A, SEE "MODULAR EXPANSION JOINT REPAIR" SHEET.

PROJECT NO. **15BPR.59**

WAKE COUNTY

BRIDGE NO. **911039**

SHEET 1 OF 3



12/08/2022

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK SURFACE REPAIR

SPAN A AND APPROACH SLAB A

DRAWN BY : D.A. CANTRELL/A.Y. GODFREY DATE : 09/2022
 CHECKED BY : N.A. PIERCE DATE : 10/2022
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 12/2022

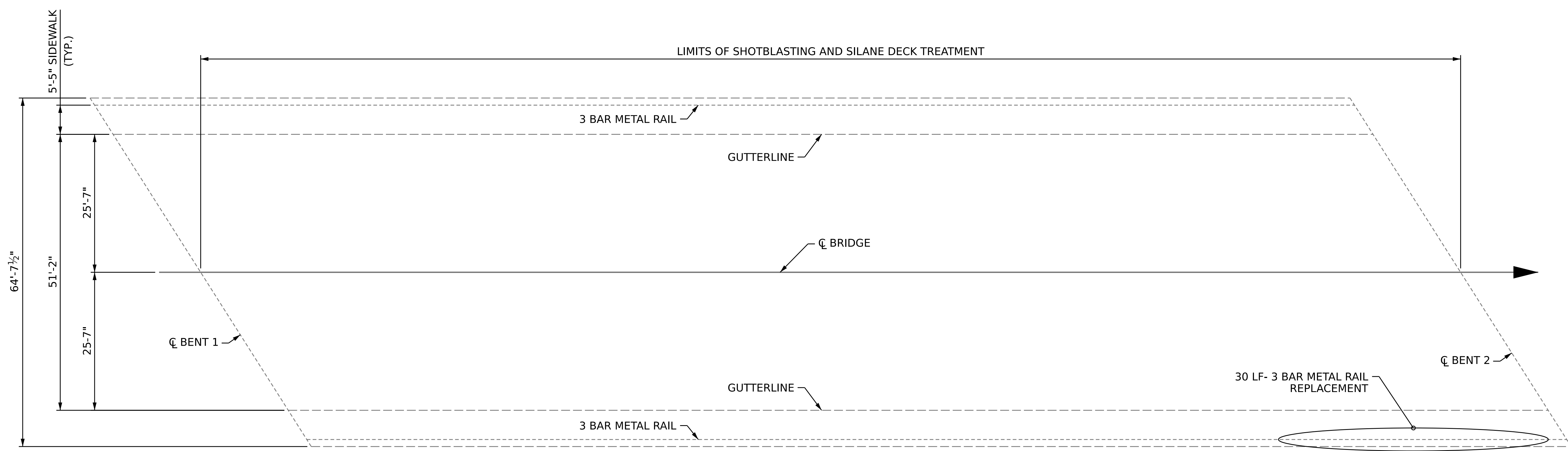
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S2-03
2			4			TOTAL SHEETS 18

DECK SURFACE REPAIR QUANTITY TABLE

SPAN B		
	ESTIMATE	ACTUAL
3 BAR METAL RAIL REPLACEMENT	30.0 L.F.	
SHOTBLASTING BRIDGE DECK	1,892.8 SQ. YDS.	
SILANE DECK TREATMENT	1,892.8 SQ. YDS.	
CONCRETE DECK REPAIR FOR SILANE TREATMENT	0.0 SQ. FT.	



SPAN B

NOTES

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

PROJECT NO. **15BPR.59**
WAKE COUNTY
 BRIDGE NO. **911039**

SHEET 2 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 DECK SURFACE REPAIR
SPAN B

DRAWN BY : D.A. CANTRELL/A.Y. GODFREY DATE : 09/2022
 CHECKED BY : N.A. PIERCE DATE : 10/2022
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 12/2022

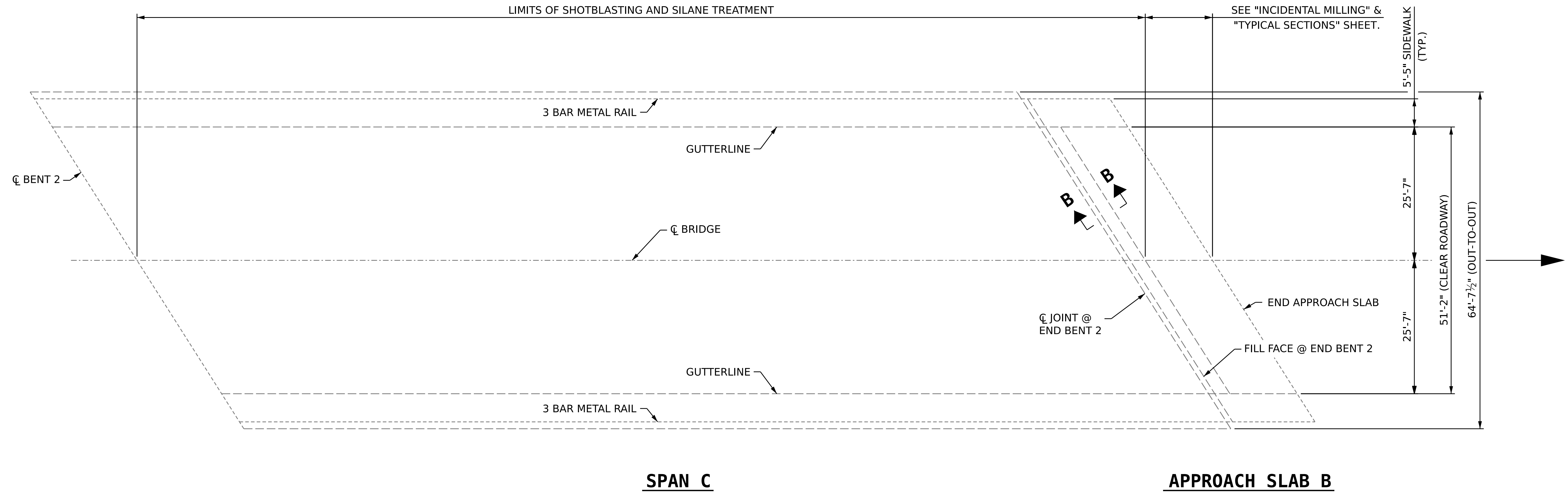
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-04
1			3			TOTAL SHEETS
2			4			18

8/26/21

DECK SURFACE REPAIR QUANTITY TABLE

APPROACH SLAB B			SPAN C		
	ESTIMATE	ACTUAL		ESTIMATE	ACTUAL
3 BAR METAL RAIL REPLACEMENT	0.0 L.F.		3 BAR METAL RAIL REPLACEMENT	0.0 L.F.	
SHOTBLASTING BRIDGE DECK	19.7 SQ. YDS.		SHOTBLASTING BRIDGE DECK	1,544.0 SQ. YDS.	
SILANE DECK TREATMENT	19.7 SQ. YDS.		SILANE DECK TREATMENT	1,544.0 SQ. YDS.	
CONCRETE DECK REPAIR FOR SILANE TREATMENT	0.0 SQ. FT.		CONCRETE DECK REPAIR FOR SILANE TREATMENT	0.0 SQ. FT.	



NOTES

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

FOR SECTION B-B, SEE "EXPANSION JOINT SEAL REPAIR DETAILS" SHEET.

PROJECT NO. **15BPR.59**
WAKE COUNTY
 BRIDGE NO. **911039**

SHEET 3 OF 3



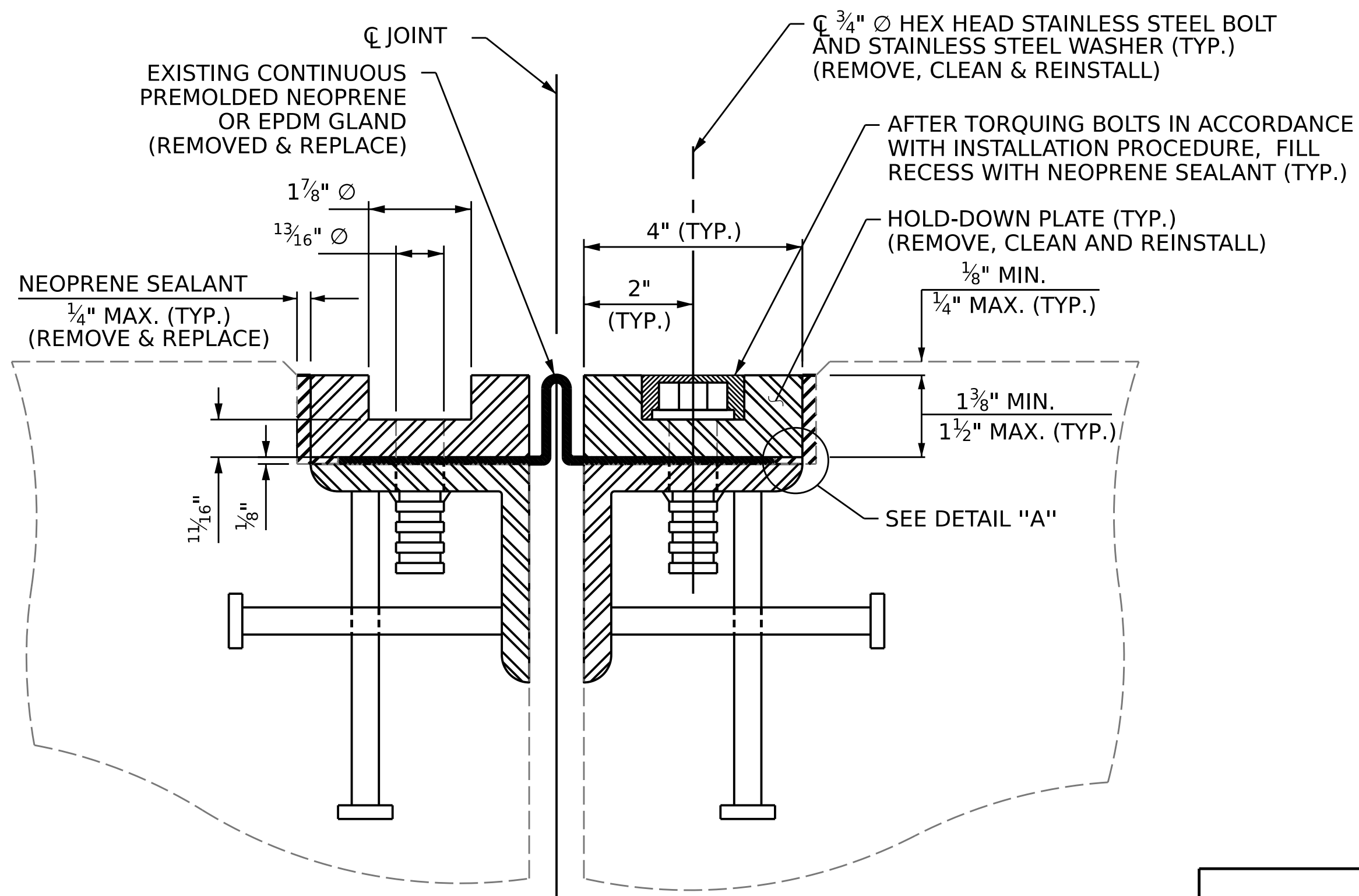
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 DECK SURFACE REPAIR
SPAN C AND APPROACH SLAB B

DRAWN BY : D.A. CANTRELL/A.Y. GODFREY DATE : 09/2022
 CHECKED BY : N.A. PIERCE DATE : 10/2022
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 12/2022

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REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			18



EXPANSION JOINT DETAILS
SECTION B-B

SUGGESTED REPAIR INSTALLATION PROCEDURE

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

GENERAL NOTES

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

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

THE CONTRACTOR SHALL TAKE CARE DURING JOINT REHAB OPERATIONS NOT TO DROP ANY MATERIAL BELOW THE BRIDGE, WITHOUT PROTECTIVE DEVICES BELOW TO CATCH THE MATERIAL. ANY MATERIAL THAT FALLS BELOW THE BRIDGE SHALL BE CONTAINED, REMOVED AND DISPOSED OF 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.

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

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

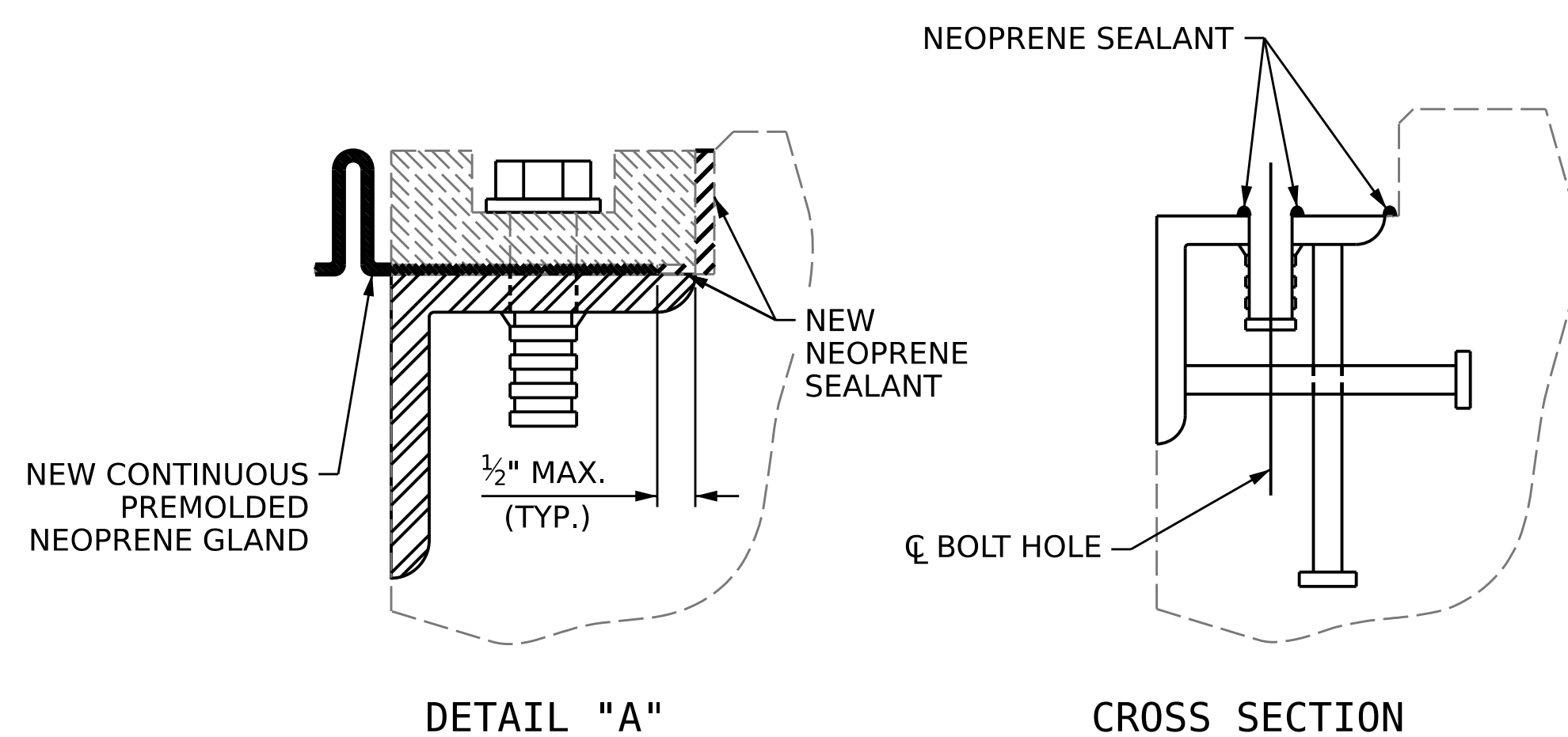
FOR EXPANSION JOINT SEAL FOR PRESERVATION, SEE SPECIAL PROVISIONS.

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

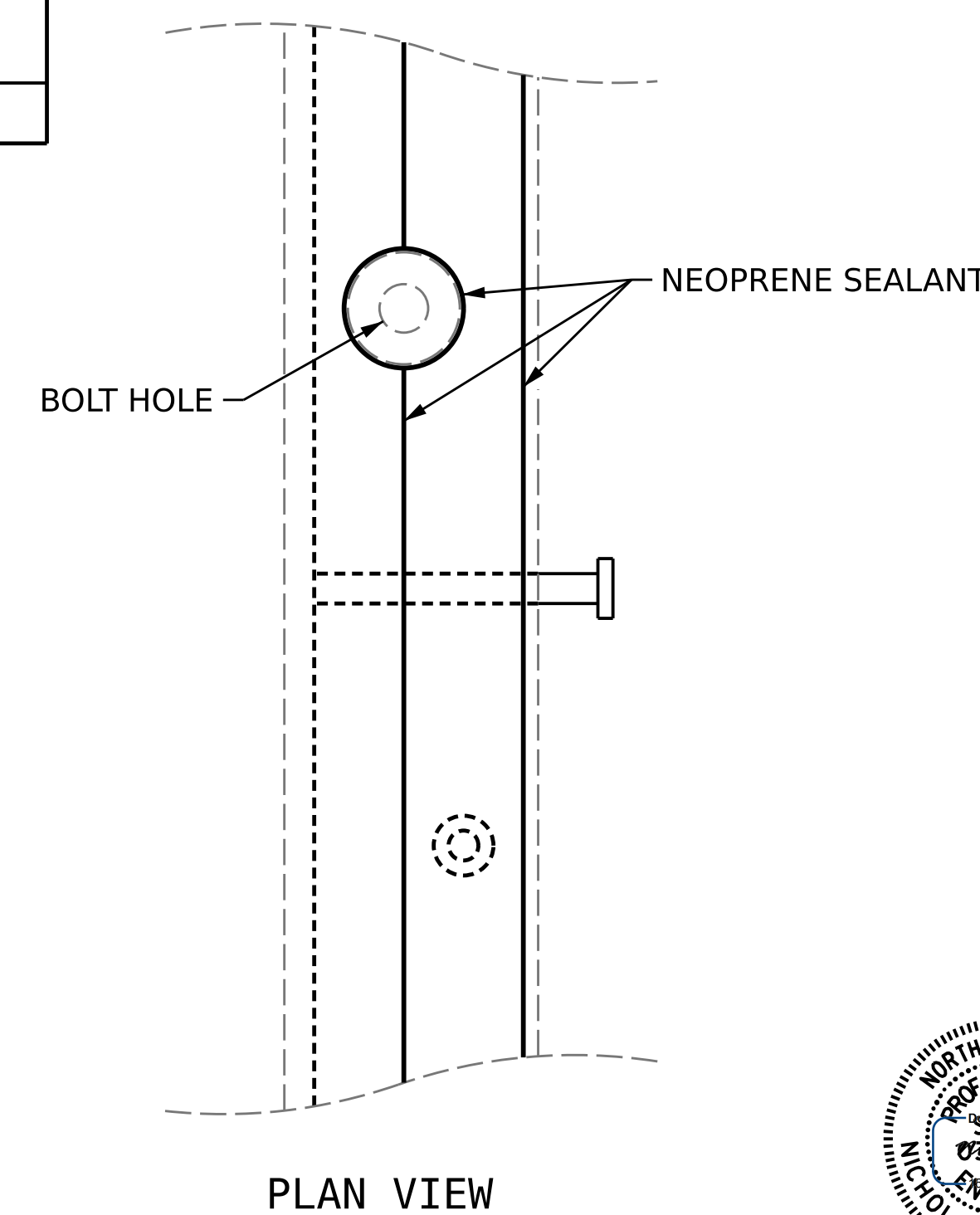
MOVEMENT AND SETTING AT JOINT					
LOCATION	SKEW ANGLE	TOTAL MOVEMENT (ALONG C RDWY)	PERPENDICULAR JOINT OPENING AT 32°F	PERPENDICULAR JOINT OPENING AT 60°F	PERPENDICULAR JOINT OPENING AT 90°F
END BENT 2	57° 36' 01"	2 1/4"	2 3/8"	1 15/16"	1 9/16"

JOINT DIMENSIONS ARE FROM ORIGINAL AS-BUILT PLANS

JOINT REPAIR QUANTITY TABLE		
	ESTIMATED	ACTUAL
EXPANSION JOINT SEALS FOR PRESERVATION	73.4 LIN. FT.	



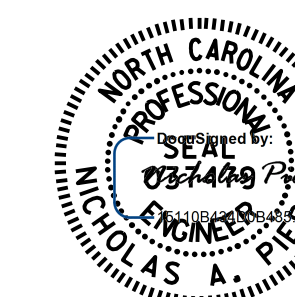
INSTALLATION SKETCH



PLAN VIEW

PROJECT NO. **15BPR.59**
WAKE COUNTY
 BRIDGE NO. **911039**

SHEET 1 OF 2



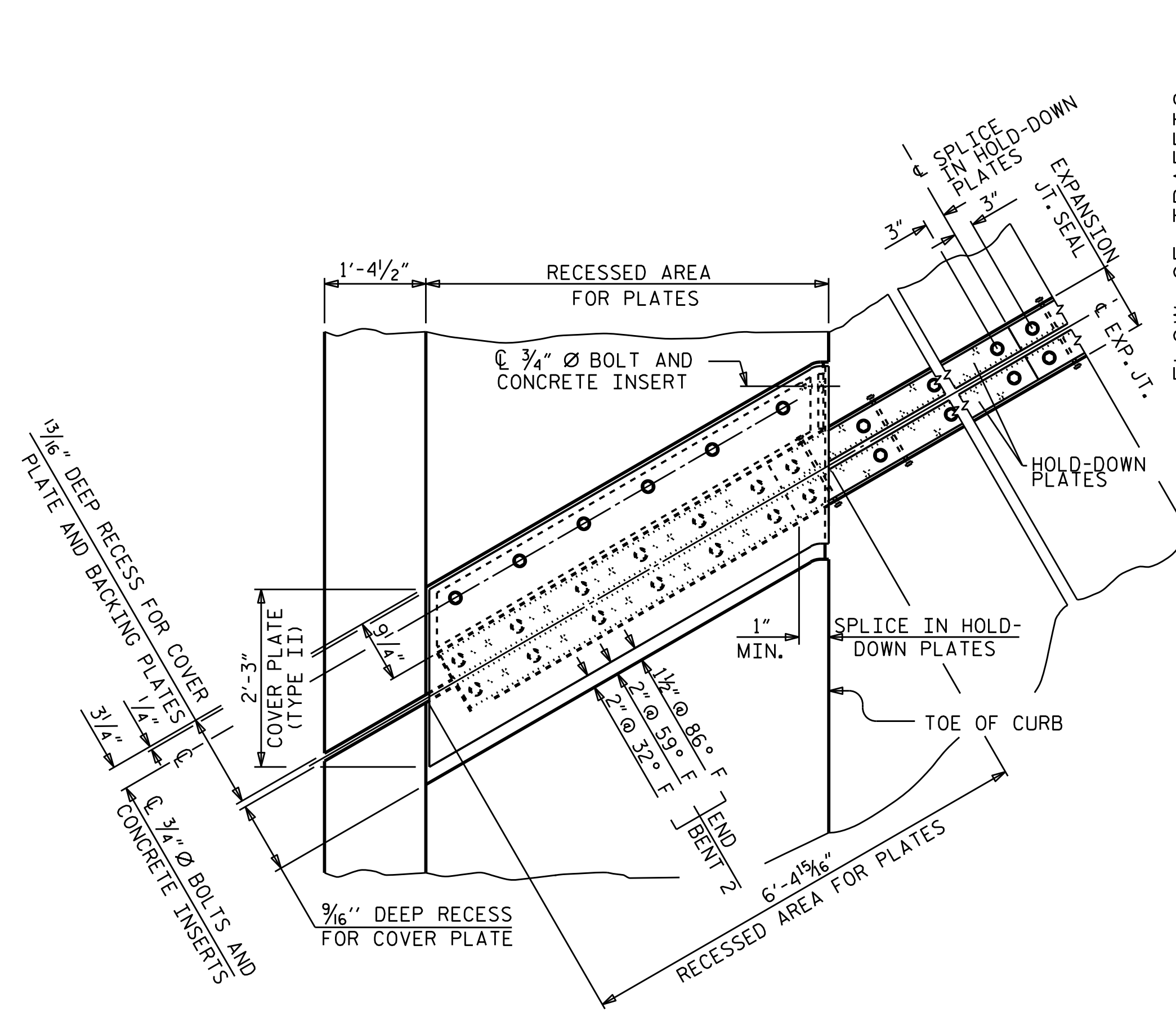
12/08/2022

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
EXPANSION JOINT SEAL REPAIR DETAILS

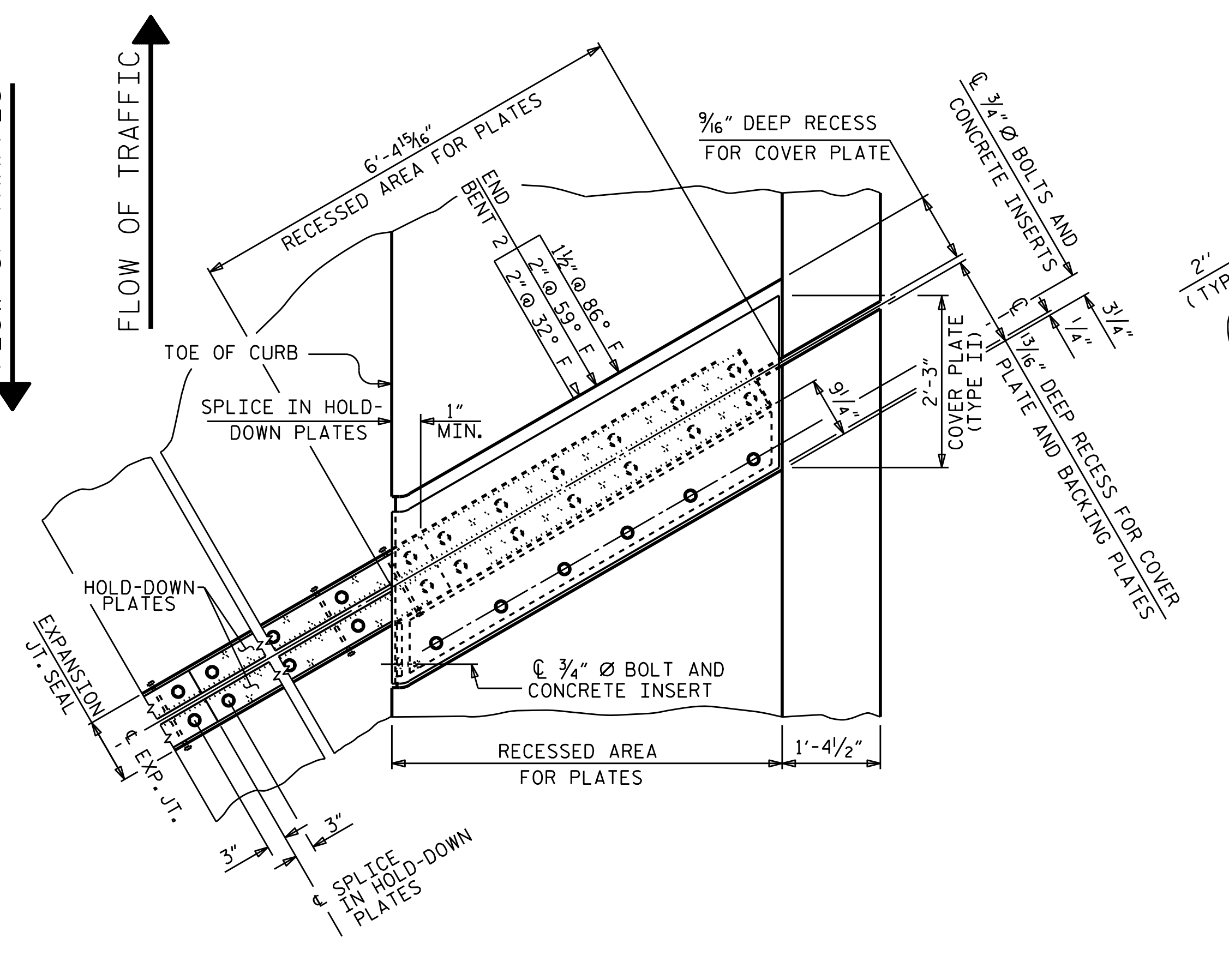
DRAWN BY : A. Y. GODFREY DATE : 10/2022
 CHECKED BY : N.A. PIERCE DATE : 10/2022
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 12/2022

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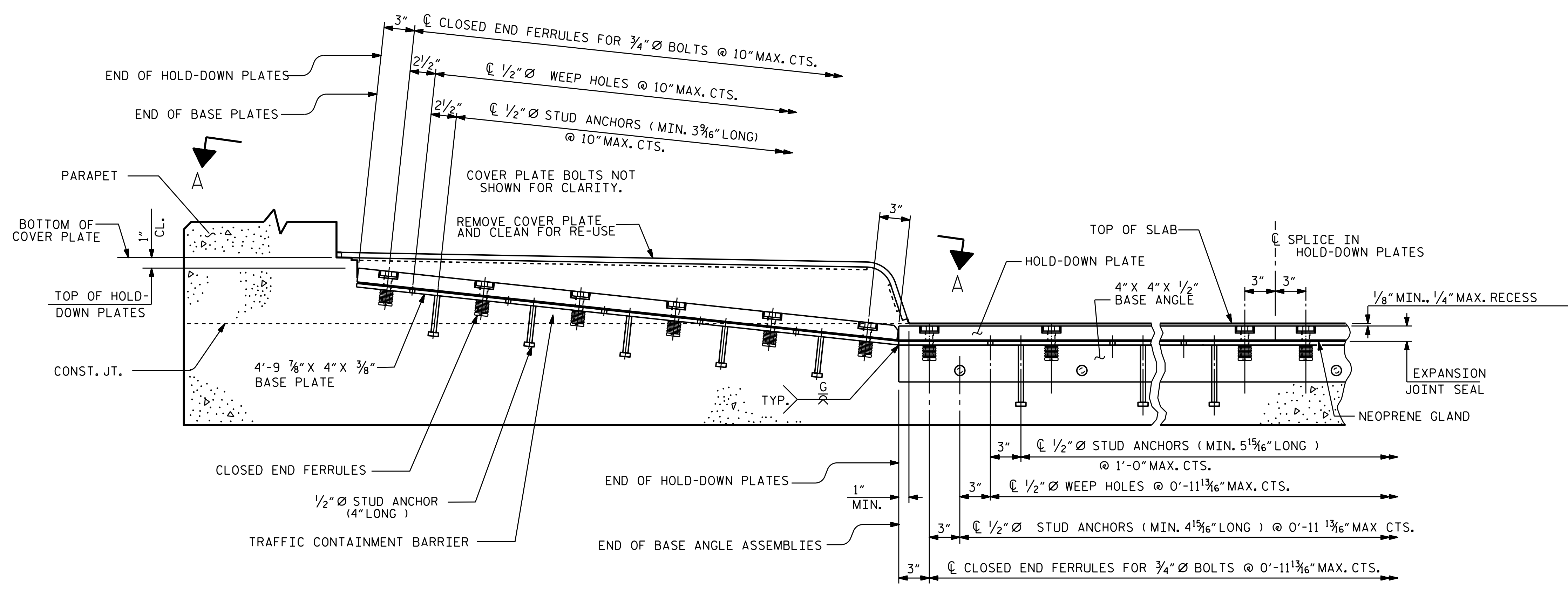
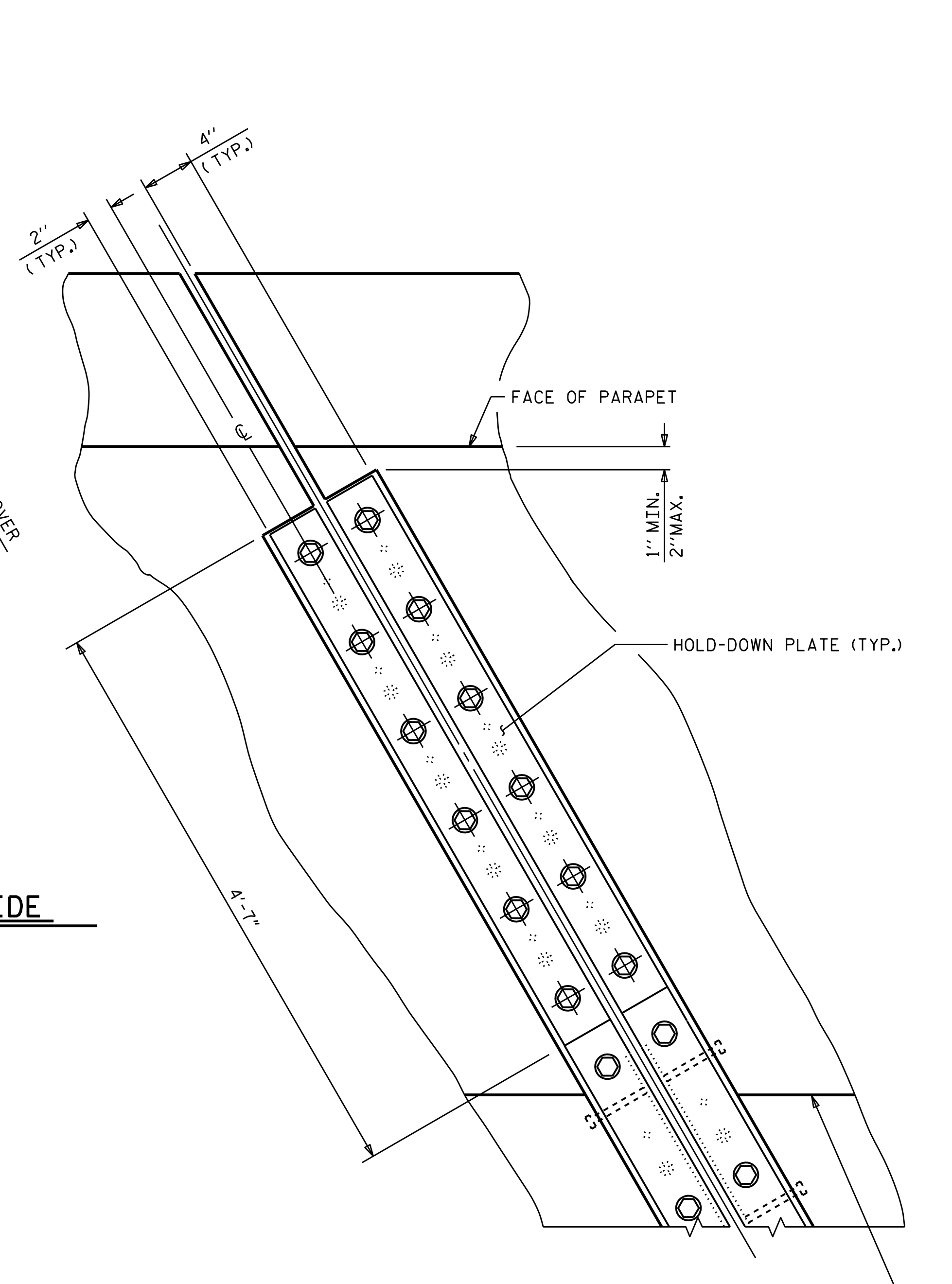
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2			4			TOTAL SHEETS 18



PLAN OF EXPANSION JOINT SEAL - LEFT SIDE



PLAN OF EXPANSION JOINT SEAL - RIGHT SIDE



SECTION THRU SIDEWALK NORMAL TO JOINT

SECTION A - A

PROJECT NO. **15BPR.59**
WAKE COUNTY
 BRIDGE NO. **911039**
 SHEET 2 OF 2



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
**EXPANSION JOINT SEAL
 REPAIR DETAILS**

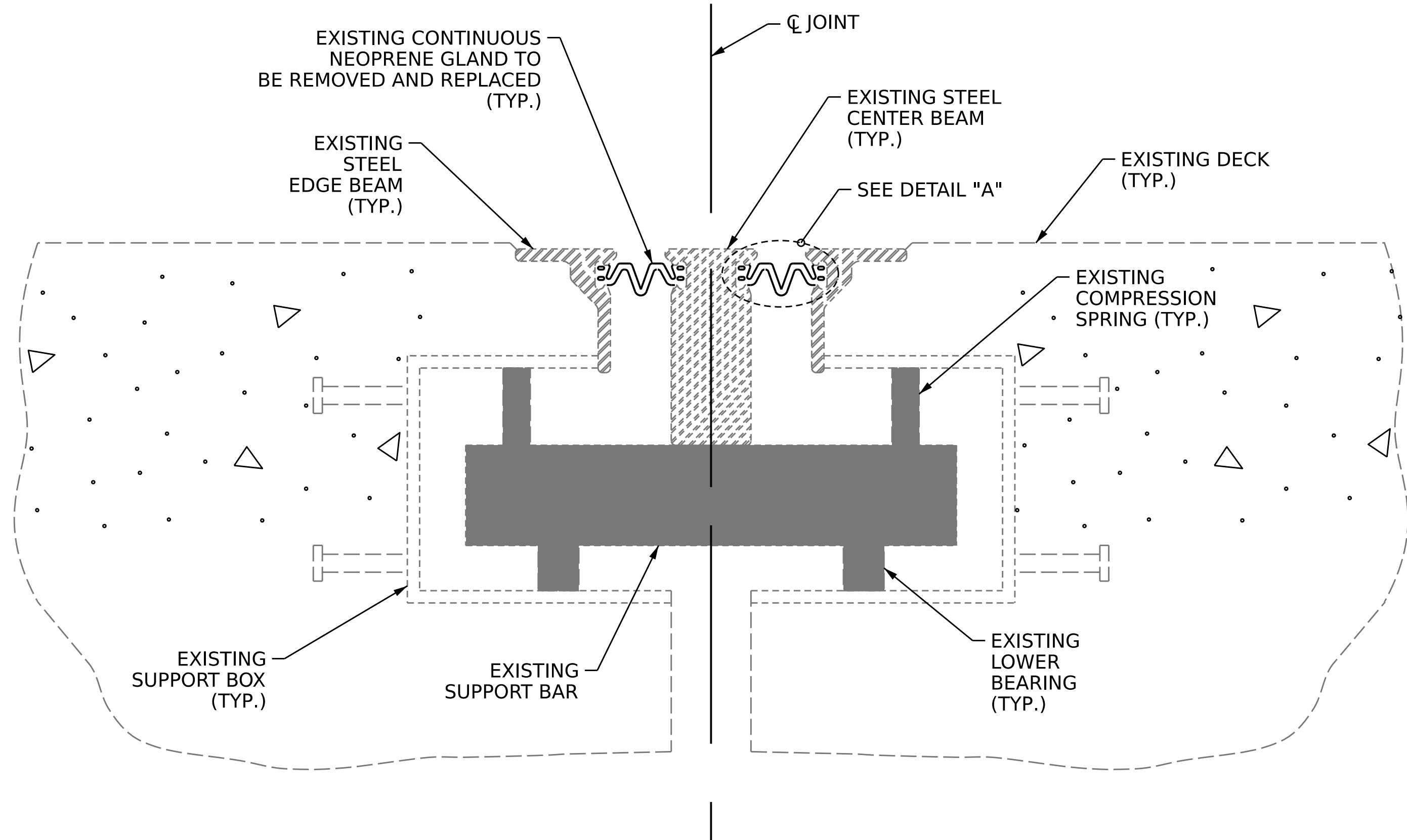
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REVISIONS						SHEET NO. S2-07 TOTAL SHEETS 18
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

8/26/21



MODULAR JOINT DETAILS
SECTION A-A

SUGGESTED REPAIR INSTALLATION PROCEDURE

REMOVE THE EXISTING BOLTS AT COVER PLATES AT BARRIER RAILS AND SIDEWALKS TO ACCESS THE EXISTING GLAND.

REMOVE DEBRIS FROM GLAND ALONG LENGTH OF JOINT.

ADJUST JOINT OPENINGS AS NEEDED TO REMOVE THE EXISTING NEOPRENE GLAND. DISENGAGE SEAL LOCKING LUG, REMOVE LOCKING LUG AND REMOVE GLANDS FROM EXTRUSIONS.

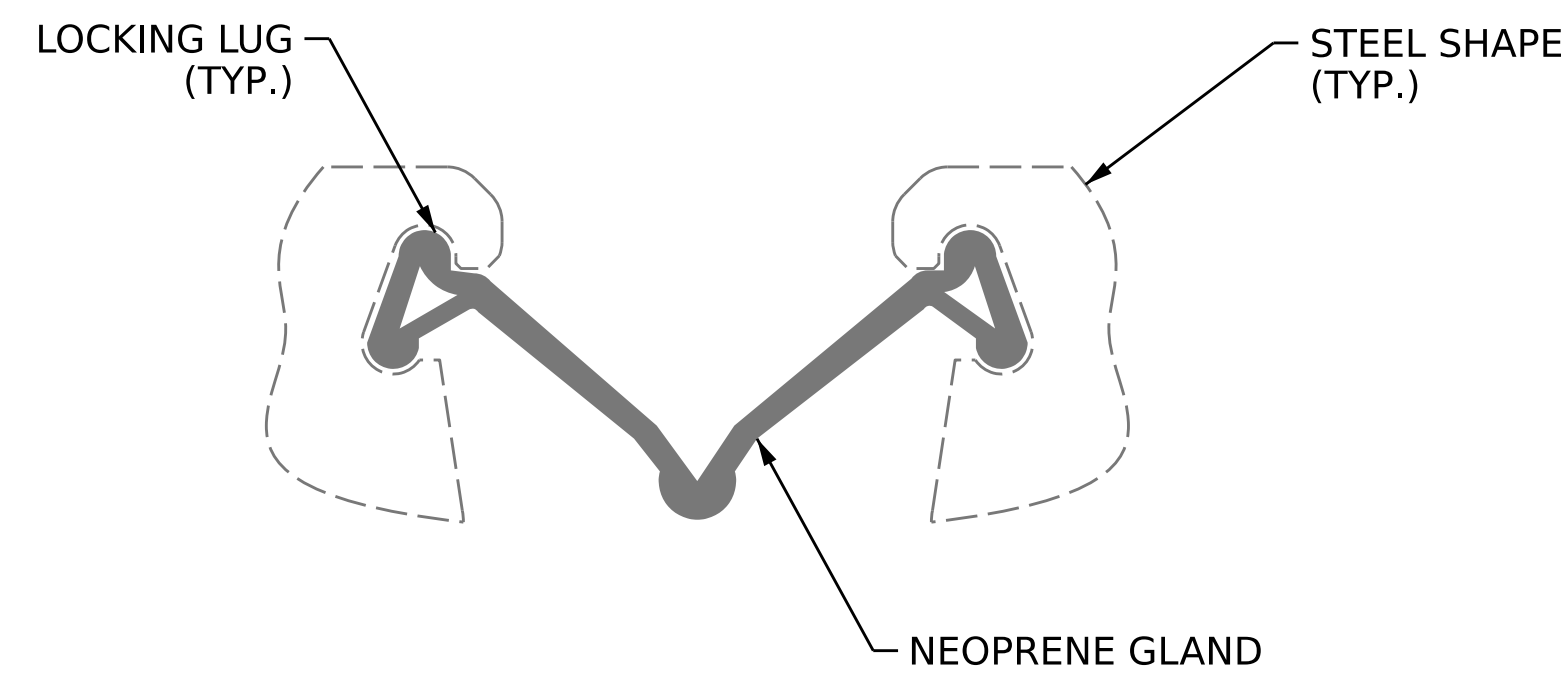
ONCE GLAND IS REMOVED CLEAN THE EXISTING EXTRUSION CAVITIES OF OIL, GREASE AND OTHER LATENTS WITH MANUFACTURER'S APPROVED SOLVENTS.

LAY THE NEW GLAND ON THE JOINT OPENING LEAVING 6" EXTENSION PAST THE END OF THE UPTURN.

AFTER INSPECTION, INSTALL THE NEW GLAND TO THE EXISTING EXTRUSION IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION GUIDE.

CONDUCT WATER-TIGHTNESS TEST.

RE-INSTALL COVER PLATES AT BARRIER RAILS AND SIDEWALKS.



DETAIL "A"

GENERAL NOTES

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

THE CONTRACTOR SHALL FIELD VERIFY THE EXISTING MODULAR EXPANSION JOINT TO FIND THE MANUFACTURER'S STAMP TO IDENTIFY THE MANUFACTURER AND PURCHASE THE APPROPRIATE GLAND.

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

THE CONTRACTOR SHALL TAKE CARE DURING JOINT REHAB OPERATIONS NOT TO DROP ANY MATERIAL BELOW THE BRIDGE, WITHOUT PROTECTIVE DEVICES BELOW TO CATCH THE MATERIAL. ANY MATERIAL THAT FALLS BELOW THE BRIDGE SHALL BE CONTAINED, REMOVED AND DISPOSED OF 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.

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

REPLACEMENT STEEL PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 OR APPROVED EQUAL. PLATE COATINGS SHALL MATCH EXISTING, UNLESS DIRECTED ELSEWISE BY ENGINEER AND BE PAINTED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS OR METALLIZED AFTER FABRICATION PER THE SPECIAL PROVISION FOR THERMAL SPRAYED COATINGS.

ALL BOLTS SHALL CONFORM TO ASTM F593 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL CONFORM TO ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.

FOR MODULAR EXPANSION JOINT SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.

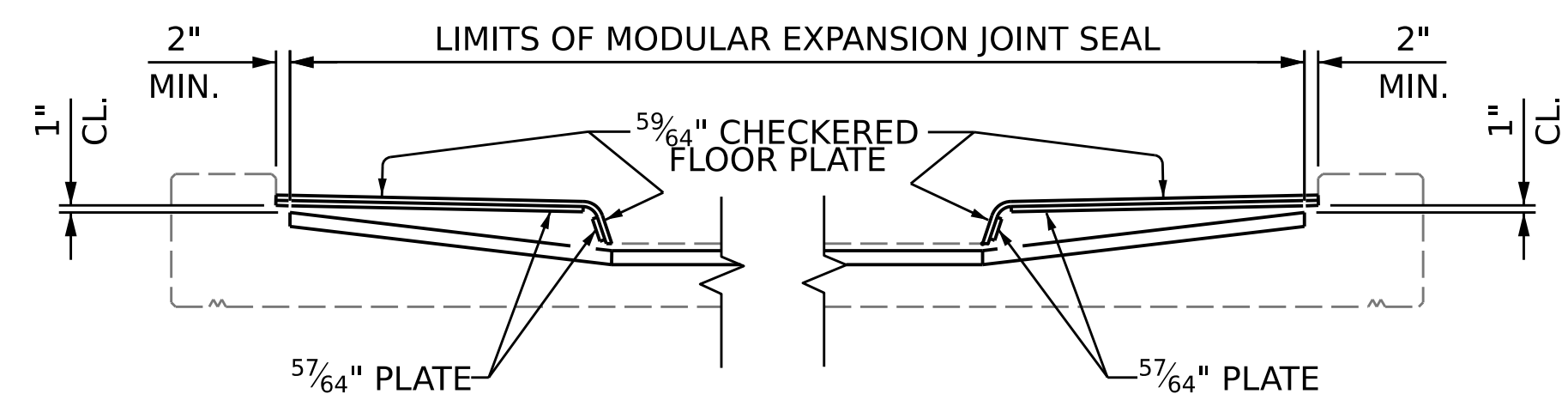
NO SEPARATE PAYMENT WILL BE MADE FOR REMOVING AND REINSTALLING MEDIAN, SIDEWALK AND BARRIER RAIL COVER PLATES. THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE LINEAR FEET PRICE BID FOR "MODULAR JOINT SEALS FOR PRESERVATION".

MOVEMENT AND SETTING AT JOINT

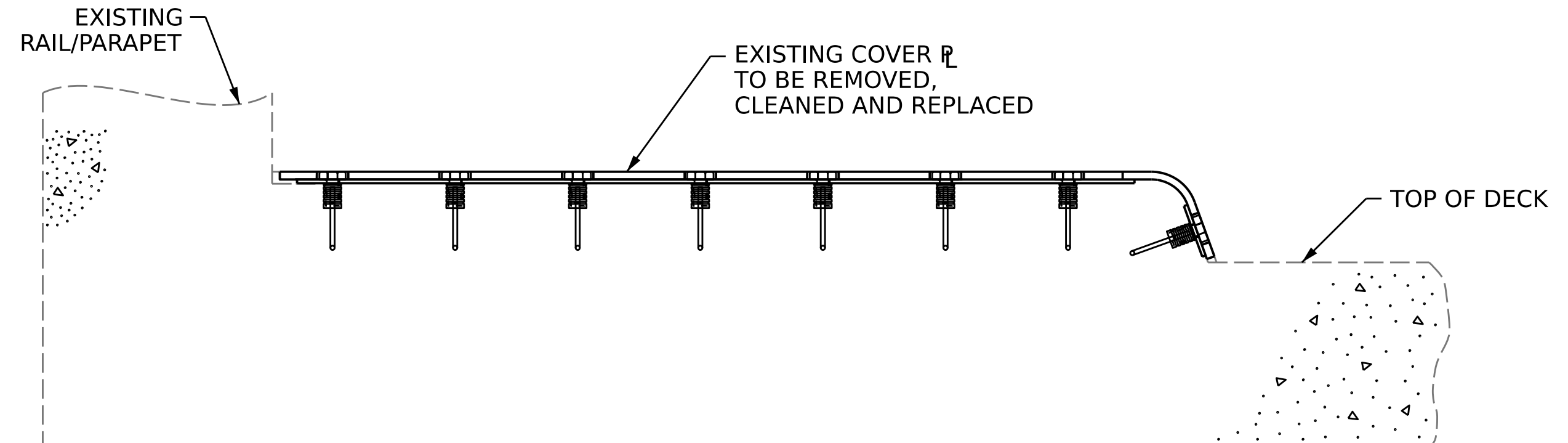
LOCATION	SKEW ANGLE	TOTAL MOVEMENT (ALONG CL RDWY)	PERPENDICULAR JOINT OPENING AT 32°F	PERPENDICULAR JOINT OPENING AT 60°F	PERPENDICULAR JOINT OPENING AT 90°F
END BENT 1	57.6°	4 ¹¹ / ₁₆ "	3 ⁹ / ₁₆ "	2 ³ / ₄ "	2"

JOINT REPAIR QUANTITY TABLE

	ESTIMATED	ACTUAL
MODULAR EXPANSION JOINT SEALS FOR PRESERVATION	73.4 LN. FT.	

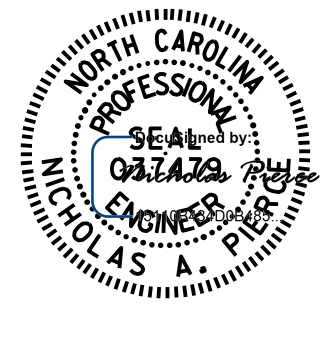


SKETCH SHOWING LIMITS OF MODULAR EXPANSION JOINT SEAL-SIDEWALK



SECTION THRU SIDEWALK NORMAL TO JOINT

PROJECT NO. **15BPR.59**
WAKE COUNTY
 BRIDGE NO. **911039**



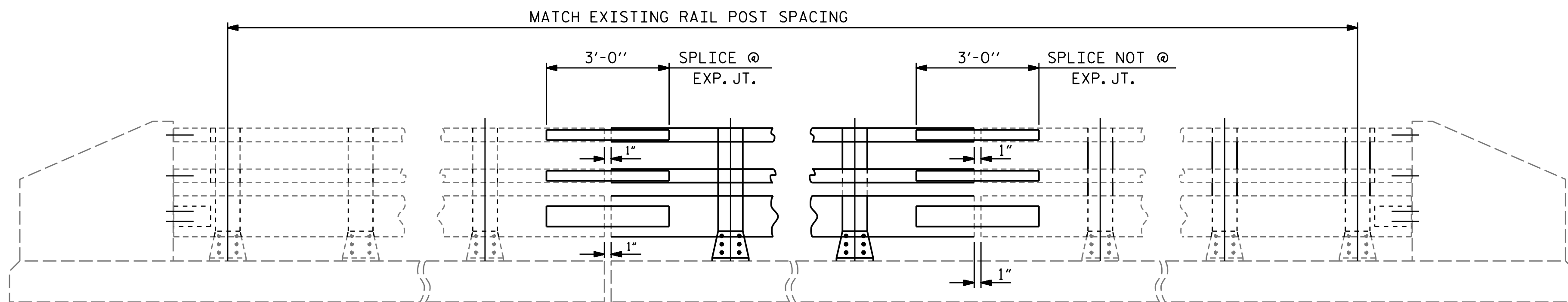
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
MODULAR EXPANSION JOINT REPAIR

DRAWN BY : A. Y. GODFREY DATE : 10/2022
 CHECKED BY : N.A. PIERCE DATE : 10/2022
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 12/2022

12/17/2022
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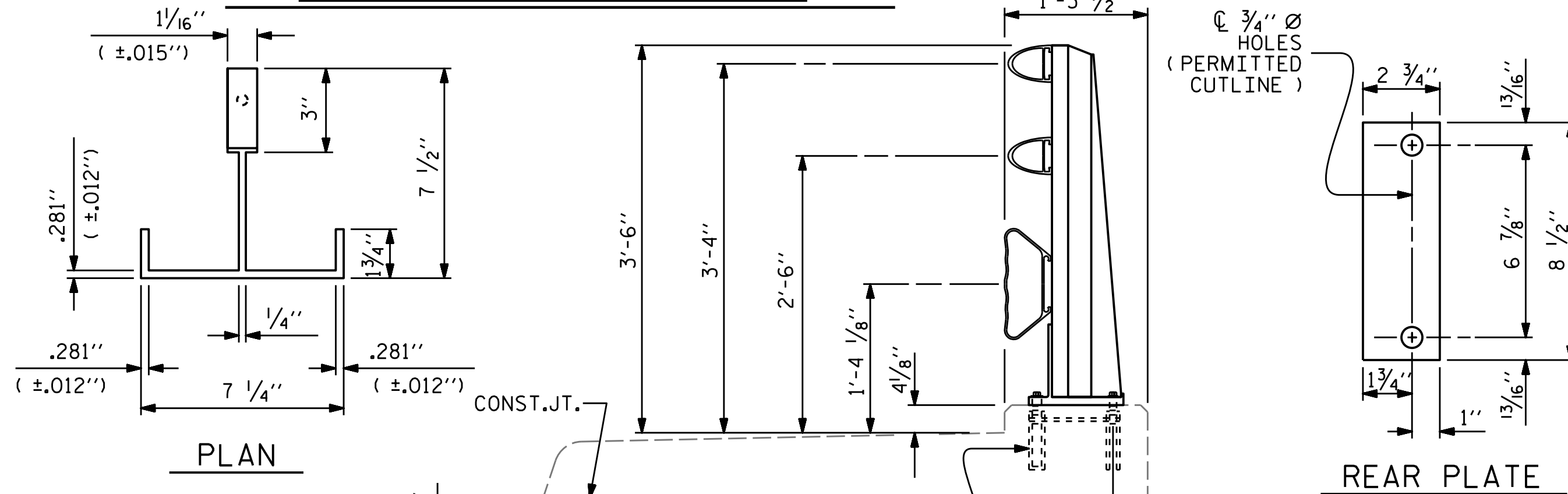
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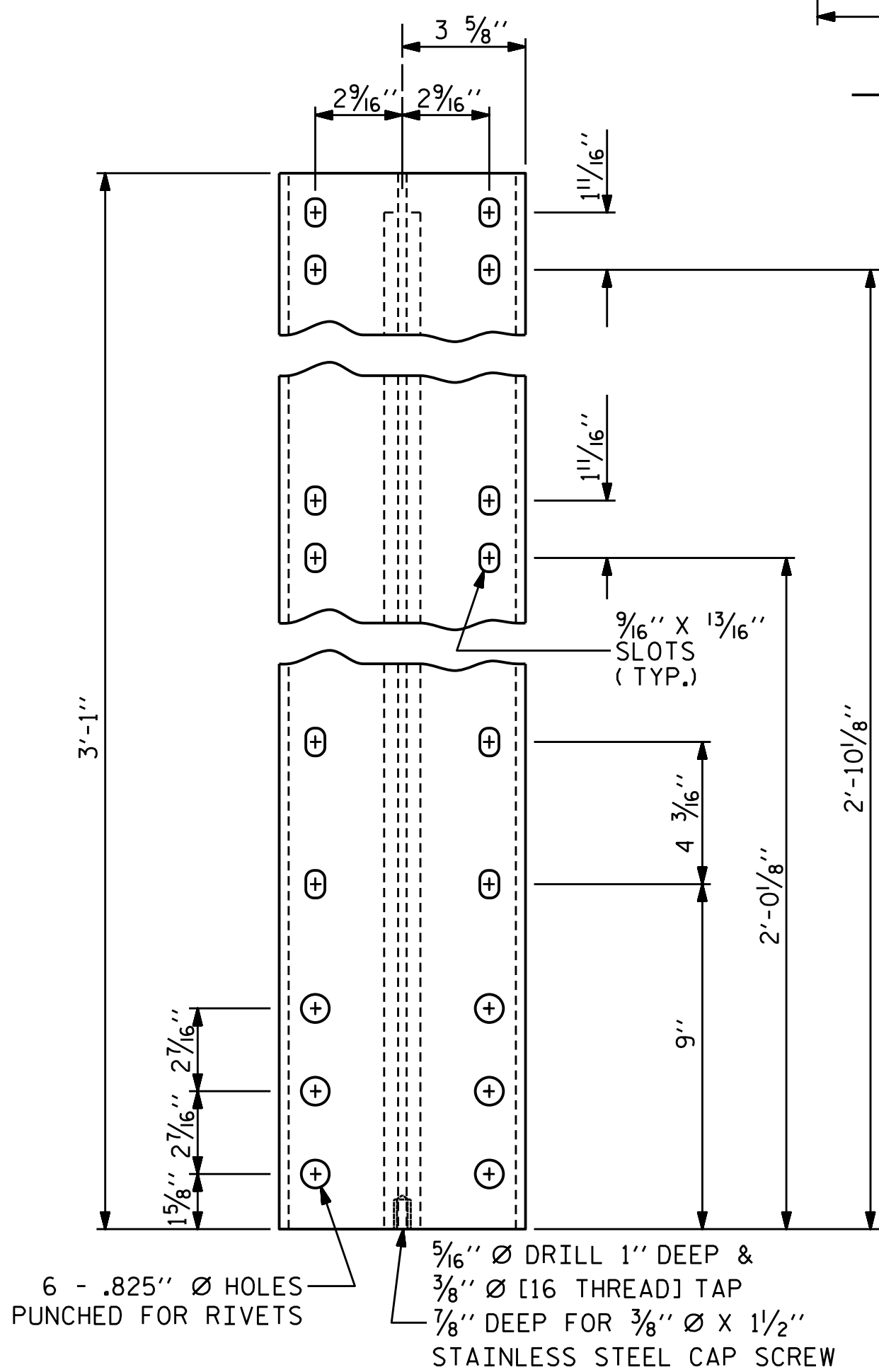


NOTE:
FOR ATTACHMENT OF METAL RAIL TO END POST, SEE SHEET 3 OF 3.

ELEVATION



PLAN

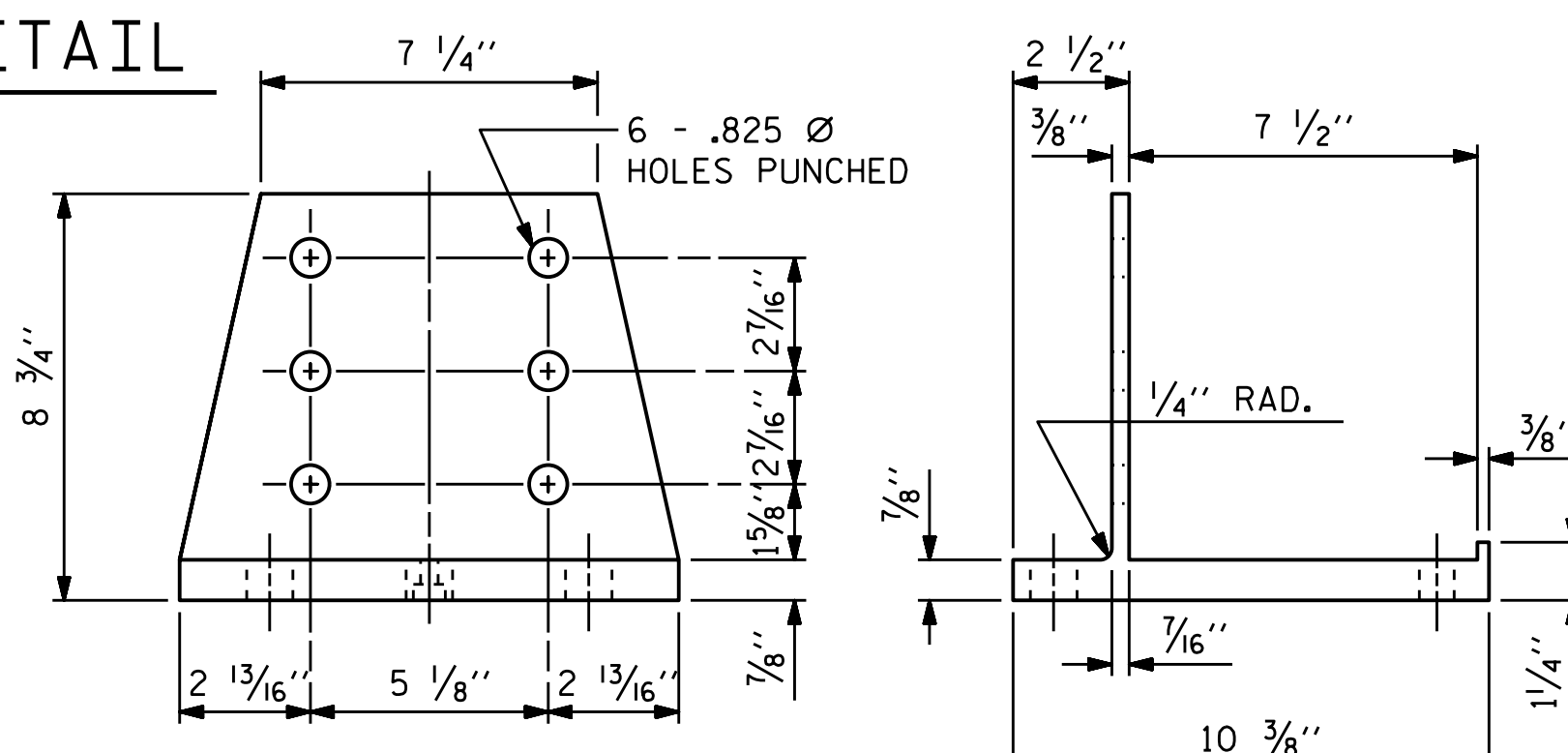


FRONT ELEVATION

SIDE ELEVATION

DETAILS OF POST

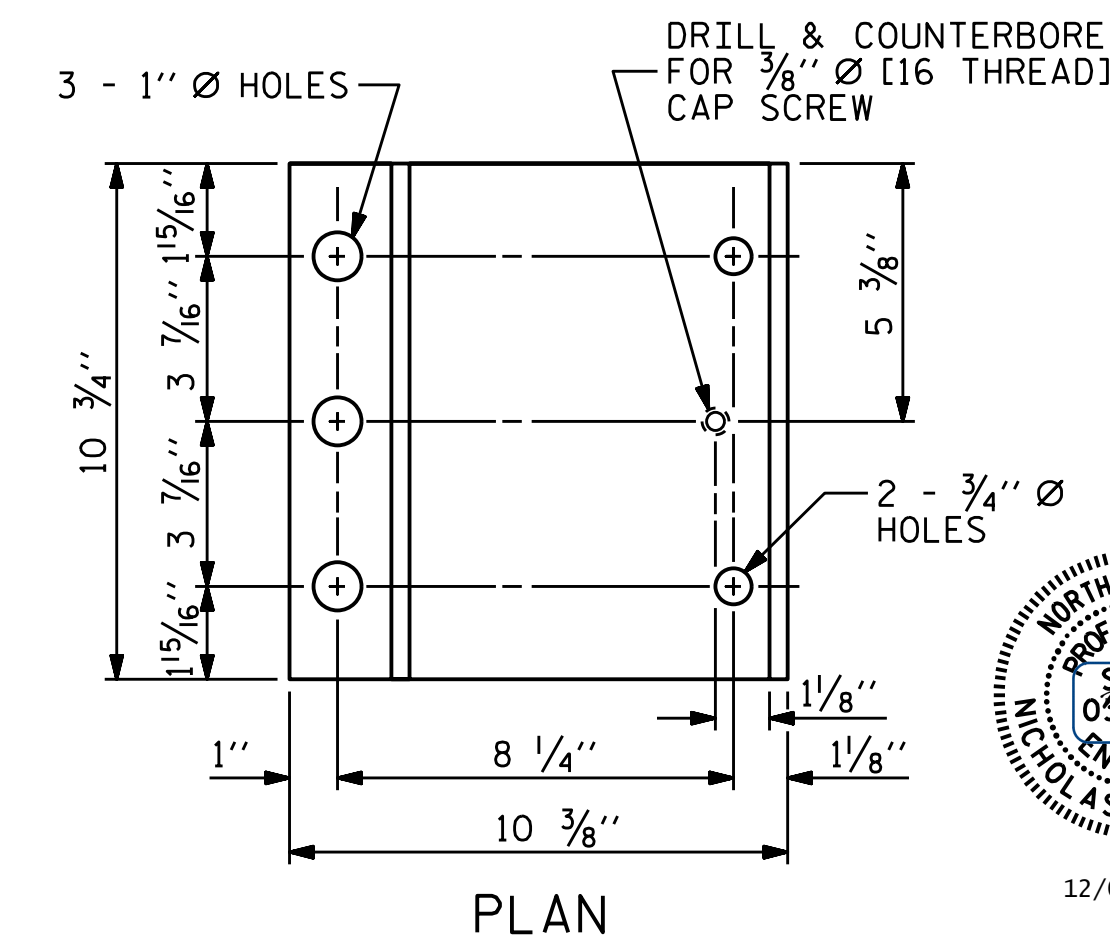
RIVET DETAIL



FRONT ELEVATION

SIDE ELEVATION

POST BASE DETAILS



12/08/2022

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PROJECT NO. **15BPR.59**
DURHAM/WAKE COUNTY
 BRIDGE NO. **911039**

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

3 BAR METAL RAIL REPAIR DETAILS

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

TOTAL SHEETS 19

NOTES
 THE CONTRACTOR SHALL MATCH THE EXISTING METAL RAIL WHICH IS EITHER ALUMINUM OR GALVANIZED STEEL IN ACCORDANCE WITH THE REQUIREMENTS OF THE GENERAL NOTES.

ALUMINUM RAILS
 MATERIAL FOR POSTS, BASES AND RAILS, EXPANSION BARS AND CLAMP BARS SHALL BE ASTM B221 ALLOY 6061-T6.
 MATERIAL FOR RIVETS SHALL BE ASTM B316 ALLOY 6061-T6. RIVETS SHALL BE STANDARD BUTTON HEAD AND CONE POINT COLD DRIVEN AS PER DRAWING.

THE BASE OF RAIL POSTS, OR ANY OTHER ALUMINUM SURFACE IN CONTACT WITH CONCRETE SHALL BE THOROUGHLY COATED WITH AN ALUMINUM IMPREGNATED CAULKING COMPOUND OF APPROVED QUALITY.

MATERIAL FOR SHIMS TO BE ASTM B209 ALLOY 6061-T6.

GALVANIZED STEEL RAILS
 MATERIAL AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:

POST, POST BASES, RAILS, EXPANSION BARS AND CLAMP BARS : AASHTO M270 GRADE 36 STRUCTURAL STEEL - GALVANIZED TO AASHTO M111.

RIVETS: RIVETS SHALL MEET THE REQUIREMENTS OF ASTM A502 FOR GRADE 1 RIVETS.

THE CUT ENDS OF GALVANIZED STEEL RAILING, AFTER GRINDING SMOOTH SHALL BE GIVEN TWO COATS OF ZINC RICH PAINT MEETING THE REQUIREMENTS OF FEDERAL SPECIFICATION MIL-P-26915 USAF TYPE 1, OR OF FEDERAL SPECIFICATIONS TT-P-641.

SHIMS: SHIMS SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.

RAIL CAPS: RAIL CAPS SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.

GENERAL NOTES
 RAILING SHALL BE CONTINUOUS FROM END POST TO END POST OF BRIDGE. EACH JOINT IN RAIL LENGTH SHALL BE SPLICED AS DETAILED. PANEL LENGTHS OF RAIL SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS.

CAP SCREWS SHALL BE ASTM F593 ALLOY 305 STAINLESS STEEL. WASHERS FOR RAIL ATTACHMENT SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.

CERTIFIED MILL REPORTS ARE REQUIRED FOR RAILS AND POSTS. SHOP INSPECTION IS NOT REQUIRED.

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

METHOD OF MEASUREMENT FOR METAL RAILS: FOR LENGTH OF METAL RAILS TO BE PAID FOR, SEE THE STANDARD SPECIFICATIONS.

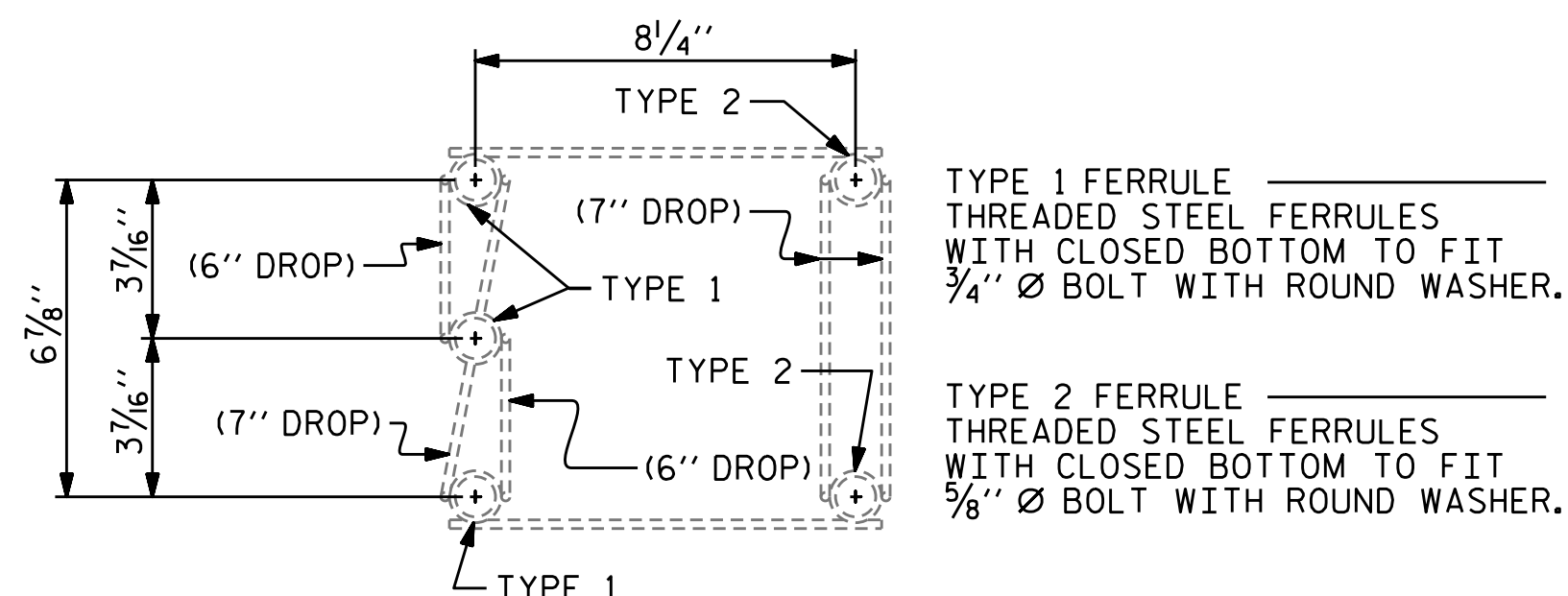
CURVED RAIL USAGE: WHERE RAILS ARE TO BE USED ON BRIDGES ON HORIZONTAL AND/OR VERTICAL CURVATURE THE CONTRACTOR MAY, AT HIS OPTION, HAVE THE REQUIRED CURVATURE IN THE RAIL FORMED IN THE SHOP OR IN THE FIELD. IN EITHER EVENT, THE RAIL SHALL CONFORM WITHOUT BUCKLING OR KINKING TO THE REQUIRED CURVATURE IN A UNIFORM MANNER ACCEPTABLE TO THE ENGINEER.

TO INSURE FUTURE IDENTIFICATION OF THE FABRICATOR, A PERMANENT IDENTIFYING MARK SHALL BE PLACED ON EACH POST. THE METHOD OF MARKING AND LOCATION SHALL BE SUCH THAT IT DOES NOT DETRACT FROM THE APPEARANCE OF THE POST, BUT REMAIN VISIBLE AFTER RAIL PLACEMENT.

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

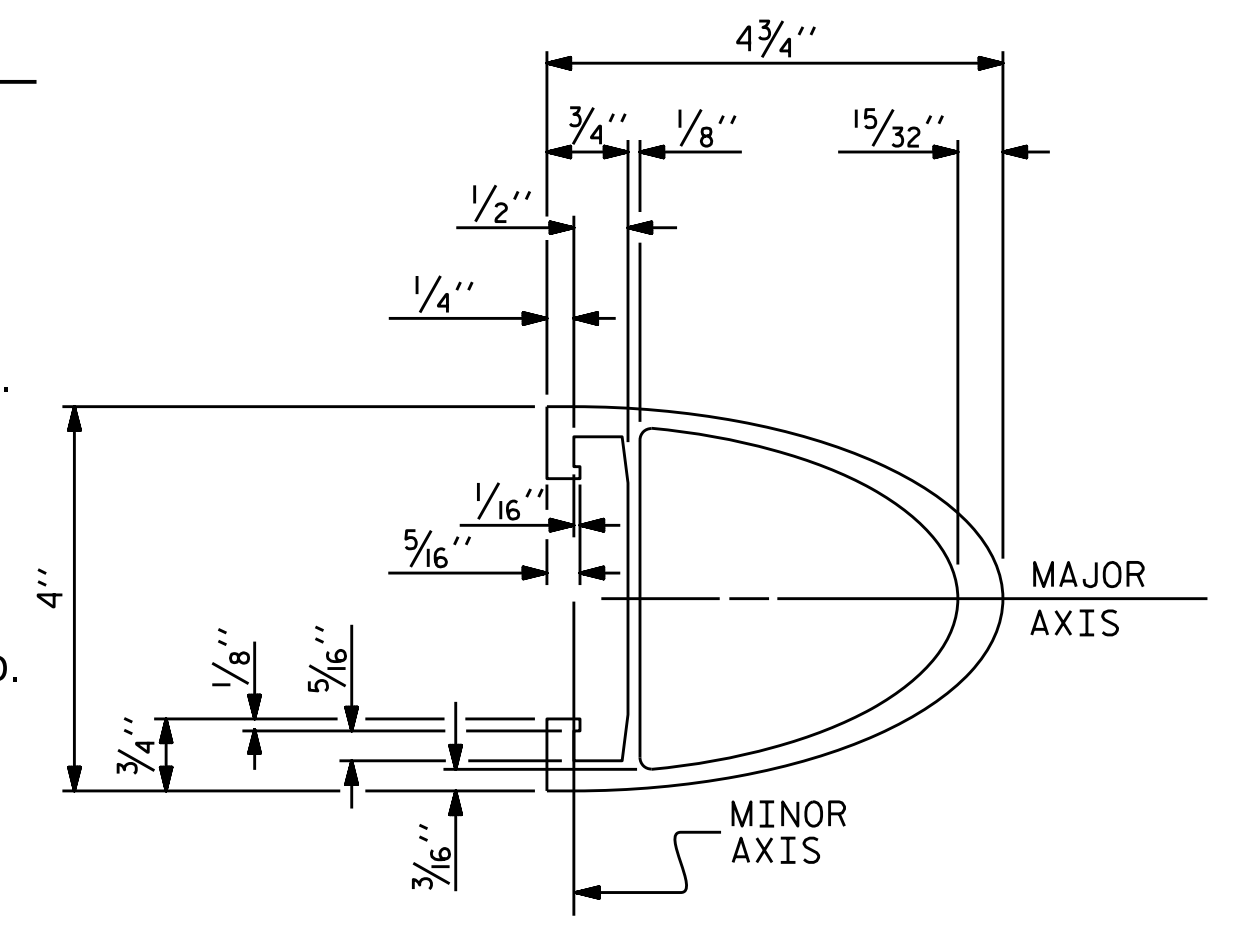
ALLOY 6351-T5 MAY BE SUBSTITUTED FOR ALLOY 6061-T6 WHERE APPLICABLE.

MINOR VARIATIONS IN DETAILS OF METAL RAIL WILL BE CONSIDERED. DETAILS OF SUCH VARIATIONS, IF DESIRED, SHALL BE SUBMITTED FOR APPROVAL.

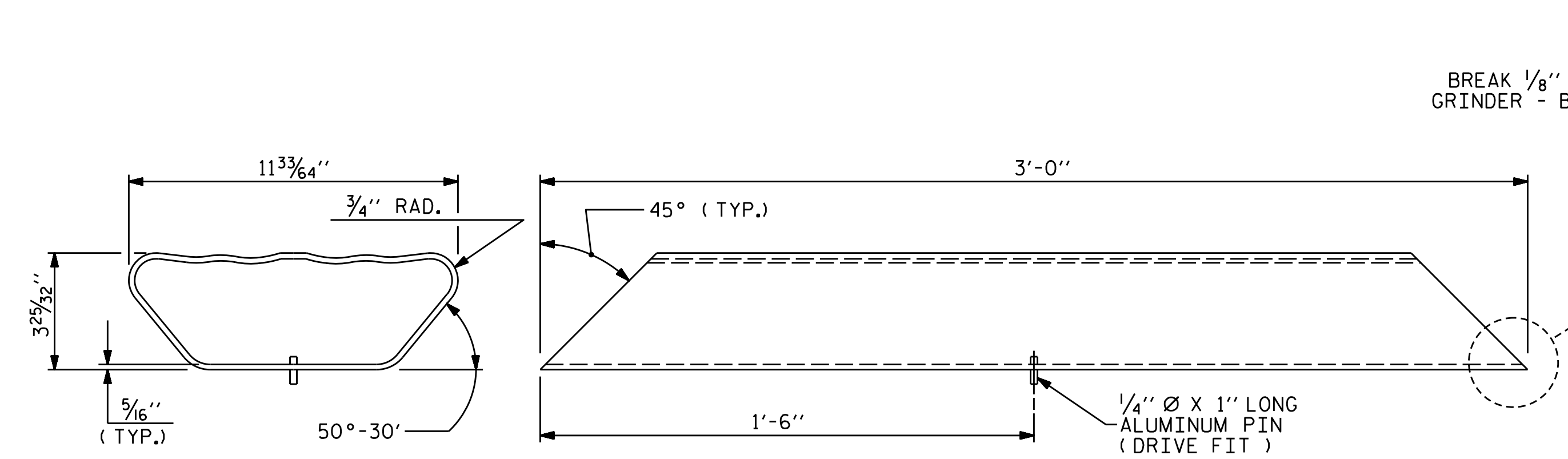


PLAN
 EXISTING 5-BOLT
 METAL RAIL ANCHOR ASSEMBLY

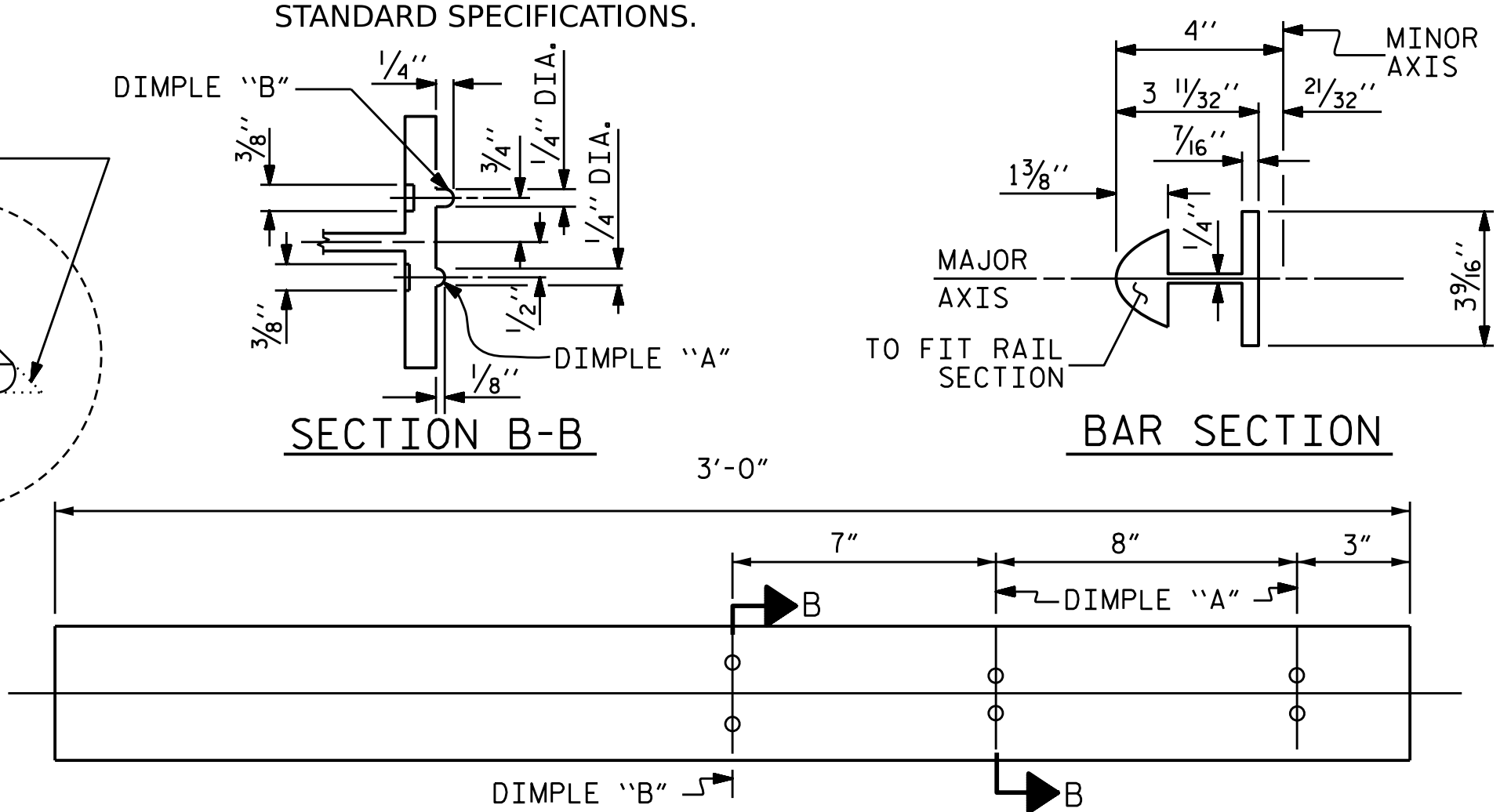
- NOTES**
- STRUCTURAL CONCRETE ANCHOR ASSEMBLY
- IF EXISTING STRUCTURAL CONCRETE ANCHOR ASSEMBLY IS INTACT AND NOT DAMAGED THEN THE EXISTING CONCRETE ANCHOR ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:
- EXISTING EMBEDDED FERRULES HAVE A MINIMUM LENGTH OF THREADS OF 2" FOR 3/4" FERRULES AND 1 3/4" FOR 5/8" FERRULES.
 - 3 - 3/4" Ø X 2 1/2" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø X 2 1/2" GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.
 - 2 - 5/8" Ø X 2 1/4" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 5/8" Ø X 2 1/4" GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.
- IF EXISTING STRUCTURAL CONCRETE ANCHOR ASSEMBLY IS DAMAGED SHIFT ANCHOR ASSEMBLY UP TO A MAXIMUM OF 12" AND DRILL NEW ANCHOR ROD HOLES AND INSTALL NEW COMPONENTS:
- 3 - 3/4" Ø THREADED RODS WITH WASHERS. RODS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. RODS, NUTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø RODS GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.
 - 2 - 5/8" Ø THREADED RODS WITH WASHERS. RODS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 5/8" Ø RODS GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.
 - ANCHOR ROD LENGTH AND EMBEDMENT LENGTH SHALL CONFORM TO ADHESIVE ANCHOR MANUFACTURER'S RECOMMENDED LENGTH.
 - THE COST OF THE METAL RAIL ANCHOR RODS, NUTS AND WASHERS COMPLETE IN PLACE SHALL BE INCLUDED IN THE PRICE BID FOR LINEAR FEET OF METAL RAIL.
 - ANCHOR ROD NUTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.
 - FOR ADHESIVELY ANCHORED BOLTS, LEVEL ONE FIELD TESTING IS REQUIRED. THE REQUIRED PULLOUT STRENGTH IS 5 KIPS.
 - FOR ADHESIVELY ANCHORED BOLTS OR DOWELS, SEE SECTION 420-13 OF THE STANDARD SPECIFICATIONS.
- D. THE COST OF THE METAL RAIL ANCHOR BOLTS AND WASHERS COMPLETE IN PLACE SHALL BE INCLUDED IN THE PRICE BID FOR LINEAR FEET OF METAL RAIL.
- E. BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.



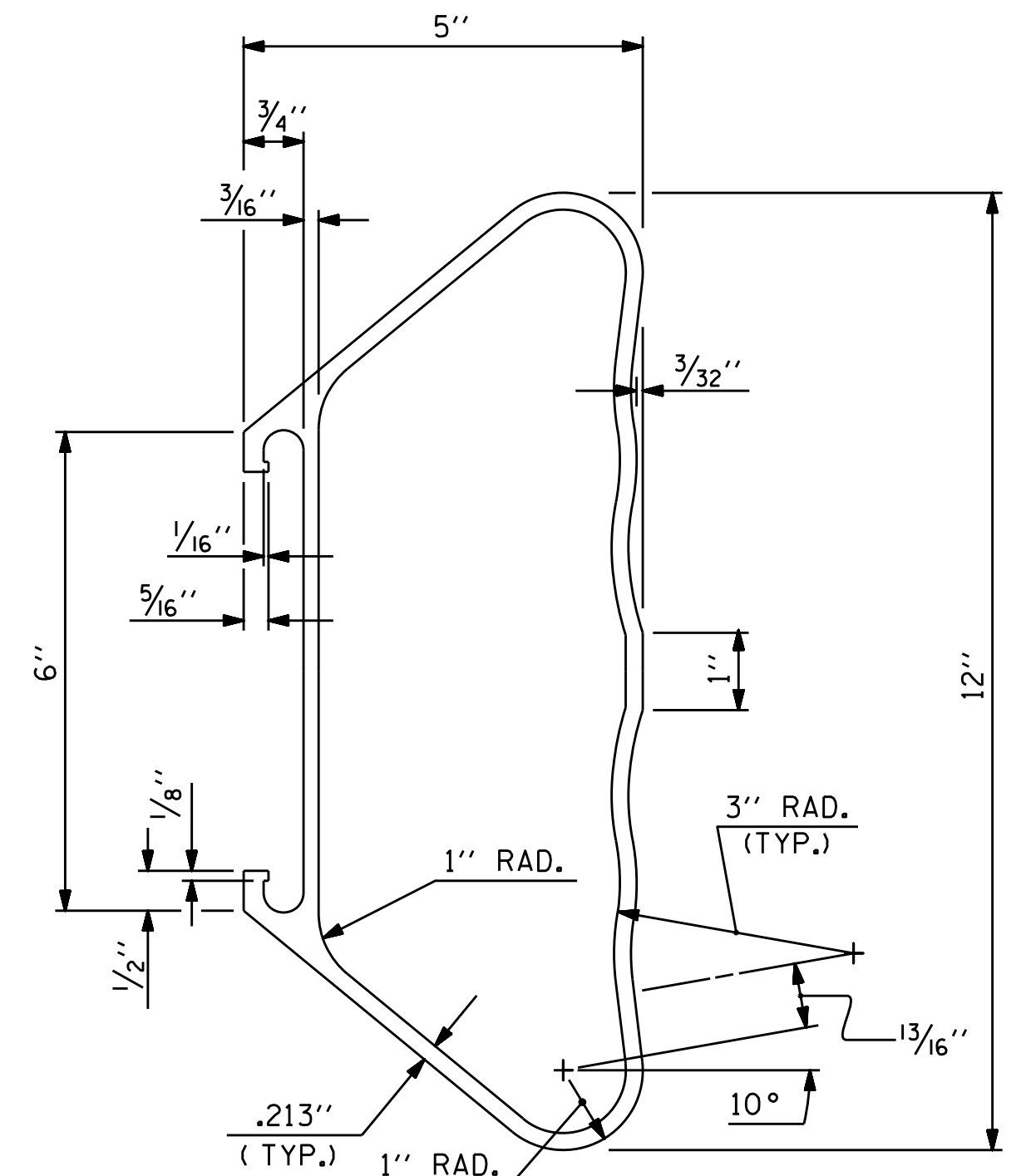
TOP & MIDDLE RAIL SECTION



END VIEW
 PLAN VIEW
 BOTTOM RAIL EXPANSION BAR

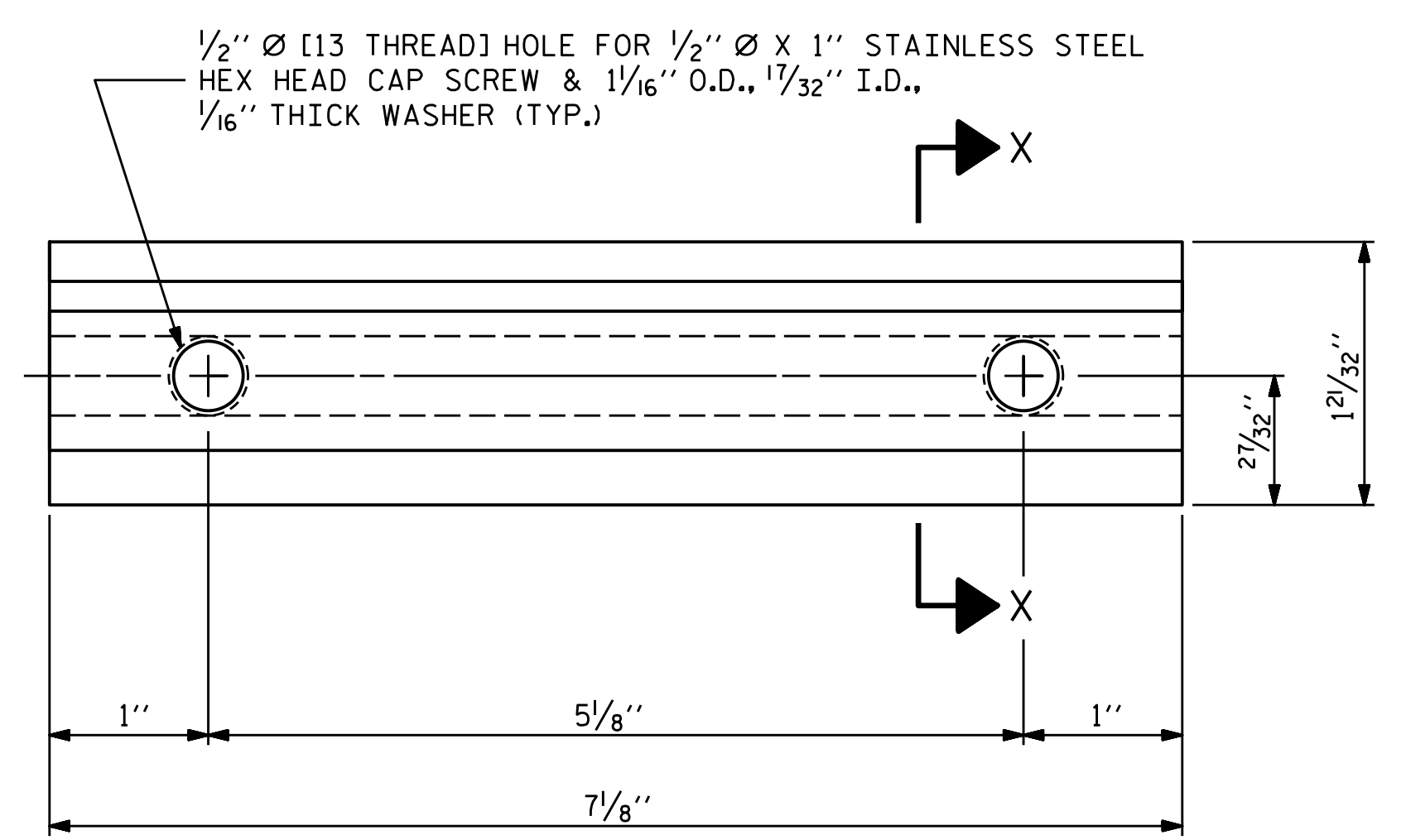
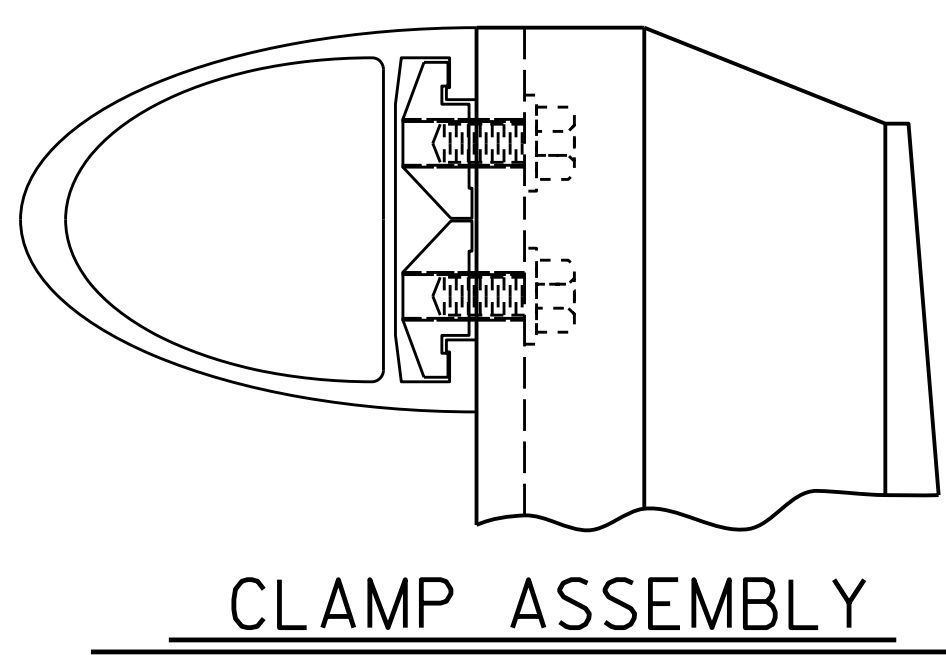
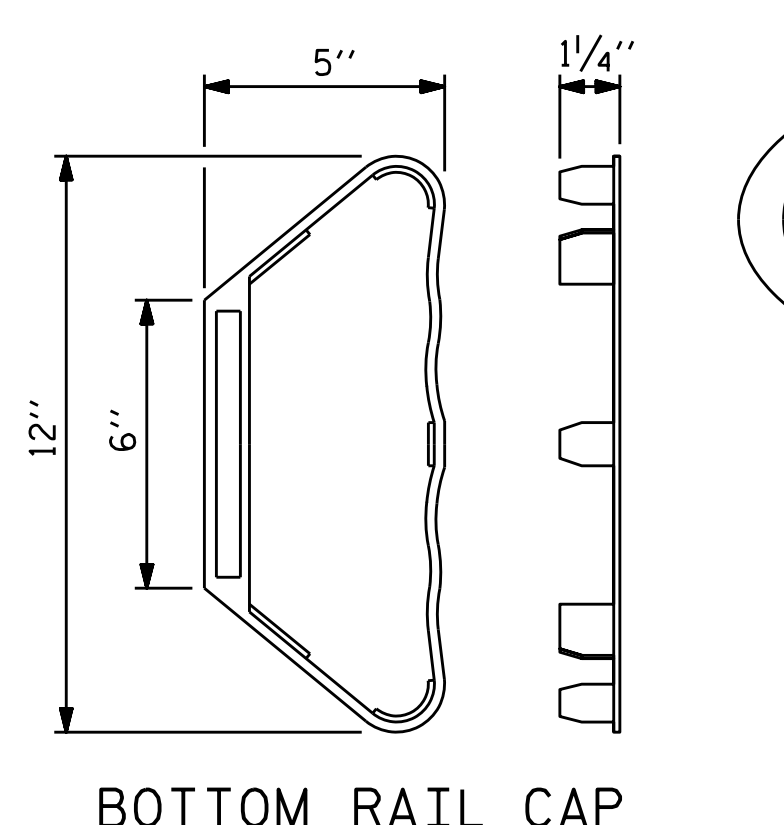
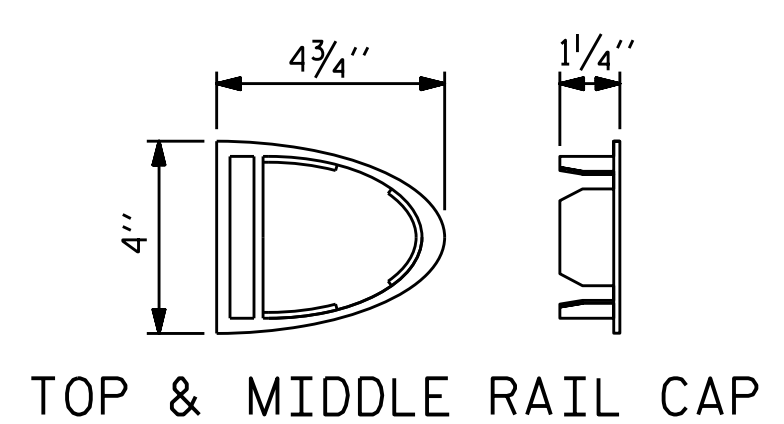


BACK ELEVATION

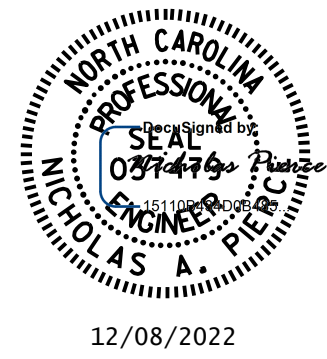
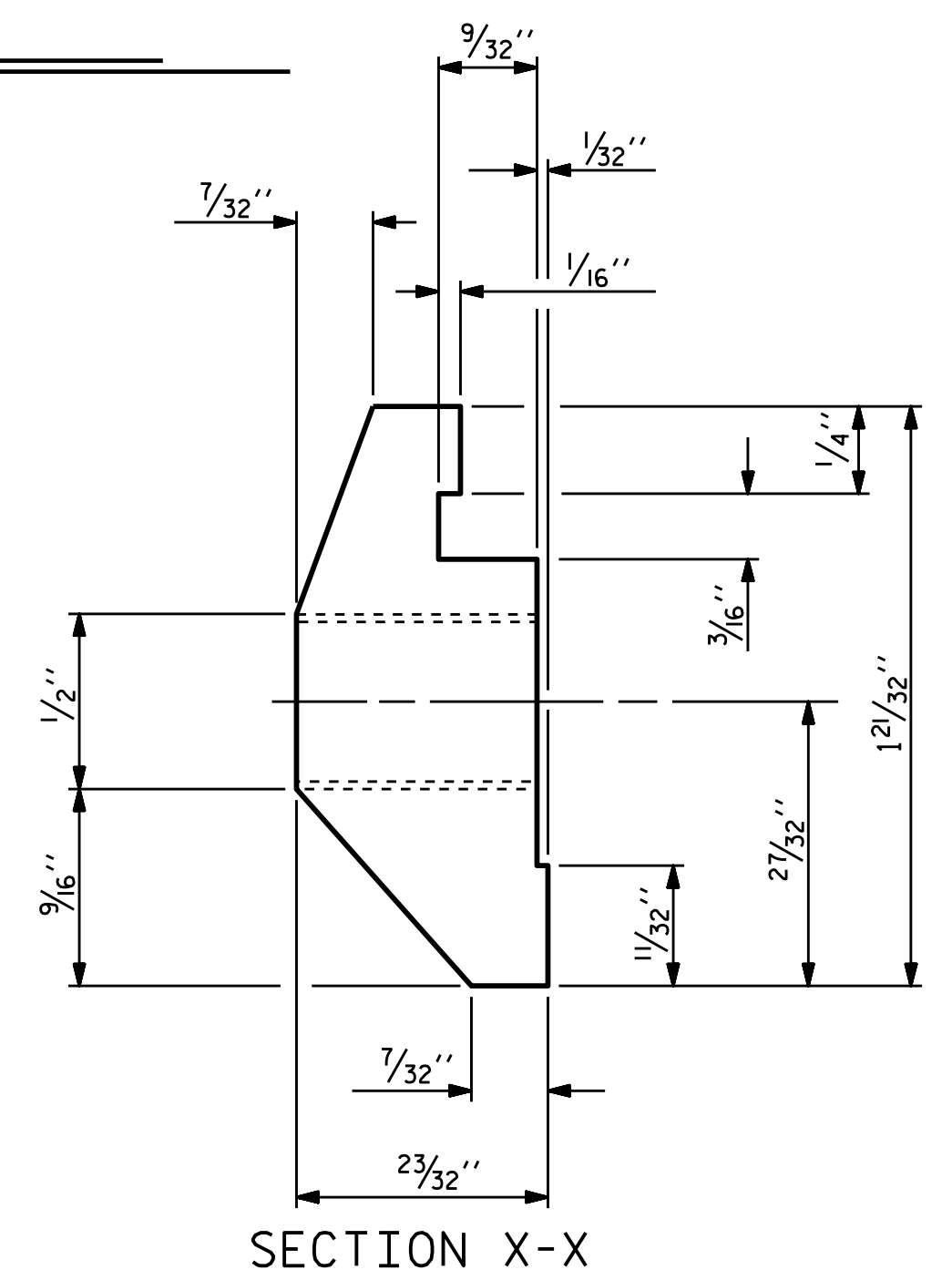


BOTTOM RAIL SECTION

TOP & MIDDLE RAIL EXPANSION BAR



CLAMP BAR DETAIL
 (6 REQUIRED PER POST)



PROJECT NO. **15BPR.59**
 DURHAM/WAKE COUNTY
 BRIDGE NO. **911039**
 SHEET 2 OF 3

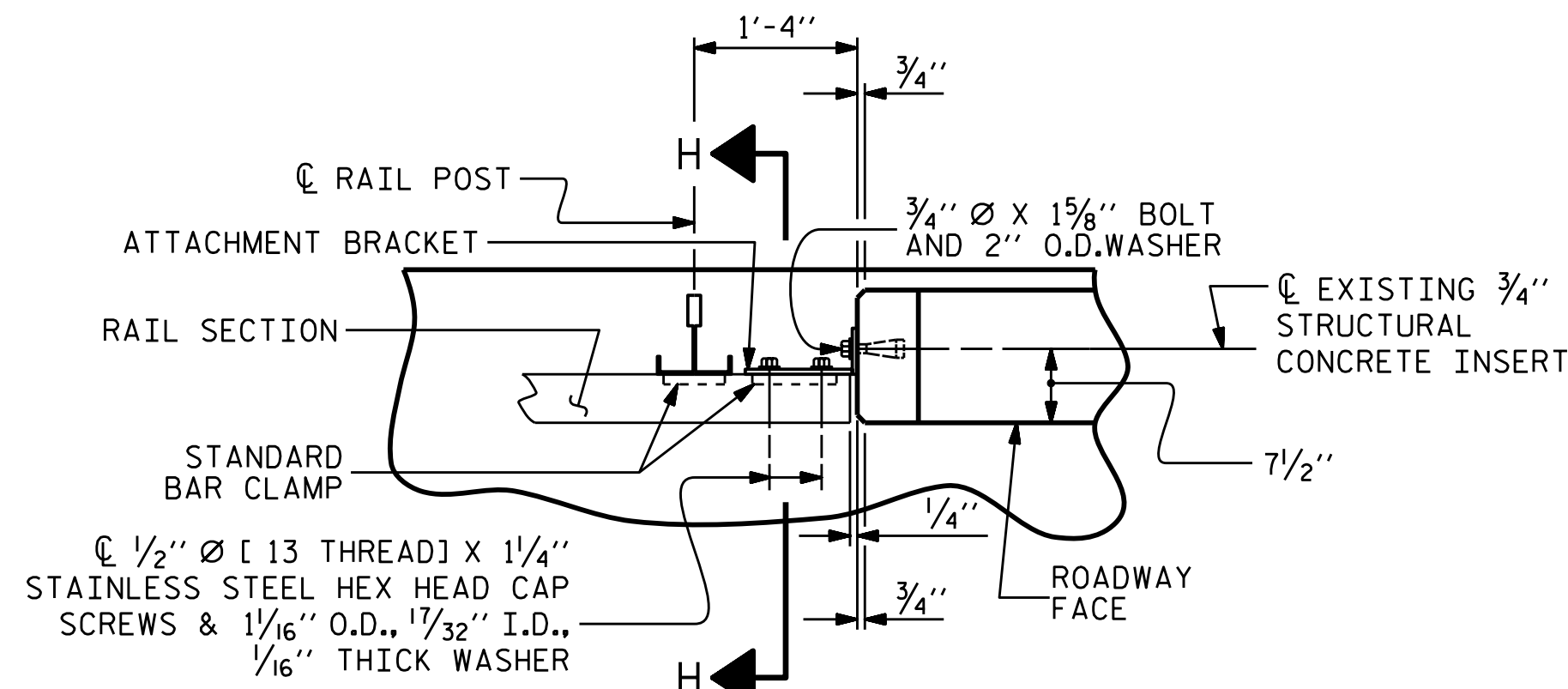
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**3 BAR METAL RAIL
 REPAIR DETAILS**

ASSEMBLED BY: N.A. PIERCE DATE: 10/2022
 CHECKED BY: A.Y. GODFREY DATE: 11/2022
 DRAWN BY:
 CHECKED BY:

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

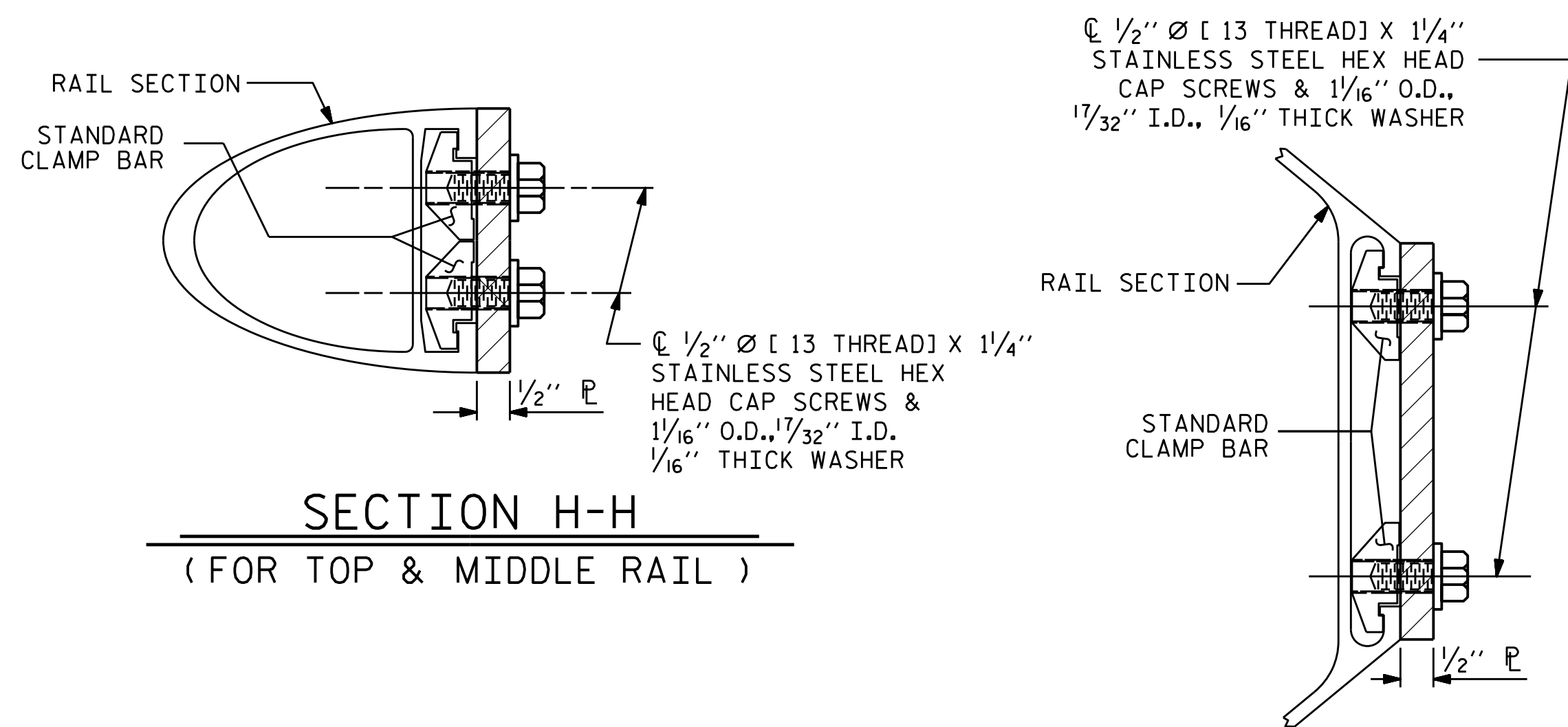
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TOTAL SHEETS: 19



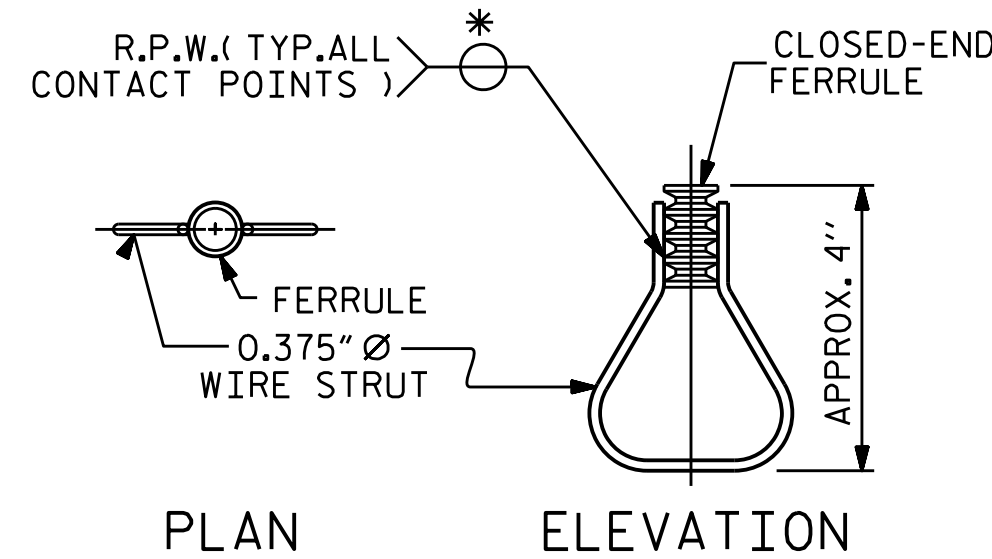
PLAN OF RAIL AND END POST

(STIFFENER ON 1/2" R NOT SHOWN FOR CLARITY)



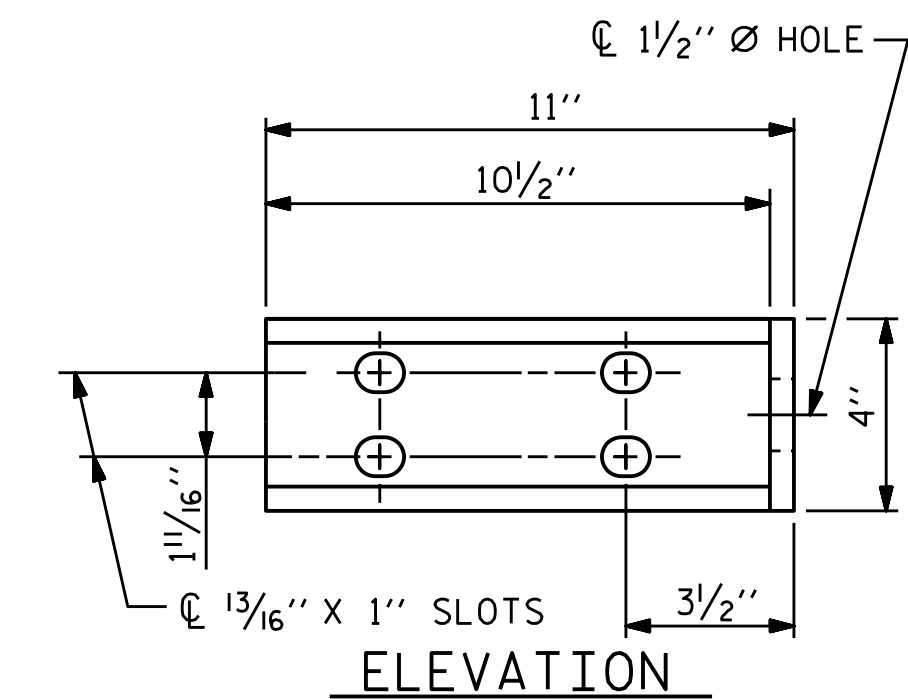
SECTION H-H

(FOR TOP & MIDDLE RAIL)

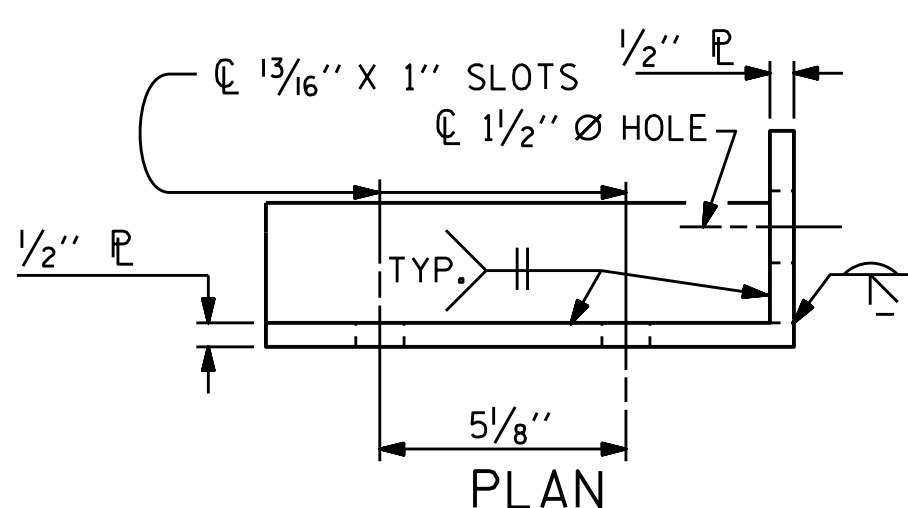


STRUCTURAL CONCRETE INSERT

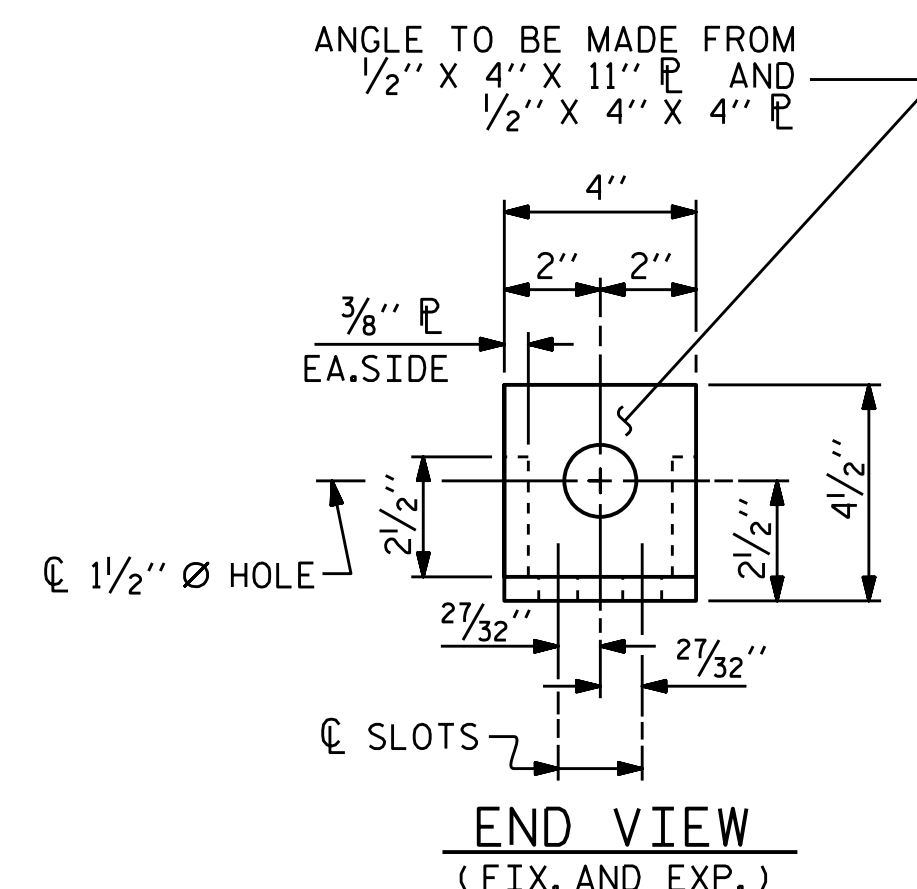
* EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.



ELEVATION



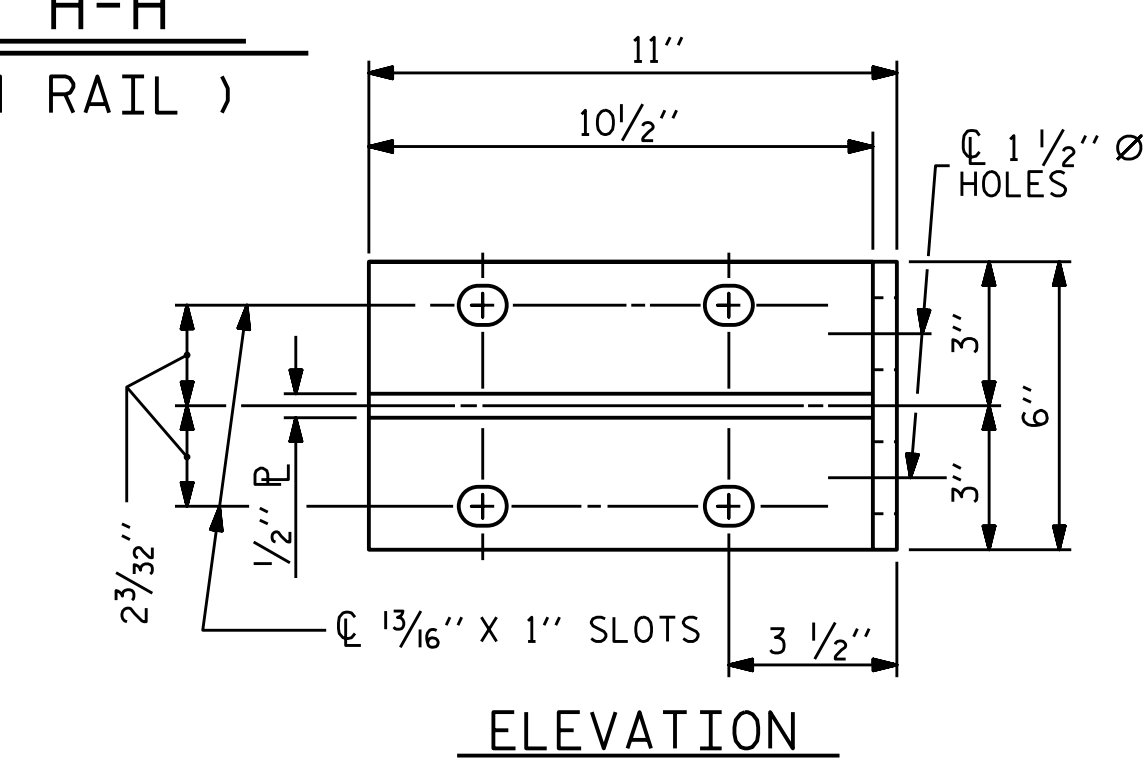
PLAN



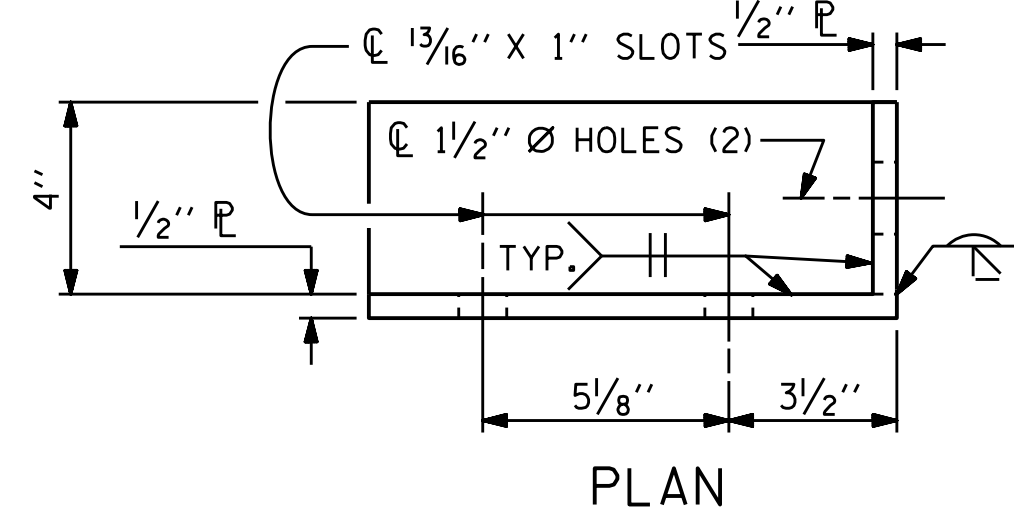
END VIEW

(FIX. AND EXP.)

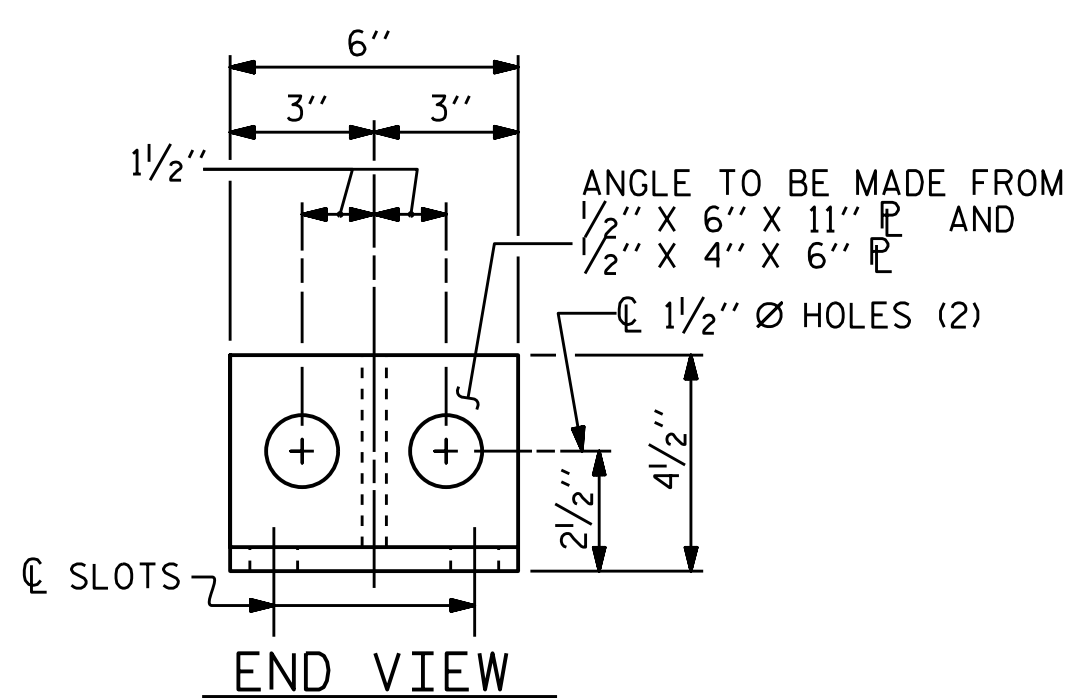
SECTION H-H
(FOR BOTTOM RAIL)



ELEVATION



PLAN



END VIEW

DETAILS FOR ATTACHMENT BRACKET
(BOTTOM RAIL ONLY)

(BOTTOM RAIL ONLY)

NOTES

METAL RAIL TO END POST CONNECTION

- THE METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:
 - A. 1/2" PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
 - B. 3/4" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A 3/4" Ø X 1 1/8" BOLT WITH 2" O.D. WASHER IN PLACE. THE 3/4" Ø X 1 1/8" BOLT SHALL HAVE N. C. THREADS.
 - C. CAP SCREWS FOR RAIL ATTACHMENT TO ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F593 ALLOY 305 STAINLESS STEEL. CAP SCREWS TO BE CENTERED IN SLOTS AT 60°F. WASHERS FOR RAIL ATTACHMENT SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.
 - D. CLAMP BARS (SEE SHEET 2 OF 3).
- THE COST OF THE STANDARD CLAMP BARS AND CAP SCREWS USED IN THE METAL RAIL TO END POST CONNECTION SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF 3 BAR METAL RAIL.
- THE 3/4" STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.
- THE COST OF THE 3/4" STRUCTURAL CONCRETE INSERT ASSEMBLY, AND THE 1/2" PLATES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.
- THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE 3/4" Ø X 1 1/8" BOLT WITH WASHER SHALL BE REPLACED WITH A 3/4" Ø X 6 1/2" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE 3/4" Ø X 1 1/8" BOLT SHALL APPLY TO THE 3/4" Ø X 6 1/2" BOLT. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

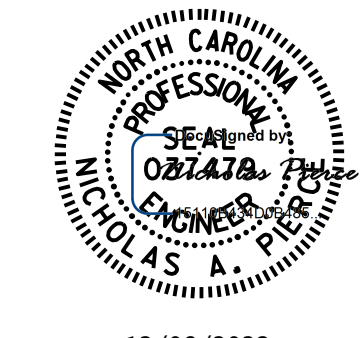
NOTES

STRUCTURAL CONCRETE INSERT

- THE STRUCTURAL CONCRETE INSERT ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:
- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1 1/2".
- B. 1 - 3/4" Ø X 1 1/8" BOLT WITH WASHER. BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. AT THE CONTRACTORS OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø X 1 1/8" GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.
- C. WIRE STRUT SHOWN IN THE CONCRETE INSERT ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 1/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

PROJECT NO. **15BPR.59**
DURHAM/WAKE COUNTY
 BRIDGE NO. **911039**

SHEET 3 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

3 BAR METAL RAIL REPAIR DETAILS

ASSEMBLED BY: N.A. PIERCE DATE: 10/2022
 CHECKED BY: A.Y. GODFREY DATE: 11/2022
 DRAWN BY:
 CHECKED BY:

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO. S2-11 TOTAL SHEETS 19
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

DECK UNDERSIDE REPAIR QUANTITY TABLE

SPAN A	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0	0		
CONCRETE DIAPHRAGM	0	0		
OVERHANG	0	0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0	0		
CONCRETE DIAPHRAGM	0	0		
OVERHANG	0	0		



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

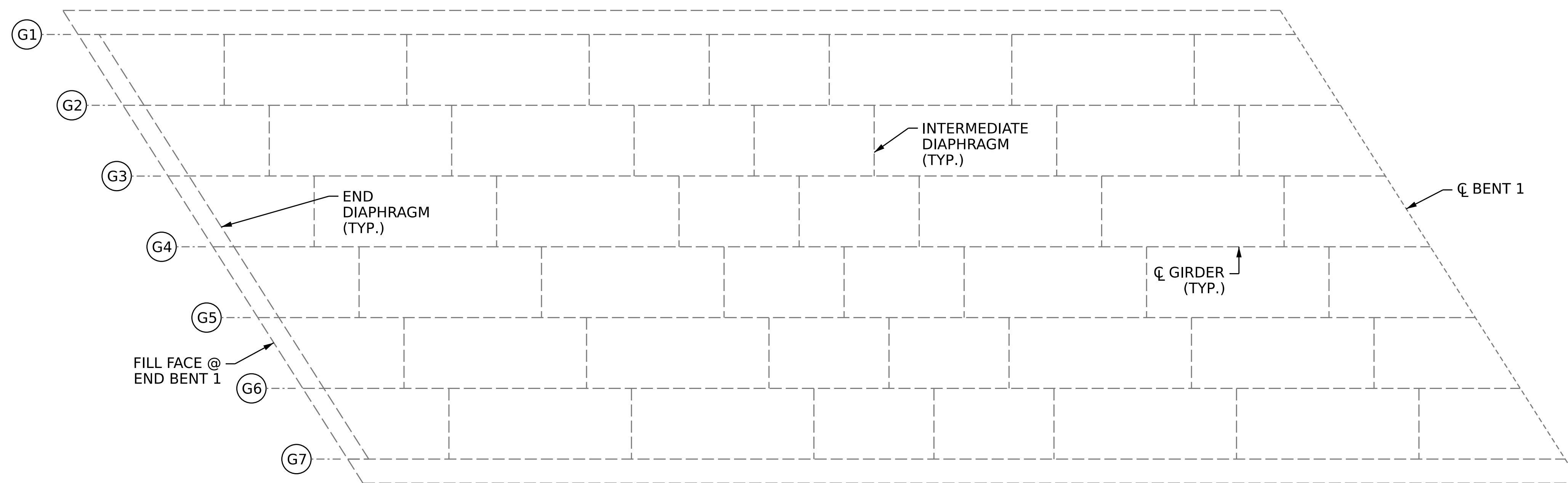
NOTES

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

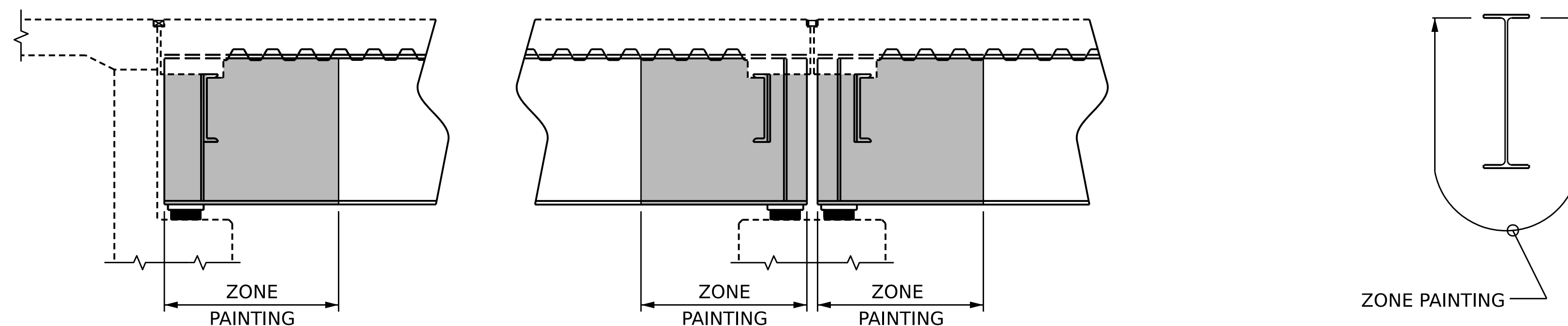
CONCRETE REPAIRS MAYBE SUBSTITUTED IN LIEU OF SHOTCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

ALL GIRDERS SHALL BE PAINTED IN ACCORDANCE WITH THE LIMITS OF ZONE PAINTING DETAIL.

-  SHOTCRETE REPAIR AREA
-  CONCRETE REPAIR AREA



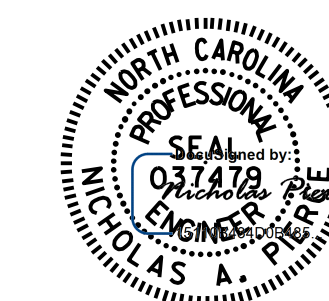
SPAN A
(UNDERSIDE)



LIMITS OF ZONE PAINTING

PROJECT NO. **15BPR.59**
WAKE COUNTY
 BRIDGE NO. **911039**

SHEET 1 OF 3



12/08/2022

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
DECK UNDERSIDE REPAIR
SPAN A

DRAWN BY : D.A. CANTRELL/A.Y. GODFREY DATE : 09/2022
 CHECKED BY : N.A. PIERCE DATE : 10/2022
 DESIGN ENGINEER OF RECORD: N.A. PIERCE DATE : 12/2022

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-12
1			3			TOTAL SHEETS
2			4			18

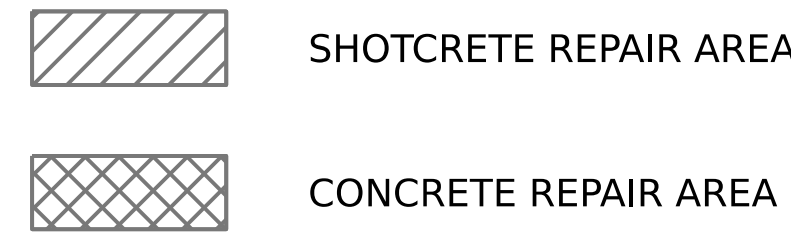
8/26/21

NOTES

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

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

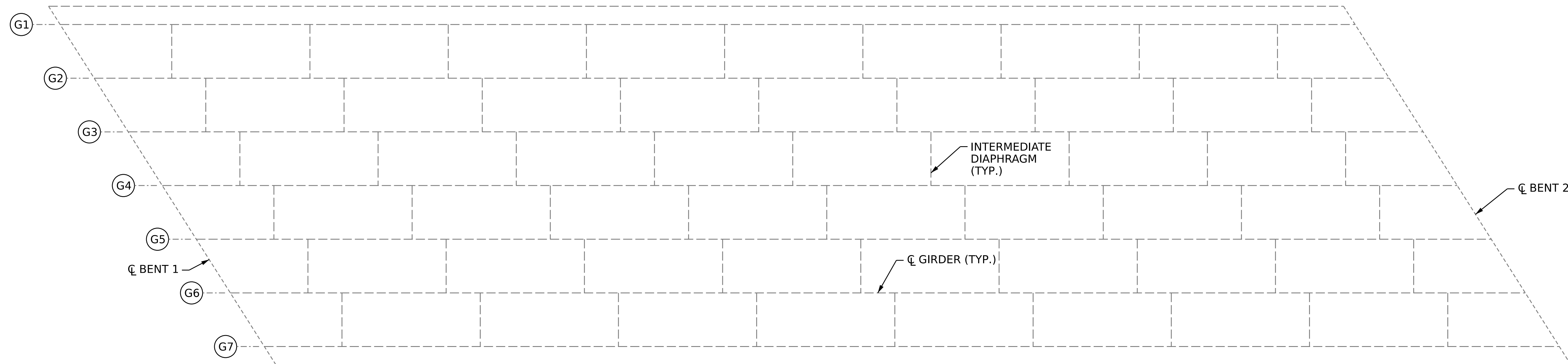
ALL GIRDERS SHALL BE PAINTED IN ACCORDANCE WITH THE LIMITS OF ZONE PAINTING DETAIL.



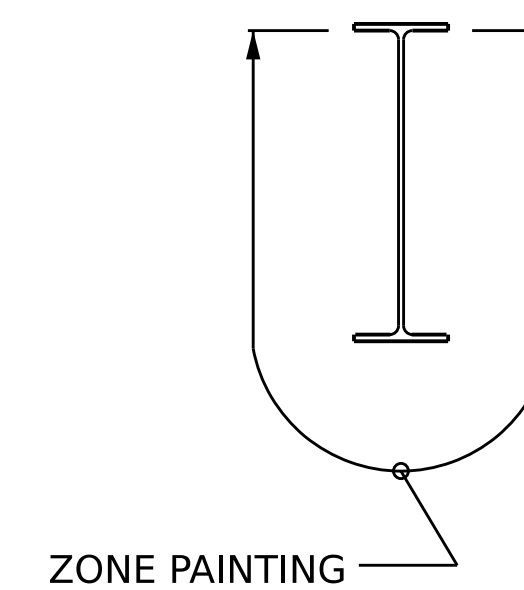
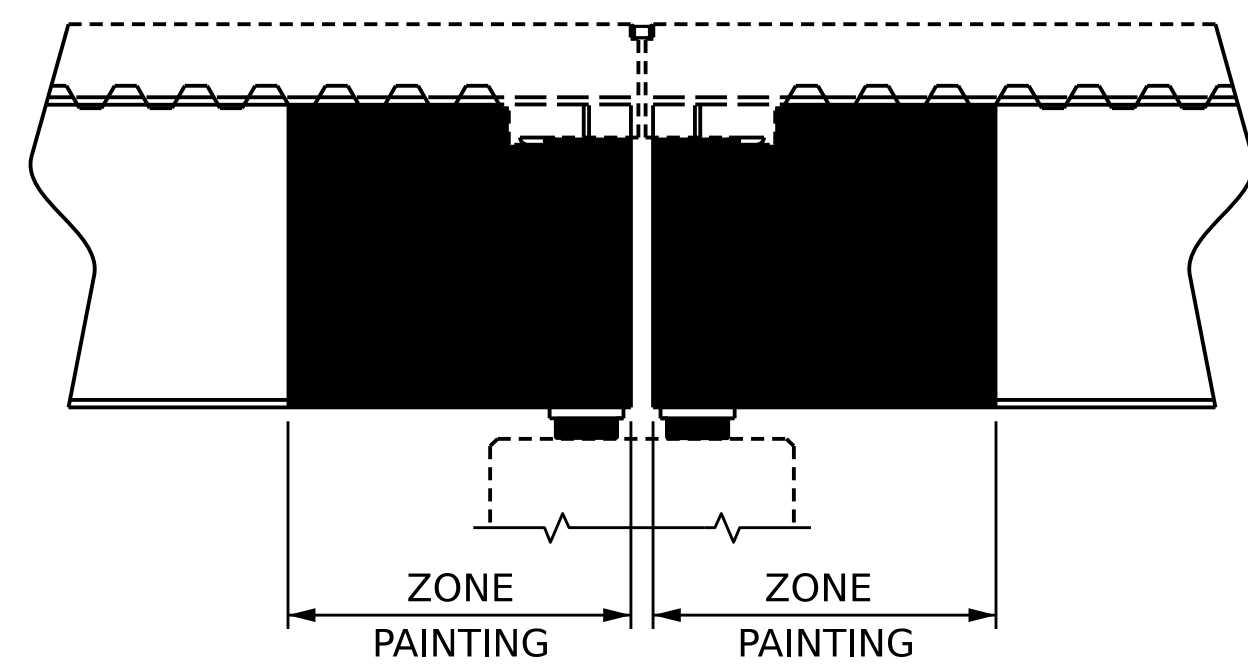
DECK UNDERSIDE REPAIR QUANTITY TABLE

SPAN B	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0	0		
CONCRETE DIAPHRAGM	0	0		
OVERHANG	0	0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0	0		
CONCRETE DIAPHRAGM	0	0		
OVERHANG	0	0		

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



SPAN B
(UNDERSIDE)



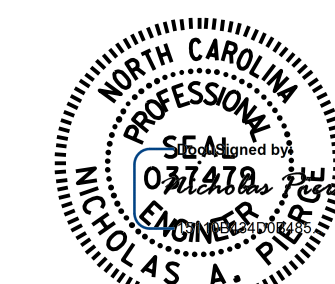
LIMITS OF ZONE PAINTING

PROJECT NO. **15BPR.59**
WAKE COUNTY
BRIDGE NO. **911039**

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
DECK UNDERSIDE REPAIR

SPAN B



12/08/2022

DRAWN BY : D.A. CANTRELL/A.Y. GODFREY DATE : 09/2022
CHECKED BY : N.A. PIERCE DATE : 10/2022
DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 12/2022

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-13
1			3			TOTAL SHEETS
2			4			18

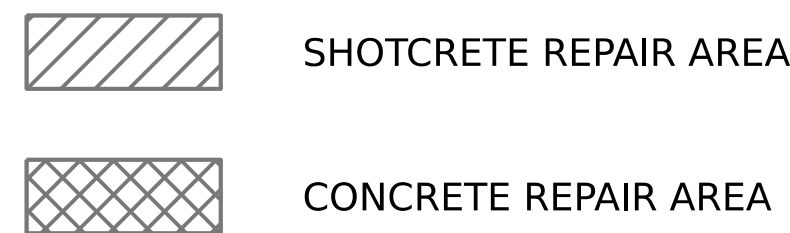
8/26/21

NOTES

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

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

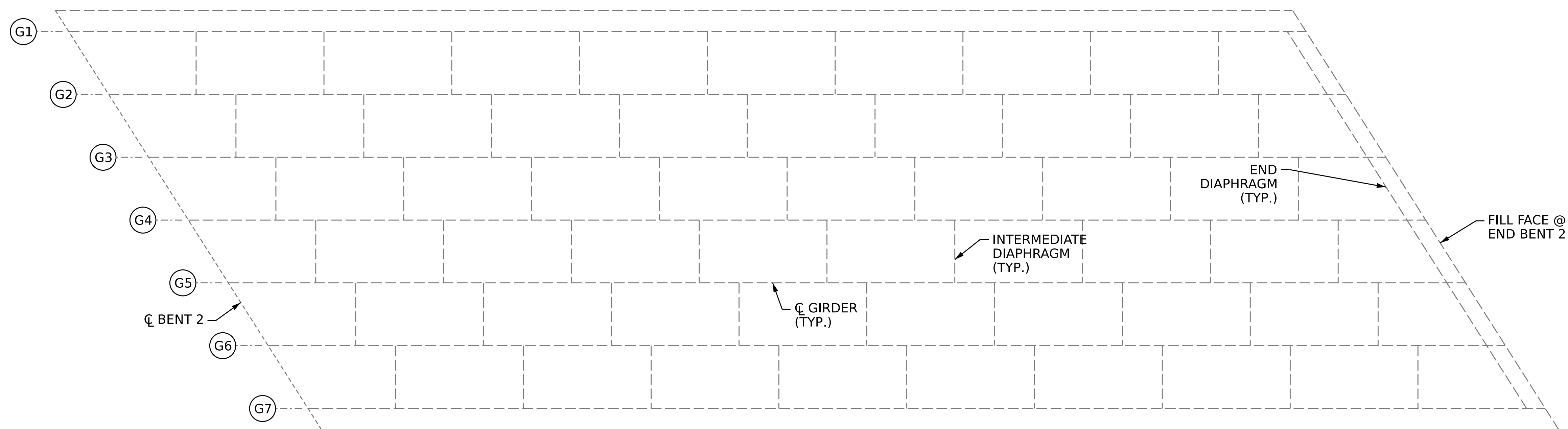
ALL GIRDERS SHALL BE PAINTED IN ACCORDANCE WITH THE LIMITS OF ZONE PAINTING DETAIL.



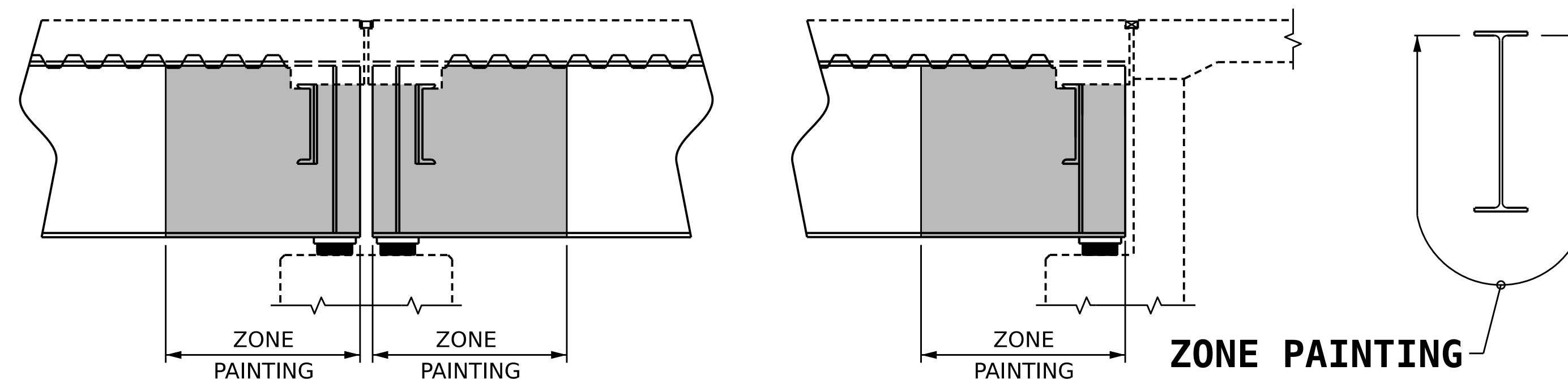
DECK UNDERSIDE REPAIR QUANTITY TABLE

SPAN C	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0	0		
CONCRETE DIAPHRAGM	0	0		
OVERHANG	0	0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0	0		
CONCRETE DIAPHRAGM	0	0		
OVERHANG	0	0		

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



SPAN C
(UNDERSIDE)



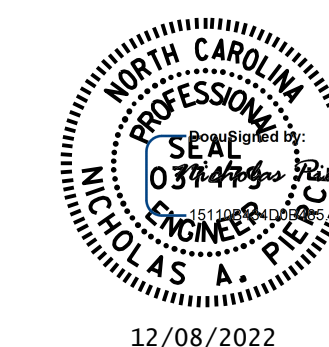
LIMITS OF ZONE PAINTING

PROJECT NO. **15BPR.59**
WAKE COUNTY
BRIDGE NO. **911039**

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
DECK UNDERSIDE REPAIR

SPAN C

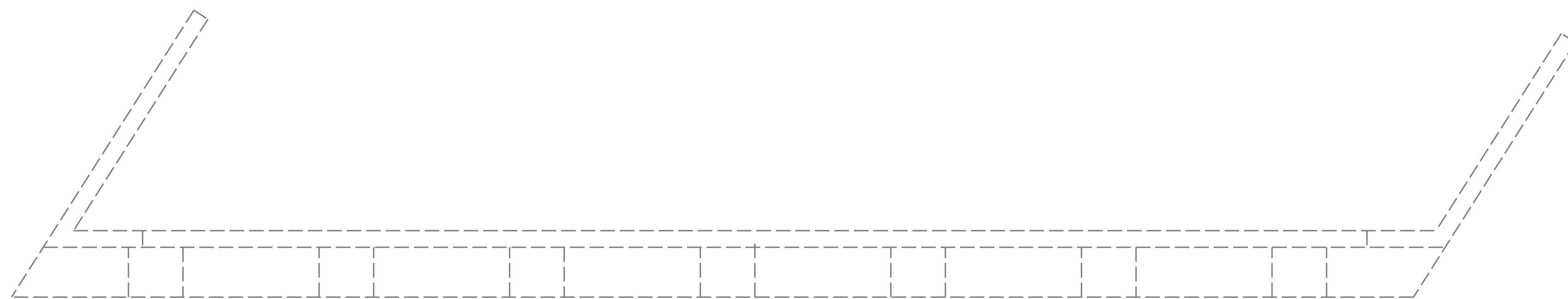


DRAWN BY : D.A. CANTRELL/A.Y. GODFREY DATE : 09/2022
CHECKED BY : N.A. PIERCE DATE : 10/2022
DESIGN ENGINEER OF RECORD: N.A. PIERCE DATE : 12/2022

12/17/2022
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DOCUMENT NOT CONSIDERED
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SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S2-14
2			4			TOTAL SHEETS 18



PLAN
TOP OF CAP



ELEVATION
LOOKING SOUTH

SUBSTRUCTURE REPAIR QUANTITY TABLE				
END BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
CURTAIN WALL	0	0		
WINGWALL				
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
CURTAIN WALL	0	0		
WINGWALL				
EPOXY RESIN INJECTION		LINEAR FT		LINEAR FT
CAP		0		
CURTAIN WALL		0		
WINGWALL				
EPOXY COATING		AREA SF		AREA SF
CAP		278.3		




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

NOTES

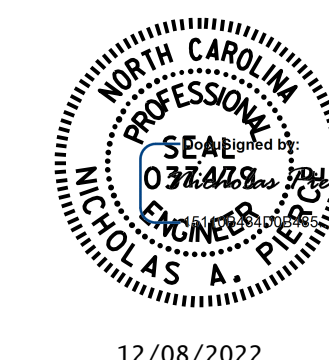
REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE BASED ON THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ENTER THE ACTUAL QUANTITIES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

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

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

-  SHOTCRETE REPAIR AREA
-  CONCRETE REPAIR AREA
-  EPOXY RESIN INJECTION

PROJECT NO. **15BPR.59**
WAKE COUNTY
 BRIDGE NO. **911039**



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE REPAIR
END BENT 1

DRAWN BY : D.A. CANTRELLE/A.Y.GODFREY DATE : 09/2022
 CHECKED BY : N.A. PIERCE DATE : 10/2022
 DESIGN ENGINEER OF RECORD: N.A. PIERCE DATE : 12/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED




REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-15
1			3			TOTAL SHEETS
2			4			18

NOTES

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

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

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

-  SHOTCRETE REPAIR AREA
-  CONCRETE REPAIR AREA
-  EPOXY RESIN INJECTION

SUBSTRUCTURE REPAIR QUANTITY TABLE

BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
COLUMN	0	0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
COLUMN	0	0		
EPOXY RESIN INJECTION		LINEAR FT		LINEAR FT
CAP	0	0		
COLUMN		0		
EPOXY COATING		AREA SF		AREA SF
CAP		449.7		

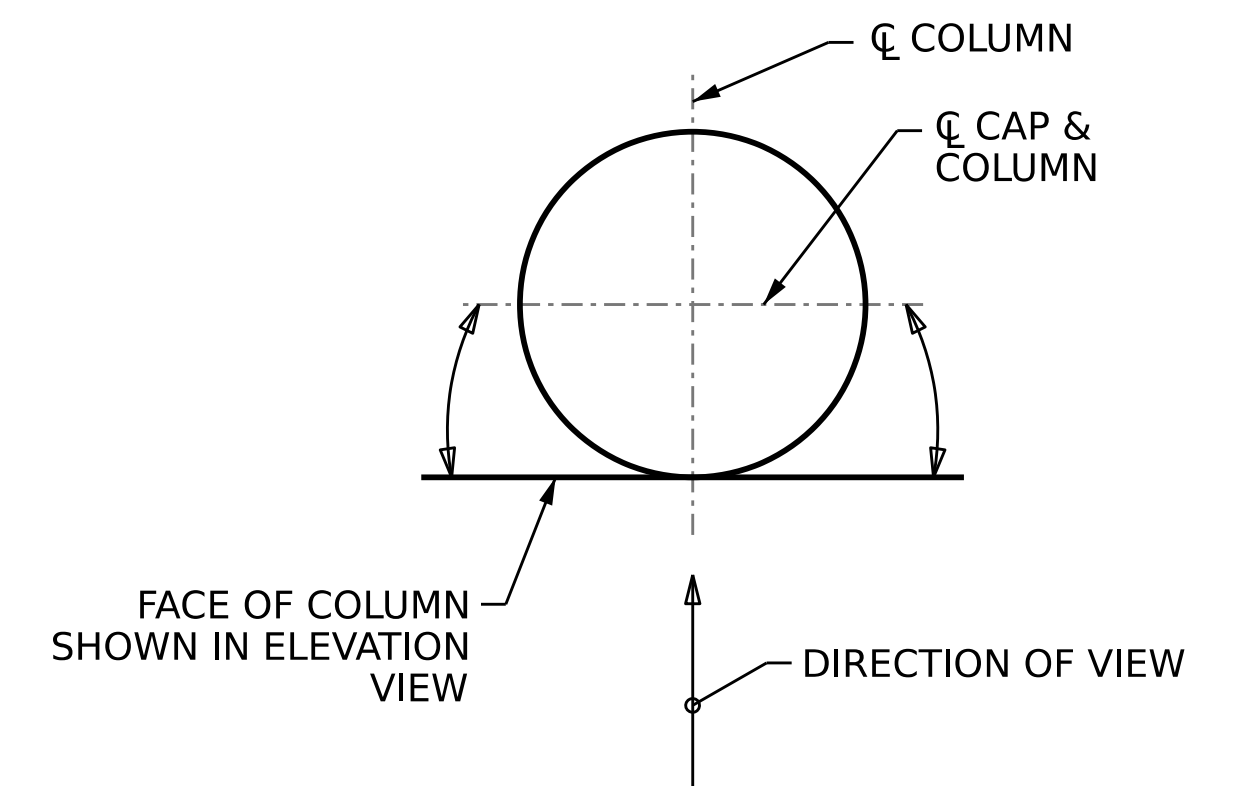
VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CLEAR TO SAWCUT. SEE REPAIR DETAILS.



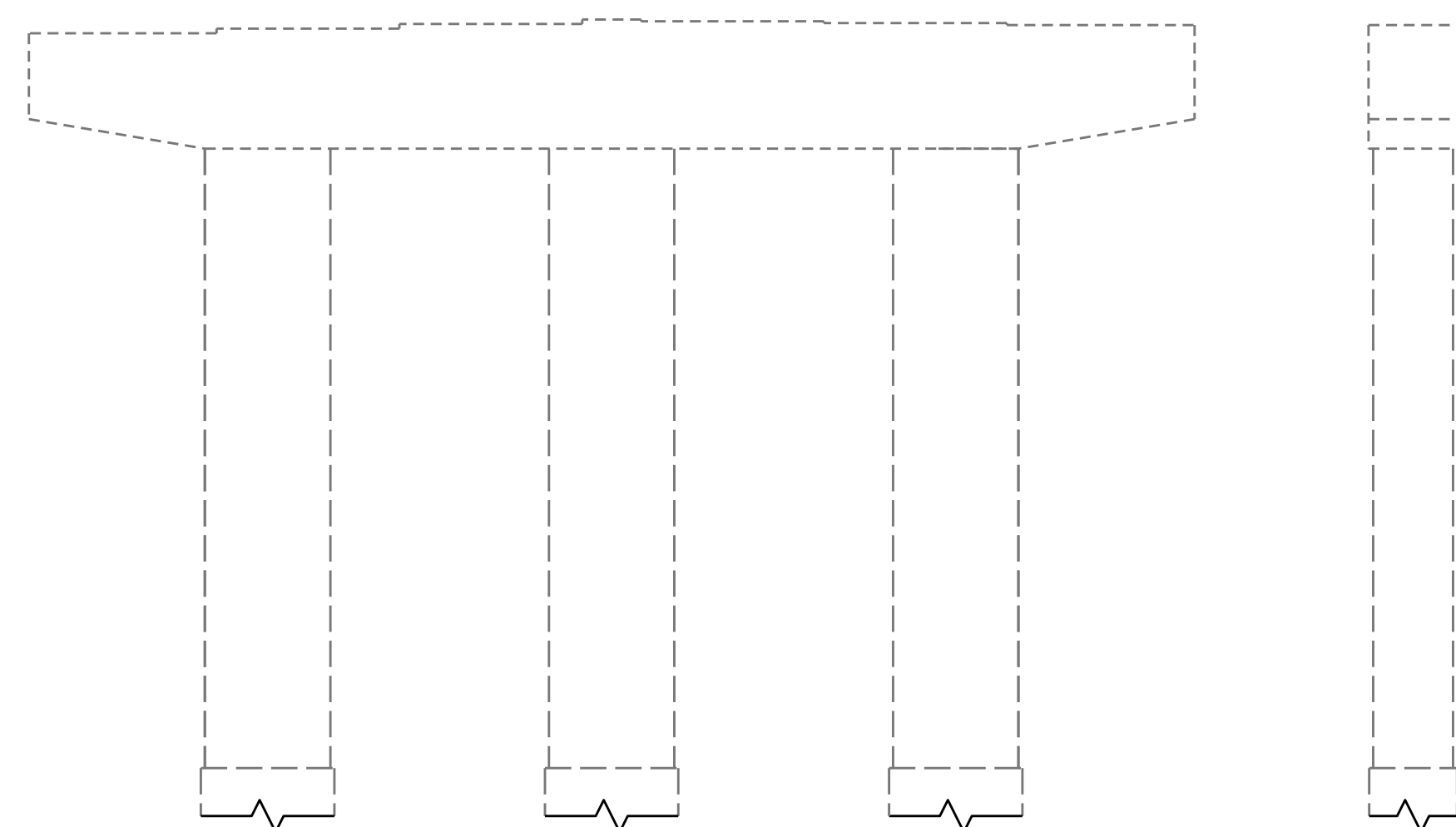
TOP OF CAP



BOTTOM OF CAP

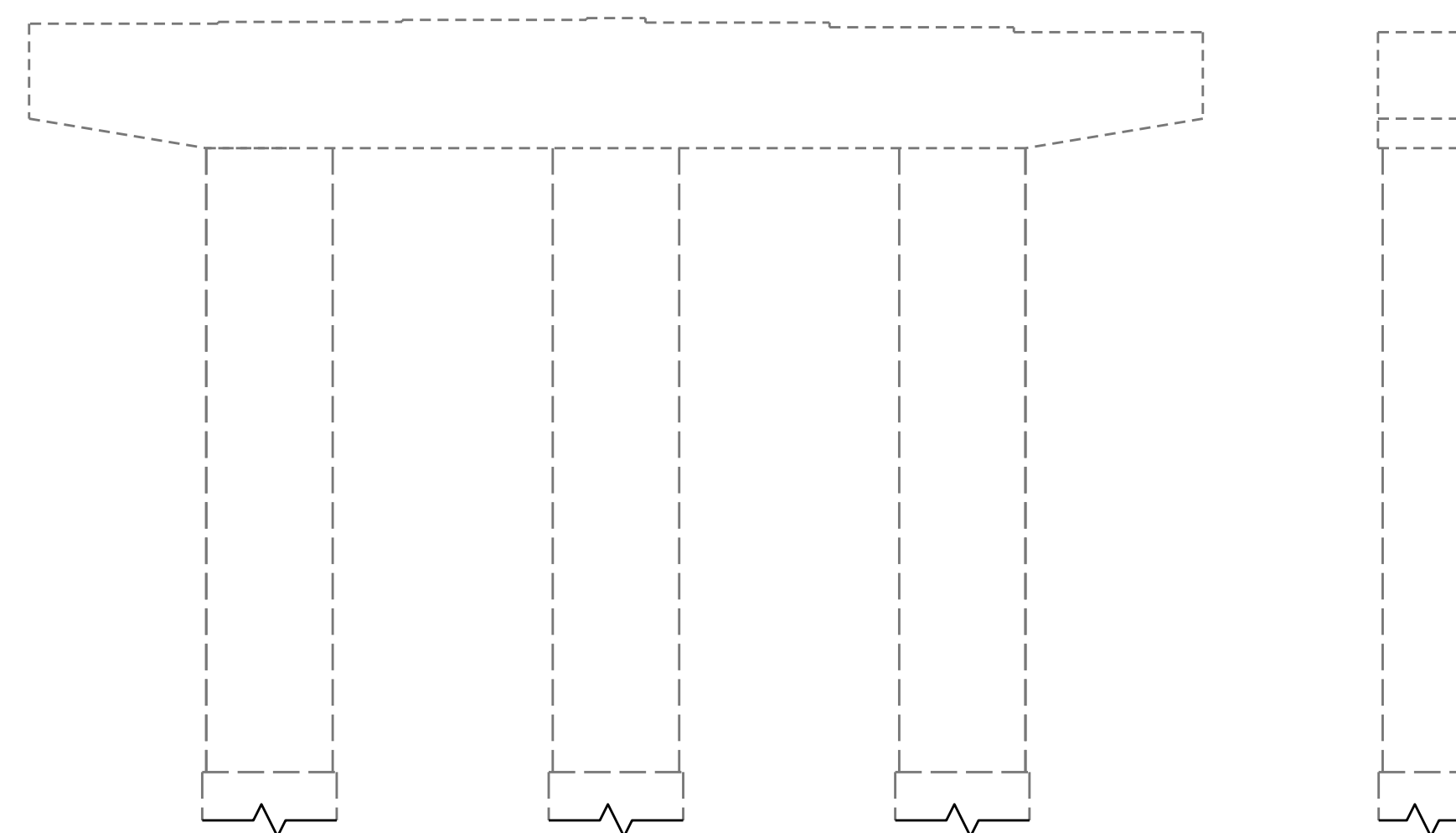


UNWRAPPED COLUMN FACE DETAIL



ELEVATION
SPAN A SIDE

END VIEW



ELEVATION
SPAN B SIDE

END VIEW

PROJECT NO. **15BPR.59**
WAKE COUNTY
BRIDGE NO. **911039**



12/08/2022

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE REPAIR
BENT 1

DRAWN BY : D.A. CANTRELL/A.Y. GODFREY DATE : 09/2022
CHECKED BY : N.A. PIERCE DATE : 10/2022
DESIGN ENGINEER OF RECORD: N.A. PIERCE DATE : 12/2022

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

REVISIONS						SHEET NO. S2-16
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			18

NOTES

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

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

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

 SHOTCRETE REPAIR AREA

 CONCRETE REPAIR AREA

 EPOXY RESIN INJECTION

SUBSTRUCTURE REPAIR QUANTITY TABLE

BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
COLUMN	0	0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
COLUMN	0	0		
EPOXY RESIN INJECTION		LINEAR FT		LINEAR FT
CAP		0		
COLUMN		0		
EPOXY COATING		AREA SF		AREA SF
CAP		441.7		

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



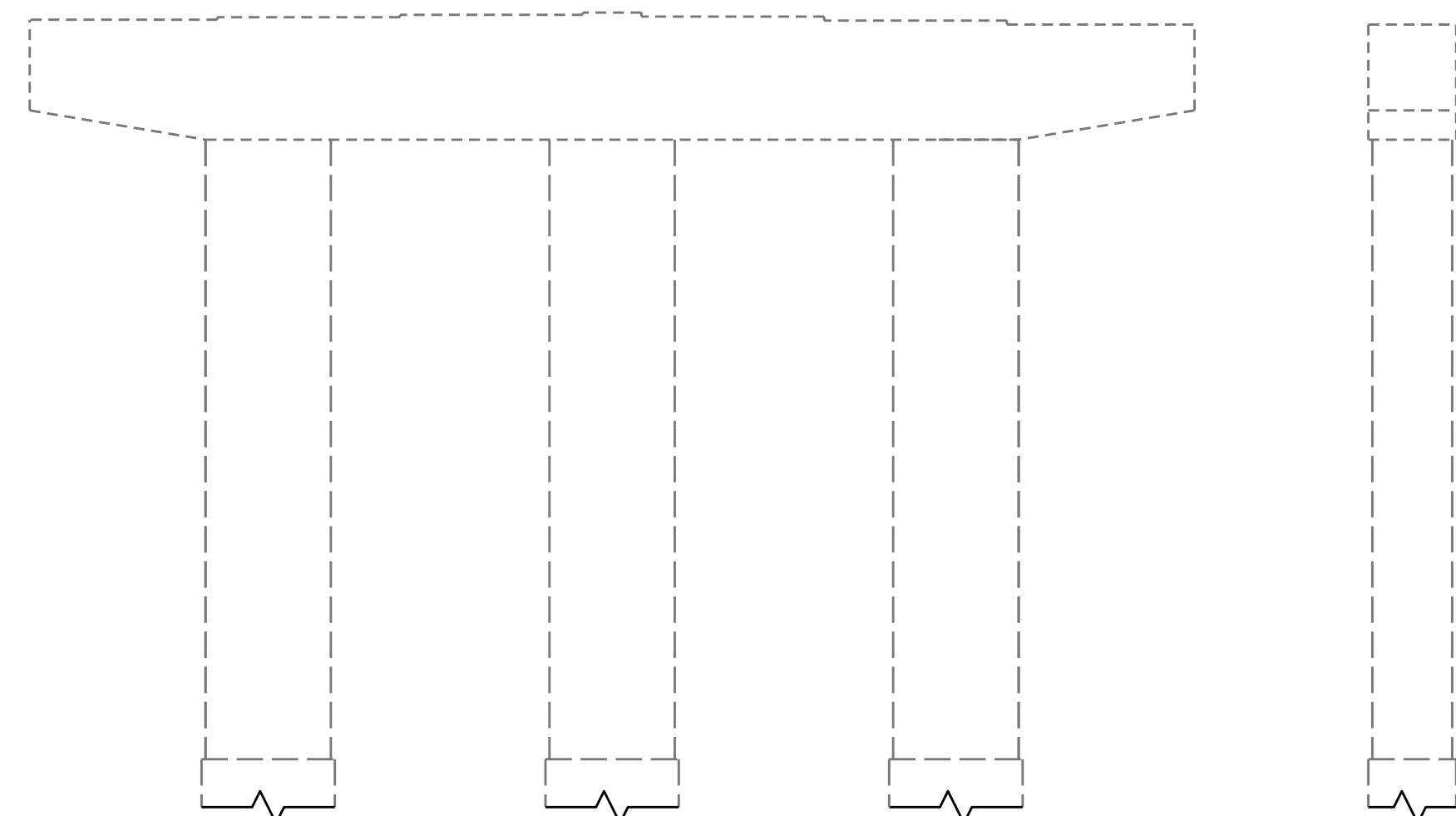
SPAN B
SPAN C



SPAN C
SPAN B

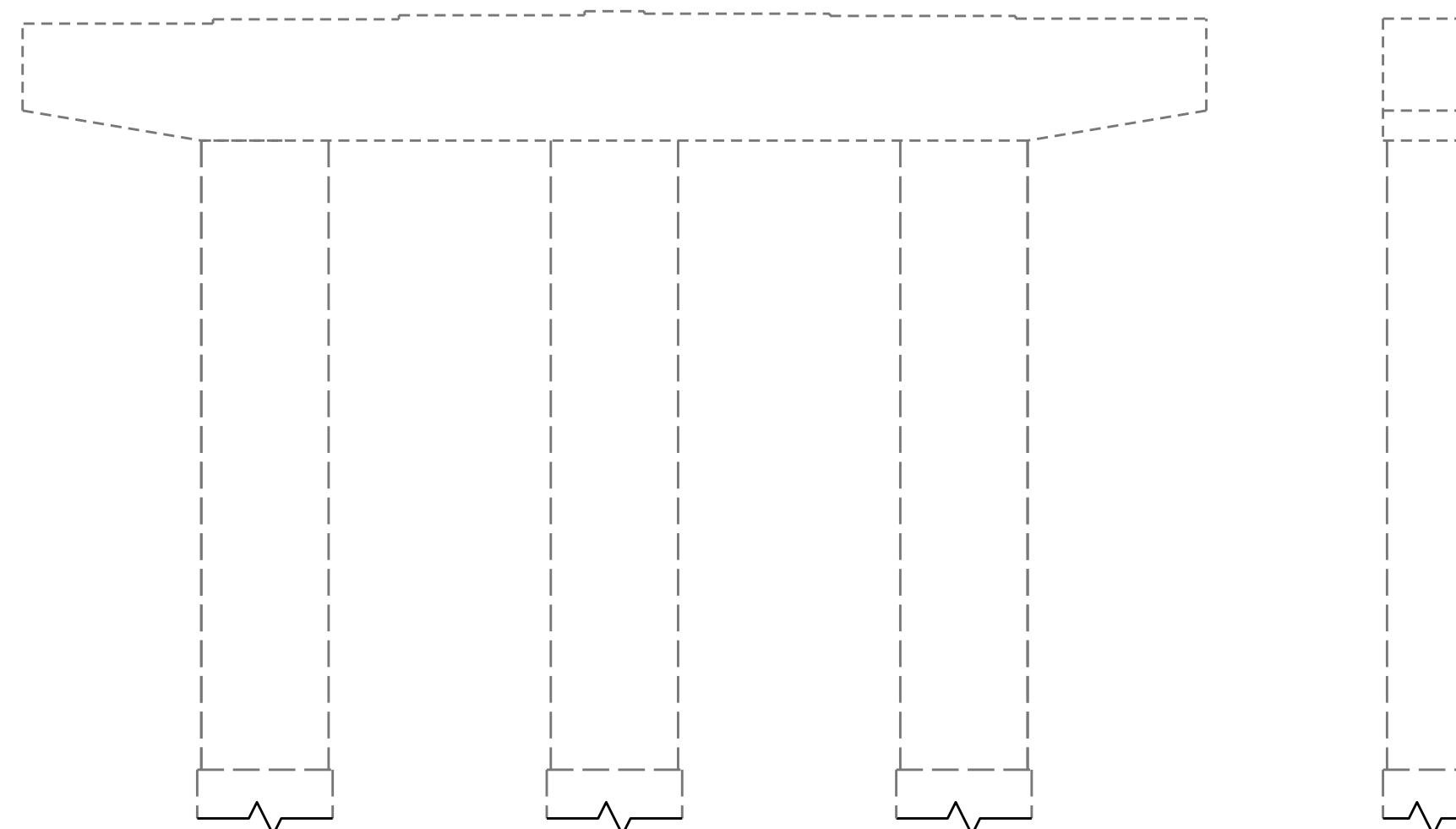
TOP OF CAP

BOTTOM OF CAP



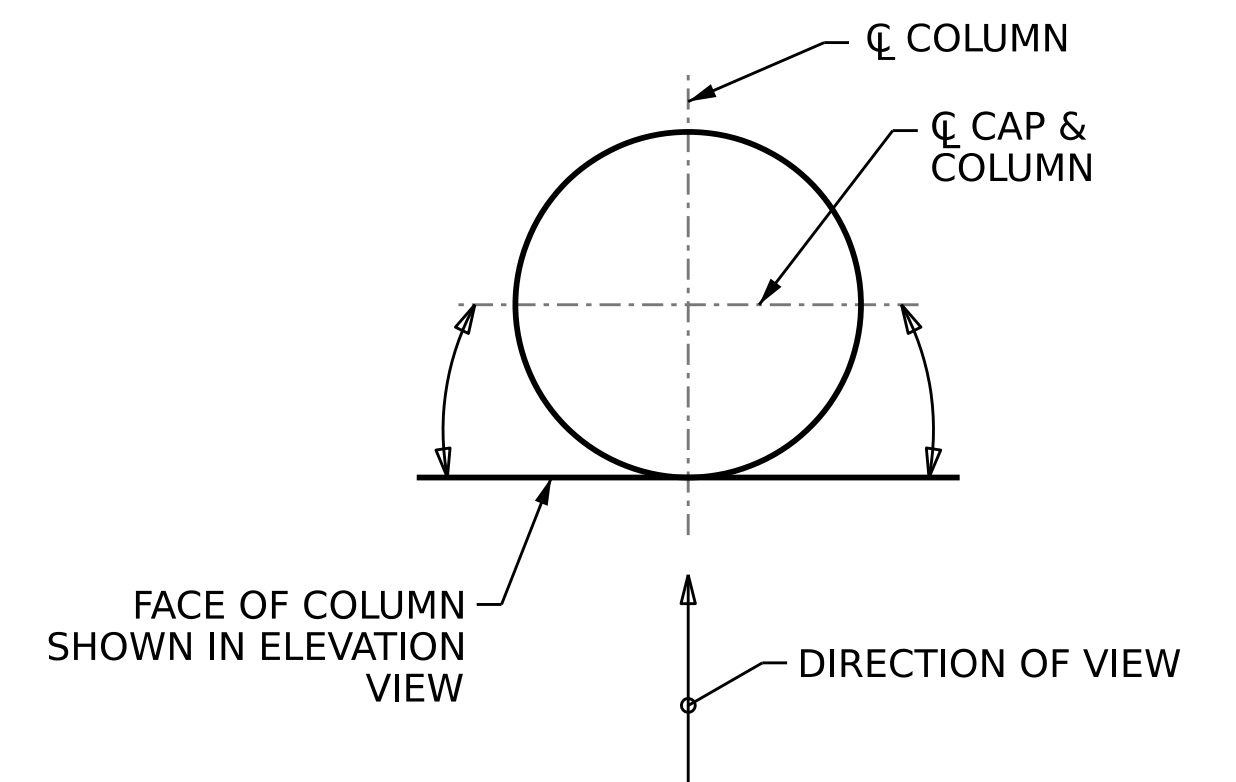
ELEVATION
SPAN B FACE

END VIEW



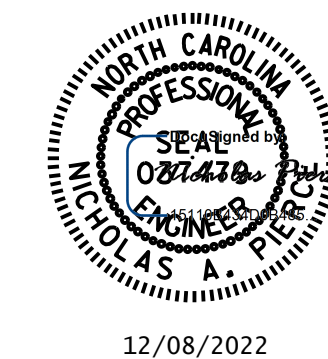
ELEVATION
SPAN C FACE

END VIEW



UNWRAPPED COLUMN FACE DETAIL

PROJECT NO. **15BPR.59**
WAKE COUNTY
 BRIDGE NO. **911039**

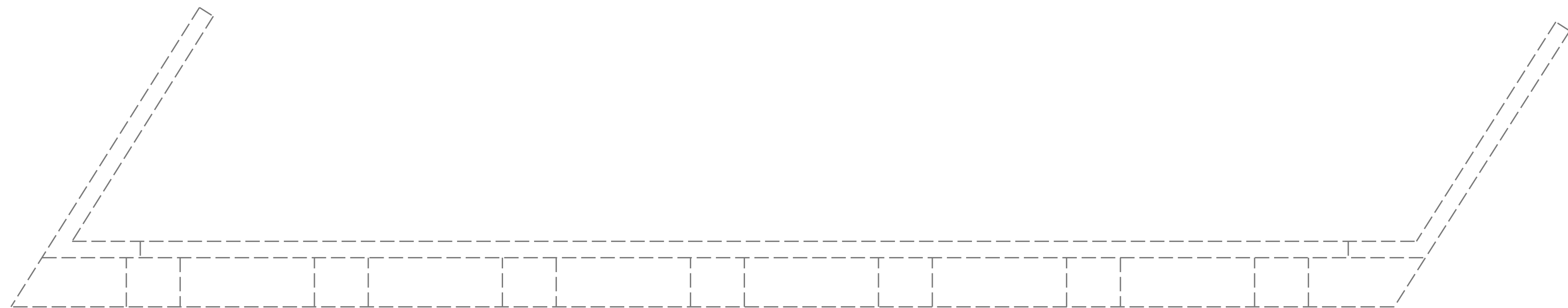


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE REPAIR
BENT 2

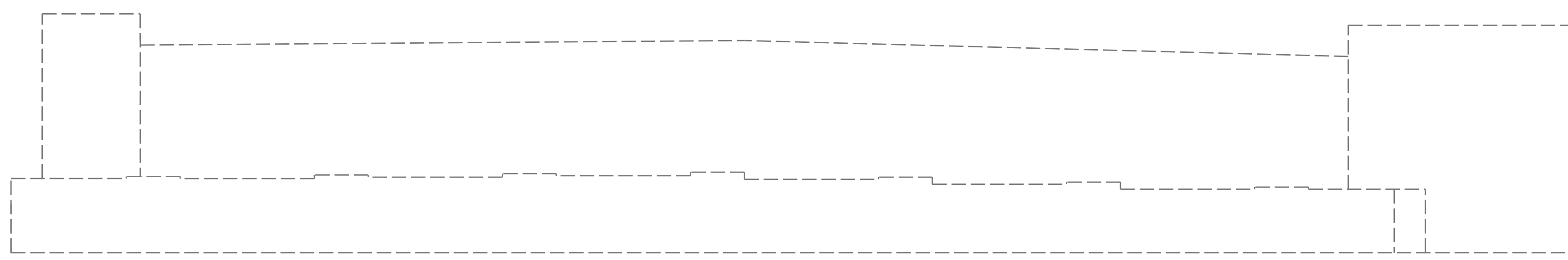
DRAWN BY : D.A. CANTRELL/A.Y. GODFREY DATE : 09/2022
 CHECKED BY : N.A. PIERCE DATE : 10/2022
 DESIGN ENGINEER OF RECORD: N.A. PIERCE DATE : 12/2022

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REVISIONS					SHEET NO. S2-17 TOTAL SHEETS 18
NO.	BY:	DATE:	NO.	BY:	
1			3		
2			4		



PLAN
TOP OF CAP



ELEVATION
LOOKING NORTH

SUBSTRUCTURE REPAIR QUANTITY TABLE

END BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
	AREA SF	VOLUME CF	AREA SF	VOLUME CF
SHOTCRETE REPAIRS				
CAP	0	0		
CURTAIN WALL	0	0		
WINGWALL				
CONCRETE REPAIRS				
CAP	0	0		
CURTAIN WALL	0	0		
WINGWALL				
EPOXY RESIN INJECTION		LINEAR FT	AREA SF	VOLUME CF
CAP	0	0		
CURTAIN WALL	0	0		
WINGWALL	0	0		
EPOXY COATING		AREA SF		AREA SF
CAP		278.3		




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

NOTES

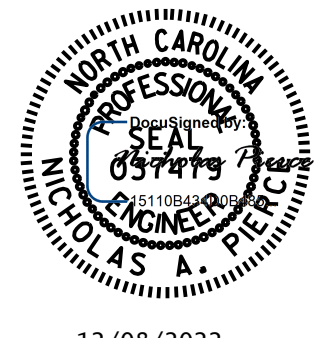
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CLEAN AND REMOVE DEBRIS FROM THE TOP OF THE CAP AND APPLY EPOXY PROTECTIVE COATING. EPOXY COATING SHALL BE APPLIED TO THE TOP SURFACE OF THE CAP. THE CONTRACTOR SHALL NOT COAT THE AREA OF THE CAP BENEATH THE MASONRY PLATES. FOR EPOXY COATING, SEE SPECIAL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

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

-  SHOTCRETE REPAIR AREA
-  CONCRETE REPAIR AREA
-  EPOXY RESIN INJECTION

PROJECT NO. **15BPR.59**
WAKE COUNTY
 BRIDGE NO. **911039**

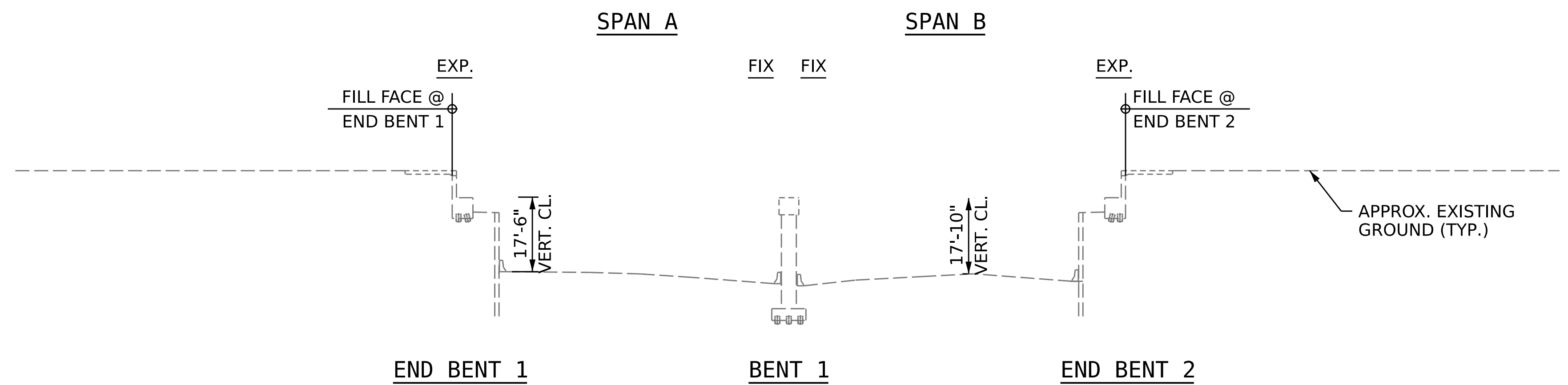


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE REPAIR
END BENT 2

DRAWN BY : D.A. CANTRELL/A.Y. GODFREY DATE : 09/2022
 CHECKED BY : N.A. PIERCE DATE : 10/2022
 DESIGN ENGINEER OF RECORD: N.A. PIERCE DATE : 12/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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



NOTES

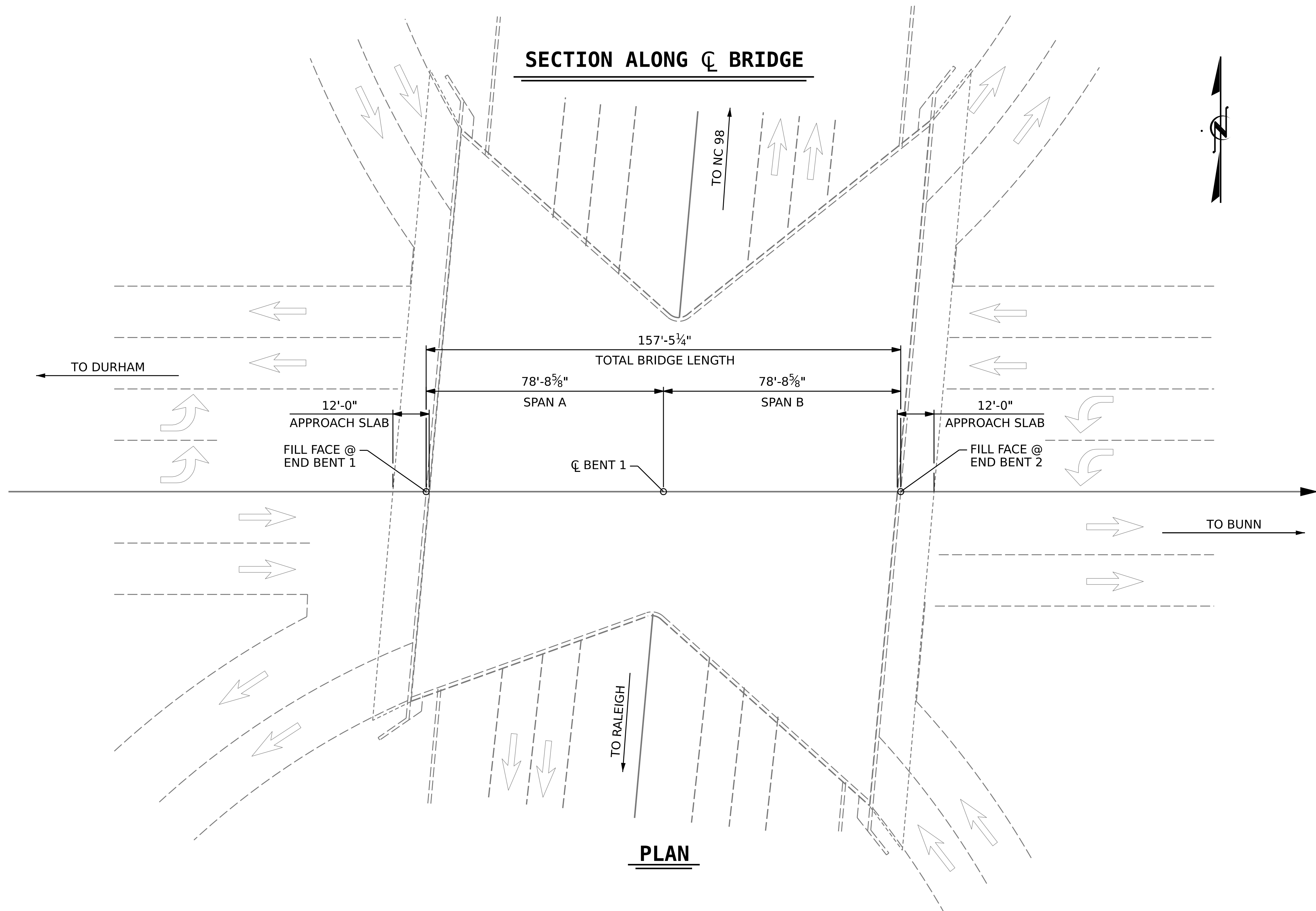
GENERAL DRAWING INFORMATION IS TAKEN FROM THE ORIGINAL PLANS AND THE ROUTINE INSPECTION REPORT DATED 05/10/2022.

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

SCOPE OF WORK

- SHOTBLAST BRIDGE DECK AND BARRIER RAILS.
- APPLY SILANE DECK TREATMENT TO PREPARED TOP OF BRIDGE DECK.
- APPLY SILANE BARRIER TREATMENT TO BARRIER RAILS.
- REMOVE EXISTING JOINT MATERIAL AND INSTALL FOAM JOINTS.
- MILL AND REPAVE ASPHALT APPROACH ROADWAYS.
- CLEAN AND ZONE PAINT EXISTING STRUCTURAL WEATHERING STEEL BEAMS.
- REMOVE DEBRIS FROM TOP OF EXISTING END BENT AND BENT CAPS AND APPLY EPOXY COATING.

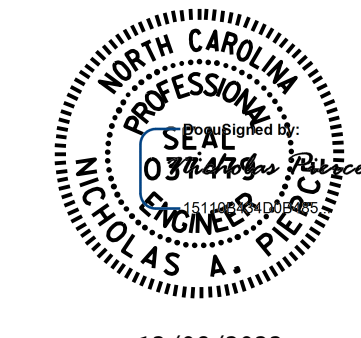
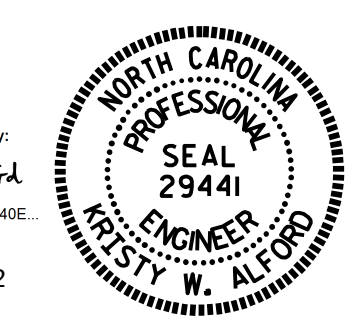
SECTION ALONG ϕ BRIDGE



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

RESIDENT ENGINEER _____ DATE _____

DocuSigned by:
Kristy Altford
F246830030BF40E
12/08/2022



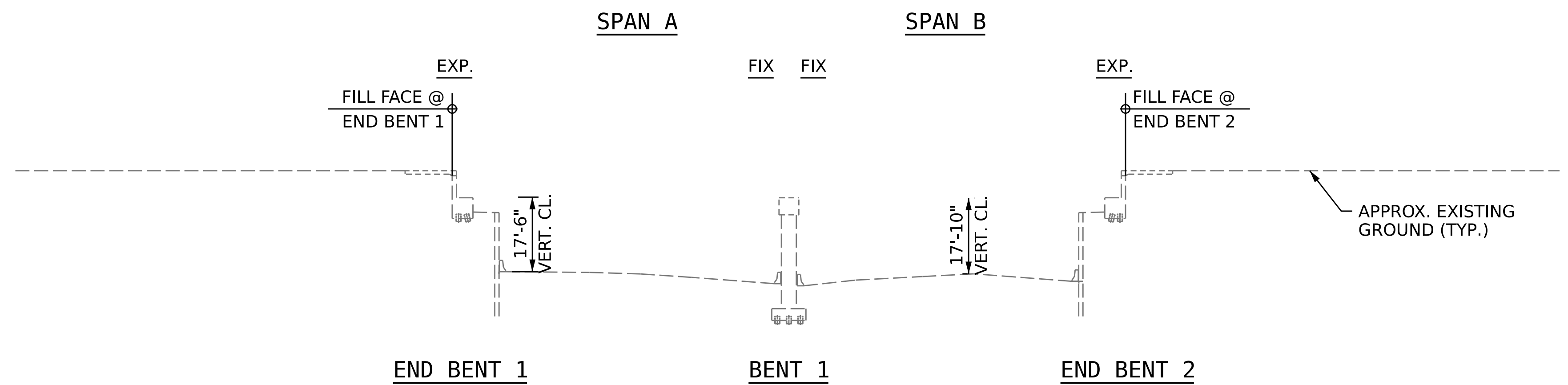
PROJECT NO. **15BPR.59**
WAKE COUNTY
 BRIDGE NO. **911083**

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE ON NC-98
 OVER US-1
 BETWEEN US 98 AND US-1A

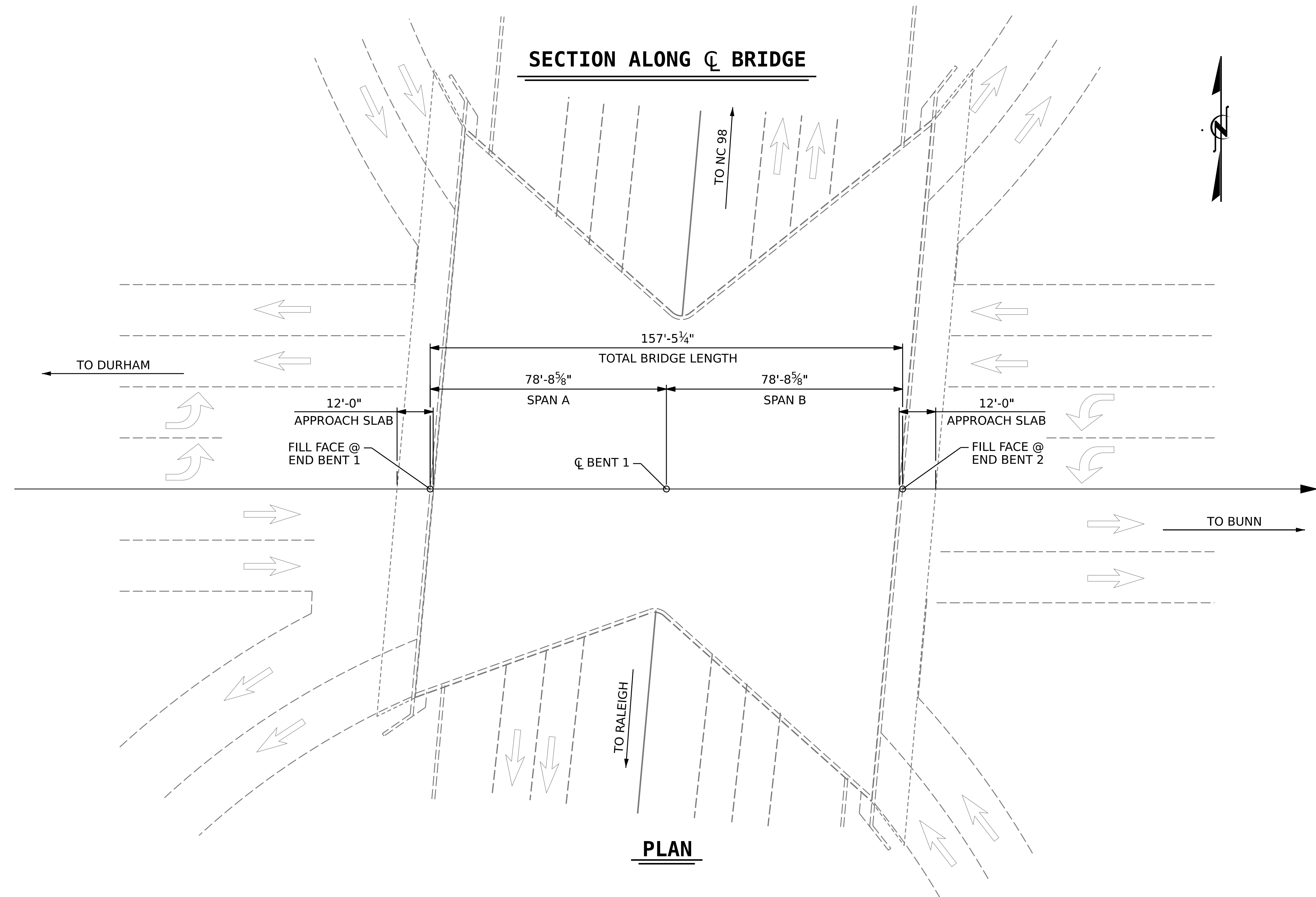
DRAWN BY : N.A. PIERCE DATE : 03/2022
 CHECKED BY : A.Y. GODFREY DATE : 11/2022
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 12/2022

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO. S3-01 TOTAL SHEETS 12
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			



SECTION ALONG ϕ BRIDGE



NOTES

GENERAL DRAWING INFORMATION IS TAKEN FROM THE ORIGINAL PLANS AND THE ROUTINE INSPECTION REPORT DATED 05/10/2022.

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

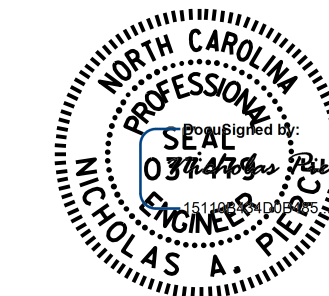
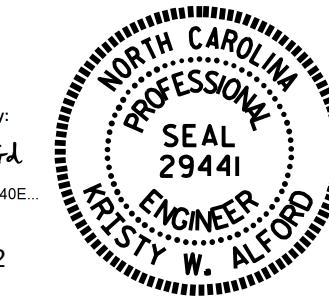
SCOPE OF WORK

- SHOTBLAST BRIDGE DECK AND BARRIER RAILS.
- APPLY SILANE DECK TREATMENT TO PREPARED TOP OF BRIDGE DECK.
- APPLY SILANE BARRIER TREATMENT TO BARRIER RAILS.
- REMOVE EXISTING JOINT MATERIAL AND INSTALL FOAM JOINTS.
- MILL AND REPAVE ASPHALT APPROACH ROADWAYS.
- CLEAN AND ZONE PAINT EXISTING STRUCTURAL WEATHERING STEEL BEAMS.
- REMOVE DEBRIS FROM TOP OF EXISTING END BENT AND BENT CAPS AND APPLY EPOXY COATING.

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

RESIDENT ENGINEER _____ DATE _____

DocuSigned by:
Kristy Altford
F246830030BF40E
12/08/2022



12/08/2022

PROJECT NO. **15BPR.59**
WAKE COUNTY
 BRIDGE NO. **911083**

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE ON NC-98
 OVER US-1
 BETWEEN US 98 AND US-1A

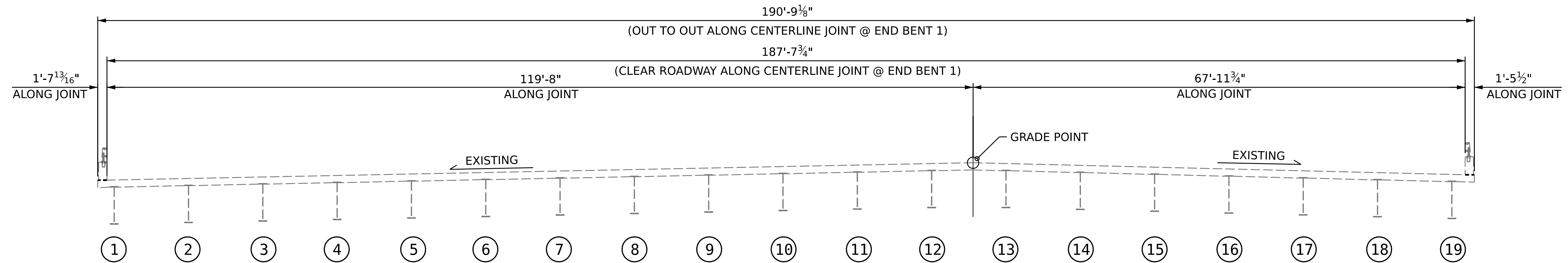
DRAWN BY : N.A. PIERCE DATE : 03/2022
 CHECKED BY : A.Y. GODFREY DATE : 11/2022
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 12/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

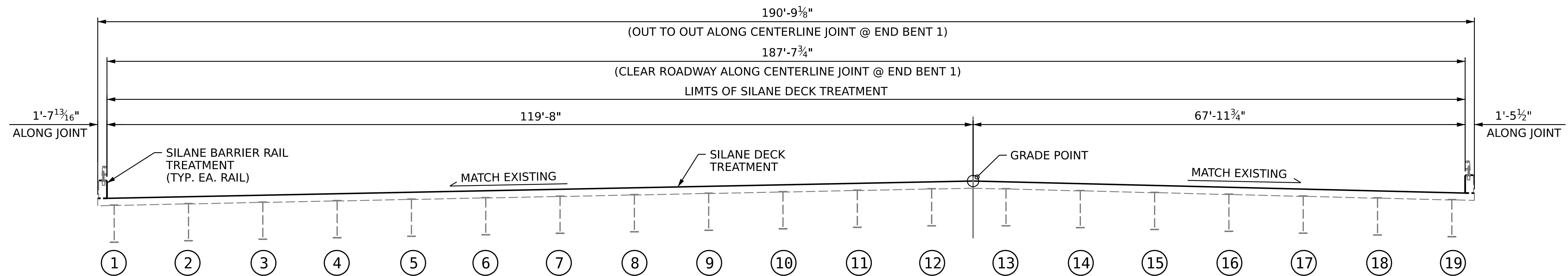
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-01
1			3			TOTAL SHEETS
2			4			12

NOTES

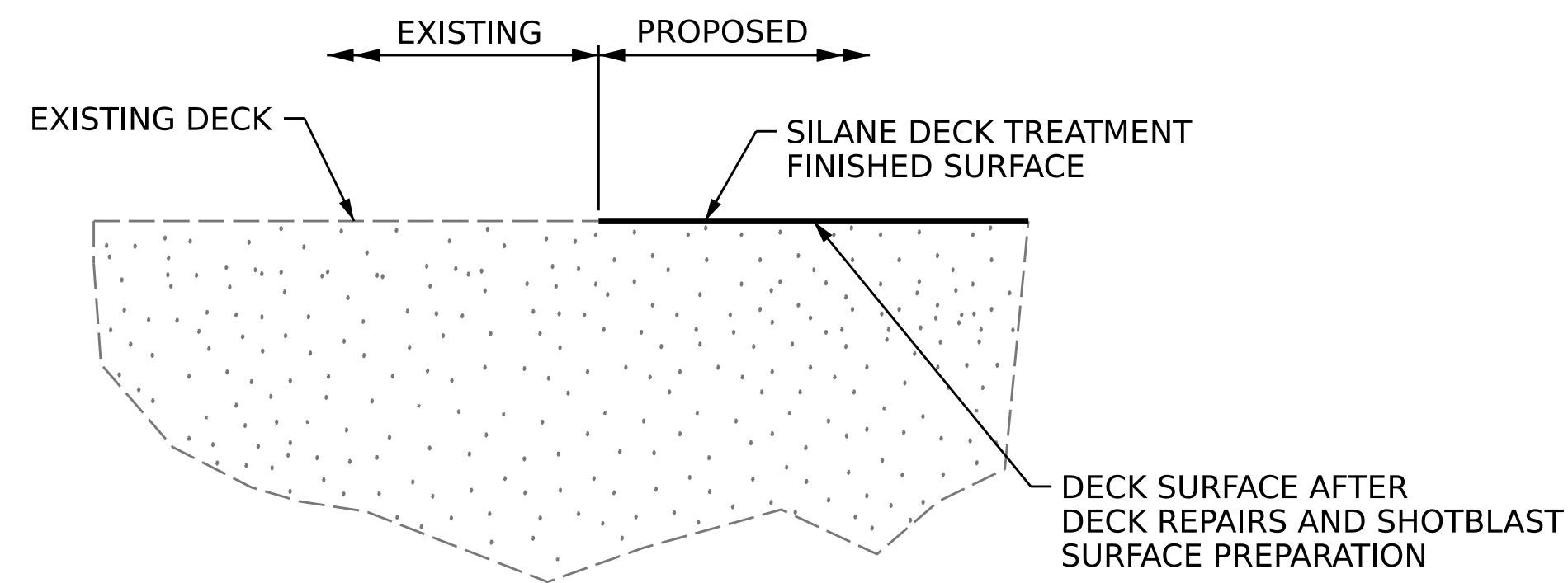
SEE TRAFFIC MANAGEMENT PLANS FOR LANE WIDTHS, SEQUENCING, AND OTHER TRAFFIC CONTROL MEASURES FOR SURFACE PREPARATION AND SILANE DECK TREATMENT APPLICATION.



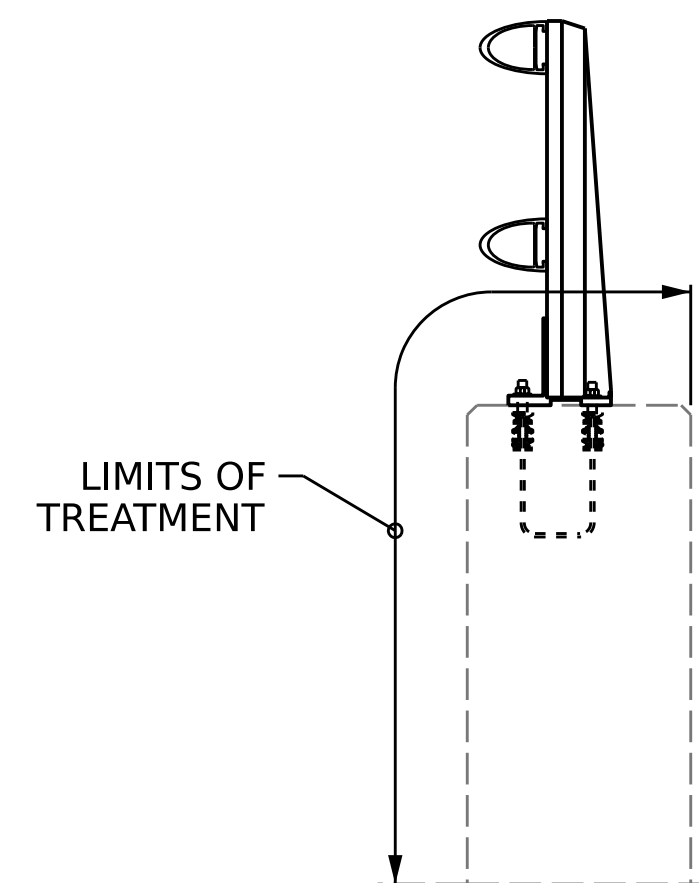
TYPICAL SECTION
(EXISTING AT END BENT 1 SHOWN)



TYPICAL SECTION
(PROPOSED AT END BENT 1 SHOWN)

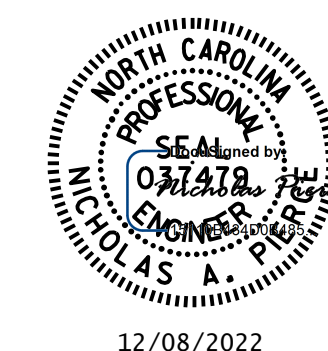


DETAIL FOR SILANE DECK TREATMENT



DETAIL FOR SILANE BARRIER RAIL TREATMENT

PROJECT NO. **15BPR.59**
WAKE COUNTY
 BRIDGE NO. **911083**



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

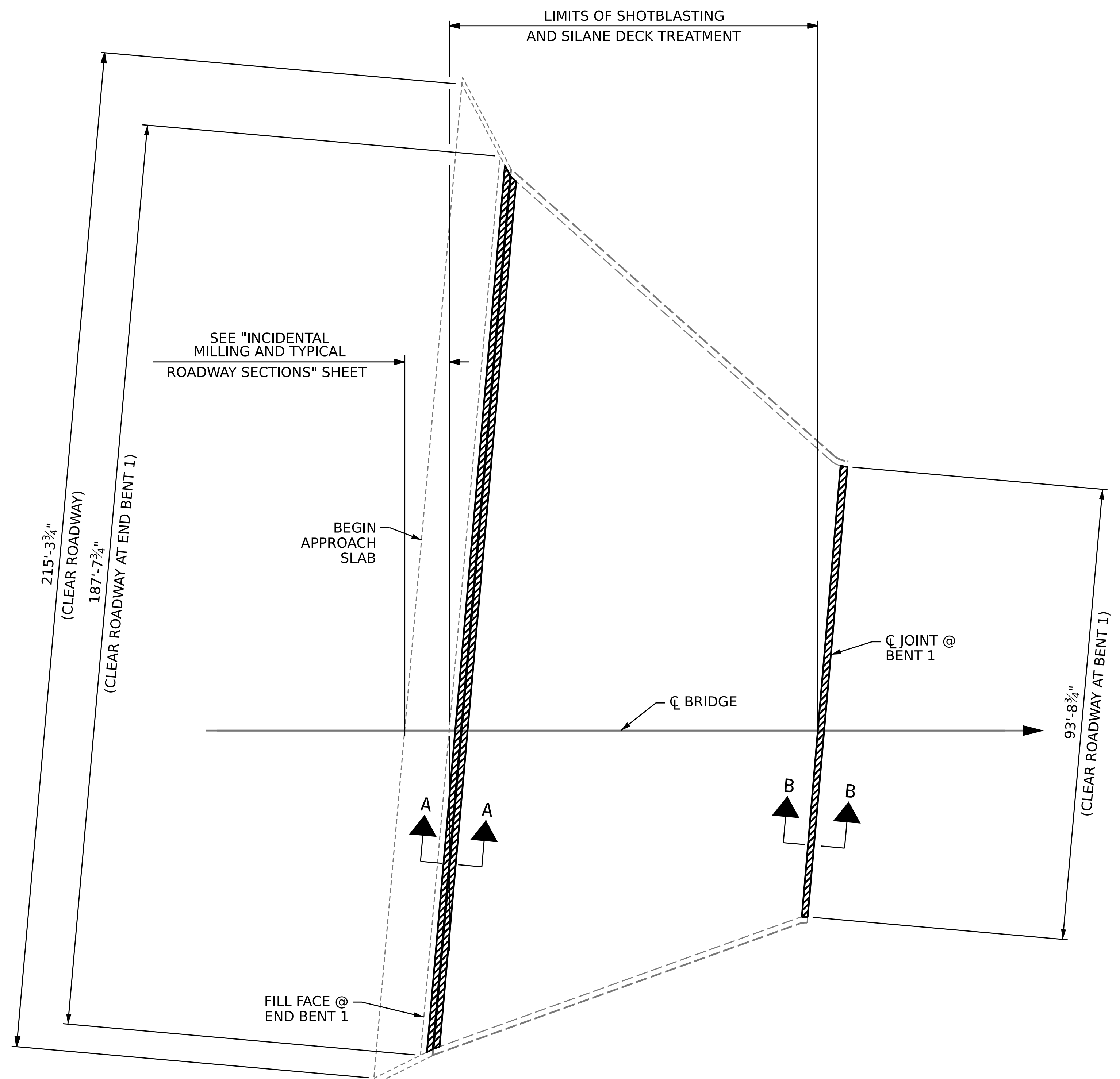
TYPICAL SECTION

DRAWN BY : N.A. PIERCE DATE : 03/2022
 CHECKED BY : R.L. PUTEK DATE : 10/2022
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 12/2022

12/17/2022
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DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

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



APPROACH SLAB A

SPAN A

DECK SURFACE REPAIR QUANTITY TABLE

APPROACH SLAB A		
	ESTIMATE	ACTUAL
CONCRETE DECK REPAIR	0.0 CU. FT	
SURFACE PREPARATION FOR CONCRETE BARRIER	143.5 SQ. FT.	
SILANE BARRIER RAIL TREATMENT	143.5 SQ.FT.	
SHOTBLASTING BRIDGE DECK	58.2 SQ. YDS.	
SILANE DECK TREATMENT	58.2 SQ. YDS.	
BRIDGE JOINT DEMOLITION	105.0 SQ.FT.	
SPAN A		
	ESTIMATE	ACTUAL
CONCRETE DECK REPAIR	0.0 CU. FT	
SURFACE PREPARATION FOR CONCRETE BARRIER	736.0 SQ.FT	
SILANE BARRIER RAIL TREATMENT	736.0 SQ. FT.	
SHOTBLASTING BRIDGE DECK	1360.3 SQ. YDS.	
SILANE DECK TREATMENT	1360.3 SQ. YDS.	
BRIDGE JOINT DEMOLITION	157.9 SQ.FT.	

NOTES

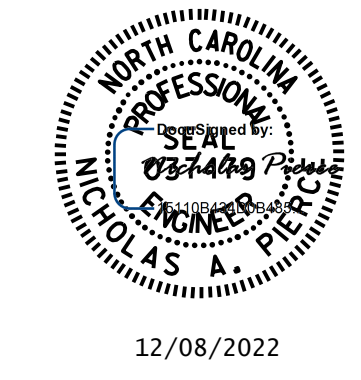
DECK SURFACE REPAIR QUANTITIES REPRESENT ESTIMATED VALUES OF CLASS II SURFACE PREPARATION AND CONCRETE DECK REPAIR AFTER REMOVAL OF UNSOUND CONCRETE. (MIN. 2" CLEAR TO SAWCUT). SEE CONCRETE FOR DECK REPAIR SPECIAL PROVISION.

REPAIR LOCATIONS AND ESTIMATED 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 REPAIR QUANTITY TABLE.

FOR SECTION A-A AND B-B, SEE "FOAM JOINT SEALS FOR PRESERVATION" SHEET.

- BRIDGE JOINT DEMOLITION
- CONCRETE DECK REPAIR

PROJECT NO. **15BPR.59**
WAKE COUNTY
 BRIDGE NO. **911083**

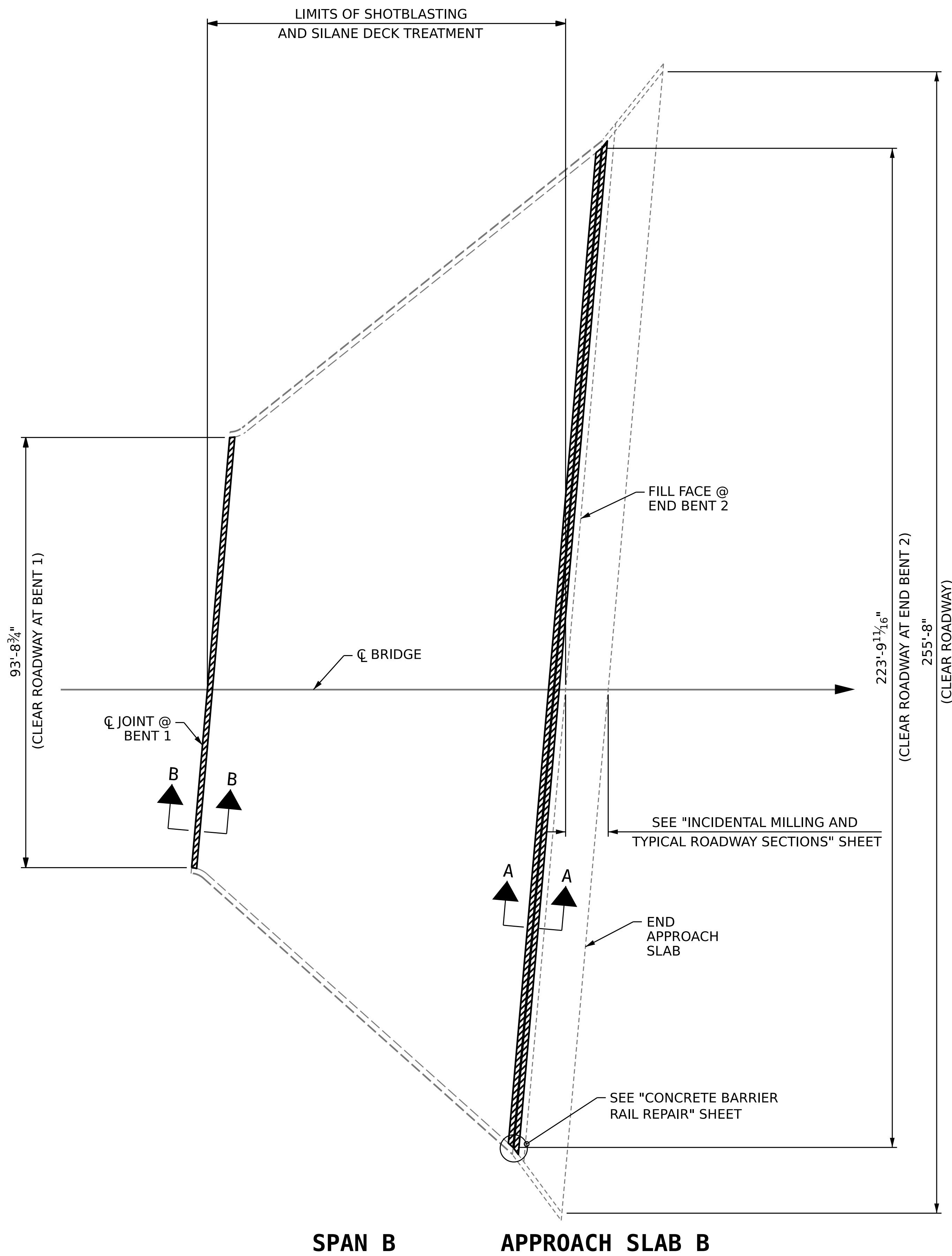


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 DECK SURFACE REPAIR
**SPAN A AND
 APPROACH SLAB A**

DRAWN BY : N.A. PIERCE DATE : 03/2022
 CHECKED BY : R.L. PUTEK DATE : 10/2022
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 12/2022

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S3-03
2			4			TOTAL SHEETS 12



DECK SURFACE REPAIR QUANTITY TABLE

APPROACH SLAB B		
	ESTIMATE	ACTUAL
CONCRETE DECK REPAIR	0.0 CU. FT.	
SURFACE PREPARATION FOR CONCRETE BARRIER	159.0 SQ. FT.	
SILANE BARRIER RAIL TREATMENT	159.0 SQ.FT.	
SHOTBLASTING BRIDGE DECK	70.8 SQ. YDS.	
SILANE DECK TREATMENT	70.8 SQ. YDS.	
BRIDGE JOINT DEMOLITION	125.9 SQ. FT.	
SPAN B		
	ESTIMATE	ACTUAL
CONCRETE DECK REPAIR	0.0 CU. FT.	
SURFACE PREPARATION FOR CONCRETE BARRIER	822.8 SQ.FT.	
SILANE BARRIER RAIL TREATMENT	822.8 SQ. FT.	
SHOTBLASTING BRIDGE DECK	1534.3 SQ. YDS.	
SILANE DECK TREATMENT	1534.3 SQ. YDS.	
BRIDGE JOINT DEMOLITION	178.9 SQ.FT.	

NOTES

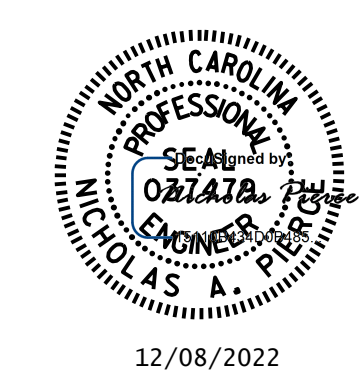
DECK SURFACE REPAIR QUANTITIES REPRESENT ESTIMATED VALUES OF CLASS II SURFACE PREPARATION AND CONCRETE DECK REPAIR AFTER REMOVAL OF UNSOUND CONCRETE. (MIN. 2" CLEAR TO SAWCUT). SEE CONCRETE FOR DECK REPAIR SPECIAL PROVISION.

REPAIR LOCATIONS AND ESTIMATED 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 REPAIR QUANTITY TABLE.

FOR SECTION A-A AND B-B, SEE "FOAM JOINT SEALS FOR PRESERVATION" SHEET.

- BRIDGE JOINT DEMOLITION
- CONCRETE DECK REPAIR

PROJECT NO. **15BPR.59**
WAKE COUNTY
 BRIDGE NO. **911083**



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

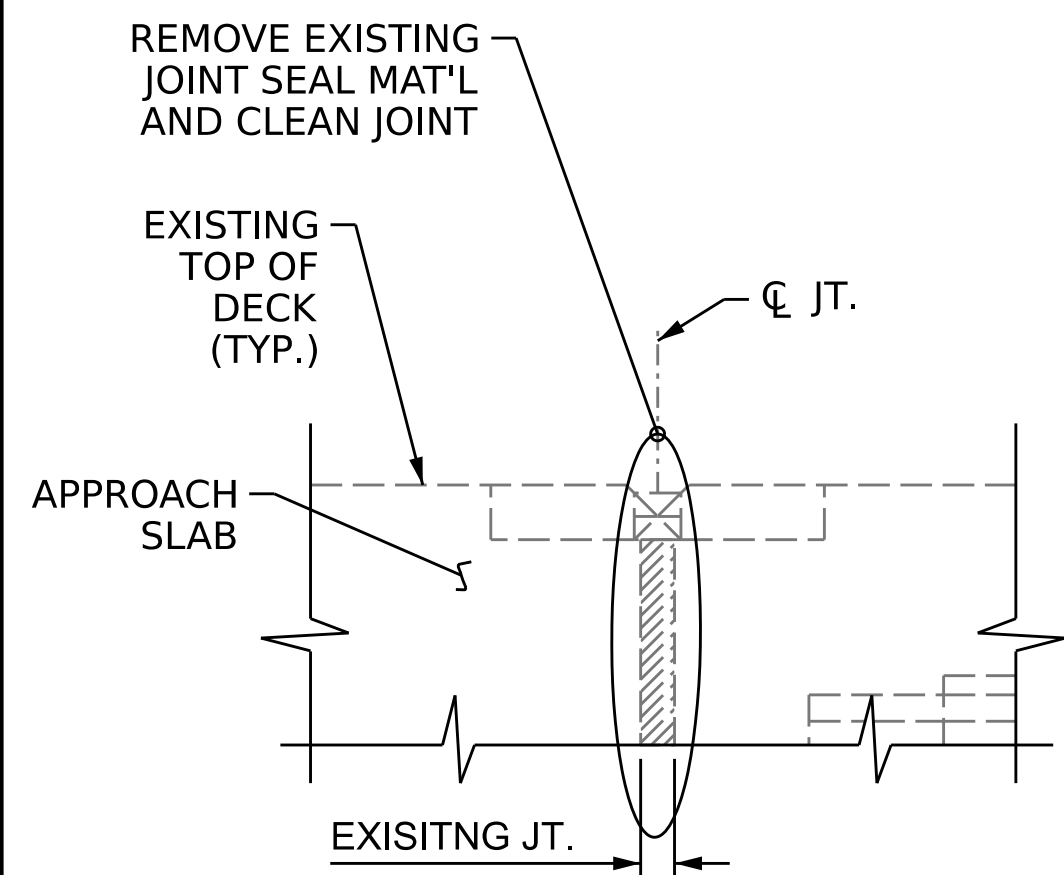
DECK SURFACE REPAIR

**SPAN B AND
 APPROACH SLAB B**

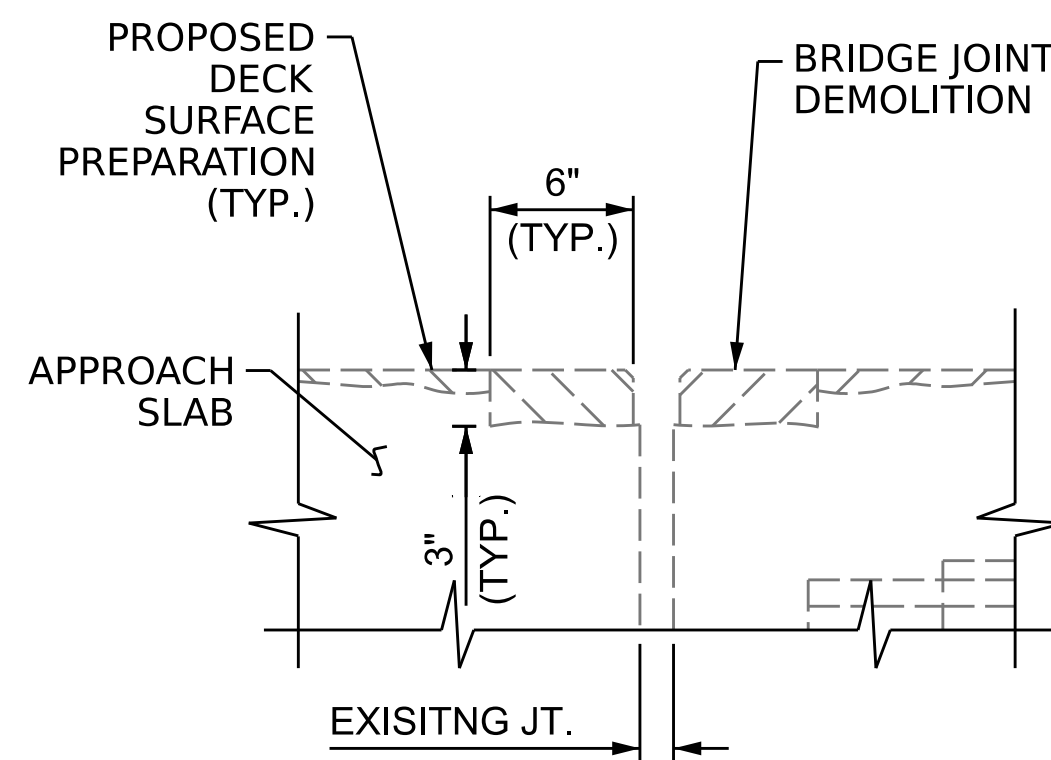
DRAWN BY : N.A. PIERCE DATE : 03/2022
 CHECKED BY : R.L.PUTEK DATE : 10/2022
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 12/2022

DOCUMENT NOT CONSIDERED
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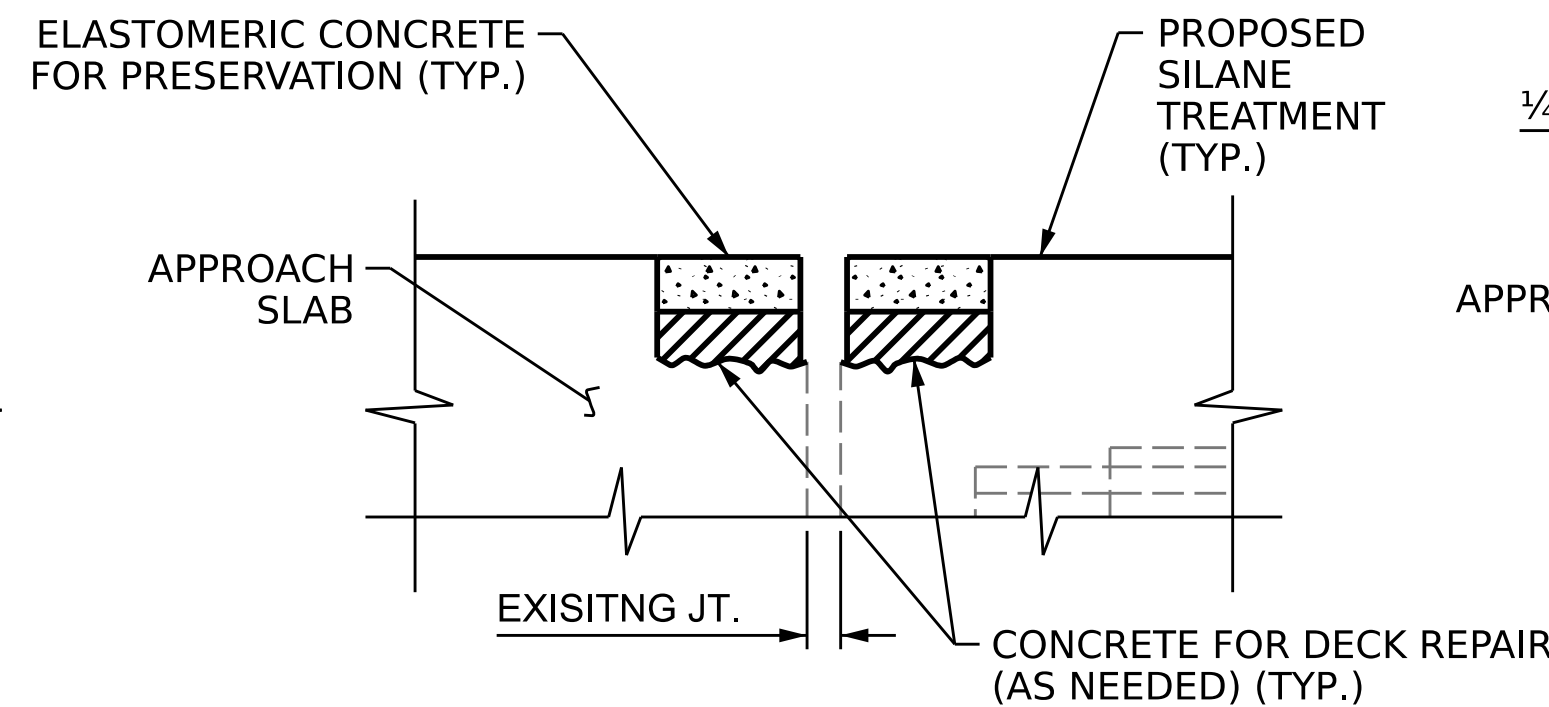
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1			3			
2			4			



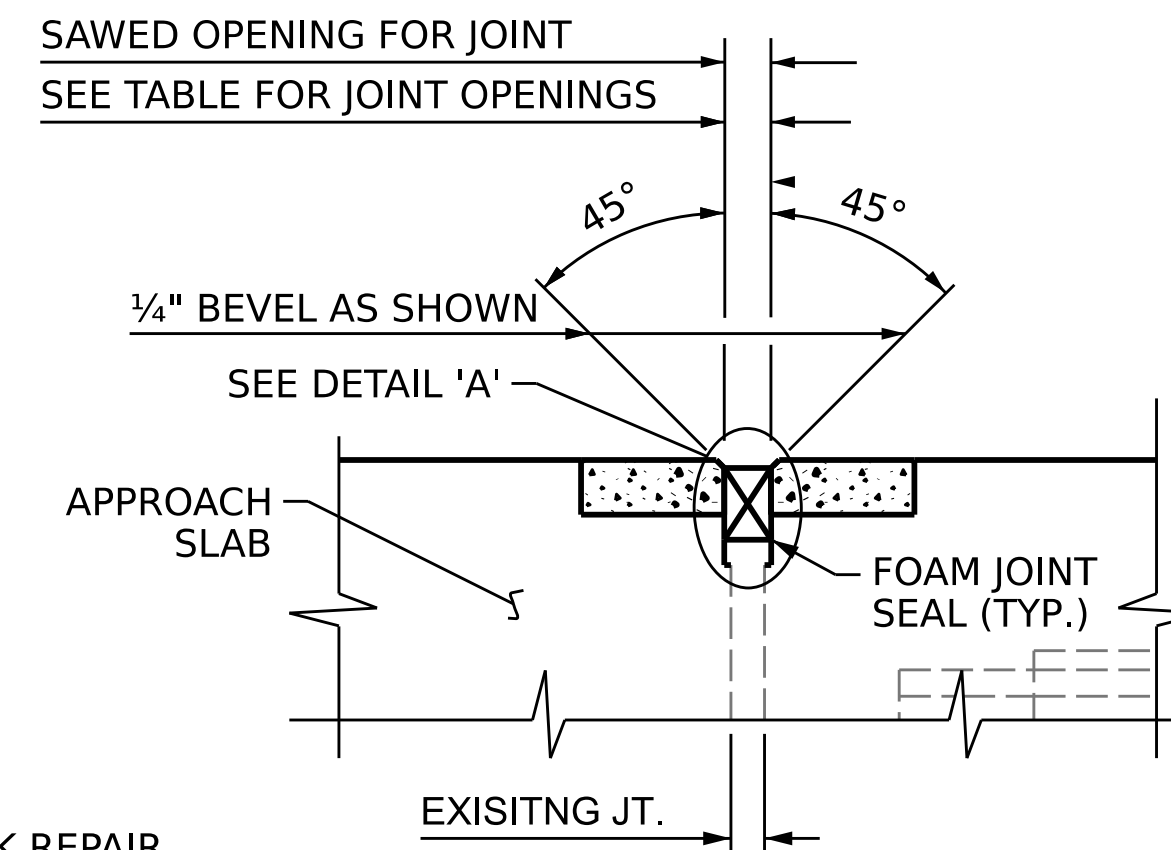
EXISTING JOINT SEAL



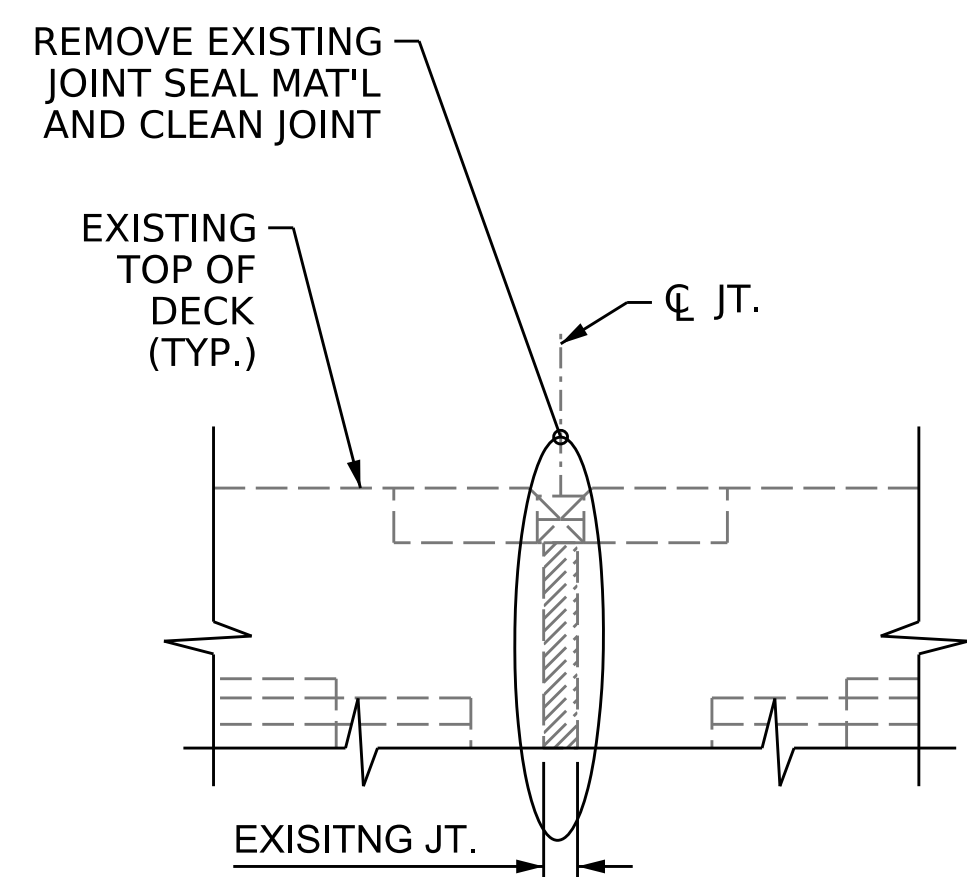
EXISTING JOINT AFTER JOINT DEMOLITION



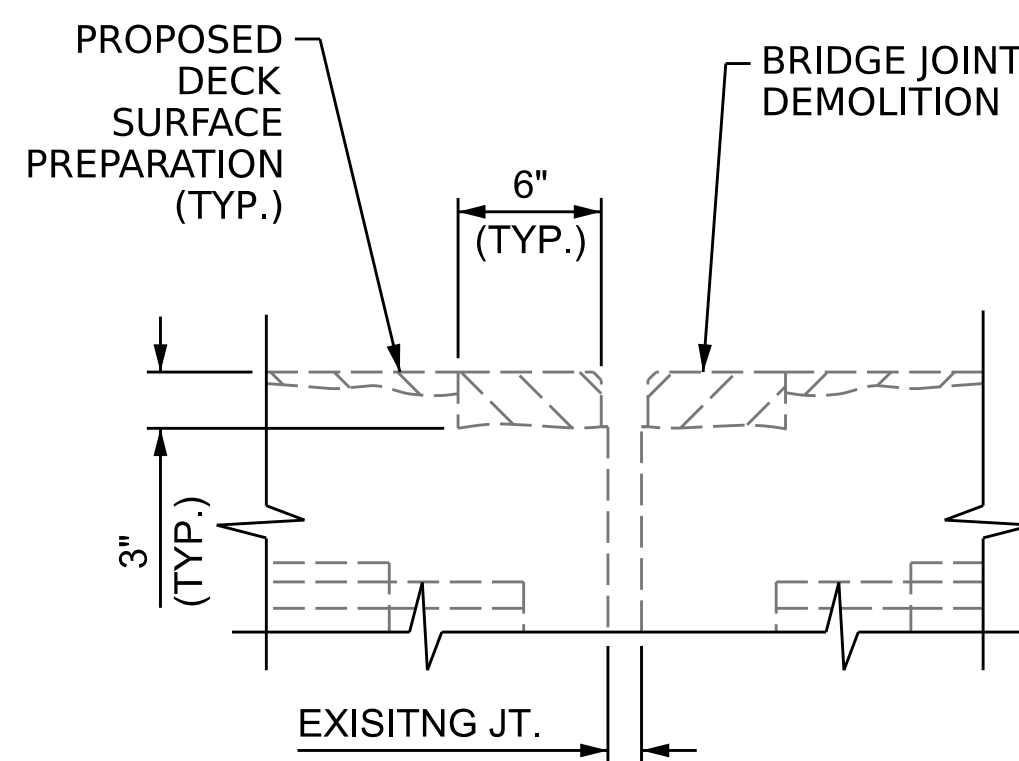
PROPOSED JOINT PRIOR TO SAWING



PROPOSED FOAM JOINT SEAL



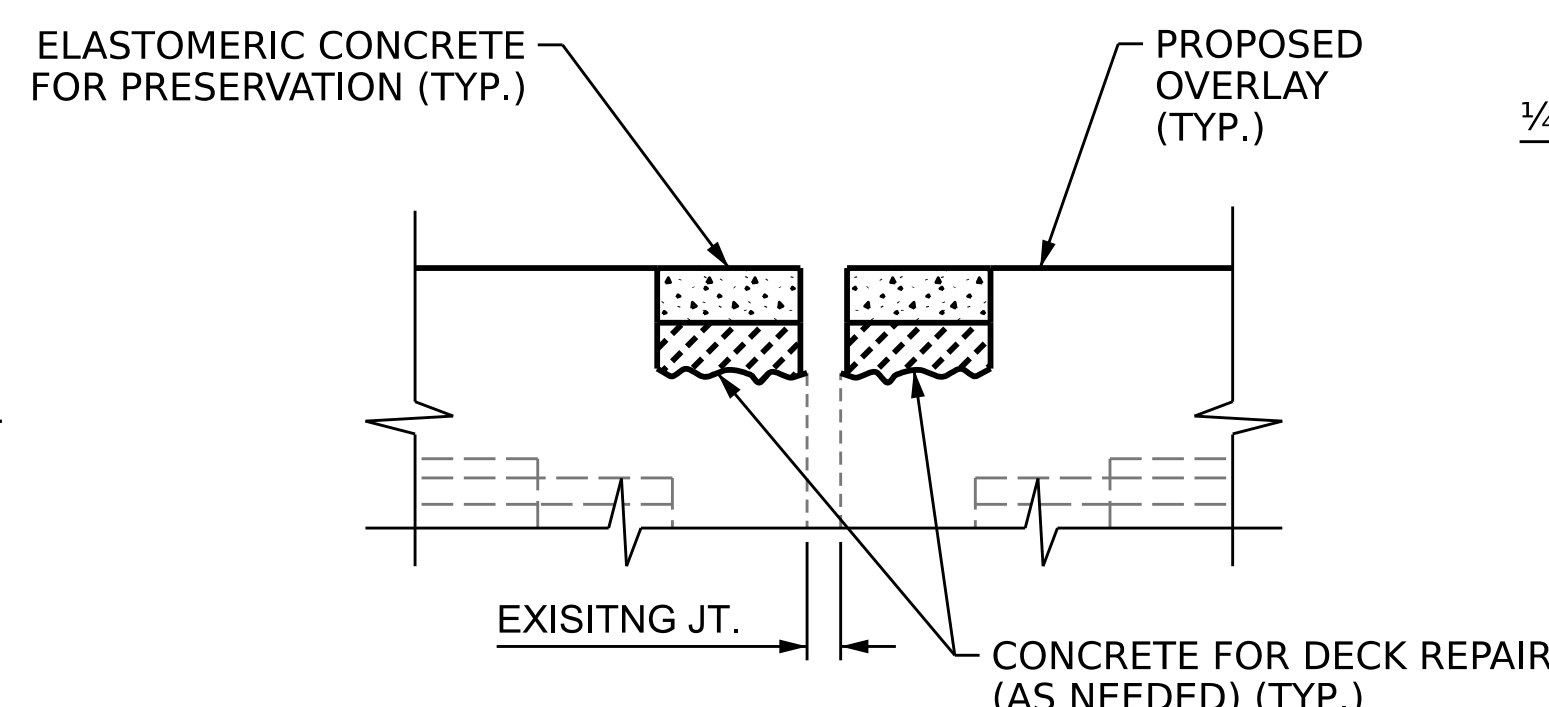
EXISTING JOINT SEAL



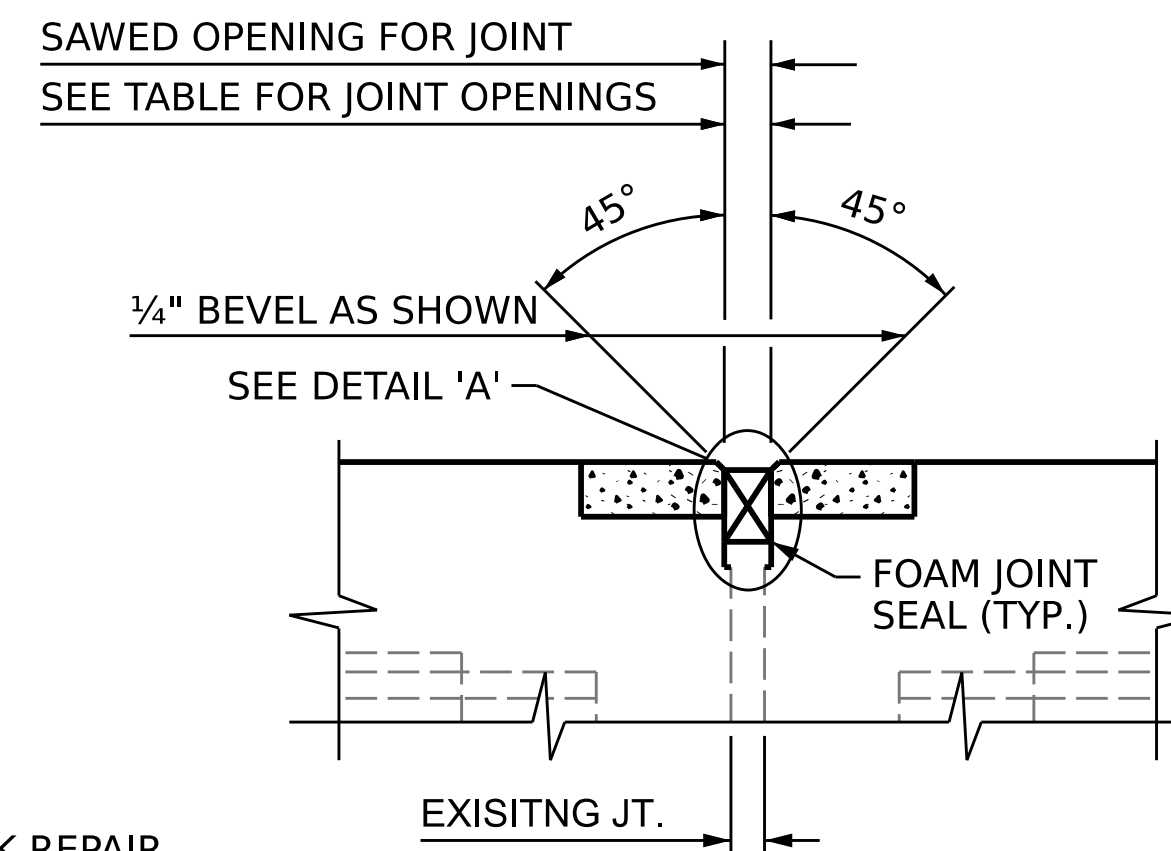
EXISTING JOINT AFTER JOINT DEMOLITION

SECTION A-A

(TYP. AT END BENTS)



PROPOSED JOINT PRIOR TO SAWING



PROPOSED FOAM JOINT SEAL

SECTION B-B

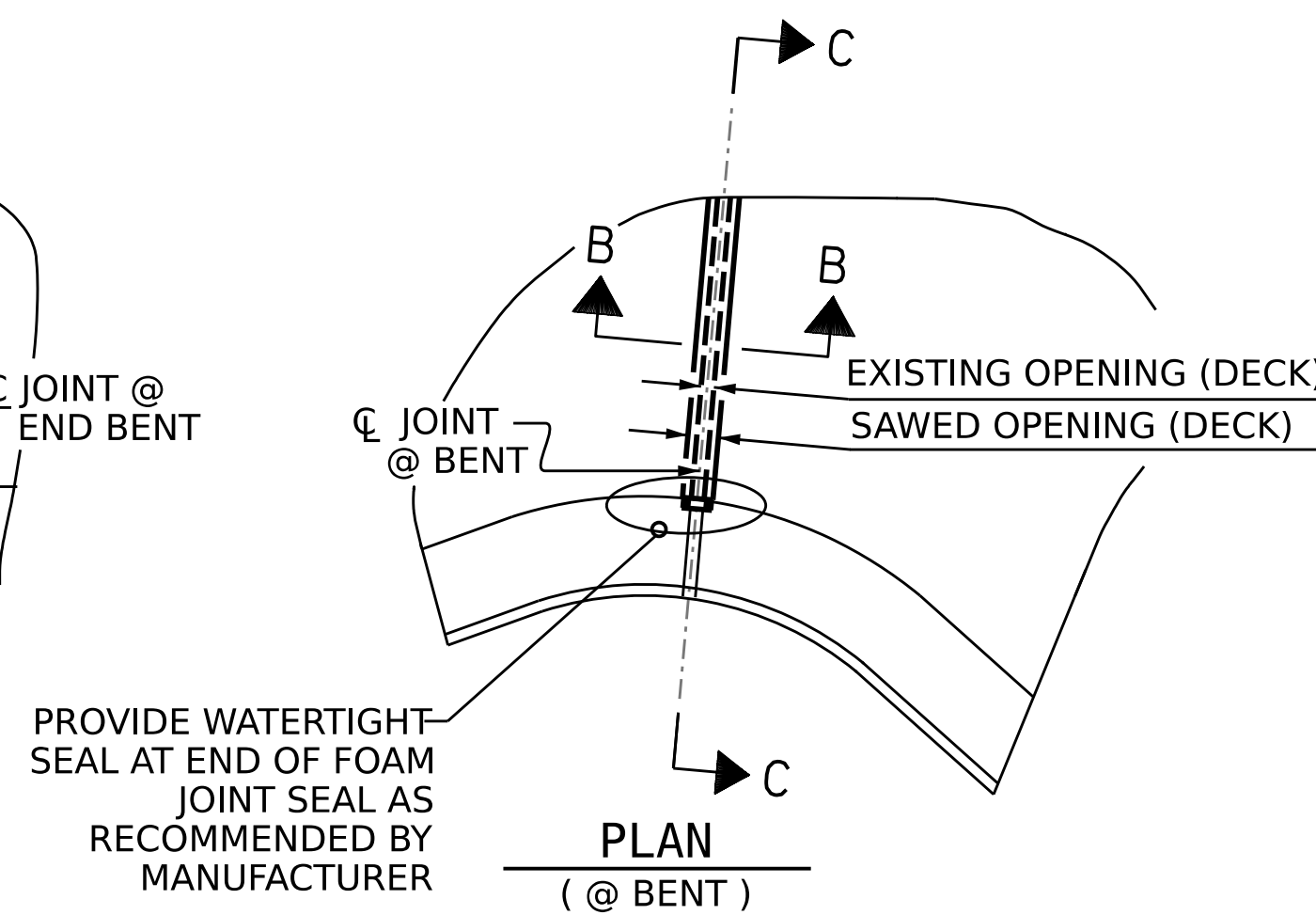
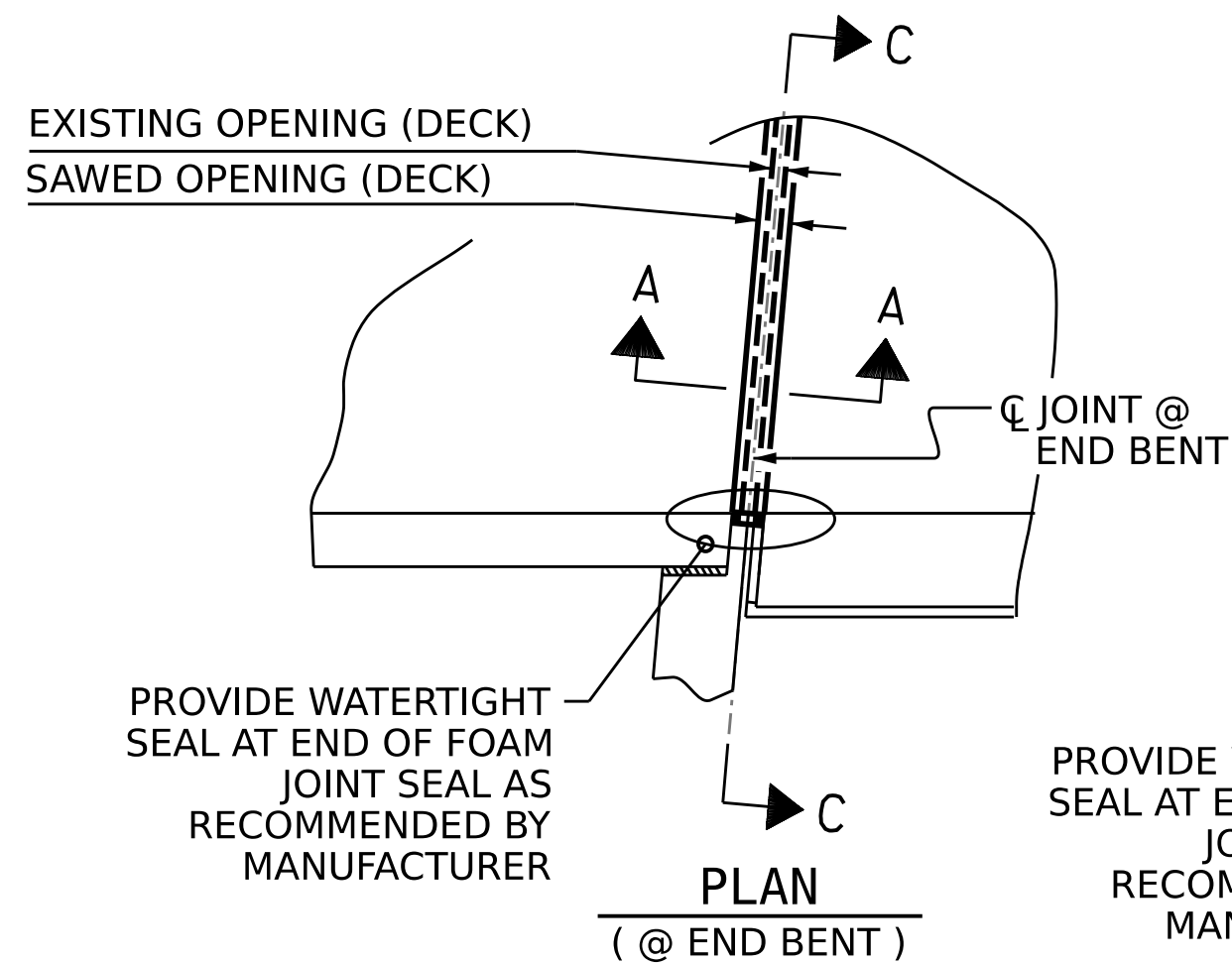
(TYP. AT BENTS)

JOINT REPAIR QUANTITY TABLE

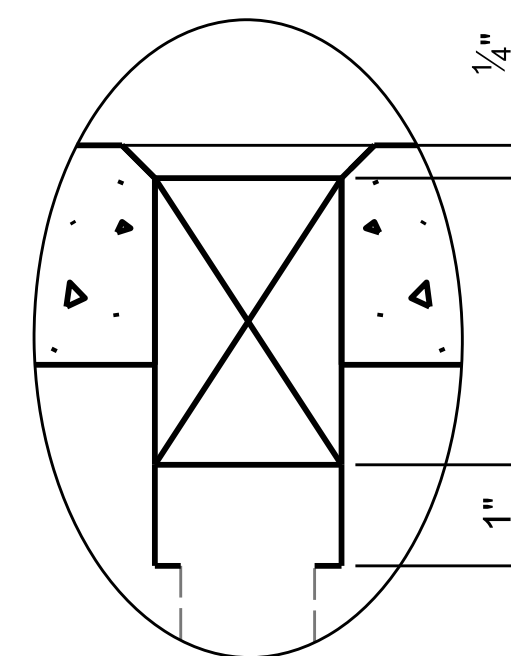
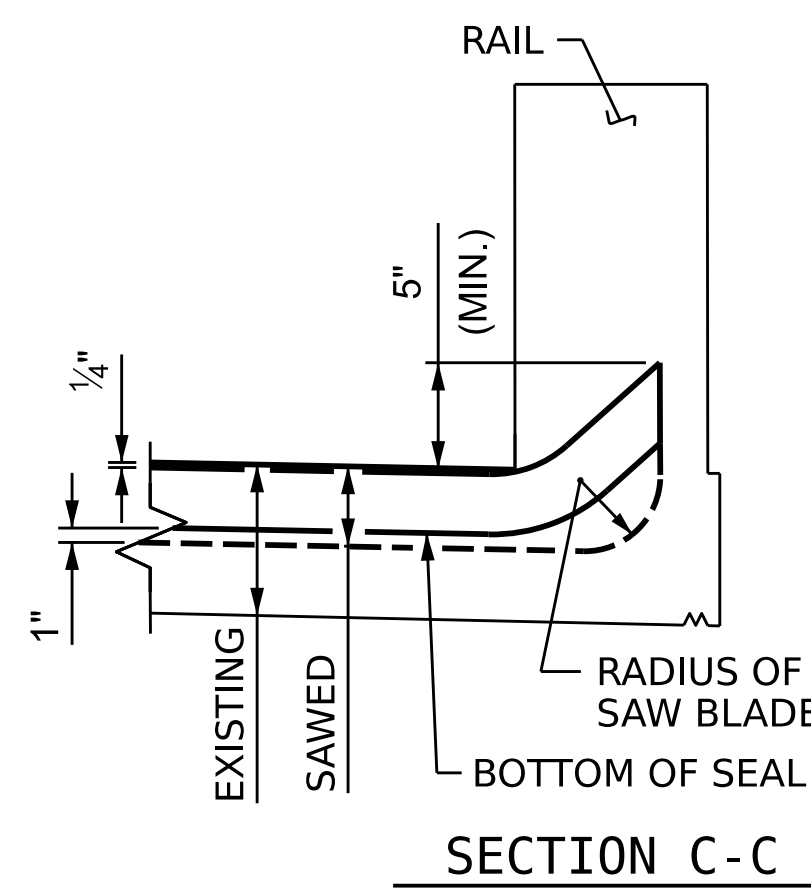
	ESTIMATED	ACTUAL
FOAM JOINT SEALS FOR PRESERVATION	513.0 LN. FT.	

SAWED JOINT OPENING TABLE

LOCATION	SAWED JT. OPENING (PERPENDICULAR TO JT.)		
	AT 45°	AT 60°	AT 90°
END BENT 1	1 3/8"	1 1/16"	1 3/8"
BENT 1	1 7/8"	1 7/8"	1 7/8"
END BENT 2	1 3/8"	1 1/16"	1 3/8"



JOINT SEAL DETAILS



ELASTOMERIC CONCRETE FOR PRESERVATION

LOCATION	ESTIMATED (CU.FT.)	ACTUAL (CU.FT.)
END BENT 1	52.5	
BENT 1	25.7	
END BENT 2	62.9	
TOTAL	141.1	

NOTES

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

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

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

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

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

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

THE INSTALLED FOAM JOINTS SHALL BE WATER TIGHT.

FOR FOAM JOINT SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.

THE CONTRACTOR SHALL SAW CUT TO A NOMINAL DEPTH OF 1/2" BUT REINFORCING STEEL SHALL NOT BE DAMAGED. CONTRACTOR SHALL REMOVE SURFACE CONCRETE TO VERIFY THAT SAWCUT DEPTH WILL NOT DAMAGE EXISTING REINFORCING STEEL.

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

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

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

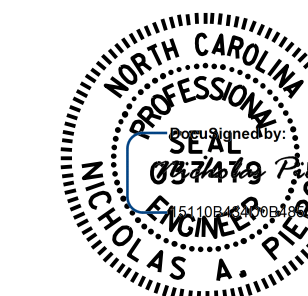
FOR BRIDGE JOINT DEMOLITION, SEE SPECIAL PROVISIONS.

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

FOR ELASTOMERIC CONCRETE FOR PRESERVATION, SEE SPECIAL PROVISIONS.

FOR CONCRETE FOR DECK REPAIR, SEE SPECIAL PROVISIONS.

PROJECT NO. **15BPR.59**
WAKE COUNTY
 BRIDGE NO. **911083**



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
FOAM JOINT SEALS FOR PRESERVATION DETAILS

12/08/2022

DRAWN BY: A.Y. GODFREY DATE: 10/2022
 CHECKED BY: N.A. PIERCE DATE: 10/2022
 DESIGN ENGINEER OF RECORD: N.A. PIERCE DATE: 12/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

TOTAL SHEETS: 12

NOTES

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

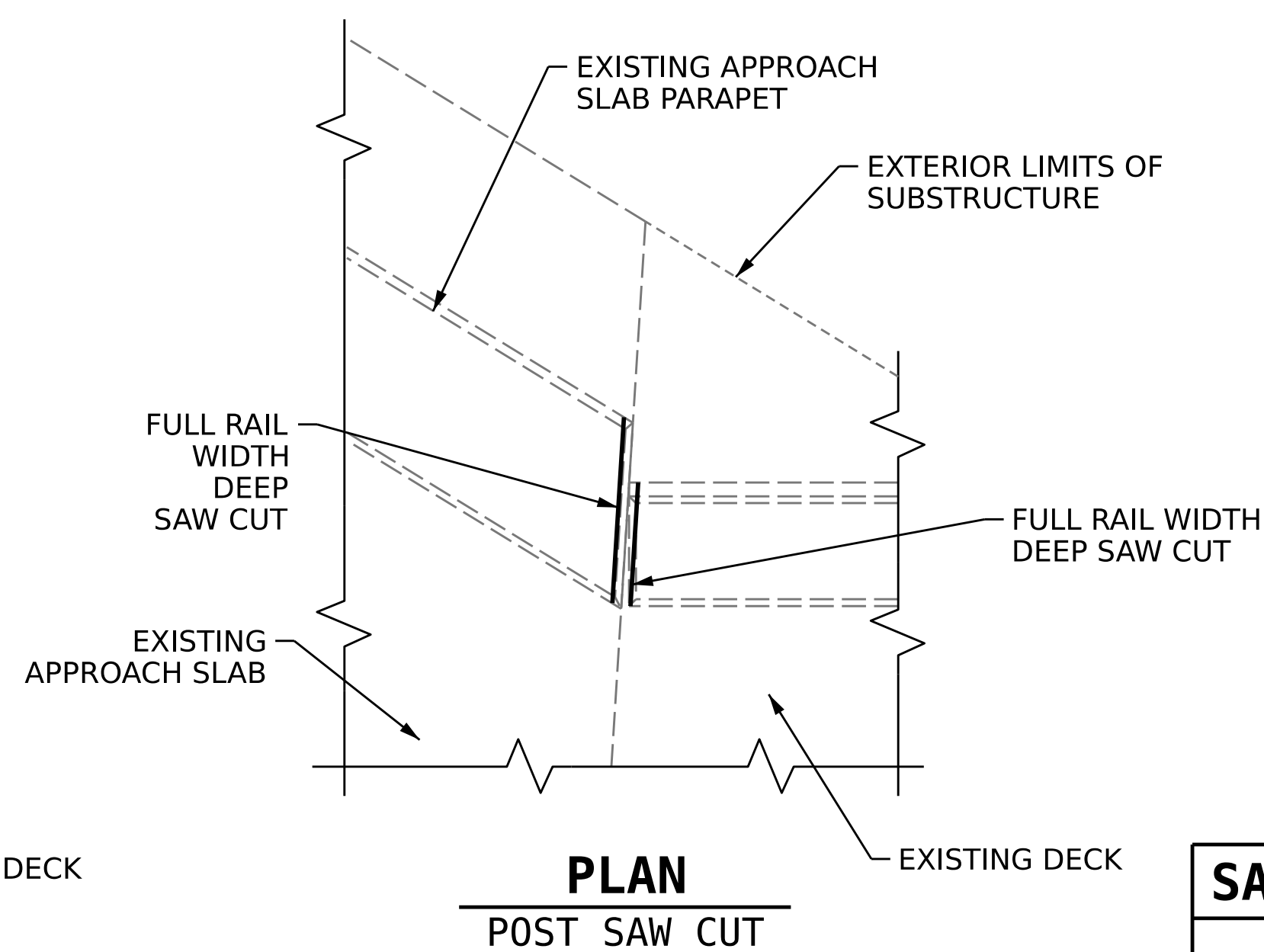
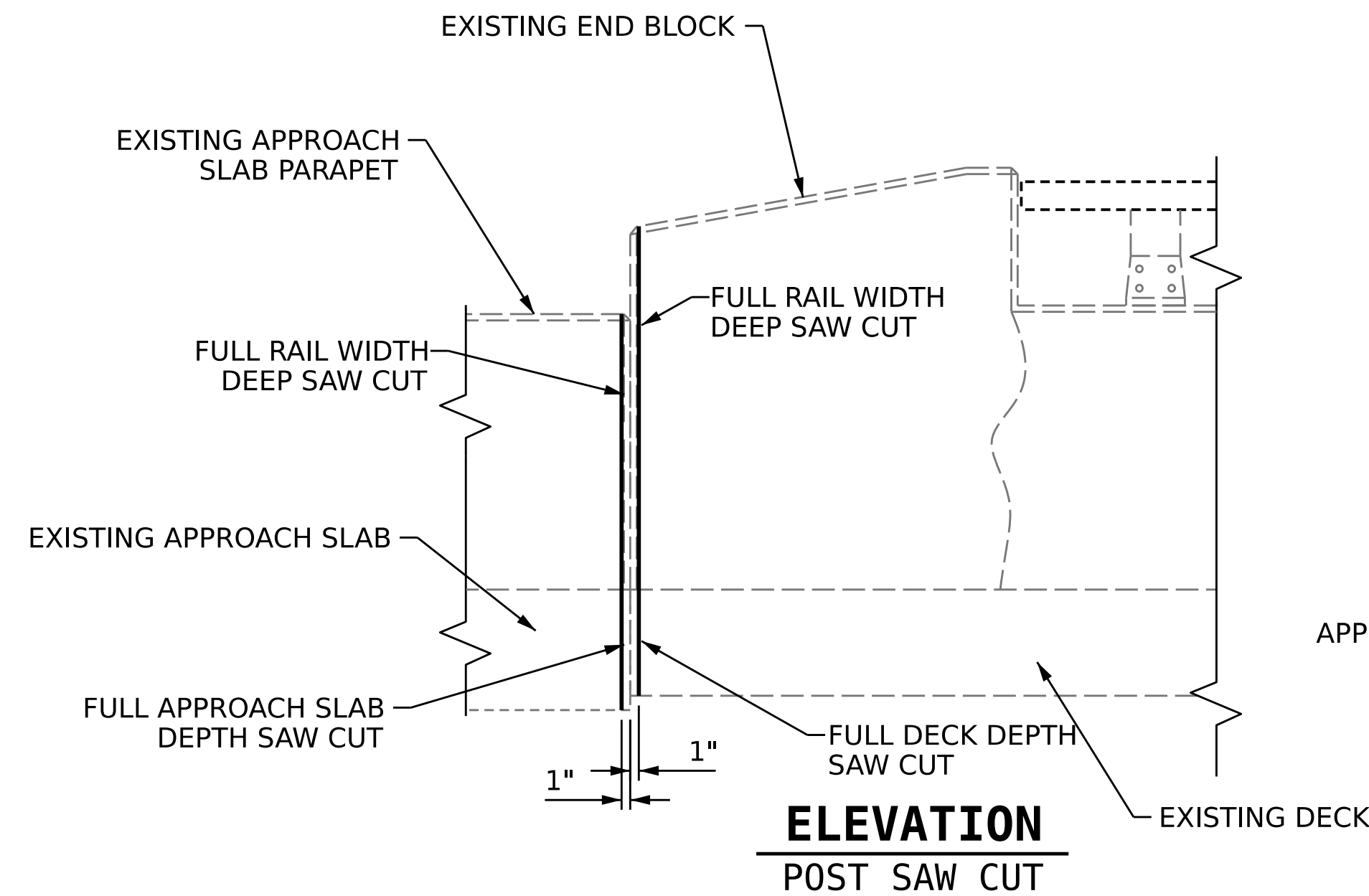
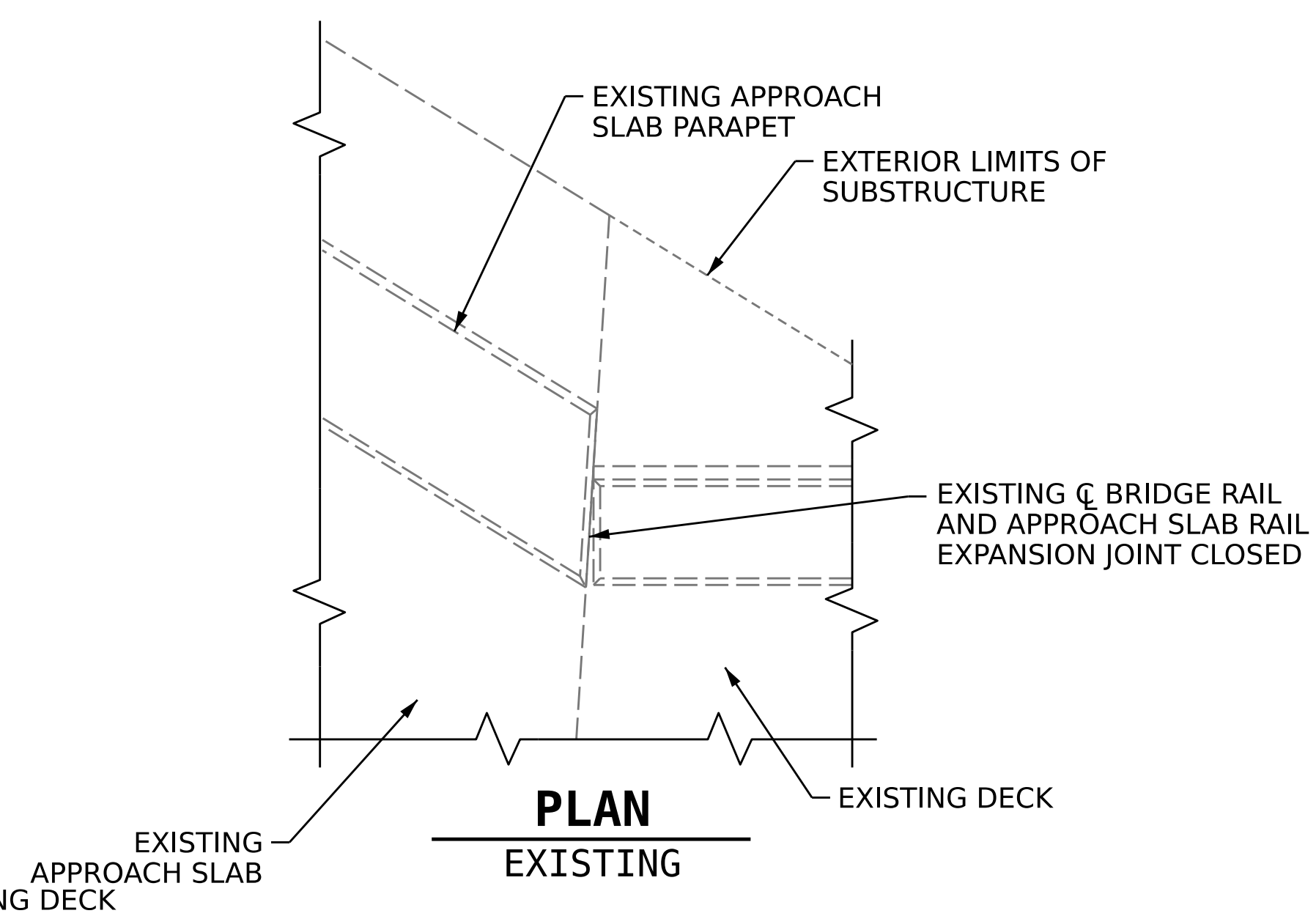
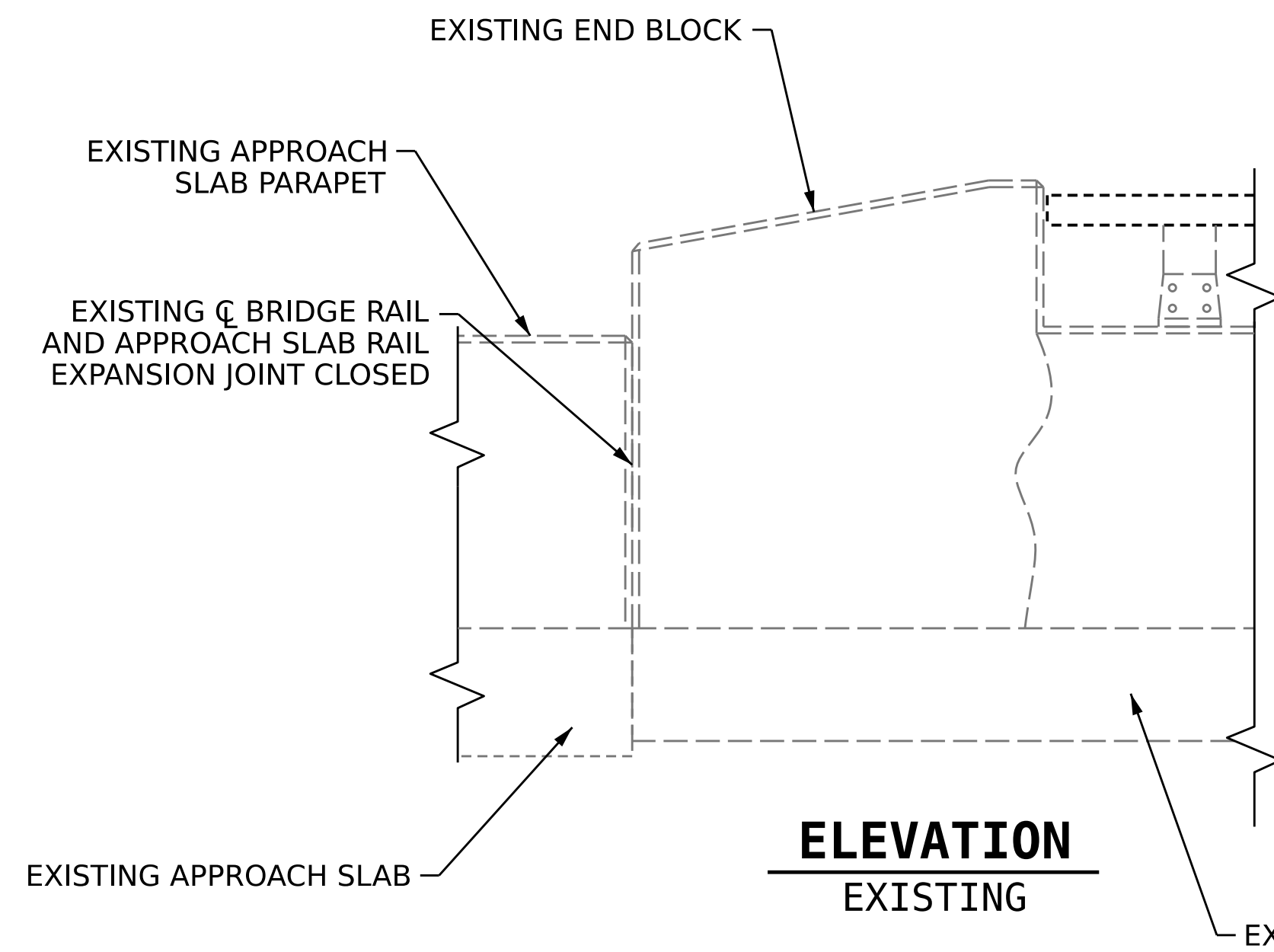
THE CONTRACTOR SHALL TAKE CARE DURING BARRIER RAIL REHAB OPERATIONS NOT TO DROP ANY MATERIAL BELOW THE BRIDGE, WITHOUT PROTECTIVE DEVICES BELOW TO CATCH THE MATERIAL. ANY MATERIAL THAT FALL BELOW THE BRIDGE SHALL BE CONTAINED, REMOVED AND DISPOSED OF BY THE CONTRACTOR AT NO EXTRA COST TO THE DEPARTMENT.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

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

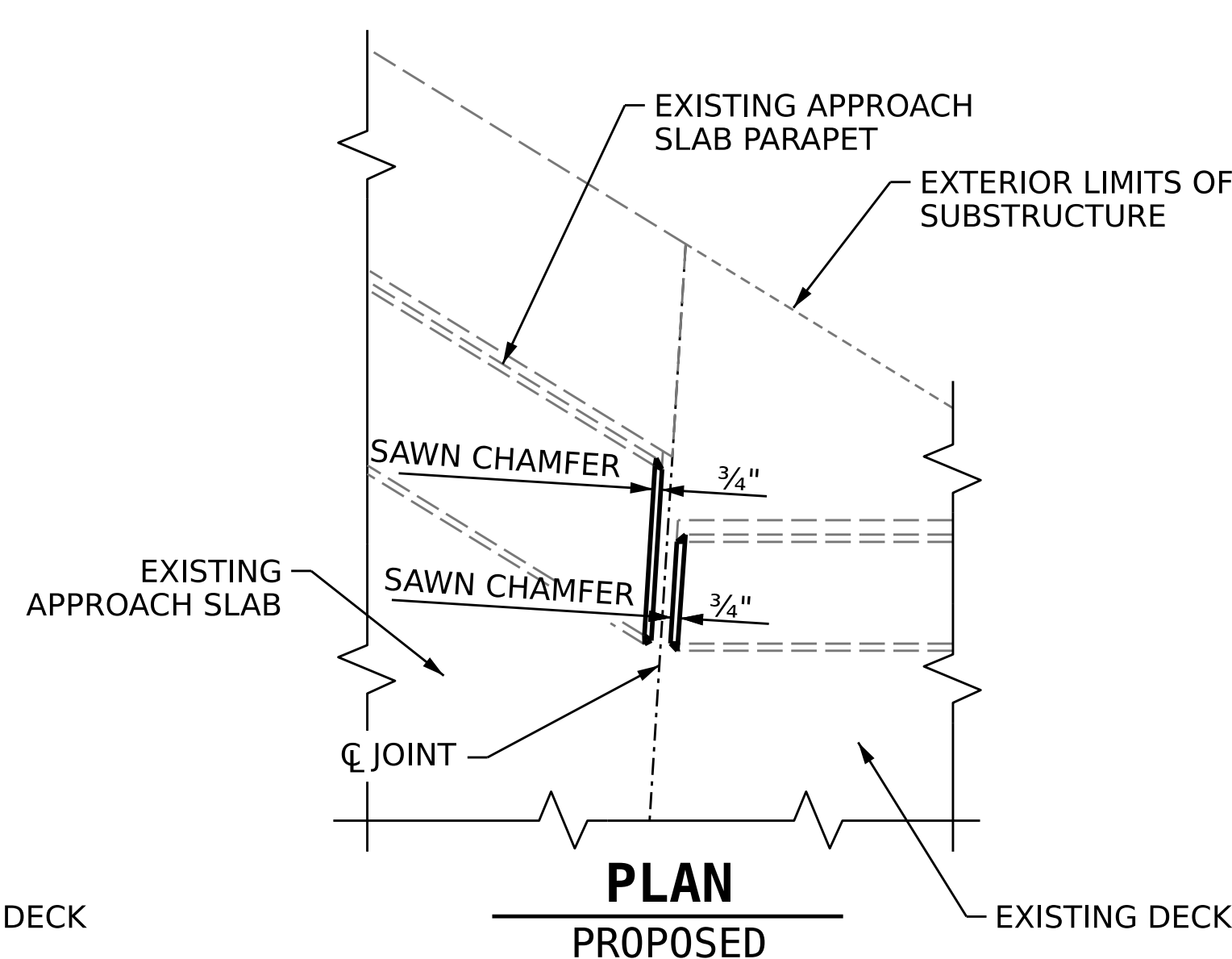
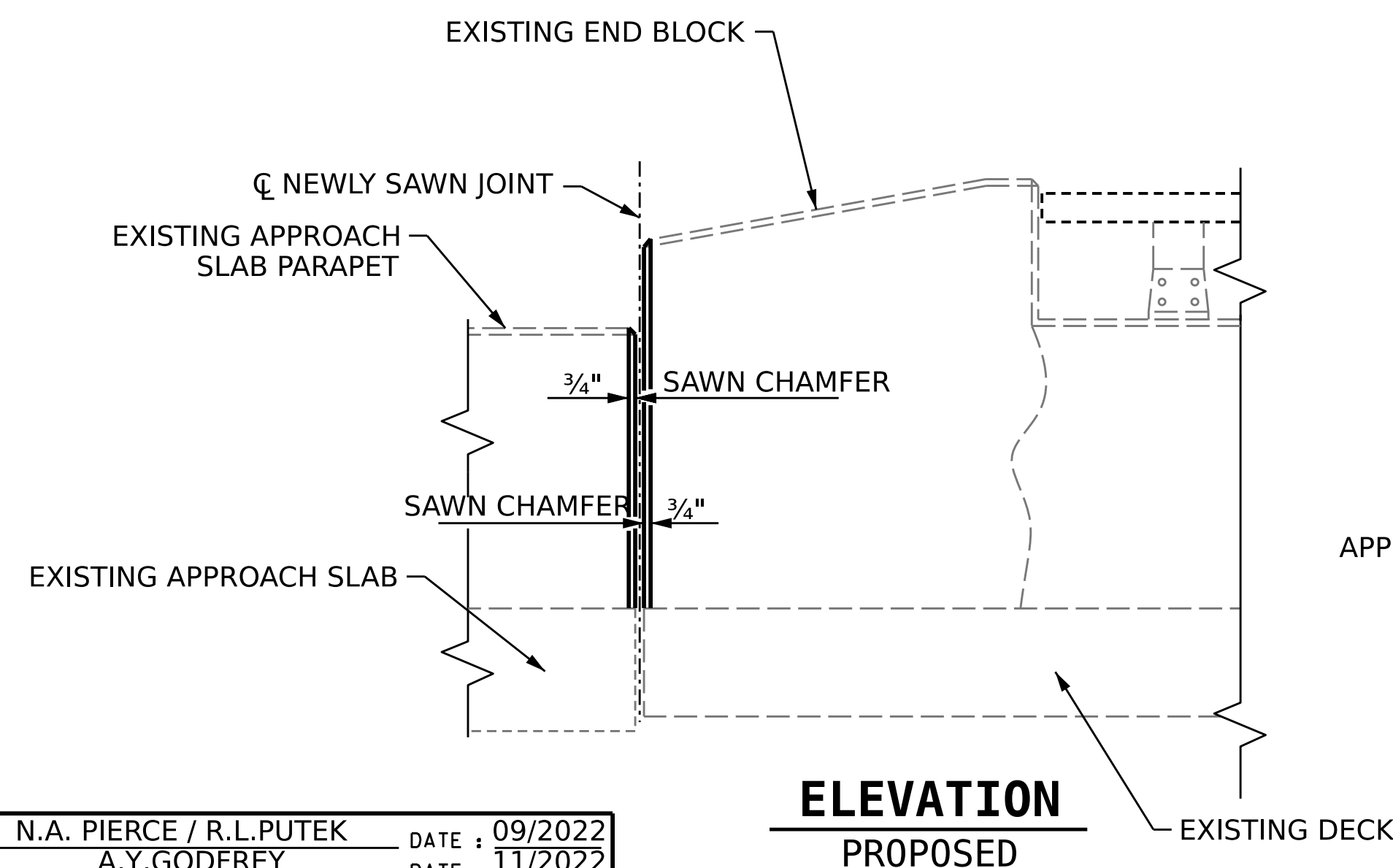
SAW CUT 1 INCH MEASURED FROM THE ENDS OF THE EXISTING END BLOCK OR PARAPET AS SHOWN ON THE PLANS. CARE SHALL BE TAKEN NOT TO CUT OR DAMAGE REINFORCING STEEL DURING CONCRETE REMOVAL. ANY DAMAGED OR EXPOSED REINFORCING STEEL SHALL BE EPOXY COATED AS DIRECTED BY THE ENGINEER AND SHALL BE INCIDENTAL TO THE CONCRETE BARRIER RAIL REPAIR.

SAW CUT 3/4 INCH CHAMFERS ON ALL EXPOSED FACES OF THE BARRIER RAILS ON FRESHLY CUT EXPANSION JOINTS.

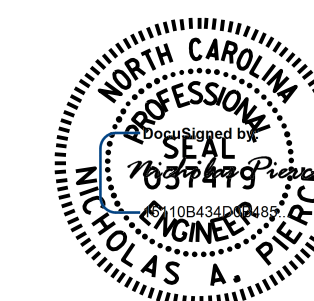
FOR CONCRETE BARRIER REPAIR LOCATIONS, SEE DECK SURFACE REPAIR SHEETS.



SAW CUTTING CONCRETE BARRIER RAIL	
DESCRIPTION	QUANTITY
FULL RAIL WIDTH DEEP AND FULL DECK DEPTH SAW CUT	1 EA.
FULL RAIL WIDTH DEEP AND APPROACH SLAB FULL DEPTH SAW CUT	1 EA.



PROJECT NO. **15BPR.59**
WAKE COUNTY
 BRIDGE NO. **911083**



12/08/2022

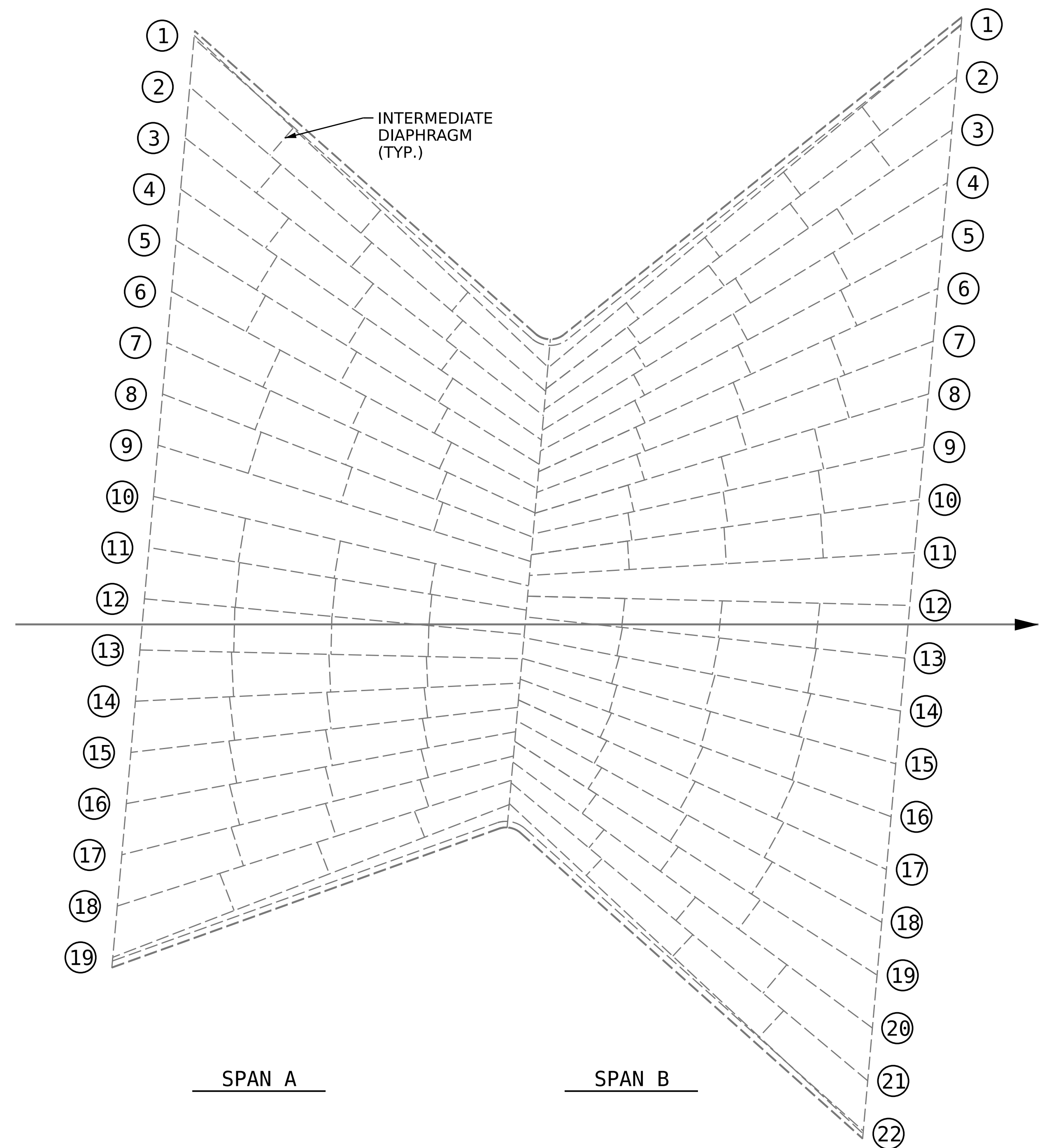
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

CONCRETE BARRIER RAIL REPAIR

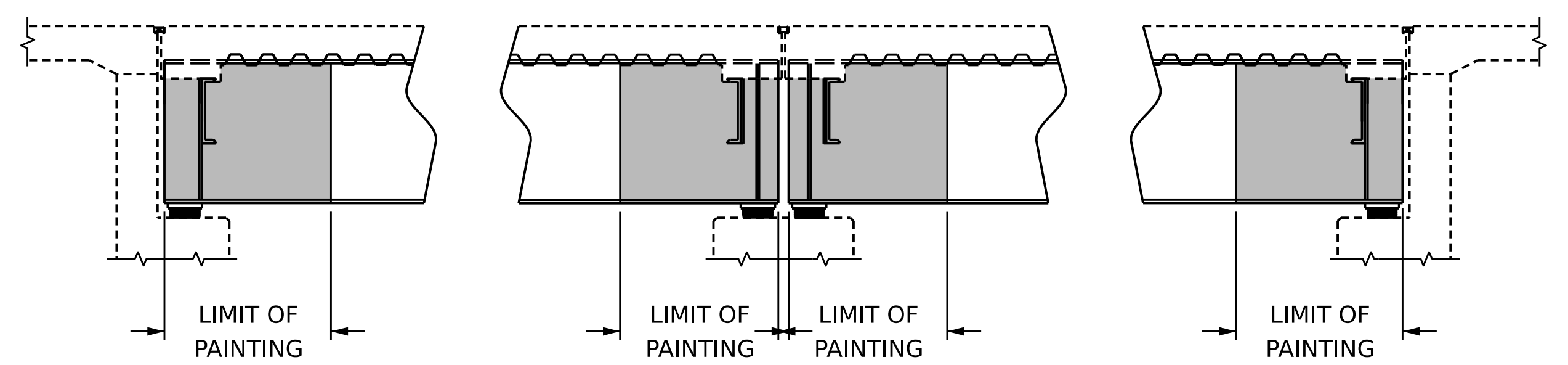
DRAWN BY : N.A. PIERCE / R.L. PUTEK DATE : 09/2022
 CHECKED BY : A.Y. GODFREY DATE : 11/2022
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 12/2022

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-06
1			3			TOTAL SHEETS
2			4			12



PLAN



LIMITS OF PAINTING

DECK UNDERSIDE REPAIR QUANTITY TABLE

SPAN A & B	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0	0		
CONCRETE DIAPHRAGM	0	0		
OVERHANG	0	0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0	0		
CONCRETE DIAPHRAGM	0	0		
OVERHANG	0	0		

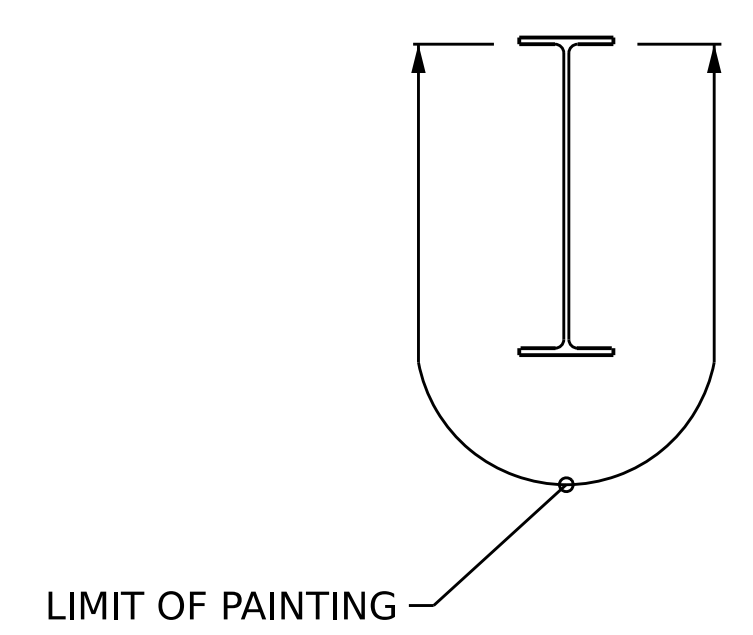
VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CLEAR TO SAWCUT. SEE REPAIR DETAILS.

NOTES

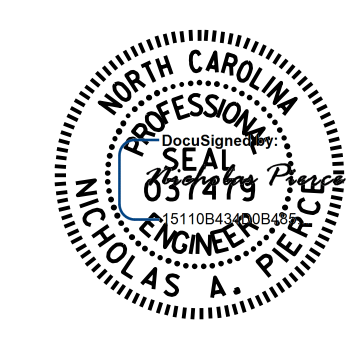
REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN BASED ON THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ENTER THE ACTUAL QUANTITIES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

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

ALL GIRDERS SHALL BE PAINTED IN ACCORDANCE WIHT THE LIMITS OF ZONE PAINTING DETAIL.



PROJECT NO. **15BPR.59**
WAKE COUNTY
 BRIDGE NO. **911083**



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
DECK UNDERSIDE REPAIR
SPAN A AND SPAN B

REVISIONS						SHEET NO.
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1			3			12
2			4			

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DRAWN BY : N.A. PIERCE DATE : 10/2022
 CHECKED BY : R.L. PUTEK DATE : 10/2022
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 12/2022

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 SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ENTER THE ACTUAL QUANTITIES INTO THE SUBSTRUCTURE REPAIR QUANTITY TABLE.




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

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

REMOVAL OF DEBRIS AND DISPOSAL OF EXISTING JOINT SEALANT MATERIAL FROM SLOPE PROTECTION PRIOR TO PLACEMENT OF BACKER ROD AND POURABLE SILICONE JOINT SEALANT SHALL BE CONSIDERED INCIDENTAL TO CONSTRUCTION.

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

THE INSTALLED POURABLE SILICONE JOINT SEALANT SHALL BE WATER TIGHT.

-  SHOTCRETE REPAIR AREA
-  CONCRETE REPAIR AREA
-  EPOXY RESIN INJECTION

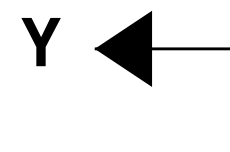
SUBSTRUCTURE REPAIR QUANTITY TABLE

END BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
CURTAIN WALL	0	0		
WINGWALL				
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
CURTAIN WALL	0	0		
WINGWALL				
EPOXY RESIN INJECTION		LINEAR FT		LINEAR FT
CAP		0		
CURTAIN WALL		0		
WINGWALL				
POURABLE SILICONE JT. SEALANT		LINEAR FT.		AREA SF
JOINT		411.0		
EPOXY COATING		AREA SF		AREA SF
CAP		855.1		

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

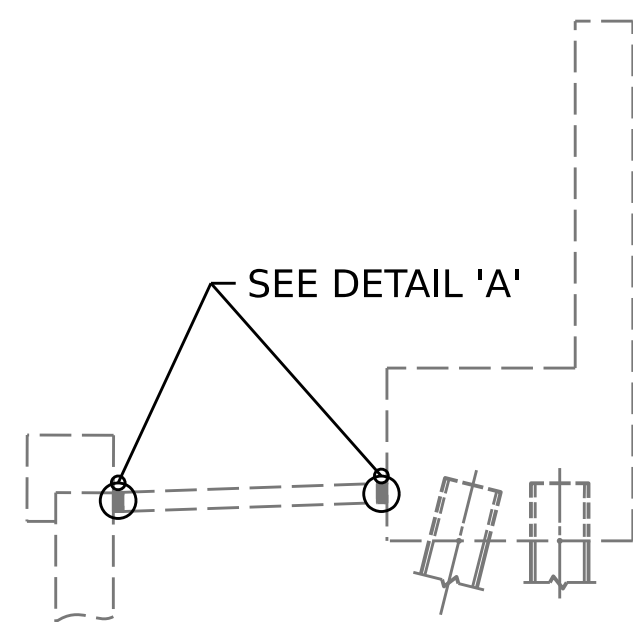
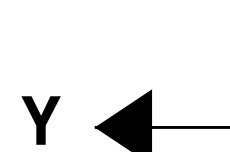
PLAN

TOP OF CAP

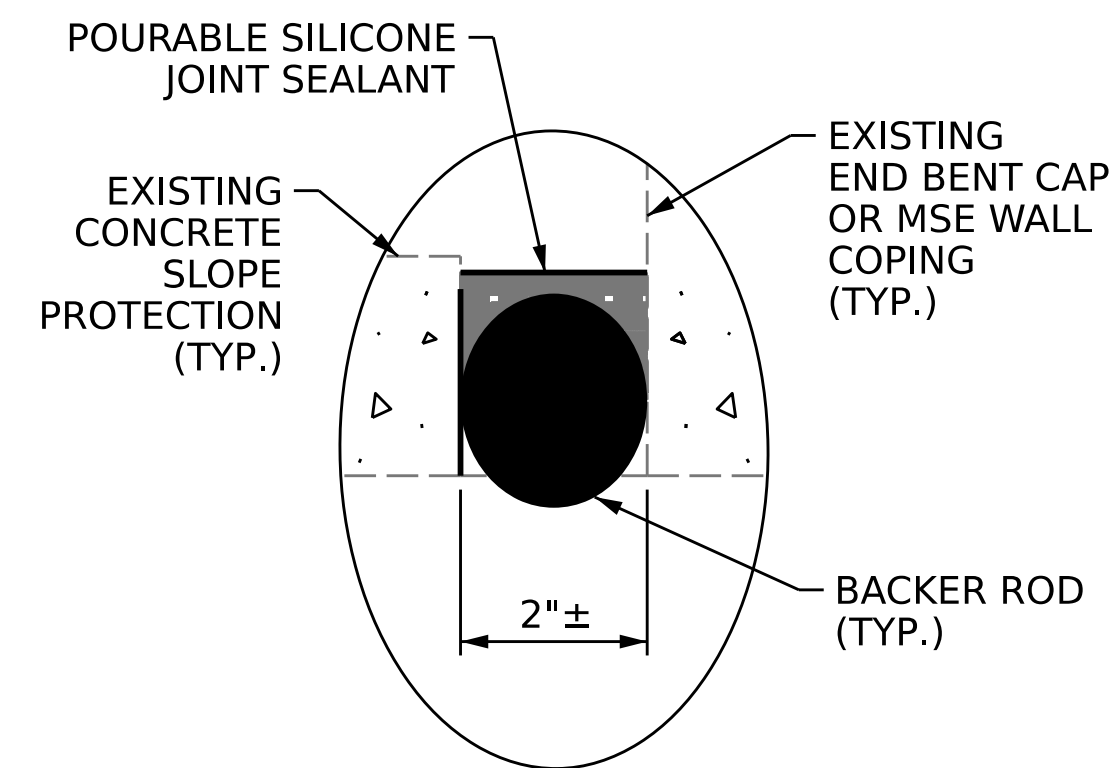


ELEVATION

LOOKING EAST

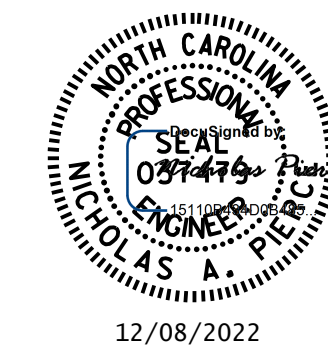


SECTION Y-Y



DETAIL 'A'

PROJECT NO. **15BPR.59**
WAKE COUNTY
 BRIDGE NO. **911083**



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE REPAIR
END BENT 1

DRAWN BY : A.Y. GODFREY DATE : 09/2022
 CHECKED BY : R.L. PUTEK DATE : 10/2022
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 12/2022

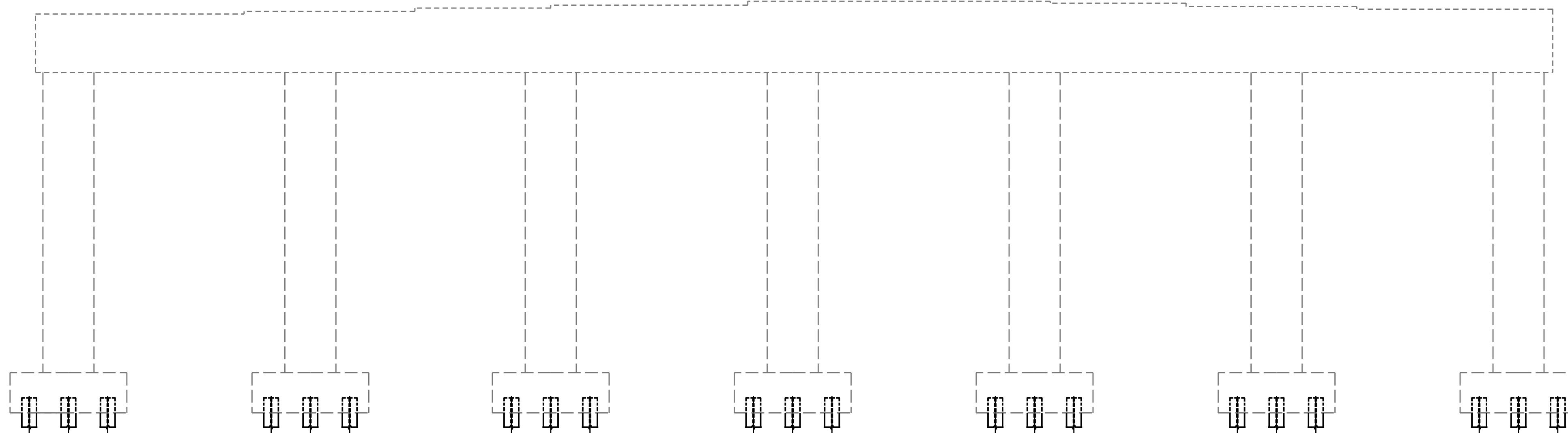
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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2			4			

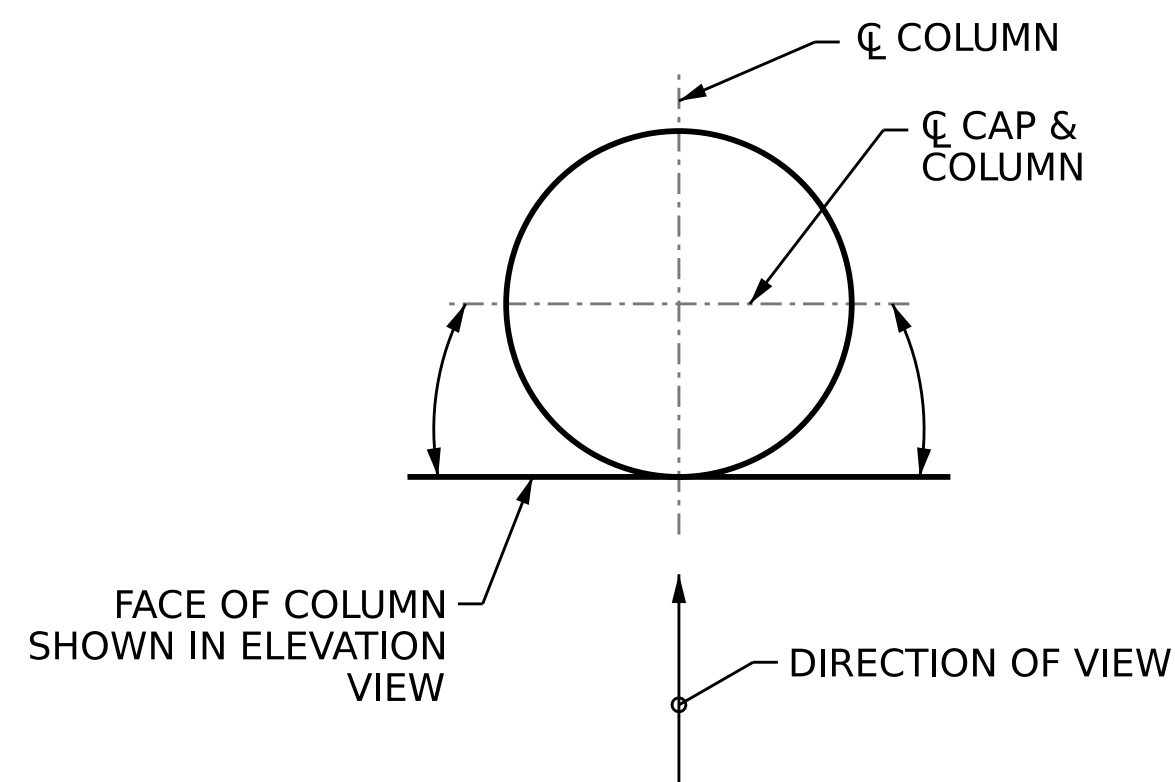
8/26/21



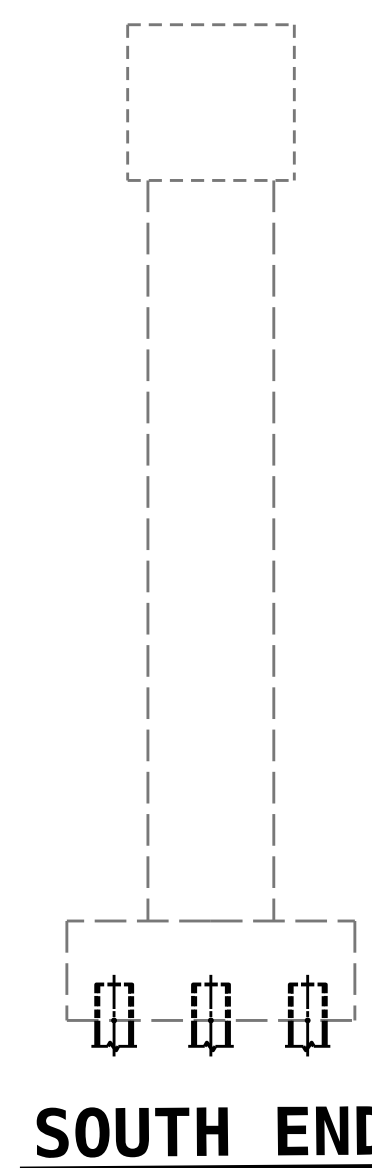
PLAN
(TOP OF CAP)



ELEVATION
(SPAN A SIDE)



UNWRAPPED COLUMN FACE DETAIL



SOUTH END

SUBSTRUCTURE REPAIR QUANTITY TABLE

BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
COLUMN	0	0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
COLUMN	0	0		
EPOXY RESIN INJECTION		LINEAR FT		LINEAR FT
CAP		0		
COLUMN		0		
EPOXY COATING		AREA SF		AREA SF
CAP		529.3		




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

NOTES

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

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

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

-  SHOTCRETE REPAIR AREA
-  CONCRETE REPAIR AREA
-  EPOXY RESIN INJECTION

PROJECT NO. **15BPR.59**

WAKE COUNTY

BRIDGE NO. **911083**

SHEET 1 OF 2



12/08/2022

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE REPAIRS

BENT 1
SPAN A FACE

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

S3-09
TOTAL SHEETS
12

DRAWN BY : **A.Y. GODFREY** DATE : **10/2022**
CHECKED BY : **R.L. PUTEK** DATE : **10/2022**
DESIGN ENGINEER OF RECORD : **N.A. PIERCE** DATE : **12/2022**

8/26/21

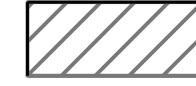


SUBSTRUCTURE REPAIR QUANTITY TABLE				
BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
COLUMN	0	0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
COLUMN	0	0		
EPOXY RESIN INJECTION		LINEAR FT		LINEAR FT
CAP		0		
COLUMN		0		

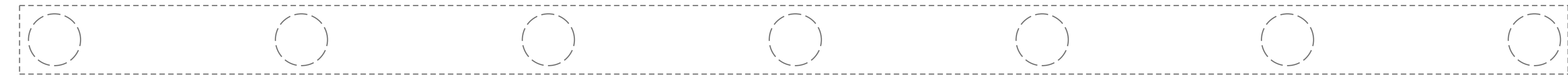
VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CLEAR TO SAWCUT. SEE REPAIR DETAILS.

NOTES

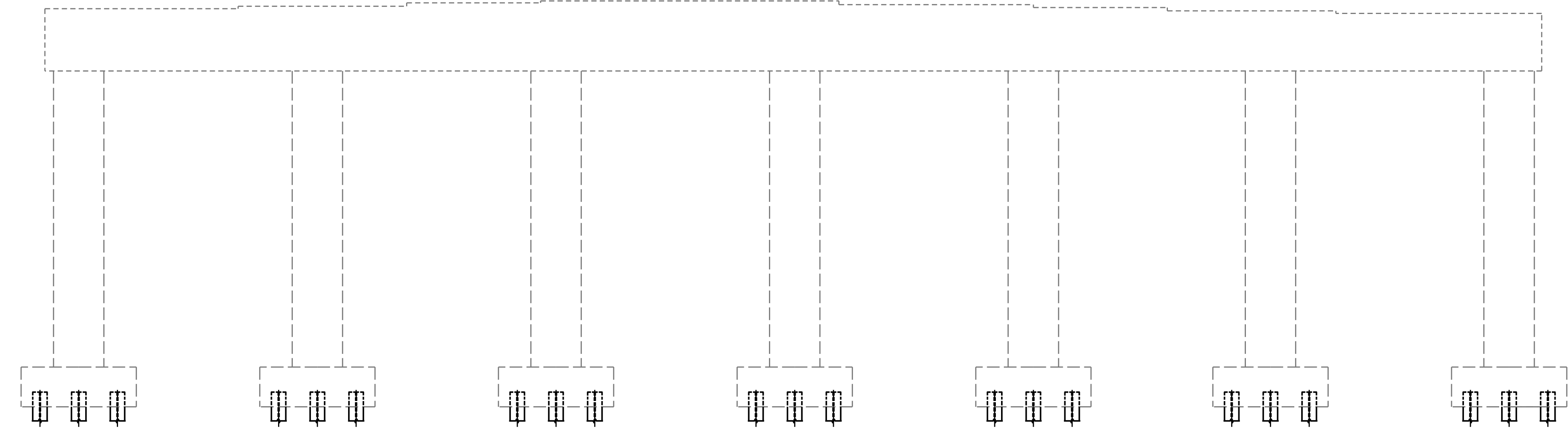
REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN BASED ON THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ENTER THE ACTUAL QUANTITIES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

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

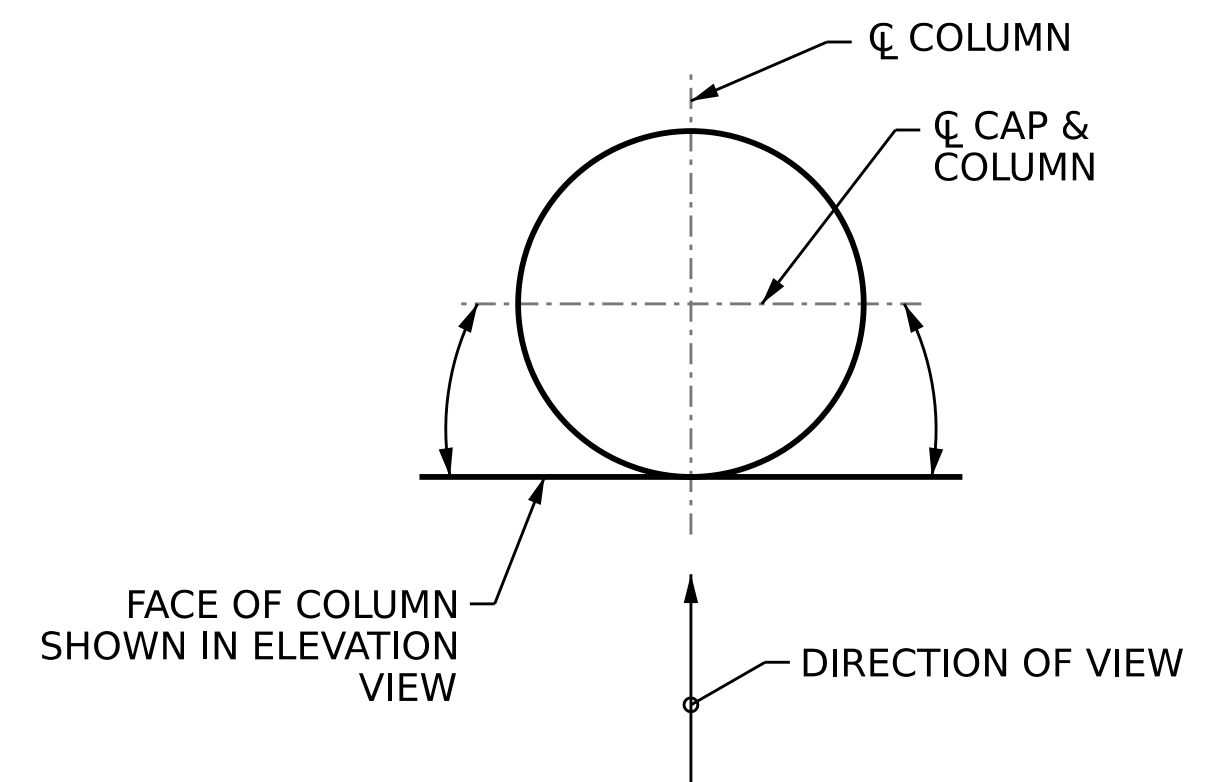
-  SHOTCRETE REPAIR AREA
-  CONCRETE REPAIR AREA
-  EPOXY RESIN INJECTION



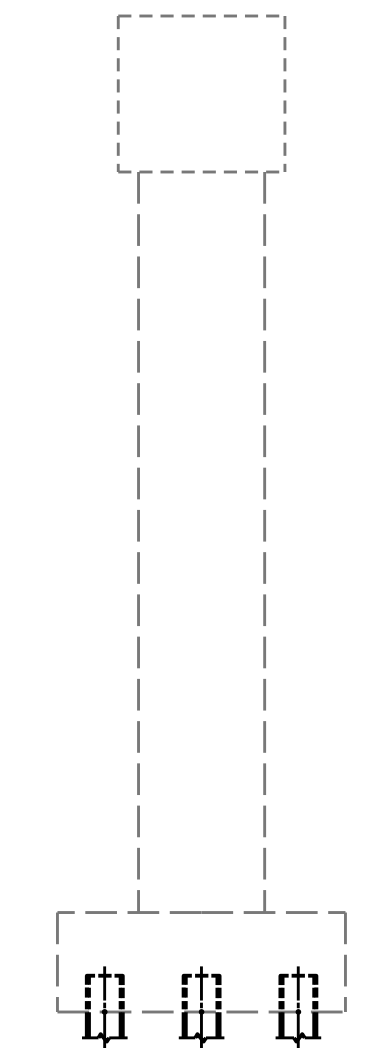
PLAN
(TOP OF CAP)



ELEVATION
(SPAN B SIDE)



UNWRAPPED COLUMN FACE DETAIL



NORTH END

PROJECT NO. **15BPR.59**
WAKE COUNTY
 BRIDGE NO. **911083**

SHEET 2 OF 2



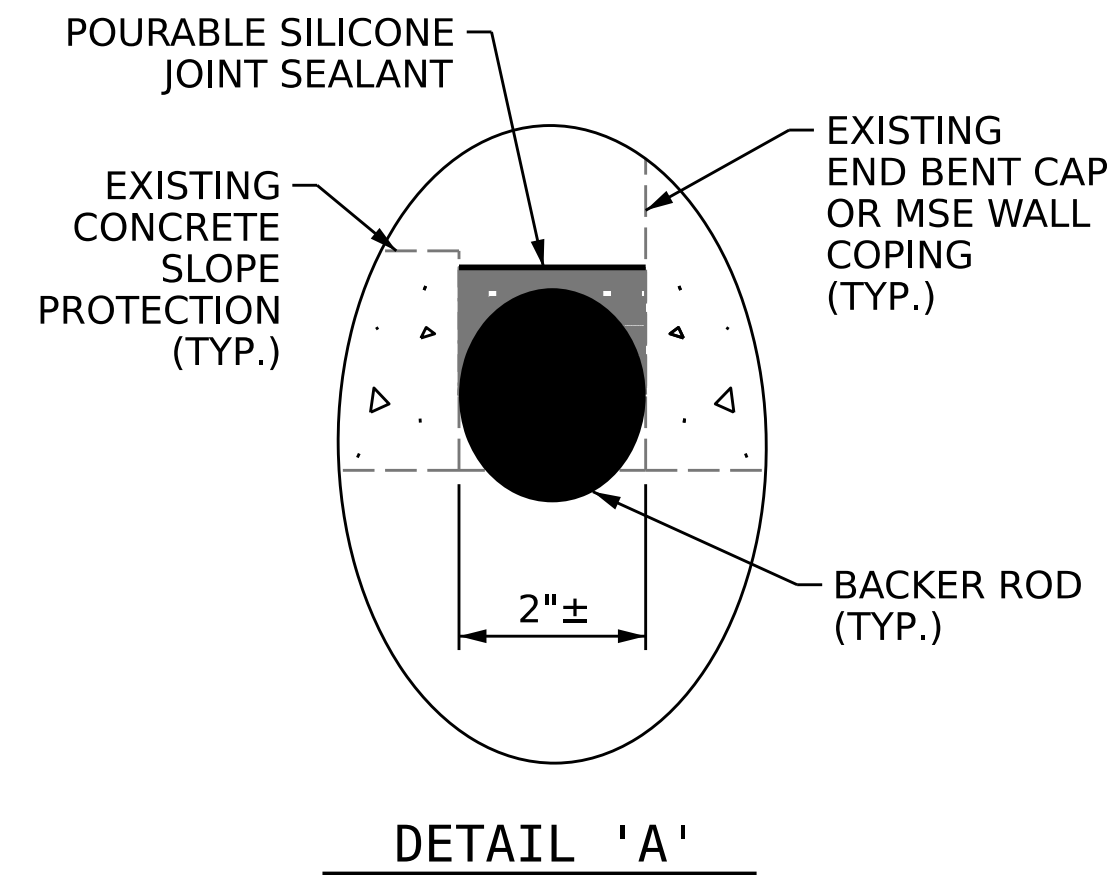
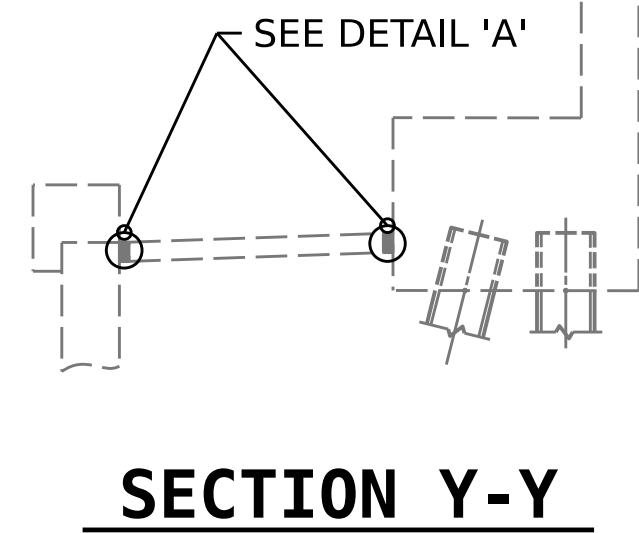
12/08/2022

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE REPAIRS
BENT 1
SPAN B FACE

DRAWN BY : A.Y. GODFREY DATE : 10/2022
 CHECKED BY : R.L. PUTEK DATE : 10/2022
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 12/2022

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO. S3-10 TOTAL SHEETS 12
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			



NOTES

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




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

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

REMOVAL OF DEBRIS AND DISPOSAL OF EXISTING JOINT SEALANT MATERIAL FROM SLOPE PROTECTION PRIOR TO PLACEMENT OF BACKER ROD AND POURABLE SILICONE JOINT SEALANT SHALL BE CONSIDERED INCIDENTAL TO CONSTRUCTION.

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

THE INSTALLED POURABLE SILICONE JOINT SEALANT SHALL BE WATER TIGHT.

-  SHOTCRETE REPAIR AREA
-  CONCRETE REPAIR AREA
-  EPOXY RESIN INJECTION

SUBSTRUCTURE REPAIR QUANTITY TABLE

END BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
CURTAIN WALL	0	0		
WINGWALL				
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
CURTAIN WALL	0	0		
WINGWALL				
EPOXY RESIN INJECTION		LINEAR FT		LINEAR FT
CAP		0		
CURTAIN WALL		0		
WINGWALL				
POURABLE SILICONE JT. SEALANT		LINEAR FT.		AREA SF
JOINT		487.0		
EPOXY COATING		AREA SF		AREA SF
CAP		1021.6		

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

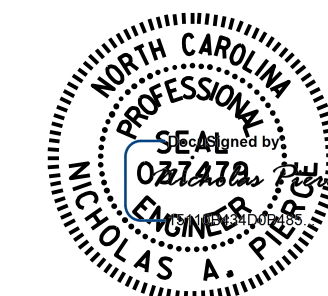


PLAN
TOP OF CAP



ELEVATION
LOOKING EAST

PROJECT NO. **15BPR.59**
WAKE COUNTY
 BRIDGE NO. **911083**



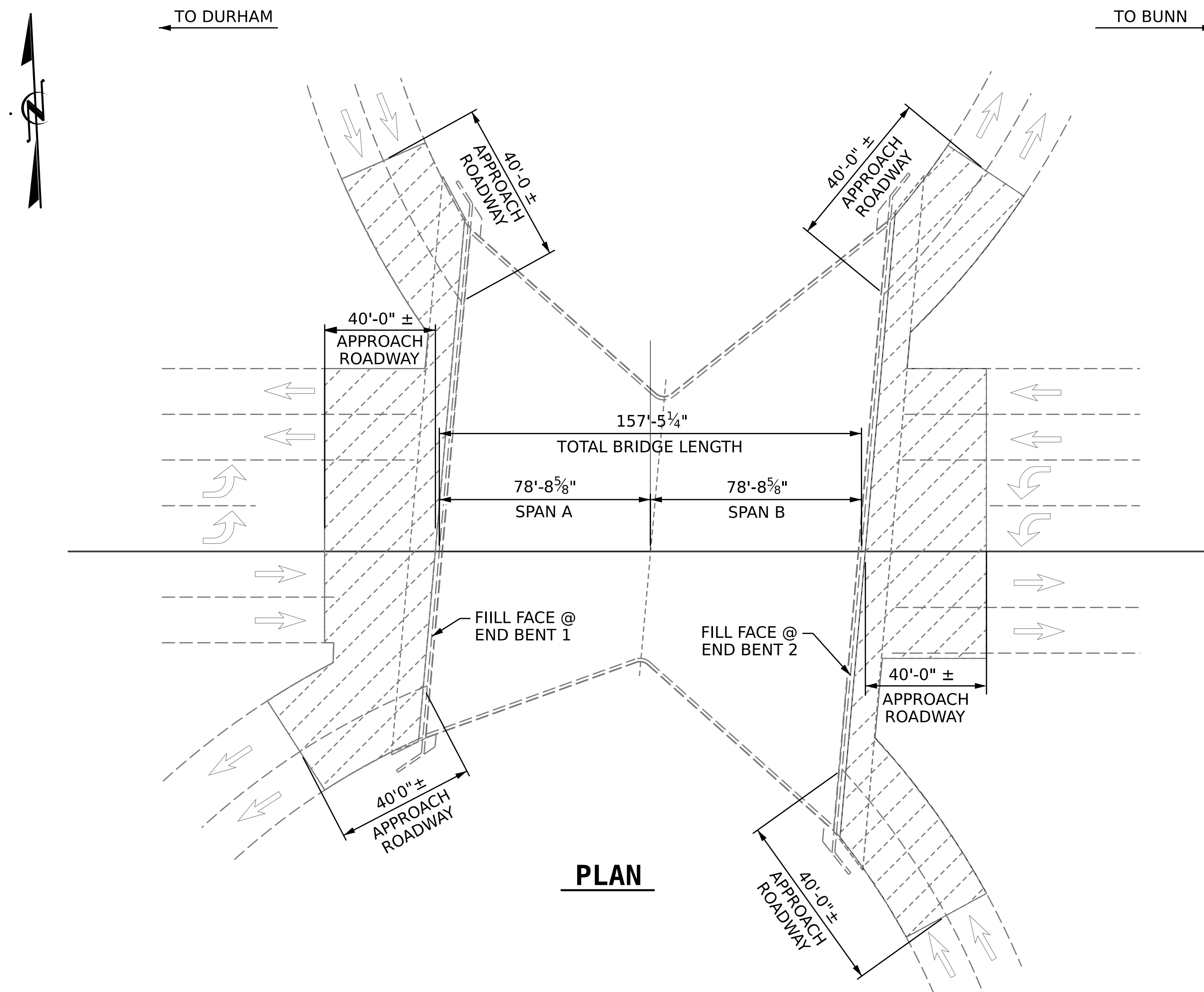
12/08/2022

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE REPAIR
END BENT 2

DRAWN BY : A.Y. GODFREY DATE : 09/2022
 CHECKED BY : R.L. PUTEK DATE : 10/2022
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 12/2022

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REVISIONS						SHEET NO. S3-11 TOTAL SHEETS 12
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			



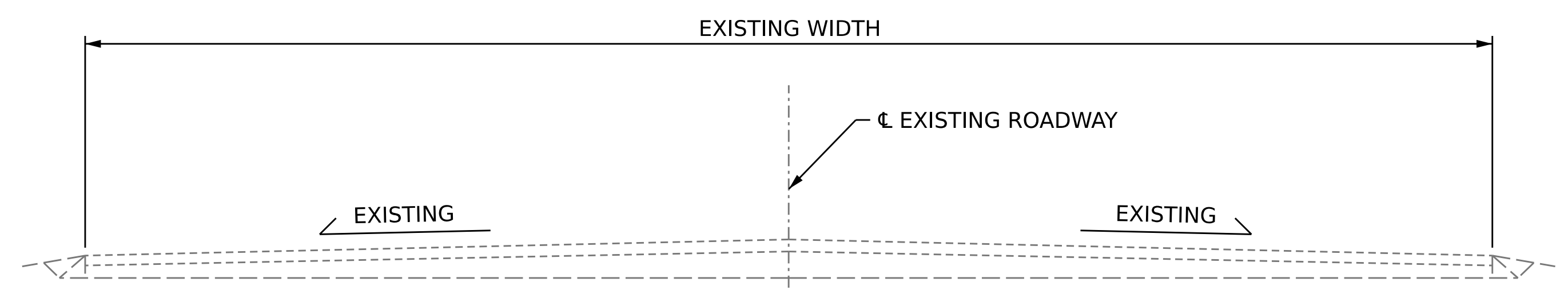
PLAN

NOTES

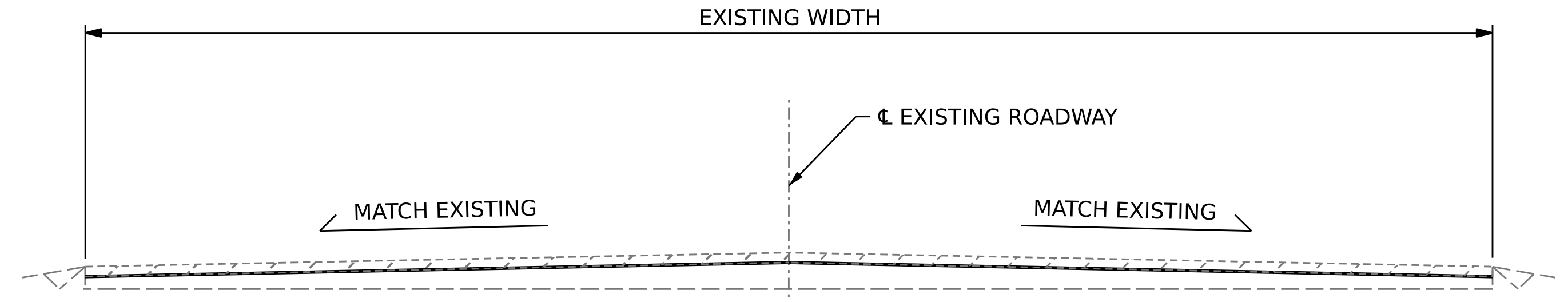
EXISTING APPROACH ASPHALT PAVEMENT SHALL BE MILLED AS NECESSARY TO ATTAIN MINIMUM 1 1/2" DEPTH OF NEW ASPHALT PAVEMENT. NEW ASPHALT PAVEMENT SHALL BE OF THICKNESS NECESSARY TO PROVIDE A SMOOTH TRANSITION BETWEEN THE ROADWAY AND THE BRIDGE DECK. THE NEW ASPHALT PAVEMENT THICKNESS MAY EXCEED 1 1/2" DUE TO SETTLEMENT OF THE EXISTING APPROACH.

EXISTING INDUCTIVE LOOPS ARE ANTICIPATED TO FALL WITHIN THE LIMITS OF APPROACH MILLING AT VARIOUS LOCATIONS. EXISTING INDUCTIVE LOOPS THAT ARE REMOVED OR DAMAGED DURING THE MILLING PROCESS ARE TO BE REPLACED IN ACCORDANCE WITH THE 2018 NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES SECTION 1098-8 AND 1098-9 ALONG WITH NCDOT STANDARD ROADWAY DRAWING 1725.01.

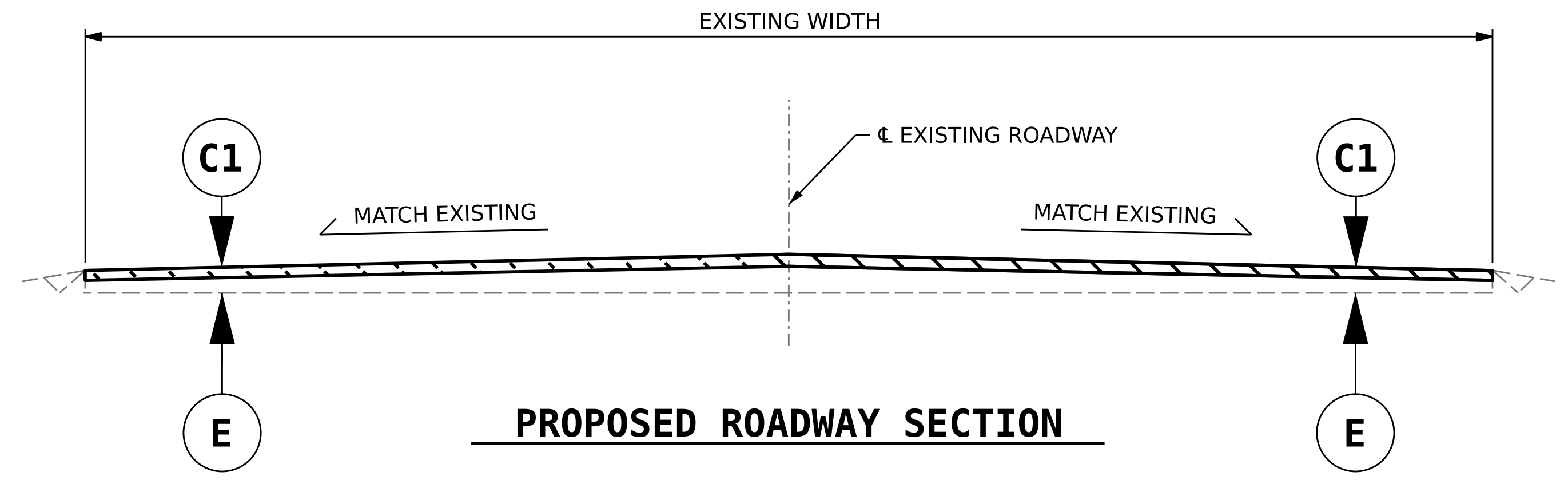
SUMMARY OF QUANTITIES		
	ESTIMATE	ACTUAL
INCIDENTAL MILLING	1969.8 SQ.YD.	
ASPHALT CONC SURFACE COURSE, TYPE S9.5B	170.0 TONS	
ASPHALT BINDER FOR PLANT MIX	15 TONS	
INDUCTIVE LOOP SAWCUT	1600 LIN. FT.	
LEAD IN CABLE	400 LIN. FT.	



EXISTING ROADWAY SECTION



TYPICAL ROADWAY MILLING SECTION
(MILL TO 1 1/2" DEPTH)

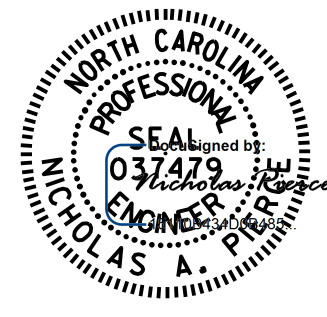


PROPOSED ROADWAY SECTION

C1	PROPOSED VARIABLE DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1 1/2" IN DEPTH OR GREATER THAN 2" IN DEPTH.
E	EXISTING PAVEMENT

INCIDENTAL MILLING

PROJECT NO. **15BPR.59**
WAKE COUNTY
 BRIDGE NO. **911083**



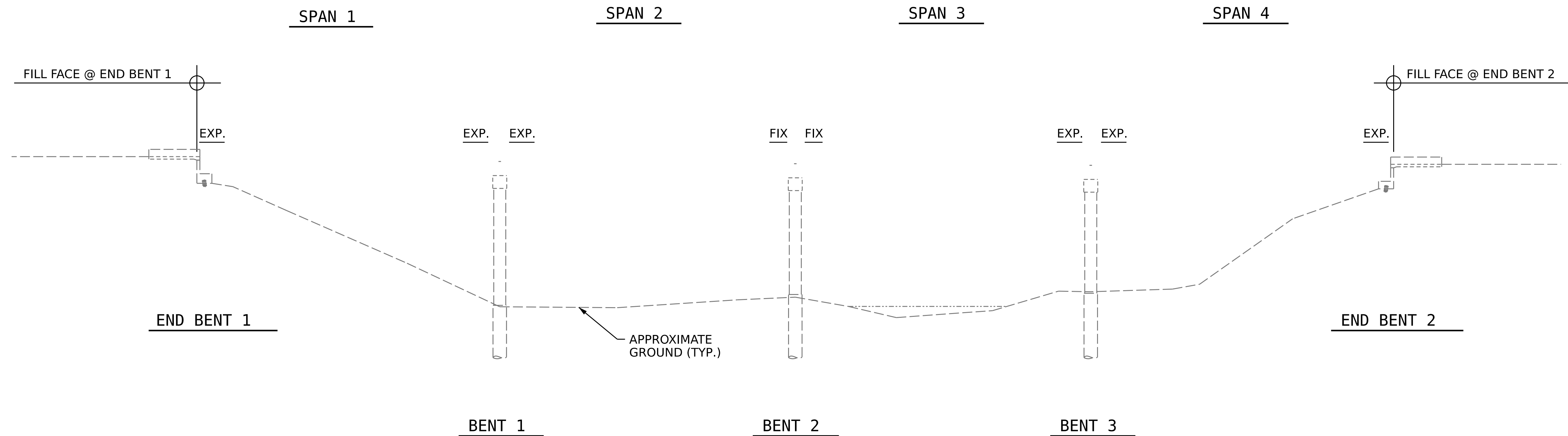
12/08/2022

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**INCIDENTAL MILLING
 AND TYPICAL ROADWAY
 SECTIONS**

DRAWN BY : **A.Y. GODFREY** DATE : **10/2022**
 CHECKED BY : **R.L. PUTEK** DATE : **10/2022**
 DESIGN ENGINEER OF RECORD : **N.A. PIERCE** DATE : **12/2022**

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

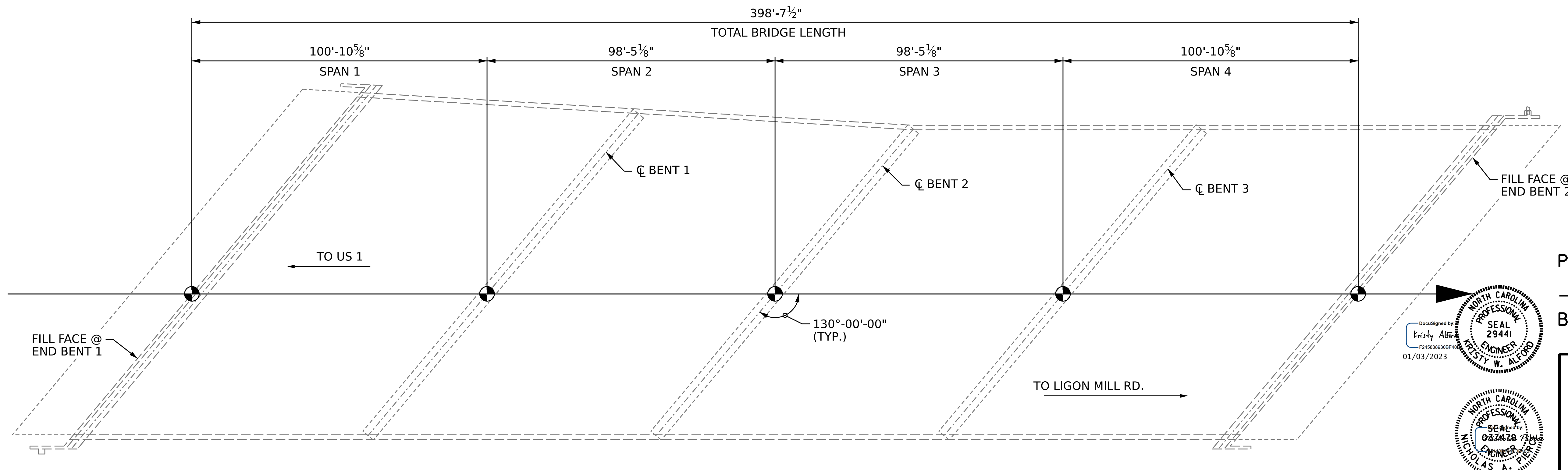
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S3-12
2			4			TOTAL SHEETS 12



ELEVATION

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

RESIDENT ENGINEER _____ DATE _____



PLAN

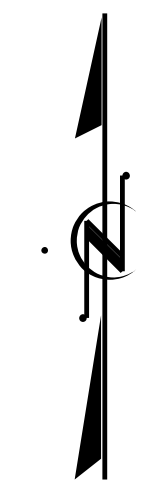
NOTES

GENERAL DRAWING INFORMATION IS TAKEN FROM THE ORIGINAL PLANS AND THE ROUTINE INSPECTION REPORT DATED 05/17/2022.

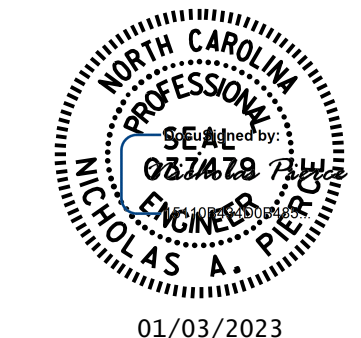
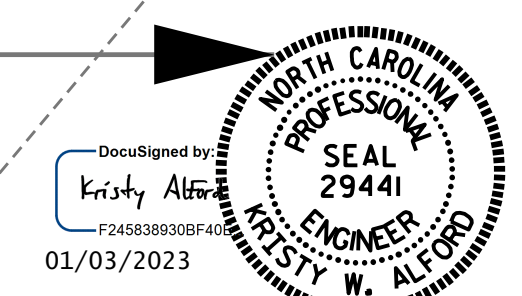
BRIDGE ORIENTATION CONFORMS TO THE EXISTING BRIDGE PLANS/ROUTINE INSPECTION.

SCOPE OF WORK

- DIAMOND GRIND APPROACH SLAB AT END BENT 1.
- MILL AND REPAVE APPROACH ROADWAYS.
- REPAIR CONCRETE MEDIAN ISLAND.
- PERFORM BRIDGE JOINT DEMOLITION AND REMOVE EXISTING JOINT MATERIAL.
- INSTALL ELASTOMERIC CONCRETE HEADERS AND FOAM JOINT SEALS.
- PREPARE TOP OF BRIDGE DECK AND BARRIER RAIL CONCRETE BY SHOTBLASTING METHODS.
- APPLY DECK SEALANT TO PREPARED TOP OF BRIDGE DECK AND BARRIER RAILS.
- CLEAN AND EPOXY COAT EXISTING PRESTRESSED CONCRETE GIRDER ENDS.
- REMOVE UNSOUND CONCRETE AND PROPERLY PREPARE EXISTING BENT AREAS FOR SHOTCRETE REPAIRS.
- REMOVE DEBRIS FROM TOP OF EXISTING END BENT AND BENT CAPS AND APPLY EPOXY COATING.
- REPAIR UNDERMINED END BENT CAPS.



PROJECT NO. **15BPR.59**
WAKE COUNTY
 BRIDGE NO. **911084**



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE ON NC 98 BYPASS
 OVER RICHLAND CREEK
 BETWEEN US 1 AND US 1A

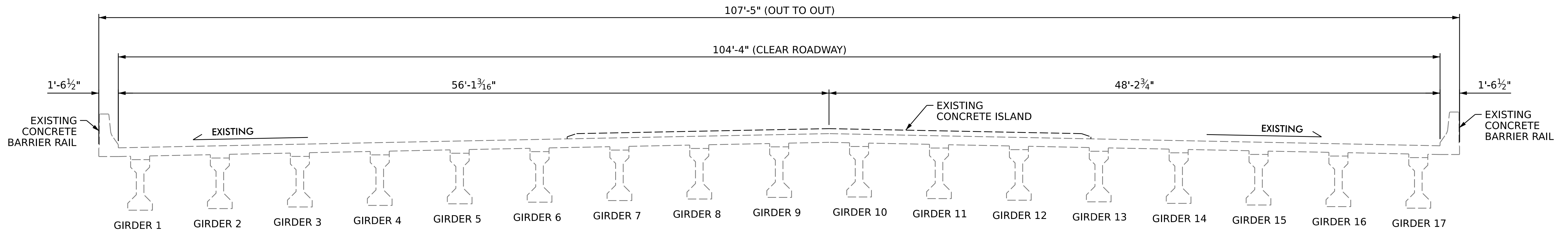
DRAWN BY : N.A. PIERCE DATE : 09/2020
 CHECKED BY : A.Y. GODFREY DATE : 10/2022
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 12/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

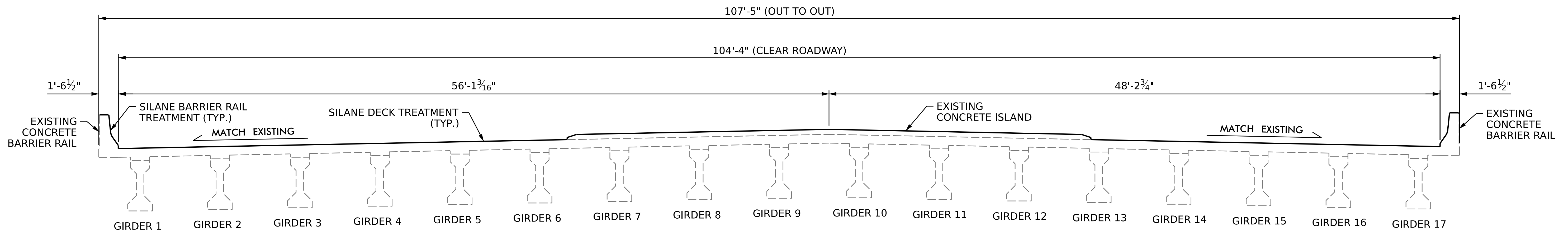
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-01
1			3			TOTAL SHEETS
2			4			21

NOTES

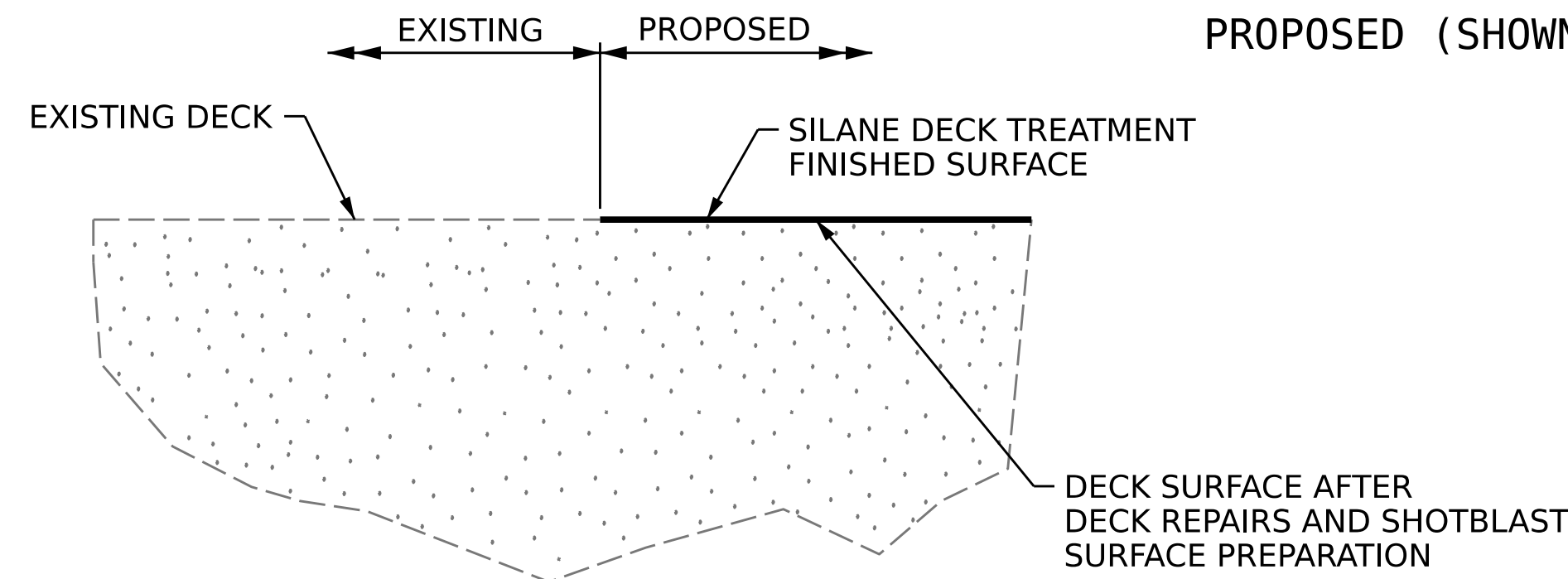
SEE TRANSPORTATION MANAGEMENT PLANS FOR LANE WIDTHS, SEQUENCING AND OTHER TRAFFIC CONTROL MEASURES FOR STAGING OF OVERLAY SURFACE PREPARATION AND SILANE DECK TREATMENT.



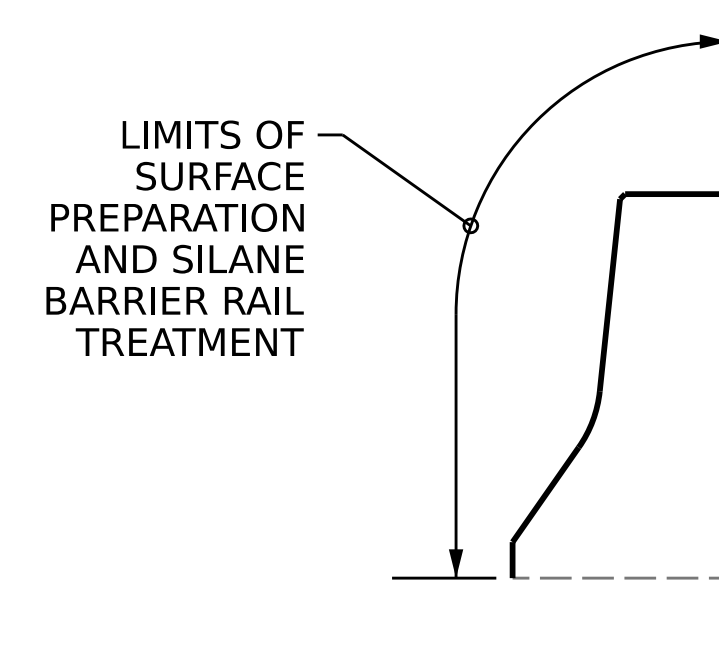
TYPICAL SECTION
EXISTING (SHOWN AT SPAN C & D)



TYPICAL SECTION
PROPOSED (SHOWN AT SPAN C & D)

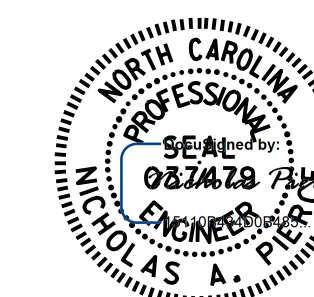


DETAIL FOR SILANE DECK TREATMENT



DETAIL FOR SILANE BARRIER RAIL TREATMENT

PROJECT NO. **15BPR.59**
WAKE COUNTY
BRIDGE NO. **911084**



12/08/2022

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION

DRAWN BY : D.A. CANTRELL DATE : 03/2021
CHECKED BY : A.Y. GODFREY DATE : 10/2022
DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 12/2022

12/17/2022
R:\Structures\Plans\404_003_15BPR59.SMU.TS01.S4-02.911084.dgn
napierce

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SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-02
1			3			TOTAL SHEETS
2			4			21

DECK SURFACE REPAIR QUANTITY TABLE

APPROACH SLAB

	ESTIMATE	ACTUAL
CONCRETE DECK REPAIR FOR SILANE DECK TREATMENT	0.0 CU. FT	
CONCRETE REPAIR	2.0 CU.FT.	
SHOTBLASTING BRIDGE DECK	23.4 SQ. YDS.	
SILANE DECK TREATMENT	23.4 SQ. YDS.	
BRIDGE JOINT DEMOLITION	77.8 SQ.FT.	
SURFACE PREPARATION FOR CONCRETE BARRIER RAIL	138.0 SQ.FT.	
SILANE BARRIER RAIL TREATMENT	138.0 SQ.FT.	
DIAMOND GRINDING	210.0 SQ.FT.	

SPAN A


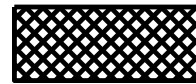
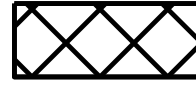
	ESTIMATE	ACTUAL
CONCRETE DECK REPAIR FOR SILANE DECK TREATMENT	0.0 CU. FT	
CONCRETE REPAIR	5.0 CU.FT.	
SHOTBLASTING BRIDGE DECK	1246.4 SQ. YDS.	
SILANE DECK TREATMENT	1246.4 SQ. YDS.	
BRIDGE JOINT DEMOLITION	77.8 SQ. FT.	
SURFACE PREPARATION FOR CONCRETE BARRIER RAIL	797.0 SQ.FT	
SILANE BARRIER RAIL TREATMENT	797.0 SQ.FT.	

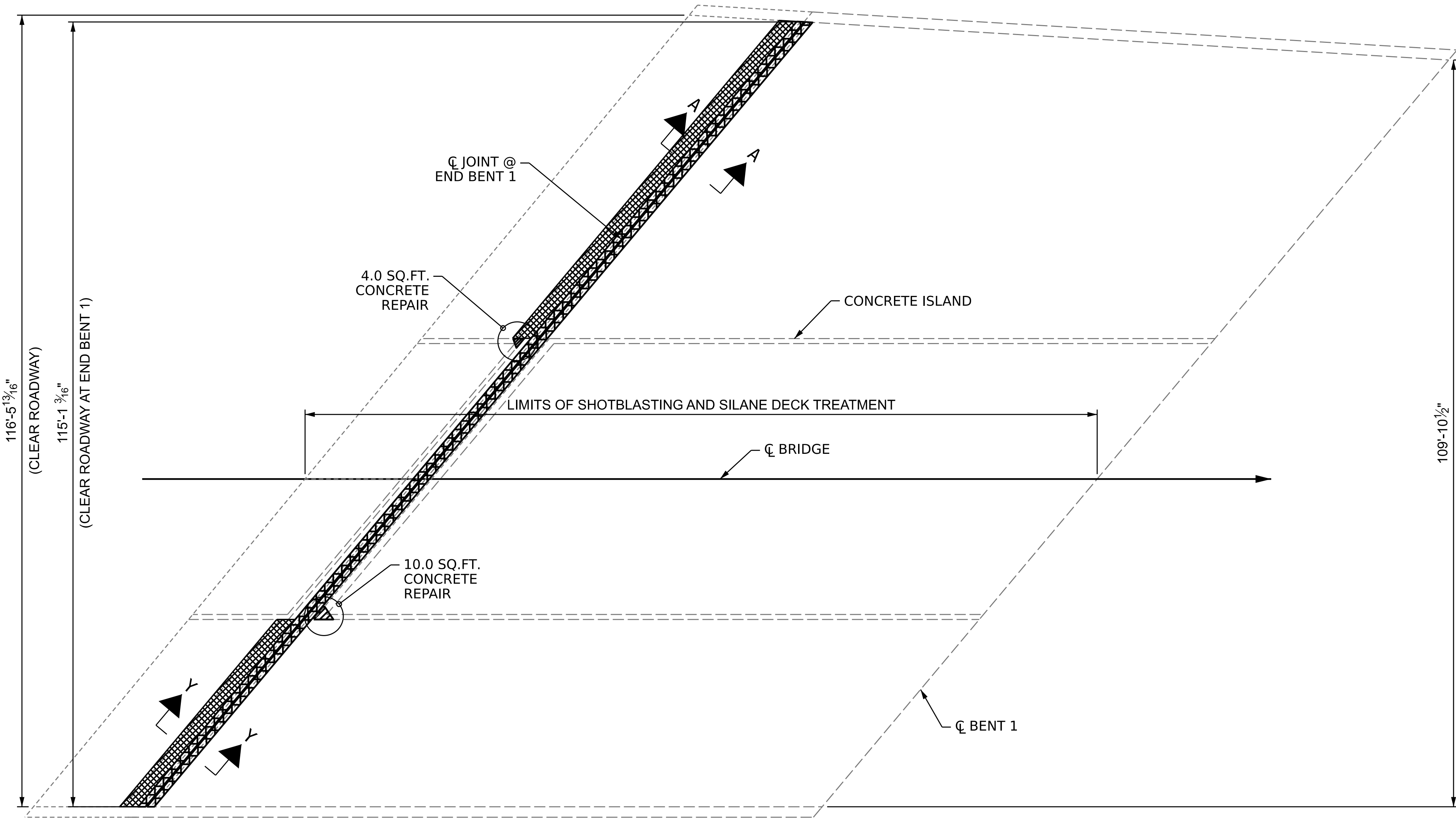
NOTES

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

REPAIR LOCATIONS AND ESTIMATED 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 REPAIR QUANTITY TABLE.

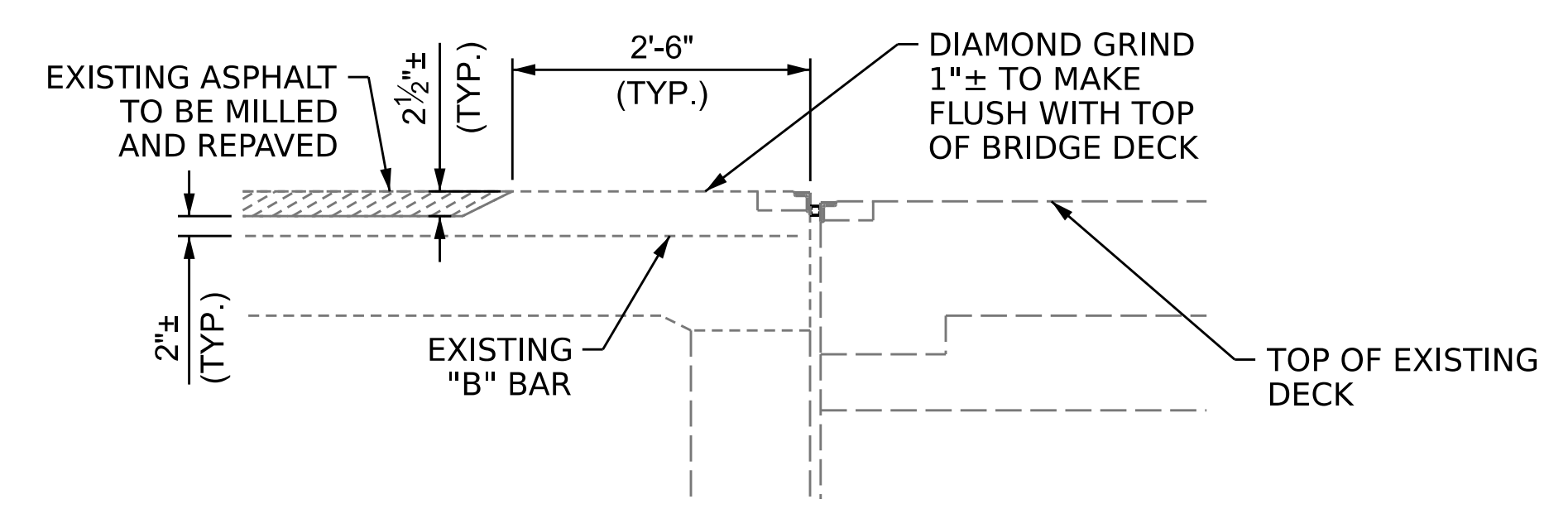
FOR SECTION A-A AND B-B, SEE "FOAM JOINT SEALS FOR PRESERVATION DETAILS" SHEET.

-  CONCRETE REPAIR AREA
-  APPROACH SLAB DIAMOND GRINDING AREA
-  BRIDGE JOINT DEMOLITION



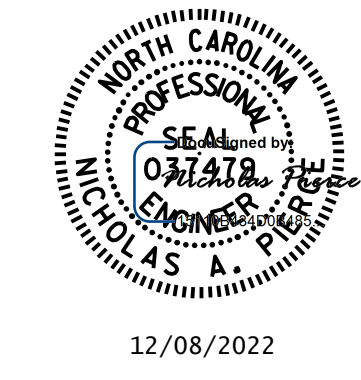
APPROACH SLAB

SPAN A



SECTION Y-Y

PROJECT NO. **15BPR.59**
WAKE COUNTY
 BRIDGE NO. **911084**



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
DECK SURFACE REPAIR
SPAN A AND APPROACH SLAB

DRAWN BY : D.A. CANTRELL DATE : 03/2021
 CHECKED BY : A.Y. GODFREY DATE : 10/2022
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 12/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-03
1			3			TOTAL SHEETS
2			4			21

DECK SURFACE REPAIR QUANTITY TABLE

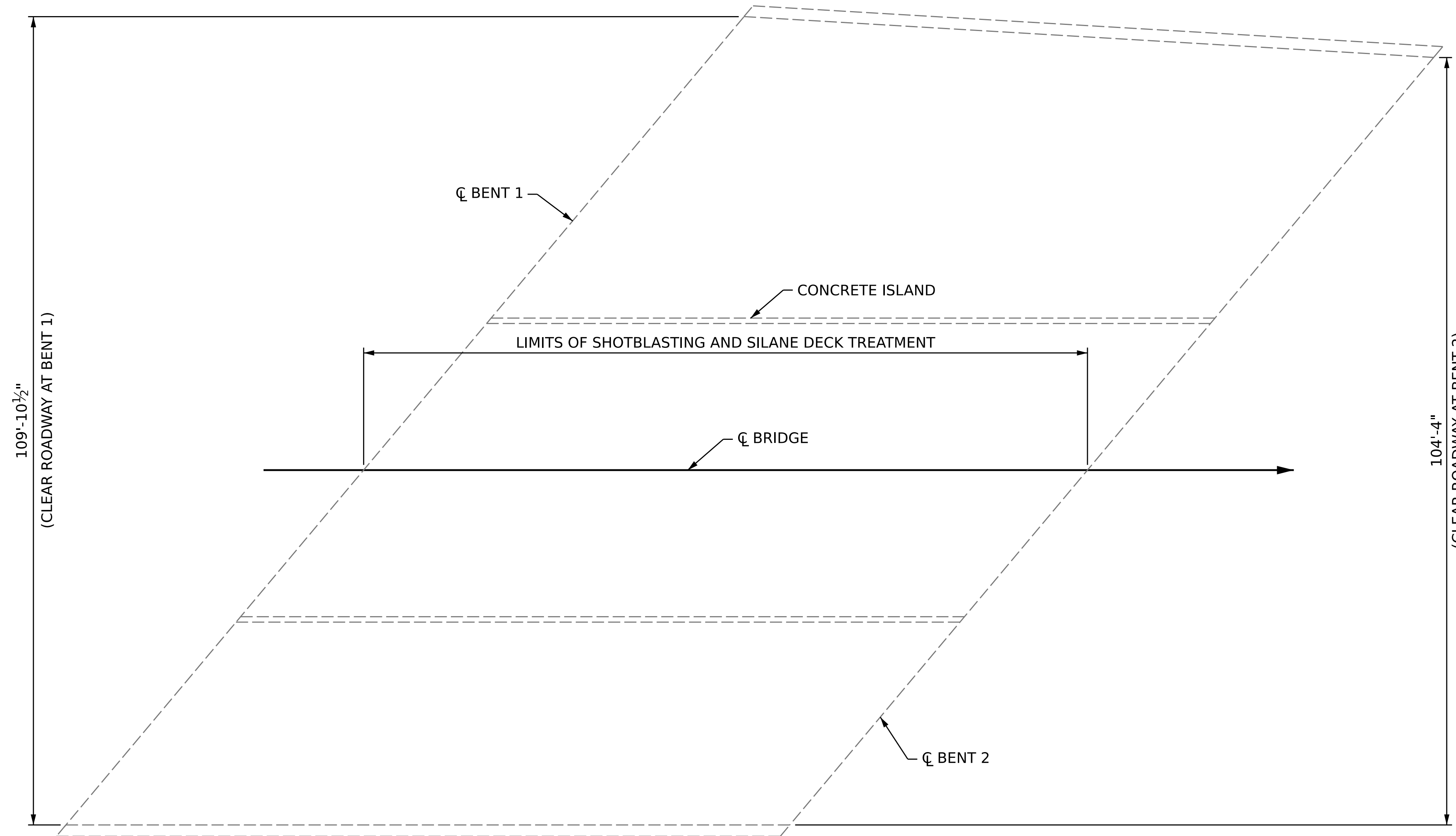
SPAN B		
	ESTIMATE	ACTUAL
CONCRETE DECK REPAIR FOR SILANE DECK TREATMENT	0.0 CU. FT	
CONCRETE REPAIR	0.0 CU.FT.	
BRIDGE JOINT DEMOLITION	0.0 SQ.FT.	
SHOTBLASTING BRIDGE DECK	1172.0 SQ. YDS.	
SILANE DECK TREATMENT	1172.0 SQ. YDS.	
SURFACE PREPARTAION FOR CONCRETE BARRIER RAIL	790.0 SQ.FT.	
SILANE BARRIER RAIL TREATMENT	790.0 SQ.FT.	

NOTES

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

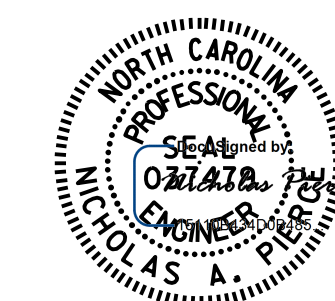
REPAIR LOCATIONS AND ESTIMATED QUANTITIES ARE BASED ON THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATIONS AND DESCRIPTION OF THE REPAIRS AND ENTER THE ACTUAL QUANTITIES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

 CONCRETE REPAIR AREA



SPAN B

PROJECT NO. **15BPR.59**
WAKE COUNTY
 BRIDGE NO. **911084**



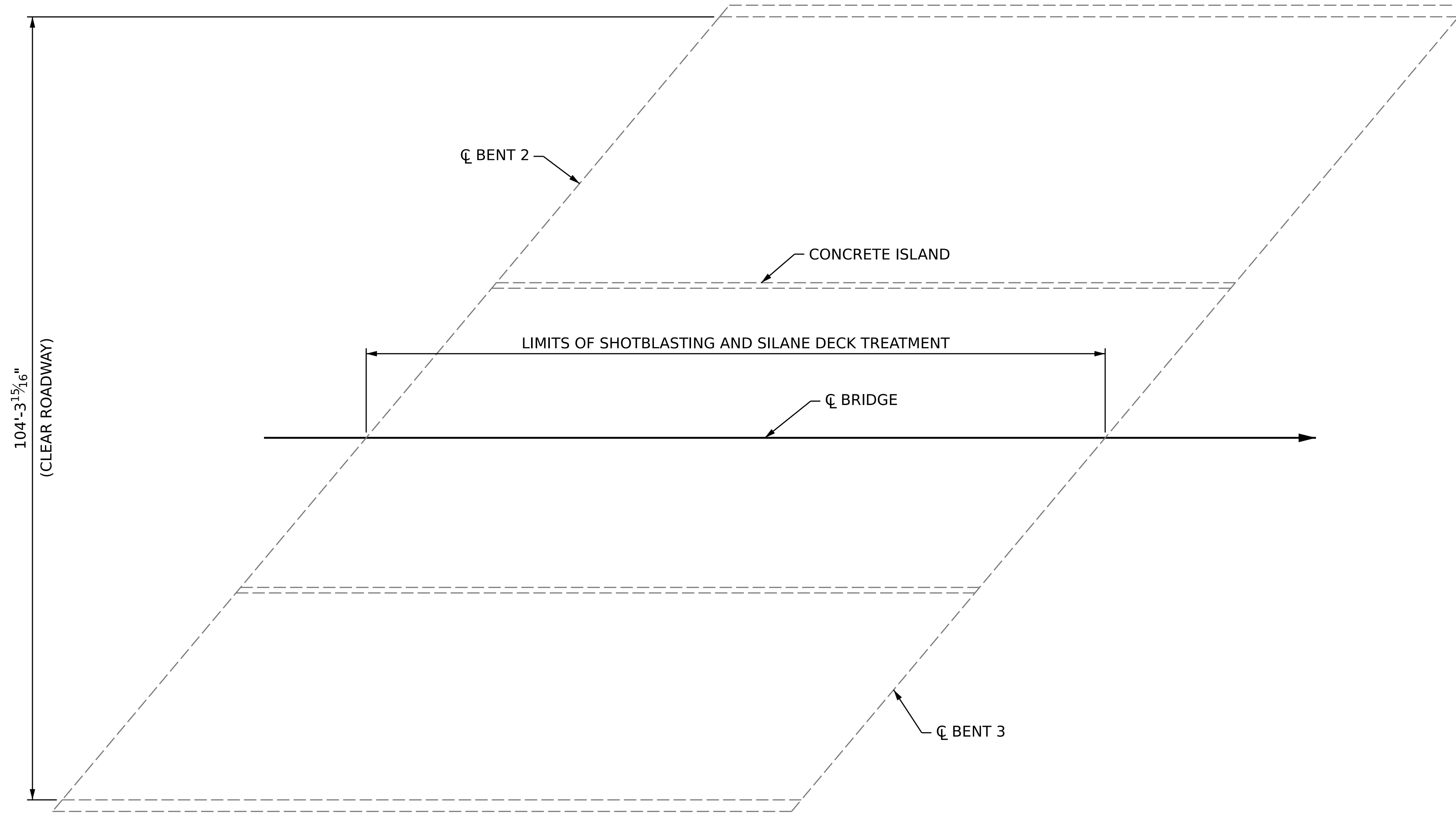
12/08/2022

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 DECK SURFACE REPAIR
SPAN B

DRAWN BY : D.A. CANTRELL DATE : 03/2021
 CHECKED BY : A.Y. GODFREY DATE : 10/2022
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 12/2022

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S4-04
2			4			TOTAL SHEETS 21



SPAN C

DECK SURFACE REPAIR QUANTITY TABLE

SPAN C		
	ESTIMATE	ACTUAL
CONCRETE DECK REPAIR FOR SILANE DECK TREATMENT	0.0 CU. FT	
CONCRETE REPAIR	0.0 CU.FT.	
BRIDGE JOINT DEMOLITION	0.0 SQ.FT.	
SHOTBLASTING BRIDGE DECK	1141.0 SQ. YDS.	
SILANE DECK TREATMENT	1141.0 SQ. YDS.	
SURFACE PREPARATION FOR CONCRETE BARRIER RAIL	790.0 SQ.FT.	
SILANE BARRIER RAIL TREATMENT	790.0 SQ.FT.	

NOTES

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

REPAIR LOCATIONS AND ESTIMATED 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 REPAIR QUANTITY TABLE.

 CONCRETE REPAIR AREA

PROJECT NO. **15BPR.59**
WAKE COUNTY
 BRIDGE NO. **911084**



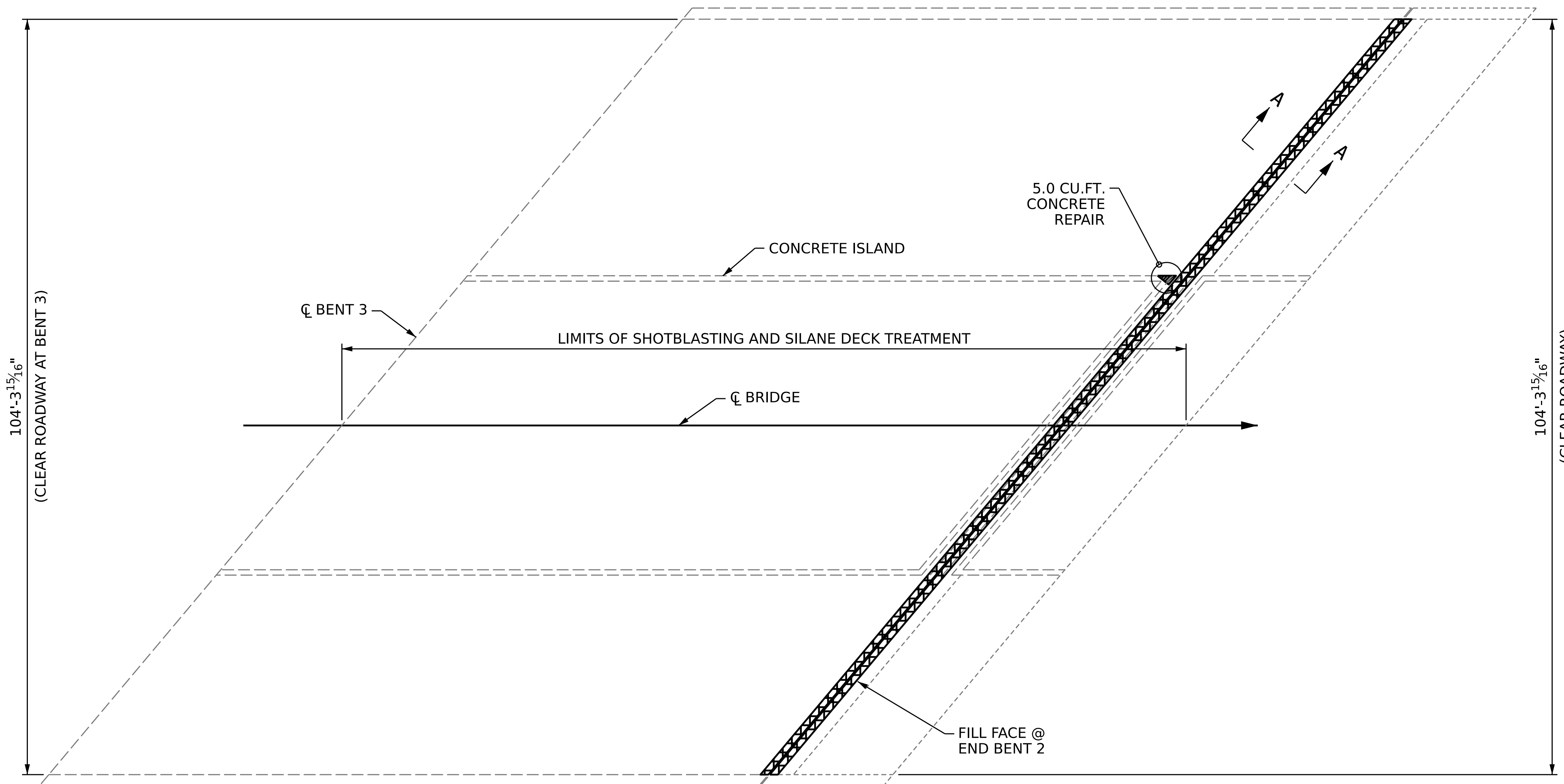
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 DECK SURFACE REPAIR
SPAN C

12/08/2022

DRAWN BY : D.A. CANTRELL DATE : 03/2021
 CHECKED BY : A.Y. GODFREY DATE : 10/2022
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 12/2022

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S4-05
2			4			TOTAL SHEETS 21



DECK SURFACE REPAIR QUANTITY TABLE

SPAN D		
	ESTIMATE	ACTUAL
CONCRETE DECK REPAIR FOR SILANE DECK TREATMENT	0.0 CU. FT	
CONCRETE REPAIR	2.5 CU.FT.	
SHOTBLASTING BRIDGE DECK	1154.4 SQ. YDS.	
SILANE DECK TREATMENT	1154.4 SQ. YDS.	
BRIDGE JOINT DEMOLITION	69.0 SQ.FT.	
SURFACE PREPARTAIION FOR CONCRETE BARRIER RAIL	797.0 SQ.FT.	
SILANE BARRIER RAIL TREATMENT	797.0 SQ.FT.	
APPROACH SLAB		
	ESTIMATE	ACTUAL
CONCRETE DECK REPAIR FOR SILANE DECK TREATMENT	0.0 CU. FT	
CONCRETE REPAIR	0.0 CU.FT.	
SHOTBLASTING BRIDGE DECK	29.4 SQ. YDS.	
SILANE DECK TREATMENT	29.4 SQ. YDS.	
BRIDGE JOINT DEMOLITION	69.0 SQ. FT.	
SURFACE PREPARTAIION FOR CONCRETE BARRIER RAIL	136.0 SQ.FT.	
SILANE BARRIER RAIL TREATMENT	136.0 SQ.FT.	

NOTES

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

REPAIR LOCATIONS AND ESTIMATED 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 REPAIR QUANTITY TABLE.

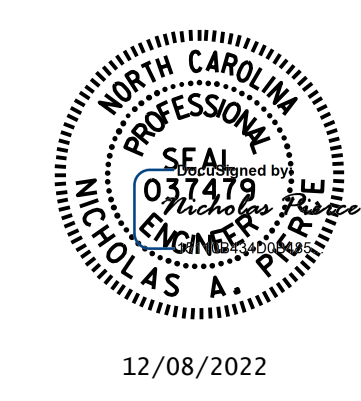
FOR SECTION A-A, SEE "FOAM JOINT SEALS FOR PRESERVATION DETAILS" SHEET.

- CONCRETE REPAIR AREA
- BRIDGE JOINT DEMO

SPAN D

APPROACH SLAB

PROJECT NO. **15BPR.59**
WAKE COUNTY
 BRIDGE NO. **911084**

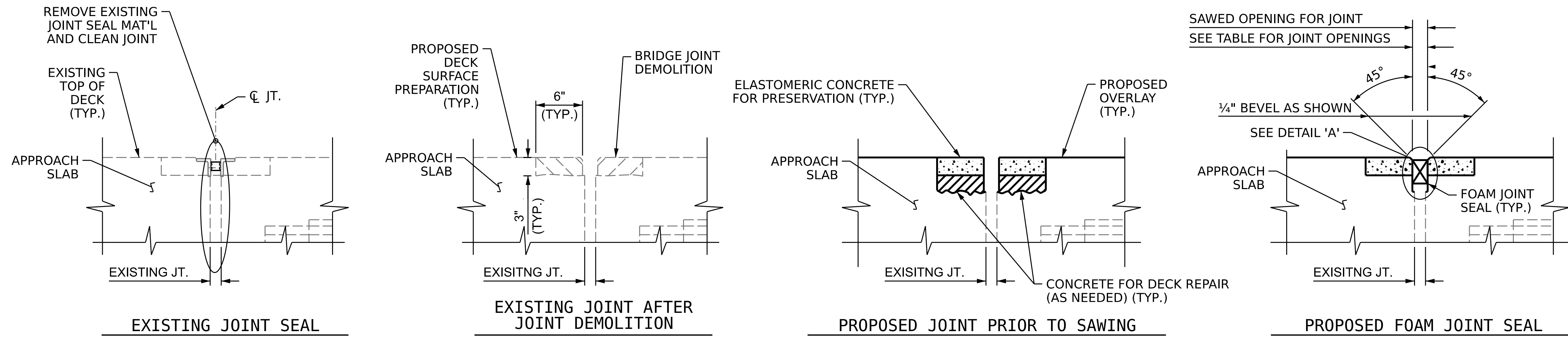


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 DECK SURFACE REPAIR
**SPAN D AND
 APPROACH SLAB**

DRAWN BY : D.A. CANTRELL DATE : 03/2021
 CHECKED BY : A.Y. GODFREY DATE : 10/2022
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 12/2022

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SECTION A-A
(TYP. AT END BENTS)

JOINT REPAIR QUANTITY TABLE		
	ESTIMATED	ACTUAL
FOAM JOINT SEALS FOR PRESERVATION	325.0 LN. FT.	

LOCATION	SAWED JT. OPENING (PERPENDICULAR TO JT.)		
	AT 45°	AT 60°	AT 90°
END BENT 1	2 1/2"	2 3/4"	1 7/8"
END BENT 2	2 1/2"	2 3/4"	1 7/8"

ELASTOMERIC CONCRETE FOR PRESERVATION		
LOCATION	ESTIMATED (CU.F.T.)	ACTUAL (CU.F.T.)
END BENT 1	42.8	
END BENT 2	38.6	
TOTAL	81.4	

NOTES

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

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

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

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

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

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

THE INSTALLED FOAM JOINTS SHALL BE WATER TIGHT.

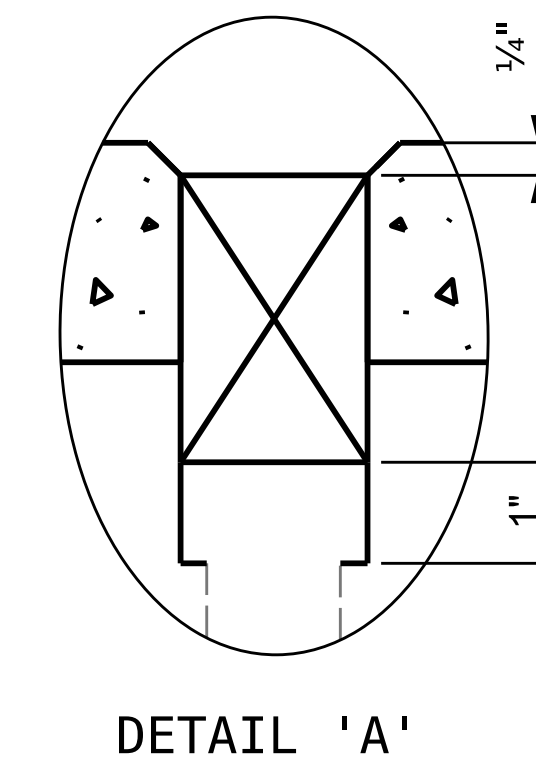
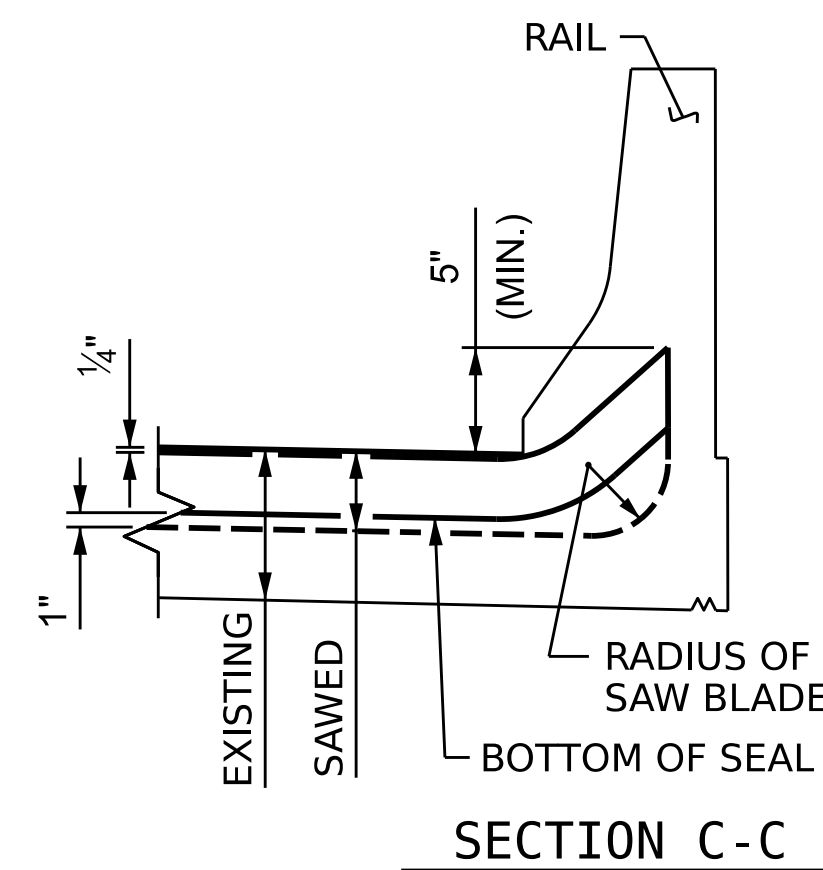
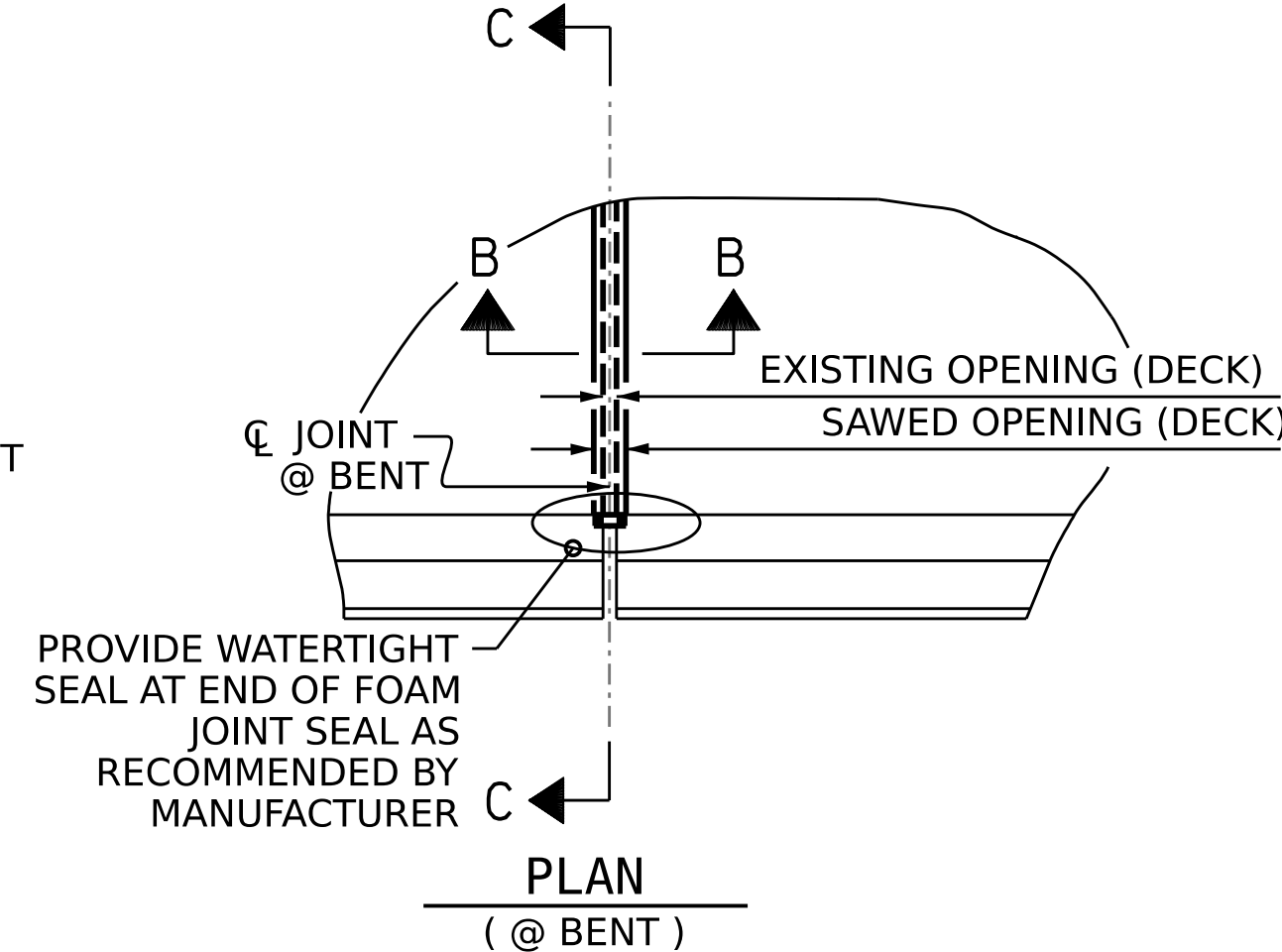
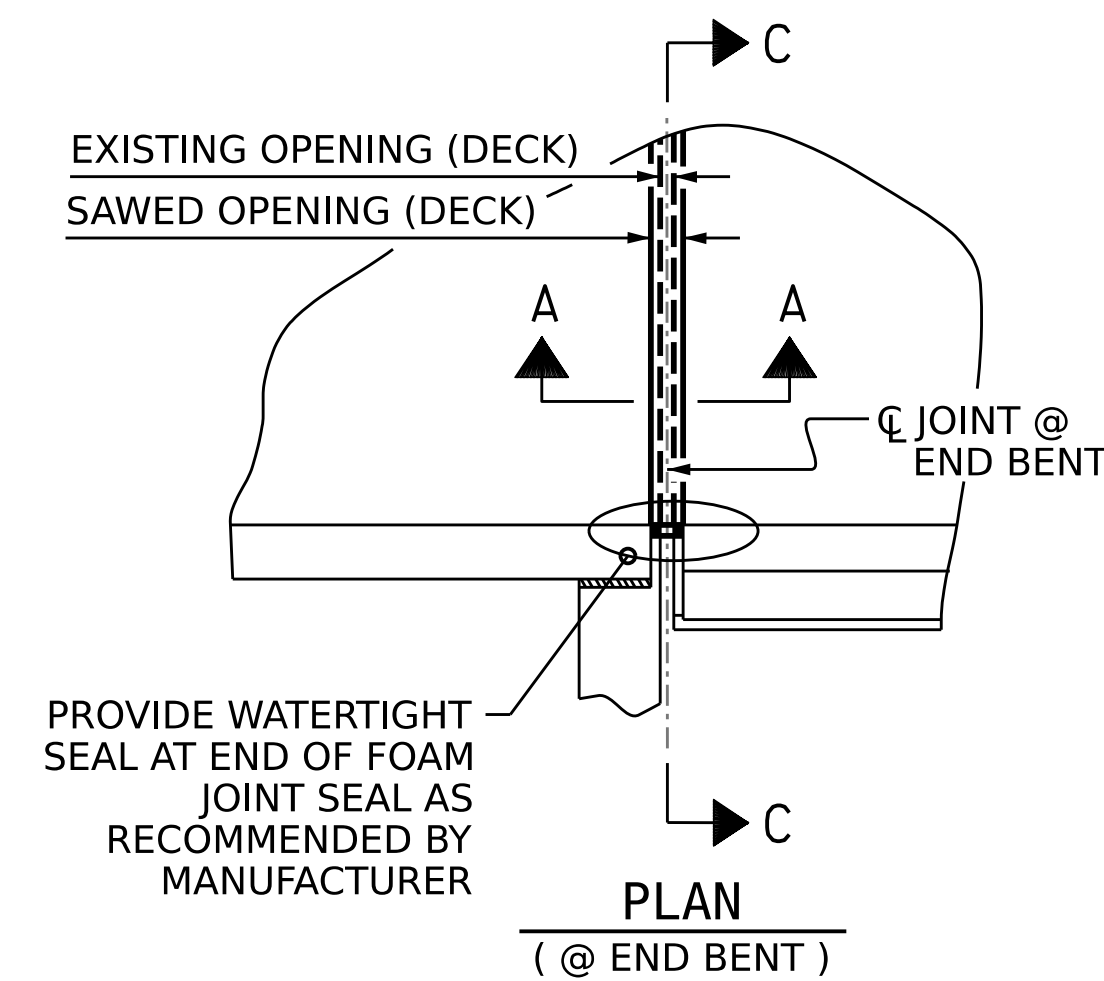
THE CONTRACTOR SHALL SAW CUT TO A NOMINAL DEPTH OF 1/2" BUT REINFORCING STEEL SHALL NOT BE DAMAGED. CONTRACTOR SHALL REMOVE SURFACE CONCRETE TO VERIFY THAT SAWCUT DEPTH WILL NOT DAMAGE EXISTING REINFORCING STEEL.

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

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

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

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



JOINT SEAL DETAILS

PROJECT NO. **15BPR.59**
WAKE COUNTY
 BRIDGE NO. **911084**



12/08/2022

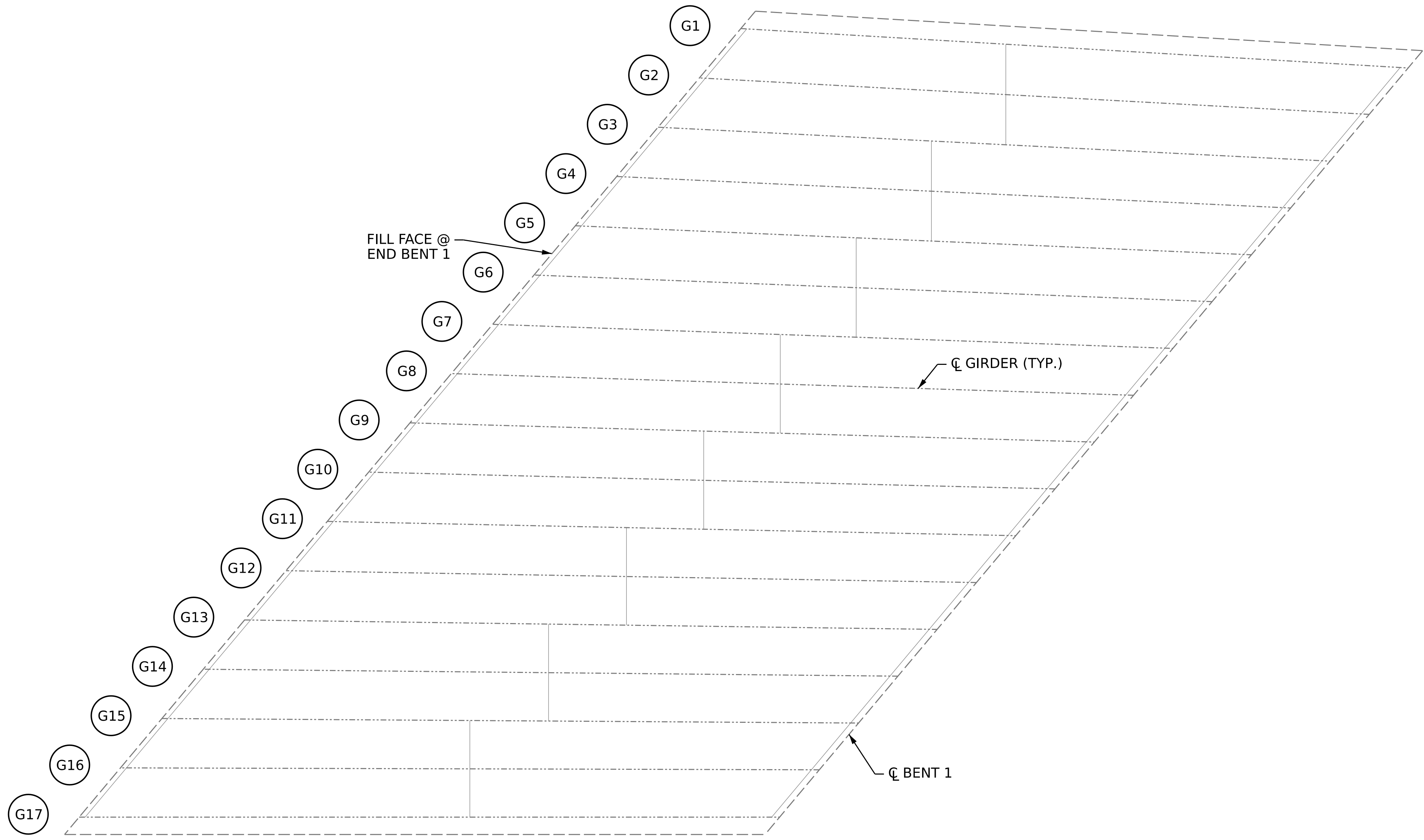
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

FOAM JOINT SEALS FOR PRESERVATION DETAILS

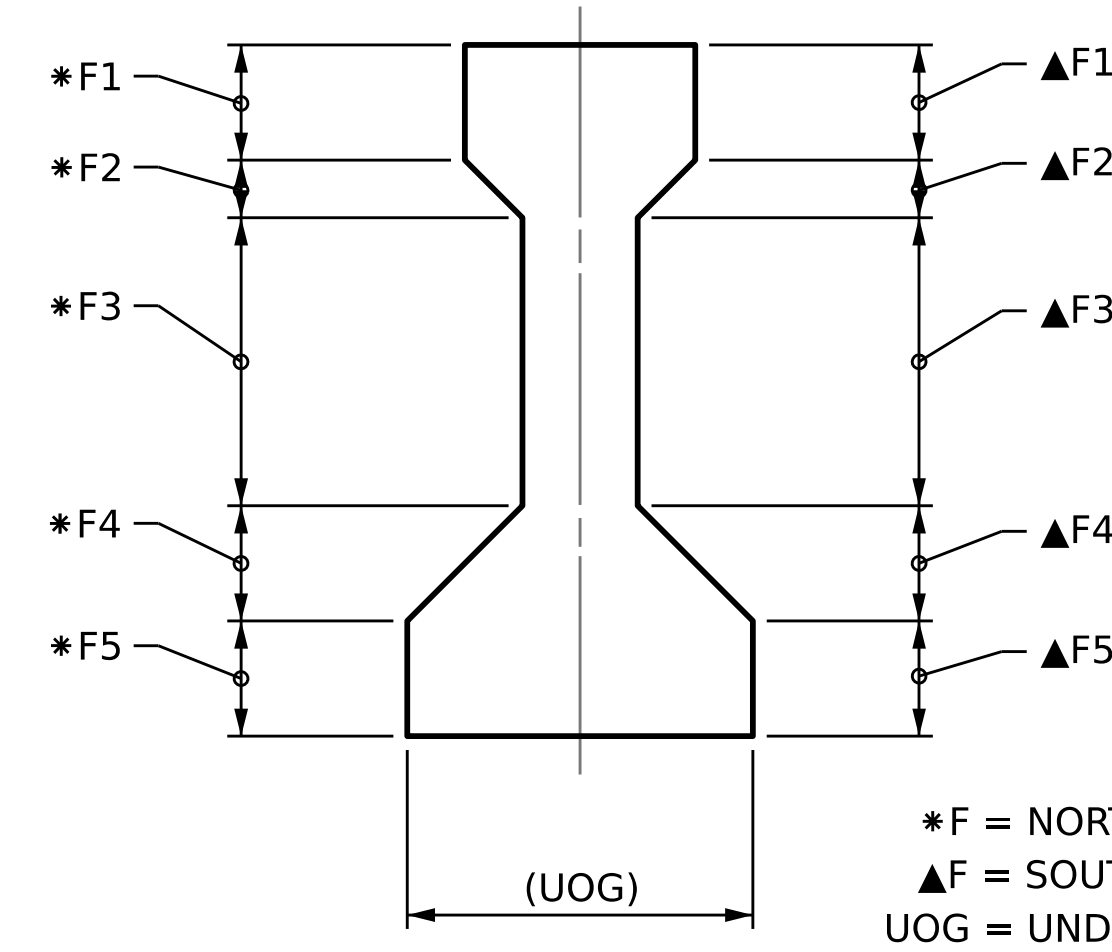
DRAWN BY : D.A. CANTRELL/A.Y. GODFREY DATE : 10/2022
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 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 12/2022

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PLAN



* F = NORTH/WEST FACE
 ▲ F = SOUTH/EAST FACE
 UOG = UNDERSIDE OF GIRDER

GIRDER SECTION

GIRDER DAMAGE LOCATIONS

DECK UNDERSIDE REPAIR QUANTITY TABLE

SPAN A	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0	0		
CONCRETE DIAPHRAGM	0	0		
OVERHANG	0	0		
CONCRETE GIRDER	0	0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0	0		
CONCRETE DIAPHRAGM	0	0		
OVERHANG	0	0		
CONCRETE GIRDER	0	0		
EPOXY COATING		AREA SF		AREA SF
GIRDER ENDS		416		

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

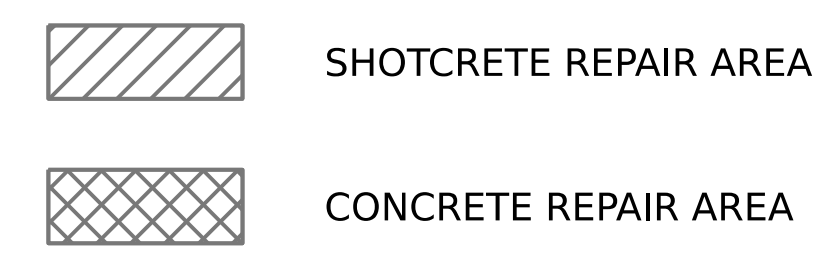
NOTES

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

EPOXY COAT THE ENDS OF ALL CONCRETE GIRDERS.

FOR PRESTRESSED CONCRETE GIRDER REPAIR DETAILS AND LIMITS OF EPOXY COATING CONCRETE GIRDER ENDS, SEE PRESTRESSED CONCRETE GIRDER REPAIRS DETAIL SHEET.



PROJECT NO. **15BPR.59**
WAKE COUNTY
 BRIDGE NO. **911084**

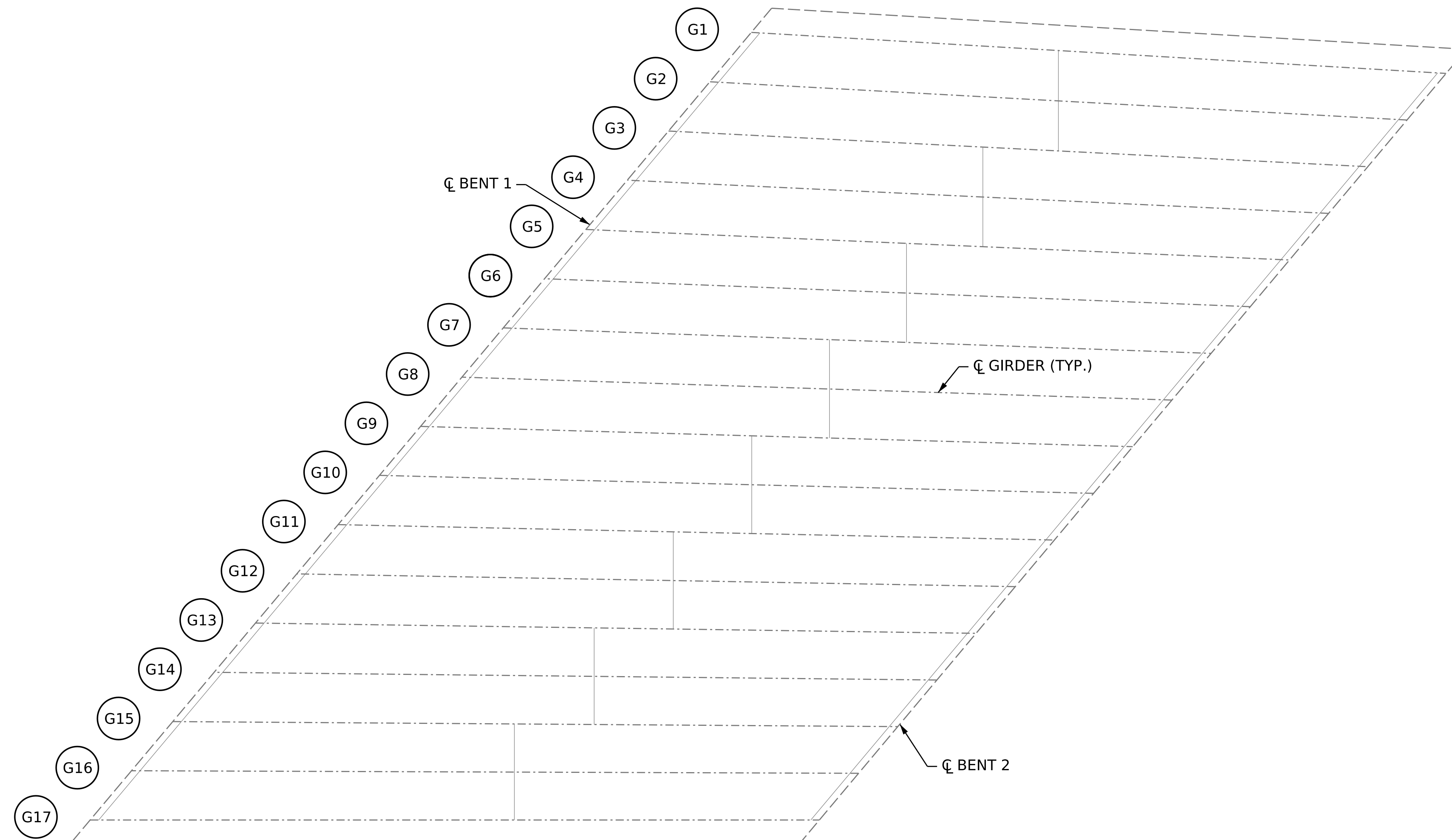


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 DECK UNDERSIDE REPAIR
SPAN A

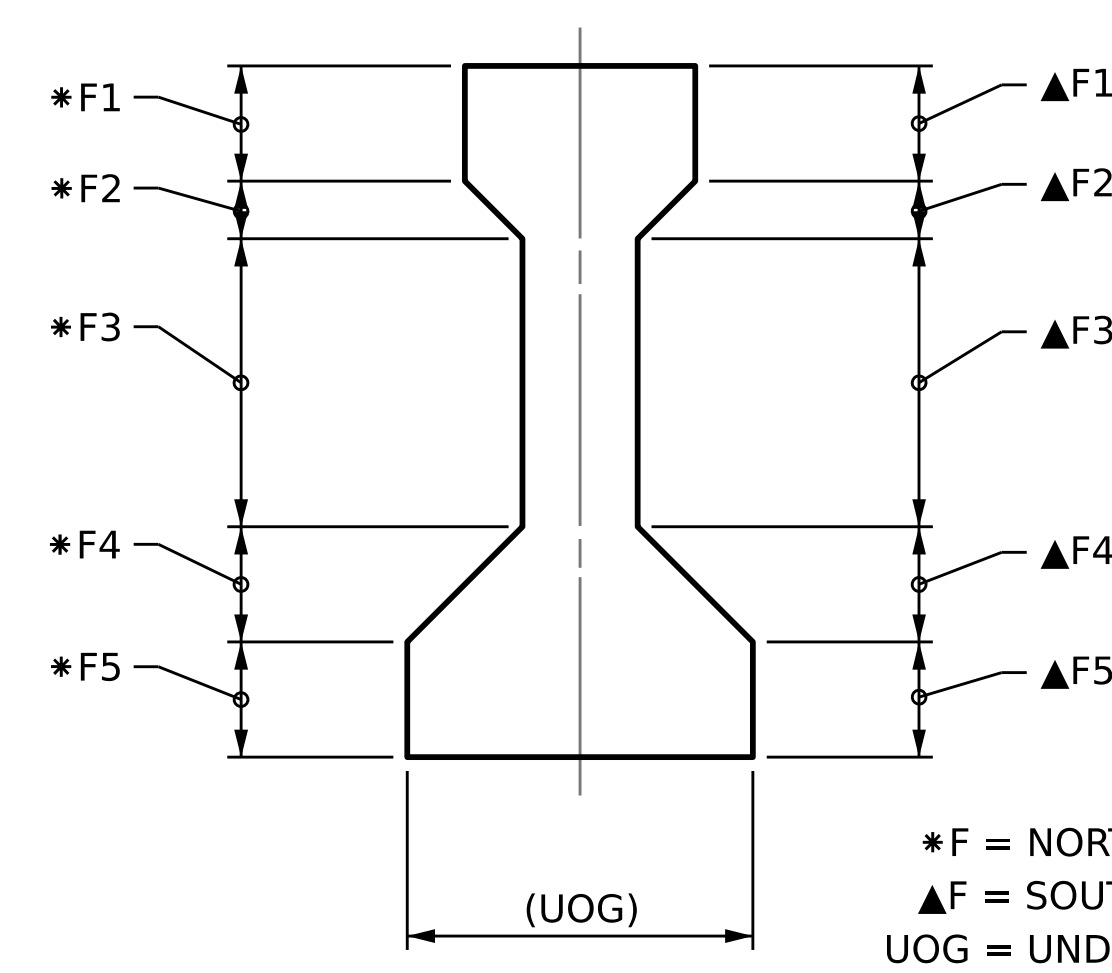
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DRAWN BY : D.A. CANTRELL DATE : 03/2021
 CHECKED BY : A.Y. GODFREY DATE : 10/2022
 DESIGN ENGINEER OF RECORD: N.A. PIERCE DATE : 12/2022



PLAN



* F = NORTH/WEST FACE
 ▲ F = SOUTH/EAST FACE
 UOG = UNDERSIDE OF GIRDER

GIRDER SECTION

GIRDER DAMAGE LOCATIONS

DECK UNDERSIDE REPAIR QUANTITY TABLE

SPAN B	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0	0		
CONCRETE DIAPHRAGM	0	0		
OVERHANG	0	0		
CONCRETE GIRDER	0	0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0	0		
CONCRETE DIAPHRAGM	0	0		
OVERHANG	0	0		
CONCRETE GIRDER	0	0		
EPOXY COATING		AREA SF		AREA SF
GIRDER ENDS		416		

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

NOTES

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

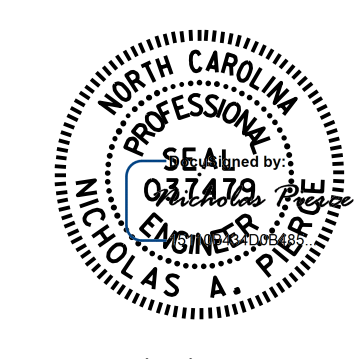
CONCRETE REPAIRS MAYBE SUBSTITUTED IN LIEU OF SHOTCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

EPOXY COAT THE ENDS OF ALL CONCRETE GIRDERS.

FOR PRESTRESSED CONCRETE GIRDER REPAIR DETAILS AND LIMITS OF EPOXY COATING CONCRETE GIRDER ENDS, SEE PRESTRESSED CONCRETE GIRDER REPAIRS DETAIL SHEET.

- SHOTCRETE REPAIR AREA
- CONCRETE REPAIR AREA

PROJECT NO. **15BPR.59**
WAKE COUNTY
 BRIDGE NO. **911084**



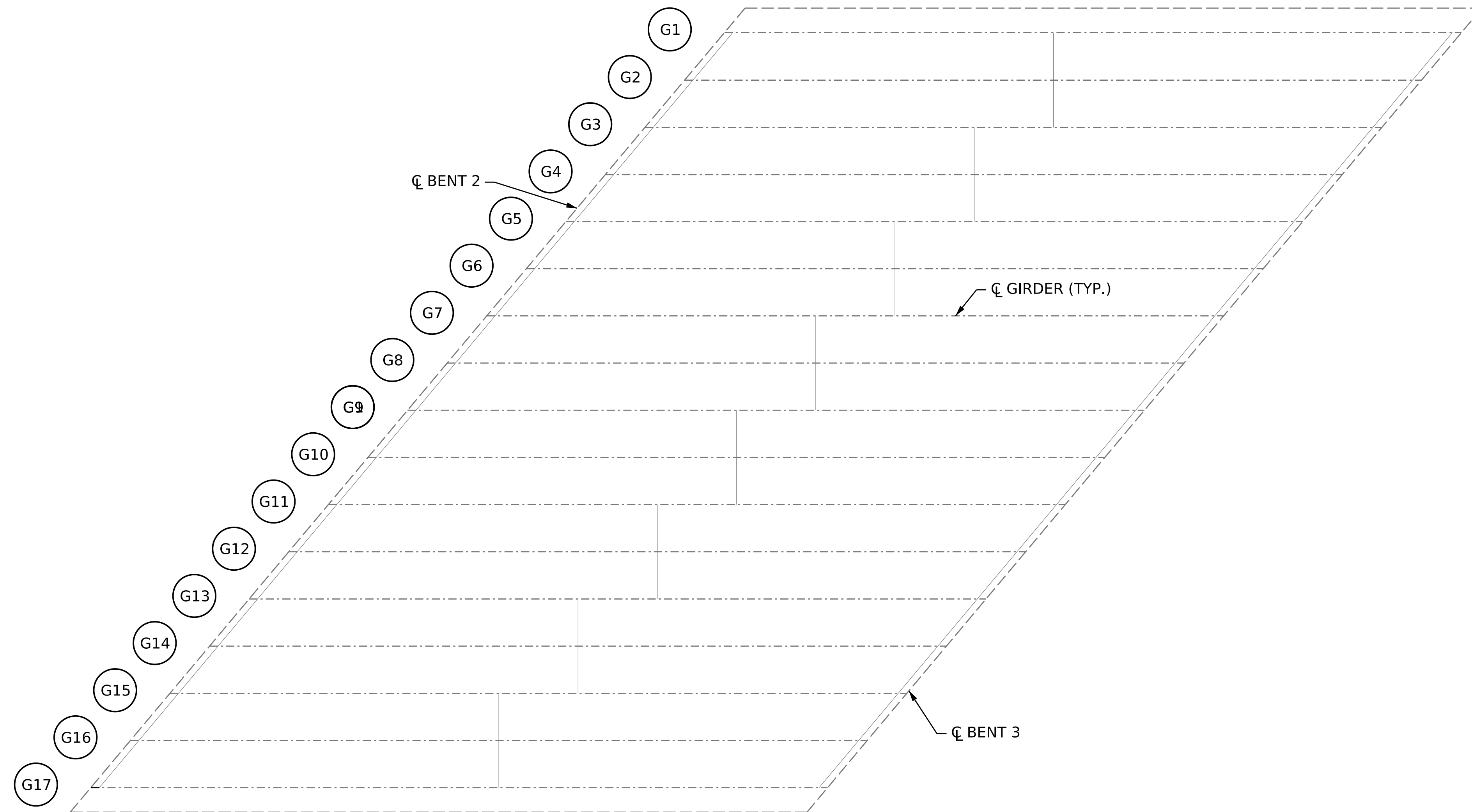
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 DECK UNDERSIDE REPAIR
SPAN B

12/08/2022

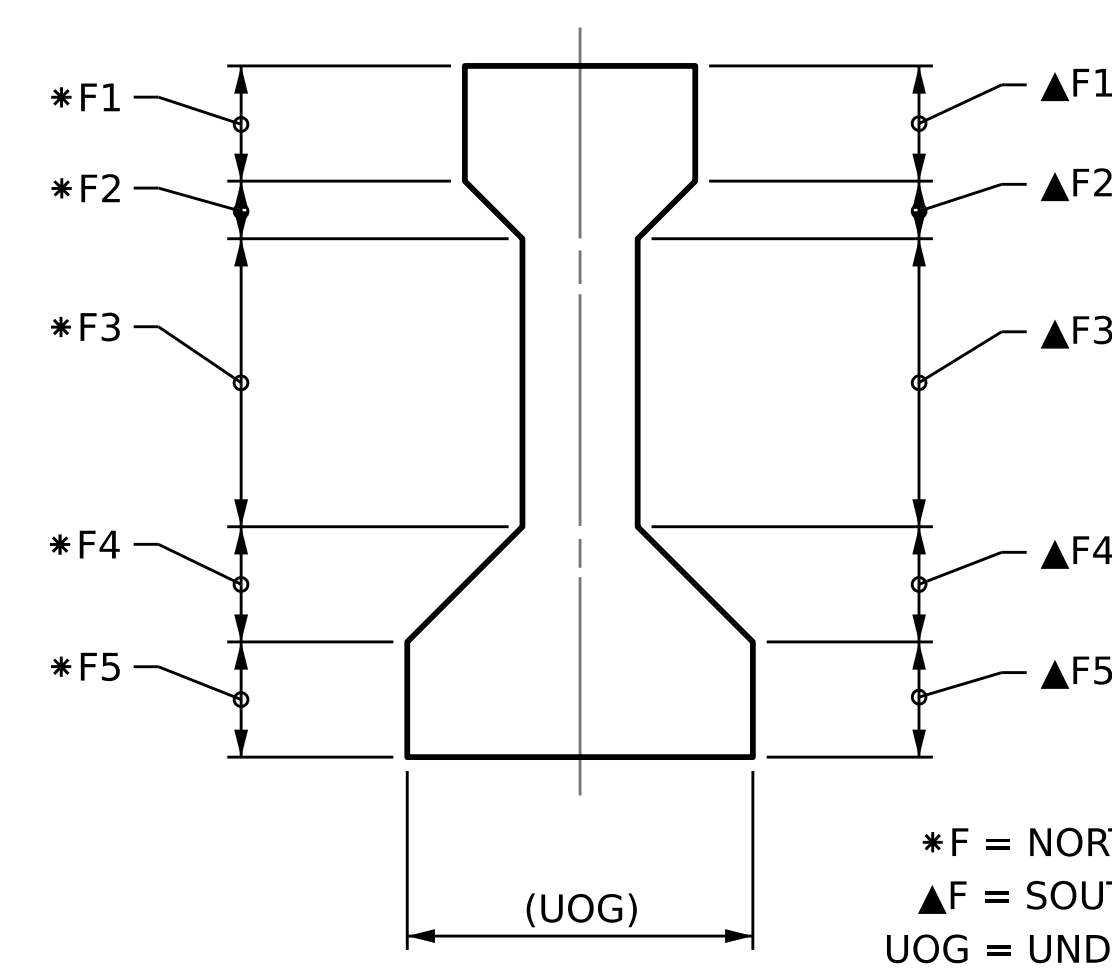
DRAWN BY : D.A. CANTRELL DATE : 03/2021
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 UOG = UNDERSIDE OF GIRDER

GIRDER SECTION

GIRDER DAMAGE LOCATIONS

DECK UNDERSIDE REPAIR QUANTITY TABLE

SPAN C	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0	0		
CONCRETE DIAPHRAGM	0	0		
OVERHANG	0	0		
CONCRETE GIRDER	0	0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0	0		
CONCRETE DIAPHRAGM	0	0		
OVERHANG	0	0		
CONCRETE GIRDER	0	0		
EPOXY COATING		AREA SF		AREA SF
GIRDER ENDS		416		

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

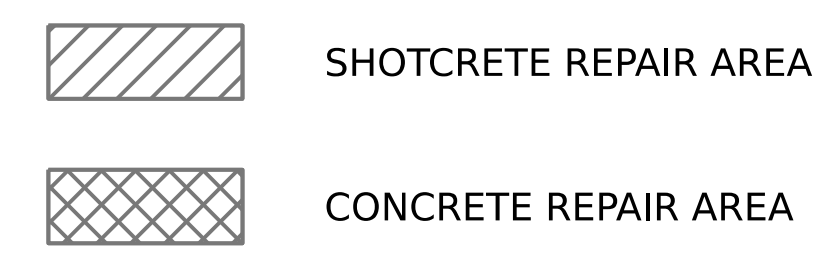
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CONCRETE REPAIRS MAYBE SUBSTITUTED IN LIEU OF SHOTCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

EPOXY COAT THE ENDS OF ALL CONCRETE GIRDERS.

FOR PRESTRESSED CONCRETE GIRDER REPAIR DETAILS AND LIMITS OF EPOXY COATING CONCRETE GIRDER ENDS, SEE PRESTRESSED CONCRETE GIRDER REPAIRS DETAIL SHEET.



PROJECT NO. **15BPR.59**
WAKE COUNTY
 BRIDGE NO. **911084**

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 DECK UNDERSIDE REPAIR
SPAN C



12/08/2022

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DECK UNDERSIDE REPAIR QUANTITY TABLE

SPAN D	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0	0		
CONCRETE DIAPHRAGM	0	0		
OVERHANG	0	0		
CONCRETE GIRDER	0	0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0	0		
CONCRETE DIAPHRAGM	0	0		
OVERHANG	0	0		
CONCRETE GIRDER	0	0		
EPOXY COATING		AREA SF		AREA SF
GIRDER ENDS		416		

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

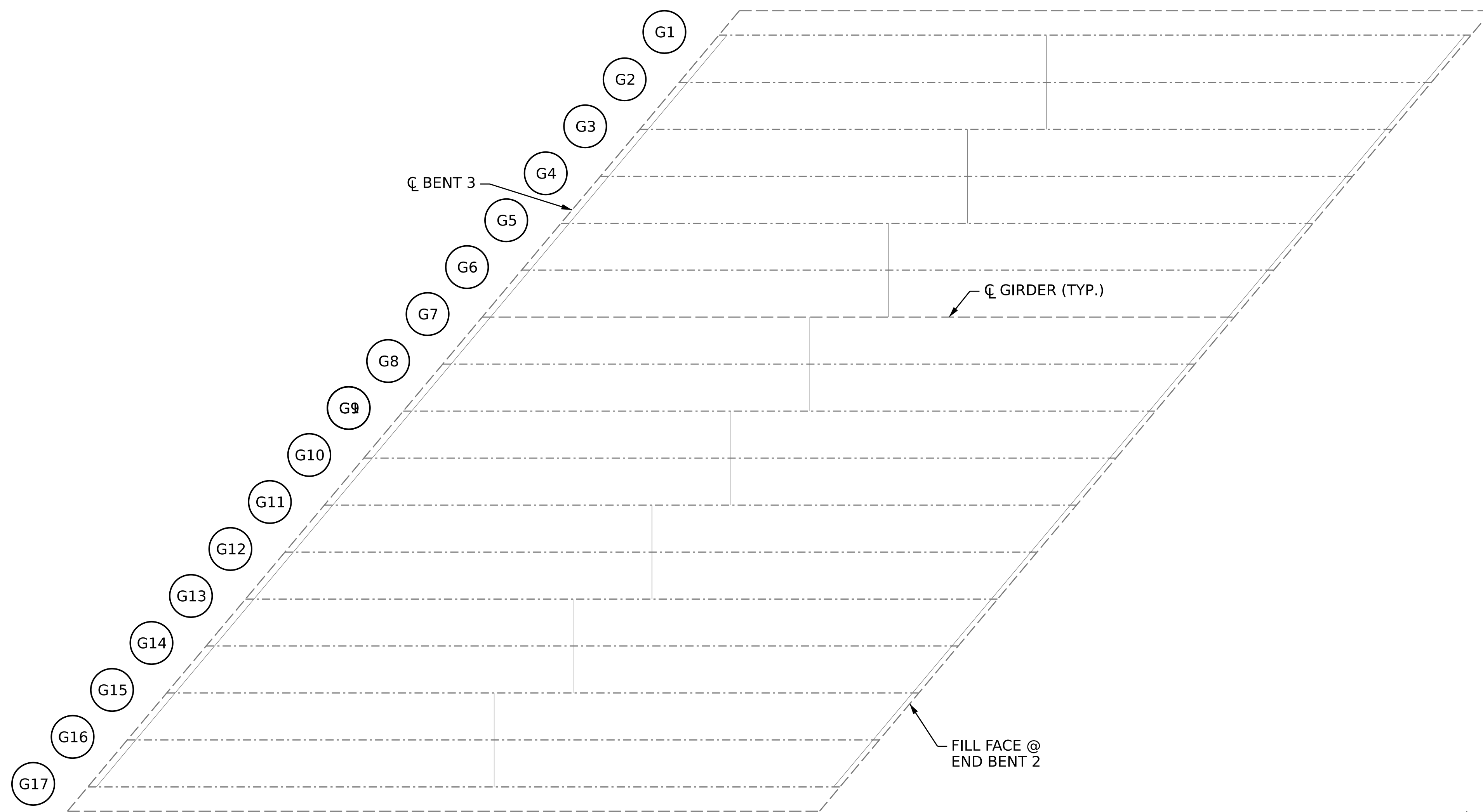
NOTES

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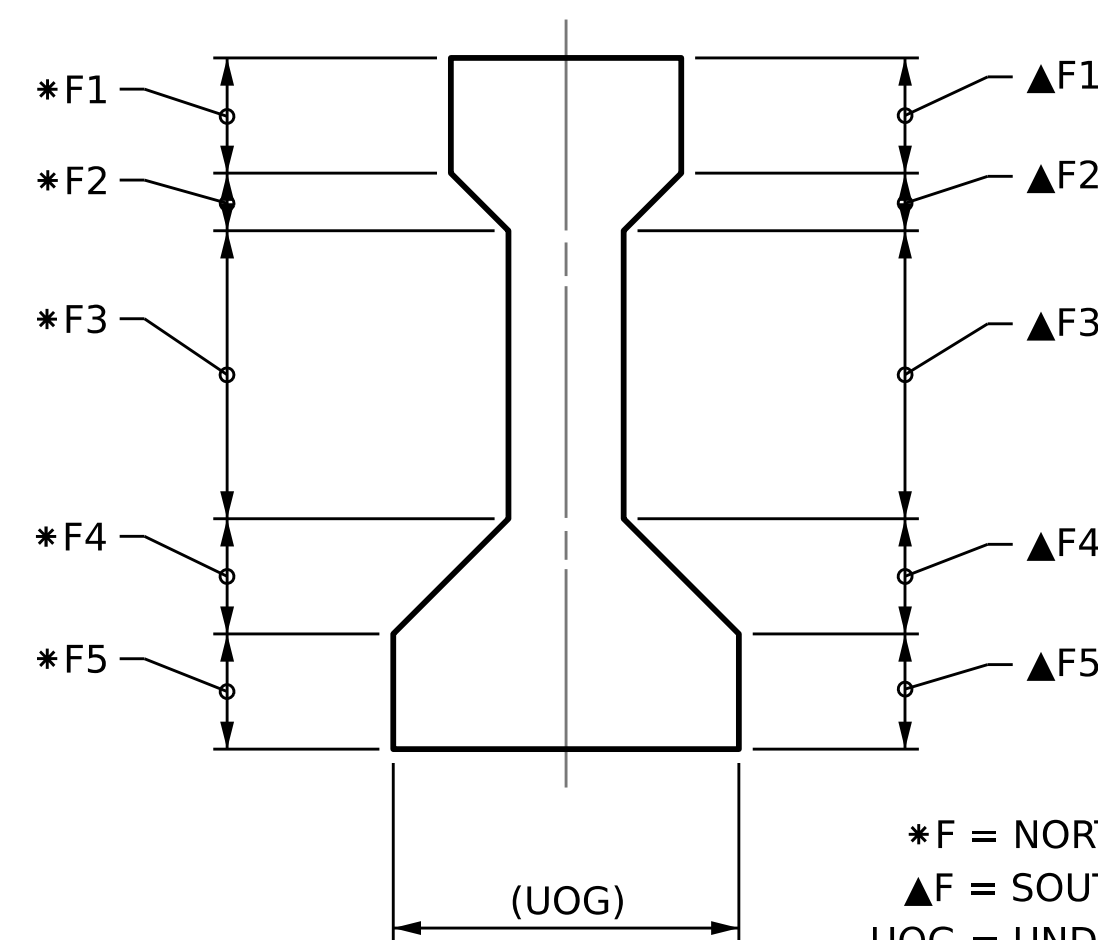
CONCRETE REPAIRS MAYBE SUBSTITUTED IN LIEU OF SHOTCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

EPOXY COAT THE END OF ALL CONCRETE GIRDERS.

FOR PRESTRESSED CONCRETE GIRDER REPAIR DETAILS AND LIMITS OF EPOXY COATING CONCRETE GIRDER ENDS, SEE PRESTRESSED CONCRETE GIRDER REPAIRS DETAIL SHEET.



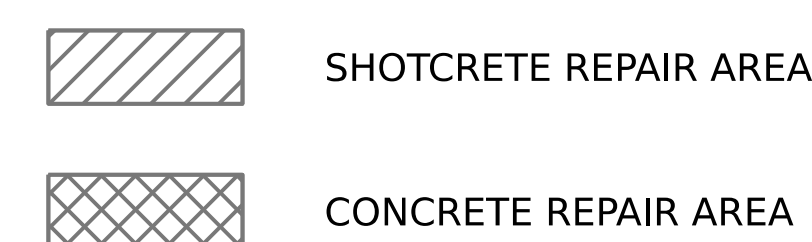
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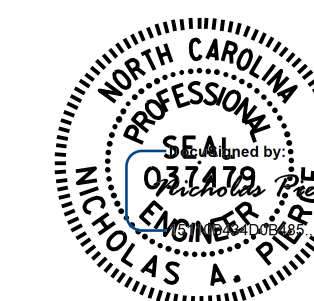
* F = NORTH/WEST FACE
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 UOG = UNDERSIDE OF GIRDER

GIRDER SECTION

GIRDER DAMAGE LOCATIONS



PROJECT NO. **15BPR.59**
WAKE COUNTY
 BRIDGE NO. **911084**



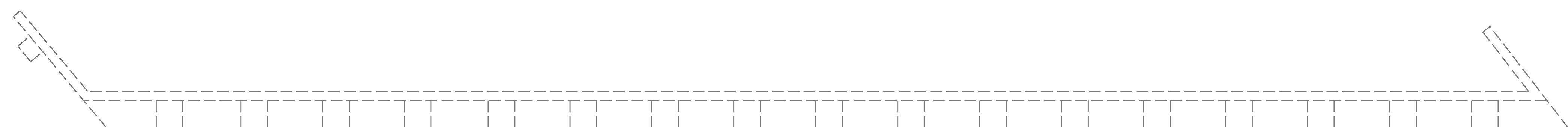
12/08/2022

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 DECK UNDERSIDE REPAIR
SPAN D

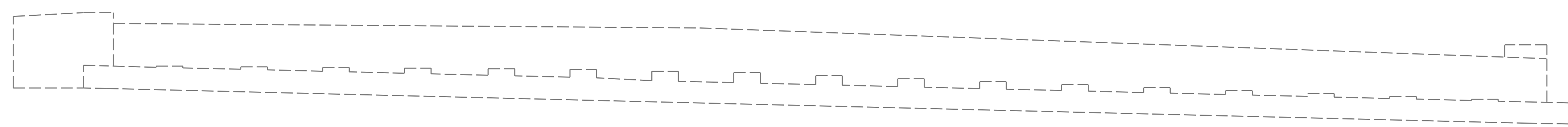
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 DESIGN ENGINEER OF RECORD: N.A. PIERCE DATE : 12/2022



TOP OF CAP



ELEVATION

SUBSTRUCTURE REPAIR QUANTITY TABLE				
END BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
CURTAIN WALL	0	0		
WINGWALL				
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
CURTAIN WALL	0	0		
WINGWALL				
EPOXY RESIN INJECTION		LINEAR FT		LINEAR FT
CAP		0		
CURTAIN WALL		0		
WINGWALL				
EPOXY COATING		AREA SF		AREA SF
CAP		506.0		




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

NOTES

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

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

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

-  SHOTCRETE REPAIR AREA
-  CONCRETE REPAIR AREA
-  EPOXY RESIN INJECTION

PROJECT NO. **15BPR.59**
WAKE COUNTY
 BRIDGE NO. **911084**



12/08/2022

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE REPAIR
END BENT 1

DRAWN BY : D.A. CANTRELL DATE : 03/2021
 CHECKED BY : A.Y. GODFREY DATE : 10/2022
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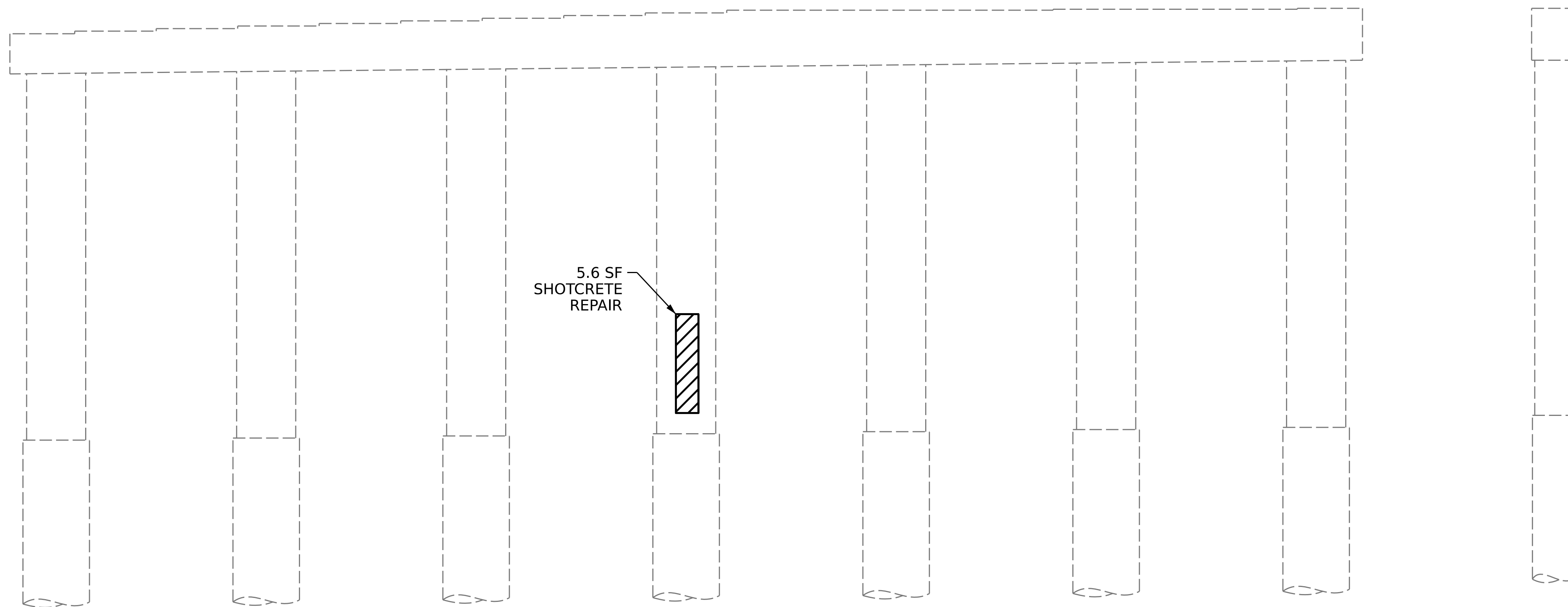
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SPAN B
SPAN A

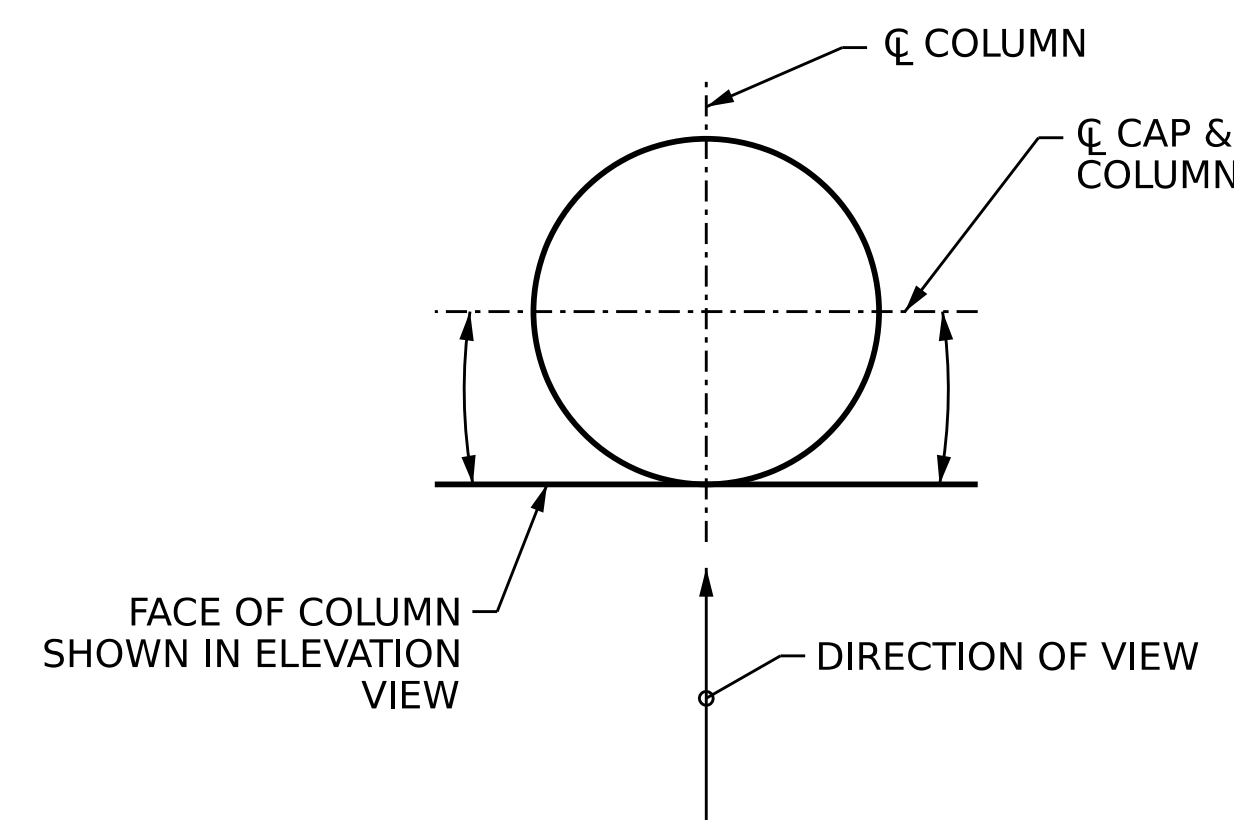
TOP OF CAP



ELEVATION



END VIEW



UNWRAPPED COLUMN FACE DETAIL

SUBSTRUCTURE REPAIR QUANTITY TABLE

BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
COLUMN	5.6	2.8		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
COLUMN	0	0		
EPOXY RESIN INJECTION		LINEAR FT		LINEAR FT
CAP		0		
COLUMN		0		
EPOXY COATING		AREA SF		AREA SF
CAP		669.7		

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

NOTES

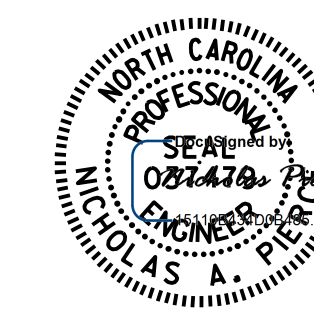
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CLEAN AND REMOVE DEBRIS FROM THE TOP OF THE CAP AND APPLY EPOXY PROTECTIVE COATING. EPOXY COATING SHALL BE APPLIED TO THE TOP SURFACE OF THE CAP. THE CONTRACTOR SHALL NOT COAT THE AREA OF THE CAP BENEATH THE MASONRY PLATES. FOR EPOXY COATING, SEE SPECIAL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

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

- SHOTCRETE REPAIR AREA
- CONCRETE REPAIR AREA
- EPOXY RESIN INJECTION

PROJECT NO. **15BPR.59**
WAKE COUNTY
 BRIDGE NO. **911084**



12/08/2022

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE REPAIR
BENT 1
SPAN A FACE

DRAWN BY : D.A. CANTRELL DATE : 03/2021
 CHECKED BY : A.Y. GODFREY DATE : 10/2022
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 12/2022

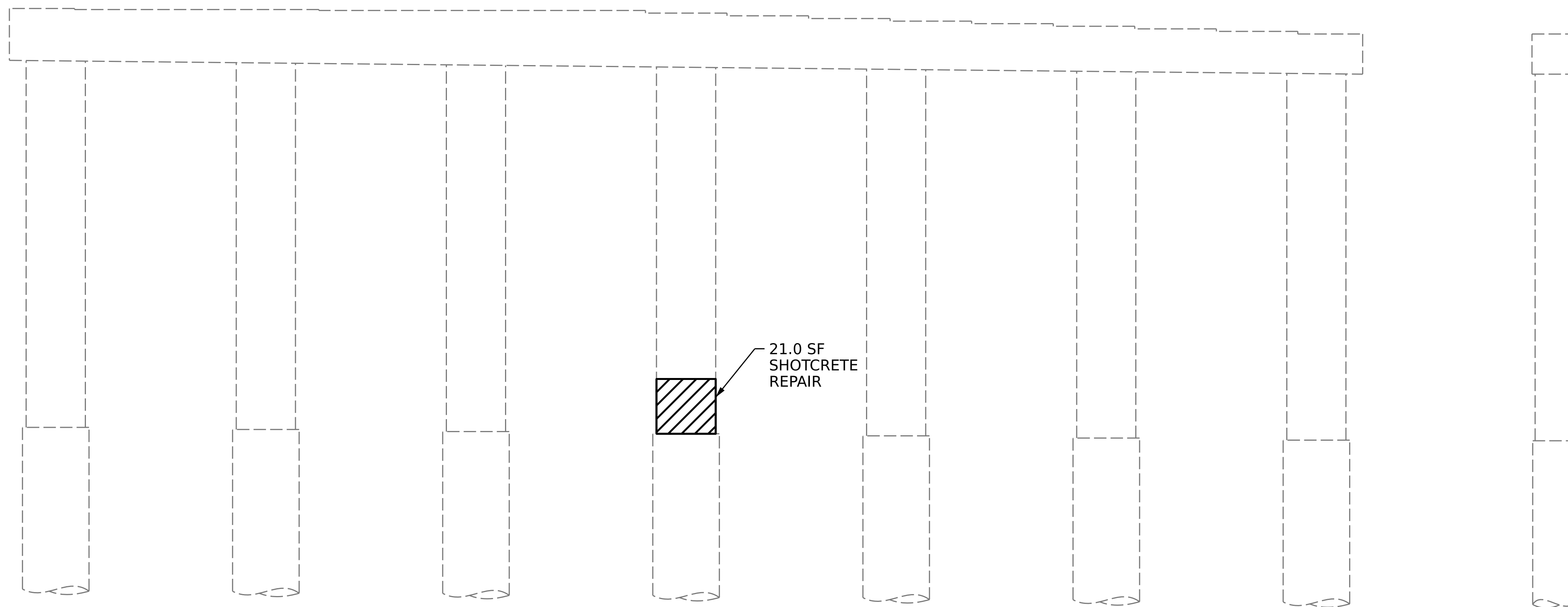
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REVISIONS					SHEET NO. S4-13 TOTAL SHEETS 21
NO.	BY:	DATE:	NO.	DATE:	
1			3		
2			4		



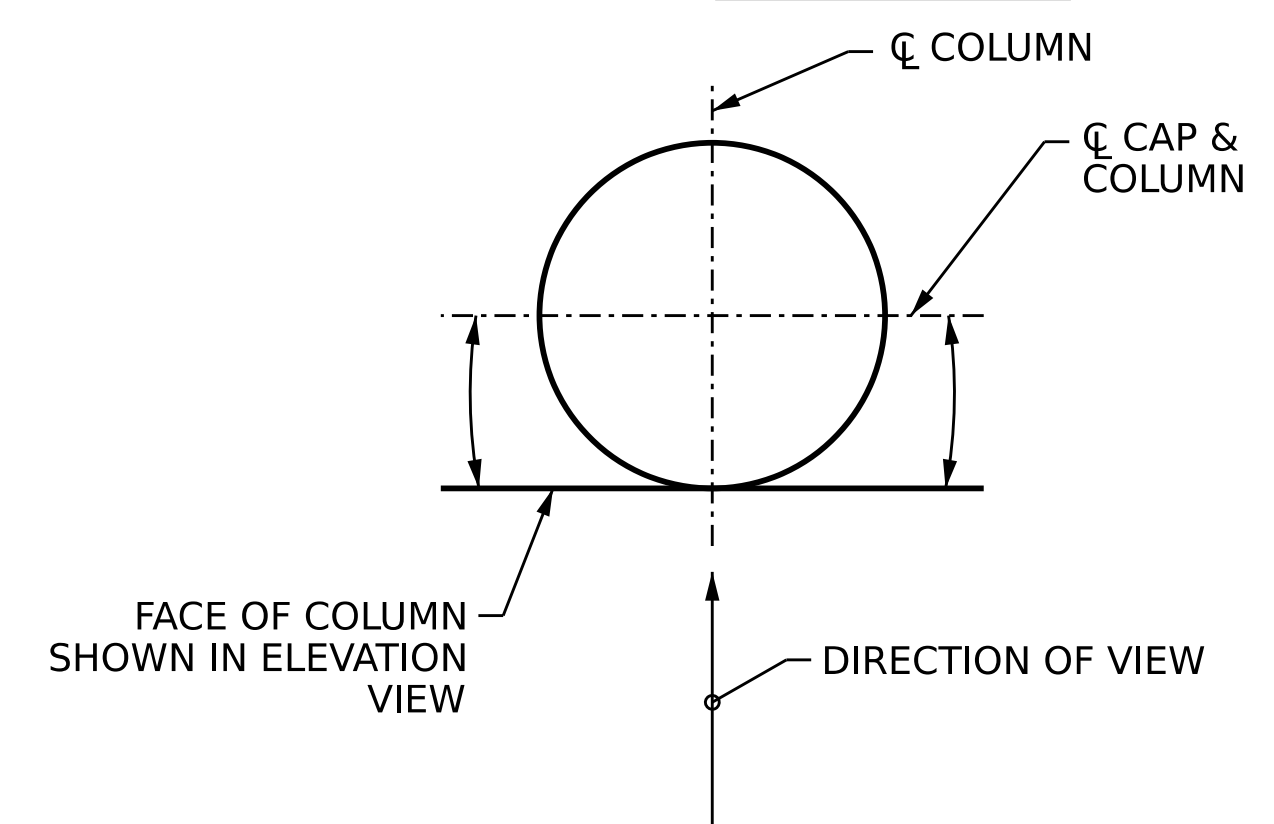
SPAN A
SPAN B

BOTTOM OF CAP



ELEVATION

END VIEW



UNWRAPPED COLUMN FACE DETAIL

SUBSTRUCTURE REPAIR QUANTITY TABLE

BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
COLUMN	21.0	10.5		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
COLUMN	0	0		
EPOXY RESIN INJECTION		LINEAR FT		LINEAR FT
CAP		0		
COLUMN		0		

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

NOTES

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

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

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

- SHOTCRETE REPAIR AREA
- CONCRETE REPAIR AREA
- EPOXY RESIN INJECTION

PROJECT NO. **15BPR.59**
WAKE COUNTY
 BRIDGE NO. **911084**



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE REPAIR
BENT 1
SPAN B FACE

DRAWN BY : D.A. CANTRELL DATE : 03/2021
 CHECKED BY : A.Y. GODFREY DATE : 10/2022
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 12/2022

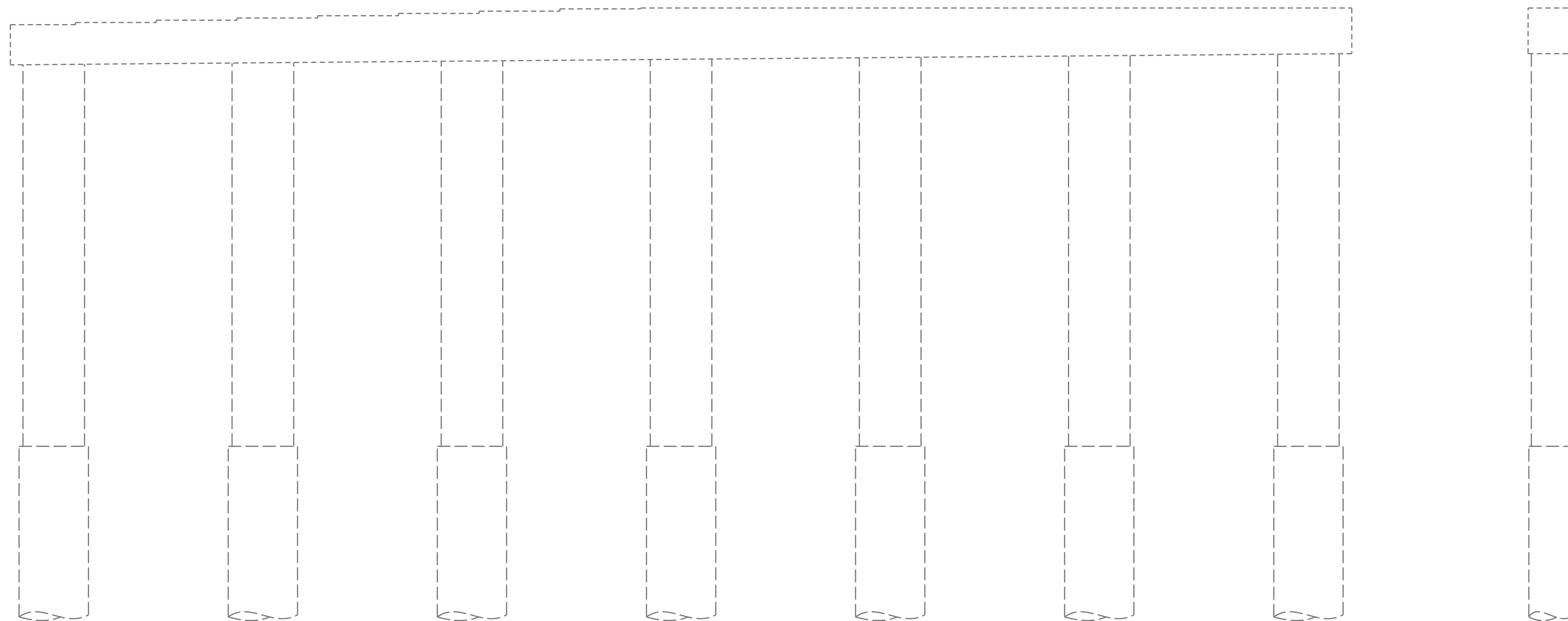
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO. S4-14 TOTAL SHEETS 21
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			



SPAN C
SPAN B

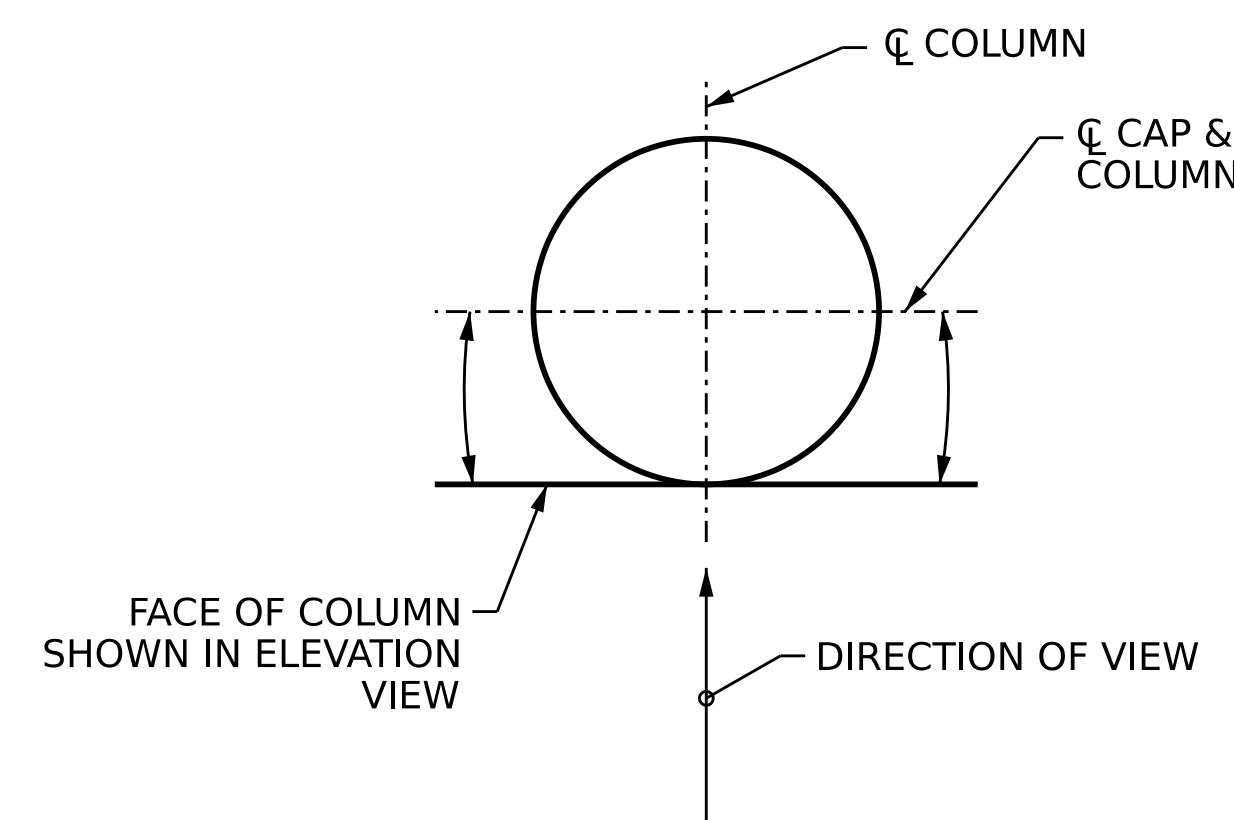
TOP OF CAP



ELEVATION



END VIEW



UNWRAPPED COLUMN FACE DETAIL

SUBSTRUCTURE REPAIR QUANTITY TABLE

BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
COLUMN	0	0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
COLUMN	0	0		
EPOXY RESIN INJECTION		LINEAR FT		LINEAR FT
CAP		0		
COLUMN		0		
EPOXY COATING		AREA SF		AREA SF
CAP		637.5		

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

NOTES

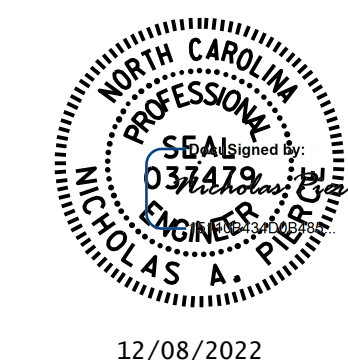
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CLEAN AND REMOVE DEBRIS FROM THE TOP OF THE CAP AND APPLY EPOXY PROTECTIVE COATING. EPOXY COATING SHALL BE APPLIED TO THE TOP SURFACE OF THE CAP. THE CONTRACTOR SHALL NOT COAT THE AREA OF THE CAP BENEATH THE MASONRY PLATES. FOR EPOXY COATING, SEE SPECIAL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

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

- SHOTCRETE REPAIR AREA
- CONCRETE REPAIR AREA
- EPOXY RESIN INJECTION

PROJECT NO. **15BPR.59**
WAKE COUNTY
 BRIDGE NO. **911084**



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE REPAIR
BENT 2
SPAN B FACE

DRAWN BY : D.A. CANTRELL DATE : 03/2021
 CHECKED BY : A.Y. GODFREY DATE : 10/2022
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 12/2022

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

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2			4		

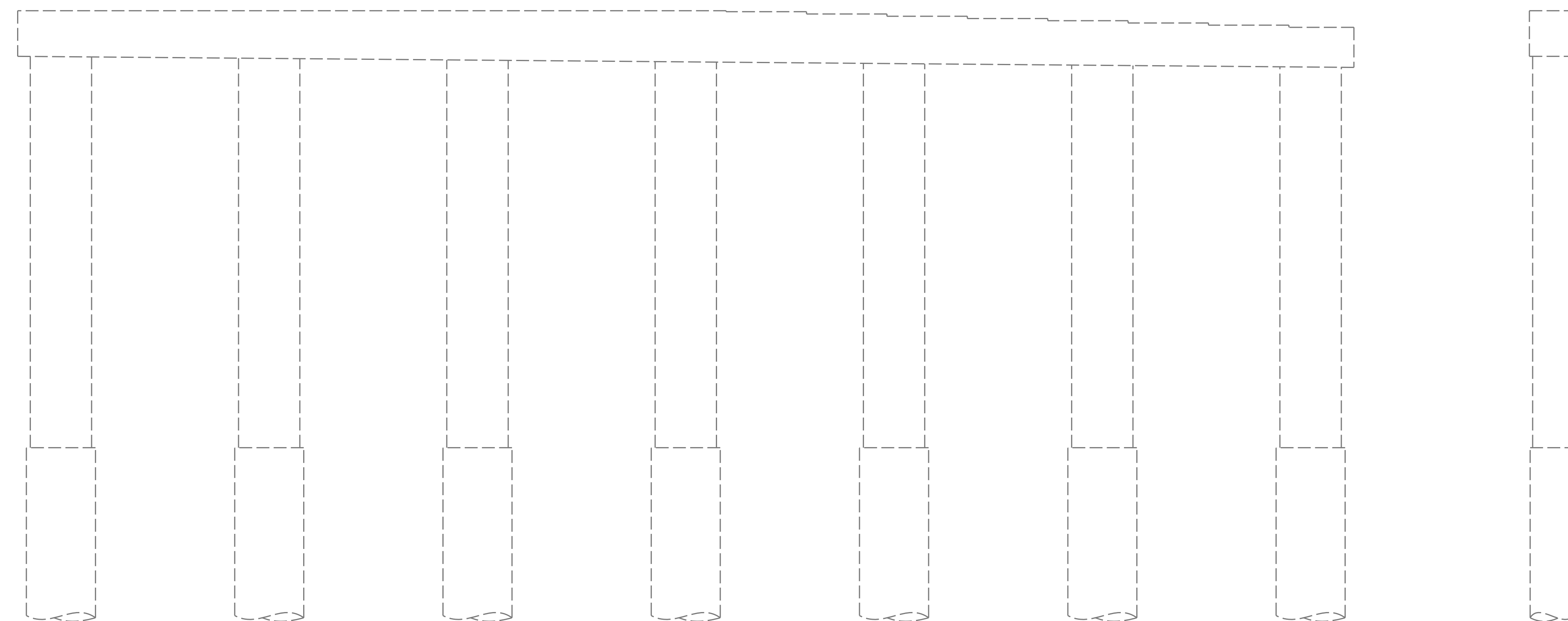
S4-15
TOTAL SHEETS
21

8/26/21



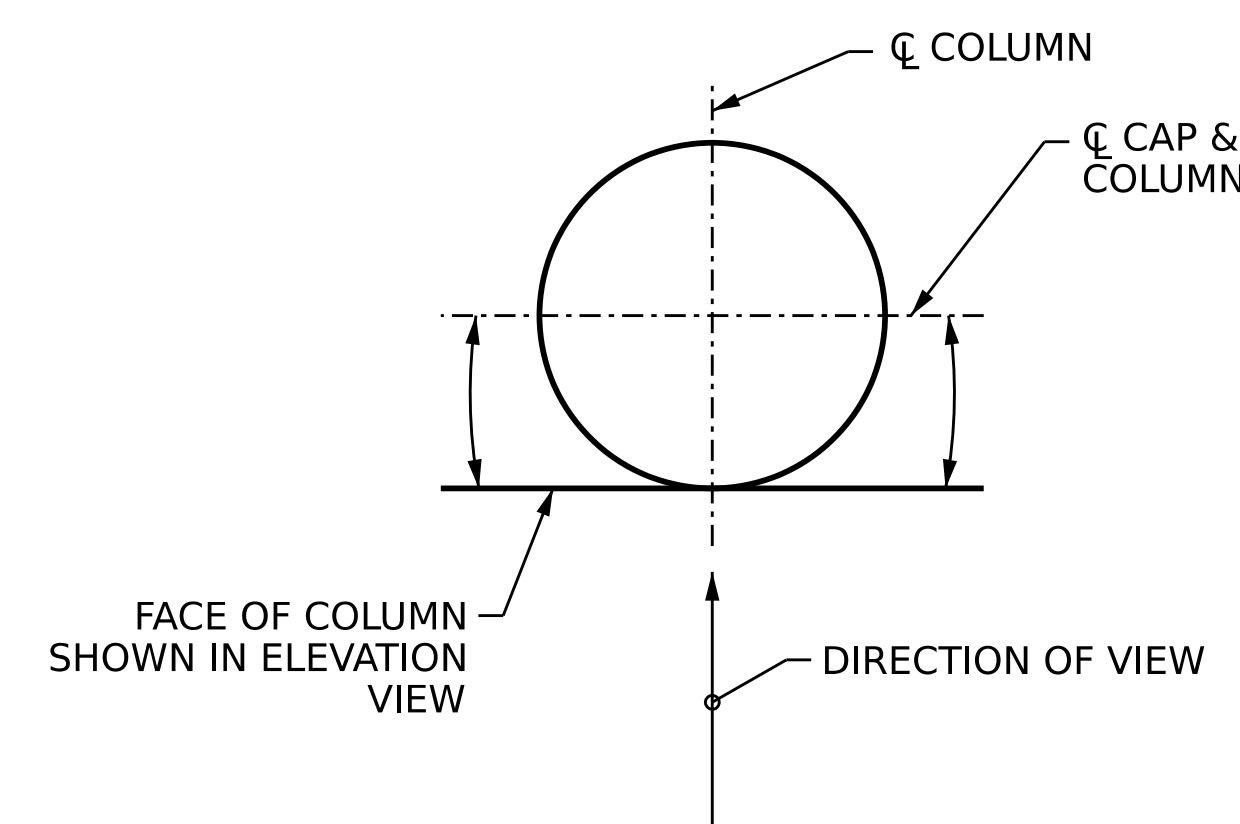
SPAN B
SPAN C

TOP OF CAP



ELEVATION

END VIEW



UNWRAPPED COLUMN FACE DETAIL

SUBSTRUCTURE REPAIR QUANTITY TABLE

BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
COLUMN	0	0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
COLUMN	0	0		
EPOXY RESIN INJECTION		LINEAR FT		LINEAR FT
CAP		0		
COLUMN		0		




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

NOTES

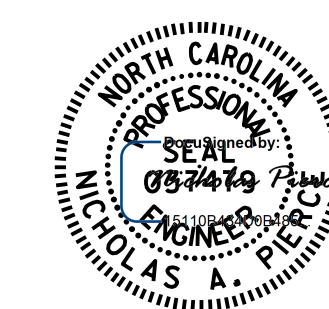
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CLEAN AND REMOVE DEBRIS FROM THE TOP OF THE CAP AND APPLY EPOXY PROTECTIVE COATING. EPOXY COATING SHALL BE APPLIED TO THE TOP SURFACE OF THE CAP. THE CONTRACTOR SHALL NOT COAT THE AREA OF THE CAP BENEATH THE MASONRY PLATES. FOR EPOXY COATING, SEE SPECIAL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

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

-  SHOTCRETE REPAIR AREA
-  CONCRETE REPAIR AREA
-  EPOXY RESIN INJECTION

PROJECT NO. **15BPR.59**
WAKE COUNTY
BRIDGE NO. **911084**



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE REPAIR
BENT 2
SPAN C FACE

DRAWN BY : D.A. CANTRELL DATE : 03/2022
CHECKED BY : A.Y. GODFREY DATE : 10/2022
DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 12/2022

12/17/2022
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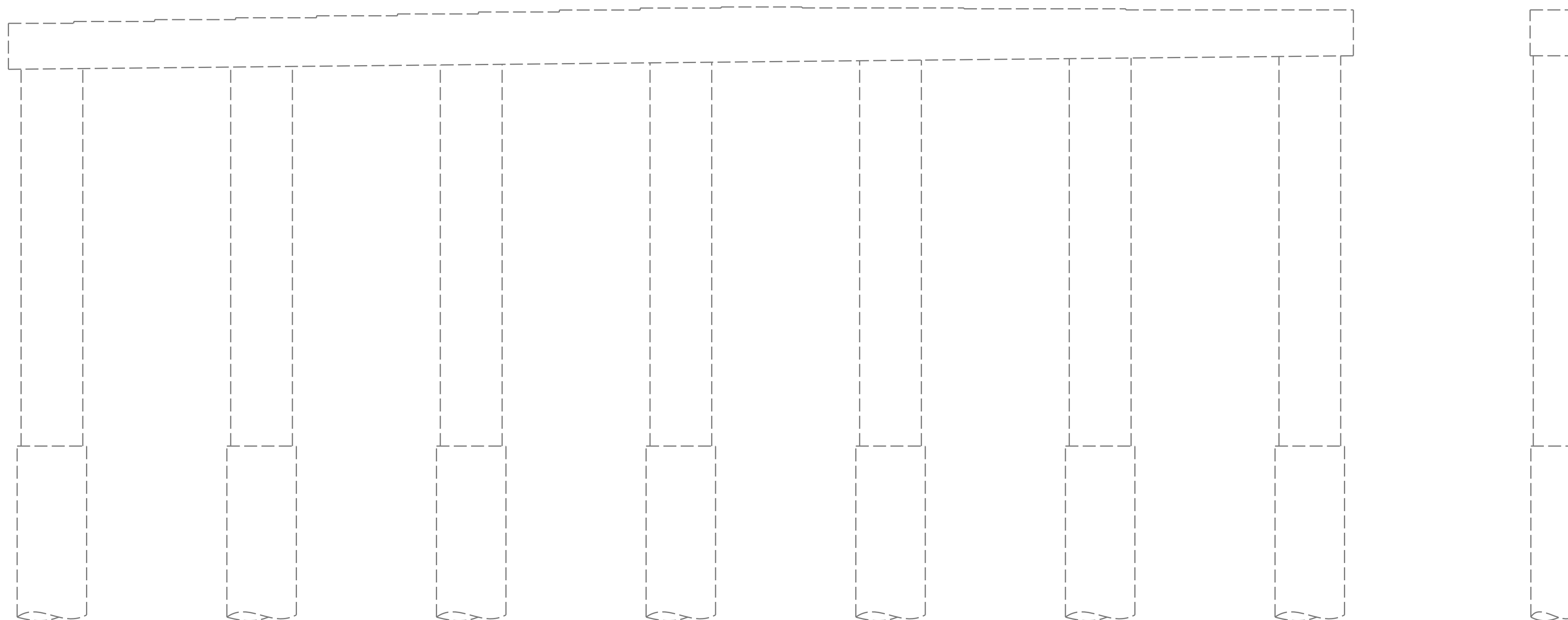
DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

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

TOTAL SHEETS: 21

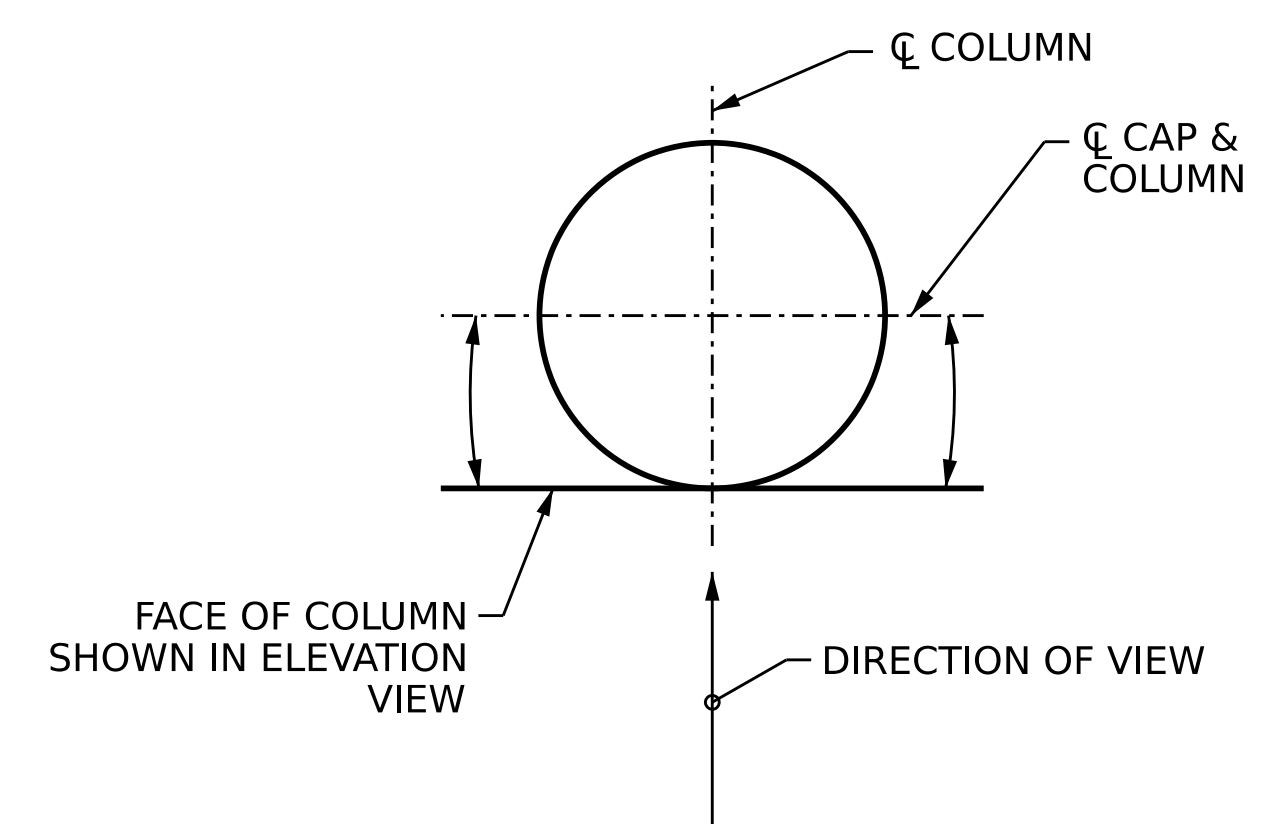


TOP OF CAP



ELEVATION

END VIEW



UNWRAPPED COLUMN FACE DETAIL

SUBSTRUCTURE REPAIR QUANTITY TABLE				
BENT 3	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
COLUMN	0	0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
COLUMN	0	0		
EPOXY RESIN INJECTION		LINEAR FT		LINEAR FT
CAP		0		
COLUMN		0		
EPOXY COATING		AREA SF		AREA SF
CAP		637.5		

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

NOTES

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

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

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

- SHOTCRETE REPAIR AREA
- CONCRETE REPAIR AREA
- EPOXY RESIN INJECTION

PROJECT NO. **15BPR.59**
WAKE COUNTY
 BRIDGE NO. **911084**



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE REPAIR
BENT 3
SPAN C FACE

DRAWN BY : D.A. CANTRELL DATE : 03/2021
 CHECKED BY : A.Y. GODFREY DATE : 10/2022
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 12/2022

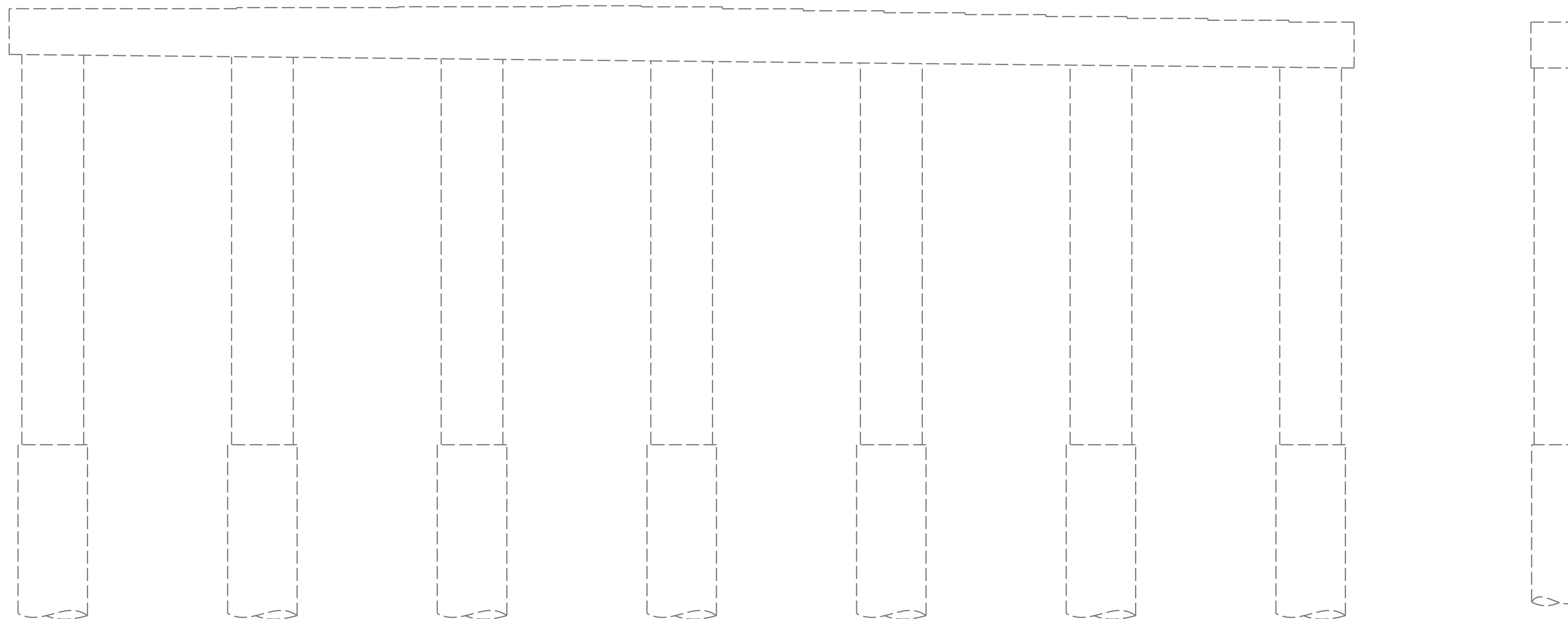
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS					SHEET NO. S4-17 TOTAL SHEETS 21
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1			3		
2			4		



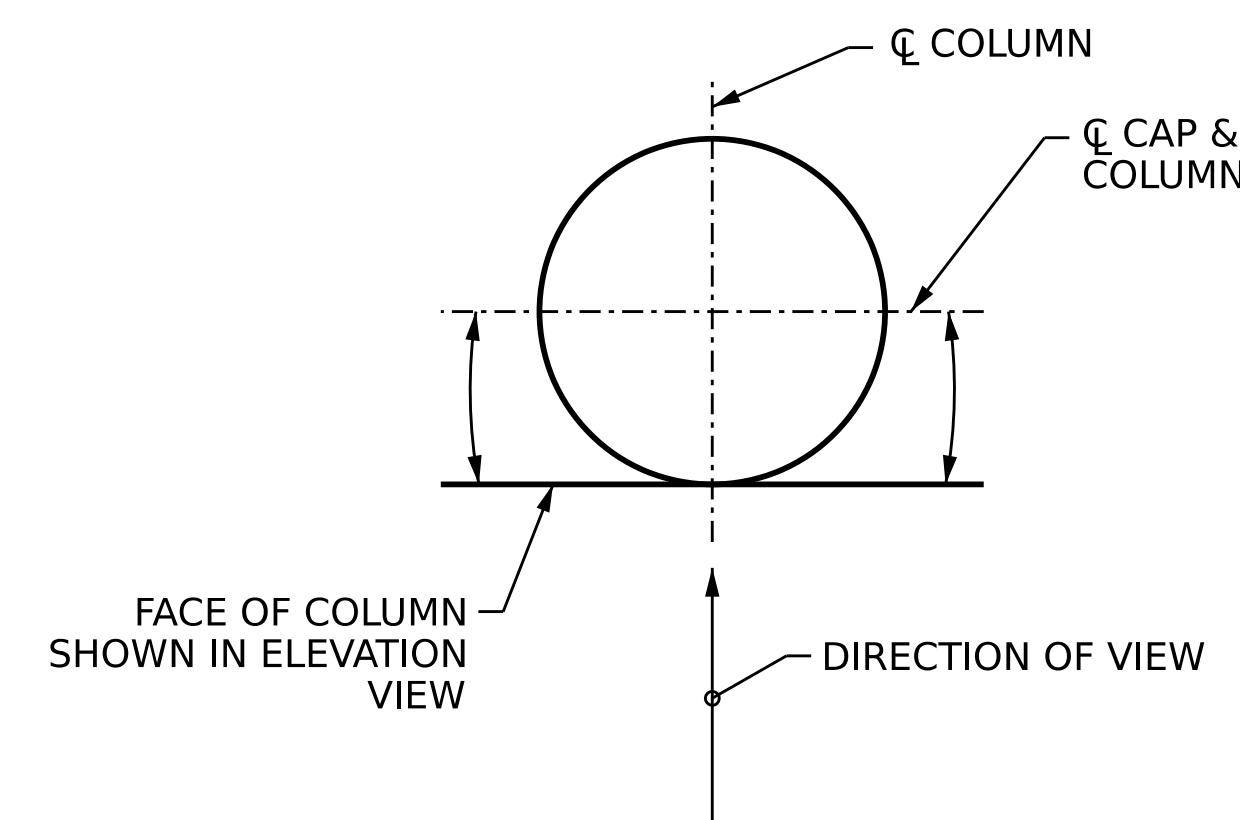
SPAN C
SPAN D

BOTTOM OF CAP



ELEVATION

END VIEW



UNWRAPPED COLUMN FACE DETAIL

SUBSTRUCTURE REPAIR QUANTITY TABLE

BENT 3	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
COLUMN	0	0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
COLUMN	0	0		
EPOXY RESIN INJECTION		LINEAR FT		LINEAR FT
CAP		0		
COLUMN		0		

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

NOTES

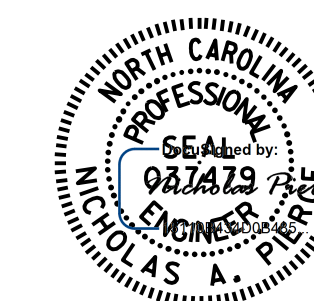
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CLEAN AND REMOVE DEBRIS FROM THE TOP OF THE CAP AND APPLY EPOXY PROTECTIVE COATING. EPOXY COATING SHALL BE APPLIED TO THE TOP SURFACE OF THE CAP. THE CONTRACTOR SHALL NOT COAT THE AREA OF THE CAP BENEATH THE MASONRY PLATES. FOR EPOXY COATING, SEE SPECIAL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

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

- SHOTCRETE REPAIR AREA
- CONCRETE REPAIR AREA
- EPOXY RESIN INJECTION

PROJECT NO. **15BPR.59**
WAKE COUNTY
 BRIDGE NO. **911084**



12/08/2022

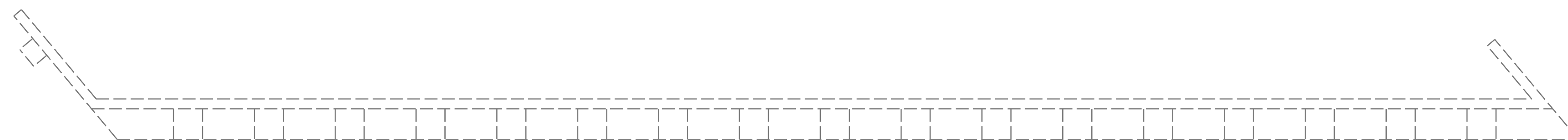
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE REPAIR
BENT 3
SPAN D FACE

DRAWN BY : D.A. CANTRELL DATE : 03/2021
 CHECKED BY : A.Y. GODFREY DATE : 10/2022
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 12/2022

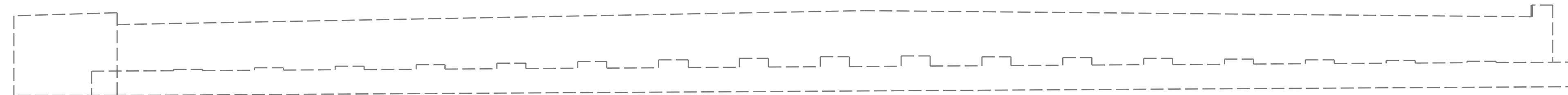
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS					SHEET NO. S4-18 TOTAL SHEETS 21
NO.	BY:	DATE:	NO.	BY:	
1			3		
2			4		

8/26/21



TOP OF CAP



ELEVATION

SUBSTRUCTURE REPAIR QUANTITY TABLE				
END BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
CURTAIN WALL	0	0		
WINGWALL				
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
CURTAIN WALL	0	0		
WINGWALL				
EPOXY RESIN INJECTION		LINEAR FT		LINEAR FT
CAP		0		
CURTAIN WALL		0		
WINGWALL				
EPOXY COATING		AREA SF		AREA SF
CAP		462		




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

NOTES

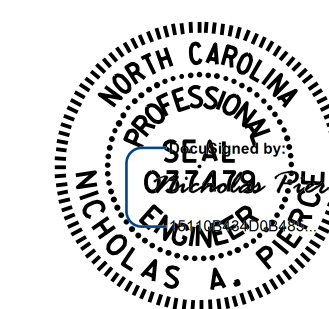
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CLEAN AND REMOVE DEBRIS FROM THE TOP OF THE CAP AND APPLY EPOXY PROTECTIVE COATING. EPOXY COATING SHALL BE APPLIED TO THE TOP SURFACE OF THE CAP. THE CONTRACTOR SHALL NOT COAT THE AREA OF THE CAP BENEATH THE MASONRY PLATES. FOR EPOXY COATING, SEE SPECIAL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

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

-  SHOTCRETE REPAIR AREA
-  CONCRETE REPAIR AREA
-  EPOXY RESIN INJECTION

PROJECT NO. **15BPR.59**
WAKE COUNTY
 BRIDGE NO. **911084**



12/08/2022

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE REPAIR
END BENT 2

DRAWN BY : D.A. CANTRELL DATE : 03/2021
 CHECKED BY : A.Y. GODFREY DATE : 10/2022
 DESIGN ENGINEER OF RECORD: N.A. PIERCE DATE : 12/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-19
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2			4			21

8/26/21

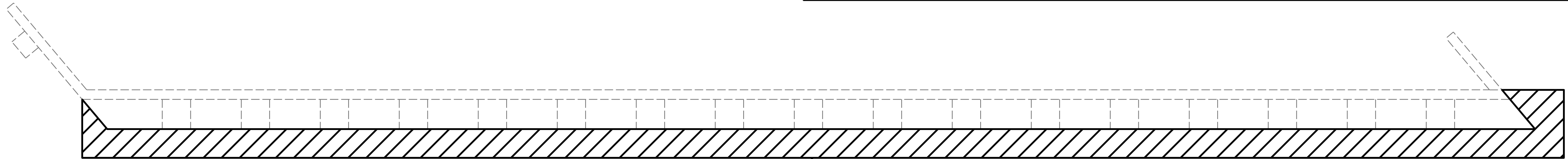
NOTES

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PLACE GEOTEXTILE FOR DRAINAGE PRIOR TO SLOPE PROTECTION VOID FILLING.

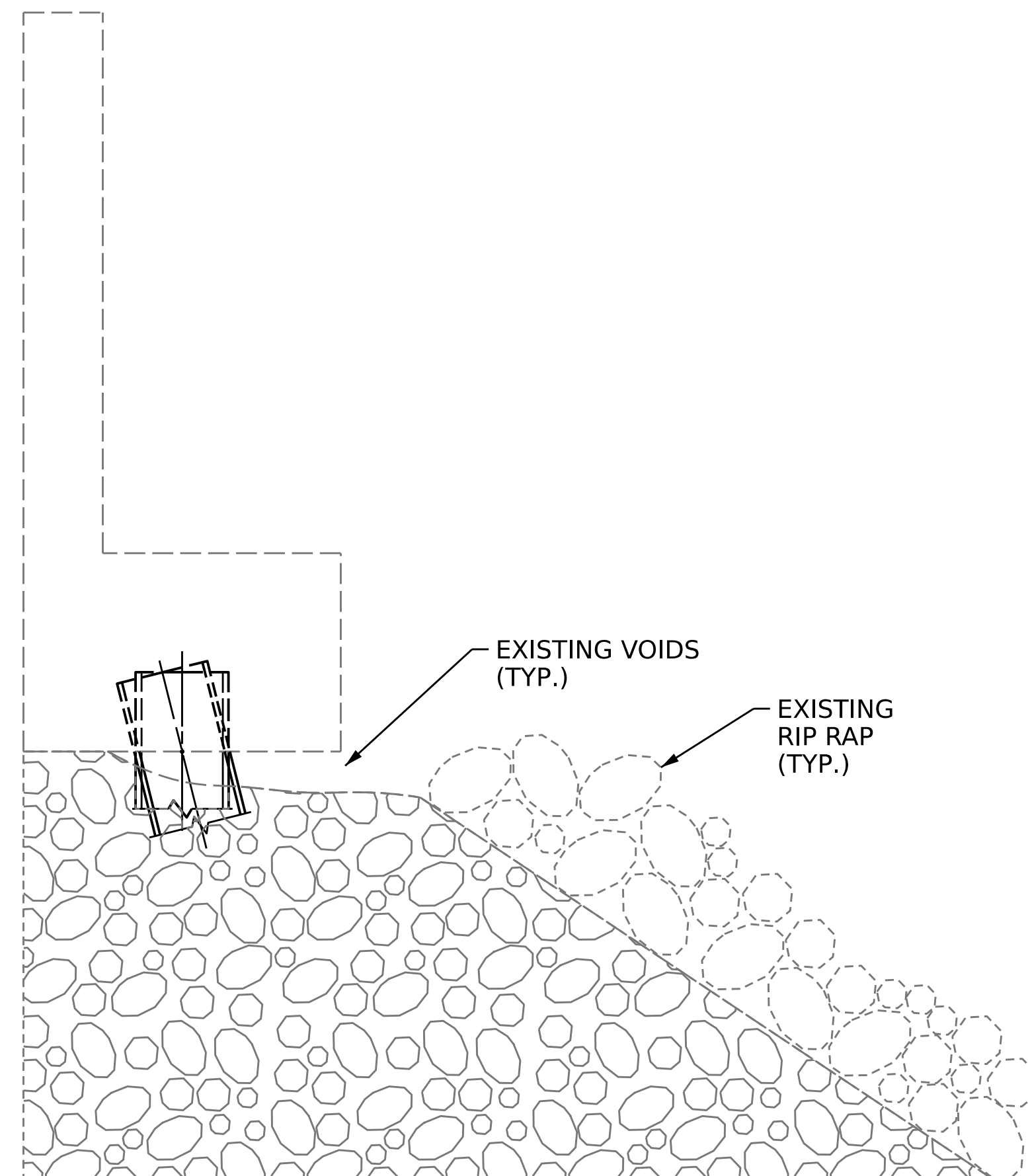
SLOPE REPAIR QUANTITY TABLE

	QUANTITIES					
	ESTIMATE			ACTUAL		
	SLOPE PROTECTION VOID FILLING	RIP RAP CLASS B	GEOTEXTILE FOR DRAINAGE	SLOPE PROTECTION VOID FILLING	RIP RAP CLASS B	GEOTEXTILE FOR DRAINAGE
	POUNDS	TONS	SQ.YDS.	POUNDS	TONS	SQ.YDS.
END BENT 1	630	90	100			
END BENT 2	630	90	100			



LIMITS OF VOID FILLING & RIP RAP REPLACEMENT (TYP.)

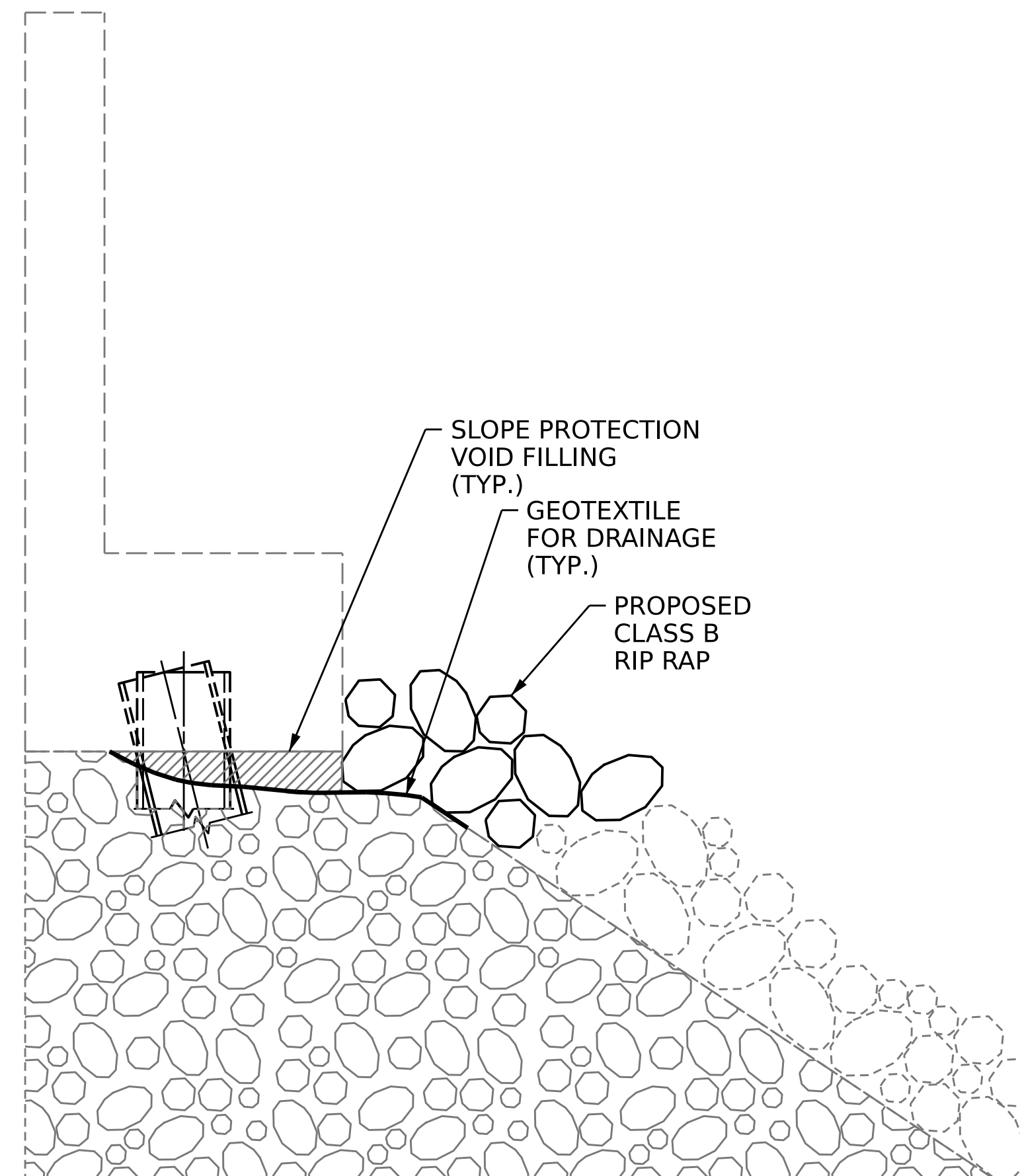
PLAN



EXISTING VOIDS (TYP.)

EXISTING RIP RAP (TYP.)

SECTION EXISTING



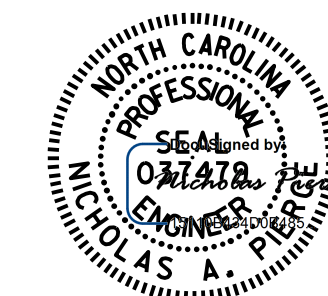
SLOPE PROTECTION VOID FILLING (TYP.)

GEOTEXTILE FOR DRAINAGE (TYP.)

PROPOSED CLASS B RIP RAP

SECTION PROPOSED

PROJECT NO. **15BPR.59**
WAKE COUNTY
BRIDGE NO. **911084**



12/08/2022

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

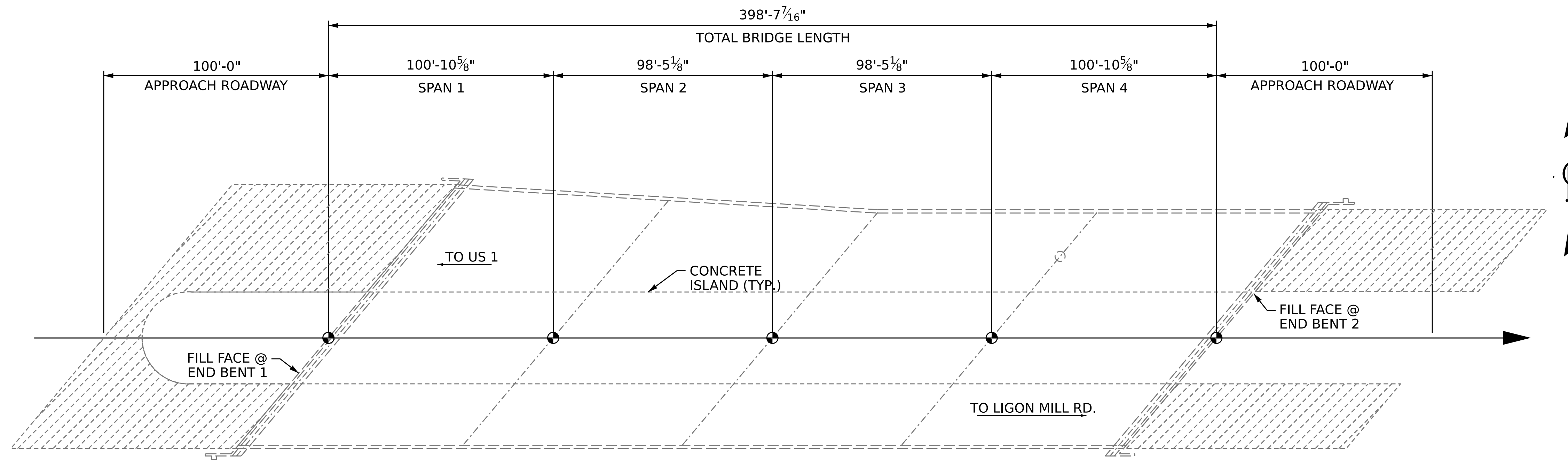
SLOPE PROTECTION REPAIR

DRAWN BY : N.A. PIERCE DATE : 09/2022
CHECKED BY : A.Y. GODFREY DATE : 10/2022
DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 12/2022

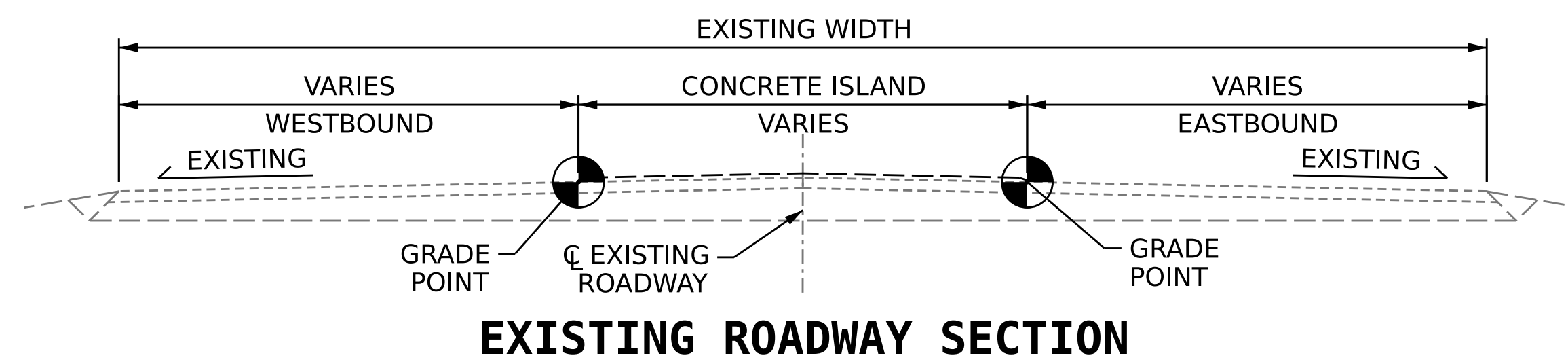
12/7/2022
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DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

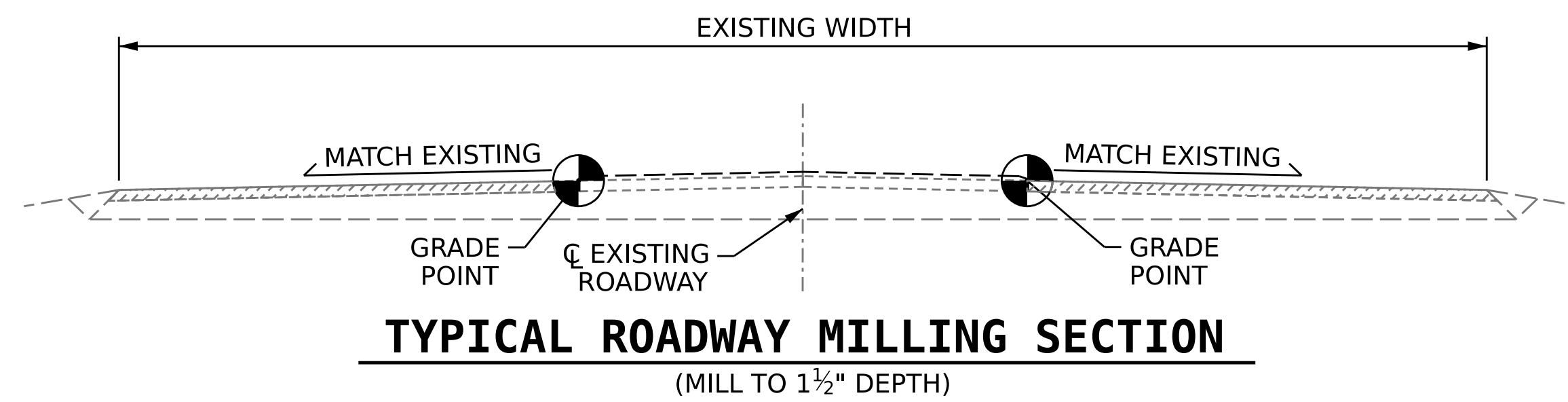
REVISIONS						SHEET NO. S4-20 TOTAL SHEETS 21
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			



PLAN

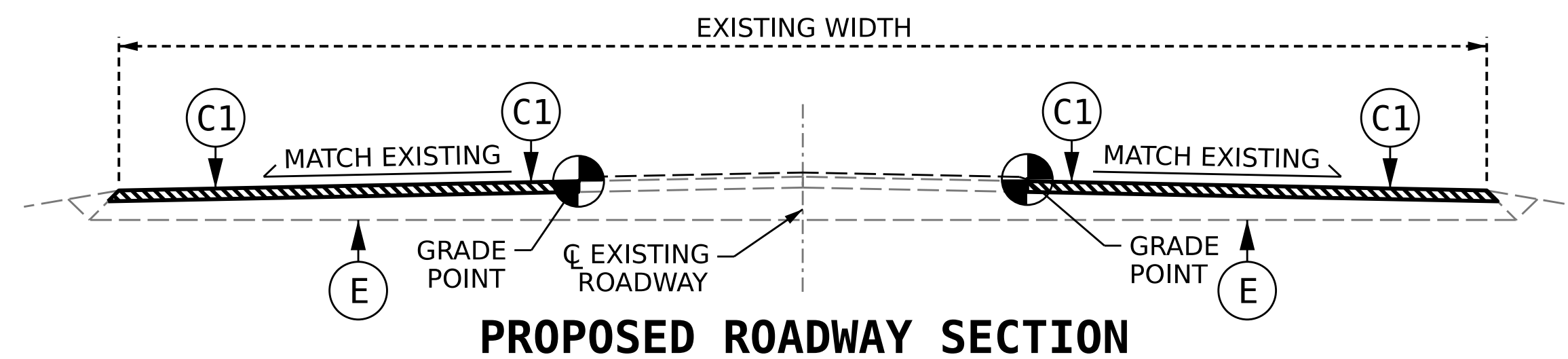


EXISTING ROADWAY SECTION



TYPICAL ROADWAY MILLING SECTION

(MILL TO 1 1/2" DEPTH)



PROPOSED ROADWAY SECTION

SUMMARY OF QUANTITIES		
	ESTIMATE	ACTUAL
INCIDENTAL MILLING	1698.4 SQ. YD.	
ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B	140.0 TONS	
ASPHALT BINDER FOR PLANT MIX	10.0 TONS	
INDUCTIVE LOOP SAWCUT	1200 LIN. FT.	
LEAD IN CABLE	200 LIN. FT.	

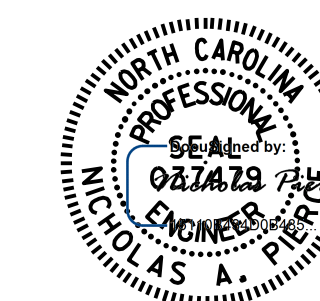
NOTES

EXISTING APPROACH ASPHALT PAVEMENT SHALL BE MILLED AS NECESSARY TO ATTAIN MINIMUM 1 1/2" DEPTH OF NEW ASPHALT PAVEMENT. NEW ASPHALT PAVEMENT SHALL BE OF THICKNESS NECESSARY TO PROVIDE A SMOOTH TRANSITION BETWEEN THE ROADWAY AND THE BRIDGE DECK. THE NEW ASPHALT PAVEMENT THICKNESS MAY EXCEED 1 1/2" DUE TO SETTLEMENT OF THE EXISTING APPROACH.

EXISTING INDUCTIVE LOOPS ARE ANTICIPATED TO FALL WITHIN THE LIMITS OF APPROACH MILLING AT VARIOUS LOCATIONS. EXISTING INDUCTIVE LOOPS THAT ARE REMOVED OR DAMAGED DURING THE MILLING PROCESS ARE TO BE REPLACED IN ACCORDANCE WITH THE 2018 NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES SECTION 1098-8 AND 1098-9 ALONG WITH NCDOT STANDARD ROADWAY DRAWING 1725.01.

C1	PROPOSED VARIABLE DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1 1/2" IN DEPTH OR GREATER THAN 2" IN DEPTH.
E	EXISTING PAVEMENT

PROJECT NO. **15BPR.59**
WAKE COUNTY
 BRIDGE NO. **911084**



12/08/2022

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**INCIDENTAL MILLING
 AND TYPICAL ROADWAY
 SECTIONS**

DRAWN BY : N.A. PIERCE DATE : 09/2022
 CHECKED BY : A.Y. GODFREY DATE : 10/2022
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 12/2022

12/7/2022
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DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-21
1			3			TOTAL SHEETS
2			4			21

NOTES

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

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

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

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

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

SIMULTANEOUS REMOVAL OF UNSOUND CONCRETE MAY BE PERMITTED ON MORE THAN ONE FACE OF A CAP AND/OR COLUMN, IF THE AREAS OF REMOVAL ARE NOT ADJACENT TO OR DIRECTLY OPPOSITE ONE ANOTHER. IF REMOVAL EXTENDS MORE THAN 1 1/2" BEHIND THE MAIN REINFORCING BARS, NOTIFY THE ENGINEER PRIOR TO PROCEEDING.

NO MORE THAN 10 VERTICAL FEET OF A COLUMN MAY BE REMOVED AT ONE TIME, PRIOR TO REPAIR, UNLESS OTHERWISE APPROVED BY THE ENGINEER.

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

THE #4 "U" DOWELS ARE REQUIRED ONLY AROUND THE ANCHOR BOLTS. THE EXISTING REINFORCING STEEL IN THE PEDESTAL WALL SHALL BE CLEANED, STRAIGHTENED AND REMAIN IN PLACE.

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

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

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY PROTECTIVE COATING, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION (ERI), SEE SPECIAL PROVISIONS.

PROJECT NO. **15BPR.59**
DURHAM/WAKE COUNTY
 BRIDGE NO. **310306, 911039, 911083, 911084**

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
TYPICAL CAP AND COLUMN REPAIR DETAILS

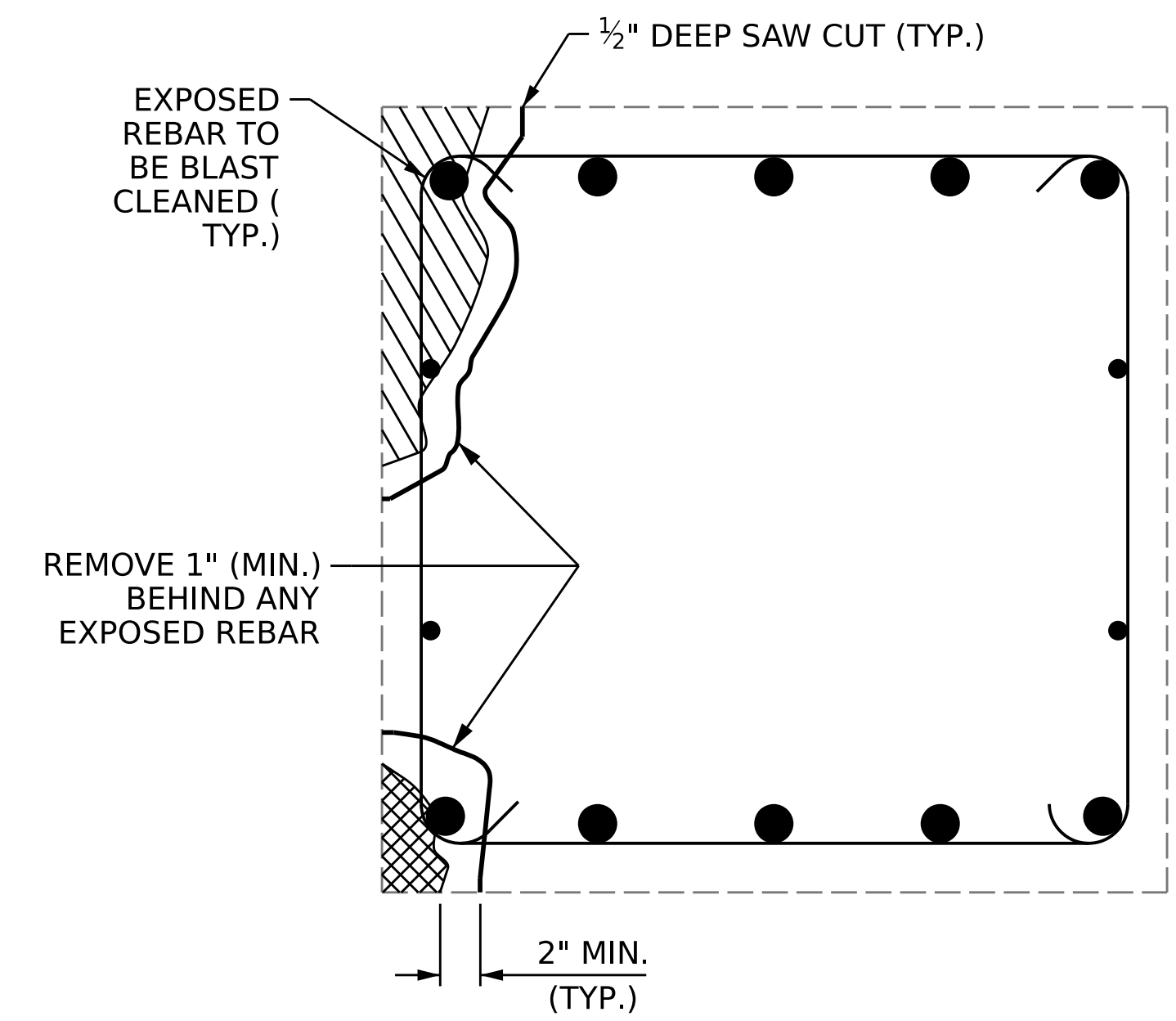


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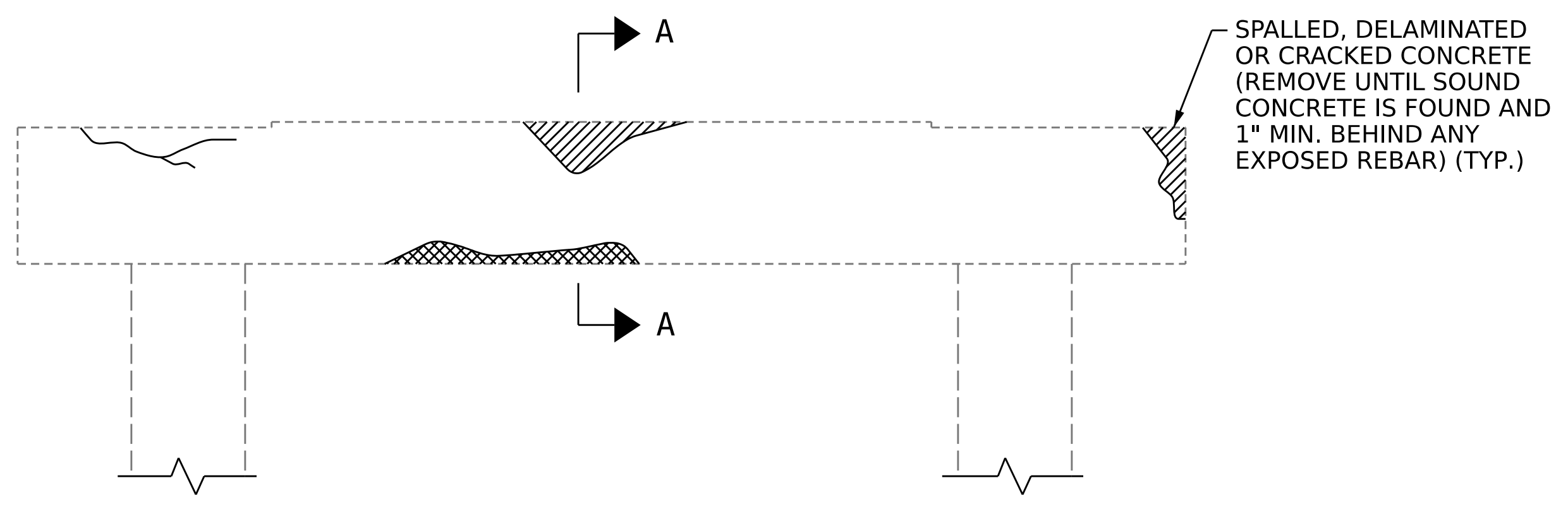
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

TOTAL SHEETS: 73

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

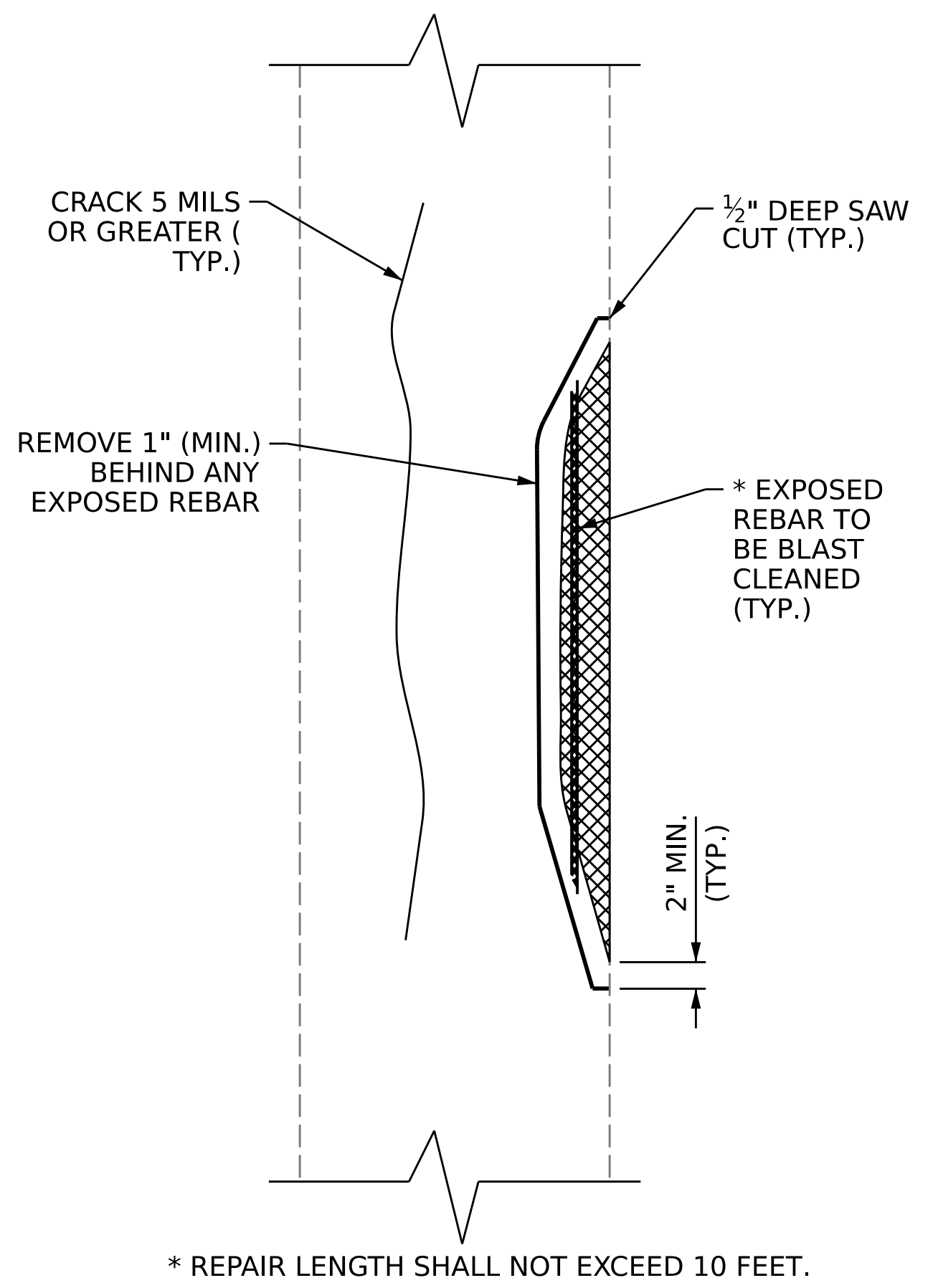


SECTION A-A



BENT CAP REPAIRS

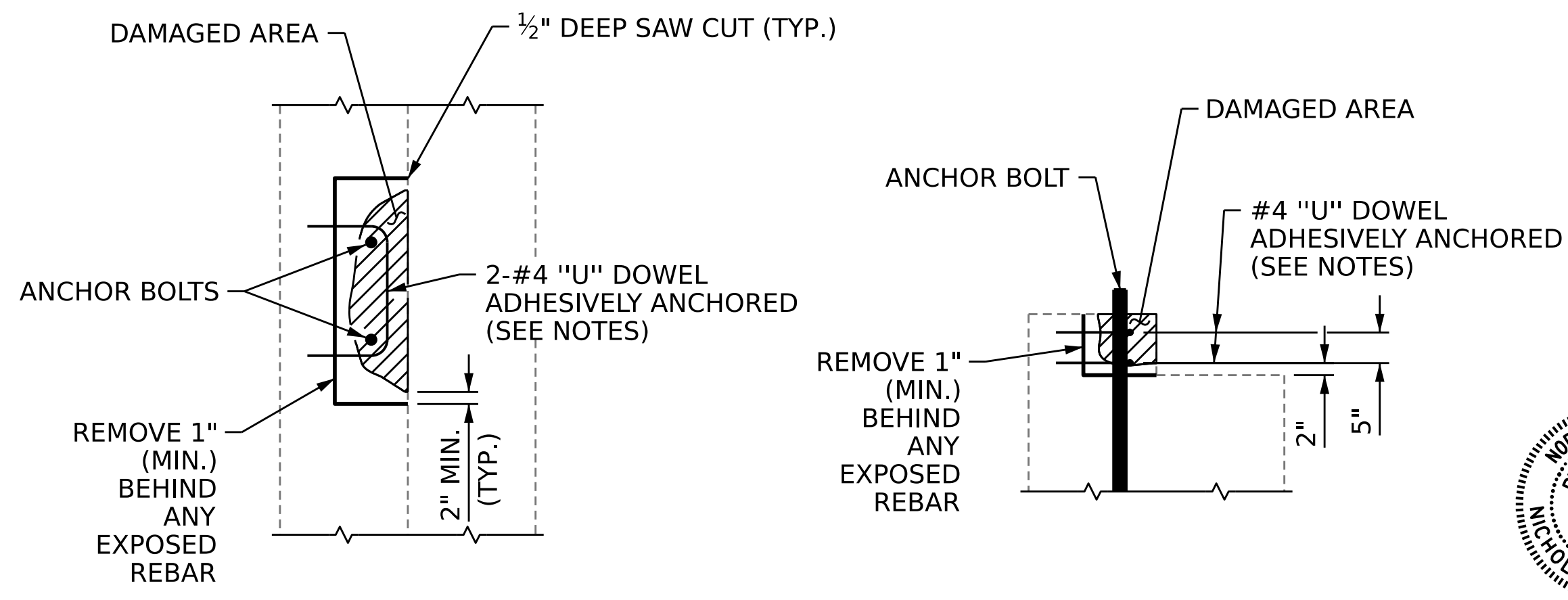
CAP REPAIR



ELEVATION OF COLUMN

REPAIR KEY

- CONCRETE REPAIR AREA (FORM AND POUR)
- SHOTCRETE REPAIR AREA
- EPOXY RESIN INJECTION (ERI)



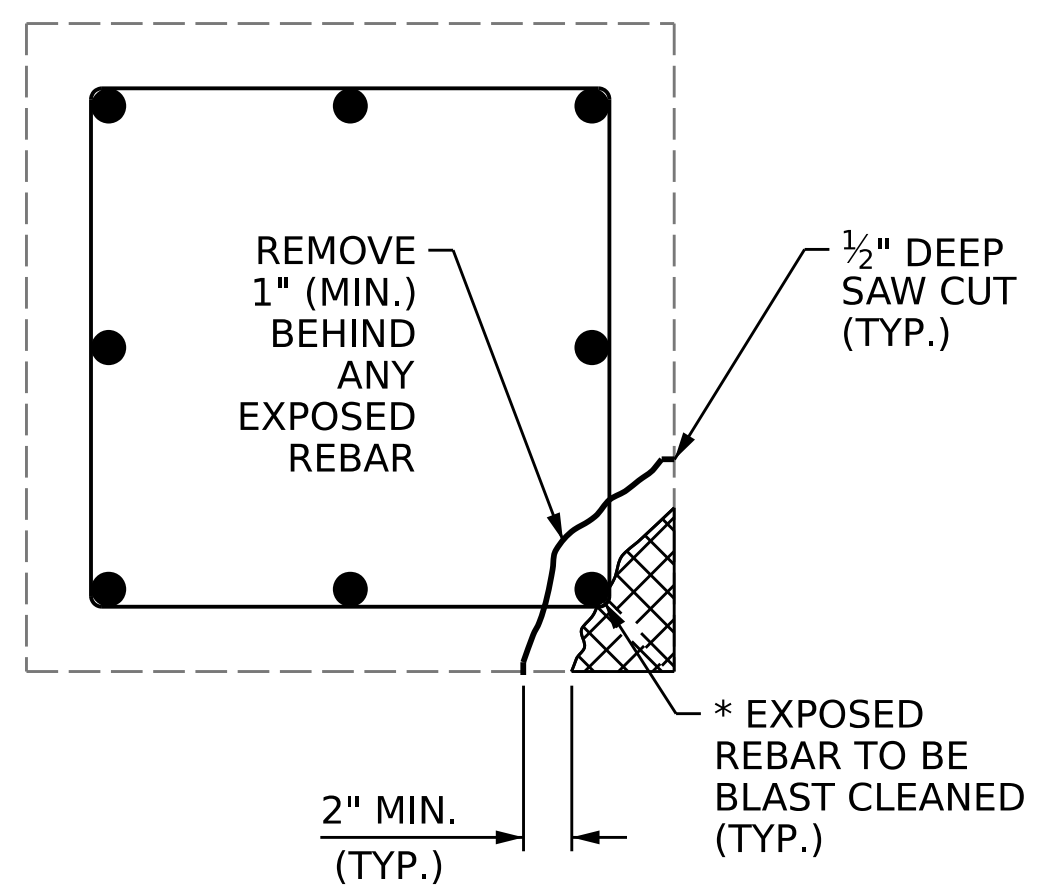
PLAN

ELEVATION

PEDESTAL WALL REPAIR

SPLICE LENGTH TABLE

BAR SIZE	MIN. SPLICE LENGTH
#4	2'-4"
#5	2'-9"
#6	4'-0"
#7	5'-3"
#8	6'-9"
#9	8'-6"
#10	10'-11"
#11	13'-4"



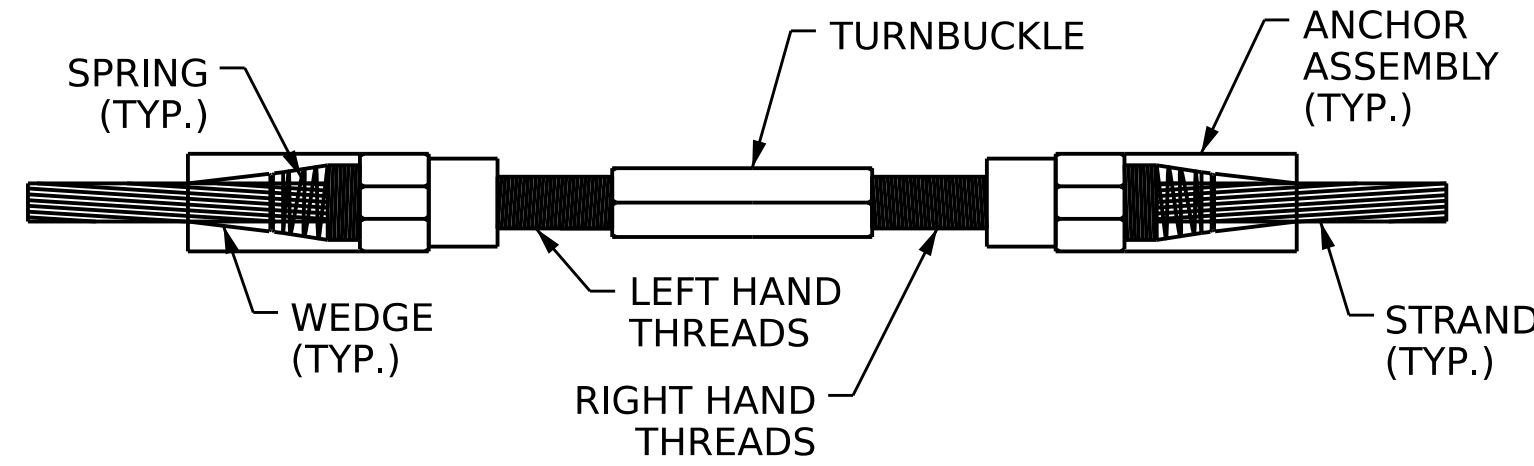
PLAN OF COLUMN

COLUMN REPAIR

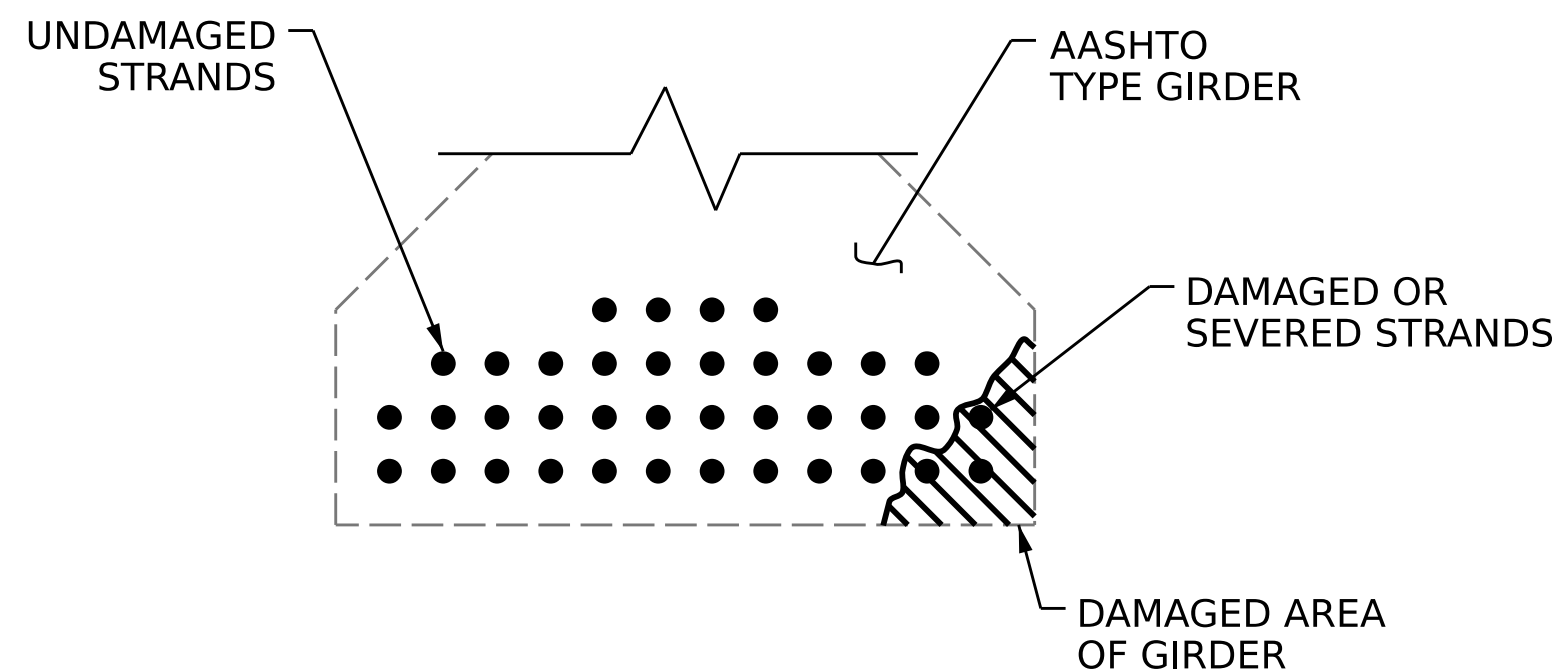
ASSEMBLED BY: N.A. PIERCE DATE: 10/2022
 CHECKED BY: A.Y. GODFREY DATE: 10/2022
 DRAWN BY:
 CHECKED BY:

ANCHOR ASSEMBLIES WEDGES SPRING THREADED ROD THREADED TURNBUCKLE THREADED ROD SPRING WEDGES ANCHOR ASSEMBLIES

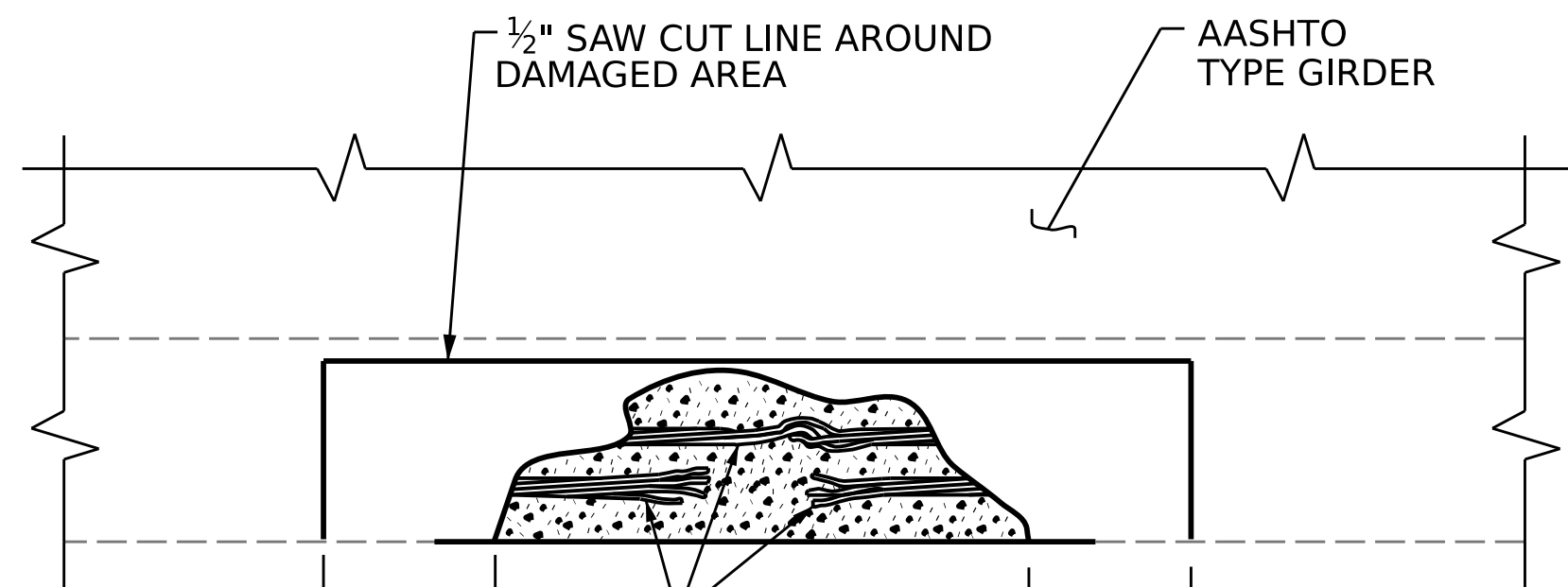
MECHANICAL STRAND SPLICE ASSEMBLY
(ASSEMBLIES MAY VARY DEPENDING ON MANUFACTURER)



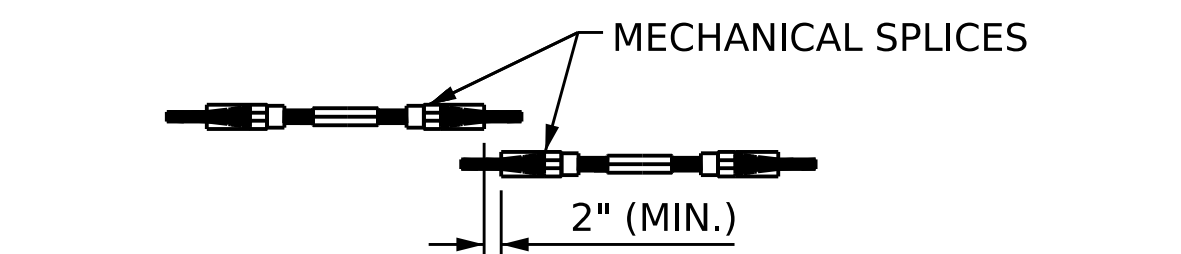
STRAND SPLICE DETAIL



SECTION VIEW OF DAMAGED GIRDER



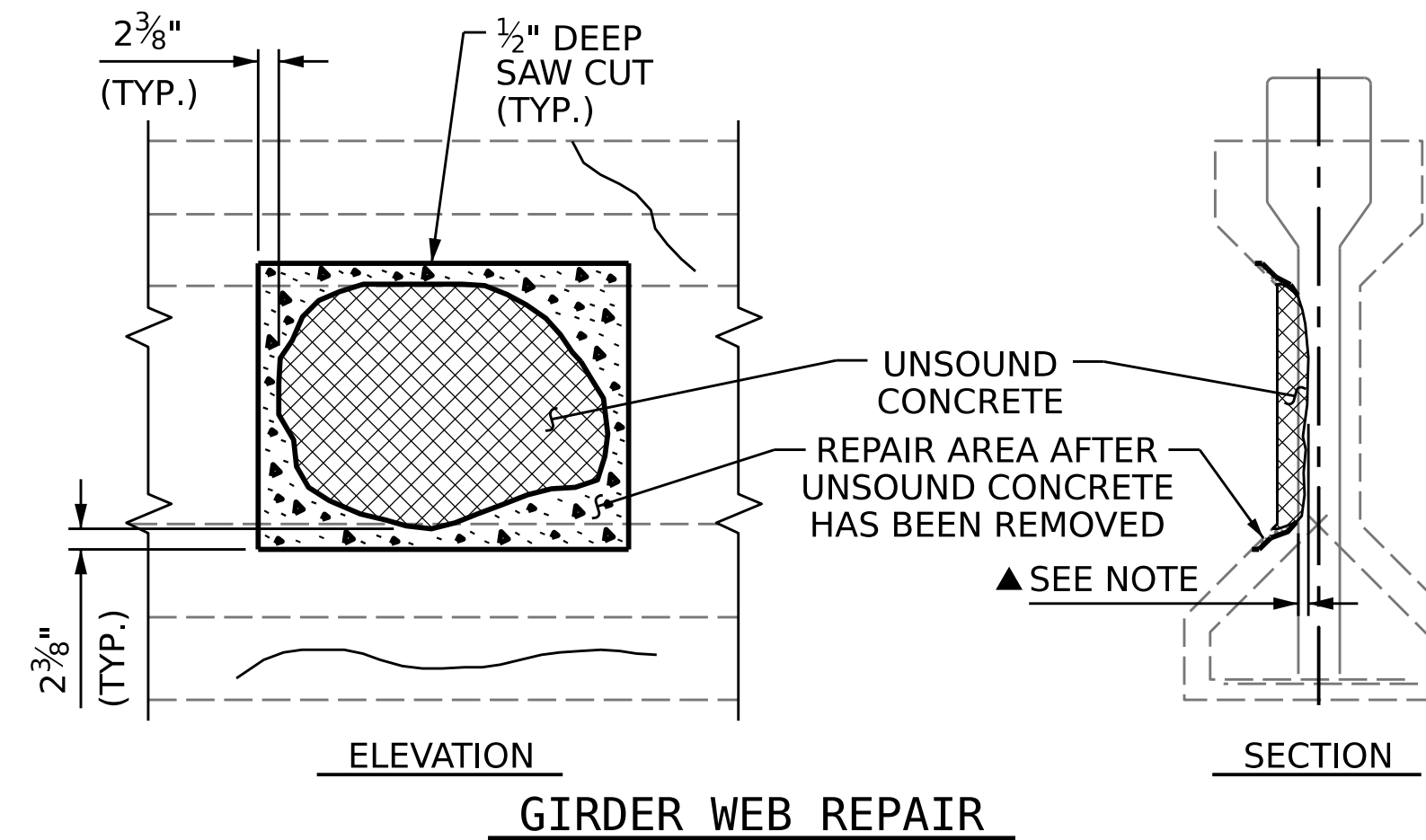
ELEVATION VIEW OF DAMAGED GIRDER



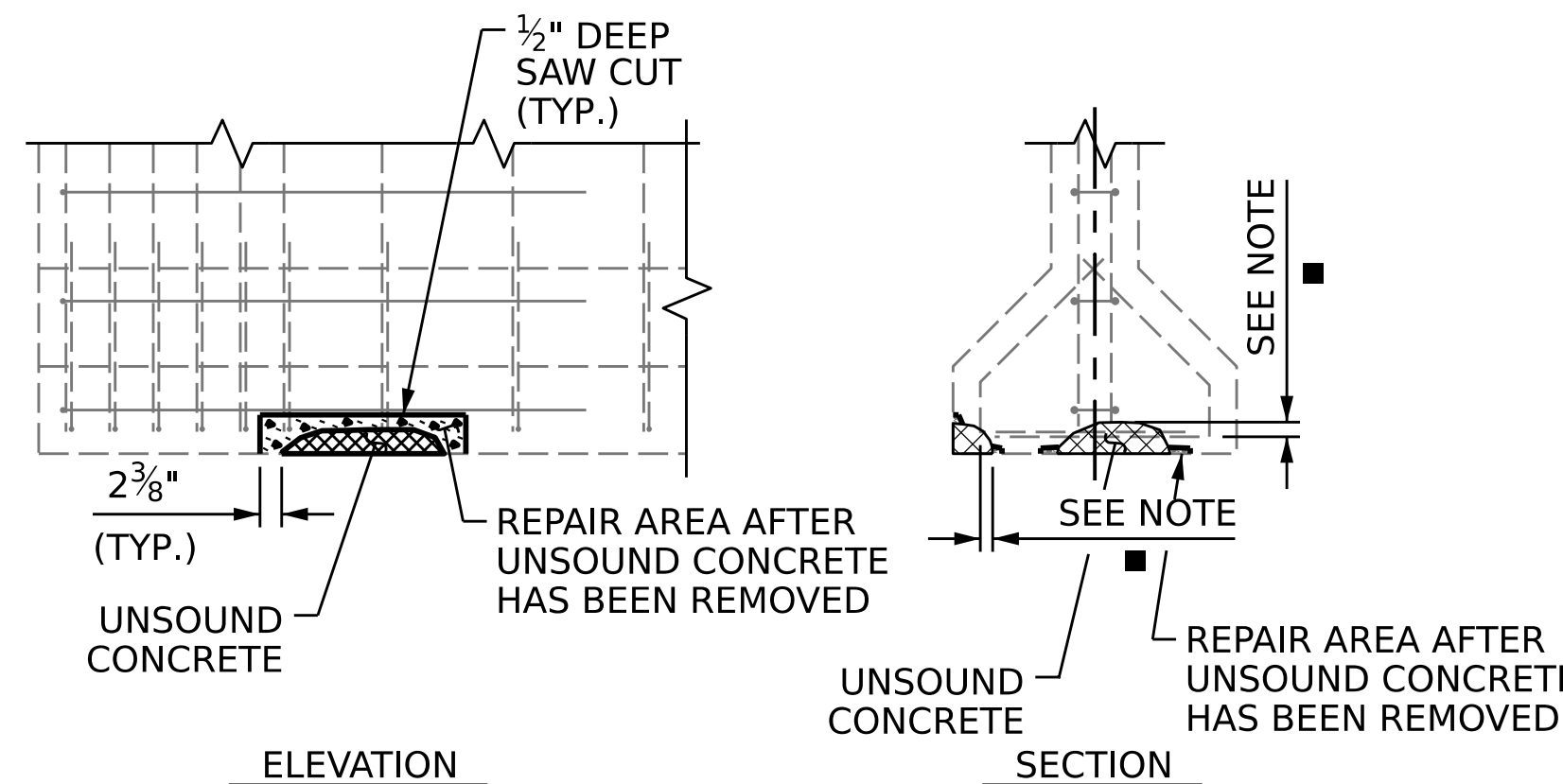
SPLICE OFFSET



STRAND REPAIR DETAILS

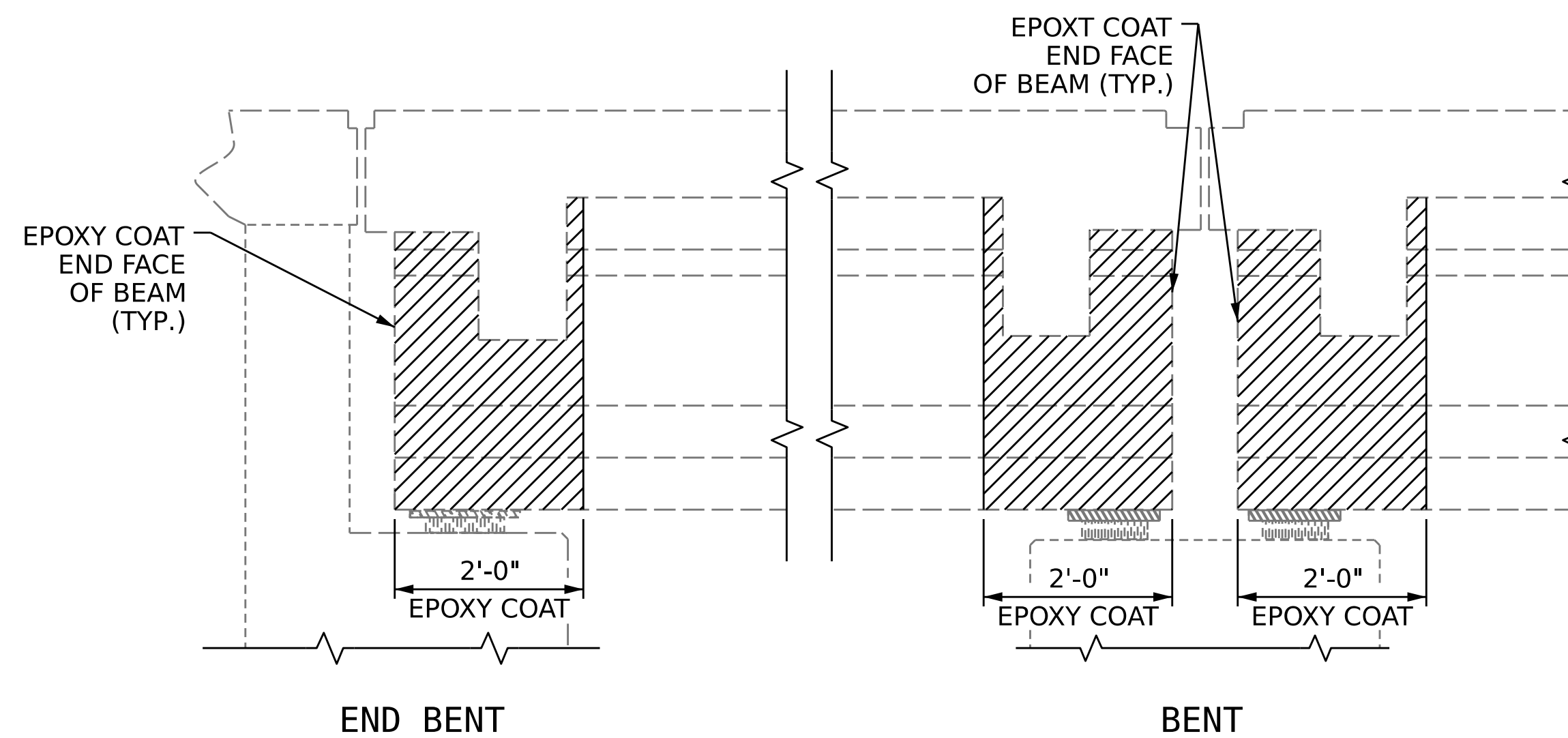
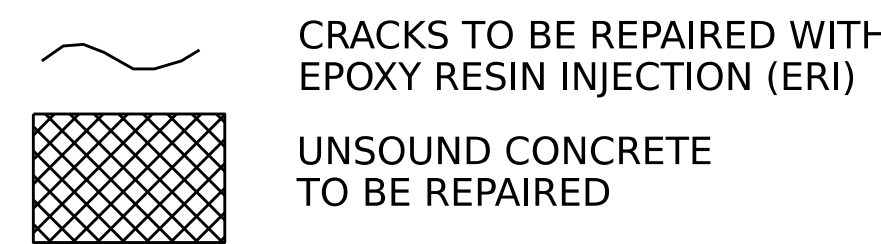


GIRDER WEB REPAIR



GIRDER FLANGE REPAIR

PRESTRESSED GIRDER REPAIR



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).
- FOR REPAIRS OVER TRAFFIC AND SHALLOW REPAIRS THAT DO NOT ENGAGE REINFORCEMENT, ANCHOR PATCH MATERIAL USING 1/4\"/>

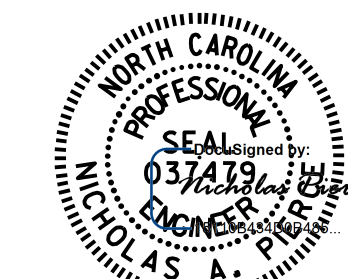
PRESTRESSED GIRDER REPAIR SEQUENCE:

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 1/2\"/>

PRESTRESSED GIRDER STRAND REPAIR SEQUENCE:

1. REMOVE LIVE LOAD FROM REPAIR AREA BY EITHER CLOSING BRIDGE TO TRAFFIC OR SHIFTING TRAFFIC AWAY FROM REPAIR AREA.
2. MEASURE OUT THE AREA NEEDED TO HAVE ADEQUATE ROOM TO SPLICE THE BROKEN OR DAMAGED STRAND. IF MULTIPLE STRANDS ARE BROKEN ADJACENT TO ONE ANOTHER THEN THE SPLICES SHALL BE STAGGERED. SEE "SPLICE OFFSET" ABOVE. AFTER YOU HAVE DETERMINED THE REPAIR AREA NEEDED, SAW CUT A MINIMUM OF 1/2\"/>

PROJECT NO. **15BPR.59**
DURHAM/WAKE COUNTY
 BRIDGE NO. **911084**



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
PRESTRESSED CONCRETE GIRDER REPAIR DETAILS

12/08/2022

DRAWN BY : N.A. PIERCE DATE : 10/2022
 CHECKED BY : A.Y. GODFREY DATE : 10/2022
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 12/2022

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 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-04
2			4			TOTAL SHEETS 73

