

#### STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

# DURHAM & WAKE COUNTIES

STATE PROJECT REFERENCE NO. 15BPR.59 STATE PROJ. NO. F. A. PROJ. NO. **DESCRIPTION** P.E. 15BPR.59 CONST. 15BPR.59

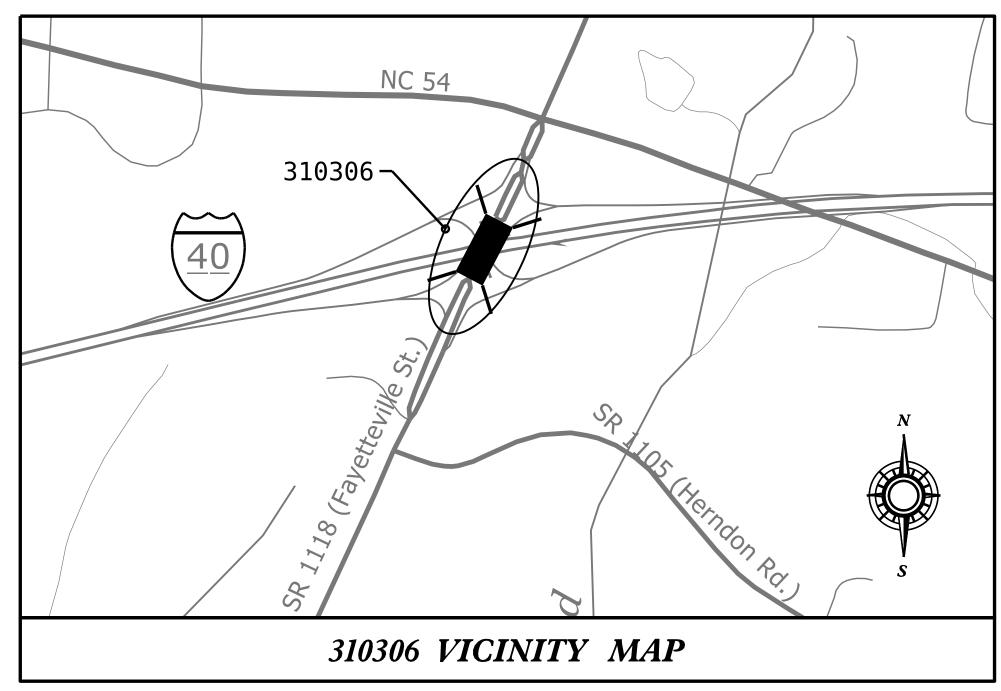
LOCATION: BRIDGE #310306 ON SR 1118 (FAYETTEVILLE RD.) OVER I-40

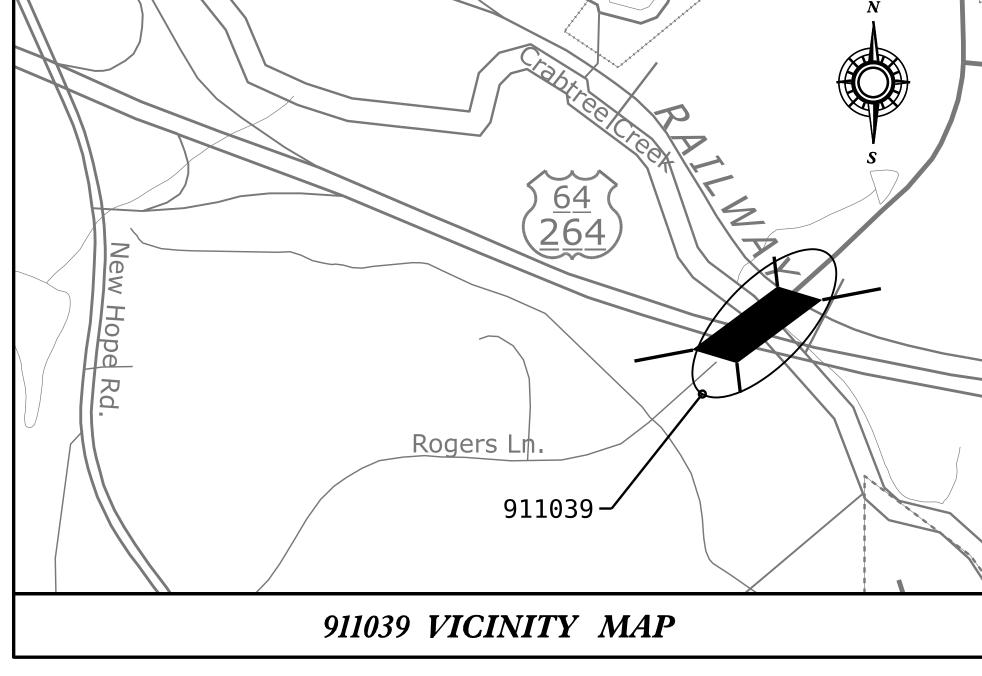
BRIDGE #911039 ON SR 2517 (ROGERS LN.) OVER I-87/US64/US264, CRABTREE CREEK AND NS RAILROAD

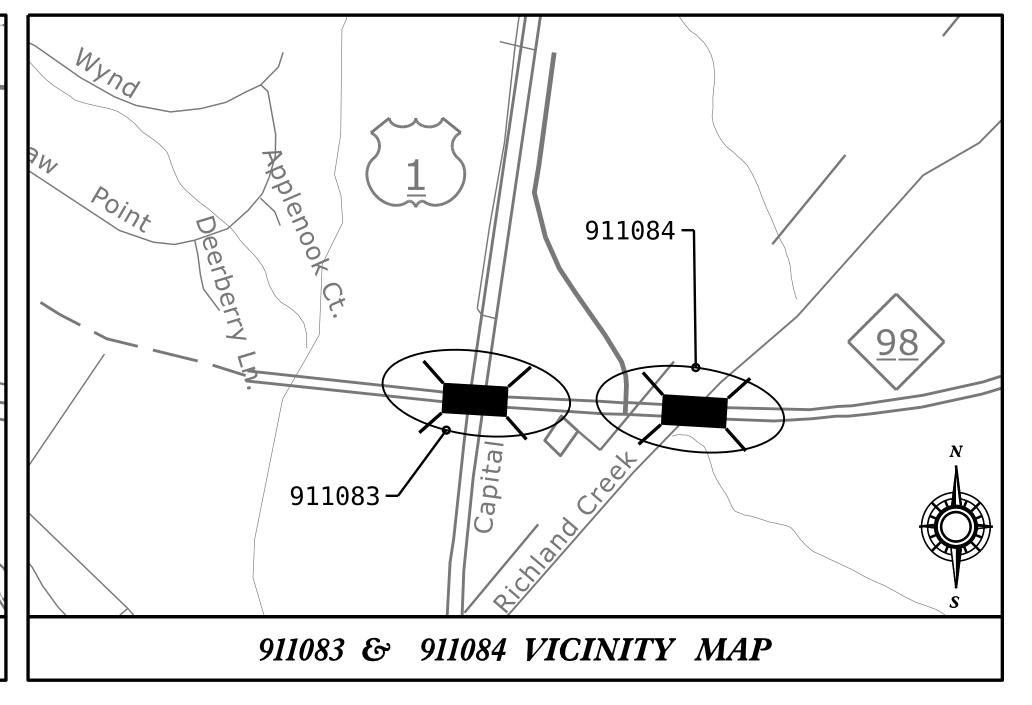
BRIDGE #911083 ON NC-98 OVER US-1 (CAPITAL BLVD.) BRIDGE #911084 ON NC-98 OVER RICHLAND CREEK

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.





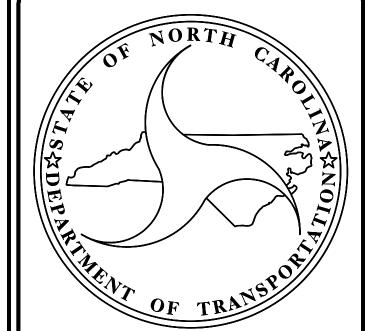


Prepared in the Office of:

**DIVISION OF HIGHWAYS** 

STRUCTURES MANAGEMENT UNIT

1000 BIRCH RIDGE DR.



#### 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

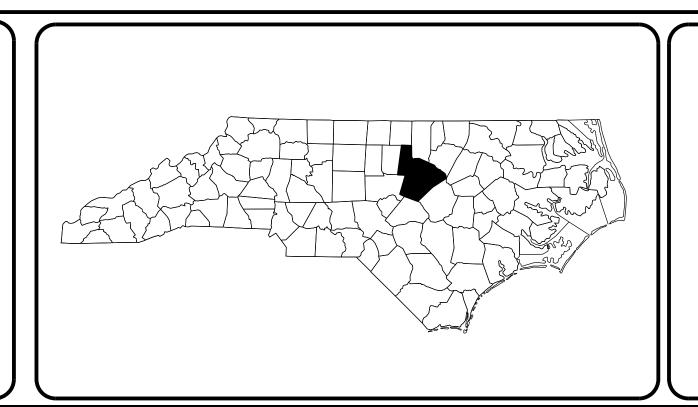
**RALEIGH**, N.C. 27610 2018 STANDARD SPECIFICATIONS

FEBRUARY 21, 2023 LETTING DATE

KRISTY W. ALFORD, P.E. PROJECT ENGINEER

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

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# STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

## DURHAM & WAKE COUNTIES

1	STATE	STAT	E PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS			
	N.C.	]	L5BPR.59	1A	<b>73</b>			
	STAT	E PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION				
	15	BPR.59		P.E.				
	15	BPR.59	_	CONST.				
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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

TITLE SHEET	SHEET No.	<b>DESCRIPTION</b>	SHEET No.	<b>DESCRIPTION</b>	SHEET No.	<b>DESCRIPTION</b>
IA   INDEX OF SHEETS   \$2-07   EXPANSION JOINT SEAL REPAIR SHEET 2   \$4-01     S-01   LOCATION SKETCHES   \$3-08   MODULAR EXPANSION JOINT REPAIR   \$4-02     S-02   TOTAL BILL OF MATERIALS   \$3-09   3 BAR METAL RAIL REPAIR SHEET 1   \$4-03   DECK SURFACE REPAIR - SPAN A     STRUCTUR NO. 310396   \$3-240   3 BAR METAL RAIL REPAIR SHEET 1   \$4-04   DECK SURFACE REPAIR - SPAN A     STRUCTUR NO. 310396   \$3-241   3 BAR METAL RAIL REPAIR SHEET 3   \$4-04   DECK SURFACE REPAIR - SPAN B     SI-01   GENERAL DRAWING   \$2-11   3 BAR METAL RAIL REPAIR SHEET 3   \$4-05   DECK SURFACE REPAIR - SPAN B     SI-02   TYPICAL SECTION   \$2-12   DECK UNDERSIDE REPAIR - SPAN A   \$4-06   DECK SURFACE REPAIR - SPAN D     SI-03   DECK SURFACE REPAIR - SPAN B   \$2-14   DECK UNDERSIDE REPAIR - SPAN B   \$4-07   FOAM JOINT REPAIR     SI-04   DECK SURFACE REPAIR - SPAN B   \$2-14   DECK UNDERSIDE REPAIR - SPAN C   \$4-08   DECK UNDERSIDE REPAIR - SPAN B     SI-05   FOAM JOINT REPAIR   \$2-16   BENT 1   S4-10   DECK UNDERSIDE REPAIR - SPAN B     SI-06   EXPANSION JOINT SEAL REPAIR   \$2-16   BENT 1   S4-10   DECK UNDERSIDE REPAIR - SPAN B     SI-07   EXPANSION JOINT SEAL REPAIR SHEET 2   S2-17   BENT 2   S4-11   DECK UNDERSIDE REPAIR - SPAN D     SI-09   CONCRETE BARRIER RAIL REPAIR SHEET 3   S2-18   BENT 2   S4-12   DECK UNDERSIDE REPAIR - SPAN D     SI-10   DECK UNDERSIDE REPAIR   S3-01   GENERAL DRAWING   S4-13   BENT 1 - SPAN B FACE     SI-11   END BENT 1   SPAN A FACE   S3-04   DECK SURFACE REPAIR - SPAN A   S4-16   BENT 2 - SPAN B FACE     SI-14   END BENT 2   S3-05   FOAM JOINT REPAIR   S4-18   BENT 2 - SPAN C FACE     SI-14   END BENT 2   S3-06   OCCORRETE BARRIER RAIL REPAIR   S4-18   BENT 2 - SPAN D FACE     SI-14   END BENT 1   SPAN A FACE   S3-04   DECK SURFACE REPAIR - SPAN A   S4-16   BENT 2 - SPAN D FACE     SI-15   END BENT 1   SPAN B FACE   S3-06   FOAM JOINT REPAIR   S4-18   BENT 3 - SPAN D FACE     SI-15   END BENT 2   S3-06   FOAM JOINT REPAIR   S4-19   SDEET 2 - SPAN B FACE     SI-15   END BENT 2   SA-10   BENT 1 - SPAN A FACE	1	TITLE SHEET	S2-06	EXPANSION JOINT SEAL REPAIR SHEET 1	STRUCTURE	No. 911084
S-02   TOTAIL BILL OF MATERIALS   S2-09   3 BAR METAL RAIL REPAIR SHEET   S4-03   DECK SURFACE REPAIR - SPAN A	<i>1A</i>	INDEX OF SHEETS	<i>S2-07</i>	•	S4-01	GENERAL DRAWING
STRUCTURE No. 310306	S-01	LOCATION SKETCHES	<i>S2–08</i>	MODULAR EXPANSION JOINT REPAIR	<i>S4–02</i>	TYPICAL SECTION
S1-01   GENERAL DRAWING   S2-11   3 BAR METAL RAIL REPAIR SHEET 3   S4-05   DECK SURFACE REPAIR - SPAN C	S-02	TOTAL BILL OF MATERIALS	<i>S2-09</i>	3 BAR METAL RAIL REPAIR SHEET 1	<b>S4–03</b>	DECK SURFACE REPAIR - SPAN A
S1-02 TYPICAL SECTION S1-03 DECK SURFACE REPAIR - SPAN A S1-04 DECK SURFACE REPAIR - SPAN B S1-04 DECK SURFACE REPAIR - SPAN B S1-05 FOAM JOINT REPAIR S1-06 EXPANSION JOINT SEAL REPAIR SPAN S S1-06 EXPANSION JOINT SEAL REPAIR SHEET 2 S1-06 EXPANSION JOINT SEAL REPAIR SHEET 2 S1-07 EXPANSION JOINT SEAL REPAIR SHEET 2 S1-08 EXPANSION JOINT SEAL REPAIR SHEET 2 S1-09 CONCRETE BARRIER RAIL REPAIR S1-10 DECK UNDERSIDE REPAIR SHEET 3 S1-11 END BENT 1 S1-12 BENT 1 - SPAN B FACE S1-13 BENT 1 - SPAN B FACE S1-14 END BENT 2 S1-15 FOAM JOINT REPAIR S1-16 END BENT 2 S1-17 END BENT 2 S1-18 BENT 1 - SPAN B FACE S1-19 BENT 1 - SPAN B FACE S1-10 BENT 1 - SPAN B FACE S1-11 END BENT 2 S1-12 BENT 1 - SPAN B FACE S1-13 BENT 1 - SPAN B FACE S1-14 END BENT 2 S1-15 INCIDENTAL MILLING S1-16 END BENT 2 S1-17 DECK UNDERSIDE REPAIR SHEE 3 S1-18 BENT 1 - SPAN B FACE S1-19 GENERAL DRAWING S1-10 END BENT 2 S1-10 GENERAL DRAWING S1-10 END BENT 2 S1-11 END BENT 3 - SPAN C FACE S1-12 BENT 1 - SPAN B FACE S1-13 BENT 1 - SPAN B FACE S1-14 END BENT 2 S1-15 INCIDENTAL MILLING S1-16 END BENT 2 S1-17 DECK UNDERSIDE REPAIR SHEET S1-10 DECK UNDERSIDE REPAIR SHALL REPAIR S1-10 DECK UNDERSIDE REPAIR SHEET S1-10 DECK UNDERSIDE REPAIR SHALL	STRUCTURI	E No. 310306	S2-10	3 BAR METAL RAIL REPAIR SHEET 2	<i>S4–04</i>	DECK SURFACE REPAIR - SPAN B
S1-03   DECK SURFACE REPAIR - SPAN A   S2-13   DECK UNDERSIDE REPAIR - SPAN B   S4-07   FOAM JOINT REPAIR	<i>S1–01</i>	GENERAL DRAWING	S2-11	3 BAR METAL RAIL REPAIR SHEET 3	<b>S4–0</b> 5	DECK SURFACE REPAIR - SPAN C
S1-04   DECK SURFACE REPAIR - SPAN B   S2-14   DECK UNDERSIDE REPAIR - SPAN C   S4-08   DECK UNDERSIDE REPAIR - SPAN A	<i>S1–02</i>	TYPICAL SECTION	S2-12	DECK UNDERSIDE REPAIR – SPAN A	<i>S4</i> – <i>06</i>	DECK SURFACE REPAIR - SPAN D
S1-05 FOAM JOINT REPAIR S2-15 END BENT 1 S4-09 DECK UNDERSIDE REPAIR - SPAN B S1-06 EXPANSION JOINT SEAL REPAIR SHEET 2 S2-16 BENT 1 S4-10 DECK UNDERSIDE REPAIR - SPAN C S4-10 DECK UNDERSIDE REPAIR - SPAN C S4-10 DECK UNDERSIDE REPAIR - SPAN C S4-10 DECK UNDERSIDE REPAIR - SPAN D S4-11 DECK UNDERSIDE REPAIR - SPAN D S4-11 DECK UNDERSIDE REPAIR - SPAN D S4-12 END BENT 1 S4-12 END BENT 1 S4-12 END BENT 1 SPAN A FACE S1-10 DECK UNDERSIDE REPAIR SHEET 3 S2-18 END BENT 2 S4-12 END BENT 1 SPAN A FACE S1-10 DECK UNDERSIDE REPAIR S4-13 BENT 1 - SPAN A FACE S1-10 DECK UNDERSIDE REPAIR S3-01 GENERAL DRAWING S4-14 BENT 1 - SPAN B FACE S1-12 BENT 1 - SPAN A FACE S3-02 TYPICAL SECTION S4-15 BENT 2 - SPAN B FACE S1-13 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 SPAN B FACE S3-05 FOAM JOINT REPAIR S4-18 BENT 3 - SPAN C FACE S1-15 INCIDENTAL MILLING S3-06 CONCRETE BARRIER RAIL REPAIR S4-18 BENT 3 - SPAN D FACE STRUCTURE No. 911039 S3-06 CONCRETE BARRIER RAIL REPAIR S4-19 END BENT 2 STRUCTURE No. 911039 S3-06 CONCRETE BARRIER RAIL REPAIR S4-20 SLOPE PROTECTION REPAIR S2-01 GENERAL DRAWING S3-08 END BENT 1 - SPAN A FACE S1-10 INCIDENTAL MILLING S2-02 TYPICAL SECTION S3-09 BENT 1 - SPAN A FACE S1-10 INCIDENTAL MILLING S2-03 DECK SURFACE REPAIR - SPAN B 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	<i>S1–03</i>	DECK SURFACE REPAIR - SPAN A	<b>S2–13</b>	DECK UNDERSIDE REPAIR – SPAN B	<i>S4</i> – <i>07</i>	FOAM JOINT REPAIR
SI-06	<i>S1–04</i>	DECK SURFACE REPAIR – SPAN B	<i>S2–14</i>	DECK UNDERSIDE REPAIR – SPAN C	<b>S4</b> –08	DECK UNDERSIDE REPAIR – SPAN A
SI-07   EXPANSION   JOINT   SEAL   REPAIR   SHEET   2   S2-17   BENT   2   S4-11   DECK   Underside   Repair   SPAN   D	<i>S1–05</i>	FOAM JOINT REPAIR	<b>S</b> 2–15	END BENT 1	S4-09	DECK UNDERSIDE REPAIR – SPAN B
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S1-09 CONCRETE BARRIER RAIL REPAIR S1-10 DECK UNDERSIDE REPAIR S1-11 END BENT 1 S1-12 BENT 1 - SPAN A FACE S1-13 BENT 1 - SPAN B FACE S1-14 END BENT 1 SPAN B FACE S1-15 BENT 1 - SPAN B FACE S1-16 DECK SURFACE REPAIR - SPAN B FACE S1-17 BENT 2 SPAN C FACE S1-18 BENT 1 - SPAN B FACE S1-19 BENT 2 S1-05 FOAM JOINT REPAIR S1-10 BENT 3 - SPAN C FACE S1-11 SINCIDENTAL MILLING S1-12 STRUCTURE No. 911039 S1-06 CONCRETE BARRIER RAIL REPAIR S1-15 INCIDENTAL DRAWING S1-16 GENERAL DRAWING S1-17 BENT 3 - SPAN D FACE S1-18 BENT 3 - SPAN D FACE S1-19 END BENT 2 S1-10 GENERAL DRAWING S1-10 GENERAL DRAWING S1-10 GENERAL DRAWING S1-10 GENERAL DRAWING S1-10 BENT 1 - SPAN A FACE S1-11 S1-12 SECTION S1-12 S1-13 BENT 1 - SPAN A FACE S1-14 END BENT 2 S1-15 INCIDENTAL MILLING S1-15 INCIDENTAL MILLING S1-16 GENERAL DRAWING S1-17 BENT 3 - SPAN D FACE S1-18 BENT 3 - SPAN D FACE S1-19 END BENT 3 - SPAN D FACE S1-10 S1-10 BENT 3 - SPAN D FACE S1-11 BENT 3 - SPAN D FACE S1-12 S1-13 BENT 3 - SPAN D FACE S1-14 END BENT 3 - SPAN B FACE S1-15 INCIDENTAL MILLING S1-16 BENT 3 - SPAN D FACE S1-17 BENT 3 - SPAN D FACE S1-18 BENT 3 - SPAN D FACE S1-19 END BENT 3 - SPAN D FACE S1-10 BENT 3 - SPAN D FACE	<i>S1–07</i>	EXPANSION JOINT SEAL REPAIR SHEET 2	<i>S2–17</i>	BENT 2	S4–11	DECK UNDERSIDE REPAIR – SPAN D
S1-10 DECK UNDERSIDE REPAIR S1-11 END BENT 1 S1-12 BENT 1 - SPAN A FACE S1-13 BENT 1 - SPAN B FACE S1-14 END BENT 2 S1-15 INCIDENTAL MILLING S1-15 INCIDENTAL MILLING S2-01 GENERAL DRAWING S2-01 TYPICAL SECTION S3-08 END BENT 1 S2-02 TYPICAL SECTION S3-04 DECK SURFACE REPAIR S3-05 FOAM JOINT REPAIR S2-04 DECK SURFACE REPAIR S3-06 CONCRETE BARRIER RAIL REPAIR S3-07 DECK UNDERSIDE REPAIR S3-08 BENT 1 - SPAN B FACE S3-09 GREERAL DRAWING S3-09 BENT 1 - SPAN B FACE S3-09 BENT 1 - SPAN B FACE S3-09 GREERAL SECTION S3-09 BENT 1 - SPAN B FACE S3-09 GAP AND COLUMN REPAIR DETAILS S3-09 BENT 1 - SPAN B FACE S3-09 GAP AND COLUMN REPAIR DETAILS S3-09 BENT 1 - SPAN B FACE S3-09 GAP AND COLUMN REPAIR DETAILS S3-09 BENT 1 - SPAN B FACE S3-09 GREERAL DETAILS S3-09 BENT 1 - SPAN B FACE S3-09 GAP AND COLUMN REPAIR DETAILS	<i>S1–08</i>	EXPANSION JOINT SEAL REPAIR SHEET 3	S2-18	END BENT 2	<b>S4–12</b>	END BENT 1
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 S4-18 BENT 3 - SPAN D FACE 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	<i>S1–09</i>	CONCRETE BARRIER RAIL REPAIR	STRUCTURE	E No. 911083	<b>S4–13</b>	BENT 1 - SPAN A 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 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	S1–10	DECK UNDERSIDE REPAIR	S3-01	GENERAL DRAWING	<i>S4–14</i>	BENT 1 – SPAN B FACE
S1-13 BENT 1 - SPAN B FACE S1-14 END BENT 2 S3-05 FOAM JOINT REPAIR S1-15 INCIDENTAL MILLING S1-16 STRUCTURE No. 911039 S1-17 BENT 3 - SPAN C FACE S1-18 BENT 3 - SPAN D FACE S1-19 END BENT 2 STRUCTURE No. 911039 S1-07 DECK UNDERSIDE REPAIR S1-01 GENERAL DRAWING S1-02 TYPICAL SECTION S1-03 DECK SURFACE REPAIR - SPAN A S1-04 DECK SURFACE REPAIR - SPAN B S1-05 S1-06 S1-07 DECK UNDERSIDE REPAIR S1-07 DECK UNDERSIDE REPAIR S1-07 S1-08 END BENT 1 S1-08 END BENT 3 - SPAN B S1-08 END BENT 1 S1-08 END BENT 3 - SPAN B S1-08 END BENT 3 - SPAN B S1-08 END BENT 1 S1-08 END BENT 3 - SPAN B S1-08 END BENT 3 - SPAN B S1-08 END BENT 1 S1-08 END BENT 3 - SPAN B S1-08 END BENT 1 S1-08 END BENT 3 - SPAN B S1-08 END BENT 3 - SPAN B S1-08 END BENT 3 - SPAN B S1-08 END BENT 1 S1-08 END BENT 3 - SPAN B S1-08 END BENT	<i>S1–11</i>	END BENT 1	<i>S3-02</i>	TYPICAL SECTION	<b>S4–1</b> 5	BENT 2 - SPAN B 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 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	<i>S1–12</i>	BENT 1 – SPAN A FACE	<b>S</b> 3-03	DECK SURFACE REPAIR – SPAN A	S4–16	BENT 2 - SPAN C FACE
S1-15 INCIDENTAL MILLING S3-06 CONCRÉTE BARRIER RAIL REPAIR STRUCTURE No. 911039 S3-07 DECK UNDERSIDE REPAIR S2-01 GENERAL DRAWING S2-02 TYPICAL SECTION S3-08 END BENT 1 S4-20 SLOPE PROTECTION REPAIR S4-21 INCIDENTAL MILLING S2-02 TYPICAL SECTION S3-09 BENT 1 - SPAN A FACE S2-03 DECK SURFACE REPAIR - SPAN A S3-10 BENT 1 - SPAN B FACE S2-04 DECK SURFACE REPAIR - SPAN B S3-11 END BENT 2 S-04 PRESTRESSED GIRDER REPAIR DETAILS	<i>S1–13</i>		<i>S3-04</i>		<i>S4–17</i>	
STRUCTURE No. 911039 S3-07 DECK UNDERSIDE REPAIR S4-20 SLOPE PROTECTION REPAIR S4-21 INCIDENTAL MILLING S4-21 INCIDENTAL MILLING S4-20 STANDARD SHEETS STANDARD SHEETS S2-03 DECK SURFACE REPAIR - SPAN A S3-10 BENT 1 - SPAN B FACE S2-04 DECK SURFACE REPAIR - SPAN B S3-11 END BENT 2 S4-20 S4-20 SLOPE PROTECTION REPAIR S4-21 INCIDENTAL MILLING S4-21 S4-21 INCIDENTAL MILLING S4-21 S4-21 INCIDENTAL MILLING S4-21 S4-21 INCIDENTAL MILLING S4-21 STANDARD SHEETS S-03 CAP AND COLUMN REPAIR DETAILS S2-04 PRESTRESSED GIRDER REPAIR DETAILS	<i>S1–14</i>	END BENT 2	<i>S3–05</i>	FOAM JOINT REPAIR	S4–18	BENT 3 - SPAN D FACE
S2-01GENERAL DRAWINGS3-08END BENT 1S4-21INCIDENTAL MILLINGS2-02TYPICAL SECTIONS3-09BENT 1 - SPAN A FACESTANDARD SHEETSS2-03DECK SURFACE REPAIR - SPAN AS3-10BENT 1 - SPAN B FACES-03CAP AND COLUMN REPAIR DETAILSS2-04DECK SURFACE REPAIR - SPAN BS3-11END BENT 2S-04PRESTRESSED GIRDER REPAIR DETAILS	<i>S1–15</i>	INCIDENTAL MILLING	<i>S3-06</i>	CONCRETE BARRIER RAIL REPAIR	S4–19	END BENT 2
S2-02TYPICAL SECTIONS3-09BENT 1 - SPAN A FACESTANDARD SHEETSS2-03DECK SURFACE REPAIR - SPAN AS3-10BENT 1 - SPAN B FACES-03CAP AND COLUMN REPAIR DETAILSS2-04DECK SURFACE REPAIR - SPAN BS3-11END BENT 2S-04PRESTRESSED GIRDER REPAIR DETAILS	STRUCTURI	E No. 911039	<i>S3–07</i>	DECK UNDERSIDE REPAIR	<i>S4</i> –20	SLOPE PROTECTION REPAIR
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	S2-01	GENERAL DRAWING	<i>S3–08</i>	END BENT 1	S4-21	INCIDENTAL MILLING
S2-04 DECK SURFACE REPAIR - SPAN B S3-11 END BENT 2 S-04 PRESTRESSED GIRDER REPAIR DETAILS	<i>S2–02</i>	TYPICAL SECTION	<i>S3-09</i>	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
S2-05 DECK SURFACE REPAIR - SPAN C S3-12 INCIDENTAL MILLING SN STANDARD NOTES		DECK SURFACE REPAIR – SPAN B	S3–11	END BENT 2	<i>S–04</i>	PRESTRESSED GIRDER REPAIR DETAILS
	S2-05	DECK SURFACE REPAIR – SPAN C	S3-12	INCIDENTAL MILLING	SN	STANDARD NOTES

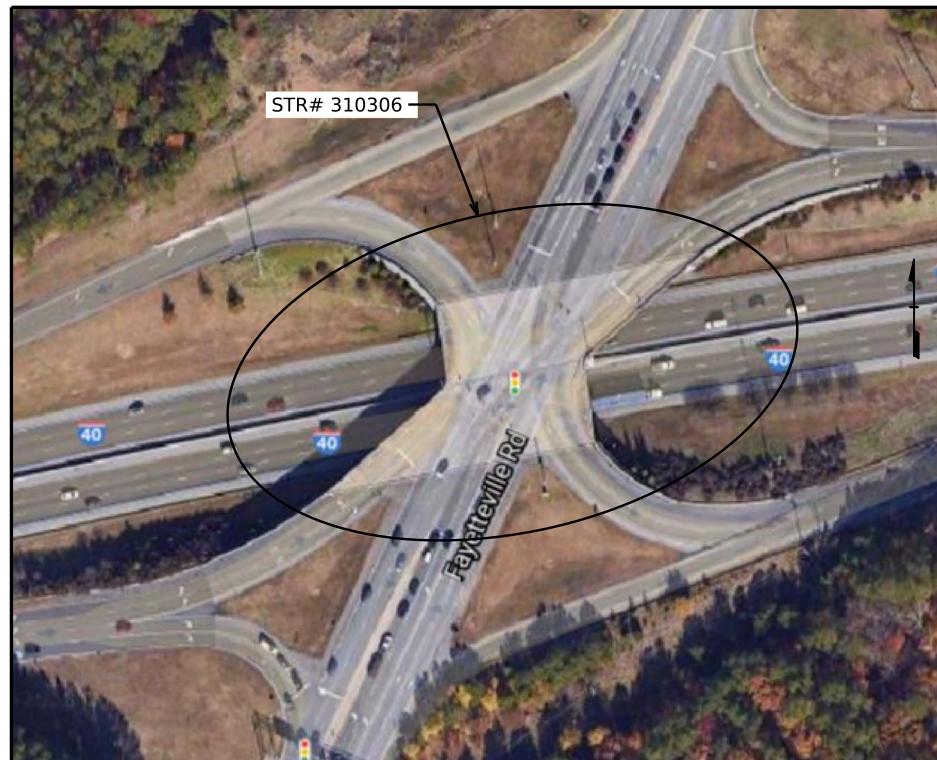
#### TYPE OF WORK:

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.

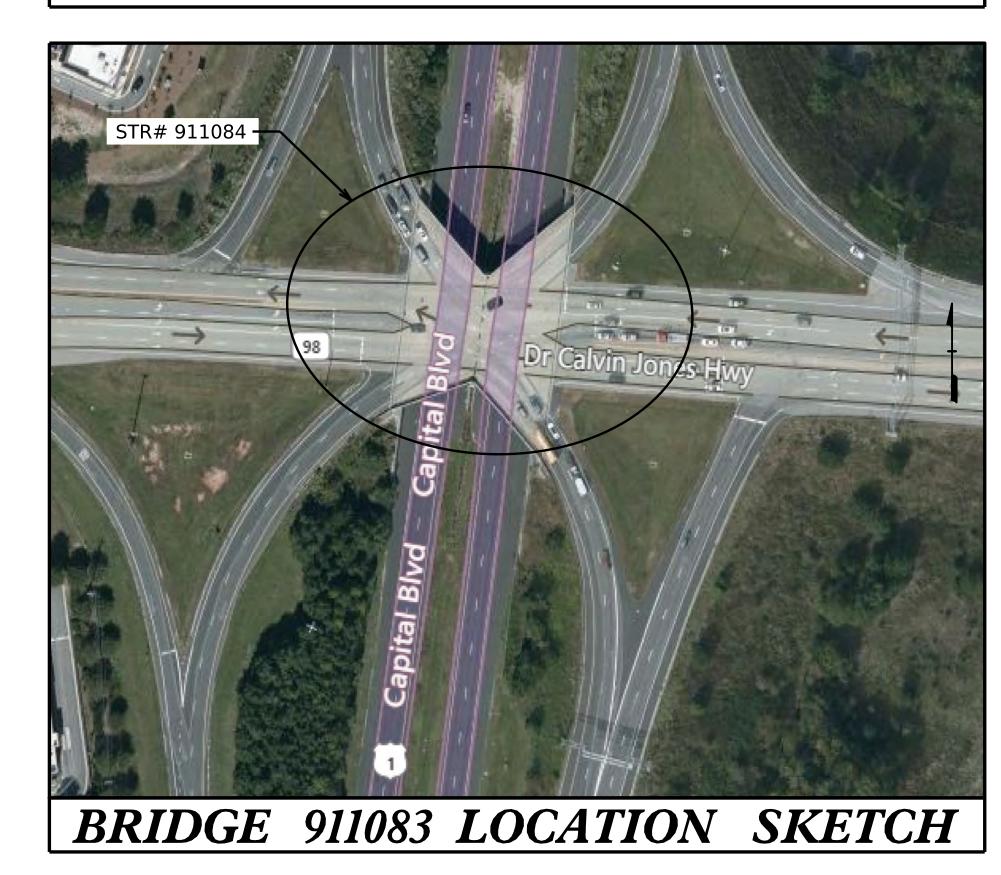
Prepared in the Office of:

#### **DIVISION OF HIGHWAYS**

STRUCTURES MANAGEMENT UNIT
1000 BIRCH RIDGE DR.
RALEIGH, N.C. 27610



BRIDGE 310306 LOCATION SKETCH







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, 911084

SEASON PETE

12/08/2022

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

RALEIGH

GENERAL DRAWING

LOCATION SKETCH

		REVISIONS								
CUMENT NOT CONSIDERED	NO.	BY:	DATE:	NO.	BY:	DATE:	S-01			
FINAL UNLESS ALL	1			3			TOTAL SHEETS			
IGNATURES COMPLETED	2			4			73			

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

	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	-	1	ı	-	-	LUMP SUM	-	-	-	-	LUMP SUM	-	LUMP SUM	73.4	<del>-</del>	73.4
911083	1969.8	170	15	1,600	400	LUMP SUM	<u>-</u>	-	-	-	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

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.

#### UNANTICIPATED ITEMS:

ITEM DESCRIPTION

(OLUMETRIC MIXER

VOLUMETRIC MIXER
CONCRETE DECK REPAIR FOR SILANE DECK TREATMENT
EPOXY RESIN INJECTION

EPOXY RESIN INJECTION
REPAIRS TO PRESTRESSED CONCRETE GIRDERS

UNIT

LUMP SUM SQ.FT. LIN. FT.

LIN. FT. CU. FT. 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.

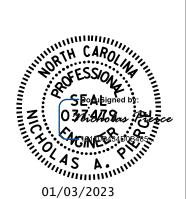
FOR THERMAL SPRAYED COATING, SEE SPECIAL PROVISIONS.

PROJECT NO. 15BPR.59

DURHAM/WAKE COUNT

DUKHAM/WAKE COUNTY

BRIDGE NO. 310306, 911039 911083, 911084



STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

BILL OF MATERIAL

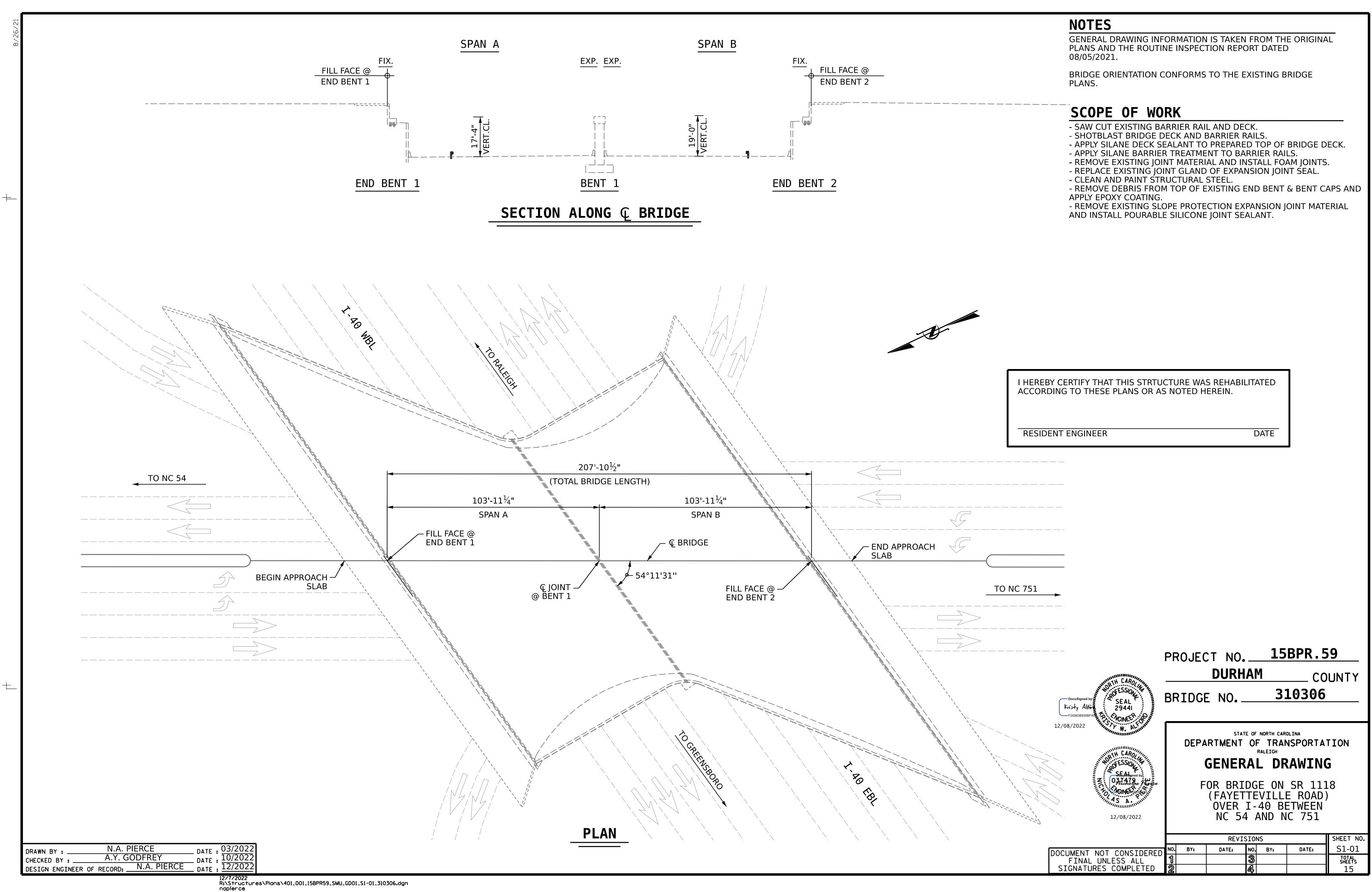
DRAWN BY: N.A. PIERCE

CHECKED BY: J.D. HAWK

DATE: 10/2022

DESIGN ENGINEER OF RECORD: N.A. PIERCE

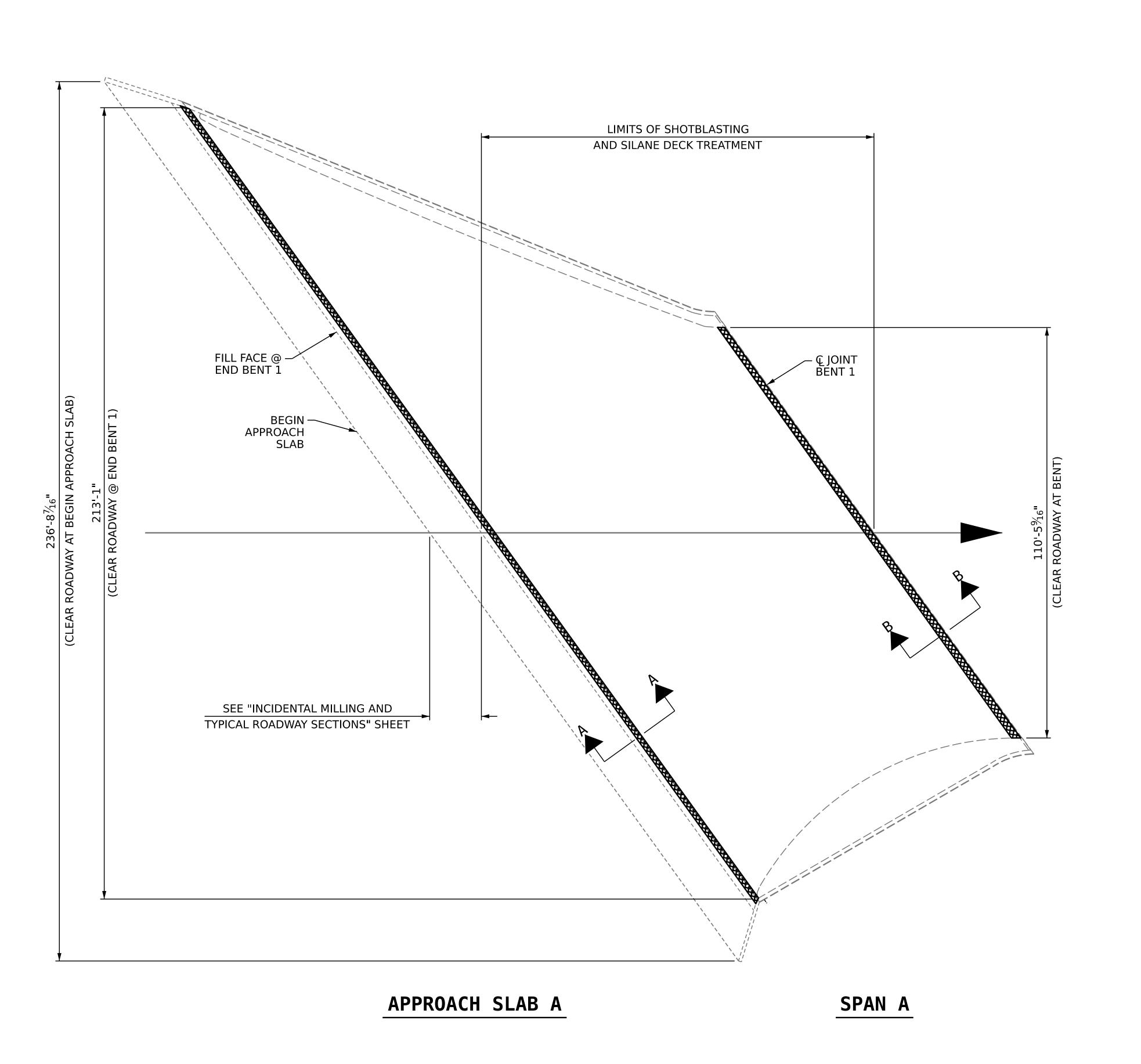
DATE: 12/2022



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. 265'-11<sup>5</sup>⁄<sub>16</sub>" (OUT TO OUT ALONG CENTERLINE JOINT @ END BENT 1) 1'-1½" 1'-1½" 256'-5<sup>3</sup>⁄4" **VARIES VARIES** (CLEAR ROADWAY ALONG CENTERLINE JOINT @ END BENT 1) EXISTING CONCRETE — WEARING SURFACE EXISTING . **EXISTING** (G21)(G1 (G5)(G7)(G16) (G2) $(\mathsf{G3})$ (G4) $(\mathsf{G6})$ (G11)(G14)(G18) (G20)(G8) (G9)(G15)TYPICAL SECTION EXISTING 265'-11<sup>5</sup>⁄<sub>16</sub>" (OUT TO OUT ALONG CENTERLINE JOINT @ END BENT 1) LIMITS OF SILANE DECK TREATMENT 1'-1½" 1'-1½" 256'-5<sup>3</sup>⁄4" **VARIES VARIES** (CLEAR ROADWAY ALONG CENTERLINE JOINT @ END BENT 1) SILANE BARRIER RAIL TREATMENT (TYP.) - SILANE DECK TREATMENT MATCH EXISTING \ MATCH EXISTING (TYP.) (G16) (G4) (G5)(G21)  $\left(\mathsf{G3}\right)$ (G6)(G7)(G14)(G17)(G18)(G20) $\left( G2\right)$ (G19)  $\left( \mathsf{G1}\right)$ ( G8 )(G12)(G13)(G15)(G9)TYPICAL SECTION **PROPOSED** PROJECT NO. 15BPR.59 PROPOSED\_\_\_ **EXISTING DURHAM** COUNTY EXISTING DECK -310306 SILANE DECK TREATMENT BRIDGE NO. \_\_ FINISHED SURFACE STATE OF NORTH CAROLINA LIMITS OF — TREATMENT DEPARTMENT OF TRANSPORTATION Desteined by:

DESTAILED PILL – DECK SURFACE AFTER TYPICAL SECTION DECK REPAIRS AND SHOTBLAST SURFACE PREPARATION 12/08/2022 DETAIL FOR SILANE BARRIER RAIL TREATMENT DETAIL FOR SILANE DECK TREATMENT SHEET NO. REVISIONS DRAWN BY: N.A. PIERCE
CHECKED BY: A.Y.GODFREY
DESIGN ENGINEER OF RECORD: N.A. PIERCE
DATE: 03/2022
DATE: 10/2022
DATE: 12/2022 S1-02 NO. BY: DATE: DATE: DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED TOTAL SHEETS 12/7/2022 R:\Structures\Plans\401\_003\_15BPR59\_SMU\_TS01\_S1-02\_310306.dgn napierce

**NOTES** 



#### 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.	

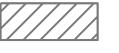
#### **NOTES**

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



DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK SURFACE REPAIR

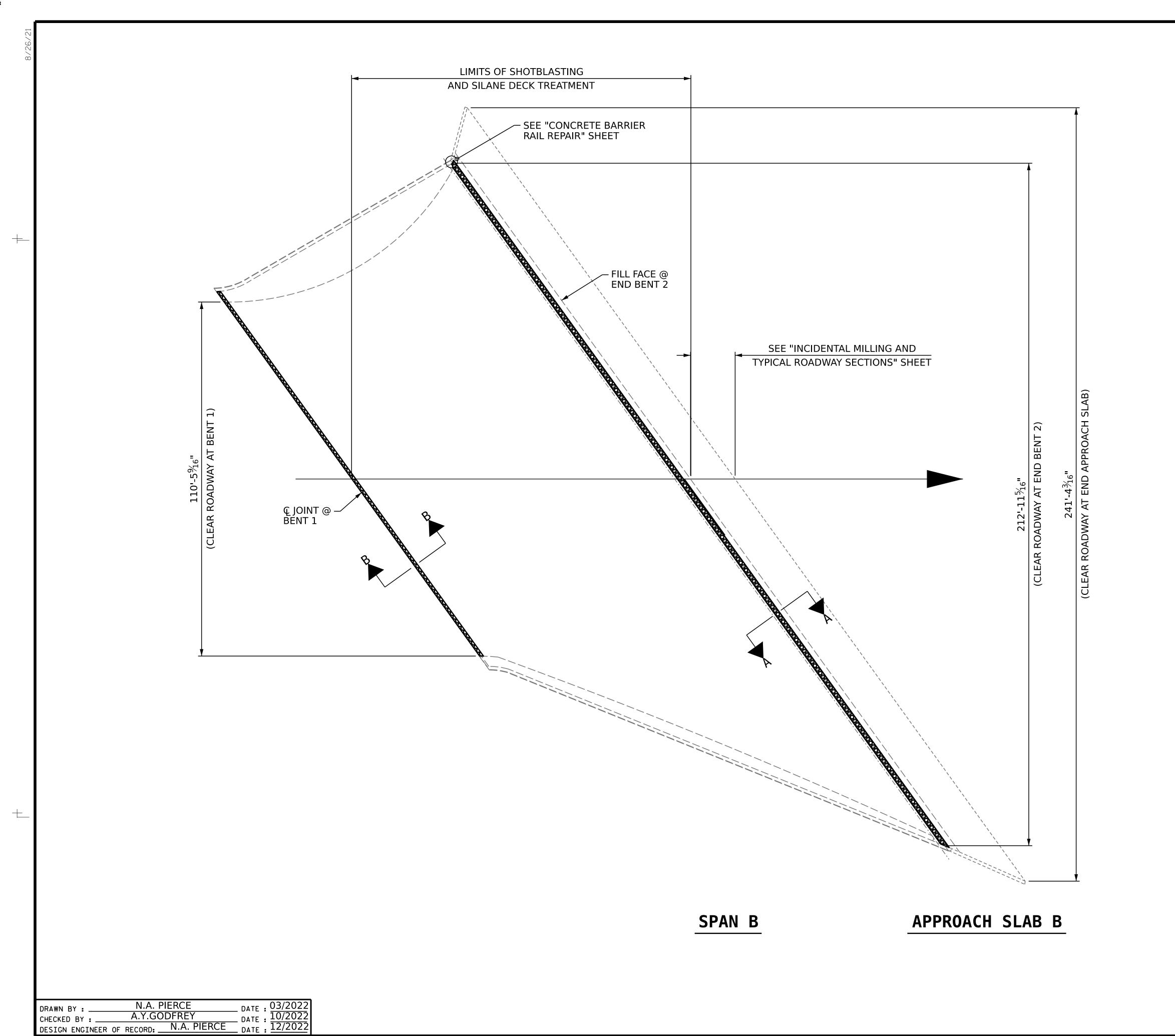
SPAN A AND APPROACH SLAB A

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

		SHEET NO.				
	BY:	DATE:	NO.	BY:	DATE:	S1-03
			3			TOTAL SHEETS
?			4			15

DRAWN BY: N.A. PIERCE
CHECKED BY: A.Y.GODFREY
DESIGN ENGINEER OF RECORD: N.A. PIERCE

DATE: 03/2022
DATE: 10/2022
DATE: 12/2022



#### 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



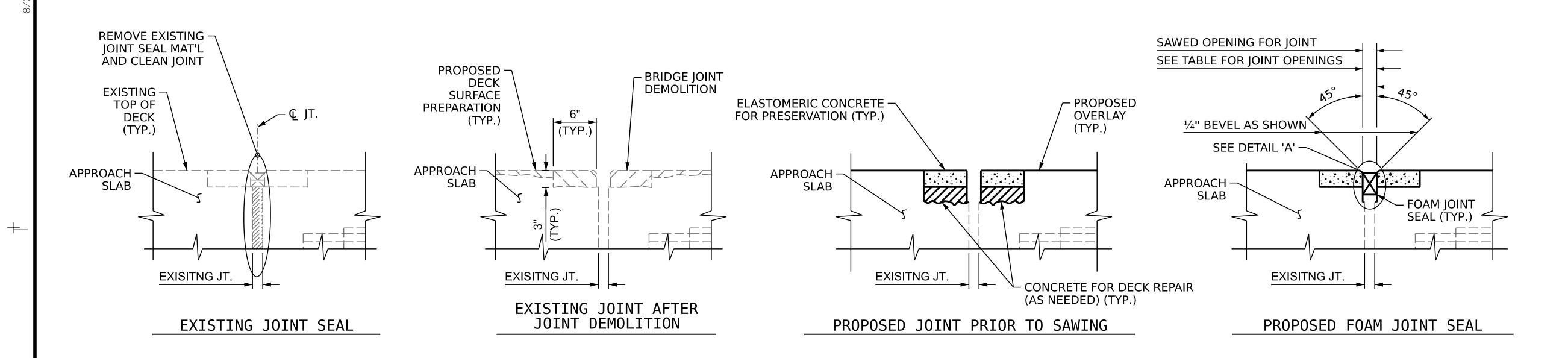
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK SURFACE REPAIR

SPAN B AND APPROACH SLAB B

DOCUMENT FINAL SIGNATUR

			SHEET NO.				
NOT CONSIDERED	NO.	BY:	DATE:	NO.	BY:	DATE:	S1-04
. UNLESS ALL	1			3			TOTAL SHEETS
IRES COMPLETED	2			4			15



SECTION A-A AT END BENTS

JOINT REPAIR QUAN	TITY TAI	BLE
	ESTIMATED	ACTUAL
FOAM JOINT SEALS FOR PRESERVATION	531.9 LIN.FT.	

SAWED JOIN			
	SAW (PERPE	ED JT. OPE NDICULAF	ENING R TO IT.)
LOCATION	ÀT 45°	AT 60°	AT 90°
END BENT 1	13/8"	1%16"	111/16"
END BENT 2	13/8"	1%6"	111/16"

ELASTOME FOR PR	RIC CON ESERVAT	·
LOCATION	ESTIMATED (CU.FT.)	ACTUAL (CU.FT.)
END BENT 1	133.0	
END BENT 2	133.0	
TOTAL	266.0	

#### **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 ACCOMODATE THE MINIMUM EXPANSION SHOWN ON THE PLANS.

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

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

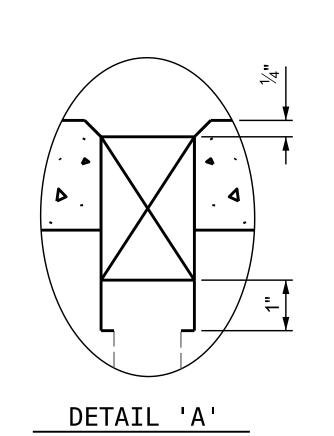
THE CONTRACTOR WILL NOT BE PERMITTED TO FORM THE JOINTS IN LIEU OF SAWING.

THE 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.

PARAPET -**EXISTING OPENING (DECK)** SAWED OPENING (DECK) −Ç JOINT @ END BENT PROVIDE WATERTIGHT SEAL AT END OF FOAM JOINT SEAL AS RECOMMENDED BY MANUFACTURER - RADIUS OF SAW BLADE - BOTTOM OF SEAL PLAN SECTION C-C ( @ END BENT )

JOINT SEAL DETAILS



**DURHAM** COUNTY 310306 BRIDGE NO. \_\_

PROJECT NO. 15BPR.59

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

STANDARD

FOAM JOINT SEALS FOR PRESERVATION DETAILS

TOTAL SHEETS

SHEET NO REVISIONS S1-05 NO. BY: DATE: DATE: DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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ODFREY

N.A. PIERCE

DATE: 09/2020

DATE: 10/2022

DATE: 12/2022

N.A. PIERCE

A.Y.GODFREY

DRAWN BY :

CHECKED BY : \_\_

DESIGN ENGINEER OF RECORD: \_

# EXPANSION JOINT DETAILS SECTION B-B AT BENT 1

TOTAL MOVEMENT

(ALONG © RDWY)

2<sup>3</sup>⁄8"

SKEW

ANGLE

54°11'31"

LOCATION

BENT 1

MOVEMENT AND SETTING AT JOINT

PERPENDICULAR

JOINT OPENING

AT 30°F

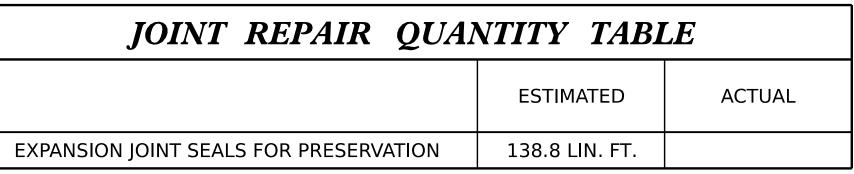
3½"

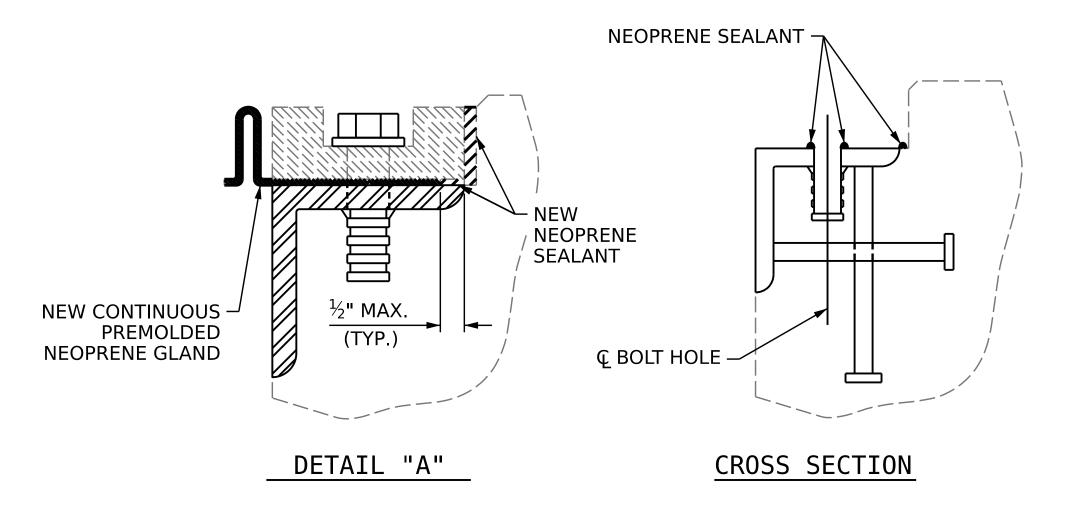
PERPENDICULAR

JOINT OPENING

AT 60°F

# PERPENDICULAR JOINT OPENING AT 90°F 2½" E





#### **INSTALLATION SKETCH**

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

#### 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  $\frac{7}{8}$ " 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 OPNEING 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.

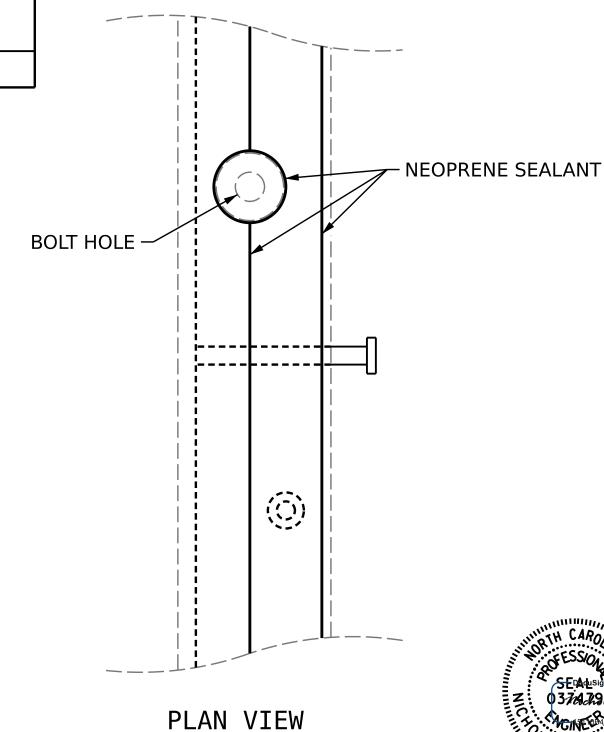
THE CONTRACTOR SHALL TAKE CARE DURING JOINT REHAB OPERATIONS NOT TO DROP ANY MATERIAL BELOW THE BRIDGE, WITHOUT PROTECTIVE DEVICES BELOW TO CATCH THE MATERIAL. ANY MATERIAL THAT FALLS BELOW THE BRIDGE SHALL BE CONTAINED, REMOVED AND DISPOSED OF BY THE CONTRACTOR AT NO EXTRA COST TO THE DEPARTMENT. IF 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".



PROJECT NO. 15BPR.59

DURHAM COUNTY

BRIDGE NO. 310306

SHEET 1 OF 3

DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

EXPANSION JOINT SEAL REPAIR DETAILS

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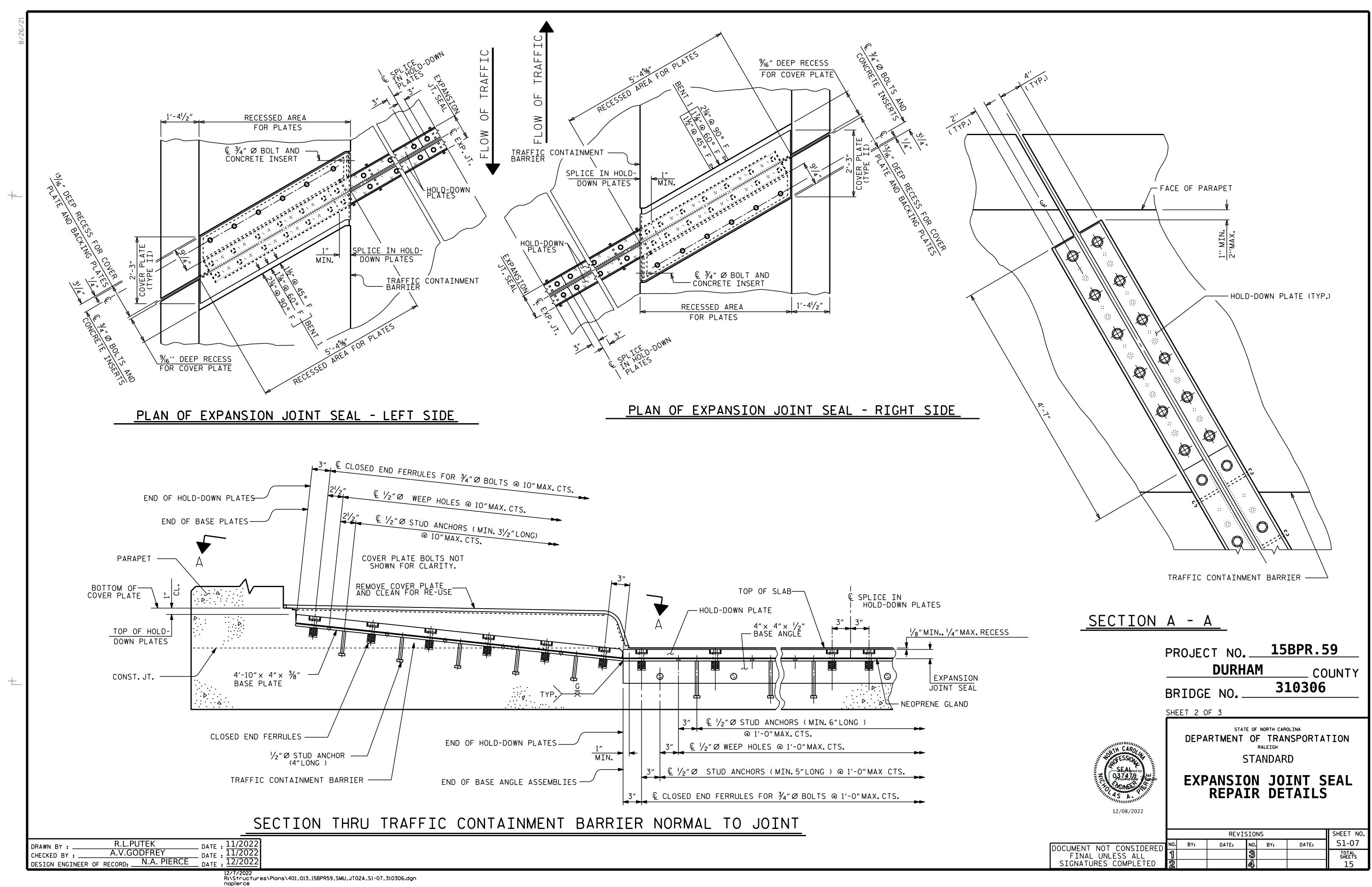
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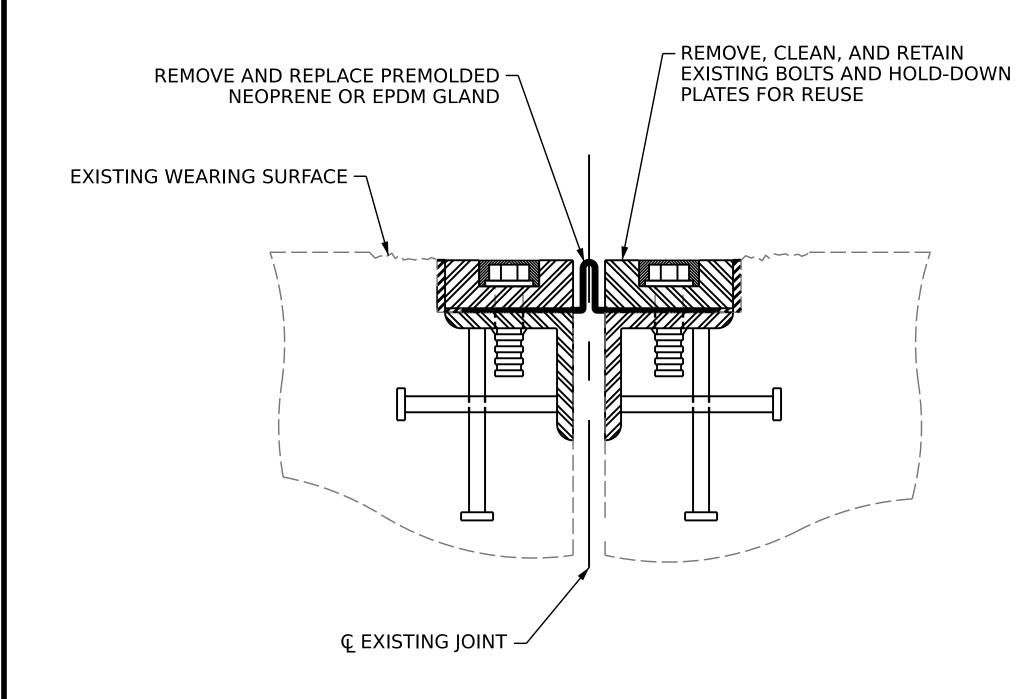
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1 3 TOTAL SHEETS
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SEE SHENG SION JOINT SEAL
REPAIR DETAILS

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PROPOSED SILANE
DECK TREATMENT

LEVEL & SMOOTH
(TYP.)

Q EXISTING JOINT

Q EXISTING JOINT

EXISTING EXPANSION JOINT SEAL

EXISTING JOINT AFTER DEMOLITION

PROPOSED EXPANSION JOINT SEAL

NOTES:

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

EACH SAW CUT SHALL MEASURE A MINIMUM OF  $7\frac{3}{4}$ " FROM © JOINT TO A MAXIMUM OF  $8\frac{3}{4}$ " FROM © 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.

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

PROJECT NO. 15BPR.59

DURHAM COUNTY

BRIDGE NO. 310306

SHEET 3 OF 3

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

RALEIGH

EXPANSION JOINT SEAL REPAIR DETAILS

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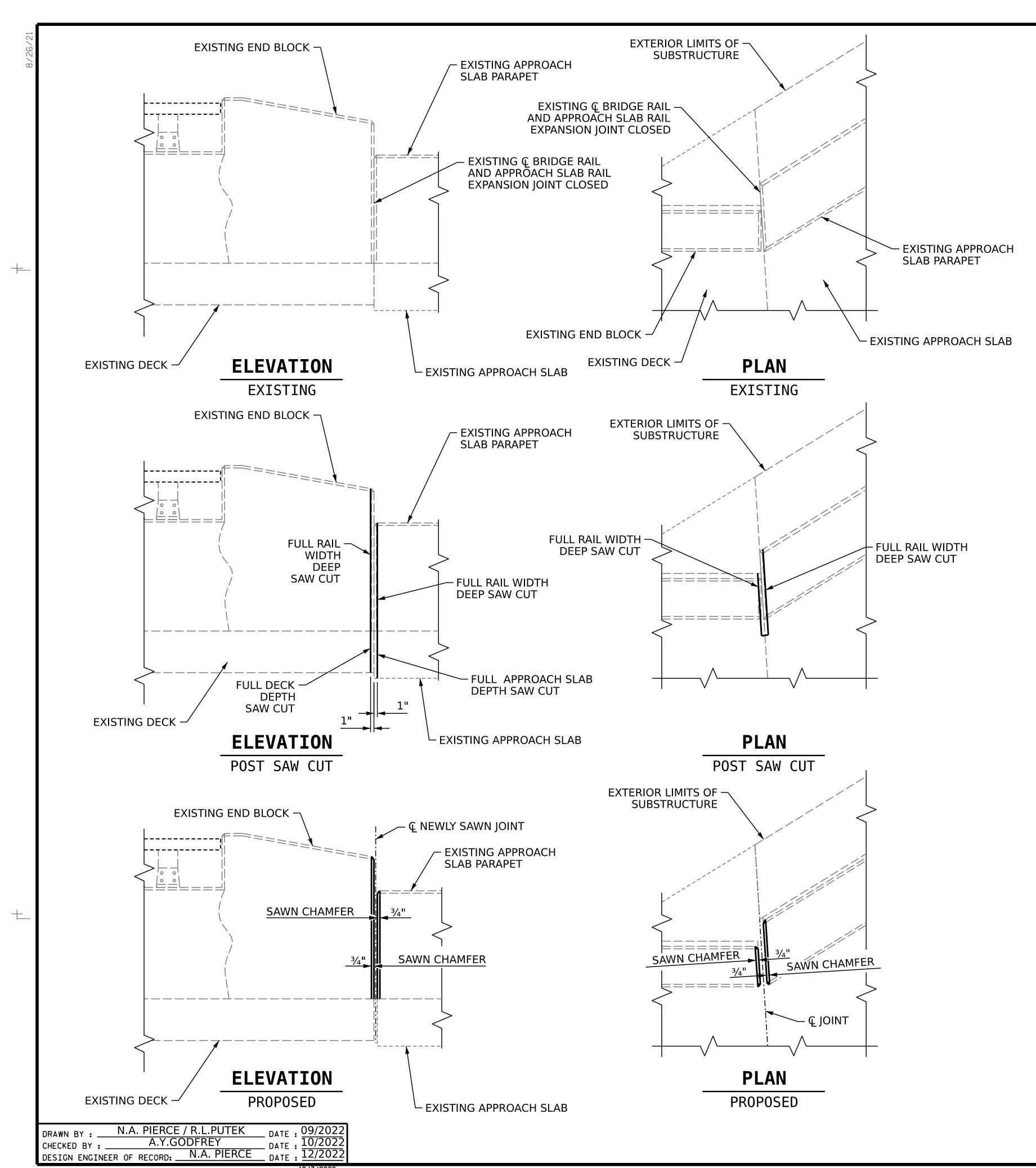
A.Y.GODFREY

DESIGN ENGINEER OF RECORD:

N.A. PIERCE

DATE: 10/2022

DATE: 12/2022



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  $\frac{3}{4}$  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



STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

RALEIGH

CONCRETE BARRIER
RAIL REPAIR

REVISIONS

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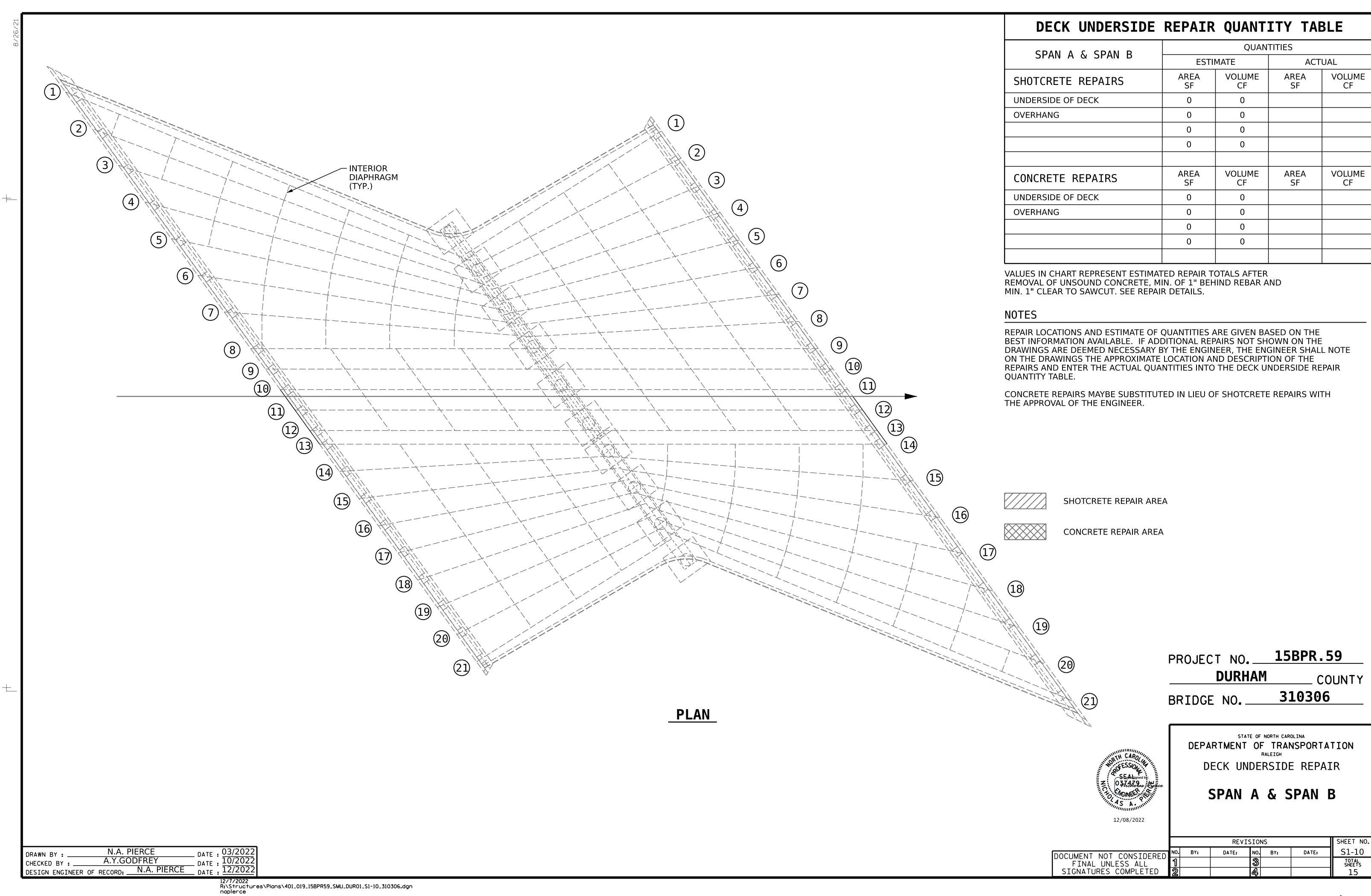
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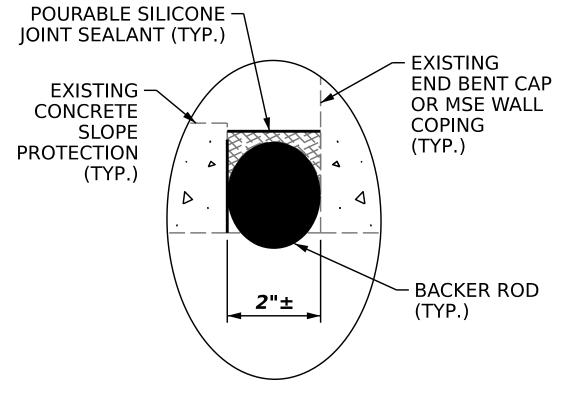
**NOTES** REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE BASED ON THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ENTER THE ACTUAL 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 RÓD 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 ELEVATION** POURABLE SILICONE JOINT SEALANT (TYP.) CONCRETE SLOPE **PROTECTION** SEE DETAIL 'A'

#### SUBSTRUCTURE REPAIR QUANTITY TABLE **QUANTITIES** END BENT 1 ESTIMATE ACTUAL AREA VOLUME AREA VOLUME SHOTCRETE REPAIRS SF CF CAP 0 0 **BACKWALL** 10 **VOLUME** VOLUME AREA AREA CONCRETE REPAIRS CF 0 **BACKWALL** 0 0 LINEAR LINEAR **EPOXY RESIN INJECTION** FT 0 **BACKWALL** 0 AREA AREA **EPOXY COATING** CAP 1050 LINEAR LINEAR POURABLE SILICONE JT. SEALANT

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.

JOINT





DETAIL 'A'

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

630

BRIDGE NO. \_\_

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION SUBSTRUCTURE REPAIR

END BENT 1

REVISIONS S1-11 NO. BY: DATE: DATE:

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12/08/2022

SECTION Y-Y

PIERCE

DDFREY

N.A. PIERCE

DATE: 10/2022

DATE: 12/2022

N.A. PIERCE

A.Y.GODFREY

DRAWN BY :

DESIGN ENGINEER OF RECORD: \_

**PLAN ELEVATION** 

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

**\\_\_\_** 

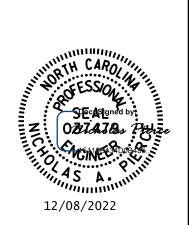
WEST END

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

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DRAWN BY: N.A. PIERCE
CHECKED BY: A.Y.GODFREY
DESIGN ENGINEER OF RECORD: N.A. PIERCE

DATE: 04/2022
DATE: 10/2022
DATE: 12/2022

SUBSTRUCTURE REPAIR QUANTITY TABLE QUANTITIES BENT 1 - SPAN B FACE ACTUAL **ESTIMATE** AREA VOLUME AREA VOLUME SHOTCRETE REPAIRS SF CAP COLUMN VOLUME AREA VOLUME AREA CONCRETE REPAIRS CF COLUMN 0 0 LINEAR LINEAR EPOXY RESIN INJECTION FΤ COLUMN 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. **BOTTOM OF CAP 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. SHOTCRETE REPAIR AREA CONCRETE REPAIR AREA **EPOXY RESIN INJECTION ELEVATION** PROJECT NO. 15BPR.59 DURHAM COUNTY 310306 BRIDGE NO. \_\_\_\_ STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION SUBSTRUCTURE REPAIR BENT 1 SPAN B FACE **EAST END** SHEET NO. REVISIONS DRAWN BY: N.A. PIERCE
CHECKED BY: A.Y.GODFREY
DESIGN ENGINEER OF RECORD: N.A. PIERCE
DATE: 04/2022
DATE: 10/2022
DATE: 12/2022 NO. BY: S1-13 DATE: DATE: DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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**NOTES** REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE BASED ON THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER 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 PLAN ELEVATION** POURABLE SILICONE – JOINT SEALANT (TYP.) EXISTING END BENT CAP OR MSE WALL CONCRETE COPING SLOPE (TYP.) PROTECTION SEE DETAIL 'A' (TYP.) - BACKER ROD 2"±

SUBSTRUCTURE R	EPAIR	QUANTI	TY TAB	LE		
END BENT 2	QUANTITIES					
END DENIZ	EST	IMATE	ACT	UAL		
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. S	EALANT	LINEAR FT		LINEAR FT		
JOINT		630				
VALUES IN CHART REPRESENT ESTIMATE REMOVAL OF UNSOUND CONCRETE, M						

MIN. 1" CLEAR TO SAWCUT. SEE REPAIR DETAILS.

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



DETAIL 'A'

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION SUBSTRUCTURE REPAIR

END BENT 2

REVISIONS SHEET NO S1-14 NO. BY: DATE: DATE: DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

 N.A. PIERCE
 DATE
 04/2022

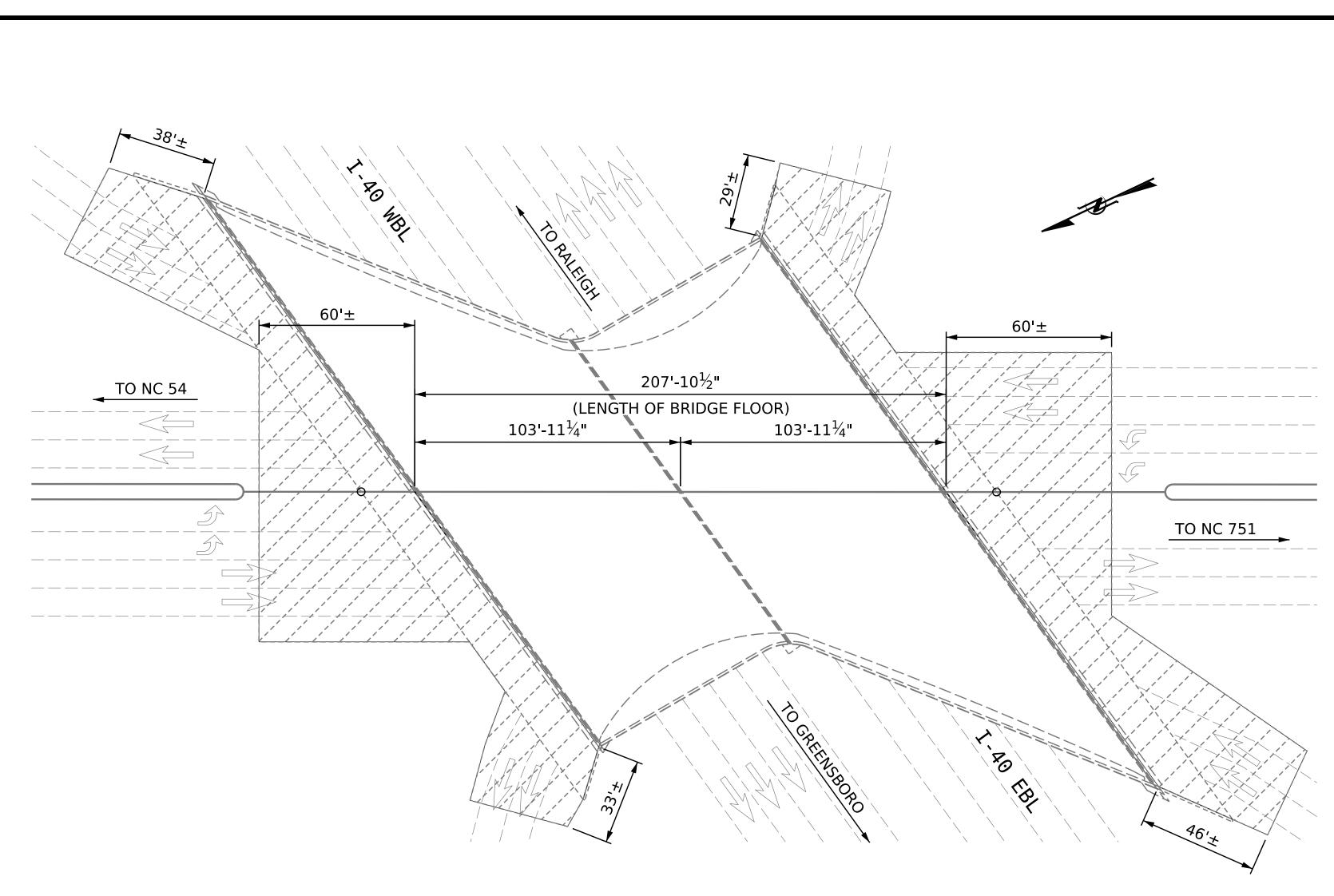
 A.Y.GODFREY
 DATE
 10/2022

 RECORD:
 N.A. PIERCE
 DATE
 12/2022

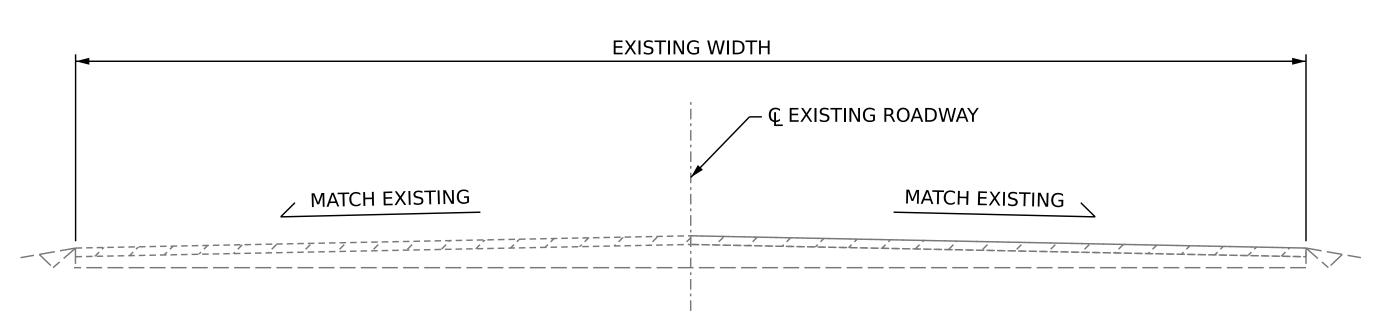
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**SECTION X-X** 



# EXISTING WIDTH © EXISTING ROADWAY EXISTING EXISTING EXISTING ROADWAY SECTION



#### TYPICAL ROADWAY MILLING SECTION

(MILL TO  $1\frac{1}{2}$ " DEPTH)

# EXISTING WIDTH — © EXISTING ROADWAY MATCH EXISTING PROPOSED ROADWAY SECTION E PROPOSED ROADWAY SECTION

PROJECT NO. 15BPR.59

DURHAM COUNTY

BRIDGE NO. 310306

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SIGNATURES COMPLETED

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

RALEIGH

INCIDENTAL MILLING AND TYPICAL ROADWAY SECTIONS

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FINAL UNLESS ALL

REVISIONS

SHEET NO. BY: DATE: S1-15

TOTAL SHEETS

#### **NOTES**

EXISTING APPROACH ASPHALT PAVEMENT SHALL BE MILLED AS NECESSARY TO ATTAIN MINIMUM  $1\frac{1}{2}$ " 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  $1\frac{1}{2}$ " 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 1½" IN DEPTH OR GREATER THAN 2" IN DEPTH.
E	EXISTING PAVEMENT

INCIDENTAL MILLING

DRAWN BY: R.L.PUTEK

CHECKED BY: A.Y.GODFREY

DATE: 10/2022

DATE: 10/2022

DATE: 12/2022

DATE: 12/2022

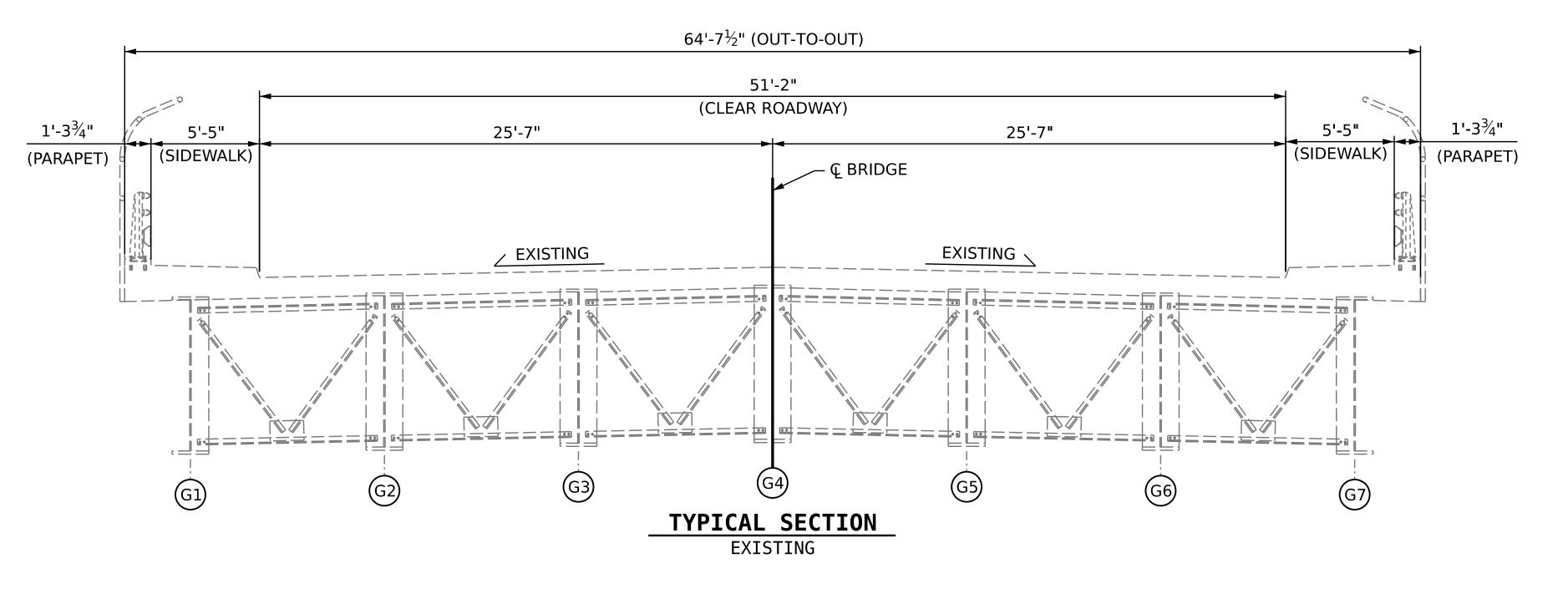
**NOTES** GENERAL DRAWING INFORMATION IS TAKEN FROM THE ORIGINAL PLANS AND THE ROUTINE INSPECTION REPORT DATED 03/08/2021. BRIDGE ORIENTATION CONFORMS TO THE EXISTING BRIDGE PLANS. SCOPE OF WORK SPAN A SPAN B SPAN C - SHOTBLAST BRIDGE DECK AND BARRIER RAILS. \_FIX\_ EXP. EXP. EXP. - APPLY SILANE DECK TREATMENT TO PREPARED TOP OF BRIDGE - 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. - FILL FACE @ END BENT 2 FILL FACE @ ——— END BENT 1 - CLEAN AND PAINT WEATHERING STEEL. - 20'-3" MIN. - REMOVE DEBRIS FROM TOP OF EXISTING END BENT & BENT CAPS CONCRETE SLOPE PROTECTION (TYP.) 33'-7" MIN. AND APPLY EPOXY COATING. VERT. CLEARANCE VERT. CLEARANCE US 64 US 64 END BENT 2 END BENT 1 CRABTREE CREEK - NORFOLK SOUTHERN EXISTING RAILROAD GROUND LINE BENT 1 BENT 2 SECTION ALONG Q BRIDGE I HEREBY CERTIFY THAT THIS STRTUCTURE WAS REHABILITATED ACCORDING TO THESE PLANS OR AS NOTED HEREIN. € I-87/US-64 ABTREE CREEK RESIDENT ENGINEER DATE WESTBOUND € NORFOLK **SOUTHERN RR** – FILL FACE @ END BENT 2 FILL FACE @ Q BENT 1 — END BENT 1 Ç BENT 2 — **Q** BRIDGE TO US-64 — 57°36'1" (TYP.) TO NEW HOPE RD. € I-87/US-64 EASTBOUND 233'-7<sup>3</sup>⁄8" 190'-6<sup>3</sup>⁄4" 166'-4½" 17'-0" 17'-0" APPROACH SLAB APPROACH SLAB SPAN C SPAN A SPAN B 590'-6<sup>5</sup>⁄8" FILL FACE TO FILL FACE **PLAN** PROJECT NO. 15BPR.59 **WAKE** COUNTY 911039 BRIDGE NO. \_\_\_ Kristy Altord 12/08/2022 STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION GENERAL DRAWING FOR BRIDGE ON SR 2517 (ROGERS LANE) OVER I-87, US64/264, CRABTREE CREEK AND NS RAILROAD 12/08/2022 REVISIONS SHEET NO.

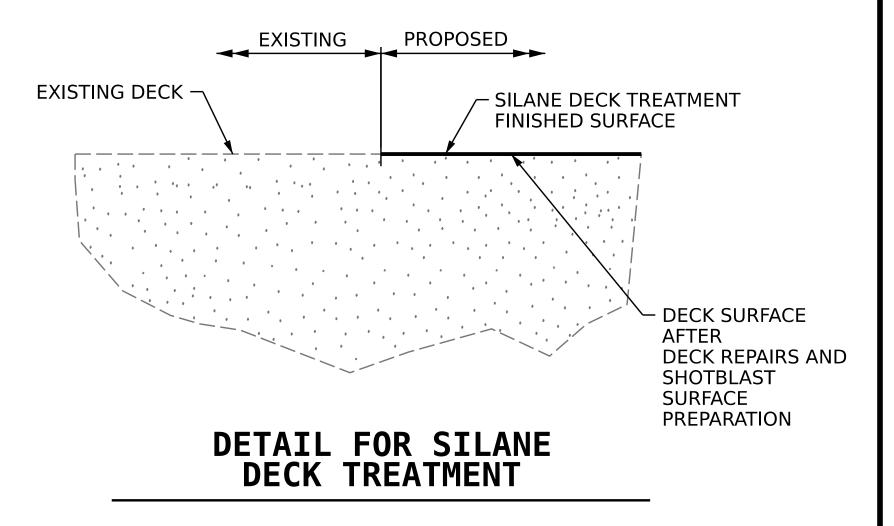
> 12/7/2022 R:\Structures\Plans\402\_001\_15BPR.59\_SMU\_GD01\_S2-01\_911039.dgn napierce

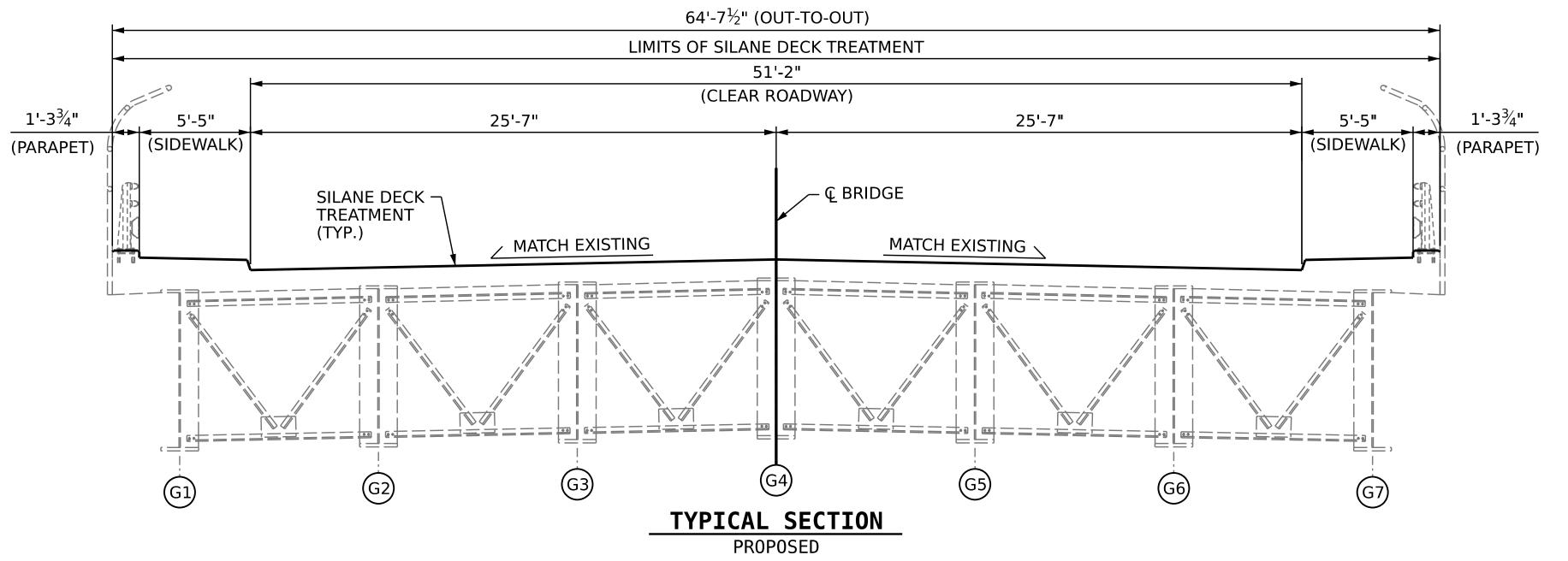
DRAWN BY: D.A. CANTRELL/A.Y. GODFREY DATE: 09/2022 CHECKED BY: N.A. PIERCE DATE: 10/2022 DATE: 12/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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







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



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

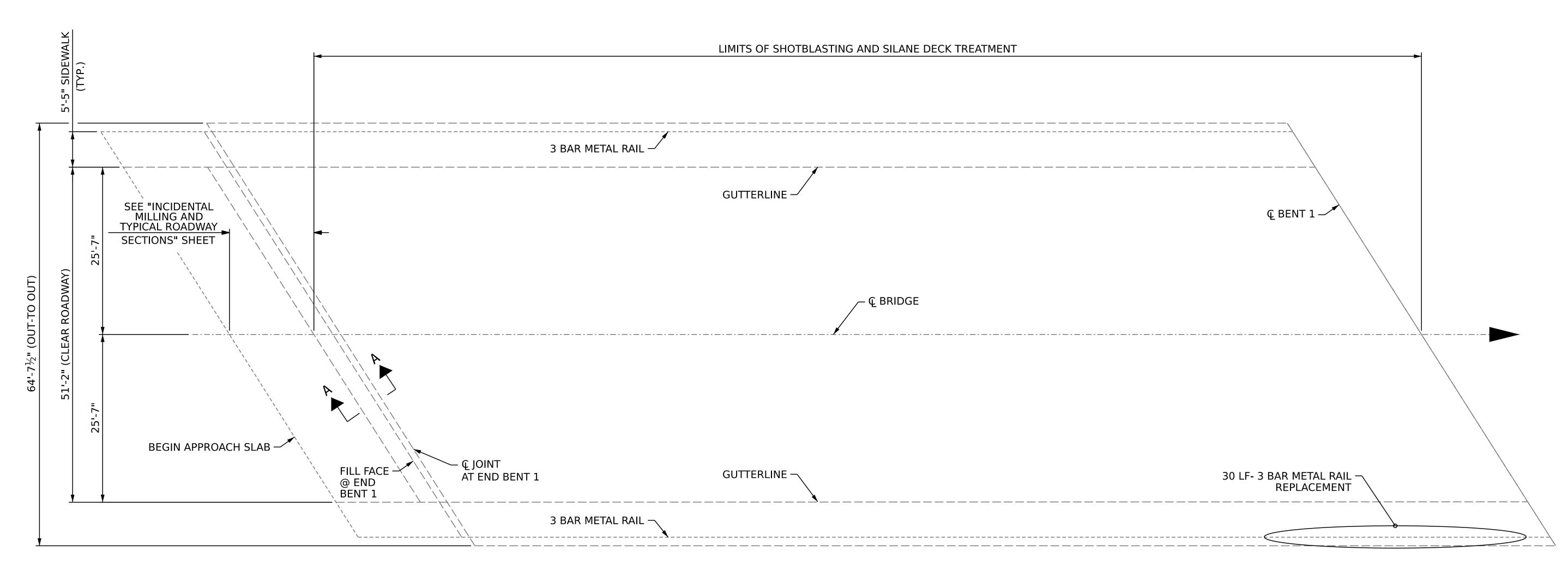
TYPICAL SECTION

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		REVISIONS					SHEET NO.
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FINAL UNLESS ALL	1			3			TOTAL SHEETS
IGNATURES COMPLETED	2			4			18

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

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

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

RALEIGH

DECK SURFACE REPAIR

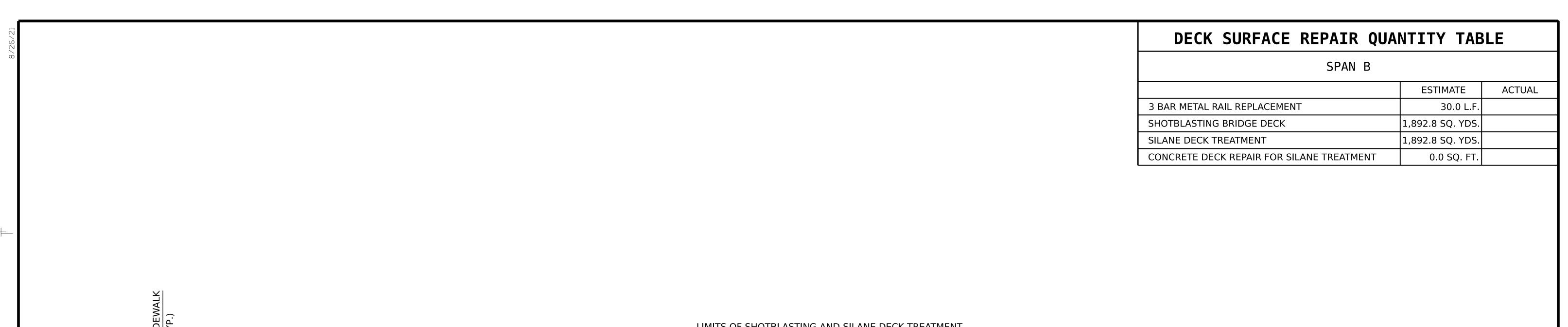
SPAN A AND
APPROACH SLAB A

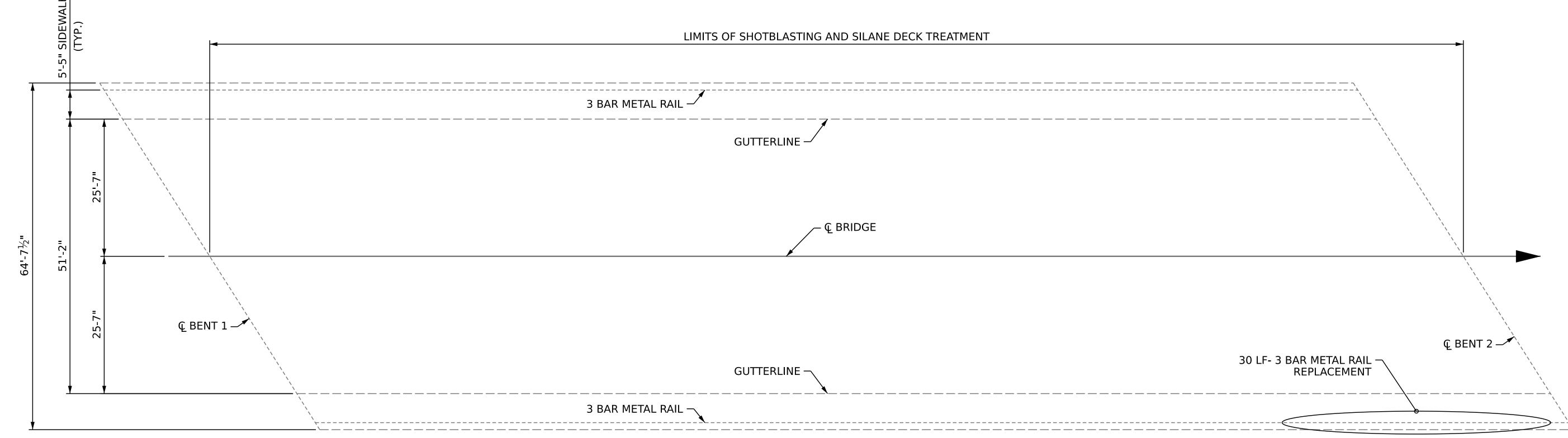
12/08/2022

APPROACH SLAB A

REVISIONSSHEET NO.DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETEDNO.BY:DATE:NO.BY:DATE:S2-033TOTAL SHEETS418

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





#### 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

911039 BRIDGE NO. \_\_\_

SHEET 2 OF 3



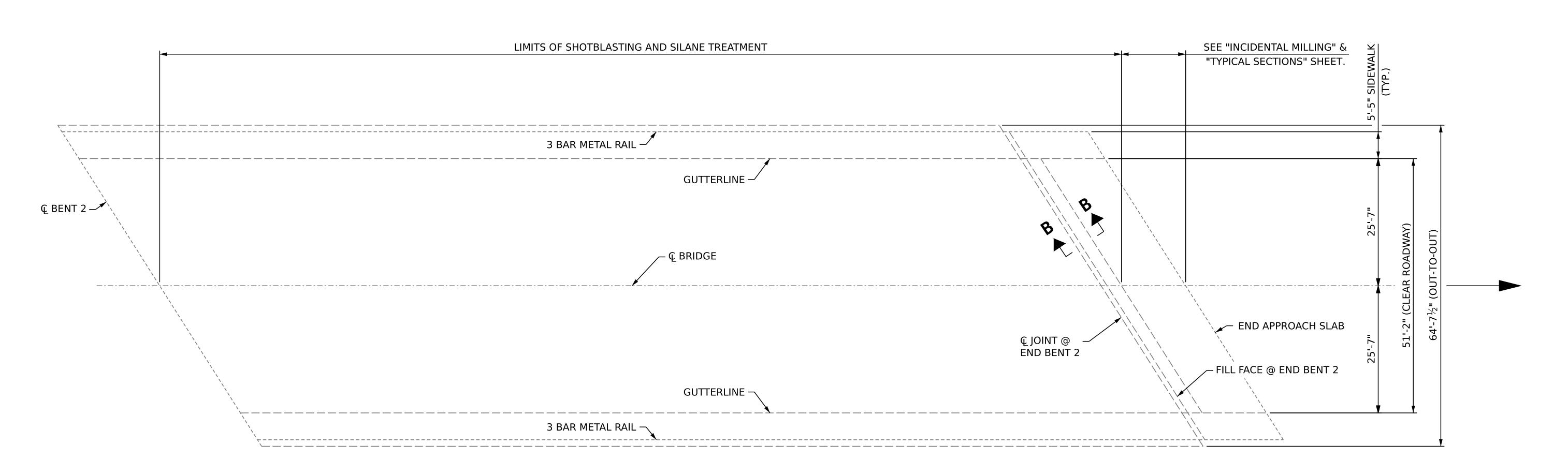
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DECK SURFACE REPAIR

SPAN B

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS S2-04 NO. BY: DATE: DATE:

D.A. CANTRELL/A.Y. GODFREY DATE DESIGN ENGINEER OF RECORD: \_



SPAN C

#### 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.

#### **APPROACH SLAB B**

PROJECT NO. 15BPR.59

WAKE COUNTY

BRIDGE NO. 911039

SHEET 3 OF 3

12/08/2022

DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK SURFACE REPAIR

SPAN C AND APPROACH SLAB B

DRAWN BY: D.A. CANTRELL/A.Y. GODFREY
CHECKED BY: N.A. PIERCE
DESIGN ENGINEER OF RECORD: N.A. PIERCE
DATE: 10/20

### EXPANSION JOINT DETAILS SECTION B-B

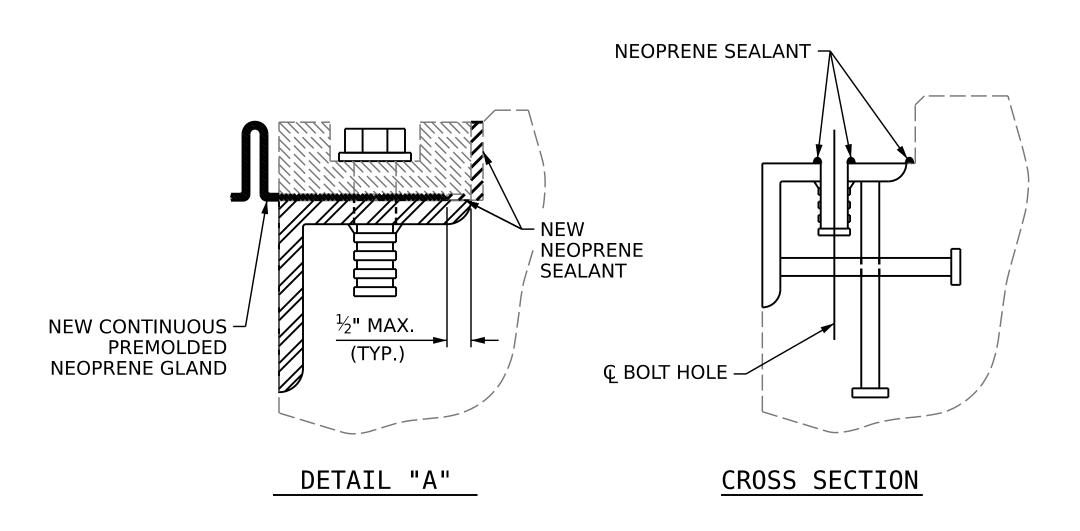
#### SUGGESTED REPAIR INSTALLATION PROCEDURE

- 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  $\frac{7}{8}$ " 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, BUT DO NOT TIGHTEN. THE ENGINEER WILL INSPECT THE JOINT SEAL DEVICE FOR PROPER ALIGNMENT.
- 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.

MOVEMENT AND SETTING AT JOINT							
LOCATION	SKEW ANGLE	TOTAL MOVEMENT (ALONG © 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"	21/4"	23/8"	1 <sup>15</sup> ⁄ <sub>16</sub> "	1%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**

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

PLAN VIEW

**GENERAL NOTES** 

OPENING PRIOR TO ORDERING JOINT SEAL MATERIAL. IF THE

INDICATED IN THE DETAILS BY MORE THAN  $\frac{1}{4}$ ", NOTIFY THE

THE MANUFACTURER IS TO PROVIDE THE NOMINAL GLAND

THE CONTRACTOR SHALL TAKE CARE DURING JOINT REHAB

BRIDGE, WITHOUT PROTECTIVE DEVICES BELOW TO CATCH

BRIDGE SHALL BE CONTAINED, REMOVED AND DISPOSED OF

OPERATIONS NOT TO DROP ANY MATERIAL BELOW THE

THE MATERIAL. ANY MATERIAL THAT FALLS BELOW THE

DEPARTMENT. IF THE ENGINEER DETERMINES THAT THE

PROTECTIVE DEVICES ARE NOT ADEQUATE OR NOT BEING

RETAIN ALL EXISTING HOLD-DOWN PLATES AND HARDWARE.

HARDWARE AS NEEDED OR DIRECTED BY THE ENGINEER AT

ALL HOLD-DOWN BOLTS SHALL CONFORM TO ASTM F593

CONFORM TO ASTM F844 EXCEPT THEY SHALL BE MADE

FOR EXPANSION JOINT SEAL FOR PRESERVATION, SEE

PLATES. THE ENTIRE COST OF THIS WORK SHALL BE

NO SEPARATE PAYMENT WILL BE MADE FOR REMOVING AND REINSTALLING MEDIAN, SIDEWALK AND BARRIER RAIL COVER

INCLUDED IN THE LINEAR FEET PRICE BID FOR "EXPANSION

BY THE CONTRACTOR AT NO EXTRA COST TO THE

ADEQUATE PROTECTION IS PROVIDED.

NO EXTRA COST TO THE DEPARTMENT.

FROM ALLOY 304 STAINLESS STEEL.

JOINT SEALS FOR PRESERVATION".

SPECIAL PROVISIONS.

EMPLOYED, THE WORK SHALL BE SUSPENDED UNTIL

CLEAN AND REPAIR AS NEEDED. CONTRACTOR SHALL

REPLACE DAMAGED HOLD-DOWN PLATES AND/OR

ALLOY 304 STAINLESS STEEL AND WASHERS SHALL

SIZE BASED ON EXISTING JOINT OPENINGS AND ANTICIPATED

CONTRACTOR SHALL FIELD VERIFY THE EXISTING JOINT

ACTUAL JOINT OPNEING VARIES FROM THE OPENING

ENGINEER.

MOVEMENTS.

12/08/2022

PROJECT NO. 15BPR.59

WAKE COUNTY

BRIDGE NO. 911039

SHEET 1 OF 2

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

EXPANSION JOINT SEAL REPAIR DETAILS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED REVISIONS

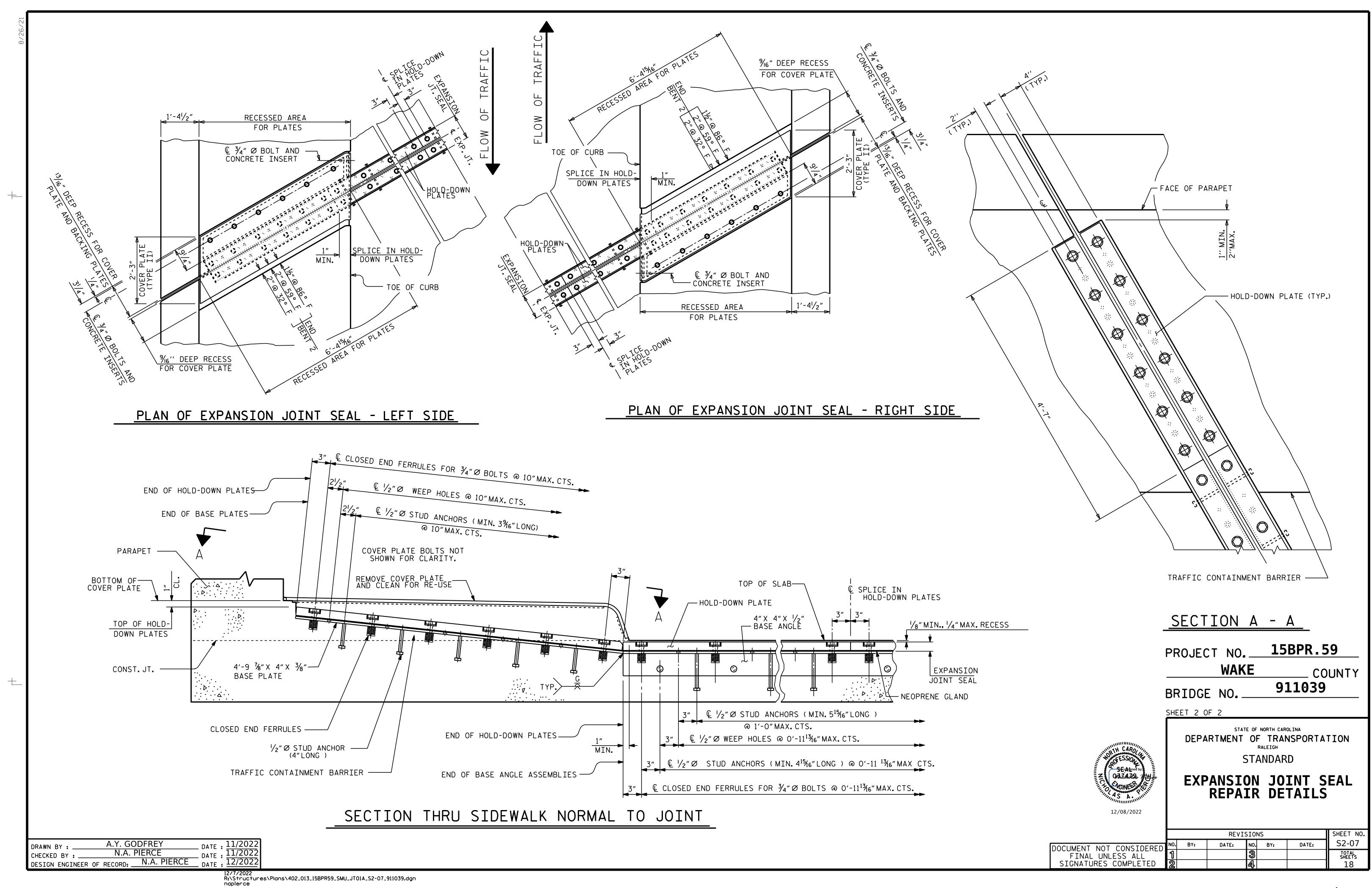
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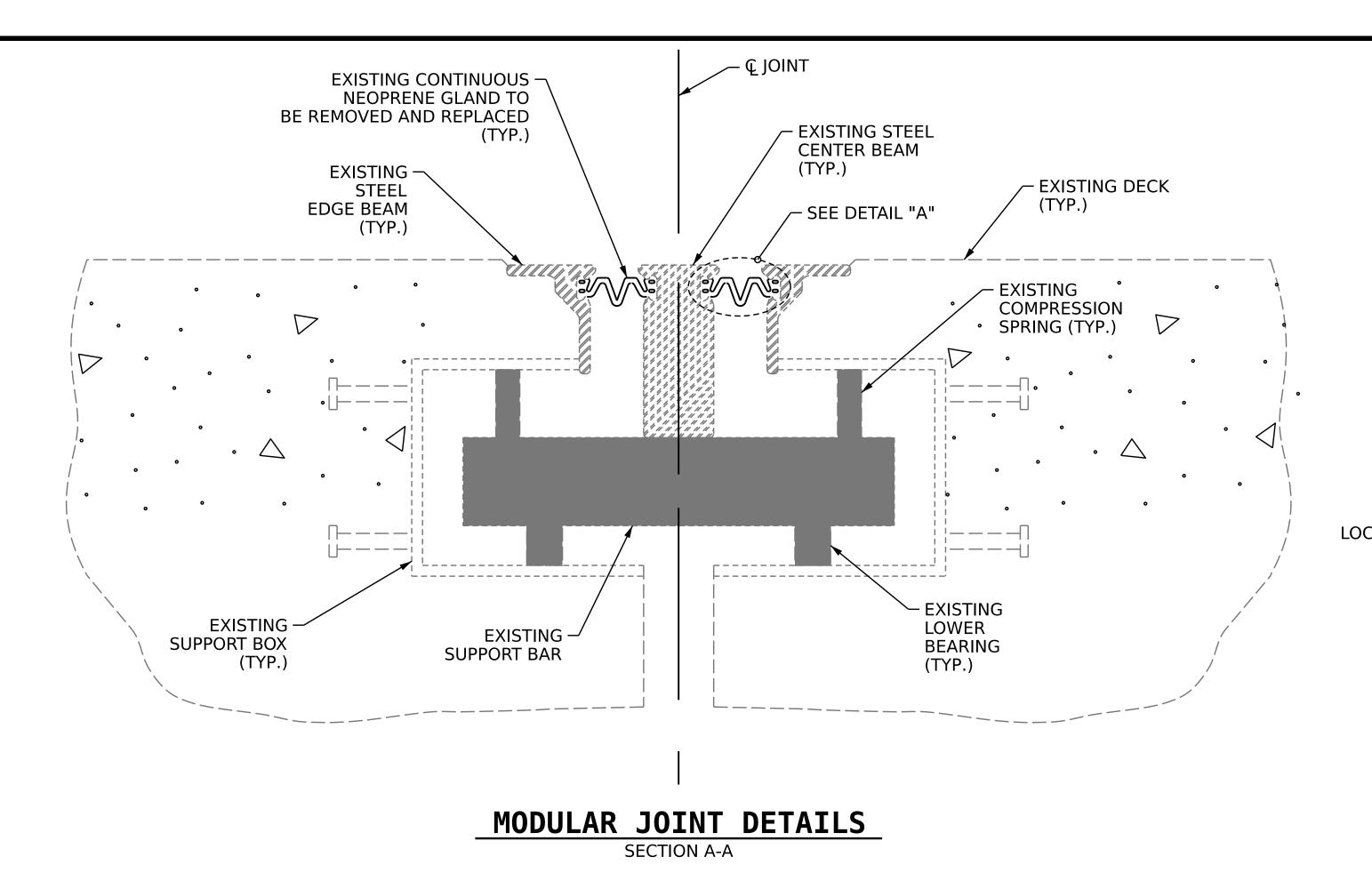
SOLUTION ST.: DATE: S2-06

TOTAL SHEETS

18

12/7/2022 R:\Structures\Plans\402\_011\_15BPR.59\_SMU\_JT01\_S2-06\_911039.dgn





#### 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.

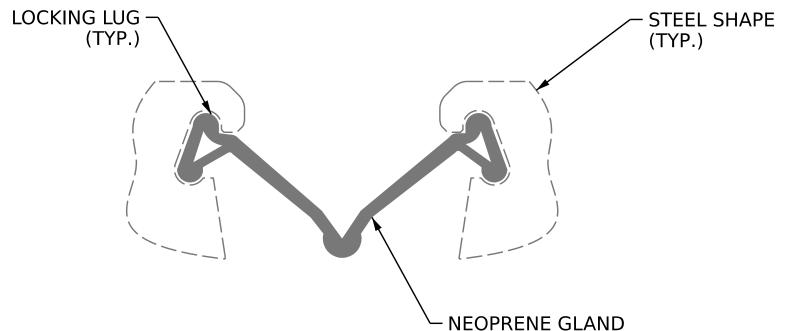
ONCE GLAND IS REMOVED CLEAN THE EXISTING EXTRUSION CAVITIES OF OIL GREASE AND OTHER LATENTS WITH MANUFACTURER'S APPROVED SOLVENTS.

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.

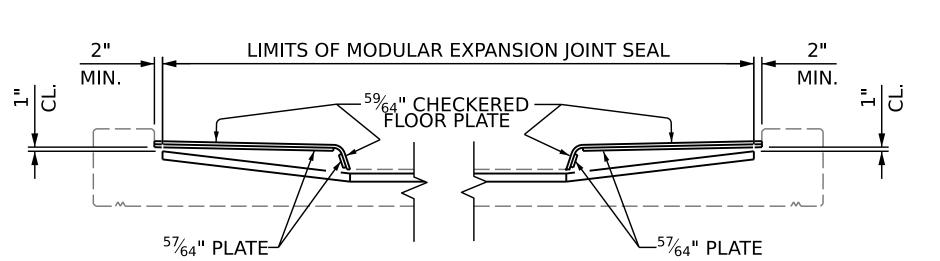
CONDUCT WATER-TIGHTNESS TEST.

RE-INSTALL COVER PLATES AT BARRIER RAILS AND SIDEWALKS.



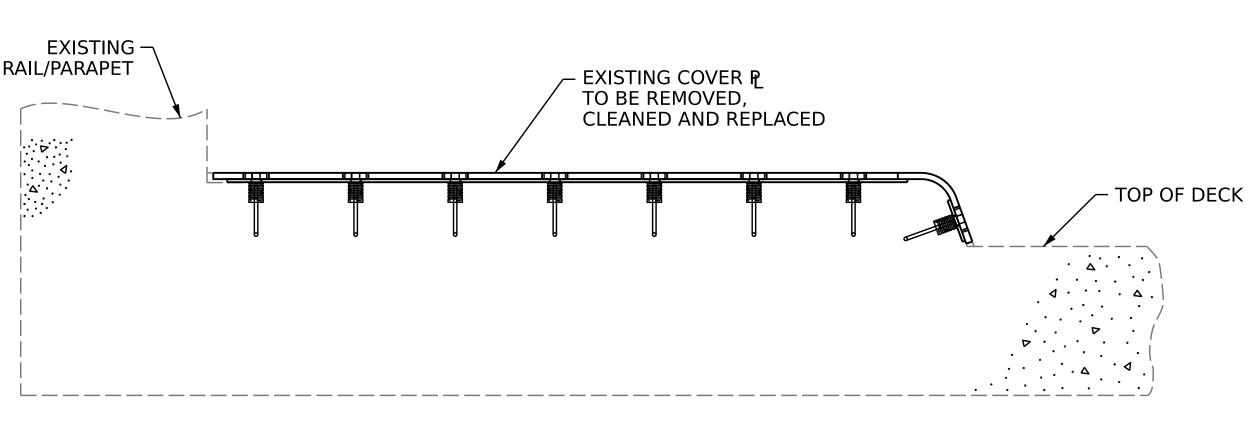
DETAIL "A"

MOVEMENT AND SETTING AT JOINT							
LOCATION	SKEW ANGLE	TOTAL MOVEMENT (ALONG © RDWY)	PERPENDICULAR JOINT OPENING AT 32°F	PERPENDICULAR JOINT OPENING AT 60°F	PERPENDICULAR JOINT OPENING AT 90°F		
END BENT 1	57.6°	411/16"	3 <sup>9</sup> ⁄16"	23/4"	2"		



SKETCH SHOWING LIMITS OF MODULAR EXPANSION JOINT SEAL-SIDEWALK

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



SECTION THRU SIDEWALK NORMAL TO JOINT

A. Y. GODFREY DRAWN BY N.A. PIERCE DESIGN ENGINEER OF RECORD: .

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

12/08/2022

THE CONTRACTOR SHALL FIELD VERIFY THE EXISTING JOINT OPENING PRIOR TO ORDERING JOINT SEAL MATERIAL. IF THE ACTUAL JOINT OPNEING VARIES

FROM THE OPENING INDICATED IN THE DETAILS BY MORE THAN  $\frac{1}{4}$ ". NOTIFY THE ENGINEER.

**GENERAL NOTES** 

THE CONTRACTOR SHALL FIELD VERIFY THE EXISTING MODULAR EXPANSION IOINT 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".

> 15BPR.59 PROJECT NO. \_\_ **WAKE** COUNTY 911039 BRIDGE NO.\_



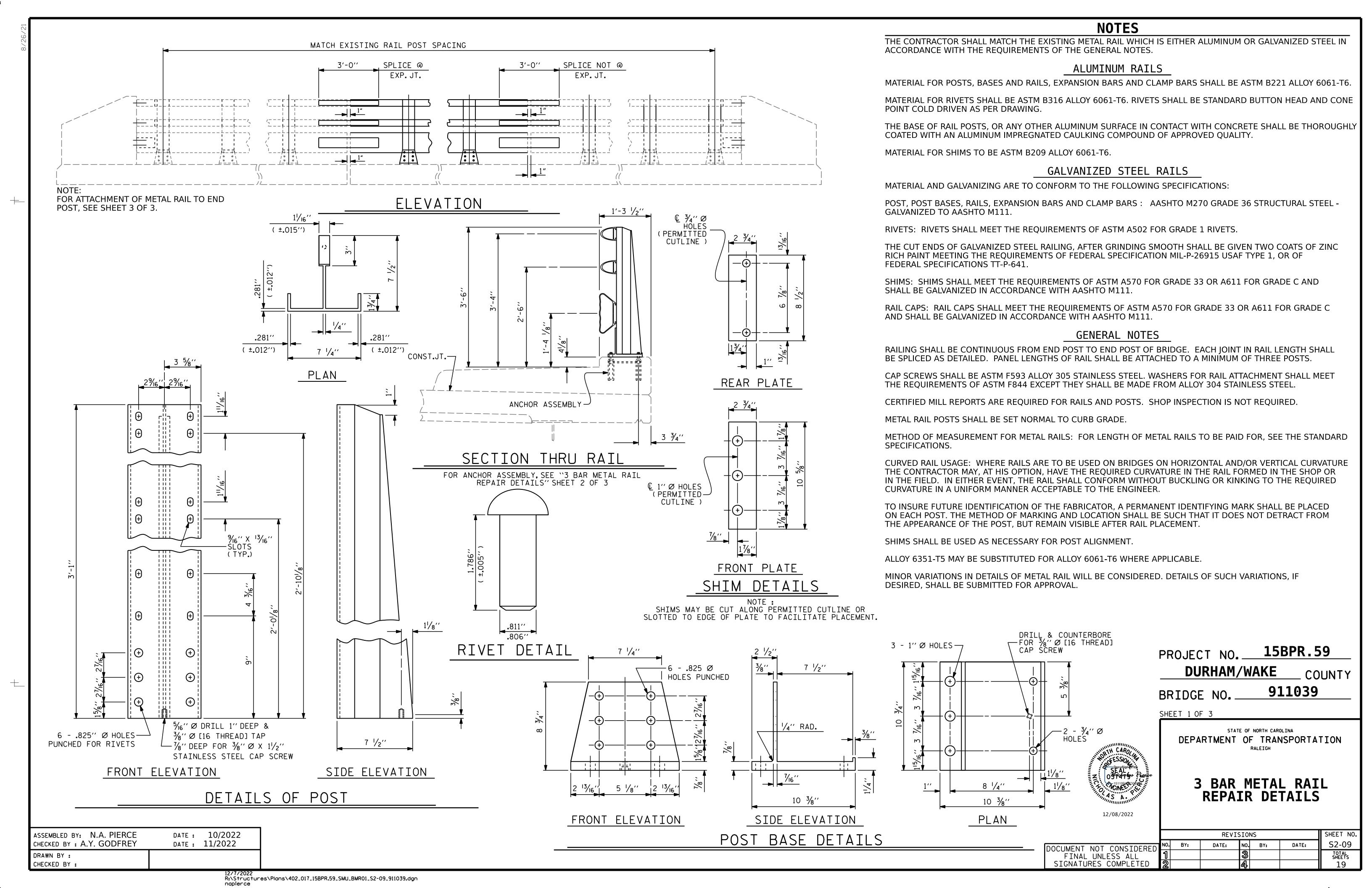
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION STANDARD

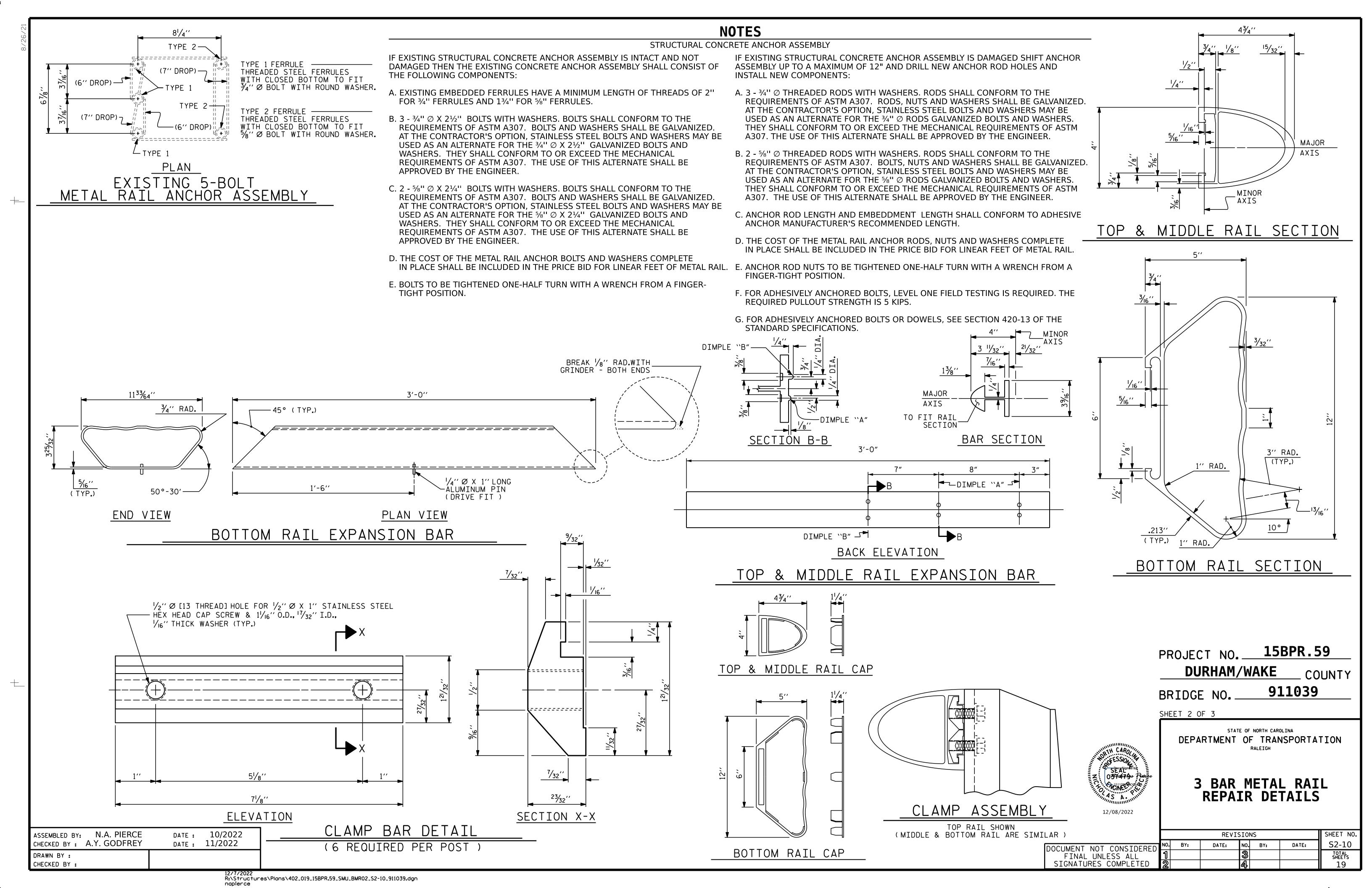
**MODULAR EXPANSION** 

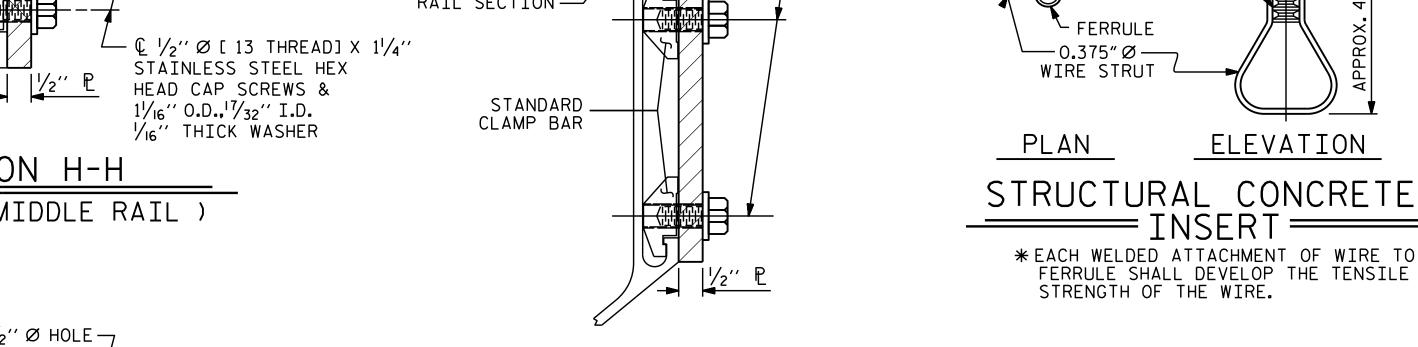
JOINT REPAIR

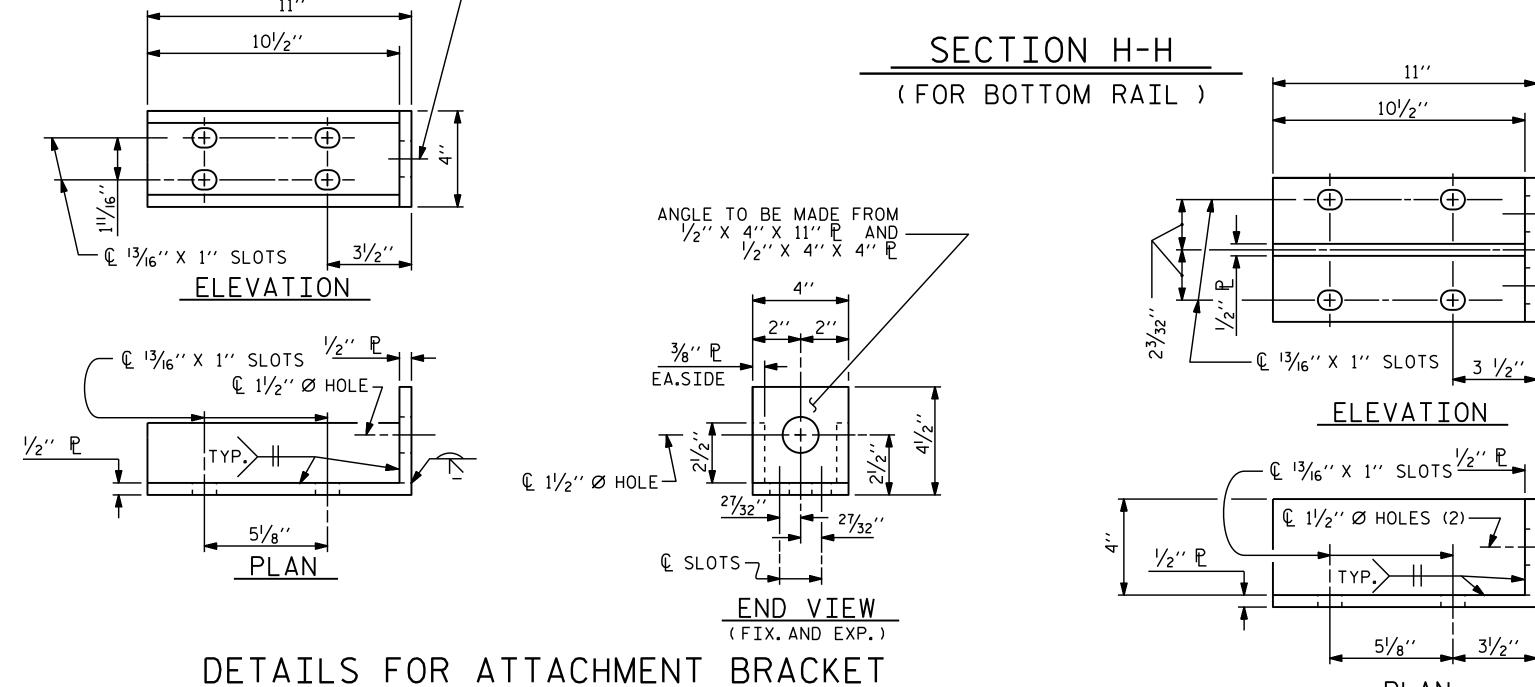
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#### METAL RAIL TO END POST CONNECTION

THE METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:

A. ½" 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 34" Ø X 158" BOLT WITH 2" O.D. WASHER IN PLACE. THE 34" Ø X 158" 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).

ANGLE TO BE MADE FROM
1/2" X 6" X 11" P AND
1/2" X 4" X 6" P

 $\mathbb{L}^{\mathbb{L}}$  1 $\frac{1}{2}$ " Ø HOLES (2)

CLOSED-END

FERRULE

€ 1 ½" Ø | HOLES

DETAILS FOR ATTACHMENT BRACKET

(BOTTOM RAIL ONLY)

PLAN

€ SLOTS -

END VIEW

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 34" 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 ¾" ☐ X 15/8" 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 34" Ø X 158" BOLT SHALL APPLY TO THE 34" 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 11/2".
- B. 1 3/4" Ø X 15/8" 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 15/8" 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  $7_{16}$ "  $\varnothing$  WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

PROJECT NO. 15BPR.59 DURHAM/WAKE \_ COUNTY 911039 BRIDGE NO. \_\_\_ SHEET 3 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

3 BAR METAL RAIL REPAIR DETAILS

19

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12/08/2022 SHEET NO REVISIONS S2-11 NO. BY: DATE: DATE: TOTAL SHEETS

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(TOP & MIDDLE RAIL ONLY)

DATE: 10/2022

DATE: 11/2022

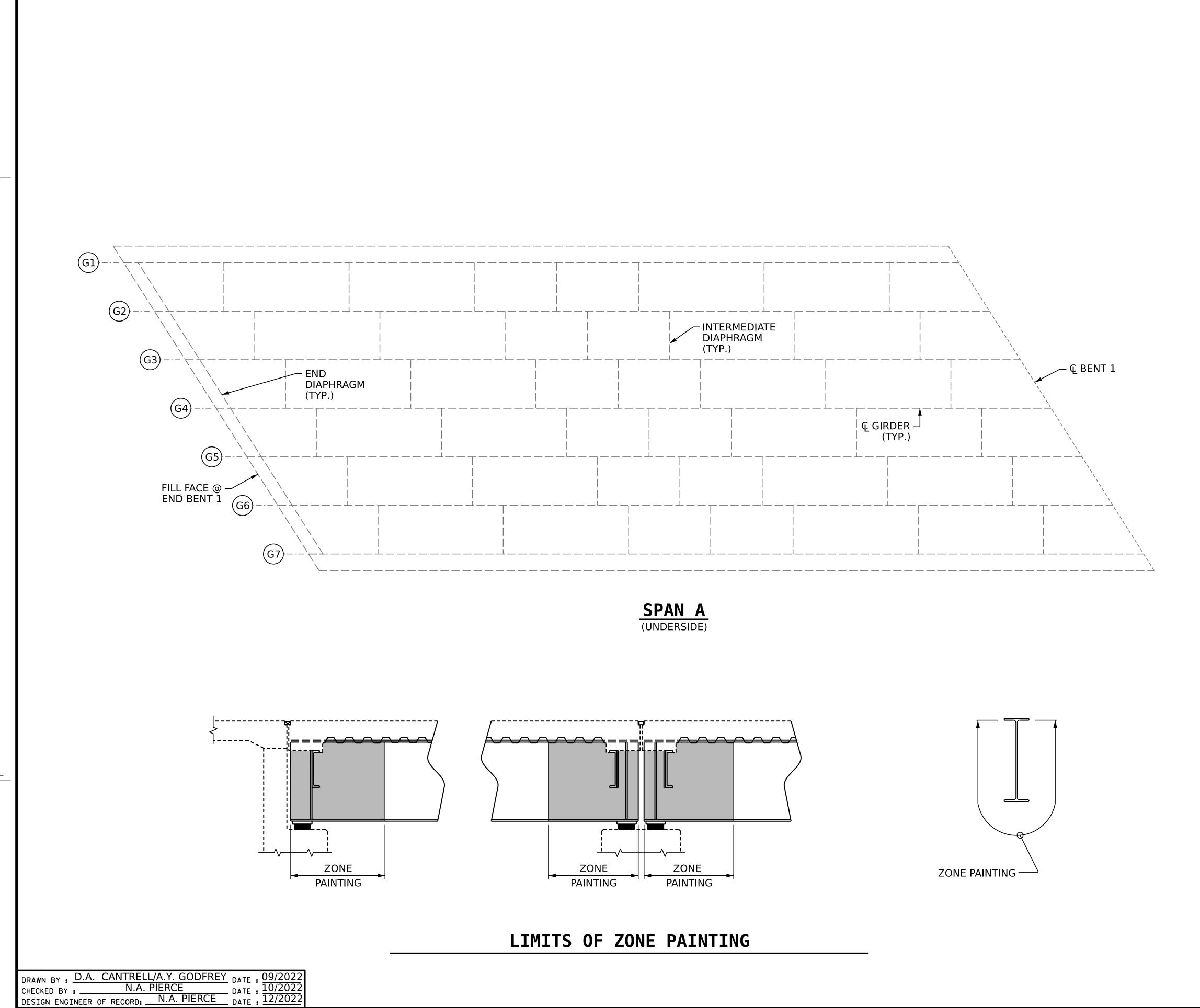
N.A. PIERCE

A.Y. GODFREY

CHECKED BY :

DRAWN BY :

CHECKED BY :



#### DECK UNDERSIDE REPAIR QUANTITY TABLE

SPAN A	QUANTITIES					
SPAN A	ESTI	MATE	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

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

911039 BRIDGE NO.\_\_\_\_

SHEET 1 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DECK UNDERSIDE REPAIR

SPAN A

SHEET NO. REVISIONS S2-12 DATE: DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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DECK UNDERSIDE REPAIR QUANTITY TABLE **NOTES** REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN BASED ON THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE QUANTITIES SPAN B **ESTIMATE** DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE AREA VOLUME SHOTCRETE REPAIRS REPAIRS AND ENTER THE ACTUAL QUANTITIES INTO THE REPAIR QUANTITY TABLE. CONCRETE REPAIRS MAYBE SUBSTITUTED IN LIEU OF SHOTCRETE REPAIRS WITH UNDERSIDE OF DECK 0 THE APPROVAL OF THE ENGINEER. CONCRETE DIAPHRAGM ALL GIRDERS SHALL BE PAINTED IN ACCORDANCE WITH THE LIMITS OF ZONE PAINTING **OVERHANG** 0 DETAIL. VOLUME AREA CONCRETE REPAIRS SHOTCRETE REPAIR AREA UNDERSIDE OF DECK 0 CONCRETE DIAPHRAGM 0 CONCRETE REPAIR AREA OVERHANG 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. (G1) ← INTERMEDIATE DIAPHRAGM (G4) — € BENT 2 \_ Q GIRDER (TYP.) © BENT 1 —∕ (G6) SPAN B PROJECT NO. 15BPR.59 **WAKE** BRIDGE NO. \_\_\_ SHEET 2 OF 3 STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DECK UNDERSIDE REPAIR ZONE PAINTING ZONE SPAN B PAINTING PAINTING

LIMITS OF ZONE PAINTING

12/08/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SHEET NO. REVISIONS S2-13 DATE:

COUNTY

911039

ACTUAL

VOLUME

VOLUME

AREA

SF

AREA

D.A. CANTRELL/A.Y. GODFREY

. N.A. PIERCE

DATE: 09/2022

10/2022

DATE: 12/2022

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

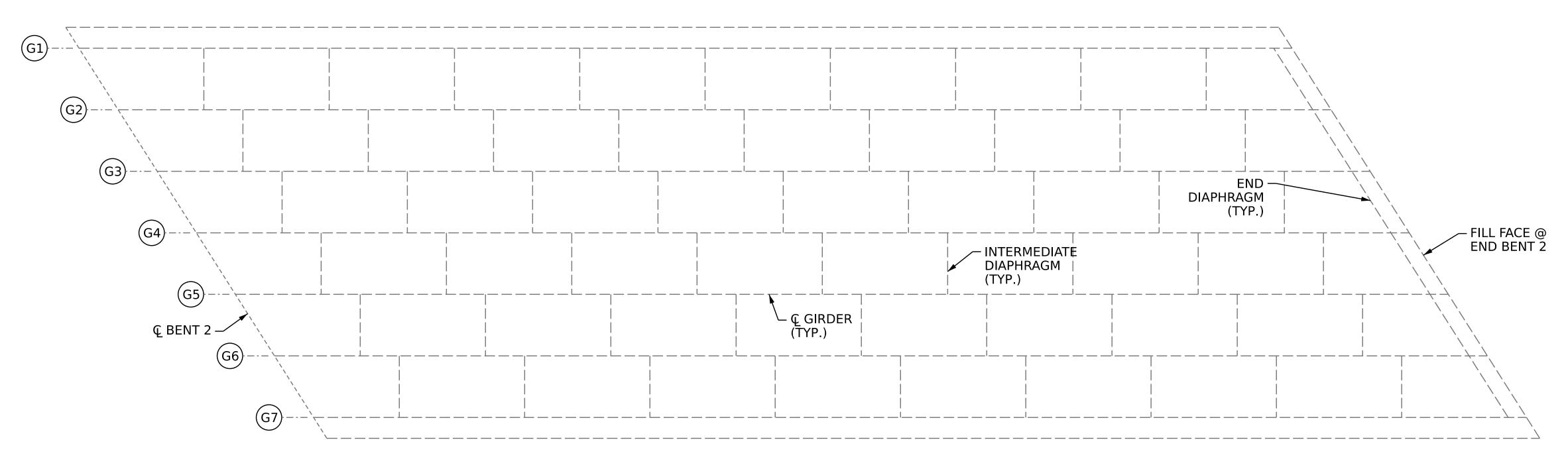


CONCRETE REPAIR AREA

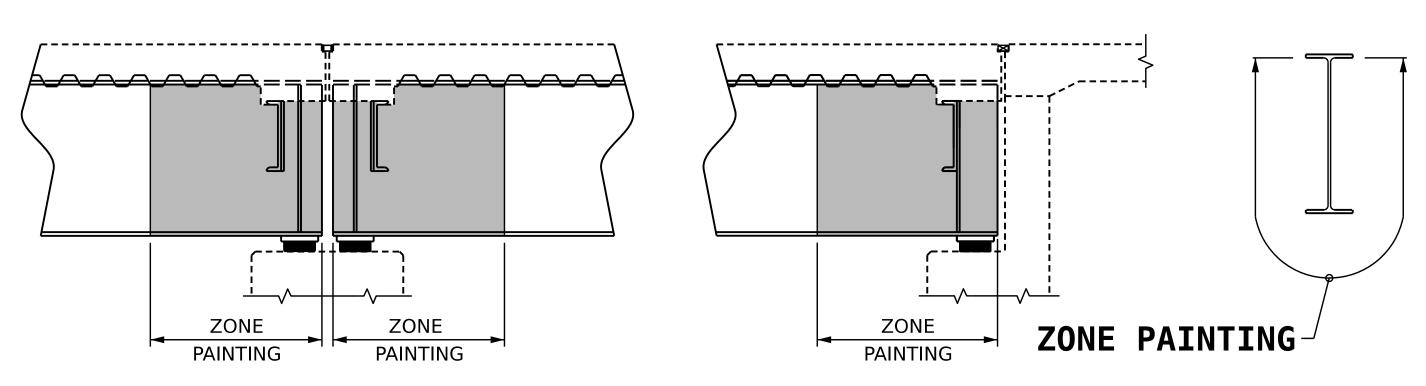
DECK UNDERSIDE REPAIR QUANTITY TABLE

SPAN C	QUANTITIES					
SPAN C	ESTII	MATE	ACTUAL			
SHOTCRETE REPAIRS	AREA VOLUME SF 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



LIMITS OF ZONE PAINTING

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

SHEET 3 OF 3

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

> SHEET NO. REVISIONS S2-14 DATE:

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

12/7/2022 R:\Structures\Plans\402\_027\_15BPR.59\_SMU\_DUR03\_S2-14\_911039.dgn

TOP OF CAP **ELEVATION** LOOKING SOUTH DRAWN BY: D.A. CANTRELLE/A.Y.GODFREY
CHECKED BY: N.A. PIERCE
DESIGN ENGINEER OF RECORD: N.A. PIERCE
DATE: 10/2022
DATE: 12/2022



END BENT 1	QUANTITIES						
LIND DENT I	ESTI	MATE	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

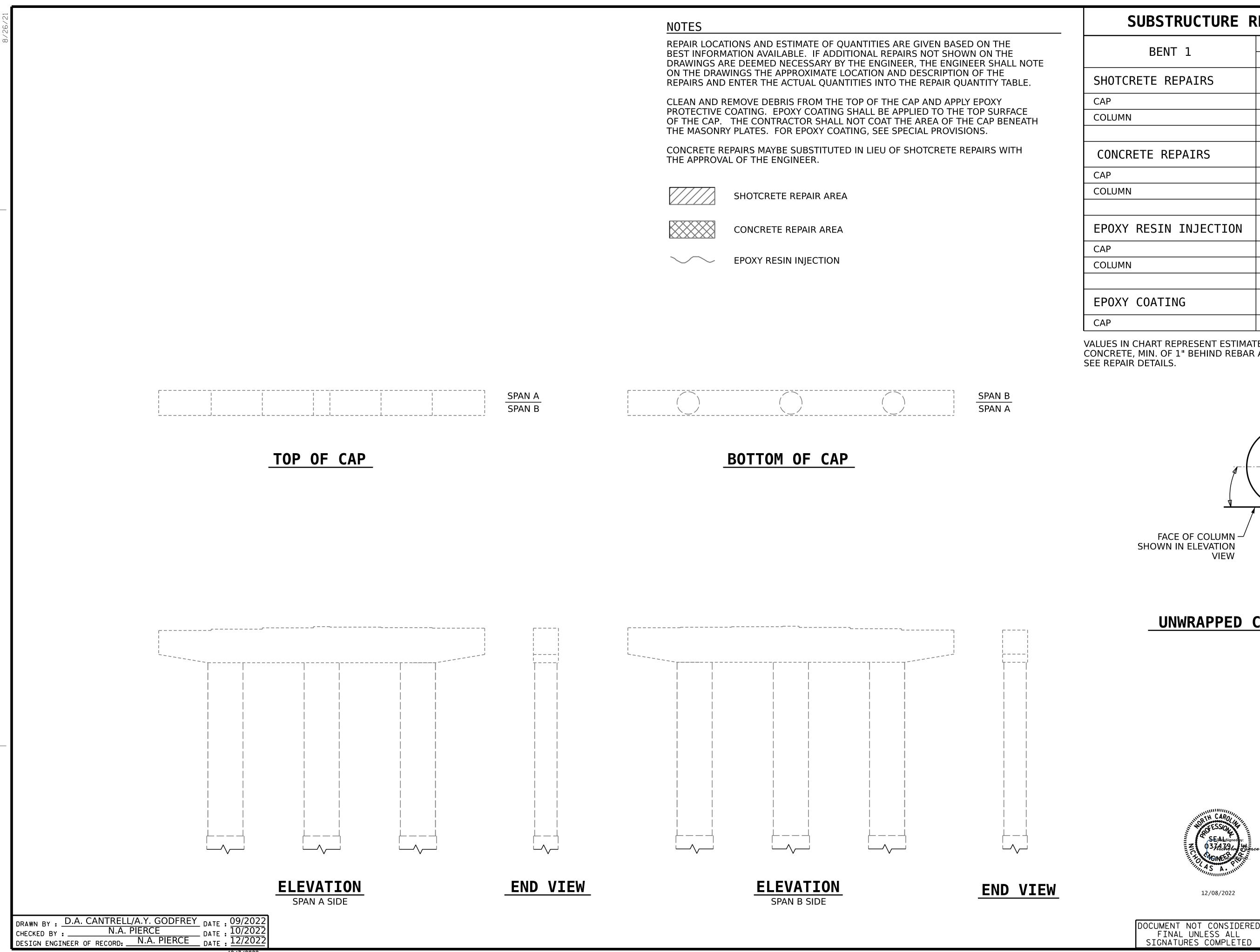
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION SUBSTRUCTURE REPAIR

END BENT 1

SHEET NO. REVISIONS S2-15 DATE: NO. BY: DATE:

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

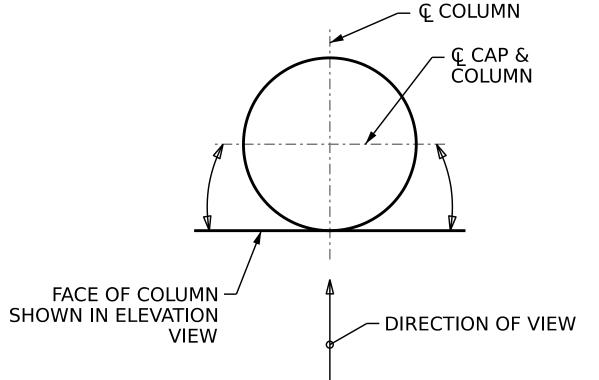
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SUBSTRUCTURE REPAIR QUANTITY TABLE

5-1-4	QUANTITIES						
BENT 1	ESTI	MATE	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.



#### UNWRAPPED COLUMN FACE DETAIL

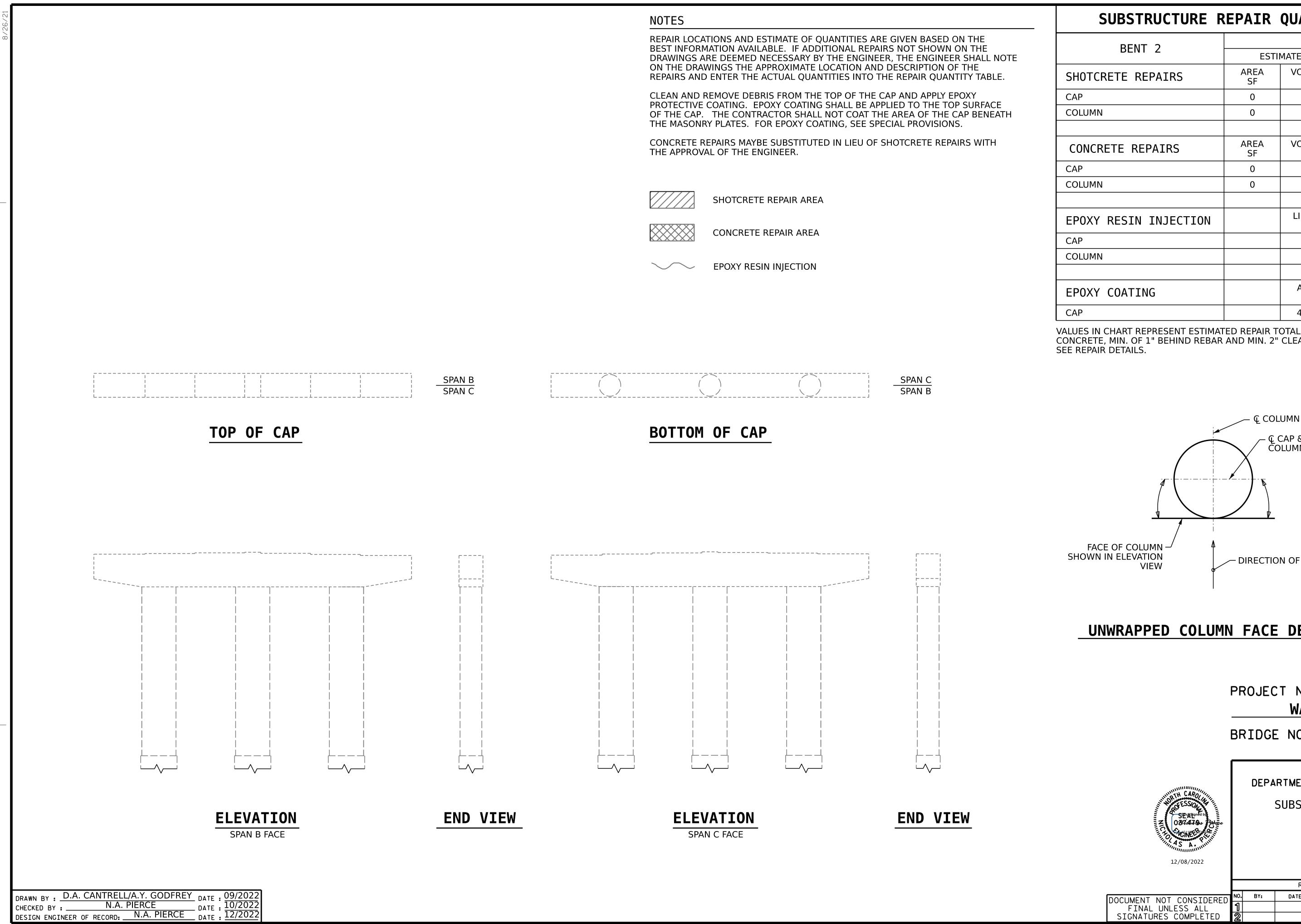
PROJECT NO. 15BPR.59 **WAKE** COUNTY 911039 BRIDGE NO.\_\_\_\_



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION SUBSTRUCTURE REPAIR

BENT 1

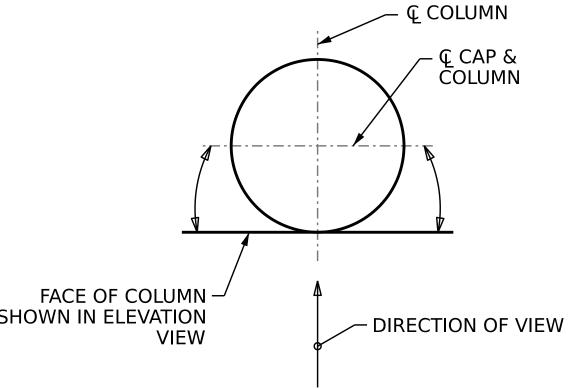
REVISIONS S2-16 NO. BY: DATE:



SUBSTRUCTURE REPAIR QUANTITY TABLE

BENT 2	QUANTITIES					
DENIZ	ESTI	MATE	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.



#### UNWRAPPED COLUMN FACE DETAIL

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

> STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION SUBSTRUCTURE REPAIR

> > BENT 2

SHEET NO REVISIONS S2-17 DATE:

NO. BY: DATE:

**PLAN** TOP OF CAP **ELEVATION** DRAWN BY: D.A. CANTRELL/A.Y. GODFREY DATE: 09/2022 CHECKED BY: N.A. PIERCE DATE: 10/2022 DATE: 12/2022

## SUBSTRUCTURE REPAIR QUANTITY TABLE

END DENT 3	QUANTITIES					
END BENT 2	ESTI	MATE	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	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

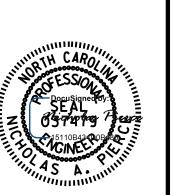


CONCRETE REPAIR AREA



**EPOXY RESIN INJECTION** 

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



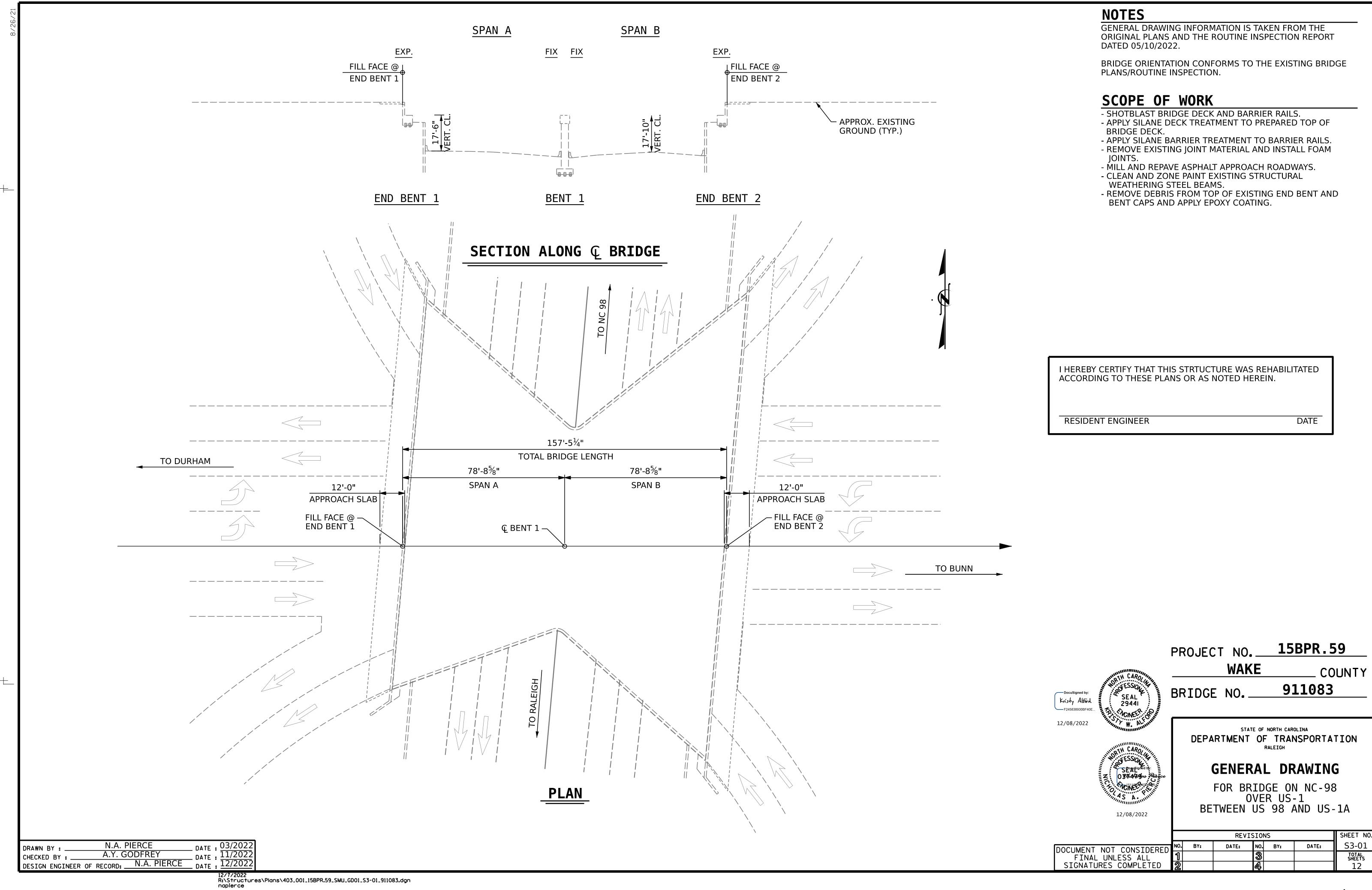
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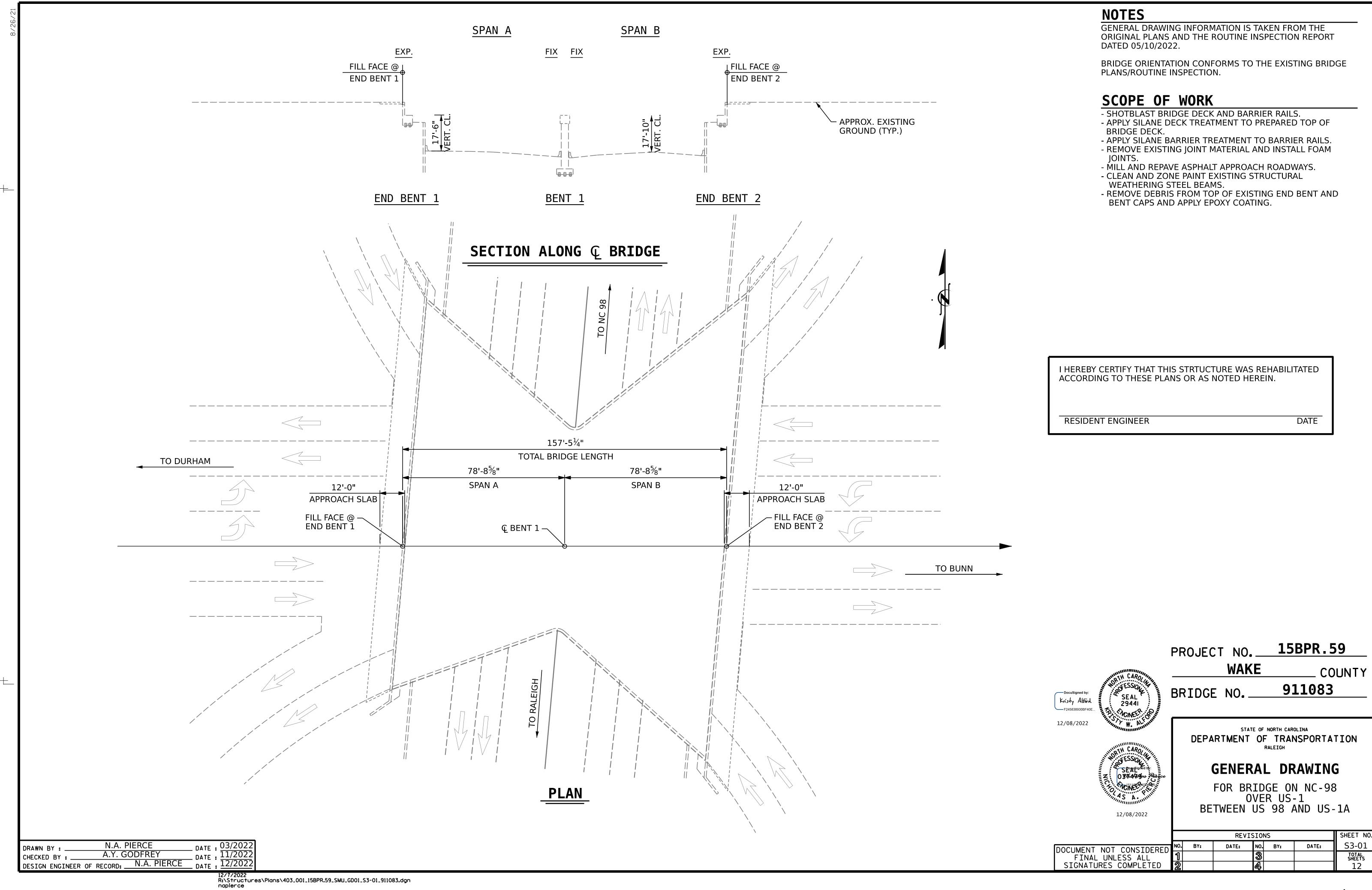
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION SUBSTRUCTURE REPAIR

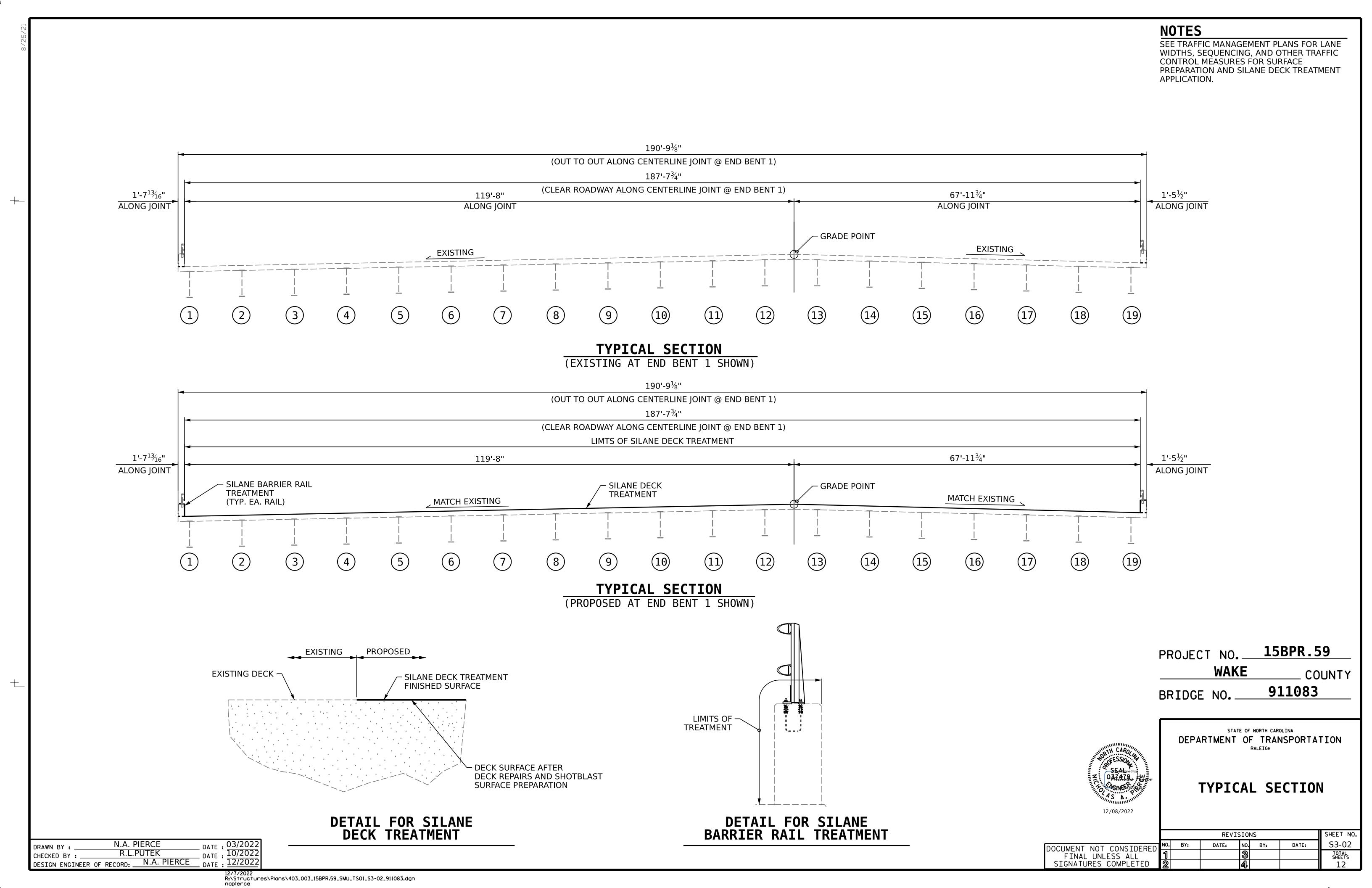
END BENT 2

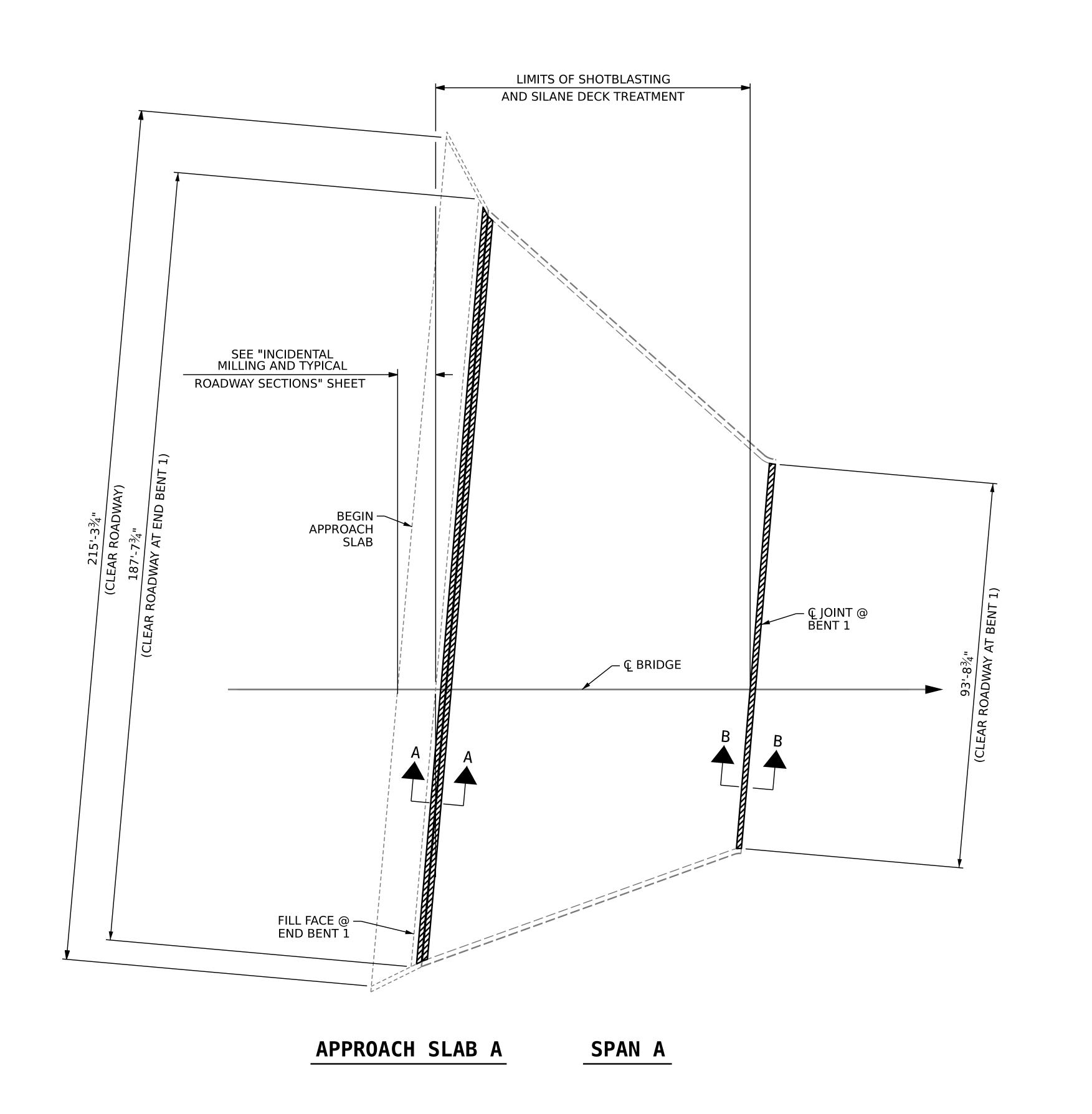
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DECK SURFACE REPAIR QUANTITY TABLE

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

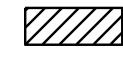
	ESTIMATE	ACTUAL
CONCRETE DECK REPAIR	0.0 CU. FT	
SURFACE PREPARATION FOR CONCRETE BARRIER	736.0 SQ.FT	
SILANE BARRIER RAIL TREATMENT	736.0 SQ. FT.	
SHOTBLASTING BRIDGE DECK	1360.3 SQ. YDS.	
SILANE DECK TREATMENT	1360.3 SQ. YDS.	
BRIDGE JOINT DEMOLITION	157.9 SQ.FT.	

#### **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

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12/08/2022

DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK SURFACE REPAIR

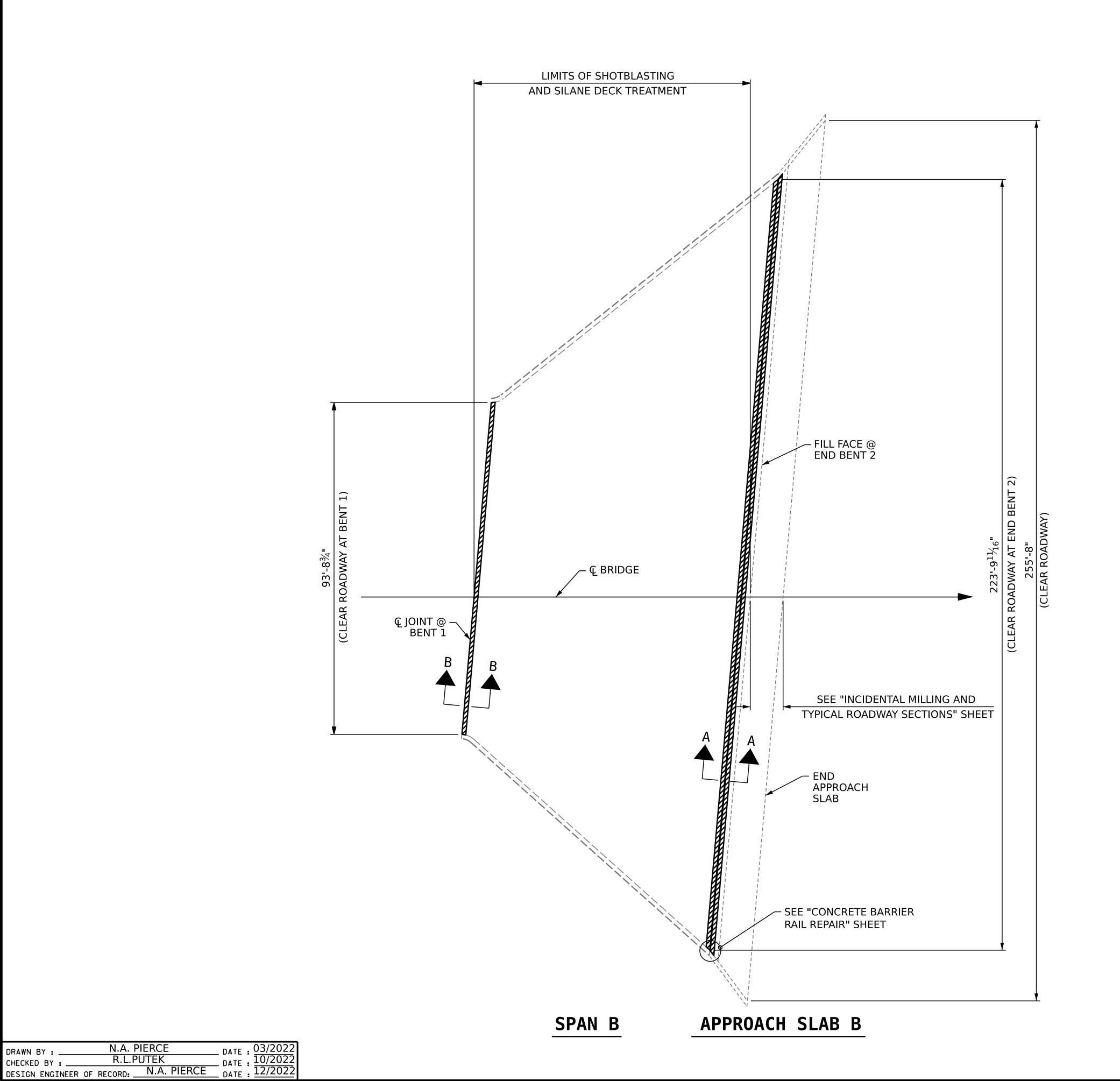
DECK SUNFACE REPAIR

SPAN A AND APPROACH SLAB A

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

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



## DECK SURFACE REPAIR QUANTITY TABLE

#### APPROACH SLAB B

ALTINOMETT SEMB 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.

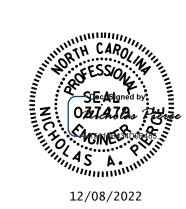


BRIDGE JOINT DEMOLITION



CONCRETE DECK REPAIR

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



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK SURFACE REPAIR

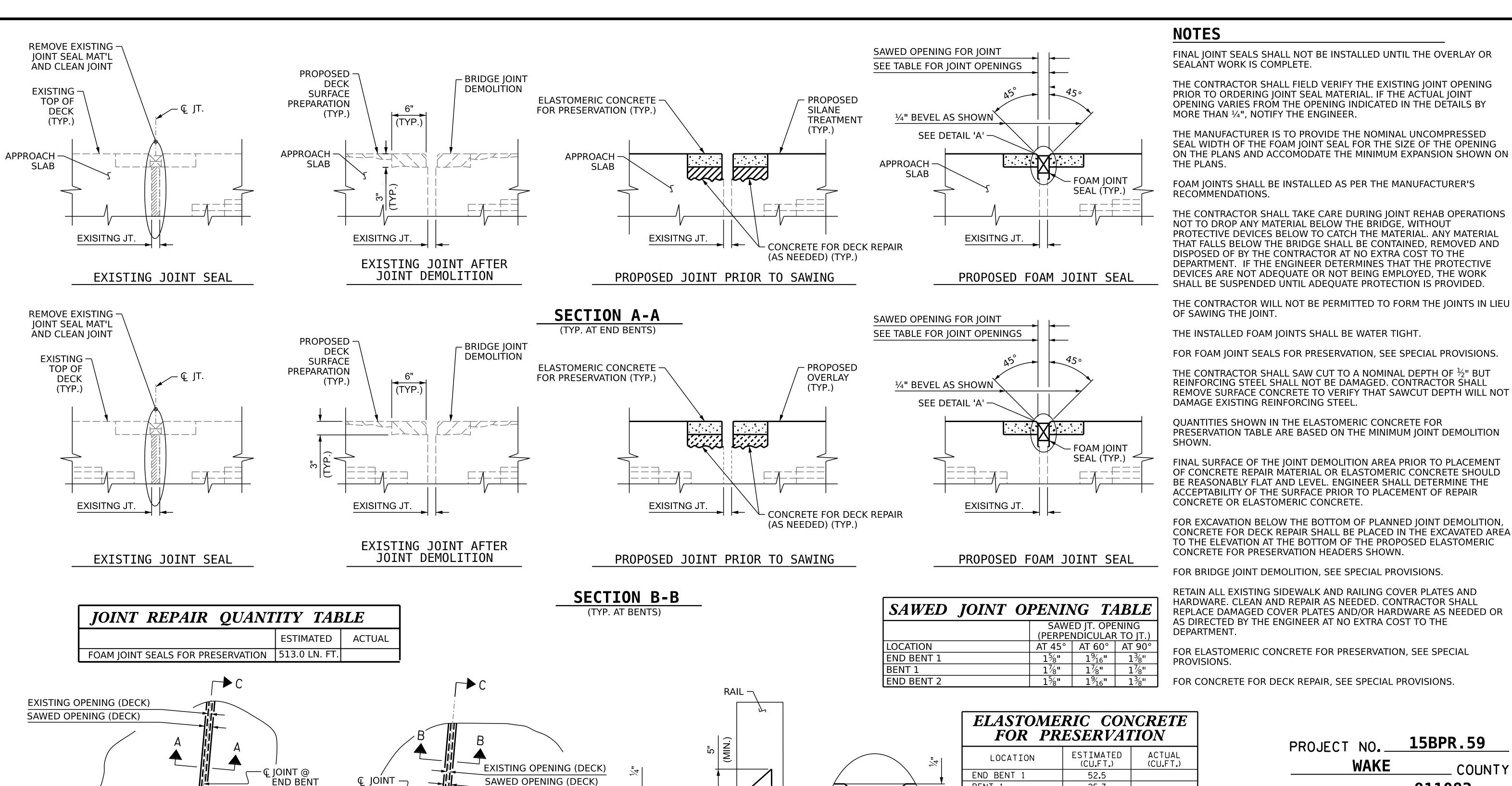
SPAN B AND APPROACH SLAB B

REVISIONS NO. BY: DATE: DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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SHEET NO.

S3-04



AWED

- RADIUS OF

- BOTTOM OF SEAL

SECTION C-C

SAW BLADE

DETAIL 'A'

ELASTOMERIC CONCRETE

25.7 BENT 1 END BENT 2 62.9 TOTAL 141.1

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

Soundined by:

OB: 7/4/109 Pil

12/08/2022

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION STANDARD

FOAM JOINT SEALS FOR PRESERVATION **DETAILS** 

SHEET NO **REVISIONS** S3-05 NO. BY: DATE: DATE: TOTAL SHEETS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

N.A. PIERCE DATE: 13/2022 12/7/2022 R:\Structures\Plans\403\_009\_15BPR.59\_SMU\_JT01\_S3-05\_911083.dgn

PROVIDE WATERTIGHT

SEAL AT END OF FOAM

RECOMMENDED BY

JOINT SEAL AS

MANUFACTURER

PROVIDE WATERTIGHT

SEAL AT END OF FOAM

RECOMMENDED BY

JOINT SEAL AS

( @ END BENT )

DATE: 10/2022

MANUFACTURER

A.Y. GODFREY

N.A. PIERCE

DRAWN BY :

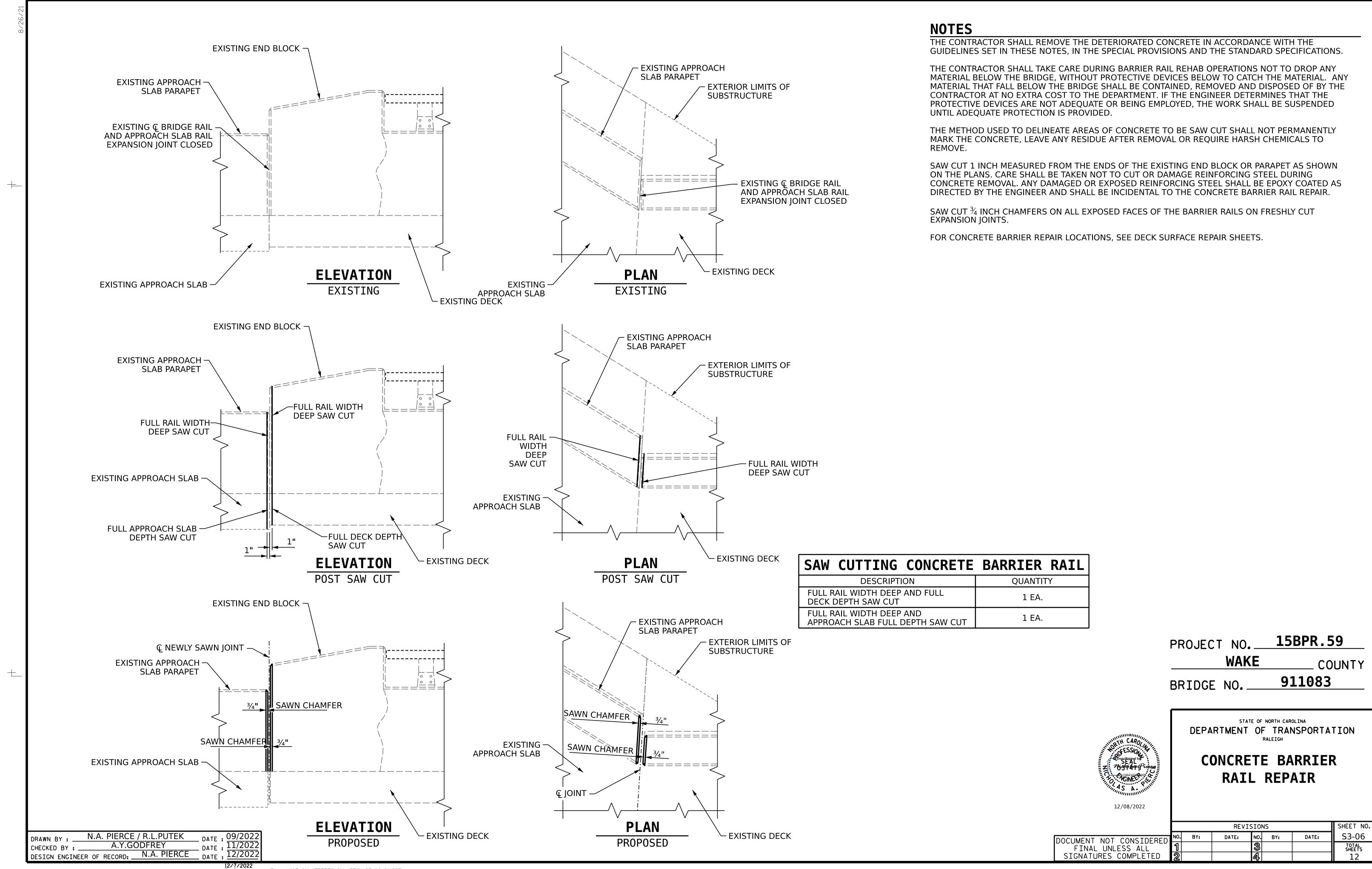
CHECKED BY : \_\_

DESIGN ENGINEER OF RECORD: \_

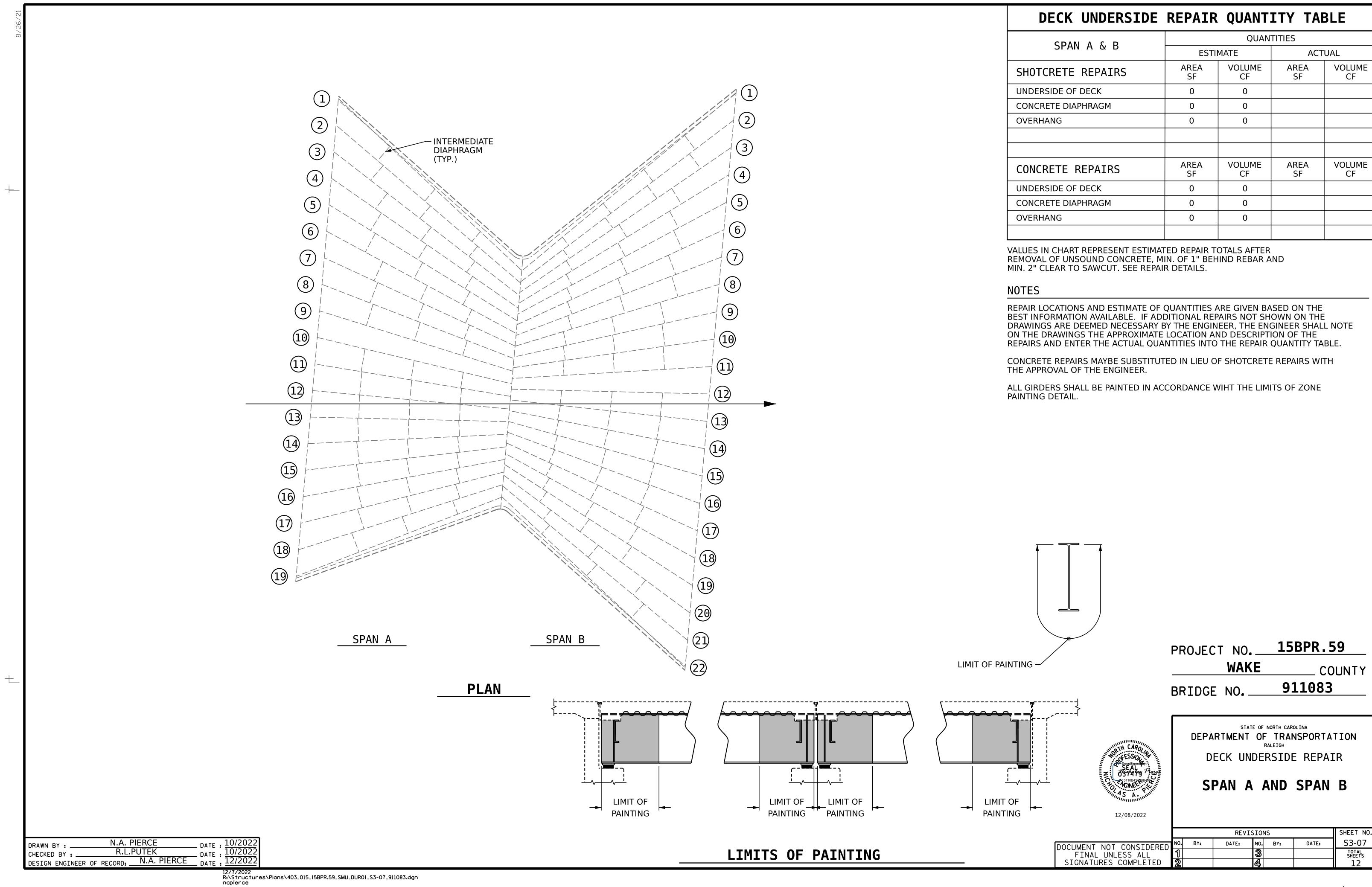
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JOINT SEAL DETAILS



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SUBSTRUCTURE REPAIR QUANTITY TABLE **NOTES QUANTITIES** REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE BASED ON THE END BENT 1 BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE ACTUAL **ESTIMATE** DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER SHALL NOTE AREA ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE VOLUME AREA VOLUME SHOTCRETE REPAIRS REPAIRS AND ENTER THE ACTUAL QUANTITIES INTO THE SUBSTRUCTURE REPAIR SF QUANTITY TABLE. CAP 0 0 CLEAN AND REMOVE DEBRIS FROM THE TOP OF THE CAP AND APPLY EPOXY **CURTAIN WALL** 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 WINGWALL THE MASONRY PLATES. AREA **VOLUME** AREA VOLUME CONCRETE REPAIRS CONCRETE REPAIRS MAYBE SUBSTITUTED IN LIEU OF SHOTCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER. CAP 0 REMOVAL OF DEBRIS AND DISPOSAL OF EXISTING JOINT SEALANT MATERIAL FROM SLOPE **CURTAIN WALL** 0 0 PROTECTION PRIOR TO PLACEMENT OF BACKER ROD AND POURABLE SILICONE JOINT WINGWALL SEALANT SHALL BE CONSIDERED INCIDENTAL TO CONSTRUCTION. LINEAR LINEAR EPOXY RESIN INJECTION POURABLE SILICONE JOINT SEALANT SHALL BE INSTALLED AS PER THE MANUFACTURER'S FT RECOMMENDATIONS. CAP 0 THE INSTALLED POURABLE SILICONE JOINT SEALANT SHALL BE WATER TIGHT. **CURTAIN WALL** 0 WINGWALL LINEAR AREA POURABLE SILICONE JT. SEALANT SHOTCRETE REPAIR AREA FT. JOINT 411.0 CONCRETE REPAIR AREA AREA AREA EPOXY COATING **EPOXY RESIN INJECTION** 855.1 CAP 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 POURABLE SILICONE -JOINT SEALANT 911083 BRIDGE NO. \_\_\_ - EXISTING END BENT CAP OR MSE WALL EXISTING -CONCRETE COPING SLOPE STATE OF NORTH CAROLINA (TYP.) PROTECTION DEPARTMENT OF TRANSPORTATION SEE DETAIL 'A' SUBSTRUCTURE REPAIR END BENT 1 – BACKER ROD 2"± 12/08/2022 SHEET NO REVISIONS ODFREY

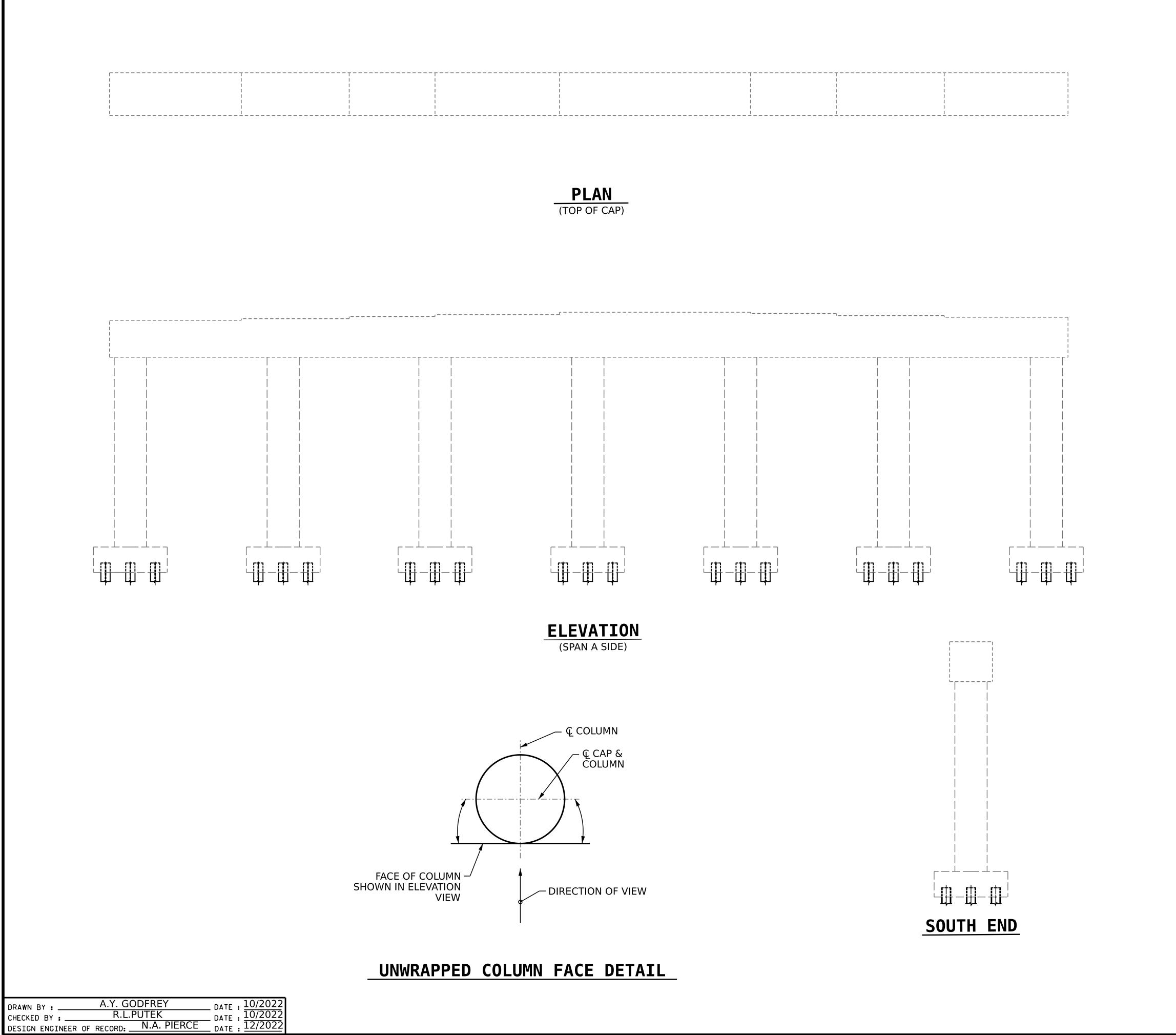
.PUTEK

N.A. PIERCE

DATE: 09/2022

10/2022

DATE: 12/2022 A.Y. GODFREY S3-08 NO. BY: DATE: DATE: SECTION Y-Y DETAIL 'A' DRAWN BY DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED R.L.PUTEK DESIGN ENGINEER OF RECORD: \_



## SUBSTRUCTURE REPAIR QUANTITY TABLE

DENT 1	QUANTITIES					
BENT 1	ESTI	MATE	ACT	UAL		
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



STATE OF NORTH CAROLINA

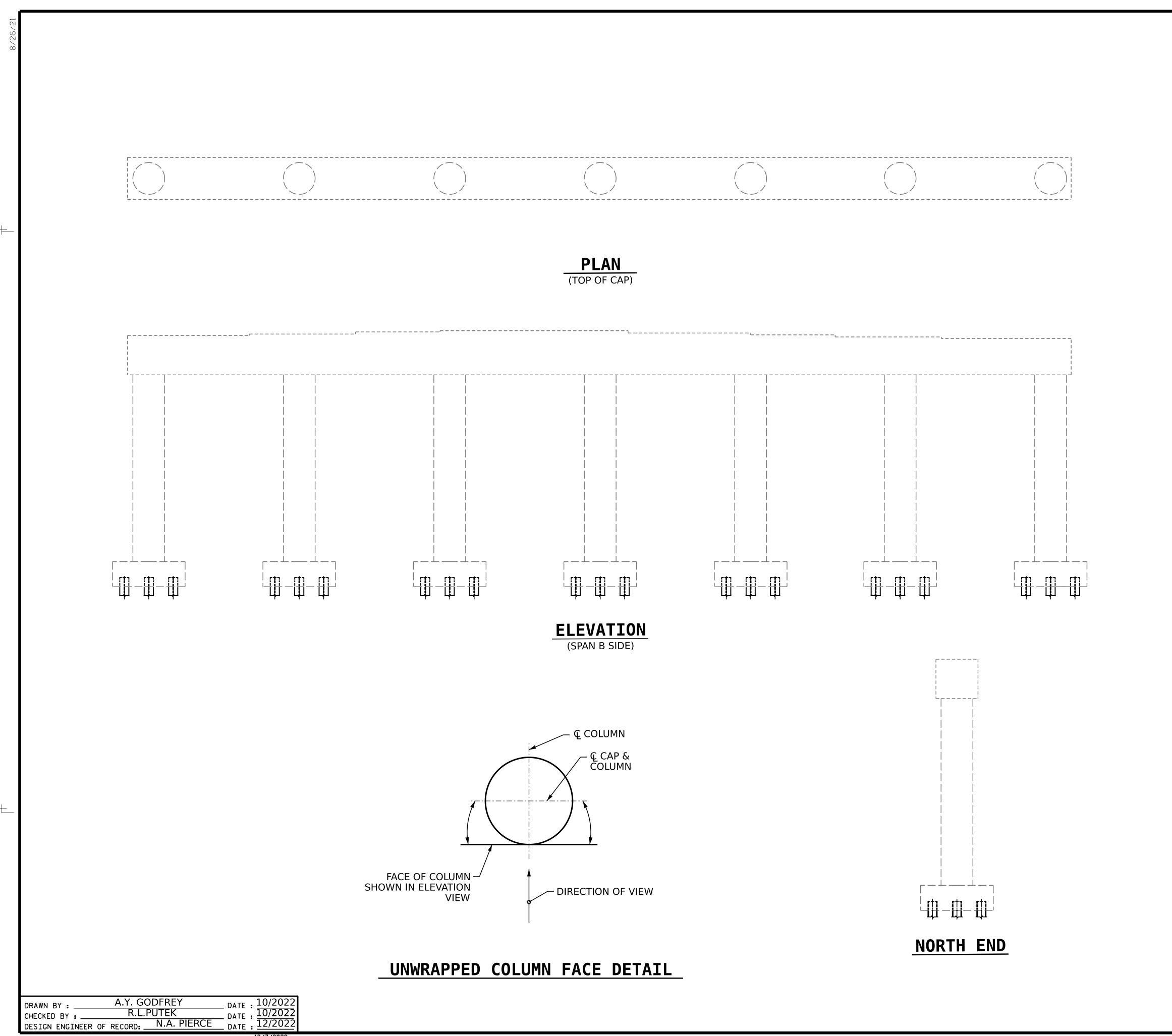
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIRS

BENT 1 SPAN A FACE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-09
1			3			TOTAL SHEETS
2			4			12



SUBSTRUCTURE REPAIR QUANTITY TABLE

		•				
DENT 1	QUANTITIES					
BENT 1	ESTII	MATE	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

PROJECT NO. 15BPR.59
WAKE COUNTY

BRIDGE NO. 911083

SHEET 2 OF 2

CAROLANDERS OF SELECTION OF SEL

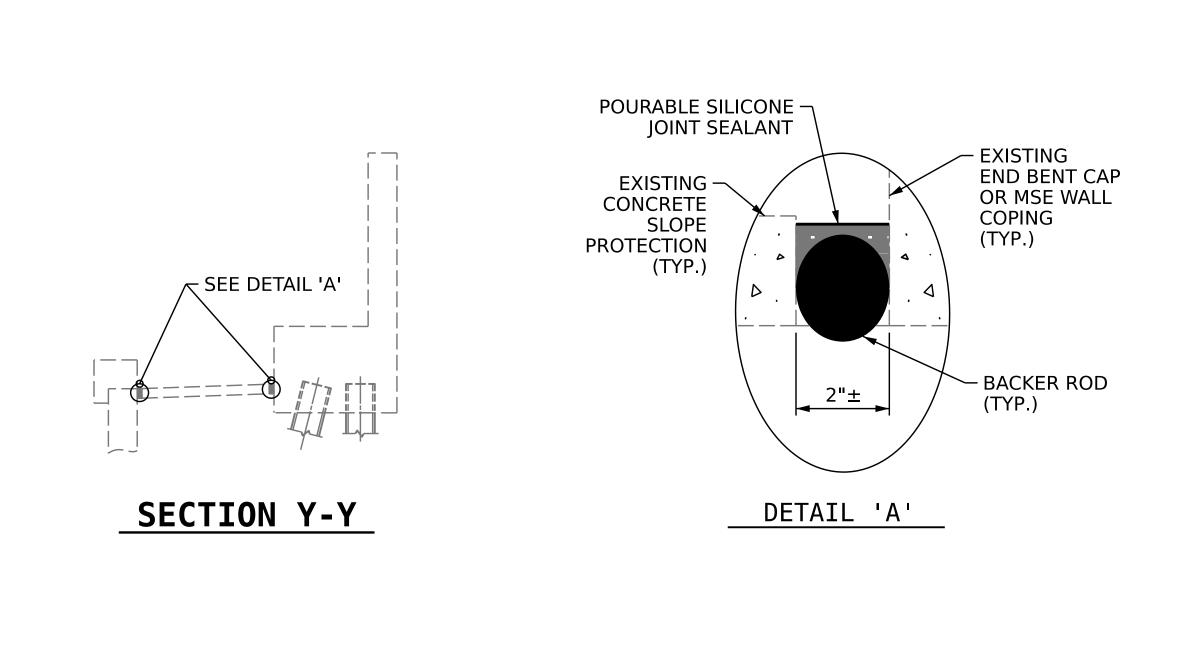
12/08/2022

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE REPAIRS

BENT 1 SPAN B FACE

DOCUMENT NOT CONSIDERED 1 SIGNATURES COMPLETED 2

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



#### **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

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

AREA

1021.6

AREA

SUBSTRUCTURE REPAIR QUANTITY TABLE

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.

EPOXY COATING

CAP

PLAN
TOP OF CAP

**ELEVATION** 

LOOKING EAST

Y **4** 

PROJECT NO. 15BPR.59
WAKE COUNTY

BRIDGE NO. 911083

SECASIGNED DO SELECTION OF STATE OF STA

12/08/2022

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE REPAIR

END BENT 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

DRAWN BY: A.Y. GODFREY

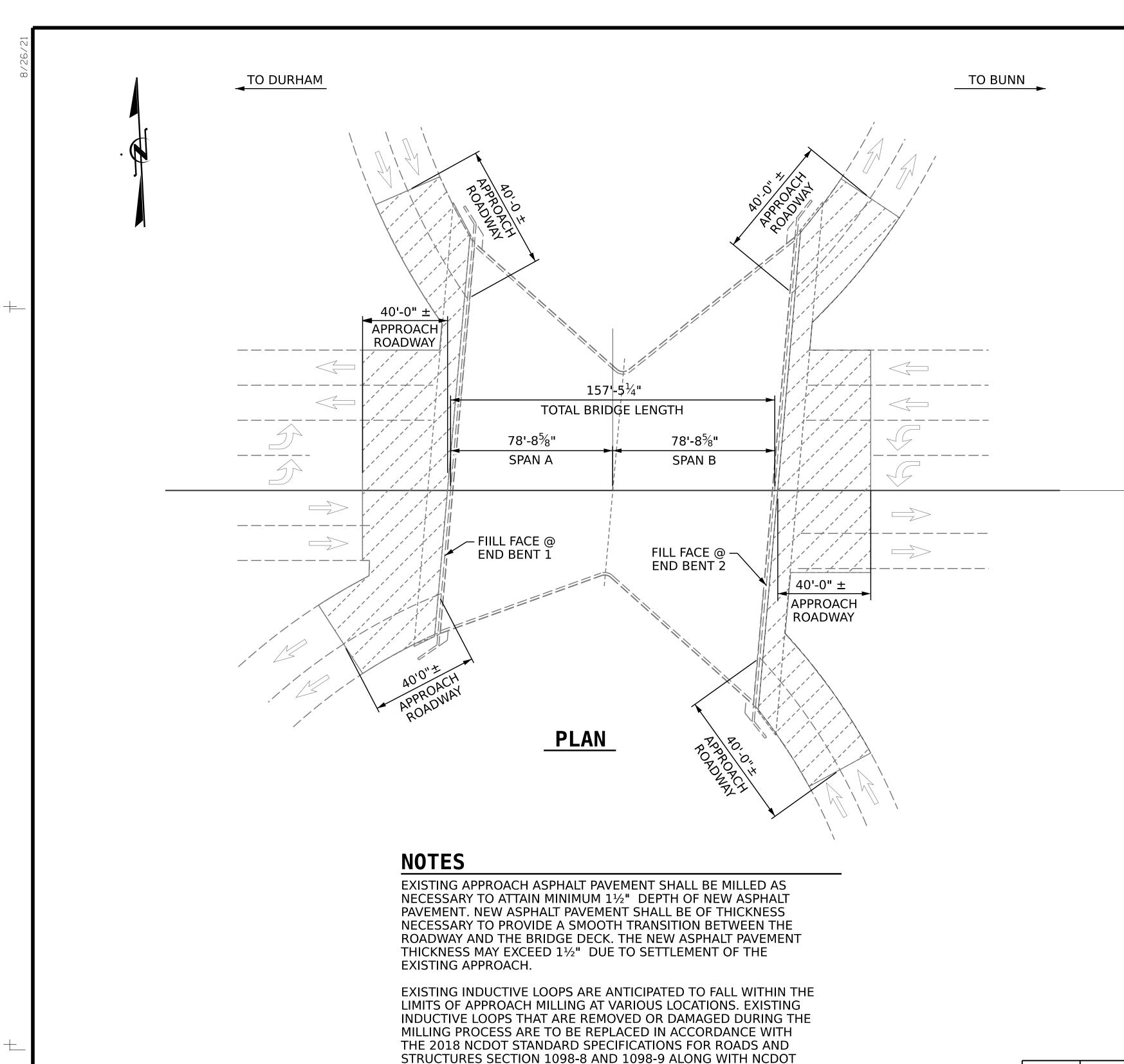
CHECKED BY: R.L.PUTEK

DESIGN ENGINEER OF RECORD: N.A. PIERCE

DATE: 10/2022

DATE: 12/2022

12/7/2022 R:\Structures\Plans\403\_023\_15BPR.59\_SMU\_EB02\_S3-11\_911083.dgn

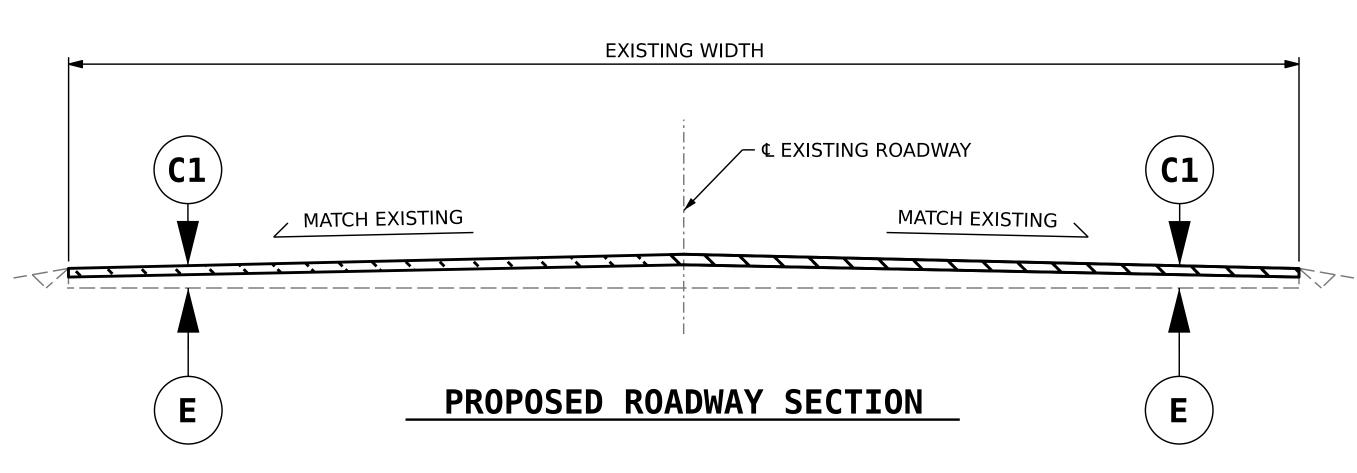


**EXISTING WIDTH** L EXISTING ROADWAY **EXISTING EXISTING ROADWAY SECTION** 

# **EXISTING WIDTH** ♠ EXISTING ROADWAY MATCH EXISTING MATCH EXISTING

## TYPICAL ROADWAY MILLING SECTION

(MILL TO  $1\frac{1}{2}$ " DEPTH)



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

911083 BRIDGE NO. \_\_

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

INCIDENTAL MILLING AND TYPICAL ROADWAY SECTIONS

12/08/2022 SHEET NO. **REVISIONS** S3-12 NO. BY: DATE: DATE: DOCUMENT NOT CONSIDERED

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 11/2" IN DEPTH OR GREATER THAN 2" IN DEPTH. **EXISTING PAVEMENT** 



INCIDENTAL MILLING

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

R.L.PUTEK

DATE: 10/2022

DATE: 10/2022

DATE: 10/2022

DATE: 10/2022

STANDARD ROADWAY DRAWING 1725.01.

INCIDENTAL MILLING

COURSE, TYPE S9.5B

LEAD IN CABLE

ASPHALT CONC SURFACE

INDUCTIVE LOOP SAWCUT

ASPHALT BINDER FOR PLANT MIX

SUMMARY OF QUANTITIES

**ESTIMATE** 

1969.8 SQ.YD.

170.0 TONS

15 TONS

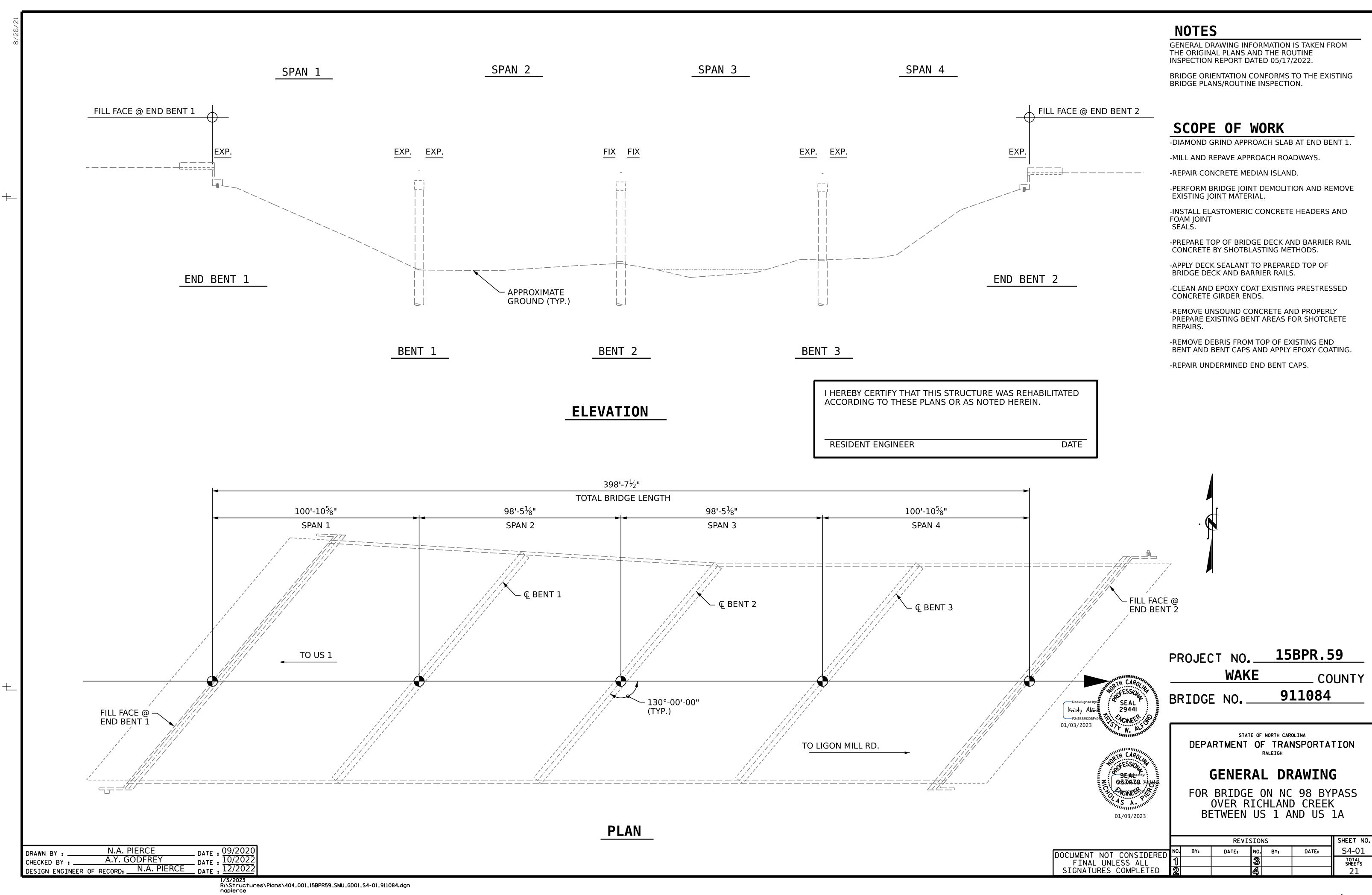
1600 LIN. FT.

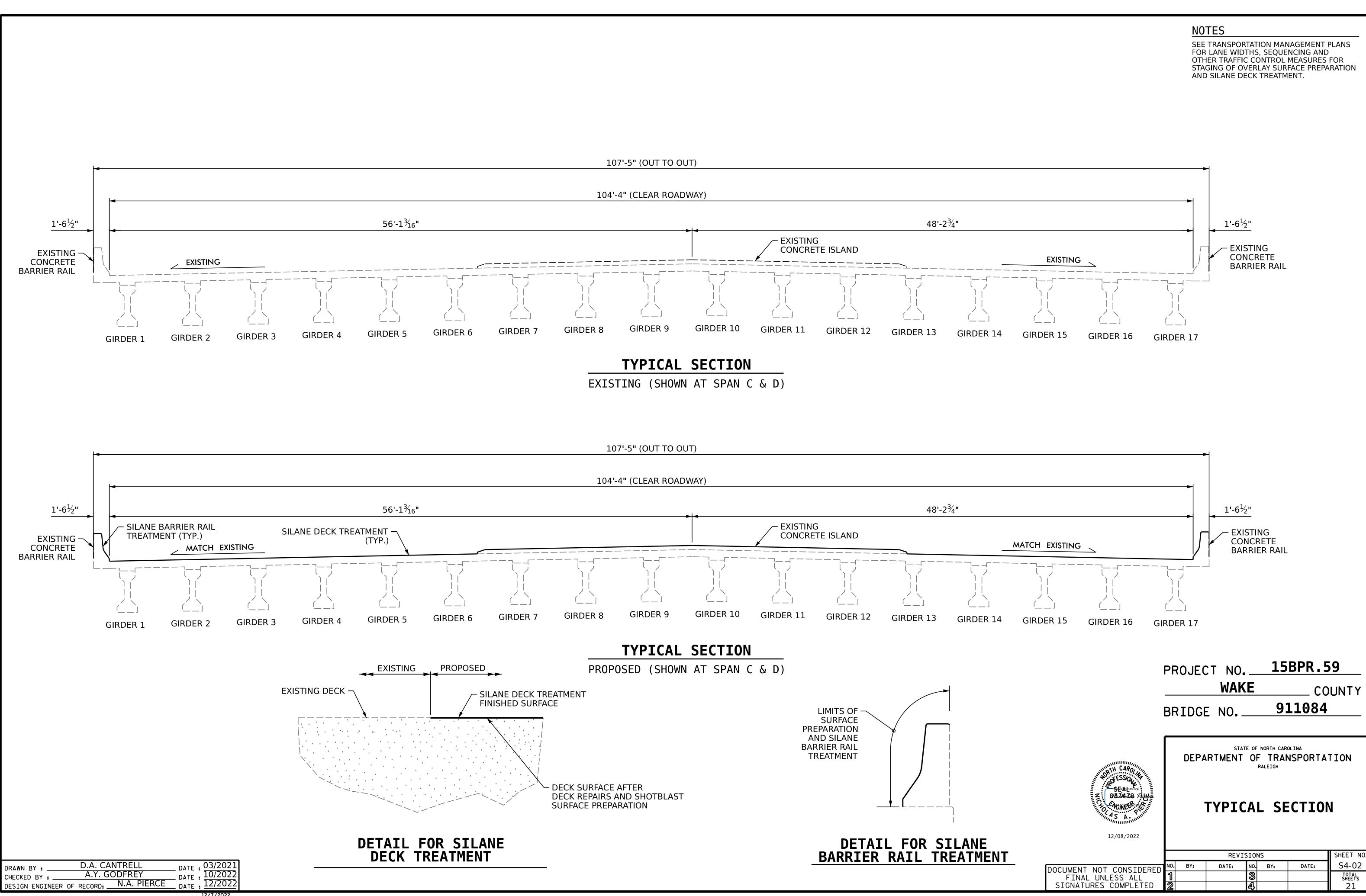
400 LIN. FT.

ACTUAL

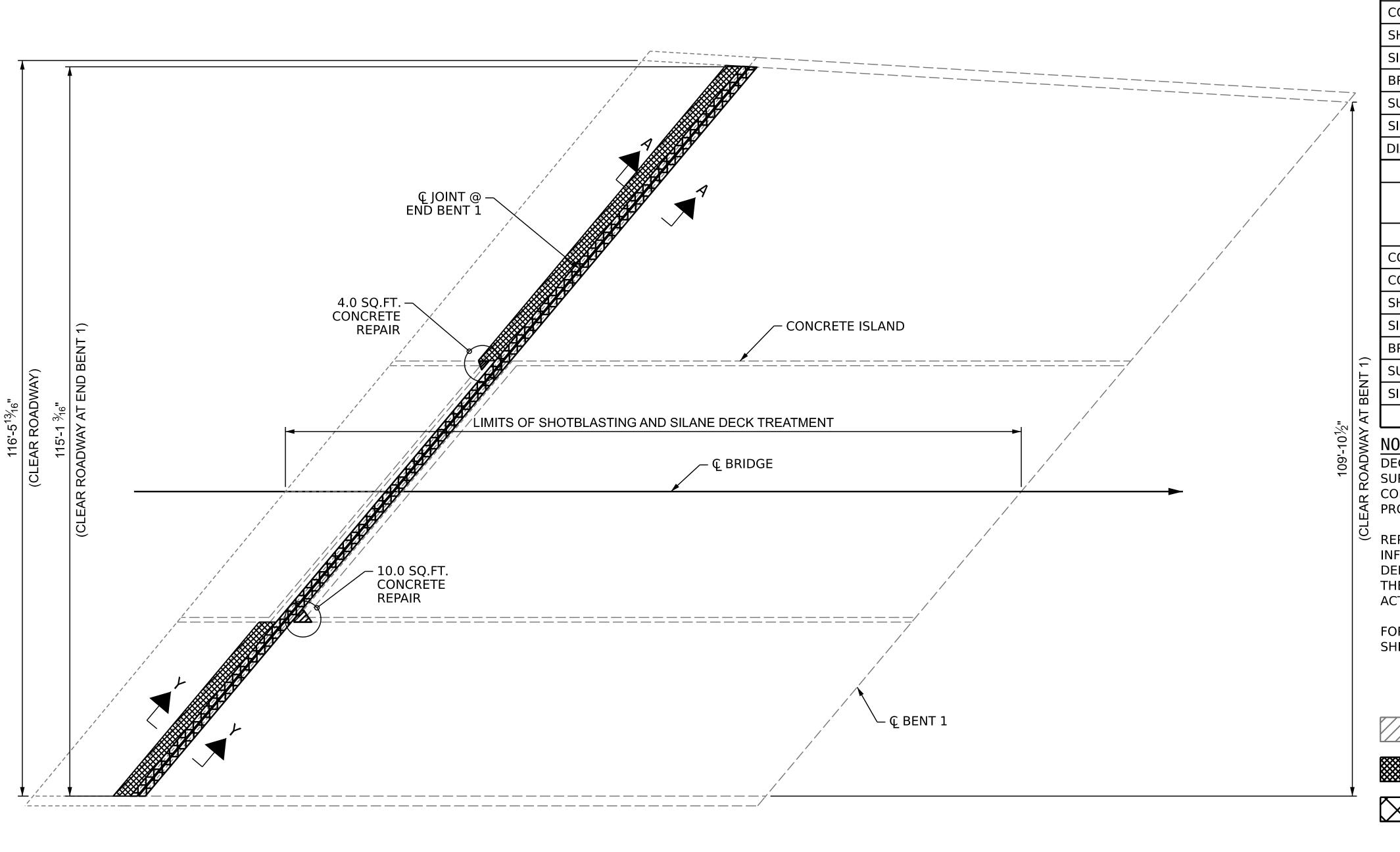
12/7/2022 R:\Structures\Plans\403\_025\_15BPR.59\_SMU\_AM\_S3-12\_911083.dgn napierce

FINAL UNLESS ALL SIGNATURES COMPLETED





12/7/2022 R:\Structures\Plans\404\_003\_15BPR59\_SMU\_TS01\_S4-02\_911084.dgn napierce



## 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.

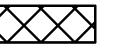
REPAIR LOCATIONS AND ESTIMATED QUANTITIES ARE BASED ON THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATIONS AND DESCRIPTION OF THE REPAIRS AND ENTER THE ACTUAL QUANTITIES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

PROJECT NO. 15BPR.59

WAKE COUNTY

BRIDGE NO. 911084



DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK SURFACE REPAIR

CDAN A AND

SPAN A AND APPROACH SLAB

		REVISIONS				SHEET N	
DOCUMENT NOT CONSIDERED	NO.	BY:	DATE:	NO.	BY:	DATE:	S4-03
FINAL UNLESS ALL	1			3			TOTAL SHEETS
SIGNATURES COMPLETED	2			4			<b>l</b> 21

SPAN A

EXISTING ASPHALT
TO BE MILLED
AND REPAVED

EXISTING

EXISTING

EXISTING

EXISTING

B''

EXISTING

EXISTING

B''

EXISTING

B''

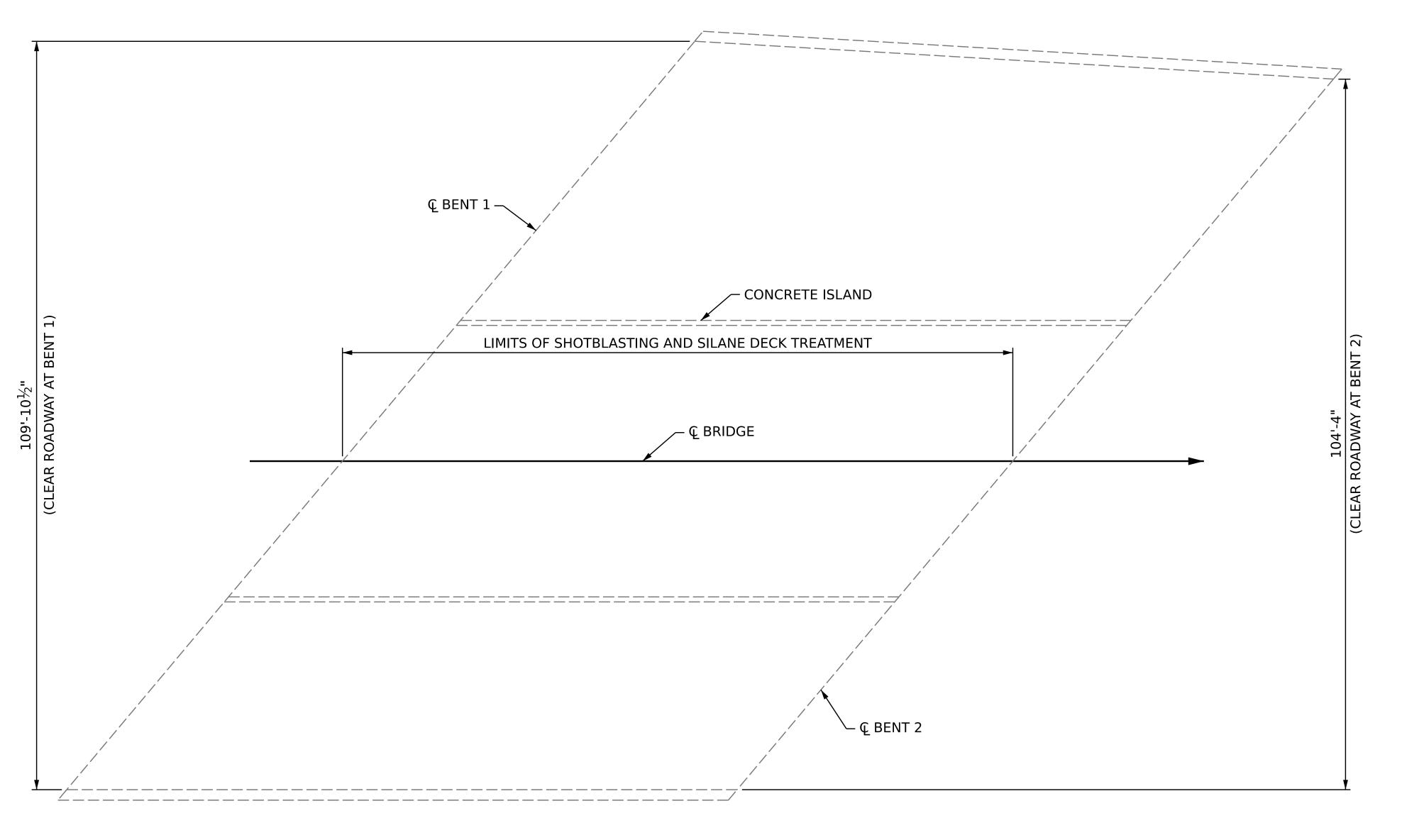
EXISTING

TOP OF EXISTING

DECK

DRAWN BY: \_\_\_\_\_\_D.A. CANTRELL DATE: 03/2021
CHECKED BY: \_\_\_\_\_\_A.Y. GODFREY DATE: 10/2022
DESIGN ENGINEER OF RECORD: \_\_\_\_\_\_N.A. PIERCE DATE: 12/7/2022
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napierce

APPROACH SLAB



## 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

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



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RALEIGH DECK SURFACE REPAIR

SPAN B

REVISIONS S4-04 DATE: NO. BY: DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DRAWN BY: D.A. CANTRELL
CHECKED BY: A.Y. GODFREY
DESIGN ENGINEER OF RECORD: N.A. PIERCE

DATE: 03/2021
DATE: 10/2022
DATE: 12/2022

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SPAN B

**NOTES** PROVISION. CONCRETE ISLAND LIMITS OF SHOTBLASTING AND SILANE DECK TREATMENT € BRIDGE  $\sim$   $\mathbb{Q}$  BENT 3 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 PREPARTAION FOR CONCRETE BARRIER RAIL	790.0 SQ.FT.	
SILANE BARRIER RAIL TREATMENT	790.0 SQ.FT.	

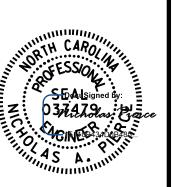
DECK SURFACE REPAIR QUANTITIES REPRESENT ESTIMATED VALUES OF CLASS II SURFACE PREPARATION AND CONCRETE DECK REPAIR AFTER REMOVAL OF UNSOUND CONCRETE. (MIN. 2" CLEAR TO SAWCUT). SEE CONCRETE FOR DECK REPAIR SPECIAL PROVISION.

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



DEPARTMENT OF TRANSPORTATION
RALEIGH

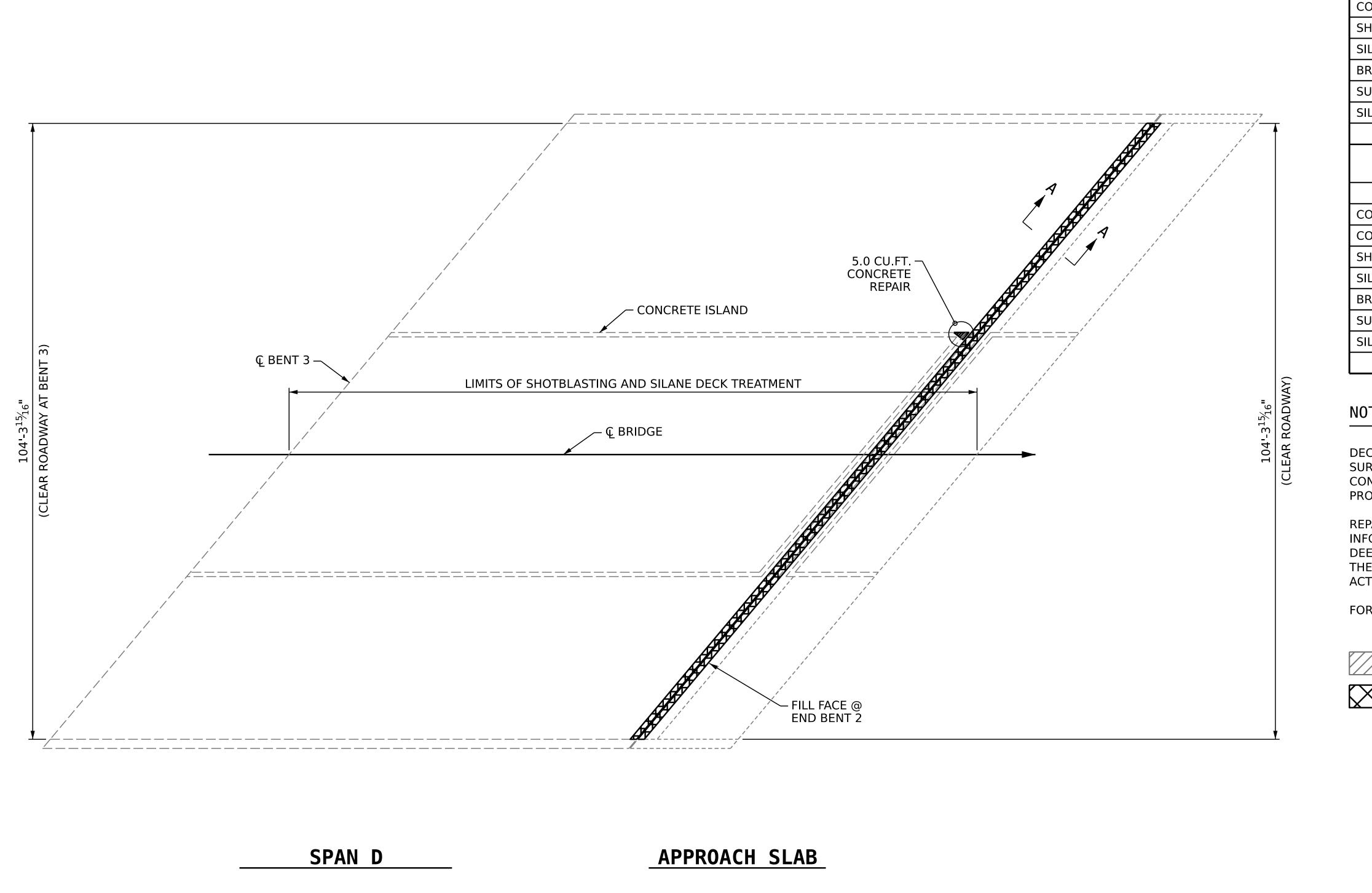
DECK SURFACE REPAIR

SPAN C

12/08/2022

DRAWN BY: D.A. CANTRELL
CHECKED BY: A.Y. GODFREY
DESIGN ENGINEER OF RECORD: N.A. PIERCE

DATE: 03/2021
DATE: 10/2022
DATE: 12/2022



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 PREPARTAION FOR CONCRETE BARRIER RAIL	797.0 SQ.FT.	
SILANE BARRIER RAIL TREATMENT	797.0 SQ.FT.	

#### APPROACH SLAB

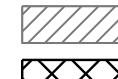
	ESTIMATE	ACTUAL
CONCRETE DECK REPAIR FOR SILANE DECK TREATMENT	0.0 CU. FT	
CONCRETE REPAIR	0.0 CU.FT.	
SHOTBLASTING BRIDGE DECK	29.4 SQ. YDS.	
SILANE DECK TREATMENT	29.4 SQ. YDS.	
BRIDGE JOINT DEMOLITION	69.0 SQ. FT.	
SURFACE PREPARTAION FOR CONCRETE BARRIER RAIL	136.0 SQ.FT.	
SILANE BARRIER RAIL TREATMENT	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

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

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DECK SURFACE REPAIR

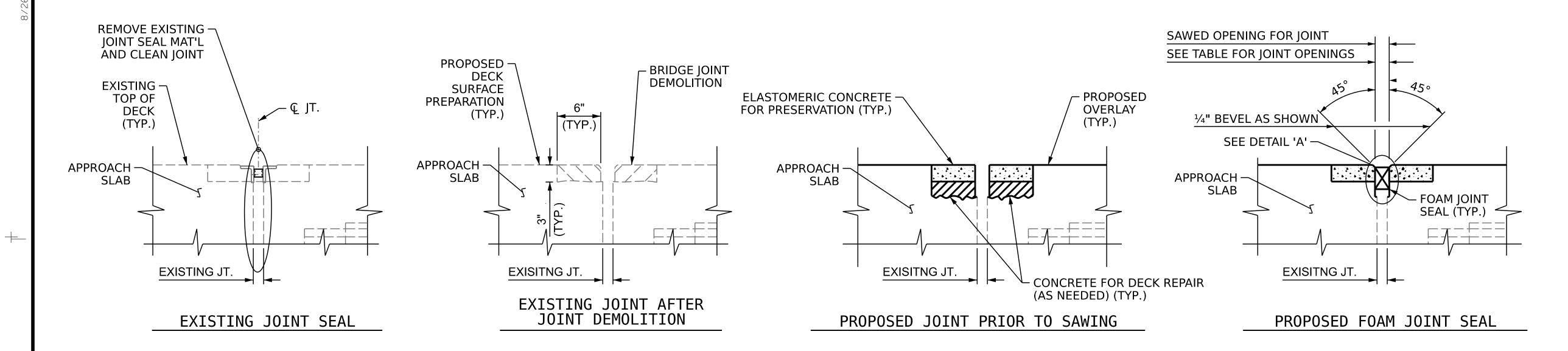
SPAN D AND APPROACH SLAB

REVISIONS NO. BY: S4-06 DATE: DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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DRAWN BY: D.A. CANTRELL
CHECKED BY: A.Y. GODFREY
DESIGN ENGINEER OF RECORD: N.A. PIERCE

DATE: 03/2021
DATE: 10/2022
DATE: 12/2022



# (TYP. AT END BENTS)

JOINT REPAIR QUAN	TITY TA	BLE
	ESTIMATED	ACTUAL
FOAM JOINT SEALS FOR PRESERVATION	325.0 LN. FT.	

ightharpoonup C

PLAN

( @ END BENT )

−Ç JOINT @ END BENT

€ JOINT — @ BENT

JOINT SEAL AS

MANUFACTURER C

PLAN

( @ BENT )

RECOMMENDED BY

PROVIDE WATERTIGHT — SEAL AT END OF FOAM

SAWED	<b>JOINT</b>	O	PENIN	<b>VG</b>	TA	ABLE
			SAWE	D JT.	OPE	NING
			(PERPEI	NDÍCL	JLAF	R TO JT.)
LOCATION			AT 45°	AT 6	0°	AT 90°
END BENT 1			2½"	21/2	ļ	1%"
END BENT 2			21/2"	21/2	,II	1%"

C <b>←</b>	RAIL	
B B EXISTING OPENING (DECK)		
SAWED OPENING (DECK)		

ELASTOMERIC CONCRETE

FOR PRESERVATION

LOCATION

- RADIUS OF

- BOTTOM OF SEAL

SECTION C-C

SAW BLADE

END BENT 1

END BENT 2

TOTAL

ESTIMATED

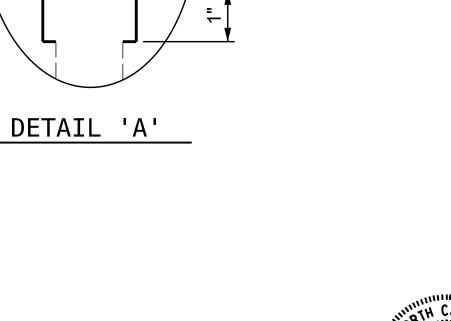
(CU.FT.)

42.8 38.6

81.4

ACTUAL (CU.FT.)

## JOINT SEAL DETAILS



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 ACCOMODATE THE MINIMUM EXPANSION SHOWN ON THE PLANS.

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

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

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

THE INSTALLED FOAM JOINTS SHALL BE WATER TIGHT.

THE CONTRACTOR SHALL SAW CUT TO A NOMINAL DEPTH OF  $\frac{1}{2}$ " 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.

PROJECT NO. 15BPR.59

WAKE COUNTY

BRIDGE NO. 911084

Populajquedby:

OBJARA PLAN

OSJARA PLAN

OS

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

EXISTING OPENING (DECK)

SAWED OPENING (DECK)

PROVIDE WATERTIGHT -

SEAL AT END OF FOAM

JOINT SEAL AS RECOMMENDED BY

MANUFACTURER

12/7/2022 R:\Structures\Plans\404\_013\_15BPR59\_SMU\_JT01\_S4-07\_911084.dgn

G1 ( G2 ) G3 G4 FILL FACE @ END BENT 1 G6 G7 © GIRDER (TYP.) G8 G9 (G10) (G11) (G12) G14 (G15) (G16) – Q BENT 1 (G17) \*F2 -\*F3 — **PLAN** \*F4 ─<u></u> DRAWN BY: D.A. CANTRELL
CHECKED BY: A.Y. GODFREY
DESIGN ENGINEER OF RECORD: N.A. PIERCE
DATE: 03/2021
DATE: 10/2022
DATE: 12/2022 GIRDER DAMAGE LOCATIONS

DECK UNDERSIDE REPAIR QUANTITY TABLE QUANTITIES SPAN A ACTUAL **ESTIMATE** AREA AREA VOLUME VOLUME SHOTCRETE REPAIRS SF UNDERSIDE OF DECK CONCRETE DIAPHRAGM OVERHANG 0 **CONCRETE GIRDER** VOLUME AREA VOLUME AREA CONCRETE REPAIRS UNDERSIDE OF DECK 0 CONCRETE DIAPHRAGM

0

AREA

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**

OVERHANG

**GIRDER ENDS** 

**CONCRETE GIRDER** 

EPOXY COATING

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.

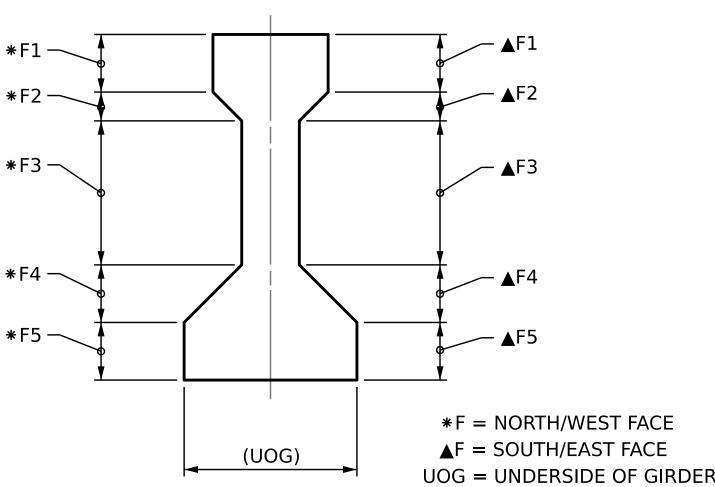
EPOXY COAT THE ENDS OF ALL CONCRETE GIRDERS.

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

SHOTCRETE REPAIR AREA



CONCRETE REPAIR AREA



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

AREA

BRIDGE NO. \_\_\_

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DECK UNDERSIDE REPAIR

SPAN A

**GIRDER SECTION** 

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BOEUNIQUE OF STATES

12/08/2022

		SHEET NO.					
<u>.</u>	NO.	BY:	DATE:	NO.	BY:	DATE:	S4-08
ا .	1			3			TOTAL SHEETS
	2			4			21

12/7/2022 R:\Structures\Plans\404\_015\_15BPR59\_SMU\_DUR01\_S4-08\_911084.dgn napierce

G2 ( G3 ) Ç BENT 1 → G5 ( G6 ) G7 ( G9 ) (G10) (G11) (G12) (G14)(G15) – Q BENT 2 (G16) (G17)

**PLAN** 

DECK UNDERSIDE REPAIR QUANTITY TABLE QUANTITIES SPAN B ACTUAL **ESTIMATE** AREA AREA VOLUME VOLUME SHOTCRETE REPAIRS SF UNDERSIDE OF DECK CONCRETE DIAPHRAGM **OVERHANG** 0 **CONCRETE GIRDER** AREA VOLUME AREA VOLUME CONCRETE REPAIRS UNDERSIDE OF DECK 0 CONCRETE DIAPHRAGM OVERHANG **CONCRETE GIRDER** 0 AREA AREA EPOXY COATING

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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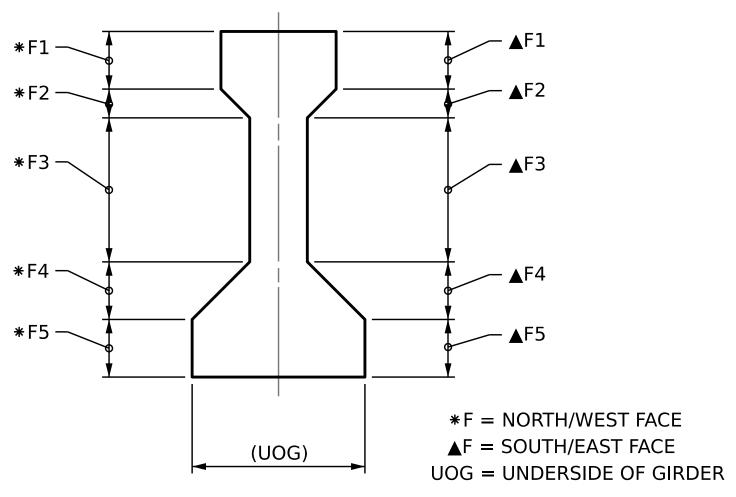
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SHOTCRETE REPAIR AREA



CONCRETE REPAIR AREA



PROJECT NO. 15BPR.59 WAKE COUNTY 911084

BRIDGE NO. \_\_\_

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DECK UNDERSIDE REPAIR

SPAN B

**GIRDER SECTION** 

GIRDER DAMAGE LOCATIONS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

12/08/2022

			REV]	SION	IS		SHEET NO.
<u>- D</u>	NO.	BY:	DATE:	NO.	BY:	DATE:	S4-09
ا ا	1			3			TOTAL SHEETS
	2			4			21

ANTRELL

PIERCE

N.A. PIERCE

DATE: 03/2021

DATE: 10/2022

DATE: 12/2022 DESIGN ENGINEER OF RECORD: \_ 12/7/2022 R:\Structures\Plans\404\_017\_15BPR59\_SMU\_DUR02\_S4-09\_911084.dgn napierce

D.A. CANTRELL

N.A. PIERCE

DRAWN BY :

€ BENT 2 — G8 (G13) (G15) **└ Ç** BENT 3 (G16 (G17)

**PLAN** 

# DECK UNDERSIDE REPAIR QUANTITY TABLE

CDAN C	QUANTITIES					
SPAN C	ESTI	MATE	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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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

SHOTCRETE REPAIR AREA



CONCRETE REPAIR AREA

12/08/2022

\*F2 — \*F3 — \*F4 ─<u></u> \*F = NORTH/WEST FACE  $\blacktriangle$ F = SOUTH/EAST FACE (UOG) UOG = UNDERSIDE OF GIRDER

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

> STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

GIRDER SECTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED GIRDER DAMAGE LOCATIONS

DECK UNDERSIDE REPAIR SPAN C

REVISIONS SHEET NO. NO. BY: S4-10 DATE: DATE:

DRAWN BY: D.A. CANTRELL
CHECKED BY: A.Y. GODFREY
DESIGN ENGINEER OF RECORD: N.A. PIERCE
DATE: 03/2021
DATE: 10/2022
DATE: 12/2022 12/7/2022 R:\Structures\Plans\404\_019\_15BPR59\_SMU\_DUR03\_S4-10\_911084.dgn napierce

€ BENT 3 -( G6 ) ( G9 ) (G10) (G11) (G12) (G14 (G15)(G16) ∽ FILL FACE @ END BENT 2 (G17)\*F2 -\*F3 — **PLAN** \*F4 ─<u></u> (UOG) **GIRDER SECTION** DRAWN BY: D.A. CANTRELL
CHECKED BY: A.Y. GODFREY
DESIGN ENGINEER OF RECORD: N.A. PIERCE
DATE: 03/2021
DATE: 10/2022
DATE: 12/2022 GIRDER DAMAGE LOCATIONS

DECK UNDERSIDE REPAIR QUANTITY TABLE QUANTITIES SPAN D **ESTIMATE** ACTUAL AREA AREA VOLUME VOLUME SHOTCRETE REPAIRS UNDERSIDE OF DECK 0 CONCRETE DIAPHRAGM OVERHANG 0 **CONCRETE GIRDER** AREA VOLUME AREA VOLUME CONCRETE REPAIRS UNDERSIDE OF DECK 0 CONCRETE DIAPHRAGM OVERHANG **CONCRETE GIRDER** 0 0 AREA AREA EPOXY COATING **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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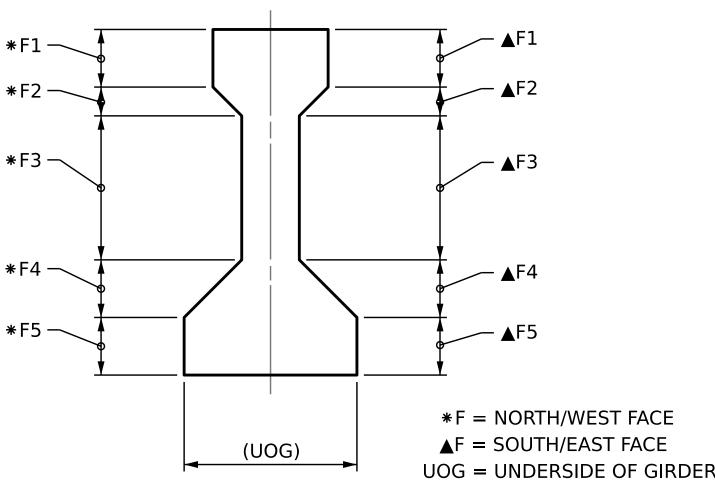
EPOXY COAT THE END OF ALL CONCRETE GIRDERS.

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

SHOTCRETE REPAIR AREA



CONCRETE REPAIR AREA



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

> STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DECK UNDERSIDE REPAIR

> > SPAN D

12/08/2022

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SHEET NO. REVISIONS S4-11 NO. BY: DATE: DATE:

12/7/2022 R:\Structures\Plans\404\_021\_15BPR59\_SMU\_DUR04\_S4-11\_911084.dgn napierce

TOP OF CAP **NOTES** QUANTITY TABLE. **ELEVATION** DRAWN BY: D.A. CANTRELL
CHECKED BY: A.Y. GODFREY
DESIGN ENGINEER OF RECORD: N.A. PIERCE
DATE: 03/2021
DATE: 10/2022
DATE: 12/2022

# SUBSTRUCTURE REPAIR QUANTITY TABLE QUANTITIES

QUANTITIES					
ESTI	MATE	ACTUAL			
AREA SF	VOLUME CF	AREA SF	VOLUME CF		
0	0				
0	0				
AREA SF	VOLUME CF	AREA SF	VOLUME CF		
0	0				
0	0				
	LINEAR FT		LINEAR FT		
	0				
	0				
	AREA SF		AREA SF		
	506.0				
	AREA SF  0  0  AREA SF  0	ESTIMATE  AREA VOLUME CF  0 0 0  AREA VOLUME CF  0 0 0  AREA CF  0 0 0  UNIVERSE CF  0 0 0  AREA CF  AREA CF  AREA SF  AREA SF	ESTIMATE ACT  AREA SF CF SF  0 0 0  0 0  AREA SF CF SF  0 0 0  AREA SF CF SF  0 0 0  0 0  LINEAR FT  0 0  AREA SF		

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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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

\_\_\_\_\_

SEVAL PROPERTY OF THE STATE OF

DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE REPAIR

END BENT 1

12/08/2022

REVISIONS SHEET NO.

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REVISIONS SHEET NO.

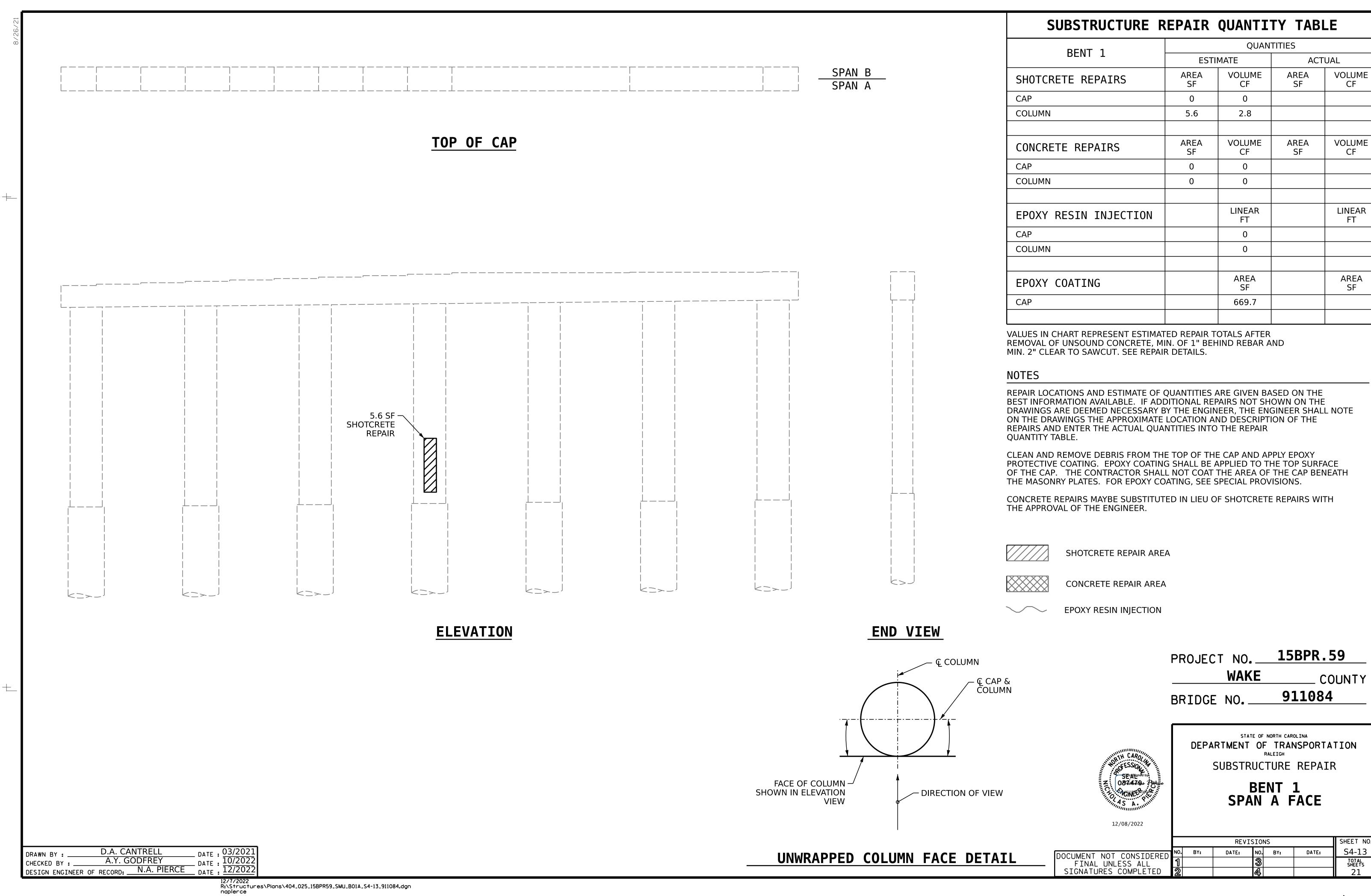
BY: DATE: NO. BY: DATE: S4-12

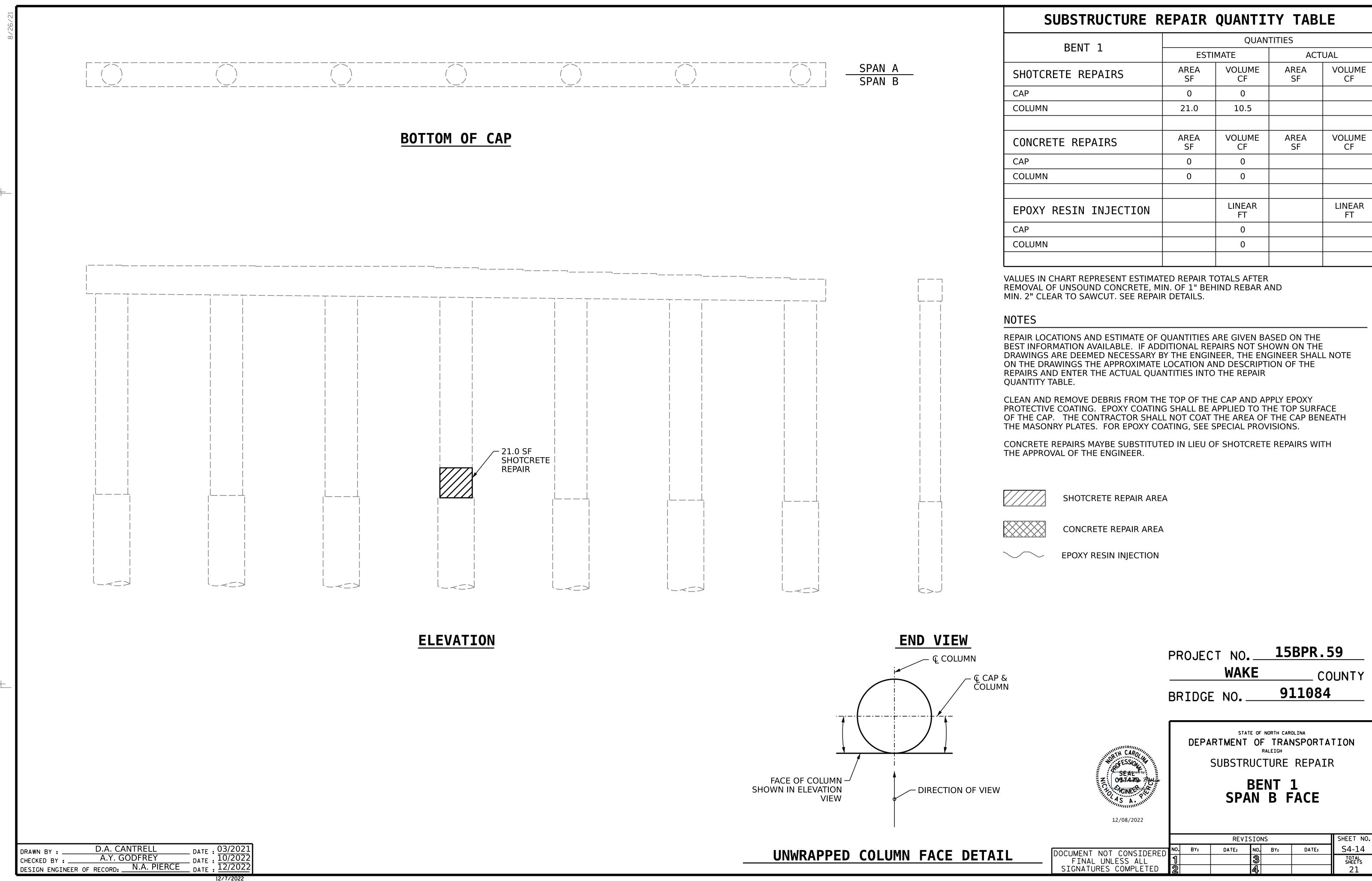
3 SHEET NO.

BY: DATE: NO. BY: DATE: S4-12

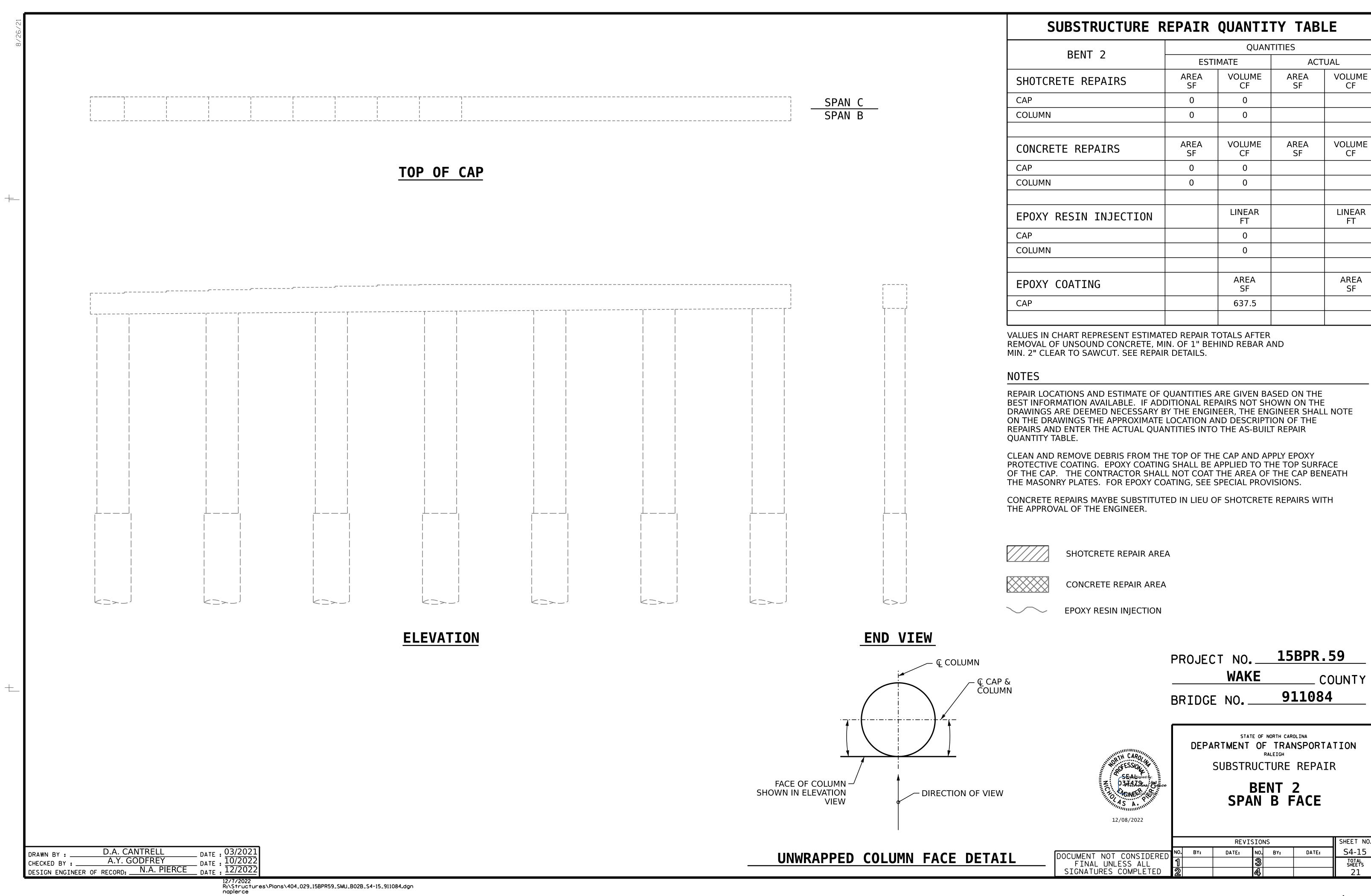
3 SHEET NO.

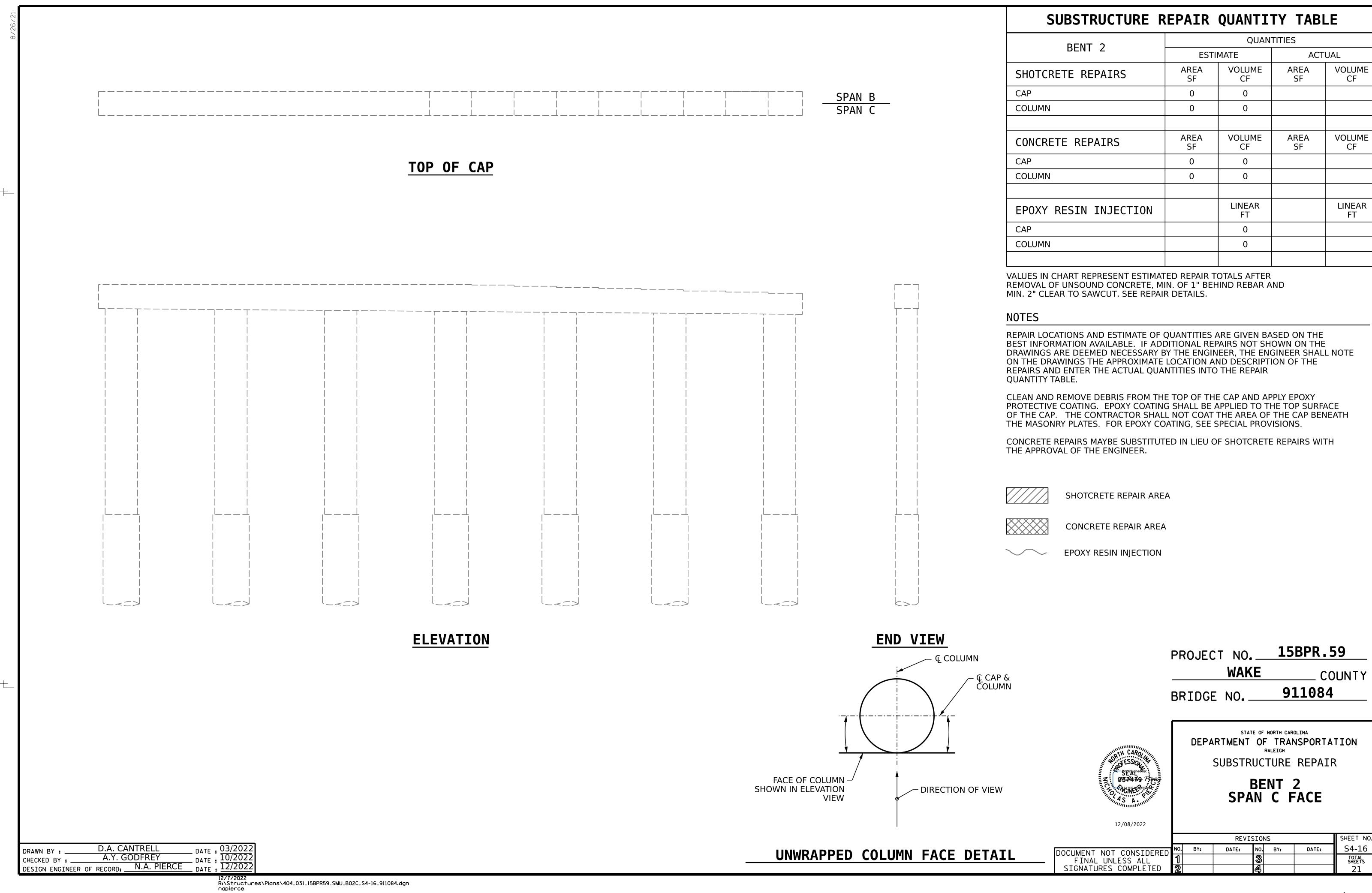
21





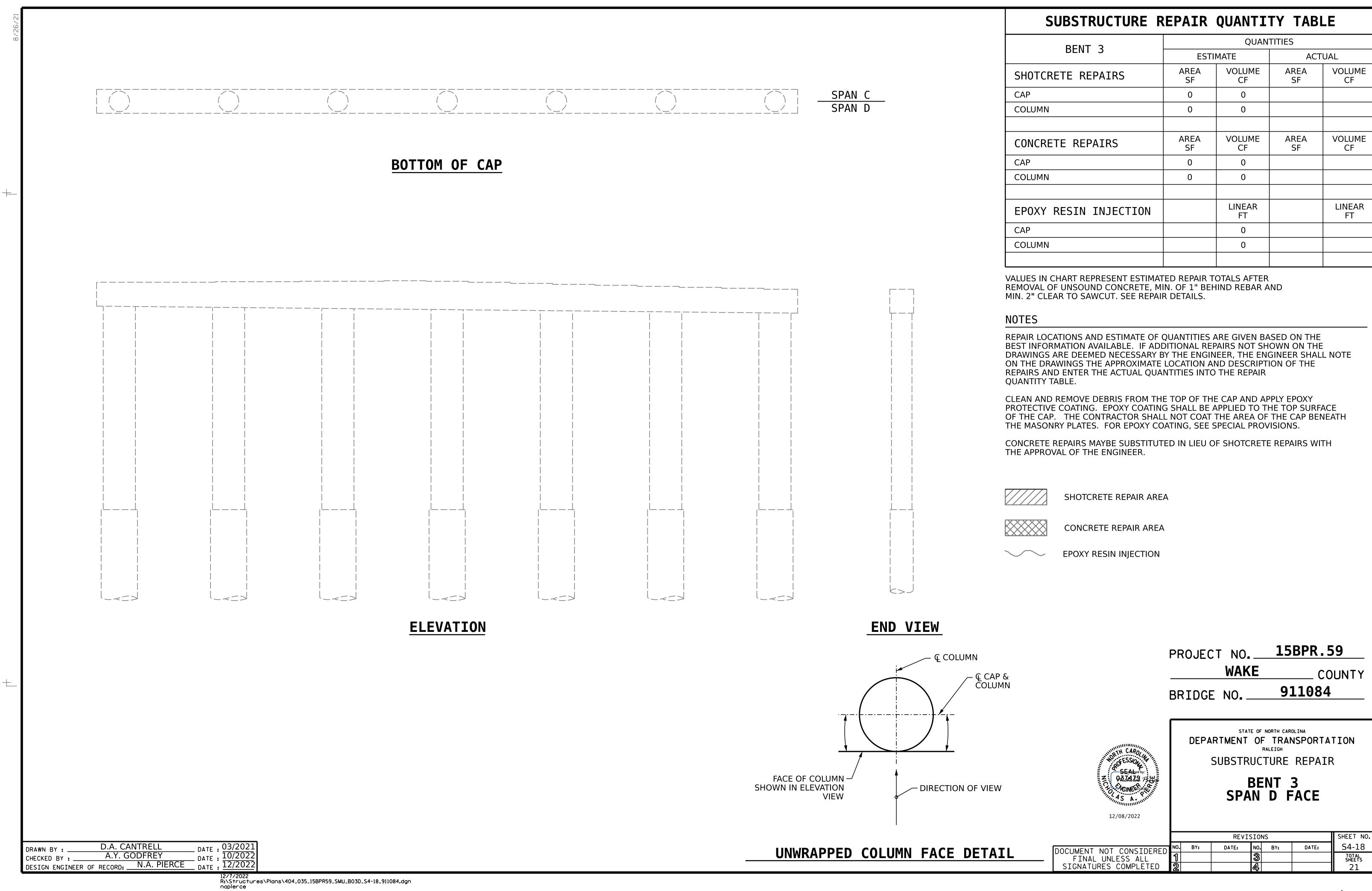
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SUBSTRUCTURE REPAIR QUANTITY TABLE QUANTITIES BENT 3 ACTUAL **ESTIMATE** AREA AREA VOLUME VOLUME SHOTCRETE REPAIRS SF SPAN D CAP 0 0 SPAN C COLUMN AREA AREA SF VOLUME VOLUME CONCRETE REPAIRS TOP OF CAP CAP 0 COLUMN 0 0 LINEAR LINEAR EPOXY RESIN INJECTION FT CAP COLUMN AREA AREA EPOXY COATING 637.5 CAP 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 ELEVATION** END VIEW PROJECT NO. 15BPR.59 € COLUMN WAKE COUNTY - Ç CAP & COLUMN 911084 BRIDGE NO. \_\_\_ STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION SEONAL PL SUBSTRUCTURE REPAIR FACE OF COLUMN -BENT 3 SPAN C FACE SHOWN IN ELEVATION DIRECTION OF VIEW VIEW 12/08/2022 SHEET NO. REVISIONS DRAWN BY: D.A. CANTRELL
CHECKED BY: A.Y. GODFREY
DESIGN ENGINEER OF RECORD: N.A. PIERCE

DATE: 03/2021
DATE: 10/2022
DATE: 12/2022 NO. BY: S4-17 DATE: DATE: DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED UNWRAPPED COLUMN FACE DETAIL 12/7/2022 R:\Structures\Plans\404\_033\_15BPR59\_SMU\_B03C\_S4-17\_911084.dgn napierce



TOP OF CAP **NOTES** QUANTITY TABLE. **ELEVATION** DRAWN BY: D.A. CANTRELL
CHECKED BY: A.Y. GODFREY
DESIGN ENGINEER OF RECORD: N.A. PIERCE
DATE: 03/2021
DATE: 10/2022
DATE: 12/2022

SUBSTRUCTURE REPAIR QUANTITY TABLE

END DENT 2	QUANTITIES					
END BENT 2	ESTI	MATE	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.

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SHOTCRETE REPAIR AREA

CONCRETE REPAIR AREA

**EPOXY RESIN INJECTION** 

PROJECT NO. 15BPR.59 WAKE COUNTY 911084

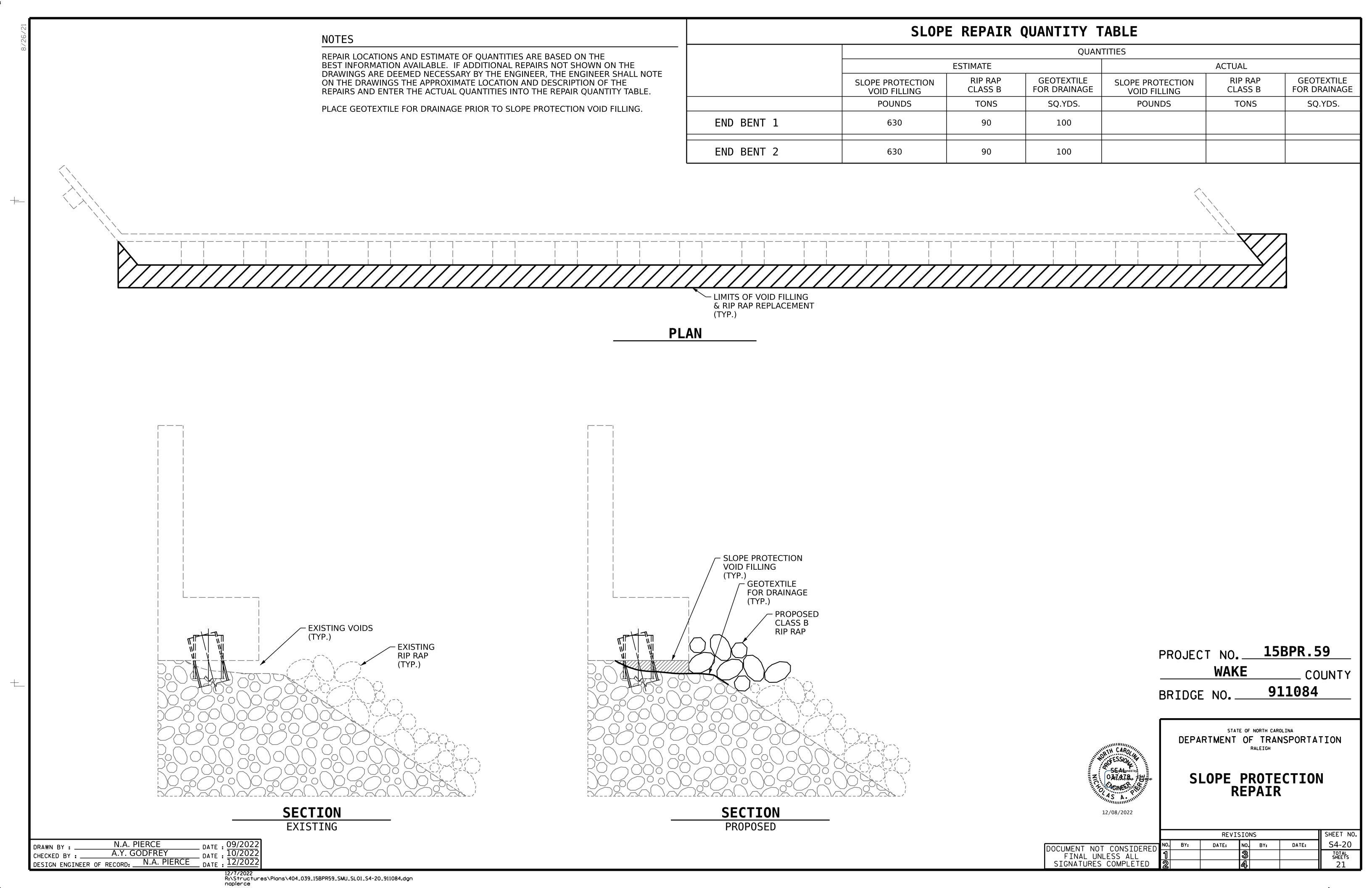
BRIDGE NO. \_\_\_\_

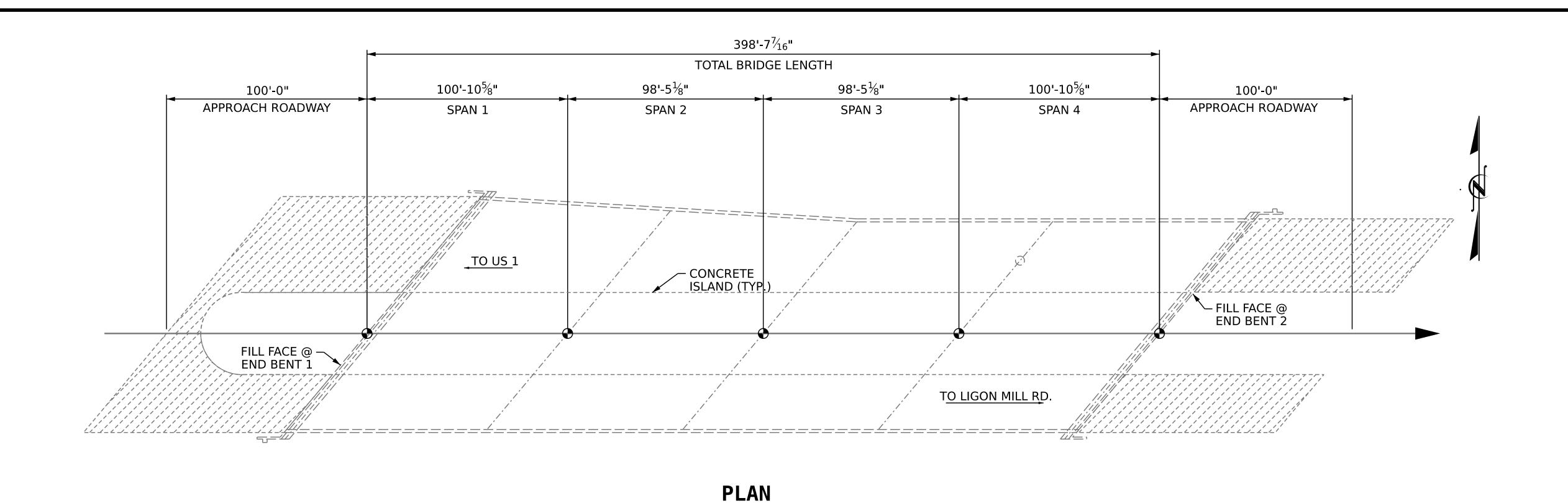
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION SUBSTRUCTURE REPAIR

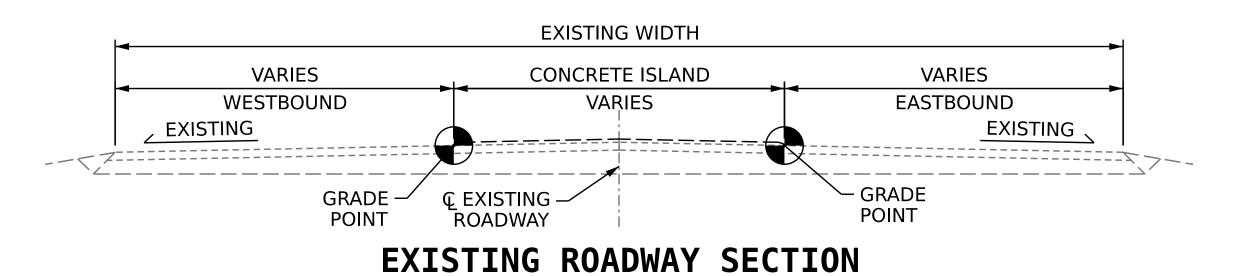
END BENT 2

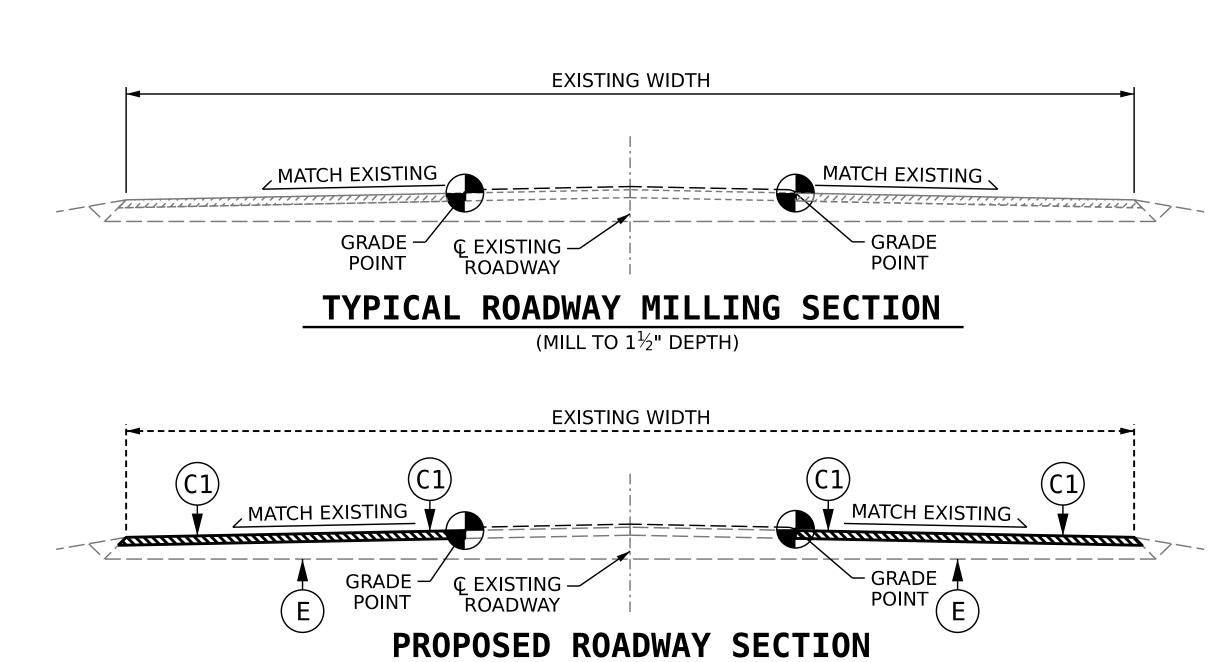
12/08/2022

REVISIONS SHEET NO. NO. BY: S4-19 DATE: DATE: DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED TOTAL SHEETS 21









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 1½" 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 11/2" 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 $1\frac{1}{2}$ " IN DEPTH OR GREATER THAN 2" IN DEPTH.
Е	EXISTING PAVEMENT

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



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

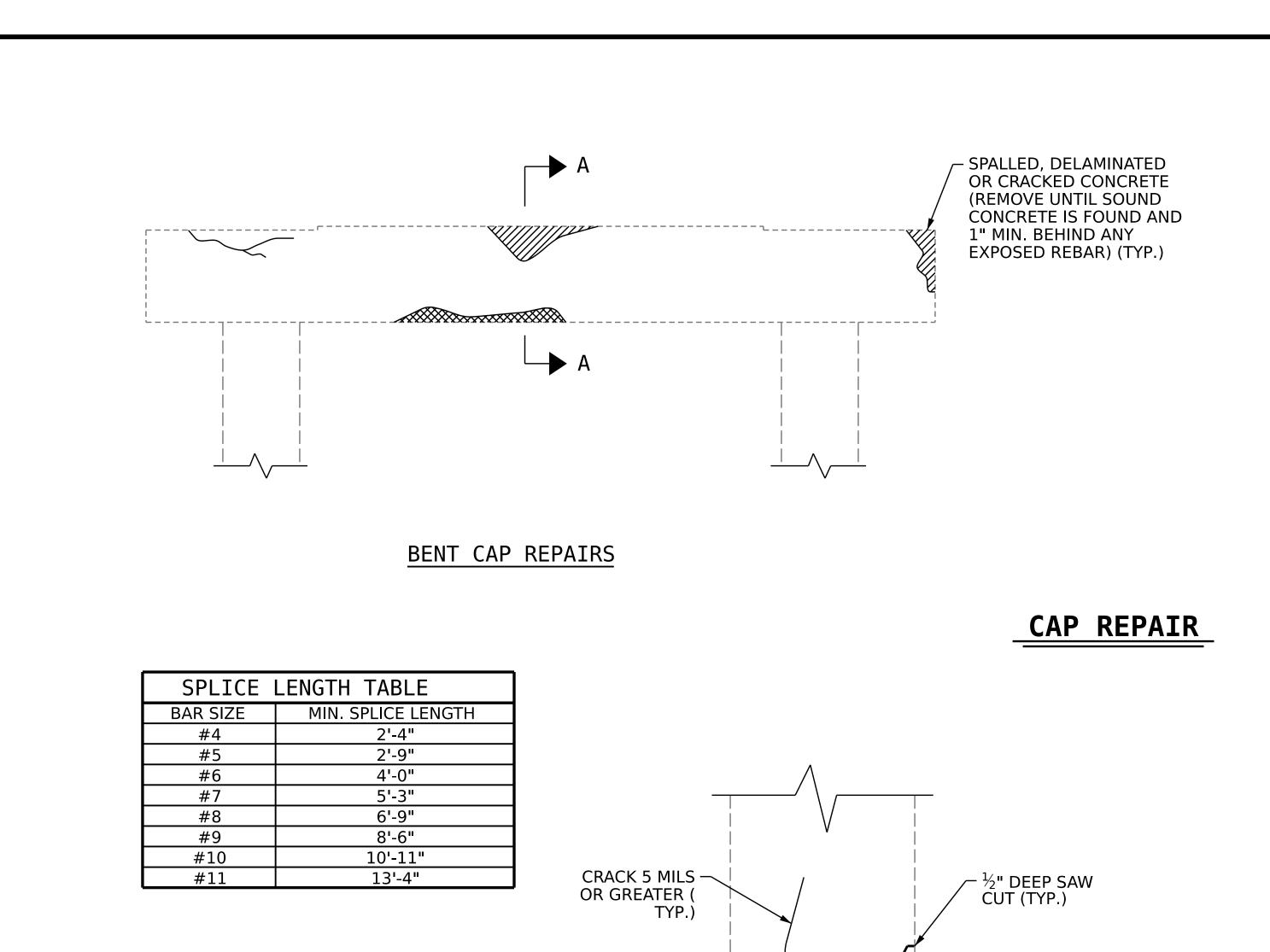
INCIDENTAL MILLING AND TYPICAL ROADWAY SECTIONS

12/08/2022

	REVISIONS					SHEET NO.	
UMENT NOT CONSIDERED	NO.	BY:	DATE:	NO.	BY:	DATE:	S4-21
FINAL UNLESS ALL	1			3			TOTAL SHEETS
IGNATURES COMPLETED	2			4			21

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

DOCL



REMOVE 1" (MIN.) -

BEHIND ANY EXPOSED REBAR

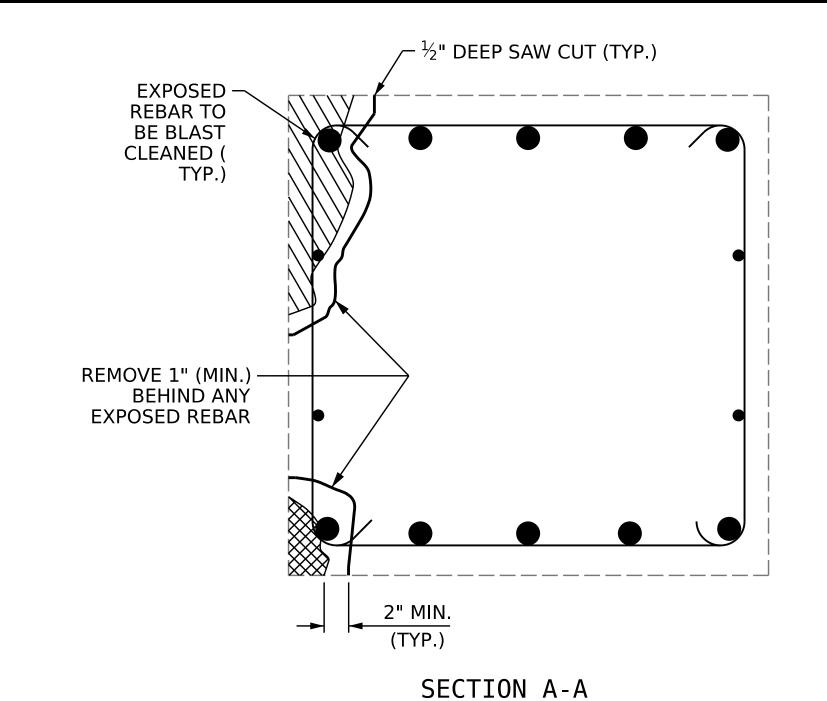
\* EXPOSED REBAR TO

BE BLAST CLEANED

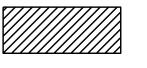
(TYP.)

\* REPAIR LENGTH SHALL NOT EXCEED 10 FEET.

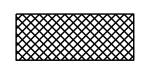
**ELEVATION OF COLUMN** 



## REPAIR KEY



CONCRETE REPAIR AREA (FORM AND POUR)



SHOTCRETE REPAIR AREA



EPOXY RESIN INJECTION (ERI)

#### 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 1½" 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.

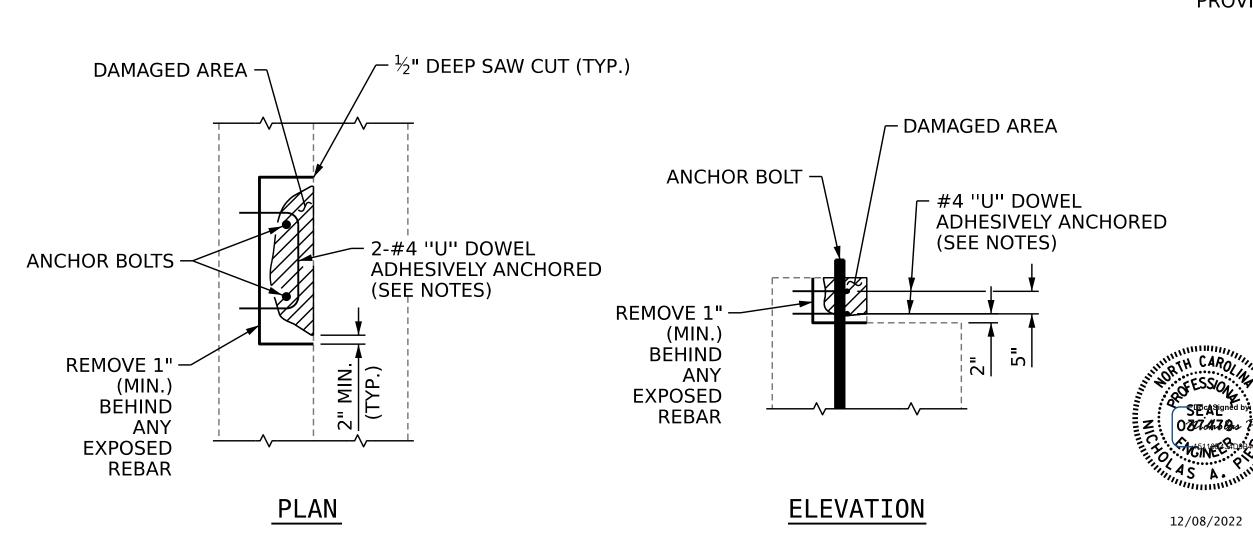
COAT ALL REPAIR SURFACE AREAS ON THE TOP OF CAPS, INCLUDING CHAMFERS, WITH EPOXY PROTECTIVE COATING, OVERLAPPING THE REPAIR AREA BY A MINIMUM OF 3" ON ALL POSSIBLE SIDES.

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.



BRIDGE NO.310306, 911039, 911084

PROJECT NO. 15BPR.59

DURHAM/WAKE

DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

TYPICAL CAP AND COLUMN REPAIR DETAILS

REVISIONS SHEET NO.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED 2 4 73

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

DRAWN BY :

CHECKED BY :

REMOVE -1" (MIN.)

BEHIND

EXPOSED

REBAR

ANY

2" MIN.

(TYP.)

PLAN OF COLUMN

PEDESTAL WALL REPAIR

12/7/2022
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napierce

COLUMN REPAIR

 $-\frac{1}{2}$ " DEEP SAW CUT

(TYP.)

\* EXPOSED

REBAR TO BE

**BLAST CLEANED** 

COUNTY

#### **NOTES:**

SECTION

REPAIR AREA AFTER

UNSOUND CONCRETE

HAS BEEN REMOVED

2'-0"

**EPOXY COAT** 

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 ½" GALVANIZED BOLTS, EPOXY ANCHORED WITH 2" EMBEDMENT. PLACE BOLTS IN A 6" GRID. USE A LATEX OR EPOXY PATCH MATERIAL FOR IMPROVED BOND. USE EXTREME CARE TO NOT DAMAGE STRANDS.

FOR PRESTRESSED CONCRETE GIRDER REPAIRS, SEE SPECIAL PROVISIONS.

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

FOR EPOXY COATING CONCRETE GIRDER ENDS. SEE SPECIAL PROVISIONS.

#### PRESTRESSED GIRDER REPAIR SEQUENCE:

- 1. SOUND CONCRETE TO DETERMINE EXTENTS OF REPAIR LOCATION.
- 2. REMOVE SURFACE CONCRETE TO VERIFY THAT SAWCUT DEPTH WILL NOT DAMAGE EXISTING REINFORCING STEEL. SAW CUT AROUND REPAIR AREA TO A NOMINAL DEPTH OF  $\frac{1}{2}$ ".
- B. REMOVE CONCRETE WITHIN SAW CUT AREA TO MINIMUM ½" DEPTH. IF CONCRETE IS DAMAGED BEYOND THE ORIGINAL SAW CUT, A NEW SAW CUT IS REQUIRED.
- ▲ 4. IF MORE THAN HALF THE CIRCUMFERENCE OF A REINFORCING BAR IS EXPOSED DURING THIS PROCESS, REMOVE ADDITIONAL CONCRETE TO 1" BEHIND THE BAR. THIS DOES NOT APPLY TO PRESTRESSED STRANDS.
- 5. ALL UNSOUND CONCRETE MUST BE REMOVED, HOWEVER, PRESTRESSED STRANDS SHOULD NOT BE DISTURBED UNLESS ABSOLUTELY NECESSARY. USE EXTREME CARE TO NOT DAMAGE STRANDS.
- 6. CLEAN AND PREPARE ALL EXPOSED REINFORCING BARS AND PRESTRESSED STRANDS IN ACCORDANCE WITH THE REPAIRS TO PRESTRESSED CONCRETE GIRDERS SPECIAL PROVISIONS. FOR BARS WITH MORE THAN 10% SECTION LOSS, SPLICE AND SECURELY TIE SUPPLEMENTAL REINFORCING BARS AS NEEDED. NOTE AND PROVIDE DETAILED DOCUMENTATION, INCLUDING LOCATION AND SEVERITY, OF ALL DAMAGE TO PRESTRESSED STRANDS THAT EXCEEDS 10% SECTION LOSS. IF FIVE (5) OR MORE STRANDS ARE DAMAGED, NOTIFY THE ENGINEER PRIOR TO PLACEMENT OF REPAIR MATERIAL.
- . REMOVE ALL LOOSE OR WEAKENED MATERIAL THEN CLEAN THE REPAIR AREA OF DIRT, GREASE, OIL, AND FOREIGN MATTER. (PICTURE REQUIRED)
- 8. PREPARE SURFACE AND PLACE APPROVED REPAIR MATERIAL ACCORDING TO MANUFACTURER'S RECOMMENDATIONS. MAXIMUM AGGREGATE SIZE FOR REPAIR MATERIAL SHALL NOT EXCEED ⅔ THE MINIMUM REPAIR DEPTH. (PICTURE REQUIRED)

#### PRESTRESSED GIRDER STRAND REPAIR SEQUENCE:

- 1. REMOVE LIVE LOAD FORM 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 ½" AT RIGHT ANGLES AROUND THE DAMAGED AREA. CHIP OUT REST OF CONCRETE TO A SUFFICIENT REPAIR DEPTH.
- 3. SPLICE STRANDS USING THE MECHANICAL SPLICE STRAND ASSEMBLY AND TENSION TO REQUIRED FORCE PER THE MANUFACTURER'S GUIDELINES.
- 4. PATCH REPAIR AREA USING NON SHRINK GROUT. PROFILE OF GIRDER MAY NEED TO BE INCREASED AROUND REPAIR AREA TO PROVIDE PROPER COVER.
- 5. AFTER GROUT HAS CURED PLACE TRAFFIC BACK ON BRIDGE OR REPAIRED AREA OF BRIDGE.

PROJECT NO. 15BPR.59

DURHAM/WAKE COUNTY

BRIDGE NO. \_\_\_

911084



12/08/2022

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

PRESTRESSED CONCRETE GIRDER REPAIR DETAILS

DOCUMENT NOT CONSIDERED NO. FINAL UNLESS ALL SIGNATURES COMPLETED 2

RED NO. BY: DATE: NO. BY: DATE: S-04

1 3 500

2 4 73

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### STANDARD NOTES

#### DESIGN DATA:

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

#### MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2018 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

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

#### CONCRETE:

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

#### CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED 3/4" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 11/2" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 1/4" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A 1/4" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

#### DOWELS:

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

#### ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT,

#### ETC. IN CASTING SUPERSTRUCTURES:

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

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

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

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

#### REINFORCING STEEL:

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

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

#### STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE  $\frac{1}{8}$ " Ø SHEAR STUDS FOR THE  $\frac{3}{4}$ " Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 -  $\frac{1}{8}$ " Ø STUDS FOR 4 -  $\frac{3}{4}$ " Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF  $\frac{1}{8}$ " Ø STUDS ALONG THE BEAM AS SHOWN FOR  $\frac{3}{4}$ " Ø STUDS BASED ON THE RATIO OF 3 -  $\frac{1}{8}$ " Ø STUDS FOR 4 -  $\frac{3}{4}$ " Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST \( \frac{1}{6}'' \) IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16 INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

#### HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

#### SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105-4.

ENGLISH

JANUARY, 1990