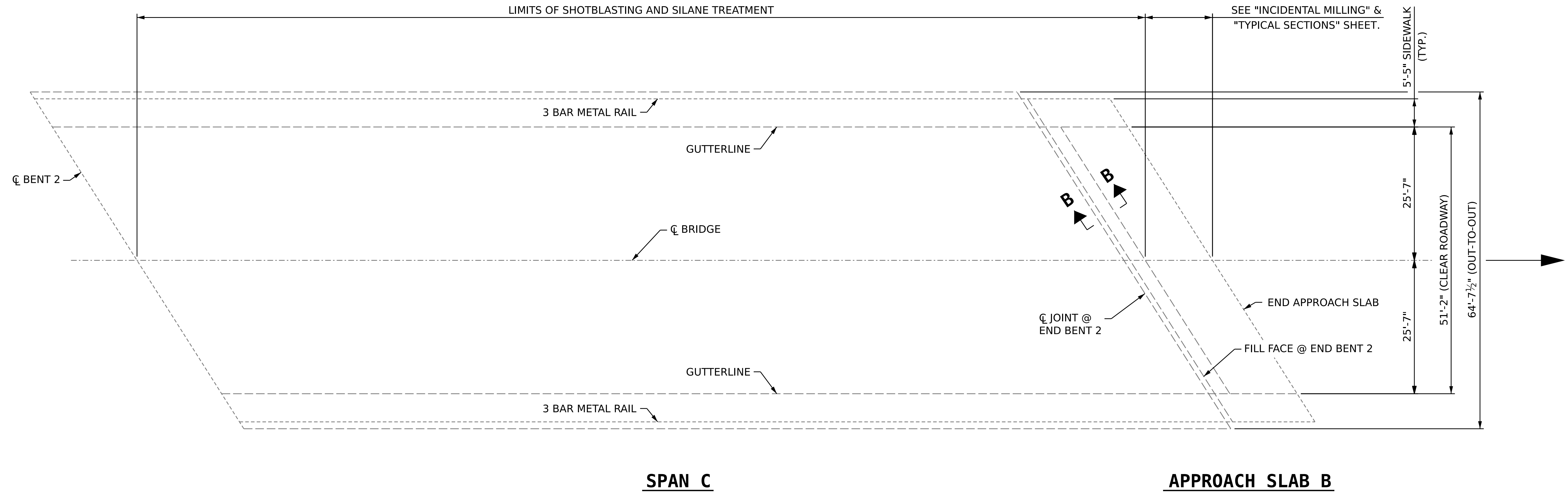


8/26/21

DECK SURFACE REPAIR QUANTITY TABLE

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



NOTES

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

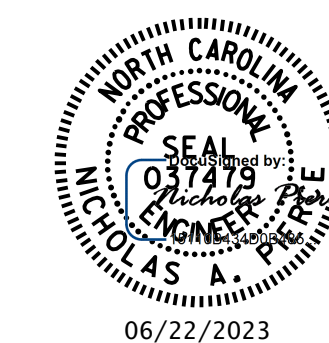
FOR SECTION B-B, SEE "EXPANSION JOINT SEAL REPAIR DETAILS" SHEET.

PROJECT NO. **15BPR.124.3**

WAKE COUNTY

BRIDGE NO. **911039**

SHEET 3 OF 3



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK SURFACE REPAIR

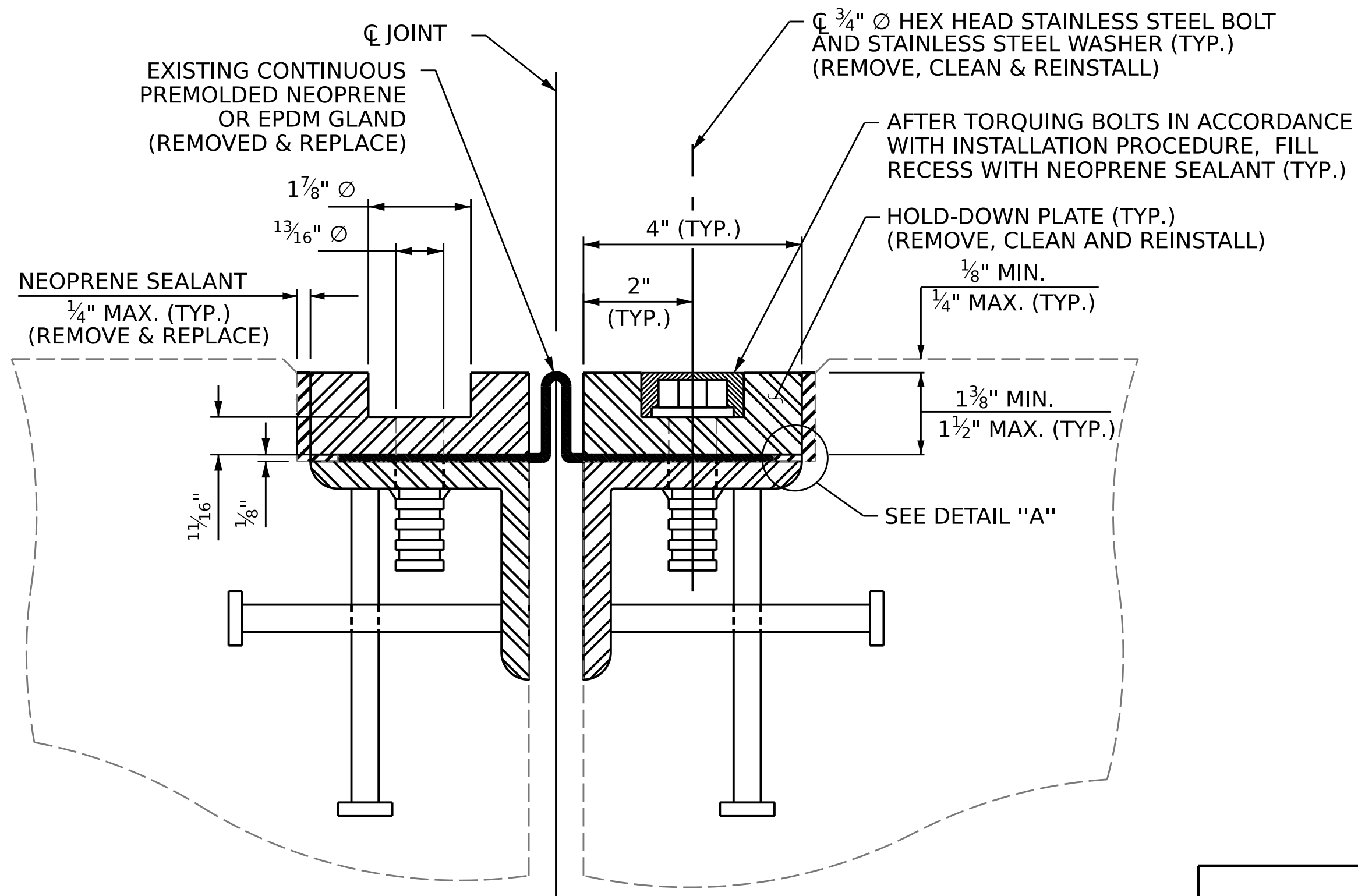
**SPAN C AND
APPROACH SLAB B**

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

6/22/2023
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 aygodfrey

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

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



EXPANSION JOINT DETAILS
SECTION B-B

SUGGESTED REPAIR INSTALLATION PROCEDURE

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

GENERAL NOTES

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

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

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

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

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

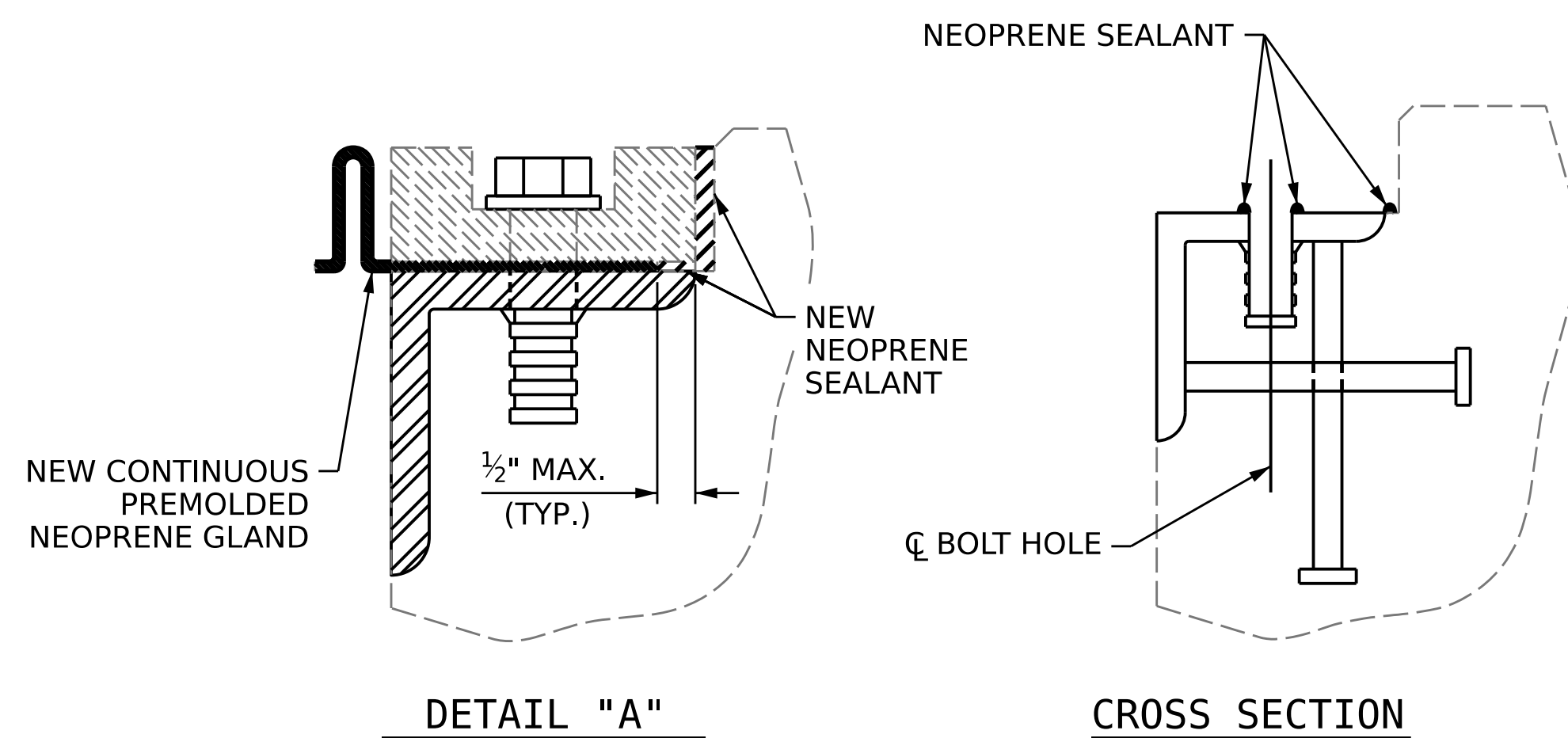
FOR EXPANSION JOINT SEAL FOR PRESERVATION, SEE SPECIAL PROVISIONS.

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

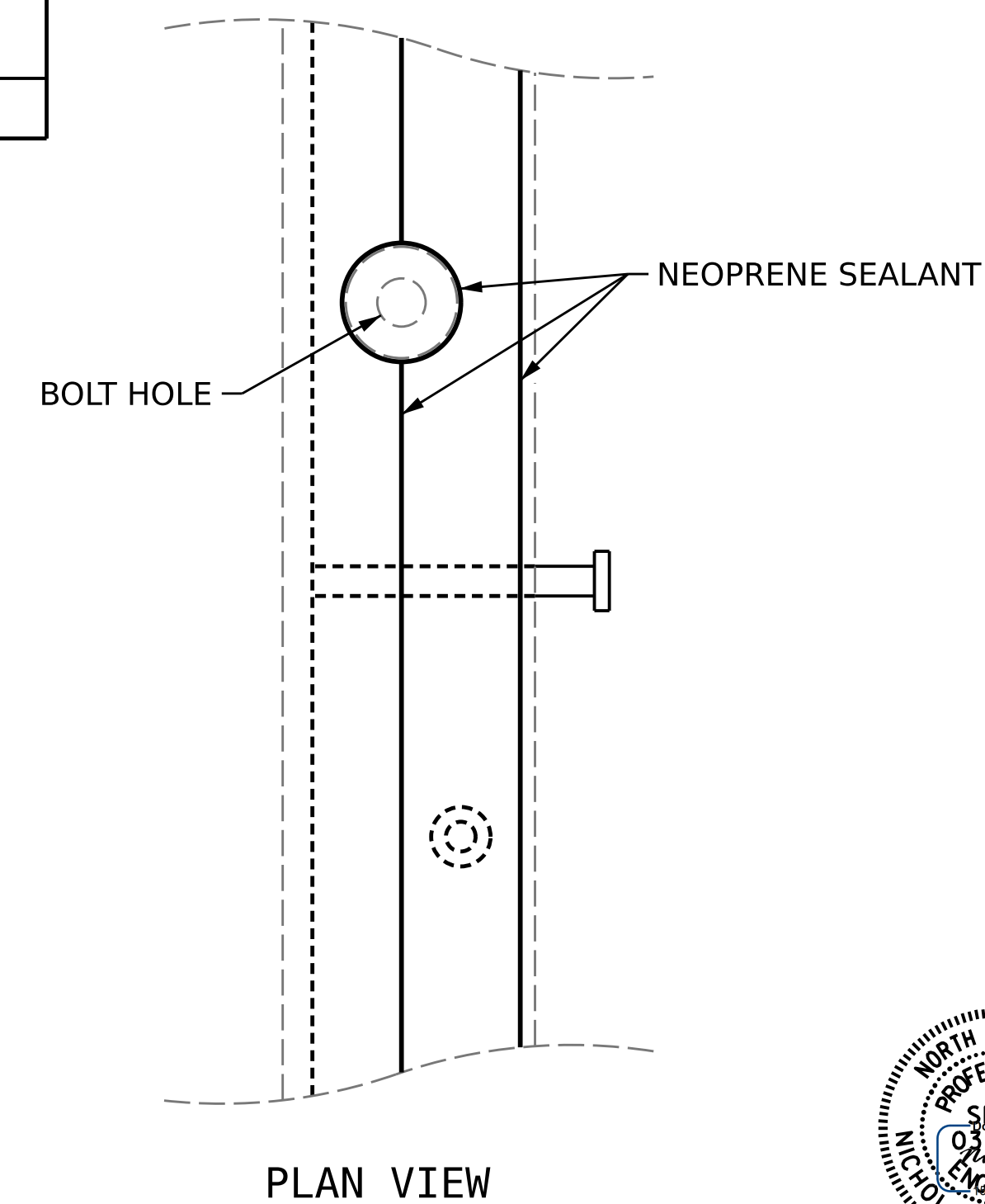
MOVEMENT AND SETTING AT JOINT					
LOCATION	SKEW ANGLE	TOTAL MOVEMENT (ALONG C RDWY)	PERPENDICULAR JOINT OPENING AT 32°F	PERPENDICULAR JOINT OPENING AT 60°F	PERPENDICULAR JOINT OPENING AT 90°F
END BENT 2	57° 36' 01"	2 1/4"	2 3/8"	1 15/16"	1 9/16"

JOINT DIMENSIONS ARE FROM ORIGINAL AS-BUILT PLANS

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



INSTALLATION SKETCH



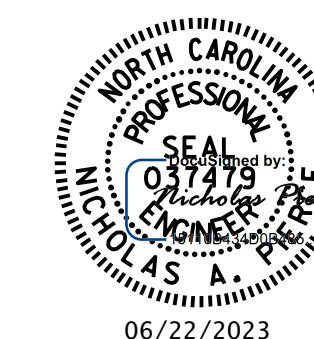
PLAN VIEW

PROJECT NO. **15BPR.124.3**

WAKE COUNTY

BRIDGE NO. **911039**

SHEET 1 OF 2

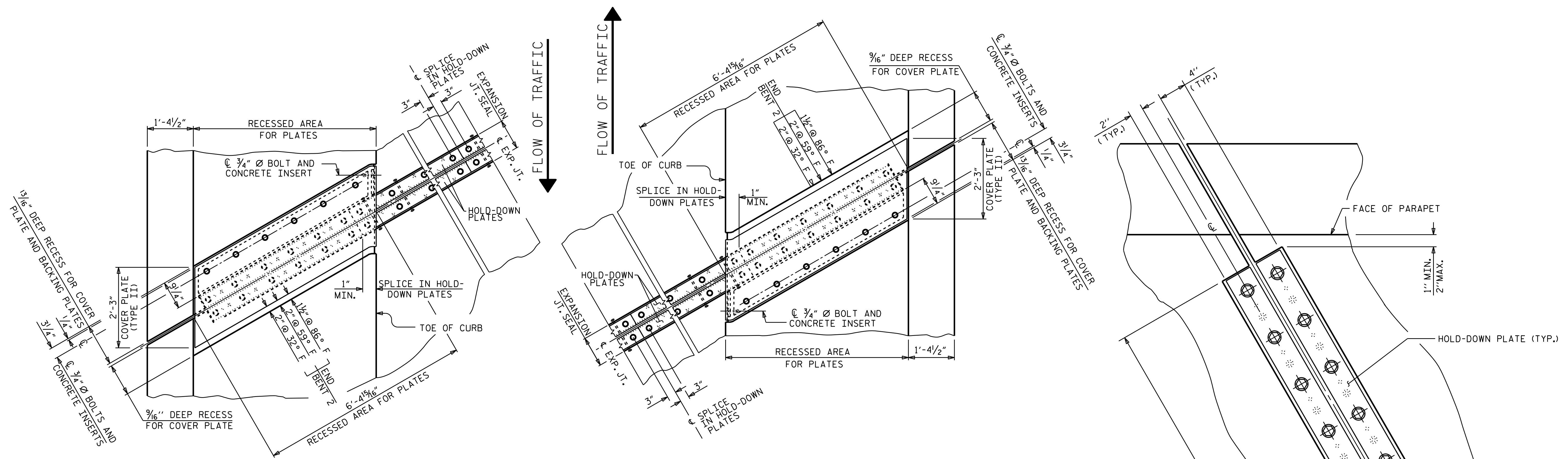


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
EXPANSION JOINT SEAL REPAIR DETAILS

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

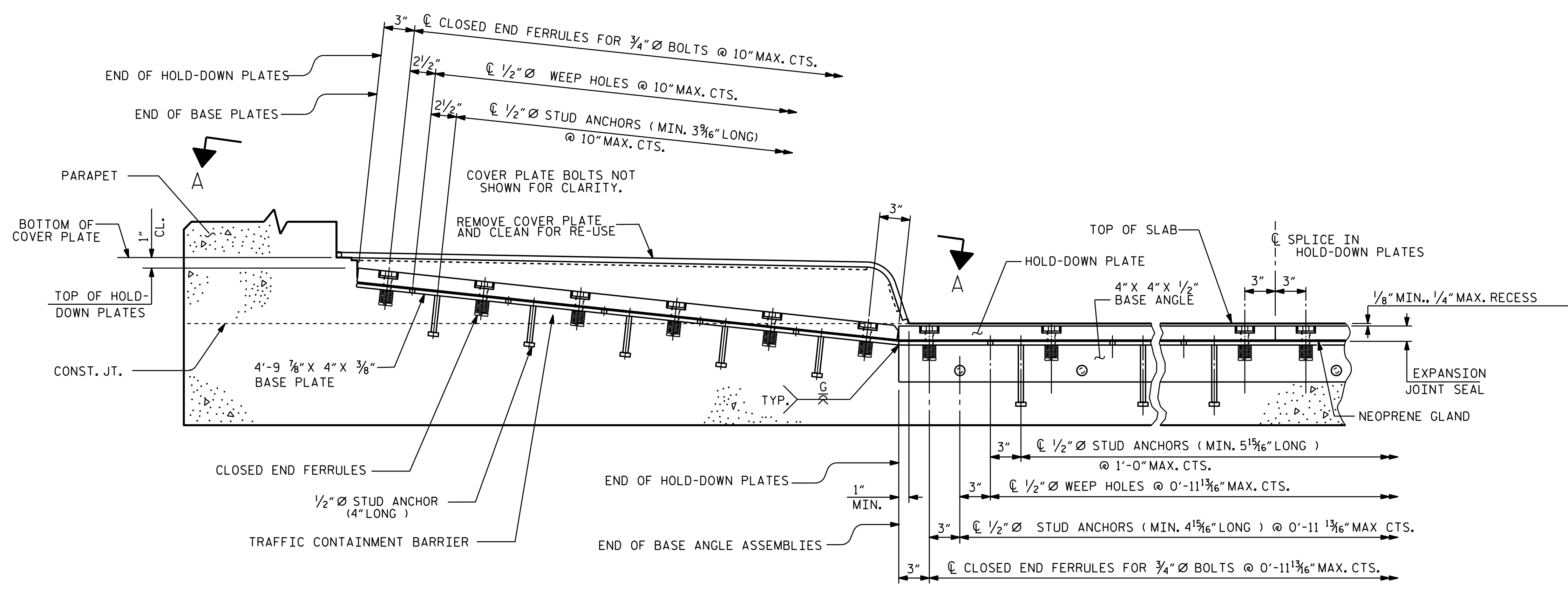
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			52-06
2			4			TOTAL SHEETS 18



PLAN OF EXPANSION JOINT SEAL - LEFT SIDE

PLAN OF EXPANSION JOINT SEAL - RIGHT SIDE



SECTION THRU SIDEWALK NORMAL TO JOINT

SECTION A - A

PROJECT NO. **15BPR.124.3**
WAKE COUNTY
 BRIDGE NO. **911039**

SHEET 2 OF 2

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

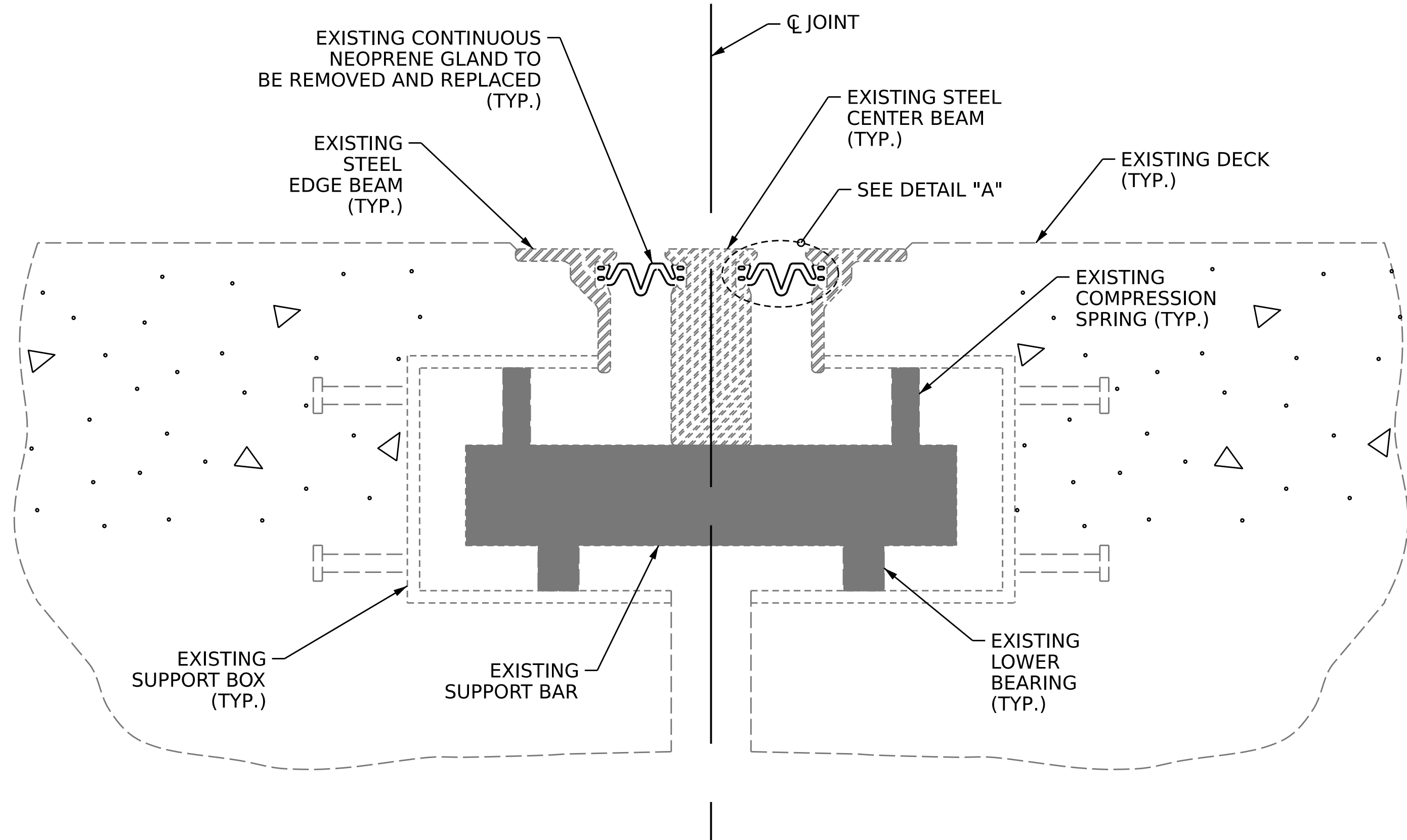


DRAWN BY : **A.Y. GODFREY** DATE : **11/2022**
 CHECKED BY : **N.A. PIERCE** DATE : **11/2022**
 DESIGN ENGINEER OF RECORD : **N.A. PIERCE** DATE : **12/2022**

6/22/2023
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 aygodfrey

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



MODULAR JOINT DETAILS
SECTION A-A

SUGGESTED REPAIR INSTALLATION PROCEDURE

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

REMOVE DEBRIS FROM GLAND ALONG LENGTH OF JOINT.

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

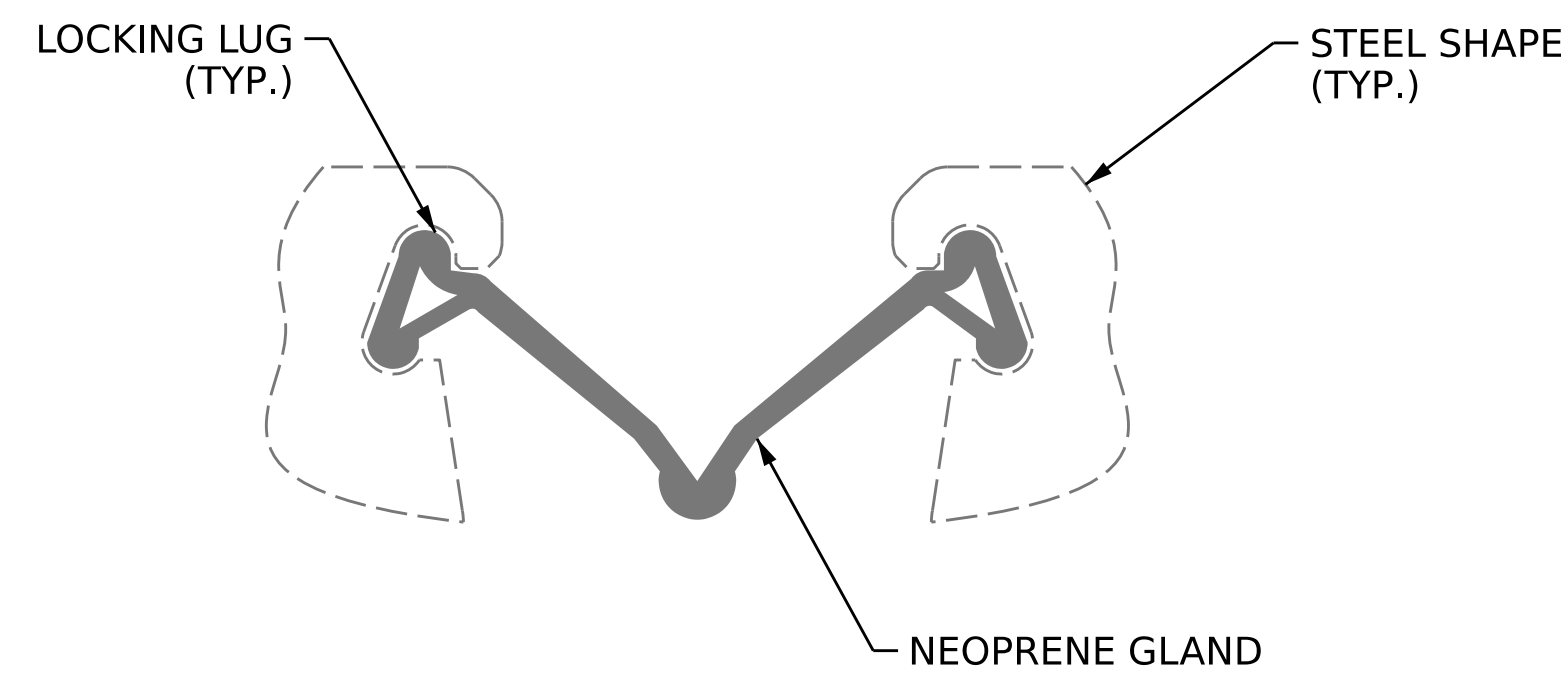
ONCE GLAND IS REMOVED CLEAN THE EXISTING EXTRUSION CAVITIES OF OIL, GREASE AND OTHER LATENTS WITH MANUFACTURER'S APPROVED SOLVENTS.

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

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

CONDUCT WATER-TIGHTNESS TEST.

RE-INSTALL COVER PLATES AT BARRIER RAILS AND SIDEWALKS.



DETAIL "A"

GENERAL NOTES

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

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

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

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

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

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

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

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

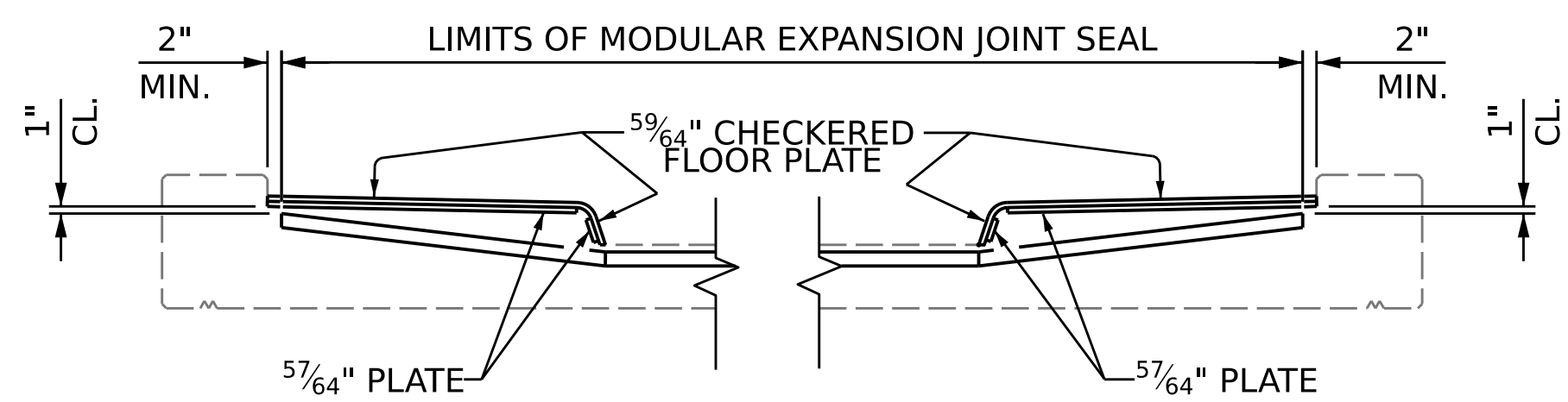
NO SEPARATE PAYMENT WILL BE MADE FOR REMOVING AND REINSTALLING MEDIAN, SIDEWALK AND BARRIER RAIL COVER PLATES. THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE LINEAR FEET PRICE BID FOR "MODULAR JOINT SEALS FOR PRESERVATION".

MOVEMENT AND SETTING AT JOINT

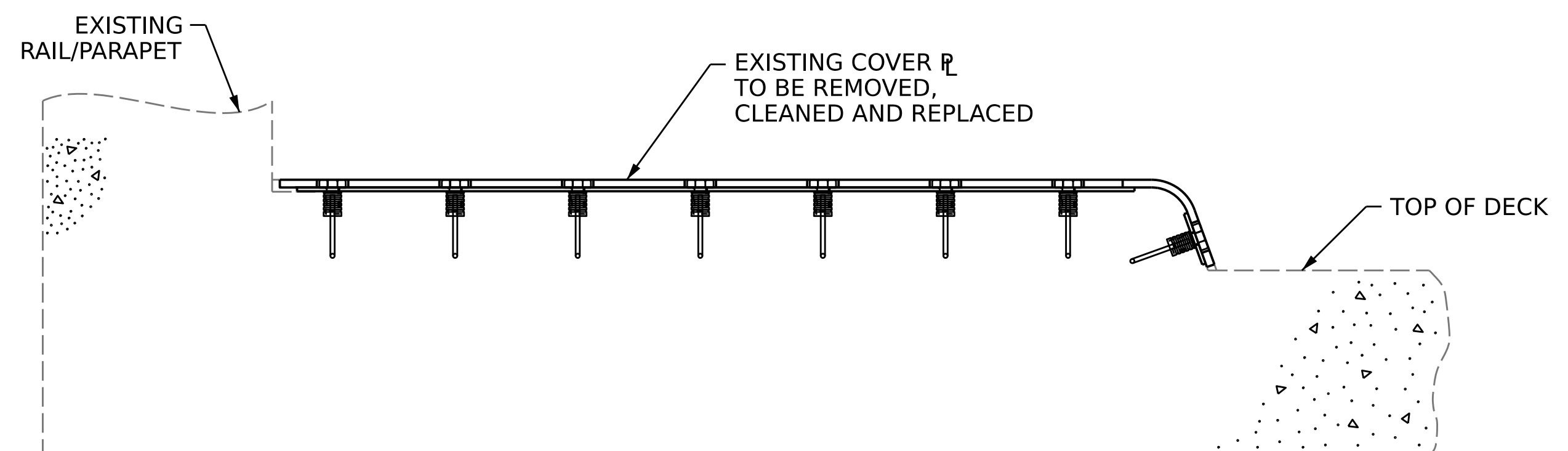
LOCATION	SKEW ANGLE	TOTAL MOVEMENT (ALONG CL RDWY)	PERPENDICULAR JOINT OPENING AT 32°F	PERPENDICULAR JOINT OPENING AT 60°F	PERPENDICULAR JOINT OPENING AT 90°F
END BENT 1	57.6°	4 ¹¹ / ₁₆ "	3 ⁹ / ₁₆ "	2 ³ / ₄ "	2"

JOINT REPAIR QUANTITY TABLE

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

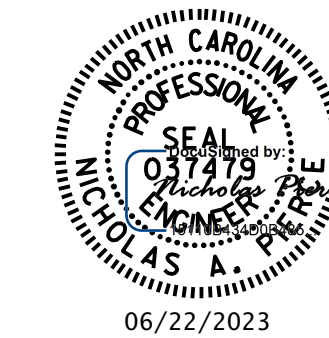


SKETCH SHOWING LIMITS OF MODULAR EXPANSION JOINT SEAL-SIDEWALK



SECTION THRU SIDEWALK NORMAL TO JOINT

PROJECT NO. **15BPR.124.3**
WAKE COUNTY
 BRIDGE NO. **911039**



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

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

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			52-08
2			4			TOTAL SHEETS 18

NOTES

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

ALUMINUM RAILS

MATERIAL FOR POSTS, BASES AND RAILS, EXPANSION BARS AND CLAMP BARS SHALL BE ASTM B221 ALLOY 6061-T6.

MATERIAL FOR RIVETS SHALL BE ASTM B316 ALLOY 6061-T6. RIVETS SHALL BE STANDARD BUTTON HEAD AND CONE POINT COLD DRIVEN AS PER DRAWING.

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

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

GALVANIZED STEEL RAILS

MATERIAL AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:

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

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

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

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

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

GENERAL NOTES

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

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

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

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

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

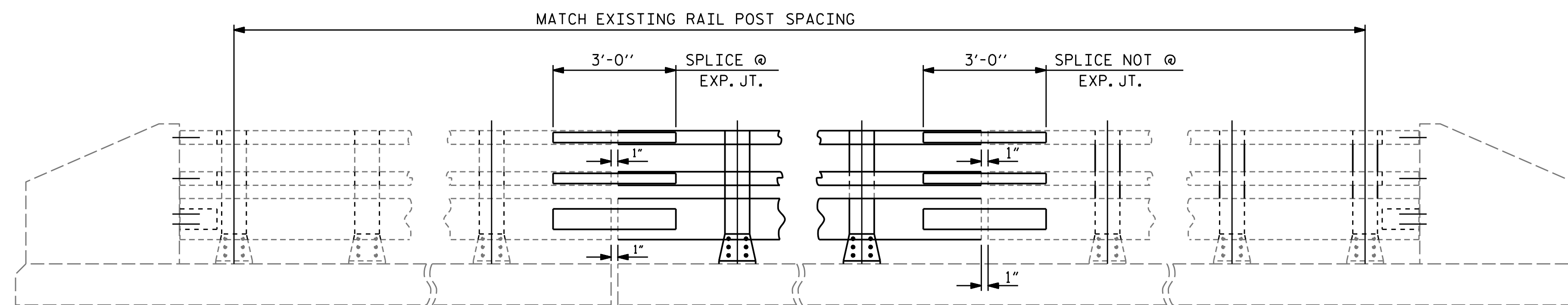
CURVED RAIL USAGE: WHERE RAILS ARE TO BE USED ON BRIDGES ON HORIZONTAL AND/OR VERTICAL CURVATURE THE CONTRACTOR MAY, AT HIS OPTION, HAVE THE REQUIRED CURVATURE IN THE RAIL FORMED IN THE SHOP OR IN THE FIELD. IN EITHER EVENT, THE RAIL SHALL CONFORM WITHOUT BUCKLING OR KINKING TO THE REQUIRED CURVATURE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

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

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

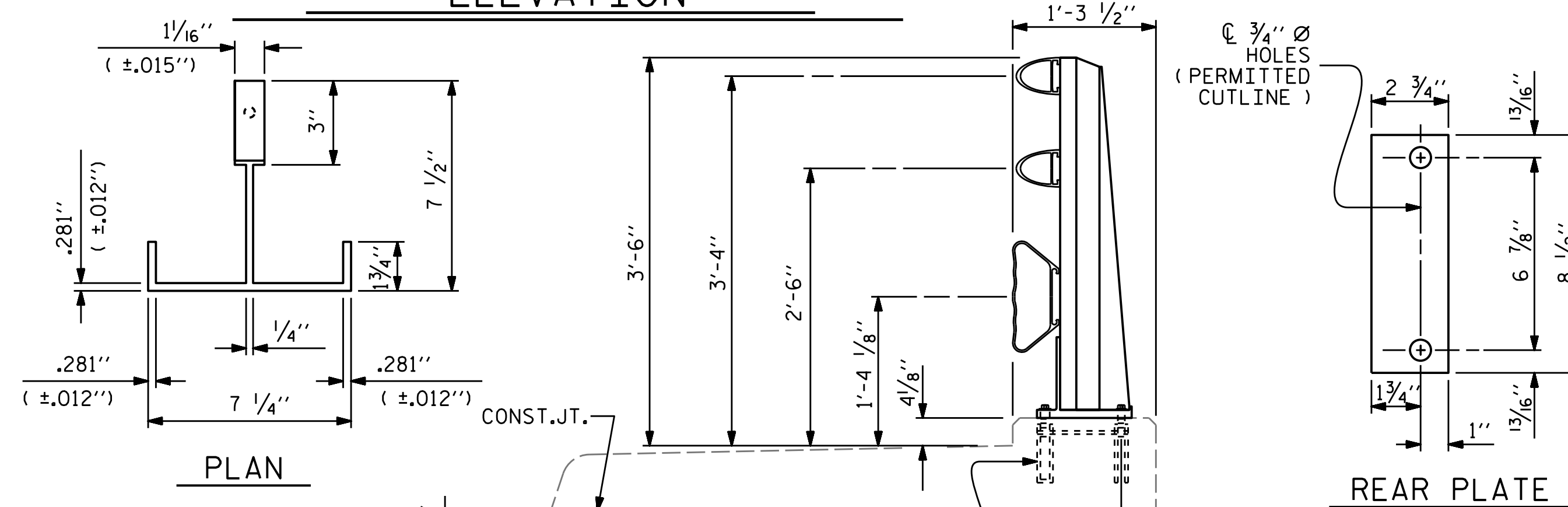
ALLOY 6351-T5 MAY BE SUBSTITUTED FOR ALLOY 6061-T6 WHERE APPLICABLE.

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

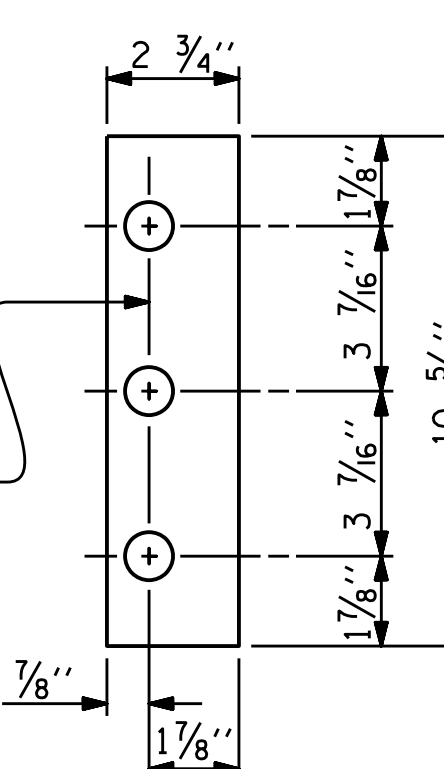


NOTE:
FOR ATTACHMENT OF METAL RAIL TO END
POST, SEE SHEET 3 OF 3.

ELEVATION



REAR PLATE

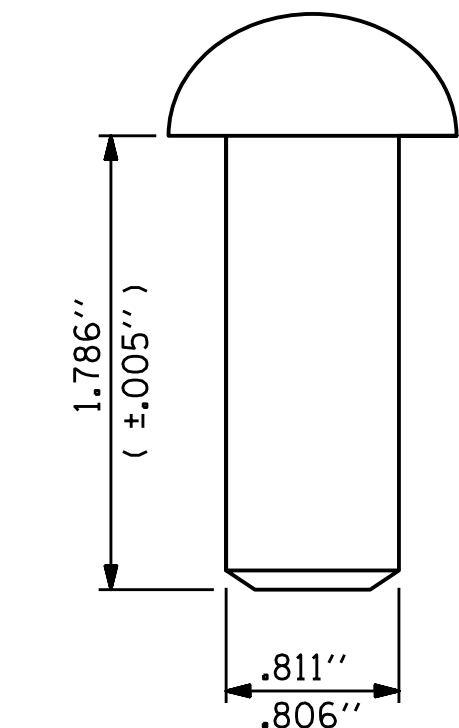


FRONT PLATE SHIM DETAILS

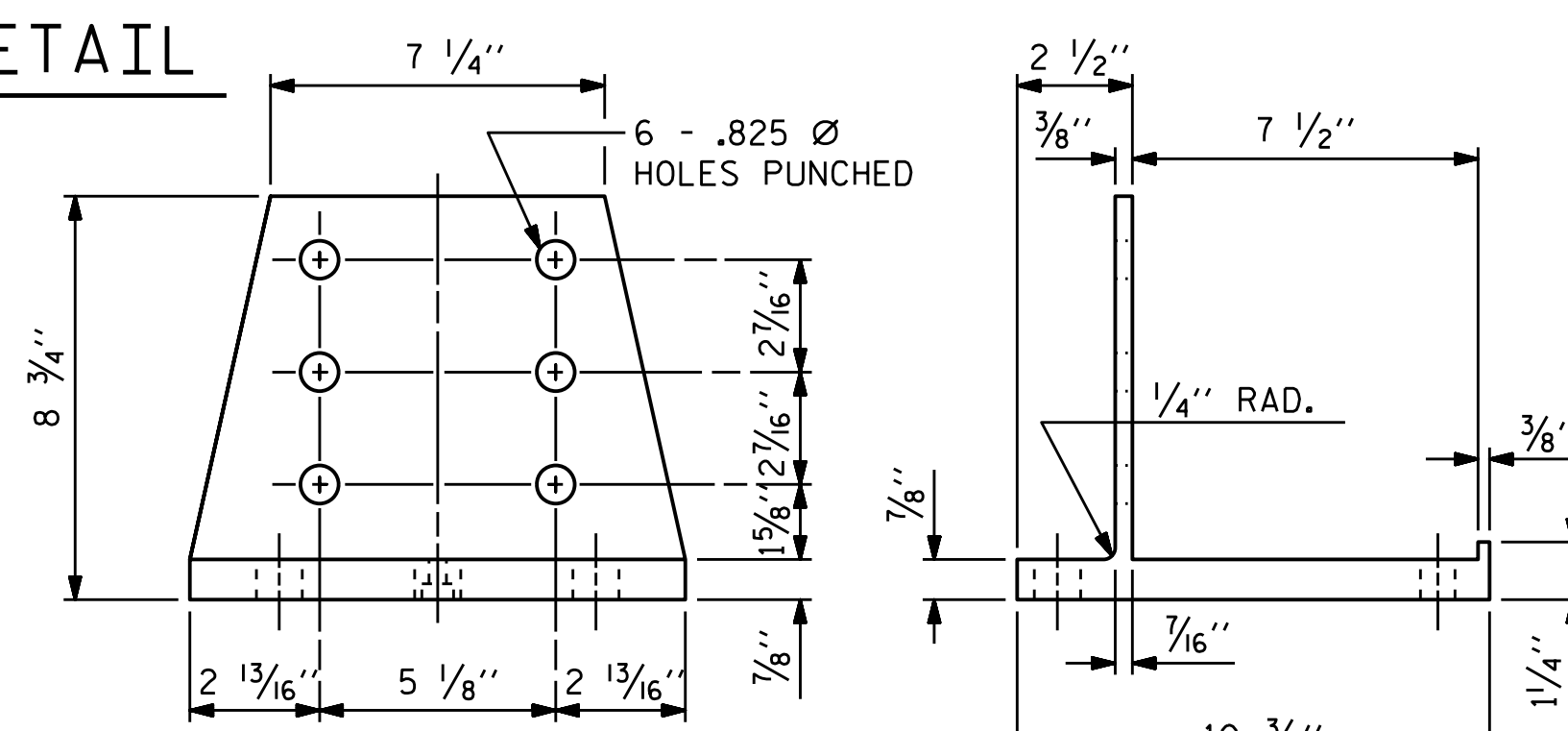
NOTE :
SHIMS MAY BE CUT ALONG PERMITTED CUTLINE OR
SLOTTED TO EDGE OF PLATE TO FACILITATE PLACEMENT.

SECTION THRU RAIL

FOR ANCHOR ASSEMBLY, SEE "3 BAR METAL RAIL
REPAIR DETAILS" SHEET 2 OF 3



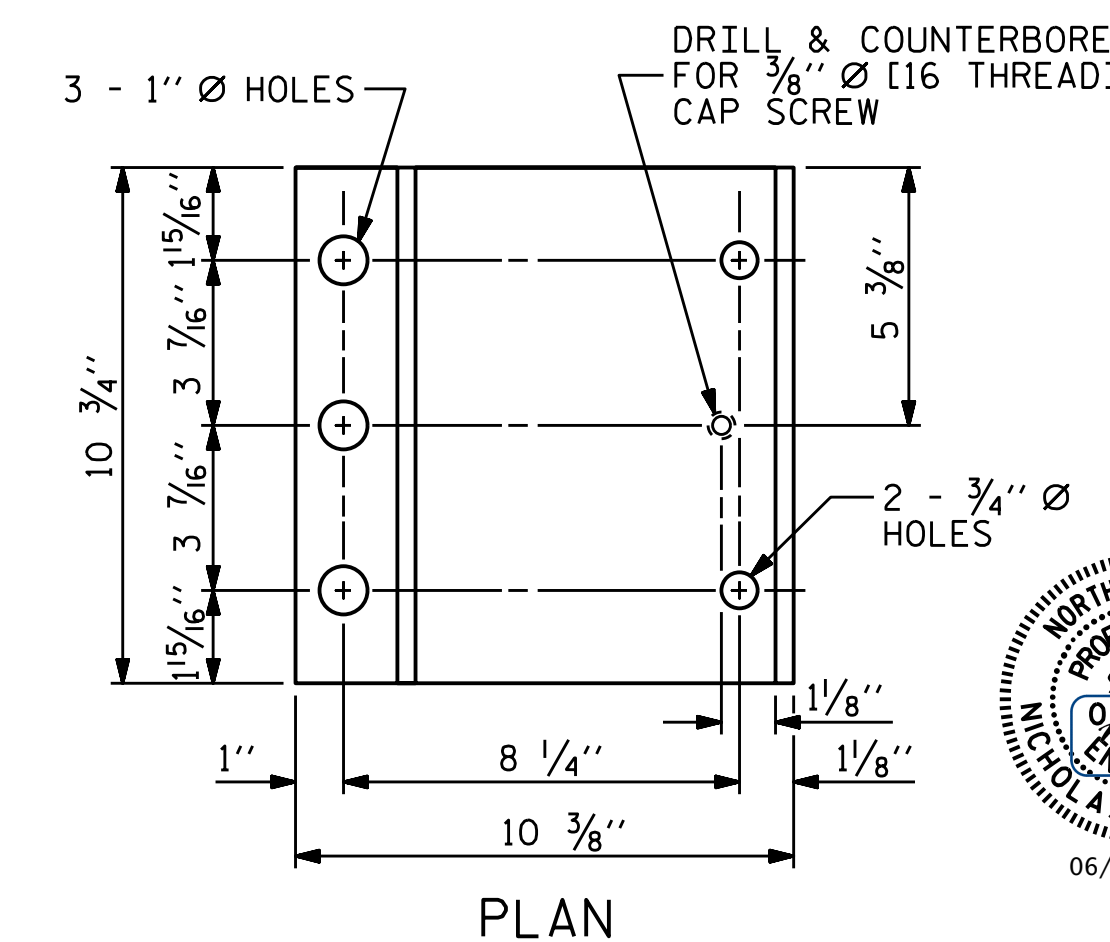
RIVET DETAIL



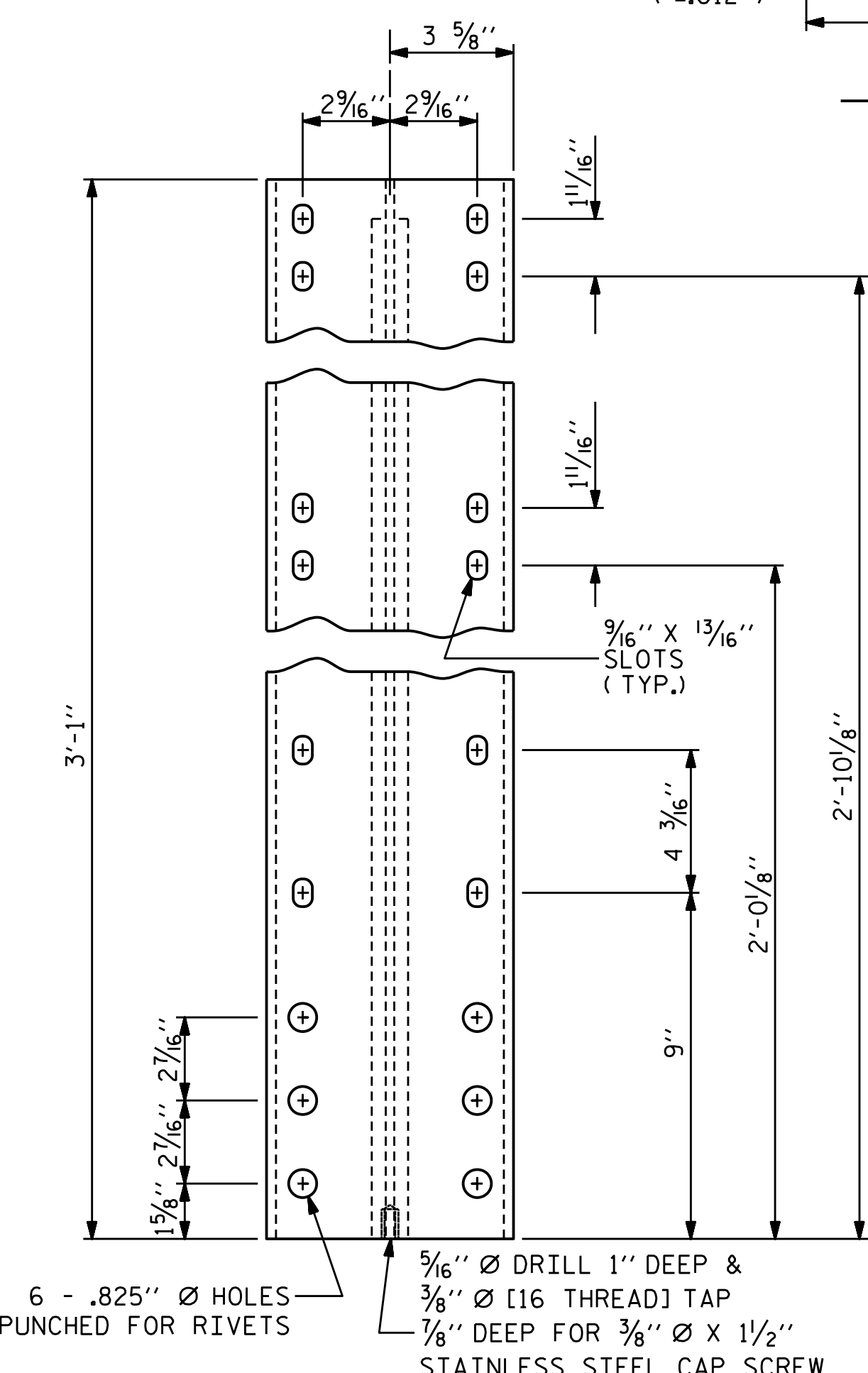
FRONT ELEVATION

SIDE ELEVATION

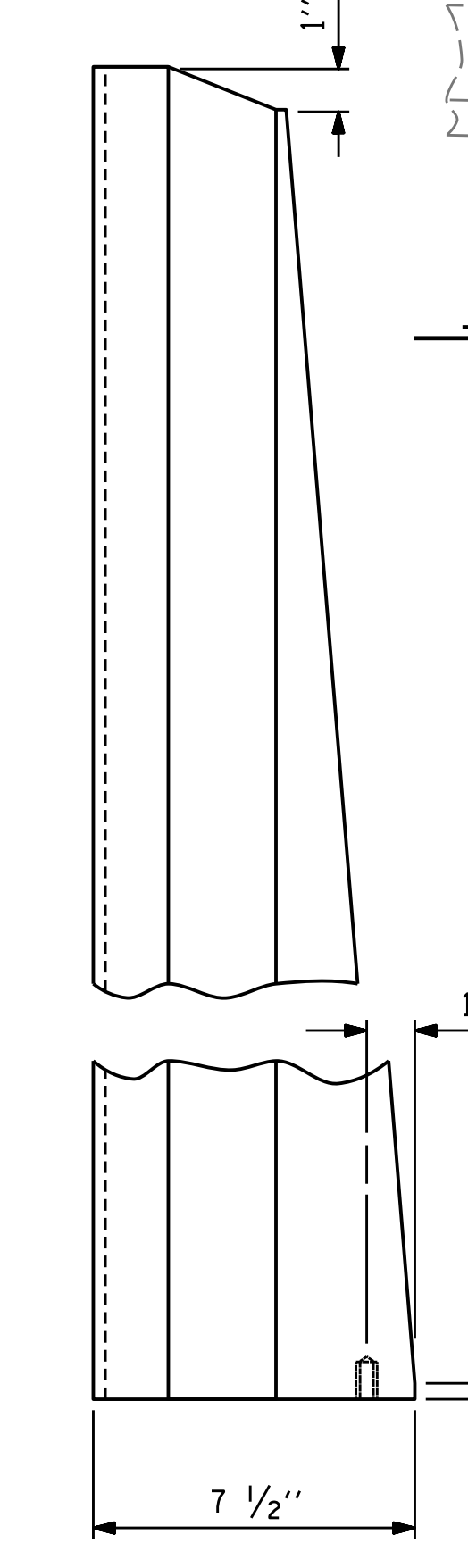
POST BASE DETAILS



PLAN



FRONT ELEVATION



SIDE ELEVATION

DETAILS OF POST

6 - .825" Ø HOLES
PUNCHED FOR RIVETS
5/16" Ø DRILL 1" DEEP &
3/8" Ø [16 THREAD] TAP
7/8" DEEP FOR 3/8" Ø X 1/2"
STAINLESS STEEL CAP SCREW

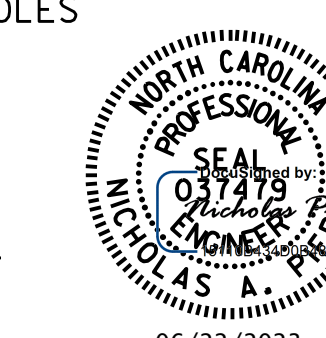
9/16" X 13/16"
SLOTS
(TYP.)

PROJECT NO. **15BPR.124.3**
DURHAM/WAKE COUNTY
BRIDGE NO. **911039**

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3 BAR METAL RAIL REPAIR DETAILS

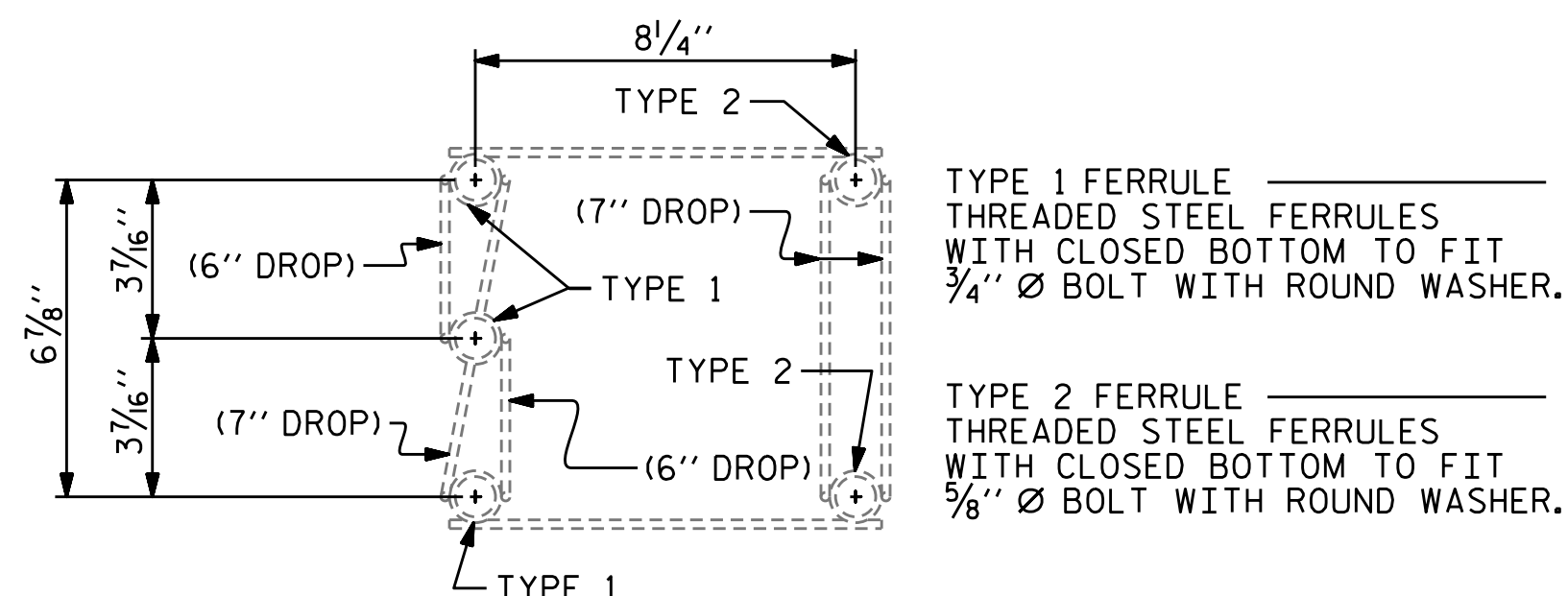


ASSEMBLED BY: N.A. PIERCE
CHECKED BY: A.Y. GODFREY
DATE: 10/2022
DATE: 11/2022

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

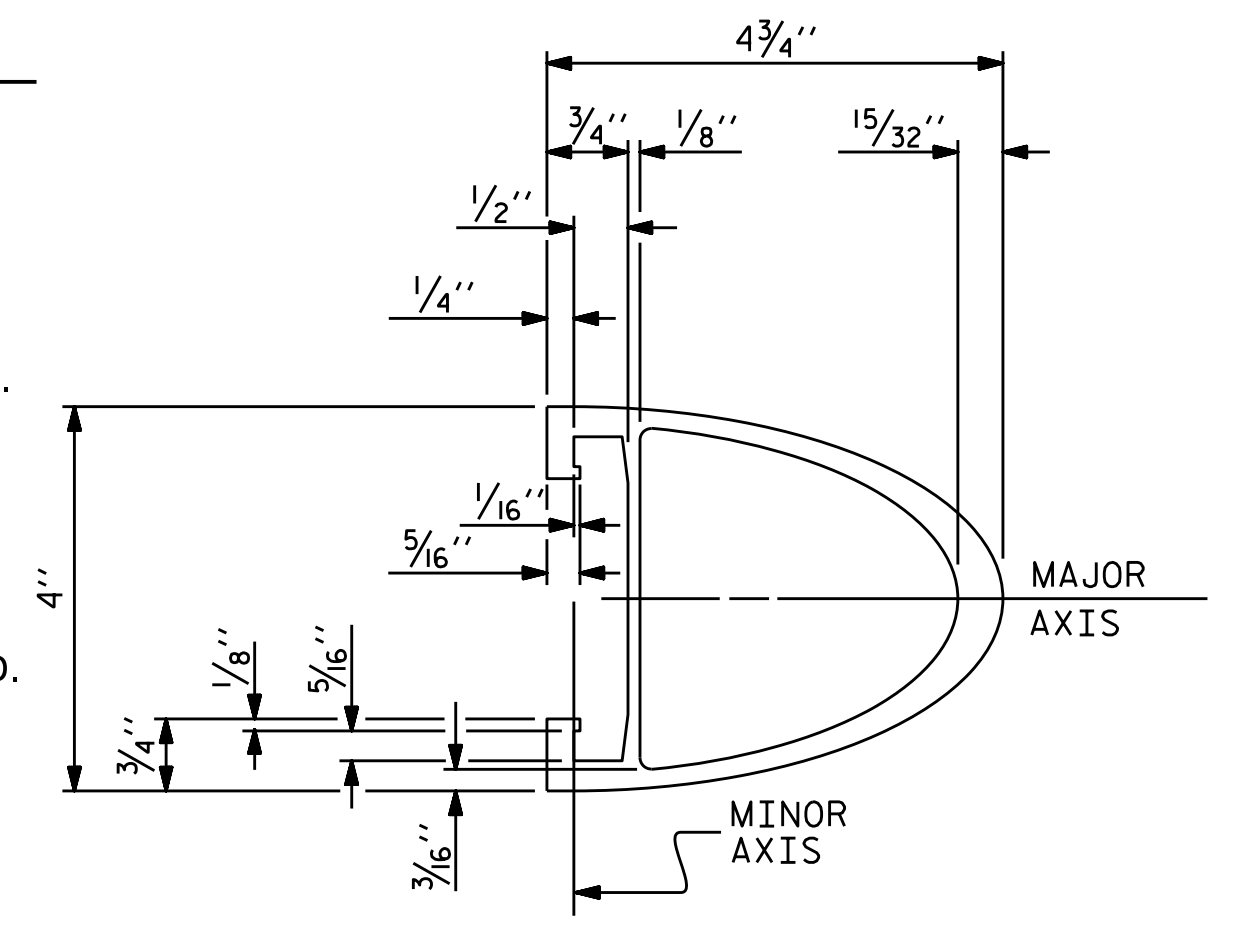
REVISIONS				SHEET NO.
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SHEET NO.
S2-09
TOTAL SHEETS
18

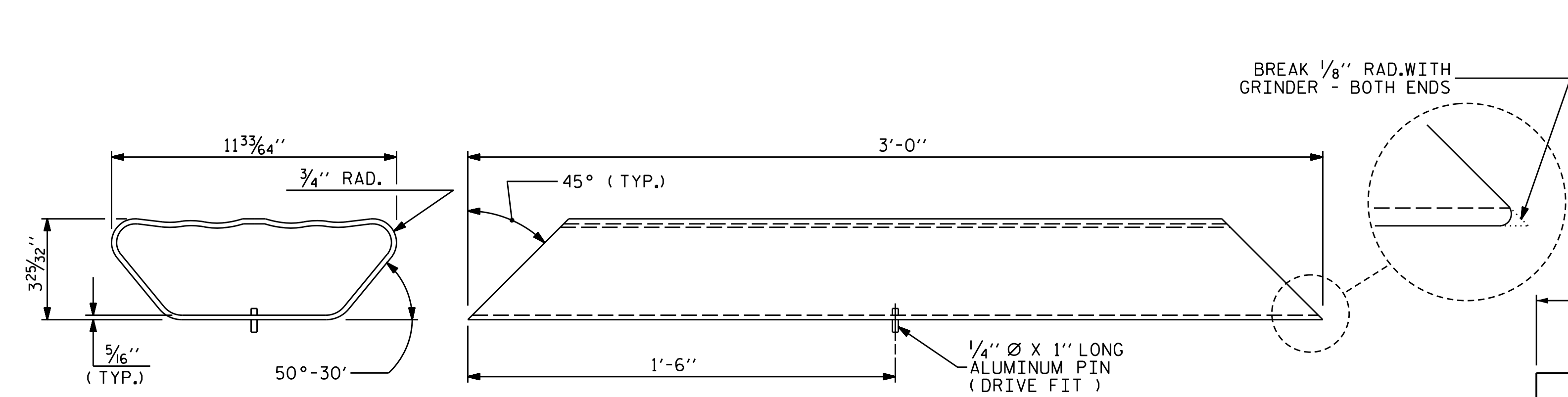


PLAN
 EXISTING 5-BOLT
 METAL RAIL ANCHOR ASSEMBLY

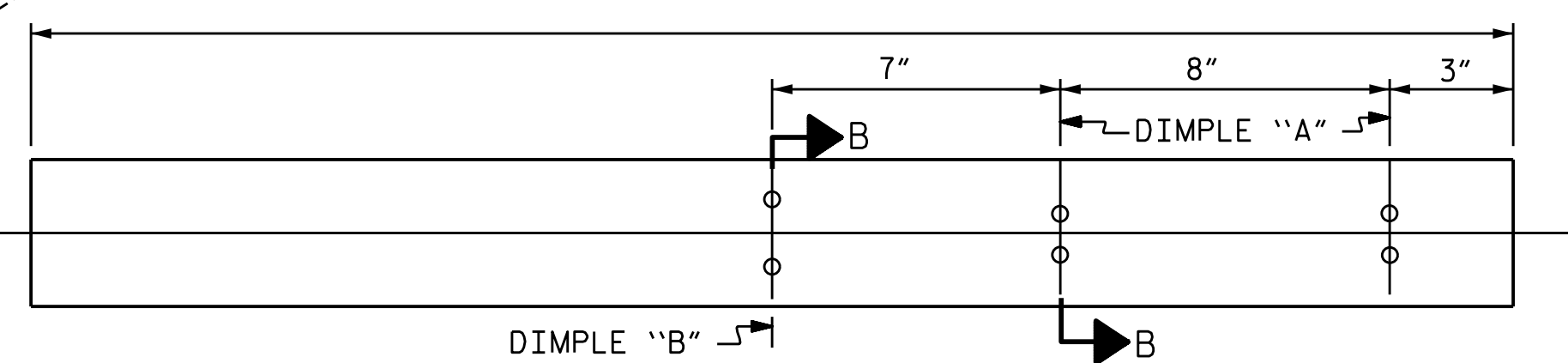
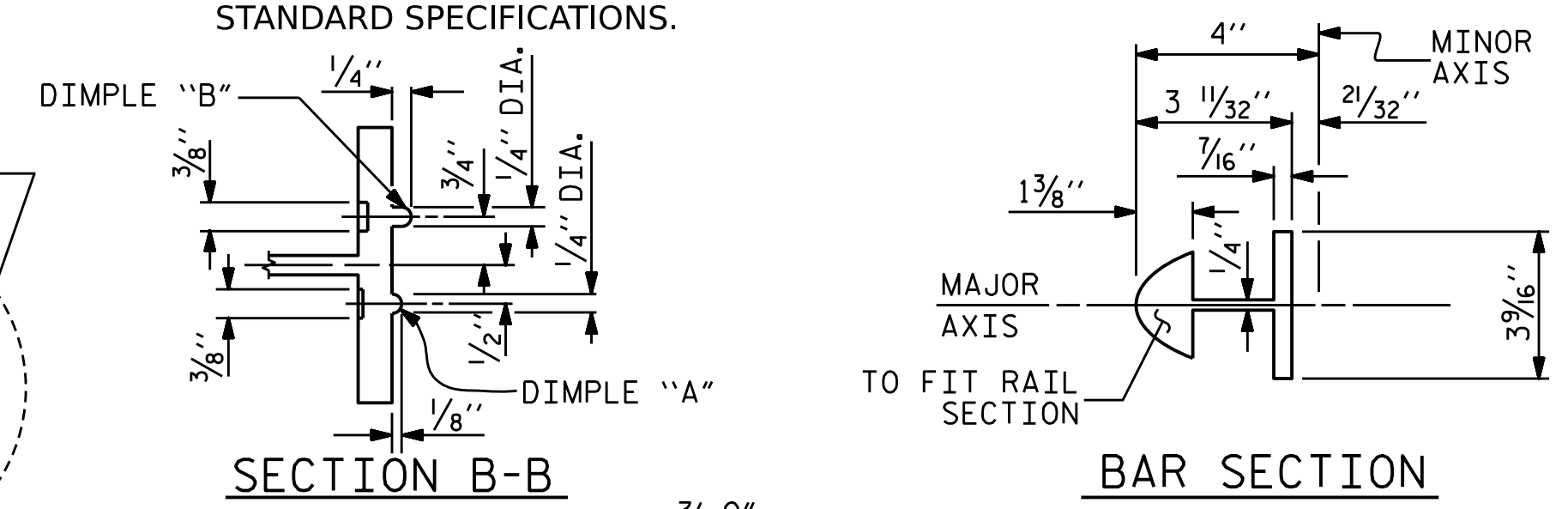
- NOTES**
- STRUCTURAL CONCRETE ANCHOR ASSEMBLY
- IF EXISTING STRUCTURAL CONCRETE ANCHOR ASSEMBLY IS INTACT AND NOT DAMAGED THEN THE EXISTING CONCRETE ANCHOR ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:
- EXISTING EMBEDDED FERRULES HAVE A MINIMUM LENGTH OF THREADS OF 2" FOR 3/4" FERRULES AND 1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



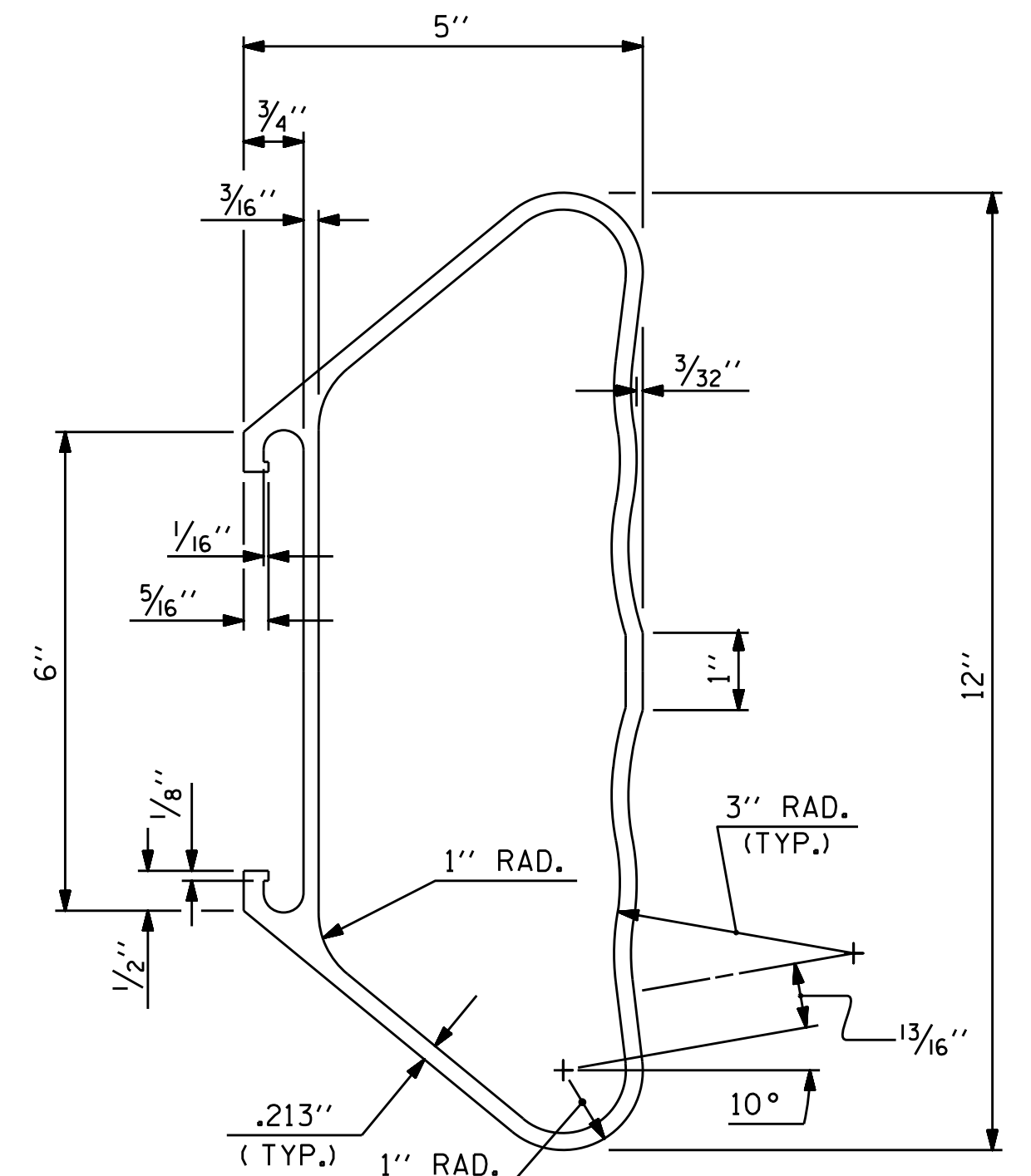
TOP & MIDDLE RAIL SECTION



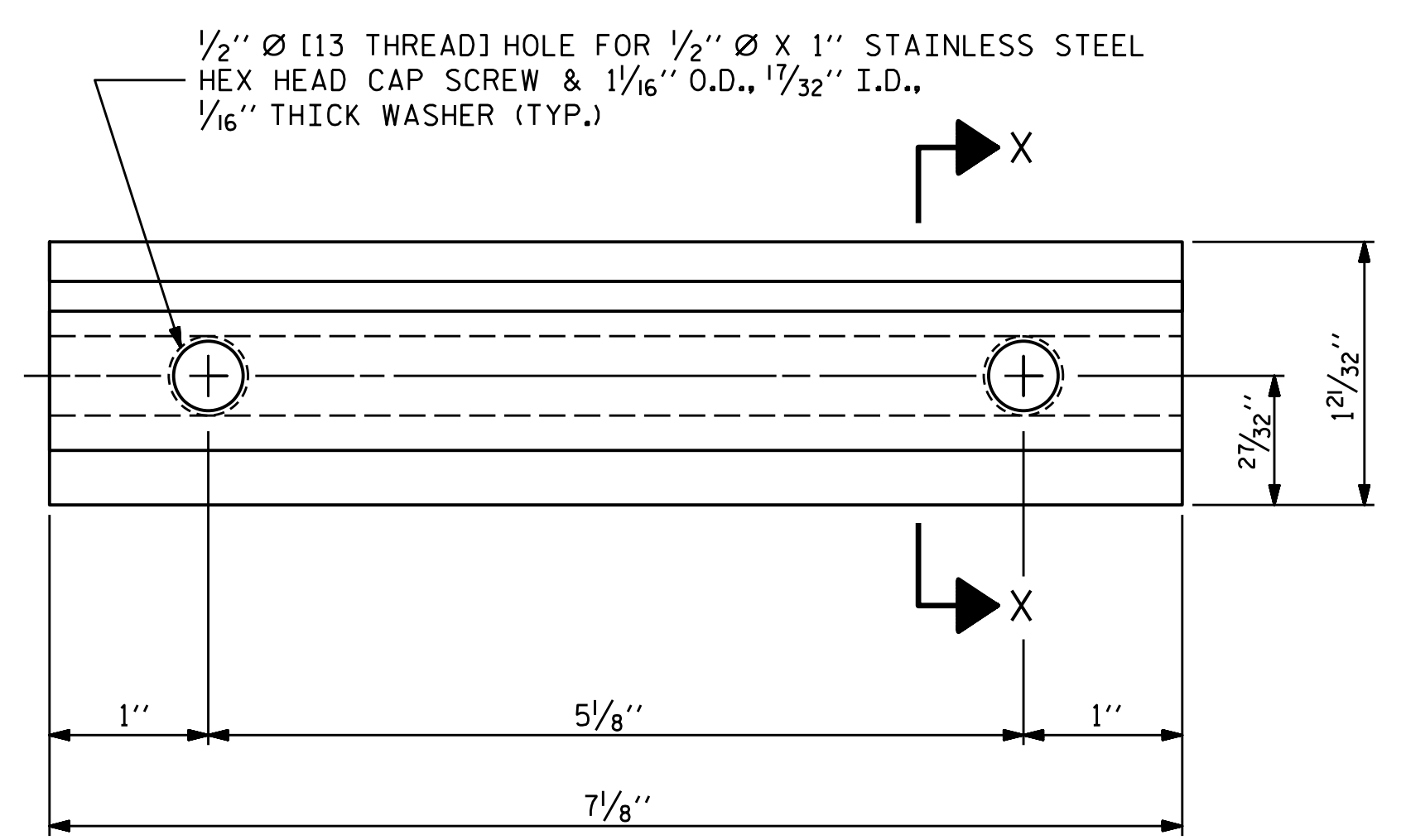
END VIEW
 PLAN VIEW
 BOTTOM RAIL EXPANSION BAR



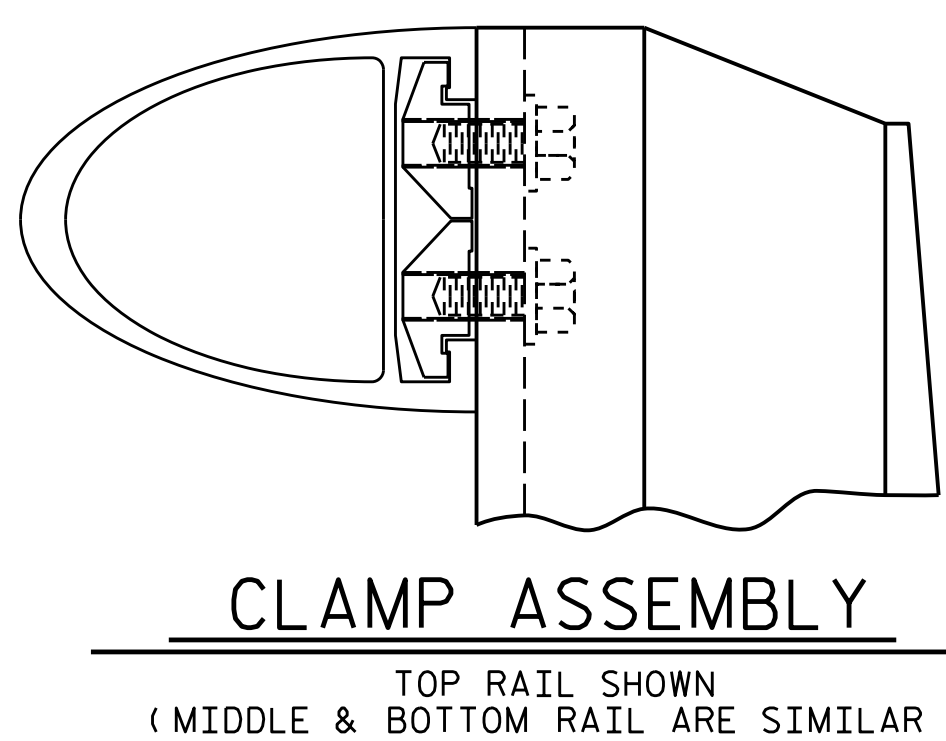
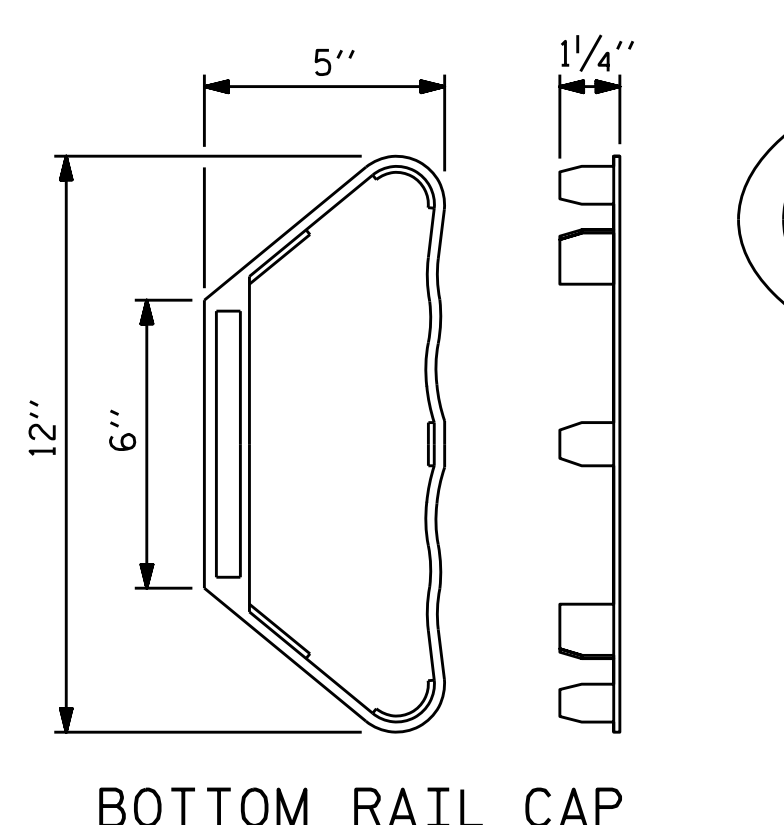
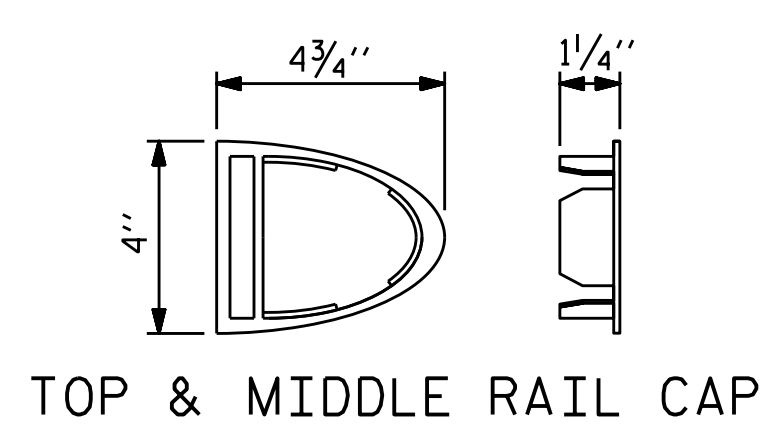
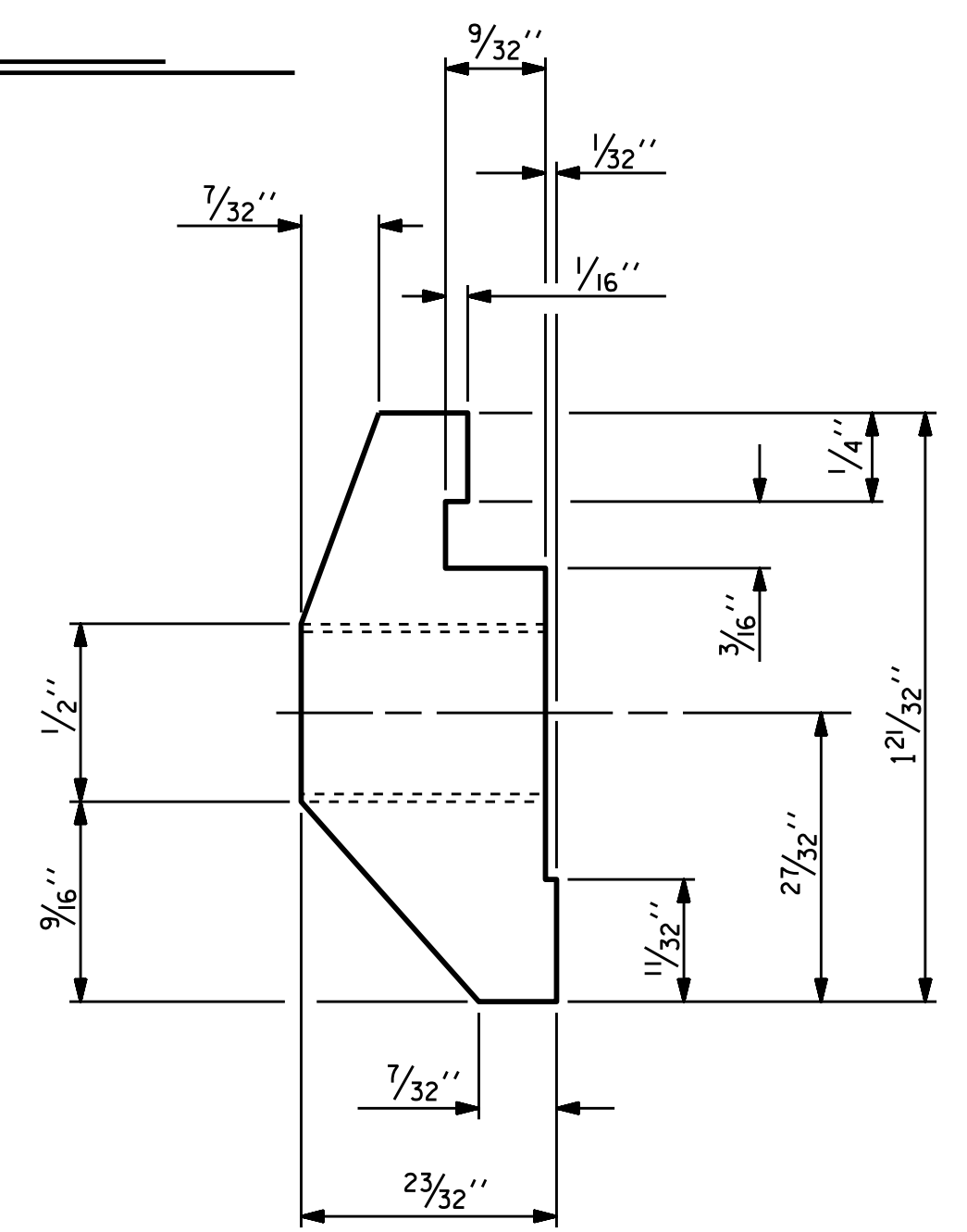
TOP & MIDDLE RAIL EXPANSION BAR



BOTTOM RAIL SECTION



CLAMP BAR DETAIL
 (6 REQUIRED PER POST)



PROJECT NO. **15BPR.124.3**
 DURHAM/WAKE COUNTY
 BRIDGE NO. **911039**
 SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**3 BAR METAL RAIL
 REPAIR DETAILS**



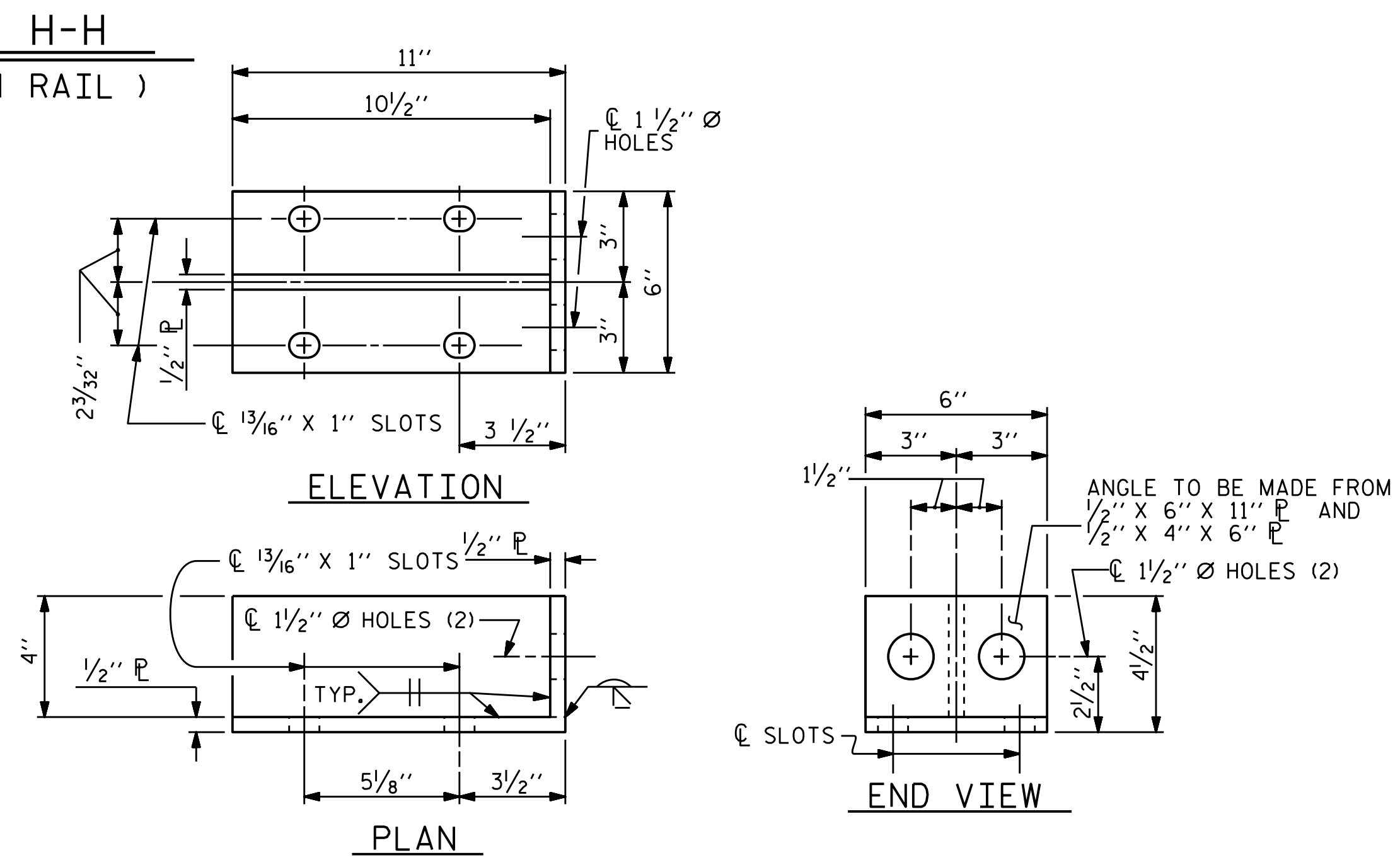
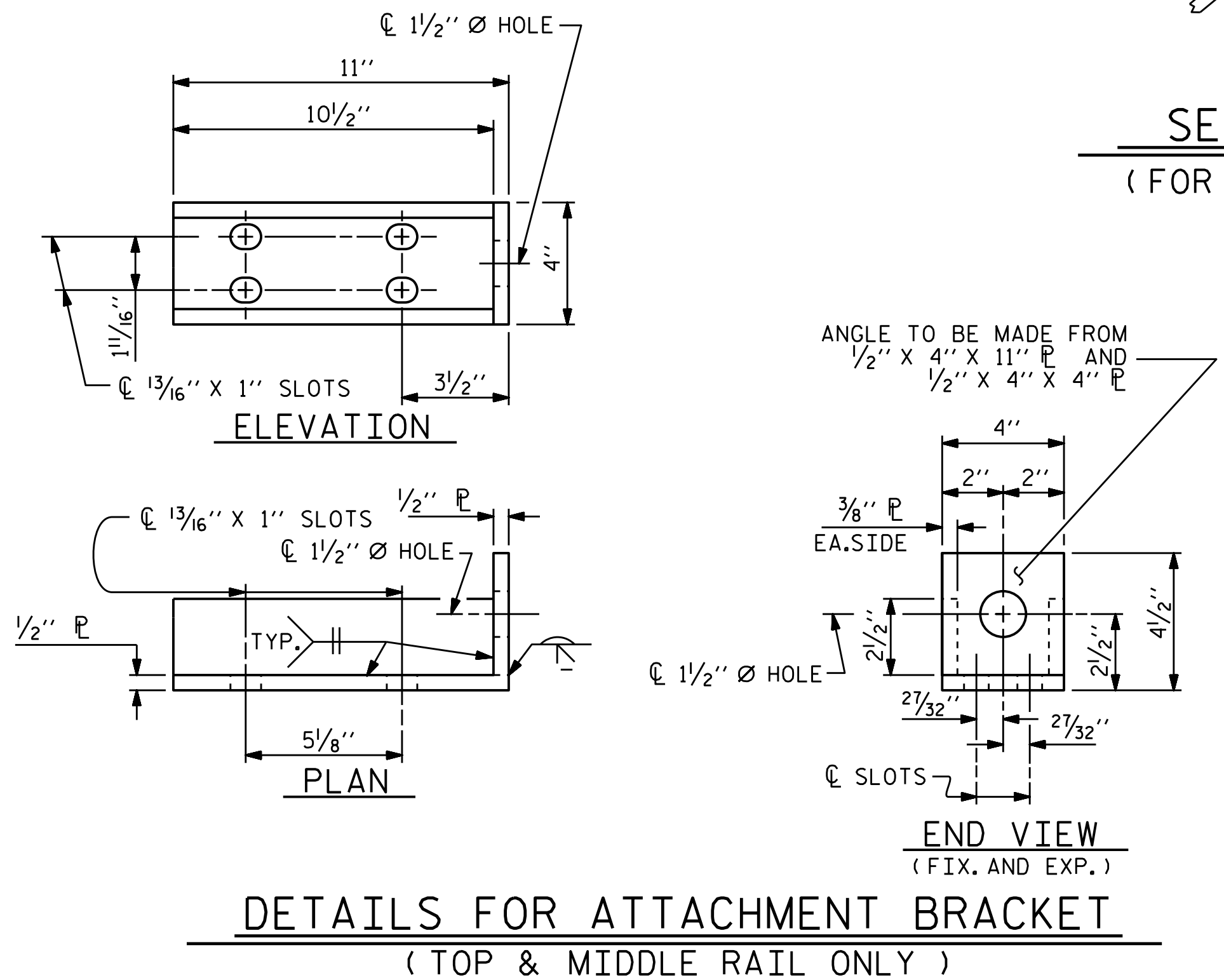
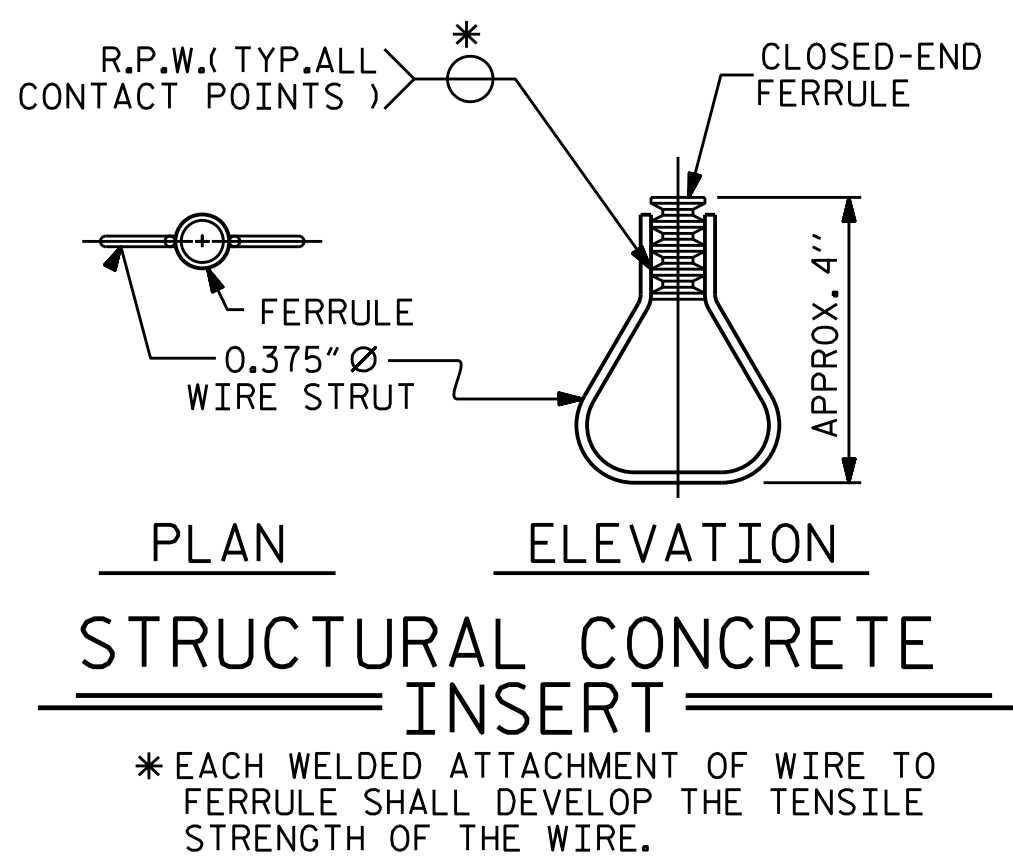
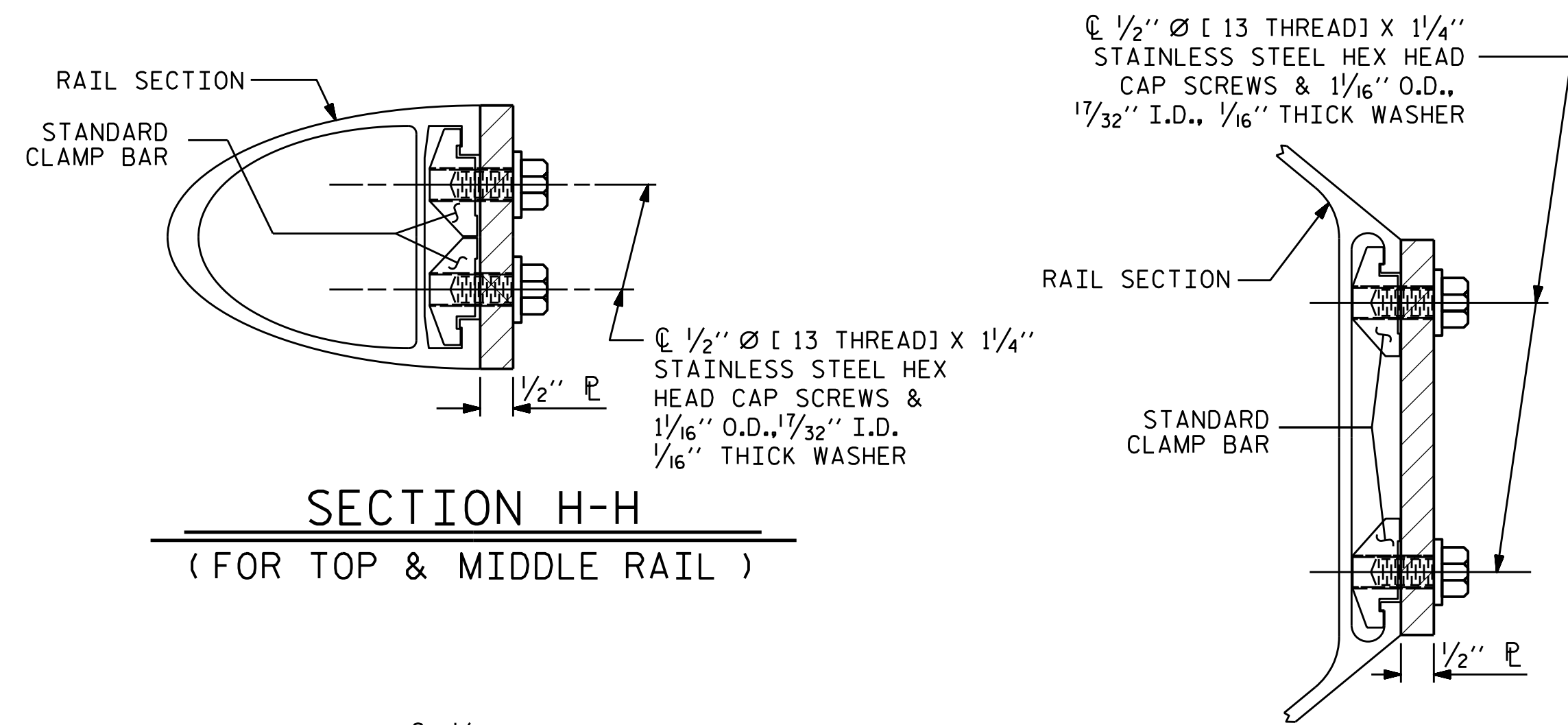
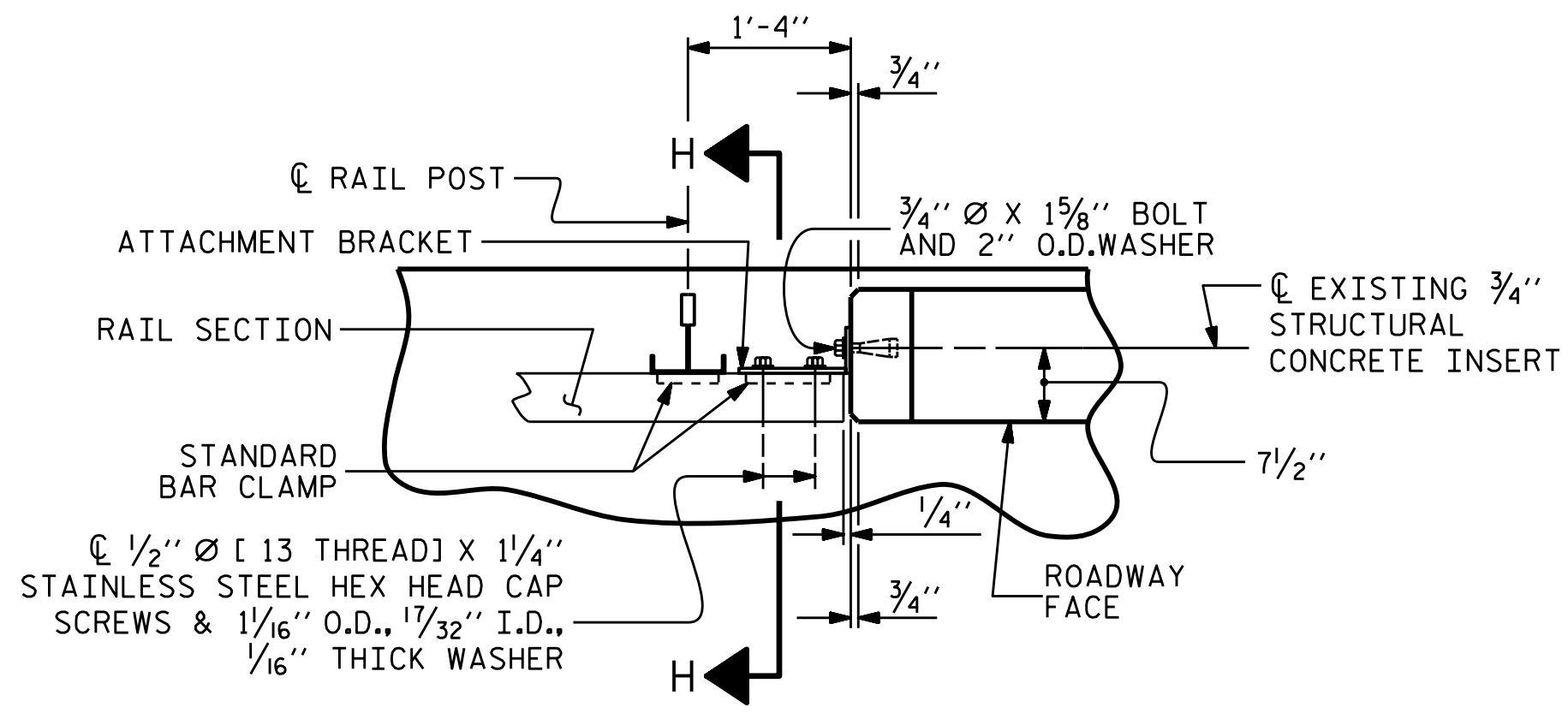
ASSEMBLED BY: N.A. PIERCE DATE: 10/2022
 CHECKED BY: A.Y. GODFREY DATE: 11/2022
 DRAWN BY:
 CHECKED BY:

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

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

TOTAL SHEETS: 18

8/26/21



NOTES

METAL RAIL TO END POST CONNECTION

- THE METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:
 - A. 1/2" PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
 - B. 3/4" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A 3/4" X 1 1/8" BOLT WITH 2" O.D. WASHER IN PLACE. THE 3/4" X 1 1/8" BOLT SHALL HAVE N. C. THREADS.
 - C. CAP SCREWS FOR RAIL ATTACHMENT TO ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F593 ALLOY 305 STAINLESS STEEL. CAP SCREWS TO BE CENTERED IN SLOTS AT 60°F. WASHERS FOR RAIL ATTACHMENT SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.
 - D. CLAMP BARS (SEE SHEET 2 OF 3).
- THE COST OF THE STANDARD CLAMP BARS AND CAP SCREWS USED IN THE METAL RAIL TO END POST CONNECTION SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF 3 BAR METAL RAIL.
- THE 3/4" STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.
- THE COST OF THE 3/4" STRUCTURAL CONCRETE INSERT ASSEMBLY, AND THE 1/2" PLATES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE 3/4" X 1 1/8" BOLT WITH WASHER SHALL BE REPLACED WITH A 3/4" X 6 1/2" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE 3/4" X 1 1/8" BOLT SHALL APPLY TO THE 3/4" X 6 1/2" BOLT. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

NOTES

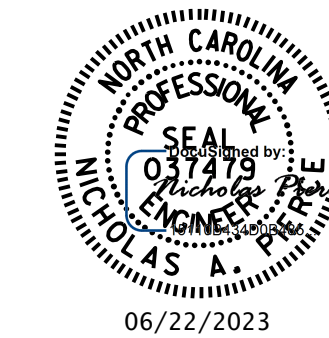
STRUCTURAL CONCRETE INSERT

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

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

PROJECT NO. **15BPR.124.3**
DURHAM/WAKE COUNTY
 BRIDGE NO. **911039**

SHEET 3 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**3 BAR METAL RAIL
 REPAIR DETAILS**

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

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 SIGNATURES COMPLETED

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

TOTAL SHEETS: 18

DECK UNDERSIDE REPAIR QUANTITY TABLE

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



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

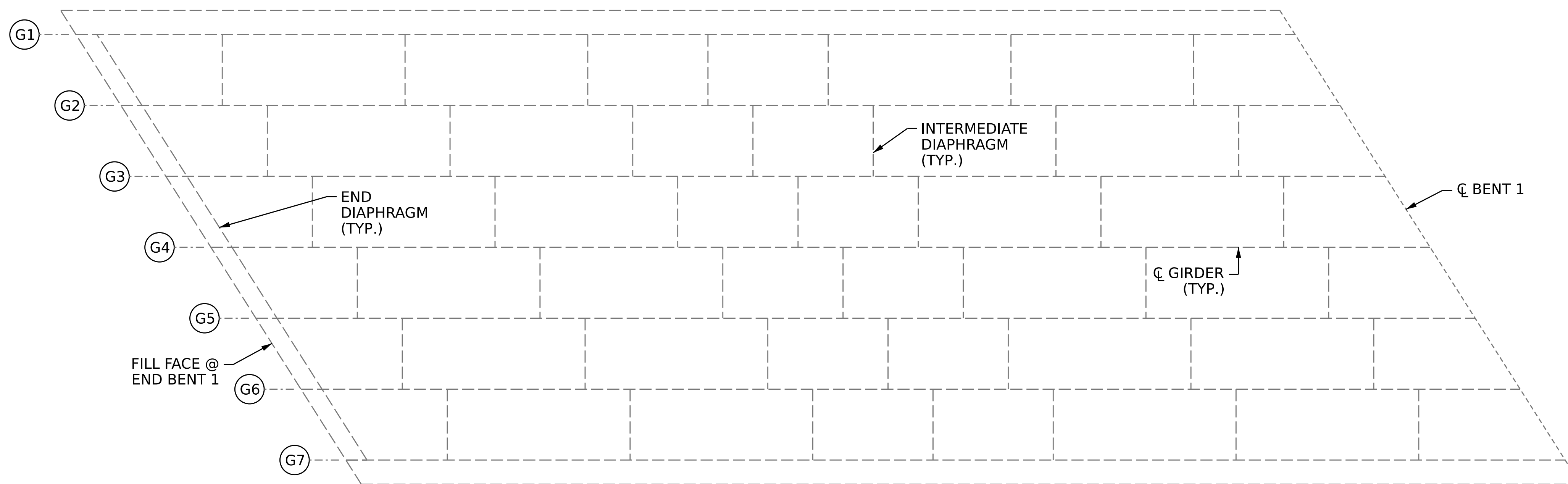
NOTES

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

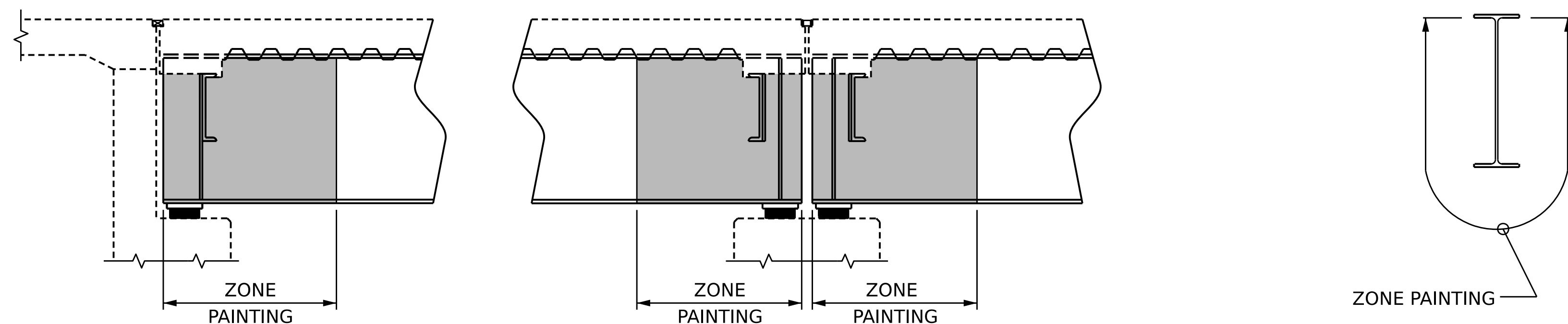
CONCRETE REPAIRS MAYBE SUBSTITUTED IN LIEU OF SHOTCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

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

-  SHOTCRETE REPAIR AREA
-  CONCRETE REPAIR AREA



SPAN A
(UNDERSIDE)



LIMITS OF ZONE PAINTING

PROJECT NO. **15BPR.124.3**
WAKE COUNTY
 BRIDGE NO. **911039**

SHEET 1 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 DECK UNDERSIDE REPAIR

SPAN A

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

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

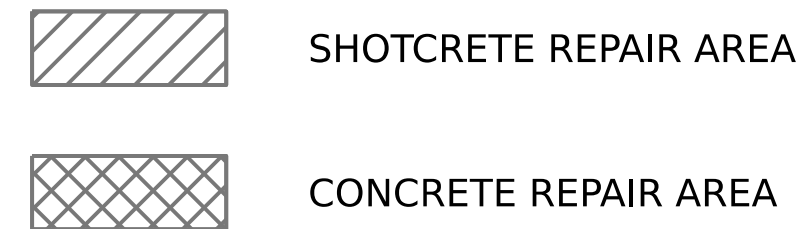
8/26/21

NOTES

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

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

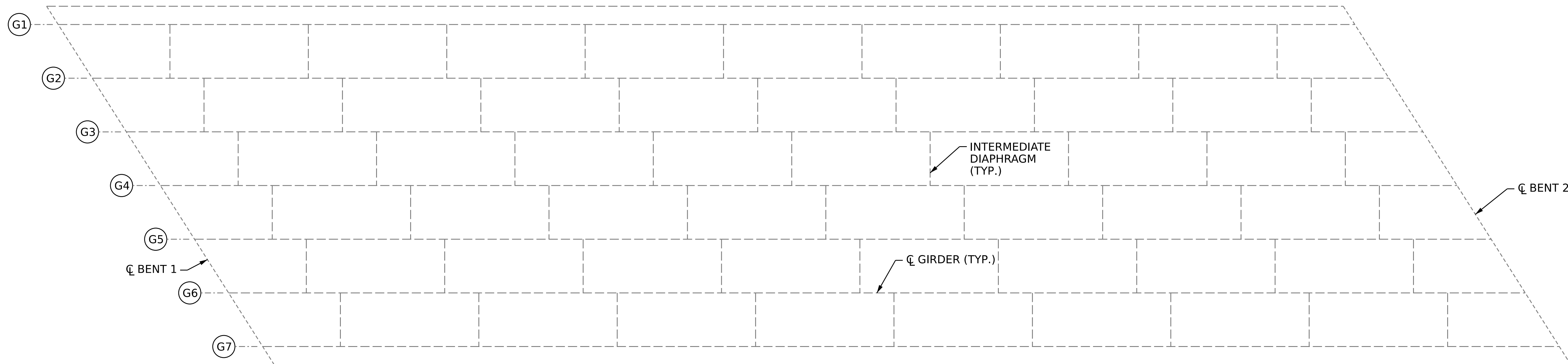
ALL GIRDERS SHALL BE PAINTED IN ACCORDANCE WITH THE LIMITS OF ZONE PAINTING DETAIL.



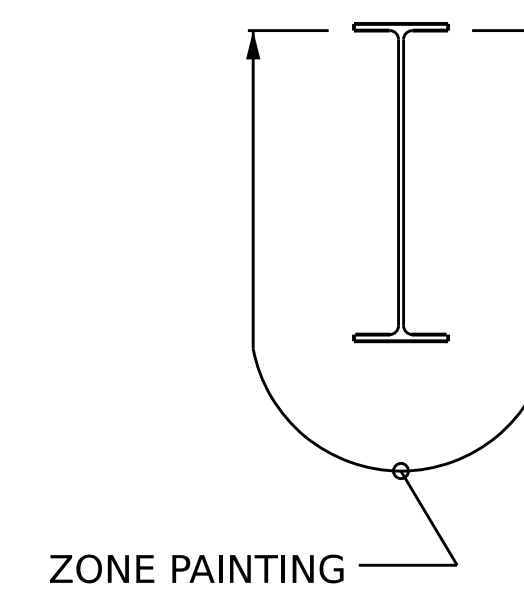
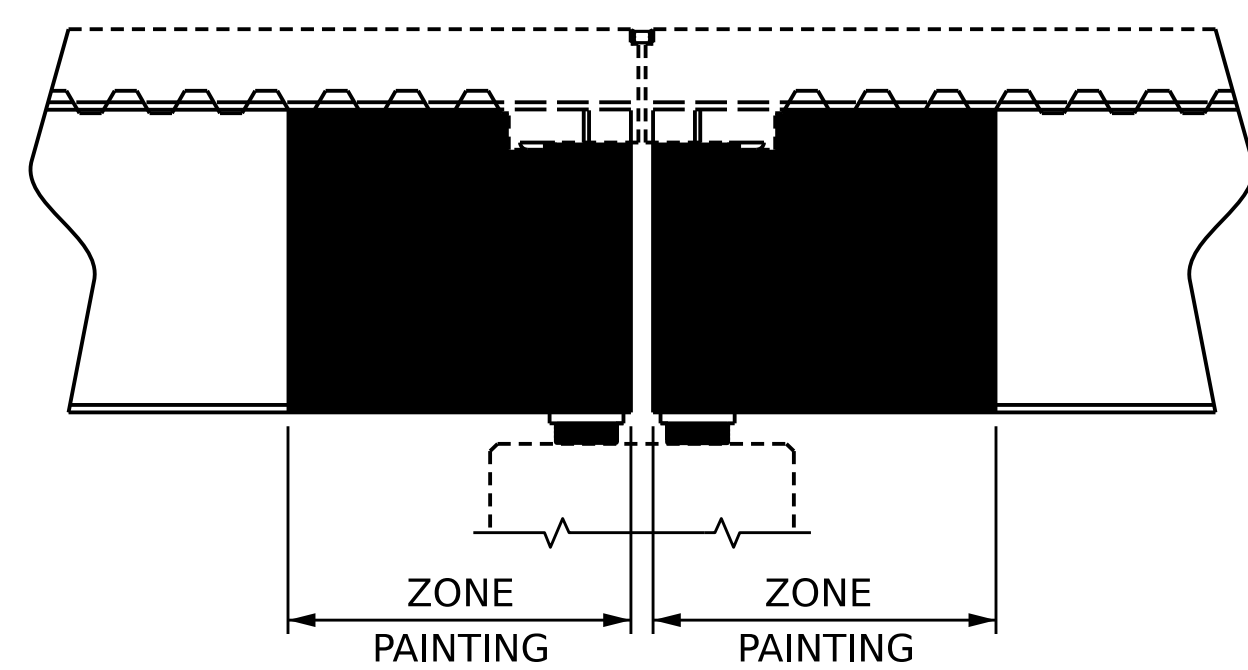
DECK UNDERSIDE REPAIR QUANTITY TABLE

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

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



SPAN B
(UNDERSIDE)



LIMITS OF ZONE PAINTING

PROJECT NO. **15BPR.124.3**

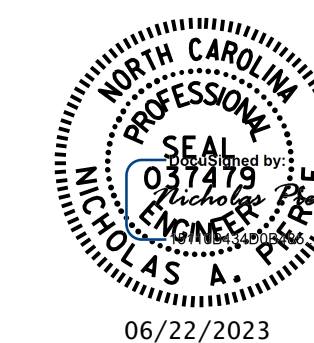
WAKE COUNTY

BRIDGE NO. **911039**

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
DECK UNDERSIDE REPAIR

SPAN B



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

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

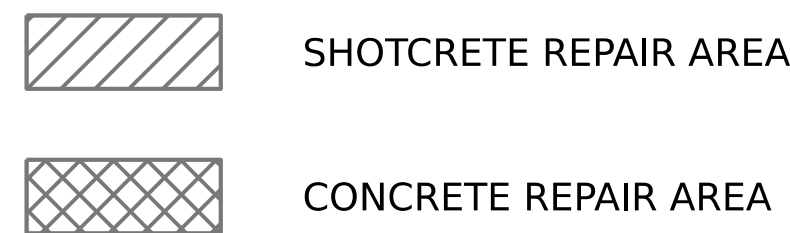
8/26/21

NOTES

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

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

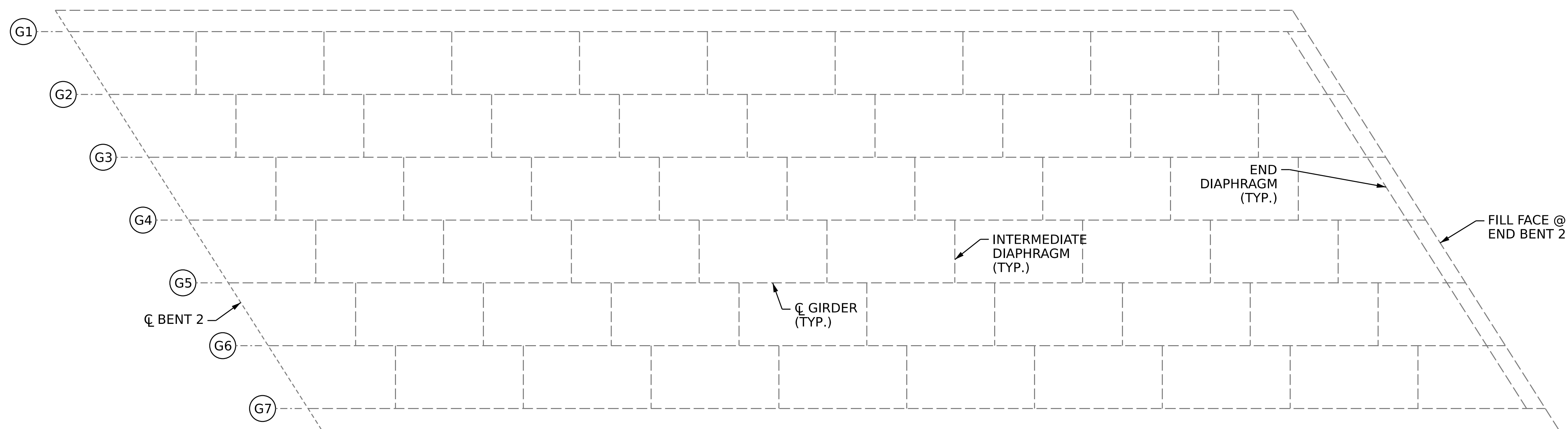
ALL GIRDERS SHALL BE PAINTED IN ACCORDANCE WITH THE LIMITS OF ZONE PAINTING DETAIL.



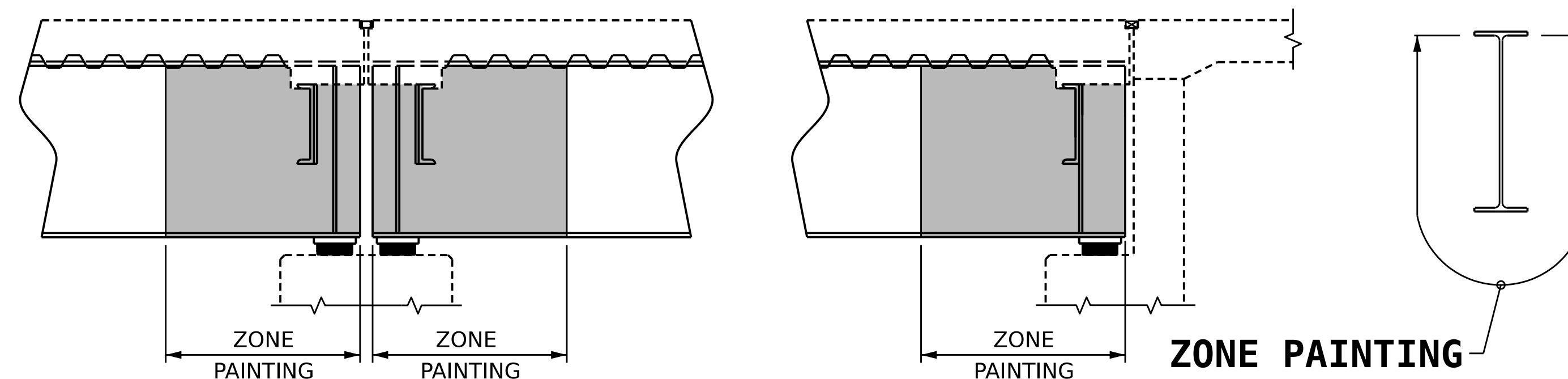
DECK UNDERSIDE REPAIR QUANTITY TABLE

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

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



SPAN C
(UNDERSIDE)



LIMITS OF ZONE PAINTING

PROJECT NO. **15BPR.124.3**

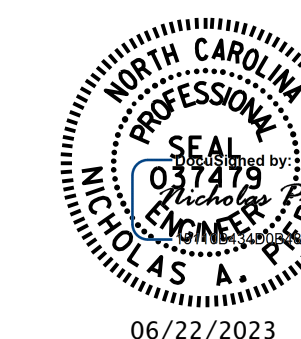
WAKE COUNTY

BRIDGE NO. **911039**

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
DECK UNDERSIDE REPAIR

SPAN C



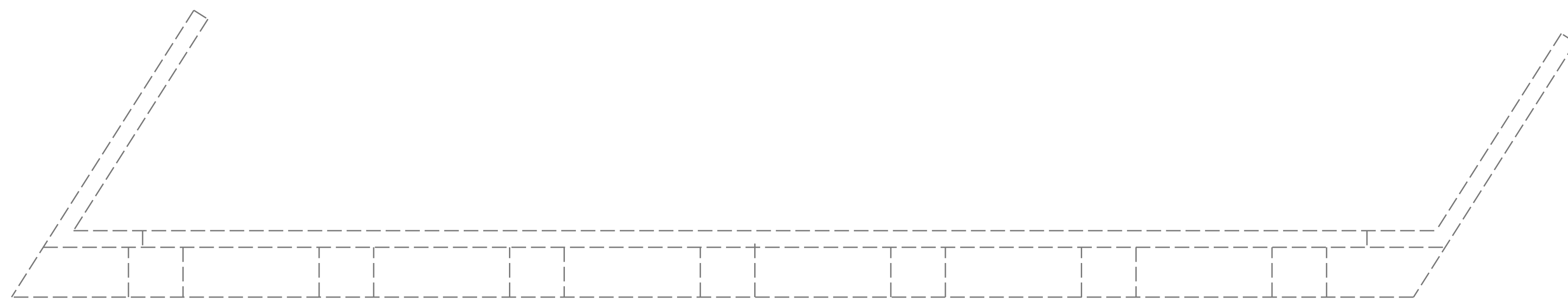
DRAWN BY : D.A. CANTRELL/A.Y. GODFREY DATE : 09/2022
 CHECKED BY : N.A. PIERCE DATE : 10/2022
 DESIGN ENGINEER OF RECORD: N.A. PIERCE DATE : 12/2022

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

8/26/21



PLAN
TOP OF CAP



ELEVATION
LOOKING SOUTH

SUBSTRUCTURE REPAIR QUANTITY TABLE

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




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

NOTES

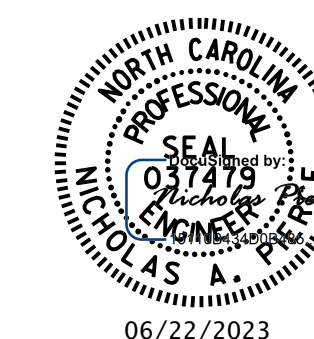
REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE BASED ON THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ENTER THE ACTUAL QUANTITIES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

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

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

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

PROJECT NO. **15BPR.124.3**
WAKE COUNTY
 BRIDGE NO. **911039**



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

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

6/22/2023
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 aygodfrey

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

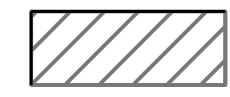
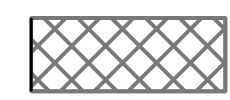

TOTAL SHEETS: 18

NOTES

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

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

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

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

SUBSTRUCTURE REPAIR QUANTITY TABLE

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

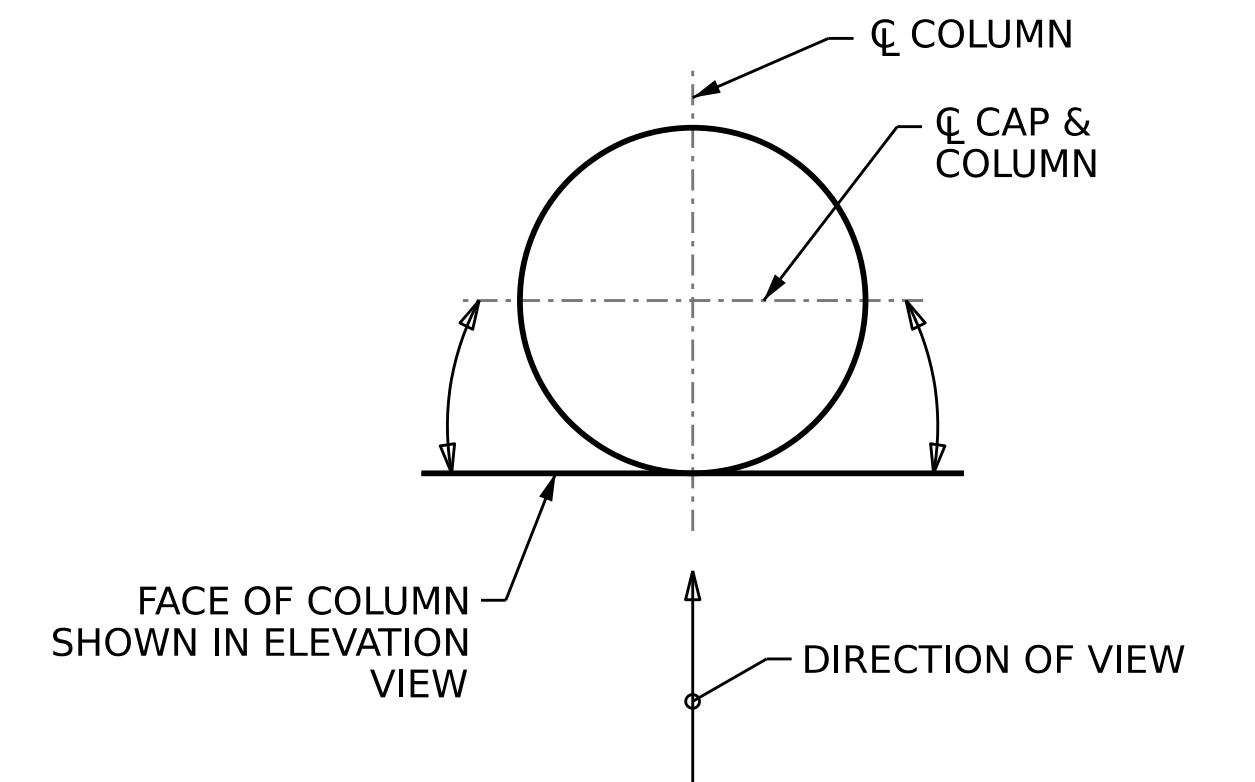
VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CLEAR TO SAWCUT. SEE REPAIR DETAILS.



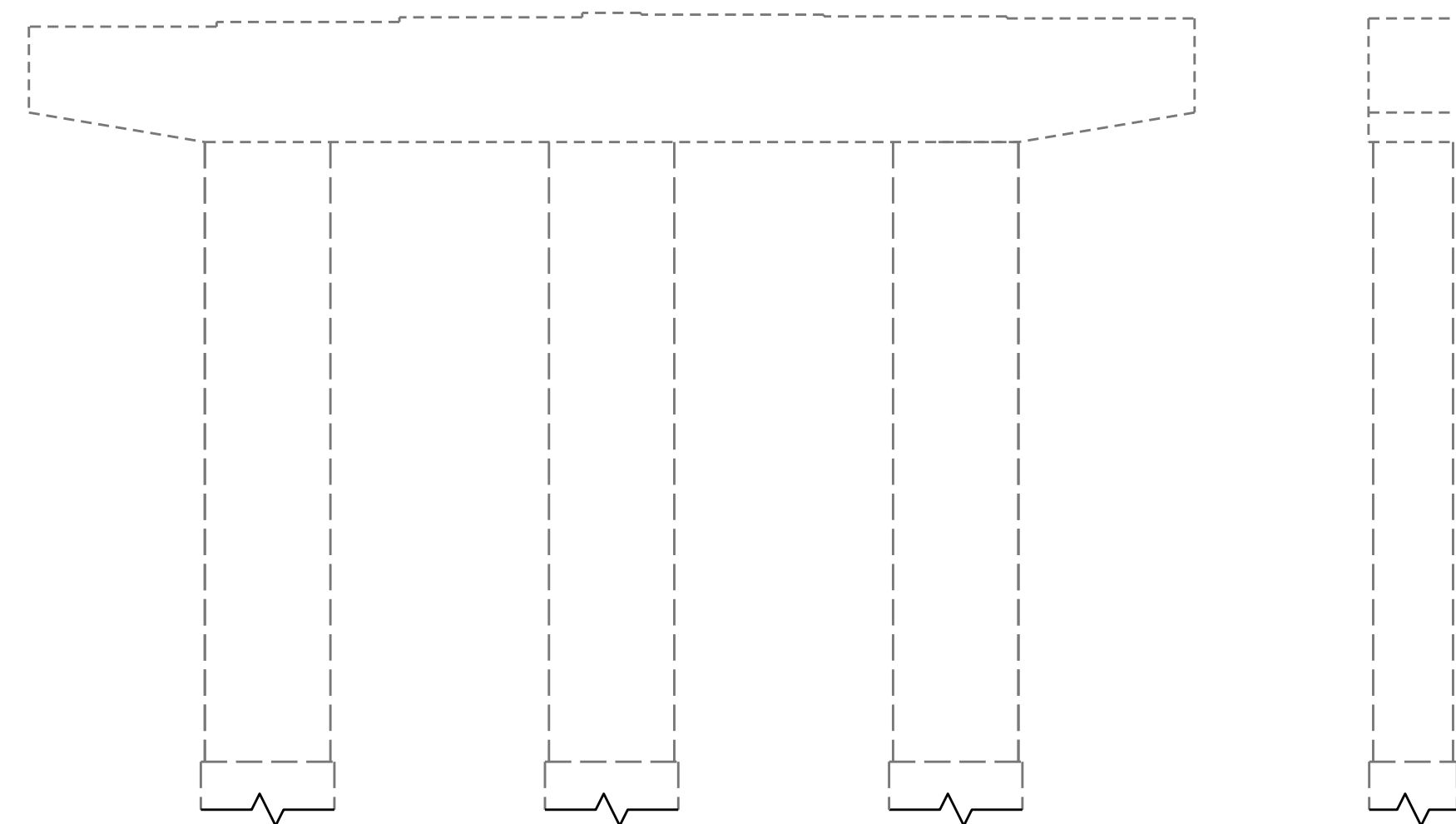
TOP OF CAP



BOTTOM OF CAP

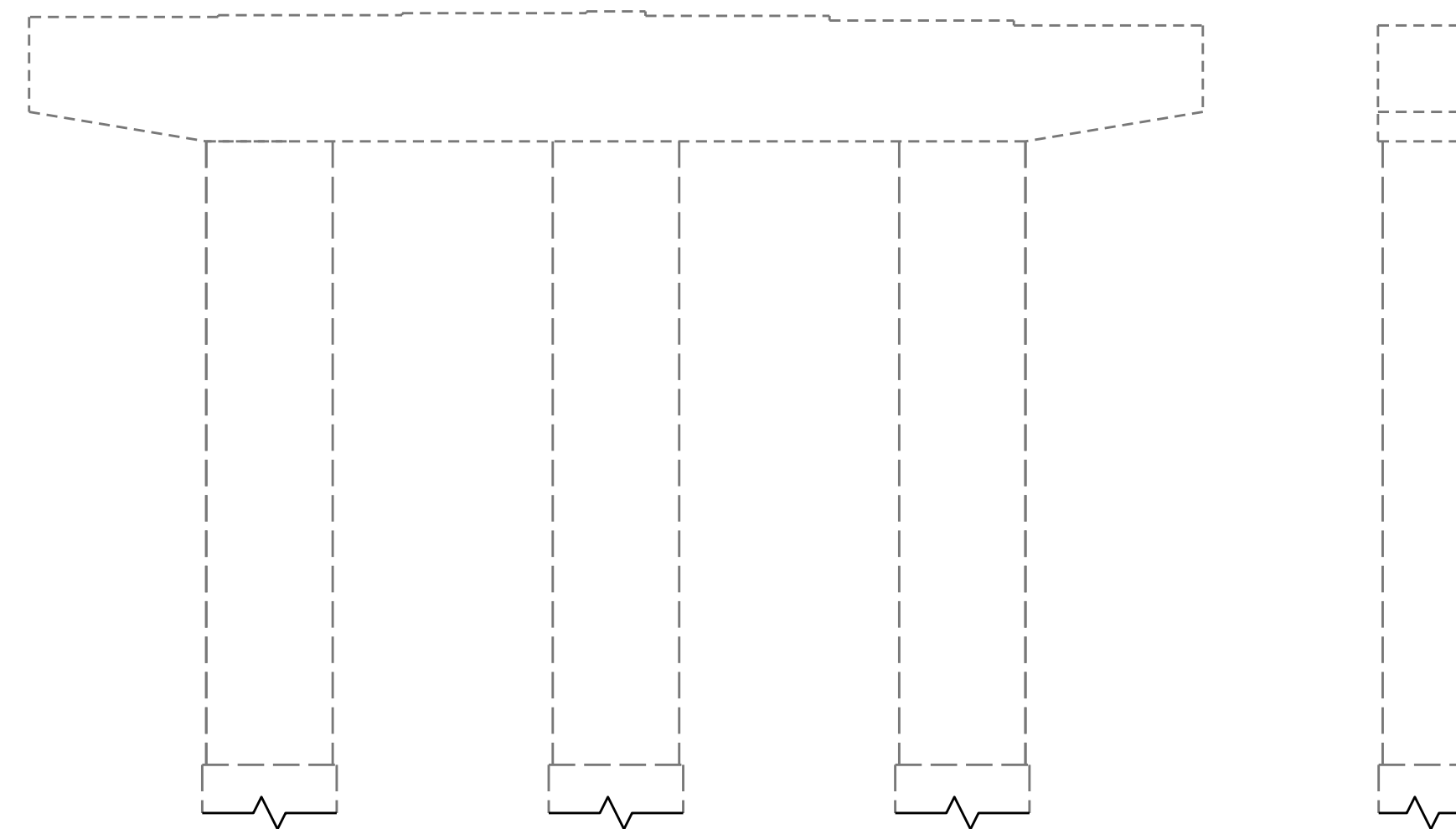


UNWRAPPED COLUMN FACE DETAIL



ELEVATION
SPAN A SIDE

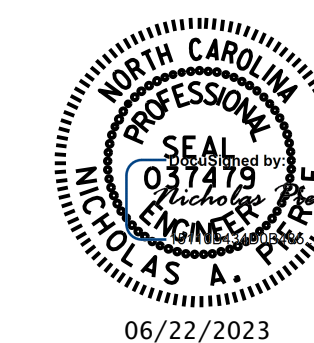
END VIEW



ELEVATION
SPAN B SIDE

END VIEW

PROJECT NO. **15BPR.124.3**
WAKE COUNTY
BRIDGE NO. **911039**



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

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

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

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

NOTES

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

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

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

 SHOTCRETE REPAIR AREA

 CONCRETE REPAIR AREA

 EPOXY RESIN INJECTION

SUBSTRUCTURE REPAIR QUANTITY TABLE

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

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



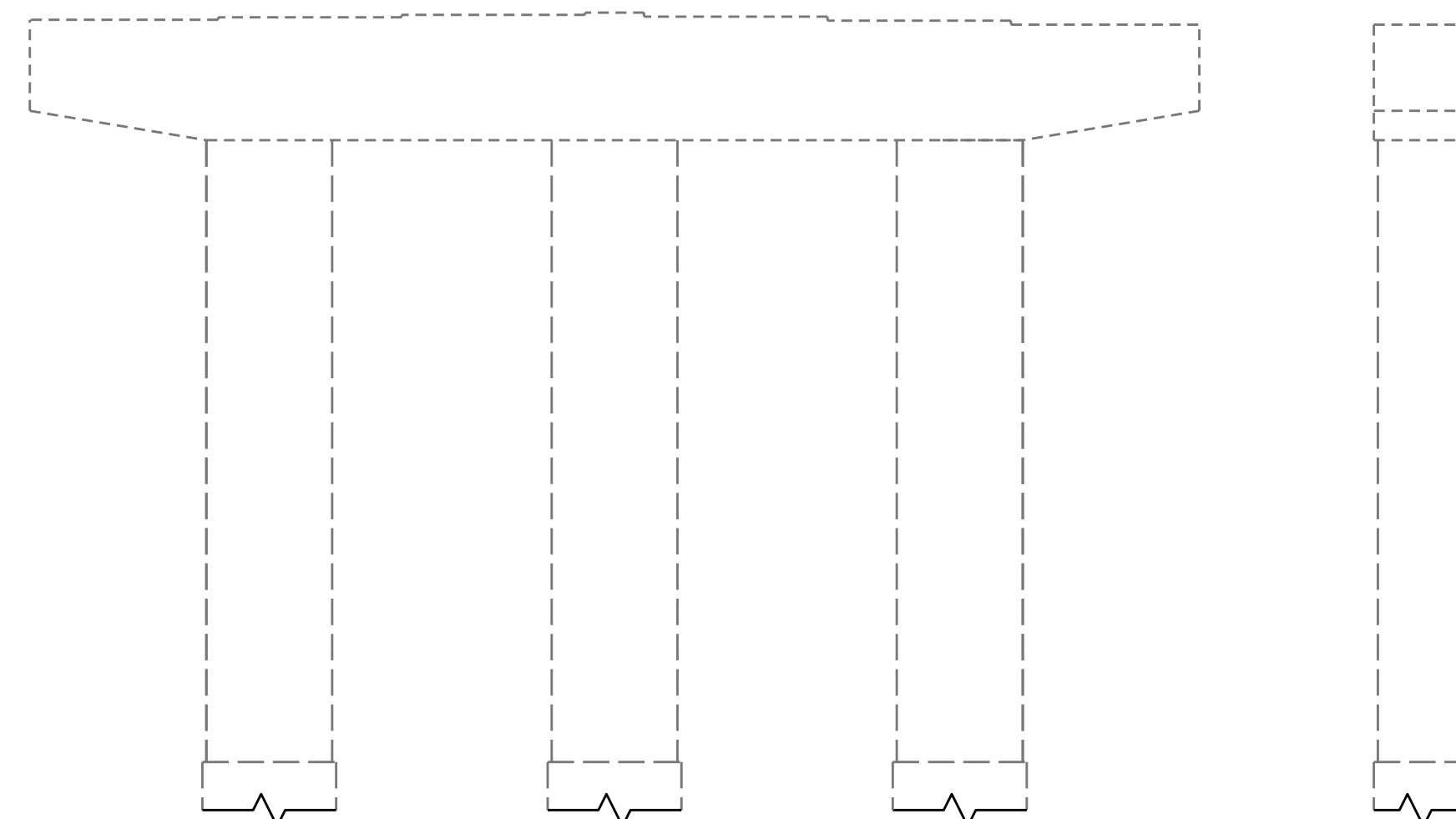
SPAN B
SPAN C



SPAN C
SPAN B

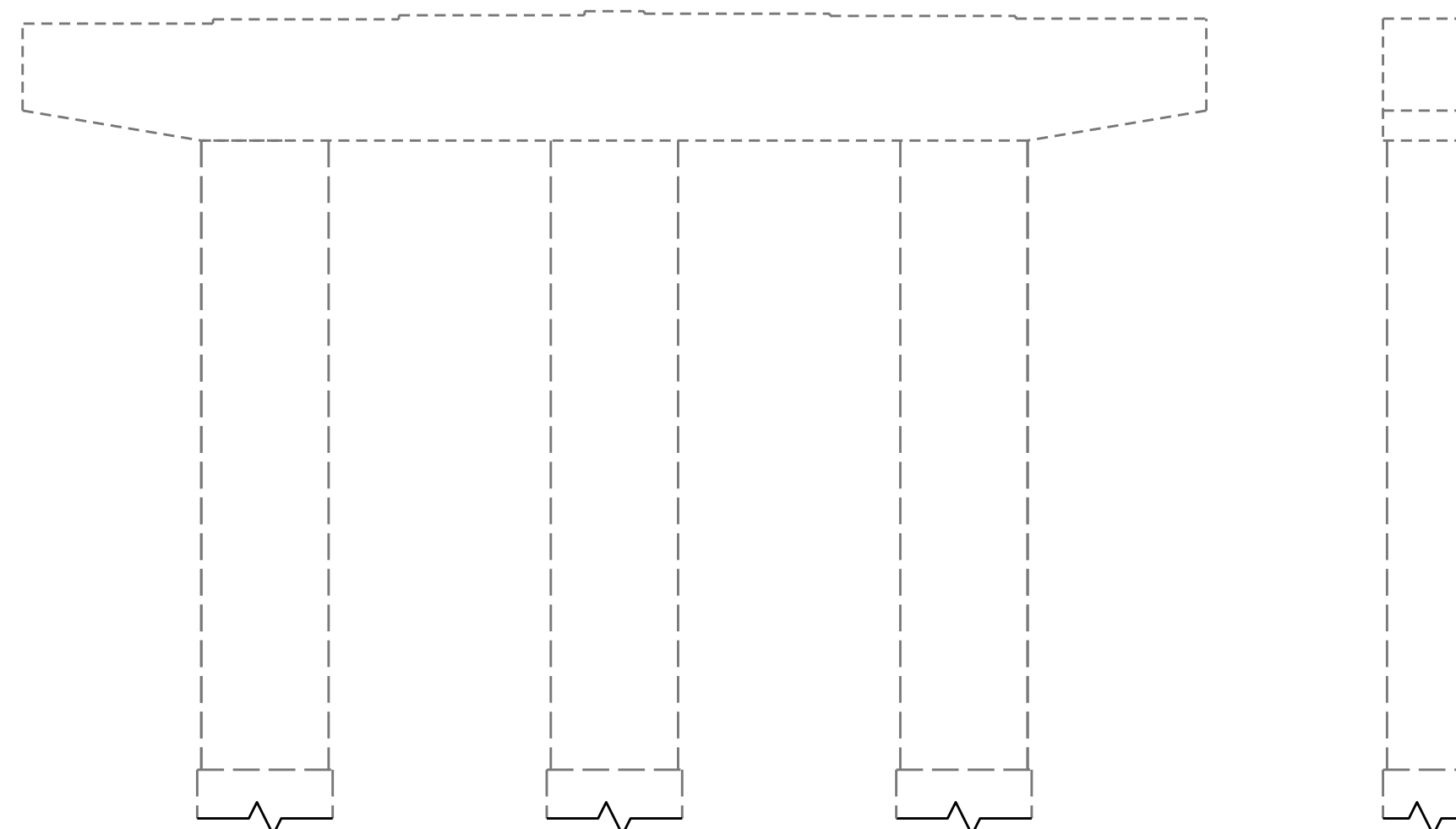
TOP OF CAP

BOTTOM OF CAP



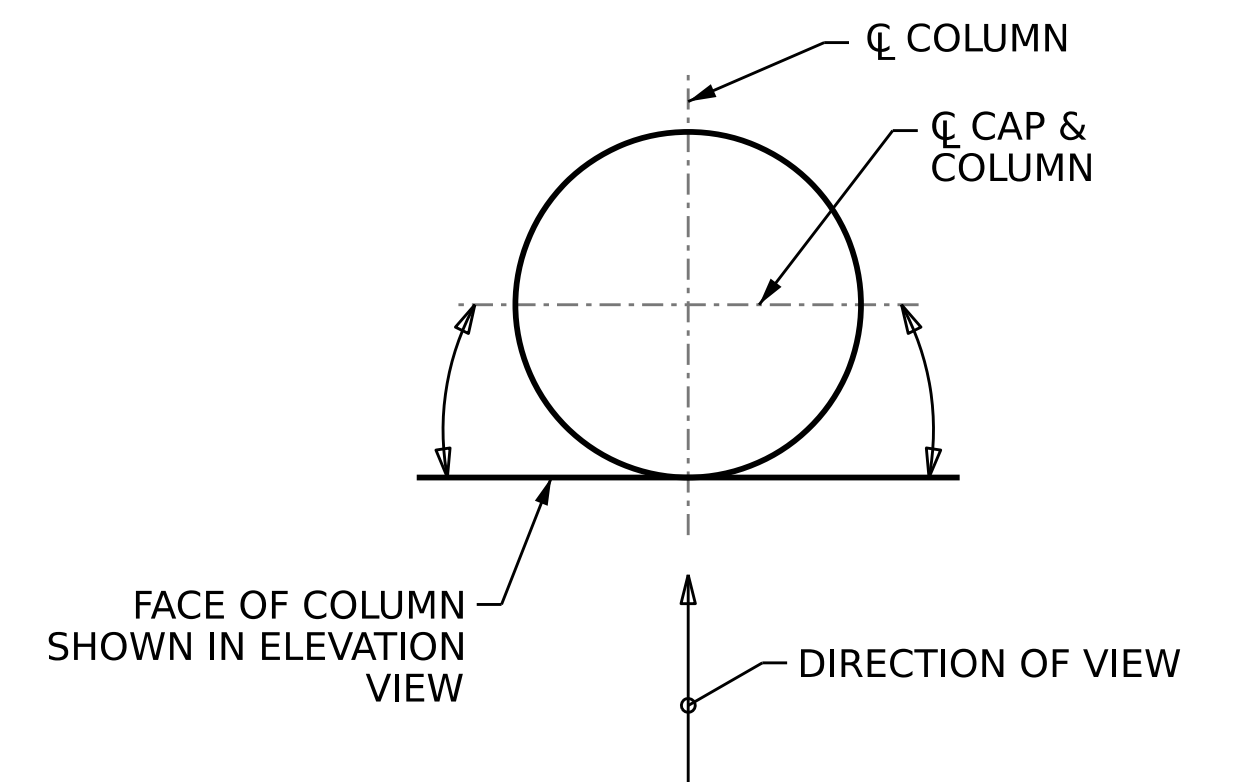
ELEVATION
SPAN B FACE

END VIEW



ELEVATION
SPAN C FACE

END VIEW



UNWRAPPED COLUMN FACE DETAIL

PROJECT NO. 15BPR.124.3
WAKE COUNTY
BRIDGE NO. 911039



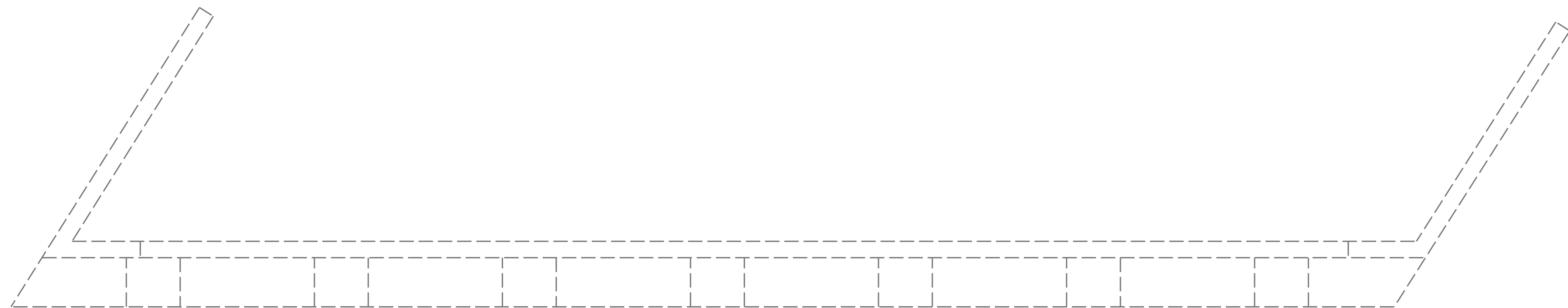
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE REPAIR
BENT 2

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

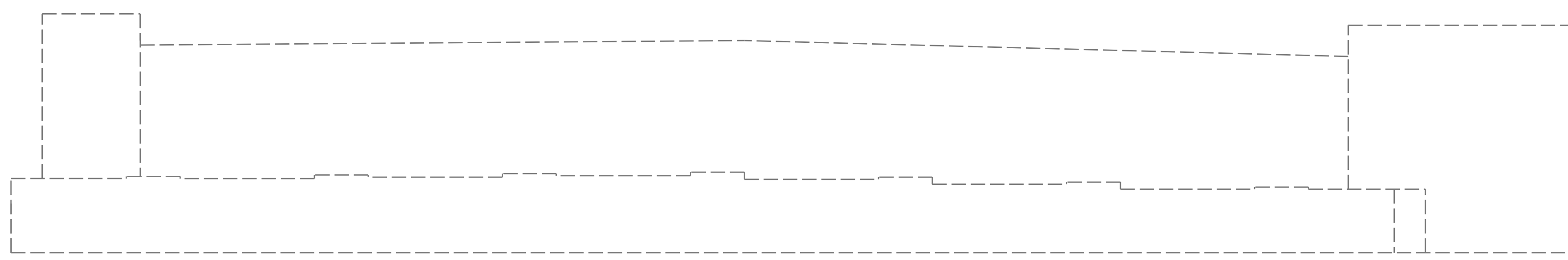
DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

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

8/26/21



PLAN
TOP OF CAP



ELEVATION
LOOKING NORTH

SUBSTRUCTURE REPAIR QUANTITY TABLE

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




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

NOTES

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.124.3**
WAKE COUNTY
 BRIDGE NO. **911039**

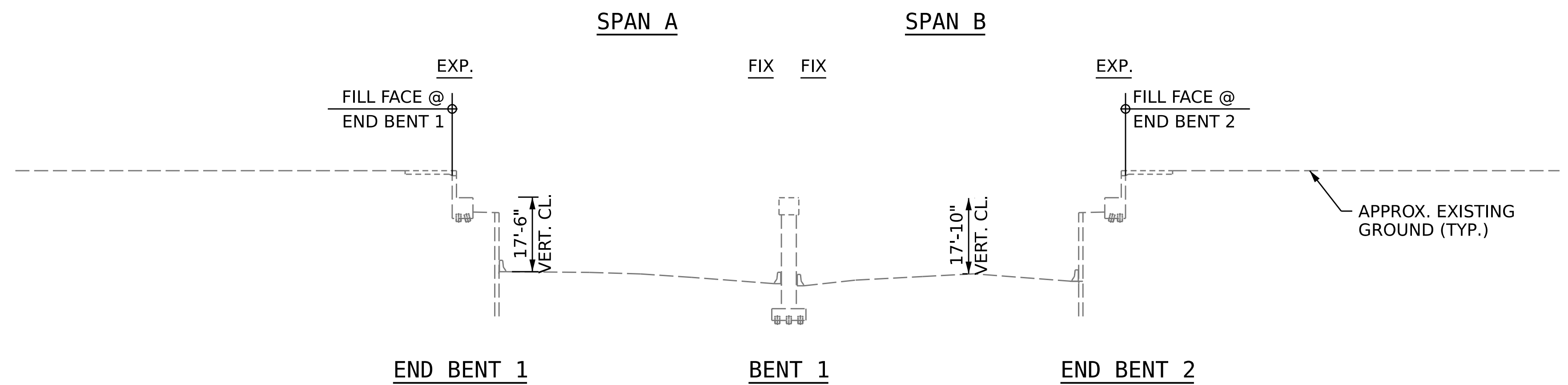


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE REPAIR
END BENT 2

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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



NOTES

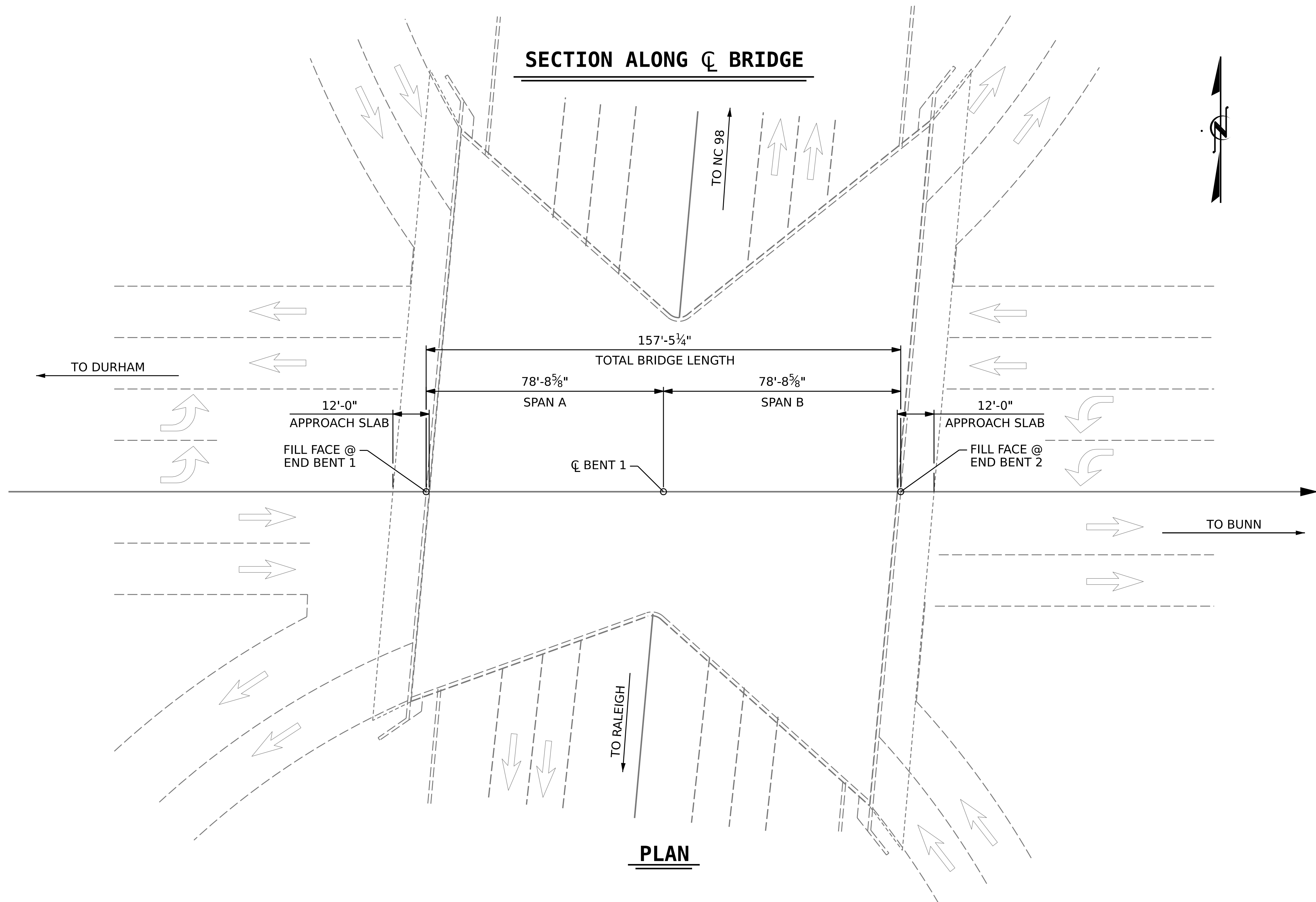
GENERAL DRAWING INFORMATION IS TAKEN FROM THE ORIGINAL PLANS AND THE ROUTINE INSPECTION REPORT DATED 05/10/2022.

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

SCOPE OF WORK

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

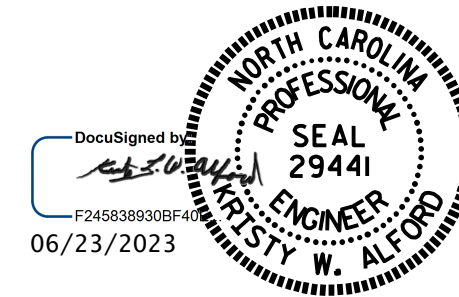
SECTION ALONG ϕ BRIDGE



PLAN

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

RESIDENT ENGINEER _____ DATE _____



PROJECT NO. **15BPR.124.3**
WAKE COUNTY
 BRIDGE NO. **911083**

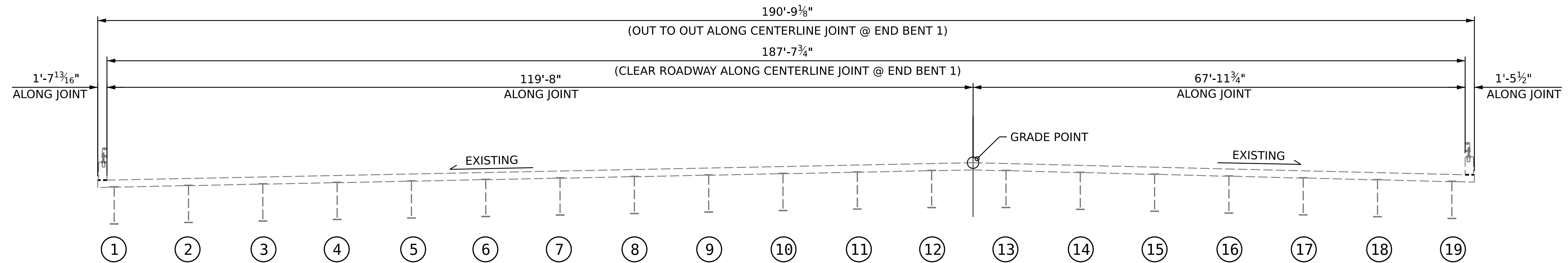
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE ON NC-98
 OVER US-1
 BETWEEN US 98 AND US-1A

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

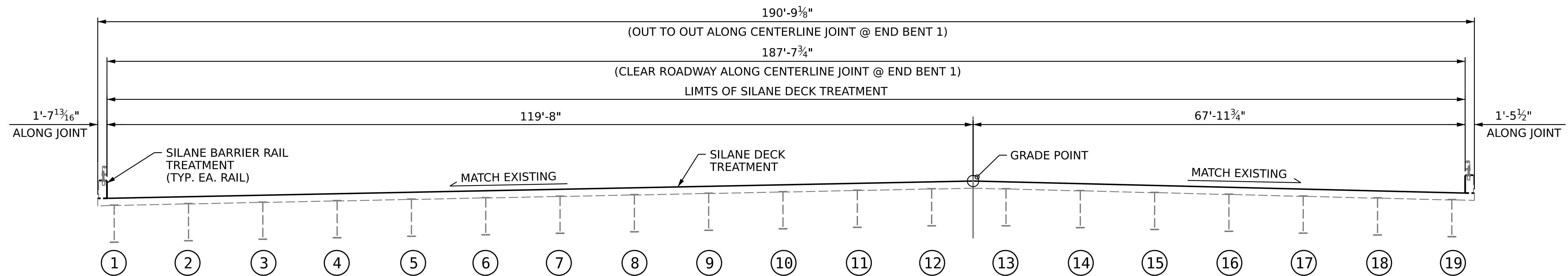
REVISIONS						SHEET NO. S3-01 TOTAL SHEETS 12
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
2			4			

NOTES

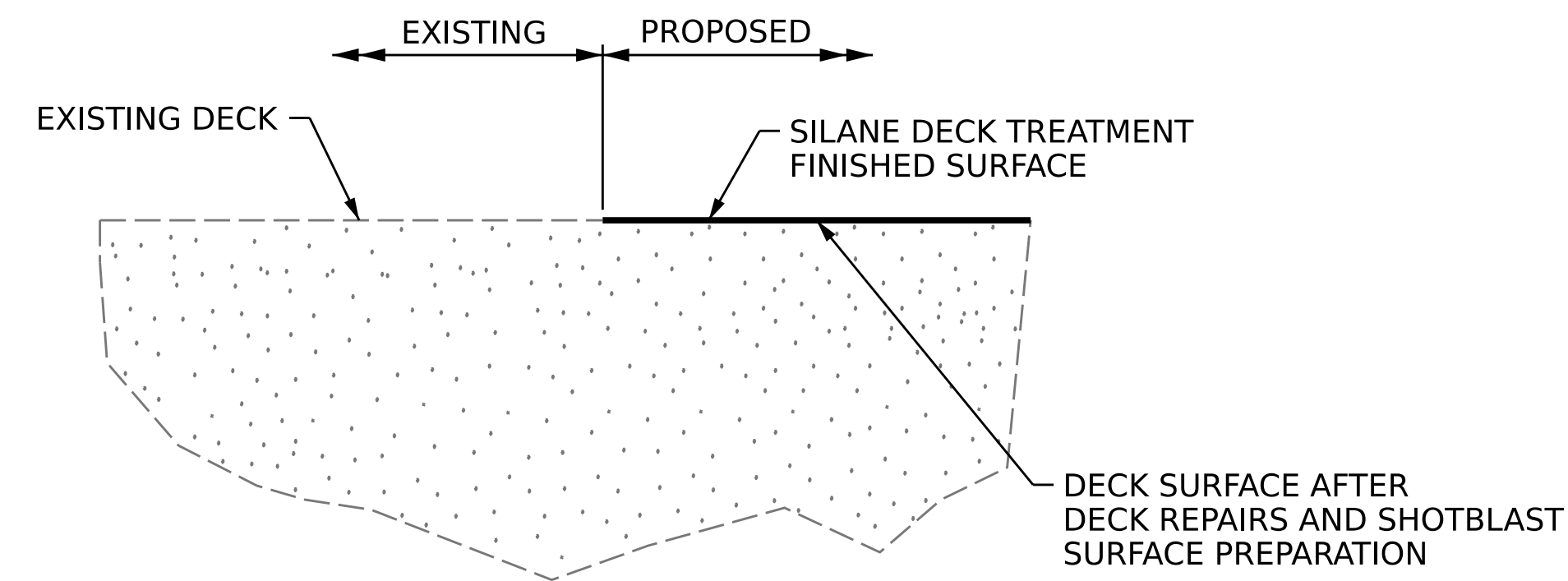
SEE TRAFFIC MANAGEMENT PLANS FOR LANE WIDTHS, SEQUENCING, AND OTHER TRAFFIC CONTROL MEASURES FOR SURFACE PREPARATION AND SILANE DECK TREATMENT APPLICATION.



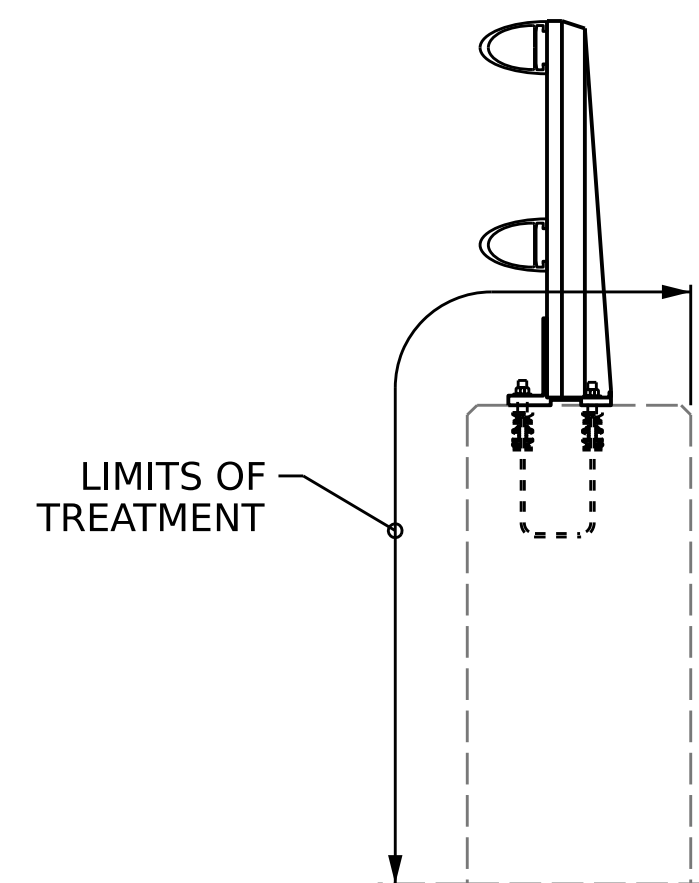
TYPICAL SECTION
(EXISTING AT END BENT 1 SHOWN)



TYPICAL SECTION
(PROPOSED AT END BENT 1 SHOWN)



DETAIL FOR SILANE DECK TREATMENT



DETAIL FOR SILANE BARRIER RAIL TREATMENT

PROJECT NO. **15BPR.124.3**
WAKE COUNTY
BRIDGE NO. **911083**



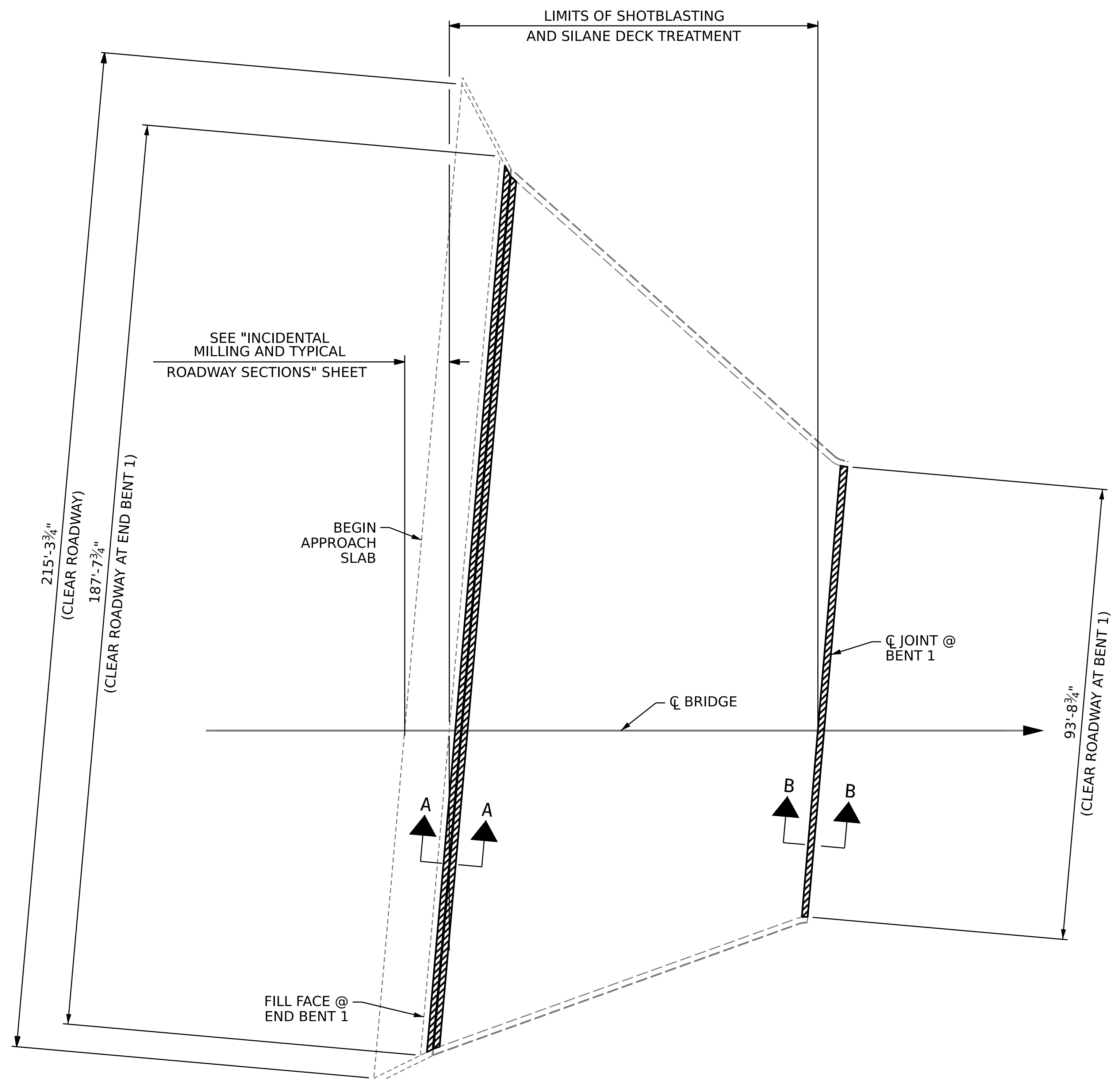
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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



APPROACH SLAB A

SPAN A

DECK SURFACE REPAIR QUANTITY TABLE

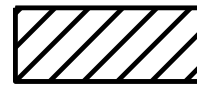

APPROACH SLAB A		
	ESTIMATE	ACTUAL
CONCRETE DECK REPAIR	0.0 CU. FT	
SURFACE PREPARATION FOR CONCRETE BARRIER	143.5 SQ. FT.	
SILANE BARRIER RAIL TREATMENT	143.5 SQ.FT.	
SHOTBLASTING BRIDGE DECK	58.2 SQ. YDS.	
SILANE DECK TREATMENT	58.2 SQ. YDS.	
BRIDGE JOINT DEMOLITION	105.0 SQ.FT.	
SPAN A		
	ESTIMATE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

NOTES

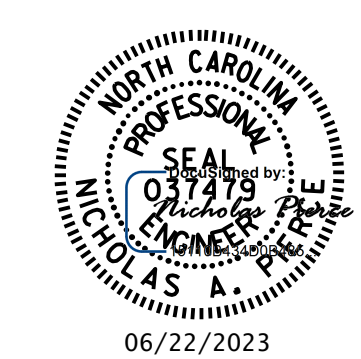
DECK SURFACE REPAIR QUANTITIES REPRESENT ESTIMATED VALUES OF CLASS II SURFACE PREPARATION AND CONCRETE DECK REPAIR AFTER REMOVAL OF UNSOUND CONCRETE. (MIN. 2" CLEAR TO SAWCUT). SEE CONCRETE FOR DECK REPAIR SPECIAL PROVISION.

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

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

-  BRIDGE JOINT DEMOLITION
-  CONCRETE DECK REPAIR

PROJECT NO. **15BPR.124.3**
WAKE COUNTY
 BRIDGE NO. **911083**

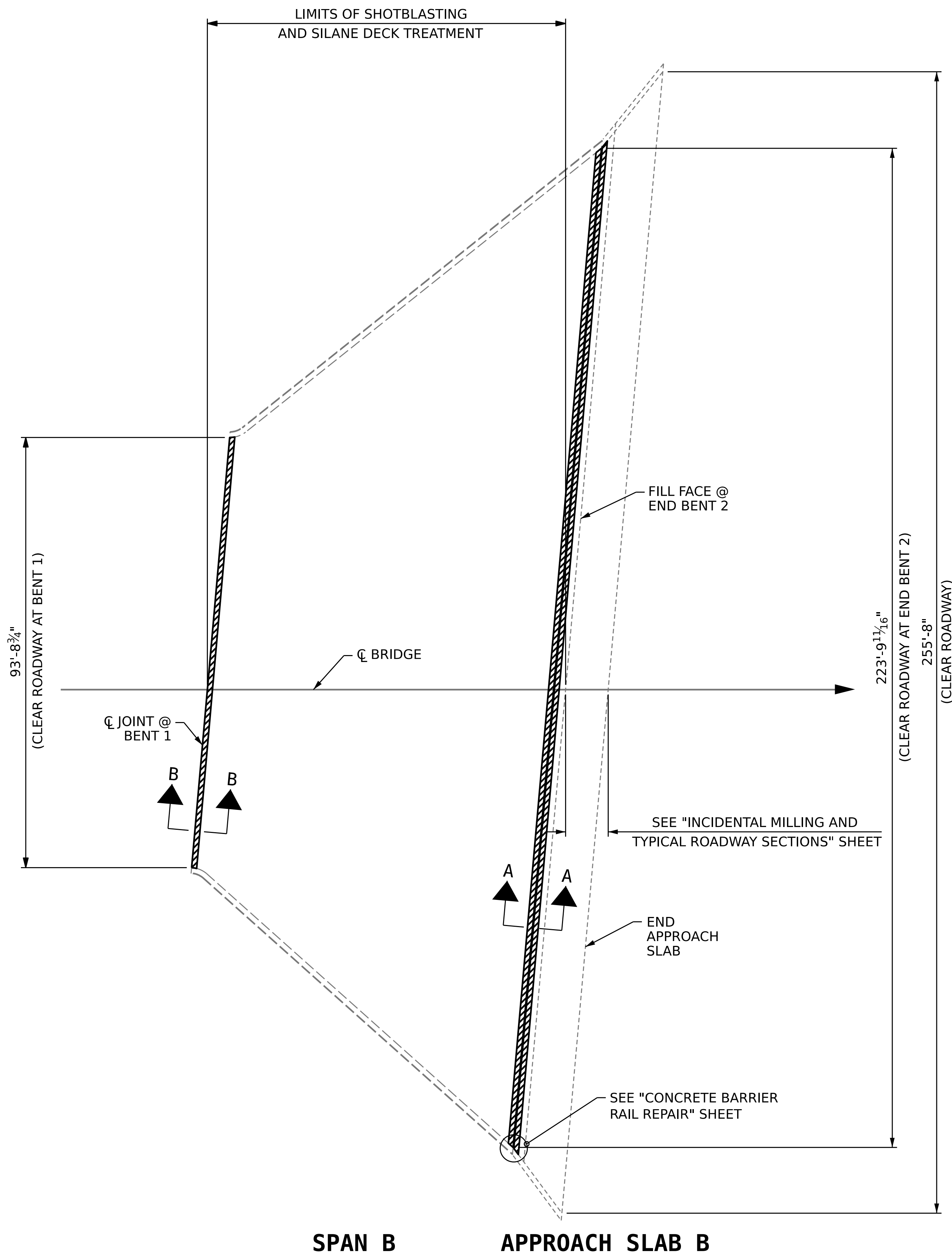


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 DECK SURFACE REPAIR
SPAN A AND APPROACH SLAB A

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

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

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



DECK SURFACE REPAIR QUANTITY TABLE

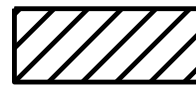

APPROACH SLAB B		
	ESTIMATE	ACTUAL
CONCRETE DECK REPAIR	0.0 CU. FT	
SURFACE PREPARATION FOR CONCRETE BARRIER	159.0 SQ. FT.	
SILANE BARRIER RAIL TREATMENT	159.0 SQ.FT.	
SHOTBLASTING BRIDGE DECK	70.8 SQ. YDS.	
SILANE DECK TREATMENT	70.8 SQ. YDS.	
BRIDGE JOINT DEMOLITION	125.9 SQ. FT.	
SPAN B		
	ESTIMATE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

NOTES

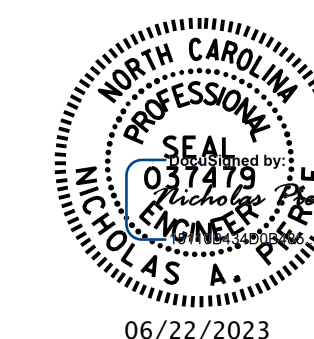
DECK SURFACE REPAIR QUANTITIES REPRESENT ESTIMATED VALUES OF CLASS II SURFACE PREPARATION AND CONCRETE DECK REPAIR AFTER REMOVAL OF UNSOUND CONCRETE. (MIN. 2" CLEAR TO SAWCUT). SEE CONCRETE FOR DECK REPAIR SPECIAL PROVISION.

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

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

-  BRIDGE JOINT DEMOLITION
-  CONCRETE DECK REPAIR

PROJECT NO. **15BPR.124.3**
WAKE COUNTY
 BRIDGE NO. **911083**

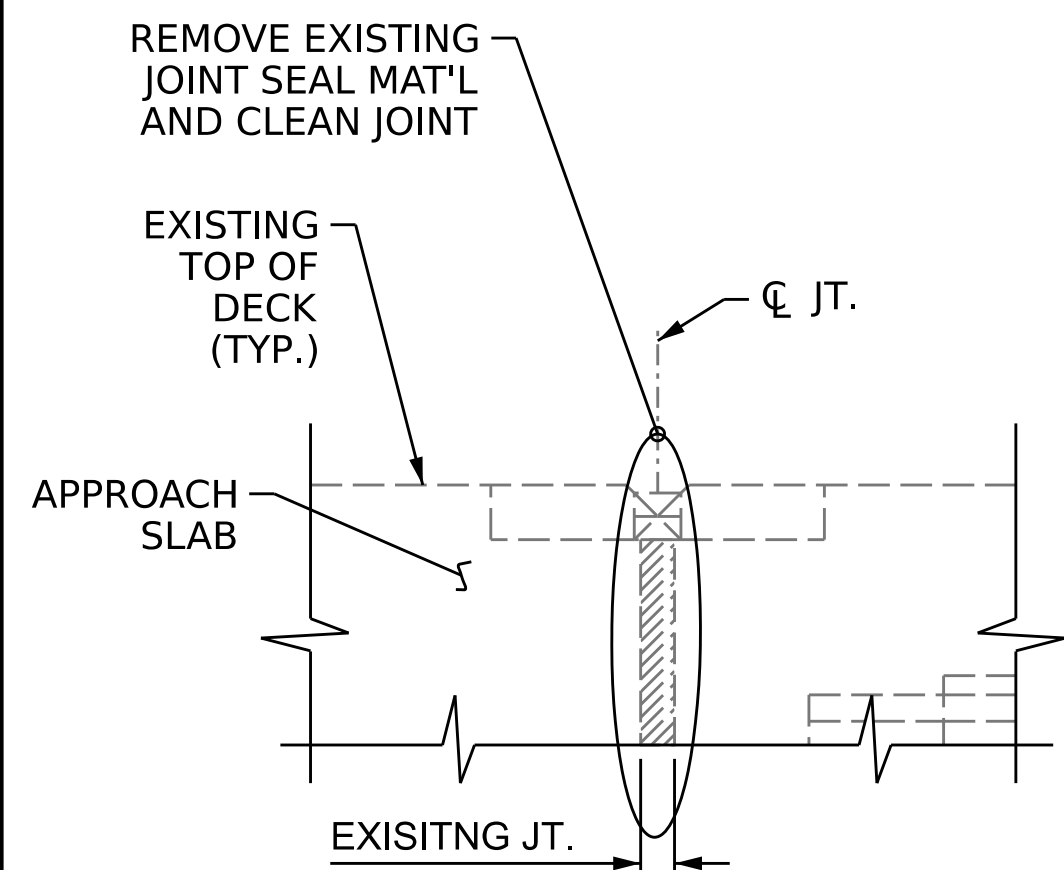


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 DECK SURFACE REPAIR
**SPAN B AND
 APPROACH SLAB B**

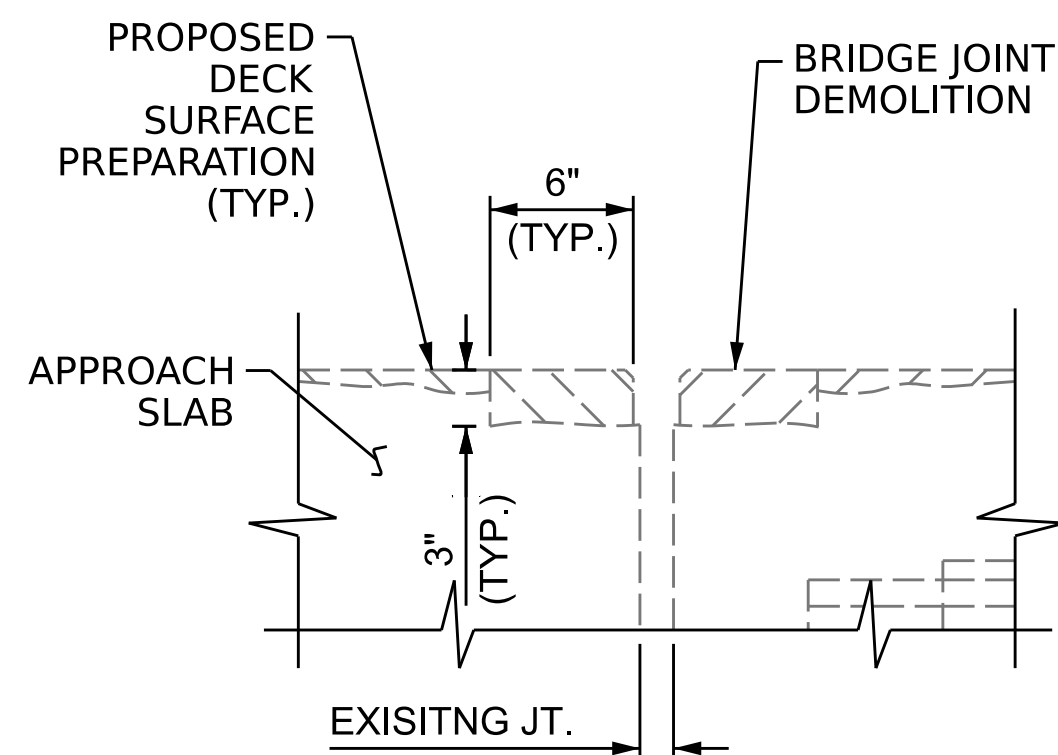
DRAWN BY : N.A. PIERCE DATE : 03/2022
 CHECKED BY : R.L.PUTEK DATE : 10/2022
 DESIGN ENGINEER OF RECORD: N.A. PIERCE DATE : 12/2022

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
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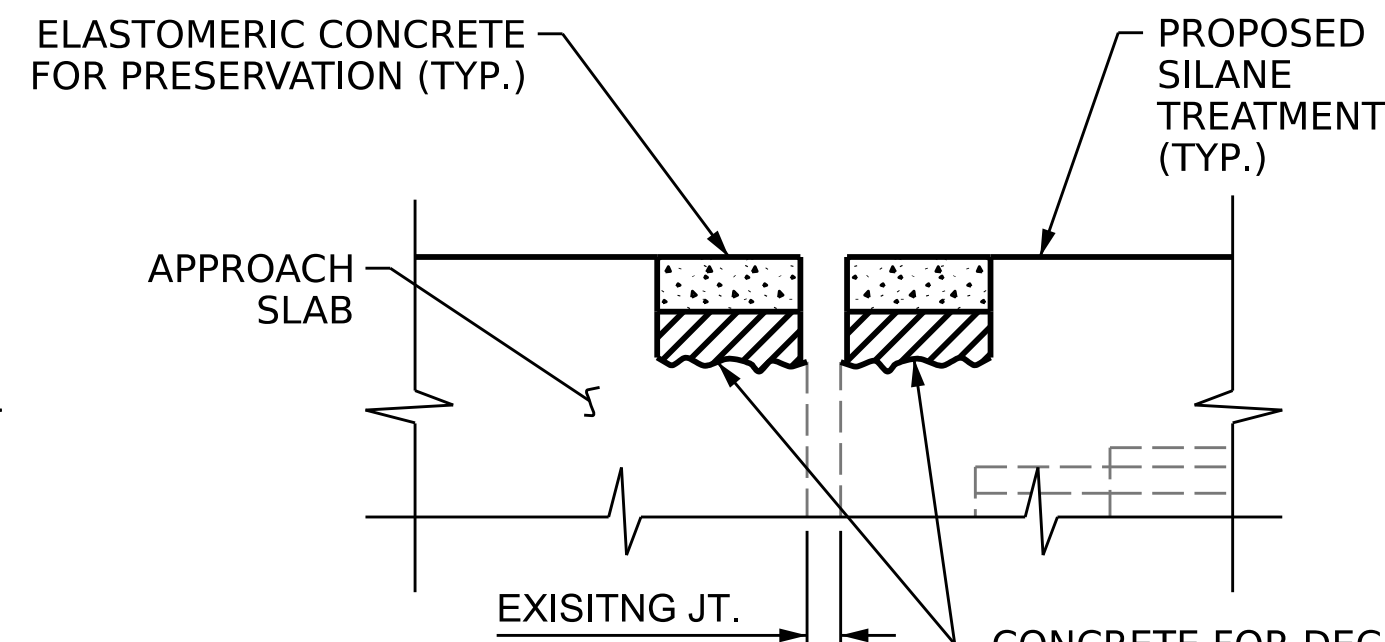
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			12
2			4			



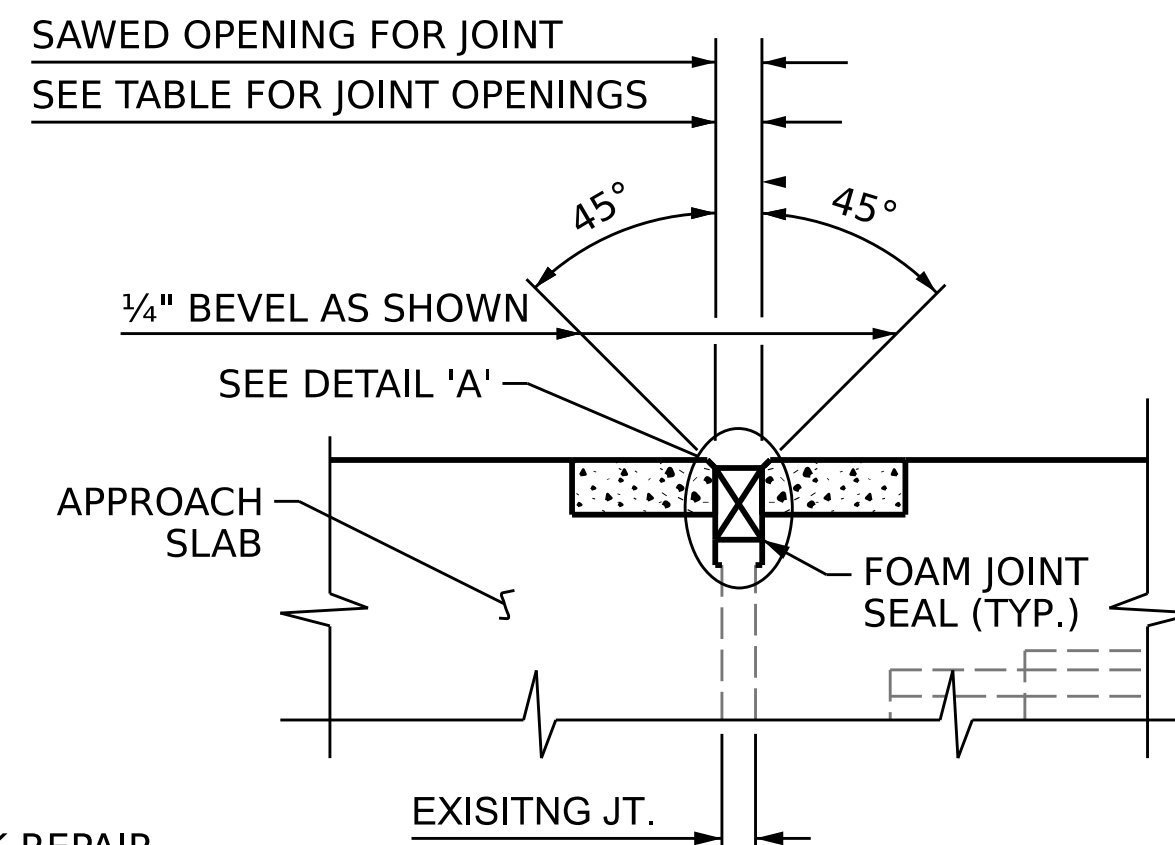
EXISTING JOINT SEAL



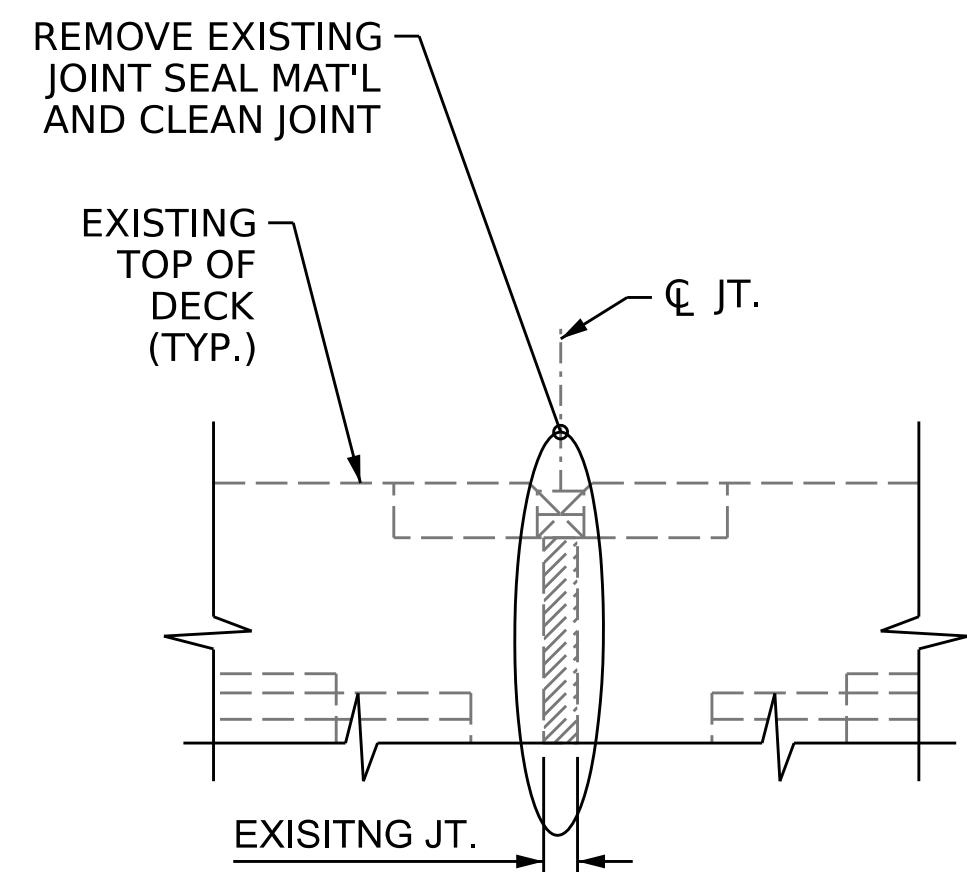
EXISTING JOINT AFTER JOINT DEMOLITION



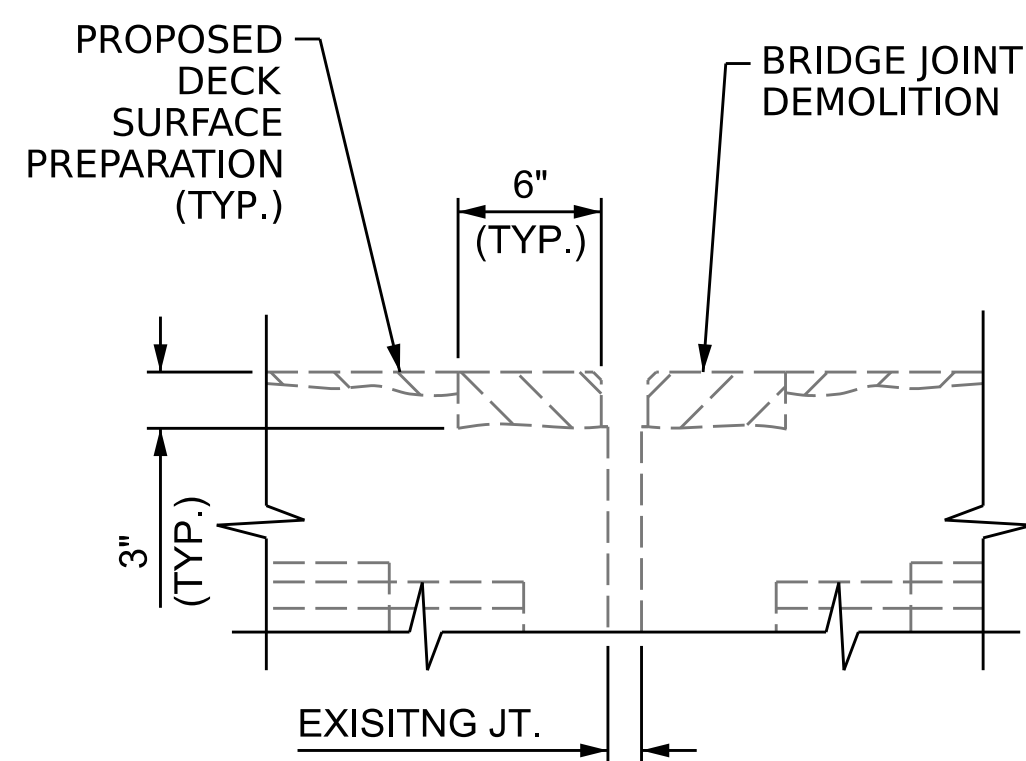
PROPOSED JOINT PRIOR TO SAWING



PROPOSED FOAM JOINT SEAL



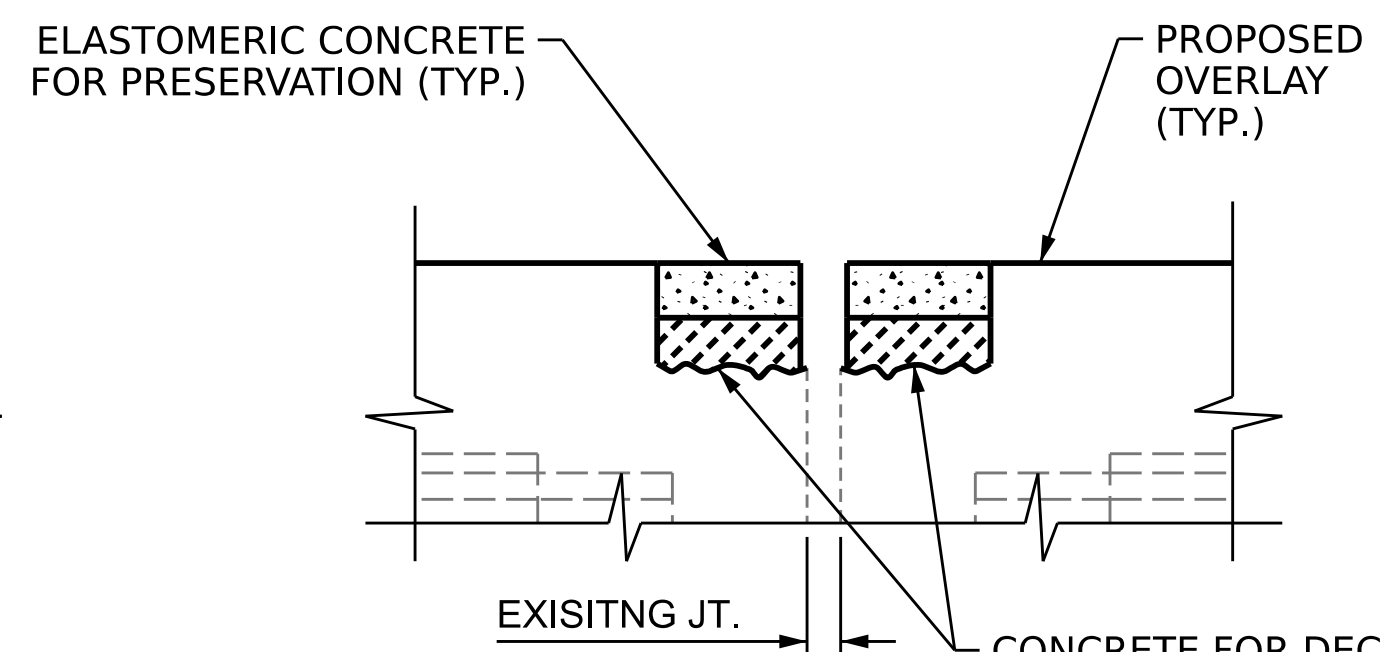
EXISTING JOINT SEAL



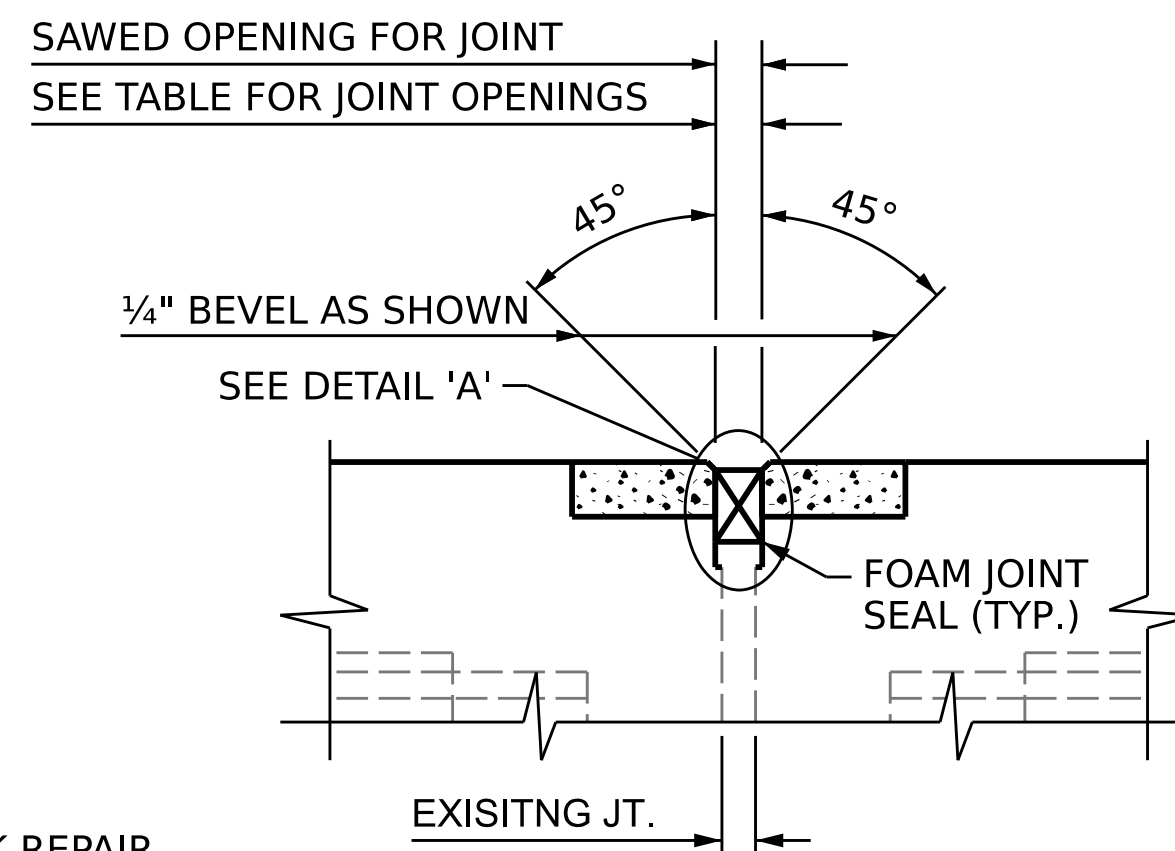
EXISTING JOINT AFTER JOINT DEMOLITION

SECTION A-A

(TYP. AT END BENTS)



PROPOSED JOINT PRIOR TO SAWING



PROPOSED FOAM JOINT SEAL

SECTION B-B

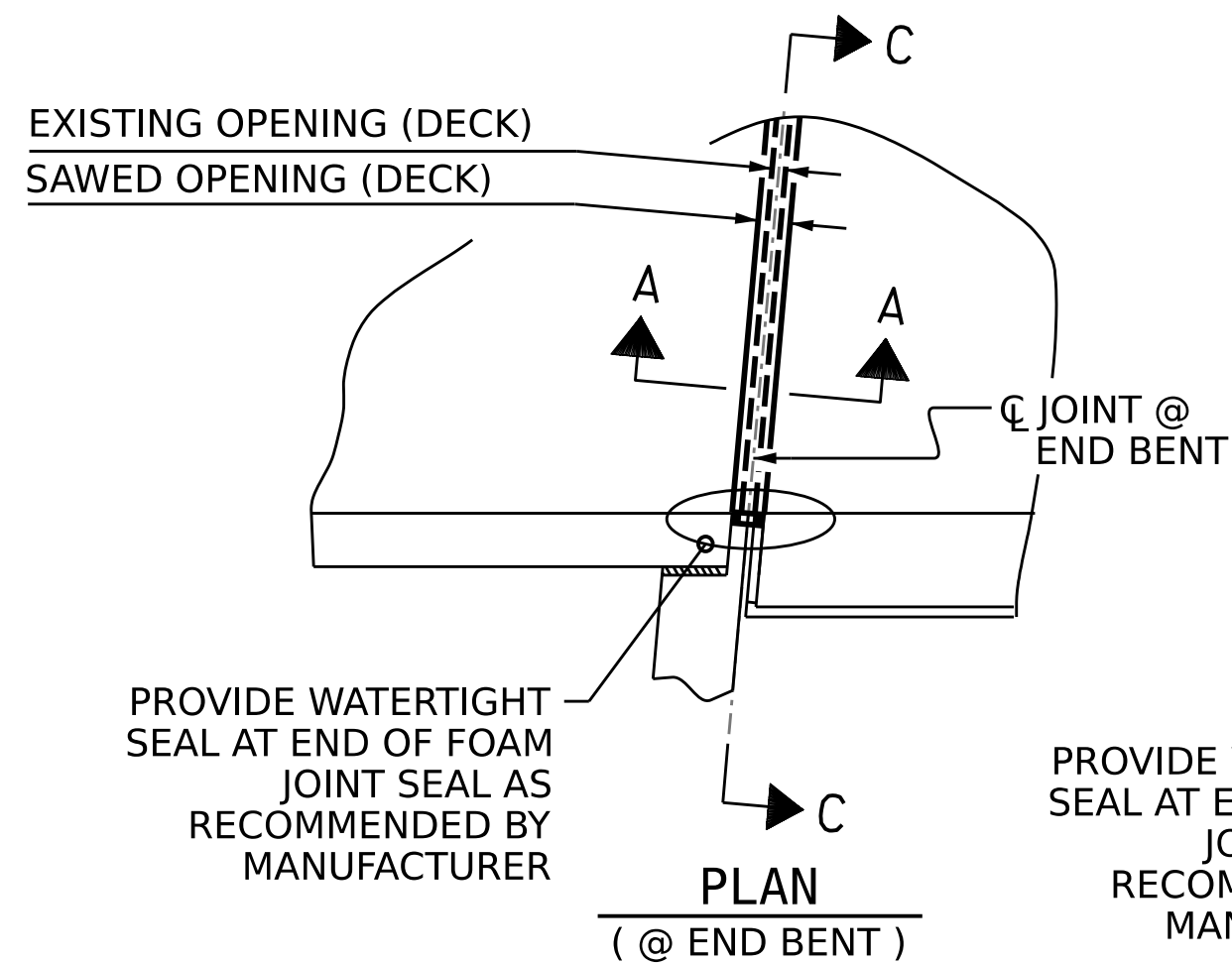
(TYP. AT BENTS)

JOINT REPAIR QUANTITY TABLE

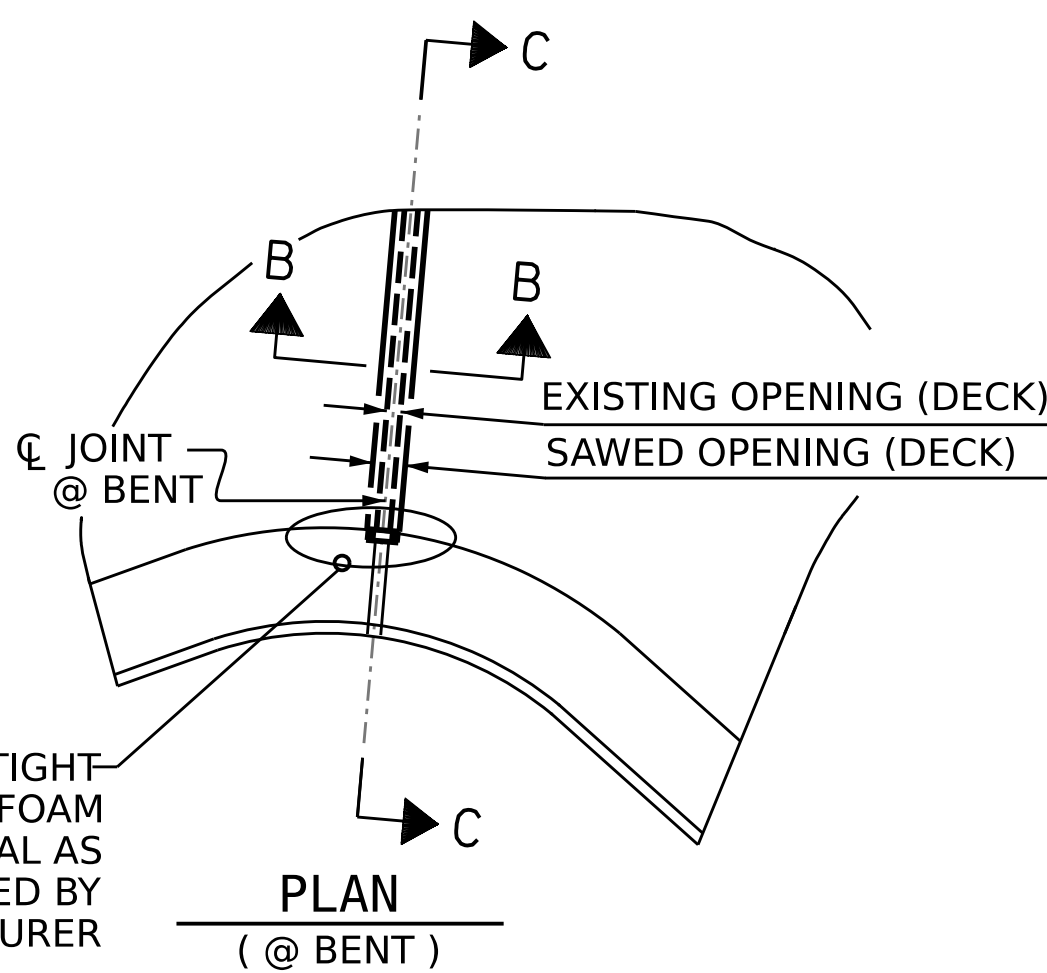
	ESTIMATED	ACTUAL
FOAM JOINT SEALS FOR PRESERVATION	513.0 LN. FT.	

SAWED JOINT OPENING TABLE

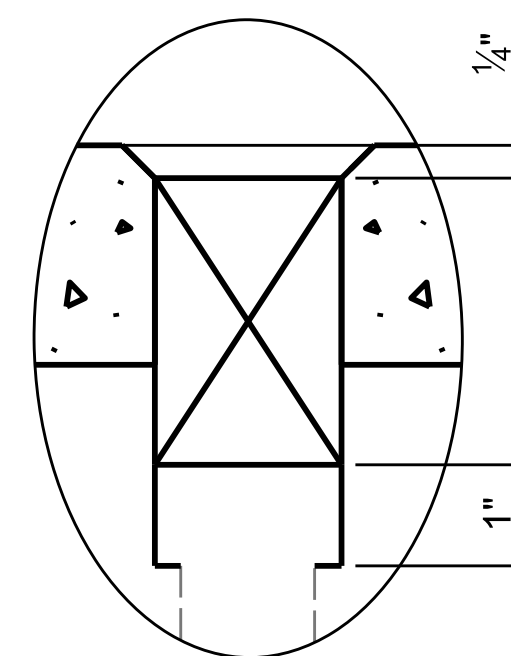
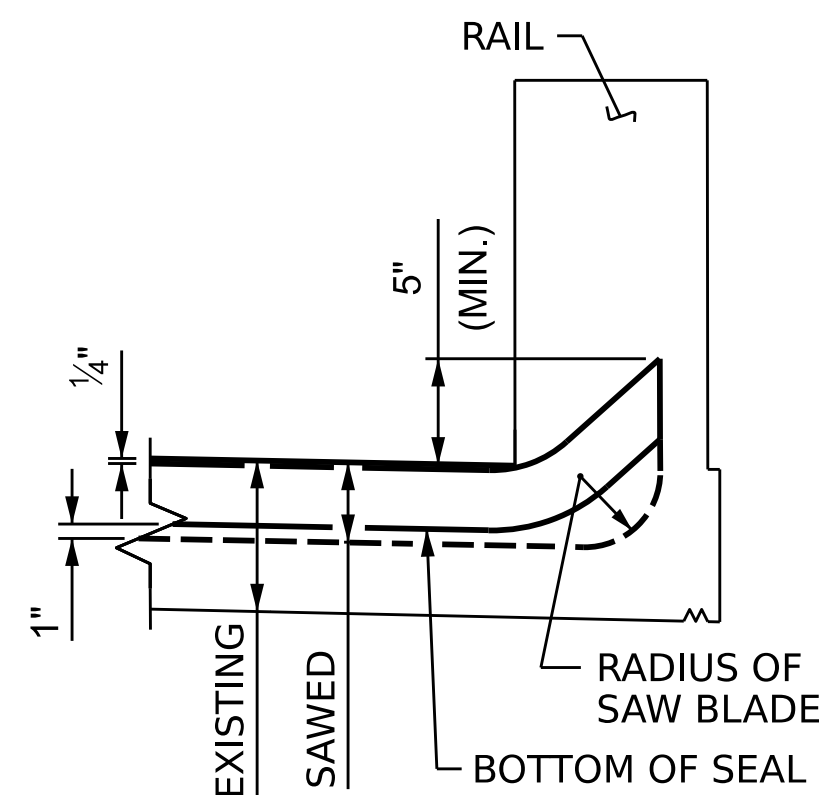
LOCATION	SAWED JT. OPENING (PERPENDICULAR TO JT.)		
	AT 45°	AT 60°	AT 90°
END BENT 1	1 3/8"	1 1/16"	1 3/8"
BENT 1	1 7/8"	1 7/8"	1 7/8"
END BENT 2	1 3/8"	1 1/16"	1 3/8"
TOTAL			



PROVIDE WATERTIGHT SEAL AT END OF FOAM JOINT SEAL AS RECOMMENDED BY MANUFACTURER



JOINT SEAL DETAILS



ELASTOMERIC CONCRETE FOR PRESERVATION

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

NOTES

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

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

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

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

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

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

THE INSTALLED FOAM JOINTS SHALL BE WATER TIGHT.

FOR FOAM JOINT SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.

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

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

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

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

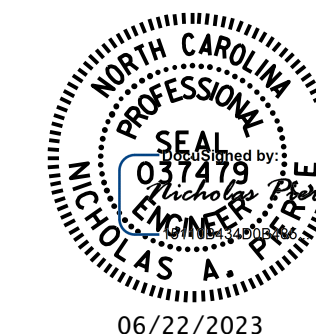
FOR BRIDGE JOINT DEMOLITION, SEE SPECIAL PROVISIONS.

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

FOR ELASTOMERIC CONCRETE FOR PRESERVATION, SEE SPECIAL PROVISIONS.

FOR CONCRETE FOR DECK REPAIR, SEE SPECIAL PROVISIONS.

PROJECT NO. **15BPR.124.3**
WAKE COUNTY
 BRIDGE NO. **911083**



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

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

NOTES

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

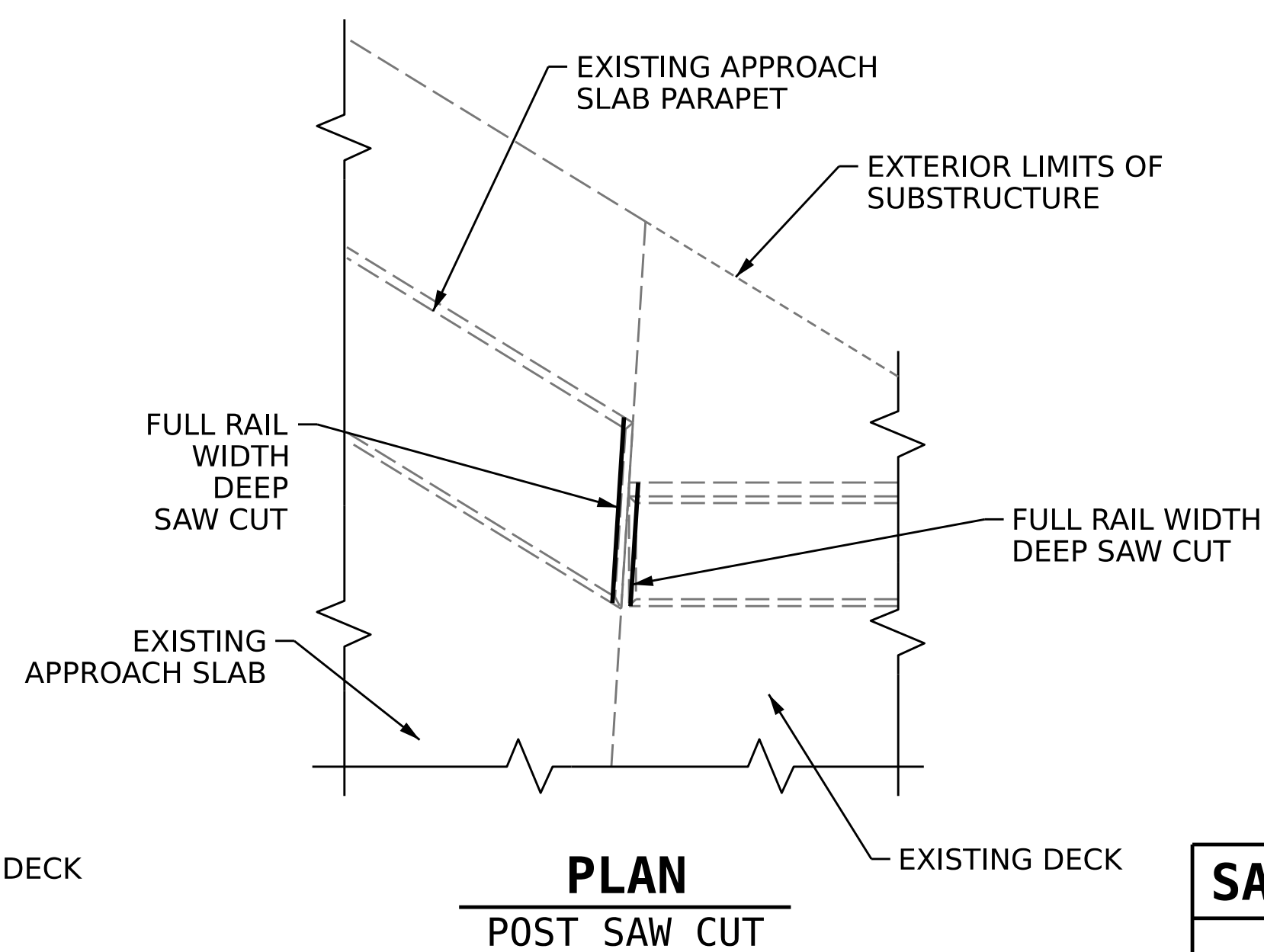
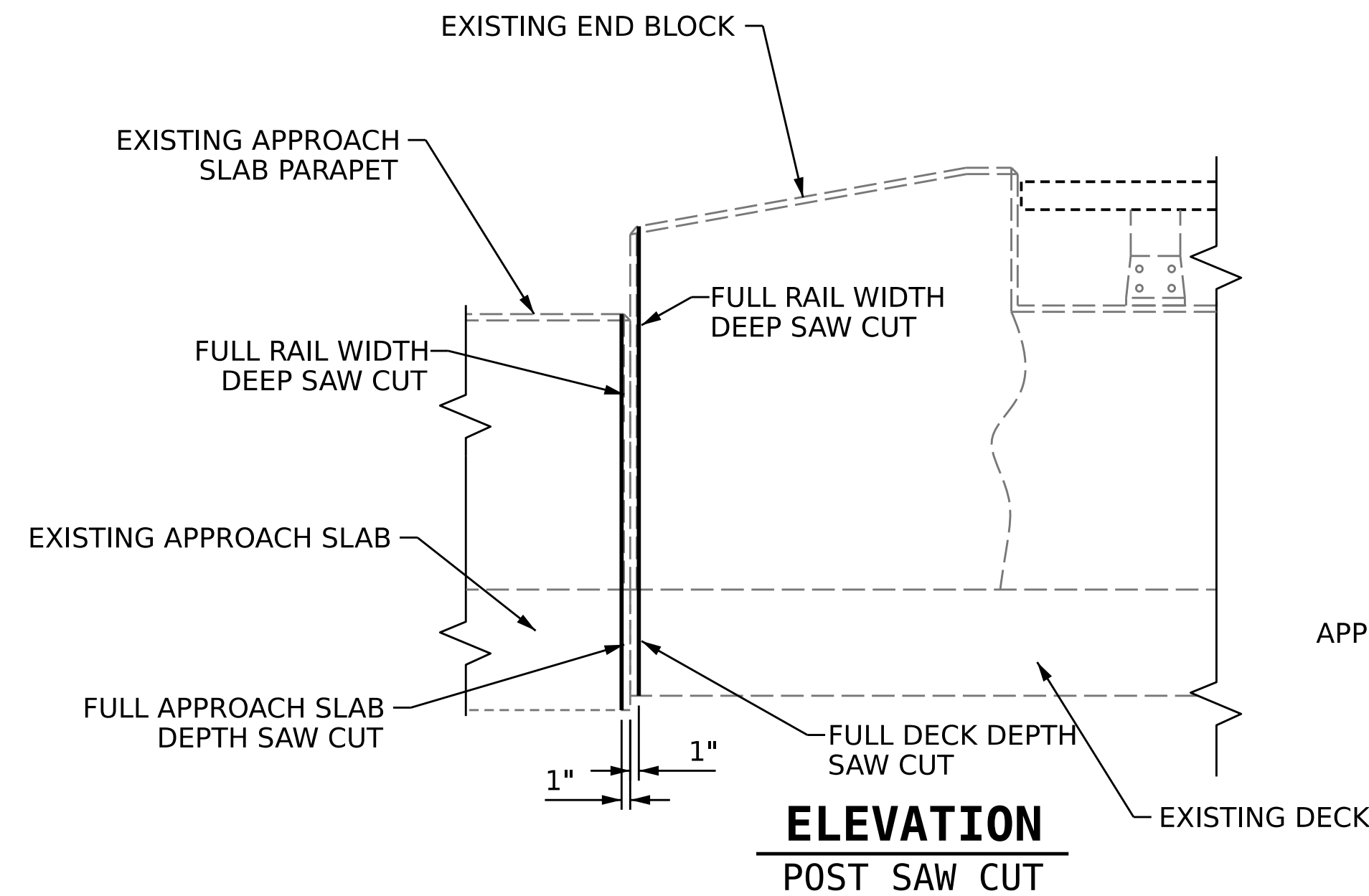
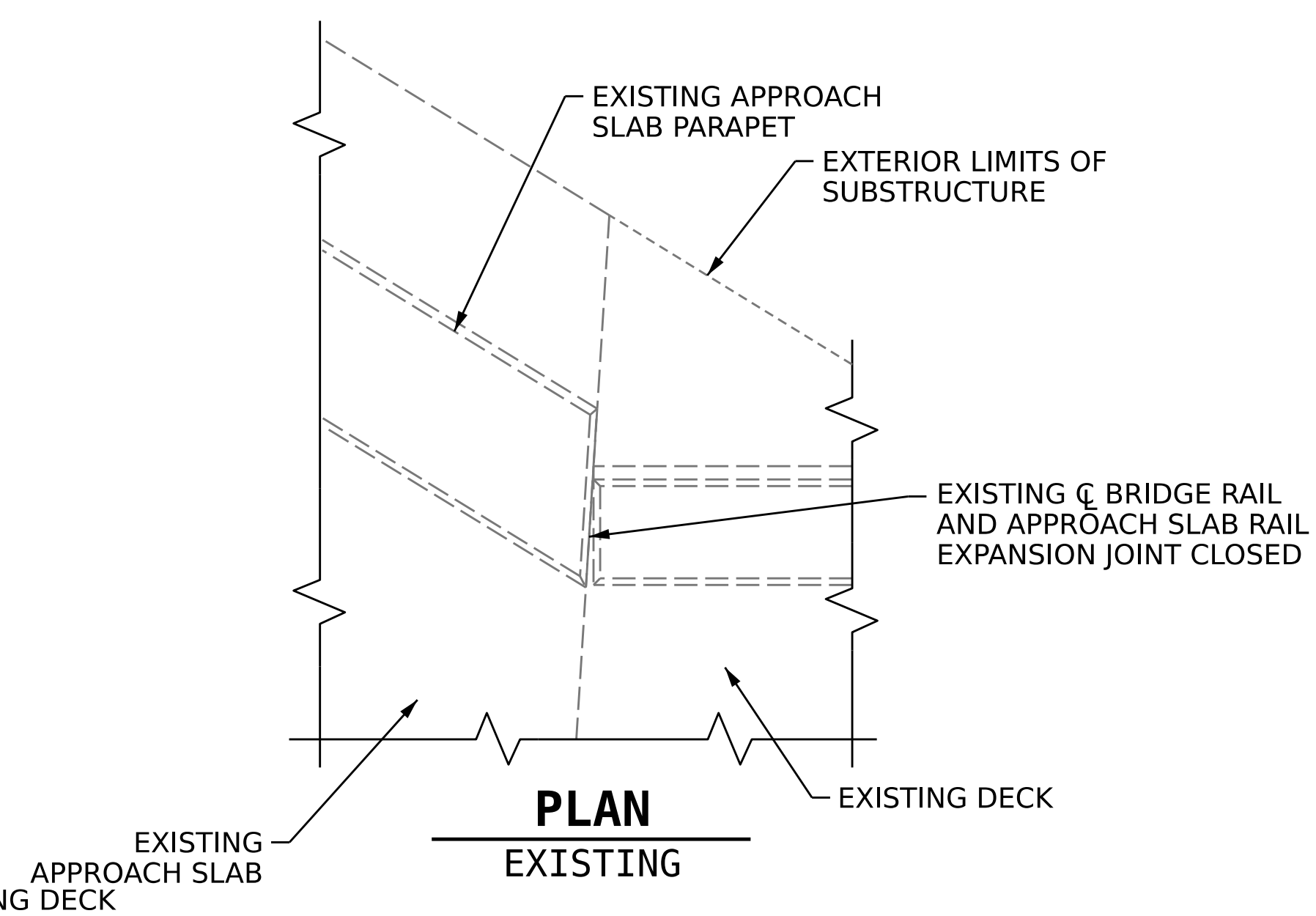
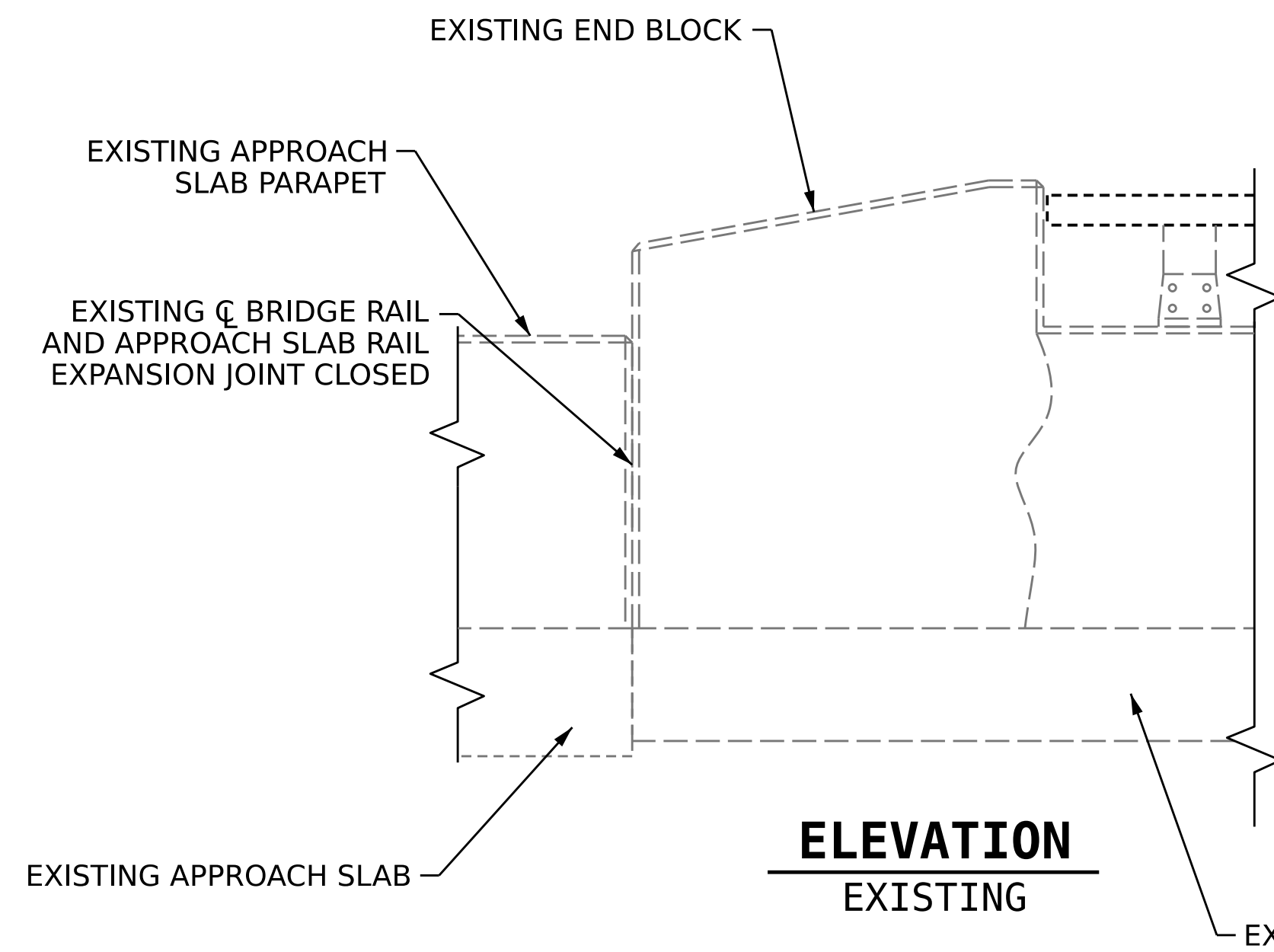
THE CONTRACTOR SHALL TAKE CARE DURING BARRIER RAIL REHAB OPERATIONS NOT TO DROP ANY MATERIAL BELOW THE BRIDGE, WITHOUT PROTECTIVE DEVICES BELOW TO CATCH THE MATERIAL. ANY MATERIAL THAT FALL BELOW THE BRIDGE SHALL BE CONTAINED, REMOVED AND DISPOSED OF BY THE CONTRACTOR AT NO EXTRA COST TO THE DEPARTMENT.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

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

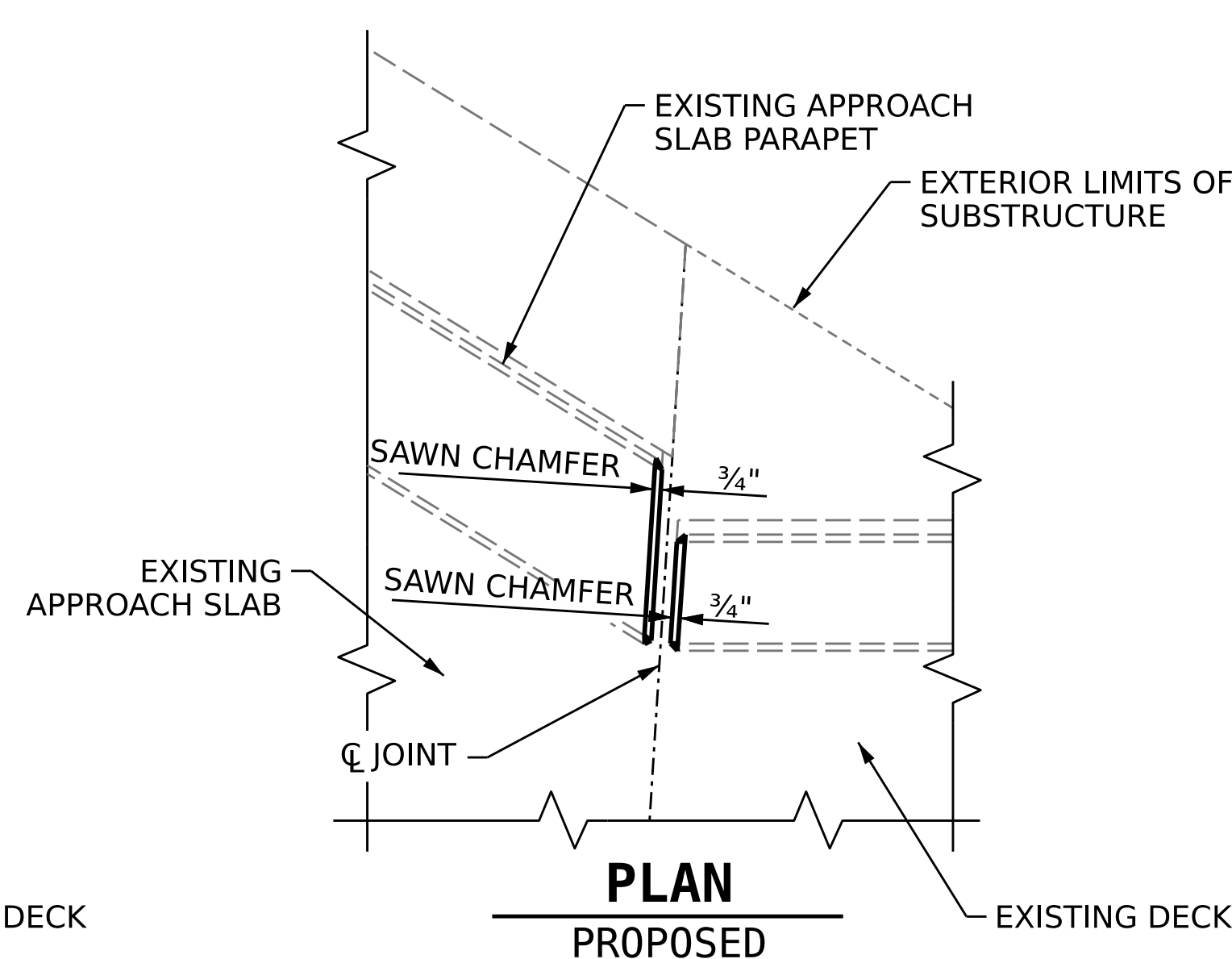
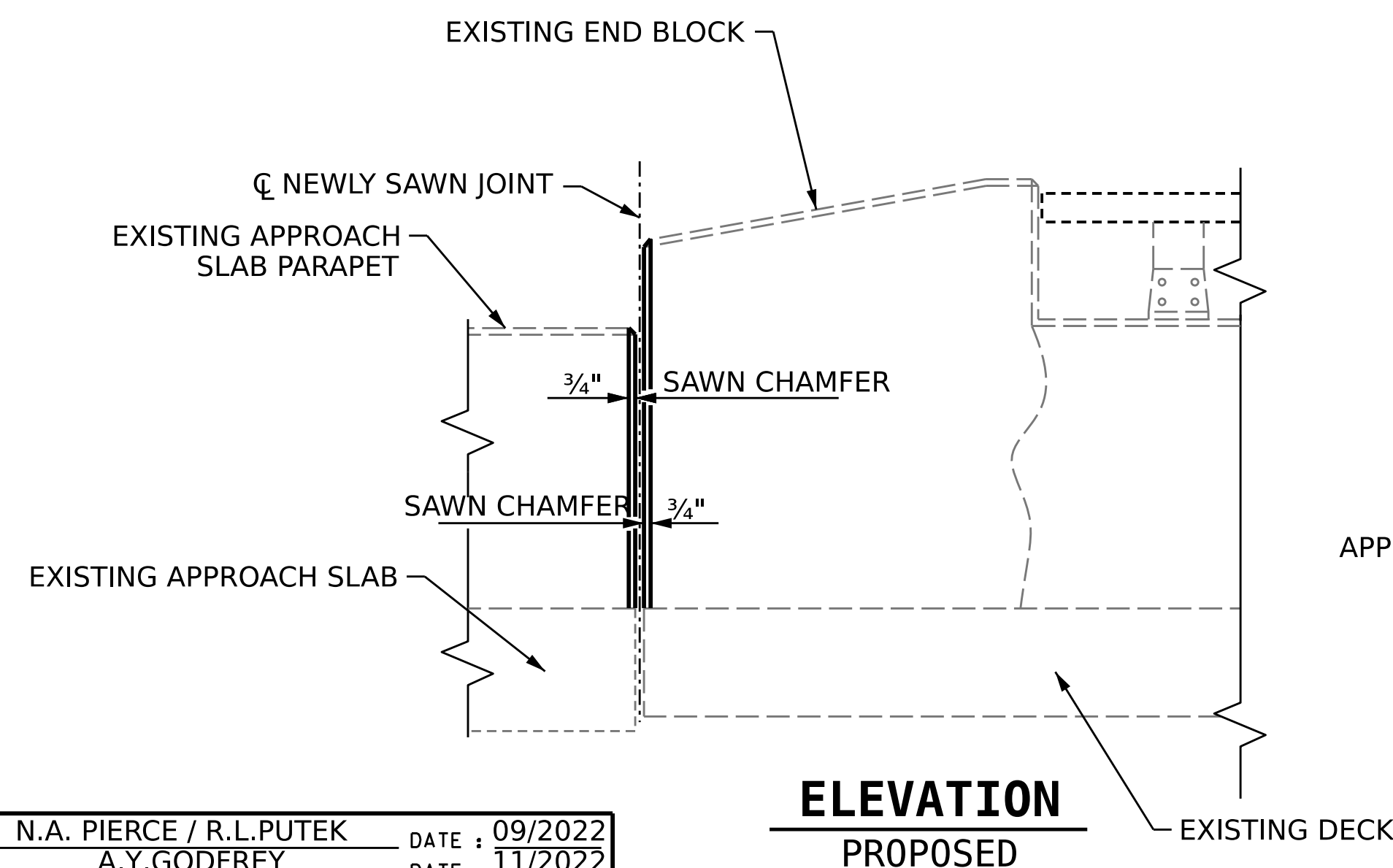
SAW CUT 1 INCH MEASURED FROM THE ENDS OF THE EXISTING END BLOCK OR PARAPET AS SHOWN ON THE PLANS. CARE SHALL BE TAKEN NOT TO CUT OR DAMAGE REINFORCING STEEL DURING CONCRETE REMOVAL. ANY DAMAGED OR EXPOSED REINFORCING STEEL SHALL BE EPOXY COATED AS DIRECTED BY THE ENGINEER AND SHALL BE INCIDENTAL TO THE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

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

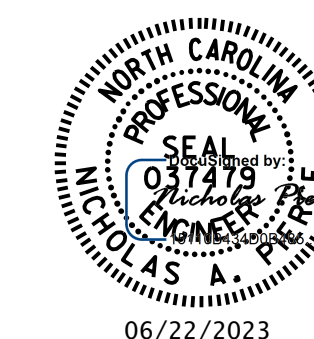
FOR CONCRETE BARRIER REPAIR LOCATIONS, SEE DECK SURFACE REPAIR SHEETS.



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



PROJECT NO. **15BPR.124.3**
WAKE COUNTY
 BRIDGE NO. **911083**



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

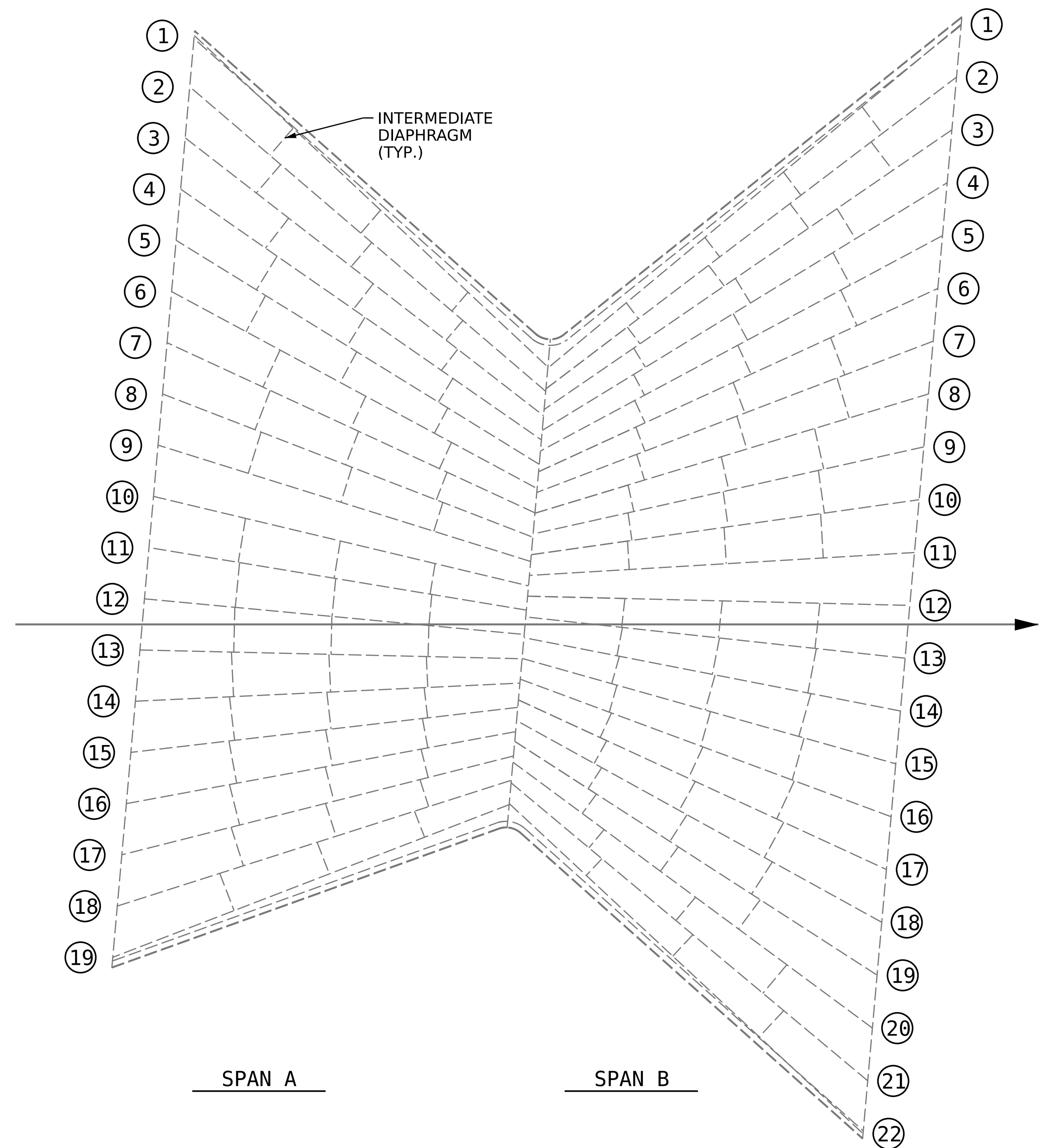
CONCRETE BARRIER RAIL REPAIR

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

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

S3-06
TOTAL SHEETS 12



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

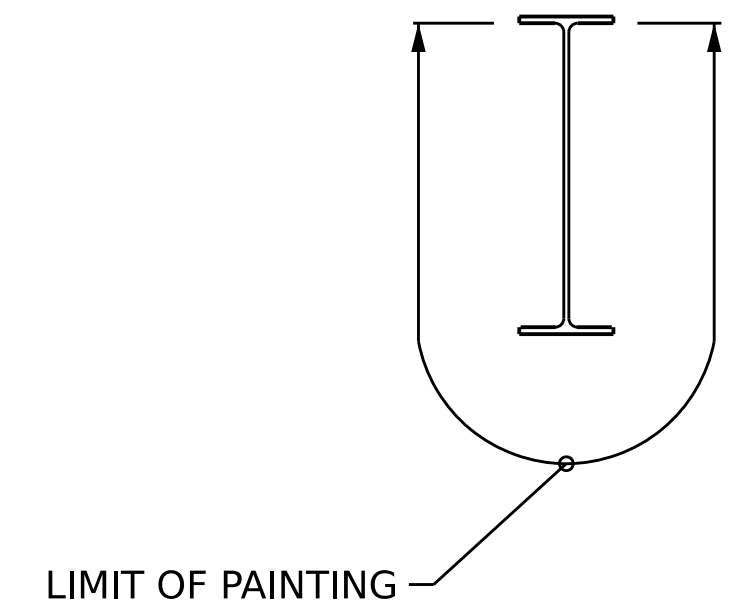
VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CLEAR TO SAWCUT. SEE REPAIR DETAILS.

NOTES

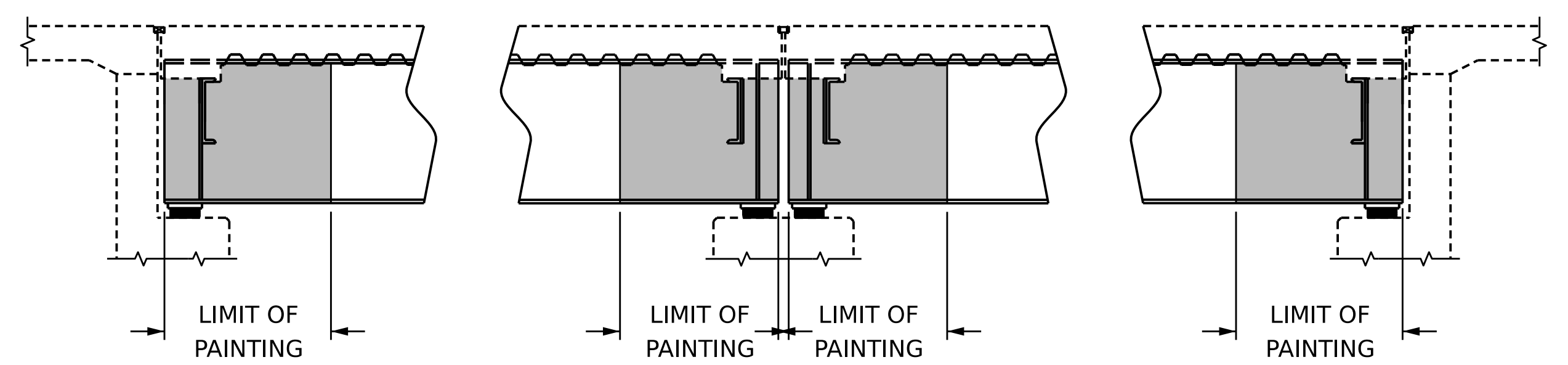
REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN BASED ON THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ENTER THE ACTUAL QUANTITIES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

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

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

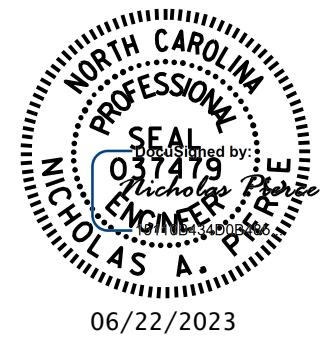


PLAN



LIMITS OF PAINTING

PROJECT NO. **15BPR.124.3**
WAKE COUNTY
 BRIDGE NO. **911083**



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

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

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 SIGNATURES COMPLETED

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

NOTES

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




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

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

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

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

THE INSTALLED POURABLE SILICONE JOINT SEALANT SHALL BE WATER TIGHT.

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

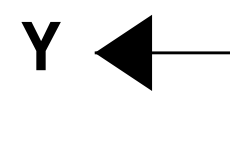
SUBSTRUCTURE REPAIR QUANTITY TABLE

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

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

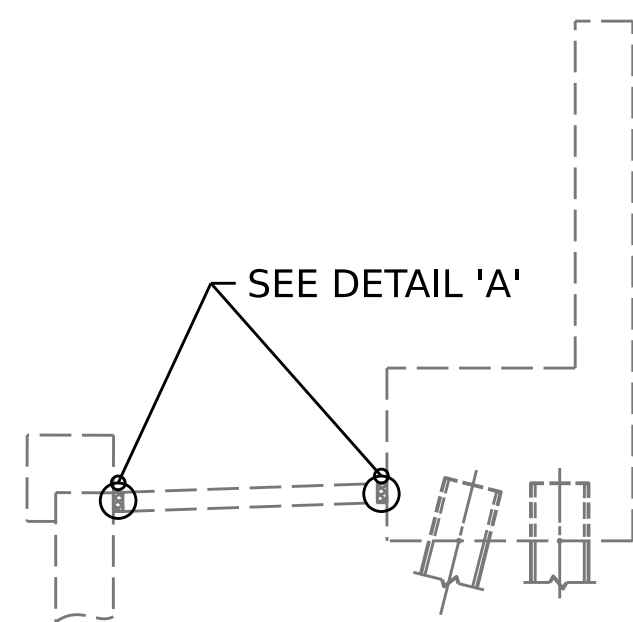
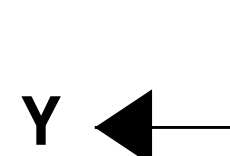
PLAN

TOP OF CAP

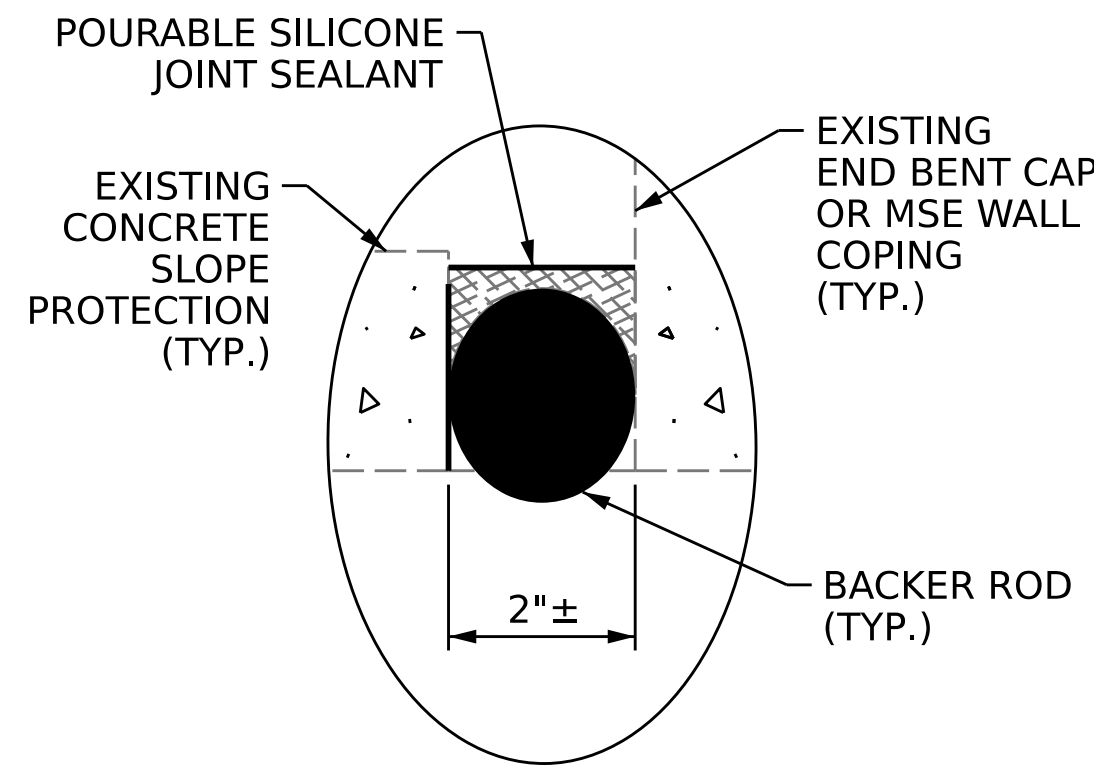


ELEVATION

LOOKING EAST

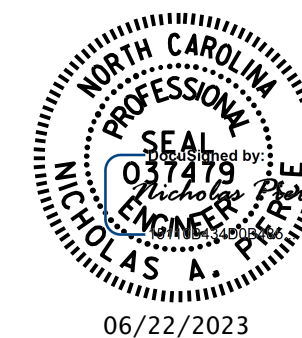


SECTION Y-Y



DETAIL 'A'

PROJECT NO. **15BPR.124.3**
WAKE COUNTY
 BRIDGE NO. **911083**



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

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

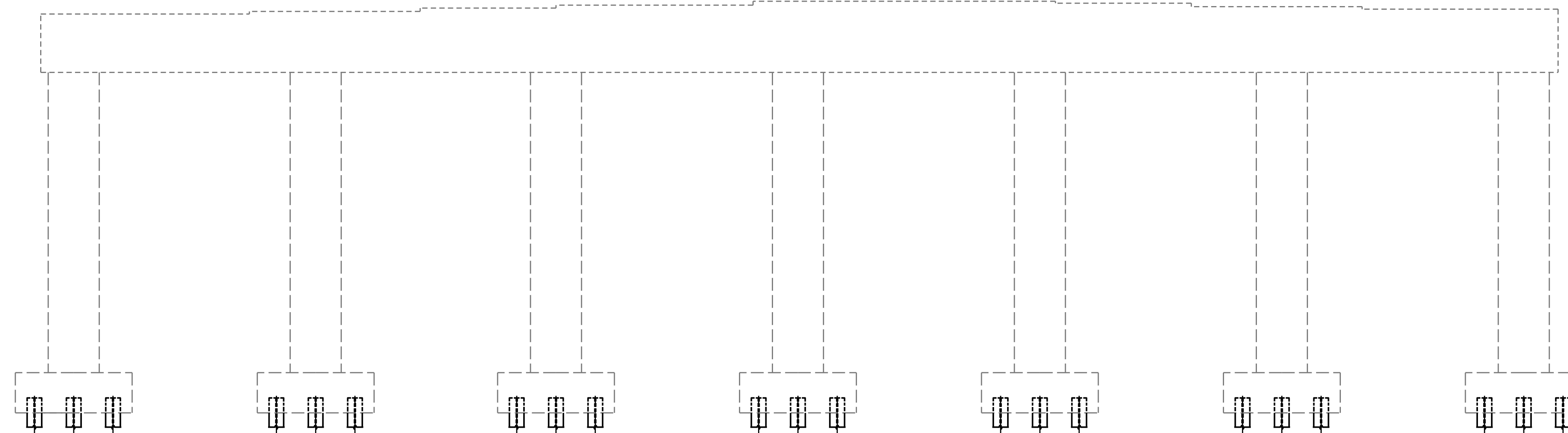
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

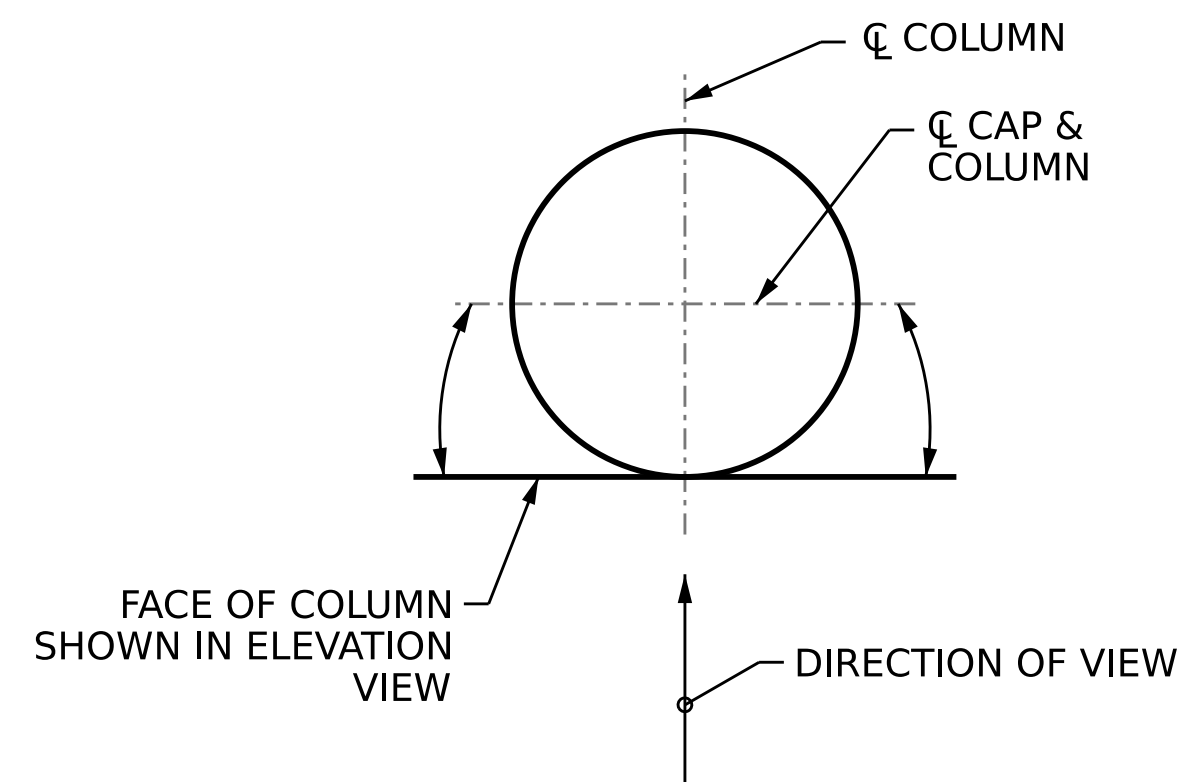
8/26/21



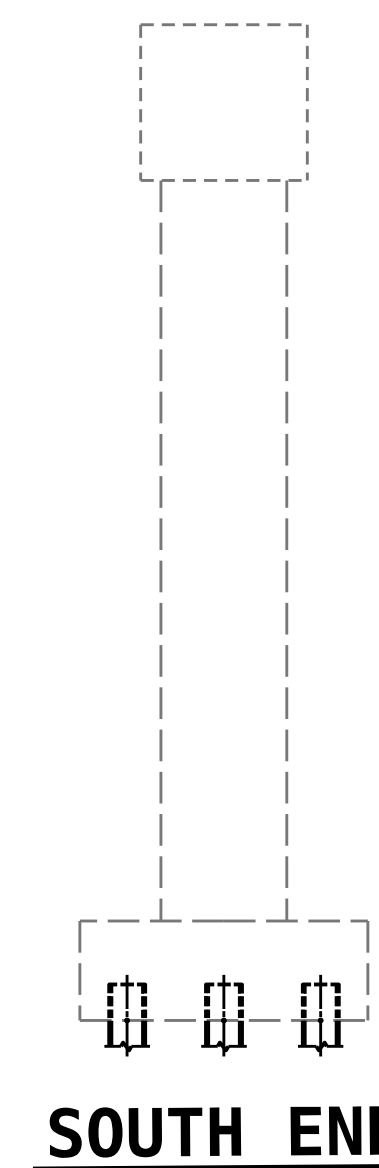
PLAN
(TOP OF CAP)



ELEVATION
(SPAN A SIDE)



UNWRAPPED COLUMN FACE DETAIL



SOUTH END

SUBSTRUCTURE REPAIR QUANTITY TABLE

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

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

NOTES

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

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

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

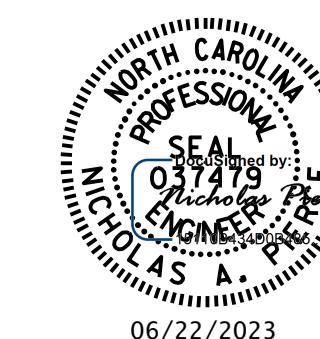
- SHOTCRETE REPAIR AREA
- CONCRETE REPAIR AREA
- EPOXY RESIN INJECTION

PROJECT NO. **15BPR.124.3**

WAKE COUNTY

BRIDGE NO. **911083**

SHEET 1 OF 2



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIRS

BENT 1
SPAN A FACE

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

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TOTAL SHEETS
12

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

8/26/21

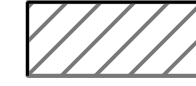


SUBSTRUCTURE REPAIR QUANTITY TABLE				
BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
COLUMN	0	0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0	0		
COLUMN	0	0		
EPOXY RESIN INJECTION		LINEAR FT		LINEAR FT
CAP		0		
COLUMN		0		

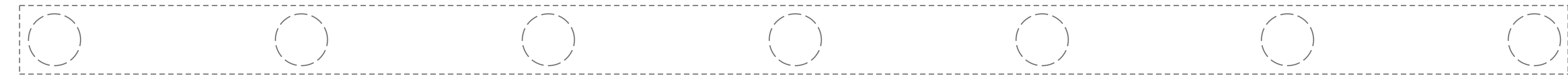
VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CLEAR TO SAWCUT. SEE REPAIR DETAILS.

NOTES

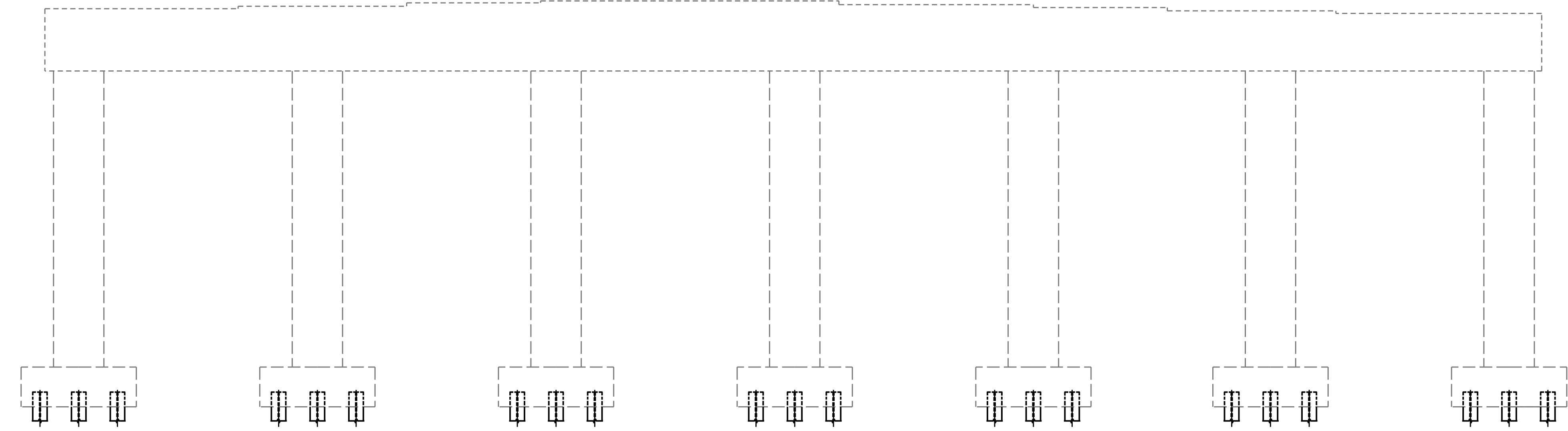
REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN BASED ON THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ENTER THE ACTUAL QUANTITIES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

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

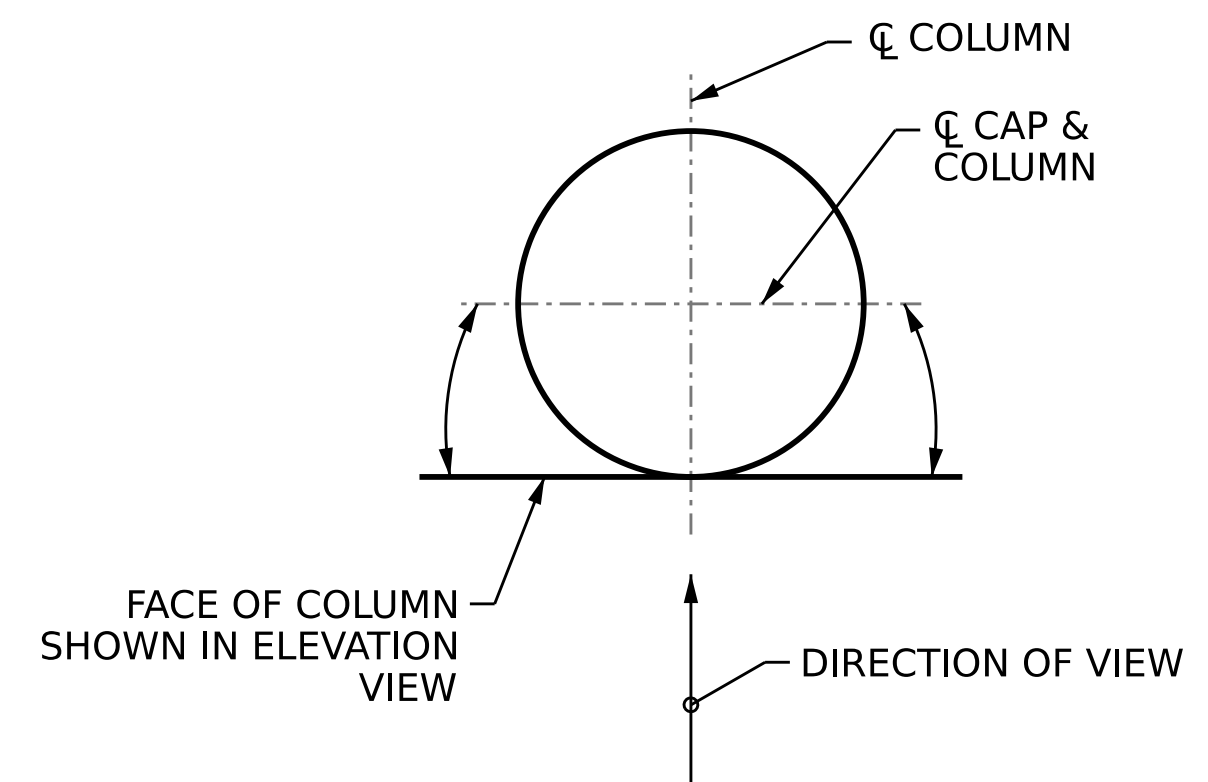
-  SHOTCRETE REPAIR AREA
-  CONCRETE REPAIR AREA
-  EPOXY RESIN INJECTION



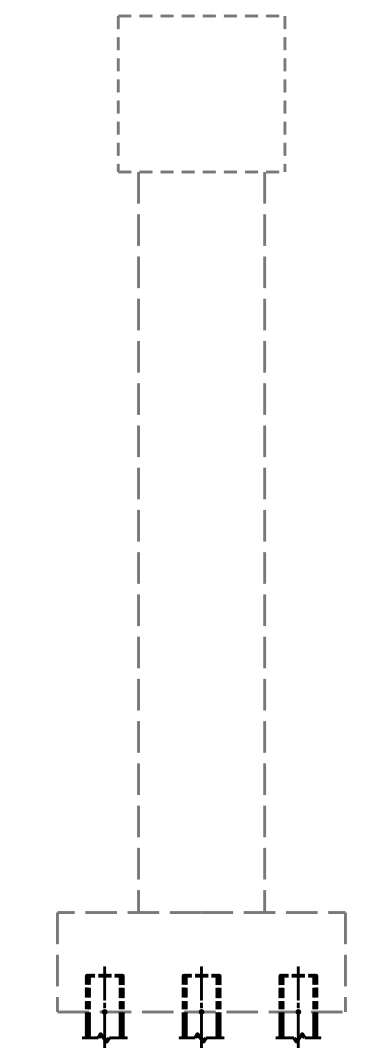
PLAN
(TOP OF CAP)



ELEVATION
(SPAN B SIDE)



UNWRAPPED COLUMN FACE DETAIL



NORTH END

PROJECT NO. 15BPR.124.3
WAKE COUNTY
 BRIDGE NO. 911083

SHEET 2 OF 2

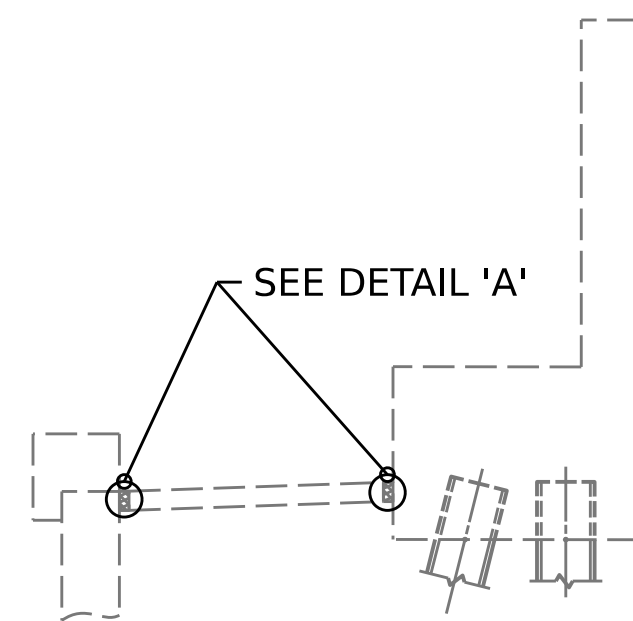


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE REPAIRS
BENT 1
SPAN B FACE

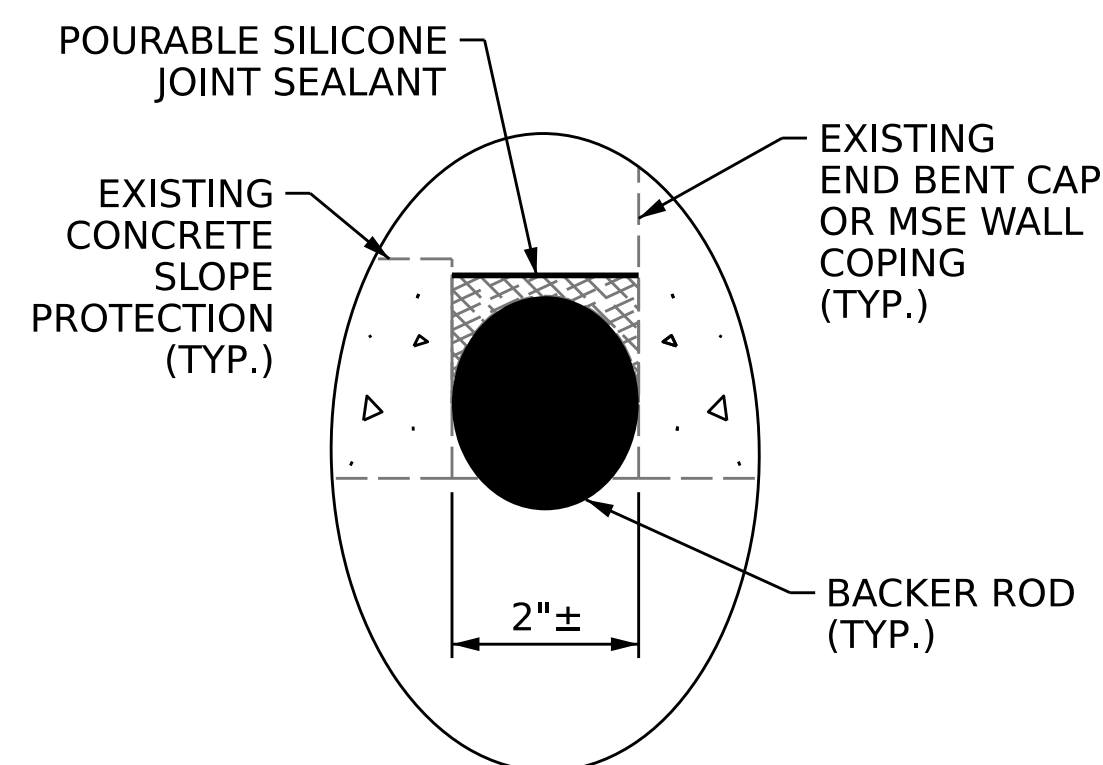
DRAWN BY : A.Y. GODFREY DATE : 10/2022
 CHECKED BY : R.L. PUTEK DATE : 10/2022
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 12/2022

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



SECTION Y-Y



DETAIL 'A'

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

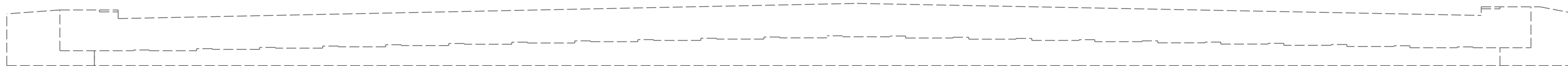
 CONCRETE REPAIR AREA

 EPOXY RESIN INJECTION



PLAN

TOP OF CAP



ELEVATION

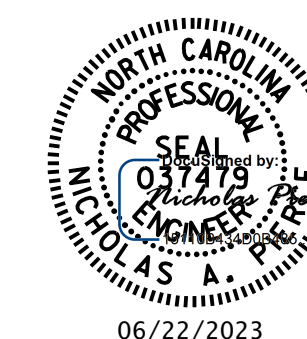
LOOKING EAST

SUBSTRUCTURE REPAIR QUANTITY TABLE

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

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

PROJECT NO. **15BPR.124.3**
WAKE COUNTY
 BRIDGE NO. **911083**

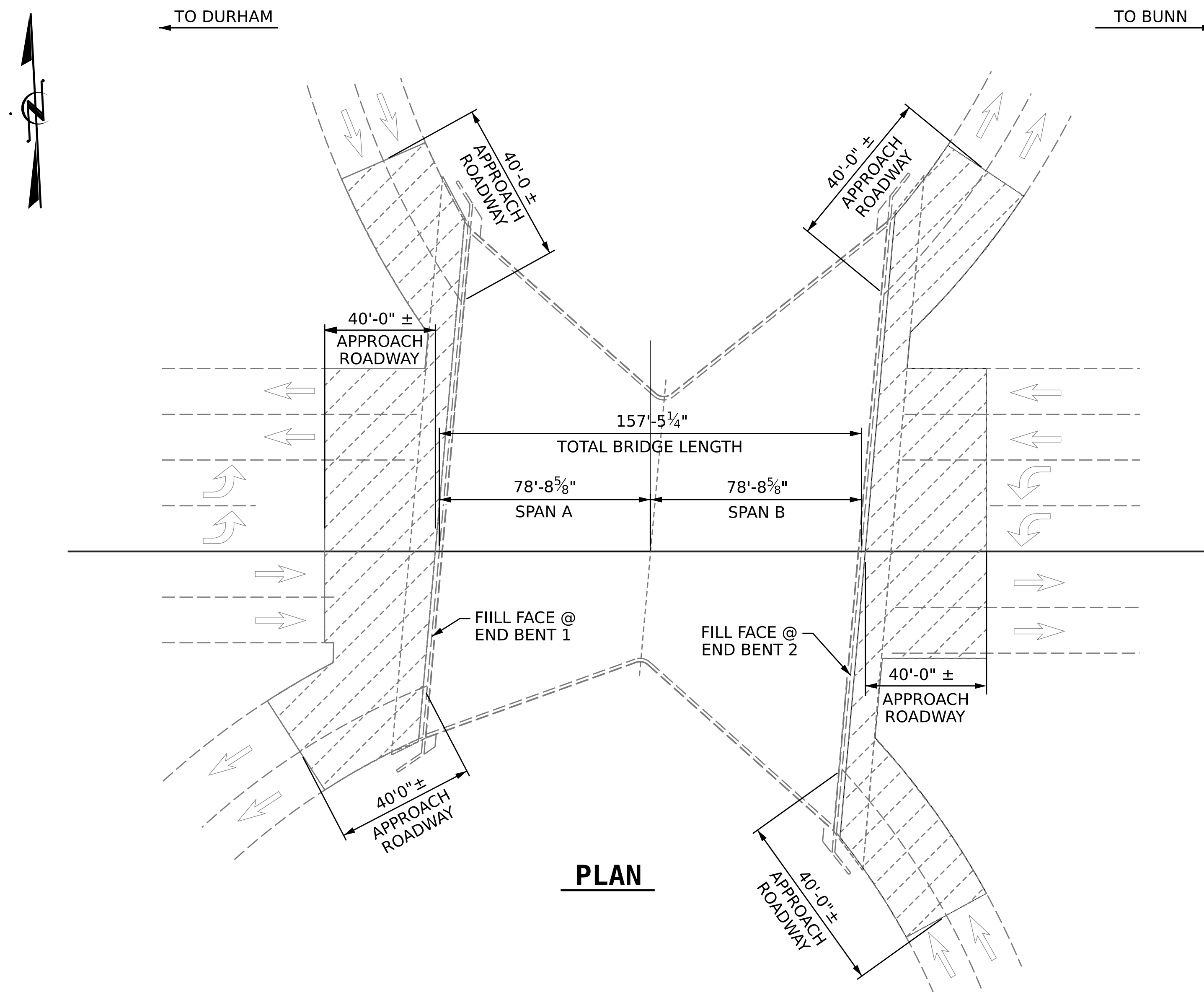


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE REPAIR
END BENT 2

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

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2			4			

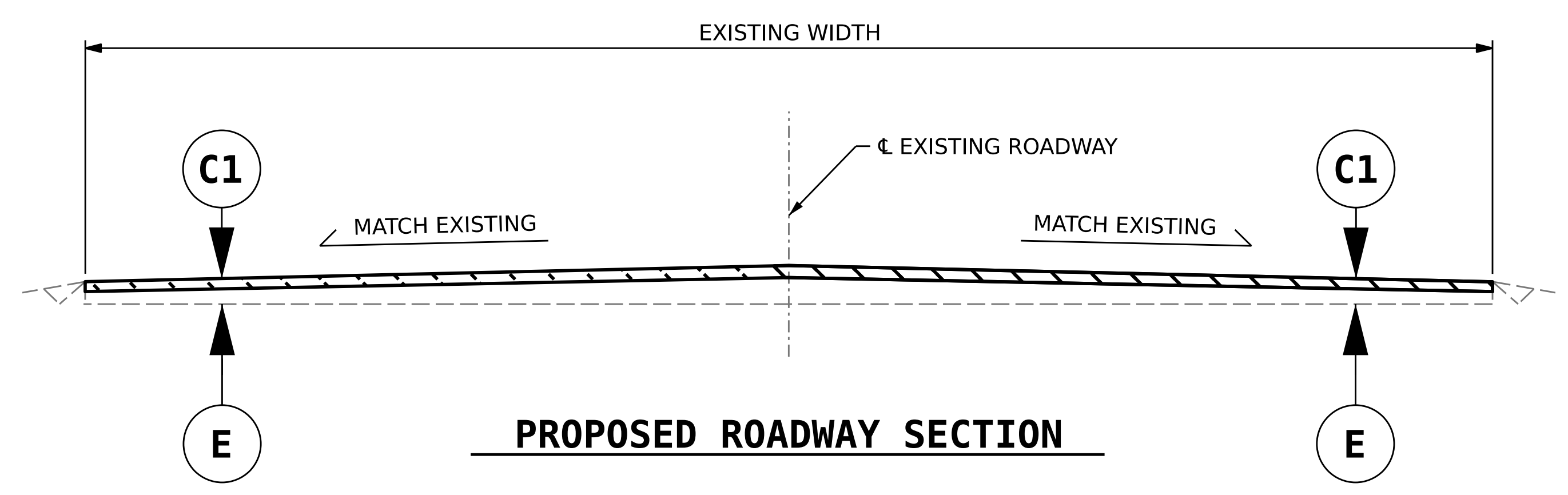
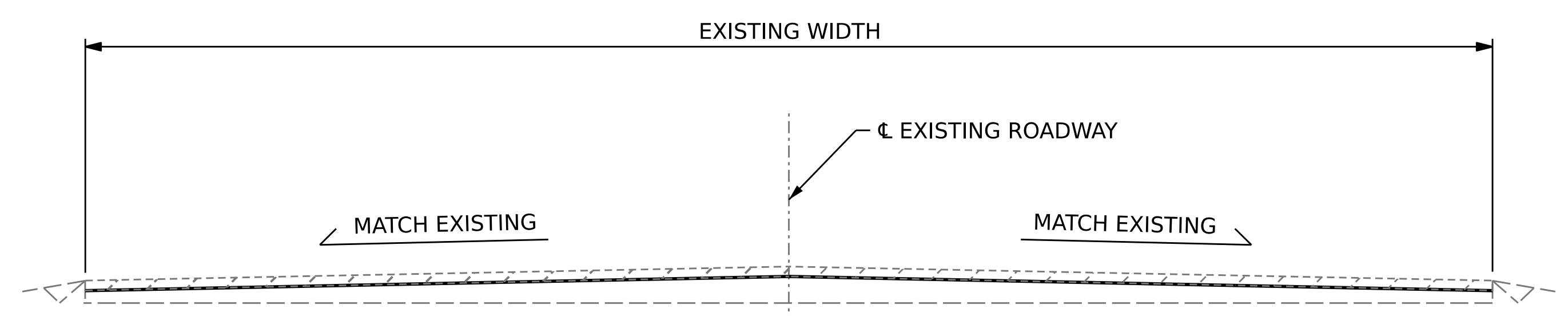
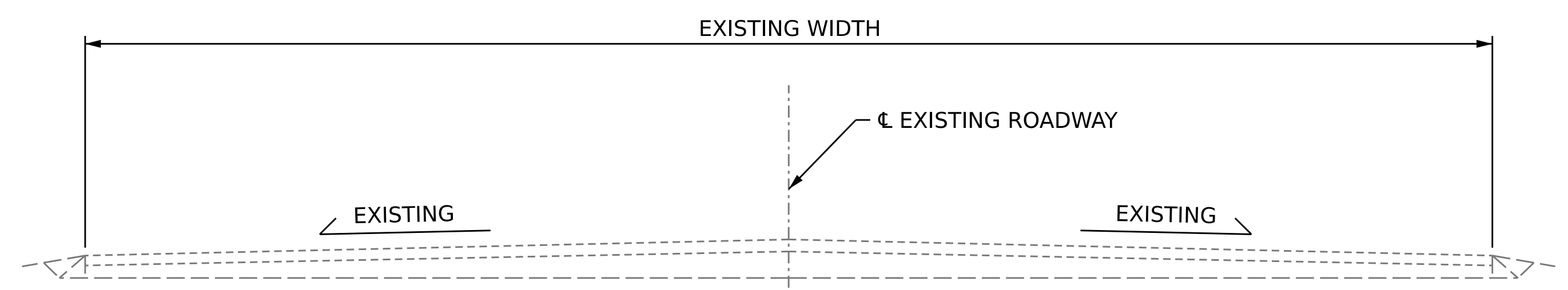


NOTES

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

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

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



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

INCIDENTAL MILLING

PROJECT NO. **15BPR.124.3**
 WAKE COUNTY
 BRIDGE NO. **911083**



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

INCIDENTAL MILLING AND TYPICAL ROADWAY SECTIONS

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

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2			4			TOTAL SHEETS 12

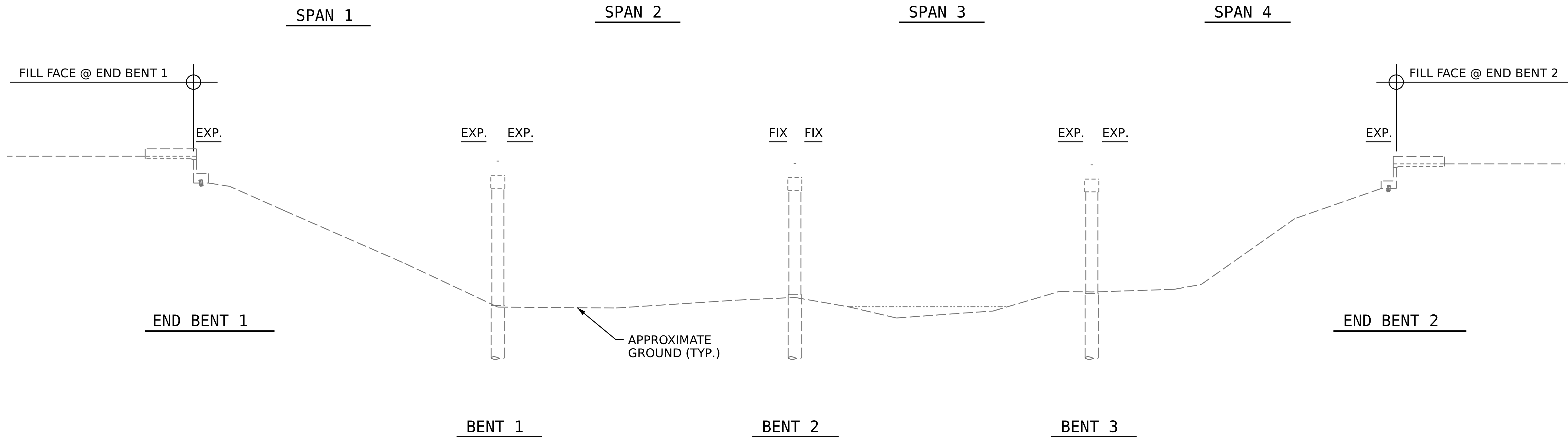
NOTES

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

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

SCOPE OF WORK

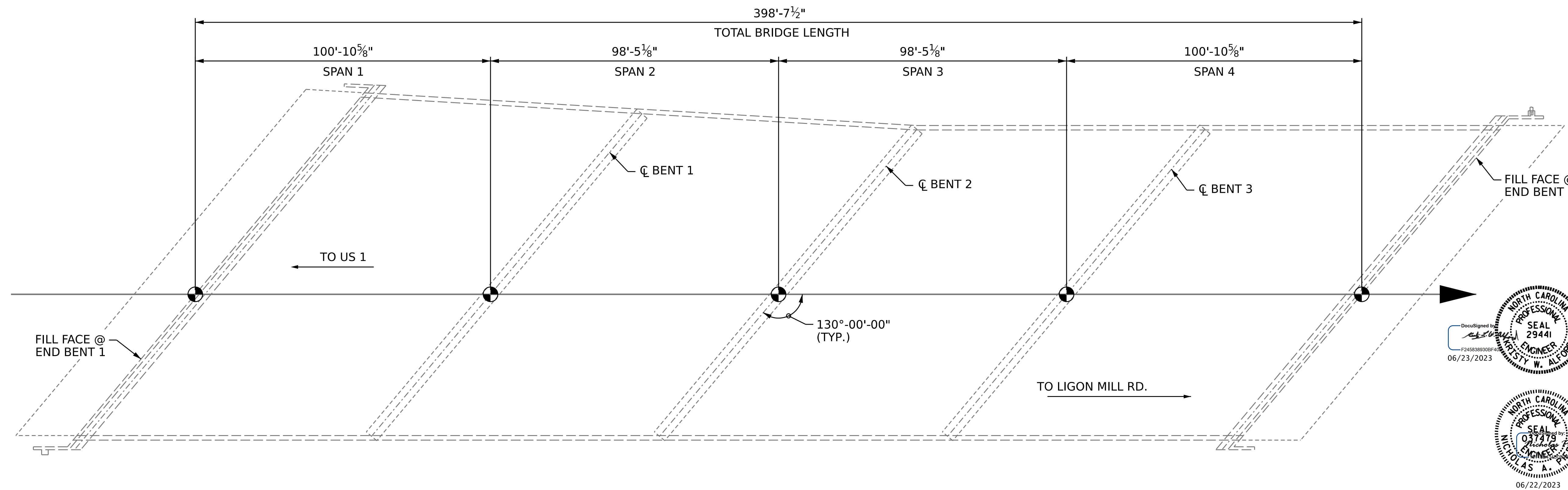
- DIAMOND GRIND APPROACH SLAB AT END BENT 1.
- MILL AND REPAVE APPROACH ROADWAYS.
- REPAIR CONCRETE MEDIAN ISLAND.
- PERFORM BRIDGE JOINT DEMOLITION AND REMOVE EXISTING JOINT MATERIAL.
- INSTALL ELASTOMERIC CONCRETE HEADERS AND FOAM JOINT SEALS.
- PREPARE TOP OF BRIDGE DECK AND BARRIER RAIL CONCRETE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



ELEVATION

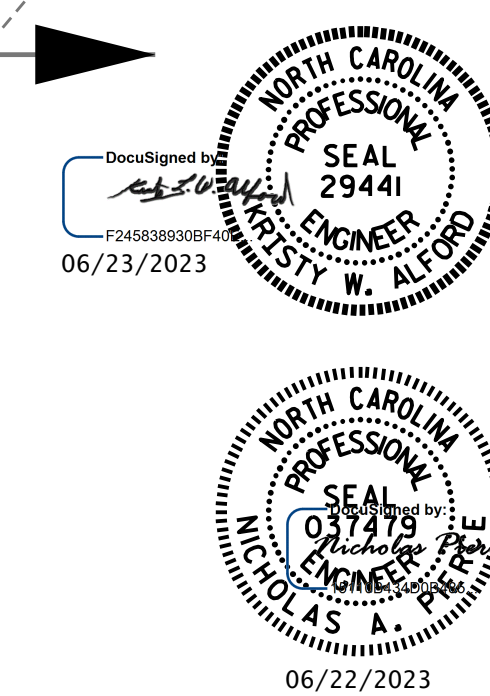
I HEREBY CERTIFY THAT THIS STRUCTURE WAS REHABILITATED ACCORDING TO THESE PLANS OR AS NOTED HEREIN.

RESIDENT ENGINEER _____ DATE _____



PLAN

PROJECT NO. **15BPR.124.3**
WAKE COUNTY
 BRIDGE NO. **911084**



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

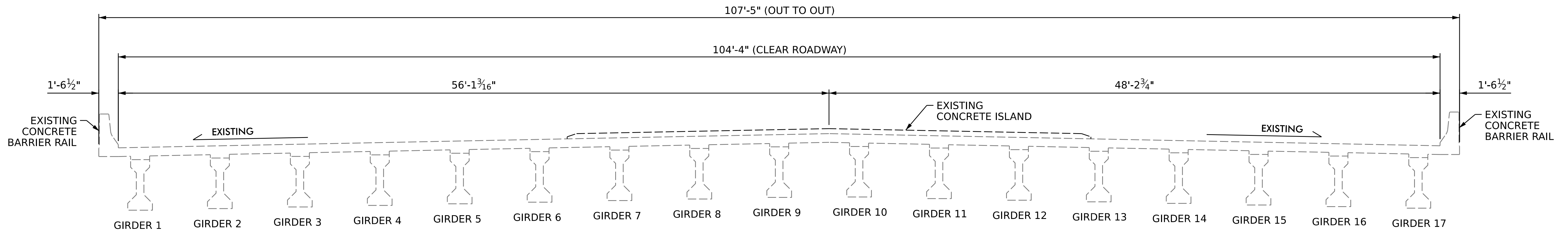
DRAWN BY : N.A. PIERCE DATE : 09/2020
 CHECKED BY : A.Y. GODFREY DATE : 10/2022
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 12/2022

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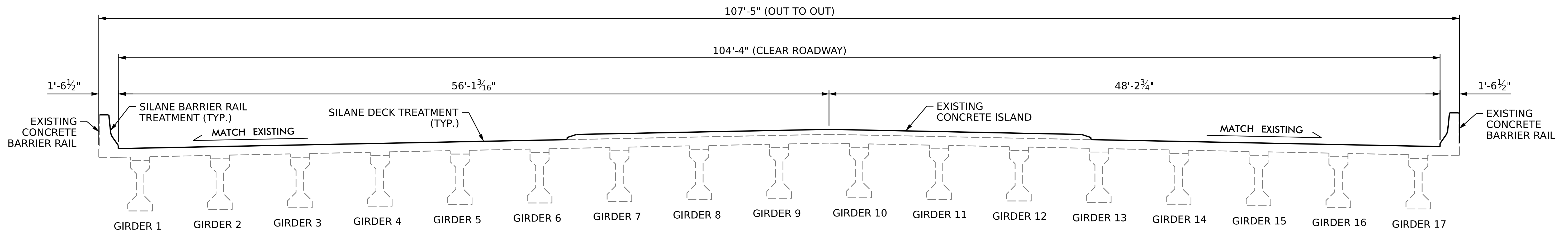
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1			3			
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NOTES

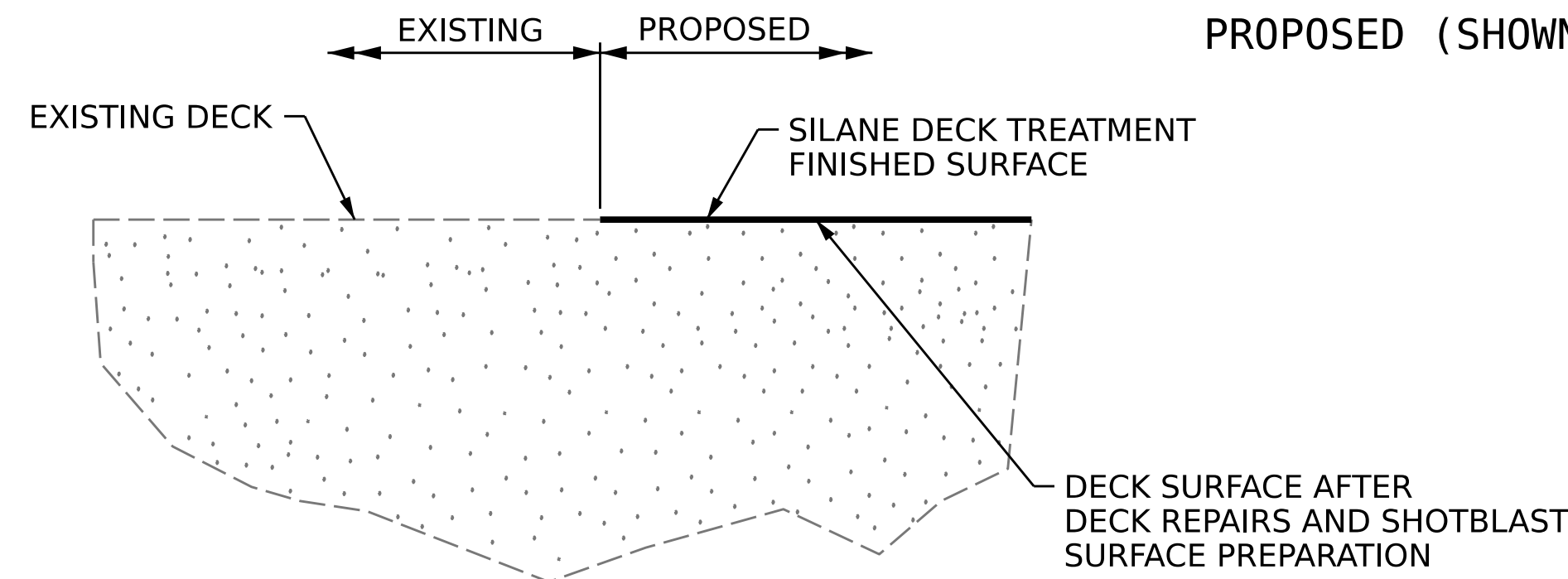
SEE TRANSPORTATION MANAGEMENT PLANS FOR LANE WIDTHS, SEQUENCING AND OTHER TRAFFIC CONTROL MEASURES FOR STAGING OF OVERLAY SURFACE PREPARATION AND SILANE DECK TREATMENT.



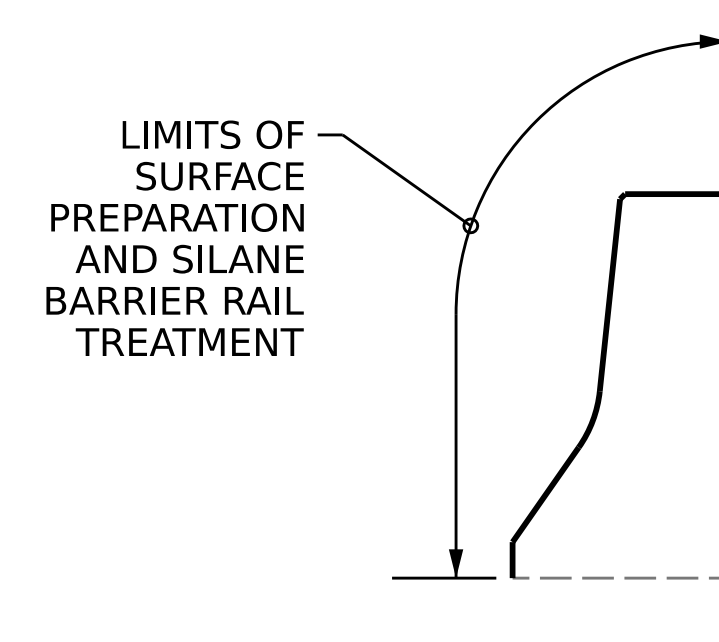
TYPICAL SECTION
EXISTING (SHOWN AT SPAN C & D)



TYPICAL SECTION
PROPOSED (SHOWN AT SPAN C & D)

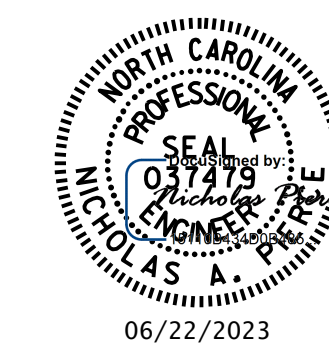


DETAIL FOR SILANE DECK TREATMENT



DETAIL FOR SILANE BARRIER RAIL TREATMENT

PROJECT NO. **15BPR.124.3**
WAKE COUNTY
BRIDGE NO. **911084**



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION

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

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2			4			21

DECK SURFACE REPAIR QUANTITY TABLE

APPROACH SLAB

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

SPAN A


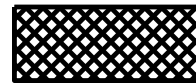
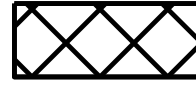
	ESTIMATE	ACTUAL
CONCRETE DECK REPAIR FOR SILANE DECK TREATMENT	0.0 CU. FT	
CONCRETE REPAIR	5.0 CU.FT.	
SHOTBLASTING BRIDGE DECK	1246.4 SQ. YDS.	
SILANE DECK TREATMENT	1246.4 SQ. YDS.	
BRIDGE JOINT DEMOLITION	77.8 SQ. FT.	
SURFACE PREPARATION FOR CONCRETE BARRIER RAIL	797.0 SQ.FT	
SILANE BARRIER RAIL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

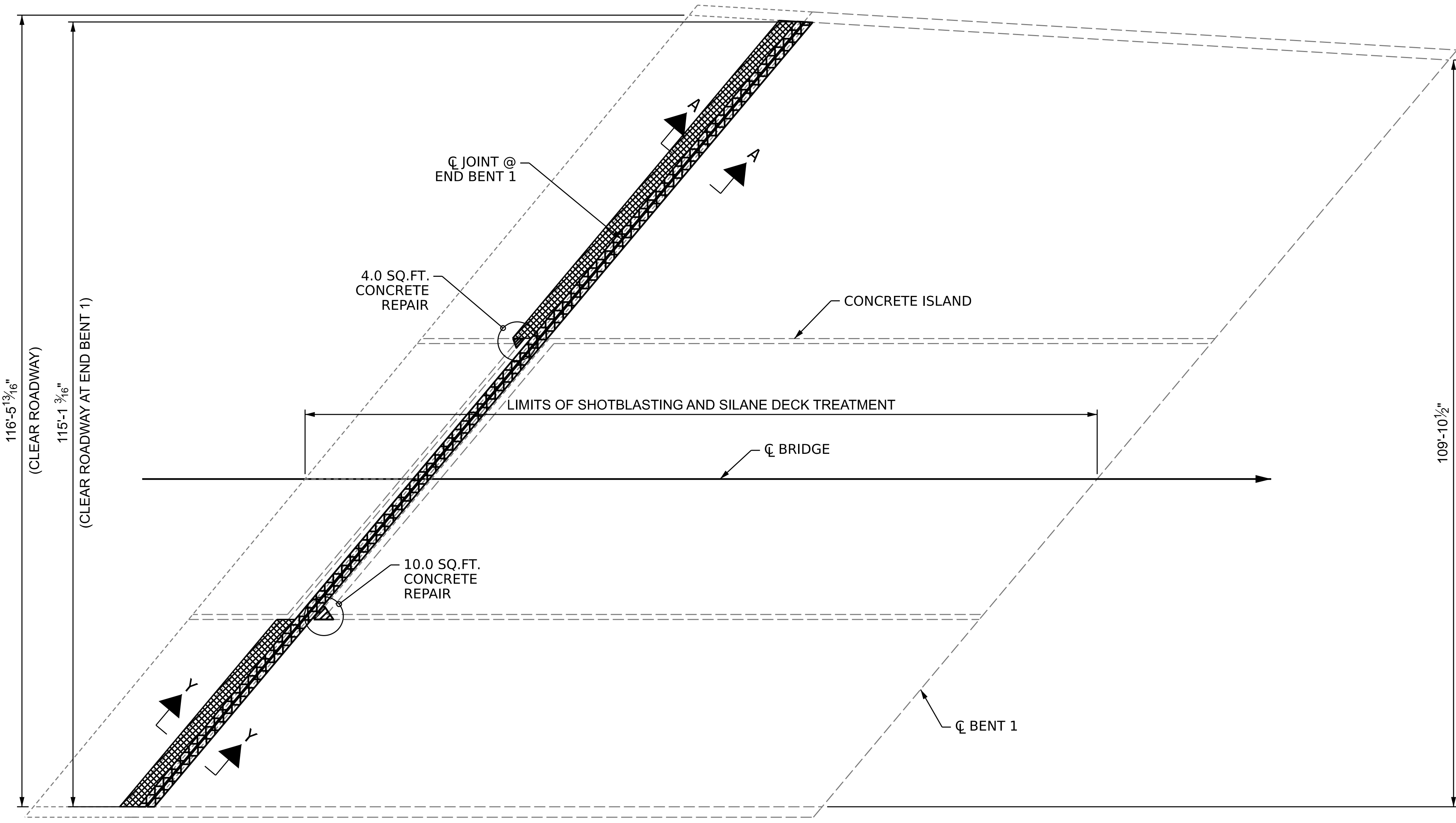
NOTES

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

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

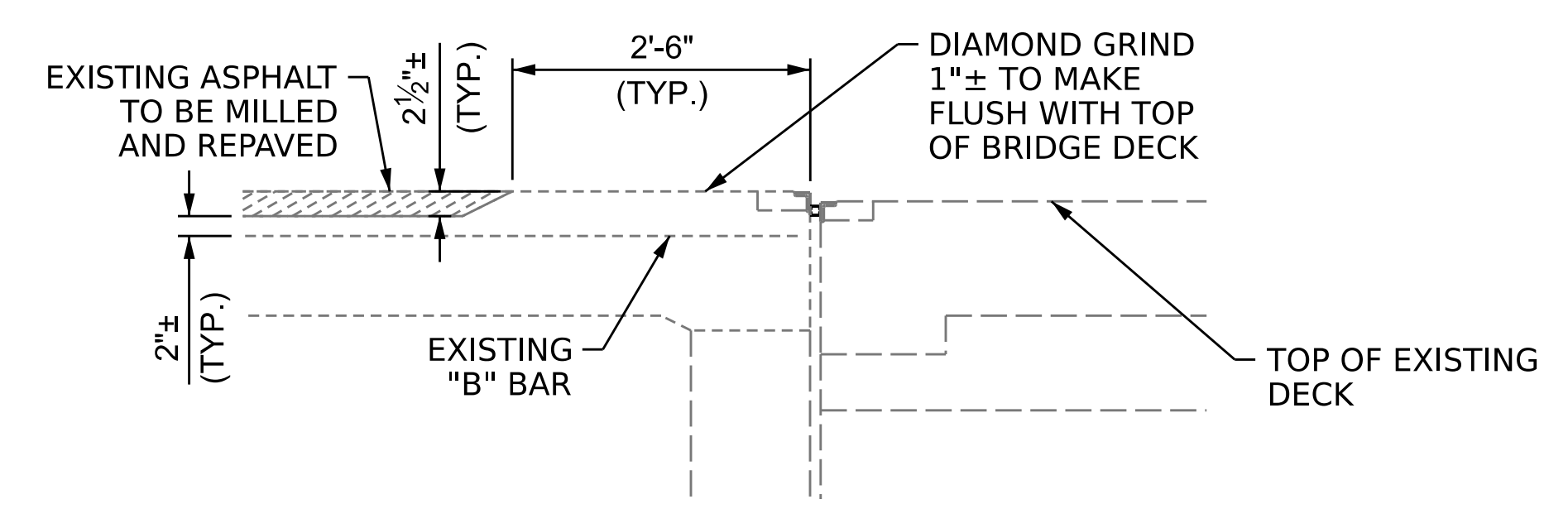
FOR SECTION A-A AND B-B, SEE "FOAM JOINT SEALS FOR PRESERVATION DETAILS" SHEET.

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



APPROACH SLAB

SPAN A



SECTION Y-Y

PROJECT NO. **15BPR.124.3**
WAKE COUNTY
 BRIDGE NO. **911084**

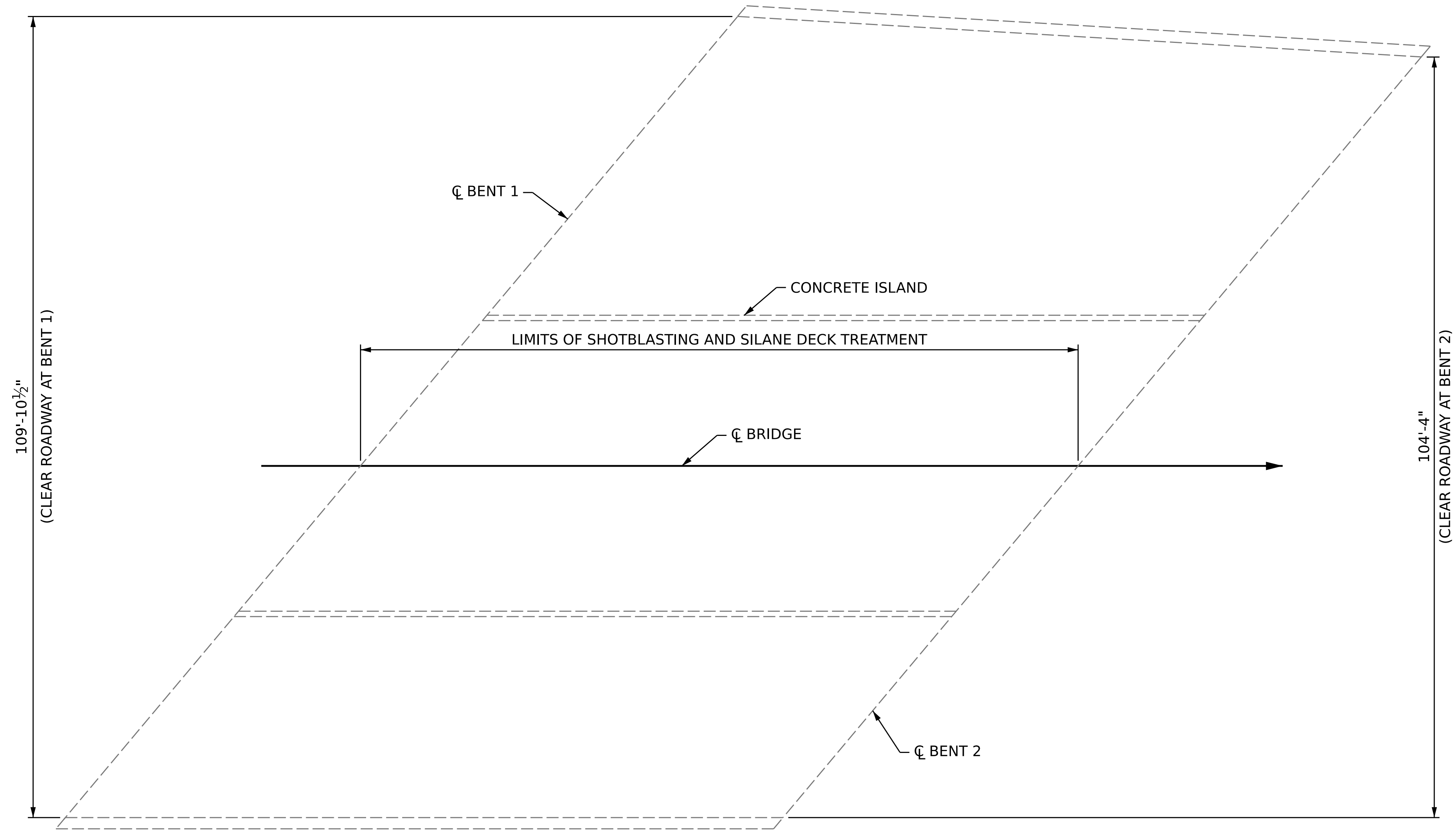


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
DECK SURFACE REPAIR
SPAN A AND APPROACH SLAB

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

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SPAN B

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.	

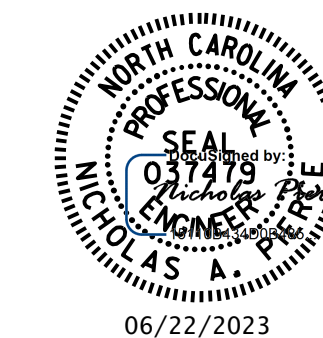
NOTES

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.124.3**
WAKE COUNTY
 BRIDGE NO. **911084**



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

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

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DECK SURFACE REPAIR QUANTITY TABLE

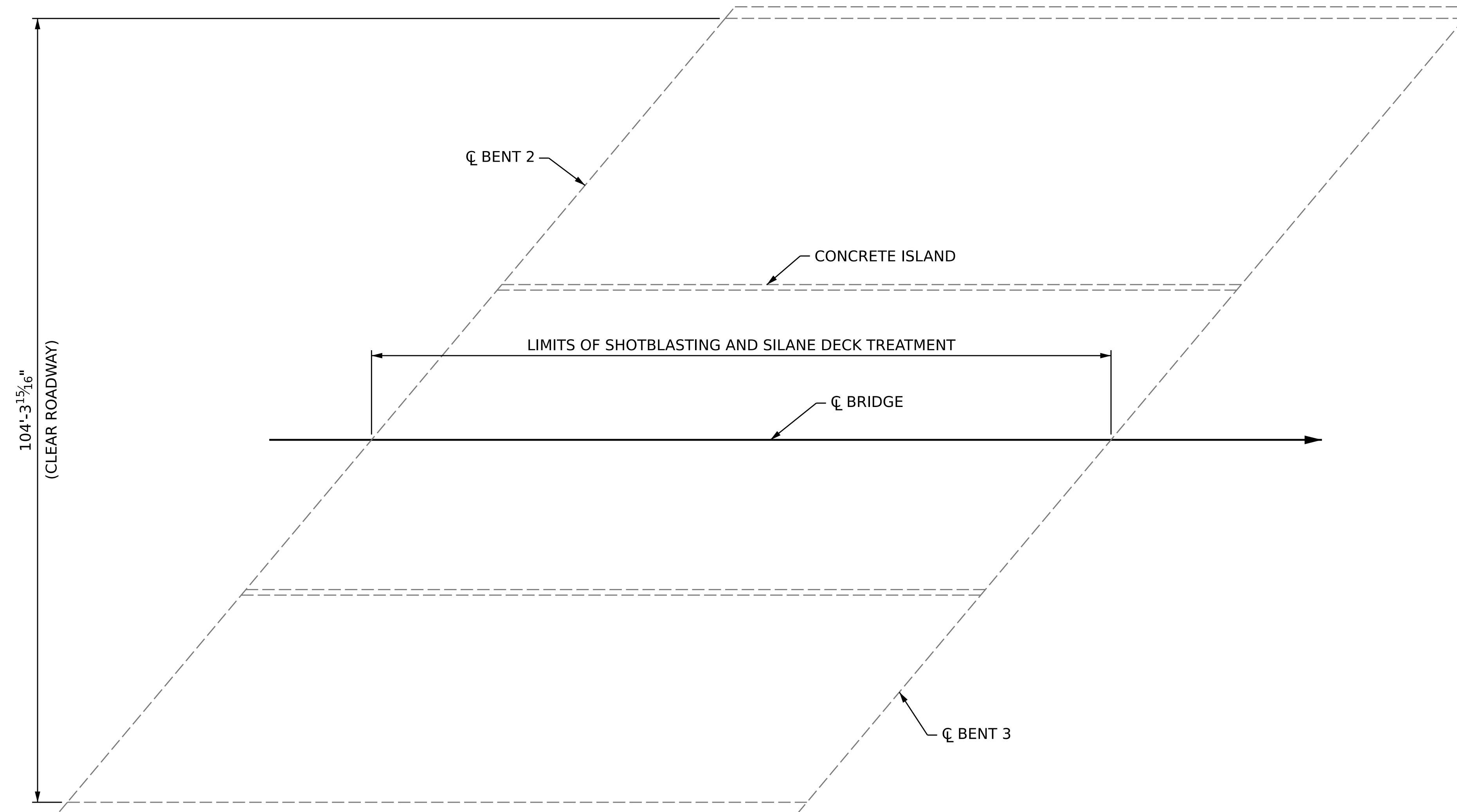
SPAN C		
	ESTIMATE	ACTUAL
CONCRETE DECK REPAIR FOR SILANE DECK TREATMENT	0.0 CU. FT	
CONCRETE REPAIR	0.0 CU.FT.	
BRIDGE JOINT DEMOLITION	0.0 SQ.FT.	
SHOTBLASTING BRIDGE DECK	1141.0 SQ. YDS.	
SILANE DECK TREATMENT	1141.0 SQ. YDS.	
SURFACE PREPARATION FOR CONCRETE BARRIER RAIL	790.0 SQ.FT.	
SILANE BARRIER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

NOTES

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

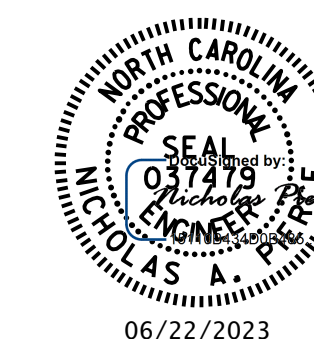
REPAIR LOCATIONS AND ESTIMATED QUANTITIES ARE BASED ON THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATIONS AND DESCRIPTION OF THE REPAIRS AND ENTER THE ACTUAL QUANTITIES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

 CONCRETE REPAIR AREA



SPAN C

PROJECT NO. **15BPR.124.3**
WAKE COUNTY
 BRIDGE NO. **911084**

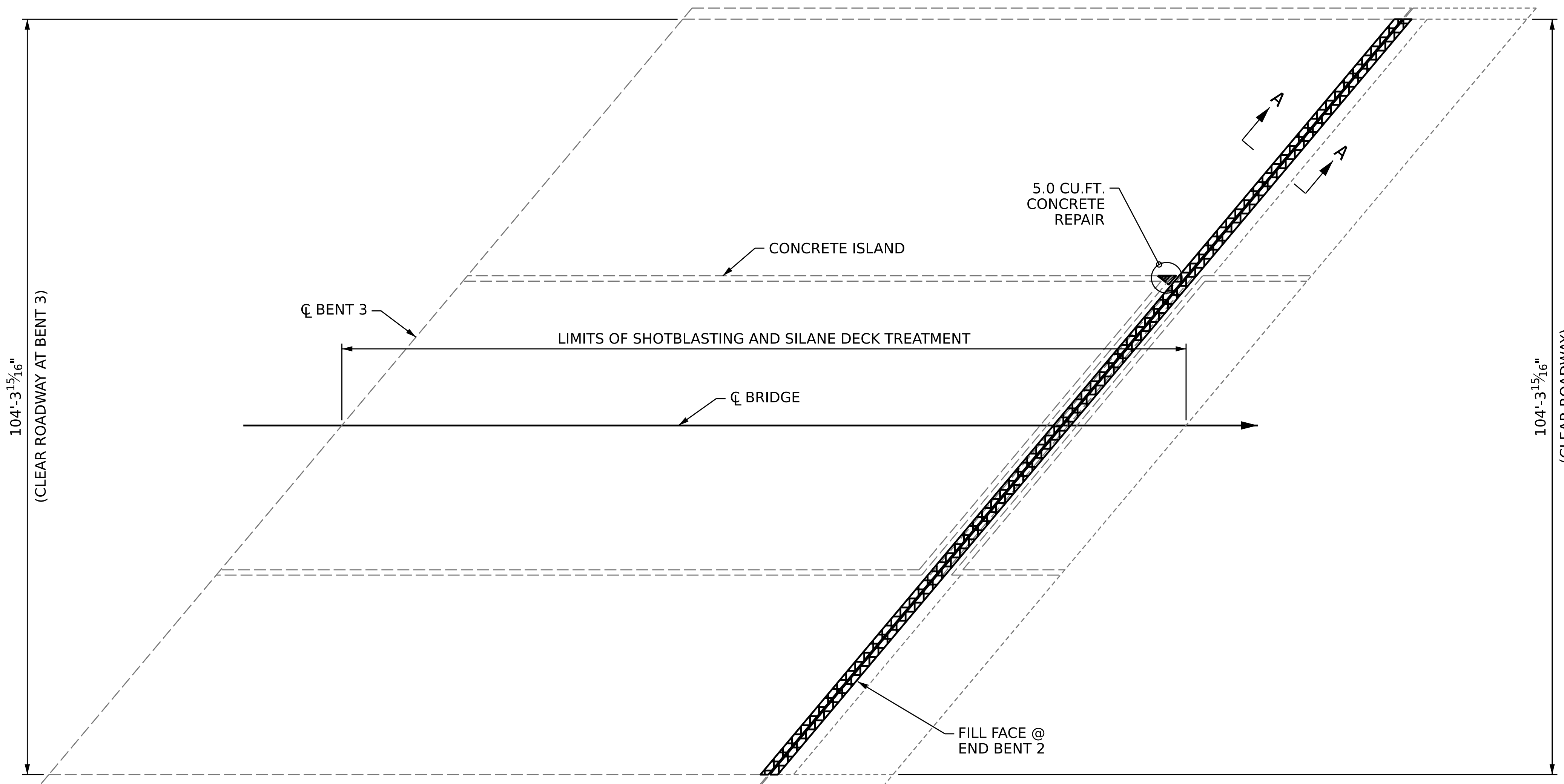


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 DECK SURFACE REPAIR
SPAN C

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

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2			4			TOTAL SHEETS 21



SPAN D

APPROACH SLAB

DECK SURFACE REPAIR QUANTITY TABLE

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

NOTES

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

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

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

- CONCRETE REPAIR AREA
- BRIDGE JOINT DEMO

PROJECT NO. **15BPR.124.3**
WAKE COUNTY
 BRIDGE NO. **911084**

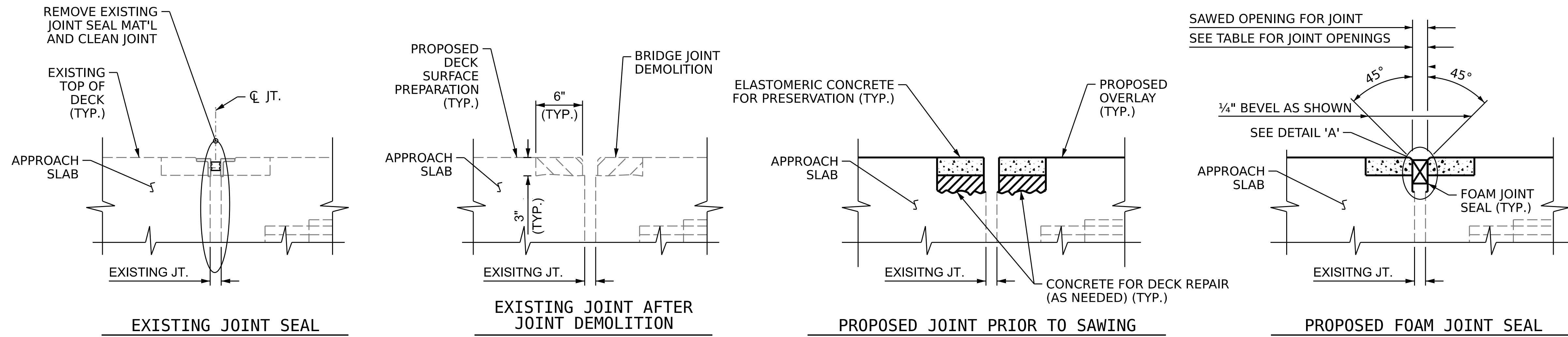


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 DECK SURFACE REPAIR
**SPAN D AND
 APPROACH SLAB**

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

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SECTION A-A
(TYP. AT END BENTS)

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

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

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

NOTES

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

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

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

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

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

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

THE INSTALLED FOAM JOINTS SHALL BE WATER TIGHT.

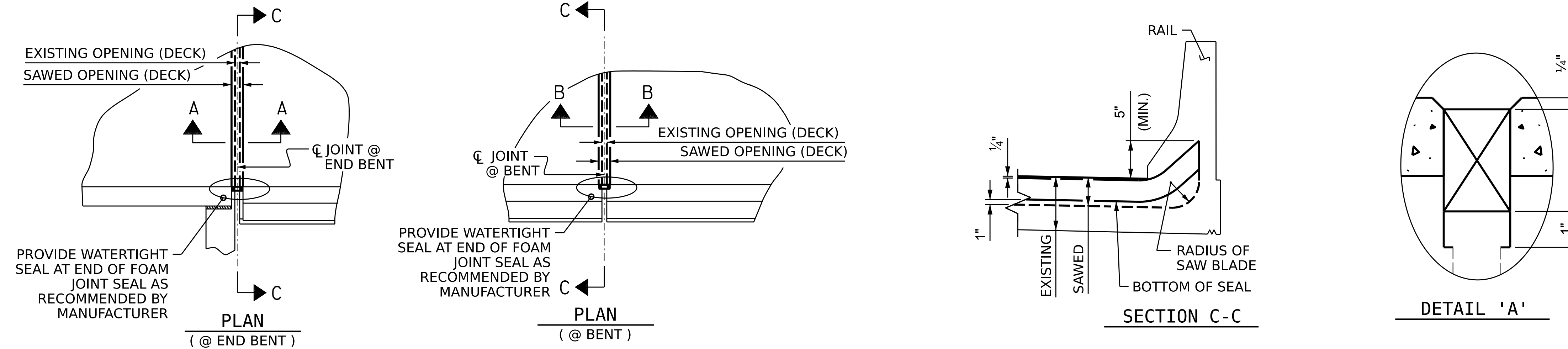
THE CONTRACTOR SHALL SAW CUT TO A NOMINAL DEPTH OF 1/2" BUT REINFORCING STEEL SHALL NOT BE DAMAGED. CONTRACTOR SHALL REMOVE SURFACE CONCRETE TO VERIFY THAT SAWCUT DEPTH WILL NOT DAMAGE EXISTING REINFORCING STEEL.

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

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

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

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



JOINT SEAL DETAILS

PROJECT NO. **15BPR.124.3**
WAKE COUNTY
 BRIDGE NO. **911084**



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

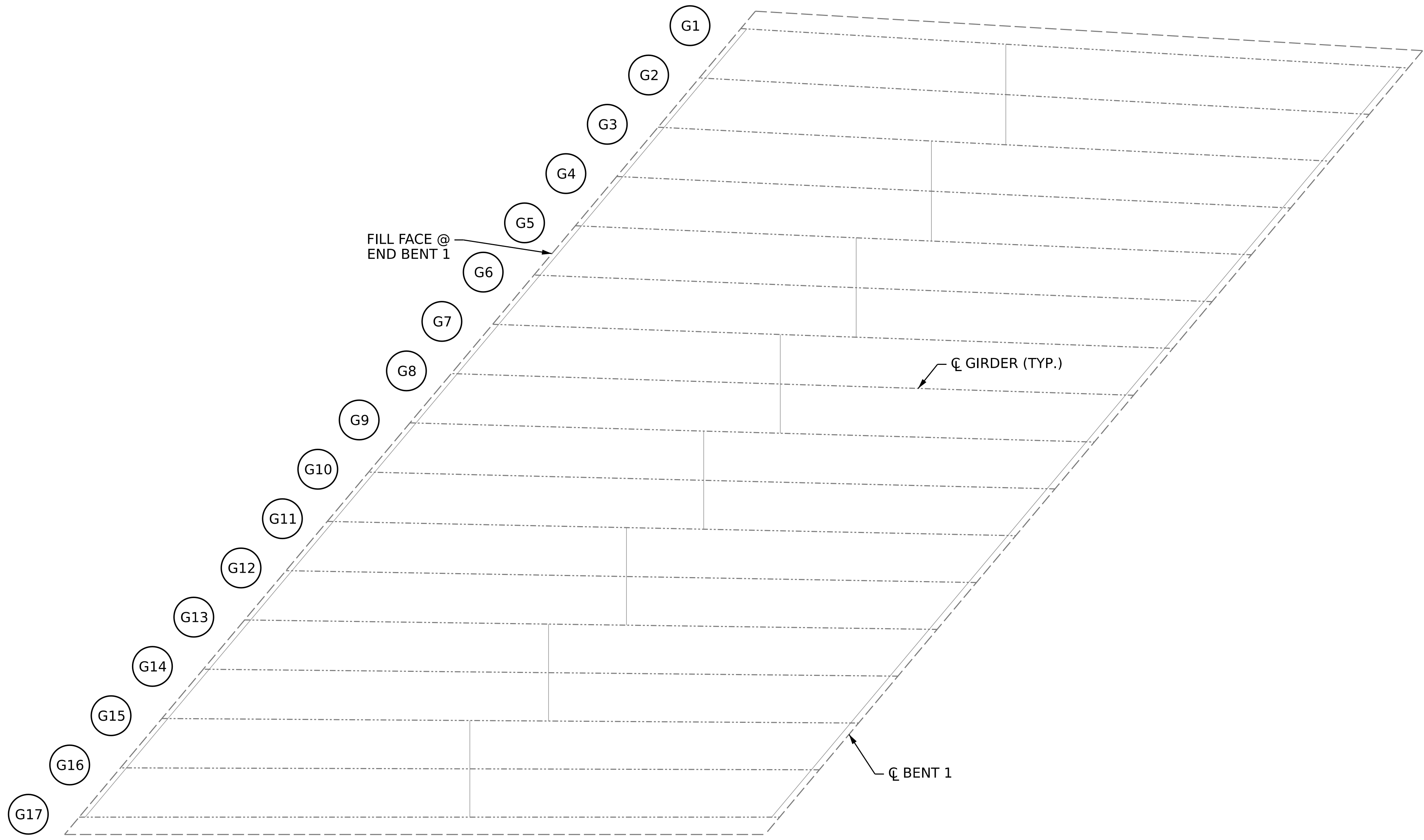
FOAM JOINT SEALS FOR PRESERVATION DETAILS

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

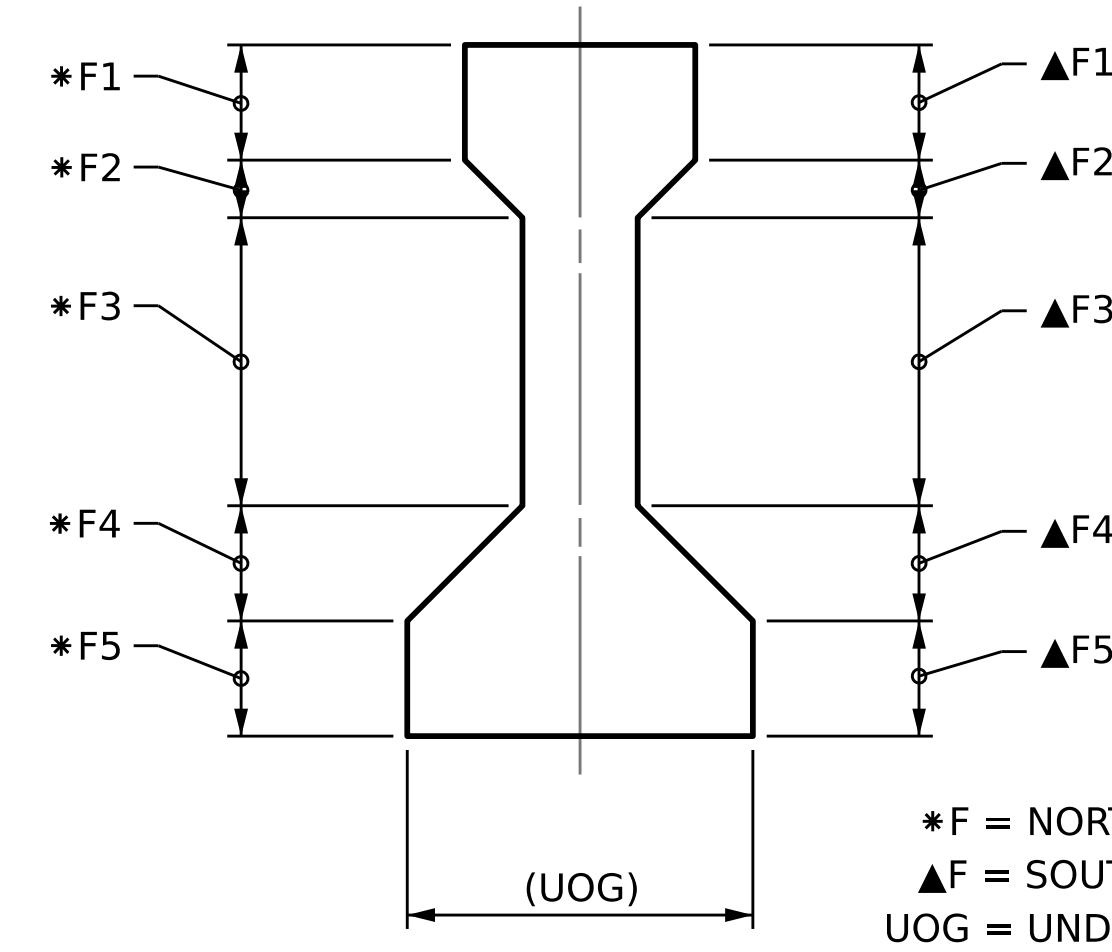
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1			3			TOTAL SHEETS
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8/26/21



PLAN



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

GIRDER SECTION

GIRDER DAMAGE LOCATIONS

DECK UNDERSIDE REPAIR QUANTITY TABLE

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

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

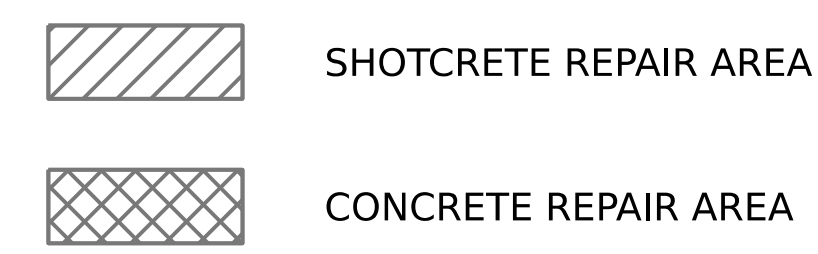
NOTES

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

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

EPOXY COAT THE ENDS OF ALL CONCRETE GIRDERS.

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



PROJECT NO. **15BPR.124.3**
 WAKE COUNTY
 BRIDGE NO. **911084**



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

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

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S4-08
2			4			TOTAL SHEETS 21

DECK UNDERSIDE REPAIR QUANTITY TABLE

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

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



NOTES

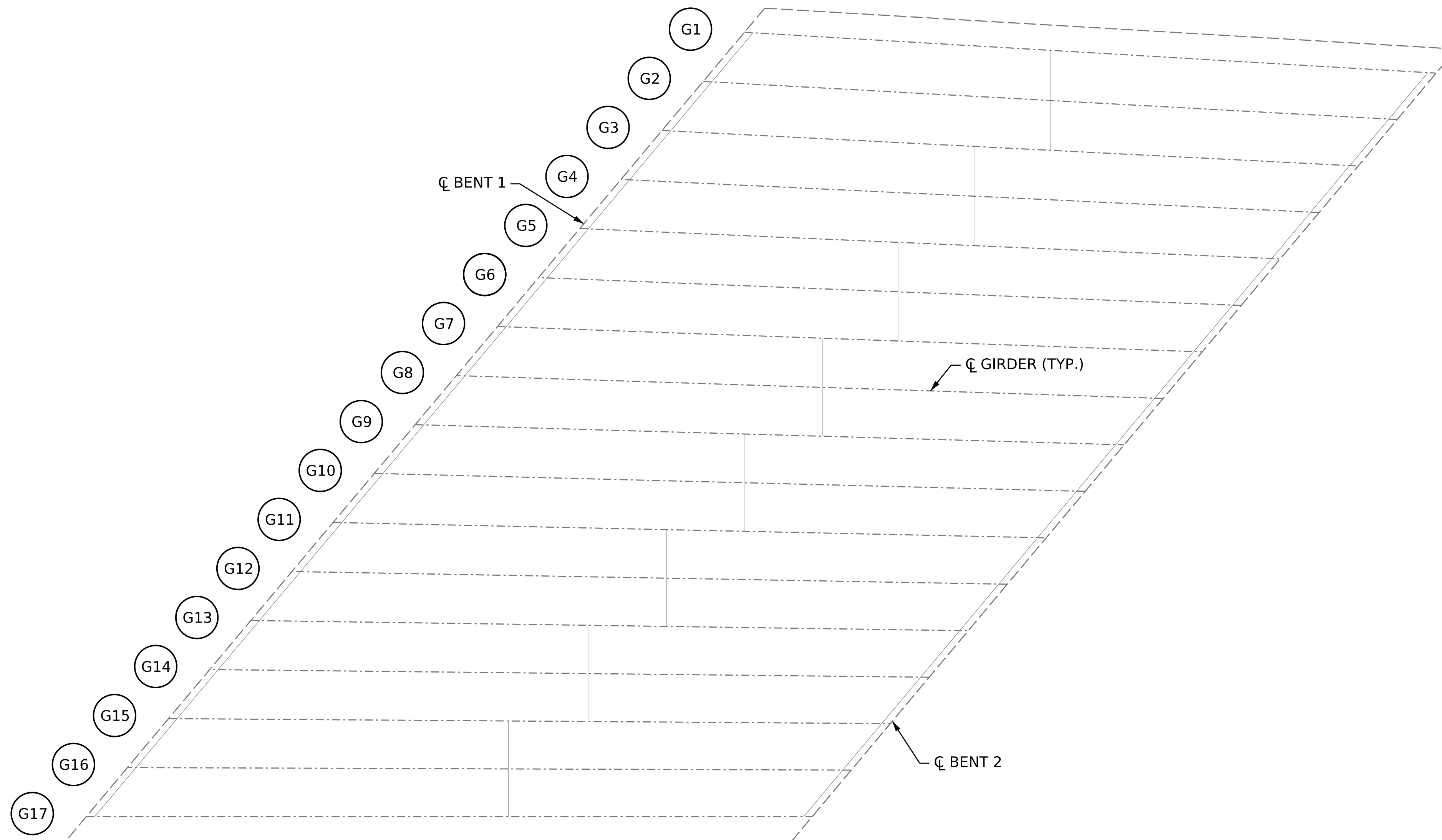
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CONCRETE REPAIRS MAYBE SUBSTITUTED IN LIEU OF SHOTCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

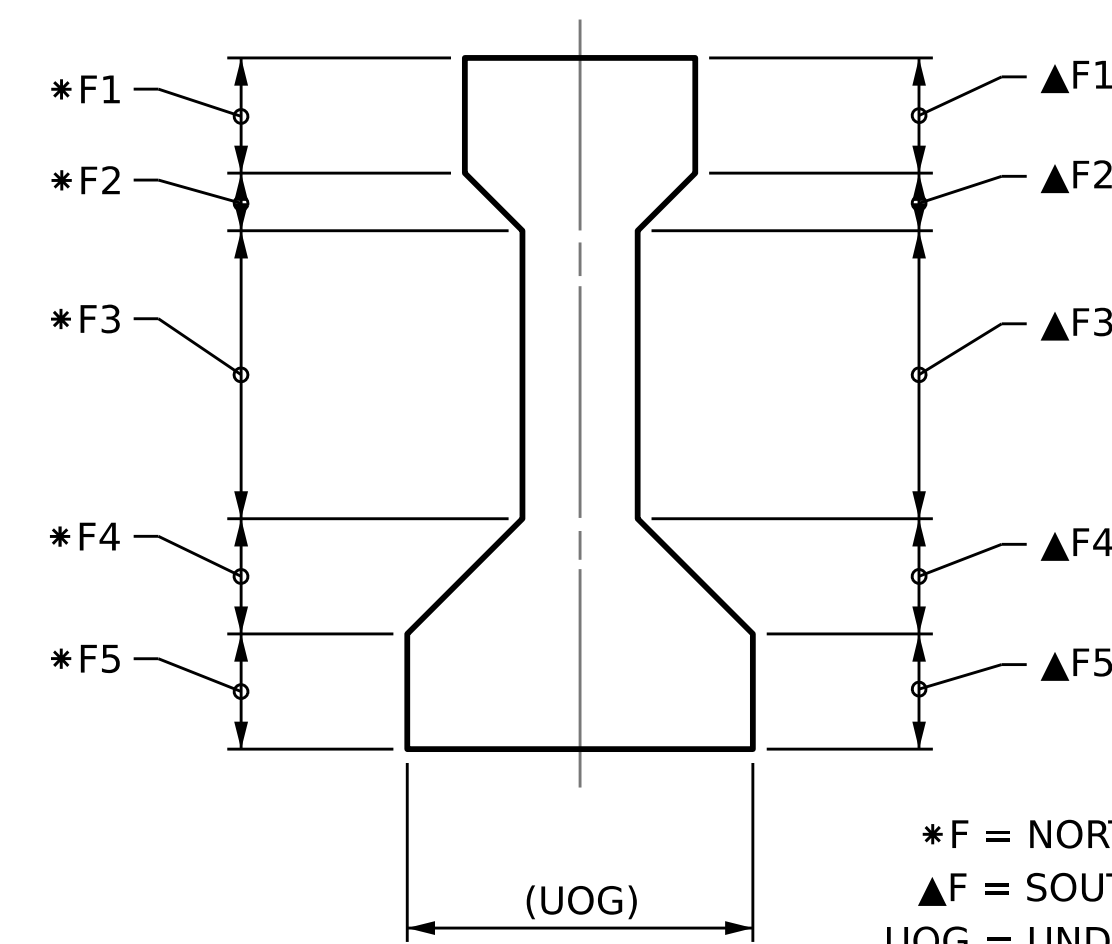
EPOXY COAT THE ENDS OF ALL CONCRETE GIRDERS.

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

-  SHOTCRETE REPAIR AREA
-  CONCRETE REPAIR AREA



PLAN



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

GIRDER SECTION

GIRDER DAMAGE LOCATIONS

PROJECT NO. **15BPR.124.3**
 WAKE COUNTY
 BRIDGE NO. **911084**

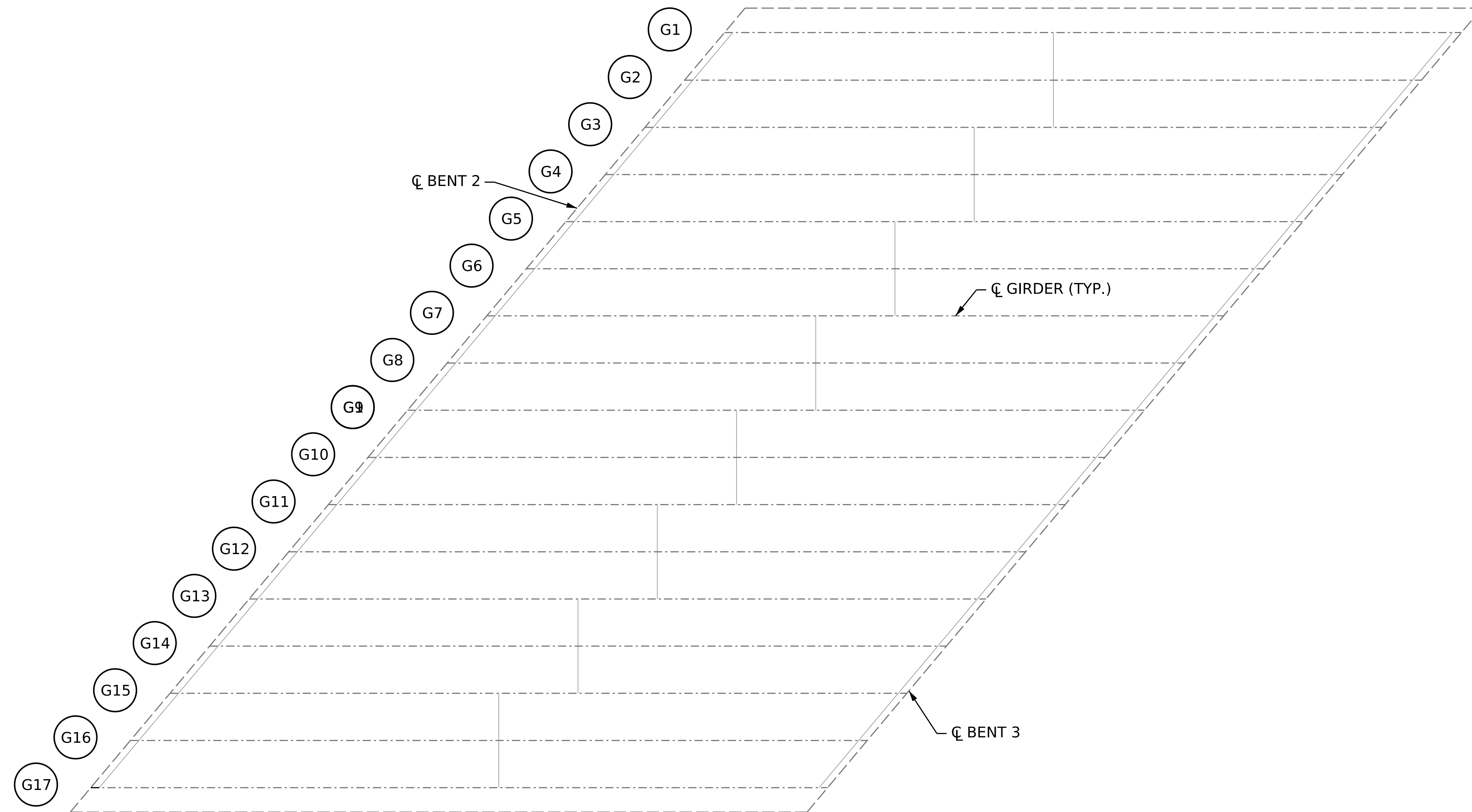


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 DECK UNDERSIDE REPAIR
SPAN B

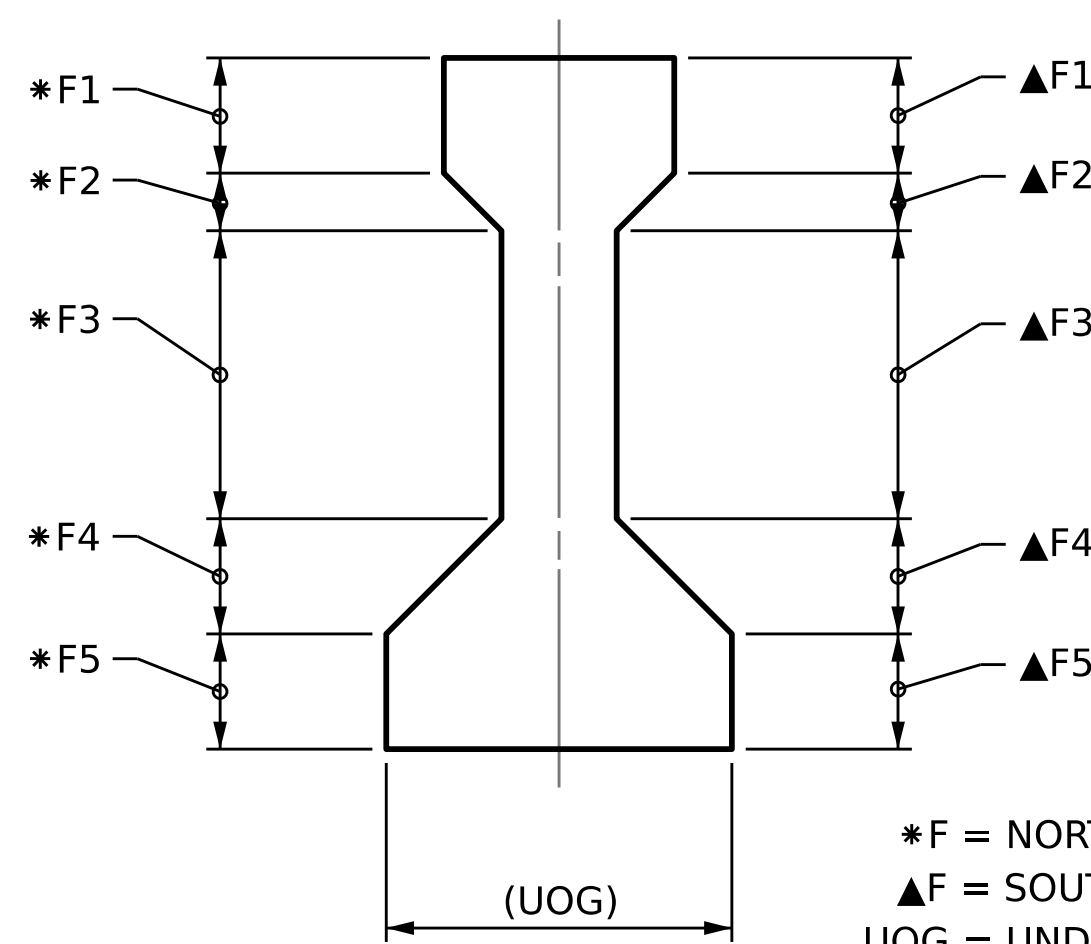
DRAWN BY : D.A. CANTRELL DATE : 03/2021
 CHECKED BY : N.A. PIERCE DATE : 10/2022
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 12/2022

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-09
1			3			TOTAL SHEETS
2			4			21



PLAN



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

GIRDER SECTION

GIRDER DAMAGE LOCATIONS

DECK UNDERSIDE REPAIR QUANTITY TABLE

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

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

NOTES

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

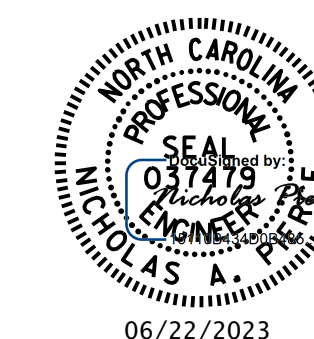
CONCRETE REPAIRS MAYBE SUBSTITUTED IN LIEU OF SHOTCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

EPOXY COAT THE ENDS OF ALL CONCRETE GIRDERS.

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

- SHOTCRETE REPAIR AREA
- CONCRETE REPAIR AREA

PROJECT NO. **15BPR.124.3**
WAKE COUNTY
 BRIDGE NO. **911084**



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

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-10
1			3			TOTAL SHEETS
2			4			21

DECK UNDERSIDE REPAIR QUANTITY TABLE

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

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



NOTES

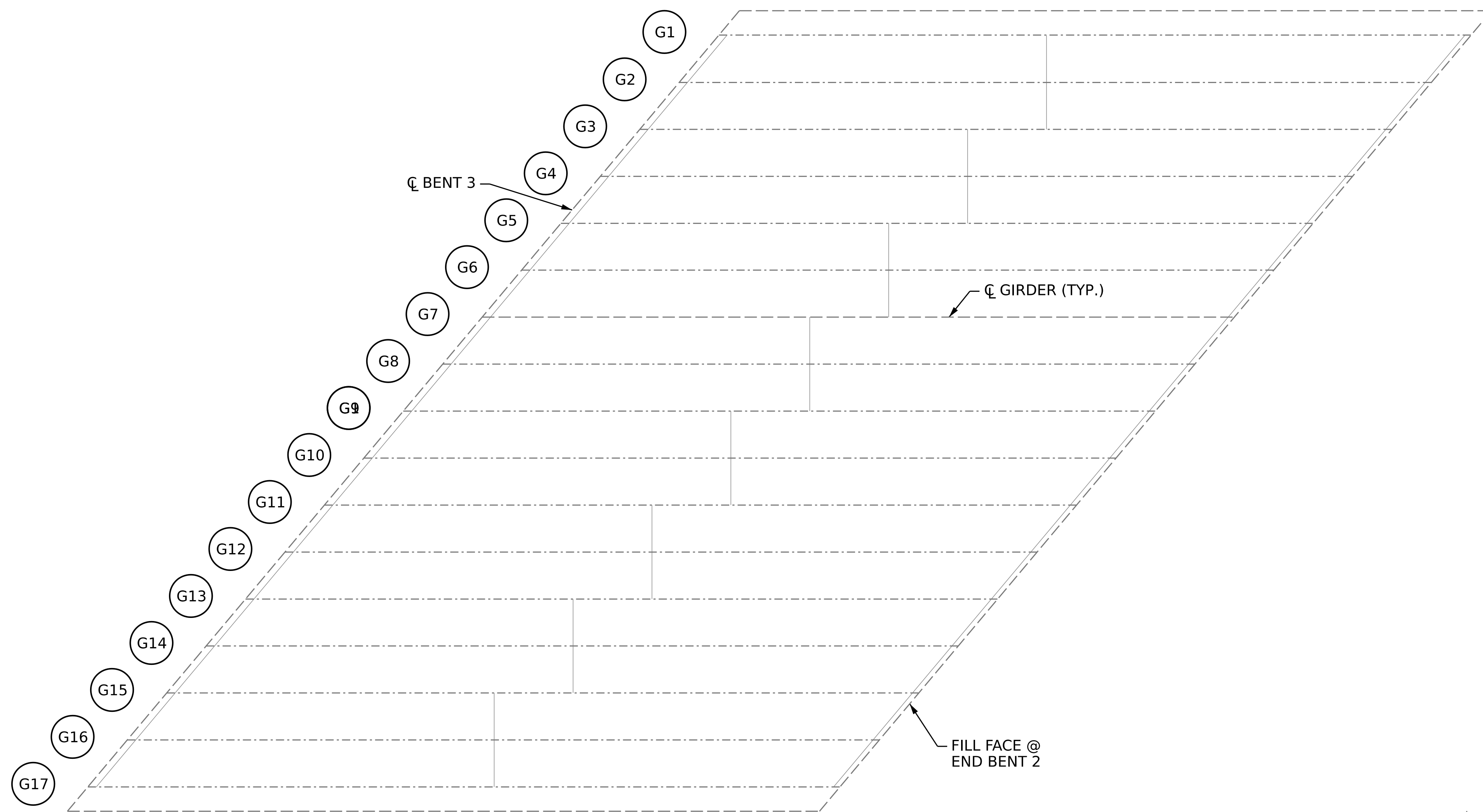
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CONCRETE REPAIRS MAYBE SUBSTITUTED IN LIEU OF SHOTCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

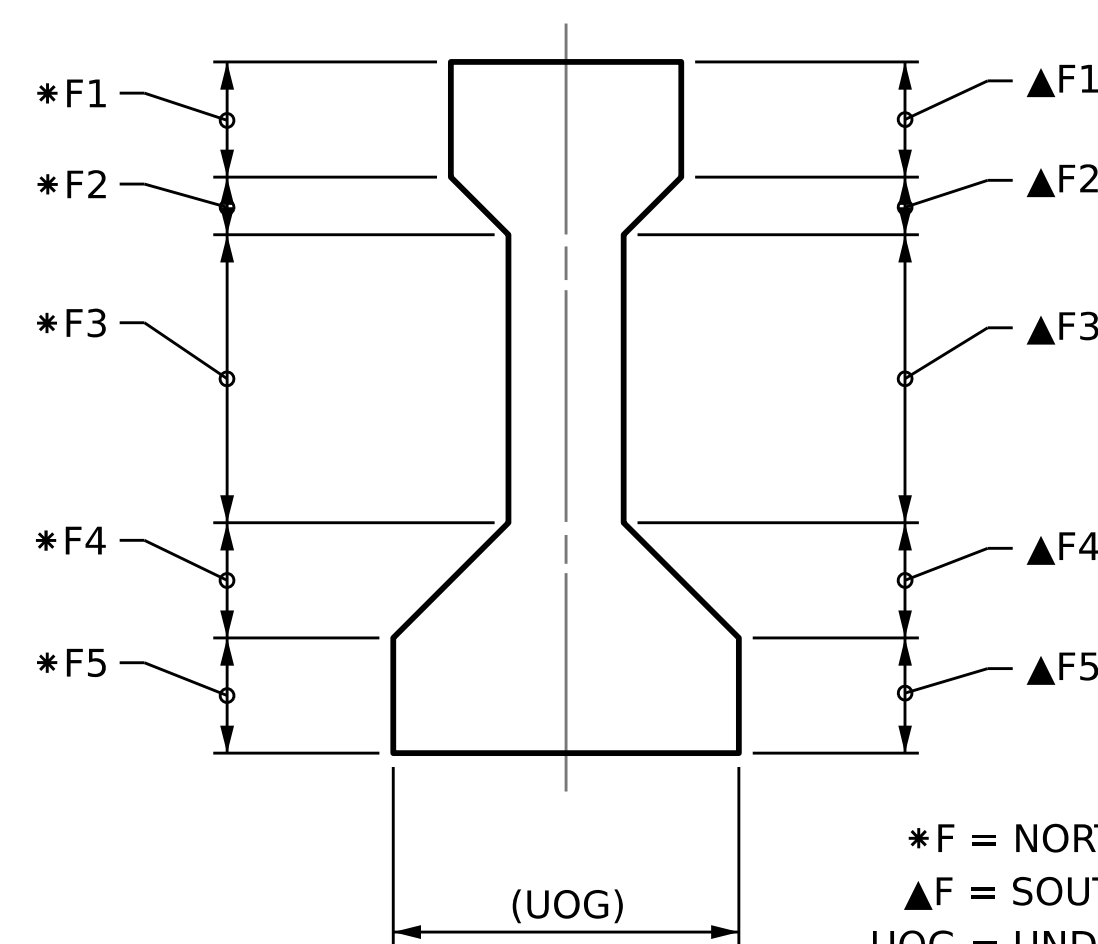
EPOXY COAT THE END OF ALL CONCRETE GIRDERS.

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

-  SHOTCRETE REPAIR AREA
-  CONCRETE REPAIR AREA



PLAN

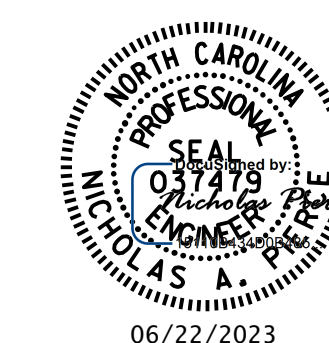


* F = NORTH/WEST FACE
 ▲ F = SOUTH/EAST FACE
 UOG = UNDERSIDE OF GIRDER

GIRDER SECTION

GIRDER DAMAGE LOCATIONS

PROJECT NO. **15BPR.124.3**
WAKE COUNTY
 BRIDGE NO. **911084**



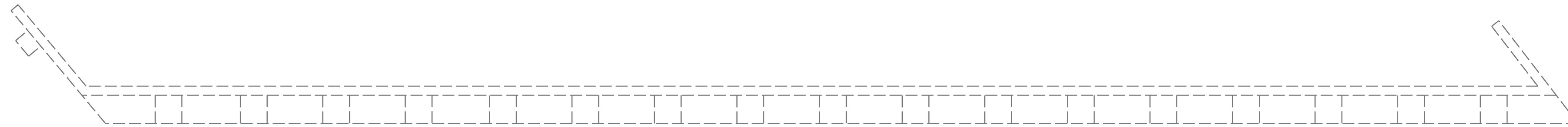
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 DECK UNDERSIDE REPAIR
SPAN D

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-11
1			3			TOTAL SHEETS
2			4			21

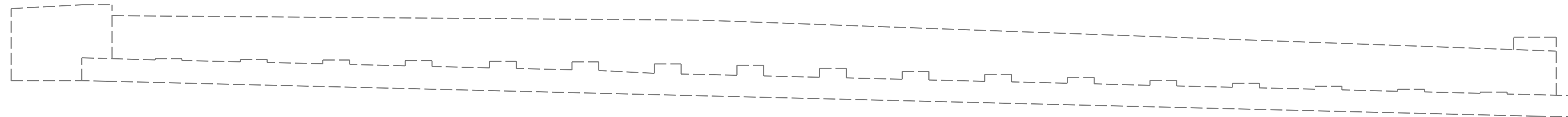
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

8/26/21



TOP OF CAP



ELEVATION

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

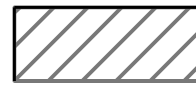


VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CLEAR TO SAWCUT. SEE REPAIR DETAILS.

NOTES

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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.124.3**
WAKE COUNTY
 BRIDGE NO. **911084**



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

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

DOCUMENT NOT CONSIDERED
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 SIGNATURES COMPLETED

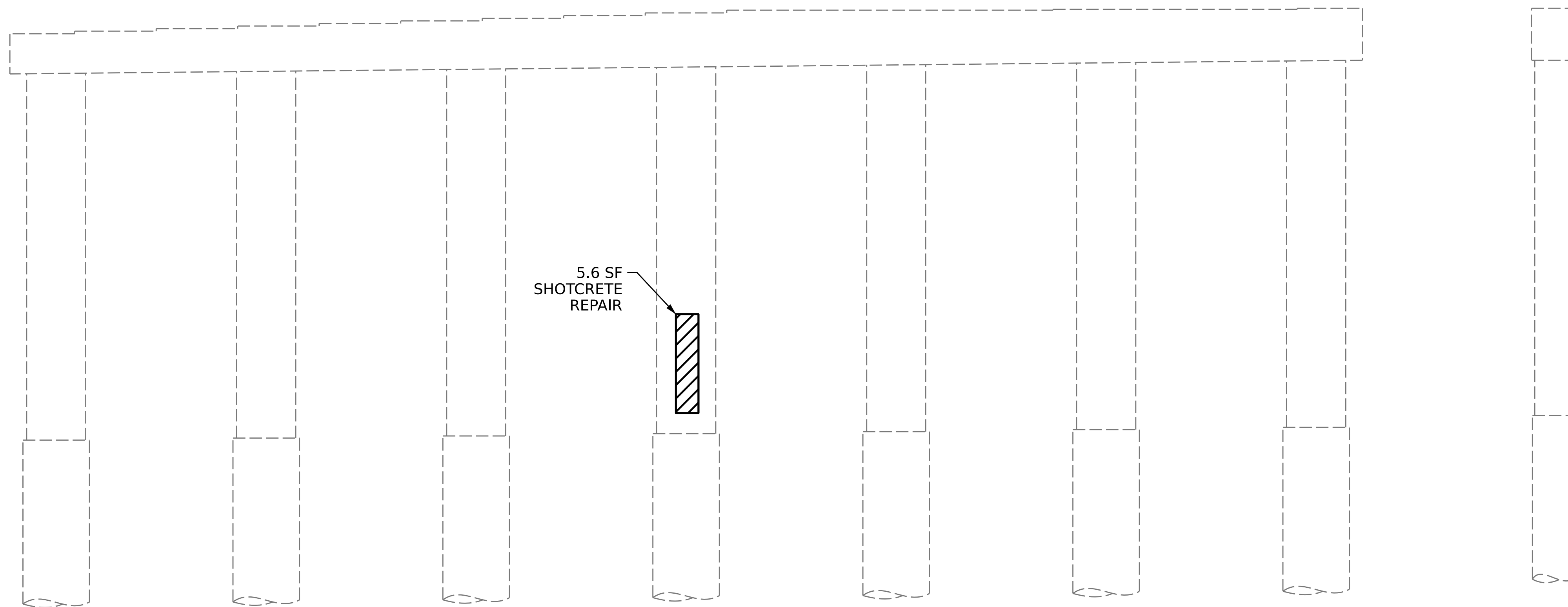
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

TOTAL SHEETS: 21



SPAN B
SPAN A

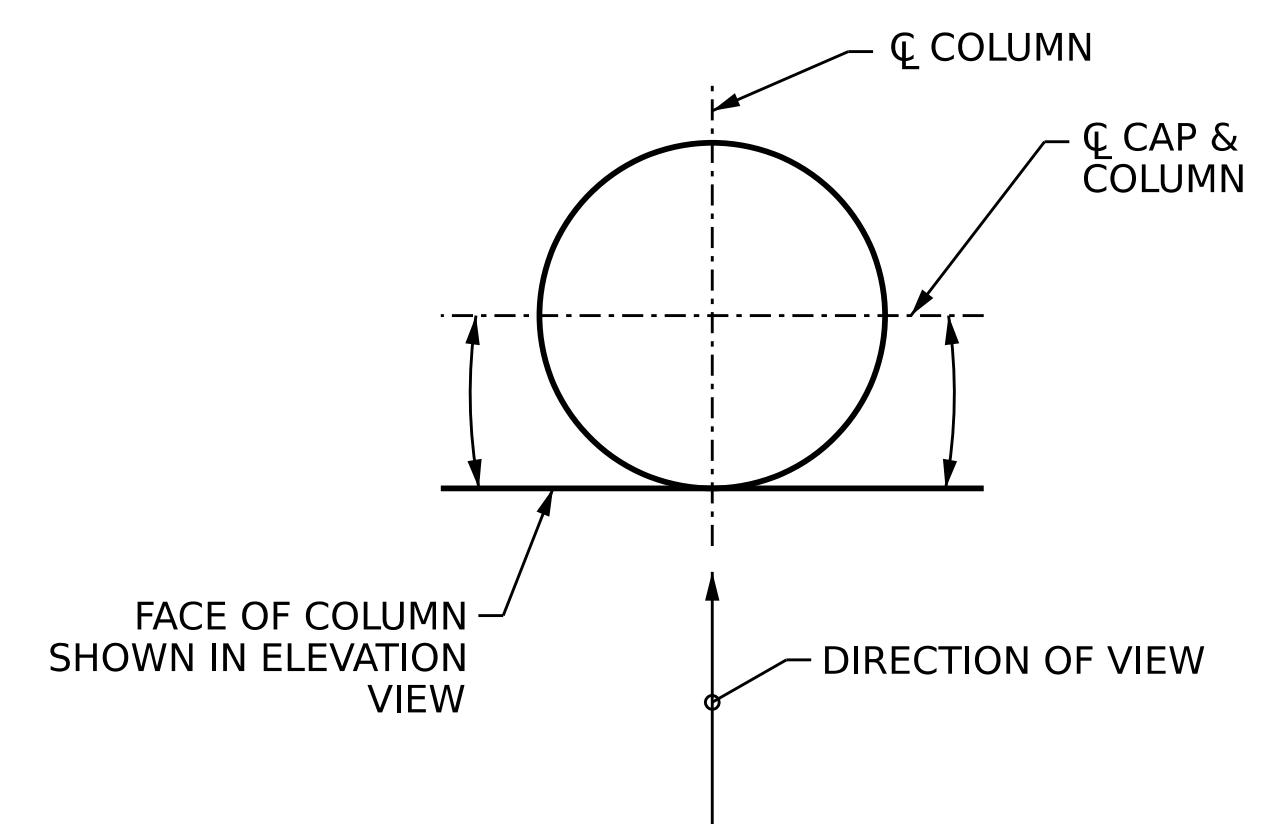
TOP OF CAP



5.6 SF
SHOTCRETE
REPAIR

ELEVATION

END VIEW



UNWRAPPED COLUMN FACE DETAIL

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

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

NOTES

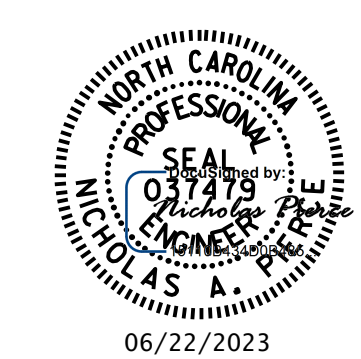
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CLEAN AND REMOVE DEBRIS FROM THE TOP OF THE CAP AND APPLY EPOXY PROTECTIVE COATING. EPOXY COATING SHALL BE APPLIED TO THE TOP SURFACE OF THE CAP. THE CONTRACTOR SHALL NOT COAT THE AREA OF THE CAP BENEATH THE MASONRY PLATES. FOR EPOXY COATING, SEE SPECIAL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

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

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

PROJECT NO. **15BPR.124.3**
WAKE COUNTY
 BRIDGE NO. **911084**



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

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

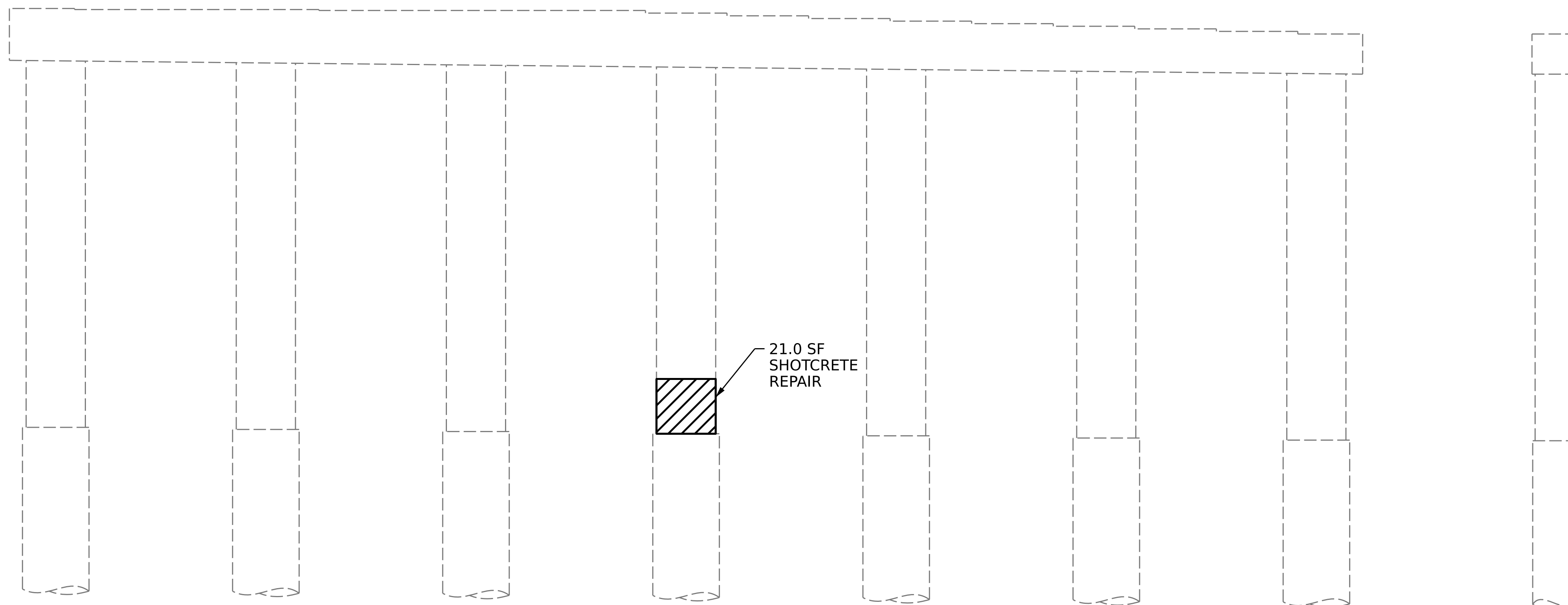
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

S4-13	TOTAL SHEETS
21	

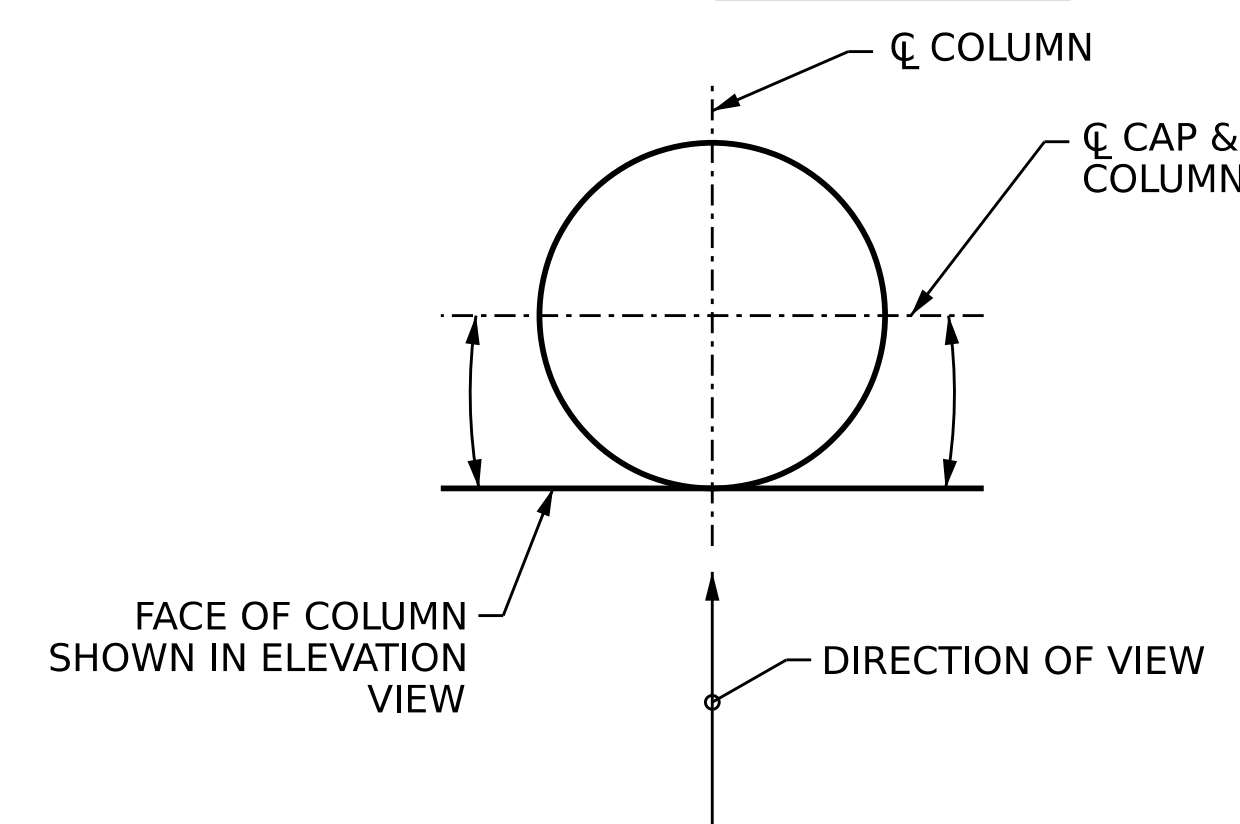


BOTTOM OF CAP



ELEVATION

END VIEW



UNWRAPPED COLUMN FACE DETAIL

SUBSTRUCTURE REPAIR QUANTITY TABLE

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




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

NOTES

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

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

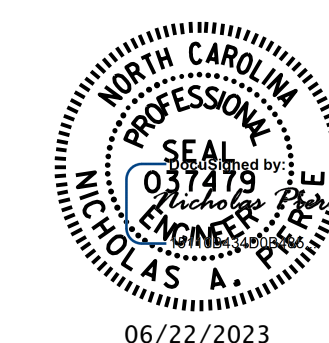
CONCRETE REPAIRS MAYBE SUBSTITUTED IN LIEU OF SHOTCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

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

PROJECT NO. **15BPR.124.3**

WAKE COUNTY

BRIDGE NO. **911084**



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIR

**BENT 1
SPAN B FACE**

REVISIONS

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

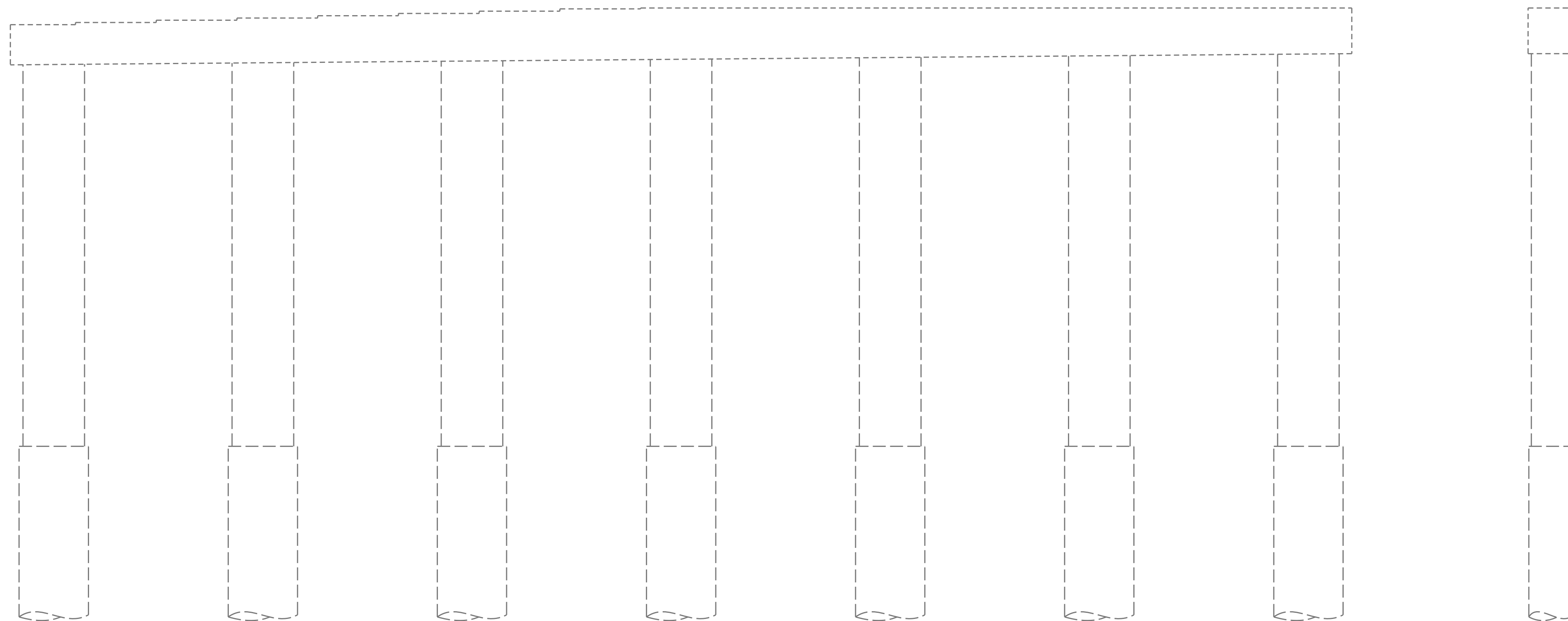
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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



SPAN C
SPAN B

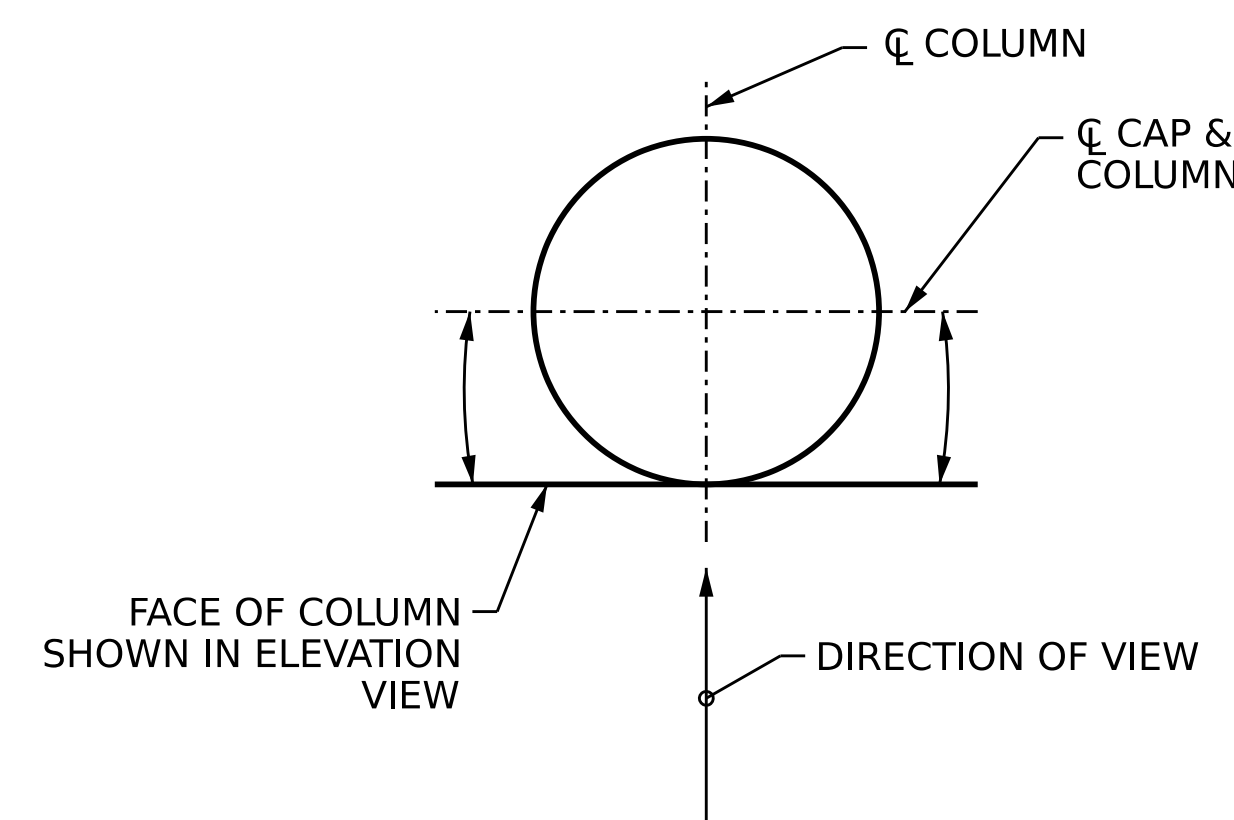
TOP OF CAP



ELEVATION



END VIEW



UNWRAPPED COLUMN FACE DETAIL

SUBSTRUCTURE REPAIR QUANTITY TABLE

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

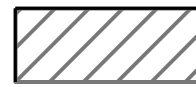


VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CLEAR TO SAWCUT. SEE REPAIR DETAILS.

NOTES

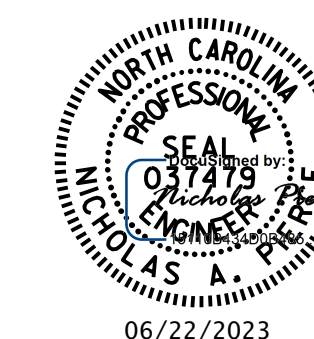
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CLEAN AND REMOVE DEBRIS FROM THE TOP OF THE CAP AND APPLY EPOXY PROTECTIVE COATING. EPOXY COATING SHALL BE APPLIED TO THE TOP SURFACE OF THE CAP. THE CONTRACTOR SHALL NOT COAT THE AREA OF THE CAP BENEATH THE MASONRY PLATES. FOR EPOXY COATING, SEE SPECIAL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

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

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

PROJECT NO. **15BPR.124.3**
WAKE COUNTY
 BRIDGE NO. **911084**



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

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

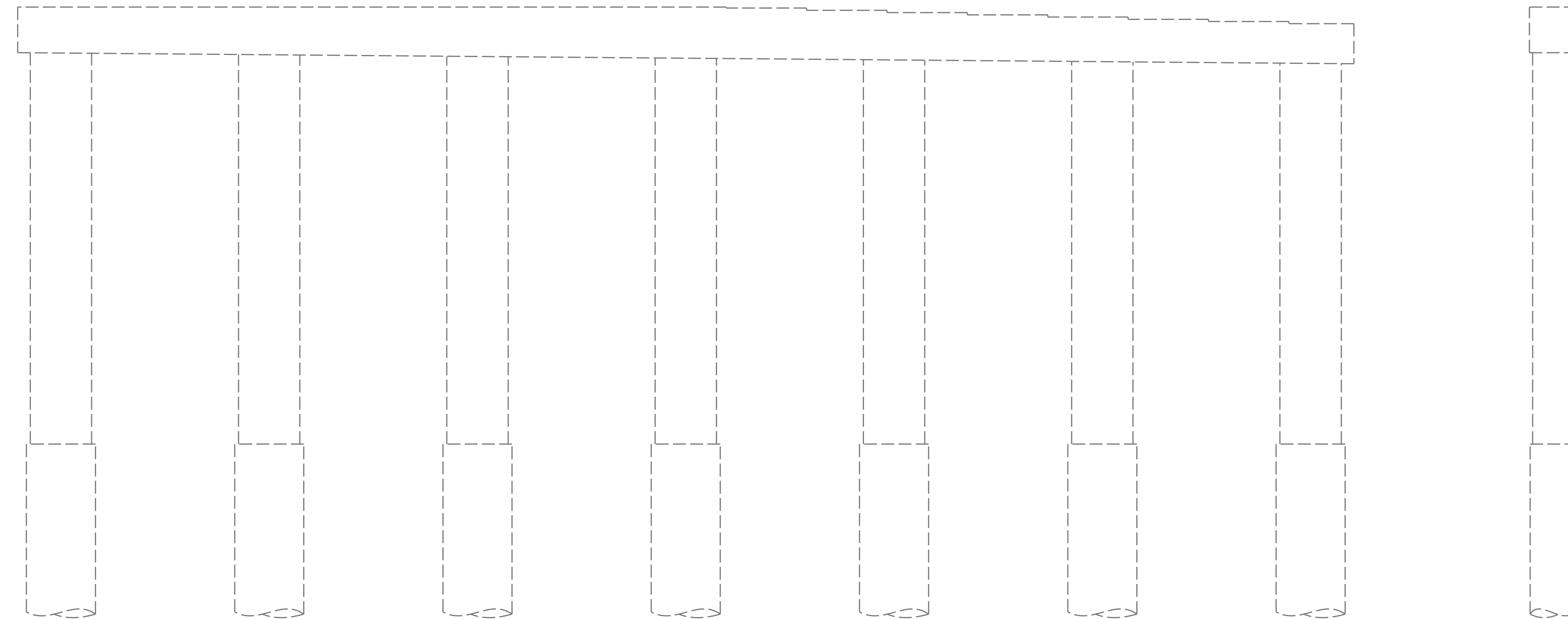
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

TOTAL SHEETS: 21



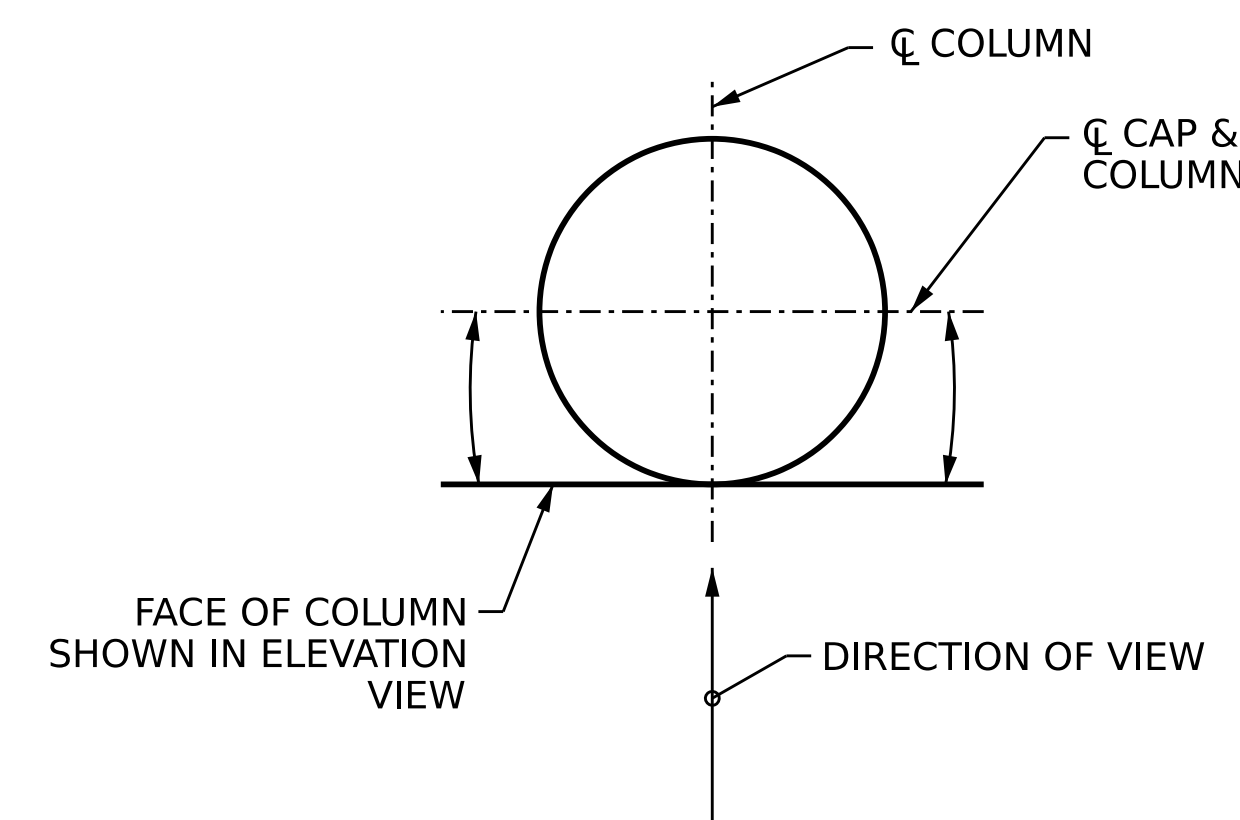
SPAN B
SPAN C

TOP OF CAP



ELEVATION

END VIEW



UNWRAPPED COLUMN FACE DETAIL

SUBSTRUCTURE REPAIR QUANTITY TABLE

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




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

NOTES

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.

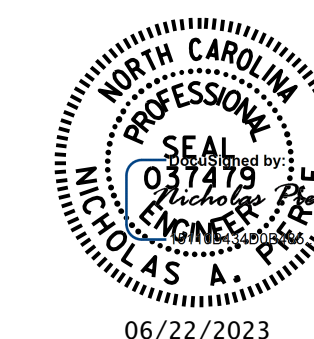
CONCRETE REPAIRS MAYBE SUBSTITUTED IN LIEU OF SHOTCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

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

PROJECT NO. **15BPR.124.3**

WAKE COUNTY

BRIDGE NO. **911084**



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIR

**BENT 2
SPAN C FACE**

REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S4-16
2			4			TOTAL SHEETS 21

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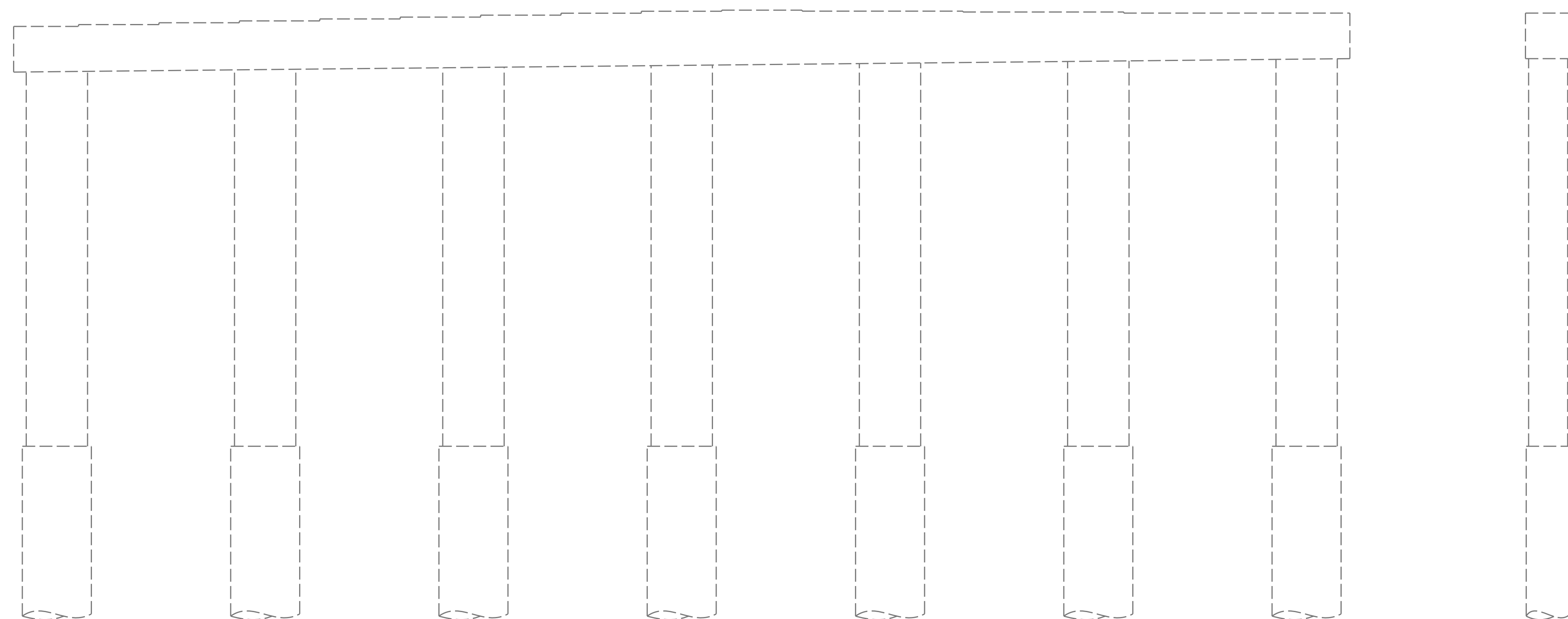
DRAWN BY : D.A. CANTRELL DATE : 03/2022
 CHECKED BY : A.Y. GODFREY DATE : 10/2022
 DESIGN ENGINEER OF RECORD : N.A. PIERCE DATE : 12/2022

8/26/21



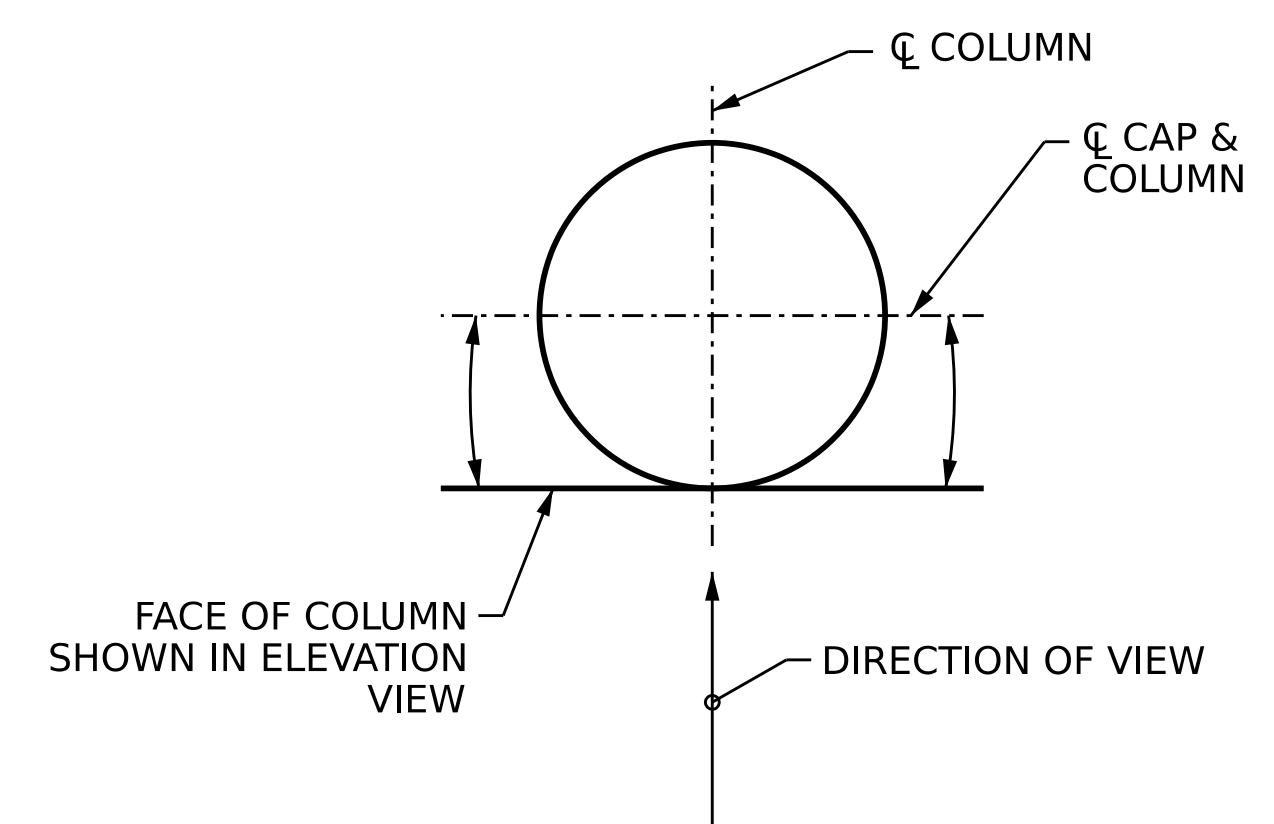
SPAN D
SPAN C

TOP OF CAP



ELEVATION

END VIEW



UNWRAPPED COLUMN FACE DETAIL

SUBSTRUCTURE REPAIR QUANTITY TABLE

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

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

NOTES

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

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

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

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

PROJECT NO. **15BPR.124.3**
WAKE COUNTY
 BRIDGE NO. **911084**



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

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

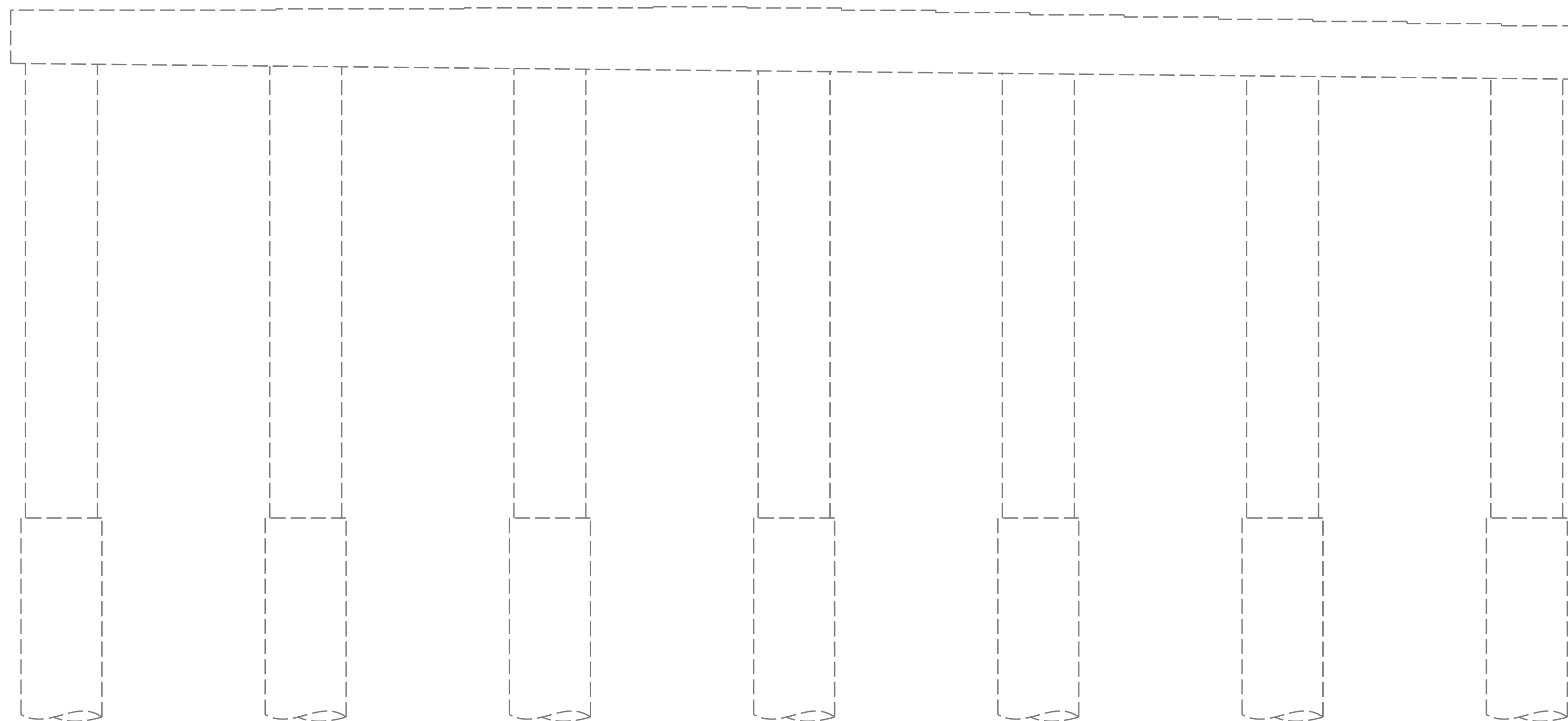
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-17
1			3			TOTAL SHEETS
2			4			21



SPAN C
SPAN D

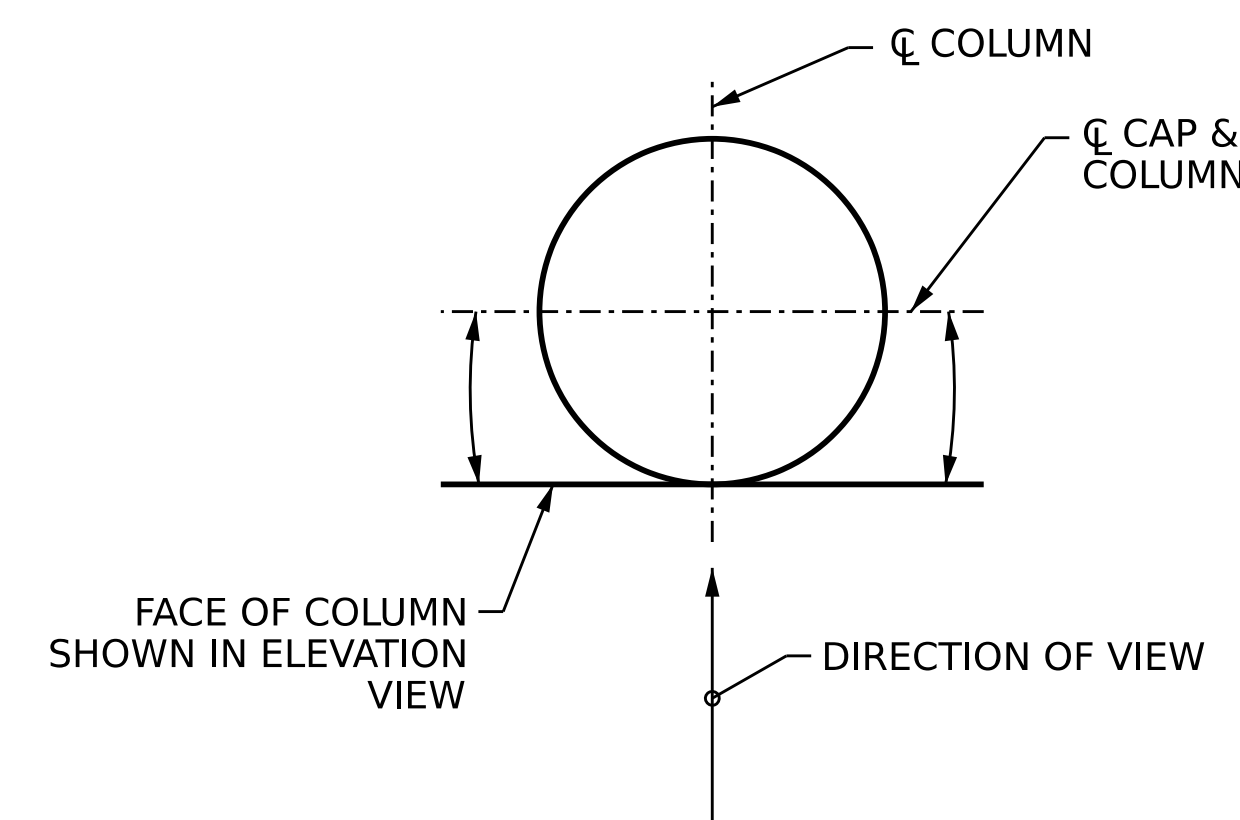
BOTTOM OF CAP



ELEVATION



END VIEW



UNWRAPPED COLUMN FACE DETAIL

SUBSTRUCTURE REPAIR QUANTITY TABLE

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

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

NOTES

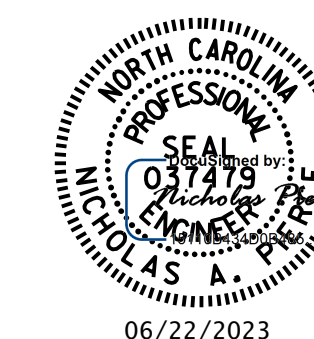
REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN BASED ON THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ENTER THE ACTUAL QUANTITIES 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.124.3**
WAKE COUNTY
 BRIDGE NO. **911084**



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

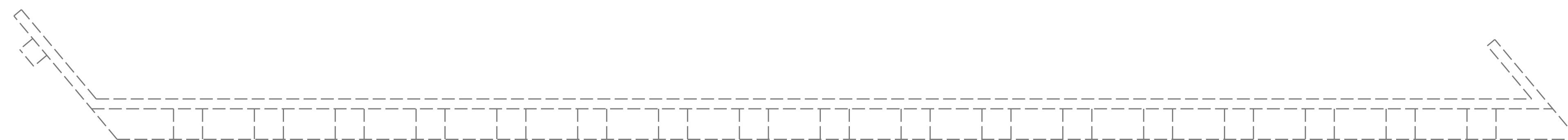
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NO.	BY:	DATE:	NO.	BY:	DATE:
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TOTAL SHEETS: 21

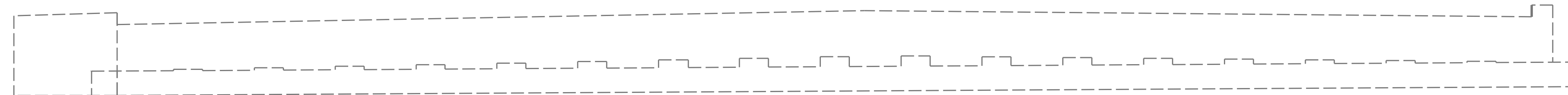
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

8/26/21



TOP OF CAP



ELEVATION

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




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

NOTES

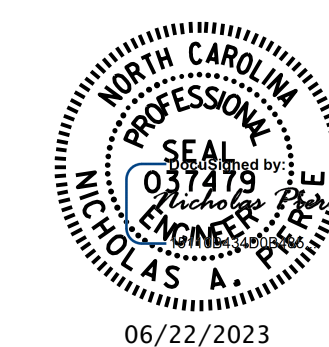
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CLEAN AND REMOVE DEBRIS FROM THE TOP OF THE CAP AND APPLY EPOXY PROTECTIVE COATING. EPOXY COATING SHALL BE APPLIED TO THE TOP SURFACE OF THE CAP. THE CONTRACTOR SHALL NOT COAT THE AREA OF THE CAP BENEATH THE MASONRY PLATES. FOR EPOXY COATING, SEE SPECIAL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

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

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

PROJECT NO. **15BPR.124.3**
WAKE COUNTY
 BRIDGE NO. **911084**



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

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

6/22/2023
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 aygodfrey

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 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
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2			4			TOTAL SHEETS 21

8/26/21

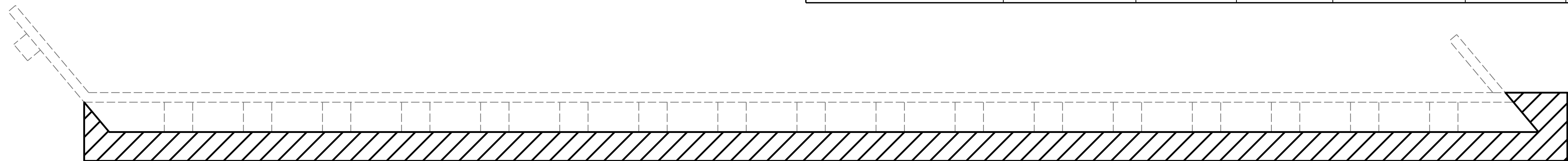
NOTES

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 REPAIR QUANTITY TABLE.

PLACE GEOTEXTILE FOR DRAINAGE PRIOR TO SLOPE PROTECTION VOID FILLING.

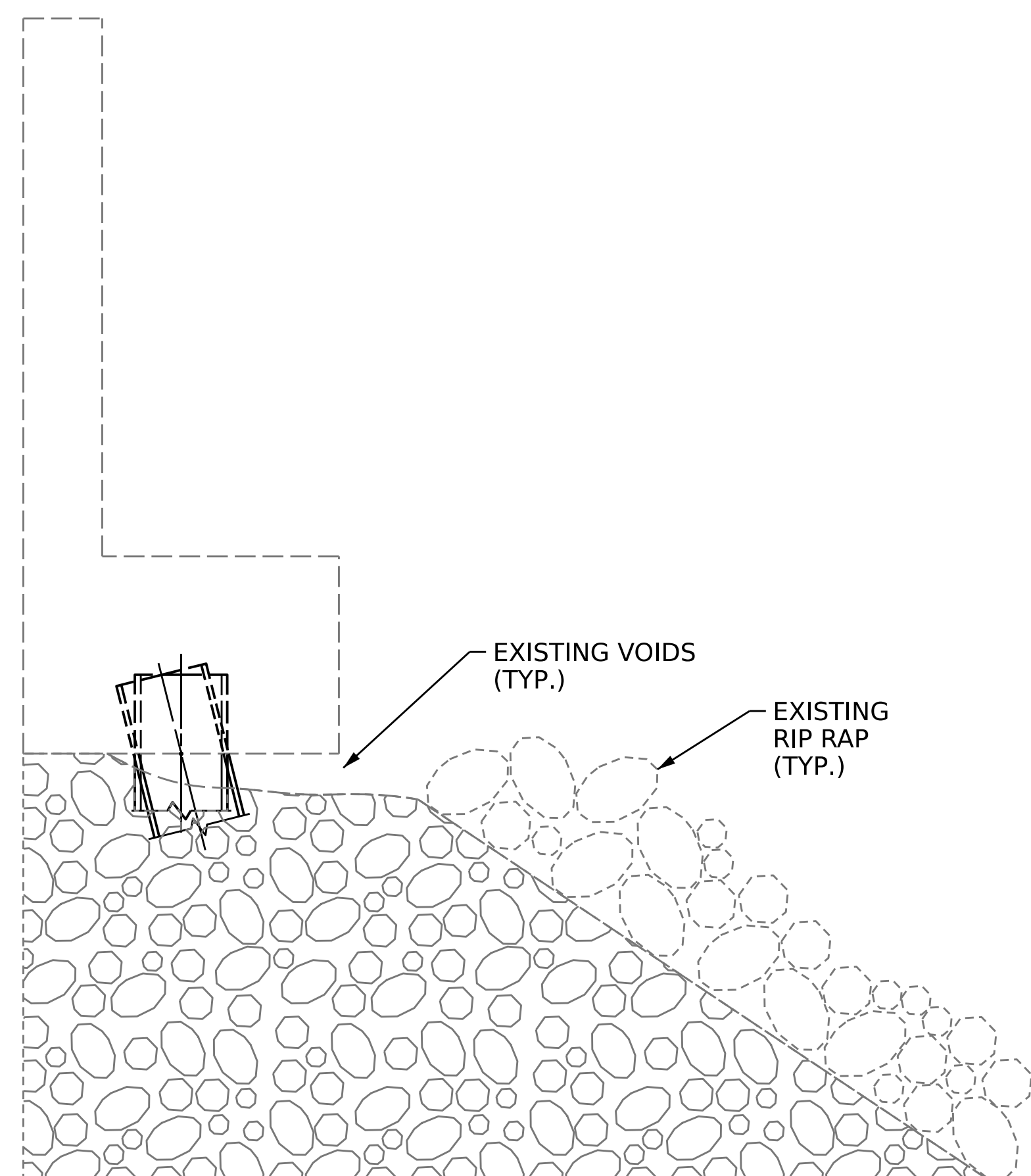
SLOPE REPAIR QUANTITY TABLE

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

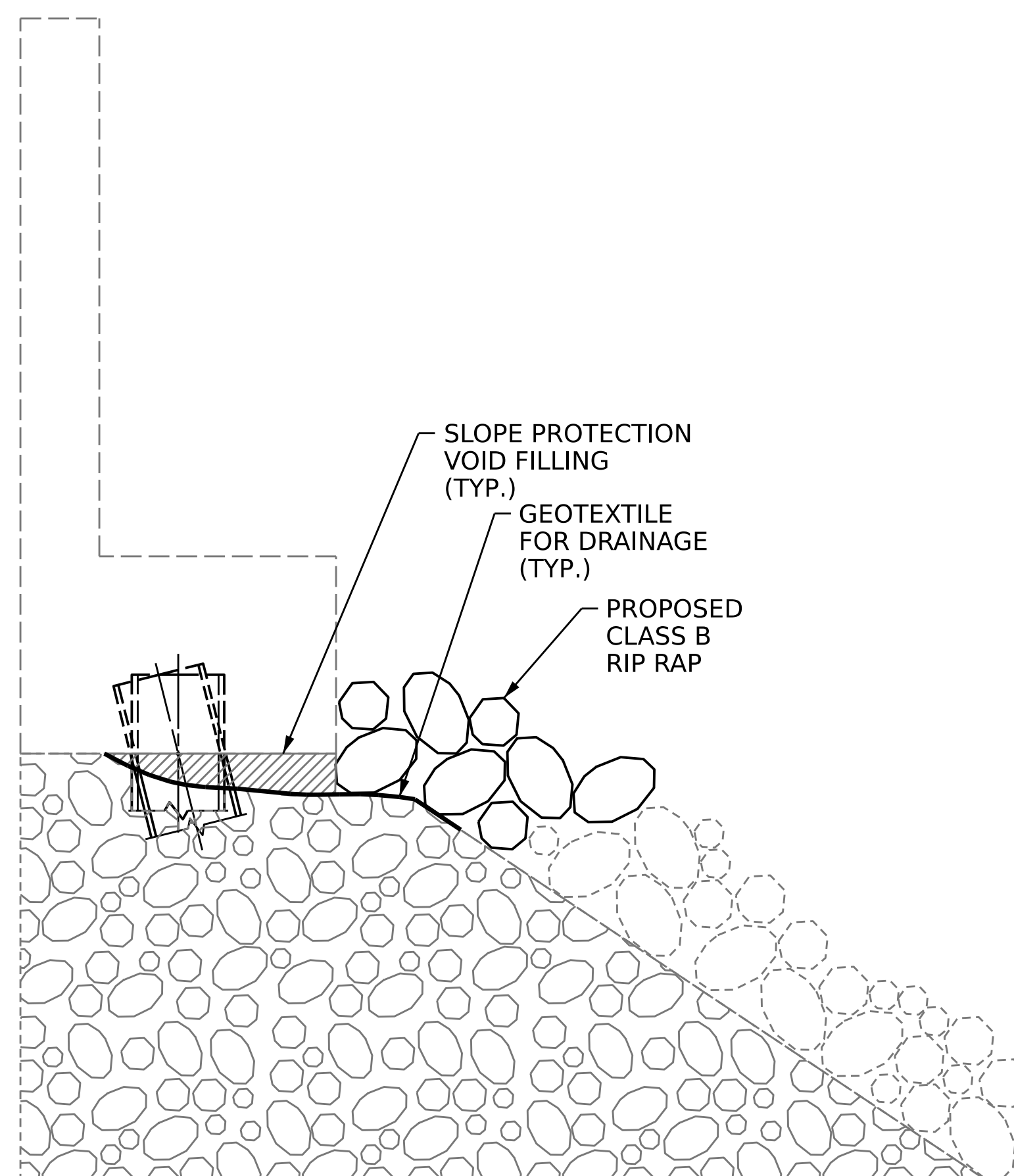


LIMITS OF VOID FILLING & RIP RAP REPLACEMENT (TYP.)

PLAN

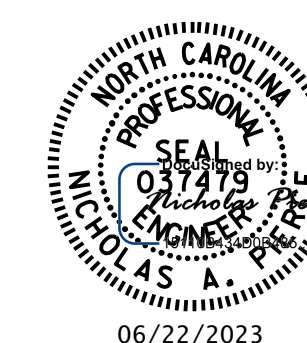


SECTION EXISTING



SECTION PROPOSED

PROJECT NO. **15BPR.124.3**
WAKE COUNTY
BRIDGE NO. **911084**



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

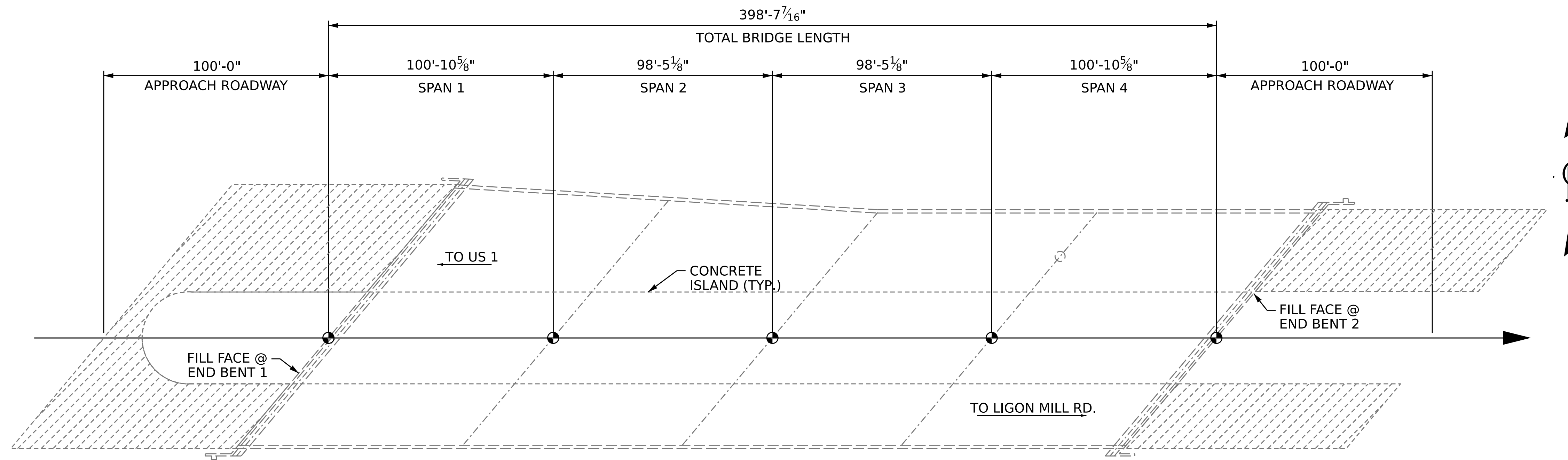
SLOPE PROTECTION REPAIR

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

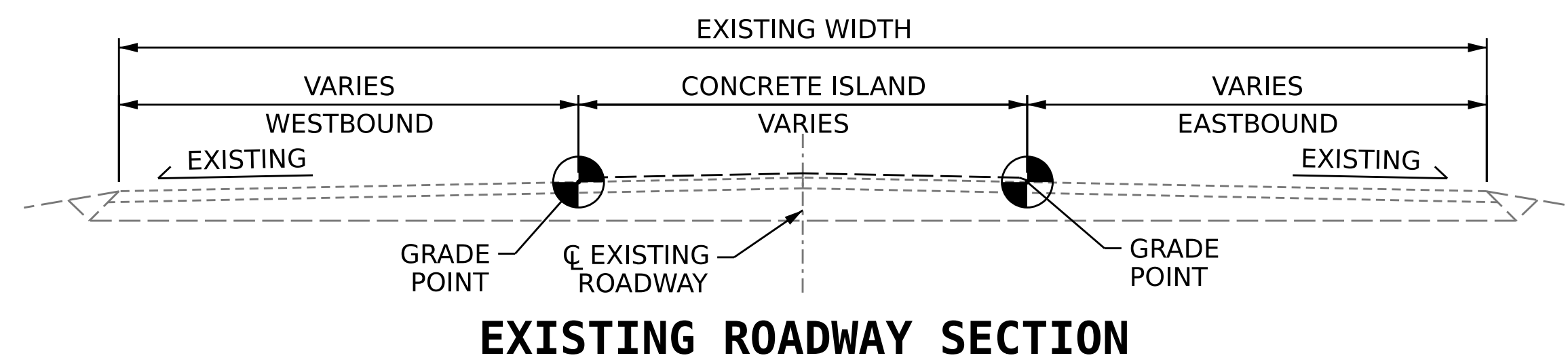
8/22/2023
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aygodfrey

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

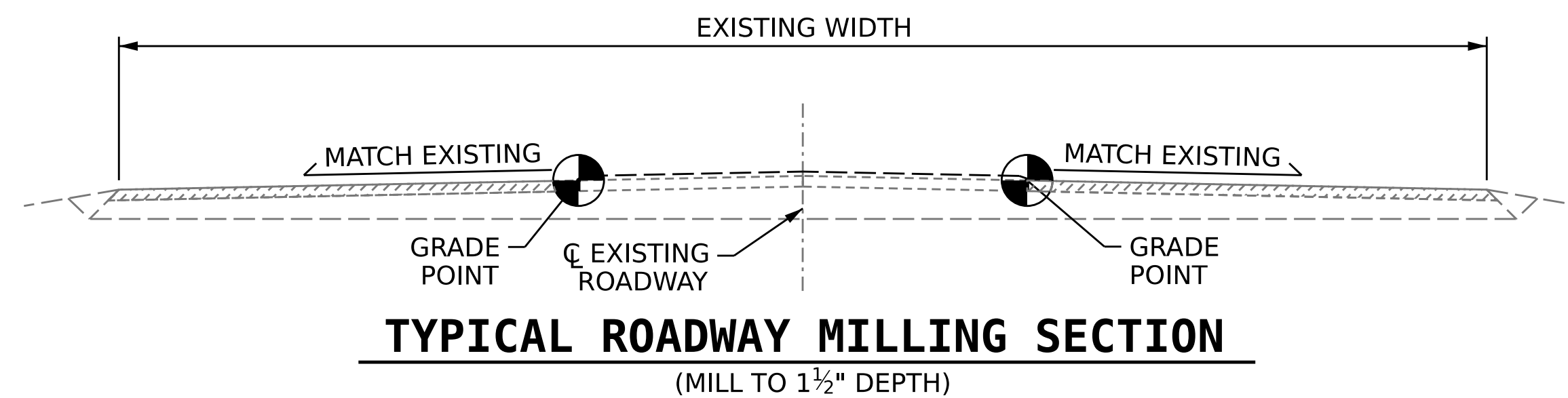
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2			4			



PLAN

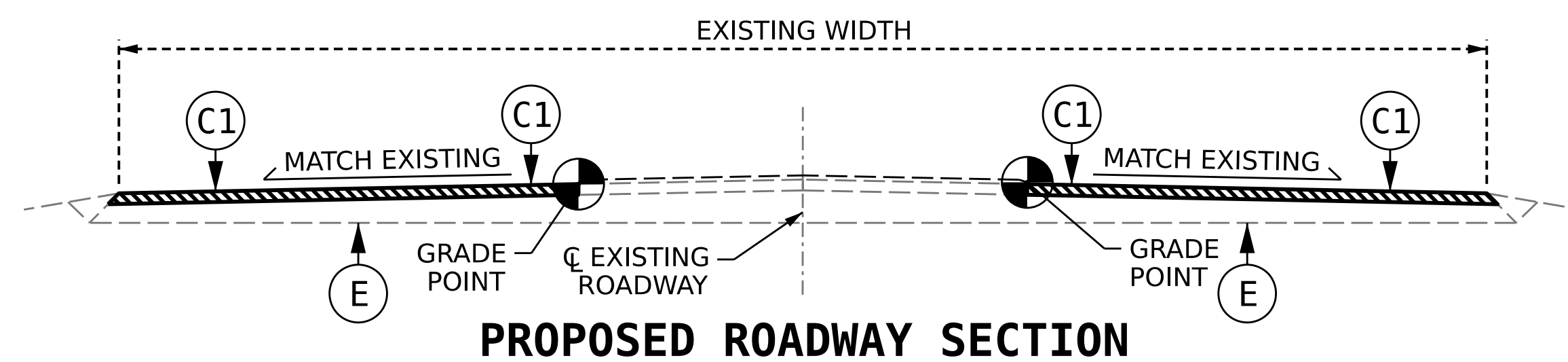


EXISTING ROADWAY SECTION



TYPICAL ROADWAY MILLING SECTION

(MILL TO 1 1/2" DEPTH)



PROPOSED ROADWAY SECTION

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

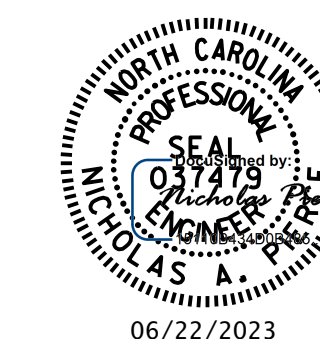
C1	PROPOSED VARIABLE DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1 1/2" IN DEPTH OR GREATER THAN 2" IN DEPTH.
E	EXISTING PAVEMENT

NOTES

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

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

PROJECT NO. **15BPR.124.3**
WAKE COUNTY
 BRIDGE NO. **911084**



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

INCIDENTAL MILLING AND TYPICAL ROADWAY SECTIONS

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

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

NOTES

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

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

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

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

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

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

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

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

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

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

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

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

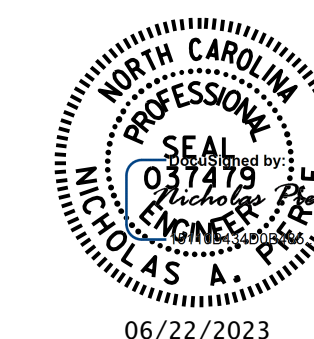
FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY PROTECTIVE COATING, SEE SPECIAL PROVISIONS.

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

PROJECT NO. **15BPR.124.3**
DURHAM/WAKE COUNTY
 BRIDGE NO. **310306, 911039, 911083, 911084**

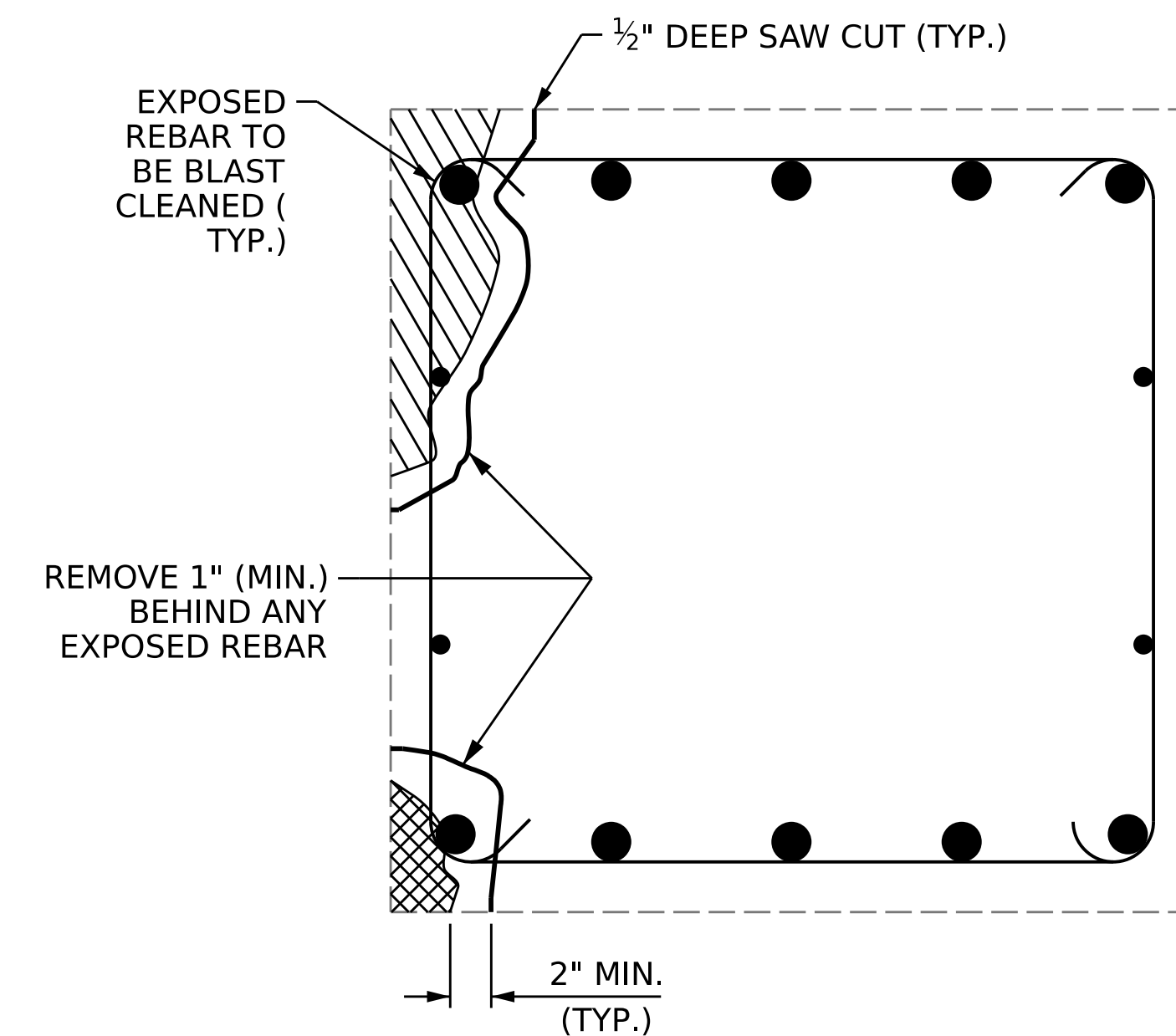
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
TYPICAL CAP AND COLUMN REPAIR DETAILS



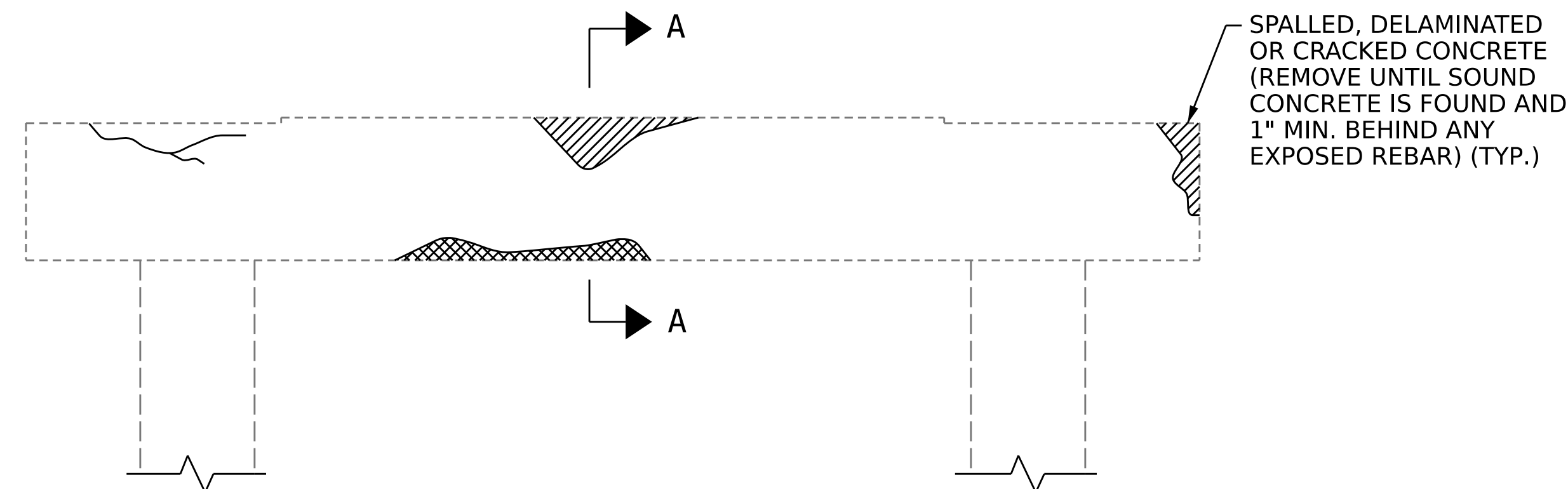
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NO.	BY:	DATE:	NO.	BY:	DATE:
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2			4		

TOTAL SHEETS: 73

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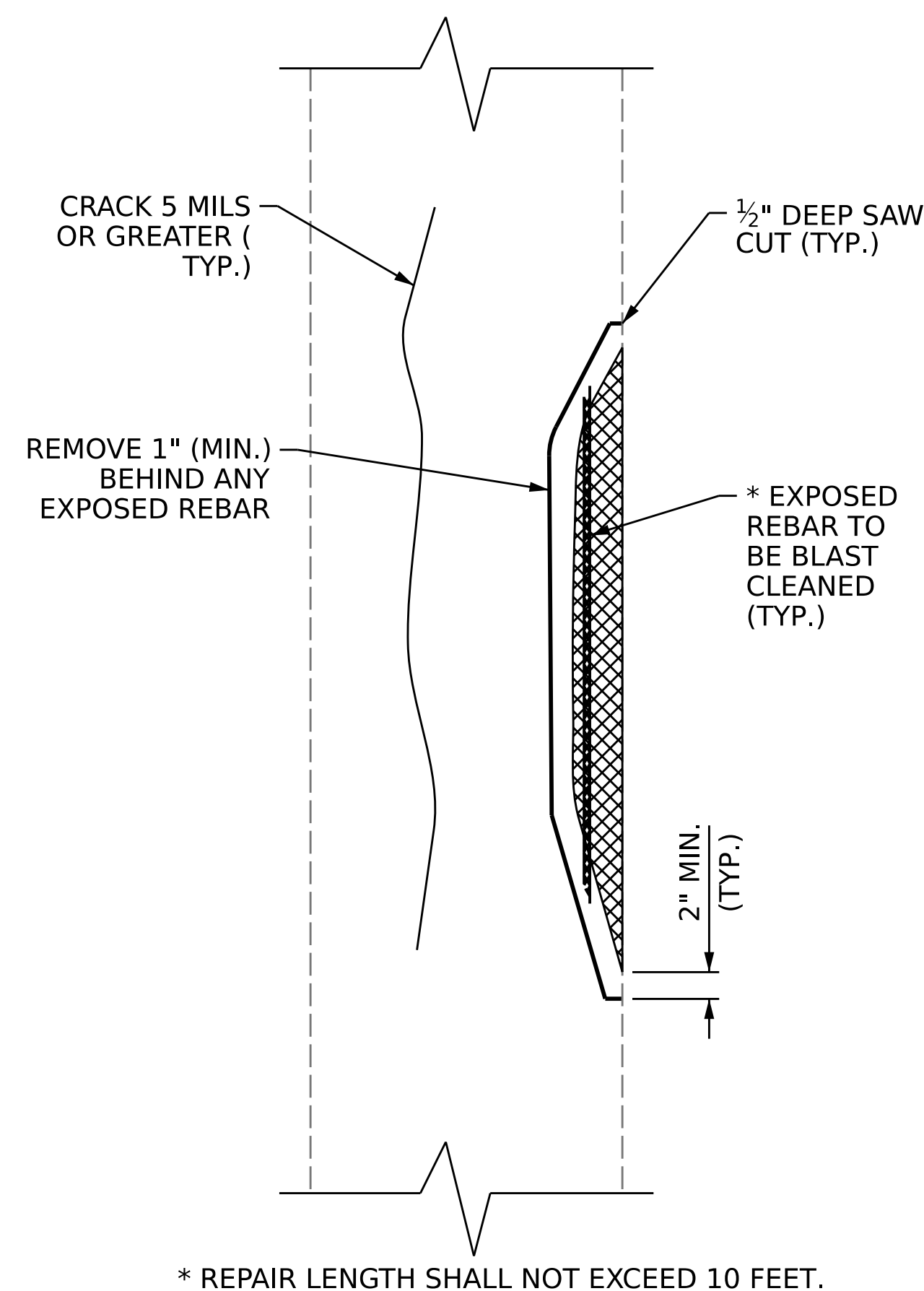
SECTION A-A



BENT CAP REPAIRS

CAP REPAIR

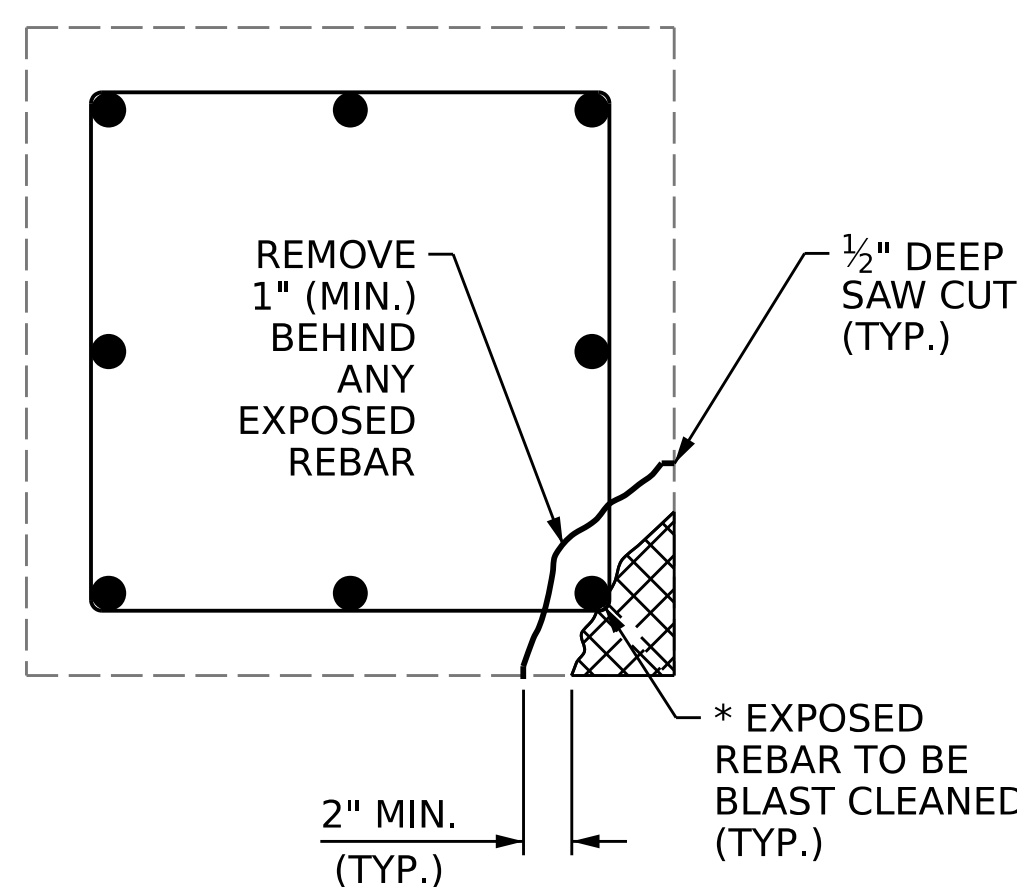
BAR SIZE	MIN. SPLICE LENGTH
#4	2'-4"
#5	2'-9"
#6	4'-0"
#7	5'-3"
#8	6'-9"
#9	8'-6"
#10	10'-11"
#11	13'-4"



ELEVATION OF COLUMN

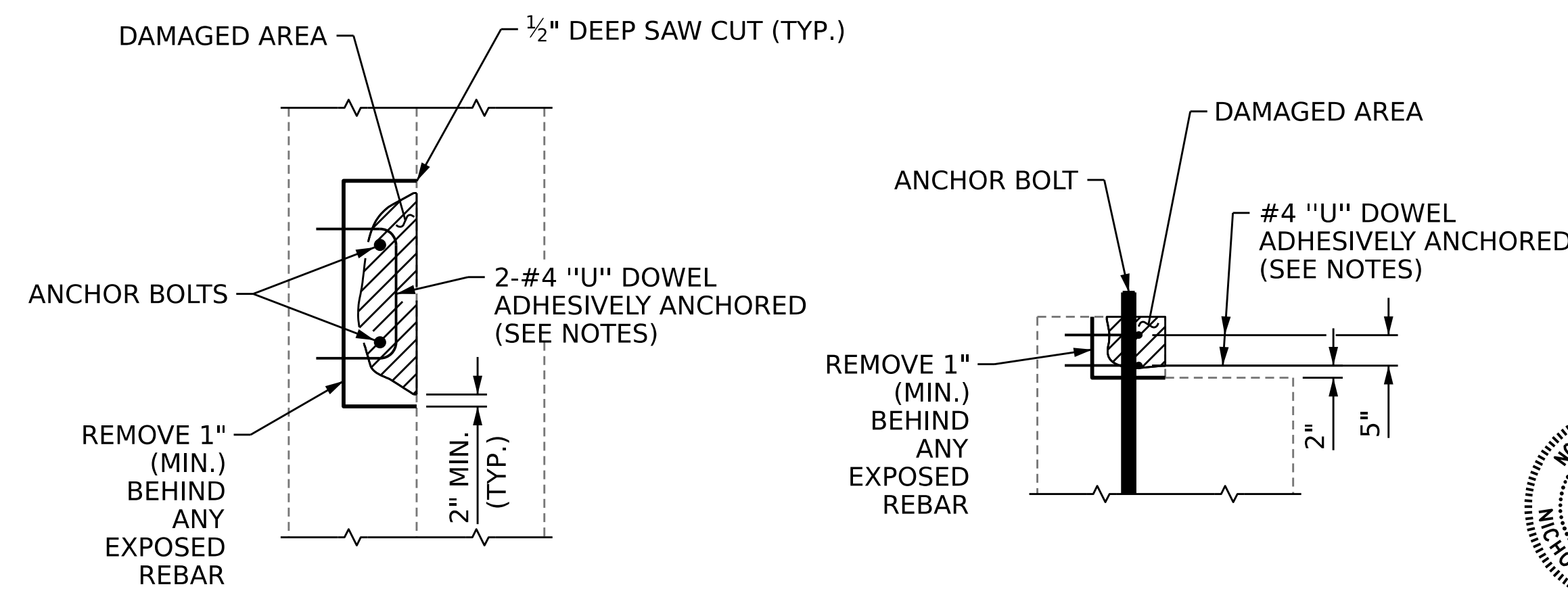
REPAIR KEY

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



PLAN OF COLUMN

COLUMN REPAIR



PLAN

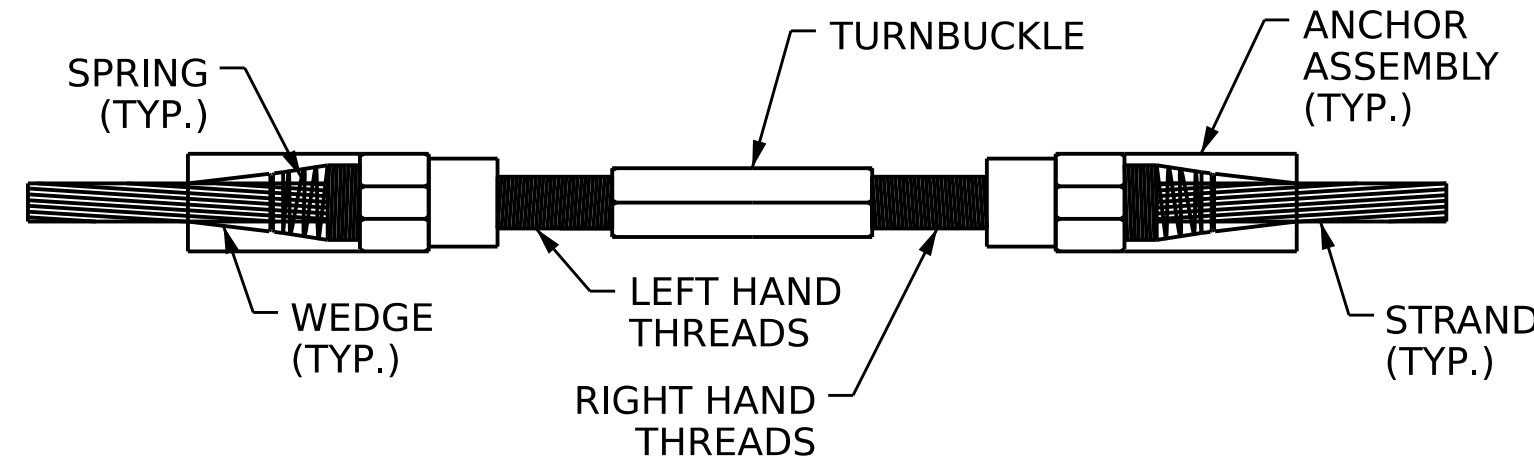
ELEVATION

PEDESTAL WALL REPAIR

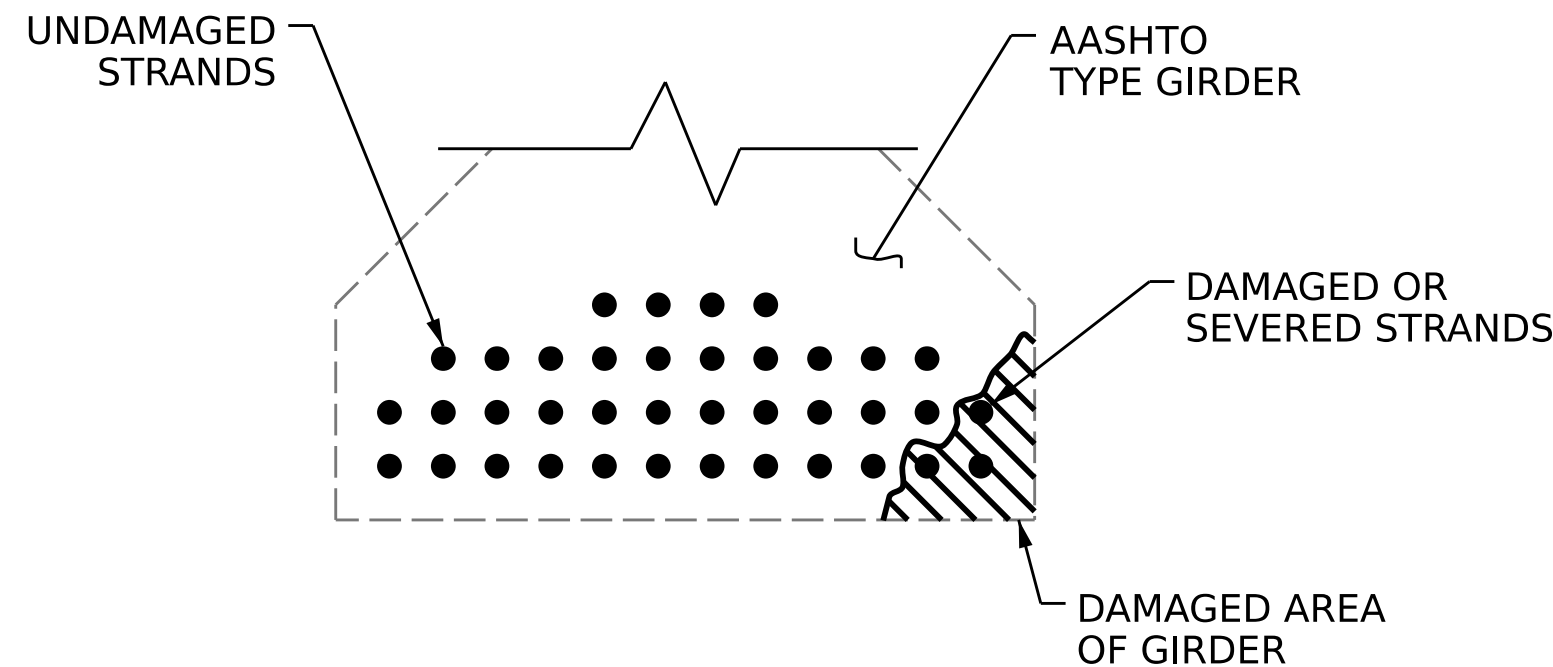
ASSEMBLED BY: N.A. PIERCE DATE: 10/2022
 CHECKED BY: A.Y. GODFREY DATE: 10/2022
 DRAWN BY:
 CHECKED BY:

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

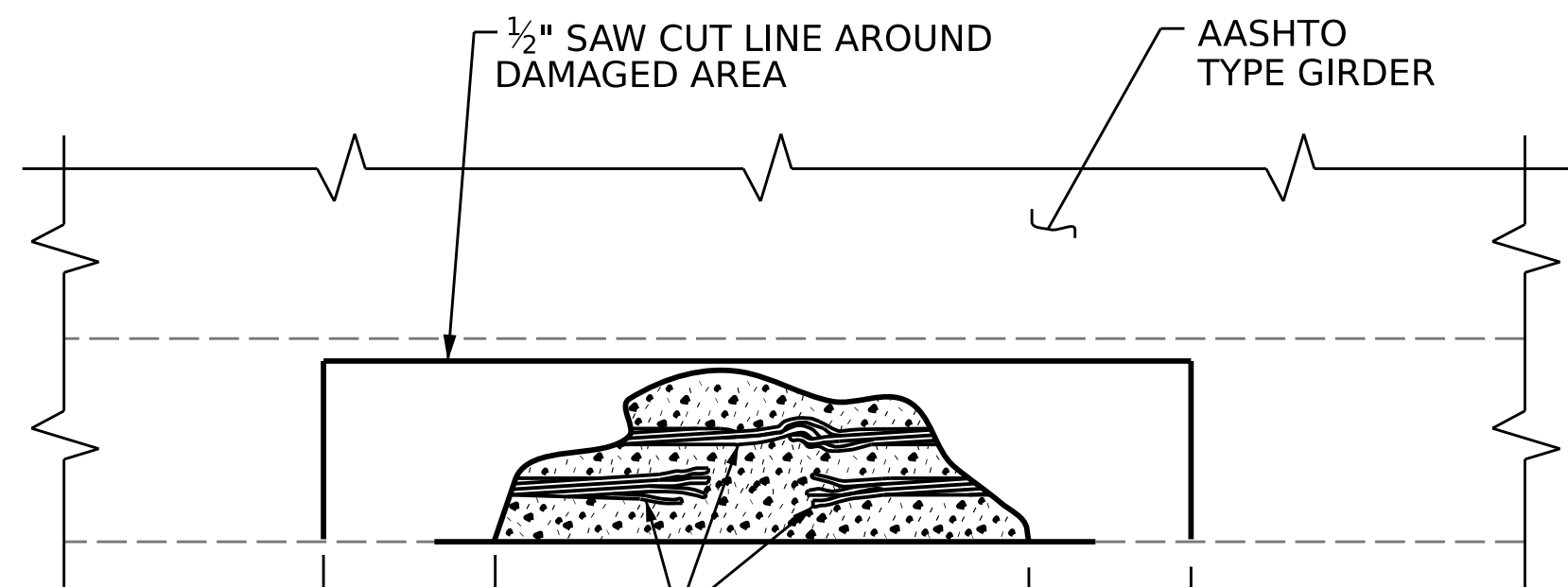
MECHANICAL STRAND SPLICE ASSEMBLY
(ASSEMBLIES MAY VARY DEPENDING ON MANUFACTURER)



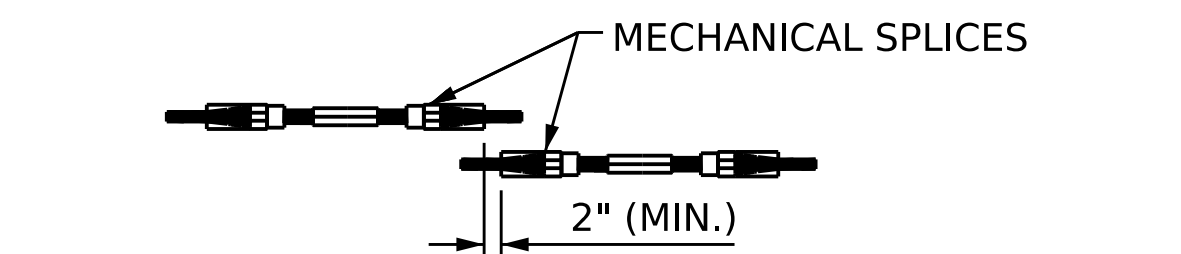
STRAND SPLICE DETAIL



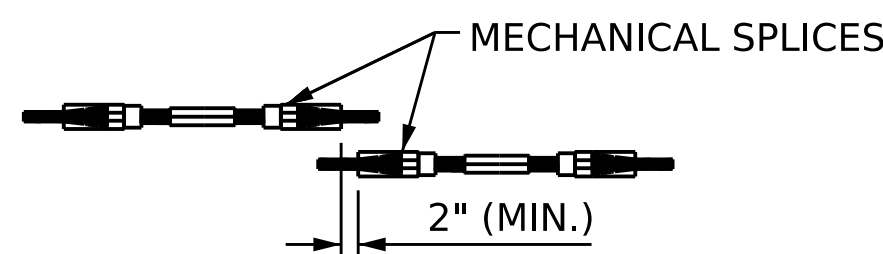
SECTION VIEW OF DAMAGED GIRDER



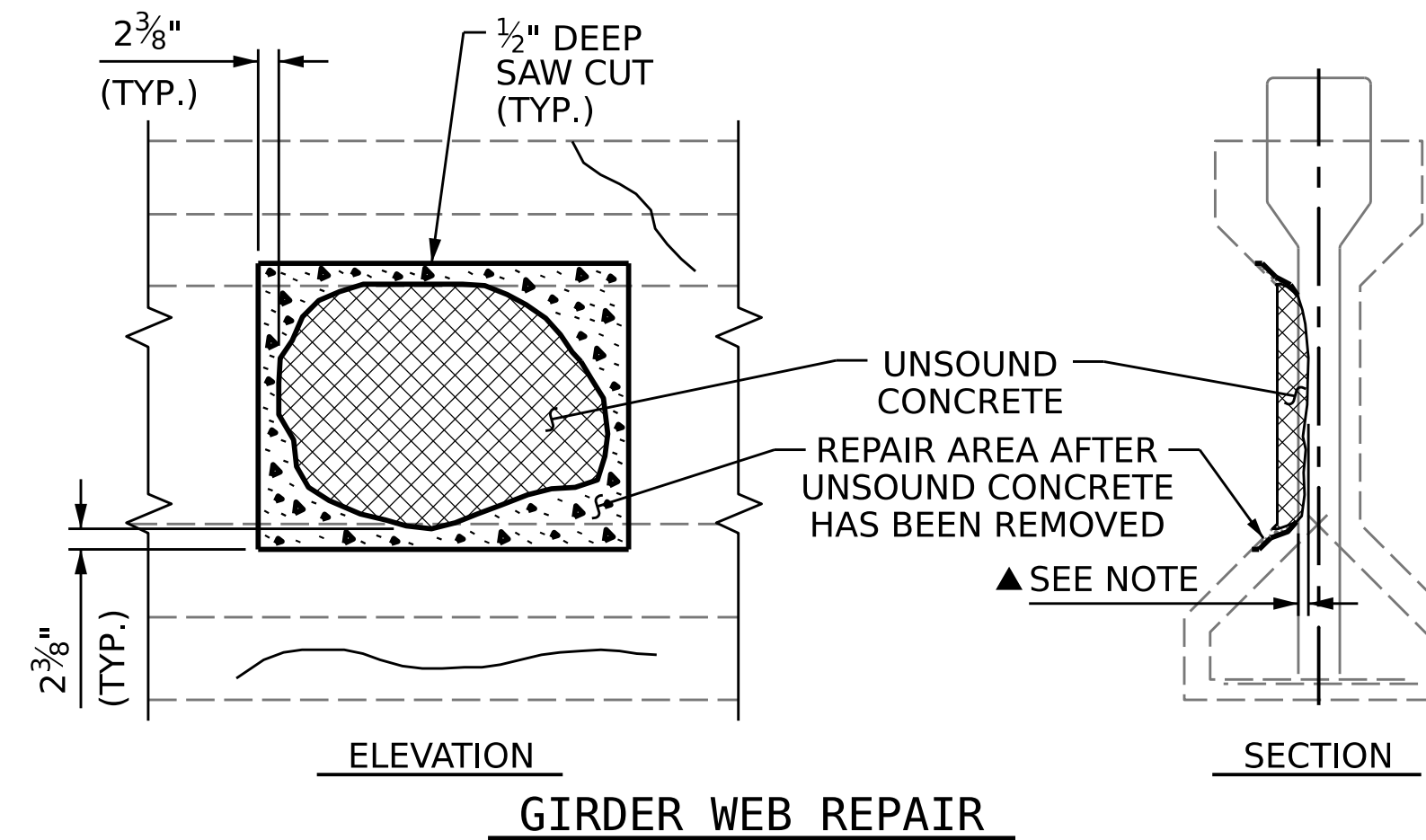
ELEVATION VIEW OF DAMAGED GIRDER



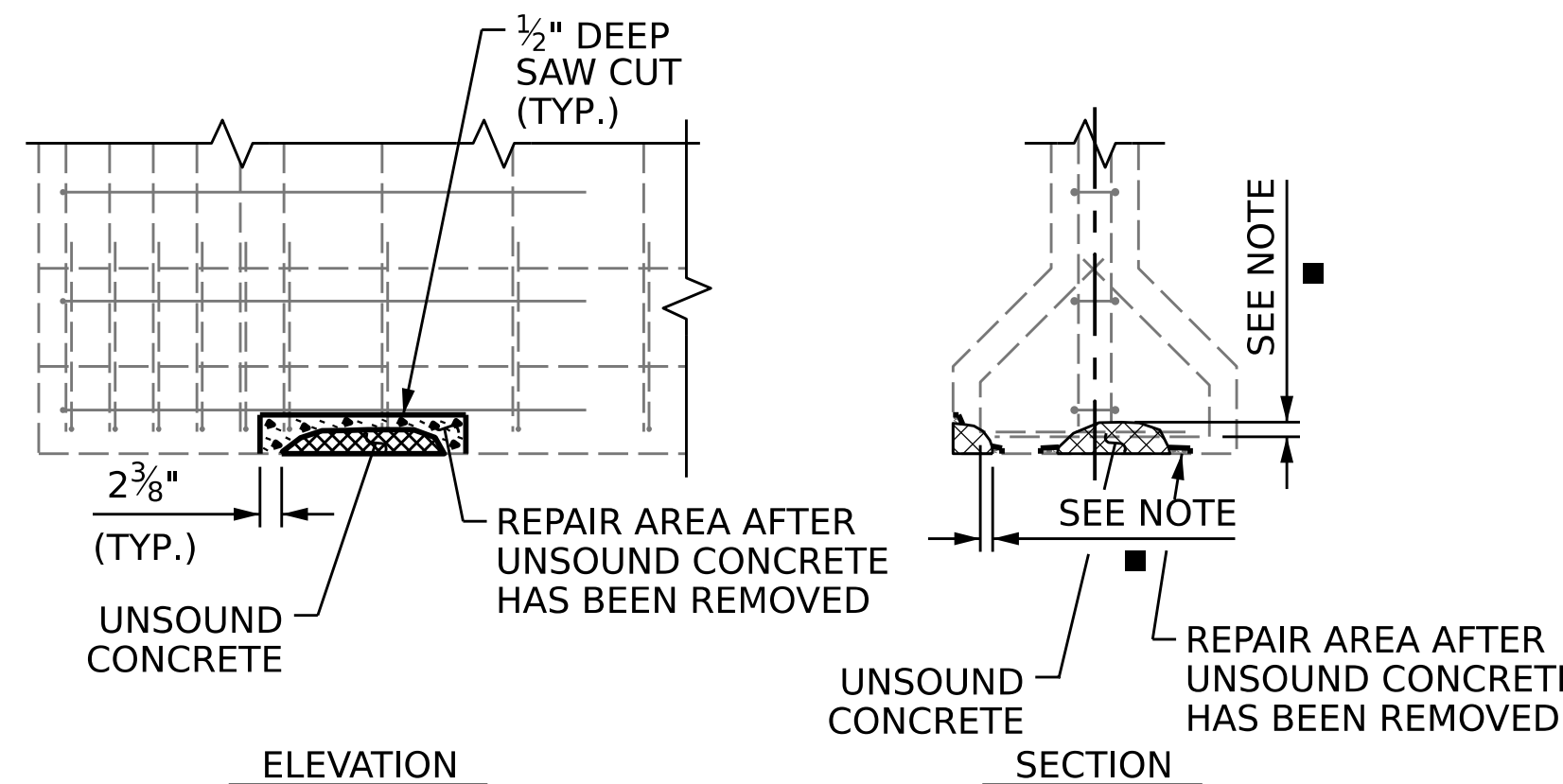
SPLICE OFFSET



STRAND REPAIR DETAILS

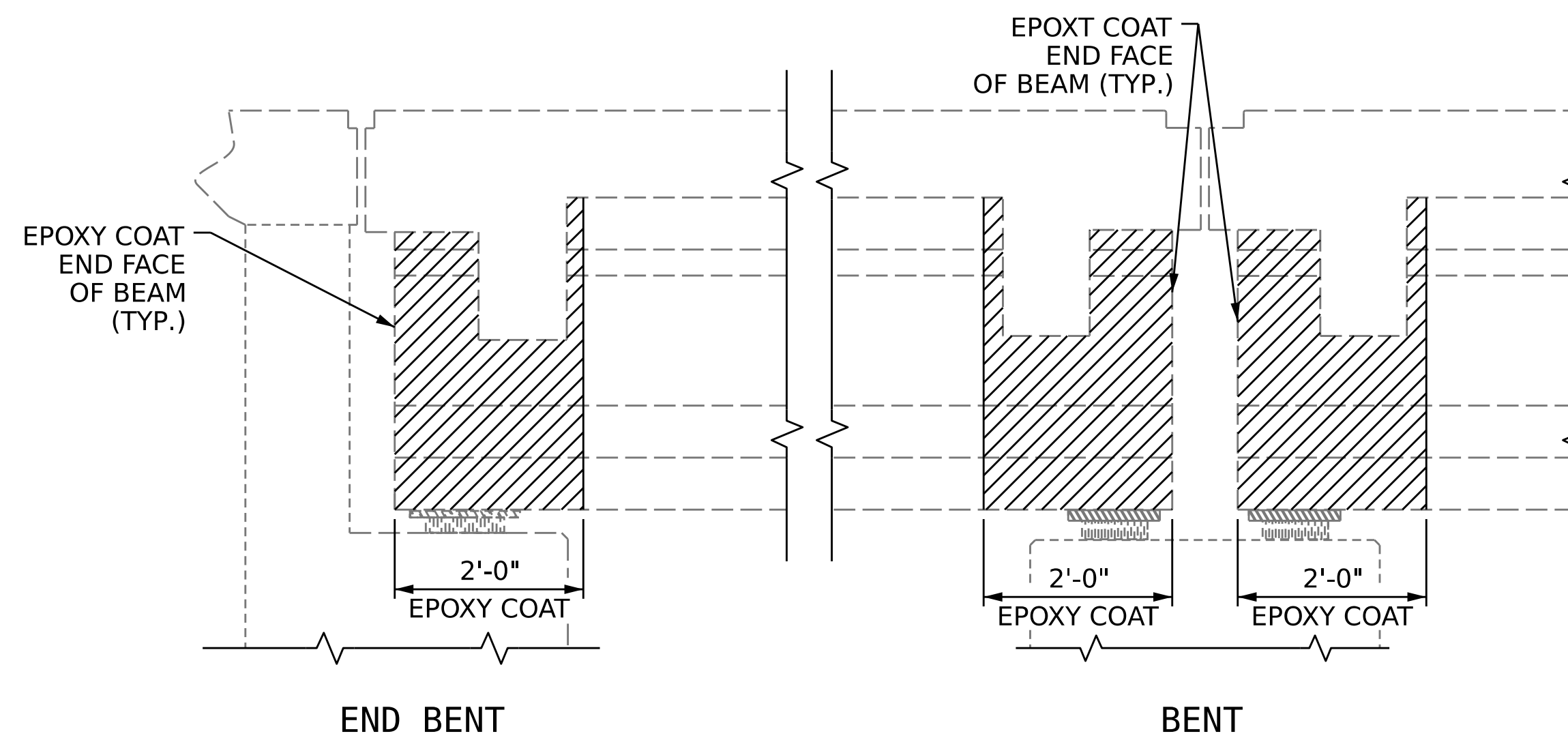
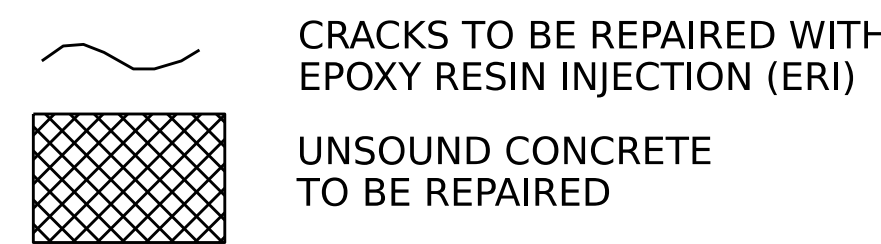


GIRDER WEB REPAIR



GIRDER FLANGE REPAIR

PRESTRESSED GIRDER REPAIR



LIMITS OF EPOXY COATING

NOTES:

- PREPACKAGED MATERIAL IS REQUIRED.
- CONSULT WITH THE ENGINEER TO DETERMINE PRELOADING REQUIREMENTS WHEN REPAIR IS WITHIN THE CENTER REGION OF THE BEAM (0.25L TO 0.75L).
- FOR REPAIRS OVER TRAFFIC AND SHALLOW REPAIRS THAT DO NOT ENGAGE REINFORCEMENT, ANCHOR PATCH MATERIAL USING 1/4" 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.

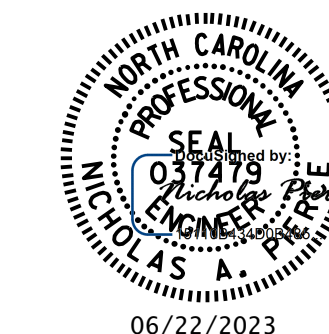
PRESTRESSED GIRDER REPAIR SEQUENCE:

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 1/2".
3. REMOVE CONCRETE WITHIN SAW CUT AREA TO MINIMUM 1/2" 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.
7. 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 2/3 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 1/2" 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.124.3**
DURHAM/WAKE COUNTY
BRIDGE NO. **911084**



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

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

