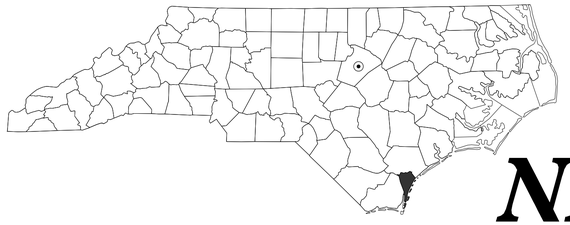
6/9/2023

TIP PROJECT: I-6039

CONTRACT: C204833



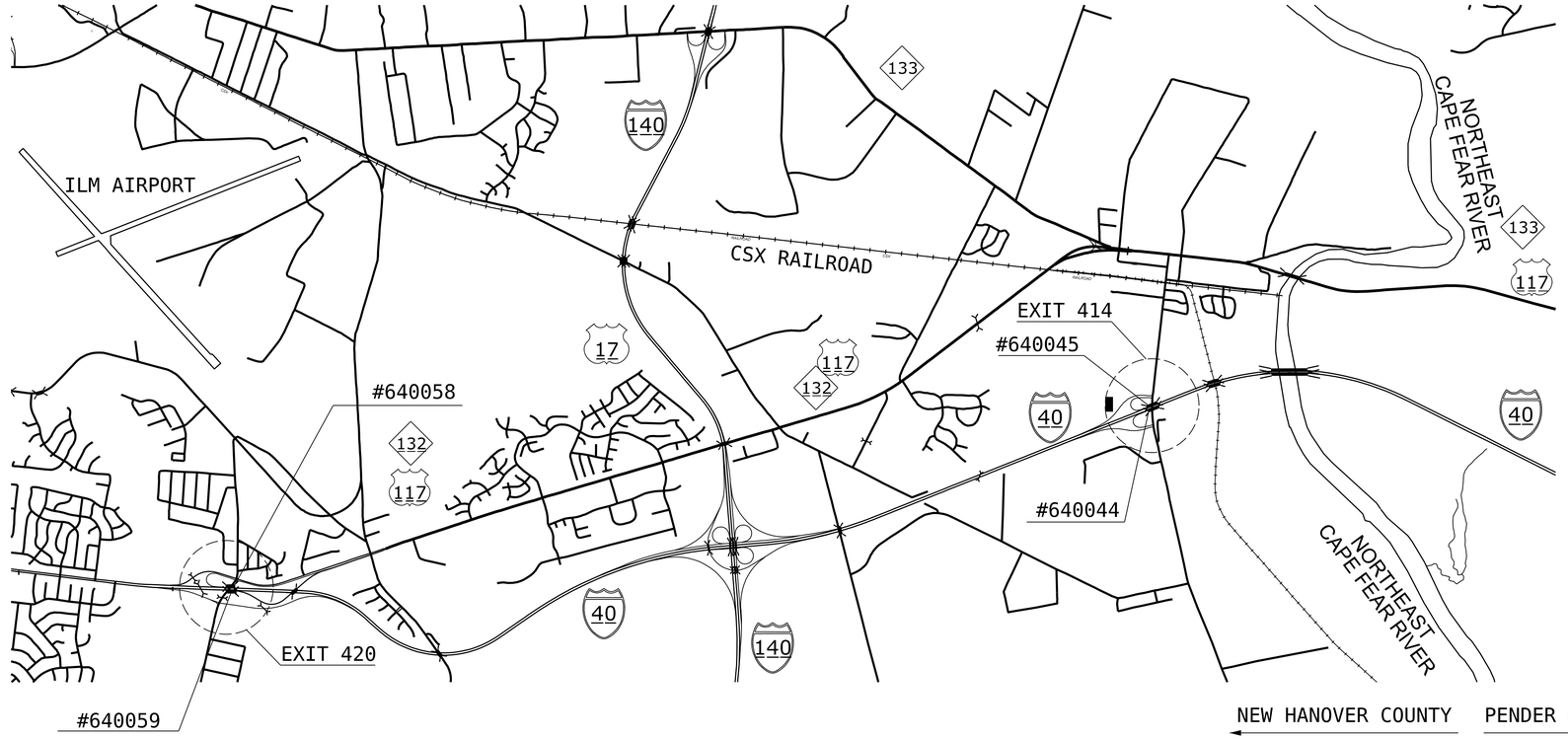
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

NEW HANOVER COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-6039	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
I-6039		P.E.
I-6039		CONST.

LOCATION: BRIDGES: ***#640044, #640045, #640058, #640059***
ON THE I-40 CORRIDOR BETWEEN NC 210 (EXIT 408)
AND GORDON RD (EXIT 420A)



BRIDGE PRESERVATION:
TYPE OF WORK –

BRIDGE RAIL REPAIRS,
GUARDRAIL ANCHOR UNIT REPAIRS,
POLYMER CONCRETE OVERLAY,
CONCRETE DECK REPAIRS,
JOINT REPLACEMENT,
SUPERSTRUCTURE BEARING REPAIRS,
EPOXY COAT CAPS,
REPAIR SILICONE JOINT SEALS AT THE BASE OF COLUMNS,
EROSION REPAIRS,
APPROACH SLAB FOAM INJECTION,
SLOPE PROTECTION FOAM INJECTION,
INSTALL WEEP HOLE FILTERS

STRUCTURES

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DESIGN DATA

BRIDGE #640044 ADT 2019 – 19,000
BRIDGE #640045 ADT 2019 – 19,000
BRIDGE #640058 ADT 2019 – 25,500
BRIDGE #640059 ADT 2019 – 25,500

PROJECT LENGTH

BRIDGE #640044 LENGTH – 0.034 MI
BRIDGE #640045 LENGTH – 0.034 MI
BRIDGE #640058 LENGTH – 0.032 MI
BRIDGE #640059 LENGTH – 0.032 MI

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

2018 STANDARD SPECIFICATIONS

LETTING DATE :

JULY 18, 2023

JACOB H. DUKE, P.E.
PROJECT ENGINEER

FIDEL L. FLORES, E.I.
PROJECT DESIGN ENGINEER

INDEX OF SHEETS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-6039	1A	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
I-6039		P.E.
I-6039		CONST.

TOTAL BILL OF MATERIAL

DESCRIPTION	CONCRETE REPAIRS	EPOXY RESIN INJECTION	GROOVING BRIDGE FLOORS	CLASS II, SURFACE PREPARATION	FOAM JOINT SEALS FOR PRESERVATION	EXPANSION JOINT SEAL REPAIR	SILICONE JOINT SEALANT FOR SLOPE PROTECTION	POLYESTER POLYMER CONCRETE MATERIALS	EPOXY POLYMER CONCRETE MATERIALS (ALTERNATE)	SLOPE PROTECTION VOID FILLING	APPROACH SLAB VOID FILLING	EPOXY COATING	SCARIFYING BRIDGE DECK	SHOTBLASTING BRIDGE DECK	PLACING AND FINISHING POLYMER CONCRETE OVERLAY	RETAINER RING (RR)	EXPANSION BEARING REPAIR (EBR)	WEEP HOLE FILTERS
	CU. FT.	LIN. FT.	SQ. FT.	SQ. YD.	LIN. FT.	LIN. FT.	LIN. FT.	CU. YD.	CU. YD.	LBS.	LBS.	SQ. FT.	SQ. YD.	SQ. YD.	SQ. YD.	EA.	EA.	EA.
640044	-	-	9045	17.4	159	53	220	29.9	29.9	-	1000	612	1075	1075	1075	14	7	16
640045	-	-	9045	11.8	106	106	220	29.9	29.9	-	1000	612	1075	1075	1075	14	7	16
640058	2.6	16	8686	19.6	180	60	236	28.6	28.6	3000	1000	710	1035	1035	1035	-	-	14
640059	2.2	-	8611	13.6	120	120	236	28.4	28.4	3000	1000	710	1026	1026	1026	-	-	14
Totals:	4.8	16	35387	62.4	565	339	912	116.8	116.8	6000	4000	2644	4211	4211	4211	28	14	60

NOTES:

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

CONCRETE FOR DECK REPAIR FOR PC OVERLAY
CLASS III, SURFACE PREPARATION
SHOTCRETE REPAIRS

PROJECT NO. I-6039
NEW HANOVER COUNTY
BRIDGE NO. MULTIPLE
BRIDGES: 640044, 640045, 640058, 640059

KCA KISINGER CAMPO & ASSOCIATES
301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

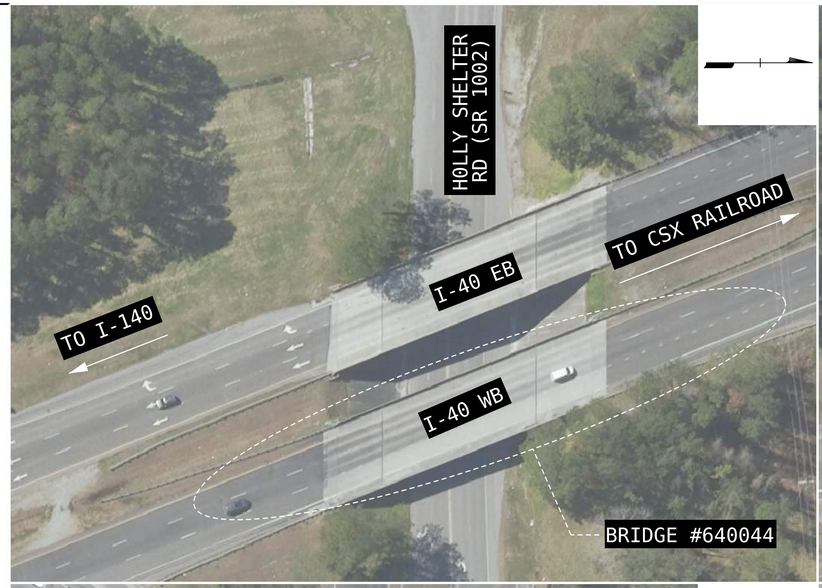
BILL OF MATERIALS

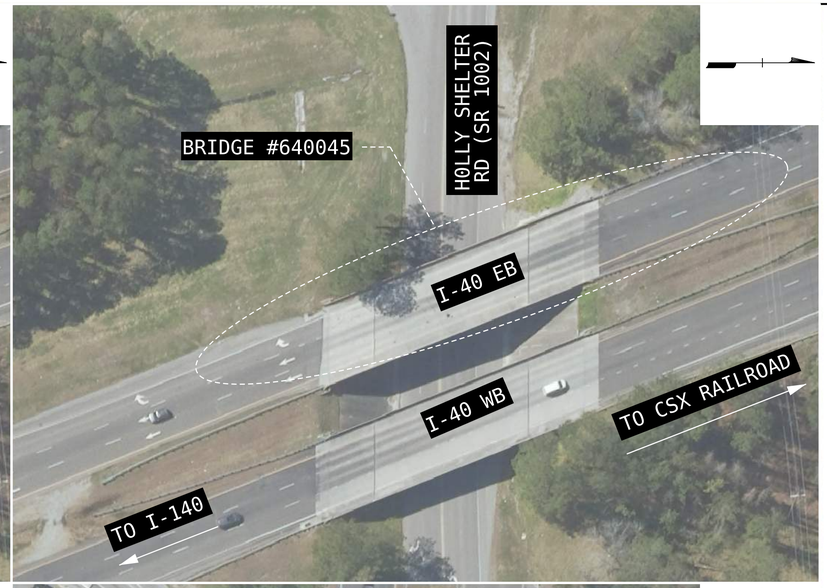
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2
1			3			TOTAL SHEETS
2			4			

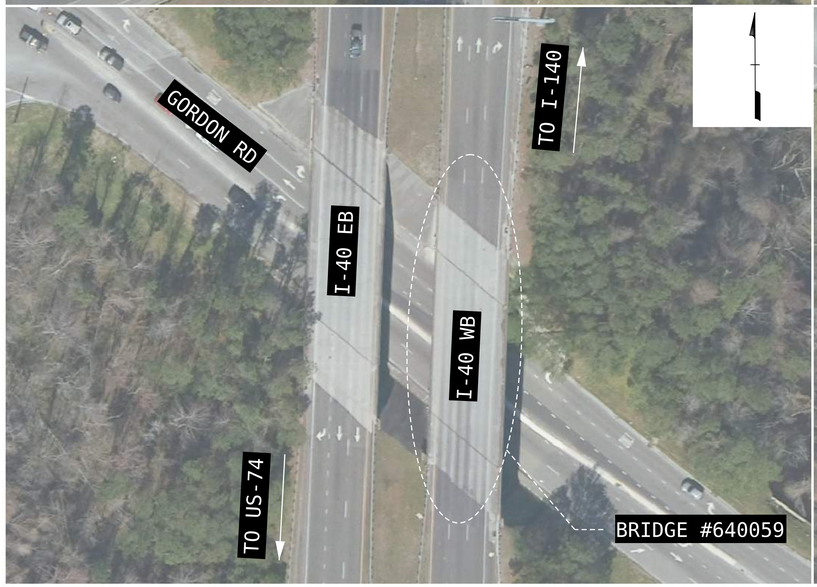
DRAWN BY : JASON M. DEBONE DATE : 01/2023
CHECKED BY : ALLEN J. MCSWAIN DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

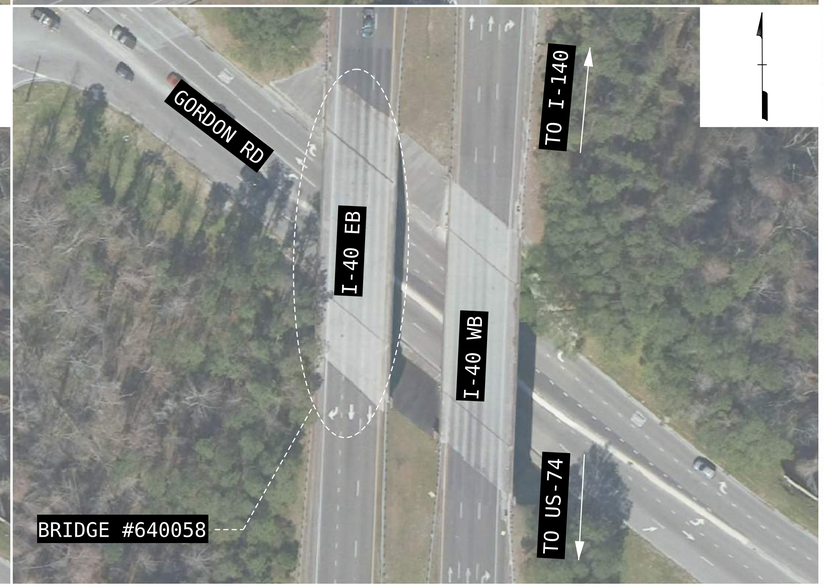
4/17/2023
16039_SMU_BOM.dgn
jduke

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED









LOCATION SKETCHES

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

PROJECT NO. I-6039

NEW HANOVER COUNTY

BRIDGE NO. MULTIPLE

BRIDGES: 640044, 640045, 640058, 640059

DRAWN BY : JASON M. DEBONE DATE : 01/2023
CHECKED BY : AJ MCSWAIN DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

4/17/2023
I6039_SMU_GD01.dgn
jduke

DocuSigned by: JACOB H. DUKE
NORTH CAROLINA PROFESSIONAL SEAL 043777 ENGINEER JACOB H. DUKE
4/17/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

KCA KISINGER CAMPO & ASSOCIATES
301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
BRIDGE LOCATION SKETCHES

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

F.A. PROJECT No. NHPIM-0040(079)

GENERAL NOTES

ASSUMED LIVE LOAD FOR REPAIRS = HL93

GENERAL DRAWING(S) INFORMATION IS TAKEN FROM THE ORIGINAL PLANS AND THE MOST RECENT ROUTINE INSPECTION REPORTS.

ALL BRIDGE ORIENTATIONS CONFORM TO THE EXISTING BRIDGE PLANS/ROUTINE INSPECTION REPORT.

THIS STRUCTURE CONTAINS THE NECESSARY CORROSION PROTECTION.

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

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

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

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

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

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

WORK ON THE BRIDGES SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL BELOW, EXCEPT WHERE THE CONTRACTOR'S PLANS USE PLATFORMS, NETS, SCREENS OR OTHER PROTECTIVE DEVICES TO CATCH THE MATERIAL.

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

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

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

REMOVING VEGETATION AND DEBRIS TO IMPROVE DRAINAGE FROM THE BRIDGES AND SURROUNDING AREAS SHALL BE CONSIDERED INCIDENTAL TO THE VARIOUS PAY ITEMS FOR THIS PROJECT. REMOVE ALL DEBRIS AND VEGETATION FROM BRIDGE DECKS, APPROACH SLABS, IN THE APPROACH ROADWAYS AND FROM DRAINAGE INLETS, AND OTHER LOCATIONS AS DIRECTED BY THE ENGINEER. THE ENGINEER SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THIS WORK.

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

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

FOR EACH BRIDGE SCOPE OF WORK, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH BAR USED. THE SAMPLE BARS SHOULD BE REPLACED BY SPLICED BARS AS SPECIFIED IN THE SAMPLE BAR REPLACEMENT CHART. PAYMENT FOR SAMPLE BARS AND REPLACEMENT REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

FOR FOAM JOINT SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.

FOR SILICONE JOINT SEALANT FOR SLOPE PROTECTION, SEE SPECIAL PROVISIONS.

FOR POLYMER CONCRETE BRIDGE DECK OVERLAY/OVERLAY SURFACE PREPARATION
FOR POLYMER CONCRETE OVERLAY, SEE SPECIAL PROVISIONS.

FOR EXPANSION JOINT SEAL REPAIRS, SEE SPECIAL PROVISIONS.

FOR APPROACH SLAB VOID FILLING, SEE SPECIAL PROVISIONS.

FOR SLOPE PROTECTION VOID FILLING, SEE SPECIAL PROVISIONS.

FOR EPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.

FOR SCARIFYING BRIDGE DECKS AND PLACING AND FINISHING POLYMER CONCRETE OVERLAY, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR WEEP HOLE FILTERS, SEE SPECIAL PROVISIONS.

FOR BEARING REPAIRS, SEE SPECIAL PROVISIONS.

BRIDGE COORDINATES		
BRIDGE	LATITUDE	LONGITUDE
640044	34°21'11.11' N	77°53'5.39' W
640045	34°21'11.13' N	77°53'6.45' W
640058	34°16'39.72' N	77°52'5.66' W
640059	34°16'39.07' N	77°52'4.70' W

SAMPLE BAR REPLACEMENT	
SIZE	LENGTH
#3	6'-2"
#4	7'-4"
#5	8'-6"
#6	9'-8"
#7	10'-10"
#8	12'-0"
#9	13'-2"
#10	14'-6"
#11	15'-10"

NOTE: SAMPLE BAR REPLACEMENT LENGTHS BASED ON 30" (SAMPLE LENGTH) PLUS TWO SPLICE LENGTHS AND Fy = 60ksi.

PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION

DRAWN BY : JASON M. DEBONE DATE : 01/2023
CHECKED BY : ALLEN J. MCSWAIN DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

4/17/2023
16039_SMU_GN01.dgn
jduke

DocuSigned by: Jacob H. Duke
NORTH CAROLINA PROFESSIONAL SEAL 043777 ENGINEER JACOB H DUKE
4/17/2023

KCA KISINGER CAMPO & ASSOCIATES
301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

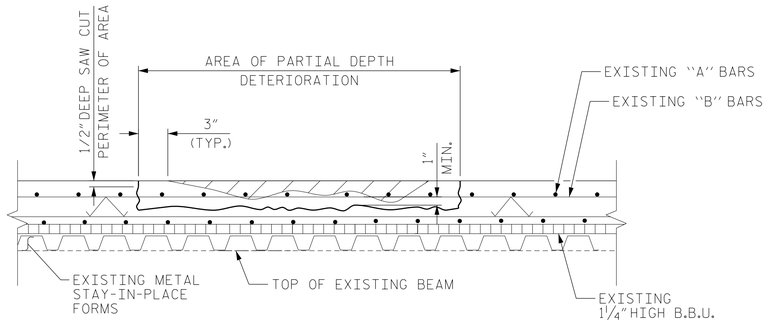
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. I-6039
NEW HANOVER COUNTY
BRIDGE NO. MULTIPLE
BRIDGES: 640044, 640045, 640058, 640059

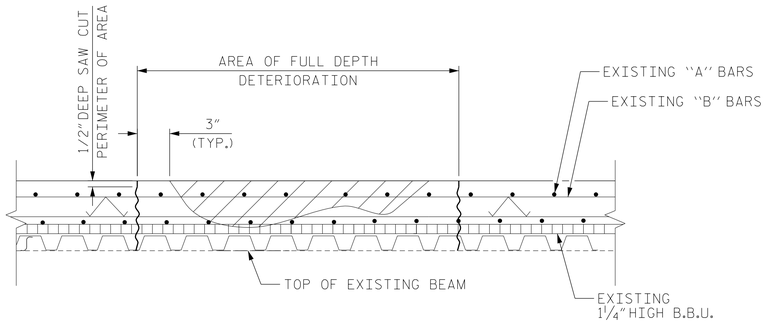
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL NOTES

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



CLASS II (PARTIAL DEPTH) REPAIR



CLASS III (FULL DEPTH) REPAIR

NOTES

FOR AREAS TO BE REPAIRED, SEE "PLAN OF SPAN" SHEETS.

ALL DECK REPAIRS SHALL BE COMPLETED PRIOR TO PLACEMENT OF OVERLAY.

FOR CLASS II AND CLASS III SURFACE PREPARATION, SEE "OVERLAY SURFACE PREPARATIONS" SPECIAL PROVISION.

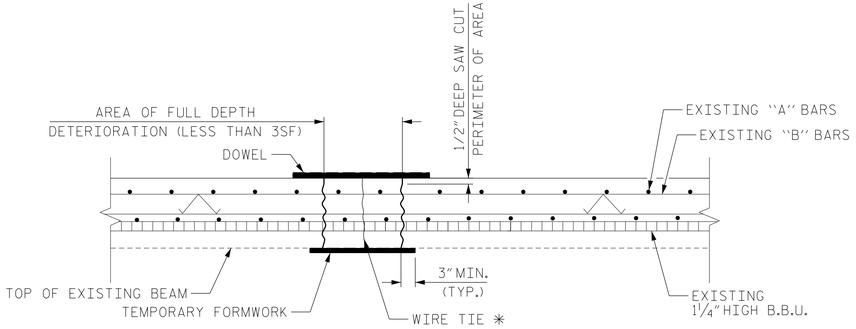
FOR CONCRETE FOR DECK REPAIR, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIR, SEE SPECIAL PROVISIONS.

THE CONTRACTOR SHALL SUBMIT WORKING DRAWINGS TO THE ENGINEER FOR APPROVAL PRIOR TO STARTING WORK FOR TEMPORARY FORMWORK. FOR SUBMITTALS OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

UPON REMOVAL OF TEMPORARY FORMWORK, ALL VOIDS AND HONEYCOMBS ON THE UNDERSIDE OF DECK SURFACE SHALL BE FILLED WITH THE SAME MATERIAL AS USED FOR THE PATCH, AND FINISHED TO CONFORM TO THE SURROUNDING CONCRETE SURFACE.

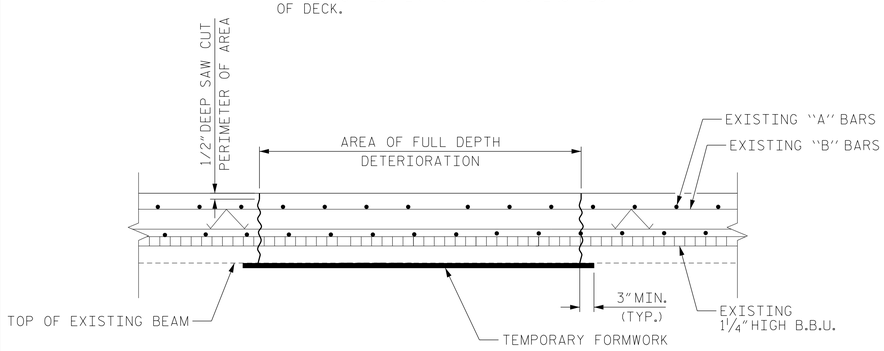
NO FORMWORK SHALL BE LEFT IN PLACE.



FULL DEPTH REPAIR WITH TEMPORARY FORMWORK

(FOR AREAS OF DETERIORATION EQUAL TO OR LESS THAN 3SF)

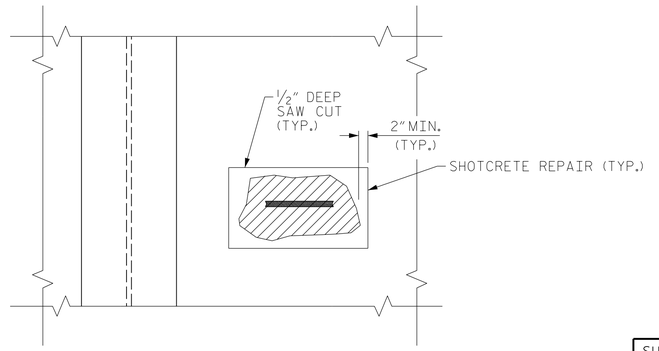
* WIRE TIE TO BE KNOTTED BELOW TEMPORARY FORMWORK AND ATTACHED TO DOWEL THAT IS WIDER THAN FORMED FULL DEPTH HOLE. ROTATE DOWEL TO TIGHTEN FORMWORK AGAINST BOTTOM OF DECK.



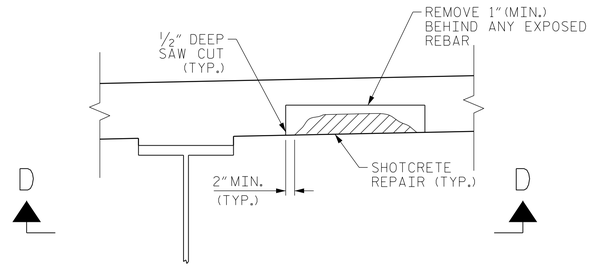
FULL DEPTH REPAIR WITH TEMPORARY FORMWORK

(FOR AREAS OF DETERIORATION GREATER THAN 3SF)

AREA OF DETERIORATION

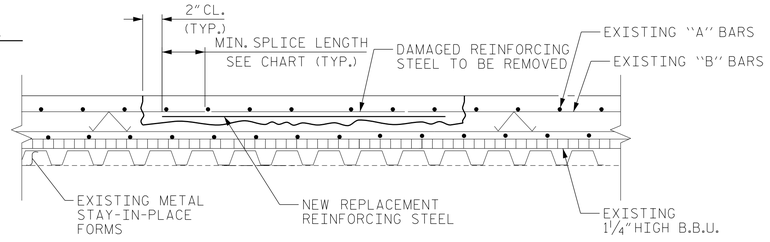


SECTION D-D



TYPICAL SECTION

UNDERSIDE OF DECK REPAIR



REINFORCING STEEL REPAIR

SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS

BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPET, AND BARRIER RAIL		APPROACH SLABS		PARAPET AND BARRIER RAIL
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#4	2'-0"	1'-9"	2'-0"	1'-9"	2'-9"
#5	2'-6"	2'-2"	2'-6"	2'-2"	3'-5"
#6	3'-0"	2'-7"	3'-10"	2'-7"	4'-4"
#7	5'-3"	3'-6"			
#8	6'-10"	4'-7"			

PROJECT NO. I-6039

NEW HANOVER COUNTY

BRIDGE NO. MULTIPLE

BRIDGES: 640044, 640045, 640058, 640059

DocuSigned by: JACOB H. DUKE NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 043777 4/17/2023

KCA KISINGER CAMPO & ASSOCIATES

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

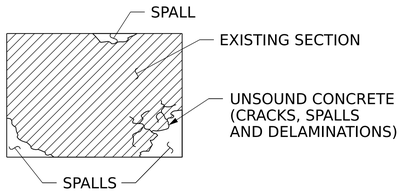
STANDARD

DECK REPAIR DETAILS

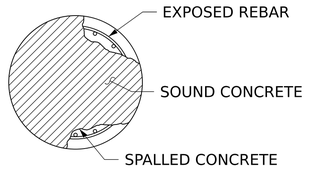
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S5
1			3			TOTAL SHEETS
2			4			

DRAWN BY : JASON M. DEBONE DATE : 01/2023
CHECKED BY : ALLEN J. MCSWAIN DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

4/17/2023
I6039_SMU_DRD01.dgn
jduke



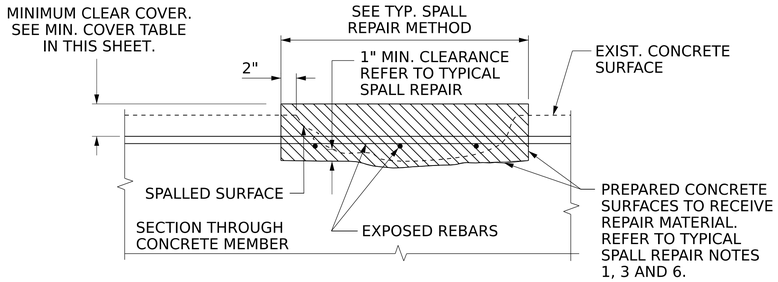
TYPICAL
DELAMINATIONS AND SPALLS



TYPICAL
SPALL WITH EXPOSED REBAR

SIMPLE PATCH CONFIGURATION

AT CORNER LOCATIONS PROVIDE RIGHT ANGLE CUTS. PATCH CONFIGURATION SHALL BE KEPT AS SIMPLE AS POSSIBLE. INDIVIDUAL REPAIR AREAS WITHIN 2 FEET SHALL BE JOINED AT THE DIRECTION OF THE ENGINEER.



EXPOSING AND UNDERCUTTING REINFORCING STEEL

APPLICABLE TO HORIZONTAL, VERTICAL, AND OVERHEAD LOCATIONS

MIN. CONCRETE COVER TABLE

STRUCTURE ELEMENT	COVER	
	ALL OTHER SITES	CORROSIVE SITES
Bridge Deck to top of slab to bottom of slab	2½" (65mm) 1¼" (32mm)	2½" (65mm) 2½" (65mm)
Footings and Pile Caps to top face to all other faces	2" (50mm) 3" (75mm)	4" (100mm) 4" (100mm)
Bent Caps to bottom of cap to ends of cap to top of cap to sides of cap	3" (75mm) 2" (50mm) 2" (50mm) 2" (50mm)	4" (100mm) 3" (75mm) 3" (75mm) 3" (75mm)
Columns (spiral)	2" (50mm)	3" (75mm)
Drilled Piers (spiral)	5" (125mm)**	6" (150mm)**
Culverts to bottom of bootom slabs and footings to all other faces	3" (75mm) 2" (50mm)	3" (75mm) 2" (50mm)
Approach Slabs	2" (50mm)	2" (50mm)

** IN THE EVENT THE DRILLED PIER EXTENDS INTO A BENT CAP OR PILE CAP, THE COVER MAY BE REDUCED TO 4"

TYPICAL SPALL REPAIR

1. FOR CONCRETE RESTORATION, REMOVE AND REPAIR UNSOUND CONCRETE FROM AREAS TO BE REPAIRED IN ACCORDANCE WITH THIS SHEET AND THE PROJECT SPECIAL PROVISIONS. AREAS WELL ADHERED TO EXISTING STRAND OR REINFORCEMENT SHALL REMAIN.
2. ALL UNSOUND CONCRETE MUST BE REMOVED. HOWEVER, PRESTRESSED STRANDS SHOULD NOT BE DISTURBED UNLESS ABSOLUTELY NECESSARY. USE EXTREME CARE TO NOT DAMAGE STRANDS.
3. ALL REPAIRS SHALL BE MARKED FOR APPROVAL OF APPROXIMATE PERIMETER PRIOR TO INITIATION OF WORK.
4. THE CONTRACTOR SHALL SUBMIT A PLAN FOR CONTROL AND DISPOSAL OF DEBRIS TO THE ENGINEER FOR APPROVAL.
5. ANY REINFORCEMENT WHICH IS LOOSE SHALL BE SECURED IN PLACE BY TYING TO OTHER SECURED BARS OR BY OTHER APPROVED METHODS. LAP SPLICES SHALL BE INSTALLED IN ACCORDANCE WITH THE TABLE BELOW.
6. CLEAN EXPOSED REBARS AND ANY LOOSE CONCRETE OR ABRASIVES BY SANDBLASTING OR APPROVED ALTERNATE. CLEANED STEEL SHALL NOT BE LEFT EXPOSED FOR MORE THAN 72 HOURS PRIOR TO ENCAPSULATION OF CONCRETE.
7. AN APPROVED BONDING AGENT SHALL BE USED ON ALL EXPOSED CONCRETE SURFACES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS BEFORE THE REPAIR MATERIAL IS APPLIED.
8. FILL VOIDS WITH REPAIR MATERIAL IN ACCORDANCE WITH THE PROJECT SPECIAL PROVISIONS AND NCDOT SPECIFICATIONS. NOTE THAT ANY REPAIR MATERIAL APPLIED TO OVERHEAD LOCATIONS SHALL BE SPECIFICALLY DESIGNATED FOR OVERHEAD USE BY THE MANUFACTURER'S SPECIFICATIONS.
9. FOR OVERHEAD SPALL REPAIRS, EXCAVATE CONCRETE TO A MINIMUM DEPTH OF 2 INCHES BEHIND FIRST MAT OF REINFORCING STEEL.

TYPICAL CRACK REPAIR

1. OBTAIN ENGINEER'S APPROVAL TO CARRY OUT CRACK REPAIR (IN LIEU OF SPALL REPAIR) FOR CASES WHERE ADJACENT CONCRETE IS OTHERWISE SOUND AND CRACKING IS NOT A RESULT OF CORRODING REINFORCEMENT.
2. ADDRESS CRACKS IN NEW CONSTRUCTION IN ACCORDANCE WITH PROJECT SPECIAL PROVISIONS. ADDRESS EXISTING CRACKS IN ACCORDANCE WITH THIS SHEET AND PROJECT SPECIAL PROVISIONS.
3. REMOVE UNSOUND CONCRETE FROM CRACK AREA.
4. THE CONTRACTOR SHALL SUBMIT A PLAN FOR CONTROL AND DISPOSAL OF DEBRIS TO THE ENGINEER FOR APPROVAL.
5. ENGINEER TO APPROVE CRACK AND CAP SEAL MATERIAL PRIOR TO BEGINNING OF CONSTRUCTION.
6. APPLY CLASS II FINISH AT COMPLETION OF CRACK REPAIR TO REMOVE FINS OR KNOBS.

DOWEL DETAILS & NOTES

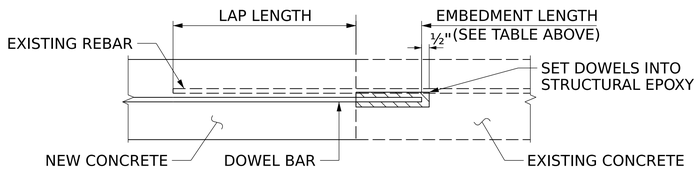
DOWEL DIMENSIONS (UNLESS OTHERWISE NOTED)			
DOWEL SIZE	HOLE DIAMETER	EMBEDMENT LENGTH	MIN LAP LENGTH
4	⅝"	8"	1'-9"
5	¾"	9"	2'-2"
6	⅞"	11"	2'-7"
8	1⅛"	1'-4"	4'-6"

NOTES:

ANY REQUIRED DOWEL HOLES SHALL BE DRILLED INTO EXISTING CONCRETE ACCORDING TO THE DETAIL AND NCDOT SPECIFICATIONS.

NOTIFY THE ENGINEER OF ANY BROKEN BARS OR BARS WHICH ARE DETERMINED TO HAVE A SECTION LOSS OF 10% OR GREATER.

INSTALL DOWELS IN ACCORDANCE WITH NCDOT SPECIFICATIONS.



CONCRETE REPAIR NOTES

1. PERFORM A SOUNDING SURVEY IN THE PRESENCE OF THE ENGINEER TO IDENTIFY ALL LOCATIONS IN NEED OF CONCRETE REPAIR.
2. GAIN CONCURRENCE ON ALL REPAIR AREAS AT EACH LOCATION PRIOR TO COMMENCING WORK.
3. THE DETERIORATED AREAS SHOWN ON OTHER SHEETS ARE BASED ON THE BRIDGE INSPECTION REPORT, AND PARTIAL FIELD REVIEWS OF THE STRUCTURE. AS SUCH, THEY ARE FOR INFORMATIONAL PURPOSES, SUBJECT TO CHANGE BASED ON CONTINUING DETERIORATION.
4. EXTEND REPAIR AREAS A MINIMUM OF 2" INTO SOUND CONCRETE BEYOND EDGE OF SPALLS AND SQUARE OFF AREAS IN ACCORDANCE WITH DETAILS ON THIS SHEET.
5. 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.
6. THE CONTRACTOR SHALL REMOVE THE DETERIORATED CONCRETE IN ACCORDANCE WITH THE GUIDELINES SET IN THESE NOTES, IN THE PROJECT SPECIAL PROVISIONS, AND THE STANDARD SPECIFICATIONS.
7. REMOVE UNSOUND CONCRETE TO THE EXTENT NECESSARY. MINIMMUM OF 1" BEHIND REBAR AND MINIMUM OF 2" CLEARANCE TO SAWCUT.
8. REINFORCING STEEL, WHICH IS DETERMINED BY THE ENGINEER TO BE REPLACED, SHALL BE REMOVED TO A POINT WHERE IT IS SOUND. THE PATCH SHALL EXTEND A SUFFICIENT DISTANCE BEYOND THIS POINT TO DEVELOP A SPLICE LENGTH SPECIFIED IN THE TABLE ON THIS SHEET.
9. FOR REPAIRS OVER TRAFFIC AND SHALLOW REPAIRS THAT DO NOT ENGAGE REINFORCEMENT, ANCHOR PATCH MATERIAL USING ¼" GALVANIZED BOLTS, EPOXY ANCHORED WITH 2" EMBEDMENT. PLACE BOLTS IN A 6" GRID. USE A LATEX OR EPOXY PATCH MATERIAL FOR IMPROVED BOND. MASONRY ANCHORS ARE ACCEPTABLE ALSO, SUBMIT PLAN IF USING MASONRY ANCHORS.
10. CONCRETE COVER SHOWN IN THE PLANS DOES NOT INCLUDE PLACEMENT OR FABRICATION TOLERANCES UNLESS SHOWN AS "MINIMUM COVER". SEE NCDOT SPECIFICATIONS FOR ALLOWABLE REINFORCEMENT PLACEMENT TOLERANCES.
11. WHEN PROPOSED CONCRETE REPAIRS (OR DETERMINED LOCATIONS) ARE ADJACENT TO A CORNER, REPAIR ON THE ADJACENT EDGE SHOULD BE ANTICIPATED IN ADDITION TO THE AREA SHOWN ON SUBSTRUCTURE CONCRETE REPAIR SHEETS. THE CONTRACTOR IS RESPONSIBLE FOR THIS REPAIR AT ALL LOCATIONS REGARDLESS OF CALL-OUT(S) ON RESPECTIVE SHEET(S).
12. FINISH CONCRETE SURFACES IN ACCORDANCE WITH THE LATEST NCDOT SPECIFICATIONS. MATCH EXISTING FINISH ON ALL EXPOSED EDGES UNLESS OTHERWISE NOTED. A CLASS 5 FINISH COATING SHALL BE APPLIED TO THE BEAM ENDS WHERE CONCRETE REPAIRS HAVE BEEN PERFORMED, MATCHING THE COLOR OF SURROUNDING CONCRETE.
13. ALL REINFORCING STEEL SHALL BE ASTM A615-96, GRADE 60. REINFORCEMENT DETAIL DIMENSIONS ARE OUT-TO-OUT OF BARS. ALL DIMENSIONS PERTAINING TO LOCATION OF REINFORCEMENT ARE TO CENTERLINE OF BARS EXCEPT WHERE THE CLEAR DIMENSION IS SHOWN TO FACE OF CONCRETE. ANY DAMAGE TO EXISTING REINFORCING STEEL, DURING CONTRACTOR'S OPERATIONS, SHALL BE REPAIRED AS DIRECTED BY THE ENGINEER AND PERFORMED AT NO ADDITIONAL COST TO THE DEPARTMENT.
14. FOR ADHESIVELY ANCHORED DOWELS OR ANCHOR BOLTS, SEE STANDARD SPECIFICATIONS.
15. FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.
16. FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.
17. FOR EPOXY RESIN INJECTION (ERI), SEE SPECIAL PROVISIONS.

LAP SPLICE TABLE	
BAR SIZE	LAP SPLICE LENGTH
4	1'-9"
5	2'-2"
6	2'-7"
7	3'-6"
8	4'-6"
9	5'-10"
10	7'-4"

BRIDGES: 640044, 640045, 640058, 640059

PROJECT NO. I-6039

NEW HANOVER COUNTY

BRIDGE NO. MULTIPLE

SHEET 1 OF 2

KISINGER CAMPO & ASSOCIATES

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

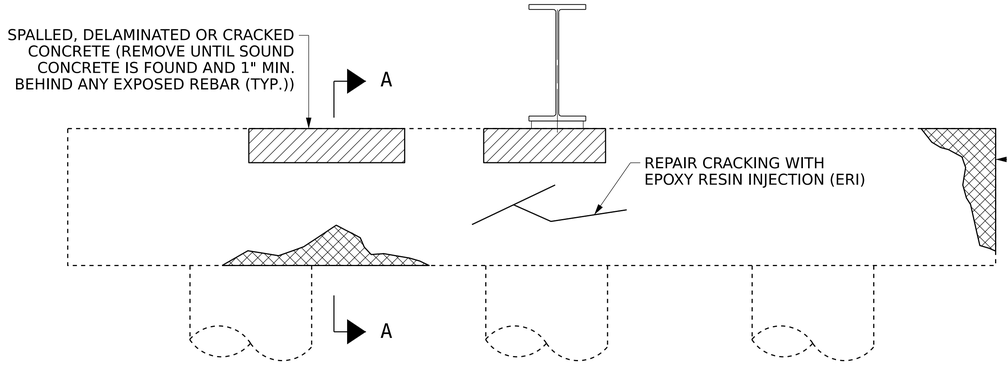
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONCRETE RESTORATION DETAILS

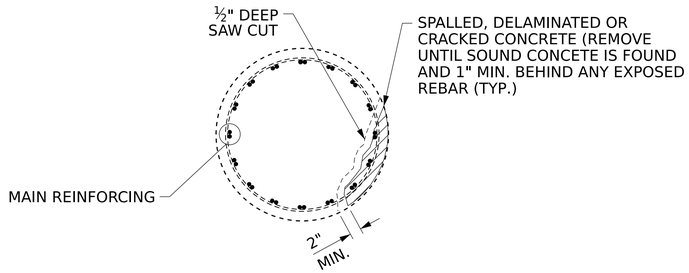
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S6
1			3			TOTAL SHEETS
2			4			

DRAWN BY : JASON M. DEBONE DATE : 01/2023
CHECKED BY : ALLEN J. MCSWAIN DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

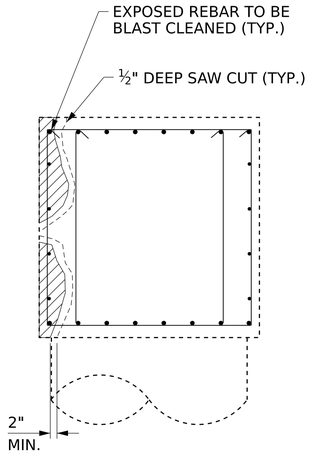
4/17/2023
I6039_SMU_CR01.dgn
jduke



CAP REPAIRS

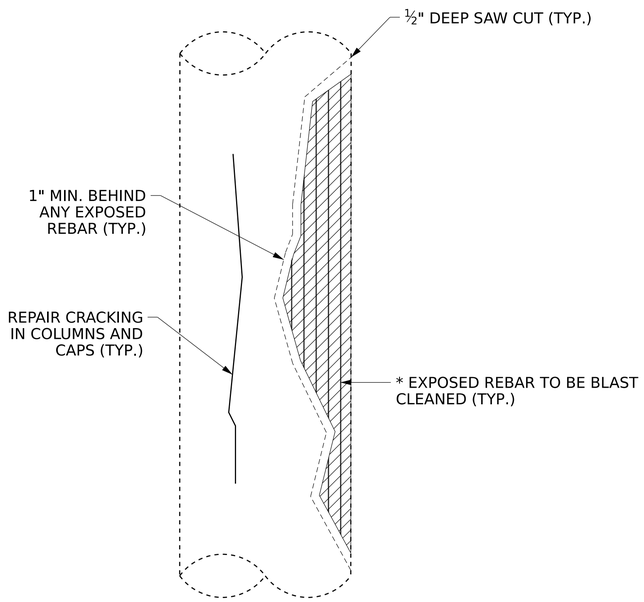


PLAN OF CIRCULAR COLUMN



SECTION A-A

BENT CAP REPAIRS



ELEVATION OF COLUMN

* REPAIR LENGTH SHALL NOT EXCEED 10 VERTICAL FEET AT ONCE OR 1/2 COLUMN DIAMETERS

COLUMN REPAIRS

NOTES:

1. WORK THIS SHEET WITH REPAIR METHODS AND CONCRETE REPAIR NOTES IN ''CONCRETE RESTORATION DETAILS'' SHEET 1.
2. TYPICAL BENT CAP REPAIRS ARE SHOWN IN THIS SHEET. REPAIR DETAILS SIMILAR FOR END BENT CAPS.
3. 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.
4. THE CONTRACTOR SHALL REMOVE THE DETERIORATED CONCRETE IN ACCORDANCE WITH THE GUIDELINES SET IN THESE NOTES, IN THE SPECIAL PROVISIONS, AND THE STANDARD SPECIFICATIONS.
5. REMOVE UNSOUND CONCRETE TO THE EXTENT NECESSARY, A MINIMUM OF 1" BEHIND REBAR AND MINIMUM CLEARANCE OF 2" TO SAWCUT.
6. REINFORCING STEEL WHICH IS DETERMINED BY THE ENGINEER TO BE REPLACED, SHALL BE REMOVED TO A POINT WHERE IT IS SOUND. THE PATCH SHALL EXTEND A SUFFICIENT DISTANCE BEYOND THIS POINT TO DEVELOP A SPLICE LENGTH SPECIFIED IN THE TABLE ON THIS SHEET.
7. IF ANY AREA IS DETERMINED TO BE UNSTABLE DURING THE REPAIR PROCESS AS DETERMINED BY THE ENGINEER, STOP THE CURRENT REPAIR PROCEDURE, SHORE THE AREA AND PERFORM A ''FORM AND POUR'' CONCRETE REPAIR.
8. NO MORE THAN ⅓ OF THE CAP OR PILE CROSS SECTIONAL AREA SHALL BE REMOVED AT ONE TIME. SHOULD IT BECOME NECESSARY TO REMOVE MORE THAN 30% OF THE CROSS SECTIONAL AREA, NOTIFY THE ENGINEER PRIOR TO PROCEEDING.
9. SIMULTANEOUS REMOVAL OF UNSOUND CONCRETE MAY BE PERMITTED ON MORE THAN ONE FACE OF A CAP AND/OR PILE, BUT NO MORE THAN ⅓ OF THE CIRCUMFERENCE SHALL BE REMOVED AT A TIME. IF REMOVAL EXTENDS MORE THAN 1-½" BEHIND THE MAIN REINFORCING BARS. NOTIFY THE ENGINEER PRIOR TO PROCEEDING.
10. FOR SUBSTRUCTURE REPAIRS, SEE ''SUBSTRUCTURE REPAIRS`` SHEETS.

LEGEND	
	CONCRETE REPAIR AREA
	SHOTCRETE REPAIR AREA
	EPOXY RESIN INJECTION (ERI)

BRIDGES: 640044, 640045, 640058, 640059

PROJECT NO. I-6039

NEW HANOVER COUNTY

BRIDGE NO. MULTIPLE

SHEET 2 OF 2

DocuSigned by: JACOB H. DUKE — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 043777 — 4/17/2023

KCA KISINGER CAMPO & ASSOCIATES

301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONCRETE RESTORATION DETAILS
SUBSTRUCTURE

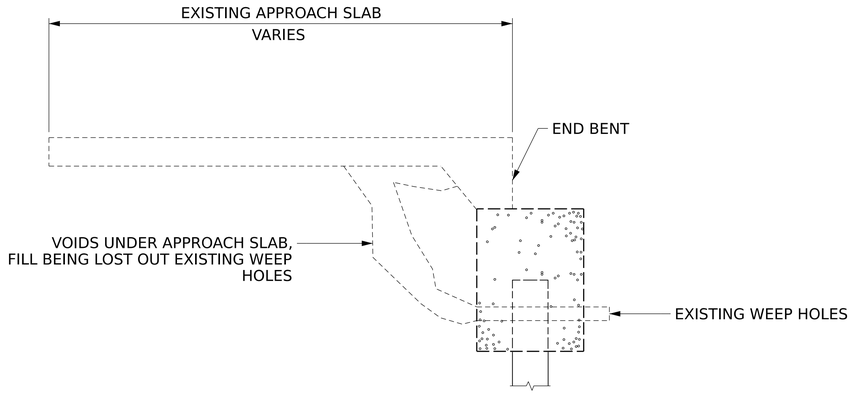
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S7
1			3			TOTAL SHEETS
2			4			

DRAWN BY : JASON M. DEBONE DATE : 01/2023
CHECKED BY : ALLEN J. MCSWAIN DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

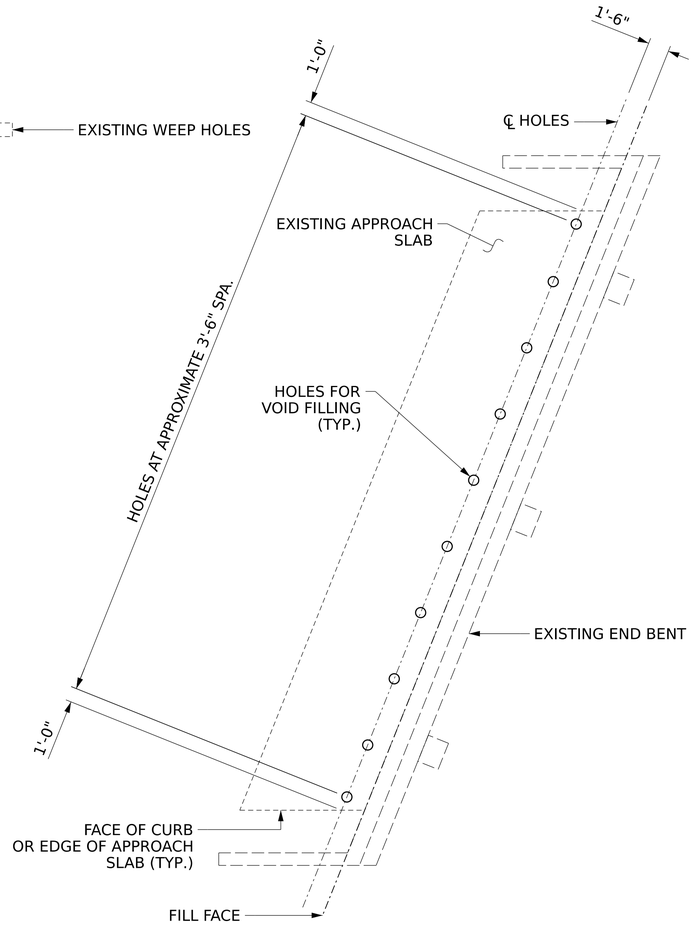
4/17/2023
I6039_SMU_CR02.dgn
jduke

AS-BUILT REPAIR QUANTITY TABLE

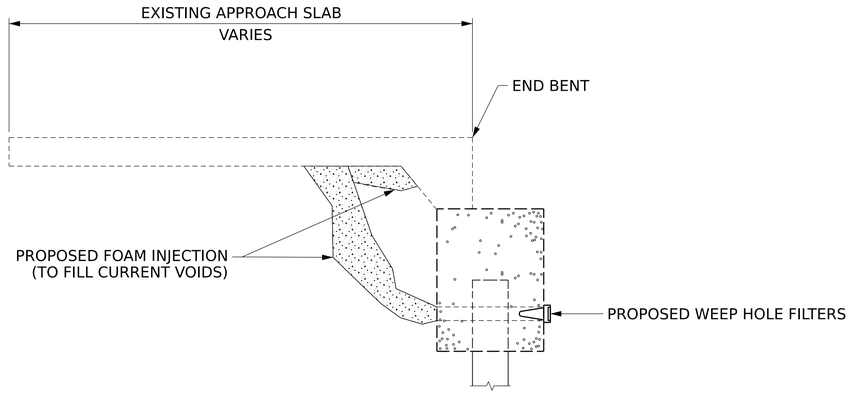
SLOPE PROTECTION REPAIRS	QUANTITIES									
	640044		640045		640058		640059		TOTAL	
	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL
APPROACH SLAB VOID FILLING	1000 LBS		1000 LBS		1000 LBS		1000 LBS		4000 LBS	



SECTION ALONG END BENT
(EXISTNG CONDITION)



PLAN
(PROPOSED FILL REPAIR)



SECTION ALONG END BENT
(PROPOSED FILL REPAIR)

NOTES:

FOR APPROACH SLAB VOID FILLING, SEE SPECIAL PROVISIONS.

FOR WEEP HOLE FILTERS, SEE SPEICAL PROVISIONS.

PROJECT NO. I-6039
NEW HANOVER COUNTY
BRIDGE NO. MULTIPLE
BRIDGES: 640044, 640045, 640058, 640059

DRAWN BY : JASON M. DEBONE DATE : 01/2023
CHECKED BY : ALLEN J. MCSWAIN DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

4/17/2023
16039_SMU_ASR01.dgn
jduke

DocuSigned by: JACOB H. DUKE 4/17/2023
NORTH CAROLINA PROFESSIONAL SEAL 043777 ENGINEER JACOB H. DUKE

KCA KISINGER CAMPO & ASSOCIATES
301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

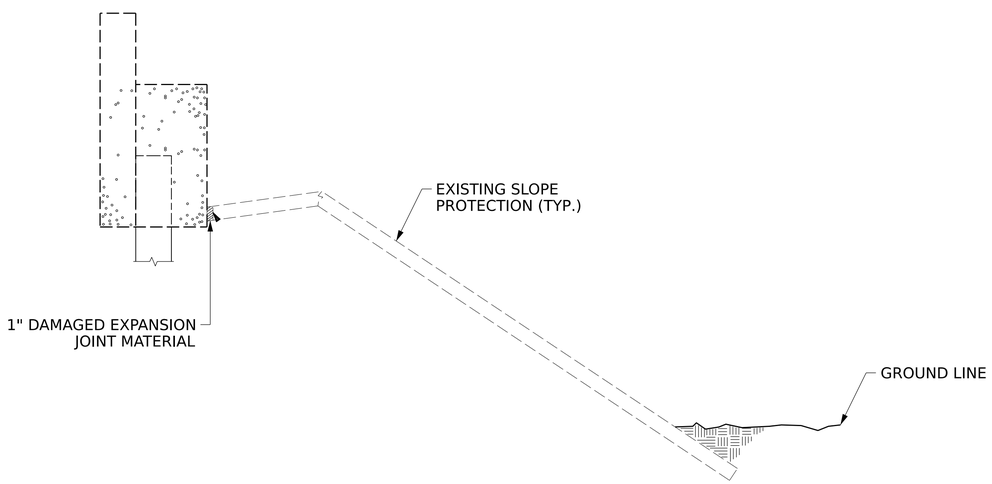
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

APPROACH SLAB REPAIRS

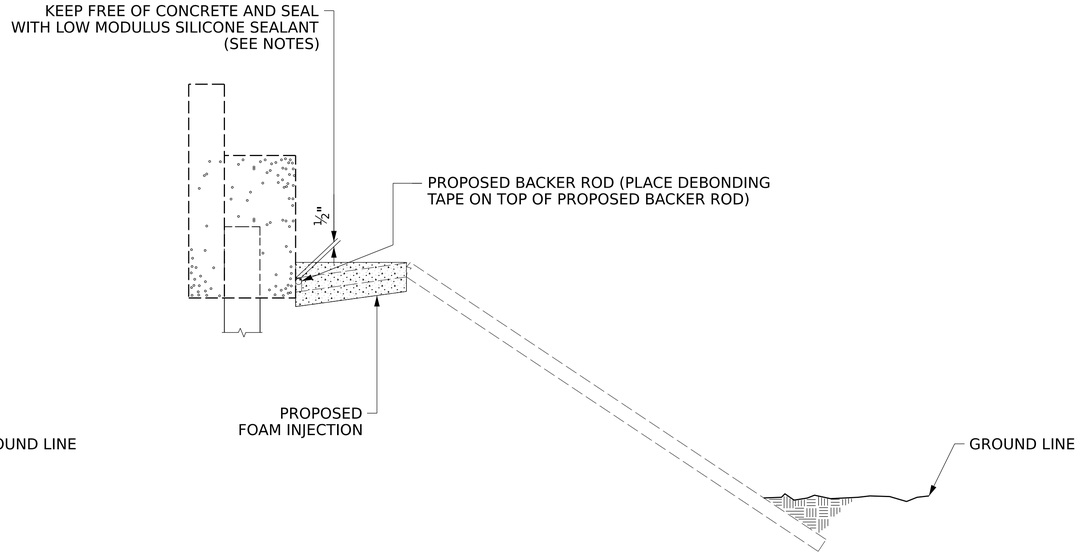
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S8
1			3			TOTAL SHEETS
2			4			

AS-BUILT REPAIR QUANTITY TABLE

SLOPE PROTECTION REPAIRS	QUANTITIES					
	640058		640059		TOTAL	
	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL
SLOPE PROTECTION VOID FILLING	3000 LBS		3000 LBS		6000 LBS	



SECTION ALONG END BENT
(EXISTNG SLOPE)



SECTION ALONG END BENT
(PROPOSED SLOPE REPAIR)

NOTES:

AFTER COMPLETION OF VOID FILLING, SEAL CRACKS IDENTIFIED WITH POURABLE SILICONE JOINT SEALANT AS DESCRIBED IN THE SPECIAL PROVISIONS FOR SILICONE JOINT SEALANT FOR SLOPE REPAIRS (BACKER RODS MAY BE OMITTED AS APPROVED BY THE ENGINEER).

FOR SLOPE PROTECTION VOID FILLING/ SILICONE JOINT SEAL LOCATIONS, SEE "GENERAL DRAWING" SHEET.

FOR SLOPE PROTECTION VOID FILLING, SEE SPECIAL PROVISIONS.

FOR SILICONE JOINT SEALANT FOR SLOPE PROTECTION REPAIR, SEE SPECIAL PROVISIONS.

FOR SILICONE JOINT SEALANT FOR SLOPE PROTECTION REPAIR, SEE "JOINT SEAL REPAIR SECTION VIEW" DETAIL.

DRAWN BY : JASON M. DEBONE DATE : 01/2023
CHECKED BY : ALLEN J. MCSWAIN DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

4/17/2023
I6039_SMU_SLP01.dgn
jduke

KCA KISINGER CAMPO & ASSOCIATES

301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

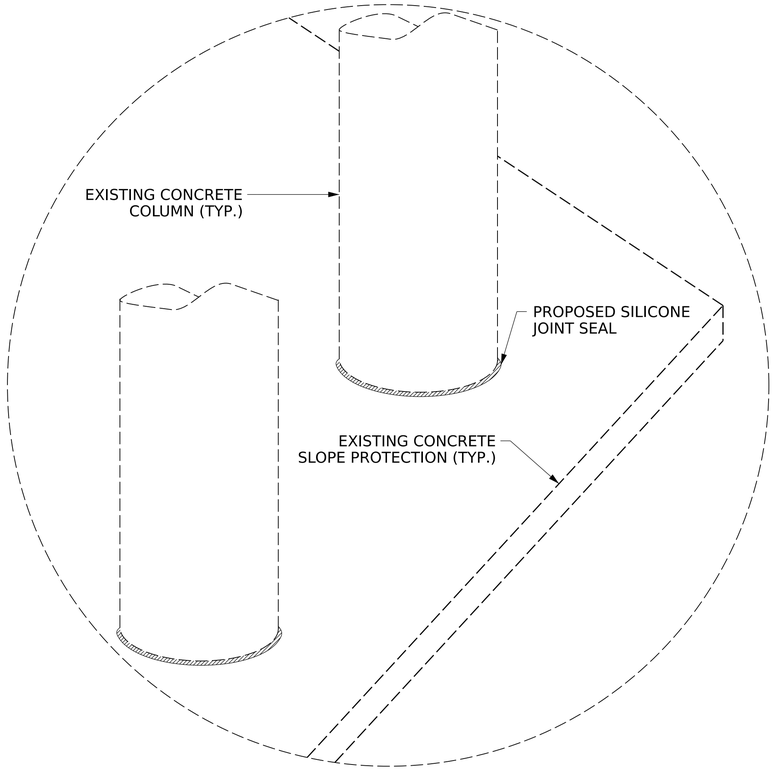
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. I-6039
NEW HANOVER COUNTY
BRIDGE NO. MULTIPLE
BRIDGES: 640058, 640059

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SLOPE PROTECTION REPAIRS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S9
1			3			TOTAL SHEETS
2			4			



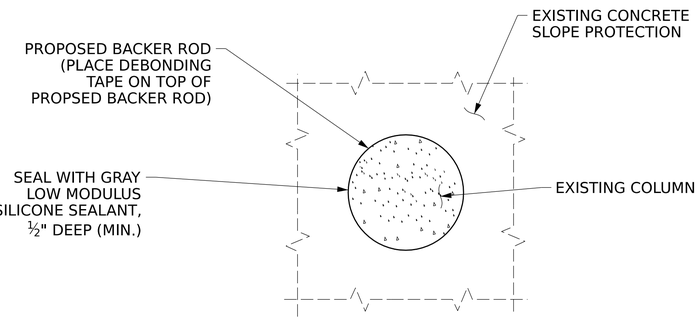
JOINT SEAL REPAIR AT SLOPE PROTECTION ELEVATION

NOTE:
FOR SILICONE JOINT SEALANT FOR SLOPE PROTECTION, SEE SPECIAL PROVISIONS.

INCLUDES QUANTITY FOR SILICONE JOINT SEALANT AT END BENTS.

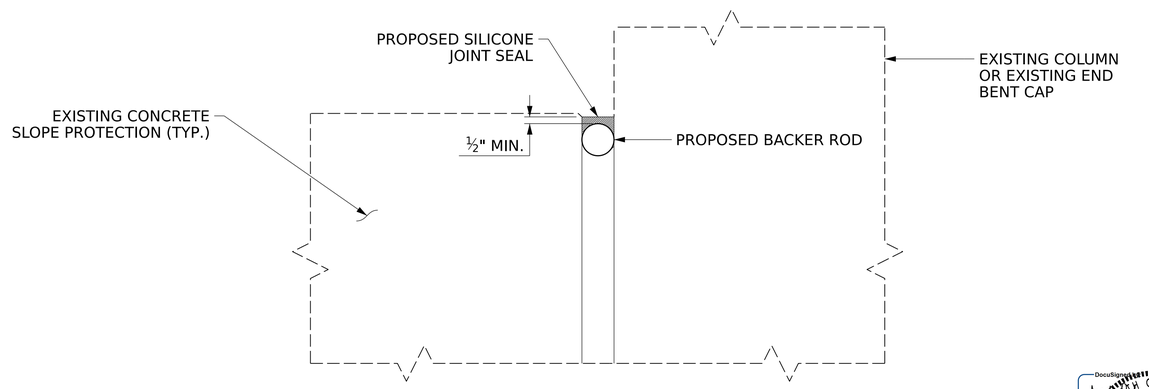
SLOPE PROTECTION JOINT SEAL REPAIR QUANTITY TABLE

STRUCTURE	ESTIMATE	ACTUAL
640044	220 LF	
640045	220 LF	
640058	236 LF	
640059	236 LF	



JOINT SEAL REPAIR PLAN VIEW

(COLUMN TRANSITION SHOWN)



JOINT SEAL REPAIR SECTION VIEW

PROJECT NO. I-6039
NEW HANOVER COUNTY
BRIDGE NO. MULTIPLE
BRIDGES: 640044, 640045, 640058, 640059

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 043777 JACOB H DUKE
4/17/2023

KCA KISINGER CAMPO & ASSOCIATES

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SLOPE PROTECTION
JOINT SEAL DETAILS

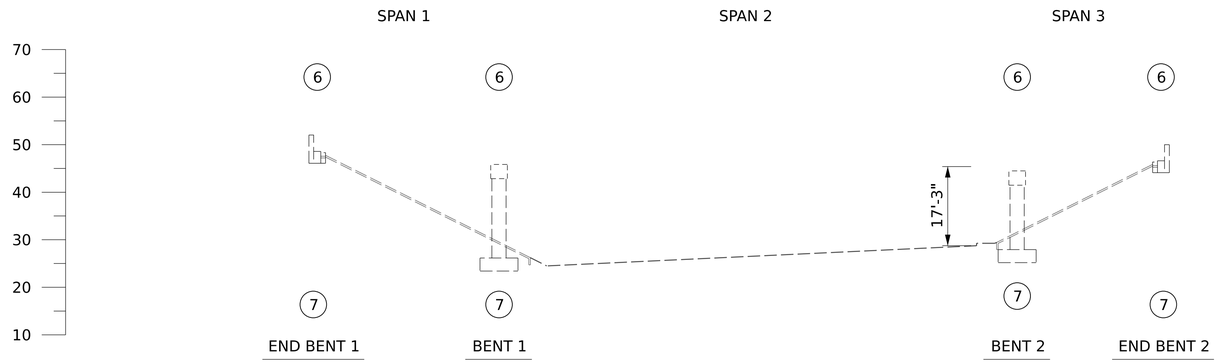
DRAWN BY :	ALLEN J. MCSWAIN	DATE :	01/2023
CHECKED BY :	JASON M. DEBONE	DATE :	01/2023
DESIGN ENGINEER OF RECORD:	JACOB H. DUKE	DATE :	01/2023

4/17/2023
I6039_SMU_JS.dgn
jduke

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

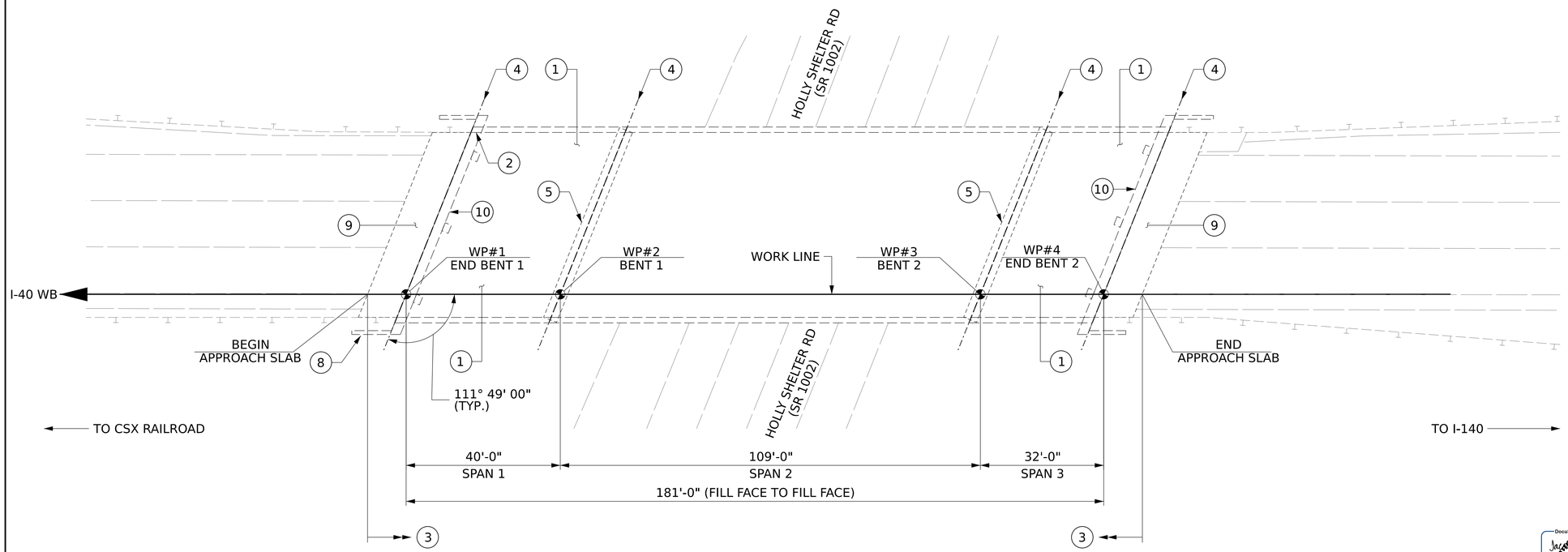
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S10
1			3			TOTAL SHEETS
2			4			



SCOPE LEGEND:

1. CLEAR SHOULDERS OF DEBRIS AND VEGETATION
2. GUARDRAIL ANCHOR UNIT REPAIRS
3. POLYMER CONCRETE OVERLAY
4. JOINT REPLACEMENT
5. SUPERSTRUCTURE BEARING REPAIRS
6. EPOXY COAT CAPS
7. REPAIR SEALS AT BASE OF COLUMNS AND END BENT CAPS
8. EROSION REPAIRS
9. APPROACH SLAB FOAM INJECTION
10. INSTALL WEEP HOLE FILTERS

SECTION ALONG ROADWAY



PLAN

NOTES:

GENERAL DRAWING INFORMATION IS TAKEN FROM THE ORIGINAL PLANS AND THE MOST UP TO DATE ROUTINE INSPECTION REPORT DATED 11/06/2020.

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

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

RESIDENT ENGINEER DATE

PROJECT NO. I-6039

NEW HANOVER COUNTY

BRIDGE NO. 640044

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DocuSigned by: Jacob H. Duke
NORTH CAROLINA PROFESSIONAL SEAL 043777 ENGINEER JACOB H DUKE
4/17/2023

KCA KISINGER CAMPO & ASSOCIATES
301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

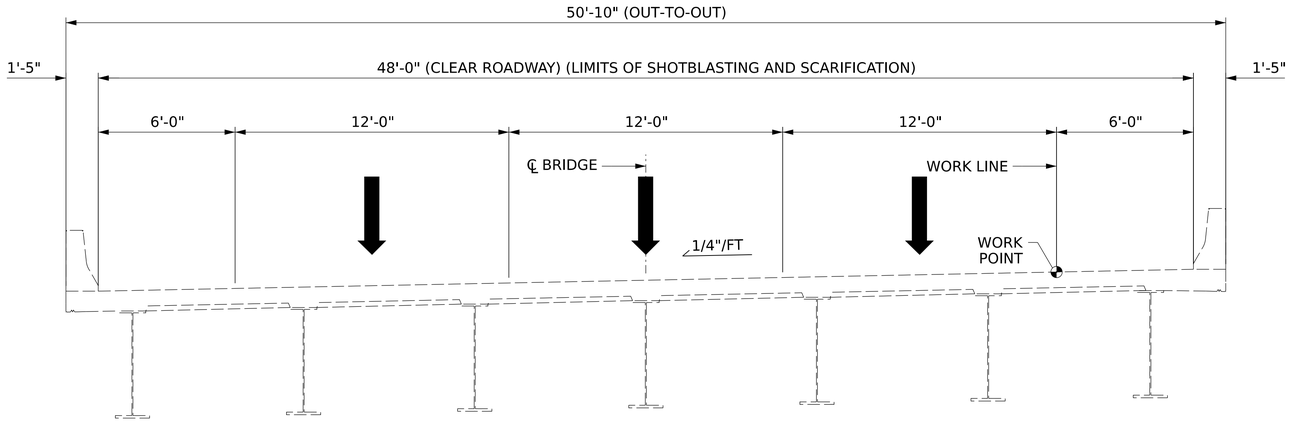
GENERAL DRAWING

FOR BRIDGE ON I-40 WB
OVER HOLLY SHELTER RD
(SR 1002)

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

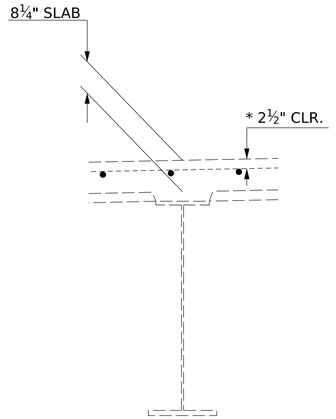
DRAWN BY : JASON DEBONE DATE : 01/2023
CHECKED BY : SCOTT A BETZ DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

4/17/2023
640044_16039_SMU_GD01.dgn
jduke



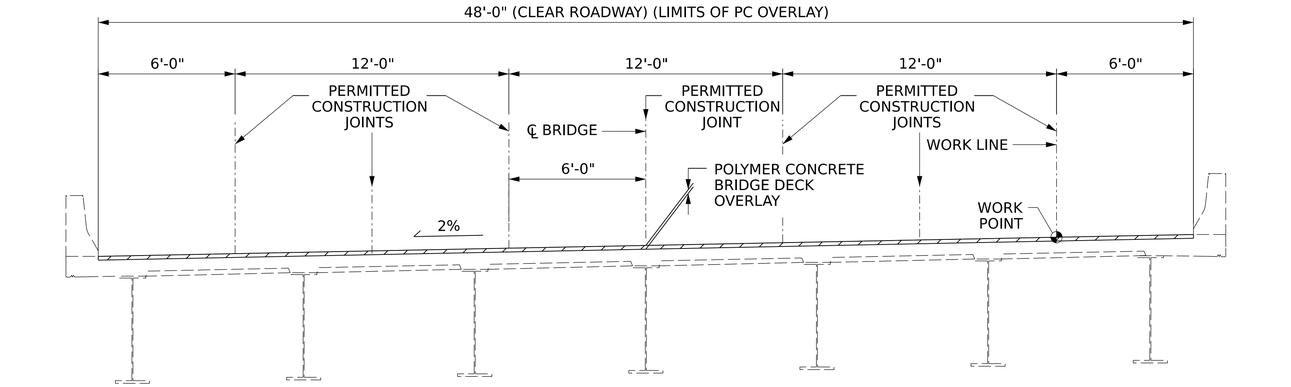
EXISTING SECTION

(SPANS 1 - 3)
(DIAPHRAGMS NOT SHOWN FOR CLARITY)



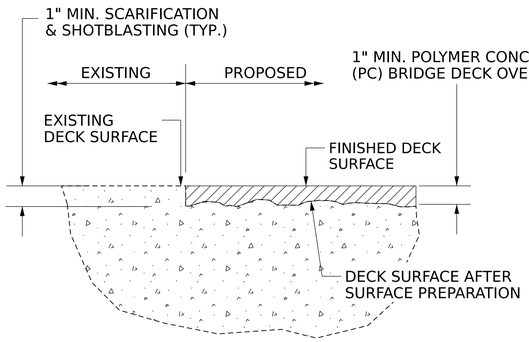
EXISTING SLAB SECTION

(SPANS 1 - 3)
* CONCRETE COVER PER EXISTING PLANS DATED 05/1981

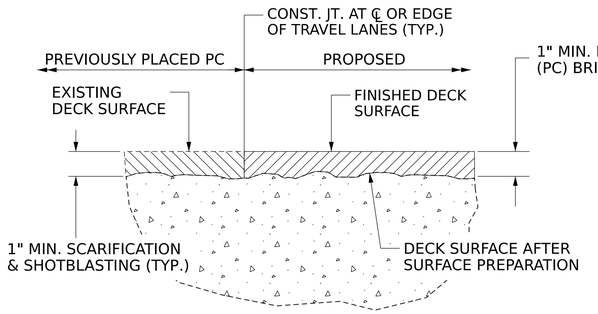


PROPOSED SECTION

(SPANS 1 - 3)
(DIAPHRAGMS NOT SHOWN FOR CLARITY)



DETAIL FOR PC OVERLAY



DETAIL FOR STAGED PC OVERLAY

NOTES:

1. LONGITUDINAL CONSTRUCTION JOINTS OF OVERLAYS SHALL BE LOCATED ALONG THE CENTERLINE OR EDGE OF TRAVEL LANES.
2. SEE TRAFFIC MANAGEMENT PLANS FOR LANE WIDTHS, SEQUENCING, AND OTHER TRAFFIC CONTROL MEASURES FOR STAGING OF PC OVERLAY AND SURFACE PREPARATION.

DRAWN BY : AJ MCSWAIN DATE : 01/2023
CHECKED BY : SCOTT A BETZ DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

4/17/2023
640044_I6039_SMU_TS01.dgn
jduke

DocuSigned by: Jacob Duke
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 043777 JACOB H. DUKE
4/17/2023

KCA KISINGER CAMPO & ASSOCIATES

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

PROJECT NO. I-6039
NEW HANOVER COUNTY
BRIDGE NO. 640044

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION
SPANS 1 - 3

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

AS-BUILT REPAIR QUANTITY TABLE

TOP OF DECK REPAIRS	SPAN 1		SPAN 2		SPAN 3		BEGIN APPROACH SLAB		END APPROACH SLAB	
	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	214 SY		582 SY		171 SY		54 SY		54 SY	
SHOTBLASTING BRIDGE DECK	214 SY		582 SY		171 SY		54 SY		54 SY	
PC MATERIALS	5.9 CY		16.2 CY		4.8 CY		1.5 CY		1.5 CY	
PLACING AND FINISHING PC OVERLAY	214 SY		582 SY		171 SY		54 SY		54 SY	
GROOVING BRIDGE FLOORS	1800 SF		4905 SF		1440 SF		450 SF		450 SF	
CLASS II SURFACE PREPARATION	2.9 SY		2.9 SY		5.8 SY		2.9 SY		2.9 SY	

NOTES:

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

CONCRETE COVER FOR TOP BARS IN THE DECK SLAB IS 2½" PER THE EXISTING BRIDGE PLANS. ACTUAL CONCRETE COVER SHALL BE DETERMINED BY THE CONTRACTOR AND PRESENTED TO THE ENGINEER PRIOR TO BEGINNING SCARIFICATION.

CURRENT AVERAGE COVER IS EXPECTED TO BE FROM 1½" TO 2" BASED ON VISUAL INSPECTION.

MINOR QUANTITIES OF CLASS II AREAS ARE ANTICIPATED, PARTICULARLY NEAR JOINTS. HOWEVER, DUE TO THEIR SMALL SIZE, THE CLASS II LOCATIONS HAVE NOT BEEN DELINEATED ON THESE PLANS. THE CLASS II QUANTITIES INDICATED ARE ANTICIPATED TO BE SUFFICIENT FOR THE ACTUAL QUANTITIES ENCOUNTERED.

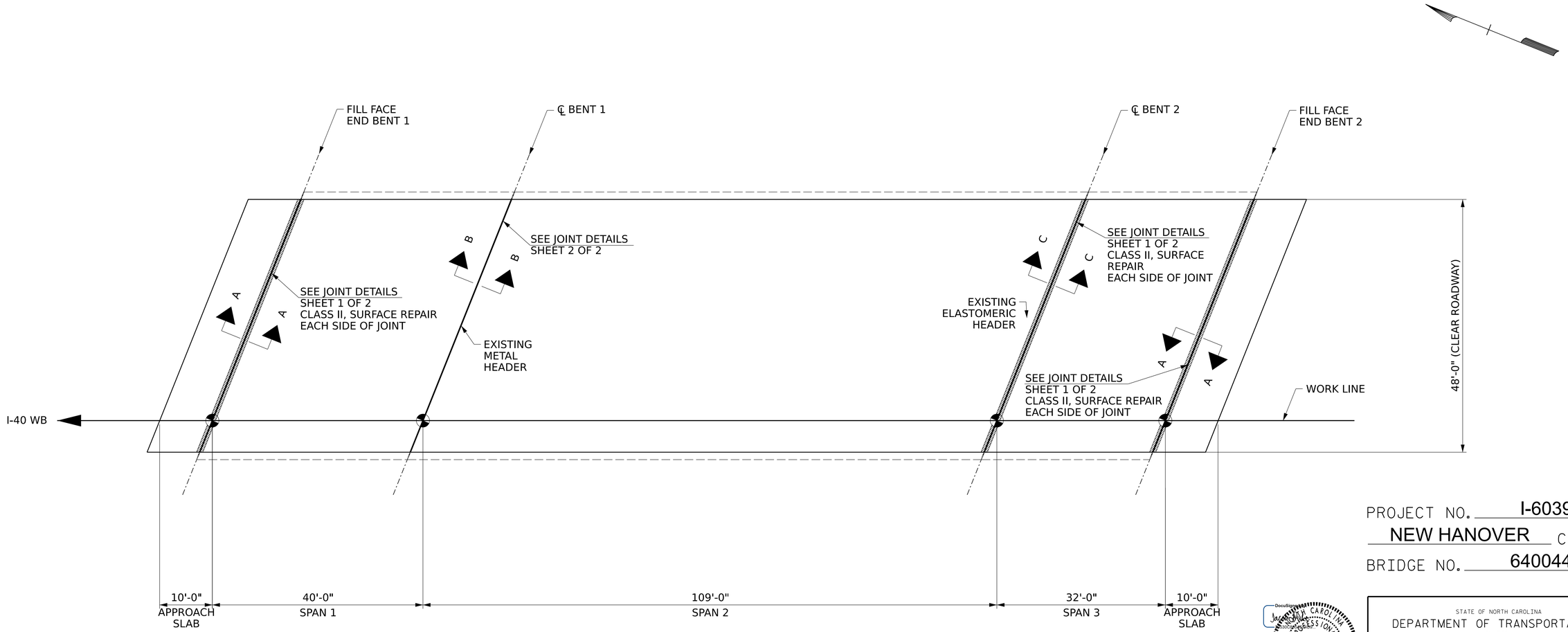
FOR CLASS II SURFACE PREPARATION, SEE SPECIAL PROVISIONS.

BRIDGE DECK GROOVING QUANTITY BASED ON LIMITS REQUIRED IN SECTION 420-14(B) OF THE STANDARD SPECIFICATIONS.

BRIDGE DECK SCARIFICATION LIMITS ARE THE FULL CLEAR ROADWAY WIDTH (INSIDE FACE OF EACH BRIDGE RAIL).

FOR POLYMER CONCRETE BRIDGE DECK OVERLAY, SEE SPECIAL PROVISIONS.

COORDINATE THIS SHEET WITH THE SHEETS FOR JOINT DETAILS.



PC OVERLAY

CLASS II SURFACE PREP.

SHOTCRETE REPAIR AREA (SCR)

PROJECT NO. I-6039

NEW HANOVER COUNTY

BRIDGE NO. 640044

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF SPANS

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 043777 JACOB H. DUKE 4/17/2023

KCA KISINGER CAMPO & ASSOCIATES
301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

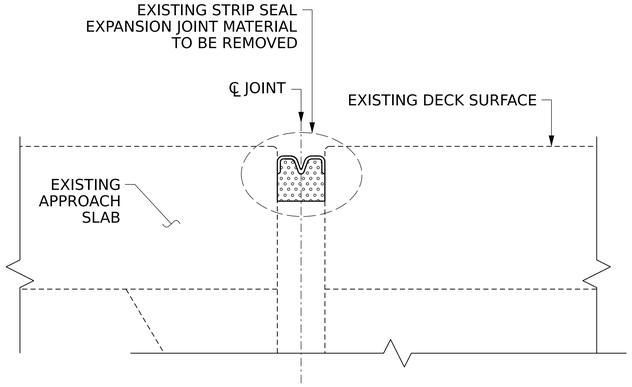
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S1-3
TOTAL SHEETS 13

DRAWN BY : JASON DEBONE DATE : 01/2023
CHECKED BY : AJ MCSWAIN DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

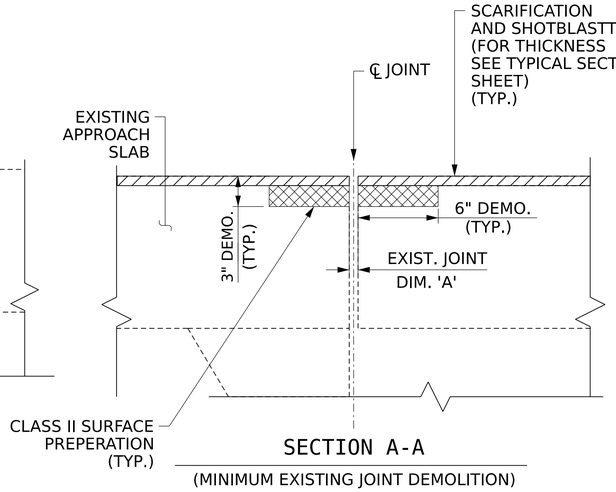
4/17/2023
640044_I6039_SMU_DSR01.dgn
jduke

PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION



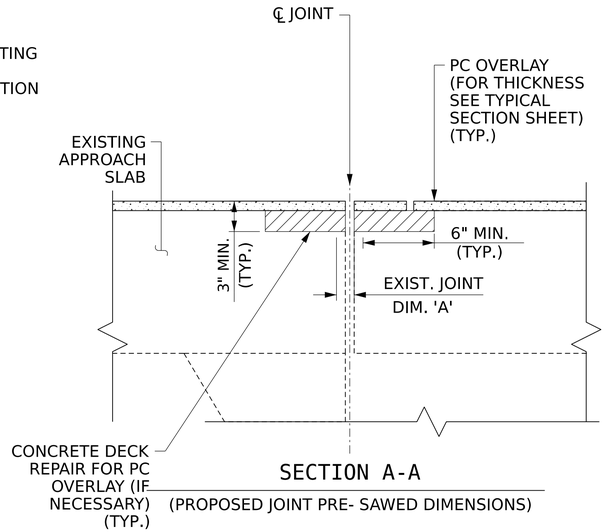
SECTION A-A

(EXISTING BRIDGE JOINT)



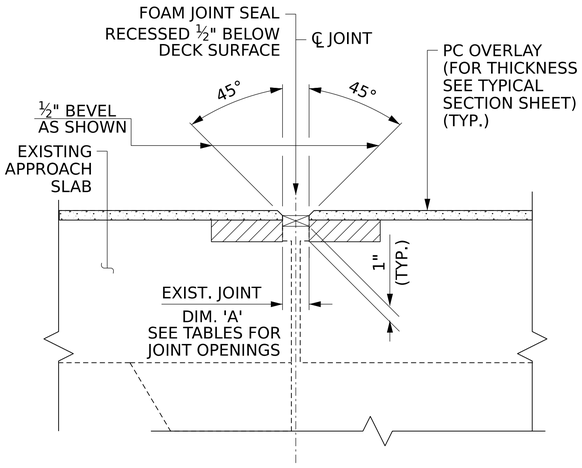
SECTION A-A

(MINIMUM EXISTING JOINT DEMOLITION)



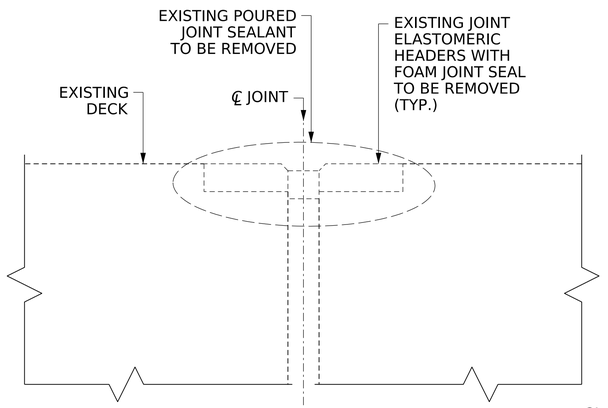
SECTION A-A

(PROPOSED JOINT PRE- SAWED DIMENSIONS)



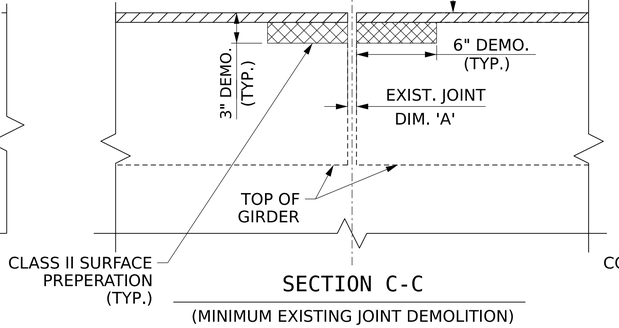
SECTION A-A

(PROPOSED FOAM JOINT SEAL)



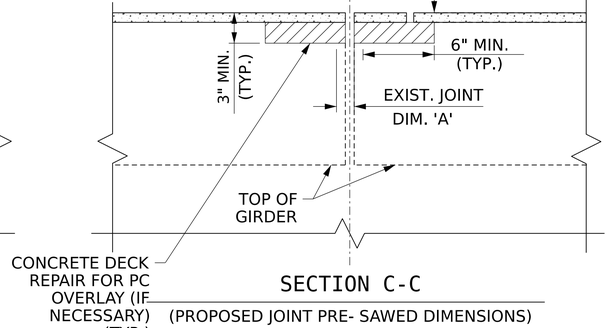
SECTION C-C

(EXISTING BRIDGE JOINT)



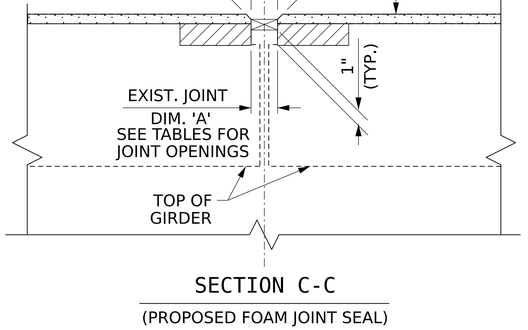
SECTION C-C

(MINIMUM EXISTING JOINT DEMOLITION)



SECTION C-C

(PROPOSED JOINT PRE- SAWED DIMENSIONS)



SECTION C-C

(PROPOSED FOAM JOINT SEAL)

PROJECT NO. I-6039

NEW HANOVER COUNTY

BRIDGE NO. 640044

SHEET 1 OF 3

KCA
KISINGER CAMPO
& ASSOCIATES

301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

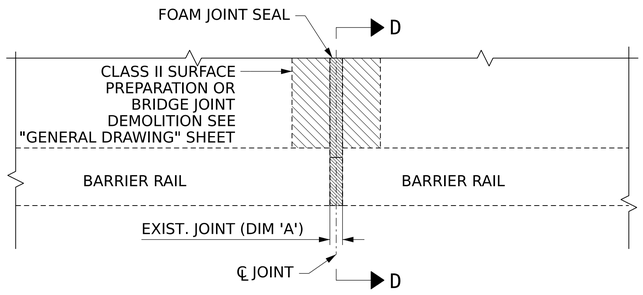
JOINT DETAILS

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

DRAWN BY : FIDEL L. FLORES DATE : 01/2023
CHECKED BY : ALLEN J. MCSWAIN DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

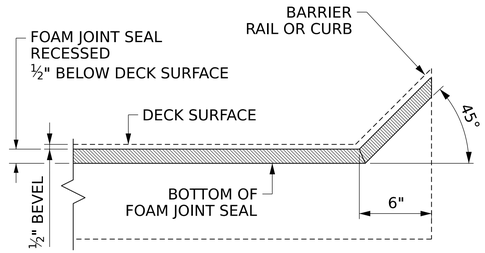
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

4/17/2023
640044_16039_SMU_JT01.dgn
jduke



PLAN AT GUTTER

(PROPOSED FOAM JOINT SEAL)



SECTION D-D

(PROPOSED FOAM JOINT SEAL)

PROPOSED JOINT QUANTITY

	ESTIMATED (LIN. FT.)	ACTUAL (LIN. FT.)
FOAM JOINT SEALS FOR PRESERVATION	159	

TABLE 1

01-26-2023

BENT/ JOINTS	DIM 'A' @ 51°F
END BENT 1	2"
BENT 2	1¾"
END BENT 2	2"

NOTES:

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

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

INSTALL FOAM JOINTS AS PER THE MANUFACTURER'S RECOMMENDATIONS.

THE CONTRACTOR SHALL TAKE CARE DURING JOINT REPAIR OPERATIONS NOT TO DROP ANY MATERIAL THAT FALLS BELOW THE BRIDGE, WITHOUT PROTECTIVE DEVICES BELOW TO CATCH THE MATERIAL. ANY MATERIAL THAT FALLS BELOW THE BRDIGE 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.

FOR BRIDGE JOINT DEMOLITION, SEE SPECIAL PROVISIONS.

FOR FOAM JOINT SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.

DEMOLISH BRIDGE JOINT AREA SUCH THAT THE BOTTOM OF THE EXCAVATION SHALL BE REASONABLY FLAT AND LEVEL AND TO THE NECESSARY DEPTH, SUCH THAT THE REPAIR SHALL BE FOUNDED ON CONCRETE OR REPAIR CONCRETE SUBSTRATE.

TAKE CARE NOT TO DAMAGE ANY EXISTING DECK REINFORCING EXPOSED DURING BRIDGE JOINT DEMOLITION. NOTIFY THE ENGINEER OF ANY DECK REINFORCING EXPOSED DURING BRIDGE JOINT DEMOLITION OPERATIONS.

EXISTING DECK REINFORCING IS NOT SHOWN IN THE SECTIONS PROVIDED ON THIS SHEET.

PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION

DRAWN BY : FIDEL L. FLORES DATE : 01/2023
CHECKED BY : ALLEN J. MCSWAIN DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

4/17/2023
640044_I6039_SMU_JT02.dgn
jduke

DocuSigned by: Jacob H. Duke
NORTH CAROLINA PROFESSIONAL SEAL 043777 ENGINEER JACOB H DUKE
4/17/2023

KCA KISINGER CAMPO & ASSOCIATES
301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

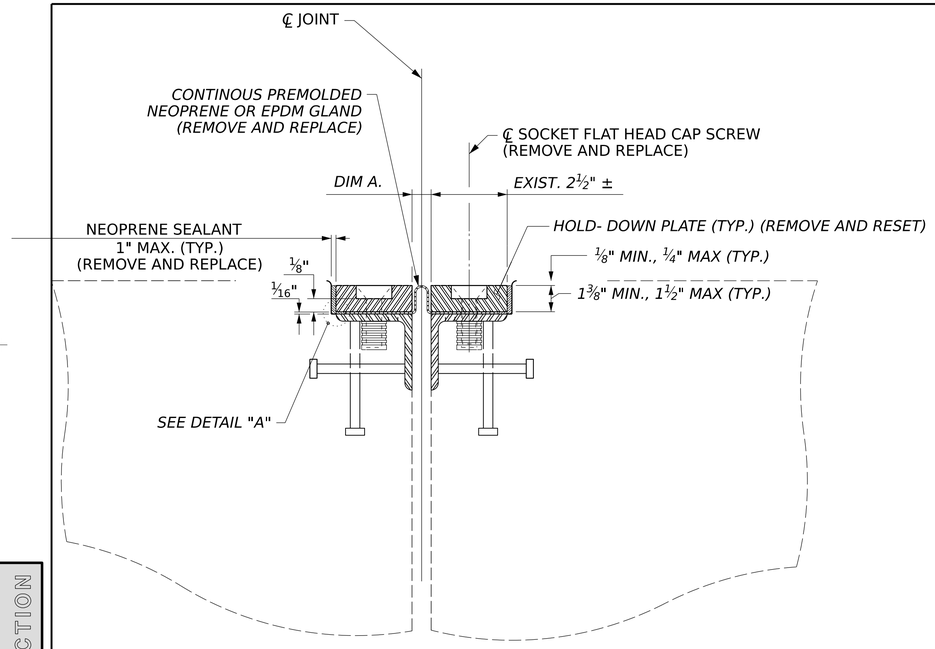
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. I-6039
NEW HANOVER COUNTY
BRIDGE NO. 640044
SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

JOINT DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-5
1			3			TOTAL SHEETS
2			4			13



EXPANSION JOINT DETAILS

SUGGESTED REPAIR INSTALLATION PROCEDURE

1. LOOSEN THE EXISTING SCREWS 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 ⅞" IN DIAMETER WITH A HAND PUNCH.
4. IN ORDER TO CHECK FOR PROPER ALIGNMENT, PLACE THE NEW GLAND AND HOLD-DOWN PLATES ON THE BASE ANGLE. DO NOT APPLY NEW NEOPRENE SEALANT. BOLT THE HOLD-DOWN PLATES TO THE BASE ANGLE, BUT DO NOT TIGHTEN. THE ENGINEER WILL INSPECT THE JOINT SEAL DEVICE FOR PROPER ALIGNMENT.
5. AFTER INSPECTION, REMOVE THE HOLD-DOWN PLATES AND NEW GLAND. APPLY NEW NEOPRENE SEALANT TO THE BASE ANGLE IN ACCORDANCE WITH THE ''INSTALLATION SKETCH''. PLACE NEW GLAND AND HOLD-DOWN PLATES ON THE BASE ANGLE. BOLT THE HOLD-DOWN PLATES TO THE BASE ANGLE ASSEMBLY AND TORQUE THE SCREWS 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 OPNEING VARIES FROM THE OPENING INDICATED IN THE DETAILS BY MORE THAN ¼", NOTIFY THE ENGINEER.

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

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

A PREMOLDED CORRUGATED OR NON-CORRUGATED GLAND SHALL BE 130°.

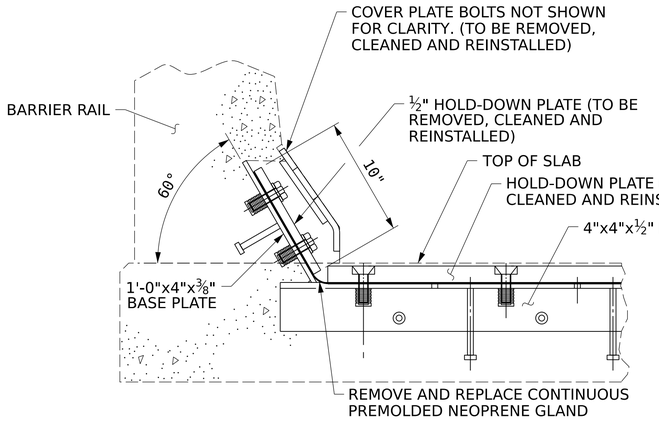
THE FINISHED EXPANSION SEAL DEVICE SHALL BE A MINIMUM SLAB.

FOR EXPANSION JOINT SEAL REPAIR, SEE SPECIAL PROVISIONS.

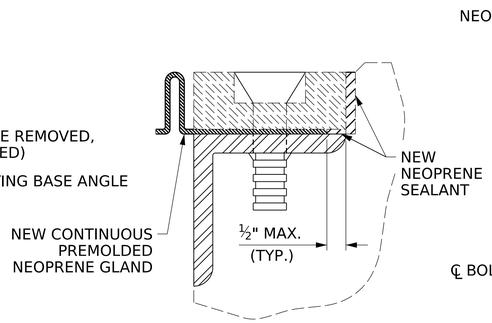
NO SEPARATE PAYMENT WILL BE MADE FOR REMOVING AND REINSTALLING MEDIAN AND BARRIER RAIL COVER PLATES. THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE LINEAR FEET PRICE BID FOR "EXPANSION JOINT SEALS FOR PRESERVATION".

DIM 'A' MOVEMENT AT JOINT	
LOCATION	PERPENDICULAR JOINT OPENING AT 51°F
BENT 1	1⅞"

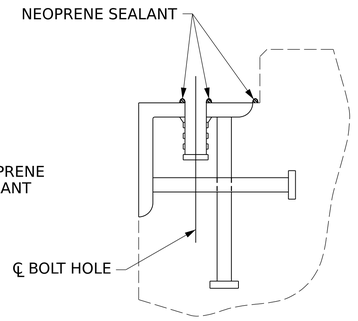
JOINT REPAIR QUANTITY TABLE		
	ESTIMATED	ACTUAL
EXPANSION JOINT SEALS FOR PRESERVATION	53	



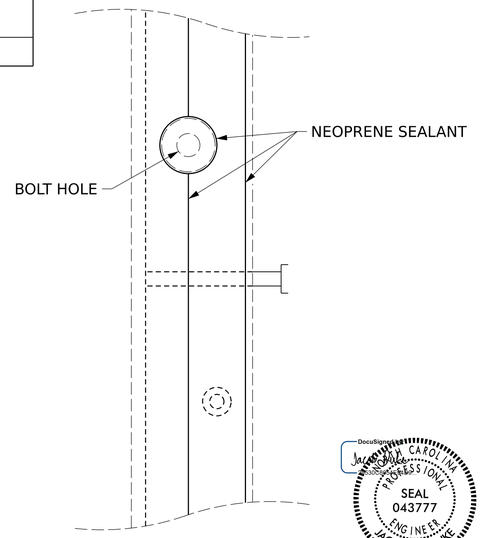
SECTION THRU RAIL NORMAL TO JOINT



DETAIL "A"



CROSS SECTION



PLAN VIEW

INSTALLATION SKETCH

PROJECT NO. I-6039
NEW HANOVER COUNTY
BRIDGE NO. 640044
SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

JOINT DETAILS

DocuSigned by: Jacob H. Duke
NORTH CAROLINA PROFESSIONAL SEAL 043777 ENGINEER JACOB H DUKE
4/17/2023

KCA KISINGER CAMPO & ASSOCIATES
301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-6
1			3			TOTAL SHEETS
2			4			13

DRAWN BY : FIDEL L. FLORES DATE : 01/2023
CHECKED BY : ALLEN J. MCSWAIN DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

4/17/2023
640044_16039_SMU_JT03.dgn
jduke

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NOTES:

REPAIR LOCATIONS AND ESTIMATED QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATIONS AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE TABLE ABOVE.

CRACKING LOCATIONS AND QUANTITIES FOR LOCATIONS DESCRIBED AS ''SCATTERED THROUGHOUT'' IN THE INSPECTION REPORT ARE BASED ON THE BEST INFORMATION AVAILABLE. THE ENGINEER AND CONTRACTOR SHALL IDENTIFY AND REPAIR ALL CRACKS >=$\frac{1}{16}$" AS DESCRIBED IN THE SPECIAL PROVISIONS.

AVERAGE CONCRETE COVER IS EXPECTED AS FOLLOWS;
DECK & DIAPHRAGMS: 2$\frac{1}{2}$"

FOR CONCRETE AND SHOTCRETE REPAIRS, SEE "CONCRETE RESTORATION DETAILS" SHEETS.

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

ADDITIONAL QUANTITIES OF CONCRETE REPAIR AREAS ARE ANTICIPATED. DUE TO LACK OF INFORMATION, ALL AREAS ARE NOT KNOWN. QUANTITIES ARE ANTICIPATED TO BE SUFFICIENT FOR ACTUAL QUANTITIES ENCOUNTERED.

FOR BEARINGS REPAIRS, SEE BEARING REPAIR SHEETS.

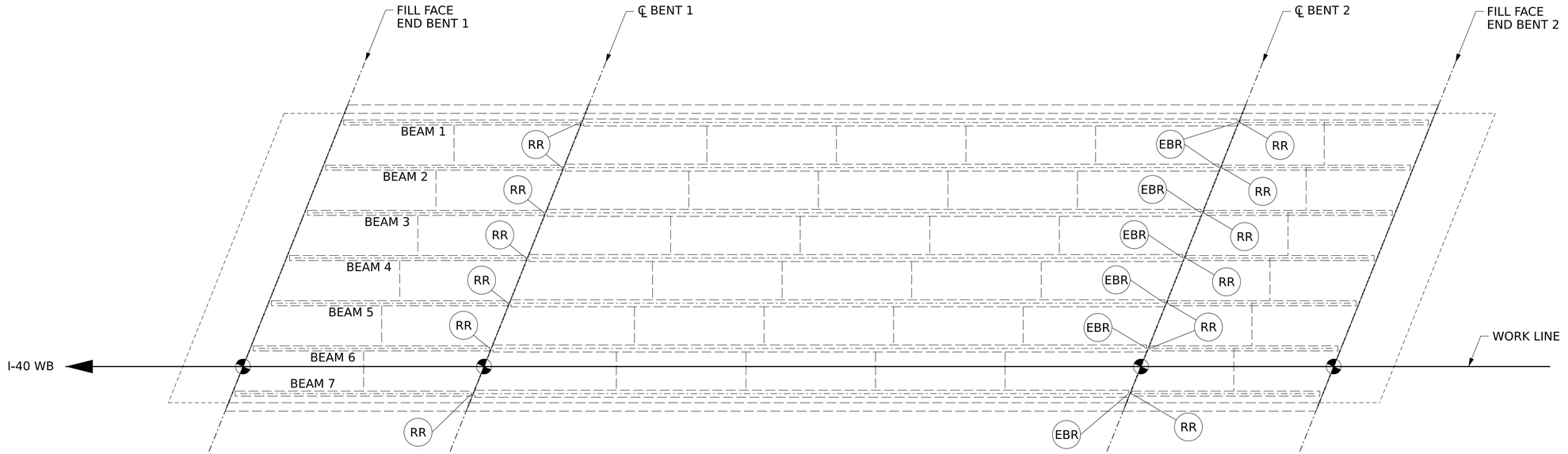
LEGEND

	SHOTCRETE REPAIR (SCR)
	EPOXY RESIN INJECTION (ERI)
RR	BEARING RETAINER RING
EBR	EXPANSION BEARING REPAIRS

AS-BUILT REPAIR QUANTITY TABLE

	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
UNDERSIDE OF DECK & OVERHANG	-	-		
DIAPHRAGMS	-	-		
RAILS	-	-		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
DECK , DIAPHRAGMS AND RAILS	-			
GIRDERS	-			

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



PROJECT NO. I-6039
NEW HANOVER COUNTY
BRIDGE NO. 640044

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 043777 JACOB H DUKE 4/17/2023

KCA KISINGER CAMPO & ASSOCIATES
301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

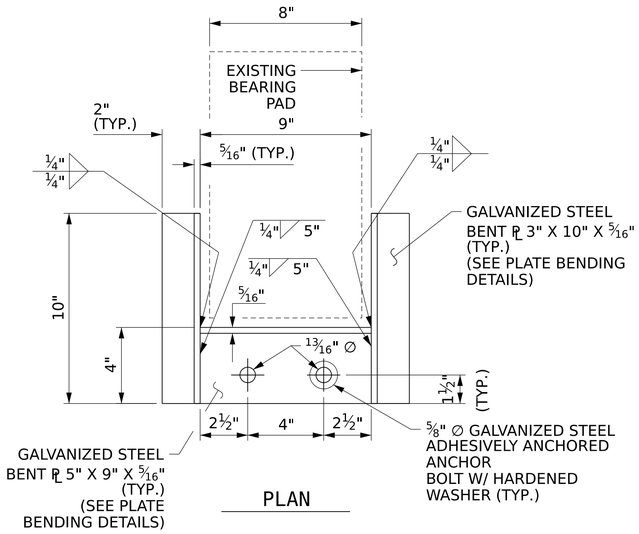
SUPERSTRUCTURE REPAIRS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-7
1			3			TOTAL SHEETS
2			4			13

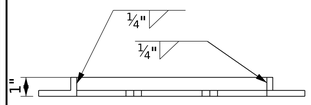
DRAWN BY : JASON DEBONE DATE : 01/2023
CHECKED BY : AJ MCSWAIN DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

4/17/2023
640044_I6039_SMU_DUR01.dgn
jduke



PLAN



ELEVATION

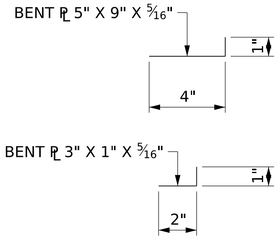
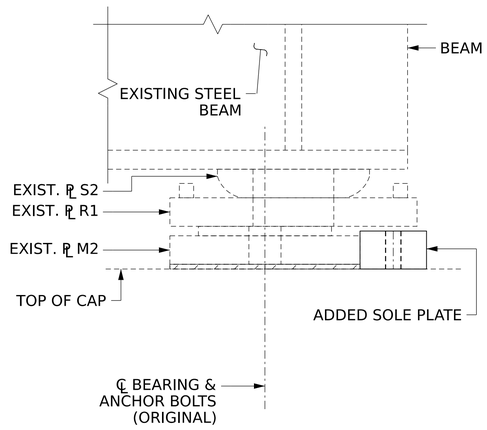


PLATE BENDING DETAILS

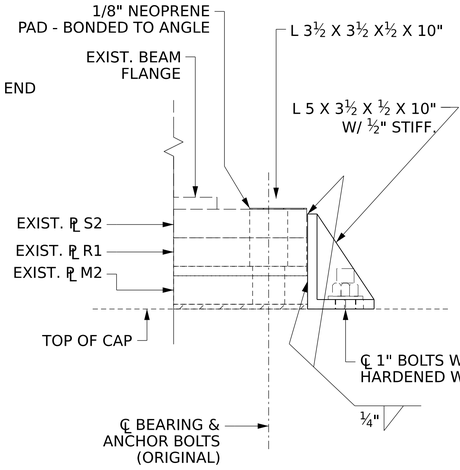
TYPE A RETAINER RING RR

(14 ASSEMBLIES REQUIRED)
(7 - BENT 1)
(7 - BENT 2)



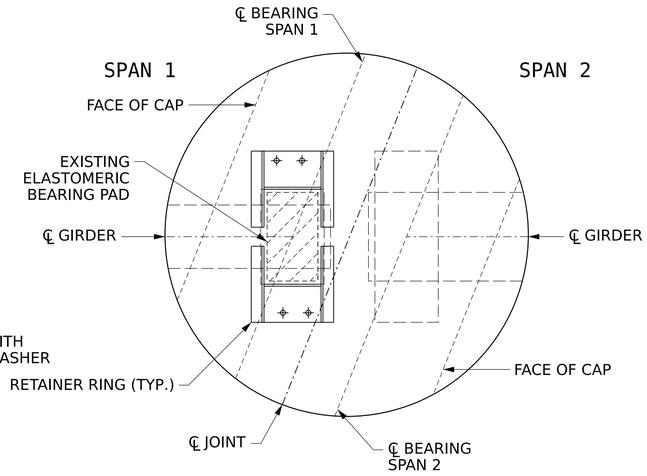
SECTION AT BENT 2

(ANCHOR BOLTS NOT SHOWN FOR CLARITY)
(PROPOSED ANGLES NOT SHOWN FOR CLARITY)

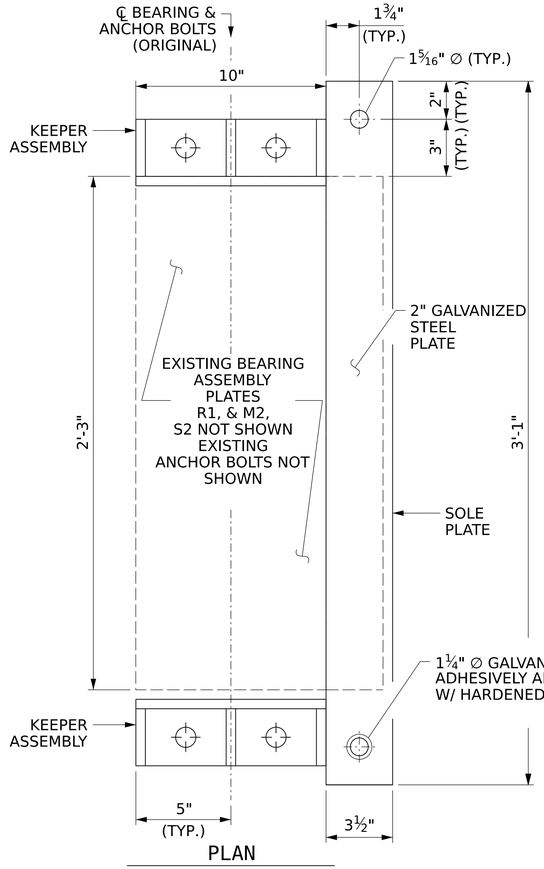


HALF-ELEVATION AT BENT 2

(ANCHOR BOLTS NOT SHOWN FOR CLARITY)
(REMOVE EXISTING DAMAGED ANCHOR BOLTS PRIOR TO ASSEMBLY)



GENERAL BENT 1 PLAN

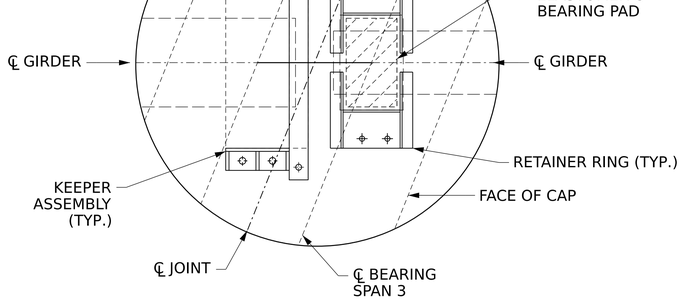


PLAN

L 5 X 3½ X ½
STIFFENER DETAILS

EXPANSION BEARING REPAIRS EBR

(7 ASSEBMLIES REQUIRED - BENT 2)



GENERAL BENT 2 PLAN

NOTES:

1. STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 36 OR HIGHER.
2. ALL STRUCTURAL STEEL SHALL, ANCHOR BOLTS, NUTS ADN WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
3. ADHESIVELY ANCHORED BOLTS SHALL CONFORM TO THE STANDARD SPECIFICATIONS. WITH THE EXCEPTION OF FIELD TESTING, FIELD TESTING OF THE ADHESIVELY ANCHORED BOLTS IS NOT REQUIRED.
4. THE STRUCTURAL STEEL FABRICATOR SHALL PROVIDE SHOP DRAWINGS TO THE ENGINEER FOR REVIEW AND APPROVAL.
5. ANCHOR BOLTS SHALL BE SHIFTED AS NECESSARY TO CLEAR EXISTING REINFORCING STEEL.
6. INSTALLATION OF ADHESIVELY ANCHORED BOLTS SHALL BE INCLUDED IN THE LUMP SUM PRICE EITHER "RETAINER RING" OR "EXPANSION BEARING REPAIR"
7. FOR KEEPER ASSEMBLY LOCATIONS, SEE "SUPERSTRUCTURE REPAIRS" SHEETS.

PROJECT NO. I-6039
NEW HANOVER COUNTY
BRIDGE NO. 640044

DRAWN BY : JASON M. DEBONE DATE : 01/2023
CHECKED BY : ALLEN J. MCSWAIN DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

4/17/2023
640044_I6039_SMU_BRG01.dgn
jduke

DocuSigned by: JACOB H. DUKE
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 043777
4/17/2023

KCA KISINGER CAMPO & ASSOCIATES

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

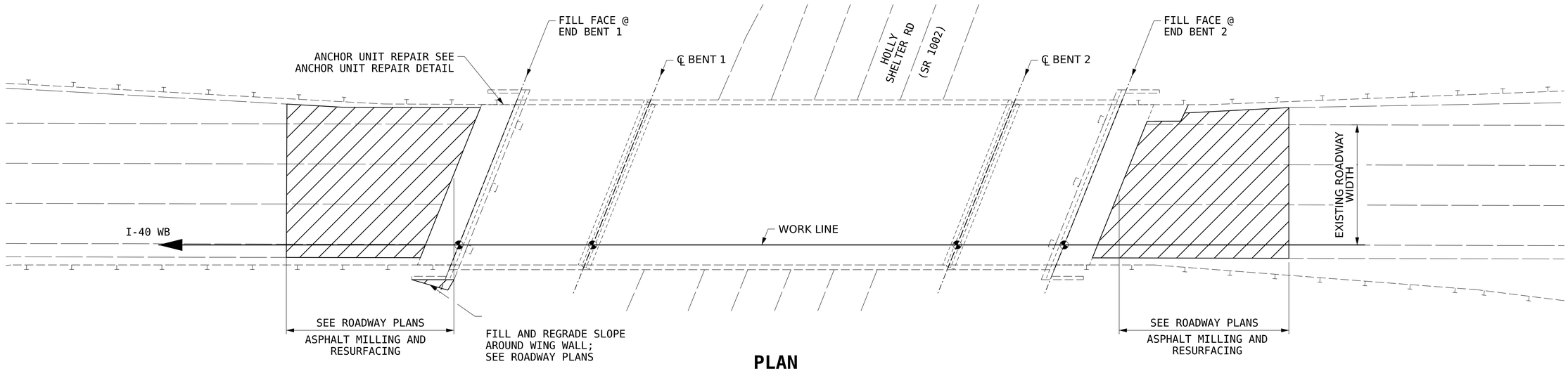
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE BEARING REPAIRS

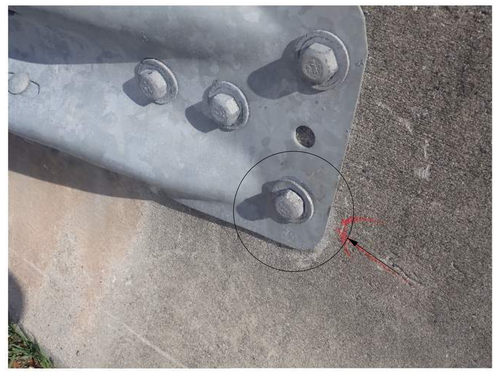
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-8
1			3			TOTAL SHEETS
2			4			13

NOTES:

1. APPROACH SLAB VOID FILLING ACTIVITIES TO BE COMPLETED PRIOR TO RESURFACING ACTIVITIES.



PLAN



ANCHOR UNIT REPAIR DETAIL

TIGHTEN BOTTOM CONNECTION MARKED IN THE PHOTO

REPLACE BOLT AS NEEDED WITH AN ADHESIVELY ANCHORED BOLT. FOR ADHESIVELY ANCHORED BOLTS AND DOWELS, SEE SECTION 420-13 OF THE STANDARD SPECIFICATIONS.

PAYMENT FOR TIGHTENING OR REPLACEMENT SHALL BE INCIDENTAL TO THE VARIOUS PAY ITEMS FOR THIS PROJECT.

PROJECT NO. I-6039
NEW HANOVER COUNTY
BRIDGE NO. 640044

NORTH CAROLINA PROFESSIONAL SEAL 043777 ENGINEER JACOB H DUKE
4/17/2023

KCA KISINGER CAMPO & ASSOCIATES

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

APPROACH ROADWAY
ASPHALT MILLING AND GUARDRAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-9
1			3			TOTAL SHEETS
2			4			13

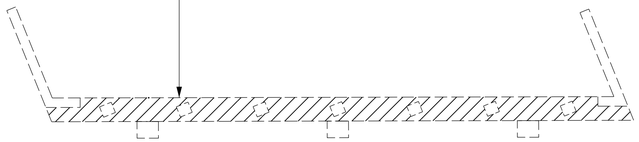
DRAWN BY : JASON M. DEBONE DATE : 01/2023
CHECKED BY : ALLEN J. MCSWAIN DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

4/17/2023
640044_I6039_SMU_AR01.dgn
jduke

COAT ALL THE FREE SURFACE AREA ON THE TOP OF THE CAPS, INCLUDING CHAMFERS, WITH EPOXY PROTECTIVE COATING. DO NOT COAT UNDER BEARING AREAS.

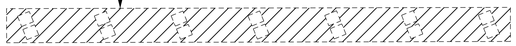


END BENT 1

COAT ALL THE FREE SURFACE AREA ON THE TOP OF THE CAPS, INCLUDING CHAMFERS, WITH EPOXY PROTECTIVE COATING. DO NOT COAT UNDER BEARING AREAS.

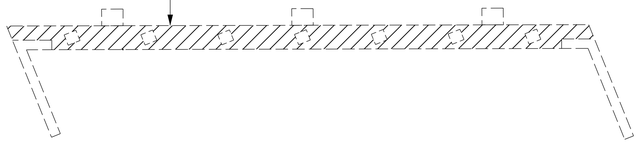
BENT 1

COAT ALL THE FREE SURFACE AREA ON THE TOP OF THE CAPS, INCLUDING CHAMFERS, WITH EPOXY PROTECTIVE COATING. DO NOT COAT UNDER BEARING AREAS.



BENT 2

COAT ALL THE FREE SURFACE AREA ON THE TOP OF THE CAPS, INCLUDING CHAMFERS, WITH EPOXY PROTECTIVE COATING. DO NOT COAT UNDER BEARING AREAS.



END BENT 2

LEGEND	
▨	EPOXY COATING AREA

NOTES:

COORDINATE THIS SHEET WITH OTHER SHEETS FOR "CONCRETE RESTORATION DETAILS".

PERFORM ALL CONCRETE REPAIRS PRIOR TO APPLYING THE EPOXY PROTECTIVE COATING.

THE TOPS OF THE CAPS SHOULD BE CLEAN AND CLEAR OF ALL DEBRIS PRIOR TO THE APPLICATION OF THE EPOXY PROTECTIVE COATING.

FOR EPOXY PROTECTIVE COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS AND STANDARD SPECIFICATIONS SECTION 420-18.

AS-BUILT REPAIR QUANTITY TABLE

EPOXY COATING BENT CAPS	TOTAL	
LOCATION	ESTIMATE	ACTUAL
END BENT 1	142 SF	
BENT 1	164 SF	
BENT 2	164 SF	
END BENT 2	142 SF	
TOTAL	612 SF	

DRAWN BY : JASON M. DEBONE DATE : 01/2023
CHECKED BY : ALLEN J. MCSWAIN DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

4/17/2023
640044_I6039_SMU_CR01.dgn
jduke

DocuSigned by: Jacob H. Duke
NORTH CAROLINA PROFESSIONAL SEAL 043777 ENGINEER JACOB H DUKE
4/17/2023

KCA KISINGER CAMPO & ASSOCIATES
301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. I-6039
NEW HANOVER COUNTY
BRIDGE NO. 640044

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

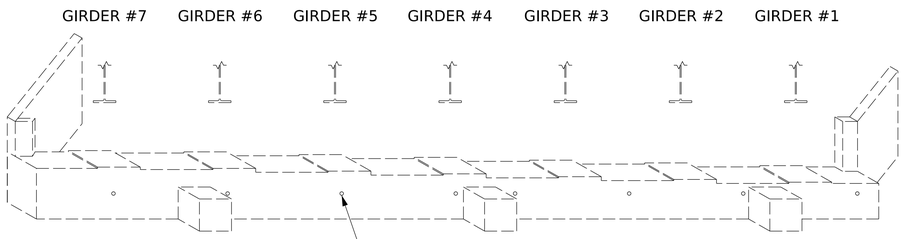
EPOXY COATING
SUBSTRUCTURE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-10
1			3			TOTAL SHEETS
2			4			13

LEGEND	
	CONCRETE REPAIR AREA (CR)
	SHOTCRETE REPAIR AREA (SCR)
	EPOXY RESIN INJECTION (ERI)

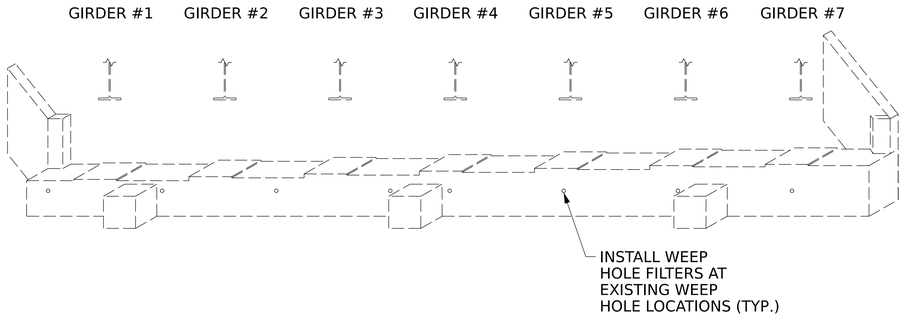
AS-BUILT REPAIR QUANTITY TABLE

END BENTS 1 & 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP/BACKWALL	-	-		
COLUMN/PILE	-	-		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	-	-		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	-			
COLUMN/PILE	-			
WEEP HOLE FILTERS	16 EA			



END BENT 1

(EAST FACE)



END BENT 2

(WEST FACE)

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

NOTES:

REPAIR LOCATIONS AND ESTIMATED QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATIONS AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE TABLE ABOVE.

CRACKING LOCATIONS AND QUANTITIES FOR LOCATIONS DESCRIBED AS ''SCATTERED THROUGHOUT'' IN THE INSPECTION REPORT ARE BASED ON THE BEST INFORMATION AVAILABLE. THE ENGINEER AND CONTRACTOR SHALL IDENTIFY AND REPAIR ALL CRACKS >=$\frac{1}{16}$" AS DESCRIBED IN THE SPECIAL PROVISIONS AT EACH BENT.

AVERAGE CONCRETE COVER IS EXPECTED TO BE 2" ON THE CAP AND FROM 1$\frac{1}{2}$" TO 2" ON THE COLUMNS. ACTUAL CONCRETE COVER SHALL BE DETERMINED BY THE CONTRACTOR AND PRESENTED TO THE ENGINEER PRIOR TO BEGINNING EXCAVATION/ DEMOLITION.

FOR CONCRETE AND SHOTCRETE REPAIRS, SEE "CONCRETE RESTORATION DETAILS" SHEETS.

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

(AT END BENTS) FOR WEEP HOLE FILTERS, SEE SPECIAL PROVISIONS.

PROJECT NO. I-6039

NEW HANOVER COUNTY

BRIDGE NO. 640044

KCA KISINGER CAMPO & ASSOCIATES

301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

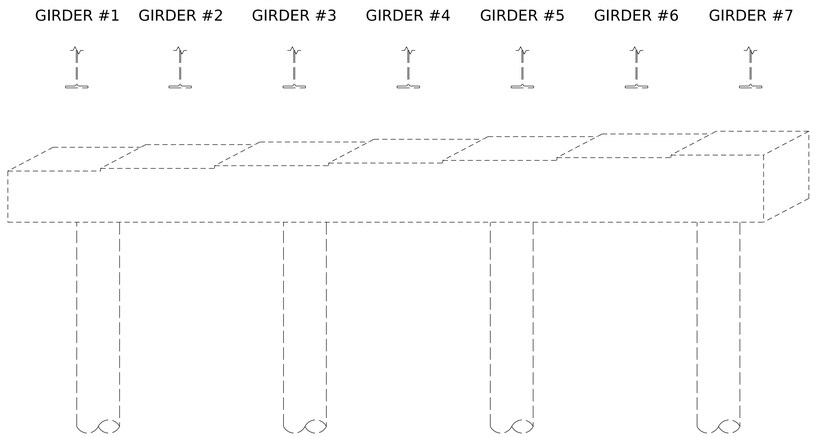
SUBSTRUCTURE REPAIRS
END BENTS 1 & 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-11
1			3			TOTAL SHEETS
2			4			13

DRAWN BY : JASON DEBONE DATE : 01/2023
CHECKED BY : AJ MCSWAIN DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

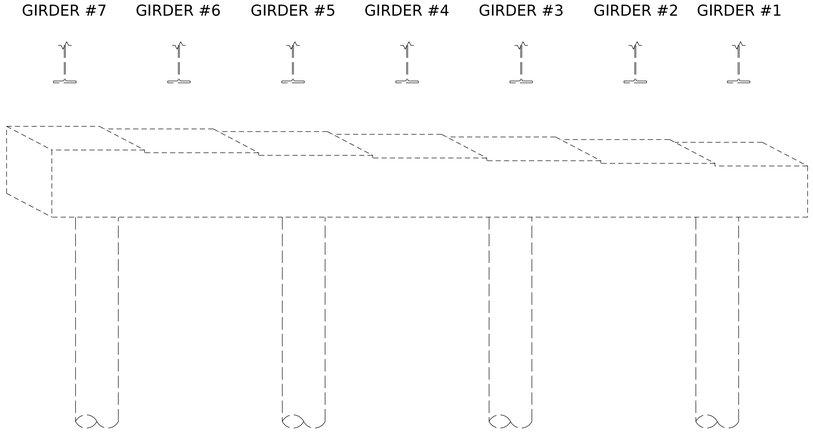
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

4/17/2023
640044_I6039_SMU_SBR00.dgn
jduke



BENT 1

(WEST FACE)



BENT 1

(EAST FACE)

LEGEND

	CONCRETE REPAIR AREA (CR)
	SHOTCRETE REPAIR AREA (SCR)
	EPOXY RESIN INJECTION (ERI)

AS-BUILT REPAIR QUANTITY TABLE

BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP/BACKWALL	-	-		
COLUMN/PILE	-	-		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	-	-		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	-			
COLUMN/PILE	-			
WEEP HOLE FILTERS	-			

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

NOTES:

REPAIR LOCATIONS AND ESTIMATED QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATIONS AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE TABLE ABOVE.

CRACKING LOCATIONS AND QUANTITIES FOR LOCATIONS DESCRIBED AS ''SCATTERED THROUGHOUT'' IN THE INSPECTION REPORT ARE BASED ON THE BEST INFORMATION AVAILABLE. THE ENGINEER AND CONTRACTOR SHALL IDENTIFY AND REPAIR ALL CRACKS >=$\frac{1}{16}$" AS DESCRIBED IN THE SPECIAL PROVISIONS AT EACH BENT.

AVERAGE CONCRETE COVER IS EXPECTED TO BE 2" ON THE CAP AND FROM 1$\frac{1}{2}$" TO 2" ON THE COLUMNS. ACTUAL CONCRETE COVER SHALL BE DETERMINED BY THE CONTRACTOR AND PRESENTED TO THE ENGINEER PRIOR TO BEGINNING EXCAVATION/ DEMOLITION.

FOR CONCRETE AND SHOTCRETE REPAIRS, SEE "CONCRETE RESTORATION DETAILS" SHEETS.

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

(AT END BENTS) FOR WEEP HOLE FILTERS, SEE SPECIAL PROVISIONS.

PROJECT NO. I-6039

NEW HANOVER COUNTY

BRIDGE NO. 640044

KCA KISINGER CAMPO & ASSOCIATES

301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

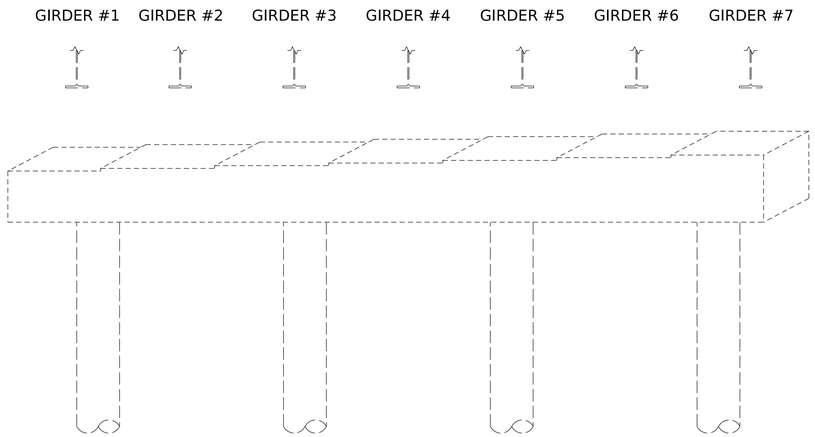
SUBSTRUCTURE REPAIRS
BENT 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-12
1			3			TOTAL SHEETS
2			4			13

DRAWN BY : JASON DEBONE DATE : 01/2023
CHECKED BY : AJ MCSWAIN DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

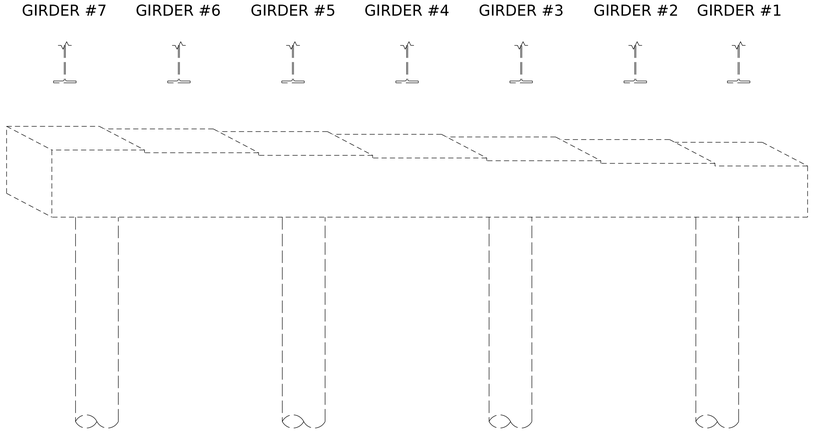
4/17/2023
640044_I6039_SMU_SBR01.dgn
jduke

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



BENT 2

(WEST FACE)



BENT 2

(EAST FACE)

LEGEND

	CONCRETE REPAIR AREA (CR)
	SHOTCRETE REPAIR AREA (SCR)
	EPOXY RESIN INJECTION (ERI)

AS-BUILT REPAIR QUANTITY TABLE

BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP/BACKWALL	-	-		
COLUMN/PILE	-	-		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	-	-		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	-			
COLUMN/PILE	-			
WEEP HOLE FILTERS	-			

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

NOTES:

REPAIR LOCATIONS AND ESTIMATED QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATIONS AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE TABLE ABOVE.

CRACKING LOCATIONS AND QUANTITIES FOR LOCATIONS DESCRIBED AS ''SCATTERED THROUGHOUT'' IN THE INSPECTION REPORT ARE BASED ON THE BEST INFORMATION AVAILABLE. THE ENGINEER AND CONTRACTOR SHALL IDENTIFY AND REPAIR ALL CRACKS >=$\frac{1}{16}$" AS DESCRIBED IN THE SPECIAL PROVISIONS AT EACH BENT.

AVERAGE CONCRETE COVER IS EXPECTED TO BE 2" ON THE CAP AND FROM 1$\frac{1}{2}$" TO 2" ON THE COLUMNS. ACTUAL CONCRETE COVER SHALL BE DETERMINED BY THE CONTRACTOR AND PRESENTED TO THE ENGINEER PRIOR TO BEGINNING EXCAVATION/ DEMOLITION.

FOR CONCRETE AND SHOTCRETE REPAIRS, SEE "CONCRETE RESTORATION DETAILS" SHEETS.

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

(AT END BENTS) FOR WEEP HOLE FILTERS, SEE SPECIAL PROVISIONS.

PROJECT NO. I-6039

NEW HANOVER COUNTY

BRIDGE NO. 640044

DocuSigned by: Jacob H. Duke

NORTH CAROLINA PROFESSIONAL SEAL 043777 ENGINEER JACOB H DUKE 4/17/2023

KCA KISINGER CAMPO & ASSOCIATES

301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

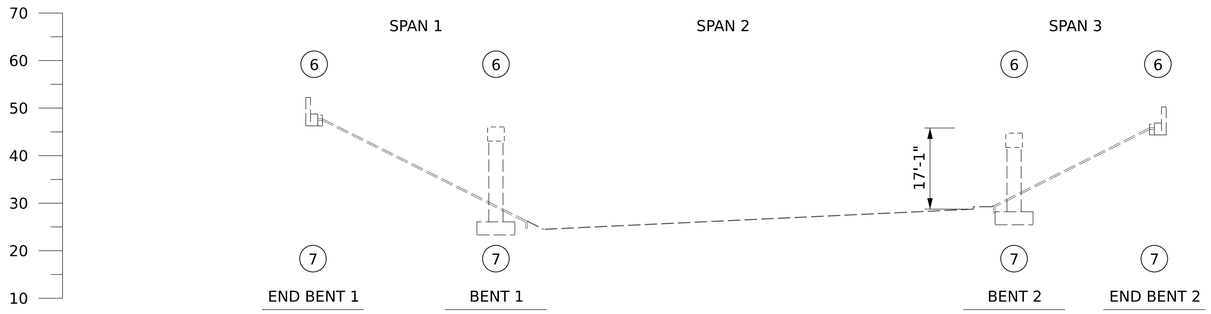
SUBSTRUCTURE REPAIRS
BENT 2

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

DRAWN BY : JASON DEBONE DATE : 01/2023
CHECKED BY : AJ MCSWAIN DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

4/17/2023
640044_I6039_SMU_SBR02.dgn
jduke

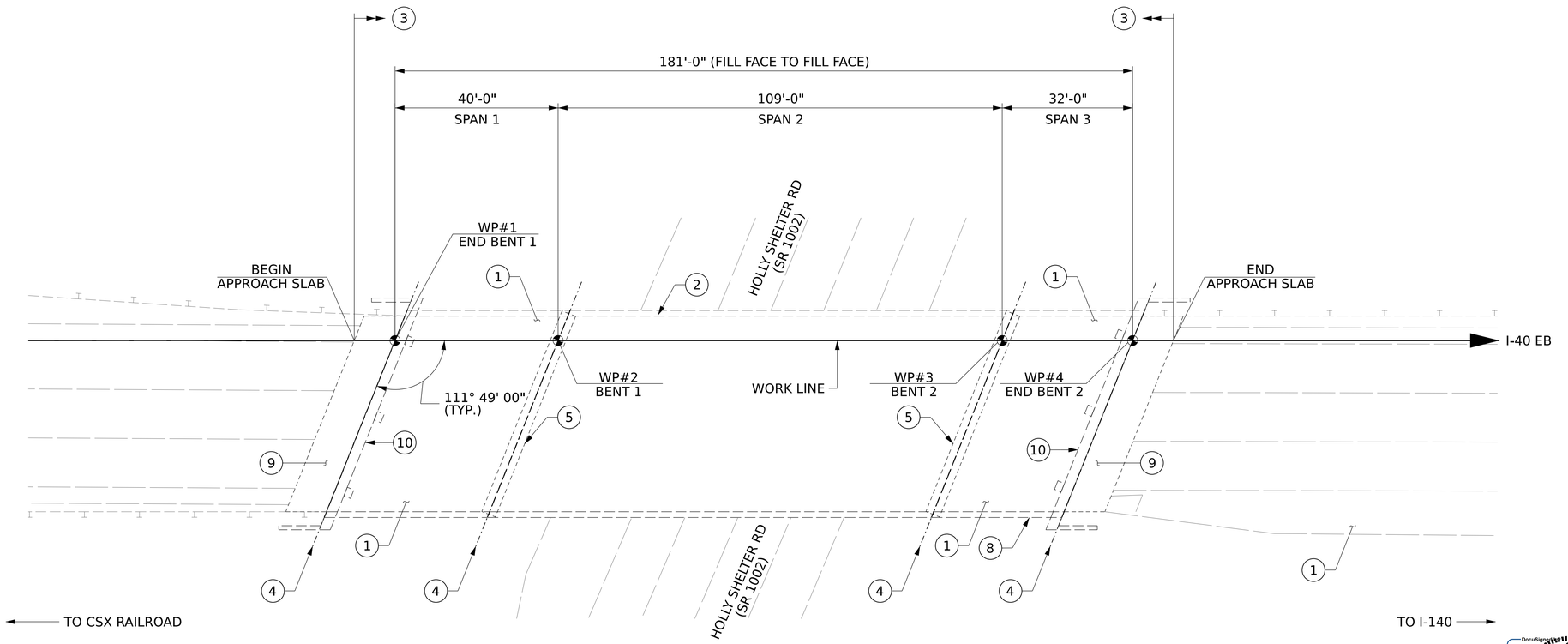
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



SECTION ALONG ROADWAY

SCOPE LEGEND:

1. CLEAR SHOULDERS OF DEBRIS AND VEGETATION
2. BRIDGE RAIL REPAIRS
3. POLYMER CONCRETE OVERLAY
4. JOINT REPLACEMENT
5. SUPERSTRUCTURE BEARING REPAIRS
6. EPOXY COAT CAPS
7. REPAIR SEALS AT BASE OF COLUMNS AND END BENT CAPS
8. EROSION REPAIRS
9. APPROACH SLAB FOAM INJECTION
10. INSTALL WEEP HOLE FILTERS



PLAN

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

RESIDENT ENGINEER DATE

PROJECT NO. I-6039

NEW HANOVER COUNTY

BRIDGE NO. 640045

NOTES:

GENERAL DRAWING INFORMATION IS TAKEN FROM THE ORIGINAL PLANS AND THE MOST UP TO DATE ROUTINE INSPECTION REPORT DATED 11/02/2022

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

DRAWN BY : JASON DEBONE DATE : 01/2023
CHECKED BY : SCOTT A BETZ DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

4/17/2023
640045_I6039_SMU_GD01.dgn
jduke

DocuSigned by: JACOB H. DUKE 4/17/2023
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 043777 JACOB H. DUKE

KCA KISINGER CAMPO & ASSOCIATES
301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

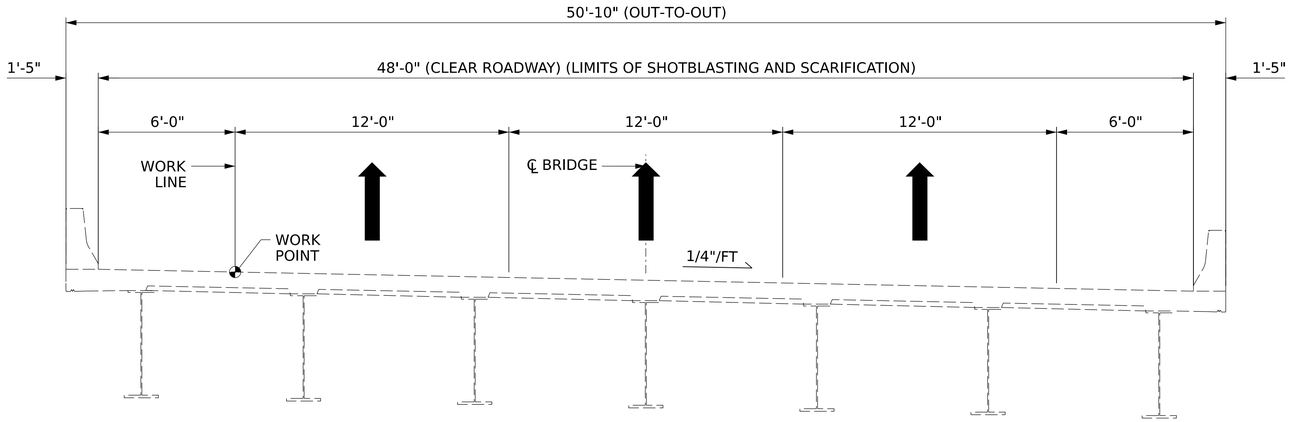
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON I-40 EB
OVER SR 1002 (HOLLY SHELTER RD)

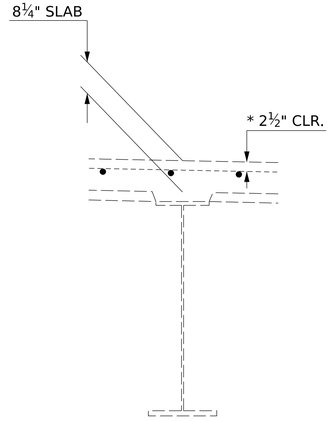
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-1
1			3			TOTAL SHEETS
2			4			13

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



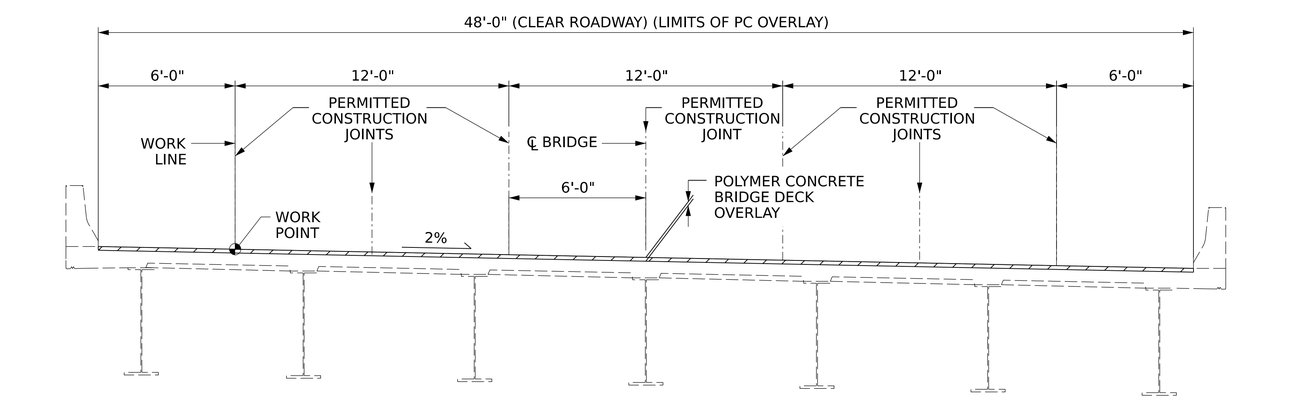
EXISTING SECTION

(SPANS 1 - 3)
(DIAPHRAGMS NOT SHOWN FOR CLARITY)



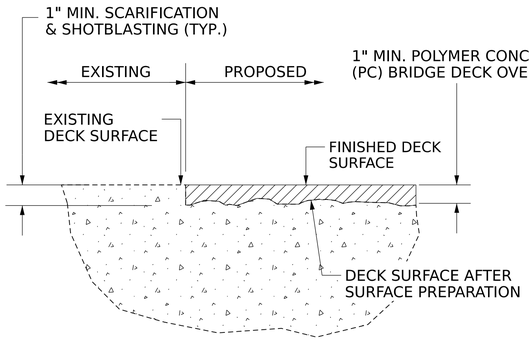
EXISTING SLAB SECTION

(SPANS 1 - 3)
* CONCRETE COVER PER EXISTING PLANS DATED 05/1981

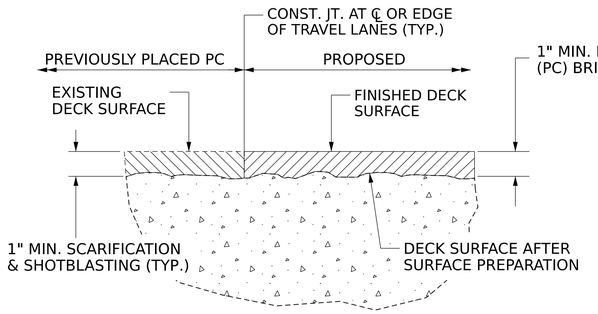


PROPOSED SECTION

(SPANS 1 - 3)
(DIAPHRAGMS NOT SHOWN FOR CLARITY)



DETAIL FOR PC OVERLAY



DETAIL FOR STAGED PC OVERLAY

NOTES:

1. LONGITUDINAL CONSTRUCTION JOINTS OF OVERLAYS SHALL BE LOCATED ALONG THE CENTERLINE OR EDGE OF TRAVEL LANES.
2. SEE TRAFFIC MANAGEMENT PLANS FOR LANE WIDTHS, SEQUENCING, AND OTHER TRAFFIC CONTROL MEASURES FOR STAGING OF PC OVERLAY AND SURFACE PREPARATION.

DRAWN BY : AJ MCSWAIN DATE : 01/2023
CHECKED BY : SCOTT A BETZ DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

4/17/2023
640045_I6039_SMU_TS01.dgn
jduke

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 043777 JACOB H DUKE 4/17/2023

KCA KISINGER CAMPO & ASSOCIATES

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

PROJECT NO. I-6039
NEW HANOVER COUNTY
BRIDGE NO. 640045

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION
SPANS 1 - 3

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

AS-BUILT REPAIR QUANTITY TABLE

TOP OF DECK REPAIRS	SPAN 1		SPAN 2		SPAN 3		BEGIN APPROACH SLAB		END APPROACH SLAB	
	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	214 SY		582 SY		171 SY		54 SY		54 SY	
SHOTBLASTING BRIDGE DECK	214 SY		582 SY		171 SY		54 SY		54 SY	
PC MATERIALS	5.9 CY		16.2 CY		4.8 CY		1.5 CY		1.5 CY	
PLACING AND FINISHING PC OVERLAY	214 SY		582 SY		171 SY		54 SY		54 SY	
GROOVING BRIDGE FLOORS	1800 SF		4905 SF		1440 SF		450 SF		450 SF	
CLASS II SURFACE PREPARATION	2.9 SY		0.0 SY		2.9 SY		3.1 SY		2.9 SY	

NOTES:

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

CONCRETE COVER FOR TOP BARS IN THE DECK SLAB IS 2½" PER THE EXISTING BRIDGE PLANS. ACTUAL CONCRETE COVER SHALL BE DETERMINED BY THE CONTRACTOR AND PRESENTED TO THE ENGINEER PRIOR TO BEGINNING SCARIFICATION.

CURRENT AVERAGE COVER IS EXPECTED TO BE FROM 1½" TO 2" BASED ON VISUAL INSPECTION.

MINOR QUANTITIES OF CLASS II AREAS ARE ANTICIPATED, PARTICULARLY NEAR JOINTS. HOWEVER, DUE TO THEIR SMALL SIZE, THE CLASS II LOCATIONS HAVE NOT BEEN DELINEATED ON THESE PLANS. THE CLASS II QUANTITIES INDICATED ARE ANTICIPATED TO BE SUFFICIENT FOR THE ACTUAL QUANTITIES ENCOUNTERED.

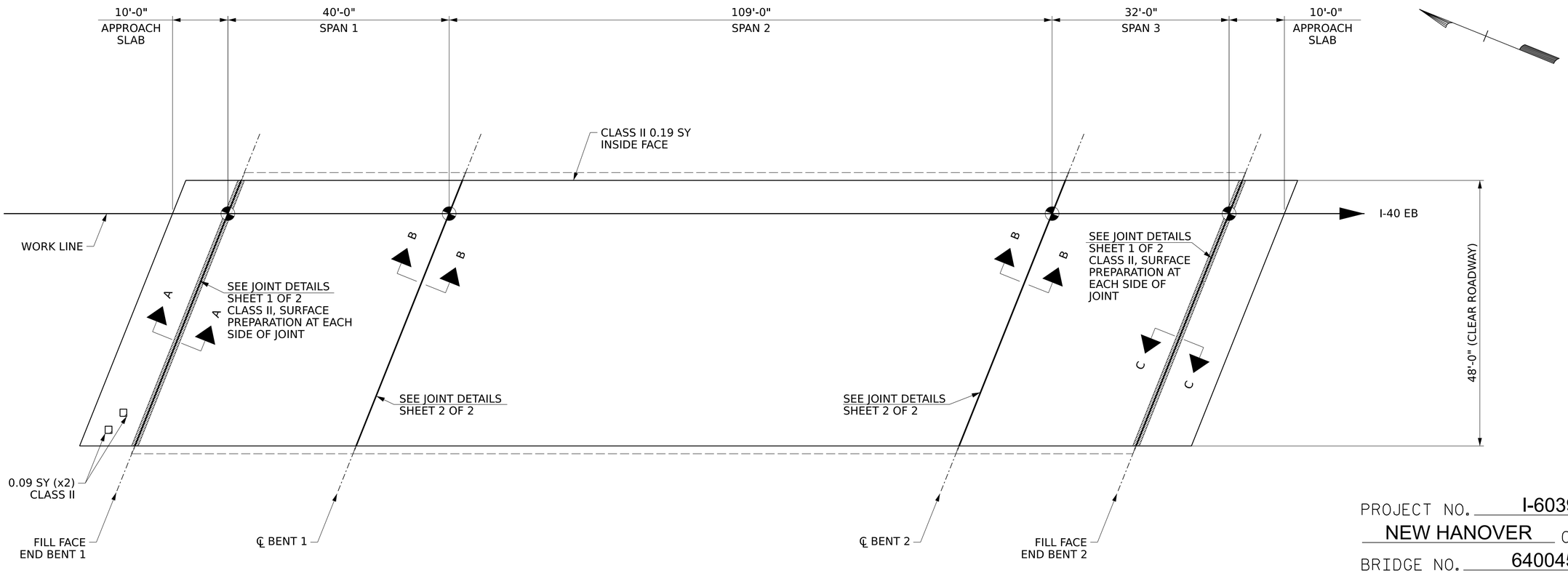
FOR CLASS II SURFACE PREPARATION, SEE SPECIAL PROVISIONS.

BRIDGE DECK GROOVING QUANTITY BASED ON LIMITS REQUIRED IN SECTION 420-14(B) OF THE STANDARD SPECIFICATIONS.

BRIDGE DECK SCARIFICATION LIMITS ARE THE FULL CLEAR ROADWAY WIDTH (INSIDE FACE OF EACH BRIDGE RAIL).

FOR POLYMER CONCRETE BRIDGE DECK OVERLAY, SEE SPECIAL PROVISIONS.

COORDINATE THIS SHEET WITH THE SHEETS FOR JOINT DETAILS.



PC OVERLAY

CLASS II SURFACE PREP.

SHOTCRETE REPAIR AREA (SCR)

PROJECT NO. I-6039

NEW HANOVER COUNTY

BRIDGE NO. 640045

KCA KISINGER CAMPO & ASSOCIATES

301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

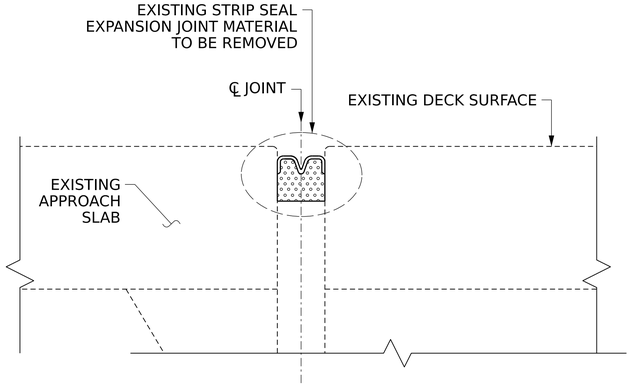
PLAN OF SPANS

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

DRAWN BY : JASON DEBONE DATE : 01/2023
CHECKED BY : AJ MCSWAIN DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

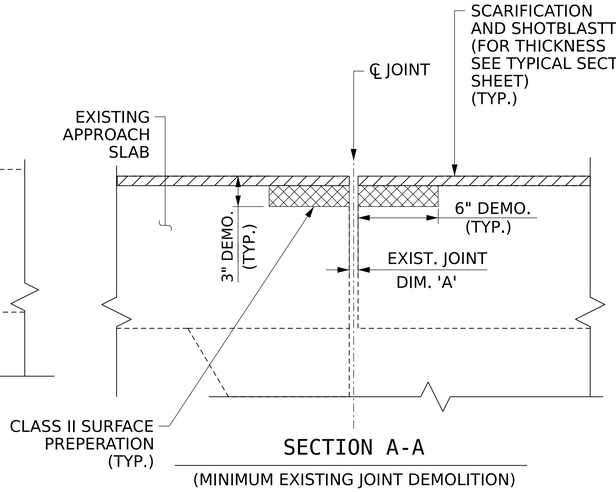
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

4/17/2023
640045_I6039_SMU_DSR01.dgn
jduke



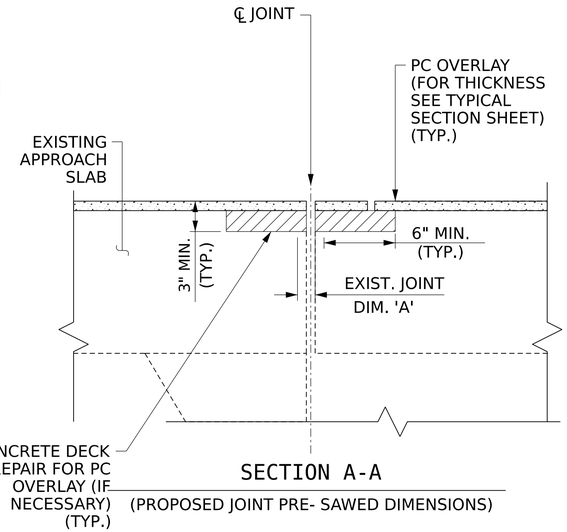
SECTION A-A

(EXISTING BRIDGE JOINT)



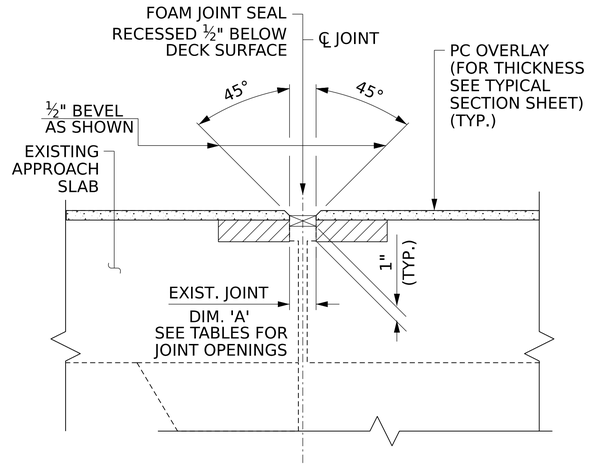
SECTION A-A

(MINIMUM EXISTING JOINT DEMOLITION)



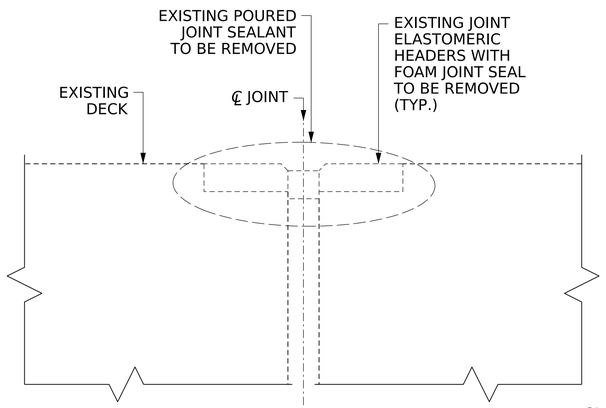
SECTION A-A

(PROPOSED JOINT PRE- SAWED DIMENSIONS)



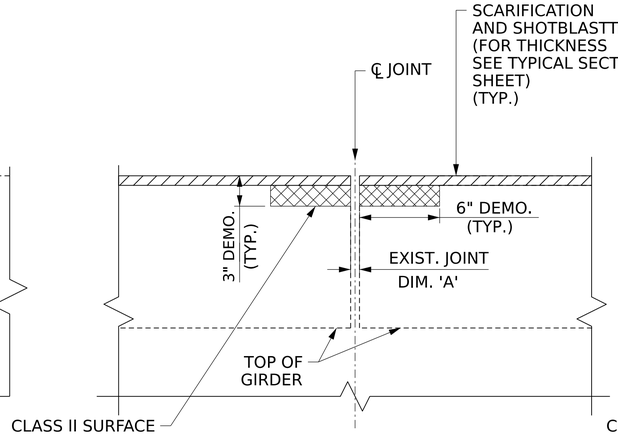
SECTION A-A

(PROPOSED FOAM JOINT SEAL)



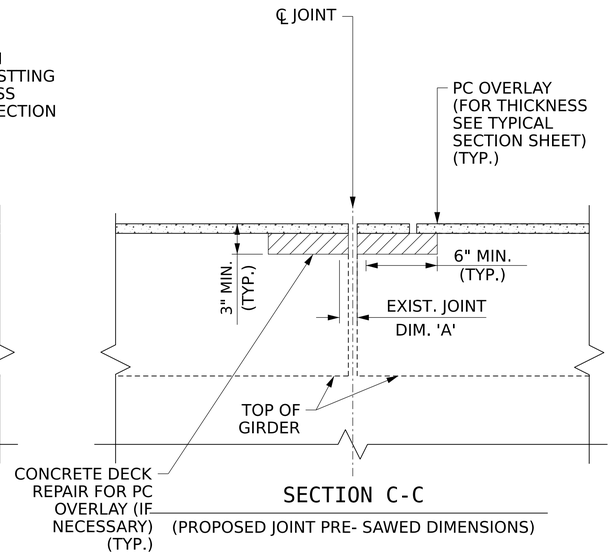
SECTION C-C

(EXISTING BRIDGE JOINT)



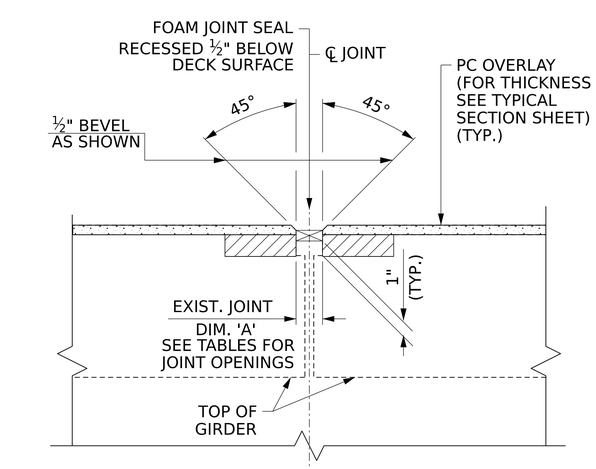
SECTION C-C

(MINIMUM EXISTING JOINT DEMOLITION)



SECTION C-C

(PROPOSED JOINT PRE- SAWED DIMENSIONS)



SECTION C-C

(PROPOSED FOAM JOINT SEAL)

PROJECT NO. I-6039

NEW HANOVER COUNTY

BRIDGE NO. 640045

SHEET 1 OF 3

KCA
KISINGER CAMPO
& ASSOCIATES

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

JOINT DETAILS

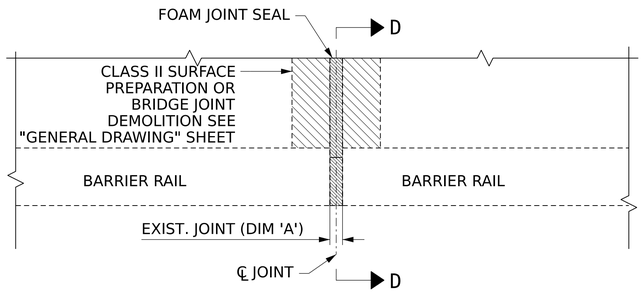
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-4
1			3			TOTAL SHEETS
2			4			13

DRAWN BY : FIDEL L. FLORES DATE : 01/2023
CHECKED BY : ALLEN J. MCSWAIN DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

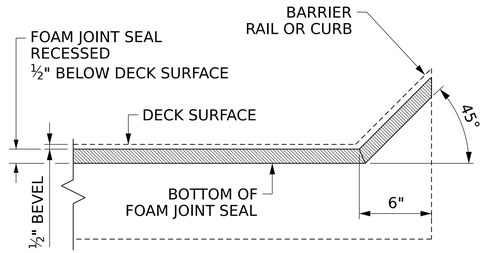
301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

4/17/2023
640045_16039_SMU_JT01.dgn
jduke



PLAN AT GUTTER

(PROPOSED FOAM JOINT SEAL)



SECTION D-D

(PROPOSED FOAM JOINT SEAL)

PROPOSED JOINT QUANTITY

	ESTIMATED (LIN. FT.)	ACTUAL (LIN. FT.)
FOAM JOINT SEALS FOR PRESERVATION	106	

TABLE 1

01-26-2023

BENT/ JOINTS	DIM 'A' @ 51°F
END BENT 1	2"
END BENT 2	1½"

NOTES:

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

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

INSTALL FOAM JOINTS AS PER THE MANUFACTURER'S RECOMMENDATIONS.

THE CONTRACTOR SHALL TAKE CARE DURING JOINT REPAIR OPERATIONS NOT TO DROP ANY MATERIAL THAT FALLS BELOW THE BRIDGE, WITHOUT PROTECTIVE DEVICES BELOW TO CATCH THE MATERIAL. ANY MATERIAL THAT FALLS BELOW THE BRDIGE 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.

FOR BRIDGE JOINT DEMOLITION, SEE SPECIAL PROVISIONS.

FOR FOAM JOINT SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.

DEMOLISH BRIDGE JOINT AREA SUCH THAT THE BOTTOM OF THE EXCAVATION SHALL BE REASONABLY FLAT AND LEVEL AND TO THE NECESSARY DEPTH, SUCH THAT THE REPAIR SHALL BE FOUNDED ON CONCRETE OR REPAIR CONCRETE SUBSTRATE.

TAKE CARE NOT TO DAMAGE ANY EXISTING DECK REINFORCING EXPOSED DURING BRIDGE JOINT DEMOLITION. NOTIFY THE ENGINEER OF ANY DECK REINFORCING EXPOSED DURING BRIDGE JOINT DEMOLITION OPERATIONS.

EXISTING DECK REINFORCING IS NOT SHOWN IN THE SECTIONS PROVIDED ON THIS SHEET.

PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION

PROJECT NO. I-6039

NEW HANOVER COUNTY

BRIDGE NO. 640045

SHEET 2 OF 3

DRAWN BY : FIDEL L. FLORES DATE : 01/2023
CHECKED BY : ALLEN J. MCSWAIN DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

4/17/2023
640045_I6039_SMU_JT02.dgn
jduke

DocuSigned by: Jacob H. Duke
NORTH CAROLINA PROFESSIONAL SEAL 043777 ENGINEER JACOB H DUKE
4/17/2023

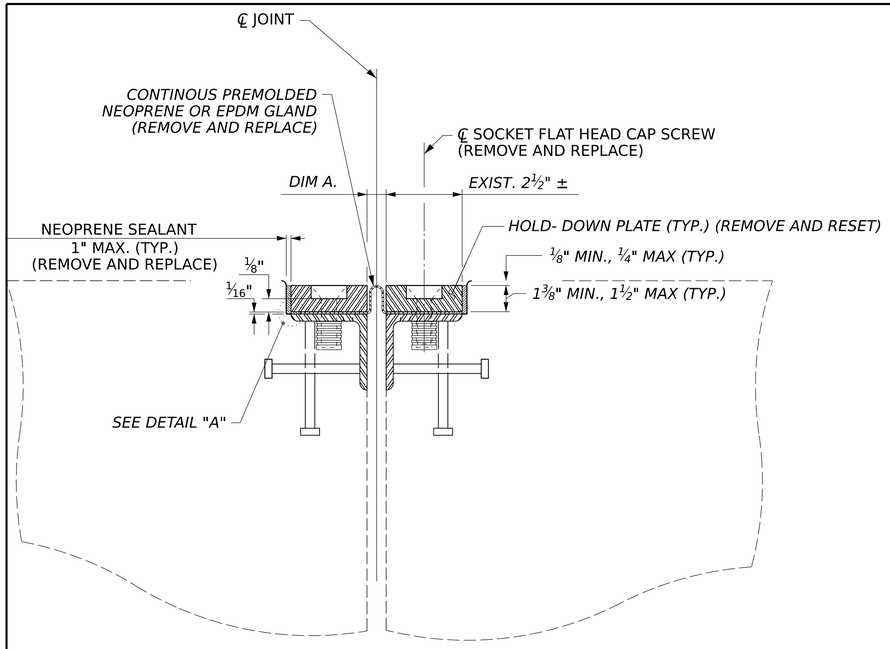
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

KCA KISINGER CAMPO & ASSOCIATES
301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

JOINT DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-5
1			3			TOTAL SHEETS
2			4			13



EXPANSION JOINT DETAILS

SUGGESTED REPAIR INSTALLATION PROCEDURE

1. LOOSEN THE EXISTING SCREWS 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 ⅞" IN DIAMETER WITH A HAND PUNCH.
4. IN ORDER TO CHECK FOR PROPER ALIGNMENT, PLACE THE NEW GLAND AND HOLD-DOWN PLATES ON THE BASE ANGLE. DO NOT APPLY NEW NEOPRENE SEALANT. BOLT THE HOLD-DOWN PLATES TO THE BASE ANGLE, BUT DO NOT TIGHTEN. THE ENGINEER WILL INSPECT THE JOINT SEAL DEVICE FOR PROPER ALIGNMENT.
5. AFTER INSPECTION, REMOVE THE HOLD-DOWN PLATES AND NEW GLAND. APPLY NEW NEOPRENE SEALANT TO THE BASE ANGLE IN ACCORDANCE WITH THE ''INSTALLATION SKETCH''. PLACE NEW GLAND AND HOLD-DOWN PLATES ON THE BASE ANGLE. BOLT THE HOLD-DOWN PLATES TO THE BASE ANGLE ASSEMBLY AND TORQUE THE SCREWS 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 OPNEING VARIES FROM THE OPENING INDICATED IN THE DETAILS BY MORE THAN ¼", NOTIFY THE ENGINEER.

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

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

A PREMOLDED CORRUGATED OR NON-CORRUGATED GLAND SHALL BE 130°.

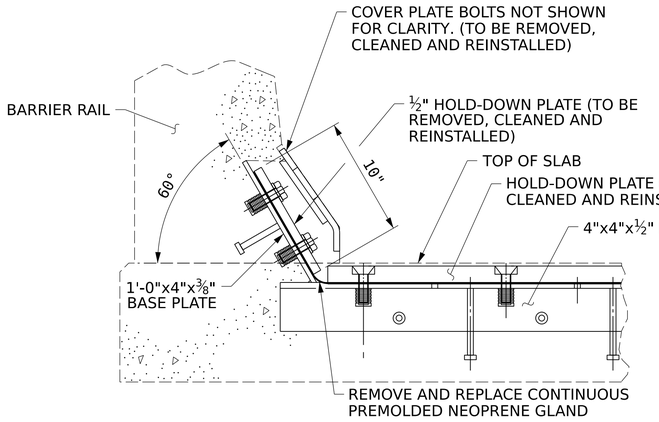
THE FINISHED EXPANSION SEAL DEVICE SHALL BE A MINIMUM SLAB.

FOR EXPANSION JOINT SEAL REPAIR, SEE SPECIAL PROVISIONS.

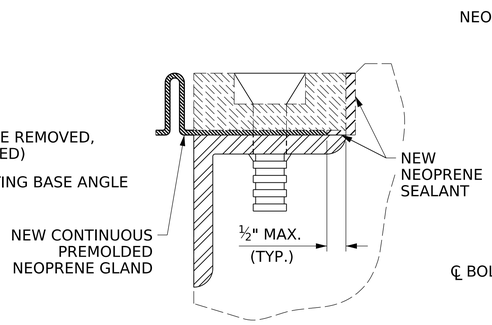
NO SEPARATE PAYMENT WILL BE MADE FOR REMOVING AND REINSTALLING MEDIAN AND BARRIER RAIL COVER PLATES. THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE LINEAR FEET PRICE BID FOR "EXPANSION JOINT SEALS FOR PRESERVATION".

DIM 'A' MOVEMENT AT JOINT	
LOCATION	PERPENDICULAR JOINT OPENING AT 51°F
BENT 1	1¾"
BENT 2	1¾"

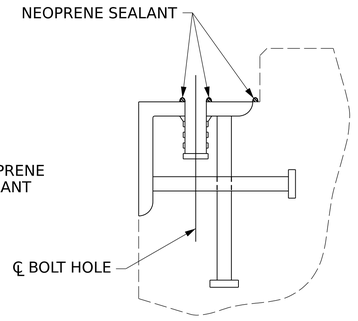
JOINT REPAIR QUANTITY TABLE		
	ESTIMATED	ACTUAL
EXPANSION JOINT SEALS FOR PRESERVATION	106	



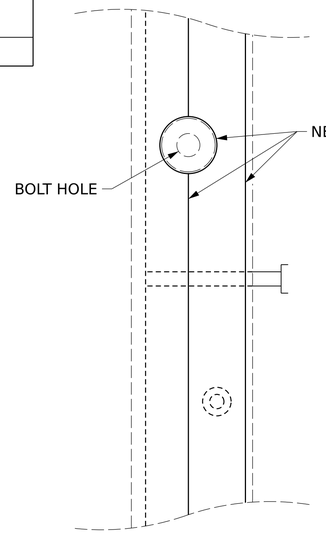
SECTION THRU RAIL NORMAL TO JOINT



DETAIL "A"



CROSS SECTION



PLAN VIEW

INSTALLATION SKETCH

PROJECT NO. I-6039
NEW HANOVER COUNTY
BRIDGE NO. 640045
SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

JOINT DETAILS

SEAL 043777 ENGINEER JACOB H DUKE 4/17/2023

KISINGER CAMPO & ASSOCIATES
301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-6
1			3			TOTAL SHEETS
2			4			13

DRAWN BY : FIDEL L. FLORES DATE : 01/2023
CHECKED BY : ALLEN J. MCSWAIN DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

4/17/2023
640045_16039_SMU_JT03.dgn
jduke

PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION

NOTES:

REPAIR LOCATIONS AND ESTIMATED QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATIONS AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE TABLE ABOVE.

CRACKING LOCATIONS AND QUANTITIES FOR LOCATIONS DESCRIBED AS ''SCATTERED THROUGHOUT'' IN THE INSPECTION REPORT ARE BASED ON THE BEST INFORMATION AVAILABLE. THE ENGINEER AND CONTRACTOR SHALL IDENTIFY AND REPAIR ALL CRACKS >=$\frac{1}{16}$" AS DESCRIBED IN THE SPECIAL PROVISIONS.

AVERAGE CONCRETE COVER IS EXPECTED AS FOLLOWS;
DECK & DIAPHRAGMS: 2$\frac{1}{2}$"

FOR CONCRETE AND SHOTCRETE REPAIRS, SEE "CONCRETE RESTORATION DETAILS" SHEETS.

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

ADDITIONAL QUANTITIES OF CONCRETE REPAIR AREAS ARE ANTICIPATED. DUE TO LACK OF INFORMATION, ALL AREAS ARE NOT KNOWN. QUANTITIES ARE ANTICIPATED TO BE SUFFICIENT FOR ACTUAL QUANTITIES ENCOUNTERED.

FOR BEARINGS REPAIRS, SEE BEARING REPAIR SHEETS.

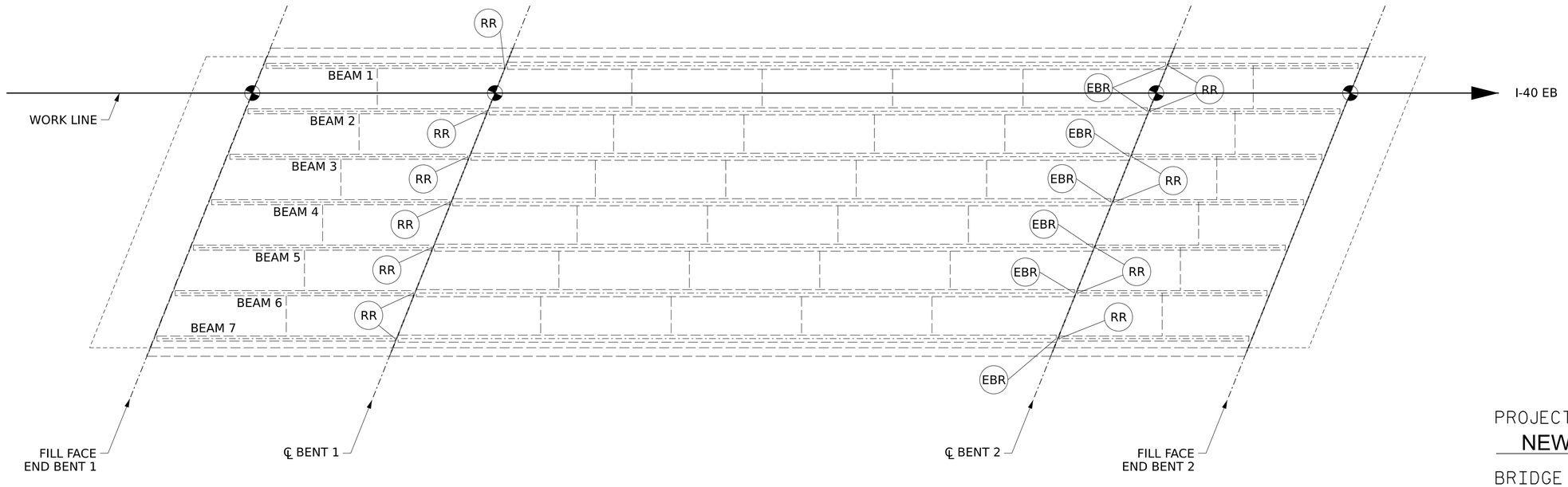
LEGEND

	SHOTCRETE REPAIR (SCR)
	EPOXY RESIN INJECTION (ERI)
RR	BEARING RETAINER RING
EBR	EXPANSION BEARING REPAIRS

AS-BUILT REPAIR QUANTITY TABLE

	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
UNDERSIDE OF DECK & OVERHANG	-	-		
DIAPHRAGMS	-	-		
RAILS	-	-		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
DECK , DIAPHRAGMS AND RAILS	-			
GIRDERS	-			

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



PROJECT NO. I-6039
NEW HANOVER COUNTY
BRIDGE NO. 640045

NORTH CAROLINA PROFESSIONAL SEAL 043777 ENGINEER JACOB H DUKE 4/17/2023

KCA KISINGER CAMPO & ASSOCIATES

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE REPAIRS

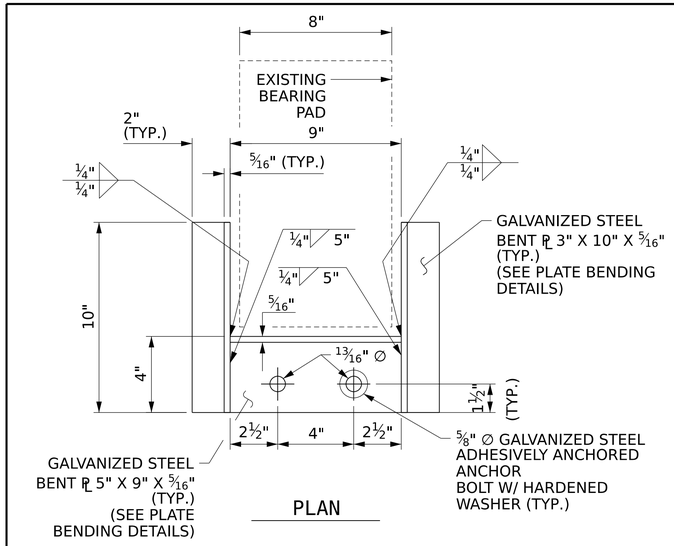
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-7
1			3			TOTAL SHEETS
2			4			13

DRAWN BY : JASON DEBONE DATE : 01/2023
CHECKED BY : AJ MCSWAIN DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

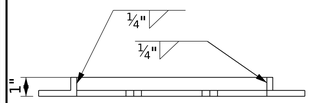
4/17/2023
640045_I6039_SMU_DUR01.dgn
jduke

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506



PLAN



ELEVATION

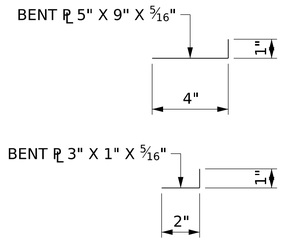
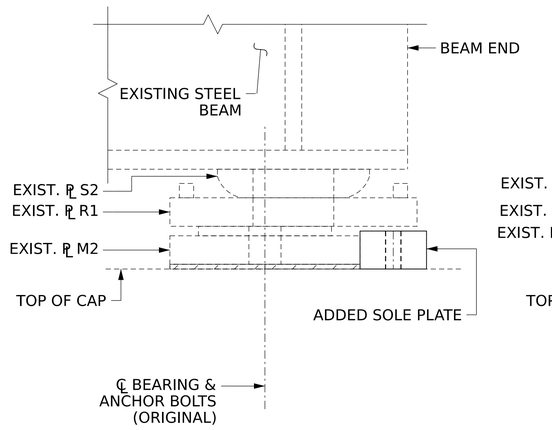


PLATE BENDING DETAILS

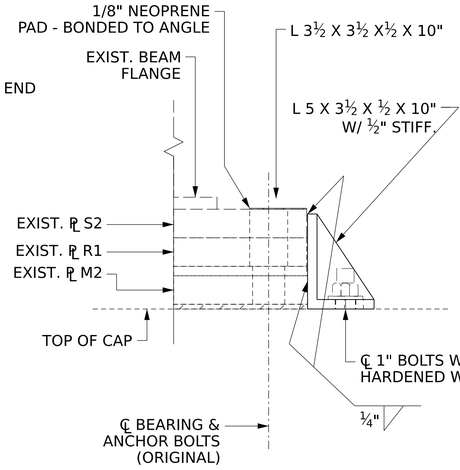
TYPE A RETAINER RING RR

(14 ASSEMBLIES REQUIRED)
(7 - BENT 1)
(7 - BENT 2)



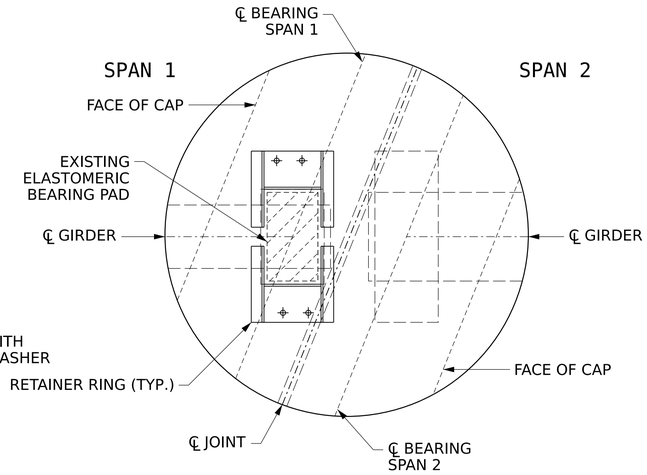
SECTION AT BENT 2

(ANCHOR BOLTS NOT SHOWN FOR CLARITY)
(PROPOSED ANGLES NOT SHOWN FOR CLARITY)

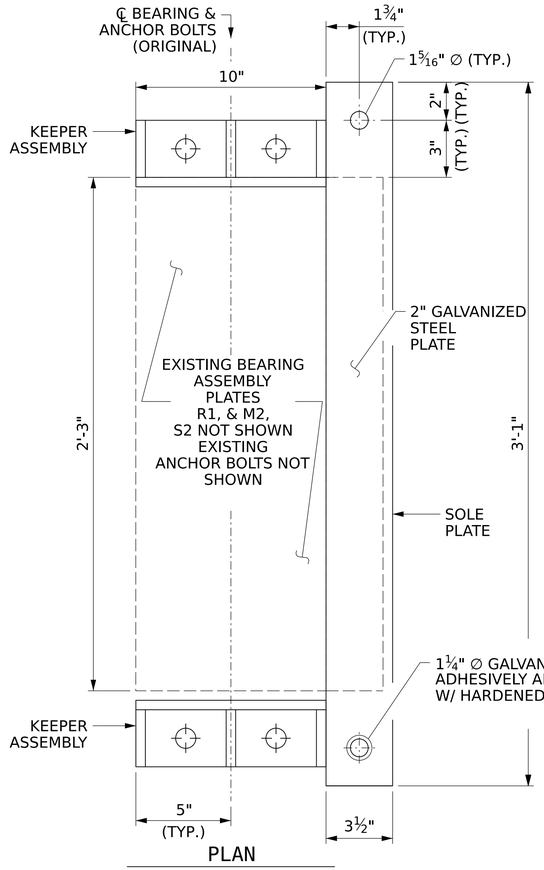


HALF-ELEVATION AT BENT 2

(ANCHOR BOLTS NOT SHOWN FOR CLARITY)
(REMOVE EXISTING DAMAGED ANCHOR BOLTS PRIOR TO ASSEMBLY)



GENERAL BENT 1 PLAN



PLAN

L 5 X 3½ X ½
STIFFENER DETAILS

EXPANSION BEARING REPAIRS EBR

(7 ASSEBMLIES REQUIRED - BENT 2)

GENERAL BENT 2 PLAN

NOTES:

1. STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 36 OR HIGHER.
2. ALL STRUCTURAL STEEL SHALL, ANCHOR BOLTS, NUTS ADN WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
3. ADHESIVELY ANCHORED BOLTS SHALL CONFORM TO THE STANDARD SPECIFICATIONS. WITH THE EXCEPTION OF FIELD TESTING, FIELD TESTING OF THE ADHESIVELY ANCHORED BOLTS IS NOT REQUIRED.
4. THE STRUCTURAL STEEL FABRICATOR SHALL PROVIDE SHOP DRAWINGS TO THE ENGINEER FOR REVIEW AND APPROVAL.
5. ANCHOR BOLTS SHALL BE SHIFTED AS NECESSARY TO CLEAR EXISTING REINFORCING STEEL.
6. INSTALLATION OF ADHESIVELY ANCHORED BOLTS SHALL BE INCLUDED IN THE LUMP SUM PRICE EITHER "RETAINER RING" OR "EXPANSION BEARING REPAIR"
7. FOR KEEPER ASSEMBLY LOCATIONS, SEE "SUPERSTRUCTURE REPAIRS" SHEETS.

PROJECT NO. I-6039
NEW HANOVER COUNTY
BRIDGE NO. 640045

DRAWN BY : JASON M. DEBONE DATE : 01/2023
CHECKED BY : ALLEN J. MCSWAIN DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

4/17/2023
640045_16039_SMU_BRG01.dgn
jduke

DocuSigned by: JACOB H. DUKE 4/17/2023
NORTH CAROLINA PROFESSIONAL SEAL 043777 ENGINEER JACOB H DUKE

KCA KISINGER CAMPO & ASSOCIATES

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

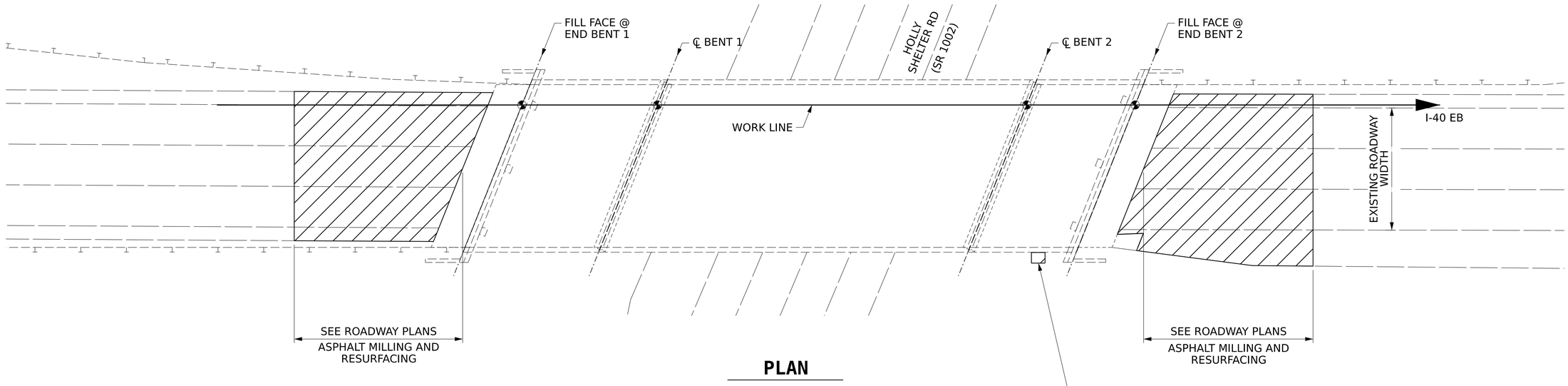
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE BEARING REPAIRS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-8
1			3			TOTAL SHEETS
2			4			13

NOTES:

1. APPROACH SLAB VOID FILLING ACTIVITIES TO BE COMPLETED PRIOR TO RESURFACING ACTIVITIES.



PLAN

PROJECT NO. I-6039

NEW HANOVER COUNTY

BRIDGE NO. 640045

DocuSigned by: Jacob H. Duke
NORTH CAROLINA PROFESSIONAL SEAL 043777 ENGINEER JACOB H DUKE
4/17/2023

KCA KISINGER CAMPO & ASSOCIATES

301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

APPROACH ROADWAY
ASPHALT MILLING

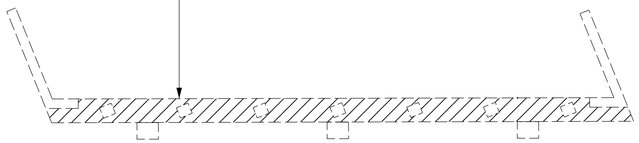
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-9
1			3			TOTAL SHEETS
2			4			13

DRAWN BY : JASON M. DEBONE DATE : 01/2023
CHECKED BY : ALLEN J. MCSWAIN DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

4/17/2023
640045_I6039_SMU_AR01.dgn
jduke

COAT ALL THE FREE SURFACE AREA ON THE TOP OF THE CAPS, INCLUDING CHAMFERS, WITH EPOXY PROTECTIVE COATING. DO NOT COAT UNDER BEARING AREAS.



END BENT 1

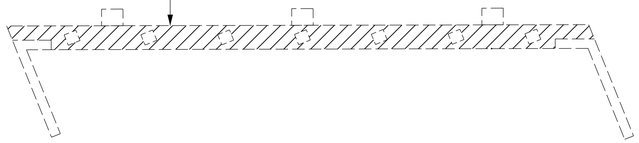
COAT ALL THE FREE SURFACE AREA ON THE TOP OF THE CAPS, INCLUDING CHAMFERS, WITH EPOXY PROTECTIVE COATING. DO NOT COAT UNDER BEARING AREAS.

BENT 1

COAT ALL THE FREE SURFACE AREA ON THE TOP OF THE CAPS, INCLUDING CHAMFERS, WITH EPOXY PROTECTIVE COATING. DO NOT COAT UNDER BEARING AREAS.

BENT 2

COAT ALL THE FREE SURFACE AREA ON THE TOP OF THE CAPS, INCLUDING CHAMFERS, WITH EPOXY PROTECTIVE COATING. DO NOT COAT UNDER BEARING AREAS.



END BENT 2

LEGEND	
▨	EPOXY COATING AREA

NOTES:

COORDINATE THIS SHEET WITH OTHER SHEETS FOR "CONCRETE RESTORATION DETAILS".

PERFORM ALL CONCRETE REPAIRS PRIOR TO APPLYING THE EPOXY PROTECTIVE COATING.

THE TOPS OF THE CAPS SHOULD BE CLEAN AND CLEAR OF ALL DEBRIS PRIOR TO THE APPLICATION OF THE EPOXY PROTECTIVE COATING.

FOR EPOXY PROTECTIVE COATING AND DEBRIS REMOVAL SEE SPECIAL PROVISIONS AND STANDARD SPECIFICATIONS SECTION 420-18.

AS-BUILT REPAIR QUANTITY TABLE

EPOXY COATING BENT CAPS	TOTAL	
LOCATION	ESTIMATE	ACTUAL
END BENT 1	142 SF	
BENT 1	164 SF	
BENT 2	164 SF	
END BENT 2	142 SF	
TOTAL	612 SF	

DRAWN BY : JASON M. DEBONE DATE : 01/2023
CHECKED BY : ALLEN J. MCSWAIN DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

4/17/2023
6400045_I6039_SMU_CR01.dgn
jduke

DocuSigned by: Jacob H. Duke
NORTH CAROLINA PROFESSIONAL SEAL 043777 ENGINEER JACOB H DUKE
4/17/2023

KCA KISINGER CAMPO & ASSOCIATES
301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. I-6039
NEW HANOVER COUNTY
BRIDGE NO. 640045

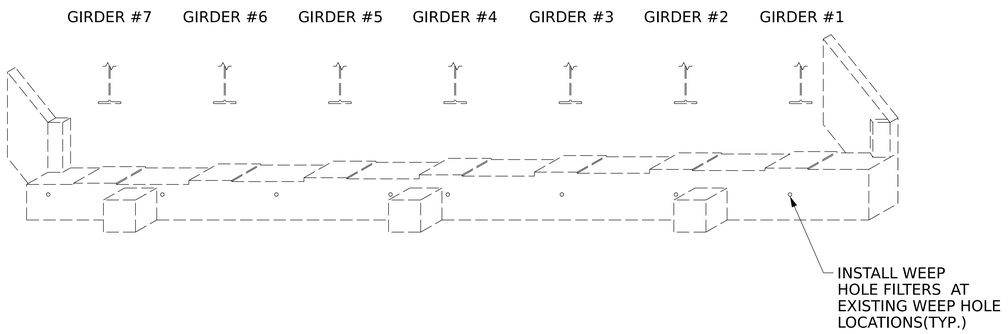
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

EPOXY COATING
SUBSTRUCTURE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-10
1			3			TOTAL SHEETS
2			4			13

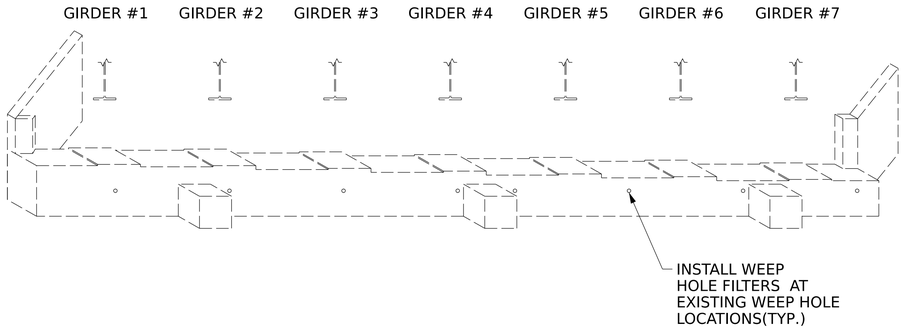
LEGEND	
	CONCRETE REPAIR AREA (CR)
	SHOTCRETE REPAIR AREA (SCR)
	EPOXY RESIN INJECTION (ERI)

AS-BUILT REPAIR QUANTITY TABLE				
END BENTS 1 & 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP/BACKWALL	-	-		
COLUMN/PILE	-	-		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	-	-		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	-			
COLUMN/PILE	-			
WEEP HOLE FILTERS	16 EA			



END BENT 1

(EAST FACE)



END BENT 2

(WEST FACE)

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

NOTES:

REPAIR LOCATIONS AND ESTIMATED QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATIONS AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE TABLE ABOVE.

CRACKING LOCATIONS AND QUANTITIES FOR LOCATIONS DESCRIBED AS ''SCATTERED THROUGHOUT'' IN THE INSPECTION REPORT ARE BASED ON THE BEST INFORMATION AVAILABLE. THE ENGINEER AND CONTRACTOR SHALL IDENTIFY AND REPAIR ALL CRACKS >=1/16" AS DESCRIBED IN THE SPECIAL PROVISIONS AT EACH BENT.

AVERAGE CONCRETE COVER IS EXPECTED TO BE 2" ON THE CAP AND FROM 1 1/2" TO 2" ON THE COLUMNS. ACTUAL CONCRETE COVER SHALL BE DETERMINED BY THE CONTRACTOR AND PRESENTED TO THE ENGINEER PRIOR TO BEGINNING EXCAVATION/ DEMOLITION.

FOR CONCRETE AND SHOTCRETE REPAIRS, SEE "CONCRETE RESTORATION DETAILS" SHEETS.

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

(AT END BENTS) FOR WEEP HOLE FILTERS, SEE SPECIAL PROVISIONS.

PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION

PROJECT NO. I-6039

NEW HANOVER COUNTY

BRIDGE NO. 640045

KCA KISINGER CAMPO & ASSOCIATES

301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

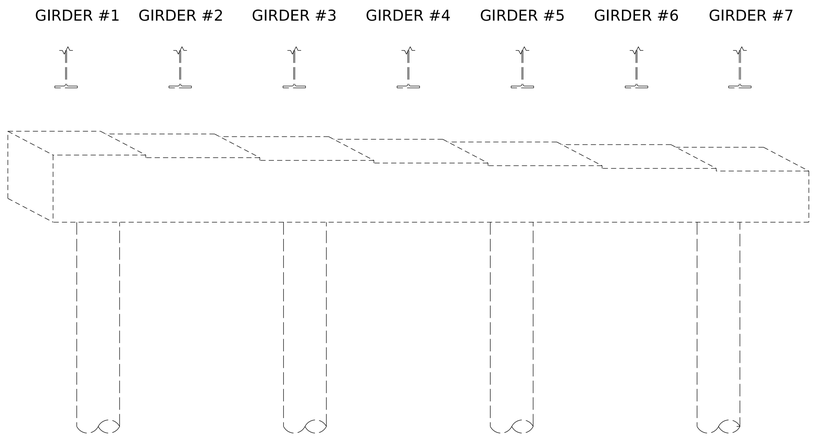
SUBSTRUCTURE REPAIRS
END BENTS 1 & 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-11
1			3			TOTAL SHEETS
2			4			13

DRAWN BY : JASON DEBONE DATE : 01/2023
CHECKED BY : AJ MCSWAIN DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

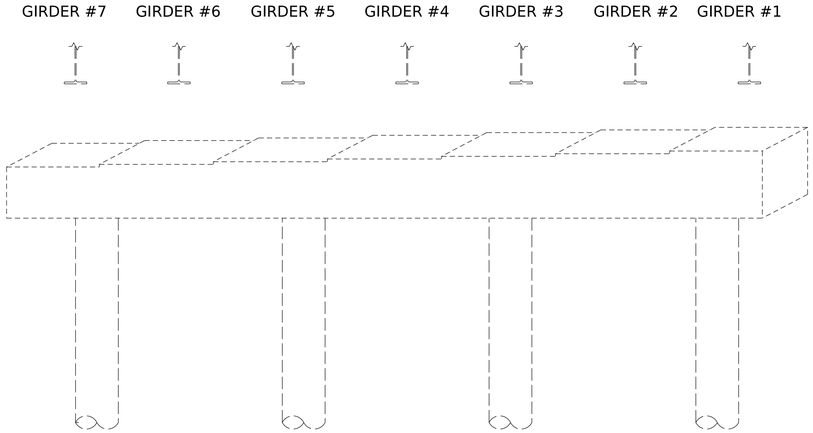
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

4/17/2023
640045_I6039_SMU_SBR00.dgn
jduke



BENT 1

(WEST FACE)



BENT 1

(EAST FACE)

LEGEND

	CONCRETE REPAIR AREA (CR)
	SHOTCRETE REPAIR AREA (SCR)
	EPOXY RESIN INJECTION (ERI)

AS-BUILT REPAIR QUANTITY TABLE

BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP/BACKWALL	-	-		
COLUMN/PILE	-	-		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	-	-		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	-			
COLUMN/PILE	-			
WEEP HOLE FILTERS	-			

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

NOTES:

REPAIR LOCATIONS AND ESTIMATED QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATIONS AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE TABLE ABOVE.

CRACKING LOCATIONS AND QUANTITIES FOR LOCATIONS DESCRIBED AS ''SCATTERED THROUGHOUT'' IN THE INSPECTION REPORT ARE BASED ON THE BEST INFORMATION AVAILABLE. THE ENGINEER AND CONTRACTOR SHALL IDENTIFY AND REPAIR ALL CRACKS >=1/16" AS DESCRIBED IN THE SPECIAL PROVISIONS AT EACH BENT.

AVERAGE CONCRETE COVER IS EXPECTED TO BE 2" ON THE CAP AND FROM 1½" TO 2" ON THE COLUMNS. ACTUAL CONCRETE COVER SHALL BE DETERMINED BY THE CONTRACTOR AND PRESENTED TO THE ENGINEER PRIOR TO BEGINNING EXCAVATION/ DEMOLITION.

FOR CONCRETE AND SHOTCRETE REPAIRS, SEE "CONCRETE RESTORATION DETAILS" SHEETS.

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

(AT END BENTS) FOR WEEP HOLE FILTERS, SEE SPECIAL PROVISIONS.

PROJECT NO. I-6039

NEW HANOVER COUNTY

BRIDGE NO. 640045

NORTH CAROLINA PROFESSIONAL SEAL 043777 ENGINEER JACOB H DUKE 4/17/2023

KCA KISINGER CAMPO & ASSOCIATES

301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

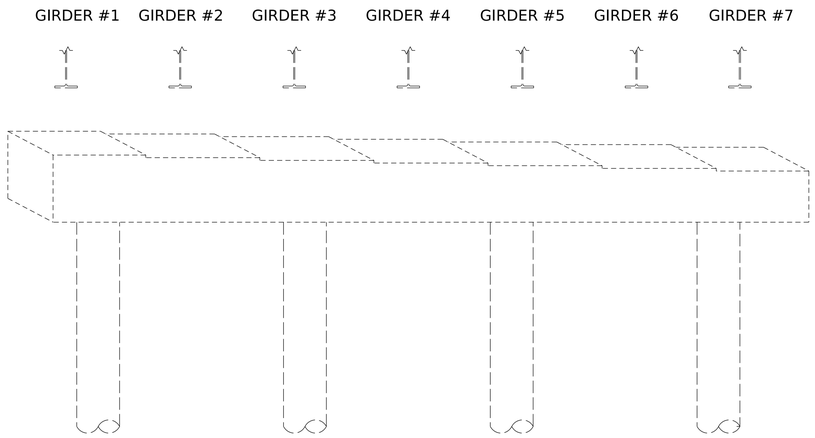
SUBSTRUCTURE REPAIRS
BENT 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-12
1			3			TOTAL SHEETS
2			4			13

DRAWN BY : JASON DEBONE DATE : 01/2023
CHECKED BY : AJ MCSWAIN DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

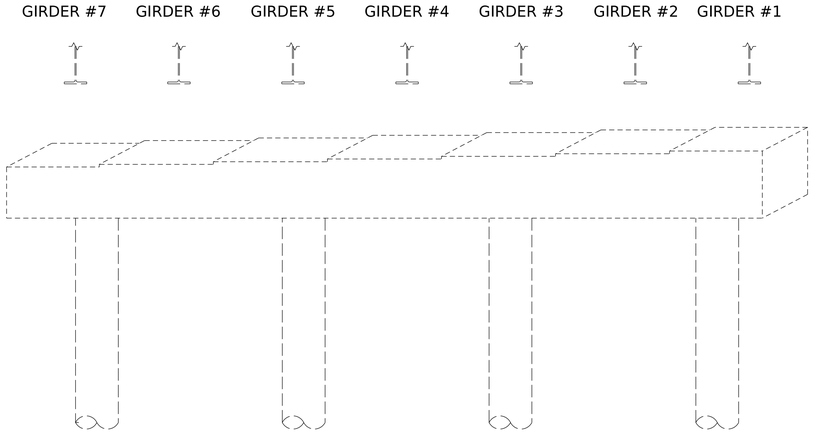
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

4/17/2023
640045_I6039_SMU_SBR01.dgn
jduke



BENT 2

(WEST FACE)



BENT 2

(EAST FACE)

LEGEND

	CONCRETE REPAIR AREA (CR)
	SHOTCRETE REPAIR AREA (SCR)
	EPOXY RESIN INJECTION (ERI)

AS-BUILT REPAIR QUANTITY TABLE

BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP/BACKWALL	-	-		
COLUMN/PILE	-	-		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	-	-		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	-			
COLUMN/PILE	-			
WEEP HOLE FILTERS	-			

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

NOTES:

REPAIR LOCATIONS AND ESTIMATED QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATIONS AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE TABLE ABOVE.

CRACKING LOCATIONS AND QUANTITIES FOR LOCATIONS DESCRIBED AS ''SCATTERED THROUGHOUT'' IN THE INSPECTION REPORT ARE BASED ON THE BEST INFORMATION AVAILABLE. THE ENGINEER AND CONTRACTOR SHALL IDENTIFY AND REPAIR ALL CRACKS >=1/16" AS DESCRIBED IN THE SPECIAL PROVISIONS AT EACH BENT.

AVERAGE CONCRETE COVER IS EXPECTED TO BE 2" ON THE CAP AND FROM 1½" TO 2" ON THE COLUMNS. ACTUAL CONCRETE COVER SHALL BE DETERMINED BY THE CONTRACTOR AND PRESENTED TO THE ENGINEER PRIOR TO BEGINNING EXCAVATION/ DEMOLITION.

FOR CONCRETE AND SHOTCRETE REPAIRS, SEE "CONCRETE RESTORATION DETAILS" SHEETS.

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

(AT END BENTS) FOR WEEP HOLE FILTERS, SEE SPECIAL PROVISIONS.

PROJECT NO. I-6039

NEW HANOVER COUNTY

BRIDGE NO. 640045

DocuSigned by: Jacob H. Duke

NORTH CAROLINA PROFESSIONAL SEAL 043777 ENGINEER JACOB H. DUKE
4/17/2023

KCA KISINGER CAMPO & ASSOCIATES

301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

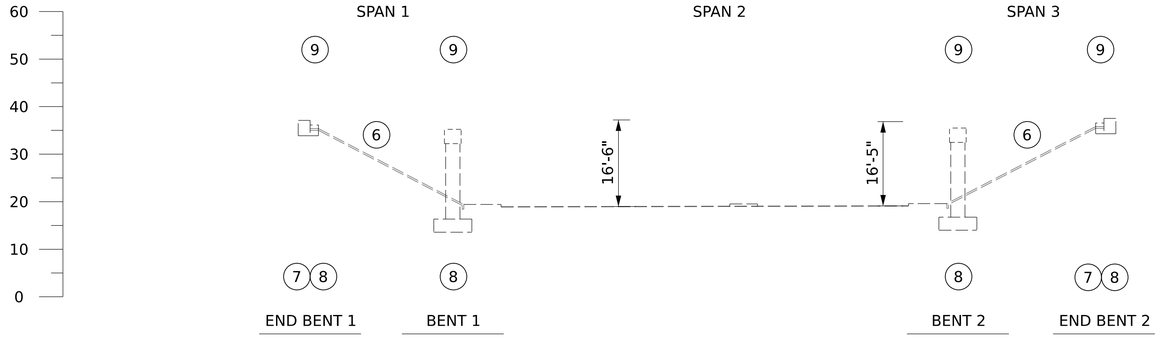
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIRS
BENT 2

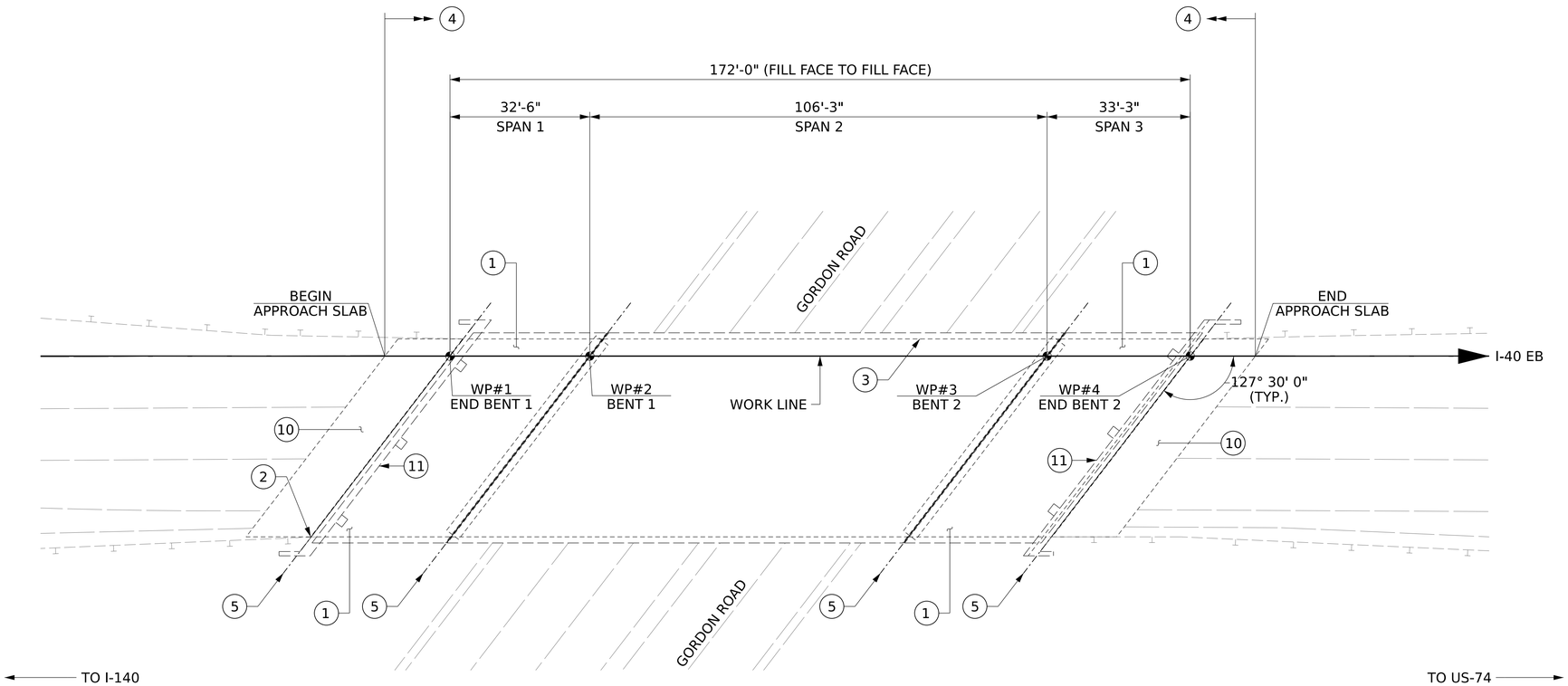
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-13
1			3			TOTAL SHEETS
2			4			13

DRAWN BY : JASON DEBONE DATE : 01/2023
CHECKED BY : AJ MCSWAIN DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

4/17/2023
640045_I6039_SMU_SBR02.dgn
jduke



SECTION ALONG ROADWAY



PLAN

SCOPE LEGEND:

1. CLEAR SHOULDERS OF DEBRIS AND VEGETATION
2. PROPOSED GUARDRAIL ANCHOR UNIT REPAIRS
3. BRIDGE RAIL REPAIRS
4. POLYMER CONCRETE OVERLAY
5. JOINT REPLACEMENT
6. SLOPE PROTECTION REPAIRS
7. SUBSTRUCTURE CONCRETE REPAIRS
8. REPAIR SEALS AT BASE OF COLUMNS AND END BENT CAPS
9. EPOXY COAT CAPS
10. APPROACH SLAB FOAM INJECTION
11. INSTALL WEEP HOLE FILTERS

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

RESIDENT ENGINEER DATE

PROJECT NO. I-6039

NEW HANOVER COUNTY

BRIDGE NO. 640058

NOTES:

GENERAL DRAWING INFORMATION IS TAKEN FROM THE ORIGINAL PLANS AND THE MOST UP TO DATE ROUTINE INSPECTION REPORT DATED 12/02/2022.

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

DRAWN BY : AJ MCSWAIN DATE : 01/2023
CHECKED BY : SCOTT BETZ DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

4/17/2023
640058_I6039_SMU_GD01.dgn
jduke

DocuSigned by: JACOB H. DUKE 4/17/2023
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 043777 JACOB H. DUKE

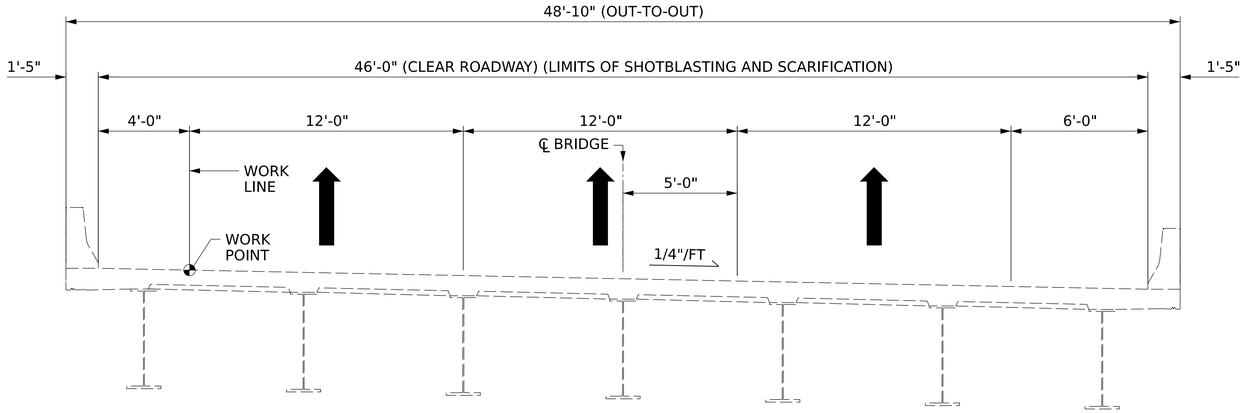
KCA KISINGER CAMPO & ASSOCIATES
301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

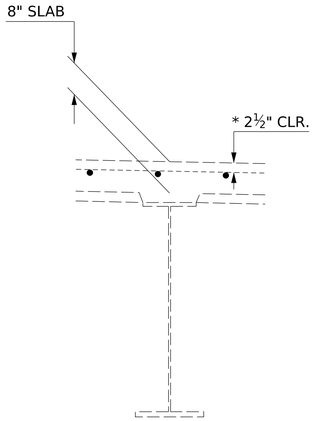
GENERAL DRAWING
FOR BRIDGE ON I-40 EB
OVER GORDON RD

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-1
1			3			TOTAL SHEETS
2			4			13



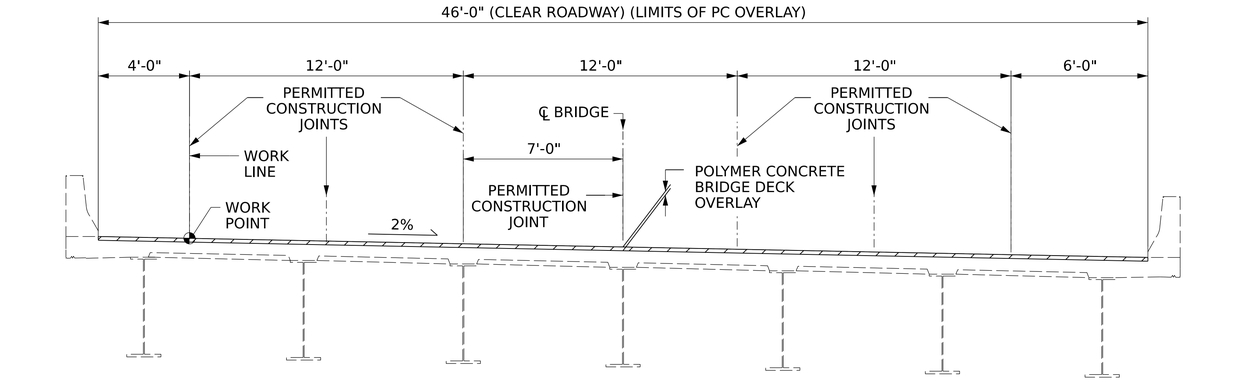
EXISTING SECTION

(SPANS 1 - 3)
(DIAPHRAGMS NOT SHOWN FOR CLARITY)



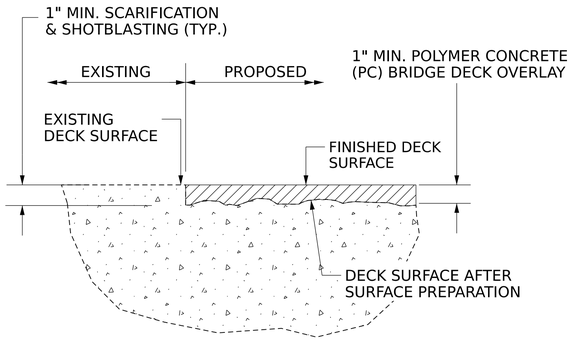
EXISTING SLAB SECTION

(SPANS 1 - 3)
* CONCRETE COVER PER EXISTING PLANS DATED 04/1982

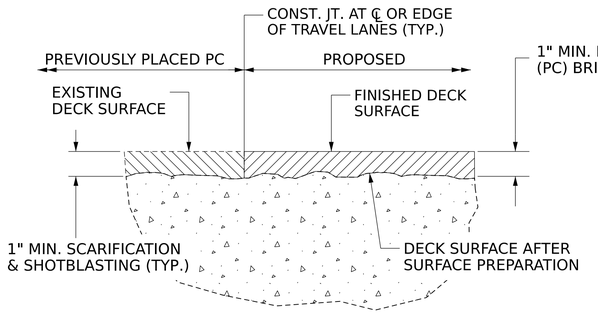


PROPOSED SECTION

(SPANS 1 - 3)
(DIAPHRAGMS NOT SHOWN FOR CLARITY)



DETAIL FOR PC OVERLAY



DETAIL FOR STAGED PC OVERLAY

NOTES:

1. LONGITUDINAL CONSTRUCTION JOINTS OF OVERLAYS SHALL BE LOCATED ALONG THE CENTERLINE OR EDGE OF TRAVEL LANES.
2. SEE TRAFFIC MANAGEMENT PLANS FOR LANE WIDTHS, SEQUENCING, AND OTHER TRAFFIC CONTROL MEASURES FOR STAGING OF PC OVERLAY AND SURFACE PREPARATION.

DRAWN BY : AJ MCSWAIN DATE : 01/2023
CHECKED BY : SCOTT A BETZ DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

4/17/2023
640058_I6039_SMU_TS01.dgn
jduke

KCA KISINGER CAMPO & ASSOCIATES

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

PROJECT NO. I-6039
NEW HANOVER COUNTY
BRIDGE NO. 640058

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION
SPANS 1 - 3

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-2
1			3			TOTAL SHEETS
2			4			13

AS-BUILT REPAIR QUANTITY TABLE

TOP OF DECK REPAIRS	SPAN 1		SPAN 2		SPAN 3		BEGIN APPROACH SLAB		END APPROACH SLAB	
	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	167 SY		544 SY		170 SY		77 SY		77 SY	
SHOTBLASTING BRIDGE DECK	167 SY		544 SY		170 SY		77 SY		77 SY	
PC MATERIALS	4.6 CY		15.1 CY		4.7 CY		2.1 CY		2.1 CY	
PLACING AND FINISHING PC OVERLAY	167 SY		544 SY		170 SY		77 SY		77 SY	
GROOVING BRIDGE FLOORS	1397.5 SF		4568.8 SF		1429.8 SF		645 SF		645 SF	
CLASS II SURFACE PREPARATION	3.4 SY		3.4 SY		6.4 SY		3.2 SY		3.2 SY	
CONCRETE REPAIR	0.0 SF		2.1 SF		0.0 SF		0.0 SF		1.0 SF	

NOTES:

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

CONCRETE COVER FOR TOP BARS IN THE DECK SLAB IS 2½" PER THE EXISTING BRIDGE PLANS. ACTUAL CONCRETE COVER SHALL BE DETERMINED BY THE CONTRACTOR AND PRESENTED TO THE ENGINEER PRIOR TO BEGINNING SCARIFICATION.

CURRENT AVERAGE COVER IS EXPECTED TO BE FROM 1½" TO 2" BASED ON VISUAL INSPECTION.

MINOR QUANTITIES OF CLASS II AREAS ARE ANTICIPATED, PARTICULARLY NEAR JOINTS. HOWEVER, DUE TO THEIR SMALL SIZE, THE CLASS II LOCATIONS HAVE NOT BEEN DELINEATED ON THESE PLANS. THE CLASS II QUANTITIES INDICATED ARE ANTICIPATED TO BE SUFFICIENT FOR THE ACTUAL QUANTITIES ENCOUNTERED.

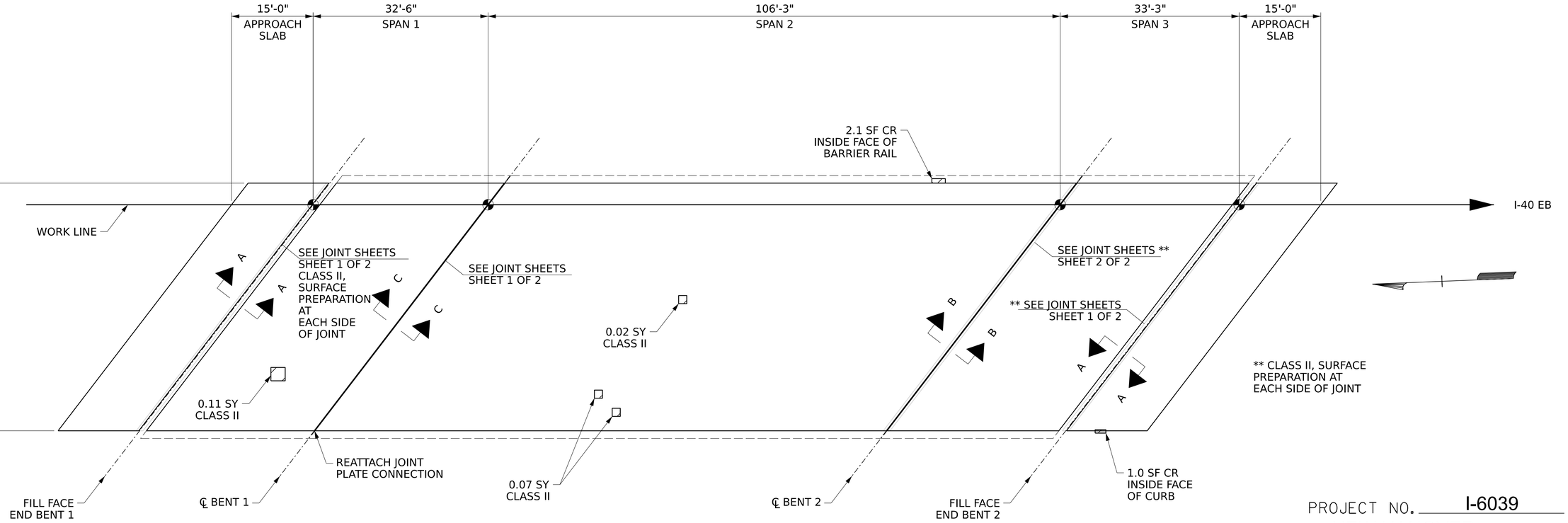
FOR CLASS II SURFACE PREPARATION, SEE SPECIAL PROVISIONS.

BRIDGE DECK GROOVING QUANTITY BASED ON LIMITS REQUIRED IN SECTION 420-14(B) OF THE STANDARD SPECIFICATIONS.

BRIDGE DECK SCARIFICATION LIMITS ARE THE FULL CLEAR ROADWAY WIDTH (INSIDE FACE OF EACH BRIDGE RAIL).

FOR POLYMER CONCRETE BRIDGE DECK OVERLAY, SEE SPECIAL PROVISIONS.

COORDINATE THIS SHEET WITH THE SHEETS FOR JOINT DETAILS.



PROJECT NO. I-6039

NEW HANOVER COUNTY

BRIDGE NO. 640058

PC OVERLAY

CLASS II SURFACE PREP.

CONCRETE REPAIR AREA (CR)

DRAWN BY : JASON DEBONE DATE : 01/2023

CHECKED BY : AJ MCSWAIN DATE : 01/2023

DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

4/17/2023
640058_I6039_SMU_DSR01.dgn
jduke

DocuSigned by: Jacob H. Duke

NORTH CAROLINA PROFESSIONAL SEAL 043777 ENGINEER JACOB H. DUKE 4/17/2023

KCA KISINGER CAMPO & ASSOCIATES

301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

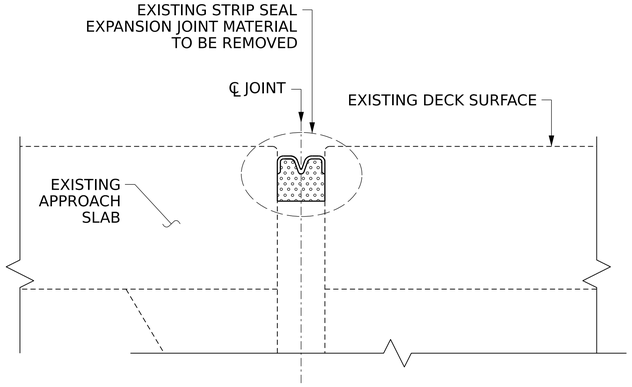
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF SPANS

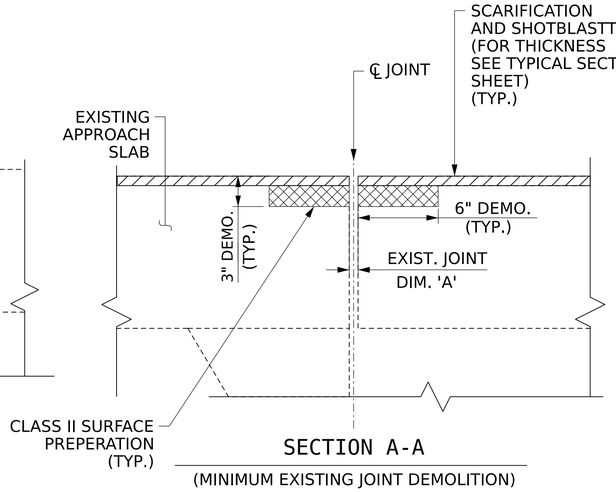
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-3
1			3			TOTAL SHEETS
2			4			13

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



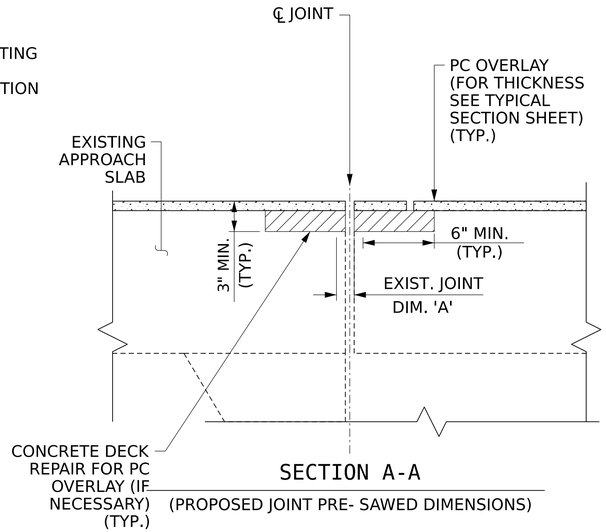
SECTION A-A

(EXISTING BRIDGE JOINT)



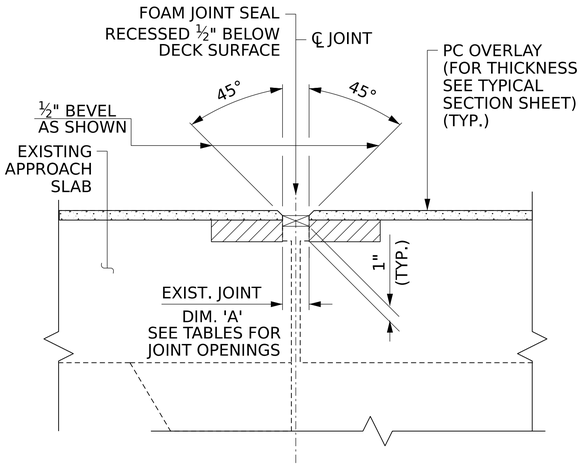
SECTION A-A

(MINIMUM EXISTING JOINT DEMOLITION)



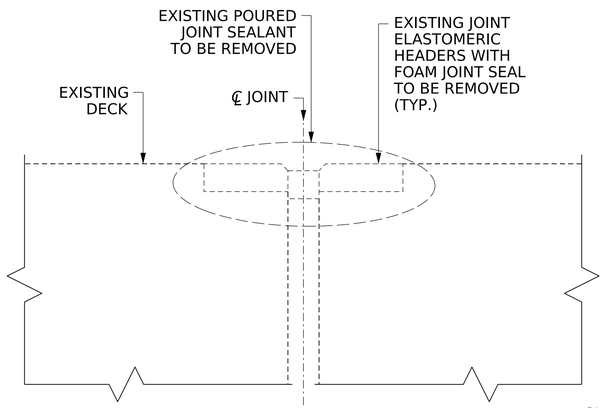
SECTION A-A

(PROPOSED JOINT PRE- SAWED DIMENSIONS)



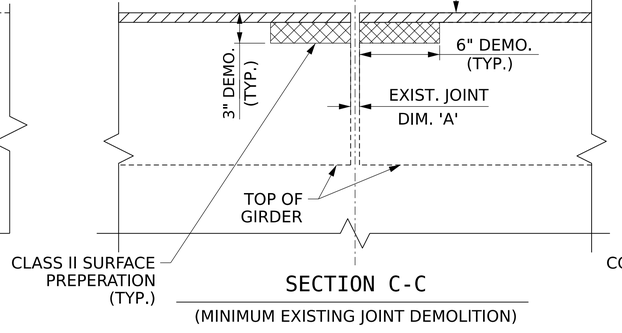
SECTION A-A

(PROPOSED FOAM JOINT SEAL)



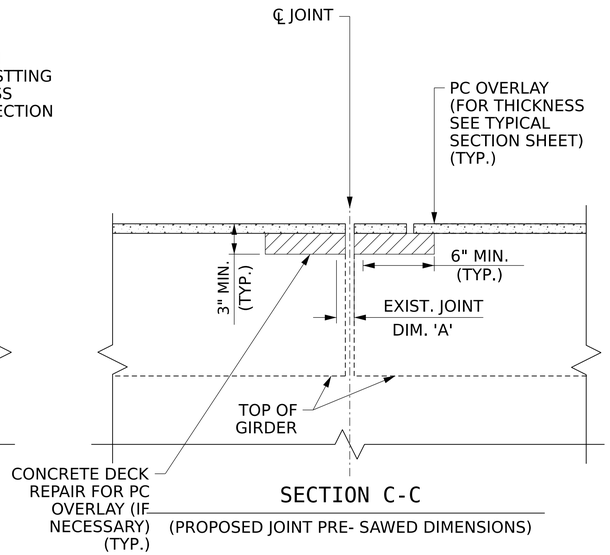
SECTION C-C

(EXISTING BRIDGE JOINT)



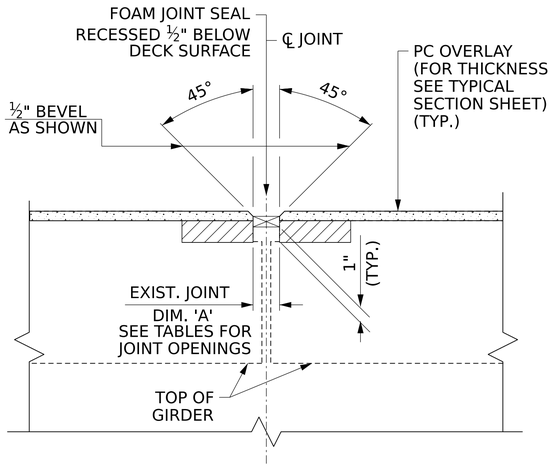
SECTION C-C

(MINIMUM EXISTING JOINT DEMOLITION)



SECTION C-C

(PROPOSED JOINT PRE- SAWED DIMENSIONS)



SECTION C-C

(PROPOSED FOAM JOINT SEAL)

PROJECT NO. I-6039

NEW HANOVER COUNTY

BRIDGE NO. 640058

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

JOINT DETAILS

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 043777 JACOB H DUKE
4/17/2023

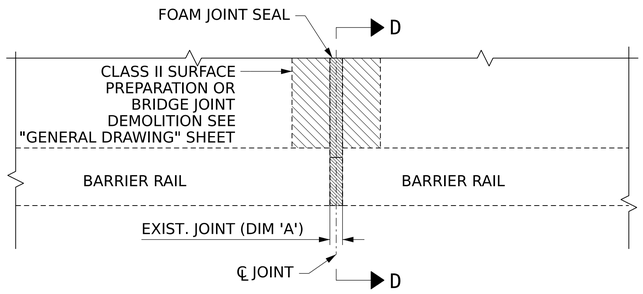
KISINGER CAMPO & ASSOCIATES
301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7835
NC FIRM LICENSE: C-1506

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-4
1			3			TOTAL SHEETS
2			4			13

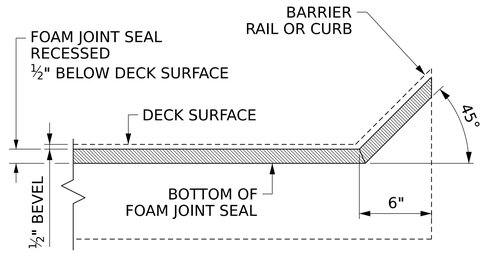
DRAWN BY : FIDEL L. FLORES DATE : 01/2023
CHECKED BY : ALLEN J. MCSWAIN DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

4/17/2023
640058_16039_SMU_JT01.dgn
jduke



PLAN AT GUTTER

(PROPOSED FOAM JOINT SEAL)



SECTION D-D

(PROPOSED FOAM JOINT SEAL)

PROPOSED JOINT QUANTITY

	ESTIMATED (LIN. FT.)	ACTUAL (LIN. FT.)
FOAM JOINT SEALS FOR PRESERVATION	180	

TABLE 1

01-26-2022

BENT/ JOINTS	DIM 'A' @ 51°F
END BENT 1	2¼"
BENT 1	2½"
END BENT 2	2"

NOTES:

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

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

INSTALL FOAM JOINTS AS PER THE MANUFACTURER'S RECOMMENDATIONS.

THE CONTRACTOR SHALL TAKE CARE DURING JOINT REPAIR OPERATIONS NOT TO DROP ANY MATERIAL THAT FALLS BELOW THE BRIDGE, WITHOUT PROTECTIVE DEVICES BELOW TO CATCH THE MATERIAL. ANY MATERIAL THAT FALLS BELOW THE BRDIGE 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.

FOR BRIDGE JOINT DEMOLITION, SEE SPECIAL PROVISIONS.

FOR FOAM JOINT SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.

DEMOLISH BRIDGE JOINT AREA SUCH THAT THE BOTTOM OF THE EXCAVATION SHALL BE REASONABLY FLAT AND LEVEL AND TO THE NECESSARY DEPTH, SUCH THAT THE REPAIR SHALL BE FOUNDED ON CONCRETE OR REPAIR CONCRETE SUBSTRATE.

TAKE CARE NOT TO DAMAGE ANY EXISTING DECK REINFORCING EXPOSED DURING BRIDGE JOINT DEMOLITION. NOTIFY THE ENGINEER OF ANY DECK REINFORCING EXPOSED DURING BRIDGE JOINT DEMOLITION OPERATIONS.

EXISTING DECK REINFORCING IS NOT SHOWN IN THE SECTIONS PROVIDED ON THIS SHEET.

PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION

PROJECT NO. I-6039

NEW HANOVER COUNTY

BRIDGE NO. 640058

SHEET 2 OF 3

DRAWN BY : FIDEL L. FLORES DATE : 01/2023

CHECKED BY : ALLEN J. MCSWAIN DATE : 01/2023

DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

4/17/2023
640058_I6039_SMU_JT02.dgn
jduke

DocuSigned by: Jacob H. Duke
NORTH CAROLINA PROFESSIONAL SEAL 043777 ENGINEER JACOB H DUKE
4/17/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

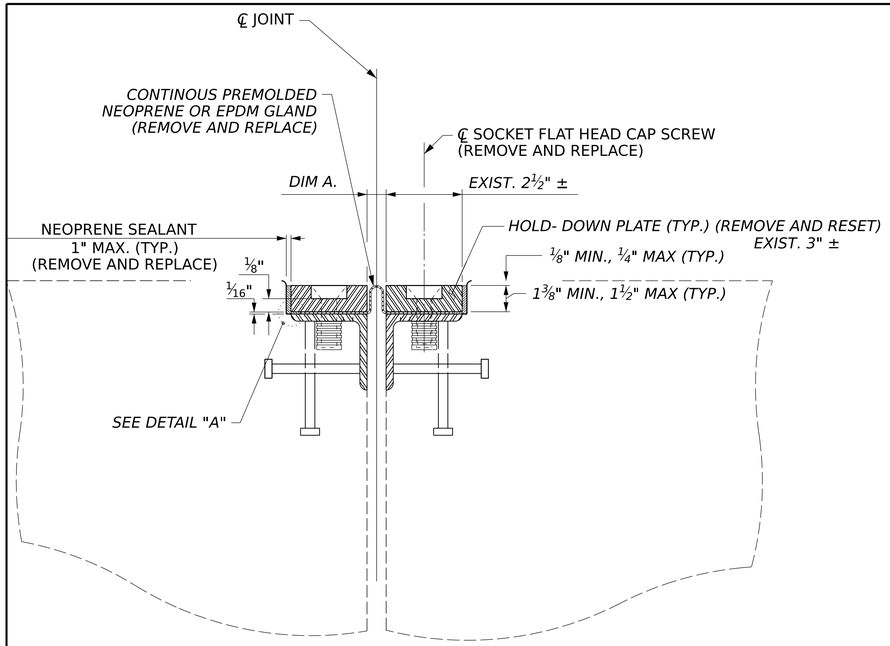
KCA KISINGER CAMPO & ASSOCIATES

301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

JOINT DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-5
1			3			TOTAL SHEETS
2			4			13



EXPANSION JOINT DETAILS

SUGGESTED REPAIR INSTALLATION PROCEDURE

1. LOOSEN THE EXISTING SCREWS 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 ⅞" IN DIAMETER WITH A HAND PUNCH.
4. IN ORDER TO CHECK FOR PROPER ALIGNMENT, PLACE THE NEW GLAND AND HOLD-DOWN PLATES ON THE BASE ANGLE. DO NOT APPLY NEW NEOPRENE SEALANT. BOLT THE HOLD-DOWN PLATES TO THE BASE ANGLE, BUT DO NOT TIGHTEN. THE ENGINEER WILL INSPECT THE JOINT SEAL DEVICE FOR PROPER ALIGNMENT.
5. AFTER INSPECTION, REMOVE THE HOLD-DOWN PLATES AND NEW GLAND. APPLY NEW NEOPRENE SEALANT TO THE BASE ANGLE IN ACCORDANCE WITH THE ''INSTALLATION SKETCH''. PLACE NEW GLAND AND HOLD-DOWN PLATES ON THE BASE ANGLE. BOLT THE HOLD-DOWN PLATES TO THE BASE ANGLE ASSEMBLY AND TORQUE THE SCREWS 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 OPNEING VARIES FROM THE OPENING INDICATED IN THE DETAILS BY MORE THAN ¼", NOTIFY THE ENGINEER.

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

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

A PREMOLDED CORRUGATED OR NON-CORRUGATED GLAND SHALL BE 130°.

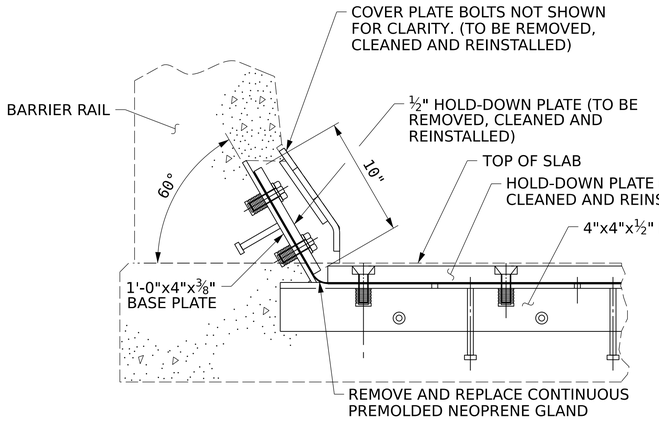
THE FINISHED EXPANSION SEAL DEVICE SHALL BE A MINIMUM SLAB.

FOR EXPANSION JOINT SEAL REPAIR, SEE SPECIAL PROVISIONS.

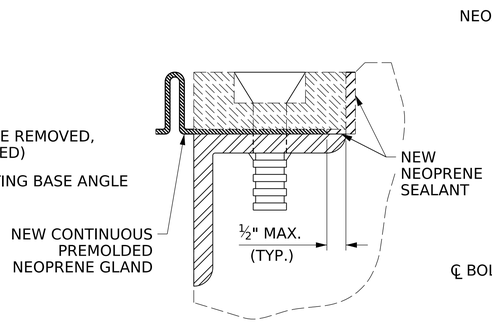
NO SEPARATE PAYMENT WILL BE MADE FOR REMOVING AND REINSTALLING MEDIAN AND BARRIER RAIL COVER PLATES. THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE LINEAR FEET PRICE BID FOR "EXPANSION JOINT SEALS FOR PRESERVATION".

DIM 'A' MOVEMENT AT JOINT	
LOCATION	PERPENDICULAR JOINT OPENING AT 51°F
BENT 1	1¼"

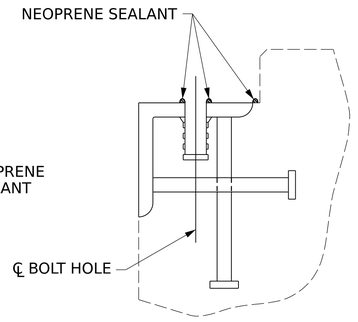
JOINT REPAIR QUANTITY TABLE		
	ESTIMATED	ACTUAL
EXPANSION JOINT SEALS FOR PRESERVATION	60	



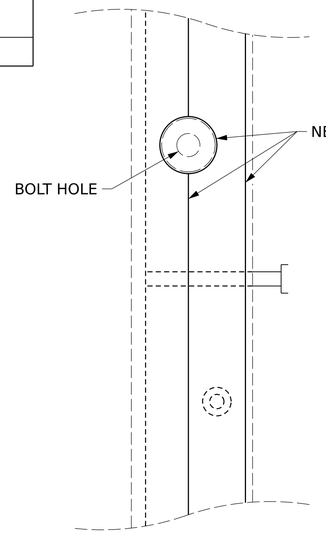
SECTION THRU RAIL NORMAL TO JOINT



DETAIL "A"



CROSS SECTION



PLAN VIEW

INSTALLATION SKETCH

PROJECT NO. I-6039
NEW HANOVER COUNTY
BRIDGE NO. 640058
SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

JOINT DETAILS

DRAWN BY : FIDEL L. FLORES DATE : 01/2023
CHECKED BY : ALLEN J. MCSWAIN DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

4/17/2023
640058_I6039_SMU_JT03.dgn
jduke

DocuSigned by: JACOB H. DUKE NORTH CAROLINA PROFESSIONAL SEAL 043777 ENGINEER JACOB H DUKE 4/17/2023

KCA KISINGER CAMPO & ASSOCIATES

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-6
1			3			TOTAL SHEETS
2			4			13

NOTES:

REPAIR LOCATIONS AND ESTIMATED QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATIONS AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE TABLE ABOVE.

CRACKING LOCATIONS AND QUANTITIES FOR LOCATIONS DESCRIBED AS ''SCATTERED THROUGHOUT'' IN THE INSPECTION REPORT ARE BASED ON THE BEST INFORMATION AVAILABLE. THE ENGINEER AND CONTRACTOR SHALL IDENTIFY AND REPAIR ALL CRACKS >=1/16" AS DESCRIBED IN THE SPECIAL PROVISIONS.

AVERAGE CONCRETE COVER IS EXPECTED AS FOLLOWS;
DECK & DIAPHRAGMS: 2½"

FOR CONCRETE AND SHOTCRETE REPAIRS, SEE "CONCRETE RESTORATION DETAILS" SHEETS.

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

ADDITIONAL QUANTITIES OF CONCRETE REPAIR AREAS ARE ANTICIPATED. DUE TO LACK OF INFORMATION, ALL AREAS ARE NOT KNOWN. QUANTITIES ARE ANTICIPATED TO BE SUFFICIENT FOR ACTUAL QUANTITIES ENCOUNTERED.

FOR BEARINGS REPAIRS, SEE BEARING REPAIR SHEETS.

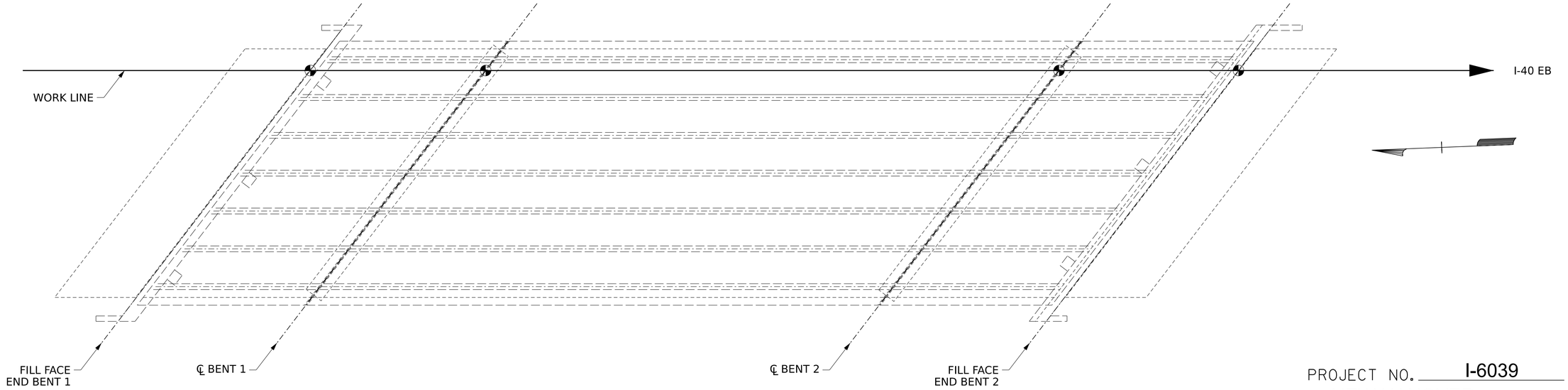
LEGEND

	SHOTCRETE REPAIR (SCR)
	EPOXY RESIN INJECTION (ERI)

AS-BUILT REPAIR QUANTITY TABLE

	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
UNDERSIDE OF DECK & OVERHANG	-	-		
DIAPHRAGMS	-	-		
RAILS	-	-		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
DECK , DIAPHRAGMS AND RAILS	-			
GIRDERS	-			

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



PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PROJECT NO. I-6039
NEW HANOVER COUNTY
BRIDGE NO. 640058

DocuSigned by: JACOB H. DUKE
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 043777 JACOB H DUKE
4/17/2023

KCA KISINGER CAMPO & ASSOCIATES
301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE REPAIRS

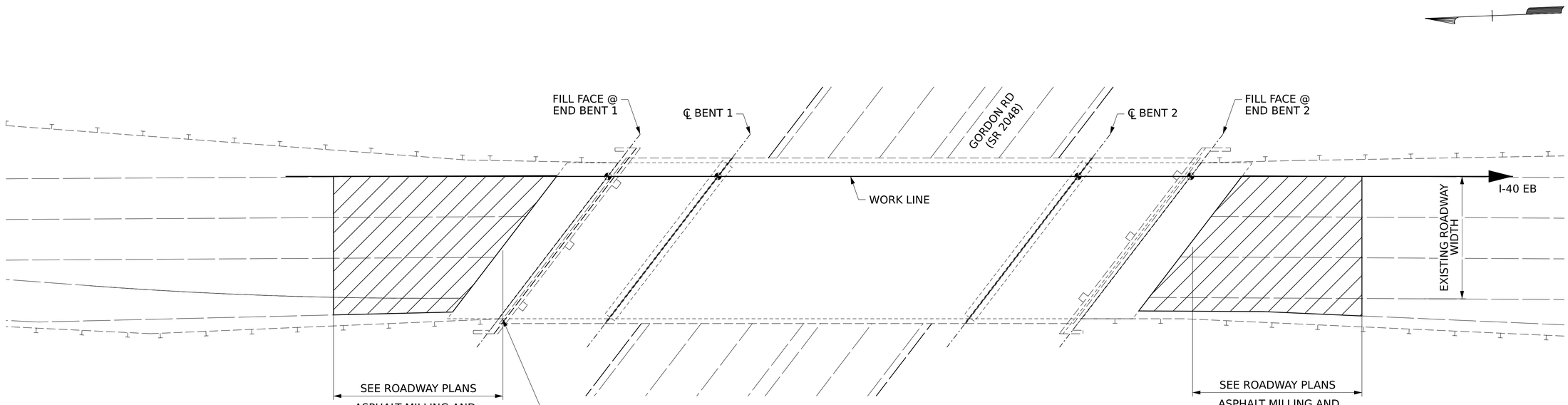
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-7
1			3			TOTAL SHEETS
2			4			13

DRAWN BY : JASON DEBONE DATE : 01/2023
CHECKED BY : AJ MCSWAIN DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

4/17/2023
640058_I6039_SMU_DUR01.dgn
jduke

NOTES:

1. APPROACH SLAB VOID FILLING ACTIVITIES TO BE COMPLETED PRIOR TO RESURFACING ACTIVITIES.



PLAN

ANCHOR UNIT REPAIR DETAIL

TIGHTEN TOP AND MIDDLE CONNECTION SHOWN IN PHOTO.

REMOVE AND REPLACE, IN THE CORRECT ORIENTATION, ANY BOLTS WHOSE THREADED ENDS ARE EXPOSED ON THE TRAFFIC FACE OF THE GUARDRAIL ANCHOR ASSEMBLY.

REPLACE BOLTS AS NEEDED WITH AN ADHESIVELY ANCHORED BOLT. FOR ADHESIVELY ANCHORED BOLTS AND DOWELS, SEE SECTION 420-13 OF THE STANDARD SPECIFICATIONS.

PAYMENT FOR TIGHTENING OR REPLACEMENT SHALL BE INCIDENTAL TO THE VARIOUS PAY ITEMS FOR THIS PROJECT.

PROJECT NO. I-6039
NEW HANOVER COUNTY
BRIDGE NO. 640058

KCA KISINGER CAMPO & ASSOCIATES
301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

APPROACH ROADWAY
ASPHALT MILLING AND GUARDRAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-8
1			3			TOTAL SHEETS
2			4			13

DRAWN BY : JASON M. DEBONE DATE : 01/2023
CHECKED BY : ALLEN J. MCSWAIN DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

4/17/2023
640058_I6039_SMU_AR01.dgn
jduke

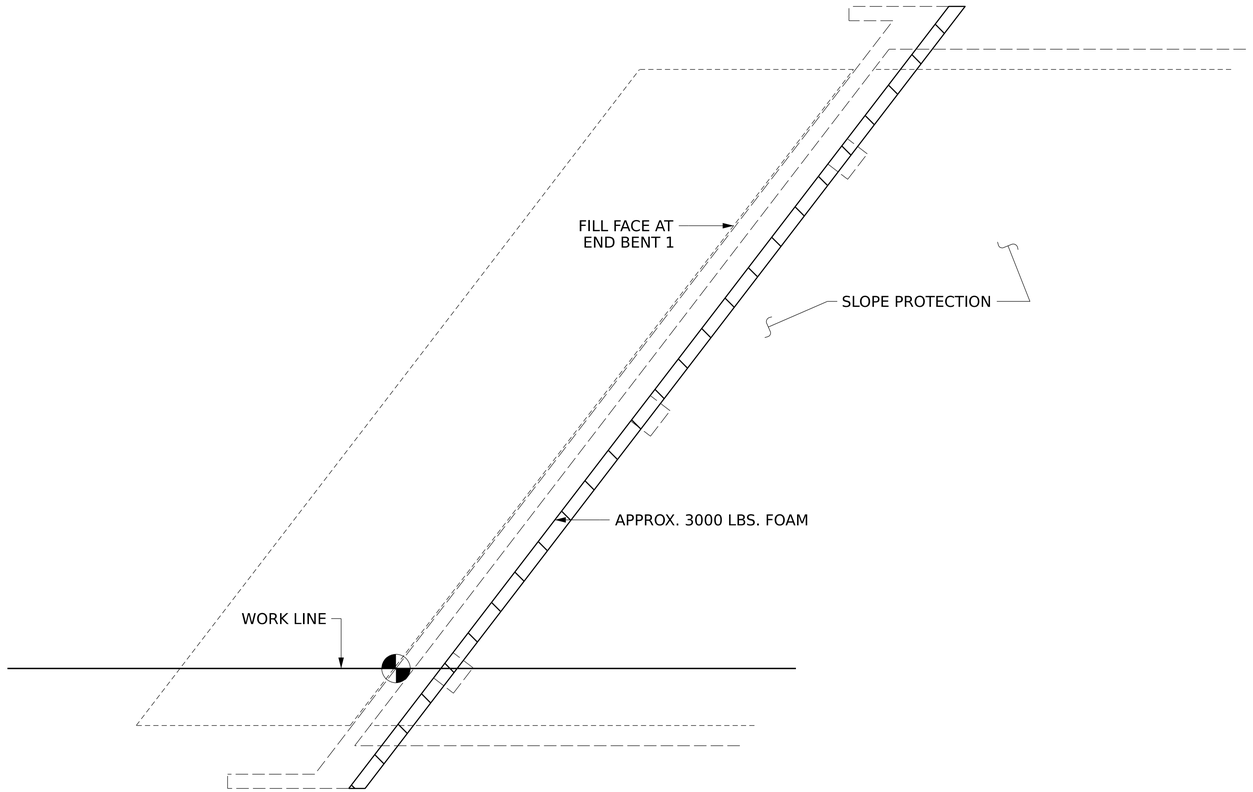
AS-BUILT REPAIR QUANTITY TABLE		
SLOPE PROTECTION REPAIRS	640058	
	ESTIMATE	ACTUAL
SLOPE PROTECTION VOID FILLING	3000 LBS	

NOTES:

USE THIS SHEET IN CONJUCTION WITH SHEET S-10.

FOR SLOPE PROTECTION VOID FILLING, SEE SPECIAL PROVISIONS.

AFTER COMPLETION OF VOID FILLING, SEAL CRACKS IDENTIFIED WITH POURABLE SILICONE JOINT SEALANT AS DESCRIBED IN THE SPECIAL PROVISION FOR "SILICONE JOINT SEALANT FOR SLOPE REPAIRS" (BACKER RODS MAY BE OMITTED AS APPROVED BY THE ENGINEER.



PLAN

FOAM INJECTION

PROJECT NO. I-6039

NEW HANOVER COUNTY

BRIDGE NO. 640058

NORTH CAROLINA PROFESSIONAL SEAL 043777 ENGINEER JACOB H DUKE 4/17/2023

KCA KISINGER CAMPO & ASSOCIATES

301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

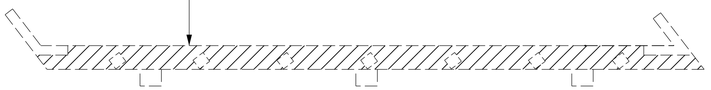
SLOPE PROTECTION REPAIRS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-9
1			3			TOTAL SHEETS
2			4			13

DRAWN BY : JASON M. DEBONE DATE : 01/2023
CHECKED BY : ALLEN J. MCSWAIN DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

4/17/2023
640058_I6039_SMU_SLP01.dgn
jduke

COAT ALL THE FREE SURFACE AREA ON THE TOP OF THE CAPS, INCLUDING CHAMFERS, WITH EPOXY PROTECTIVE COATING. DO NOT COAT UNDER BEARING AREAS.



END BENT 1

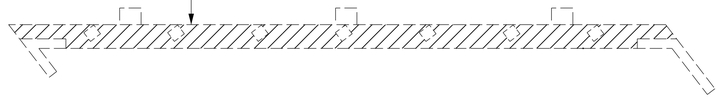
COAT ALL THE FREE SURFACE AREA ON THE TOP OF THE CAPS, INCLUDING CHAMFERS, WITH EPOXY PROTECTIVE COATING. DO NOT COAT UNDER BEARING AREAS.

BENT 1

COAT ALL THE FREE SURFACE AREA ON THE TOP OF THE CAPS, INCLUDING CHAMFERS, WITH EPOXY PROTECTIVE COATING. DO NOT COAT UNDER BEARING AREAS.

BENT 2

COAT ALL THE FREE SURFACE AREA ON THE TOP OF THE CAPS, INCLUDING CHAMFERS, WITH EPOXY PROTECTIVE COATING. DO NOT COAT UNDER BEARING AREAS.



END BENT 2

LEGEND	
▨	EPOXY COATING AREA

NOTES:

COORDINATE THIS SHEET WITH OTHER SHEETS FOR "CONCRETE RESTORATION DETAILS".

PERFORM ALL CONCRETE REPAIRS PRIOR TO APPLYING THE EPOXY PROTECTIVE COATING.

THE TOPS OF THE CAPS SHOULD BE CLEAN AND CLEAR OF ALL DEBRIS PRIOR TO THE APPLICATION OF THE EPOXY PROTECTIVE COATING.

FOR EPOXY PROTECTIVE COATING, SEE SPECIAL PROVISIONS AND STANDARD SPECIFICATIONS SECTION 420-18.

AS-BUILT REPAIR QUANTITY TABLE

EPOXY COATING BENT CAPS	TOTAL	
LOCATION	ESTIMATE	ACTUAL
END BENT 1	173 SF	
BENT 1	182 SF	
BENT 2	182 SF	
END BENT 2	173 SF	
TOTAL	710 SF	

DocuSigned by: Jacob H. Duke
NORTH CAROLINA PROFESSIONAL SEAL 043777 ENGINEER JACOB H DUKE
4/17/2023

KCA KISINGER CAMPO & ASSOCIATES
301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. I-6039
NEW HANOVER COUNTY
BRIDGE NO. 640058

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

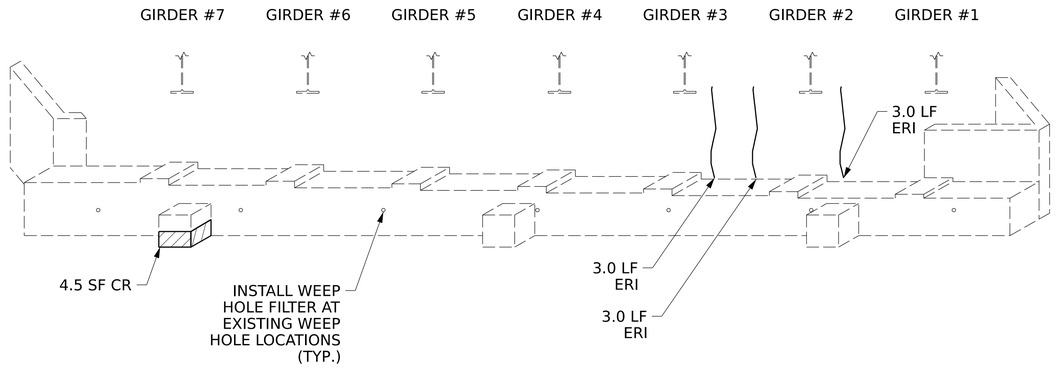
EPOXY COATING
SUBSTRUCTURE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-10
1			3			TOTAL SHEETS
2			4			13

DRAWN BY : JASON M. DEBONE DATE : 01/2023
CHECKED BY : ALLEN J. MCSWAIN DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

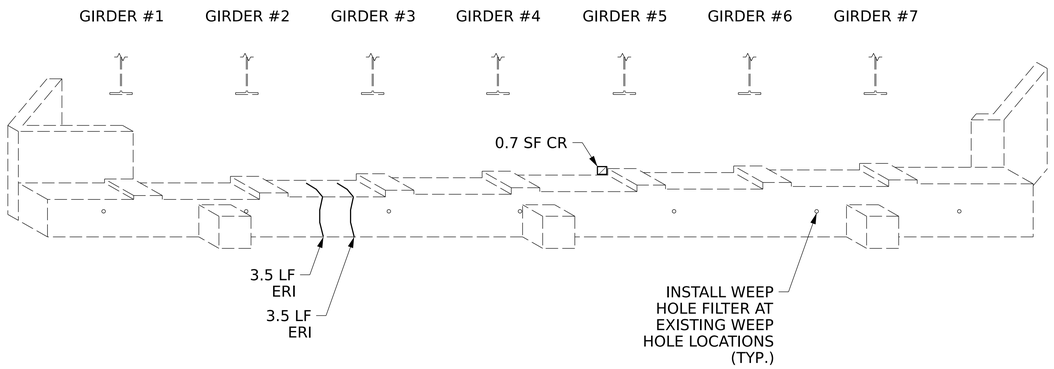
4/17/2023
640058_I6039_SMU_CR01.dgn
jduke

LEGEND	
	CONCRETE REPAIR AREA (CR)
	SHOTCRETE REPAIR AREA (SCR)
	EPOXY RESIN INJECTION (ERI)



END BENT 1

(EAST FACE)



END BENT 2

(WEST FACE)

AS-BUILT REPAIR QUANTITY TABLE

END BENTS 1 & 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP/BACKWALL	-	-		
COLUMN/PILE	-	-		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	5.2	2.6		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	16.0			
COLUMN/PILE	-			
WEEP HOLE FILTERS	14			

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

NOTES:

REPAIR LOCATIONS AND ESTIMATED QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATIONS AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE TABLE ABOVE.

CRACKING LOCATIONS AND QUANTITIES FOR LOCATIONS DESCRIBED AS ''SCATTERED THROUGHOUT'' IN THE INSPECTION REPORT ARE BASED ON THE BEST INFORMATION AVAILABLE. THE ENGINEER AND CONTRACTOR SHALL IDENTIFY AND REPAIR ALL CRACKS >=1/16" AS DESCRIBED IN THE SPECIAL PROVISIONS AT EACH BENT.

AVERAGE CONCRETE COVER IS EXPECTED TO BE 2" ON THE CAP AND FROM 1 1/2" TO 2" ON THE COLUMNS. ACTUAL CONCRETE COVER SHALL BE DETERMINED BY THE CONTRACTOR AND PRESENTED TO THE ENGINEER PRIOR TO BEGINNING EXCAVATION/ DEMOLITION.

FOR CONCRETE AND SHOTCRETE REPAIRS, SEE "CONCRETE RESTORATION DETAILS" SHEETS.

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

(AT END BENTS) FOR WEEP HOLE FILTERS, SEE SPECIAL PROVISIONS.

PROJECT NO. I-6039
NEW HANOVER COUNTY
BRIDGE NO. 640058

KCA KISINGER CAMPO & ASSOCIATES

301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

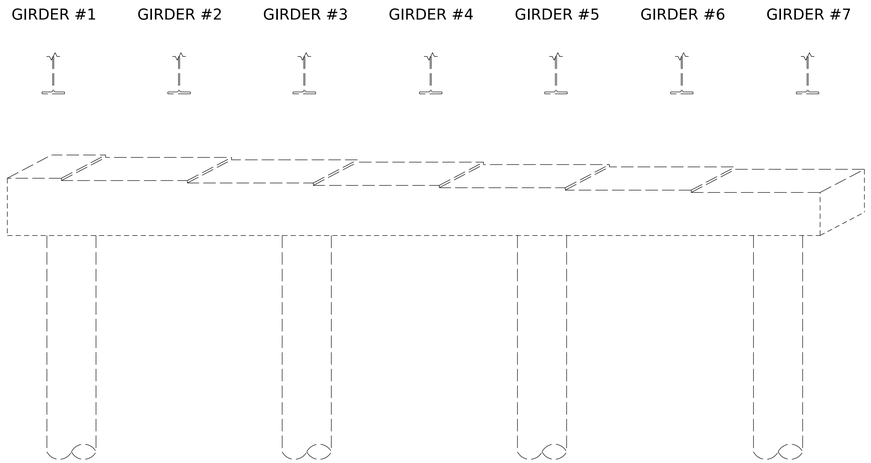
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIRS
END BENTS 1 & 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-11
1			3			TOTAL SHEETS
2			4			13

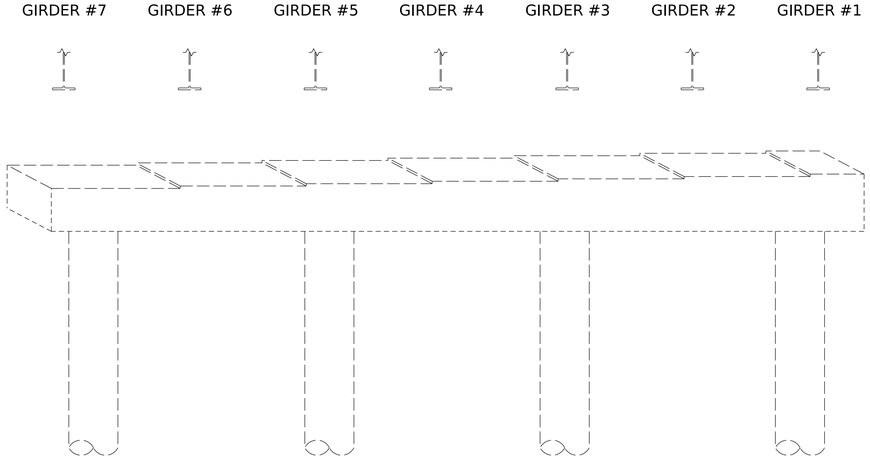
DRAWN BY : JASON DEBONE DATE : 01/2023
CHECKED BY : AJ MCSWAIN DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

4/17/2023
640058_I6039_SMU_SBR00.dgn
jduke



BENT 1

(WEST FACE)



BENT 1

(EAST FACE)

LEGEND

	CONCRETE REPAIR AREA (CR)
	SHOTCRETE REPAIR AREA (SCR)
	EPOXY RESIN INJECTION (ERI)

AS-BUILT REPAIR QUANTITY TABLE

BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP/BACKWALL	-	-		
COLUMN/PILE	-	-		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	-	-		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	-			
COLUMN/PILE	-			
WEEP HOLE FILTERS	-			

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

NOTES:

REPAIR LOCATIONS AND ESTIMATED QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATIONS AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE TABLE ABOVE.

CRACKING LOCATIONS AND QUANTITIES FOR LOCATIONS DESCRIBED AS ''SCATTERED THROUGHOUT'' IN THE INSPECTION REPORT ARE BASED ON THE BEST INFORMATION AVAILABLE. THE ENGINEER AND CONTRACTOR SHALL IDENTIFY AND REPAIR ALL CRACKS >=$\frac{1}{16}$" AS DESCRIBED IN THE SPECIAL PROVISIONS AT EACH BENT.

AVERAGE CONCRETE COVER IS EXPECTED TO BE 2" ON THE CAP AND FROM 1$\frac{1}{2}$" TO 2" ON THE COLUMNS. ACTUAL CONCRETE COVER SHALL BE DETERMINED BY THE CONTRACTOR AND PRESENTED TO THE ENGINEER PRIOR TO BEGINNING EXCAVATION/ DEMOLITION.

FOR CONCRETE AND SHOTCRETE REPAIRS, SEE "CONCRETE RESTORATION DETAILS" SHEETS.

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

(AT END BENTS) FOR WEEP HOLE FILTERS, SEE SPECIAL PROVISIONS.

PROJECT NO. I-6039

NEW HANOVER COUNTY

BRIDGE NO. 640058

KCA KISINGER CAMPO & ASSOCIATES

301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIRS
BENT 1

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

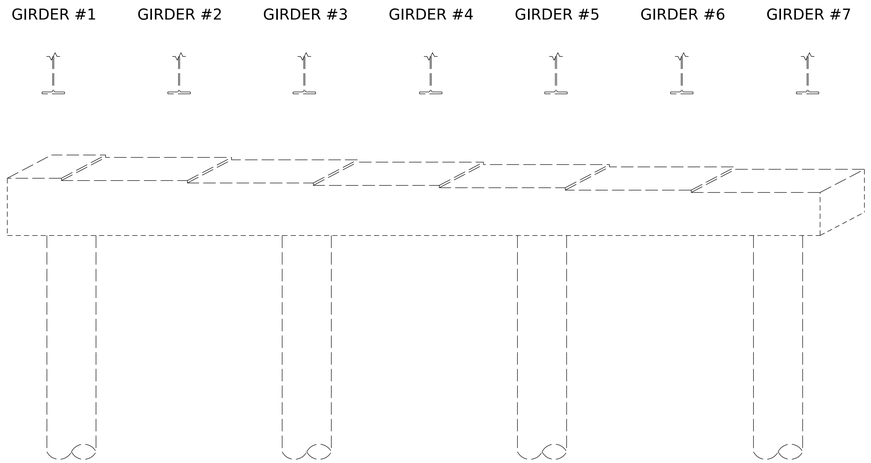
SHEET NO. S3-12

TOTAL SHEETS 13

DRAWN BY : JASON DEBONE DATE : 01/2023
CHECKED BY : AJ MCSWAIN DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

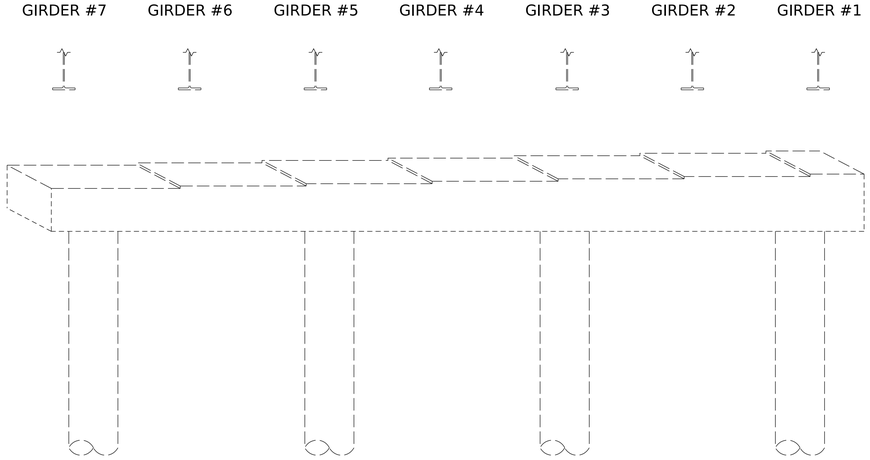
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

4/17/2023
640058_I6039_SMU_SBR01.dgn
jduke



BENT 2

(WEST FACE)



BENT 2

(EAST FACE)

LEGEND

	CONCRETE REPAIR AREA (CR)
	SHOTCRETE REPAIR AREA (SCR)
	EPOXY RESIN INJECTION (ERI)

AS-BUILT REPAIR QUANTITY TABLE

BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP/BACKWALL	-	-		
COLUMN/PILE	-	-		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	-	-		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	-			
COLUMN/PILE	-			
WEEP HOLE FILTERS	-			

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

NOTES:

REPAIR LOCATIONS AND ESTIMATED QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATIONS AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE TABLE ABOVE.

CRACKING LOCATIONS AND QUANTITIES FOR LOCATIONS DESCRIBED AS ''SCATTERED THROUGHOUT'' IN THE INSPECTION REPORT ARE BASED ON THE BEST INFORMATION AVAILABLE. THE ENGINEER AND CONTRACTOR SHALL IDENTIFY AND REPAIR ALL CRACKS >=$\frac{1}{16}$" AS DESCRIBED IN THE SPECIAL PROVISIONS AT EACH BENT.

AVERAGE CONCRETE COVER IS EXPECTED TO BE 2" ON THE CAP AND FROM 1$\frac{1}{2}$" TO 2" ON THE COLUMNS. ACTUAL CONCRETE COVER SHALL BE DETERMINED BY THE CONTRACTOR AND PRESENTED TO THE ENGINEER PRIOR TO BEGINNING EXCAVATION/ DEMOLITION.

FOR CONCRETE AND SHOTCRETE REPAIRS, SEE "CONCRETE RESTORATION DETAILS" SHEETS.

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

(AT END BENTS) FOR WEEP HOLE FILTERS, SEE SPECIAL PROVISIONS.

PROJECT NO. I-6039

NEW HANOVER COUNTY

BRIDGE NO. 640058

KCA KISINGER CAMPO & ASSOCIATES

301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIRS
BENT 2

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

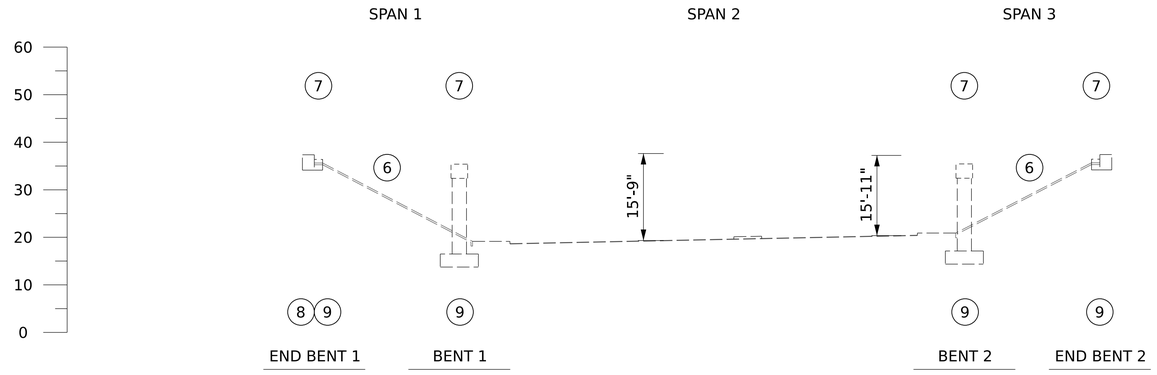
SHEET NO. S3-13

TOTAL SHEETS 13

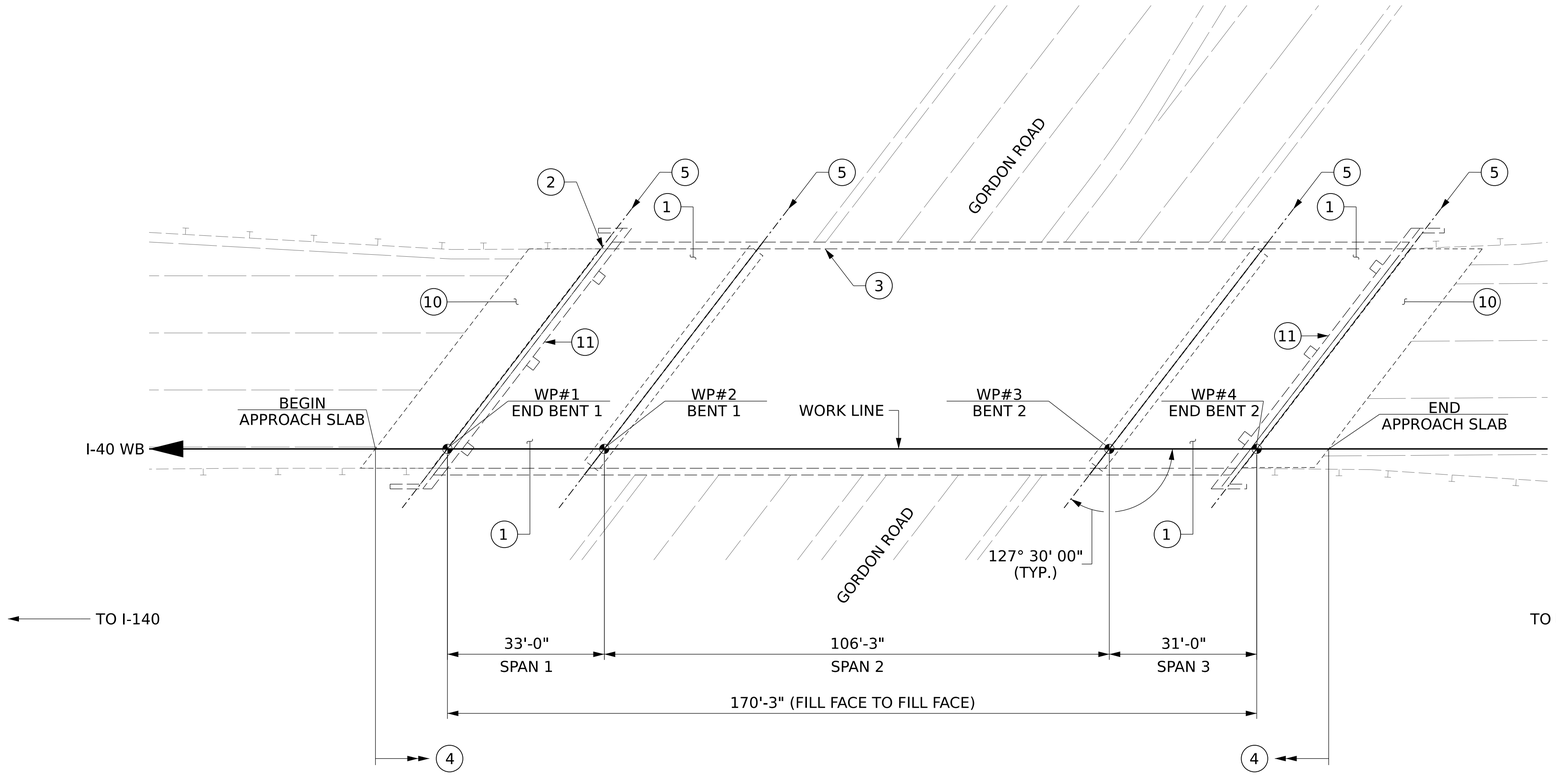
DRAWN BY : JASON DEBONE DATE : 01/2023
CHECKED BY : AJ MCSWAIN DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

4/17/2023
640058_I6039_SMU_SBR02.dgn
jduke



SECTION ALONG ROADWAY



PLAN

SCOPE LEGEND:

1. CLEAR SHOULDERS OF DEBRIS AND VEGETATION
2. PROPOSED GUARDRAIL ANCHOR UNITS
3. BRIDGE RAIL REPAIRS
4. POLYMER CONCRETE OVERLAY
5. JOINT REPLACEMENT
6. SLOPE PROTECTION REPAIRS
7. EPOXY COAT CAPS
8. SUBSTRUCTURE CONCRETE REPAIRS
9. REPAIR SEALS AT BASE OF COLUMNS AND END BENT CAPS
10. APPROACH SLAB FOAM INJECTION
11. INSTALL WEEP HOLE FILTERS

NOTES:

GENERAL DRAWING INFORMATION IS TAKEN FROM THE ORIGINAL PLANS AND THE MOST UP TO DATE ROUTINE INSPECTION REPORT DATED 12/03/2022.

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

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

RESIDENT ENGINEER DATE

PROJECT NO. I-6039

NEW HANOVER COUNTY

BRIDGE NO. 640059

DRAWN BY : AJ MCSWAIN DATE : 01/2023
CHECKED BY : SCOTT BETZ DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

4/17/2023
640059_I6039_SMU_GD01.dgn
jduke

DocuSigned by: JACOB H. DUKE 4/17/2023
NORTH CAROLINA PROFESSIONAL SEAL 043777 ENGINEER JACOB H DUKE

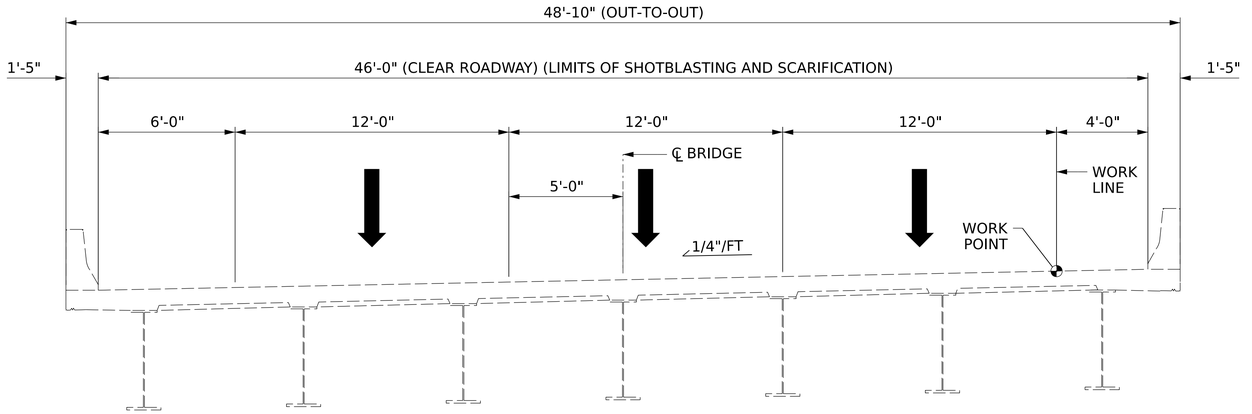
KCA KISINGER CAMPO & ASSOCIATES
301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

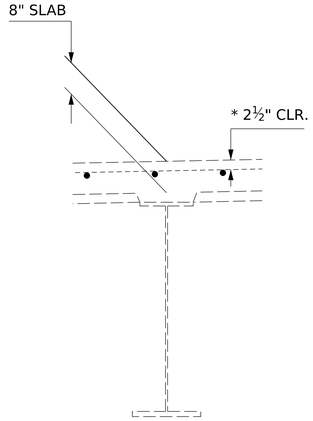
GENERAL DRAWING
FOR BRIDGE ON I-40 WB
OVER GORDON RD

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



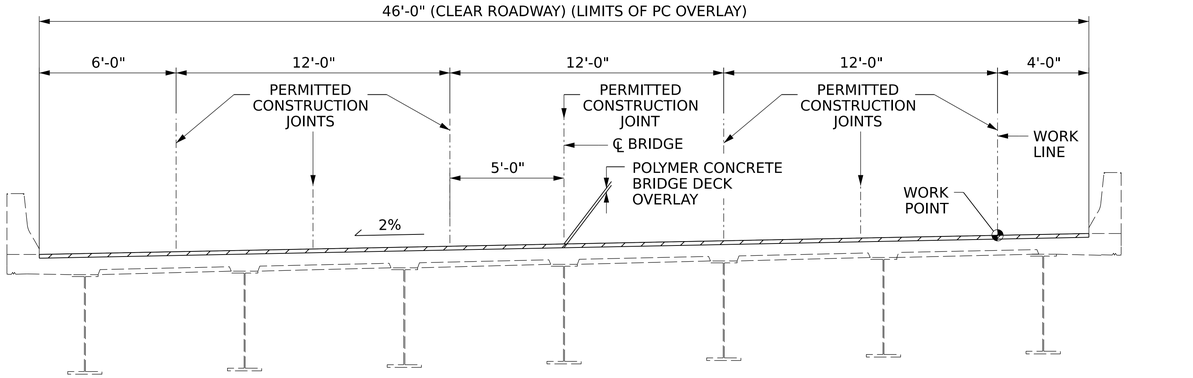
EXISTING SECTION

(SPANS 1 - 3)
(DIAPHRAGMS NOT SHOWN FOR CLARITY)



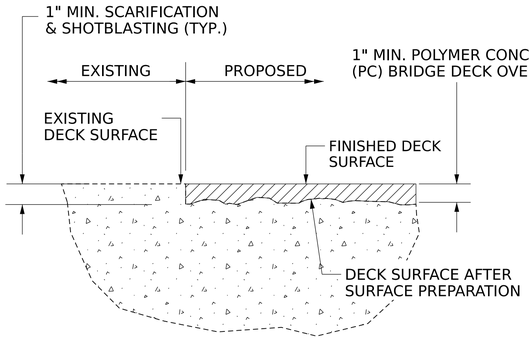
EXISTING SLAB SECTION

(SPANS 1 - 3)
* CONCRETE COVER PER EXISTING PLANS DATED 06/1982

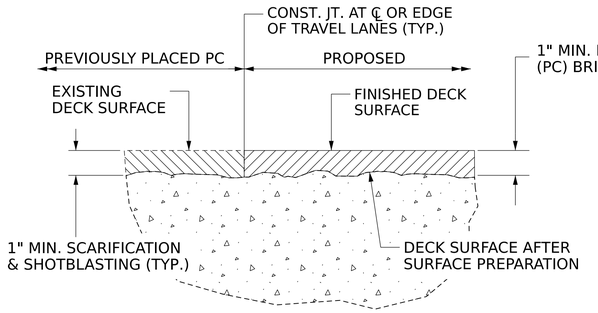


PROPOSED SECTION

(SPANS 1 - 3)
(DIAPHRAGMS NOT SHOWN FOR CLARITY)



DETAIL FOR PC OVERLAY



DETAIL FOR STAGED PC OVERLAY

NOTES:

1. LONGITUDINAL CONSTRUCTION JOINTS OF OVERLAYS SHALL BE LOCATED ALONG THE CENTERLINE OR EDGE OF TRAVEL LANES.
2. SEE TRAFFIC MANAGEMENT PLANS FOR LANE WIDTHS, SEQUENCING, AND OTHER TRAFFIC CONTROL MEASURES FOR STAGING OF PC OVERLAY AND SURFACE PREPARATION.

DRAWN BY : AJ MCSWAIN DATE : 01/2023
CHECKED BY : SCOTT A BETZ DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

4/17/2023
640059_I6039_SMU_TS01.dgn
jduke

KCA KISINGER CAMPO & ASSOCIATES

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

PROJECT NO. I-6039
NEW HANOVER COUNTY
BRIDGE NO. 640059

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION
SPANS 1 - 3

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

AS-BUILT REPAIR QUANTITY TABLE

TOP OF DECK REPAIRS	SPAN 1		SPAN 2		SPAN 3		BEGIN APPROACH SLAB		END APPROACH SLAB	
	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	169 SY		544 SY		159 SY		77 SY		77 SY	
SHOTBLASTING BRIDGE DECK	169 SY		544 SY		159 SY		77 SY		77 SY	
PC MATERIALS	4.7 CY		15.1 CY		4.4 CY		2.1 CY		2.1 CY	
PLACING AND FINISHING PC OVERLAY	169 SY		544 SY		159 SY		77 SY		77 SY	
GROOVING BRIDGE FLOORS	1419 SF		4568.8 SF		1333 SF		645 SF		645 SF	
CLASS II SURFACE PREPARATION	3.3 SY		0.4 SY		3.3 SY		3.3 SY		3.3 SY	

NOTES:

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

CONCRETE COVER FOR TOP BARS IN THE DECK SLAB IS 2½" PER THE EXISTING BRIDGE PLANS. ACTUAL CONCRETE COVER SHALL BE DETERMINED BY THE CONTRACTOR AND PRESENTED TO THE ENGINEER PRIOR TO BEGINNING SCARIFICATION.

CURRENT AVERAGE COVER IS EXPECTED TO BE FROM 1½" TO 2" BASED ON VISUAL INSPECTION.

MINOR QUANTITIES OF CLASS II AREAS ARE ANTICIPATED, PARTICULARLY NEAR JOINTS. HOWEVER, DUE TO THEIR SMALL SIZE, THE CLASS II LOCATIONS HAVE NOT BEEN DELINEATED ON THESE PLANS. THE CLASS II QUANTITIES INDICATED ARE ANTICIPATED TO BE SUFFICIENT FOR THE ACTUAL QUANTITIES ENCOUNTERED.

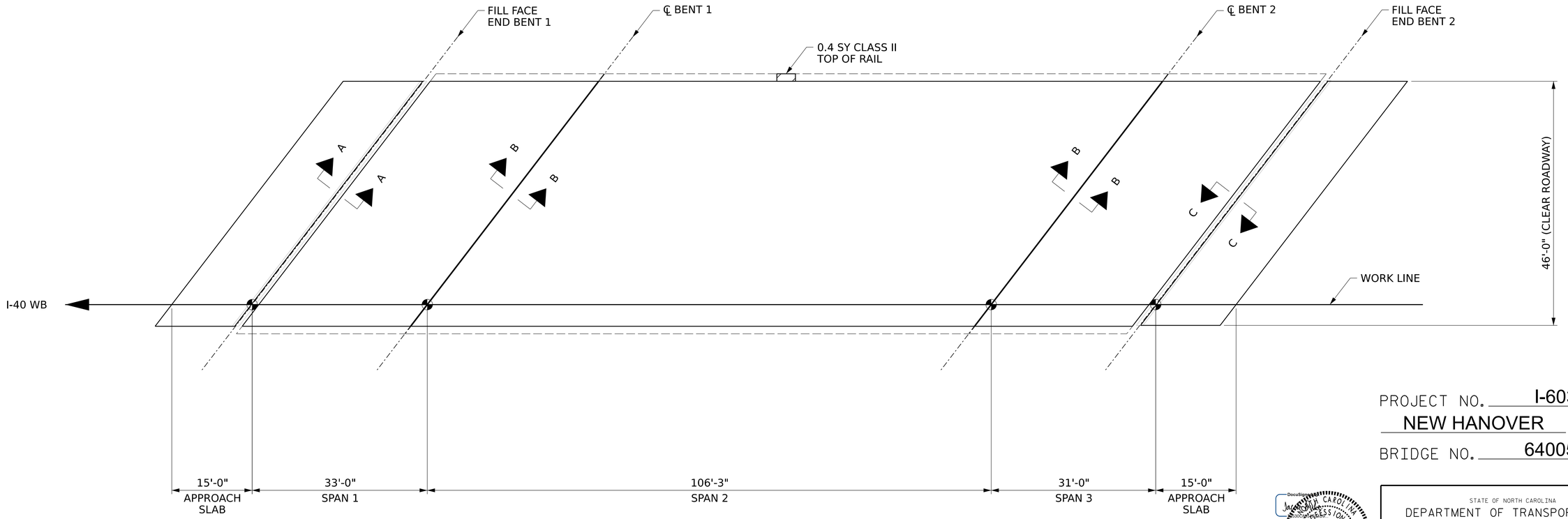
FOR CLASS II SURFACE PREPARATION, SEE SPECIAL PROVISIONS.

BRIDGE DECK GROOVING QUANTITY BASED ON LIMITS REQUIRED IN SECTION 420-14(B) OF THE STANDARD SPECIFICATIONS.

BRIDGE DECK SCARIFICATION LIMITS ARE THE FULL CLEAR ROADWAY WIDTH (INSIDE FACE OF EACH BRIDGE RAIL).

FOR POLYMER CONCRETE BRIDGE DECK OVERLAY, SEE SPECIAL PROVISIONS.

COORDINATE THIS SHEET WITH THE SHEETS FOR JOINT DETAILS.



PC OVERLAY

CLASS II SURFACE PREP.

SHOTCRETE REPAIR AREA (SCR)

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PROJECT NO. I-6039
NEW HANOVER COUNTY
BRIDGE NO. 640059

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 043777 JACOB H. DUKE 4/17/2023

KCA KISINGER CAMPO & ASSOCIATES
301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF SPANS

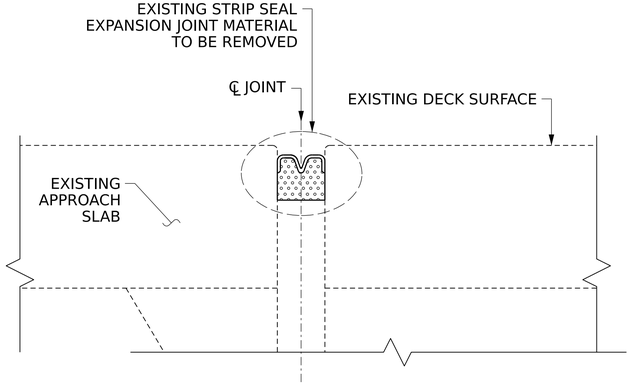
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S4-3
TOTAL SHEETS 13

DRAWN BY : JASON DEBONE DATE : 01/2023
CHECKED BY : AJ MCSWAIN DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

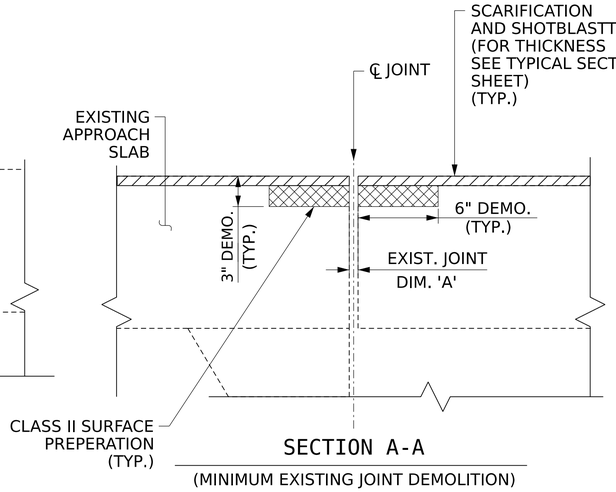
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

4/17/2023
640059_I6039_SMU_DSR01.dgn
jduke



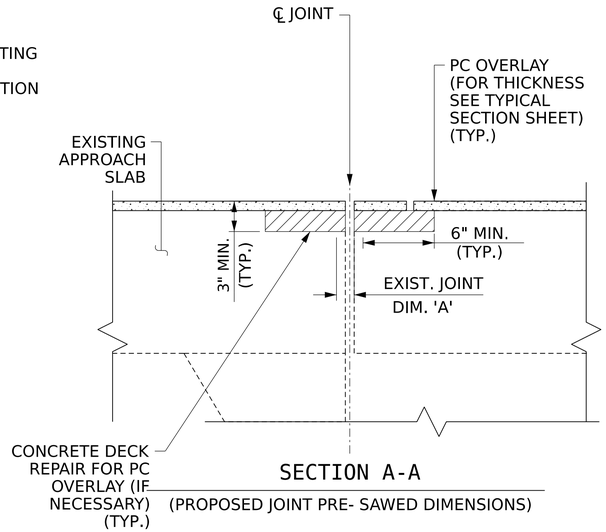
SECTION A-A

(EXISTING BRIDGE JOINT)



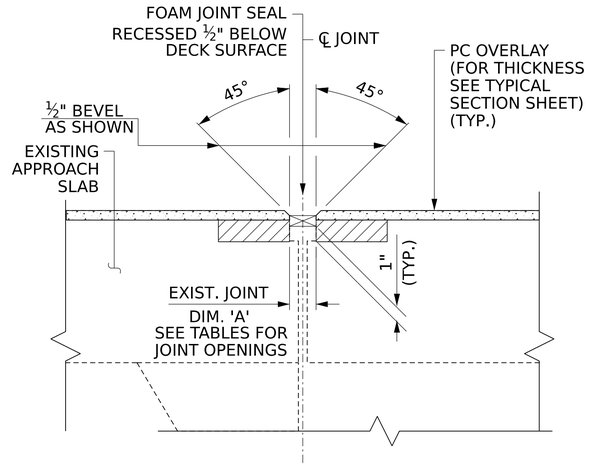
SECTION A-A

(MINIMUM EXISTING JOINT DEMOLITION)



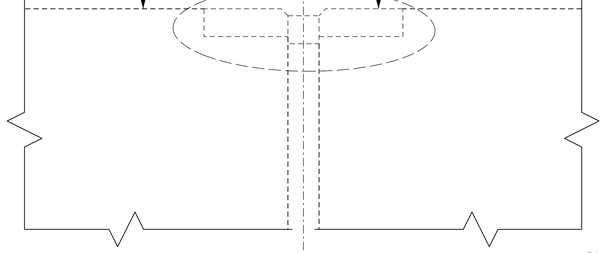
SECTION A-A

(PROPOSED JOINT PRE- SAWED DIMENSIONS)



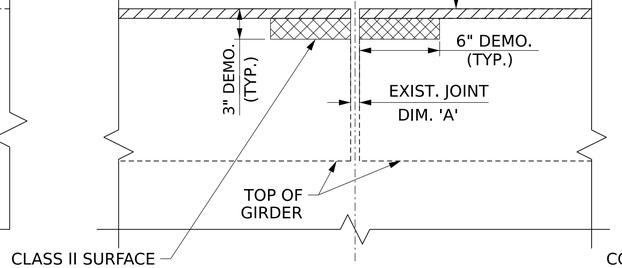
SECTION A-A

(PROPOSED FOAM JOINT SEAL)



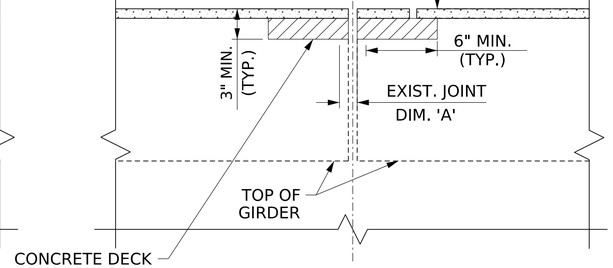
SECTION C-C

(EXISTING BRIDGE JOINT)



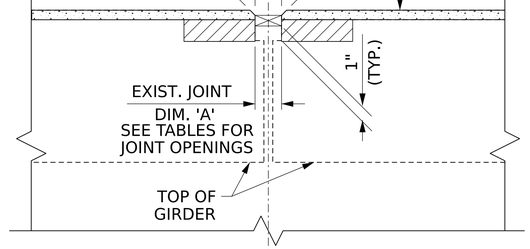
SECTION C-C

(MINIMUM EXISTING JOINT DEMOLITION)



SECTION C-C

(PROPOSED JOINT PRE- SAWED DIMENSIONS)



SECTION C-C

(PROPOSED FOAM JOINT SEAL)

PROJECT NO. I-6039

NEW HANOVER COUNTY

BRIDGE NO. 640059

SHEET 1 OF 3

KCA
KISINGER CAMPO
& ASSOCIATES

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

JOINT DETAILS

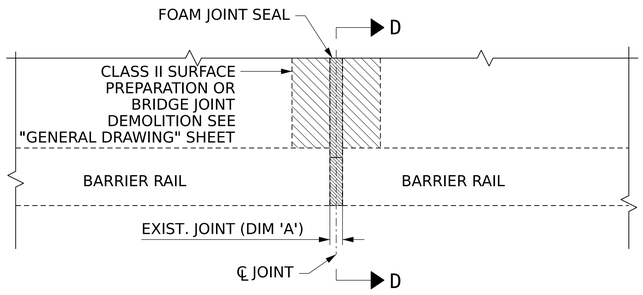
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-4
1			3			TOTAL SHEETS
2			4			13

DRAWN BY : FIDEL L. FLORES DATE : 01/2023
CHECKED BY : ALLEN J. MCSWAIN DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

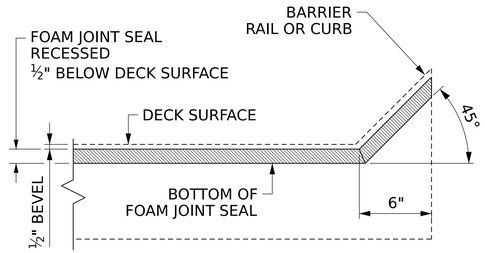
301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

4/17/2023
640059_16039_SMU_JT01.dgn
jduke



PLAN AT GUTTER

(PROPOSED FOAM JOINT SEAL)



SECTION D-D

(PROPOSED FOAM JOINT SEAL)

PROPOSED JOINT QUANTITY

	ESTIMATED (LIN. FT.)	ACTUAL (LIN. FT.)
FOAM JOINT SEALS FOR PRESERVATION	120	

TABLE 1

01-26-2023

BENT/ JOINTS	DIM 'A' @ 51°F
END BENT 1	2¼"
END BENT 2	2"

NOTES:

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

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

INSTALL FOAM JOINTS AS PER THE MANUFACTURER'S RECOMMENDATIONS.

THE CONTRACTOR SHALL TAKE CARE DURING JOINT REPAIR OPERATIONS NOT TO DROP ANY MATERIAL THAT FALLS BELOW THE BRIDGE, WITHOUT PROTECTIVE DEVICES BELOW TO CATCH THE MATERIAL. ANY MATERIAL THAT FALLS BELOW THE BRDIGE 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.

FOR BRIDGE JOINT DEMOLITION, SEE SPECIAL PROVISIONS.

FOR FOAM JOINT SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.

DEMOLISH BRIDGE JOINT AREA SUCH THAT THE BOTTOM OF THE EXCAVATION SHALL BE REASONABLY FLAT AND LEVEL AND TO THE NECESSARY DEPTH, SUCH THAT THE REPAIR SHALL BE FOUNDED ON CONCRETE OR REPAIR CONCRETE SUBSTRATE.

TAKE CARE NOT TO DAMAGE ANY EXISTING DECK REINFORCING EXPOSED DURING BRIDGE JOINT DEMOLITION. NOTIFY THE ENGINEER OF ANY DECK REINFORCING EXPOSED DURING BRIDGE JOINT DEMOLITION OPERATIONS.

EXISTING DECK REINFORCING IS NOT SHOWN IN THE SECTIONS PROVIDED ON THIS SHEET.

DRAWN BY : FIDEL L. FLORES DATE : 01/2023
CHECKED BY : ALLEN J. MCSWAIN DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

4/17/2023
640059_I6039_SMU_JT02.dgn
jduke

KCA KISINGER CAMPO & ASSOCIATES

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

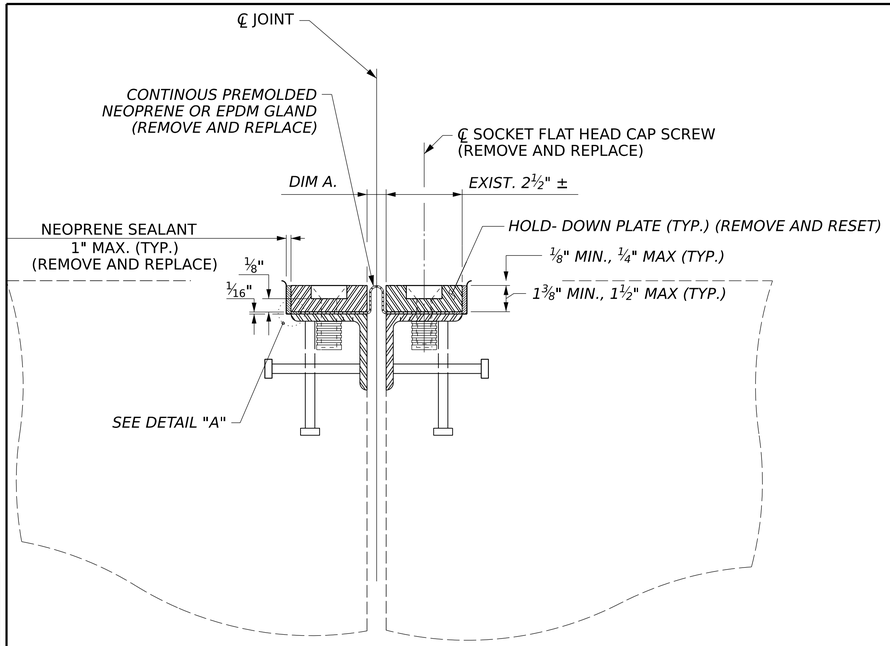
PROJECT NO. I-6039
NEW HANOVER COUNTY
BRIDGE NO. 640059

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

JOINT DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-5
1			3			TOTAL SHEETS
2			4			13



EXPANSION JOINT DETAILS

SUGGESTED REPAIR INSTALLATION PROCEDURE

1. LOOSEN THE EXISTING SCREWS 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 ⅞" IN DIAMETER WITH A HAND PUNCH.
4. IN ORDER TO CHECK FOR PROPER ALIGNMENT, PLACE THE NEW GLAND AND HOLD-DOWN PLATES ON THE BASE ANGLE. DO NOT APPLY NEW NEOPRENE SEALANT. BOLT THE HOLD-DOWN PLATES TO THE BASE ANGLE, BUT DO NOT TIGHTEN. THE ENGINEER WILL INSPECT THE JOINT SEAL DEVICE FOR PROPER ALIGNMENT.
5. AFTER INSPECTION, REMOVE THE HOLD-DOWN PLATES AND NEW GLAND. APPLY NEW NEOPRENE SEALANT TO THE BASE ANGLE IN ACCORDANCE WITH THE ''INSTALLATION SKETCH''. PLACE NEW GLAND AND HOLD-DOWN PLATES ON THE BASE ANGLE. BOLT THE HOLD-DOWN PLATES TO THE BASE ANGLE ASSEMBLY AND TORQUE THE SCREWS 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 OPNEING VARIES FROM THE OPENING INDICATED IN THE DETAILS BY MORE THAN ¼", NOTIFY THE ENGINEER.

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

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

A PREMOLDED CORRUGATED OR NON-CORRUGATED GLAND SHALL BE 130°.

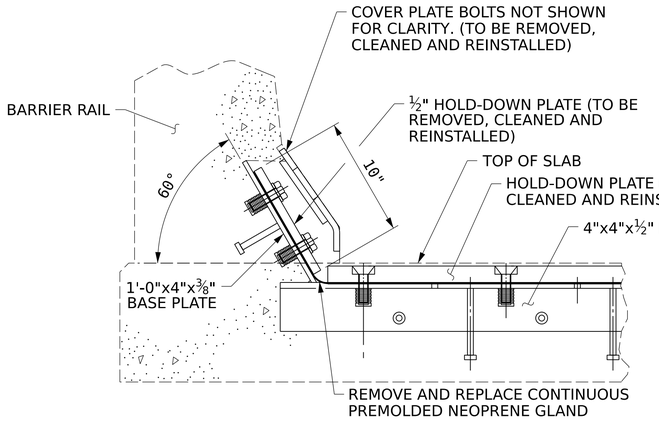
THE FINISHED EXPANSION SEAL DEVICE SHALL BE A MINIMUM SLAB.

FOR EXPANSION JOINT SEAL REPAIR, SEE SPECIAL PROVISIONS.

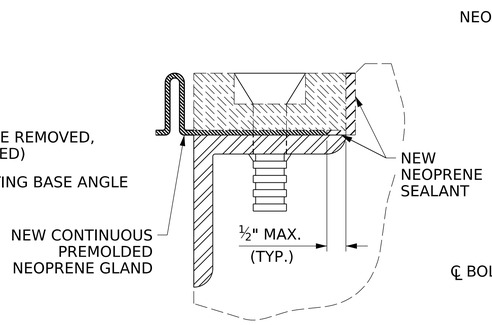
NO SEPARATE PAYMENT WILL BE MADE FOR REMOVING AND REINSTALLING MEDIAN AND BARRIER RAIL COVER PLATES. THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE LINEAR FEET PRICE BID FOR "EXPANSION JOINT SEALS FOR PRESERVATION".

DIM 'A' MOVEMENT AT JOINT	
LOCATION	PERPENDICULAR JOINT OPENING AT 51°F
BENT 1	1⅞"
BENT 2	1⅝"

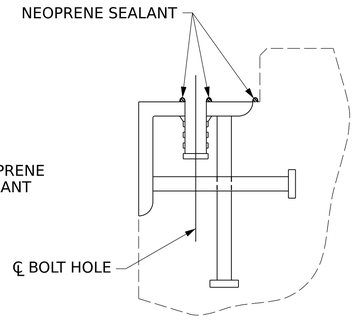
JOINT REPAIR QUANTITY TABLE		
	ESTIMATED	ACTUAL
EXPANSION JOINT SEALS FOR PRESERVATION	120	



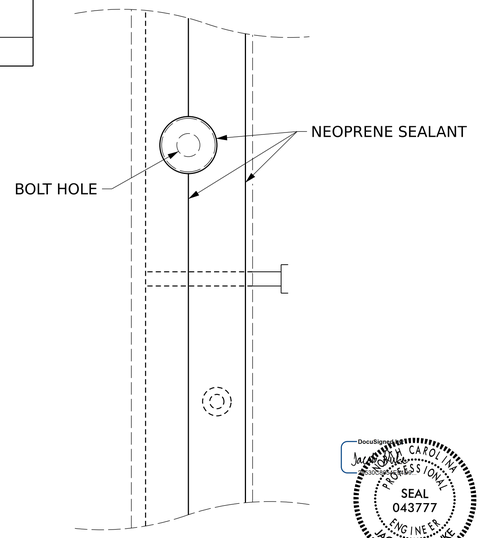
SECTION THRU RAIL NORMAL TO JOINT



DETAIL "A"



CROSS SECTION



PLAN VIEW

INSTALLATION SKETCH

PROJECT NO. I-6039
NEW HANOVER COUNTY
BRIDGE NO. 640059
SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

JOINT DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 043777 ENGINEER JACOB H DUKE 4/17/2023

KCA KISINGER CAMPO & ASSOCIATES

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-6
1			3			TOTAL SHEETS
2			4			13

DRAWN BY : JASON M. DEBONE DATE : 01/2023
CHECKED BY : ALLEN J. MCSWAIN DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

4/17/2023
640059_I6039_SMU_JT03.dgn
jduke

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

NOTES:

REPAIR LOCATIONS AND ESTIMATED QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATIONS AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE TABLE ABOVE.

CRACKING LOCATIONS AND QUANTITIES FOR LOCATIONS DESCRIBED AS ''SCATTERED THROUGHOUT'' IN THE INSPECTION REPORT ARE BASED ON THE BEST INFORMATION AVAILABLE. THE ENGINEER AND CONTRACTOR SHALL IDENTIFY AND REPAIR ALL CRACKS >=$\frac{1}{16}$" AS DESCRIBED IN THE SPECIAL PROVISIONS.

AVERAGE CONCRETE COVER IS EXPECTED AS FOLLOWS;
DECK & DIAPHRAGMS: 2$\frac{1}{2}$"

FOR CONCRETE AND SHOTCRETE REPAIRS, SEE "CONCRETE RESTORATION DETAILS" SHEETS.

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

ADDITIONAL QUANTITIES OF CONCRETE REPAIR AREAS ARE ANTICIPATED. DUE TO LACK OF INFORMATION, ALL AREAS ARE NOT KNOWN. QUANTITIES ARE ANTICIPATED TO BE SUFFICIENT FOR ACTUAL QUANTITIES ENCOUNTERED.

FOR BEARINGS REPAIRS, SEE BEARING REPAIR SHEETS.

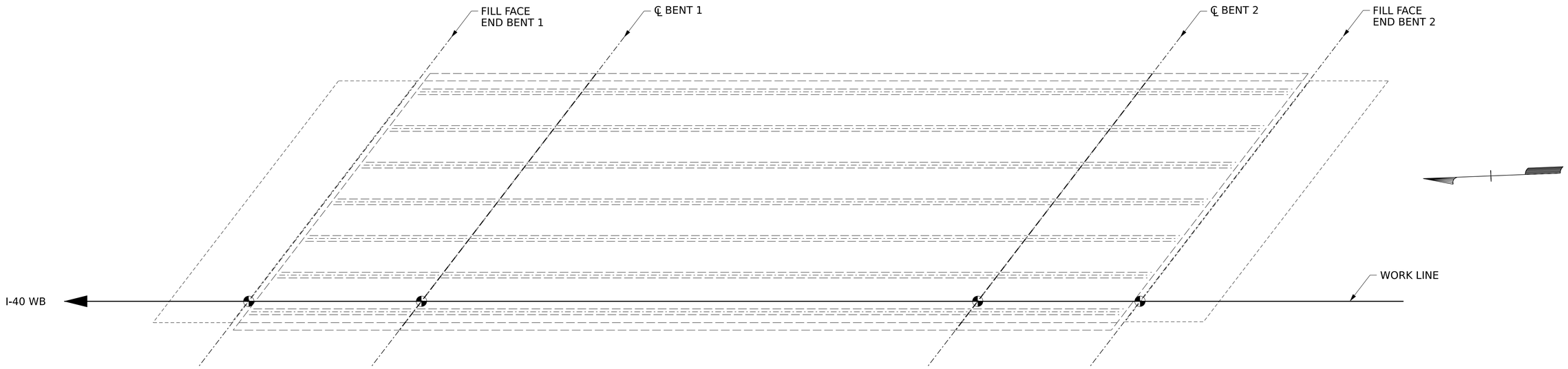
LEGEND

	SHOTCRETE REPAIR (SCR)
	EPOXY RESIN INJECTION (ERI)

AS-BUILT REPAIR QUANTITY TABLE

	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
UNDERSIDE OF DECK & OVERHANG	-	-		
DIAPHRAGMS	-	-		
RAILS	-	-		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
DECK , DIAPHRAGMS AND RAILS	-			
GIRDERS	-			

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



PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PROJECT NO. I-6039
NEW HANOVER COUNTY
BRIDGE NO. 640059

DocuSigned by: Jacob H. Duke
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 043777 JACOB H. DUKE
4/17/2023

KCA KISINGER CAMPO & ASSOCIATES
301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE REPAIRS

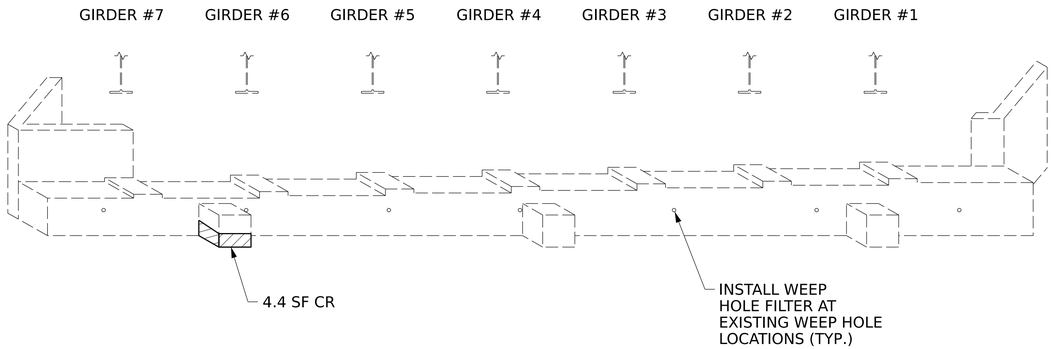
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S4-7
TOTAL SHEETS 13

DRAWN BY : JASON DEBONE DATE : 01/2023
CHECKED BY : AJ MCSWAIN DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

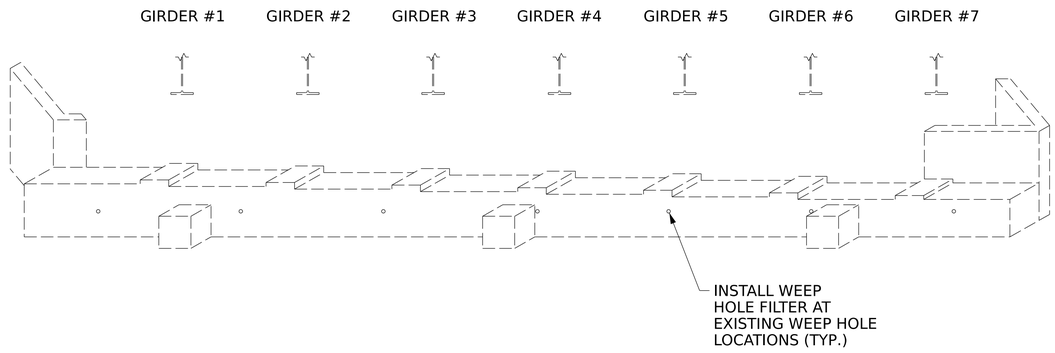
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

4/17/2023
640059_I6039_SMU_DUR01.dgn
jduke



END BENT 1

(EAST FACE)



END BENT 2

(WEST FACE)

LEGEND

	CONCRETE REPAIR AREA (CR)
	SHOTCRETE REPAIR AREA (SCR)
	EPOXY RESIN INJECTION (ERI)

AS-BUILT REPAIR QUANTITY TABLE

END BENTS 1 & 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP/BACKWALL	-	-		
COLUMN/PILE	-	-		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	4.4	2.2		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	-			
COLUMN/PILE	-			
WEEP HOLE FILTERS	14 EA			

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

NOTES:

REPAIR LOCATIONS AND ESTIMATED QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATIONS AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE TABLE ABOVE.

CRACKING LOCATIONS AND QUANTITIES FOR LOCATIONS DESCRIBED AS ''SCATTERED THROUGHOUT'' IN THE INSPECTION REPORT ARE BASED ON THE BEST INFORMATION AVAILABLE. THE ENGINEER AND CONTRACTOR SHALL IDENTIFY AND REPAIR ALL CRACKS >=$\frac{1}{16}$" AS DESCRIBED IN THE SPECIAL PROVISIONS AT EACH BENT.

AVERAGE CONCRETE COVER IS EXPECTED TO BE 2" ON THE CAP AND FROM 1$\frac{1}{2}$" TO 2" ON THE COLUMNS. ACTUAL CONCRETE COVER SHALL BE DETERMINED BY THE CONTRACTOR AND PRESENTED TO THE ENGINEER PRIOR TO BEGINNING EXCAVATION/ DEMOLITION.

FOR CONCRETE AND SHOTCRETE REPAIRS, SEE "CONCRETE RESTORATION DETAILS" SHEETS.

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

(AT END BENTS) FOR WEEP HOLE FILTERS, SEE SPECIAL PROVISIONS.

PROJECT NO. I-6039
NEW HANOVER COUNTY
BRIDGE NO. 640059

KCA KISINGER CAMPO & ASSOCIATES

301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIRS
END BENTS 1 & 2

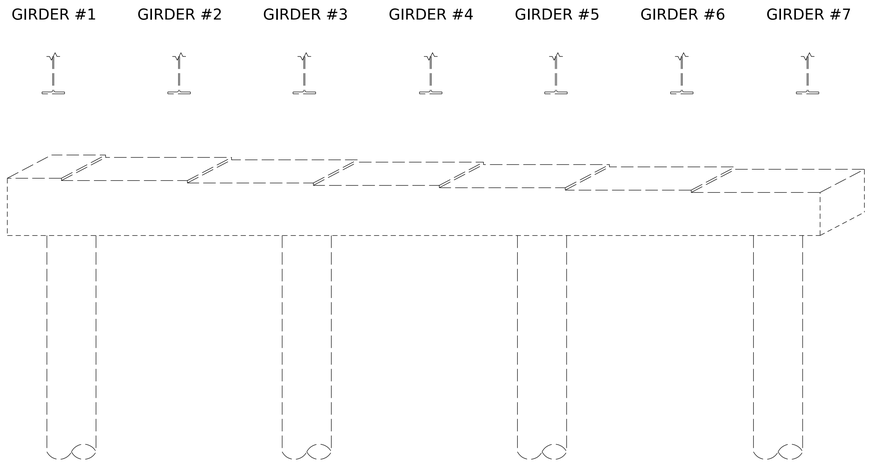
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S4-11
TOTAL SHEETS 13

DRAWN BY : JASON DEBONE DATE : 01/2023
CHECKED BY : AJ MCSWAIN DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

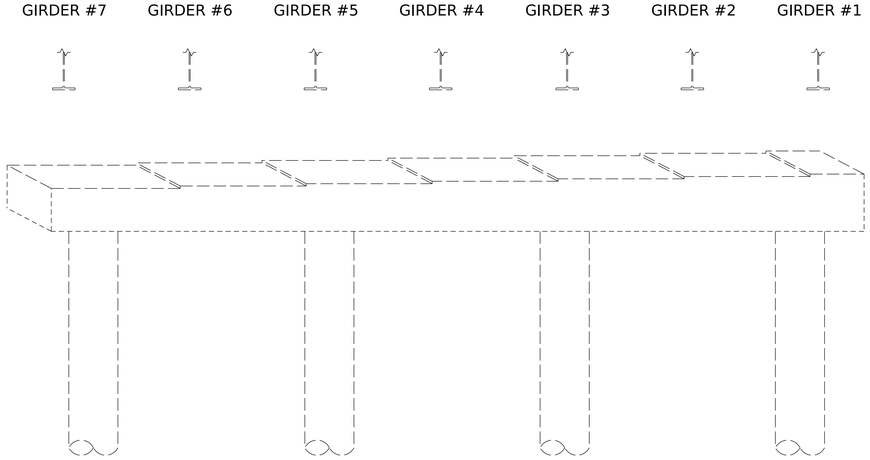
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

4/17/2023
640059_I6039_SMU_SBR00.dgn
jduke



BENT 1

(WEST FACE)



BENT 1

(EAST FACE)

LEGEND

	CONCRETE REPAIR AREA (CR)
	SHOTCRETE REPAIR AREA (SCR)
	EPOXY RESIN INJECTION (ERI)

AS-BUILT REPAIR QUANTITY TABLE

BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP/BACKWALL	-	-		
COLUMN/PILE	-	-		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	-	-		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	-			
COLUMN/PILE	-			
WEEP HOLE FILTERS	-			

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

NOTES:

REPAIR LOCATIONS AND ESTIMATED QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATIONS AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE TABLE ABOVE.

CRACKING LOCATIONS AND QUANTITIES FOR LOCATIONS DESCRIBED AS ''SCATTERED THROUGHOUT'' IN THE INSPECTION REPORT ARE BASED ON THE BEST INFORMATION AVAILABLE. THE ENGINEER AND CONTRACTOR SHALL IDENTIFY AND REPAIR ALL CRACKS >=$\frac{1}{16}$" AS DESCRIBED IN THE SPECIAL PROVISIONS AT EACH BENT.

AVERAGE CONCRETE COVER IS EXPECTED TO BE 2" ON THE CAP AND FROM 1$\frac{1}{2}$" TO 2" ON THE COLUMNS. ACTUAL CONCRETE COVER SHALL BE DETERMINED BY THE CONTRACTOR AND PRESENTED TO THE ENGINEER PRIOR TO BEGINNING EXCAVATION/ DEMOLITION.

FOR CONCRETE AND SHOTCRETE REPAIRS, SEE "CONCRETE RESTORATION DETAILS" SHEETS.

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

(AT END BENTS) FOR WEEP HOLE FILTERS, SEE SPECIAL PROVISIONS.

PROJECT NO. I-6039

NEW HANOVER COUNTY

BRIDGE NO. 640059

KCA KISINGER CAMPO & ASSOCIATES

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIRS
BENT 1

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

SHEET NO. S4-12

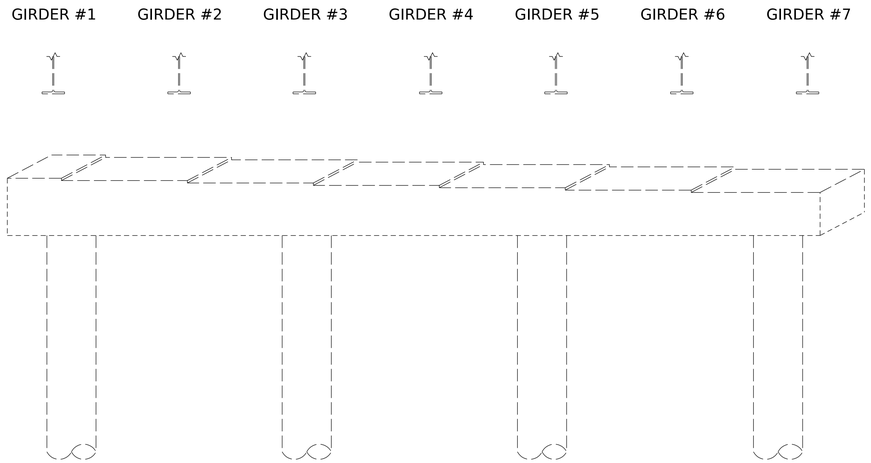
TOTAL SHEETS 13

DRAWN BY : JASON DEBONE DATE : 01/2023
CHECKED BY : AJ MCSWAIN DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

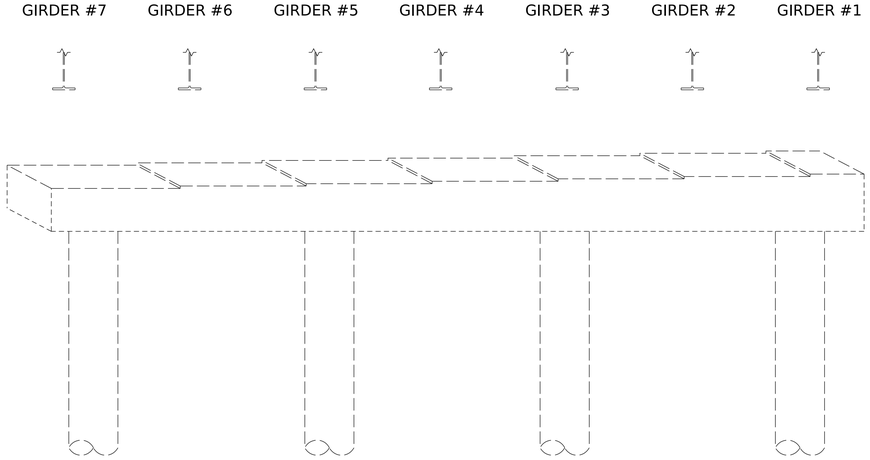
301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

4/17/2023
640059_I6039_SMU_SBR01.dgn
jduke



BENT 2

(WEST FACE)



BENT 2

(EAST FACE)

LEGEND

	CONCRETE REPAIR AREA (CR)
	SHOTCRETE REPAIR AREA (SCR)
	EPOXY RESIN INJECTION (ERI)

AS-BUILT REPAIR QUANTITY TABLE

BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP/BACKWALL	-	-		
COLUMN/PILE	-	-		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	-	-		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	-			
COLUMN/PILE	-			
WEEP HOLE FILTERS	-			

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

NOTES:

REPAIR LOCATIONS AND ESTIMATED QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATIONS AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE TABLE ABOVE.

CRACKING LOCATIONS AND QUANTITIES FOR LOCATIONS DESCRIBED AS ''SCATTERED THROUGHOUT'' IN THE INSPECTION REPORT ARE BASED ON THE BEST INFORMATION AVAILABLE. THE ENGINEER AND CONTRACTOR SHALL IDENTIFY AND REPAIR ALL CRACKS >=$\frac{1}{16}$" AS DESCRIBED IN THE SPECIAL PROVISIONS AT EACH BENT.

AVERAGE CONCRETE COVER IS EXPECTED TO BE 2" ON THE CAP AND FROM 1$\frac{1}{2}$" TO 2" ON THE COLUMNS. ACTUAL CONCRETE COVER SHALL BE DETERMINED BY THE CONTRACTOR AND PRESENTED TO THE ENGINEER PRIOR TO BEGINNING EXCAVATION/ DEMOLITION.

FOR CONCRETE AND SHOTCRETE REPAIRS, SEE "CONCRETE RESTORATION DETAILS" SHEETS.

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

(AT END BENTS) FOR WEEP HOLE FILTERS, SEE SPECIAL PROVISIONS.

PROJECT NO. I-6039

NEW HANOVER COUNTY

BRIDGE NO. 640059

KCA KISINGER CAMPO & ASSOCIATES

301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIRS
BENT 2

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

SHEET NO. S4-13

TOTAL SHEETS 13

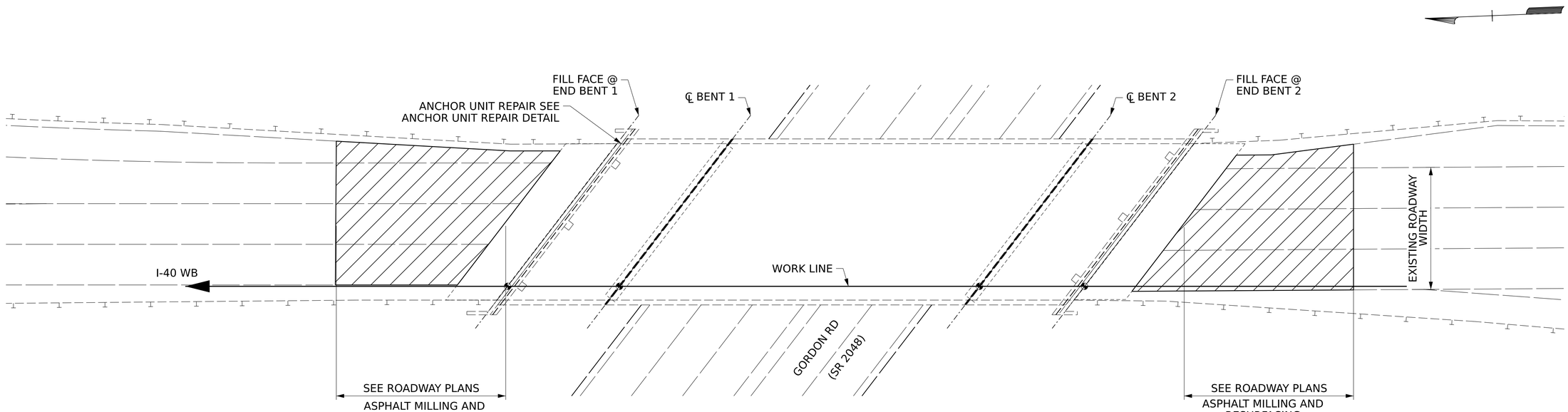
DRAWN BY : JASON DEBONE DATE : 01/2023
CHECKED BY : AJ MCSWAIN DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

4/17/2023
640059_I6039_SMU_SBR02.dgn
jduke

NOTES:

1. APPROACH SLAB VOID FILLING ACTIVITIES TO BE COMPLETED PRIOR TO RESURFACING ACTIVITIES.



PLAN

ANCHOR UNIT REPAIR DETAIL

TIGHTEN ALL CONNECTIONS SHOWN IN PHOTO.

REPLACE BOLTS WITH AN ADHESIVELY ANCHORED BOLT. FOR ADHESIVELY ANCHORED BOLTS AND DOWELS, SEE SECTION 420-13 OF THE STANDARD SPECIFICATIONS.

PAYMENT FOR TIGHTENING OR REPLACEMENT SHALL BE INCIDENTAL TO THE VARIOUS PAY ITEMS FOR THIS PROJECT.

PROJECT NO. I-6039
NEW HANOVER COUNTY
BRIDGE NO. 640059

NORTH CAROLINA PROFESSIONAL SEAL 043777 ENGINEER JACOB H DUKE 4/17/2023

KCA KISINGER CAMPO & ASSOCIATES
301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

APPROACH ROADWAY
ASPHALT MILLING AND GUARDRAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-8
1			3			TOTAL SHEETS
2			4			13

DRAWN BY : JASON M. DEBONE DATE : 01/2023
CHECKED BY : ALLEN J. MCSWAIN DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

4/17/2023
640059_I6039_SMU_AR01.dgn
jduke

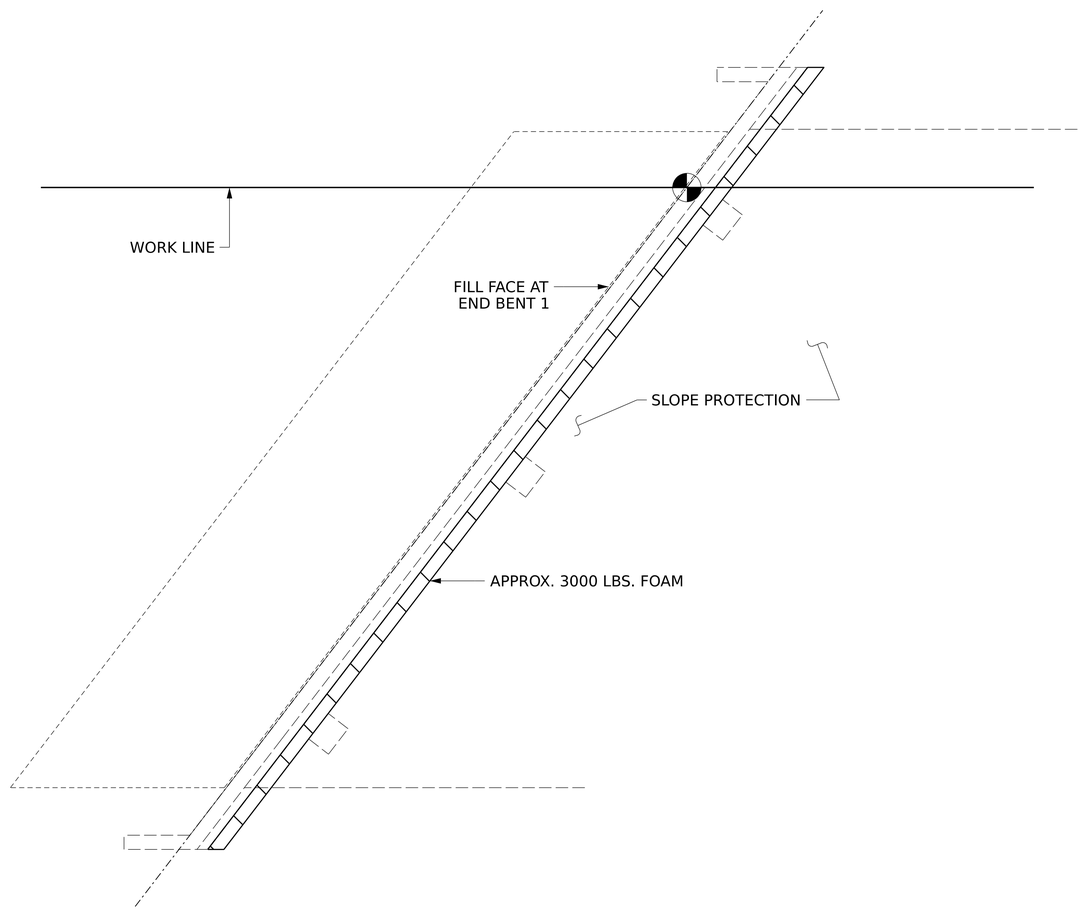
AS-BUILT REPAIR QUANTITY TABLE		
SLOPE PROTECTION REPAIRS	640059	
	ESTIMATE	ACTUAL
SLOPE PROTECTION VOID FILLING	3000 LBS	

NOTES:

USE THIS SHEET IN CONJUCTION WITH THE SHEET S-10.

FOR SLOPE PROTECTION VOID FILLING, SEE SPECIAL PROVISIONS.

AFTER COMPLETION OF VOID FILLING, SEAL CRACKS IDENTIFIED WITH POURABLE SILICONE JOINT SEALANT AS DESCRIBED IN THE SPECIAL PROVISION FOR "SILICONE JOINT SEALANT FOR SLOPE REPAIRS" (BACKER RODS MAY BE OMITTED AS APPROVED BY THE ENGINEER.



PLAN

FOAM INJECTION

PROJECT NO. I-6039
NEW HANOVER COUNTY
BRIDGE NO. 640059

KCA KISINGER CAMPO & ASSOCIATES
301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

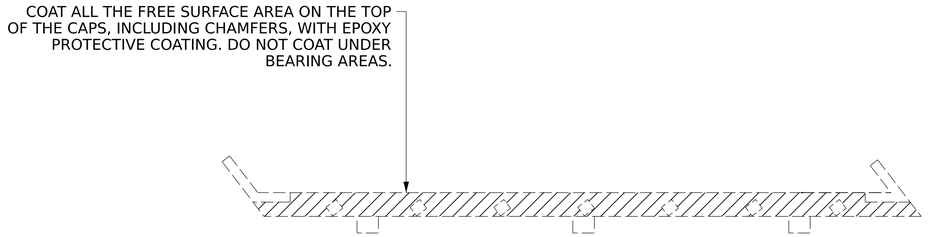
SLOPE PROTECTION REPAIRS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-9
1			3			TOTAL SHEETS
2			4			13

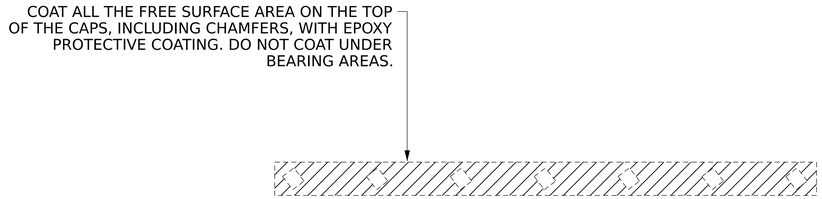
DRAWN BY : JASON M. DEBONE DATE : 01/2023
CHECKED BY : ALLEN J. MCSWAIN DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

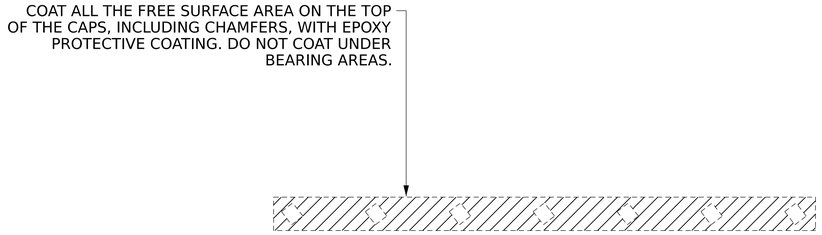
4/17/2023
640059_I6039_SMU_SLP01.dgn
jduke



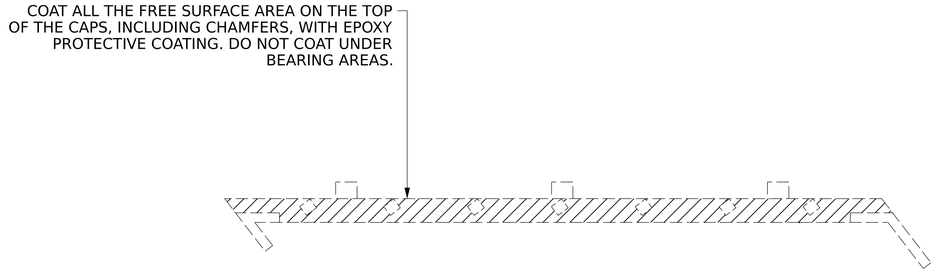
END BENT 1



BENT 1



BENT 2



END BENT 2

LEGEND	
▨	EPOXY COATING AREA

NOTES:

COORDINATE THIS SHEET WITH OTHER SHEETS FOR "CONCRETE RESTORATION DETAILS".

PERFORM ALL CONCRETE REPAIRS PRIOR TO APPLYING THE EPOXY PROTECTIVE COATING.

THE TOPS OF THE CAPS SHOULD BE CLEAN AND CLEAR OF ALL DEBRIS PRIOR TO THE APPLICATION OF THE EPOXY PROTECTIVE COATING.

FOR EPOXY PROTECTIVE COATING, SEE SPECIAL PROVISIONS AND STANDARD SPECIFICATIONS SECTION 420-18.

AS-BUILT REPAIR QUANTITY TABLE

EPOXY COATING BENT CAPS	TOTAL	
LOCATION	ESTIMATE	ACTUAL
END BENT 1	173 SF	
BENT 1	182 SF	
BENT 2	182 SF	
END BENT 2	173 SF	
TOTAL	710 SF	

DocuSigned by: Jacob H. Duke
NORTH CAROLINA PROFESSIONAL SEAL 043777 ENGINEER JACOB H DUKE
4/17/2023

KCA KISINGER CAMPO & ASSOCIATES
301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. I-6039
NEW HANOVER COUNTY
BRIDGE NO. 640059

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

EPOXY COATING
SUBSTRUCTURE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-10
1			3			TOTAL SHEETS
2			4			13

DRAWN BY : JASON M. DEBONE DATE : 01/2023
CHECKED BY : ALLEN J. MCSWAIN DATE : 01/2023
DESIGN ENGINEER OF RECORD: JACOB H. DUKE DATE : 01/2023

4/17/2023
640059_I6039_SMU_CR01.dgn
jduke

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

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

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

CONCRETE:

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

CONCRETE CHAMFERS:

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

DOWELS:

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

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

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

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

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

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

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE $\frac{7}{8}$"∅ SHEAR STUDS FOR THE $\frac{3}{4}$"∅ STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - $\frac{7}{8}$" ∅ STUDS FOR 4 -$\frac{3}{4}$" ∅ STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF $\frac{7}{8}$" ∅ STUDS ALONG THE BEAM AS SHOWN FOR $\frac{3}{4}$" ∅ STUDS BASED ON THE RATIO OF 3 - $\frac{7}{8}$" ∅ STUDS FOR 4 - $\frac{3}{4}$" ∅ STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST $\frac{5}{16}$" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS ;;BRIDGE WELDING CODE''. ELECTROSLAG WELDING WILL NOT BE PERMITTED.

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

HANDRAILS AND POSTS:

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

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

SPECIAL NOTES:

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

ENGLISH

JANUARY, 1990

STD. NO. SN

REV. 6-16-95 EEM (/) RGW REV. 5-7-03 RWW (/) JTE REV. 10-1-11 MAA (/) GM
REV. 8-16-99 RWW (/) LES REV. 5-1-06 TLA (/) GM REV. 12-17 MAA (/) THC
4/17/2023
16039_SMU_SN.dgn
jduke