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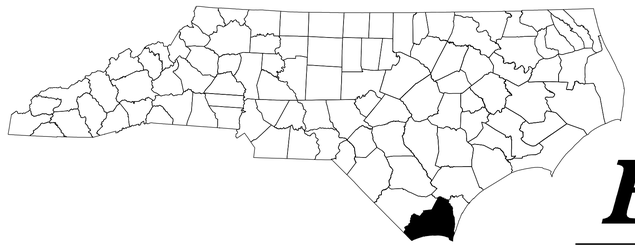
PROJECT: 15BPR.16

CONTRACT: C204254



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

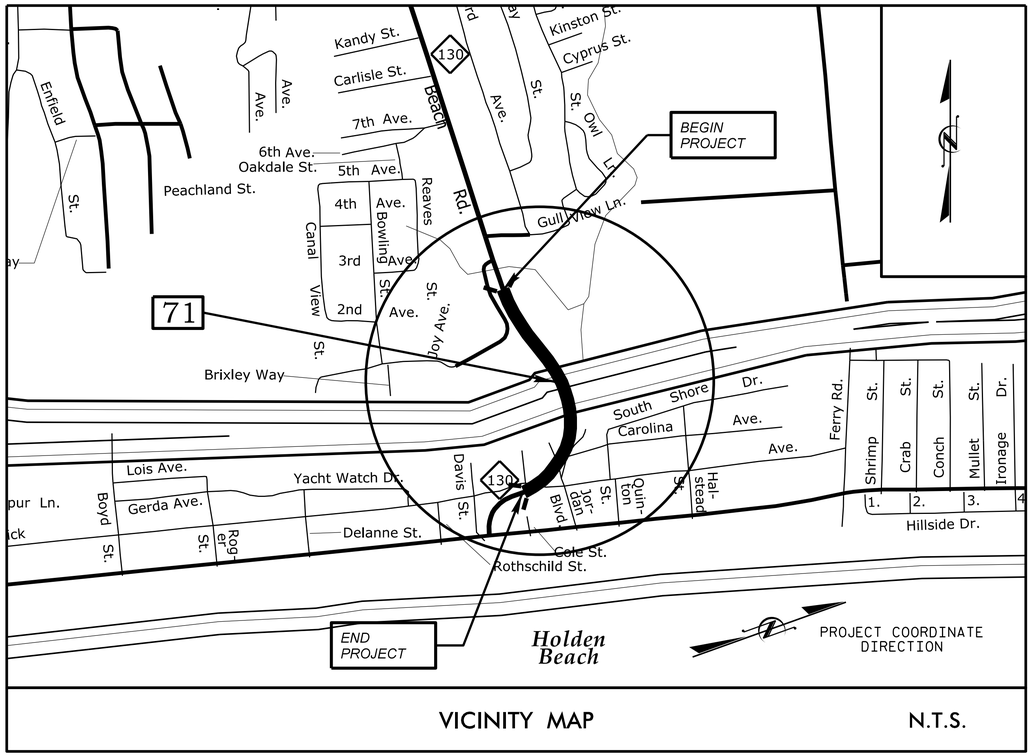
BRUNSWICK COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	15BPR.16	1	69

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
15BPR.16	–	P.E.
15BPR.16	–	CONST.

LOCATION: BRUNSWICK COUNTY
BRIDGE #71 ON NC 130 OVER THE INTRACOASTAL WATERWAY

TYPE OF WORK: BRIDGE PRESERVATION – DECK, SUPERSTRUCTURE AND SUBSTRUCTURE REPAIR, JOINT REPAIR AND RAIL RETROFIT



VICINITY MAP N.T.S.

STRUCTURES

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DESIGN DATA

BRUNSWICK COUNTY
#71 ADT 2018 = 7,900

PROJECT LENGTH

BRUNSWICK COUNTY
#71 = 0.34 MILE

2018 STANDARD SPECIFICATIONS

LETTING DATE :
SEPTEMBER 18, 2018

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

KCA KISINGER CAMPO & ASSOCIATES
4800 SIX FORKS ROAD SUITE 120
RALEIGH, NC 27609
(919) 882-7839

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 043571 SAMUEL L CULLUM

DocuSigned by: Samuel L. Cullum 19C97095C75A467...

8/13/2018 2:06:25 PM PDT

SAMUEL L. CULLUM, P.E.
PROJECT ENGINEER

JACOB H. DUKE, P.E.
PROJECT DESIGN ENGINEER

PROJECT: 15BPR.16

CONTRACT: C204254

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	15BPR.16	1A	69

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
15BPR.16	–	P.E.
15BPR.16	–	CONST.

INDEX OF SHEETS - STRUCTURES

STATE OF NORTH CAROLINA ★ DEPARTMENT OF TRANSPORTATION ★

KCA KISINGER CAMPO & ASSOCIATES
4800 SIX FORKS ROAD SUITE 120
RALEIGH, NC 27609
(919) 882-7839

PROJECT: 15BPR.16

CONTRACT: C204254

SUMMARY OF QUANTITIES

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	15BPR.16	S-1	69

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
15BPR.16	–	P.E.
15BPR.16	–	CONST.

TOTAL BILL OF MATERIAL - STRUCTURES

	GROOVING BRIDGE FLOORS	POLLUTION CONTROL	CLASS II, SURFACE PREPARATION	ELASTOMERIC BEARINGS	REPAIRS TO PRESTRESSED CONCRETE GIRDERS	CONCRETE REPAIRS	SHOTCRETE REPAIRS	EPOXY RESIN INJECTION	BRIDGE JOINT REMOVAL	SILICONE JOINT SEALANT	PPC MATERIALS	CP SYSTEM ZINC ALUMINUM SPRAY	EPOXY PROTECTIVE COATING	SCARIFYING BRIDGE DECK	SHOTBLASTING BRIDGE DECK
	SQ. FT.	LUMP SUM	SQ. YDS.	LUMP SUM	CU. FT.	CU. FT.	CU. FT.	LIN. FT.	LIN. FT.	LIN. FT.	CU. YDS.	SQ. FT.	SQ. FT.	SQ. YDS.	SQ. YDS.
SUPERSTRUCTURE	53721		6		210	46		534	132	788	192			6674	6674
SUBSTRUCTURE						145	1031	606				975	3527		
TOTAL	53721	LUMP SUM	6	LUMP SUM	210	191	1031	1140	132	788	192	975	3527	6674	6674

TOTAL BILL OF MATERIAL - STRUCTURES CONT.

	PLACING AND FINISHING PPC OVERLAY	CONCRETE DECK REPAIR FOR PPC OVERLAY	RAIL RETROFIT	CP SYSTEM (ZINC BULK ANODES)	BRIDGE JACKING (TYPE I)
	SQ. YDS.	SQ. YDS.	LIN. FT.	EA.	EA.
SUPERSTRUCTURE	6674	6	3599		
SUBSTRUCTURE				22	
TOTAL	6674	6	3599	22	3

KISINGER CAMPO & ASSOCIATES
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NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM

Docusigned by: Samuel L. Cullum 8/13/2018 2:06:25 PM PDT

DRAWINGS AND DIMENSIONS:

1. DO NOT SCALE DRAWINGS FOR DIMENSIONS NOT GIVEN.
2. VERIFY ALL EXISTING FIELD CONDITIONS AND DIMENSIONS (INCLUDING MINIMUM VERTICAL CLEARANCE) PRIOR TO COMMENCING REPAIRS OR ORDERING ANY MATERIAL. NOTIFY ENGINEER OF ANY DISCREPANCIES FOUND.
3. ALL DIMENSIONS ARE IN FEET AND INCHES.

DESIGN SPECIFICATIONS:

1. LRFD BRIDGE DESIGN SPECIFICATIONS (8TH EDITION, 2017)
2. 2018 NCDOT STANDARD SPECIFICATIONS AND PROJECT SPECIAL PROVISIONS.

PROJECT SCOPE:

1. POLYESTER POLYMER CONCRETE (PPC) OVERLAY
2. SUPERSTRUCTURE CONCRETE REPAIRS
3. SUBSTRUCTURE CONCRETE REPAIRS
4. EXPANSION JOINT REPLACEMENT/INSTALLATION
5. BEARING REPLACEMENT
6. GALVANIC CATHODIC PROTECTION - METALIZING
7. GALVANIC CATHODIC PROTECTION - BULK ANODE
8. RAIL RETROFIT
9. APPROACH ROADWAY MILLING AND RESURFACING

GENERAL NOTES:

1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FOLLOW ALL STATE AND FEDERAL REQUIREMENTS.
2. FOR SUBMITTAL OF FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
3. FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
4. FOR CONTROL OF TRAFFIC AND LIMITS ON PHASING CONSTRUCTION, SEE TRANSPORTATION MANAGEMENT PLAN.
5. FOR SURFACE PREPARATION FOR PPC OVERLAY, SEE SPECIAL PROVISIONS.
6. FOR POLYESTER POLYMER CONCRETE (PPC), SEE SPECIAL PROVISIONS.
7. FOR SILICONE JOINT SEALANT, SEE SPECIAL PROVISIONS.
8. FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.
9. FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.
10. FOR CONCRETE REPAIRS, SEE PLAN DETAILS AND SPECIAL PROVISIONS.
11. FOR CONCRETE DECK REPAIR FOR PPC OVERLAY, SEE SPECIAL PROVISIONS.
12. FOR ADHESIVELY ANCHORED RODS AND DOWELS, SEE ARTICLE 420-13 OF THE STANDARD SPECIFICATIONS.
13. ALL PROPOSED EXPANSION JOINT DIMENSIONS, OPENINGS AND BLOCKOUTS ARE SHOWN AT 60°F, CONTRACTOR SHALL FOLLOW MANUFACTURER'S INSTALLATION GUIDELINES AND MAKE ANY NECESSARY ADJUSTMENTS.
14. WORK ON BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL SUBMIT PLANS FOR CONSTRUCTION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.
15. PRIOR TO BEGINNING WORK, THE CONTRACTOR SHALL SUBMIT FOR REVIEW AND APPROVAL, A COMPLETE SEQUENCE OF TASKS FOR EACH OPERATION AFFECTING THE BRIDGE SURFACE AND/OR VEHICLE/MARINE TRAFFIC.
16. ANY DAMAGE TO EXISTING REINFORCING STEEL, DURING CONTRACTOR'S OPERATIONS, SHALL BE REPAIRED AS DIRECTED BY THE ENGINEER AND PERFORMED AT NO ADDITIONAL COST.
17. FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
18. FOR MAINTENANCE OF WATER TRAFFIC, SEE SPECIAL PROVISIONS.
19. FOR WORK IN, OVER OR ADJANCE TO NAVIGABLE WATERS, SEE SPECIAL PROVISIONS.

PROJECT COORDINATES:

NC 130/HOLDEN BEACH ROAD IS AN EAST/WEST ROUTE AND THE BRIDGE BEGINS ON THE MAINLAND SIDE AND ENDS ON THE BEACH SIDE. ALTHOUGH THE BRIDGE IS ORIENTED IN THE NORTH/SOUTH CARDINAL DIRECTION, REFERENCE IN THESE PLANS, BRIDGE INSPECTION REPORTS, AND OTHER DATA IS BASED ON END BENT 1 BEING LOCATED AT THE MAINLAND SIDE AND END BENT 2 BEING LOCATED AT THE BEACH SIDE. IN AN ATTEMPT TO BE CONSISTENT WITH THE CURRENT BRIDGE INSPECTION REPORT, END BENT 1 WILL BE LABELED THE "WEST" END OF THE BRIDGE AND END BENT 2 WILL BE LABELED THE "EAST" END.

DATUM:

ALL ELEVATIONS REFER TO NGVD '29 UNLESS NOTED OTHERWISE.

ENVIRONMENT:

SUPERSTRUCTURE: EXTREMELY AGGRESSIVE - COASTAL
SUBSTRUCTURE: EXTREMELY AGGRESSIVE - COASTAL

SITE CONDITIONS:

HABITAT BEYOND THE LIMITS OF CONSTRUCTION SHALL NOT BE DISTURBED.

CONCRETE CLASS:

SEE PROJECT SPECIAL PROVISIONS FOR CONCRETE REPAIR MATERIALS.

CONCRETE COVER:

1. 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.
2. CONSTRUCTION JOINTS ARE PERMITTED ONLY AT LOCATIONS SPECIFIED IN THE PLANS. ADDITIONAL CONSTRUCTION JOINTS OR ALTERATIONS TO THOSE SHOWN REQUIRE THE ENGINEER'S APPROVAL.

CONCRETE FINISHES:

FINISH 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.

REINFORCING STEEL:

1. ALL REINFORCING STEEL SHALL BE ASTM A615-96, GRADE 60.
2. ALL DIMENSIONS PERTAINING TO LOCATION OF REINFORCEMENT ARE TO CENTERLINE OF BARS EXCEPT WHERE THE CLEAR DIMENSION IS SHOWN TO FACE OF CONCRETE.
3. REINFORCEMENT DETAIL DIMENSIONS ARE OUT-TO-OUT OF BARS.

ADJACENT EDGE CONCRETE REPAIRS:

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. CONTRACTOR IS RESPONSIBLE FOR THIS REPAIR AT ALL LOCATIONS REGARDLESS OF CALL-OUT ON RESPECTIVE SHEET(S).

LIMIT OF REPAIRS:

1. LIMITS OF REPAIRS PROVIDED IN THESE PLANS ARE BASED ON PREVIOUS NBIS ELEMENT INSPECTIONS AND LIMITED FIELD WORK. THE EXTENT OF THE REPAIRS IS EXPECTED TO VARY DURING CONSTRUCTION.
2. DUE TO TIME SINCE INSPECTION, DEFICIENCIES MAY HAVE DETERIORATED OR INCREASED IN NUMBER. NOTIFY THE ENGINEER OF SIGNIFICANT CHANGES.

FORMS CONSTRUCTION:

FORMS MUST BE SUPPORTED BY THE EXISTING STRUCTURE. FULL DEPTH COFFERDAMS WILL NOT BE ACCEPTED. THE CONTRACTOR SHALL SUBMIT DETAILED PLANS FOR FORMS AND FALSEWORK TO BE USED FOR CONSTRUCTION OF THE PIER AND CONCRETE REPAIR.

CONSTRUCTION SURVEYING:

ALL SURVEYING AND STAKING NECESSARY TO COMPLETE THE PROPOSED WORK IS INCIDENTAL TO ALL OTHER PAY ITEMS FOR THIS PROJECT.

ENVIRONMENTAL NOTES:

STANDARD CONSTRUCTION CONDITIONS SHALL BE IMPLEMENTED FOR THE FOLLOWING PROTECTED/ENDANGERED SPECIES AS APPLICABLE AND INCLUDED IN CONTRACT DOCUMENTS.

A. WEST INDIAN MANATEE
B. VARIOUS SEA TURTLE SPECIES
C. ATLANTIC STURGEON

POLLUTION CONTROL:

1. THE CONTRACTOR SHALL SUBMIT A POLLUTION CONTROL PLAN TO THE ENGINEER IN ACCORDANCE THE NCDOT STANDARD SPECIFICATIONS, PRIOR TO COMMENCING ANY CONSTRUCTION ACTIVITIES.
2. THE CONTRACTOR SHALL NOT ALLOW, AT ANY TIME, ANY DISCHARGE OR MATERIALS TO FALL INTO THE WATERWAY.
3. THE CONTRACTORS SHALL SUBMIT TO THE ENGINEER AN EROSION CONTROL PLAN AS REQUIRED BY THE NCDOT STANDARD SPECIFICATIONS AND BEST MANAGEMENT PRACTICES.
4. NO OFFSITE IMPACTS SHALL BE PERMITTED.
5. A CONTAINMENT PLAN IS REQUIRED FOR FENDER PILE CLEANING AND COATING, AS WELL AS, CONCRETE REPAIR.

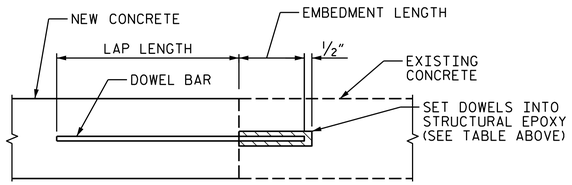
MISCELLANEOUS NOTES:

1. THE CONTRACTOR IS RESPONSIBLE TO SUBMIT A JACKING PLAN FOR EACH OPERATION TO THE ENGINEER FOR APPROVAL PRIOR TO BRIDGE JACKING.
2. PAYMENT FOR INCIDENTAL ITEMS NOT SPECIFICALLY COVERED IN THE INDIVIDUAL BID ITEMS SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE FOR THE BID ITEMS CONTAINED IN THE CONTRACT.
3. FOR ICT, SEE CONTRACT DOCUMENTS AND TRANSPORTATION MANAGEMENT PLANS.

DOWEL DETAIL:

DOWEL DIMENSIONS (UNLESS OTHERWISE NOTED)

DOWEL SIZE	HOLE DIAMETER	EMBEDMENT LENGTH	MIN LAP LENGTH
4	5/8"	8"	1'-9"
5	3/4"	9"	2'-2"
6	7/8"	11"	2'-7"
8	1 1/8"	1'-4"	4'-6"



1. ANY REQUIRED DOWEL HOLES SHALL BE DRILLED INTO EXISTING CONCRETE ACCORDING TO THE DETAIL AND NCDOT SPECIFICATIONS.
2. NOTIFY THE ENGINEER OF ANY BROKEN BARS OR BARS WHICH ARE DETERMINED TO HAVE A SECTION LOSS OF 25% OR GREATER.
3. INSTALL DOWELS IN ACCORDANCE WITH NCDOT SPECIFICATIONS.

KCA KISINGER CAMPO & ASSOCIATES
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RALEIGH, NC 27609
(919) 882-7839

DRAWN BY : JACOB H. DUKE DATE : 03-2018
CHECKED BY : DIEGO A. AGUIRRE DATE : 03-2018
DESIGN ENGINEER OF RECORD : SAMUEL L. CULLUM DATE : 03-2018

8/13/2018
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User:jduke

PROJECT NO. 15BPR.16
BRUNSWICK COUNTY
BRIDGE NO. 71

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL NOTES

NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2A
1			3			TOTAL SHEETS
2			4			69

CONSTRUCTION OPERATIONS:

1. FOR WORK ADJACENT TO THE PUBLIC, THE CONTRACTOR IS RESPONSIBLE TO ADEQUATELY PROTECT THE TRAVELING PUBLIC. THIS INCLUDES, BUT IS NOT LIMITED TO FENCING OFF OPERATIONS, SIDEWALK CLOSURES, LANE CLOSURES, DEBRIS SHIELDS, ETC.
2. COORDINATE ANY FACILITY CLOSURES IN ACCORDANCE WITH THE TRAFFIC MANAGEMENT PLANS AND THE SPECIAL PROVISIONS.

WORK ON THE WATER:

1. CONTACT THE US COAST GUARD 30 DAYS PRIOR TO IN-WATER CONSTRUCTION ACTIVITIES. THE NAVIGABLE CHANNEL SHALL NOT BE BLOCKED DURING CONSTRUCTION. FOR U.S. COAST GUARD CONTACT INFORMATION, SEE SPECIAL PROVISION FOR "COORDINATION WITH THE U.S. COAST GUARD".
2. THE CONTRACTOR SHALL LIMIT SUBSTRUCTURE REPAIRS AND CONTAINMENT, TO HALF OF THE CHANNEL SPAN AT A TIME IN ORDER TO REDUCE THE IMPACTS TO BOATERS.
3. THE CONTRACTOR SHALL MONITOR VHF RADIO AND COMMUNICATE WITH MARINE TRAFFIC AS NECESSARY. CONTRACTOR SHALL MONITOR CHANNEL 16.
4. THE CONTRACTOR SHALL NOTIFY AND/OR COORDINATE WITH THE COAST GUARD WHENEVER THE CONTRACTOR PLANS TO BE IN THE WATER FOR ANY PERIOD OF TIME.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING AND ADJUSTING ALL NAVIGATIONAL LIGHTS AS NECESSARY THROUGHOUT THE LIFE OF THE PROJECT.

MARINE TRAFFIC:

MARINE TRAFFIC CONSTRUCTION SIGNS SHALL BE PLACED ON BOTH FACES OF EACH BRIDGE AT THE LOCATIONS WHERE WORK IS BEING PERFORMED. PLACEMENT OF THE SIGNS SHALL BE SUCH THAT THEY ARE CLEARLY VISIBLE TO THE APPROACHING MARINE TRAFFIC. BARGES LEFT IN WATER IN LOW-LIGHT CONDITIONS SHALL BE ILLUMINATED SO AS TO BE VISIBLE TO MARINE TRAFFIC.

LOCAL TRAFFIC AND PUBLIC USAGE:

1. FOR LANE CLOSURE TIMES AND RESTRICTIONS, SEE TRANSPORTATION MANAGEMENT PLAN.
2. ONLY CLOSE OR NARROW LANES UNDER THE BRIDGE AT AREAS WHERE WORK IS BEING PERFORMED. DO NOT CLOSE OR NARROW LANES IN AREAS UNDER THE BRIDGE IF NO WORK IS BEING PERFORMED.
3. ACCESS TO ALL PUBLIC FACILITIES SHALL REMAIN OPEN THROUGHOUT THE LIFE OF THE PROJECT. SUCH FACILITIES ARE INCLUDED BUT ARE NOT LIMITED TO: BOAT RAMPS, GAZEBOS, PARKING AREAS, RESTROOMS, ETC.

FINAL PAVEMENT MARKINGS AND MARKERS

1. FOR FINAL PAVEMENT MARKING PLANS, SEE TRANSPORTATION MANAGEMENT PLANS.
2. FOR FINAL PAVEMENT MARKINGS AND MARKERS, SEE STANDARD SPECIFICATIONS.
3. PLACE (PERMANENT) (4") THERMOPLASTIC MARKINGS ON FINAL ASPHALT SURFACES.
4. PLACE (PERMANENT) (4") COLD APPLIED PLASTIC MARKINGS ON FINAL CONCRETE SURFACES.
5. ANY UNANTICIPATED REMOVAL OF PAVEMENT MARKINGS AND MARKERS SHALL BE REPLACED IN KIND.

CONSTRUCTION SEQUENCE

BRIDGE PRESERVATION PHASE	1	ELECTRICAL REPAIRS TO NAVIGATIONAL LIGHT SYSTEM		
	2	DECK CONCRETE REPAIRS	SUBSTRUCTURE CONCRETE REPAIRS	RAIL RETROFIT
	3	BEARING REPLACEMENT		
	4	PPC OVERLAY / SUPERSTRUCTURE CONCRETE REPAIRS		
	5	ASPHALT ROADWAY MILLING AND RESURFACING		
	6	EXPANSION JOINT REPLACEMENT/INSTALLATION	GALVANIC CATHODIC PROTECTION	

SIGN NAME	OHBC	QTY	2	SIGN NO.	STATION(S)
PANEL		BORDER			
WIDTH	5'-0"	WIDTH	1"		
HEIGHT	3'-0"	RADII	2"		
LEGEND	Black	COLOR	Black		
COLOR	Yellow				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NO.	NO. OF POSTS	EDGE OF LANE CLEARANCE	COLUMN SIZE	AVERAGE LENGTH

OVERHEAD BRIDGE CONSTRUCTION

4.5"
6"C
4.5"
6"C
4.5"
6"C
4.5"

BORDER
R=2"
TH=1"

NO. OF LIGHT FIXTURES ___ FIXTURE SPACING _____ PHOTOMETRIC CURVE _____ WATT ____ VOLTAGE _____

COPY		O	V	E	R	H	E	A	D		L											
SPACE	13.2	4.3	4.6	4.1	4.4	4.7	3.6	4.7	3.4	13.2	33.6											
COPY		B	R	I	D	G	E		L													
SPACE	18.5	4.4	4.4	2.2	4.4	4.6	3.1	18.5	23													
COPY		C	O	N	S	T	R	U	C	T	I	O	N		L							
SPACE	5.8	4.4	4.7	4.4	3.9	3.9	4.4	4.6	4.1	3.9	2	4.7	3.4	5.8	48.4							
COPY																						
SPACE																						
COPY																						
SPACE																						
COPY																						
SPACE																						

PROJECT NO. 15BPR.16
BRUNSWICK COUNTY
BRIDGE NO. 71

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL NOTES

NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM

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KCA KISINGER CAMPO & ASSOCIATES
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DRAWN BY : JACOB H. DUKE DATE : 03-2018
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DESIGN ENGINEER OF RECORD : SAMUEL L. CULLUM DATE : 03-2018

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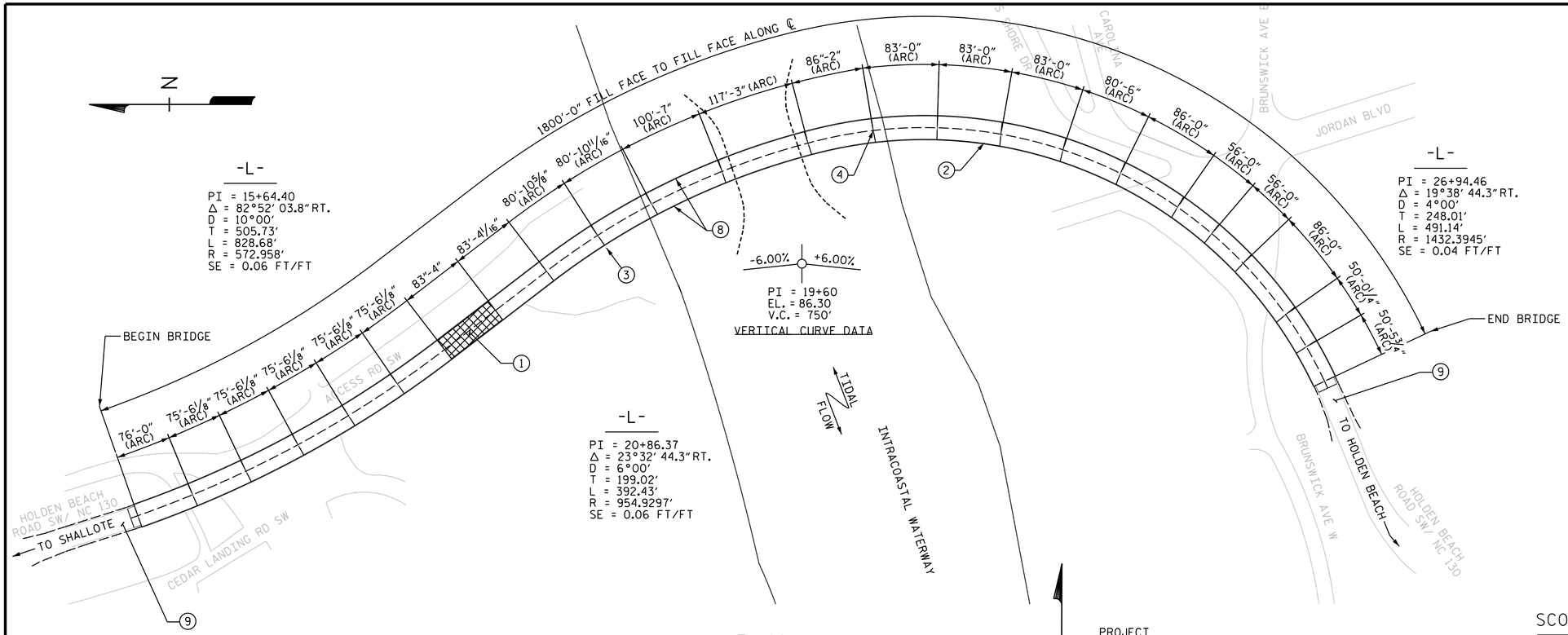
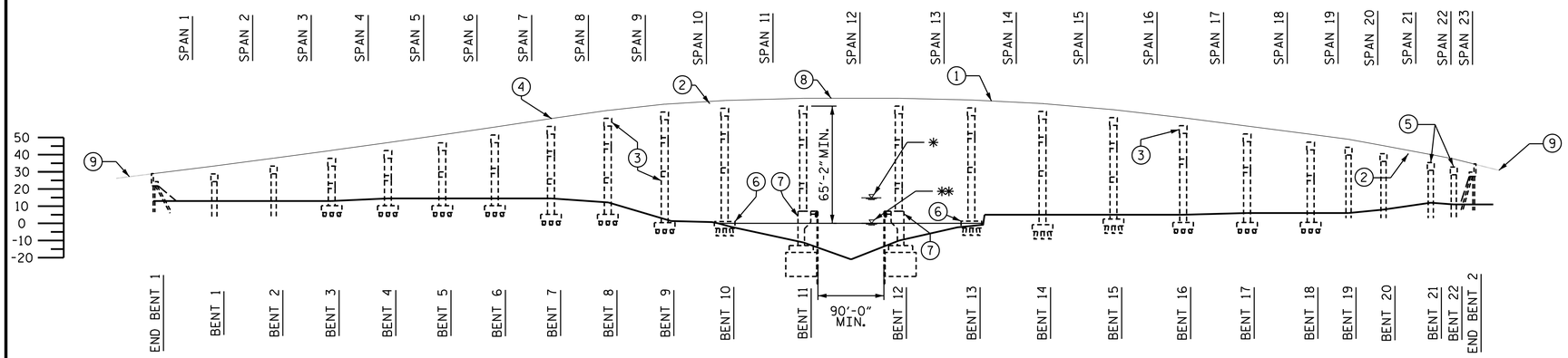


PLAN

(SUBSTRUCTURE UNITS AND PILES NOT SHOWN FOR CLARITY)

N PROJECT COORDINATE DIRECTION



* MAX. HIGH WATER EL. 14.8
HURRICANE HAZEL SEPT. 1954
** WATER EL. 0.0
MEAN HIGH TIDE EL. 2.4
MEAN LOW TIDE EL. -2.2

ELEVATION

BENT #	STATION	BENT #	STATION	BENT #	STATION	BENT #	STATION	BENT #	STATION
END BENT 1	10+00.00	BENT 5	13+78.04	BENT 10	17+82.00	BENT 15	22+52.00	BENT 20	26+13.50
BENT 1	10+76.00	BENT 6	14+53.55	BENT 11	18+82.58	BENT 16	23+35.00	BENT 21	26+99.50
BENT 2	11+51.51	BENT 7	15+36.88	BENT 12	19+99.83	BENT 17	24+15.50	BENT 22	27+49.52
BENT 3	12+27.02	BENT 8	16+20.22	BENT 13	20+86.00	BENT 18	25+01.50	END BENT 2	28+00.00
BENT 4	13+02.53	BENT 9	17+01.11	BENT 14	21+69.00	BENT 19	25+57.50		

HYDRAULIC DATA FROM INITIAL DESIGN:

DESIGN HIGH WATER ELEVATION: (MEAN HIGH TIDE)	2.4 FT.
FREQUENCY OF FLOOD: (HURRICANE BACKWATER)	100 YR.
FLOOD ELEVATION:	14.8 FT.

NOTES:

CURVE DATA BASED ON INITIAL DESIGN.

STATIONING, SPAN AND BENT NUMBERS BASED ON PLAN SET AND CURRENT INSECTION REPORT.

SCOPE LEGEND:

1. PPC OVERLAY (TYP)
2. SUPERSTRUCTURE CONCRETE REPAIRS (TYP)
3. SUBSTRUCTURE CONCRETE REPAIRS (TYP)
4. EXPANSION JOINT REPLACEMENT/INSTALLATION (TYP.)
5. BEARING REPLACEMENT
6. GALVANIC CATHODIC PROTECTION - METALIZING
7. GALVANIC CATHODIC PROTECTION - BULK ANODE
8. RAIL RETROFIT
9. APPROACH ROADWAY MILLING AND RESURFACING

NOTE: REPAIRS TYPICAL THROUGHOUT BRIDGE.

PROJECT NO. 15BPR.16
BRUNSWICK COUNTY
BRIDGE NO. 71

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User:jduke

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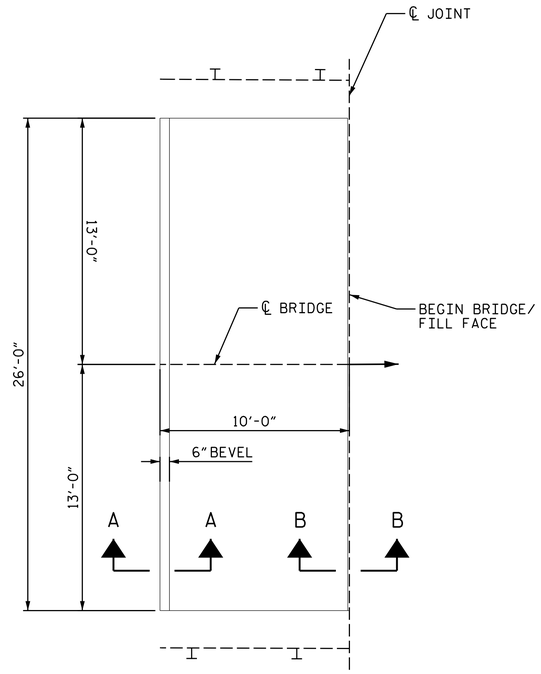
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

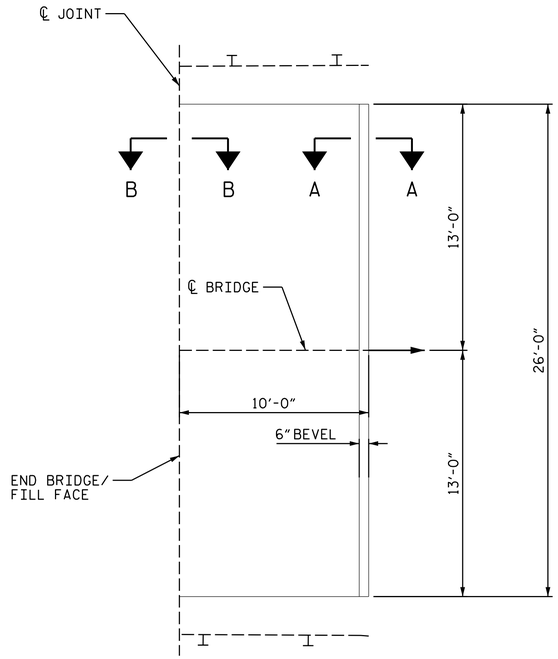
GENERAL DRAWING

TO SHALOTTE



WEST APPROACH SLAB

TO HOLDEN BEACH



EAST APPROACH SLAB

AS-BUILT REPAIR QUANTITY TABLE

TOP OF DECK REPAIRS

WEST APPROACH SLAB

	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	29 SY	
CLASS II SURFACE PREPARATION	0.2 SY *	
CONCRETE DECK REPAIR FOR PPC OVERLAY	0.2 SY *	
PPC MATERIALS	1.1 CY	
PLACING & FINISHING PPC OVERLAY	29 SY	
GROOVING BRIDGE FLOORS	222 SF	

EAST APPROACH SLAB

	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	29 SY	
CLASS II SURFACE PREPARATION	0.2 SY *	
CONCRETE DECK REPAIR FOR PPC OVERLAY	0.2 SY *	
PPC MATERIALS	1.1 CY	
PLACING & FINISHING PPC OVERLAY	29 SY	
GROOVING BRIDGE FLOORS	222 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 2½" 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.

GROOVING BRIDGE FLOORS QUANITITY BASED ON WIDTHS OF TRAVEL LANES PLUS 6" ON EACH SIDE.

COORDINATE THIS SHEET WITH S-28 FOR THE PPC OVERLAY.

FOR SECTIONS A-A, B-B, AND C-C SEE SHEET S-29.

FOR SECTION D-D AND DETAILS OF JOINT AT BARRIER SEE SHEET S-30.

PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

BRIDGE NO. 71

KCA KISINGER CAMPO & ASSOCIATES
4800 SIX FORKS ROAD SUITE 120
RALEIGH, NC 27609
(919) 882-7839

DRAWN BY : DIEGO A. AGUIRRE DATE : 03-2018
CHECKED BY : JACOB H. DUKE DATE : 03-2018
DESIGN ENGINEER OF RECORD : SAMUEL L. CULLUM DATE : 03-2018

NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF SPANS

APPROACH SLABS 1 & 2

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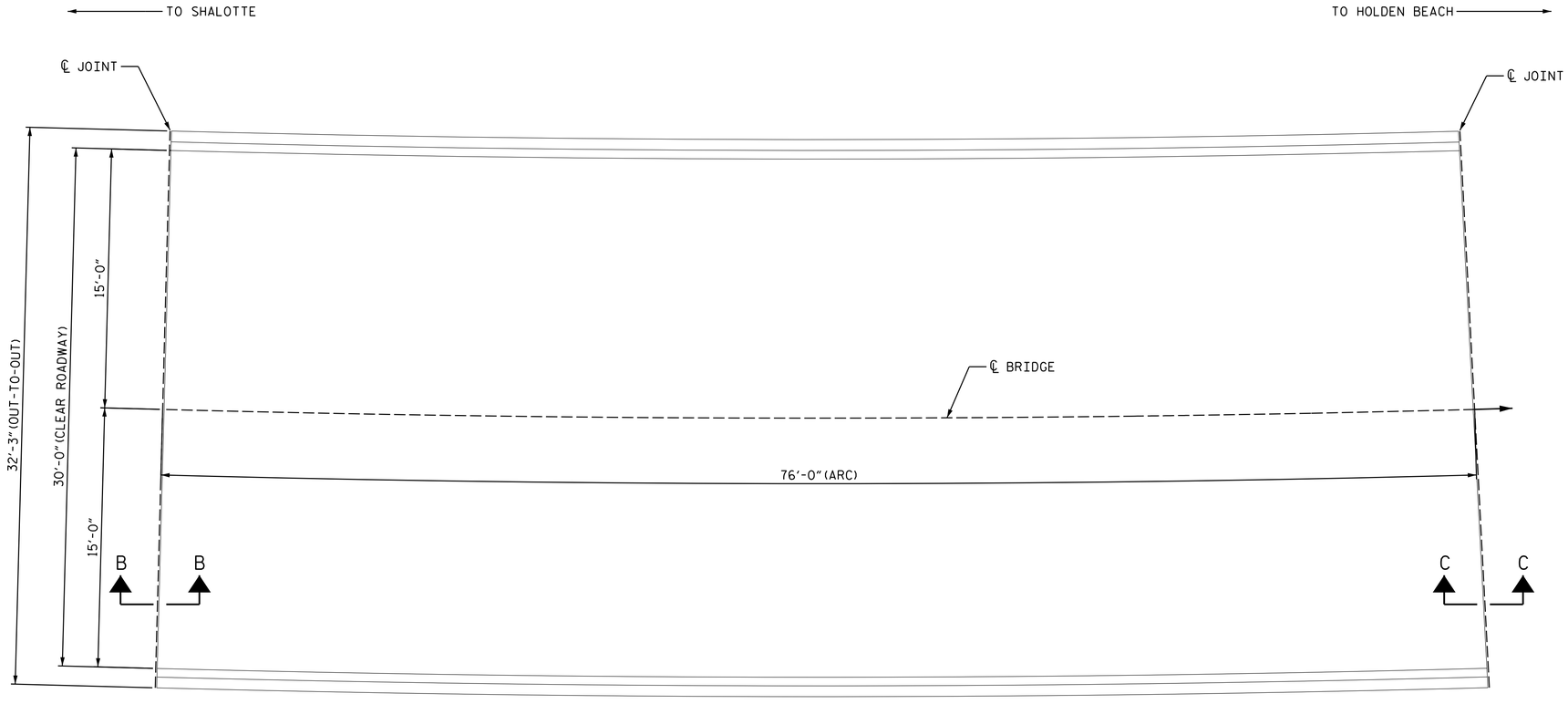

PLAN

AS-BUILT REPAIR QUANTITY TABLE

TOP OF DECK REPAIRS

SPAN 1

	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	254 SY	
CLASS II SURFACE PREPARATION	0.2 SY *	
CONCRETE DECK REPAIR FOR PPC OVERLAY	0.2 SY *	
SHOTBLASTING BRIDGE DECK	254 SY	
PPC MATERIALS	7.3 CY	
PLACING & FINISHING PPC OVERLAY	254 SY	
GROOVING BRIDGE FLOORS	2043 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.

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GROOVING BRIDGE FLOORS QUANITITY BASED ON WIDTHS OF TRAVEL LANES PLUS 6" ON EACH SIDE.

COORDINATE THIS SHEET WITH S-28 FOR THE PPC OVERLAY.

FOR SECTIONS A-A, B-B, AND C-C SEE SHEET S-29.

FOR SECTION D-D AND DETAILS OF JOINT AT BARRIER SEE SHEET S-30.

PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

BRIDGE NO. 71

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NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM

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RALEIGH

PLAN OF SPAN
SPAN 1

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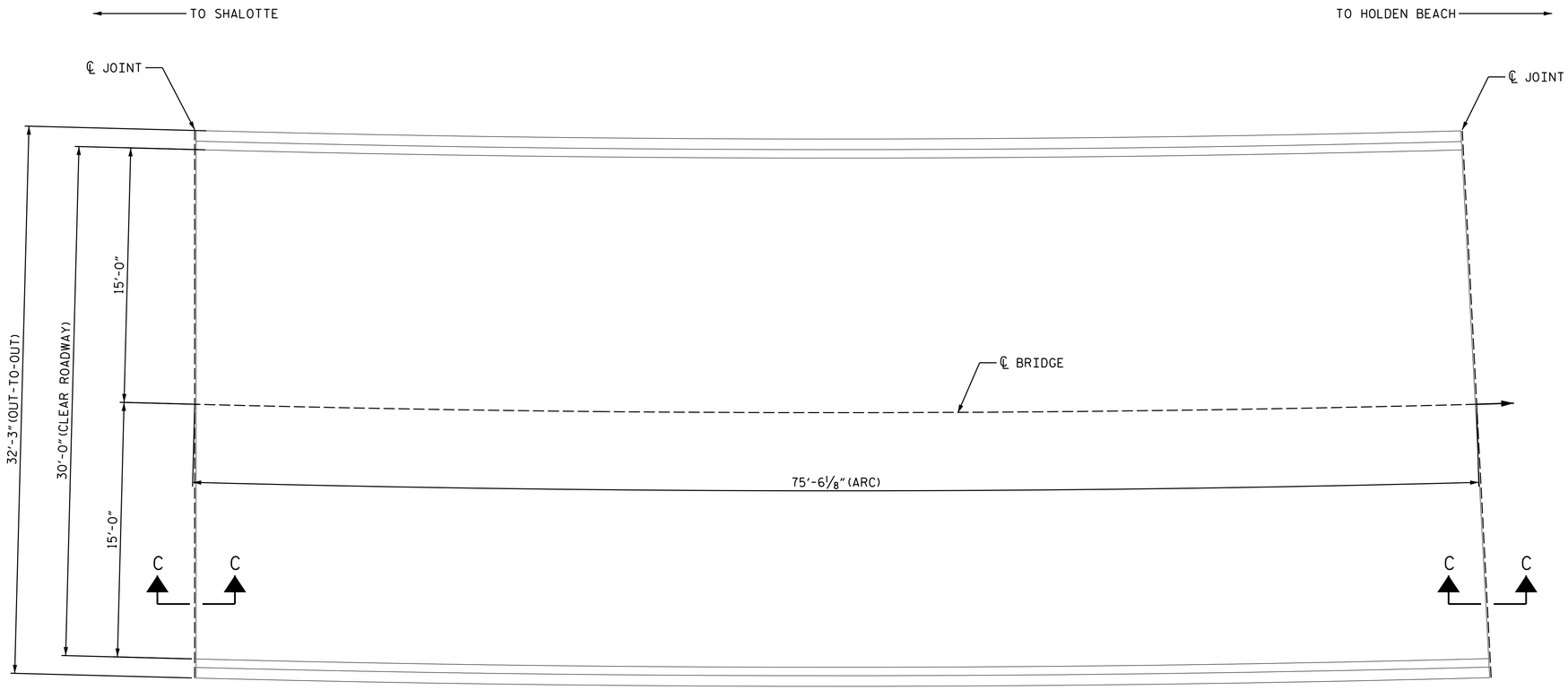

PLAN

AS-BUILT REPAIR QUANTITY TABLE

TOP OF DECK REPAIRS

SPAN 2

	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	252 SY	
CLASS II SURFACE PREPARATION	0.2 SY *	
CONCRETE DECK REPAIR FOR PPC OVERLAY	0.2 SY *	
SHOTBLASTING BRIDGE DECK	252 SY	
PPC MATERIALS	7.2 CY	
PLACING & FINISHING PPC OVERLAY	252 SY	
GROOVING BRIDGE FLOORS	2030 SF	

NOTES:

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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.

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GROOVING BRIDGE FLOORS QUANITITY BASED ON WIDTHS OF TRAVEL LANES PLUS 6" ON EACH SIDE.

COORDINATE THIS SHEET WITH S-28 FOR THE PPC OVERLAY.

FOR SECTIONS A-A, B-B, AND C-C SEE SHEET S-29.

FOR SECTION D-D AND DETAILS OF JOINT AT BARRIER SEE SHEET S-30.

PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

BRIDGE NO. 71

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PLAN OF SPAN
SPAN 2

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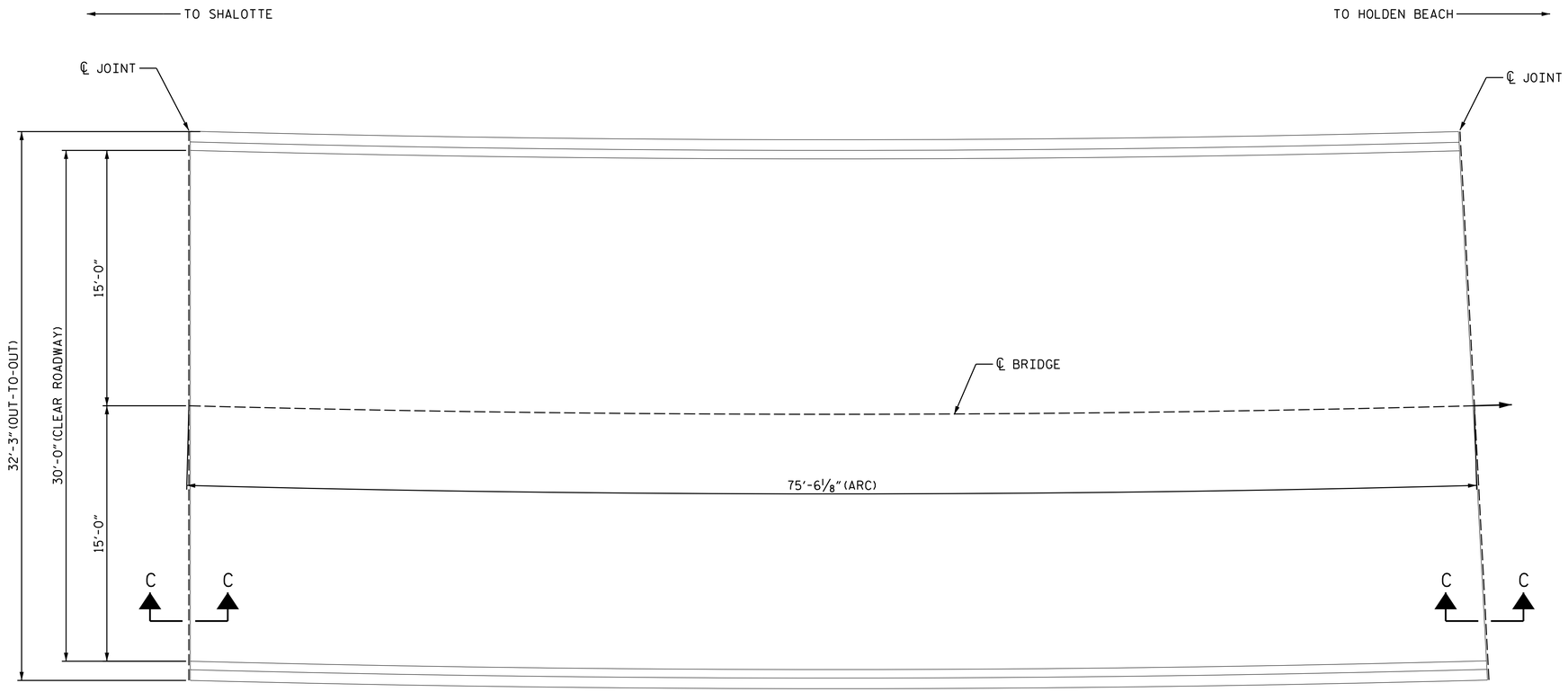

PLAN

AS-BUILT REPAIR QUANTITY TABLE

TOP OF DECK REPAIRS

SPAN 3

	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	252 SY	
CLASS II SURFACE PREPARATION	0.2 SY *	
CONCRETE DECK REPAIR FOR PPC OVERLAY	0.2 SY *	
SHOTBLASTING BRIDGE DECK	252 SY	
PPC MATERIALS	7.2 CY	
PLACING & FINISHING PPC OVERLAY	252 SY	
GROOVING BRIDGE FLOORS	2030 SF	

NOTES:

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GROOVING BRIDGE FLOORS QUANITITY BASED ON WIDTHS OF TRAVEL LANES PLUS 6" ON EACH SIDE.

COORDINATE THIS SHEET WITH S-28 FOR THE PPC OVERLAY.

FOR SECTIONS A-A, B-B, AND C-C SEE SHEET S-29.

FOR SECTION D-D AND DETAILS OF JOINT AT BARRIER SEE SHEET S-30.

PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

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DRAWN BY : DIEGO A. AGUIRRE DATE : 03-2018
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SPAN 3

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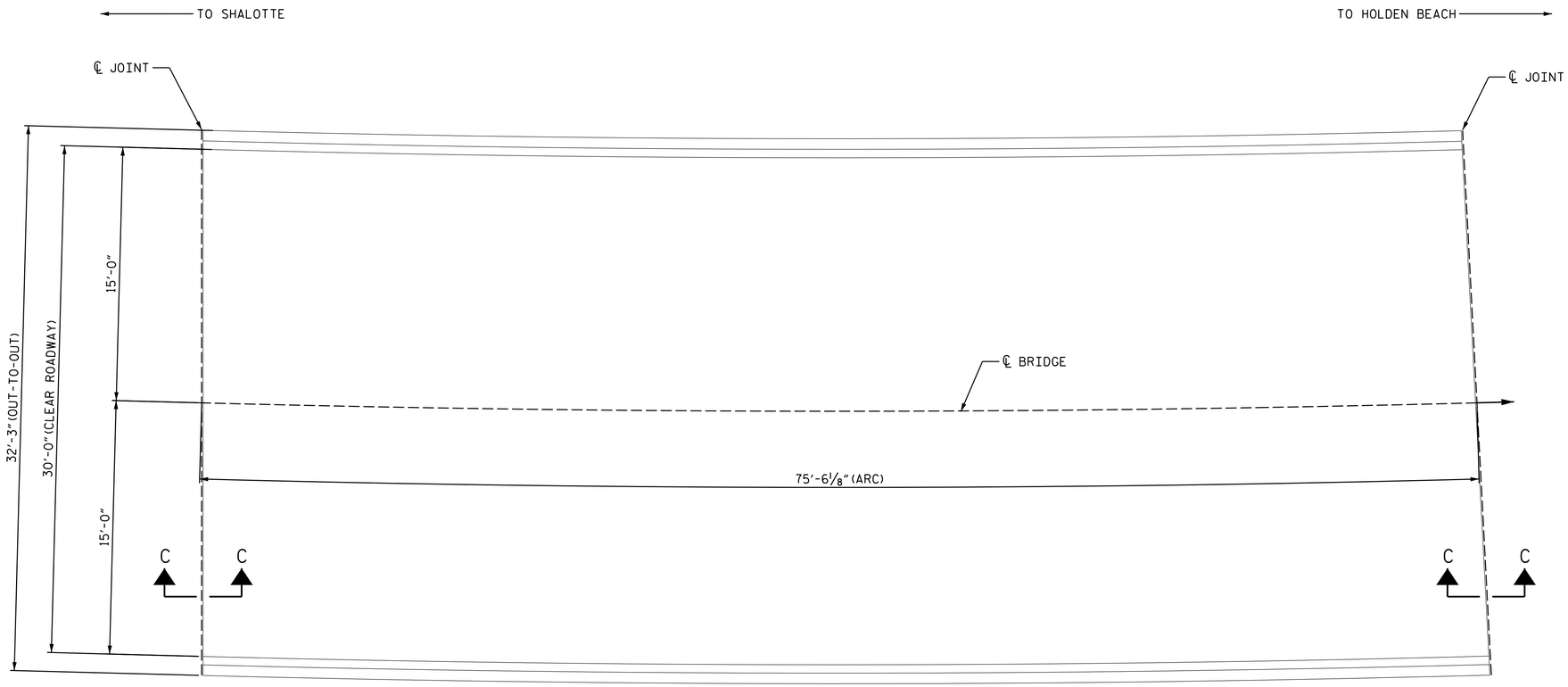

PLAN

AS-BUILT REPAIR QUANTITY TABLE

TOP OF DECK REPAIRS

SPAN 4

	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	252 SY	
CLASS II SURFACE PREPARATION	0.2 SY *	
CONCRETE DECK REPAIR FOR PPC OVERLAY	0.2 SY *	
SHOTBLASTING BRIDGE DECK	252 SY	
PPC MATERIALS	7.2 CY	
PLACING & FINISHING PPC OVERLAY	252 SY	
GROOVING BRIDGE FLOORS	2030 SF	

NOTES:

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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.

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GROOVING BRIDGE FLOORS QUANITITY BASED ON WIDTHS OF TRAVEL LANES PLUS 6" ON EACH SIDE.

COORDINATE THIS SHEET WITH S-28 FOR THE PPC OVERLAY.

FOR SECTIONS A-A, B-B, AND C-C SEE SHEET S-29.

FOR SECTION D-D AND DETAILS OF JOINT AT BARRIER SEE SHEET S-30.

PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

BRIDGE NO. 71

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RALEIGH, NC 27609
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DRAWN BY : DIEGO A. AGUIRRE DATE : 03-2018
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NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM

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PLAN OF SPAN
SPAN 4

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1			3			TOTAL SHEETS
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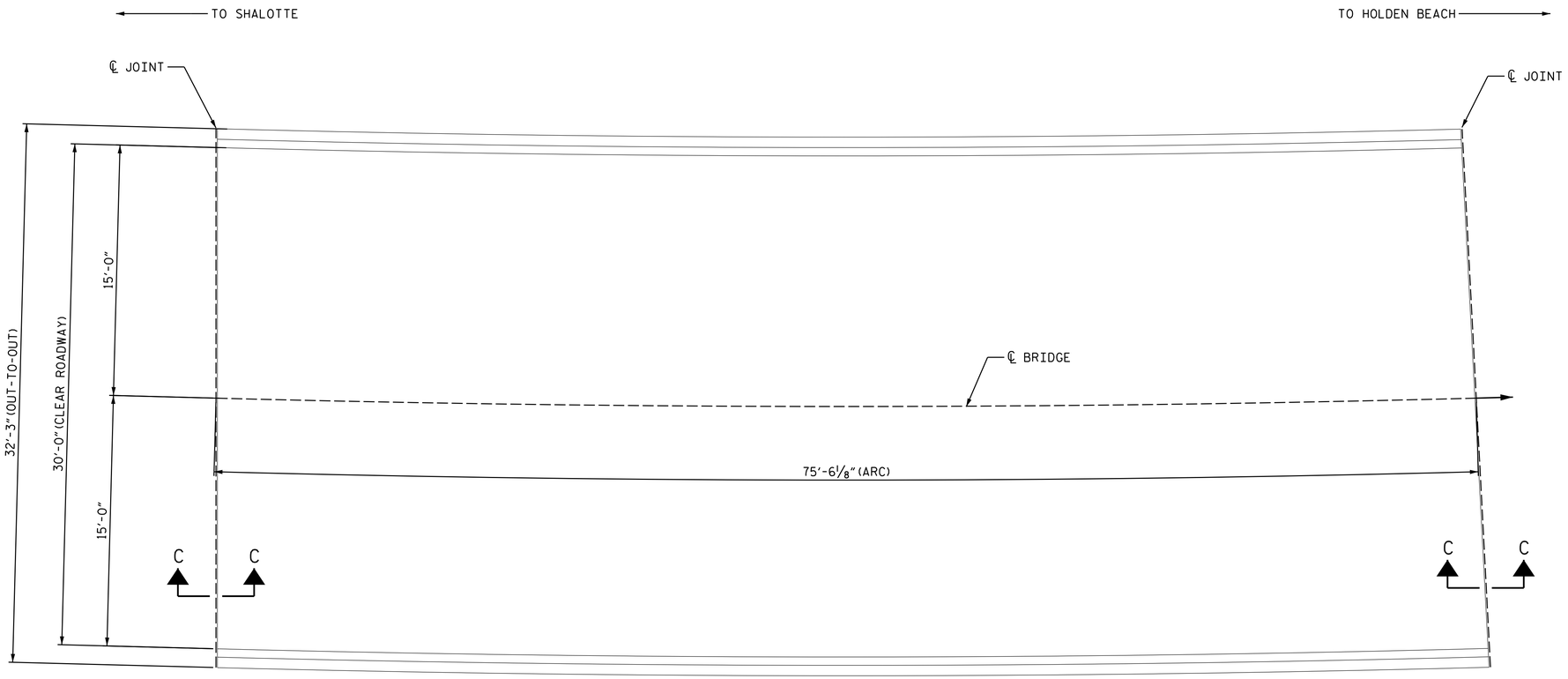

PLAN

AS-BUILT REPAIR QUANTITY TABLE

TOP OF DECK REPAIRS

SPAN 5

	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	252 SY	
CLASS II SURFACE PREPARATION	0.2 SY *	
CONCRETE DECK REPAIR FOR PPC OVERLAY	0.2 SY *	
SHOTBLASTING BRIDGE DECK	252 SY	
PPC MATERIALS	7.2 CY	
PLACING & FINISHING PPC OVERLAY	252 SY	
GROOVING BRIDGE FLOORS	2030 SF	

NOTES:

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COORDINATE THIS SHEET WITH S-28 FOR THE PPC OVERLAY.

FOR SECTIONS A-A, B-B, AND C-C SEE SHEET S-29.

FOR SECTION D-D AND DETAILS OF JOINT AT BARRIER SEE SHEET S-30.

PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

BRIDGE NO. 71

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PLAN OF SPAN
SPAN 5

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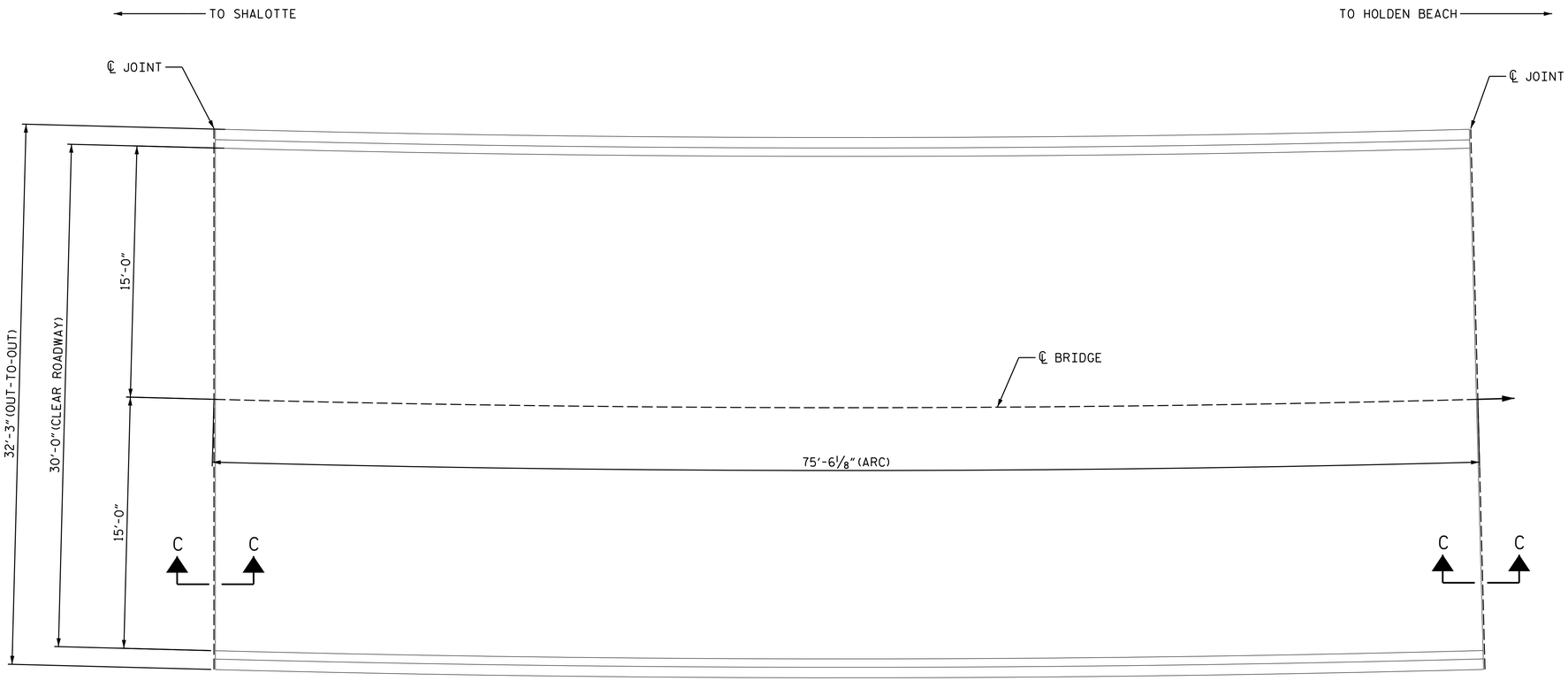

PLAN

AS-BUILT REPAIR QUANTITY TABLE

TOP OF DECK REPAIRS

SPAN 6

	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	252 SY	
CLASS II SURFACE PREPARATION	0.2 SY *	
CONCRETE DECK REPAIR FOR PPC OVERLAY	0.2 SY *	
SHOTBLASTING BRIDGE DECK	252 SY	
PPC MATERIALS	7.2 CY	
PLACING & FINISHING PPC OVERLAY	252 SY	
GROOVING BRIDGE FLOORS	2030 SF	

NOTES:

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COORDINATE THIS SHEET WITH S-28 FOR THE PPC OVERLAY.

FOR SECTIONS A-A, B-B, AND C-C SEE SHEET S-29.

FOR SECTION D-D AND DETAILS OF JOINT AT BARRIER SEE SHEET S-30.

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BRUNSWICK COUNTY

BRIDGE NO. 71

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SPAN 6

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1			3			TOTAL SHEETS
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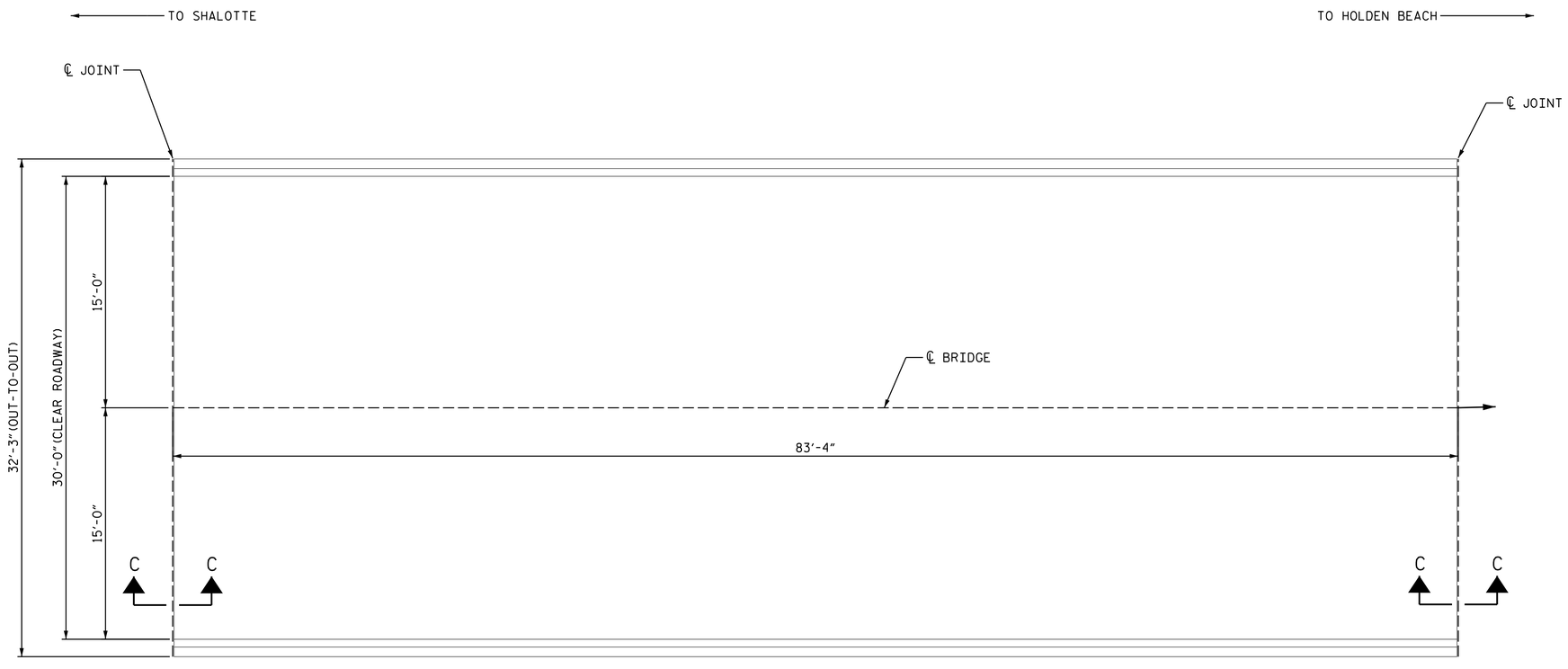

PLAN

AS-BUILT REPAIR QUANTITY TABLE

TOP OF DECK REPAIRS

SPAN 7

	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	278 SY	
CLASS II SURFACE PREPARATION	0.2 SY *	
CONCRETE DECK REPAIR FOR PPC OVERLAY	0.2 SY *	
SHOTBLASTING BRIDGE DECK	278 SY	
PPC MATERIALS	8.0 CY	
PLACING & FINISHING PPC OVERLAY	278 SY	
GROOVING BRIDGE FLOORS	2241 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.

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GROOVING BRIDGE FLOORS QUANITITY BASED ON WIDTHS OF TRAVEL LANES PLUS 6" ON EACH SIDE.

COORDINATE THIS SHEET WITH S-28 FOR THE PPC OVERLAY.

FOR SECTIONS A-A, B-B, AND C-C SEE SHEET S-29.

FOR SECTION D-D AND DETAILS OF JOINT AT BARRIER SEE SHEET S-30.

PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

BRIDGE NO. 71

KCA KISINGER CAMPO & ASSOCIATES
4800 SIX FORKS ROAD SUITE 120
RALEIGH, NC 27609
(919) 882-7839

DRAWN BY : DIEGO A. AGUIRRE DATE : 03-2018
CHECKED BY : JACOB H. DUKE DATE : 03-2018
DESIGN ENGINEER OF RECORD : SAMUEL L. CULLUM DATE : 03-2018

NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF SPAN
SPAN 7

REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			69

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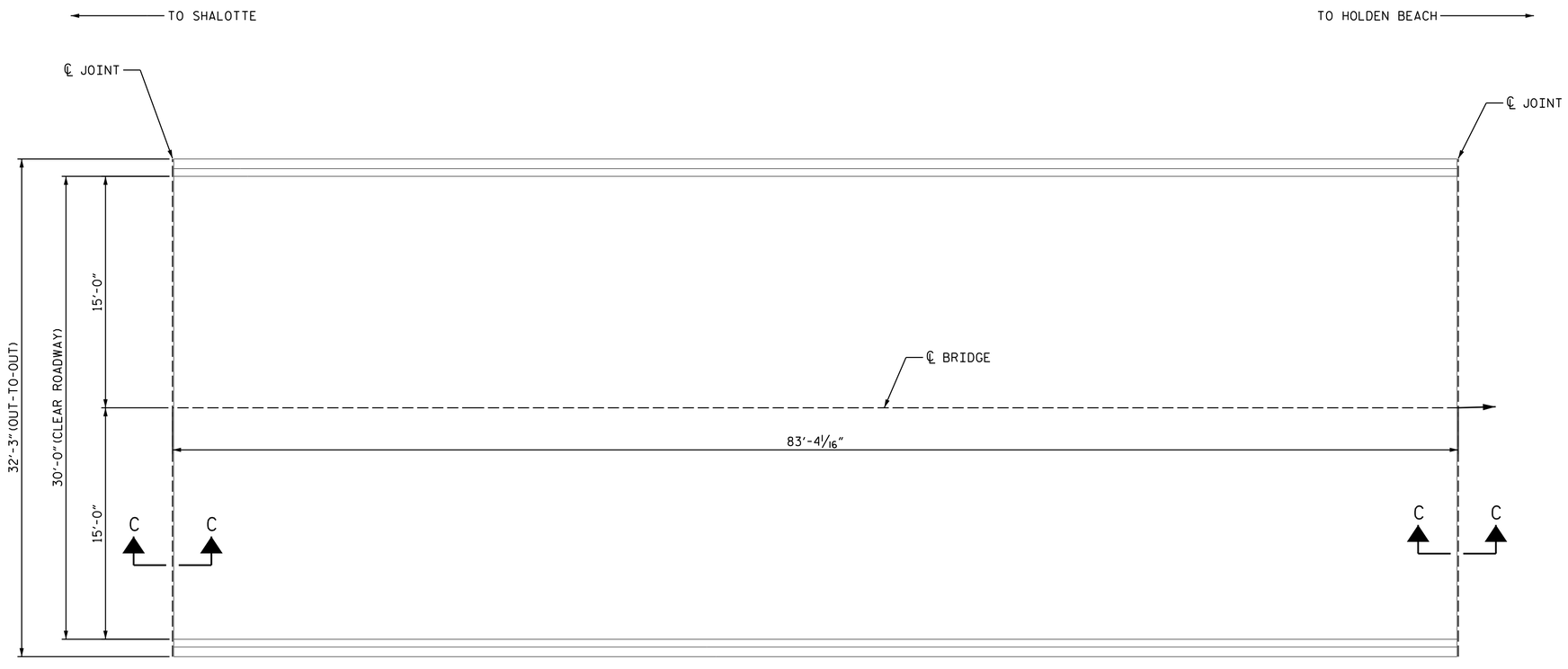
User:jduke



PLAN

AS-BUILT REPAIR QUANTITY TABLE

TOP OF DECK REPAIRS

SPAN 8

	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	278 SY	
CLASS II SURFACE PREPARATION	0.2 SY *	
CONCRETE DECK REPAIR FOR PPC OVERLAY	0.2 SY *	
SHOTBLASTING BRIDGE DECK	278 SY	
PPC MATERIALS	8.0 CY	
PLACING & FINISHING PPC OVERLAY	278 SY	
GROOVING BRIDGE FLOORS	2241 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.

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GROOVING BRIDGE FLOORS QUANITITY BASED ON WIDTHS OF TRAVEL LANES PLUS 6" ON EACH SIDE.

COORDINATE THIS SHEET WITH S-28 FOR THE PPC OVERLAY.

FOR SECTIONS A-A, B-B, AND C-C SEE SHEET S-29.

FOR SECTION D-D AND DETAILS OF JOINT AT BARRIER SEE SHEET S-30.

PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

BRIDGE NO. 71

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DRAWN BY : DIEGO A. AGUIRRE DATE : 03-2018
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF SPAN
SPAN 8

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2			4			69

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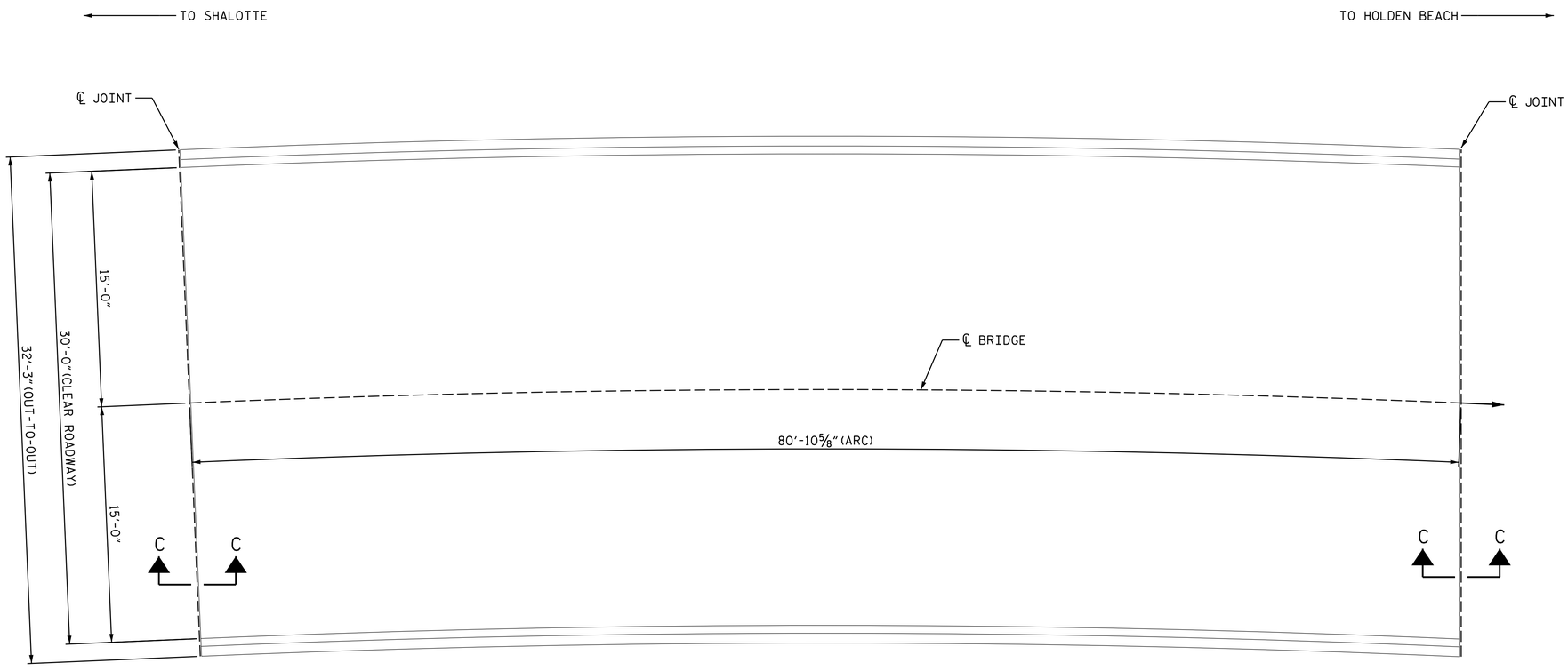
User:jduke



PLAN

AS-BUILT REPAIR QUANTITY TABLE

TOP OF DECK REPAIRS

SPAN 9

	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	270 SY	
CLASS II SURFACE PREPARATION	0.2 SY *	
CONCRETE DECK REPAIR FOR PPC OVERLAY	0.2 SY *	
SHOTBLASTING BRIDGE DECK	270 SY	
PPC MATERIALS	7.7 CY	
PLACING & FINISHING PPC OVERLAY	270 SY	
GROOVING BRIDGE FLOORS	2173 SF	

NOTES:

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GROOVING BRIDGE FLOORS QUANITITY BASED ON WIDTHS OF TRAVEL LANES PLUS 6" ON EACH SIDE.

COORDINATE THIS SHEET WITH S-28 FOR THE PPC OVERLAY.

FOR SECTIONS A-A, B-B, AND C-C SEE SHEET S-29.

FOR SECTION D-D AND DETAILS OF JOINT AT BARRIER SEE SHEET S-30.

PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

BRIDGE NO. 71

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DRAWN BY : DIEGO A. AGUIRRE DATE : 03-2018
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DESIGN ENGINEER OF RECORD : SAMUEL L. CULLUM DATE : 03-2018

NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM

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RALEIGH

PLAN OF SPAN
SPAN 9

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2			4			69

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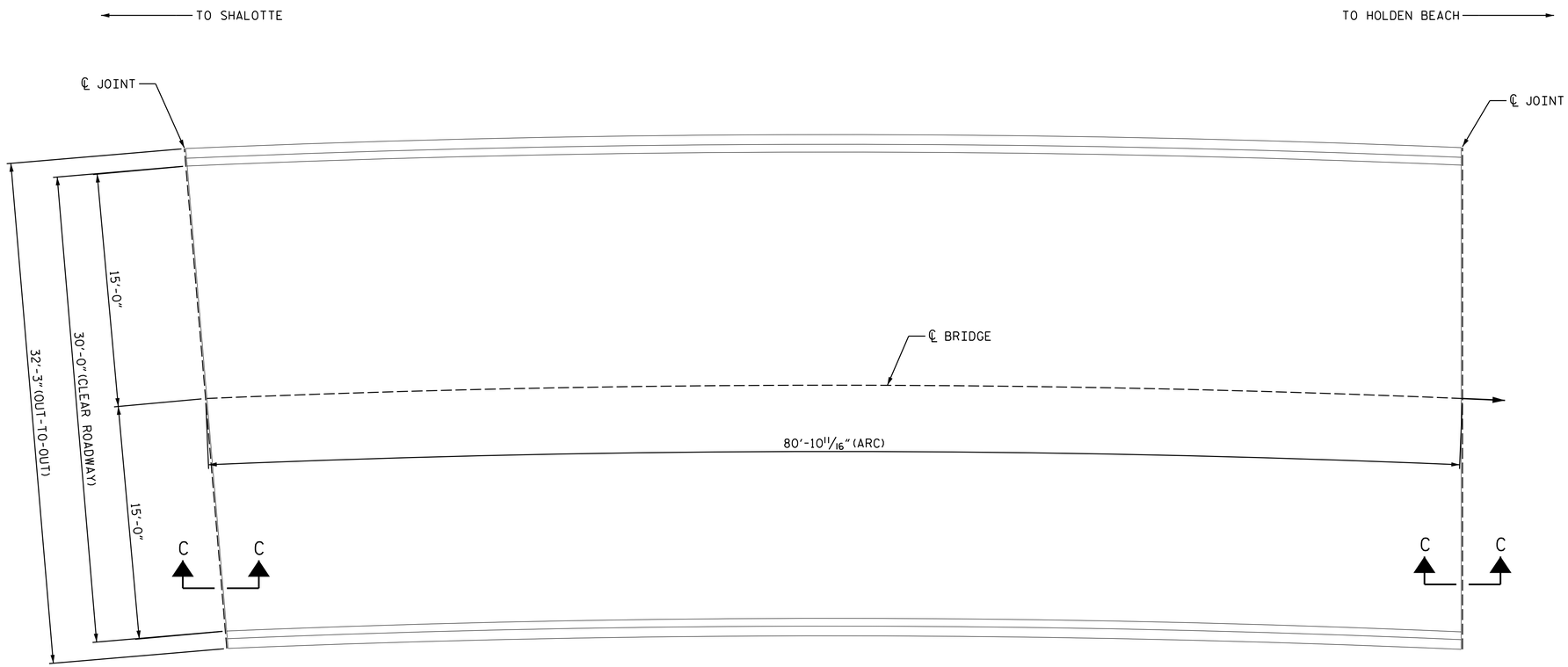
User:jduke



PLAN

AS-BUILT REPAIR QUANTITY TABLE

TOP OF DECK REPAIRS

SPAN 10

	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	270 SY	
CLASS II SURFACE PREPARATION	0.2 SY *	
CONCRETE DECK REPAIR FOR PPC OVERLAY	0.2 SY *	
SHOTBLASTING BRIDGE DECK	270 SY	
PPC MATERIALS	7.7 CY	
PLACING & FINISHING PPC OVERLAY	270 SY	
GROOVING BRIDGE FLOORS	2175 SF	

NOTES:

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GROOVING BRIDGE FLOORS QUANITITY BASED ON WIDTHS OF TRAVEL LANES PLUS 6" ON EACH SIDE.

COORDINATE THIS SHEET WITH S-28 FOR THE PPC OVERLAY.

FOR SECTIONS A-A, B-B, AND C-C SEE SHEET S-29.

FOR SECTION D-D AND DETAILS OF JOINT AT BARRIER SEE SHEET S-30.

PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

BRIDGE NO. 71

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NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM

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RALEIGH

PLAN OF SPAN
SPAN 10

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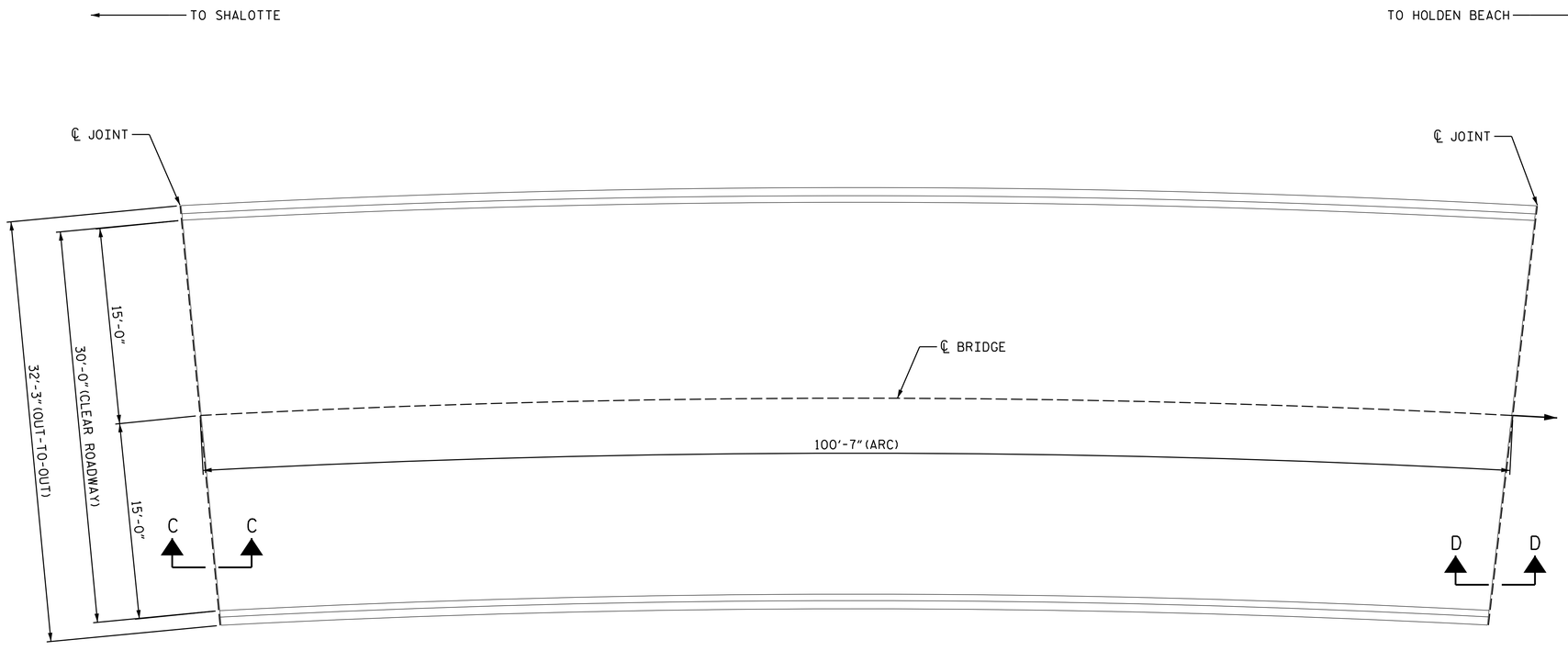
User:jduke



PLAN

AS-BUILT REPAIR QUANTITY TABLE

TOP OF DECK REPAIRS

SPAN 11

	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	336 SY	
CLASS II SURFACE PREPARATION	0.2 SY *	
CONCRETE DECK REPAIR FOR PPC OVERLAY	0.2 SY *	
SHOTBLASTING BRIDGE DECK	336 SY	
PPC MATERIALS	9.6 CY	
PLACING & FINISHING PPC OVERLAY	336 SY	
GROOVING BRIDGE FLOORS	2707 SF	

NOTES:

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PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

BRIDGE NO. 71

KCA KISINGER CAMPO & ASSOCIATES
4800 SIX FORKS ROAD SUITE 120
RALEIGH, NC 27609
(919) 882-7839

DRAWN BY : DIEGO A. AGUIRRE DATE : 03-2018
CHECKED BY : JACOB H. DUKE DATE : 03-2018
DESIGN ENGINEER OF RECORD : SAMUEL L. CULLUM DATE : 03-2018

8/13/2018
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NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM

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DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF SPAN
SPAN 11

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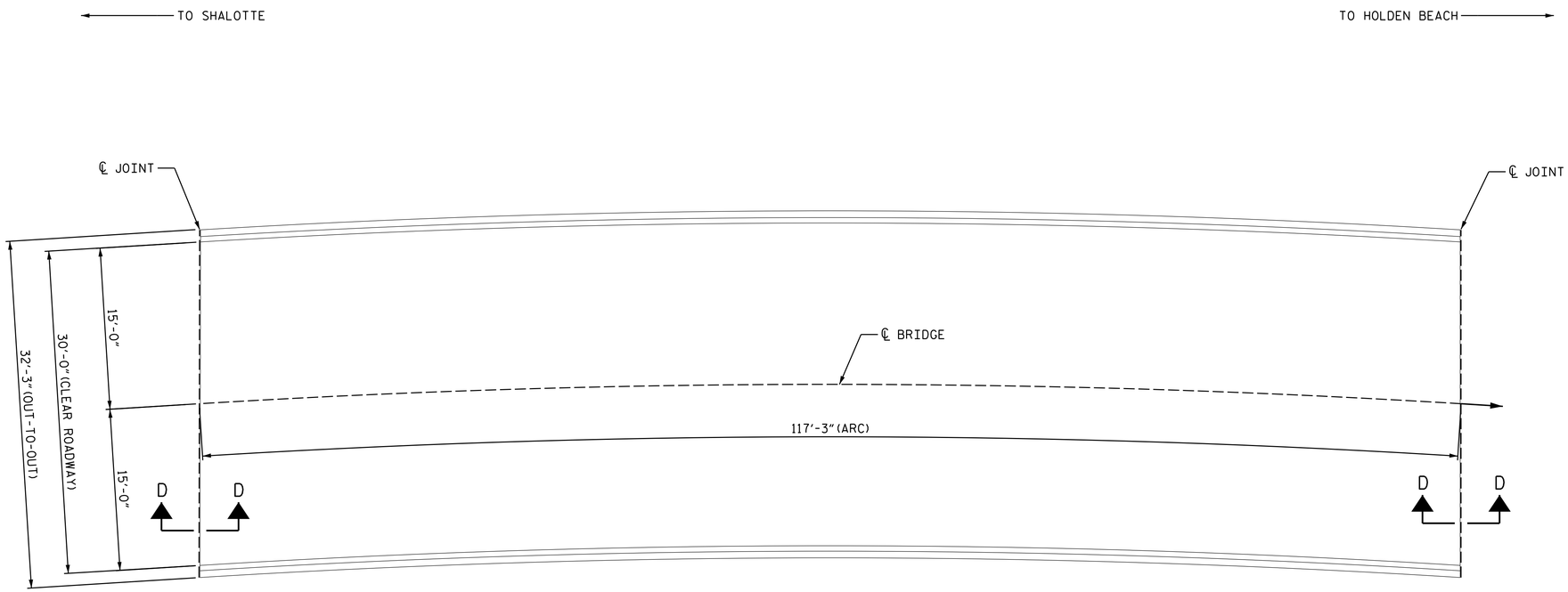

PLAN

AS-BUILT REPAIR QUANTITY TABLE

TOP OF DECK REPAIRS

SPAN 12

	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	391 SY	
CLASS II SURFACE PREPARATION	0.2 SY *	
CONCRETE DECK REPAIR FOR PPC OVERLAY	0.2 SY *	
SHOTBLASTING BRIDGE DECK	391 SY	
PPC MATERIALS	11.1 CY	
PLACING & FINISHING PPC OVERLAY	391 SY	
GROOVING BRIDGE FLOORS	3157 SF	

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FOR SECTIONS A-A, B-B, AND C-C SEE SHEET S-29.

FOR SECTION D-D AND DETAILS OF JOINT AT BARRIER SEE SHEET S-30.

PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

BRIDGE NO. 71

KCA KISINGER CAMPO & ASSOCIATES
4800 SIX FORKS ROAD SUITE 120
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(919) 882-7839

DRAWN BY : DIEGO A. AGUIRRE DATE : 03-2018
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF SPAN
SPAN 12

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NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
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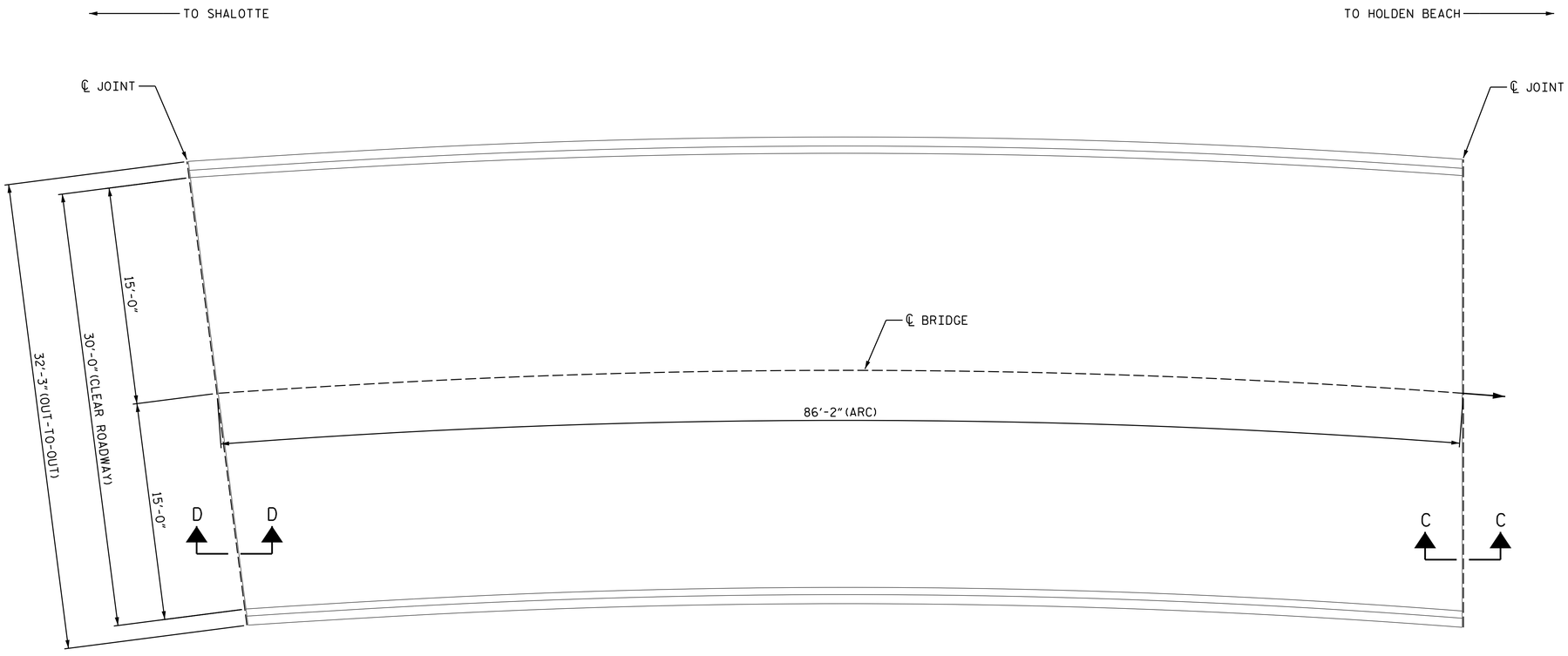

PLAN

AS-BUILT REPAIR QUANTITY TABLE

TOP OF DECK REPAIRS

SPAN 13

	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	287 SY	
CLASS II SURFACE PREPARATION	0.2 SY *	
CONCRETE DECK REPAIR FOR PPC OVERLAY	0.2 SY *	
SHOTBLASTING BRIDGE DECK	287 SY	
PPC MATERIALS	8.2 CY	
PLACING & FINISHING PPC OVERLAY	287 SY	
GROOVING BRIDGE FLOORS	2318 SF	

NOTES:

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FOR SECTION D-D AND DETAILS OF JOINT AT BARRIER SEE SHEET S-30.

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STATE OF NORTH CAROLINA
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PLAN OF SPAN
SPAN 13

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1			3			TOTAL SHEETS
2			4			69

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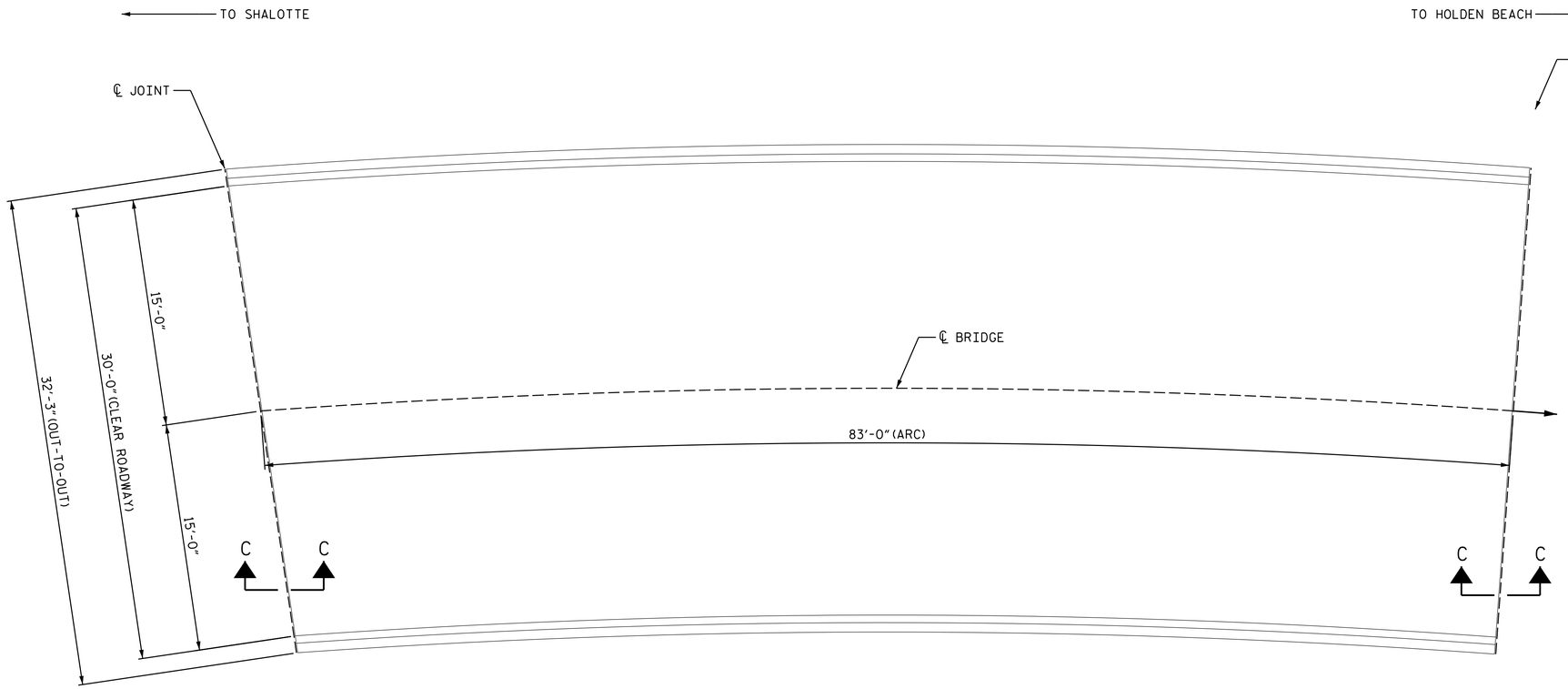

PLAN

AS-BUILT REPAIR QUANTITY TABLE

TOP OF DECK REPAIRS

SPAN 14

	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	277 SY	
CLASS II SURFACE PREPARATION	0.2 SY *	
CONCRETE DECK REPAIR FOR PPC OVERLAY	0.2 SY *	
SHOTBLASTING BRIDGE DECK	277 SY	
PPC MATERIALS	7.9 CY	
PLACING & FINISHING PPC OVERLAY	277 SY	
GROOVING BRIDGE FLOORS	2232 SF	

NOTES:

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF SPAN
SPAN 14

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REVISIONS						SHEET NO.
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2			4			69

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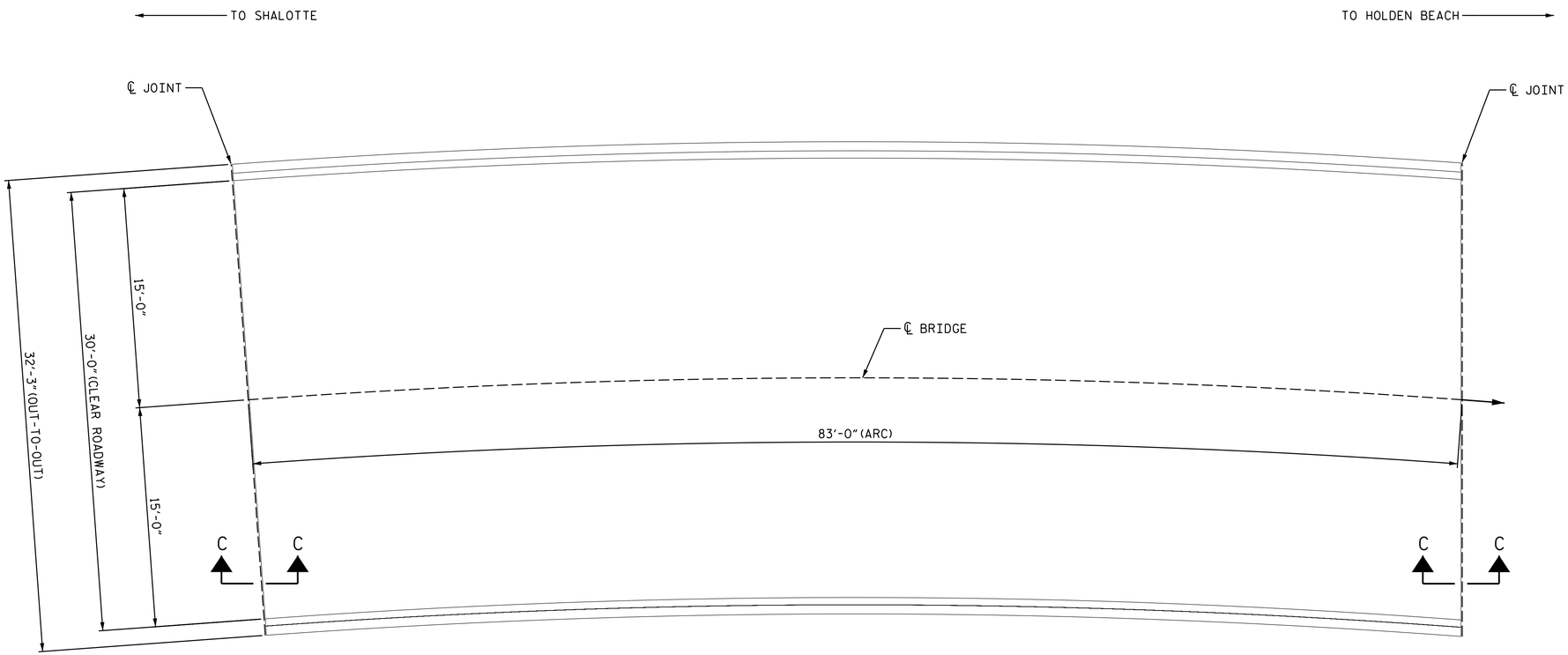
User:jduke



PLAN

AS-BUILT REPAIR QUANTITY TABLE

TOP OF DECK REPAIRS

SPAN 15

	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	277 SY	
CLASS II SURFACE PREPARATION	0.2 SY *	
CONCRETE DECK REPAIR FOR PPC OVERLAY	0.2 SY *	
SHOTBLASTING BRIDGE DECK	277 SY	
PPC MATERIALS	7.9 CY	
PLACING & FINISHING PPC OVERLAY	277 SY	
GROOVING BRIDGE FLOORS	2232 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 2½" 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.

GROOVING BRIDGE FLOORS QUANITITY BASED ON WIDTHS OF TRAVEL LANES PLUS 6" ON EACH SIDE.

COORDINATE THIS SHEET WITH S-28 FOR THE PPC OVERLAY.

FOR SECTIONS A-A, B-B, AND C-C SEE SHEET S-29.

FOR SECTION D-D AND DETAILS OF JOINT AT BARRIER SEE SHEET S-30.

PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

BRIDGE NO. 71

KCA KISINGER CAMPO & ASSOCIATES
4800 SIX FORKS ROAD SUITE 120
RALEIGH, NC 27609
(919) 882-7839

DRAWN BY : DIEGO A. AGUIRRE DATE : 03-2018
CHECKED BY : JACOB H. DUKE DATE : 03-2018
DESIGN ENGINEER OF RECORD : SAMUEL L. CULLUM DATE : 03-2018

NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF SPAN
SPAN 15

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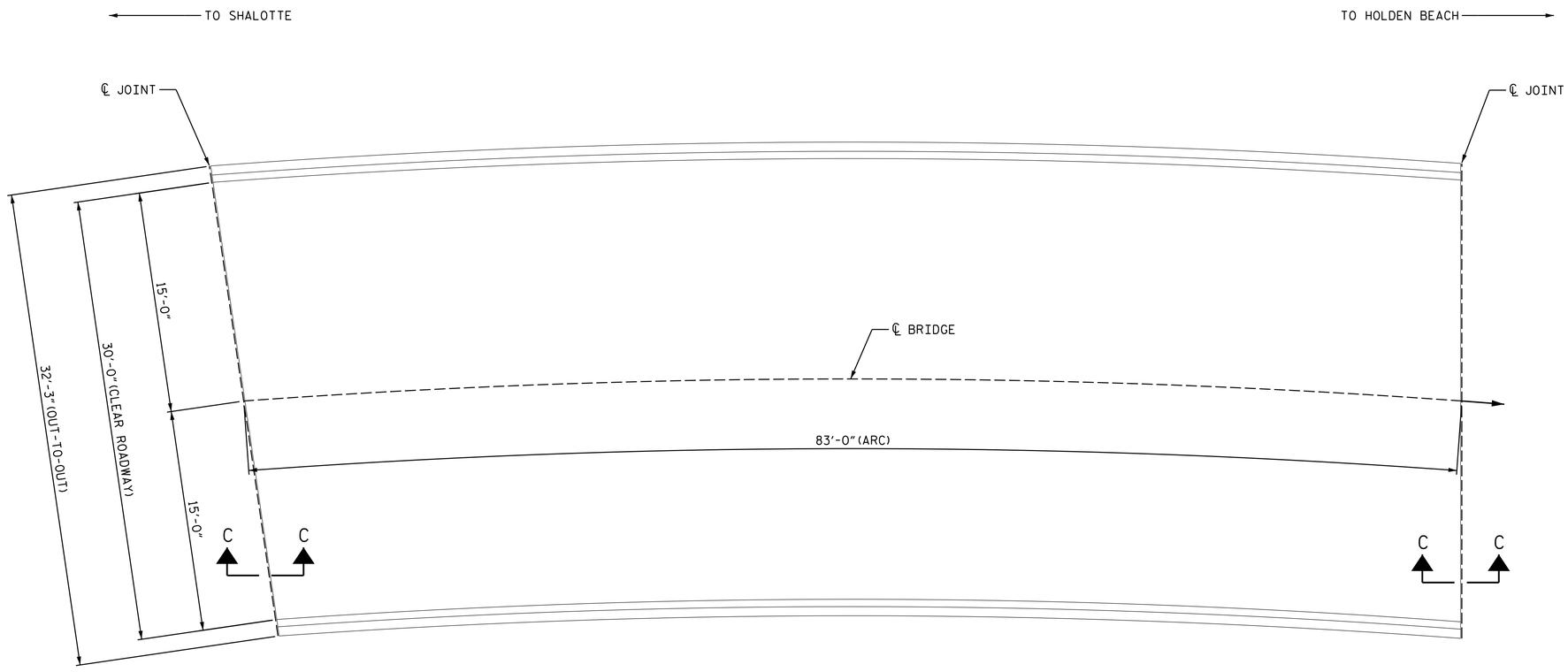

PLAN

AS-BUILT REPAIR QUANTITY TABLE

TOP OF DECK REPAIRS

SPAN 16

	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	277 SY	
CLASS II SURFACE PREPARATION	0.2 SY *	
CONCRETE DECK REPAIR FOR PPC OVERLAY	0.2 SY *	
SHOTBLASTING BRIDGE DECK	277 SY	
PPC MATERIALS	7.9 CY	
PLACING & FINISHING PPC OVERLAY	277 SY	
GROOVING BRIDGE FLOORS	2232 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.

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GROOVING BRIDGE FLOORS QUANITITY BASED ON WIDTHS OF TRAVEL LANES PLUS 6" ON EACH SIDE.

COORDINATE THIS SHEET WITH S-28 FOR THE PPC OVERLAY.

FOR SECTIONS A-A, B-B, AND C-C SEE SHEET S-29.

FOR SECTION D-D AND DETAILS OF JOINT AT BARRIER SEE SHEET S-30.

PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

BRIDGE NO. 71

KCA KISINGER CAMPO & ASSOCIATES
4800 SIX FORKS ROAD SUITE 120
RALEIGH, NC 27609
(919) 882-7839

DRAWN BY : DIEGO A. AGUIRRE DATE : 03-2018
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DESIGN ENGINEER OF RECORD : SAMUEL L. CULLUM DATE : 03-2018

NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF SPAN
SPAN 16

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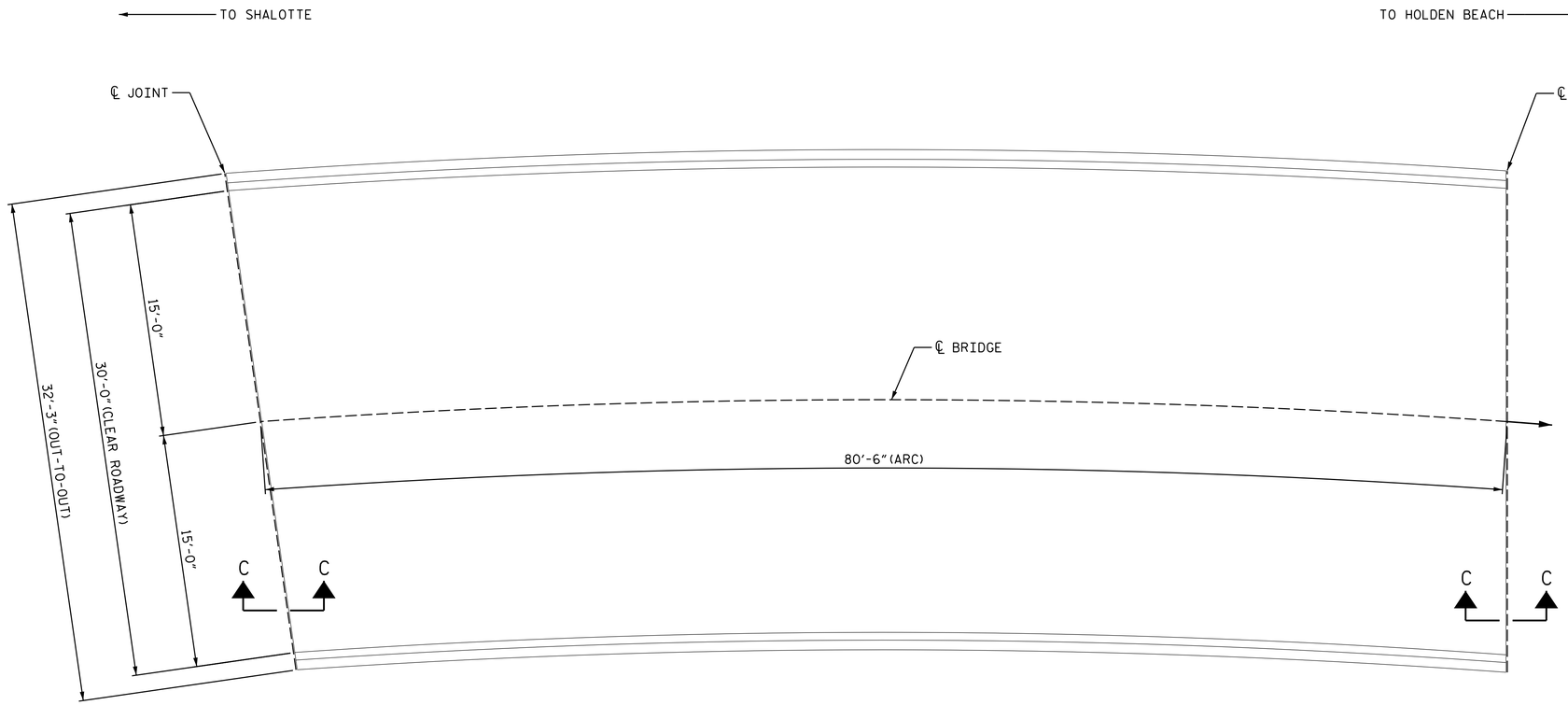

PLAN

AS-BUILT REPAIR QUANTITY TABLE

TOP OF DECK REPAIRS

SPAN 17

	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	269 SY	
CLASS II SURFACE PREPARATION	0.2 SY *	
CONCRETE DECK REPAIR FOR PPC OVERLAY	0.2 SY *	
SHOTBLASTING BRIDGE DECK	269 SY	
PPC MATERIALS	7.9 CY	
PLACING & FINISHING PPC OVERLAY	269 SY	
GROOVING BRIDGE FLOORS	2165 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.

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GROOVING BRIDGE FLOORS QUANITITY BASED ON WIDTHS OF TRAVEL LANES PLUS 6" ON EACH SIDE.

COORDINATE THIS SHEET WITH S-28 FOR THE PPC OVERLAY.

FOR SECTIONS A-A, B-B, AND C-C SEE SHEET S-29.

FOR SECTION D-D AND DETAILS OF JOINT AT BARRIER SEE SHEET S-30.

PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

BRIDGE NO. 71

KCA KISINGER CAMPO & ASSOCIATES
4800 SIX FORKS ROAD SUITE 120
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DRAWN BY : DIEGO A. AGUIRRE DATE : 03-2018
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NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF SPAN
SPAN 17

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1			3			TOTAL SHEETS
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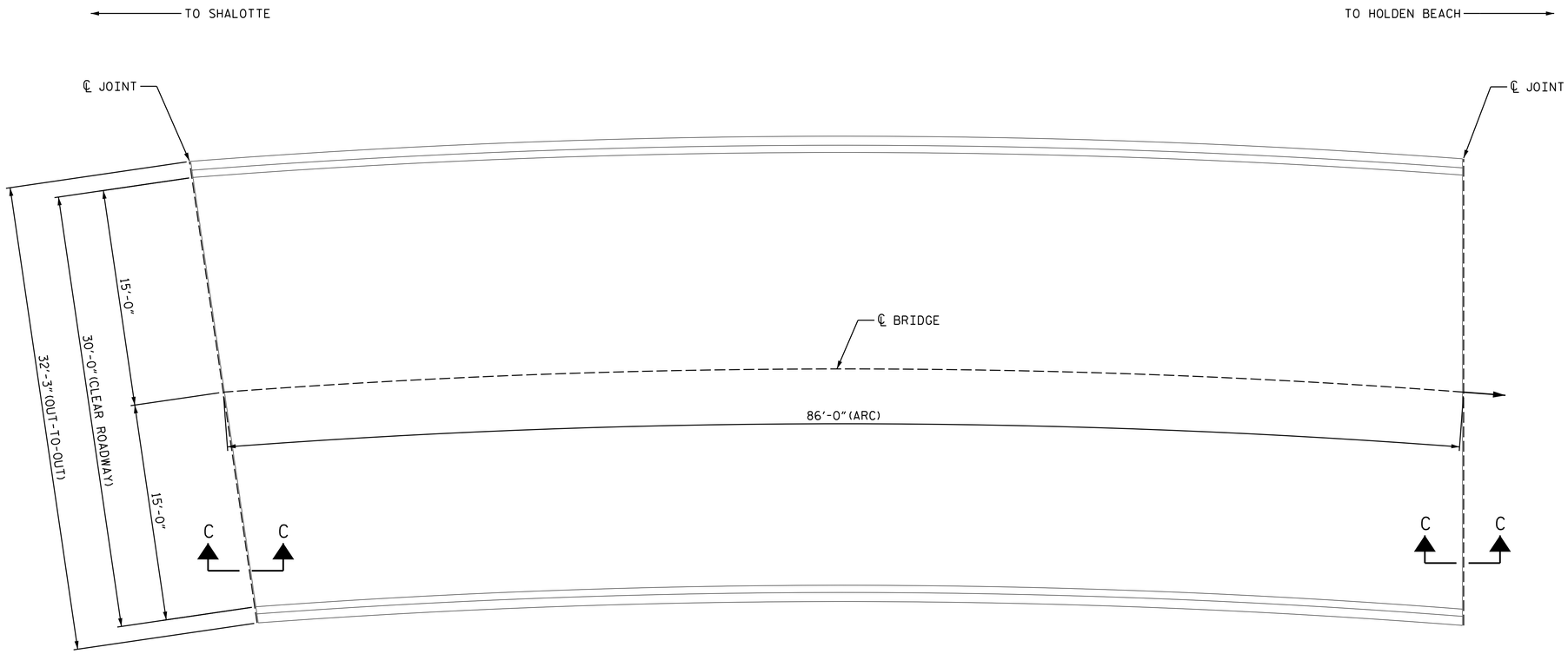

PLAN

AS-BUILT REPAIR QUANTITY TABLE

TOP OF DECK REPAIRS

SPAN 18

	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	287 SY	
CLASS II SURFACE PREPARATION	0.2 SY *	
CONCRETE DECK REPAIR FOR PPC OVERLAY	0.2 SY *	
SHOTBLASTING BRIDGE DECK	287 SY	
PPC MATERIALS	8.2 CY	
PLACING & FINISHING PPC OVERLAY	287 SY	
GROOVING BRIDGE FLOORS	2313 SF	

NOTES:

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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.

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GROOVING BRIDGE FLOORS QUANITITY BASED ON WIDTHS OF TRAVEL LANES PLUS 6" ON EACH SIDE.

COORDINATE THIS SHEET WITH S-28 FOR THE PPC OVERLAY.

FOR SECTIONS A-A, B-B, AND C-C SEE SHEET S-29.

FOR SECTION D-D AND DETAILS OF JOINT AT BARRIER SEE SHEET S-30.

PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

BRIDGE NO. 71

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RALEIGH, NC 27609
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DRAWN BY : DIEGO A. AGUIRRE DATE : 03-2018
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NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM

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RALEIGH

PLAN OF SPAN
SPAN 18

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1			3			TOTAL SHEETS
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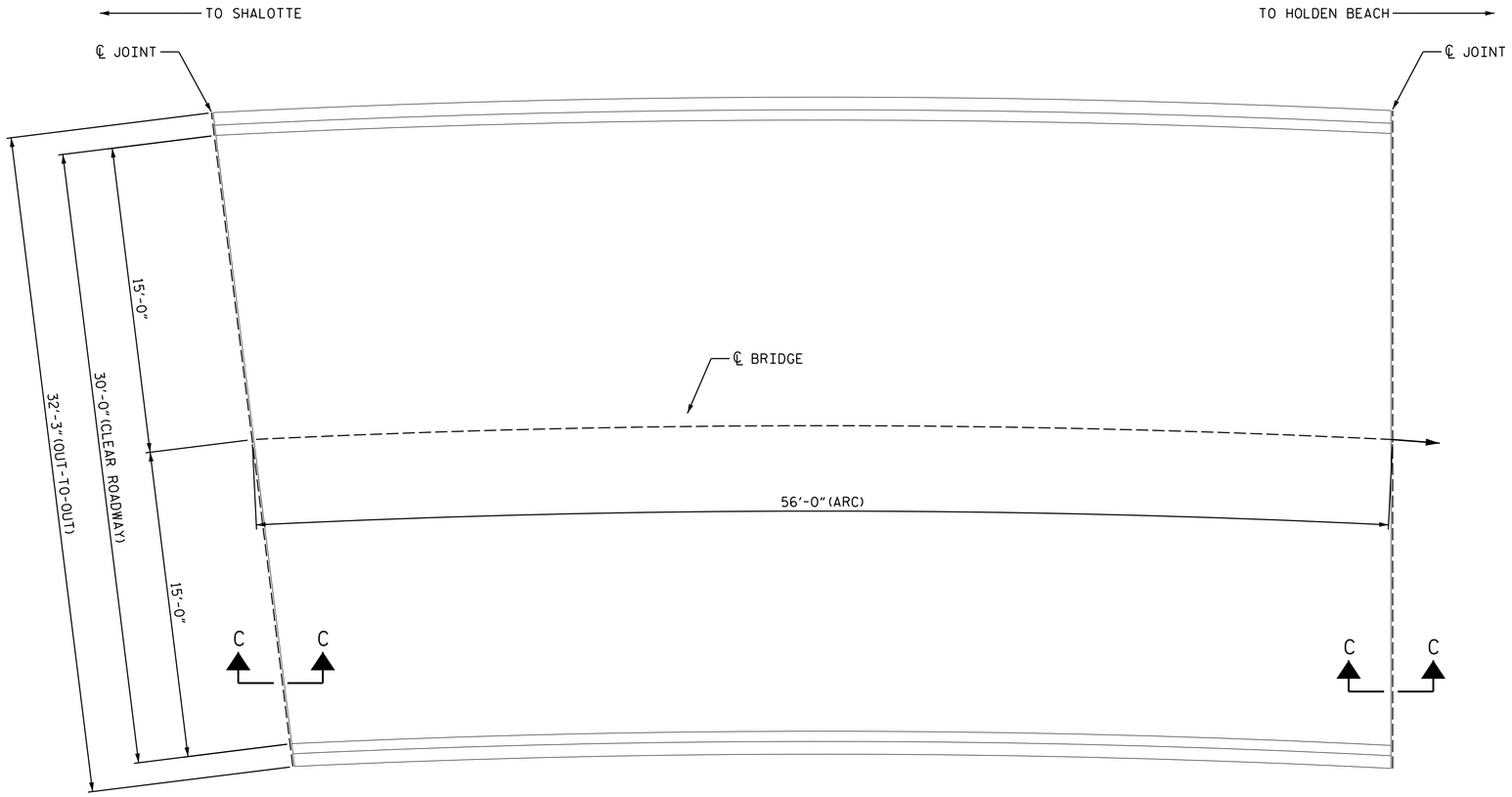

PLAN

AS-BUILT REPAIR QUANTITY TABLE

TOP OF DECK REPAIRS

SPAN 19

	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	187 SY	
CLASS II SURFACE PREPARATION	0.2 SY *	
CONCRETE DECK REPAIR FOR PPC OVERLAY	0.2 SY *	
SHOTBLASTING BRIDGE DECK	187 SY	
PPC MATERIALS	5.4 CY	
PLACING & FINISHING PPC OVERLAY	187 SY	
GROOVING BRIDGE FLOORS	1503 SF	

NOTES:

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GROOVING BRIDGE FLOORS QUANITITY BASED ON WIDTHS OF TRAVEL LANES PLUS 6" ON EACH SIDE.

COORDINATE THIS SHEET WITH S-28 FOR THE PPC OVERLAY.

FOR SECTIONS A-A, B-B, AND C-C SEE SHEET S-29.

FOR SECTION D-D AND DETAILS OF JOINT AT BARRIER SEE SHEET S-30.

PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

BRIDGE NO. 71

KCA KISINGER CAMPO & ASSOCIATES
4800 SIX FORKS ROAD SUITE 120
RALEIGH, NC 27609
(919) 882-7839

DRAWN BY : DIEGO A. AGUIRRE DATE : 03-2018
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NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF SPAN
SPAN 19

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1			3			TOTAL SHEETS
2			4			69

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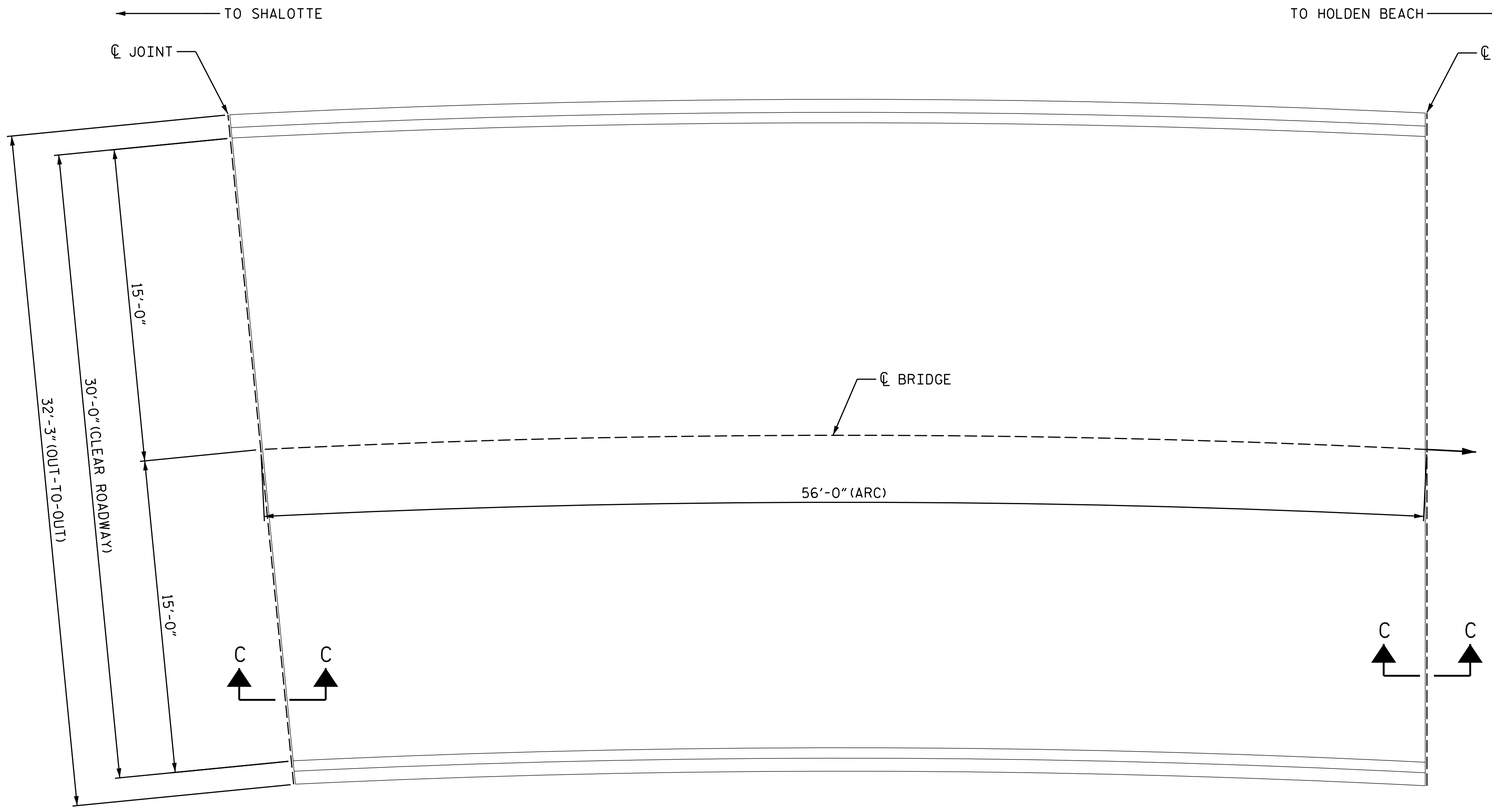

PLAN

AS-BUILT REPAIR QUANTITY TABLE

TOP OF DECK REPAIRS

SPAN 20

	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	187 SY	
CLASS II SURFACE PREPARATION	0.2 SY *	
CONCRETE DECK REPAIR FOR PPC OVERLAY	0.2 SY *	
SHOTBLASTING BRIDGE DECK	187 SY	
PPC MATERIALS	5.4 CY	
PLACING & FINISHING PPC OVERLAY	187 SY	
GROOVING BRIDGE FLOORS	1503 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.

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GROOVING BRIDGE FLOORS QUANITITY BASED ON WIDTHS OF TRAVEL LANES PLUS 6" ON EACH SIDE.

COORDINATE THIS SHEET WITH S-28 FOR THE PPC OVERLAY.

FOR SECTIONS A-A, B-B, AND C-C SEE SHEET S-29.

FOR SECTION D-D AND DETAILS OF JOINT AT BARRIER SEE SHEET S-30.

PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

BRIDGE NO. 71

KISINGER CAMPO & ASSOCIATES
4800 SIX FORKS ROAD SUITE 120
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(919) 882-7839

DRAWN BY : DIEGO A. AGUIRRE DATE : 03-2018
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF SPAN
SPAN 20

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REVISIONS						SHEET NO.
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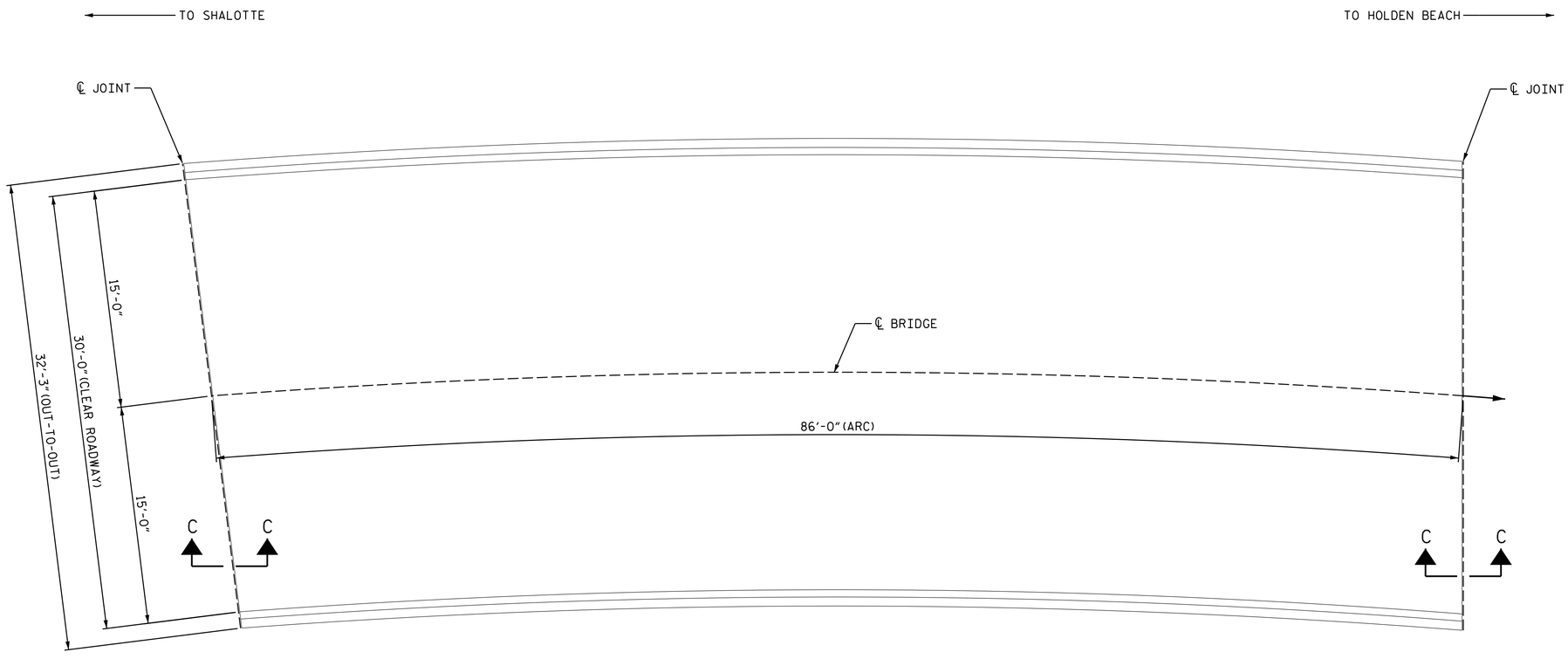
1			3			TOTAL SHEETS
2			4			69



PLAN

AS-BUILT REPAIR QUANTITY TABLE

TOP OF DECK REPAIRS

SPAN 21

	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	287 SY	
CLASS II SURFACE PREPARATION	0.2 SY *	
CONCRETE DECK REPAIR FOR PPC OVERLAY	0.2 SY *	
SHOTBLASTING BRIDGE DECK	287 SY	
PPC MATERIALS	8.2 CY	
PLACING & FINISHING PPC OVERLAY	287 SY	
GROOVING BRIDGE FLOORS	2313 SF	

NOTES:

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COORDINATE THIS SHEET WITH S-28 FOR THE PPC OVERLAY.

FOR SECTIONS A-A, B-B, AND C-C SEE SHEET S-29.

FOR SECTION D-D AND DETAILS OF JOINT AT BARRIER SEE SHEET S-30.

PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

BRIDGE NO. 71

KCA KISINGER CAMPO & ASSOCIATES
4800 SIX FORKS ROAD SUITE 120
RALEIGH, NC 27609
(919) 882-7839

DRAWN BY : DIEGO A. AGUIRRE DATE : 03-2018
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF SPAN
SPAN 21

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-25
1			3			TOTAL SHEETS
2			4			69

8/13/2018
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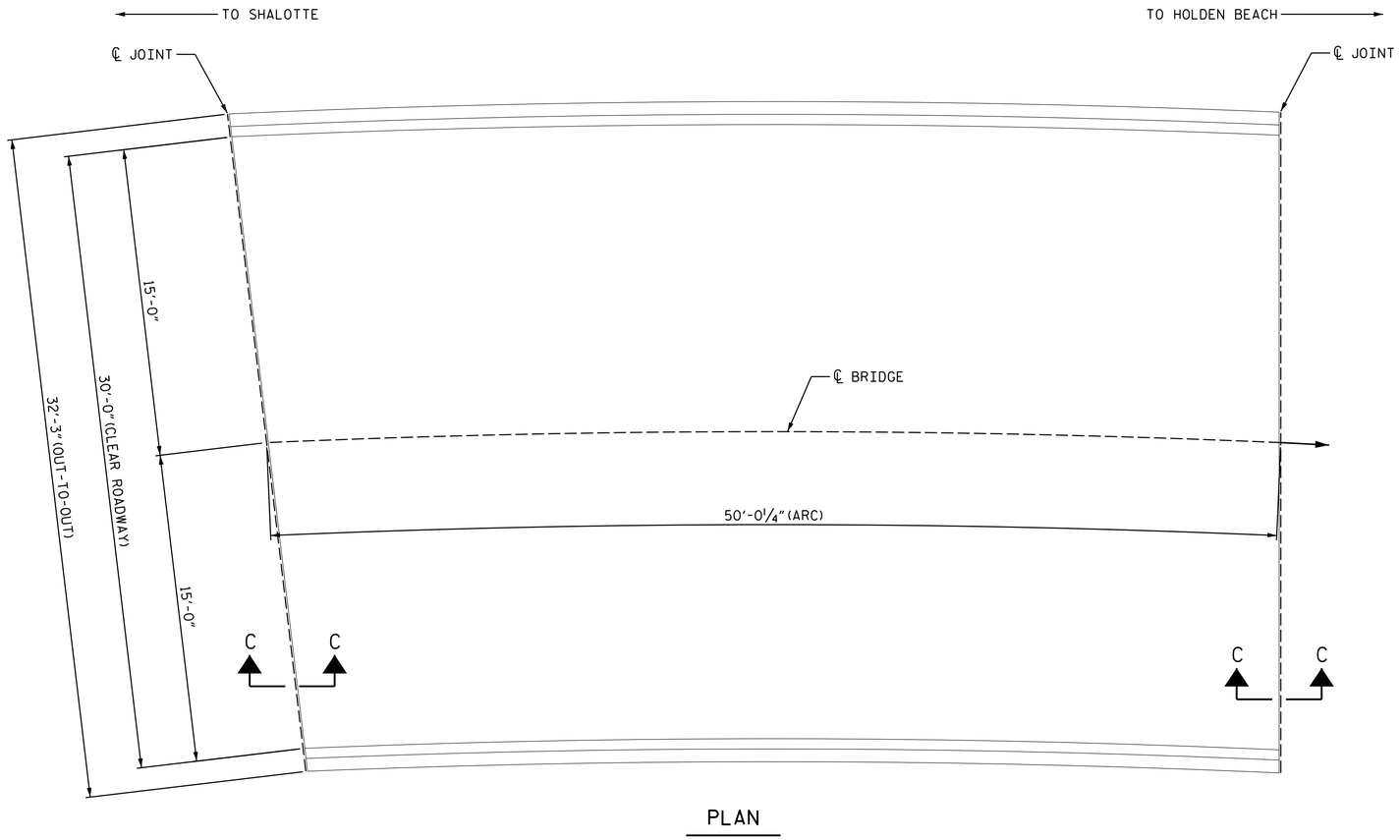

PLAN

AS-BUILT REPAIR QUANTITY TABLE

TOP OF DECK REPAIRS

SPAN 22

	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	167 SY	
CLASS II SURFACE PREPARATION	0.2 SY *	
CONCRETE DECK REPAIR FOR PPC OVERLAY	0.2 SY *	
SHOTBLASTING BRIDGE DECK	167 SY	
PPC MATERIALS	4.9 CY	
PLACING & FINISHING PPC OVERLAY	167 SY	
GROOVING BRIDGE FLOORS	1342 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 2½" 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.

GROOVING BRIDGE FLOORS QUANITITY BASED ON WIDTHS OF TRAVEL LANES PLUS 6" ON EACH SIDE.

COORDINATE THIS SHEET WITH S-28 FOR THE PPC OVERLAY.

FOR SECTIONS A-A, B-B, AND C-C SEE SHEET S-29.

FOR SECTION D-D AND DETAILS OF JOINT AT BARRIER SEE SHEET S-30.

PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

BRIDGE NO. 71

KCA KISINGER CAMPO & ASSOCIATES
4800 SIX FORKS ROAD SUITE 120
RALEIGH, NC 27609
(919) 882-7839

DRAWN BY : DIEGO A. AGUIRRE DATE : 03-2018
CHECKED BY : JACOB H. DUKE DATE : 03-2018
DESIGN ENGINEER OF RECORD : SAMUEL L. CULLUM DATE : 03-2018

NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM

DocuSigned by: Samuel L. Cullum 19C97095C75A467...

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF SPAN
SPAN 22

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-26
1			3			TOTAL SHEETS
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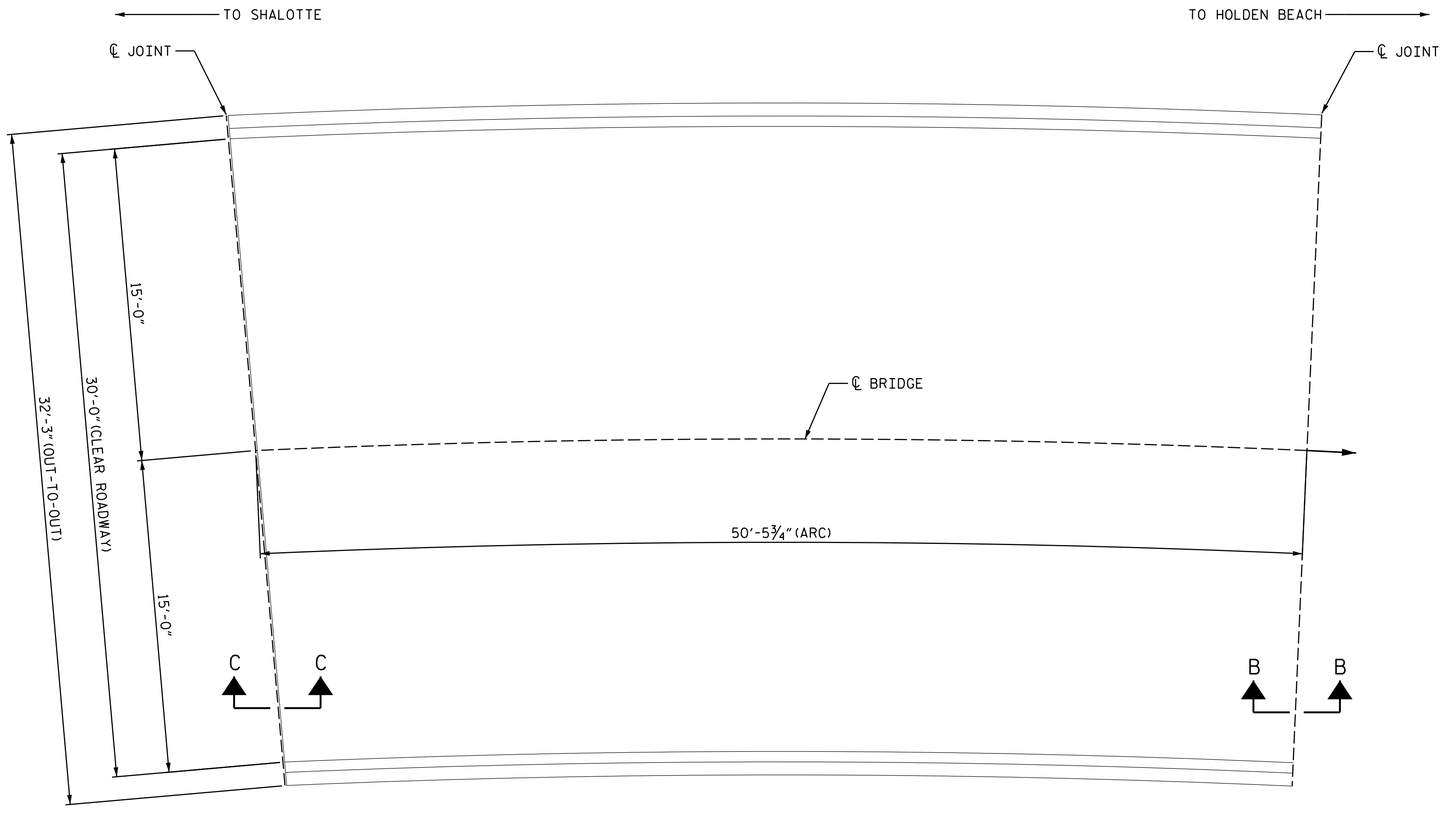
User:jduke



PLAN

AS-BUILT REPAIR QUANTITY TABLE

TOP OF DECK REPAIRS

SPAN 23

	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	169 SY	
CLASS II SURFACE PREPARATION	0.2 SY *	
CONCRETE DECK REPAIR FOR PPC OVERLAY	0.2 SY *	
SHOTBLASTING BRIDGE DECK	169 SY	
PPC MATERIALS	4.9 CY	
PLACING & FINISHING PPC OVERLAY	169 SY	
GROOVING BRIDGE FLOORS	1354 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.

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GROOVING BRIDGE FLOORS QUANITITY BASED ON WIDTHS OF TRAVEL LANES PLUS 6" ON EACH SIDE.

COORDINATE THIS SHEET WITH S-28 FOR THE PPC OVERLAY.

FOR SECTIONS A-A, B-B, AND C-C SEE SHEET S-29.

FOR SECTION D-D AND DETAILS OF JOINT AT BARRIER SEE SHEET S-30.

PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

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4800 SIX FORKS ROAD SUITE 120
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DESIGN ENGINEER OF RECORD : SAMUEL L. CULLUM DATE : 03-2018

NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM

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RALEIGH

PLAN OF SPAN
SPAN 23

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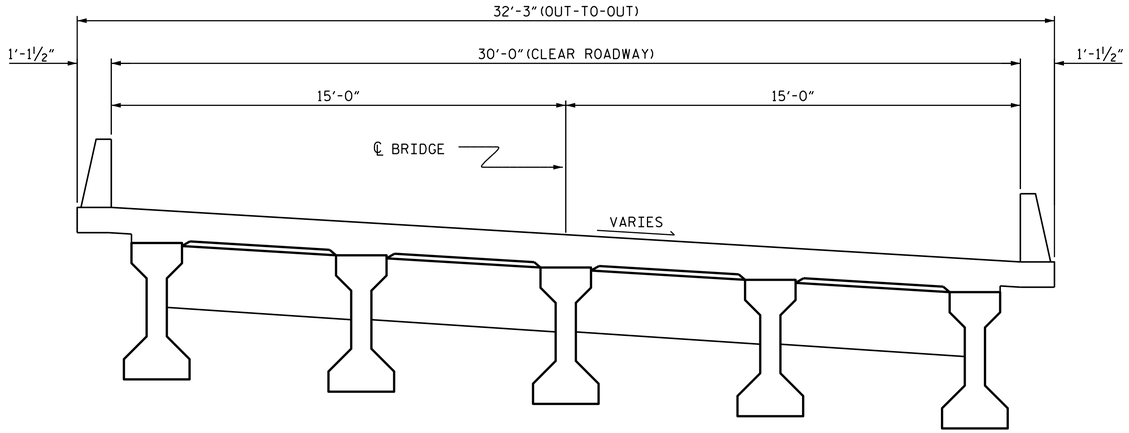
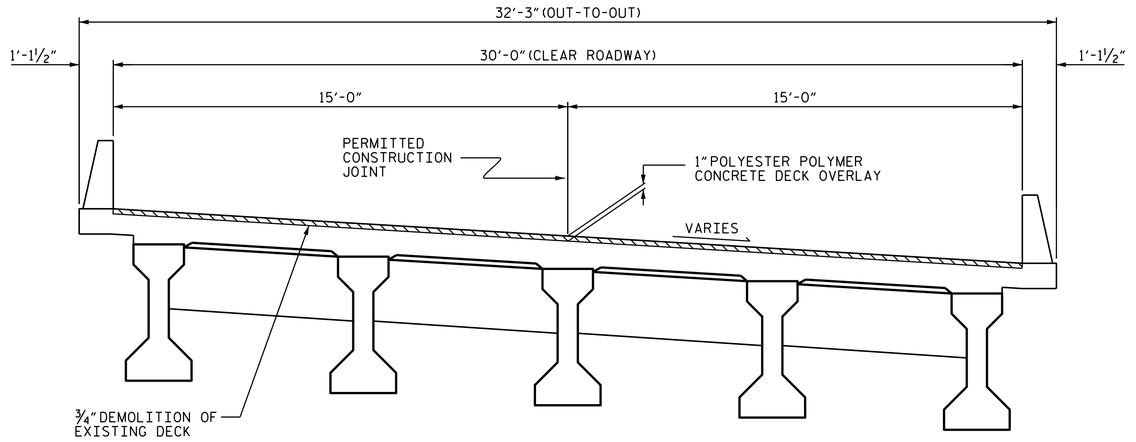


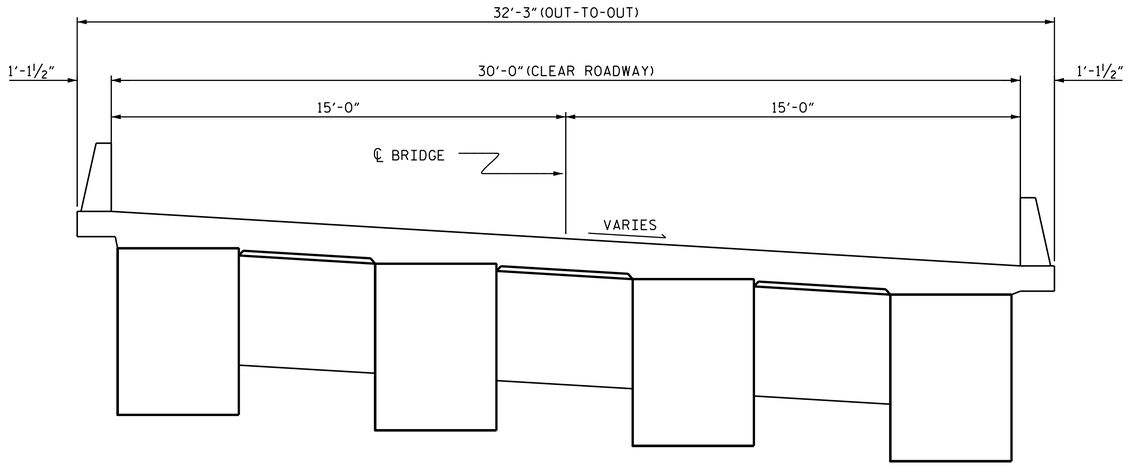
TYPICAL SECTION

(EXISTING SPANS 1-10 & 14-23)



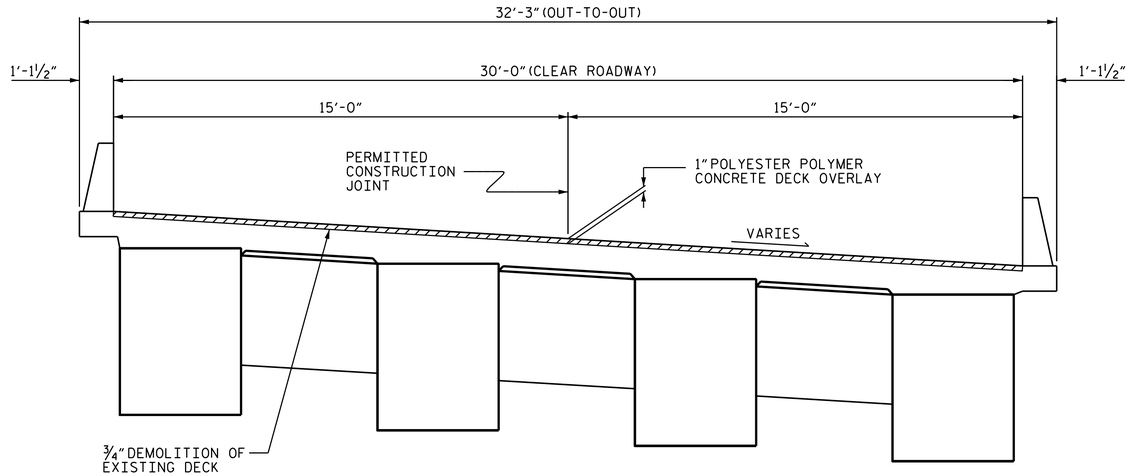
TYPICAL SECTION

(PROPOSED SPANS 1-10 & 14-23)



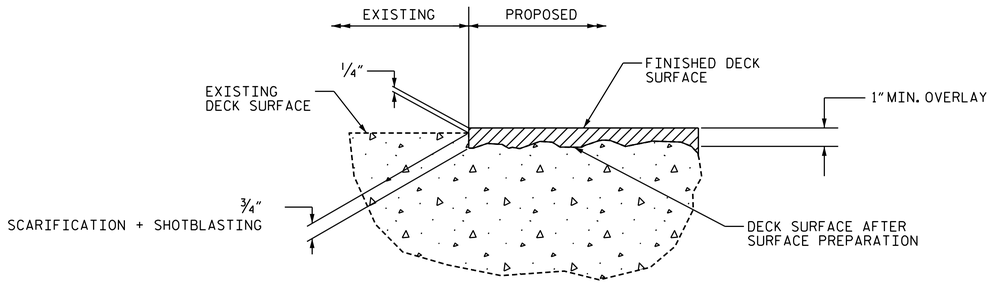
TYPICAL SECTION

(EXISTING SPANS 11-13)



TYPICAL SECTION

(PROPOSED SPANS 11-13)



DETAIL FOR PPC OVERLAY

NOTES:

ONLY LONGITUDINAL CONSTRUCTION JOINTS SHALL BE ALLOWED IN THE PPC OVERLAY AND ONLY AT THE PERMITTED LOCATION SHOWN.

PROPOSED RAIL RETROFIT NOT SHOWN.

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DESIGN ENGINEER OF RECORD : SAMUEL L. CULLUM DATE : 03-2018

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PROJECT NO. 15BPR.16
BRUNSWICK COUNTY
BRIDGE NO. 71

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTIONS PPC OVERLAY

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 043571 SAMUEL L CULLUM
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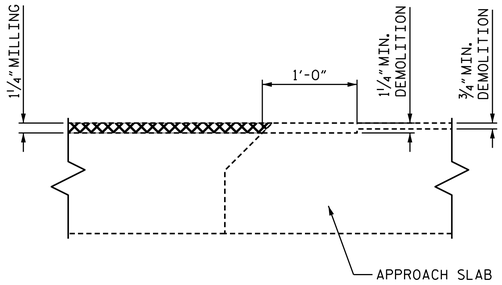

SECTION A-A

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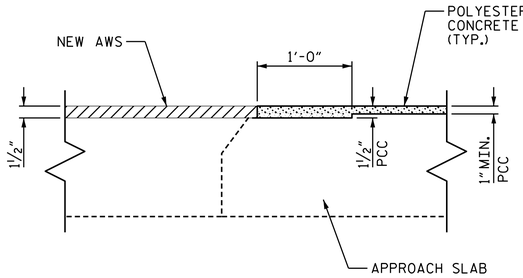


SECTION A-A

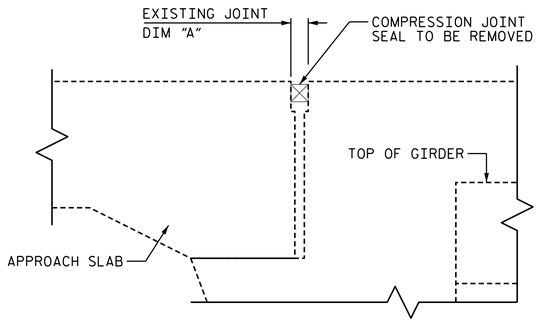
(PROPOSED)

NOTES:

FOR SILICONE JOINT SEALANT , SEE SPECIAL PROVISIONS.

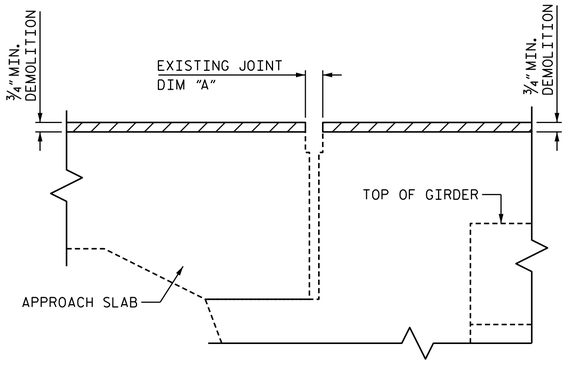
SILICONE JOINT SEALANT AND BACKER ROD SHAL BE INSTALLED AS PER MANUFACTURER'S RECOMMENDATIONS.

FOR DIM "A", SEE TABLE 1 ON SHEET S-30.



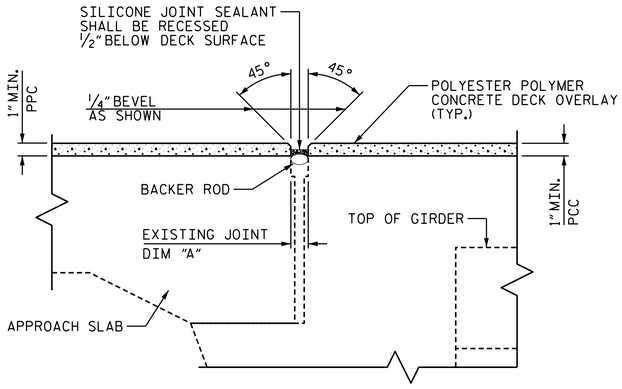
SECTION B-B

(EXISTING)



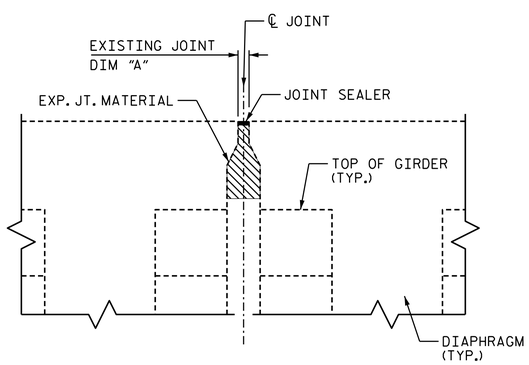
SECTION B-B

(MINIMUM EXISTING JOINT DEMOLITION)



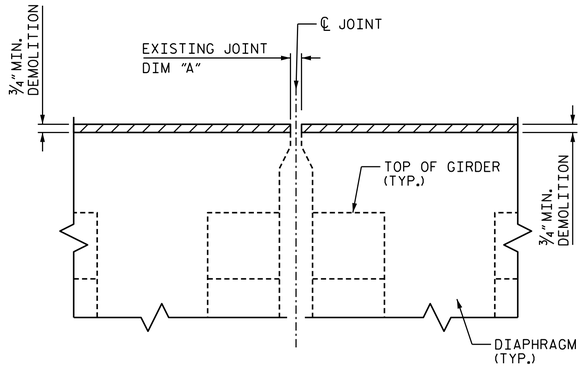
SECTION B-B

(PROPOSED JOINT SEAL)



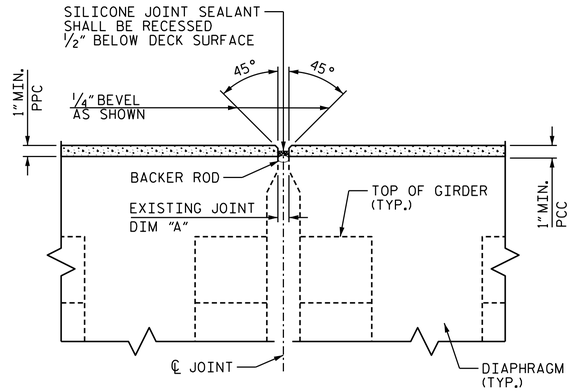
SECTION C-C

(EXISTING)



SECTION C-C

(MINIMUM EXISTING JOINT DEMOLITION)



SECTION C-C

(PROPOSED JOINT SEAL)

PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

BRIDGE NO. 71

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

JOINT DETAILS

APPROACH SLABS, SPANS 1-10 AND 14-23

NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM

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(919) 882-7839

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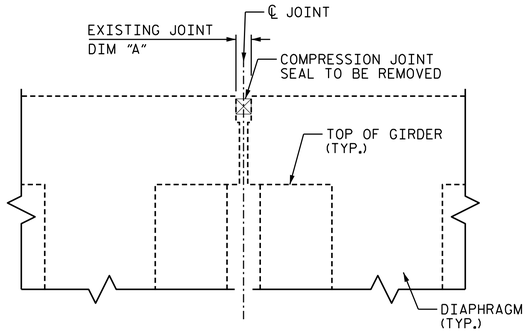
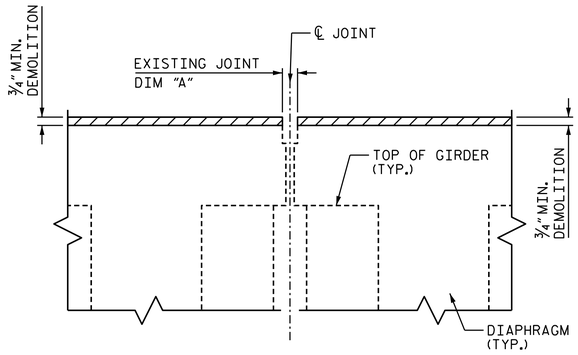


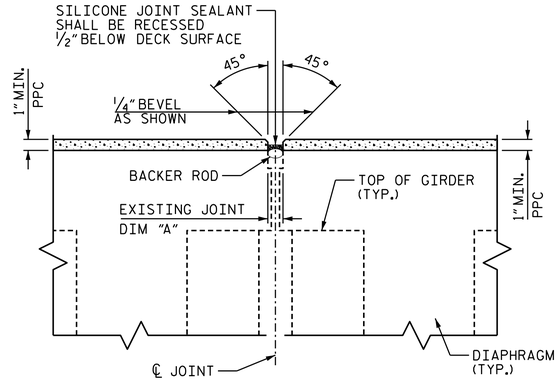
SECTION D-D

(EXISTING)



SECTION D-D

(MINIMUM EXISTING
JOINT DEMOLITION)



SECTION D-D

(PROPOSED JOINT SEAL)

NOTES:

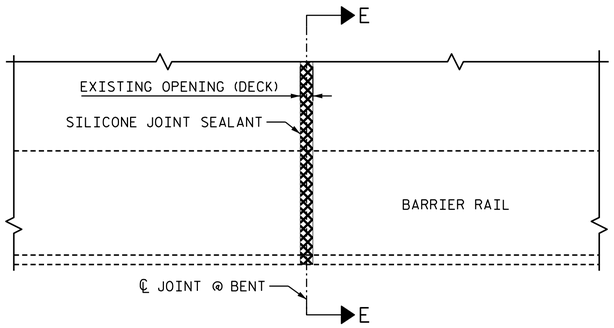
FOR SILICONE JOINT SEALANT, SEE SPECIAL PROVISIONS.

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

FOR DIM "A", SEE TABLE 1.

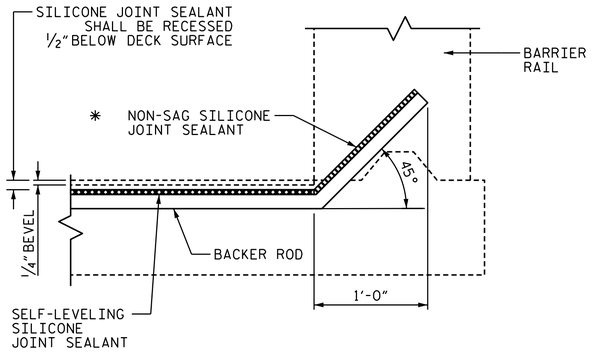
WORK THIS SHEET WITH SHEET S-29.

* NON-SAG SILICONE JOINT SEALANT TO BE PLACED AND ALLOWED TO SET, PRIOR TO PLACEMENT OF SELF-LEVELING SILICONE JOINT SEALANT.



PLAN AT BARRIER

(EXISTING)



SECTION E-E

(PROPOSED JOINT SEAL)

TABLE 1		Table Date 3-2018
DIM "A" @ 65°F	BENT/JOINTS	(MEASUREMENTS FROM FIELD VISIT)
1"	BENTS: 22	
1¼"	BENTS: 7, 17, 18, 20, 21	
1⅜"	BENTS: 1, 16	
1½"	BENTS: 4, 5, 6, 8, 9, 14, 15, 19	
1⅝"	BENTS: 2, 3	
1¾"	BENTS: END BENT#1	
2"	BENTS: END BENT#2	
2½"	BENTS: 10, 12, 13	
2⅝"	BENTS: 11	

PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

BRIDGE NO. 71

SHEET 2 OF 2

KCA KISINGER CAMPO & ASSOCIATES
4800 SIX FORKS ROAD SUITE 120
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(919) 882-7839

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NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM

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STATE OF NORTH CAROLINA
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RALEIGH

JOINT DETAILS

SPANS 11, 12, AND 13 AND JOINT TABLE

REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
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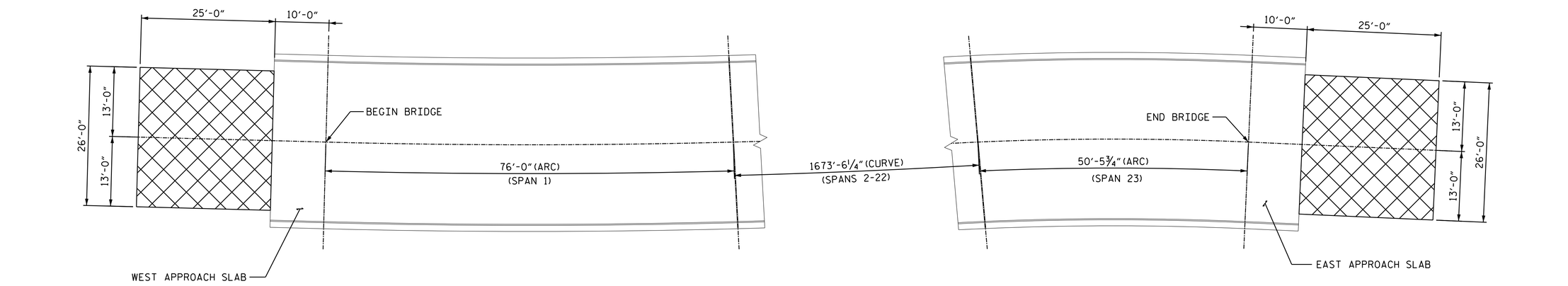
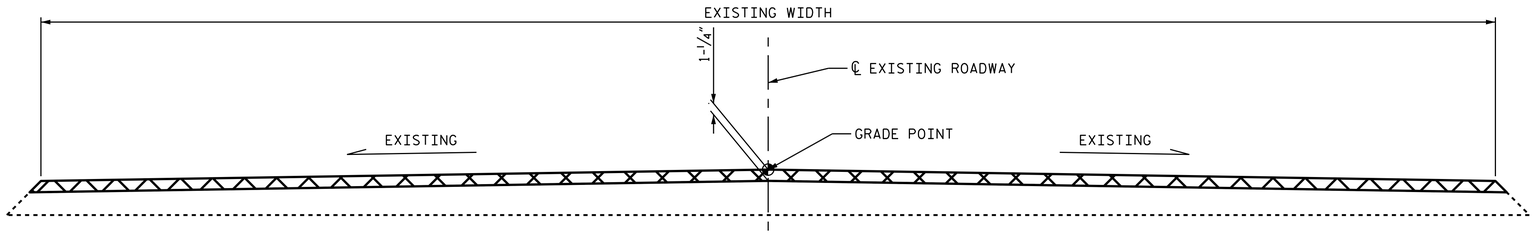


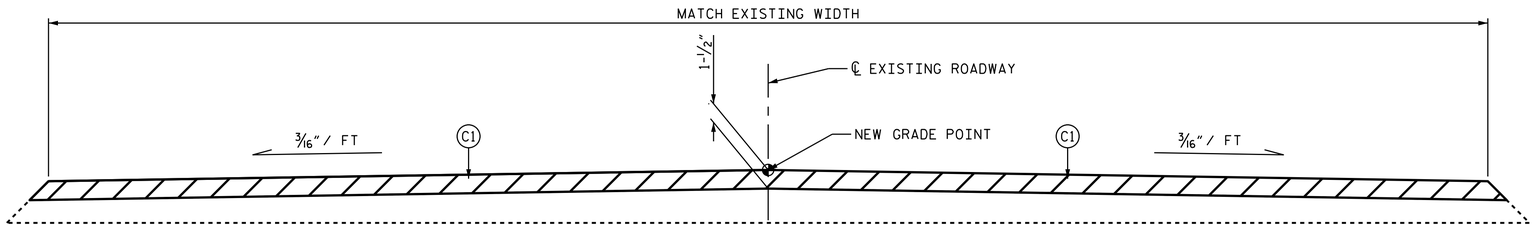
PLAN



TYPICAL ROADWAY MILLING SECTION

(MILL TO ¾" DEPTH)

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



TYPICAL ROADWAY SECTION

AS-BUILT QUANTITY TABLE

	ESTIMATE	ACTUAL
INCIDENTAL MILLING	145 SY	
ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C	12.0 TONS	

NOTES:

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

INCIDENTAL MILLING

ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C

PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

APPROACH MILLING AND TYPICAL ROADWAY SECTIONS

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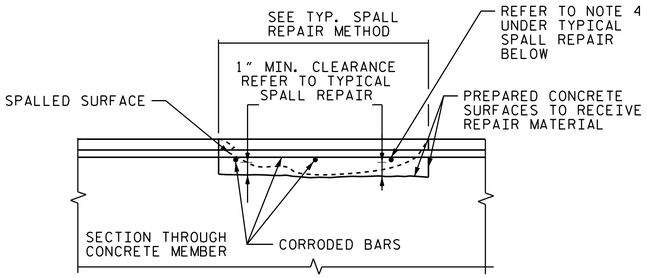
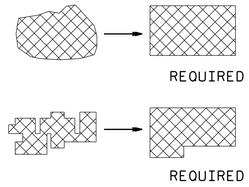


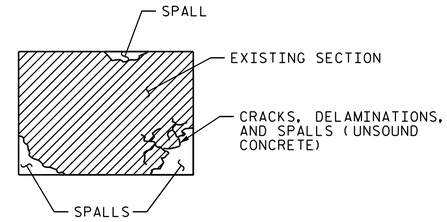
EXPOSING AND UNDERCUTTING REINFORCING STEEL

APPLICABLE TO HORIZONTAL, VERTICAL, AND OVERHEAD LOCATIONS



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.



TYPICAL DELAMINATIONS AND SPALLS

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. REFER TO GENERAL NOTES FOR DOWEL DETAIL (IF NECESSARY).
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 CEMENTITIOUS BASED 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.

LAP SPLICE TABLE	
REBAR 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"

TYPICAL CRACK REPAIR METHOD

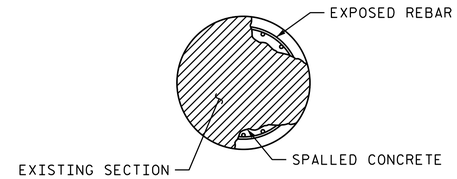
1. OBTAIN ENGINEER'S APPROVAL TO CARRY OUT CRACK REPAIR (IN LIEU OF SPALL REPAIR) FOR CASES WHERE ADJACENT CONCRETE IS OTHERWISE SOUND AND CRACKING IS NOT A RESULT OF CORRODING REINFORCEMENT.
2. ADDRESS CRACKS IN NEW CONSTRUCTION IN ACCORDANCE WITH PROJECT SPECIAL PROVISIONS. ADDRESS EXISTING CRACKS 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. FOR CRACKS UP TO 1/8" USE AN EPOXY RESIN WITH MINIMUMS OF VISCOSITY OF 325 CPS, 28 DAY COMPRESSIVE STRENGTH OF 13000 PSI. FOR CRACKS 1/8" TO 1/4", USE AN INJECTION GEL OR EQUAL NON-SAG PASTE WITH 28 DAY COMPRESSIVE STRENGTH OF 10000 PSI.
6. TO SEAL CRACK SURFACES PRIOR TO CRACK INJECTION, USE INJECTION GEL WITH MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 12000 PSI.
7. ENGINEER TO APPROVE CRACK AND CAP SEAL MATERIAL PRIOR TO BEGINNING OF CONSTRUCTION.
8. APPLY CLASS II FINISH AT COMPLETION OF CRACK REPAIR TO REMOVE FINS OR KNOBS.

CONCRETE REPAIR SCHEDULE	
REPAIR AREA	APPROVED MATERIAL
BEAMS	CONCRETE REPAIRS (PPC GIRDERS)
PIER FOOTINGS	``FORM AND POUR" CONCRETE REPAIR
OTHER SUBSTRUCTURE	SHOTCRETE, OR CONTRACTOR OPTION

SEE PPC PLANS AND PSP FOR TOP OF DECK CONCRETE REPAIRS.

PRESTRESSED GIRDER REPAIR NOTES

IF AFTER UNSOUND CONCRETE REMOVAL ON GIRDERS, MORE THAN 50% SECTION LOSS IS NOTED ON THE PRESTRESSING STRANDS, OR A SEVERED PRESTRESSING STRAND IS ENCOUNTERED, NOTIFY THE ENGINEER PRIOR TO PROCEEDING WITH CONCRETE REPAIR.



TYPICAL SPALL WITH EXPOSED REBAR

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 AT THE BENT.
3. THE DETERIORATED AREAS SHOWN ON OTHER PAGES ARE BASED ON INFRARED SURVEYS, BRIDGE INSPECTION REPORT, AND PARTIAL FIELD REVIEWS OF THE STRUCTURE. AS SUCH, THEY ARE FOR INFORMATIONAL PURPOSES AND SUBJECT TO CHANGE BASED ON CONTINUED DETERIORATION.
4. GENERALLY EXTEND REPAIR AREAS 2"-3" INTO SOUND CONCRETE BEYOND EDGE OF SPALLS AND SQUARE OFF AREAS IN ACCORDANCE WITH DETAILS ON THIS SHEET.

PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

BRIDGE NO. 71

SHEET 1 OF 2

KCA KISINGER CAMPO & ASSOCIATES
4800 SIX FORKS ROAD SUITE 120
RALEIGH, NC 27609
(919) 882-7839

DRAWN BY : JACOB H. DUKE DATE : 03-2018
CHECKED BY : DIEGO A. AGUIRRE DATE : 03-2018
DESIGN ENGINEER OF RECORD : SAMUEL L. CULLUM DATE : 03-2018

NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM

DocuSigned by: Samuel L. Cullum 19C97095C75A467...

8/13/2018 2:06:25 PM PDT

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONCRETE RESTORATION DETAILS

SUPERSTRUCTURE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-32
1			3			TOTAL SHEETS
2			4			69

8/13/2018
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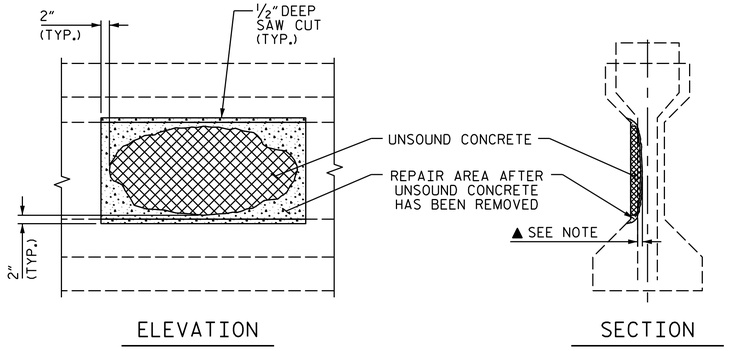
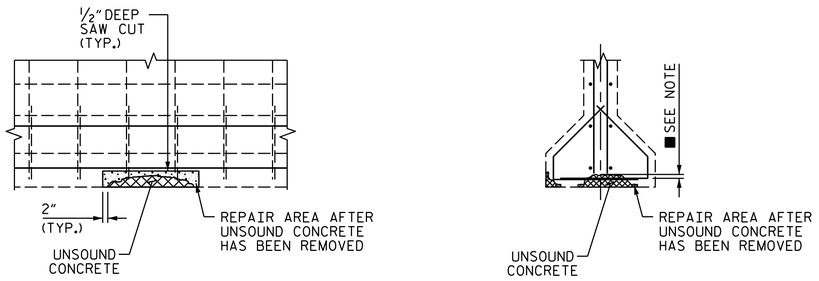
User:jduke



GIRDER WEB REPAIR



GIRDER FLANGE REPAIR

PRESTRESSED GIRDER REPAIR SEQUENCE:

1. SOUND CONCRETE TO DETERMINE EXTENTS OF REPAIR LOCATION (PHOTO REQUIRED).
2. REMOVE SURFACE CONCRETE TO VERIFY THAT SAW CUT DEPTH WILL NOT DAMAGE EXISTING REINFORCING STEEL. SAW CUT AROUND REPAIR AREA TO A NOMINAL DEPTH OF ½".
3. REMOVE CONCRETE WITHIN SAW CUT AREA TO MINIMUM DEPTH ½" DEPTH. IF CONCRETE IS DAMAGED BEYOND THE ORIGINAL SAW CUT, A NEW SAW CUT IS REQUIRED.
4. ▲ IF MORE THAN HALF THE CIRCUMFERENCE OF A REINFORCING BAR IS EXPOSED DURING THIS PROCESS, REMOVE ADDITIONAL CONCRETE TO 1" BEHIND THE BAR. THIS DOES NOT APPLY TO PRESTRESS STRANDS.
5. ■ ALL UNSOUND CONCRETE MUST BE REMOVED. HOWEVER, PRESTRESSED STRAND SHOULD NOT BE DISTURBED UNLESS ABSOLUTELY NECESSARY. USE EXTREME CARE TO NOT DAMAGE STRANDS.
6. CLEAN ALL EXPOSED REINFORCING BARS AND PRESTRESSED STRANDS. FOR BAR WITH MORE THAN 10% SECTION LOSS, SPLICE AND SECURELY TIE SUPPLEMENTAL REINFORCING BARS AS NEEDED. NOTE AND PROVIDE DETAILED DOCUMENTATION, INCLUDING LOCATION AND SEVERITY OF ALL DAMAGE TO PRESTRESSED STRANDS THAT EXCEEDS 10% SECTION LOSS. IF FIVE OR MORE STRANDS ARE DAMAGED, NOTIFY THE ENGINEER PRIOR TO PLACEMENT OF REPAIR MATERIAL.
7. REMOVE ALL LOOSE OR WEAKENED MATERIAL THEN CLEAN THE REPAIR AREA OF DIRT, GREASE, OIL, AND FOREIGN MATTER.
8. PREPARE SURFACE AND PLACE APPROVED MATERIAL ACCORDING TO MANUFACTURER'S RECOMMENDATIONS. MAXIMUM AGGREGATE SIZE FOR REPAIR MATERIAL SHALL NOT EXCEED ⅔ THE MINIMUM REPAIR DEPTH.
9. FOR GIRDER REPAIRS, SEE PROJECT SPECIAL PROVISION FOR REPAIRS TO PRESTRESSED CONCRETE GIRDERS AND SEE SHEETS S-60 THRU S-63 FOR DEFICIENCIES.

NOTES:

PREPACKAGED MATERIAL IS REQUIRED.

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 PATH MATERIAL FOR IMPROVED BOND. USE EXTREME CARE TO NOT DAMAGE STRANDS.

PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

BRIDGE NO. 71

SHEET 2 OF 2

KCA KISINGER CAMPO & ASSOCIATES
4800 SIX FORKS ROAD SUITE 120
RALEIGH, NC 27609
(919) 882-7839

DRAWN BY : JACOB H. DUKE DATE : 03-2018
CHECKED BY : DIEGO A. AGUIRRE DATE : 03-2018
DESIGN ENGINEER OF RECORD : SAMUEL L. CULLUM DATE : 03-2018

NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONCRETE RESTORATION DETAILS

SUPERSTRUCTURE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-33
1			3			TOTAL SHEETS
2			4			69

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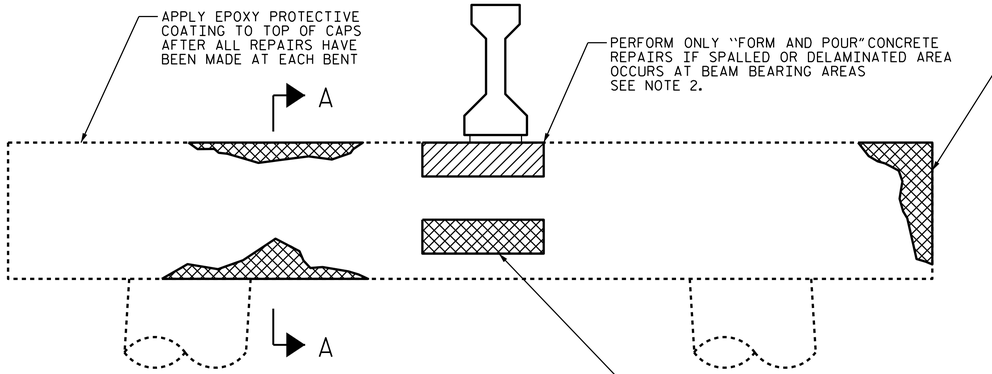
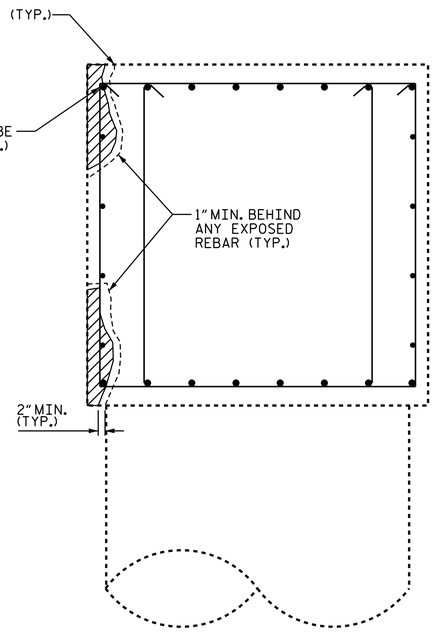
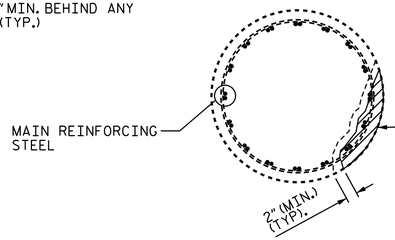
User:jduke



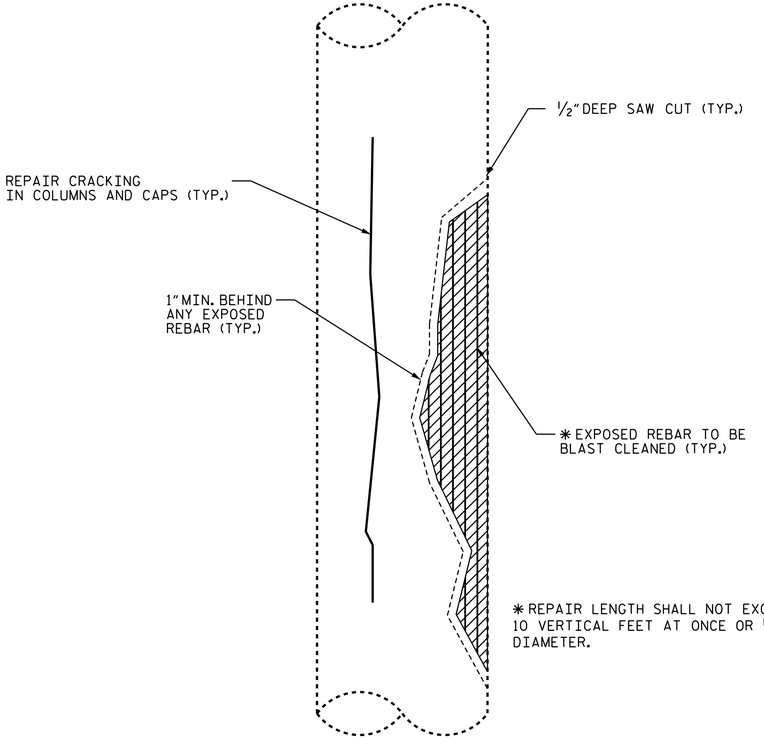
CAP REPAIRS



SECTION A-A



PLAN OF COLUMN



ELEVATION OF COLUMN

CONCRETE REPAIR AREA (FORM AND POUR)

SHOTCRETE REPAIR AREA

EPOXY RESIN INJECTION (ERI)

BENT CAP REPAIRS

COLUMN REPAIRS

NOTES:

1. WORK THIS SHEET WITH THE SUBSTRUCTURE REPAIR SHEETS.
2. 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.
3. COAT ALL SURFACE AREAS OF THE TOP OF THE CAPS INCLUDING CHAMFERS, WITH EPOXY PROTECTIVE COATING. DO NOT COAT THE AREA UNDER THE ELASTOMERIC BEARINGS.
4. FOR EPOXY PROTECTIVE COATING, SEE SPECIAL PROVISIONS.

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DESIGN ENGINEER OF RECORD : SAMUEL L. CULLUM DATE : 03-2018

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User:jduke

NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM
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PROJECT NO. 15BPR.16
BRUNSWICK COUNTY
BRIDGE NO. 71

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONCRETE RESTORATION DETAILS

SUBSTRUCTURE

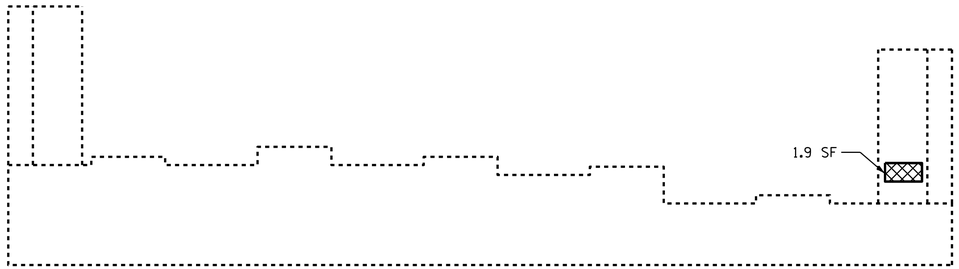
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-34
1			3			TOTAL SHEETS
2			4			69

LEGEND:

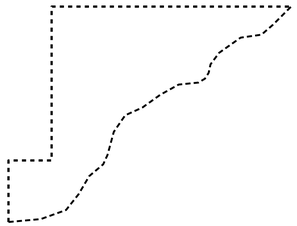
CONCRETE REPAIR AREA (FORM AND POUR)

SHOTCRETE REPAIR AREA

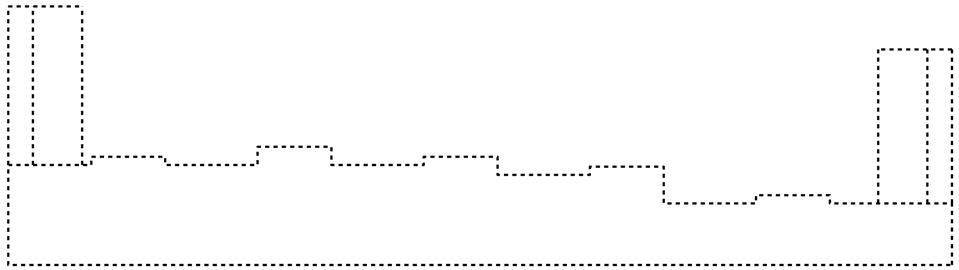
EPOXY RESIN INJECTION (ERI)



END BENT 1



ELEVATION



END BENT 2

ELEVATION

AS-BUILT REPAIR QUANTITY TABLE

END BENT 1 & 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	1.9	1.0		
COLUMN/PILE	N/A	N/A		
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		N/A		

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 - SUBSTRUCTURE" SHEET.

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 EXTERIOR BARS IN THE CAP IS 3" ON THE BOTTOM FACE, 2" ELSEWHERE, AND 3" ON THE COLUMNS PER 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 2" TO 3" ON THE CAP AND FROM 2½" TO 3" ON THE COLUMNS BASED ON VISUAL INSPECTION.

SEE TITLE SHEET FOR PROJECT CARDINAL DIRECTION DESIGNATION.

FOR CONCRETE AND SHOTCRETE REPAIRS, SEE CONCRETE RESTORATION DETAILS - SUBSTRUCTURE SHEET AND SPECIAL PROVISIONS.

* QUANTITIES OF CONCRETE REPAIR AREAS ARE ANTICIPATED UNDER BEARING AREAS. DUE TO LACK OF INFORMATION, ALL AREAS ARE NOT KNOWN. QUANTITY INCLUDES CONTINGENCIES AND ARE ANTICIPATED TO BE SUFFICIENT FOR ACTUAL QUANTITIES ENCOUNTERED. FOR CONCRETE REPAIRS SEE CONCRETE RESTORATION DETAILS.

ALL DEFECT QUANTITIES ON STRUTS AND COLUMN FOOTINGS ARE LISTED WITH THE QUANTITIES FOR THE CAP.

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

COAT ALL SURFACE AREAS OF THE TOP OF THE CAP INCLUDING CHAMFERS, WITH EPOXY PROTECTIVE COATING. DO NOT COAT THE AREA UNDER THE ELASTOMERIC BEARINGS.

FOR EPOXY PROTECTIVE COATING, SEE SPECIAL PROVISIONS.

PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

BRIDGE NO. 71

KCA KISINGER CAMPO & ASSOCIATES
4800 SIX FORKS ROAD SUITE 120
RALEIGH, NC 27609
(919) 882-7839

DRAWN BY : AARON J. MCMILLAN DATE : 03-2018
CHECKED BY : JACOB H. DUKE DATE : 03-2018
DESIGN ENGINEER OF RECORD : SAMUEL L. CULLUM DATE : 03-2018

NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE CONCRETE REPAIRS END BENTS 1 & 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-35
1			3			TOTAL SHEETS
2			4			69

8/13/2018
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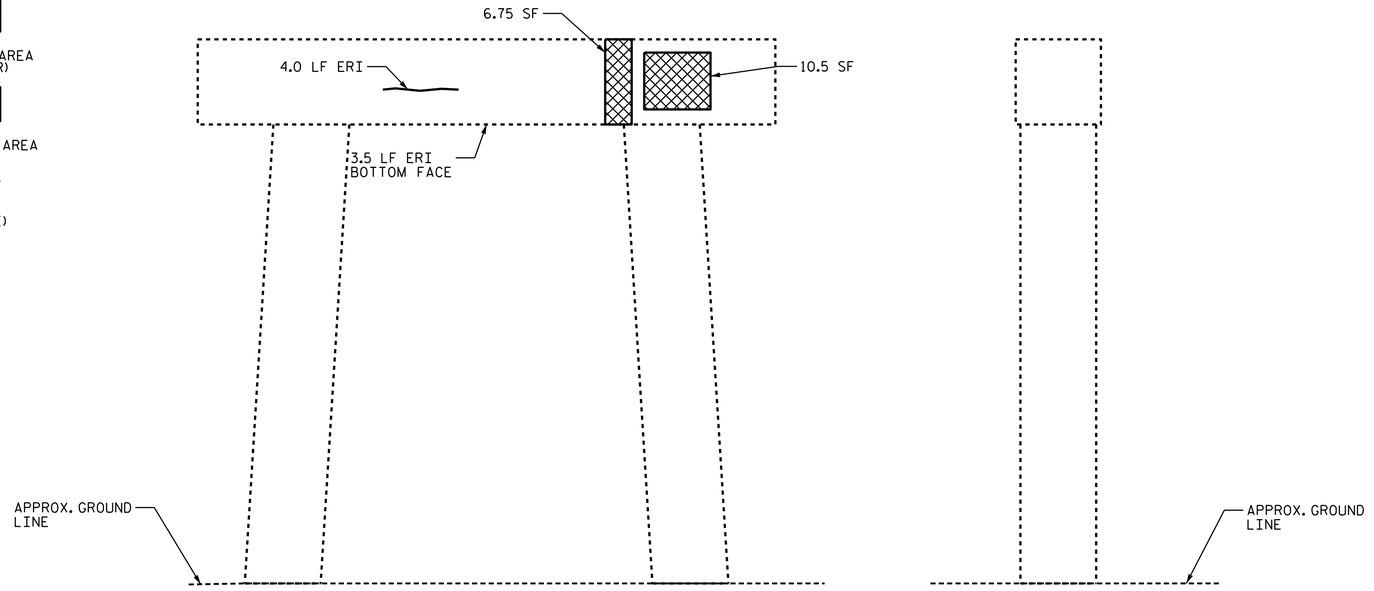
User:jduke

LEGEND:

CONCRETE REPAIR AREA (FORM AND POUR)

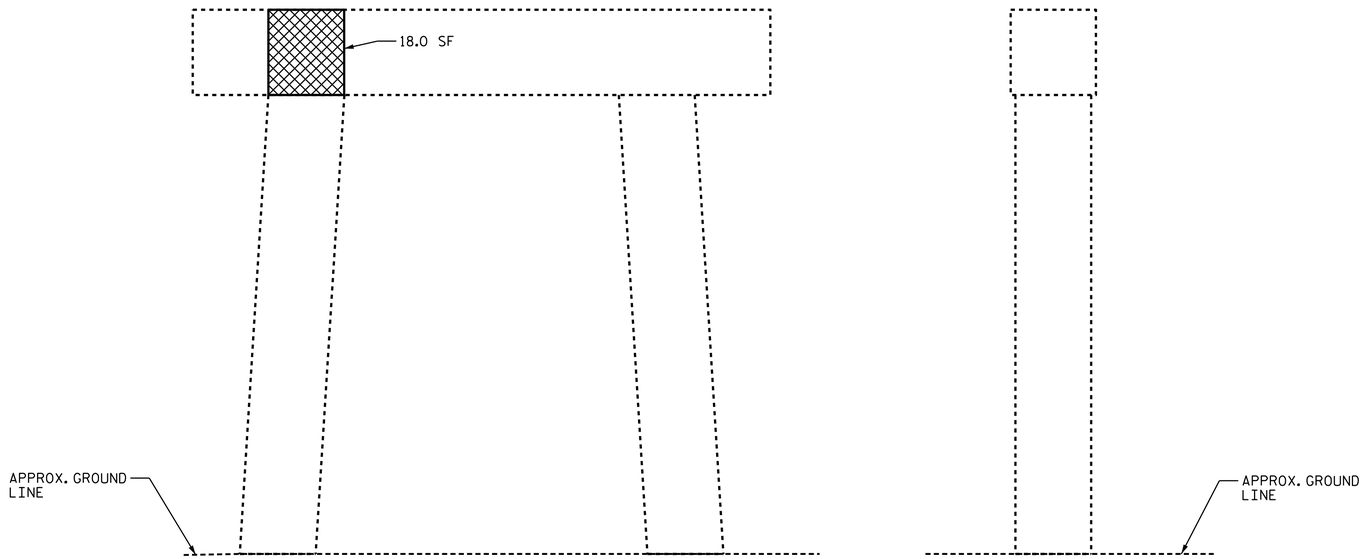
SHOTCRETE REPAIR AREA

EPOXY RESIN INJECTION (ERI)



WEST ELEVATION

SOUTH FACE



EAST ELEVATION

NORTH FACE

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	35.3	17.7		
COLUMN/PILE	-	-		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	5.3	2.6		
EPOXY RESIN INJECTION		LIN. FT.		LIN. FT.
CAP		7.5		
COLUMN/PILE		-		

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 - SUBSTRUCTURE" SHEET.

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SEE TITLE SHEET FOR PROJECT CARDINAL DIRECTION DESIGNATION.

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FOR EPOXY PROTECTIVE COATING, SEE SPECIAL PROVISIONS.

PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

BRIDGE NO. 71

KCA KISINGER CAMPO & ASSOCIATES
4800 SIX FORKS ROAD SUITE 120
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DRAWN BY : AARON J. MCMILLAN DATE : 03-2018
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NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM

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DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE CONCRETE REPAIRS BENT 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-36
1			3			TOTAL SHEETS
2			4			69

8/13/2018
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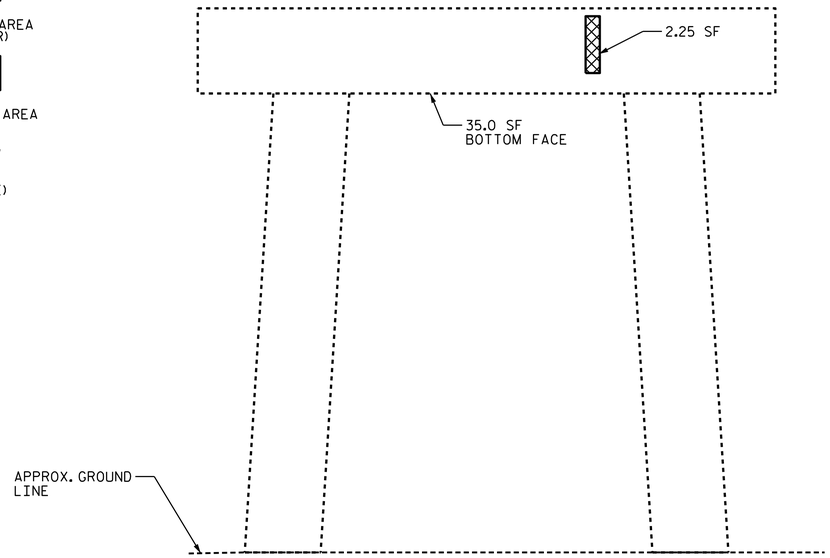
User:jduke

LEGEND:

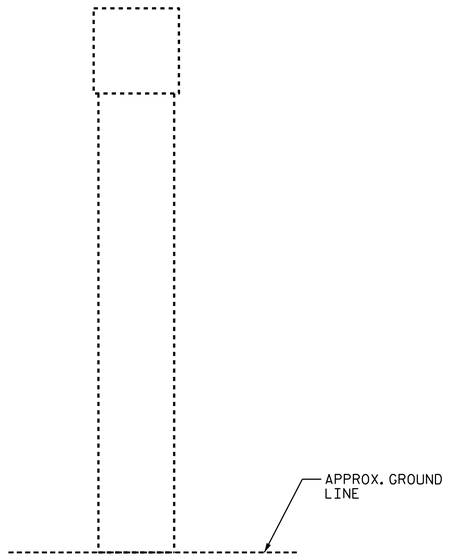
CONCRETE REPAIR AREA (FORM AND POUR)

SHOTCRETE REPAIR AREA

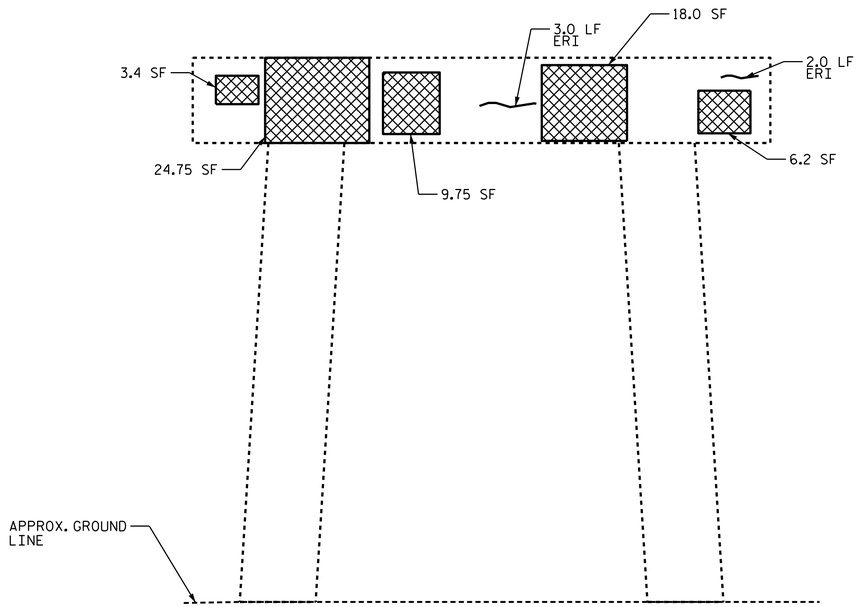
EPOXY RESIN INJECTION (ERI)



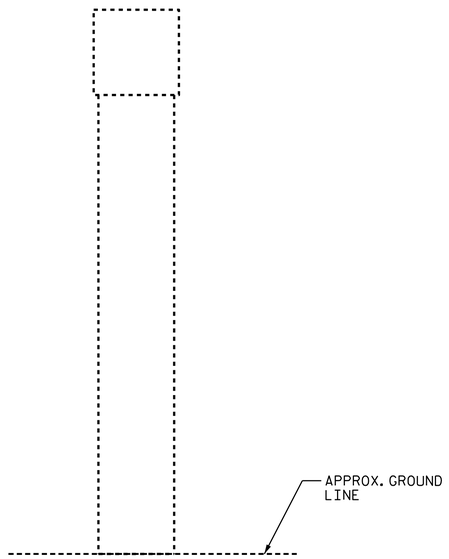
WEST ELEVATION



SOUTH FACE



EAST ELEVATION



NORTH FACE

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	99.4	49.7		
COLUMN/PILE	-	-		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	14.9	7.5		
EPOXY RESIN INJECTION		LIN. FT.		LIN. FT.
CAP		5.0		
COLUMN/PILE		-		

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 - SUBSTRUCTURE" SHEET.

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 EXTERIOR BARS IN THE CAP IS 3" ON THE BOTTOM FACE, 2" ELSEWHERE, AND 3" ON THE COLUMNS PER 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 2" TO 3" ON THE CAP AND FROM 2½" TO 3" ON THE COLUMNS BASED ON VISUAL INSPECTION.

SEE TITLE SHEET FOR PROJECT CARDINAL DIRECTION DESIGNATION.

FOR CONCRETE AND SHOTCRETE REPAIRS, SEE CONCRETE RESTORATION DETAILS - SUBSTRUCTURE SHEET AND SPECIAL PROVISIONS.

* QUANTITIES OF CONCRETE REPAIR AREAS ARE ANTICIPATED UNDER BEARING AREAS. DUE TO LACK OF INFORMATION, ALL AREAS ARE NOT KNOWN. QUANTITY INCLUDES CONTINGENCIES AND ARE ANTICIPATED TO BE SUFFICIENT FOR ACTUAL QUANTITIES ENCOUNTERED. FOR CONCRETE REPAIRS SEE CONCRETE RESTORATION DETAILS.

ALL DEFECT QUANTITIES ON STRUTS AND COLUMN FOOTINGS ARE LISTED WITH THE QUANTITIES FOR THE CAP.

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

COAT ALL SURFACE AREAS OF THE TOP OF THE CAP INCLUDING CHAMFERS, WITH EPOXY PROTECTIVE COATING. DO NOT COAT THE AREA UNDER THE ELASTOMERIC BEARINGS.

FOR EPOXY PROTECTIVE COATING, SEE SPECIAL PROVISIONS.

PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

BRIDGE NO. 71

KISINGER CAMPO & ASSOCIATES
4800 SIX FORKS ROAD SUITE 120
RALEIGH, NC 27609
(919) 882-7839

DRAWN BY : AARON J. MCMILLAN DATE : 03-2018
CHECKED BY : JACOB H. DUKE DATE : 03-2018
DESIGN ENGINEER OF RECORD : SAMUEL L. CULLUM DATE : 03-2018

NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM

DocuSigned by: Samuel L. Cullum 19C97095C75A467...

8/13/2018 2:06:25 PM PDT

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE CONCRETE REPAIRS BENT 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-37
1			3			TOTAL SHEETS
2			4			69

8/13/2018
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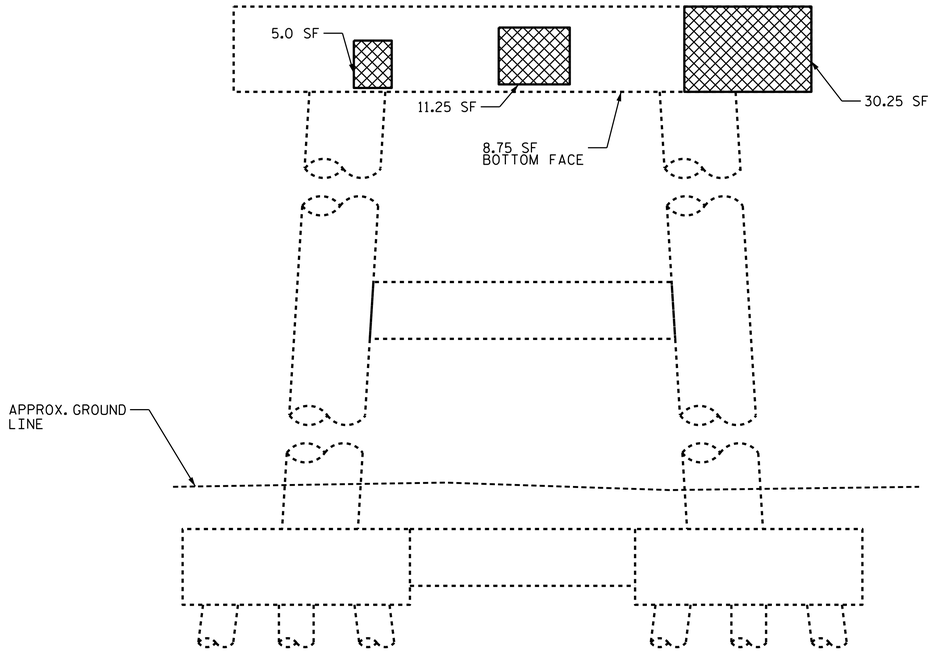
User:jduke

LEGEND:

CONCRETE REPAIR AREA (FORM AND POUR)

SHOTCRETE REPAIR AREA

EPOXY RESIN INJECTION (ERI)



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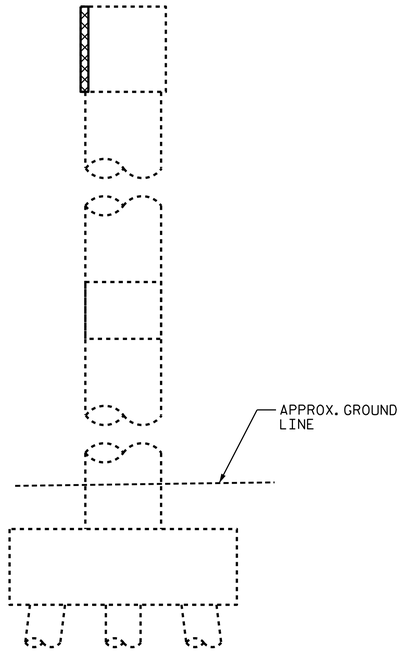
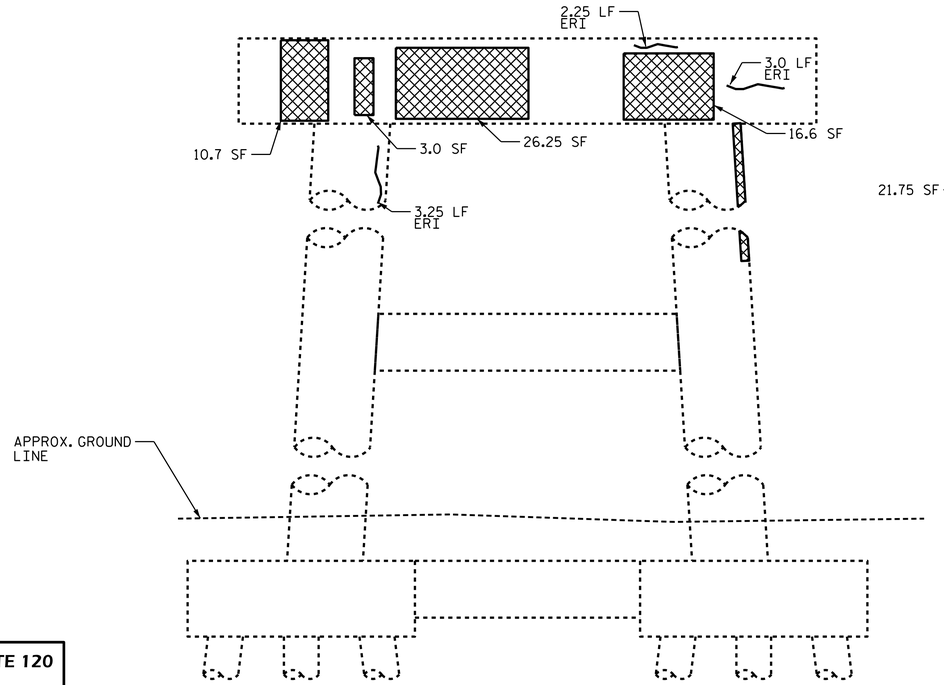


SOUTH FACE



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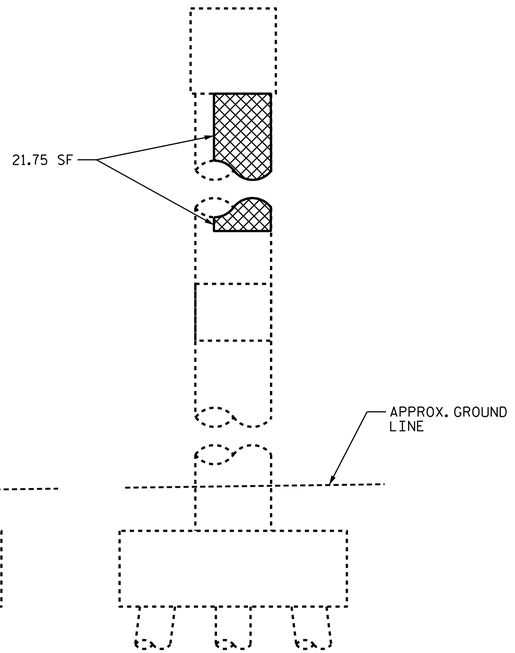

NORTH FACE

AS-BUILT REPAIR QUANTITY TABLE

BENT 3	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	111.8	55.9		
COLUMN/PILE	21.8	10.9		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	16.8	8.4		
EPOXY RESIN INJECTION		LIN. FT.		LIN. FT.
CAP		5.3		
COLUMN/PILE		3.3		

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 - SUBSTRUCTURE" SHEET.

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 EXTERIOR BARS IN THE CAP IS 3" ON THE BOTTOM FACE, 2" ELSEWHERE, AND 3" ON THE COLUMNS PER EXISTING BRIDGE PLANS. ACTUAL CONCRETE COVER SHALL BE DETERMINED BY THE CONTRACTOR AND PRESENTED TO THE ENGINEER PRIOR TO BEGINNING SCARIFICATION.

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FOR CONCRETE AND SHOTCRETE REPAIRS, SEE CONCRETE RESTORATION DETAILS - SUBSTRUCTURE SHEET AND SPECIAL PROVISIONS.

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

COAT ALL SURFACE AREAS OF THE TOP OF THE CAP INCLUDING CHAMFERS, WITH EPOXY PROTECTIVE COATING. DO NOT COAT THE AREA UNDER THE ELASTOMERIC BEARINGS.

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PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

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DRAWN BY : AARON J. MCMILLAN DATE : 03-2018
CHECKED BY : JACOB H. DUKE DATE : 03-2018
DESIGN ENGINEER OF RECORD : SAMUEL L. CULLUM DATE : 03-2018

NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM

DocuSigned by: Samuel L. Cullum 19C97095C75A457...

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE CONCRETE REPAIRS BENT 3

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-38
1			3			TOTAL SHEETS
2			4			69

8/13/2018
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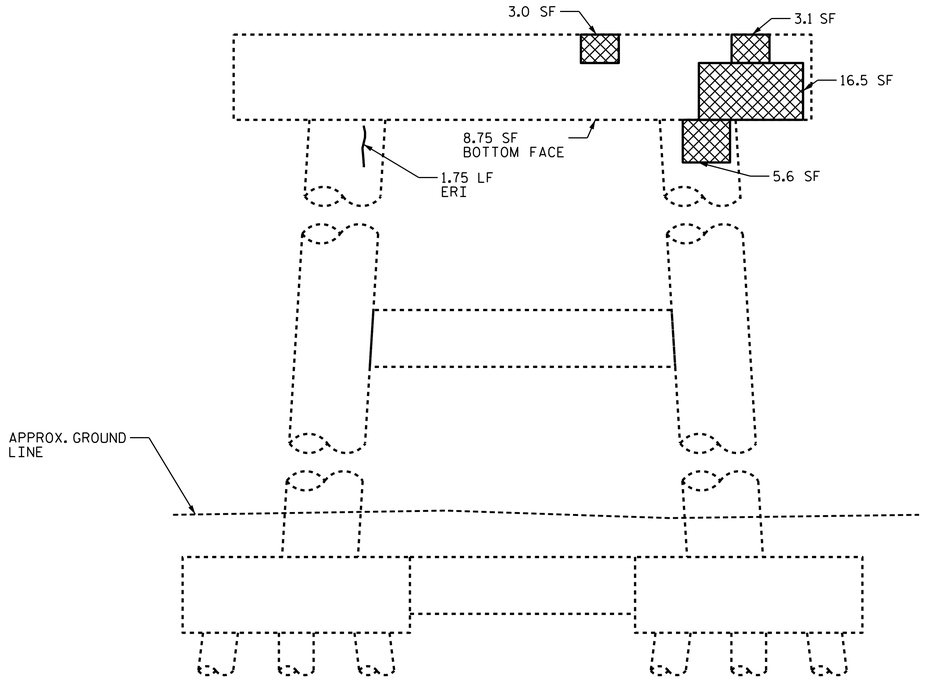
User:jduke

LEGEND:

CONCRETE REPAIR AREA (FORM AND POUR)

SHOTCRETE REPAIR AREA

EPOXY RESIN INJECTION (ERI)



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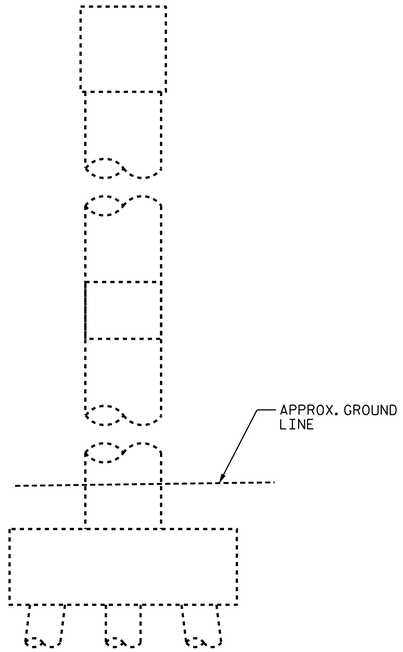
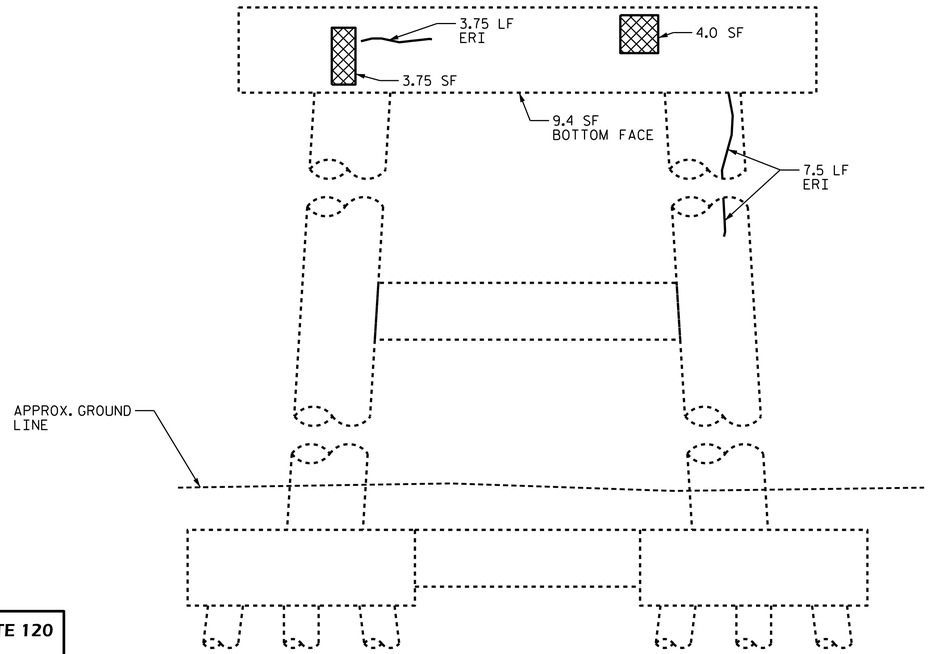
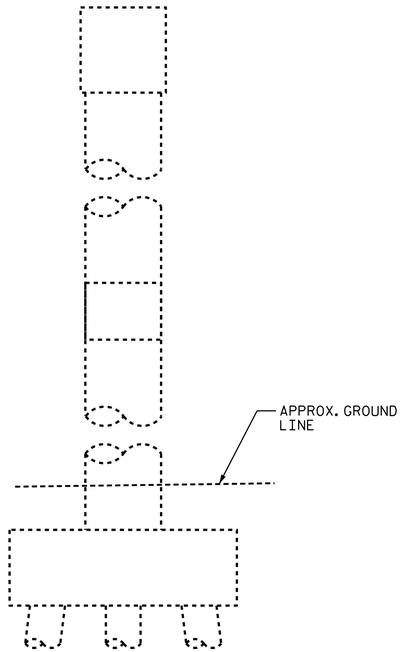


SOUTH FACE



EAST ELEVATION



NORTH FACE

AS-BUILT REPAIR QUANTITY TABLE

BENT 4	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	39.1	19.6		
COLUMN/PILE	5.6	2.8		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	5.9	2.9		
EPOXY RESIN INJECTION		LIN. FT.		LIN. FT.
CAP		3.8		
COLUMN/PILE		9.3		

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 - SUBSTRUCTURE" SHEET.

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 EXTERIOR BARS IN THE CAP IS 3" ON THE BOTTOM FACE, 2" ELSEWHERE, AND 3" ON THE COLUMNS PER EXISTING BRIDGE PLANS. ACTUAL CONCRETE COVER SHALL BE DETERMINED BY THE CONTRACTOR AND PRESENTED TO THE ENGINEER PRIOR TO BEGINNING SCARIFICATION.

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SEE TITLE SHEET FOR PROJECT CARDINAL DIRECTION DESIGNATION.

FOR CONCRETE AND SHOTCRETE REPAIRS, SEE CONCRETE RESTORATION DETAILS - SUBSTRUCTURE SHEET AND SPECIAL PROVISIONS.

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

COAT ALL SURFACE AREAS OF THE TOP OF THE CAP INCLUDING CHAMFERS, WITH EPOXY PROTECTIVE COATING. DO NOT COAT THE AREA UNDER THE ELASTOMERIC BEARINGS.

FOR EPOXY PROTECTIVE COATING, SEE SPECIAL PROVISIONS.

PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

BRIDGE NO. 71

KCA KISINGER CAMPO & ASSOCIATES
4800 SIX FORKS ROAD SUITE 120
RALEIGH, NC 27609
(919) 882-7839

DRAWN BY : AARON J. MCMILLAN DATE : 03-2018
CHECKED BY : JACOB H. DUKE DATE : 03-2018
DESIGN ENGINEER OF RECORD : SAMUEL L. CULLUM DATE : 03-2018

NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM

DocuSigned by: Samuel L. Cullum 19C97095C75A467...

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE CONCRETE REPAIRS BENT 4

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-39
1			3			TOTAL SHEETS
2			4			69

8/13/2018
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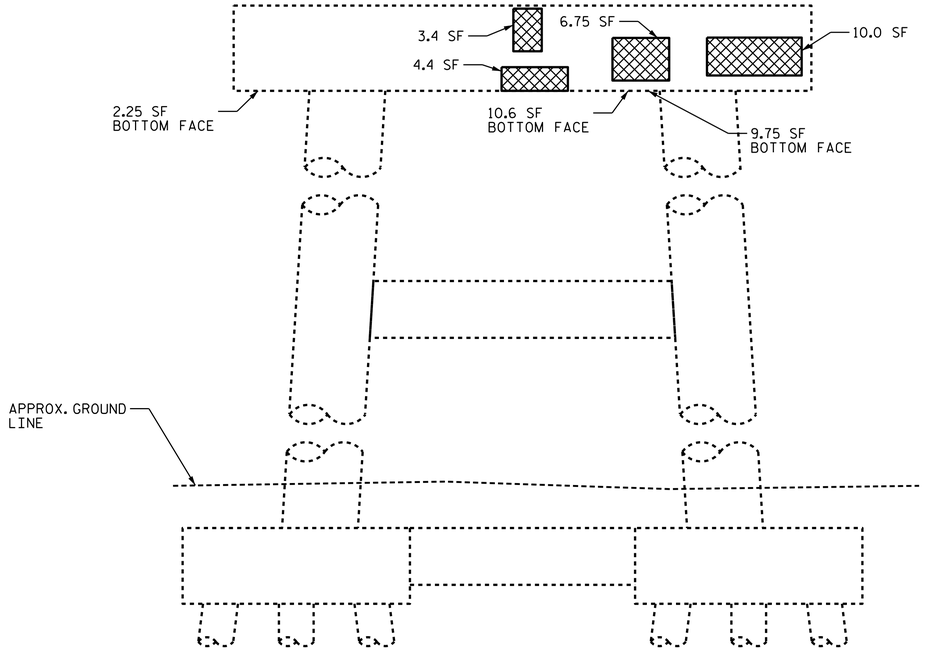
User:jduke

LEGEND:

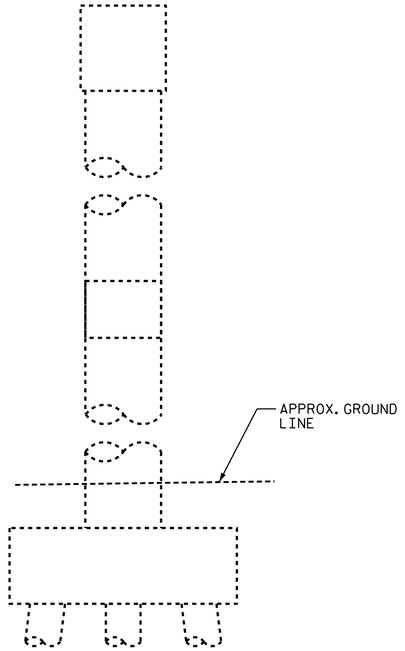
CONCRETE REPAIR AREA (FORM AND POUR)

SHOTCRETE REPAIR AREA

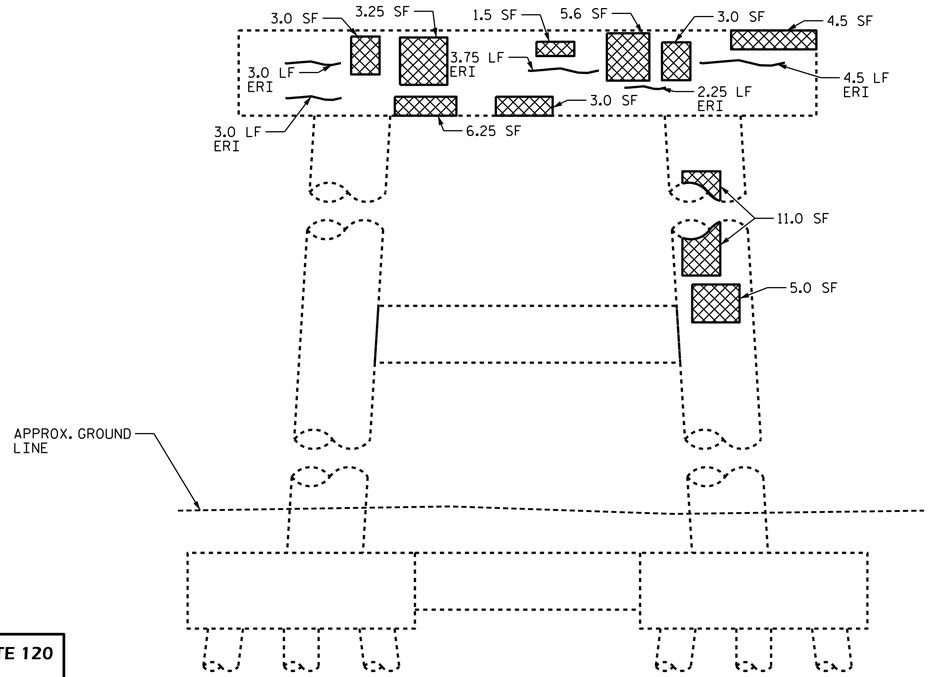
EPOXY RESIN INJECTION (ERI)



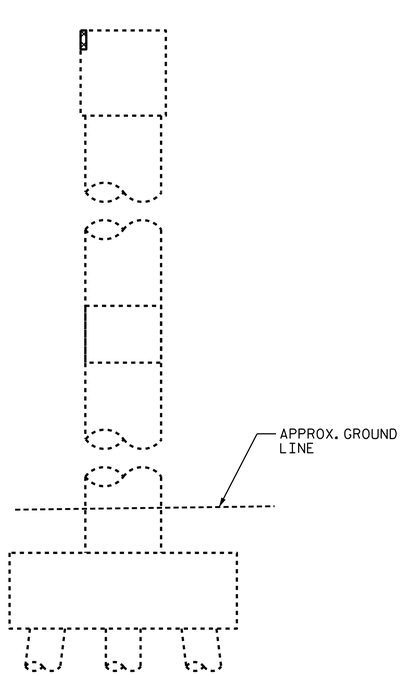
WEST ELEVATION



SOUTH FACE



EAST ELEVATION



NORTH FACE

AS-BUILT REPAIR QUANTITY TABLE

BENT 5	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	75.0	37.5		
COLUMN/PILE	16.0	8.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	11.3	5.6		
EPOXY RESIN INJECTION		LIN. FT.		LIN. FT.
CAP		16.5		
COLUMN/PILE		-		

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 - SUBSTRUCTURE" SHEET.

NOTES:

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CONCRETE COVER FOR EXTERIOR BARS IN THE CAP IS 3" ON THE BOTTOM FACE, 2" ELSEWHERE, AND 3" ON THE COLUMNS PER EXISTING BRIDGE PLANS. ACTUAL CONCRETE COVER SHALL BE DETERMINED BY THE CONTRACTOR AND PRESENTED TO THE ENGINEER PRIOR TO BEGINNING SCARIFICATION.

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SEE TITLE SHEET FOR PROJECT CARDINAL DIRECTION DESIGNATION.

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COAT ALL SURFACE AREAS OF THE TOP OF THE CAP INCLUDING CHAMFERS, WITH EPOXY PROTECTIVE COATING. DO NOT COAT THE AREA UNDER THE ELASTOMERIC BEARINGS.

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PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

BRIDGE NO. 71

KCA KISINGER CAMPO & ASSOCIATES
4800 SIX FORKS ROAD SUITE 120
RALEIGH, NC 27609
(919) 882-7839

DRAWN BY : AARON J. MCMILLAN DATE : 03-2018
CHECKED BY : JACOB H. DUKE DATE : 03-2018
DESIGN ENGINEER OF RECORD : SAMUEL L. CULLUM DATE : 03-2018

NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM

DocuSigned by: Samuel L. Cullum 19C97095C75A467...

8/13/2018 2:06:25 PM PDT

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE CONCRETE REPAIRS BENT 5

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REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			69

8/13/2018
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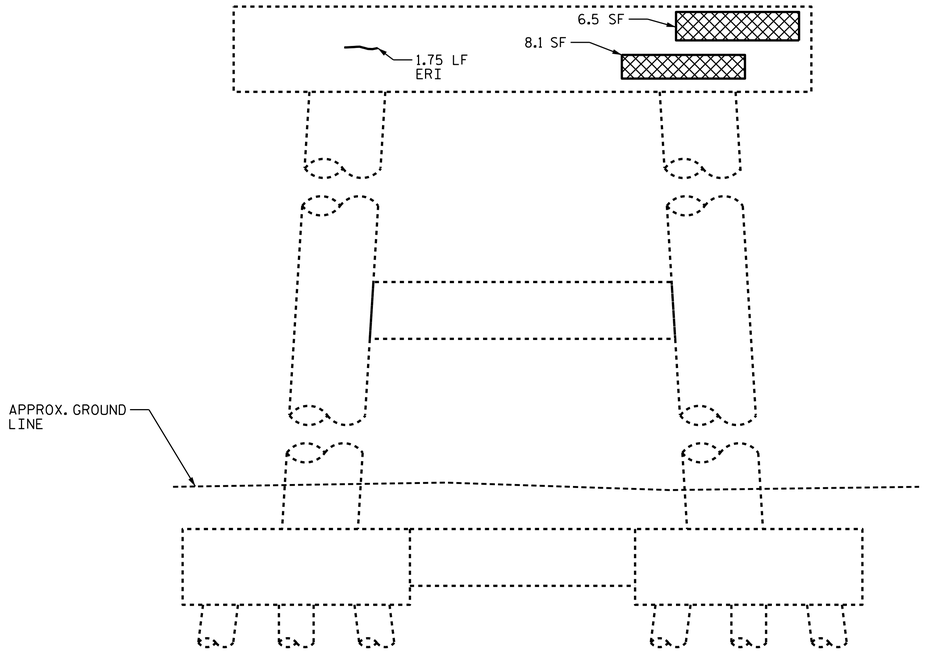
User:jduke

LEGEND:

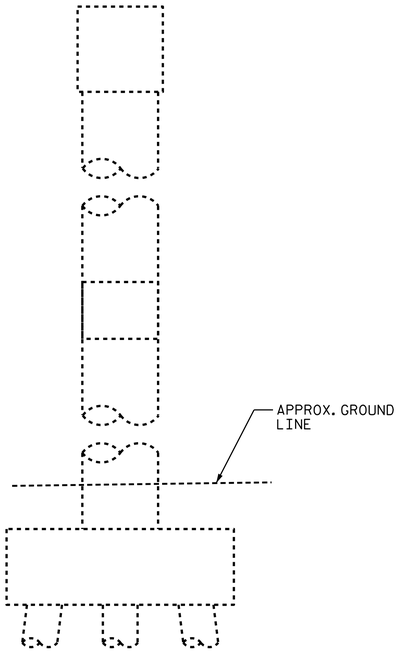
CONCRETE REPAIR AREA (FORM AND POUR)

SHOTCRETE REPAIR AREA

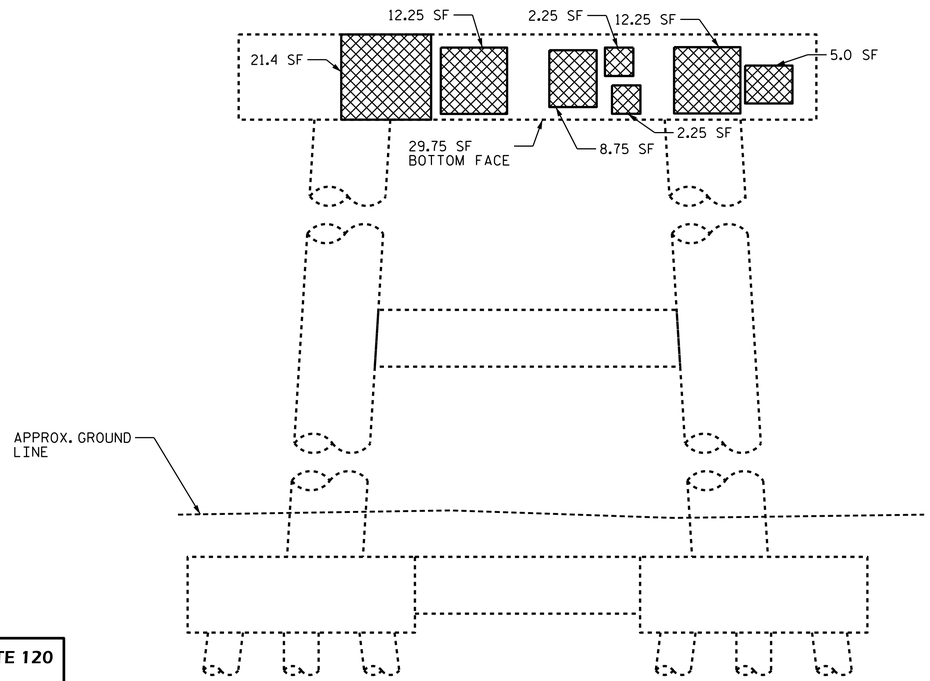
EPOXY RESIN INJECTION (ERI)



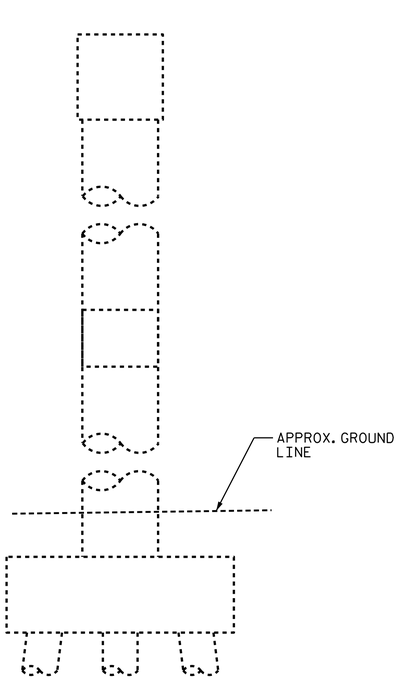
WEST ELEVATION



SOUTH FACE



EAST ELEVATION



NORTH FACE

AS-BUILT REPAIR QUANTITY TABLE

BENT 6	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	108.5	54.3		
COLUMN/PILE	-	-		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	16.3	8.1		
EPOXY RESIN INJECTION		LIN. FT.		LIN. FT.
CAP		1.8		
COLUMN/PILE		-		

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 - SUBSTRUCTURE" SHEET.

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DocuSigned by: Samuel L. Cullum 19C97095C75A467...

8/13/2018 2:06:25 PM PDT

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE CONCRETE REPAIRS BENT 6

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-41
1			3			TOTAL SHEETS
2			4			69

8/13/2018
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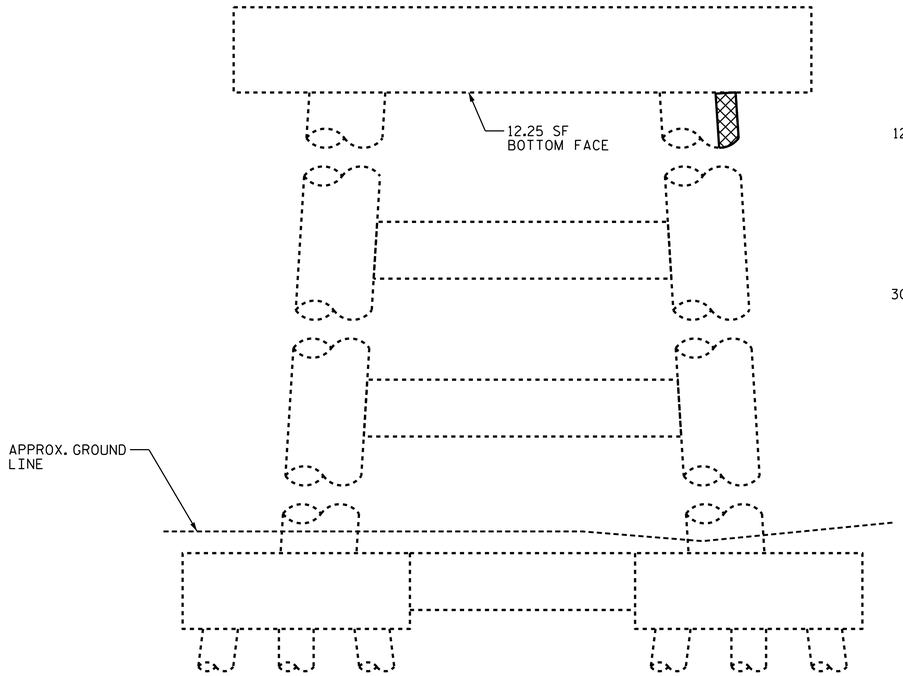
User:jduke

LEGEND:

CONCRETE REPAIR AREA (FORM AND POUR)

SHOTCRETE REPAIR AREA

EPOXY RESIN INJECTION (ERI)



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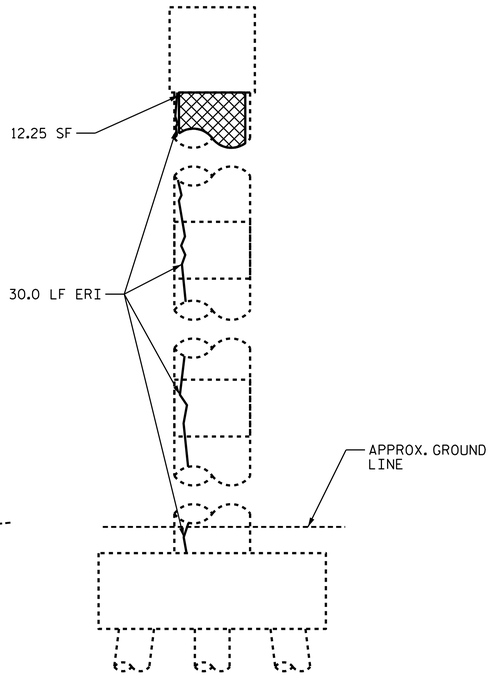
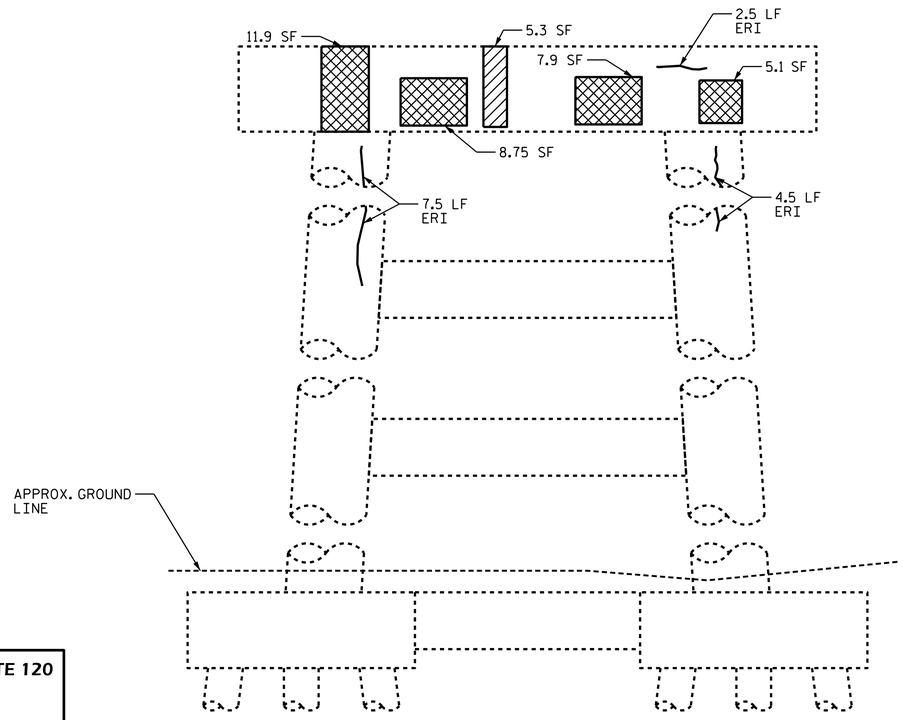
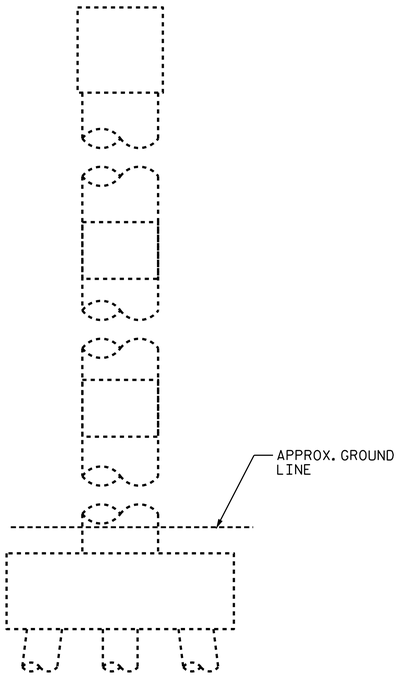


SOUTH FACE



EAST ELEVATION



NORTH FACE

AS-BUILT REPAIR QUANTITY TABLE

BENT 7	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	45.9	23.0		
COLUMN/PILE	12.3	6.1		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	6.9	3.4		
EPOXY RESIN INJECTION		LIN. FT.		LIN. FT.
CAP		2.5		
COLUMN/PILE		42.0		

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 - SUBSTRUCTURE" SHEET.

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 EXTERIOR BARS IN THE CAP IS 3" ON THE BOTTOM FACE, 2" ELSEWHERE, AND 3" ON THE COLUMNS PER 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 2" TO 3" ON THE CAP AND FROM 2½" TO 3" ON THE COLUMNS BASED ON VISUAL INSPECTION.

SEE TITLE SHEET FOR PROJECT CARDINAL DIRECTION DESIGNATION.

FOR CONCRETE AND SHOTCRETE REPAIRS, SEE CONCRETE RESTORATION DETAILS - SUBSTRUCTURE SHEET AND SPECIAL PROVISIONS.

* QUANTITIES OF CONCRETE REPAIR AREAS ARE ANTICIPATED UNDER BEARING AREAS. DUE TO LACK OF INFORMATION, ALL AREAS ARE NOT KNOWN. QUANTITY INCLUDES CONTINGENCIES AND ARE ANTICIPATED TO BE SUFFICIENT FOR ACTUAL QUANTITIES ENCOUNTERED. FOR CONCRETE REPAIRS SEE CONCRETE RESTORATION DETAILS.

ALL DEFECT QUANTITIES ON STRUTS AND COLUMN FOOTINGS ARE LISTED WITH THE QUANTITIES FOR THE CAP.

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

COAT ALL SURFACE AREAS OF THE TOP OF THE CAP INCLUDING CHAMFERS, WITH EPOXY PROTECTIVE COATING. DO NOT COAT THE AREA UNDER THE ELASTOMERIC BEARINGS.

FOR EPOXY PROTECTIVE COATING, SEE SPECIAL PROVISIONS.

PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

BRIDGE NO. 71

KISINGER CAMPO & ASSOCIATES
4800 SIX FORKS ROAD SUITE 120
RALEIGH, NC 27609
(919) 882-7839

DRAWN BY : AARON J. MCMILLAN DATE : 03-2018
CHECKED BY : JACOB H. DUKE DATE : 03-2018
DESIGN ENGINEER OF RECORD : SAMUEL L. CULLUM DATE : 03-2018

NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM

DocuSigned by: Samuel L. Cullum 19C97095C75A467...

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE CONCRETE REPAIRS BENT 7

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-42
1			3			TOTAL SHEETS
2			4			69

8/13/2018
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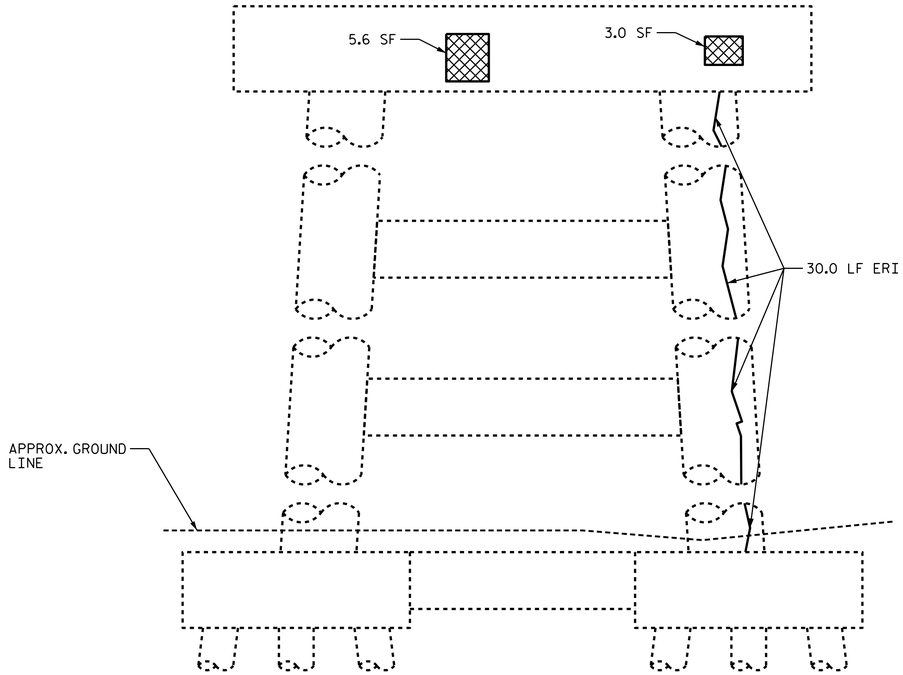
User:jduke

LEGEND:

CONCRETE REPAIR AREA (FORM AND POUR)

SHOTCRETE REPAIR AREA

EPOXY RESIN INJECTION (ERI)



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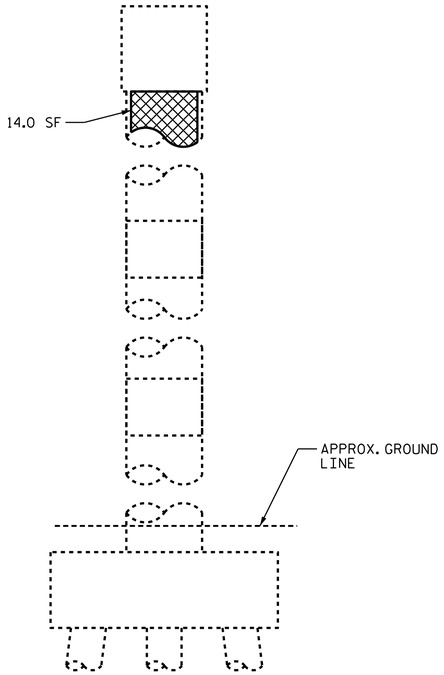
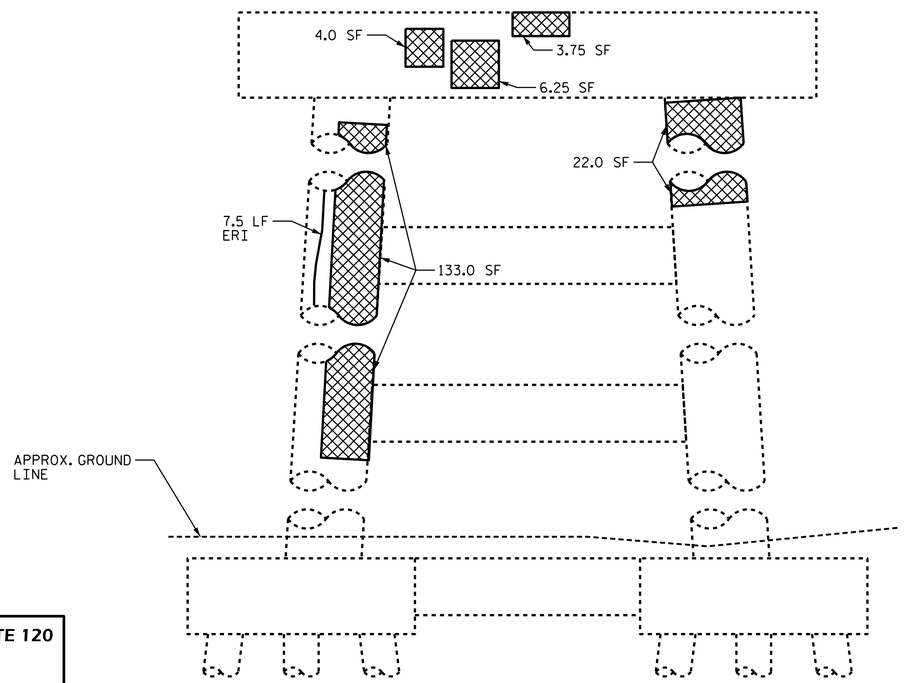
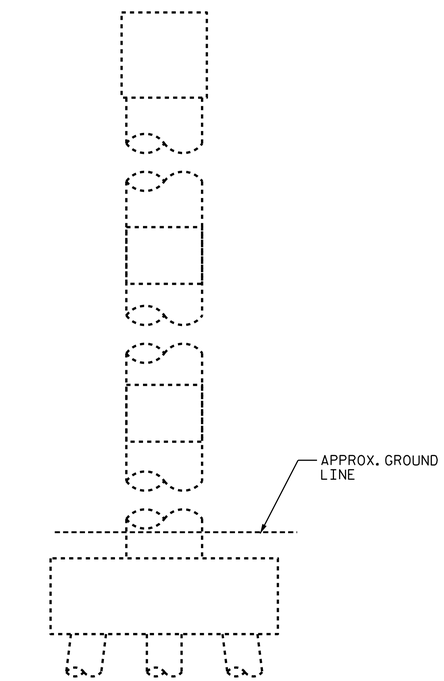


SOUTH FACE



EAST ELEVATION



NORTH FACE

AS-BUILT REPAIR QUANTITY TABLE

BENT 8	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	22.6	11.3		
COLUMN/PILE	169.0	84.5		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	3.4	1.7		
EPOXY RESIN INJECTION		LIN. FT.		LIN. FT.
CAP		-		
COLUMN/PILE		37.5		

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 - SUBSTRUCTURE" SHEET.

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 EXTERIOR BARS IN THE CAP IS 3" ON THE BOTTOM FACE, 2" ELSEWHERE, AND 3" ON THE COLUMNS PER 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 2" TO 3" ON THE CAP AND FROM 2½" TO 3" ON THE COLUMNS BASED ON VISUAL INSPECTION.

SEE TITLE SHEET FOR PROJECT CARDINAL DIRECTION DESIGNATION.

FOR CONCRETE AND SHOTCRETE REPAIRS, SEE CONCRETE RESTORATION DETAILS - SUBSTRUCTURE SHEET AND SPECIAL PROVISIONS.

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

COAT ALL SURFACE AREAS OF THE TOP OF THE CAP INCLUDING CHAMFERS, WITH EPOXY PROTECTIVE COATING. DO NOT COAT THE AREA UNDER THE ELASTOMERIC BEARINGS.

FOR EPOXY PROTECTIVE COATING, SEE SPECIAL PROVISIONS.

PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

BRIDGE NO. 71

KCA KISINGER CAMPO & ASSOCIATES
4800 SIX FORKS ROAD SUITE 120
RALEIGH, NC 27609
(919) 882-7839

DRAWN BY : AARON J. MCMILLAN DATE : 03-2018
CHECKED BY : JACOB H. DUKE DATE : 03-2018
DESIGN ENGINEER OF RECORD : SAMUEL L. CULLUM DATE : 03-2018

NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM

DocuSigned by: Samuel L. Cullum 19C97095C75A457...

8/13/2018 2:06:25 PM PDT

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE CONCRETE REPAIRS BENT 8

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REVISIONS							SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:		S-43
1			3				TOTAL SHEETS
2			4				69

8/13/2018
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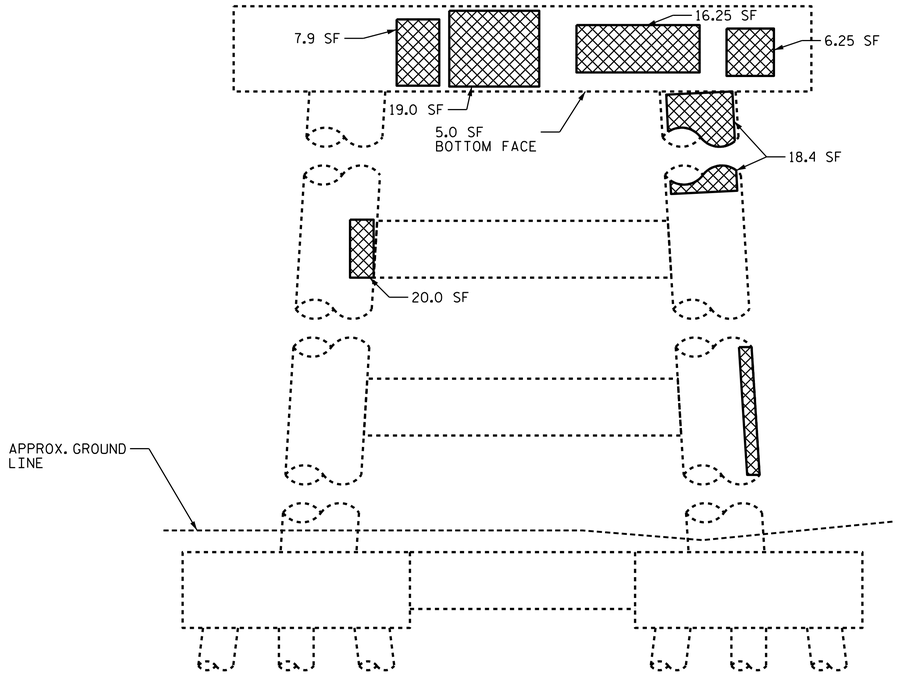
User:jduke

LEGEND:

CONCRETE REPAIR AREA (FORM AND POUR)

SHOTCRETE REPAIR AREA

EPOXY RESIN INJECTION (ERI)



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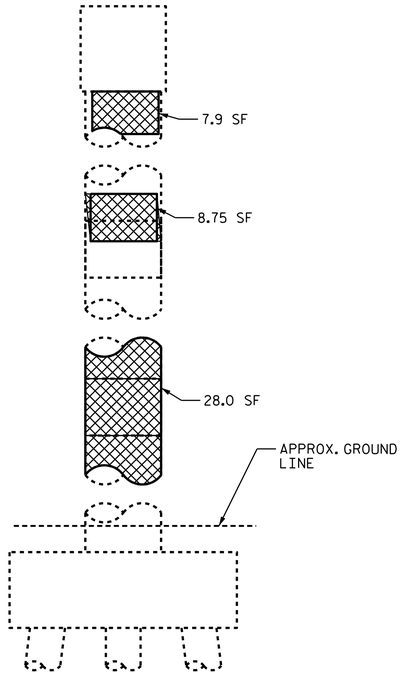
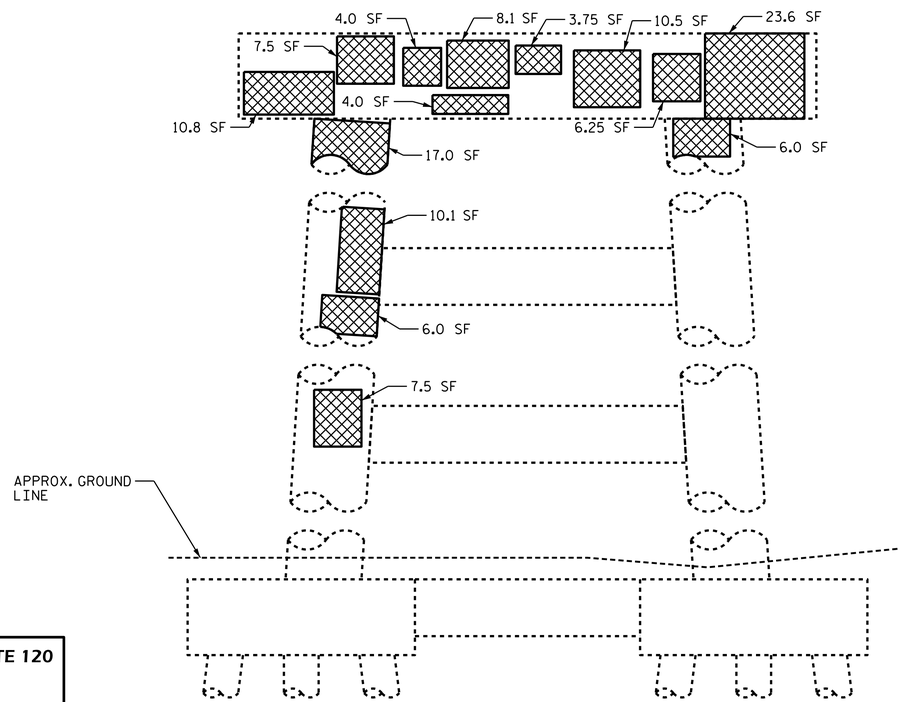
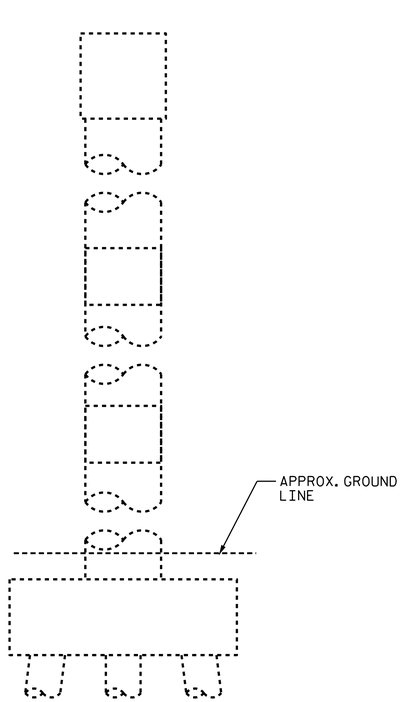


SOUTH FACE



EAST ELEVATION



NORTH FACE

AS-BUILT REPAIR QUANTITY TABLE

BENT 9	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	132.9	66.5		
COLUMN/PILE	123.7	61.8		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	19.9	10.0		
EPOXY RESIN INJECTION		LIN. FT.		LIN. FT.
CAP		-		
COLUMN/PILE		-		

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 - SUBSTRUCTURE" SHEET.

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.

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SEE TITLE SHEET FOR PROJECT CARDINAL DIRECTION DESIGNATION.

FOR CONCRETE AND SHOTCRETE REPAIRS, SEE CONCRETE RESTORATION DETAILS - SUBSTRUCTURE SHEET AND SPECIAL PROVISIONS.

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FOR EPOXY PROTECTIVE COATING, SEE SPECIAL PROVISIONS.

PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

BRIDGE NO. 71

KCA KISINGER CAMPO & ASSOCIATES
4800 SIX FORKS ROAD SUITE 120
RALEIGH, NC 27609
(919) 882-7839

DRAWN BY : AARON J. MCMILLAN DATE : 03-2018
CHECKED BY : JACOB H. DUKE DATE : 03-2018
DESIGN ENGINEER OF RECORD : SAMUEL L. CULLUM DATE : 03-2018

8/13/2018
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User:jduke

NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE CONCRETE REPAIRS BENT 9

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-44
1			3			TOTAL SHEETS
2			4			69

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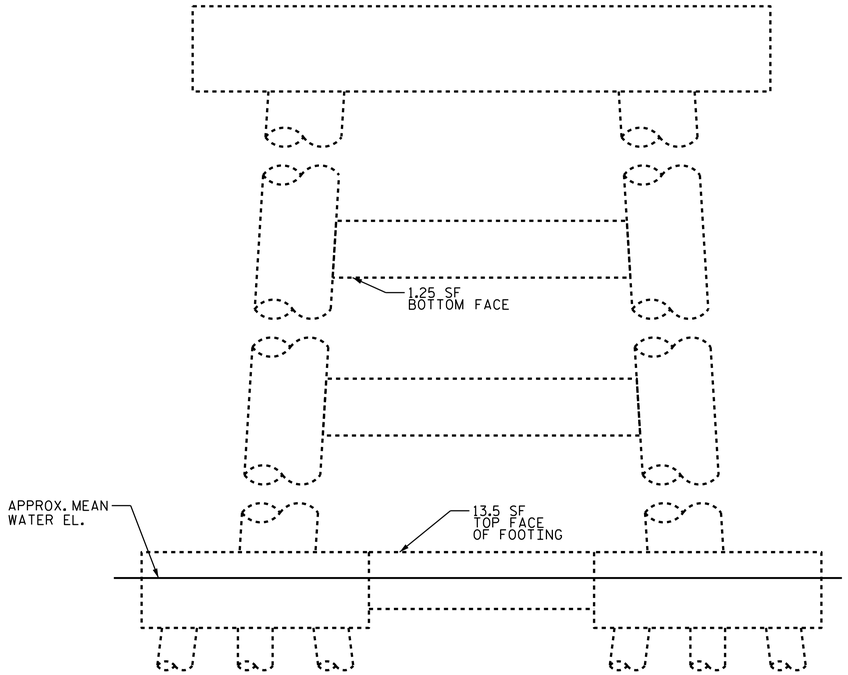
LEGEND:

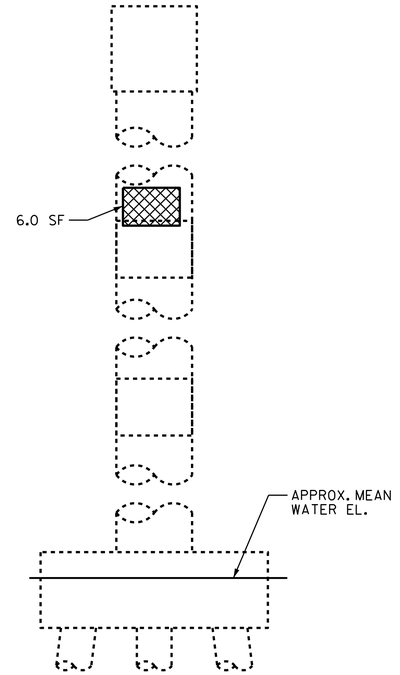
CONCRETE REPAIR AREA (FORM AND POUR)

SHOTCRETE REPAIR AREA

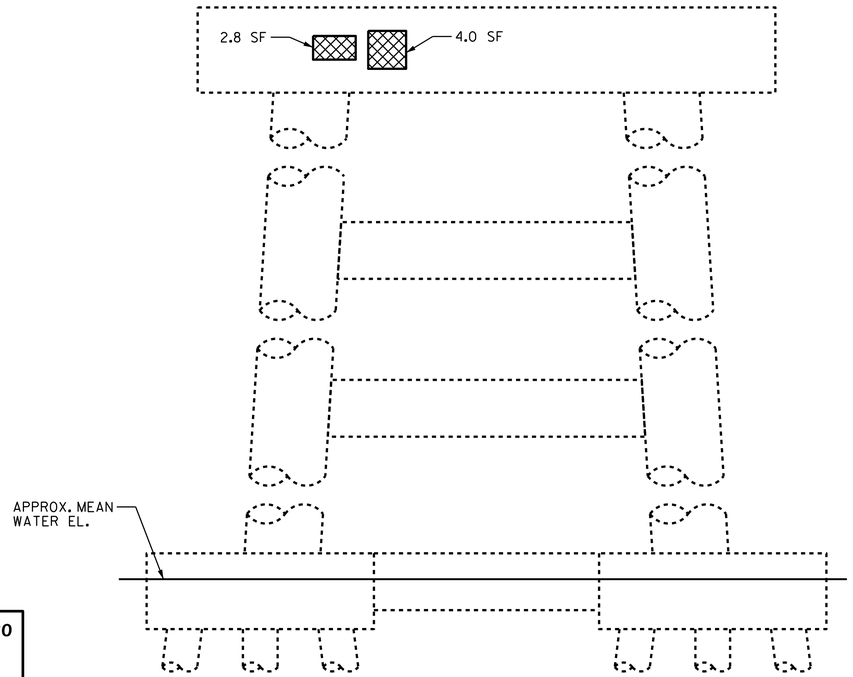
EPOXY RESIN INJECTION (ERI)



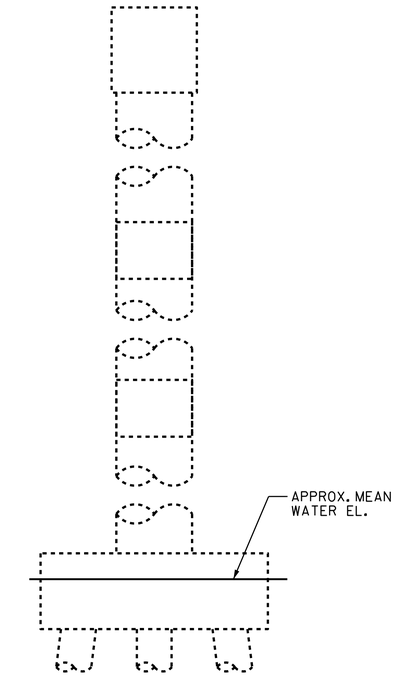
WEST ELEVATION



SOUTH FACE



EAST ELEVATION



NORTH FACE

AS-BUILT REPAIR QUANTITY TABLE

BENT 10	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	21.6	10.8		
COLUMN/PILE	6.0	3.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	13.5	6.8		
EPOXY RESIN INJECTION		LIN. FT.		LIN. FT.
CAP		-		
COLUMN/PILE		-		

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 - SUBSTRUCTURE" SHEET.

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 EXTERIOR BARS IN THE CAP IS 3" ON THE BOTTOM FACE, 2" ELSEWHERE, AND 3" ON THE COLUMNS PER 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 2" TO 3" ON THE CAP AND FROM 2½" TO 3" ON THE COLUMNS BASED ON VISUAL INSPECTION.

SEE TITLE SHEET FOR PROJECT CARDINAL DIRECTION DESIGNATION.

FOR CONCRETE AND SHOTCRETE REPAIRS, SEE CONCRETE RESTORATION DETAILS - SUBSTRUCTURE SHEET AND SPECIAL PROVISIONS.

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ALL DEFECT QUANTITIES ON STRUTS AND COLUMN FOOTINGS ARE LISTED WITH THE QUANTITIES FOR THE CAP.

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

COAT ALL SURFACE AREAS OF THE TOP OF THE CAP INCLUDING CHAMFERS, WITH EPOXY PROTECTIVE COATING. DO NOT COAT THE AREA UNDER THE ELASTOMERIC BEARINGS.

FOR EPOXY PROTECTIVE COATING, SEE SPECIAL PROVISIONS.

PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

BRIDGE NO. 71

KCA KISINGER CAMPO & ASSOCIATES
4800 SIX FORKS ROAD SUITE 120
RALEIGH, NC 27609
(919) 882-7839

DRAWN BY : AARON J. MCMILLAN DATE : 03-2018
CHECKED BY : JACOB H. DUKE DATE : 03-2018
DESIGN ENGINEER OF RECORD : SAMUEL L. CULLUM DATE : 03-2018

NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM

DocuSigned by: Samuel L. Cullum 19C97095C75A457...
8/13/2018 2:06:25 PM PDT

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE CONCRETE REPAIRS BENT 10

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-45
1			3			TOTAL SHEETS
2			4			69

8/13/2018
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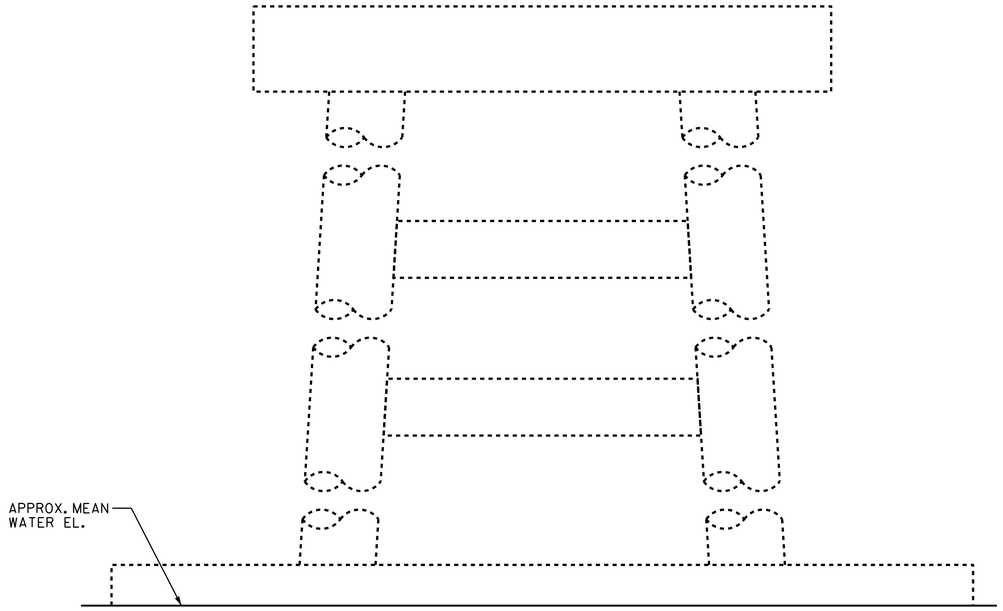
User:jduke

LEGEND:

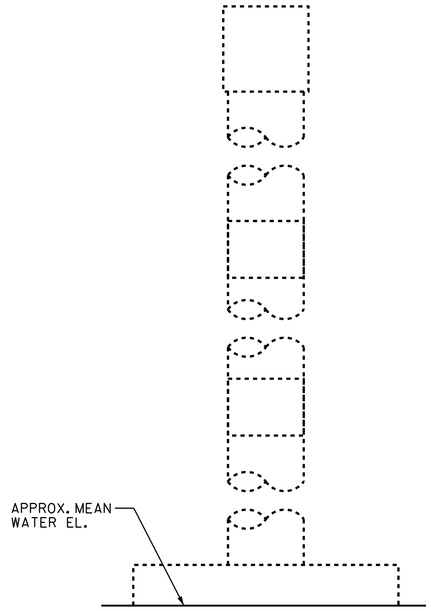
CONCRETE REPAIR AREA (FORM AND POUR)

SHOTCRETE REPAIR AREA

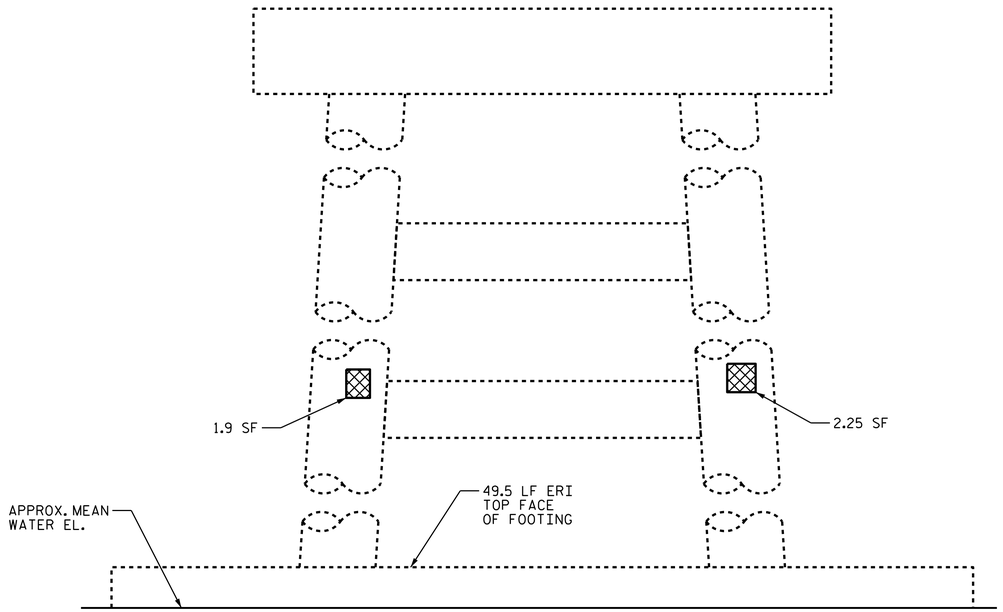
EPOXY RESIN INJECTION (ERI)



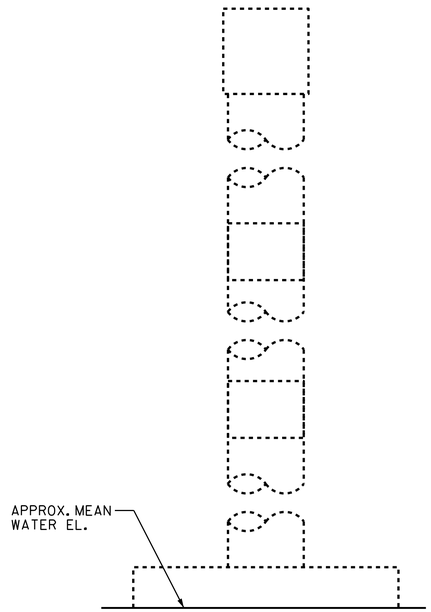
WEST ELEVATION



SOUTH FACE



EAST ELEVATION



NORTH FACE

AS-BUILT REPAIR QUANTITY TABLE

BENT 11	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	-	-		
COLUMN/PILE	4.2	2.1		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	-	-		
EPOXY RESIN INJECTION		LIN. FT.		LIN. FT.
CAP		49.5		
COLUMN/PILE		-		

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 - SUBSTRUCTURE" SHEET.

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 EXTERIOR BARS IN THE CAP IS 3" ON THE BOTTOM FACE, 2" ELSEWHERE, AND 3" ON THE COLUMNS PER 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 2" TO 3" ON THE CAP AND FROM 2½" TO 3" ON THE COLUMNS BASED ON VISUAL INSPECTION.

SEE TITLE SHEET FOR PROJECT CARDINAL DIRECTION DESIGNATION.

FOR CONCRETE AND SHOTCRETE REPAIRS, SEE CONCRETE RESTORATION DETAILS - SUBSTRUCTURE SHEET AND SPECIAL PROVISIONS.

* QUANTITIES OF CONCRETE REPAIR AREAS ARE ANTICIPATED UNDER BEARING AREAS. DUE TO LACK OF INFORMATION, ALL AREAS ARE NOT KNOWN. QUANTITY INCLUDES CONTINGENCIES AND ARE ANTICIPATED TO BE SUFFICIENT FOR ACTUAL QUANTITIES ENCOUNTERED. FOR CONCRETE REPAIRS SEE CONCRETE RESTORATION DETAILS.

ALL DEFECT QUANTITIES ON STRUTS AND COLUMN FOOTINGS ARE LISTED WITH THE QUANTITIES FOR THE CAP.

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

COAT ALL SURFACE AREAS OF THE TOP OF THE CAP INCLUDING CHAMFERS, WITH EPOXY PROTECTIVE COATING. DO NOT COAT THE AREA UNDER THE ELASTOMERIC BEARINGS.

FOR EPOXY PROTECTIVE COATING, SEE SPECIAL PROVISIONS.

PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

BRIDGE NO. 71

KCA KISINGER CAMPO & ASSOCIATES
4800 SIX FORKS ROAD SUITE 120
RALEIGH, NC 27609
(919) 882-7839

DRAWN BY : AARON J. MCMILLAN DATE : 03-2018
CHECKED BY : JACOB H. DUKE DATE : 03-2018
DESIGN ENGINEER OF RECORD : SAMUEL L. CULLUM DATE : 03-2018

NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM

DocuSigned by: Samuel L. Cullum
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8/13/2018 2:06:25 PM PDT

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE CONCRETE REPAIRS BENT 11

REVISIONS							SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:		S-46
1			3				TOTAL SHEETS
2			4				69

8/13/2018
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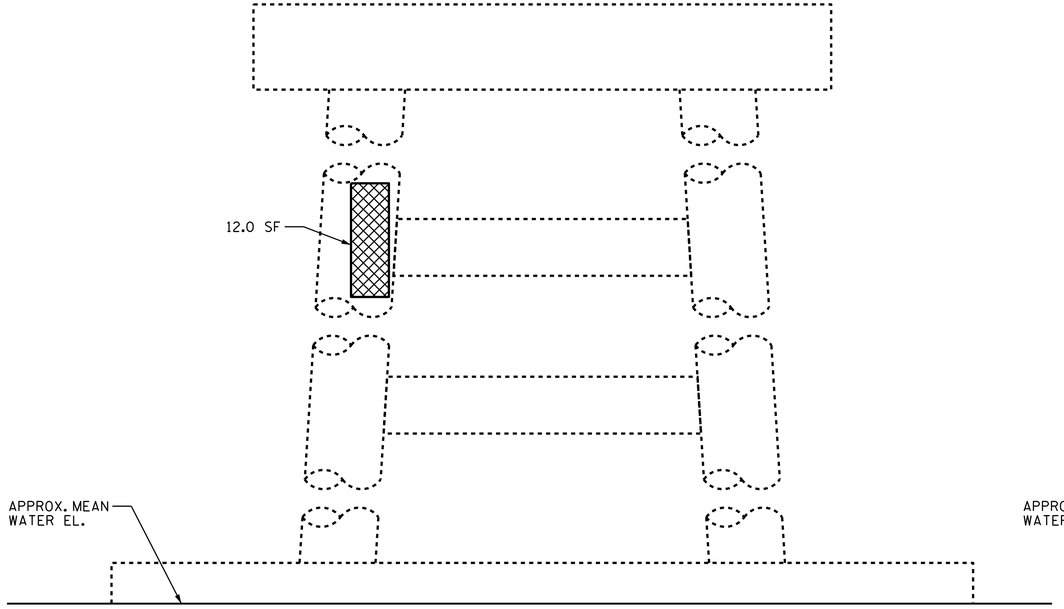
User:jduke

LEGEND:

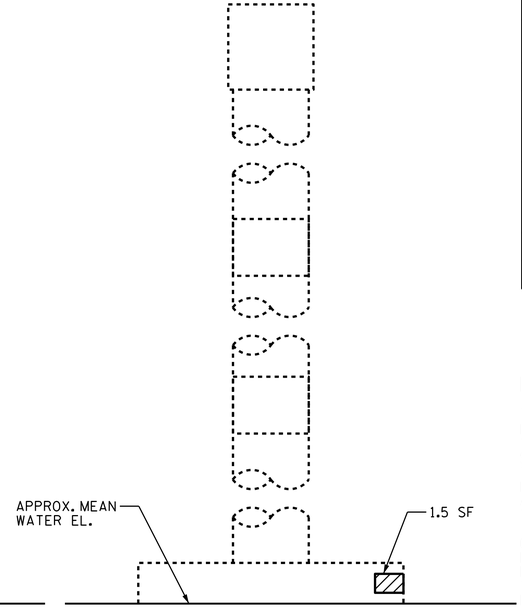
CONCRETE REPAIR AREA (FORM AND POUR)

SHOTCRETE REPAIR AREA

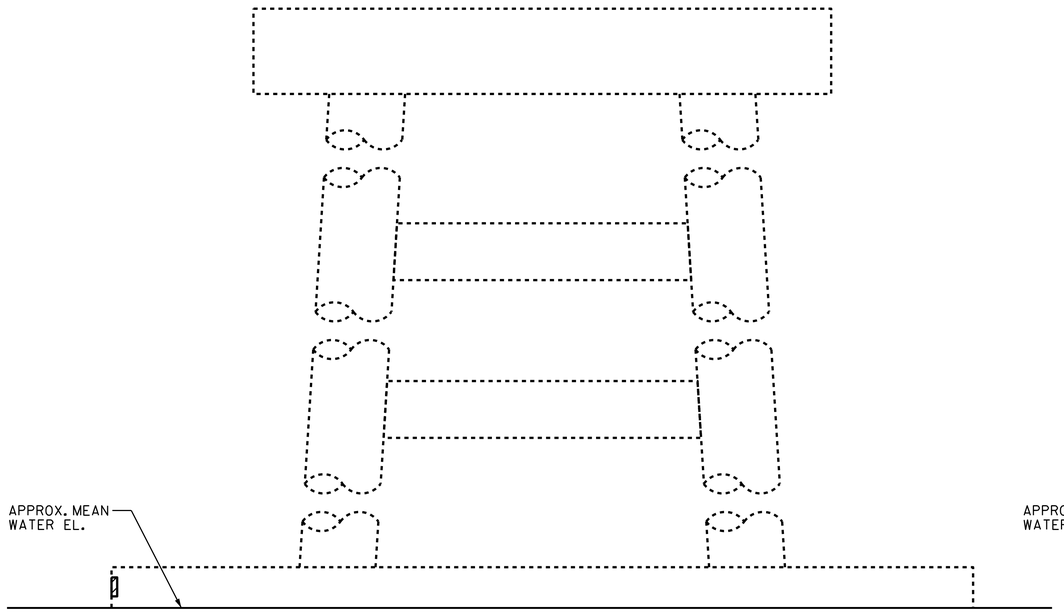
EPOXY RESIN INJECTION (ERI)



WEST ELEVATION



SOUTH FACE



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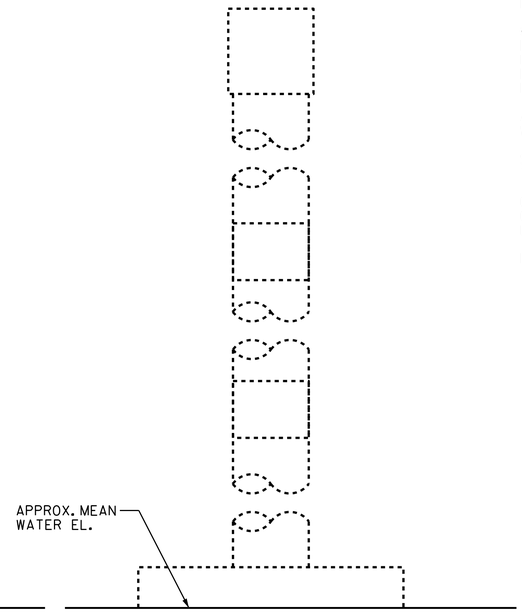

NORTH FACE

AS-BUILT REPAIR QUANTITY TABLE

BENT 12	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	-	-		
COLUMN/PILE	12.0	6.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	1.5	0.8		
EPOXY RESIN INJECTION		LIN. FT.		LIN. FT.
CAP		-		
COLUMN/PILE		-		

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 - SUBSTRUCTURE" SHEET.

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 EXTERIOR BARS IN THE CAP IS 3" ON THE BOTTOM FACE, 2" ELSEWHERE, AND 3" ON THE COLUMNS PER EXISTING BRIDGE PLANS. ACTUAL CONCRETE COVER SHALL BE DETERMINED BY THE CONTRACTOR AND PRESENTED TO THE ENGINEER PRIOR TO BEGINNING SCARIFICATION.

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SEE TITLE SHEET FOR PROJECT CARDINAL DIRECTION DESIGNATION.

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PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

BRIDGE NO. 71

KCA KISINGER CAMPO & ASSOCIATES
4800 SIX FORKS ROAD SUITE 120
RALEIGH, NC 27609
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DRAWN BY : AARON J. MCMILLAN DATE : 03-2018
CHECKED BY : JACOB H. DUKE DATE : 03-2018
DESIGN ENGINEER OF RECORD : SAMUEL L. CULLUM DATE : 03-2018

NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM

DocuSigned by: Samuel L. Cullum 19C97095C75A467...

8/13/2018 2:06:25 PM PDT

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE CONCRETE REPAIRS BENT 12

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-47
1			3			TOTAL SHEETS
2			4			69

8/13/2018
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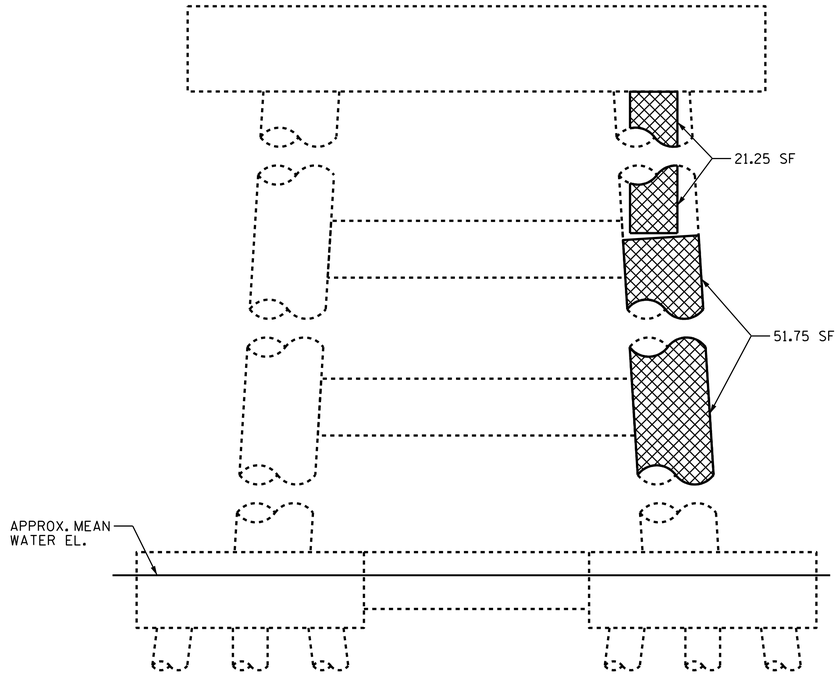
User:jduke

LEGEND:

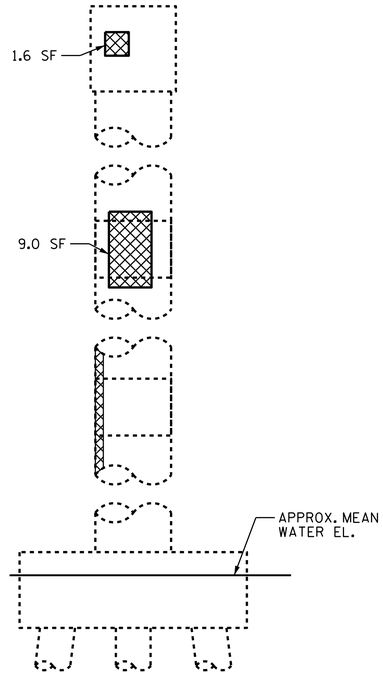
CONCRETE REPAIR AREA (FORM AND POUR)

SHOTCRETE REPAIR AREA

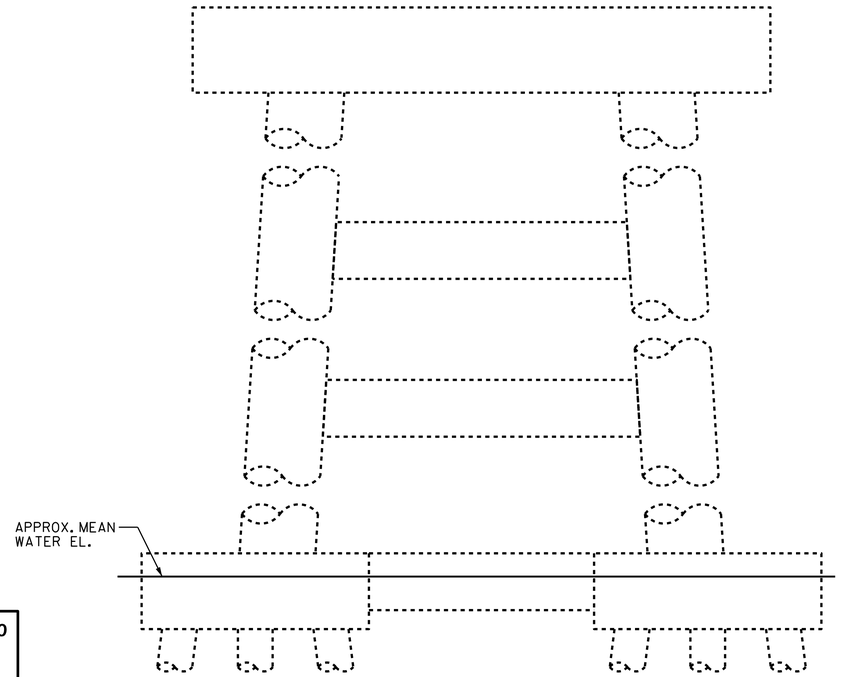
EPOXY RESIN INJECTION (ERI)



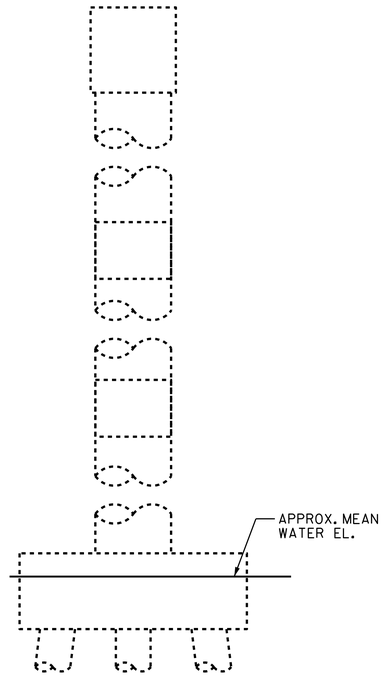
WEST ELEVATION



SOUTH FACE



EAST ELEVATION



NORTH FACE

AS-BUILT REPAIR QUANTITY TABLE

BENT 13	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	1.6	0.8		
COLUMN/PILE	82.0	41.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	0.2	0.1		
EPOXY RESIN INJECTION		LIN. FT.		LIN. FT.
CAP		-		
COLUMN/PILE		-		

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 - SUBSTRUCTURE" SHEET.

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 EXTERIOR BARS IN THE CAP IS 3" ON THE BOTTOM FACE, 2" ELSEWHERE, AND 3" ON THE COLUMNS PER 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 2" TO 3" ON THE CAP AND FROM 2½" TO 3" ON THE COLUMNS BASED ON VISUAL INSPECTION.

SEE TITLE SHEET FOR PROJECT CARDINAL DIRECTION DESIGNATION.

FOR CONCRETE AND SHOTCRETE REPAIRS, SEE CONCRETE RESTORATION DETAILS - SUBSTRUCTURE SHEET AND SPECIAL PROVISIONS.

* QUANTITIES OF CONCRETE REPAIR AREAS ARE ANTICIPATED UNDER BEARING AREAS. DUE TO LACK OF INFORMATION, ALL AREAS ARE NOT KNOWN. QUANTITY INCLUDES CONTINGENCIES AND ARE ANTICIPATED TO BE SUFFICIENT FOR ACTUAL QUANTITIES ENCOUNTERED. FOR CONCRETE REPAIRS SEE CONCRETE RESTORATION DETAILS.

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COAT ALL SURFACE AREAS OF THE TOP OF THE CAP INCLUDING CHAMFERS, WITH EPOXY PROTECTIVE COATING. DO NOT COAT THE AREA UNDER THE ELASTOMERIC BEARINGS.

FOR EPOXY PROTECTIVE COATING, SEE SPECIAL PROVISIONS.

PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

BRIDGE NO. 71

KCA KISINGER CAMPO & ASSOCIATES
4800 SIX FORKS ROAD SUITE 120
RALEIGH, NC 27609
(919) 882-7839

DRAWN BY : AARON J. MCMILLAN DATE : 03-2018
CHECKED BY : JACOB H. DUKE DATE : 03-2018
DESIGN ENGINEER OF RECORD : SAMUEL L. CULLUM DATE : 03-2018

NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM

DocuSigned by: Samuel L. Cullum 19C97095C75A457...
8/13/2018 2:06:25 PM PDT

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE CONCRETE REPAIRS BENT 13

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-48
1			3			TOTAL SHEETS
2			4			69

8/13/2018
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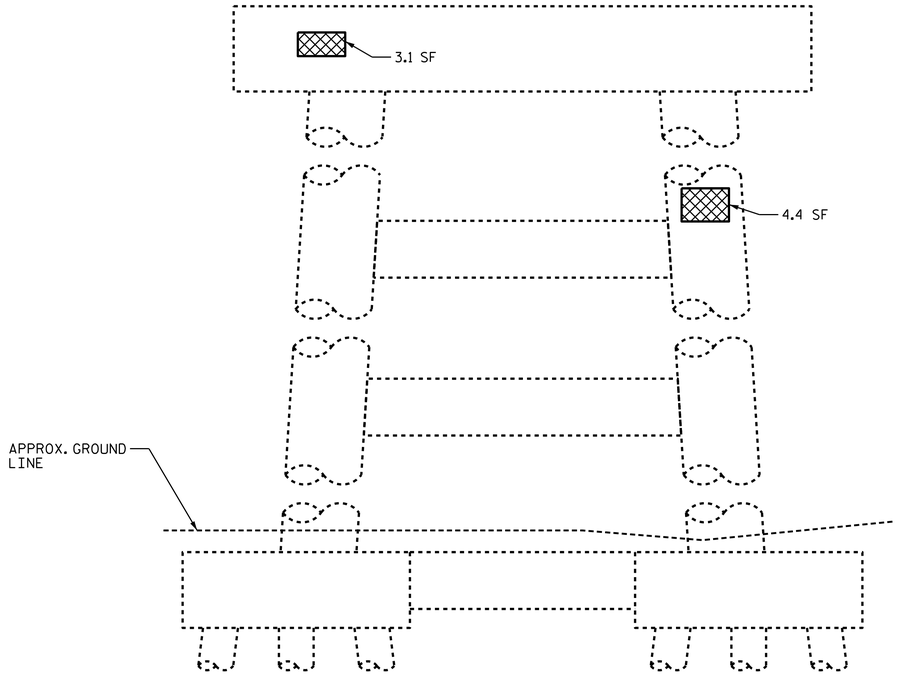
User:jduke

LEGEND:

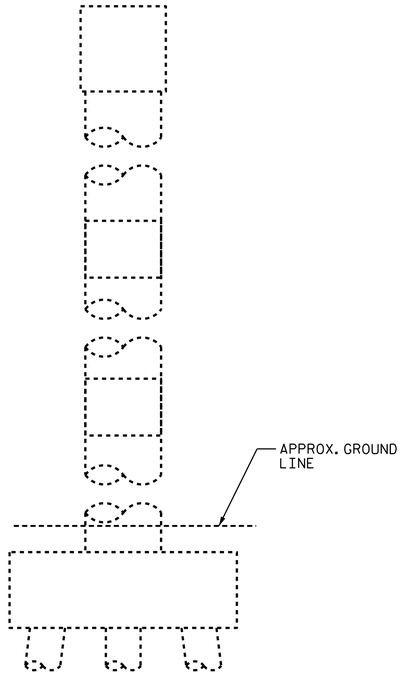
CONCRETE REPAIR AREA (FORM AND POUR)

SHOTCRETE REPAIR AREA

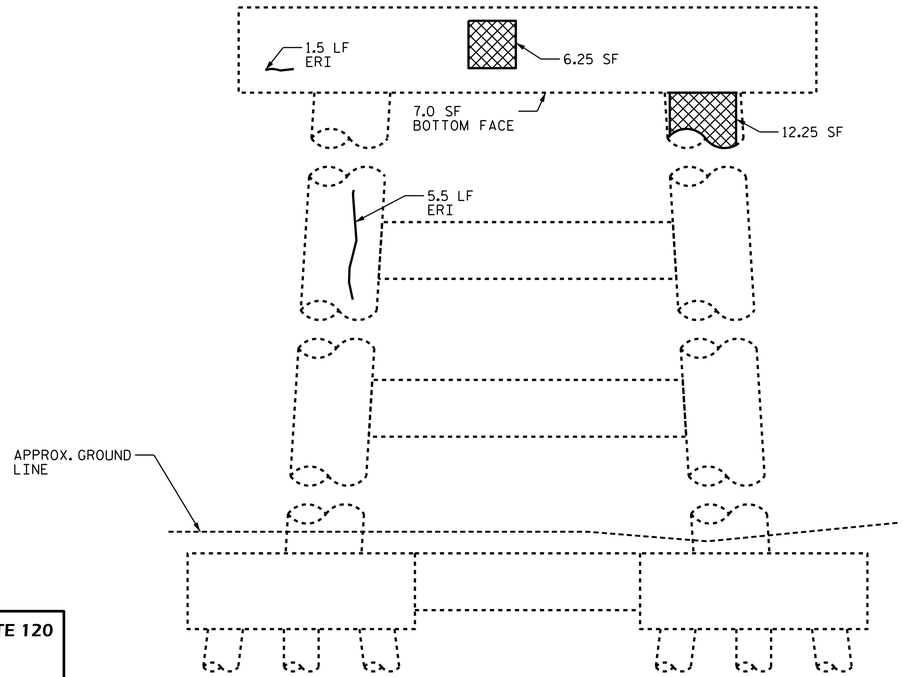
EPOXY RESIN INJECTION (ERI)



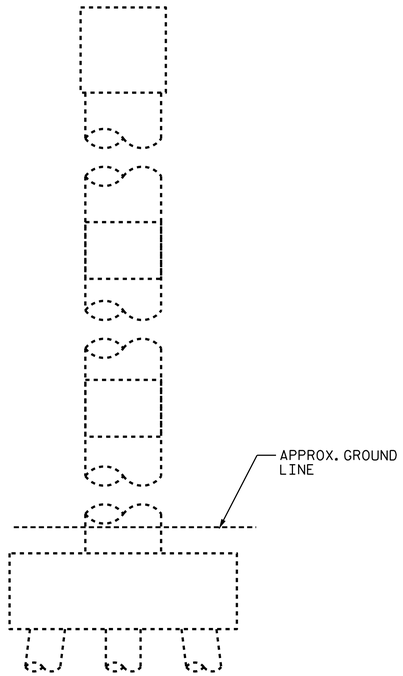
WEST ELEVATION



SOUTH FACE



EAST ELEVATION



NORTH FACE

AS-BUILT REPAIR QUANTITY TABLE

BENT 14	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	16.4	8.2		
COLUMN/PILE	16.7	8.3		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	2.5	1.2		
EPOXY RESIN INJECTION		LIN. FT.		LIN. FT.
CAP		1.5		
COLUMN/PILE		5.5		

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 - SUBSTRUCTURE" SHEET.

NOTES:

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CONCRETE COVER FOR EXTERIOR BARS IN THE CAP IS 3" ON THE BOTTOM FACE, 2" ELSEWHERE, AND 3" ON THE COLUMNS PER 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 2" TO 3" ON THE CAP AND FROM 2½" TO 3" ON THE COLUMNS BASED ON VISUAL INSPECTION.

SEE TITLE SHEET FOR PROJECT CARDINAL DIRECTION DESIGNATION.

FOR CONCRETE AND SHOTCRETE REPAIRS, SEE CONCRETE RESTORATION DETAILS - SUBSTRUCTURE SHEET AND SPECIAL PROVISIONS.

* QUANTITIES OF CONCRETE REPAIR AREAS ARE ANTICIPATED UNDER BEARING AREAS. DUE TO LACK OF INFORMATION, ALL AREAS ARE NOT KNOWN. QUANTITY INCLUDES CONTINGENCIES AND ARE ANTICIPATED TO BE SUFFICIENT FOR ACTUAL QUANTITIES ENCOUNTERED. FOR CONCRETE REPAIRS SEE CONCRETE RESTORATION DETAILS.

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PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

BRIDGE NO. 71

KCA KISINGER CAMPO & ASSOCIATES
4800 SIX FORKS ROAD SUITE 120
RALEIGH, NC 27609
(919) 882-7839

DRAWN BY : AARON J. MCMILLAN DATE : 03-2018
CHECKED BY : JACOB H. DUKE DATE : 03-2018
DESIGN ENGINEER OF RECORD : SAMUEL L. CULLUM DATE : 03-2018

8/13/2018
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User:jduke

NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM

DocuSigned by: Samuel L. Cullum 19C97095C75A457...
8/13/2018 2:06:25 PM PDT

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE CONCRETE REPAIRS BENT 14

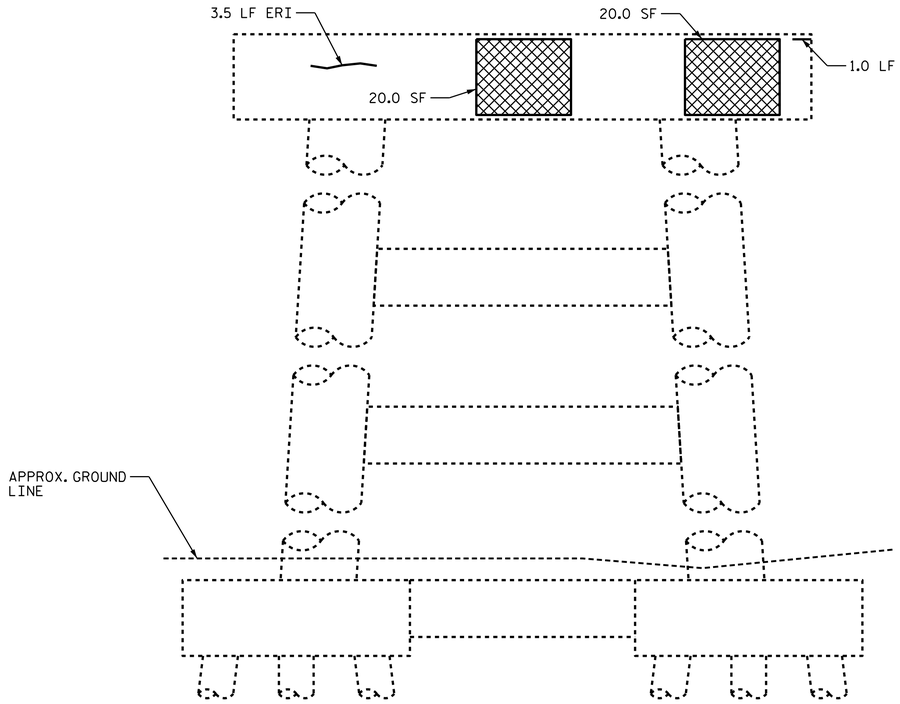
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-49
1			3			TOTAL SHEETS
2			4			69

LEGEND:

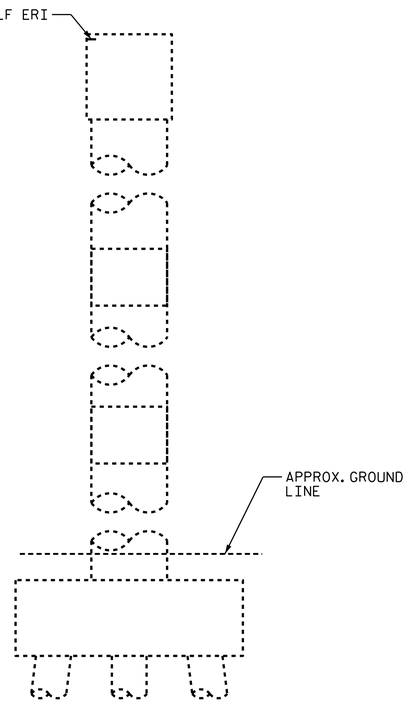
CONCRETE REPAIR AREA (FORM AND POUR)

SHOTCRETE REPAIR AREA

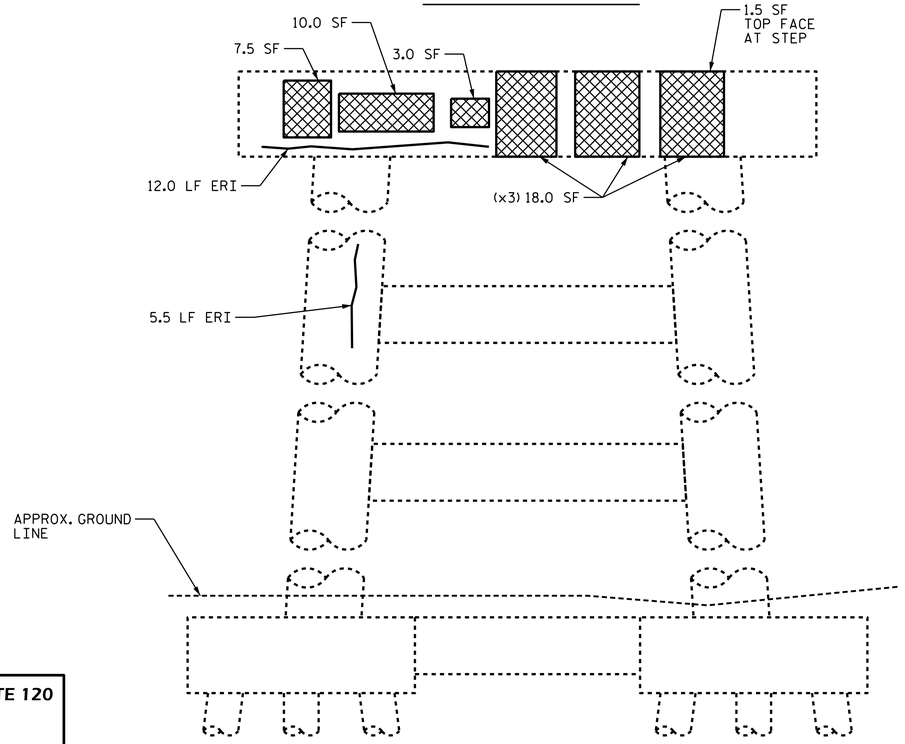
EPOXY RESIN INJECTION (ERI)



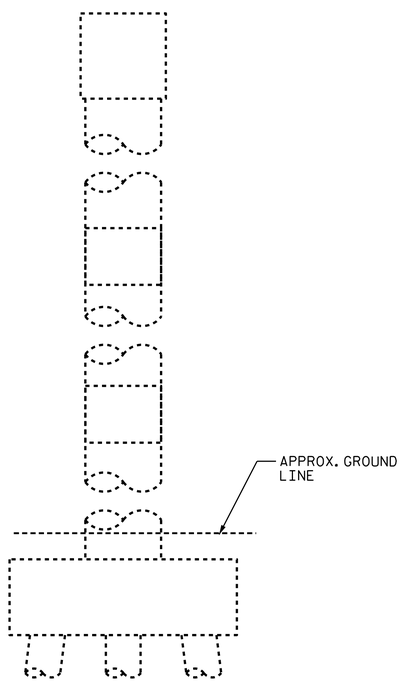
WEST ELEVATION



SOUTH FACE



EAST ELEVATION



NORTH FACE

AS-BUILT REPAIR QUANTITY TABLE

BENT 15	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	116.0	58.0		
COLUMN/PILE	-	-		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	17.4	8.7		
EPOXY RESIN INJECTION		LIN. FT.		LIN. FT.
CAP		16.8		
COLUMN/PILE		5.5		

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 - SUBSTRUCTURE" SHEET.

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PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

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User:jduke

NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM

DocuSigned by: Samuel L. Cullum 19C97095C75A467...

8/13/2018 2:06:25 PM PDT

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE CONCRETE REPAIRS BENT 15

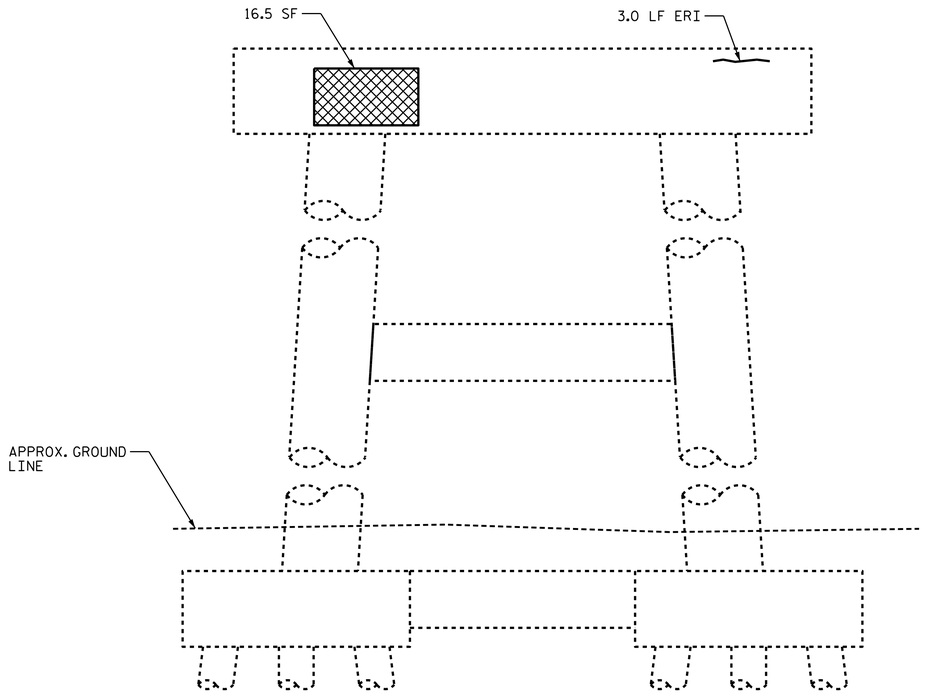
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-50
1			3			TOTAL SHEETS
2			4			69

LEGEND:

CONCRETE REPAIR AREA (FORM AND POUR)

SHOTCRETE REPAIR AREA

EPOXY RESIN INJECTION (ERI)



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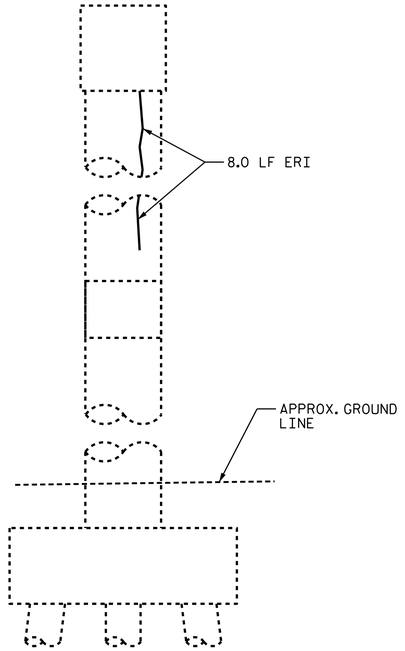
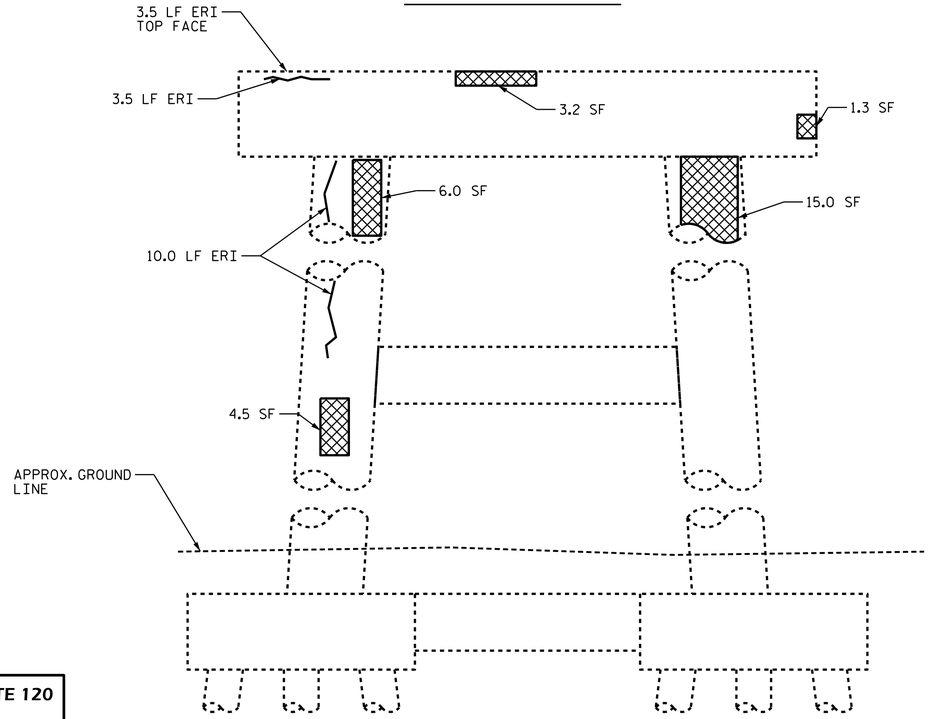
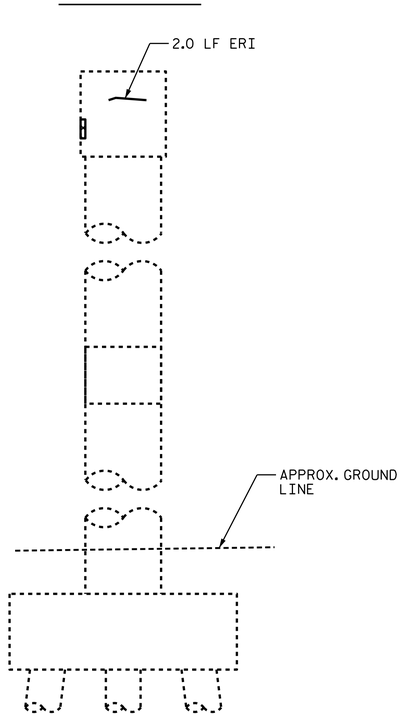


SOUTH FACE



EAST ELEVATION



NORTH FACE

AS-BUILT REPAIR QUANTITY TABLE

BENT 16	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	21.0	10.5		
COLUMN/PILE	25.5	12.8		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	3.2	1.6		
EPOXY RESIN INJECTION		LIN. FT.		LIN. FT.
CAP		12.0		
COLUMN/PILE		18.0		

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 - SUBSTRUCTURE" SHEET.

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 EXTERIOR BARS IN THE CAP IS 3" ON THE BOTTOM FACE, 2" ELSEWHERE, AND 3" ON THE COLUMNS PER 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 2" TO 3" ON THE CAP AND FROM 2½" TO 3" ON THE COLUMNS BASED ON VISUAL INSPECTION.

SEE TITLE SHEET FOR PROJECT CARDINAL DIRECTION DESIGNATION.

FOR CONCRETE AND SHOTCRETE REPAIRS, SEE CONCRETE RESTORATION DETAILS - SUBSTRUCTURE SHEET AND SPECIAL PROVISIONS.

* QUANTITIES OF CONCRETE REPAIR AREAS ARE ANTICIPATED UNDER BEARING AREAS. DUE TO LACK OF INFORMATION, ALL AREAS ARE NOT KNOWN. QUANTITY INCLUDES CONTINGENCIES AND ARE ANTICIPATED TO BE SUFFICIENT FOR ACTUAL QUANTITIES ENCOUNTERED. FOR CONCRETE REPAIRS SEE CONCRETE RESTORATION DETAILS.

ALL DEFECT QUANTITIES ON STRUTS AND COLUMN FOOTINGS ARE LISTED WITH THE QUANTITIES FOR THE CAP.

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

COAT ALL SURFACE AREAS OF THE TOP OF THE CAP INCLUDING CHAMFERS, WITH EPOXY PROTECTIVE COATING. DO NOT COAT THE AREA UNDER THE ELASTOMERIC BEARINGS.

FOR EPOXY PROTECTIVE COATING, SEE SPECIAL PROVISIONS.

PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

BRIDGE NO. 71

KCA KISINGER CAMPO & ASSOCIATES
4800 SIX FORKS ROAD SUITE 120
RALEIGH, NC 27609
(919) 882-7839

DRAWN BY : AARON J. MCMILLAN DATE : 03-2018
CHECKED BY : JACOB H. DUKE DATE : 03-2018
DESIGN ENGINEER OF RECORD : SAMUEL L. CULLUM DATE : 03-2018

NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM

DocuSigned by: Samuel L. Cullum 19C97095C75A467...

8/13/2018 2:06:25 PM PDT

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE CONCRETE REPAIRS BENT 16

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-51
1			3			TOTAL SHEETS
2			4			69

8/13/2018
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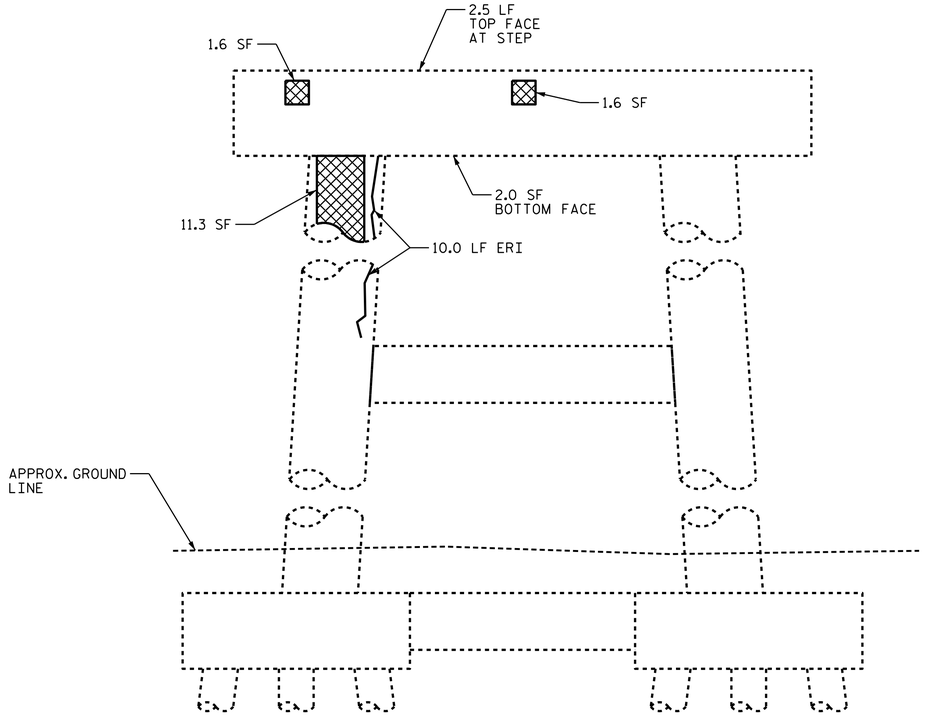
User:jduke

LEGEND:

CONCRETE REPAIR AREA (FORM AND POUR)

SHOTCRETE REPAIR AREA

EPOXY RESIN INJECTION (ERI)



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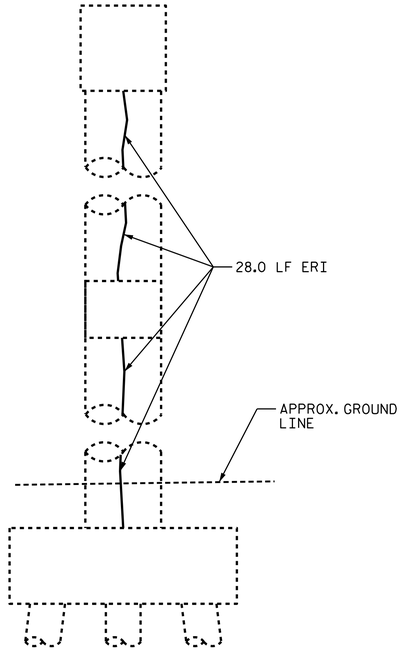
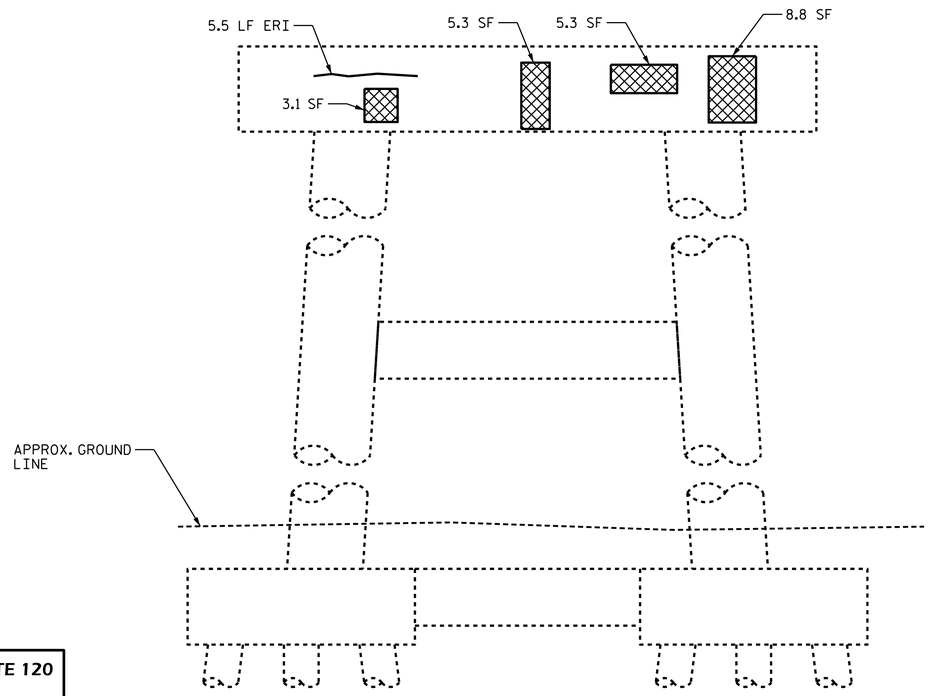


SOUTH FACE



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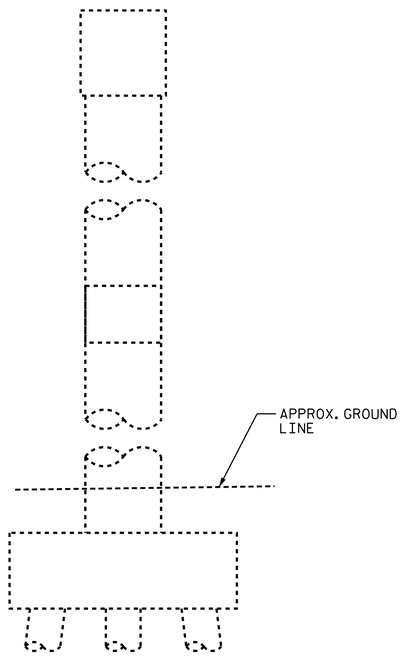

NORTH FACE

AS-BUILT REPAIR QUANTITY TABLE

BENT 17	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	27.7	13.9		
COLUMN/PILE	11.3	5.7		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	4.2	2.1		
EPOXY RESIN INJECTION		LIN. FT.		LIN. FT.
CAP		8.0		
COLUMN/PILE		38.0		

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 - SUBSTRUCTURE" SHEET.

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 EXTERIOR BARS IN THE CAP IS 3" ON THE BOTTOM FACE, 2" ELSEWHERE, AND 3" ON THE COLUMNS PER 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 2" TO 3" ON THE CAP AND FROM 2½" TO 3" ON THE COLUMNS BASED ON VISUAL INSPECTION.

SEE TITLE SHEET FOR PROJECT CARDINAL DIRECTION DESIGNATION.

FOR CONCRETE AND SHOTCRETE REPAIRS, SEE CONCRETE RESTORATION DETAILS - SUBSTRUCTURE SHEET AND SPECIAL PROVISIONS.

* QUANTITIES OF CONCRETE REPAIR AREAS ARE ANTICIPATED UNDER BEARING AREAS. DUE TO LACK OF INFORMATION, ALL AREAS ARE NOT KNOWN. QUANTITY INCLUDES CONTINGENCIES AND ARE ANTICIPATED TO BE SUFFICIENT FOR ACTUAL QUANTITIES ENCOUNTERED. FOR CONCRETE REPAIRS SEE CONCRETE RESTORATION DETAILS.

ALL DEFECT QUANTITIES ON STRUTS AND COLUMN FOOTINGS ARE LISTED WITH THE QUANTITIES FOR THE CAP.

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

COAT ALL SURFACE AREAS OF THE TOP OF THE CAP INCLUDING CHAMFERS, WITH EPOXY PROTECTIVE COATING. DO NOT COAT THE AREA UNDER THE ELASTOMERIC BEARINGS.

FOR EPOXY PROTECTIVE COATING, SEE SPECIAL PROVISIONS.

PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

BRIDGE NO. 71

KISINGER CAMPO & ASSOCIATES
4800 SIX FORKS ROAD SUITE 120
RALEIGH, NC 27609
(919) 882-7839

DRAWN BY : AARON J. MCMILLAN DATE : 03-2018
CHECKED BY : JACOB H. DUKE DATE : 03-2018
DESIGN ENGINEER OF RECORD : SAMUEL L. CULLUM DATE : 03-2018

NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM

DocuSigned by: Samuel L. Cullum 19C97095C75A467...

8/13/2018 2:06:25 PM PDT

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE CONCRETE REPAIRS BENT 17

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-52
1			3			TOTAL SHEETS
2			4			69

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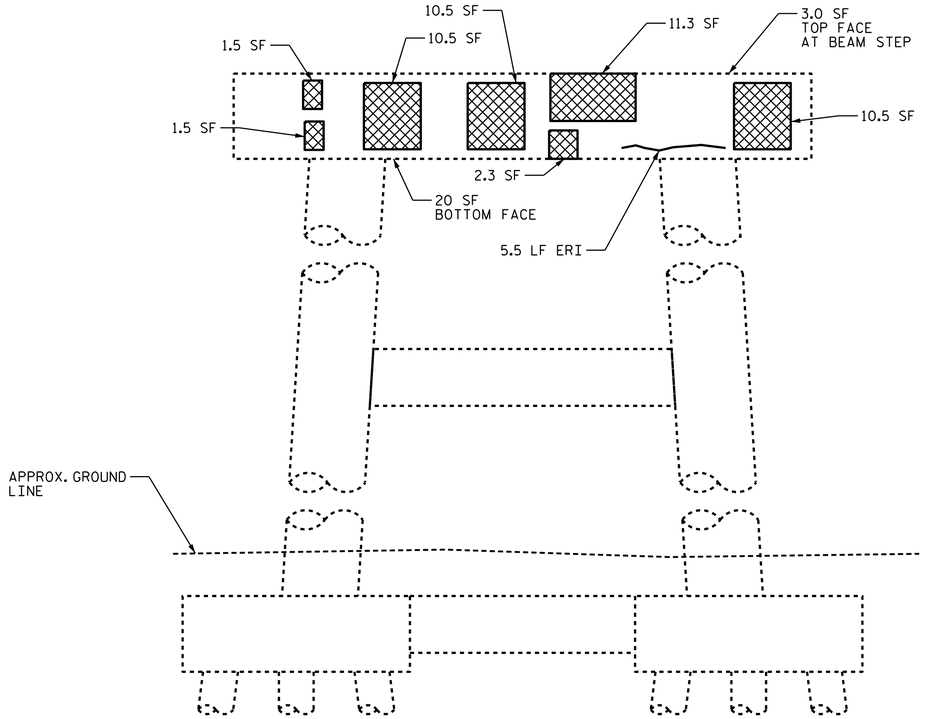
User:jduke

LEGEND:

CONCRETE REPAIR AREA (FORM AND POUR)

SHOTCRETE REPAIR AREA

EPOXY RESIN INJECTION (ERI)



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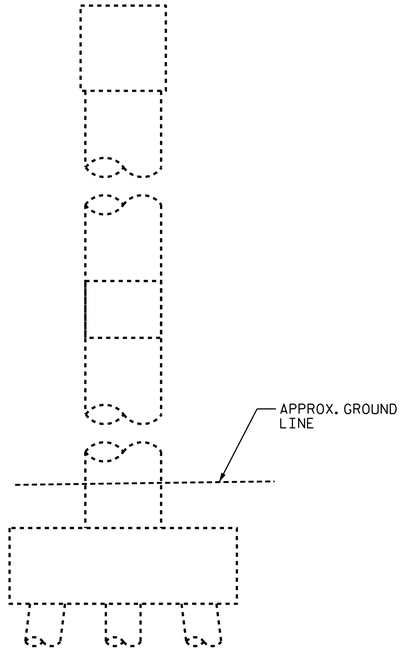
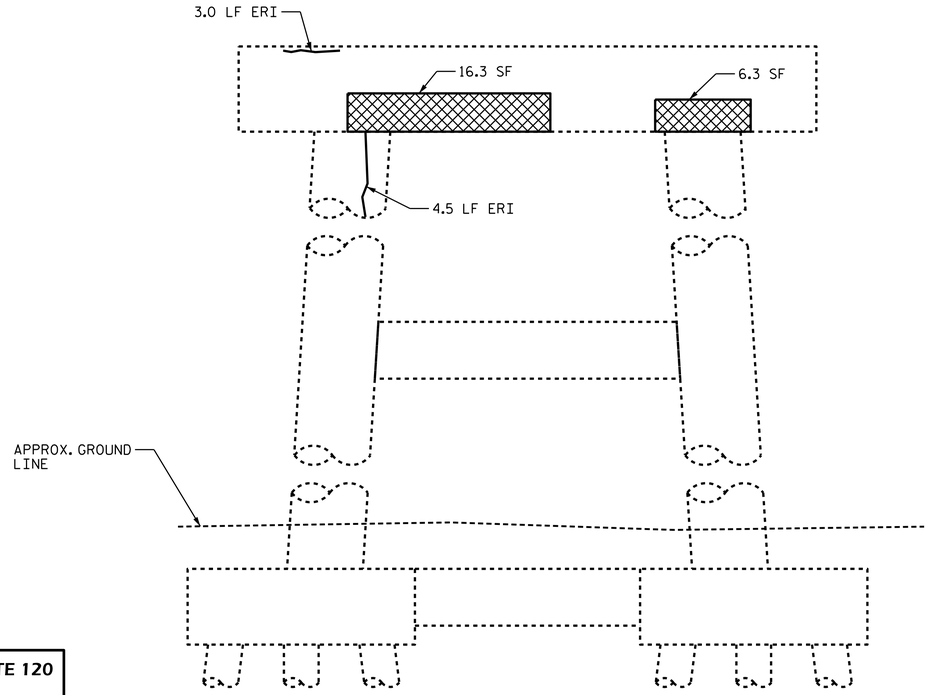
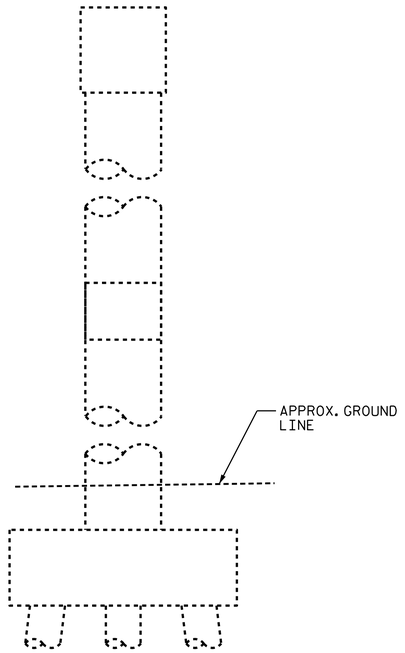


SOUTH FACE



EAST ELEVATION



NORTH FACE

AS-BUILT REPAIR QUANTITY TABLE

BENT 18	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	93.7	46.9		
COLUMN/PILE	-	-		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	14.1	7.0		
EPOXY RESIN INJECTION		LIN. FT.		LIN. FT.
CAP		8.5		
COLUMN/PILE		4.5		

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 - SUBSTRUCTURE" SHEET.

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 EXTERIOR BARS IN THE CAP IS 3" ON THE BOTTOM FACE, 2" ELSEWHERE, AND 3" ON THE COLUMNS PER EXISTING BRIDGE PLANS. ACTUAL CONCRETE COVER SHALL BE DETERMINED BY THE CONTRACTOR AND PRESENTED TO THE ENGINEER PRIOR TO BEGINNING SCARIFICATION.

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SEE TITLE SHEET FOR PROJECT CARDINAL DIRECTION DESIGNATION.

FOR CONCRETE AND SHOTCRETE REPAIRS, SEE CONCRETE RESTORATION DETAILS - SUBSTRUCTURE SHEET AND SPECIAL PROVISIONS.

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COAT ALL SURFACE AREAS OF THE TOP OF THE CAP INCLUDING CHAMFERS, WITH EPOXY PROTECTIVE COATING. DO NOT COAT THE AREA UNDER THE ELASTOMERIC BEARINGS.

FOR EPOXY PROTECTIVE COATING, SEE SPECIAL PROVISIONS.

PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

BRIDGE NO. 71

KISINGER CAMPO & ASSOCIATES
4800 SIX FORKS ROAD SUITE 120
RALEIGH, NC 27609
(919) 882-7839

DRAWN BY : AARON J. MCMILLAN DATE : 03-2018
CHECKED BY : JACOB H. DUKE DATE : 03-2018
DESIGN ENGINEER OF RECORD : SAMUEL L. CULLUM DATE : 03-2018

NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM

DocuSigned by: Samuel L. Cullum 19C97095C75A467...

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE CONCRETE REPAIRS BENT 18

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-53
1			3			TOTAL SHEETS
2			4			69

8/13/2018
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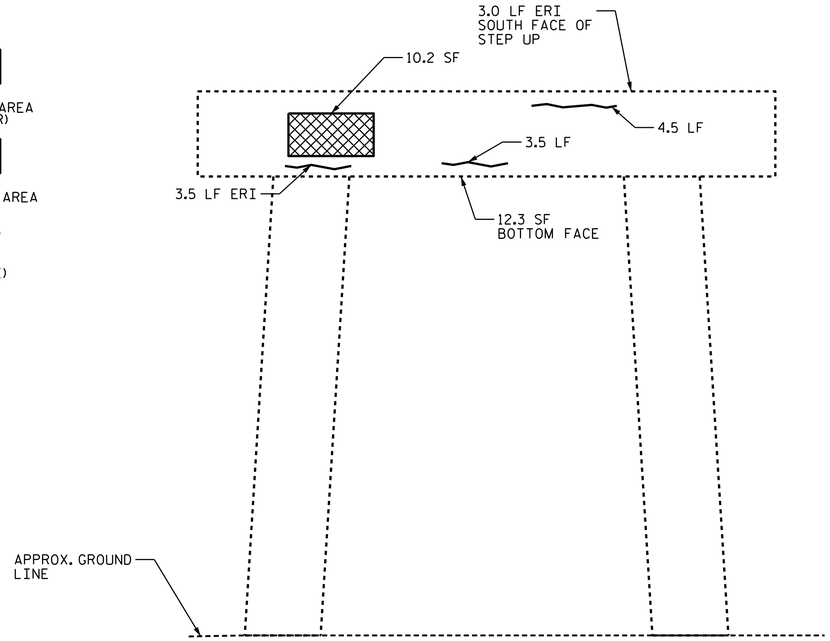
User:jduke

LEGEND:

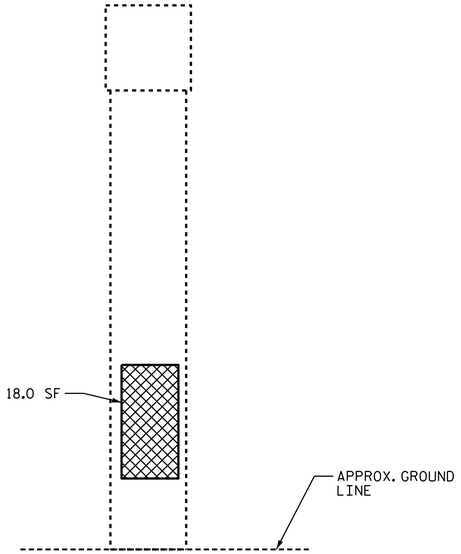
CONCRETE REPAIR AREA (FORM AND POUR)

SHOTCRETE REPAIR AREA

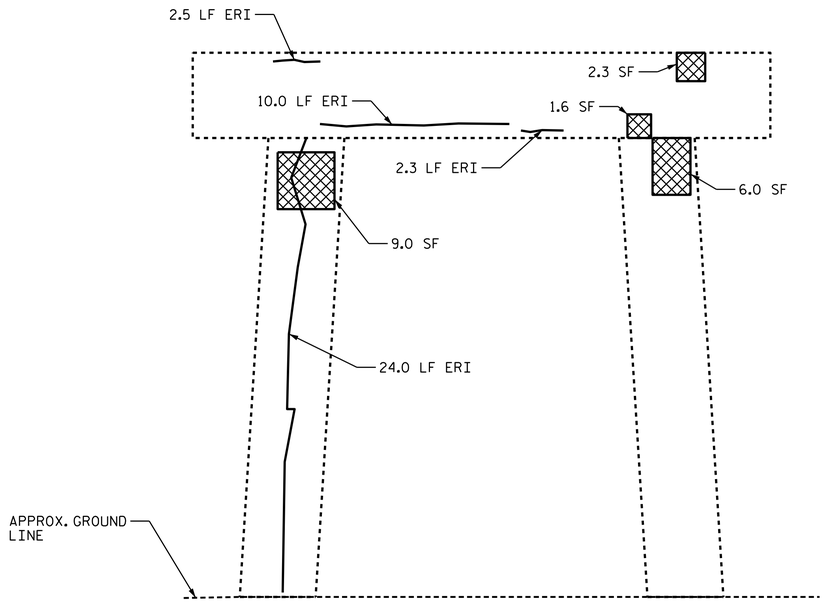
EPOXY RESIN INJECTION (ERI)



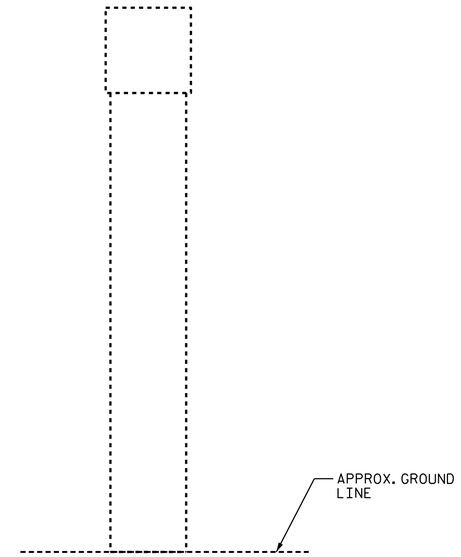
WEST ELEVATION



SOUTH FACE



EAST ELEVATION



NORTH FACE

AS-BUILT REPAIR QUANTITY TABLE

BENT 19	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	26.4	13.2		
COLUMN/PILE	33.0	16.5		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	4.0	2.0		
EPOXY RESIN INJECTION		LIN. FT.		LIN. FT.
CAP		29.3		
COLUMN/PILE		24.0		

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 - SUBSTRUCTURE" SHEET.

NOTES:

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CONCRETE COVER FOR EXTERIOR BARS IN THE CAP IS 3" ON THE BOTTOM FACE, 2" ELSEWHERE, AND 3" ON THE COLUMNS PER EXISTING BRIDGE PLANS. ACTUAL CONCRETE COVER SHALL BE DETERMINED BY THE CONTRACTOR AND PRESENTED TO THE ENGINEER PRIOR TO BEGINNING SCARIFICATION.

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SEE TITLE SHEET FOR PROJECT CARDINAL DIRECTION DESIGNATION.

FOR CONCRETE AND SHOTCRETE REPAIRS, SEE CONCRETE RESTORATION DETAILS - SUBSTRUCTURE SHEET AND SPECIAL PROVISIONS.

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ALL DEFECT QUANTITIES ON STRUTS AND COLUMN FOOTINGS ARE LISTED WITH THE QUANTITIES FOR THE CAP.

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

COAT ALL SURFACE AREAS OF THE TOP OF THE CAP INCLUDING CHAMFERS, WITH EPOXY PROTECTIVE COATING. DO NOT COAT THE AREA UNDER THE ELASTOMERIC BEARINGS.

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PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

BRIDGE NO. 71

KISINGER CAMPO & ASSOCIATES
4800 SIX FORKS ROAD SUITE 120
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DRAWN BY : AARON J. MCMILLAN DATE : 03-2018
CHECKED BY : JACOB H. DUKE DATE : 03-2018
DESIGN ENGINEER OF RECORD : SAMUEL L. CULLUM DATE : 03-2018

NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM

DocuSigned by: Samuel L. Cullum 19C97095C75A467...

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE CONCRETE REPAIRS BENT 19

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-54
1			3			TOTAL SHEETS
2			4			69

8/13/2018
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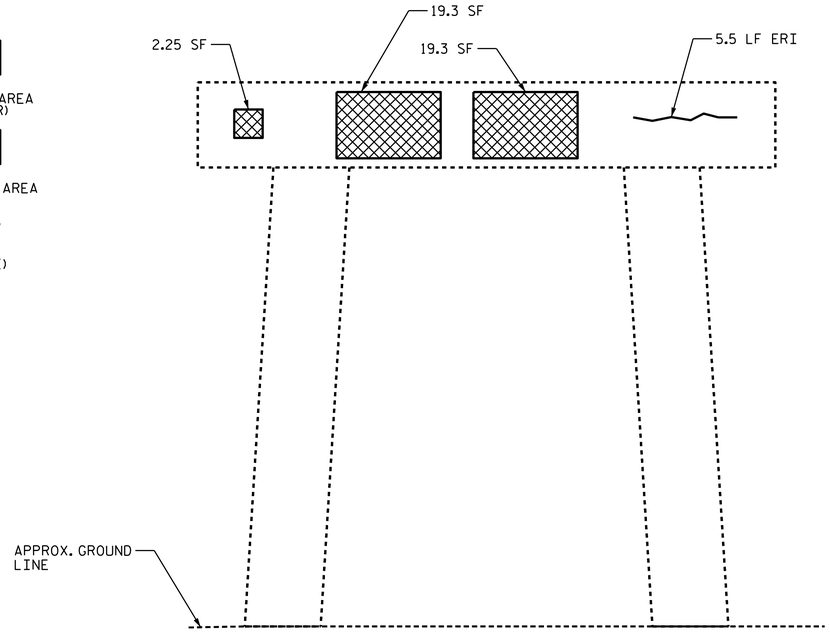
User:jduke

LEGEND:

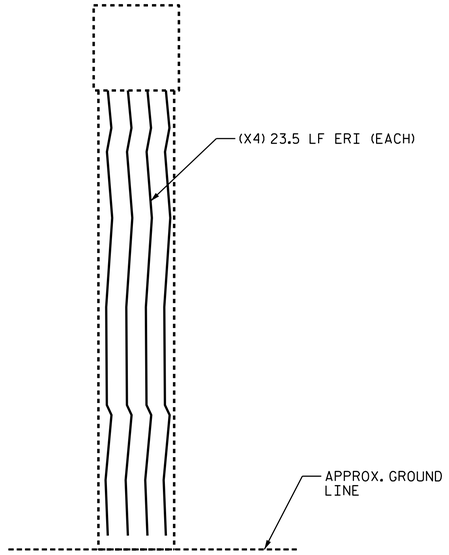
CONCRETE REPAIR AREA (FORM AND POUR)

SHOTCRETE REPAIR AREA

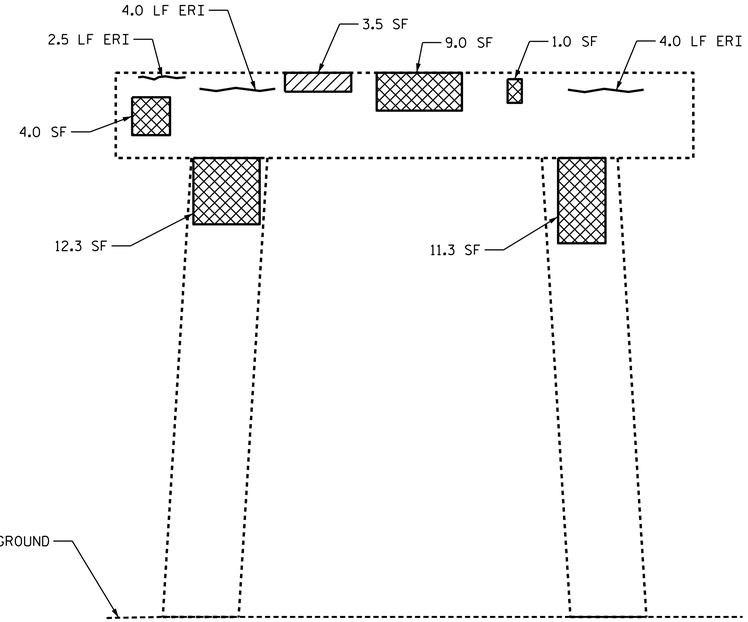
EPOXY RESIN INJECTION (ERI)



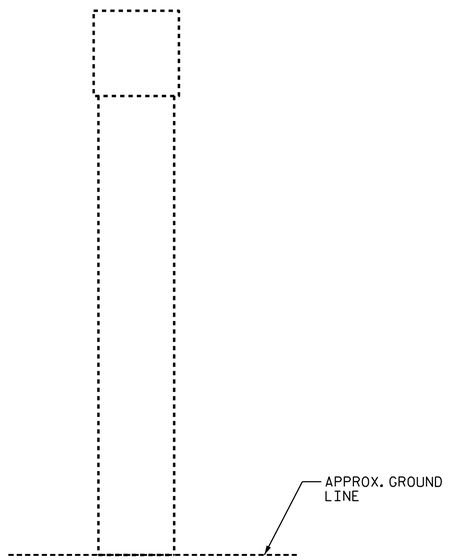
WEST ELEVATION



SOUTH FACE



EAST ELEVATION



NORTH FACE

AS-BUILT REPAIR QUANTITY TABLE

BENT 20	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	54.9	27.4		
COLUMN/PILE	23.6	11.8		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	8.2	4.1		
EPOXY RESIN INJECTION		LIN. FT.		LIN. FT.
CAP		16.0		
COLUMN/PILE		94.0		

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 - SUBSTRUCTURE" SHEET.

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 EXTERIOR BARS IN THE CAP IS 3" ON THE BOTTOM FACE, 2" ELSEWHERE, AND 3" ON THE COLUMNS PER 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 2" TO 3" ON THE CAP AND FROM 2½" TO 3" ON THE COLUMNS BASED ON VISUAL INSPECTION.

SEE TITLE SHEET FOR PROJECT CARDINAL DIRECTION DESIGNATION.

FOR CONCRETE AND SHOTCRETE REPAIRS, SEE CONCRETE RESTORATION DETAILS - SUBSTRUCTURE SHEET AND SPECIAL PROVISIONS.

* QUANTITIES OF CONCRETE REPAIR AREAS ARE ANTICIPATED UNDER BEARING AREAS. DUE TO LACK OF INFORMATION, ALL AREAS ARE NOT KNOWN. QUANTITY INCLUDES CONTINGENCIES AND ARE ANTICIPATED TO BE SUFFICIENT FOR ACTUAL QUANTITIES ENCOUNTERED. FOR CONCRETE REPAIRS SEE CONCRETE RESTORATION DETAILS.

ALL DEFECT QUANTITIES ON STRUTS AND COLUMN FOOTINGS ARE LISTED WITH THE QUANTITIES FOR THE CAP.

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

COAT ALL SURFACE AREAS OF THE TOP OF THE CAP INCLUDING CHAMFERS, WITH EPOXY PROTECTIVE COATING. DO NOT COAT THE AREA UNDER THE ELASTOMERIC BEARINGS.

FOR EPOXY PROTECTIVE COATING, SEE SPECIAL PROVISIONS.

PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

BRIDGE NO. 71

KCA KISINGER CAMPO & ASSOCIATES
4800 SIX FORKS ROAD SUITE 120
RALEIGH, NC 27609
(919) 882-7839

DRAWN BY : AARON J. MCMILLAN DATE : 03-2018
CHECKED BY : JACOB H. DUKE DATE : 03-2018
DESIGN ENGINEER OF RECORD : SAMUEL L. CULLUM DATE : 03-2018

NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM

DocuSigned by: Samuel L. Cullum 19C97095C75A457...
8/13/2018 2:06:25 PM PDT

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE CONCRETE REPAIRS BENT 20

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-55
1			3			TOTAL SHEETS
2			4			69

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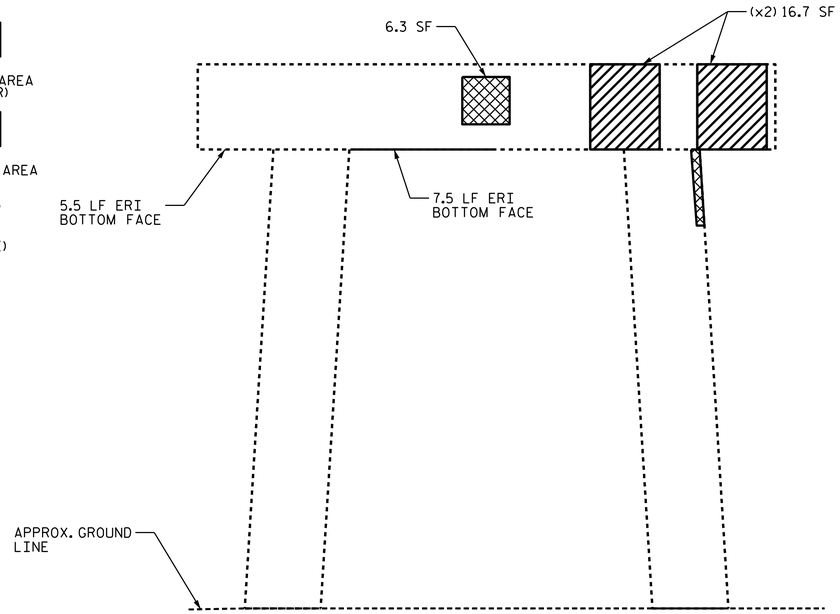
User:jduke

LEGEND:

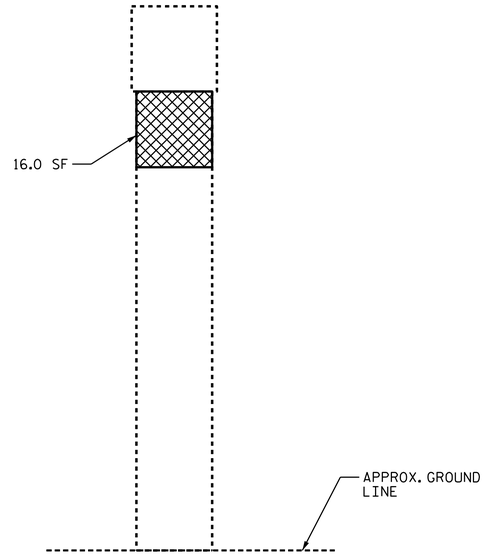
CONCRETE REPAIR AREA (FORM AND POUR)

SHOTCRETE REPAIR AREA

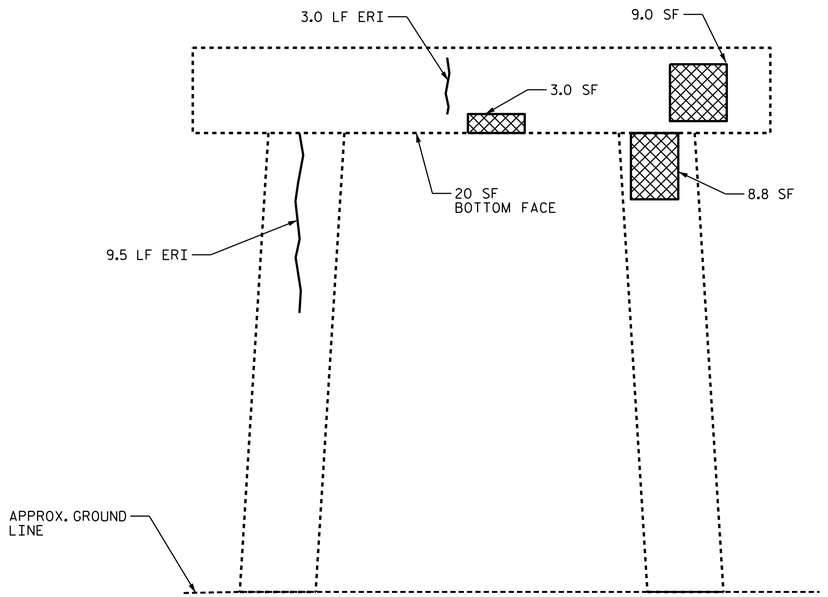
EPOXY RESIN INJECTION (ERI)



WEST ELEVATION



SOUTH FACE



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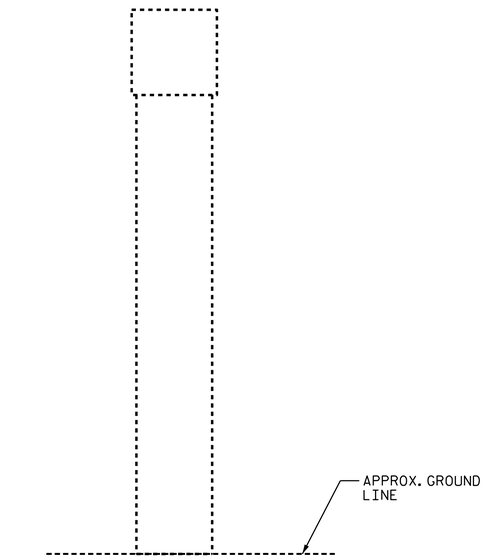

NORTH FACE

AS-BUILT REPAIR QUANTITY TABLE

BENT 21	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	18.3	9.2		
COLUMN/PILE	24.8	12.4		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	33.4	16.7		
EPOXY RESIN INJECTION		LIN. FT.		LIN. FT.
CAP		16.0		
COLUMN/PILE		9.5		

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 - SUBSTRUCTURE" SHEET.

NOTES:

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PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

BRIDGE NO. 71

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RALEIGH, NC 27609
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DRAWN BY : AARON J. MCMILLAN DATE : 03-2018
CHECKED BY : JACOB H. DUKE DATE : 03-2018
DESIGN ENGINEER OF RECORD : SAMUEL L. CULLUM DATE : 03-2018

NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM

DocuSigned by: Samuel L. Cullum 19C97095C75A457...

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE CONCRETE REPAIRS BENT 21

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-56
1			3			TOTAL SHEETS
2			4			69

8/13/2018
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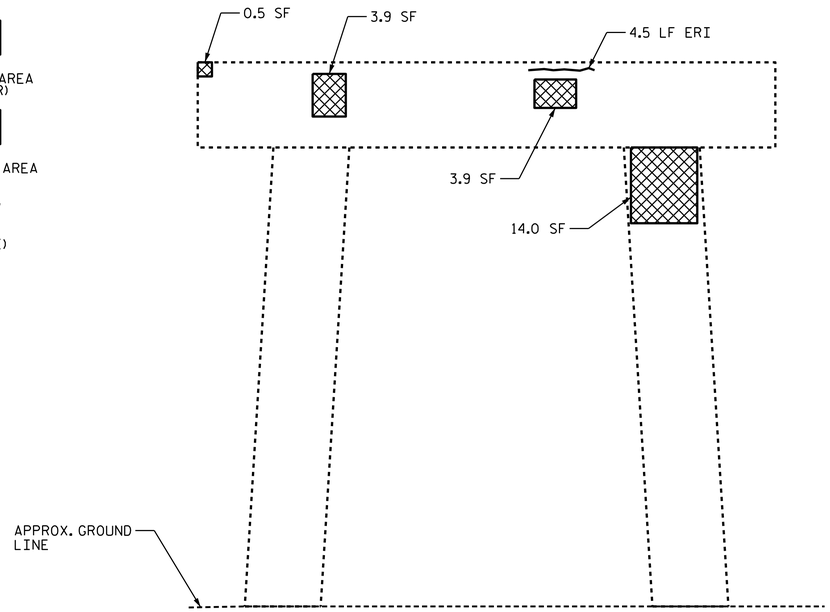
User:jduke

LEGEND:

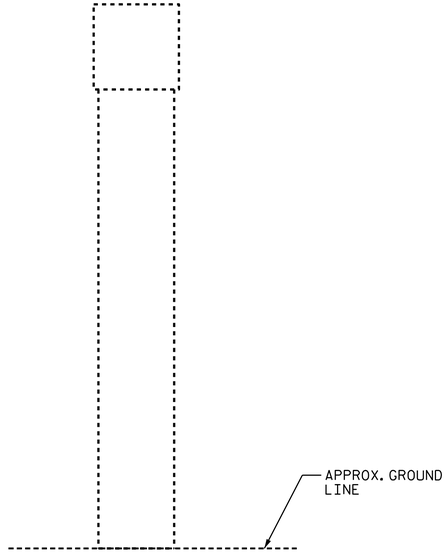
CONCRETE REPAIR AREA (FORM AND POUR)

SHOTCRETE REPAIR AREA

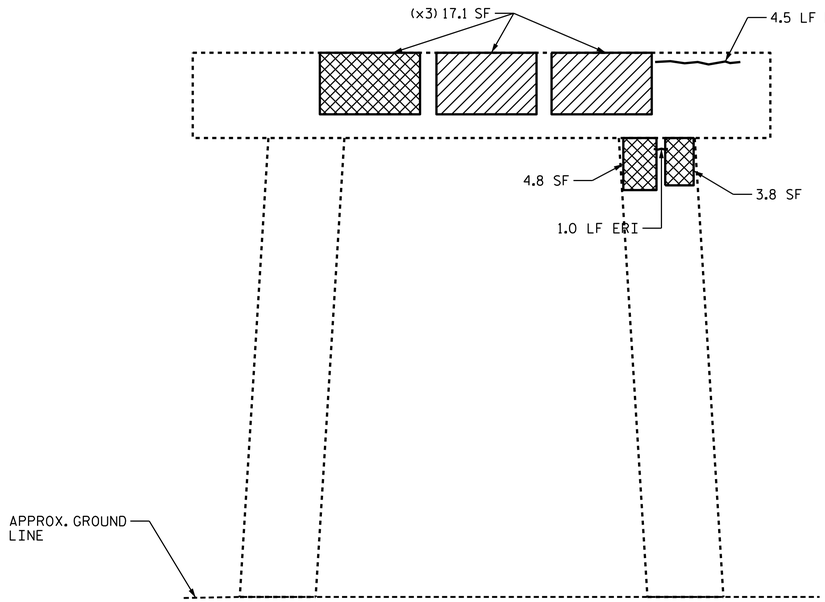
EPOXY RESIN INJECTION (ERI)



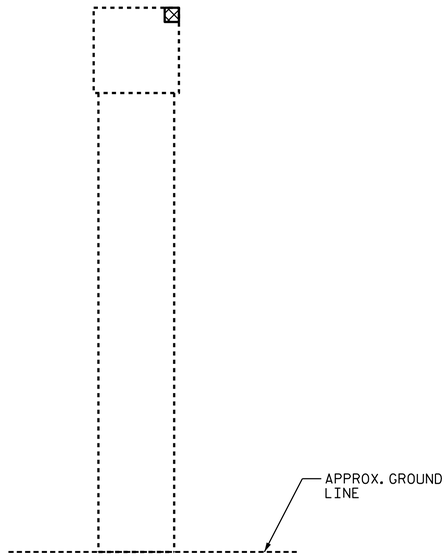
WEST ELEVATION



SOUTH FACE



EAST ELEVATION



NORTH FACE

AS-BUILT REPAIR QUANTITY TABLE

BENT 22	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	25.4	12.7		
COLUMN/PILE	22.6	11.3		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	34.2	17.1		
EPOXY RESIN INJECTION		LIN. FT.		LIN. FT.
CAP		9.0		
COLUMN/PILE		1.0		

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FOR EPOXY PROTECTIVE COATING, SEE SPECIAL PROVISIONS.

PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

BRIDGE NO. 71

KCA KISINGER CAMPO & ASSOCIATES
4800 SIX FORKS ROAD SUITE 120
RALEIGH, NC 27609
(919) 882-7839

DRAWN BY : AARON J. MCMILLAN DATE : 03-2018
CHECKED BY : JACOB H. DUKE DATE : 03-2018
DESIGN ENGINEER OF RECORD : SAMUEL L. CULLUM DATE : 03-2018

NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM

DocuSigned by: Samuel L. Cullum 19C97095C75A467...

8/13/2018 2:06:25 PM PDT

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE CONCRETE REPAIRS BENT 22

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-57
1			3			TOTAL SHEETS
2			4			69

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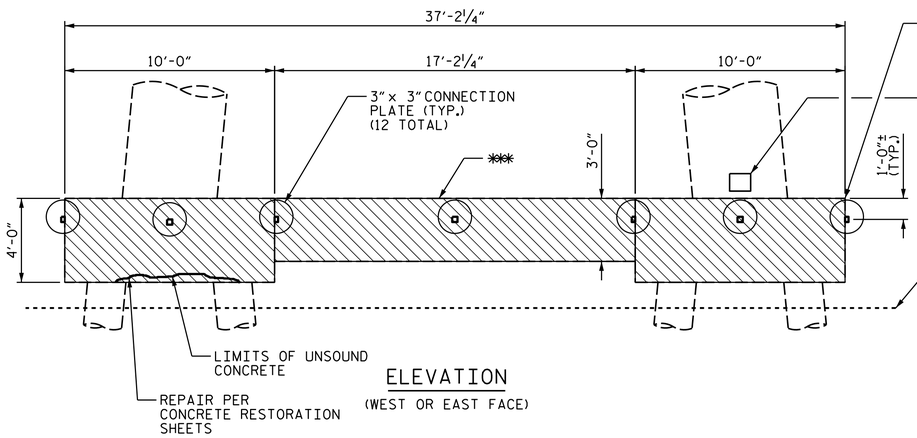
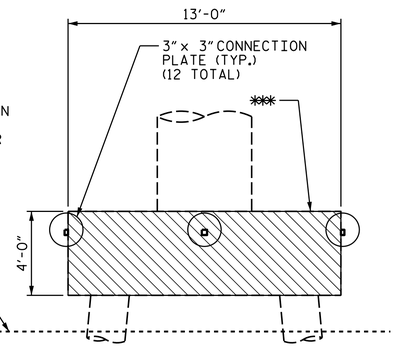
User:jduke



ELEVATION

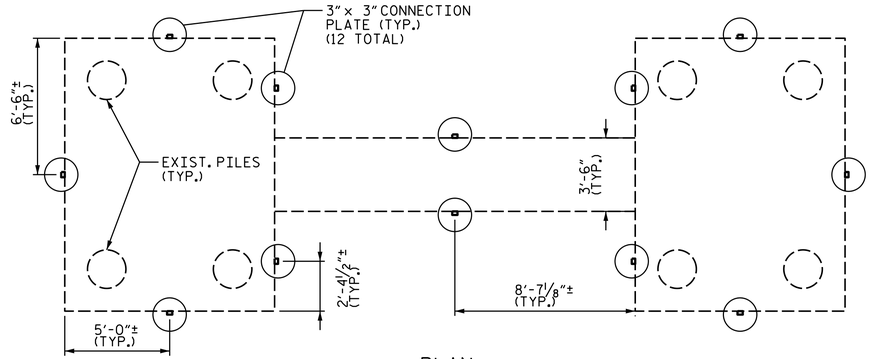
(WEST OR EAST FACE)

*** DO NOT METAILIZE TOP OF FOOTINGS



ELEVATION

(NORTH OR SOUTH FACE)

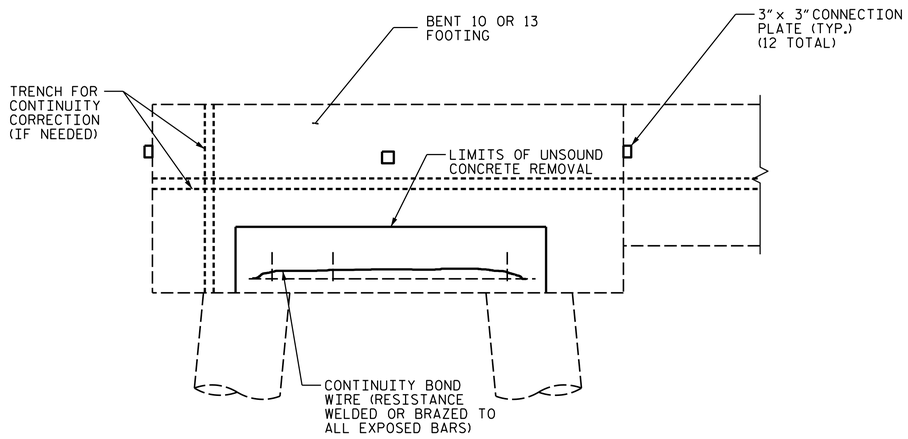


PLAN

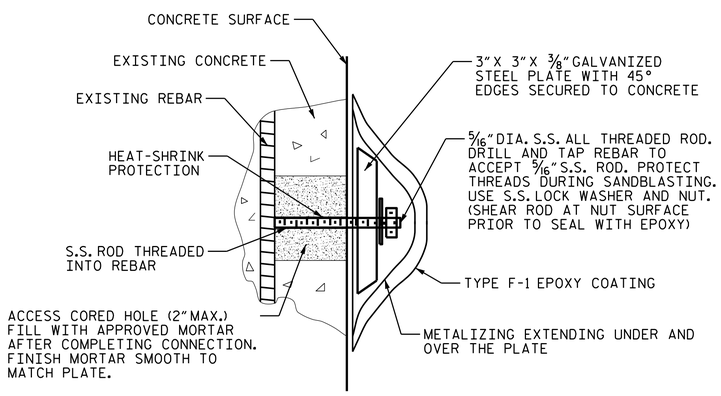
(LOCATION OF CONNECTION PLATES)

LEGEND:

TO BE METALIZED



CONTINUITY DETAIL



CONNECTION PLATE DETAIL FOR REBARS

METALIZING NOTES:

1. NO METALIZING SHALL BE PERFORMED UNTIL THE CONCRETE RESTORATION HAS BEEN APPROVED BY THE ENGINEER. METALIZE AT NO LESS THAN 10 (TEN) DAYS AFTER PLACING CONCRETE, BUT NO MORE THAN 90 (NINETY) DAYS. CONNECT METALIZING CONNECTION PLATE IMMEDIATELY AFTER COMPLETING METALIZING.
2. APPLY A ZINC SILICATE OVERCOAT AT NO MORE THAN 72 HOURS AFTER METALIZING.
3. COAT CONNECTION PLATE WITH EPOXY AT NO MORE THAN 96 HOURS AFTER APPLICATION OF ZINC SILICATE OVERCOAT.

NOTES:

1. REMOVE ALL UNSOUND CONCRETE FROM THE BENT FOOTINGS IN ACCORDANCE WITH CONCRETE RESTORATION DETAILS AND PROJECT SPECIAL PROVISIONS FOR CONCRETE REPAIR.
2. THE CONTRACTOR SHALL SUBMIT A PLAN FOR CONTROL AND DISPOSAL OF DEBRIS TO THE ENGINEER FOR APPROVAL.
3. FOR SPALLS OR DELAMINATIONS ON THE FOOTINGS GREATER THAN 2'-0" WIDE OR LONG AND GREATER THAN 1" DEEP, RESTORE CONCRETE TO ORIGINAL PROFILE IN ACCORDANCE WITH CONCRETE RESTORATION DETAILS SHEET AND PROJECT SPECIAL PROVISIONS FOR CONCRETE REPAIR.
4. FOR ANY CONCRETE AREAS THAT WOULD BE ISOLATED FROM PROPOSED CONTINUITY BY EXISTING SUPERFICIAL CRACKING, FILL CRACKS WITH EPOXY PRIOR TO METALIZING PER PROJECT SPECIAL PROVISIONS FOR EPOXY INJECTION OF CRACKS.
5. ALL VERTICAL FACES OF THE FOOTING SHALL BE METALIZED. CONNECTION BETWEEN PLATE AND REINFORCING STEEL SHALL BE PROVIDED VIA A ⅝" DIAMETER STAINLESS STEEL ALL THREADED ROD AS DESCRIBED IN THE CONNECTION PLATE DETAIL. THE CONNECTION PLATES SHALL BE LOCATED IN AREAS OF SOUND CONCRETE AS DETAILED IN THE PROJECT SPECIAL PROVISIONS FOR CATHODIC PROTECTION AND SHALL BE INSTALLED ON DIFFERENT BARS.
6. CHECK INTERBAR CONTINUITY. REINFORCING BARS REQUIRING CONTINUITY CORRECTION SHALL BE MADE CONTINUOUS USING STEEL WIRE RESISTANCE WELDED OR BRAZED TO EVERY REBAR. ALL EXPOSED BARS SHALL BE MADE CONTINUOUS. COAT ALL CONTINUITY CORRECTION WELDS WITH NON-CONDUCTIVE EPOXY.
7. CHECK ELECTRICAL CONTINUITY BETWEEN ALL PLATES IN ACCORDANCE WITH THE PROJECT SPECIAL PROVISIONS FOR CATHODIC PROTECTION.
8. METALIZE AND PLACE CONNECTION PLATES IN ACCORDANCE WITH PROJECT SPECIAL PROVISIONS FOR CATHODIC PROTECTION.
9. APPLY A ZINC SILICATE OVERCOAT TO THE METALIZED AREAS AS DESCRIBED IN THE PROJECT SPECIAL PROVISIONS FOR CATHODIC PROTECTION-INTERMEDIATE BENT METALIZING. THE ENGINEER MUST APPROVE THE METALIZING PRIOR TO THE OVERCOAT APPLICATION.
10. SEE PROJECT SPECIAL PROVISIONS FOR ADDITIONAL METALIZING REQUIREMENTS AND ACCEPTANCE CRITERIA. (PSP: CATHODIC PROTECTION-INTERMEDIATE BENT METALIZING)
11. SEQUENCE CLEANING AND COATING IN ORDER TO AVOID DELETERIOUS SUBSTANCES INHIBITING PROPOSED COATINGS.
12. ALL HARDWARE AND MATERIAL ITEMS ON THIS SHEET ARE INCIDENTAL TO PAY ITEM FOR ZINC ALUMINUM SPRAY.
13. THOROUGHLY CLEAR THE ALL VERTICAL FACES OF THE FOOTINGS OF ANY MARINE GROWTH AND DEBRIS BEFORE ALL PERFOMING ANY OF THE ASSOCIATED WORK FOR FOOTING METALIZATION.

PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

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DRAWN BY : JACOB H. DUKE DATE : 03-2018
CHECKED BY : DIEGO A. AGUIRRE DATE : 03-2018
DESIGN ENGINEER OF RECORD : SAMUEL L. CULLUM DATE : 03-2018

8/13/2018
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User:jduke

NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM

DocuSigned by: Samuel L. Cullum 19C97095C75A467...

8/13/2018 2:06:25 PM PDT

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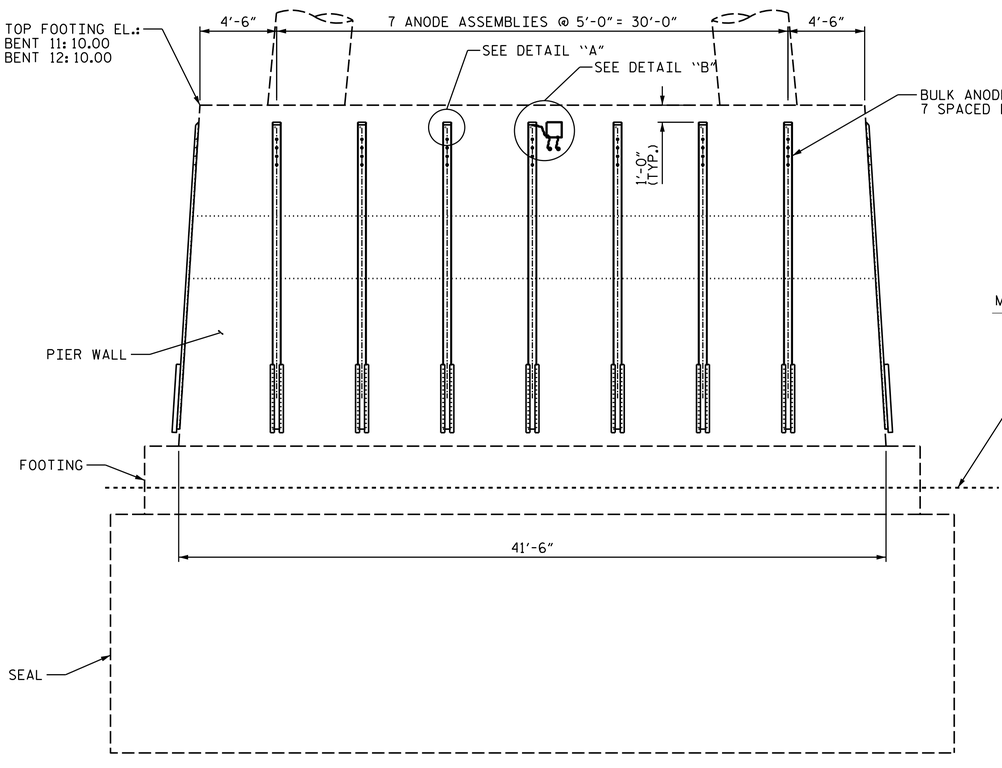
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CHANNEL BENT FOOTING RESTORATION

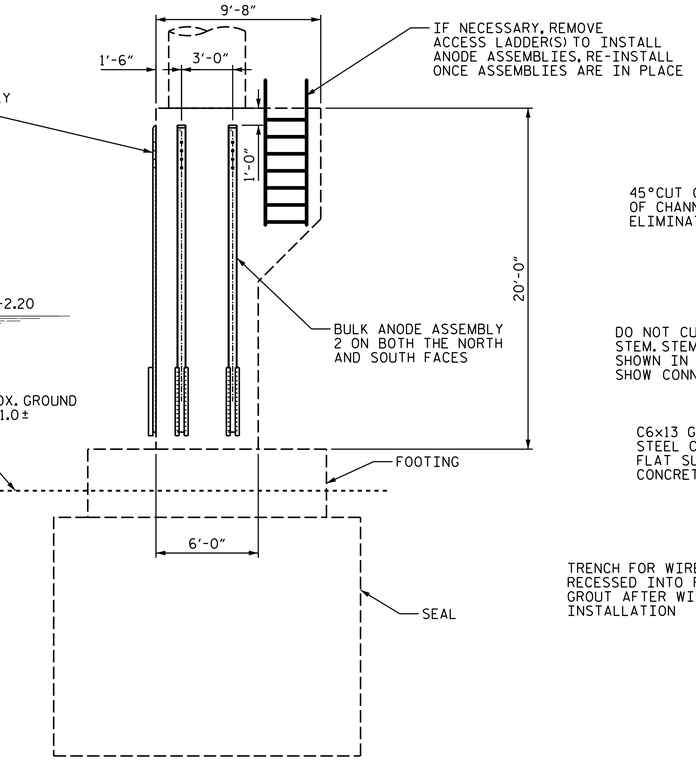
ZINC METALIZING DETAILS BENT 10 & 13

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-58
1			3			TOTAL SHEETS
2			4			69



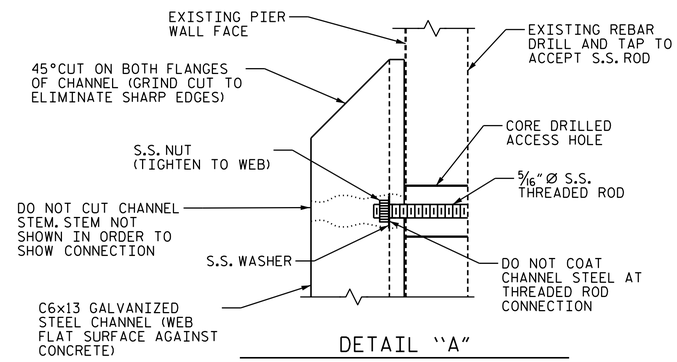
ELEVATION

(WEST FACE OF BENT 11)
(EAST FACE OF BENT 12)



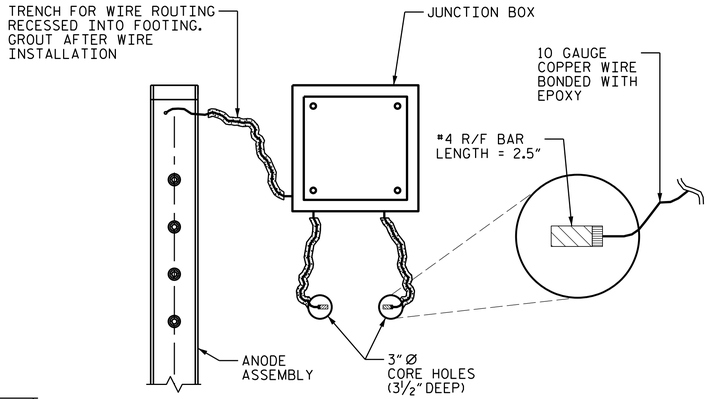
ELEVATION

(SOUTH FACE OF BENT 11)
(NORTH FACE OF BENT 12)
(ACCESS LADDER ON SOUTH FACES OF FOOTINGS ONLY)



DETAIL "A"

CONNECTION TO EXISTING REBAR DETAIL
(SIDE VIEW)
(CHANNEL STEM NOT SHOWN AT CONNECTION)



DETAIL 'B"

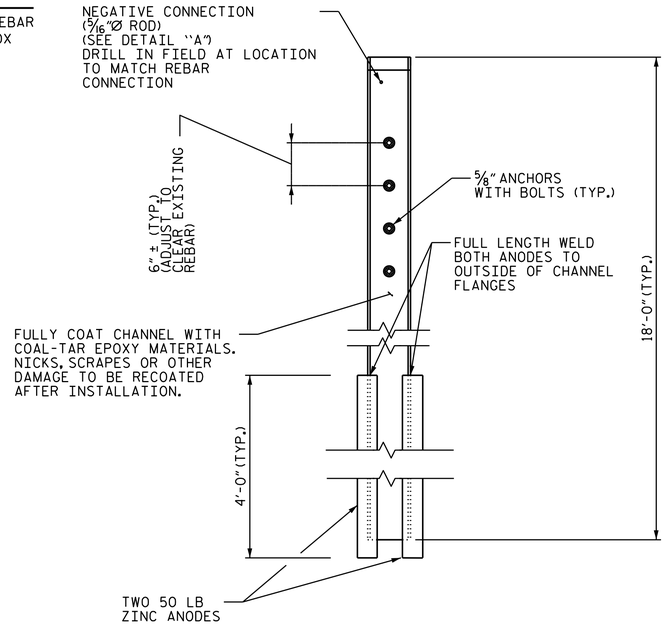
MONITORING JUNCTION BOX DETAIL
(FRONT VIEW)

ANODE PLACEMENT

SEE DETAIL "A" FOR CONNECTION TO EXISTING REBAR
SEE DETAIL "B" FOR MONITORING JUNCTION BOX

NOTES:

1. ANODES SHALL BE ASTM B418-01 TYPE I.
2. EXCEPT FOR ANODE WELDING, ALL CHANNEL MANUFACTURING SHALL BE PERFORMED PRIOR TO GALVANIZING.
3. ANCHORS TO BE DROP-IN TYPE 5/8" x 27/32" GALVANIZED HILTI HDI 243262 OR APPROVED EQUAL.
4. SEAL ACCESS HOLE WITH APPROVED EPOXY GROUT MATERIAL AFTER S.S. ROD INSTALLATION.
5. ANODE ASSEMBLIES SHALL BE PLACED SUCH THAT THE ANODE BE SUBMERGED A MINIMUM OF 3'-0" BELOW MEAN LOW WATER ELEVATION AT ALL TIMES. SPACING AND ELEVATION ADJUSTMENTS SHALL BE APPROVED BY THE ENGINEER.
6. PER EXISTING PLANS, TYPICAL CONCRETE COVER ON EXISTING PIER WALL IS 4".
7. WELDING OF S.S. ROD TO THE REBAR IN LIEU OF DRILL AND TAP MAY BE APPROVED AT THE DISCRETION OF THE ENGINEER.
8. ELECTRICAL CONTINUITY OF REINFORCING STEEL BETWEEN AT LEAST TWO OTHER CONNECTIONS SHALL BE PERFORMED PER CONNECTION PRIOR TO AND AFTER ANODE ASSEMBLY INSTALLATION.
9. IT IS THE CONTRACTORS RESPONSIBILITY TO LOCATE REINFORCING STEEL AND PATCH ALL CORES WITH APPROVED CONCRETE REPAIR MATERIAL.
10. PAYMENT FOR ALL WORK AND HARDWARE DESCRIBED ASSOCIATED WITH FURNISHING AND INSTALLING OF THE ZINC ANODES SHALL BE INCIDENTAL TO THE PAY ITEM FOR "CP SYSTEM (ZINC BULK ANODES)".
11. THOROUGHLY CLEAR THE FOOTINGS OF MARINE GROWTH AND DEBRIS BEFORE PERFORMING ANY WORK ASSOCIATED WITH THE INSTALLATION OF THE PROPOSED BULK ANODES.



ANODE ASSEMBLY DETAIL

(FRONT VIEW)

KCA KISINGER CAMPO & ASSOCIATES
4800 SIX FORKS ROAD SUITE 120
RALEIGH, NC 27609
(919) 882-7839

DRAWN BY : JACOB H. DUKE DATE : 03-2018
CHECKED BY : DIEGO A. AGUIRRE DATE : 03-2018
DESIGN ENGINEER OF RECORD : SAMUEL L. CULLUM DATE : 03-2018

PROJECT NO. 15BPR.16
BRUNSWICK COUNTY
BRIDGE NO. 71

NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM
DocuSigned by: Samuel L. Cullum 19C97095C75A457...
8/13/2018 2:06:25 PM PDT

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CHANNEL BENT FOOTING RESTORATION

BULK ANODE DETAILS
BENT 11 & 12

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-59
1			3			TOTAL SHEETS
2			4			69

8/13/2018
G:\4201720.03-Brunswick-71\Structures\401_310_15BPR.16_SMU_CBR02_S-59_090071.dgn
User:jduke

Brunswick #71								As-Built Quantities	
Span #	Component	Location (ft. from nearest bent, etc)	Bent #	Defect Description	Length(ft.)	Width(ft.)	Assumed Depth (ft.)	Actual (C.F.)	Actual Depth (ft.)
1	Curved Concrete Deck	in eastbound lane, at EB 1	EB 1	Delam	2.5	1.5			
1	Lt. Bridge Rail	at random throughout		(x10) Cracking (RC and Other)	10	1.5			
1	Lt. Bridge Rail	at random throughout		Delam	2.5	1.5			
1	Rt. Bridge Rail	at random throughout		(x13) Cracking (RC and Other)	13	1.5			
1	Rt. Bridge Rail	at random throughout		(x3) Spalls	3.5	1.5			
2	Girder 1	South face	1	Spall	1.5	1.75	0.75		
2	Girder 1	Bottom of beam, 1' from Bent	1	Unsound Patched Area	2.5	1.5			
2	Girder 1	North face, 1' from Bent	2	Delam	0.75	0.75			
2	Girder 1	South face, at Bent	2	Spall	0.75	0.75			
2	Girder 2	South face, at Bent	1	(x2) Spalls	2.5	1.5			
2	Girder 2	Bottom of beam, 1' from Bent	1	Spall	0.75	0.75			
2	Girder 3	North face, at Bent	2	Spall	1.75	2			
2	Girder 3	North & South faces, at Bent	1	(x2) Delam	2	3			
2	Girder 3	Bottom of beam, 1' from Bent	2	Spall	1	1			
2	Girder 4	North face, at Bent	1	Spall	1	1.25			
2	Girder 4	Bottom of beam, 1' from Bent	2	Delam	1.25	0.75			
2	Girder 5	South face, at Bent	1	Cracking (PSC)	3.5	2.5			
2	Lt. Bridge Rail	at random throughout		(x8) Cracking (RC and Other)	8.5	1.5			
2	Lt. Bridge Rail	South face, 8' from Bent	1	Exposed Rebar	1.5	1.5			
2	Rt. Bridge Rail	at random throughout		(x5) Cracking (RC and Other)	5.5	1.5			
3	Rt. Deck Overhang	at Bent	2	Spall	1.5	1			
3	Girder 1	Bottom of beam, starts 25' from Bent	3	Unsound Patched Area	2	1			
3	Girder 1	Bottom of beam, 1' from Bent	2	Unsound Patched Area	2.5	1.75			
3	Girder 1	Bottom of beam, starts 33' from Bent	3	Unsound Patched Area	2.5	1.75			
3	Girder 1	Bottom of beam, starts 30' from Bent	3	Unsound Patched Area	4.5	1.5			
3	Girder 1	Bottom of beam, starts 30' from Bent	2	Unsound Patched Area	5.25	1.75			
3	Girder 1	Bottom of beam, starts 2' from Bent	3	Delam	2.75	1.75			
3	Girder 1	South face, 1' from Bent	2	Delam	1	1			
3	Girder 2	South face, 1' from Bent	2	(x2) Delam	2.5	2			
3	Girder 2	East face, at Bent	3	Spall	0.75	0.75	2		
3	Girder 2	Bottom of beam, at Bent	2	Unsound Patched Area	2.5	1.5			
3	Girder 2	Bottom face, starts at Bent	3	Failed Patched Area	3.5	1.5			
3	Girder 2	North face, 1' from Bent	2	(x2) Delam	3	1.25			
3	Girder 2	Bottom of beam, 30' from Bent	3	Delam	1.5	1.25			
3	Girder 2	South face, at Bent	2	Delam	1.25	1.5			
3	Girder 3	Bottom of beam, 1' from Bent	2	Unsound Patched Area	1.25	2.25			
3	Girder 3	North face, at Bent	3	Delam	1	1.25			
3	Girder 4	Bottom of Beam, 30' from Bent	2	Delam	0.75	0.75			
3	Girder 5	North face, at Bent	2	Spall	1.5	1			
3	Girder 5	Bottom face, 1' from Bent	2	Spall	1	1.25			
3	Lt. Bridge Rail	at random throughout		(x4) Cracking (RC and Other)	6.5	1.5			
3	Rt. Bridge Rail	at random throughout		(x8) Cracking (RC and Other)	8.5	1.5			
4	Girder 1	East face, at Bent	4	Spall	0.75	2	0.75		
4	Girder 1	South face, 1' from Bent	4	Spall	1	1.25			
4	Girder 1	Bottom face, at Bent	3	Unsound Patched Area	1.5	2.25			
4	Girder 1	Bottom face, at Bent	4	Unsound Patched Area	6	2.5			
4	Girder 1	West face, Bottom flange, at Bent	4	Cracking (PSC)	1.25	1.5			
4	Girder 1	West face, 1' from Bent	3	Spall	0.75	1			
4	Girder 3	Bottom face, at Bent	4	Spall	1	1			
4	Girder 4	South face, at Bent	3	Delam	1.75	1.75			

Brunswick #71								As-Built Quantities	
Span #	Component	Location (ft. from nearest bent, etc)	Bent #	Defect Description	Length(ft.)	Width(ft.)	Depth(ft.)	Actual (C.F.)	Actual Depth (ft.)
4	Girder 4	Bottom face, 1' from Bent	3	Delam	0.75	0.75			
4	Girder 5	Bottom of beam, starts 30' from Bent	3	Unsound Patched Area	5.5	1.5			
4	Girder 5	South face, 1' from Bent	3	Spall	0.75	0.75			
4	Lt. Bridge Rail	at random throughout		(x15) Cracking (RC and Other)	15.5	1.5			
4	Rt. Bridge Rail	at random throughout		(x5) Cracking (RC and Other)	5.5	1.5			
5	Girder 1	Bottom of beam, at mid span		Unsound Patched Area	22.5	2.5			
5	Girder 2	East end corner, at Bent	5	Delam	0.75	2	0.75		
5	Girder 3	Bottom face, 31' from Bent	5	Spall	1.25	1			
5	Girder 4	Bottom face, 2' from Bent	5	Delam	2.25	1.5			
5	Girder 5	Bottom face, 31' from Bent	5	Spall	1	1			
5	Lt. Bridge Rail	South face, 18" from Bent	5	Spall	0.75	1.5			
5	Lt. Bridge Rail	at random throughout		(x7) Cracking (RC and Other)	7.5				
5	Lt. Bridge Rail	at random throughout		(x2) Spalls	0.75	0.75			
5	Lt. Bridge Rail	at random throughout		(x3) Spalls	0.75	1			
5	Rt. Bridge Rail	at random throughout		(x7) Cracking (RC and Other)	4.5	1.5			
5	Rt. Bridge Rail	at random throughout		(x2) Spalls	1.5	0.75			
5	Rt. Bridge Rail	North & South faces, 11' from Bent	5	Efflorescence/Rust Staining	5.5	3			
6	Girder 1	North face, at mid span		Spall	1.5	1.5	0.75		
6	Girder 1	South face, 1' from West end		Spall	2	2.25			
6	Girder 1	Bottom of beam, 1' from Bent	5	Unsound Patched Area	1.25	2.5			
6	Girder 1	North face, 3" from West end		Cracking (PSC)	2	1.5			
6	Girder 1	South face, at Bent	6	Delam	3	1	1.5		
6	Girder 2	South face, at Bent	6	Delam	3	1	0.75		
6	Girder 2	Bottom face, 31' from Bent	5	Spall	0.75	0.75			
6	Girder 3	West face, Bottom flange, at Bent	6	Cracking (PSC)	2	1.5			
6	Girder 3	Bottom face, 31' from Bent	6	Spall	0.75	0.75			
6	Girder 4	Bottom face, 31' from Bent	6	Spall	1	0.75			
6	Girder 5	Bottom face, 1' from Bent	5	Unsound Patched Area	1.25	2.25			
6	Lt. Bridge Rail	at random throughout		(x8) Cracking (RC and Other)	8.5	1.5			
6	Lt. Bridge Rail	South face, 13' from Bent	5	Efflorescence/Rust Staining	3.5	1.5			
6	Rt. Bridge Rail	North face, 14' from Bent	6	Unsound Patched Area	2	2			
6	Rt. Bridge Rail	at random throughout		(x2) Cracking (RC and Other)	2.5	1.5			
7	Girder 1	North face, at mid span		Unsound Patched Area	1	1			
7	Girder 1	North face, at Bent	6	(x2) Spalls	2	1			
7	Girder 1	Bottom face, 31' from Bent	6	Spall	0.75	1			
7	Girder 2	Bottom face, 31' from Bent	6	Spall	0.75	0.75			
7	Girder 2	North face, at Bent	7	Spall	0.75	1			
7	Girder 2	North face, at Bent	6	Spall	1	1			
7	Girder 3	Bottom face, at Bent	6	Spall	1.25	2			
7	Girder 3	Bottom face, 31' from Bent	6	Spall	0.75	0.75			
7	Girder 4	North & South faces, at Bent	6	(x3) Spalls	6	1.75			
7	Girder 4	South face, at Bent	7	(x2) Delams	2.5	1			
7	Girder 4	Bottom face, 2' from Bent	7	Delam	2	1.25			
7	Girder 4	Bottom face, 1' from Bent	7	Spall	0.75	1			
7	Girder 5	Bottom face, 1' from Bent	6	Spall	0.75	1.75			
7	Girder 5	North face, at Bent	6	Spall	2.25	2			
7	Lt. Bridge Rail	at random throughout		(x8) Cracking (RC and Other)	8.5	1.5			
7	Rt. Bridge Rail	at random throughout		(x3) Cracking (RC and Other)	3.5	1.5			
7	Rt. Bridge Rail	North face, 14' from Bent	6	Delam	1	1			
8	Girder 1	Bottom face, at Bent	8	Spall	1	1.5			

NOTES:

1. ALL DEFECTS WERE TAKEN FROM THE 2018 BRIDGE INSPECTION REPORT.
2. REPAIR LOCATIONS AND ESTIMATED QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE.
3. THE ENGINEER SHALL FILL OUT THE AS-BUILT REPAIR QUANTITY FOR EACH LISTED DEFICIENCY.
4. COORDINATE THIS SHEET WITH SHEETS S-32 THRU S-57.
5. IF ADDITIONAL REPAIRS, NOT SHOWN ON SHEETS S-35 THRU S-57, ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE CORRESPONDING SHEET THE APPROXIMATE LOCATIONS AND THE DESCRIPTION OF THE REPAIRS, AND WILL ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE AS-BUILT REPAIR QUANTITIES TABLE.

PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

BRIDGE NO. 71

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE DEFICIENCIES

NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM

DocuSigned by: Samuel L. Cullum 19C97095C75A467...

8/13/2018 2:06:25 PM PDT

KCA KISINGER CAMPO & ASSOCIATES
4800 SIX FORKS ROAD SUITE 120
RALEIGH, NC 27609
(919) 882-7839

DRAWN BY : AARON J. MCMILLAN DATE : 03-2018
CHECKED BY : DIEGO A. AGUIRRE DATE : 03-2018
DESIGN ENGINEER OF RECORD : SAMUEL L. CULLUM DATE : 03-2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-60
1			3			TOTAL SHEETS
2			4			69

8/13/2018
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User:jduke

Brunswick #71								As-Built Quantities	
Span #	Component	Location (ft. from nearest bent, etc)	Bent #	Defect Description	Length(ft.)	Width(ft.)	Depth(ft.)	Actual (C.F.)	Actual Depth (ft.)
8	Girder 1	South face, at Bent	7	Delam	1.5	1.5			
8	Girder 1	Bottom face, 31' from Bent	7	Spall	0.75	0.75			
8	Girder 1	Bottom face, 31' from Bent	8	Spall	0.75	0.75			
8	Girder 1	North face, 3' from Bent	8	Exposed Rebar	1.5	1.5			
8	Girder 2	North & South faces, at Bent	8	(x2) Spalls	1	1.25			
8	Girder 2	Bottom face, 1' from Bent	8	Spall	1	1.25			
8	Girder 2	Bottom face, 1' from Bent	7	Spall	1	1.25			
8	Girder 2	South face, at Bent	8	(x2) Spalls	1.5	1			
8	Girder 2	North & South faces, at Bent	7	(x3) Spalls	3	1			
8	Girder 2	Bottom face, 31' from Bent	7	Spall	0.75	0.75			
8	Girder 3	Bottom face, 1' from Bent	8	(x2) Spalls	3	1.75			
8	Girder 3	North face, at Bent	7	Spall	2	2			
8	Girder 3	South face, at Bent	8	Spall	1.25	1.5			
8	Girder 3	Bottom face, 31' from Bent	8	Spall	1.25	1			
8	Girder 3	South face, at Bent	8	Spall	0.75	0.75			
8	Girder 3	South face, at Bent	7	Delam	2	2			
8	Girder 3	Bottom face, 31' from Bent	7	Spall	0.75	0.75			
8	Girder 4	North face, at Bent	8	(x2) Spalls	2	1.25			
8	Girder 4	North face, at Bent	7	(x2) Spalls	2	1.25			
8	Girder 5	South face, at East end		Cracking (PSC)	1.5	1.5			
8	Girder 5	South face, at Bent	8	Cracking (PSC)	2.25	1.5			
8	Girder 5	North & South faces, 1' from Bent	8	(x4) Spalls	5	1.75			
8	Girder 5	at mid span		Spall	1.5	1.5			
8	Girder 5	North face, 1' from Bent	7	Cracking (PSC)	1.5	1.5			
8	Girder 5	South face, at Bent	7	Spall	1	1			
8	Girder 5	Bottom face, starts 2' from Bent	8	Delam	5.5	1.5			
8	Girder 5	Bottom face, 30' from Bent	8	Delam	9.5	1.5			
8	Girder 5	North face, at Bent	7	Exposed Rebar	1.5	1.5			
8	Lt. Bridge Rail	at random throughout		(x9) Cracking (RC and Other)	9.5	1.5			
8	Rt. Bridge Rail	at random throughout		(x6) Cracking (RC and Other)	6.5	1.5			
9	Girder 1	North face, at mid span		Unsound Patched Area	1.5	1.5			
9	Girder 1	Bottom face, 31' from Bent	8	Spall	0.75	0.75			
9	Girder 1	Bottom face, 31' from Bent	9	Spall	0.75	0.75			
9	Girder 2	Bottom face, 1' from Bent	9	Spall	1.5	1			
9	Girder 2	South face, at Bent	9	Delam	1.5	2.25			
9	Girder 2	North face, at Bent	9	Spall	0.75	1			
9	Girder 3	South face, at Bent	9	Spall	0.75	0.75			
9	Girder 3	South face, starts 1' from Bent	9	Delam	3.25	1	1		
9	Girder 3	Bottom face, 31' from Bent	8	Spall	1	1			
9	Girder 4	Bottom face, 1' from Bent	9	Spall	0.75	1			
9	Girder 4	South face, 1' from Bent	9	Spall	0.75	1			
9	Girder 5	Bottom face 1' from Bent	9	Spall	1	1			
9	Lt. Bridge Rail	at random throughout		(x8) Cracking (RC and Other)	8.5	1.5			
9	Rt. Bridge Rail	at random throughout		(x7) Cracking (RC and Other)	7.5	1.5			
10	Curved Concrete Deck	Eastbound lane, at Bent Joint	10	Spall	3.5	1	1		
10	Girder 1	Bottom face, 31' from from Bent	10	Spall	1	1			
10	Girder 1	Bottom face, 31' from Bent	9	Spall	1	1			
10	Girder 2	North face, at Bent	10	Spall	0.75	1.25			
10	Girder 2	Bottom face, at strand hold down locations		(x2) Spalls	2	1			
10	Girder 2	North face, at Bent	10	Delam	1.5	2			

Brunswick #71								As-Built Quantities	
Span #	Component	Location (ft. from nearest bent, etc)	Bent #	Defect Description	Length(ft.)	Width(ft.)	Depth(ft.)	Actual (C.F.)	Actual Depth (ft.)
10	Girder 2	North face, 3' from Bent	10	Spall	0.75	0.75			
10	Girder 3	Bottom face, at strand hold down locations		(x2) Spalls	2	1			
10	Girder 3	Bottom face, 1' from Bent	10	Spall	1	1			
10	Girder 4	Bottom face, at strand hold down locations		(x2) Spalls	2	1			
10	Girder 4	North face, at Bent	10	Spall	0.75	0.75			
10	Girder 4	South face, at Bent	10	Delam	1	1.25			
10	Girder 5	North face, at Bent	10	Delam	1.5	1.5			
10	Girder 5	Bottom face, 1' from Bent	10	Delam	1.25	1.5			
10	Lt. Bridge Rail	at random throughout		(x11) Cracking (RC and Other)	11.5	1.5			
10	Rt. Bridge Rail	at random throughout		(x13) Cracking (RC and Other)	13.5	1.5			
10	Rt. Bridge Rail	North face, 3' from Bent	10	Spall	0.75	0.75			
11	Curved Concrete Deck	Eastbound lane, 7' from Bent	10	Spall	1.25	1.5			
11	Lt. Bridge Rail	at random throughout		(x23) Cracking (RC and Other)	23.5	1.5			
11	Rt. Bridge Rail	at random throughout		(x5) Cracking (RC and Other)	5.5	1.5			
11	Girder 1	North face, at diaphragm locations		(x2) Unsound Patched Area	2	1			
11	Girder 2	North face, at East end		Unsound Patched Area	0.75	1			
11	Girder 2	North face, starts 6" from East end.		Cracking (PSC)	1.75	1.5			
11	Girder 2	South face, at Bent	10	Spall	0.75	0.75			
11	Girder 3	East face		Spall	1.25	1.25	1		
11	Girder 3	West face		(x5) Spalls	3.75	0.75			
11	Girder 3	North face, at Bent	11	Spall	0.75	1			
11	Girder 4	North face, 1' from Bent	11	Spall	1	1.5			
11	Girder 4	South face, at West end		Spall	1	2.75			
11	Girder 4	South face, 1' from Bent	11	Cracking (PSC)	2	1.5			
12	Curved Concrete Deck	Eastbound lane, 3' from Bent	11	Unsound Patched Area	3.5	3.5			
12	Girder 1	South face, at Bent	12	Unsound Patched Area	2	1.5			
12	Girder 2	North face, at Bent	12	Spall	1	1	1		
12	Girder 2	North face, at Bent	11	Spall	1.25	0.75	0.75		
12	Girder 3	South face, at Bent	11	Unsound Patched Area	1.5	1.75			
12	Girder 3	North face, at Bent	12	Unsound Patched Area	2.5	2.25			
12	Girder 3	North face, at Bent	12	Unsound Patched Area	3.25	1			
12	Girder 3	South face, 1' from Bent	11	Spall	1	1			
12	Girder 4	South face, starts at Bent	12	Cracking (PSC)	18.5	2.5			
12	Girder 4	South face, at Bent	12	Spall	1.25	1	0.75		
12	Girder 4	North face, 3' from Bent	11	Unsound Patched Area	2.5	1.25			
12	Girder 4	South face, at Bent	11	(x2) Cracking (PSC)	9	4.5			
12	Lt. Bridge Rail	at random throughout		(x19) Cracking (RC and Other)	19.5	1.5			
12	Lt. Bridge Rail	North & South faces, 29' from Bent	12	Cracking (RC and Other)	1.25	1.5			
12	Rt. Bridge Rail	North face, at random throughout		(x2) Spalls	1.5	0.75			
12	Rt. Bridge Rail	at random throughout		Delam	24.5	1.5			
13	Girder 2	North face, at Bent	12	(x4) Cracking (PSC)	10	1.5			
13	Girder 2	North face, at Bent	13	(x2) Spalls	1.5	0.75			
13	Girder 3	South face, 1' from Bent	13	Spall	1	1.5			
13	Girder 3	North face, at Bent	12	Spall	0.75	0.75			
13	Girder 3	North face, at Bent	13	Spall	0.75	1			
13	Girder 4	South face, at Bent	13	Spall	0.75	2	0.75		
13	Girder 4	South face, 1' from Bent	12	Cracking (PSC)	2.5	2.5			
13	Girder 4	South face, at Bent	13	Cracking (PSC)	4.5	4.5			
13	Girder 4	North face, at Bent	12	Spall	0.75	1			
13	Girder 4	North face, at Bent	12	Spall	1	1			

NOTES:

1. ALL DEFECTS WERE TAKEN FROM THE 2018 BRIDGE INSPECTION REPORT.
2. REPAIR LOCATIONS AND ESTIMATED QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE.
3. THE ENGINEER SHALL FILL OUT THE AS-BUILT REPAIR QUANTITY FOR EACH LISTED DEFICIENCY.
4. COORDINATE THIS SHEET WITH SHEETS S-32 THRU S-57.
5. IF ADDITIONAL REPAIRS, NOT SHOWN ON SHEETS S-35 THRU S-57, ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE CORRESPONDING SHEET THE APPROXIMATE LOCATIONS AND THE DESCRIPTION OF THE REPAIRS, AND WILL ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE AS-BUILT REPAIR QUANTITIES TABLE.

PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

BRIDGE NO. 71

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE DEFICIENCIES

NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM

DocuSigned by: Samuel L. Cullum 19C97095C75A467...

8/13/2018 2:06:25 PM PDT

KCA KISINGER CAMPO & ASSOCIATES
4800 SIX FORKS ROAD SUITE 120
RALEIGH, NC 27609
(919) 882-7839

DRAWN BY : AARON J. MCMILLAN DATE : 03-2018
CHECKED BY : DIEGO A. AGUIRRE DATE : 03-2018
DESIGN ENGINEER OF RECORD : SAMUEL L. CULLUM DATE : 03-2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-61
1			3			TOTAL SHEETS
2			4			69

8/13/2018
G:\4201720.03-Brunswick-71\Structures\401_320_15BPR.16_SMU_DEF02_S-61_090071.dgn
User:jduke

Brunswick #71								As-Built Quantities	
Span #	Component	Location (ft. from nearest bent, etc)	Bent #	Defect Description	Length(ft.)	Width(ft.)	Depth(ft.)	Actual (C.F.)	Actual Depth (ft.)
13	Lt. Bridge Rail	at random throughout		(x11) Cracking (PSC)	11.5	1.5			
13	Lt. Bridge Rail	North face, at random throughout		(x2) Spalls	1.5	0.75			
13	Rt. Bridge Rail	at random throughout		(x9) Cracking (PSC)	9.5	1.5			
13	Rt. Bridge Rail	North face, at random throughout		(x2) Spalls	1.5	0.75			
14	Curved Concrete Deck	Eastboound lane, at Bent	13	Delam	2.5	1.25			
14	Girder 1	North face, at mid span		Unsound Patched Area	1	1			
14	Girder 1	South face, 1" from end of beam, at Bent	14	Cracking (PSC)	1.5	1.5			
14	Girder 2	Bottom face, at Bent	13	Spall	1.5	0.75	0.75		
14	Girder 2	West face		(x2) Spalls	1	0.75			
14	Girder 2	at end of beam, at Bent	14	Delam	1.5	1.5			
14	Girder 2	31' from Bent	14	Spall	1	1			
14	Girder 3	South face, at Bent	14	Delam	1.25	2.25			
14	Girder 3	West face		Spall	0.75	1.75			
14	Girder 3	Bottom face, 1' from Bent	14	Spall	1.25	1.5			
14	Girder 3	North face, at Bent	13	Spall	0.75	0.75			
14	Girder 4	West face		Spall	1.5	2	1		
14	Girder 4	South face, at mid span		Unsound Patched Area	1	1			
14	Girder 4	near end of beam, at Bent	14	Delam	1.75	1.5			
14	Lt. Bridge Rail	at random throughout		(x8) Cracking (RC and Other)	8.5	1.5			
14	Lt. Bridge Rail	South face, 6' from Bent	14	(x2) Spalls	1.5	1			
14	Rt. Bridge Rail	at random throughout		(x8) Cracking (RC and Other)	8.5	1.5			
14	Rt. Bridge Rail	North face, at random throughout		(x2) Spalls	1.5	0.75			
14	Girder 5	Bottom face, 23' from Bent	14	Unsound Patched Area	4.5	1.25			
14	Girder 5	Bottom face, at Bent	13	Spall	1.5	2			
14	Girder 5	near end of beam, at Bent	14	Delam	1.75	1.5			
14	Girder 5	Bottom face, 8' from Bent	14	Delam	2	1.25			
14	Girder 5	Bottom face, 20' from Bent	14	Delam	2.5	1.25			
15	Girder 1	Bottom face, at strand hold down locations		Spall	1	0.75			
15	Girder 1	Southeast corner, at Bent	15	Spall	0.75	2	0.75		
15	Girder 2	Northeast corner, at Bent	15	Delam	1.75	2			
15	Girder 2	Southeast corner, at Bent	15	Spall	1	1.5	0.75		
15	Girder 3	South face, at Bent	15	Spall	1.25	1.75			
15	Girder 3	North face, at end of beam, at Bent	15	Spall	1.25	2			
15	Girder 4	Bottom face, at Bent	14	Cracking (PSC)	3.5	1.5			
15	Girder 4	North face, at Bent	15	Spall	1.75	1.5			
15	Girder 4	South face of web, 8" from end, at Bent	14	Delam	1.5	2			
15	Girder 5	4" from beam end, at Bent	15	Cracking (PSC)	1.75	1.5			
15	Girder 5	North face, at end of beam, at Bent	14	Spall	1	1	2.5		
15	Girder 5	South & Bottom faces, near mid-span		Unsound Patched Area	6.5	1.5	0.75		
15	Girder 5	South face, 3" from end of beam, at Bent	14	Cracking (PSC)	1.75	1.5			
15	Girder 5	South face, 4" from end of beam, at Bent	15	Spall	0.75	0.75			
15	Girder 5	North face, at Bent	15	Spall	1	2.5	0.75		
15	Girder 5	North face, 10" from end of beam, at Bent	14	Spall	1	0.75			
15	Lt. Bridge Rail	at random throughout		(x9) Cracking (RC and Other)	9.5	1.5			
15	Lt. Bridge Rail	South face, 35' from Bent	15	Spall	0.75	0.75			
15	Rt. Bridge Rail	at random throughout		(x8) Cracking (RC and Other)	8.5	1.5			
15	Rt. Bridge Rail	North face, near mid span		Spall	0.75	0.75			
16	Curved Concrete Deck	Deck underside, at Beam 5, at Bent	16	Spall	4.5	1	1		
16	Girder 1	South face, at Bent	16	Spall	1.25	2.75			
16	Girder 2	South face, 3" from end of beam, at Bent	16	Spall	1.25	1			

Brunswick #71								As-Built Quantities	
Span #	Component	Location (ft. from nearest bent, etc)	Bent #	Defect Description	Length(ft.)	Width(ft.)	Depth(ft.)	Actual (C.F.)	Actual Depth (ft.)
16	Girder 3	North face, at Bent	16	Delam	3	1.5			
16	Girder 3	South face, 6" from end of beam, at Bent	16	Spall	1.25	0.75			
16	Girder 4	South face, at Bent	16	Spall	0.75	0.75			
16	Girder 5	Bottom & South faces, 3' from Bent	15	(x2) Unsound Patched Area	13	2			
16	Girder 5	South face, 3" from end of beam, at Bent	16	Spall	1	1			
16	Lt. Bridge Rail	Top of North face, starts 12' from Bent	16	(x7) Spalls	10.5	1			
16	Lt. Bridge Rail	at random throughout		(x13) Cracking (RC and Other)	13.5	1.5			
17	Girder 1	South face, at Bent	17	Cracking (PSC)	3	1.5			
17	Girder 1	3" from beam end, South face, at Bent	17	Spall	0.75	0.75			
17	Girder 1	Northeast corner, at Bent	17	Delam	1	3	0.75		
17	Girder 2	South face, at beam end, at Bent	17	Cracking (PSC)	1.5	2			
17	Girder 2	Bottom of beam, at Bent	16	Spall	1.25	1.25			
17	Girder 2	North face, at Bent	17	Cracking (PSC)	1.5	1.5			
17	Girder 3	South face, at Bent	17	Delam	0.75	2.5			
17	Girder 3	Bottom of beam, at Bent	16	Spall	1.25	1			
17	Girder 4	North face, at Bent	17	Delam	4.5	2.5			
17	Girder 4	2" from beam end, South face, at Bent	17	Spall	0.75	1.25			
17	Girder 4	North face, at Bent	16	Spall	0.75	2.75	0.75		
17	Girder 4	Bottom of beam, at Bent	17	Spall	1.5	1.25			
17	Girder 5	at mid span, South face		Spall	1.5	1.25			
17	Girder 5	North face, at Bent	17	Spall	1.5	3.5	0.75		
17	Girder 5	North face, at Bent	16	Spall	3.5	2			
17	Girder 5	Bottom of beam, 31' from Bent	16	Spall	1.5	1.25			
17	Girder 5	South face, at Bent	17	Delam	1.5	2.75			
17	Girder 5	Bottom face, 6' from beam end, near Bent	17	Unsound Patched Area	9.5	2	1		
17	Girder 5	North face, at Bent	16	Cracking (PSC)	1	2			
17	Girder 5	Bottom face, 14' from Bent	17	Delam	3.5	2			
17	Lt. Bridge Rail	at random throughout		(x16) Cracking (RC and Other)	16.5	1.5			
17	Rt. Bridge Rail	at random throughout		(x15) Cracking (RC and Other)	15.5	1.5			
17	Rt. Bridge Rail	near Bent	17	Spall	0.75	1			
18	Girder 1	Bottom & South faces, at Bent	17	Unsound Patched Area	3.5	1			
18	Girder 2	Bottom flange, North face, 4' from Bent	17	Spall	1.75	0.75	0.75		
18	Girder 2	4" from beam end, North face, at Bent	17	Spall	0.75	0.75			
18	Girder 3	North face, 1.5" from beam end, at Bent	17	Cracking (PSC)	1.75	1.5			
18	Girder 3	North face, 6" from end of beam, at Bent	18	Cracking (PSC)	1.75	1.5			
18	Girder 3	Bottom face, 5" from North face, 7' from Bent	17	Cracking (PSC)	3.5	1.5			
18	Girder 3	Bottom face, at Bent	17	Cracking (PSC)	3	1.5			
18	Girder 3	South face, at Bent	17	Delam	1.5	1.25			
18	Girder 3	Bottom face, 12' from Bent	17	Delam	5.5	0.75	1.5		
18	Girder 4	South face, 5" from end of beam, at Bent	18	Cracking (PSC)	2.25	1.5			
18	Girder 4	North face, at Bent	17	Cracking (PSC)	1	2.5			
18	Girder 4	South face, at Bent	17	Spall	2	2.5			
18	Girder 4	North face, at Bent	17	Delam	1.75	1.75			
18	Girder 4	North face, 4" from end of beam, at Bent	18	Spall	1	1			
18	Girder 5	South face, 3" from end of beam, at Bent	18	Cracking (PSC)	2.75	1.5			
18	Lt. Bridge Rail	at random throughout		(x7) Cracking (RC and Other)	7.5	1.5			
18	Rt. Bridge Rail	at random throughout		(x6) Cracking (RC and Other)	6.5	1.5			
18	Rt. Bridge Rail	20' from Bent	18	Spall	0.75	0.75			
19	Curved Concrete Deck	Deck underside, above Beam 1, at Bent	18	Spall	1	1	0.75		
19	Girder 1	South face, 5" from beam end, at Bent	18	Delam	1.25	1.25			

NOTES:

1. ALL DEFECTS WERE TAKEN FROM THE 2018 BRIDGE INSPECTION REPORT.
2. REPAIR LOCATIONS AND ESTIMATED QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE.
3. THE ENGINEER SHALL FILL OUT THE AS-BUILT REPAIR QUANTITY FOR EACH LISTED DEFICIENCY.
4. COORDINATE THIS SHEET WITH SHEETS S-32 THRU S-57.
5. IF ADDITIONAL REPAIRS, NOT SHOWN ON SHEETS S-35 THRU S-57, ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE CORRESPONDING SHEET THE APPROXIMATE LOCATIONS AND THE DESCRIPTION OF THE REPAIRS, AND WILL ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE AS-BUILT REPAIR QUANTITIES TABLE.

PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

BRIDGE NO. 71

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE DEFICIENCIES

NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM

DocuSigned by: Samuel L. Cullum 19C97095C75A467...

8/13/2018 2:06:25 PM PDT

KCA KISINGER CAMPO & ASSOCIATES
4800 SIX FORKS ROAD SUITE 120
RALEIGH, NC 27609
(919) 882-7839

DRAWN BY : AARON J. MCMILLAN DATE : 03-2018
CHECKED BY : DIEGO A. AGUIRRE DATE : 03-2018
DESIGN ENGINEER OF RECORD : SAMUEL L. CULLUM DATE : 03-2018

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-62
1			3			TOTAL SHEETS
2			4			69

8/13/2018
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User:jduke

Brunswick #71								As-Built Quantities	
Span #	Component	Location (ft. from nearest bent, etc)	Bent #	Defect Description	Length(ft.)	Width(ft.)	Depth(ft.)	Actual (C.F.)	Actual Depth (ft.)
19	Girder 2	North face, at end of beam, at Bent	19	Exposed Prestressing	0.75	1.5	1		
19	Girder 2	North face, 1' from beam, at Bent	18	Delam	1.25	1.25			
19	Girder 3	North face, 3" from end of beam, at Bent	19	Cracking (PSC)	2.25	1.5			
19	Girder 4	South face, 3" from end of beam, at Bent	19	Cracking (PSC)	1.75	1.5			
19	Girder 4	North face, 5" from end of beam, at Bent	18	Spall	1	1			
19	Girder 5	North face, 2" from end of beam, at Bent	18	Spall	1	1			
19	Girder 5	North face, at Bent	19	Delam	1.25	1.25			
19	Lt. Bridge Rail	at Bent	18	Spall	1	1.5	1		
19	Lt. Bridge Rail	at random throughout		(x3) Cracking (RC and Other)	3.5	1.5			
20	Girder 2	Bottom face, at Bent	19	Spall	1	1.75			
20	Girder 2	North face, 10" from end of beam , at Bent	19	Delam	1.5	1.5			
20	Girder 2	North face, 2" from end of beam, at Bent	19	Spall	1	1			
20	Girder 3	Bottom & South faces, near Bent	19	Unsound Patched Area	1	5.5			
20	Girder 3	North face, at Bent	20	Cracking (PSC)	2.75	1.5			
20	Girder 4	South face, 3" from end of beam, at Bent	19	Cracking (PSC)	1.75	1.5			
20	Girder 4	North face, 3" from end of beam, at Bent	20	Cracking (PSC)	2	1.5			
20	Girder 5	North face, at Bent	20	Cracking (PSC)	1.5	1.5			
20	Lt. Bridge Rail	at random throughout		(x8) Cracking (RC and Other)	8.5	1.5			
20	Rt. Bridge Rail	at random throughout		(x2) Cracking (RC and Other)	2.5	1.5			
21	Curved Concrete Deck	8' from left bridge rail, 14' from Bent	21	Spall	1	1			
21	Girder 1	North face, at beam end, at Bent	20	Delam	1	1			
21	Girder 2	Bottom of beam, 12' from Cap 1		Unsound Patched Area	2.5	1.5			
21	Girder 2	Bottom face, 14' from Bent	20	Delam	1.5	1.5			
21	Girder 2	East face, at Bent	21	Delam	1.5	2.25			
21	Girder 2	North face, at Bent	20	Delam	1.25	1.25			
21	Girder 2	Bottom face, 22' from Bent	20	Delam	8.5	1.5			
21	Girder 3	North face, 6" from end of beam, at Bent	20	Spall	1.5	1.5			
21	Girder 3	North & Bottom faces, 1.5' from beam end at Ber	20	Unsound Patched Area	7	1	1.25		
21	Girder 4	North face, 4" from end of beam, at Bent	20	Spall	1	0.75			
21	Girder 5	North face, at Bent	20	Cracking (PSC)	2.5	1.5			
21	Girder 5	Bottom face, at Bent	20	Spall	1	1.25			
21	Lt. Bridge Rail	at random throughout		(x7) Cracking (RC and Other)	7.5	1.5			
21	Rt. Bridge Rail	at random throughout		(x13) Cracking (RC and Other)	13.5	1.5			
22	Girder 1	Bottom face, 23' from Bent	21	Spall	1	1			
22	Girder 1	North face, 2" from end of beam, at Bent	22	Cracking (PSC)	2.5	1.5			
22	Girder 1	Bottom face, 23' from Bent	22	Spall	1	1			
22	Girder 2	North face, at Bent	21	Delam	2.5	1	0.75		
22	Girder 3	South face, at Bent	22	Cracking (PSC)	2.5	1.5			
22	Girder 3	Beam end, at Bent	22	Cracking (PSC)	0.75	2.75	0.75		
22	Girder 5	Bottom face, 22' from Bent	21	Spall	1	1			
22	Lt. Bridge Rail	at random throughout		(x4) Cracking (RC and Other)	4.5	1.5			
22	Rt. Bridge Rail	at random throughout		(x2) Cracking (RC and Other)	2.5	1.5			
23	Girder 1	Bottom face, 23' from EB 2	EB2	Spall	1	1			
23	Girder 3	North & Bottom faces, at Bent	22	Delam	3	0.75	0.75		
23	Girder 4	North corner, Bottom flange, at Bent	22	Delam	3.5	1.25	0.75		
23	Girder 4	Bottom face, 23' from EB 2	EB2	Spall	1	1			
23	Girder 5	Bottom face, 22' from EB 2	EB2	Spall	1	1			
23	Girder 5	Bottom face, 22' from Bent	22	Spall	1	1			
23	Lt. Bridge Rail	3' from Bent	22	Spall	0.75	1			
23	Lt. Bridge Rail	at random throughout		(x5) Cracking (RC and Other)	5.5	1.5			

Brunswick #71								As-Built Quantities	
Span #	Component	Location (ft. from nearest bent, etc)	Bent #	Defect Description	Length(ft.)	Width(ft.)	Depth(ft.)	Actual (C.F.)	Actual Depth (ft.)
23	Rt. Bridge Rail	at random throughout		(x6) Cracking (RC and Other)	6.5	1.5			

NOTES:

1. ALL DEFECTS WERE TAKEN FROM THE 2018 BRIDGE INSPECTION REPORT.
2. REPAIR LOCATIONS AND ESTIMATED QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE.
3. THE ENGINEER SHALL FILL OUT THE AS-BUILT REPAIR QUANTITY FOR EACH LISTED DEFICIENCY.
4. COORDINATE THIS SHEET WITH SHEETS S-32 THRU S-57.
5. IF ADDITIONAL REPAIRS, NOT SHOWN ON SHEETS S-35 THRU S-57, ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE CORRESPONDING SHEET THE APPROXIMATE LOCATIONS AND THE DESCRIPTION OF THE REPAIRS, AND WILL ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE AS-BUILT REPAIR QUANTITIES TABLE.

PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

BRIDGE NO. 71

SHEET 4 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE DEFICIENCIES

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-63
1			3			TOTAL SHEETS
2			4			69

KCA KISINGER CAMPO & ASSOCIATES
4800 SIX FORKS ROAD SUITE 120
RALEIGH, NC 27609
(919) 882-7839

DRAWN BY : AARON J. MCMILLAN DATE : 03-2018
CHECKED BY : DIEGO A. AGUIRRE DATE : 03-2018
DESIGN ENGINEER OF RECORD : SAMUEL L. CULLUM DATE : 03-2018

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PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

BRIDGE NO. 71

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

NAVIGATIONAL LIGHT SYSTEM

NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-64
1			3			TOTAL SHEETS
2			4			69

KCA KISINGER CAMPO & ASSOCIATES
4800 SIX FORKS ROAD SUITE 120
RALEIGH, NC 27609
(919) 882-7839

DRAWN BY : JACOB H. DUKE DATE : 03-2018
CHECKED BY : AARON J. MCMILLAN DATE : 03-2018
DESIGN ENGINEER OF RECORD : SAMUEL L. CULLUM DATE : 03-2018

8/13/2018
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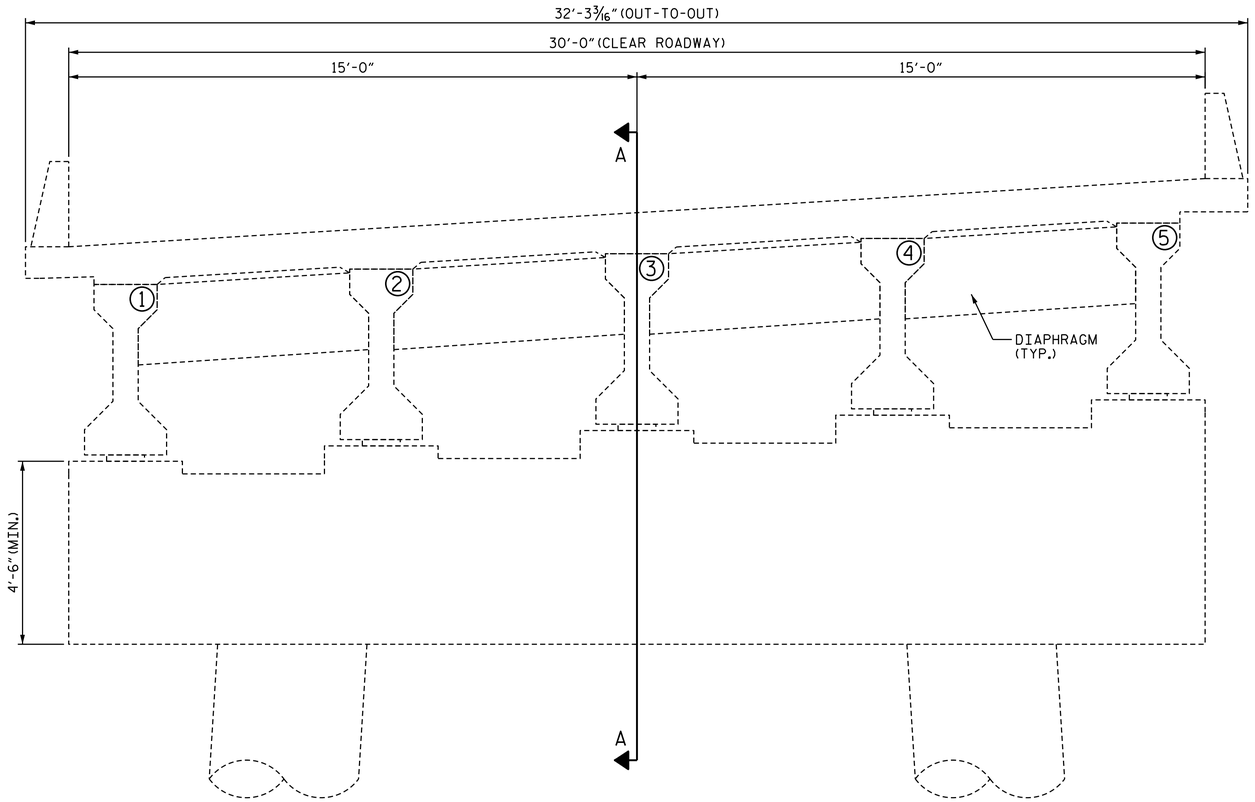
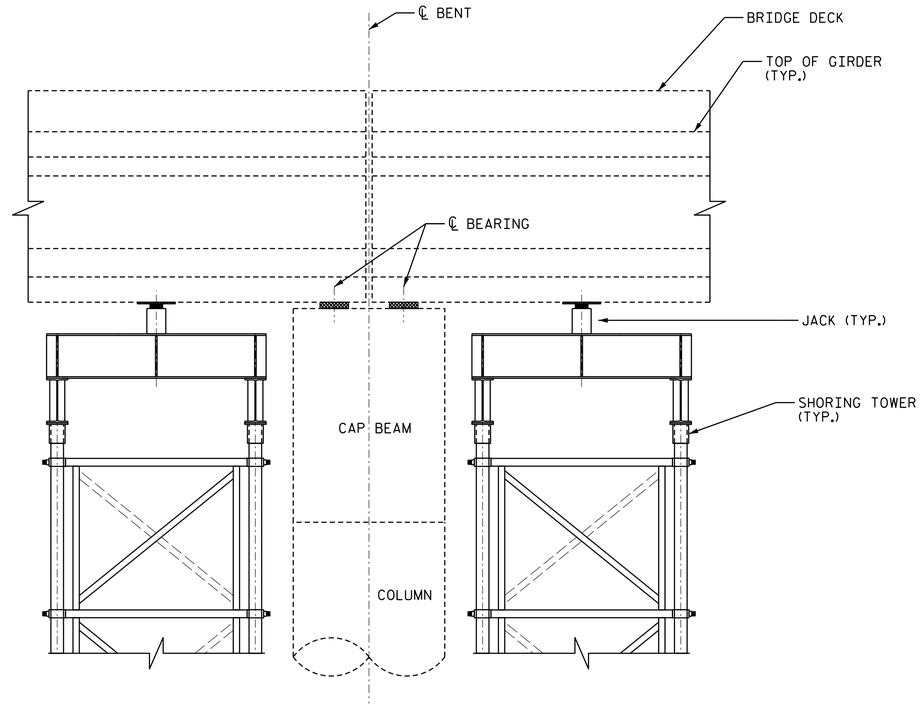


TYPICAL SECTION

(BENTS 21 AND 22)

(JACKING FRAMES NOT SHOWN FOR CLARITY)



SECTION A-A

JACKING NOTES:

1. ANY SKETCHES OR NOTES ON THIS SHEET OR OTHERS REGARDING BRIDGE JACKING ARE FOR ILLUSTRATIVE PURPOSES ONLY. THE CONTRACTOR IS RESPONSIBLE FOR DESIGNING A JACKING PLAN FOR PARTICULAR GEOMETRIES AND LOADS. THE JACKING PLANS MUST BE SUBMITTED FOR REVIEW AND APPROVAL.
2. PRIOR TO JACKING, LOOSEN ANY ATTACHMENTS TO ALLOW MOVEMENT DURING JACKING.
3. JACKING OF THE SUPERSTRUCTURE IS NECESSARY TO FACILITATE BEARING REPLACEMENT.
4. NO BEAMS SHALL BE LIFTED OVER 2" DURING JACKING OPERATIONS. THE JACKS SHALL BE PLACED SYMMETRICALLY AT THE CENTERLINE OF EACH GIRDER. ALL JACKS SHALL BE FED BY A COMMON MANIFOLD. JACKS SHALL BE EQUIPPED WITH A LOCKING RING WHICH WILL PREVENT MOVEMENT IN THE EVENT HYDRAULIC PRESSURE IS LOST. JACKS SHALL BE LOCKED OFF PRIOR TO REPAIRS. USE SHIMS OR OTHER APPROVED MEANS IF LOCKING RINGS ARE NOT PRACTICAL.
5. JACKS USED SHALL BE IN FULL COMPLIANCE WITH ANSI B30.1.
6. THE CONTRACTOR IS RESPONSIBLE TO ADEQUATELY SIZE JACKS AND SUPPORTS TO ALLOW FOR INDETERMINANT FACTORS SUCH AS MINOR LOAD REDISTRIBUTION AND MECHANICAL INEFFICIENCIES.
7. A PRE-JACKING MEETING SHALL BE REQUIRED BETWEEN THE CONTRACTOR, THE UTILITY REPRESENTATIVE, AND THE ENGINEER PRIOR TO ANY JACKING OPERATIONS.
8. THE CONTRACTOR SHALL BE AWARE OF UTILITY CONDUITS THROUGHOUT BRIDGE. A UTILITY REPRESENTATIVE SHALL BE ON SITE DURING JACKING OPERATIONS.
9. AS A MINIMUM, THE FULL BRIDGE WIDTH (5 BEAM LINES) AND BEAMS ON BOTH SIDES OF THE BENT SHALL BE LIFTED AT ONCE. MORE MAY BE RAISED AT ONCE AT THE DISCRETION OF THE CONTRACTOR.
10. PRIOR TO JACKING, ALL JOINT AND BARRIER SAWCUTS MUST BE COMPLETED.
11. FOR BRIDGE JACKING, SEE SPECIAL PROVISIONS.

PRELIMINARY JACKING LOADS

	BEAM	FACTORED DEAD LOAD (KIPS)	FACTORED LIVE LOAD NO IMPACT (KIPS)	MIN. JACK CAPACITY LIVE & DEAD LOAD (TONS)
SPAN 21 - BENT 21	1	105	150	130
	2	105	125	120
	3	105	125	120
	4	105	125	120
	5	105	150	130
SPANS 22 & 23 - BENT 22	BEAM	FACTORED DEAD LOAD (KIPS)	FACTORED LIVE LOAD NO IMPACT (KIPS)	MIN. JACK CAPACITY LIVE & DEAD LOAD (TONS)
	1	65	130	100
	2	65	110	90
	3	65	110	90
	4	65	110	90
	5	65	130	100

NOTES:

DL FACTOR: 1.25

LL FACTOR: 1.75

KCA KISINGER CAMPO & ASSOCIATES
4800 SIX FORKS ROAD SUITE 120
RALEIGH, NC 27609
(919) 882-7839

DRAWN BY : DIEGO A. AGUIRRE DATE : 03-2018

CHECKED BY : JACOB H. DUKE DATE : 03-2018

DESIGN ENGINEER OF RECORD : SAMUEL L. CULLUM DATE : 03-2018

8/13/2018
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User:jduke

PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

BRIDGE NO. 71

NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

JACKING DETAILS

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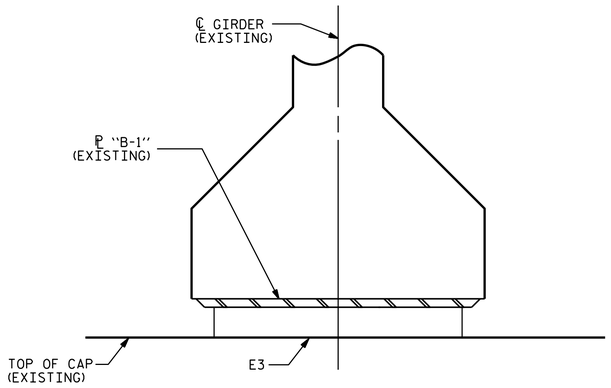
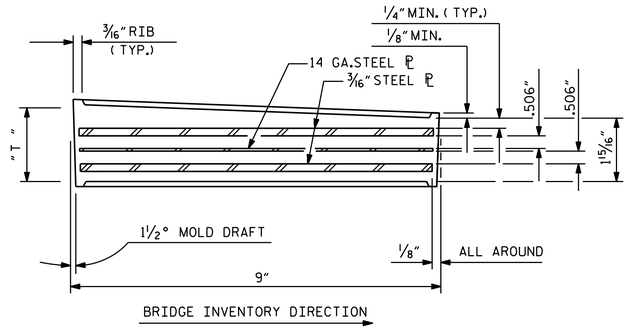
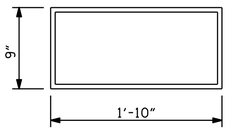
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-65
1			3			TOTAL SHEETS
2			4			69



EXPANSION BEARINGS



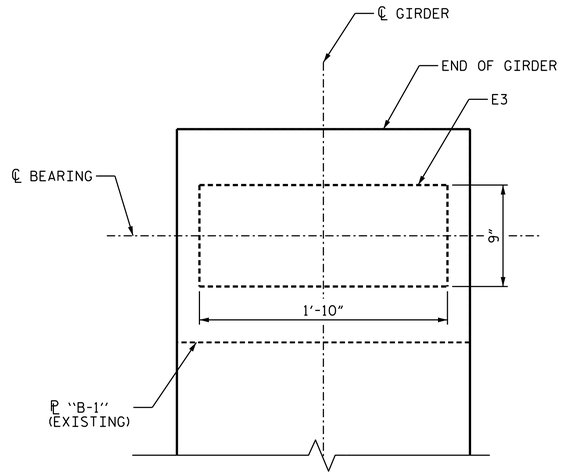
TYPICAL SECTION OF ELASTOMERIC BEARINGS



E3 (3 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING

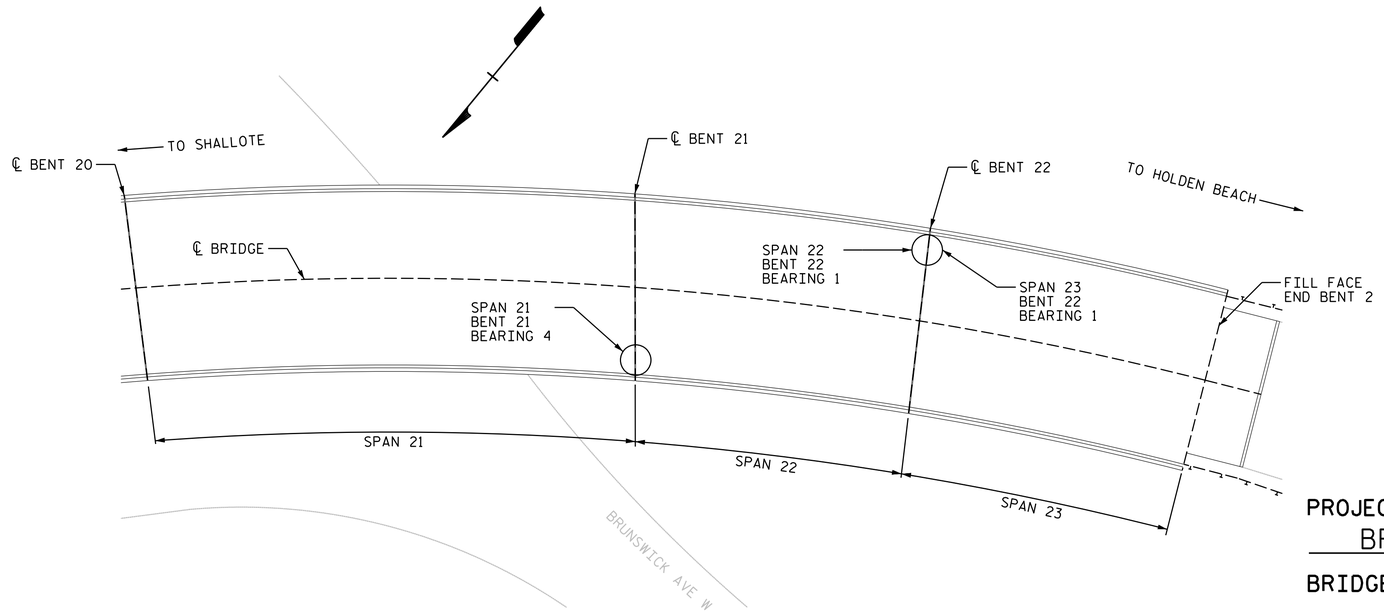
TYPE IV (EXPANSION BEARING)



TYPICAL PLAN VIEW OF ELASTOMERIC BEARING

(CAP NOT SHOWN)

SPAN 21, BENT 21, BRG. 4 (1 REQ'D)
SPAN 22, BENT 22, BRG. 1 (1 REQ'D)
SPAN 23, BENT 22, BRG. 1 (1 REQ'D)



REPLACEMENT BEARING LOCATIONS

(PLAN)

NOTES:

1. THE ELASTOMER IN THE STEEL REINFORCED BEARINGS SHALL HAVE A SHEAR MODULUS OF 0.160 KSI, IN ACCORDANCE WITH AASHTO M251.
2. FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE STANDARD SPECIFICATIONS AND PROJECT SPECIAL PROVISIONS.

MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE IV	225 k

BEARING REPLACEMENT TABLE

SPAN	BENT	BEARING	TYPE	"T"	ELASTOMER VOLUME
21	21	4	E3	2 7/16"	0.25 CF
22	22	1	E3	2 3/16"	0.24 CF
23	22	1	E3	2 3/16"	0.24 CF

PROJECT NO. 15BPR.16
BRUNSWICK COUNTY
BRIDGE NO. 71

KCA KISINGER CAMPO & ASSOCIATES
4800 SIX FORKS ROAD SUITE 120
RALEIGH, NC 27609
(919) 882-7839

DRAWN BY : DIEGO A. AGUIRRE DATE : 03-2018
CHECKED BY : JACOB H. DUKE DATE : 03-2018
DESIGN ENGINEER OF RECORD : SAMUEL L. CULLUM DATE : 03-2018

NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM
DocuSigned by: Samuel L. Cullum 19C97095C75A467...
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BEARING REPLACEMENT DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-66
1			3			TOTAL SHEETS
2			4			69

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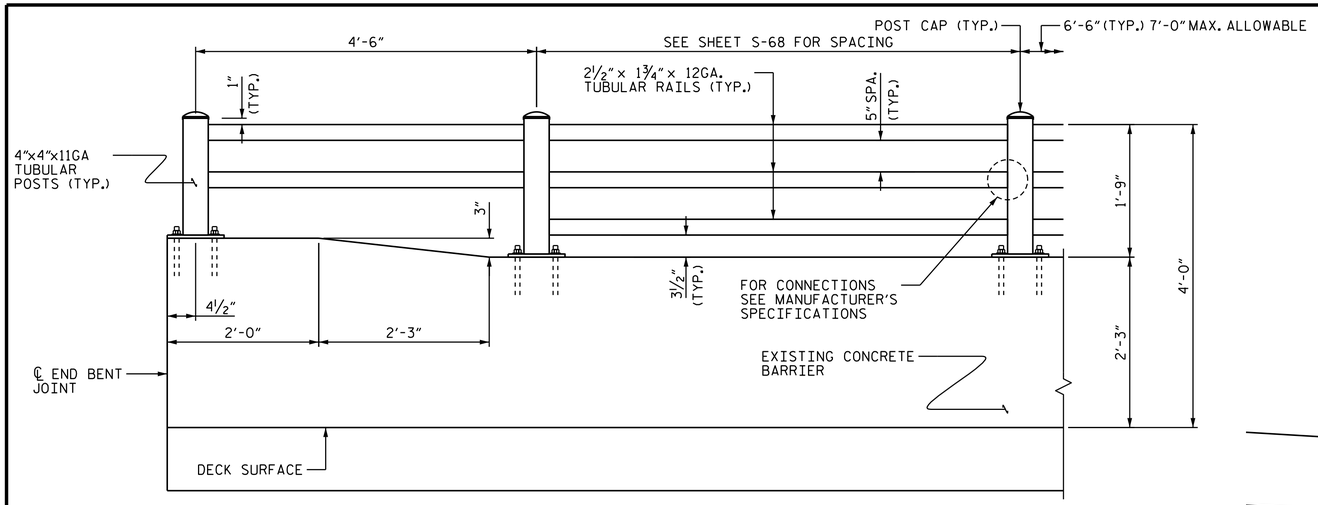
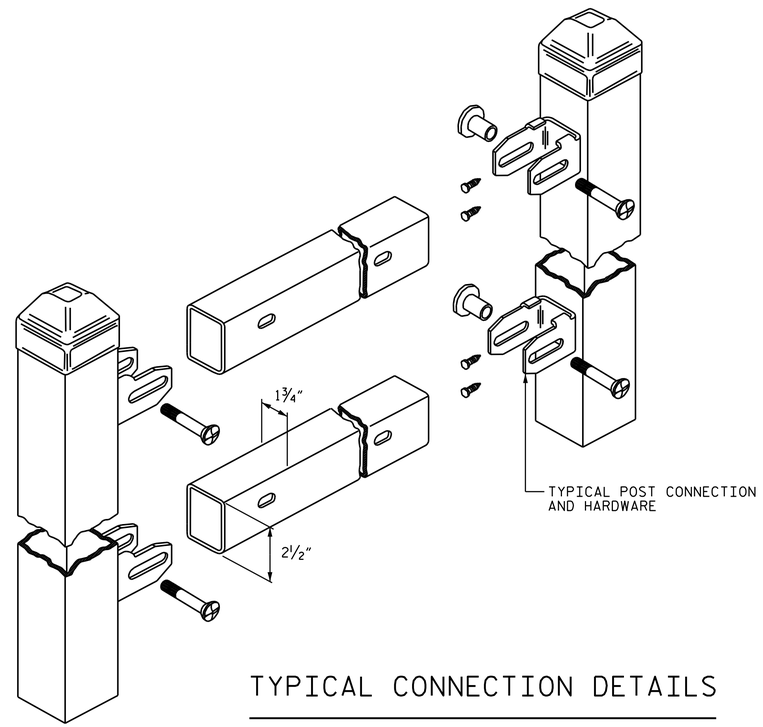
User:jduke

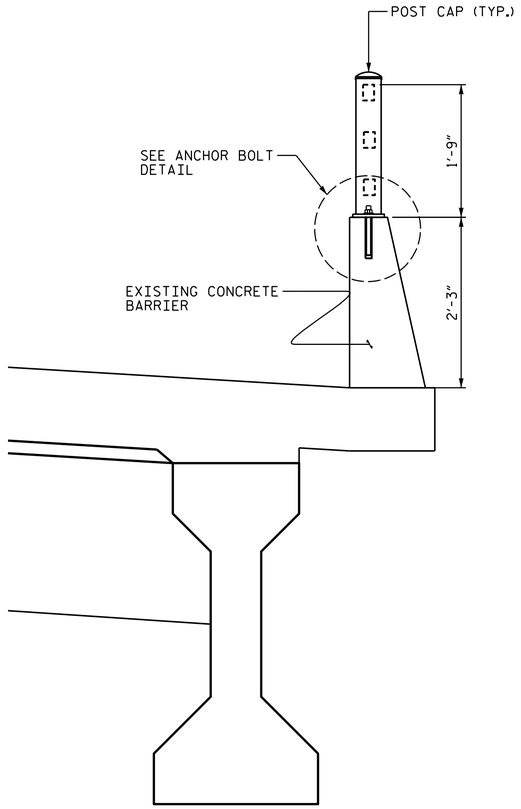


RAIL END ELEVATION

(BASE AND RAIL CONNECTIONS NOT SHOWN FOR CLARITY)

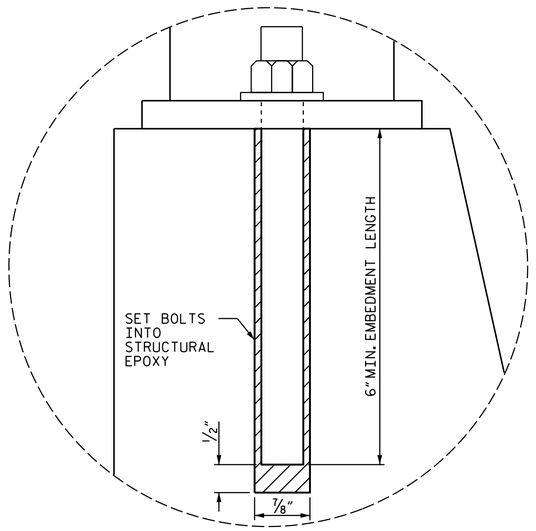


TYPICAL CONNECTION DETAILS



SECTION THROUGH RAIL

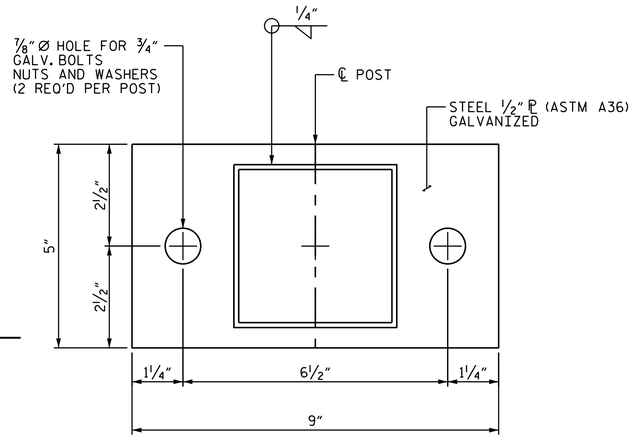
(BASE AND RAIL CONNECTIONS NOT SHOWN FOR CLARITY)



DOWEL DETAIL

NOTES:

1. PROVIDE STEEL BARRIER RAIL RETROFIT IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. ALTERNATIVE RAIL SYSTEMS ARE PERMITTED BUT MUST BE APPROVED BY THE ENGINEER PRIOR TO PURCHASE AND INSTALLATION. IF ALTERNATIVE RAILING SYSTEM IS USED, THE PROPOSED RAILING SYSTEM MUST MEASURE 48" FROM THE DECK SURFACE TO THE TOP OF THE TOP-MOST LONGITUDINAL RAIL.
2. THE FINAL SURFACE OF ALL BARRIER RAIL MATERIAL SHALL BE HOT DIP GALVANIZED PER THE MANUFACTURER'S SPECIFICATIONS.
3. WASHERS SHALL CONFORM TO ASTM F844.
4. FOR ADHESIVELY ANCHORED DOWELS, SEE STANDARD SPECIFICATIONS.
5. ALL BARRIER RAIL POSTS ARE TO BE VERTICALLY PLUMB.
6. FOR BARRIER RAIL POST LOCATIONS, SEE SHEET S-68.
7. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS REQUIRED. SEE SPECIAL PROVISION FOR ADHESIVELY ANCHORED BOLTS OR DOWELS.
8. PROVIDE SHORTER POSTS AT THE FOUR END LOCATIONS TO MAINTAIN LEVEL HORIZONTAL RAILS.



BASEPLATE DETAILS

PROJECT NO. 15BPR.16

BRUNSWICK COUNTY

BRIDGE NO. 71

SHEET 1 OF 2

KCA KISINGER CAMPO & ASSOCIATES
4800 SIX FORKS ROAD SUITE 120
RALEIGH, NC 27609
(919) 882-7839

DRAWN BY : JACOB H. DUKE DATE : 08-2018
CHECKED BY : SAMUEL L. CULLUM DATE : 08-2018
DESIGN ENGINEER OF RECORD : SAMUEL L. CULLUM DATE : 08-2018

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

RAIL RETROFIT

NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-67
1			3			TOTAL SHEETS
2			4			69

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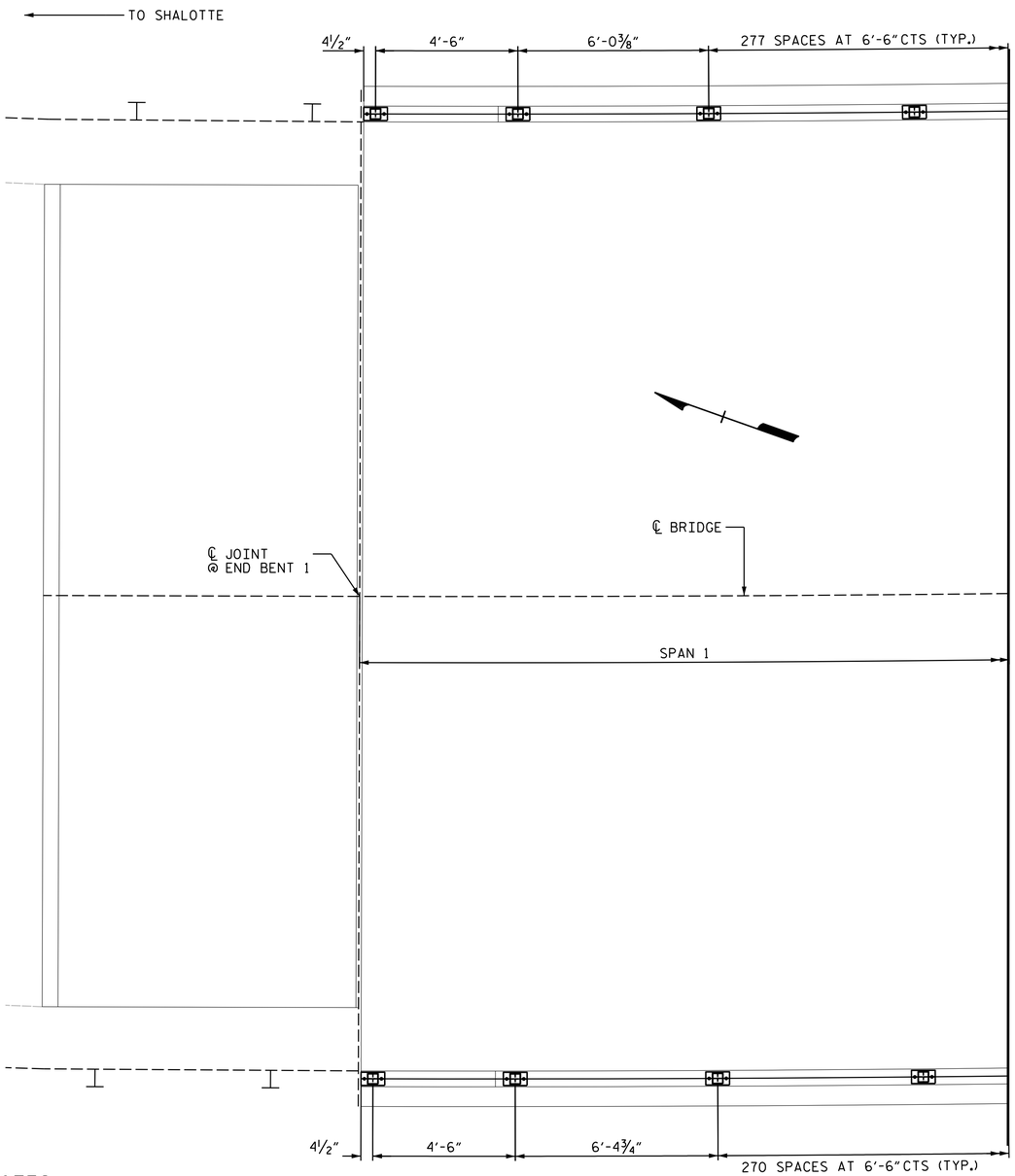

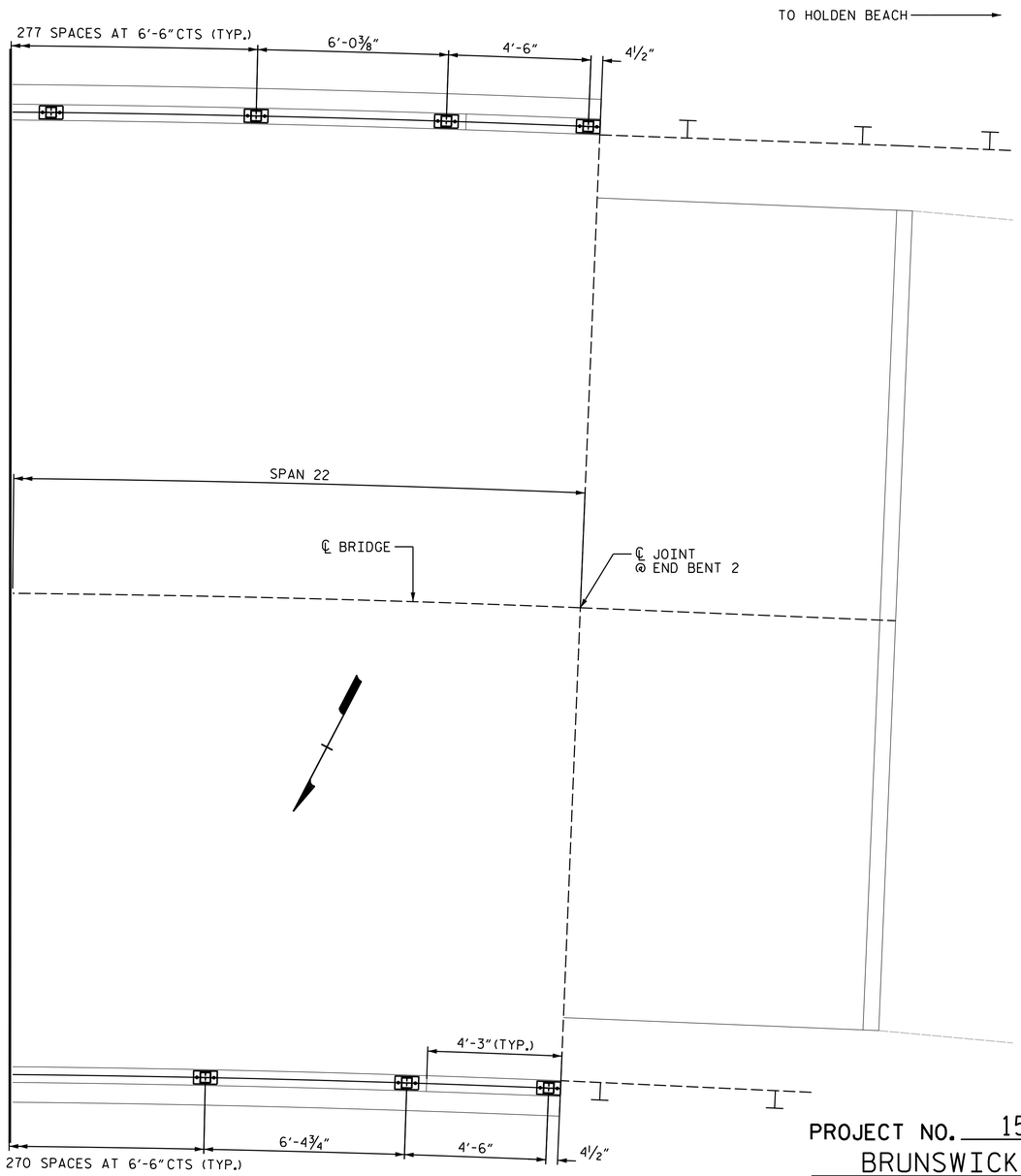

NOTES:

1. DO NOT PLACE ANY POST BASEPLATE OVER A BENT JOINT.
2. FIELD ADJUST POST LOCATIONS AT LOCATIONS WHERE POST BASEPLATE FALLS OVER A BRIDGE JOINT.
3. TYPICAL POST SPACING: 6'-6", MAX. ALLOWED POST SPACING: 7'-0"
4. COORDINATE THIS SHEET WITH SHEET S-67.

RAIL POST SPACING

KCA KISINGER CAMPO & ASSOCIATES
4800 SIX FORKS ROAD SUITE 120
RALEIGH, NC 27609
(919) 882-7839

DRAWN BY : JACOB H. DUKE DATE : 08-2018
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User:jduke

NORTH CAROLINA PROFESSIONAL SEAL 043571 ENGINEER SAMUEL L CULLUM

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PROJECT NO. 15BPR.16
BRUNSWICK COUNTY
BRIDGE NO. 71
SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

RAIL RETROFIT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-68
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STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

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

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

CONCRETE:

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

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED ¾" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1½" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A ¼" 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 ¼" 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 ⅞" Ø SHEAR STUDS FOR THE ¾" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - ⅞" Ø STUDS FOR 4 - ¾" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF ⅞" Ø STUDS ALONG THE BEAM AS SHOWN FOR ¾" Ø STUDS BASED ON THE RATIO OF 3 - ⅞" Ø STUDS FOR 4 - ¾" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 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 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

8/13/2018
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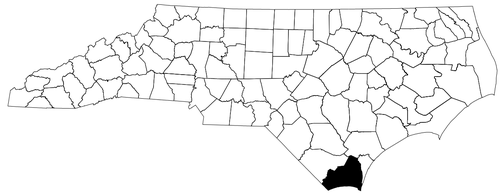
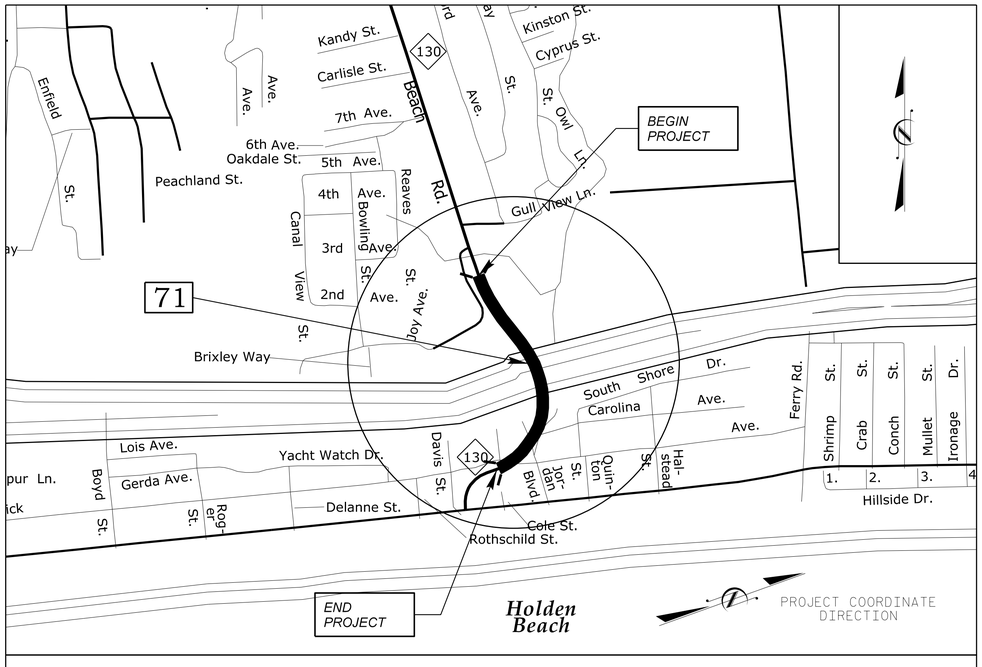
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

BRUNSWICK COUNTY





VICINITY MAP N.T.S.

INDEX OF SHEETS

SHEET NO.
TMP-1

PROJECT: 15BPR.16

WORK ZONE SAFETY & MOBILITY
"from the MOUNTAINS to the COAST"

PLANS PREPARED BY:

JACOB H. DUKE, P.E.

WORK ZONE TRAFFIC CONTROL ENGINEER

NCDOT CONTACTS:

J.S. (STEVE) KITE, P.E.
PROJECT ENGINEER

MATT SPRINGER, P.E.
PROJECT DESIGN ENGINEER

DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

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KCA KISINGER CAMPO & ASSOCIATES

Kisinger Campo & Associates Corp.
4800 Six Forks Rd.,
Suite 120
Raleigh, NC 27609
Jacob H. Duke, PE No. 043777

APPROVED: DocuSigned by: Jacob H. Duke 9C0563ADC6606400...

DATE: 5/9/2018 1:16:10 PM PDT

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 043777 ENGINEER JACOB H DUKE

5/9/2018
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User:jduke

PROJ. REFERENCE NO.	SHEET NO.
15BPR.16	TMP-1A

KCA KISINGER CAMPO & ASSOCIATES
Kisinger Campo & Associates Corp.
4800 Six Forks Rd.,
Suite 120
Raleigh, NC 27609
Jacob H. Duke, PE No. 043777

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2018 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1101.01	WORK ZONE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.06	WARNING SIGNS FOR BLASTING ZONES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1115.01	FLASHING ARROW BOARDS
1130.01	DRUM
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1160.01	TEMPORARY CRASH CUSHION
1165.01	TRUCK MOUNTED ATTENUATOR
1170.01	PORTABLE CONCRETE BARRIER
1180.01	SKINNY-DRUM
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTI-LANE ROADWAYS
1205.03	PAVEMENT MARKINGS - EXITS AND ENTRANCE RAMPS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1205.05	PAVEMENT MARKINGS - TURN LANES
1205.06	PAVEMENT MARKINGS - LANE DROPS
1205.07	PAVEMENT MARKINGS - PEDESTRIAN CROSSWALKS
1205.08	PAVEMENT MARKINGS - SYMBOLS AND WORD MESSAGES
1205.09	PAVEMENT MARKINGS - PAINTED ISLANDS
1205.10	PAVEMENT MARKINGS - SCHOOL AREAS
1205.11	PAVEMENT MARKINGS - RAILROAD CROSSINGS
1205.12	PAVEMENT MARKINGS - BRIDGES
1205.13	PAVEMENT MARKINGS - LANE REDUCTIONS
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - PERMANENT AND TEMPORARY
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION
1264.01	OBJECT MARKERS - TYPES
1264.02	OBJECT MARKERS - INSTALLATION

LEGEND

- DIRECTION OF TRAFFIC FLOW
- DRUM
- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN
- TRUCK MOUNTED ATTENUATOR (TMA)
- CHANGEABLE MESSAGE SIGN
- FLAGGER
- FLASHING ARROW BOARD (TYPE C)(96"X48" MIN.) "CAUTION MODE"
- WORK AREA

PAVEMENT MARKINGS

CA - WHITE PLASTIC EDGELINE (4")

CI - DOUBLE YELLOW PLASTIC CENTERLINE (4")

TA - WHITE THERMO EDGELINE (4", 90 MIL)

TI - DOUBLE YELLOW THERMO CENTELINE (4", 120 MIL)

APPROVED: Jacob H. Duke
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5/9/2018 1:16:10 PM PDT

DATE:

NORTH CAROLINA PROFESSIONAL SEAL 043777 ENGINEER JACOB H DUKE

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DIVISION OF HIGHWAYS * STATE OF NORTH CAROLINA * DEPARTMENT OF TRANSPORTATION * WORK ZONE TRAFFIC CONTROL

ROADWAY STANDARD DRAWINGS & LEGEND

5/9/2018
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User:jduke

KCA KISINGER CAMPO & ASSOCIATES
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Suite 120
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Jacob H. Duke, PE No. 043777

GENERAL NOTES

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS IN THE DETAIL DRAWINGS, STANDARD DETAILS AND ROADWAY DETAILS ARE NOT ATTAINABLE TO MEET FIELD CONDITIONS, OR RESULT IN DUPLICATE, OR UNDESIRED OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING OR REMOVAL OF DEVICES, AS DIRECTED BY THE ENGINEER.

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT, EXCEPT WHEN OTHERWISE NOTED IN THE PLAN, OR DIRECTED BY THE ENGINEER.

TIME RESTRICTIONS

A) DO NOT CLOSE OR NARROW TRAVEL LANES AS FOLLOWS:

ROAD NAME

1. NC 130/Holden Beach Road

   A. WEEK BEFORE MEMORIAL DAY TO WEEK AFTER LABOR DAY (SUMMER) 5:00 A.M. TO 9:00 P.M. MONDAY THRU THURSDAY AND FRIDAY 5:00 A.M. TO SUNDAY 9:00 P.M.

   B. WEEK AFTER LABOR DAY TO WEEK BEFORE MEMORIAL DAY (OFF SEASON) 6:00 A.M. TO 9:00 A.M. AND 4:00 P.M. TO 7:00 P.M. MONDAY THRU THURSDAY AND FRIDAY 6:00 A.M. TO SUNDAY 7:00 P.M.

B) DO NOT CLOSE OR NARROW TRAVEL LANES DURING HOLIDAYS AND SPECIAL EVENTS AS FOLLOWS:

ROAD NAME

1. NC 130/HOLDEN Beach Road

HOLIDAY

1. FOR ANY UNEXPECTED OCCURRENCE THAT CREATES UNUSUALLY HIGH TRAFFIC VOLUMES, AS DIRECTED BY THE ENGINEER.

2. FOR NEW YEAR'S, BETWEEN THE HOURS OF 6:00 A.M. DECEMBER 31st TO 9:00 P.M. JANUARY 2ND. IF NEW YEAR'S DAY IS ON A FRIDAY, SATURDAY, SUNDAY, OR MONDAY THEN UNTIL 9:00 P.M. THE FOLLOWING TUESDAY.

3. FOR EASTER, BETWEEN THE HOURS OF 6:00 A.M. THURSDAY AND 9:00 P.M. MONDAY.

4. FOR MEMORIAL DAY, BETWEEN THE HOURS OF 5:00 A.M. FRIDAY TO 9:00 P.M. TUESDAY.

5. FOR INDEPENDENCE DAY, BETWEEN THE HOURS OF 5:00 A.M. THE DAY BEFORE INDEPENDENCE DAY AND 9:00 P.M. THE DAY AFTER INDEPENDENCE DAY.

   IF INDEPENDENCE DAY IS ON A FRIDAY, SATURDAY, SUNDAY OR MONDAY THEN BETWEEN THE HOURS OF 5:00 A.M. THE THURSDAY BEFORE INDEPENDENCE DAY AND 9:00 P.M. THE TUESDAY AFTER INDEPENDENCE DAY.

6. FOR LABOR DAY, BETWEEN THE HOURS OF 5:00 A.M. FRIDAY AND 9:00 P.M. TUESDAY.

7. FOR THANKSGIVING DAY, BETWEEN THE HOURS OF 6:00 A.M. TUESDAY TO 9:00 P.M. MONDAY.

8. FOR CHRISTMAS, BETWEEN THE HOURS OF 6:00 A.M. THE FRIDAY BEFORE THE WEEK OF CHRISTMAS DAY AND 9:00 P.M. THE FOLLOWING TUESDAY AFTER THE WEEK OF CHRISTMAS.

GENERAL NOTES

C) ALL TRAFFIC CONTROL SETUP, MAINTENANCE AND BREAKDOWN/REMOVAL SHALL ADHERE TO THE STANDARDS AND SPECIFICATIONS SET FORTH BY THE MOST RECENT EDITION OF THE MANUAL FOR UNIFORM TRAFFIC CONTROL (MUTCD), THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION (NCDOT) STANDARDS AND SPECIFICATIONS AND ROADWAY STANDARD DRAWINGS.

D) THE CONTRACT SHALL BE REQUIRED TO DO ALL NECESSARY WORK TO PROVIDE SUITABLE CONNECTIONS WITH ALL ROADS, STREETS AND DRIVEWAYS ENTERING THIS PROJECT.

E) THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL UTILITIES BEFORE BEGINNING CONSTRUCTION BY CONTACTING THE NORTH CAROLINA ONE CALL CENTER (1-800-632-4949).

F) THE CONTRACTOR SHALL COORDINATE THE FINAL PAVEMENT MARKING LAYOUT WITH ALL LONGITUDINAL PAVEMENT JOINTS ON THE FINAL SURFACE LAYER PRIOR TO PAVING.

G) PERFORM WORK ONLY WHEN WEATHER AND VISIBILITY CONDITIONS ALLOW SAFE OPERATIONS.

H) DO NOT CONDUCT ANY HAULING OPERATIONS AGAINST THE FLOW OF TRAFFIC OF ANY OPEN TRAVELWAY UNLESS HAULING OPERATIONS IS PROTECTED BY BARRIER OR GUARDRAIL OR AS DIRECTED BY THE ENGINEER.

I) ALL PEDESTRIAN TRAFFIC SHALL BE MAINTAINED DURING THE LIFE OF THE PROJECT. INCLUDING ANY CROSSWALKS, SIDEWALKS, SIDE STREETS AND DRIVEWAYS.

LANE AND SHOULDER CLOSURE REQUIREMENTS

J) REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED, OR AS DIRECTED BY THE ENGINEER.

K) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 15 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN SHOULDER USING ROADWAY STANDARD DRAWING NO. 1101.04 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL OR A LANE CLOSURE IS INSTALLED.

L) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO AN UNDIVIDED FACILITY AND WITHIN 5 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

   WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO A DIVIDED FACILITY AND WITHIN 10 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

M) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED OR DIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE TRAFFIC CONTROL PLANS, ROADWAY STANDARD DRAWINGS OR AS DIRECTED BY THE ENGINEER. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.

N) DO NOT WORK SIMULTANEOUSLY WITHIN 15 FT ON BOTH SIDES OF AN OPEN TRAVELWAY, RAMP OR LOOP WITHIN THE SAME LOCATION UNLESS PROTECTED WITH GUARDRAIL OR BARRIER.

O) DO NOT INSTALL MORE THAN ONE LANE CLOSURE, IN ANY ONE DIRECTION, ON NC 130/HOLDEN BEACH ROAD.

PAVEMENT EDGE DROP OFF REQUIREMENTS

P) DO NOT EXCEED A DIFFERENCE OF 2 INCHES IN ELEVATION BETWEEN OPEN LANES OF TRAFFIC FOR NOMINAL LIFTS OF 1.5 INCHES. INSTALL ADVANCE WARNING "UNEVEN LANES" SIGNS (W8-11) 500FT IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

TRAFFIC PATTERN ALTERATIONS

Q) NOTIFY THE ENGINEER AND DIVISION TWENTY ONE (21) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

   DIVISION 3 NCDOT CONTACT INFORMATION FOR CLOSURES ON BRIDGE #71:

   FRANK GRANDA - TRANSPORTATION SUPERVISOR
   OFFICE:(910) 371-2372
   CELL:(910) 470-3927

SIGNING

R) INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.

S) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

T) AT THE END OF EACH WORK PERIOD, FOR MAINTENANCE OF TRAFFIC WHERE NECESSARY, INSTALL BLACK ON ORANGE "DIP" SIGNS (W8-2) AND/OR "BUMP" SIGNS (W8-1) 500FT IN ACCORDANCE OF THE CONDITION. THE CONTRACTOR SHALL FEATHER ALL TRANSVERSE JOINTS.

TRAFFIC CONTROL DEVICES

U) SPACE CHANNELIZING DEVICES IN WORK AREAS NO GREATER THAN TWICE THE POSTED SPEED LIMIT (MPH), EXCEPT 10 FT ON-CENTER IN RADII, AND 3 FT OFF THE EDGE OF AN OPEN TRAVELWAY, WHEN LANE CLOSURES ARE NOT IN EFFECT. WHEN SKINNY DRUMS ARE ALLOWED, REFER TO SECTION 1180 OF STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES OR AS SHOWN IN THE PLANS.

V) THE CONTRACTOR SHALL PROVIDE CHANGEABLE MESSAGE BOARDS AS DIRECTED BY THE ENGINEER TO ADVISE MOTORISTS OF UPCOMING WORK AT LEAST (7) SEVEN CALENDAR DAYS IN ADVANCE OF THE WORK AND RETAIN THESE MESSAGE BOARDS ON THE PROJECT WITH UPDATED MESSAGING THROUGHOUT THE DURATION OF THE PROJECT. SEE TMP-1C FOR DETAILS.

W) PLACE PORTABLE CHANGEABLE MESSAGE SIGNS OUTSIDE OF TRAVELWAY AT LOCATIONS DETERMINED BY THE ENGINEER. ADJUST AND RELOCATE MESSAGE BOARDS AS NECESSARY OR AS DIRECTED BY THE ENGINEER.

PAVEMENT MARKINGS AND MARKERS

X) REVIEW AND RECORD EXISTING PAVEMENT MARKINGS AND MARKERS PRIOR TO MILLING AND DECK RESURFACING. USE THE RECORD OF EXISTING PAVEMENT MARKINGS AND MARKERS IN CONJUNCTION WITH THE BRIDGE PLANS AND THE MOST RECENT VERSION OF THE ROADWAY STANDARD DRAWINGS TO RESTABLISH THE PROPOSED PAVEMENT MARKINGS AND MARKERS UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

Y) REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS, SYMBOLS AND CHARACTERS OBLITERATED BY WORK WITH TEMPORARY PAINT IN ACCORDANCE WITH SECTION 1205 OF THE LATEST VERSION OF THE NCDOT STANDARD SPECIFICATION BY THE END OF EACH WORK DAY AT NO COST TO THE DEPARTMENT.

Z) PERFORM THE NECESSARY LAYOUT TO TIE IN EITHER TEMPORARY OR PERMANENT PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.

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DATE: 5/16/2018 9:45:29 AM PDT

NORTH CAROLINA PROFESSIONAL SEAL 043777 ENGINEER JACOB H. DUKE

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DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

GENERAL NOTES

5/16/2018
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User:amcswain

PROJ. REFERENCE NO.	SHEET NO.
15BPR.16	TMP-1C

KCA KISINGER CAMPO & ASSOCIATES
Kisinger Campo & Associates Corp.
4800 Six Forks Rd.,
Suite 120
Raleigh, NC 27609
Jacob H. Duke, PE No. 043777

PHASING NOTES

PERFORM ALL WORK AS SHOWN IN THE CONTRACT AND BRIDGE PLANS IN ACCORDANCE WITH ALL COAST GUARD REGULATIONS & REQUIREMETNS

ALL LANE CLOSURES SHALL BE IN ACCORDANCE WITH THE MOST RECENT EDITION OF THE NCDOT STANDARD SPECIFICATIONS, STANDARD DRAWINGS AND THE TRAFFIC MANAGEMENT PLAN.

PHASING:

USE NCDOT RSD 1101.01 SHEET 3 OF 3 TO INSTALL ADVANCED WARNING SIGNS AND DEVICES.

PHASE 1:

STEP 1: USE NCDOT RSD 1101.02 SHEET 1 OF 14 TO INSTALL SIGNS, DEVICES AND A FLAGGING OPERATION TO CLOSE THE RIGHT LANE OF BRIDGE #71 AND ITS APPROACHES.

STEP 2: PERFORM ALL WORK PER BRIDGE PLANS.

STEP 3: AT THE END OF EACH WORK PERIOD, REMOVE ALL SIGNS, DEVICES AND FLAGGING OPERATIONS AND REOPEN THE BRIDGE AND ROADWAY TO TRAFFIC.

STEP 4: REPEAT STEPS 1 THRU 3 UNTIL ALL WORK IS COMPLETE.

PHASE 2:

STEP 1: USE NCDOT RSD 1101.02 SHEET 1 OF 14 TO INSTALL SIGNS, DEVICES AND A FLAGGING OPERATION TO CLOSE THE LEFT LANE OF BRIDGE #71 AND ITS APPROACHES.

STEP 2: PERFORM ALL WORK PER BRIDGE PLANS.

STEP 3: REPEAT STEPS 1 THRU 2 UNTIL ALL WORK IS COMPLETE.

STEP 4: COMPLETE ALL APPROACH ROADWAY WORK, TIE-INS AND ASSOCIATED ITEMS.

STEP 5: AT THE END OF EACH WORK PERIOD, REMOVE ALL SIGNS, DEVICES AND FLAGGING OPERATIONS AND REOPEN THE BRIDGE AND ROADWAY TO TRAFFIC.

PCMS MESSAGES

PCMS MESSAGE
ONE WEEK
PRIOR TO LANE CLOSURES

MESSAGE NO. 1	MESSAGE NO. 2
LANE CLOSURES	MM/DD ## AM TO ## PM

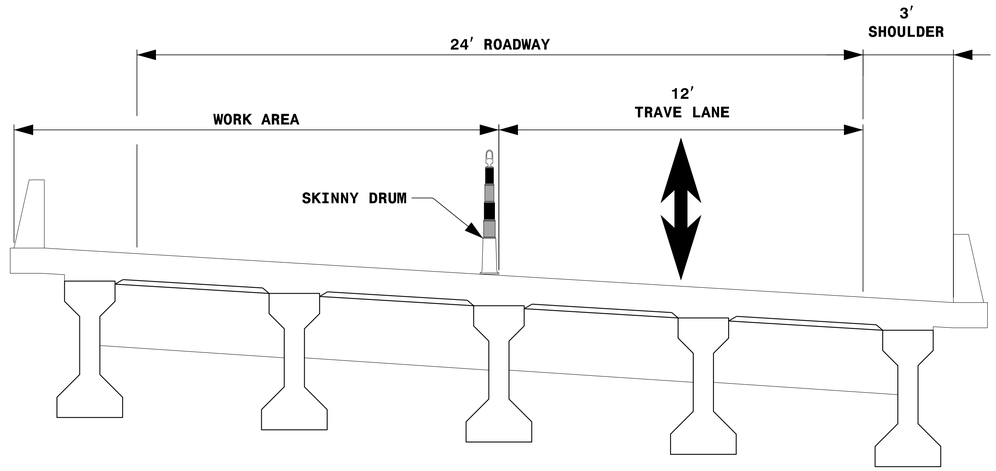
CHANGEABLE MESSAGE SIGN

PCMS MESSAGE
DURING
LANE CLOSURES

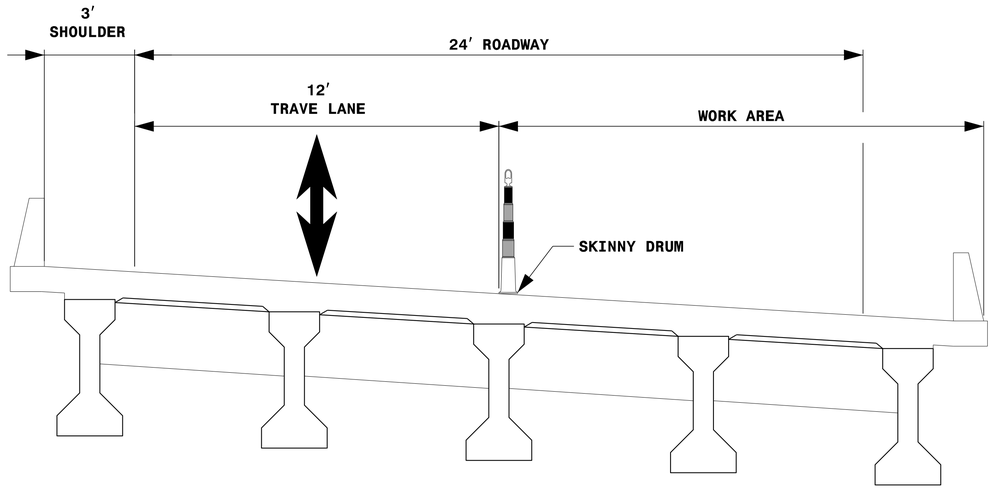
MESSAGE NO. 1	MESSAGE NO. 2
LANE CLOSURES	MM/DD ## AM TO ## PM

CHANGEABLE MESSAGE SIGN

PROVIDE CHANGEABLE MESSAGE SIGNS (PCMS) SHALL BE USED AT LEAST (7) SEVEN CALENDAR DAYS IN ADVANCE OF THE WORK AND RETAIN THESE MESSAGE BOARDS ON THE PROJECT WITH UPDATED MESSAGING THROUGHOUT THE DURATION OF THE PROJECT AND SHALL BE PLACED A MINIMUM OF 500′ IN ADVANCE OF THE WORK ZONE. SEE ABOVE FOR TIMING AND MESSAGES. MESSAGES SIGN LOCATION CAN BE CHANGED AT THE APPROVAL OF THE ENGINEER.



PHASE 1
TMP TYPICAL SECTION (BRIDGE #71)



PHASE 2
TMP TYPICAL SECTION (BRIDGE #71)

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PHASING NOTES

5/16/2018
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