

PROJECT: 17BP.14.P.7 / 13414.1045010



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.14.P.7	1	14
STATE PROGRAM	F.A. PROGRAM	DESCRIPTION	
17BP.14.P.7		PE	
17BP.14.P.7		CONSTR.	

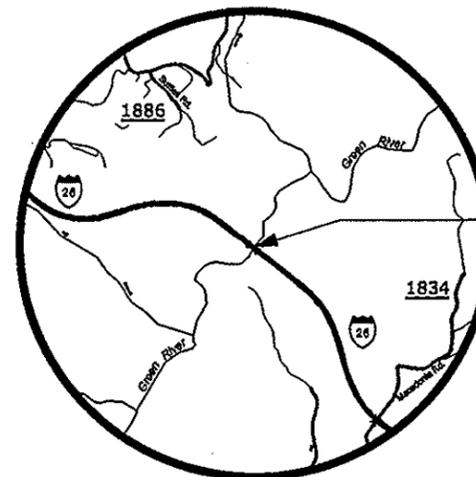
HENDERSON COUNTY

LOCATION: BRIDGES #108 AND #112 ON INTERSTATE 26 OVER GREEN RIVER

TYPE OF WORK: BRIDGE PRESERVATION: MODULAR AND FOAM JOINT REPLACEMENT
REPLACEMENT OF GUARDRAIL



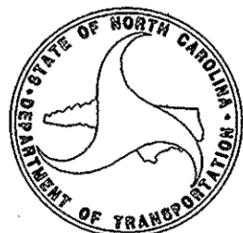
BRIDGES #108
AND #112



BRIDGES #108
AND #112

VICINITY MAP
BRIDGES #108 & #112

STV/Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC LICENSE NO. R-0991



TRAFFIC DATA

BRIDGE #108
ADT = 17,500

BRIDGE #112
ADT = 17,500

PROJECT LENGTH

BRIDGE #108
LENGTH STRUCTURE PROJECT = .20 MILE

BRIDGE #112
LENGTH STRUCTURE PROJECT = .20 MILE

Prepared For
STRUCTURES MANAGEMENT UNIT
1000 BIRCH RIDGE DR. RALEIGH, NC 27610

2012 STANDARD SPECIFICATIONS

LETTING DATE:

OCTOBER 9, 2012

PAUL KELLY, P.E.
PROJECT ENGINEER

ERICK NELSON, P.E.
NCDOT PROJECT ENGINEER

ENGINEER

09/27/12

TIMOTHY M. SHERRILL, P.E.
PROJECT DESIGN ENGINEER

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.14.P.7	1A	14
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
17BP.14.P.7		PE	
17BP.14.P.7		CONSTR.	

HENDERSON COUNTY

LOCATION: BRIDGES #108 AND #112 ON INTERSTATE 26 OVER GREEN RIVER

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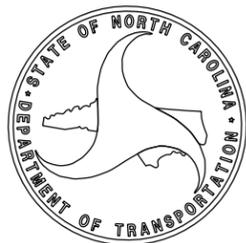
PROJECT: 17BP.14.P.7 / 13414.1045010

CONTRACT:

INDEX OF SHEETS

1	TITLE SHEET
1A	INDEX OF SHEETS
2	SUMMARY OF QUANTITIES
S1-S6	STRUCTURES
G1	GUARDRAIL REPLACEMENT
TMP-1 - TMP-2	TRAFFIC MANAGEMENT PLANS

\$DATE\$ \$TIME\$ \$FILES\$



Prepared For:
**DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS**
STRUCTURES MANAGEMENT UNIT - PRESERVATION & REPAIR GROUP
1000 BIRCH RIDGE DR., RALEIGH, NC 27610

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS
SUMMARY OF QUANTITIES

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS
 DIVISION 14
 SUMMARY OF QUANTITIES FOR PROJECT 17BP.14.P.7

Item No.	Sec #	Quantity	Units	Description
0000100000-N	800	Lump Sum		MOBILIZATION
3120000000-E	862	2250	LF	20" TUBULAR TRIPLE CORRUGATED STEEL BM GUARDRAIL
3150000000-N	862	45	EA	ADDITIONAL GUARDRAIL POSTS
3375000000-E	SP	2250	LF	REMOVE & STOCKPILE EXISTING GUARDRAIL
3436000000-N	862	45	EA	GENERIC GUARDRAIL ITEM 6" COLLAPSING TUBE WITH 3/4" PLATE
4400000000-E	1110	192	SF	STATIONARY WORK ZONE SIGNS
4415000000-N	1115	3	EA	FLASHING ARROW PANEL, TYPE C
4422000000-N	1120	1	EA	CHANGEABLE MESSAGE SIGN
4430000000-N	1130	25	EA	DRUMS
4516000000-N	1180	15	EA	SKINNY DRUMS
4480000000-N	1165	1	EA	TRUCK MOUNTED IMPACT ATTENUATOR
8217000000-E	425	2028	LB	REINFORCING STEEL (BRIDGE)
8860000000-N	SP	Lump Sum		GENERIC STRUCTURE ITEM MODULAR JOINT REPLACEMENT
8860000000-N	SP	Lump Sum		GENERIC STRUCTURE ITEM FOAM JOINT REPLACEMENT
8882000000-E	SP	224	CF	GENERIC STRUCTURE ITEM DIAPHRAGM MODIFICATIONS
8893000000-E	SP	44	SY	GENERIC STRUCTURE ITEM HYDRO-DEMOLITION OF BRIDGE DECK

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5/1/2012

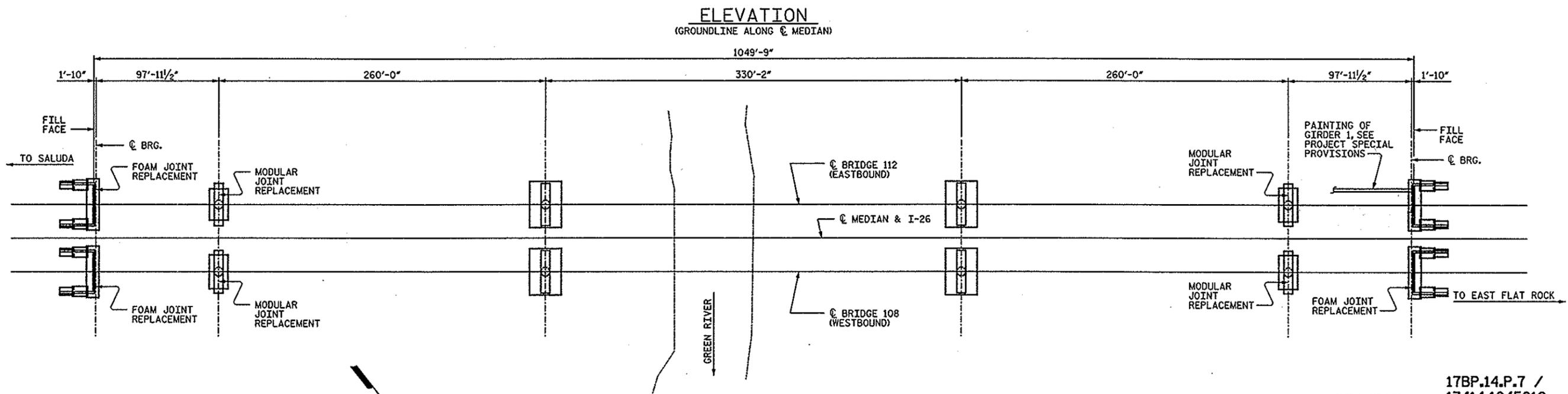
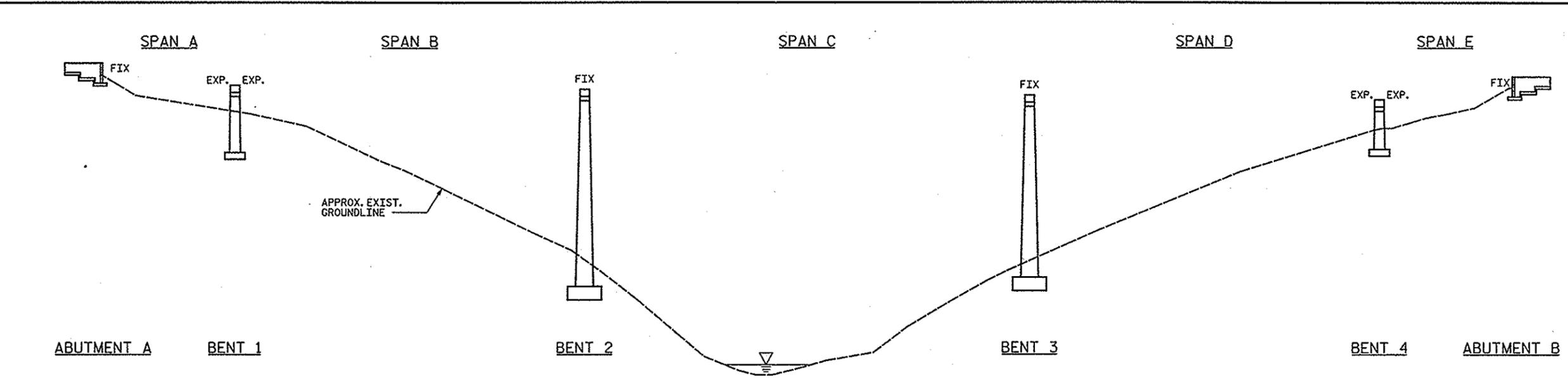
DRAWN BY : TRL DATE : 11-11
 CHECKED BY : AJP DATE : 1-12

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 Charlotte, NC 28208
 NC LICENSE NO. F-0991

17BP.14.P.7 /
 PROJECT NO. 13414.1045010
 HENDERSON COUNTY
 BRIDGE NO.: 108 & 112

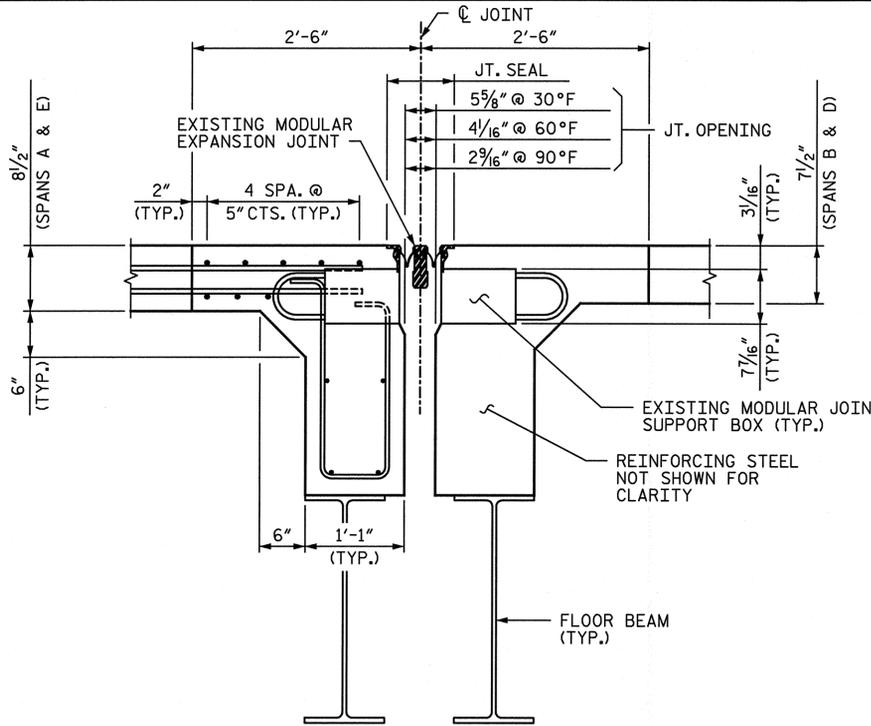
REHABILITATION OF BRIDGE NO. 108 & 112
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 BRIDGES ON I-26 OVER
 GREEN RIVER

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1			3			S-1
2			4			S-6

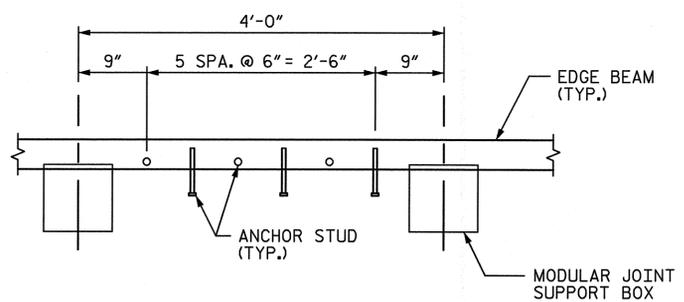


PLAN

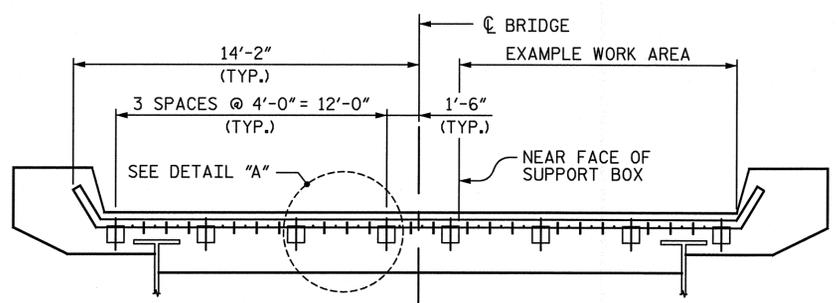
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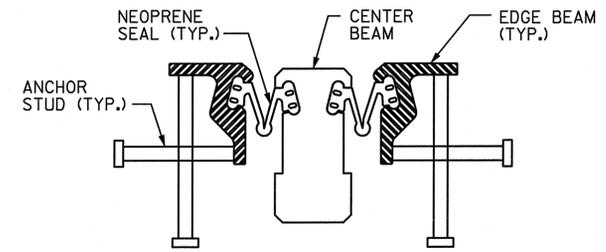
EXISTING JOINT DETAIL
(STRINGER NOT SHOWN FOR CLARITY)



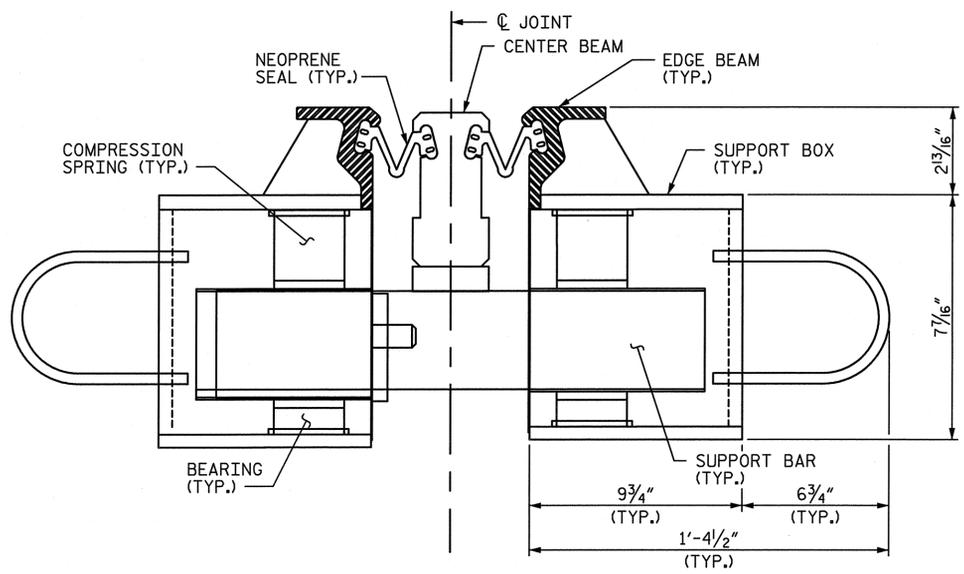
DETAIL "A"



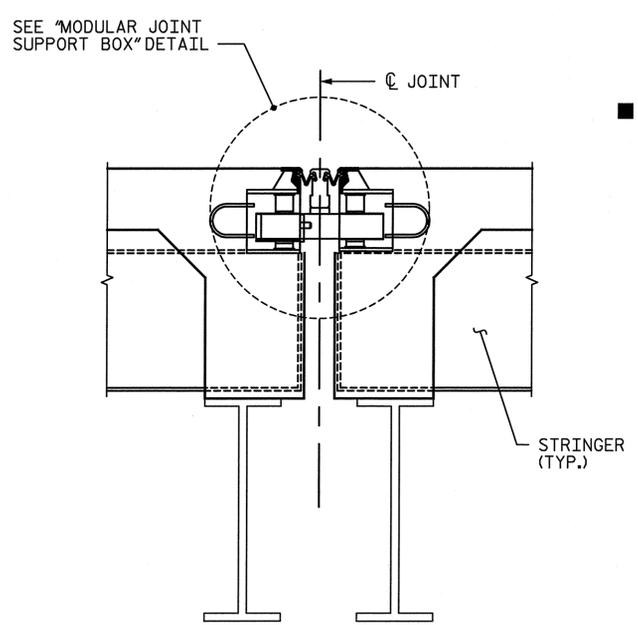
EXISTING MODULAR JOINT LOCATIONS



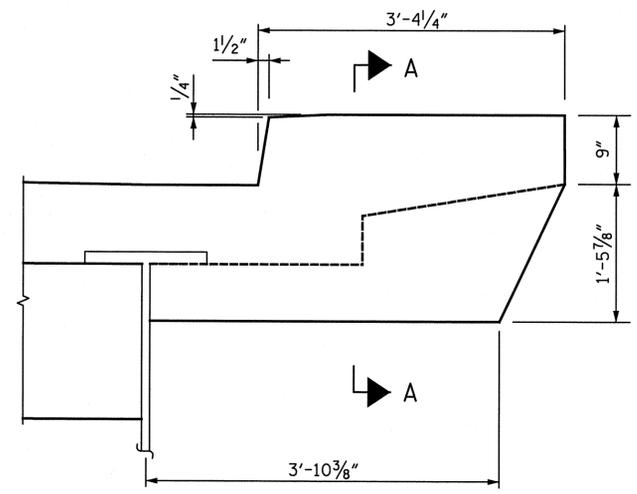
MODULAR JOINT ANCHOR STUDS



MODULAR JOINT SUPPORT BOX

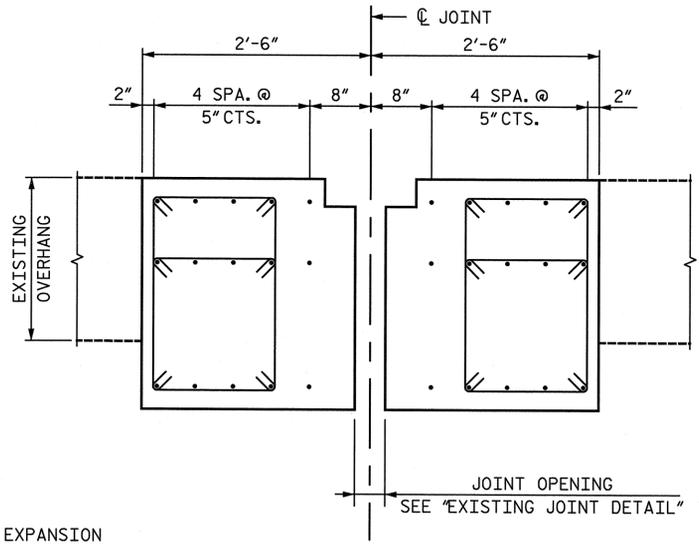


EXISTING MODULAR JOINT



OVERHANG AT MODULAR JOINTS

(BENTS 1 & 4)
(3 BAR METAL RAIL & TUBULAR BEAM RAIL NOT SHOWN FOR CLARITY)



SECTION A-A

NOTES:
1. THE DETAILS ON THIS SHEET ARE BASED ON THE BEST AVAILABLE INFORMATION.
2. FOR ADDITIONAL NOTES SEE SHEET S-2 AND S-4.

■ EXISTING MODULAR EXPANSION JOINT DETAILS ARE SHOWN FOR INFORMATION ONLY. ACTUAL FIELD CONDITIONS MAY VARY & SHALL BE VERIFIED BY THE CONTRACTOR. THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE ENGINEER IF ACTUAL CONDITIONS VARY FROM WHAT IS SHOWN IN THESE PLANS.

17BP.14.P.7 /
PROJECT NO. 13414.1045010
HENDERSON COUNTY
BRIDGE NO.: 108 & 112
REHABILITATION OF BRIDGE NO. 108 & 112



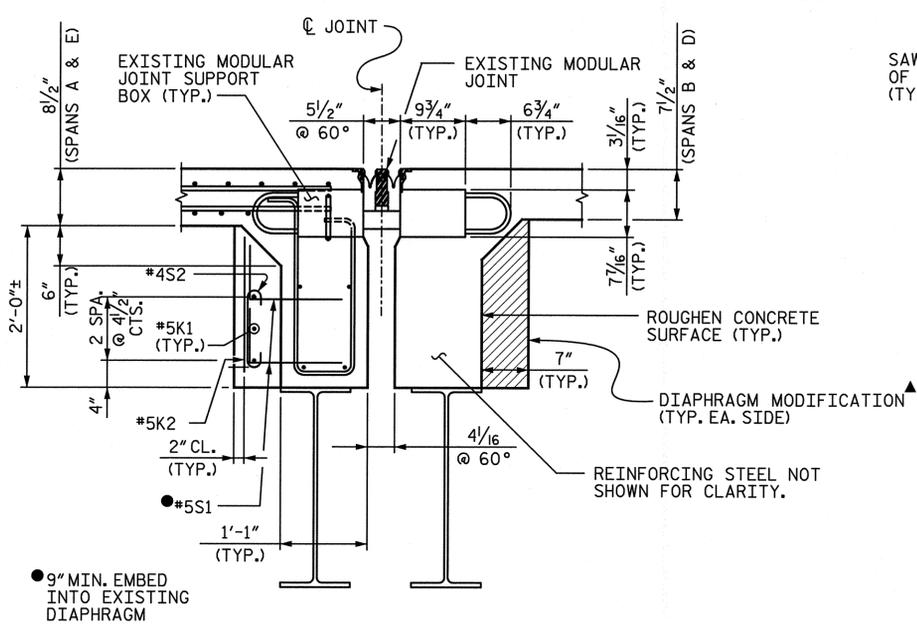
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
EXISTING MODULAR JOINT DETAILS
BRIDGES ON I-26 OVER GREEN RIVER

DRAWN BY: CLG/JDE DATE: 11-11
CHECKED BY: AJP DATE: 1-12

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1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC LICENSE NO. F-0991

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

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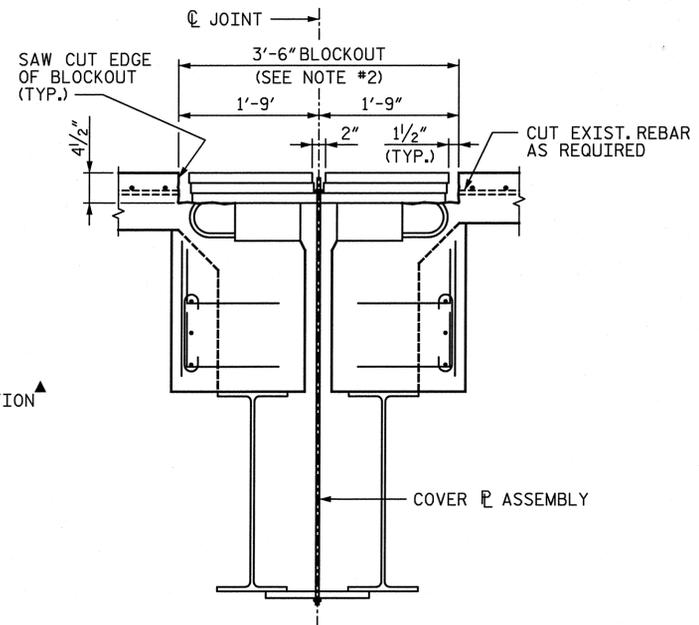


JOINT REPLACEMENT--STAGE 1

SEQUENCE

- PERFORM DIAPHRAGM MODIFICATION, DRILL AND ADHESIVELY ANCHOR #5S1 DOWEL BARS INTO EXISTING DIAPHRAGM.

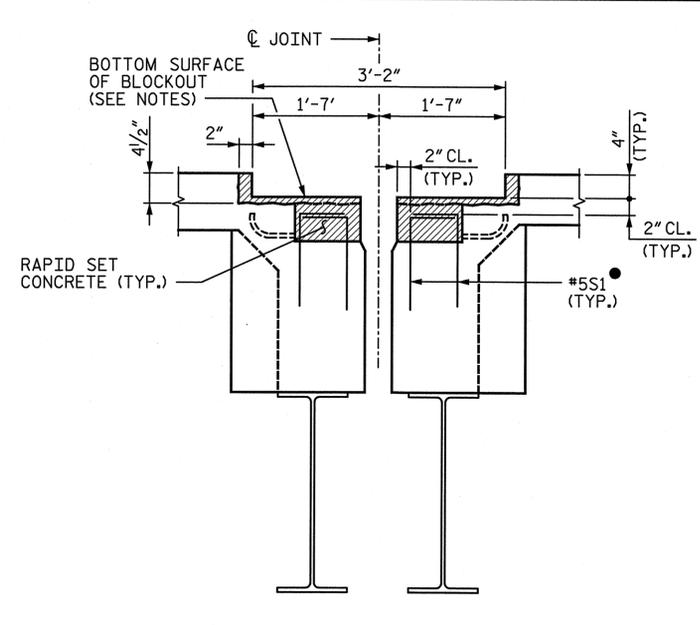
▲ CONTRACTOR MAY CORE HOLES (≤6" Ø) THROUGH DECK TO POUR DIAPHRAGM MODIFICATION. VENT HOLES SHALL BE PROVIDED TO PREVENT AIR POCKETS AND ENSURE UNIFORM POUR. NECESSARY PRECAUTIONS SHALL BE TAKEN TO NOT DAMAGE EXISTING REINFORCING STEEL.



JOINT REPLACEMENT--STAGE 2

SEQUENCE

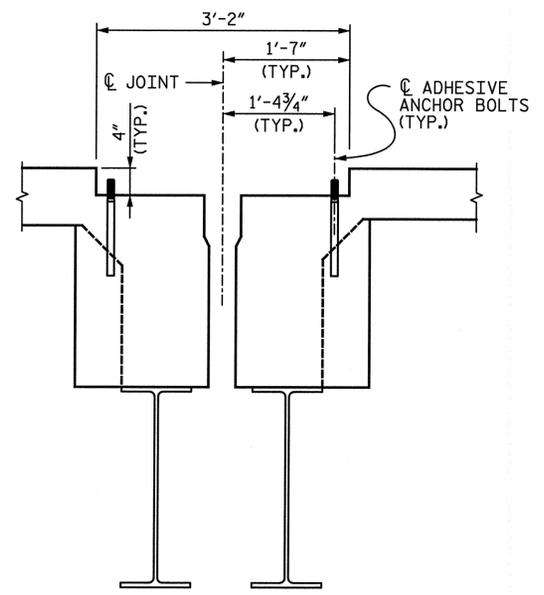
- REMOVE NEOPRENE SEAL AND CENTER BEAM OF EXISTING MODULAR JOINT IN THE WORK AREA. WORK AREAS SHALL TERMINATE AT THE NEAR FACE OF AN EXISTING SUPPORT BOX TO ENSURE END OF CENTER BEAM IS SUPPORTED (SEE "EXISTING MODULAR JOINT LOCATIONS" ON SHEET 3 OF 6).
- HYDRO-DEMOLITION TO REMOVE DECK IN THE PROPOSED BLOCKOUT AREA TO A DEPTH OF 4 1/2". TOP OF EXISTING MODULAR SUPPORT BOXES AND EXPOSED REBAR SHALL BE CUT AND REMOVED AS REQUIRED.
- INSTALL COVER PLATE ASSEMBLY.



JOINT REPLACEMENT--STAGE 3

SEQUENCE

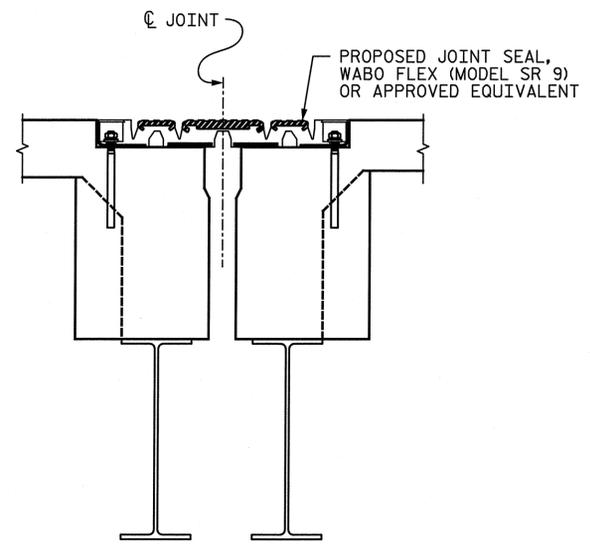
- COMPLETELY REMOVE REMAINING MODULAR JOINT SUPPORT BOXES.
- DRILL AND ADHESIVELY ANCHOR 2-#5S1 BARS IN EACH VOID FROM SUPPORT BOX REMOVAL.
- CUT OR REMOVE EXPOSED REBAR AS NECESSARY TO PROVIDE 2" MIN. COVER TO PROPOSED CONCRETE SURFACE.
- PLACE RAPID SET CONCRETE REPAIR MATERIAL.
- INSTALL COVER PLATE ASSEMBLY.



JOINT REPLACEMENT--STAGE 4

SEQUENCE

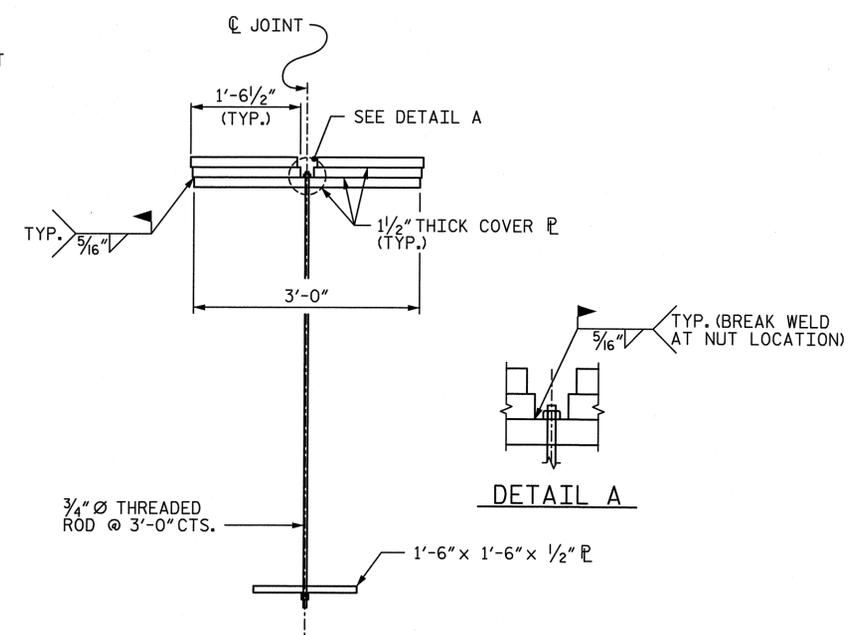
- INSTALL ADHESIVE ANCHOR BOLTS.



JOINT REPLACEMENT--STAGE 5

SEQUENCE

- INSTALL PROPOSED EXPANSION JOINT SEAL PER MANUFACTURER'S RECOMMENDATIONS.



COVER PLATE ASSEMBLY DETAIL

NOTE: SECURELY TIGHTEN BOLTS AND PLACE DOUBLE NUTS ON ENDS OF THREADED ROD TO ENSURE COVER PLATE ASSEMBLY REMAINS IN PLACE.

- NOTES:**
- EXISTING MODULAR JOINT AND DECK REINFORCING STEEL SHOWN IS BASED ON BEST INFORMATION AVAILABLE.
 - 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.
 - ADHESIVE ANCHOR BOLTS AND HARDWARE FOR THE PROPOSED EXPANSION JOINT SHALL BE STAINLESS STEEL AND INSTALLED PER THE MANUFACTURER'S RECOMMENDATIONS.
 - TOTAL THERMAL MOVEMENT MEASURED PARALLEL TO THE CENTER LINE OF THE ROADWAY IS 6 1/8" (3 1/16" EXPANSION AND 3 1/16" CONTRACTION.)
 - THE CONTRACTOR SHALL PREPARE THE BOTTOM SURFACE OF THE BLOCKOUT TO BE PARALLEL WITH THE PLANE OF THE ROADWAY AND PROVIDE A UNIFORM BEARING SURFACE.
 - PRIOR TO BEGINNING WORK, CONTRACTOR SHALL SUBMIT FOR REVIEW AND APPROVAL A COMPLETE SEQUENCE OF TASKS FOR EACH OPERATION AFFECTING THE BRIDGE SURFACE AND/OR TRAFFIC.
 - CONTRACTOR SHALL DETERMINE EXTENT OF WORKING AREA, STAGING PROCESS, AND INSTALL COVER PLATE ASSEMBLY AS NECESSARY TO MEET THE REQUIREMENTS OF TRAFFIC MANAGEMENT PLANS.
 - CONTRACTOR SHALL DETERMINE EXTENT OF WORK FOR EACH NIGHT OPERATION. EACH OPERATION SHALL END WITH COVER PLATE INSTALLATION WHICH SHALL BE COMPLETED TO THE SATISFACTION OF THE ENGINEER PRIOR TO RE-OPENING TRAFFIC LANES.
 - THE CONTRACTOR SHALL ENSURE THE COVER PLATE ASSEMBLIES AND PLATES MAINTAIN A LEVEL TRANSITION TO THE TOP OF EXISTING ROADWAY. PLATES MAY NOT BE ABOVE AND NO MORE THAN 1/4" BELOW THE TOP OF EXISTING ROADWAY.
 - CONTRACTOR MAY SUBMIT ALTERNATIVE COVER PLATE FOR PROVIDING A PROPER TRANSITION OVER WORK AREAS DURING STAGED CONSTRUCTION FOR APPROVAL BY THE ENGINEER.
 - ALL COSTS ASSOCIATED WITH THE REMOVAL OF EXISTING MODULAR JOINT IS CONSIDERED INCIDENTAL TO THE PAY ITEM "MODULAR JOINT REPLACEMENT", SEE SPECIAL PROVISIONS.
 - RAPID SET CONCRETE SHALL BE A MATERIAL SUITABLE FOR CONCRETE BRIDGE DECK REPAIRS UNDER FAST SETTING CONDITIONS.
 - RAPID SET CONCRETE SHALL REACH A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI IN 3 HOURS OR LESS. CONTRACTOR SHALL SUBMIT PROPOSED MATERIAL DOCUMENTATION TO THE ENGINEER FOR APPROVAL, SEE SPECIAL PROVISIONS.
 - #5S1 DOWEL BARS SHALL BE ADHESIVELY ANCHORED ACCORDING TO SECTION 420-13 OF THE STANDARD SPECIFICATIONS.
 - ANY DAMAGE TO EXISTING REINFORCING STEEL, DURING CONTRACTOR'S OPERATIONS, SHALL BE REPAIRED AS DIRECTED BY THE ENGINEER AND PERFORMED AT NO ADDITIONAL COST.
 - CONTRACTOR SHALL SUBMIT A CONCRETE PLACEMENT PLAN FOR THE DIAPHRAGM MODIFICATION FOR REVIEW AND APPROVAL BY THE ENGINEER. THE PLAN SHALL ADDRESS PLACEMENT METHOD, VENTING AND MEANS TO ENSURE FULLY CONSOLIDATED MATERIAL.

17BP.14.P.7 /
 PROJECT NO. **13414.1045010**
 HENDERSON COUNTY

BRIDGE NO.: **108 & 112**

REHABILITATION OF BRIDGE NO. 108 & 112

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

MODULAR JOINT REPLACEMENT
 BRIDGES ON I-26 OVER GREEN RIVER



DRAWN BY : TRL/CLG DATE : 11-11
 CHECKED BY : AJP DATE : 1-12

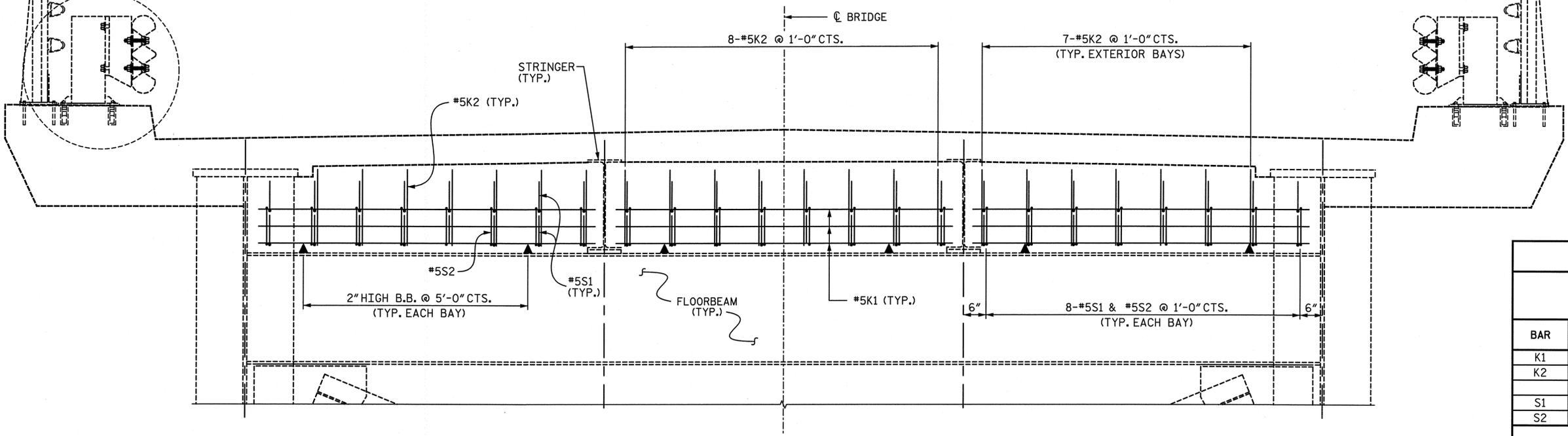
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 NC LICENSE NO. F-0991

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ALL ADJUSTMENTS, MODIFICATIONS, REMOVAL AND REPLACEMENT OF EXISTING TRAFFIC RAILING IS TO BE CONSIDERED INCIDENTAL TO THE SEVERAL PAY ITEMS. NO SEPARATE MEASUREMENT SHALL BE MADE FOR THIS PROCEDURE.

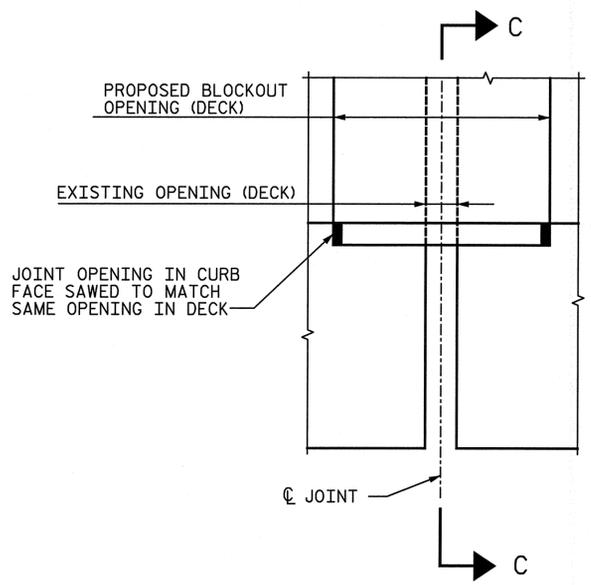
NOTES:

- CONTRACTOR SHALL INSTALL PROPOSED JOINT PER THE MANUFACTURER'S RECOMMENDATIONS.
- #5S1 BARS SHALL BE ADHESIVELY ANCHORED TO EXISTING BENT DIAPHRAGM. ADHESIVELY ANCHOR #5S1 BARS PER SECTION 420-13 OF THE STANDARD SPECIFICATIONS.

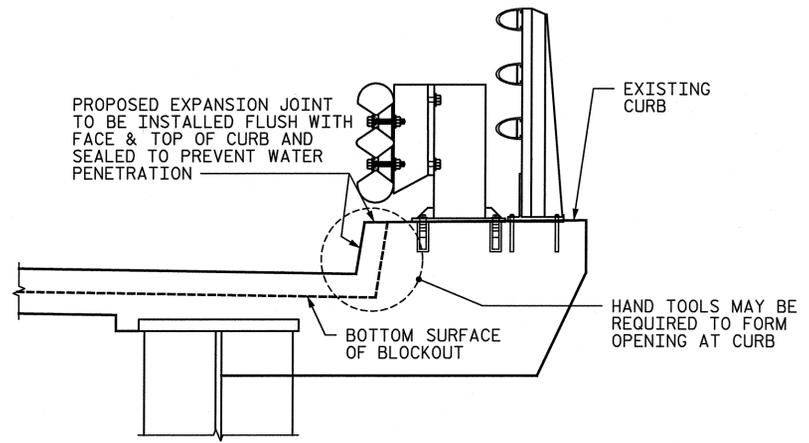


PLAN - DIAPHRAGM MODIFICATIONS

BILL OF MATERIAL					
QUANTITIES FOR ONE EXPANSION JOINT REPAIR					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
K1	18	#5	STR.	7'-6"	141
K2	44	#5	STR.	1'-7"	73
S1	128	#5	①	1'-10"	245
S2	48	#4	②	1'-10"	59
SUMMARY OF QUANTITIES					
REINFORCING STEEL				LBS.	518
CLASS AA CONCRETE				CU. FT.	56
RAPID SET CONCRETE				CU. FT.	19
BAR TYPES					
ALL BAR DIMENSIONS ARE OUT TO OUT.					



PLAN OF JOINT SEAL AT CURB



SECTION C-C

17BP.14.P.7 /
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 HENDERSON COUNTY
 BRIDGE NO.: 108 & 112
 REHABILITATION OF BRIDGE NO. 108 & 112

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
MODULAR JOINT REPLACEMENT DETAILS
 BRIDGES ON I-26 OVER GREEN RIVER



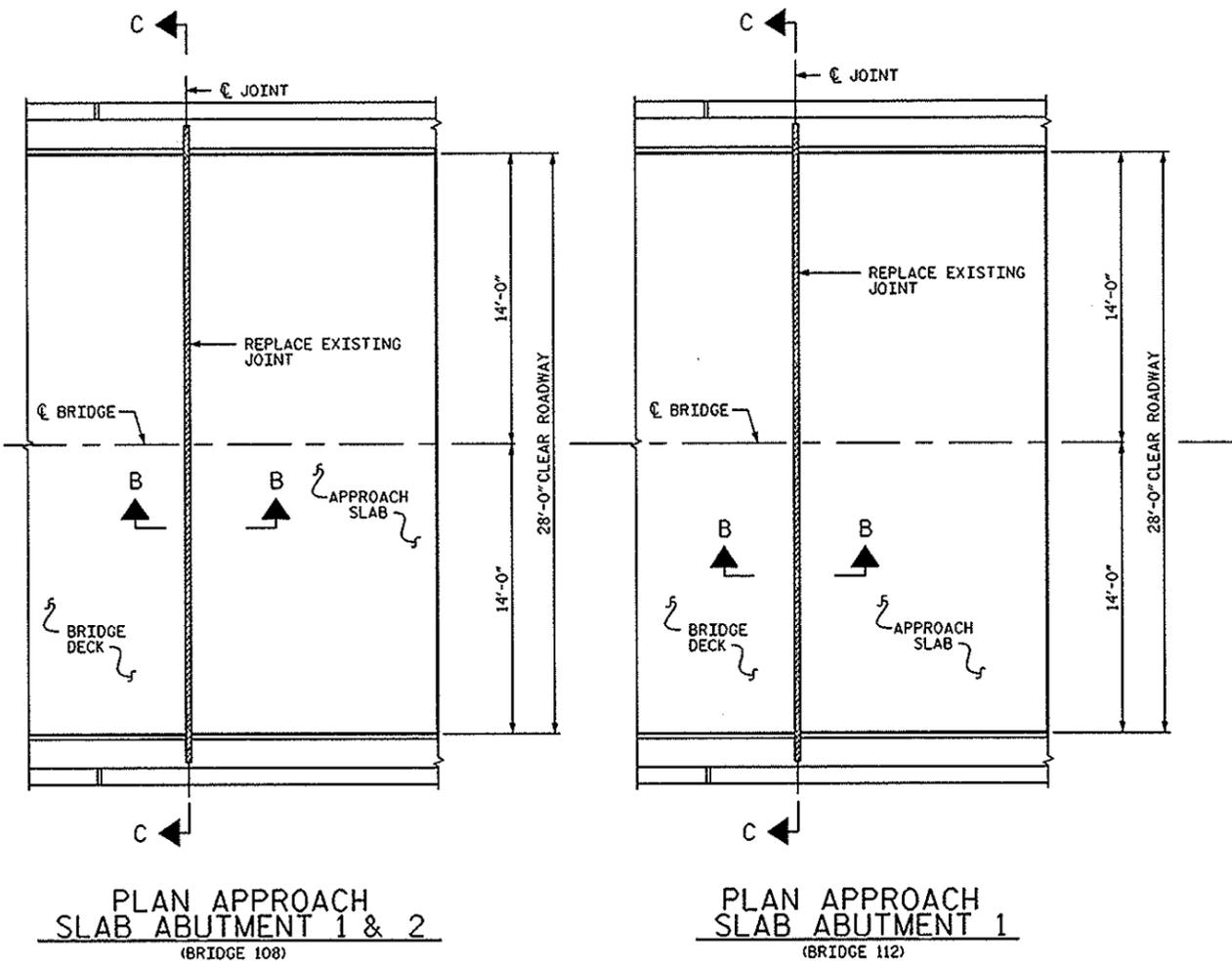
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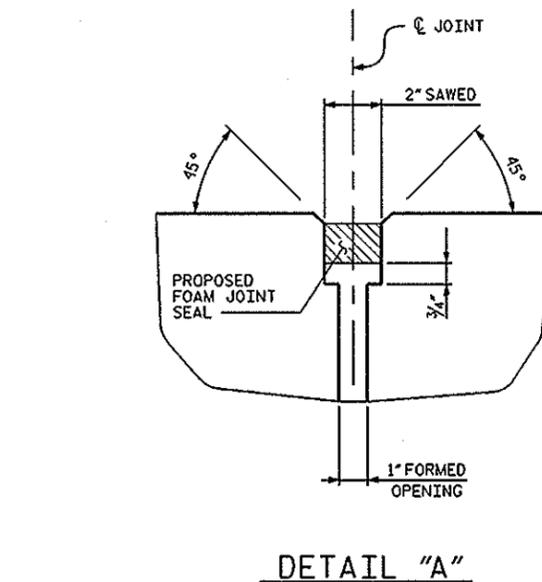
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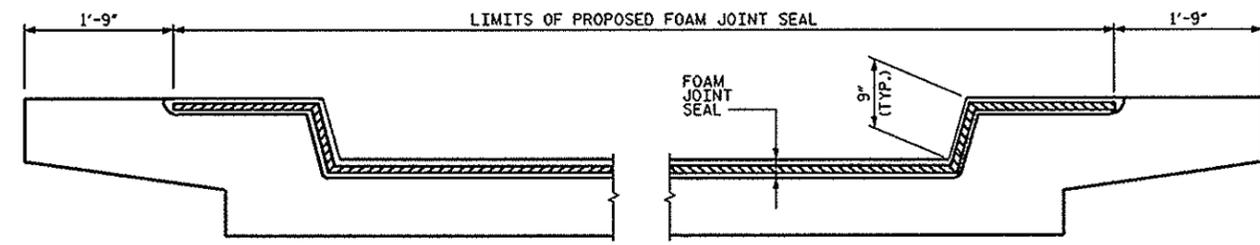


PLAN APPROACH SLAB ABUTMENT 1 & 2 (BRIDGE 108)

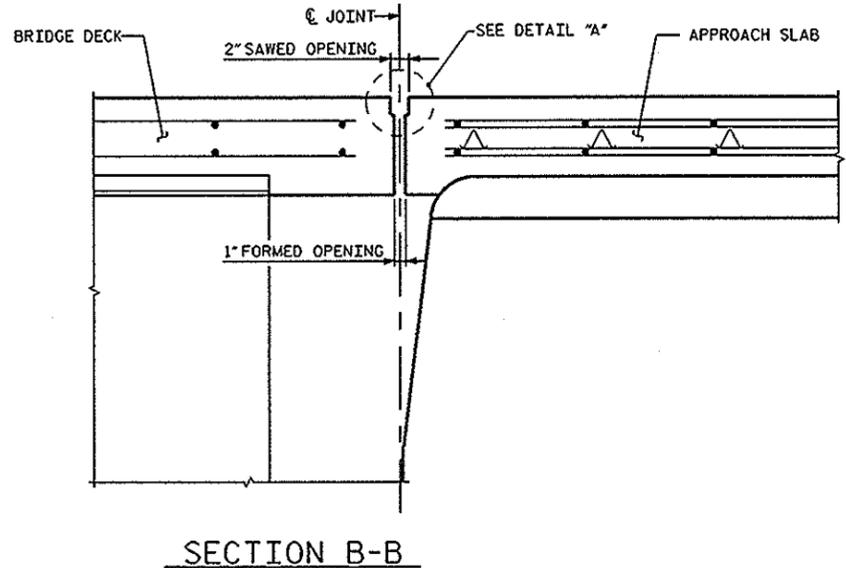
PLAN APPROACH SLAB ABUTMENT 1 (BRIDGE 112)



DETAIL "A"



SECTION C-C



SECTION B-B

NOTES

1. THE NOMINAL UNCOMPRESSED WIDTH OF THE FOAM JOINT SEAL SHALL BE 3/8".
2. FOR FOAM JOINT SEAL, SEE SPECIAL PROVISIONS.
3. THE CONTRACTOR SHALL TAKE CARE NOT TO DAMAGE EXISTING CONCRETE DECK AND APPROACH PAVEMENT. AREAS DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED AS DIRECTED BY THE ENGINEER. ANY COST ASSOCIATED WITH THESE REPAIRS SHALL BE CONSIDERED INCIDENTAL AND NO SEPARATE PAYMENT WILL BE MADE.
4. THE INSTALLED FOAM JOINT SHALL BE WATERTIGHT.
5. ALL COSTS ASSOCIATED WITH "CONCRETE DECK REPAIR" SHALL BE CONSIDERED INCIDENTAL TO THE PAY ITEMS FOR BRIDGE 112.

PROJECT NO. 17BP.14.P.7
HENDERSON COUNTY
 BRIDGE NO. 108 & 112
 REHABILITATION OF BRIDGE NO. 108 & 112



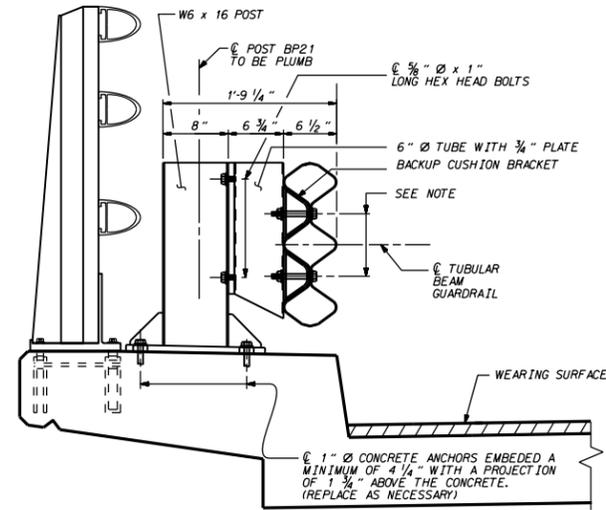
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
FOAM JOINT REPLACEMENT
 BRIDGES ON I-26 OVER GREEN RIVER

DRAWN BY: JDE/CLG DATE: 11-11
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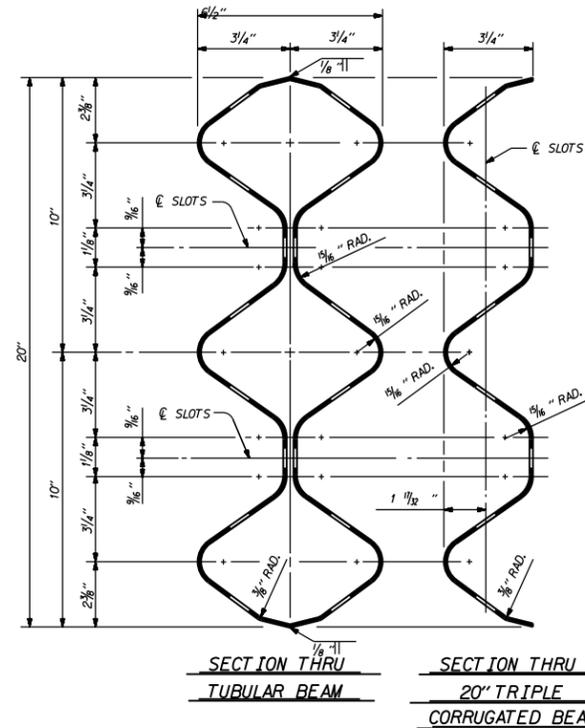
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NOTES :
 5/8" Ø x 5" LONG HEX OR HEAVY HEX HEAD BOLTS WITH ONE GALVANIZED FLAT PLATE WASHER (TYPE 1) AND ONE GALVANIZED STANDARD ROUND WASHER EACH OR ROUND HEAD, OVAL NECK CARRIAGE BOLT WITH ONE GALVANIZED STANDARD ROUND WASHER AND ONE GALVANIZED FLAT PLATE WASHER (TYP 6).



EXISTING TUBULAR BEAM GUARDRAIL



SECTION THRU TUBULAR BEAM
 SECTION THRU 20" TRIPLE CORRUGATED BEAM

REMOVE AND REPLACE ALL DAMAGED TUBULAR BEAM GUARDRAIL ON BRIDGES 108 AND 112, OR AS DIRECTED BY THE ENGINEER. TOTAL LENGTH IS APPROXIMATELY 2250 FEET.

REMOVE AND REPLACE DAMAGED POSTS AND 6" TUBES AS DIRECTED BY THE ENGINEER. ANTICIPATED QUANTITY TO BE REPLACED IS 45.

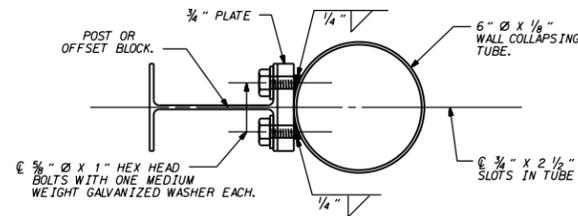
REUSE OF UNDAMAGED HARDWARE IS ACCEPTABLE FOR ATTACHMENT OF NEW GUARDRAIL, POSTS, AND/OR 6" TUBES.

REPLACE BENT, DAMAGED, OR MISSING ANCHORS AS DIRECTED BY THE ENGINEER. IF REPLACEMENT IS NECESSARY, CUT OR GRIND DAMAGED BOLT FLUSH WITH CONCRETE SURFACE, AND SHIFT THE LOCATION OF THE POST AND PIPE SLIGHTLY, AS NECESSARY, TO INSTALL NEW ADHESIVE ANCHOR BOLTS.

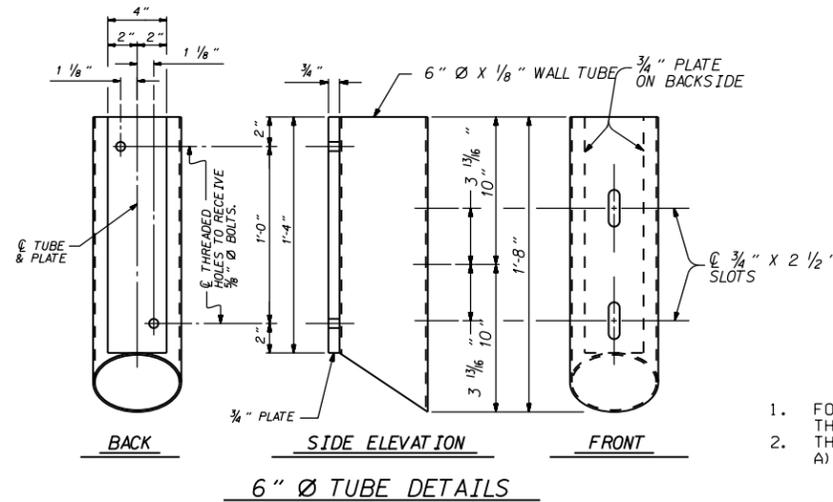
CHECK AND MEASURE LOCATIONS FOR ATTACHMENT OF NEW GUARDRAIL AFTER COMPLETION OF THE REPLACEMENT OF DAMAGED ANCHOR BOLTS, POSTS, AND/OR PIPES.

GENERAL NOTES :

- THE 20" TRIPLE TUBULAR CORRUGATED BEAM RAIL SECTION SHALL BE FABRICATED BY WELDING TWO (2) 20" TRIPLE CORRUGATED BEAM RAIL ELEMENTS AS SHOWN AND THE GUARDRAIL SHALL CONFORM TO THE NCDOT STANDARD SPECIFICATIONS EXCEPT AS NOTED AND SHOWN ON THE PLANS.
- 20" TRIPLE TUBULAR CORRUGATED BEAM RAIL SHALL BE 10 GAGE.
- POSTS, BASE ANGLES AND/OR BASE PLATES, 6" DIA. TUBES, AND OFFSET BLOCKS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A-36. SHIMS SHALL MEET THE REQUIREMENTS OF ASTM A-570 GRADE 33 OR A-611 GRADE C.
- POSTS, BASE ANGLES AND/OR BASE PLATES, TUBES, BLOCKS AND SHIMS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A-123.
- POSTS ARE TO BE PLUMB. SHIMS MAY BE USED BENEATH THE ROADWAY EDGE OF THE BASE ANGLES AND/OR BASE PLATES AS NECESSARY FOR POST ALIGNMENT. PROVIDE ONE 1/8" AND TWO 1/16" STEEL SHIMS AS NECESSARY.
- "BP" POST HEIGHT TO MATCH EXISTING AND SHALL BE DETERMINED IN THE FIELD BY THE CONTRACTOR.
- PROPOSED RAIL POST MAY BE SHIFTED SLIGHTLY TO CLEAR REINFORCING STEEL. STANDARD SLOTS MAY BE USED IN THE RAIL TO ALLOW ADJUSTMENT.
- HOLES SHALL BE DRILLED HORIZONTAL OR VERTICAL USING A ROTARY DRILL OR A ROTARY IMPACT DRILL. IMPACT TOOLS WILL NOT BE PERMITTED. CARBIDE TIPPED BITS SHALL BE USED.
- POST SPACINGS SHALL BE CHECKED BEFORE HOLES ARE DRILLED IN THE 20" TRIPLE TUBULAR CORRUGATED BEAM RAIL. STANDARD SLOTS WILL BE ALLOWED. FIELD PUNCHING OF THE HOLES OR SLOTS WILL NOT BE PERMITTED.
- A SEALANT WILL BE REQUIRED IN THE AREA OF THE ANCHOR BOLTS AND WILL BE PLACED IN THE FOLLOWING MANNER:
 - BEFORE THE BASE PLATE HAS BEEN SET IN PLACE, IF THE GROUT DOES NOT COMPLETELY FILL THE ANCHOR HOLE, SEAL THE AREA AROUND EACH CONCRETE ANCHOR BOLT TO KEEP MOISTURE FROM ENTERING THE HOLE.
 - AFTER THE BASE PLATE HAS BEEN SET IN PLACE AND BEFORE THE WASHERS AND NUTS HAVE BEEN PLACED ON THE BOLT, SEAL THE HOLE REMAINING AROUND THE ANCHOR BOLT.
 THE SEALANT SHALL BE A ONE-COMPONENT POLYSULFIDE GUN GRADE MEETING FEDERAL SPECIFICATION TT-S-230. SEALANT SHALL BE GRAY IN COLOR AND APPLIED ACCORDING TO THE MANUFACTURER'S RECOMMENDATION. THE FOLLOWING SEALANTS MEET THE ABOVE REQUIREMENTS:
 - SONOLASTIC ONE PART*, MANUFACTURED BY SONNEBORN-DESOTO CO., DES PLAINES, ILLINOIS, 60018.
 - THOROSPAN ONE COMPONENT*, MANUFACTURED BY STANDARD DRY WALL PRODUCTS, INC., MIAMI, FLORIDA, 33166.
 - HORNFLX ONE COMPONENT*, MANUFACTURED BY W. R. GRACE AND CO., CAMBRIDGE, MASSACHUSETTS, 02140.
- ALL CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.
- VERTICAL SLOTS IN THE 6" TUBE ALLOW FOR SOME VERTICAL ADJUSTMENT OF RAIL HEIGHT IN ORDER TO OBTAIN THE CENTERLINE OF RAIL HEIGHT OF 1'-10" ABOVE RIDING SURFACE.
- THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES. ELECTROSLAG WELDING WILL NOT BE PERMITTED.
- LAP BEAM RAIL JOINTS IN DIRECTION OF TRAFFIC.



DETAIL SHOWING CONNECTION OF 6" Ø TUBE TO POST OR OFFSET BLOCK



6" Ø TUBE DETAILS

- FOR ADHESIVELY ANCHORED BOLTS OR DOWELS, SEE 420-13 OF THE STANDARD SPECIFICATIONS.
- THE CONCRETE ANCHORS SHALL BE TESTED AS FOLLOWS :
 - THE CONTRACTOR SHALL TEST 5% OF THE TOTAL NUMBER OF REPLACED BOLTS FOR LOAD TESTS AS DESCRIBED IN THE 420-13 OF THE STANDARD SPECIFICATIONS.
 - THE ANCHOR BEING TESTED SHALL WITHSTAND A LOAD EQUAL TO 4700 POUNDS WHEN TESTED AS SPECIFIED IN THE STANDARD SPECIFICATIONS.
 - THE SUCCESSFULLY TESTED ANCHOR MAY BE USED IN THE FINAL RAIL ASSEMBLY, IF APPROPRIATELY LOCATED. IF NOT SO LOCATED, OR IF THE ANCHOR FAILS THE TEST, THE TEST AREA SHALL BE REPAIRED AS DAMAGED CONCRETE, SEE "GENERAL NOTES".
- EMBEDMENT SHOWN ON THE PLANS IS A MINIMUM, BUT THE MANUFACTURER'S RECOMMENDATIONS SHALL BE FOLLOWED.
- THE 1" DIAMETER CONCRETE ANCHOR SHALL CONSIST OF A STUD, THREADED ON ONE END, WITH NUT AND WASHERS. THE ANCHOR SHALL BE GALVANIZED TO CONFORM TO THE REQUIREMENTS OF ASTM A-153.
- AT THE CONTRACTOR'S OPTION, STAINLESS STEEL ANCHORS MAY BE USED AS AN ALTERNATE FOR THE GALVANIZED CONCRETE ANCHORS. THEY SHALL MEET OR EXCEED THE MECHANICAL REQUIREMENTS FOR THE GALVANIZED ANCHORS. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.
- EXPANSION ANCHORS WILL NOT BE PERMITTED.
- REPLACEMENT OF ANCHORS SHALL BE INCIDENTAL TO REPLACEMENT OF POSTS. THERE WILL BE NO SEPARATE PAY ITEM FOR ANCHOR REPLACEMENT.

NOTES :
 5/8" DIAMETER BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A-307 AND SHALL BE GALVANIZED TO CONFORM TO THE REQUIREMENTS OF ASTM A-153.

BILL OF MATERIAL

PAY ITEMS:
45- 6" COLLAPSING TUBE WITH 3/4" PLATE
45- W6X16 POSTS
2250 LIN. FT. OF 20' TUBULAR TRIPLE CORRUGATED STEEL BEAM GUARDRAIL.

PROJECT NO. 17.BP.14.P.7
 HENDERSON COUNTY
 BRIDGE: 108 & 112

STATE OF NORTH CAROLINA					
DEPARTMENT OF TRANSPORTATION					
RALEIGH					
DETAILS FOR REPLACEMENT OF EXISTING TUBULAR BEAM GUARDRAIL					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					G-1
TOTAL SHEETS					G-1

ASSEMBLED BY : M. WELDON	DATE : 6/12	SPECIAL
CHECKED BY : T. SHEPHERD	DATE : 6/12	
DRAWN BY : N. M. RUFFIN	DATE : 5/88	STANDARD
CHECKED BY :	DATE :	

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

HENDERSON COUNTY

DIVISION 14



LOCATION 1: BRIDGE #108 I-26 WB OVER GREEN RIVER
TYPE OF WORK: REPLACE JOINTS

LOCATION 2: BRIDGE #112 I-26 EB OVER GREEN RIVER
TYPE OF WORK: REPLACE JOINTS

SEE SHEET 1 FOR VICINITY MAPS

INDEX OF SHEETS

<u>SHEET NO.</u>	<u>TITLE</u>
TMP-1	TITLE SHEET AND INDEX OF SHEETS
TMP-1A	ROADWAY STANDARD DRAWINGS AND LEGEND
TMP-1B	GENERAL NOTES
TMP-2	PHASING NOTES

SHEET NO.

TMP-1

3/29/2012
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odynskrf

PROJECT: 17BP.14.P.7



PLAN PREPARED FOR NCDOT BRIDGE MANAGEMENT UNIT

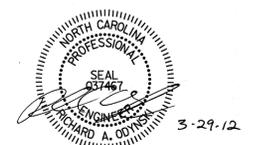
RALEIGH, NC




STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License Number F-0991
PROJECT ENGINEER JOHN JOHNSON, PE
DESIGN ENGINEER RICHARD ODYNSKI, PE

APPROVED: _____
DATE: _____

SEAL



GENERAL NOTES

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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	DAY AND TIME RESTRICTIONS
I-26	6:00 A.M. TO 9:00 P.M. MONDAY THRU SUNDAY

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

ROAD NAME

I-26

HOLIDAY

1. FOR ANY UNEXPECTED OCCURRENCE THAT CREATES UNUSUALLY HIGH TRAFFIC VOLUMES, AS DIRECTED BY THE ENGINEER.
2. FOR EASTER, BETWEEN THE HOURS OF 6:00 A.M. THURSDAY AND 9:00 P.M. MONDAY.
3. FOR MEMORIAL DAY, BETWEEN THE HOURS OF 6:00 A.M. FRIDAY TO 9:00 P.M. TUESDAY.
4. FOR INDEPENDENCE DAY, BETWEEN THE HOURS OF 6:00 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 6:00 A.M. THE THURSDAY BEFORE INDEPENDENCE DAY AND 9:00 P.M. THE TUESDAY AFTER INDEPENDENCE DAY.
5. FOR LABOR DAY, BETWEEN THE HOURS OF 6:00 A.M. FRIDAY AND 9:00 P.M. TUESDAY.
6. CHRISTMAS RETAIL SEASON- NO LANE CLOSURES ARE ALLOWED BETWEEN 6:00 A.M. THE FRIDAY BEFORE THANKSGIVING UNTIL 9:00 P.M. ON THE THIRD WEEKDAY FOLLOWING NEW YEAR'S DAY. EXCEPT THAT A LANE CLOSURE WILL BE ALLOWED FROM 9:00 P.M. TO 6:00 A.M. ON MONDAY, TUESDAY, AND WEDNESDAY NIGHTS.

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

LANE AND SHOULDER CLOSURE REQUIREMENTS

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

F) 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.

G) 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.

TRAFFIC PATTERN ALTERATIONS

- H) NOTIFY THE ENGINEER TWENTY ONE (21) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.
- I) ANY CHANGE TO THE PROPOSED PHASING OR DETAILS SHALL REQUIRE APPROVAL FROM THE ENGINEER

SIGNING

- J) 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.
- K) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

TRAFFIC CONTROL DEVICES

L) WHEN LANE CLOSURES ARE NOT IN EFFECT, SPACE CHANNELIZING DEVICES IN WORK AREAS NO GREATER IN FEET THAN TWICE THE POSTED SPEED LIMIT (MPH) EXCEPT, 10 FT ON-CENTER IN RADII, AND 3 FT OFF THE EDGE OF AN OPEN TRAVELWAY. REFER TO STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES SECTIONS 1130 (DRUMS), 1135 (CONES) AND 1180 (SKINNY DRUMS) FOR ADDITIONAL REQUIREMENTS.

MISCELLANEOUS

M) LAW ENFORCEMENT MAY BE USED TO MAINTAIN TRAFFIC THROUGH THE WORK AREA AND/OR INTERSECTIONS AS DIRECTED BY THE ENGINEER.

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APPROVED: _____ DATE: _____ 		<h2 style="margin: 0;">GENERAL NOTES</h2>
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PHASING NOTES

USE NCDOT STD. 1101.01 SHEET 1 OF 3 TO INSTALL WORK ZONE ADVANCE WARNING SIGNS.

PHASE 1 (BRIDGE 108):

- STEP 1: USING NCDOT STD. 1101.02 SHEET 4 OF 15, INSTALL LANE CLOSURE SIGNS AND DEVICES TO CLOSE THE INSIDE LANE OF BRIDGE 108, DURING NIGHT OPERATIONS.
- STEP 2: AWAY FROM TRAFFIC, PERFORM THE FOLLOWING:

PERFORM JOINT REPAIRS AS REQUIRED, SEE STRUCTURE PLANS.
- STEP 3: RETURN TRAFFIC TO ITS NORMAL TRAFFIC PATTERN AT THE END OF EACH NIGHT OPERATION.
- STEP 4: WHEN WORK IS COMPLETE, REMOVE ALL LANE CLOSURE SIGNS AND DEVICES AND RETURN TRAFFIC TO ITS NORMAL TRAFFIC PATTERN.
- STEP 5: USING NCDOT STD. 1101.02 SHEET 4 OF 15, INSTALL LANE CLOSURE SIGNS AND DEVICES TO CLOSE THE OUTSIDE LANE OF BRIDGE 108, DURING NIGHT OPERATIONS.
- STEP 6: AWAY FROM TRAFFIC, PERFORM THE FOLLOWING:

PERFORM JOINT REPAIRS AS REQUIRED, SEE STRUCTURE PLANS.
- STEP 7: RETURN TRAFFIC TO ITS NORMAL TRAFFIC PATTERN AT THE END OF EACH NIGHT OPERATION.
- STEP 8: WHEN WORK IS COMPLETE, REMOVE ALL LANE CLOSURE SIGNS AND DEVICES AND RETURN TRAFFIC TO ITS NORMAL TRAFFIC PATTERN.

PHASE 2 (BRIDGE 112):

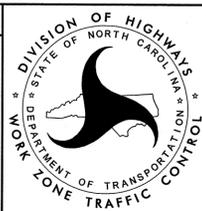
- STEP 1: USING NCDOT STD. 1101.02 SHEET 4 OF 15, INSTALL LANE CLOSURE SIGNS AND DEVICES TO CLOSE THE INSIDE LANE OF BRIDGE 112, DURING NIGHT OPERATIONS.
- STEP 2: AWAY FROM TRAFFIC, PERFORM THE FOLLOWING:

PERFORM JOINT REPAIRS AND STRUCTURAL STEEL CLEANING AND PAINTING AS REQUIRED, SEE STRUCTURE PLANS.
- STEP 3: RETURN TRAFFIC TO ITS NORMAL TRAFFIC PATTERN AT THE END OF EACH NIGHT OPERATION.
- STEP 4: WHEN WORK IS COMPLETE, REMOVE ALL LANE CLOSURE SIGNS AND DEVICES AND RETURN TRAFFIC TO ITS NORMAL TRAFFIC PATTERN.
- STEP 5: USING NCDOT STD. 1101.02 SHEET 4 OF 15, INSTALL LANE CLOSURE SIGNS AND DEVICES TO CLOSE THE OUTSIDE LANE OF BRIDGE 112, DURING NIGHT OPERATIONS.
- STEP 6: AWAY FROM TRAFFIC, PERFORM THE FOLLOWING:

PERFORM JOINT REPAIRS AS REQUIRED, SEE STRUCTURE PLANS.
- STEP 7: RETURN TRAFFIC TO ITS NORMAL TRAFFIC PATTERN AT THE END OF EACH NIGHT OPERATION.
- STEP 8: WHEN WORK IS COMPLETE, REMOVE ALL LANE CLOSURE SIGNS AND DEVICES AND RETURN TRAFFIC TO ITS NORMAL TRAFFIC PATTERN.

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