

CONTRACT: DL00067 TIP PROJECT: BP-5500X



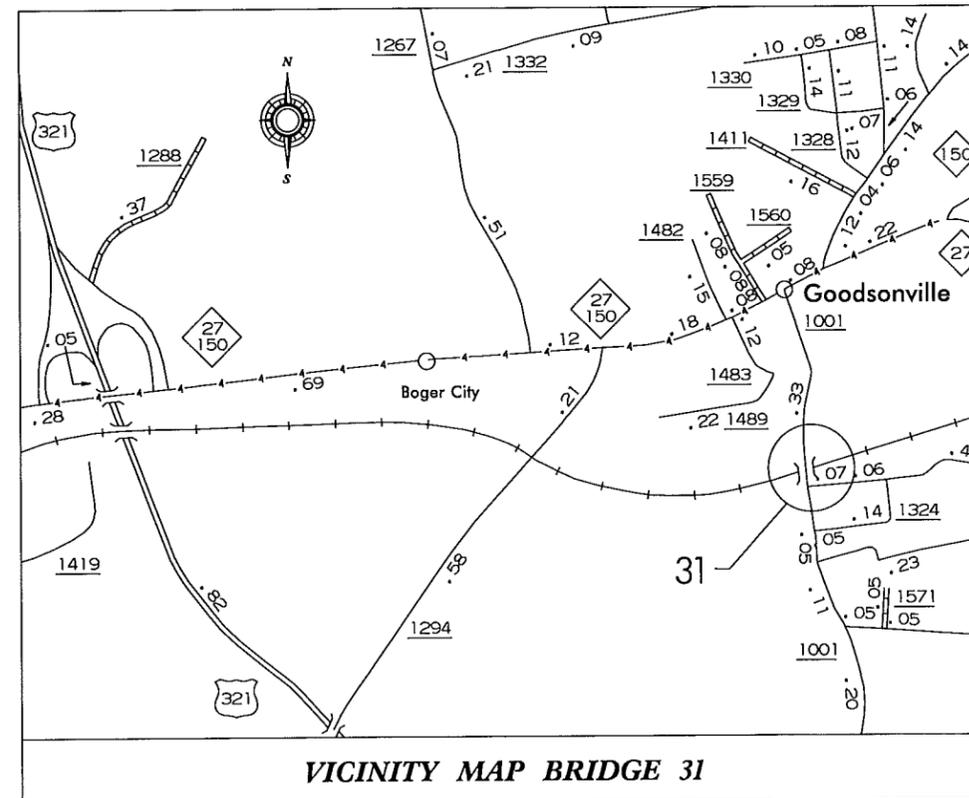
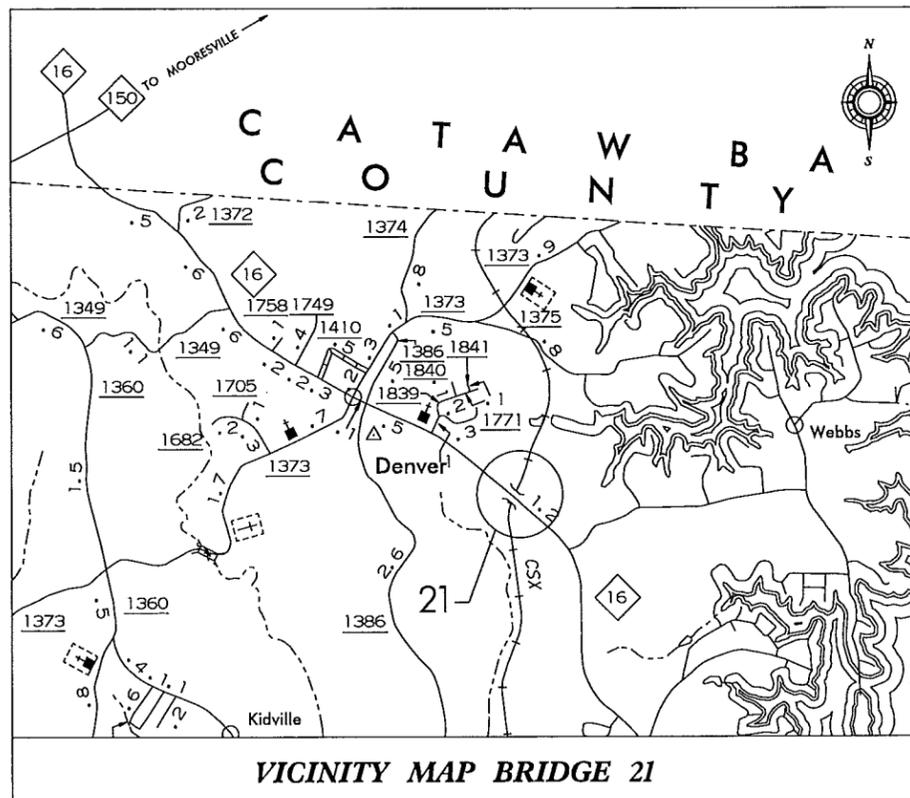
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# LINCOLN COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP-5500X	1	29
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
50070.1.1		P.E.	
50070.3.FR24	BRSTP-0016(59)	CONST.	

LOCATION: BRIDGE LINCOLN 21 OVER CSX RAILROAD  
BRIDGE LINCOLN 31 OVER CSX RAILROAD

TYPE OF WORK: BRIDGE DECK PRESERVATION LMC OVERLAY, EPOXY/STONE OVERLAY,  
SUPERSTRUCTURE & SUBSTRUCTURE REPAIRS, STRUCTURAL STEEL  
CLEANING & PAINTING



**DESIGN DATA**  
BRIDGE 21 ADT 2010 = 14000  
BRIDGE 31 ADT 2010 = 6600

**PROJECT LENGTH**  
LENGTH STRUCTURE PROJECT BRIDGE 21 =  
0.026 Miles  
LENGTH STRUCTURE PROJECT BRIDGE 31 =  
0.011 Miles  
TOTAL LENGTH STRUCTURE PROJECT =  
0.037 Miles

Prepared in the Office of:  
**STRUCTURES MANAGEMENT UNIT**  
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2012 STANDARD SPECIFICATIONS

LETTING DATE:  
SEPT. 23, 2014

RICK NELSON, P.E.  
PROJECT ENGINEER

ENGINEER

*Timothy M. Sherrill*  
NORTH CAROLINA  
SEAL  
18565  
ENGINEER  
TIMOTHY M. SHERRILL  
08/14/14  
**TIMOTHY M. SHERRILL, P.E.**  
PROJECT DESIGN ENGINEER

**CONTRACT: DL00067 TIP PROJECT: BP5500X**



STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**LINCOLN COUNTY**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	<b>BP-5500X</b>	1A	29
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50070.1.1		P.E.	
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LOCATION: BRIDGE LINCOLN 21 OVER CSX RAILROAD  
BRIDGE LINCOLN 31 OVER CSX RAILROAD

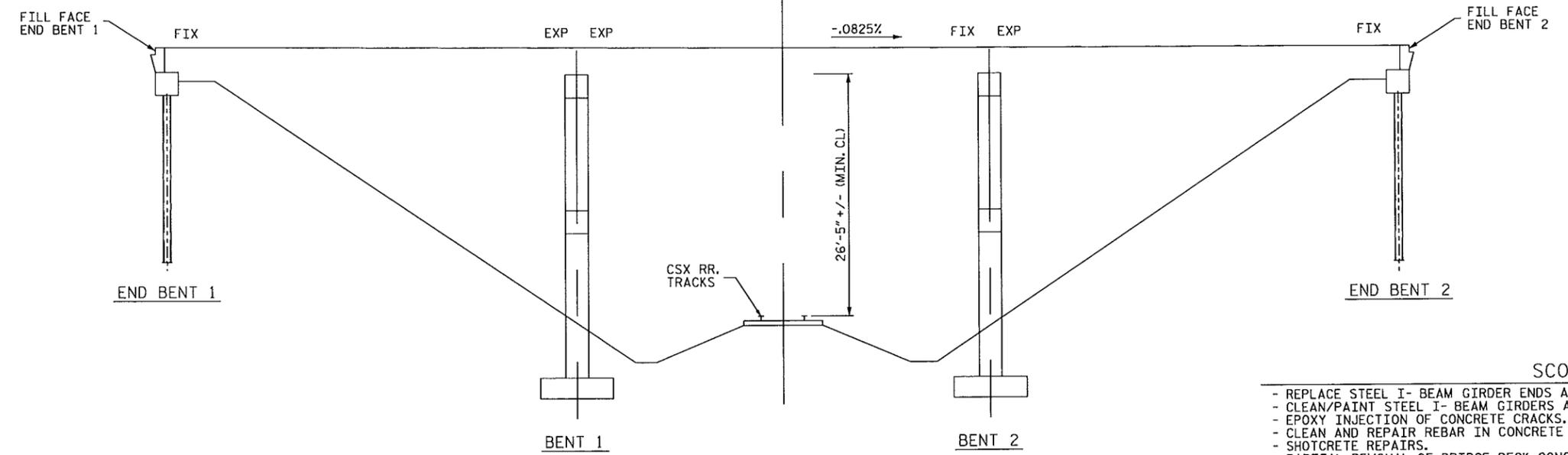
TYPE OF WORK: BRIDGE DECK PRESERVATION LMC OVERLAY, EPOXYSTONE OVERLAY,  
SUPERSTRUCTURE & SUBSTRUCTURE REPAIRS, STRUCTURAL STEEL  
CLEANING & PAINTING

INDEX OF SHEETS

<i>1</i>	<i>TITLE SHEET</i>
<i>1A</i>	<i>INDEX OF SHEETS</i>
<i>S-1 THROUGH S-13</i>	<i>BRIDGE 21</i>
<i>S-14 THROUGH S-18</i>	<i>BRIDGE 31</i>
<i>SN</i>	<i>STRUCTURE STANDARD NOTES</i>
<i>TMP-1 THROUGH TMP-5</i>	<i>TRAFFIC MANAGEMENT PLANS</i>
<i>SD-01</i>	<i>SIGNING PLANS</i>
<i>PMP-1 THROUGH PMP-2</i>	<i>PAVEMENT MARKING PLANS</i>

← TO DENVER

→ TO WEBBS RD



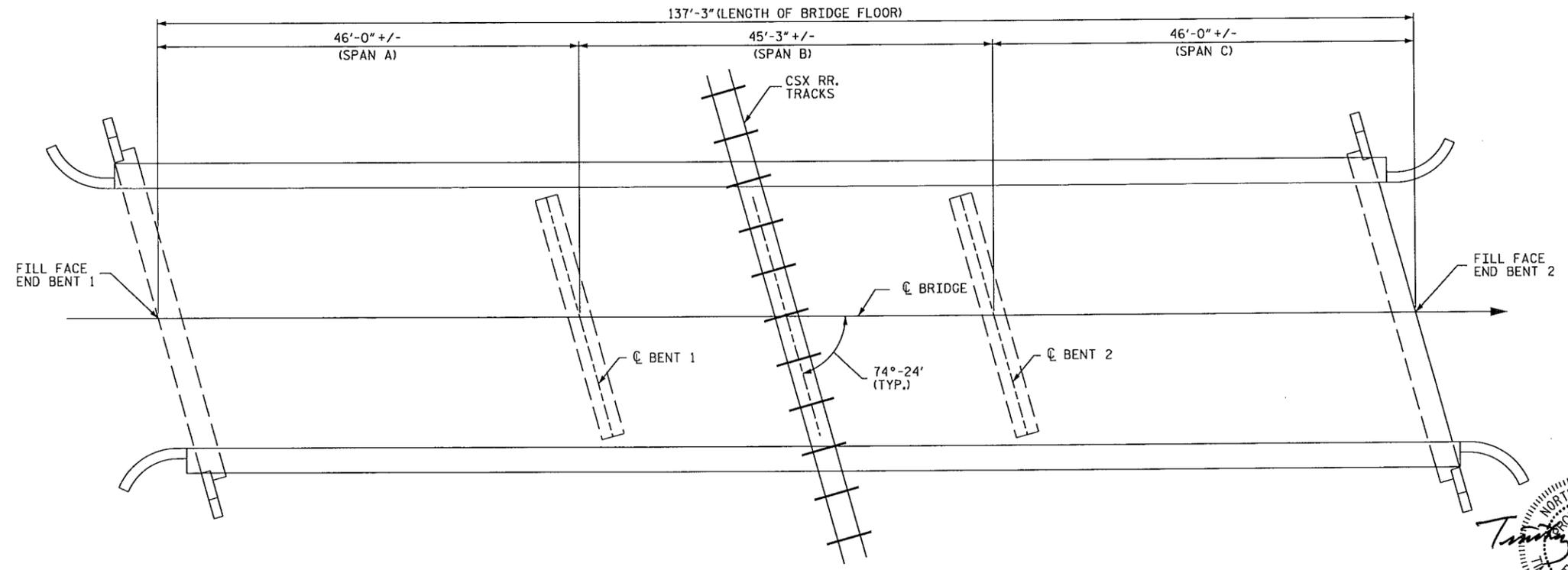
NOTE: THE PROFILE INFORMATION IS TAKEN FROM THE ORIGINAL PLANS AND THE ROUTINE INSPECTION REPORT DATED 04/17/2012.

**SCOPE OF WORK**

- REPLACE STEEL I-BEAM GIRDER ENDS AND BEARINGS.
- CLEAN/PAINT STEEL I-BEAM GIRDERS AND BEARINGS.
- EPOXY INJECTION OF CONCRETE CRACKS.
- CLEAN AND REPAIR REBAR IN CONCRETE REPAIR AREAS.
- SHOTCRETE REPAIRS.
- PARTIAL REMOVAL OF BRIDGE DECK CONCRETE, BY SCARIFICATION AND HYDRO-DEMOLITION METHODS.
- OVERLAY PREPARED BRIDGE DECK WITH LATEX MODIFIED CONCRETE - VERY EARLY STRENGTH.
- EXISTING BRIDGE JOINT DEMOLITION.
- RECONSTRUCT BRIDGE JOINTS AND INSTALL NEW JOINT SEALS.
- GROOVE LATEX MODIFIED CONCRETE BRIDGE DECK.

**ELEVATION**

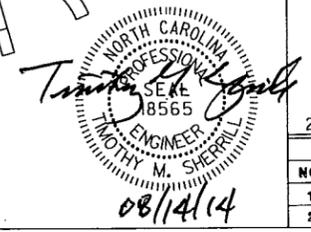
CSXT HAS CONSIDERED ALLOWING A TEMPORARY HORIZONTAL CLEARANCE VARIANCE TO THEIR STANDARD TOLERANCES, SUCH THAT REPAIR WORK OPERATIONS AND ANY CONTAINMENT OR OTHER EQUIPMENT MAY BE NO CLOSER THAN 12'-0" MEASURED PERPENDICULARLY FROM THE CENTERLINE OF THE NEAREST TRACK. HOWEVER, FINAL APPROVAL OF ANY TEMPORARY VARIANCE WILL BE DETERMINED AFTER SUBMITTAL OF THE CONTRACTOR'S MEANS AND METHODS AND REVIEW BY CSXT.



**PLAN**

PROJECT NO. BP-5500 (X)  
 COUNTY: LINCOLN  
 BRIDGE NO. 21

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 GENERAL DRAWING  
 BRIDGE #21 ON NC 16  
 OVER CSX RAILROAD  
 28' CL. ROADWAY

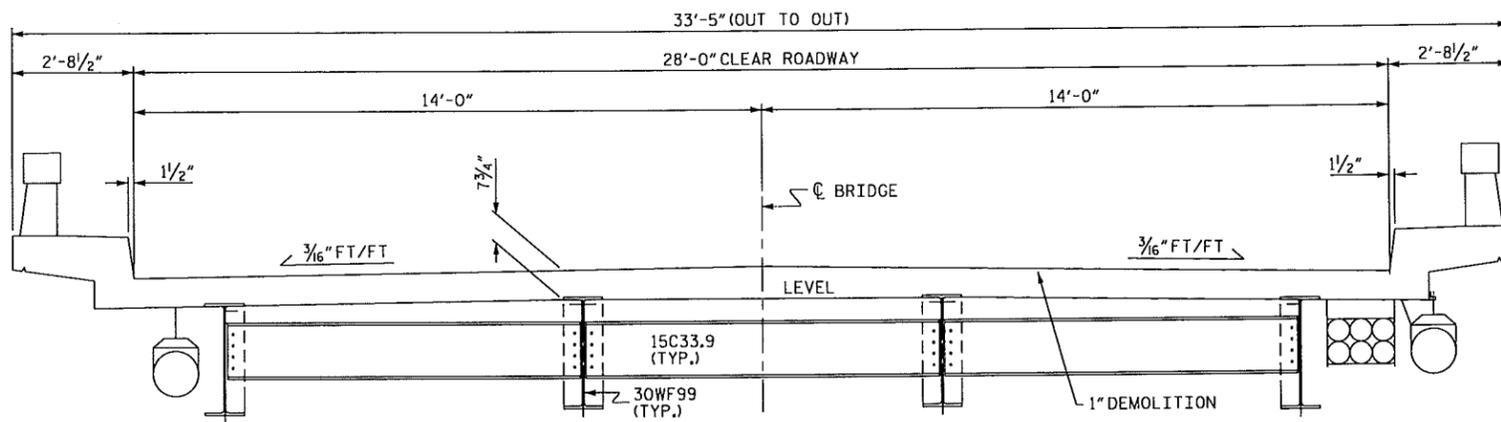


REVISIONS						SHEET NO. S-1
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 21
2			4			

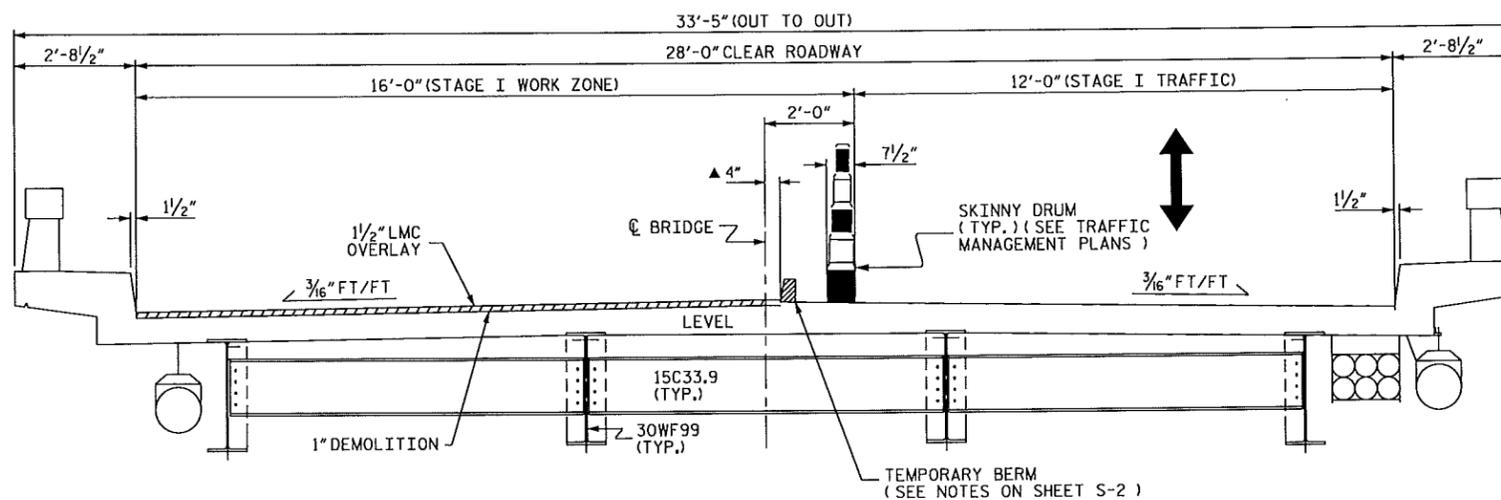
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 CHECKED BY: TMS DATE: 04/14

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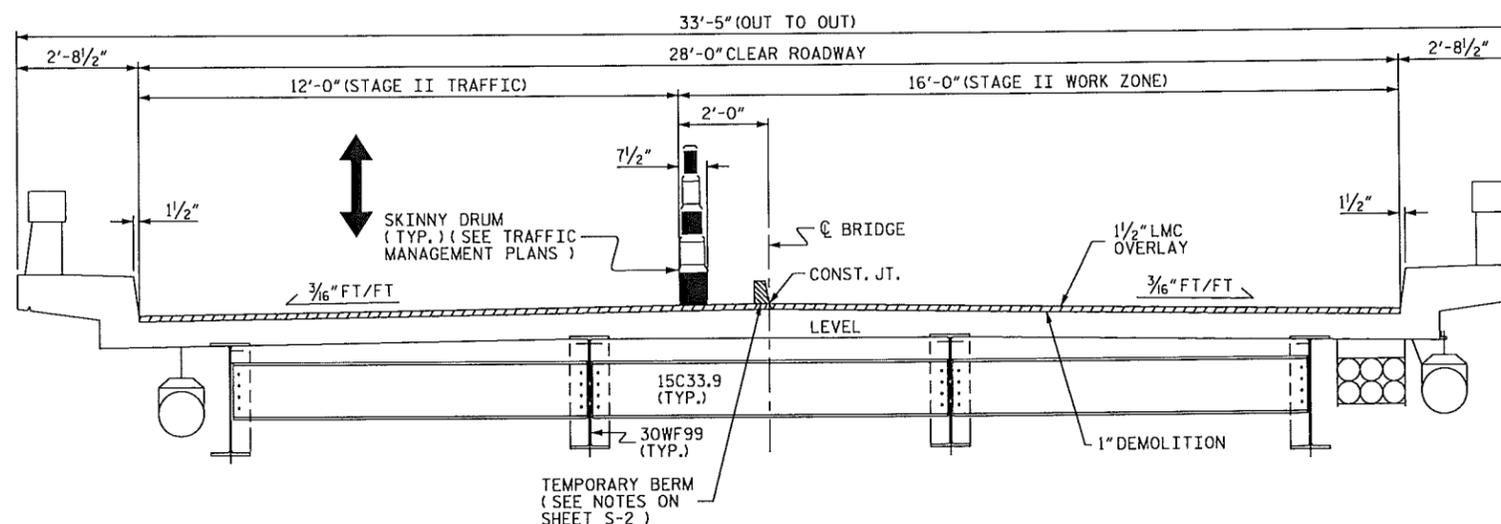




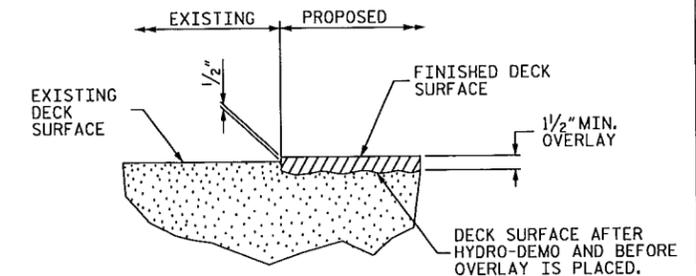
TYPICAL SECTION  
(EXISTING)



TYPICAL SECTION  
(STAGE I)



TYPICAL SECTION  
(STAGE II)



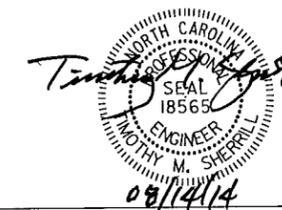
DETAIL FOR LATEX  
MODIFIED CONCRETE OVERLAY

▲ 4" OVERLAP BETWEEN OVERLAYS  
PREVIOUSLY POURED LMC  
TO BE HYDRO-DEMOLITIONED  
& RECAST WITH LMC

PROJECT NO. BP-5500 (X)  
COUNTY: LINCOLN  
BRIDGE NO. 21

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

TYPICAL SECTION  
&  
STAGING SEQUENCE

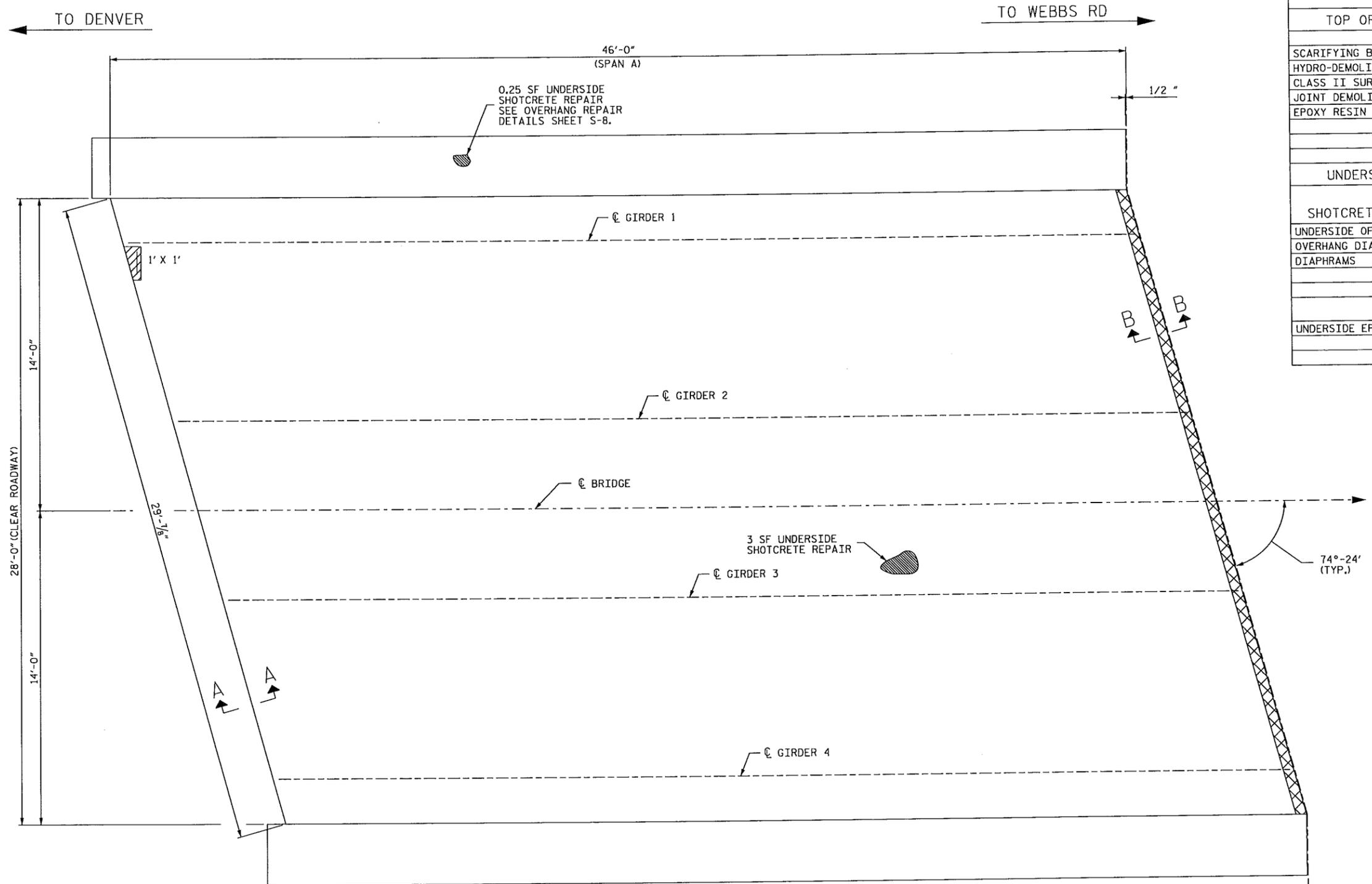


REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	TOTAL SHEETS
1			3			21
2			4			

DRAWN BY: CLB DATE: 04/14  
CHECKED BY: TMS DATE: 05/14

\*\*\*\*\*SYTIME\*\*\*\*\*

SUMMARY OF QUANTITIES						
TOP OF DECK REPAIRS						
	ESTIMATE			ACTUAL		
SCARIFYING BRIDGE DECK			142 SY			
HYDRO-DEMOLITION OF BRIDGE DECK			142 SY			
CLASS II SURFACE PREPARATION			0.11 SY			
JOINT DEMOLITION			14.54 SF			
EPOXY RESIN INJECTION			0.0 LNFT			
UNDERSIDE OF DECK REPAIRS						
SHOTCRETE	ESTIMATE			ACTUAL		
	AREA SF	DEPTH FT	VOLUME CF	AREA SF	DEPTH FT	VOLUME CF
UNDERSIDE OF DECK	3.25	0.30	0.98			
OVERHANG DIAPHRAMS	0.0	0.0	0.0			
DIAPHRAMS	0.0	0.0	0.0			
	ESTIMATE			ACTUAL		
UNDERSIDE EPOXY RESIN INJECTION			0.0 LNFT			



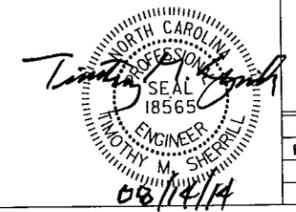
- SCARIFYING BRIDGE DECK
- APPROX. CLASS II AREA
- BRIDGE JOINT DEMOLITION
- UNDERSIDE REPAIR
- DIAPHRAM REPAIR

PLAN OF SPAN "A"

PROJECT NO. BP-5500 (X)  
 COUNTY: LINCOLN  
 BRIDGE NO. 21

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

PLAN VIEW  
 SPAN A

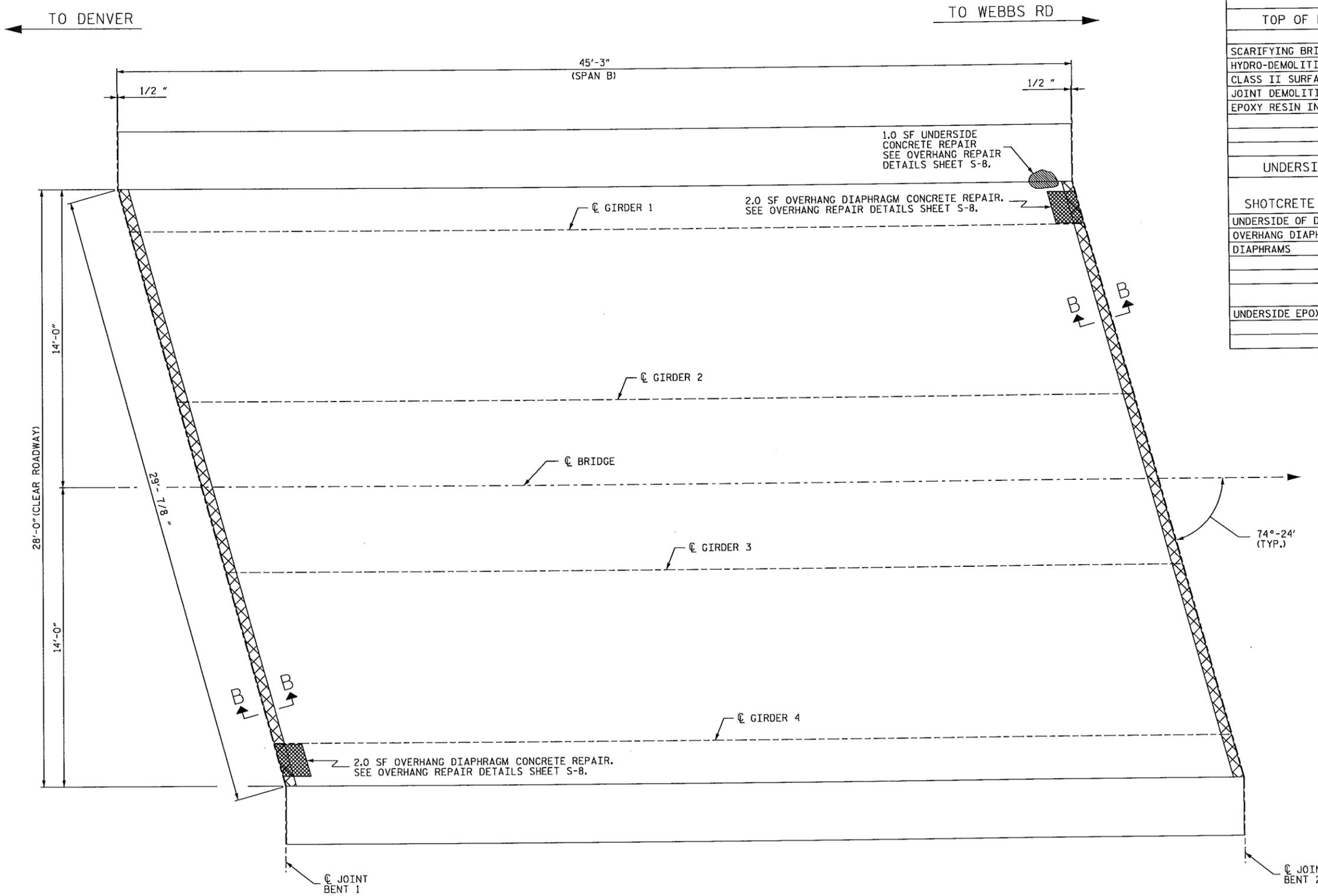


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 CHECKED BY: TMS DATE: 05/14

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

SUMMARY OF QUANTITIES

TOP OF DECK REPAIRS						
	ESTIMATE		ACTUAL			
SCARIFYING BRIDGE DECK	138	SY				
HYDRO-DEMOLITION OF BRIDGE DECK	138	SY				
CLASS II SURFACE PREPARATION	0.0	SY				
JOINT DEMOLITION	29.07	SF				
EPOXY RESIN INJECTION	0.0	LNFT				
UNDERSIDE OF DECK REPAIRS						
SHOTCRETE	ESTIMATE			ACTUAL		
	AREA SF	DEPTH FT	VOLUME CF	AREA SF	DEPTH FT	VOLUME CF
UNDERSIDE OF DECK	1.0	0.30	0.30			
OVERHANG DIAPHRAMS	4.0	0.50	2.00			
DIAPHRAMS	0.0	0.50	0.0			
ESTIMATE ACTUAL						
UNDERSIDE EPOXY RESIN INJECTION	0.0	LNFT				



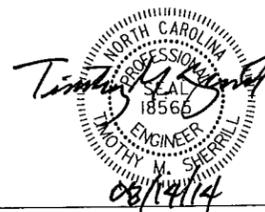
- SCARIFYING BRIDGE DECK
- APPROX. CLASS II AREA
- BRIDGE JOINT DEMOLITION
- UNDERSIDE REPAIR
- DIAPHRAM REPAIR

PLAN OF SPAN "B"

PROJECT NO. BP-5500 (X)  
 COUNTY: LINCOLN  
 BRIDGE NO. 21

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

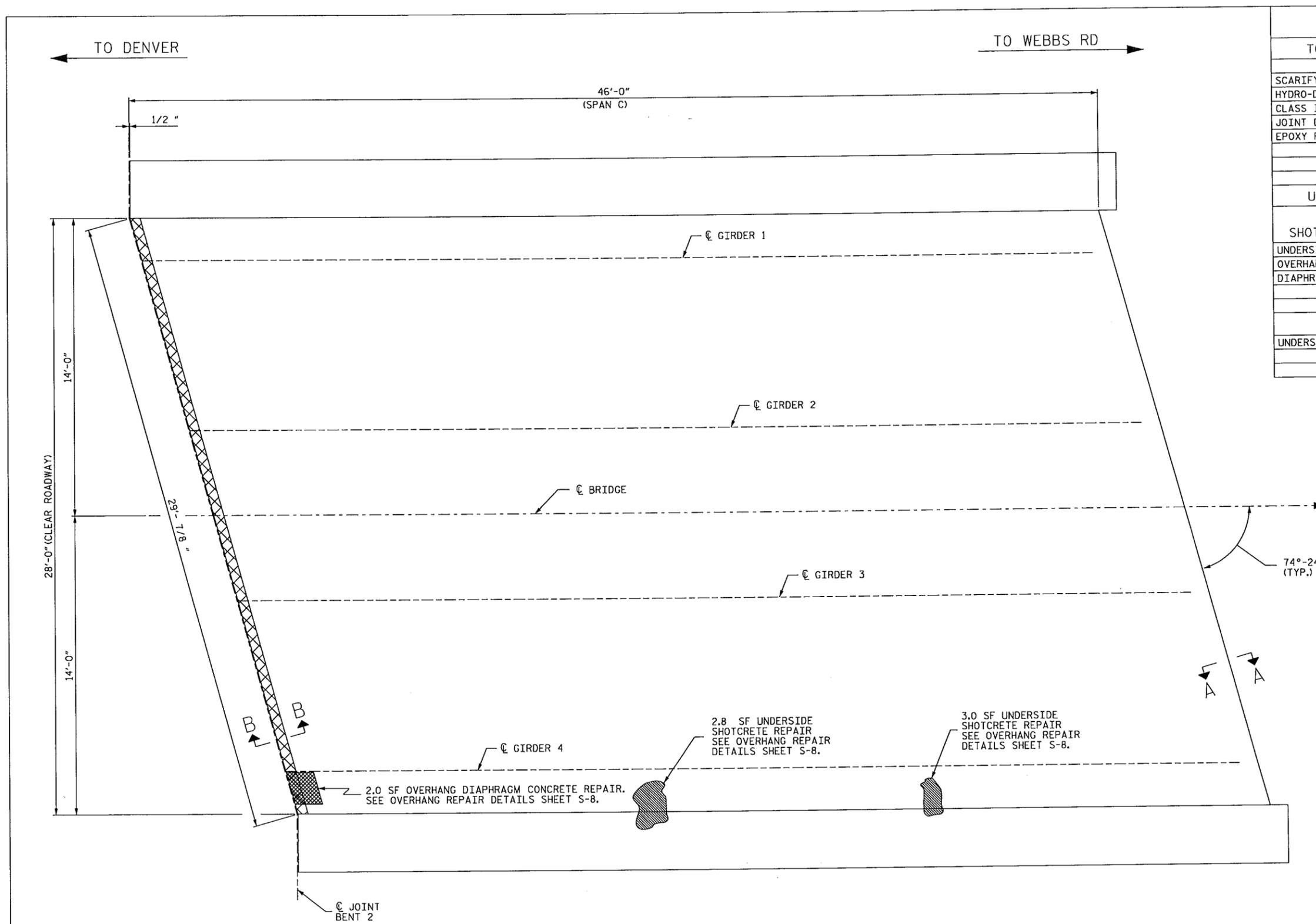
PLAN VIEW  
 SPAN B



DRAWN BY: CLB DATE: 04/14  
 CHECKED BY: TMS DATE: 05/14

REVISIONS						SHEET NO. S-5	TOTAL SHEETS 21
NO.	BY	DATE	NO.	BY	DATE		
1			3				
2			4				

SUMMARY OF QUANTITIES						
TOP OF DECK REPAIRS						
	ESTIMATE		ACTUAL			
SCARIFYING BRIDGE DECK		142 SY				
HYDRO-DEMOLITION OF BRIDGE DECK		142 SY				
CLASS II SURFACE PREPARATION		0.0 SY				
JOINT DEMOLITION		14.54 SF				
EPOXY RESIN INJECTION		0.0 LNFT				
UNDERSIDE OF DECK REPAIRS						
SHOTCRETE	ESTIMATE			ACTUAL		
	AREA SF	DEPTH FT	VOLUME CF	AREA SF	DEPTH FT	VOLUME CF
UNDERSIDE OF DECK	5.8	0.30	1.74			
OVERHANG DIAPHRAMS	2.0	0.50	1.00			
DIAPHRAMS	0.0	0.50	0.0			
		ESTIMATE		ACTUAL		
UNDERSIDE EPOXY RESIN INJECTION		0.0 LNFT				



- SCARIFYING BRIDGE DECK
- APPROX. CLASS II AREA
- BRIDGE JOINT DEMOLITION
- UNDERSIDE REPAIR
- DIAPHRAM REPAIR

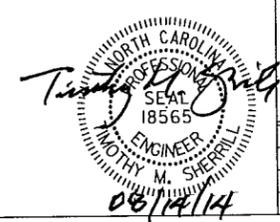
PLAN OF SPAN "C"

PROJECT NO. BP-5500 (X)  
 COUNTY: LINCOLN  
 BRIDGE NO. 21

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

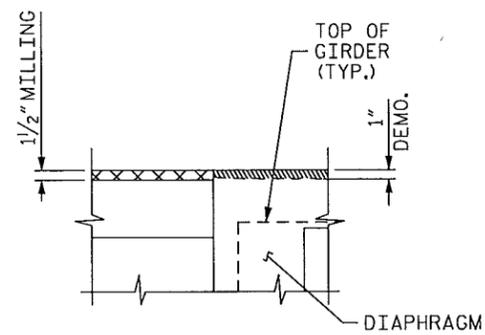
PLAN VIEW  
 SPAN C

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

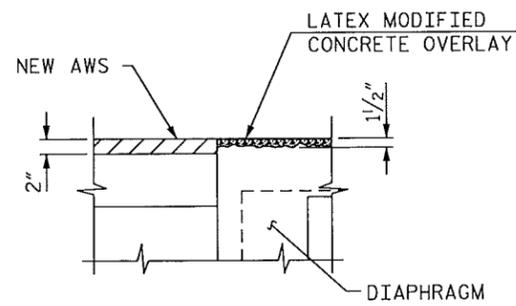


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 CHECKED BY: TMS DATE: 05/14

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SECTION A-A  
(EXISTING JOINT)



SECTION A-A  
(PROPOSED JOINT)

ELASTOMERIC CONCRETE	
BENTS	13.3 (CU. FT.)
* TOTAL	13.3 (CU. FT.)

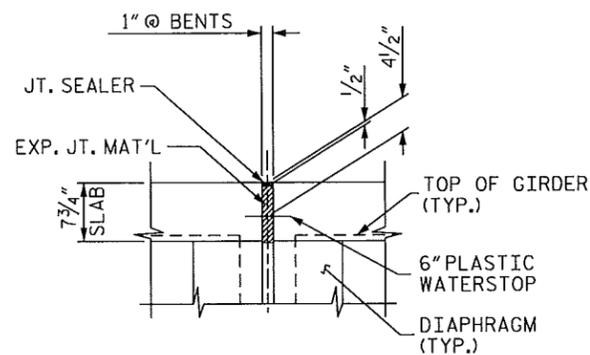
\* BASED ON THE MINIMUM BLOCKOUT SHOWN.

**NOTES**

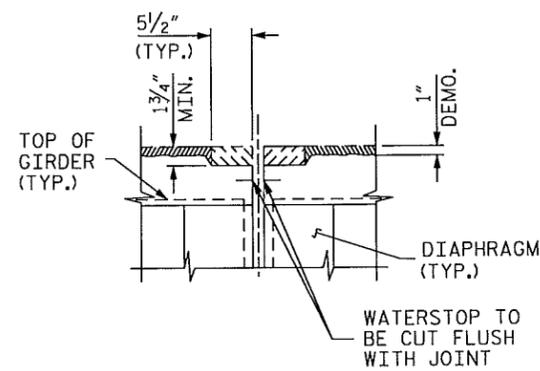
THE INSTALLED FOAM JOINT SEAL SHALL BE WATERTIGHT.

NOMINAL UNCOMPRESSED SEAL WIDTH OF FOAM JOINT SEAL SHALL BE 2" AT BENTS.

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

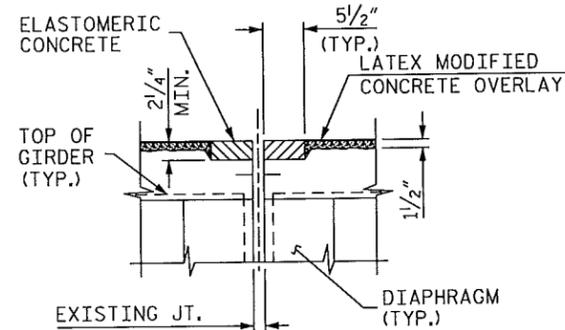


SECTION B-B  
(EXISTING JOINT)

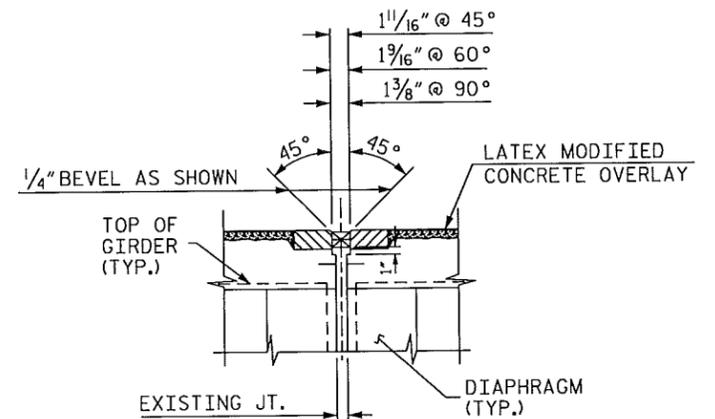


SECTION B-B  
(MINIMUM EXISTING JOINT DEMOLITION)

NOTE: RETAIN ALL EXISTING REINFORCING STEEL. CLEAN AND REPAIR AS REQ'D.



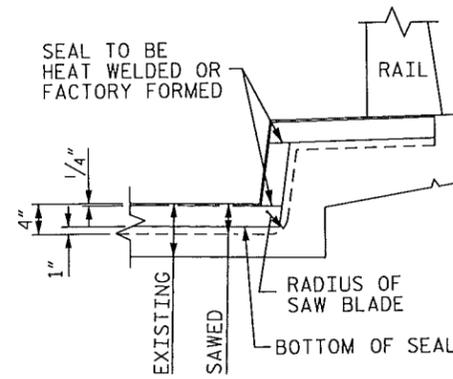
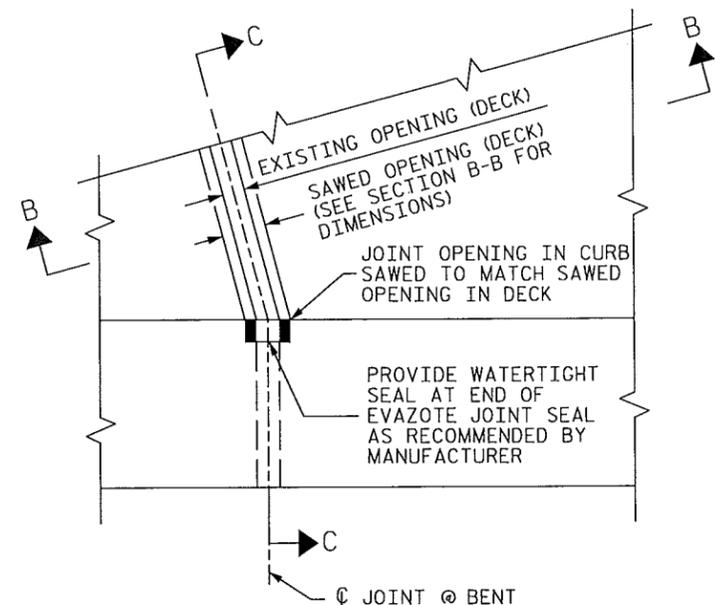
SECTION B-B  
(PROPOSED JOINT PRE-SAWED)



SECTION B-B  
(PROPOSED FOAM JOINT SEAL EXPANSION)

IF THE EMBEDDED PORTION OF THE EXISTING PLASTIC WATERSTOP IS EXPOSED DURING REMOVAL OF UNSOUND CONCRETE, OR IF UNSOUND CONCRETE IS REMOVED WITHIN 2" OF THE WATERSTOP, THE ENTIRE CONCRETE DEPTH TO THE WATERSTOP SHALL BE REMOVED. IF SUCH EXCAVATION EXTENDS MORE THAN 2" BELOW THE BOTTOM OF THE PLANNED ELASTOMERIC CONCRETE HEADER, AS SHOWN, APPROVED REPAIR CONCRETE SHALL BE PLACED IN THE EXCAVATED AREA TO THE ELEVATION AT THE BOTTOM OF THE ELASTOMERIC CONCRETE.

HYDRO-DEMOLITION OR EXCAVATION OF CONCRETE AT THE EXISTING JOINT SHALL RESULT IN THE BOTTOM OF THE EXCAVATION BEING REASONABLY FLAT AND LEVEL, TO PROVIDE SUFFICIENT SUBSTRATE FOR PLACEMENT AND SUPPORT OF REPAIR CONCRETE OR ELASTOMERIC CONCRETE. DEMOLISH BRIDGE JOINT AREA TO THE NECESSARY DEPTH, SUCH THAT ELASTOMERIC CONCRETE SHALL BE FOUNDED ON CONCRETE OR REPAIR CONCRETE SUBSTRATE, NOT LATEX MODIFIED CONCRETE.



SECTION C-C

PROJECT NO. BP-5500 (X)  
 COUNTY: LINCOLN  
 BRIDGE NO. 21

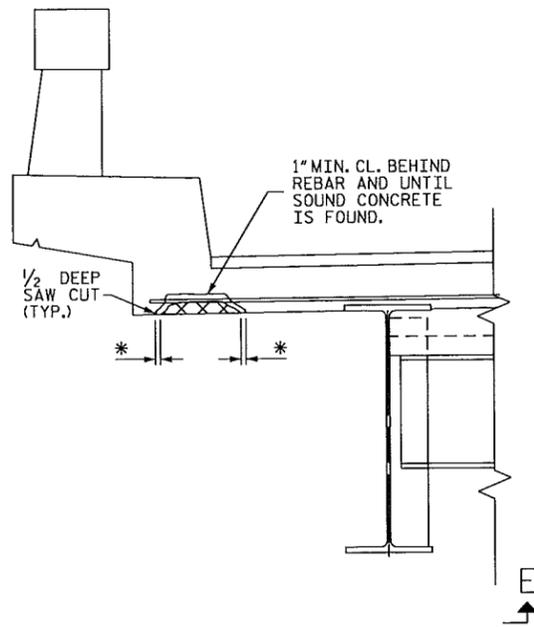
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
JOINT DETAILS					
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

ENGINEER  
TIMOTHY M. SHEPHERD  
08/14/14

SHEET NO.	S-7
TOTAL SHEETS	21

DRAWN BY: CLB DATE: 04/14  
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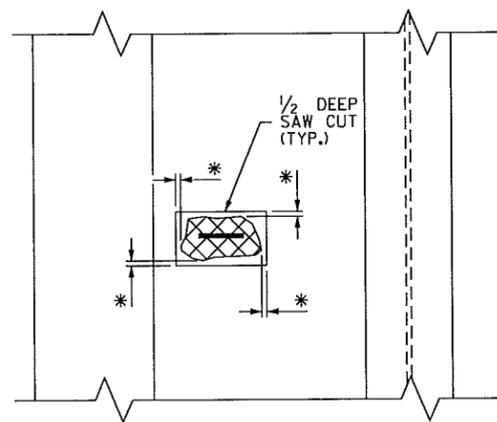
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TYPICAL SECTION

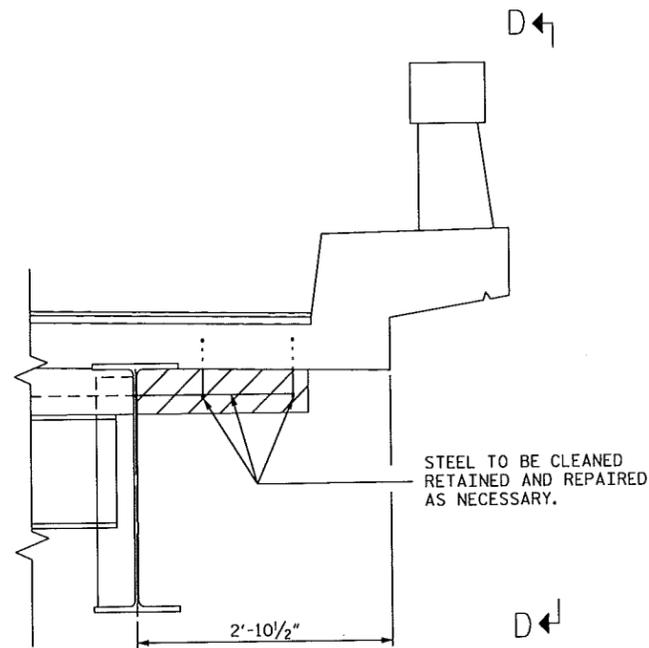
DAMAGED AREA

\* CONCRETE TO BE REMOVED UNTIL SOUND CONCRETE IS FOUND. MIN. OF 1" DEPTH.

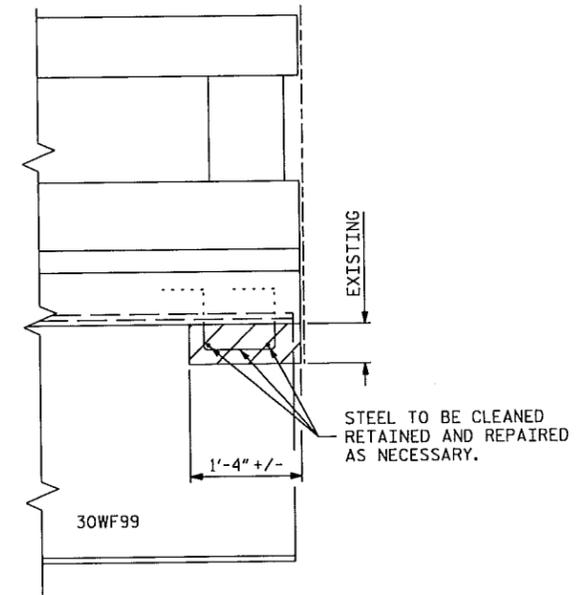


SECTION E-E

OVERHANG DETAILS



TYPICAL SECTION



SECTION D-D

CONCRETE IN THIS AREA SHALL BE REMOVED AND REPLACED.

OVERHANG DIAPHRAGM DETAILS

PROJECT NO. BP-5500 (X)  
 COUNTY: LINCOLN  
 BRIDGE NO. 21

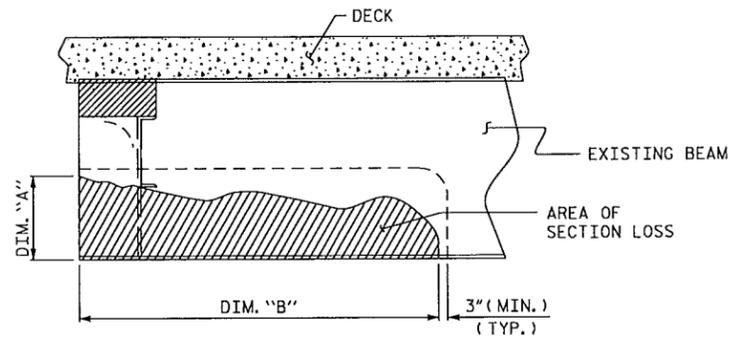
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

OVERHANG REPAIR  
 DETAILS

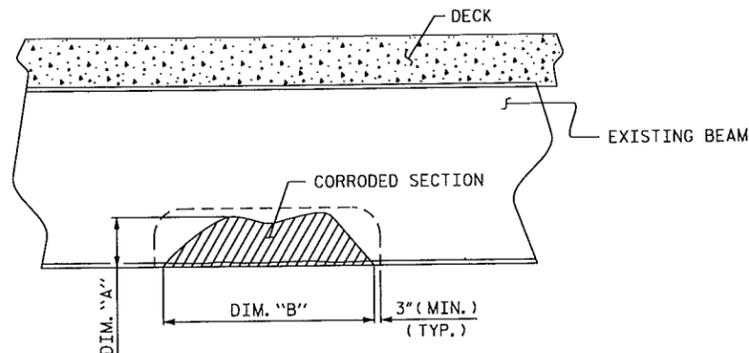


REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-8
1			3			TOTAL SHEETS
2			4			21

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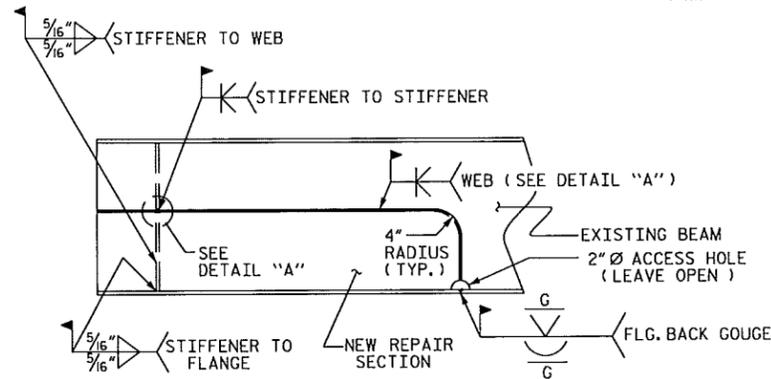


SECTION LOSS BEAM END REPAIR

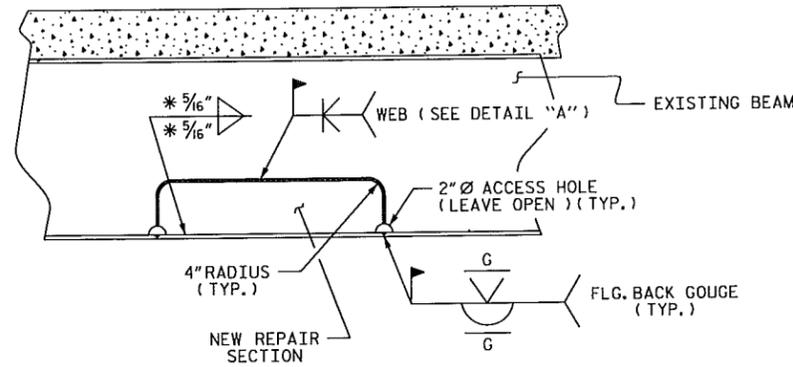


SECTION LOSS INTERMEDIATE BEAM REPAIR

\* NOT NEEDED IF REPAIRED SECTION IS CUT FROM A ROLLED BEAM

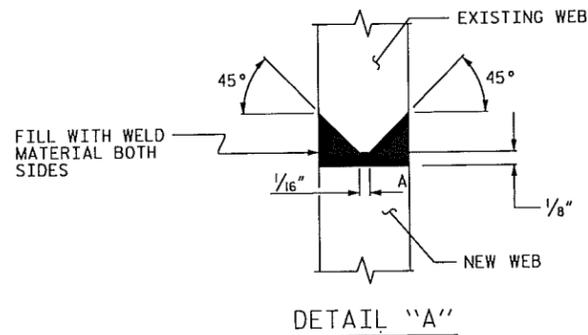


SECTION LOSS BEAM END REPAIR SECTION



SECTION LOSS INTERMEDIATE BEAM REPAIR SECTION

ANTICIPATED BEAM REPAIR LOCATIONS				
SPAN	BEAM	LOCATION	DIM. "A"	DIM. "B"
A	1	BENT 1	8"	4'-0"
A	2	BENT 1	5"	1'-6"
A	3	BENT 1	6"	1'-6"
A	4	BENT 1	11"	4'-0"
B	1	BENT 1	8"	3'-0"
B	3	BENT 1	6"	1'-0"
B	4	BENT 1	6"	3'-0"
B	1	BENT 2	4"	2'-6"
B	2	BENT 2	5"	1'-6"
B	3	BENT 2	6"	1'-6"
B	4	BENT 2	8"	3'-6"
C	1	BENT 2	10"	4'-6"
C	2	BENT 2	6"	1'-6"
C	3	BENT 2	4"	1'-6"
C	4	BENT 2	6"	3'-0"



DETAIL "A"

BILL OF MATERIAL		
BRIDGE JACKING	BEAM REPAIR	REPLACE BEARINGS
LUMP SUM	LBS.	EACH
LUMP SUM	1588	16

BEAM REPAIR

AFTER THE STRUCTURAL STEEL HAS BEEN BLASTED AND PRIMED, THE STRUCTURAL STEEL AND BEARING SHALL BE INSPECTED FOR EXCESSIVE SECTION LOSS. AREAS THAT EXHIBIT AN EXCESS OF 25% SECTION LOSS SHALL BE REVIEWED BY THE ENGINEER TO DETERMINE IF AREA OF SECTION LOSS SHOULD BE REPAIRED.

AS DETERMINED BY THE ENGINEER, AREAS WITH EXCESSIVE SECTION LOSS OR AREAS WITH TEMPORARY REPAIRS SHALL BE REMOVED AND THE BEAMS SHALL BE REPAIRED AS INDICATED ON THIS PLAN SHEET, CONTRACTOR AND ENGINEER TO DETERMINE ACTUAL DIMENSIONS OF AREA TO BE REMOVED AND REPLACED. REMOVE CONCRETE BENT DIAPHRAGMS AS NEEDED TO EVALUATE LIMITS OF REPAIR.

AREAS OF EXCESSIVE SECTION LOSS, IN ADDITION TO THOSE INDICATED ON THE PLAN SHEETS, MIGHT BE ENCOUNTERED. THE CONTRACTOR SHALL HAVE ADDITIONAL REPAIR MATERIALS ON HAND OR READILY AVAILABLE, SO ADDITIONAL AREAS OF EXCESSIVE SECTION LOSS MAY BE REPAIRED IN A TIMELY MANNER.

PAYMENT FOR THE SECTION REPAIR SHALL BE BASED ON THAT AMOUNT OF REPAIR ACTUALLY PERFORMED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER.

PROVIDE RUN-OFF WELD TABS, WHERE APPLICABLE, TO PROVIDE PROPER WELD START AND TERMINATION. SEE NCDOT M&T FIELD WELD MANUAL AND AWS D1.5 SECTION 3.12.

GOUGES AND INDENTIONS FROM IMPACT ON GIRDERS SHALL BE GROUND SMOOTH PRIOR TO BLASTING AND PAINTING OPERATION.

REPAIR SEQUENCE:

REMOVE LIVE LOAD FROM REPAIR AREA BY EITHER CLOSING BRIDGE TO TRAFFIC OR SHIFTING TRAFFIC AWAY FROM REPAIR AREA.

REMOVE DEAD LOAD FROM BEAM BY JACKING AND BLOCKING.

STEEL DIAPHRAGM CHANNELS AND/OR STIFFENERS MAY BE TEMPORARILY REMOVED, IF NECESSARY, AND REPLACED AFTER BEAM REPAIR.

IF BEAM DETERIORATION EXTENDS INTO THE CONCRETE DIAPHRAGM THEN CHIP AWAY CONCRETE TO DETERMINE THE EXTENT OF THE DAMAGE, CUT OUT BY APPROPRIATE MEANS THE DAMAGED BEAM AREA AND/OR BEARING STIFFENER.

MECHANICALLY CLEAN RUST, SCALE, AND EXISTING PAINT TO AT LEAST 3" BEYOND REPAIR AREA.

REPLACEMENT CUT-TO-FIT BEAM SECTION SHALL BE NEW AND FROM SIMILAR SIZE ROLLED BEAM OR APPROVED EQUIVALENT PLATES. THE GRADE OF STEEL SHALL BE AASHTO M270, GRADE 36 OR BETTER.

INSTALL THE CUT-TO-FIT SECTION, FULLY WELD ALONG TOP AND SIDES OF PLATE USING FULL PENETRATION WELDS.

ALL WELDING SHALL BE IN ACCORDANCE WITH CURRENT APPLICABLE AWS AND NCDOT STANDARD SPECIFICATIONS.

ALL WELDS SHALL PASS INSPECTION AND TESTING BY THE NCDOT MATERIALS AND TEST UNIT IN ACCORDANCE WITH THE CURRENT AWS BRIDGE WELDING CODE AND STANDARD SPECIFICATIONS.

IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS, AFTER REPAIR, GRIND ALL WELDS FLUSH, THOROUGHLY CLEAN AREA TO REMOVE DEBRIS AND OILS FROM REPAIR PROCESS.

CLEANING AND PAINTING OF REPAIRED STRUCTURAL STEEL SHALL BE PERFORMED AS PART OF THE OVERALL CLEANING AND PAINTING CONTRACT.

FOR PAINTING EXISTING STRUCTURE, SEE PROJECT SPECIAL PROVISIONS.

AFTER BEAMS ARE REPAIRED AND PAINTED, ANY CONCRETE REMOVED FROM THE BENT DIAPHRAGMS SHALL BE CAST BACK. ANY REINFORCING STEEL CUT DURING THE REMOVAL PROCESS SHALL BE SPLICED WITH A SIMILAR SIZE BAR WITH AT LEAST A ONE FOOT SPLICE TO THE EXISTING STEEL. NO SEPARATE PAYMENT SHALL BE MADE FOR CONCRETE AND REINFORCING STEEL AS THIS IS CONSIDERED INCIDENTAL TO THE PAY ITEM "BEAM REPAIR".

LOWER SPAN TO BEAR; CHECK FOR DISTRESS.

REMOVE JACKING EQUIPMENT AND TEMPORARY SUPPORTS.

REMOVE ALL TRAFFIC CONTROL DEVICES.

PROJECT NO. BP-5500 (X)

COUNTY: LINCOLN

BRIDGE NO. 21

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

BEAM REPAIR  
DETAILS



REVISIONS						SHEET NO. S-9	TOTAL SHEETS 21
NO.	BY	DATE	NO.	BY	DATE		
1			3				
2			4				

DRAWN BY: CLB DATE: 04/14  
CHECKED BY: TMS DATE: 04/14

\*\*\*\*\*SYSTEM\*\*\*\*\*

**JACKING NOTES:**

THE CONTRACTOR SHALL SUBMIT JACKING PLANS AND CALCULATIONS FOR REVIEW AND APPROVAL PRIOR TO MATERIAL PURCHASE OR FABRICATION OF THE JACKING SYSTEM.

THE CONTRACTOR SHALL JACK ALL BEAMS IN A SPAN ON AN INDIVIDUAL BENT SIMULTANEOUSLY BY MEANS OF A DUAL-FLOW PRESSURIZED PUMP CONTROLLING THE JACKS. ALTERNATIVELY, JACKING OF INDIVIDUAL BEAMS MAY BE ALLOWED, PROVIDED THE ELEVATION DIFFERENCE FROM THE JACKED BEAM TO ADJACENT BEAM(S) DOES NOT EXCEED 1/8".

ALL ADJACENT BEARINGS OF BEAMS NOT BEING JACKED MAY BE LOOSENED TO DECREASE THE RESISTANCE OF THE DECK SLAB DURING JACKING. ALL BEARINGS LOOSENED SHALL BE TIGHTENED BACK AFTER THE BEAMS ARE REPAIRED AND THE JACKS AND BLOCKING HAVE BEEN REMOVED.

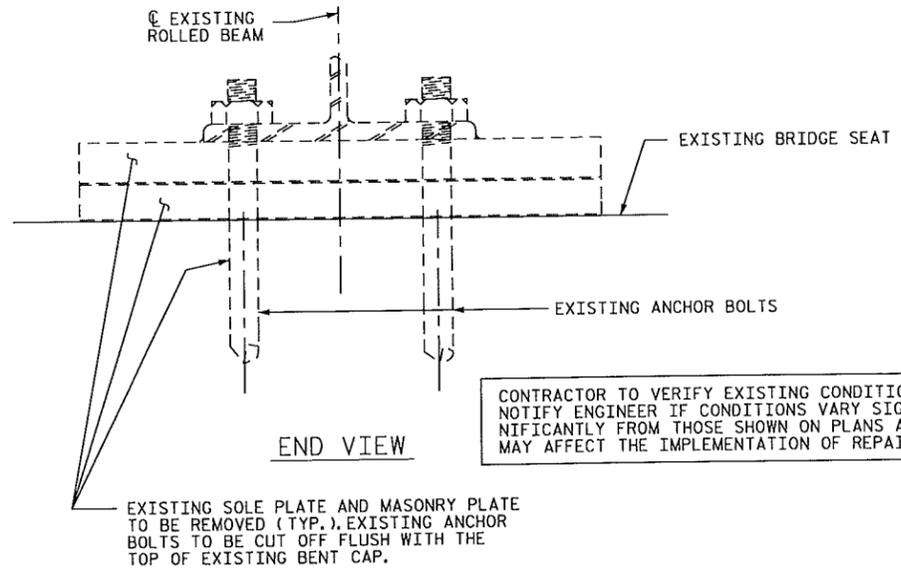
THE SPAN SHALL BE LIFTED ENOUGH THAT THE BEAMS CLEAR THE BEARINGS AND ALL LOAD IS SUPPORTED BY THE JACKS. AFTER JACKING IS COMPLETE, THE CONTRACTOR SHALL PROVIDE A METHOD TO SUPPORT THE SPAN FOR DEAD AND LIVE LOADS AND REMOVE THE JACKS DURING BEAM REPAIR, OR IF JACKS REMAIN IN PLACE DURING THE ENTIRE JACKING AND REPAIR OPERATION, IT SHALL HAVE MECHANICAL LOCK OFF CAPABILITIES.

IF DURING THE JACKING PROCESS OR WHILE THE SPAN IS BEING SUPPORTED THE BEAMS SHIFT FROM THEIR ORIGINAL POSITION, ALL WORK WILL CEASE AND THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY.

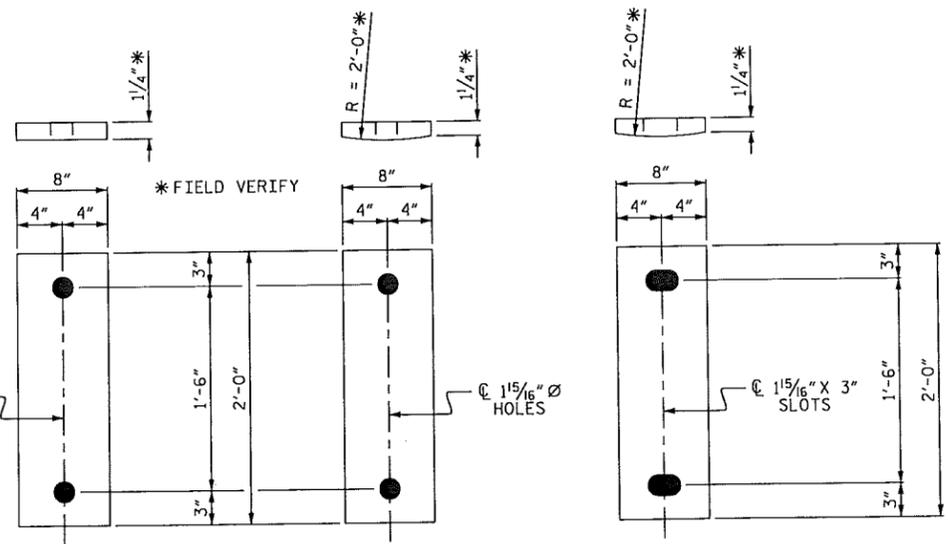
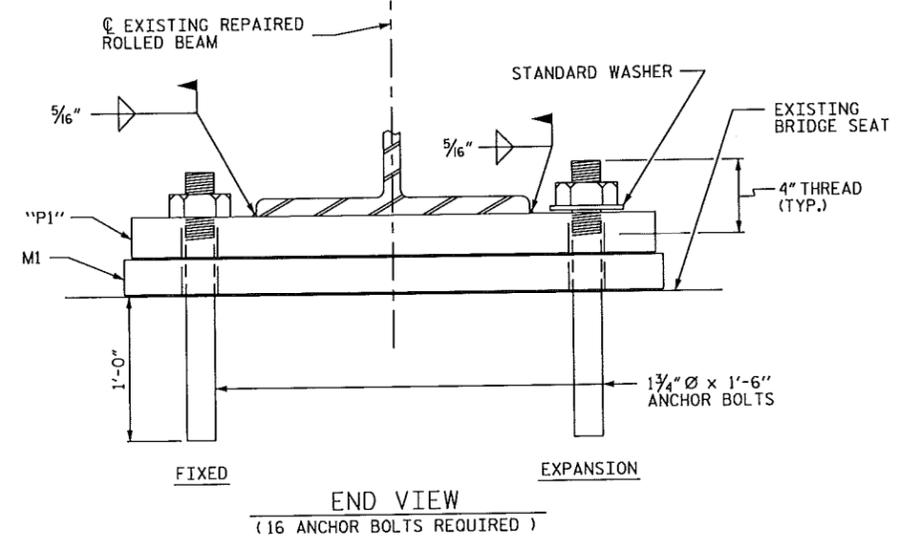
PRIOR TO JACKING, THE CONTRACTOR SHALL ENSURE THERE ARE NO OBSTACLES PREVENTING THE SPAN FROM BEING LIFTED.

PAYMENT OF JACKING WILL BE MADE AT THE LUMP SUM PRICE BID FOR "BRIDGE JACKING". SUCH LUMP SUM PRICE WILL BE FULL COMPENSATION FOR ALL MATERIALS, EQUIPMENT, TOOLS, LABOR, AND INCIDENTALS NECESSARY TO COMPLETE THE WORK.

EXISTING ROLLED BEAM

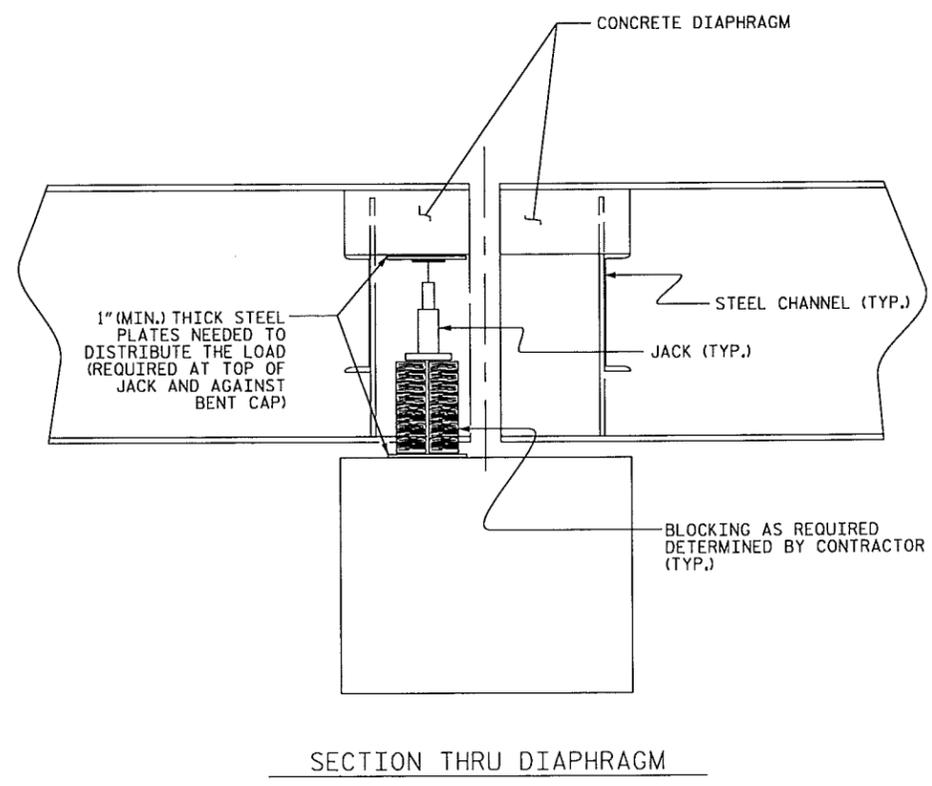


EXISTING REPAIRED ROLLED BEAM



M1 (16 REQ'D) P1 (4 REQ'D) P2 (12 REQ'D)  
(FIXED) (EXPANSION)

MASONRY PLATE SOLE PLATE



**BEARING REPAIR SEQUENCE**

THE EXISTING BEARINGS DETERMINED FOR REPLACEMENT SHALL BE REMOVED AND REPLACED WITH BEARINGS AS SHOWN.

AT ALL POINTS OF SUPPORT, NUTS FOR ANCHOR BOLTS ARE TO BE TIGHTENED FINGER TIGHT AND THEN BACKED OFF 1/2 TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

SOLE PLATES, ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. SHOP DRAWINGS ARE NOT REQUIRED FOR ANCHOR BOLTS, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

ALL WELDING SHALL BE IN ACCORDANCE WITH CURRENT APPLICABLE AWS AND NCDOT STANDARD SPECIFICATIONS.

ALL WELDS WILL BE INSPECTED AND TESTED BY THE NCDOT MATERIALS AND TEST UNIT IN ACCORDANCE WITH THE CURRENT AWS BRIDGE WELDING CODE AND STANDARD SPECIFICATIONS.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

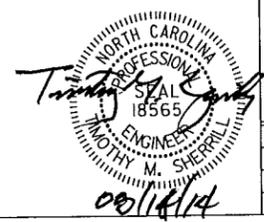
THE CONTRACTOR SHALL CORE INTO EXISTING BENT CAP TO INSTALL 1 3/4" Ø ANCHOR BOLTS. BOLTS SHALL BE ADHESIVELY ANCHORED; SEE STANDARD SPECIFICATIONS. ADHESIVE FOR NEW ANCHOR BOLTS SHALL BE AN NCDOT-APPROVED PRODUCT. FIELD TESTING WILL NOT BE REQUIRED FOR INSTALLATION OF ADHESIVELY ANCHORED BOLTS.

**ANTICIPATED BEARING REPLACEMENT LOCATIONS**

SPAN	BEAM	LOCATION
A	1	BENT 1
A	2	BENT 1
A	3	BENT 1
A	4	BENT 1
B	1	BENT 1
B	2	BENT 1
B	3	BENT 1
B	4	BENT 1
B	1	BENT 2
B	2	BENT 2
B	3	BENT 2
B	4	BENT 2
C	1	BENT 2
C	2	BENT 2
C	3	BENT 2
C	4	BENT 2

PROJECT NO. BP-5500 (X)  
COUNTY: LINCOLN  
BRIDGE NO. 21

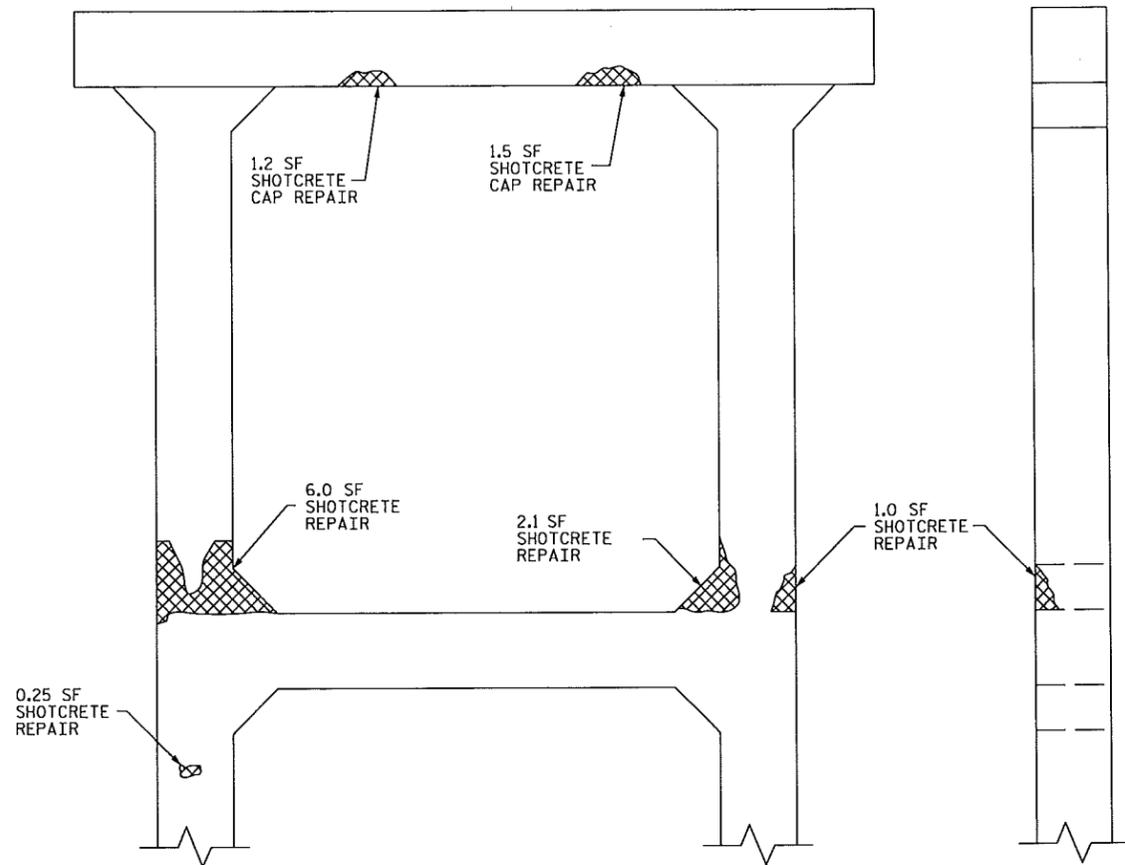
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
BEARING REPAIR & JACKING DETAILS



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

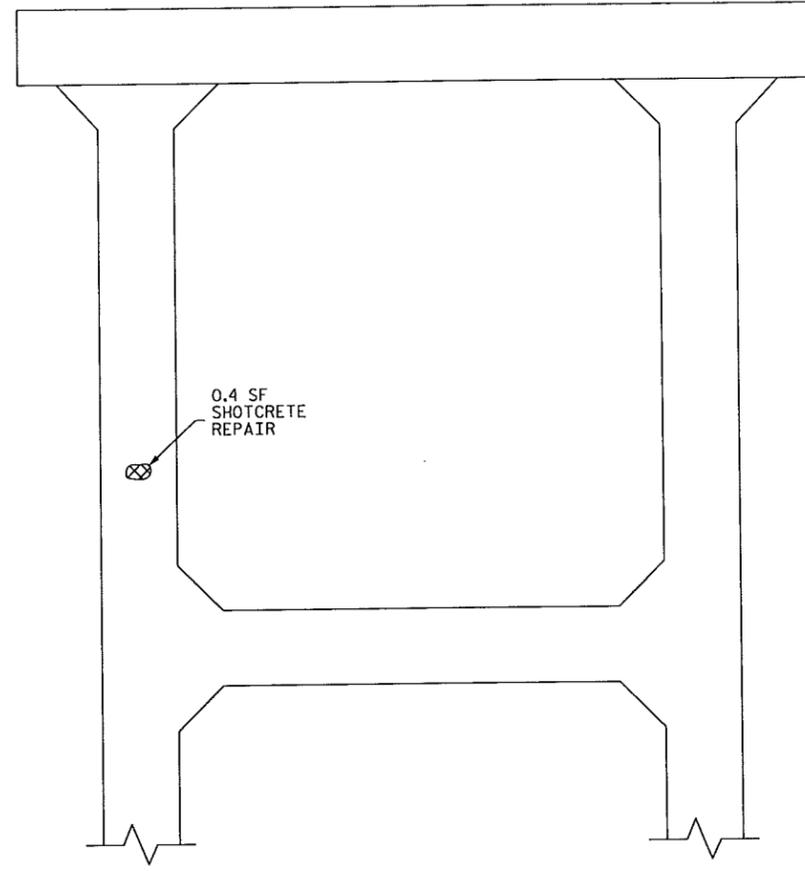
DRAWN BY: CLB DATE: 04/14  
CHECKED BY: TMS DATE: 04/14

\*\*\*\*\*SYSTEM\*\*\*\*\*



SPAN 1 FACE

END VIEW  
MULTIPLE UTILITY SIDE



SPAN 2 FACE  
(RAILROAD FACE)

END VIEW  
SINGLE UTILITY SIDE

DAMAGED AREA

CSXT HAS CONSIDERED ALLOWING A TEMPORARY HORIZONTAL CLEARANCE VARIANCE TO THEIR STANDARD TOLERANCES, SUCH THAT REPAIR WORK OPERATIONS AND ANY CONTAINMENT OR OTHER EQUIPMENT MAY BE NO CLOSER THAN 12'-0", MEASURED PERPENDICULARLY FROM THE CENTERLINE OF THE NEAREST TRACK. HOWEVER, FINAL APPROVAL OF ANY TEMPORARY VARIANCE WILL BE DETERMINED AFTER SUBMITTAL OF THE CONTRACTOR'S MEANS AND METHODS AND REVIEW BY CSXT.

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 SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATIONS AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR SUMMARY OF QUANTITIES TABLE.

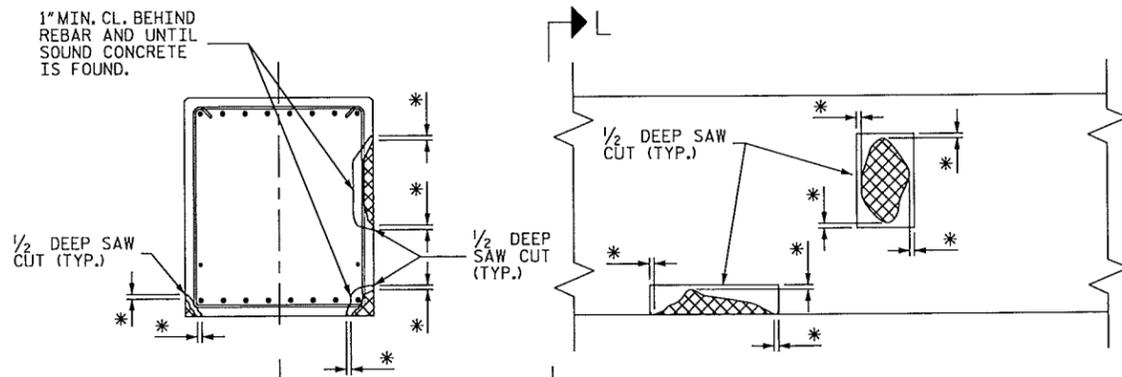
FOR COLUMN REPAIR DETAILS SEE SHEET S-12.

EPOXY COATING SHALL BE APPLIED TO THE TOP FACE OF THE CAP. THE CONTRACTOR SHALL NOT COAT THE AREA OF THE CAP BENEATH THE BEARING PAD. SEE ARTICLE 420-18 OF THE STANDARD SPECIFICATIONS.

PROJECT NO. BP-5500 (X)  
COUNTY: LINCOLN  
BRIDGE NO. 21

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

BENT 1



SECTION L-L

CAP REPAIR DETAILS

\* CONCRETE TO BE REMOVED UNTIL SOUND CONCRETE IS FOUND. MIN. OF 1"

REPAIRS BENT 1	QUANTITIES					
	ESTIMATE			ACTUAL		
SHOTCRETE REPAIRS	AREA SF	DEPTH FT	VOLUME CF	AREA SF	DEPTH FT	VOLUME CF
CAP (VERTICAL)	0.0	0.30	0.0			
CAP (HORIZONTAL, CORNER)	2.7	0.42	1.13			
COLUMN	12.4	0.48	5.95			
EPOXY RESIN INJECTION			LN. FT			
CAP (VERTICAL, FACE)			0.0			
CAP (HORIZONTAL, UNDERSIDE & TOP)			0.0			
COLUMN			0.0			
EPOXY COATING			SF			
CAP (HORIZONTAL, TOP)			66.9			

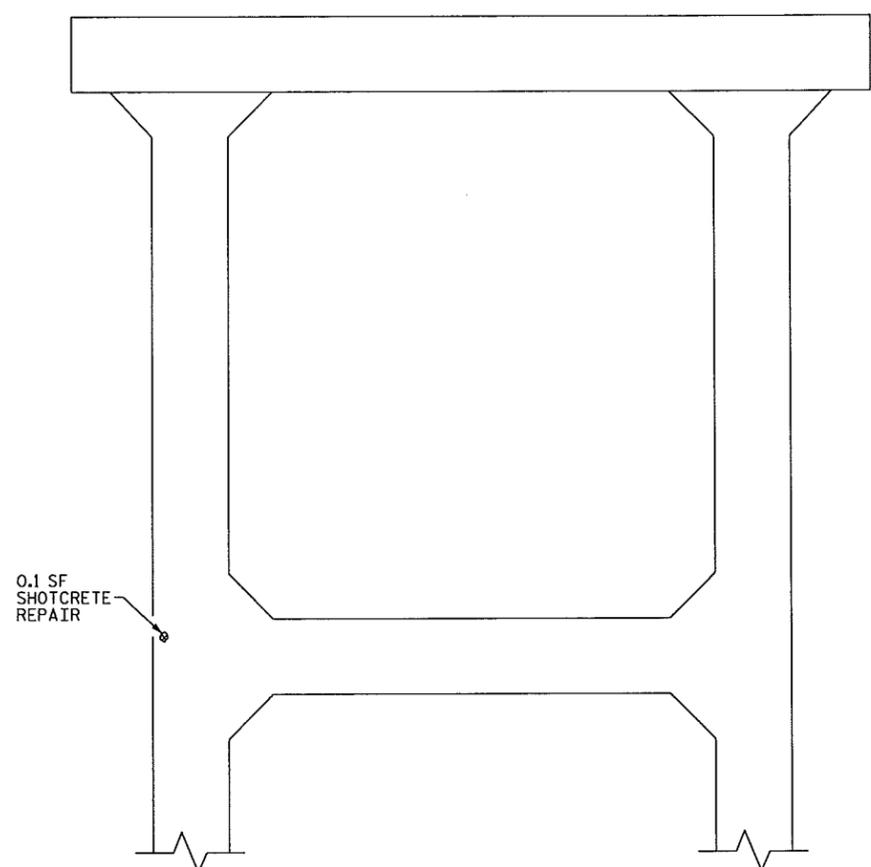
VALUES IN CHARTS REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 1" CL TO SAWCUT. SEE REPAIR DETAILS.



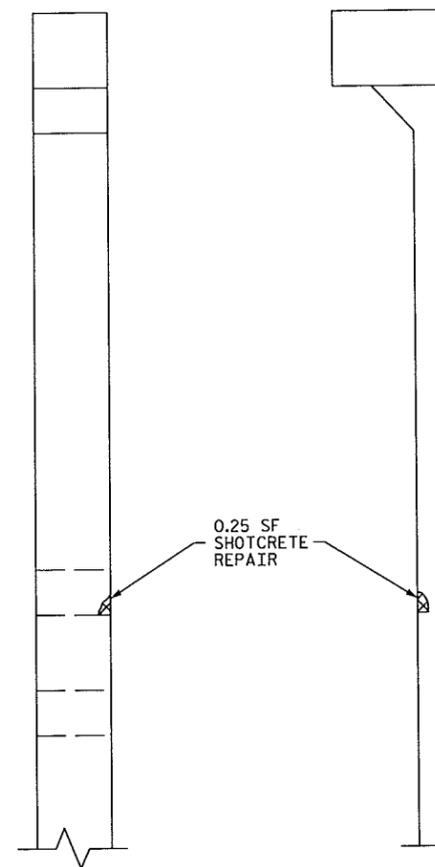
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	TOTAL SHEETS
1			3			22
2			4			

DRAWN BY: CLB DATE: 04/14  
CHECKED BY: TMS DATE: 04/14

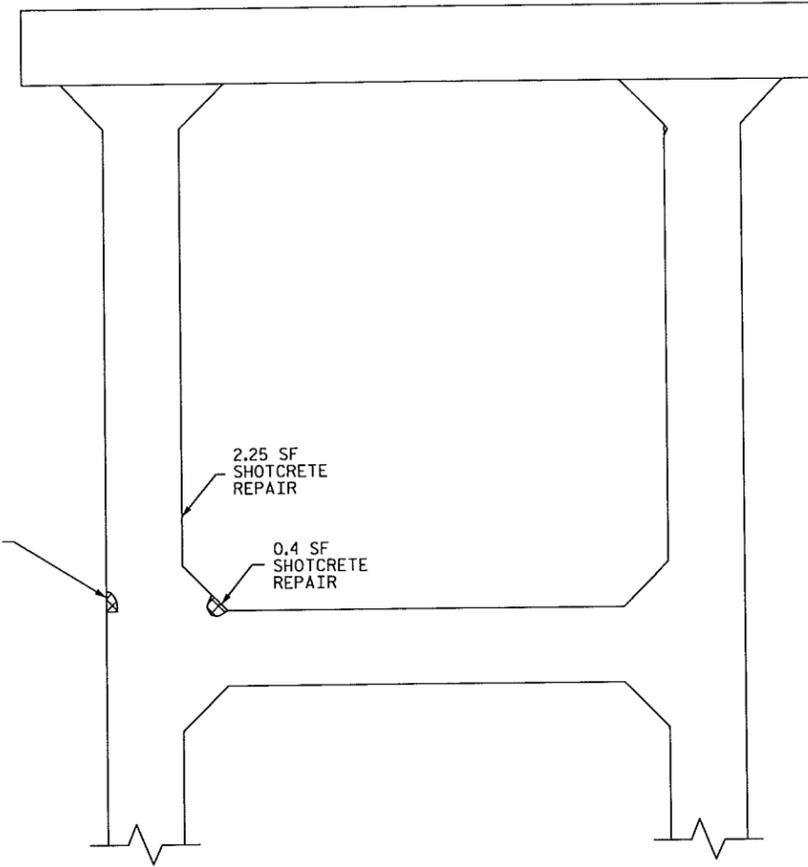
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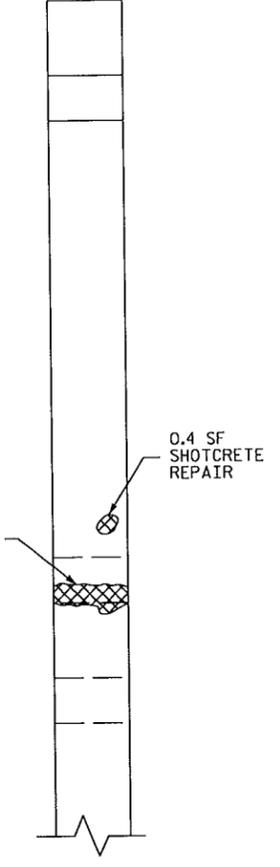
SPAN 2 FACE  
RAILROAD FACE



END VIEW  
MULTIPLE UTILITY SIDE



SPAN 3 FACE

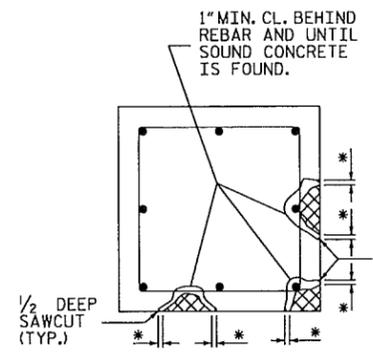


END VIEW  
SINGLE UTILITY SIDE

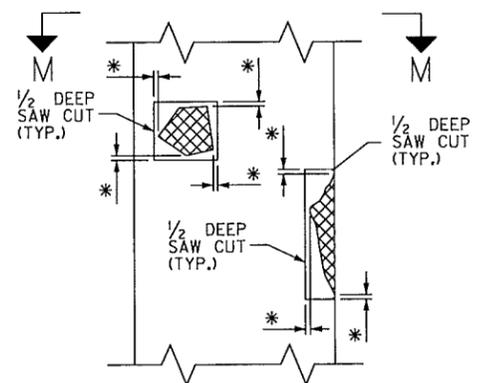
DAMAGED AREA

CSXT HAS CONSIDERED ALLOWING A TEMPORARY HORIZONTAL CLEARANCE VARIANCE TO THEIR STANDARD TOLERANCES, SUCH THAT REPAIR WORK OPERATIONS AND ANY CONTAINMENT OR OTHER EQUIPMENT MAY BE NO CLOSER THAN 12'-0", MEASURED PERPENDICULARLY FROM THE CENTERLINE OF THE NEAREST TRACK. HOWEVER, FINAL APPROVAL OF ANY TEMPORARY VARIANCE WILL BE DETERMINED AFTER SUBMITTAL OF THE CONTRACTOR'S MEANS AND METHODS AND REVIEW BY CSXT.

**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 SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATIONS AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR SUMMARY OF QUANTITIES TABLE.  
FOR COLUMN REPAIR DETAILS SEE SHEET S-11.  
EPOXY COATING SHALL BE APPLIED TO THE TOP FACE OF THE CAP. THE CONTRACTOR SHALL NOT COAT THE AREA OF THE CAP BENEATH THE BEARING PAD. SEE ARTICLE 420-18 OF THE STANDARD SPECIFICATIONS.



SECTION M-M



COLUMN REPAIR DETAIL

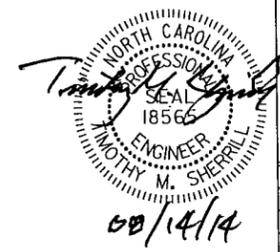
\* CONCRETE TO BE REMOVED UNTIL SOUND CONCRETE IS FOUND. MIN. OF 1"

REPAIRS BENT 2	QUANTITIES					
	ESTIMATE			ACTUAL		
SHOTCRETE REPAIRS	AREA SF	DEPTH FT	VOLUME CF	AREA SF	DEPTH FT	VOLUME CF
CAP (VERTICAL)	0.0	0.30	0.0			
CAP (HORIZONTAL, CORNER)	0.0	0.42	0.0			
COLUMN	5.9	0.48	2.83			
EPOXY RESIN INJECTION			LN. FT			
CAP (VERTICAL, FACE)			0.0			
CAP (HORIZONTAL, UNDERSIDE & TOP)			0.0			
COLUMN			0.0			
EPOXY COATING			SF			
CAP (HORIZONTAL, TOP)			66.9			

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

PROJECT NO. BP-5500 (X)  
COUNTY: LINCOLN  
BRIDGE NO. 21

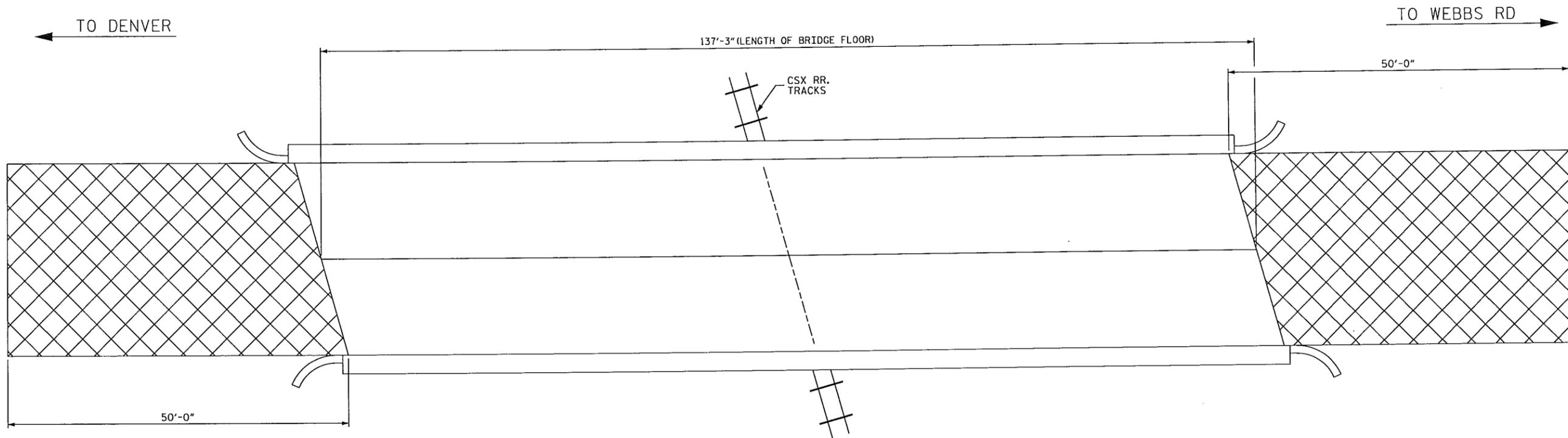
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
  
BENT 2



REVISIONS						SHEET NO. S-12	TOTAL SHEETS 22
NO.	BY	DATE	NO.	BY	DATE		
1			3				
2			4				

DRAWN BY: CLB DATE: 04/14  
CHECKED BY: TMS DATE: 04/14

\*\*\*\*\*SYSTEM\*\*\*\*\*

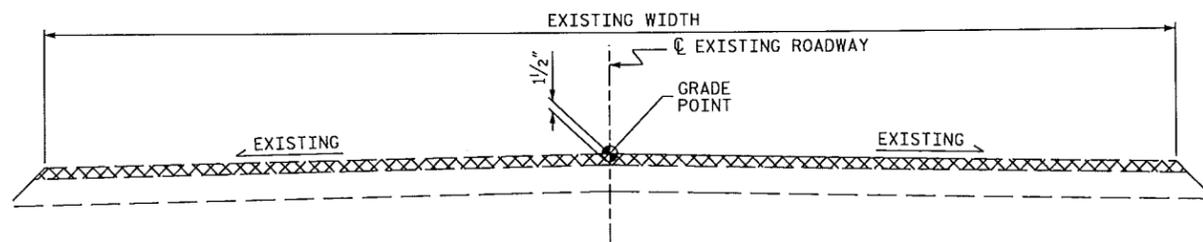


INCIDENTAL MILLING

PLAN

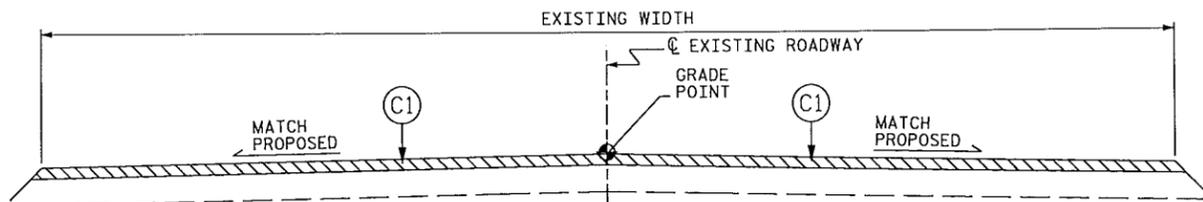
NOTES

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



TYPICAL ROADWAY MILLING SECTION  
(MILL TO 1 1/2" 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 1/2" IN DEPTH OR GREATER THAN 2" IN DEPTH.



TYPICAL ROADWAY SECTION  
(FINAL SECTION)

NOT TO SCALE

PROJECT NO. BP-5500 (X)  
COUNTY: LINCOLN  
BRIDGE NO. 21

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
APPROACH MILLING  
& TYPICAL ROADWAY  
SECTIONS



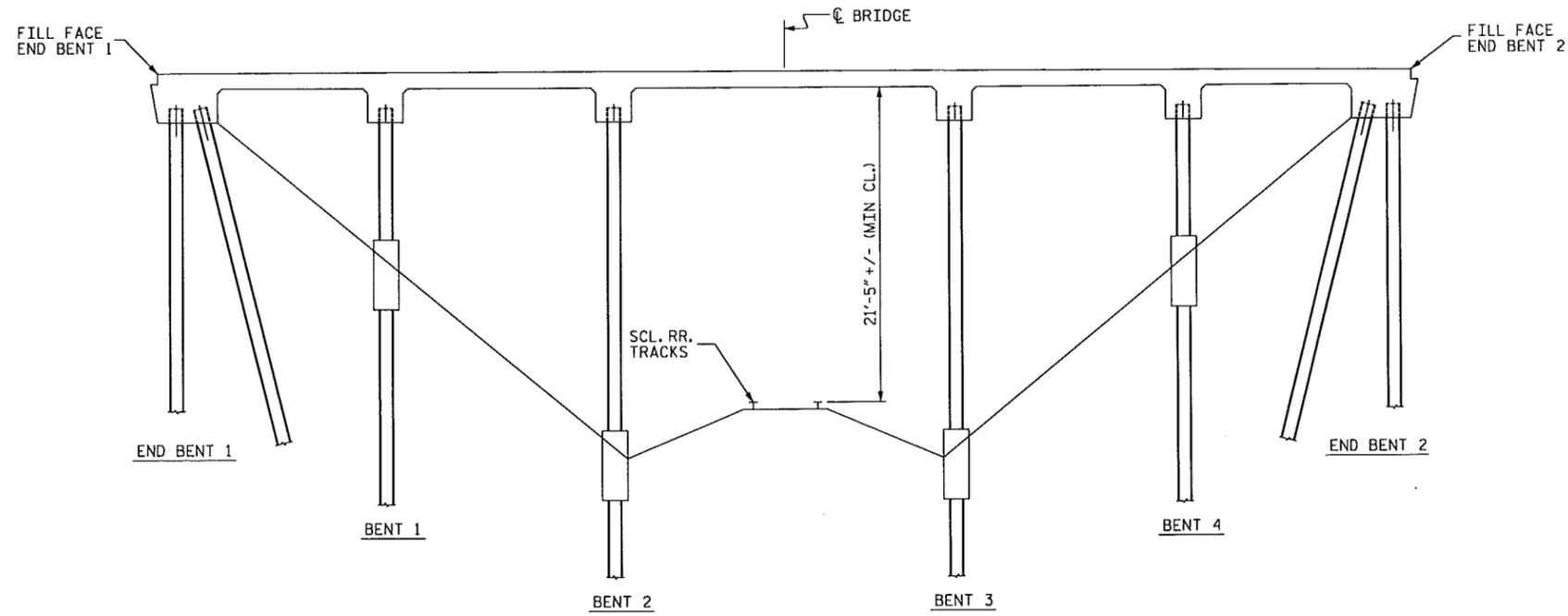
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	TOTAL SHEETS
1			3			21
2			4			

DRAWN BY: CLB DATE: 04/14  
CHECKED BY: TMS DATE: 04/14

\*\*\*\*\*USERNAME\*\*\*\*\* \*\*\*\*\*SYSTEM\*\*\*\*\*

← TO LAKE ST.

TO DALE AVE. →

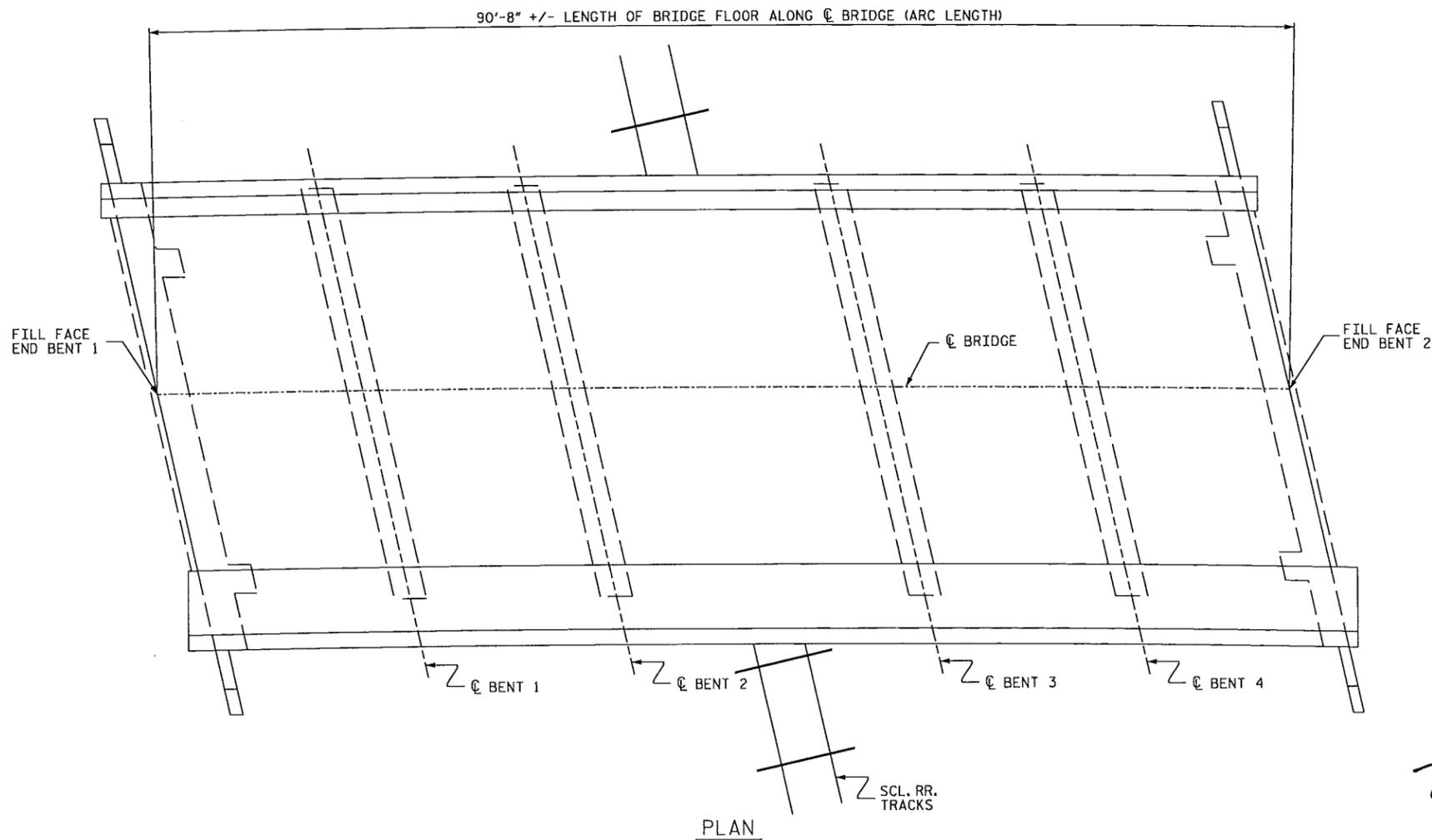
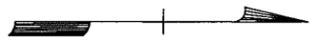


NOTE: THE PROFILE INFORMATION IS TAKEN FROM THE ORIGINAL PLANS AND THE ROUTINE INSPECTION REPORT DATED 04/03/2012.

**SCOPE OF WORK**

- BLASTING AND CLEANING OF BRIDGE DECK.
- DECK CRACK EPOXY INJECTION.
- SEALING OF BRIDGE DECK.
- APPLICATION OF EPOXY AND STONE OVERLAY.

**ELEVATION**



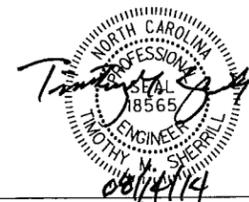
**PLAN**

PROJECT NO. BP-5500 (X)  
 COUNTY: LINCOLN  
 BRIDGE NO. 31

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

GENERAL DRAWING  
 BRIDGE #31 ON SR 1001  
 OVER SCL RAILROAD

28' CL. ROADWAY



REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-14
1			3			TOTAL SHEETS 21
2			6			

DRAWN BY: CLB DATE: 04/14  
 CHECKED BY: TMS DATE: 04/14

\*\*\*\*\*SYSTEM\*\*\*\*\*



NOTES

FOR REPAIR OF BRIDGE WITH EPOXY AND STONE OVERLAY, SEE SPECIAL PROVISIONS.  
 FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.  
 CRACK REPAIR MAY BE NEEDED IN LOCATIONS OTHER THAN SHOWN ON THE PLANS. THESE REPAIRS SHALL BE AT THE DIRECTION OF THE ENGINEER.



LOCATION SKETCH

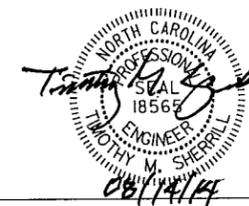
INFORMATION INDICATED ON THE LOCATION SKETCH SHALL BE CONSIDERED GENERAL INFORMATION ONLY. THE CONTRACTOR SHALL CONFIRM, THROUGH OTHER SOURCES, SPECIFIC INFORMATION REGARDING BRIDGES, ROADWAYS, UTILITIES, THE SURROUNDING AREA, AND ANY OTHER ASPECTS THAT MAY BE NECESSARY TO PERFORM AND COMPLETE THE PROJECT.

PROJECT NO. BP-5500 (X)  
 COUNTY: LINCOLN  
 BRIDGE NO. 31

TOTAL BILL OF MATERIAL				
INCIDENTAL MILLING	ASPHALT CONCRETE SURFACE COURSE TYPE SF 9.5A	ASPHALT BINDER FOR PLANT MIX GRADE 64-22	EPOXY RESIN INJECTION	EPOXY OVERLAY SYSTEM
SO.YDS.	TONS	TONS	LN. FT.	SO.FT.
136	11	1	69	2539

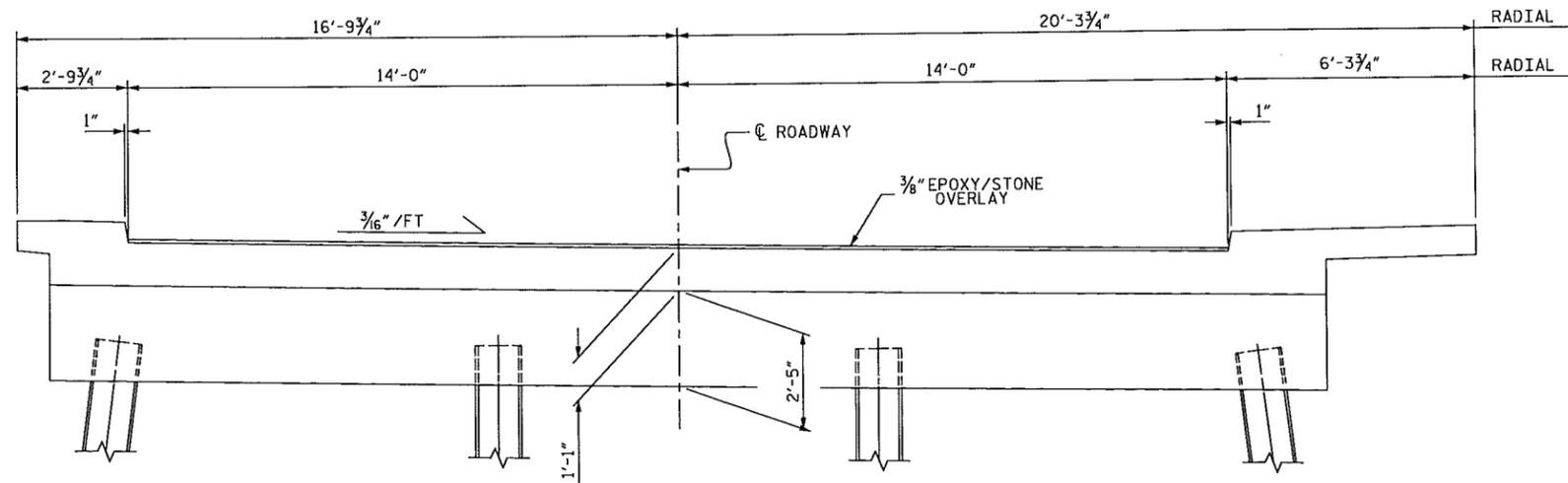
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

LOCATION SKETCH  
 BRIDGE #31 ON SR 1001  
 OVER CSX RAILROAD



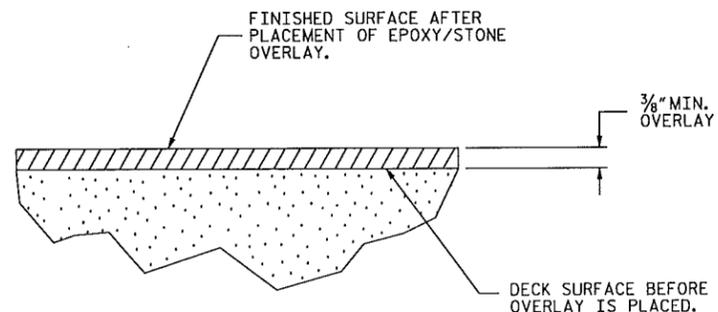
REVISIONS						SHEET NO. S-15 TOTAL SHEETS 21
NO.	BY	DATE	NO.	BY	DATE	
1			3			
2			4			

DRAWN BY: CLB DATE: 04/14  
 CHECKED BY: TMS DATE: 04/14



TYPICAL SECTION

SECTION @ BENT



DETAIL FOR EPOXY/STONE OVERLAY

PROJECT NO. BP-5500 (X)  
 COUNTY: LINCOLN  
 BRIDGE NO. 31

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

TYPICAL SECTION & OVERLAY DETAIL

*Timothy M. Sherrill*  
 NORTH CAROLINA PROFESSIONAL ENGINEER  
 SEAL 18565  
 TIMOTHY M. SHERRILL  
 08/14/14

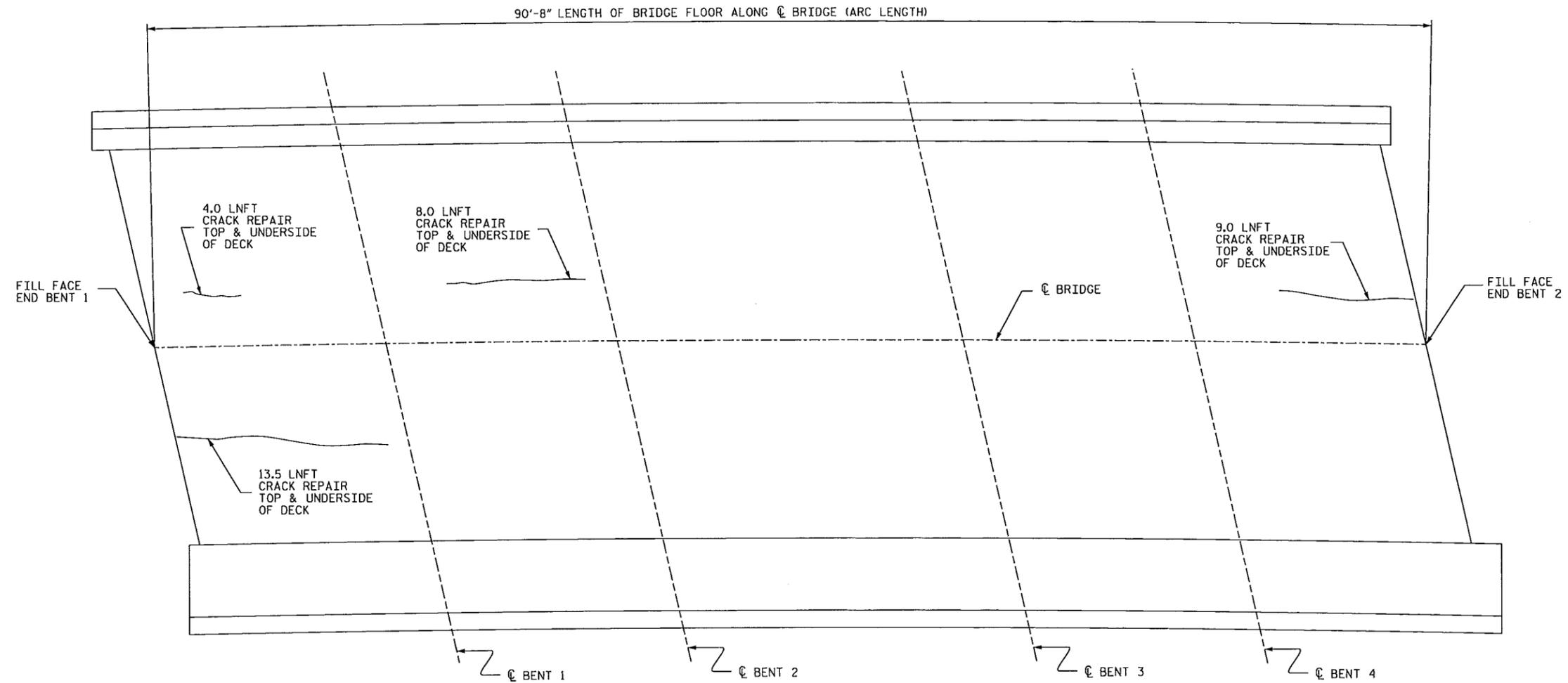
REVISIONS						SHEET NO. S-16
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 21
2			4			

DRAWN BY: CLB DATE: 04/14  
 CHECKED BY: TMS DATE: 04/14

\*\*\*\*\*SYTIME\*\*\*\*\*

SUMMARY OF QUANTITIES

	ESTIMATE	ACTUAL
3/8" EPOXY/STONE OVELAY	283 SY	
EPOXY RESIN INJECTION (TOP)	34.5 LNFT	
EPOXY RESIN INJECTION (UNDERSIDE)	34.5 LNFT	



PLAN

PROJECT NO. BP-5500 (X)  
 COUNTY: LINCOLN  
 BRIDGE NO. 31

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

PLAN VIEW



DRAWN BY: CLB DATE: 04/14  
 CHECKED BY: TMS DATE: 04/14

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

← TO LAKE ST.

TO DALE AVE. →

90'-8" +/- LENGTH OF BRIDGE FLOOR ALONG C BRIDGE (ARC LENGTH)

25'-0"

25'-0"

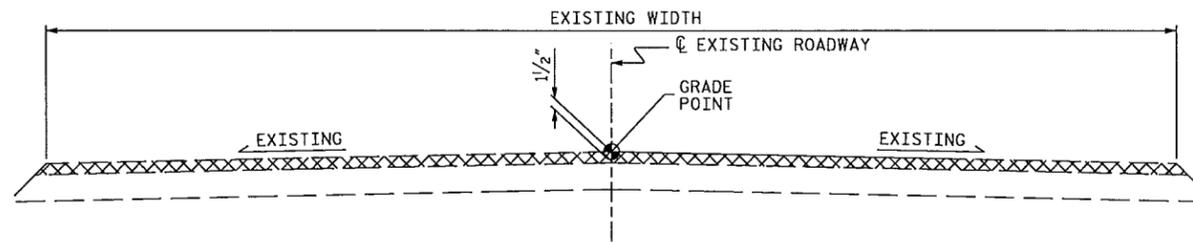
SCL. RR. TRACKS

PLAN

INCIDENTAL MILLING

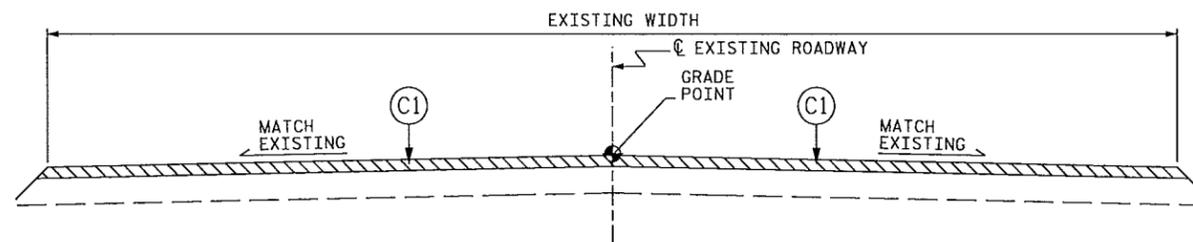
### NOTES

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



TYPICAL ROADWAY MILLING SECTION  
(MILL TO 1/2" DEPTH)

C1 PROPOSED VARIABLE DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF 9.5A AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1" IN DEPTH OR GREATER THAN 1/2" IN DEPTH.



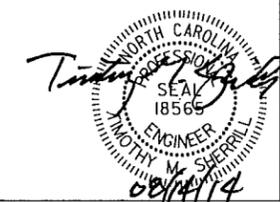
TYPICAL ROADWAY SECTION

NOT TO SCALE

PROJECT NO. BP-5500 (X)  
COUNTY: LINCOLN  
BRIDGE NO. 31

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

APPROACH MILLING  
& TYPICAL ROADWAY  
SECTIONS



REVISIONS						SHEET NO. S-18
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 21
2			4			

DRAWN BY: CLB DATE: 04/14  
CHECKED BY: TMS DATE: 04/14

\*\*\*\*\*SYSTEM\*\*\*\*\*



STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**TRANSPORTATION MANAGEMENT PLAN**

**LINCOLN COUNTY**



**LOCATION: BRIDGE NO. 21 ON NC 16 BUSINESS OVER P & N RAILROAD,  
BRIDGE NO. 31 ON SR 1001 (SALEM CHURCH ROAD) OVER SCL RAILROAD**

**SEE SHEET TMP-1B FOR VICINITY MAPS**

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**N.C.D.O.T. WORK ZONE TRAFFIC CONTROL**  
1561 MAIL SERVICE CENTER (MSC) RALEIGH, NC 27699-1561  
750 N. GREENFIELD PARKWAY, GARNER, NC 27529 (DELIVERY)  
PHONE: (919) 773-2800 FAX: (919) 771-2745

J. S. BOURNE, P.E. STATE TRAFFIC MANAGEMENT ENGINEER  
LAWRENCE GETTIER, P.E. TRAFFIC CONTROL PROJECT ENGINEER  
JESSE GILSTRAP TRAFFIC CONTROL PROJECT DESIGN ENGINEER  
TRAFFIC CONTROL DESIGN ENGINEER



**INDEX OF SHEETS**

SHEET NO.	TITLE
TMP-1	TITLE SHEET & INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS & LEGEND
TMP-1B	VICINITY MAPS
TMP-2	TRANSPORTATION OPERATIONS PLAN: (GENERAL NOTES)
TMP-3	TEMPORARY TRAFFIC CONTROL PHASING
TMP-4	TYPICAL SECTIONS - NC 16 BUSINESS
TMP-5	DETOUR ROUTE - SR 1001 (SALEM CHURCH ROAD)
SD-01	SIGN DESIGN - SALEM CHURCH RD

PLAN PREPARED BY:

**HDR** HDR Engineering, Inc. of the Carolinas  
3733 National Drive, Suite 207 Raleigh, N.C. 27612  
N.C.B.E.L.S. License Number: F-0116

MICHELLE WARD, P.E. TRAFFIC CONTROL PROJECT ENGINEER

AMY FAULKNER, E.I. TRAFFIC CONTROL DESIGN ENGINEER

SEAL  
  
 MICHELLE WARD 2/19/14

SHEET NO.  
TMP-1

**BP-5500X**

**TIP PROJECT:**

# ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1130.01	DRUM
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1180.01	SKINNY-DRUM
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO LANE AND MULTILANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - PERMANENT AND TEMPORARY

# LEGEND

## GENERAL

-  DIRECTION OF TRAFFIC FLOW
-  DIRECTION OF PEDESTRIAN TRAFFIC FLOW
- EXIST. PVMT.
-  NORTH ARROW
- PROPOSED PVMT.
- ~~~~~ TEMP. SHORING (LOCATION PURPOSES ONLY)
-  WORK AREA

## PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

## PAVEMENT MARKERS

-  CRYSTAL/CRYSTAL
-  CRYSTAL/RED
-  YELLOW/YELLOW

## PAVEMENT MARKING SYMBOLS

-  PAVEMENT MARKING SYMBOLS

## TRAFFIC CONTROL DEVICES

-  BARRICADE (TYPE III)
-  CONE
-  DRUM  SKINNY DRUM  TUBULAR MARKER
-  TEMPORARY CRASH CUSHION
-  FLASHING ARROW BOARD
-  FLAGGER
-  LAW ENFORCEMENT
-  TRUCK MOUNTED ATTENUATOR (TMA)
-  CHANGEABLE MESSAGE SIGN

## TEMPORARY SIGNING

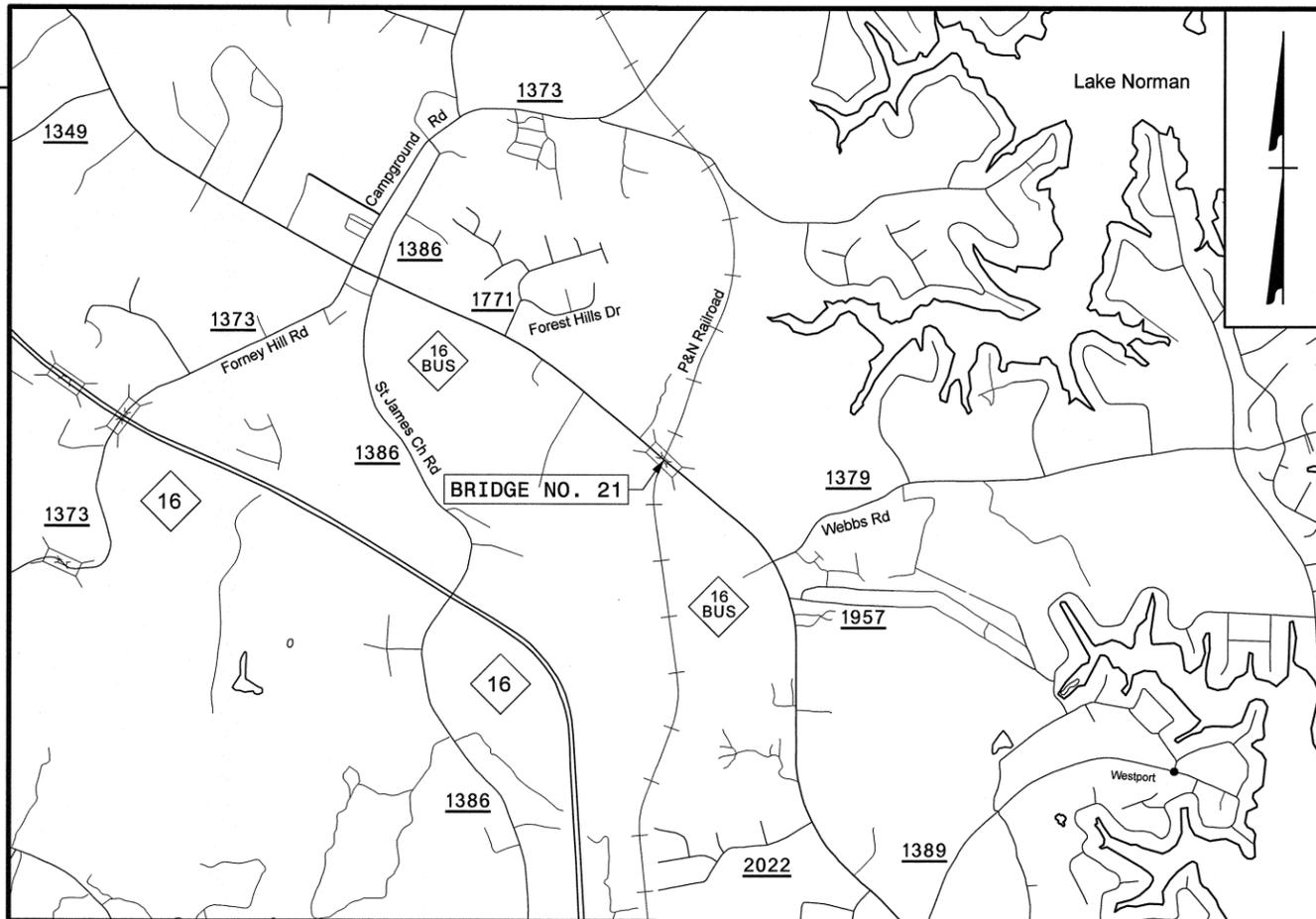
-  PORTABLE SIGN
-  STATIONARY SIGN
-  STATIONARY OR PORTABLE SIGN

## SIGNALS

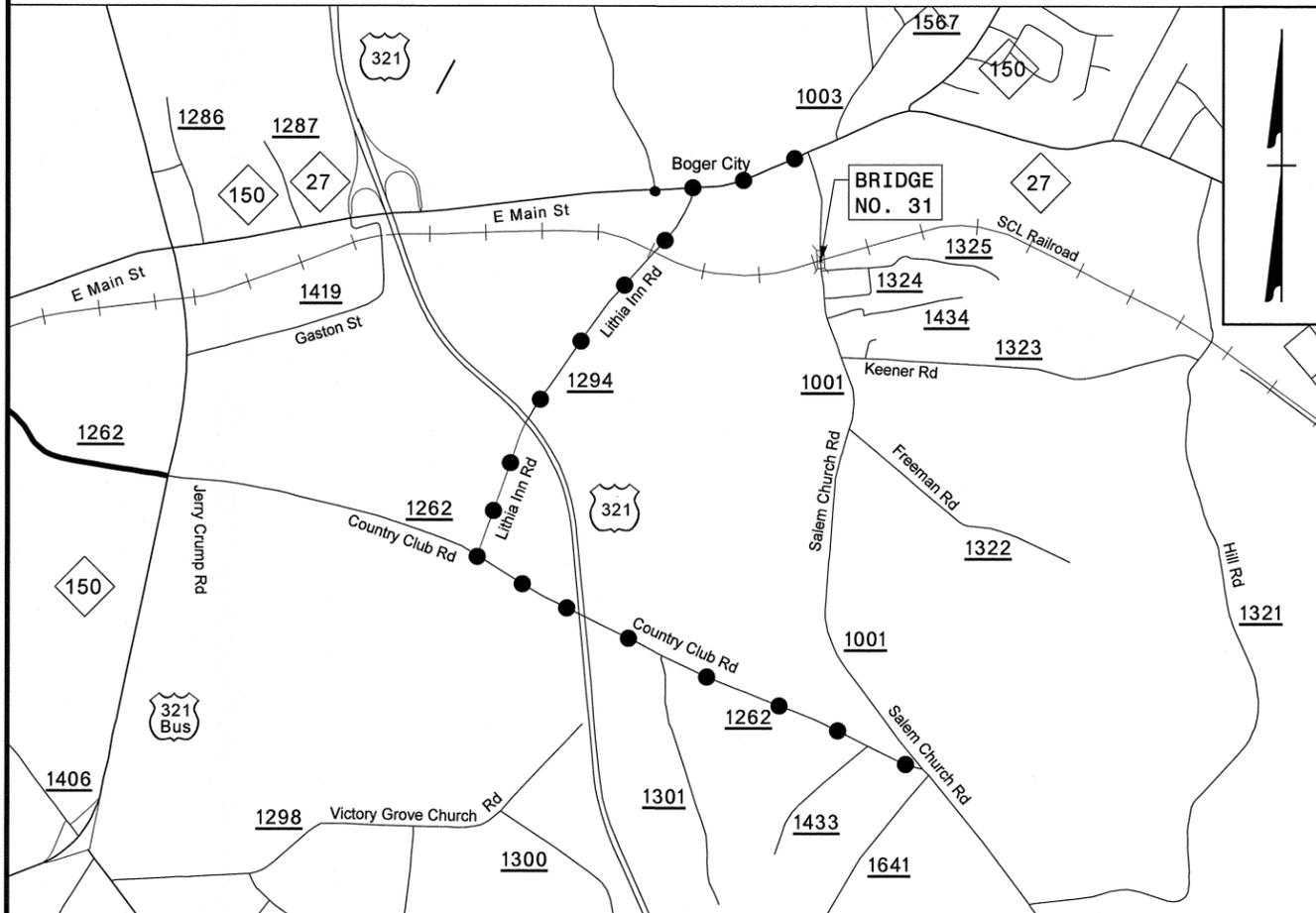
-  EXISTING
-  PROPOSED
-  TEMPORARY

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		<h2>ROADWAY STANDARD DRAWINGS &amp; LEGEND</h2>
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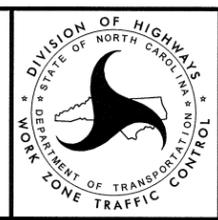


BRIDGE NO. 21 ON NC 16 BUSINESS OVER P & N RAILROAD



BRIDGE NO. 31 ON SR 1001 (SALEM CHURCH ROAD) OVER SCL RAILROAD

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VICINITY MAPS



**NOTES:**

INSTALL ADVANCE WORK ZONE WARNING SIGNS AT BRIDGE NO. 21, AS SHOWN ON RSD 1101.01, SHEET 3 of 3, PRIOR TO BEGINNING WORK.

THE CONTRACTOR MAY BEGIN WORK ON BRIDGE NO. 21 OR BRIDGE NO. 31, FIRST, AND MAY WORK ON BOTH BRIDGES SIMULTANEOUSLY.

RECORD ALL EXISTING MARKINGS ON BRIDGE AND APPROACHES IN ORDER TO REPLACE MARKINGS AT THE END OF EACH WORKDAY.

MAINTAIN ACCESS TO ALL DRIVEWAYS THROUGHOUT THE LIFE OF THE PROJECT.

AT THE END OF EACH WORKDAY, REMOVE ALL TRAFFIC CONTROL DEVICES, COVER OR REMOVE ALL SIGNS FOR THE LANE CLOSURES AND ROAD CLOSURES AND RETURN TRAFFIC TO ITS EXISTING PATTERN.

COORDINATE WITH P&N RAILROAD AND/OR SCL RAILROAD FOR ALL WORK WITHIN RAILROAD RIGHT-OF-WAY.

**PHASING – BRIDGE NO. 21**

**STAGE 1**

**STEP 1:**  
 USING NIGHTLY LANE CLOSURES (RSD 1101.02, SHEET 1 OF 15, AND SHEET TMP-4), PLACE TRAFFIC IN A ONE-LANE/TWO-WAY PATTERN, AND COMPLETE THE BRIDGE WORK ON THE FIRST HALF OF BRIDGE NO. 21.

UPON COORDINATION WITH P & N RAILROAD, COMPLETE SUBSTRUCTURE WORK.

**NOTE:**

SUBSTRUCTURE WORK MAY CONTINUE THRU STAGE 2.

**STAGE 2**

**STEP 1:**  
 USING NIGHTLY LANE CLOSURES (RSD 1101.02, SHEET 1 OF 15, AND SHEET TMP-4), PLACE TRAFFIC IN A ONE-LANE/TWO-WAY PATTERN, AND COMPLETE THE BRIDGE WORK ON THE OTHER HALF OF BRIDGE NO. 21.

USING RSD 1101.02, SHEET 1 OF 15, COMPLETE ALL ROADWAY APPROACH WORK AS SHOWN IN THE STRUCTURE PLANS.

**STEP 2:**  
 USING NIGHTLY LANE CLOSURES (RSD 1101.02, SHEET 1 OF 15, AND SHEET TMP-4), PLACE FINAL PAVEMENT MARKINGS AND MARKERS AS SHOWN IN THE PAVEMENT MARKING PLAN, AND OPEN NC 16 BUSINESS TO THE EXISTING TWO-LANE/TWO-WAY TRAFFIC PATTERN.

**STEP 3:**  
 REMOVE ALL REMAINING TRAFFIC CONTROL DEVICES.

**PHASING – BRIDGE NO. 31**

**STEP 1:**  
 USING RSD 1101.03, SHEET 1 OF 9, AND SHEET TMP-5, INSTALL OFF-SITE DETOUR SIGNS FOR THE DETOUR ROUTE, AND CLOSE SR 1001 (SALEM CHURCH ROAD) USING NIGHTLY ROAD CLOSURES, THEN, AWAY FROM TRAFFIC, COMPLETE BRIDGE WORK AND ROADWAY APPROACH WORK AS SHOWN IN THE STRUCTURE PLANS.

UPON COORDINATION WITH SCL RAILROAD, COMPLETE SUBSTRUCTURE WORK.

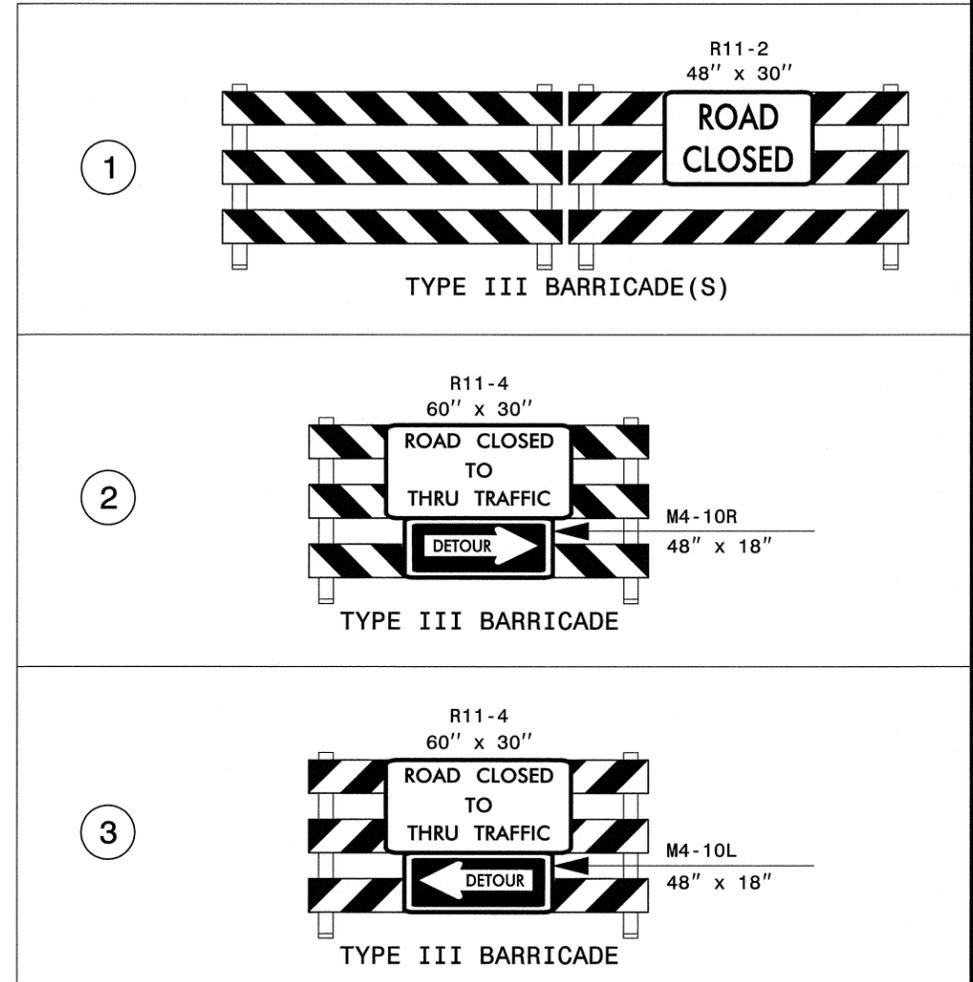
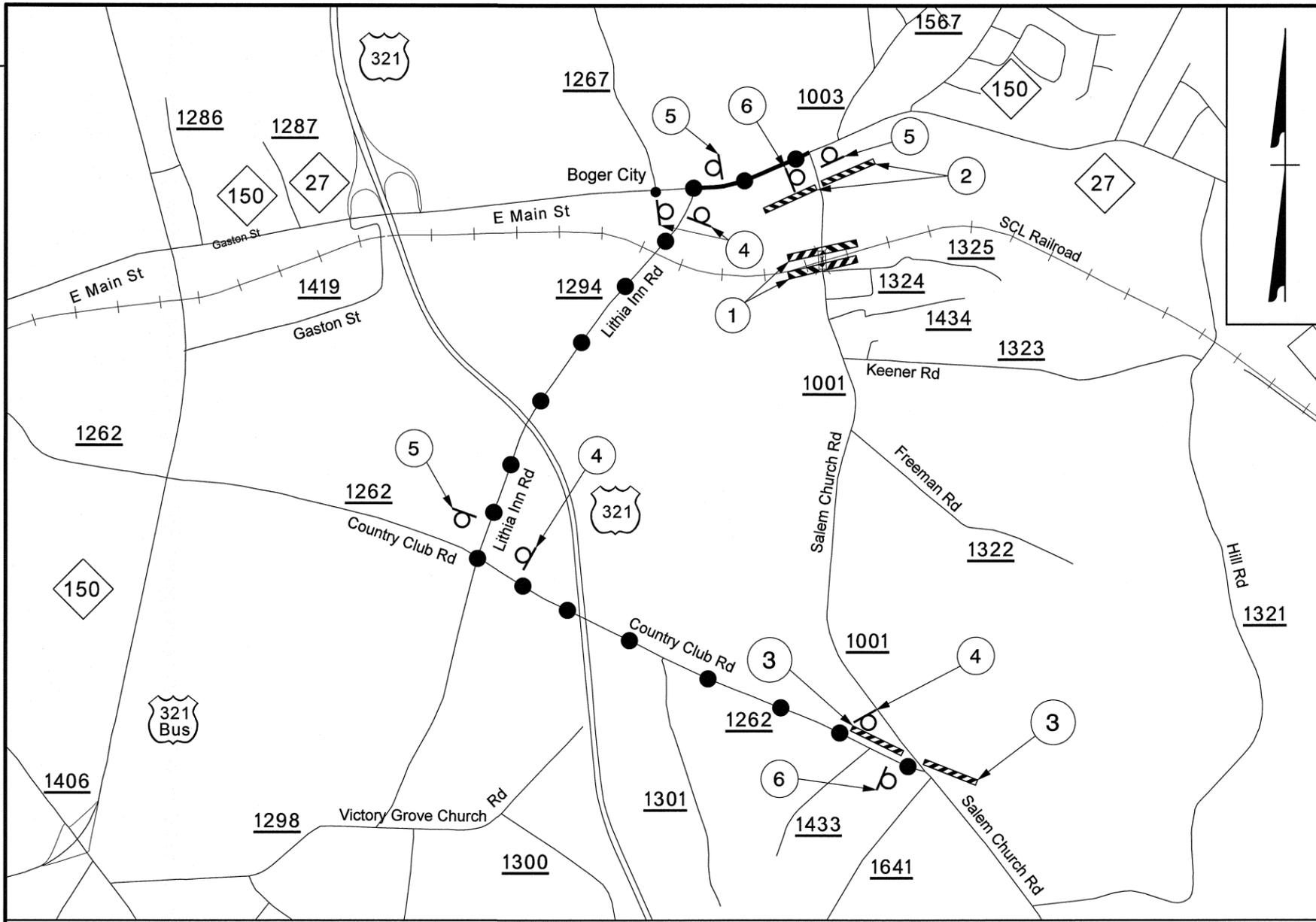
**STEP 2:**  
 USING RSD 1101.03, SHEET 1 OF 9, AND SHEET TMP-5, OR RSD 1101.02, SHEET 1 OF 15, AS NECESSARY, PLACE FINAL PAVEMENT MARKINGS AND MARKERS AS SHOWN IN THE PAVEMENT MARKING PLAN, AND OPEN SR 1001 (SALEM CHURCH ROAD) TO THE EXISTING TWO-LANE/TWO-WAY TRAFFIC PATTERN.

**STEP 3:**  
 REMOVE ALL REMAINING TRAFFIC CONTROL DEVICES.

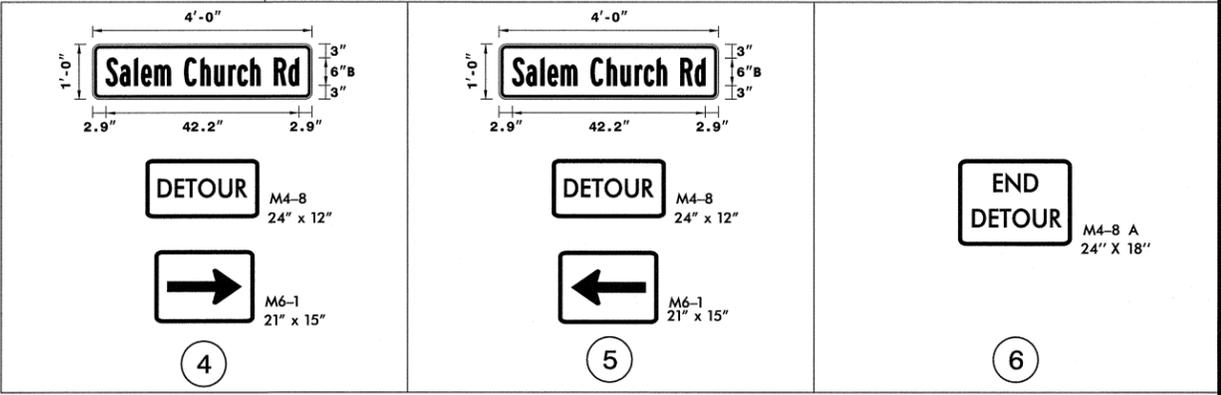
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		<p style="text-align: center;"><b>TEMPORARY TRAFFIC CONTROL PHASING</b></p>
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BRIDGE NO. 31 ON SR 1001 (SALEM CHURCH ROAD) OVER SCL RAILROAD



SEE SHEET SD-01 FOR SPECIAL SIGN DESIGN DETAIL

● — ●  
**DETOUR ROUTE**  
 REFER TO RSD 1101.03 SHEET 1 OF 9 FOR  
 ADDITIONAL SIGN AND BARRICADE PLACEMENT

		<p>DETOUR ROUTE          SR 1001          (SALEM CHURCH ROAD)</p>
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T.I.P.: BP-5500X

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

TIP NO. BP-5500X	SHEET NO. PMP-1
APPROVED:	
DATE: 5/22/14	
SEAL 	

**PAVEMENT MARKING PLAN  
LINCOLN COUNTY**

**LOCATION: BRIDGE No. 21 ON NC 16 BUSINESS OVER P&N RAILROAD,  
BRIDGE No. 31 ON SR 1001 (SALEM CHURCH ROAD) OVER SCL RAILROAD**

**ROADWAY STANDARD DRAWING**

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTILANE ROADWAYS
1205.09	PAVEMENT MARKINGS - PAINTED ISLANDS
1205.12	PAVEMENT MARKINGS - BRIDGES
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - PERMANENT AND TEMPORARY
1253.01	RAISED PAVEMENT MARKERS - SNOWFLOWABLE

**GENERAL NOTES**

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.

- A) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE AS FOLLOWS:

ROAD NAME	MARKING	MARKER
NC 16 BUSINESS & BRIDGE #21 DECK	THERMOPLASTIC PAINT	SNOWFLOWABLE NONE
SALEM CHURCH RD. & BRIDGE #31 DECK	PAINT	SNOWFLOWABLE NONE

- B) PLACE TWO APPLICATIONS OF PAINT PAVEMENT MARKINGS ON THE FINAL WEARING SURFACE. PLACE THE SECOND APPLICATION OF PAINT UPON SUFFICIENT DRYING TIME OF THE FIRST.
- C) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- D) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS.
- E) REMOVE ALL RESIDUE AND SURFACE LAITANCE BY ACCEPTABLE METHODS ON CONCRETE BRIDGE DECKS PRIOR TO PLACING PAINT PAVEMENT MARKING MATERIAL.

**PAVEMENT MARKING SCHEDULE**

SYMB	DESCRIPTION
	FINAL PAVEMENT MARKINGS
	<u>PAINT (4")</u>
PA	WHITE EDGELINE (2X)
PI	YELLOW DOUBLE CENTER (2X)
	<u>THERMO (4", 120 MILS)</u>
TI	YELLOW DOUBLE CENTER
	<u>THERMO (4", 90 MILS)</u>
TA	WHITE EDGELINE
	<u>THERMO (8", 90 MILS)</u>
TP	YELLOW DIAGONAL
	MARKERS
	<u>SNOWFLOWABLE RAISED PAVEMENT MARKERS</u>
ME	YELLOW & YELLOW

NOTE: FOR EACH PAINT PAVEMENT MARKING ITEM, 2X IMPLIES TWO APPLICATIONS

**INDEX**

SHEET NO.	DESCRIPTION
PMP-1	PAVEMENT MARKING PLAN TITLE AND SCHEDULE SHEET
PMP-2	PAVEMENT MARKING DETAIL

PLAN PREPARED BY: N.C.D.O.T. SIGNING AND DELINEATION UNIT

\_\_\_\_\_  
KELVIN JORDAN      SIGNING & DELINEATION REGIONAL ENGINEER

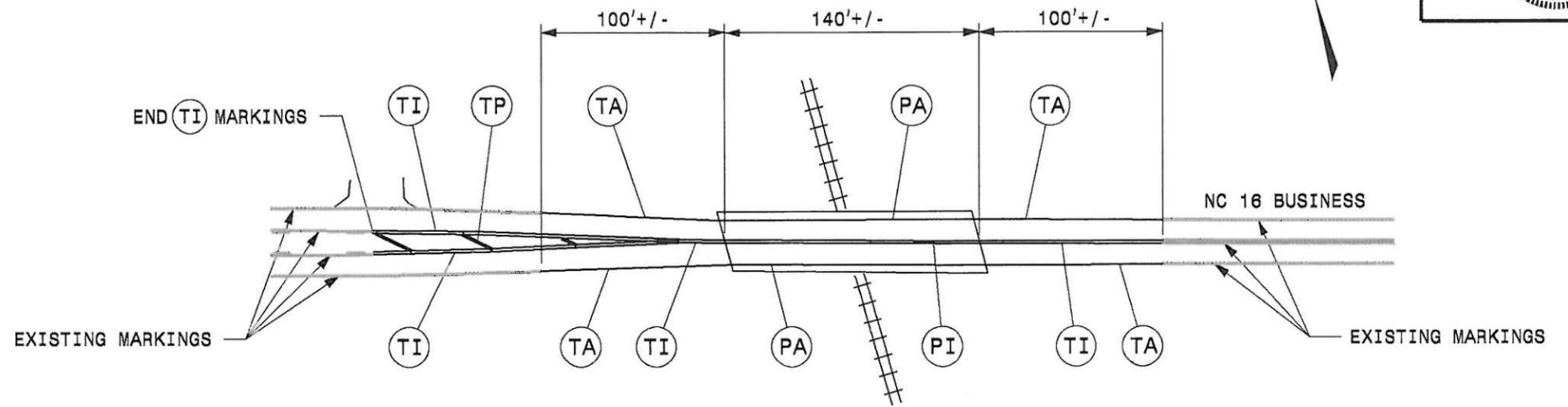
\_\_\_\_\_  
DERRICK BEARD      SIGNING & DELINEATION PROJECT DESIGN ENGINEER



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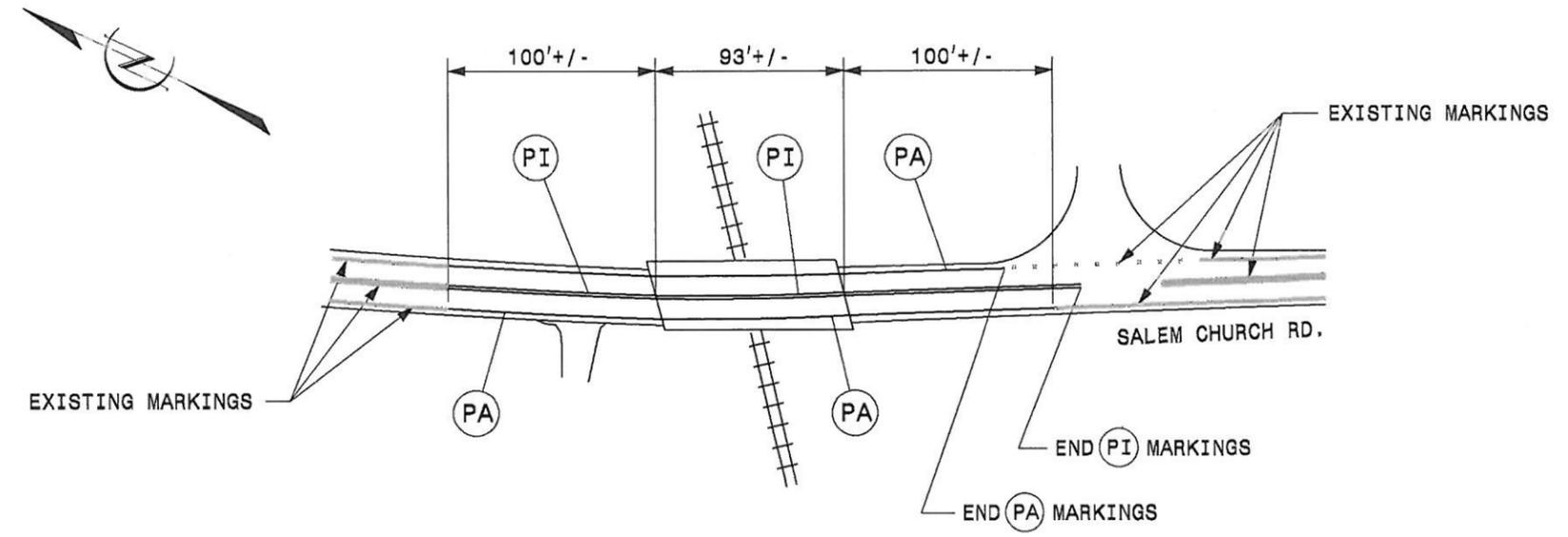
**BRIDGE No. 21 ON NC 16 BUSINESS  
OVER P&N RAILROAD**

- PAINT
- (PA) WHITE EDGELINE (4")
  - (PI) YELLOW DOUBLE CENTERLINE (4")
- THERMOPLASTIC
- (TA) WHITE EDGELINE (4")
  - (TI) YELLOW DOUBLE CENTERLINE (4")
  - (TP) YELLOW DIAGONAL (8")



**BRIDGE No. 31 ON SALEM CHURCH ROAD  
OVER SCL RAILROAD**

- PAINT
- (PA) WHITE EDGELINE (4")
  - (PI) YELLOW DOUBLE CENTERLINE (4")



**PAVEMENT MARKING DETAIL**

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