CONTRACT: C203270 WBS: 17BP.7.P.4 (PART 1) & 17BP.7.P.1 (PART 2)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

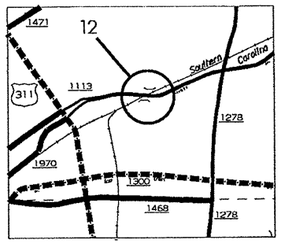
GUILFORD COUNTY

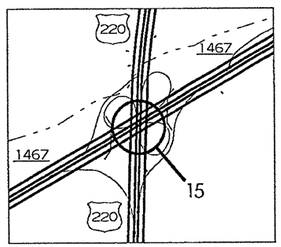
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.7.P.4 / 17BP.7.P.1	1	

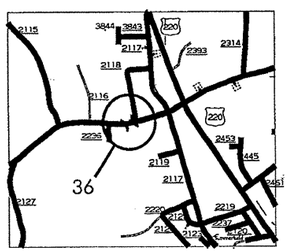
STATE PROJECT NO.	F.A. PROJ. NO.	DESCRIPTION
17BP.7.P.4		PE
17BP.7.P.4		CONSTR
17BP.7.P.1		PE
17BP.7.P.1		CONSTR

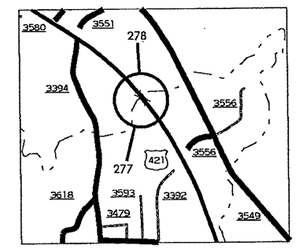
LOCATION: BRIDGE #12 ON SR 1970 (EAST KIVETT DR.) OVER NORFOLK SOUTHERN RAILWAY (REHAB AND PAINT)
BRIDGE #15 ON US 220 (WENDOVER AVE.) OVER I-85 (REHAB ONLY)
BRIDGE #36 ON NC 150 (OAK RIDGE RD.) OVER ABANDONED RAILROAD GRADE (REHAB AND PAINT)
BRIDGE #57 ON SR 1398 (FREEMAN MILL RD.) OVER NC 6 (WEST LEE ST.) & US 70A/29A (REHAB AND PAINT)
BRIDGE #169 ON SR 1129 (GROOMETOWN RD.) OVER I-85 & US 70/29 (REHAB ONLY)
BRIDGE #277 ON US 421 SBL OVER BIG ALAMANCE CREEK (REHAB AND PAINT)
BRIDGE #278 ON US 421 NBL OVER BIG ALAMANCE CREEK (REHAB ONLY)
BRIDGE #292 ON US 220 (WENDOVER AVENUE.) OVER US 220 SBL & SR 1452 (PAINT ONLY)
BRIDGE #334 ON BESSEMER AVENUE OVER US 220/70/29 (REHAB AND PAINT)

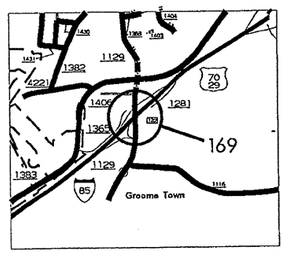
TYPE OF WORK: BRIDGE PRESERVATION- SUBSTRUCTURE AND DECK REPAIR OF EXITING BRIDGE STRUCTURES
CLEANING AND PAINTING OF EXISTING BRIDGE STRUCTURES

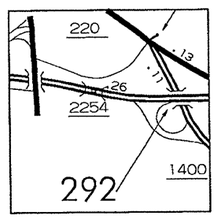












DESIGN DATA

#12 ADT 2011 = 8,900
#15 ADT 2011 = 27,000
#36 ADT 2011 = 6,700
#57 ADT 2009 = 21,500
#169 ADT 2011 = 8,400
#277 ADT 2009 = 8,000
#278 ADT 2009 = 8,000
#292 ADT 2011 = 55,000
#334 ADT 2011 = 17,000

PROJECT LENGTH

PROJECT LENGTH #12 = 0.080 MI
PROJECT LENGTH #15 = 0.035 MI
PROJECT LENGTH #36 = 0.030 MI
PROJECT LENGTH #57 = 0.030 MI
PROJECT LENGTH #169 = 0.030 MI
PROJECT LENGTH #277 = 0.039 MI
PROJECT LENGTH #278 = 0.039 MI
PROJECT LENGTH #292 = 0.034 MI
PROJECT LENGTH #334 = 0.032 MI

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

2012 STANDARD SPECIFICATIONS

LETTING DATE:
June 18, 2013

RICK NELSON, PE
PROJECT ENGINEER

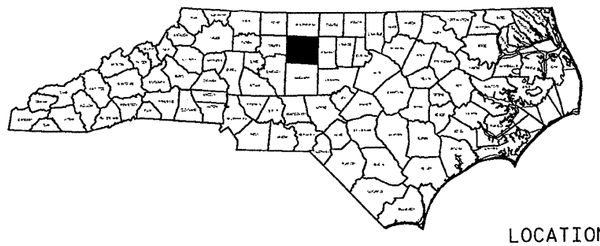
NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARZIN ASEFNIA
3/28/13

FARZIN ASEFNIA, PE
PROJECT DESIGN ENGINEER

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

$TIME$
$DATE$
$FILE$

CONTRACT NO: C203270 WBS: 17BP.7.P.4 (PART 1) & 17BP.7.P.1 (PART 2)



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.7.P.4 / 17BP.7.P.1	1A	

STATE PROJECT NO.	F.A. PROJ. NO.	DESCRIPTION
17BP.7.P.4		PE
17BP.7.P.4		CONSTR
17BP.7.P.1		PE
17BP.7.P.1		CONSTR

LOCATION: BRIDGE #12 ON SR 1970 (EAST KIVETT DR.) OVER NORFOLK SOUTHERN RAILWAY
BRIDGE #15 ON US 220 (WENDOVER AVE.) OVER I-85
BRIDGE #36 ON NC 150 (OAK RIDGE RD.) OVER ABANDONED RAILROAD GRADE
BRIDGE #57 ON SR 1398 (FREEMAN MILL RD.) OVER NC 6 (WEST LEE ST.) & US 70A/29A
BRIDGE #169 ON SR 1129 (GROOMETOWN RD.) OVER I-85 & US 70/29
BRIDGE #277 ON US 421 SBL OVER BIG ALAMANCE CREEK
BRIDGE #278 ON US 421 NBL OVER BIG ALAMANCE CREEK
BRIDGE #292 ON US 220 (WENDOVER AVENUE.) OVER US 220 SBL & SR 1452
BRIDGE #334 ON BESSEMER AVENUE OVER US 220/70/29

TYPE OF WORK: BRIDGE PRESERVATION- SUBSTRUCTURE AND DECK REPAIR OF EXITING BRIDGE STRUCTURES
CLEANING AND PAINTING OF EXISTING BRIDGE STRUCTURES

SHT#	DESCRIPTION
1	COMBINED TITLE SHEET
1A	INDEX OF SHEETS
2	SUMMARY OF QUANTITIES
3	TITLE SHEET (17BP.7.P.4)
S-1 THRU S-63	STRUCTURAL REHABILITATION PLANS (17BP.7.P.4)
TMP-1 THRU TMP-18	TRAFFIC CONTROL PLANS (17BP.7.P.4)
4	TITLE SHEET (17BP.7.P.1)
TMP-1 THRU TMP-6B	TRAFFIC CONTROL PLANS (17BP.7.P.1)

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

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

2012 STANDARD SPECIFICATIONS

LETTING DATE:
June 18, 2013

RICK NELSON, PE
PROJECT ENGINEER

FARZIN ASEFNIA P.E.
DESIGN ENGINEER

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C203270

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
1330000000-E	607	4,534	SY	INCIDENTAL MILLING
1525000000-E	610	510	TON	ASPHALT CONC SURFACE COURSE, TYPE SF9.5A
1575000000-E	620	34	TON	ASPHALT BINDER FOR PLANT MIX
4400000000-E	1110	892	SF	WORK ZONE SIGNS (STATIONARY)
4405000000-E	1110	830	SF	WORK ZONE SIGNS (PORTABLE)
4410000000-E	1110	60	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
4415000000-N	1115	8	EA	FLASHING ARROW BOARD
4420000000-N	1120	6	EA	PORTABLE CHANGEABLE MESSAGE SIGN
4430000000-N	1130	850	EA	DRUMS
4435000000-N	1135	20	EA	CONES
4445000000-E	1145	40	LF	BARRICADES (TYPE III)
4450000000-N	1150	160	HR	FLAGGER
4480000000-N	1165	6	EA	TMA
4510000000-N	SP	616	HR	LAW ENFORCEMENT
4805000000-N	1205	4	EA	COLD APPLIED PLASTIC PAVEMENT MARKING SYMBOL, TYPE ** (II)
4847000000-E	1205	7,480	LF	POLYUREA PAVEMENT MARKING LINES (4", **********) (STANDARD GLASS BEADS)
4847100000-E	1205	1,260	LF	POLYUREA PAVEMENT MARKING LINES (6", **********) (STANDARD GLASS BEADS)
4900000000-N	1251	35	EA	PERMANENT RAISED PAVEMENT MARKERS
8161000000-E	420	119,486	SF	GROOVING BRIDGE FLOORS
8296000000-N	442	Lump Sum		POLLUTION CONTROL
8559000000-E	SP	522	SY	CLASS II, SURFACE PREPARATION
8566000000-E	SP	1	SY	CLASS III, SURFACE PREPARATION
8660000000-E	SP	114.5	CF	CONCRETE REPAIRS
8664000000-E	SP	590	CF	SHOTCRETE REPAIRS

ItemNumber	Sec #	Quantity	Unit	Description
8678000000-E	SP	324.3	LF	EPOXY RESIN INJECTION
8692000000-N	SP	Lump Sum		FOAM JOINT SEALS
8860000000-N	SP	Lump Sum		GENERIC STRUCTURE ITEM CLEANING & REPAINTING BRIDGE #12
8860000000-N	SP	Lump Sum		GENERIC STRUCTURE ITEM CLEANING & REPAINTING BRIDGE #277
8860000000-N	SP	Lump Sum		GENERIC STRUCTURE ITEM CLEANING & REPAINTING BRIDGE #292
8860000000-N	SP	Lump Sum		GENERIC STRUCTURE ITEM CLEANING & REPAINTING BRIDGE #334
8860000000-N	SP	Lump Sum		GENERIC STRUCTURE ITEM CLEANING & REPAINTING BRIDGE #36
8860000000-N	SP	Lump Sum		GENERIC STRUCTURE ITEM CLEANING & REPAINTING BRIDGE #57
8860000000-N	SP	Lump Sum		GENERIC STRUCTURE ITEM PAINTING CONTAINMENT FOR BRIDGE #12
8860000000-N	SP	Lump Sum		GENERIC STRUCTURE ITEM PAINTING CONTAINMENT FOR BRIDGE #277
8860000000-N	SP	Lump Sum		GENERIC STRUCTURE ITEM PAINTING CONTAINMENT FOR BRIDGE #292
8860000000-N	SP	Lump Sum		GENERIC STRUCTURE ITEM PAINTING CONTAINMENT FOR BRIDGE #334
8860000000-N	SP	Lump Sum		GENERIC STRUCTURE ITEM PAINTING CONTAINMENT FOR BRIDGE #36
8860000000-N	SP	Lump Sum		GENERIC STRUCTURE ITEM PAINTING CONTAINMENT FOR BRIDGE #57
8860000000-N	SP	Lump Sum		GENERIC STRUCTURE ITEM PARTIAL REMOVAL OF EXISTING STRUCTURE
8881000000-E	SP	669.7	CY	GENERIC STRUCTURE ITEM LATEX MOD CONC OVERLAY - VERY EARLY STRENGTH

ItemNumber	Sec #	Quantity	Unit	Description
8889000000-E	SP	1,000	LB	GENERIC STRUCTURE ITEM STRUCTURAL STEEL FOR GIRDER REPAIR
8892000000-E	SP	1,181	SF	GENERIC STRUCTURE ITEM BRIDGE JOINT DEMOLITION
8892000000-E	SP	3,892	SF	GENERIC STRUCTURE ITEM EPOXY COATING
8893000000-E	SP	14,394	SY	GENERIC STRUCTURE ITEM HYDRO-DEMOLITION OF BRIDGE DECK
8893000000-E	SP	14,394	SY	GENERIC STRUCTURE ITEM PLACING & FINISHING LATEX MOD CONC OVERLAY - VERY EARLY STRENGTH
8893000000-E	SP	14,394	SY	GENERIC STRUCTURE ITEM SCARIFYING BRIDGE DECK
8897000000-N	SP	19	EA	GENERIC STRUCTURE ITEM BRIDGE JACKING
8897000000-N	SP	27	EA	GENERIC STRUCTURE ITEM TEMPORARY WORK PLATFORM

WBS: 17BP.7.P.4

CONTRACT: C203270

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.7.P.4	3	

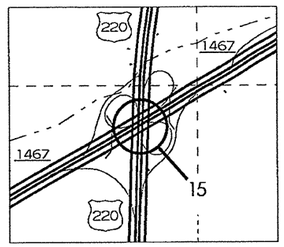
STATE PROJECT NO.	F.A. PROJ. NO.	DESCRIPTION
17BP.7.P.4		PE
17BP.7.P.4		CONSTR

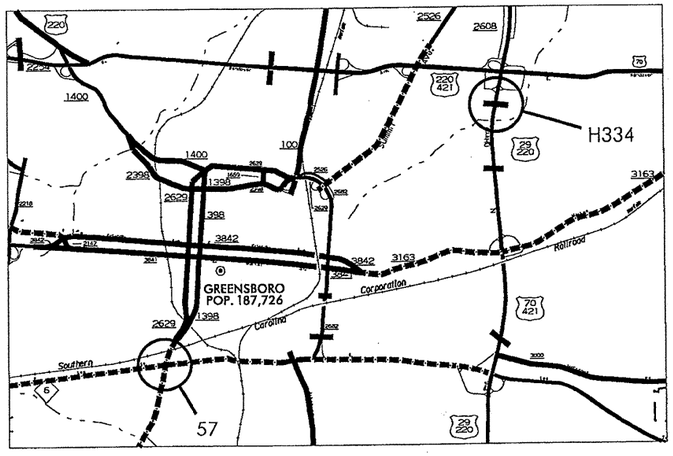
LOCATION: BRIDGE #12 ON SR 1970 (EAST KIVETT DR.) OVER NORFOLK SOUTHERN RAILWAY
BRIDGE #15 ON US 220 (WENDOVER AVE.) OVER I-85
BRIDGE #36 ON NC 150 (OAK RIDGE RD.) OVER ABANDONED RAILROAD
BRIDGE #57 ON SR 1398 (FREEMAN MILL RD.) OVER NC 6 (WEST LEE ST.) & US 70A/29A
BRIDGE #169 ON SR 1129 (GROOMETOWN RD.) OVER I-85 & US 70/29
BRIDGE #277 ON US 421 SBL OVER BIG ALAMANCE CREEK
BRIDGE #278 ON US 421 NBL OVER BIG ALAMANCE CREEK
BRIDGE #334 ON BESSEMER AVENUE OVER US 220/70/29

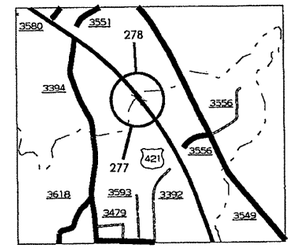
N

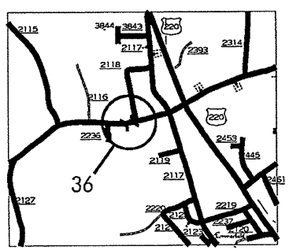
S

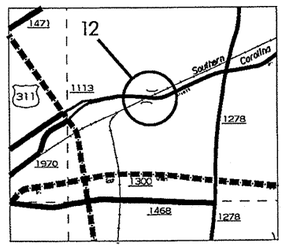
TYPE OF WORK: BRIDGE PRESERVATION- SUBSTRUCTURE AND DECK REPAIR OF EXISTING BRIDGE STRUCTURES

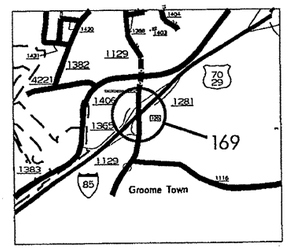












STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DESIGN DATA

#12 ADT 2011 = 8900
#15 ADT 2011 = 27000
#36 ADT 2011 = 6700
#57 ADT 2009 = 21500
#169 ADT 2011 = 8400
#277 ADT 2009 = 8000
#278 ADT 2009 = 8000
#334 ADT 2011 = 17000

PROJECT LENGTH

PROJECT LENGTH #12 = 0.080 MI
PROJECT LENGTH #15 = 0.035 MI
PROJECT LENGTH #36 = 0.030 MI
PROJECT LENGTH #57 = 0.030 MI
PROJECT LENGTH #169 = 0.030 MI
PROJECT LENGTH #277 = 0.039 MI
PROJECT LENGTH #278 = 0.039 MI
PROJECT LENGTH #334 = 0.032 MI

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

2012 STANDARD SPECIFICATIONS

LETTING DATE:
June 18, 2013

RICK NELSON, PE
PROJECT ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARZIN ASEFNIA

FARZIN ASEFNIA, PE
PROJECT DESIGN ENGINEER

DATES
FILES
TIMES

TOTAL BILL OF MATERIAL

GUILFORD COUNTY BRIDGE NO.	17BP.7.P.4																	17BP.7.P.1			
	INCIDENTAL MILLING	ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A	GROOVING BRIDGE FLOORS	CLASS II, SURFACE PREPARATION	CLASS III, SURFACE PREPARATION	CONCRETE REPAIRS	SHOTCRETE REPAIRS	EPOXY RESIN INJECTION	FOAM JOINT SEALS	PARTIAL REMOVAL OF EXISTING STRUCTURE	LATEX MODIFIED CONCRETE-VERY EARLY STRENGTH	EPOXY COATING	BRIDGE JOINT DEMOLITION	SCARIFYING BRIDGE DECK	HYDRO-DEMOLITION OF BRIDGE DECK	PLACING & FINISHING LATEX MODIFIED CONCRETE-VERY EARLY STRENGTH	TEMPORARY WORK PLATFORM	BRIDGE JACKING	POLLUTION CONTROL	CLEANING & REPAINTING OF BRIDGE *___	PAINTING CONTAINMENT FOR BRIDGE *___	STRUCTURAL STEEL FOR GIRDER REPAIR*
	SQ. YDS.	TONS	SQ. FT.	SQ. YDS.	SQ. YDS.	CU. FT.	CU. FT.	LIN. FT.	LUMP SUM	LUMP SUM	CU. YDS.	SQ. FT.	SQ. FT.	SQ. YDS.	SQ. YDS.	SQ. YDS.	EACH	EACH	LUMP SUM	LUMP SUM	LUMP SUM	LBS.
12	289	32	29,360	191	——	7	95.5	144.5	LUMP SUM	——	174.6	1,020	210	3,592	3,592	3,592	5	6	——	LUMP SUM	LUMP SUM	——
15	1,673	194	31,488	35	——	5	23.5	72	LUMP SUM	——	157.2	590	215	3,773	3,773	3,773	4	4	——	——	——	——
36	235	26	4,814	——	——	——	——	——	LUMP SUM	——	21.0	——	70	604	604	604	——	——	——	LUMP SUM	LUMP SUM	——
57	512	56	11,698	56	——	——	45	2	LUMP SUM	LUMP SUM	56.0	555	136	1,378	1,378	1,378	3	——	——	LUMP SUM	LUMP SUM	——
169	1,202	132	21,307	188	——	——	30	47.8	LUMP SUM	——	156.0	171	165	2,493	2,493	2,493	4	——	——	——	——	——
277	244	27	7,455	34	——	100.5	13.5	39	LUMP SUM	——	38.4	506	145	921	921	921	4	7	——	LUMP SUM	LUMP SUM	——
278	229	26	5,956	——	——	2	5.5	3	LUMP SUM	——	28.9	295	107	732	732	732	3	2	——	——	——	——
292	——	——	——	——	——	——	——	——	——	——	——	——	——	——	——	——	——	——	——	LUMP SUM	LUMP SUM	——
334	150	17	7,408	18	1	——	377	16	LUMP SUM	——	37.6	755	133	901	901	901	4	——	——	LUMP SUM	LUMP SUM	——
TOTAL	4,534	510	119,486	522	1	114.5	590	324.3	LUMP SUM	LUMP SUM	669.7	3,892	1,181	14,394	14,394	14,394	27	19	LUMP SUM	LUMP SUM	LUMP SUM	1,000

* FOR INFORMATION ONLY. ACTUAL QUANTITY WILL BE DETERMINED IN THE FIELD.

17BP.7.P.4 &
PROJECT NO. 17BP.7.P.1
GUILFORD COUNTY
STATION:

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STRUCTURE
TOTAL BILL
OF MATERIAL

NORTH CAROLINA PROFESSIONAL ENGINEER 20103 FARZIN ASEFNIA

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

DRAWN BY : J. YANNACCONE DATE : 3/13
CHECKED BY : F. ASEFNIA DATE : 3/13

28-MAR-2013 13:35
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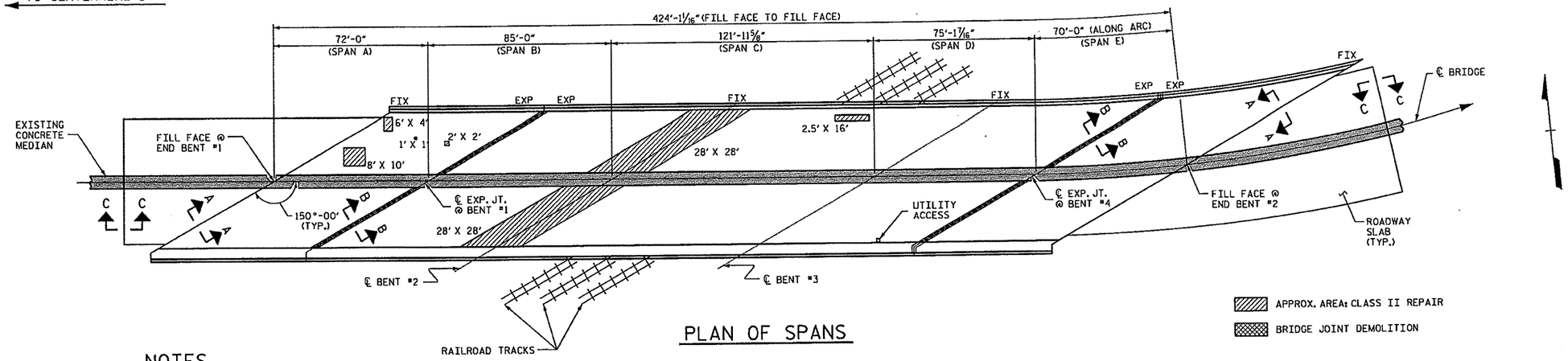
joyannaccone



PLAN OF SPANS

APPROX. AREA: CLASS II REPAIR

BRIDGE JOINT DEMOLITION

NOTES

EXISTING JOINTS AND DECK DRAINS SHALL BE SEALED PRIOR TO BEGINNING SURFACE PREPARATION OF BRIDGE DECK.

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

INCIDENTAL MILLING IS INCLUDED TO ENSURE A SMOOTH TRANSITION ONTO THE BRIDGE FLOOR. DIMENSIONS SHOWN ARE APPROXIMATE. CONTRACTOR SHALL MILL AS REQUIRED TO PROVIDE A SMOOTH TRANSITION TO THE ROADWAY AT BOTH ENDS OF BRIDGE.

THE CONTRACTOR SHALL PROVIDE A METHOD OF HANDLING UNEXPECTED BLOW THROUGH OF THE DECK, SEE "TYPICAL "BLOW THRU" CONTAINMENT AND FORMWORK" DETAIL.

THE CONTRACTOR MUST COLLECT, TREAT AND DISPOSE OF RUN-OFF WATER FROM THE HYDRO-DEMOLITION PROCESS, SEE MANAGING HYDRO-DEMOLITION WATER SPECIAL PROVISIONS.

FOR OVERLAY SURFACE PREPARATION, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

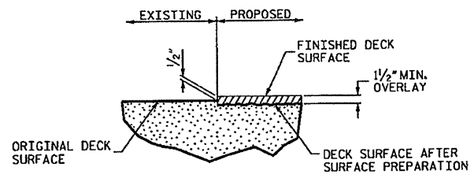
FOR PROTECTION OF RAILWAY INTERESTS, SEE SPECIAL PROVISIONS.

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

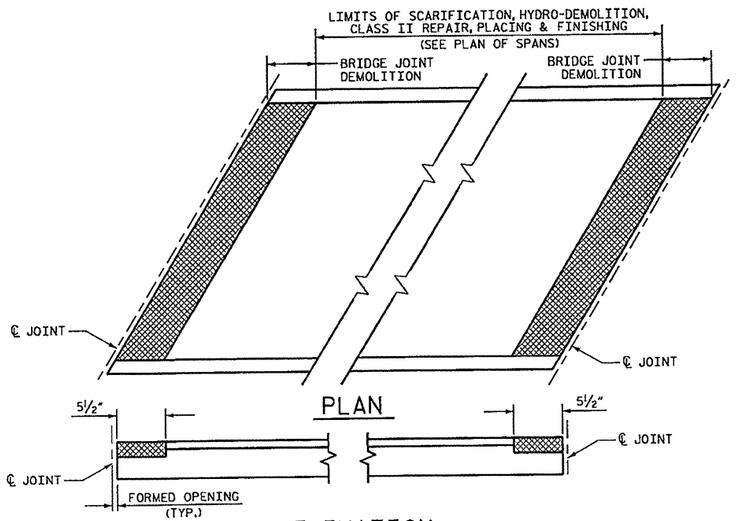
FOR CONTROL OF TRAFFIC AND LIMITS ON PHASING OF CONSTRUCTION, SEE TRANSPORTATION MANAGEMENT PLAN SHEET.

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

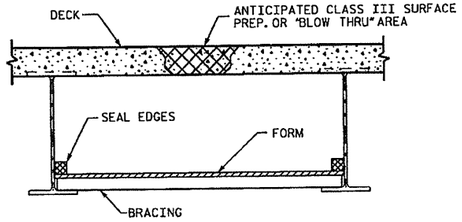
DURING CONSTRUCTION, BERMS OR APPROPRIATE MEASURES SHALL BE USED TO ENSURE HYDRO-DEMOLITION WATER DOES NOT FLOW OR MIGRATE INTO ACTIVE TRAVEL LANES.



DETAIL FOR LATEX MODIFIED CONCRETE OVERLAY



ELEVATION



TYP. "BLOW THRU" CONTAINMENT AND FORMWORK

A METHOD TO CAPTURE WATER AND DEBRIS FROM BLOW THRU DURING HYDRO-DEMOLITION SHALL BE INSTALLED IN AREAS INDICATED AS CLASS III SURFACE PREPARATION.

SUBMIT DETAILS OF PROPOSED FORM WORK FOR APPROVAL PRIOR TO BEGINNING WORK.

COST FOR INSTALLING AND REMOVING FORM WORK SHALL BE INCIDENTAL TO THE PRICE PER SQ. YARD OF HYDRO-DEMOLITION.

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 12
SHEET 1 OF 10

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN VIEW OF BRIDGE #12, KIVETT DRIVE OVER SOUTHERN R.R.

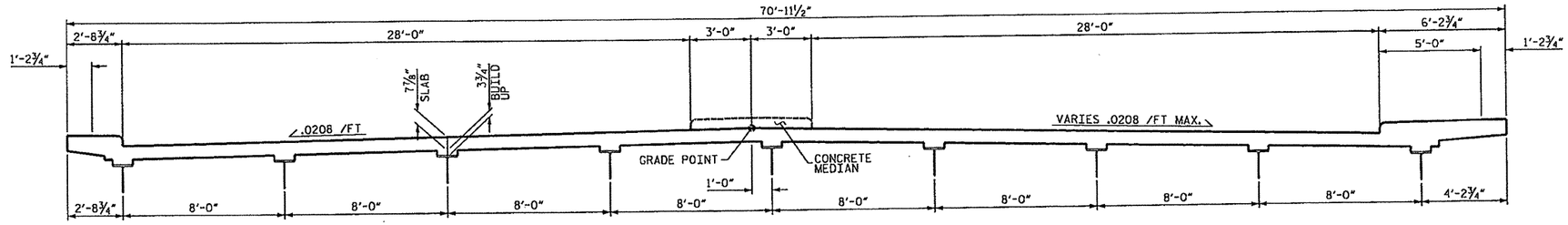
56' CL. ROADWAY

NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARZIN ASEFNIA 3/28/13

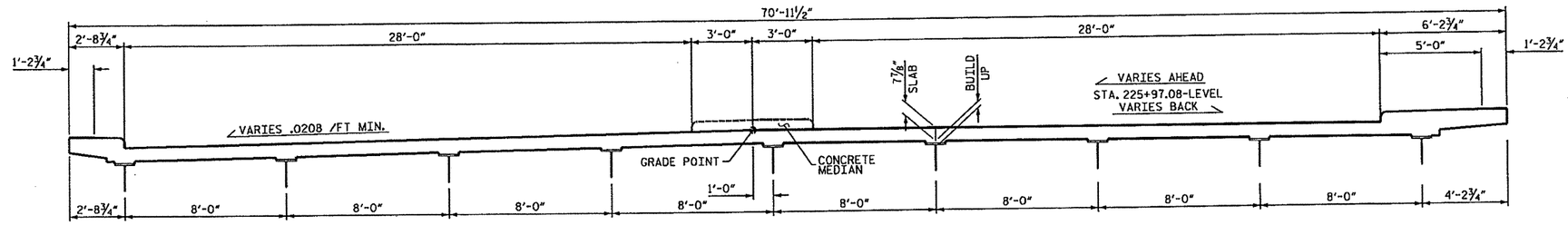
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-2
			3			TOTAL SHEETS
2			4			63

DRAWN BY: C. BRIGHT DATE: 10/12
CHECKED BY: F. ASEFNIA DATE: 10/12

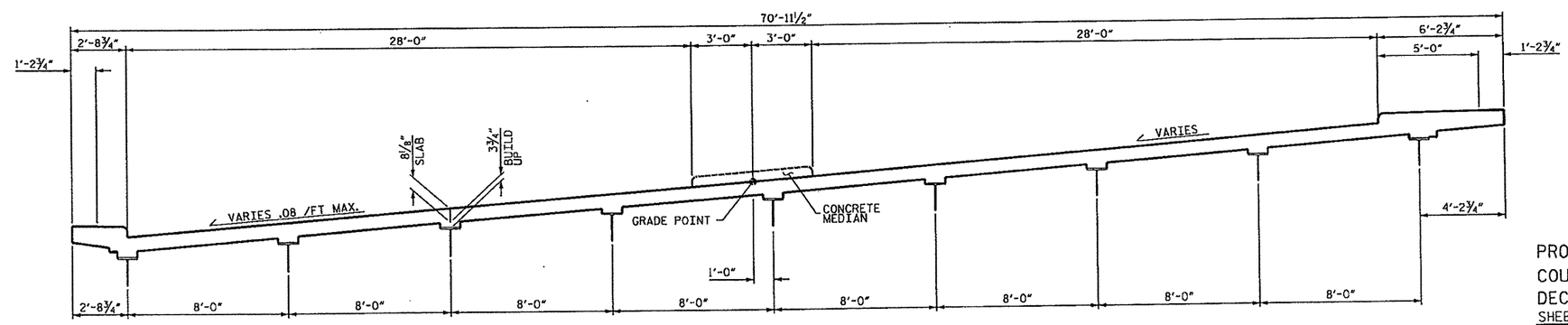
jayannaccone 28-MAR-2013 13:35



TYPICAL SECTION
(SPAN A)



TYPICAL SECTION
(SPANS B,C & D)



TYPICAL SECTION
(SPAN E)

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 12
SHEET 2 OF 10

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION

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

NORTH CAROLINA PROFESSIONAL SEAL 20003 ENGINEER FARZIN ASEFNIA

DRAWN BY: C. BRIGHT DATE: 10/12
CHECKED BY: F. ASEFNIA DATE: 10/12

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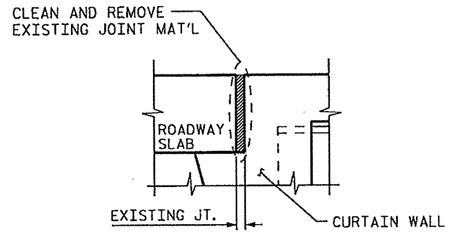
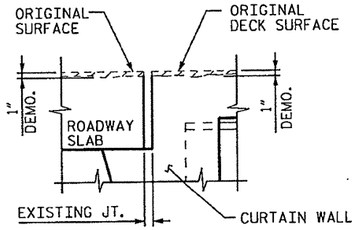
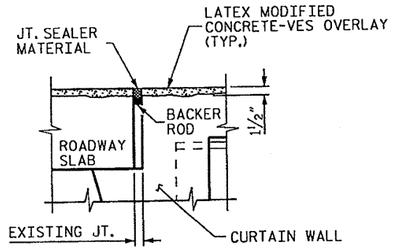


SECTION A-A
(EXISTING JOINT)



SECTION A-A
(MINIMUM EXISTING JOINT DEMOLITION)



SECTION A-A
(PROPOSED JOINT)

NOTES

FOR FOAM JOINT SEAL, SEE SPECIAL PROVISIONS.

THE INSTALLED FOAM JOINT SEALS SHALL BE WATERTIGHT.

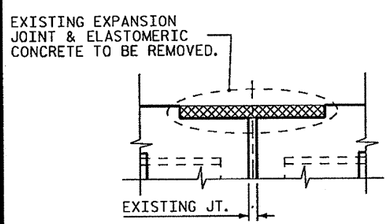
NOMINAL UNCOMPRESSED SEAL WIDTH OF FOAM JOINT SEAL SHALL BE 2" AT BENTS.

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

NOMINAL UNCOMPRESSED SEAL WIDTH OF FOAM JOINT SEAL FOR THE EXISTING JOINT IN THE CURB, MEDIAN AND SIDEWALK TO BE DETERMINED BY THE ENGINEER.

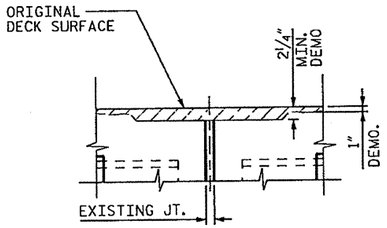
GRADE DIFFERENCE BETWEEN PROPOSED BRIDGE LMC OVERLAY AND EXISTING PAVEMENT SHALL BE ADJUSTED IN THE APPROACH SLAB OVERLAY. SEE SECTIONS A-A & C-C.

BACKER ROD SIZE TO BE DETERMINED BY THE ENGINEER.

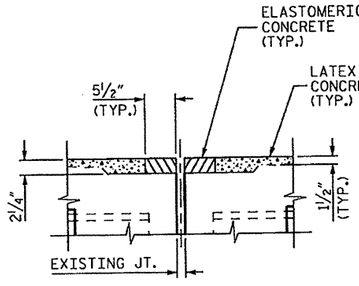


SECTION B-B
(EXISTING JOINT)

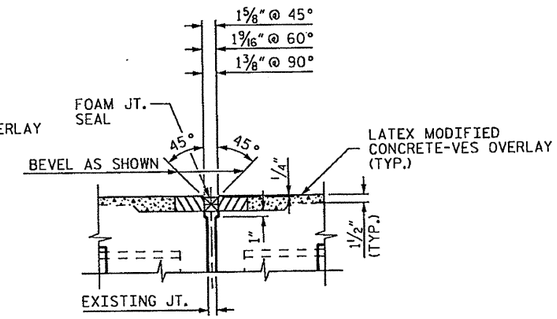
NOTE: RETAIN ALL EXISTING REINFORCING STEEL. CLEAN AND REPAIR AS NEEDED.



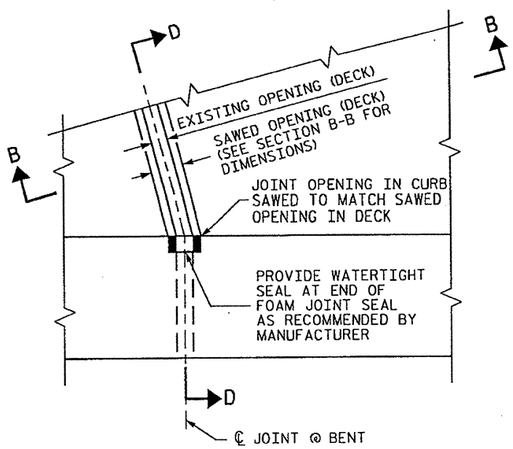
SECTION B-B
(PREPOSED JOINT
PRE-SAWED DIMENSIONS)



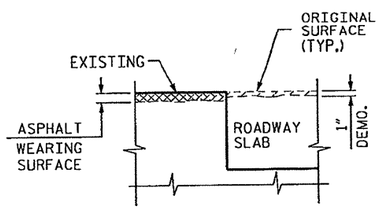
SECTION B-B
(PROPOSED JOINT
PRE-SAWED DIMENSIONS)



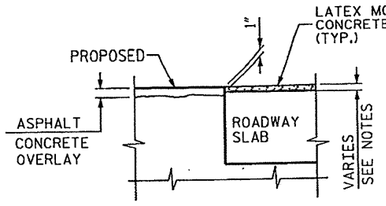
SECTION B-B
(PROPOSED FOAM JOINT SEAL EXPANSION)



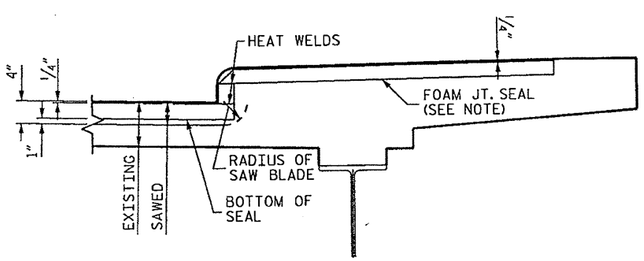
PLAN



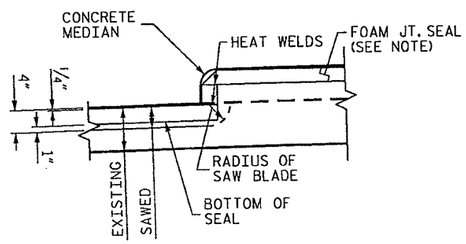
SECTION C-C
(MINIMUM EXISTING DEMOLITION)



SECTION C-C
(PROPOSED)



SECTION D-D



SECTION @ MEDIAN

ELASTOMERIC CONCRETE	
BENTS	39.3 (CU. FT.)
* TOTAL	39.3 (CU. FT.)

* BASED ON THE MINIMUM BLOCKOUT SHOWN.

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
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SHEET 3 OF 10

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

JOINT DETAILS

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

SHEET NO. S-4
TOTAL SHEETS 63

DRAWN BY: C. BRIGHT DATE: 10/12
CHECKED BY: F. ASEFNIA DATE: 10/12

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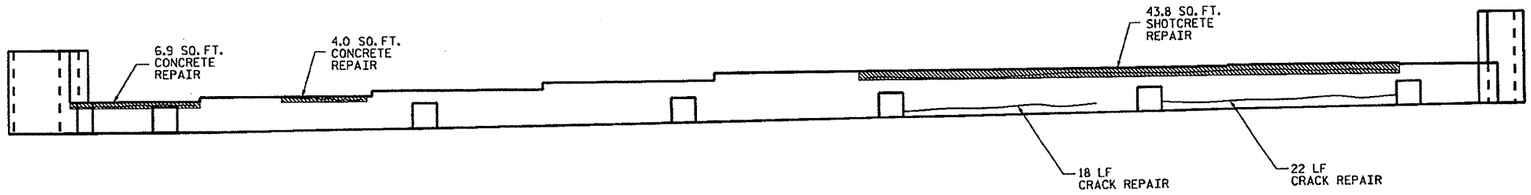
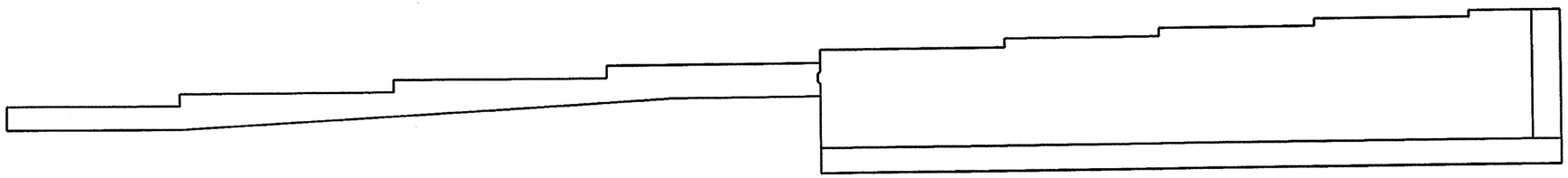


END BENT 1



END BENT 2*

* NO DAMAGE OBSERVED ON BENT 2, HOWEVER IF SOME DAMAGE IS FOUND BY THE ENGINEER SEE NOTE ON THIS SHEET CONCERNING ADDITIONAL REPAIRS.

REPAIR QUANTITY TABLE				
REPAIRS END BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL)	0	0		
CAP (HORIZONTAL, CORNER)	0	0		
TOP OF CAP	43.8	27.5		
PILE CAP	0	0		
CONCRETE REPAIRS	10.9	7.0		
EPOXY RESIN INJECTION		LN. FT		LN. FT
CAP (VERTICAL, FACE)		40		
PILE CAP		0		
EPOXY COATING		SQ. FT		SQ. FT
TOP OF CAP AND PILE CAPS		230		

REPAIR QUANTITY TABLE				
REPAIRS END BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL)	0	0		
CAP (HORIZONTAL, CORNER)	0	0		
TOP OF CAP	0	0		
PILE CAP	0	0		
CONCRETE REPAIRS	0	0		
EPOXY RESIN INJECTION		LN. FT		LN. FT
CAP (VERTICAL, FACE)		0		
PILE CAP		0		
EPOXY COATING		SQ. FT		SQ. FT
TOP OF CAP AND PILE CAPS		0		

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.

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

FOR STRUCTURE REPAIRS, SEE SHEET S-10.

EPOXY COATING SHALL BE APPLIED TO THE TOP FACE OF THE CAP AND PILE CAPS AT END BENT 1.

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 12
SHEET 4 OF 10

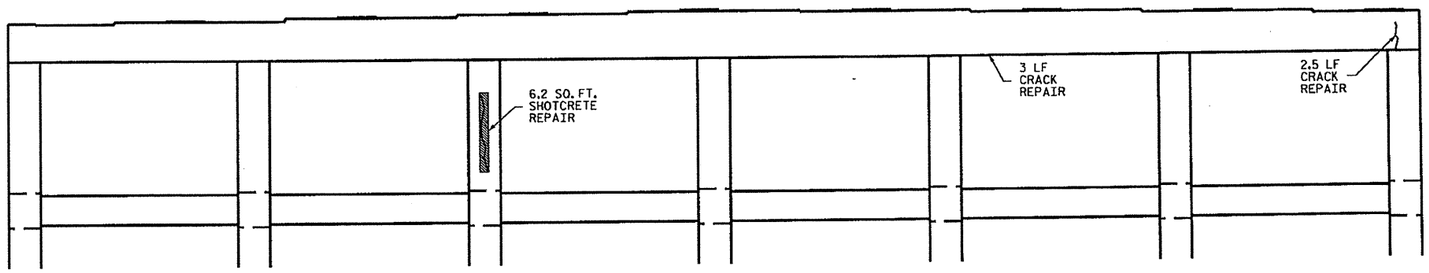
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

END BENTS

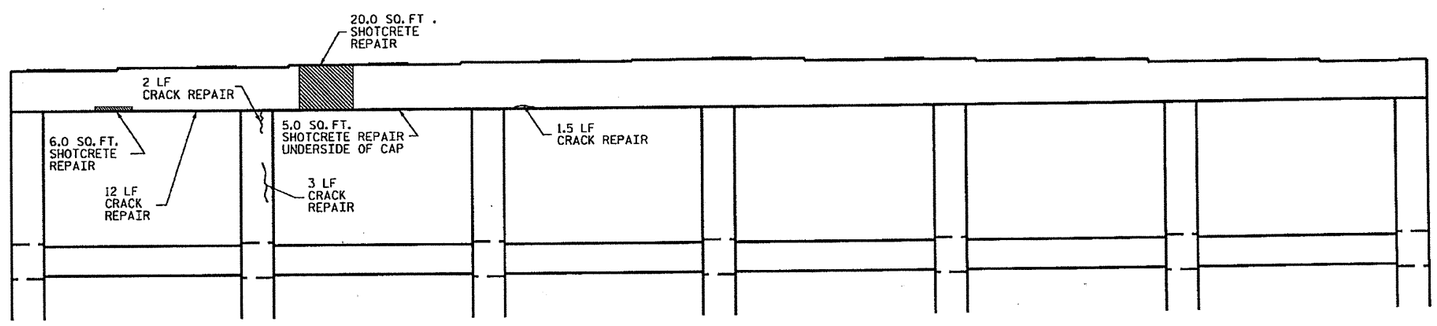
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 20103 FARZIN ASEFNIA 3/28/13

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-5
1			3			TOTAL SHEETS
2			4			63

DRAWN BY: C. BRIGHT DATE: 10/12
CHECKED BY: F. ASEFNIA DATE: 10/12



SPAN 'B' FACE



SPAN 'A' FACE

REPAIR QUANTITY TABLE

REPAIRS BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	20.0	9.0		
CAP (HORIZONTAL, CORNER)	11.0	7.0		
COLUMN	6.2	4.0		
STRUT (VERTICAL FACE)	0	0		
STRUT (HORIZONAL, CORNER)	0	0		
EPOXY RESIN INJECTION		LN. FT		LN. FT
CAP		19		
COLUMN		5		
STRUT		0		
EPOXY COATING		SQ. FT		SQ. FT
TOP FACE OF CAP		395		

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

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

FOR STRUCTURE REPAIRS, SEE SHEET S-10.

EPOXY COATING SHALL BE APPLIED TO THE TOP FACE OF THE CAP AT BENT 1.

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 12
SHEET 5 OF 10

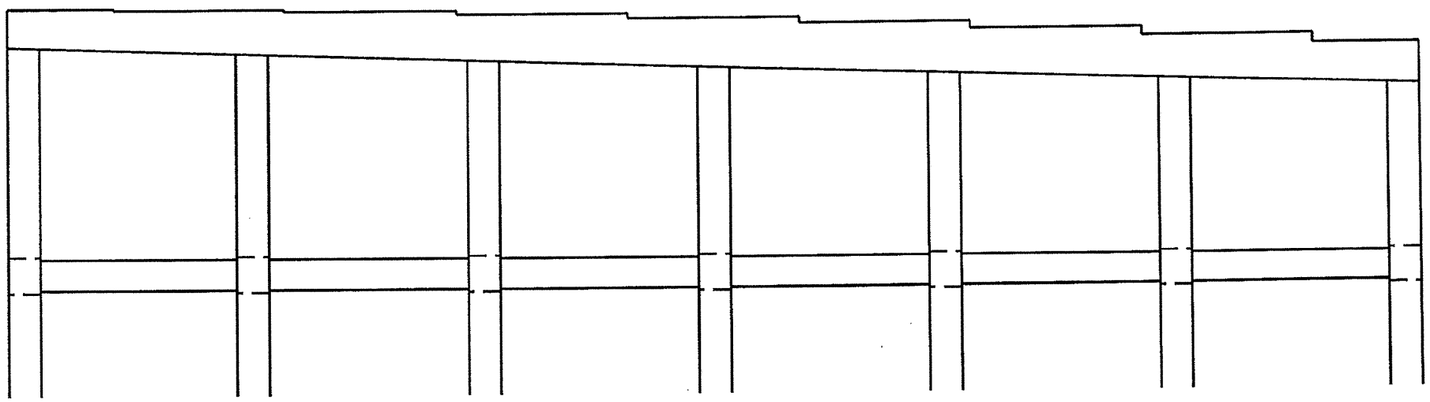
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 1

NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARZIN ASEFNIA
12/23/13

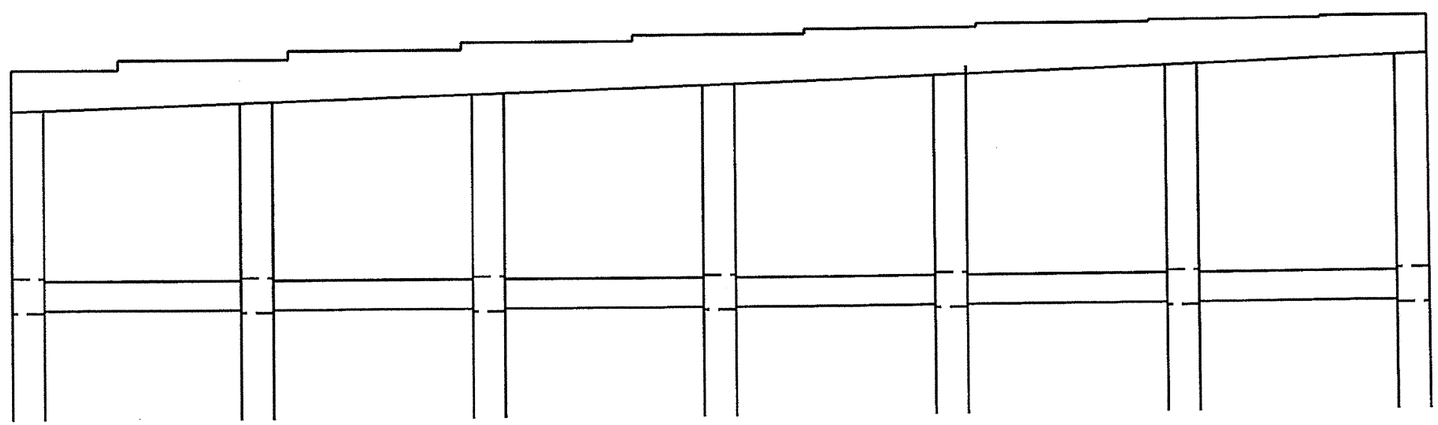
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-6
1			3			TOTAL SHEETS
2			4			63

DRAWN BY: C. BRIGHT DATE: 10/12
CHECKED BY: F. ASEFNIA DATE: 10/12



SPAN 'C' FACE*

* NO DAMAGE OBSERVED ON BENT 2, HOWEVER IF SOME DAMAGE IS FOUND BY THE ENGINEER SEE NOTE ON THIS SHEET CONCERNING ADDITIONAL REPAIRS.



SPAN 'B' FACE*

REPAIR QUANTITY TABLE

REPAIRS BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	0	0		
CAP (HORIZONTAL, CORNER)	0	0		
COLUMN	0	0		
STRUT (VERTICAL FACE)	0	0		
STRUT (HORIZONAL, CORNER)	0	0		
EPOXY RESIN INJECTION		LN. FT		LN. FT
CAP		0		
COLUMN		0		
STRUT		0		

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

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

NORTH CAROLINA PROFESSIONAL SEAL 040103 ENGINEER FARZIN ASEFNIA 10/26/13

DRAWN BY: C. BRIGHT DATE: 10/12
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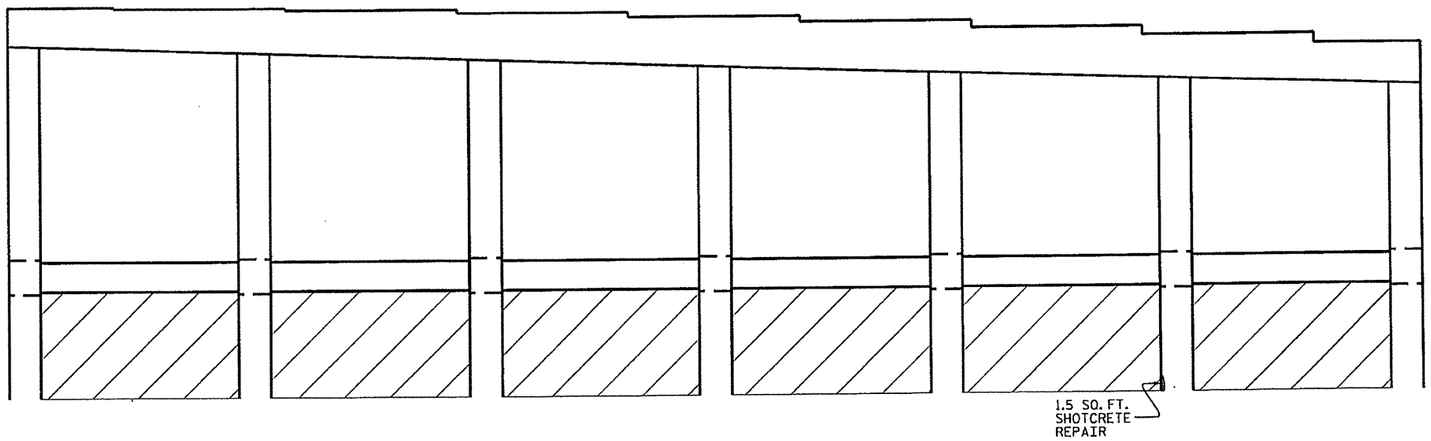
PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 12
SHEET 6 OF 10

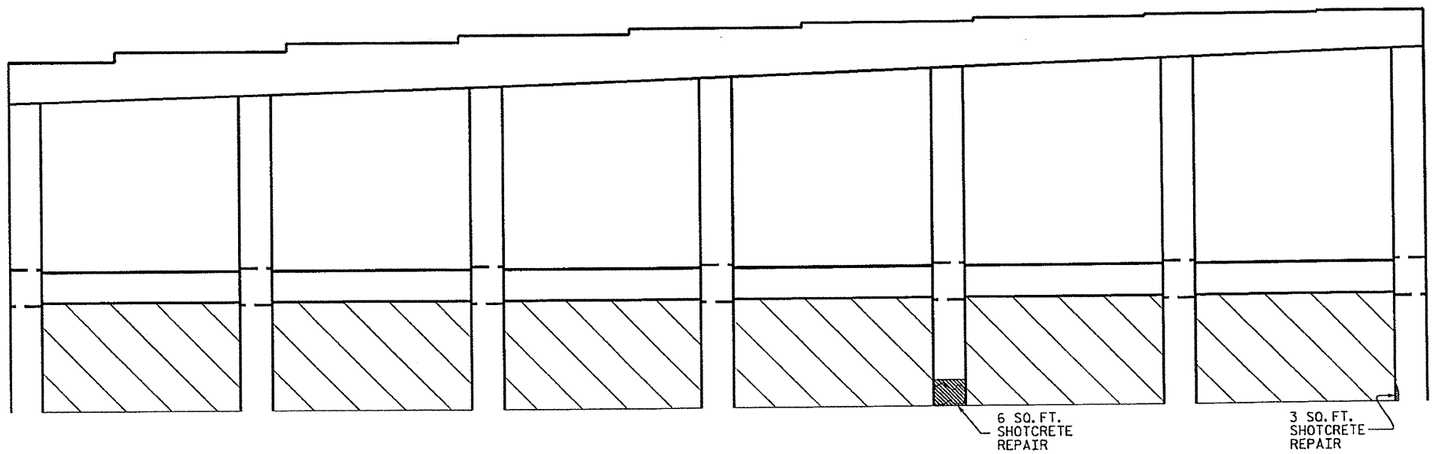
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 2

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-7
1			3			TOTAL SHEETS
2			4			63



SPAN 'D' FACE



SPAN 'C' FACE

REPAIR QUANTITY TABLE

REPAIRS BENT 3	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	0	0		
CAP (HORIZONTAL, CORNER)	0	0		
COLUMN	10.5	6.5		
STRUT (VERTICAL FACE)	0	0		
STRUT (HORIZONAL, CORNER)	0	0		
EPOXY RESIN INJECTION		LN. FT		LN. FT
CAP		0		
COLUMN		0		
STRUT		0		

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

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

FOR STRUCTURE REPAIRS, SEE SHEET S-10.

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 12
SHEET 7 OF 10

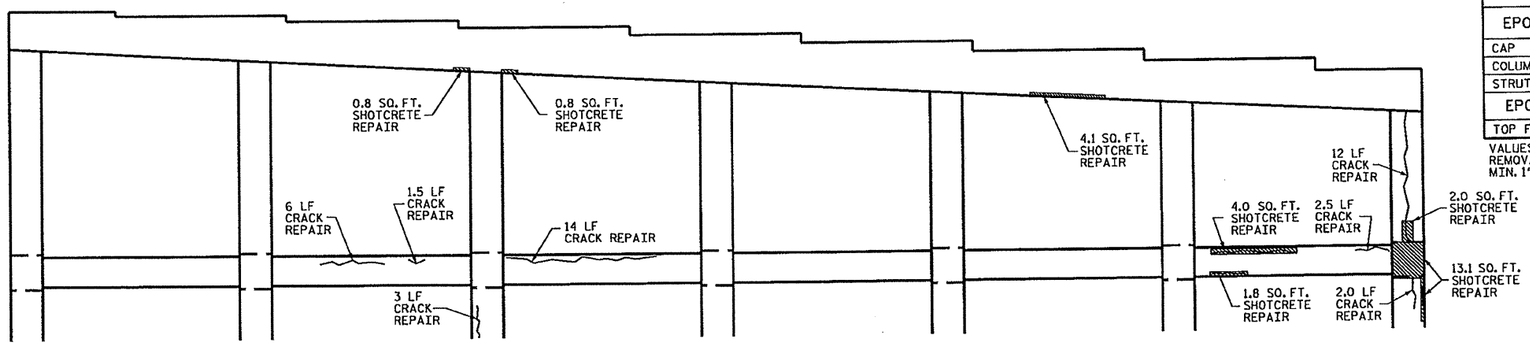
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 3

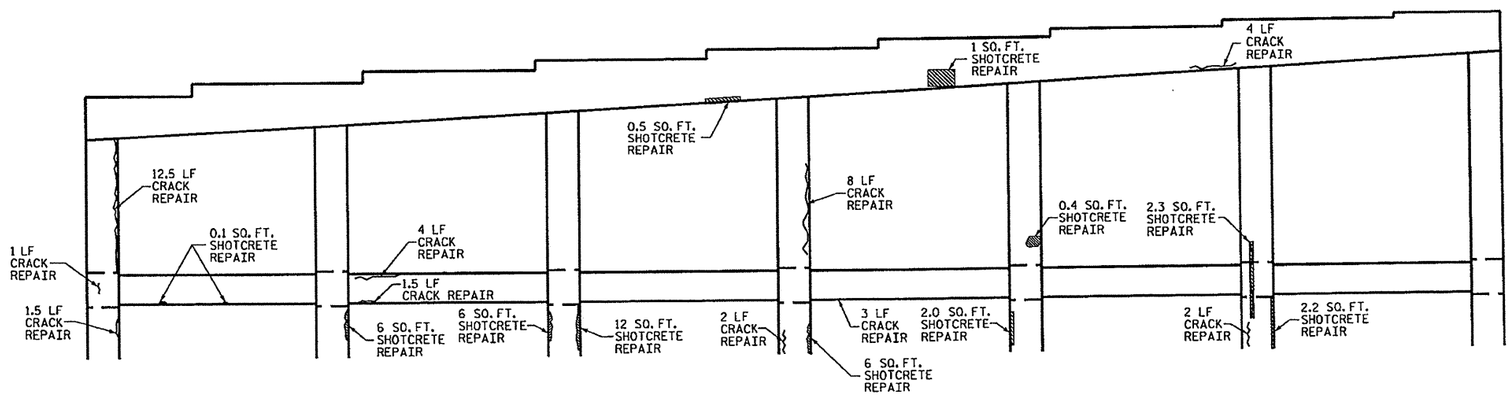
NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARZIN ASEFNIA

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-8
1			3			TOTAL SHEETS
2			4			63

DRAWN BY: C. BRIGHT DATE: 10/12
CHECKED BY: F. ASEFNIA DATE: 10/12



SPAN 'E' FACE



SPAN 'D' FACE

REPAIR QUANTITY TABLE

REPAIRS BENT 4	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	1.0	0.5		
CAP (HORIZONTAL, CORNER)	6.2	4		
COLUMN	52.0	33		
STRUT (VERTICAL FACE)	0	0		
STRUT (HORIZONAL, CORNER)	6.0	4		
EPOXY RESIN INJECTION		LN. FT		LN. FT
CAP		4.0		
COLUMN		44.0		
STRUT		32.5		
EPOXY COATING		SQ. FT		SQ. FT
TOP FACE OF CAP		395		

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

NOTE:
REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE INSPECTOR OR ENGINEER THE ENGINEER SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

FOR STRUCTURE REPAIRS, SEE SHEET S-10.

EPOXY COATING SHALL BE APPLIED TO THE TOP FACE OF THE CAP AT BENT 4.

DRAWN BY: C. BRIGHT DATE: 10/12
CHECKED BY: F. ASEFNIA DATE: 10/12

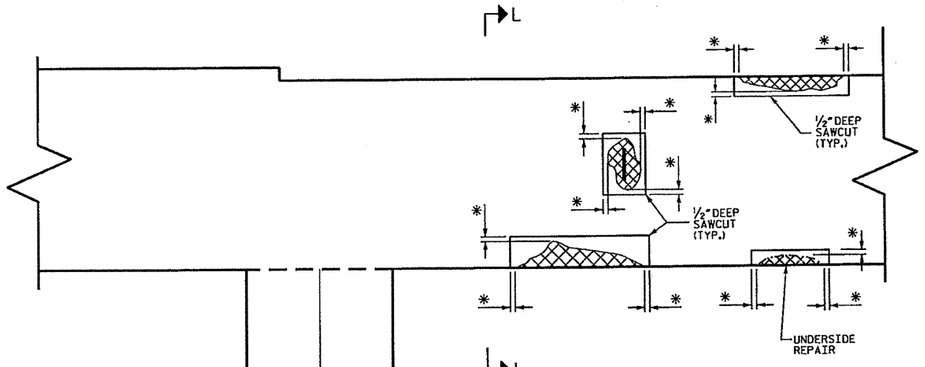
NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARZIN ASEFNIA

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 12
SHEET 8 OF 10

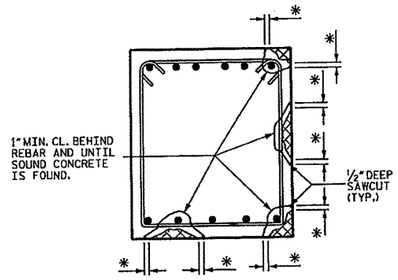
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 4

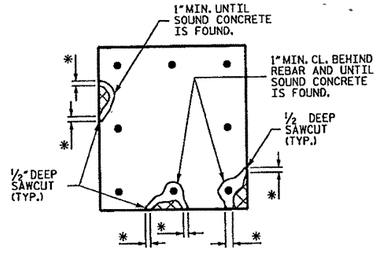
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-9
1			3			TOTAL SHEETS
2			4			63



BENT CAP & COLUMN REPAIR DETAIL

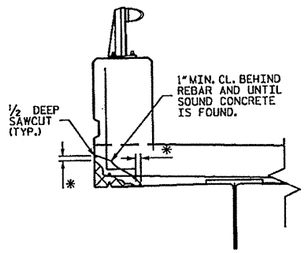


SECTION L-L

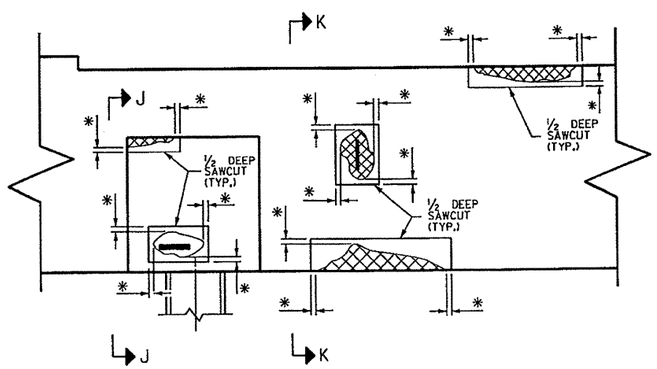


SECTION M-M

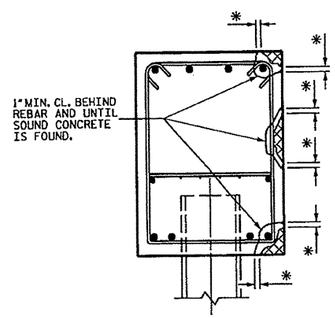
* CONCRETE SHALL BE REMOVED UNTIL SOUND CRETE IS FOUND. MIN. OF 1"



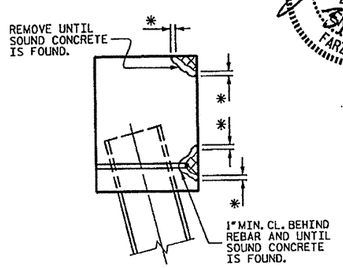
OVERHANG REPAIR DETAIL



END BENT CAP REPAIR DETAIL



SECTION K-K



SECTION J-J

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

DAMAGED AREA

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 12
SHEET 9 OF 10

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CAP & COLUMN REPAIR DETAILS

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-10
1			3			TOTAL SHEETS
2			4			63

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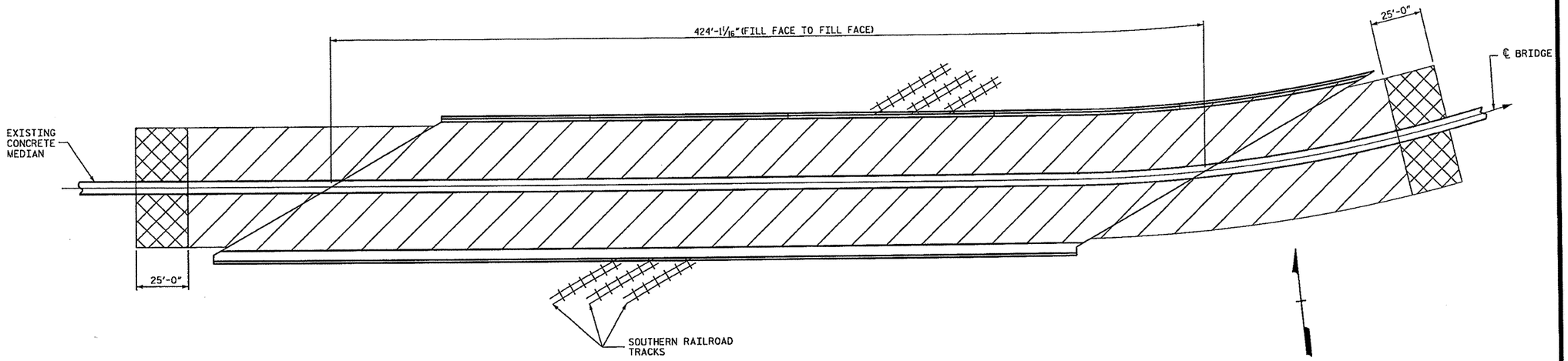
TO CENTENNIAL ST

TO COLLEGE DR



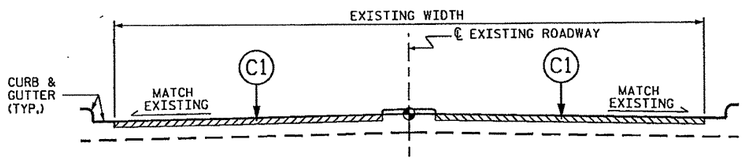
PLAN

** DISTANCE TO BE FIELD DETERMINED BY THE ENGINEER

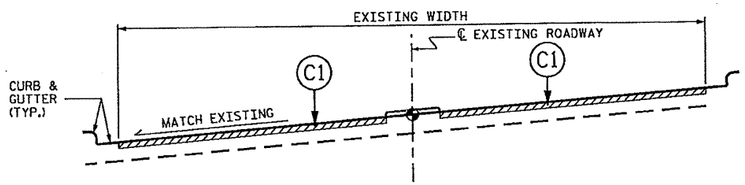
DECK SCARIFICATION AND HYDRODEMOLITION

INCIDENTAL MILLING

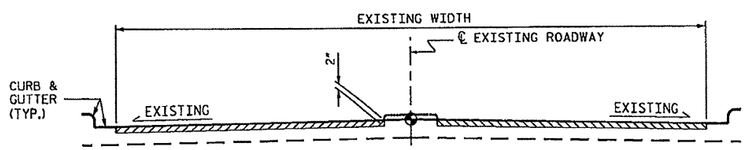
C1	PROPOSED VARIABLE DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF 9.5A AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1" IN DEPTH OR GREATER THAN 1½" IN DEPTH.



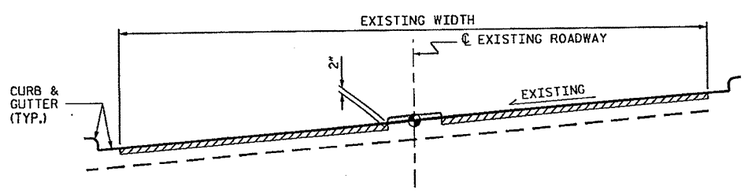
TYPICAL ROADWAY SECTION
(WEST BRIDGE APPROACH)



TYPICAL ROADWAY SECTION
(EAST BRIDGE APPROACH)



TYPICAL ROADWAY MILLING SECTION
(WEST BRIDGE APPROACH)
(MILL TO 2" DEPTH)



TYPICAL ROADWAY MILLING SECTION
(EAST BRIDGE APPROACH)
(MILL TO 2" DEPTH)

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 12
SHEET 10 OF 10

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN VIEW OF BRIDGE #12, KIVETT DRIVE OVER SOUTHERN R.R.

56' CL. ROADWAY

NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARZIN ASEFNIA 5/28/13

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-11
1			3			TOTAL SHEETS
2			4			63

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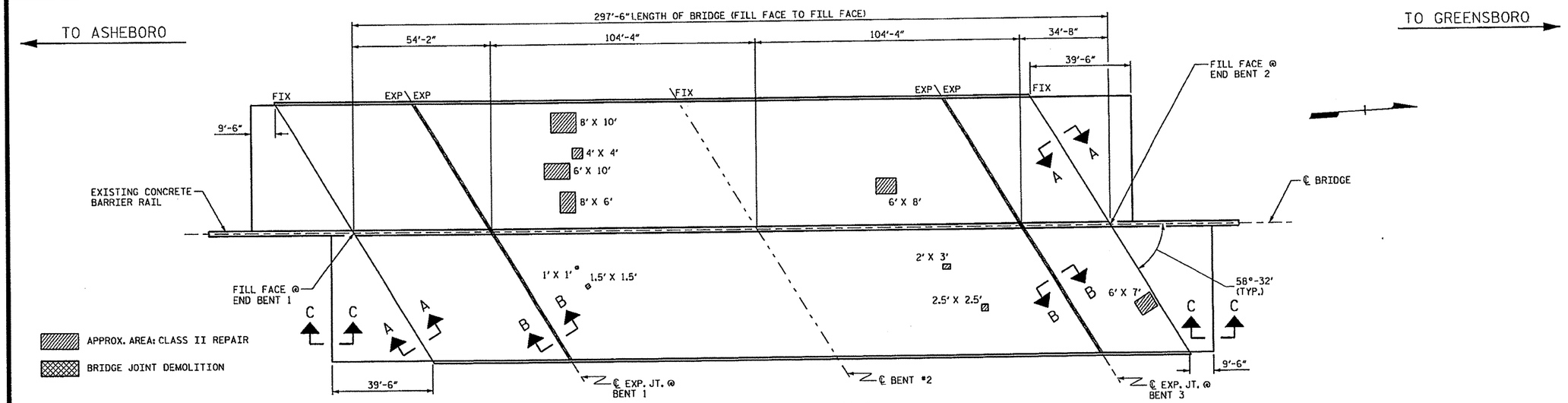


PLAN OF SPANS

NOTES

EXISTING JOINTS AND DECK DRAINS SHALL BE SEALED PRIOR TO BEGINNING SURFACE PREPARATION OF BRIDGE DECK.

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

INCIDENTAL MILLING IS INCLUDED TO ENSURE A SMOOTH TRANSITION ONTO THE BRIDGE FLOOR. DIMENSIONS SHOWN ARE APPROXIMATE. CONTRACTOR SHALL MILL AS REQUIRED TO PROVIDE A SMOOTH TRANSITION TO THE ROADWAY AT BOTH ENDS OF BRIDGE.

THE CONTRACTOR SHALL PROVIDE A METHOD OF HANDLING UNEXPECTED BLOW THROUGH OF THE DECK, SEE "TYPICAL "BLOW THRU" CONTAINMENT AND FORMWORK" DETAIL.

THE CONTRACTOR MUST COLLECT, TREAT AND DISPOSE OF RUN-OFF WATER FROM THE HYDRO-DEMOLITION PROCESS, SEE MANAGING HYDRO-DEMOLITION WATER SPECIAL PROVISION.

FOR OVERLAY SURFACE PREPARATION, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR SCARIFYING BRIDGE DECK, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

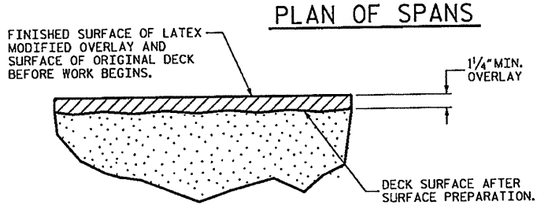
FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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

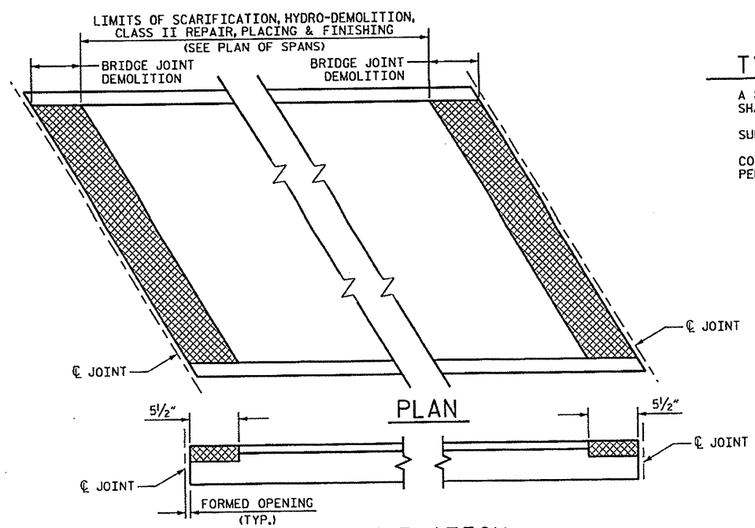
FOR CONTROL OF TRAFFIC AND LIMITS ON PHASING OF CONSTRUCTION, SEE TRANSPORTATION MANAGEMENT PLAN SHEETS.

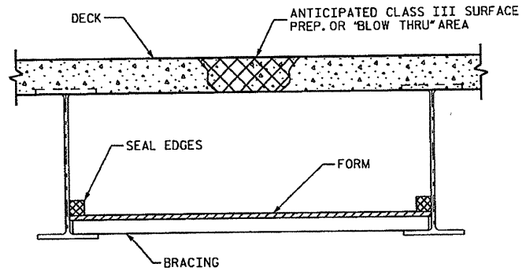
LONGITUDINAL CONSTRUCTION JOINTS OF OVERLAYS SHALL BE LOCATED ALONG THE CENTERLINE OR EDGE OF TRAVEL LANES.

DURING CONSTRUCTION, BERMS OR APPROPRIATE MEASURES SHALL BE USED TO ENSURE HYDRO-DEMOLITION WATER DOES NOT FLOW OR MIGRATE INTO ACTIVE TRAVEL LANES.



DETAIL FOR LATEX MODIFIED CONCRETE OVERLAY





TYP. "BLOW THRU" CONTAINMENT AND FORMWORK

A METHOD TO CAPTURE WATER AND DEBRIS FROM BLOW THRU DURING HYDRO-DEMOLITION SHALL BE INSTALLED IN AREAS INDICATED AS CLASS III SURFACE PREPARATION.

SUBMIT DETAILS OF PROPOSED FORM WORK FOR APPROVAL PRIOR TO BEGINNING WORK.

COST FOR INSTALLING AND REMOVING FORM WORK SHALL BE INCIDENTAL TO THE PRICE PER SQ. YARD OF HYDRO-DEMOLITION.

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 15
SHEET 1 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN VIEW OF BRIDGE #15, ON US 220 OVER I -85

100' CL. ROADWAY SKEW 58°-32'

NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARZIN ASEFNIA 3/28/13

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-12
1			3			TOTAL SHEETS
2			4			63

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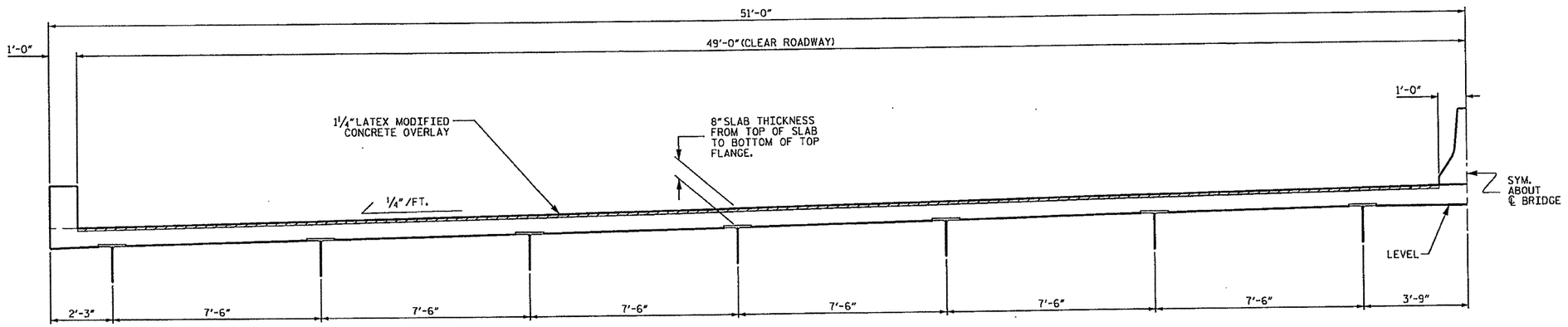
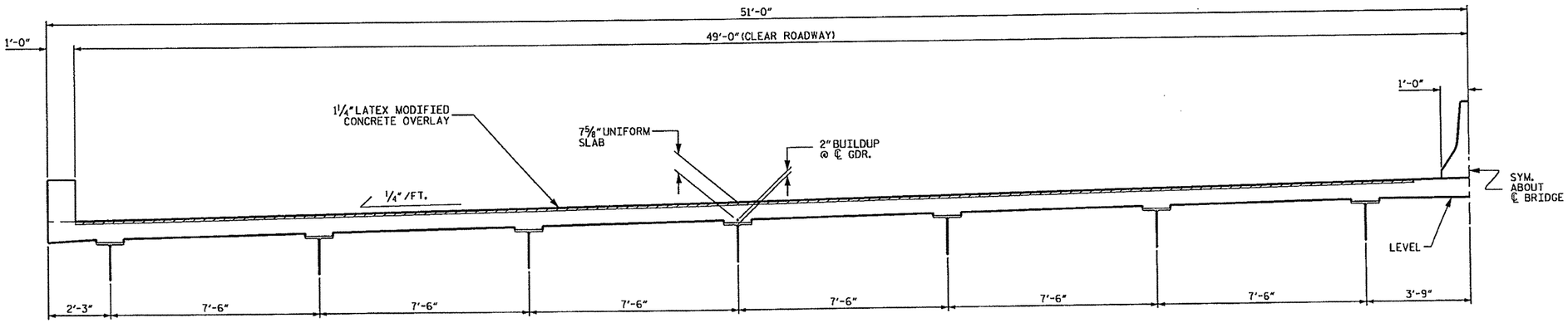


TYPICAL SECTION
(SPANS A & D)



TYPICAL SECTION
(SPANS B & C)

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 15
SHEET 2 OF 9

STATE OF NORTH CAROLINA
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RALEIGH

TYPICAL SECTION

NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARZIN ASEFNIA 3/28/13

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-13
1			3			TOTAL SHEETS
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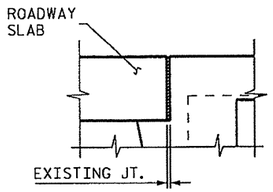
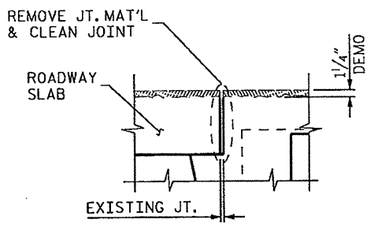
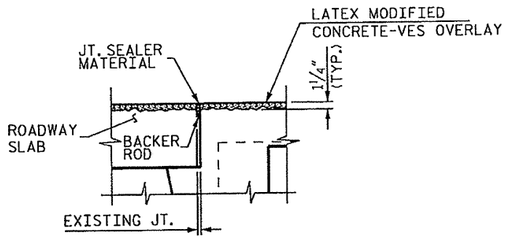


SECTION A-A
(EXISTING JOINT)



SECTION A-A
(PROPOSED JOINT)



SECTION A-A
(PROPOSED JOINT)

NOTES

FOR FOAM JOINT SEAL, SEE SPECIAL PROVISIONS.

THE INSTALLED FOAM JOINT SEALS SHALL BE WATERTIGHT.

NOMINAL UNCOMPRESSED SEAL WIDTH OF FOAM JOINT SEAL SHALL BE 2½" AT BENTS.

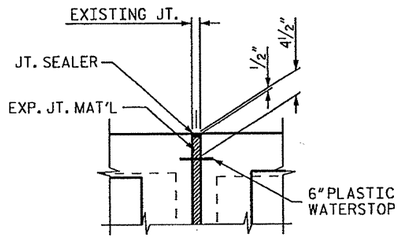
THE CONTRACTOR WILL NOT BE PERMITTED TO FORM THE JOINT FOR THE FOAM JOINT SEAL IN LIEU OF SAWING THE JOINT.

THE BACKER ROD SIZE SHALL BE DETERMINED BY THE ENGINEER.

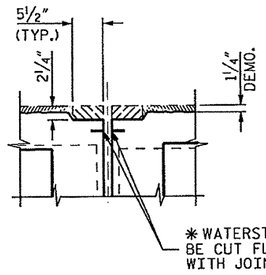
ELASTOMERIC CONCRETE		
BENTS	40.3	(CU. FT.)
* TOTAL	40.3	(CU. FT.)

*BASED ON THE MINIMUM BLOCKOUT SHOWN.

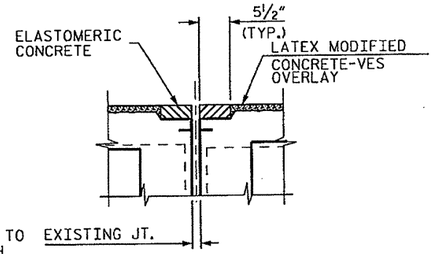
* ALL LOOSE AND UNSOUND CONCRETE SHALL BE REMOVED. IF THE EMBEDDED PORTION OF THE EXISTING WATERSTOP IS EXPOSED DURING REMOVAL, THE ENTIRE WATERSTOP SHALL BE REMOVED.



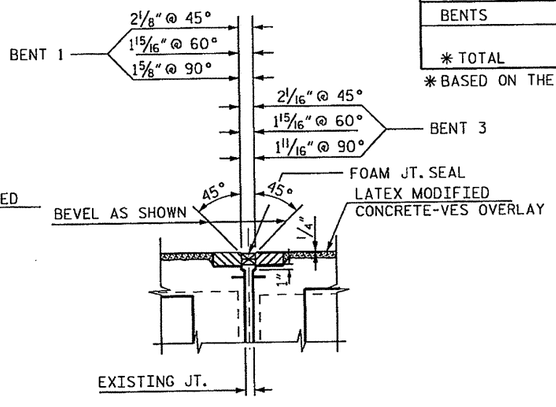
SECTION B-B
(EXISTING JOINT)



SECTION B-B
(MINIMUM EXISTING JOINT DEMOLITION)

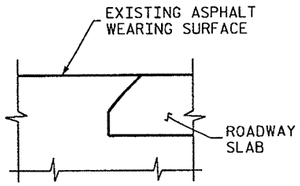


SECTION B-B
(PROPOSED JOINT
PRE-SAWED DIMENSIONS)

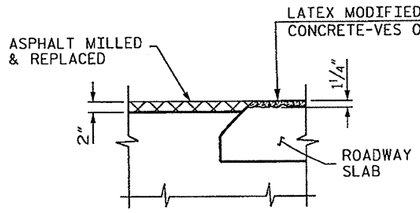


SECTION B-B
(PROPOSED FOAM
JOINT SEAL EXPANSION)

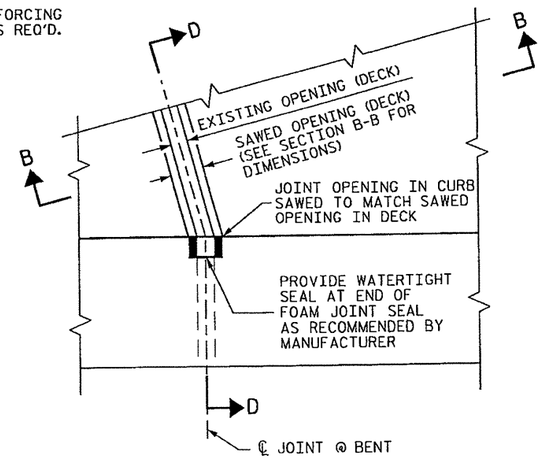
NOTE: RETAIN ALL EXISTING REINFORCING STEEL. CLEAN AND REPAIR AS REQ'D.



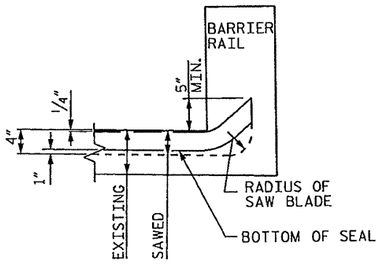
SECTION C-C
(EXISTING JOINT)



SECTION C-C
(PROPOSED JOINT)



PLAN



SECTION D-D

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 15
SHEET 3 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

JOINT DETAILS

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-14
1			3			TOTAL SHEETS
2			4			63

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 2010 FARZIN ASEFNIA 4/23/13

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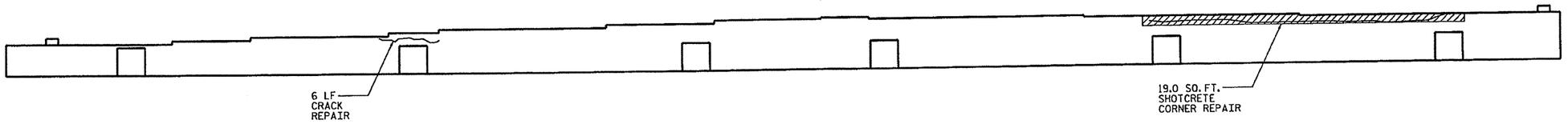
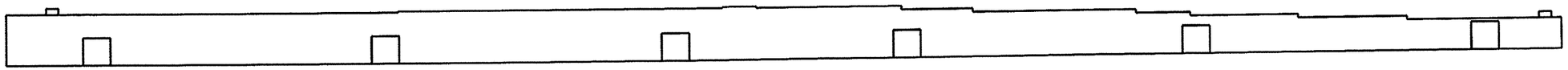


END BENT 1

ESTIMATED REPAIR AREA



END BENT 2*

* NO DAMAGE OBSERVED ON END BENT 2. HOWEVER IF SOME DAMAGE IS FOUND BY THE ENGINEER, SEE NOTE ON THIS SHEET CONCERNING ADDITIONAL REPAIRS.

NOTE:

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

FOR STRUCTURE REPAIRS, SEE SHEET S-19.

EPOXY COATIING SHALL BE APPLIED TO THE TOP FACE OF THE CAP AND PILE CAPS AT END BENT 1.

REPAIR QUANTITY TABLE

REPAIRS END BENT 1	QUANTITIES				
	ESTIMATE		ACTUAL		
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	DEPTH FT	VOLUME CF
CAP (VERTICAL)	0	0			
CAP (HORIZONTAL, CORNER)	19.0	12.0			
PILE CAP	0	0			
EPOXY RESIN INJECTION		LN. FT			LN. FT
CAP (VERTICAL, FACE)		6			
PILE CAP		0			
EPOXY COATING	215 SQ. FT.				

REPAIR QUANTITY TABLE

REPAIRS END BENT 2	QUANTITIES				
	ESTIMATE		ACTUAL		
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	DEPTH FT	VOLUME CF
CAP (VERTICAL)	0	0			
CAP (HORIZONTAL, CORNER)	0	0			
PILE CAP	0	0			
EPOXY RESIN INJECTION		LN. FT			LN. FT
CAP (VERTICAL, FACE)		0			
PILE CAP		0			

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.

DRAWN BY: C BRIGHT DATE: 10/12
CHECKED BY: F. ASEFNIA DATE: 10/12

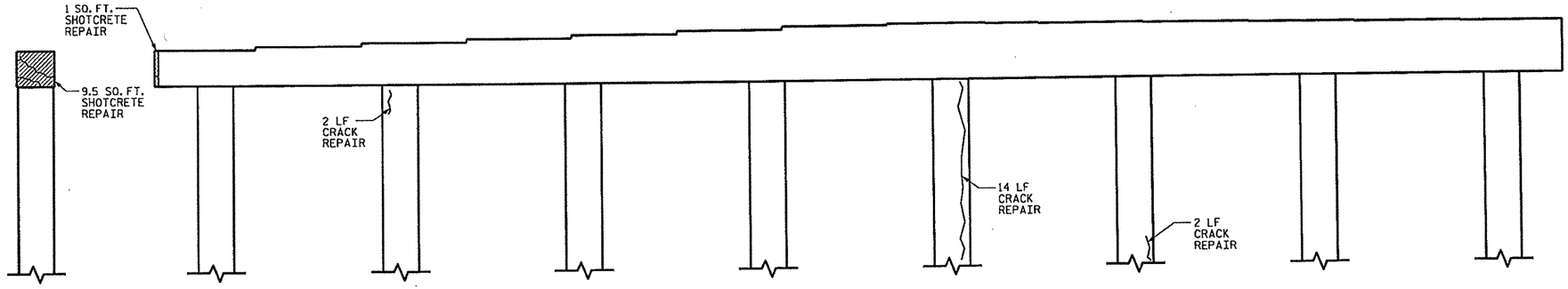
NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARZIN ASEFNIA 12/23/13

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 15
SHEET 4 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

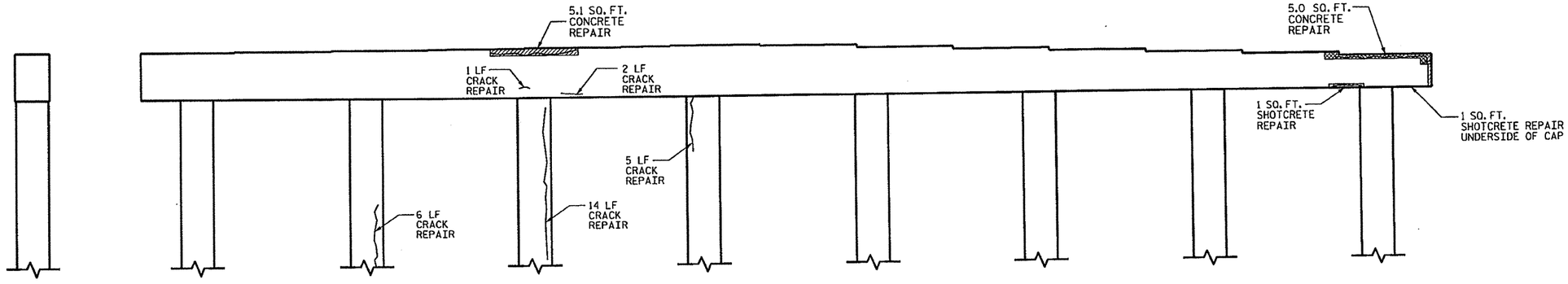
END BENTS

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-15
1			3			TOTAL SHEETS
2			4			63



EAST END

NORTH FACE



WEST END

SOUTH FACE

REPAIR QUANTITY TABLE

REPAIRS BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	9.5	4.0		
CAP (HORIZONTAL, CORNER)	3.0	2.0		
COLUMN (VERTICAL FACE)	0	0		
COLUMN (HORIZONAL, CORNER)	0	0		
CONCRETE REPAIRS	10.1	5.0		
EPOXY RESIN INJECTION		LN. FT		LN. FT
CAP		3		
COLUMN		43		
EPOXY COATING	375 SQ. FT.			

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

NOTE:

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

FOR STRUCTURE REPAIRS, SEE SHEET S-19.

EPOXY COATING SHALL BE APPLIED TO THE TOP FACE OF THE CAP AT BENT 1.

NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARHIN ASEFNIA 8/23/12

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 15
SHEET 5 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 1

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-16
1			3			TOTAL SHEETS
2			4			63

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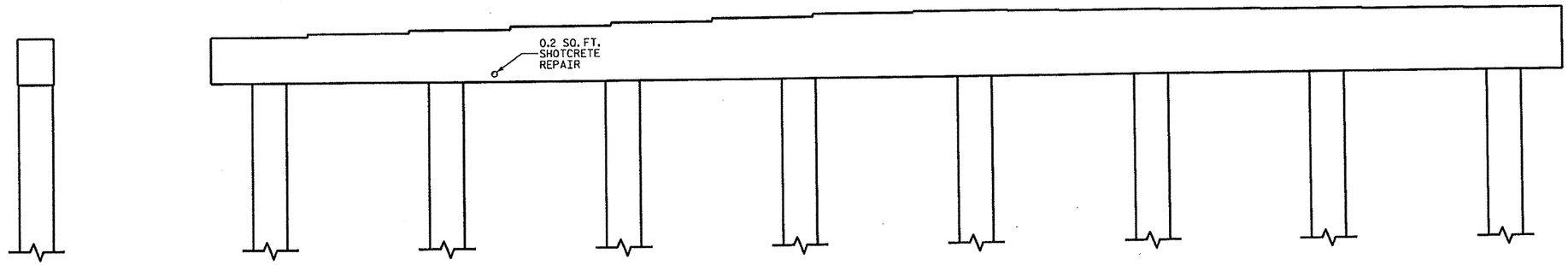
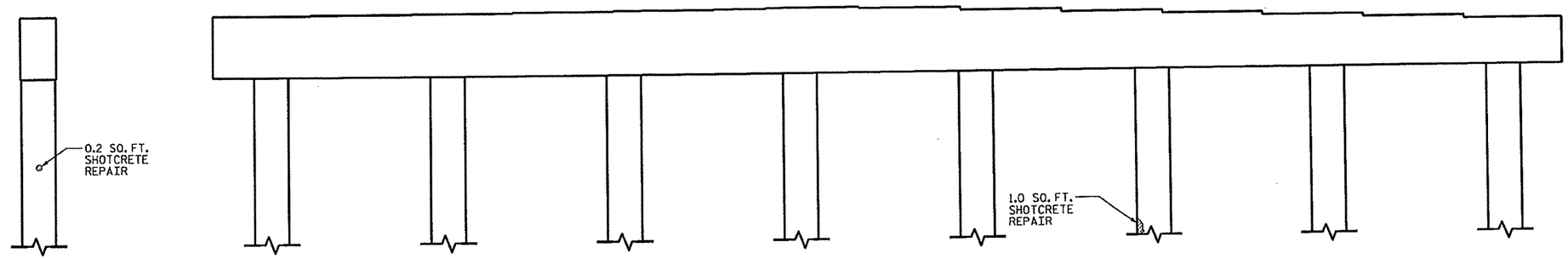


EAST END

NORTH FACE



WEST END

SOUTH FACE

REPAIR QUANTITY TABLE

REPAIRS BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	0.2	0.5		
CAP (HORIZONTAL, CORNER)	0	0		
COLUMN (VERTICAL FACE)	1.2	1.0		
COLUMN (HORIZONAL, CORNER)	0	0		
EPOXY RESIN INJECTION		LN. FT		LN. FT
CAP		0		
COLUMN		0		

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

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

FOR STRUCTURE REPAIRS, SEE SHEET S-19.

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 15
SHEET 6 OF 9

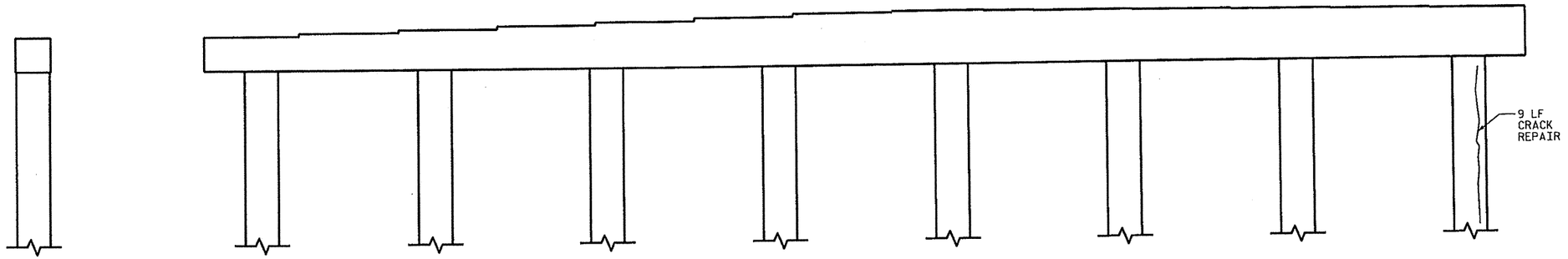
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 2

NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARZIN ASEFNIA

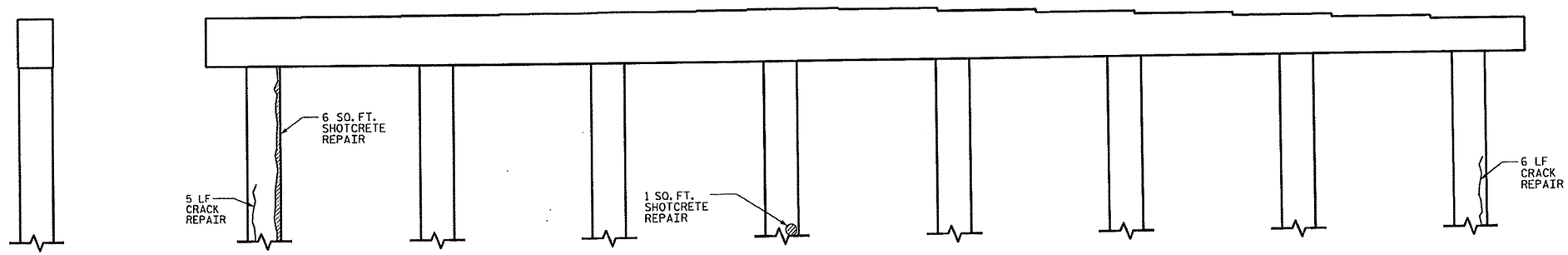
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-17
1			3			TOTAL SHEETS
2			4			63

DRAWN BY: C BRIGHT DATE: 02/12
CHECKED BY: F. ASEFNIA DATE: 10/12



EAST END

NORTH FACE



WEST END

SOUTH FACE

REPAIR QUANTITY TABLE

REPAIRS BENT 3	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	0	0		
CAP (HORIZONTAL, CORNER)	0	0		
COLUMN (VERTICAL FACE)	7.0	4.0		
COLUMN (HORIZONAL, CORNER)	0	0		
EPOXY RESIN INJECTION		LN. FT		LN. FT
CAP		0		
COLUMN		20		

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

NOTE:
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FOR STRUCTURE REPAIRS, SEE SHEET S-19.

NORTH CAROLINA PROFESSIONAL SEAL 039265 ENGINEER FARZIN ASEFNIA 2013

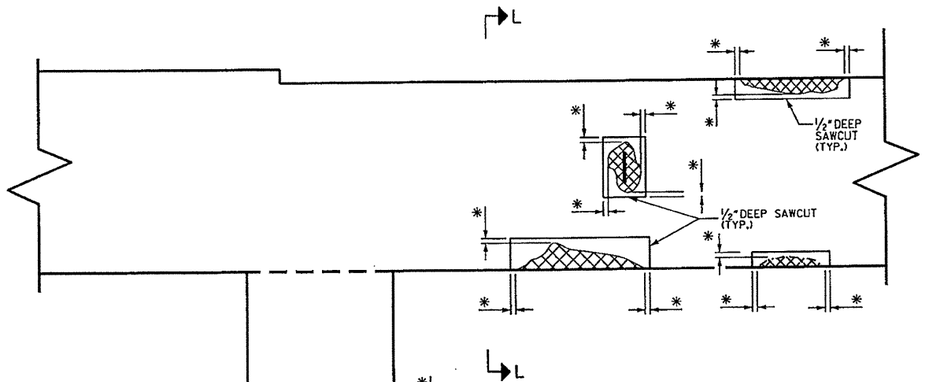
PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 15
SHEET 7 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

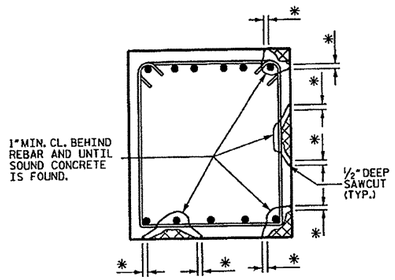
BENT 3

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-18
1			3			TOTAL SHEETS
2			4			63

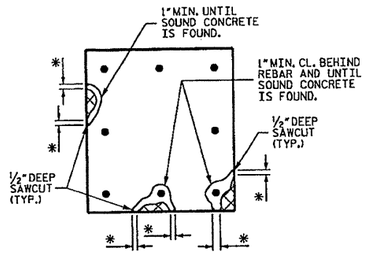
DRAWN BY: C BRIGHT DATE: 02/12
CHECKED BY: F. ASEFNIA DATE: 10/12



BENT CAP & COLUMN REPAIR DETAIL

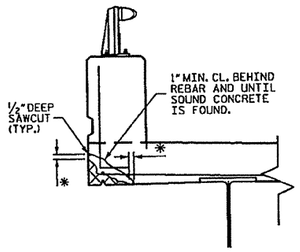


SECTION L-L

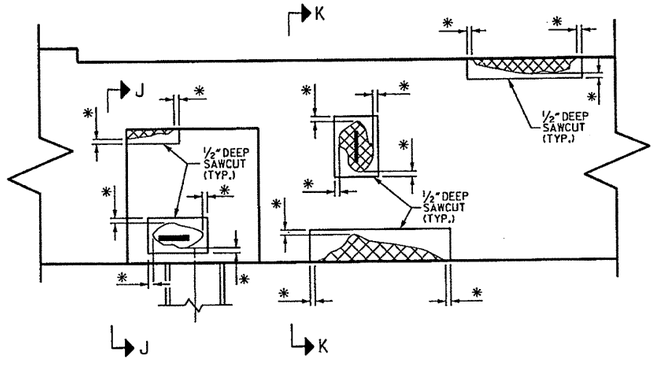


SECTION M-M

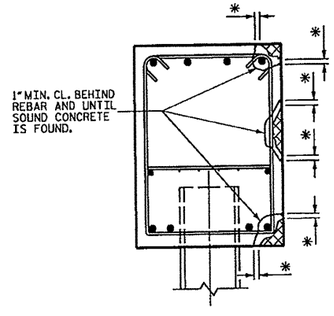
* CONCRETE SHALL BE REMOVED UNTIL SOUND CONCRETE IS FOUND. (1" MIN.)



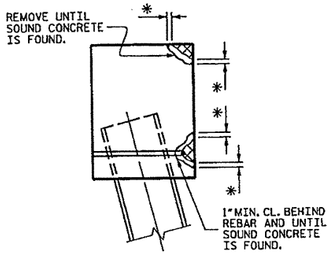
OVERHANG REPAIR DETAIL



END BENT CAP REPAIR DETAIL



SECTION K-K



SECTION J-J

* CONCRETE SHALL BE REMOVED UNTIL SOUND CONCRETE IS FOUND. (1" MIN.)

DAMAGED AREA

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 15
SHEET 8 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CAP & COLUMN REPAIR DETAILS

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-19
1			3			TOTAL SHEETS
2			4			63

NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARZIN ASEFNIA

DRAWN BY: C BRIGHT DATE: 10/12
CHECKED BY: F. ASEFNIA DATE: 10/12

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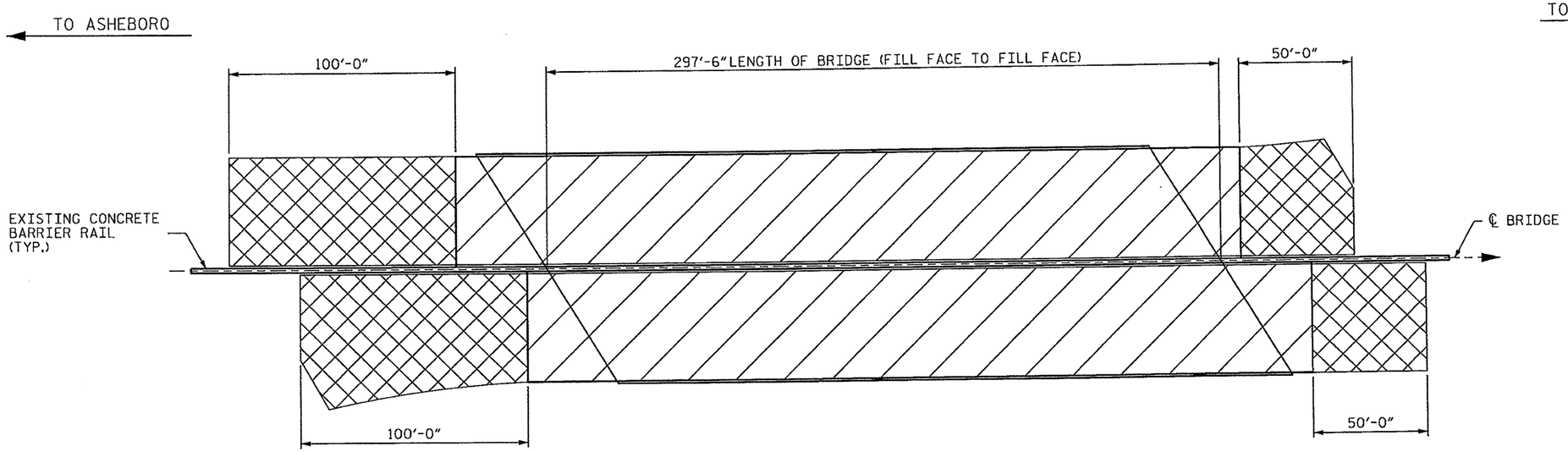
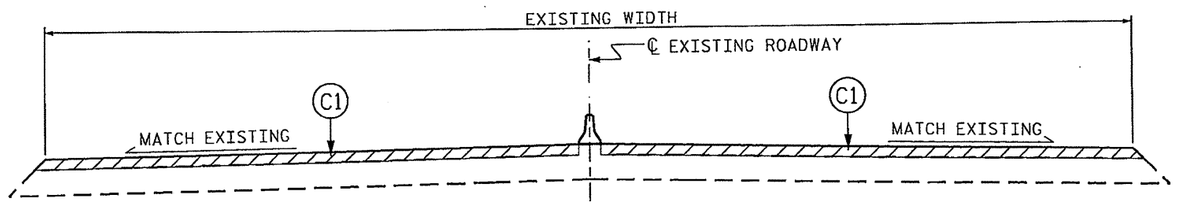


DECK SCARIFICATION AND HYDRO-DEMOLITION

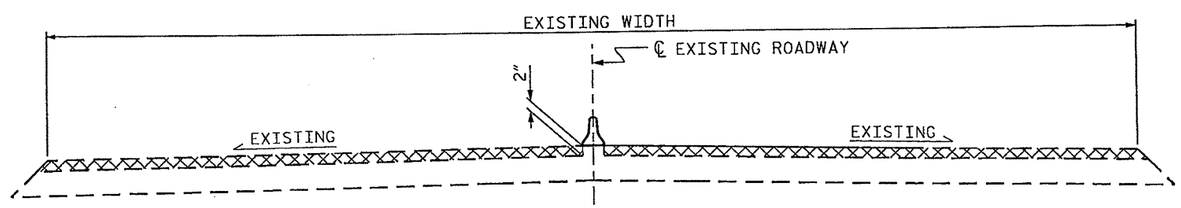
INCIDENTAL MILLING

PLAN

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 1½" IN DEPTH.



TYPICAL ROADWAY SECTION



TYPICAL ROADWAY MILLING SECTION

(MILL TO 2" DEPTH)

NOT TO SCALE

NORTH CAROLINA PROFESSIONAL SEAL 20105 ENGINEER FARZIN ASEFNIA

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 15
SHEET 9 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

ROADWAY TYPICAL SECTION AND MILLING DETAILS

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-20
1			3			TOTAL SHEETS
2			4			63

DRAWN BY: C BRIGHT DATE: 02/12
CHECKED BY: F. ASEFNIA DATE: 10/12

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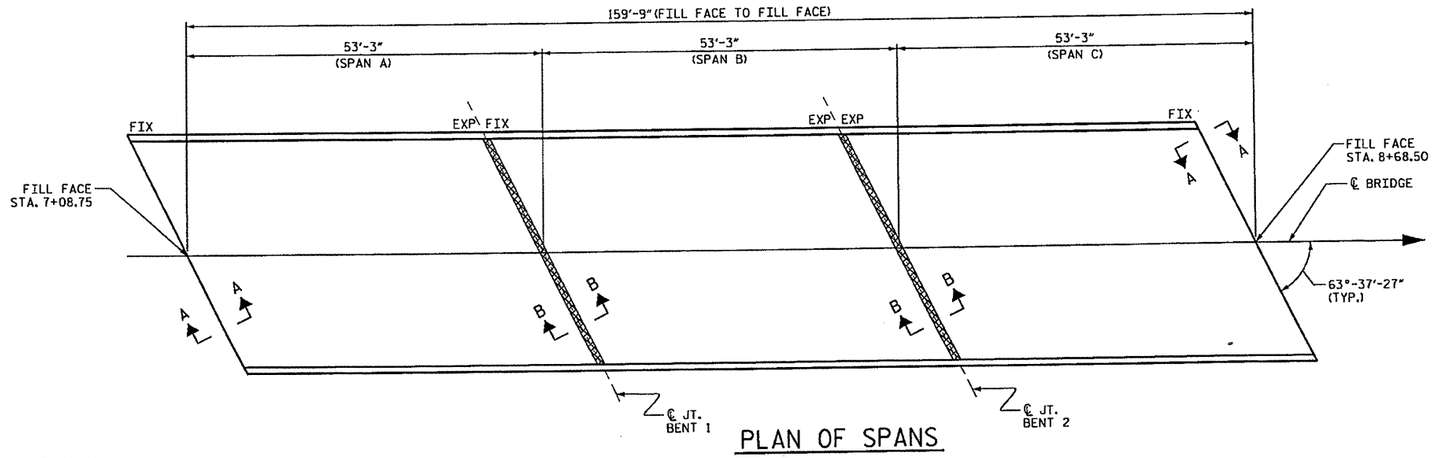


PLAN OF SPANS

NOTES

EXISTING JOINTS AND DECK DRAINS SHALL BE SEALED PRIOR TO BEGINNING SURFACE PREPARATION OF BRIDGE DECK.

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

INCIDENTAL MILLING IS INCLUDED TO ENSURE A SMOOTH TRANSITION ONTO THE BRIDGE FLOOR. DIMENSIONS SHOWN ARE APPROXIMATE. CONTRACTOR SHALL MILL AS REQUIRED TO PROVIDE A SMOOTH TRANSITION TO THE ROADWAY AT BOTH ENDS OF BRIDGE.

THE CONTRACTOR SHALL PROVIDE A METHOD OF HANDLING UNEXPECTED BLOW THROUGH OF THE DECK, SEE "TYPICAL "BLOW THRU" CONTAINMENT AND FORMWORK" DETAIL.

THE CONTRACTOR MUST COLLECT, TREAT AND DISPOSE OF RUN-OFF WATER FROM THE HYDRO-DEMOLITION PROCESS SEE, MANAGING HYDRO-DEMOLITION WATER SPECIAL PROVISION.

FOR OVERLAY SURFACE PREPARATION, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR SCARIFYING BRIDGE DECK, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

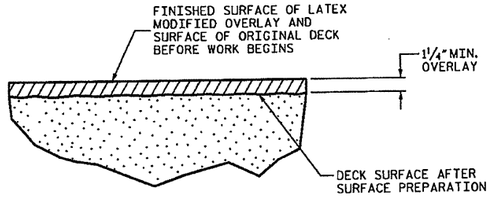
FOR PROTECTION OF RAILWAY INTERESTS, SEE SPECIAL PROVISIONS.

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

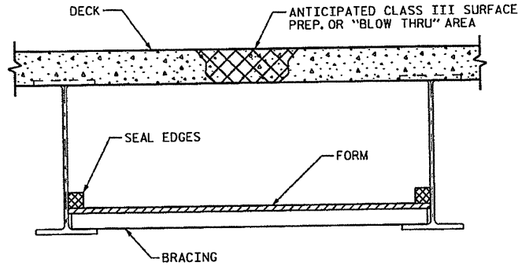
FOR CONTROL OF TRAFFIC AND LIMITS ON PHASING OF CONSTRUCTION, SEE TRANSPORTATION MANAGEMENT PLAN SHEETS.

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

DURING CONSTRUCTION, BERMS OR APPROPRIATE MEASURES SHALL BE USED TO ENSURE HYDRO-DEMOLITION WATER DOES NOT FLOW OR MIGRATE INTO ACTIVE TRAVEL LANES.



DETAIL FOR LATEX MODIFIED CONCRETE OVERLAY

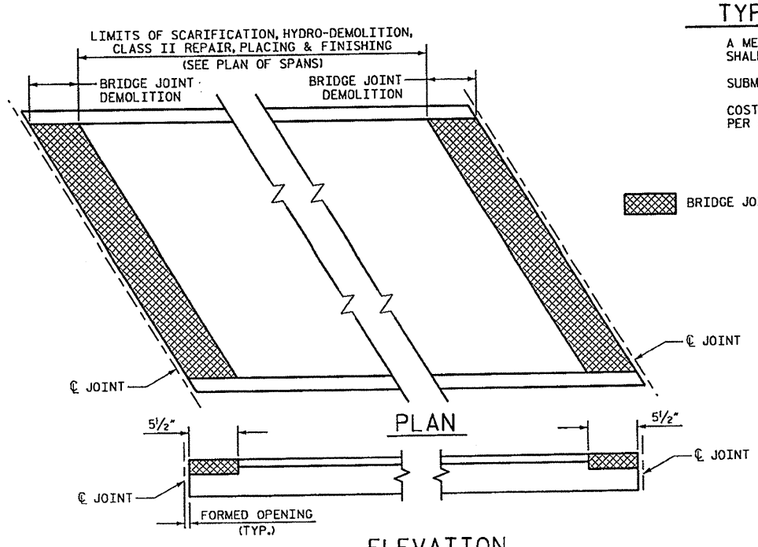


TYP. "BLOW THRU" CONTAINMENT AND FORMWORK

A METHOD TO CAPTURE WATER AND DEBRIS FROM BLOW THRU DURING HYDRO-DEMOLITION SHALL BE INSTALLED IN AREAS INDICATED AS CLASS III SURFACE PREPARATION.

SUBMIT DETAILS OF PROPOSED FORM WORK FOR APPROVAL PRIOR TO BEGINNING WORK.

COST FOR INSTALLING AND REMOVING FORM WORK SHALL BE INCIDENTAL TO THE PRICE PER SQ. YARD OF HYDRO-DEMOLITION.



PLAN

ELEVATION

BRIDGE JOINT DEMOLITION

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 36
SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN VIEW OF BRIDGE #36, ON NC 150 OVER ABANDONDED RAILWAY

34' CL. ROADWAY 26°-37'-27" SKEW

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-21
1			3			TOTAL SHEETS
2			4			63

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 20103 FARZIN ASEFNIA 3/28/13

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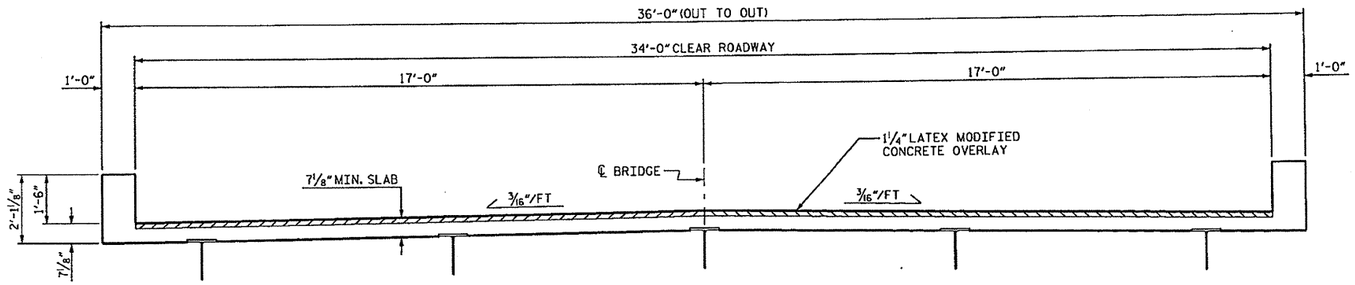
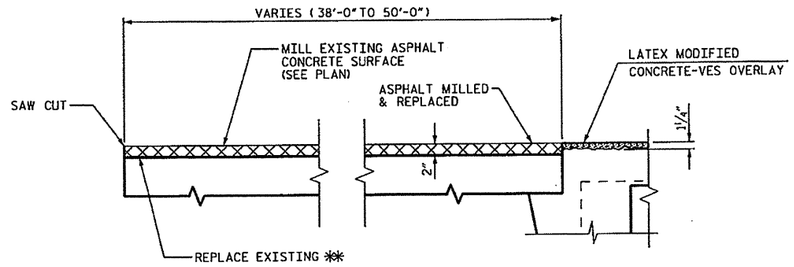
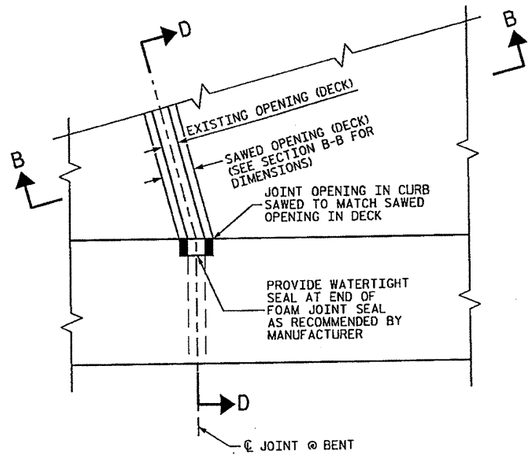


TYPICAL SECTION

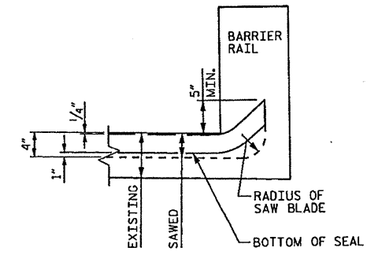


SECTION A-A

** EXISTING APPROACH AND SHOULDER ASPHALT CONCRETE PAVING TO BE MILLED A MINIMUM DEPTH OF 2". PROVIDE ADEQUATE NEW ASPHALT CONCRETE THICKNESS TO PROVIDE SMOOTH TRANSITION TO APPROACH SLAB, AS SHOWN. NEW ASPHALT THICKNESS MAY EXCEED 2" DUE TO SETTLEMENT OF THE APPROACH AND SHOULDER ASPHALT.



PLAN



SECTION D-D

NOTES

FOR FOAM JOINT SEAL, SEE SPECIAL PROVISIONS.

THE INSTALLED FOAM JOINT SEALS SHALL BE WATERTIGHT.

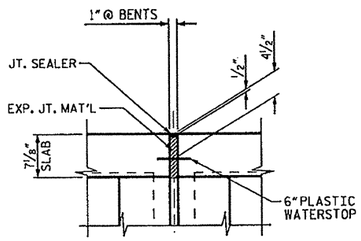
NOMINAL UNCOMPRESSED SEAL WIDTH OF FOAM JOINT SEAL SHALL BE 2½" AT BENTS.

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

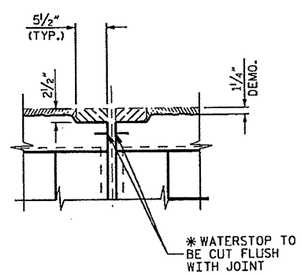
ELASTOMERIC CONCRETE		
BENTS	14.5	(CU. FT.)
* TOTAL	14.5	(CU. FT.)

* BASED ON THE MINIMUM BLOCKOUT SHOWN.

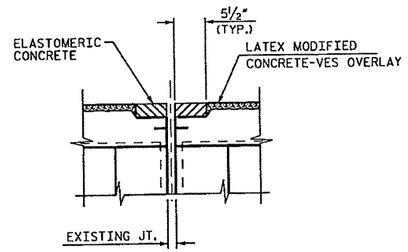
* ALL LOOSE AND UNSOUND CONCRETE SHALL BE REMOVED. IF THE EMBEDDED PORTION OF THE EXISTING WATERSTOP IS EXPOSED DURING REMOVAL, THE ENTIRE WATERSTOP SHALL BE REMOVED.



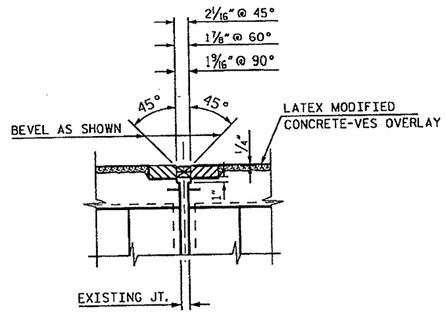
SECTION B-B
(EXISTING JOINT)



SECTION B-B
(MINIMUM EXISTING JOINT DEMOLITION)



SECTION B-B
(PROPOSED FOAM JOINT SEAL PRE-SAWED DIMENSIONS)



SECTION B-B
(PROPOSED FOAM JOINT SEAL EXPANSION)

NOTE: RETAIN ALL EXISTING REINFORCING STEEL. CLEAN AND REPAIR AS REQUIRED.

NORTH CAROLINA PROFESSIONAL SEAL 040103 ENGINEER FARZIN ASEFNIA

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 36
SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION & JOINT DETAILS

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-22
1			3			TOTAL SHEETS
2			4			63

DRAWN BY: C. BRIGHT DATE: 09/12
CHECKED BY: J. YANNACCONE DATE: 10/12

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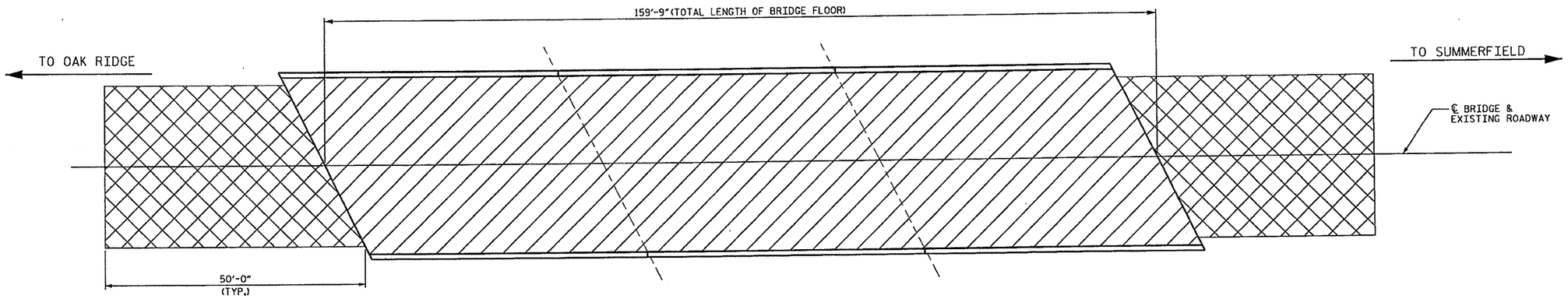
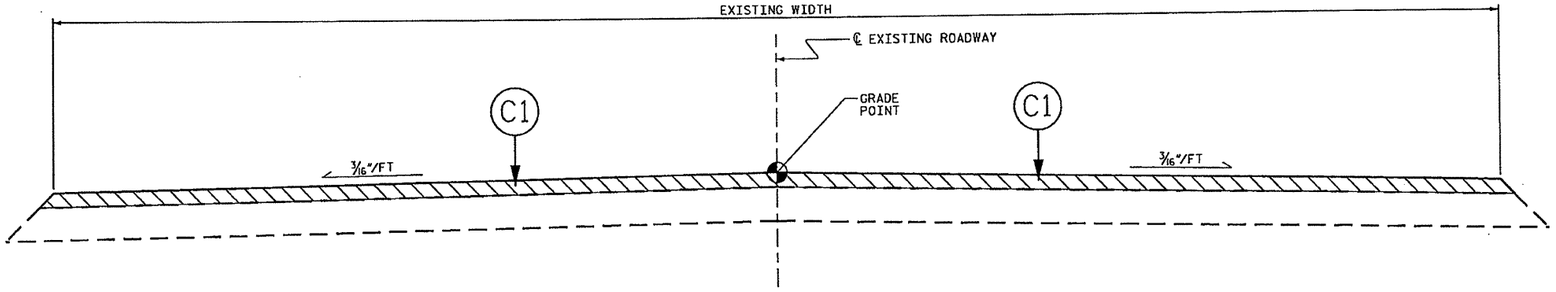


PLAN

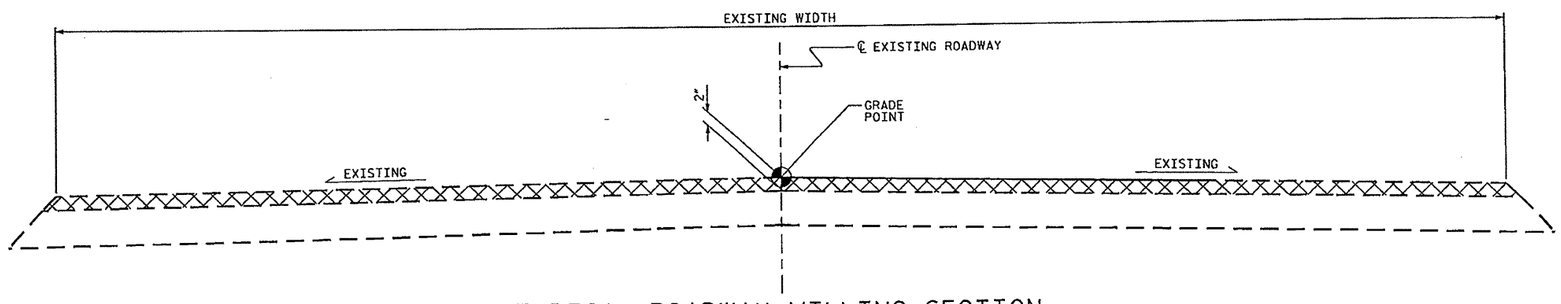
DECK SCARIFICATION AND HYDRODEMOLITION

ASPHALT MILLING

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 1½" IN DEPTH.



TYPICAL ROADWAY SECTION



TYPICAL ROADWAY MILLING SECTION

(MILL TO 2" DEPTH)

NOT TO SCALE

NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER JARZIN ASEFNIA

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 36
SHEET 3 OF 3

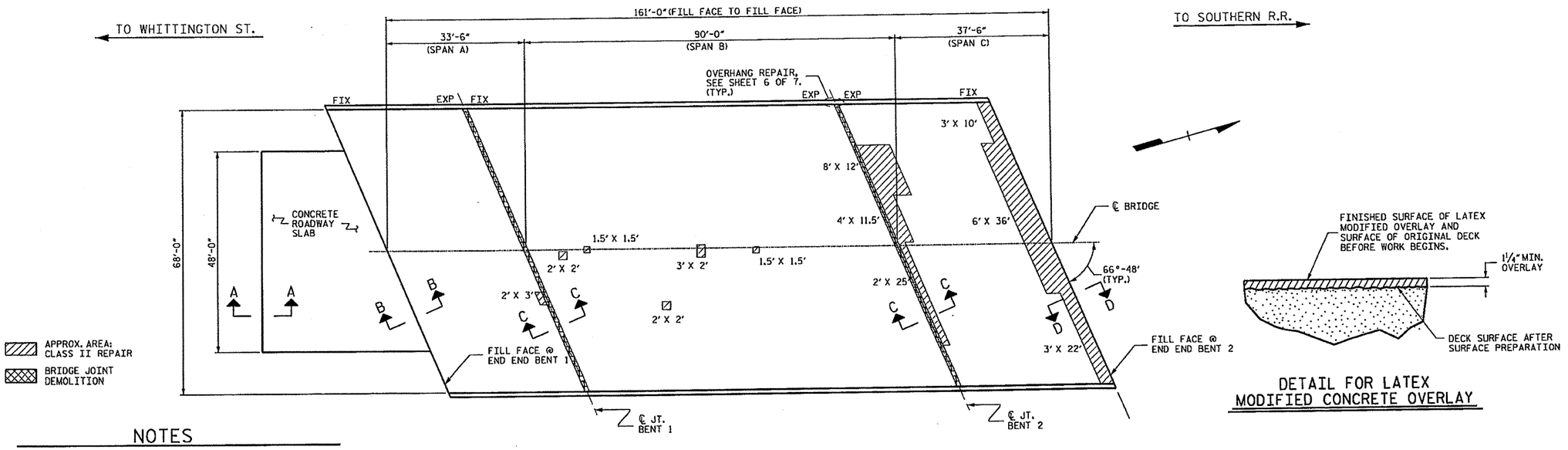
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

ROADWAY TYPICAL SECTION AND MILLING DETAILS

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-23
1			3			TOTAL SHEETS
2			4			63

DRAWN BY: C. BRIGHT DATE: 09/12
CHECKED BY: J. YANNACCONE DATE: 10/12

jayannaccone 28-MAR-2013 13:35



PLAN OF SPANS

DETAIL FOR LATEX MODIFIED CONCRETE OVERLAY

NOTES

EXISTING JOINTS AND DECK DRAINS SHALL BE SEALED PRIOR TO BEGINNING SURFACE PREPARATION OF BRIDGE DECK.

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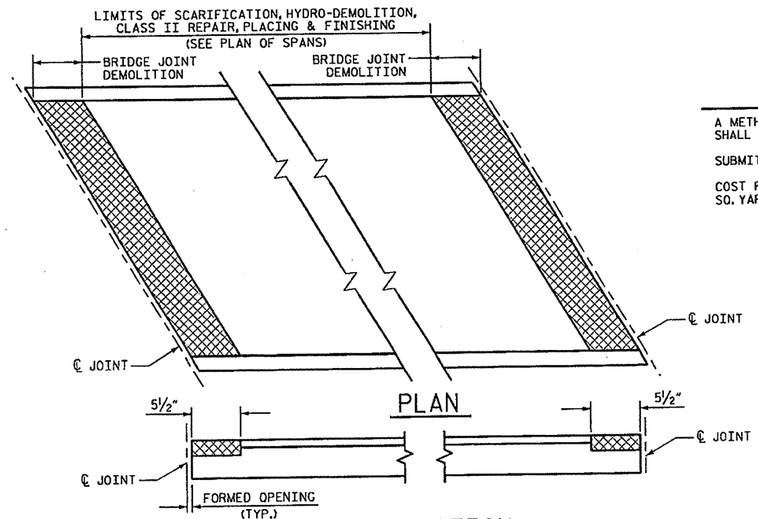
FOR CONTROL OF TRAFFIC AND LIMITS ON PHASING OF CONSTRUCTION, SEE TRANSPORTATION MANAGEMENT PLAN SHEET.

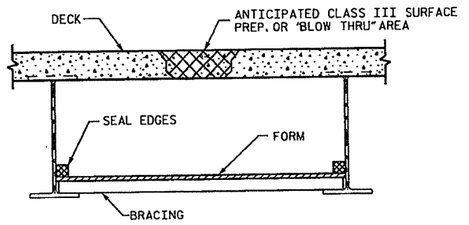
LONGITUDINAL CONSTRUCTION JOINTS OF OVERLAYS SHALL BE LOCATED ALONG THE CENTERLINE OR EDGE OF TRAVEL LANES.

DURING CONSTRUCTION, BERMS OR APPROPRIATE MEASURES SHALL BE USED TO ENSURE HYDRO-DEMOLITION WATER DOES NOT FLOW OR MIGRATE INTO ACTIVE TRAVEL LANES.

FOR PARTIAL REMOVAL OF EXISTING STRUCTURE, SEE SPECIAL PROVISIONS.



ELEVATION



TYP. "BLOW THRU" CONTAINMENT AND FORMWORK

A METHOD TO CAPTURE WATER AND DEBRIS FROM BLOW THRU DURING HYDRO-DEMOLITION SHALL BE INSTALLED IN AREAS INDICATED AS CLASS III SURFACE PREPARATION.

SUBMIT DETAILS OF PROPOSED FORM WORK FOR APPROVAL PRIOR TO BEGINNING WORK.

COST FOR INSTALLING AND REMOVING FORM WORK SHALL BE INCIDENTAL TO THE PRICE PER SQ. YARD OF HYDRO-DEMOLITION.

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 57
SHEET 1 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN VIEW OF BRIDGE #57, ON FREEMAN MILL RD OVER NC 6 (LEE ST.)

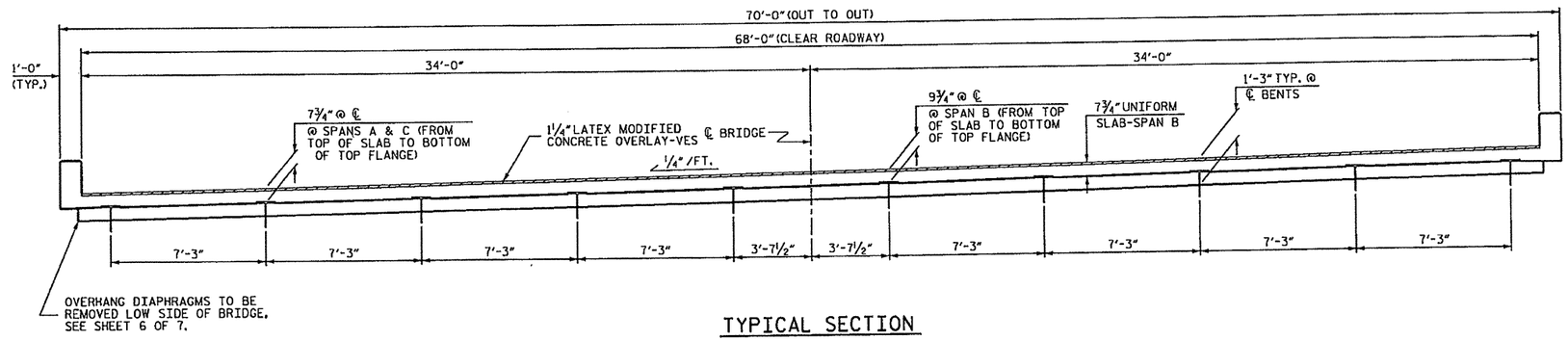
68' CL. ROADWAY 66°-48' SKEW

NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARZIN ASEFNIA 3/28/13

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-24
1			3			TOTAL SHEETS
2			4			63

DRAWN BY: C. BRIGHT DATE: 09/12
CHECKED BY: F. ASEFNIA DATE: 09/12

Jayannaccone 28-MAR-2013 13:35



TYPICAL SECTION

NOTES

FOR FOAM JOINT SEAL, SEE SPECIAL PROVISIONS.

THE INSTALLED FOAM JOINT SEALS SHALL BE WATERTIGHT.

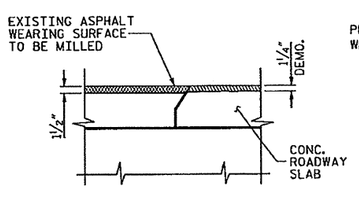
NOMINAL UNCOMPRESSED SEAL WIDTH OF FOAM JOINT SEAL SHALL BE 2½" AT BENTS.

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

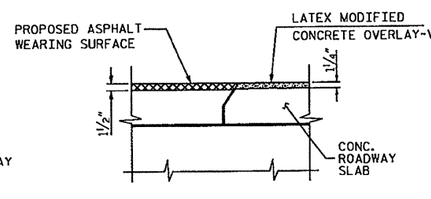
BACKER ROD WIDTH SHALL BE FIELD DETERMINED BY THE ENGINEER AFTER THE JOINT HAS BEEN CLEANED.

ELASTOMERIC CONCRETE		
BENTS	25.4	(CU. FT.)
* TOTAL	25.4	(CU. FT.)

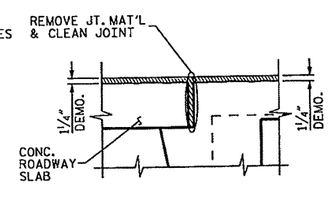
* BASED ON THE MINIMUM BLOCKOUT SHOWN.



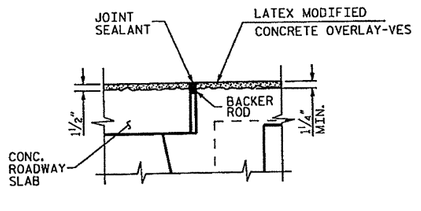
SECTION A-A
(EXISTING JOINT)



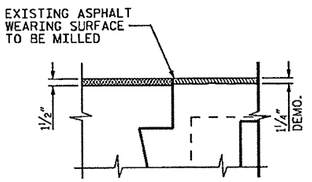
SECTION A-A
(PROPOSED JOINT)



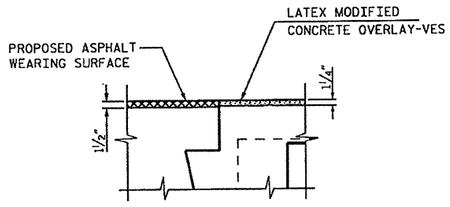
SECTION B-B
(EXISTING JOINT)



SECTION B-B
(PROPOSED JOINT)

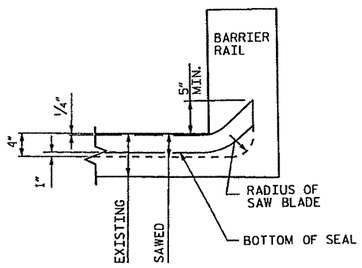


SECTION D-D
(EXISTING JOINT)

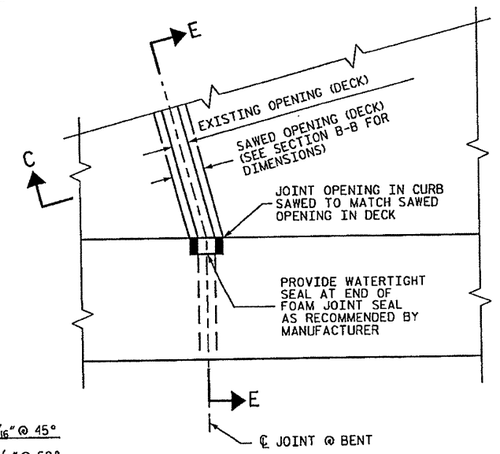


SECTION D-D
(PROPOSED JOINT)

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

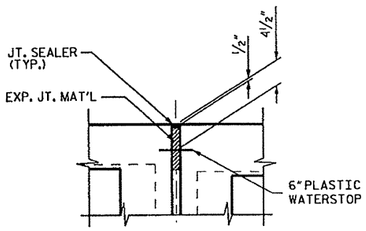


SECTION E-E

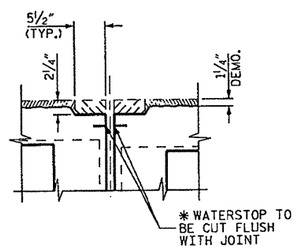


PLAN

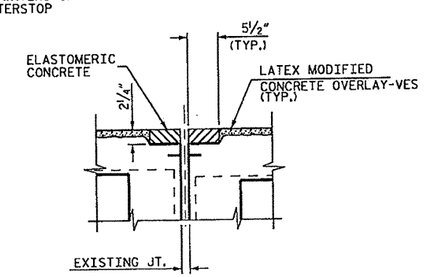
* ALL LOOSE AND UNSOUND CONCRETE SHALL BE REMOVED. IF THE EMBEDDED PORTION OF THE EXISTING WATERSTOP IS EXPOSED DURING REMOVAL, THE ENTIRE WATERSTOP SHALL BE REMOVED.



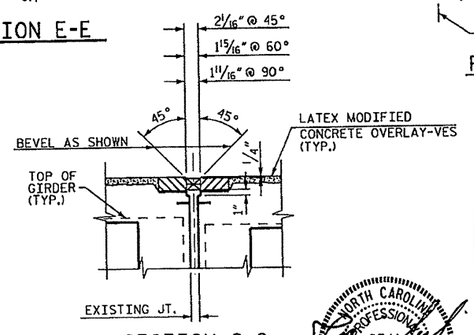
SECTION C-C
(EXISTING JOINT)



SECTION C-C
(MINIMUM EXISTING JOINT DEMOLITION)



SECTION C-C
(PROPOSED FOAM JOINT SEAL PRE-SAWED DIMENSIONS)



SECTION C-C
(PROPOSED FOAM JOINT SEAL EXPANSION)

NORTH CAROLINA PROFESSIONAL SEAL 2908 ENGINEER FARHIN ASEFNIA 3/28/13

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 57
SHEET 2 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION & JOINT DETAILS

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-25
1			3			TOTAL SHEETS
2			4			63

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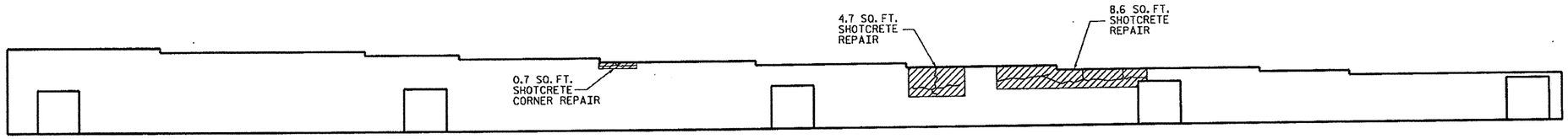
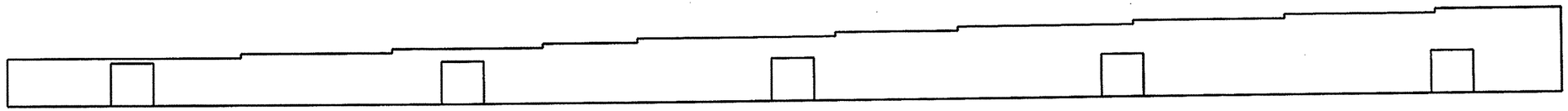


END BENT 1

ESTIMATED REPAIR AREA



END BENT 2*

* NO DAMAGE OBSERVED ON END BENT 2. HOWEVER IF DAMAGE IS FOUND BY THE ENGINEER, SEE NOTE ON THIS SHEET CONCERNING ADDITIONAL REPAIRS.

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

FOR STRUCTURE REPAIRS, SEE SHEET S-29.

EPOXY COATING SHALL BE APPLIED TO THE TOP FACE OF THE CAP AND PILE CAPS AT END BENT 1.

REPAIR QUANTITY TABLE

REPAIRS END BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL)	13.3	6.0		
CAP (HORIZONTAL, CORNER)	0.7	0.5		
PILE CAP	0	0		
EPOXY RESIN INJECTION		LN. FT		LN. FT
CAP (VERTICAL, FACE)		0		
PILE CAP		0		
EPOXY COATING		SQ. FT.		SQ. FT.
TOP OF CAP AND PILE CAPS		143		

REPAIR QUANTITY TABLE

REPAIRS END BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL)	0	0		
CAP (HORIZONTAL, CORNER)	0	0		
PILE CAP	0	0		
EPOXY RESIN INJECTION		LN. FT		LN. FT
CAP (VERTICAL, FACE)		0		
PILE CAP		0		
EPOXY COATING		SQ. FT.		SQ. FT.
TOP OF CAP AND PILE CAPS		0		

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.

NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARZIN ASEFNIA 3/28/13

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 57
SHEET 3 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

END BENTS

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-26
1			3			TOTAL SHEETS
2			4			63

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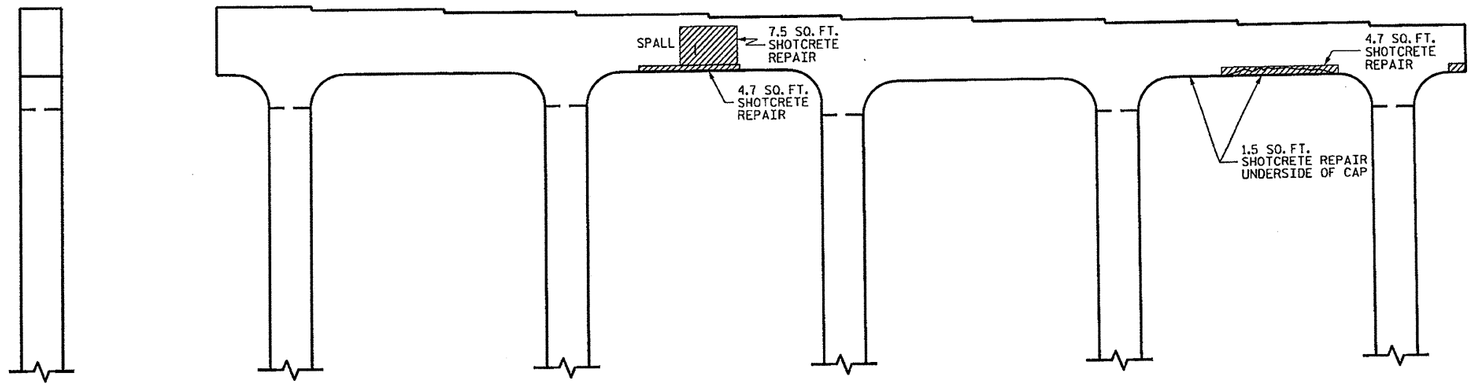


EAST END

SPAN 'B' FACE

ESTIMATED REPAIR AREA

REPAIR QUANTITY TABLE

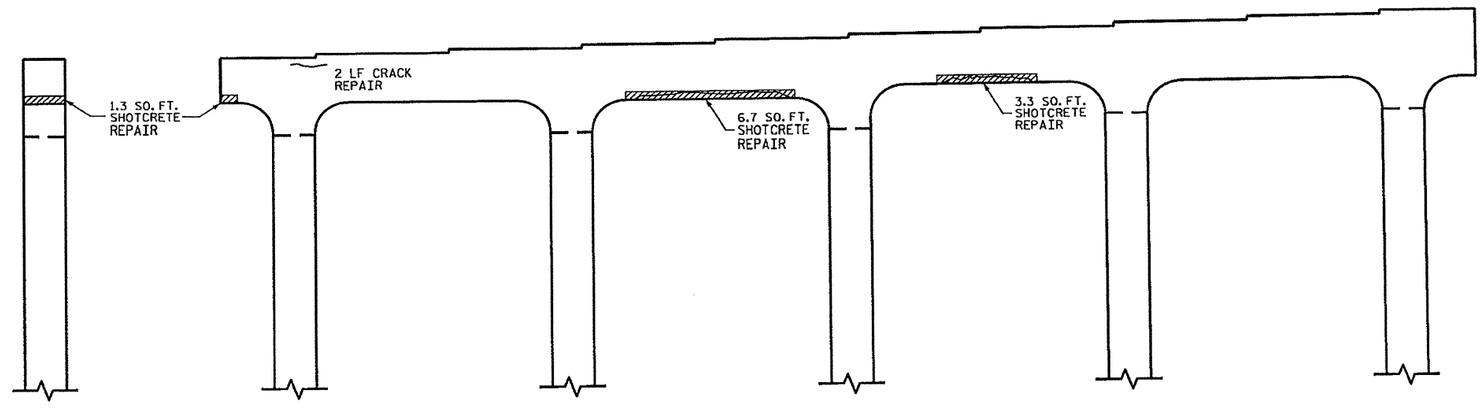
REPAIRS BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	7.5	3.5		
CAP (HORIZONTAL, CORNER)	23.7	15.0		
COLUMN (VERTICAL FACE)	0	0		
COLUMN (HORIZONAL, CORNER)	0	0		
EPOXY RESIN INJECTION		LN. FT		LN. FT
CAP		2		
EPOXY COATING		SQ. FT.		SQ. FT.
TOP OF CAP		206		

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

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

FOR STRUCTURE REPAIRS, SEE SHEET S-29.

EPOXY COATING SHALL BE APPLIED TO THE TOP FACE OF THE CAP AT BENT 1.



WEST END

SPAN 'A' FACE

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 57
SHEET 4 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 1

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 20103 FARZIN ASEFNIA

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-27
1			3			TOTAL SHEETS
2			4			63

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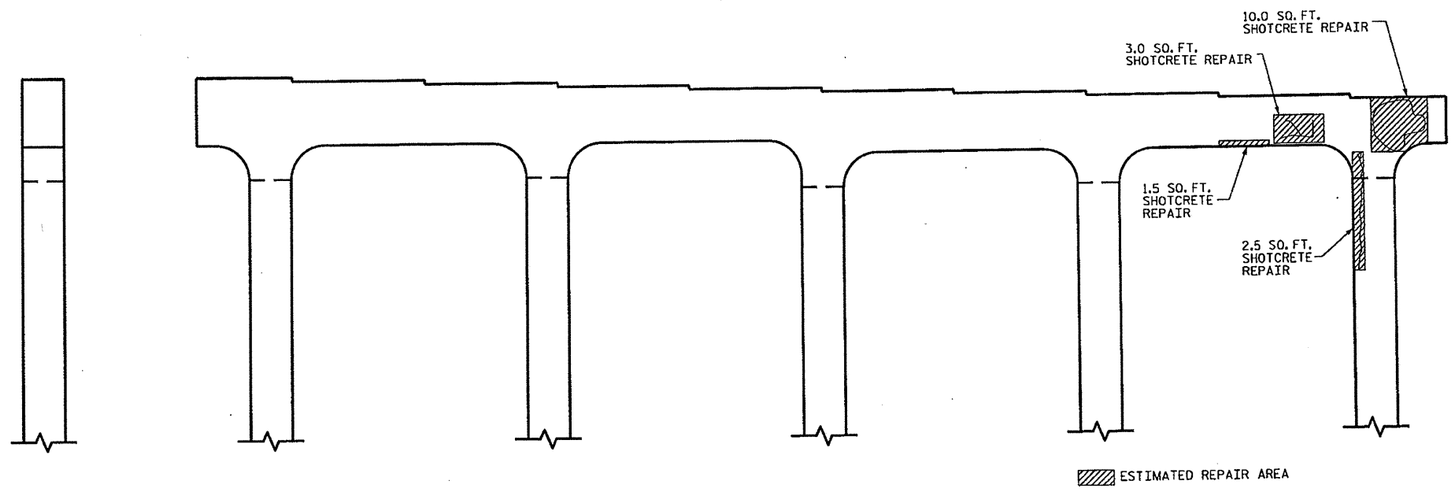
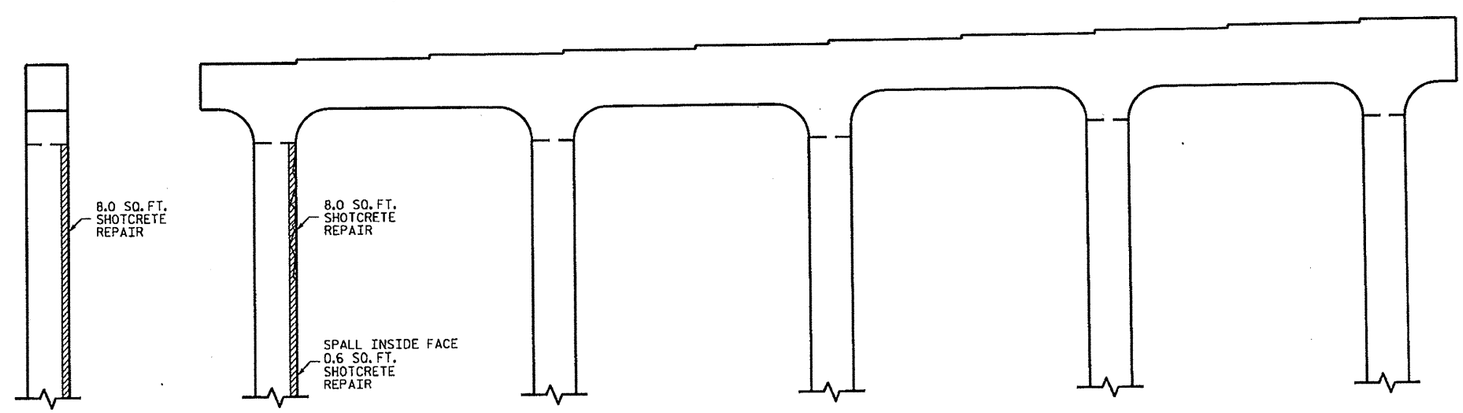


SPAN 'C' FACE

EAST END



SPAN 'B' FACE

WEST END

REPAIR QUANTITY TABLE

REPAIRS BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	13.0	5.5		
CAP (HORIZONTAL, CORNER)	1.5	1.0		
COLUMN (VERTICAL FACE)	0.6	0.5		
COLUMN (HORIZONAL, CORNER)	18.5	13.0		
EPOXY RESIN INJECTION		LN. FT		LN. FT
CAP		0		
COLUMN		0		
EPOXY COATING		SQ. FT.		SQ. FT.
TOP OF CAP		206		

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

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

FOR STRUCTURE REPAIRS, SEE SHEET S-29.

EPOXY COATING SHALL BE APPLIED TO THE TOP FACE OF THE CAP AT BENT 2.

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 57
SHEET 5 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 2

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 20103 FARZIN ASEFNIA 5/28/13

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-28
1			3			TOTAL SHEETS
2			4			63

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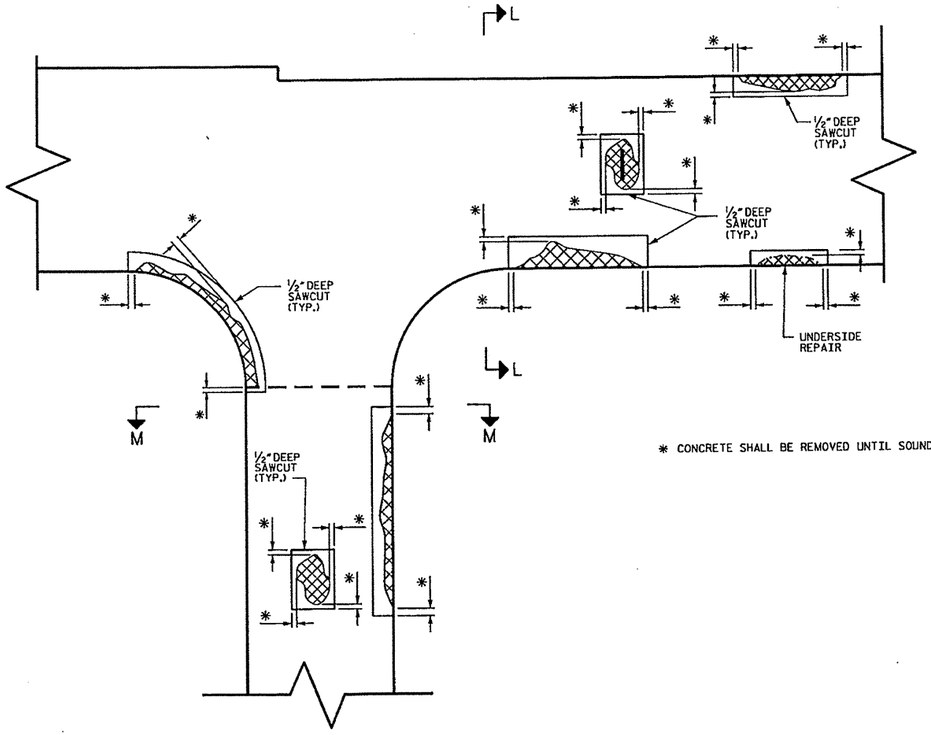
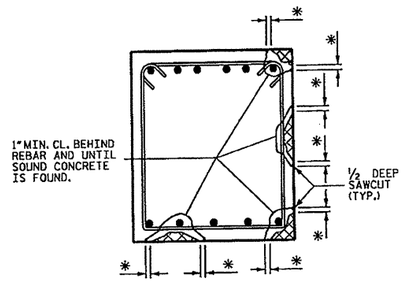
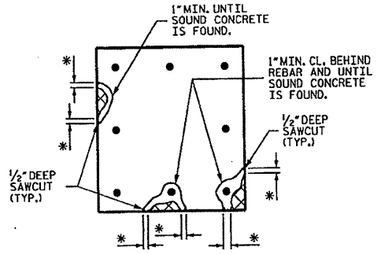


BENT CAP & COLUMN REPAIR DETAIL

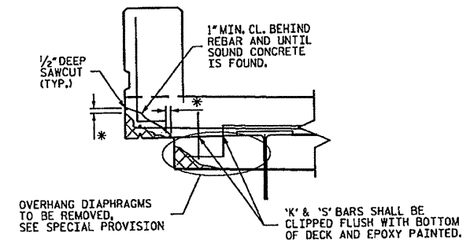


SECTION L-L

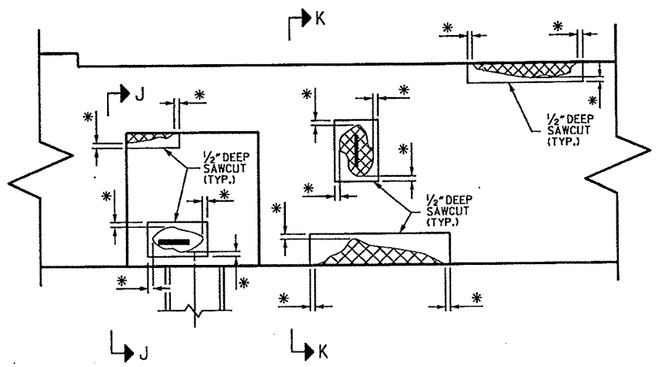


SECTION M-M

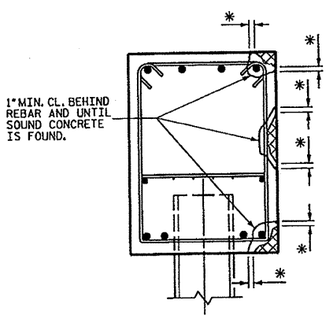
* CONCRETE SHALL BE REMOVED UNTIL SOUND CONCRETE IS FOUND. (1" MIN.)



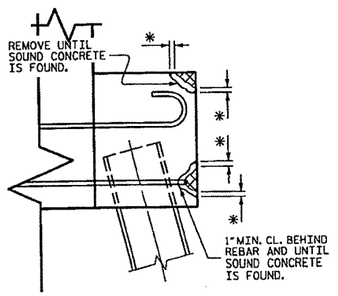
OVERHANG REPAIR DETAIL



END BENT CAP REPAIR DETAIL



SECTION K-K



SECTION J-J

* CONCRETE SHALL BE REMOVED UNTIL SOUND CONCRETE IS FOUND. (1" MIN.)

DAMAGED AREA

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 57
SHEET 6 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CAP & COLUMN REPAIR DETAILS

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

SHEET NO. S-29
TOTAL SHEETS 63

NORTH CAROLINA PROFESSIONAL SEAL 20163 ENGINEER JAYANNA ASEEMA FARRIN

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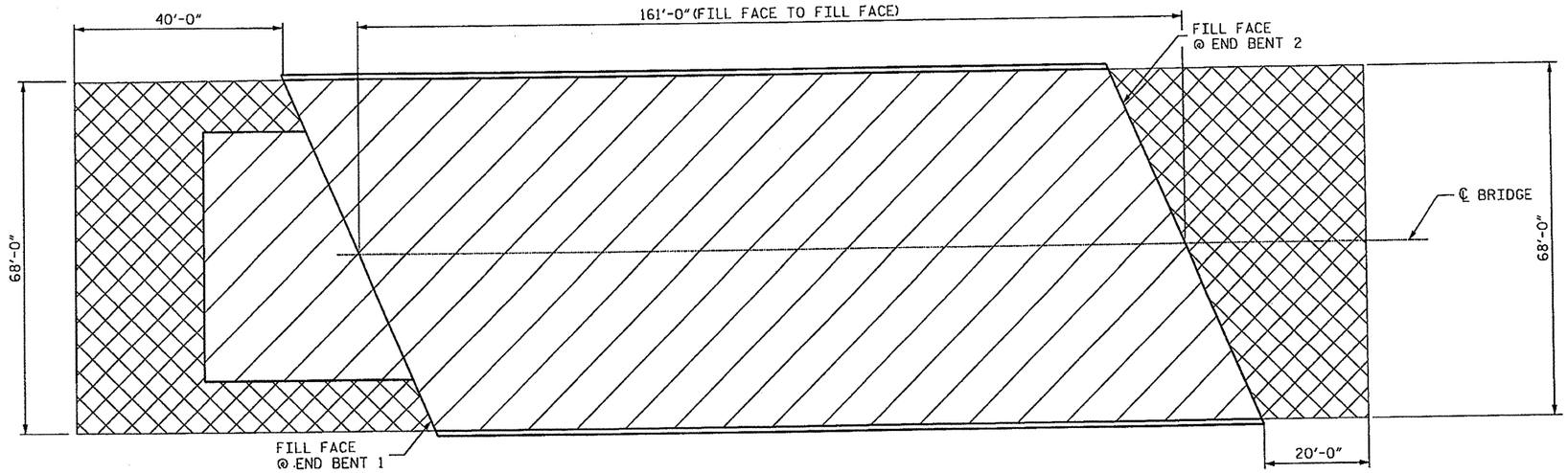
CHECKED BY: DCM DATE: 11/11

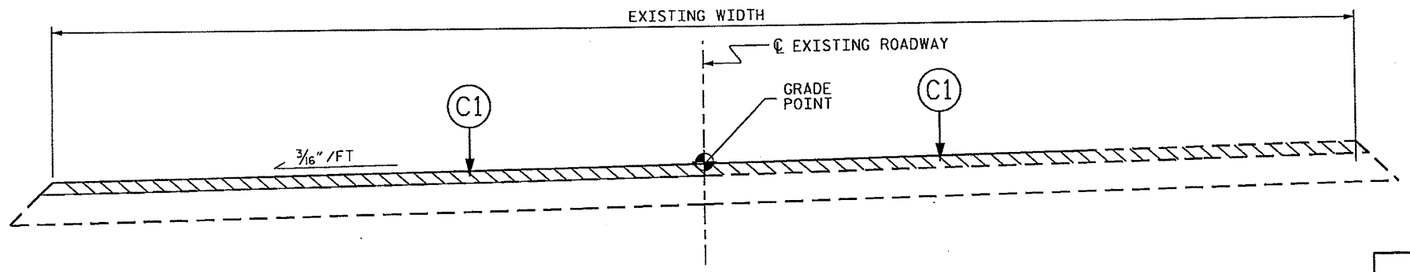
jayannacoons 28-MAR-2013 13:35



PLAN

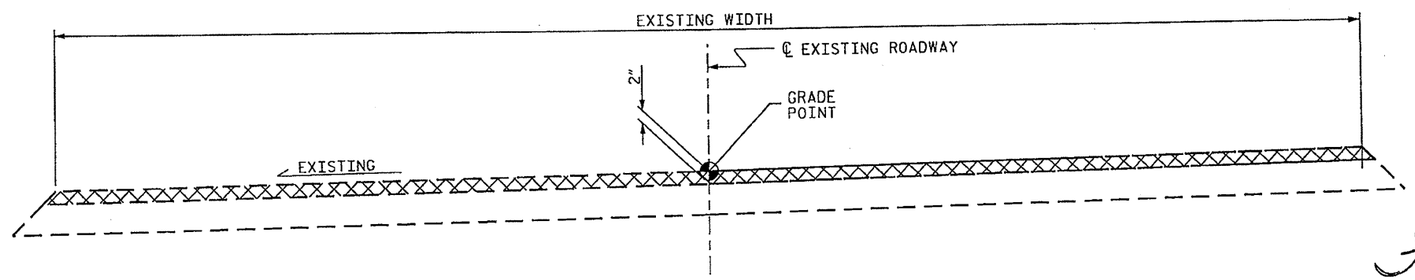
DECK SCARIFICATION AND HYDRODEMOLITION

INCIDENTAL MILLING



TYPICAL ROADWAY SECTION

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 1½" IN DEPTH.



TYPICAL ROADWAY MILLING SECTION
(MILL TO 2" DEPTH)

NOT TO SCALE

NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARZIN ASEFNIA 3/28/13

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 57
SHEET 7 OF 7

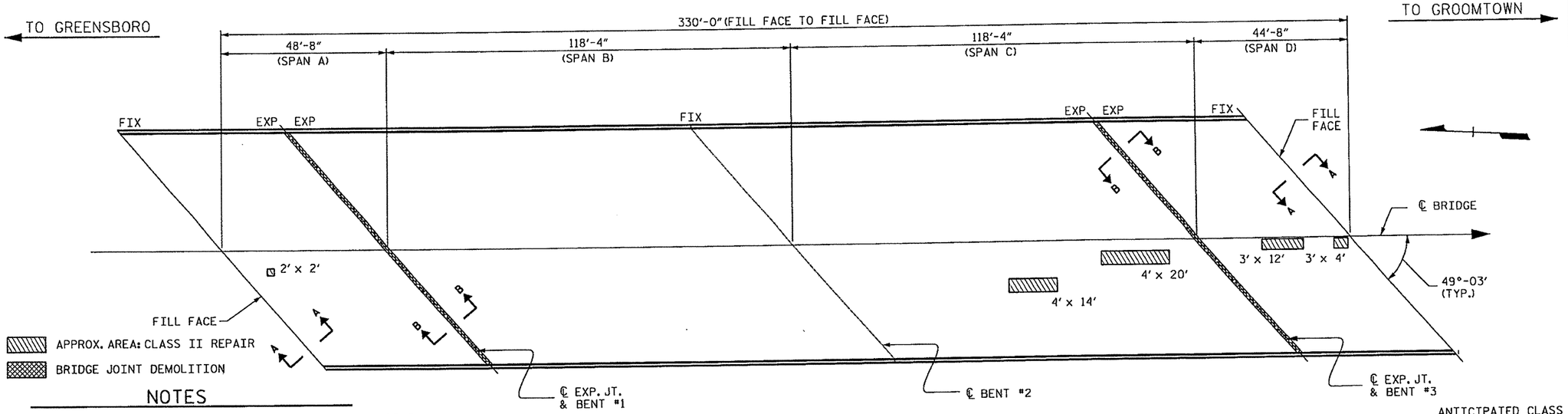
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

ROADWAY TYPICAL SECTION AND MILLING DETAILS

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-30
1			3			TOTAL SHEETS
2			4			63

DRAWN BY: CLB DATE: 10/11
CHECKED BY: DCM DATE: 11/11

Jayannaccone 28-MAR-2013 13:35



PLAN

NOTES

EXISTING JOINTS AND DECK DRAINS SHALL BE SEALED PRIOR TO BEGINNING SURFACE PREPARATION OF BRIDGE DECK.

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

INCIDENTAL MILLING IS INCLUDED TO ENSURE A SMOOTH TRANSITION ONTO THE BRIDGE FLOOR. DIMENSIONS SHOWN ARE APPROXIMATE. CONTRACTOR SHALL MILL AS REQUIRED TO PROVIDE A SMOOTH TRANSITION TO THE ROADWAY AT BOTH ENDS OF BRIDGE.

THE CONTRACTOR SHALL PROVIDE A METHOD OF HANDLING UNEXPECTED BLOW THROUGH OF THE DECK, SEE "TYPICAL "BLOW THRU" CONTAINMENT AND FORMWORK" DETAIL.

THE CONTRACTOR MUST COLLECT, TREAT AND DISPOSE OF RUN-OFF WATER FROM THE HYDRO-DEMOLITION PROCESS SEE, MANAGING HYDRO-DEMOLITION WATER SPECIAL PROVISION.

FOR OVERLAY SURFACE PREPARATION, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR SCARIFYING BRIDGE DECK, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

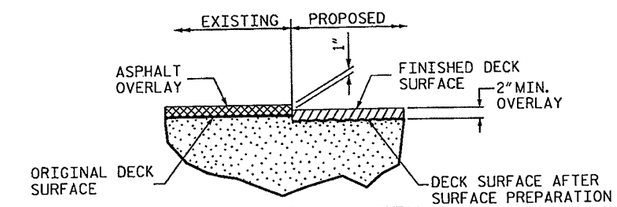
FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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

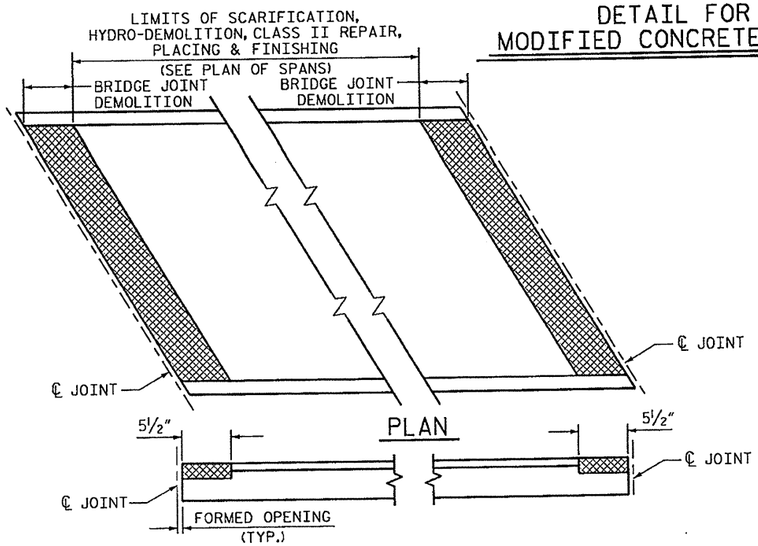
FOR CONTROL OF TRAFFIC AND LIMITS ON PHASING OF CONSTRUCTION, SEE TRANSPORTATION MANAGEMENT PLAN SHEETS.

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

DURING CONSTRUCTION, BERMS OR APPROPRIATE MEASURES SHALL BE USED TO ENSURE HYDRO-DEMOLITION WATER DOES NOT FLOW OR MIGRATE INTO ACTIVE TRAVEL LANES.



DETAIL FOR LATEX MODIFIED CONCRETE OVERLAY-VES



PLAN

ELEVATION

TYP. "BLOW THRU" CONTAINMENT AND FORMWORK

A METHOD TO CAPTURE WATER AND DEBRIS FROM BLOW THRU DURING HYDRO-DEMOLITION SHALL BE INSTALLED IN AREAS INDICATED AS CLASS III SURFACE PREPARATION.

SUBMIT DETAILS OF PROPOSED FORM WORK FOR APPROVAL PRIOR TO BEGINNING WORK.

COST FOR INSTALLING AND REMOVING FORM WORK SHALL BE INCIDENTAL TO THE PRICE PER SQ. YARD OF HYDRO-DEMOLITION.

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 169
SHEET 1 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

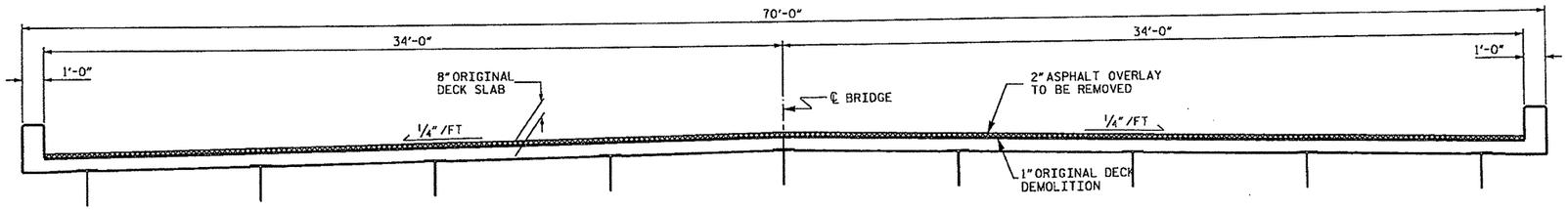
PLAN VIEW OF BRIDGE #169, ON SR 1129 OVER I-85

70' CL. ROADWAY 49°-03' SKEW

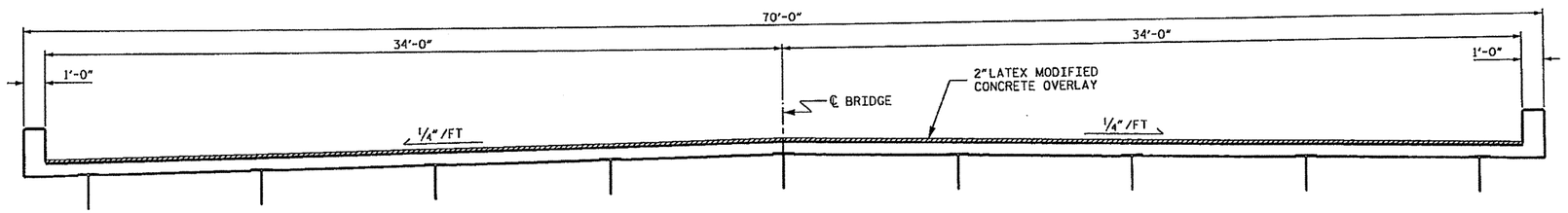
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-31
1			3			TOTAL SHEETS
2			4			63

DRAWN BY: C BRIGHT DATE: 10/12
CHECKED BY: F. ASEFNIA DATE: 10/12

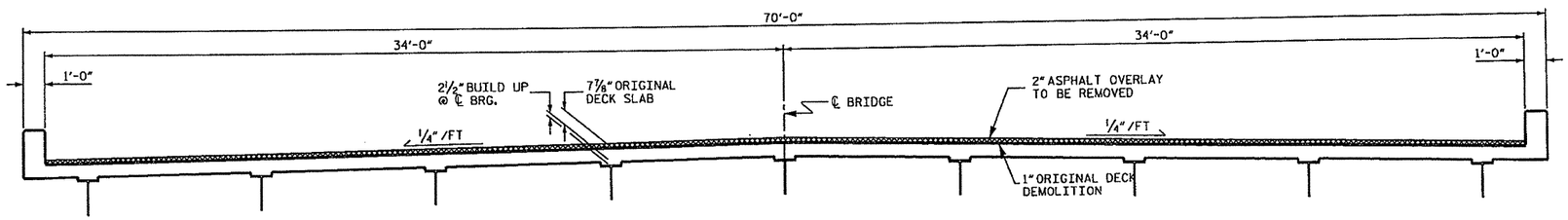
jayannaccone 28-MAR-2013 13:35



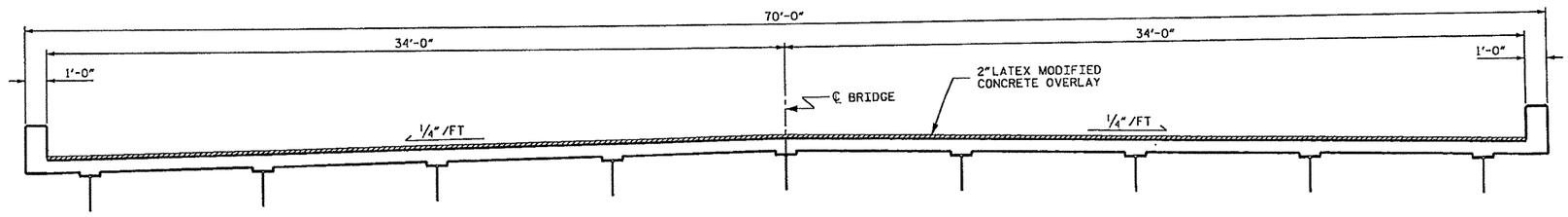
TYPICAL SECTION
(SPANS A & D)



TYPICAL SECTION
(SPANS A & D)



TYPICAL SECTION
(SPANS B & C)



TYPICAL SECTION
(SPANS B & C)

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 169
SHEET 2 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION & JOINT DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARZIN ASEFNIA
3/28/13

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

SHEET NO. S-32
TOTAL SHEETS 63

DRAWN BY: C BRIGHT DATE: 10/12
CHECKED BY: F. ASEFNIA DATE: 10/12

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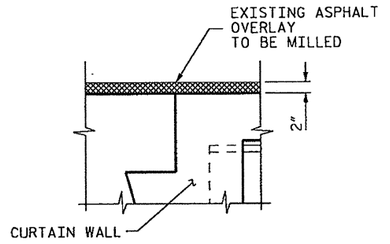
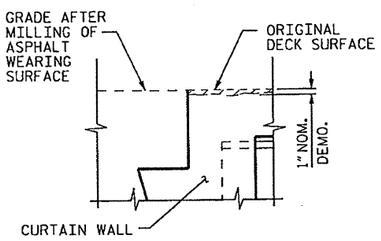
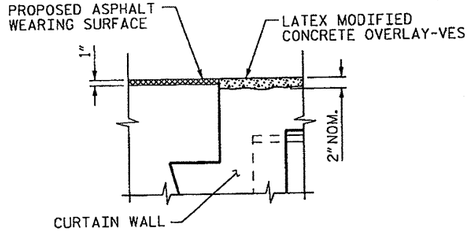


SECTION A-A
(EXISTING JOINT)



SECTION A-A
(MINIMUM EXISTING JOINT DEMOLITION)



SECTION A-A
(PROPOSED JOINT)

NOTES

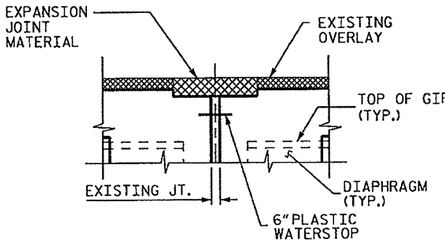
FOR FOAM JOINT SEAL, SEE SPECIAL PROVISIONS.

THE INSTALLED FOAM JOINT SEALS SHALL BE WATERTIGHT.

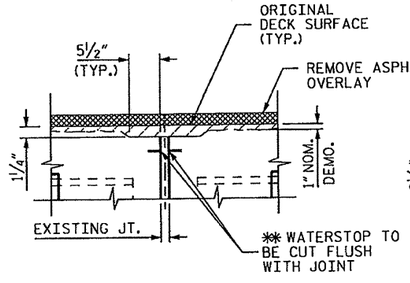
NOMINAL UNCOMPRESSED SEAL WIDTH OF FOAM JOINT SEAL SHALL BE 2½" AT BENTS.

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

NOTE: RETAIN ALL EXISTING REINFORCING STEEL. CLEAN AND REPAIR AS NEEDED.

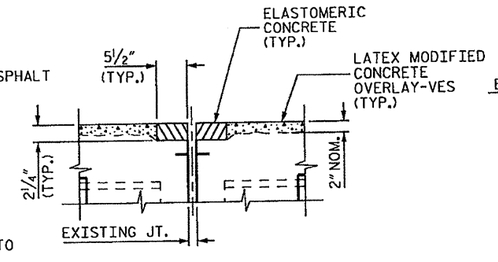


SECTION B-B
(EXISTING JOINT)

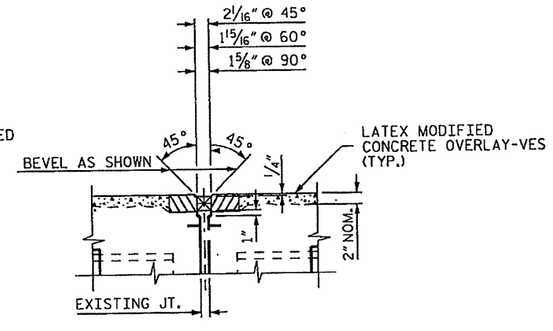


SECTION B-B
(MINIMUM EXISTING JOINT DEMOLITION)

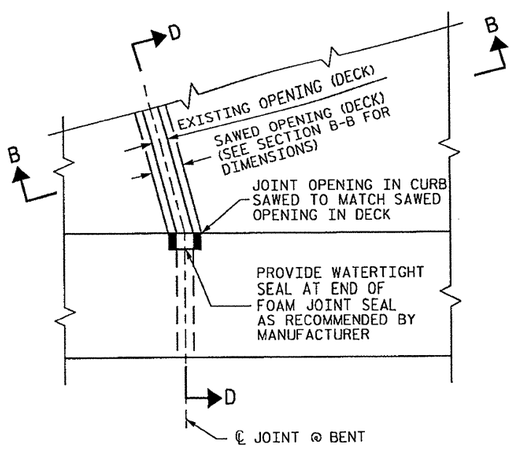
** ALL LOOSE AND UNSOUND CONCRETE SHALL BE REMOVED. IF THE EMBEDDED PORTION OF THE EXISTING WATERSTOP IS EXPOSED DURING REMOVAL, THE ENTIRE WATERSTOP SHALL BE REMOVED.



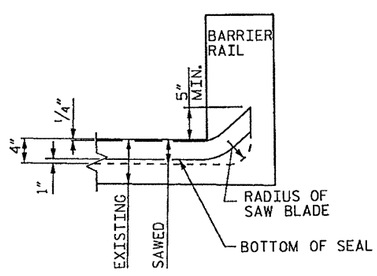
SECTION B-B
(PROPOSED FOAM JOINT SEAL PRE-SAWED DIMENSIONS)



SECTION B-B
(PROPOSED FOAM JOINT SEAL EXPANSION)



PLAN



SECTION D-D

ELASTOMERIC CONCRETE		
BENT 1	15.5	(CU. FT.)
BENT 3	15.5	(CU. FT.)
* TOTAL	31.0	(CU. FT.)

* BASED ON THE MINIMUM BLOCKOUT SHOWN.

NORTH CAROLINA PROFESSIONAL ENGINEER FARZIN ASEFNIA 20103 SEAL 2013

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 169
SHEET 3 OF 9

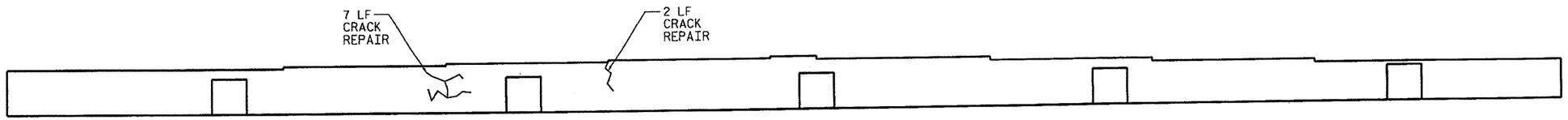
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

JOINT DETAILS

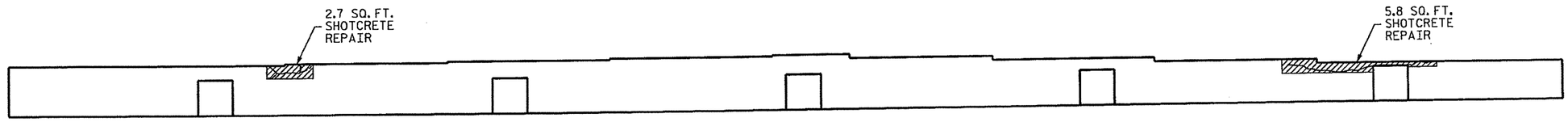
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-33
1			3			TOTAL SHEETS
2			4			63

DRAWN BY: C BRIGHT DATE: 10/12
CHECKED BY: F. ASEFNIA DATE: 10/12

jayannaccone 28-MAR-2013 13:35



END BENT #1



END BENT #2

ESTIMATED REPAIR AREA

REPAIR QUANTITY TABLE

REPAIRS END BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL)	0	0		
CAP (HORIZONTAL, CORNER)	0	0		
PILE CAP	0	0		
EPOXY RESIN INJECTION		LN. FT.		LN. FT.
CAP (VERTICAL, FACE)		9		
PILE CAP		0		

REPAIR QUANTITY TABLE

REPAIRS END BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL)	0	0		
CAP (HORIZONTAL, CORNER)	8.5	5.0		
PILE CAP	0	0		
EPOXY RESIN INJECTION		LN. FT		LN. FT
CAP (VERTICAL, FACE)		0		
PILE CAP		0		
EPOXY COATING		SQ. FT.		SQ. FT.
TOP OF CAP AND PILE CAPS		171		

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.

NOTE:

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

FOR STRUCTURE REPAIRS, SEE SHEET S-38.

EPOXY COATING SHALL BE APPLIED TO THE TOP FACE OF THE CAP AND PILE CAPS AT END BENT 2.

NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARZIN ASEFNIA 5/28/13

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 169
SHEET 4 OF 9

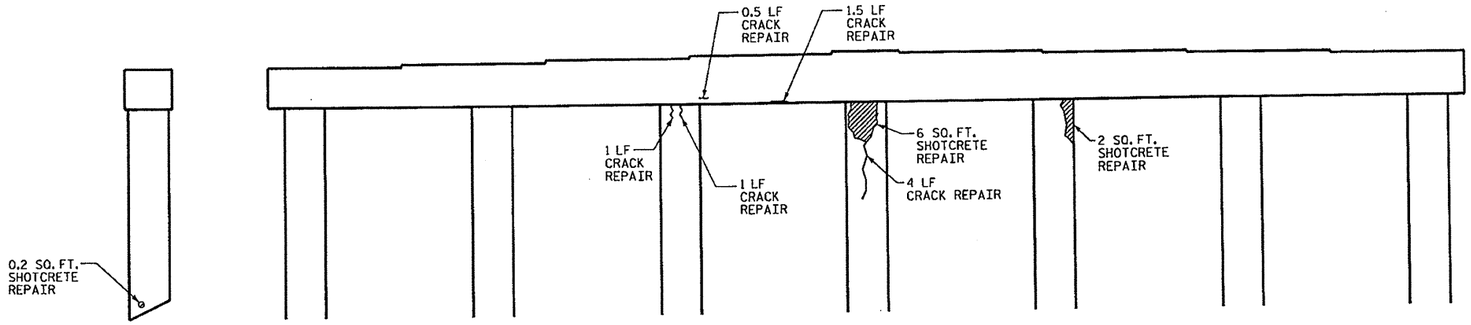
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

END BENTS

70' CL. ROADWAY 49°-03' SKEW

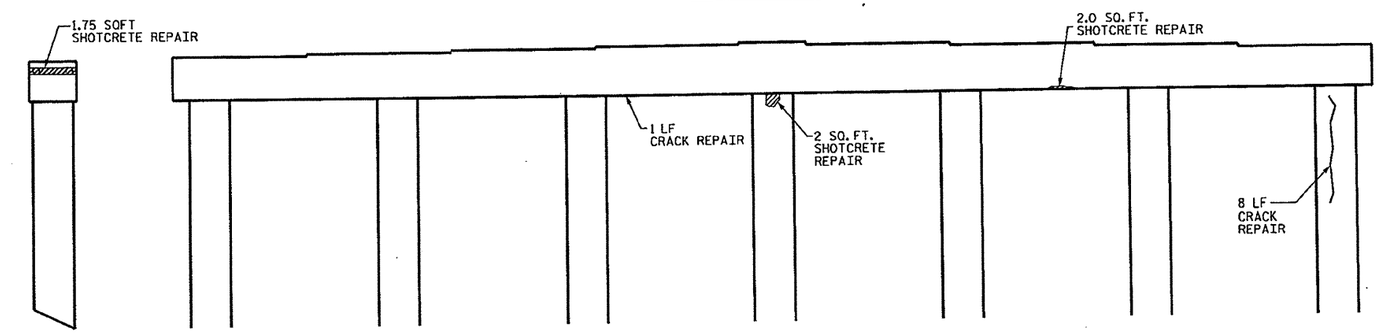
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-34
1			3			TOTAL SHEETS
2			4			63

DRAWN BY: C BRIGHT DATE: 02/12
CHECKED BY: F. ASEFNIA DATE: 10/12



EAST END

NORTH FACE



WEST END

SOUTH FACE

ESTIMATED REPAIR AREA

REPAIR QUANTITY TABLE

REPAIRS BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	2.0	1.0		
CAP (HORIZONTAL, CORNER)	1.8	1.0		
COLUMN (VERTICAL FACE)	10.2	6.5		
COLUMN (HORIZONAL, CORNER)	0	0		
EPOXY RESIN INJECTION		LN. FT		LN. FT
CAP		3		
COLUMN		14		

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

NOTE:

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

FOR STRUCTURE REPAIRS, SEE SHEET S-38.

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 169
SHEET 5 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

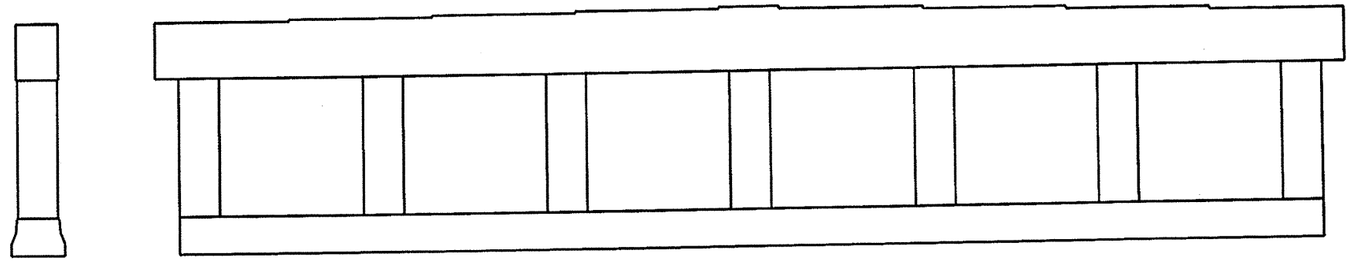
BENT 1

70' CL. ROADWAY 49°-03' SKEW

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-35
1			3			TOTAL SHEETS
2			4			63

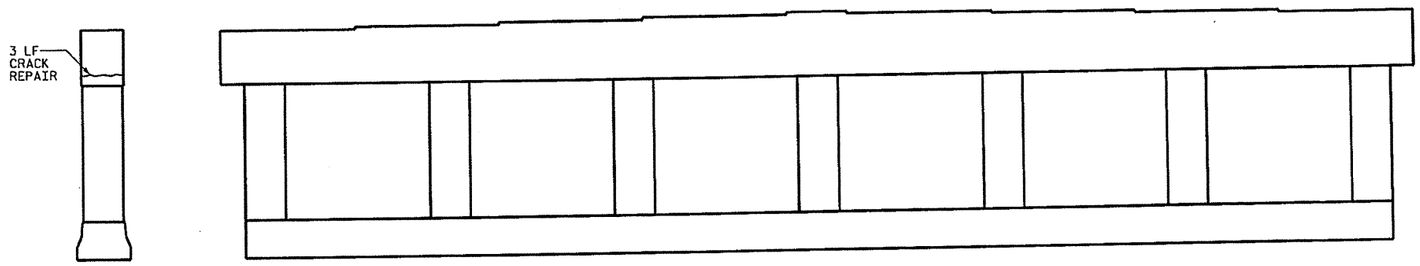
NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARZIN ASEFNIA
3/28/13

DRAWN BY: C BRIGHT DATE: 02/12
CHECKED BY: F. ASEFNIA DATE: 10/12



EAST END

NORTH FACE



WEST END

SOUTH FACE

ESTIMATED REPAIR AREA

NOTE:

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

FOR STRUCTURE REPAIRS, SEE SHEET S-38.

REPAIR QUANTITY TABLE

REPAIRS BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	0	0		
CAP (HORIZONTAL, CORNER)	0	0		
COLUMN (VERTICAL FACE)	0	0		
COLUMN (HORIZONAL, CORNER)	0	0		
EPOXY RESIN INJECTION		LN. FT		LN. FT
CAP		3		
COLUMN		0		

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

NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARZIN ASEFNIA 3/12/13

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 169
SHEET 6 OF 9

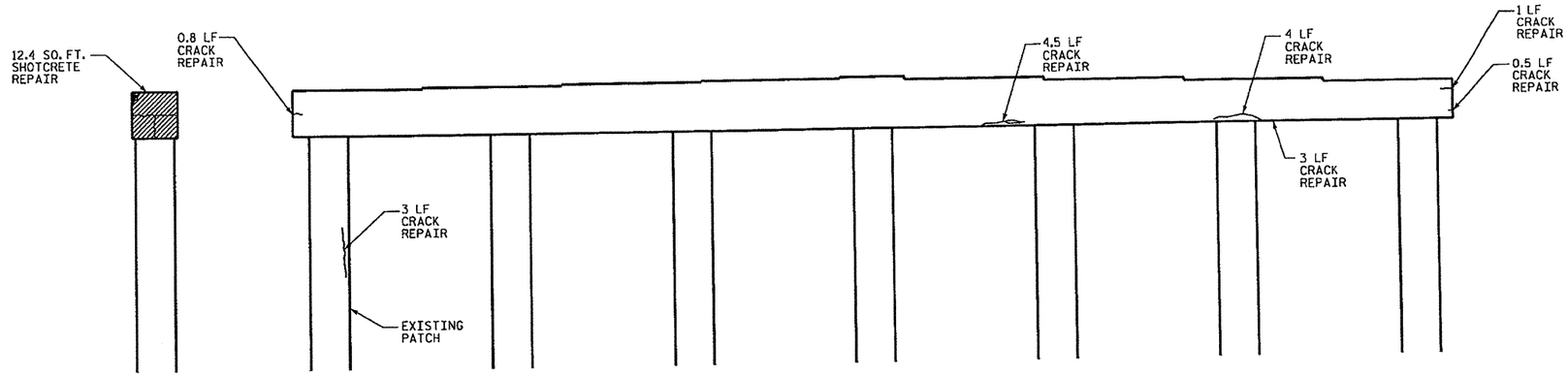
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 2

70' CL. ROADWAY 49°-03' SKEW

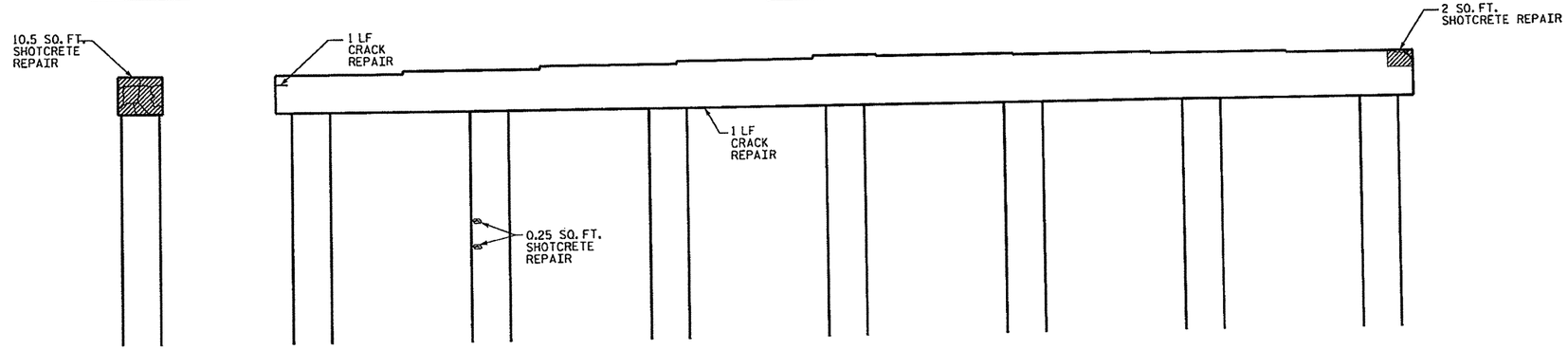
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-36
1			3			TOTAL SHEETS
2			4			63

DRAWN BY: C BRIGHT DATE: 02/12
CHECKED BY: F. ASEFNIA DATE: 10/12



EAST END

NORTH FACE



WEST END

SOUTH FACE

ESTIMATED REPAIR AREA

REPAIR QUANTITY TABLE

REPAIRS BENT 3	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	0	0		
CAP (HORIZONTAL, CORNER)	24.9	16.0		
COLUMN (VERTICAL FACE)	0.25	0.5		
COLUMN (HORIZONAL, CORNER)	0	0		
EPOXY RESIN INJECTION		LN. FT		LN. FT
CAP		15.8		
COLUMN		3.0		

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

NOTE:

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

FOR STRUCTURE REPAIRS, SEE SHEET S-38.

NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARZIN ASEFNIA 3/28/13

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 169
SHEET 7 OF 9

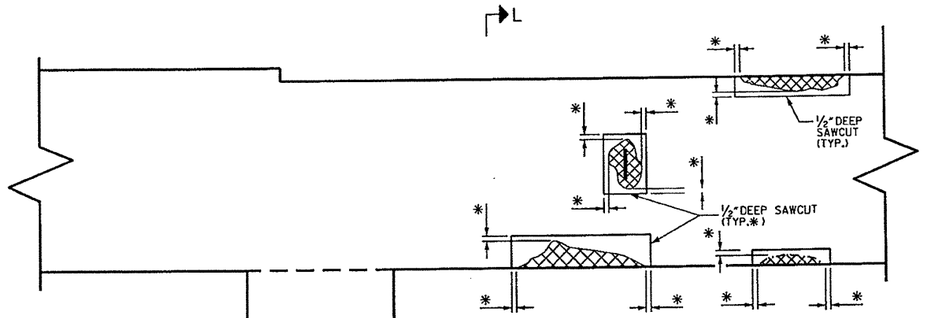
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 3

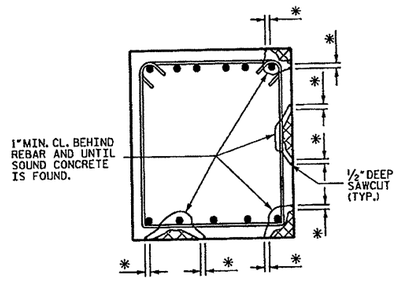
70' CL. ROADWAY 49°-03' SKEW

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-37
1			3			TOTAL SHEETS
2			4			63

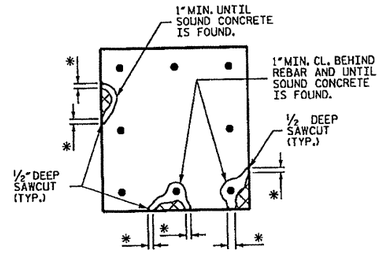
DRAWN BY: C BRIGHT DATE: 02/12
CHECKED BY: F. ASEFNIA DATE: 10/12



BENT CAP & COLUMN REPAIR DETAIL

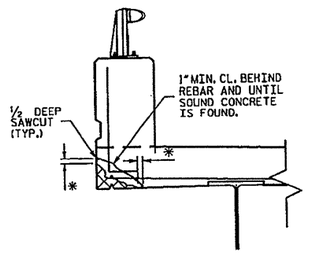


SECTION L-L

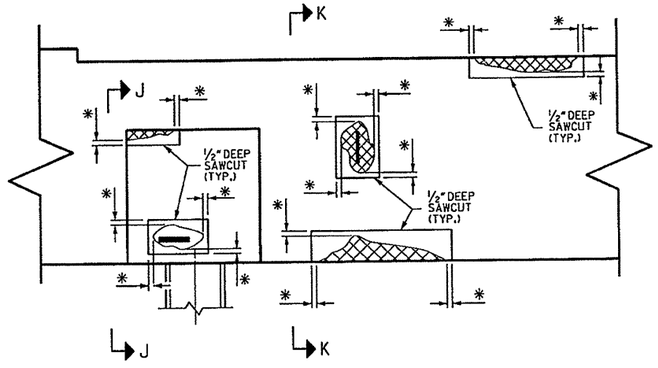


SECTION M-M

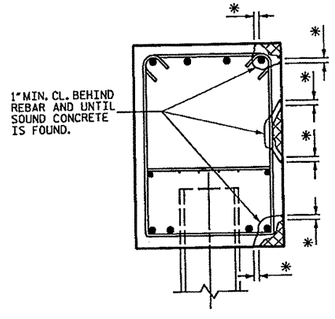
* CONCRETE SHALL BE REMOVED UNTIL SOUND CONCRETE IS FOUND. (1" MIN.)



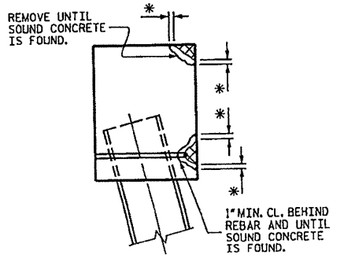
OVERHANG REPAIR DETAIL



END BENT CAP REPAIR DETAIL



SECTION K-K



SECTION J-J

* CONCRETE SHALL BE REMOVED UNTIL SOUND CONCRETE IS FOUND. (1" MIN.)

DAMAGED AREA

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 169
SHEET 8 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CAP & COLUMN REPAIR DETAILS

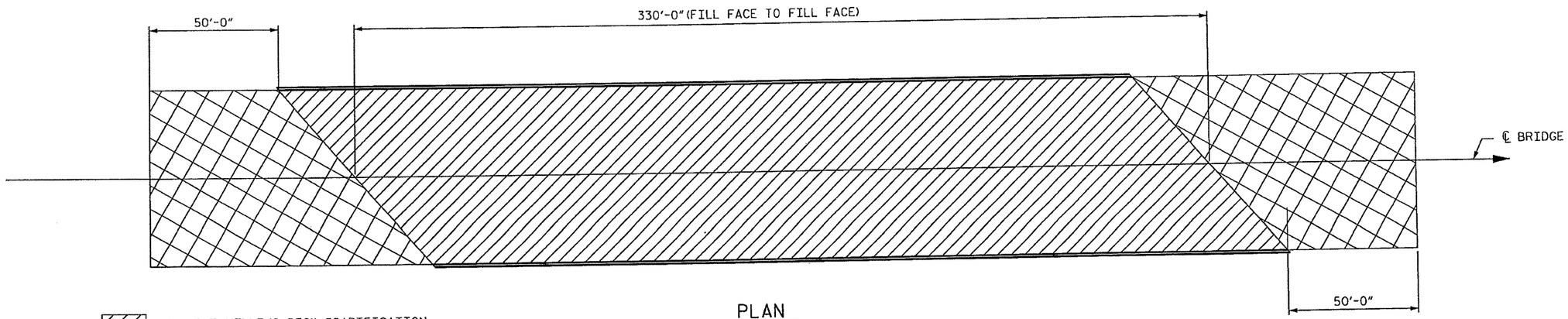
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

SHEET NO. S-38
TOTAL SHEETS 63

NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARZIN ASEFNIA

DRAWN BY: C BRIGHT DATE: 10/12
CHECKED BY: F. ASEFNIA DATE: 10/12

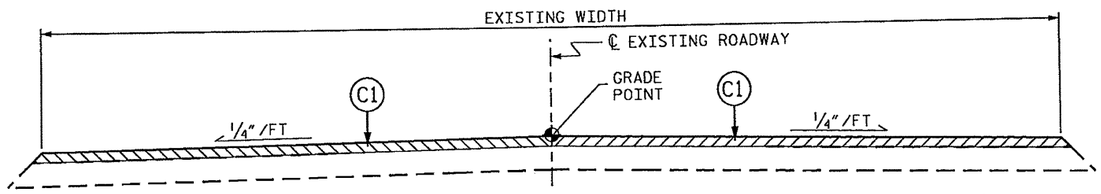
Jayannaccone 28-MAR-2013 13:35



PLAN

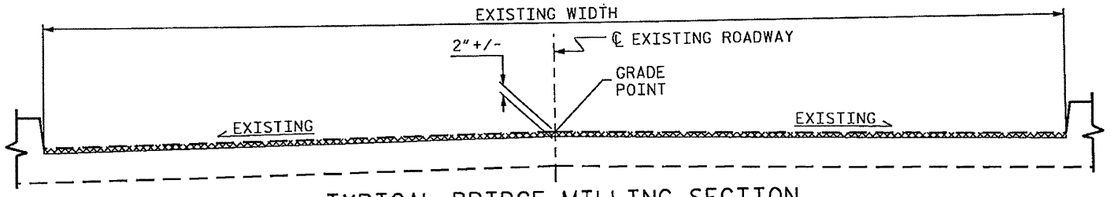
ASPHALT MILLING, DECK SCARIFICATION AND HYDRODEMOLITION

INCIDENTAL MILLING



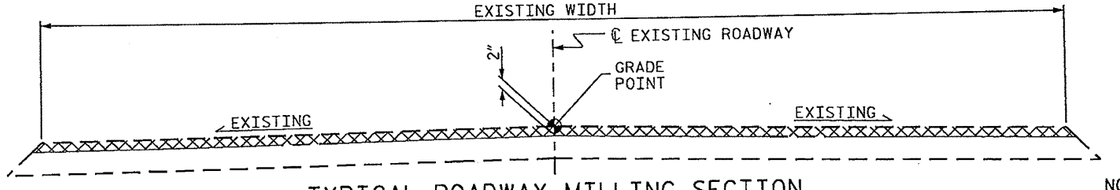
TYPICAL ROADWAY SECTION

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 1½" IN DEPTH.



TYPICAL BRIDGE MILLING SECTION

(MILL TO 2" DEPTH OR BRIDGE DECK SURFACE)



TYPICAL ROADWAY MILLING SECTION

(MILL TO 2" DEPTH)

NOT TO SCALE

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 20103 FARZIN ASEFNIA

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 169
SHEET 9 OF 9

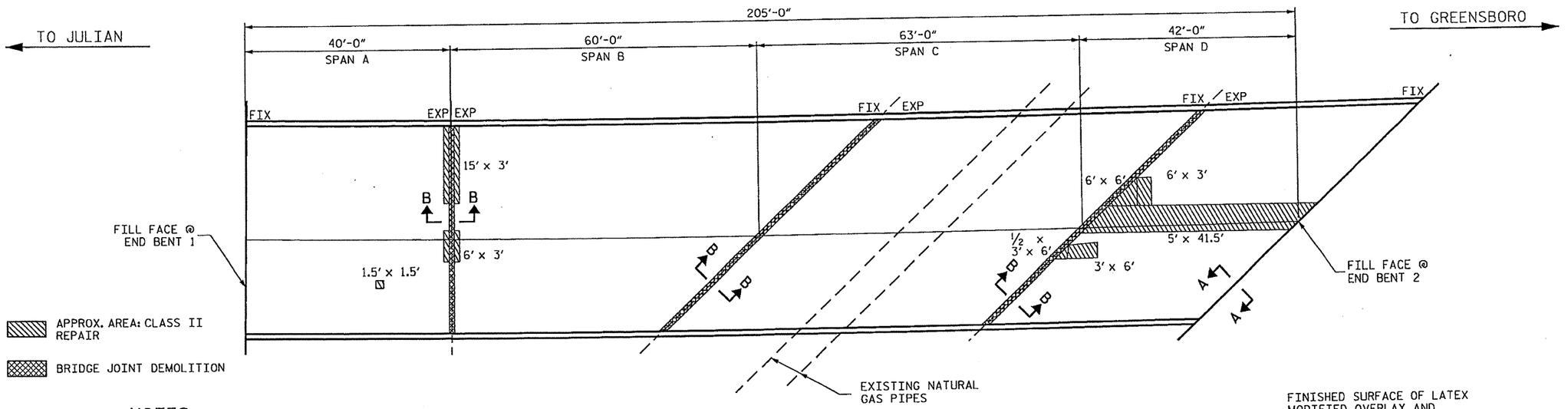
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

ROADWAY TYPICAL SECTION AND MILLING DETAILS

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-39
1			3			TOTAL SHEETS
2			4			63

DRAWN BY: C BRIGHT DATE: 10/12
CHECKED BY: F. ASEFNIA DATE: 10/12

jayonnaccone 28-MAR-2013 13:36



NOTES

EXISTING JOINTS AND DECK DRAINS SHALL BE SEALED PRIOR TO BEGINNING SURFACE PREPARATION OF BRIDGE DECK.

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

INCIDENTAL MILLING IS INCLUDED TO ENSURE A SMOOTH TRANSITION ONTO THE BRIDGE FLOOR. DIMENSIONS SHOWN ARE APPROXIMATE. CONTRACTOR SHALL MILL AS REQUIRED TO PROVIDE A SMOOTH TRANSITION TO THE ROADWAY AT BOTH ENDS OF BRIDGE.

THE CONTRACTOR SHALL PROVIDE A METHOD OF HANDLING UNEXPECTED BLOW THROUGH OF THE DECK, SEE "TYPICAL "BLOW THRU" CONTAINMENT AND FORMWORK" DETAIL.

THE CONTRACTOR MUST COLLECT, TREAT AND DISPOSE OF RUN-OFF WATER FROM THE HYDRO-DEMOLITION PROCESS SEE, MANAGING HYDRO-DEMOLITION WATER SPECIAL PROVISION.

FOR OVERLAY SURFACE PREPARATION, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR SCARIFYING BRIDGE DECK, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

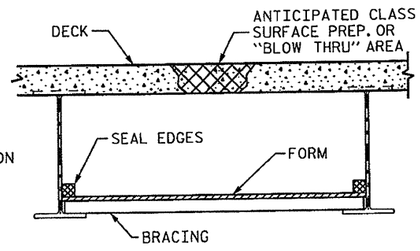
FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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

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

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

DURING CONSTRUCTION, BERMS OR APPROPRIATE MEASURES SHALL BE USED TO ENSURE HYDRO-DEMOLITION WATER DOES NOT FLOW OR MIGRATE INTO ACTIVE TRAVEL LANES.

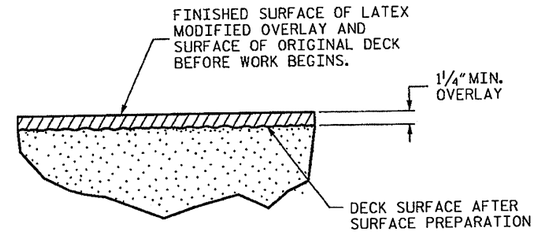


TYP. "BLOW THRU" CONTAINMENT AND FORMWORK

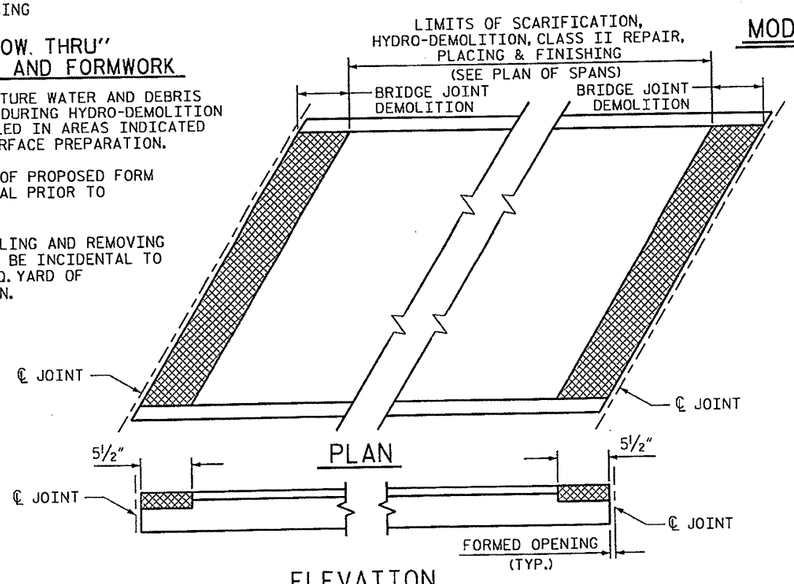
A METHOD TO CAPTURE WATER AND DEBRIS FROM BLOW THRU DURING HYDRO-DEMOLITION SHALL BE INSTALLED IN AREAS INDICATED AS CLASS III SURFACE PREPARATION.

SUBMIT DETAILS OF PROPOSED FORM WORK FOR APPROVAL PRIOR TO BEGINNING WORK.

COST FOR INSTALLING AND REMOVING FORM WORK SHALL BE INCIDENTAL TO THE PRICE PER SQ. YARD OF HYDRO-DEMOLITION.



DETAIL FOR LATEX MODIFIED CONCRETE OVERLAY



ELEVATION

NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARDIN ASEFNIA

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 277
SHEET 1 OF 8

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

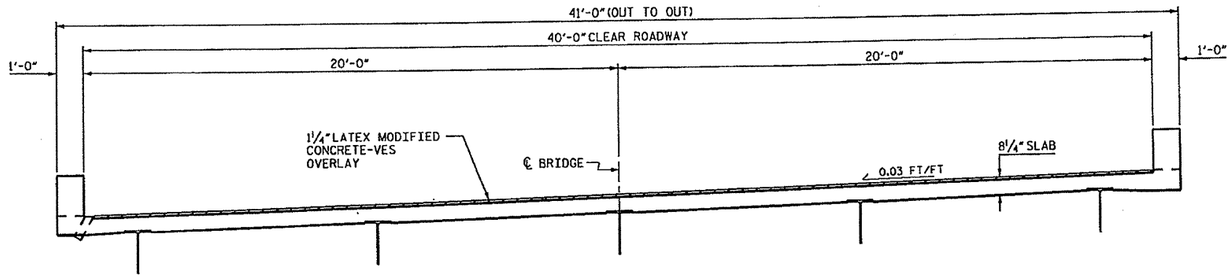
PLAN VIEW OF BRIDGE #277, ON US 421 OVER BIG ALAMANCE CREEK

40' CL. ROADWAY

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-40
1			3			TOTAL SHEETS
2			4			63

DRAWN BY: C BRIGHT DATE: 10/12
CHECKED BY: F. ASEFNIA DATE: 10/12

jayonnacone 26-MAR-2013 13:36



TYPICAL SECTION

NOTES

FOR FOAM JOINT SEAL, SEE SPECIAL PROVISIONS.

THE INSTALLED FOAM JOINT SEALS SHALL BE WATERTIGHT.

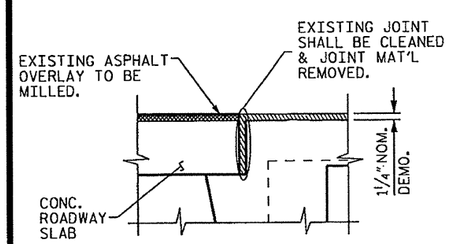
NOMINAL UNCOMPRESSED SEAL WIDTH OF FOAM JOINT SEAL SHALL BE 2½" AT BENTS.

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

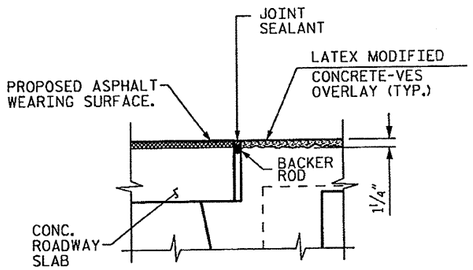
BACKER ROD WIDTH SHALL BE FIELD DETERMINED BY THE ENGINEER AFTER THE JOINT HAS BEEN CLEANED.

ELASTOMERIC CONCRETE		
BENTS	27.1	(CU. FT.)
* TOTAL	27.1	(CU. FT.)

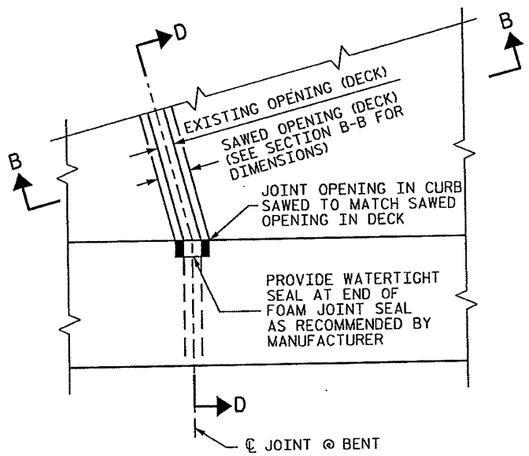
*BASED ON THE MINIMUM BLOCKOUT SHOWN.



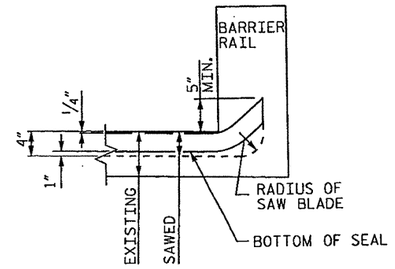
SECTION A-A
(EXISTING JOINT)



SECTION A-A
(PROPOSED JOINT)

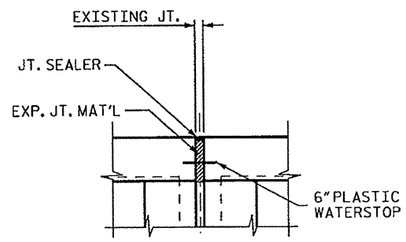


PLAN

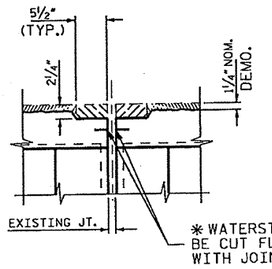


SECTION D-D

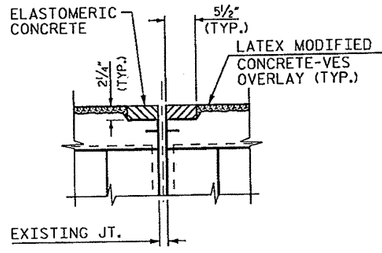
* ALL LOOSE AND UNSOUND CONCRETE SHALL BE REMOVED. IF THE EMBEDDED PORTION OF THE EXISTING WATERSTOP IS EXPOSED DURING REMOVAL, THE ENTIRE WATERSTOP SHALL BE REMOVED.



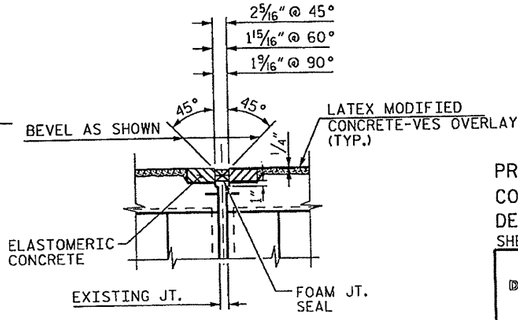
SECTION B-B
(EXISTING JOINT)



SECTION B-B
(MINIMUM EXISTING JOINT DEMOLITION)



SECTION B-B
(PROPOSED JOINT
PRE-SAWED DIMENSIONS)



SECTION B-B
(PROPOSED FOAM
JOINT SEAL EXPANSION)

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 277
SHEET 2 OF 8

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

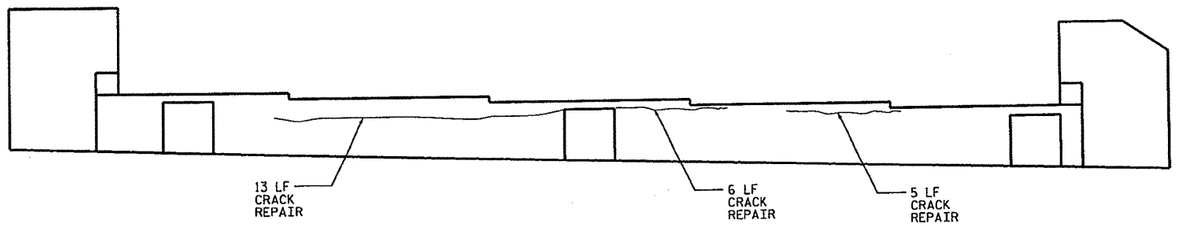
TYPICAL SECTION & JOINT DETAILS

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-41
1			3			TOTAL SHEETS
2			4			63

NORTH CAROLINA PROFESSIONAL SEAL 2003 ENGINEER FARZIN ASEFNIA

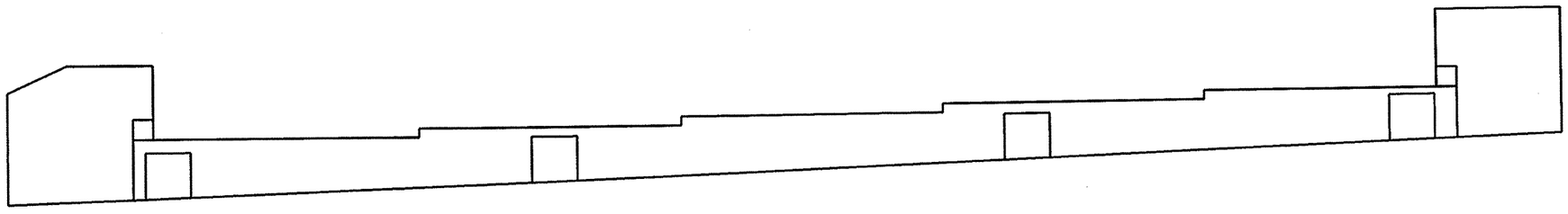
DRAWN BY : C. BRIGHT DATE : 10/2012
CHECKED BY : F. ASEFNIA DATE : 10/2012

joyannaccone 28-MAR-2013 13:36



END BENT 1

SPAN A FACE



END BENT 2*

SPAN D FACE

* NO DAMAGE OBSERVED ON BENT 2, HOWEVER IF SOME DAMAGE IS FOUND BY THE ENGINEER, SEE NOTE ON THIS SHEET CONCERNING ADDITIONAL REPAIRS.

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

FOR STRUCTURE REPAIRS, SEE SHEET S-46.

REPAIR QUANTITY TABLE

REPAIRS END BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL)	0	0		
CAP (HORIZONTAL, CORNER)	0	0		
PILE CAP	0	0		
EPOXY RESIN INJECTION		LN. FT		LN. FT
CAP (VERTICAL, FACE)		24		
PILE CAP		0		

REPAIR QUANTITY TABLE

REPAIRS END BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL)	0	0		
CAP (HORIZONTAL, CORNER)	0	0		
PILE CAP	0	0		
EPOXY RESIN INJECTION		LN. FT		LN. FT
CAP (VERTICAL, FACE)		0		
PILE CAP		0		

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.

DRAWN BY: C BRIGHT DATE: 02/12
CHECKED BY: F. ASEFNIA DATE: 10/12

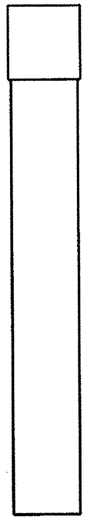
PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 277
SHEET 3 OF 8

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

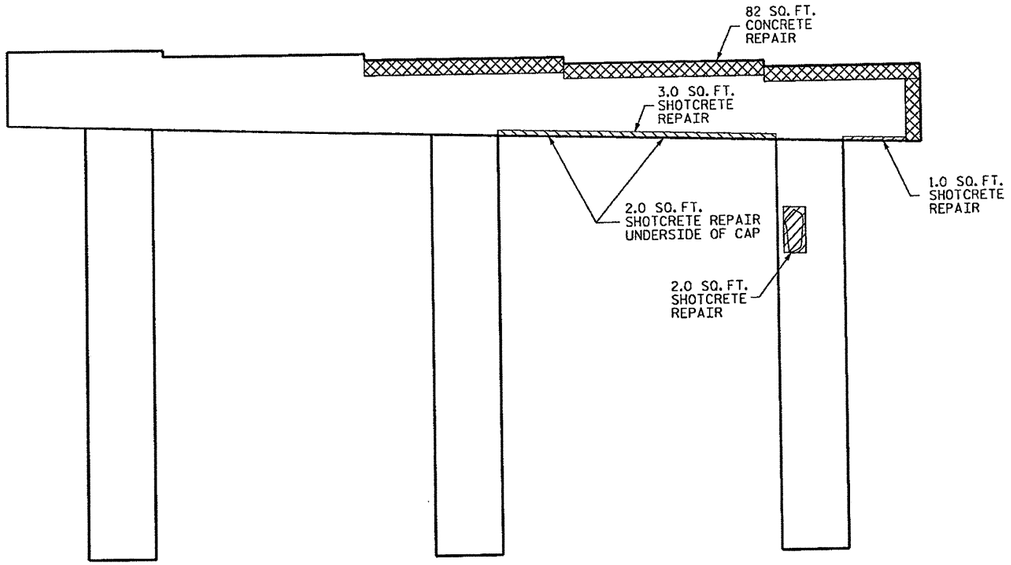
END BENTS

NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARZIN ASEFNIA 8/28/13

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-42
1			3			TOTAL SHEETS
2			4			63



END VIEW



SPAN 'B' FACE

REPAIR QUANTITY TABLE				
REPAIRS BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	1.8	1.0		
CAP (HORIZONTAL, CORNER)	9.0	5.5		
COLUMN (VERTICAL FACE)	2.0	1.0		
COLUMN (HORIZONAL, CORNER)	0	0		
CONCRETE REPAIRS	91.0	91.5		
EPOXY RESIN INJECTION		LN. FT		LN. FT
CAP		0		
COLUMN		0		
EPOXY COATING		SQ. FT.		SQ. FT.
TOP OF CAP		134		

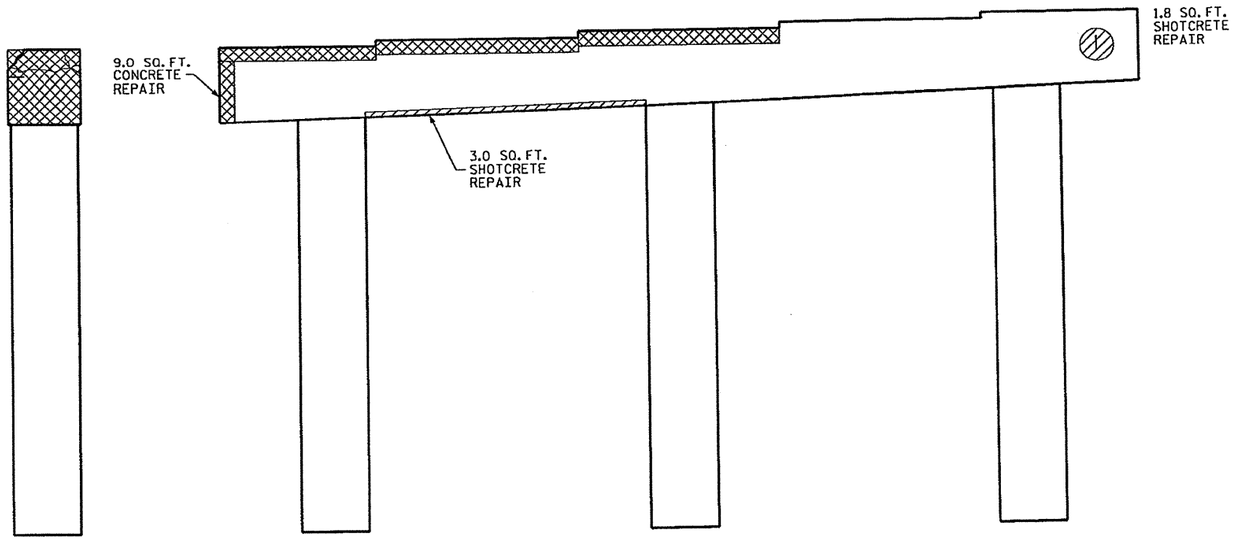
VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 1" CL TO SAWCUT. SEE REPAIR DETAILS.

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

FOR STRUCTURE REPAIRS, SEE SHEET S-46.

EPOXY COATING SHALL BE APPLIED TO THE TOP FACE OF THE CAP AT BENT 1.

ESTIMATED REPAIR AREA



END VIEW

SPAN 'A' FACE

DRAWN BY: C BRIGHT DATE: 02/12
CHECKED BY: F. ASEFNIA DATE: 10/12

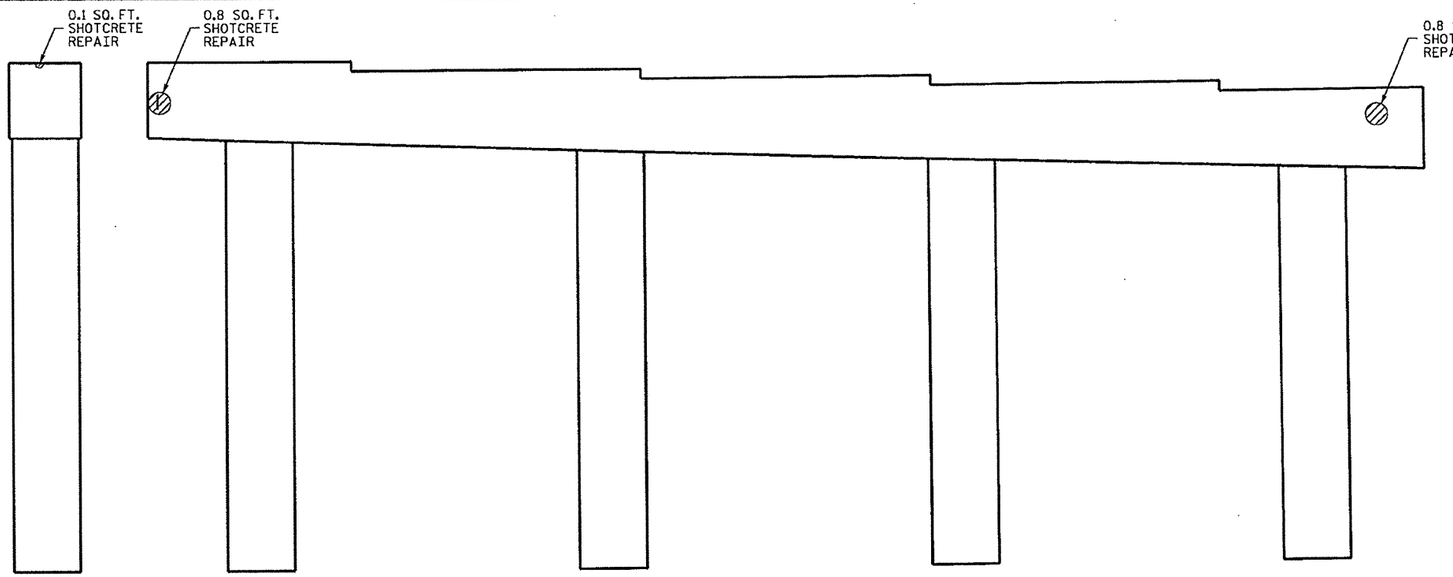
PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 277
SHEET 4 OF 8

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 1

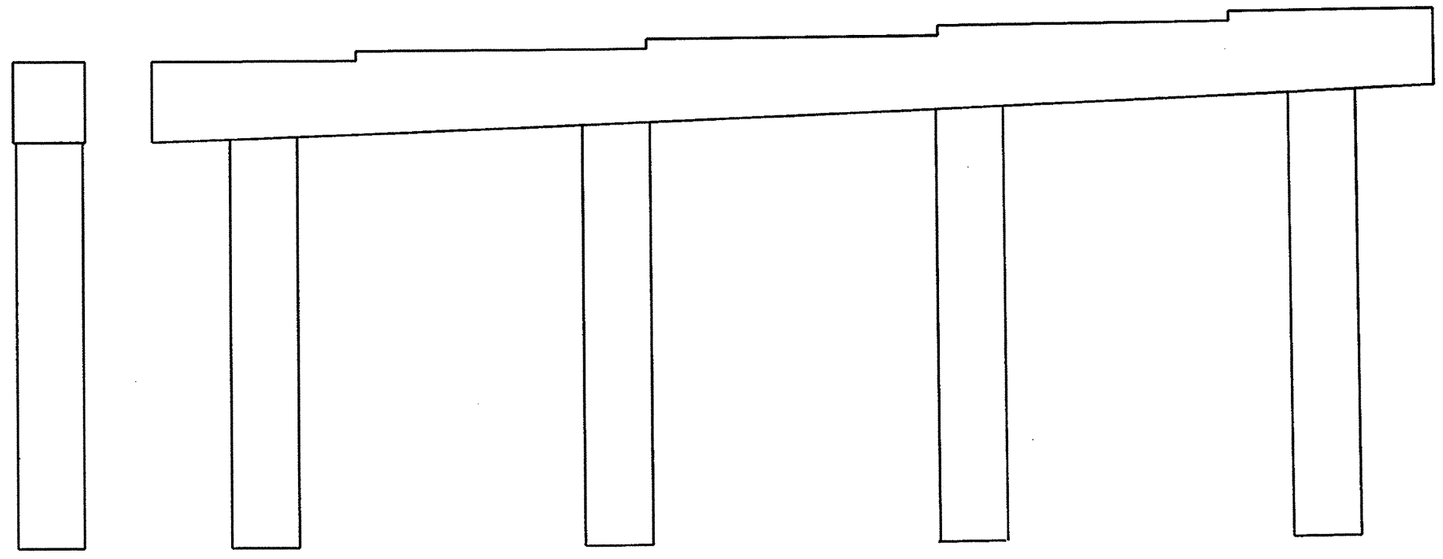
NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARZIN ASEFNIA 3/28/13

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-43
1			3			TOTAL SHEETS
2			4			63



END VIEW

SPAN 'C' FACE



END VIEW

SPAN 'B' FACE

REPAIR QUANTITY TABLE

REPAIRS BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	1.6	0.5		
CAP (HORIZONTAL, CORNER)	0.1	0.5		
COLUMN (VERTICAL FACE)	0	0		
COLUMN (HORIZONAL, CORNER)	0	0		
CONCRETE REPAIRS	0	0		
EPOXY RESIN INJECTION		LN. FT		LN. FT
CAP		0		
COLUMN		0		
EPOXY COATING		SQ. FT.		SQ. FT.
TOP OF CAP		186		

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

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

FOR STRUCTURE REPAIRS, SEE SHEET S-46.

EPOXY COATING SHALL BE APPLIED TO THE TOP FACE OF THE CAP AT BENT 2.

ESTIMATED REPAIR AREA

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 277
SHEET 5 OF 8

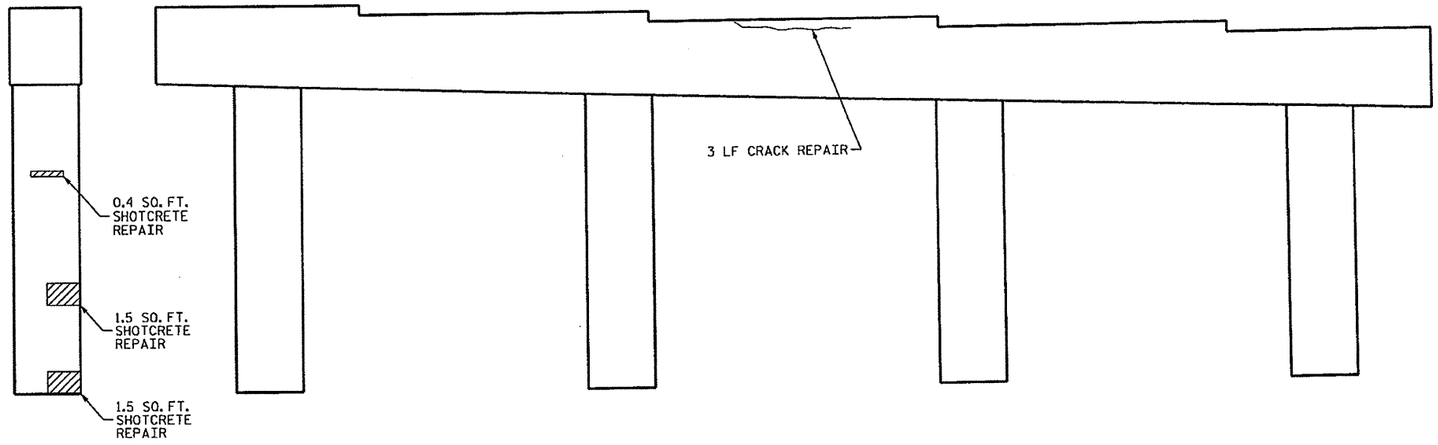
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 2

NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARZIN ASEFNIA 8/28/13

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-44
1			3			TOTAL SHEETS
2			4			63

DRAWN BY: C BRIGHT DATE: 02/12
CHECKED BY: F. ASEFNIA DATE: 10/12



END VIEW

SPAN 'D' FACE

REPAIR QUANTITY TABLE				
REPAIRS BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	0	0		
CAP (HORIZONTAL, CORNER)	4.5	3.0		
COLUMN (VERTICAL FACE)	3.4	2.0		
COLUMN (HORIZONAL, CORNER)	0	0		
CONCRETE REPAIRS	14.3	9.0		
EPOXY RESIN INJECTION		LN. FT.		LN. FT.
CAP		4		
COLUMN		11		
EPOXY COATING		SQ. FT.		SQ. FT.
TOP OF CAP		186		

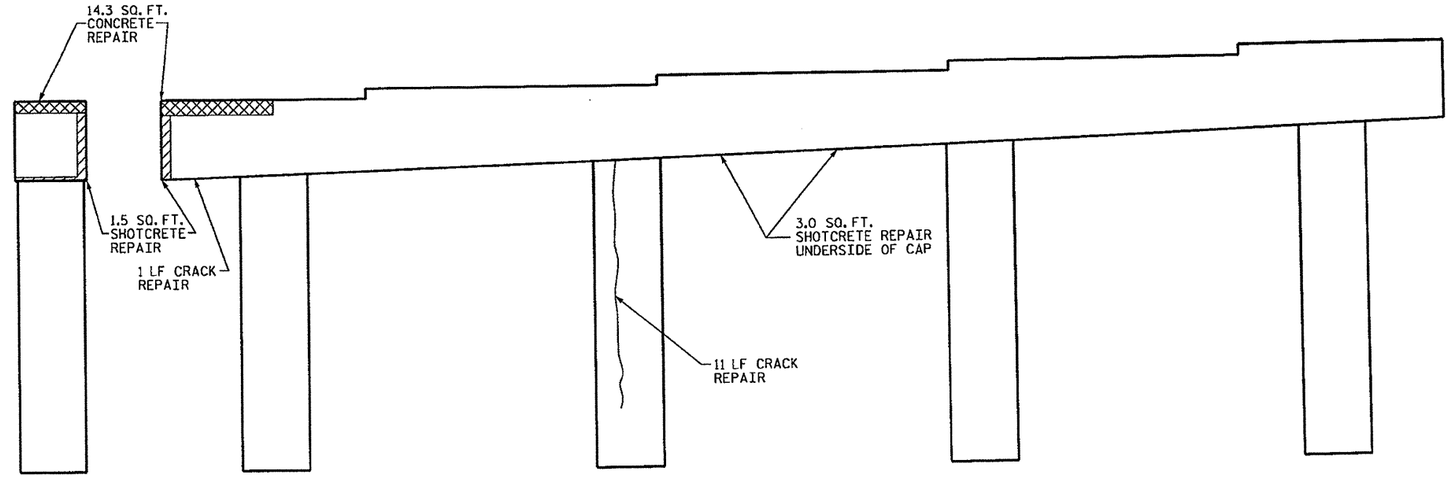
VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 1" CL TO SAWCUT. SEE REPAIR DETAILS.

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

FOR STRUCTURE REPAIRS, SEE SHEET S-46.

EPOXY COATING SHALL BE APPLIED TO THE TOP FACE OF THE CAP AT BENT 3.

ESTIMATED REPAIR AREA



END VIEW

SPAN 'C' FACE

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 277
SHEET 6 OF 8

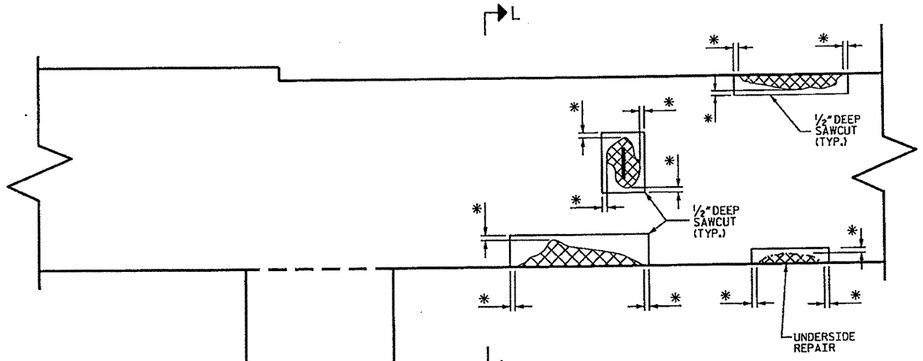
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

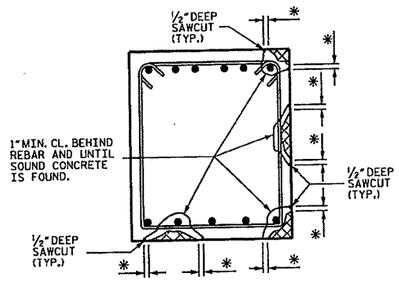
BENT 3

NORTH CAROLINA PROFESSIONAL SEAL 032322 ENGINEER FARZIN ASEFNIA 2013

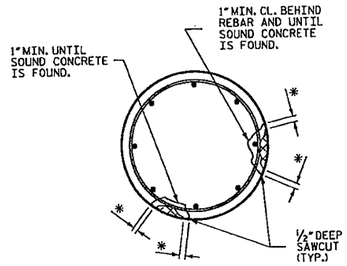
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-45
1			3			TOTAL SHEETS
2			4			63

DRAWN BY: C BRIGHT DATE: 02/12
CHECKED BY: F. ASEFNIA DATE: 10/12



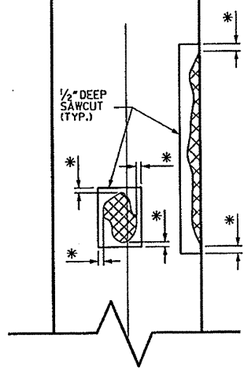


SECTION L-L

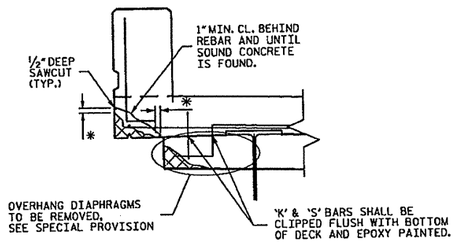


SECTION M-M

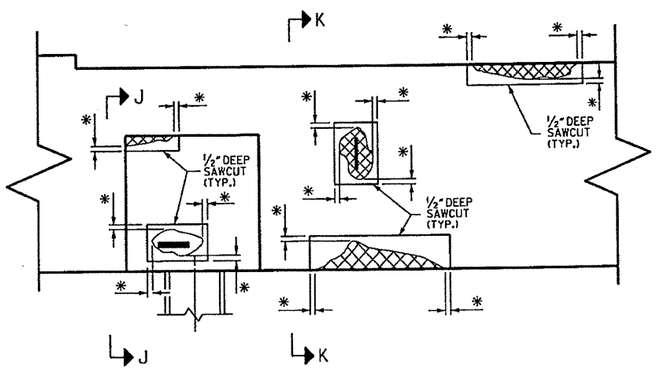
* CONCRETE SHALL BE REMOVED UNTIL SOUND CONCRETE IS FOUND. (1"MIN.)



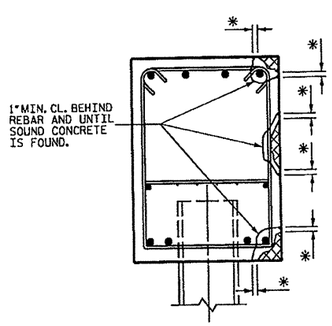
BENT CAP & COLUMN REPAIR DETAIL



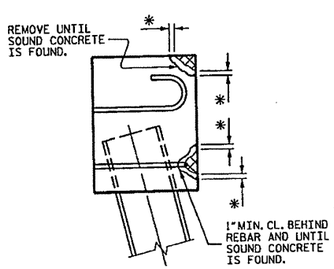
OVERHANG REPAIR DETAIL



END BENT CAP REPAIR DETAIL



SECTION K-K



SECTION J-J

* CONCRETE SHALL BE REMOVED UNTIL SOUND CONCRETE IS FOUND. (1"MIN.)

DAMAGED AREA

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 277
SHEET 7 OF 8

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CAP & COLUMN REPAIR DETAILS

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-46
1			3			TOTAL SHEETS
2			4			63

NORTH CAROLINA PROFESSIONAL SEAL 29268 ENGINEER FARZIN ASEFNIA

DRAWN BY: C BRIGHT DATE: 02/12
CHECKED BY: F. ASEFNIA DATE: 10/12

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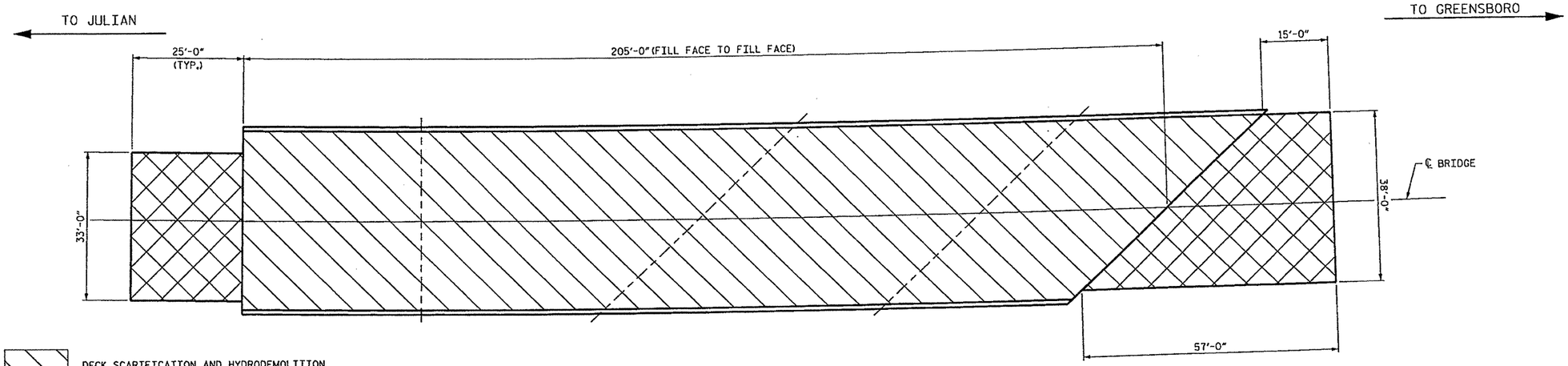
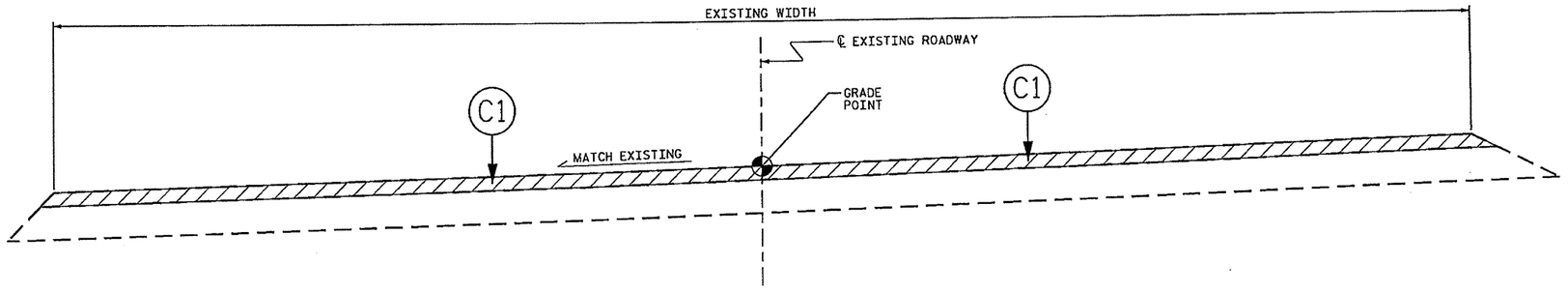
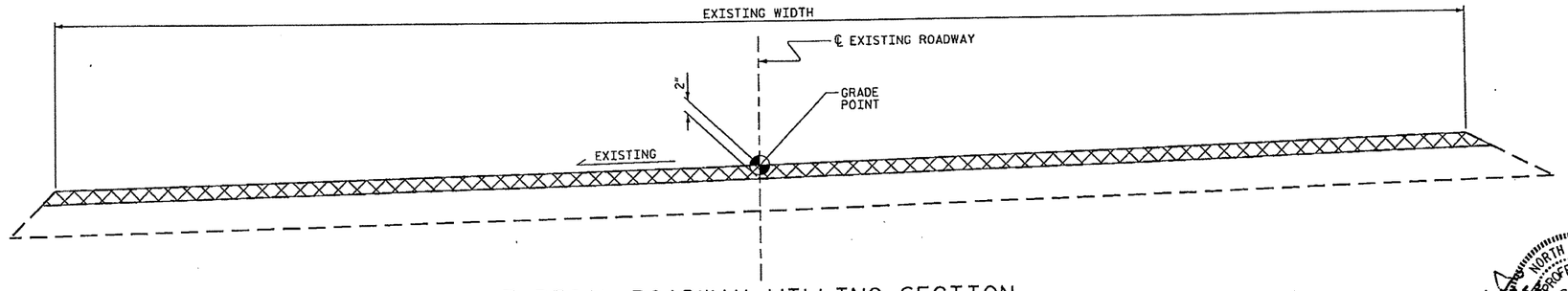


PLAN

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 1½" IN DEPTH.



TYPICAL ROADWAY SECTION



TYPICAL ROADWAY MILLING SECTION

(MILL TO 2" DEPTH)

NOT TO SCALE

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 277
SHEET 8 OF 8

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

ROADWAY TYPICAL SECTION AND MILLING DETAILS

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-47
1			3			TOTAL SHEETS
2			4			63

DRAWN BY : J. YANNACCONE DATE : 11/12
CHECKED BY : F. ASEFNIA DATE : 11/12

28-MAR-2013 13:36
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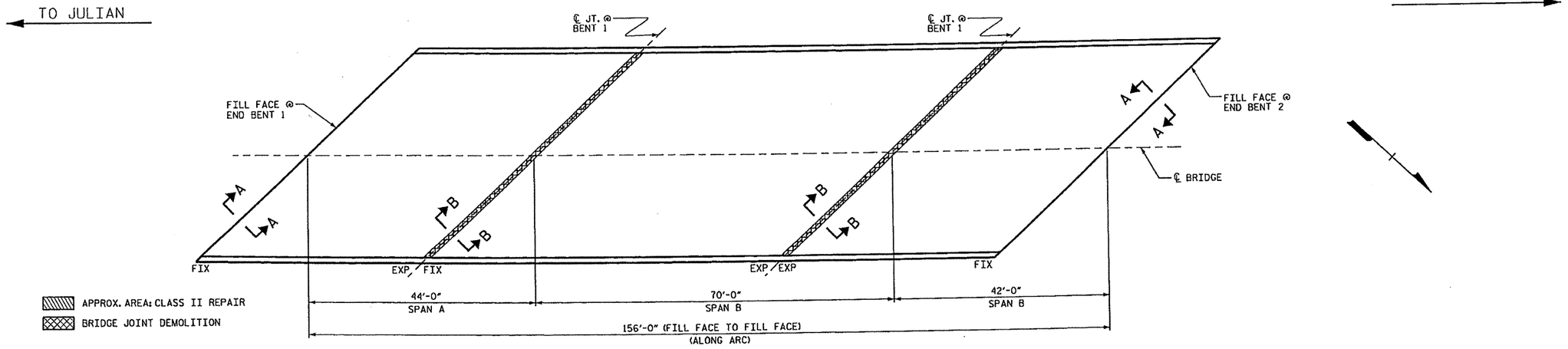
joyannaccone



PLAN OF SPANS

NOTES

EXISTING JOINTS AND DECK DRAINS SHALL BE SEALED PRIOR TO BEGINNING SURFACE PREPARATION OF BRIDGE DECK.

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

INCIDENTAL MILLING IS INCLUDED TO ENSURE A SMOOTH TRANSITION ONTO THE BRIDGE FLOOR. DIMENSIONS SHOWN ARE APPROXIMATE. CONTRACTOR SHALL MILL AS REQUIRED TO PROVIDE A SMOOTH TRANSITION TO THE ROADWAY AT BOTH ENDS OF BRIDGE.

THE CONTRACTOR SHALL PROVIDE A METHOD OF HANDLING UNEXPECTED BLOW THROUGH OF THE DECK, SEE "TYPICAL "BLOW THRU" CONTAINMENT AND FORMWORK" DETAIL.

THE CONTRACTOR MUST COLLECT, TREAT AND DISPOSE OF RUN-OFF WATER FROM THE HYDRO-DEMOLITION PROCESS. SEE MANAGING HYDRO-DEMOLITION WATER SPECIAL PROVISION.

FOR OVERLAY SURFACE PREPARATION, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR SCARIFYING BRIDGE DECK, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

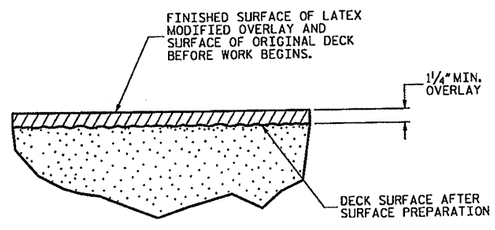
FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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

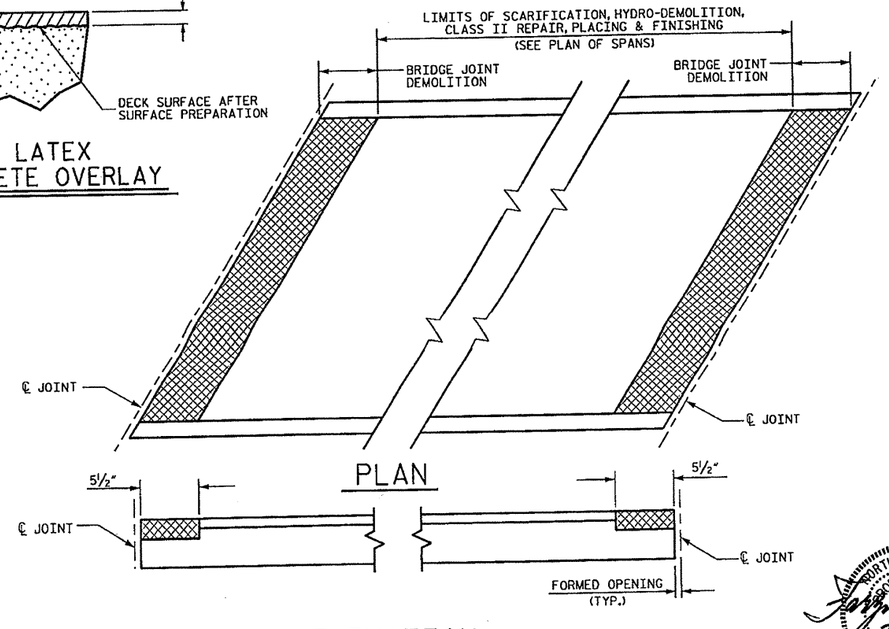
FOR CONTROL OF TRAFFIC AND LIMITS ON PHASING OF CONSTRUCTION, SEE TRANSPORTATION MANAGEMENT PLAN SHEETS.

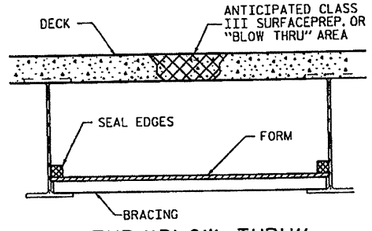
LONGITUDINAL CONSTRUCTION JOINTS OF OVERLAYS SHALL BE LOCATED ALONG THE CENTERLINE OR EDGE OF TRAVEL LANES.

DURING CONSTRUCTION, BERMS OR APPROPRIATE MEASURES SHALL BE USED TO ENSURE HYDRO-DEMOLITION WATER DOES NOT FLOW OR MIGRATE INTO ACTIVE TRAVEL LANES.



DETAIL FOR LATEX MODIFIED CONCRETE OVERLAY





TYP. "BLOW THRU" CONTAINMENT AND FORMWORK

A METHOD TO CAPTURE WATER AND DEBRIS FROM BLOW THRU DURING HYDRO-DEMOLITION SHALL BE INSTALLED IN AREAS INDICATED AS CLASS III SURFACE PREPARATION.

SUBMIT DETAILS OF PROPOSED FORM WORK FOR APPROVAL PRIOR TO BEGINNING WORK.

COST FOR INSTALLING AND REMOVING FORM WORK SHALL BE INCIDENTAL TO THE PRICE PER SQ. YARD OF HYDRO-DEMOLITION.

PROJECT NO. 17BP.7.P.4
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DECK REPAIR BRIDGE NO. 278
SHEET 1 OF 7

STATE OF NORTH CAROLINA
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RALEIGH

PLAN VIEW OF BRIDGE #278, ON US 421 OVER BIG ALAMANCE CREEK

40' CL. ROADWAY

NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARZIN ASEFNIA 3/28/13

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-48
1			3			TOTAL SHEETS
2			4			63

DRAWN BY: C BRIGHT DATE: 10/12
CHECKED BY: F. ASEFNIA DATE: 10/12

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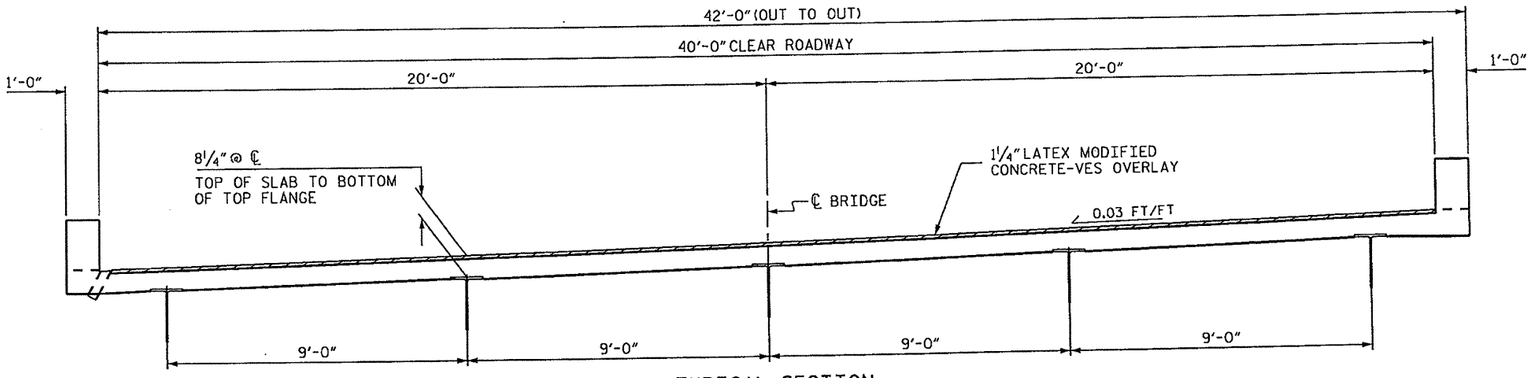


TYPICAL SECTION

NOTES

FOR FOAM JOINT SEAL, SEE SPECIAL PROVISIONS.

THE INSTALLED FOAM JOINT SEALS SHALL BE WATERTIGHT.

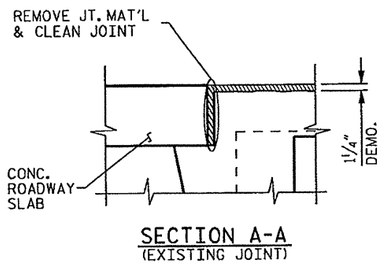
NOMINAL UNCOMPRESSED SEAL WIDTH OF FOAM JOINT SEAL SHALL BE 2" AT BENTS.

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

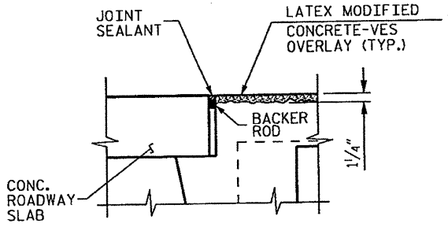
BACKER ROD WIDTH SHALL BE FIELD DETERMINED BY THE ENGINEER AFTER THE JOINT HAS BEEN CLEANED.

ELASTOMERIC CONCRETE		
BENTS	20.8	(CU. FT.)
* TOTAL	20.8	(CU. FT.)

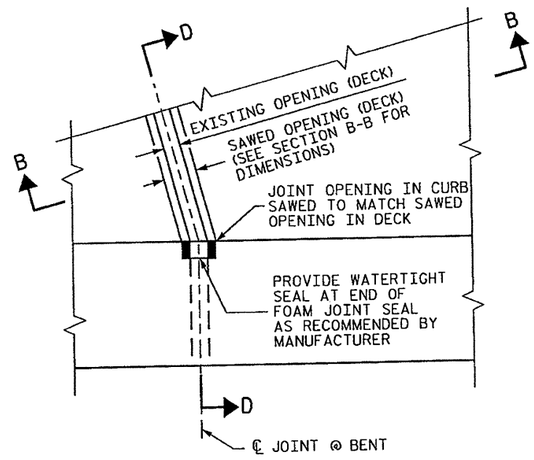
*BASED ON THE MINIMUM BLOCKOUT SHOWN.



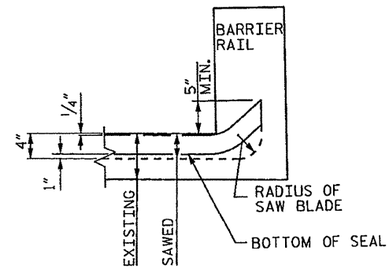
SECTION A-A
(EXISTING JOINT)



SECTION A-A
(PROPOSED JOINT)

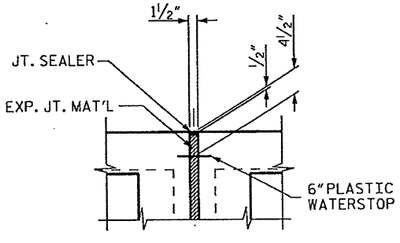


PLAN

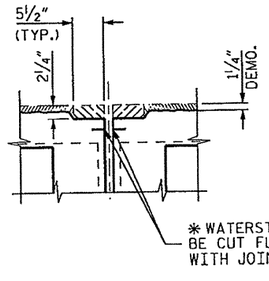


SECTION D-D

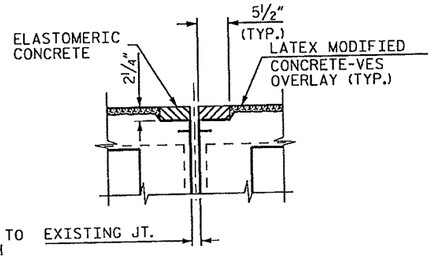
* ALL LOOSE AND UNSOUND CONCRETE SHALL BE REMOVED. IF THE EMBEDDED PORTION OF THE EXISTING WATERSTOP IS EXPOSED DURING REMOVAL, THE ENTIRE WATERSTOP SHALL BE REMOVED.



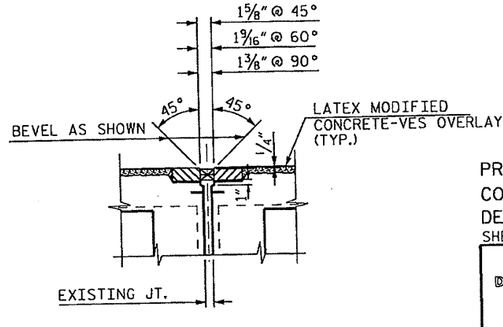
SECTION B-B
(EXISTING JOINT)



SECTION B-B
(MINIMUM EXISTING JOINT DEMOLITION)



SECTION B-B
(PROPOSED JOINT
PRE-SAWED DIMENSIONS)



SECTION B-B
(PROPOSED FOAM
JOINT SEAL EXPANSION)

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

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 278
SHEET 2 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION
&
JOINT DETAILS

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-49
1			3			TOTAL SHEETS
2			4			63

DRAWN BY : C. BRIGHT DATE : 10/2012
CHECKED BY : F. ASEFNIA DATE : 10/2012

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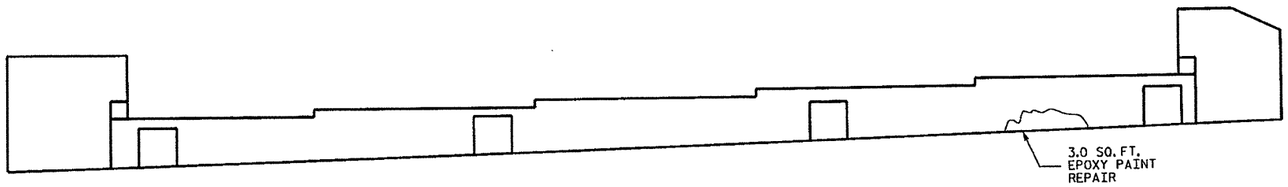


END BENT 2

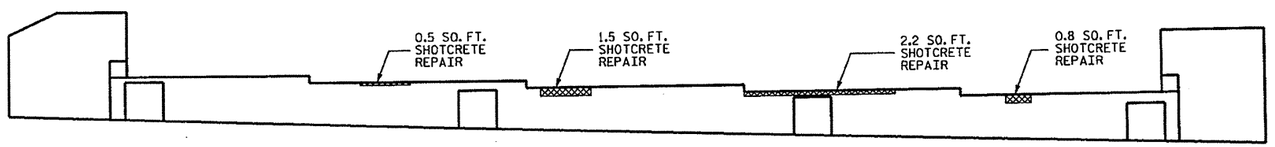
SPAN C SIDE

ESTIMATED REPAIR AREA

REPAIR QUANTITY TABLE				
REPAIRS END BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL)	5.0	2.5		
CAP (HORIZONTAL, CORNER)	0	0		
PILE CAP	0	0		
EPOXY RESIN INJECTION		LN. FT		LN. FT
CAP (VERTICAL, FACE)		0		
PILE CAP		0		
EPOXY COATING		SQ. FT.		SQ. FT.
TOP OF CAP AND PILE CAPS		111		

REPAIR QUANTITY TABLE				
REPAIRS END BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL)	0	0		
CAP (HORIZONTAL, CORNER)	0	0		
PILE CAP	0	0		
EPOXY RESIN INJECTION		LN. FT		LN. FT
CAP (VERTICAL, FACE)		0		
PILE CAP		0		
EPOXY COATING		SQ. FT.		SQ. FT.
TOP OF CAP AND PILE CAPS		0		

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.



END BENT 1

SPAN A SIDE

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

FOR STRUCTURE REPAIRS, SEE SHEET S-53.

EPOXY COATING SHALL BE APPLIED TO THE TOP FACE OF THE CAP AND PILE CAPS AT END BENT 1.

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 278
SHEET 3 OF 7

STATE OF NORTH CAROLINA
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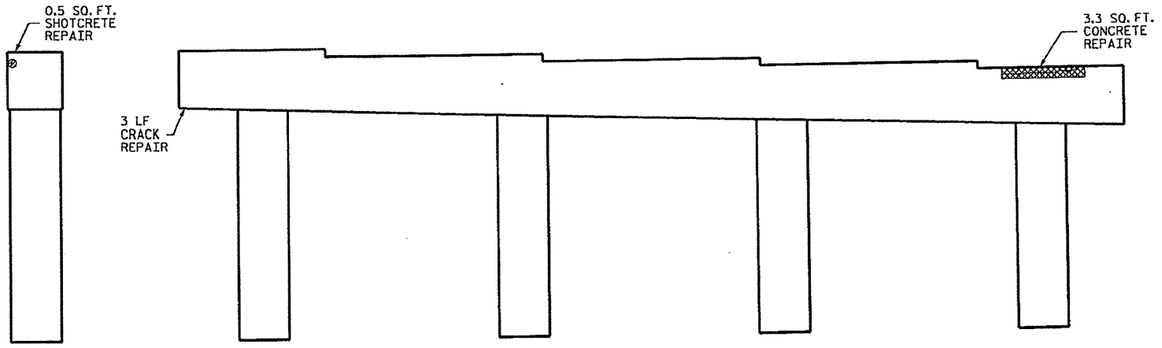
RALEIGH

END BENTS

NORTH CAROLINA PROFESSIONAL SEAL 030333 ENGINEER FARZIN ASEFNIA

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-50
1			3			TOTAL SHEETS
2			4			63

DRAWN BY : C. BRIGHT DATE : 10/2012
CHECKED BY : F. ASEFNIA DATE : 10/2012



SPAN 'B' FACE

REPAIR QUANTITY TABLE				
REPAIRS END BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL)	5.8	2.5		
CAP (HORIZONTAL, CORNER)	0.8	0.5		
PILE CAP	0	0		
CONCRETE REPAIRS	3.3	2.0		
EPOXY RESIN INJECTION		LN. FT		LN. FT
CAP (VERTICAL, FACE)		3		
PILE CAP		0		
EPOXY COATING		SQ. FT.		SQ. FT.
TOP OF CAP AND PILE CAPS		184		

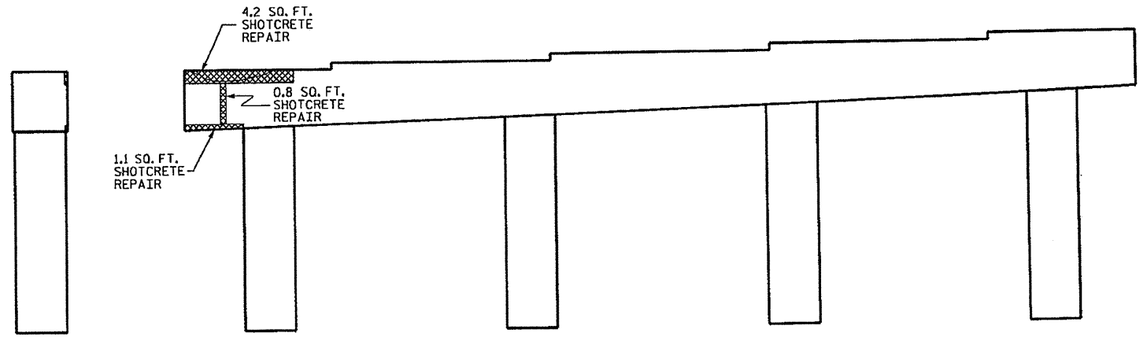
VALUES IN CHARTS REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 1" CL TO SAWCUT. SEE REPAIR DETAILS.

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

FOR STRUCTURE REPAIRS, SEE SHEET S-53.

EPOXY COATING SHALL BE APPLIED TO THE TOP FACE OF THE CAP AT BENT 1.

ESTIMATED REPAIR AREA



SPAN 'A' FACE

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 278
SHEET 4 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 1

NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARZIN ASEFNIA

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

SHEET NO. S-51
TOTAL SHEETS 63

DRAWN BY : C. BRIGHT DATE : 10/2012
CHECKED BY : F. ASEFNIA DATE : 10/2012

28-MAR-2013 13:36
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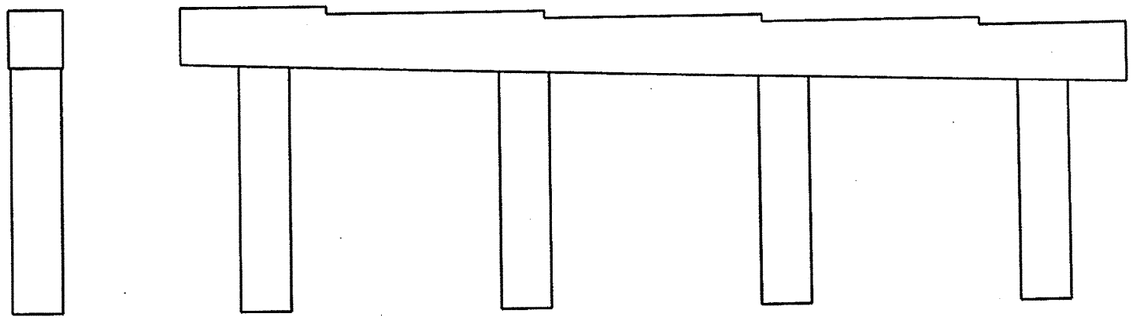
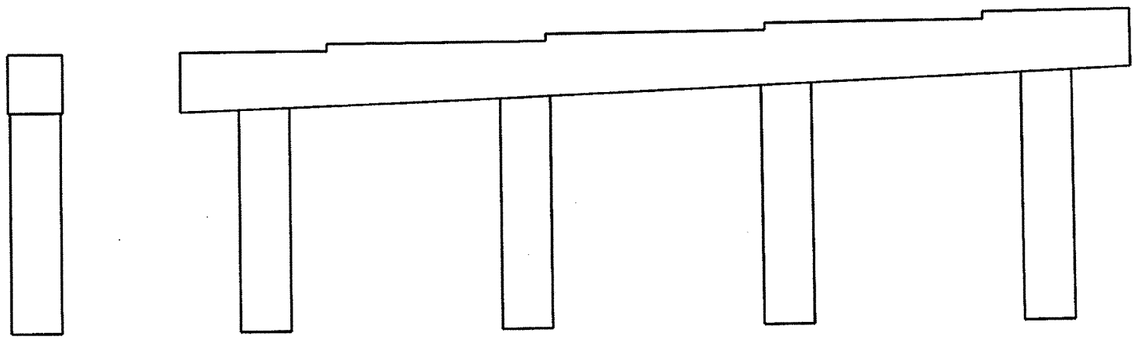
jayannaccone



SPAN 'B' FACE*



SPAN 'C' FACE*

* NO DAMAGE OBSERVED ON BENT 2. HOWEVER IF DAMAGE IS FOUND BY THE ENGINEER, SEE NOTE ON THIS SHEET CONCERNING ADDITIONAL REPAIRS.

REPAIR QUANTITY TABLE				
REPAIRS END BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL)	0	0		
CAP (HORIZONTAL, CORNER)	0	0		
PILE CAP	0	0		
EPOXY RESIN INJECTION		LN. FT		LN. FT
CAP (VERTICAL, FACE)		0		
PILE CAP		0		

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.

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

FOR STRUCTURE REPAIRS, SEE SHEET S-53.

ESTIMATED REPAIR AREA

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 278
SHEET 5 OF 7

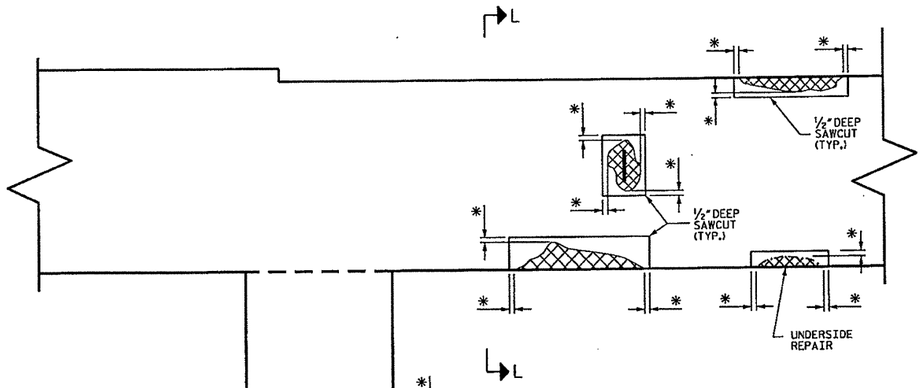
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 2

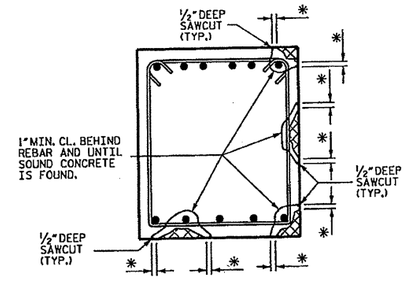
NORTH CAROLINA PROFESSIONAL SEAL 029117 ENGINEER FARZIN ASEFNIA

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-52
1			3			TOTAL SHEETS
2			4			63

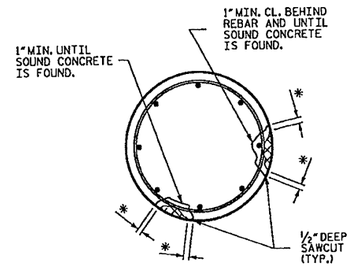
DRAWN BY : C. BRIGHT DATE : 10/2012
CHECKED BY : F. ASEFNIA DATE : 10/2012



BENT CAP & COLUMN REPAIR DETAIL

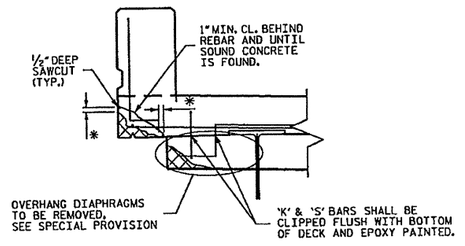


SECTION L-L

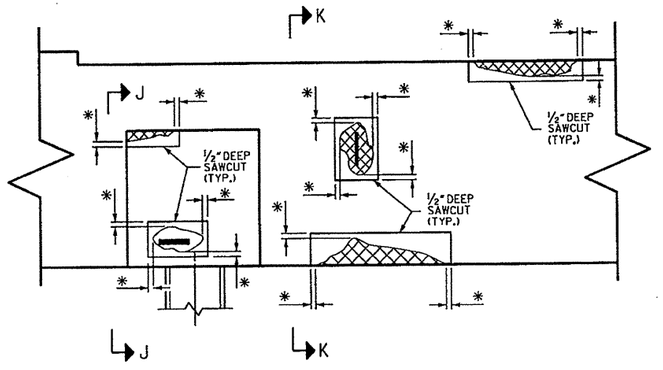


SECTION M-M

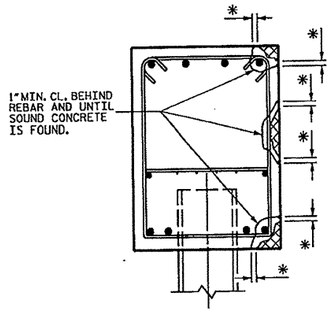
* CONCRETE SHALL BE REMOVED UNTIL SOUND CONCRETE IS FOUND. (1"MIN.)



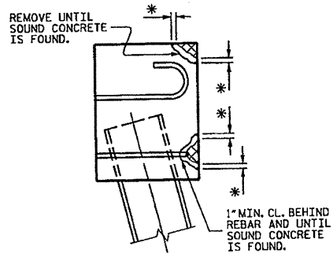
OVERHANG REPAIR DETAIL



END BENT CAP REPAIR DETAIL



SECTION K-K



SECTION J-J

* CONCRETE SHALL BE REMOVED UNTIL SOUND CONCRETE IS FOUND. (1"MIN.)

DAMAGED AREA

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 278
SHEET 6 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CAP & COLUMN REPAIR DETAILS

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-53
1			3			TOTAL SHEETS
2			4			63

DRAWN BY : C. BRIGHT DATE : 10/2012
CHECKED BY : F. ASEFNIA DATE : 10/2012

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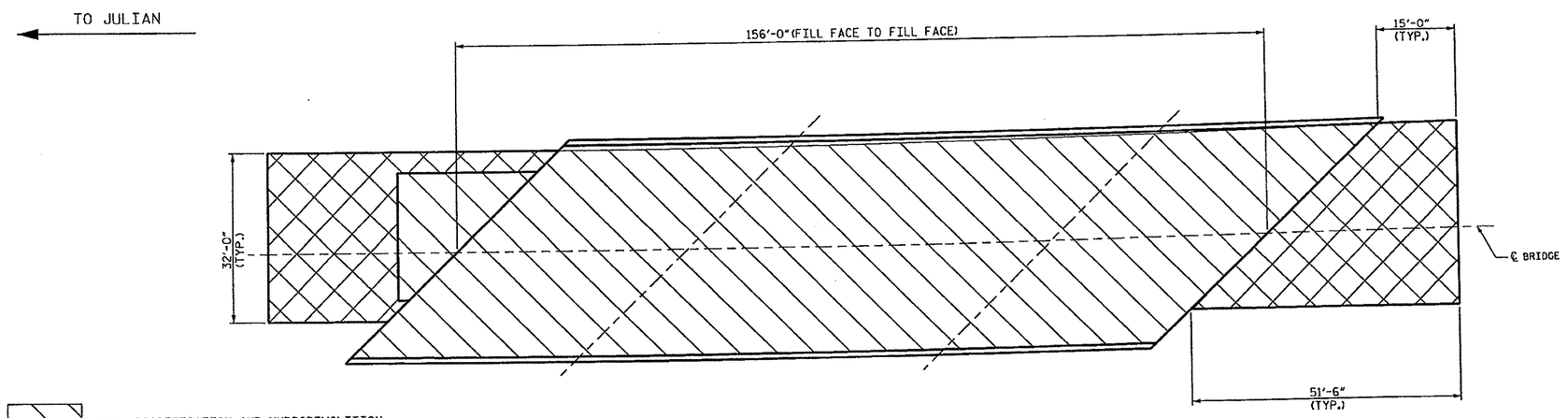
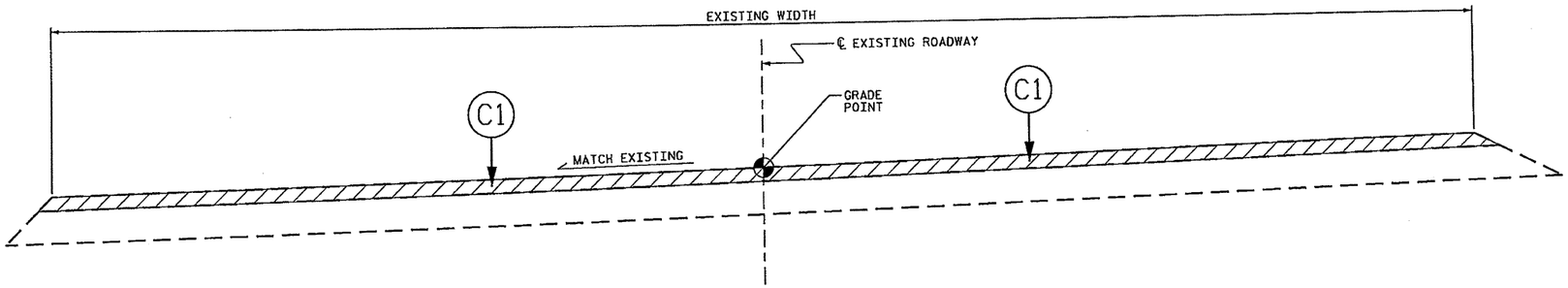


DECK SCARIFICATION AND HYDRODEMOLITION

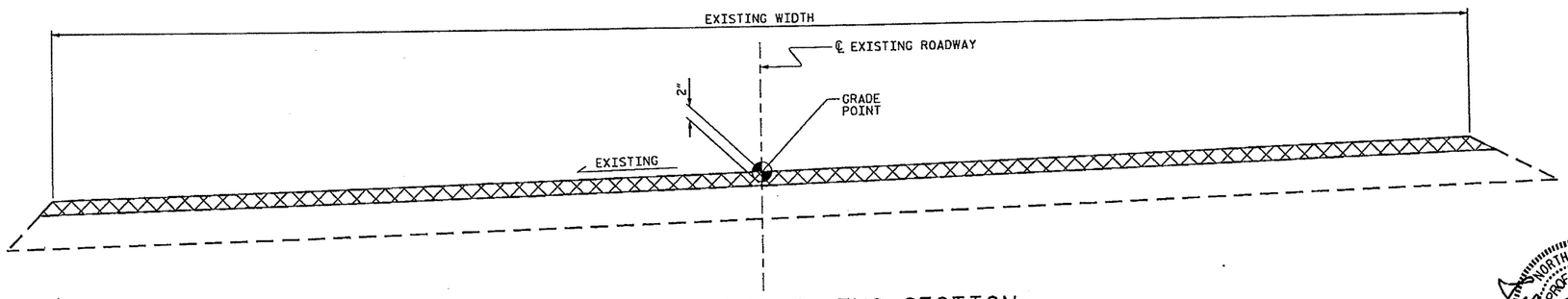
INCIDENTAL MILLING

PLAN

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 1½" IN DEPTH.



TYPICAL ROADWAY SECTION



TYPICAL ROADWAY MILLING SECTION

(MILL TO 2" DEPTH)

NOT TO SCALE

NORTH CAROLINA PROFESSIONAL SEAL 037843 ENGINEER FARZIN ASEFNIA 2010

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 278
SHEET 7 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

ROADWAY TYPICAL SECTION AND MILLING DETAILS

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-54
1			3			TOTAL SHEETS
2			4			63

DRAWN BY : J. YANNACCONE DATE : 11/12
CHECKED BY : F. ASEFNIA DATE : 11/12

28-MAR-2013 13:36
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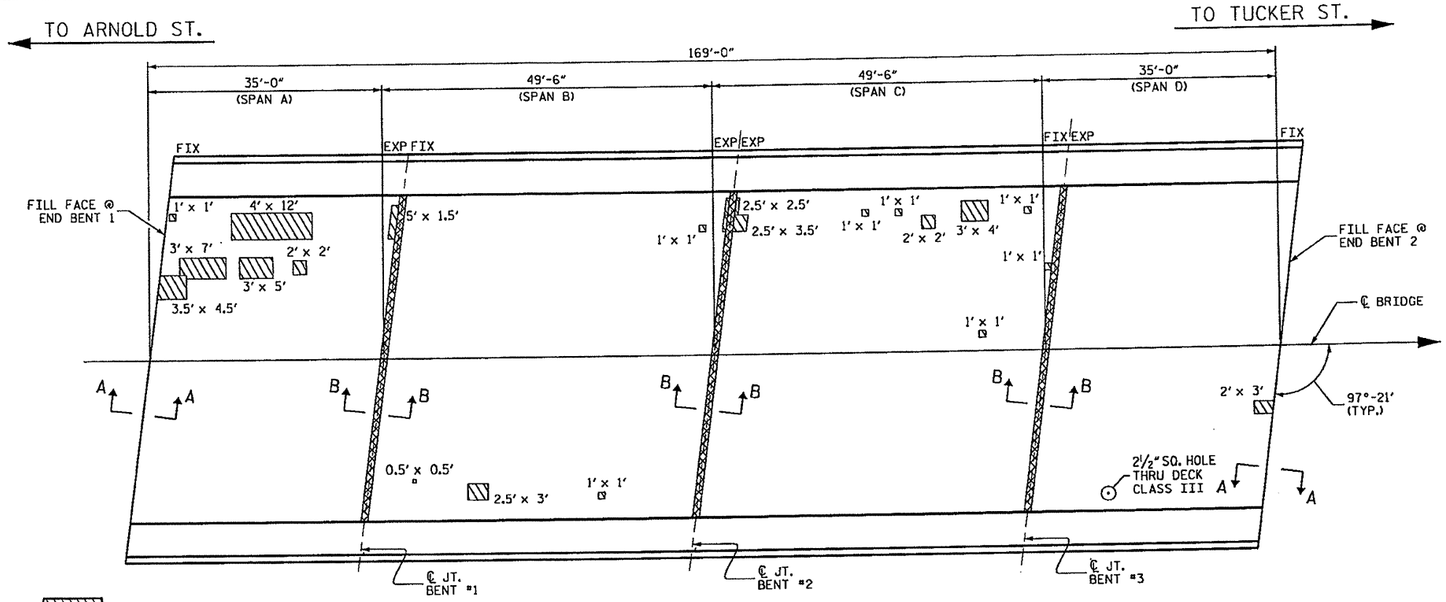
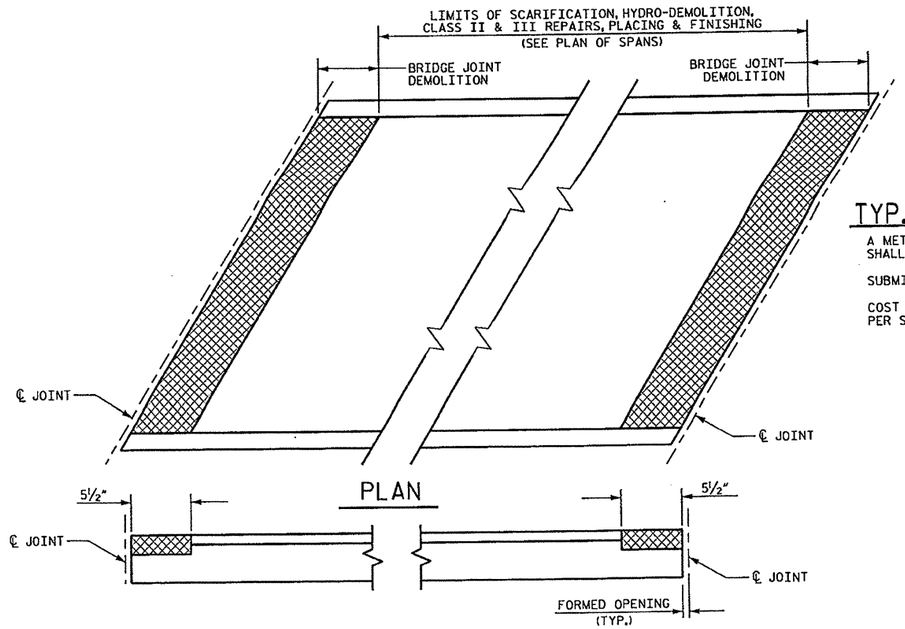
jayannaccone



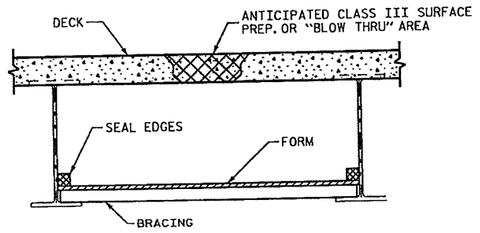
PLAN

APPROX. AREA: CLASS II REPAIR

BRIDGE JOINT DEMOLITION



ELEVATION

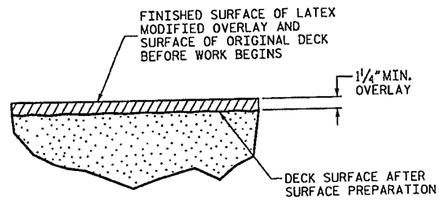


TYP. "BLOW THRU" CONTAINMENT AND FORMWORK

A METHOD TO CAPTURE WATER AND DEBRIS FROM BLOW THRU DURING HYDRO-DEMOLITION SHALL BE INSTALLED IN AREAS INDICATED AS CLASS III SURFACE PREPARATION.

SUBMIT DETAILS OF PROPOSED FORM WORK FOR APPROVAL PRIOR TO BEGINNING WORK.

COST FOR INSTALLING AND REMOVING FORM WORK SHALL BE INCIDENTAL TO THE PRICE PER SQ. YARD OF HYDRO-DEMOLITION.



DETAIL FOR LATEX MODIFIED CONCRETE OVERLAY

NOTES

EXISTING JOINTS AND DECK DRAINS SHALL BE SEALED PRIOR TO BEGINNING SURFACE PREPARATION OF BRIDGE DECK.

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

INCIDENTAL MILLING IS INCLUDED TO ENSURE A SMOOTH TRANSITION ONTO THE BRIDGE FLOOR. DIMENSIONS SHOWN ARE APPROXIMATE. CONTRACTOR SHALL MILL AS REQUIRED TO PROVIDE A SMOOTH TRANSITION TO THE ROADWAY AT BOTH ENDS OF BRIDGE.

THE CONTRACTOR SHALL PROVIDE A METHOD OF HANDLING UNEXPECTED BLOW THROUGH OF THE DECK, SEE "TYPICAL "BLOW THRU" CONTAINMENT AND FORMWORK" DETAIL.

THE CONTRACTOR MUST COLLECT, TREAT AND DISPOSE OF RUN-OFF WATER FROM THE HYDRO-DEMOLITION PROCESS, SEE MANAGING HYDRO-DEMOLITION WATER SPECIAL PROVISION.

FOR OVERLAY SURFACE PREPARATION, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR SCARIFYING BRIDGE DECK, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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

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

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

DURING CONSTRUCTIOIN, BERMS OR APPROPRIATE MEASURES SHALL BE USED TO ENSURE HYDRO-DEMOLITION WATER DOES NOT FLOW OR MIGRATE INTO ACTIVE TRAVEL LANES.

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 20103 FARZIN ASEFNIA 3/28/2013

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 334
SHEET 1 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN VIEW OF BRIDGE #334, ON BESSEMER AVE. OVER NC 29

48' CL. ROADWAY 97°-21" SKEW

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-55
1			3			TOTAL SHEETS
2			4			63

DRAWN BY: C.L.B./ S.T.S. DATE: 11/12
CHECKED BY: F. ASEFNIA DATE: 11/12

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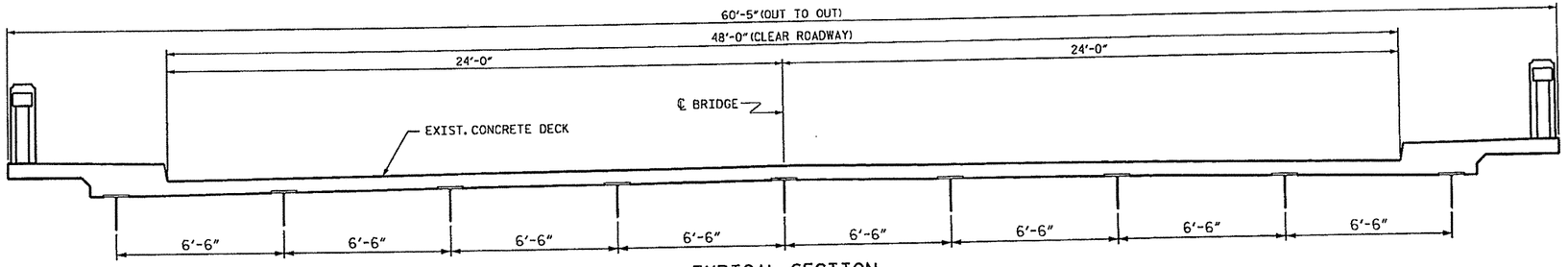
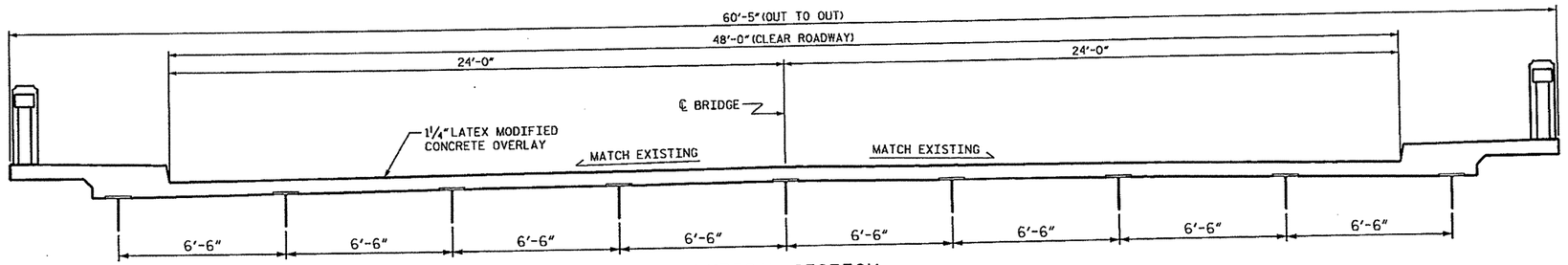


TYPICAL SECTION



TYPICAL SECTION

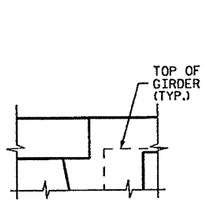
NOTES

FOR FOAM JOINT SEAL, SEE SPECIAL PROVISIONS.

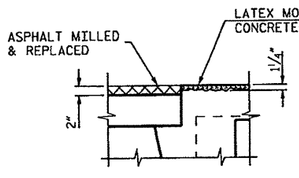
THE INSTALLED FOAM JOINT SEALS SHALL BE WATERTIGHT.

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

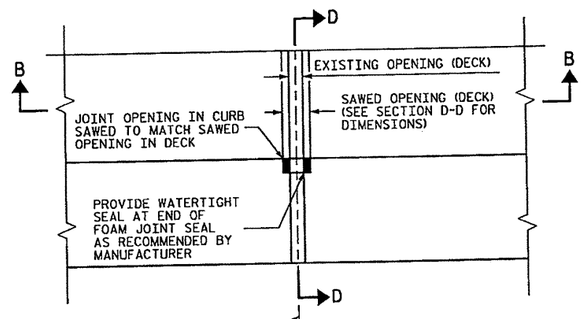
THE CONTRACTOR WILL NOT BE PERMITTED TO FORM THE JOINT FOR THE FOAM JOINT SEAL IN LIEU OF SAWING THE JOINT.



SECTION A-A
(EXISTING JOINT)



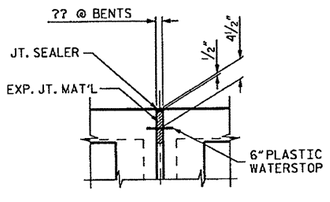
SECTION A-A
(PROPOSED JOINT)



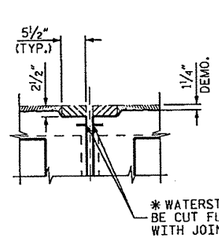
ELASTOMERIC CONCRETE		
BENTS	25.0	(CU. FT.)
* TOTAL	25.0	(CU. FT.)

* BASED ON THE MINIMUM BLOCKOUT SHOWN.

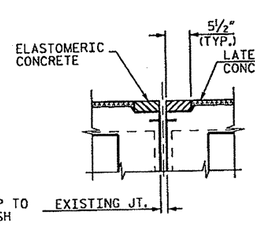
* ALL LOOSE AND UNSOUND CONCRETE SHALL BE REMOVED. IF THE EMBEDDED PORTION OF THE EXISTING WATERSTOP IS EXPOSED DURING REMOVAL, THE ENTIRE WATERSTOP SHALL BE REMOVED.



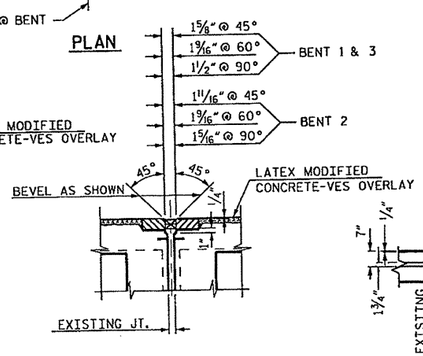
SECTION B-B
(EXISTING JOINT)



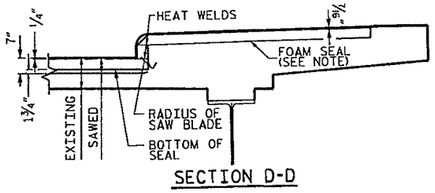
SECTION B-B
(MINIMUM EXISTING JOINT DEMOLITION)



SECTION B-B
(PROPOSED JOINT PRE-SAWED)



SECTION B-B
(PROPOSED EVAZOTE JOINT SEAL EXPANSION)



SECTION D-D

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

NORTH CAROLINA PROFESSIONAL SEAL 2010 ENGINEER F. ARZIN ASEFNIA

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 334
SHEET 2 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION & JOINT DETAILS

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-56
1			3			TOTAL SHEETS
2			4			63

DRAWN BY: C.L.B / S.T.S. DATE: 11/12
CHECKED BY: F. ASEFNIA DATE: 11/12

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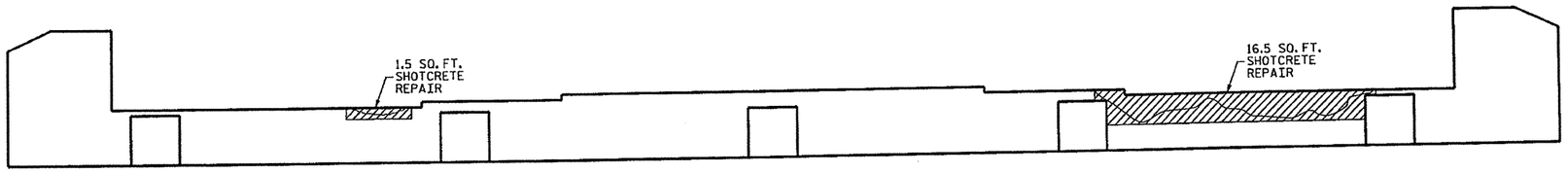
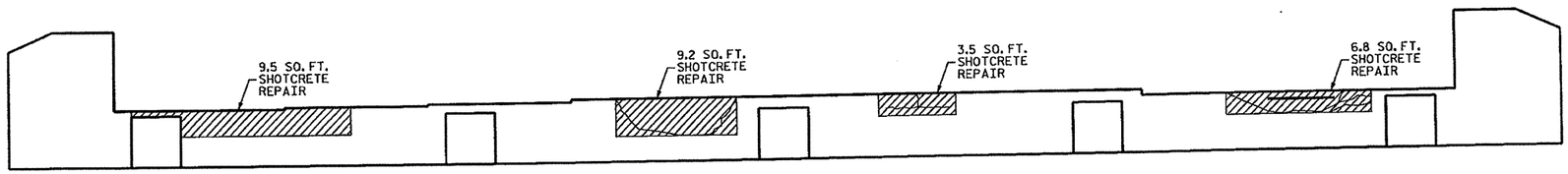


END BENT 1
SPAN A VIEW



END BENT 2
SPAN D VIEW

REPAIR QUANTITY TABLE

REPAIRS END BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	18	8.0		
CAP (HORIZONTAL, CORNER)	0	0		
PILE CAP	0	0		
EPOXY RESIN INJECTION		LN. FT		LN. FT
CAP (VERTICAL, FACE)		0		
PILE CAP		0		
EPOXY COATING		SQ. FT.		SQ. FT.
TOP OF CAP AND PILE CAPS		175		

REPAIR QUANTITY TABLE

REPAIRS END BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	29	13.0		
CAP (HORIZONTAL, CORNER)	0	0		
PILE CAP	0	0		
EPOXY RESIN INJECTION		LN. FT		LN. FT
CAP (VERTICAL, FACE)		0		
PILE CAP		0		
EPOXY COATING		SQ. FT.		SQ. FT.
TOP OF CAP AND PILE CAPS		175		

NOTE:

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

FOR STRUCTURE REPAIRS, SEE SHEET S-61.

EPOXY COATING SHALL BE APPLIED TO THE TOP FACE OF THE CAP AND PILE CAPS AT END BENT 1.

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. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 334
SHEET 3 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

END BENTS

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-57
1			3			TOTAL SHEETS
2			4			63

DRAWN BY: C.L.B. / S.T.S. DATE: 11/12
CHECKED BY: F. ASEFNIA DATE: 11/12

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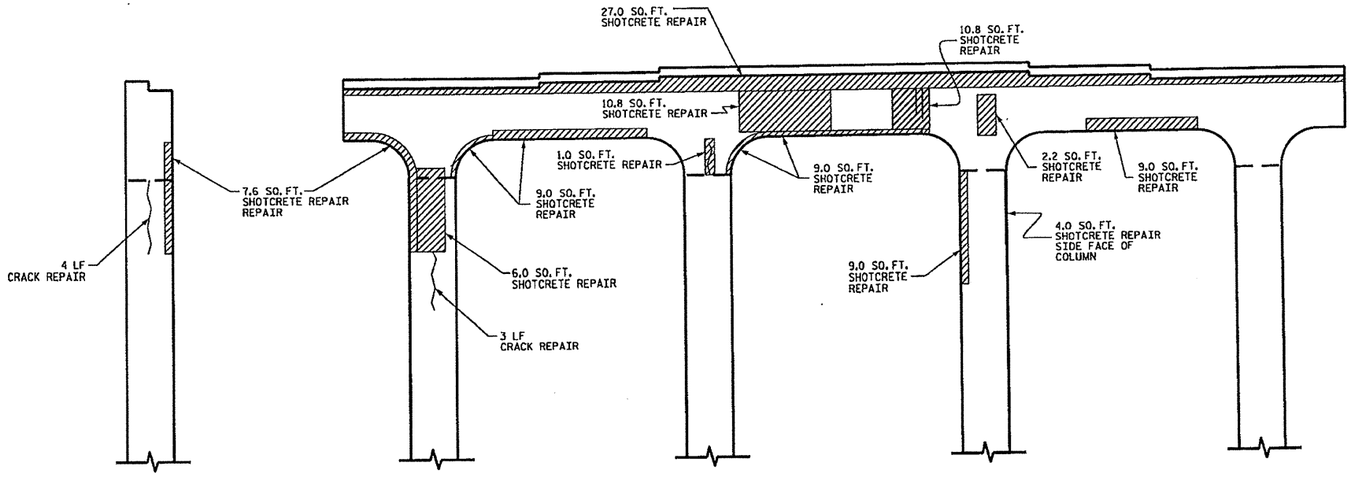
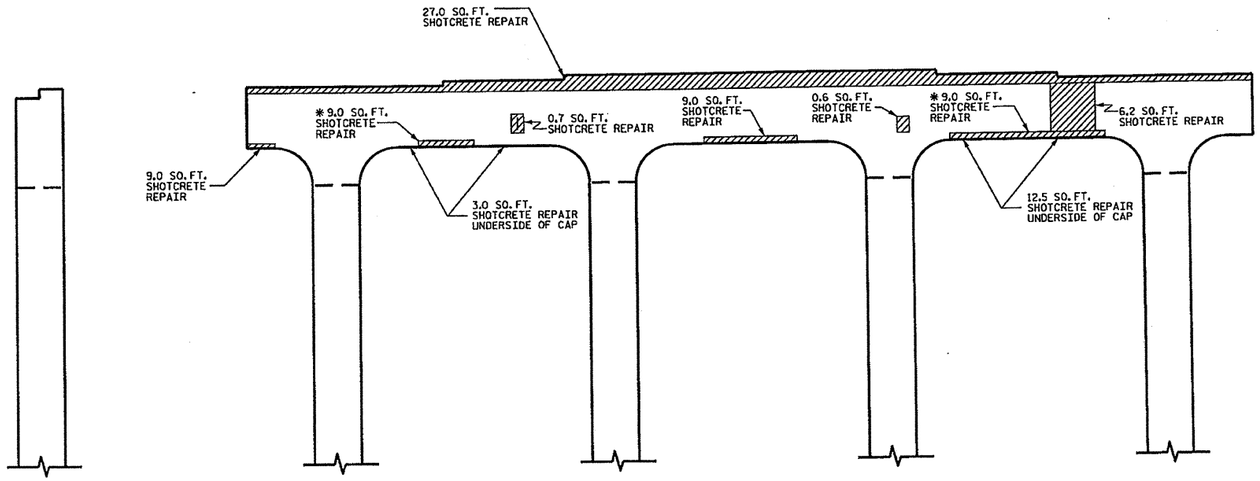


END VIEW

SPAN 'B' FACE



END VIEW

SPAN 'A' FACE

REPAIR QUANTITY TABLE

REPAIRS BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	32.2	14.5		
CAP (HORIZONTAL, CORNER)	140.1	88.0		
COLUMN (VERTICAL FACE)	10.0	6.0		
COLUMN (HORIZONAL, CORNER)	9	6.5		
EPOXY RESIN INJECTION		LN. FT		LN. FT
CAP		0		
COLUMN		7		
EPOXY COATING		SQ. FT.		SQ. FT.
TOP OF CAP AND PILE CAPS		135		

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

NOTE:

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

FOR STRUCTURE REPAIRS, SEE SHEET S-61.

EPOXY COATING SHALL BE APPLIED TO THE TOP FACE OF THE CAP AT BENT 1.

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 334
SHEET 4 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

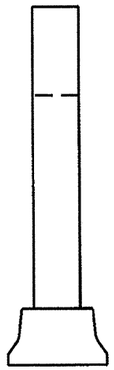
BENT 1

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-58
1			3			TOTAL SHEETS
2			4			63

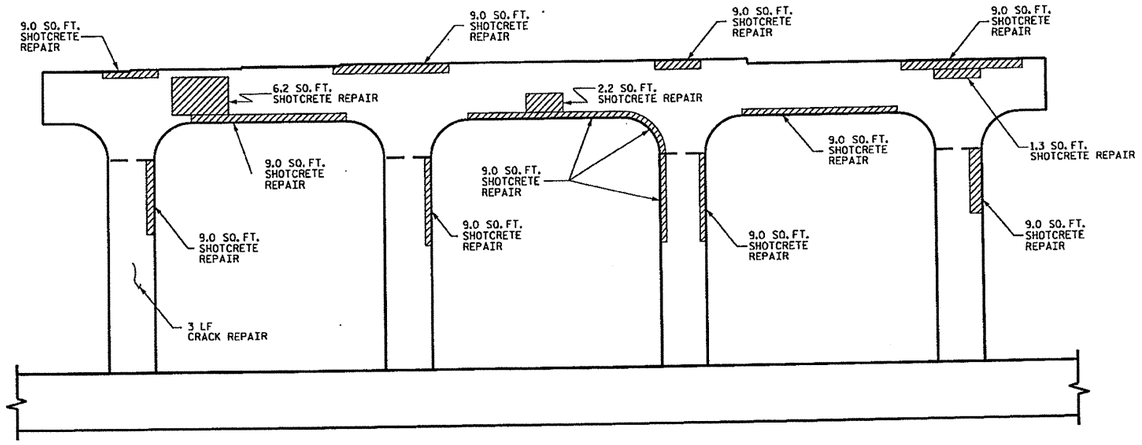
NORTH CAROLINA PROFESSIONAL SEAL 20108 ENGINEER FARZIN ASEFNIA

DRAWN BY: C.L.B/ S.T.S. DATE: 11/12
CHECKED BY: F. ASEFNIA DATE: 11/12

jayannaccone 28-MAR-2013 13:36



END VIEW



SPAN 'C' FACE

REPAIR QUANTITY TABLE				
REPAIRS BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	24.6	11.0		
CAP (HORIZONTAL, CORNER)	130.0	82.0		
COLUMN (VERTICAL FACE)	10.3	6.5		
COLUMN (HORIZONAL, CORNER)	56.1	40.5		
EPOXY RESIN INJECTION		LN. FT		LN. FT
CAP		0		
COLUMN		3		
EPOXY COATING		SQ. FT.		SQ. FT.
TOP OF CAP AND PILE CAPS		135		

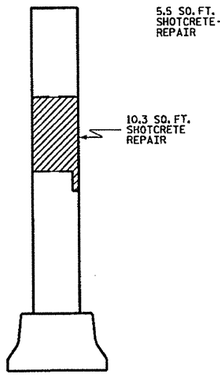
VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 1" CL TO SAWCUT. SEE REPAIR DETAILS.

NOTE:

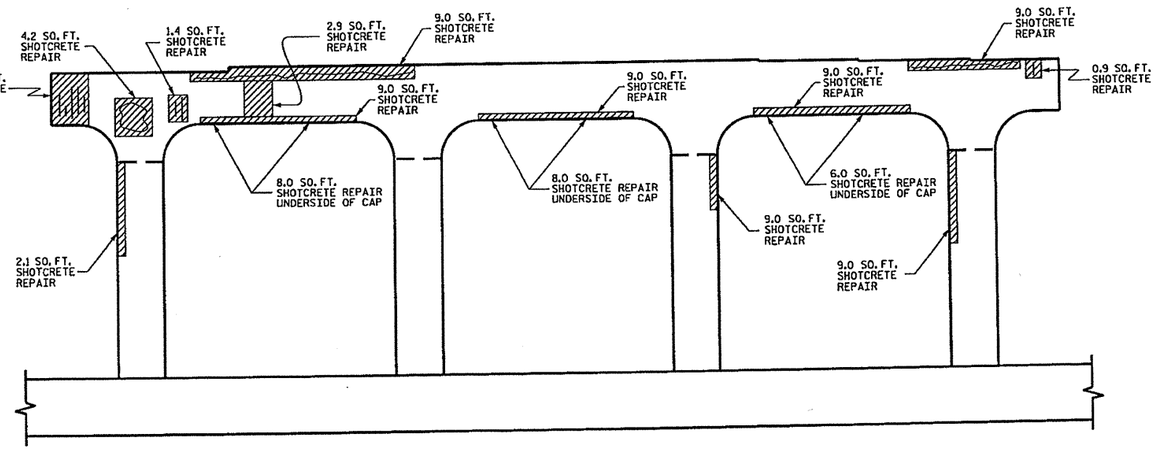
REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES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

FOR STRUCTURE REPAIRS, SEE SHEET S-61.

EPOXY COATING SHALL BE APPLIED TO THE TOP FACE OF THE CAP AT BENT 2.



END VIEW



SPAN 'B' FACE

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 334
SHEET 5 OF 9

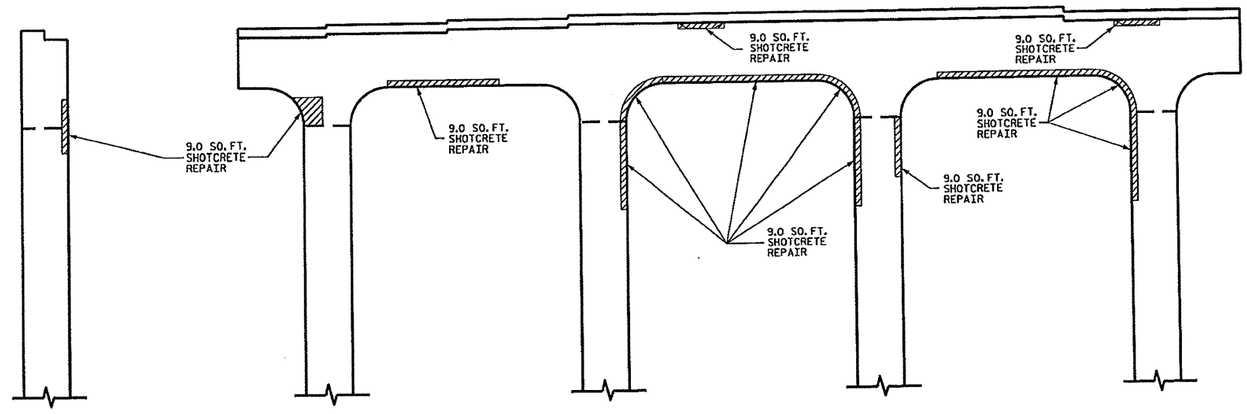
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 2

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-59
1			3			TOTAL SHEETS
2			4			63

DRAWN BY: C.L.B/ S.T.S. DATE: 11/12
CHECKED BY: F. ASEFNIA DATE: 11/12

jayonneccone 28-MAR-2013 13:36



END VIEW

SPAN 'C' FACE

REPAIR QUANTITY TABLE				
REPAIRS BENT 3	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	13.0	6.0		
CAP (HORIZONTAL, CORNER)	109.0	69.0		
COLUMN (VERTICAL FACE)	0	0		
COLUMN (HORIZONAL, CORNER)	36.0	26.0		
EPOXY RESIN INJECTION		LN. FT		LN. FT
CAP		0		
COLUMN		6		
EPOXY COATING		SQ. FT.		SQ. FT.
TOP OF CAP AND PILE CAPS		135		

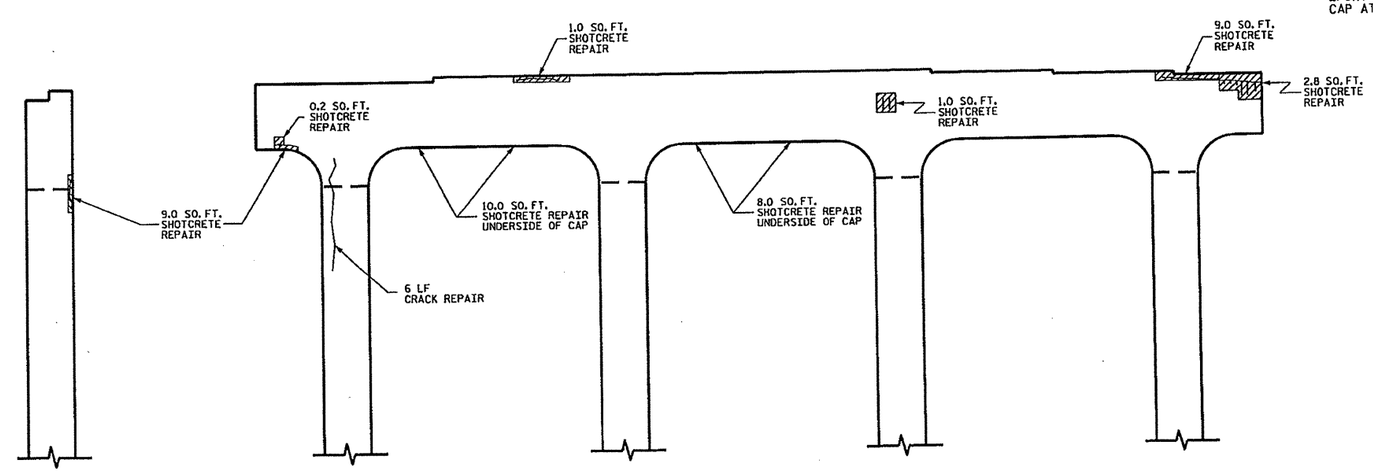
VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 1" CL TO SAWCUT. SEE REPAIR DETAILS.

NOTE:

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

FOR STRUCTURE REPAIRS, SEE SHEET S-61.

EPOXY COATING SHALL BE APPLIED TO THE TOP FACE OF THE CAP AT BENT 3.



END VIEW

SPAN 'D' FACE

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 334
SHEET 6 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

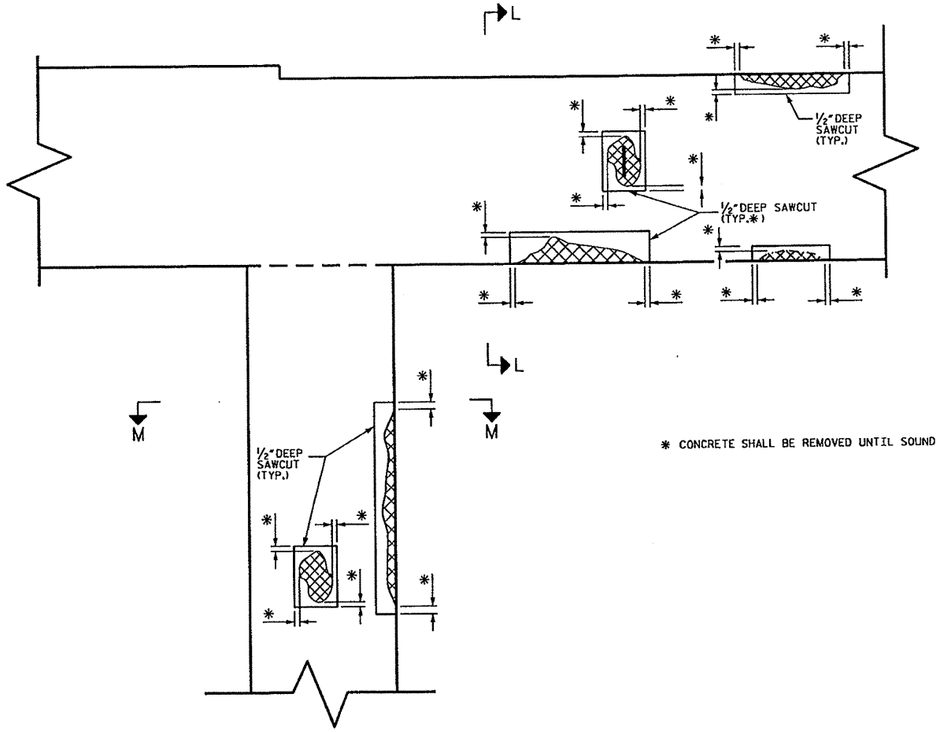
BENT 3

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 2010 FARZIN ASEFNIA 3/28/13

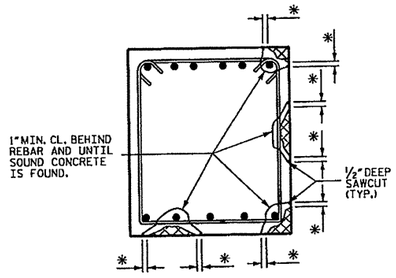
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-60
1			3			TOTAL SHEETS
2			4			63

DRAWN BY: C.L.B/ S.T.S. DATE: 11/12
CHECKED BY: F. ASEFNIA DATE: 11/12

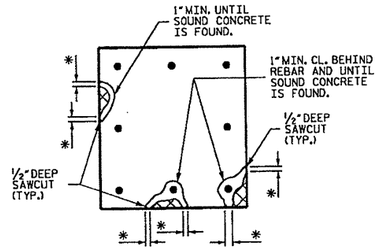
jayannaccone 28-MAR-2013 13:36



BENT CAP & COLUMN REPAIR DETAIL

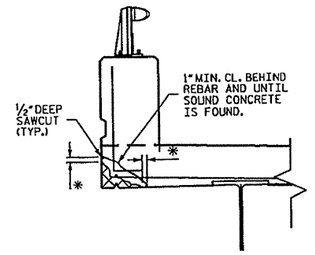


SECTION L-L

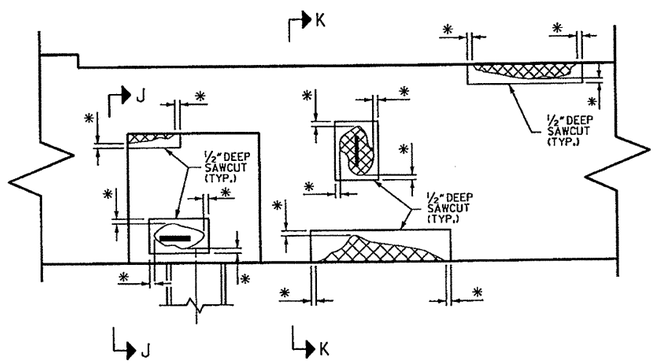


SECTION M-M

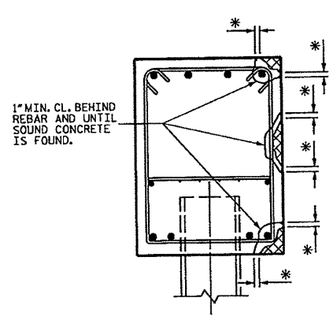
* CONCRETE SHALL BE REMOVED UNTIL SOUND CONCRETE IS FOUND. (1"MIN.)



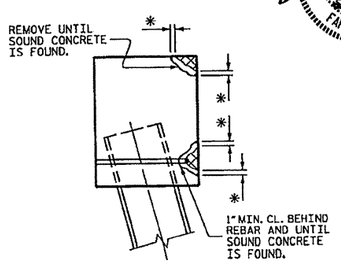
OVERHANG REPAIR DETAIL



END BENT CAP REPAIR DETAIL



SECTION K-K



SECTION J-J

* CONCRETE SHALL BE REMOVED UNTIL SOUND CONCRETE IS FOUND. (1"MIN.)

NORTH CAROLINA PROFESSIONAL SEAL 20003 ENGINEER FARZIN ASEFNIA 3/28/13

DAMAGED AREA

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 334
SHEET 7 OF 9

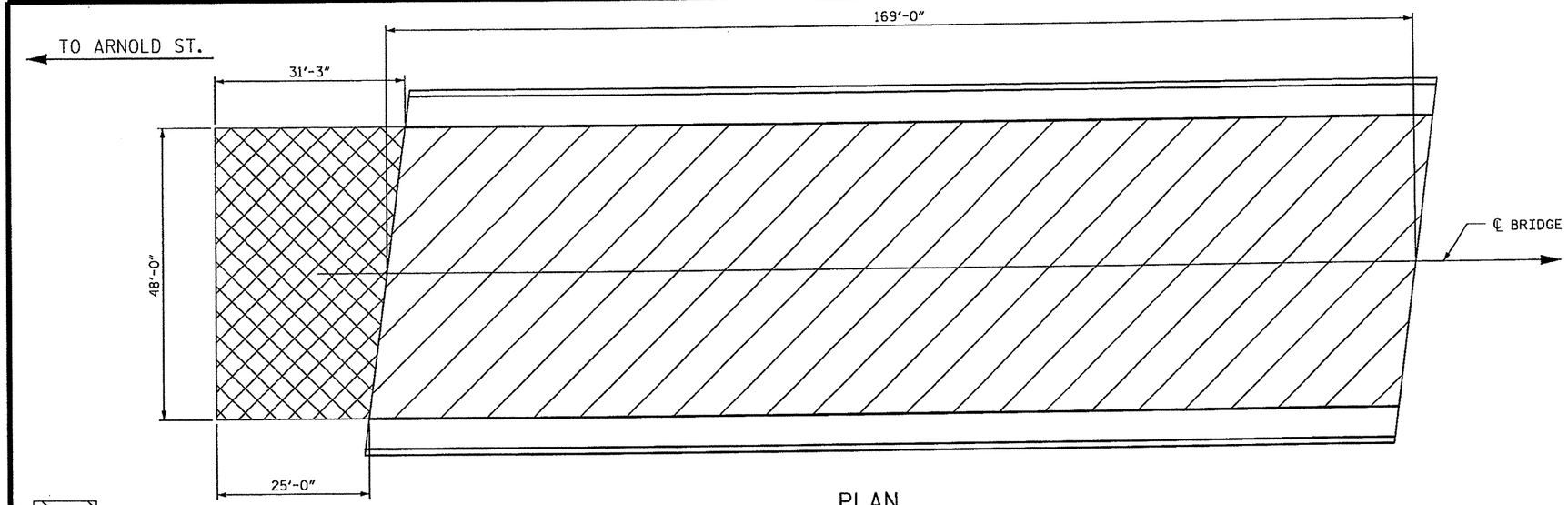
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CAP & COLUMN REPAIR DETAILS

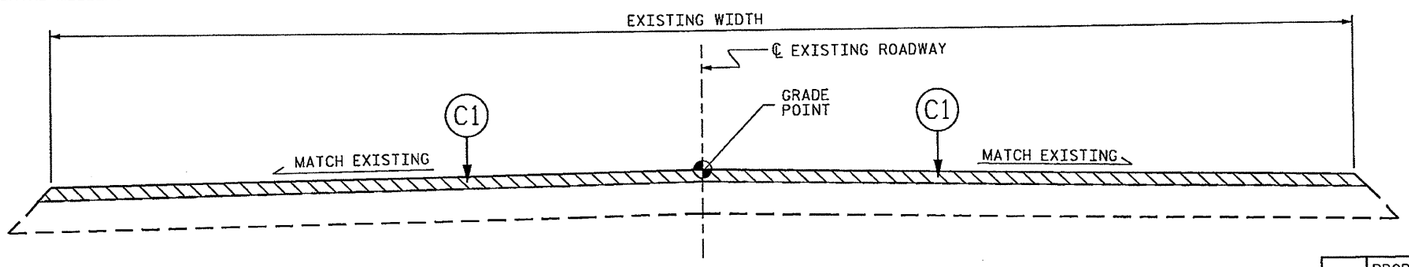
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-61
1			3			TOTAL SHEETS
2			4			63

DRAWN BY: C. BRIGHT DATE: 10/12
CHECKED BY: F. ASEFNIA DATE: 10/12

jayannacone 28-MAR-2013 13:36

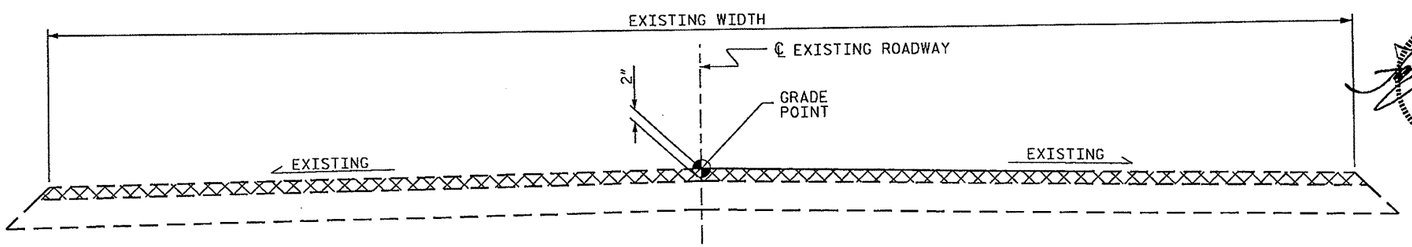


PLAN



TYPICAL ROADWAY SECTION

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 1½" IN DEPTH.



TYPICAL ROADWAY MILLING SECTION
(MILL TO 2"DEPTH)

NOT TO SCALE

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 20103 FARZIN ASEFNIA 3/28/13

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 334
SHEET 8 OF 9

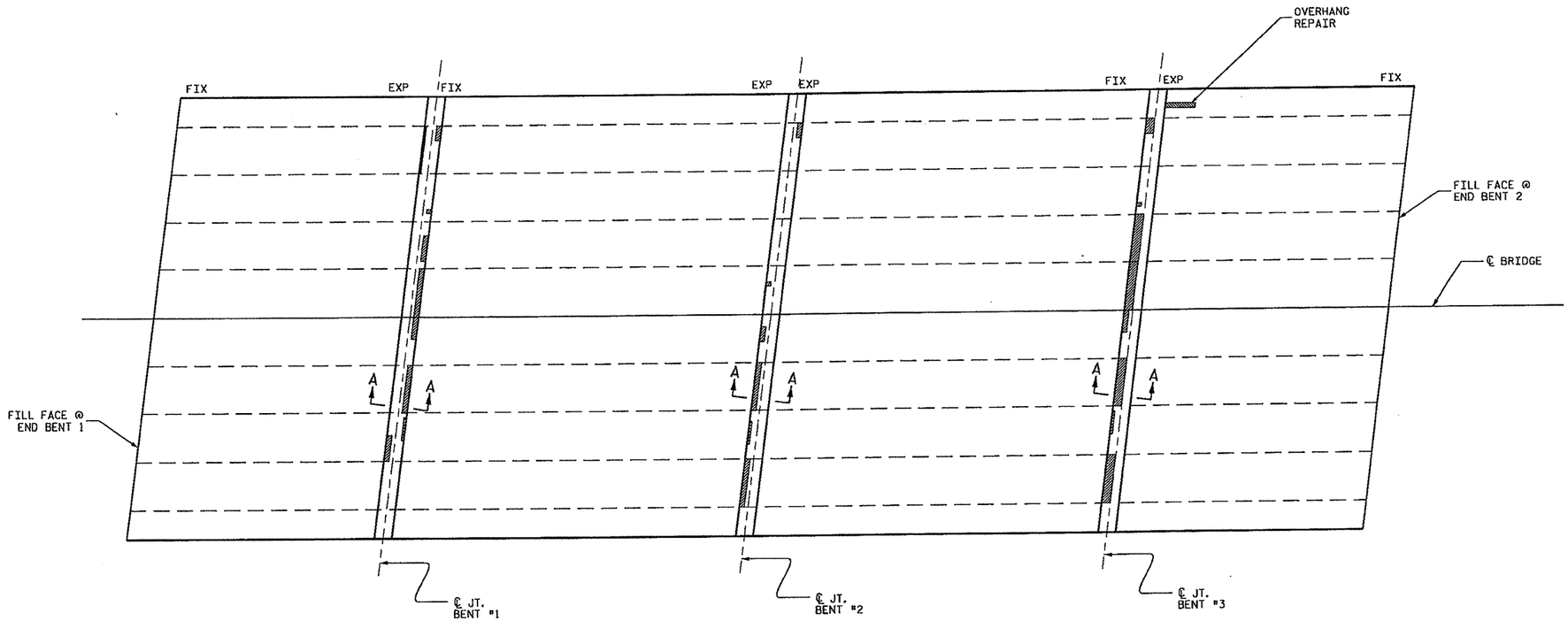
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

ROADWAY TYPICAL SECTION AND MILLING DETAILS

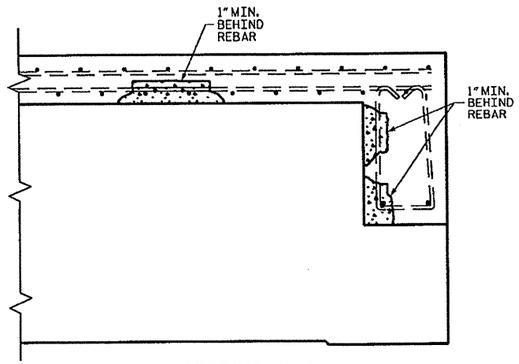
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-62
1			3			TOTAL SHEETS
2			4			63

DRAWN BY: C. BRIGHT DATE: 10/12
CHECKED BY: F. ASEFNIA DATE: 10/12

jayannaccone 28-MAR-2013 13:36



PLAN VIEW
(UNDERSIDE)



SECTION A-A

BILL OF MATERIAL

REPAIRS SPANS A THRU D	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
DIAPHRAGMS	—	5.0		
GIRDERS	0	0		
UNDERSIDE OF DECK & OVERHANGS	2.68	0.39		
EPOXY RESIN INJECTION		LN. FT		LN. FT
DIAPHRAGMS		0		
GIRDERS		0		
UNDERSIDE OF DECK & OVERHANGS		0		

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF LOOSE CONCRETE, MIN. OF 1" BEHIND REBAR. SEE REPAIR DETAILS.

PROJECT NO. 17BP.7.P.4
COUNTY: GUILFORD
DECK REPAIR BRIDGE NO. 334
SHEET 9 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT DIAPHRAGM REPAIRS

NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARZIN ASEFNIA

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

DRAWN BY: C.L.B/M.J.W. DATE: 11/12
CHECKED BY: F. ASEFNIA DATE: 11/12

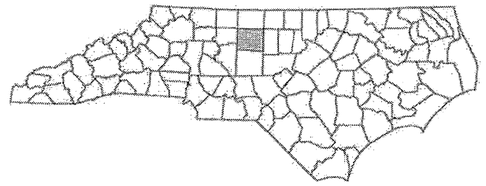
joyannaccone 28-MAR-2013 13:36

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

GUILFORD COUNTY

DIVISION 7



DECK PRESERVATION

BRIDGE #12 – SR 1970 (E. KIVETT DR.) OVER RAILROAD

BRIDGE #15 – US 220 OVER I–85 BUS./US 70/US 29

BRIDGE #36 – NC 150 (OAK RIDGE RD.) OVER RAILROAD

BRIDGE #57 – SR 1398 (FREEMAN MILL RD.) OVER NC 6

BRIDGE #169 – SR 1129 (GROOMETOWN RD.) OVER I–85

BRIDGE #277 – US 421 SOUTHBOUND OVER BIG ALAMANCE CREEK

BRIDGE #278 – US 421 NORTHBOUND OVER BIG ALAMANCE CREEK

BRIDGE #334 – E. BESSEMER AVENUE OVER US 29

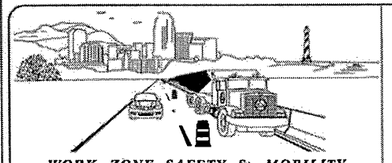
INDEX OF SHEETS

TRAFFIC MANAGEMENT STRATEGY

PROPOSED BRIDGE WORK WILL BE PERFORMED USING A COMBINATION OF DAY AND TIME RESTRICTED LANE CLOSURES. REFER TO SHEET TMP-3 FOR PHASING.

SHEET NO.
TMP-1

WBS 17BP.7.P.4



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

PLAN PREPARED FOR NCDOT STRUCTURES MANAGEMENT UNIT
RALEIGH, NC

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

PLAN PREPARED BY:
Stantec Consulting Services Inc.
801 Jones Franklin Road-Suite 300
Raleigh, NC 27606

Tel. 919.851.6666
Fax. 919.851.7024
www.stantec.com

BETSY L. WATSON, P.E. — *TRAFFIC ENGINEER*

GEORGE KARAGEORGE — *SR. TRANSPORTATION DESIGNER*

APPROVED: Betsy L Watson
DATE: 11/28/12

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 29449 ENGINEER BETSY L WATSON

11/20/2012
UNTraffic\Traffic Control\WBS 17BP.7.P.4 Guilford\TCP\Plan Sheets\17BP.7.P.4_TC_TMP_DLTITLE.dgn
rgullan

PROJ. REFERENCE NO.	SHEET NO.
WBS 17BP.7.P.4	TMP-1A

LEGEND

DIRECTION OF TRAFFIC FLOW

DIRECTION OF PEDESTRIAN TRAFFIC FLOW

WORK AREA

PAVEMENT REMOVAL

NORTH ARROW

TYPE III BARRICADE

CONE

DRUM

SKINNY DRUM

TUBULAR MARKER

CHANGEABLE MESSAGE SIGN (CMS)

FLAGGER

AUTOMATED FLAGGER ASSISTANCE DEVICE (AFAD)

FLASHING ARROW BOARD(TYPE C)

LAW ENFORCEMENT

TRUCK MOUNTED ATTENUATOR (TMA)

PORTABLE CONCRETE BARRIER (PCB)

TEMPORARY CRASH CUSHION

TEMPORARY SHORING

WORK ZONE SIGN-PORTABLE

WORK ZONE SIGN-STATIONARY

WORK ZONE SIGN-STATIONARY OR PORTABLE

SIGNALS

EXISTING

PROPOSED

TEMP

TEMPORARY

PAVEMENT MARKINGS

EXISTING PAVEMENT MARKING (GRAY)

SKIP LINES

MINI-SKIP LINES

SOLID LINES

PAVEMENT MARKING SYMBOLS

PAVEMENT MARKING SYMBOLS

EXISTING PAVEMENT MARKING SYMBOLS (HOLLOW)

ONLY PAVEMENT MARKING ALPHANUMERIC CHARACTERS

PAVEMENT MARKERS

CRYSTAL/CRYSTAL

CRYSTAL/RED

YELLOW/YELLOW

ROADWAY STANDARD DRAWINGS

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
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
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	DRUMS
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1165.01	WORK VEHICLE LIGHTING SYSTEMS AND TMA DELINEATION
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO LANE AND MULTILANE ROADWAYS
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - (PERMANENT AND TEMPORARY)

Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

APPROVED: DATE:

SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 36449 BETSEY L. WATSON

12/8/12

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

LEGEND
&
ROADWAY STANDARD DRAWINGS

11/20/2012
G:\Traffic\TrafficControl\WBS 17BP.7.P.4 Guilford\TCP\Plan Sheets\17BP.7.P.4_TC_TMP_OA_RDWYSTDSLEGEND.dgn
cwilson

PROJ. REFERENCE NO.	SHEET NO.
WBS 17BP.7.P.4	TMP-2

GENERAL NOTES

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

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.

LANE CLOSURE TIME RESTRICTIONS

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

ROAD NAME/BRIDGE #	DAY AND TIME RESTRICTIONS
US220/#15, SR 1970 E. KIVETT DR/#12, SR 1398 FREEMAN MILL RD/#57, SR 1129 GROOMETOWN RD/#169, E. BESSEMER AVE/#334, US 29/#334	6:00 A.M.- 7:00 P.M. MONDAY-SUNDAY
US 421/#277,#278, NC 150 OAK RIDGE RD/#36.	6:00 A.M.-9:00 A.M. MONDAY-FRIDAY AND 4:00 P.M.-7:00 P.M. MONDAY-FRIDAY

B) DO NOT CLOSE OR NARROW A LANE OF TRAFFIC, DETAIN AND/OR ALTER THE TRAFFIC FLOW ON OR DURING HOLIDAYS, HOLIDAY WEEKENDS, OR ANY OTHER TIME WHEN TRAFFIC IS UNUSUALLY HEAVY, INCLUDING THE FOLLOWING SCHEDULES:

ROAD NAME
ALL ROADS

HOLIDAY & HOLIDAY WEEKEND LANE CLOSURE TIME RESTRICTIONS

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 7:00 P.M. JANUARY 2ND. IF NEW YEAR'S DAY IS ON A FRIDAY, SATURDAY, SUNDAY, OR MONDAY THEN UNTIL 7:00 P.M. THE FOLLOWING TUESDAY.

3) FOR EASTER, BETWEEN THE HOURS OF 6:00 A.M. THURSDAY AND 7:00 P.M. MONDAY.

4) FOR MEMORIAL DAY, BETWEEN THE HOURS OF 6:00 A.M. FRIDAY TO 7:00 P.M. TUESDAY.

5) FOR INDEPENDENCE DAY, BETWEEN THE HOURS OF 6:00 A.M. THE DAY BEFORE INDEPENDENCE DAY AND 7:00 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 7:00 P.M. THE TUESDAY AFTER INDEPENDENCE DAY.

6) FOR LABOR DAY, BETWEEN THE HOURS OF 6:00 A.M. FRIDAY AND 7:00 P.M. TUESDAY.

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

8) FOR CHRISTMAS, BETWEEN THE HOURS OF 6:00 A.M. THE FRIDAY BEFORE THE WEEK OF CHRISTMAS DAY AND 7:00 P.M. THE FOLLOWING TUESDAY AFTER THE WEEK OF CHRISTMAS.

C) ROAD CLOSURES ARE NOT PERMITTED AT ANY TIME, EXCEPT WHEN SPECIFIED IN THE PLAN OR ALLOWED BY THE ENGINEER.

AT BRIDGE #15 THE RAMPS AT EXITS 35A AND 35B FROM I-85 BUSINESS TO US 220 WILL BE PERMITTED TO BE CLOSED AS SHOWN ON SHEETS TMP-6B AND TMP-8B.

DO NOT CLOSE RAMPS AT EXITS 35A AND 35B AS FOLLOWS:

DAY AND TIME RESTRICTIONS
6:00 A.M.-7:00 P.M. MONDAY-SUNDAY

D) DO NOT STOP TRAFFIC AS FOLLOWS:

ROAD NAME	DAY AND TIME RESTRICTIONS	DURATION AND OPERATION
ALL ROADS	6:00 A.M.-7:00 P.M. MONDAY-SUNDAY	15 MIN. DURING HYDRO-DEMOLITION

LANE AND SHOULDER CLOSURE REQUIREMENTS

E) LANE CLOSURES ARE REQUIRED WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN ANY PORTION OF A TRAVEL LANE. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.

F) INSTALL ALL LANE CLOSURES ACCORDING TO THE PLANS, ROADWAY STANDARD DRAWINGS (1101.02), OR AS DIRECTED BY THE ENGINEER.

G) 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. COVER OR LAY DOWN SIGNS, AND TURN OFF ARROW BOARDS AND MESSAGE BOARDS.

H) 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.

I) 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 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

J) 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 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

ROAD CLOSURES

K) NOTIFY THE ENGINEER TWENTY ONE (21) CALENDAR DAYS PRIOR TO ANY ROAD CLOSURE.

L) FURNISH AND INSTALL SIGNING AND DEVICES FOR ROAD CLOSURES ACCORDING TO THE TRAFFIC MANAGEMENT PLAN. COVER OR REMOVE ALL SIGNS AND DEVICES FOR ROAD CLOSURES WHEN NOT IN EFFECT.

M) FURNISH AND INSTALL OFFSITE-DETOUR ROUTE SIGNING AS SHOWN IN THE TRAFFIC MANAGEMENT PLAN. COVER OR REMOVE OFFSITE-DETOUR SIGNING WHEN THE DETOUR IS NOT IN OPERATION. ALL DETOUR ROUTES MUST BE APPROVED BY THE ENGINEER PRIOR TO IMPLEMENTING.

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

O) WHEN CLOSING A ROADWAY OR DRIVEWAY PLACE TYPE III BARRICADES COMPLETELY ACROSS THE ROADWAY OR FROM CURB TO CURB. ATTACH BARRICADE MOUNTED "ROAD CLOSED" SIGN R11-2 AT ALL CLOSURE LOCATIONS. IF LOCAL TRAFFIC IS TO BE MAINTAINED STAGGER THE BARRICADES TO ALLOW ACCESS.

P) INSTALL SIGNS BEFORE BARRICADES WHEN CLOSING A ROADWAY TO TRAFFIC. REMOVE BARRICADES BEFORE SIGNS WHEN OPENING A ROADWAY TO TRAFFIC. INSTALL/REMOVE ROAD CLOSURE SIGNS AND BARRICADES IN A CONTINUOUS OPERATION AND WITHIN THE SAME CALENDAR DAY.

PAVEMENT MARKINGS AND MARKERS

Q) RECORD ALL LOCATIONS AND TYPES OF EXISTING PAVEMENT MARKINGS AS THEY WILL BE REPLACED IN THE SAME LOCATION ON THE NEW SURFACE.

R) UPON COMPLETION OF ALL OTHER CONSTRUCTION OPERATIONS INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE AS FOLLOWS:

ROAD NAME	MARKING	PAVEMENT MARKER
SR 1970	POLYUREA	NONE
US 220	POLYUREA	PERMANENT RAISED
NC 150	POLYUREA	PERMANENT RAISED
SR 1398	POLYUREA	PERMANENT RAISED
SR 1129	POLYUREA	NONE
US 421	POLYUREA	PERMANENT RAISED
BESSEMER AVE.	POLYUREA	NONE

S) FOR PAVEMENT MARKING SYMBOLS, ALPHANUMERIC CHARACTERS, DIAGONAL LINES AND STOP BARS USE THE FOLLOWING TYPE OF MARKING:

ON ASPHALT PAVEMENTS
1. THERMOPLASTIC HEATED IN PLACE, OR
2. THERMOPLASTIC EXTRUDED.
3. COLD APPLIED PLASTIC (TYPE 2) OR 3 OPTIONAL

ON CONCRETE PAVEMENTS
1. COLD APPLIED PLASTIC (TYPE 2) OR 3 OPTIONAL
2. THERMOPLASTIC HEATED IN PLACE (OPTIONAL)

T) DO NOT USE POLYUREA MARKING ON TYPE S9.5A SURFACE COURSE.

U) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.

V) REPLACE ANY PAVEMENT MARKINGS ERADICATED OR DAMAGED BY CONSTRUCTION OPERATIONS BEFORE OPENING LANES TO TRAFFIC.

MISCELLANEOUS

W) USE LAW ENFORCEMENT TO MAINTAIN TRAFFIC THROUGH THE WORK AREA AND/OR INTERSECTIONS AS SHOWN IN THE PLANS OR AS DIRECTED BY THE ENGINEER. LOCATIONS SHOWN IN THE PLANS ARE APPROXIMATE AND MAY BE REVISED AS THE OFFICER OR THE ENGINEER DEEM NECESSARY.

X) ALL DIMENSIONS AND STATIONS IN THE TRANSPORTATION MANAGEMENT PLAN AND PHASING ARE APPROXIMATE (+/-); FIELD ADJUST AS NECESSARY OR AS DIRECTED BY THE ENGINEER.

Y) ENSURE THE OVERSIZE/OVERWEIGHT PERMIT UNIT (919) 733-4740 HAS BEEN ADVISED OF THE ONGOING TRAFFIC OPERATIONS THROUGH THE DIVISION OFFICE.

Z) CHANGEABLE MESSAGE SIGN MESSAGES SHOWN ARE EXAMPLES. OTHER MESSAGES MAY BE USED AS CONDITIONS WARRANT. ALL MESSAGES AND LOCATIONS MUST BE APPROVED BY THE ENGINEER PRIOR TO INCORPORATING.

AA) IN THE EVENT OF FALLING DEBRIS OR WATER USE LAW ENFORCEMENT TO DIRECT TRAFFIC BELOW THE BRIDGE.

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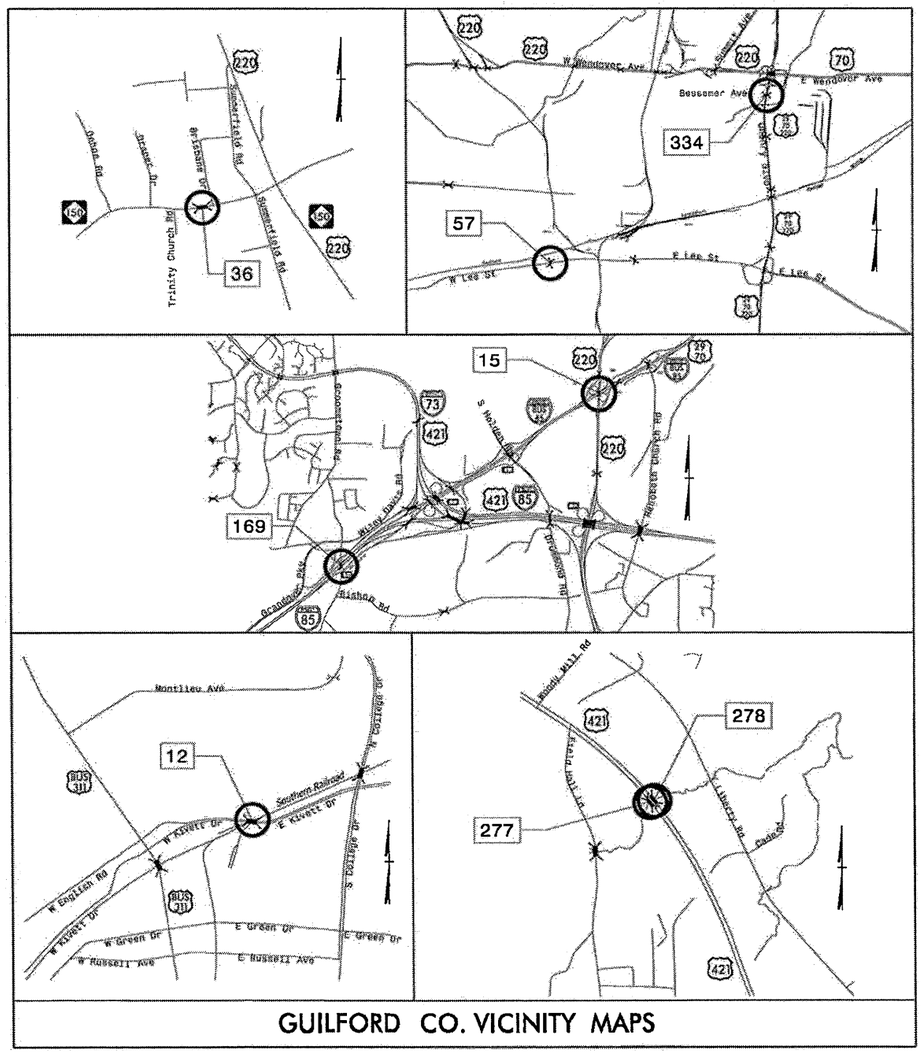
APPROVED:_____ DATE:_____

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 036445 BETSY L. WATSON
12/28/12

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

GENERAL NOTES



GUILFORD CO. VICINITY MAPS

PHASING

PROJ. REFERENCE NO.	SHEET NO.
WBS 17BP.7.P.4	TMP-3

FOR BRIDGE #12 #36, #57, #277, #292, #334 PERFORM PAINTING OPERATIONS AFTER COMPLETION OF REHAB OPERATIONS. REFER TO PLANS FOR BRIDGE PAINTING PROJECT 17BP.7.P.1.

BRIDGE #12 - SR 1970 (E. KIVETT DR.) OVER RAILROAD
FOR CONSTRUCTION OF SR 1970 EASTBOUND, USE LEFT AND RIGHT LANE CLOSURES PER SHEETS TMP-4 AND TMP-5.

FOR CONSTRUCTION OF SR 1970 WESTBOUND, USE LEFT AND RIGHT LANE CLOSURES PER ROADWAY STANDARD DRAWING 1101.02 SHEET 3.

BRIDGE #15 - US 220 OVER I-85 BUSINESS/US 29/US 70
FOR CONSTRUCTION OF US 220 NORTHBOUND RIGHT LANE & RAMP LANE, USE RIGHT LANE CLOSURE WITH CLOSURE OF EXIT 35B RAMP PER SHEETS TMP-6, 6A,6B.

FOR CONSTRUCTION OF US 220 NORTHBOUND LEFT LANE, USE LEFT LANE CLOSURE WITH CLOSURE OF EXIT 35B RAMP PER SHEETS TMP-7,7A,6B.

FOR CONSTRUCTION OF US 220 SOUTHBOUND RIGHT LANE AND RAMP LANE, USE RIGHT LANE CLOSURE WITH CLOSURE OF EXIT 35A RAMP PER SHEETS TMP-8,8A,8B.

FOR CONSTRUCTION OF US 220 SOUTHBOUND LEFT LANE, USE LEFT LANE CLOSURE WITH CLOSURE OF EXIT 35A PER SHEETS TMP-9,8B.

BRIDGE #36 - NC 150 (OAK RIDGE RD.) OVER RAILROAD
FOR CONSTRUCTION OF NC 150 EASTBOUND, USE FLAGGING OPERATION PER ROADWAY STANDARD DRAWING 1101.02 SHEET 1.

FOR CONSTRUCTION OF NC 150 WESTBOUND, USE FLAGGING OPERATION PER ROADWAY STANDARD DRAWING 1101.02 SHEET 1.

BRIDGE #57 - SR 1398 (FREEMAN MILL RD.) OVER NC 6 (W. LEE ST.)
FOR CONSTRUCTION OF SR 1398 NORTHBOUND RIGHT LANE & SHOULDER, USE 2-LANE/2-WAY TRAFFIC PATTERN PER SHEETS TMP-10 AND 10A.

FOR CONSTRUCTION OF SR 1398 SOUTHBOUND RIGHT LANE & SHOULDER, USE 2-LANE/2-WAY TRAFFIC PATTERN PER SHEETS TMP-11 AND 11A.

FOR CONSTRUCTION OF SR 1398 INTERIOR LANES, USE 2-LANE/2-WAY TRAFFIC PATTERN PER SHEETS TMP-12 AND 12A.

BRIDGE #169 - SR 1129 (GROOMETOWN RD.) OVER I-85/US 29/US 70
FOR CONSTRUCTION OF SR 1129 NORTHBOUND RIGHT LANE & SHOULDER, USE 2-LANE/2-WAY TRAFFIC PATTERN PER SHEET TMP-13.

FOR CONSTRUCTION OF SR 1129 SOUTHBOUND RIGHT LANE & SHOULDER, USE 2-LANE/2-WAY TRAFFIC PATTERN PER SHEET TMP-14.

FOR CONSTRUCTION OF SR 1129 LEFT LANES (INTERIOR WORK AREAS), USE SHEET TMP-15.

BRIDGE #277 - US 421 OVER BIG ALAMANCE CREEK
FOR CONSTRUCTION OF US 421 SOUTHBOUND, USE LEFT AND RIGHT LANE CLOSURES PER ROADWAY STANDARD DRAWING 1101.02 SHEET 3.

BRIDGE #278 - US 421 WESTBOUND OVER BIG ALAMANCE CREEK
FOR CONSTRUCTION OF US 421 NORTHBOUND, USE LEFT AND RIGHT LANE CLOSURES PER ROADWAY STANDARD DRAWING 1101.02 SHEET 3.

BRIDGE #334 - BESSEMER AVENUE OVER US 29/US 70/US 220
FOR CONSTRUCTION OF BESSEMER AVE. EASTBOUND RIGHT LANE, USE RIGHT LANE CLOSURE PER SHEET TMP-16.

FOR CONSTRUCTION OF BESSEMER AVE. WESTBOUND RIGHT LANE, USE RIGHT LANE CLOSURE PER SHEET TMP-17.

FOR CONSTRUCTION OF BESSEMER AVE. LEFT LANES, USE LEFT LANE CLOSURES PER SHEET TMP-18.

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SEAL 29449 ENGINEER KELSEY L. WATSON 11/28/12

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

VICINITY MAPS
&
PHASING

11/20/2012
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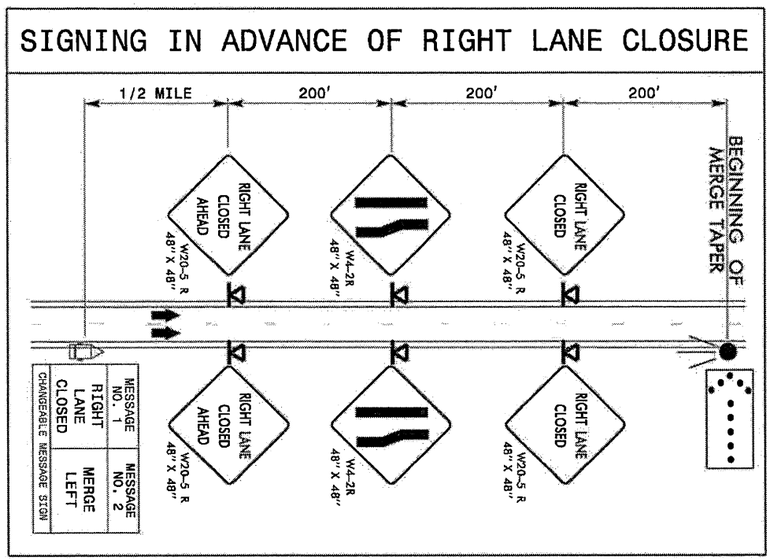
PROJ. REFERENCE NO.	SHEET NO.
WBS 17BP.7.P.4	TMP-4

SIGNING IN ADVANCE OF RIGHT LANE CLOSURE



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SEAL 19401 NORTH CAROLINA PROFESSIONAL ENGINEER KELLY L. WATSON

11/28/12

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

GUILFORD CO. BRIDGE #12

SR 1970 (E. KIVETT DR.) EASTBOUND RIGHT LANE WORK AREA

11/29/2012
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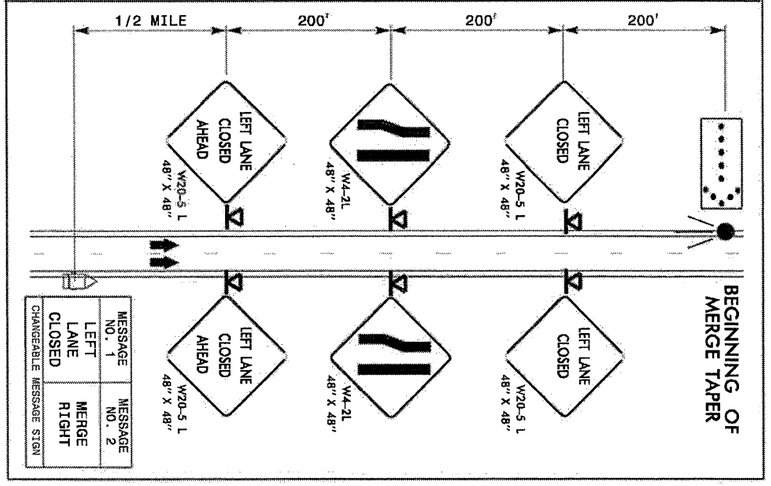
PROJ. REFERENCE NO.	SHEET NO.
WBS 17BP.7.P.4	TMP-5

SIGNING IN ADVANCE OF LEFT LANE CLOSURE



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APPROVED: _____ DATE: _____

SEAL 24446 — ENGINEER — BRETT L. WATSON — NORTH CAROLINA — PROFESSIONAL

11/28/12

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

GUILFORD CO. BRIDGE #12

SR 1970 (E. KIVETT DR.)
EASTBOUND LEFT LANE
WORK AREA

11/20/2012
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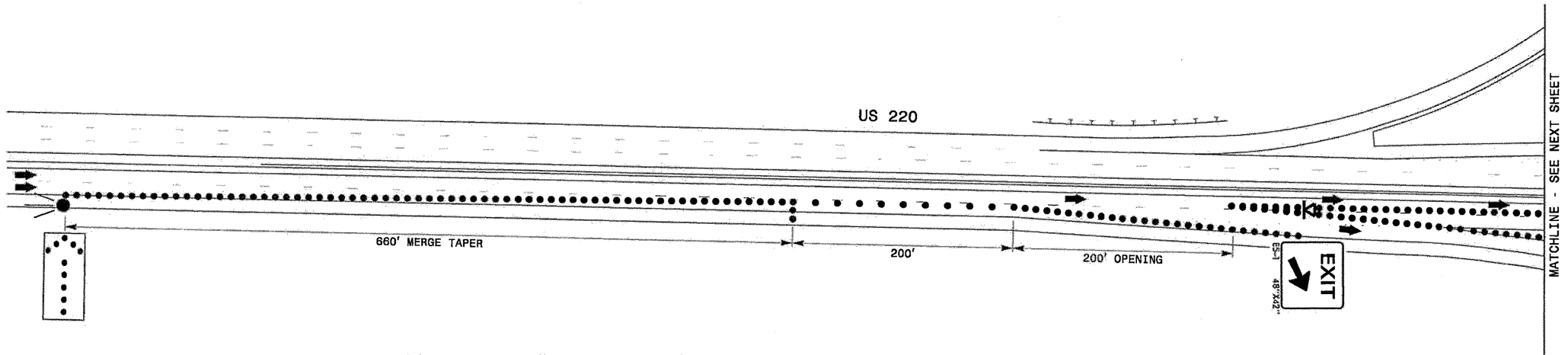
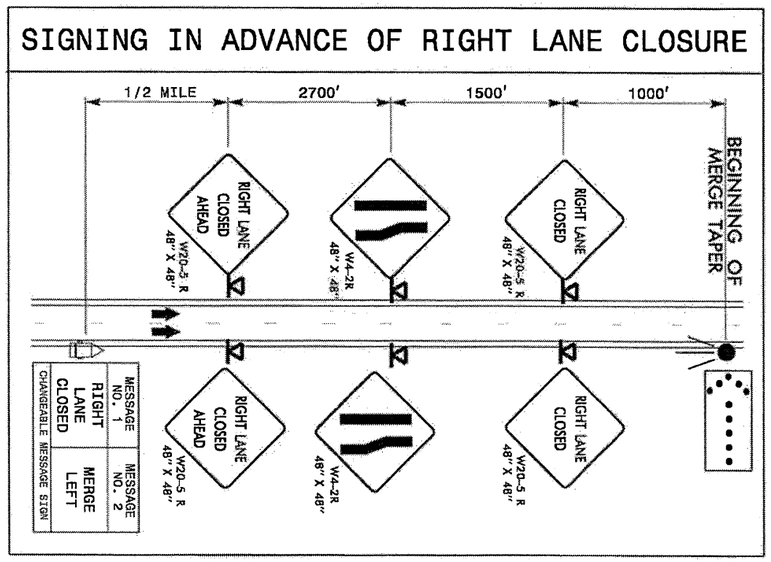
PROJ. REFERENCE NO.	SHEET NO.
WBS 17BP.7.P.4	TMP-6



SIGNING IN ADVANCE OF RIGHT LANE CLOSURE



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SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19246 JOHNNY I. WATSON

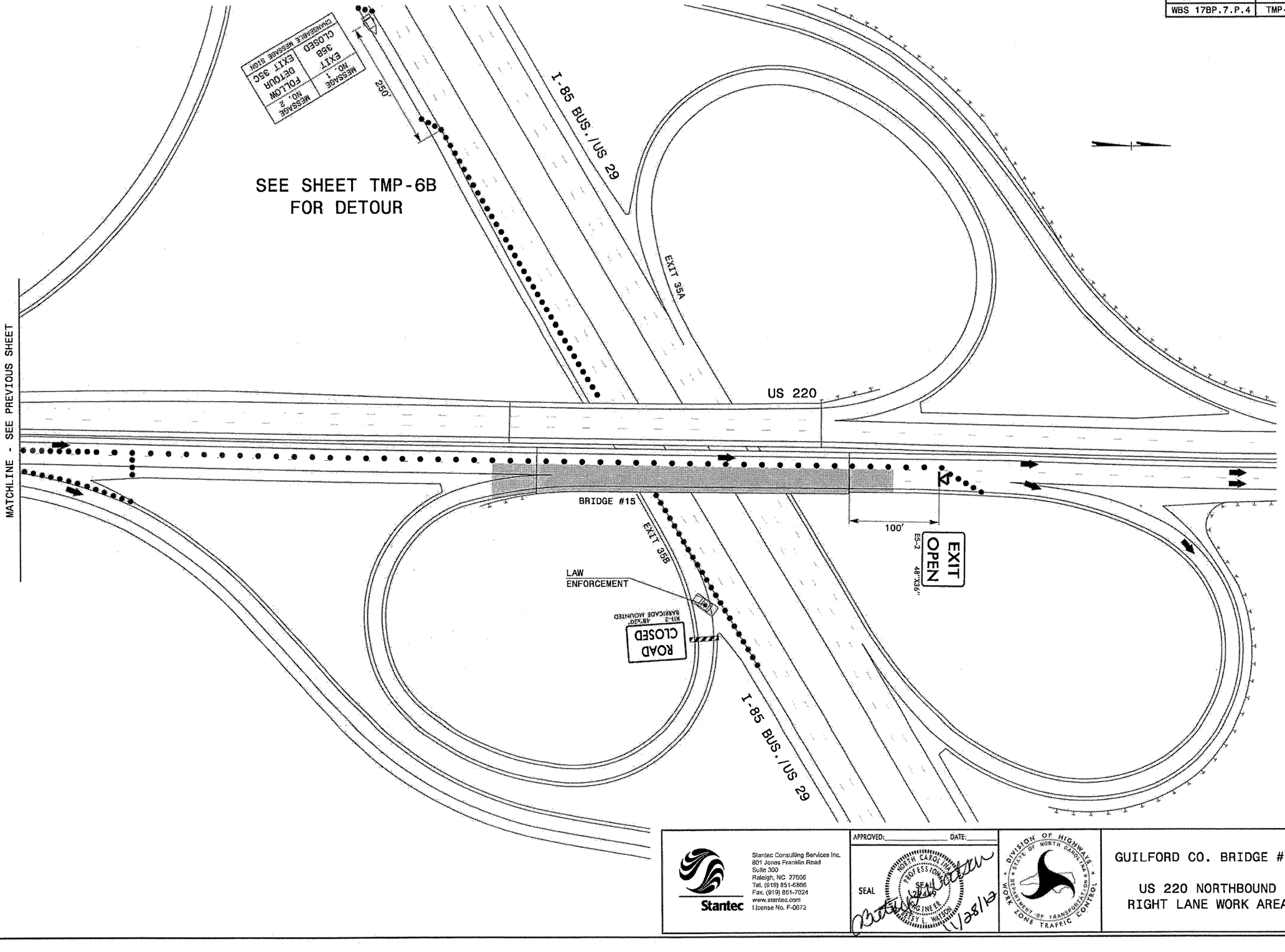
11/28/12

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

GUILFORD CO. BRIDGE #15

US 220 NORTHBOUND
RIGHT LANE WORK AREA

PROJ. REFERENCE NO.	SHEET NO.
WBS 17BP.7.P.4	TMP-6A



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GUILFORD CO. BRIDGE #15

US 220 NORTHBOUND RIGHT LANE WORK AREA

11/20/2012
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PROJ. REFERENCE NO.	SHEET NO.
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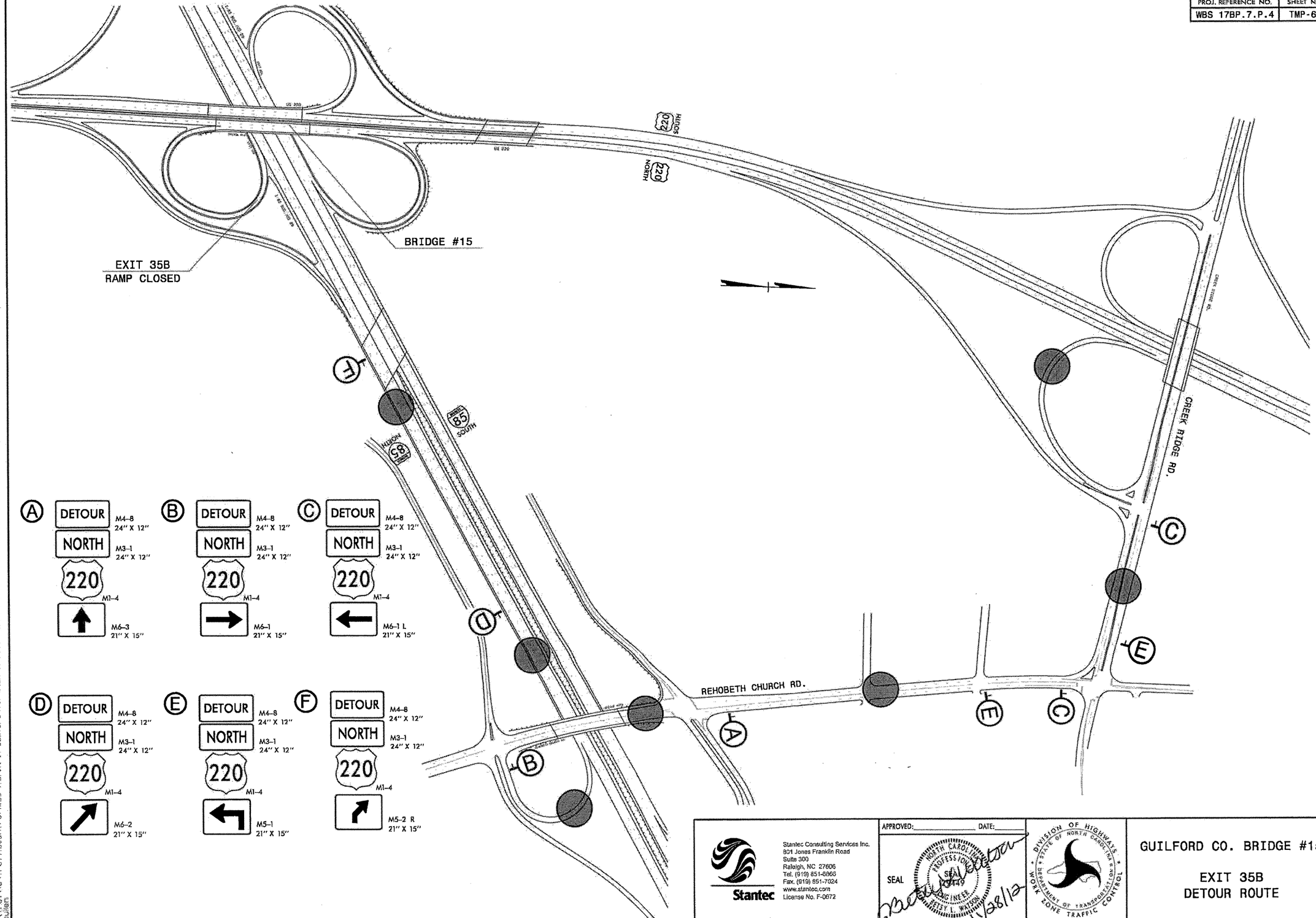

Ⓐ DETOUR M4-8 24" X 12"
NORTH M3-1 24" X 12"
220 M1-4
M6-3 21" X 15"

Ⓑ DETOUR M4-8 24" X 12"
NORTH M3-1 24" X 12"
220 M1-4
M6-1 21" X 15"

Ⓒ DETOUR M4-8 24" X 12"
NORTH M3-1 24" X 12"
220 M1-4
M6-1 L 21" X 15"

Ⓓ DETOUR M4-8 24" X 12"
NORTH M3-1 24" X 12"
220 M1-4
M6-2 21" X 15"

Ⓔ DETOUR M4-8 24" X 12"
NORTH M3-1 24" X 12"
220 M1-4
M5-1 21" X 15"

Ⓕ DETOUR M4-8 24" X 12"
NORTH M3-1 24" X 12"
220 M1-4
M5-2 R 21" X 15"

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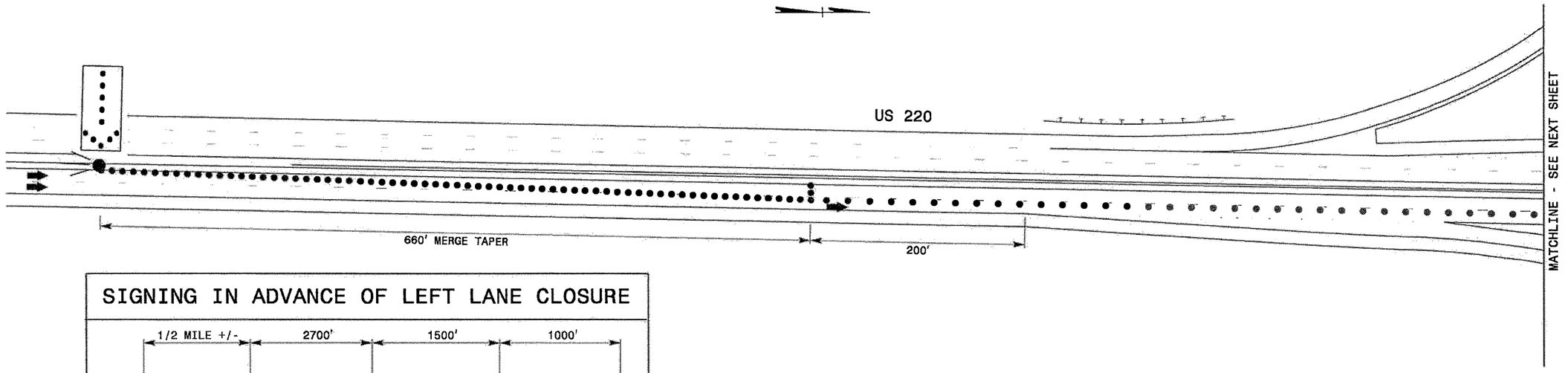
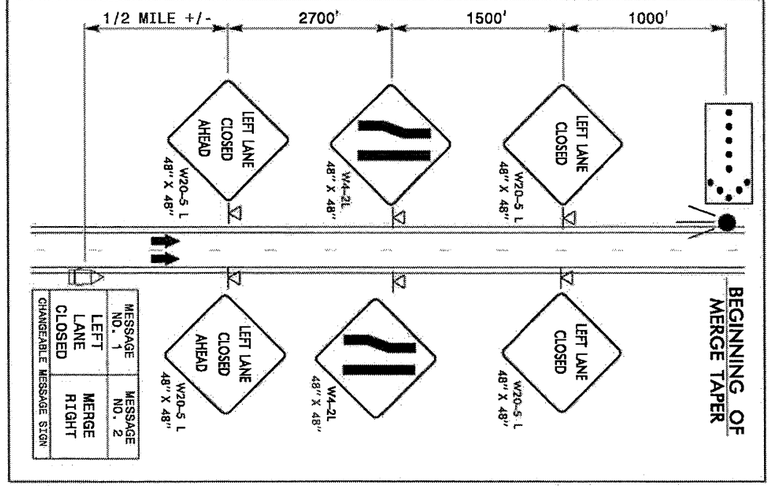
EXIT 35B
DETOUR ROUTE

PROJ. REFERENCE NO.	SHEET NO.
WBS 17BP.7.P.4	TMP-7



SIGNING IN ADVANCE OF LEFT LANE CLOSURE



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SEAL

NORTH CAROLINA PROFESSIONAL SEAL 28410 ENGINEER LESLY L WATSON

1/28/12

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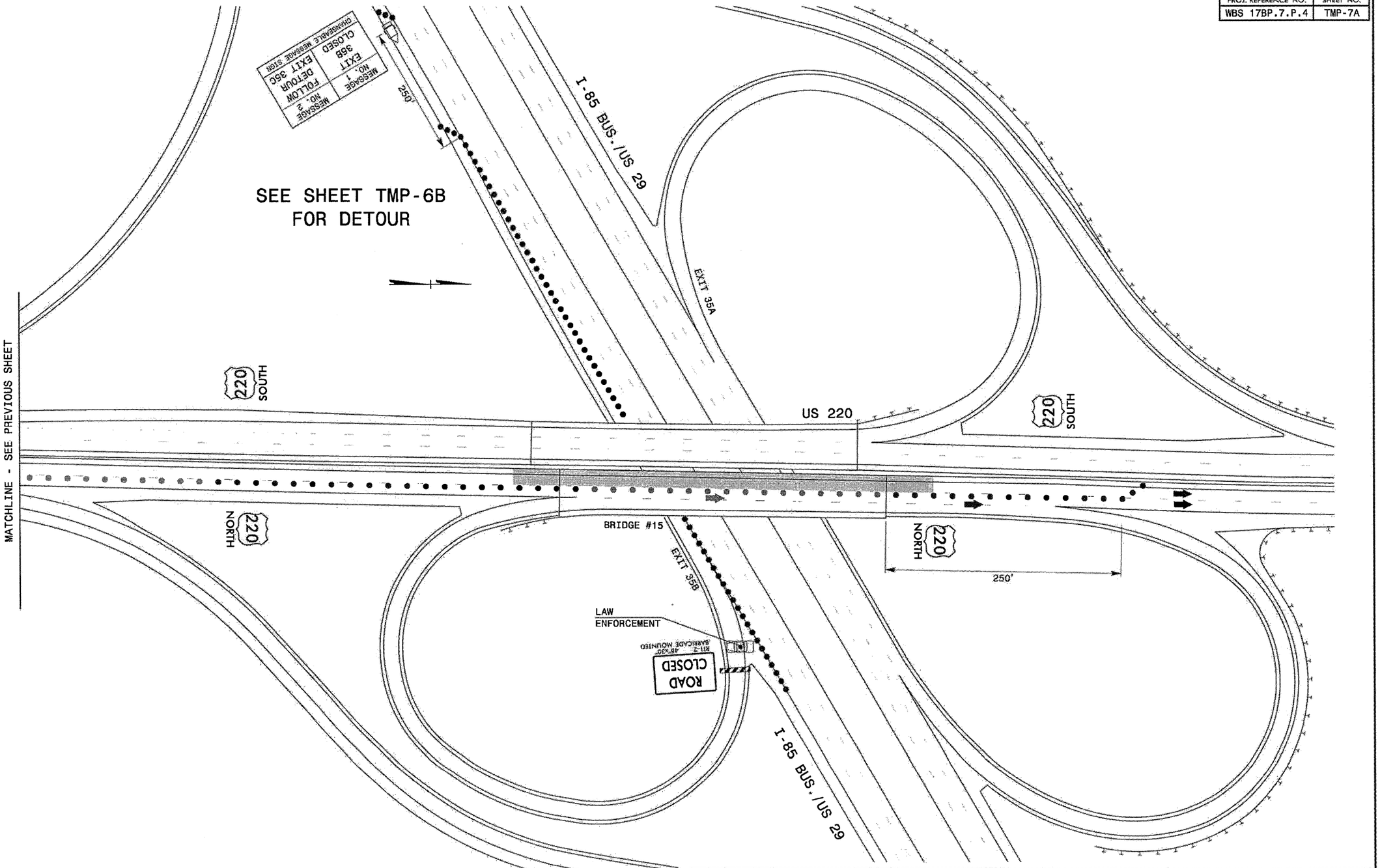
US 220 NORTHBOUND LEFT LANE WORK AREA

PROJ. REFERENCE NO.	SHEET NO.
WBS 17BP.7.P.4	TMP-7A



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SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 024181 BECKY L. WATSON

11/28/12

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US 220 NORTHBOUND LEFT LANE WORK AREA

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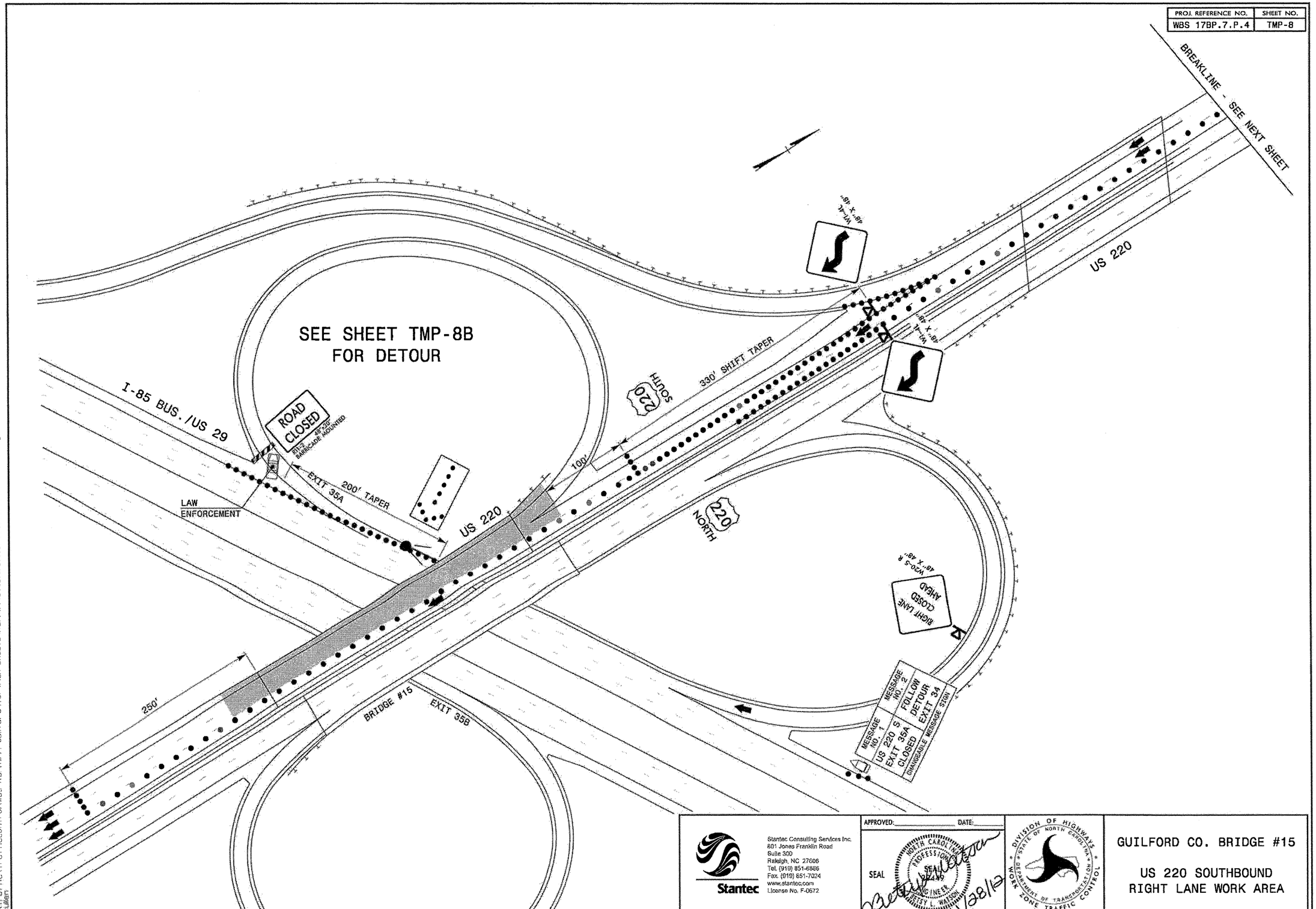

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DEPARTMENT OF TRANSPORTATION
WORK ZONE TRAFFIC CONTROL

GUILFORD CO. BRIDGE #15

US 220 SOUTHBOUND RIGHT LANE WORK AREA

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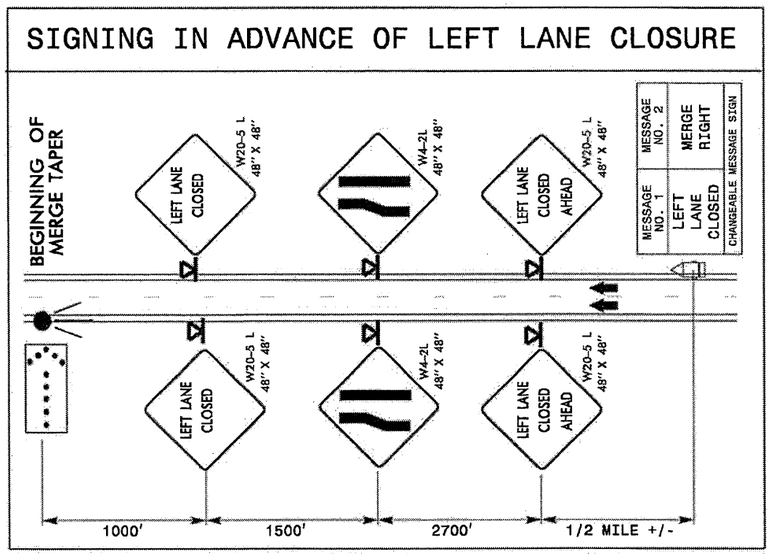
WBS 17BP.7.P.4	TMP-8A

SIGNING IN ADVANCE OF LEFT LANE CLOSURE



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1/20/12

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

GUILFORD CO. BRIDGE #15

US 220 SOUTHBOUND RIGHT LANE WORK AREA

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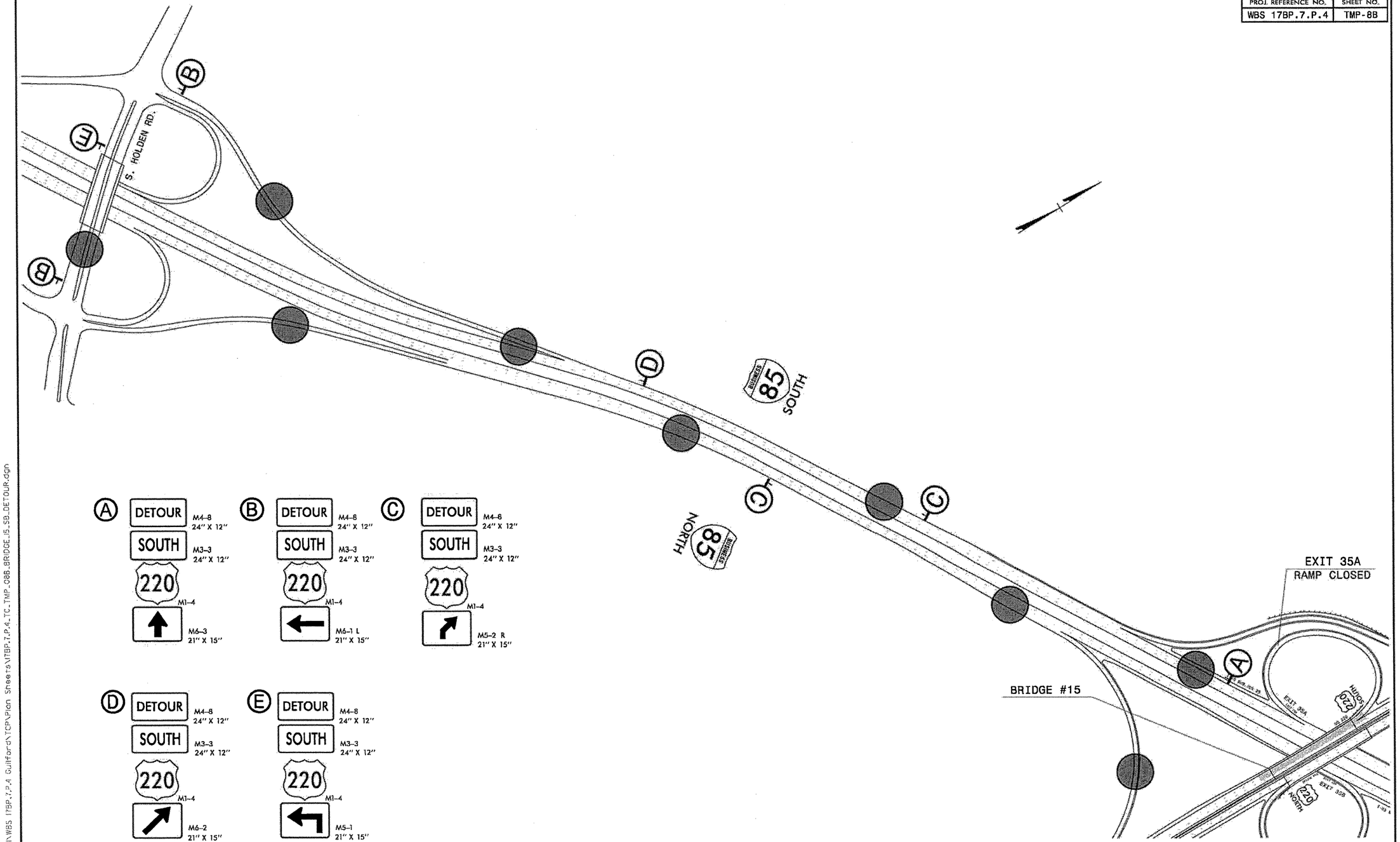

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11/28/12

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GUILFORD CO. BRIDGE #15

EXIT 35A DETOUR ROUTE

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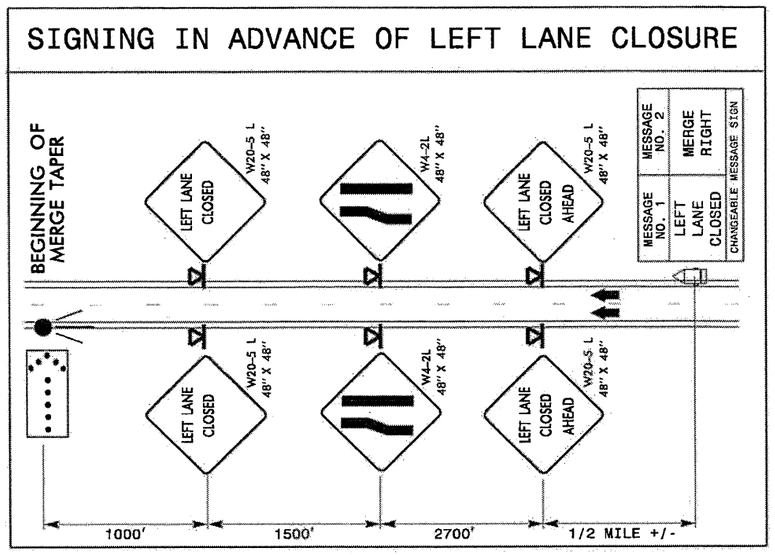
PROJ. REFERENCE NO.	SHEET NO.
WBS 17BP.7.P.4	TMP-9

SIGNING IN ADVANCE OF LEFT LANE CLOSURE



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GUILFORD CO. BRIDGE #15

US 220 SOUTHBOUND
LEFT LANE WORK AREA

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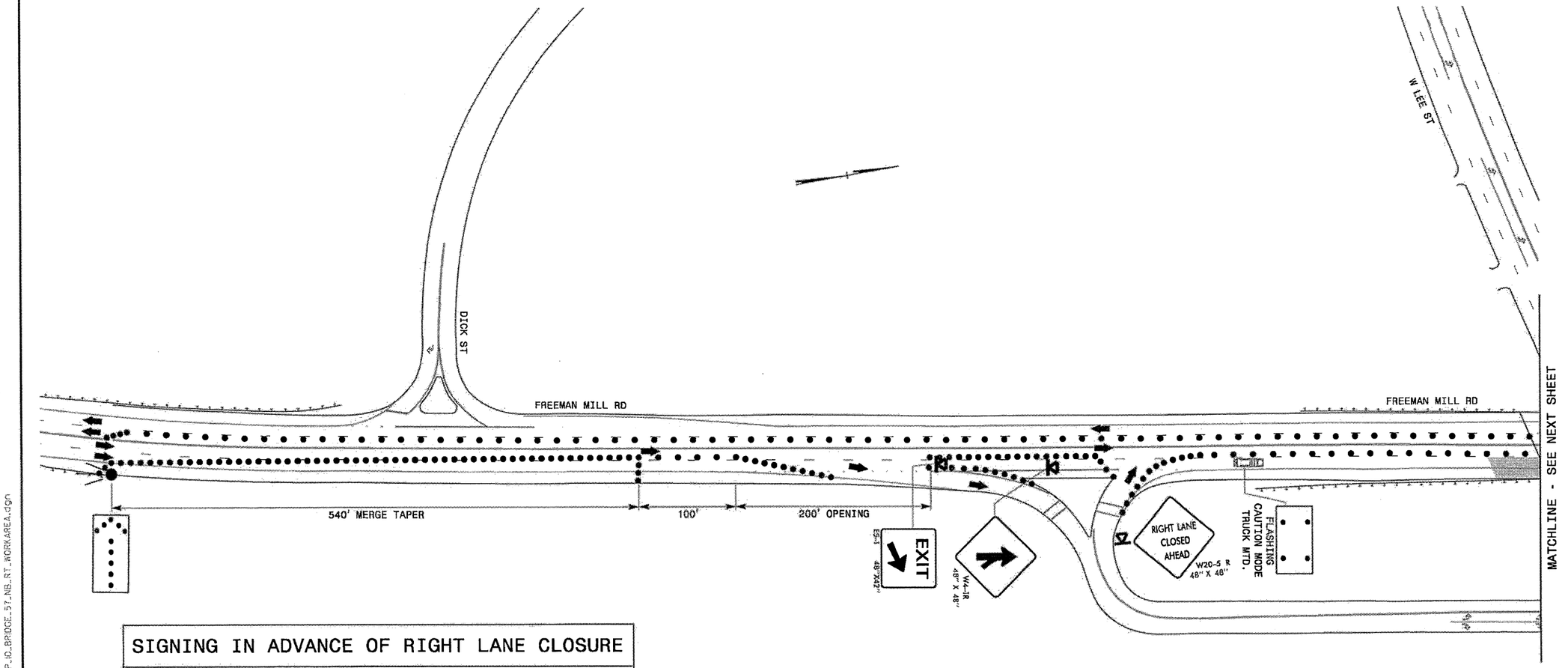
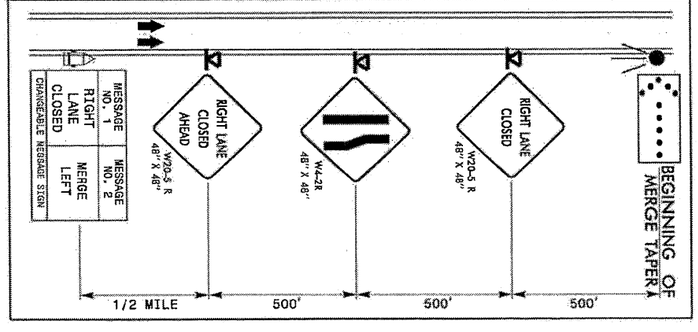
cullen

PROJ. REFERENCE NO.	SHEET NO.
WBS 17BP.7.P.4	TMP-10



SIGNING IN ADVANCE OF RIGHT LANE CLOSURE



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Fax. (919) 851-7024
www.stantec.com
License No. F-0672

APPROVED: _____ DATE: _____

SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 036945 BETSY WATSON

11/28/12

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

GUILFORD CO. BRIDGE #57

SR 1398 (FREEMAN MILL RD.)
NORTHBOUND RIGHT LANE
WORK AREA

11/20/2012
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cculler

PROJ. REFERENCE NO.	SHEET NO.
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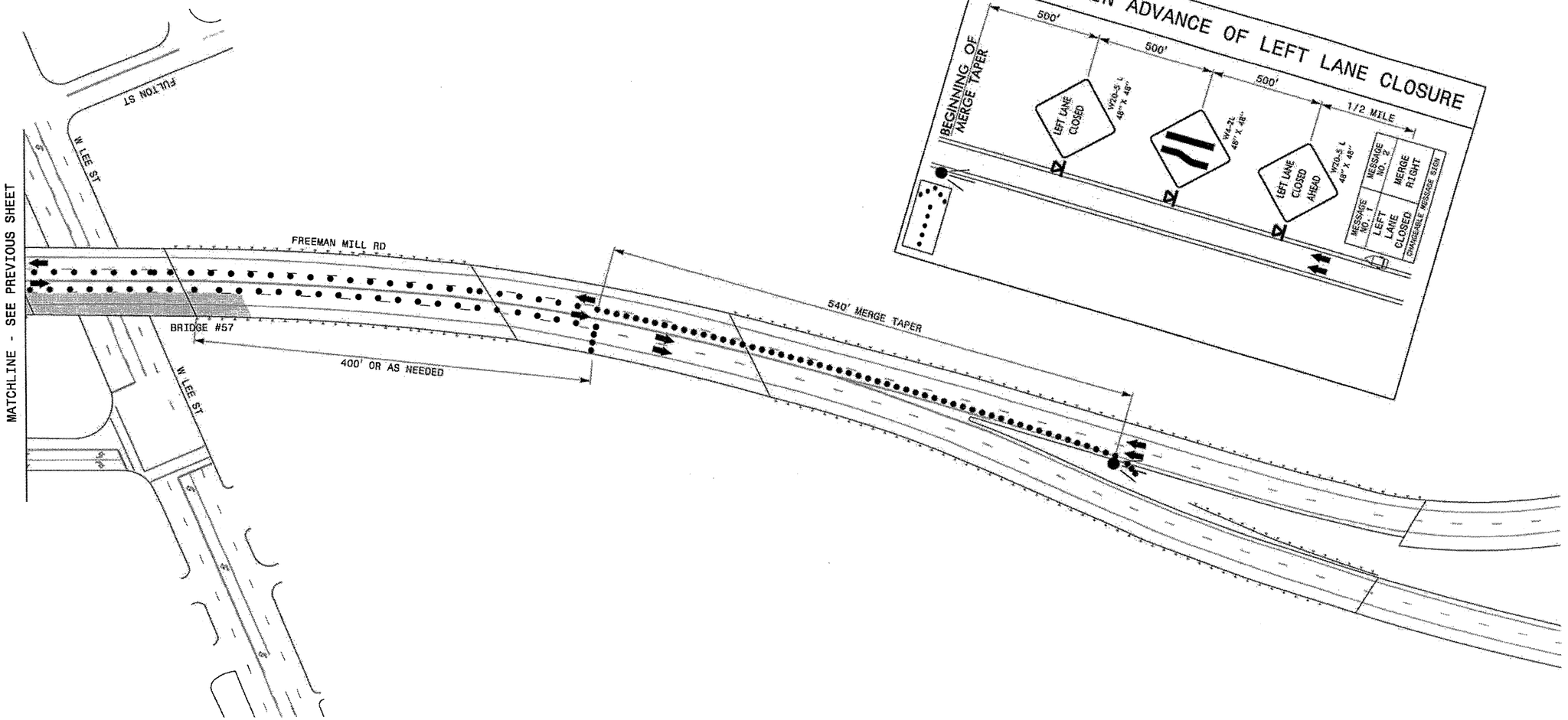

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SEAL 30449 ENGINEER BETSY L. WATSON NORTH CAROLINA PROFESSIONAL ENGINEER

11/28/12

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

GUILFORD CO. BRIDGE #57

SR 1398 (FREEMAN MILL RD.) NORTHBOUND RIGHT LANE WORK AREA

11/20/2012
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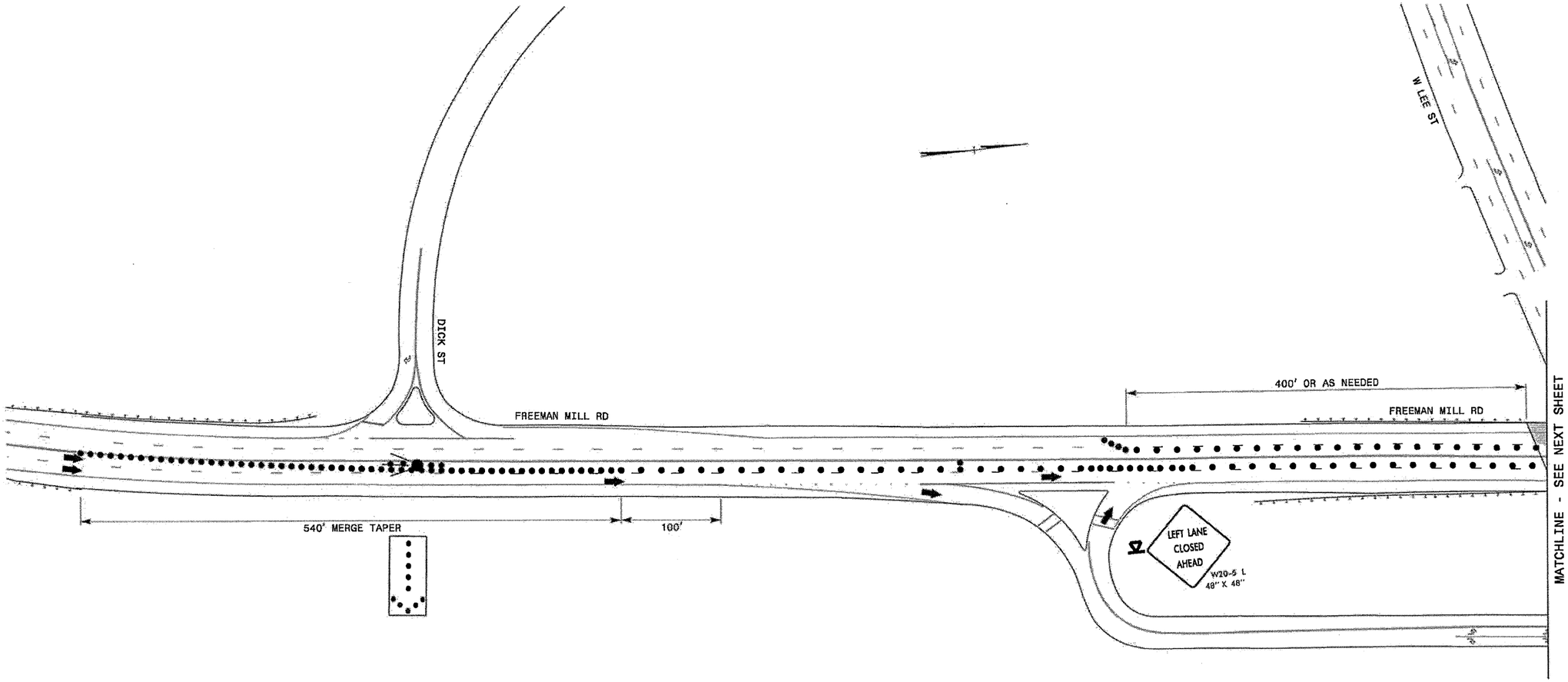

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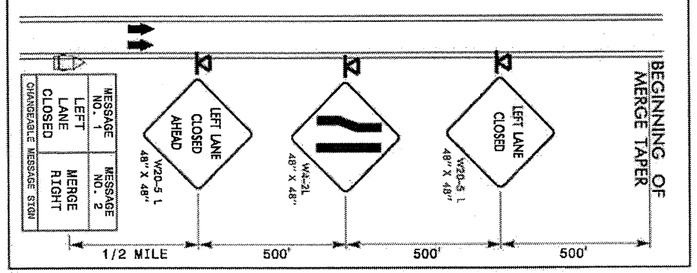

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SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 029861 BETTY L. WATSON

11/28/12

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

GUILFORD CO. BRIDGE #57

SR 1398 (FREEMAN MILL RD.) SOUTHBOUND RIGHT LANE WORK AREA

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CLSmith
Guilford

PROJ. REFERENCE NO.	SHEET NO.
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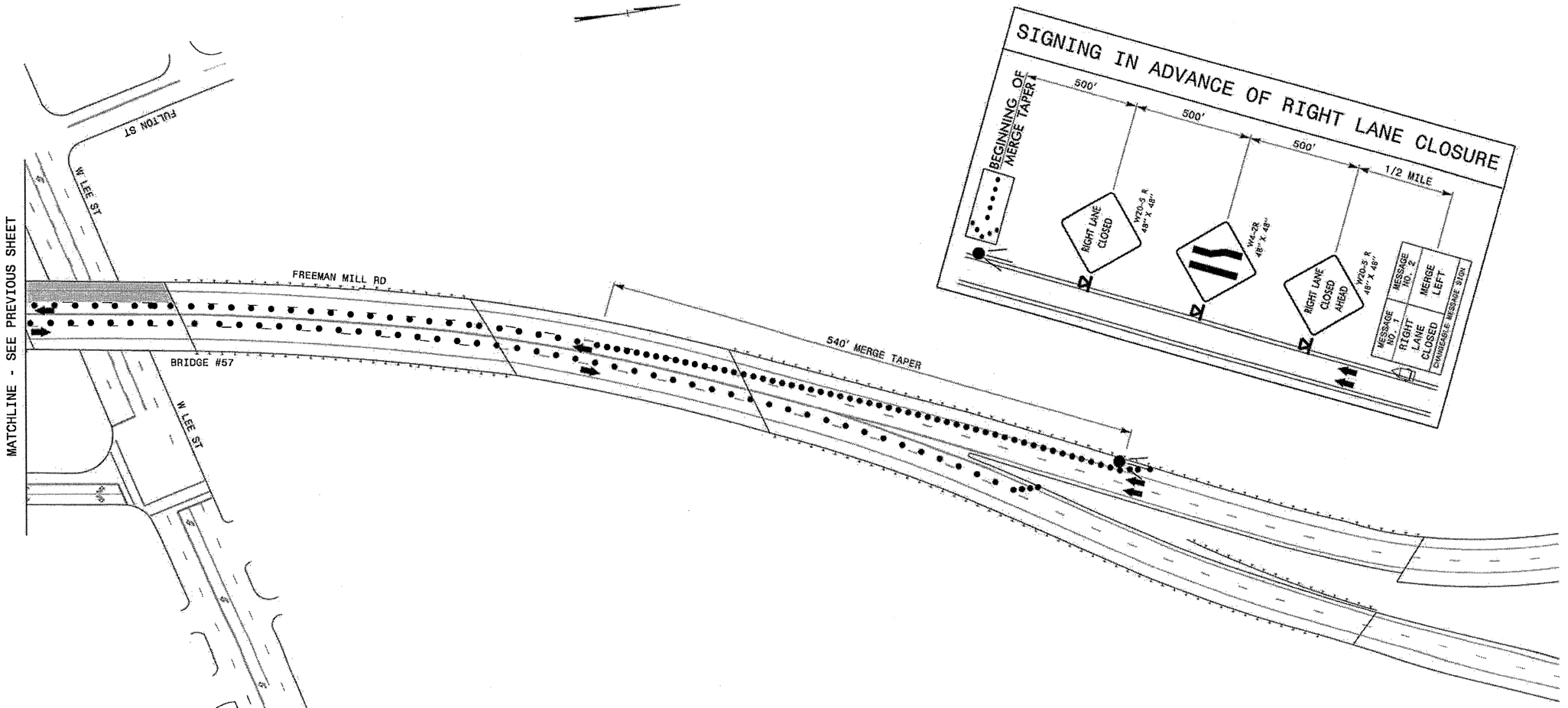

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SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 25429 BETSY WATSON

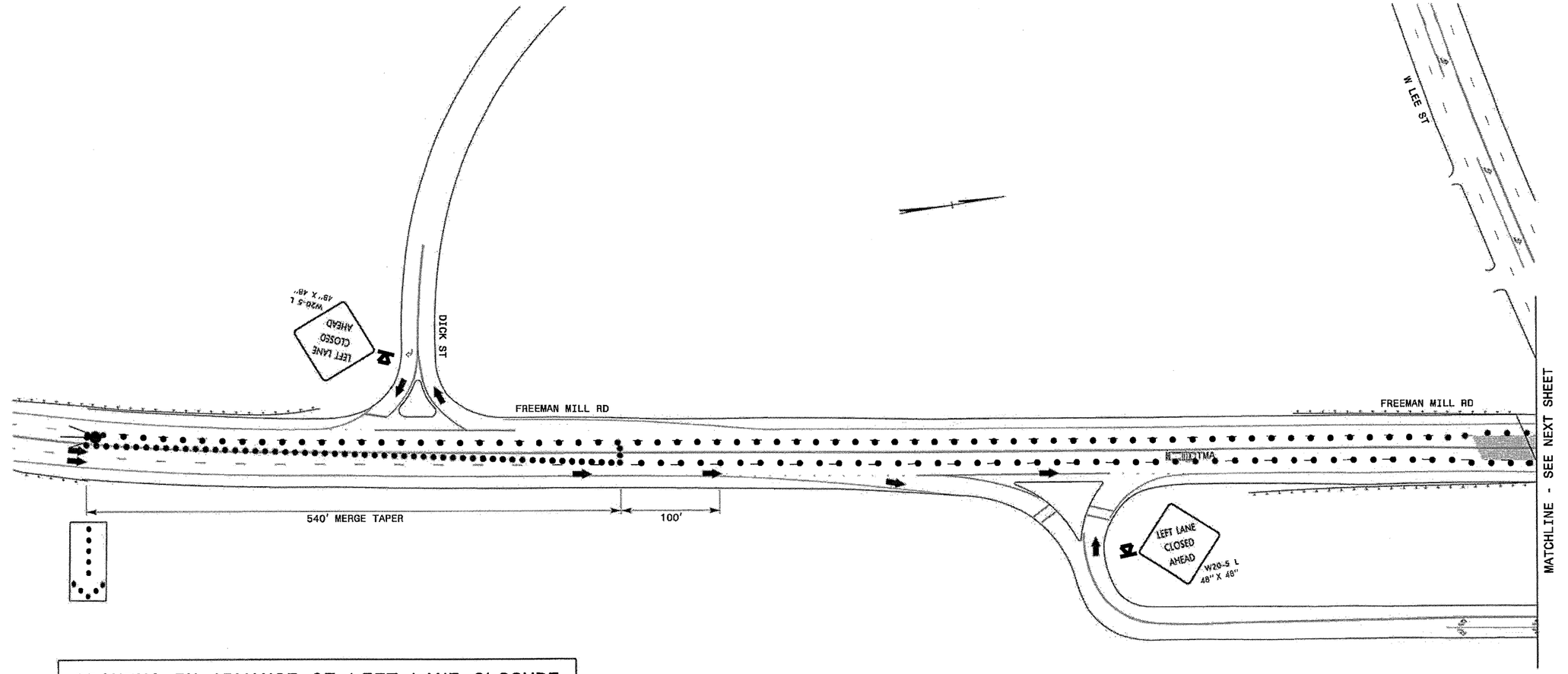
4/28/12

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

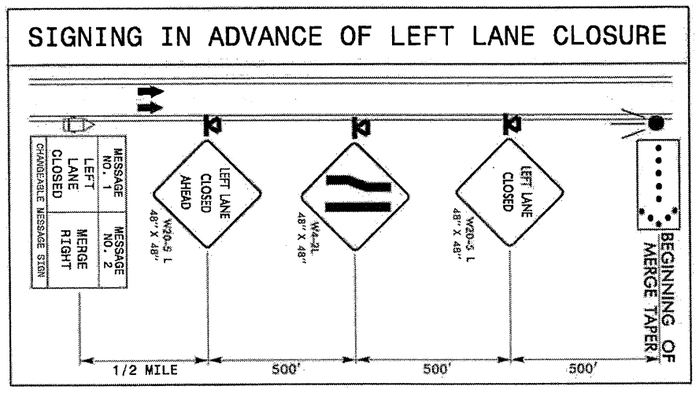
GUILFORD CO. BRIDGE #57

SR 1398 (FREEMAN MILL RD.) SOUTHBOUND RIGHT LANE WORK AREA

PROJ. REFERENCE NO.	SHEET NO.
WBS 17BP.7.P.4	TMP-12



SIGNING IN ADVANCE OF LEFT LANE CLOSURE



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SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER JESSE L. WATSON 29449
11/28/12

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

GUILFORD CO. BRIDGE #57

SR 1398 (FREEMAN MILL RD.)
LEFT LANE
WORK AREA

11/20/2012
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cullen

PROJ. REFERENCE NO.	SHEET NO.
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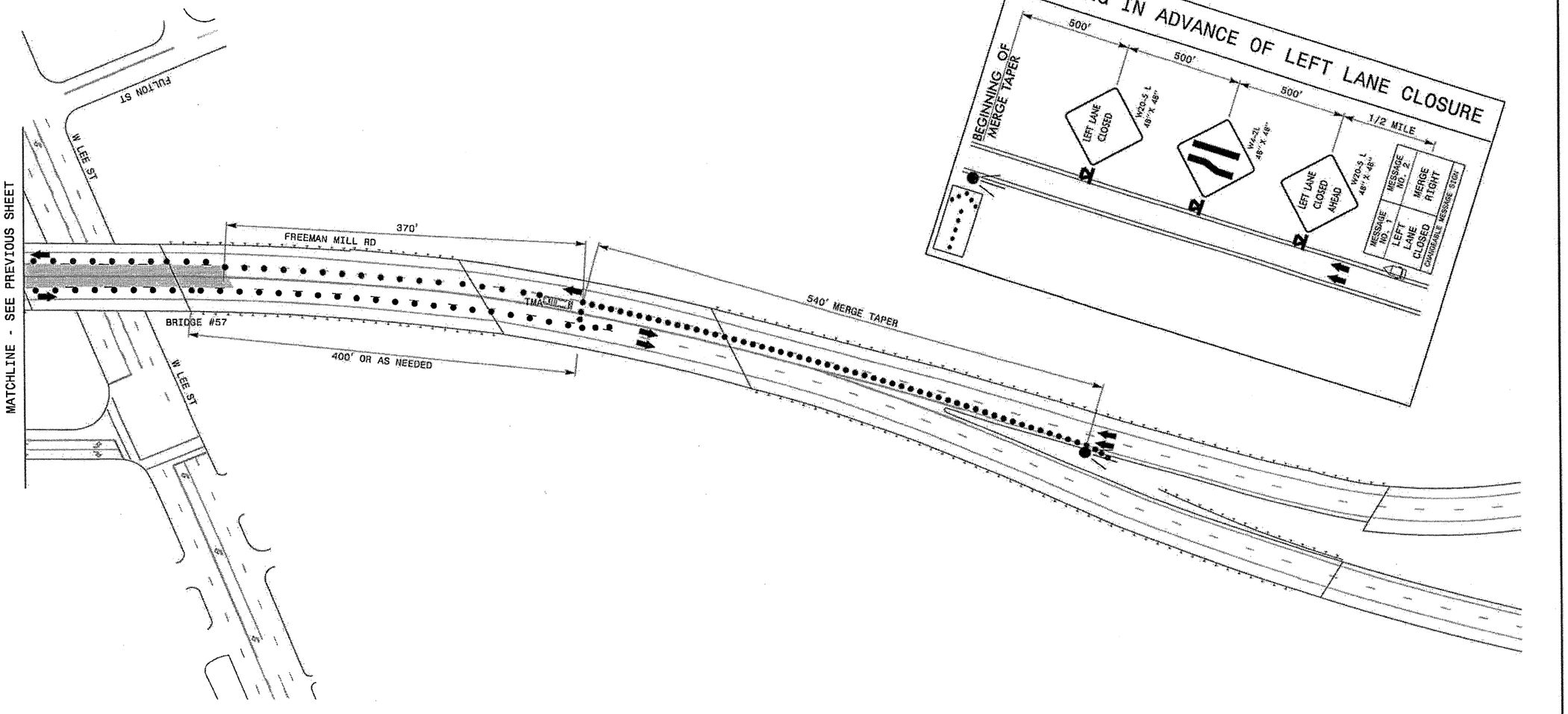

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SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL BETSY L. WATSON 11/28/12

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

GUILFORD CO. BRIDGE #57

SR 1398 (FREEMAN MILL RD.) LEFT LANE WORK AREA

11/29/2012
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jcramer

PROJ. REFERENCE NO.	SHEET NO.
WBS 17BP.7.P.4	TMP-13

SIGNING IN ADVANCE OF LEFT LANE CLOSURE

BEGINNING OF MERGE TAPER

LEFT LANE CLOSED W20-5 L 48" X 48"

W4-2L 48" X 48"

LEFT LANE CLOSED AHEAD W20-5 L 48" X 48"

200'

200'

245' MERGE TAPER

125'

LAW ENF

SR 1129 (GROOMETOWN RD.)

275'

US 85 SOUTH

650' MERGE TAPER

BRIDGE #169

US 85 NORTH

LAW ENF

SIGNING IN ADVANCE OF LEFT LANE CLOSURE

LEFT LANE CLOSED W20-5 L 48" X 48"

W4-2L 48" X 48"

LEFT LANE CLOSED AHEAD W20-5 L 48" X 48"

LEFT LANE CLOSED W20-5 L 48" X 48"

W4-2L 48" X 48"

LEFT LANE CLOSED AHEAD W20-5 L 48" X 48"

500'

500'

500'

CLOSE RIGHT LANE AT INCEPTION

RIGHT LANE CLOSED AHEAD W20-5 R 48" X 48"

BISHOP RD.

11/20/2012
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Guilford

Stantec

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APPROVED: _____ DATE: _____

SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 034644 BRETT KELLY WATSON

11/28/12

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

GUILFORD CO. BRIDGE #169

SR 1129 (GROOMETOWN RD.) NORTHBOUND RIGHT LANE WORK AREA

PROJ. REFERENCE NO.	SHEET NO.
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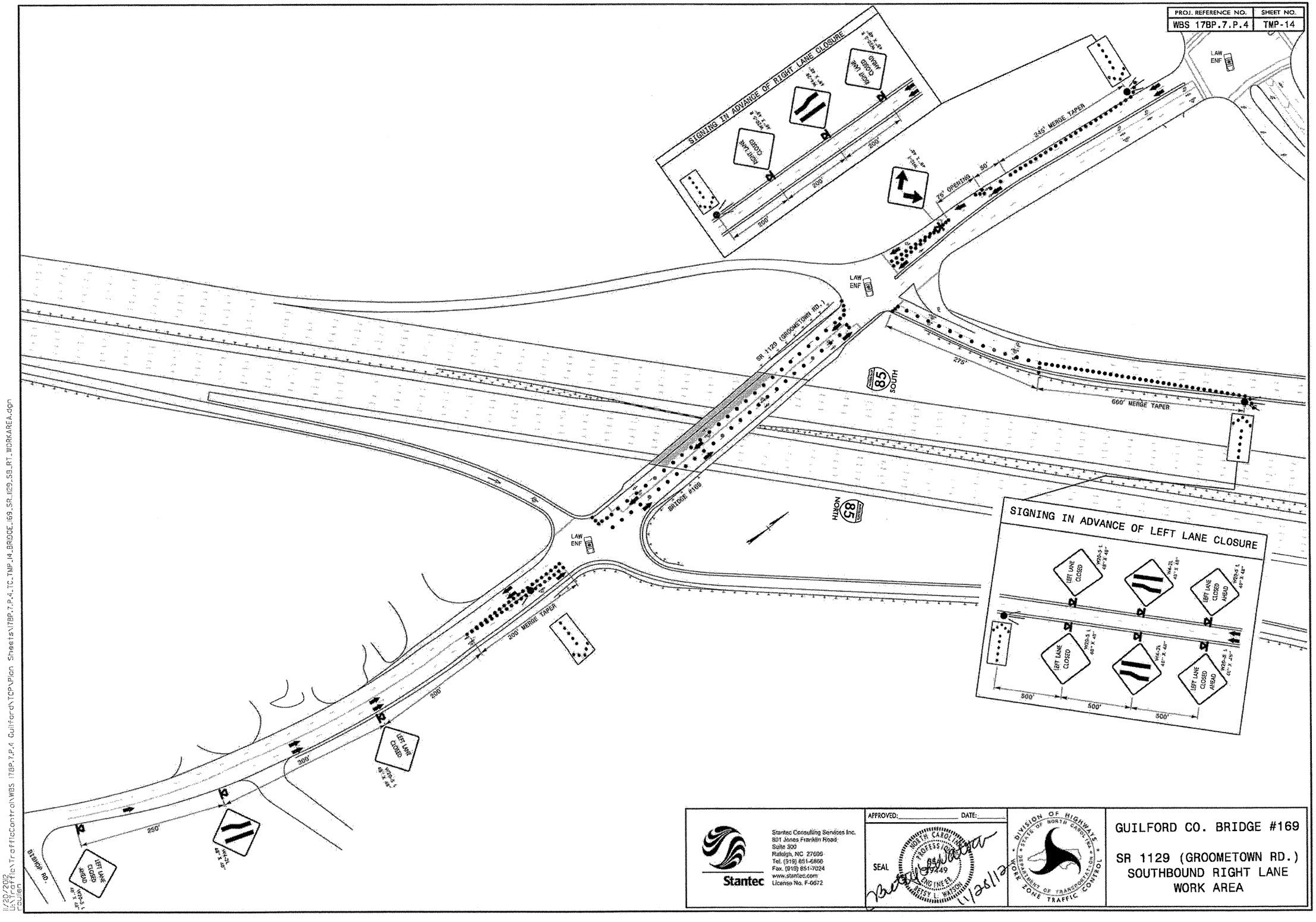

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SEAL 039449 ENGINEER BETSY WATSON NORTH CAROLINA PROFESSIONAL

11/26/12

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

GUILFORD CO. BRIDGE #169

SR 1129 (GROOMETOWN RD.) SOUTHBOUND RIGHT LANE WORK AREA

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cauldwell

PROJ. REFERENCE NO.	SHEET NO.
WBS 17BP.7.P.4	TMP-15

SIGNING IN ADVANCE OF LEFT LANE CLOSURE

BEGINNING OF MERGE TAPER

LEFT LANE CLOSED — W20-5 L 48" X 48"

W4-2L 48" X 48"

LEFT LANE CLOSED AHEAD — W20-5 L 48" X 48"

200' 200' 200'

245' MERGE TAPER

125'

LAW ENF

SR 1129 (GROOMETOWN RD.)

US 29 BUS 85 SOUTH

275'

660' MERGE TAPER

SIGNING IN ADVANCE OF LEFT LANE CLOSURE

LEFT LANE CLOSED — W20-5 L 48" X 48"

W4-2L 48" X 48"

LEFT LANE CLOSED AHEAD — W20-5 L 48" X 48"

500' 500' 500'

US 29 BUS 85 NORTH

BRIDGE #169

LAW ENF

200' MERGE TAPER

200'

300'

LEFT LANE CLOSED — W20-5 L 48" X 48"

250'

W4-2L 48" X 48"

BISHOP RD.

LEFT LANE CLOSED AHEAD — W20-5 L 48" X 48"

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APPROVED: DATE:

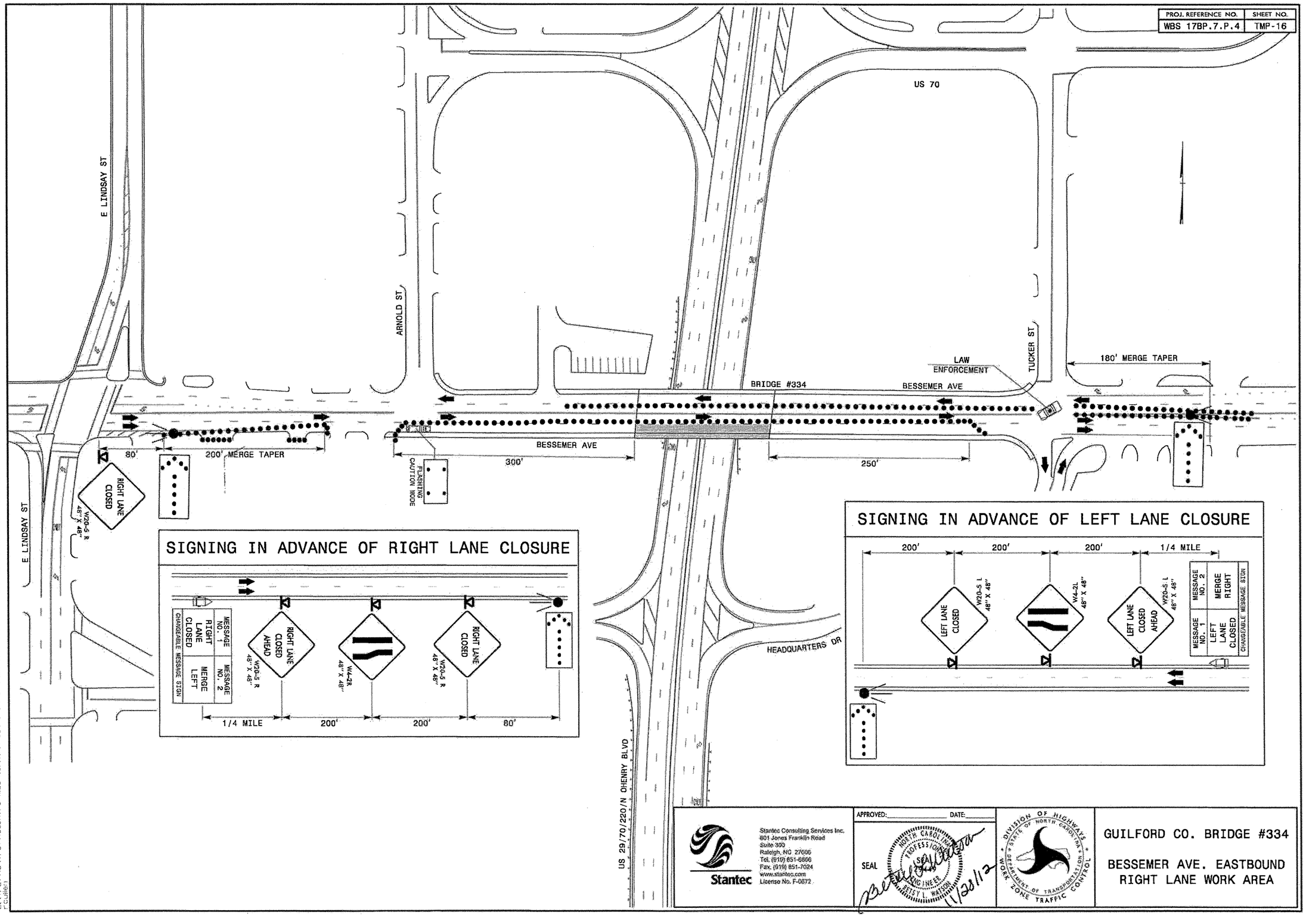
SEAL — NORTH CAROLINA PROFESSIONAL SEAL 29449 ENGINEER BESSY L. WATSON — 11/28/12

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

GUILFORD CO. BRIDGE #169

SR 1129 (GROOMETOWN RD.)
LEFT LANE WORK AREA

PROJ. REFERENCE NO.	SHEET NO.
WBS 17BP.7.P.4	TMP-16



SIGNING IN ADVANCE OF RIGHT LANE CLOSURE

SIGNING IN ADVANCE OF LEFT LANE CLOSURE

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SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL BETSY L. WATSON

11/20/12

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

GUILFORD CO. BRIDGE #334

BESSEMER AVE. EASTBOUND RIGHT LANE WORK AREA

11/20/2012
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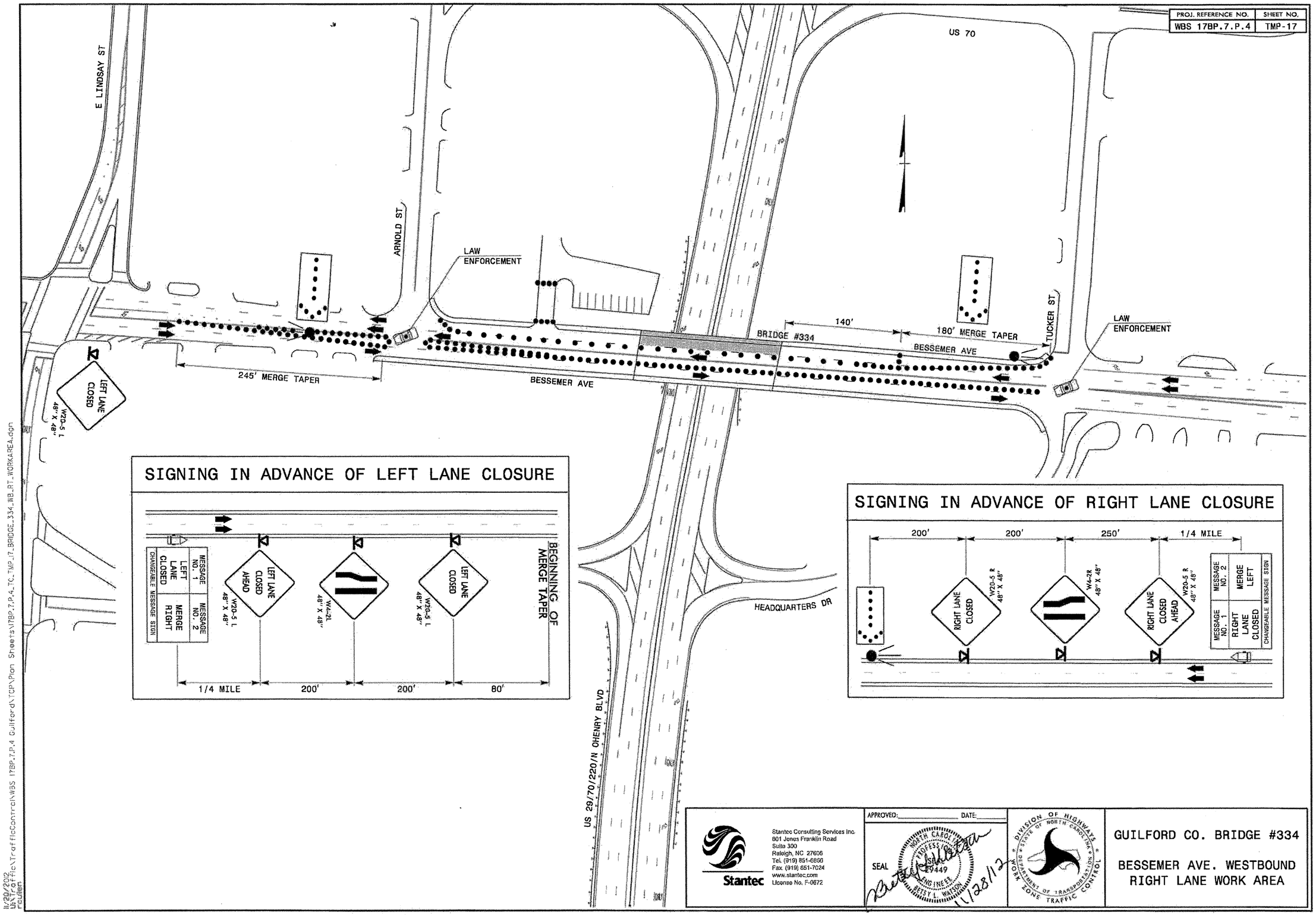

SIGNING IN ADVANCE OF LEFT LANE CLOSURE

SIGNING IN ADVANCE OF RIGHT LANE CLOSURE

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SEAL 29449 ENGINEER BETSY L. WATSON NORTH CAROLINA PROFESSIONAL

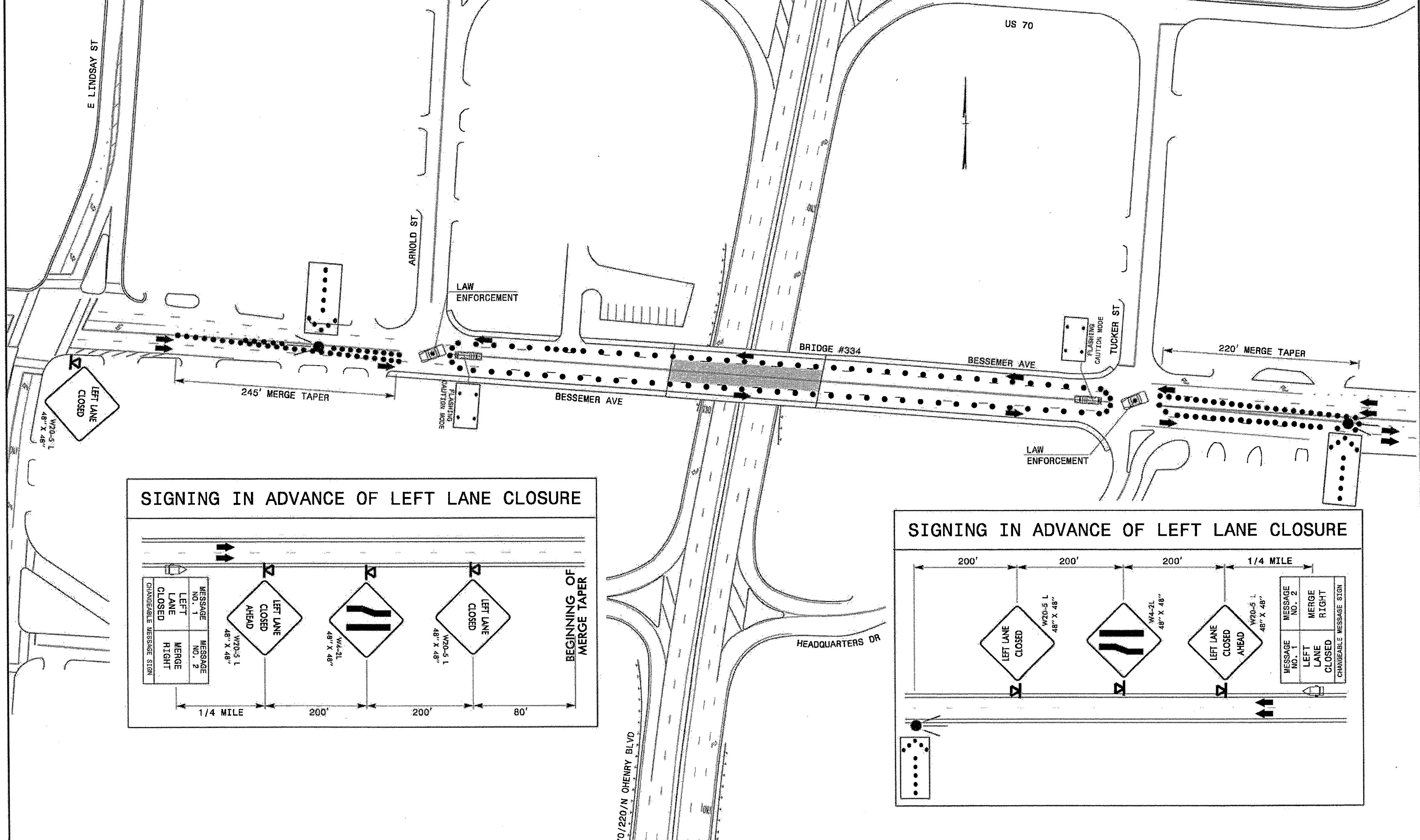
11/28/12

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

GUILFORD CO. BRIDGE #334

BESSEMER AVE. WESTBOUND RIGHT LANE WORK AREA

PROJ. REFERENCE NO.	SHEET NO.
WBS 17BP.7.P.4	TMP-18



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SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 029449 BETSY L. WATSON

Betsy L. Watson 11/28/12

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

GUILFORD CO. BRIDGE #334

BESSEMER AVE. LEFT LANE WORK AREA

11/20/2012
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rcullen

PROJECT: 17BP.7.P.1

CONTRACT: C203270

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
GUILFORD COUNTY

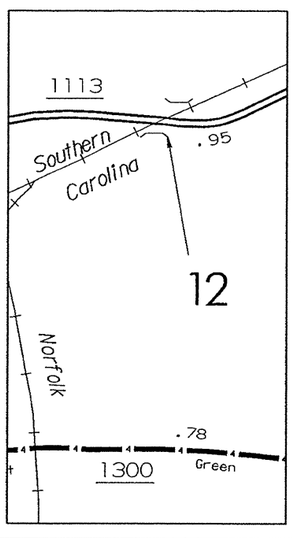
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.7.P.1	4	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
17BP.7.P.1		PE
17BP.7.P.1		CONSTR

LOCATION: *BRIDGE #12, ON SR 1970 (EAST KIVETT DR.) OVER NORFOLK SOUTHERN RAILWAY*
BRIDGE #36, ON NC 150 (OAK RIDGE RD.) OVER SOUTHERN RAILWAY (ABANDONED)
BRIDGE #57, ON SR 1398 (FREEMAN MILL RD.) OVER NC 6
BRIDGE #277, ON US 421 EBL OVER BIG ALAMANCE CREEK
BRIDGE #292, ON US 220 (WENDOVER AVE.) ACROSS US 220 SBL & SR 1452
BRIDGE #334, ON BESSEMER AVENUE ACROSS US 29

TYPE OF WORK: *BRIDGE PRESERVATION – CLEANING & PAINTING OF EXISTING BRIDGE STRUCTURES*

BRIDGE #12



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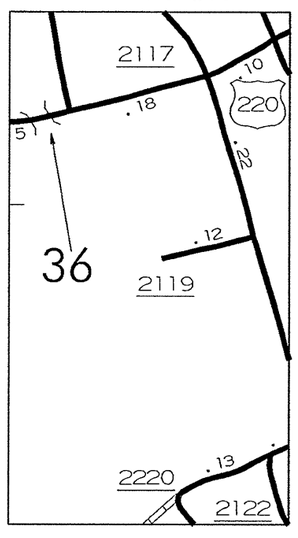
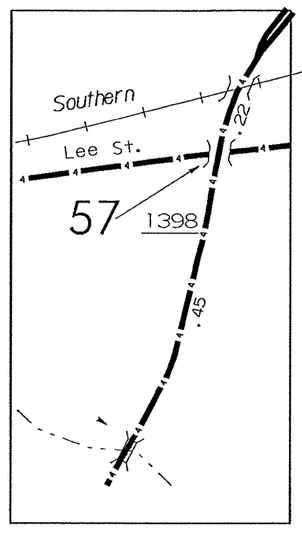


BRIDGE #57



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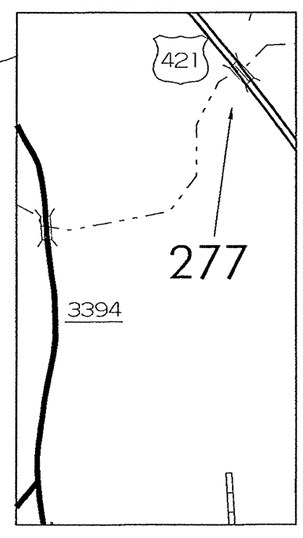

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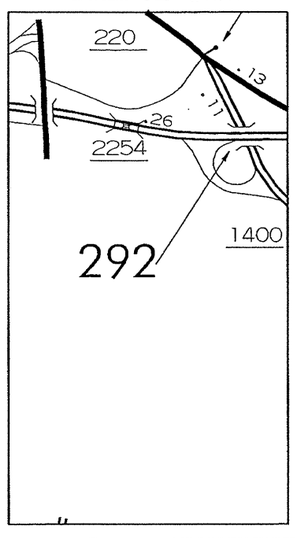
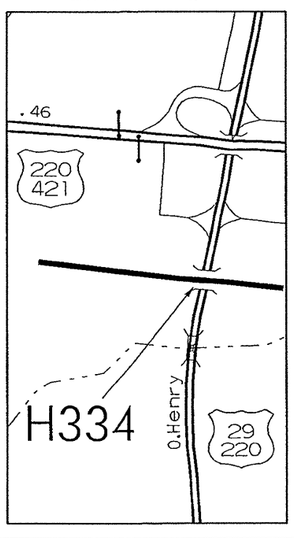


BRIDGE #334



DESIGN DATA

#12 ADT 2011	=	8,900
#36 ADT 2011	=	6,700
#57 ADT 2009	=	21,500
#277 ADT 2009	=	8,000
#292 ADT 2011	=	55,000
#334 ADT 2011	=	17,000

PROJECT LENGTH

GUILFORD BRIDGE #12	=	.080 MILE
GUILFORD BRIDGE #36	=	.030 MILE
GUILFORD BRIDGE #57	=	.030 MILE
GUILFORD BRIDGE #277	=	.039 MILE
GUILFORD BRIDGE #292	=	.034 MILE
GUILFORD BRIDGE #334	=	.032 MILE

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

2012 STANDARD SPECIFICATIONS

LETTING DATE:
June 18, 2013

RICK NELSON, PE
PROJECT ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 20103 ENGINEER FARZIN ASEFNIA

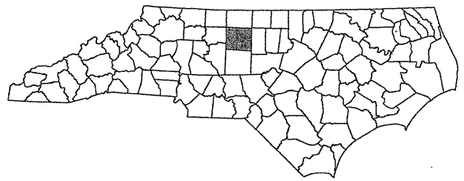
FARZIN ASEFNIA, P.E.
PROJECT DESIGN ENGINEER

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

GUILFORD COUNTY

DIVISION 7



BRIDGE PAINTING

GUILFORD BRIDGE #12 – SR 1970 OVER SOUTHERN RAILROAD
GUILFORD BRIDGE #36 – NC 150 OVER SOUTHERN RR (ABANDONED)
GUILFORD BRIDGE #57 – SR 1398 OVER NC 6
GUILFORD BRIDGE #277 – US 421 EB OVER BIG ALAMANCE CREEK
GUILFORD BRIDGE #292 – US 220 OVER US 220 SB
GUILFORD BRIDGE #334 – BESSEMER AVENUE OVER US 29

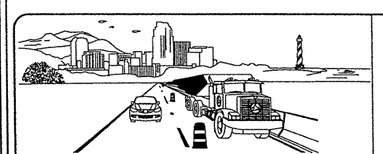
INDEX OF SHEETS

SHEET NO.
TMP-1

WBS 17BP.7.P.1

TRAFFIC MANAGEMENT STRATEGY

BRIDGE PAINTING OPERATIONS WILL BE ACCOMPLISHED USING TIME RESTRICTED LANE CLOSURES. REFER TO SHEET TMP-3 FOR PHASING.



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

PLAN PREPARED FOR NCDOT BRIDGE MANAGEMENT UNIT
RALEIGH, NC

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

PLAN PREPARED BY:
Stantec Consulting Services Inc.
801 Jones Franklin Road-Suite 300
Raleigh, NC 27606

Tel. 919.851.6866
Fax. 919.851.7024
www.stantec.com

BETSY L. WATSON, P.E. — TRAFFIC ENGINEER
GEORGE KARAGEORGE — SR. TRANSPORTATION DESIGNER

APPROVED: Betsy L Watson
DATE: 12/15/11

SEAL

12/14/2011
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gkarageorge

PROJ. REFERENCE NO.	SHEET NO.
17BP.7.P.1	TMP-1A

LEGEND

DIRECTION OF TRAFFIC FLOW

DIRECTION OF PEDESTRIAN TRAFFIC FLOW

WORK AREA PAVEMENT REMOVAL

NORTH ARROW

TYPE III BARRICADE

CONE

DRUM SKINNY DRUM TUBULAR MARKER

CHANGEABLE MESSAGE SIGN (CMS)

FLAGGER

FLASHING ARROW BOARD(TYPE C)

LAW ENFORCEMENT

TRUCK MOUNTED ATTENUATOR (TMA)

PORTABLE CONCRETE BARRIER (PCB)

TEMPORARY CRASH CUSHION

TEMPORARY SHORING

WORK ZONE SIGN-PORTABLE

WORK ZONE SIGN-STATIONARY

WORK ZONE SIGN-STATIONARY OR PORTABLE

SIGNALS

EXISTING PROPOSED TEMP TEMPORARY

PAVEMENT MARKINGS

EXISTING PAVEMENT MARKING (GRAY)

SKIP LINES

MINI-SKIP LINES

SOLID LINES

PAVEMENT MARKING SYMBOLS

PAVEMENT MARKING SYMBOLS

EXISTING PAVEMENT MARKING SYMBOLS (HOLLOW)

ONLY PAVEMENT MARKING ALPHANUMERIC CHARACTERS

PAVEMENT MARKERS

CRYSTAL/CRYSTAL

CRYSTAL/RED

YELLOW/YELLOW

ROADWAY STANDARD DRAWINGS

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
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
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	DRUMS
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1165.01	WORK VEHICLE LIGHTING SYSTEMS AND TMA DELINEATION
1180.01	SKINNY - DRUM

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APPROVED:_____ DATE:_____

SEAL 25449 NORTH CAROLINA PROFESSIONAL ENGINEER LISA L. WATSON

5/15/11

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

LEGEND
&
ROADWAY STANDARD DRAWINGS

12/14/2011
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gkaragaorge

PROJ. REFERENCE NO.	SHEET NO.
17BP.7.P.1	TMP-2

GENERAL NOTES

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

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.

LANE CLOSURE TIME RESTRICTIONS

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

ROAD NAME	DAY AND TIME RESTRICTIONS
E. KIVETT DR. FREEMAN MILL RD. WEST LEE ST.(NC 9) BATTLEGROUND AVE. WENDOVER AVE. N. OHENRY BLVD. E. BESSEMER AVE.	6:00 A.M.- 7:00 P.M. MONDAY-SUNDAY (EVERY DAY)
NC 150 US 421	6:00 A.M.-9:00 A.M. MONDAY THRU FRIDAY, AND 4:00 P.M.-7:00 P.M. MONDAY THRU FRIDAY

HOLIDAY & HOLIDAY WEEKEND LANE CLOSURE TIME RESTRICTIONS

B) DO NOT CLOSE OR NARROW TRAVEL LANES DURING HOLIDAYS AND HOLIDAY WEEKENDS AS FOLLOWS:

ROAD NAME
ALL ROADS

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 7:00 P.M. JANUARY 2nd. IF NEW YEAR'S DAY IS ON A FRIDAY, SATURDAY, SUNDAY, OR MONDAY THEN UNTIL 7:00 P.M. THE FOLLOWING TUESDAY.

3) FOR EASTER, BETWEEN THE HOURS OF 6:00 A.M. THURSDAY AND 7:00 P.M. MONDAY.

4) FOR MEMORIAL DAY, BETWEEN THE HOURS OF 6:00 A.M. FRIDAY TO 7:00 P.M. TUESDAY.

5) FOR INDEPENDENCE DAY, BETWEEN THE HOURS OF 6:00 A.M. THE DAY BEFORE INDEPENDENCE DAY AND 7:00 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 7:00 P.M. THE TUESDAY AFTER INDEPENDENCE DAY.

6) FOR LABOR DAY, BETWEEN THE HOURS OF 6:00 A.M. FRIDAY AND 7:00 P.M. TUESDAY.

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

8) FOR CHRISTMAS, BETWEEN THE HOURS OF 6:00 A.M. THE FRIDAY BEFORE THE WEEK OF CHRISTMAS DAY AND 7:00 P.M. THE FOLLOWING TUESDAY AFTER THE WEEK OF CHRISTMAS.

ROAD CLOSURE TIME RESTRICTIONS

C) DO NOT CLOSE ROADS AS FOLLOWS:

ROAD NAME	DAY AND TIME RESTRICTIONS
RAMPS FROM ARNOLD ST AND BESSEMER AVE (HEADQUARTERS DR) ONTO US 29	6:00 A.M.-7:00 P.M. MONDAY-SUNDAY (EVERY DAY)

LANE AND SHOULDER CLOSURE REQUIREMENTS

D) LANE CLOSURES ARE REQUIRED WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN ANY PORTION OF A TRAVEL LANE. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.

E) INSTALL ALL LANE CLOSURES ACCORDING TO THE PLANS, ROADWAY STANDARD DRAWINGS (1101.02), OR AS DIRECTED BY THE ENGINEER.

F) 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. COVER OR LAY DOWN SIGNS, AND TURN OFF ARROW BOARDS AND MESSAGE SIGNS.

G) INSTALL LANE CLOSURES WITH THE TRAFFIC FLOW, BEGINNING WITH DEVICES ON THE UPSTREAM SIDE OF TRAFFIC. REMOVE LANE CLOSURES AGAINST THE TRAFFIC FLOW, BEGINNING WITH DEVICES ON THE DOWNSTREAM SIDE OF TRAFFIC.

H) 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.

I) 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 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

J) 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 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

K) UNLESS OTHERWISE SHOWN IN THE PLANS, PLACE ARROW BOARDS ON THE ROADWAY SHOULDER. IF SHOULDERS DO NOT EXIST, PLACE ARROW BOARDS WITHIN THE MERGE TAPER BEHIND THE CHANNELIZING DEVICES OF THE LANE CLOSURE. IF NEEDED, EXTEND LANE CLOSURES TO PROVIDE STOPPING SIGHT DISTANCE TO THE ARROW BOARD (REFER TO ROADWAY STANDARD DRAWING 1101.11 SHEET 2).

L) PLACE LANE CLOSURE DRUMS IN TAPERS AT A MAXIMUM SPACING EQUAL IN FEET TO THE POSTED SPEED LIMIT (MPH). ALONG BUFFER SPACES AND WORK AREAS SPACE DRUMS AT A MAXIMUM SPACING EQUAL IN FEET TO TWICE THE POSTED SPEED LIMIT (MPH). IN ALL CASES, CHANNELIZING DEVICES ARE TO BE SPACED IN SUCH A MANNER AS TO POSITIVELY ACHIEVE THE INTENDED VISUAL CHANNELIZATION. CHANNELIZING DEVICES SHOULD BE LATERALLY OFFSET 3 FT INSIDE THE CLOSED LANE AS ROOM PERMITS.

M) WHENEVER TAPERS ARE TO BE USED IN CLOSE PROXIMITY TO AN INTERCHANGE RAMP, CROSSROADS, CURVES, OR OTHER INFLUENCING FACTORS, THE LENGTH OF STANDARD TAPERS MAY BE ADJUSTED.

ROAD CLOSURES

N) NOTIFY THE ENGINEER TWENTY ONE (21) CALENDAR DAYS PRIOR TO ANY ROAD CLOSURE.

O) FURNISH AND INSTALL SIGNING AND DEVICES FOR ROAD CLOSURES ACCORDING TO THE TRAFFIC MANAGEMENT PLAN. COVER OR REMOVE ALL SIGNS AND DEVICES FOR ROAD CLOSURES WHEN NOT IN EFFECT.

P) FURNISH AND INSTALL OFFSITE-DETOUR ROUTE SIGNING AS SHOWN IN THE TRAFFIC MANAGEMENT PLAN. COVER OR REMOVE OFFSITE-DETOUR SIGNING WHEN THE DETOUR IS NOT IN OPERATION. ALL DETOUR ROUTES MUST BE APPROVED BY THE ENGINEER PRIOR TO IMPLEMENTING.

Q) WHEN CLOSING A ROADWAY OR DRIVEWAY PLACE TYPE III BARRICADES COMPLETELY ACROSS THE ROADWAY OR FROM CURB TO CURB. ATTACH BARRICADE MOUNTED "ROAD CLOSED" SIGN R11-2 AT ALL CLOSURE LOCATIONS. IF LOCAL TRAFFIC IS TO BE MAINTAINED STAGGER THE BARRICADES TO ALLOW ACCESS.

R) INSTALL SIGNS BEFORE BARRICADES WHEN CLOSING A ROADWAY TO TRAFFIC. REMOVE BARRICADES BEFORE SIGNS WHEN OPENING A ROADWAY TO TRAFFIC. INSTALL/REMOVE ROAD CLOSURE SIGNS AND BARRICADES IN A CONTINUOUS OPERATION AND WITHIN THE SAME CALENDAR DAY.

MISCELLANEOUS

S) LAW ENFORCEMENT MAY BE USED TO MAINTAIN TRAFFIC THROUGH THE WORK AREA AND/OR INTERSECTIONS AS DIRECTED BY THE ENGINEER. LOCATIONS SHOWN IN THE PLANS ARE APPROXIMATE AND MAY BE REVISED AS THE OFFICER OR THE ENGINEER DEEM NECESSARY.

T) ALL DIMENSIONS AND STATIONS IN THE TRAFFIC MANAGEMENT PLAN AND PHASING ARE APPROXIMATE (+/-); FIELD ADJUST AS NECESSARY OR AS DIRECTED BY THE ENGINEER.

U) ENSURE THE OVERSIZE/OVERWEIGHT PERMIT UNIT (919) 733-4740 HAS BEEN ADVISED OF THE ONGOING TRAFFIC OPERATIONS THROUGH THE DIVISION OFFICE.

V) CHANGEABLE MESSAGE SIGN MESSAGES SHOWN ARE EXAMPLES. OTHER MESSAGES MAY BE USED AS CONDITIONS WARRANT. ALL MESSAGES AND LOCATIONS MUST BE APPROVED BY THE ENGINEER PRIOR TO INCORPORATING.

W) DO NOT PERFORM WORK FROM THE ROADWAY ON TOP OF ANY BRIDGE, UNLESS SPECIFICALLY ALLOWED IN THE PLAN OR BY THE ENGINEER.

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APPROVED:_____ DATE:_____

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 29449 BETSY L. WATSON
12/16/11

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

GENERAL NOTES

12/16/2011
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PROJ. REFERENCE NO.	SHEET NO.
17BP.7.P.1	TMP-3

PHASING

DURING BRIDGE PAINTING OPERATIONS USE LANE CLOSURES WHEN REQUIRED AS OUTLINED BELOW:

BRIDGE #12 SR 1970 (E KIVETT DR) OVER SOUTHERN RR

USE RIGHT LANE CLOSURES PER ROADWAY STANDARD DRAWING 1101.02 SHEET 3 OF 15.

BRIDGE #36 NC 150 (OAK RIDGE RD) OVER SOUTHERN RR (ABANDONED)

USE FLAGGER LANE CLOSURES PER ROADWAY STANDARD DRAWING 1101.02 SHEET 1 OF 15.

BRIDGE #57 SR 1398 (FREEMAN MILL RD) OVER NC 6 (W LEE ST)

USE LANE CLOSURES PER SHEETS TMP-4, 4A.

BRIDGE #277 US 421 EASTBOUND OVER BIG ALAMANCE CREEK

USE LANE CLOSURES PER ROADWAY STANDARD DRAWING 1101.02 SHEET 3 OF 15 OR ROADWAY STANDARD DRAWING SHEET 6 OF 15.

BRIDGE #292 US 220 (W WENDOVER AVE) OVER US 220 SOUTHBOUND & BATTLEGROUND AVE

USE LANE CLOSURES PER SHEETS TMP-5,5A.

BRIDGE #334 BESSEMER AVE OVER US 29/70/220 (N OHENRY BLVD)

USE LANE CLOSURES PER SHEETS TMP-6,6A

WHEN WORKING IN THE RIGHT AND ENTRANCE RAMP LANES CLOSE THE ENTRANCE RAMPS FROM ARNOLD ST. AND BESSEMER AVE. (HEADQUARTERS DR.) PER SHEET TMP-6B.

WHEN WORKING IN THE RIGHT AND ENTRANCE RAMP LANES CLOSE THE ENTRANCE RAMPS FROM ARNOLD ST. AND BESSEMER AVE. (HEADQUARTERS DR.) PER SHEET TMP-6B.

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NORTH CAROLINA PROFESSIONAL SEAL 29449 ENGINEER BETSY L. WATSON
12/15/11

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

PHASING

12/14/2011
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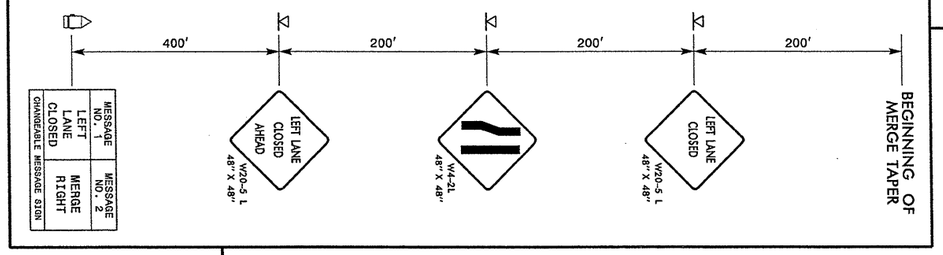
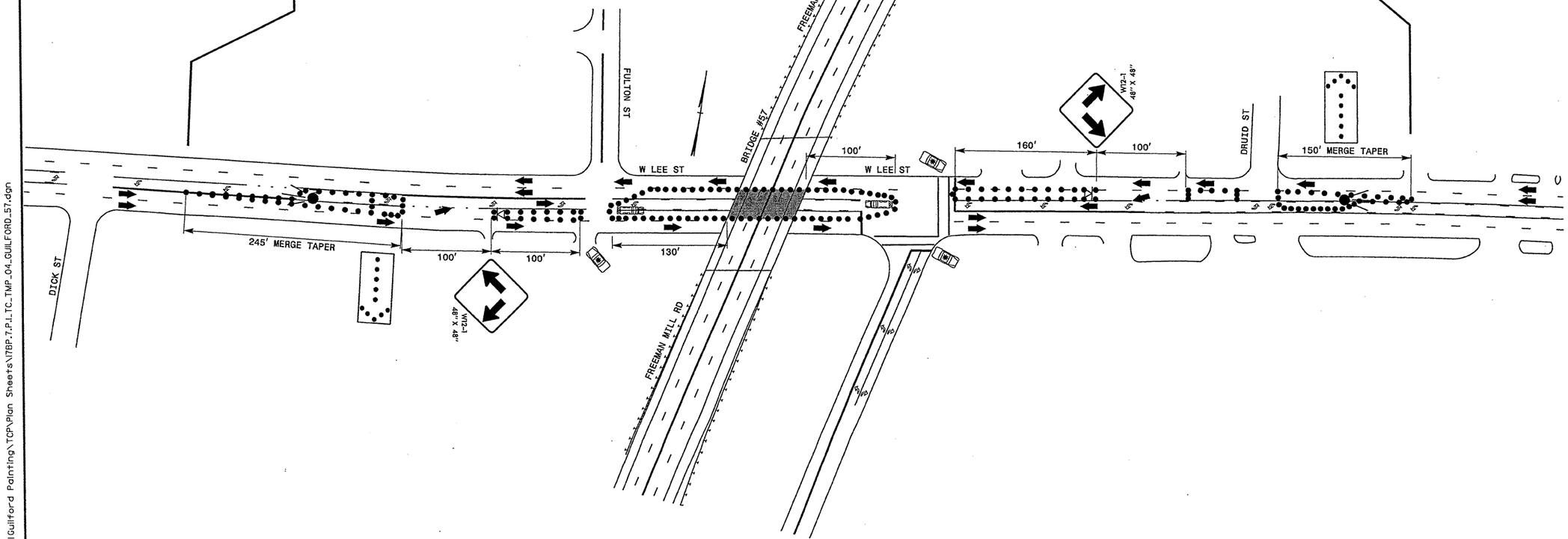
akarageorge

PROJ. REFERENCE NO.	SHEET NO.
17BP.7.P.1	TMP-4

SIGNING IN ADVANCE OF LEFT LANE CLOSURE

SIGNS ARE REQUIRED ON BOTH SIDES OF THE ROADWAY





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SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 34449 JESSY L. WATSON

11/5/11

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

BRIDGE #57

NC 6/W LEE ST.
LEFT & CENTER LANE CLOSURES

12/14/2011
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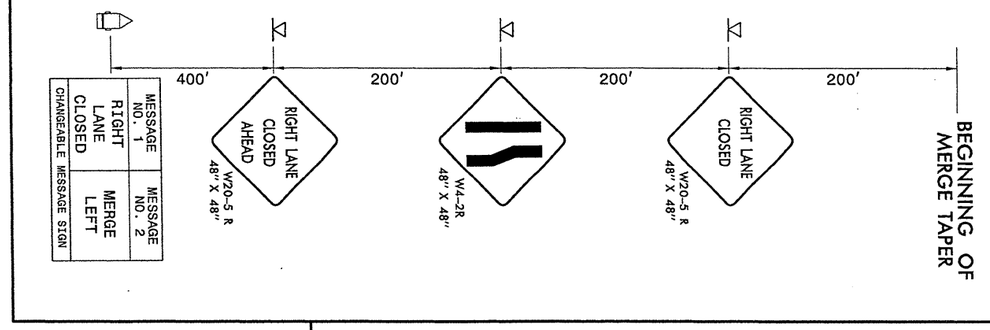
gkarageorge

PROJ. REFERENCE NO.	SHEET NO.
17BP.7.P.1	TMP-4A

SIGNING IN ADVANCE OF RIGHT LANE CLOSURES

SIGNS ARE REQUIRED ONLY ON THE RIGHT SIDE OF THE ROADWAY



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gkoraggeorge

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SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 034115 JESSY L. WATSON

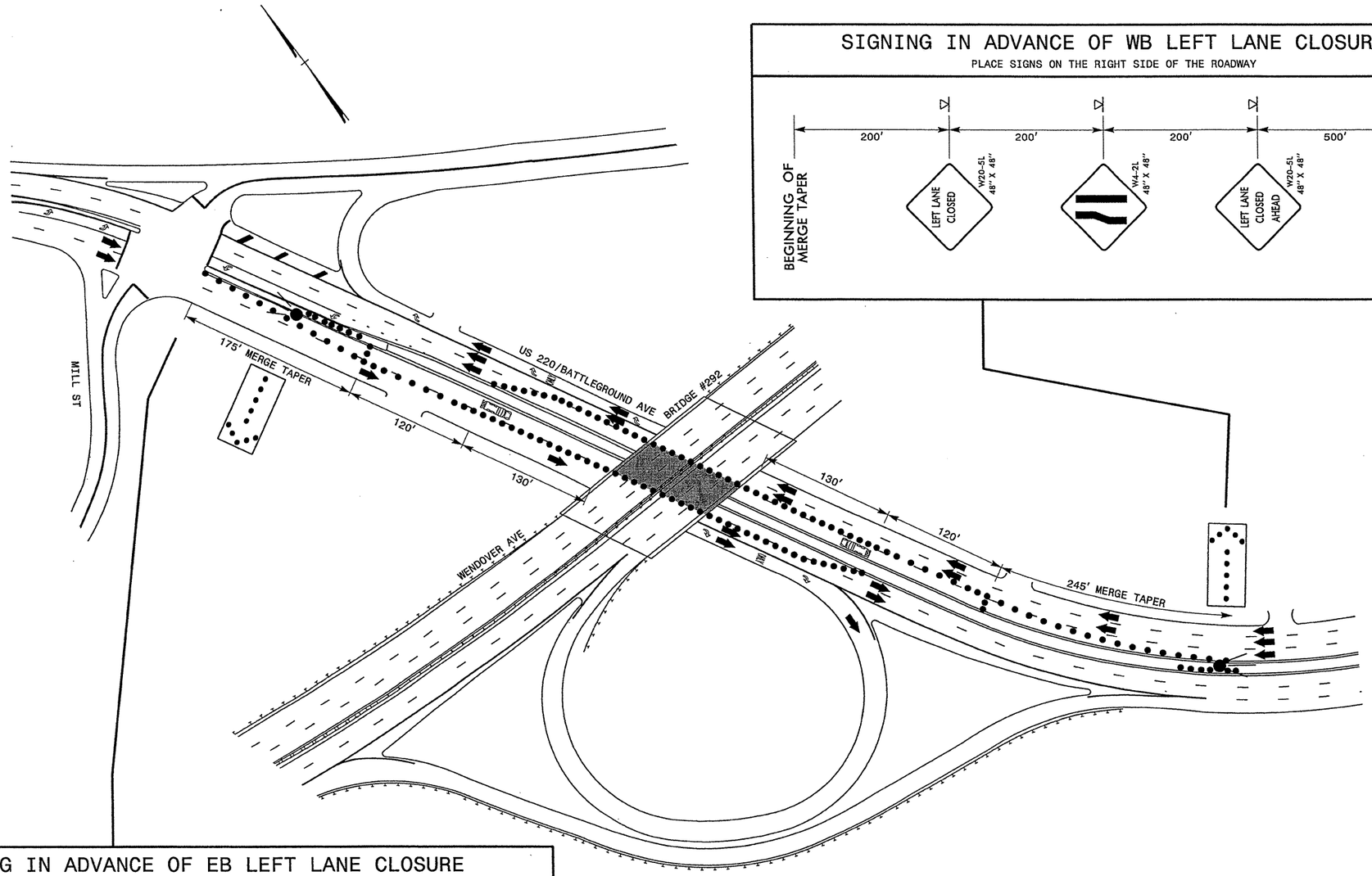
10/15/11

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

BRIDGE #57

NC 6/W LEE ST
RIGHT LANE CLOSURES

PROJ. REFERENCE NO.	SHEET NO.
17BP.7.P.1	TMP-5

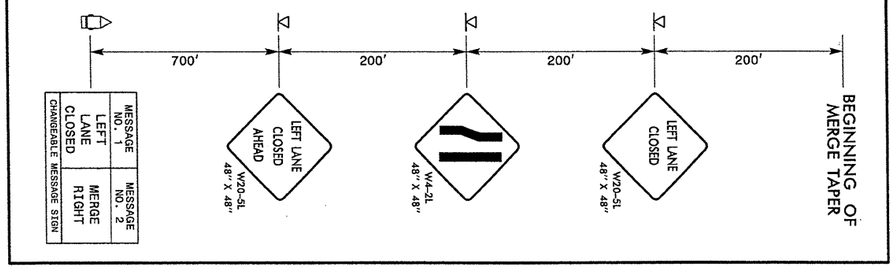


SIGNING IN ADVANCE OF WB LEFT LANE CLOSURE

PLACE SIGNS ON THE RIGHT SIDE OF THE ROADWAY

SIGNING IN ADVANCE OF EB LEFT LANE CLOSURE

PLACE SIGNS ON THE RIGHT SIDE OF THE ROADWAY



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SEAL 031419 ENGINEER BETSY L. WATSON NORTH CAROLINA PROFESSIONAL

5/15/11

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

BRIDGE #292

BATTLEGROUND AVE
LEFT LANE CLOSURES

12/4/2011
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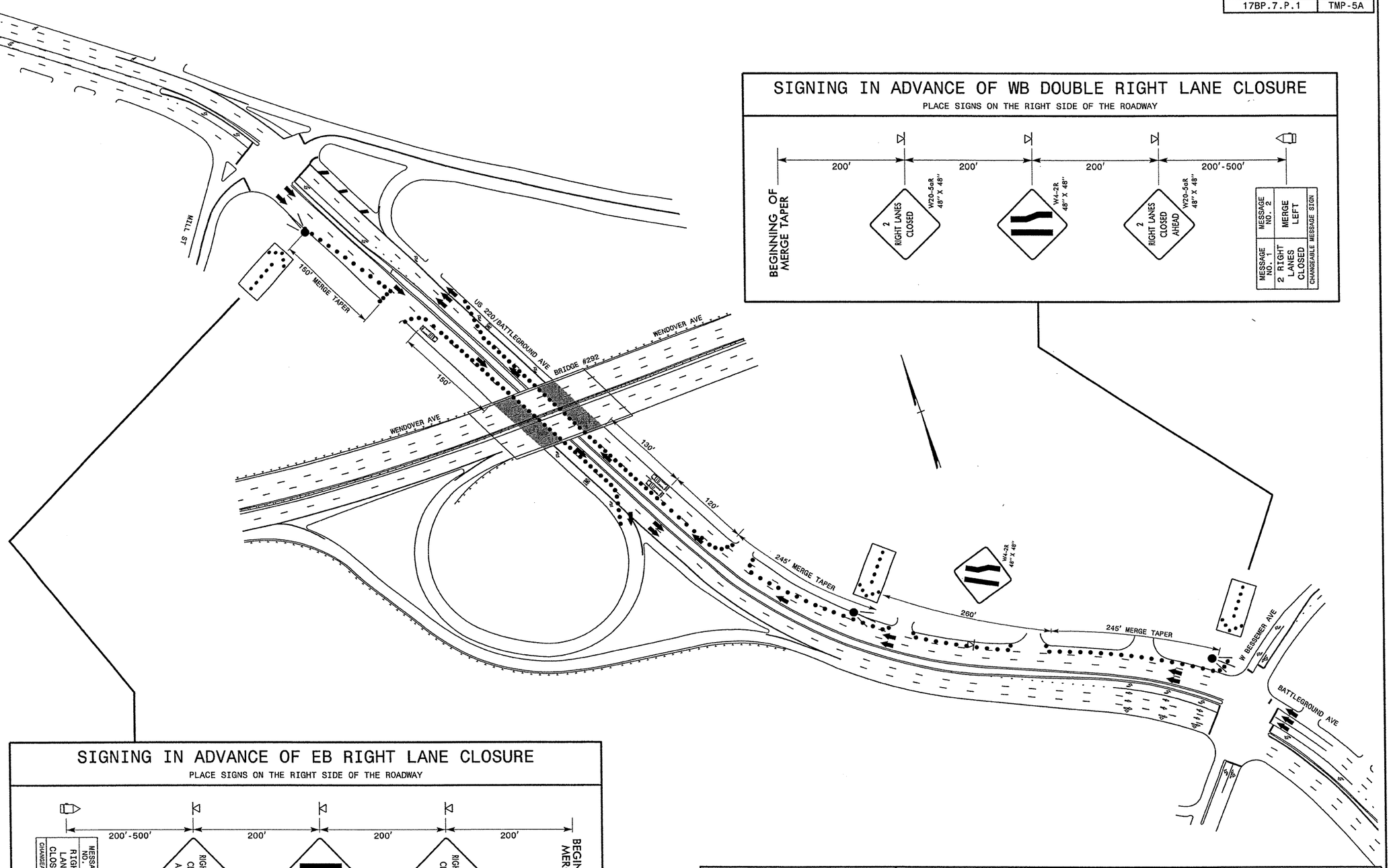
PROJ. REFERENCE NO.	SHEET NO.
17BP.7.P.1	TMP-5A

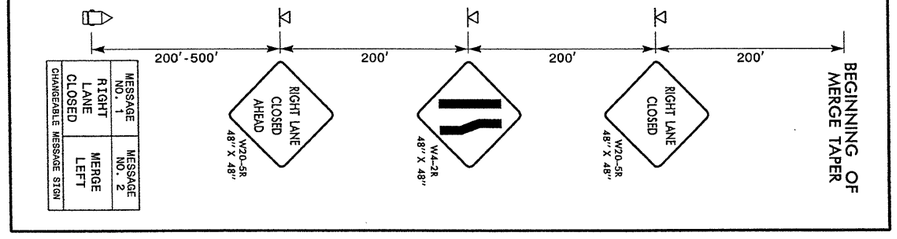


SIGNING IN ADVANCE OF WB DOUBLE RIGHT LANE CLOSURE

PLACE SIGNS ON THE RIGHT SIDE OF THE ROADWAY

SIGNING IN ADVANCE OF EB RIGHT LANE CLOSURE

PLACE SIGNS ON THE RIGHT SIDE OF THE ROADWAY



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APPROVED:_____ DATE:_____

SEAL 24749 NORTH CAROLINA PROFESSIONAL ENGINEER BETSY L. WATSON

5/16/11

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

BRIDGE #292

BATTLEGROUND AVE
RIGHT LANE CLOSURES

12/14/2011
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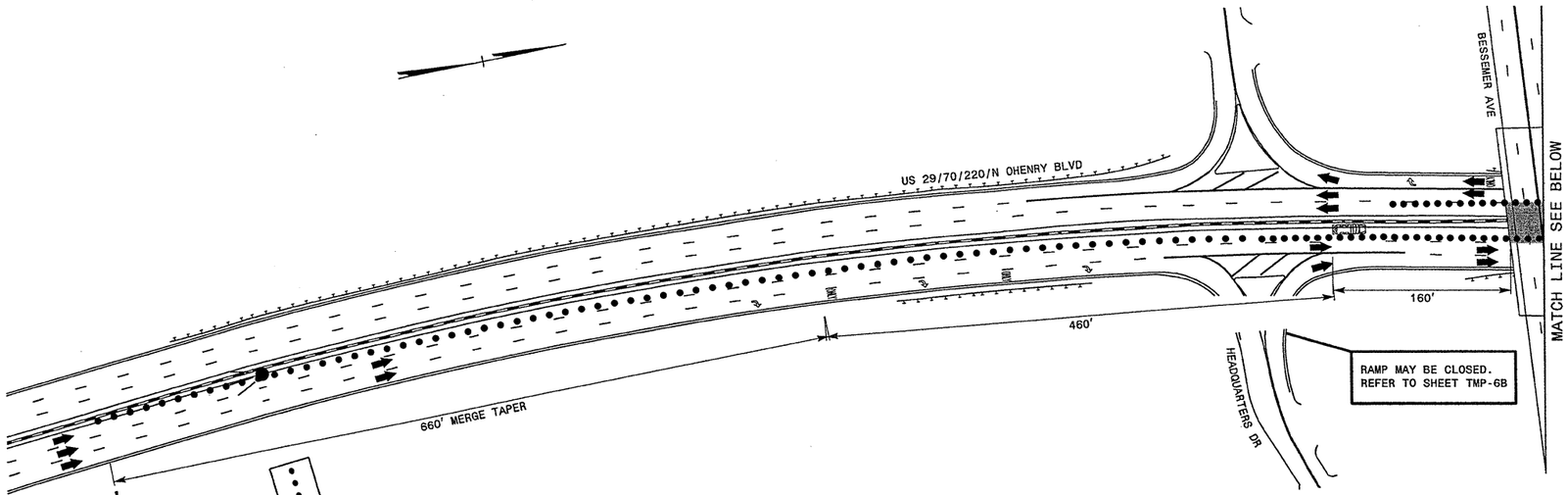
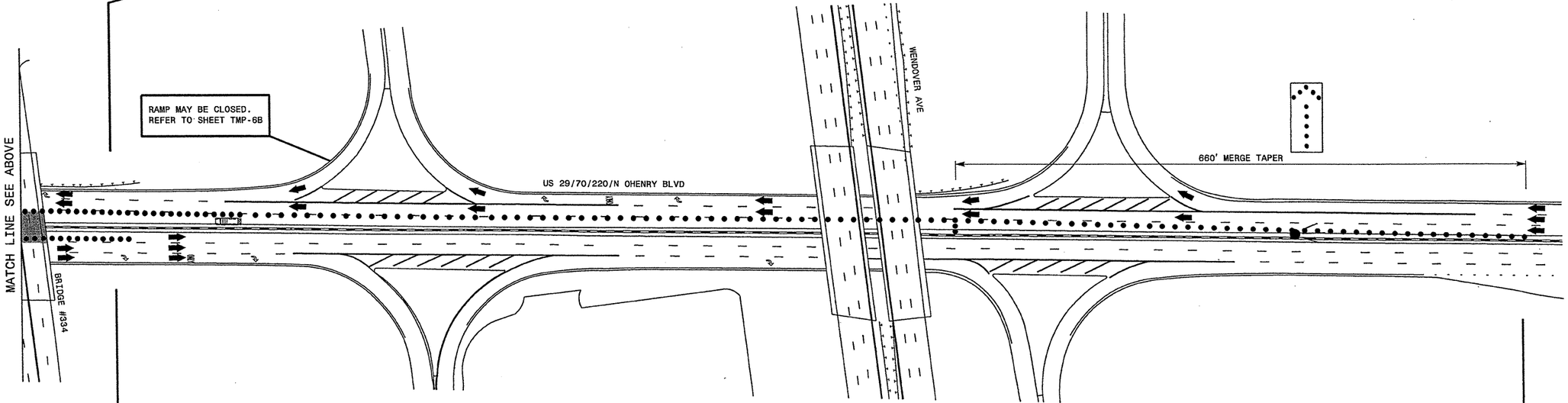
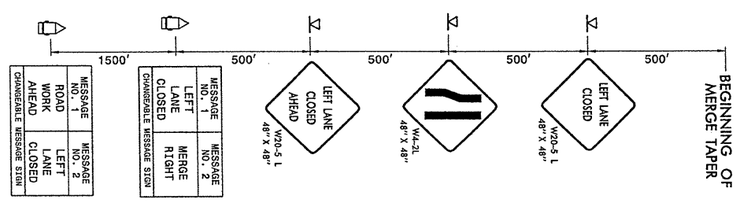
PROJ. REFERENCE NO.	SHEET NO.
17BP.7.P.1	TMP-6





SIGNING IN ADVANCE OF LEFT LANE CLOSURES

PLACE SIGNS ON THE RIGHT SIDE OF THE ROADWAY



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APPROVED:_____ DATE:_____

SEAL 29449 PROFESSIONAL ENGINEER BESSY L. WATSON 9/15/11

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

BRIDGE #334

US 29/70/220/N OHENRY BLVD
LEFT LANE CLOSURES

12/14/2011
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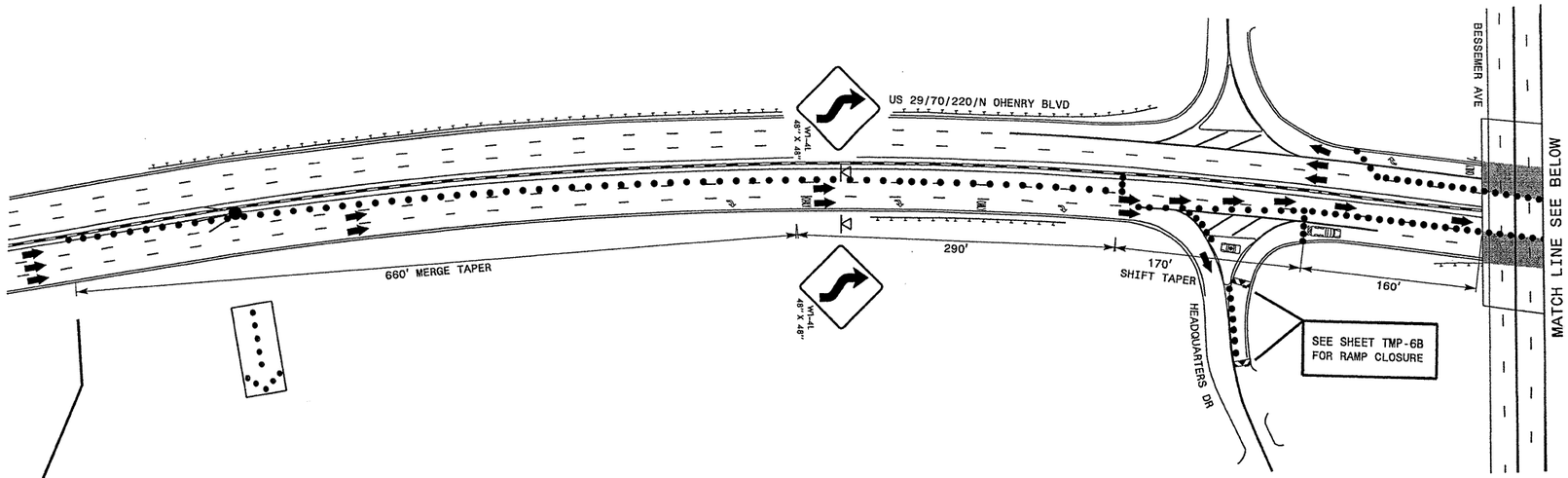
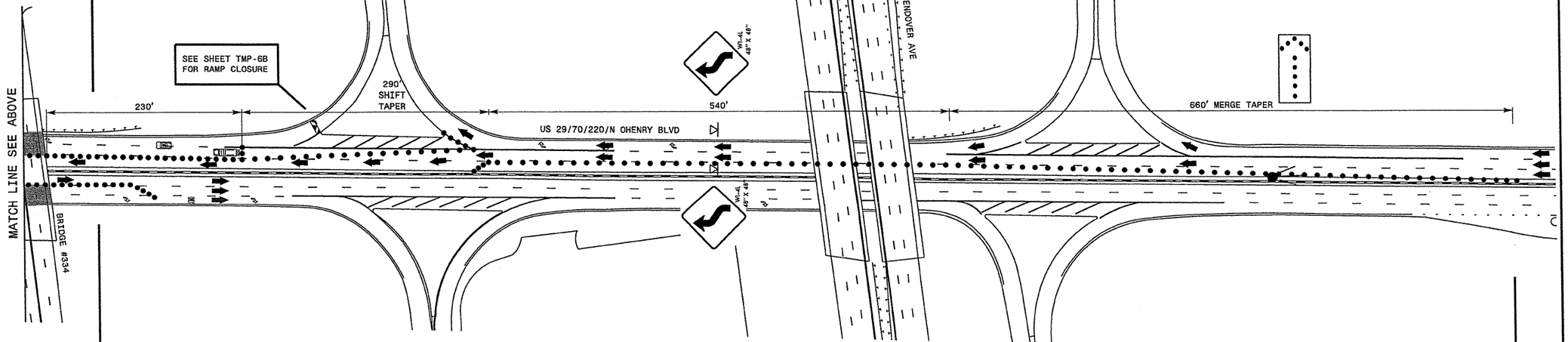
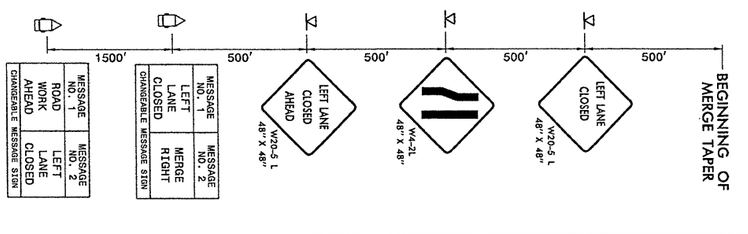
PROJ. REFERENCE NO.	SHEET NO.
17BP.7.P.1	TMP-6A





SIGNING IN ADVANCE OF LEFT LANE CLOSURE

PLACE SIGNS ON THE RIGHT SIDE OF THE ROADWAY



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APPROVED: _____ DATE: _____

SEAL
NORTH CAROLINA
PROFESSIONAL
SEAL
029449
ENGINEER
BETSY L. WATSON

8/15/11

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

BRIDGE #334

US 29/70/220/N OHENRY BLVD
LEFT LANE CLOSURES
WITH SHIFT

12/14/2011
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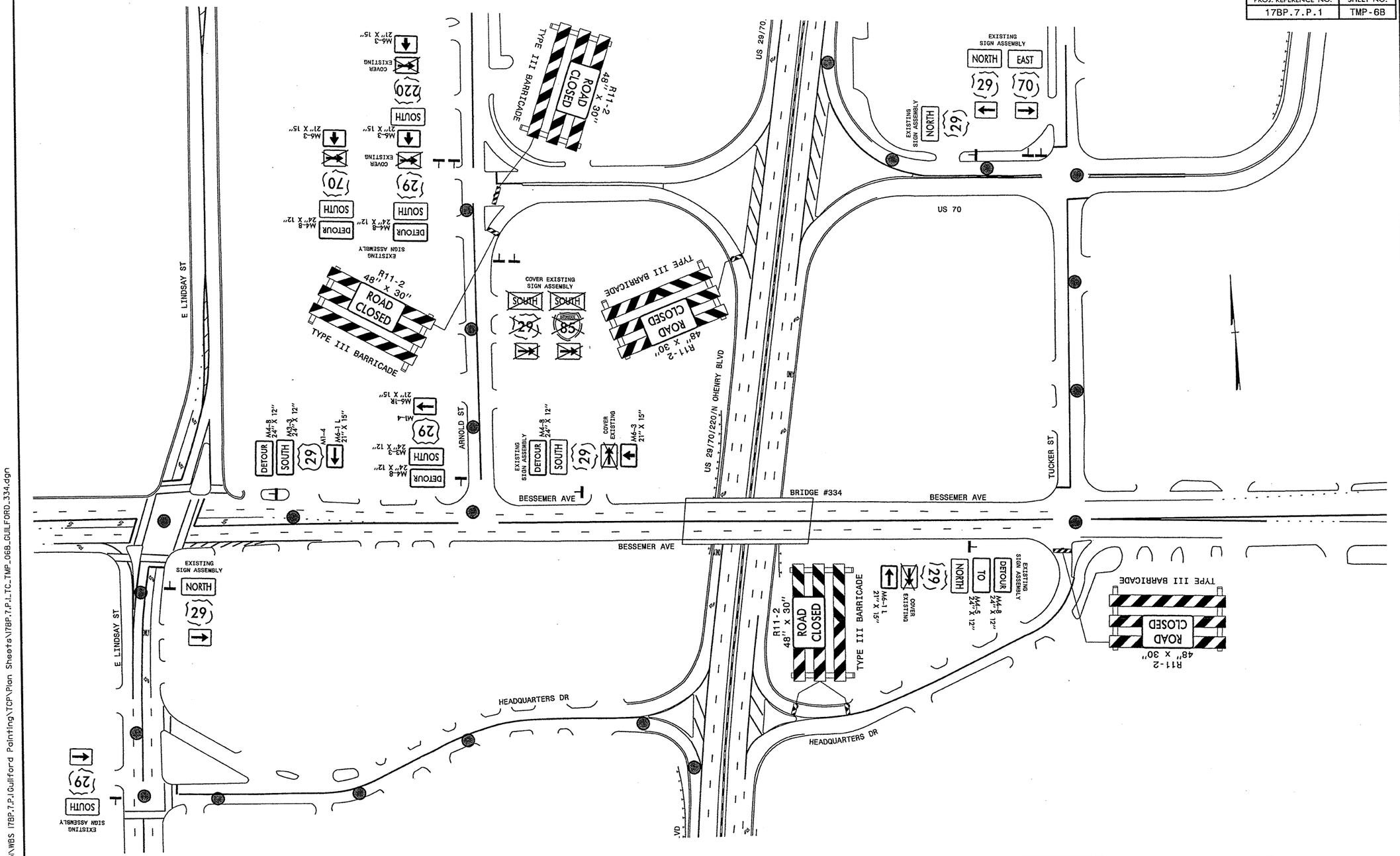
PROJ. REFERENCE NO.	SHEET NO.
17BP.7.P.1	TMP-6B



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