TIP NO: I-5205A

CONTRACT: C202992

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STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5205A	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
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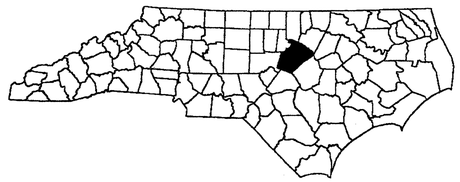
47051.3.2	IMPP-0440 (15)	CONST.



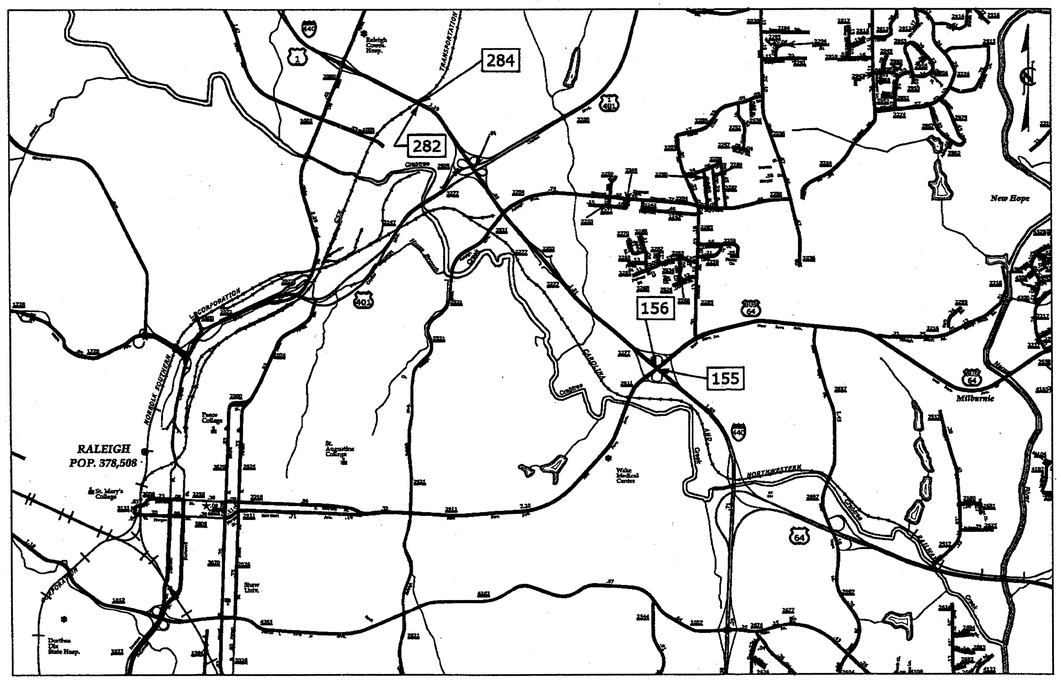
STATE OF NORTH CAROLINA

DIVISION OF HIGHWAYS

WAKE COUNTY

LOCATION: BRIDGE NO. 155 & NO. 156 ON US 64 OVER I-440 AND BRIDGE NO. 282 & NO. 284 ON I-440 OVER ALANTIC AVE. & CSX RAILROAD

TYPE OF WORK: BRIDGE PRESERVATION: HYDRODEMOLITION, LMC OVERLAY, & SUBSTRUCTURE REPAIRS



STRUCTURES

DESIGN DATA	PROJECT LENGTH
	LENGTH ROADWAY OF F.A. PROJECT = 0.00 MILES
	LENGTH STRUCTURE OF F.A. PROJECT = 0.22 MILES
	TOTAL LENGTH OF STATE PROJECT = 0.22 MILES

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

2012 STANDARD SPECIFICATIONS

LETTING DATE :

APRIL 17, 2012

MATTHEW MOYER, P.E.
PROJECT ENGINEER

STRUCTURE DESIGN UNIT
1000 BIRCH RIDGE DR.
RALEIGH, N.C. 27610

NORTH CAROLINA PROFESSIONAL SEAL 20208 ENGINEER ERIC B. NELSON, JR.
3/13/12

NORTH CAROLINA PROFESSIONAL SEAL 032129 ENGINEER MATTHEW J. MOYER
3-12-12

P.E.
BRIDGE DESIGN ENGINEER

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5205A	1A	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
47051.1.2	IMPP-0440 (15)	P.E.
47051.3.2	IMPP-0440 (15)	CONST.

TIP NO: I-5205A

CONTRACT: C202992

STATE OF NORTH CAROLINA

DIVISION OF HIGHWAYS

WAKE COUNTY

LOCATION: BRIDGE NO. 155 & NO. 156 ON US 64 OVER I-440 AND BRIDGE NO. 282 & NO. 284 ON I-440 OVER ALANTIC AVE. & CSX RAILROAD

TYPE OF WORK: BRIDGE PRESERVATION: HYDRODEMOLITION, LMC OVERLAY, & SUBSTRUCTURE REPAIRS

INDEX OF SHEETS

STRUCTURES

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

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

2012 STANDARD SPECIFICATIONS

LETTING DATE :

APRIL 17, 2012

MATTHEW MOYER, P.E.
PROJECT ENGINEER

STRUCTURE DESIGN UNIT
1000 BIRCH RIDGE DR.
RALEIGH, N.C. 27610

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032129 ENGINEER MATTHEW J. MOYER

3-12-12

P.E.
BRIDGE DESIGN ENGINEER

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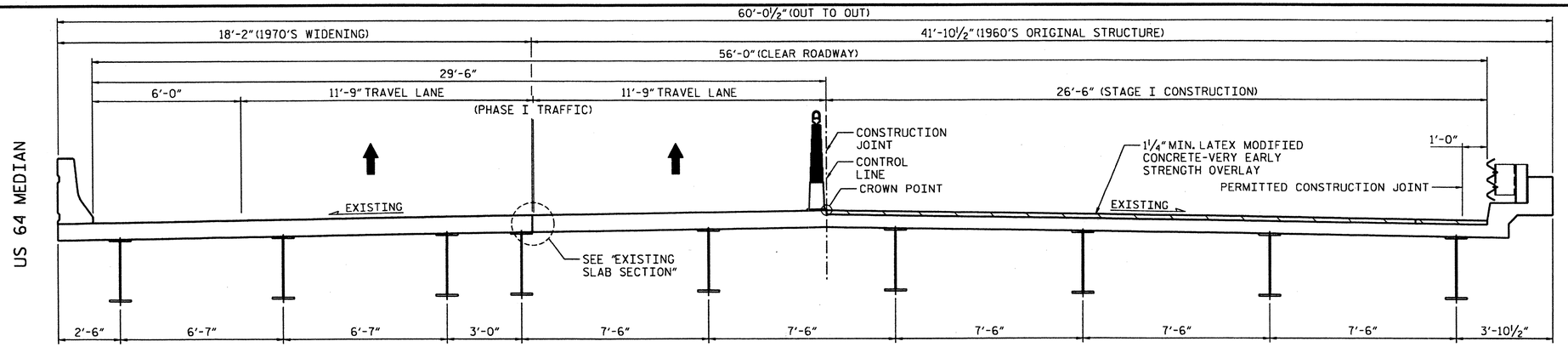
PROJECT REFERENCE NO.	SHEET NO.
I-5205A	2

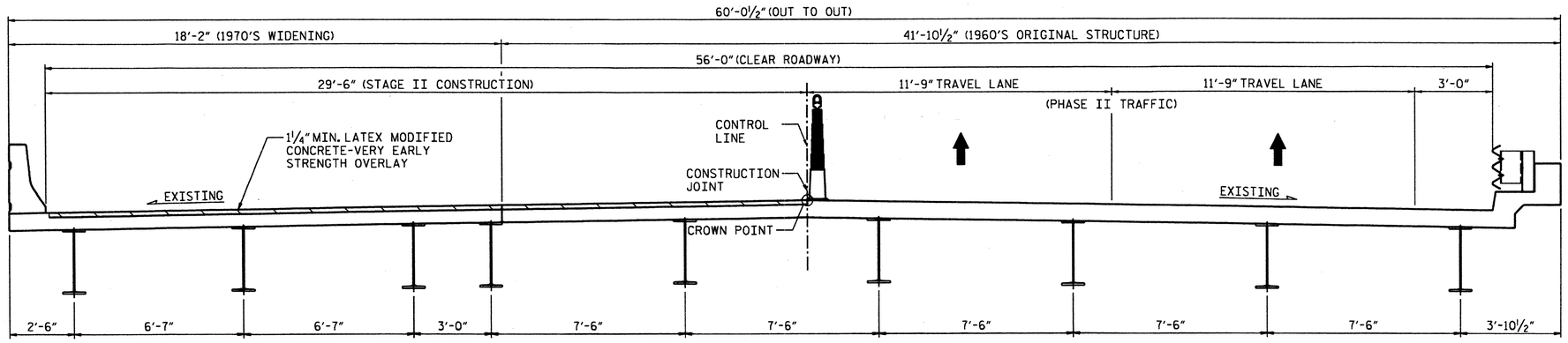
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF QUANTITIES

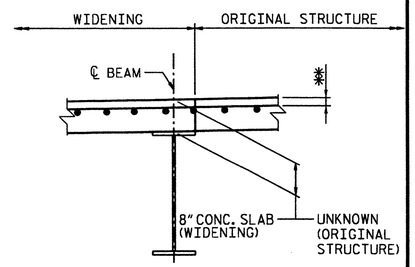
ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
4400000000-E	1110	144	SF	WORK ZONE SIGNS (STATIONARY)
4405000000-E	1110	612	SF	WORK ZONE SIGNS (PORTABLE)
4410000000-E	1110	22	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
4415000000-N	1115	2	EA	FLASHING ARROW BOARD
4420000000-N	1120	4	EA	PORTABLE CHANGEABLE MESSAGE SIGN
4430000000-N	1130	140	EA	DRUMS
4445000000-E	1145	40	LF	BARRICADES (TYPE III)
4480000000-N	1165	6	EA	TMA
4510000000-N	SP	640	HR	LAW ENFORCEMENT
4516000000-N	1180	140	EA	SKINNY DRUM
4800000000-N	1205	8	EA	COLD APPLIED PLASTIC PAVEMENT MARKING CHARACTER, TYPE ** (II)
4805000000-N	1205	6	EA	COLD APPLIED PLASTIC PAVEMENT MARKING SYMBOL, TYPE ** (II)
4810000000-E	1205	1,293	LF	PAINT PAVEMENT MARKING LINES (4")
4815000000-E	1205	1,926	LF	PAINT PAVEMENT MARKING LINES (6")
4840000000-N	1205	8	EA	PAINT PAVEMENT MARKING CHARACTER
4845000000-N	1205	6	EA	PAINT PAVEMENT MARKING SYMBOL
4847000000-E	1205	1,293	LF	POLYUREA PAVEMENT MARKING LINES (4", **********) (HIGHLY REFLECTIVE ELEMENTS)
4847100000-E	1205	1,926	LF	POLYUREA PAVEMENT MARKING LINES (6", **********) (HIGHLY REFLECTIVE ELEMENTS)
4900000000-N	1251	44	EA	PERMANENT RAISED PAVEMENT MARKERS
8161000000-E	420	65,968	SF	GROOVING BRIDGE FLOORS
8217000000-E	425	90	LB	REINFORCING STEEL (BRIDGE)
8660000000-E	SP	27	CF	CONCRETE REPAIRS
8664000000-E	SP	23	CF	SHOTCRETE REPAIRS
8678000000-E	SP	131	LF	EPOXY RESIN INJECTION
8692000000-N	SP	Lump Sum		FOAM JOINT SEALS
8860000000-N	SP	Lump Sum		GENERIC STRUCTURE ITEM BRIDGE JACKING
8881000000-E	SP	330	CY	GENERIC STRUCTURE ITEM LATEX MODIFIED CONCRETE OVER-LAY - VERY EARLY STRENGTH
8893000000-E	SP	7,856	SY	GENERIC STRUCTURE ITEM HYDRO-DEMOLITION OF BRIDGE DECK
8893000000-E	SP	7,856	SY	GENERIC STRUCTURE ITEM PLACING & FINISHING LATEX MOD CONC OVERLAY - VERY EARLY STRENGTH
8893000000-E	SP	7,856	SY	GENERIC STRUCTURE ITEM SCARIFYING BRIDGE DECK



TYPICAL SECTION - STAGE I



TYPICAL SECTION - STAGE II



EXISTING SLAB SECTION

BOTTOM MAT OF REINFORCING NOT SHOWN FOR CLARITY
✱✱ SEE DRAWING "BRIDGE DECK EVALUATION TEST LOCATIONS FOR BRIDGE NO. 155"

NOTES

FOR "HYDRO-DEMOLITION OF BRIDGE DECK", SEE SPECIAL PROVISIONS.

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

THE BOUNDARIES OF AREAS IDENTIFIED FOR CLASS III SURFACE PREPARATION ARE APPROXIMATE. IF ANY CLASS III LOCATIONS ARE ENCOUNTERED PRIOR TO OR DURING HYDRO-DEMOLITION, SEE "TYPICAL "BLOW THRU" CONTAINMENT AND FORMWORK" DETAIL. THE CONTRACTOR SHALL PROVIDE A METHOD OF HANDLING UNEXPECTED BLOW THROUGH OF THE DECK.

THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE FOAM JOINT SEAL SHALL BE 2½" AT BENTS. FOR "FOAM JOINT SEALS", SEE SPECIAL PROVISIONS.

FOR "ELASTOMERIC CONCRETE", SEE SPECIAL PROVISIONS.

LATEX MODIFIED CONCRETE SHALL BE LATEX MODIFIED CONCRETE - VERY EARLY STRENGTH.

FOR "LATEX MODIFIED CONCRETE - VERY EARLY STRENGTH", SEE SPECIAL PROVISIONS.

FOR GROOVING BRIDGE FLOORS INFORMATION, SEE "LATEX MODIFIED CONCRETE VERY EARLY STRENGTH" SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

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

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

FOR SCARIFYING BRIDGE DECK, SEE SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL

SCARIFYING BRIDGE DECK	✱CLASS I SURFACE PREPARATION	✱CLASS II SURFACE PREPARATION	✱CLASS III SURFACE PREPARATION	CONCRETE REPAIRS	✱CLASS AA CONCRETE	HYDRO-DEMOLITION OF BRIDGE DECK	LATEX MODIFIED CONCRETE-VERY EARLY STRENGTH OVERLAY	PLACING & FINISHING LATEX MODIFIED CONCRETE-VERY EARLY STRENGTH OVERLAY	FOAM JOINT SEALS	GROOVING BRIDGE FLOORS	EPOXY RESIN INJECTION	SHOTCRETE REPAIRS	REINFORCING STEEL	BRIDGE JACKING
SQ. YDS.	SQ. YDS.	SQ. YDS.	SQ. YDS.	CU. FT.	CU. YDS.	SQ. YDS.	CU. YDS.	SQ. YDS.	LUMP SUM	SQ. FT.	LIN. FT.	CU. FT.	LBS	LUMP SUM
1326	238	0	0	21	0	1326	56	1326	LUMP SUM	11039	119	15	70	LUMP SUM

✱QUANTITY SHOWN IS FOR INFORMATION ONLY.

PROJECT NO. I-5205A

WAKE COUNTY

BRIDGE NO.: 155

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION FOR BRIDGE NO. 155

(US 64 EBL OVER I-440)

NORTH CAROLINA PROFESSIONAL SEAL 036212 ENGINEER MATTHEW J. MOYER
1-13-2012

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

DRAWN BY : K. RAMSEY 01/2012
CHECKED BY : M. MOYER DATE : 01/2012

REVISIONS						SHEET NO. S-1
NO.	BY:	DATE:	NO.	BY:	DATE:	
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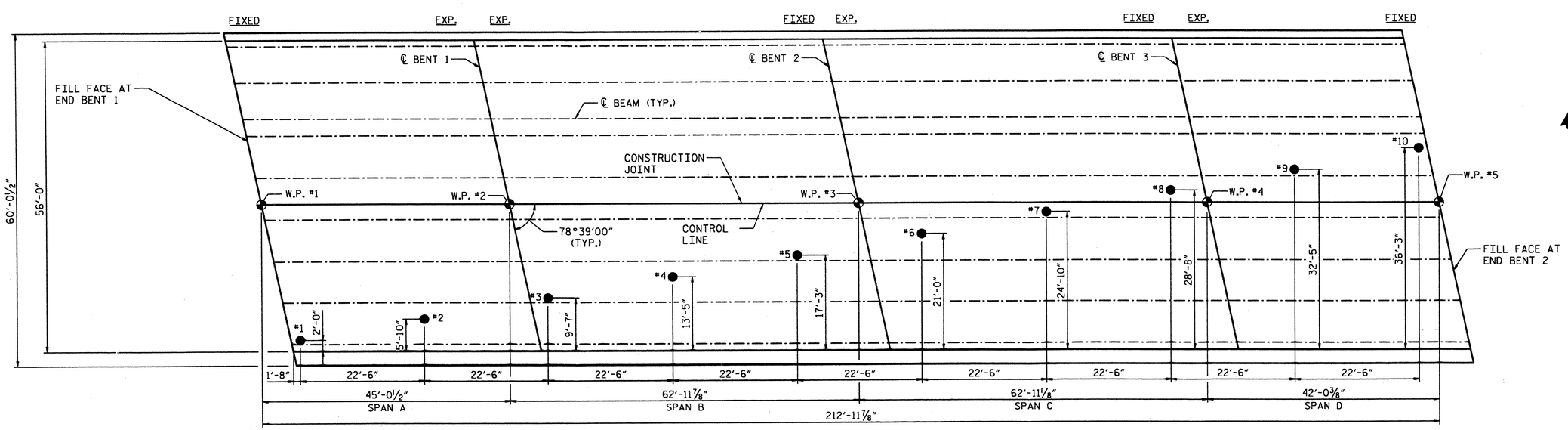
2			4			



PLAN VIEW - TEST LOCATIONS

CONCRETE & REINFORCEMENT		
TEST LOCATION	TOP BAR COVER (IN.)	CONCRETE STRENGTH (PSI)
1	1½"	3500
2	1⅝"	4300
3	1¼"	3700
4	1½"	3900
5	⅞"	4500
6	1½"	3500
7	1¼"	3700
8	1¾"	3500
9	1¼"	3700
10	2⅛"	4300

NOTE: ALL TEST LOCATIONS ARE TAKEN FROM THE GUTTERLINE

PROJECT NO. I-5205A

WAKE COUNTY

BRIDGE NO.: 155

NORTH CAROLINA PROFESSIONAL SEAL 032129 ENGINEER MATTHEW J. MOYER

1-13-2012

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE DECK EVALUATION TEST LOCATIONS FOR BRIDGE NO. 155

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

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

DRAWN BY : L. PATTERSON DATE : 01/2012
CHECKED BY : M. MOYER DATE : 01/2012

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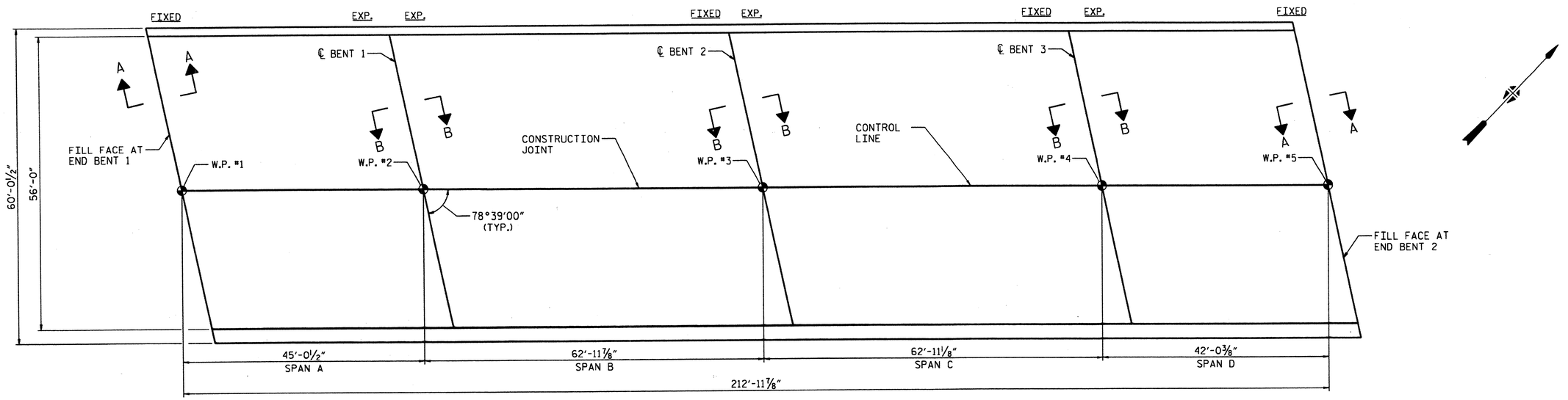
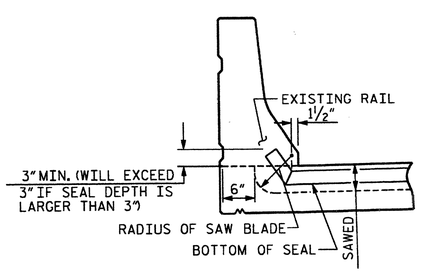
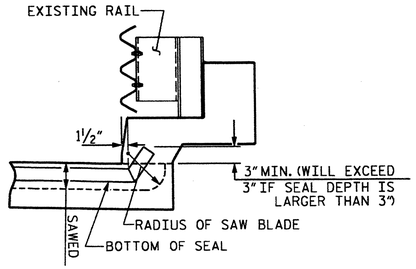


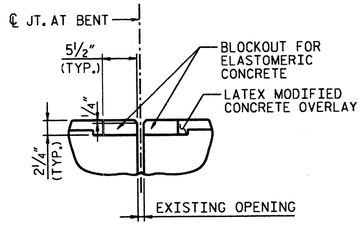
PLAN VIEW



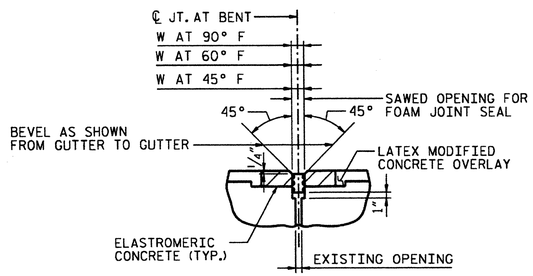
JOINT DETAIL AT NORTH RAIL



JOINT DETAIL AT SOUTH RAIL



FOAM JOINT SEAL
PRE-SAWED ELASTOMERIC CONCRETE DIMENSIONS

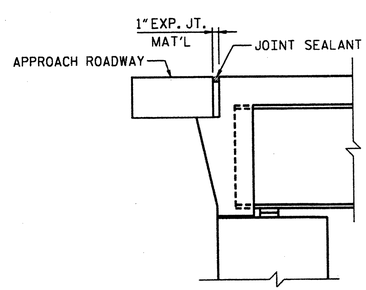


PROPOSED JOINT AT BENTS
FOAM JOINT SEAL EXPANSION

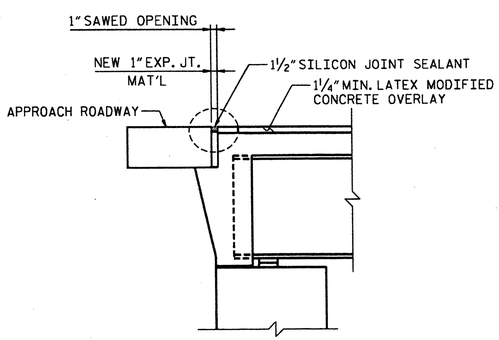
SAWED OPENING FOR FOAM JOINT			
BENT NO.	W AT 90° F	W AT 60° F	W AT 45° F
BENT 1	1⁹⁄₁₆"	1⅞"	2¹⁄₁₆"
BENT 2	1¹¹⁄₁₆"	1⅞"	2"
BENT 3	1¾"	1⅛"	1¹⁵⁄₁₆"

ELASTOMERIC CONCRETE	
BENT NO.	ELASTOMERIC CONCRETE * (CU. FT.)
BENT 1	9.8
BENT 2	9.8
BENT 3	9.8
TOTAL	29.4

*BASED ON THE MINIMUM BLOCKOUT SHOWN

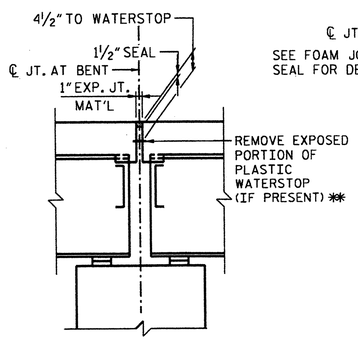


EXISTING SECTION AT END BENT

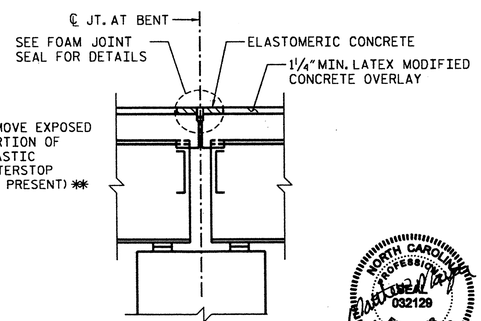


PROPOSED SECTION AT END BENT
(REPLACE 1" EXPANSION JOINT MATERAIL)

SECTION A-A



EXISTING JOINT AT BENTS



PROPOSED JOINT AT BENTS

SECTION B-B

** ALL LOOSE AND UNSOUND CONCRETE SHALL BE REMOVED. IF THE EMBEDDED PORTION OF THE EXISTING PLASTIC WATERSTOP EXPOSED DURING REMOVAL OF UNSOUND CONCRETE, THE ENTIRE WATERSTOP SHALL BE REMOVED. OTHERWISE, TRIM WATERSTOP FLUSH WITH EXISTING CONCRETE SURFACE.

PROJECT NO. I-5205A
WAKE COUNTY
BRIDGE NO.: 155

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN VIEW AND JOINT DETAILS FOR BRIDGE NO. 155

DRAWN BY : L. PATTERSON DATE : 01/2012
CHECKED BY : M. MOYER DATE : 01/2012

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

REVISIONS						SHEET NO. S-3
NO.	BY:	DATE:	NO.	BY:	DATE:	
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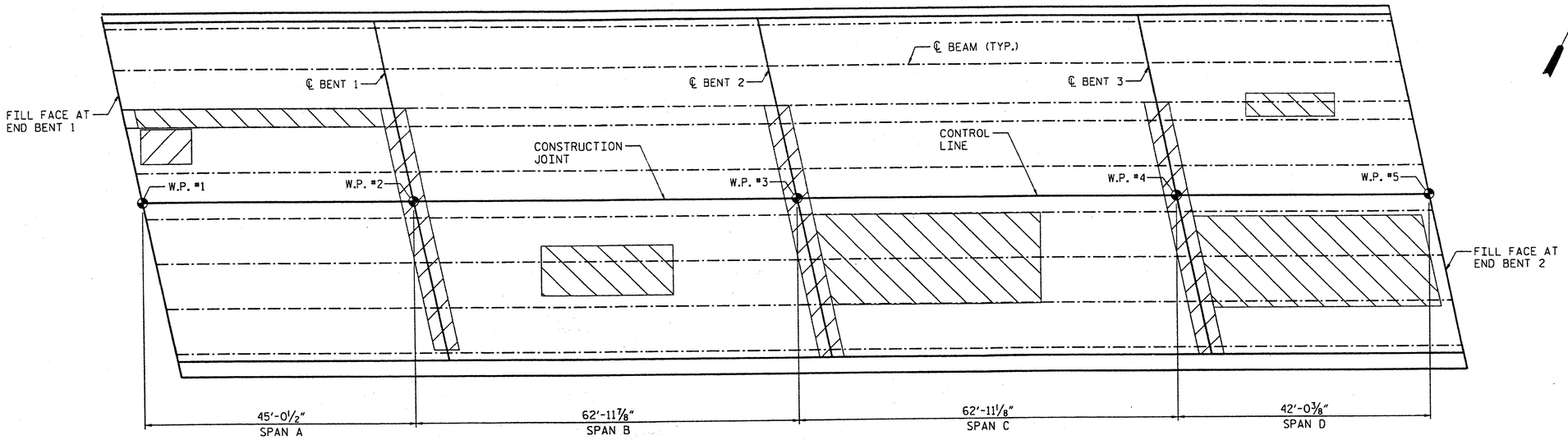
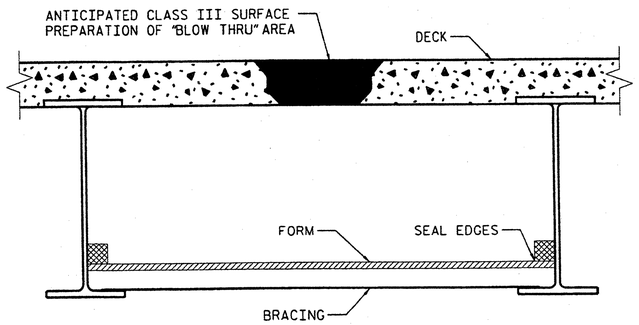


PLAN OF SPANS - DECK REPAIRS

APPROX. AREA: CLASS I REPAIR

APPROX. AREA: CLASS II REPAIR

APPROX. AREA: CLASS III REPAIR

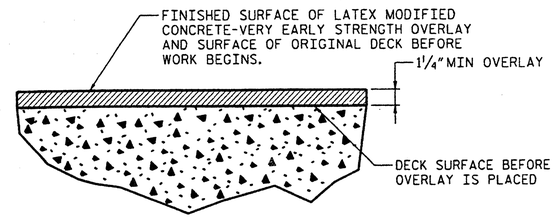


TYPICAL "BLOW THRU" CONTAINMENT AND FORMWORK

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 FORMWORK FOR APPROVAL PRIOR TO BEGINNING WORK.

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



DETAIL FOR LATEX MODIFIED CONCRETE OVERLAY

PROJECT NO. I-5205A

WAKE COUNTY

BRIDGE NO.: 155

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK REPAIR DETAILS FOR BRIDGE NO. 155

NORTH CAROLINA PROFESSIONAL SEAL 032129 ENGINEER MATTHEW J. MOYER

1-13-2012

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
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2			4			26

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CHECKED BY : M. MOYER DATE : 01/2012

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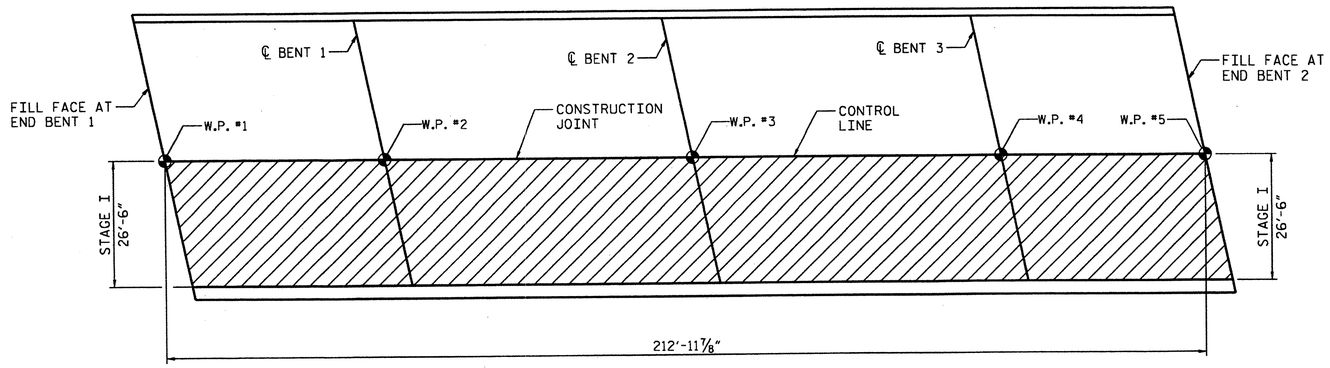
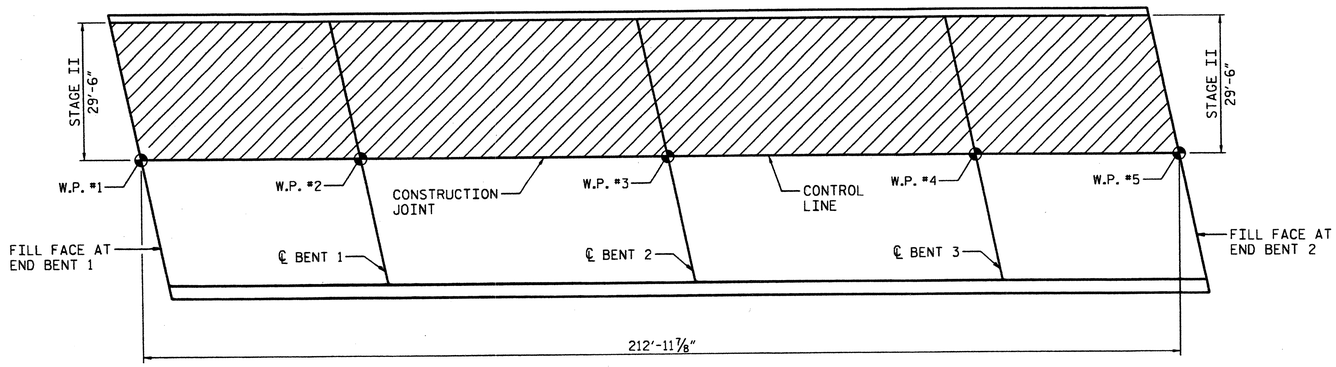


PLAN - STAGE I CONSTRUCTION

DECK SCARIFICATION AND HYDRODEMOLITION



PLAN - STAGE II CONSTRUCTION

DECK SCARIFICATION AND HYDRODEMOLITION

PROJECT NO. I-5205A

WAKE COUNTY

BRIDGE NO.: 155

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK SCARIFICATION FOR BRIDGE NO. 155

NORTH CAROLINA PROFESSIONAL SEAL 032129 ENGINEER MATTHEW J. MOYER

1-13-2012

REVISIONS							SHEET NO. S-5
NO.	BY:	DATE:	NO.	BY:	DATE:		
1			3				TOTAL SHEETS 26
2			4				

HDR Engineering, Inc. of the Carolinas
3723 National Drive, Suite 207 Raleigh, N.C. 27612
N.C.B.E.L. License Number: F-0116

DRAWN BY : L. PATTERSON DATE : 01/2012
CHECKED BY : M. MOYER DATE : 01/2012

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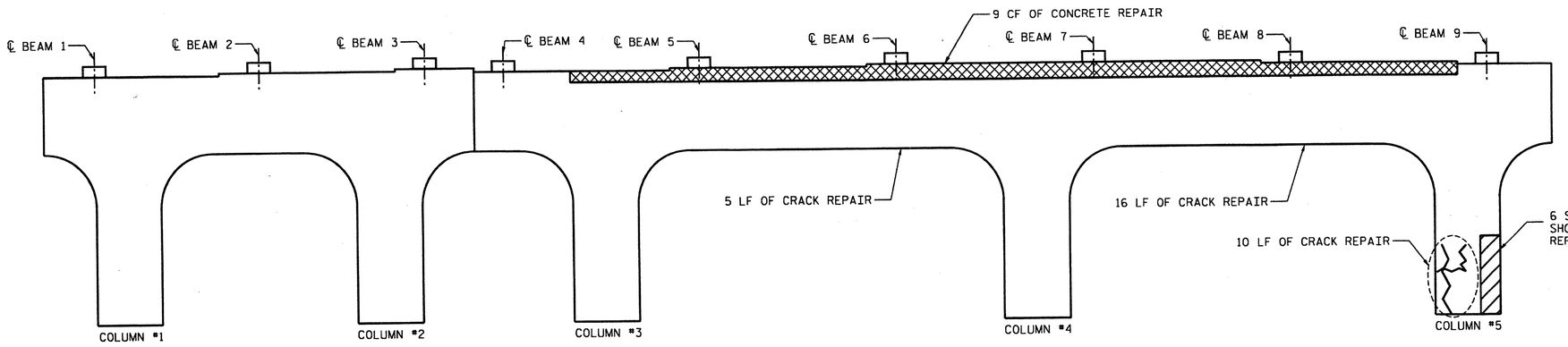
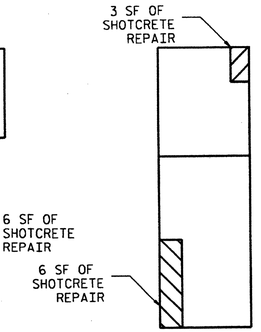


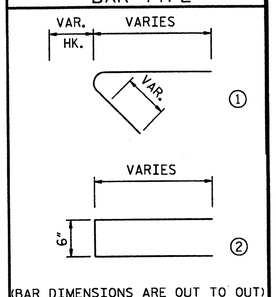
WEST ELEVATION



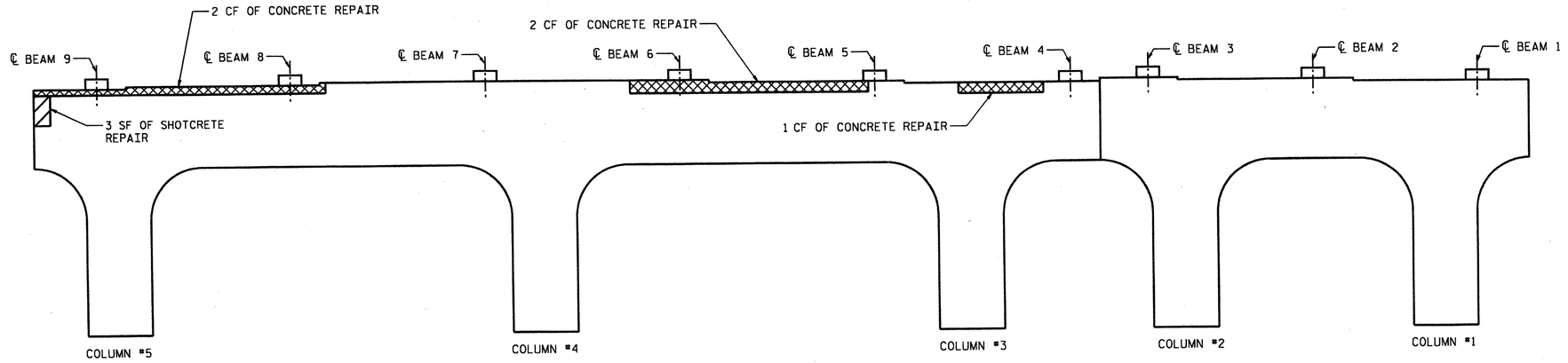
SOUTH END ELEVATION

BILL OF MATERIAL				
BENT 1				
BAR	NO.	SIZE	TYPE	LENGTH
S1	VAR.	#4	1	VARIES
S2	VAR.	#5	2	VARIES
CONCRETE REPAIRS			CF	14
SHOTCRETE REPAIRS			CF	5
EPOXY RESIN INJECTION			LF	31
REINFORCING STEEL			LBS	50

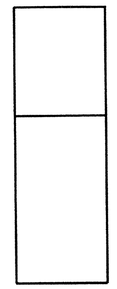
BAR TYPE



(BAR DIMENSIONS ARE OUT TO OUT)



EAST ELEVATION



NORTH END ELEVATION

NOTES:

THE LOCATION AND EXTENT OF REPAIRS SHOWN ON THE PLANS ARE GENERAL IN NATURE. THE ENGINEER WILL DETERMINE THE EXACT EXTENT OF REMOVAL IN THE FIELD BASED ON AN EVALUATION OF THE CONDITION OF THE EXPOSED SURFACES.

CONSTRUCTION METHODS, PROCEDURES, AND SEQUENCES ARE THE CONTRACTOR'S RESPONSIBILITY AND THE CONTRACTOR SHALL TAKE ALL THE NECESSARY MEANS TO MAINTAIN AND PROTECT THE STRUCTURAL INTEGRITY OF ALL CONSTRUCTION AT ALL STAGES.

ANY DISCREPANCIES BETWEEN THE CONSTRUCTION DOCUMENTS AND THE ACTUAL FIELD CONDITIONS SHALL BE REPORTED TO THE ENGINEER.

THE MANUFACTURER'S CERTIFIED DRAWINGS AND SPECIFICATIONS FOR EQUIPMENT ANCHORAGE AND DETAILS SHALL BE SUBMITTED FOR APPROVAL.

FOR "COLUMN REPAIR DETAIL", SEE DRAWING "BENT 3 FOR BRIDGE NO. 155."

FOR "TYPICAL REPAIR AT BEAM BEARING" DETAIL, SEE DRAWING "BENT 2 FOR BRIDGE NO. 155"

FOR BRIDGE JACKING, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

FIELD TESTING OF ADHESIVELY ANCHORED DOWELS IS NOT REQUIRED.

CONCRETE REPAIR

SHOTCRETE REPAIR

EPOXY RESIN INJECTION OF CRACKS

PROJECT NO. I-5205A

WAKE COUNTY

BRIDGE NO.: 155

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 1
FOR BRIDGE NO. 155

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032129 ENGINEER MATTHEW J. MOYER

1-13-2012

REVISIONS							SHEET NO. S-6
NO.	BY:	DATE:	NO.	BY:	DATE:		
1			3				TOTAL SHEETS 26
2			4				

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

DRAWN BY : L. PATTERSON DATE : 01/2012
CHECKED BY : M. MOYER DATE : 01/2012

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USER: msells
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DATE: 1/11/2012
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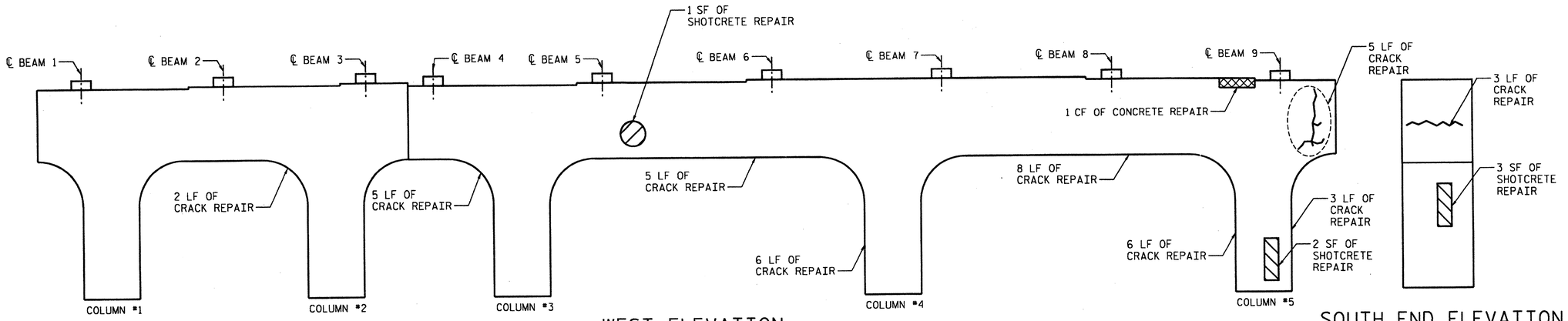
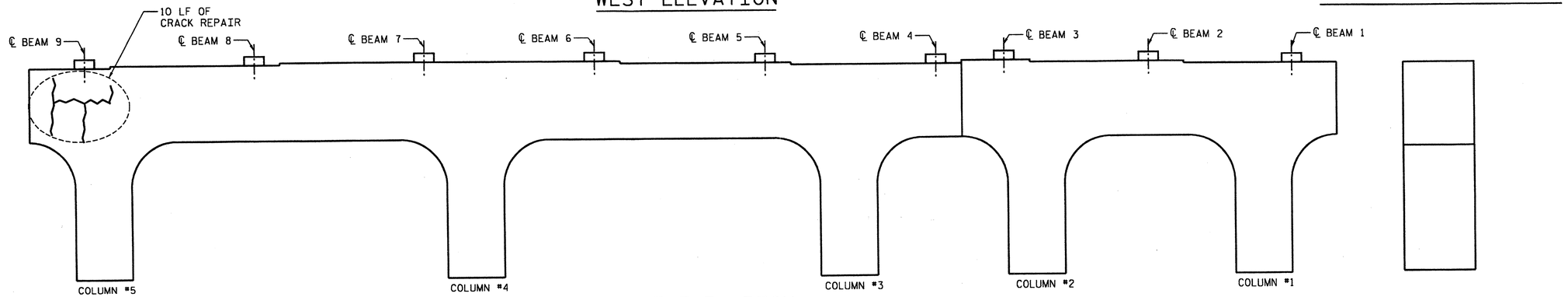


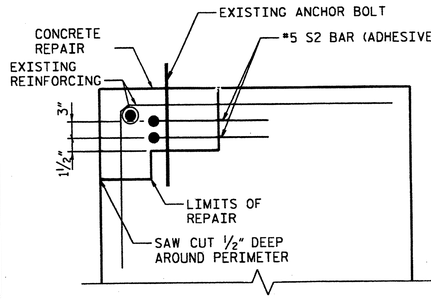
WEST ELEVATION

SOUTH END ELEVATION

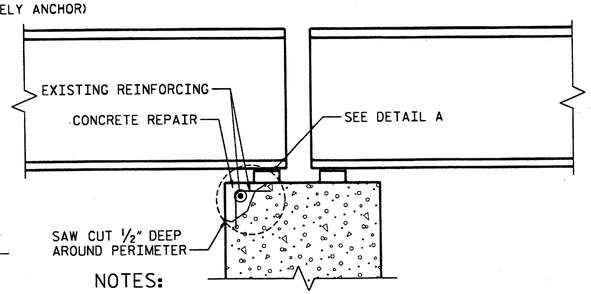


EAST ELEVATION

NORTH END ELEVATION



DETAIL A



NOTES:

RAISE BEAMS ½" BY JACKING BEFORE REMOVING CONCRETE. DO NOT LOWER SUPERSTRUCTURE UNTIL REPAIR HAS CURED AND REACHED A COMPRESSIVE STRENGTH OF 3000 PSI.

TYPICAL REPAIR AT BEAM BEARING

JACKING NOTES

JACKING SHALL BE CONDUCTED IN A MANNER SUCH THAT THE SUPERSTRUCTURE WILL NOT BE DAMAGED.

THE MAXIMUM ALLOWABLE VERTICAL JACKING DISPLACEMENT SHALL BE ½ INCH WITH RESPECT TO BEARINGS OF ADJACENT PIERS.

BEARING NUTS SHALL BE LOOSENED TO PROVIDE A MINIMUM OF $^{5}\%_{64}$INCH GAP TO ALLOW FOR JACKING.

ALL BEAMS AT A PIER SHALL BE JACKED SIMULTANEOUSLY AND SHALL BE RAISED THE SAME AMOUNT AND AT THE SAME RATE. THE HYDRAULIC PRESSURE OF THE JACKS SHALL BE ADJUSTED AS REQUIRED TO ALLOW FOR EQUAL MOVEMENTS. JACKING DEVICES SHALL BE EQUIPPED WITH LOCKING RINGS. USE BEVELED JACKING PLATES AS NEEDED TO PROVIDE A LEVEL JACKING SURFACE.

EFFECT OF VIBRATIONS FROM TRAFFIC SHOULD BE CONSIDERED DURING JACKING AND WHEN JACKS ARE LOCKED.

PROVISIONS SHALL BE MADE TO ACCOUNT FOR THERMAL MOVEMENTS DURING THE PERIOD THAT THE STRUCTURE IS RESTING ON TEMPORARY SUPPORTS.

THE BRIDGE SHALL BE INSPECTED PRIOR TO JACKING TO VERIFY THAT ITEMS CONNECTED TO THE SUPERSTRUCTURE OR SUBSTRUCTURE WILL NOT BE DAMAGED DURING THE JACKING AND BEARING REPLACEMENT PROCEDURE.

IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR PERFORMING THE JACKING TO DETERMINE A JACKING LOCATION AT EACH BEARING AND PROVIDE A DESIGN FOR THE JACKING LOADS. JACKS SHALL HAVE A MINIMUM SAFE LOAD CAPACITY OF 125% OF THE LOAD SPECIFIED IN THE JACKING LOAD TABLE. THE CONTRACTOR SHALL SUBMIT THE JACKING PLAN, DETAILS, PROCEDURES AND SUPPORTING CALCULATIONS TO THE ENGINEER FOR REVIEW AND APPROVAL.

SERVICE REACTIONS PER BEARING

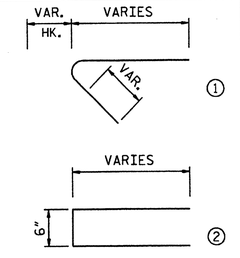
SUPPORT	DL (KIP)		LL+I (KIP)	
	BACK	AHEAD	BACK	AHEAD
END BENT 1	--	27	--	63
BENT 1	24	35	63	66
BENT 2	35	35	66	66
BENT 3	35	24	66	63
END BENT 2	27	--	63	--

BILL OF MATERIAL

BENT 2

BAR	NO.	SIZE	TYPE	LENGTH
S1	VAR.	#4	1	VARIES
S2	VAR.	#5	2	VARIES
CONCRETE REPAIRS			CF	1
SHOTCRETE REPAIRS			CF	2
EPOXY RESIN INJECTION			LF	53
REINFORCING STEEL			LBS	10

BAR TYPE



(BAR DIMENSIONS ARE OUT TO OUT)

NOTES

FOR NOTES, SEE DRAWING "BENT 1 FOR BRIDGE NO. 155".

CONCRETE REPAIR

SHOTCRETE REPAIR

EPOXY RESIN INJECTION OF CRACKS

PROJECT NO. I-5205A

WAKE COUNTY

BRIDGE NO.: 155

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 2 FOR BRIDGE NO. 155

NORTH CAROLINA PROFESSIONAL SEAL 032129 ENGINEER MATTHEW J. MOYER

1-13-2012

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			26

DRAWN BY : L. PATTERSON DATE : 01/2012
CHECKED BY : M. MOYER DATE : 01/2012

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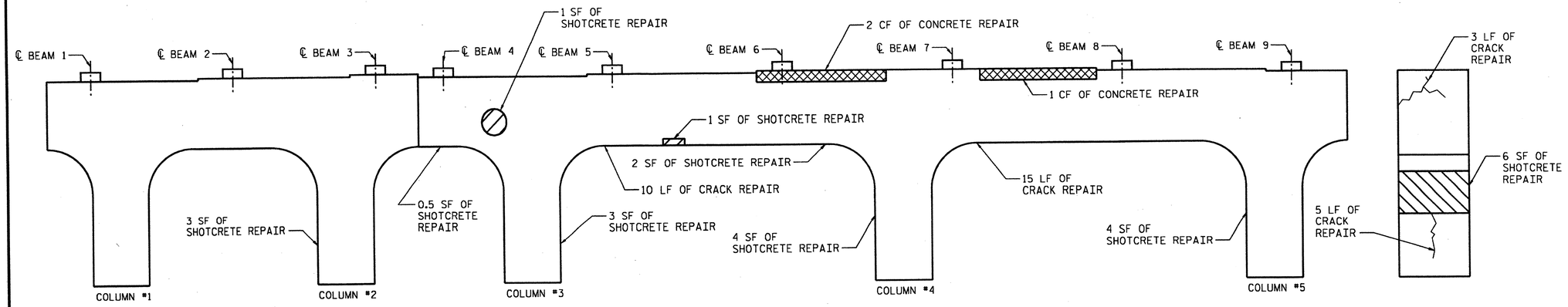
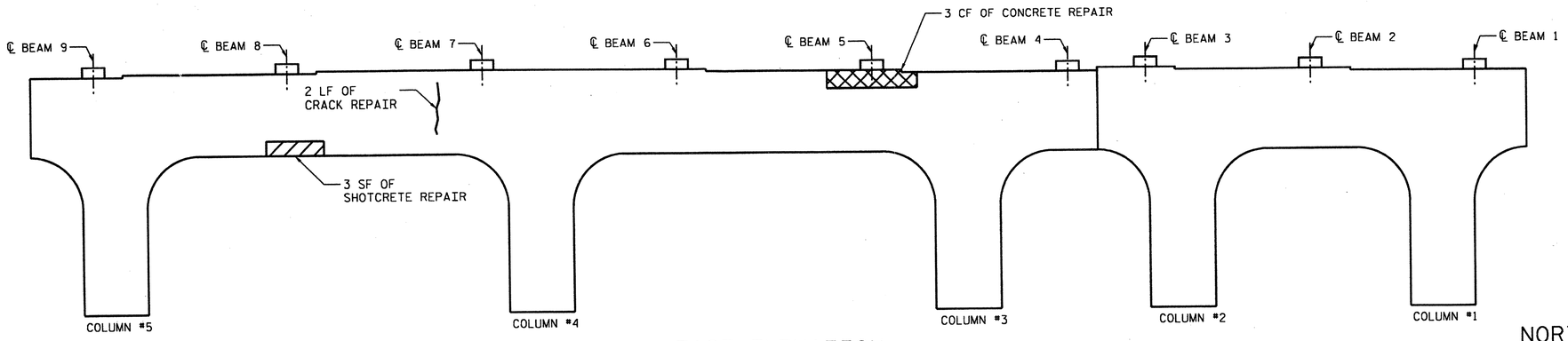
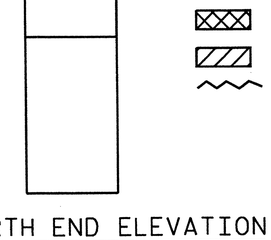


WEST ELEVATION

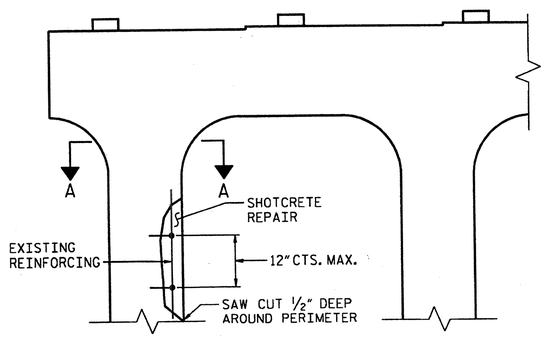
SOUTH END ELEVATION



EAST ELEVATION

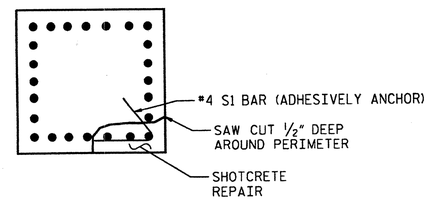


NORTH END ELEVATION



COLUMN REPAIR DETAIL

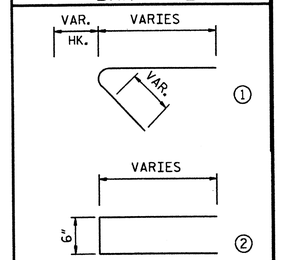
AFTER DETERIORATED CONCRETE HAS BEEN REMOVED THE EXPOSED VERTICAL COLUMN STEEL SHALL BE ENCLOSED BY EITHER EXISTING STIRRUPS OR ADHESIVELY ANCHORED S1 BARS AS SHOWN IN SECTION A-A.



SECTION A-A

BILL OF MATERIAL				
BENT 3				
BAR	NO.	SIZE	TYPE	LENGTH
S1	VAR.	#4	1	VARIES
S2	VAR.	#5	2	VARIES
CONCRETE REPAIRS			CF	6
SHOTCRETE REPAIRS			CF	8
EPOXY RESIN INJECTION			LF	35
REINFORCING STEEL			LBS	10

BAR TYPE



(BAR DIMENSIONS ARE OUT TO OUT)

NOTES

FOR NOTES, SEE DRAWING "BENT 1 BRIDGE NO. 155".

- CONCRETE REPAIR
- SHOTCRETE REPAIR
- EPOXY RESIN INJECTION OF CRACKS

PROJECT NO. I-5205A

WAKE COUNTY

BRIDGE NO.: 155

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 3
FOR BRIDGE NO. 155

REVISIONS						SHEET NO. S-8
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 26
2			4			

NORTH CAROLINA PROFESSIONAL SEAL 032129 ENGINEER MATTHEW J. MOYER
1-13-2012

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

DRAWN BY : L. PATTERSON DATE : 01/2012
CHECKED BY : M. MOYER DATE : 01/2012

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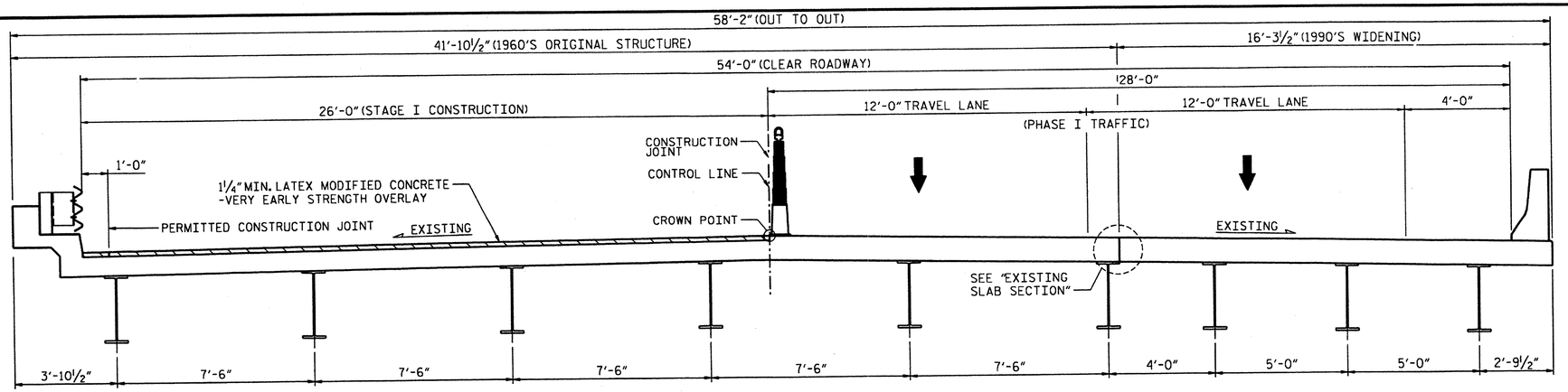
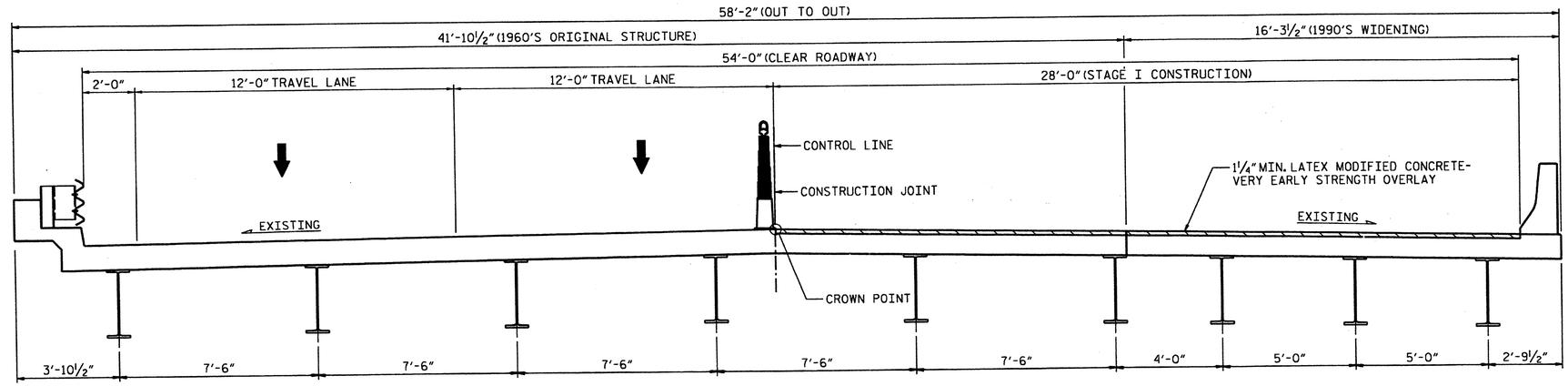


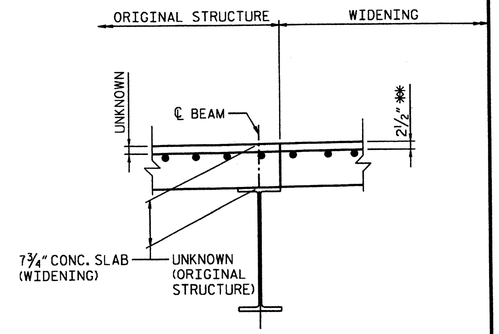
US 64 MEDIAN

TYPICAL SECTION - STAGE I



US 64 MEDIAN

TYPICAL SECTION - STAGE II



EXISTING SLAB SECTION

BOTTOM MAT OF REINFORCING NOT SHOWN FOR CLARITY.
** CONCRETE COVER PER "AS-BUILT PLANS"

NOTES

FOR "HYDRO-DEMOLITION OF BRIDGE DECK", SEE SPECIAL PROVISIONS.

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

THE BOUNDARIES OF AREAS IDENTIFIED FOR CLASS III SURFACE PREPARATION ARE APPROXIMATE. IF ANY CLASS III LOCATIONS ARE ENCOUNTERED PRIOR TO OR DURING HYDRO-DEMOLITION, SEE "TYPICAL "BLOW THRU" CONTAINMENT AND FORMWORK" DETAIL. THE CONTRACTOR SHALL PROVIDE A METHOD OF HANDLING UNEXPECTED BLOW THROUGH OF THE DECK.

THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE FOAM JOINT SEAL SHALL BE 2½" AT BENTS. FOR "FOAM JOINT SEALS", SEE SPECIAL PROVISIONS.

FOR "ELASTOMERIC CONCRETE", SEE SPECIAL PROVISIONS.

LATEX MODIFIED CONCRETE SHALL BE LATEX MODIFIED CONCRETE - VERY EARLY STRENGTH.

FOR "LATEX MODIFIED CONCRETE - VERY EARLY STRENGTH", SEE SPECIAL PROVISIONS.

FOR GROOVING BRIDGE FLOORS INFORMATION, SEE "LATEX MODIFIED CONCRETE VERY EARLY STRENGTH" SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

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

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

FOR SCARIFYING BRIDGE DECK, SEE SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL

SCARIFYING BRIDGE DECK	*CLASS I SURFACE PREPARATION	*CLASS II SURFACE PREPARATION	*CLASS III SURFACE PREPARATION	CONCRETE REPAIRS	*CLASS AA CONCRETE	HYDRO-DEMOLITION OF BRIDGE DECK	LATEX MODIFIED CONCRETE-VERY EARLY STRENGTH OVERLAY	PLACING & FINISHING LATEX MODIFIED CONCRETE-VERY EARLY STRENGTH OVERLAY	FOAM JOINT SEALS	GROOVING BRIDGE FLOORS	EPOXY RESIN INJECTION	SHOTCRETE REPAIRS	REINFORCING STEEL	BRIDGE JACKING
SQ. YDS.	SQ. YDS.	SQ. YDS.	SQ. YDS.	CU. FT.	CU. YDS.	SQ. YDS.	CU. YDS.	SQ. YDS.	LUMP SUM	SQ. FT.	LIN. FT.	CU. FT.	LBS	LUMP SUM
1422	0	0	0	6	0	1422	60	1422	LUMP SUM	11805	12	8	20	LUMP SUM

*QUANTITY SHOWN IS FOR INFORMATION ONLY.

DRAWN BY : D. KEENER 01/2012
CHECKED BY : M. MOYER DATE : 01/2012

NORTH CAROLINA PROFESSIONAL SEAL 032129 ENGINEER MATTHEW J. MOYER
1-13-2012

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

PROJECT NO. I-5205A
WAKE COUNTY
BRIDGE NO.: 156

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION FOR BRIDGE NO. 156

(US 64 WBL OVER I-440)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			26

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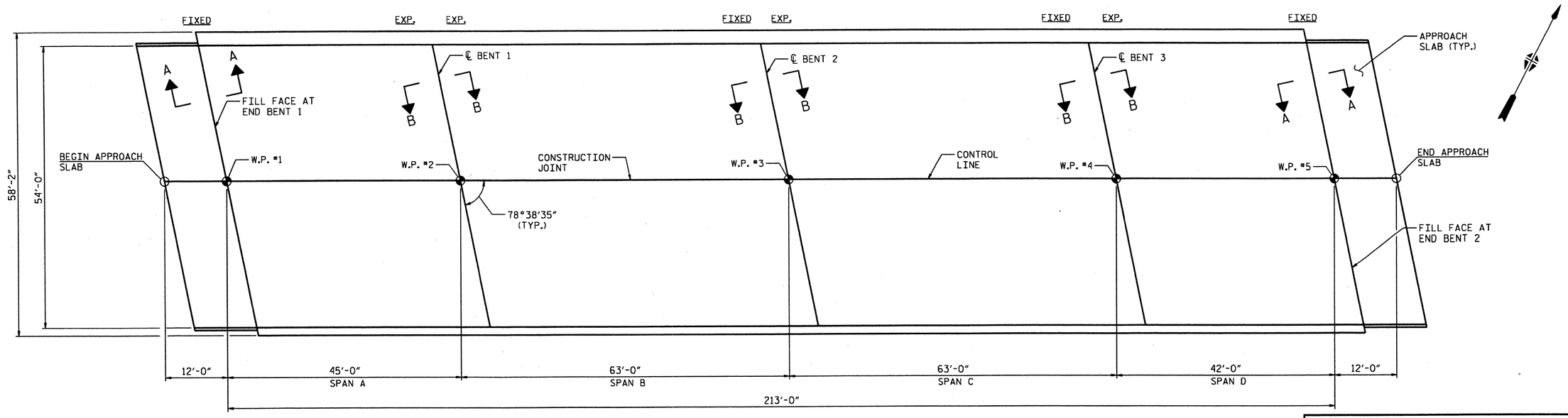
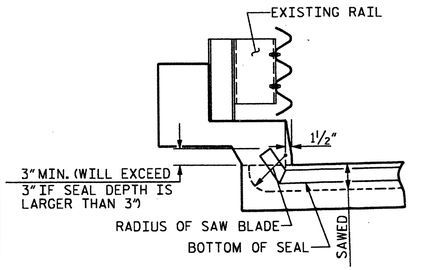
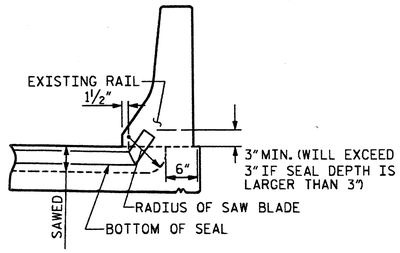


PLAN VIEW

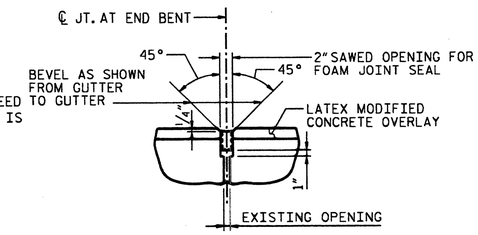
SAWED OPENING FOR FOAM JOINT			
BENT NO.	W AT 90° F	W AT 60° F	W AT 45° F
BENT 1	1 9/16"	1 7/8"	2 1/16"
BENT 2	1 11/16"	1 7/8"	2"
BENT 3	1 3/4"	1 7/8"	1 15/16"



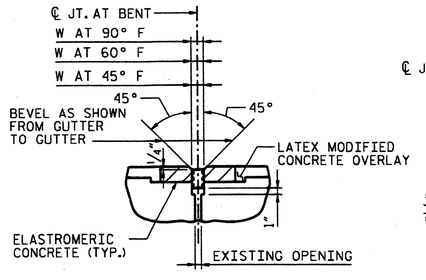
JOINT DETAIL AT SOUTH RAIL



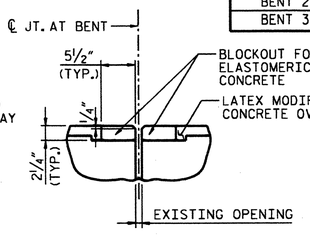
JOINT DETAIL AT NORTH RAIL



PROPOSED JOINT AT END BENTS
FOAM JOINT SEAL EXPANSION



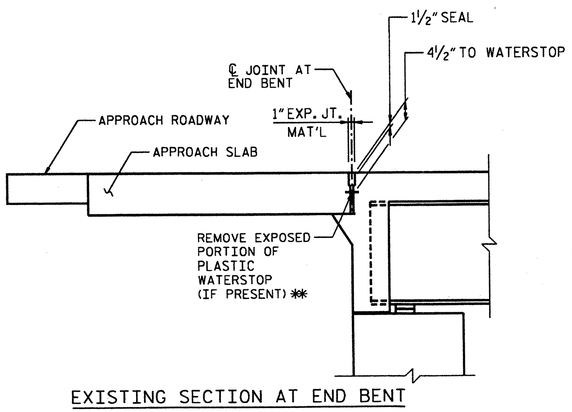
PROPOSED JOINT AT BENTS
FOAM JOINT SEAL EXPANSION



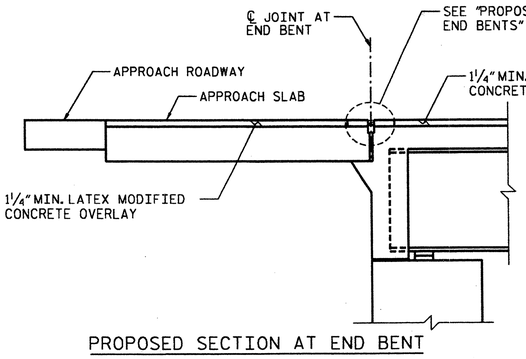
FOAM JOINT SEAL AT BENTS
PRE-SAWED ELASTOMERIC CONCRETE DIMENSIONS

ELASTOMERIC CONCRETE	
BENT NO.	ELASTOMERIC CONCRETE * (CU. FT.)
BENT 1	9.5
BENT 2	9.5
BENT 3	9.5
TOTAL	28.5

* BASED ON THE MINIMUM BLOCKOUT SHOWN

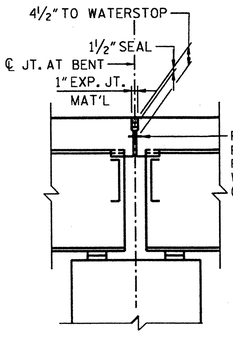


EXISTING SECTION AT END BENT

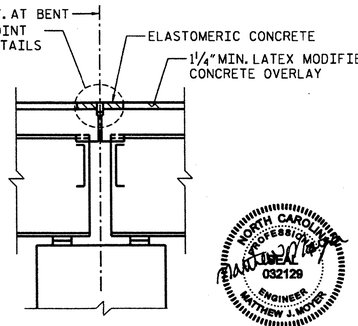


PROPOSED SECTION AT END BENT

SECTION A-A



EXISTING JOINT AT BENTS



PROPOSED JOINT AT BENTS

SECTION B-B

** ALL LOOSE AND UNSOUND CONCRETE SHALL BE REMOVED. IF THE EMBEDDED PORTION OF THE EXISTING PLASTIC WATERSTOP EXPOSED DURING REMOVAL OF UNSOUND CONCRETE, THE ENTIRE WATERSTOP SHALL BE REMOVED. OTHERWISE, TRIM WATERSTOP FLUSH WITH EXISTING CONCRETE SURFACE.

PROJECT NO. I-5205A

WAKE COUNTY

BRIDGE NO.: 156

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN VIEW AND JOINT DETAILS FOR BRIDGE NO. 156

NORTH CAROLINA PROFESSIONAL SEAL 032129 ENGINEER MATTHEW J. MOYER
1-13-2012

DRAWN BY : D. KEENER 01/2012
CHECKED BY : M. MOYER DATE : 01/2012

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

REVISIONS						SHEET NO. S-10
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1			3			TOTAL SHEETS 26
2			4			

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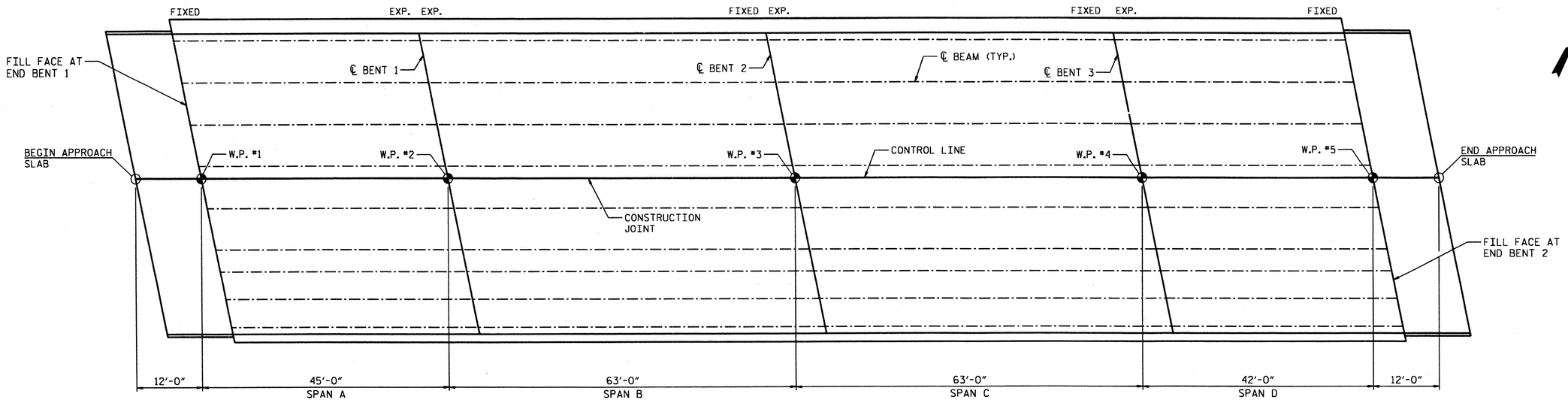
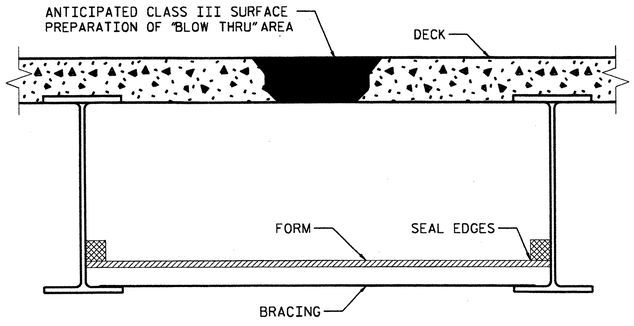
DATE: 1/11/2012
FILE: North Carolina.Dept_of_Transportation\NCDOT_Wake_LMC_I5205A\NCDOT_Wake_LMC_I-5205A\13.00_CAD\Wake 156\Drawings\WAKE-156_STR.dgn



PLAN OF SPANS - DECK REPAIRS

- APPROX. AREA: CLASS I REPAIR
- APPROX. AREA: CLASS II REPAIR
- APPROX. AREA: CLASS III REPAIR

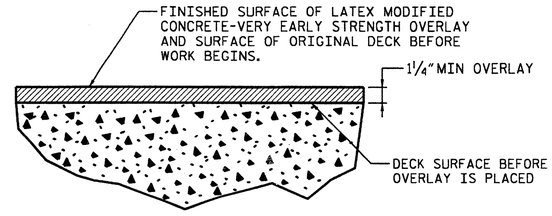


TYPICAL "BLOW THRU" CONTAINMENT AND FORMWORK

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 FORMWORK FOR APPROVAL PRIOR TO BEGINNING WORK.

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



DETAIL FOR LATEX MODIFIED CONCRETE OVERLAY

PROJECT NO. I-5205A

WAKE COUNTY

BRIDGE NO.: 156

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK REPAIR DETAILS FOR BRIDGE NO. 156

NORTH CAROLINA PROFESSIONAL SEAL 032129 ENGINEER MATTHEW J. MOYER

1-13-2012

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			26

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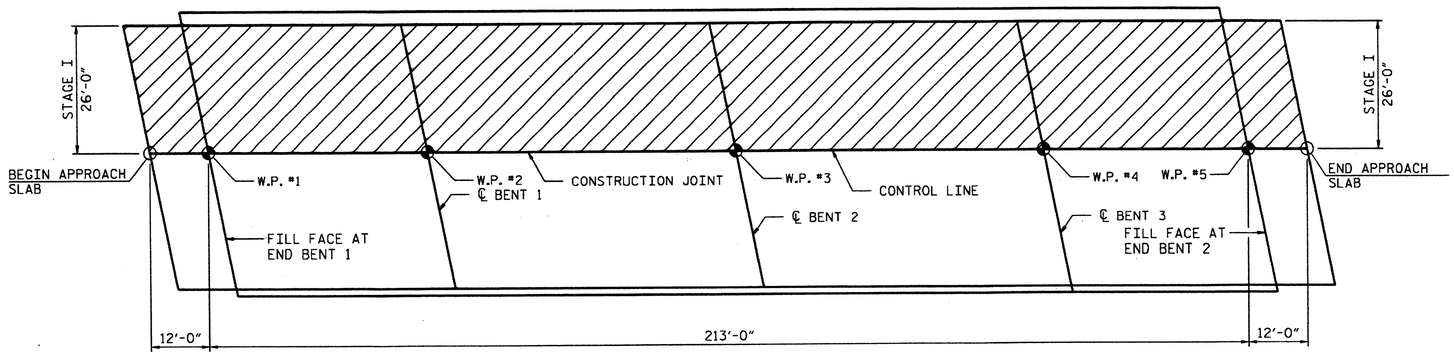
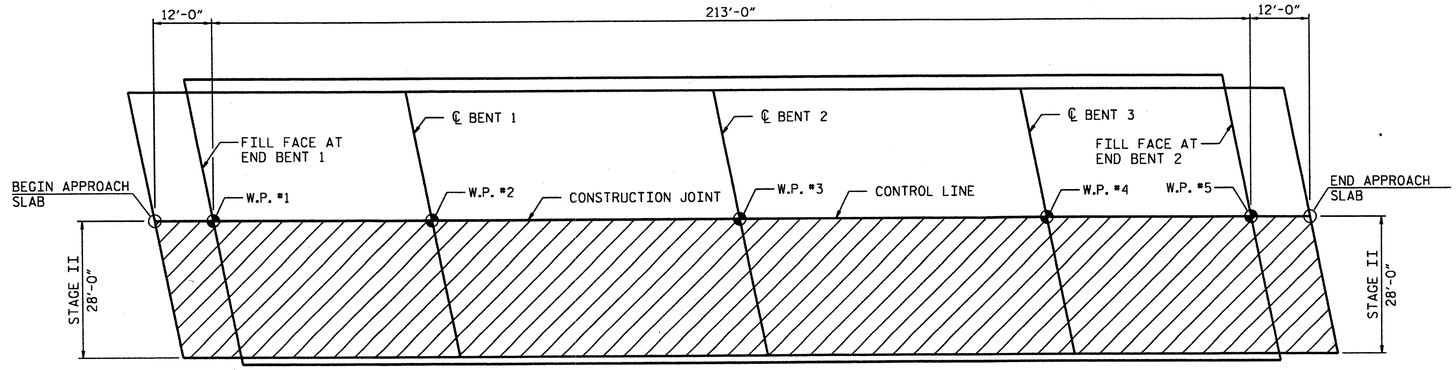


PLAN - STAGE I CONSTRUCTION

DECK SCARIFICATION AND HYDRO-DEMOLITION



PLAN - STAGE II CONSTRUCTION

DECK SCARIFICATION AND HYDRO-DEMOLITION

PROJECT NO. I-5205A

WAKE COUNTY

BRIDGE NO.: 156

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK SCARIFICATION FOR BRIDGE NO. 156

NORTH CAROLINA PROFESSIONAL SEAL 032129 ENGINEER MATTHEW J. MOYER

1-13-2012

REVISIONS						SHEET NO. S-12
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2			4			

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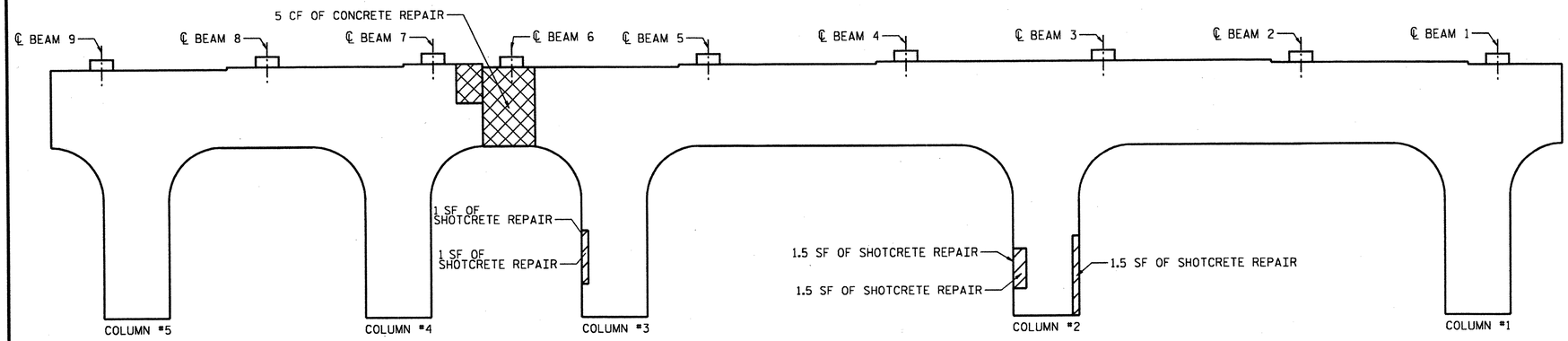
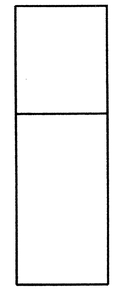


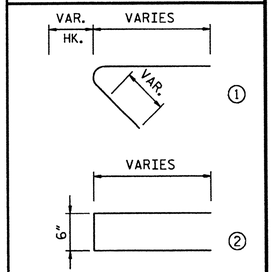
EAST ELEVATION



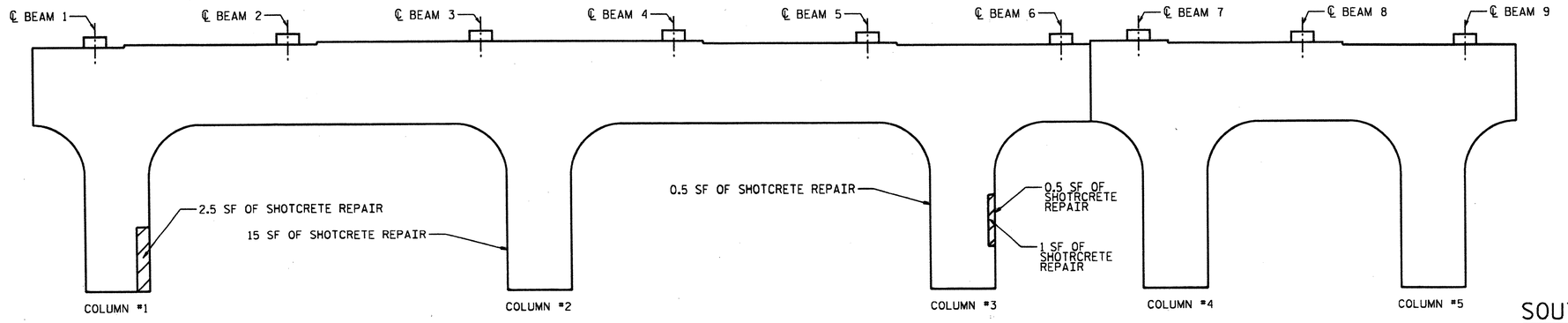
NORTH END ELEVATION

BILL OF MATERIAL				
BENT 1				
BAR	NO.	SIZE	TYPE	LENGTH
S1	VAR.	#4	1	VARIES
S2	VAR.	#5	2	VARIES
CONCRETE REPAIRS			CF	5
SHOTCRETE REPAIRS			CF	7
EPOXY RESIN INJECTION			LF	0
REINFORCING STEEL			LBS	10

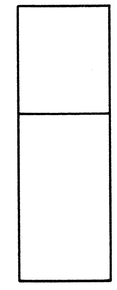
BAR TYPE



(BAR DIMENSIONS ARE OUT TO OUT)



WEST ELEVATION



SOUTH END ELEVATION

NOTES:

THE LOCATION AND EXTENT OF REPAIRS SHOWN ON THE PLANS ARE GENERAL IN NATURE. THE ENGINEER WILL DETERMINE THE EXACT EXTENT OF REMOVAL IN THE FIELD BASED ON AN EVALUATION OF THE CONDITION OF THE EXPOSED SURFACES.

CONSTRUCTION METHODS, PROCEDURES, AND SEQUENCES ARE THE CONTRACTOR'S RESPONSIBILITY AND THE CONTRACTOR SHALL TAKE ALL THE NECESSARY MEANS TO MAINTAIN AND PROTECT THE STRUCTURAL INTEGRITY OF ALL CONSTRUCTION AT ALL STAGES.

ANY DISCREPANCIES BETWEEN THE CONSTRUCTION DOCUMENTS AND THE ACTUAL FIELD CONDITIONS SHALL BE REPORTED TO THE ENGINEER.

THE MANUFACTURER'S CERTIFIED DRAWINGS AND SPECIFICATIONS FOR EQUIPMENT ANCHORAGE AND DETAILS SHALL BE SUBMITTED FOR APPROVAL.

FOR "COLUMN REPAIR DETAIL", SEE DRAWING "BENT 3 FOR BRIDGE NO. 156."

FOR "TYPICAL REPAIR AT BEAM BEARING" DETAIL, SEE DRAWING "BENT 2 FOR BRIDGE NO. 156."

FOR BRIDGE JACKING, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIR, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

FIELD TESTING OF THE ADHESIVELY ANCHORED DOWELS IS NOT REQUIRED.

CONCRETE REPAIR

SHOTCRETE REPAIR

EPOXY RESIN INJECTION OF CRACKS

NORTH CAROLINA PROFESSIONAL SEAL 032129 ENGINEER MATTHEW J MOYER

1-13-2012

PROJECT NO. I-5205A

WAKE COUNTY

BRIDGE NO.: 156

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 1
FOR BRIDGE NO. 156

REVISIONS							SHEET NO. S-13
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1			3				TOTAL SHEETS 26
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FILE: North Carolina_Dept_of_Transportation\NCDOT_Wake_LMC_I5205A\NCDOT_Wake_LMC_I-5205A\13.00_CAD\Wake 156\Drawings\WAKE-156_STR.dgn
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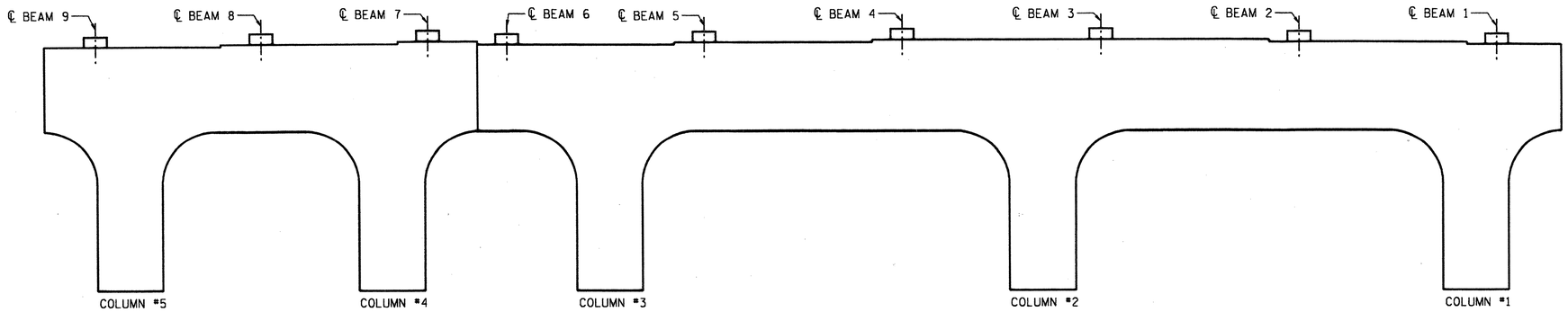

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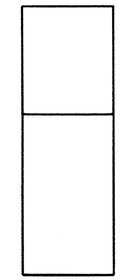
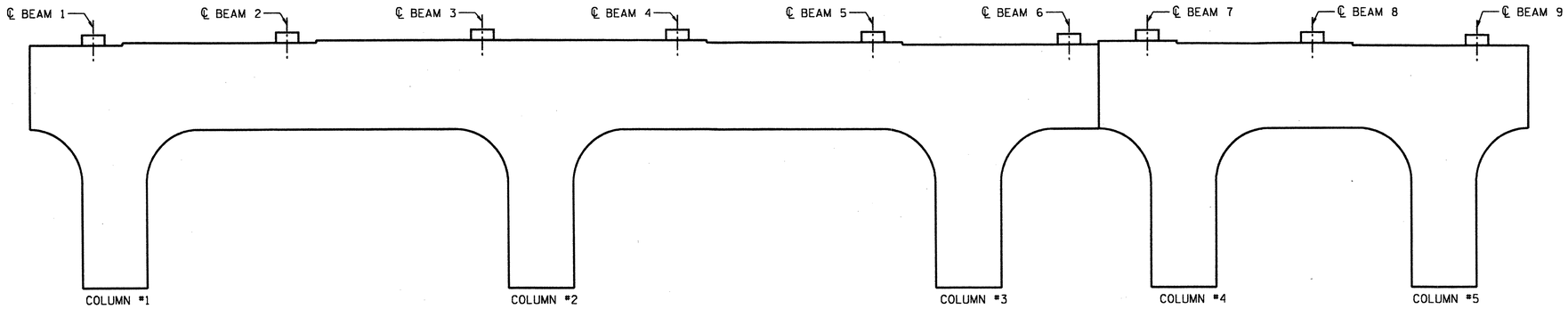


NORTH END ELEVATION

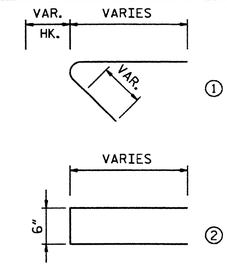


WEST ELEVATION

SOUTH END ELEVATION

BILL OF MATERIAL				
BENT 2				
BAR	NO.	SIZE	TYPE	LENGTH
S1	VAR.	#4	1	VARIES
S2	VAR.	#5	2	VARIES
CONCRETE REPAIRS			CF	0
SHOTCRETE REPAIRS			CF	0
EPOXY RESIN INJECTION			LF	0
REINFORCING STEEL			LBS	0

BAR TYPE



(BAR DIMENSIONS ARE OUT TO OUT)

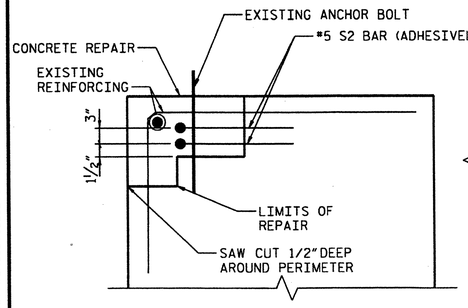
NOTES

FOR NOTES, SEE DRAWING "BENT 1 FOR BRIDGE NO. 156".

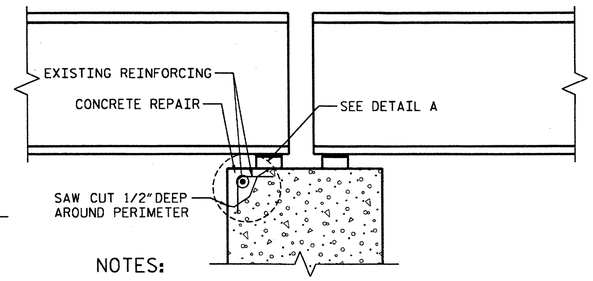
CONCRETE REPAIR

SHOTCRETE REPAIR

EPOXY RESIN INJECTION OF CRACKS



DETAIL A



NOTES:

RAISE BEAM ½" BY JACKING BEFORE REMOVING CONCRETE. DO NOT LOWER SUPERSTRUCTURE UNTIL REPAIR HAS CURED AND REACHED A COMPRESSIVE STRENGTH OF 3000 PSI.

TYPICAL REPAIR AT BEAM BEARING

JACKING NOTES

JACKING SHALL BE CONDUCTED IN A MANNER SUCH THAT THE SUPERSTRUCTURE WILL NOT BE DAMAGED.

THE MAXIMUM ALLOWABLE VERTICAL JACKING DISPLACEMENT SHALL BE ½ INCH WITH RESPECT TO BEARINGS OF ADJACENT PIERS.

BEARING NUTS SHALL BE LOOSENED TO PROVIDE A MINIMUM OF $^{5}/_{64}$INCH GAP TO ALLOW FOR JACKING.

ALL BEAMS AT A PIER SHALL BE JACKED SIMULTANEOUSLY AND SHALL BE RAISED THE SAME AMOUNT AND AT THE SAME RATE. THE HYDRAULIC PRESSURE OF THE JACKS SHALL BE ADJUSTED AS REQUIRED TO ALLOW FOR EQUAL MOVEMENTS. JACKING DEVICES SHALL BE EQUIPPED WITH LOCKING RINGS. USE BEVELED JACKING PLATES AS NEEDED TO PROVIDE A LEVEL JACKING SURFACE.

EFFECT OF VIBRATIONS FROM TRAFFIC SHOULD BE CONSIDERED DURING JACKING AND WHEN JACKS ARE LOCKED.

PROVISIONS SHALL BE MADE TO ACCOUNT FOR THERMAL MOVEMENTS DURING THE PERIOD THAT THE STRUCTURE IS RESTING ON TEMPORARY SUPPORTS.

THE BRIDGE SHALL BE INSPECTED PRIOR TO JACKING TO VERIFY THAT ITEMS CONNECTED TO THE SUPERSTRUCTURE OR SUBSTRUCTURE WILL NOT BE DAMAGED DURING THE JACKING AND BEARING REPLACEMENT PROCEDURE.

IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR PERFORMING THE JACKING TO DETERMINE A JACKING LOCATION AT EACH BEARING AND PROVIDE A DESIGN FOR THE JACKING LOADS. JACKS SHALL HAVE A MINIMUM SAFE LOAD CAPACITY OF 125% OF THE LOAD SPECIFIED IN THE JACKING LOAD TABLE. THE CONTRACTOR SHALL SUBMIT THE JACKING PLAN, DETAILS, PROCEDURES AND SUPPORTING CALCULATIONS TO THE ENGINEER FOR REVIEW AND APPROVAL.

SERVICE REACTIONS PER BEARING

SUPPORT	DL (KIP)		LL+I (KIP)	
	BACK	AHEAD	BACK	AHEAD
END BENT 1	--	30	--	63
BENT 1	27	40	63	66
BENT 2	40	40	66	66
BENT 3	40	27	66	63
END BENT 2	30	--	63	--

1-13-2012

PROJECT NO. I-5205A

WAKE COUNTY

BRIDGE NO.: 156

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 2
FOR BRIDGE NO. 156

REVISIONS						SHEET NO. S-14
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 26
2			4			

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USER: msells
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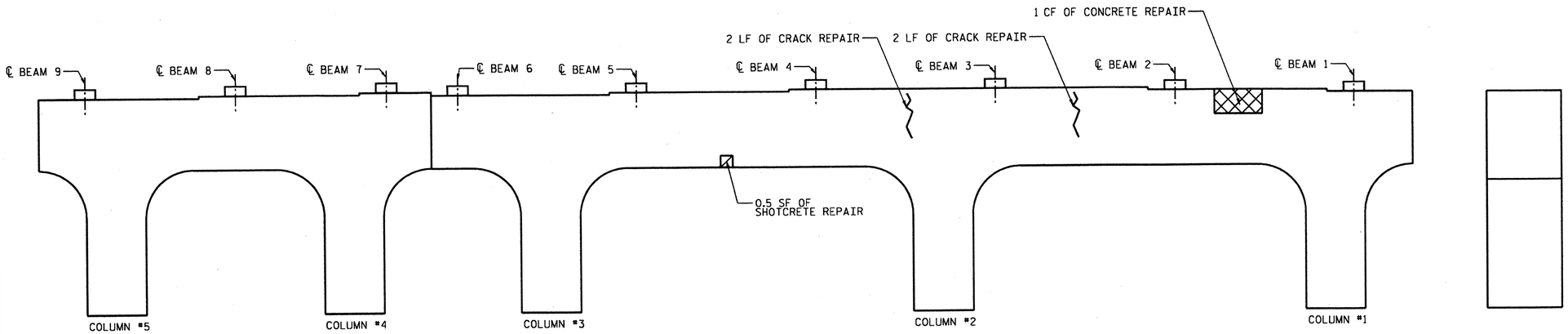
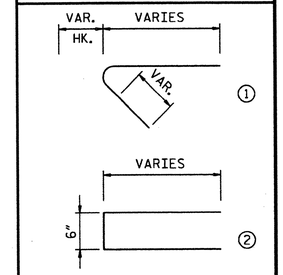


EAST ELEVATION

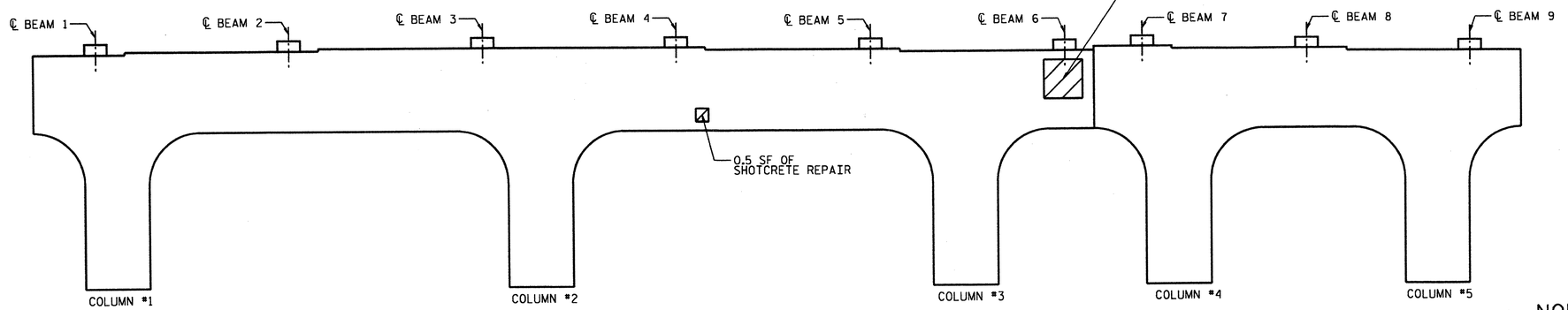
SOUTH END ELEVATION

BILL OF MATERIAL				
BENT 3				
BAR	NO.	SIZE	TYPE	LENGTH
S1	VAR.	#4	1	VARIES
S2	VAR.	#5	2	VARIES
CONCRETE REPAIRS			CF	1
SHOTCRETE REPAIRS			CF	1
EPOXY RESIN INJECTION			LF	4
REINFORCING STEEL			LBS	10

BAR TYPE



(BAR DIMENSIONS ARE OUT TO OUT)



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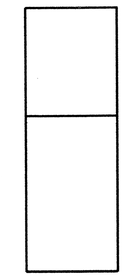


NORTH END ELEVATION

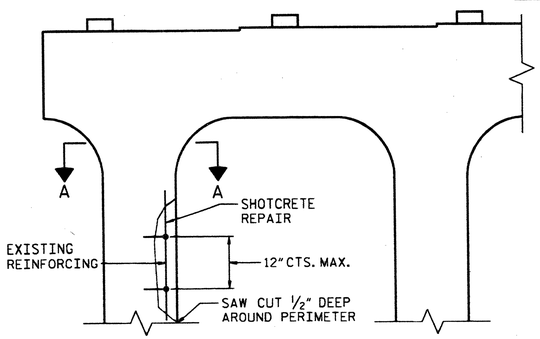
NOTES

FOR NOTES, SEE DRAWING "BENT 1 FOR BRIDGE NO. 156".

CONCRETE REPAIR

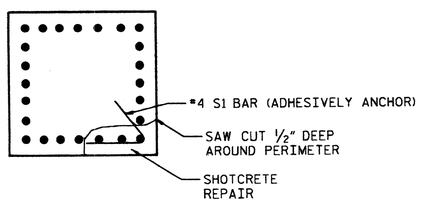
SHOTCRETE REPAIR

EPOXY RESIN INJECTION OF CRACKS



COLUMN REPAIR DETAIL

AFTER DETERIORATED CONCRETE HAS BEEN REMOVED THE EXPOSED VERTICAL COLUMN STEEL SHALL BE EITHER ENCLOSED BY EXISTING STIRRUPS OR ADHESIVELY ANCHORED S1 BARS AS SHOWN IN SECTION B-B



SECTION A-A

PROJECT NO. I-5205A

WAKE COUNTY

BRIDGE NO.: 156

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 3
FOR BRIDGE NO. 156

REVISIONS						SHEET NO. S-15
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 26
1			3			
2			4			

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CHECKED BY : M. MOYER DATE : 01/2012

PLOT DRIVER: NCDOT_pdf_mono_eng_50.pit + PENTABLE: Division 4_pen_Austin.tbl
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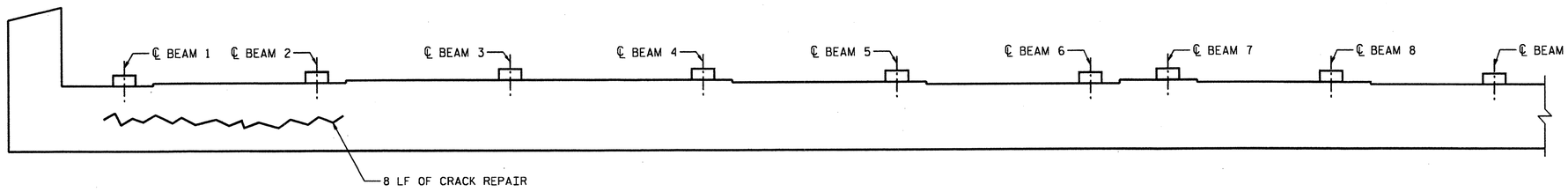
NOTES

FOR NOTES, SEE DRAWING "BENT 1 FOR BRIDGE NO. 156".

CONCRETE REPAIR

SHOTCRETE REPAIR

EPOXY RESIN INJECTION OF CRACKS

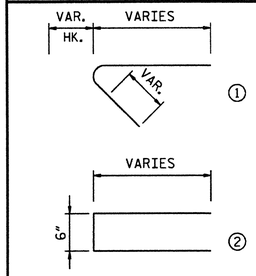


WEST ELEVATION

BILL OF MATERIAL
END BENT 2

BAR	NO.	SIZE	TYPE	LENGTH
S1	VAR.	#4	1	VARIES
S2	VAR.	#5	2	VARIES
CONCRETE REPAIRS			CF	0
SHOTCRETE REPAIRS			CF	0
EPOXY RESIN INJECTION			LF	8
REINFORCING STEEL			LBS	0

BAR TYPE



(BAR DIMENSIONS ARE OUT TO OUT)

PROJECT NO. I-5205A

WAKE COUNTY

BRIDGE NO.: 156

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

END BENT 2
FOR BRIDGE NO. 156

NORTH CAROLINA PROFESSIONAL SEAL 032129 ENGINEER MATTHEW J. MOYER
1-13-2012

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			26

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CHECKED BY : M. MOYER DATE : 01/2012

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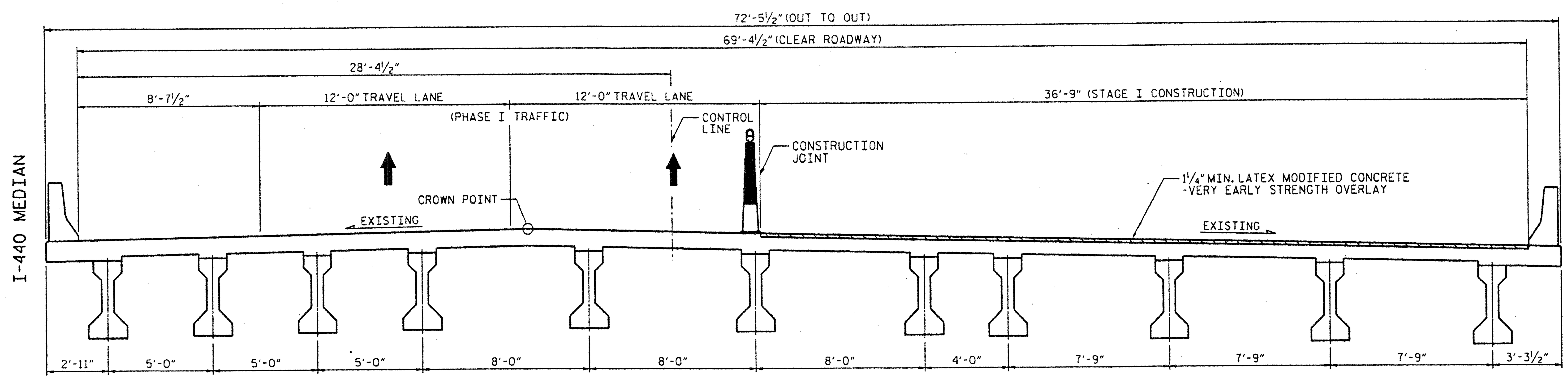
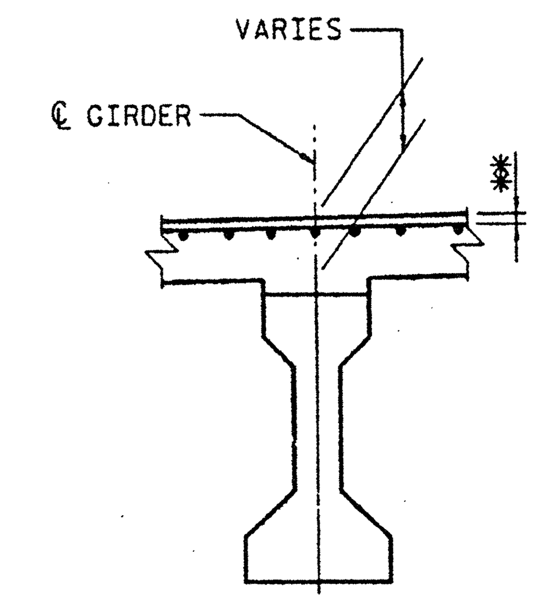
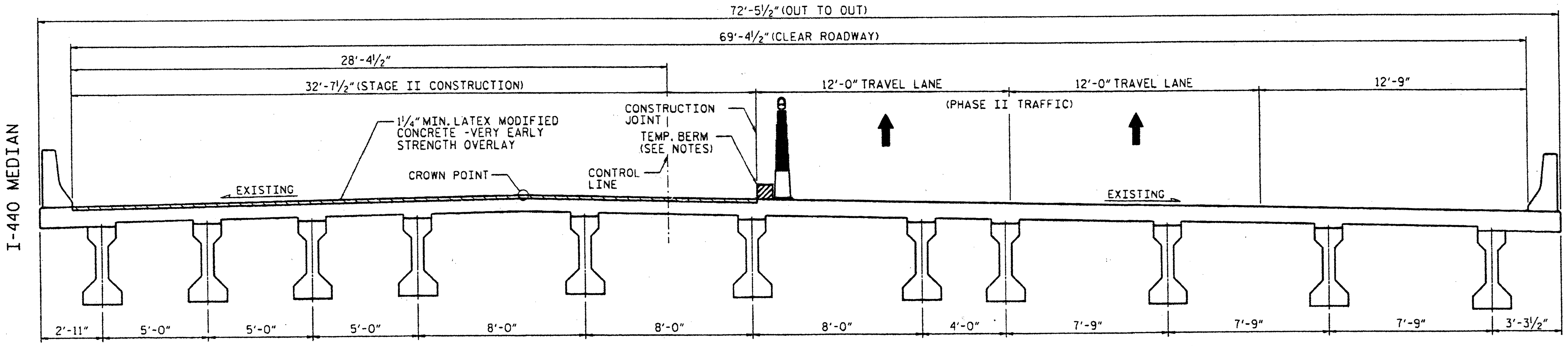


TYPICAL SECTION - STAGE I

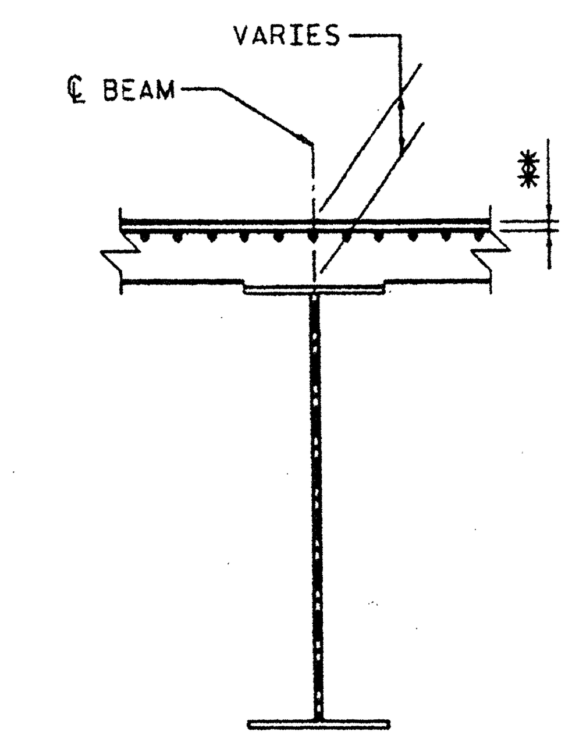


EXISTING SLAB SECTION

FOR SPANS A, C, D, E, AND F
BOTTOM OF MAT REINFORCING,
NOT SHOWN FOR CLARITY.



TYPICAL SECTION - STAGE II



EXISTING SLAB SECTION

FOR SPAN B
BOTTOM OF MAT REINFORCING,
NOT SHOWN FOR CLARITY.

** SEE DRAWING "BRIDGE DECK EVALUATION TEST LOCATIONS FOR BRIDGE NO. 282"

NOTES

FOR "HYDRO-DEMOLITION OF BRIDGE DECK", SEE SPECIAL PROVISIONS.

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

THE BOUNDARIES OF AREAS IDENTIFIED FOR CLASS III SURFACE PREPARATION ARE APPROXIMATE. IF ANY CLASS III LOCATIONS ARE ENCOUNTERED PRIOR TO OR DURING HYDRO-DEMOLITION, SEE "TYPICAL "BLOW THRU" CONTAINMENT AND FORMWORK" DETAIL. THE CONTRACTOR SHALL PROVIDE A METHOD OF HANDLING UNEXPECTED BLOW THROUGH OF THE DECK.

THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE FOAM JOINT SEAL SHALL BE 2½" AT BENTS. FOR "FOAM JOINT SEALS", SEE SPECIAL PROVISIONS.

FOR "ELASTOMERIC CONCRETE", SEE SPECIAL PROVISIONS.

LATEX MODIFIED CONCRETE SHALL BE LATEX MODIFIED CONCRETE - VERY EARLY STRENGTH.

FOR "LATEX MODIFIED CONCRETE - VERY EARLY STRENGTH", SEE SPECIAL PROVISIONS.

FOR GROOVING BRIDGE FLOORS INFORMATION, SEE "LATEX MODIFIED CONCRETE VERY EARLY STRENGTH" SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

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

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

FOR SCARIFYING BRIDGE DECK, SEE SPECIAL PROVISIONS.

WATER AND CONCRETE SLURRY FROM HYDRO-DEMOLITION SHALL NOT BE ALLOWED TO DRAIN ACROSS TRAVEL LANES. CONTRACTOR SHALL PROVIDE A METHOD TO CONTROL THE WATER.

TOTAL BILL OF MATERIAL

SCARIFYING BRIDGE DECK	* CLASS I SURFACE PREPARATION	* CLASS II SURFACE PREPARATION	* CLASS III SURFACE PREPARATION	* CLASS AA CONCRETE	HYDRO-DEMOLITION OF BRIDGE DECK	LATEX MODIFIED CONCRETE-VERY EARLY STRENGTH OVERLAY	PLACING & FINISHING LATEX MODIFIED CONCRETE-VERY EARLY STRENGTH OVERLAY	FOAM JOINT SEALS	GROOVING BRIDGE FLOORS
SQ. YDS.	SQ. YDS.	SQ. YDS.	SQ. YDS.	CU. YDS.	SQ. YDS.	CU. YDS.	SQ. YDS.	LUMP SUM	SQ. FT.
2554	0	0	0	0	2554	107	2554	LUMP SUM	21427

* QUANTITY SHOWN IS FOR INFORMATION ONLY.

DRAWN BY : D. KEENER DATE : 01/2012
CHECKED BY : M. MOYER DATE : 01/2012

PROJECT NO. I-5205A
WAKE COUNTY
BRIDGE NO.: 282

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION FOR BRIDGE NO. 282
(I-440 EBL OVER ATLANTIC AVE AND CSX RAILROAD)

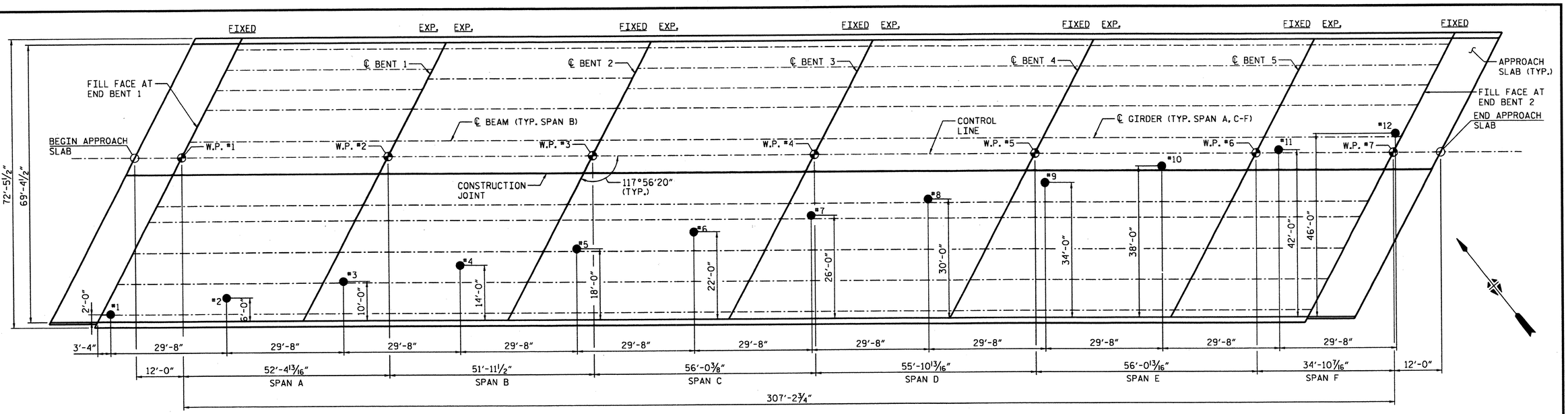
NORTH CAROLINA SEAL 032129 ENGINEER MATTHEW J. MOYER
3-12-12

HDR Engineering, Inc. of the Carolinas

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

REVISIONS

SHEET NO. S-17
TOTAL SHEETS 26



PLAN VIEW - TEST LOCATIONS

CONCRETE & REINFORCEMENT		
TEST LOCATION	TOP BAR COVER (IN.)	CONCRETE STRENGTH (PSI)
1	3"	3700
2	3 3/8"	3900
3	2 5/8"	3500
4	2 5/8"	3900
5	3 3/8"	3500
6	3 3/8"	4300
7	2 1/8"	3900
8	2 3/4"	3700
9	3 1/8"	4300
10	3 1/4"	3900
11	3 3/4"	3700
12	3 5/8"	4100

PROJECT NO. I-5205A

WAKE COUNTY

BRIDGE NO.: 282

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE DECK EVALUATION
TEST LOCATIONS
FOR BRIDGE NO. 282

NORTH CAROLINA PROFESSIONAL SEAL 032129 ENGINEER MATTHEW J. MOYER

1-13-2012

REVISIONS						SHEET NO. S-18
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 26
1			3			
2			4			

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

DRAWN BY : D. KEENER DATE : 01/2012
CHECKED BY : M. MOYER DATE : 01/2012

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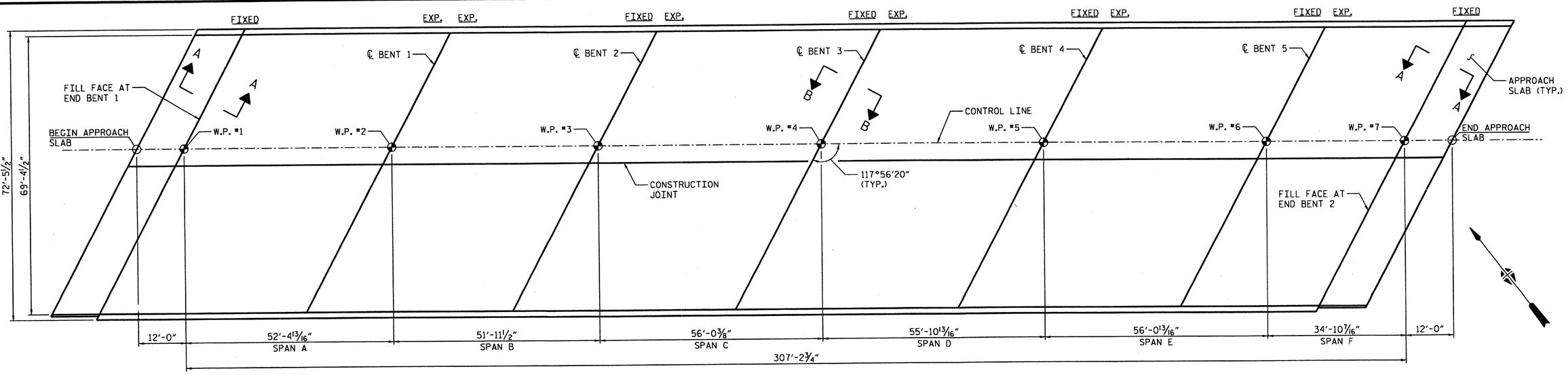
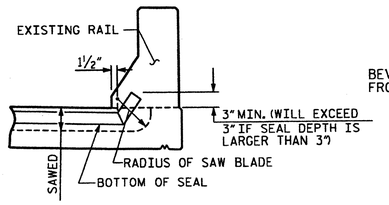
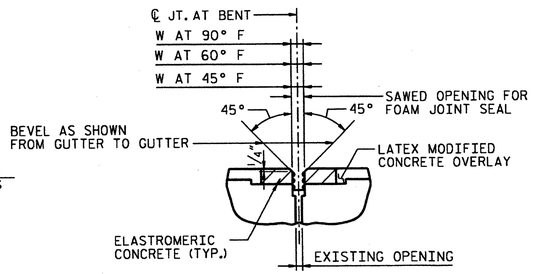


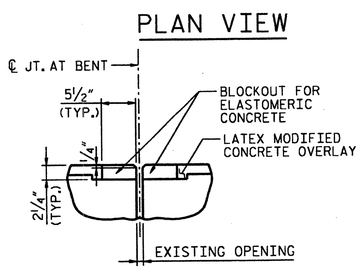
PLAN VIEW



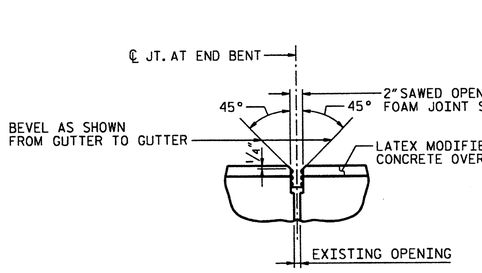
JOINT DETAIL AT RAIL



PROPOSED JOINT AT BENTS
FOAM JOINT SEAL EXPANSION



FOAM JOINT SEAL AT BENTS
PRE-SAWED ELASTOMERIC CONCRETE DIMENSIONS

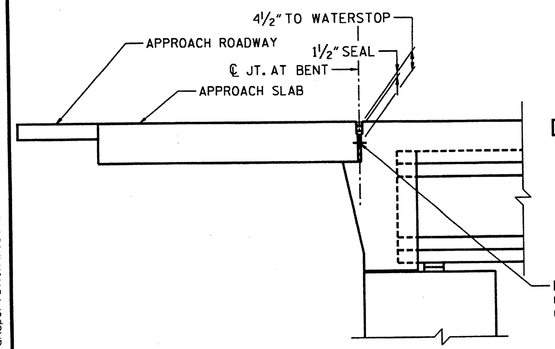


PROPOSED JOINT AT END BENTS
FOAM JOINT SEAL EXPANSION

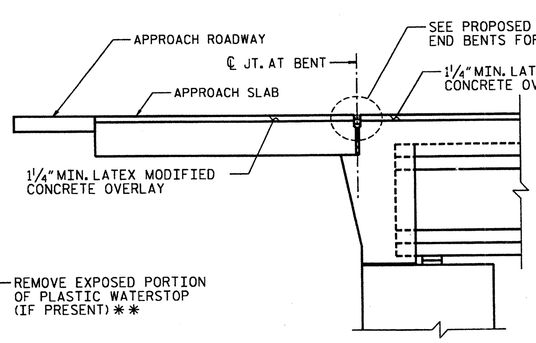
SAWED OPENING FOR FOAM JOINT			
BENT NO.	W AT 90°F	W AT 60°F	W AT 45°F
BENT 1	1¾"	2"	2⅛"
BENT 2	1⅞"	2"	2 1/16"
BENT 3	1⅞"	2"	2 1/16"
BENT 4	1⅞"	2"	2 1/16"
BENT 5	1 15/16"	2"	2 1/16"

ELASTOMERIC CONCRETE	
BENT NO.	ELASTOMERIC CONCRETE * (CU. FT.)
BENT 1	13.5
BENT 2	13.5
BENT 3	13.5
BENT 4	13.5
BENT 5	13.5
TOTAL	67.5

*BASED ON THE MINIMUM BLOCKOUT SHOWN

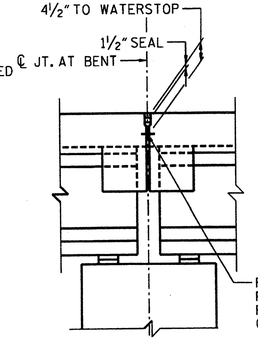


EXISTING SECTION AT END BENT

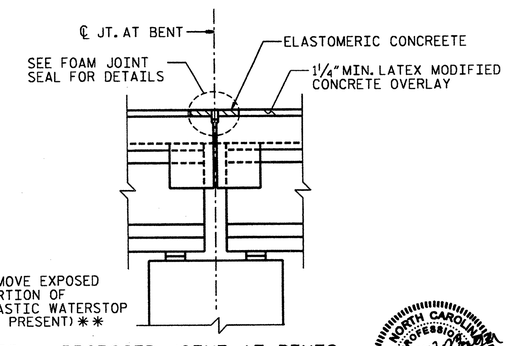


PROPOSED SECTION AT END BENT

SECTION A-A



EXISTING JOINT AT BENTS



PROPOSED JOINT AT BENTS

SECTION B-B

**ALL LOOSE AND UNSOUND CONCRETE SHALL BE REMOVED. IF THE EMBEDDED PORTION OF THE EXISTING PLASTIC WATERSTOP IS EXPOSED DURING REMOVAL OF UNSOUND CONCRETE, THE ENTIRE WATERSTOP SHALL BE REMOVED. OTHERWISE, TRIM WATERSTOP FLUSH WITH EXISTING CONCRETE SURFACE.

PROJECT NO. I-5205A

WAKE COUNTY

BRIDGE NO.: 282

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN VIEW AND JOINT DETAILS FOR BRIDGE NO. 282

REVISIONS						SHEET NO. S-19
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 26
1			3			
2			4			

NORTH CAROLINA PROFESSIONAL SEAL 032129 ENGINEER MATTHEW J. MOYER
1-13-2012

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

DRAWN BY : D. KEENER DATE : 01/2012
CHECKED BY : M. MOYER DATE : 01/2012

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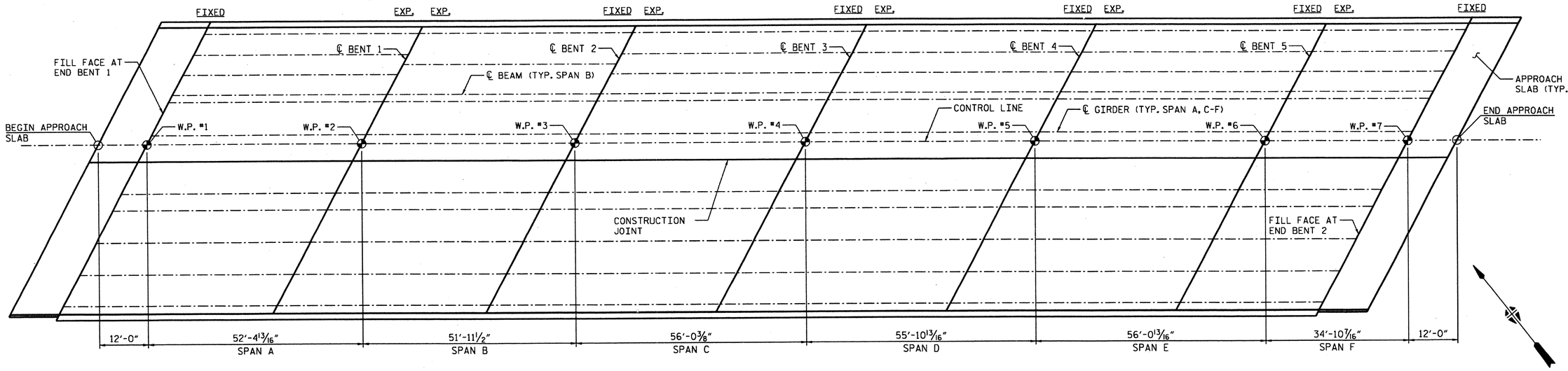
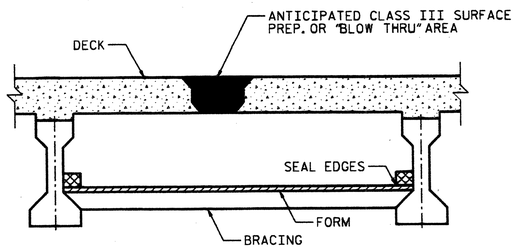


PLAN OF SPANS - DECK REPAIRS

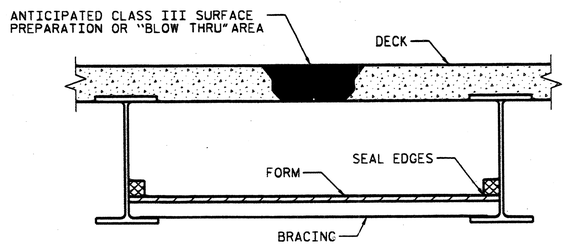
APPROX. AREA: CLASS I REPAIR

APPROX. AREA: CLASS II REPAIR

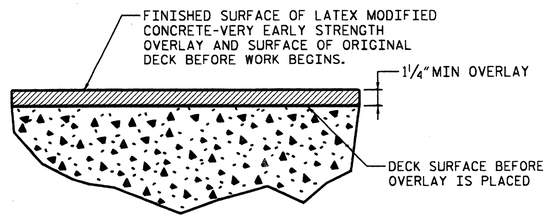
APPROX. AREA: CLASS III REPAIR



SPANS A, C, D, E, AND F



SPAN B



DETAIL FOR LATEX MODIFIED CONCRETE OVERLAY

"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 FORMWORK FOR APPROVAL PRIOR TO BEGINNING WORK.

COST FOR INSTALLING REMOVING FORMWORK SHALL BE INCIDENTAL TO THE PER SQ. YARD OF HYDRO-DEMOLITION.

THE CONTRACTOR AT HIS OPTION, MAY CHOOSE TO MONITOR HYDRO-DEMOLITION WORK AND CONTROL, TRAFFIC UNDER THE BRIDGE IN LIEU OF BLOW THRU CONTAINMENT. SEE TRAFFIC CONTROL PLANS.

DRAWN BY : D. KEENER DATE : 01/2012

CHECKED BY : M. MOYER DATE : 01/2012

NORTH CAROLINA PROFESSIONAL SEAL 032129 ENGINEER MATTHEW J. MOYER

1-13-2012

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

PROJECT NO. I-5205A

WAKE COUNTY

BRIDGE NO.: 282

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK REPAIR DETAILS FOR BRIDGE NO. 282

REVISIONS						SHEET NO. S-20
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 26
1			3			
2			4			

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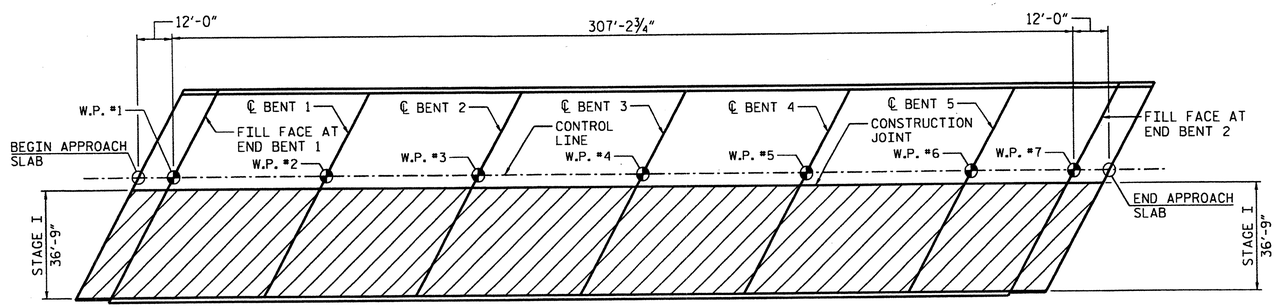
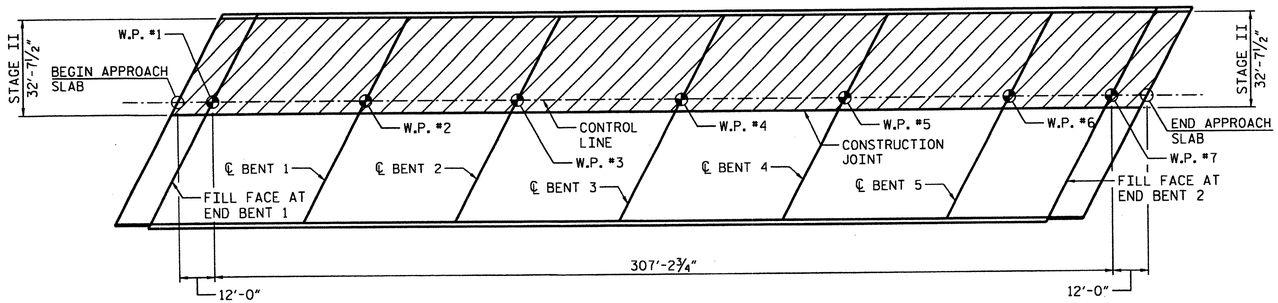


PLAN - STAGE I CONSTRUCTION

DECK SCARIFICATION AND HYDRO-DEMOLITION



PLAN - STAGE II CONSTRUCTION

DECK SCARIFICATION AND HYDRO-DEMOLITION

PROJECT NO. I-5205A

WAKE COUNTY

BRIDGE NO.: 284

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK SCARIFICATION FOR BRIDGE NO. 282

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032129 ENGINEER MATTHEW J. MOYER
1-13-2012

REVISIONS						SHEET NO. S-21
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 26
1			3			
2			4			

HDR Engineering, Inc. of the Carolinas
2733 National Drive, Suite 207 Raleigh, N.C. 27612
N.C.B.E.L.S. License Number: F-0116

DRAWN BY : L. PATTERSON DATE : 01/2012
CHECKED BY : M. MOYER DATE : 01/2012

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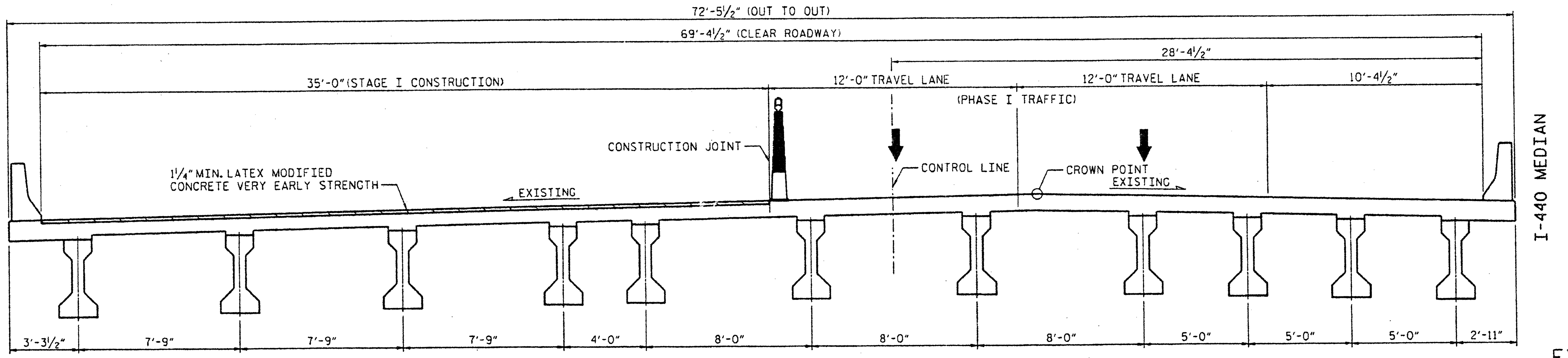
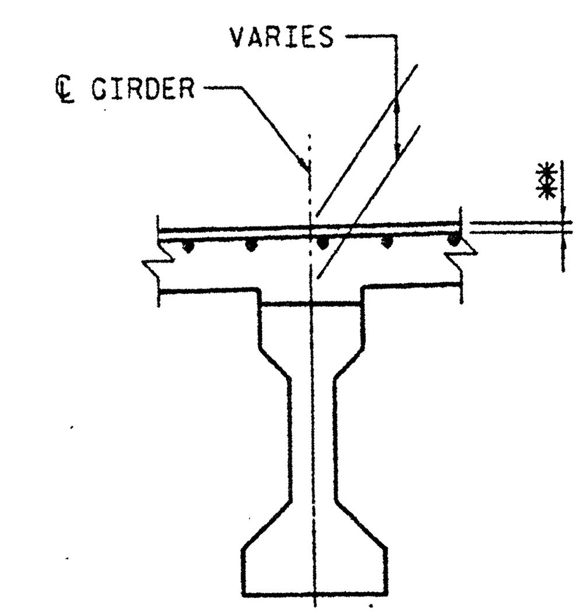
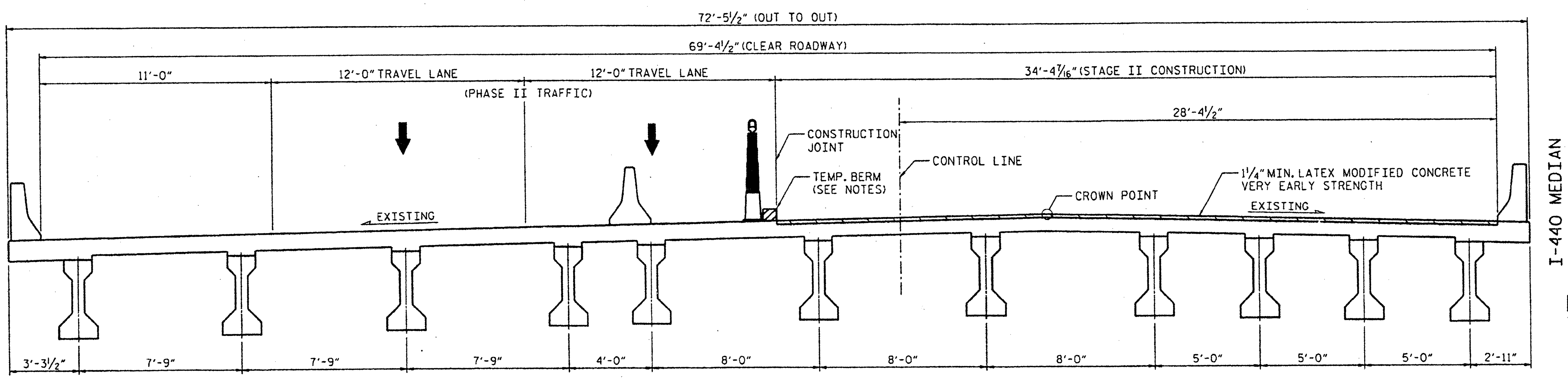


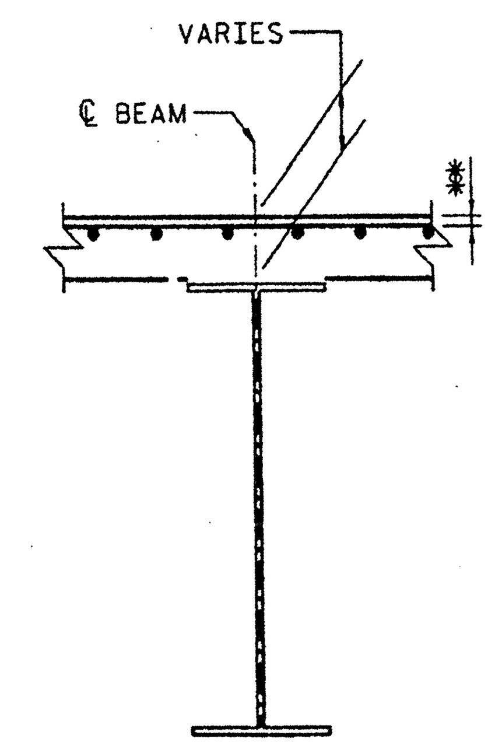
TYPICAL SECTION - STAGE I



EXISTING SLAB SECTION

FOR SPANS A, C, D, E, AND F
BOTTOM MAT OF REINFORCING.
NOT SHOWN FOR CLARITY.





EXISTING SLAB SECTION

FOR SPAN B
BOTTOM MAT OF REINFORCING.
NOT SHOWN FOR CLARITY.

** SEE DRAWING "BRIDGE DECK EVALUATION TEST LOCATIONS FOR BRIDGE NO. 284"

TYPICAL SECTION - STAGE II

NOTES

FOR "HYDRO-DEMOLITION OF BRIDGE DECK", SEE SPECIAL PROVISIONS.

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

THE BOUNDARIES OF AREAS IDENTIFIED FOR CLASS III SURFACE PREPARATION ARE APPROXIMATE. IF ANY CLASS III LOCATIONS ARE ENCOUNTERED PRIOR TO OR DURING HYDRO-DEMOLITION, SEE "TYPICAL "BLOW THRU" CONTAINMENT AND FORMWORK" DETAIL. THE CONTRACTOR SHALL PROVIDE A METHOD OF HANDLING UNEXPECTED BLOW THROUGH OF THE DECK.

THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE FOAM JOINT SEAL SHALL BE 2½" AT BENTS. FOR "FOAM JOINT SEALS", SEE SPECIAL PROVISIONS.

FOR "ELASTOMERIC CONCRETE", SEE SPECIAL PROVISIONS.

LATEX MODIFIED CONCRETE SHALL BE LATEX MODIFIED CONCRETE - VERY EARLY STRENGTH.

FOR "LATEX MODIFIED CONCRETE - VERY EARLY STRENGTH", SEE SPECIAL PROVISIONS.

FOR GROOVING BRIDGE FLOORS INFORMATION, SEE "LATEX MODIFIED CONCRETE VERY EARLY STRENGTH" SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

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

FOR SCARIFYING BRIDGE DECK, SEE SPECIAL PROVISIONS.

WATER AND CONCRETE SLURRY FROM HYDRO-DEMOLITION SHALL NOT BE ALLOWED TO DRAIN ACROSS TRAVEL LANES. CONTRACTOR SHALL PROVIDE A METHOD TO CONTROL THE WATER.

TOTAL BILL OF MATERIAL

SCARIFYING BRIDGE DECK	* CLASS I SURFACE PREPARATION	* CLASS II SURFACE PREPARATION	* CLASS III SURFACE PREPARATION	* CLASS AA CONCRETE	HYDRO-DEMOLITION OF BRIDGE DECK	LATEX MODIFIED CONCRETE-VERY EARLY STRENGTH OVERLAY	PLACING & FINISHING LATEX MODIFIED CONCRETE-VERY EARLY STRENGTH OVERLAY	FOAM JOINT SEALS	GROOVING BRIDGE FLOORS
SQ. YDS.	SQ. YDS.	SQ. YDS.	SQ. YDS.	CU. YDS.	SQ. YDS.	CU. YDS.	SQ. YDS.	LUMP SUM	SQ. FT.
2554	0	0	0	0	2554	107	2554	LUMP SUM	21427

* QUANTITY SHOWN IS FOR INFORMATION ONLY.

DRAWN BY : D. KEENER DATE : 01/2012
CHECKED BY : M. MOYER DATE : 01/2012

PROJECT NO. I-5205A
WAKE COUNTY
BRIDGE NO.: 282

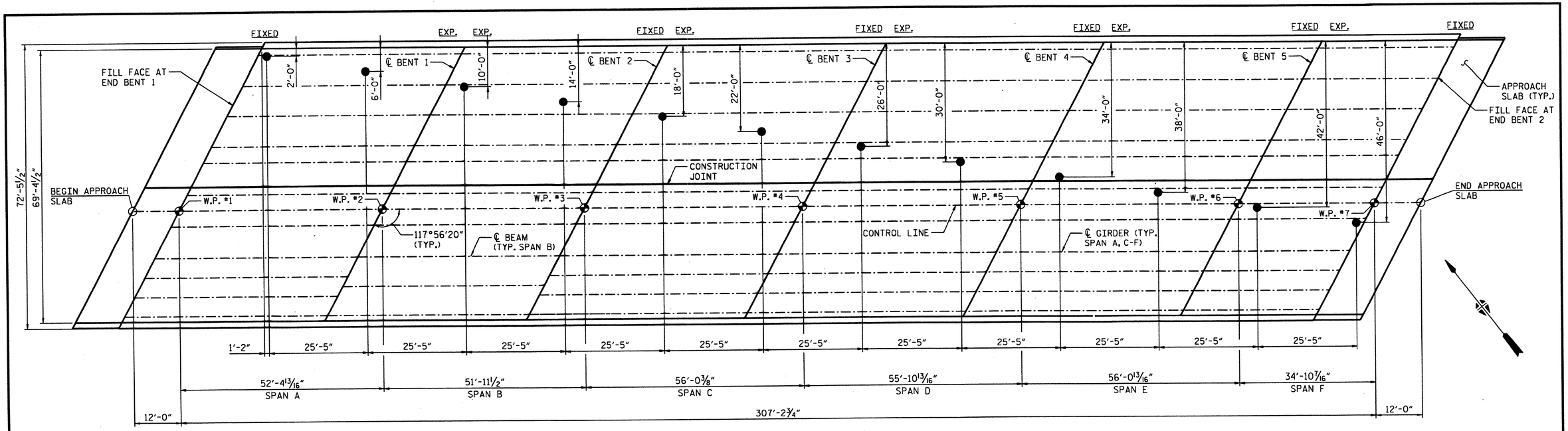
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032129 MATTHEW J. MOYER
3-12-12

HDR Engineering, Inc. of the Carolinas

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION
FOR BRIDGE NO. 284
(I-440 WBL OVER ATLANTIC AVENUE AND CSX RAILROAD)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
1			3			TOTAL SHEETS
2			4			26



PLAN VIEW - TEST LOCATIONS

CONCRETE & REINFORCEMENT		
TEST LOCATION	TOP BAR COVER (IN)	CONCRETE STRENGTH (PSI)
1	3⅜"	3500
2	3½"	3700
3	2⅞"	3700
4	2¼"	5100
5	3⅜"	3900
6	3⅜"	3700
7	3½"	4300
8	3"	4100
9	3⅛"	4100
10	4⅛"	4900
11	5¼"	4300
12	3⅜"	3700

PROJECT NO. I-5205A

WAKE COUNTY

BRIDGE NO.: 284

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032129 MATTHEW J. MOYER
1-13-2012

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE DECK EVALUATION TEST LOCATIONS FOR BRIDGE NO. 284

REVISIONS						SHEET NO. S-23
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 26
2			4			

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

DRAWN BY : D. KEENER DATE : 01/2012
CHECKED BY : M. MOYER DATE : 01/2012

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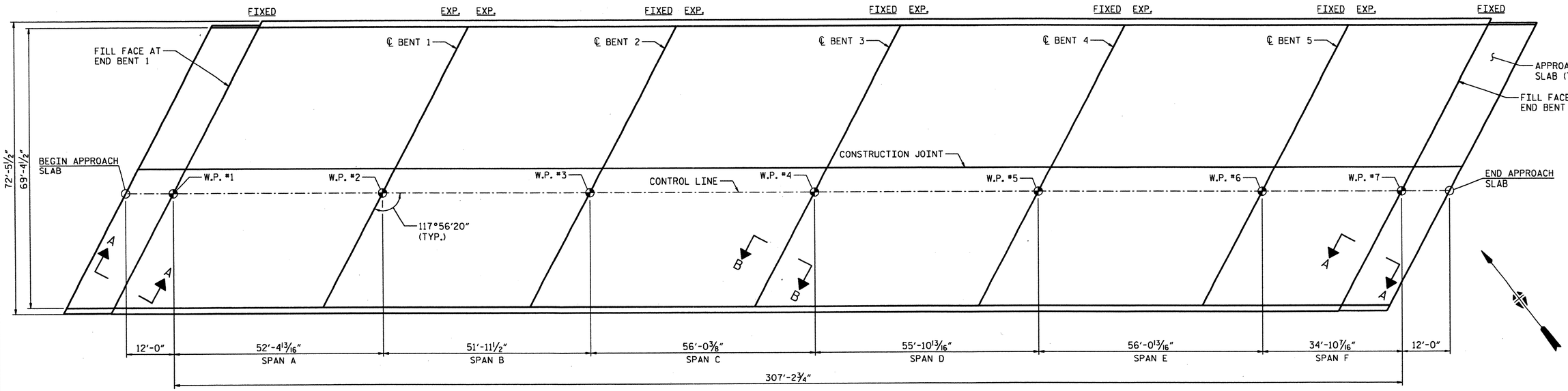
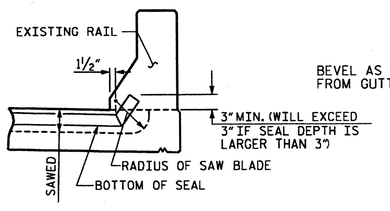
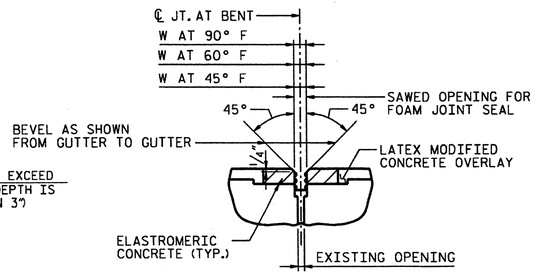


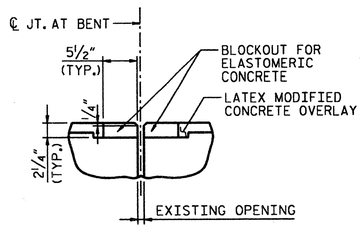
PLAN VIEW



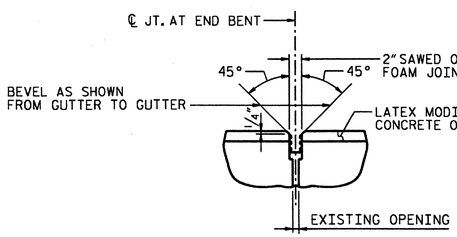
JOINT DETAIL AT RAIL



PROPOSED JOINT AT BENTS
FOAM JOINT SEAL EXPANSION



FOAM JOINT SEAL AT BENTS
PRE-SAWED ELASTOMERIC CONCRETE DIMENSIONS

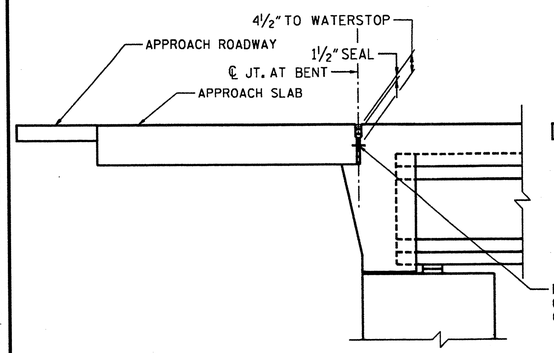


PROPOSED JOINT AT END BENTS
FOAM JOINT SEAL EXPANSION

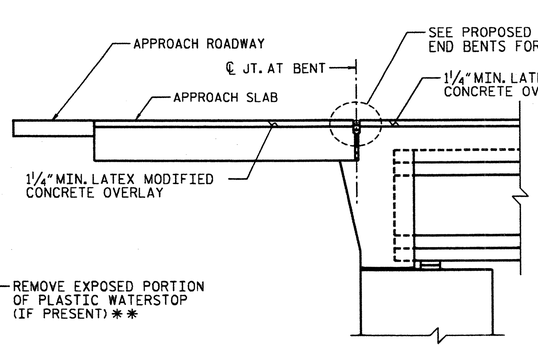
SAWED OPENING FOR FOAM JOINT			
BENT NO.	W AT 90°F	W AT 60°F	W AT 45°F
BENT 1	1¾"	2"	2⅛"
BENT 2	1⅞"	2"	2 1/16"
BENT 3	1⅞"	2"	2 1/16"
BENT 4	1⅞"	2"	2 1/16"
BENT 5	1 15/16"	2"	2 1/16"

ELASTOMERIC CONCRETE	
BENT NO.	ELASTOMERIC CONCRETE * (CU. FT.)
BENT 1	13.5
BENT 2	13.5
BENT 3	13.5
BENT 4	13.5
BENT 5	13.5
TOTAL	67.5

*BASED ON THE MINIMUM BLOCKOUT SHOWN

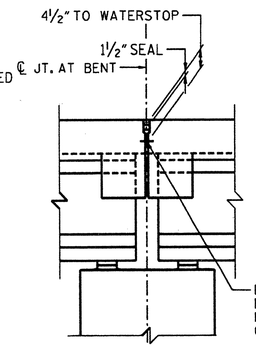


EXISTING SECTION AT END BENT



PROPOSED SECTION AT END BENT

SECTION A-A



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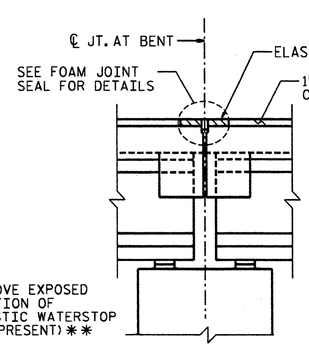

PROPOSED JOINT AT BENTS

SECTION B-B

**ALL LOOSE AND UNSOUND CONCRETE SHALL BE REMOVED. IF THE EMBEDDED PORTION OF THE EXISTING PLASTIC WATERSTOP IS EXPOSED DURING REMOVAL OF UNSOUND CONCRETE, THE ENTIRE WATERSTOP SHALL BE REMOVED. OTHERWISE, TRIM WATERSTOP FLUSH WITH EXISTING CONCRETE SURFACE.

PROJECT NO. I-5205A
WAKE COUNTY
BRIDGE NO.: 284

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN VIEW AND JOINT DETAILS FOR BRIDGE NO. 284

NORTH CAROLINA PROFESSIONAL SEAL 032129 ENGINEER MATTHEW J. MOYER
1-13-2012

DRAWN BY : D. KEENER DATE : 01/2012
CHECKED BY : M. MOYER DATE : 01/2012

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

REVISIONS						SHEET NO. S-24
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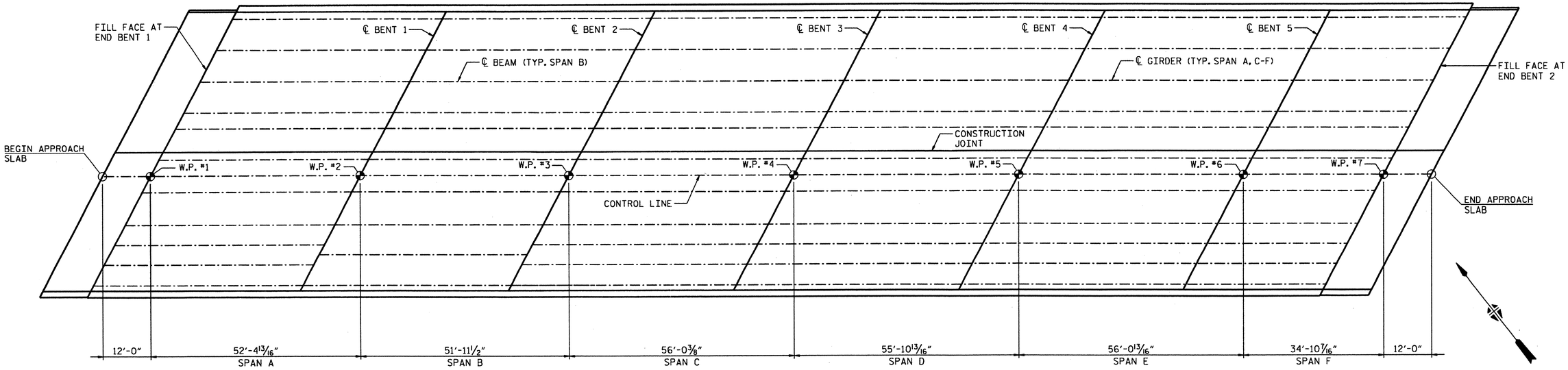
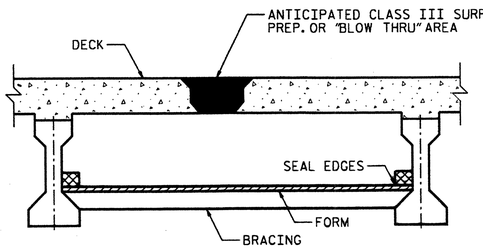
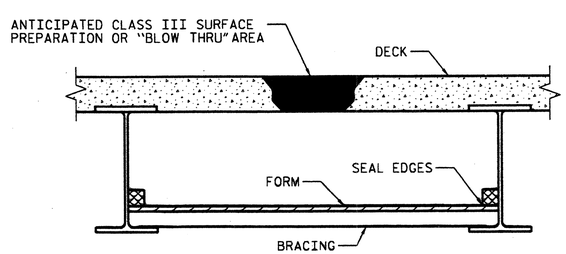


PLAN OF SPANS - DECK REPAIRS

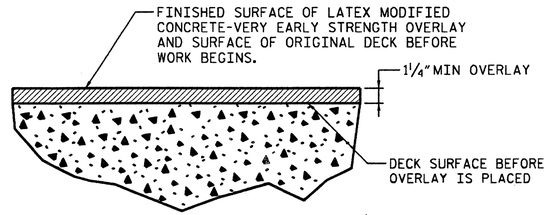
- APPROX. AREA: CLASS I REPAIR
- APPROX. AREA: CLASS II REPAIR
- APPROX. AREA: CLASS III REPAIR



SPANS A, C, D, E, AND F



SPAN B



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 FORMWORK FOR APPROVAL PRIOR TO BEGINNING WORK.

COST FOR INSTALLING REMOVING FORMWORK SHALL BE INCIDENTAL TO THE PER SQ. YARD OF HYDRO-DEMOLITION.

THE CONTRACTOR AT HIS OPTION, MAY CHOOSE TO MONITOR HYDRO-DEMOLITION WORK AND CONTROL, TRAFFIC UNDER THE BRIDGE IN LIEU OF BLOW THRU CONTAINMENT. SEE TRAFFIC CONTROL PLANS.

DRAWN BY : D. KEENER DATE : 01/2012
CHECKED BY : M. MOYER DATE : 01/2012

NORTH CAROLINA PROFESSIONAL SEAL 032129 ENGINEER MATTHEW J. MOYER
1-13-2012

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

PROJECT NO. I-5205A
WAKE COUNTY
BRIDGE NO.: 284

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK REPAIR DETAILS FOR BRIDGE NO. 284

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-25
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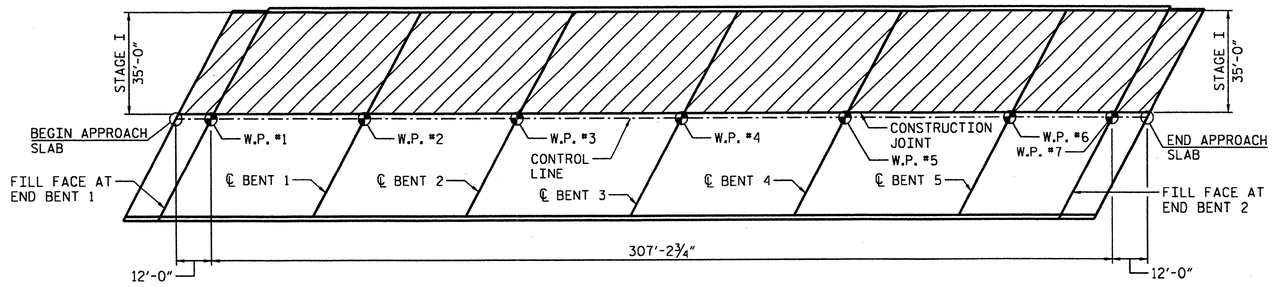
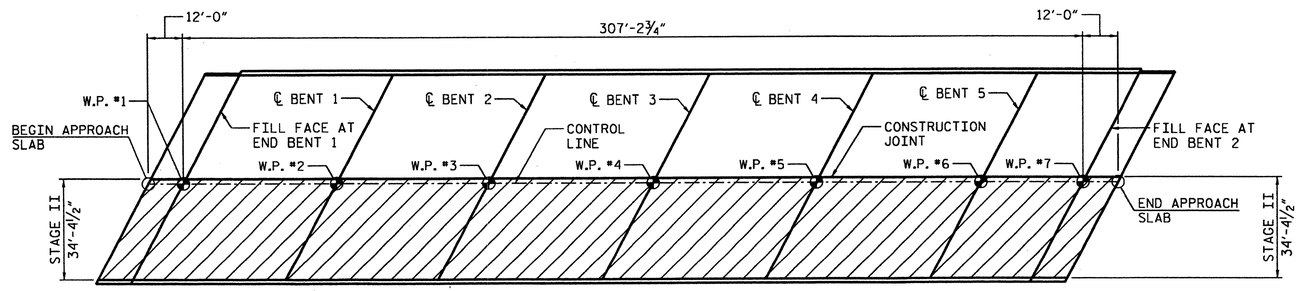


PLAN - STAGE I CONSTRUCTION

DECK SCARIFICATION AND HYDRODEMOLITION



PLAN - STAGE II CONSTRUCTION

DECK SCARIFICATION AND HYDRODEMOLITION

PROJECT NO. I-5205A

WAKE COUNTY

BRIDGE NO.: 282

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK SCARIFICATION FOR BRIDGE NO. 284

NORTH CAROLINA PROFESSIONAL SEAL 032129 ENGINEER MATTHEW J. MOYER

1-13-2012

HDR Engineering, Inc. of the Carolinas
3723 National Drive, Suite 207 Raleigh, N.C. 27612
N.C.B.E.L.S. License Number: F-0116

REVISIONS						SHEET NO. S-26
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CHECKED BY : M. MOYER DATE : 01/2012

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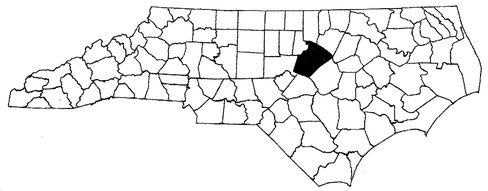
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

WAKE COUNTY



LOCATION: BRIDGES 155 & 156 ON US 64 OVER I-440
BRIDGES 282 & 284 ON I-440 OVER ATLANTIC AVE & CSX RAILROAD

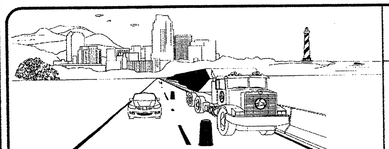
TYPE OF WORK: TRAFFIC CONTROL FOR BRIDGE DECK PRESERVATION

INDEX OF SHEETS

SHEET NO.
TMP-1

I-5205A

TIP PROJECT:



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

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

J. S. BOURNE, P.E. — *STATE TRAFFIC MANAGEMENT ENGINEER*
MATTHEW MOYER, P.E. — *PROJECT MANAGER*
MICHELLE WARD, P.E. — *TRAFFIC CONTROL PROJECT DESIGN ENGINEER*
CHRIS HARNDEN — *TRAFFIC CONTROL DESIGN ENGINEER*

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

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

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 033789 ENGINEER MICHELLE WARD
1/12/12

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PROJ. REFERENCE NO.	SHEET NO.
I-5205A	TMP-1A

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

ROADWAY STANDARD DRAWINGS

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

STD. NO.	TITLE
1101.01	WORK ZONE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1115.01	FLASHING ARROW BOARDS
1130.01	DRUMS
1145.01	BARRICADES
1165.01	WORK VEHICLE LIGHTING SYSTEMS AND TMA DELINEATION
1180.01	SKINNY-DRUM
1205.01	PAVEMENT MARKINGS - LINE TYPES & OFFSETS
1205.02	PAVEMENT MARKINGS - TWO LANE & MULTILANE ROADWAYS
1205.06	PAVEMENT MARKINGS - LANE DROPS
1205.08	PAVEMENT MARKINGS - SYMBOLS & WORD MESSAGES
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - (PERMANENT AND TEMPORARY)

LEGEND

GENERAL

- DIRECTION OF TRAFFIC FLOW
- DIRECTION OF PEDESTRIAN TRAFFIC FLOW
- EXIST. PVMT.
- NORTH ARROW
- PROPOSED PVMT.
- WORK AREA

TRAFFIC CONTROL DEVICES

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

TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

SIGNALS

EXISTING PROPOSED TEMP TEMPORARY

PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

PAVEMENT MARKERS

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

PAVEMENT MARKING SYMBOLS

PAVEMENT MARKING SYMBOLS

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 033789 ENGINEER MITCHELLE WARD
1/12/12

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

ROADWAY STANDARD DRAWINGS & LEGEND

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PROJ. REFERENCE NO.	SHEET NO.
I-5205A	TMP-1B

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

GENERAL NOTES

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

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

TIME RESTRICTIONS

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

ROAD NAMES	DAY & TIME RESTRICTIONS	
I-440 & US 64 (FOR BRIDGE NOS. 155 & 156) I-440 & ATLANTIC AVE. (FOR STAGE I CONSTRUCTION OF BRIDGE NOS. 282 & 284)	MONDAY-FRIDAY: SATURDAY: SUNDAY:	5:00 AM TO 9:00 PM 9:00 AM TO 10:00 PM 11:00 AM TO 9:00 PM

ROAD NAMES	DAY & TIME RESTRICTIONS	
I-440 & ATLANTIC AVE. (FOR STAGE II CONSTRUCTION OF BRIDGE NOS. 282 & 284 - WHEN TRAFFIC ON I-440 IS REDUCED TO ONE LANE)	MONDAY-FRIDAY: SATURDAY: SUNDAY:	5:00 AM TO 11:00 PM 9:00 AM TO 11:00 PM 11:00 AM TO 11:00 PM

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

ROAD NAMES
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 5 A.M. DECEMBER 31ST TO 9 P.M. JANUARY 2ND. IF NEW YEARS DAY IS ON A FRIDAY, SATURDAY, SUNDAY, OR MONDAY THEN UNTIL 9 P.M. THE FOLLOWING TUESDAY.

3) FOR EASTER, BETWEEN THE HOURS OF 5 A.M. THURSDAY AND 9 P.M. MONDAY.

4) FOR MEMORIAL DAY, BETWEEN THE HOURS OF 5 A.M. FRIDAY AND 9 P.M. TUESDAY

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

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

7) FOR THANKSGIVING DAY, BETWEEN THE HOURS OF 5 A.M. TUESDAY AND 9 P.M. MONDAY.

8) FOR CHRISTMAS, BETWEEN THE HOURS OF 5 A.M. THE FRIDAY BEFORE THE WEEK OF CHRISTMAS DAY AND 9 P.M. THE FOLLOWING TUESDAY AFTER THE WEEK OF CHRISTMAS.

9) FOR THE NC STATE FAIR, BETWEEN THE HOURS OF 5 A.M. THE WEDNESDAY OF THE WEEK OF THE NC STATE FAIR AND 9 P.M. THE FOLLOWING MONDAY AFTER THE WEEK OF THE NC STATE FAIR.

C) DO NOT STOP TRAFFIC AS FOLLOWS:

ROAD NAMES	DAY & TIME RESTRICTIONS		DURATION & OPERATION
I-440 US-64 ATLANTIC AVE	MONDAY-FRIDAY: SATURDAY: SUNDAY:	5:00 AM TO 11:00 PM 9:00 AM TO 11:00 PM 11:00 AM TO 11:00 PM	20 MINUTES JACKING OR HYDRO-DEMOLITION

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

E) DO NOT CLOSE ROADS AS FOLLOWS:

ROAD NAMES	DAY & TIME RESTRICTIONS	
US 64 RAMPS/LOOPS	MONDAY-FRIDAY: SATURDAY: SUNDAY:	5:00 AM TO 9:00 PM 9:00 AM TO 10:00 PM 11:00 AM TO 9:00 PM

LANE AND SHOULDER CLOSURE REQUIREMENTS

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.

G) 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.

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

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

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

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

K) DO NOT INSTALL MORE THAN 1 MILE OF LANE CLOSURES ON I-440, US 64 OR ATLANTIC AVE MEASURED FROM THE BEGINNING OF THE MERGE TAPER TO THE END OF THE LANE CLOSURE.

L) DO NOT INSTALL MORE THAN ONE LANE CLOSURE IN ANY ONE DIRECTION ON I-440, US 64 OR ATLANTIC AVE.

PAVEMENT EDGE DROP OFF REQUIREMENTS

M) BACKFILL AT A 6:1 SLOPE UP TO THE EDGE AND ELEVATION OF EXISTING PAVEMENT IN AREA ADJACENT TO AN OPEN TRAVEL LANE THAT HAS AN EDGE OF PAVEMENT DROP-OFF AS FOLLOWS:

BACKFILL DROP-OFFS THAT EXCEED 2 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS OF 45 MPH OR GREATER.

BACKFILL DROP-OFFS THAT EXCEED 3 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS LESS THAN 45 MPH.

BACKFILL WITH SUITABLE COMPACTED MATERIAL, AS APPROVED BY THE ENGINEER, AT NO EXPENSE TO THE DEPARTMENT.

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

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 033789 ENGINEER MICHELLE WARD
1/12/12

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

GENERAL NOTES

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PROJ. REFERENCE NO.	SHEET NO.
I-5205A	TMP-1C

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

GENERAL NOTES

TRAFFIC PATTERN ALTERATIONS

O) NOTIFY THE EGINEER TWENTY ONE (21) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

SIGNING

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

Q) PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRAFFIC CONTROL PLANS.

PROVIDE SIGNING REQUIRED FOR THE OFF-SITE DETOUR ROUTE AS SHOWN IN THE TRAFFIC CONTROL PLANS.

R) COVER OR REMOVE ALL SIGNS AND DEVICES REQUIRED TO CLOSE THE ROAD WHEN ROAD CLOSURE IS NOT IN OPERATION.

COVER OR REMOVE ALL SIGNS REQUIRED FOR THE OFF-SITE DETOUR WHEN THE DETOUR IS NOT IN OPERATION.

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

TRAFFIC CONTROL DEVICES

T) WHEN LANE CLOSURES ARE IN EFFECT, SPACE CHANNELIZING DEVICES IN WORK AREAS NO GREATER THAN TWICE THE POSTED SPEED LIMIT (MPH), EXCEPT 10 FT. ON-CENTER IN RADII, AND 3 FT. OFF THE EDGE OF AN OPEN TRAVELWAY. REFER TO STANDARD SPECIFICATION FOR ROADS & STRUCTURES SECTIONS 1130 (DRUMS), 1135 (CONES), & 1180 (SKINNY DRUMS) FOR ADDITIONAL REQUIREMENTS.

U) PLACE TYPE III BARRICADES, WITH "ROAD CLOSED" SIGN R11-2 ATTACHED, OF SUFFICIENT LENGTH TO CLOSE THE ENTIRE ROADWAY.

V) PLACE ADDITIONAL SETS OF THREE CHANNELIZING DEVICES PERPENDICULAR TO THE EDGE OF TRAVELWAY ON 500 FT. CENTERS WHEN UNOPENED LANES ARE CLOSED TO TRAFFIC.

PAVEMENT MARKINGS AND MARKERS

W) INSTALL FINAL PAVEMENT MARKINGS AND PAVEMENT MARKERS AS FOLLOWS:

ROAD NAME	MARKING	MARKER
ALL ROADS	POLYUREA COLD APPLIED PLASTIC (FOR SYMBOLS & CHARACTERS)	PERMANENT RAISED

X) INSTALL TEMPORARY PAVEMENT MARKINGS AND TEMPORARY PAVEMENT MARKERS AS FOLLOWS:

ROAD NAME	MARKING	MARKER
ALL ROADS	PAINT	NONE

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

Z) REMOVE/REPLACE ANY CONFLICTING OR DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATIONS, WITH ONE APPLICATION OF PAINT.

MISCELLANEOUS

AA) LAW ENFORCEMENT OFFICERS SHALL BE USED TO MAINTAIN TRAFFIC THROUGH THE WORK AREA AND/OR INTERSECTIONS, AS DIRECTED BY THE ENGINEER.

BB) ENGINEER WILL NOTIFY THE OVERSIZE/OVERWIEGHT PERMIT UNIT AT 919-733-4740 TWO WEEKS PRIOR TO TRAFFIC BEING PLACED IN A ONE-LANE TRAFFIC PATTERN, IF NECESSARY AND WHEN TRAFFIC IS RESTORED TO THE EXISTING PATTERN.

CC) DO NOT ALLOW WATER AND CONCRETE SLURRY FROM HYDRO-DEMOLITION TO DRAIN ACROSS TRAVEL LANES.

DD) COORDINATE WITH CSX RAILROAD PRIOR TO PERFORMING ANY WORK ON BRIDGE NOS. 282 & 284.

EE) MAINTAIN ACCESS TO EMERGENCY SERVICES THROUGH THE WORK ZONE AND ON CLOSED RAMPS AND LOOPS AT ALL TIMES.

FF) RECORD ALL EXISTING MARKINGS ON THE BRIDGE IN ORDER TO REPLACE MARKINGS AT THE END OF THE WORKDAY AND ONCE CONSTRUCTION IS COMPLETE.

GG) COMPLETE PROPOSED CONSTRUCTION IN SUCH A MANNER THAT PONDING OF WATER DOES NOT OCCUR IN THE TRAVEL LANES.

HH) MEET & COORDINATE WITH EMS & LAW ENFORCEMENT AT LEAST 7 DAYS PRIOR TO BEGINNING WORK ON ANY BRIDGE.

II) DO NOT PERFORM WORK ON MORE THAN ONE BRIDGE SIMULTANEOUSLY, UNLESS DIRECTED BY THE ENGINEER.

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 033789 ENGINEER MICHELLE WARD
11/12/12

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

GENERAL NOTES

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PROJ. REFERENCE NO.	SHEET NO.
I-5205A	TMP-2

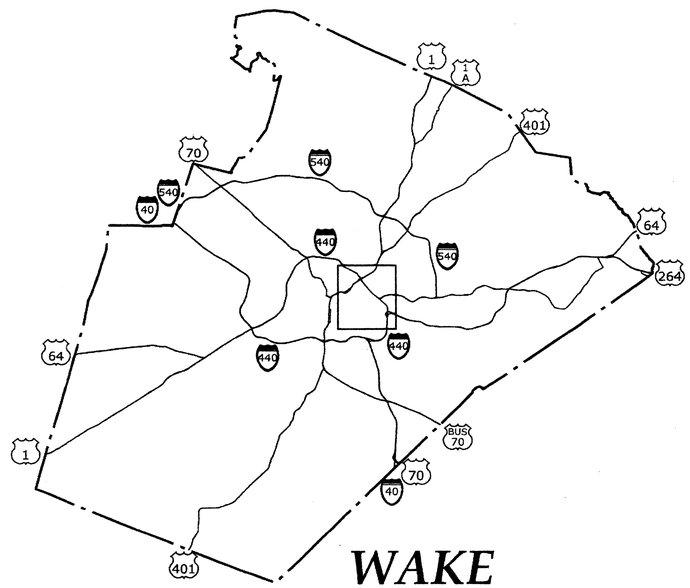
HDR Engineering, Inc. of the Carolinas
3733 National Drive, Suite 207 Raleigh, N.C. 27612
N.C.B.E.L.S. License Number: F-0116

#284 WBL

#282 EBL

#156WBL

#155 EBL



WAKE COUNTY

PROJECT VICINITY MAP

SEAL 033789 ENGINEER MICHELLE WARD 1/12/12

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

PLOT DRIVER: NCDOT_pdf_color_eng_100.plt
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PROJ. REFERENCE NO.	SHEET NO.
I-5205A	TMP-3

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

STAGING

STAGING NOTES - BRIDGE 155

AT THE END OF THE WORK DAY, REMOVE ALL TRAFFIC CONTROL DEVICES & COVER OR REMOVE ALL ADVANCED WARNING SIGNS FOR LANE CLOSURES & RAMP/LOOP CLOSURES, AND RETURN TRAFFIC TO ITS EXISTING PATTERN.

IF NEEDED AND AS DIRECTED BY THE ENGINEER, USE RSD 1101.02, SHEET 4, 6 OR 8 OF 15, LAW ENFORCEMENT, AND/OR RSD 1101.03, SHEET 9 OF 9 TO DIRECT TRAFFIC ON I-440 UNDER BRIDGE #155 WHEN PERFORMING WORK ON THE SUPERSTRUCTURE.

STAGE I

STEP 1: USING LAW ENFORCEMENT, COMPLETE THE FOLLOWING:

A) CLOSE THE LOOP FROM I-440 EAST TO US 64 BUS EAST & PLACE TRAFFIC ON THE OFFSITE DETOUR. (SEE TMP-9),

B) CLOSE LANES & SHIFT TRAFFIC ON EB NEW BERN AVE AS SHOWN ON TMP-4,

C) THEN, COMPLETE ALL BRIDGE WORK ON THE OUTSIDE OF THE BRIDGE.

USING LAW ENFORCEMENT AND THE FOLLOWING, COMPLETE SUBSTRUCTURE REAPAIRS:
LOOP CLOSURES SHOW ON TMP-9 & 11

I-440
RSD 1101.02, SHEET 4, 6 OR 8 OF 15
RSD 1101.03 SHEET 9 OF 9 (SEE GENERAL NOTE C, TMP-1B)

US 64
RSD 1101.03, SHEET 9 OF 9 (SEE GENERAL NOTE C, TMP-1B)

STAGE II

STEP 1: USING LAW ENFORCEMENT, COMPLETE THE FOLLOWING:

A) CLOSE THE RAMP FROM US 64 BUS EAST TO I-440 WEST & PLACE TRAFFIC ON THE OFFSITE DETOUR. (SEE TMP-10),

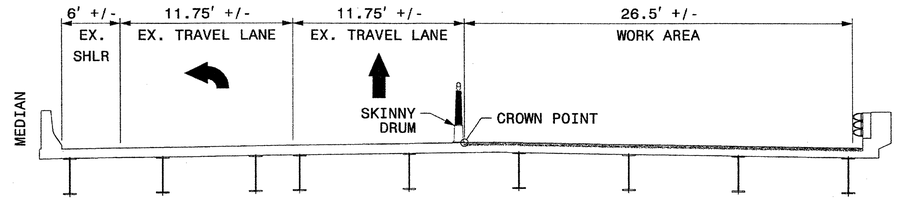
B) CLOSE LANES & PLACE TRAFFIC ON EB NEW BERN AVE AS SHOWN ON TMP-5,

C) THEN, COMPLETE ALL BRIDGE WORK ON THE INSIDE OF THE BRIDGE.

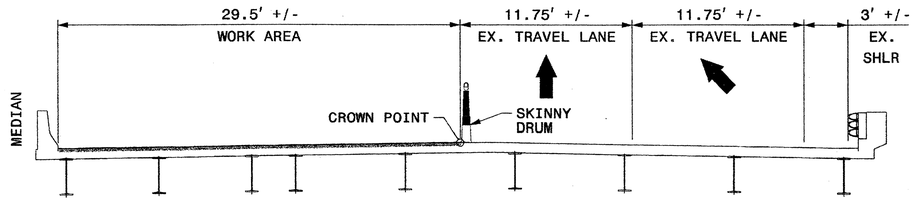
STEP 2: USING LAW ENFORCEMENT AND RSD 1101.02, SHEET 13 OF 15, PLACE FINAL PAVEMENT MARKINGS AND MARKERS, THEN OPEN TRAFFIC TO FINAL PATTERN.

STEP 3: REMOVE ALL REMAINING TRAFFIC CONTROL DEVICES.

TYPICALS



TYPICAL SECTION ACROSS BRDIGE - STAGE I



TYPICAL SECTION ACROSS BRDIGE - STAGE II

SEAL
NORTH CAROLINA PROFESSIONAL 033789 ENGINEER MICHELLE WARD
1/12/12

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

STAGING & TYPICALS BRIDGE 155 (US 64 EBL)

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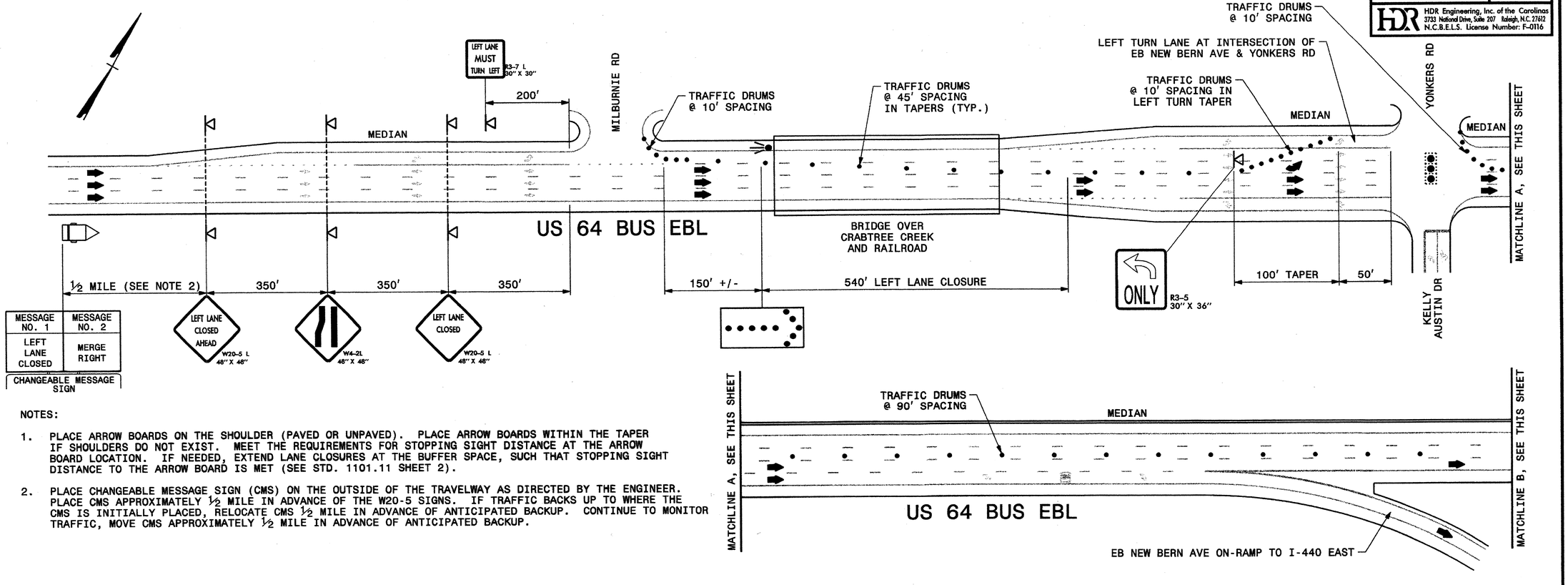
PROJ. REFERENCE NO.	SHEET NO.
I-5205A	TMP-4

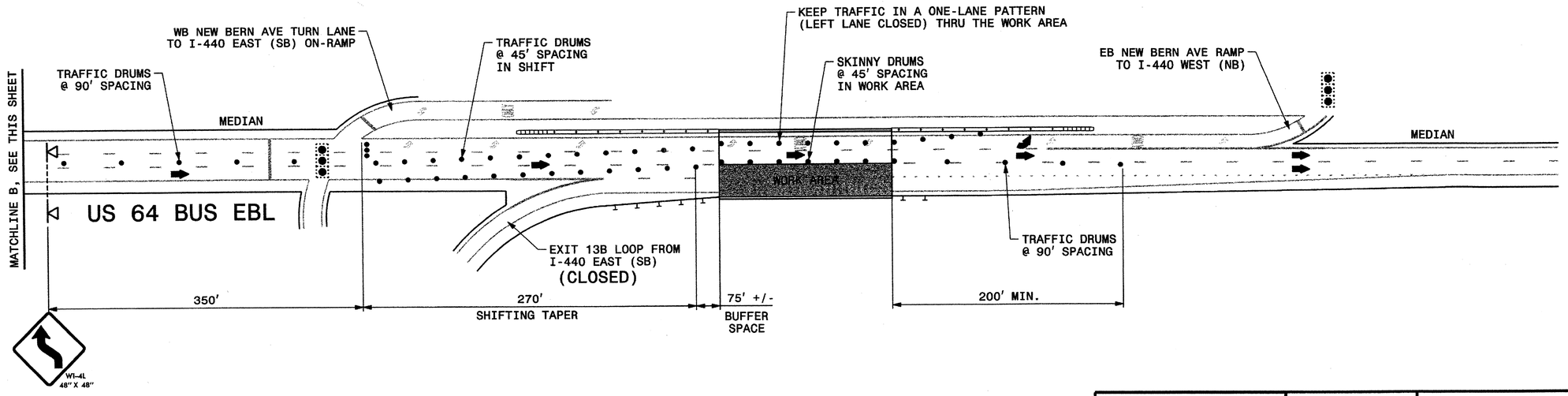
HDR Engineering, Inc. of the Carolinas
3733 National Drive, Suite 207 Raleigh, N.C. 27612
N.C.B.E.L.S. License Number: F-0116



NOTES:

1. PLACE ARROW BOARDS ON THE SHOULDER (PAVED OR UNPAVED). PLACE ARROW BOARDS WITHIN THE TAPER IF SHOULDERS DO NOT EXIST. MEET THE REQUIREMENTS FOR STOPPING SIGHT DISTANCE AT THE ARROW BOARD LOCATION. IF NEEDED, EXTEND LANE CLOSURES AT THE BUFFER SPACE, SUCH THAT STOPPING SIGHT DISTANCE TO THE ARROW BOARD IS MET (SEE STD. 1101.11 SHEET 2).

2. PLACE CHANGEABLE MESSAGE SIGN (CMS) ON THE OUTSIDE OF THE TRAVELWAY AS DIRECTED BY THE ENGINEER. PLACE CMS APPROXIMATELY ½ MILE IN ADVANCE OF THE W20-5 SIGNS. IF TRAFFIC BACKS UP TO WHERE THE CMS IS INITIALLY PLACED, RELOCATE CMS ½ MILE IN ADVANCE OF ANTICIPATED BACKUP. CONTINUE TO MONITOR TRAFFIC, MOVE CMS APPROXIMATELY ½ MILE IN ADVANCE OF ANTICIPATED BACKUP.



NOTES:

SEE TCP-9 FOR DETOUR ROUTING PLAN.

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 033789 ENGINEER MICHELLE WARD 11/12/12

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

BRIDGE 155 (US 64 EBL) STAGE I

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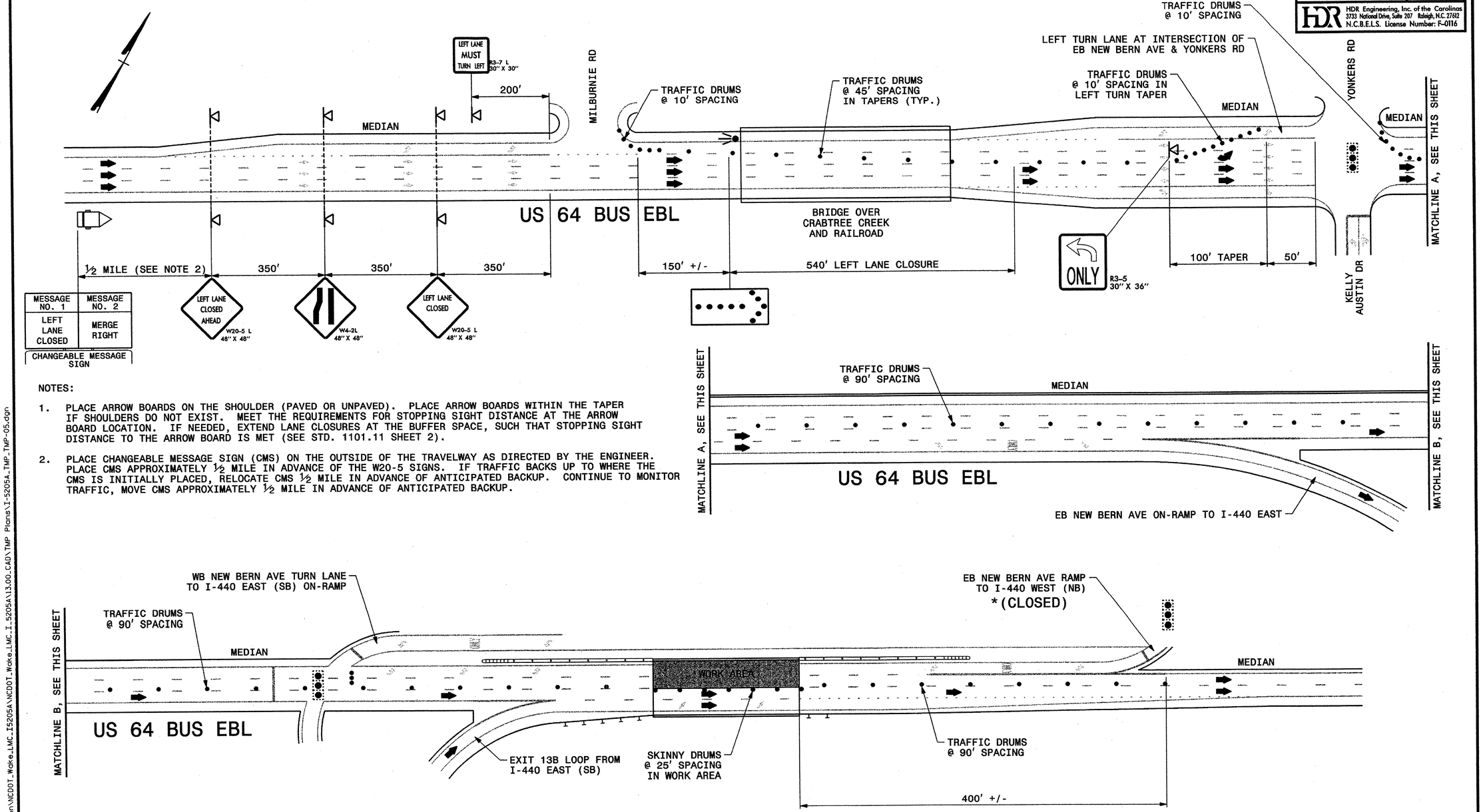
DATE: 1/13/2012

PROJ. REFERENCE NO.	SHEET NO.
I-5205A	TMP-5

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



NOTES:

1. PLACE ARROW BOARDS ON THE SHOULDER (PAVED OR UNPAVED). PLACE ARROW BOARDS WITHIN THE TAPER IF SHOULDERS DO NOT EXIST. MEET THE REQUIREMENTS FOR STOPPING SIGHT DISTANCE AT THE ARROW BOARD LOCATION. IF NEEDED, EXTEND LANE CLOSURES AT THE BUFFER SPACE, SUCH THAT STOPPING SIGHT DISTANCE TO THE ARROW BOARD IS MET (SEE STD. 1101.11 SHEET 2).

2. PLACE CHANGEABLE MESSAGE SIGN (CMS) ON THE OUTSIDE OF THE TRAVELWAY AS DIRECTED BY THE ENGINEER. PLACE CMS APPROXIMATELY ½ MILE IN ADVANCE OF THE W20-5 SIGNS. IF TRAFFIC BACKS UP TO WHERE THE CMS IS INITIALLY PLACED, RELOCATE CMS ½ MILE IN ADVANCE OF ANTICIPATED BACKUP. CONTINUE TO MONITOR TRAFFIC, MOVE CMS APPROXIMATELY ½ MILE IN ADVANCE OF ANTICIPATED BACKUP.

NOTES:

* PROVIDE ACCESS FOR EMS THRU DRUMS

SEE TCP-10 FOR DETOUR ROUTING PLAN.

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 033789 ENGINEER MITCHELLE WARD 1/12/12

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

BRIDGE 155 (US 64 EBL) STAGE II

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TIME: 9:48:23 AM
DATE: 1/13/2012

PROJ. REFERENCE NO.	SHEET NO.
I-5205A	TMP-6

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

STAGING

STAGING NOTES - BRIDGE 156

AT THE END OF THE WORK DAY, REMOVE ALL TRAFFIC CONTROL DEVICES & COVER OR REMOVE ALL ADVANCED WARNING SIGNS FOR LANE CLOSURES & RAMP/LOOP CLOSURES, AND RETURN TRAFFIC TO ITS EXISTING PATTERN.

IF NEEDED AND AS DIRECTED BY THE ENGINEER, USE RSD 1101.02, SHEET 4, 6 OR 8 OF 15, LAW ENFORCEMENT, AND/OR RSD 1101.03, SHEET 9 OF 9 TO DIRECT TRAFFIC ON I-440 UNDER BRIDGE #156 WHEN PERFORMING WORK ON THE SUPERSTRUCTURE.

STAGE I

STEP 1: USING LAW ENFORCEMENT, COMPLETE THE FOLLOWING:

A) CLOSE THE LOOP FROM I-440 WEST (EXIT 13A) TO WB NEW BERN AVE. & PLACE TRAFFIC ON THE OFFSITE DETOUR. (SEE TMP-11),

B) CLOSE LANES AND PLACE TRAFFIC ON US 64 BUS WEST AS SHOWN ON TMP-7,

C) THEN, COMPLETE ALL BRIDGE WORK ON THE OUTSIDE OF THE BRIDGE.

USING LAW ENFORCEMENT AND THE FOLLOWING, COMPLETE SUBSTRUCTURE REPAIRS:
LOOP CLOSURES SHOW ON TMP 9 & 11.

I-440
RSD 1101.02, SHEET 4, 6 OR 8 OF 15
RSD 1101.03, SHEET 9 OF 9 (SEE GENERAL NOTE C, TMP-18)

US 64
RSD 1101.03, SHEET 9 OF 9 (SEE GENERAL NOTE C, TMP-18)

STAGE II

STEP 1: USING LAW ENFORCEMENT, COMPLETE THE FOLLOWING:

A) CLOSE THE RAMP FROM US 64 WB TO I-440 EAST AND PLACE TRAFFIC ON THE OFFSITE DETOUR. (SEE TMP-12),

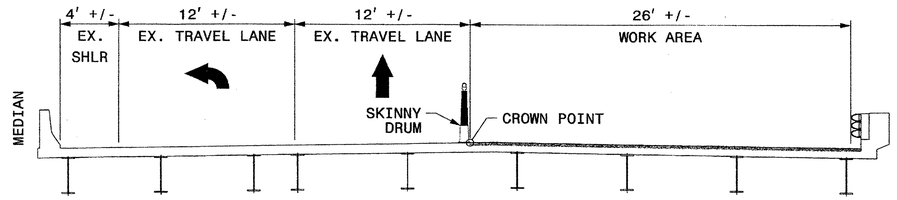
B) CLOSE LANES AND PLACE TRAFFIC ON US 64 BUS WEST AS SHOWN ON TMP-8,

C) THEN, COMPLETE ALL BRIDGE WORK ON THE INSIDE OF THE BRIDGE.

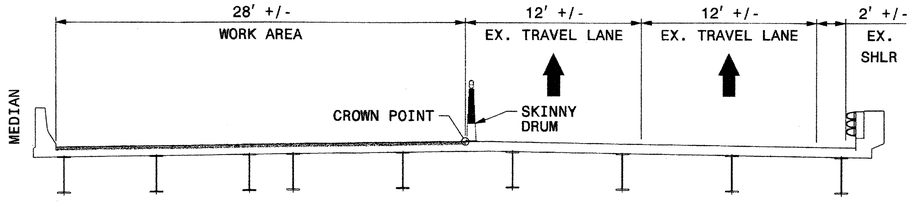
STEP 2: USING LAW ENFORCEMENT AND RSD 1101.02, SHEET 13 OF 15, PLACE FINAL PAVEMENT MARKINGS AND MARKERS, THEN OPEN TRAFFIC TO FINAL PATTERN.

STEP 3: REMOVE ALL REMAINING TRAFFIC CONTROL DEVICES.

TYPICALS



TYPICAL SECTION ACROSS BRDIGE - STAGE I



TYPICAL SECTION ACROSS BRDIGE - STAGE II

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 033789 ENGINEER MICHELLE WARD
11/2/12

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

STAGING & TYPICALS BRIDGE 156 (NEW BERN AVE/ US 64 WBL)

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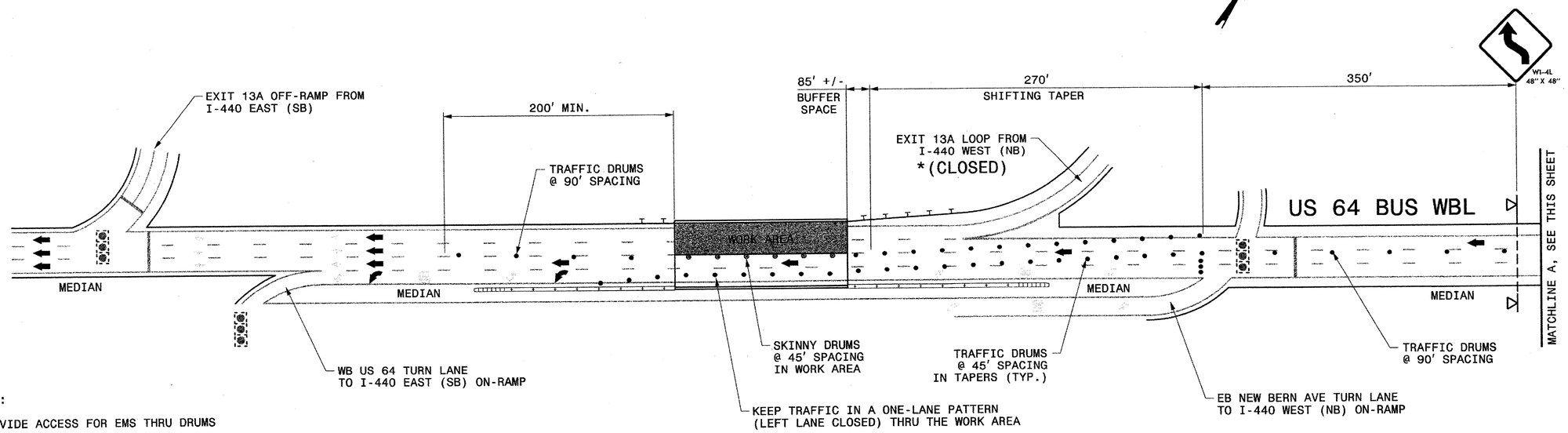
TIME: 5:02:42 PM

PROJ. REFERENCE NO.	SHEET NO.
I-5205A	TMP-7

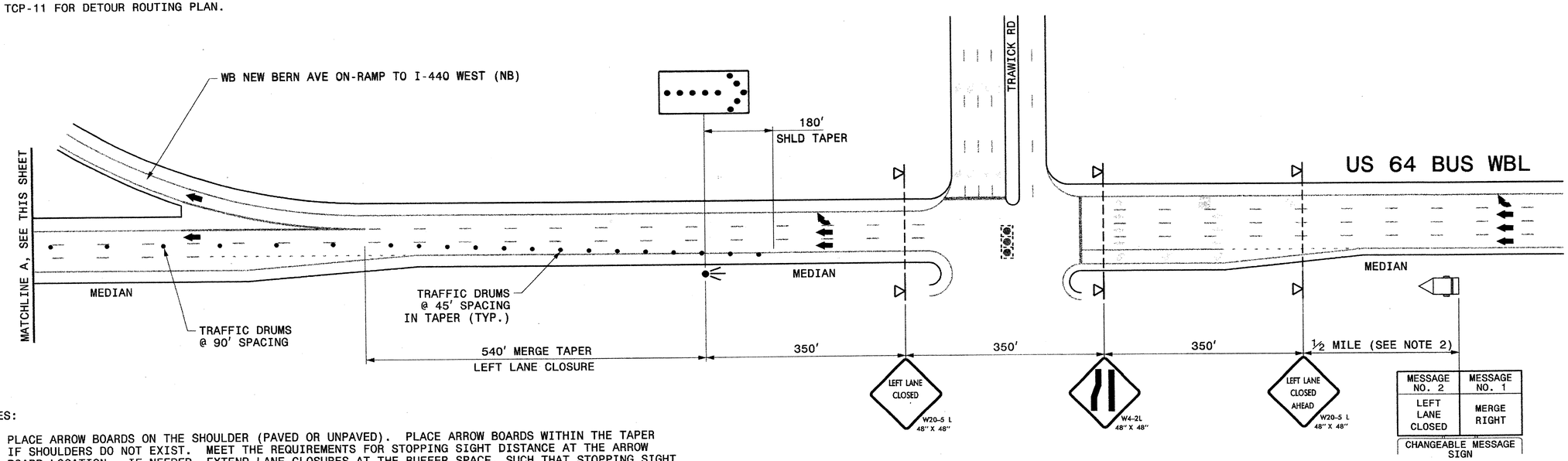
HDR Engineering, Inc. of the Carolinas
3733 National Drive, Suite 207 Raleigh, N.C. 27612
N.C.B.E.L.S. License Number: F-0116



NOTES:

* PROVIDE ACCESS FOR EMS THRU DRUMS

SEE TCP-11 FOR DETOUR ROUTING PLAN.



NOTES:

1. PLACE ARROW BOARDS ON THE SHOULDER (PAVED OR UNPAVED). PLACE ARROW BOARDS WITHIN THE TAPER IF SHOULDERS DO NOT EXIST. MEET THE REQUIREMENTS FOR STOPPING SIGHT DISTANCE AT THE ARROW BOARD LOCATION. IF NEEDED, EXTEND LANE CLOSURES AT THE BUFFER SPACE, SUCH THAT STOPPING SIGHT DISTANCE TO THE ARROW BOARD IS MET (SEE STD. 1101.11 SHEET 2).

2. PLACE CHANGEABLE MESSAGE SIGN (CMS) ON THE OUTSIDE OF THE TRAVELWAY AS DIRECTED BY THE ENGINEER. PLACE CMS APPROXIMATELY ½ MILE IN ADVANCE OF THE W20-5 SIGNS. IF TRAFFIC BACKS UP TO WHERE THE CMS IS INITIALLY PLACED, RELOCATE CMS ½ MILE IN ADVANCE OF ANTICIPATED BACKUP. CONTINUE TO MONITOR TRAFFIC, MOVE CMS APPROXIMATELY ½ MILE IN ADVANCE OF ANTICIPATED BACKUP.

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 033789 ENGINEER MITCHELLE WARD
1/12/12

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

BRIDGE 156 (NEW BERN AVE/ US 64 WBL) STAGE 1

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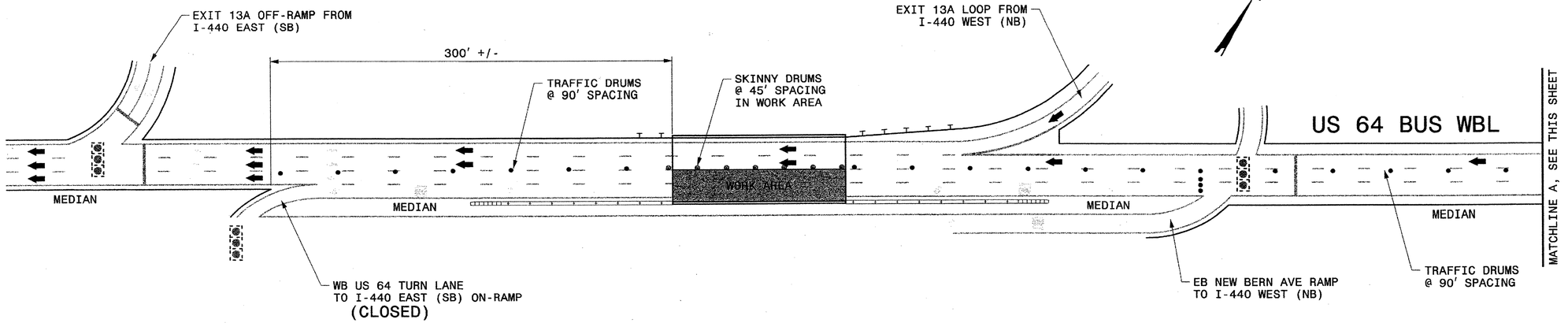
TIME: 3:31:57 PM

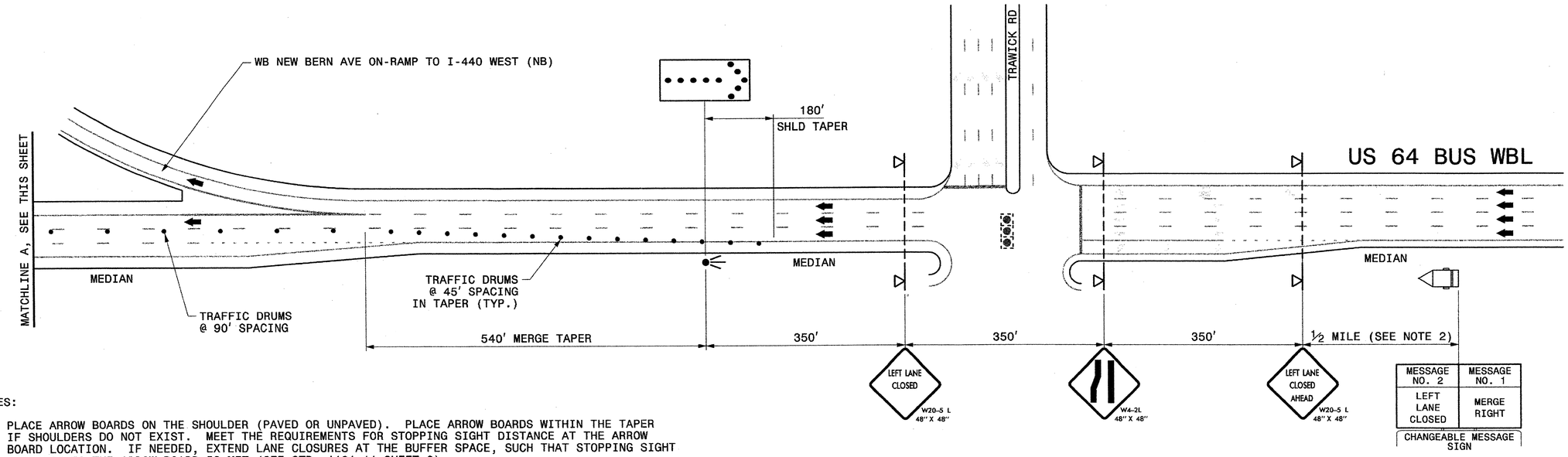
PROJ. REFERENCE NO.	SHEET NO.
I-5205A	TMP-8

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



NOTES:

SEE TCP-12 FOR DETOUR ROUTING PLAN.



NOTES:

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SEAL
NORTH CAROLINA PROFESSIONAL SEAL 033789 ENGINEER MICHELLE WARD
11/21/12

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

BRIDGE 156 (NEW BERN AVE/ US 64 WBL) STAGE II

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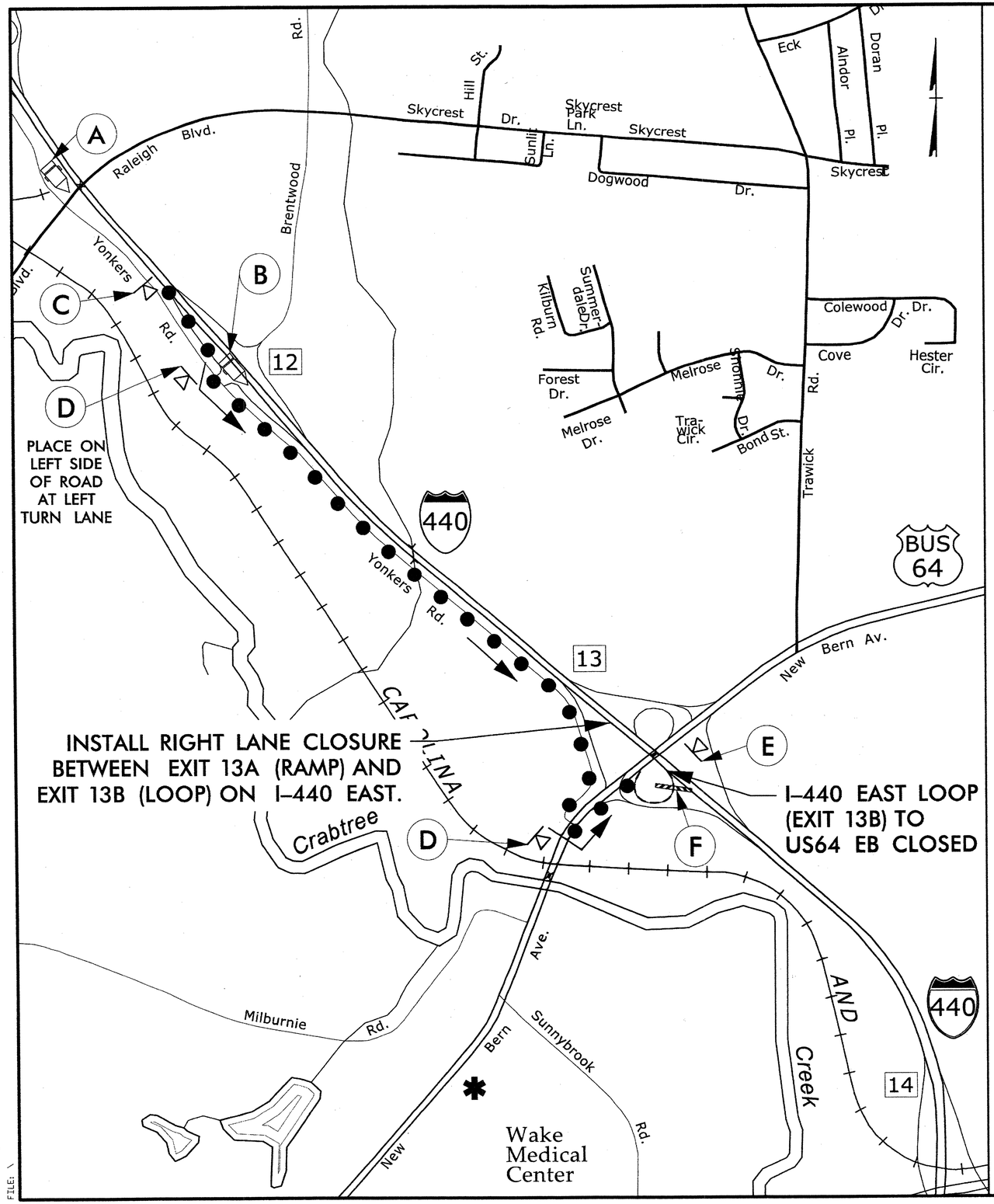
DATE: 1/12/2012

PROJ. REFERENCE NO.	SHEET NO.
I-5205A	TMP-9

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



A

MESSAGE NO. 1	MESSAGE NO. 2
EXIT 13B NIGHTLY CLOSURES	XX/XX TO XX/XX

CHANGEABLE MESSAGE SIGN

INSTALL CMS 1 MILE IN ADVANCE OF EXIT 12 (YONKERS RD). INSTALL CMS ABOVE 7 DAYS PRIOR TO IMPLEMENTING THE DETOUR PATTERN. ONCE TRAFFIC IS PLACED IN THE DETOUR PATTERN, REVISE MESSAGES AS SHOWN BELOW.

MESSAGE NO. 1	MESSAGE NO. 2
US64 BUS EAST CLOSED	DETOUR USE EXIT 12

CHANGEABLE MESSAGE SIGN

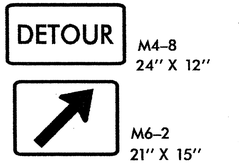
B

MESSAGE NO. 1	MESSAGE NO. 2
EXIT 13B CLOSED AHEAD	MERGE LEFT

CHANGEABLE MESSAGE SIGN

INSTALL CMS ABOVE IN LIEU OF OR NEXT TO THE FIRST ADVANCED WARNING SIGN OF THE RIGHT LANE CLOSURE BETWEEN EXIT 13A & 13B.
(SEE RSD 1101.02 SHEET 4 OF 15).

C



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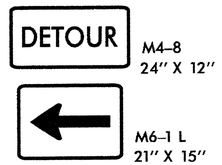


E

F

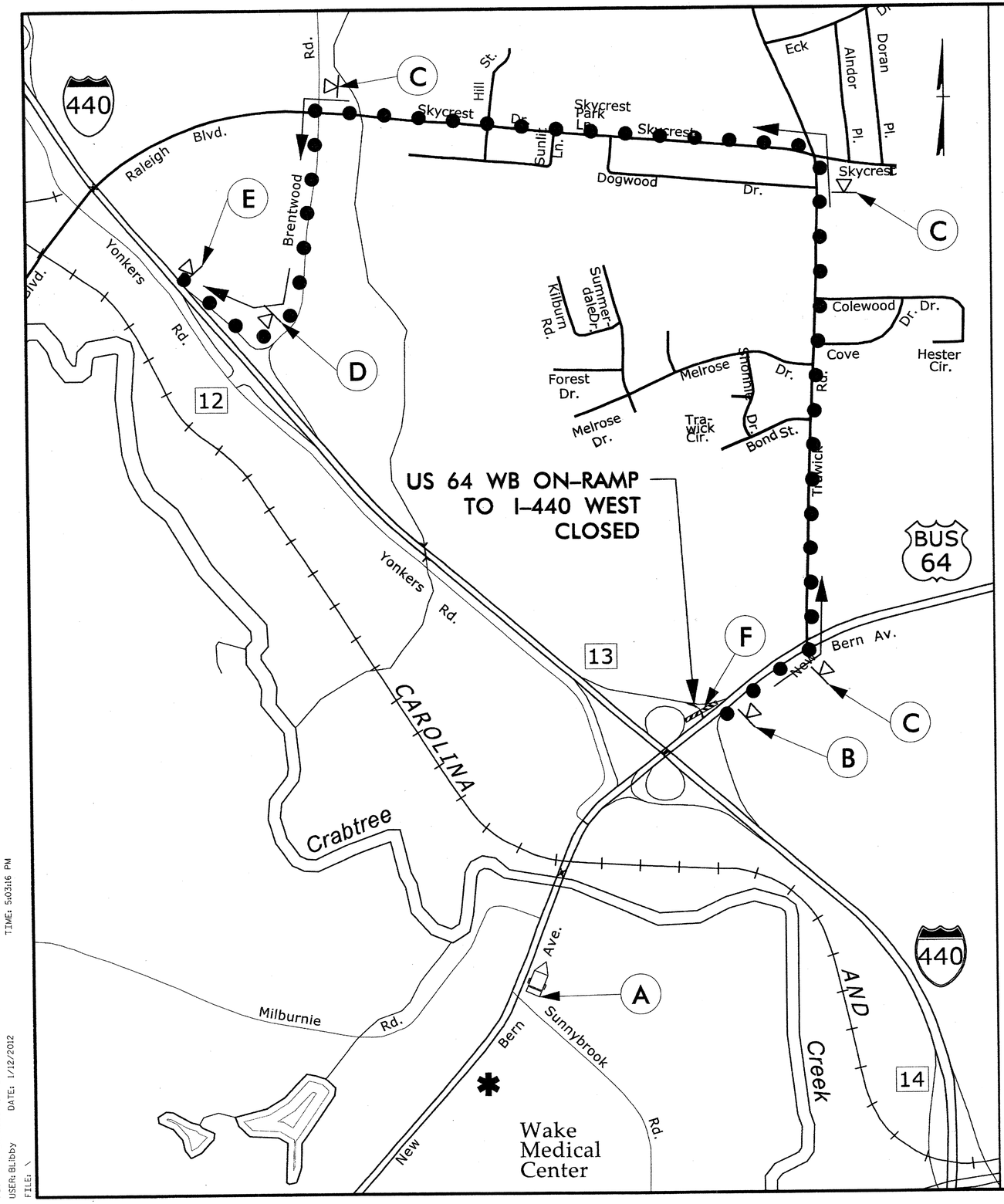
TO BE USED DURING STAGE I CONSTRUCTION ON BRIDGE NO. 155 & SUBSTRUCTURE REPAIR ON BRIDGE NOS. 155 & 156.

SEAL 033789 ENGINEER MICHELLE WARD — 11/8/12

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

DETOUR ROUTE (I-440 EAST TO US64 BUS EB)

PLOT DRIVER: NCDOT.pdf.color_eng.100.plt
USER: BLibby
FILE:
PENTABLE: NCDOT_top.tbl
DATE: 1/12/2012
TIME: 5:03:00 PM



PENTABLE: NCDOT_1cp.tbl
TIME: 5:03:16 PM

PLOT DRIVER: NCDOT.pdf_color_eng_100.plt
USER: BLibby
DATE: 1/12/2012
FILE: \

PROJ. REFERENCE NO.	SHEET NO.
I-5205A	TMP-10

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

A

MESSAGE NO. 1	MESSAGE NO. 2
ACCESS TO 440WB CLOSED	NIGHTLY XX/XX TO XX/XX

CHANGEABLE MESSAGE SIGN

INSTALL CMS 1/2 MILE IN ADVANCE OF LEFT TURN FROM NEW BERN AVE ONTO I-440 WEST. INSTALL CMS ABOVE 7 DAYS PRIOR TO IMPLEMENTING THE DETOUR PATTERN. ONCE TRAFFIC IS PLACED IN THE DETOUR PATTERN, REVISE MESSAGES AS SHOWN BELOW.

MESSAGE NO. 1	MESSAGE NO. 2
ACCESS TO 440WB CLOSED	FOLLOW DETOUR ROUTE

CHANGEABLE MESSAGE SIGN

B

DETOUR M4-8 24" X 12"

M6-3 21" X 15"

C

DETOUR M4-8 24" X 12"

M6-1 L 21" X 15"

D

DETOUR M4-8 24" X 12"

M6-1 21" X 15"

E

END DETOUR M4-8 A 24" X 18"

F

R11-2 48" x 30"
ROAD CLOSED
DETOUR
M4-10R 48" x 18"

TYPE III BARRICADE

TO BE USED DURING STAGE II CONSTRUCTION ON BRIDGE NO. 155.

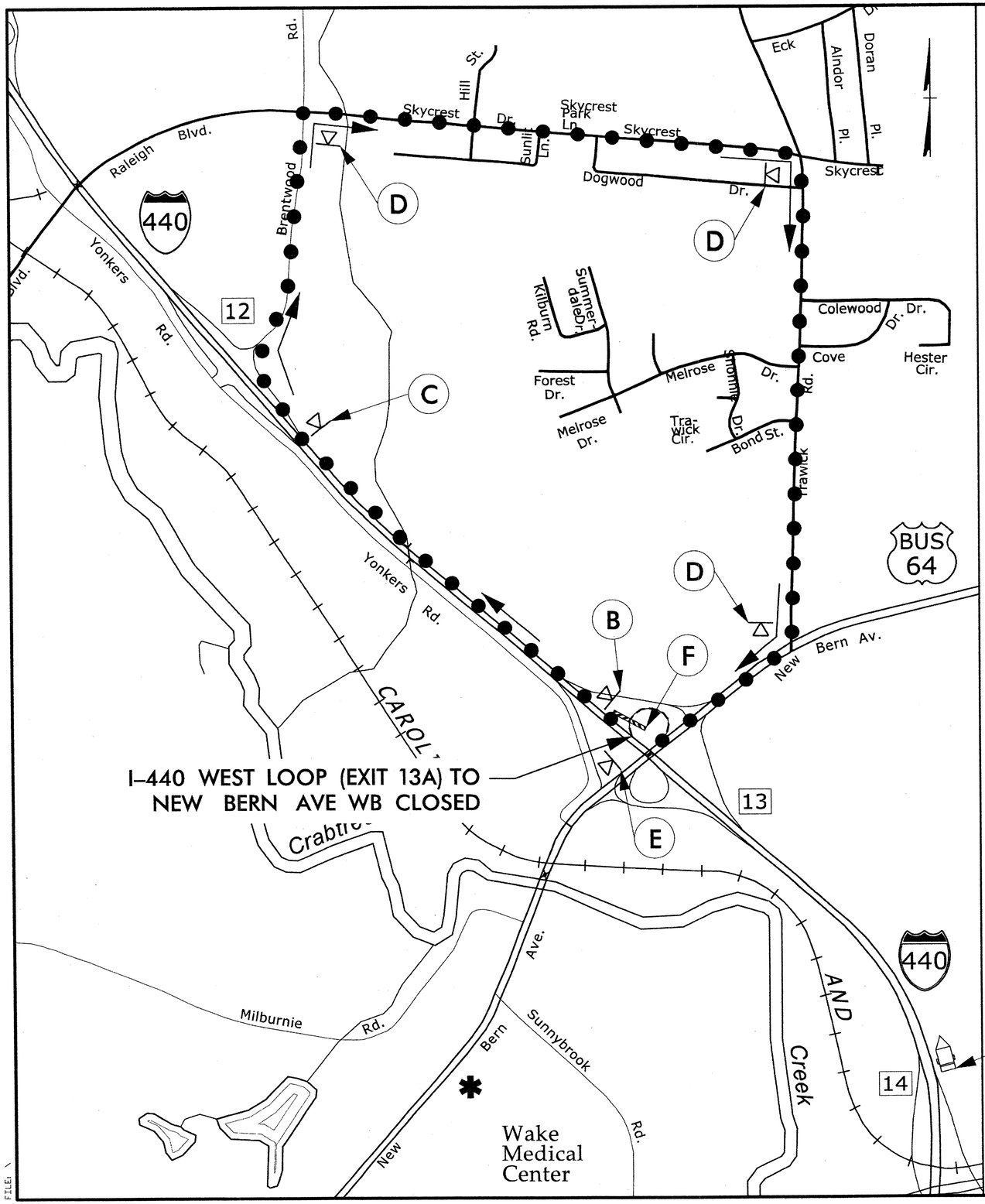
SEAL 033789 ENGINEER MICHELLE WARD 1/12/12

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

DETOUR ROUTE (US 64 EB TO I-440 WEST)

PROJ. REFERENCE NO.	SHEET NO.
I-5205A	TMP-11

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



A

MESSAGE NO. 1	MESSAGE NO. 2
EXIT 13A NIGHTLY CLOSURES	XX/XX TO XX/XX

CHANGEABLE MESSAGE SIGN

INSTALL CMS 1 MILE IN ADVANCE OF EXIT 13A (NEW BERN AVE WB). INSTALL CMS ABOVE 7 DAYS PRIOR TO IMPLEMENTING THE DETOUR PATTERN. ONCE TRAFFIC IS PLACED IN THE DETOUR PATTERN, REVISE MESSAGES AS SHOWN BELOW.

MESSAGE NO. 1	MESSAGE NO. 2
NEW BERN AVE EXIT CLOSED	FOLLOW DETOUR ROUTE

CHANGEABLE MESSAGE SIGN

B

DETOUR — M4-8, 24" X 12"

M6-3, 21" X 15"

C

DETOUR — M4-8, 24" X 12"

M6-2, 21" X 15"

D

DETOUR — M4-8, 24" X 12"

M6-1, 21" X 15"

E

END DETOUR — M4-8 A, 24" X 18"

F

R11-2, 48" x 30"

ROAD CLOSED

DETOUR — M4-10L, 48" x 18"

TYPE III BARRICADE

A

TO BE USED DURING STAGE I CONSTRUCTION ON BRIDGE NO. 156 AND SUBSTRUCTURE REPAIR ON BRIDGE NOS. 155 & 156.

SEAL — NORTH CAROLINA PROFESSIONAL 033789 ENGINEER MICHELLE WARD — 1/12/12

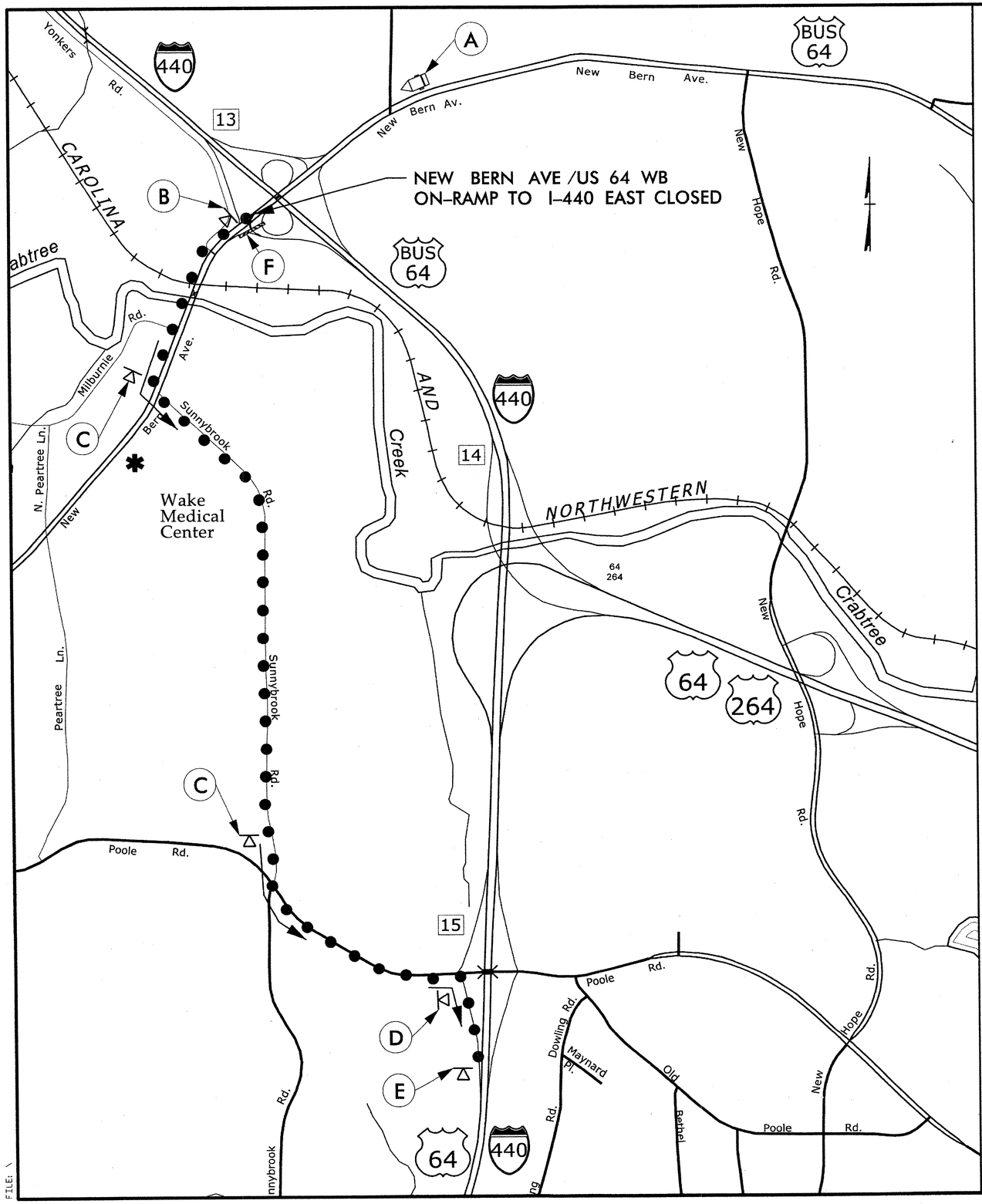
DIVISION OF HIGHWAYS — STATE OF NORTH CAROLINA — DEPARTMENT OF TRANSPORTATION — WORK ZONE TRAFFIC CONTROL

DETOUR ROUTE (I-440 WEST TO NEW BERN AVE WB)

PLOT DRIVER: NCDOT.pdf color_eng_100.plt
USER: BLibby
FILE: \
PENTABLE: NCDOT_tsp.tbl
TIME: 5:03:33 PM
DATE: 1/12/2012

PROJ. REFERENCE NO.	SHEET NO.
I-5205A	TMP-12

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



A

MESSAGE NO. 1	MESSAGE NO. 2
ACCESS TO 440EB CLOSED	NIGHTLY XX/XX TO XX/XX

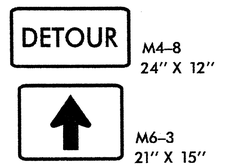
CHANGEABLE MESSAGE SIGN

INSTALL CMS 1/2 MILE IN ADVANCE OF LEFT TURN FROM US 64 BUS WB ONTO I-440 EAST. INSTALL CMS ABOVE 7 DAYS PRIOR TO IMPLEMENTING THE DETOUR PATTERN. ONCE TRAFFIC IS PLACED IN THE DETOUR PATTERN, REVISE MESSAGES AS SHOWN BELOW.

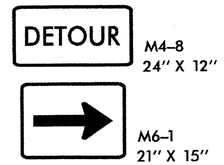
MESSAGE NO. 1	MESSAGE NO. 2
ACCESS TO 440EB CLOSED	FOLLOW DETOUR ROUTE

CHANGEABLE MESSAGE SIGN

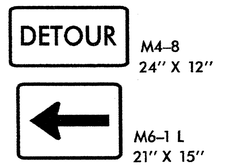
B



D

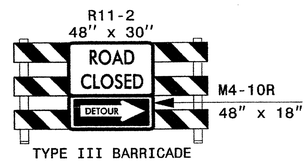


C



E

F



TYPE III BARRICADE

TO BE USED DURING STAGE II CONSTRUCTION ON BRIDGE NO. 156.

SEAL 033789 ENGINEER MICHELLE WARD 1/12/12

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

DETOUR ROUTE (NEW BERN AVE/ US 64 WB TO I-440 EAST)

PLOT DRIVER: NCDOT_pdf_color_eng_100.pltPENTABLE: NCDOT_tcp.tbl
USER: BLibby DATE: 1/12/2012 TIME: 5:03:49 PM
FILE: \

PROJ. REFERENCE NO.	SHEET NO.
I-5205A	TMP-13

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

STAGING

STAGING NOTES - BRIDGE 282

AT THE END OF THE WORK DAY, REMOVE ALL TRAFFIC CONTROL DEVICES & COVER OR REMOVE ALL ADVANCED WARNING SIGNS FOR LANE CLOSURES, AND RETURN TRAFFIC TO ITS EXISTING PATTERN.

IF NEEDED AND AS DIRECTED BY THE ENGINEER, USE RSD 1101.02, SHEET 3 OR 5 OF 15, LAW ENFORCEMENT, AND/OR RSD 1101.03, SHEET 9 OF 9 TO DIRECT TRAFFIC ON ATLANTIC AVE UNDER BRIDGE #282 WHEN PERFORMING WORK ON THE SUPERSTRUCTURE.

STAGE I

STEP 1: USING LAW ENFORCEMENT, SHEET TMP-14, AND RSD 1101.02, SHEET 4 OF 15, PLACE TRAFFIC IN THE PATTERN SHOWN ON TMP-14, THEN COMPLETE ALL BRIDGE WORK ON THE OUTSIDE OF THE BRIDGE.

STAGE II

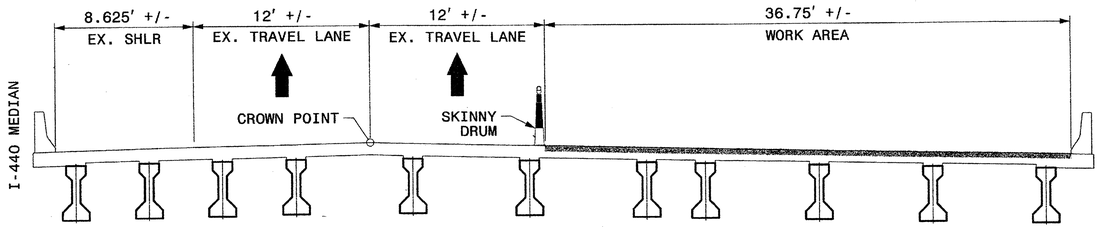
STEP 1: USING LAW ENFORCEMENT, SHEET TMP-15, AND RSD 1101.02, SHEET 8 OF 15, PLACE TRAFFIC IN THE PATTERN SHOWN ON TMP-15, THEN COMPLETE ALL BRIDGE WORK ON THE INSIDE OF THE BRIDGE.

NOTE: CONTRACTOR MAY USE RSD 1101.02, SHEET 4 OF 15 TO CLOSE ONLY ONE LANE WHEN PERFORMING WORK ON PAVED SHOULDERS & LANE 1 & USE RSD 1101.02, SHEET 8 OF 15 WHEN WORKING ON LANE 2.

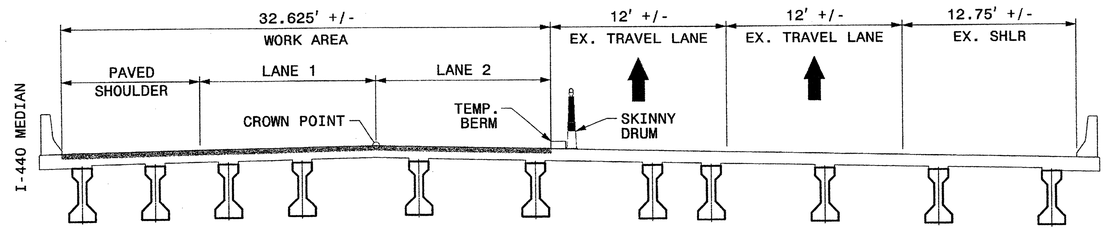
STEP 2: USING LAW ENFORCEMENT AND RSD 1101.02, SHEET 13 OF 15, PLACE FINAL PAVEMENT MARKINGS AND MARKERS, THEN OPEN TRAFFIC TO FINAL PATTERN.

STEP 3: REMOVE ALL REMAINING TRAFFIC CONTROL DEVICES.

TYPICALS



TYPICAL SECTION ACROSS BRDIGE - STAGE I



TYPICAL SECTION ACROSS BRDIGE - STAGE II

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 033789 ENGINEER MICHELLE WARD
1/12/12

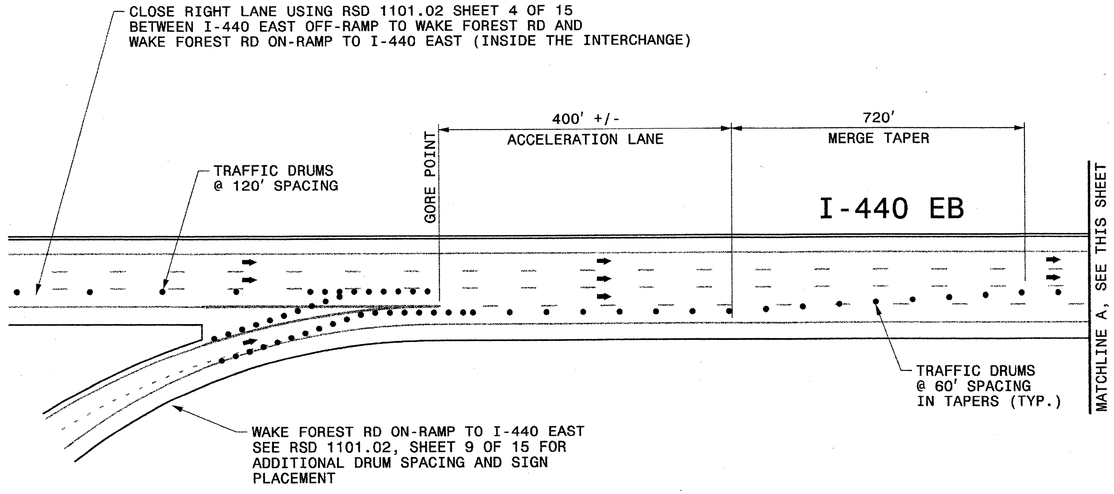
DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION WORK ZONE TRAFFIC CONTROL

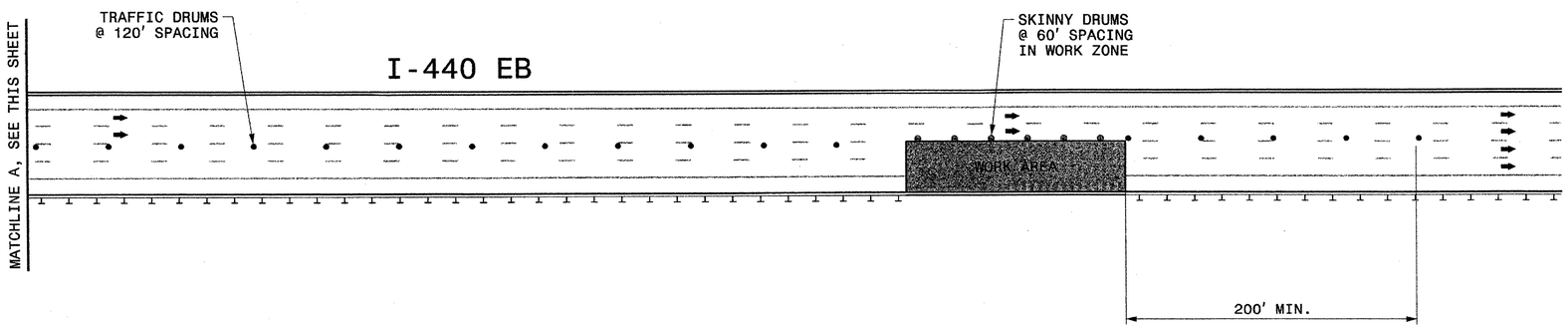
STAGING & TYPICALS BRIDGE 282 (I-440 EB)

PLOT DRIVER: NCDOT_pdf_color_eng.100.plt
USER: BLibby
DATE: 1/12/2012
FILE: \
PENTABLE: NCDOT_tcp.tbl
TIME: 3:34:00 PM

PROJ. REFERENCE NO.	SHEET NO.
I-5205A	TMP-14

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





SEAL
NORTH CAROLINA PROFESSIONAL SEAL 033789 ENGINEER MICHELLE WARD
1/12/12

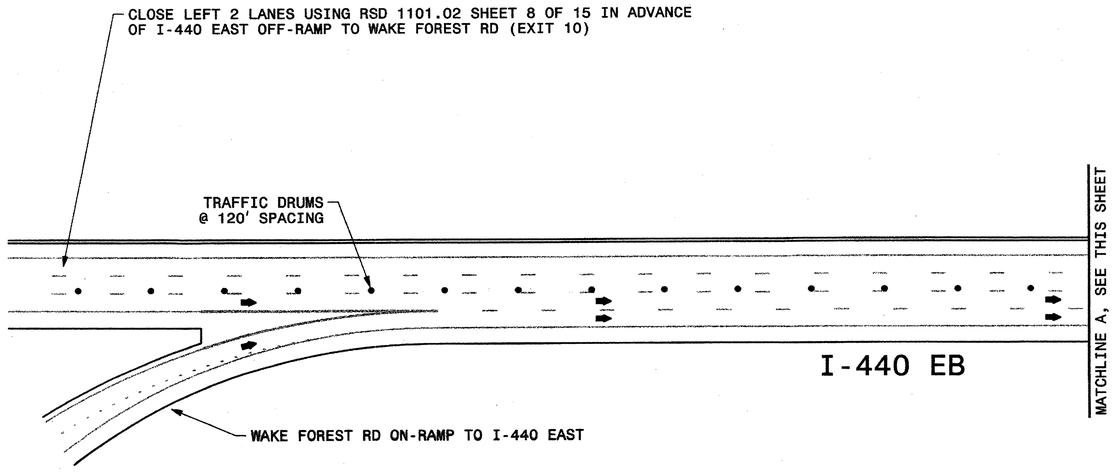
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
WORK ZONE TRAFFIC CONTROL

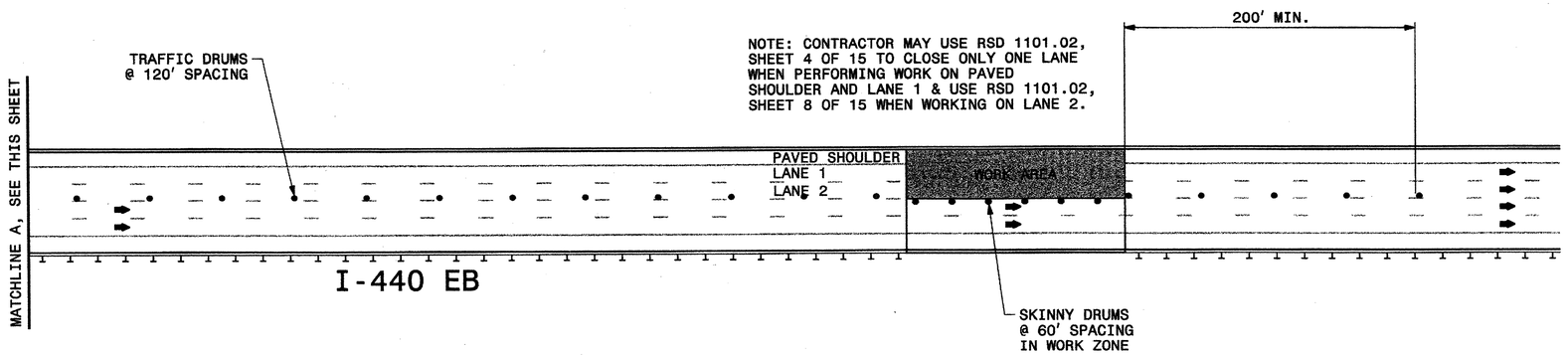
BRIDGE 282
(I–440 EB)
STAGE 1

PLOT DRIVER: NCDOT.pdf_color_enq_100.plt
USER: BLibby
FILE:
PENTABLE: NCDOT_Top.tbl
TIME: 5:04:09 PM
DATE: 1/12/2012

PROJ. REFERENCE NO.	SHEET NO.
I-5205A	TMP-15

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





SEAL 033789 NORTH CAROLINA PROFESSIONAL SEAL ENGINEER MITCHELLE WARD 1/12/12

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

BRIDGE 282 (I-440 EB) STAGE II

PLOT DRIVER: NCDOT_pdf_color_eng_50.plt PENTABLE: NCDOT_top.tbl
USER: charnden DATE: 1/13/2012 TIME: 9:48:40 AM
FILE: North Carolina_Dept_of_Transportation\NCDOT_Wake_LMC_I5205A\NCDOT_Wake_LMC_I_5205A\13.00_CAD\TMP Plans\I-5205A_TMP_TMP-15.dgn

PROJ. REFERENCE NO.	SHEET NO.
I-5205A	TMP-16

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

STAGING

STAGING NOTES - BRIDGE 284

AT THE END OF THE WORK DAY, REMOVE ALL TRAFFIC CONTROL DEVICES & COVER OR REMOVE ALL ADVANCED WARNING SIGNS FOR LANE CLOSURES, AND RETURN TRAFFIC TO ITS EXISTING PATTERN.

IF NEEDED AND AS DIRECTED BY THE ENGINEER, USE RSD 1101.02, SHEET 3 OR 5 OF 15, LAW ENFORCEMENT, AND/OR RSD 1101.03, SHEET 9 OF 9 TO DIRECT TRAFFIC ON ATLANTIC AVE UNDER BRIDGE #284 WHEN PERFORMING WORK ON THE SUPERSTRUCTURE.

STAGE I

STEP 1: USING LAW ENFORCEMENT, SHEET TMP-17, AND RSD 1101.02, SHEET 4 OF 15, PLACE TRAFFIC IN THE PATTERN SHOWN ON TMP-17, THEN COMPLETE ALL BRIDGE WORK ON THE OUTSIDE OF THE BRIDGE.

STAGE II

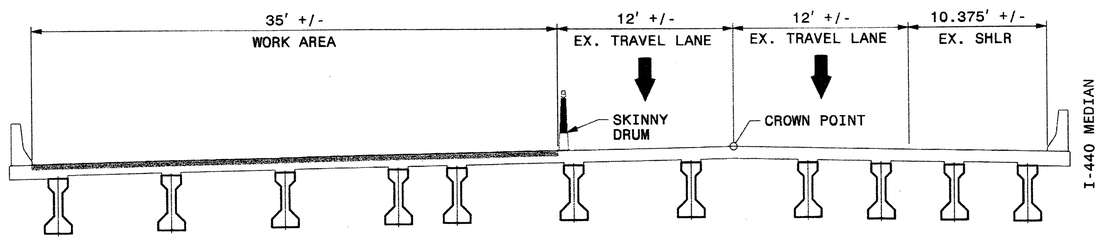
STEP 1: USING LAW ENFORCEMENT, SHEET TMP-18, AND RSD 1101.02, SHEET 8 OF 15, PLACE TRAFFIC IN THE PATTERN SHOWN ON TMP-18, THEN COMPLETE ALL BRIDGE WORK ON THE INSIDE OF THE BRIDGE.

NOTE: CONTRACTOR MAY USE RSD 1101.02, SHEET 4 OF 15 TO CLOSE ONLY ONE LANE WHEN PERFORMING WORK ON PAVED SHOULDER AND LANE 1 AND USE RSD 1101.02, SHEET 8 OF 15 WHEN WORKING ON LANE 2.

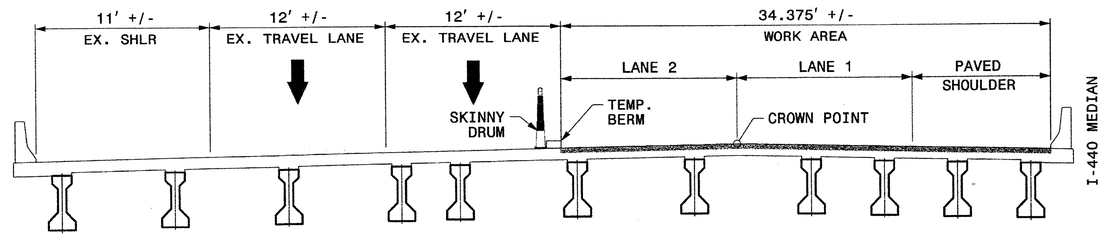
STEP 2: USING LAW ENFORCEMENT AND RSD 1101.02, SHEET 13 OF 15, PLACE FINAL PAVEMENT MARKINGS AND MARKERS, THEN OPEN TRAFFIC TO FINAL PATTERN.

STEP 3: REMOVE ALL REMAINING TRAFFIC CONTROL DEVICES.

TYPICALS



TYPICAL SECTION ACROSS BRDIGE - STAGE I



TYPICAL SECTION ACROSS BRDIGE - STAGE II

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 033789 ENGINEER MICHELLE WARD
1/12/12

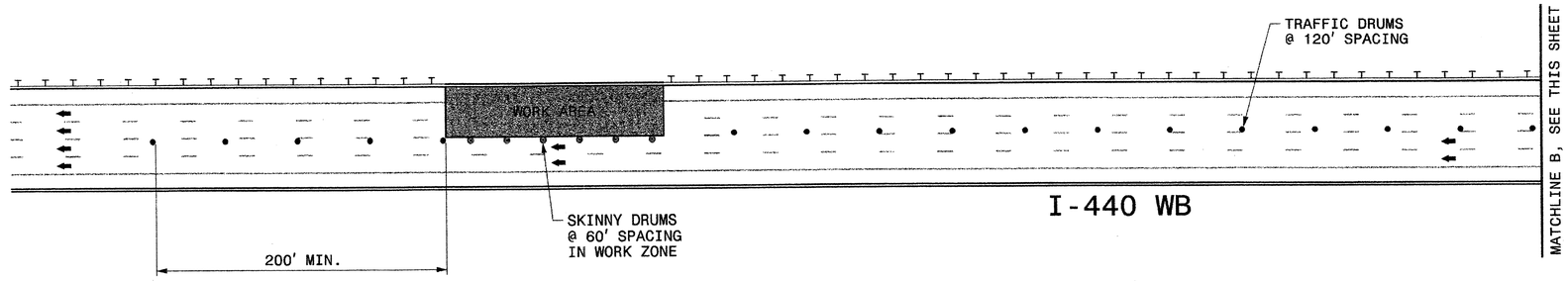
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
WORK ZONE TRAFFIC CONTROL

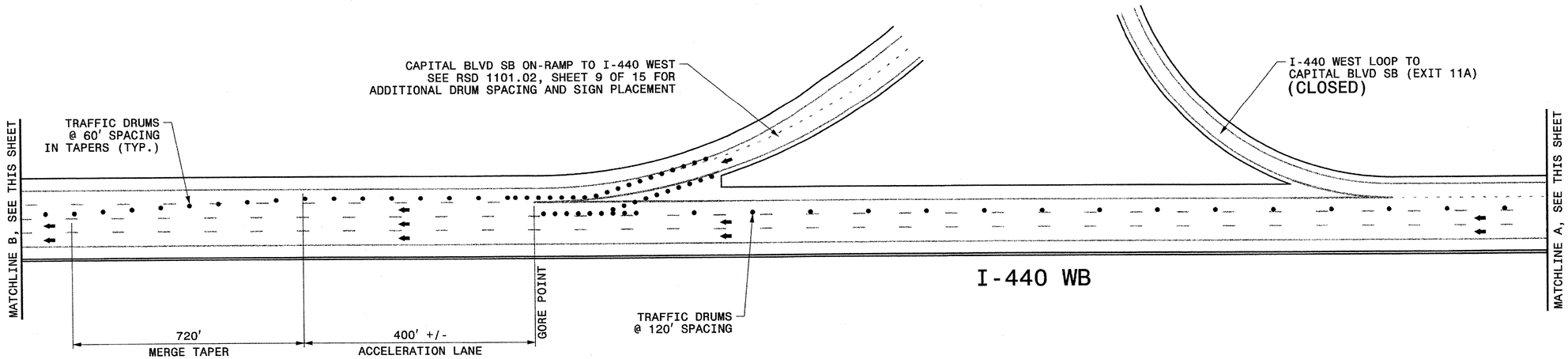
STAGING & TYPICALS BRIDGE 284 (I-440 WB)

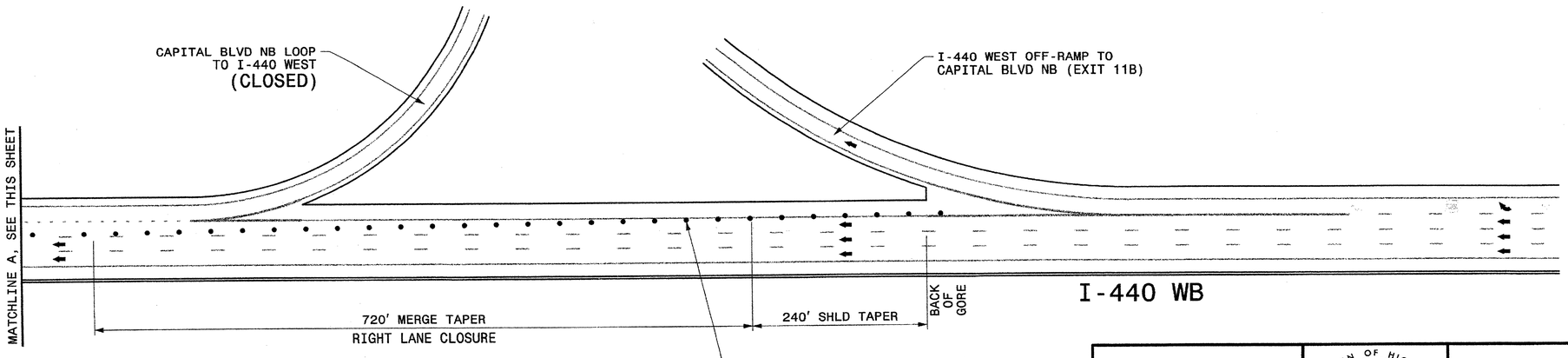
PLOT DRIVER: NCDOT_pdf_color_eng_100.plt
USER: Bibby DATE: 1/12/2012
FILE: \
PENTABLE: NCDOT_top.tbl
TIME: 3:35:12 PM

PROJ. REFERENCE NO.	SHEET NO.
I-5205A	TMP-17

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







NOTES:

SEE TCP-19 FOR DETOUR ROUTING PLAN.

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 033789 ENGINEER MITCHELLE WARD
4/12/12

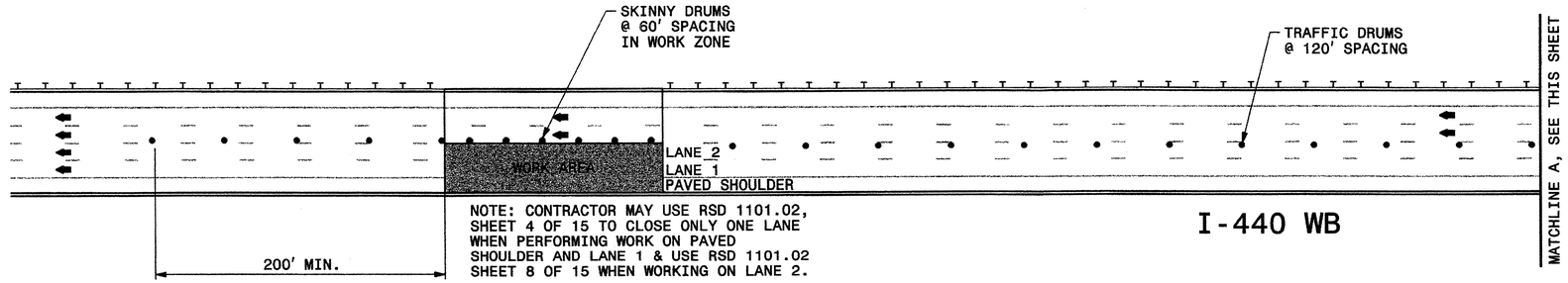
DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

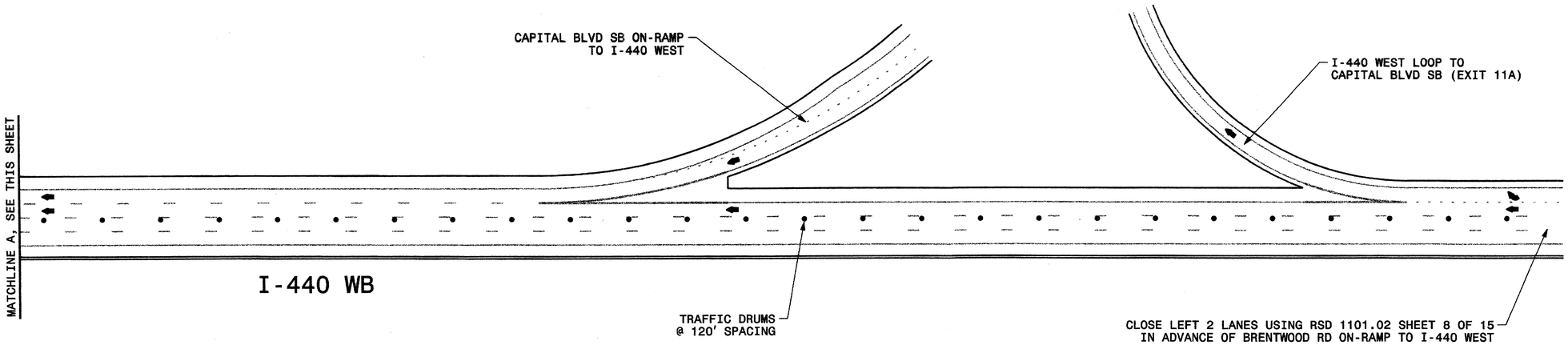
BRIDGE 284 (I-440 WB) STAGE 1

PLOT DRIVER: NCDOT_pdf_color_eng.tbl
USER: BLibby
FILE: \
PENTABLE: NCDOT_tcp.tbl
DATE: 1/12/2012
TIME: 3:35:33 PM

PROJ. REFERENCE NO.	SHEET NO.
I-5205A	TMP-18

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



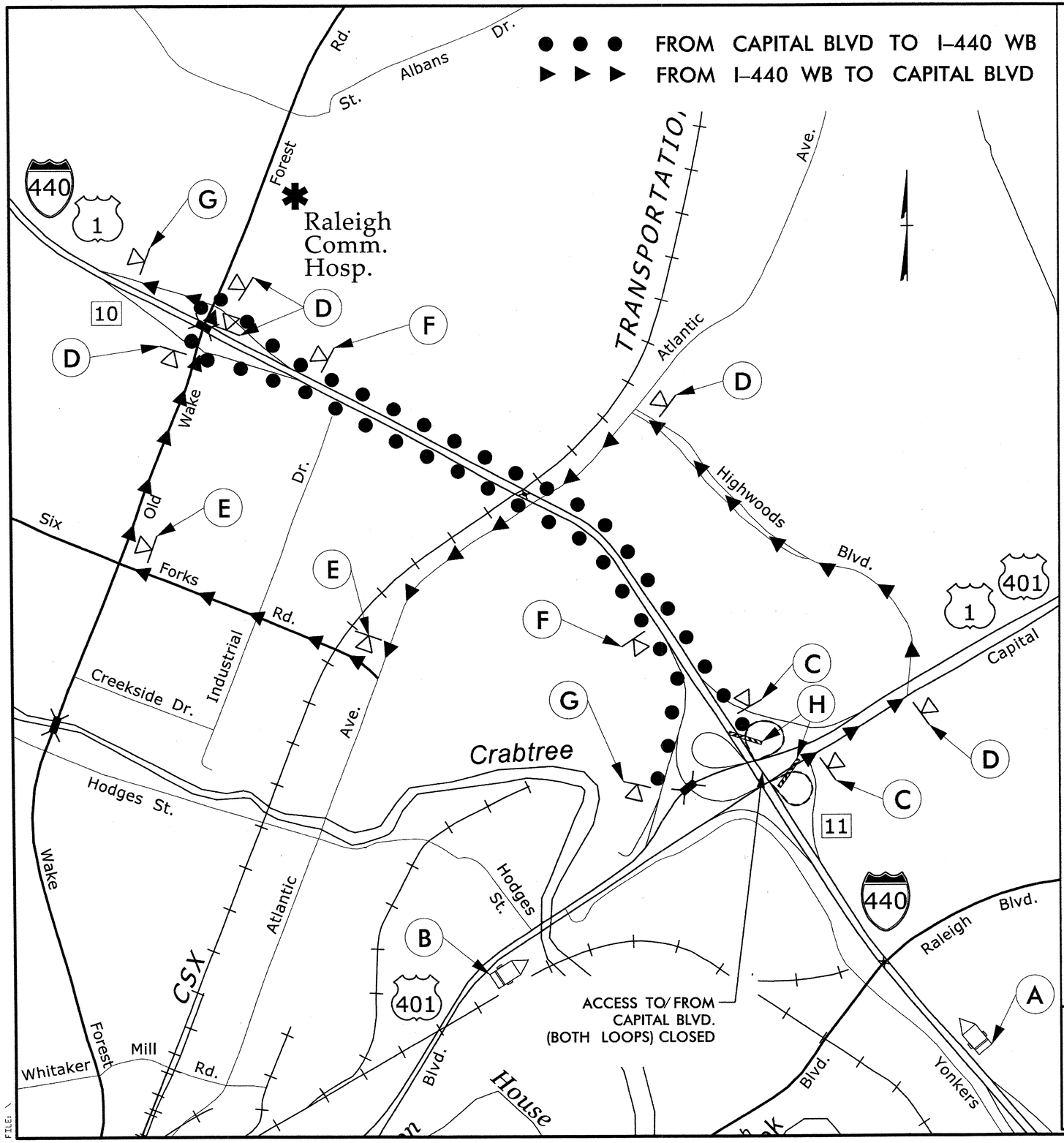


SEAL
NORTH CAROLINA PROFESSIONAL SEAL 033789 ENGINEER MICHELLE WARD
1/12/12

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

BRIDGE 284
(I–440 WB)
STAGE II

PLOT DRIVER: NCDOT_pdf_color_eng_50.plt
USER: charnden
FILE: North Carolina Dept of Transportation\NCDOT_Wake_LMC_I5205A\NCDOT_Wake_LMC_I_5205A\13.00_CAD\TMP Plans\I-5205A_TMP_TMP-18.dgn
PENTABLE: NCDOT_hcp.tbl
TIME: 9:48:57 AM
DATE: 1/13/2012



PROJ. REFERENCE NO.	SHEET NO.
I-5205A	TMP-19

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

A

MESSAGE NO. 1	MESSAGE NO. 2
EXIT 11A NIGHTLY CLOSURES	XX/XX TO XX/XX

CHANGEABLE MESSAGE SIGN

INSTALL CMS 1 MILE IN ADVANCE OF EXIT 11A (CAPITAL BLVD). INSTALL CMS ABOVE 7 DAYS PRIOR TO IMPLEMENTING THE DETOUR PATTERN. ONCE TRAFFIC IS PLACED IN THE DETOUR PATTERN, REVISE MESSAGES AS SHOWN BELOW.

D

MESSAGE NO. 1	MESSAGE NO. 2
US401 SB EXIT 11A CLOSED	FOLLOW DETOUR ROUTE

CHANGEABLE MESSAGE SIGN

B

MESSAGE NO. 1	MESSAGE NO. 2
ACCESS TO 440WB CLOSED	NIGHTLY XX/XX TO XX/XX

CHANGEABLE MESSAGE SIGN

INSTALL CMS 1/2 MILE IN ADVANCE OF LOOP TO I-440 WEST. INSTALL CMS ABOVE 7 DAYS PRIOR TO IMPLEMENTING THE DETOUR PATTERN. ONCE TRAFFIC IS PLACED IN THE DETOUR PATTERN, REVISE MESSAGES AS SHOWN BELOW.

G

MESSAGE NO. 1	MESSAGE NO. 2
ACCESS TO 440WB CLOSED	FOLLOW DETOUR ROUTE

CHANGEABLE MESSAGE SIGN

C

DETOUR — M4-8, 24" X 12"

M6-3, 21" X 15"

D

DETOUR — M4-8, 24" X 12"

M6-1 L, 21" X 15"

E

DETOUR — M4-8, 24" X 12"

M6-1, 21" X 15"

F

DETOUR — M4-8, 24" X 12"

M6-2, 21" X 15"

G

END DETOUR — M4-8 A, 24" X 18"

H

R11-2, 48" x 30"
ROAD CLOSED
DETOUR
M4-10L, 48" x 18"
TYPE III BARRICADE

TO BE USED DURING STAGE I CONSTRUCTION ON BRIDGE NO. 284.

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 033789 ENGINEER MICHELLE WARD
11/2/12

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

DETOUR ROUTES FOR CAPITAL BLVD/ I-440 WB LOOPS BRIDGE 284 – STAGE I

PLOT DRIVER: NCDOT_pdf_color_eng_100.plt
USER: BLibby
FILE:
PENTABLE: NCDOT_Tcp.tbl
TIME: 5:04:26 PM
DATE: 1/12/2012

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2006 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

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

CONCRETE:

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

CONCRETE CHAMFERS:

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

DOWELS:

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

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

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

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

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

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

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

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

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

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

HANDRAILS AND POSTS:

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

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

SPECIAL NOTES:

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

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