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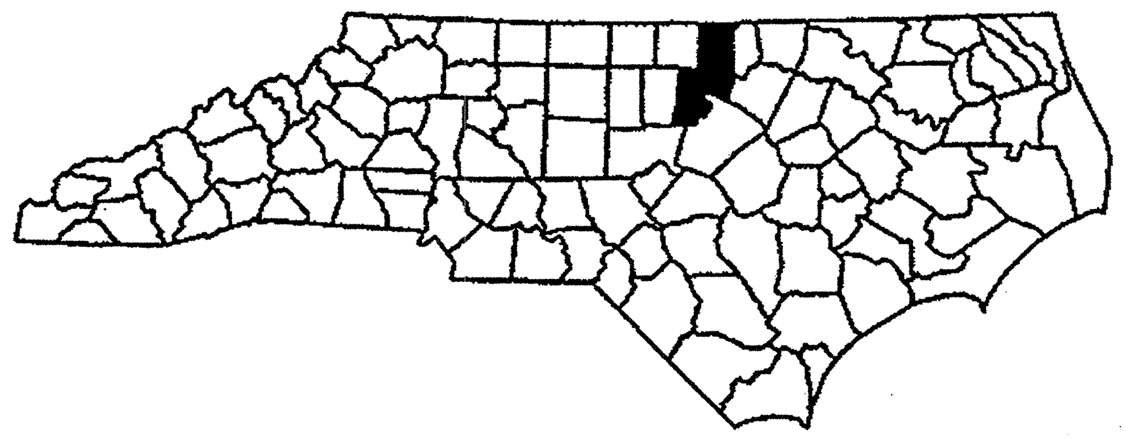
17BP.5.P.4

CONTRACT: C202995

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.5.P.4	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
17BP.5.P.4		P.E.
17BP.5.P.4		CONST.

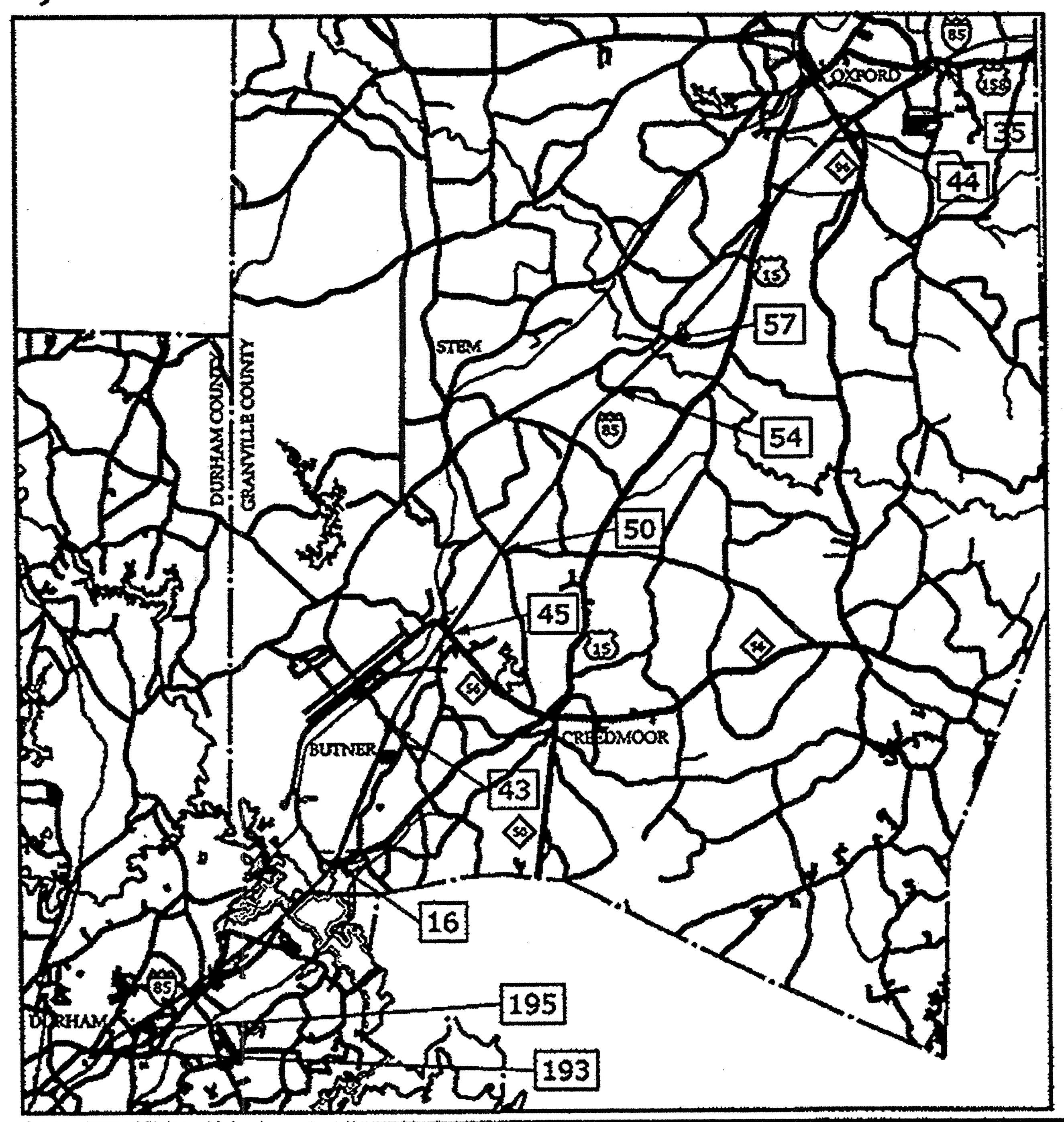


STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

DURHAM & GRANVILLE COUNTIES

LOCATION: BRIDGE NO. 193 ON SR1671 OVER I-85, BRIDGE NO. 195 ON SR1675 OVER I-85, BRIDGE NO. 16 ON US15 OVER I-85, BRIDGE NO. 35 ON US158 OVER I-85, BRIDGE NO. 43 ON SR1103 OVER I-85, BRIDGE NO. 44 ON NC96 OVER I-85, BRIDGE NO. 45 ON NC56 OVER I-85, BRIDGE NO. 50 ON SR1127 OVER I-85, BRIDGE NO. 54 ON SR1135 OVER I-85, BRIDGE NO. 57 ON SR1192 OVER I-85

TYPE OF WORK: BRIDGE PRESERVATION: HYDRODEMOLITION, LMC OVERLAY, EPOXY OVERLAY, STRUCTURAL STEEL REPAIRS, CLEANING & PAINTING BEARINGS & SUBSTRUCTURE REPAIRS



STRUCTURES

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DESIGN DATA

PROJECT LENGTH

LENGTH ROADWAY OF PROJECT = 0.21 MILES
LENGTH STRUCTURE OF PROJECT = 0.53 MILES
TOTAL LENGTH OF STATE PROJECT = 0.74 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

STRUCTURES MANAGMENT UNIT
1000 BIRCH RIDGE DR.
RALEIGH, N.C. 27610

NORTH CAROLINA PROFESSIONAL SEAL 20208 ENGINEER ERIC B. NELSON, JR.
2/16/12

NORTH CAROLINA PROFESSIONAL SEAL 032129 ENGINEER MATTHEW J. MOYER
2-15-12

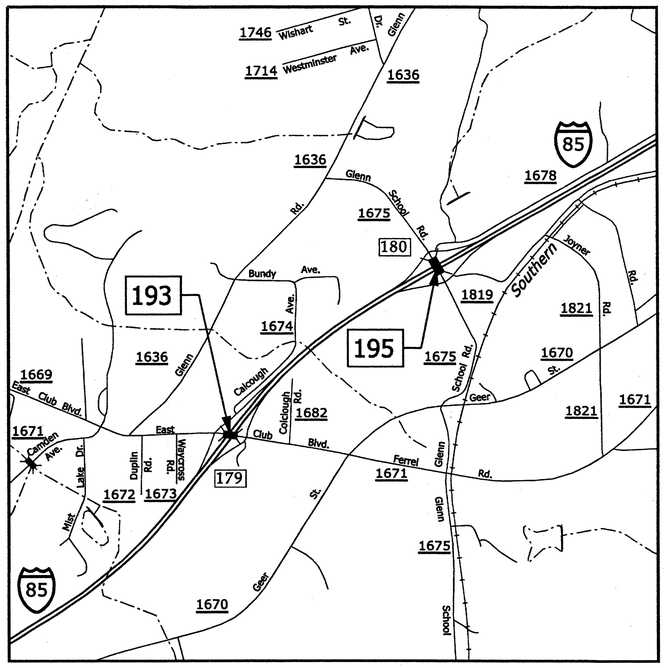
P.E.
BRIDGE DESIGN ENGINEER

17BP.5.P.4

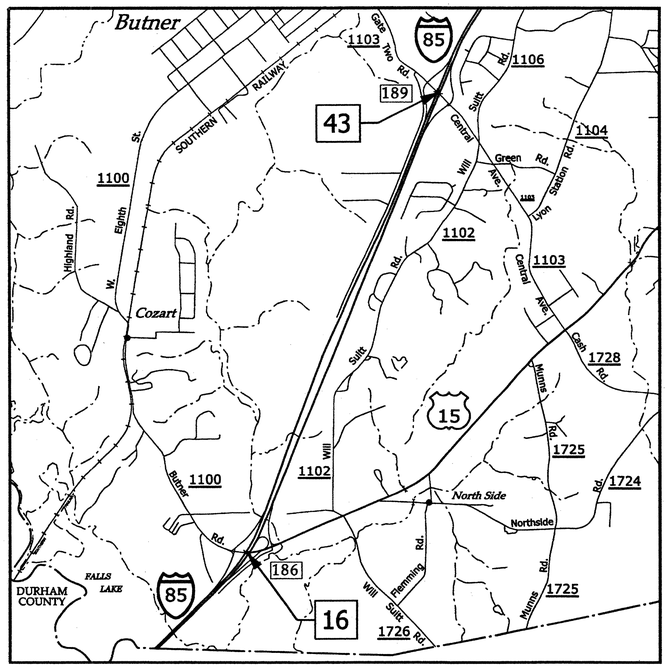
CONTRACT: C202995

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.5.P.4	1A	

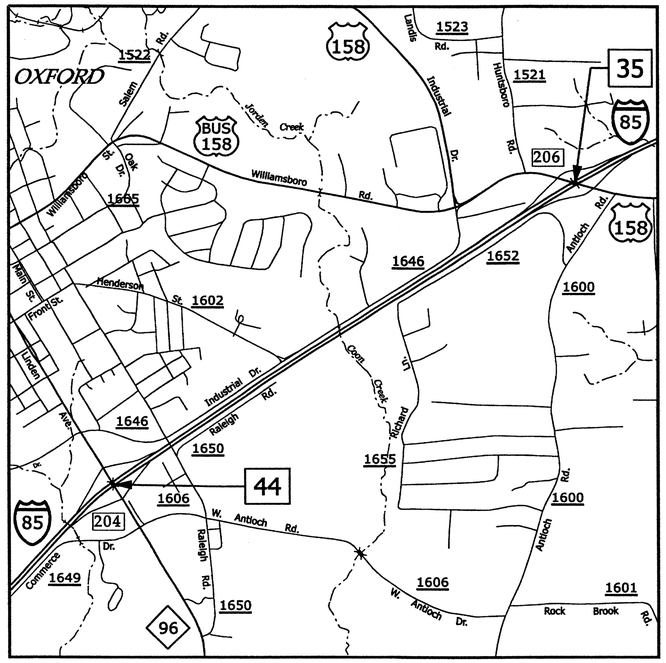
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
17BP.5.P.4		P.E.
17BP.5.P.4		CONST.



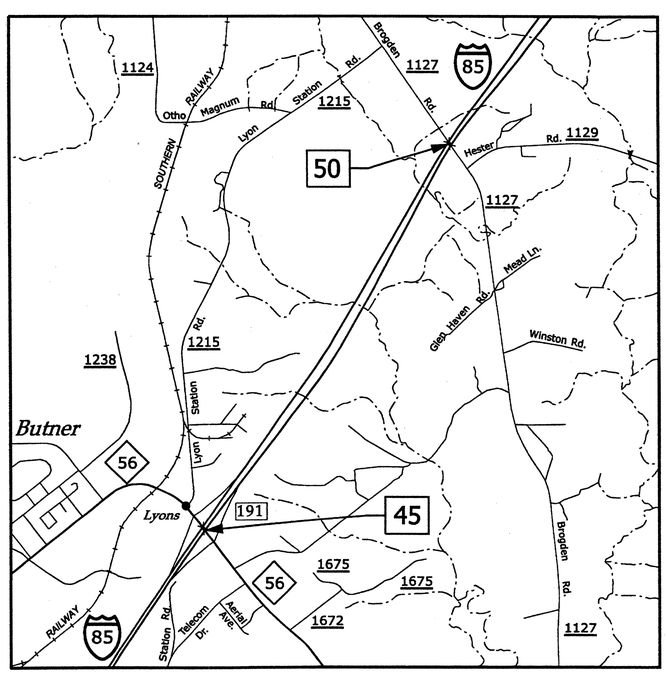
DURHAM COUNTY - BRIDGE NOs. 193 & 195



GRANVILLE COUNTY - BRIDGE NOs. 16 & 43



GRANVILLE COUNTY - BRIDGE NOs. 44 & 35



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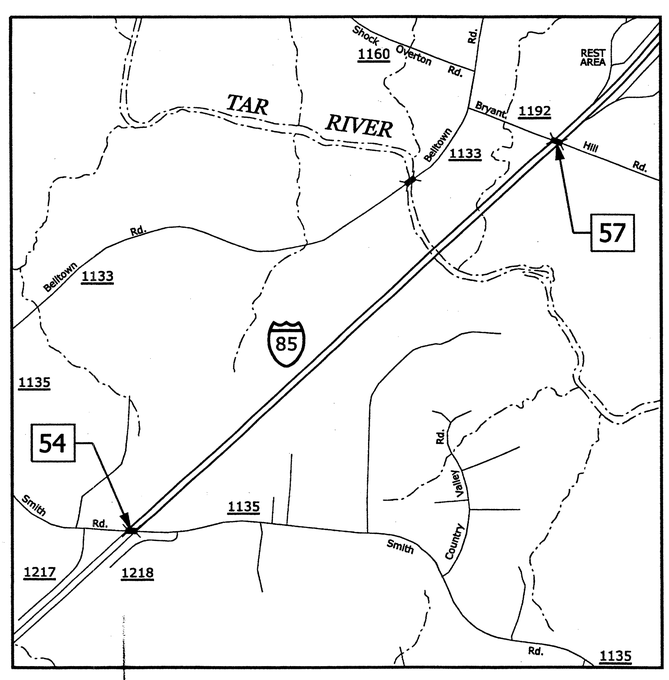
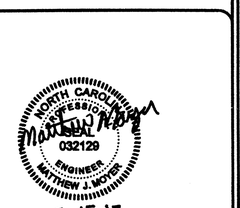


GRANVILLE COUNTY - BRIDGE NOs. 54 & 57



P.E.

BRIDGE DESIGN ENGINEER

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17BP.5.P.4

CONTRACT: C202995

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.5.P.4	1B	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
17BP.5.P.4		P.E.
17BP.5.P.4		CONST.

DURHAM & GRANVILLE COUNTIES

LOCATION: BRIDGE NO. 193 ON SR1671 OVER I–85, BRIDGE NO. 195 ON SR1675 OVER I–85, BRIDGE NO. 16 ON US15 OVER I–85, BRIDGE NO. 35 ON US158 OVER I–85, BRIDGE NO. 43 ON SR1103 OVER I–85, BRIDGE NO. 44 ON NC96 OVER I–85, BRIDGE NO. 45 ON NC56 OVER I–85, BRIDGE NO. 50 ON SR1127 OVER I–85, BRIDGE NO. 54 ON SR1135 OVER I–85, BRIDGE NO. 57 ON SR1192 OVER I–85

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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

NORTH CAROLINA PROFESSIONAL SEAL 032129 ENGINEER MATTHEW J MOYER
2-15-12

P.E.
BRIDGE DESIGN ENGINEER

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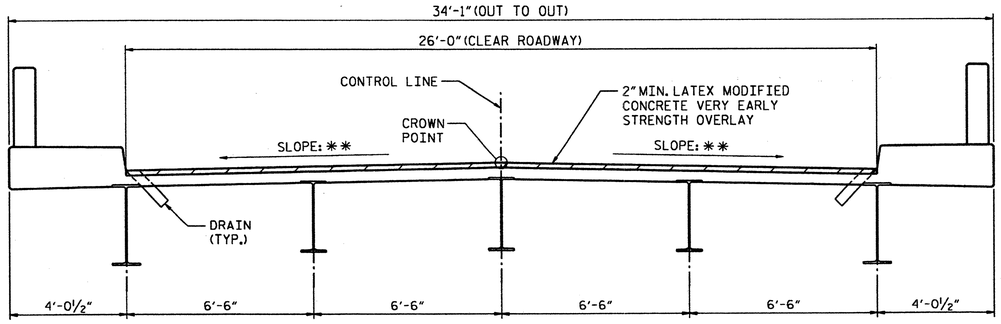
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF QUANTITIES

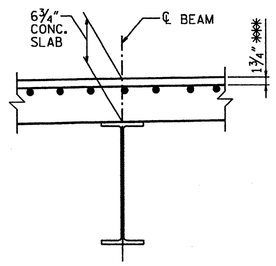
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C202995

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
1330000000-E	607	4,190	SY	INCIDENTAL MILLING
1525000000-E	610	482.9	TON	ASPHALT CONC SURFACE COURSE, TYPE SF9.5A
1575000000-E	620	35	TON	ASPHALT BINDER FOR PLANT MIX
4400000000-E	1110	240	SF	WORK ZONE SIGNS (STATIONARY)
4405000000-E	1110	856	SF	WORK ZONE SIGNS (PORTABLE)
4410000000-E	1110	58	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
4415000000-N	1115	2	EA	FLASHING ARROW BOARD
4420000000-N	1120	3	EA	PORTABLE CHANGEABLE MESSAGE SIGN
4430000000-N	1130	125	EA	DRUMS
4435000000-N	1135	50	EA	CONES
4445000000-E	1145	80	LF	BARRICADES (TYPE III)
4455000000-N	1150	40	DAY	FLAGGER
4480000000-N	1165	3	EA	TMA
4510000000-N	SP	320	HR	LAW ENFORCEMENT
4516000000-N	1180	125	EA	SKINNY DRUM
4726100000-E	1205	8	EA	HEATED-IN-PLACE THERMOPLASTIC PAVEMENT MARKING CHARACTER (120 MILS)
4726110000-E	1205	9	EA	HEATED-IN-PLACE THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS)
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	14,000	LF	PAINT PAVEMENT MARKING LINES (4")
4840000000-N	1205	16	EA	PAINT PAVEMENT MARKING CHARACTER
4845000000-N	1205	15	EA	PAINT PAVEMENT MARKING SYMBOL
4847000000-E	1205	14,000	LF	POLYUREA PAVEMENT MARKING LINES (4", **********) (HIGHLY REFLECTIVE ELEMENTS)
4900000000-N	1251	57	EA	PERMANENT RAISED PAVEMENT MARKERS
8161000000-E	420	66,953	SF	GROOVING BRIDGE FLOORS
8217000000-E	425	6,400	LB	REINFORCING STEEL (BRIDGE)
8660000000-E	SP	67	CF	CONCRETE REPAIRS
8664000000-E	SP	267	CF	SHOTCRETE REPAIRS
8678000000-E	SP	227	LF	EPOXY RESIN INJECTION
8692000000-N	SP	Lump Sum		FOAM JOINT SEALS
8860000000-N	SP	Lump Sum		GENERIC STRUCTURE ITEM BRIDGE JACKING
8860000000-N	SP	Lump Sum		GENERIC STRUCTURE ITEM CLEANING & PAINTING EXISTING BEARING PLATES
8881000000-E	SP	371	CY	GENERIC STRUCTURE ITEM LATEX MOD CONC OVERLAY VERY EARLY STRENGTH
8889000000-E	SP	3,432	LB	GENERIC STRUCTURE ITEM BEAM REPAIR
8892000000-E	SP	1,056	SF	GENERIC STRUCTURE ITEM CLASS II CONCRETE DECK REPAIR FOR EPOXY/ASPHALT OVERLAY
8892000000-E	SP	9,503	SF	GENERIC STRUCTURE ITEM PLACEMENT OF EPOXY OVERLAY
8893000000-E	SP	8,333	SY	GENERIC STRUCTURE ITEM HYDRO-DEMOLITION OF BRIDGE DECK
8893000000-E	SP	8,333	SY	GENERIC STRUCTURE ITEM PLACE & FINISH LATEX MOD CONC OVERLAY VERY EARLY STRENGTH
8893000000-E	SP	8,333	SY	GENERIC STRUCTURE ITEM SCARIFYING BRIDGE DECK
8897000000-N	SP	41	EA	GENERIC STRUCTURE ITEM BEARING REPLACEMENT IN KIND



TYPICAL SECTION

** MATCH EXISTING PARABOLIC CROWN



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 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 MODIFIRED 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 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.

FOR CLEANING AND PAINTING EXISTING BEARING PLATES, SEE SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL

INCIDENTAL MILLING	ASPHALT CONCRETE SURFACE COURSE TYPE SF9.5A	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.	TONS	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
144	17.9	589	589	12	2	25	1	589	33	589	LUMP SUM	4579	9	20	826	LUMP SUM

* QUANTITY SHOWN IS FOR INFORMATION ONLY.

BEAM REPAIR	BEARING REPLACEMENT IN KIND	CLEANING AND PAINTING EXISTING BEARING PLATES
LBS	EACH	LUMP SUM
573	4	LUMP SUM

DRAWN BY : R. HELFRICH DATE : 01/2012
CHECKED BY : M. LEONARD DATE : 01/2012

NORTH CAROLINA PROFESSIONAL SEAL 032129 ENGINEER MATTHEW J. MOYER
2-15-12

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

PROJECT NO. WBS 17BP.5.P.4
DURHAM COUNTY
BRIDGE NO.: 193

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION FOR BRIDGE NO. 193
(SR1671 OVER I-85)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			70

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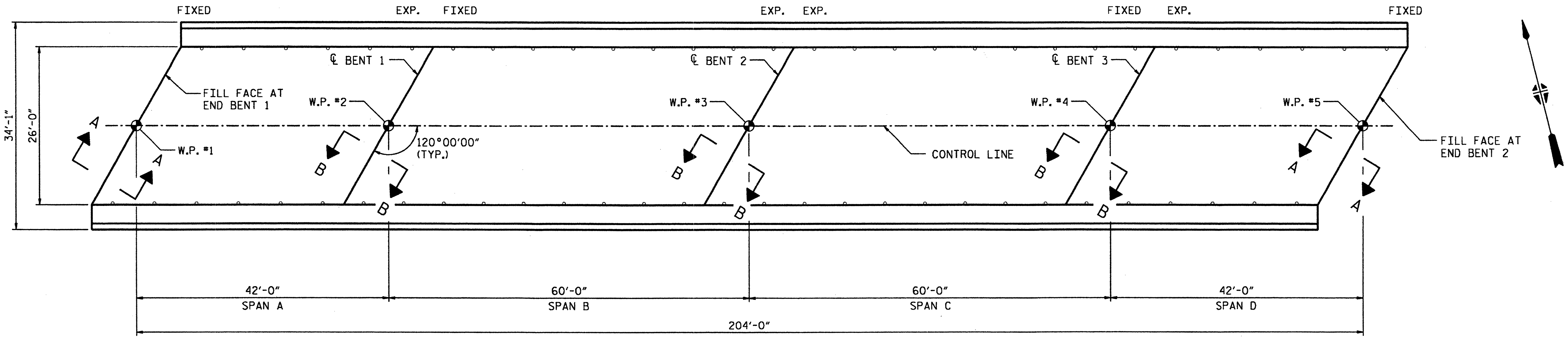
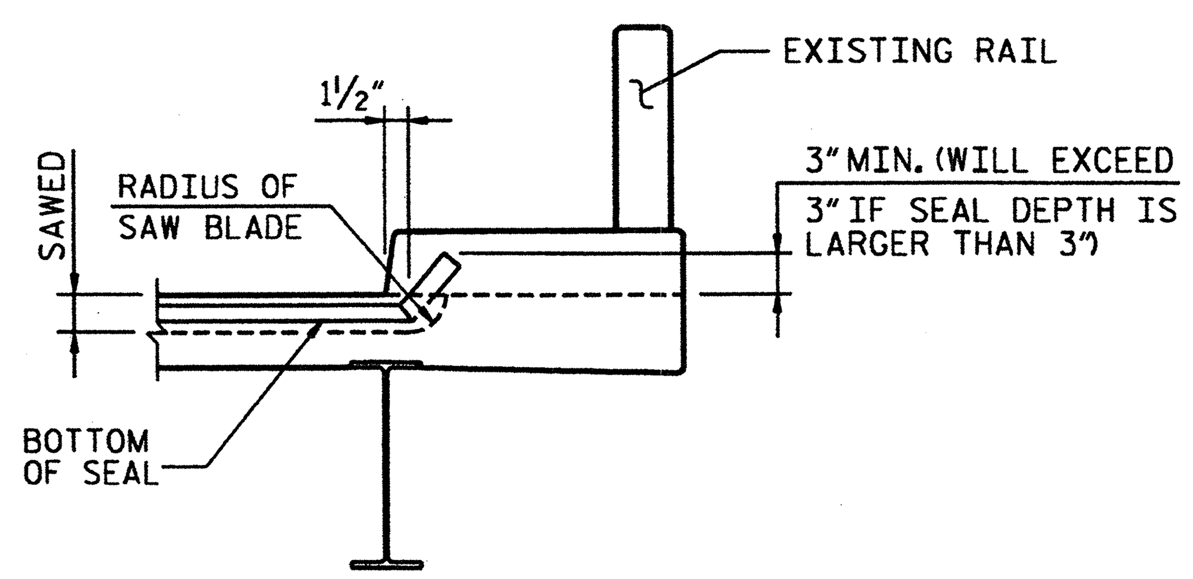
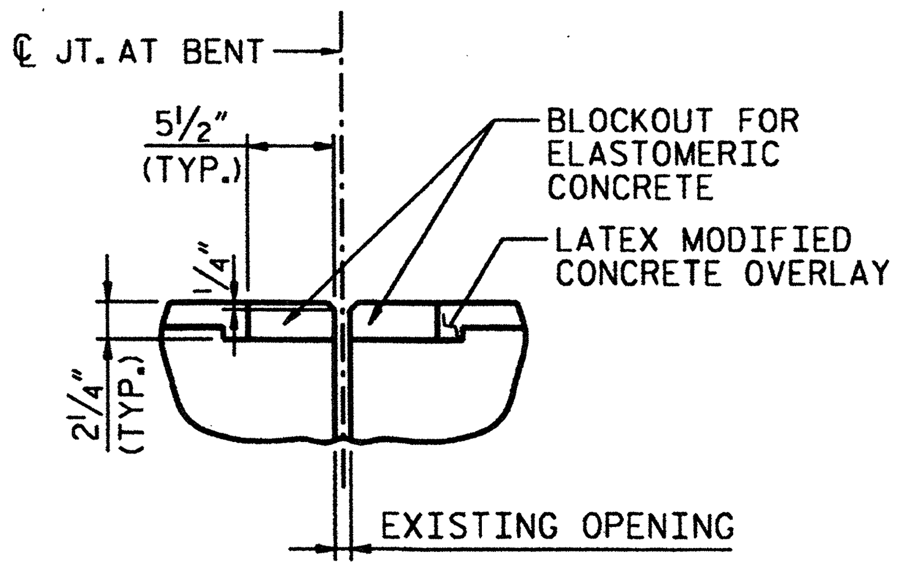


PLAN VIEW

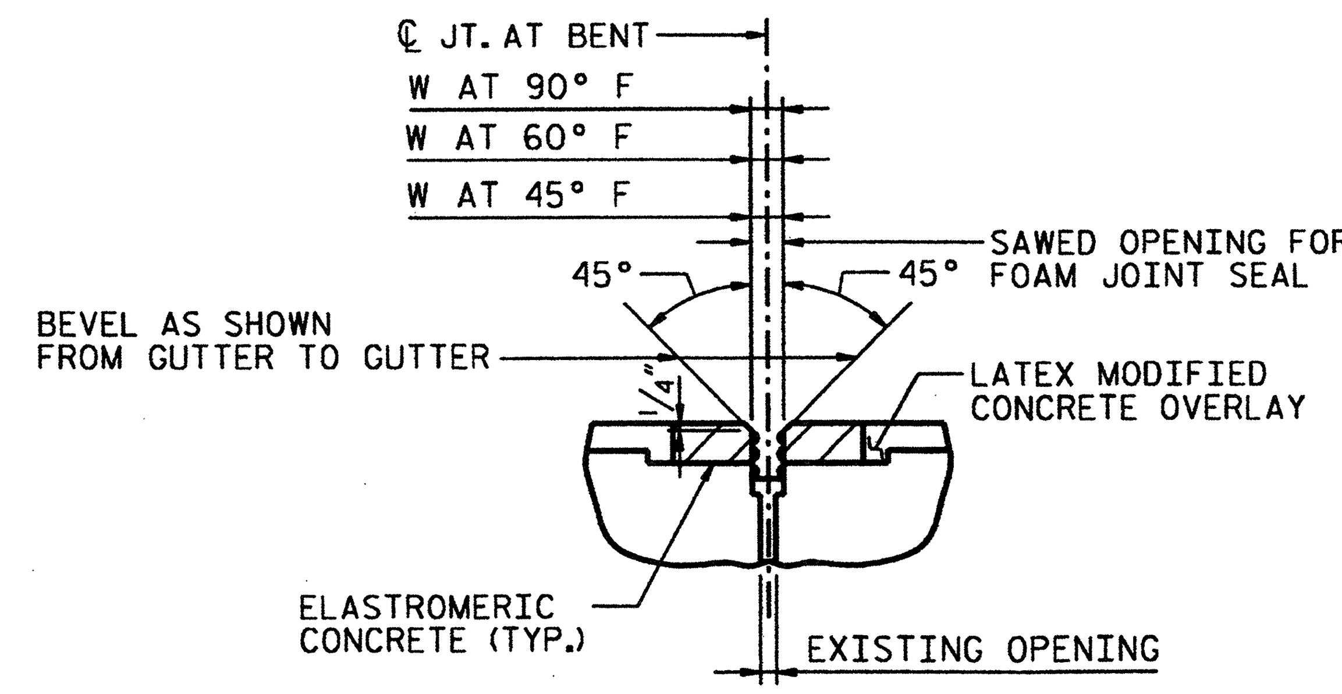


JOINT DETAIL AT CURB



FOAM JOINT SEAL

PRE-SAWED ELASTOMERIC CONCRETE DIMENSIONS



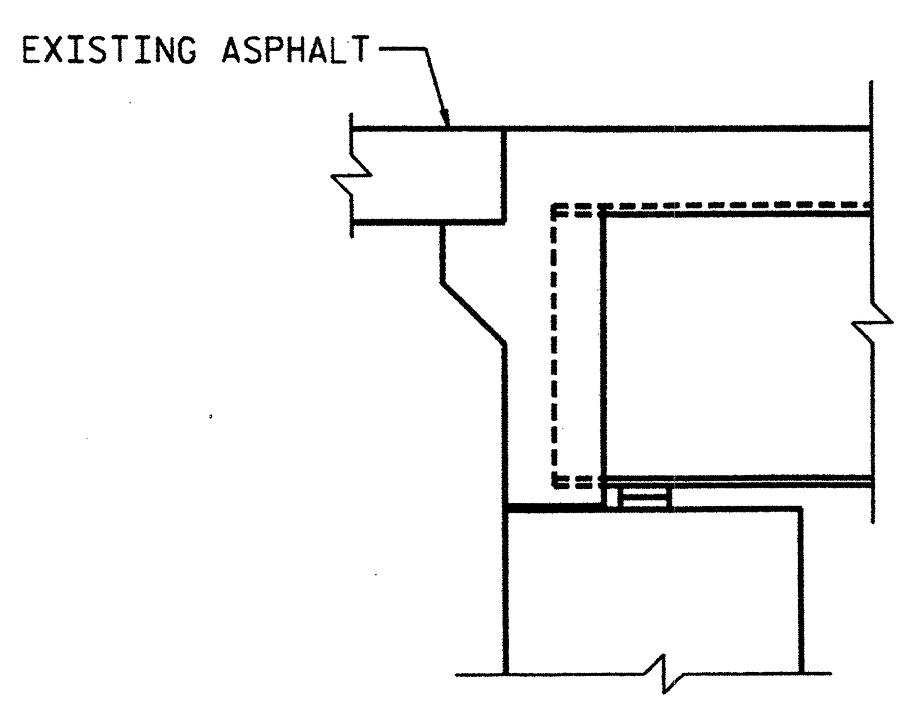
PROPOSED JOINT AT BENTS

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	1¾"	1⅞"	1 15/16"
BENT 2	1 9/16"	1⅞"	2 1/16"
BENT 3	1¾"	1⅞"	1 15/16"

ELASTOMERIC CONCRETE	
BENT NO.	ELASTOMERIC CONCRETE ** (CU. FT.)
BENT 1	5.2
BENT 2	5.2
BENT 3	5.2
TOTAL	15.6

** BASED ON THE MINIMUM BLOCKOUT SHOWN



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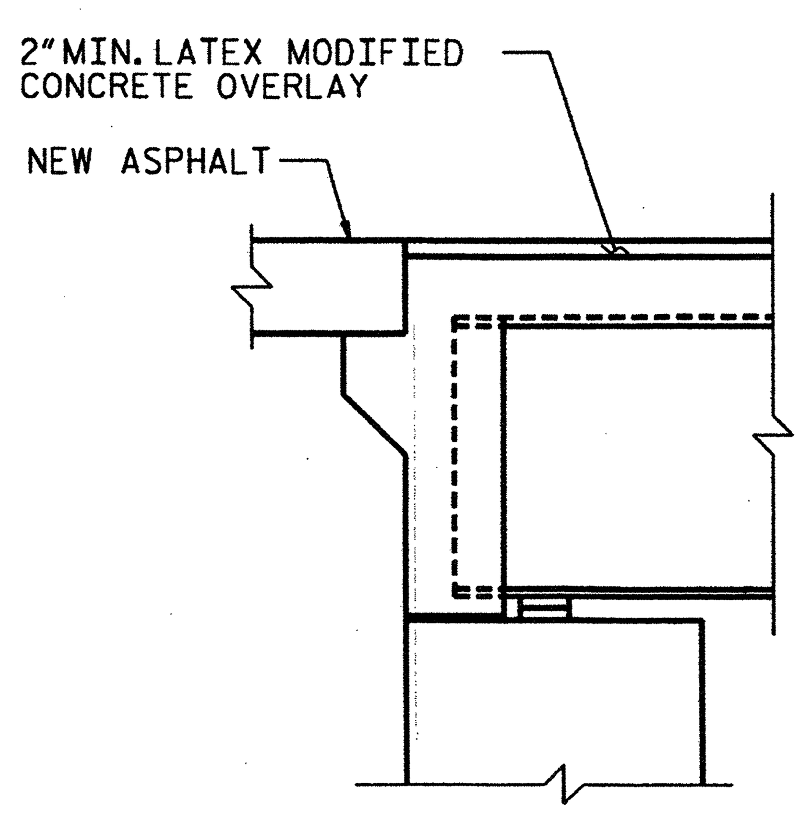
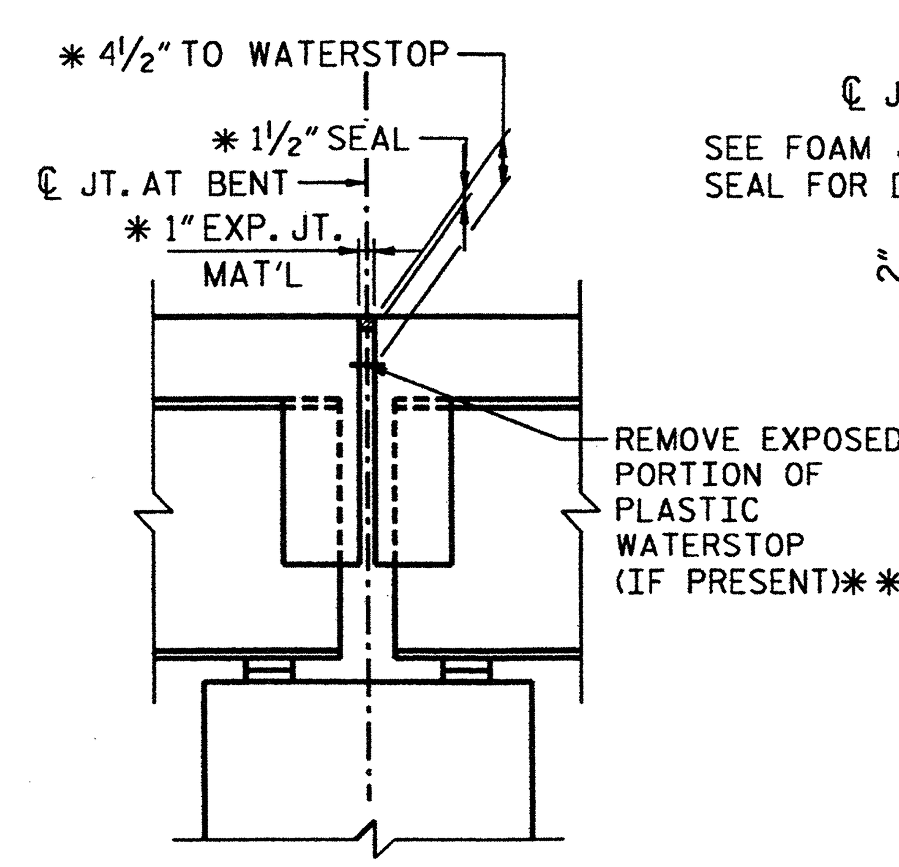
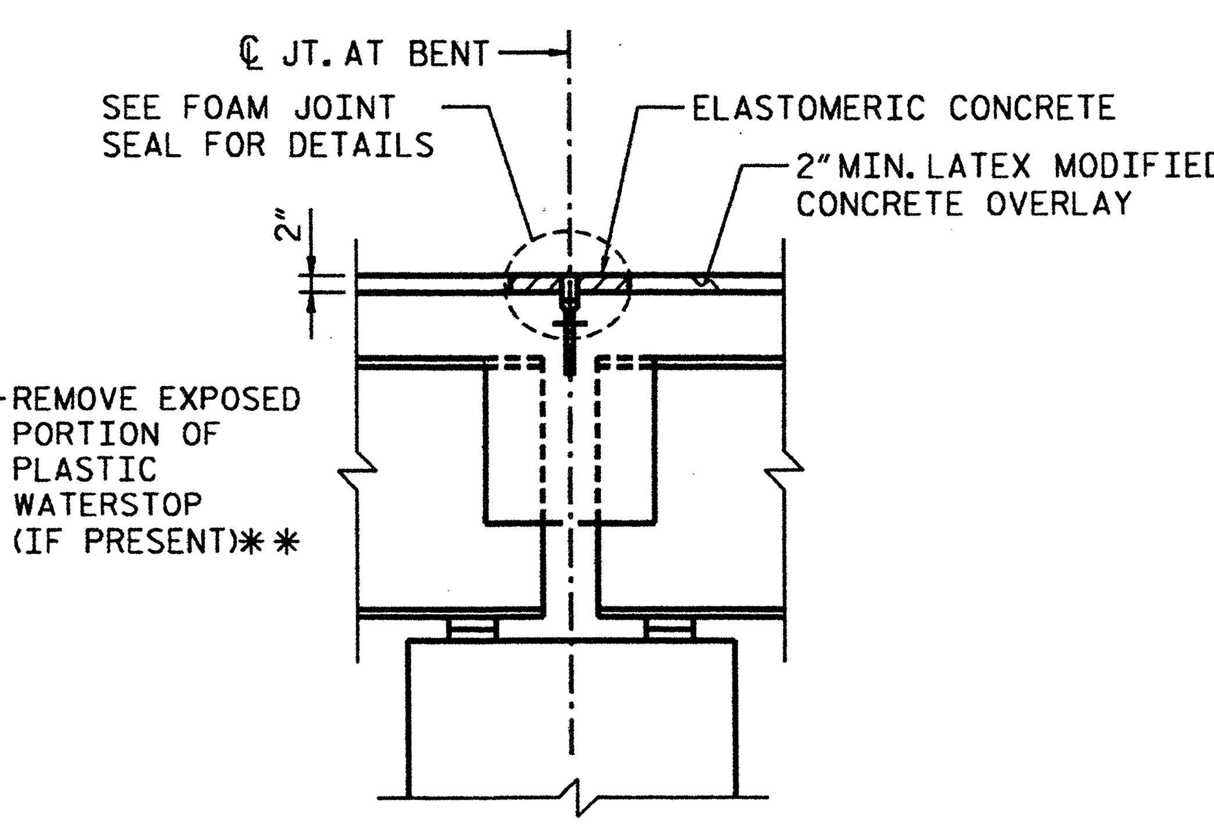


PROPOSED SECTION AT END BENT

SECTION A-A



EXISTING JOINT AT BENTS



PROPOSED JOINT AT BENTS

SECTION B-B

* ESTIMATED DIMENSION

** 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.

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

PROJECT NO. WBS 17BP.5.P.4
DURHAM COUNTY
BRIDGE NO.: 193

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN VIEW AND JOINT DETAILS FOR BRIDGE NO. 193

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

SHEET NO. S-2
TOTAL SHEETS 70

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 : R. HELFRICH DATE : 01/2012
CHECKED BY : M. LEONARD DATE : 01/2012

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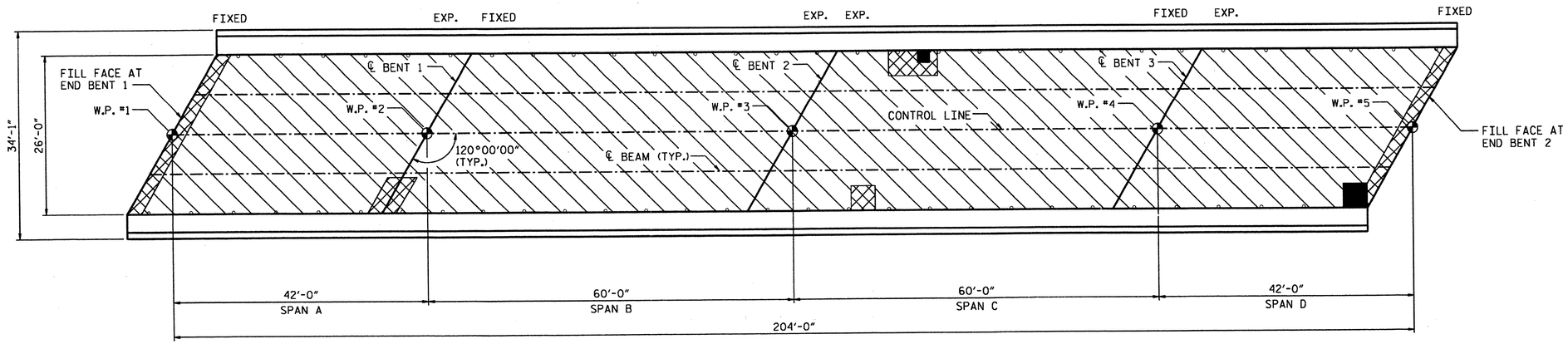
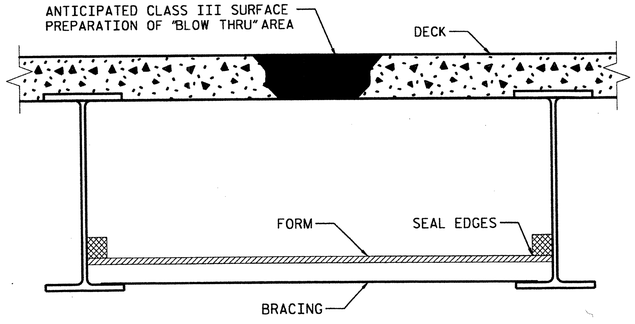


PLAN OF SPANS - DECK REPAIRS

APPROX. AREA: CLASS I REPAIR

APPROX. AREA: CLASS II REPAIR

APPROX. AREA: CLASS III REPAIR

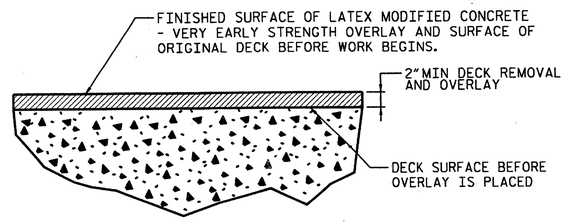


TYPICAL "BLOW THRU" CONTAINMENT AND FORMWORK

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 VERY EARLY STRENGTH OVERLAY

PROJECT NO. WBS 17BP.5.P.4

DURHAM COUNTY

BRIDGE NO.: 193

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032129 MATTHEW J. MOTER

1-13-2012

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK REPAIR DETAILS FOR BRIDGE NO. 193

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS
2			4			70

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 : R. HELFRICH DATE : 01/2012
CHECKED BY : M. LEONARD DATE : 01/2012

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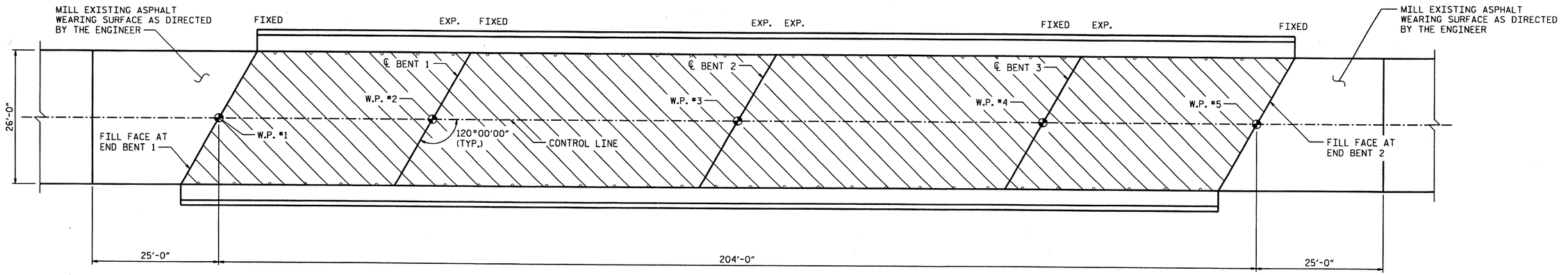
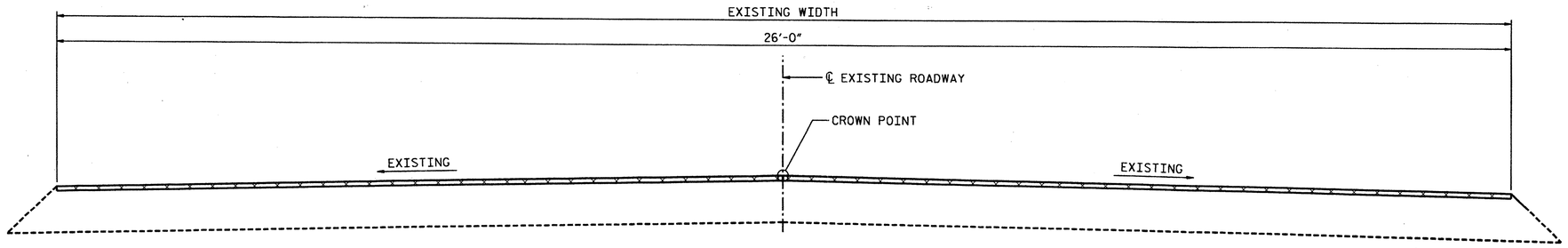


PLAN VIEW

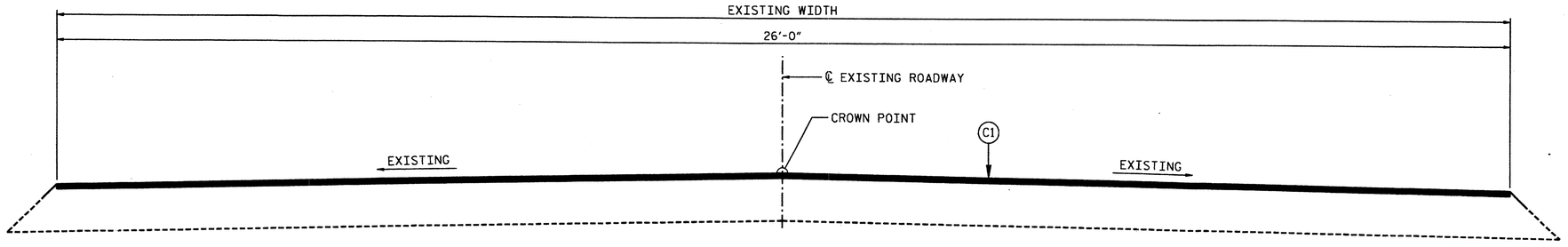
DECK SCARIFICATION AND HYDRODEMOLITION

C1	PROPOSED VARIABLE DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH.



TYPICAL ROADWAY MILLING SECTION

ASPHALT MILLING



TYPICAL ROADWAY SECTION

PROJECT NO. WBS 17BP.5.P.4

DURHAM COUNTY

BRIDGE NO.: 193

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION & MILLING DETAILS FOR BRIDGE NO. 193

NORTH CAROLINA PROFESSIONAL SEAL 032129 ENGINEER MATTHEW J. MOYER

1-13-2012

REVISIONS						SHEET NO. S-4
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 70
2			4			

DRAWN BY : R. HELFRICH DATE : 01/2012
CHECKED BY : M. LEONARD DATE : 01/2012

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3733 National Drive, Suite 207 Raleigh, N.C. 27612
N.C.B.E.L.S. License Number: F-0116

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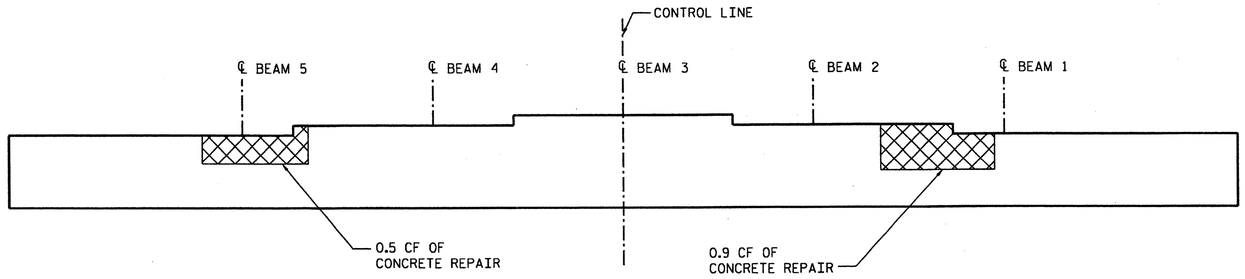


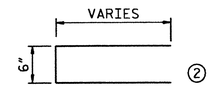
EAST ELEVATION

BILL OF MATERIAL

END BENT 1

BAR	NO.	SIZE	TYPE	LENGTH
S2	VAR.	#5	2	VARIES
CONCRETE REPAIRS			CF	2
SHOTCRETE REPAIRS			CF	0
EPOXY RESIN INJECTION			LF	0
REINFORCING STEEL			LBS	28

BAR TYPE



(BAR DIMENSIONS ARE OUT TO OUT)

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 2 FOR BRIDGE NO. 193".

FOR "TYPICAL REPAIR AT BEAM BEARING" DETAIL, SEE DRAWING "BENT 3 FOR BRIDGE NO. 193".

FOR BRIDGE JACKING, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIR, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, 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 ENGINEER SEAL 032129 MATTHEW J. MOYER

1-13-2012

HDR Engineering, Inc. of the Carolinas
3735 National Drive, Suite 207 Raleigh, N.C. 27612
N.C.B.E.L.S. License Number: F-0116

PROJECT NO. WBS 17BP.5.P.4

DURHAM COUNTY

BRIDGE NO.: 193

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

END BENT 1
FOR BRIDGE NO. 193

REVISIONS						SHEET NO. 5-5
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 70
1			3			
2			4			

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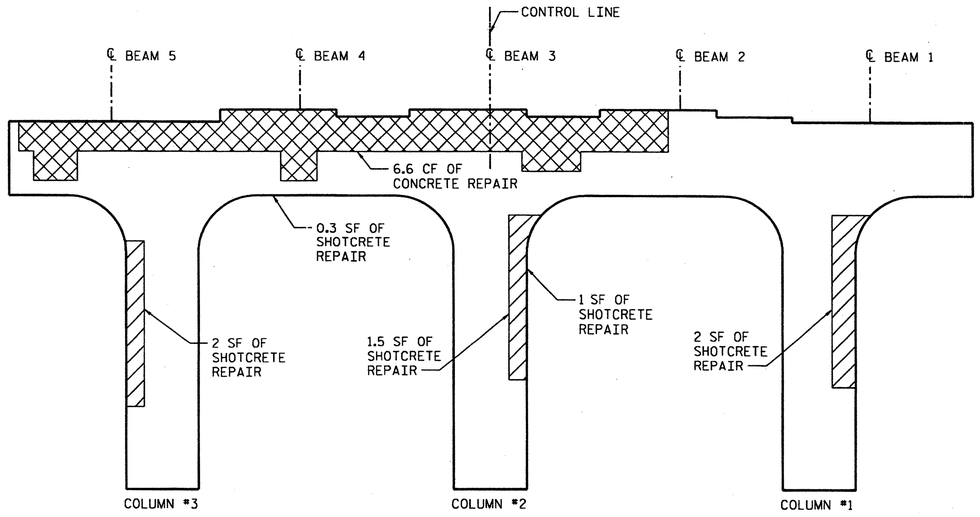

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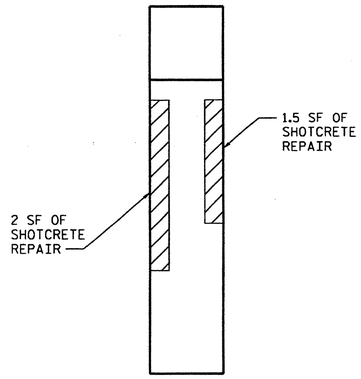
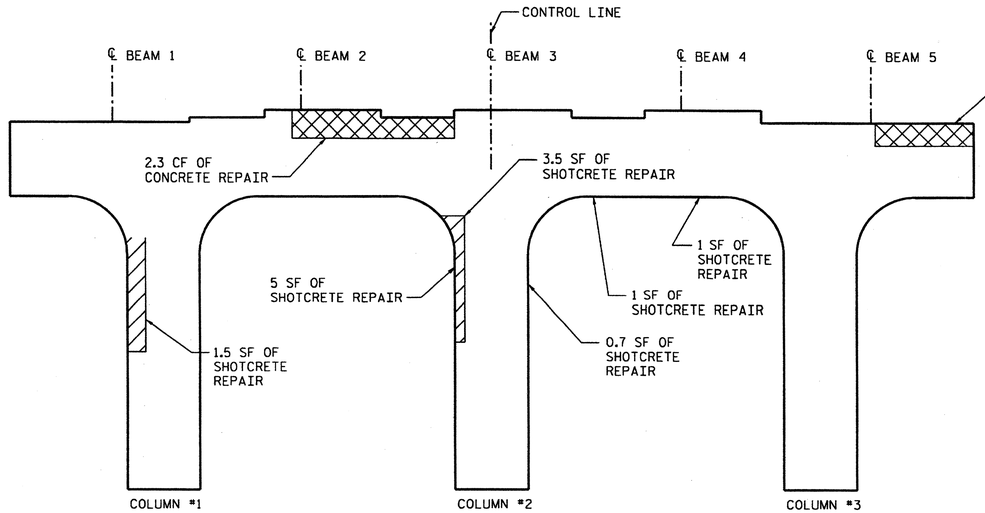


NORTH END ELEVATION



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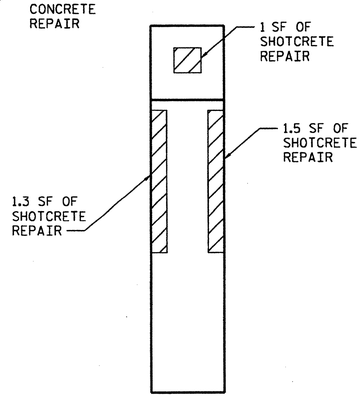


SOUTH END ELEVATION

NOTES

FOR NOTES, SEE DRAWING "END BENT 1 FOR BRIDGE NO. 193".

CONCRETE REPAIR

SHOTCRETE REPAIR

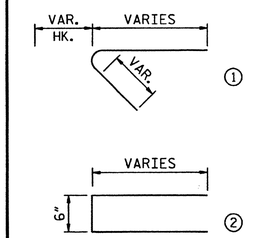
EPOXY RESIN INJECTION OF CRACKS

BILL OF MATERIAL

BENT 1

BAR	NO.	SIZE	TYPE	LENGTH
S1	VAR.	#4	1	VARIES
S2	VAR.	#5	2	VARIES
CONCRETE REPAIRS			CF	10
SHOTCRETE REPAIRS			CF	7
EPOXY RESIN INJECTION			LF	0
REINFORCING STEEL			LBS	328

BAR TYPE



(BAR DIMENSIONS ARE OUT TO OUT)

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 1/2 INCH WITH RESPECT TO BEARINGS OF ADJACENT PIERS.

BEARING NUTS SHALL BE LOOSENED TO PROVIDE A MINIMUM OF 59/64 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	--	21	--	54
BENT 1	21	30	54	57
BENT 2	30	30	57	57
BENT 3	30	21	57	54
END BENT 2	21	--	54	--

PROJECT NO. WBS 17BP.5.P.4

DURHAM COUNTY

BRIDGE NO.: 193

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 1 FOR BRIDGE NO. 193

REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			70

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CHECKED BY : M. LEONARD DATE : 01/2012

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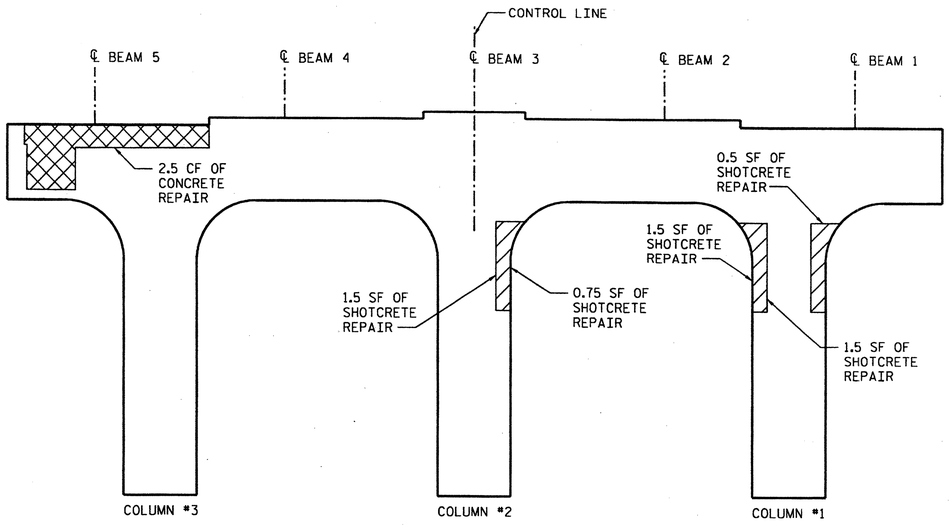

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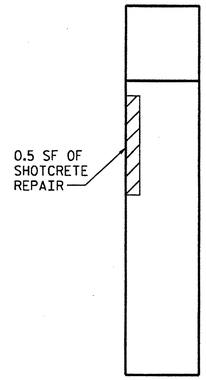

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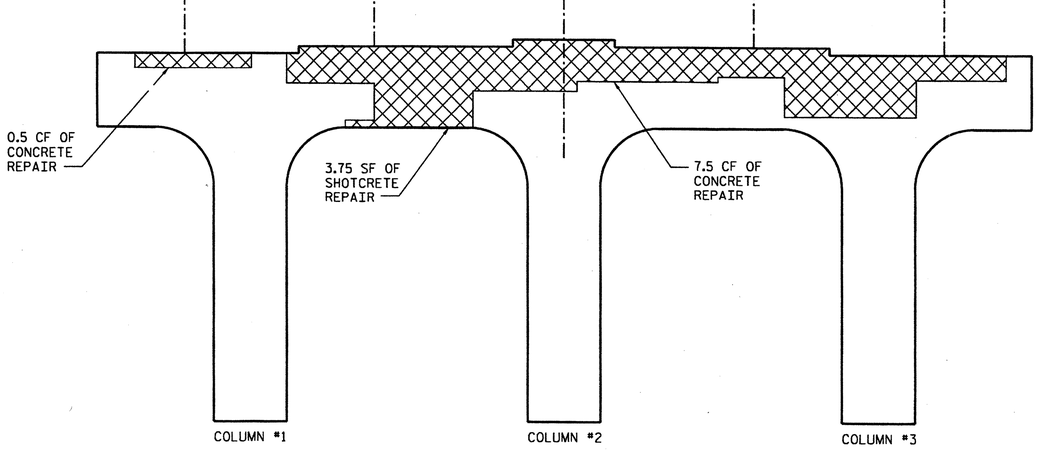

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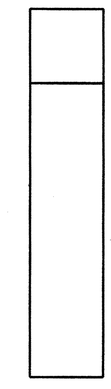


SOUTH END ELEVATION

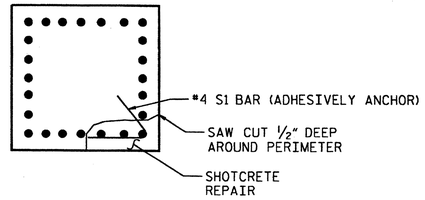
NOTES

FOR NOTES, SEE DRAWING "END BENT 1 FOR BRIDGE NO. 193".

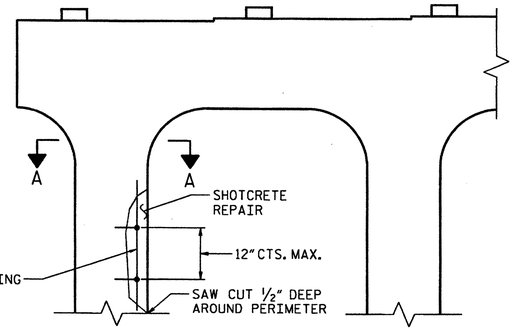
CONCRETE REPAIR

SHOTCRETE REPAIR

EPOXY RESIN INJECTION OF CRACKS



SECTION A-A



COLUMN REPAIR DETAIL

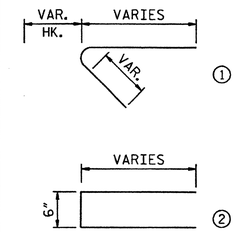
AFTER DETERIORATED CONCRETE HAS BEEN REMOVED THE EXPOSED VERTICAL COLUMN STEEL SHALL BE ENCLOSED BY EITHER EXISTING STIRRUPS OR ADHESIVELY ANCHOR S1 BARS AS SHOWN IN SECTION A-A

BILL OF MATERIAL

BENT 2

BAR	NO.	SIZE	TYPE	LENGTH
S1	VAR.	#4	1	VARIES
S2	VAR.	#5	2	VARIES
CONCRETE REPAIRS			CF	11
SHOTCRETE REPAIRS			CF	3
EPOXY RESIN INJECTION			LF	0
REINFORCING STEEL			LBS	260

BAR TYPE



(BAR DIMENSIONS ARE OUT TO OUT)

PROJECT NO. WBS 17BP.5.P.4

DURHAM COUNTY

BRIDGE NO.: 193

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 2
FOR BRIDGE NO. 193

NORTH CAROLINA PROFESSIONAL 032129 ENGINEER MATTHEW J. MOYER

1-13-2012

HDR Engineering, Inc. of the Carolinas
3733 National Drive, Suite 207 Raleigh, N.C. 27612
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2			4		

SHEET NO. S-7

TOTAL SHEETS 70

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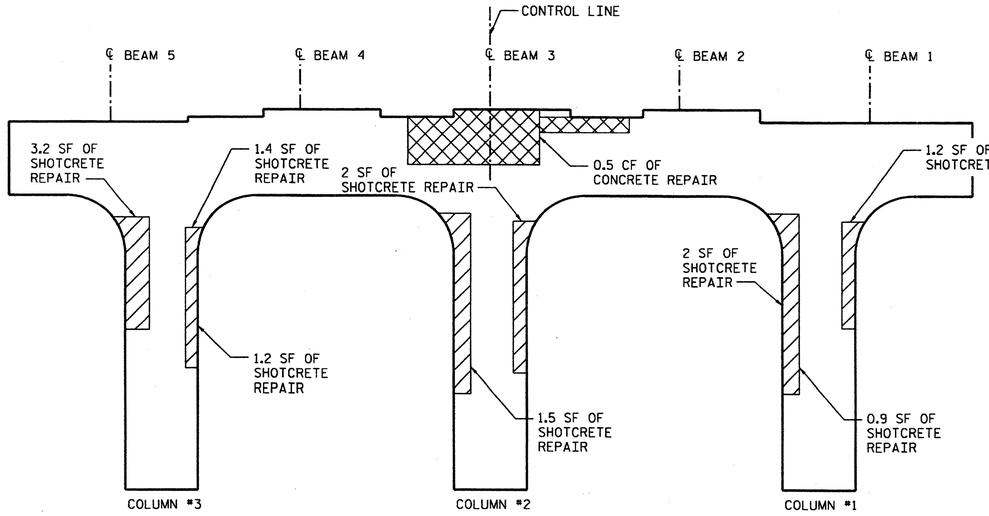

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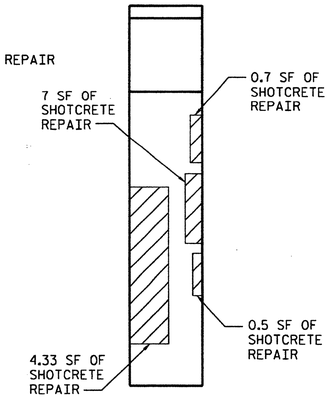


NORTH END ELEVATION

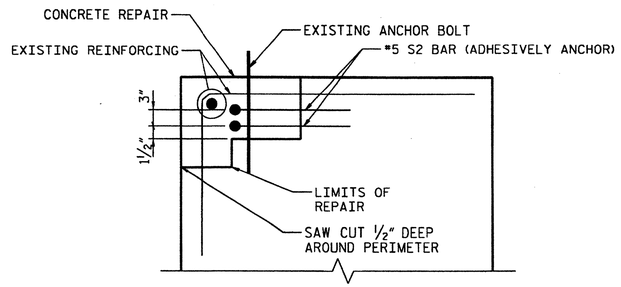
NOTES

FOR NOTES, SEE DRAWING "END BENT 1 FOR BRIDGE NO. 193".

CONCRETE REPAIR

SHOTCRETE REPAIR

EPOXY RESIN INJECTION OF CRACKS



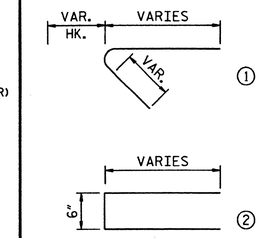
DETAIL A

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	10
EPOXY RESIN INJECTION			LF	2
REINFORCING STEEL			LBS	192

BAR TYPE



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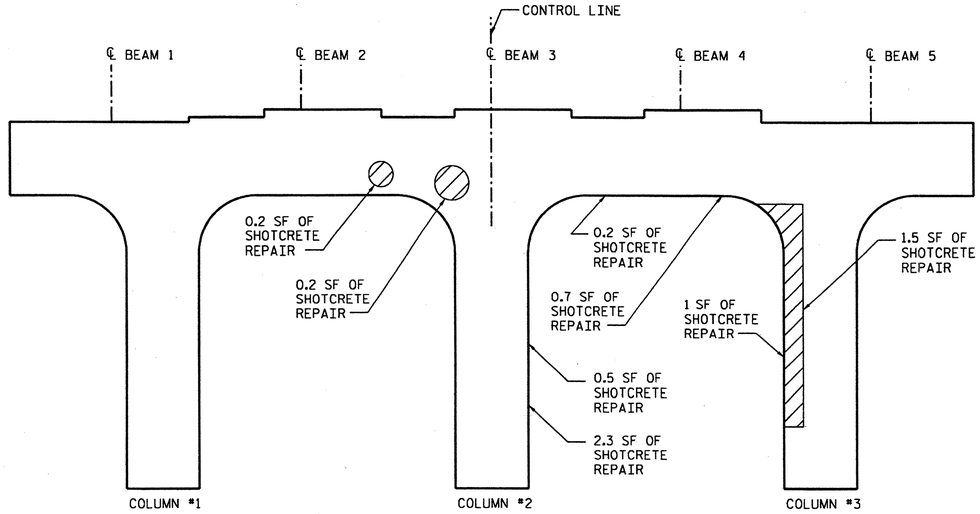

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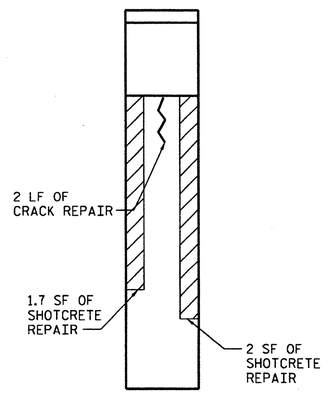
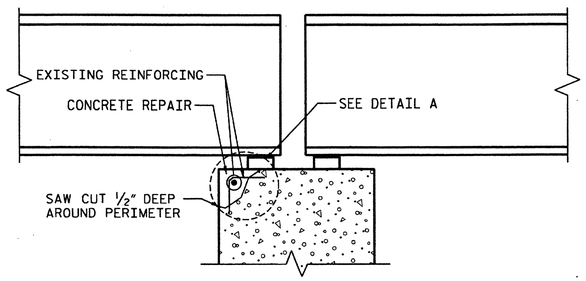


SOUTH END ELEVATION



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

PROJECT NO. WBS 17BP.5.P.4

DURHAM COUNTY

BRIDGE NO.: 193

NORTH CAROLINA PROFESSIONAL 032129 ENGINEER MATTHEW J. MOYER

1-13-2012

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 3
FOR BRIDGE NO. 193

REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			70

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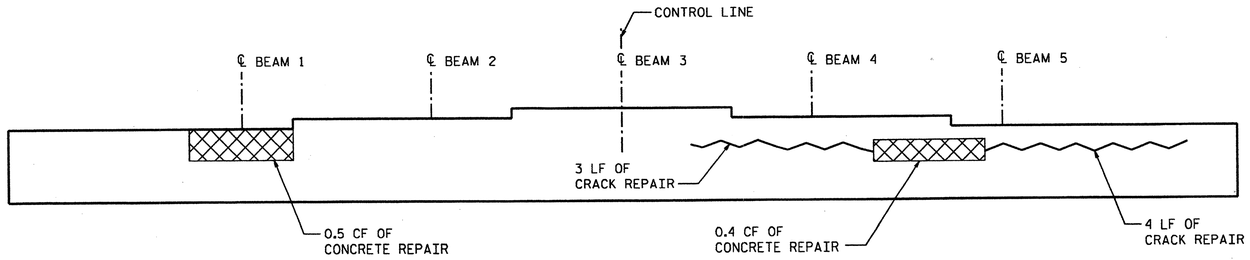
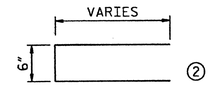


WEST ELEVATION

BILL OF MATERIAL				
END BENT 2				
BAR	NO.	SIZE	TYPE	LENGTH
S2	VAR.	#5	2	VARIES
CONCRETE REPAIRS			CF	1
SHOTCRETE REPAIRS			CF	0
EPOXY RESIN INJECTION			LF	7
REINFORCING STEEL			LBS	18

BAR TYPE



(BAR DIMENSIONS ARE OUT TO OUT)

NOTES

FOR NOTES, SEE DRAWING "END BENT 1 FOR BRIDGE NO. 193".

CONCRETE REPAIR

SHOTCRETE REPAIR

EPOXY RESIN INJECTION OF CRACKS

PROJECT NO. WBS 17BP.5.P.4

DURHAM COUNTY

BRIDGE NO.: 193

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

END BENT 2
FOR BRIDGE NO. 193

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
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REVISIONS						SHEET NO. S-9
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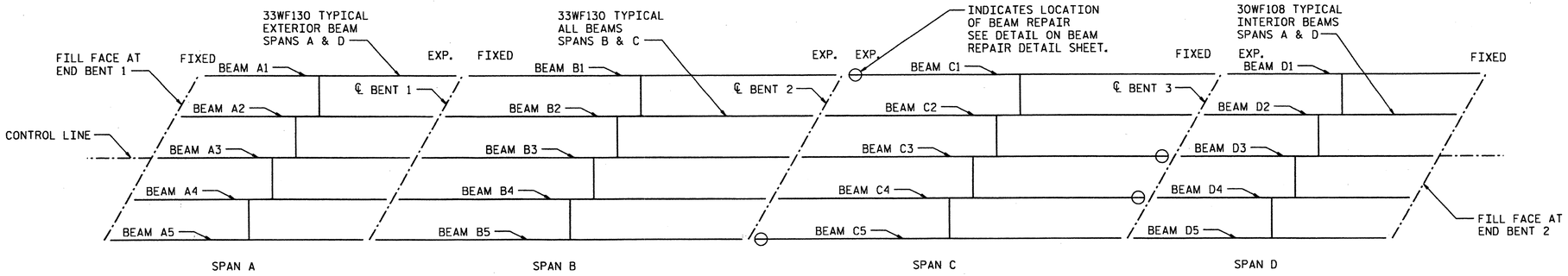
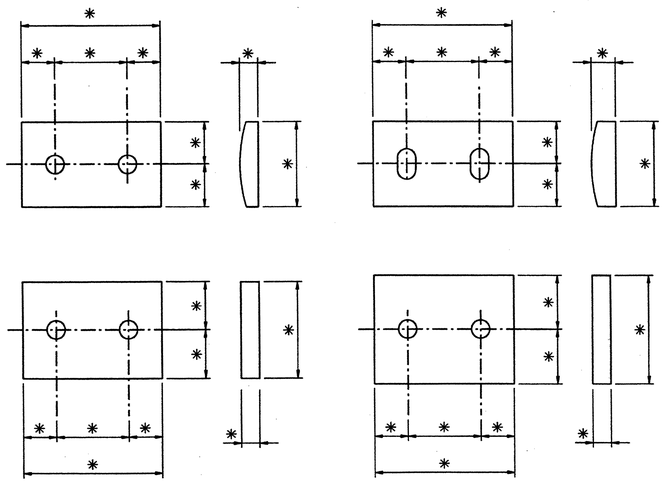


PLAN VIEW



* - DIMENSION UNKNOWN

BEARING REPLACEMENT IN KIND

BEARING REPLACEMENT AT THE DIRECTION OF THE ENGINEER.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR NEW BEARING DESIGN AND JACKING LOADS.

FOR BRIDGE JACKING, SEE SPECIAL PROVISIONS.

STEEL NOTES

EXISTING BRIDGE AND REPAIR DETAILS INDICATED ON THE PLANS ARE FROM THE BEST INFORMATION AVAILABLE. THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE AND REPAIR DETAILS SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

CONCTRACTOR SHALL TAKE ALL MEASURES NECESSARY TO VERIFY INFORMATION SHOWN ON THESE PLANS AND SHALL OBTAIN ALL OTHER BRIDGE DATA NECESSARY FOR THE EXECUTION OF THE WORK.

INASMUCH AS THE PAINT SYSTEM OF THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COST RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE IN THE BID PRICE FOR THE VARIOUS ITEMS OF WORK.

THE CONTRACTOR TO PROVIDE BLOCKING FOR ALL JACKS AS NECESSARY. A BLOCKING PLANS SHALL BE SUBMITTED FOR ALL SPANS LIFTED FOR APPROVAL BY THE ENGINEER.

THE CONTRACTOR SHALL MONITOR THE PLAN LOCATION OF THE BEAMS FROM INITIAL JACKING UNTIL BEAMS ARE SECURED ON THEIR PERMANENT BEARINGS. IF THE PLAN LOCATION OF THESE BEAMS SHIFT FROM ITS ORIGINAL POSITION, ALL WORK SHALL CEASE AND THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY.

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

SEE SPECIAL PROVISIONS FOR "BRIDGE JACKING".

REPAIR BEAMS AS INDICATED ON THE PLANS.

BEAM REPAIR DETAILS AND DIMENSIONS PROVIDED IN PLANS MAY BE MODIFIED BASED ON FIELD CONDITIONS BY THE ENGINEER.

CHIP AWAY CONCRETE DIAPHRAGMS AS NEEDED TO DETERMINE LIMITS OF REPAIR.

MECHANICALLY CLEAN RUST AND SCALE AND EXISTING PAINT TO AT LEAST 4" BEYOND REPAIR AREA LIMITS.

REPLACEMENT BEAM SECTIONS SHALL BE CUT FROM A ROLLED WT SECTION AND SHALL BE AASHTO M270 GRADE 50, OR APPROVED EQUIVALENT.

ALL REPLACEMENT STEEL SHALL BE SHOP PRIMED IN ACCORDANCE WITH SECTION 442 SYSTEM 1 OF STANDARD SPECIFICATIONS.

IN ACCORDANCE WITH THE SPECIAL PROVISIONS, AFTER REPAIR, GRIND ALL WELDS FLUSH, THOROUGHLY CLEAN AREA TO REMOVE DEBRIS AND OILS FROM REPAIR PROCESS. CLEAN AND PAINT STRUCTURAL STEEL.

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

FOR "BEAM REPAIR", SEE SPECIAL PROVISIONS.

FOR CLEANING AND PAINTING EXISTING BEARING PLATES, SEE SPECIAL PROVISIONS.

PROJECT NO. WBS 17BP.5.P.4

DURHAM COUNTY

BRIDGE NO.: 193

NORTH CAROLINA PROFESSIONAL SEAL 032129 ENGINEER MATTHEW J. MOYER

1-13-2012

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BEAM REPAIR PLAN VIEW FOR BRIDGE NO. 193

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			70

HDR Engineering, Inc. of the Carolinas
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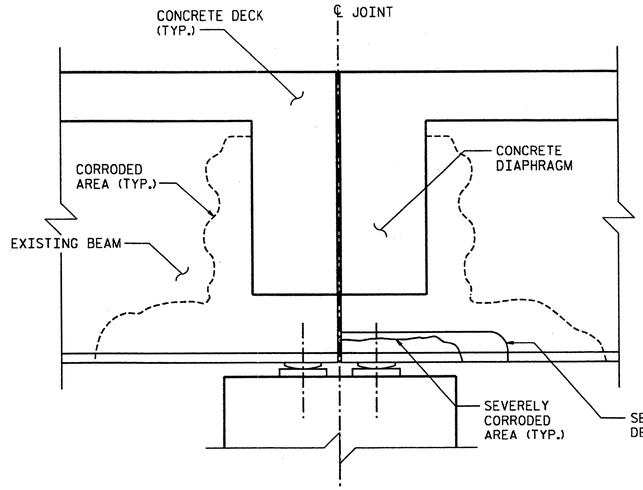
N.C.B.E.L.S. License Number: F-0116

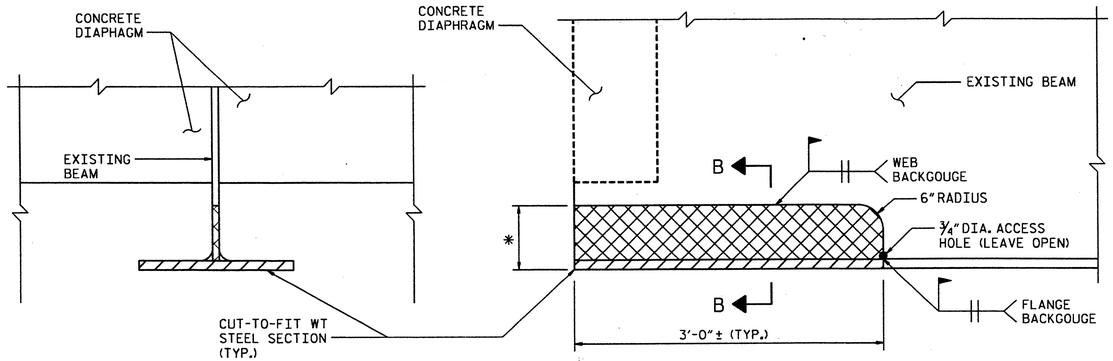
DRAWN BY : R. HELFRICH DATE : 01/2012
CHECKED BY : M. LEONARD DATE : 01/2012



NOTE:

IF CONCRETE DIAPHRAGM INTERFERES WITH INSTALLATION OF REPAIR, REMOVE DIAPHRAGM CONCRETE TO 1" BEHIND REINFORCING FOR A DISTANCE SUFFICIENT TO ALLOW WELDING. REPAIR DIAPHRAGM WITH SHOTCRETE AFTER REPAIR IS COMPLETE. SHOTCRETE AND CONCRETE REMOVAL SHALL BE CONSIDERED INCIDENTAL TO THE REPAIR.

SECTION THRU DIAPHRAGM



SECTION B-B

(NOT TO SCALE)

* TO BE DETERMINED BY THE ENGINEER (6"MINIMUM)

REPAIR DETAIL

(SEVERE SECTION LOSS)

REPAIR SEQUENCE

1) MECHANICALLY CLEAN RUST & SCALE & EXISTING PAINT TO AT LEAST 4" BEYOND THE REPAIR LIMITS.

2) CUT OUT SECTION TO BE REPAIRED AFTER JACKING SPAN.

3) REPLACE STEEL SECTION WITH A WT16.5x65 CUT TO FIT.

4) INSTALL WT SECTION AS INDICATED.

5) LOWER SPAN TO BEAR. CHECK FOR DISTRESS.

6) REMOVE JACKING EQUIPMENT AND OTHER TEMPORARY SUPPORTS.

PROJECT NO. WBS 17BP.5.P.4

DURHAM COUNTY

BRIDGE NO.: 193

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BEAM REPAIR DETAILS FOR BRIDGE NO. 193

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			70

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

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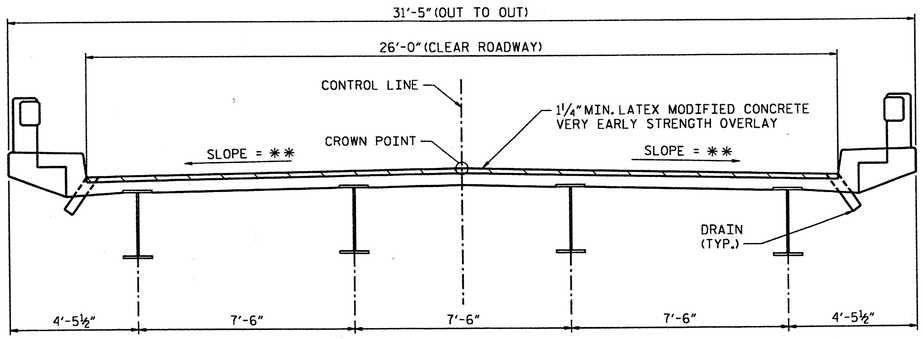
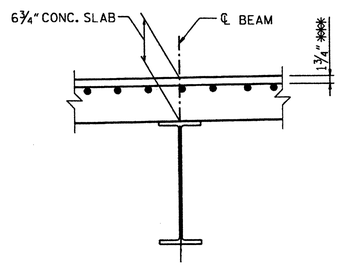


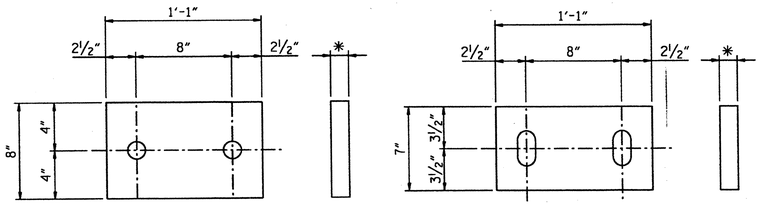
TYPICAL SECTION

** MATCH EXISTING PARABOLIC CROWN



EXISTING SLAB SECTION

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



* - DIMENSION UNKNOWN

BEARING REPLACEMENT IN KIND

BEARING REPLACEMENT AT THE DIRECTION OF THE ENGINEER.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR NEW BEARING DESIGN.

FOR BRIDGE JACKING, SEE SPECIAL PROVISIONS.

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 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 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.

FOR CLEANING AND PAINTING EXISTING BEARING PLATES, SEE SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL

INCIDENTAL MILLING	ASPHALT CONCRETE SURFACE COURSE TYPE SF9.5A	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
SQ. YDS.	TONS	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.
433	47.7	520	0	3	0	13	0	520	18	520	LUMP SUM	4042	137	19

*QUANTITY SHOWN IS FOR INFORMATION ONLY.

REINFORCING STEEL	BRIDGE JACKING	BEARING REPLACEMENT IN KIND	CLEANING AND PAINTING EXISTING BEARING PLATES
LBS	LUMP SUM	EACH	LUMP SUM
591	LUMP SUM	4	LUMP SUM

PROJECT NO. WBS 17BP.5.P.4

DURHAM COUNTY

BRIDGE NO.: 195

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION FOR BRIDGE NO. 195

(SR1675 OVER I-85)

NORTH CAROLINA PROFESSIONAL 032129 ENGINEER MATTHEW J. MOYER
2-15-12

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

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1			3			TOTAL SHEETS
2			4			70

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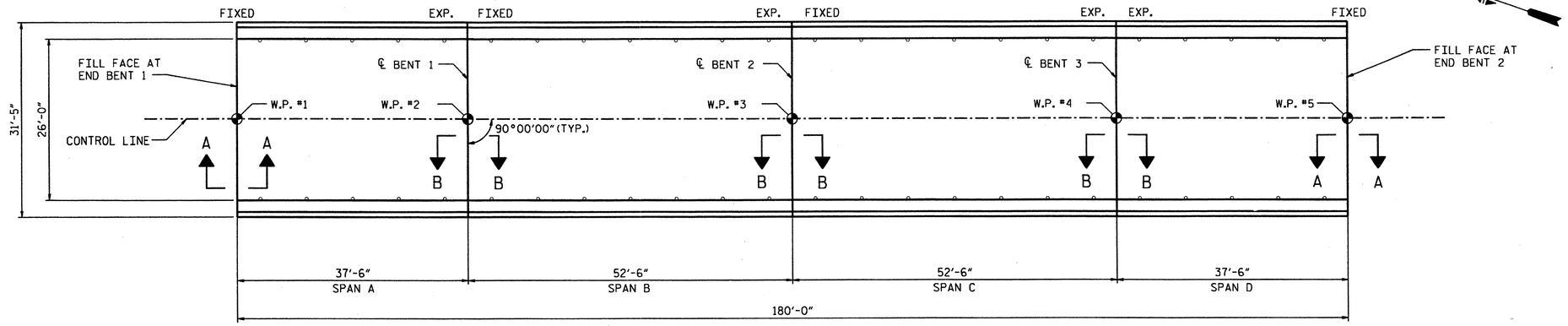
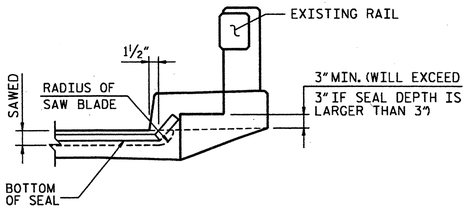
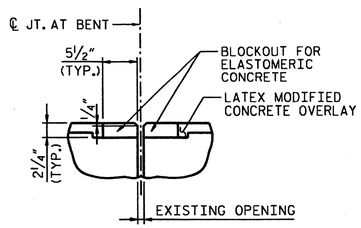
CHECKED BY : M. LEONARD DATE : 01/2012



PLAN VIEW

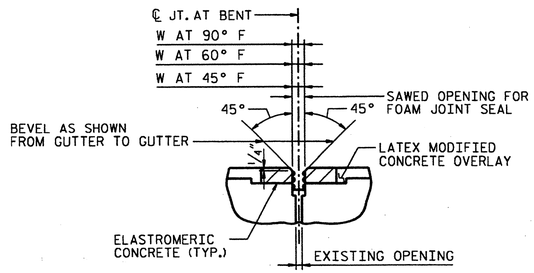


JOINT DETAIL AT CURB



FOAM JOINT SEAL

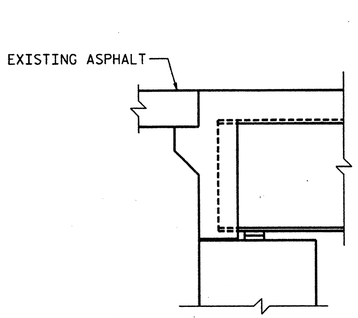
PRE-SAWED ELASTOMERIC CONCRETE DIMENSIONS



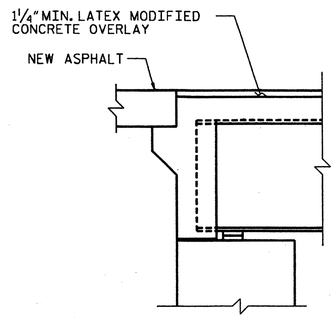
PROPOSED JOINT AT BENTS

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	1¾"	1⅞"	1 15/16"
BENT 2	1 11/16"	1⅞"	1 15/16"
BENT 3	1⅝"	1⅞"	2"

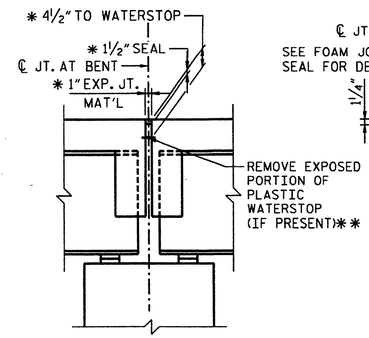


EXISTING SECTION AT END BENT

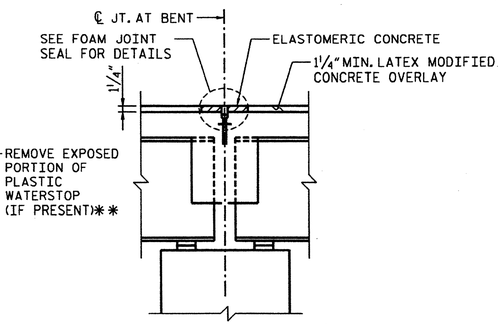


PROPOSED SECTION AT END BENT

SECTION A-A



EXISTING JOINT AT BENTS



PROPOSED JOINT AT BENTS

SECTION B-B

ELASTOMERIC CONCRETE	
BENT NO.	ELASTOMERIC CONCRETE ** (CU. FT.)
BENT 1	4.0
BENT 2	4.0
BENT 3	4.0
TOTAL	12.0

** BASED ON THE MINIMUM BLOCKOUT SHOWN

* ESTIMATED DIMENSION

** 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. WBS 17BP.5.P.4

DURHAM COUNTY

BRIDGE NO.: 195

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032129 MATTHEW J. MOYER

1-13-2012

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN VIEW AND JOINT DETAILS FOR BRIDGE NO. 195

REVISIONS						SHEET NO. S-13
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 70
1			3			
2			4			

DRAWN BY : R. HELFRICH DATE : 01/2012
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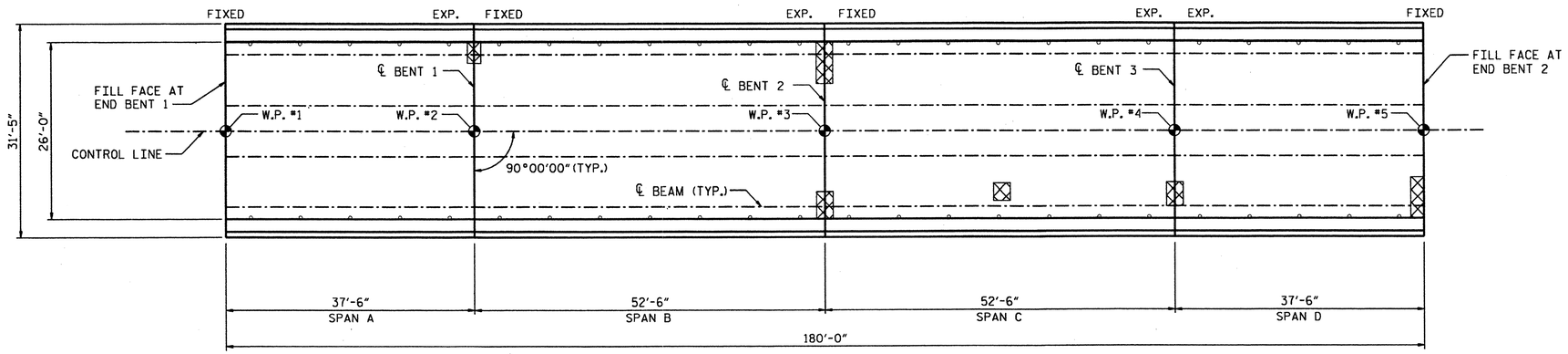
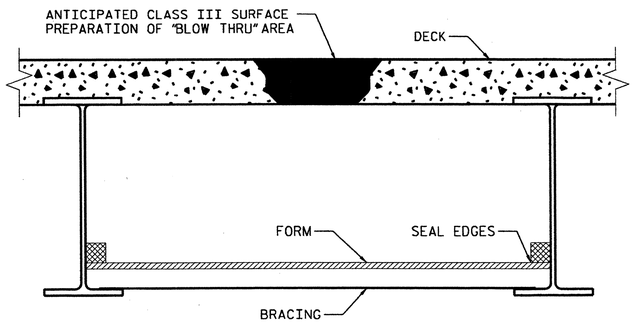


PLAN OF SPANS - DECK REPAIRS

APPROX. AREA: CLASS I REPAIR

APPROX. AREA: CLASS II REPAIR

APPROX. AREA: CLASS III REPAIR

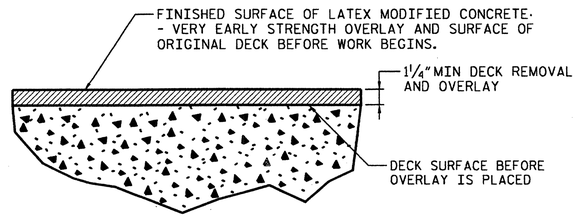


TYPICAL "BLOW THRU" CONTAINMENT AND FORMWORK

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 VERY EARLY STRENGTH OVERLAY

PROJECT NO. WBS 17BP.5.P.4

DURHAM COUNTY

BRIDGE NO.: 195

NORTH CAROLINA PROFESSIONAL SEAL 032129 ENGINEER MATTHEW J. MOYER

1-13-2012

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK REPAIR DETAILS FOR BRIDGE NO. 195

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			70

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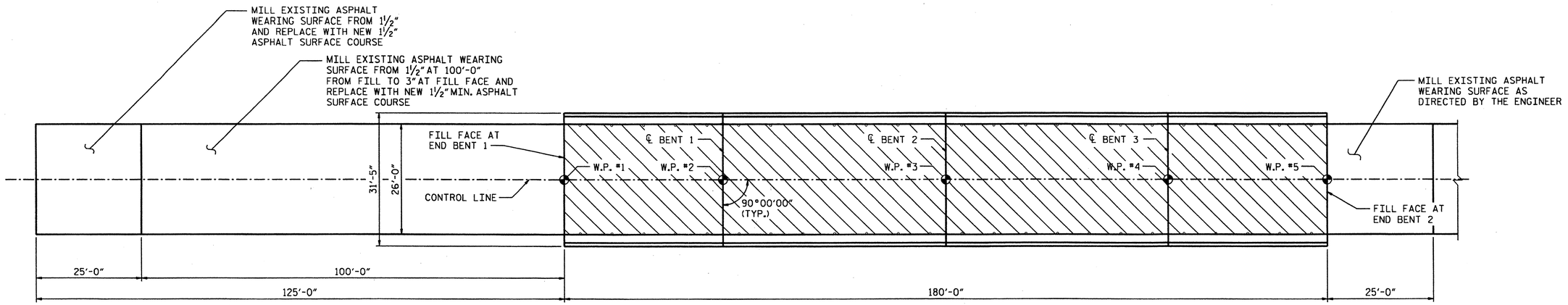
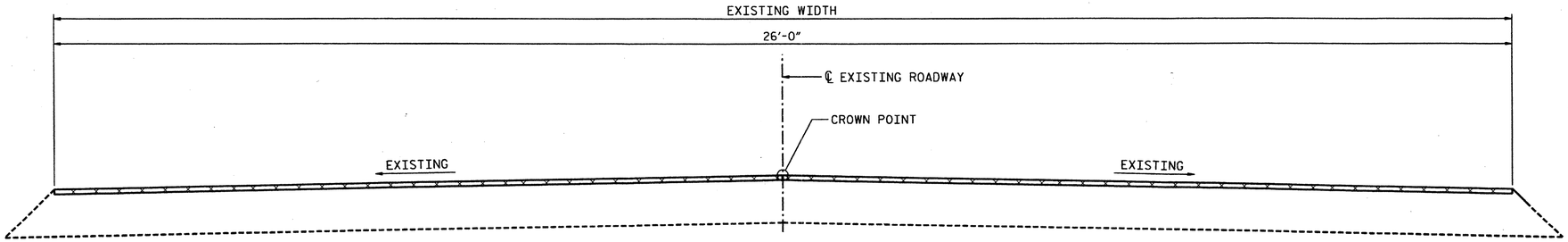


PLAN VIEW

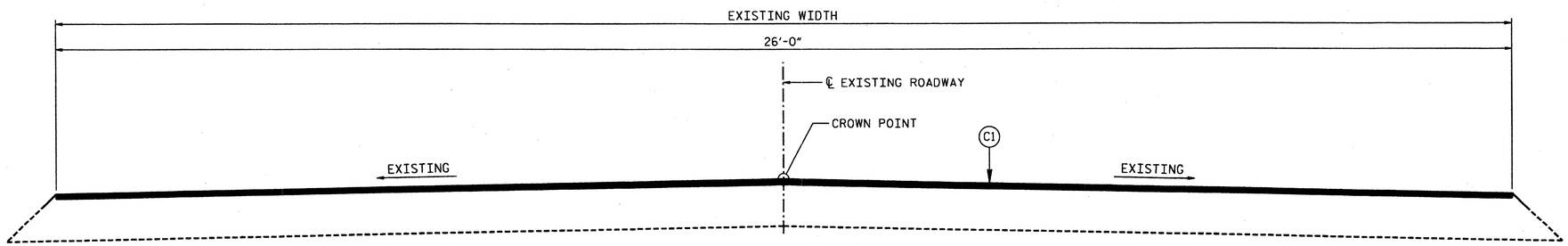
DECK SCARIFICATION AND HYDRODEMOLITION

C1	PROPOSED VARIABLE DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH.



TYPICAL ROADWAY MILLING SECTION

ASPHALT MILLING



TYPICAL ROADWAY SECTION

PROJECT NO. WBS 17BP.5.P.4

DURHAM COUNTY

BRIDGE NO.: 195

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION & MILLING DETAILS FOR BRIDGE NO. 195

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			70

DRAWN BY : R. HELFRICH DATE : 01/2012
CHECKED BY : M. LEONARD DATE : 01/2012

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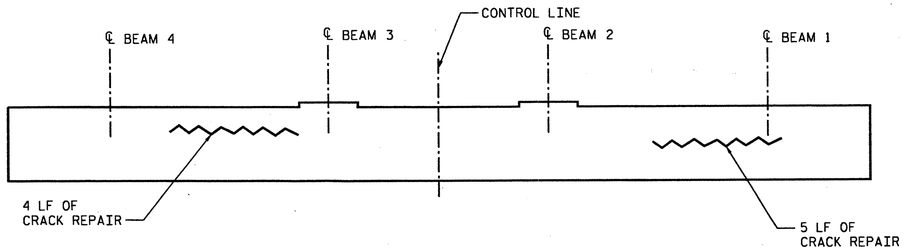
BILL OF MATERIAL		
END BENT 1		
CONCRETE REPAIRS	CF	0
SHOTCRETE REPAIRS	CF	0
EPOXY RESIN INJECTION	LF	9
REINFORCING STEEL	LBS	0



EAST 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 1 FOR BRIDGE NO. 195".

FOR "TYPICAL REPAIR AT BEAM BEARING" DETAIL, SEE DRAWING "BENT 3 FOR BRIDGE NO. 195".

FOR BRIDGE JACKING, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIR, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, 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

PROJECT NO. WBS 17BP.5.P.4

DURHAM COUNTY

BRIDGE NO.: 195

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

END BENT 1
FOR BRIDGE NO. 195

REVISIONS						SHEET NO. S-16
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 70
2			4			

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

DRAWN BY : R. HELFRICH DATE : 01/2012
CHECKED BY : M. LEONARD DATE : 01/2012

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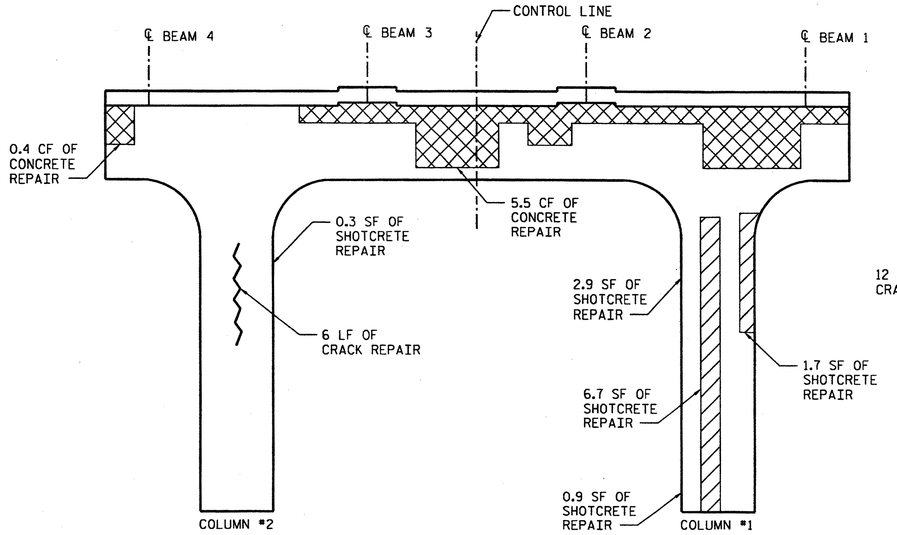

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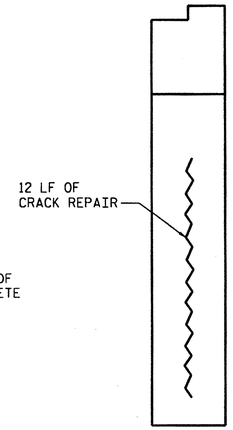

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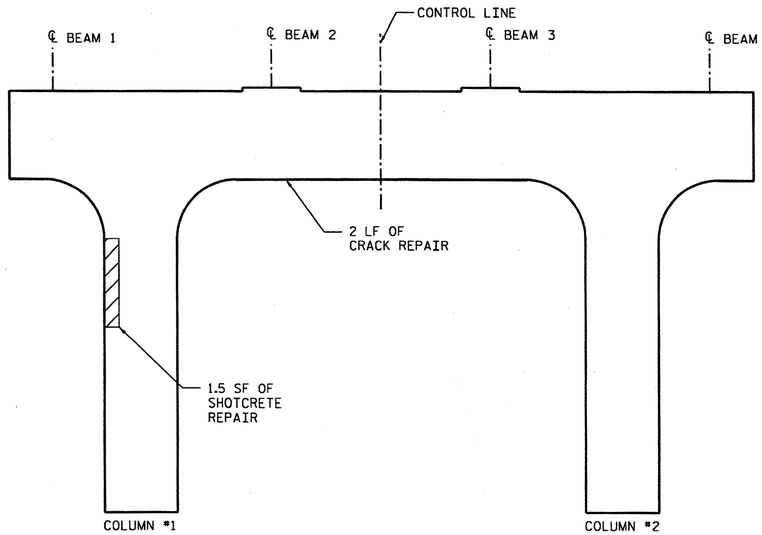

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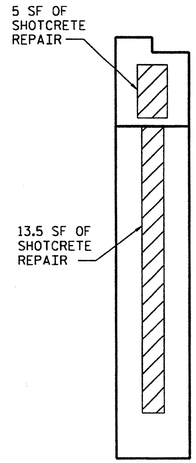

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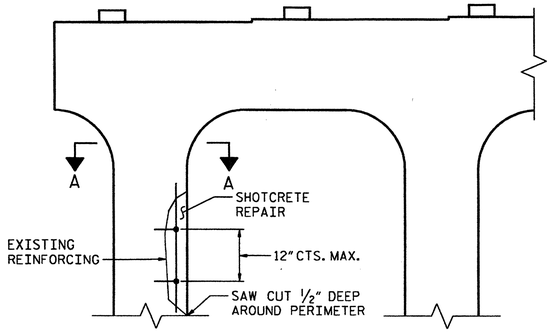
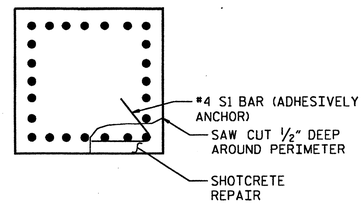


COLUMN REPAIR DETAIL

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



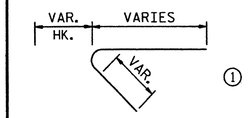
SECTION A-A

BILL OF MATERIAL

BENT 1

BAR	NO.	SIZE	TYPE	LENGTH
S1	VAR.	#4	1	VARIES
S2	VAR.	#5	2	VARIES
CONCRETE REPAIRS				CF 6
SHOTCRETE REPAIRS				CF 9
EPOXY RESIN INJECTION				LF 20
REINFORCING STEEL				LBS 281

BAR TYPE



(BAR DIMENSIONS ARE OUT TO OUT)

NOTES

FOR NOTES, SEE DRAWING "END BENT 1 FOR BRIDGE NO. 195".

CONCRETE REPAIR

SHOTCRETE REPAIR

EPOXY RESIN INJECTION OF CRACKS

PROJECT NO. WBS 17BP.5.P.4

DURHAM COUNTY

BRIDGE NO.: 195

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 1
FOR BRIDGE NO. 195

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-17
1			3			TOTAL SHEETS
2			4			70

DRAWN BY : R. HELFRICH DATE : 01/2012
CHECKED BY : M. LEONARD DATE : 01/2012

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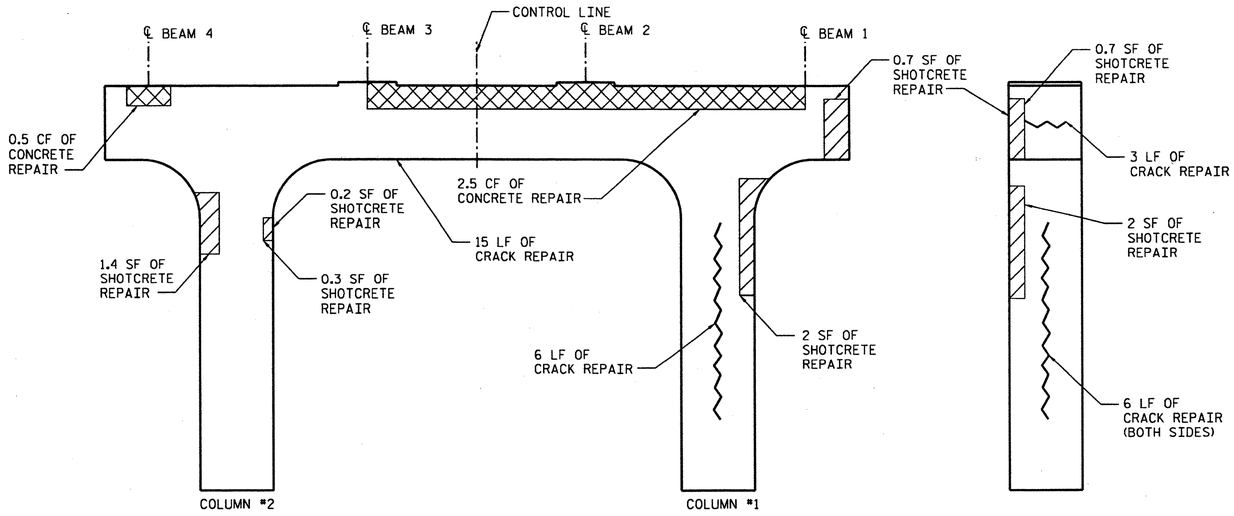
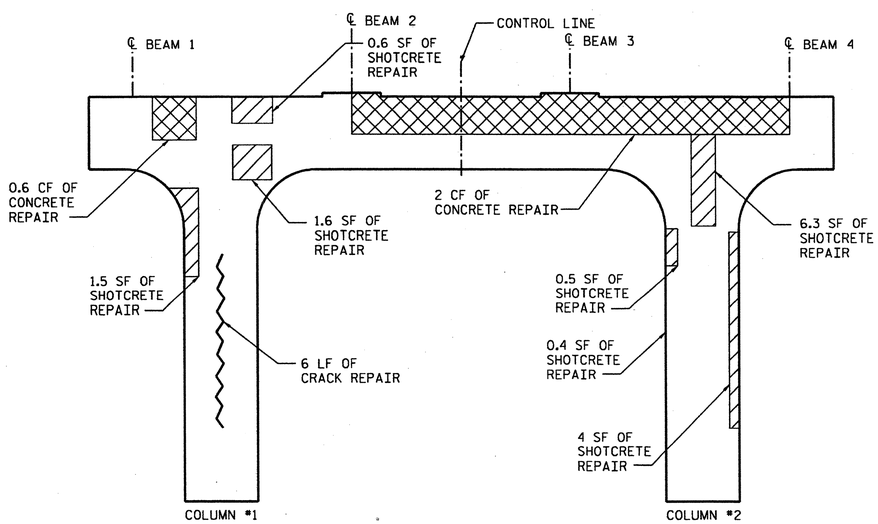


EAST ELEVATION

NORTH END ELEVATION



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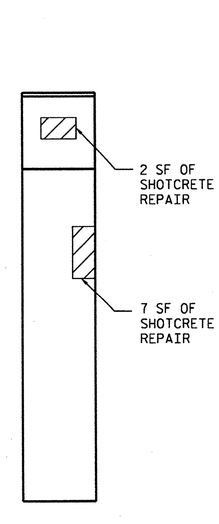


SOUTH END ELEVATION

SERVICE REACTIONS PER BEARING				
SUPPORT	DL (KIP)		LL+I (KIP)	
	BACK	AHEAD	BACK	AHEAD
END BENT 1	--	18	--	60
BENT 1	18	25	60	64
BENT 2	25	25	64	64
BENT 3	25	18	64	60
END BENT 2	18	--	60	--

NOTES

FOR NOTES, SEE DRAWING "END BENT 1 FOR BRIDGE NO. 195".

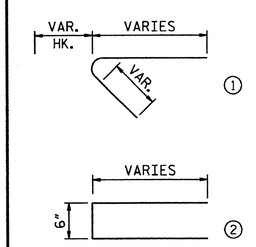
CONCRETE REPAIR

SHOTCRETE REPAIR

EPOXY RESIN INJECTION OF CRACKS

BILL OF MATERIAL				
BENT 2				
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	42
REINFORCING STEEL			LBS	268

BAR TYPE



(BAR DIMENSIONS ARE OUT TO OUT)

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 1/2 INCH WITH RESPECT TO BEARINGS OF ADJACENT PIERS.

BEARING NUTS SHALL BE LOOSENED TO PROVIDE A MINIMUM OF 59/64 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.

PROJECT NO. WBS 17BP.5.P.4

DURHAM COUNTY

BRIDGE NO.: 195

NORTH CAROLINA PROFESSIONAL SEAL 032129 ENGINEER MATTHEW J. MOTES

1-13-2012

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 2 FOR BRIDGE NO. 195

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			70

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 : R. HELFRICH DATE : 01/2012
CHECKED BY : M. LEONARD DATE : 01/2012

PLOT DRIVER: NCDOT.pdf_mono_eng_50.plt PENTABLE: Durham_Granville_FULLSET_pen.tbl
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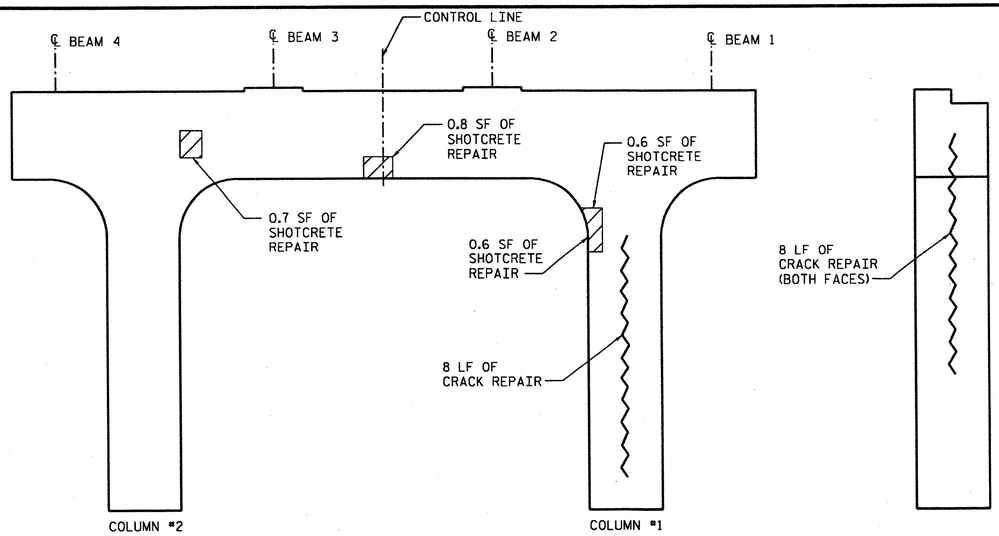
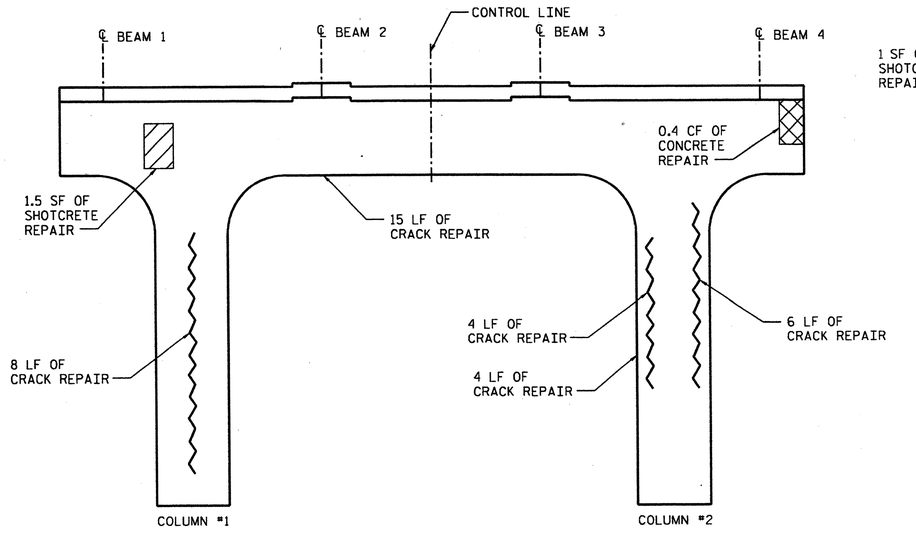


EAST ELEVATION

NORTH END ELEVATION



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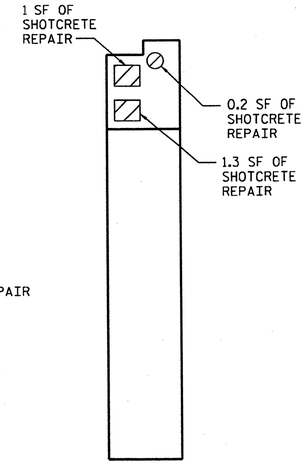
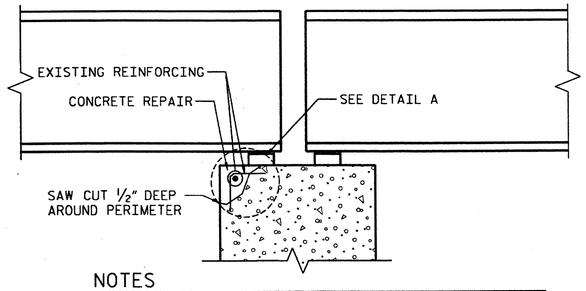


SOUTH END ELEVATION



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.

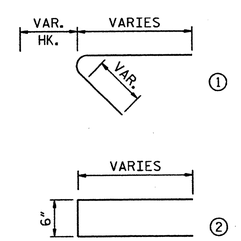
TYPICAL REPAIR AT BEAM BEARING

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 2
EPOXY RESIN INJECTION				LF 61
REINFORCING STEEL				LBS 42

BAR TYPE



(BAR DIMENSIONS ARE OUT TO OUT)

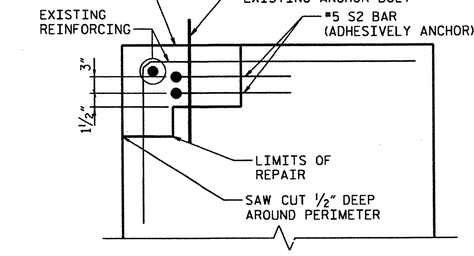
NOTES

FOR NOTES, SEE DRAWING "END BENT 1 FOR BRIDGE NO. 195".

CONCRETE REPAIR

SHOTCRETE REPAIR

EPOXY RESIN INJECTION OF CRACKS



DETAIL A

PROJECT NO. WBS 17BP.5.P.4

DURHAM COUNTY

BRIDGE NO.: 195

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 3 FOR BRIDGE NO. 195

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032129 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-19
1			3			TOTAL SHEETS
2			4			70

DRAWN BY : R. HELFRICH DATE : 01/2012
CHECKED BY : M. LEONARD DATE : 01/2012

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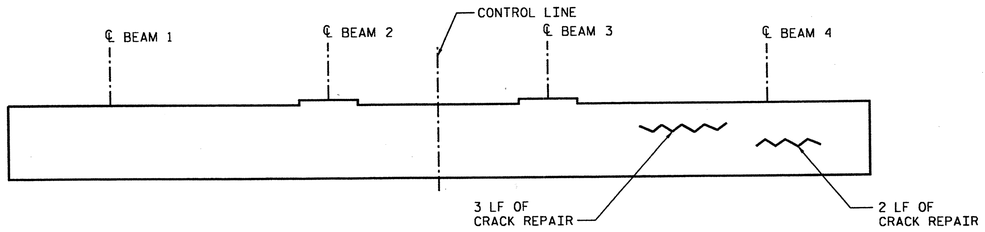
BILL OF MATERIAL		
END BENT 2		
CONCRETE REPAIRS	CF	0
SHOTCRETE REPAIRS	CF	0
EPOXY RESIN INJECTION	LF	5
REINFORCING STEEL	LBS	0



WEST ELEVATION

NOTES

FOR NOTES, SEE DRAWING "END BENT 1 FOR BRIDGE NO. 195".

CONCRETE REPAIR

SHOTCRETE REPAIR

EPOXY RESIN INJECTION OF CRACKS

PROJECT NO. WBS 17BP.5.P.4

DURHAM COUNTY

BRIDGE NO.: 195

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

END BENT 2
FOR BRIDGE NO. 195

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-20
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 70
1			3			
2			4			

DRAWN BY : R. HELFRICH DATE : 01/2012
CHECKED BY : M. LEONARD DATE : 01/2012

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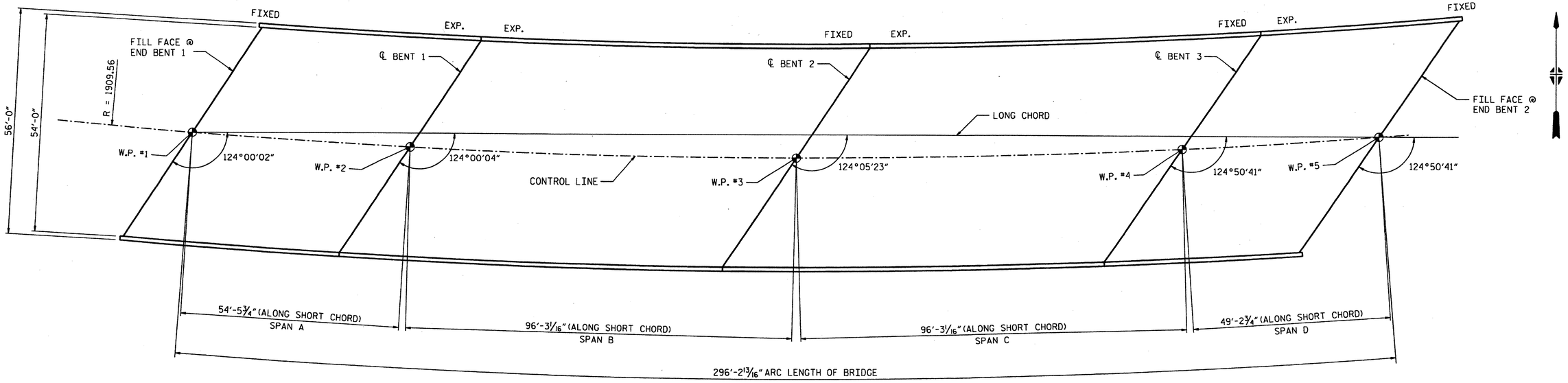

PLAN VIEW

NOTES

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

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.

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 1/2 INCH WITH RESPECT TO BEARINGS OF ADJACENT PIERS.

BEARING NUTS SHALL BE LOOSENED TO PROVIDE A MINIMUM OF 59/64 INCH GAP TO ALLOW FOR JACKING.

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SERVICE REACTIONS PER BEARING

SUPPORT	DL (KIP)		LL+I (KIP)	
	BACK	AHEAD	BACK	AHEAD
END BENT 1	--	34	--	50
BENT 1	34	64	50	53
BENT 2	64	64	53	53
BENT 3	64	34	53	50
END BENT 2	34	--	50	--

TOTAL BILL OF MATERIALS

CONCRETE REPAIRS	EPOXY RESIN INJECTION	SHOTCRETE REPAIRS	REINFORCING STEEL	BRIDGE JACKING
CU. FT	LIN. FT.	CU. FT	LBS.	LUMP SUM
24	31	25	946	LUMP SUM

PROJECT NO. WBS 17BP.5.P.4

GRANVILLE COUNTY

BRIDGE NO.: 16

NORTH CAROLINA PROFESSIONAL SEAL 032129 ENGINEER MATTHEW J. MOYER

1-13-2012

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN VIEW
FOR BRIDGE NO. 16
(US15 OVER I-85)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS
2			4			70

HDR Engineering, Inc. of the Carolinas
3733 National Drive, Suite 207 Raleigh, N.C. 27612
N.C.B.E.L.S. License Number: F-0176

DRAWN BY : R. HELFRICH DATE : 01/2012
CHECKED BY : M. LEONARD DATE : 01/2012

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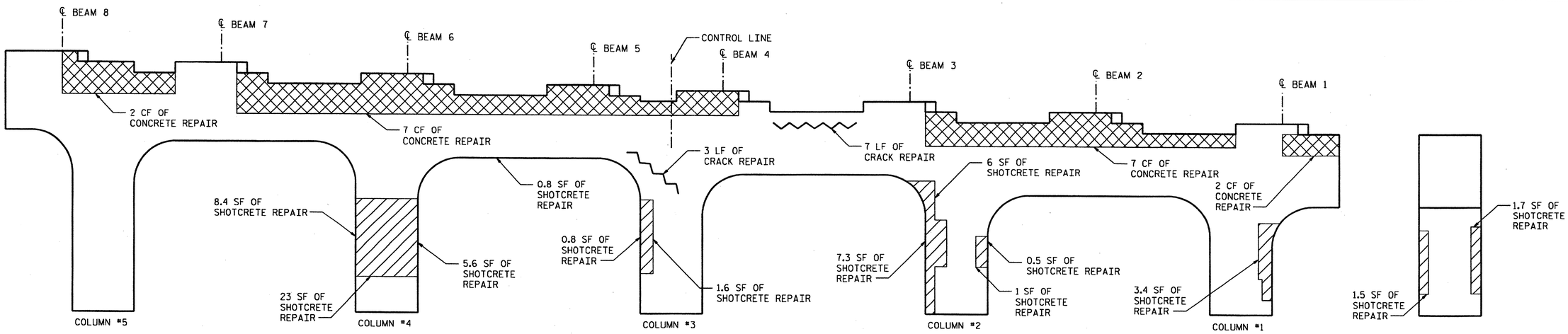
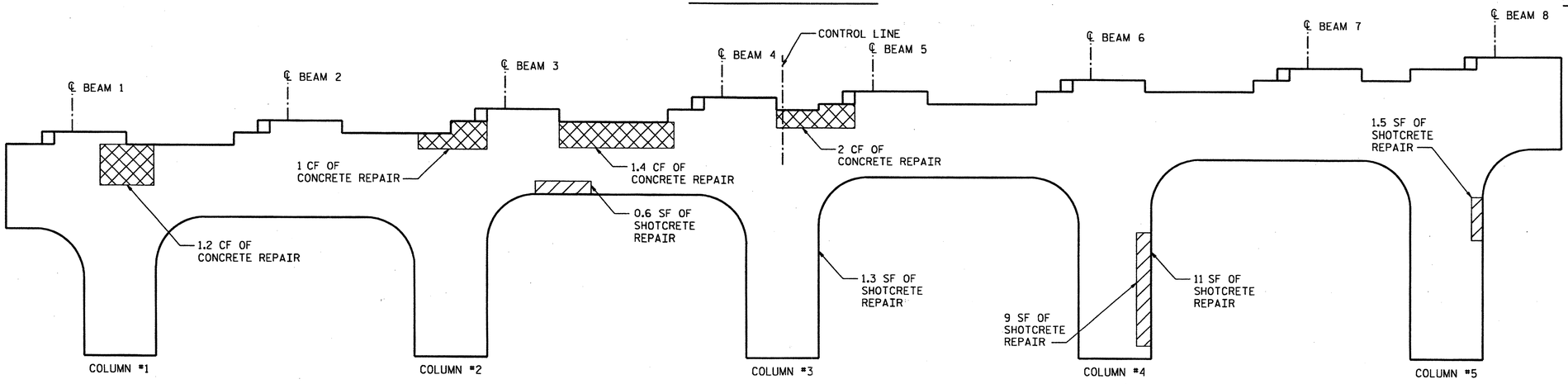
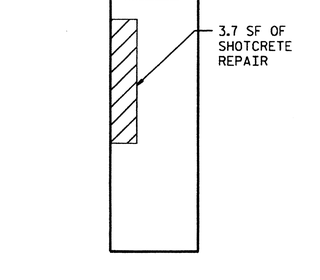


EAST ELEVATION

NORTH END ELEVATION



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 2 FOR BRIDGE NO. 16".

FOR "TYPICAL REPAIR AT BEAM BEARING" DETAIL, SEE DRAWING "BENT 3 FOR BRIDGE NO. 16".

FOR BRIDGE JACKING, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIR, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, 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

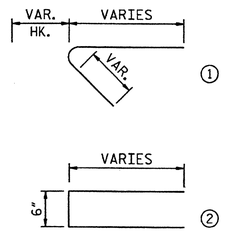
EPOXY RESIN INJECTION OF CRACKS

BILL OF MATERIAL

BENT 1

BAR	NO.	SIZE	TYPE	LENGTH
S1	VAR.	#4	1	VARIES
S2	VAR.	#5	2	VARIES
CONCRETE REPAIRS			CF	24
SHOTCRETE REPAIRS			CF	23
EPOXY RESIN INJECTION			LF	10
REINFORCING STEEL			LBS	916

BAR TYPE



(BAR DIMENSIONS ARE OUT TO OUT)

DRAWN BY : R. HELFRICH DATE : 01/2012
CHECKED BY : M. LEONARD DATE : 01/2012

PROJECT NO. WBS 17BP.5.P.4

GRANVILLE COUNTY

BRIDGE NO.: 16

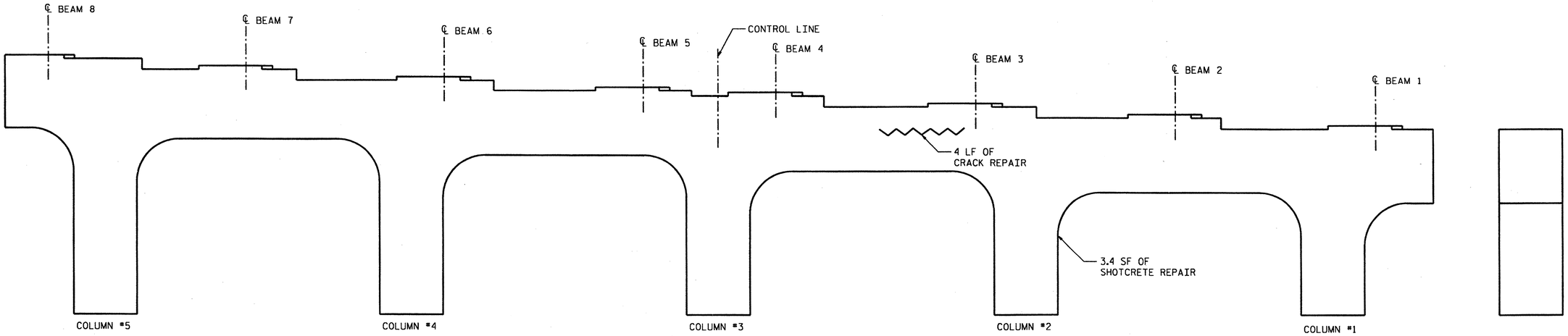
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 1
FOR BRIDGE NO. 16

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

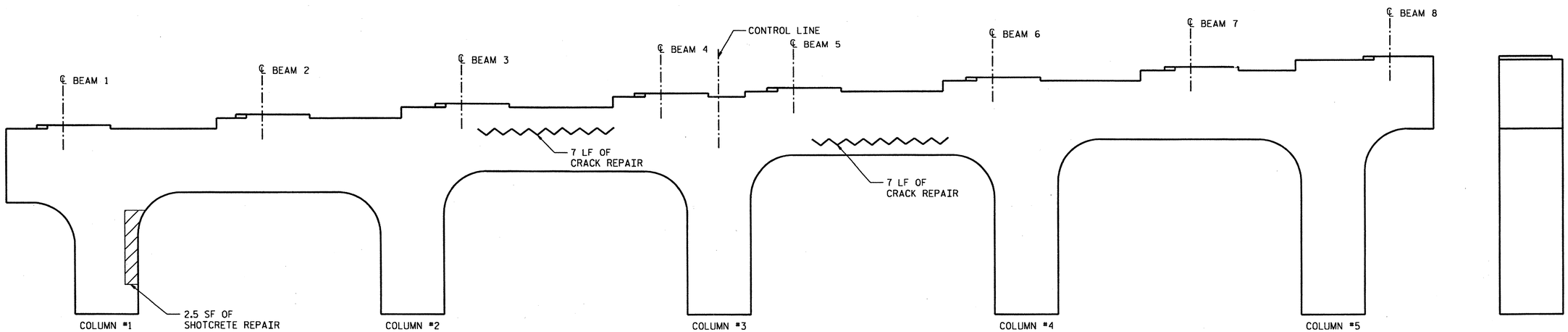
HDR Engineering, Inc. of the Carolinas
2733 National Drive, Suite 207 Raleigh, N.C. 27612
N.C.B.E.L.S. License Number: F-0116

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
1			3			TOTAL SHEETS
2			4			70



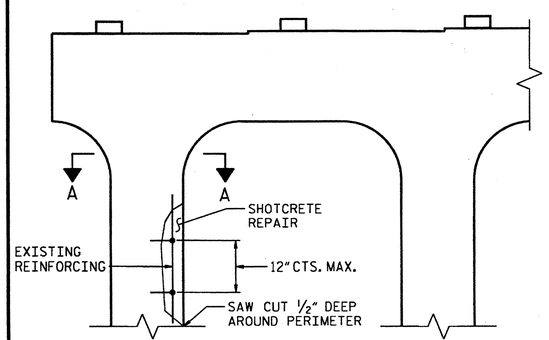
EAST ELEVATION

NORTH END ELEVATION



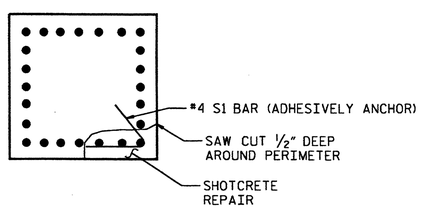
WEST ELEVATION

SOUTH 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 ANCHOR S1 BARS AS SHOWN IN SECTION A-A



SECTION A-A

NOTES

FOR NOTES, SEE DRAWING "BENT 1 FOR BRIDGE NO. 16".

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

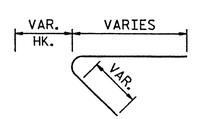
BILL OF MATERIAL

BENT 2

BAR	NO.	SIZE	TYPE	LENGTH
S1	VAR.	#4	1	VARIES

CONCRETE REPAIRS	CF	0
SHOTCRETE REPAIRS	CF	2
EPOXY RESIN INJECTION	LF	18
REINFORCING STEEL	LBS	30

BAR TYPE



(BAR DIMENSIONS ARE OUT TO OUT)

NORTH CAROLINA PROFESSIONAL 032129 ENGINEER MATTHEW J. MOTER

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. WBS 17BP.5.P.4

GRANVILLE COUNTY

BRIDGE NO.: 16

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 2
FOR BRIDGE NO. 16

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-23
1			3			TOTAL SHEETS
2			4			70

DRAWN BY : R. HELFRICH DATE : 01/2012
CHECKED BY : M. LEONARD DATE : 01/2012

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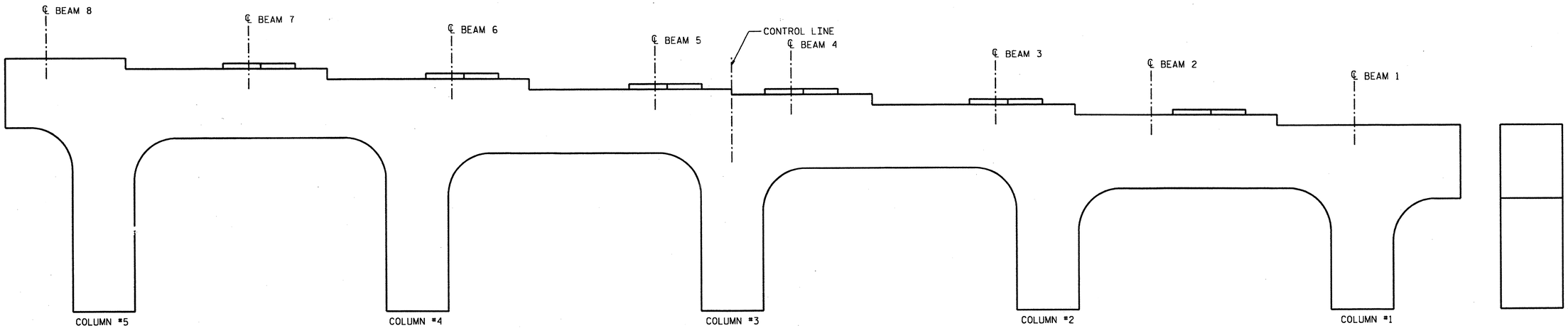
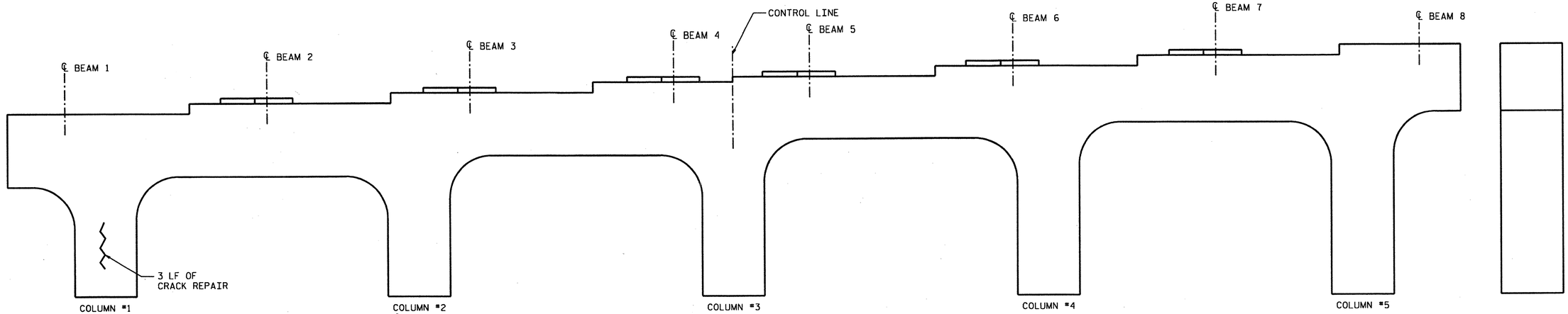


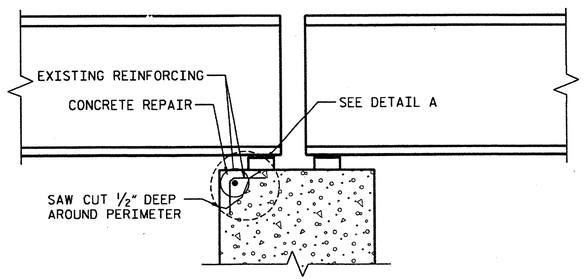
EAST ELEVATION

NORTH END ELEVATION



WEST ELEVATION

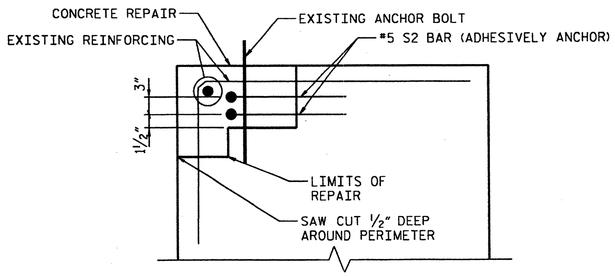
SOUTH END ELEVATION



NOTES

RAISE BEAM 1/2 " 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



DETAIL A

BILL OF MATERIAL		
BENT 3		
CONCRETE REPAIRS	CF	0
SHOTCRETE REPAIRS	CF	0
EPOXY RESIN INJECTION	LF	3
REINFORCING STEEL	LBS	0

NOTES

FOR NOTES, SEE DRAWING "BENT 1 FOR BRIDGE NO. 16".

CONCRETE REPAIR

SHOTCRETE REPAIR

EPOXY RESIN INJECTION OF CRACKS

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032129 MATTHEW J. MOYER

1-13-2012

PROJECT NO. WBS 17BP.5.P.4

GRANVILLE COUNTY

BRIDGE NO.: 16

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 3
FOR BRIDGE NO. 16

REVISIONS						SHEET NO. S-24
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 70
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 : R. HELFRICH DATE : 01/2012
CHECKED BY : M. LEONARD DATE : 01/2012

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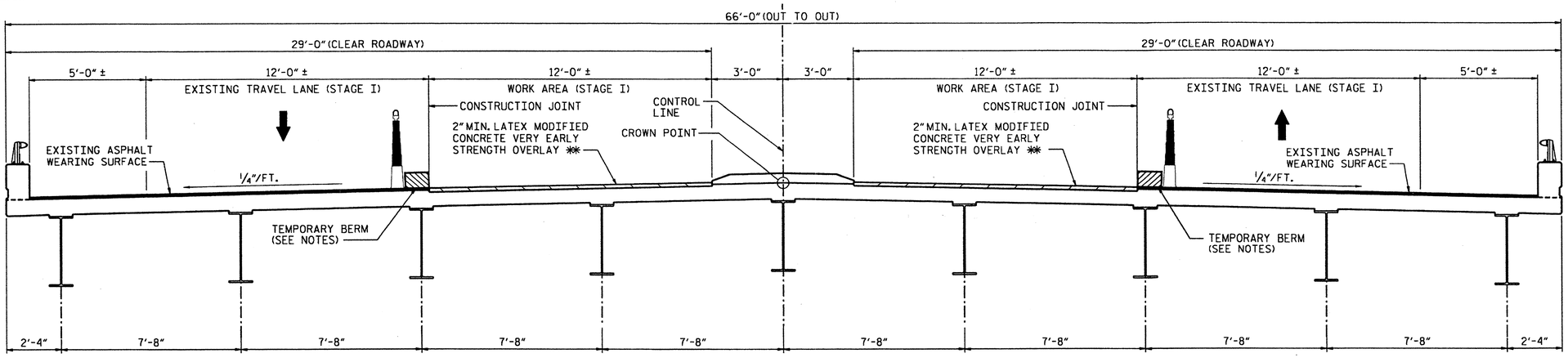
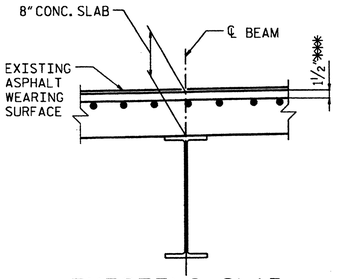


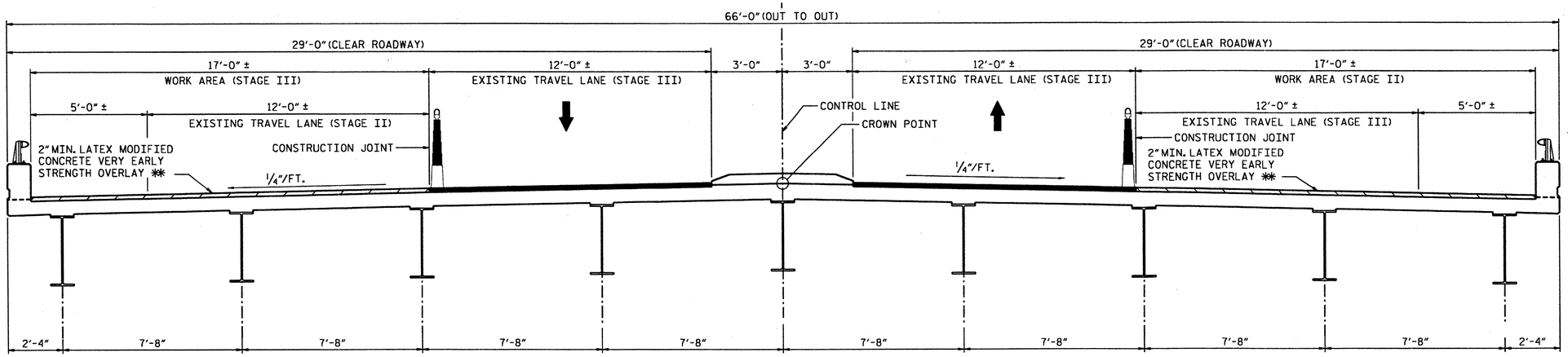
TYPICAL SECTION - STAGE I

NOTE:
DECK DRAIN LOCATIONS & DETAILS UNKNOWN.



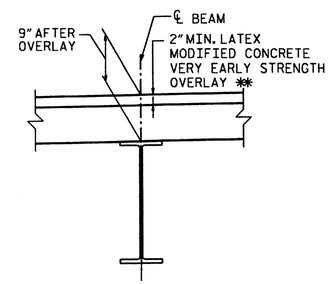
EXISTING SLAB SECTION

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



TYPICAL SECTION - STAGES II & III

** THE FINISHED SURFACE OF THE LATEX MODIFIED CONCRETE OVERLAY SHALL BE 1" ABOVE THE SURFACE OF THE ORIGINAL DECK.



PROPOSED SLAB SECTION

REINFORCING NOT SHOWN

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 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 CLEANING AND PAINTING EXISTING BEARING PLATES, 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 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

INCIDENTAL MILLING	ASPHALT CONCRETE SURFACE COURSE TYPE SF9.5A	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
SQ. YDS.	TONS	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
711	79.8	2430	28	0	0	0	0	2430	135	2430	LUMP SUM	19,397	5	48	912

* QUANTITY SHOWN IS FOR INFORMATION ONLY.

TOTAL BILL OF MATERIAL

BRIDGE JACKING	BEAM REPAIR	CLEANING & PAINTING EXISTING BEARING PLATES	BEARING REPLACEMENT IN KIND
LUMP SUM	LBS	LUMP SUM	EA
LUMP SUM	514	LUMP SUM	8

DRAWN BY : R. HELFRICH DATE : 01/2012
CHECKED BY : M. LEONARD DATE : 01/2012

NORTH CAROLINA PROFESSIONAL ENGINEER 032129 MATTHEW J. MOTES
2-15-12

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

PROJECT NO. WBS 17BP.5.P.4
GRANVILLE COUNTY
BRIDGE NO.: 35

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION FOR BRIDGE NO. 35

(US158 OVER I-85)

REVISIONS						SHEET NO. S-25
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 70
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2			4			

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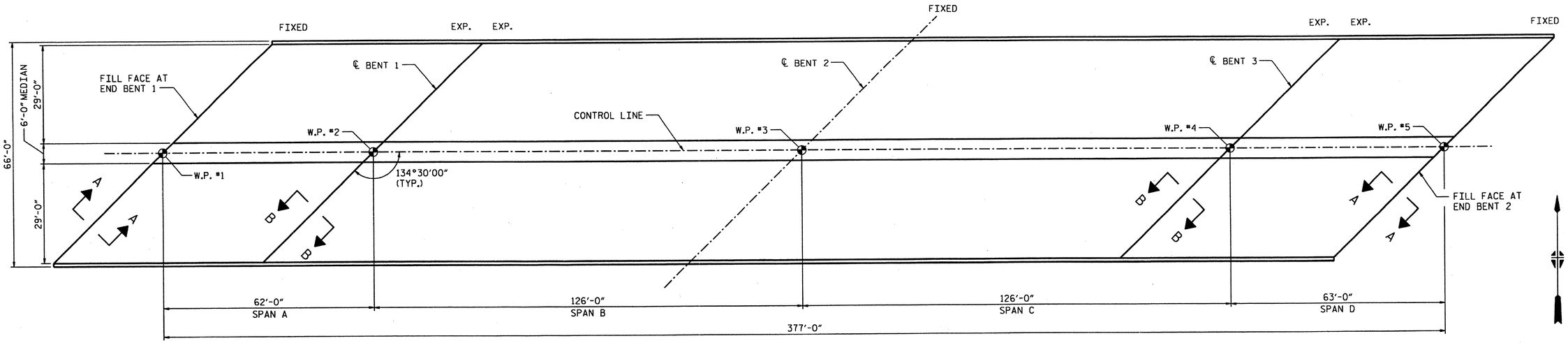
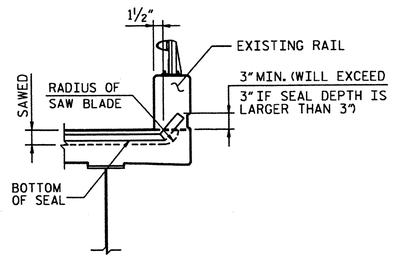
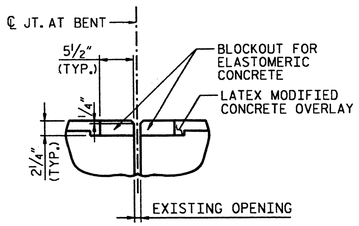


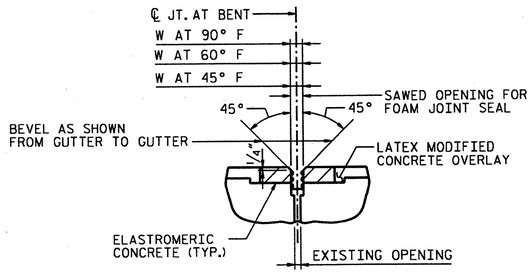
PLAN VIEW



JOINT DETAIL AT CURB



FOAM JOINT SEAL
PRE-SAWED ELASTOMERIC CONCRETE DIMENSIONS

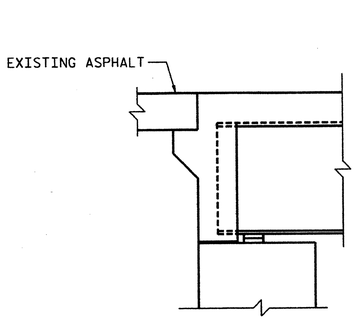


PROPOSED JOINT AT BENTS
FOAM JOINT SEAL EXPANSION

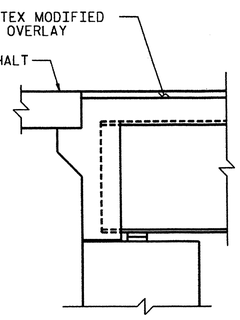
SAWED OPENING FOR FOAM JOINT			
BENT NO.	W AT 90° F	W AT 60° F	W AT 45° F
BENT 1	1 11/16"	2 1/8"	2 5/16"
BENT 3	1 11/16"	2 1/8"	2 5/16"

ELASTOMERIC CONCRETE	
BENT NO.	ELASTOMERIC CONCRETE ** (CU. FT.)
BENT 1	12.4
BENT 3	12.4
TOTAL	24.8

** BASED ON THE MINIMUM BLOCKOUT SHOWN

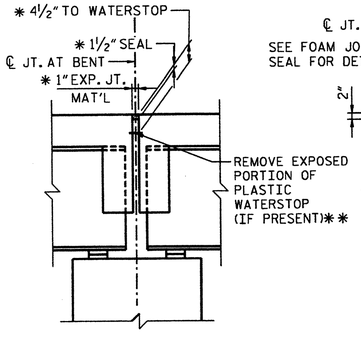


EXISTING SECTION AT END BENT



PROPOSED SECTION AT END BENT

SECTION A-A



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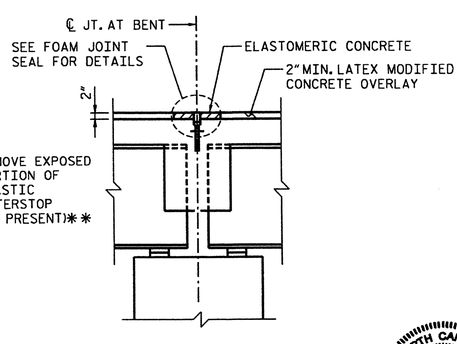


PROPOSED JOINT AT BENTS

SECTION B-B

* ESTIMATED DIMENSION

** 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. WBS 17BP.5.P.4

GRANVILLE COUNTY

BRIDGE NO.: 35

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

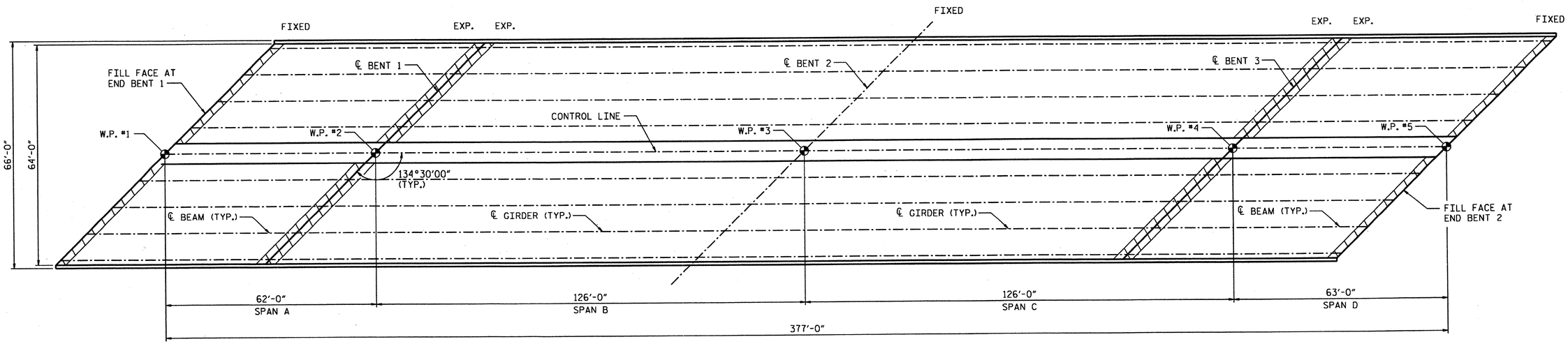
PLAN VIEW AND JOINT DETAILS FOR BRIDGE NO. 35

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
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 70
1			3			
2			4			

DRAWN BY : R. HELFRICH DATE : 01/2012
CHECKED BY : M. LEONARD DATE : 01/2012

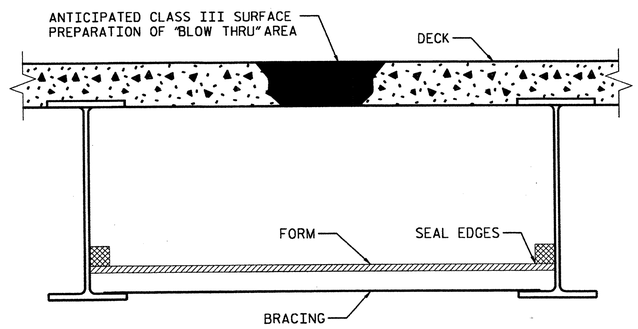


PLAN OF SPANS - DECK REPAIRS

APPROX. AREA: CLASS I REPAIR

APPROX. AREA: CLASS II REPAIR

APPROX. AREA: CLASS III REPAIR

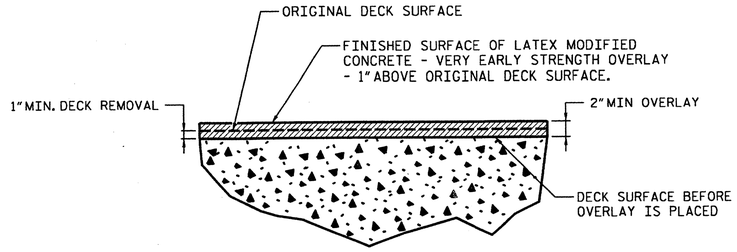


TYPICAL "BLOW THRU" CONTAINMENT AND FORMWORK

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. WBS 17BP.5.P.4

GRANVILLE COUNTY

BRIDGE NO.: 35

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK REPAIR DETAILS FOR BRIDGE NO. 35

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-27
1			3			TOTAL SHEETS
2			4			70

DRAWN BY : R. HELFRICH DATE : 01/2012

CHECKED BY : M. LEONARD DATE : 01/2012

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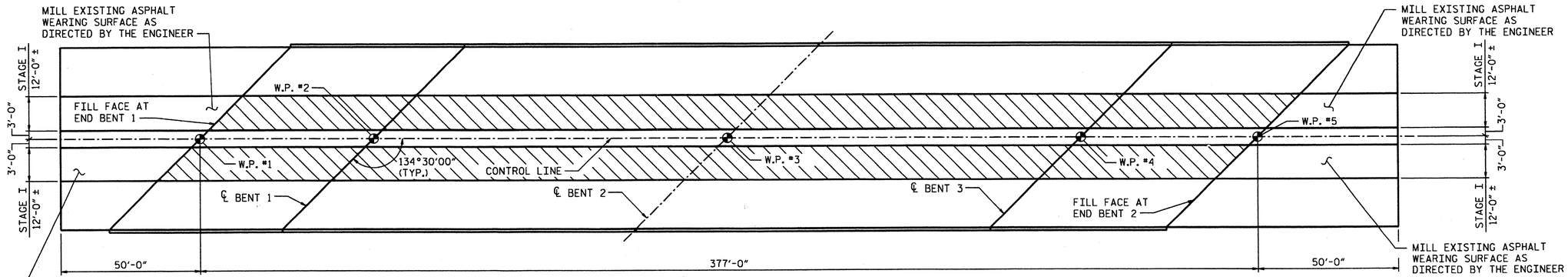


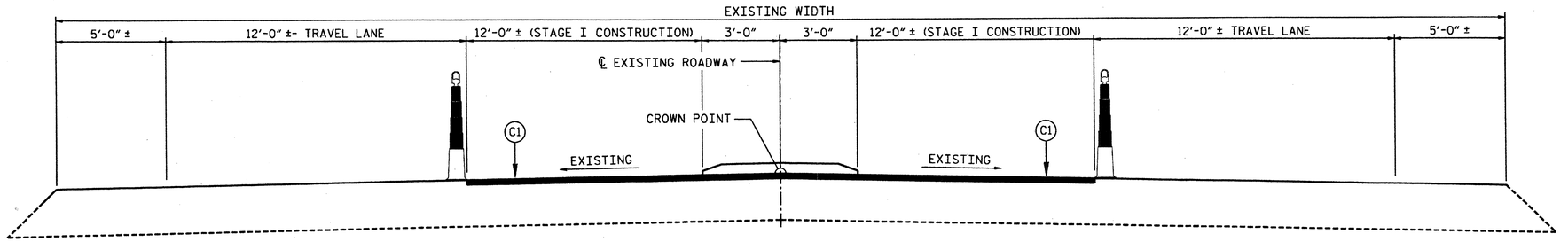
PLAN VIEW

(STAGE I)

▨ DECK SCARIFICATION AND HYDRODEMOLITION

C1	PROPOSED VARIABLE DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH.

TYPICAL ROADWAY MILLING SECTION - STAGE I



TYPICAL ROADWAY SECTION - STAGE I

PROJECT NO. WBS 17BP.5.P.4

GRANVILLE COUNTY

BRIDGE NO.: 35

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION & MILLING DETAILS FOR BRIDGE NO. 35 (STAGE I)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-28
1			3			TOTAL SHEETS
2			4			70

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032129 MATTHEW J. MOTER
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 : R. HELFRICH DATE : 01/2012
CHECKED BY : M. LEONARD DATE : 01/2012

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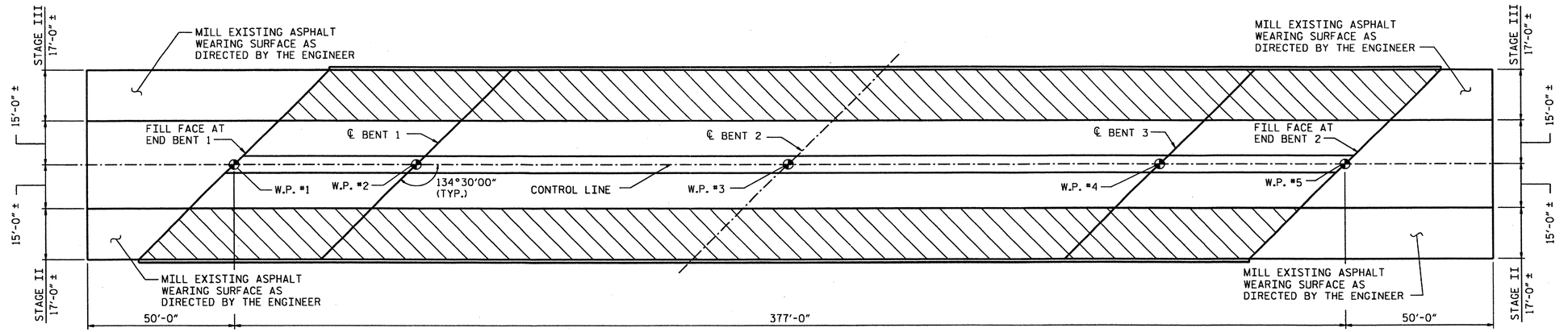
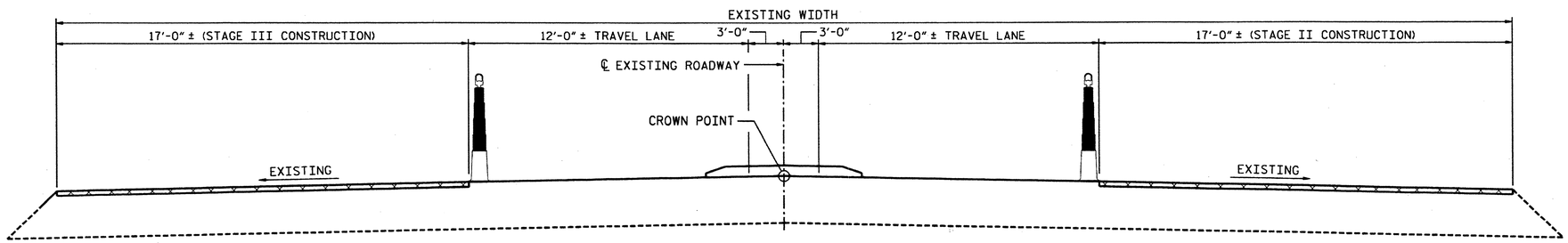


PLAN VIEW

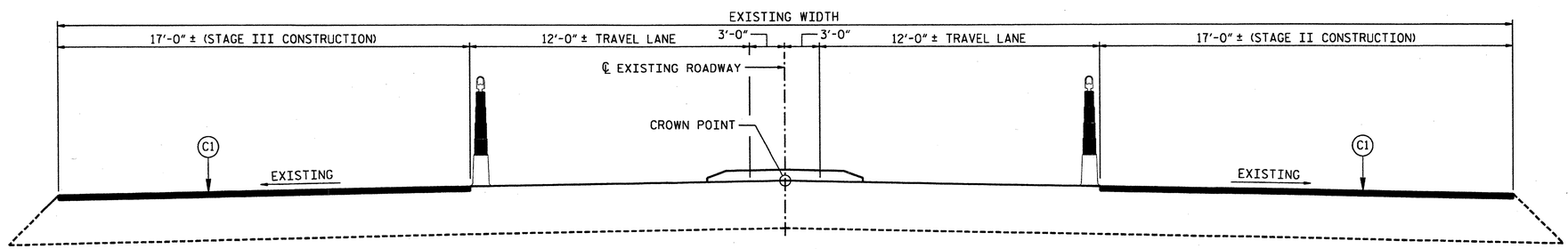
(STAGE I)

▨ DECK SCARIFICATION AND HYDRODEMOLITION

C1	PROPOSED VARIABLE DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH.



TYPICAL ROADWAY MILLING SECTION - STAGES II & III



TYPICAL ROADWAY SECTION - STAGES II & III

PROJECT NO. WBS 17BP.5.P.4

GRANVILLE COUNTY

BRIDGE NO.: 35

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION & MILLING DETAILS FOR BRIDGE NO. 35 (STAGES II & III)

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

REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			70

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

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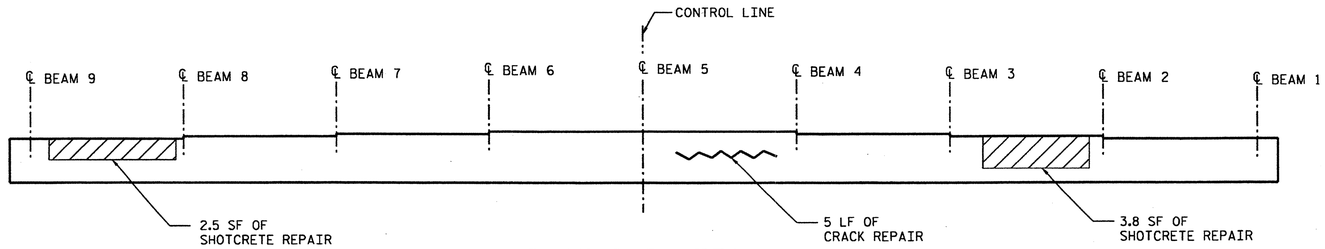


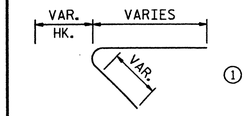
EAST ELEVATION

BILL OF MATERIAL

END BENT 1

BAR	NO.	SIZE	TYPE	LENGTH
S1	VAR.	#4	1	VARIES
CONCRETE REPAIRS			CF	0
SHOTCRETE REPAIRS			CF	2
EPOXY RESIN INJECTION			LF	5
REINFORCING STEEL			LBS	32

BAR TYPE



(BAR DIMENSIONS ARE OUT TO OUT)

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. 35".

FOR BRIDGE JACKING, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIR, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, 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

PROJECT NO. WBS 17BP.5.P.4

GRANVILLE COUNTY

BRIDGE NO.: 35

1-13-2012

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

END BENT 1
FOR BRIDGE NO. 35

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1			3			TOTAL SHEETS
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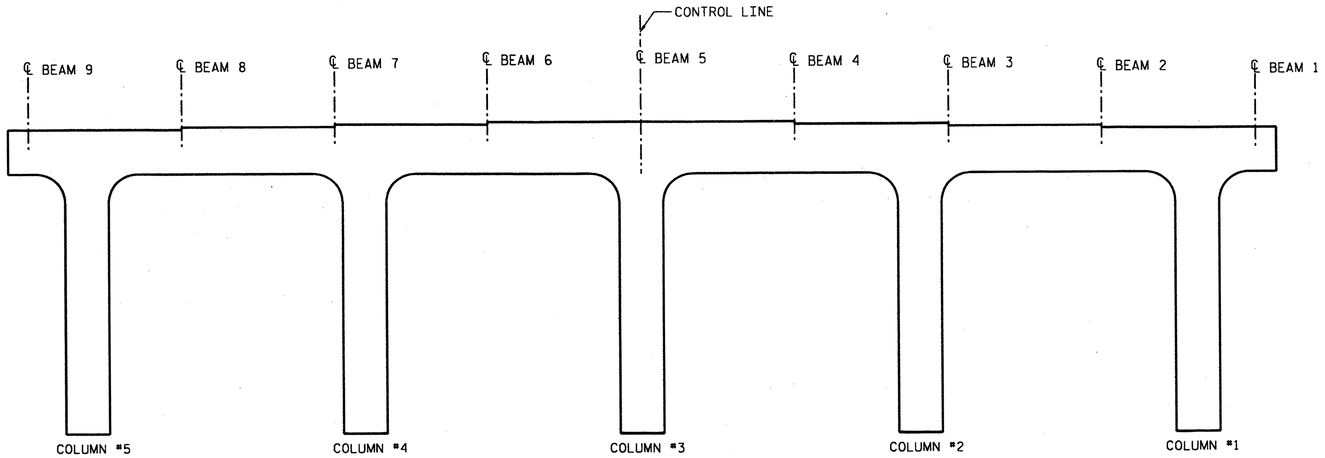
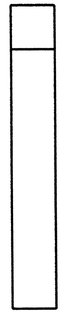


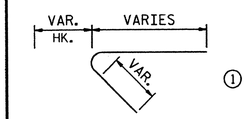
EAST ELEVATION



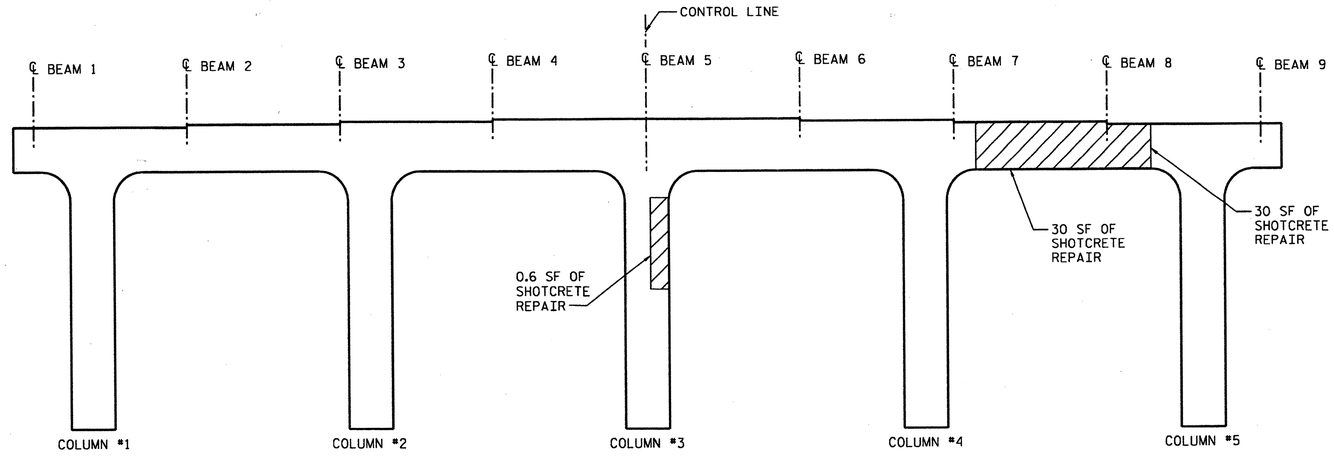
NORTH END ELEVATION

BILL OF MATERIAL				
BENT 1				
BAR	NO.	SIZE	TYPE	LENGTH
S1	VAR.	#4	1	VARIES
CONCRETE REPAIRS			CF	0
SHOTCRETE REPAIRS			CF	16
EPOXY RESIN INJECTION			LF	0
REINFORCING STEEL				LBS 303

BAR TYPE



(BAR DIMENSIONS ARE OUT TO OUT)



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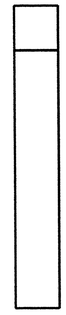

SOUTH END ELEVATION

NOTES

FOR NOTES, SEE DRAWING "END BENT 1 FOR BRIDGE NO. 35".

CONCRETE REPAIR

SHOTCRETE REPAIR

EPOXY RESIN INJECTION OF CRACKS

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 1/2 INCH WITH RESPECT TO BEARINGS OF ADJACENT PIERS.

BEARING NUTS SHALL BE LOOSENED TO PROVIDE A MINIMUM OF 59/64 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	--	51
BENT 1	27	41	51	51
BENT 2	138		83	
BENT 3	41	27	51	51
END BENT 2	27	--	51	--

PROJECT NO. WBS 17BP.5.P.4

GRANVILLE COUNTY

BRIDGE NO.: 35

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032129 MATTHEW J. MOTES

1-13-2012

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 1 FOR BRIDGE NO. 35

REVISIONS						SHEET NO. S-31
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2			4			

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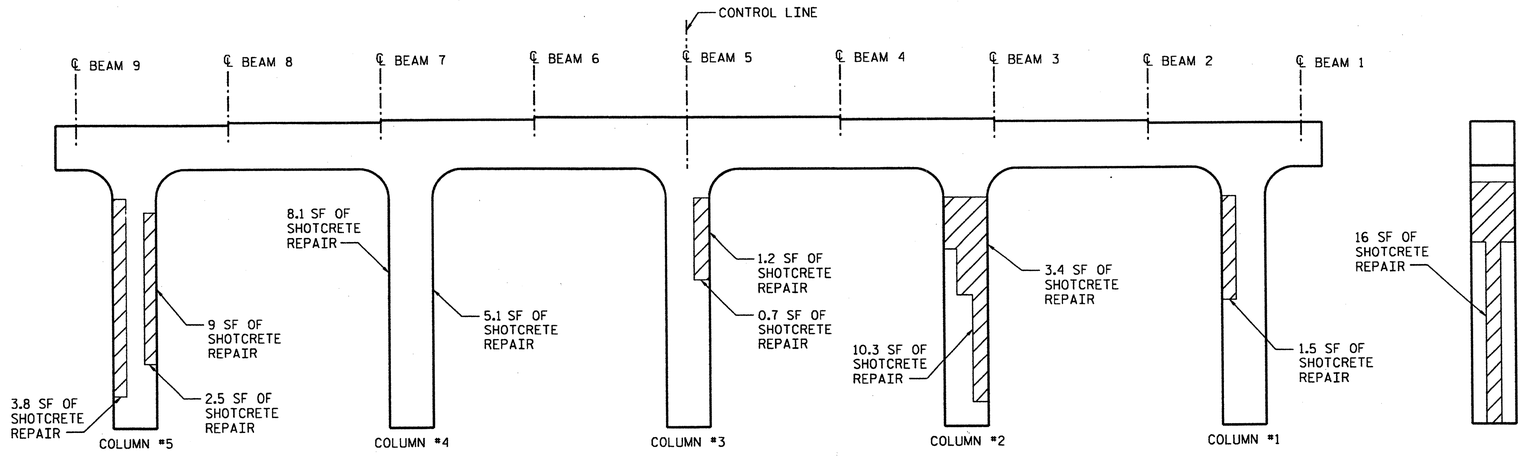
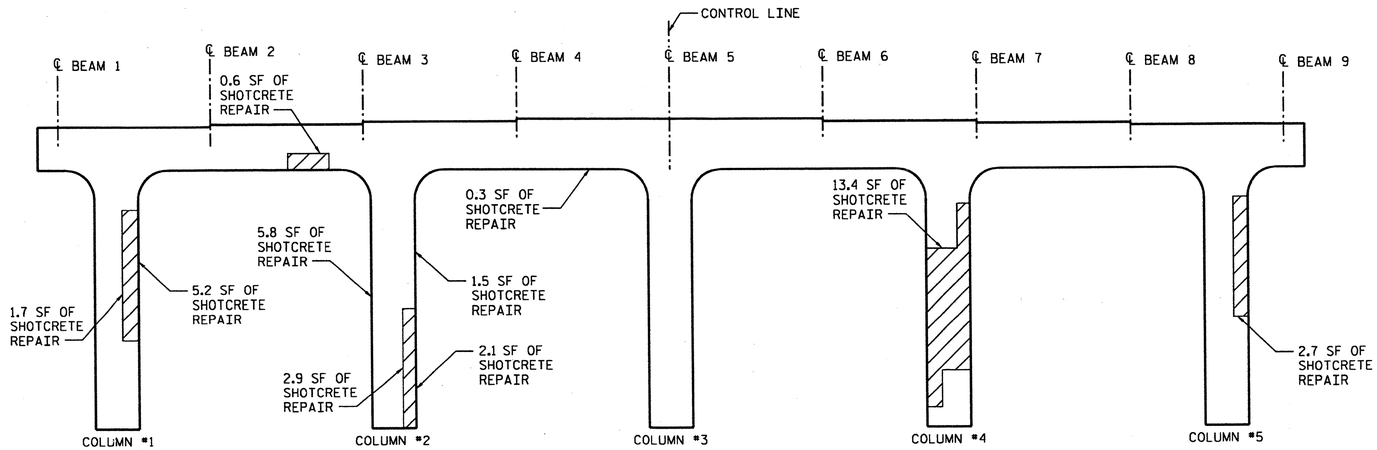


EAST ELEVATION

NORTH END ELEVATION



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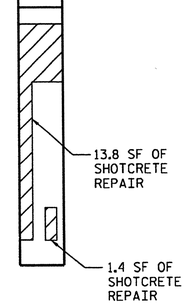

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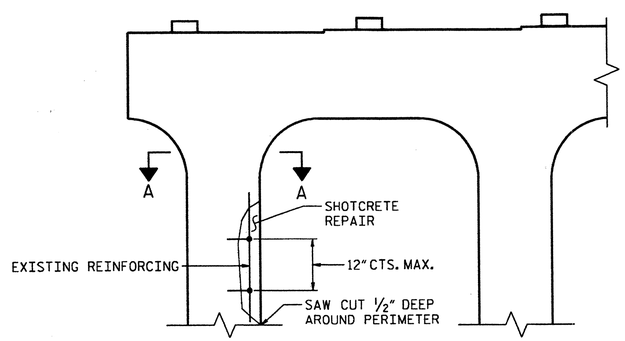
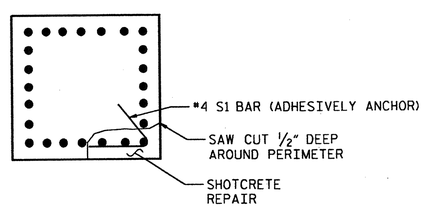


COLUMN REPAIR DETAIL

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



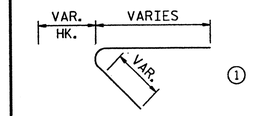
SECTION A-A

BILL OF MATERIAL

BENT 3

BAR	NO.	SIZE	TYPE	LENGTH
S1	VAR.	#4	1	VARIES
CONCRETE REPAIRS			CF	0
SHOTCRETE REPAIRS			CF	29
EPOXY RESIN INJECTION			LF	0
REINFORCING STEEL				LBS 565

BAR TYPE



(BAR DIMENSIONS ARE OUT TO OUT)

NOTES

FOR NOTES, SEE DRAWING "END BENT 1 FOR BRIDGE NO. 35".

CONCRETE REPAIR

SHOTCRETE REPAIR

EPOXY RESIN INJECTION OF CRACKS

PROJECT NO. WBS 17BP.5.P.4

GRANVILLE COUNTY

BRIDGE NO.: 35

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 3
FOR BRIDGE NO. 35

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

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1			3			TOTAL SHEETS
2			4			70

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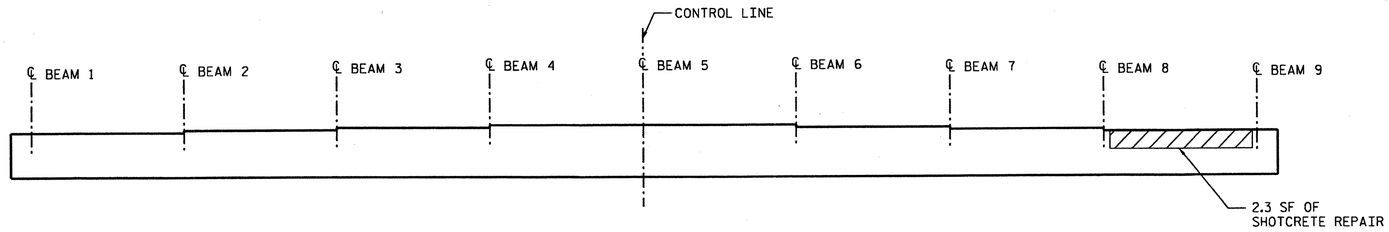


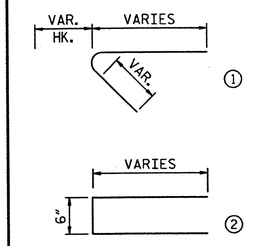
WEST ELEVATION

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	1
EPOXY RESIN INJECTION			LF	0
REINFORCING STEEL			LBS	12

BAR TYPE



(BAR DIMENSIONS ARE OUT TO OUT)

NOTES

FOR NOTES, SEE DRAWING "END BENT 1 FOR BRIDGE NO. 35".

CONCRETE REPAIR

SHOTCRETE REPAIR

EPOXY RESIN INJECTION OF CRACKS

PROJECT NO. WBS 17BP.5.P.4

GRANVILLE COUNTY

BRIDGE NO.: 35

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

END BENT 2
FOR BRIDGE NO. 35

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

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3733 National Drive, Suite 207 Raleigh, N.C. 27612
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1			3			
2			4			

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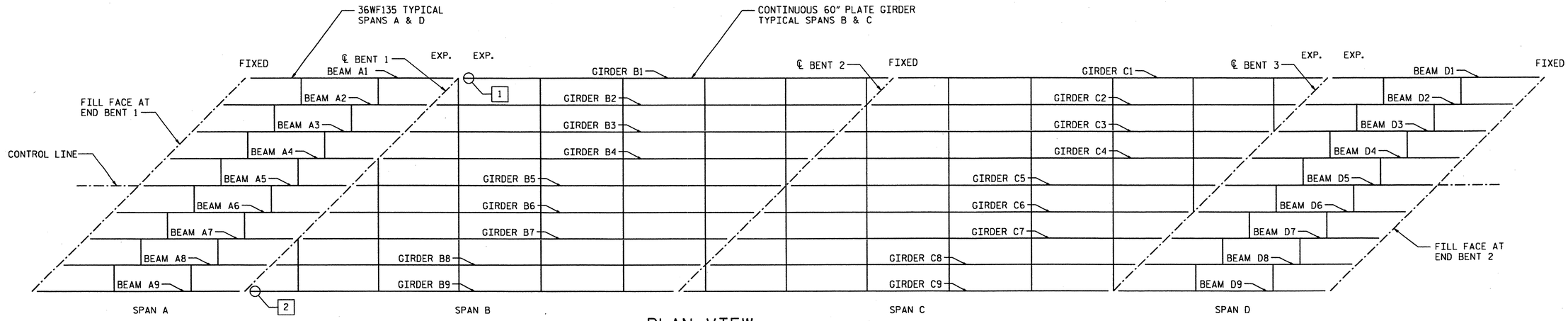
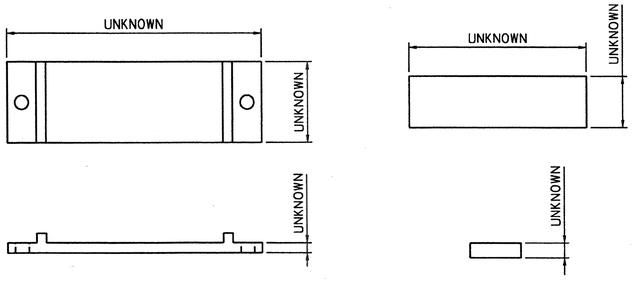


PLAN VIEW

[1] - REPAIR WEB, FLANGE AND BEARING STIFFENER, SEE GIRDER REPAIR DETAILS 1 OF 2 AND 2 OF 2.

[2] - FLANGE REPAIR, SEE GIRDER REPAIR DETAILS 2 OF 2.



BEARING REPLACEMENT IN KIND

BEARING REPLACEMENT AT THE DIRECTION OF THE ENGINEER.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR NEW BEARING DESIGN AND JACKING LOADS.

FOR BRIDGE JACKING, SEE SPECIAL PROVISIONS.

STEEL NOTES

EXISTING BRIDGE AND REPAIR DETAILS INDICATED ON THE PLANS ARE FROM THE BEST INFORMATION AVAILABLE. THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE AND REPAIR DETAILS SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

CONCTRACTOR SHALL TAKE ALL MEASURES NECESSARY TO VERIFY INFORMATION SHOWN ON THESE PLANS AND SHALL OBTAIN ALL OTHER BRIDGE DATA NECESSARY FOR THE EXECUTION OF THE WORK.

INASMUCH AS THE PAINT SYSTEM OF THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COST RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE IN THE BID PRICE FOR THE VARIOUS ITEMS OF WORK.

THE CONTRACTOR TO PROVIDE BLOCKING FOR ALL JACKS AS NECESSARY. A BLOCKING PLANS SHALL BE SUBMITTED FOR ALL SPANS LIFTED FOR APPROVAL BY THE ENGINEER.

THE CONTRACTOR SHALL MONITOR THE PLAN LOCATION OF THE GIRDERS FROM INITIAL JACKING UNTIL GIRDERS ARE SECURED ON THEIR PERMANENT BEARINGS. IF THE PLAN LOCATION OF THESE GIRDERS SHIFT FROM ITS ORIGINAL POSITION, ALL WORK SHALL CEASE AND THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY.

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

SEE SPECIAL PROVISIONS FOR "BRIDGE JACKING".

REPAIR GIRDERS AS INDICATED ON THE PLANS.

BEAM REPAIR DETAILS AND DIMENSIONS PROVIDED IN PLANS MAY BE MODIFIED BASED ON FIELD CONDITIONS BY THE ENGINEER.

CHIP AWAY CONCRETE DIAPHRAGMS AS NEEDED TO DETERMINE LIMITS OF REPAIR.

MECHANICALLY CLEAN RUST AND SCALE AND EXISTING PAINT TO AT LEAST 4" BEYOND REPAIR AREA LIMITS.

REPLACEMENT BEAM SECTIONS SHALL BE CUT FROM A ROLLED WT SECTION AND SHALL BE AASHTO M270 GRADE 50, OR APPROVED EQUIVALENT.

ALL REPLACEMENT STEEL SHALL BE SHOP PRIMED IN ACCORDANCE WITH SECTION 442 SYSTEM 1 OF STANDARD SPECIFICATIONS.

IN ACCORDANCE WITH THE SPECIAL PROVISIONS, AFTER REPAIR, GRIND ALL WELDS FLUSH, THOROUGHLY CLEAN AREA TO REMOVE DEBRIS AND OILS FROM REPAIR PROCESS, CLEAN AND PAINT STRUCTURAL STEEL.

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

FOR "BEAM REPAIR", SEE SPECIAL PROVISIONS.

FOR CLEANING AND PAINTING EXISTING BEARING PLATES, SEE SPECIAL PROVISIONS.

PROJECT NO. WBS 17BP.5.P.4

GRANVILLE COUNTY

BRIDGE NO.: 35

NORTH CAROLINA PROFESSIONAL SEAL 032129 ENGINEER MATTHEW J. MOYER

1-13-2012

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BEAM & GIRDER REPAIR PLAN VIEW FOR BRIDGE NO. 35

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1			3			TOTAL SHEETS
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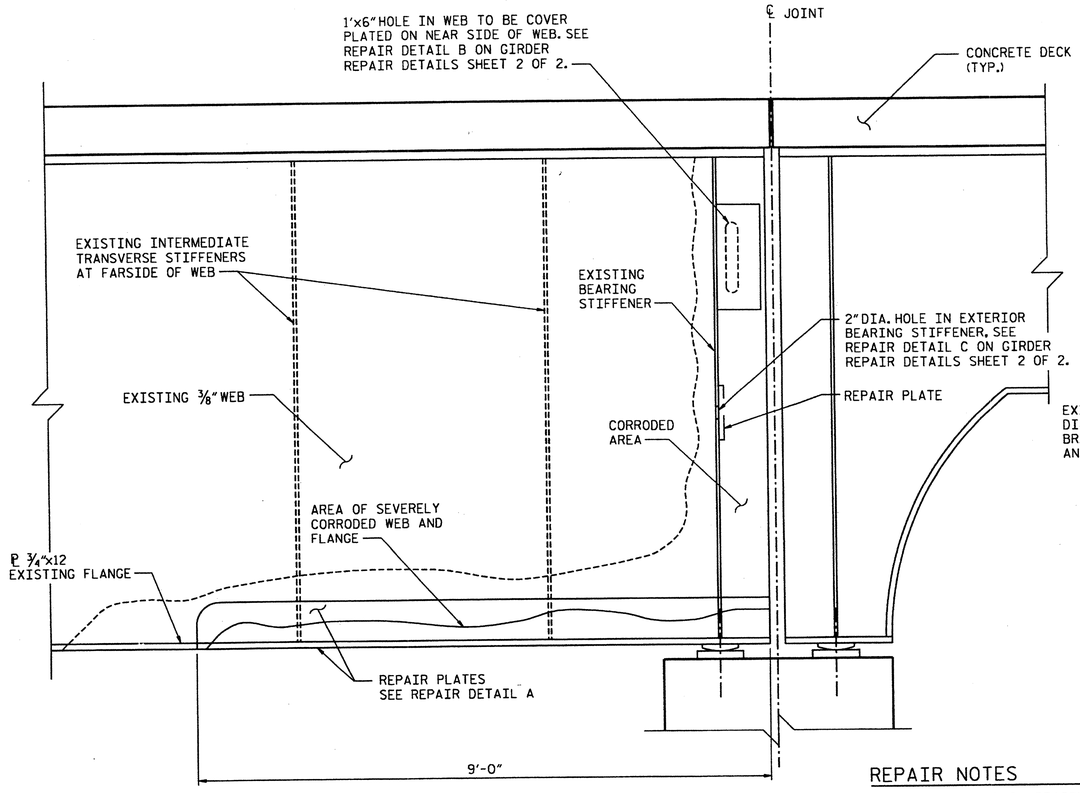
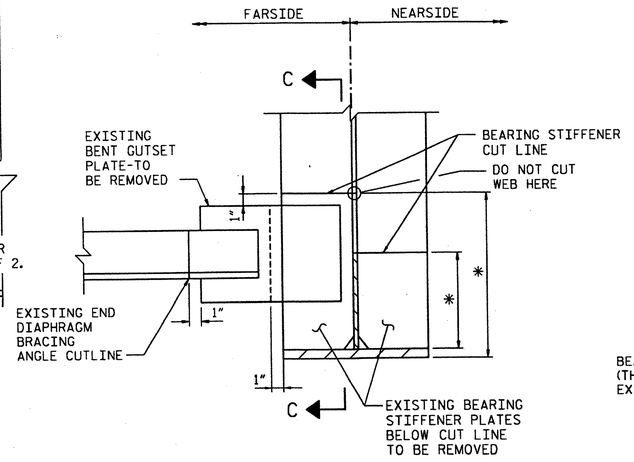
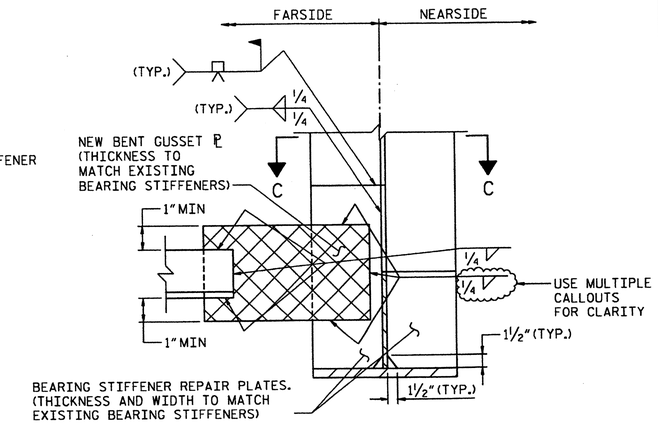


GIRDER REPAIRS FOR GIRDER B1 AT BENT 1

EXTERIOR FACE

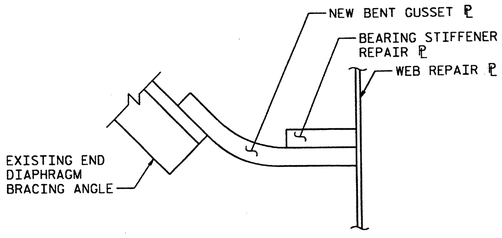


(EXISTING)



(PROPOSED)

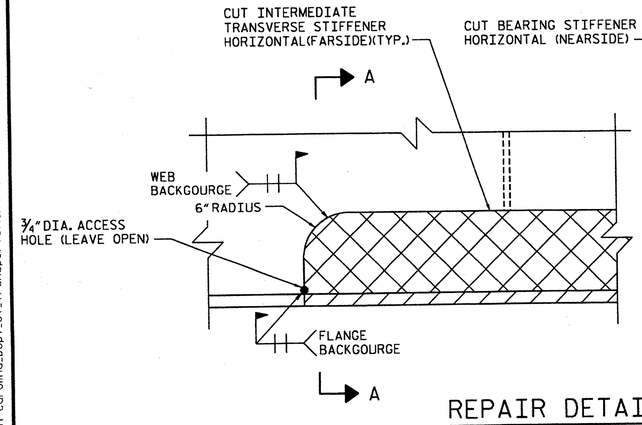
SECTION B-B



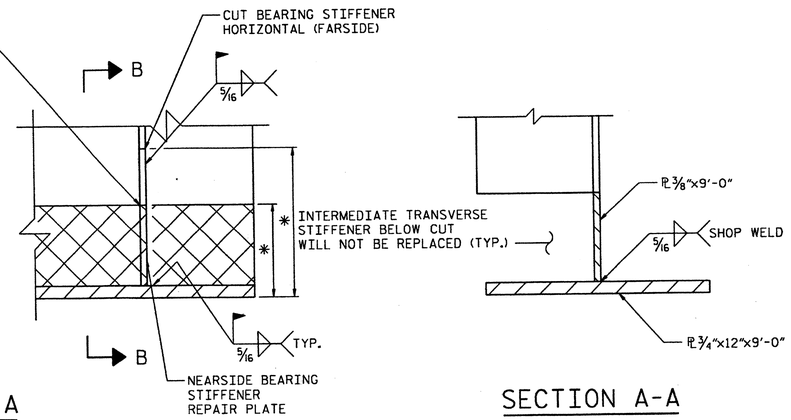
SECTION C-C

REPAIR NOTES

1. CUT END DIAPHRAGM BRACING ANGLE AS SHOWN IN SECTION B-B.
2. CUT NEARSIDE AND FARSIDE BEARING STIFFENERS AS SHOWN IN SECTION B-B.
3. CUT INTERMEDIATE TRANSVERSE STIFFENER, WEB AND BOTTOM FLANGE AS SHOWN IN REPAIR DETAIL A.
4. GRIND WEB, FLANGE AND BEARING STIFFENERS SMOOTH ADJACENT TO REMOVAL AREAS.
5. PROVIDE RUN OFF TABS AS NEEDED FOR FULL PENETRATION WELDS.



REPAIR DETAIL A



* TO BE DETERMINED BY THE ENGINEER (6" MINIMUM) SEE STEEL REPAIR NOTES

SECTION A-A

PROJECT NO. WBS 17BP.5.P.4

GRANVILLE COUNTY

BRIDGE NO.: 35

NORTH CAROLINA PROFESSIONAL SEAL 032129 ENGINEER MATTHEW J. MOYER

2-15-12

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GIRDER REPAIR DETAILS (1 OF 2) FOR BRIDGE NO. 35

REVISIONS						SHEET NO. S-35
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 70
1			3			
2			4			

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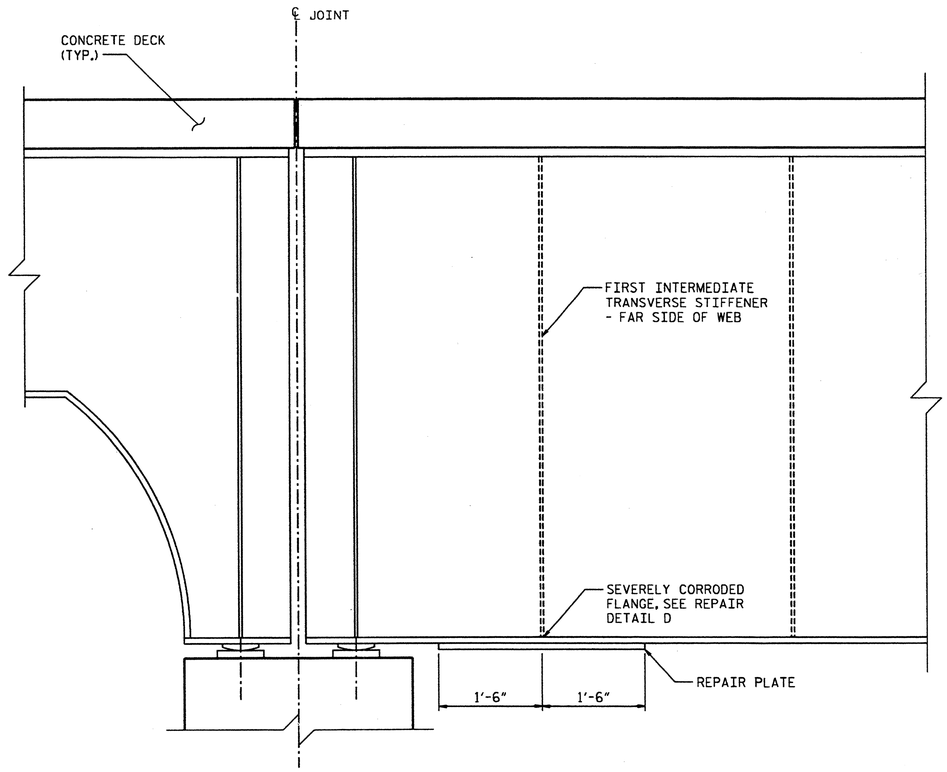
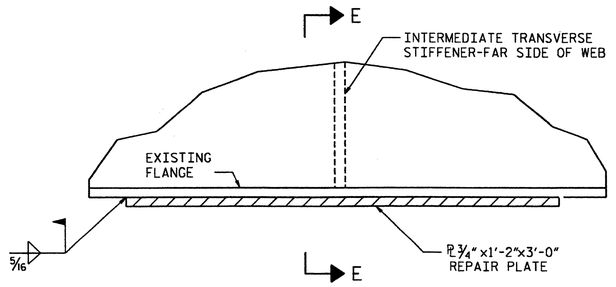
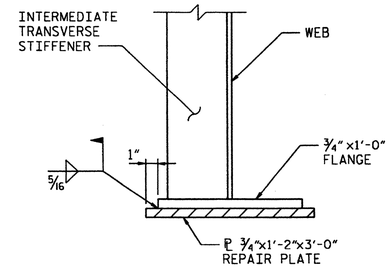


GIRDER REPAIR FOR GIRDER B9 AT BENT 1

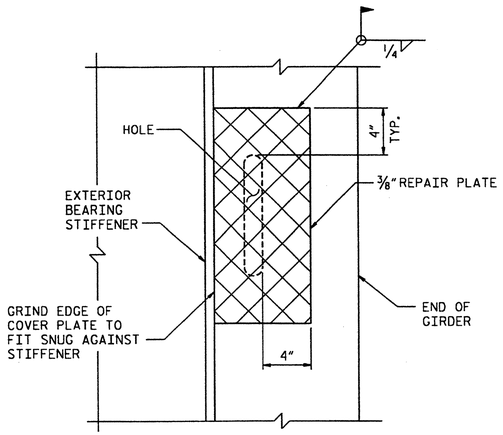
EXTERIOR FACE



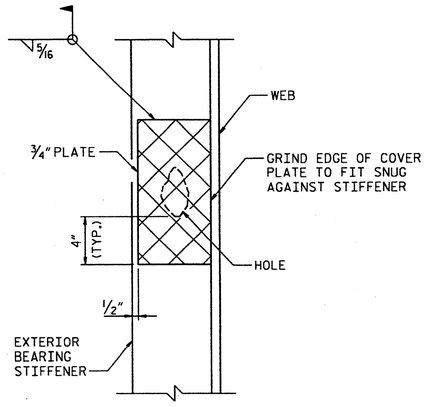
REPAIR DETAIL D



SECTION E-E



REPAIR DETAIL B



REPAIR DETAIL C

PROJECT NO. WBS 17BP.5.P.4

GRANVILLE COUNTY

BRIDGE NO.: 35

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GIRDER REPAIR DETAILS (2 OF 2) FOR BRIDGE NO. 35

NORTH CAROLINA PROFESSIONAL SEAL 032129 ENGINEER MATTHEW J. MOYER
2-15-12

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REVISIONS						SHEET NO. S-36
NO.	BY:	DATE:	NO.	BY:	DATE:	
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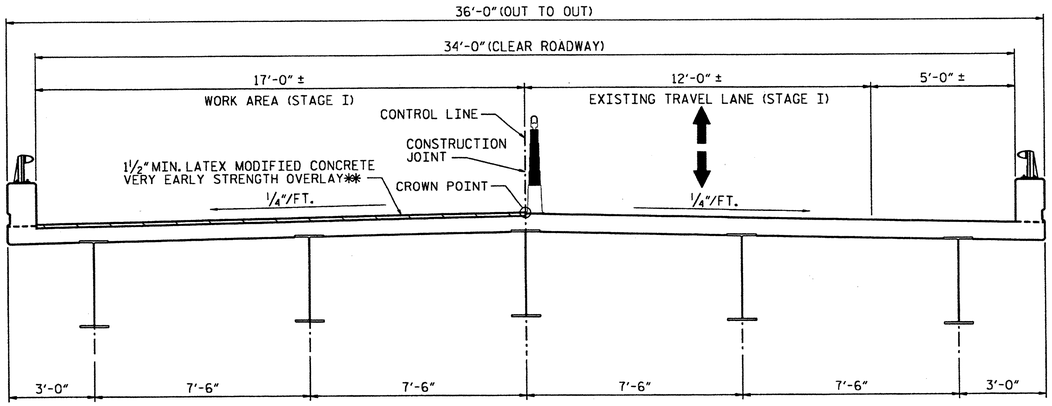
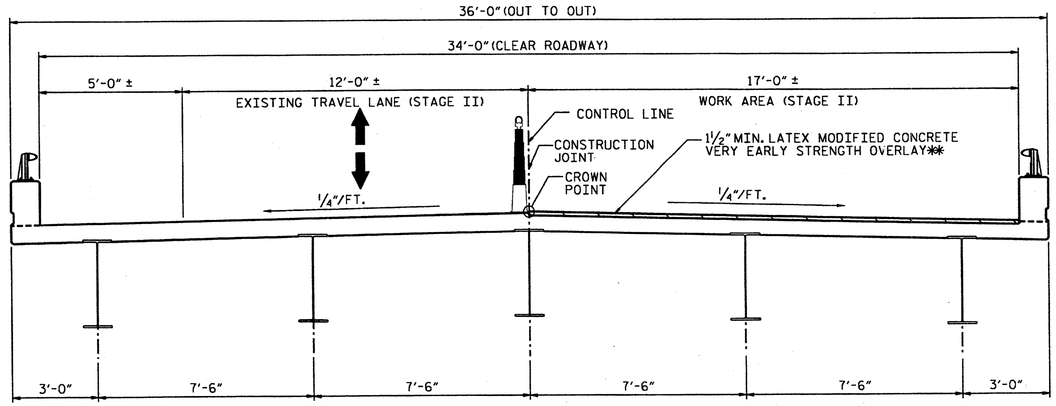
2			4			

DRAWN BY : R. HELFRICH DATE : 01/2012
CHECKED BY : M. LEONARD DATE : 01/2012

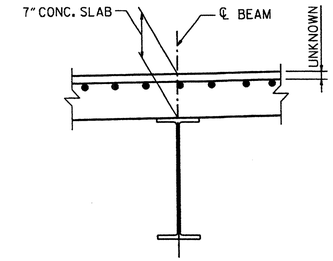


TYPICAL SECTION - STAGE I



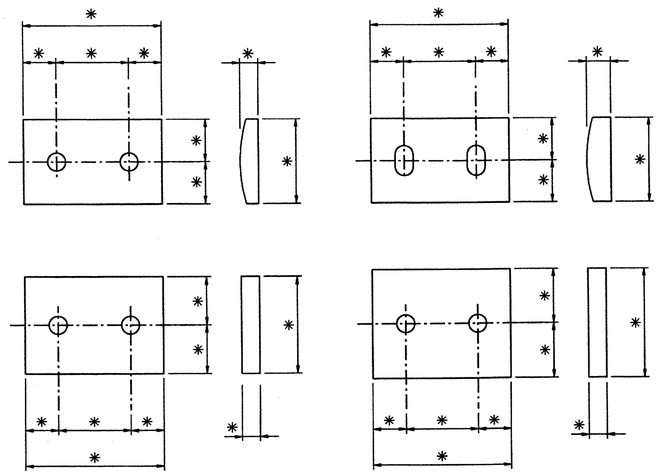
TYPICAL SECTION - STAGE II

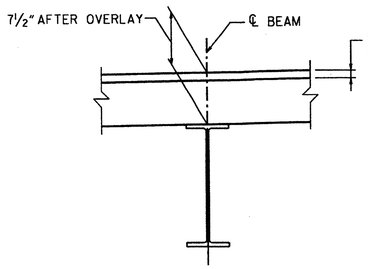
** THE FINISHED SURFACE OF THE LATEX MODIFIED CONCRETE VERY EARLY STRENGTH OVERLAY SHALL BE ½" ABOVE THE SURFACE OF THE ORIGINAL DECK BEFORE WORK BEGINS



EXISTING SLAB SECTION

BOTTOM MAT OF REINFORCING NOT SHOWN FOR CLARITY.





PROPOSED SLAB SECTION

REINFORCING NOT SHOWN

* - DIMENSION UNKNOWN

NOTE:
DECK DRAIN LOCATIONS AND DETAILS UNKNOWN.

BEARING REPLACEMENT IN KIND

BEARING REPLACEMENT AT THE DIRECTION OF THE ENGINEER.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR NEW BEARING DESIGN AND JACKING LOADS.

FOR BRIDGE JACKING, SEE SPECIAL PROVISIONS.

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 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 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.

FOR CLEANING AND PAINTING EXISTING BEARING PLATES, SEE SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL

INCIDENTAL MILLING	ASPHALT CONCRETE SURFACE COURSE TYPE SF9.5A	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
SQ. YDS.	TONS	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
945	109.1	1035	19	0	0	2	0	1035	43	1035	LUMP SUM	8351	0	33	669

*** QUANTITY SHOWN IS FOR INFORMATION ONLY.

BRIDGE JACKING	BEARING REPLACEMENT IN KIND	CLEANING AND PAINTING EXISTING BEARING PLATES
LUMP SUM	EACH	LUMP SUM
LUMP SUM	4	LUMP SUM

DRAWN BY : R. HELFRICH DATE : 01/2012
CHECKED BY : M. LEONARD DATE : 01/2012

NORTH CAROLINA PROFESSIONAL SEAL 032129 ENGINEER MATTHEW J. MOYER
2-15-12

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION FOR BRIDGE NO. 43

(SR1103 OVER I-85)

REVISIONS						SHEET NO. S-37
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 70
1			3			
2			4			

PROJECT NO. WBS 17BP.5.P.4
GRANVILLE COUNTY
BRIDGE NO.: 43

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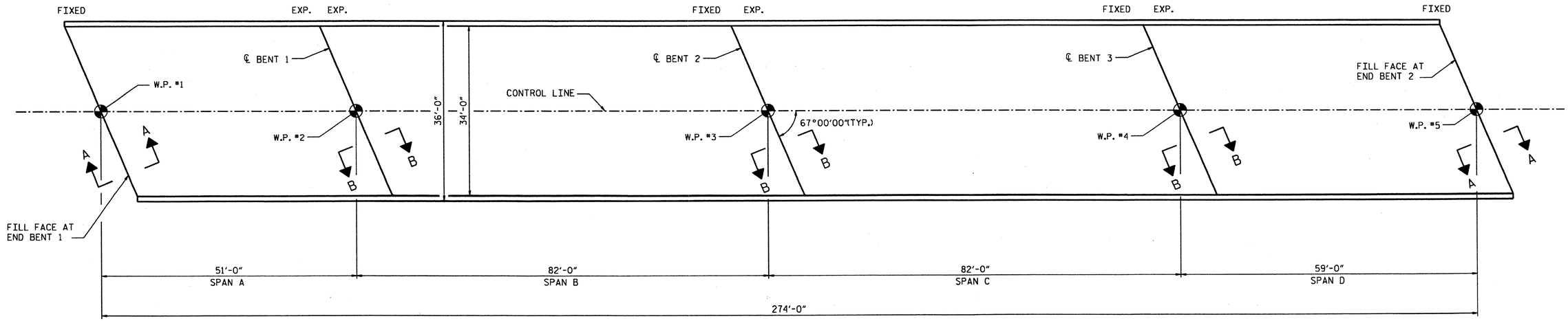
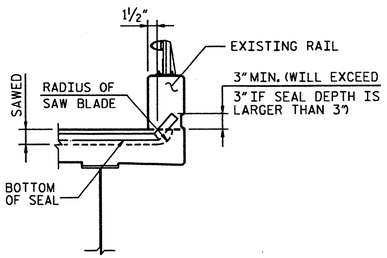
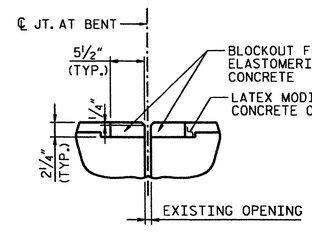


PLAN VIEW

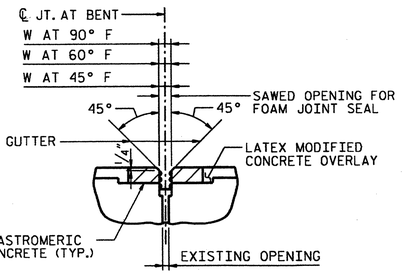


JOINT DETAIL AT CURB



FOAM JOINT SEAL

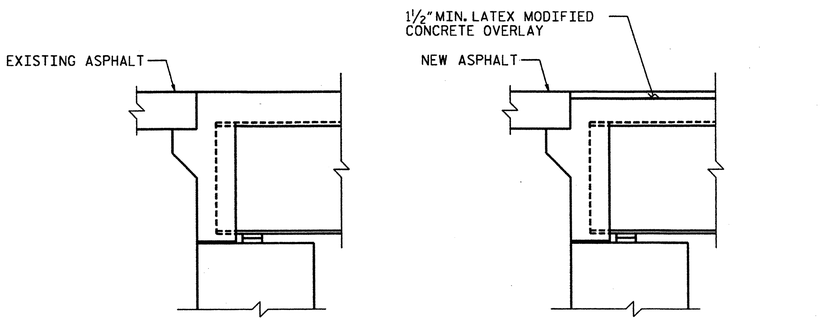
PRE-SAWED ELASTOMERIC CONCRETE DIMENSIONS



PROPOSED JOINT AT BENTS

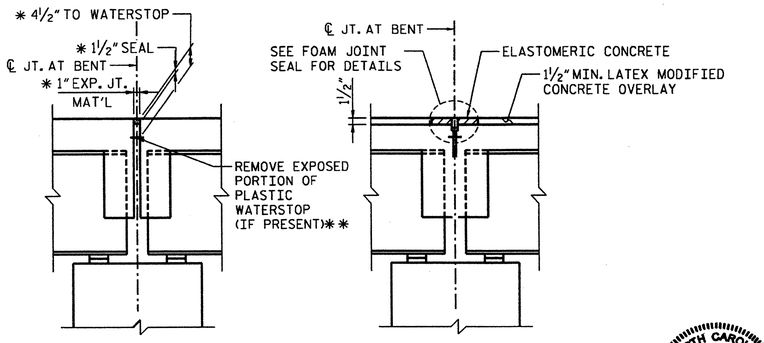
FOAM JOINT SEAL EXPANSION

SAWED OPENING FOR FOAM JOINT			
BENT NO.	W AT 90° F	W AT 60° F	W AT 45° F
BENT 1	1½"	1⅞"	2 1/16"
BENT 2	1⅝"	1⅛"	2"
BENT 3	1 11/16"	1⅛"	1 15/16"



EXISTING SECTION AT END BENT PROPOSED SECTION AT END BENT

SECTION A-A



EXISTING JOINT AT BENTS PROPOSED JOINT AT BENTS

SECTION B-B

ELASTOMERIC CONCRETE	
BENT NO.	ELASTOMERIC CONCRETE ** (CU. FT.)
BENT 1	5.6
BENT 2	5.6
BENT 3	5.6
TOTAL	16.8

** BASED ON THE MINIMUM BLOCKOUT SHOWN

* ESTIMATED DIMENSION

** 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. WBS 17BP.5.P.4

GRANVILLE COUNTY

BRIDGE NO.: 43

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN VIEW AND JOINT DETAILS FOR BRIDGE NO. 43

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

REVISIONS						SHEET NO. S-38
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 70
2			4			

DRAWN BY : R. HELFRICH DATE : 01/2012
CHECKED BY : M. LEONARD DATE : 01/2012

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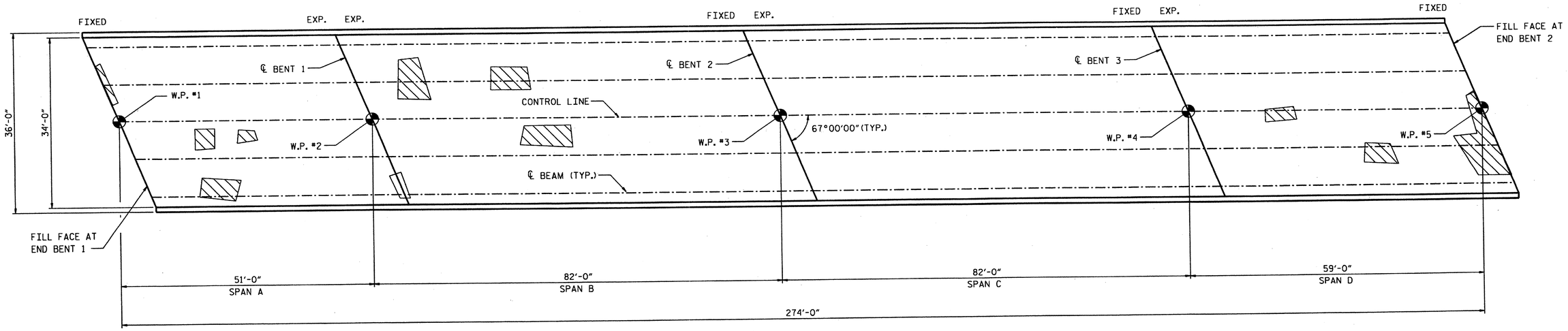
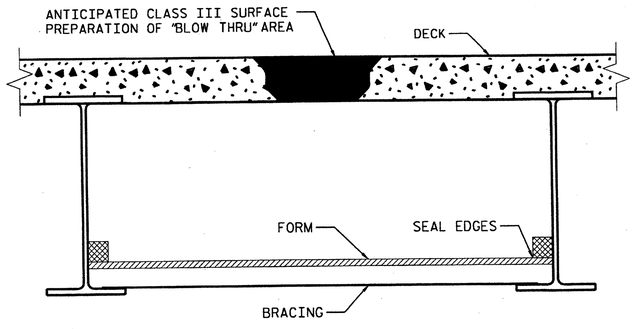


PLAN OF SPANS - DECK REPAIRS

APPROX. AREA: CLASS I REPAIR

APPROX. AREA: CLASS II REPAIR

APPROX. AREA: CLASS III REPAIR

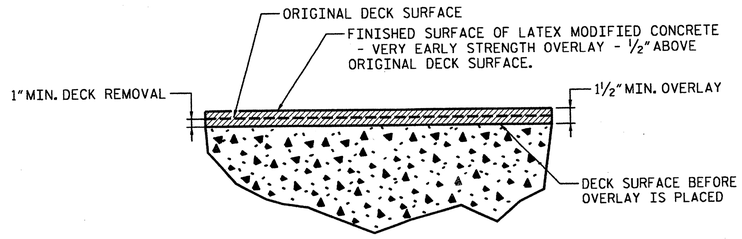


TYPICAL "BLOW THRU" CONTAINMENT AND FORMWORK

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 VERY EARLY STRENGTH OVERLAY

PROJECT NO. WBS 17BP.5.P.4

GRANVILLE COUNTY

BRIDGE NO.: 43

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK REPAIR DETAILS FOR BRIDGE NO. 43

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032129 MATTHEW J. MOYER

1-13-2012

HDR Engineering, Inc. of the Carolinas
3733 National Drive, Suite 207 Raleigh, N.C. 27612
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REVISIONS						SHEET NO. S-39
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1			3			TOTAL SHEETS 70
2			4			

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CHECKED BY : M. LEONARD DATE : 01/2012

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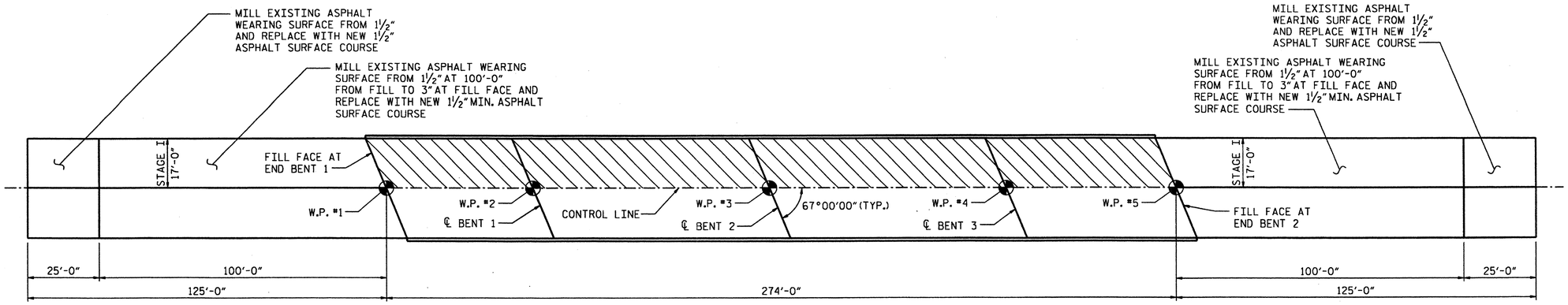
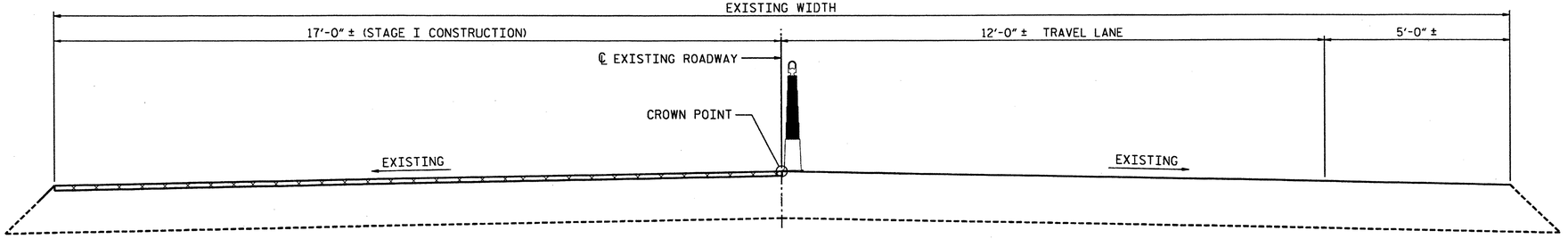


PLAN VIEW

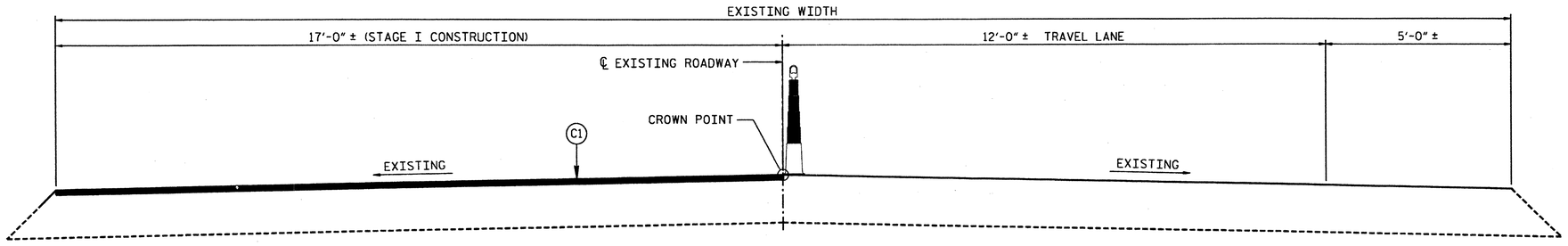
(STAGE I)

▨ DECK SCARIFICATION AND HYDRODEMOLITION

C1	PROPOSED VARIABLE DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH.



TYPICAL ROADWAY MILLING SECTION - STAGE I



TYPICAL ROADWAY SECTION - STAGE I

PROJECT NO. WBS 17BP.5.P.4

GRANVILLE COUNTY

BRIDGE NO.: 43

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION & MILLING DETAILS FOR BRIDGE NO. 43 (STAGE I)

REVISIONS						SHEET NO. S-40
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 70
1			3			
2			4			

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

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N.C.B.E.L.S. License Number: F-0116

DRAWN BY : R. HELFRICH DATE : 01/2012
CHECKED BY : M. LEONARD DATE : 01/2012

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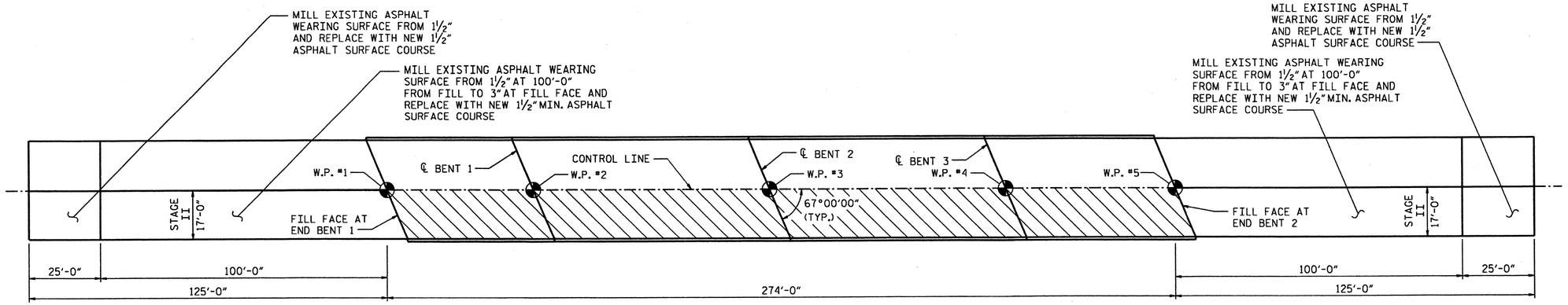
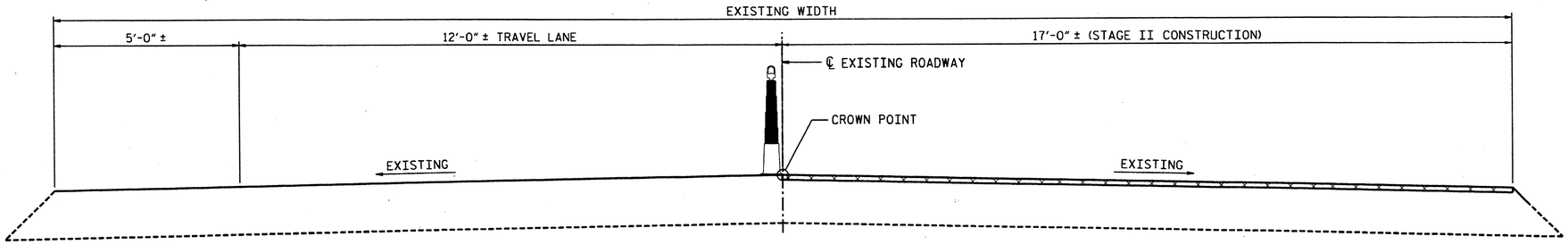


PLAN VIEW

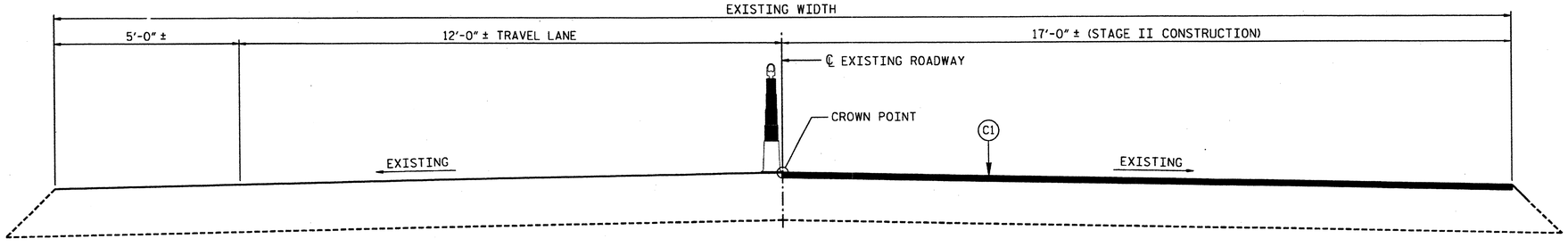
(STAGE II)

▨ DECK SCARIFICATION AND HYDRODEMOLITION

C1	PROPOSED VARIABLE DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH.



TYPICAL ROADWAY MILLING SECTION - STAGE II



TYPICAL ROADWAY SECTION - STAGE II

PROJECT NO. WBS 17BP.5.P.4

GRANVILLE COUNTY

BRIDGE NO.: 43

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION & MILLING DETAILS FOR BRIDGE NO. 43 (STAGE II)

REVISIONS						SHEET NO. S-41
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 70
2			4			

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

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

DRAWN BY : R. HELFRICH DATE : 01/2012
CHECKED BY : M. LEONARD DATE : 01/2012

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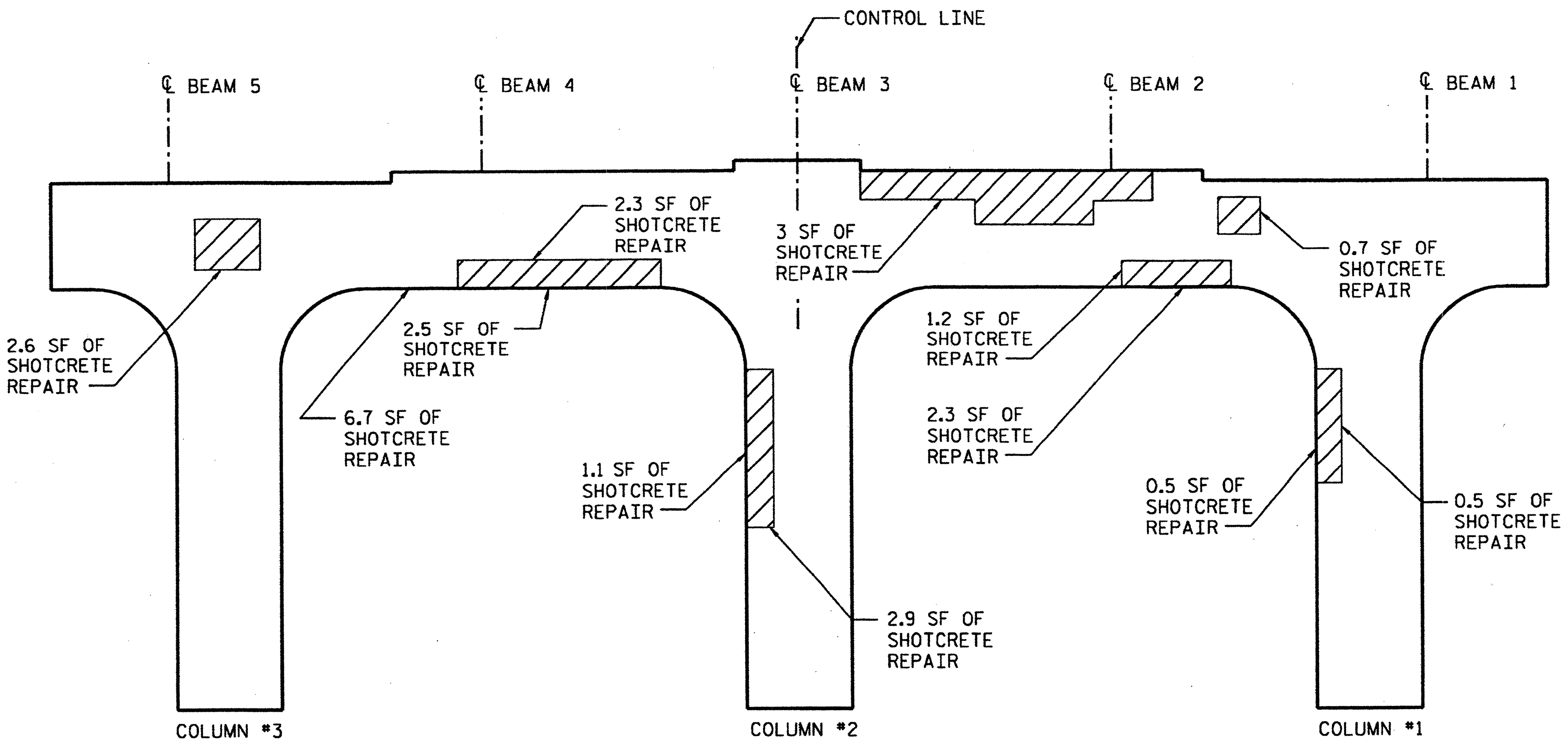

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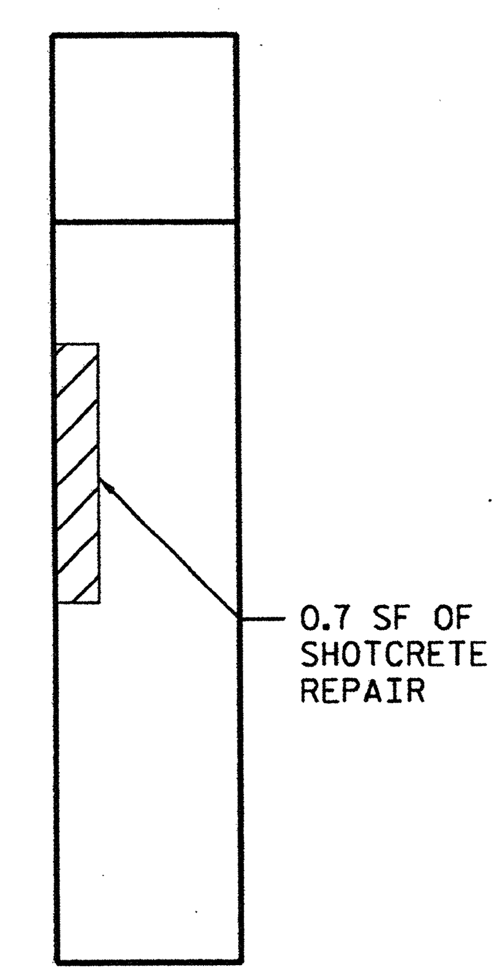

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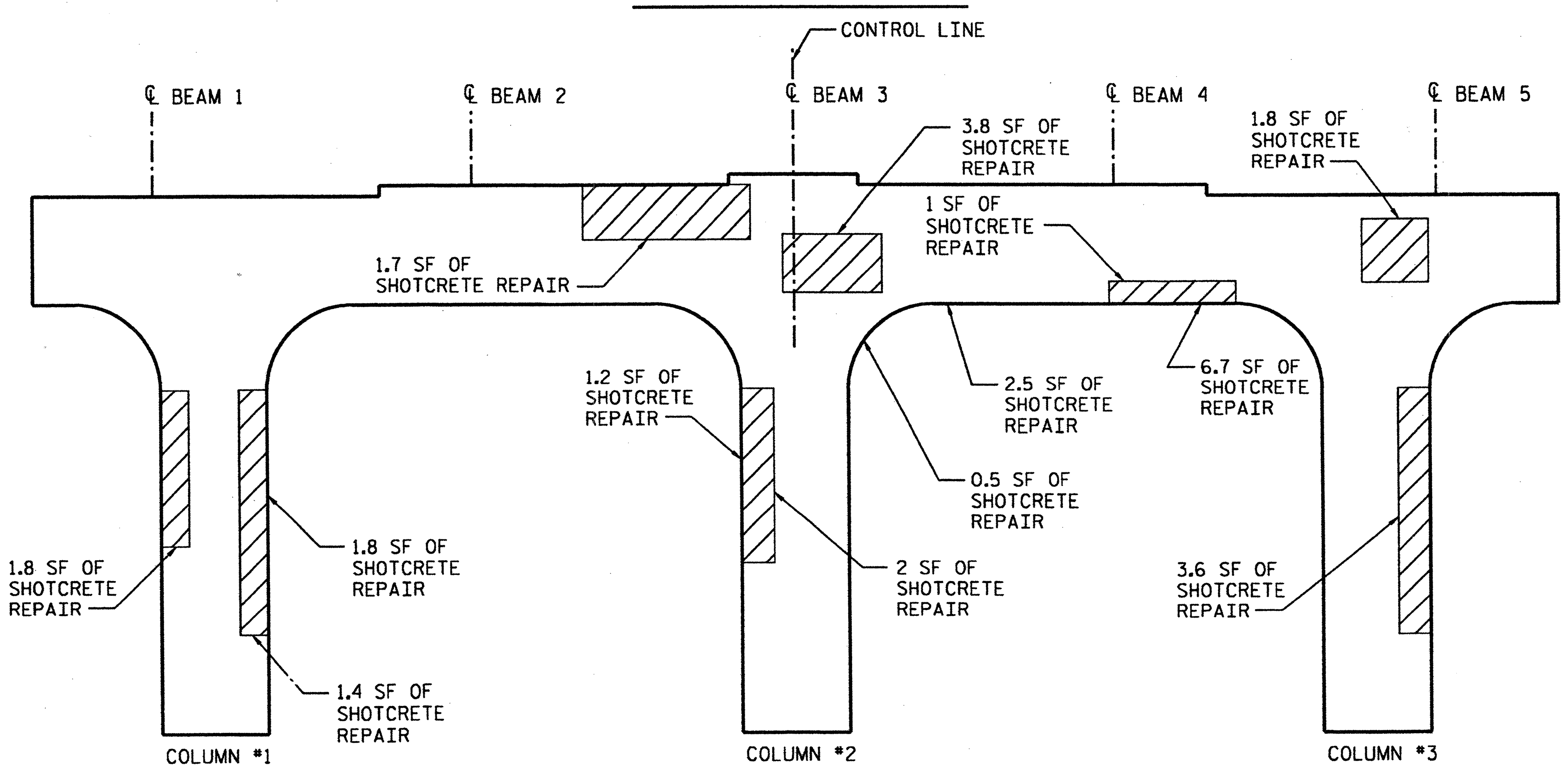

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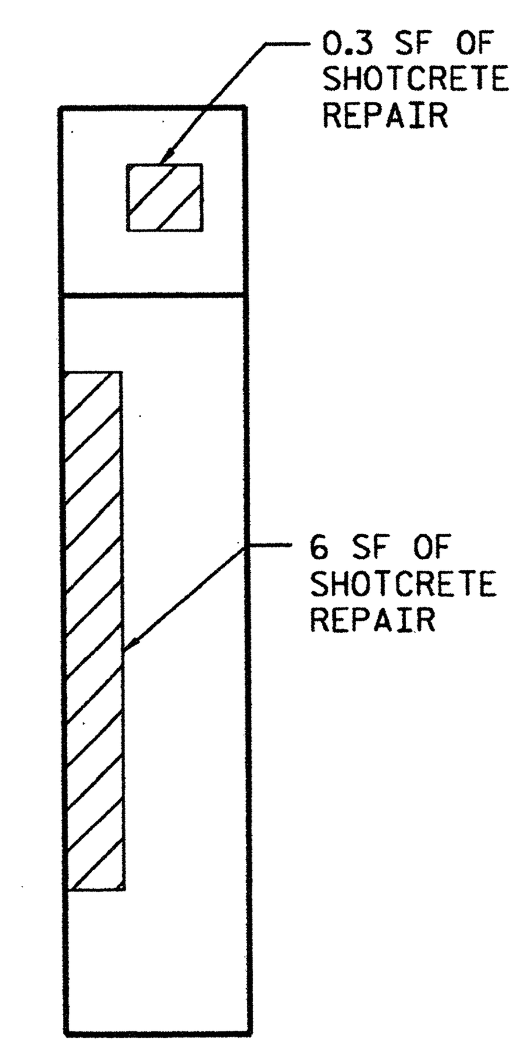
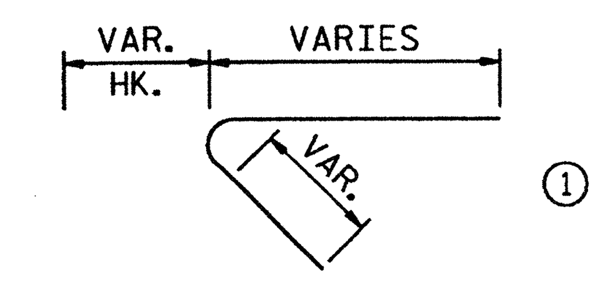


SOUTH END ELEVATION

SERVICE REACTIONS PER BEARING				
SUPPORT	DL (KIP)		LL+I (KIP)	
	BACK	AHEAD	BACK	AHEAD
END BENT 1	--	23	--	64
BENT 1	23	38	64	67
BENT 2	38	38	67	67
BENT 3	38	27	67	66
END BENT 2	27	--	66	--

BILL OF MATERIAL				
BENT 1				
BAR	NO.	SIZE	TYPE	LENGTH
S1	VAR.	#4	1	VARIES
CONCRETE REPAIRS			CF	0
SHOTCRETE REPAIRS			CF	16
EPOXY RESIN INJECTION			LF	0
REINFORCING STEEL			LBS	316

BAR TYPE



(BAR DIMENSIONS ARE OUT TO OUT)

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 1/2 INCH WITH RESPECT TO BEARINGS OF ADJACENT PIERS.

BEARING NUTS SHALL BE LOOSENED TO PROVIDE A MINIMUM OF 59/64 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.

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 2 FOR BRIDGE NO. 43".

FOR "TYPICAL REPAIR AT BEAM BEARING" DETAIL, SEE DRAWING "BENT 3 FOR BRIDGE NO. 43".

FOR BRIDGE JACKING, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIR, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, 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

DRAWN BY : R. HELFRICH DATE : 01/2012
CHECKED BY : M. LEONARD DATE : 01/2012

PROJECT NO. WBS 17BP.5.P.4

GRANVILLE COUNTY

BRIDGE NO.: 43

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 1 FOR BRIDGE NO. 43

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-42
1			3			TOTAL SHEETS
2			4			70

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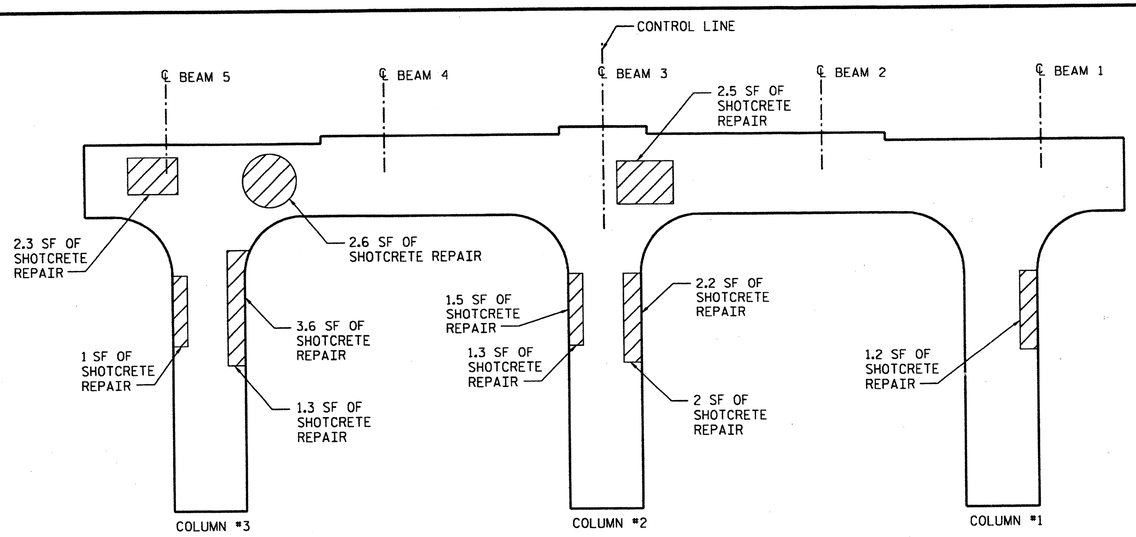
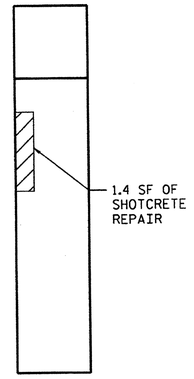
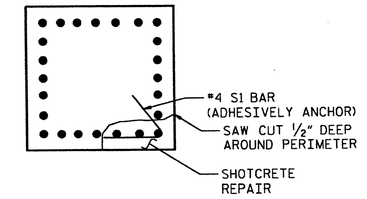


EAST ELEVATION



NORTH END ELEVATION



SECTION A-A

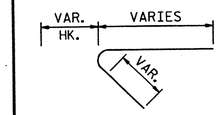
BILL OF MATERIAL

BENT 2

BAR	NO.	SIZE	TYPE	LENGTH
S1	VAR.	#4	1	VARIES

CONCRETE REPAIRS	CF	0
SHOTCRETE REPAIRS	CF	10
EPOXY RESIN INJECTION	LF	0
REINFORCING STEEL	LBS	185

BAR TYPE



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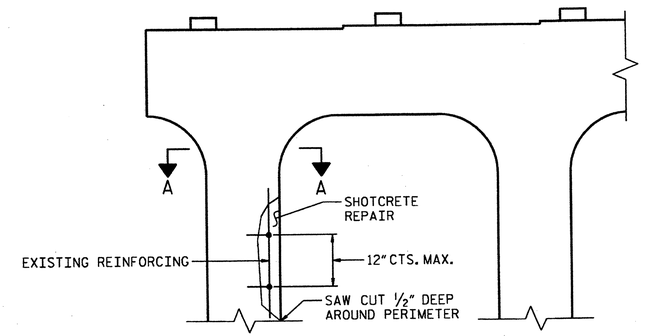
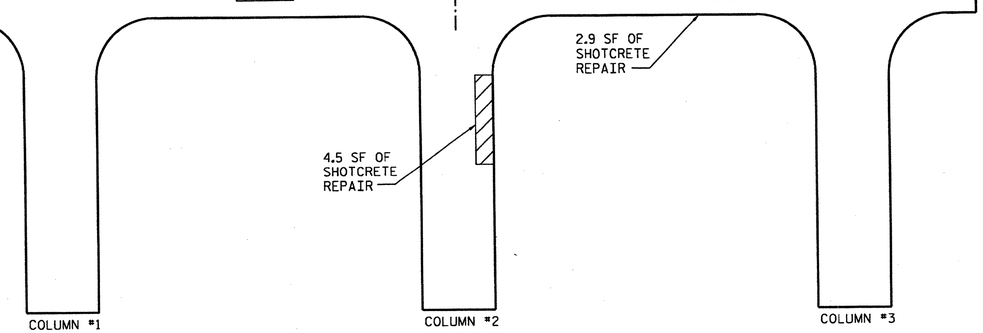


COLUMN REPAIR DETAIL

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



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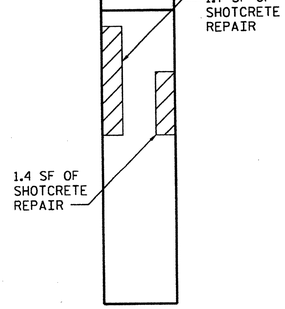

SOUTH END ELEVATION

NOTES

FOR NOTES, SEE DRAWING "BENT 1 FOR BRIDGE NO. 43".

CONCRETE REPAIR

SHOTCRETE REPAIR

EPOXY RESIN INJECTION OF CRACKS

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032129 MATTHEW J. MOYER

1-13-2012

PROJECT NO. WBS 17BP.5.P.4

GRANVILLE COUNTY

BRIDGE NO.: 43

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 2 FOR BRIDGE NO. 43

REVISIONS						SHEET NO. S-43
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 70
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 : R. HELFRICH DATE : 01/2012
CHECKED BY : M. LEONARD DATE : 01/2012

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USER: mseils
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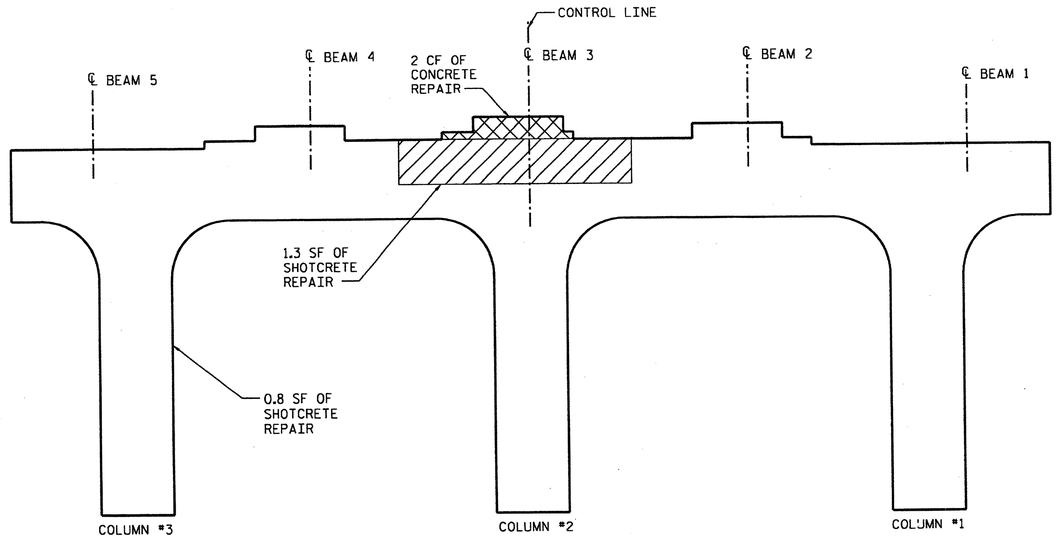

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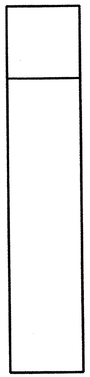
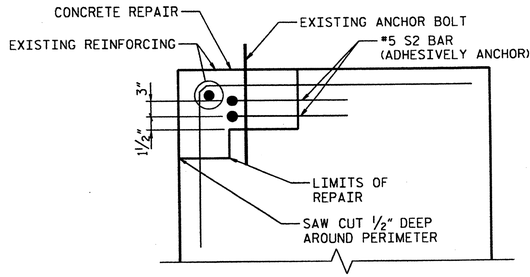


NORTH END ELEVATION



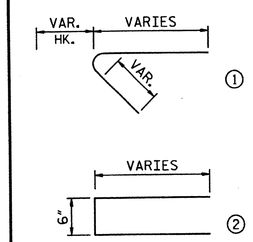
DETAIL A

BILL OF MATERIAL

BENT 3

BAR	NO.	SIZE	TYPE	LENGTH
S1	VAR.	#4	1	VARIES
S2	VAR.	#5	2	VARIES
CONCRETE REPAIRS			CF	2
SHOTCRETE REPAIRS			CF	7
EPOXY RESIN INJECTION			LF	0
REINFORCING STEEL			LBS	168

BAR TYPE



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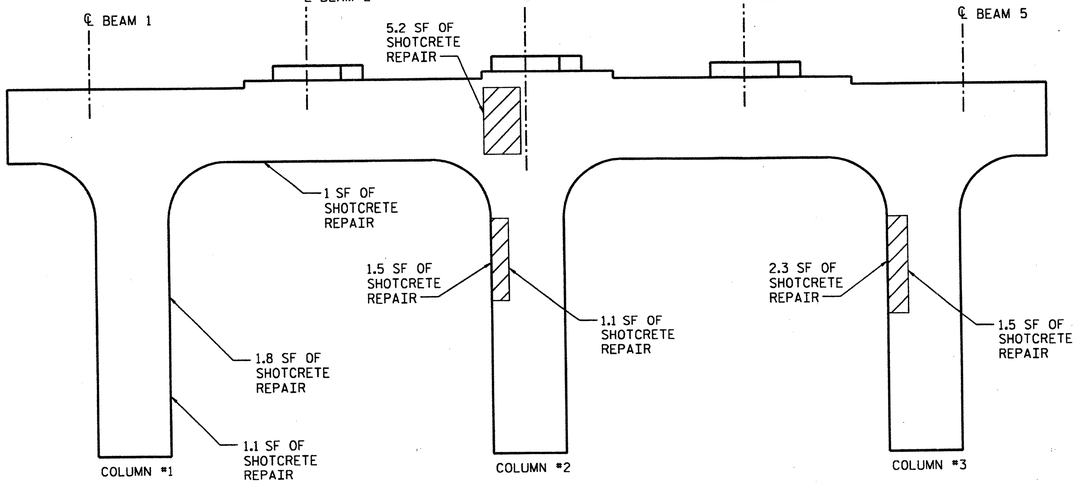

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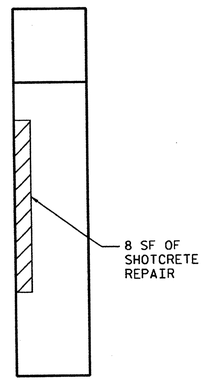

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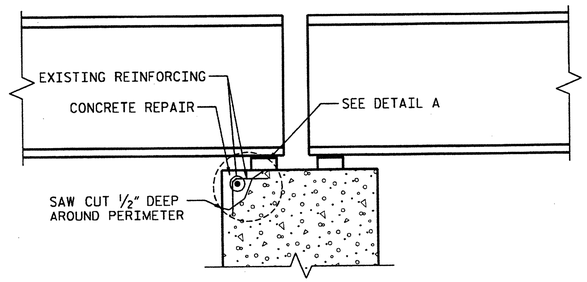

NOTES

RAISE BEAM 1/2 " 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

NOTES

FOR NOTES, SEE DRAWING "BENT 1 FOR BRIDGE NO. 43".

CONCRETE REPAIR

SHOTCRETE REPAIR

EPOXY RESIN INJECTION OF CRACKS

NORTH CAROLINA PROFESSIONAL ENGINEER 032129 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. WBS 17BP.5.P.4

GRANVILLE COUNTY

BRIDGE NO.: 43

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 3
FOR BRIDGE NO. 43

REVISIONS						SHEET NO. S-44
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 70
2			4			

DRAWN BY : R. HELFRICH DATE : 01/2012
CHECKED BY : M. LEONARD DATE : 01/2012

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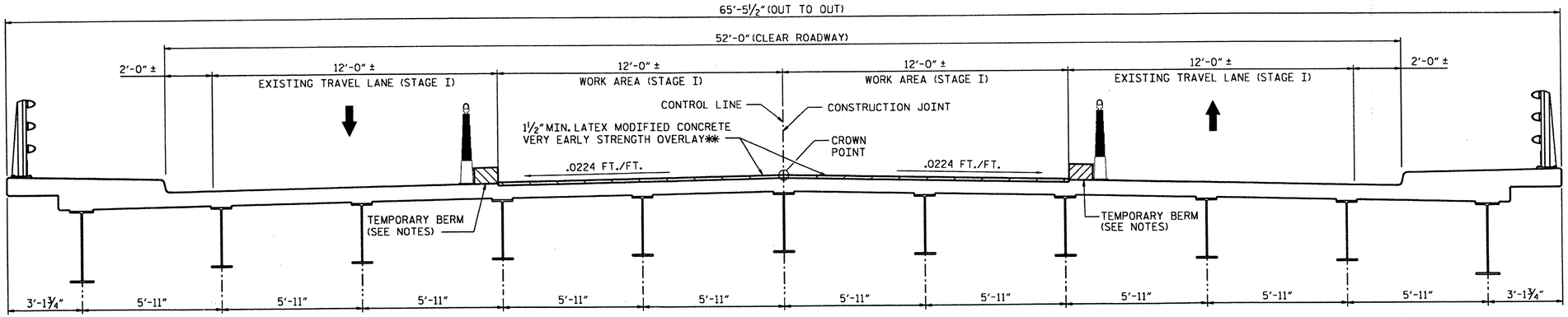
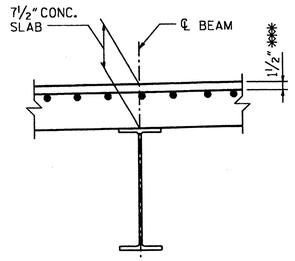


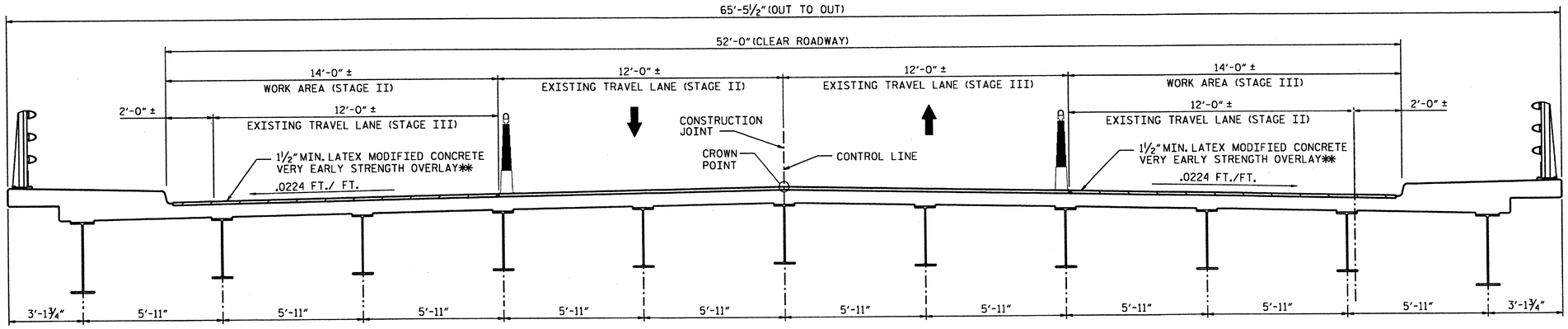
TYPICAL SECTION - STAGE I



EXISTING SLAB SECTION

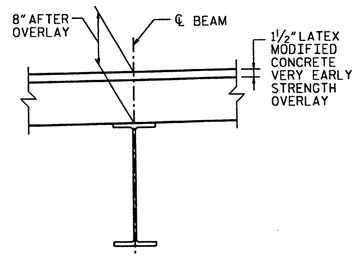
BOTTOM MAT OF REINFORCING NOT SHOWN FOR CLARITY.

*** CONCRETE COVER PER "AS-BUILT PLANS"



TYPICAL SECTION - STAGES II & III

** FINISHED SURFACE OF THE LATEX MODIFIED CONCRETE VERY EARLY STRENGTH OVERLAY SHALL BE ½" ABOVE THE SURFACE OF THE ORIGINAL DECK BEFORE WORK BEGINS



PROPOSED SLAB SECTION

REINFORCING NOT SHOWN

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 DECK.

THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE FOAM JOINT SEAL SHALL BE 2 13/16" 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 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.

FOR CLEANING AND PAINTING EXISTING BEARING PLATES, SEE SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL

INCIDENTAL MILLING	ASPHALT CONCRETE SURFACE COURSE TYPE SF9.5A	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
SQ. YDS.	TONS	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
291	35.8	1554	120	0	0	0	0	1554	65	1554	LUMP SUM	12972	42	49	965

*** QUANTITY SHOWN IS FOR INFORMATION ONLY.

BRIDGE JACKING	BEARING REPLACEMENT IN KIND	CLEANING AND PAINTING EXISTING BEARING PLATES	BEAM REPAIR
LUMP SUM	EACH	LUMP SUM	LBS
LUMP SUM	9	LUMP SUM	305

DRAWN BY : R. HELFRICH DATE : 01/2012
CHECKED BY : M. LEONARD DATE : 01/2012

PROJECT NO. WBS 17BP.5.P.4
GRANVILLE COUNTY
BRIDGE NO.: 44

NORTH CAROLINA PROFESSIONAL SEAL 032129 ENGINEER MATTHEW J. MOYER
2-15-12

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION FOR BRIDGE NO. 44

(NC 96 OVER I-85)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-45
1			3			TOTAL SHEETS
2			4			70

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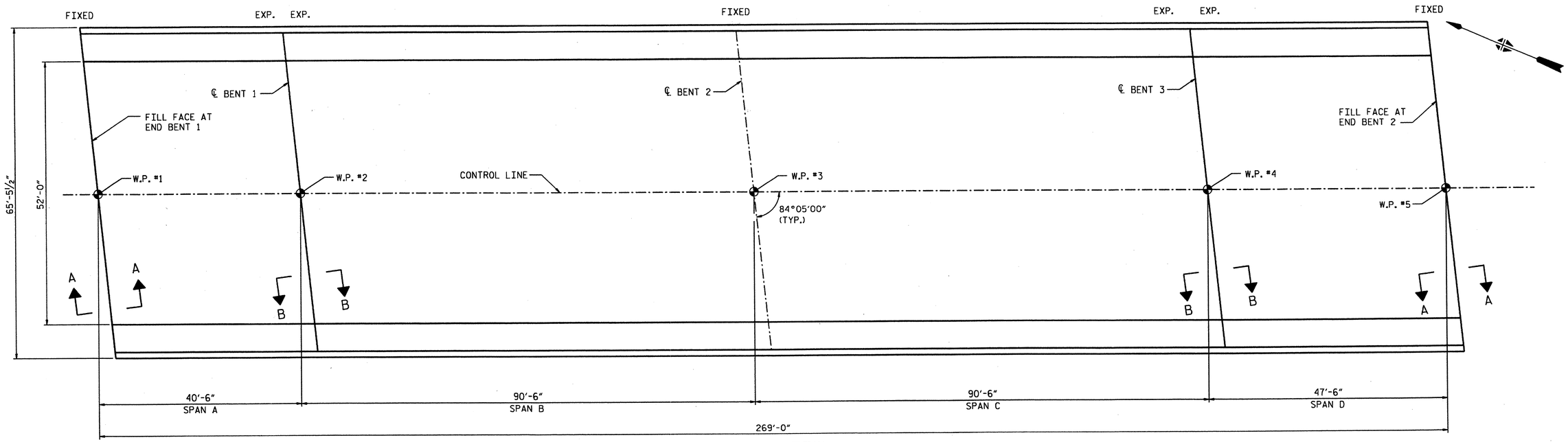
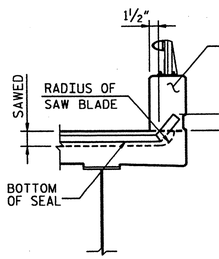
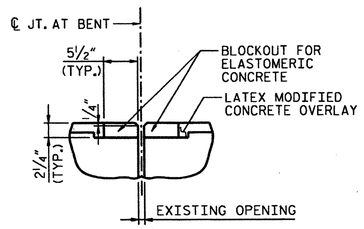


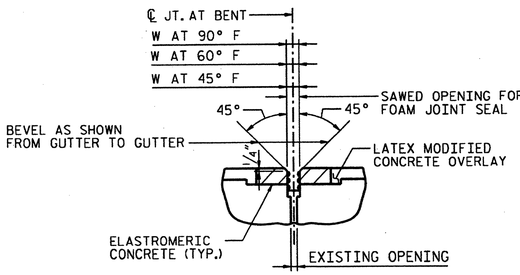
PLAN VIEW



JOINT DETAIL AT CURB



FOAM JOINT SEAL
PRE-SAWED ELASTOMERIC CONCRETE DIMENSIONS

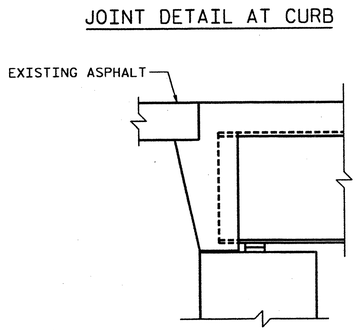


PROPOSED JOINT AT BENTS
FOAM JOINT SEAL EXPANSION

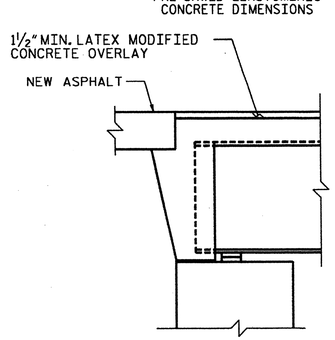
SAWED OPENING FOR FOAM JOINT			
BENT NO.	W AT 90° F	W AT 60° F	W AT 45° F
BENT 1	1¾"	2⅛"	2⅝"
BENT 3	1¹¹⁄₁₆"	2⅛"	2⅝"

ELASTOMERIC CONCRETE	
BENT NO.	ELASTOMERIC CONCRETE ** (CU. FT.)
BENT 1	8.0
BENT 3	8.0
TOTAL	16.0

** BASED ON THE MINIMUM BLOCKOUT SHOWN

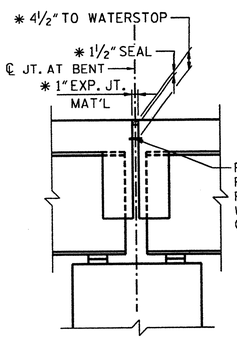


EXISTING SECTION AT END BENT

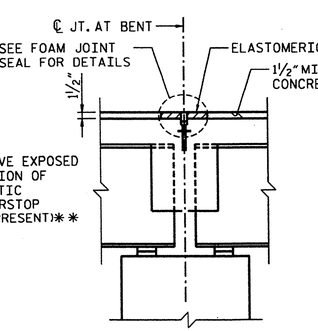


PROPOSED SECTION AT END BENT

SECTION A-A



EXISTING JOINT AT BENTS



PROPOSED JOINT AT BENTS

SECTION B-B

* ESTIMATED DIMENSION

** 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. WBS 17BP.5.P.4

GRANVILLE COUNTY

BRIDGE NO.: 44

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN VIEW AND JOINT DETAILS FOR BRIDGE NO. 44

NORTH CAROLINA PROFESSIONAL SEAL 032129 ENGINEER MATTHEW J. MOTER
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. S-46
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 70
2			4			

DRAWN BY : R. HELFRICH DATE : 01/2012
CHECKED BY : M. LEONARD DATE : 01/2012

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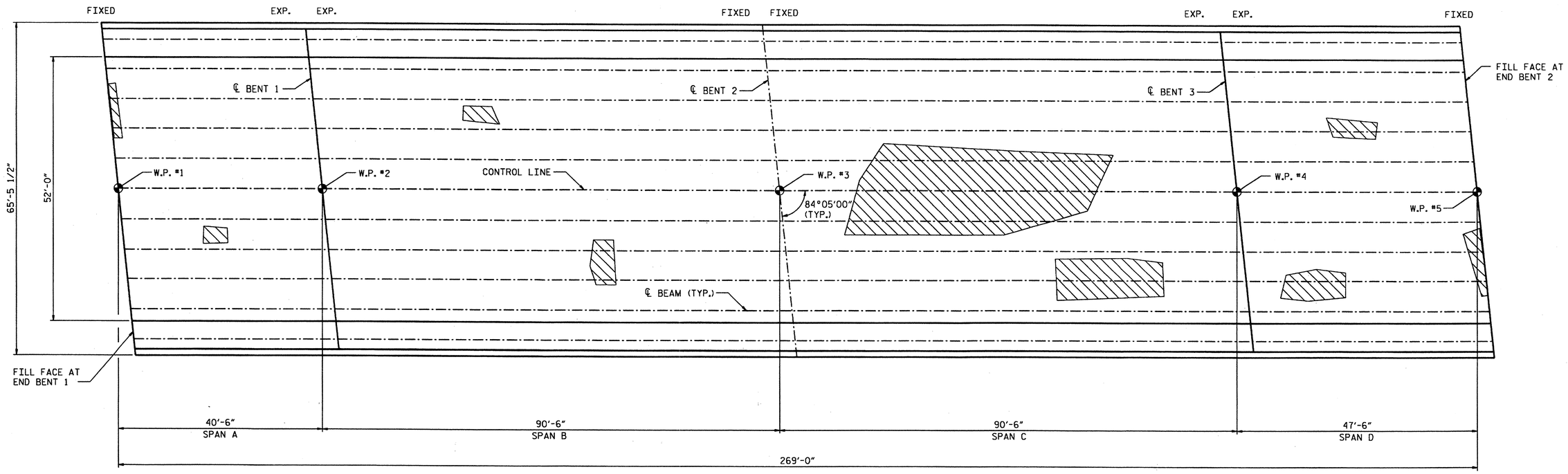
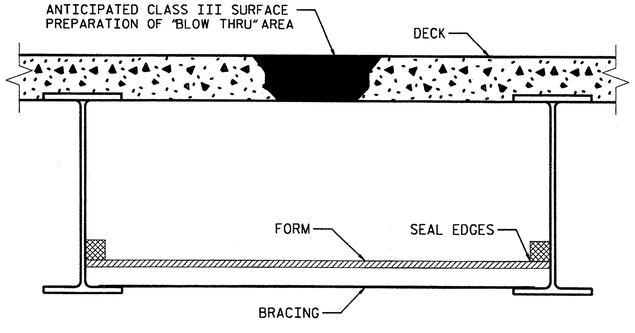


PLAN OF SPANS - DECK REPAIRS

APPROX. AREA: CLASS I REPAIR

APPROX. AREA: CLASS II REPAIR

APPROX. AREA: CLASS III REPAIR

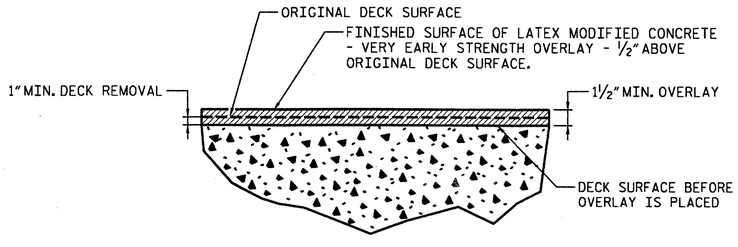


TYPICAL "BLOW THRU" CONTAINMENT AND FORMWORK

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 VERY EARLY STRENGTH OVERLAY

PROJECT NO. WBS 17BP.5.P.4

GRANVILLE COUNTY

BRIDGE NO.: 44

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032129 MATTHEW J. MOYER

1-13-2012

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK REPAIR DETAILS FOR BRIDGE NO. 44

REVISIONS						SHEET NO. S-47
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 70
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 : R. HELFRICH DATE : 01/2012

CHECKED BY : M. LEONARD DATE : 01/2012

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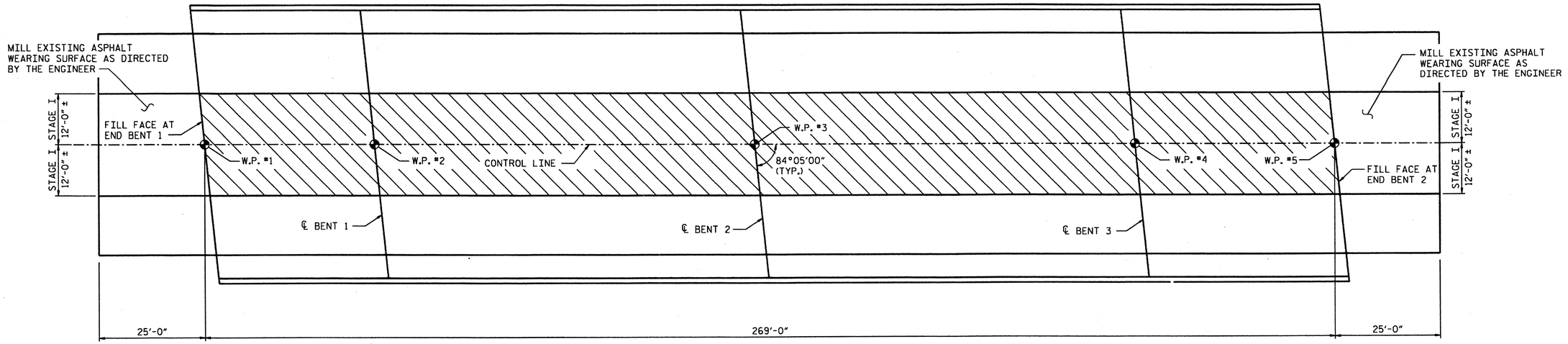
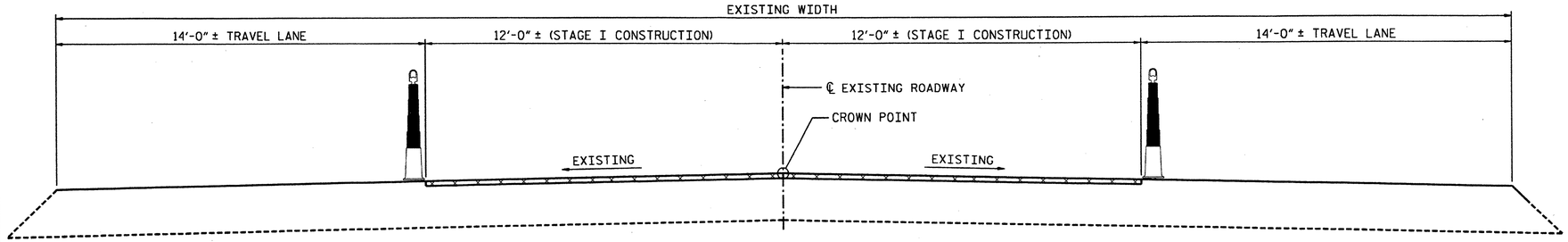


PLAN VIEW

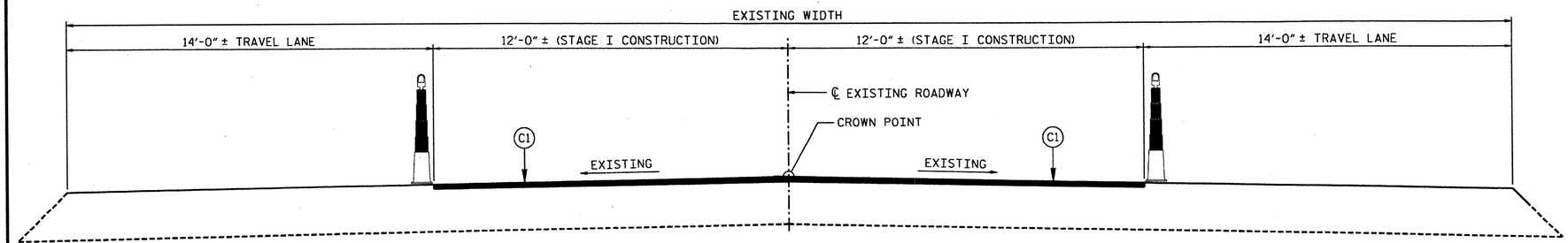
(STAGE I)

▨ DECK SCARIFICATION AND HYDRODEMOLITION

C1	PROPOSED VARIABLE DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH.



TYPICAL ROADWAY MILLING SECTION - STAGE I



TYPICAL ROADWAY SECTION - STAGE I

PROJECT NO. WBS 17BP.5.P.4

GRANVILLE COUNTY

BRIDGE NO.: 44

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION & MILLING DETAILS FOR BRIDGE NO. 44 (STAGE I)

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. S-48
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 70
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2			4			

DRAWN BY : R. HELFRICH DATE : 01/2012
CHECKED BY : M. LEONARD DATE : 01/2012

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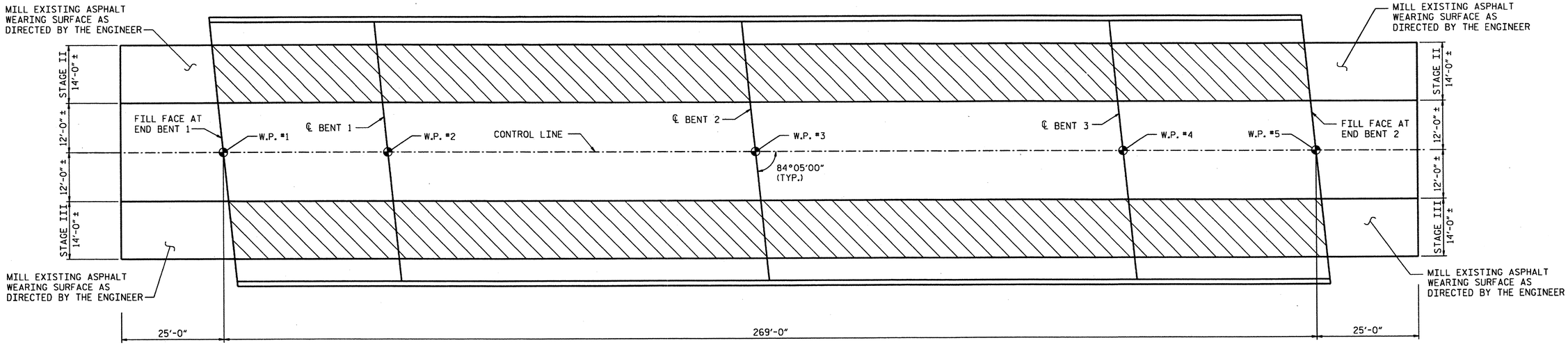
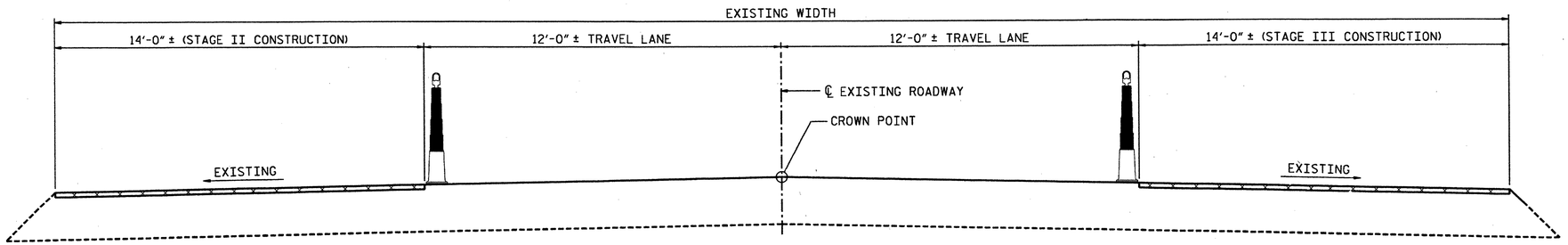


PLAN VIEW

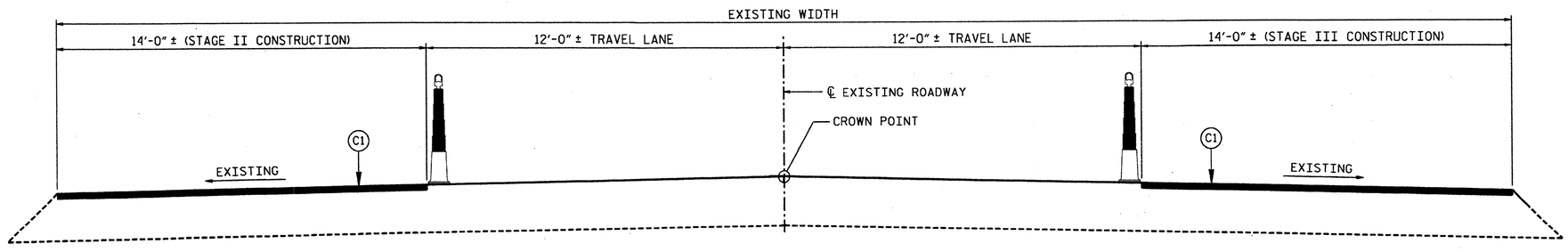
(STAGES II & III)

DECK SCARIFICATION AND HYDRODEMOLITION

C1	PROPOSED VARIABLE DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH.



TYPICAL ROADWAY MILLING SECTION - STAGES II & III



TYPICAL ROADWAY SECTION - STAGES II & III

PROJECT NO. WBS 17BP.5.P.4

GRANVILLE COUNTY

BRIDGE NO.: 44

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION & MILLING DETAILS FOR BRIDGE NO. 44 (STAGES II & III)

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032129 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. S-49
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 70
2			4			

DRAWN BY : R. HELFRICH DATE : 01/2012
CHECKED BY : M. LEONARD DATE : 01/2012

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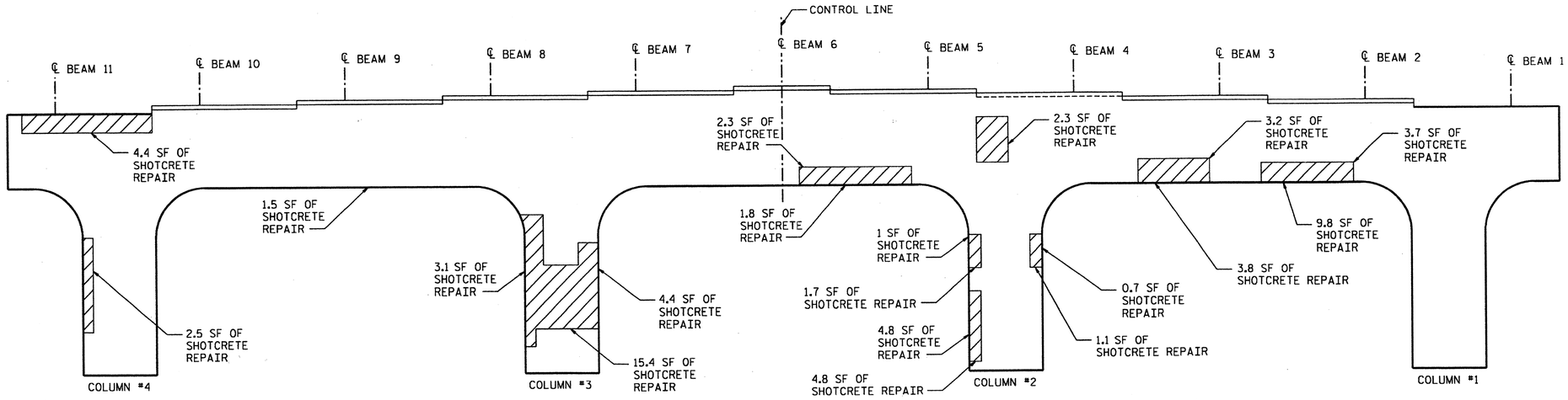
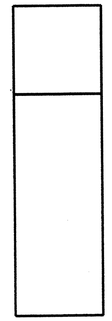
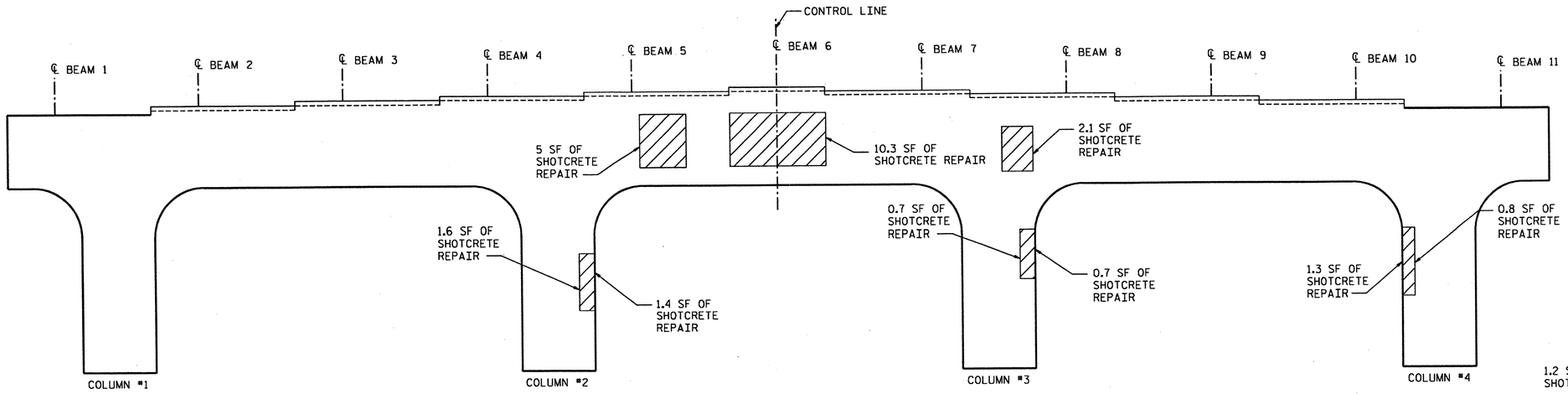


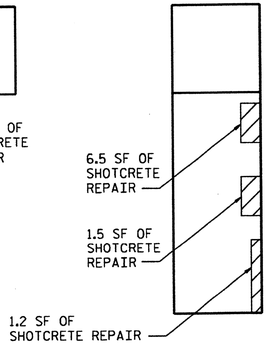
EAST ELEVATION



NORTH END ELEVATION



WEST ELEVATION



SOUTH END ELEVATION

SERVICE REACTIONS PER BEARING				
SUPPORT	DL (KIP)		LL+I (KIP)	
	BACK	AHEAD	BACK	AHEAD
END BENT 1	-	16	-	36
BENT 1	16	27	36	39
BENT 2	95		50	
BENT 3	27	19	39	38
END BENT 2	19	-	38	-

DRAWN BY : R. HELFRICH DATE : 01/2012
CHECKED BY : M. LEONARD DATE : 01/2012

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 BRIDGE NO. 44"

FOR BRIDGE JACKING, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIR, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, 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.

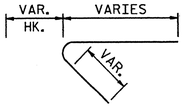
CONCRETE REPAIR

SHOTCRETE REPAIR

EPOXY RESIN INJECTION OF CRACKS

BILL OF MATERIAL				
BENT 1				
BAR	NO.	SIZE	TYPE	LENGTH
S1	VAR.	#4	1	VARIES
CONCRETE REPAIRS			CF	0
SHOTCRETE REPAIRS			CF	27
EPOXY RESIN INJECTION			LF	0
REINFORCING STEEL			LBS	527

BAR TYPE



(BAR DIMENSIONS ARE OUT TO OUT)

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032129 MATTHEW J. MOTON
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. WBS 17BP.5.P.4
GRANVILLE COUNTY
BRIDGE NO.: 44

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 1
FOR BRIDGE NO. 44

REVISIONS						SHEET NO. S-50
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 70
1			3			
2			4			

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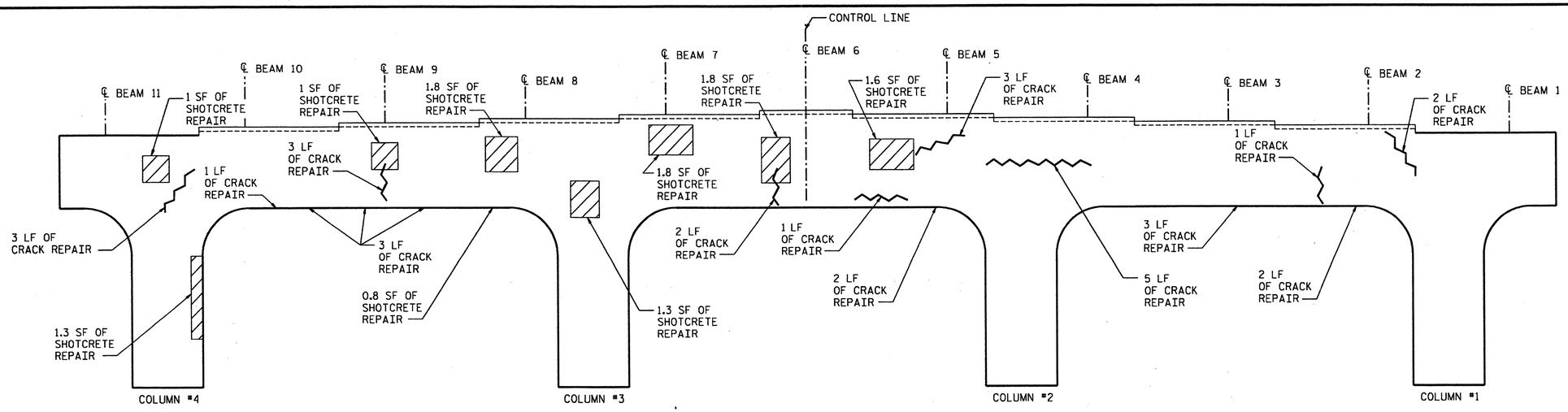
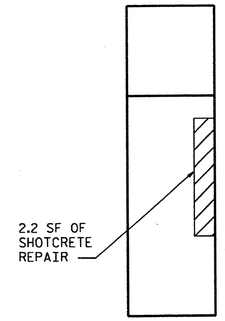
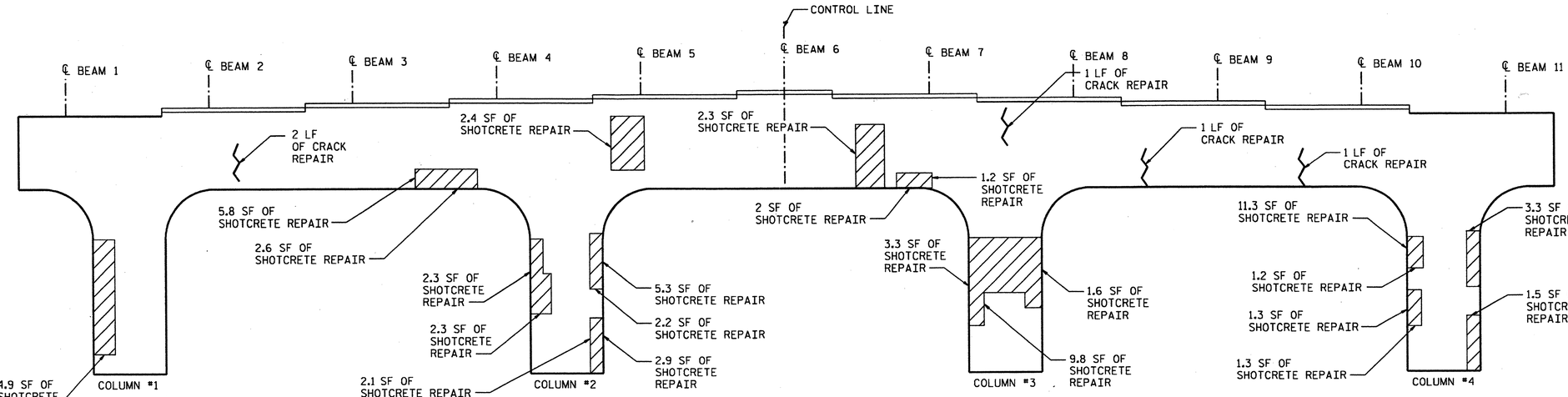


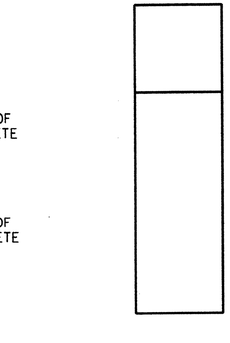
EAST ELEVATION



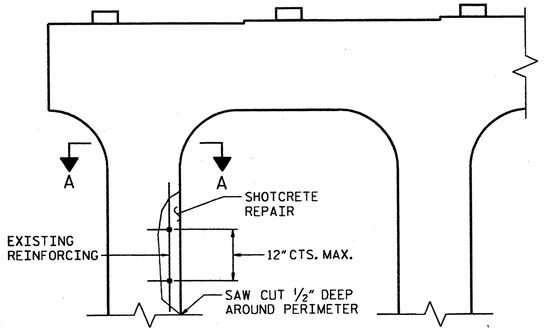
NORTH END ELEVATION



WEST ELEVATION

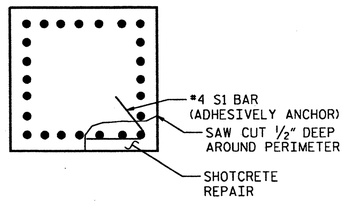


SOUTH END ELEVATION



COLUMN REPAIR DETAIL

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



SECTION A-A

DRAWN BY : R. HELFRICH DATE : 01/2012
CHECKED BY : M. LEONARD DATE : 01/2012

NOTES

FOR NOTES, SEE DRAWING "BENT 1 FOR BRIDGE NO. 44".

CONCRETE REPAIR

SHOTCRETE REPAIR

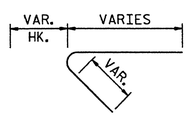
EPOXY RESIN INJECTION OF CRACKS

BILL OF MATERIAL

BENT 3

BAR	NO.	SIZE	TYPE	LENGTH
S1	VAR.	#4	1	VARIES
CONCRETE REPAIRS			CF	0
SHOTCRETE REPAIRS			CF	22
EPOXY RESIN INJECTION			LF	42
REINFORCING STEEL			LBS	438

BAR TYPE



(BAR DIMENSIONS ARE OUT TO OUT)

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. WBS 17BP.5.P.4

GRANVILLE COUNTY

BRIDGE NO.: 44

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 3 FOR BRIDGE NO. 44

REVISIONS						SHEET NO. S-51
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 70
2			4			

PLOT DRIVER: NCDOT.pdf_mono_eng-50.plt
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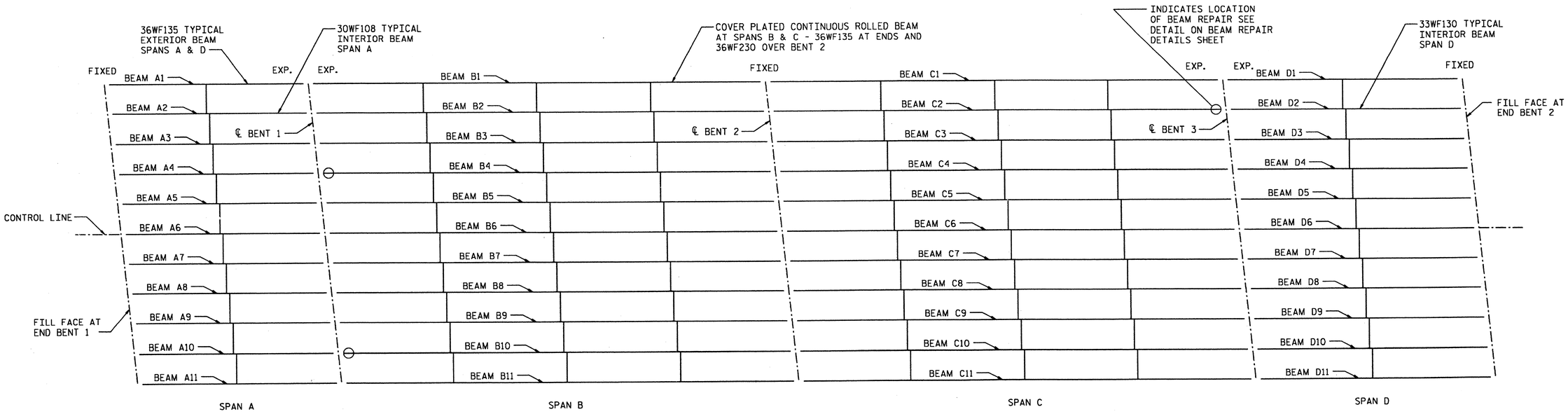
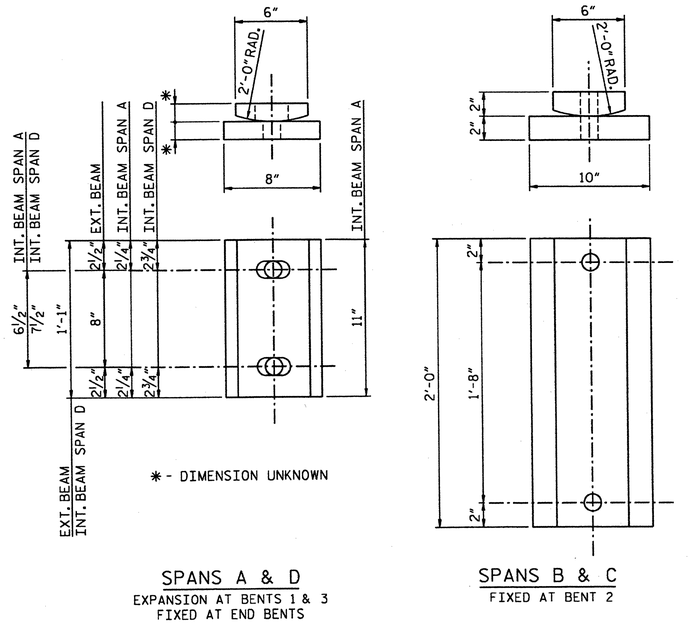


PLAN VIEW



SPANS A & D
EXPANSION AT BENTS 1 & 3
FIXED AT END BENTS

SPANS B & C
FIXED AT BENT 2

BEARING REPLACEMENT IN KIND

BEARING REPLACEMENT AT THE DIRECTION OF THE ENGINEER.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR NEW BEARING DESIGN AND JACKING LOADS.

FOR BRIDGE JACKING, SEE SPECIAL PROVISIONS.

STEEL NOTES

EXISTING BRIDGE AND REPAIR DETAILS INDICATED ON THE PLANS ARE FROM THE BEST INFORMATION AVAILABLE. THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE AND REPAIR DETAILS SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

CONCTRACTOR SHALL TAKE ALL MEASURES NECESSARY TO VERIFY INFORMATION SHOWN ON THESE PLANS AND SHALL OBTAIN ALL OTHER BRIDGE DATA NECESSARY FOR THE EXECUTION OF THE WORK.

INASMUCH AS THE PAINT SYSTEM OF THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COST RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE IN THE BID PRICE FOR THE VARIOUS ITEMS OF WORK.

THE CONTRACTOR TO PROVIDE BLOCKING FOR ALL JACKS AS NECESSARY. A BLOCKING PLANS SHALL BE SUBMITTED FOR ALL SPANS LIFTED FOR APPROVAL BY THE ENGINEER.

THE CONTRACTOR SHALL MONITOR THE PLAN LOCATION OF THE BEAMS FROM INITIAL JACKING UNTIL BEAMS ARE SECURED ON THEIR PERMANENT BEARINGS. IF THE PLAN LOCATION OF THESE BEAMS SHIFT FROM ITS ORIGINAL POSITION, ALL WORK SHALL CEASE AND THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY.

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

SEE SPECIAL PROVISIONS FOR "BRIDGE JACKING".

REPAIR BEAMS AS INDICATED ON THE PLANS.

BEAM REPAIR DETAILS AND DIMENSIONS PROVIDED IN PLANS MAY BE MODIFIED BASED ON FIELD CONDITIONS BY THE ENGINEER.

CHIP AWAY CONCRETE DIAPHRAGMS AS NEEDED TO DETERMINE LIMITS OF REPAIR.

MECHANICALLY CLEAN RUST AND SCALE AND EXISTING PAINT TO AT LEAST 4" BEYOND REPAIR AREA LIMITS.

REPLACEMENT BEAM SECTIONS SHALL BE CUT FROM A ROLLED WT SECTION AND SHALL BE AASHTO M270 GRADE 50, OR APPROVED EQUIVALENT.

ALL REPLACEMENT STEEL SHALL BE SHOP PRIMED IN ACCORDANCE WITH SECTION 442 SYSTEM 1 OF STANDARD SPECIFICATIONS.

IN ACCORDANCE WITH THE SPECIAL PROVISIONS, AFTER REPAIR, GRIND ALL WELDS FLUSH, THOROUGHLY CLEAN AREA TO REMOVE DEBRIS AND OILS FROM REPAIR PROCESS, CLEAN AND PAINT STRUCTURAL STEEL.

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

FOR "BEAM REPAIR", SEE SPECIAL PROVISIONS.

FOR CLEANING AND PAINTING EXISTING BEARING PLATES, SEE SPECIAL PROVISIONS.

PROJECT NO. WBS 17BP.5.P.4

GRANVILLE COUNTY

BRIDGE NO.: 44

NORTH CAROLINA PROFESSIONAL SEAL 032129 ENGINEER MATTHEW J. MOYER

2-15-12

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BEAM REPAIR PLAN VIEW FOR BRIDGE NO. 44

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-52
1			3			TOTAL SHEETS
2			4			70

DRAWN BY : R. HELFRICH DATE : 01/2012
CHECKED BY : M. LEONARD DATE : 01/2012

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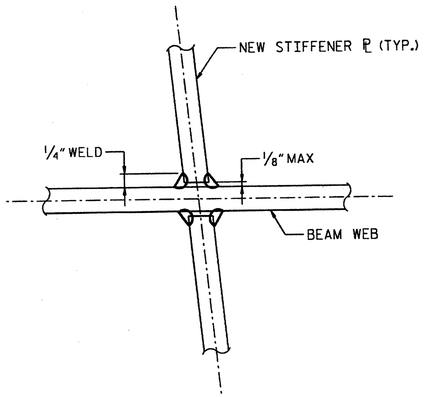

SECTION A-A
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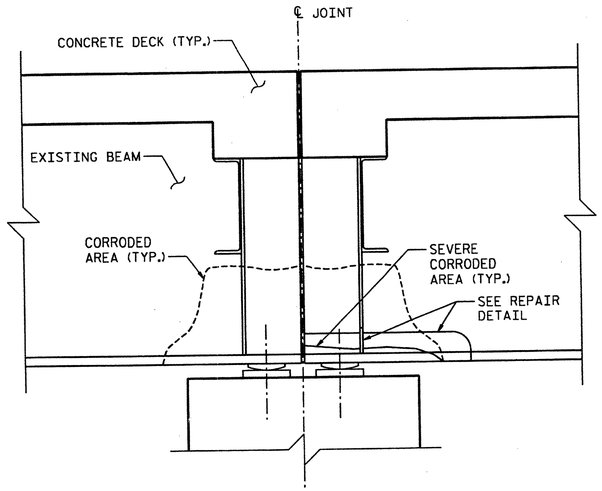


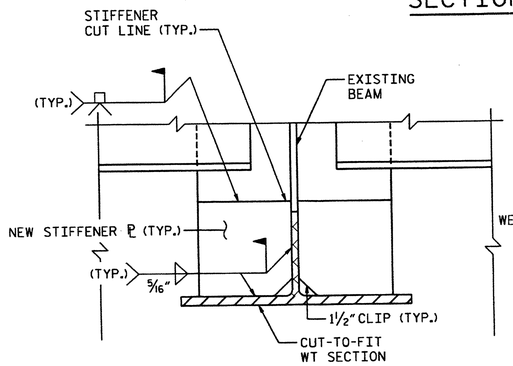
SECTION THRU DIAPHRAGM

NOTES

* THE ENGINEER SHALL DETERMINE THE EXTENT OF BEAM REPAIR (6" MINIMUM).

** THE ENGINEER SHALL DETERMINE THE STIFFENER PLATE CUTLINE LOCATION (6" MINIMUM)

PROVIDE RUN OFF TABS AS NEEDED FOR FULL PENETRATION WELDS.



SECTION B-B
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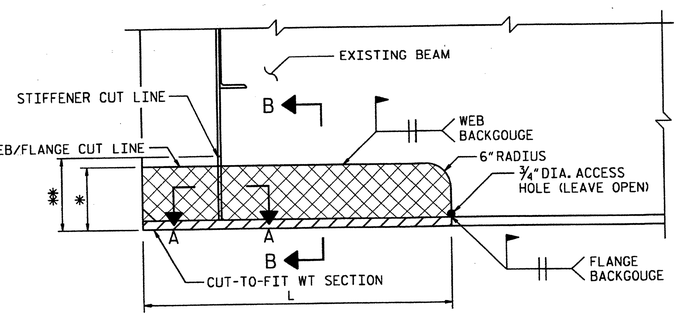

REPAIR DETAIL

(SEVERE SECTION LOSS)

WT REPAIR SCHEDULE	
BEAM	L
B4 @ BENT 1	2'-0"
B10 @ BENT 1	2'-0"
B2 @ BENT 3	3'-6"

REPAIR SEQUENCE

1. MECHANICALLY CLEAN RUST & SCALE & EXISTING PAINT TO AT LEAST 4" BEYOND THE REPAIR LIMITS.
2. CUT OUT BEAM SECTION AND PORTION OF EXISTING STIFFENER PLATE(S) TO BE REPAIRED AFTER JACKING SPAN.
3. GRIND WEB, FLANGE AND STIFFENER(S) SMOOTH ADJACENT TO REMOVAL AREAS.
4. REPLACE STEEL SECTION WITH A WT18x67.5 CUT TO FIT.
5. INSTALL WT SECTION AS INDICATED.
6. INSTALL NEW STIFFENER PLATE(S) AS INDICATED. NEW STIFFENER PLATES SHALL MATCH THE WIDTH AND THICKNESS OF THE EXISTING STIFFENER PLATES.
7. LOWER SPAN TO BEAR. CHECK FOR DISTRESS.
8. REMOVE JACKING EQUIPMENT AND OTHER TEMPORARY SUPPORTS.

PROJECT NO. WBS 17BP.5.P.4

GRANVILLE COUNTY

BRIDGE NO.: 44

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BEAM REPAIR DETAILS FOR BRIDGE NO. 44

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-53
1			3			TOTAL SHEETS
2			4			70

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N.C.B.E.L.S. License Number: F-0116

DRAWN BY : R. HELFRICH DATE : 01/2012
CHECKED BY : M. LEONARD DATE : 01/2012

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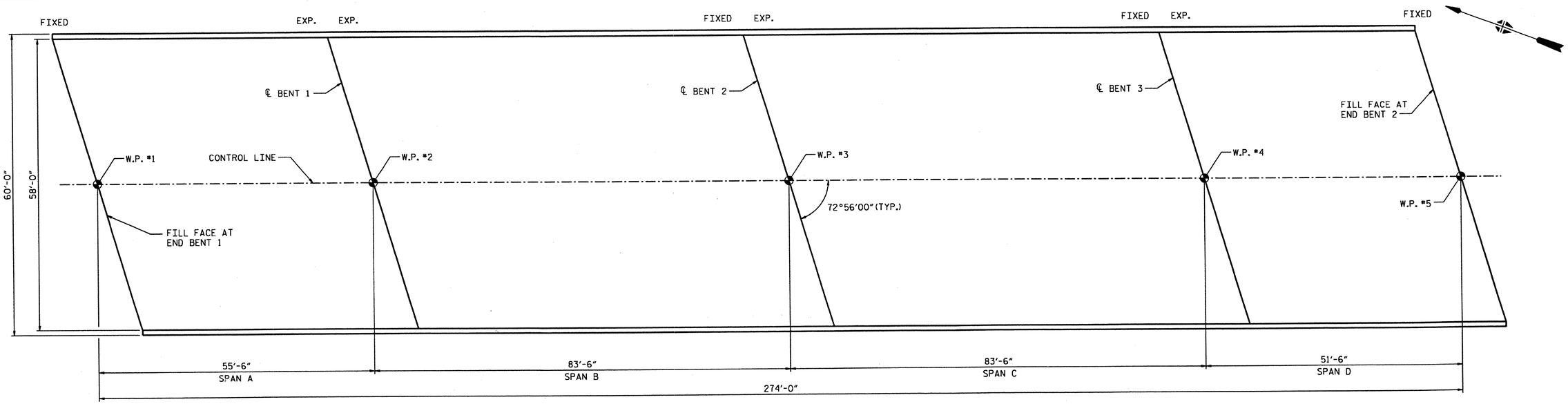

PLAN VIEW

NOTES

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

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 CLEANING AND PAINTING EXISTING BEARING PLATES, SEE SPECIAL PROVISIONS.

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 1/2 INCH WITH RESPECT TO BEARINGS OF ADJACENT PIERS.

BEARING NUTS SHALL BE LOOSENED TO PROVIDE A MINIMUM OF 59/64 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	--	22	--	41
BENT 1	22	33	41	42
BENT 2	33	33	42	42
BENT 3	33	20	42	40
END BENT 2	20	--	40	--

TOTAL BILL OF MATERIAL

CONCRETE REPAIRS	FOAM JOINT SEALS	EPOXY RESIN INJECTION	SHOTCRETE REPAIRS	REINFORCING STEEL	BEAM REPAIR	BRIDGE JACKING	BEARING REPLACEMENT IN KIND	CLEANING AND PAINTING EXISTING BEARING PLATES
CU. FT.	LUMP SUM	LIN. FT.	CU. FT.	LBS	LBS	LUMP SUM	EACH	LUMP SUM
3	LUMP SUM	3	73	1,491	2,040	LUMP SUM	8	LUMP SUM

DRAWN BY : R. HELFRICH DATE : 01/2012
CHECKED BY : M. LEONARD DATE : 01/2012

PROJECT NO. WBS 17BP.5.P.4

GRANVILLE COUNTY

BRIDGE NO.: 45

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032129 ENGINEER MATTHEW J. MOYER

2-15-12

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN VIEW
FOR BRIDGE NO. 45
(NC56 OVER I-85)

REVISIONS						SHEET NO. S-54
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 70
1			3			
2			4			

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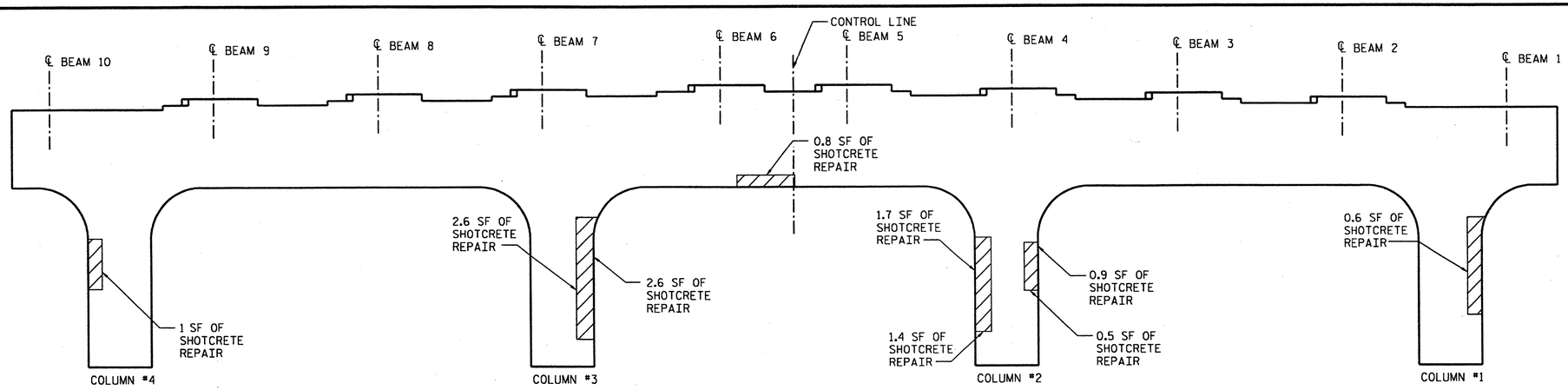

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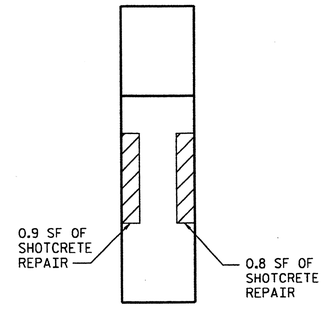

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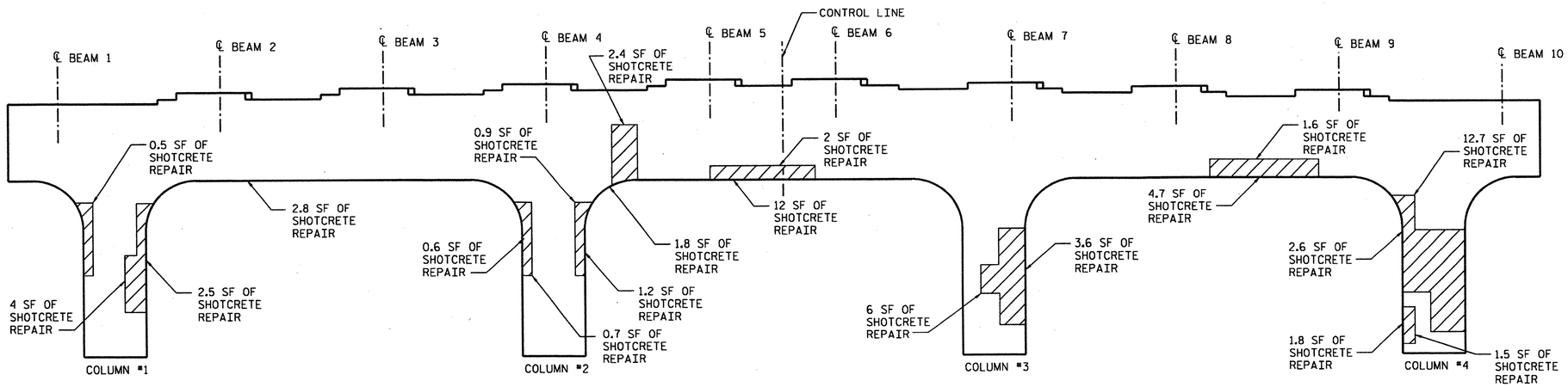

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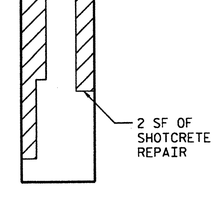


SOUTH END ELEVATION

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 2 FOR BRIDGE NO. 45".

FOR "TYPICAL REPAIR AT BEAM BEARING" DETAIL, SEE DRAWING "BENT 3 FOR BRIDGE NO. 45".

FOR BRIDGE JACKING, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIR, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, 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

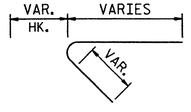
BILL OF MATERIAL

BENT 1

BAR	NO.	SIZE	TYPE	LENGTH
S1	VAR.	#4	1	VARIES

CONCRETE REPAIRS	CF	0
SHOTCRETE REPAIRS	CF	23
EPOXY RESIN INJECTION	LF	0
REINFORCING STEEL	LBS	451

BAR TYPE



(BAR DIMENSIONS ARE OUT TO OUT)

DRAWN BY : R. HELFRICH DATE : 01/2012
CHECKED BY : M. LEONARD DATE : 01/2012

PROJECT NO. WBS 17BP.5.P.4

GRANVILLE COUNTY

BRIDGE NO.: 45

NORTH CAROLINA PROFESSIONAL SEAL 032128 ENGINEER MATTHEW J. MOYER

1-13-2012

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 1
FOR BRIDGE NO. 45

REVISIONS						SHEET NO. S-55
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 70
1			3			
2			4			

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N.C.B.E.L.S. License Number: F-0116

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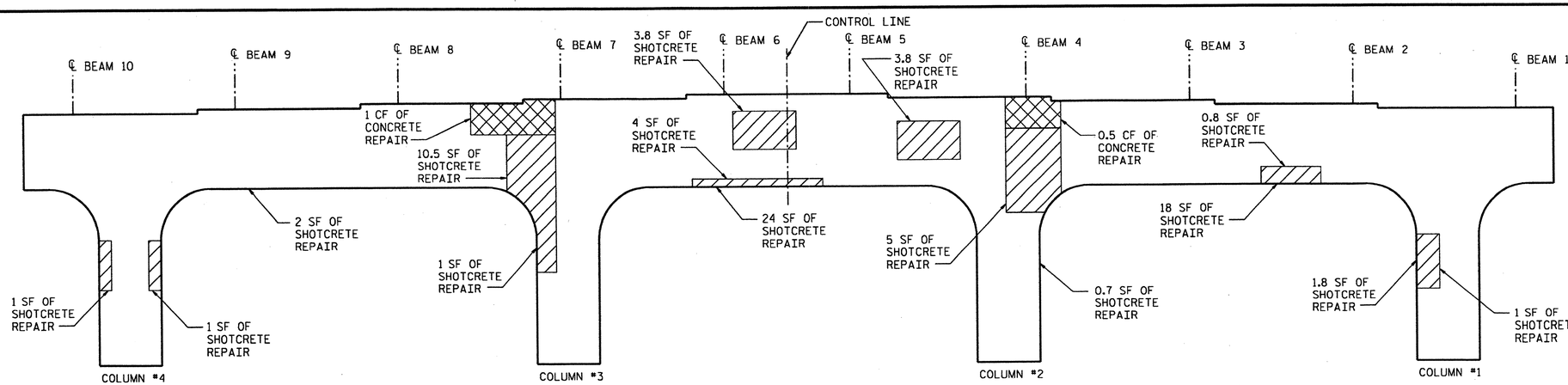

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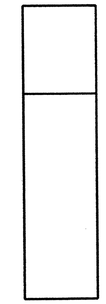

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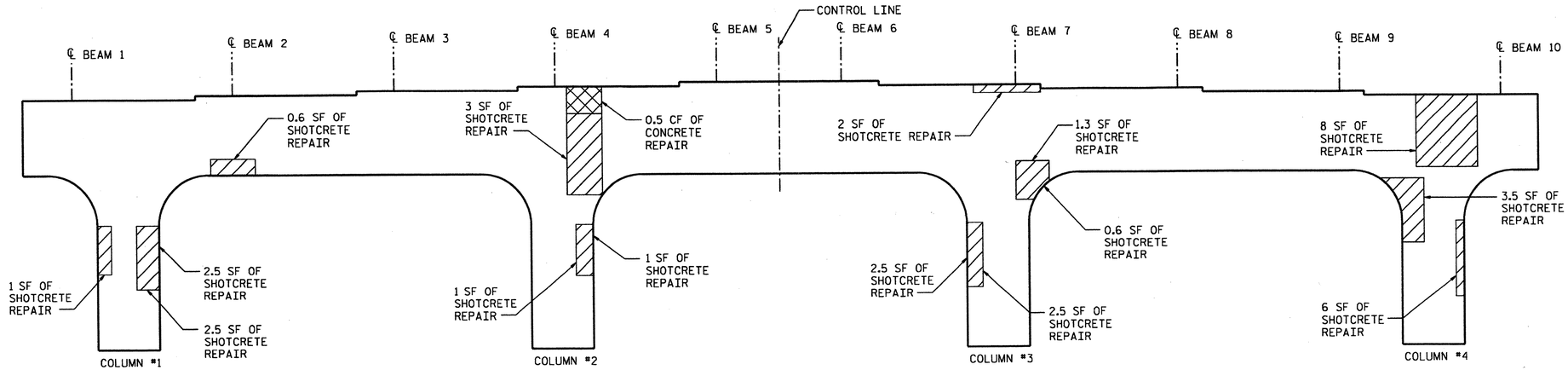

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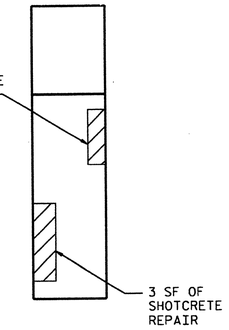

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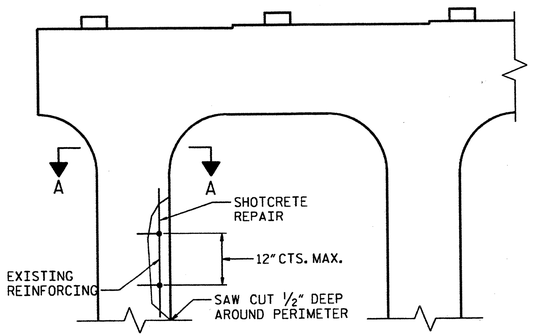
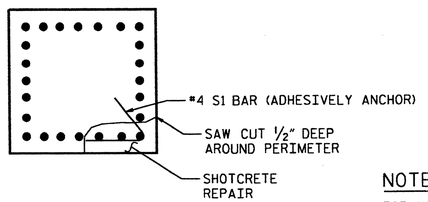


COLUMN REPAIR DETAIL

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



SECTION A-A

NOTES

FOR NOTES, SEE DRAWING "BENT 1 FOR BRIDGE NO. 45".

CONCRETE REPAIR

SHOTCRETE REPAIR

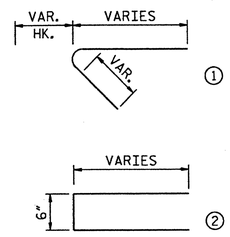
EPOXY RESIN INJECTION OF CRACKS

BILL OF MATERIAL

BENT 2

BAR	NO.	SIZE	TYPE	LENGTH
S1	VAR.	#4	1	VARIES
S2	VAR.	#5	2	VARIES
CONCRETE REPAIRS			CF	2
SHOTCRETE REPAIRS			CF	31
EPOXY RESIN INJECTION			LF	0
REINFORCING STEEL			LBS	642

BAR TYPE



(BAR DIMENSIONS ARE OUT TO OUT)

PROJECT NO. WBS 17BP.5.P.4

GRANVILLE COUNTY

BRIDGE NO.: 45

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 2 FOR BRIDGE NO. 45

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032129 ENGINEER MATTHEW J. MOTER

1-13-2012

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N.C.B.E.L. License Number: F-0116

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-56
1			3			TOTAL SHEETS
2			4			70

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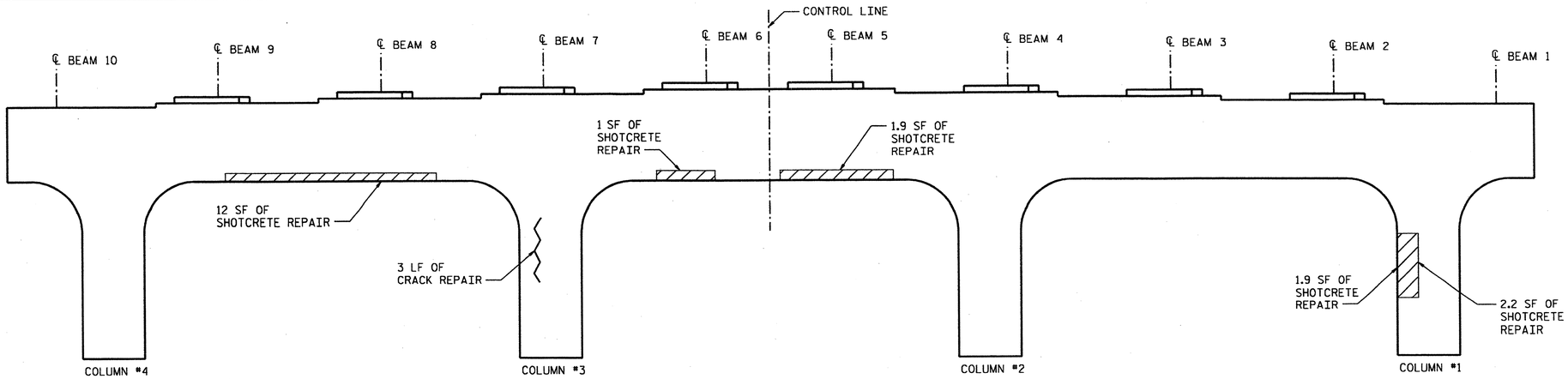

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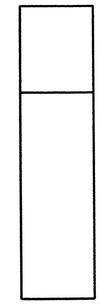

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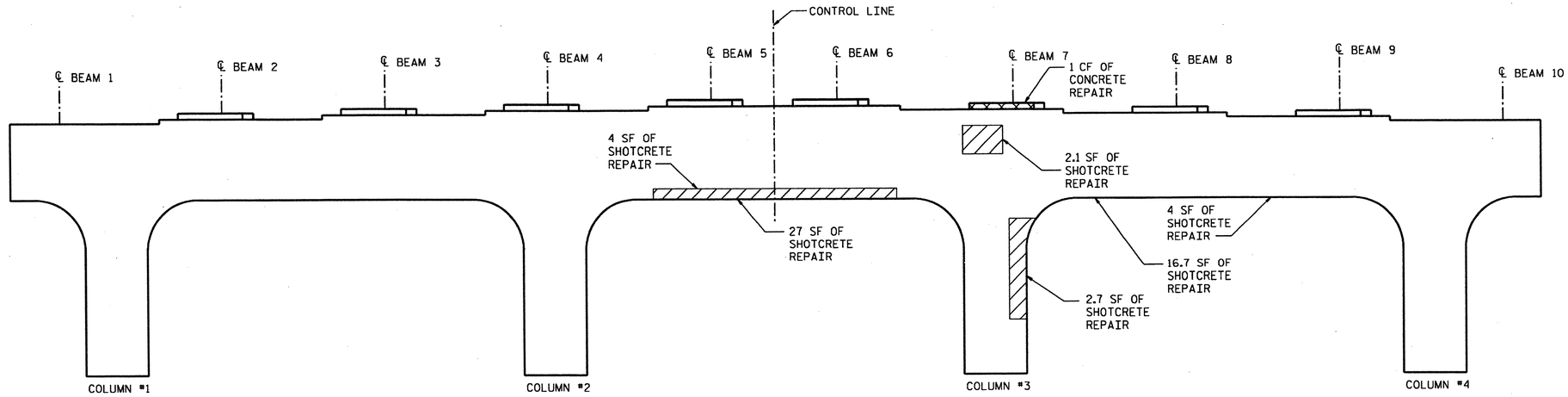

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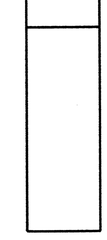

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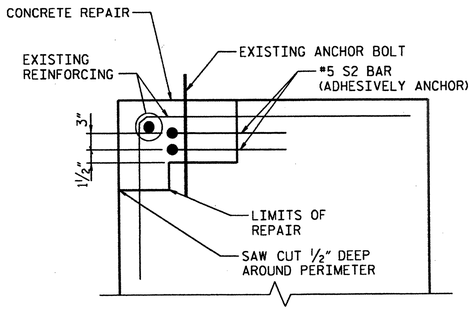
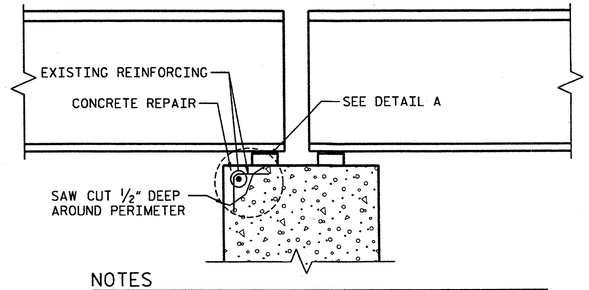


DETAIL A



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

NOTES

FOR NOTES, SEE DRAWING "BENT 1 FOR BRIDGE NO. 45".

CONCRETE REPAIR

SHOTCRETE REPAIR

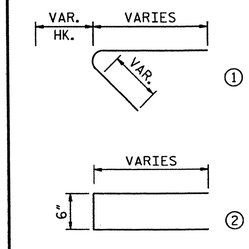
EPOXY RESIN INJECTION OF CRACKS

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	19
EPOXY RESIN INJECTION			LF	3
REINFORCING STEEL			LBS	398

BAR TYPE



(BAR DIMENSIONS ARE OUT TO OUT)

PROJECT NO. WBS 17BP.5.P.4

GRANVILLE COUNTY

BRIDGE NO.: 45

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT 3 FOR BRIDGE NO. 45

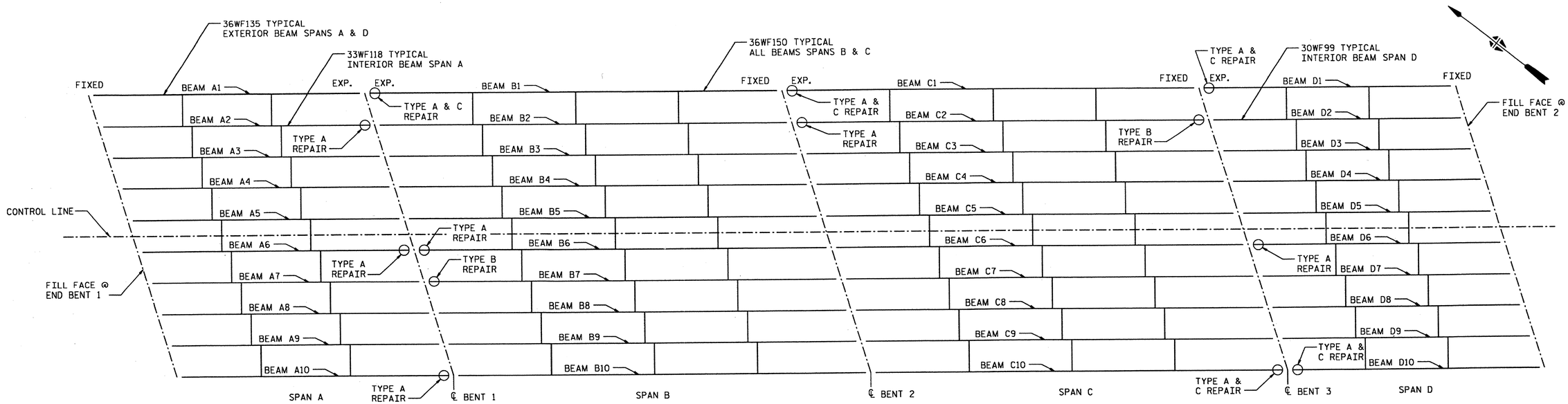
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032129 MATTHEW J. MOYER

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

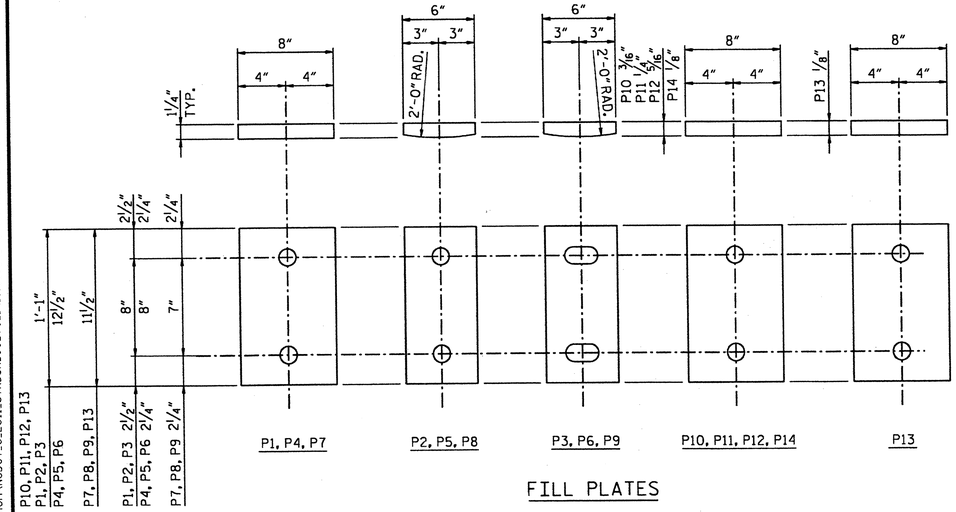
REVISIONS						SHEET NO. S-57
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 70
1			3			
2			4			

DRAWN BY : R. HELFRICH DATE : 01/2012
CHECKED BY : M. LEONARD DATE : 01/2012



○ - INDICATES LOCATION OF BEAM REPAIR, SEE "BEAM REPAIR DETAILS FOR BRIDGE NO. 45" FOR REPAIR TYPES.

PLAN VIEW



FILL PLATES

BEARING REPLACEMENT IN KIND

BEARING REPLACEMENT AT THE DIRECTION OF THE ENGINEER.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR NEW BEARING DESIGN AND JACKING LOADS.

FOR BRIDGE JACKING, SEE SPECIAL PROVISIONS.

STEEL NOTES

EXISTING BRIDGE AND REPAIR DETAILS INDICATED ON THE PLANS ARE FROM THE BEST INFORMATION AVAILABLE. THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE AND REPAIR DETAILS SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

CONCTRACTOR SHALL TAKE ALL MEASURES NECESSARY TO VERIFY INFORMATION SHOWN ON THESE PLANS AND SHALL OBTAIN ALL OTHER BRIDGE DATA NECESSARY FOR THE EXECUTION OF THE WORK.

INASMUCH AS THE PAINT SYSTEM OF THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COST RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE IN THE BID PRICE FOR THE VARIOUS ITEMS OF WORK.

THE CONTRACTOR TO PROVIDE BLOCKING FOR ALL JACKS AS NECESSARY. A BLOCKING PLANS SHALL BE SUBMITTED FOR ALL SPANS LIFTED FOR APPROVAL BY THE ENGINEER.

THE CONTRACTOR SHALL MONITOR THE PLAN LOCATION OF THE BEAMS FROM INITIAL JACKING UNTIL BEAMS ARE SECURED ON THEIR PERMANENT BEARINGS. IF THE PLAN LOCATION OF THESE BEAMS SHIFT FROM ITS ORIGINAL POSITION, ALL WORK SHALL CEASE AND THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY.

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

SEE SPECIAL PROVISIONS FOR "BRIDGE JACKING".

REPAIR BEAMS AS INDICATED ON THE PLANS.

BEAM REPAIR DETAILS AND DIMENSIONS PROVIDED IN PLANS MAY BE MODIFIED BASED ON FIELD CONDITIONS BY THE ENGINEER.

CHIP AWAY CONCRETE DIAPHRAGMS AS NEEDED TO DETERMINE LIMITS OF REPAIR.

MECHANICALLY CLEAN RUST AND SCALE AND EXISTING PAINT TO AT LEAST 4" BEYOND REPAIR AREA LIMITS.

REPLACEMENT BEAM SECTIONS SHALL BE CUT FROM A ROLLED WT SECTION AND SHALL BE AASHTO M270 GRADE 50, OR APPROVED EQUIVALENT.

ALL REPLACEMENT STEEL SHALL BE SHOP PRIMED IN ACCORDANCE WITH SECTION 442 SYSTEM 1 OF STANDARD SPECIFICATIONS.

IN ACCORDANCE WITH THE SPECIAL PROVISIONS, AFTER REPAIR, GRIND ALL WELDS FLUSH, THOROUGHLY CLEAN AREA TO REMOVE DEBRIS AND OILS FROM REPAIR PROCESS, CLEAN AND PAINT STRUCTURAL STEEL.

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

FOR "BEAM REPAIR", SEE SPECIAL PROVISIONS.

FOR CLEANING AND PAINTING EXISTING BEARING PLATES, SEE SPECIAL PROVISIONS.

PROJECT NO. WBS 17BP.5.P.4

GRANVILLE COUNTY

BRIDGE NO.: 45

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BEAM REPAIR PLAN VIEW FOR BRIDGE NO. 45

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-58
1			3			TOTAL SHEETS
2			4			70

DRAWN BY : R. HELFRICH DATE : 01/2012
CHECKED BY : M. LEONARD DATE : 01/2012

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3733 National Drive, Suite 207 Raleigh, N.C. 27612
N.C.B.E.L. License Number: F-0116

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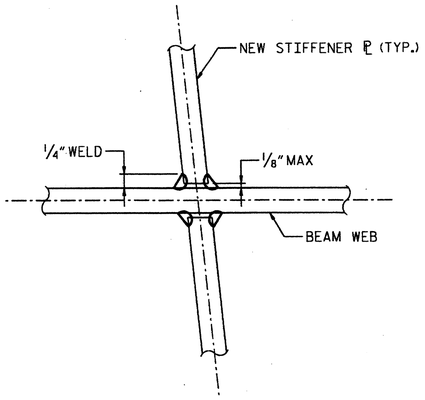
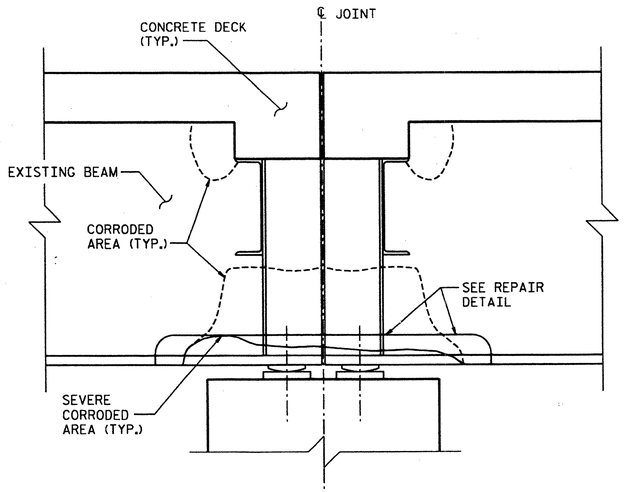


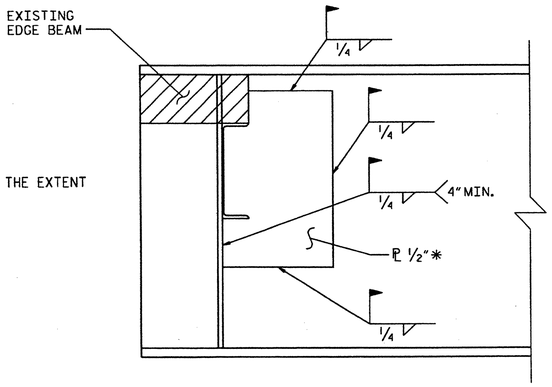
SECTION A-A

(NOT TO SCALE)



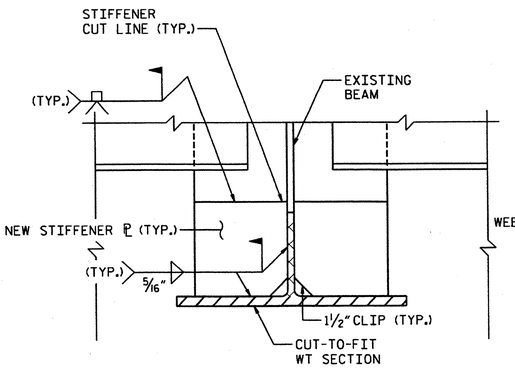
SECTION THRU DIAHPHRAGM

NOTE:
THE ENGINEER SHALL DETERMINE THE EXTENT OF BEAM REPAIR.



TYPE B REPAIR

(2 REQUIRED)



SECTION B-B

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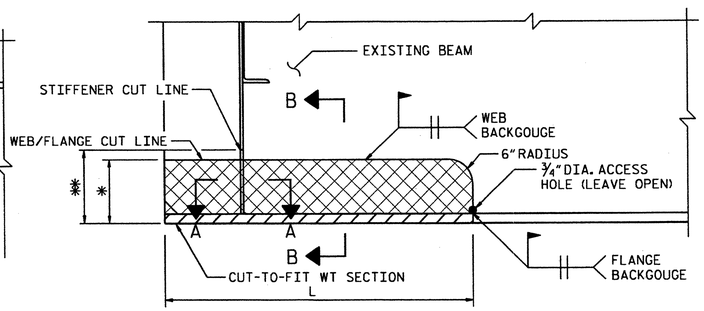


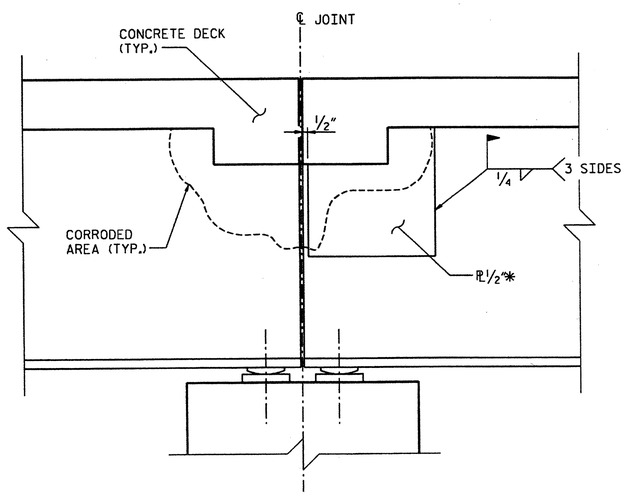
TYPE A REPAIR

(11 REQUIRED)

TYPE A REPAIR SEQUENCE

1. MECHANICALLY CLEAN RUST & SCALE & EXISTING PAINT TO AT LEAST 4" BEYOND THE REPAIR LIMITS.
2. CUT OUT SECTION TO BE REPAIRED AFTER JACKING SPAN.
3. REPLACE STEEL SECTION WITH APPROPRIATE WT SECTION, CUT TO FIT (SEE "WT REPAIR SCHEDULE").
4. INSTALL WT SECTION AS INDICATED.
5. GRIND WEB AND REMAINING STIFFENER FOR INSTALLATION OF STIFFENER REPAIR PLATES AND WEB AS SHOWN.
6. LOWER SPAN TO BEAR. CHECK FOR DISTRESS.
7. REMOVE JACKING EQUIPMENT AND OTHER TEMPORARY SUPPORTS.

WT REPAIR SCHEDULE		
BEAM	WT SCHEDULE	L
A2 & A6	WT16.5x59	2'-6"
A10	WT18x67.5	2'-6"
B6	WT18x75	2'-6"
C1 & C10	WT18x75	2'-6"
D1	WT18x67.5	2'-6"
D6	WT15x49.5	2'-6"
D10	WT18x67.5	6'-0"



TYPE C REPAIR

(4 REQUIRED)

* ENGINEER SHALL DETERMINE THE EXTENT OF THE PLATE AREA

DRAWN BY : R. HELFRICH DATE : 01/2012
CHECKED BY : M. LEONARD DATE : 01/2012

PROJECT NO. WBS 17BP.5.P.4

GRANVILLE COUNTY

BRIDGE NO.: 45

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BEAM REPAIR DETAILS FOR BRIDGE NO. 45

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-59
1			3			TOTAL SHEETS
2			4			70

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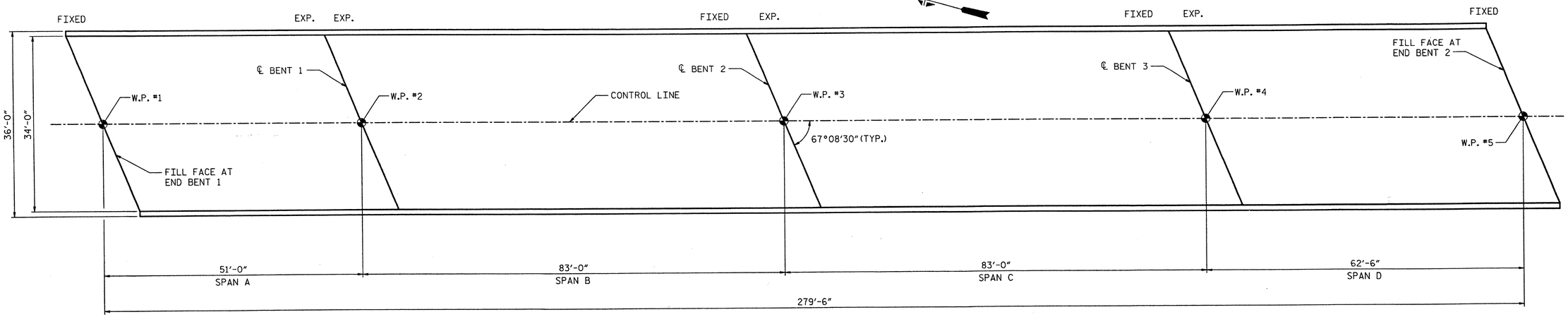
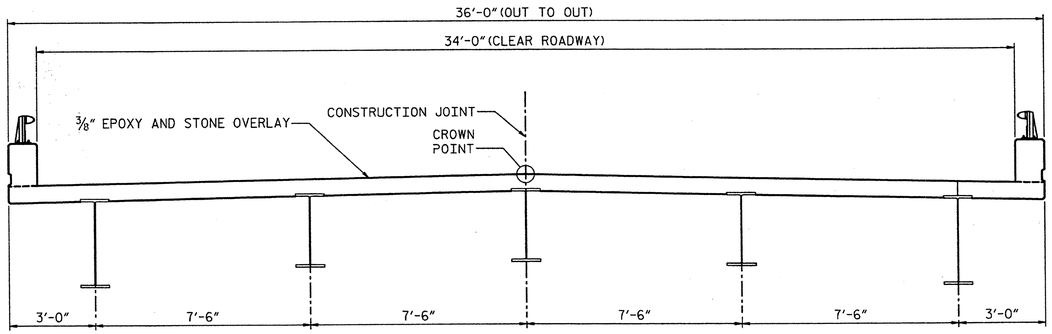
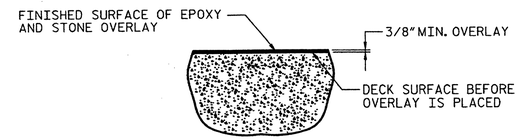


PLAN VIEW

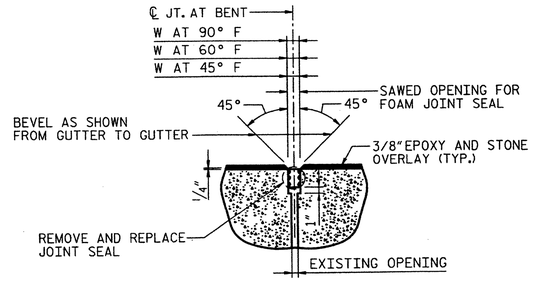


TYPICAL SECTION



DETAIL FOR EPOXY AND STONE OVERLAY

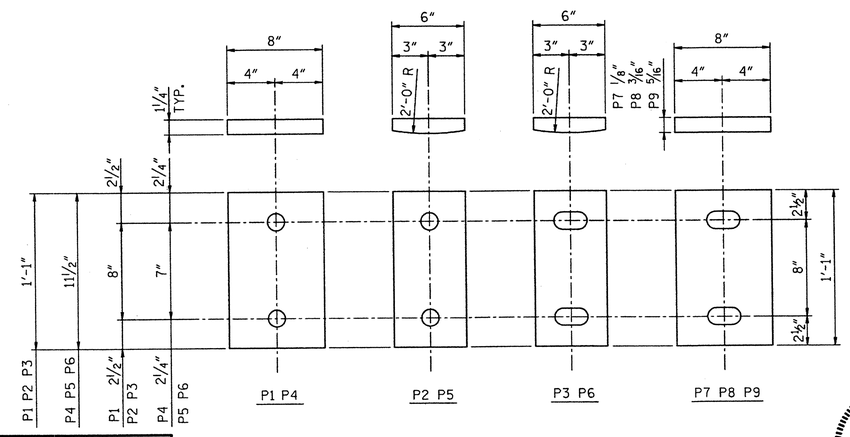
SAWED OPENING FOR FOAM JOINT			
BENT NO.	W AT 90° F	W AT 60° F	W AT 45° F
BENT 1	1 1/2"	1 7/8"	2 1/16"
BENT 2	1 5/16"	1 7/8"	2"
BENT 3	1 11/16"	1 7/8"	1 15/16"



PROPOSED JOINT AT BENTS

FOAM JOINT SEAL EXPANSION

SERVICE REACTIONS PER BEARING				
SUPPORT	DL (KIP)		LL+I (KIP)	
	BACK	AHEAD	BACK	AHEAD
END BENT 1	-	24	-	64
BENT 1	24	38	64	67
BENT 2	38	38	67	67
BENT 3	38	29	67	66
END BENT 2	29	-	66	-



NOTES

FOR REPAIR OF BRIDGE WITH EPOXY AND STONE OVERLAY, SEE SPECIAL PROVISIONS.

FOR FOAM JOINT SEALS, SEE SPECIAL PROVISIONS.

THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE FOAM JOINT SEAL SHALL BE 2 1/2" AT BENTS.

FOR OVER-SAWED JOINTS, THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE FOAM JOINT SEAL SHALL BE DETERMINED BY THE ENGINEER.

THE CONTRACTOR SHALL SOUND THE DECK AND REPAIR DETERIORATED AREAS BEFORE APPLYING THE EPOXY OVERLAY.

FOR CLEANING AND PAINTING EXISTING BEARING PLATES, SEE SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL					
BRIDGE JACKING	PLACEMENT OF EPOXY OVERLAY	FOAM JOINT SEALS	CLASS II CONCRETE DECK REPAIR FOR EPOXY/ASPHALT OVERLAY	CLEANING AND PAINTING EXISTING BEARING PLATES	BEARING REPLACEMENT IN KIND
LUMP SUM	SQ. FT.	LUMP SUM	SQ. FT.	LUMP SUM	EA
LUMP SUM	9503	LUMP SUM	1056	LUMP SUM	4

BEARING REPLACEMENT IN KIND

BEARING REPLACEMENT AT THE DIRECTION OF THE ENGINEER.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR NEW BEARING DESIGN.

FOR BRIDGE JACKING, SEE SPECIAL PROVISIONS.

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032129 MATTHEW J. MOYER
2-15-12

PROJECT NO. WBS 17BP.5.P.4

GRANVILLE COUNTY

BRIDGE NO.: 50

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN VIEW AND TYPICAL SECTION FOR BRIDGE NO. 50

(SR1127 OVER I-85)

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

SHEET NO. S-60
TOTAL SHEETS 70

HDR Engineering, Inc. of the Carolinas
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DRAWN BY : R. HELFRICH DATE : 01/2012
CHECKED BY : M. LEONARD DATE : 01/2012

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USER: dwagner DATE: 2/15/2012
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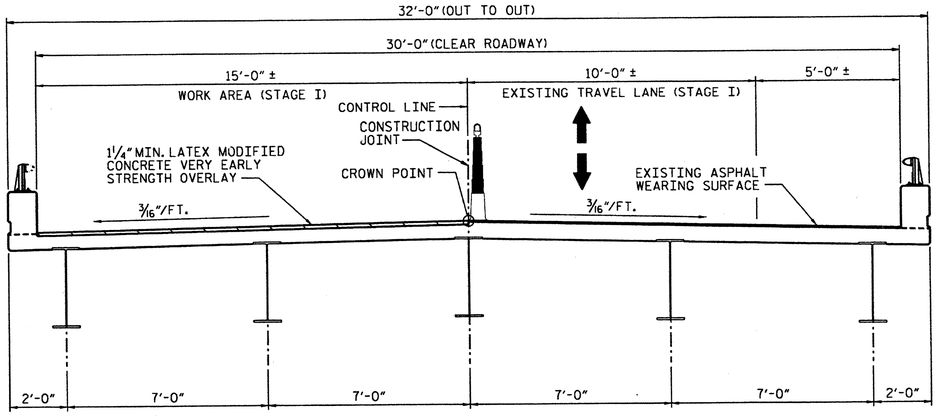
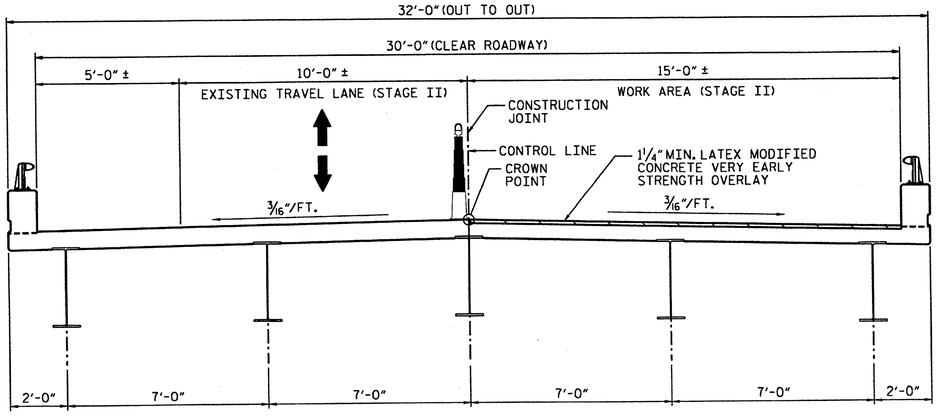
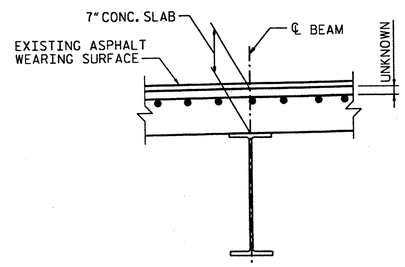


TYPICAL SECTION - STAGE I



TYPICAL SECTION - STAGE II



EXISTING SLAB SECTION

BOTTOM MAT OF REINFORCING NOT SHOWN FOR CLARITY.

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 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 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

INCIDENTAL MILLING	ASPHALT CONCRETE SURFACE COURSE TYPE SF9.5A	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.	TONS	SQ. YDS.	SQ. YDS.	SQ. YDS.	SQ. YDS.	CU. YDS.	SQ. YDS.	CU. YDS.	SQ. YDS.	LUMP SUM	SQ. FT.
833	96.3	1195	0	0	0	0	1195	42	1195	LUMP SUM	9517

✱QUANTITY SHOWN IS FOR INFORMATION ONLY.

DRAWN BY : R. HELFRICH DATE : 01/2012
CHECKED BY : M. LEONARD DATE : 01/2012

PROJECT NO. WBS 17BP.5.P.4
GRANVILLE COUNTY
BRIDGE NO.: 54

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032129 MATTHEW J. MOYER
2-15-12

HDR Engineering, Inc. of the Carolinas
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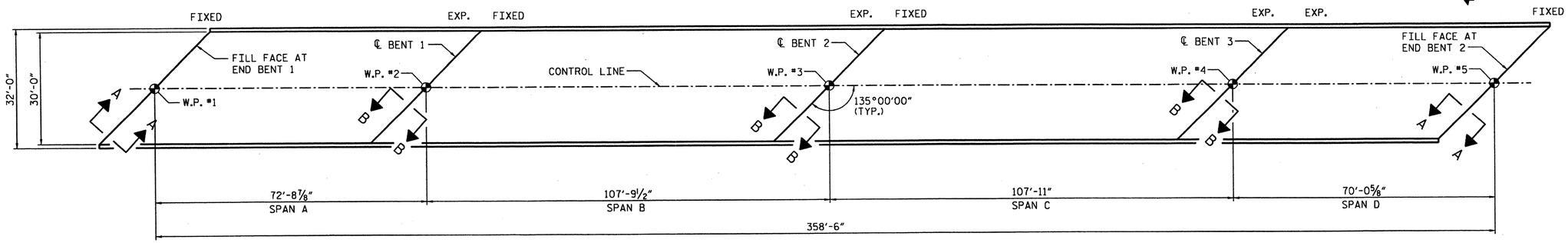
N.C.B.E.L.S. License Number: F-0116

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

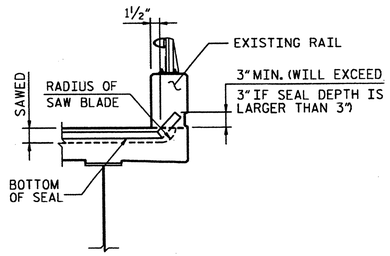
TYPICAL SECTION FOR BRIDGE NO. 54

(SR1135 OVER I-85)

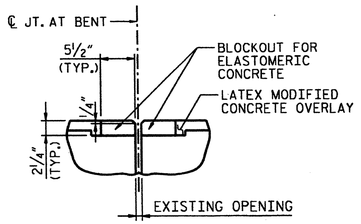
REVISIONS						SHEET NO. S-61
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 70
1			3			
2			4			



PLAN VIEW

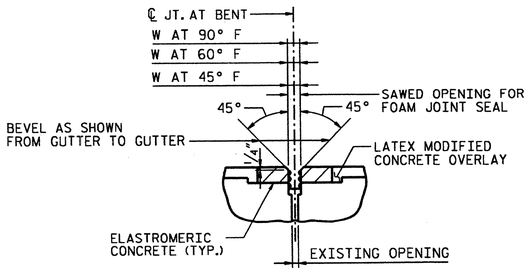


JOINT DETAIL AT CURB



FOAM JOINT SEAL

PRE-SAWED ELASTOMERIC CONCRETE DIMENSIONS



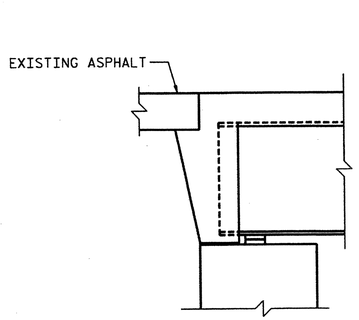
PROPOSED JOINT AT BENTS

FOAM JOINT SEAL EXPANSION

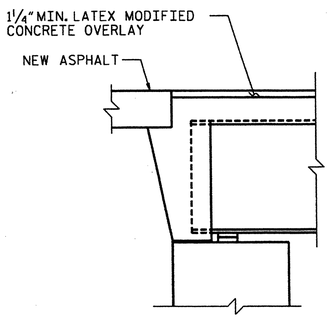
SAWED OPENING FOR FOAM JOINT			
BENT NO.	W AT 90° F	W AT 60° F	W AT 45° F
BENT 1	1 11/16"	1⅞"	1 15/16"
BENT 2	1⅝"	1⅛"	2"
BENT 3	1½"	1⅛"	2 1/16"

ELASTOMERIC CONCRETE	
BENT NO.	ELASTOMERIC CONCRETE ** (CU. FT.)
BENT 1	6.5
BENT 2	6.5
BENT 3	6.5
TOTAL	19.5

** BASED ON THE MINIMUM BLOCKOUT SHOWN

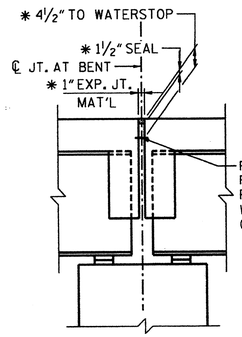


EXISTING SECTION AT END BENT

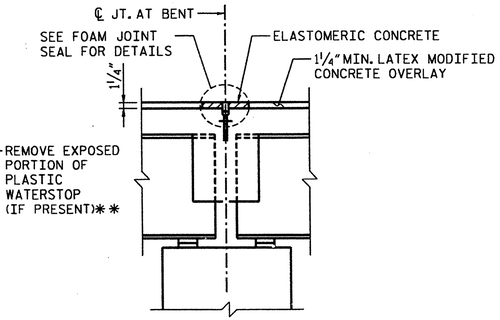


PROPOSED SECTION AT END BENT

SECTION A-A



EXISTING JOINT AT BENTS



PROPOSED JOINT AT BENTS

SECTION B-B

* ESTIMATED DIMENSION

** 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. WBS 17BP.5.P.4

GRANVILLE COUNTY

BRIDGE NO.: 54

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN VIEW AND JOINT DETAILS FOR BRIDGE NO. 54

NORTH CAROLINA PROFESSIONAL SEAL 032129 ENGINEER MATTHEW J. MOTTER
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. S-62
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 70
1			3			
2			4			

DRAWN BY : R. HELFRICH DATE : 01/2012
CHECKED BY : M. LEONARD DATE : 01/2012

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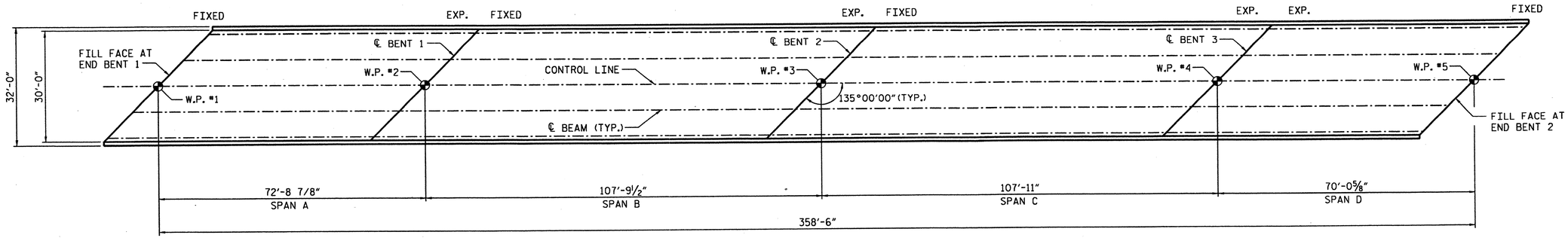
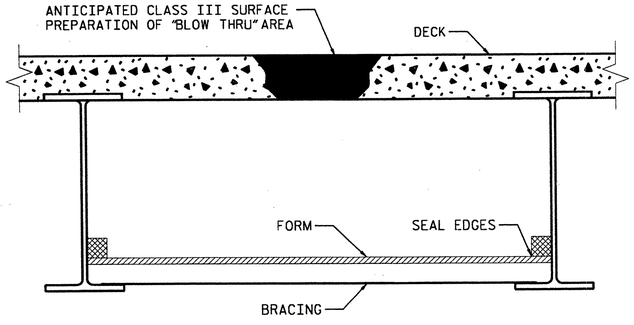


PLAN OF SPANS - DECK REPAIRS

APPROX. AREA: CLASS I REPAIR

APPROX. AREA: CLASS II REPAIR

APPROX. AREA: CLASS III REPAIR



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.

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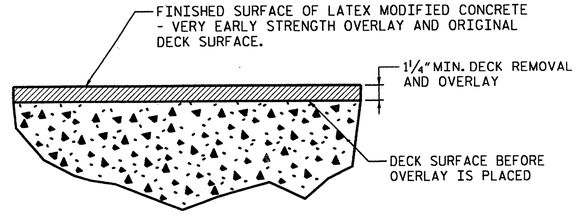

DETAIL FOR LATEX MODIFIED CONCRETE VERY EARLY STRENGTH OVERLAY

PROJECT NO. WBS 17BP.5.P.4

GRANVILLE COUNTY

BRIDGE NO.: 54

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032129 MATTHEW J. MOYER

1-13-2012

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK REPAIR DETAILS FOR BRIDGE NO. 54

REVISIONS						SHEET NO. S-63
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 70
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 : R. HELFRICH DATE : 01/2012
CHECKED BY : M. LEONARD DATE : 01/2012

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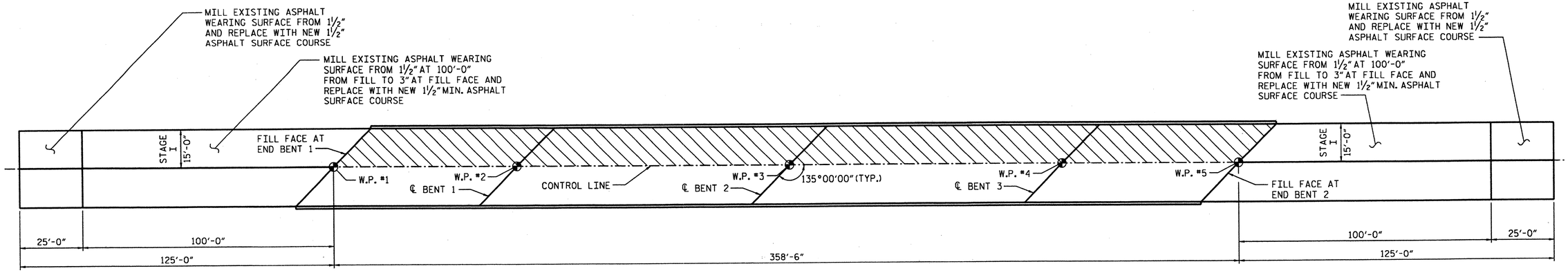
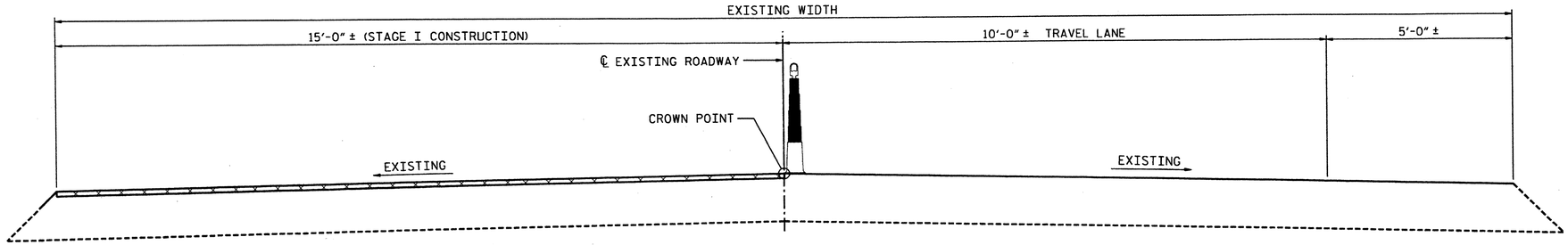


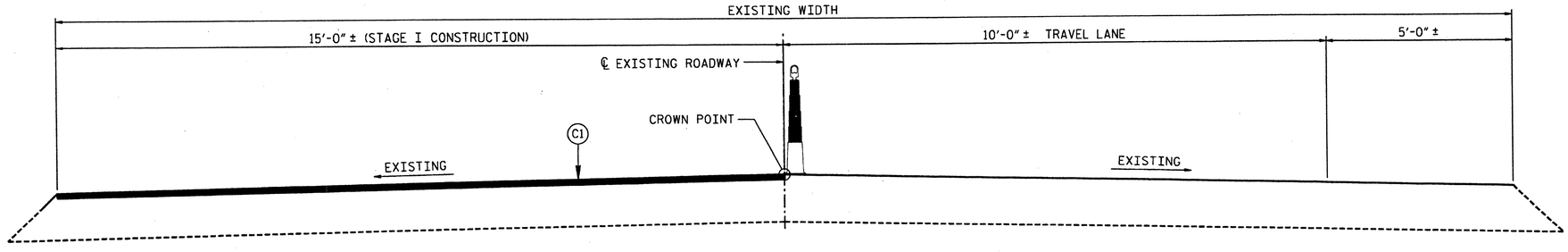
PLAN VIEW
(STAGE I)

▨ DECK SCARIFICATION AND HYDRODEMOLITION

C1	PROPOSED VARIABLE DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH.



TYPICAL ROADWAY MILLING SECTION - STAGE I



TYPICAL ROADWAY SECTION - STAGE I

PROJECT NO. WBS 17BP.5.P.4

GRANVILLE COUNTY

BRIDGE NO.: 54

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION & MILLING DETAILS FOR BRIDGE NO. 54 (STAGE I)

REVISIONS						SHEET NO. S-64
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 70
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 : R. HELFRICH DATE : 01/2012
CHECKED BY : M. LEONARD DATE : 01/2012

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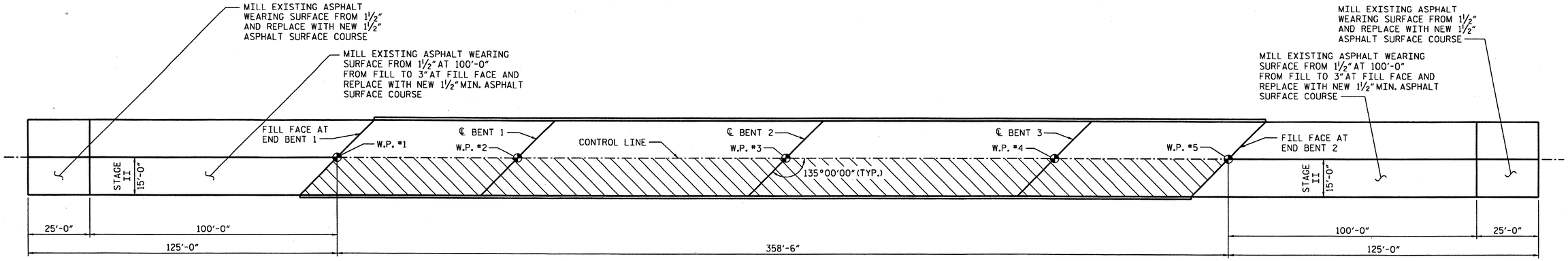
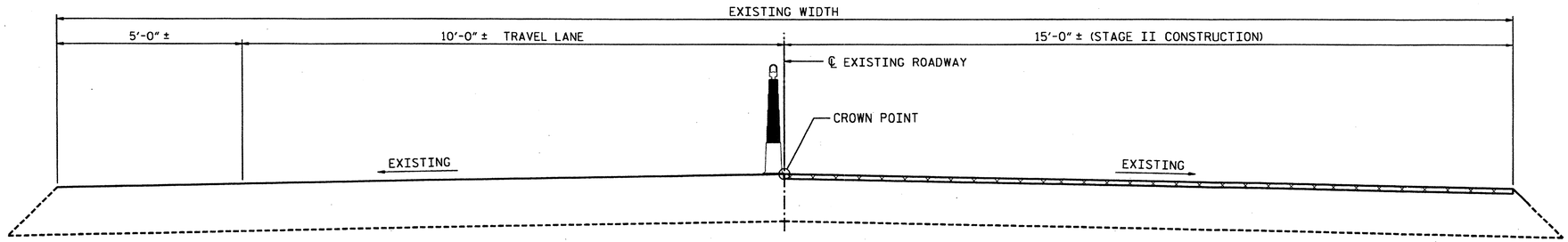


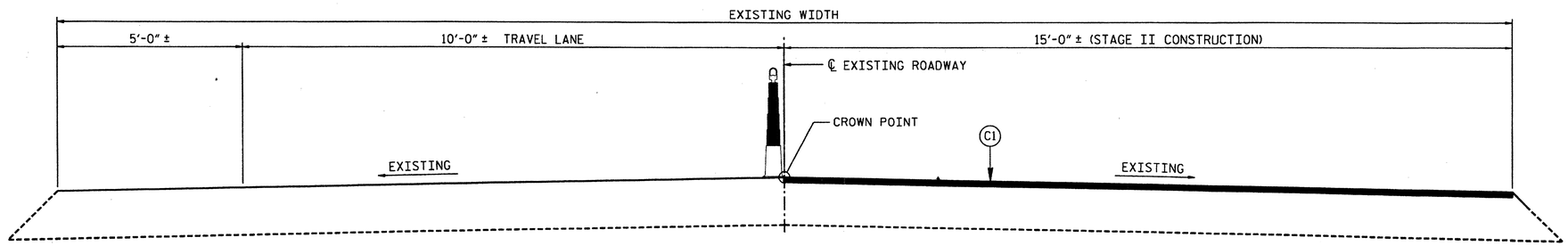
PLAN VIEW
(STAGE II)

▨ DECK SCARIFICATION AND HYDRODEMOLITION

C1	PROPOSED VARIABLE DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1"DEPTH.



TYPICAL ROADWAY MILLING SECTION - STAGE II



TYPICAL ROADWAY SECTION - STAGE II

PROJECT NO. WBS 17BP.5.P.4

GRANVILLE COUNTY

BRIDGE NO.: 54

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION & MILLING DETAILS FOR BRIDGE NO. 54 (STAGE II)

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032126 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-65
1			3			TOTAL SHEETS
2			4			70

DRAWN BY : R. HELFRICH DATE : 01/2012
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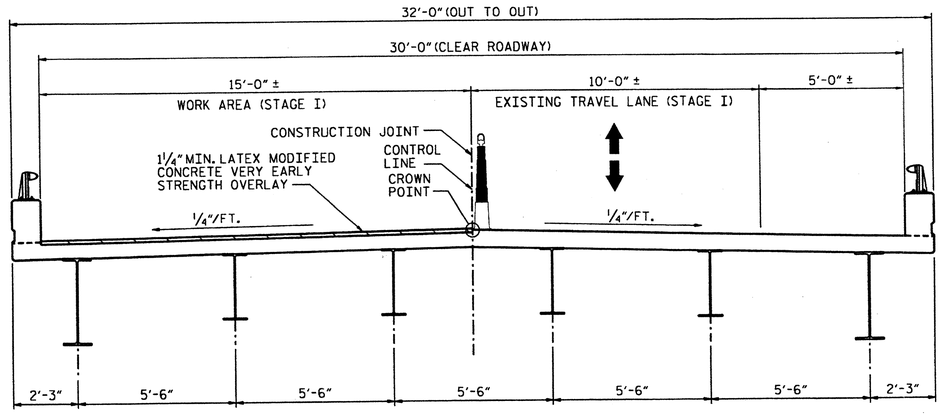
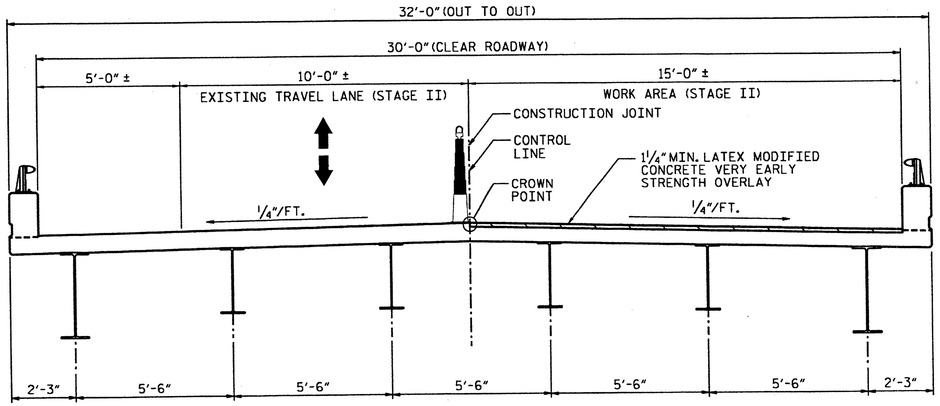
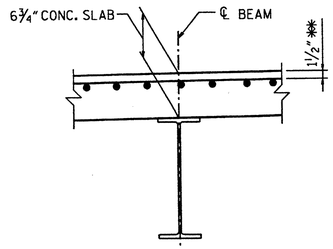


TYPICAL SECTION - STAGE I



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 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 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

INCIDENTAL MILLING	ASPHALT CONCRETE SURFACE COURSE TYPE SF9.5A	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.	TONS	SQ. YDS.	SQ. YDS.	SQ. YDS.	SQ. YDS.	CU. YDS.	SQ. YDS.	CU. YDS.	SQ. YDS.	LUMP SUM	SQ. FT.
833	96.3	1010	0	0	0	0	1010	35	1010	LUMP SUM	8095

*QUANTITY SHOWN IS FOR INFORMATION ONLY.

DRAWN BY : R. HELFRICH DATE : 01/2012
CHECKED BY : M. LEONARD DATE : 01/2012

PROJECT NO. WBS 17BP.5.P.4
GRANVILLE COUNTY
BRIDGE NO.: 57

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION FOR BRIDGE NO. 57

(SR1192 OVER I-85)

NORTH CAROLINA PROFESSIONAL SEAL 032129 ENGINEER MATTHEW J. MOYER
2-15-12

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-66
1			3			TOTAL SHEETS
2			4			70

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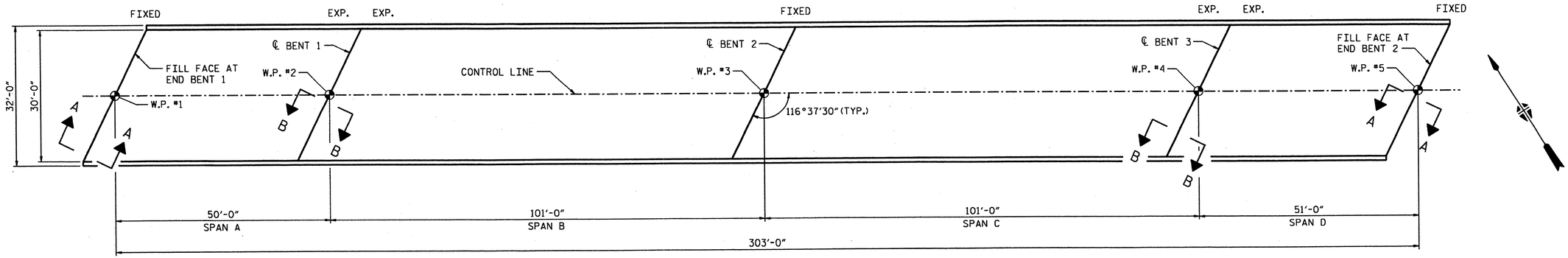
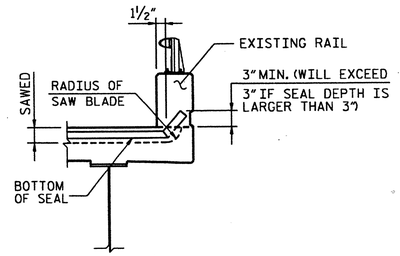
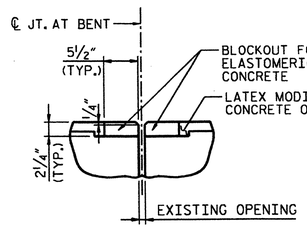


PLAN VIEW

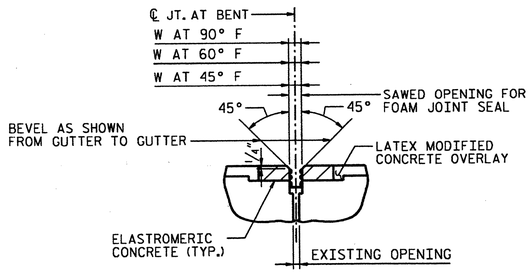


JOINT DETAIL AT CURB



FOAM JOINT SEAL

PRE-SAWED ELASTOMERIC CONCRETE DIMENSIONS



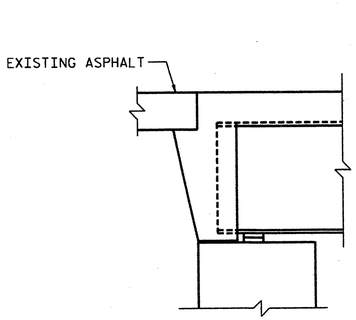
PROPOSED JOINT AT BENTS

FOAM JOINT SEAL EXPANSION

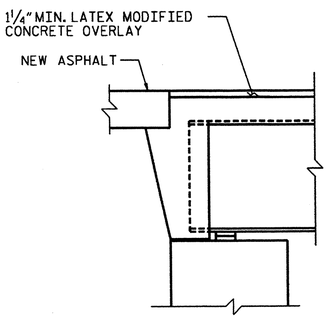
SAWED OPENING FOR FOAM JOINT			
BENT NO.	W AT 90° F	W AT 60° F	W AT 45° F
BENT 1	1 11/16"	2⅛"	2 5/16"
BENT 3	1 11/16"	2⅛"	2 5/16"

ELASTOMERIC CONCRETE	
BENT NO.	ELASTOMERIC CONCRETE * (CU. FT.)
BENT 1	5.1
BENT 3	5.1
TOTAL	10.2

*BASED ON THE MINIMUM BLOCKOUT SHOWN

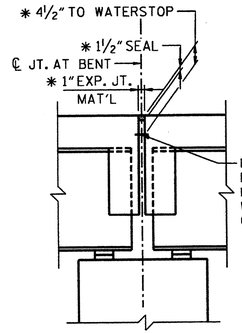


EXISTING SECTION AT END BENT

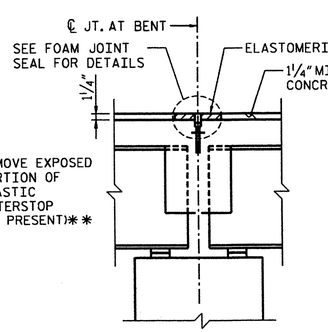


PROPOSED SECTION AT END BENT

SECTION A-A



EXISTING JOINT AT BENTS



PROPOSED JOINT AT BENTS

SECTION B-B

* ESTIMATED DIMENSION

** 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. WBS 17BP.5.P.4

GRANVILLE COUNTY

BRIDGE NO.: 57

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN VIEW AND JOINT DETAILS FOR BRIDGE NO. 57

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032129 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. S-67
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 70
2			4			

DRAWN BY : R. HELFRICH DATE : 01/2012
CHECKED BY : M. LEONARD DATE : 01/2012

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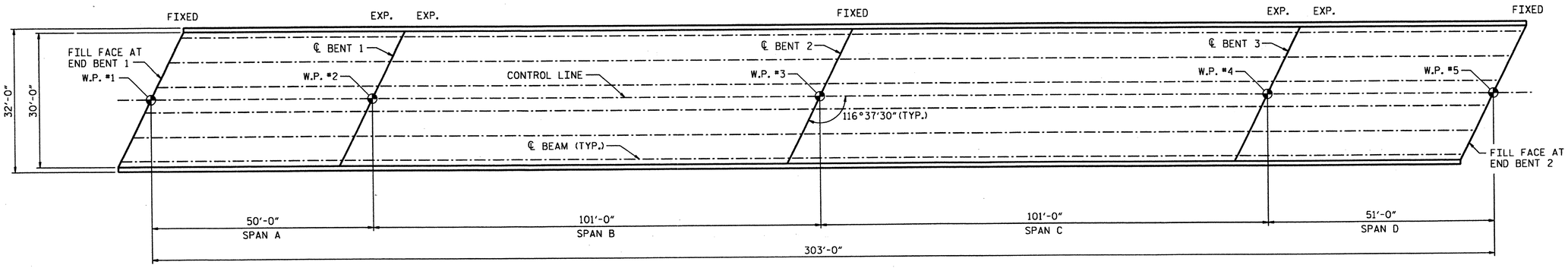
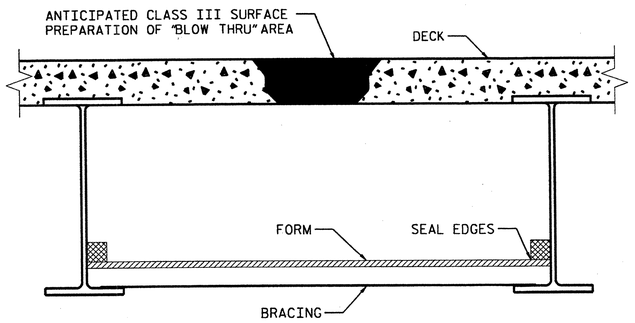


PLAN OF SPANS - DECK REPAIRS

APPROX. AREA: CLASS I REPAIR

APPROX. AREA: CLASS II REPAIR

APPROX. AREA: CLASS III REPAIR

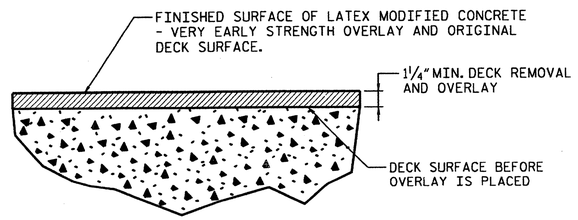


TYPICAL "BLOW THRU" CONTAINMENT AND FORMWORK

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 VERY EARLY STRENGTH OVERLAY

PROJECT NO. WBS 17BP.5.P.4

GRANVILLE COUNTY

BRIDGE NO.: 57

NORTH CAROLINA PROFESSIONAL ENGINEER 032129 MATTHEW J. MOYER

1-13-2012

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK REPAIR DETAILS FOR BRIDGE NO. 57

REVISIONS						SHEET NO. S-68
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 70
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 : R. HELFRICH DATE : 01/2012
CHECKED BY : M. LEONARD DATE : 01/2012

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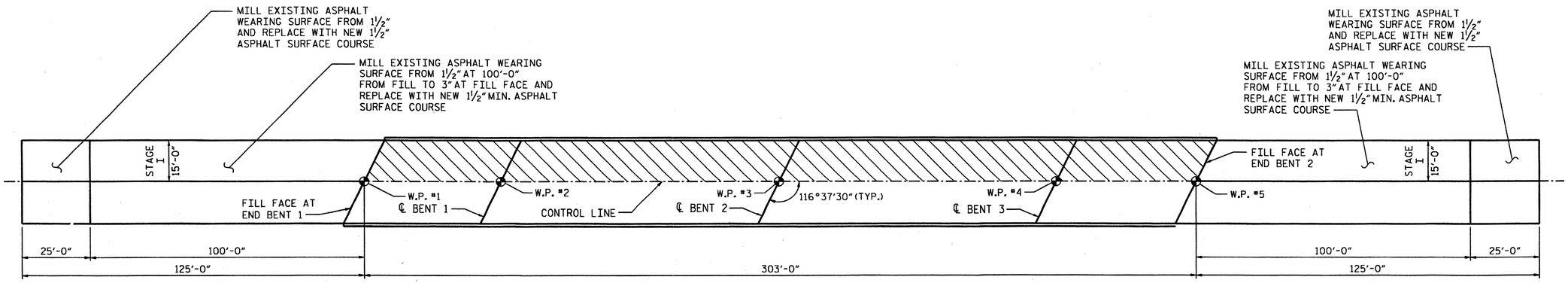
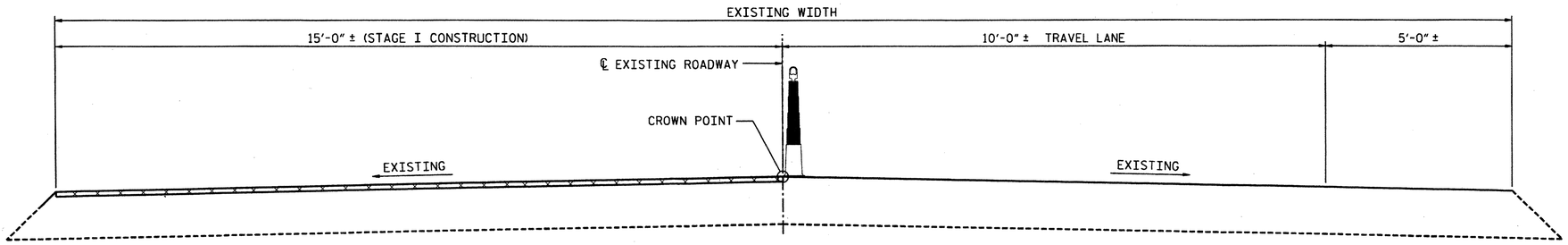


PLAN VIEW

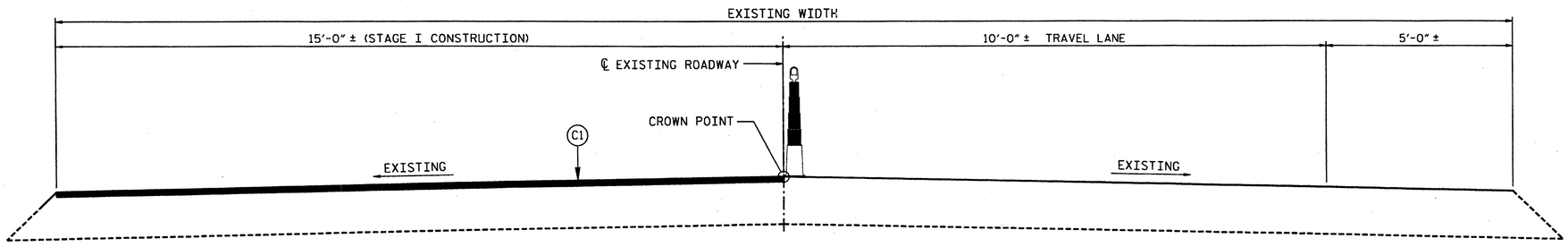
(STAGE I)

▨ DECK SCARIFICATION AND HYDRODEMOLITION

C1	PROPOSED VARIABLE DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH.



TYPICAL ROADWAY MILLING SECTION - STAGE I



TYPICAL ROADWAY SECTION - STAGE I

PROJECT NO. WBS 17BP.5.P.4

GRANVILLE COUNTY

BRIDGE NO.: 57

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION & MILLING DETAILS FOR BRIDGE NO. 57 (STAGE I)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-69
1			3			TOTAL SHEETS
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NORTH CAROLINA PROFESSIONAL 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 : R. HELFRICH DATE : 01/2012
CHECKED BY : M. LEONARD DATE : 01/2012

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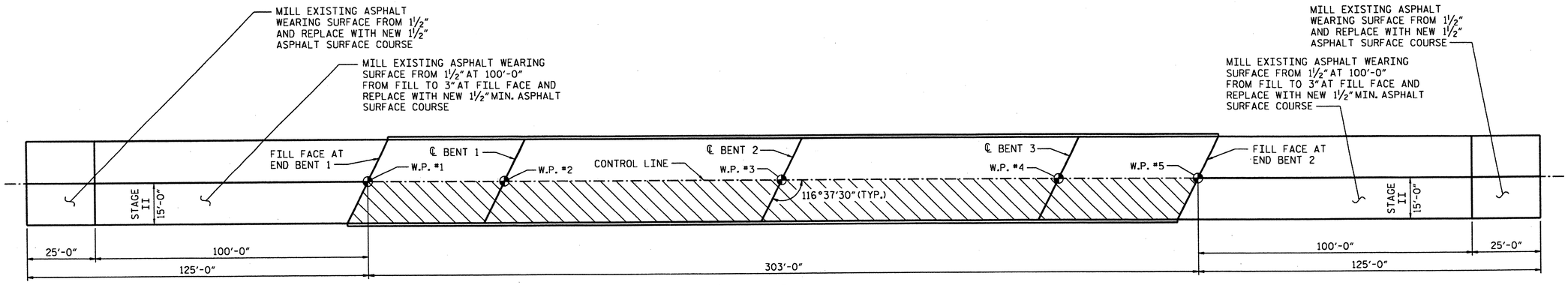
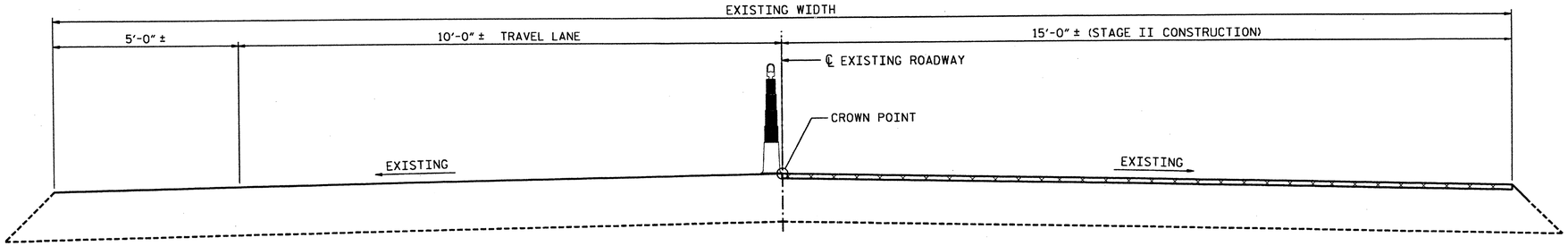


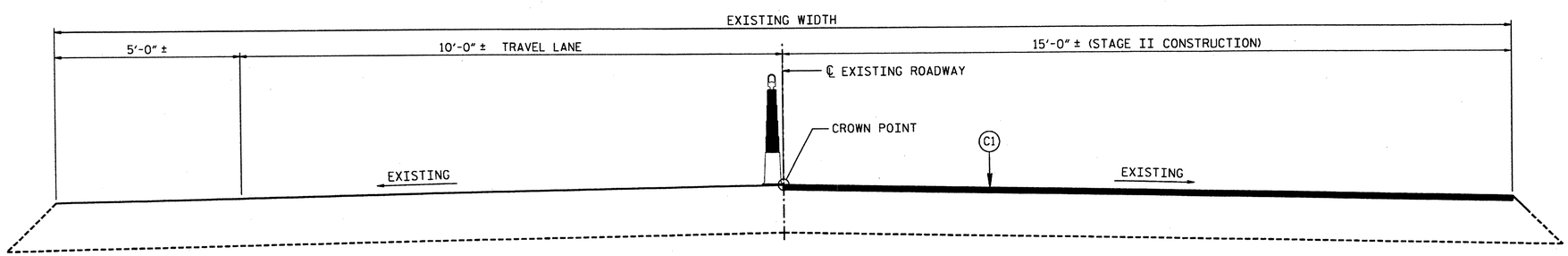
PLAN VIEW
(STAGE II)

▨ DECK SCARIFICATION AND HYDRODEMOLITION

C1	PROPOSED VARIABLE DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH.



TYPICAL ROADWAY MILLING SECTION - STAGE II



TYPICAL ROADWAY SECTION - STAGE II

PROJECT NO. WBS 17BP.5.P.4
GRANVILLE COUNTY
BRIDGE NO.: 57

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION & MILLING DETAILS FOR BRIDGE NO. 57 (STAGE II)

REVISIONS						SHEET NO. S-70
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 70
1			3			
2			4			

NORTH CAROLINA PROFESSIONAL 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 : R. HELFRICH DATE : 01/2012
CHECKED BY : M. LEONARD DATE : 01/2012

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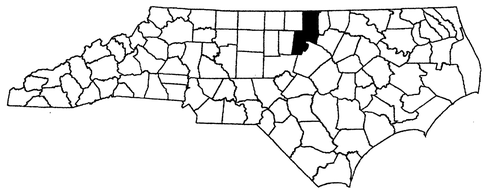
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRAFFIC MANAGEMENT PLAN

DURHAM & GRANVILLE COUNTIES



LOCATION: ***BRIDGE NO. 193 ON E. CLUB BLVD (SR 1671) OVER I–85***
BRIDGE NO. 195 ON GLEN SCHOOL RD (SR 1675) OVER I–85
BRIDGE NO. 16 ON US 15 OVER I–85
BRIDGE NO. 35 ON US 158 OVER I–85
BRIDGE NO. 43 ON GATE #2 RD (SR 1103) OVER I–85
BRIDGE NO. 44 ON NC 96 OVER I–85
BRIDGE NO. 45 ON NC 56 OVER I–85
BRIDGE NO. 50 ON BROGDEN RD (SR 1127) OVER I–85
BRIDGE NO. 54 ON SMITH RD (SR 1135) OVER I–85
BRIDGE NO. 57 ON BRYANS HILL RD (SR 1192) OVER I–85
(SEE STRUCTURE SHEET 1A FOR VICINITY MAPS)

TYPE OF WORK: BRIDGE PRESERVATION: HYDRO–DEMOLITION, LMC OVERLAY, EPOXY OVERLAY, CLEANING & PAINTING STRUCTURAL STEEL, STRUCTURAL STEEL REPAIRS, & SUBSTRUCTURE REPAIRS

INDEX OF SHEETS

SHEET NO.
TMP-1

17BP.5.P.4

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
11/12/12

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PROJ. REFERENCE NO.	SHEET NO.
17BP.5.P.4	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 JANUARY 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1130.01	DRUM
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1180.01	SKINNY-DRUM
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO LANE AND MULTILANE ROADWAYS
1205.05	PAVEMENT MARKINGS - TURN LANES
1205.06	PAVEMENT MARKINGS - LANE DROPS
1205.08	PAVEMENT MARKINGS - SYMBOLS AND WORD MESSAGES
1205.12	PAVEMENT MARKINGS - BRIDGES
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - PERMANENT AND TEMPORARY

LEGEND

GENERAL

- DIRECTION OF TRAFFIC FLOW
- DIRECTION OF PEDESTRIAN TRAFFIC FLOW
- EXIST. PVMT.
- NORTH ARROW
- PROPOSED PVMT.
- 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 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
4/12/12

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.
17BP.5.P.4	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

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-85	MONDAY-FRIDAY:	6:00 AM - 9:00 PM
	SATURDAY:	9:00 AM - 9:00 PM
	SUNDAY:	11:00 AM - 9:00 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 6 A.M. DECEMBER 31ST TO 9 P.M. JANUARY 2ND. IF NEW YEARS DAY IS ON A FRIDAY, SATURDAY, SUNDAY, OF MONDAY THEN UNTIL 9 P.M. THE FOLLOWING TUESDAY.

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

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

5) FOR INDEPENDENCE DAY, BETWEEN THE HOURS OF 6 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 6 A.M. THE THURSDAY BEFORE INDEPENDENCE DAY AND 9 P.M. THE TUESDAY AFTER INDEPENDENCE DAY.

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

7) FOR THANKSGIVING DAY, BETWEEN THE HOURS OF 6 A.M. TUESDAY AND 9 P.M. MONDAY.

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

C) DO NOT CLOSE ROADS AS FOLLOWS:

ROAD NAME	DAY & TIME RESTRICTIONS	
E. CLUB BLVD. (SR 1671)	MONDAY-FRIDAY:	6:00 AM - 8:00 PM
GLENN SCHOOL ROAD (SR 1675)	SATURDAY & SUNDAY:	9:00 AM - 8:00 PM

D) DO NOT STOP TRAFFIC AS FOLLOWS:

ROAD NAME	DAY AND TIME RESTRICTIONS		DURATION AND OPERATION
1. I-85	MONDAY-FRIDAY:	6:00 AM - 9:00 PM	30 MINUTES FOR
	SATURDAY:	9:00 AM - 9:00 PM	BRIDGE JACKING OR
	SUNDAY:	11:00 AM - 9:00 PM	HYDRO-DEMOLITION
2. US 15 (BRIDGE NO. 16) US 158 (BRIDGE NO. 35) NC 96 (BRIDGE NO. 44)	MONDAY-FRIDAY: SATURDAY: SUNDAY:	6:00 AM - 9:00 PM 9:00 AM - 9:00 PM 11:00 AM - 9:00 PM	30 MINUTES FOR BRIDGE JACKING OR HYDRO-DEMOLITION
3. GATE #2 ROAD (BRIDGE NO. 43) NC 56 (BRIDGE NO. 45)	MONDAY-FRIDAY: SATURDAY: SUNDAY:	6:00 AM - 9:00 PM 9:00 AM - 9:00 PM 11:00 AM - 9:00 PM	30 MINUTES FOR BRIDGE JACKING OR HYDRO-DEMOLITION

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

LANE AND SHOULDER CLOSURE REQUIREMENTS

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 A DIVIDED FACILITY AND WITHIN 10 FT. OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

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 TWO MILES OF LANE CLOSURE ON I-85 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-85.

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.

TRAFFIC PATTERN ALTERATIONS

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

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 033789 ENGINEER MICHELLE WARD
2/23/12

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

GENERAL NOTES (SHEET 1 OF 2)

PROJ. REFERENCE NO. 17BP.5.P.4 | SHEET NO. TMP-2A
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

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

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 200 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 THERMOPLASTIC (FOR SYMBOLS & CHARACTERS ON ASPHALT) COLD APPLIED PLASTIC (FOR SYMBOLS & CHARACTERS ON CONCRETE)	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 SHALL BE USED TO MAINTAIN TRAFFIC THROUGH THE WORK AREA, INCLUDING ROADS UNDER BRIDGES, AND/OR INTERSECTIONS, AS DIRECTED BY THE ENGINEER.

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

CC) UNLESS DIRECTED BY THE ENGINEER, DO NOT PERFORM WORK SIMULTANEOUSLY ON MORE THAN ONE BRIDGE OVER I-85, IN ANY ONE DIRECTION ALONG I-85, IF THE WORK REQUIRED WILL AFFECT TRAFFIC ALONG I-85.

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

EE) RECORD ALL EXISTING MARKINGS ON BRIDGE AND APPROACHES IN ORDER TO REPLACE MARKINGS AT THE END OF THE WORK DAY AND ONCE CONSTRUCTION IS COMPLETE.

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

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

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 (SHEET 2 OF 2)

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PROJ. REFERENCE NO.	SHEET NO.
17BP.5.P.4	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

TRAFFIC CONTROL STAGING

NOTE: AT THE END OF THE WORKDAY, REMOVE ALL TRAFFIC CONTROL DEVICES, COVER OR REMOVE ALL SIGNS FOR THE OFF-SITE DETOUR AND LANE CLOSURES, AND RETURN TRAFFIC TO ITS EXISTING PATTERN.

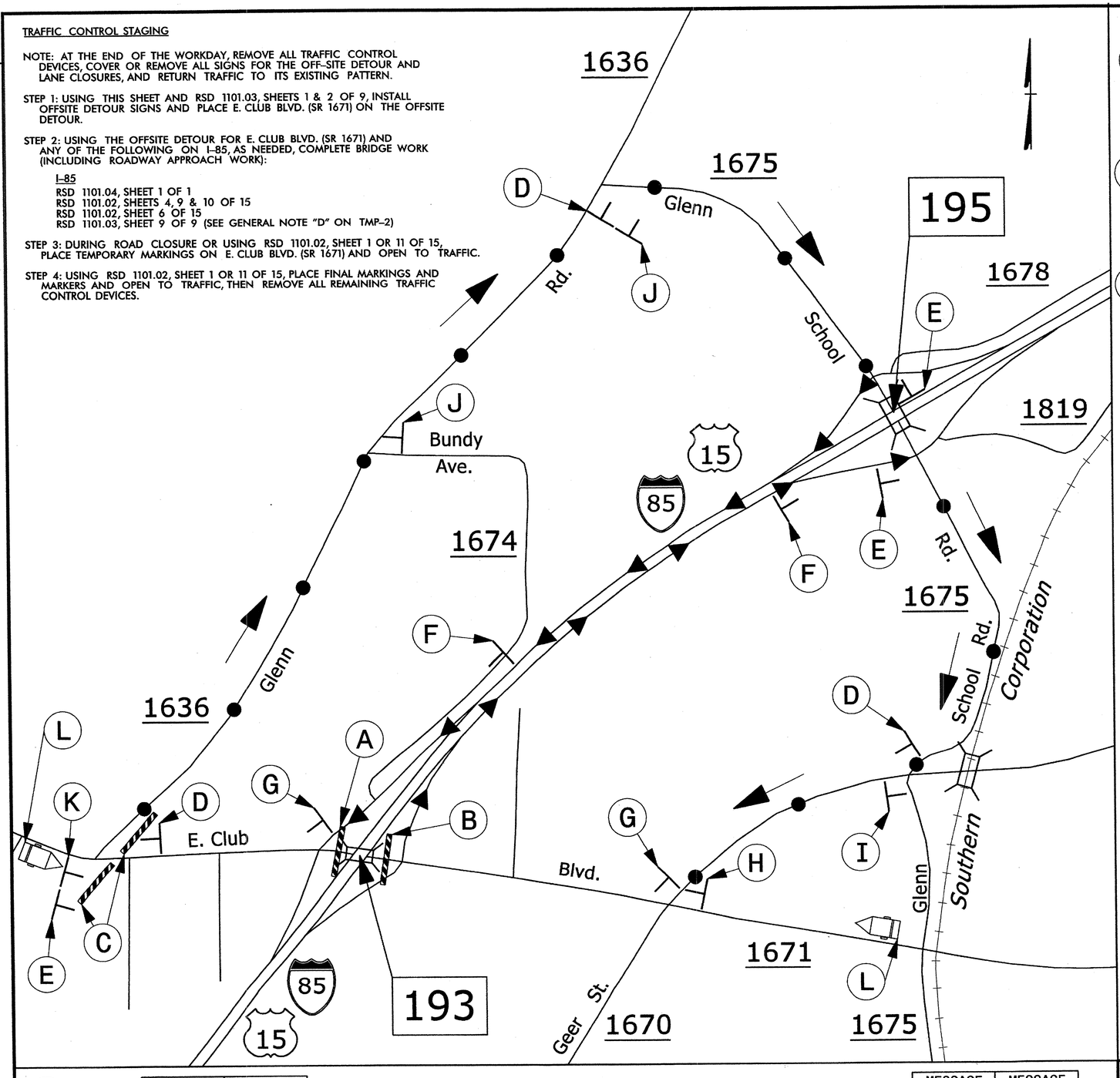
STEP 1: USING THIS SHEET AND RSD 1101.03, SHEETS 1 & 2 OF 9, INSTALL OFFSITE DETOUR SIGNS AND PLACE E. CLUB BLVD. (SR 1671) ON THE OFFSITE DETOUR.

STEP 2: USING THE OFFSITE DETOUR FOR E. CLUB BLVD. (SR 1671) AND ANY OF THE FOLLOWING ON I-85, AS NEEDED, COMPLETE BRIDGE WORK (INCLUDING ROADWAY APPROACH WORK):

I-85
RSD 1101.04, SHEET 1 OF 1
RSD 1101.02, SHEETS 4, 9 & 10 OF 15
RSD 1101.02, SHEET 6 OF 15
RSD 1101.03, SHEET 9 OF 9 (SEE GENERAL NOTE "D" ON TMP-2)

STEP 3: DURING ROAD CLOSURE OR USING RSD 1101.02, SHEET 1 OR 11 OF 15, PLACE TEMPORARY MARKINGS ON E. CLUB BLVD. (SR 1671) AND OPEN TO TRAFFIC.

STEP 4: USING RSD 1101.02, SHEET 1 OR 11 OF 15, PLACE FINAL MARKINGS AND MARKERS AND OPEN TO TRAFFIC, THEN REMOVE ALL REMAINING TRAFFIC CONTROL DEVICES.



L

"I" MESSAGE NO. 1	"I" MESSAGE NO. 2
EAST CLUB BLVD	EXPECT NIGHTLY CLOSURES

CHANGEABLE MESSAGE SIGN

PLACE CMS 500' +/- IN ADVANCE OF FIRST ADVANCED WARNING SIGNS FOR ROAD CLOSURE. INSTALL CMS WITH MESSAGES "I" DURING THE DAY AND CHANGE TO MESSAGES "II" WHEN CLOSURE IS IN OPERATION.

"II" MESSAGE NO. 1	"II" MESSAGE NO. 2
EAST CLUB BLVD	ROAD CLOSED AHEAD

CHANGEABLE MESSAGE SIGN

A
R11-2
48" x 30"
ROAD CLOSED
TYPE III BARRICADE(S)

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

C
R11-4
60" x 30"
ROAD CLOSED TO THRU TRAFFIC
DETOUR
M4-10L
48" x 18"
TYPE III BARRICADE

D
DETOUR M4-8 24" X 12"
M6-1 21" X 15"

E
DETOUR M4-8 24" X 12"
M6-1 L 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
DETOUR M4-8 24" X 12"
TO M4-5 24" X 12"
SOUTH M3-3 24" X 12"
85 15 SP-02 24" X 12"
M6-1 21" X 15"

I
DETOUR M4-8 24" X 12"
TO M4-5 24" X 12"
SOUTH M3-3 24" X 12"
85 15 SP-02 24" X 12"
M6-1 L 21" X 15"

J
DETOUR M4-8 24" X 12"
TO M4-5 24" X 12"
NORTH M3-1 24" X 12"
85 15 SP-02 24" X 12"
M6-1 21" X 15"

K
DETOUR M4-8 24" X 12"
TO M4-5 24" X 12"
NORTH M3-1 24" X 12"
85 15 SP-02 24" X 12"
M6-1 L 21" X 15"

LEGEND
● ● ● = DETOUR ROUTE – EB E. CLUB BLVD.
▶ ▶ ▶ = DETOUR ROUTE – WB E. CLUB BLVD.

NOTES:
1. SEE RSD 1101.03 SHEETS 1 & 2 OF 9, FOR ADDITIONAL SIGN & BARRICADE PLACEMENT.

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

DURHAM CO.
BRIDGE NO. 193
(SR1671 OVER I-85)
DETOUR ROUTING PLAN
& SIGNING SCHEDULE

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PROJ. REFERENCE NO.	SHEET NO.
17BP.5.P.4	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

TRAFFIC CONTROL STAGING

NOTE: AT THE END OF THE WORKDAY, REMOVE ALL TRAFFIC CONTROL DEVICES, COVER OR REMOVE ALL SIGNS FOR THE OFF-SITE DETOUR AND LANE CLOSURES, AND RETURN TRAFFIC TO ITS EXISTING PATTERN.

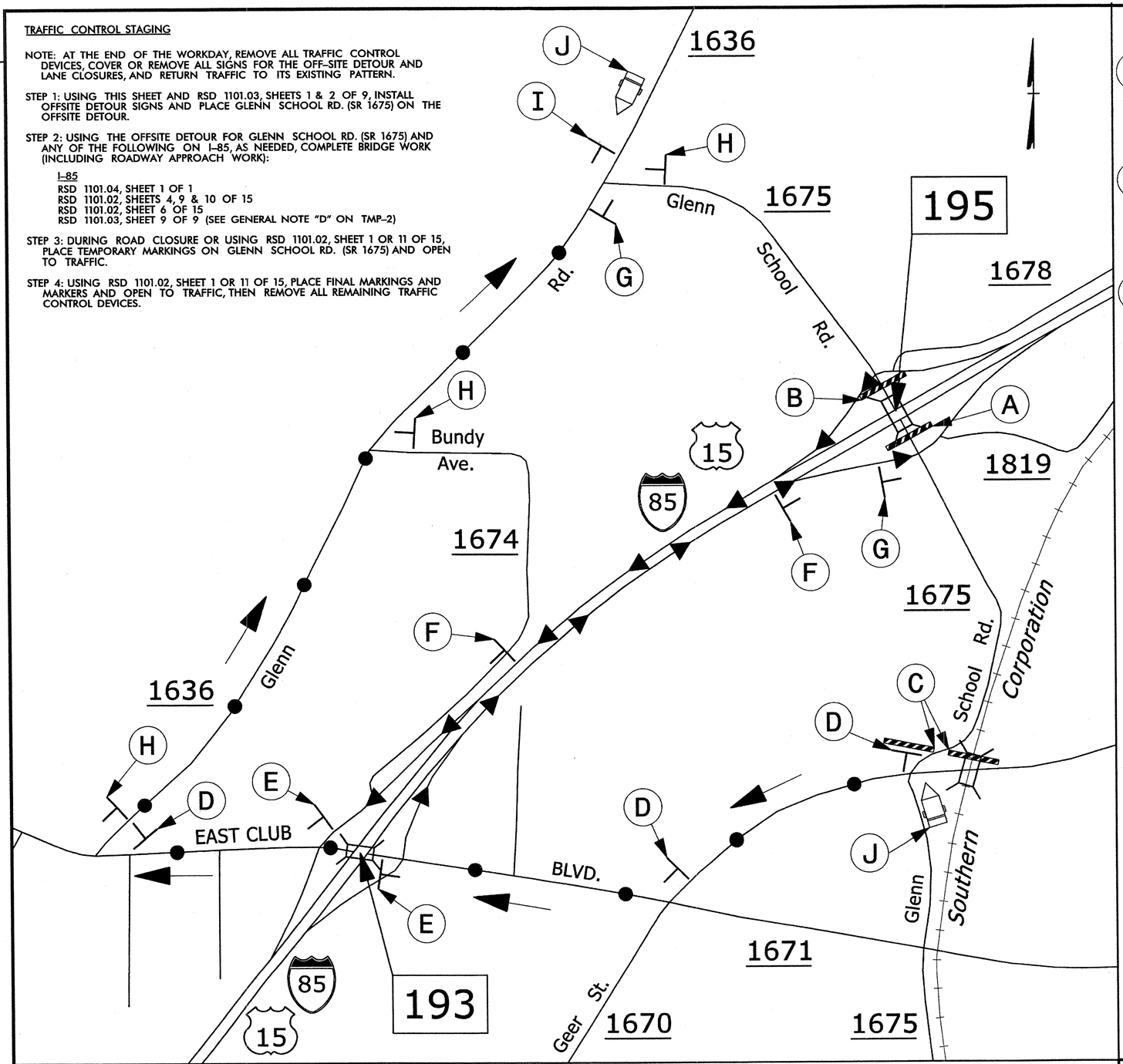
STEP 1: USING THIS SHEET AND RSD 1101.03, SHEETS 1 & 2 OF 9, INSTALL OFFSITE DETOUR SIGNS AND PLACE GLENN SCHOOL RD. (SR 1675) ON THE OFFSITE DETOUR.

STEP 2: USING THE OFFSITE DETOUR FOR GLENN SCHOOL RD. (SR 1675) AND ANY OF THE FOLLOWING ON I-85, AS NEEDED, COMPLETE BRIDGE WORK (INCLUDING ROADWAY APPROACH WORK):

I-85
RSD 1101.04, SHEET 1 OF 1
RSD 1101.02, SHEETS 4, 9 & 10 OF 15
RSD 1101.02, SHEET 6 OF 15
RSD 1101.03, SHEET 9 OF 9 (SEE GENERAL NOTE "D" ON TMP-2)

STEP 3: DURING ROAD CLOSURE OR USING RSD 1101.02, SHEET 1 OR 11 OF 15, PLACE TEMPORARY MARKINGS ON GLENN SCHOOL RD. (SR 1675) AND OPEN TO TRAFFIC.

STEP 4: USING RSD 1101.02, SHEET 1 OR 11 OF 15, PLACE FINAL MARKINGS AND MARKERS AND OPEN TO TRAFFIC, THEN REMOVE ALL REMAINING TRAFFIC CONTROL DEVICES.



R11-2
48" x 30"

A — ROAD CLOSED
TYPE III BARRICADE(S)

B — R11-2 48" x 30" ROAD CLOSED DETOUR; M4-10R 48" x 18"
TYPE III BARRICADE

C — R11-4 60" x 30" ROAD CLOSED TO THRU TRAFFIC DETOUR; M4-10L 48" x 18"
TYPE III BARRICADE

D — DETOUR M4-8 24" X 12"; M6-1 21" X 15"

E — DETOUR M4-8 24" X 12"; M6-1 L 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 — DETOUR M4-8 24" X 12"; TO M4-5 24" X 12"; NORTH M3-1 24" X 12"; 85 15 SP-02 24" X 12"; M6-1 L 21" X 15"

I — DETOUR M4-8 24" X 12"; TO M4-5 24" X 12"; NORTH M3-1 24" X 12"; 85 15 SP-02 24" X 12"; M6-3 21" X 15"

LEGEND
● ● ● = DETOUR ROUTE – WB GLENN SCHOOL RD.
▶ ▶ ▶ = DETOUR ROUTE – EB GLENN SCHOOL RD.

NOTES:
1. SEE RSD 1101.03 SHEETS 1 & 2 OF 9, FOR ADDITIONAL SIGN & BARRICADE PLACEMENT.

J — "I"

MESSAGE NO. 1	MESSAGE NO. 2
GLENN SCHOOL ROAD	EXPECT NIGHTLY CLOSURES

CHANGEABLE MESSAGE SIGN

PLACE CMS 500' +/- IN ADVANCE OF FIRST ADVANCED WARNING SIGNS FOR ROAD CLOSURE. INSTALL CMS WITH MESSAGES "I" DURING THE DAY AND CHANGE TO MESSAGES "II" WHEN CLOSURE IS IN OPERATION.

"II"

MESSAGE NO. 1	MESSAGE NO. 2
GLENN SCHOOL ROAD	ROAD CLOSED AHEAD

CHANGEABLE MESSAGE SIGN

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

DURHAM CO.
BRIDGE NO. 195
(SR1675 OVER I-85)
DETOUR ROUTING PLAN
& SIGNING SCHEDULE

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PROJ. REFERENCE NO.	SHEET NO.
17BP.5.P.4	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

TRAFFIC CONTROL STAGING

NOTE: AT THE END OF THE WORK DAY, REMOVE ALL TRAFFIC CONTROL DEVICES, COVER OR REMOVE ALL ADVANCED TRAFFIC CONTROL SIGNS FOR THE LANE CLOSURE OPERATION, AND RETURN TRAFFIC TO ITS EXISTING PATTERN.

NOTE: WHEN USING RSD 1101.02, SHEET 4, ALLOW LOOP FROM I-85 NB TO US15 WB TO REMAIN OPEN AT THE END OF THE LANE CLOSURE.

STEP 1: USING ANY OF THE FOLLOWING, AS APPROPRIATE, COMPLETE BRIDGE WORK ON US 15 (BRIDGE NO. 16) OVER I-85:

I-85
RSD 1101.04, SHEET 1 OF 1
RSD 1101.02, SHEETS 4 & 10 OF 15
RSD 1101.02, SHEET 6 OF 15
RSD 1101.03, SHEET 9 OF 9 (SEE GENERAL NOTE "D" ON TMP-2)

US 15
RSD 1101.03, SHEET 8 OF 9 (SEE GENERAL NOTE "D" ON TMP-2)

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REVISIONS

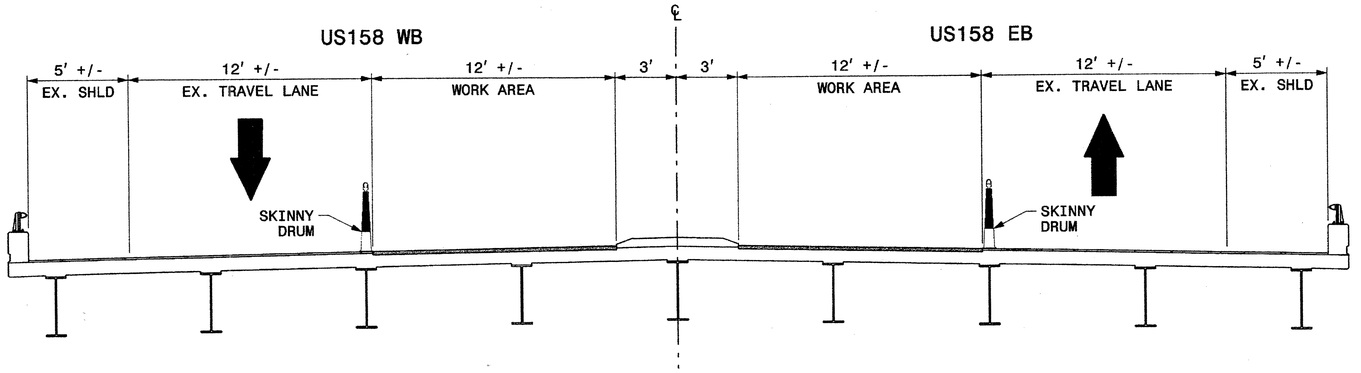
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 033789 ENGINEER MICHELLE WARD
1/12/12

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

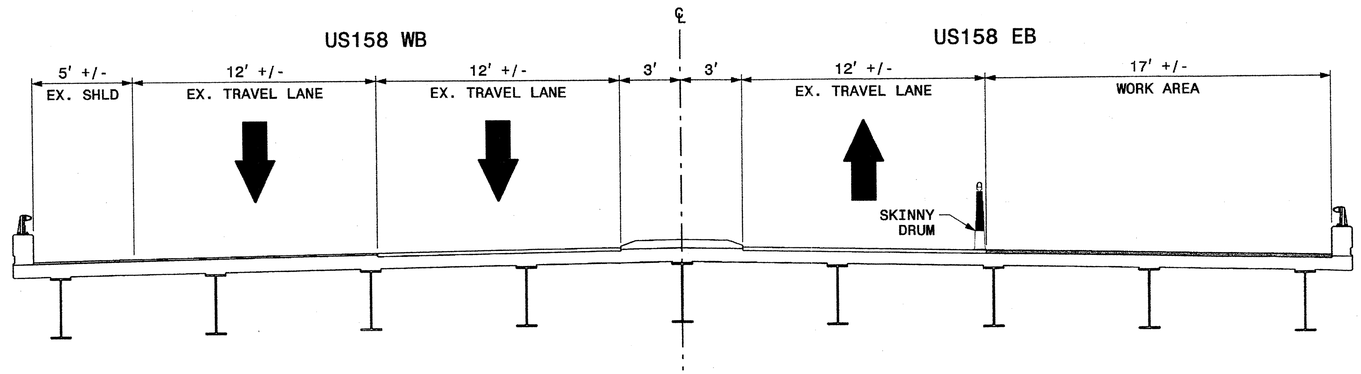
GRANVILLE CO.
BRIDGE NO. 16
(US15 OVER I-85)
STAGING

PROJ. REFERENCE NO.	SHEET NO.
17BP.5.P.4	TMP-6

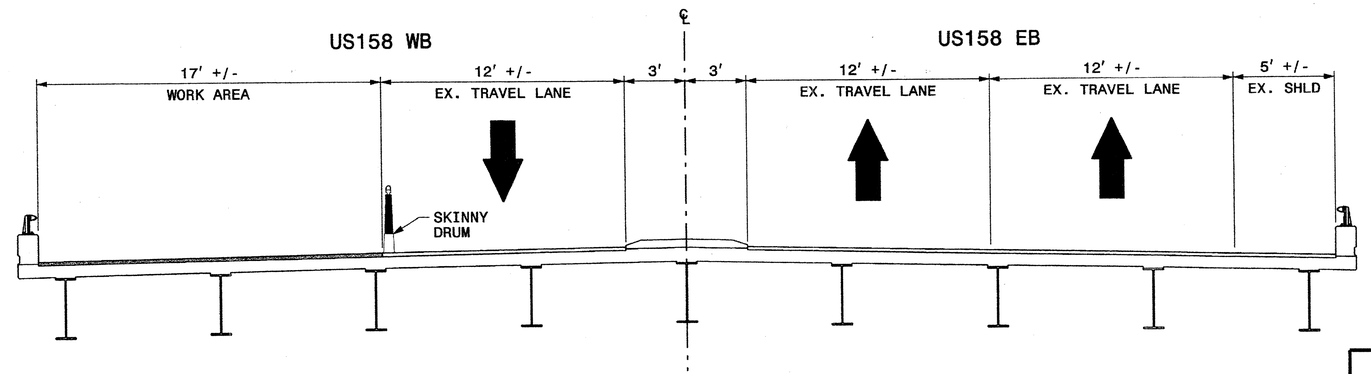
HDR Engineering, Inc. of the Carolinas
3733 National Drive, Suite 207 Raleigh, N.C. 27612
N.C.B.E.L.S. License Number: F-0116



TYPICAL SECTION - STAGE I



TYPICAL SECTION - STAGE II



TYPICAL SECTION - STAGE III

TRAFFIC CONTROL STAGING

NOTE: AT THE END OF THE WORK DAY, REMOVE ALL TRAFFIC CONTROL DEVICES, COVER OR REMOVE ALL ADVANCED TRAFFIC CONTROL SIGNS FOR THE LANE CLOSURE OPERATION, AND RETURN TRAFFIC TO ITS EXISTING PATTERN.

STAGE I:

STEP 1: USING THIS SHEET, AND RSD 1101.02, SHEET 3 OR 6 OF 15 ON US158 EB AND USING DRUMS TO KEEP US158 WB IN A ONE-LANE PATTERN, COMPLETE BRIDGE WORK ON THE MEDIAN LANE OF BOTH SIDES OF THE BRIDGE.

NOTE: CONTRACTOR MAY CLOSE ONE DIRECTION AT A TIME TO WORK ON MEDIAN LANE IN ONE DIRECTION OR CLOSE BOTH DIRECTIONS AT A TIME TO WORK ON BOTH MEDIAN LANES.

USING ANY OF THE FOLLOWING, AS NECESSARY, COMPLETE THE SUBSTRUCTURE WORK:

I-85
RSD 1101.02, SHEET 6 OF 15
RSD 1101.03, SHEET 9 OF 9
(SEE GENERAL NOTE "D" ON TMP-2)

US158
RSD 1101.03, SHEET 9 OF 9
(SEE GENERAL NOTE "D" ON TMP-2)

STAGE II:

STEP 1: USING THIS SHEET AND RSD 1101.02, SHEET 3 OR 6 OF 15, COMPLETE BRIDGE WORK ON THE EB OUTSIDE LANE OF THE BRIDGE.

STAGE III:

STEP 1: USING THIS SHEET AND USING DRUMS TO KEEP US158 WB IN A ONE-LANE PATTERN, COMPLETE BRIDGE WORK ON THE WB OUTSIDE LANE OF THE BRIDGE.

STEP 2: USING RSD 1101.02, SHEET 3 OR 6 OF 15 ON US158 EB AND DRUMS TO KEEP US158 WB IN A ONE-LANE PATTERN, COMPLETE ROADWAY APPROACH WORK.

STEP 3: USING RSD 1101.02, SHEET 3 OR 12 OF 15, PLACE TEMPORARY MARKINGS AND OPEN TO TRAFFIC.

STEP 4: USING RSD 1101.02, SHEET 3 OR 12 OF 15, PLACE FINAL PAVEMENT MARKINGS AND MARKERS AND OPEN TO TRAFFIC. REMOVE ALL REMAINING TRAFFIC CONTROL DEVICES.

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

GRANVILLE CO.
BRIDGE NO. 35
(US158 OVER I-85)
TYPICALS & STAGING

REVISIONS

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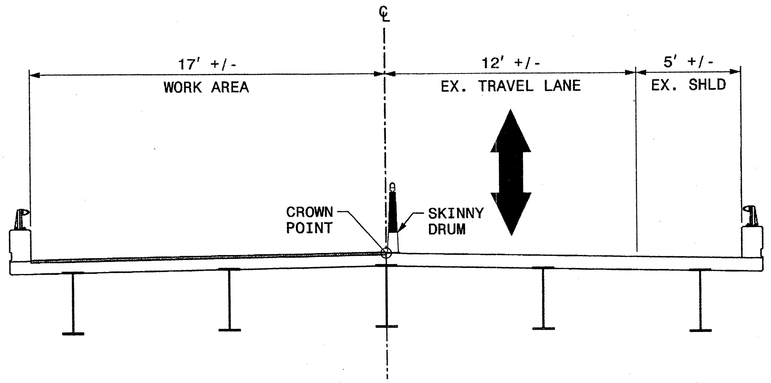
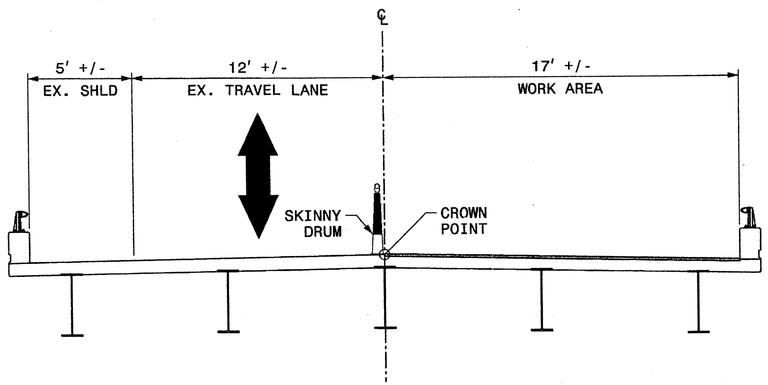
PROJ. REFERENCE NO. 17BP.5.P.4 | SHEET NO. TMP-7
HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116



TYPICAL SECTION - STAGE I



TYPICAL SECTION - STAGE II

TRAFFIC CONTROL STAGING

NOTE: AT THE END OF THE WORK DAY, REMOVE ALL TRAFFIC CONTROL DEVICES, COVER OR REMOVE ALL ADVANCED TRAFFIC CONTROL SIGNS FOR THE LANE CLOSURE OPERATION, AND RETURN TRAFFIC TO ITS EXISTING PATTERN.

STAGE I:

STEP 1: USING THIS SHEET AND RSD 1101.02, SHEET 1 OF 15, COMPLETE BRIDGE WORK ON THE FIRST HALF OF THE BRIDGE.

USING ANY OF THE FOLLOWING, AS NECESSARY, COMPLETE THE SUBSTRUCTURE WORK:

I-85
RSD 1101.02, SHEET 6 OF 15
RSD 1101.03, SHEET 9 OF 9
(SEE GENERAL NOTE "D" ON TMP-2)

GATE #2 RD (SR1103)
RSD 1101.03, SHEET 8 OF 9
(SEE GENERAL NOTE "D" ON TMP-2)

STAGE II:

STEP 1: USING THIS SHEET AND RSD 1101.02, SHEET 1 OF 15, COMPLETE BRIDGE WORK ON THE SECOND HALF OF THE BRIDGE.

STEP 2: USING RSD 1101.02, SHEET 1 OF 15, COMPLETE APPROACH ROADWAY WORK.

STEP 3: USING RSD 1101.02, SHEET 1 OR 11 OF 15, PLACE TEMPORARY MARKINGS, AND OPEN TO TRAFFIC.

STEP 4: USING RSD 1101.02, SHEET 1 OR 11 OF 15, PLACE FINAL MARKINGS AND MARKERS, AND OPEN TO TRAFFIC. REMOVE ALL REMAINING TRAFFIC CONTROL DEVICES.

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

GRANVILLE CO.
BRIDGE NO. 43
(SR1103 OVER I-85)
TYPICALS & STAGING

REVISIONS

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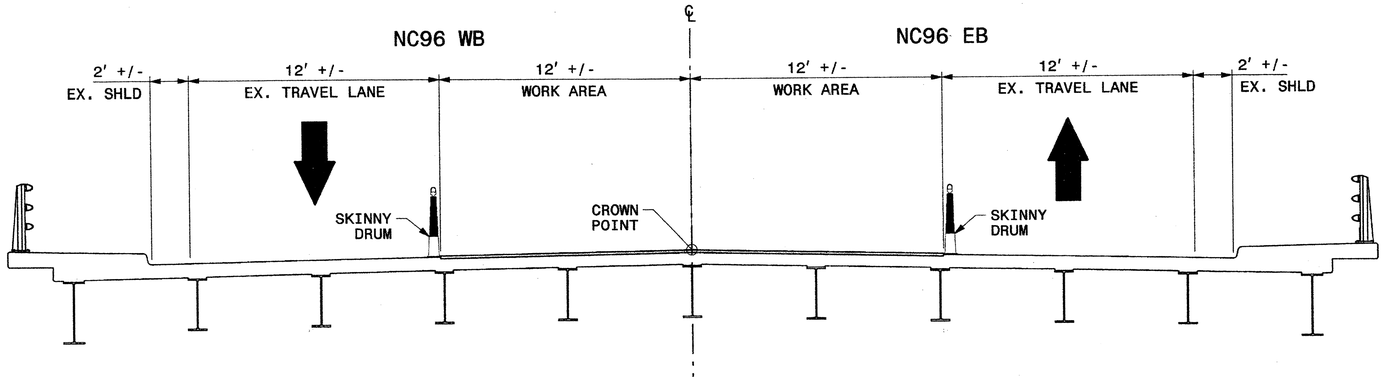
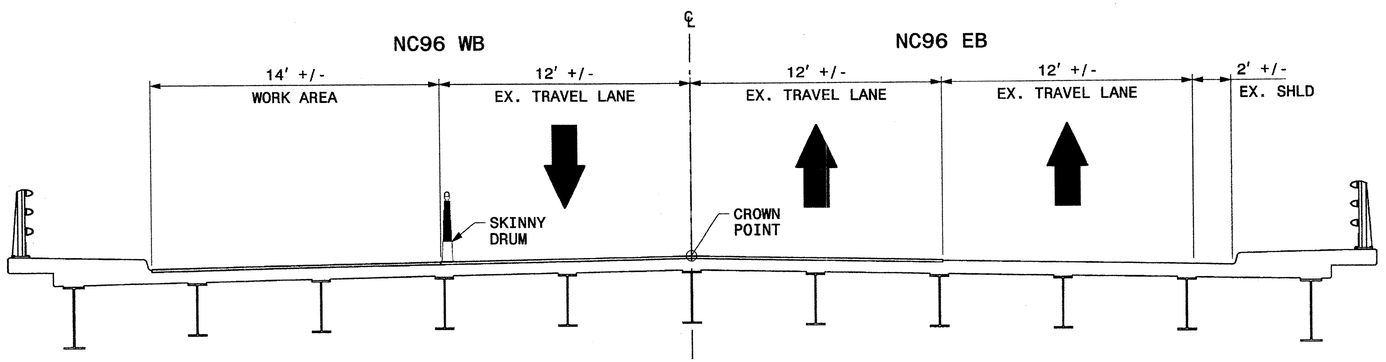
PROJ. REFERENCE NO.	SHEET NO.
17BP.5.P.4	TMP-8

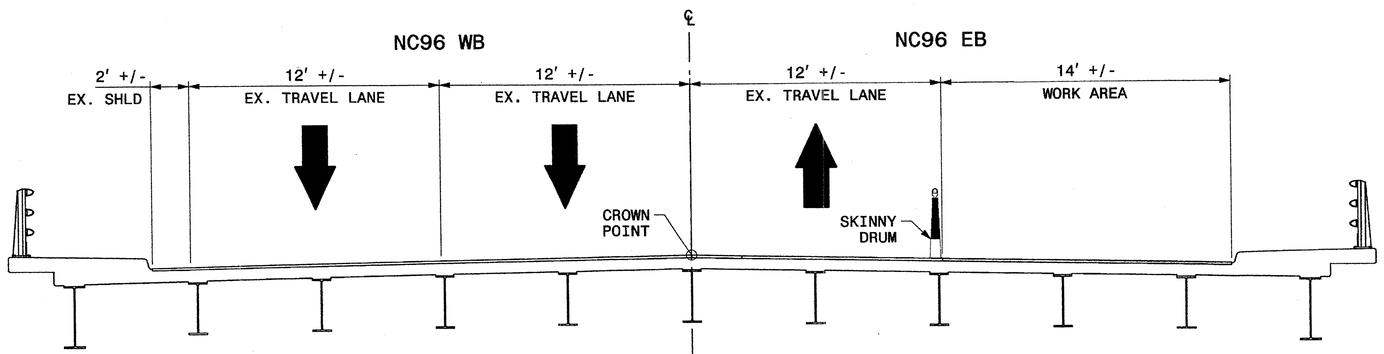
HDR Engineering, Inc. of the Carolinas
3733 National Drive, Suite 207 Raleigh, N.C. 27612
N.C.B.E.L.S. License Number: F-0116



TYPICAL SECTION - STAGE I



TYPICAL SECTION - STAGE II



TYPICAL SECTION - STAGE III

TRAFFIC CONTROL STAGING

NOTE: AT THE END OF THE WORK DAY, REMOVE ALL TRAFFIC CONTROL DEVICES, COVER OR REMOVE ALL ADVANCED TRAFFIC CONTROL SIGNS FOR THE LANE CLOSURE OPERATION, AND RETURN TRAFFIC TO ITS EXISTING PATTERN.

STAGE I:

STEP 1: USING THIS SHEET, TMP-9 FOR NC96 EB, AND USING DRUMS TO KEEP NC96 WB IN A ONE-LANE PATTERN, COMPLETE BRIDGE WORK ON THE MEDIAN LANE OF BOTH SIDES OF THE BRIDGE.

NOTE: CONTRACTOR MAY CLOSE ONE DIRECION AT A TIME TO WORK ON A MEDIAN LANE IN ONE DIRECTION OR CLOSE BOTH DIRECTIONS AT THE A TIME TO WORK ON BOTH MEDIAN LANES.

USING ANY OF THE FOLLOWING, AS NECESSARY, COMPLETE THE SUBSTRUCTURE WORK:

I-85
RSD 1101.02, SHEET 6 OF 15
RSD 1101.03, SHEET 9 OF 9
(SEE GENERAL NOTE "D" ON TMP-2)

NC96
RSD 1101.03, SHEET 9 OF 9
(SEE GENERAL NOTE "D" ON TMP-2)

STAGE II:

STEP 1: USING THIS SHEET AND USING DRUMS TO KEEP NC96 WB IN A ONE-LANE PATTERN, COMPLETE BRIDGE WORK ON THE WB OUTSIDE LANE OF THE BRIDGE.

STAGE III:

STEP 1: USING THIS SHEET AND TMP-9 FOR NC96 EB, COMPLETE BRIDGE WORK ON THE EB OUTSIDE LANE OF THE BRIDGE.

STEP 2: USING SHEET TMP-9 FOR NC96 EB AND USING DRUMS TO KEEP NC96 WB IN A ONE-LANE PATTERN, COMPLETE ROADWAY APPROACH WORK.

STEP 3: USING RSD 1101.02, SHEET 3 OR 12 OF 15, PLACE TEMPORARY MARKINGS, AND OPEN TO TRAFFIC.

STEP 4: USING RSD 1101.02, SHEET 3 OR 12 OF 15, PLACE FINAL MARKINGS AND MARKERS, AND OPEN TO TRAFFIC. REMOVE ALL REMAINING TRAFFIC CONTROL DEVICES.

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

GRANVILLE CO.
BRIDGE NO. 44
(NC96 OVER I-85)
TYPICALS & STAGING

REVISIONS

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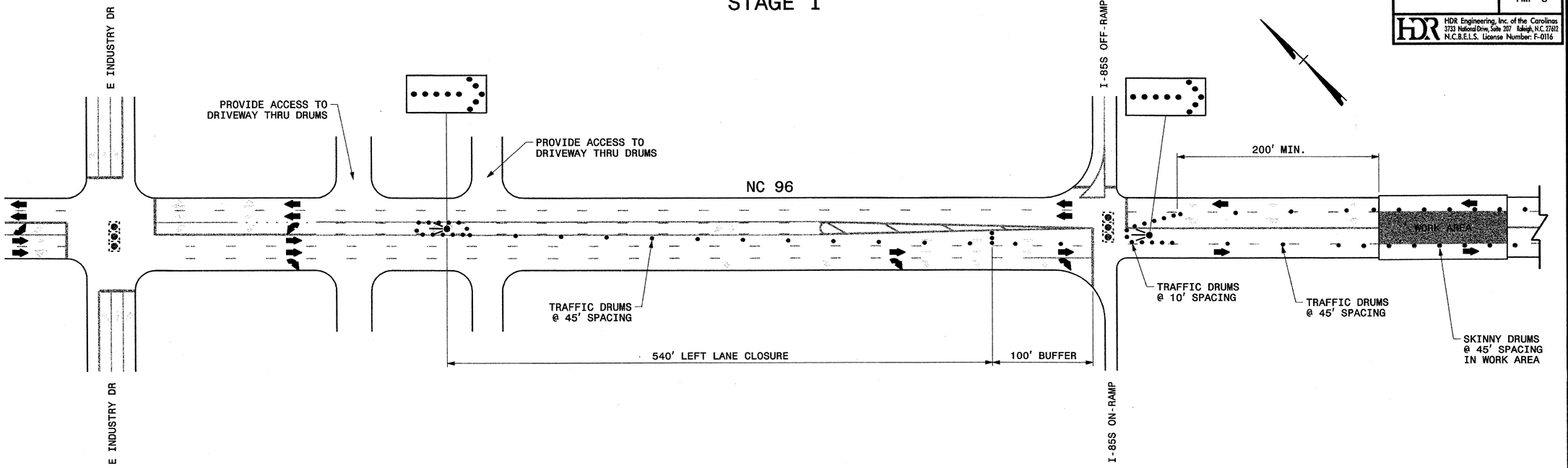
PROJ. REFERENCE NO.	SHEET NO.
17BP.5.P.4	TMP-9

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

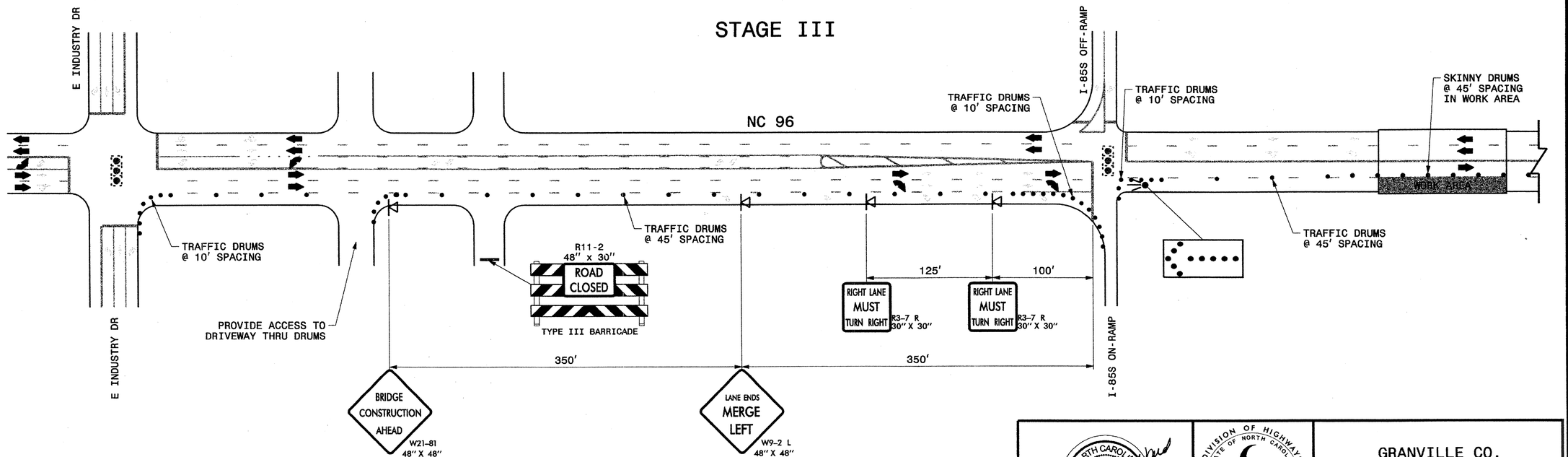
STAGE I



NOTES:

SEE RSD 1101.02, SHEET 7 OF 15 FOR SIGN PLACEMENT AND ADDITIONAL INFORMATION ON LEFT LANE CLOSURE.

STAGE III



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

GRANVILLE CO.
BRIDGE NO. 44
(NC96 OVER I-85)
STAGE I & III DETAILS

REVISIONS

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PROJ. REFERENCE NO.	SHEET NO.
17BP.5.P.4	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

TRAFFIC CONTROL STAGING

NOTE: AT THE END OF THE WORK DAY, REMOVE ALL TRAFFIC CONTROL DEVICES, COVER OR REMOVE ALL ADVANCED TRAFFIC CONTROL SIGNS FOR THE LANE CLOSURE OPERATION, AND RETURN TRAFFIC TO ITS EXISTING PATTERN.

STAGE 1:

STEP 1: USING ANY OF THE FOLLOWING, AS APPROPRIATE, COMPLETE BRIDGE WORK ON NC 56 OVER I 85. (BRIDGE NO. 45):

I-85
RSD 1101.04, SHEET 1 OF 1
RSD 1101.02, SHEETS 4, 9 & 10 OF 15
RSD 1101.02, SHEET 6 OF 15
RSD 1101.03, SHEET 9 OF 9 (SEE GENERAL NOTE "D" ON TMP-2)

NC 56
RSD 1101.03, SHEET 8 OF 9 (SEE GENERAL NOTE "D" ON TMP-2)

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

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

GRANVILLE CO.
BRIDGE NO. 45
(NC56 OVER I-85)
STAGING

REVISIONS

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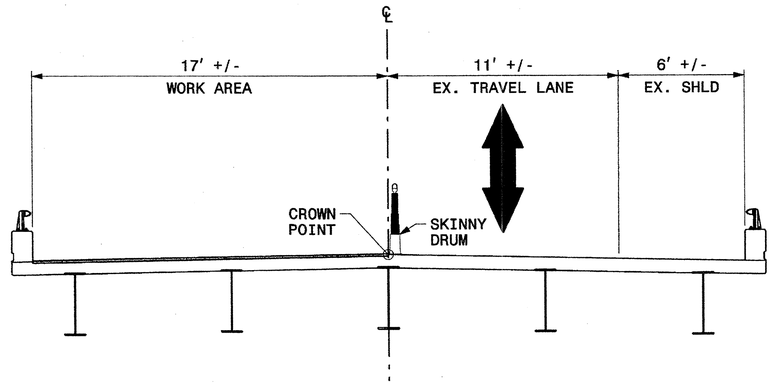
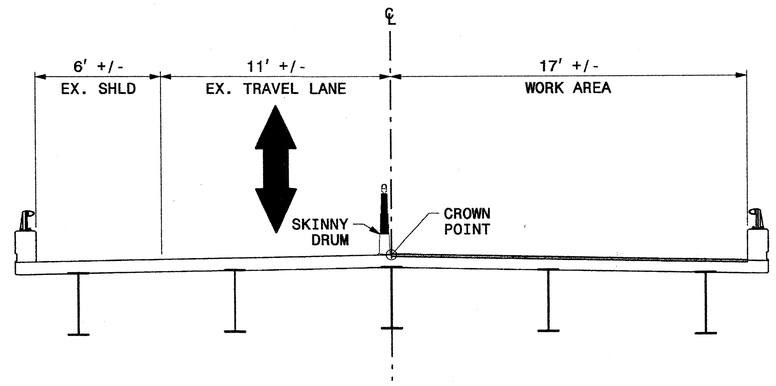
HDR Engineering, Inc. of the Carolinas
3733 National Drive, Suite 207 Raleigh, N.C. 27612
N.C.B.E.L.S. License Number: F-0116



TYPICAL SECTION - STAGE I



TYPICAL SECTION - STAGE II

TRAFFIC CONTROL STAGING

NOTE: AT THE END OF THE WORK DAY, REMOVE ALL TRAFFIC CONTROL DEVICES, COVER OR REMOVE ALL ADVANCED TRAFFIC CONTROL SIGNS FOR THE LANE CLOSURE OPERATION, AND RETURN TRAFFIC TO ITS EXISTING PATTERN.

STAGE I:

STEP 1: USING THIS SHEET AND RSD 1101.02, SHEET 1 OF 15, COMPLETE BRIDGE WORK ON THE FIRST HALF OF THE BRIDGE.

STAGE II:

STEP 1: USING THIS SHEET AND RDS 1101.02, SHEET 1 OF 15, COMPLETE BRIDGE WORK ON THE SECOND HALF OF THE BRIDGE.

STEP 2: USING RSD 1101.02, SHEET 1 OR 11 OF 15, PLACE TEMPORARY MARKINGS, AND OPEN TO TRAFFIC.

STEP 3: USING RSD 1101.02, SHEET 1 OR 11 OF 15, PLACE FINAL MARKINGS AND MARKERS, AND OPEN TO TRAFFIC. REMOVE ALL REMAINING TRAFFIC CONTROL DEVICES.

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

GRANVILLE CO.
BRIDGE NO. 50
(SR1127 OVER I-85)
TYPICALS & STAGING

REVISIONS

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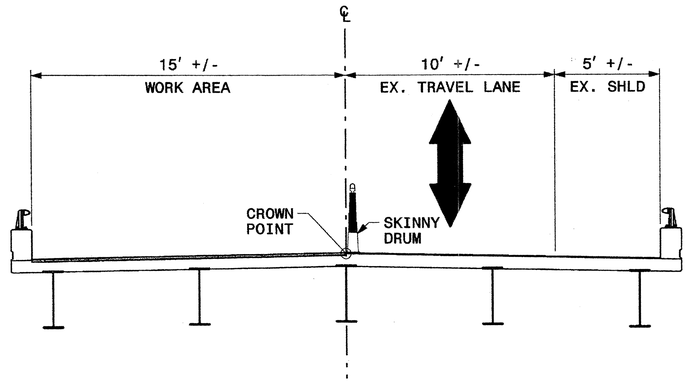
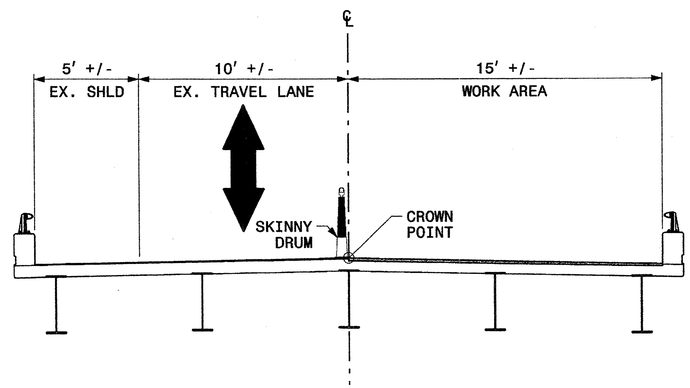
PROJ. REFERENCE NO.	SHEET NO.
17BP.5.P.4	TMP-12

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



TYPICAL SECTION - STAGE I



TYPICAL SECTION - STAGE II

TRAFFIC CONTROL STAGING

NOTE: AT THE END OF THE WORK DAY, REMOVE ALL TRAFFIC CONTROL DEVICES, COVER OR REMOVE ALL ADVANCED TRAFFIC CONTROL SIGNS FOR THE LANE CLOSURE OPERATION, AND RETURN TRAFFIC TO ITS EXISTING PATTERN.

STAGE I:

STEP 1: USING THIS SHEET AND RSD 1101.02, SHEET 1 OF 15, COMPLETE BRIDGE WORK ON THE FIRST HALF OF THE BRIDGE.

STAGE II:

STEP 1: USING THIS SHEET AND RSD 1101.02, SHEET 1 OF 15, COMPLETE BRIDGE WORK ON THE SECOND HALF OF THE BRIDGE.

STEP 2: USING RSD 1101.02, SHEET 1 OF 15, COMPLETE ROADWAY APPROACH WORK.

STEP 3: USING RSD 1101.02, SHEET 1 OR 11 OF 15, PLACE TEMPORARY MARKINGS, AND OPEN TO TRAFFIC.

STEP 4: USING RSD 1101.02, SHEET 1 OR 11 OF 15, PLACE FINAL MARKINGS AND MARKERS, AND OPEN TO TRAFFIC. REMOVE ALL REMAINING TRAFFIC CONTROL DEVICES.

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

GRANVILLE CO.
BRIDGE NO. 54
(SR1135 OVER I-85)
TYPICALS & STAGING

REVISIONS

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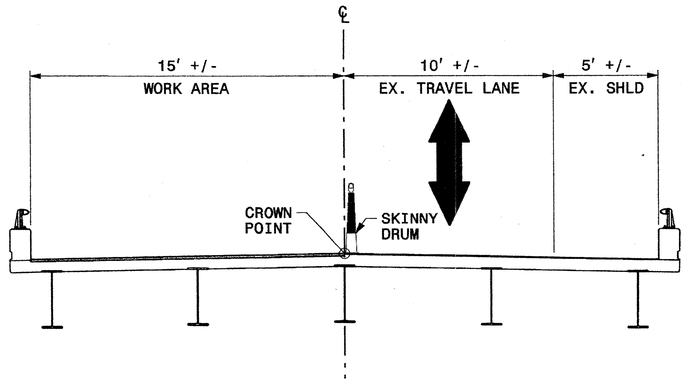
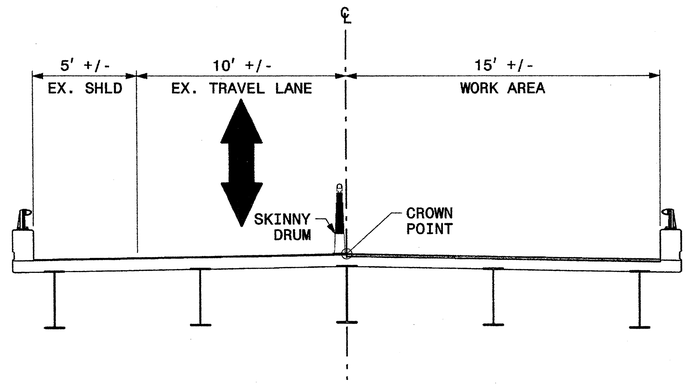
DATE: 1/12/2012
TIME: 3:13:47 PM

PROJ. REFERENCE NO.	SHEET NO.
17BP.5.P.4	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



TYPICAL SECTION - STAGE I



TYPICAL SECTION - STAGE II

TRAFFIC CONTROL STAGING

NOTE: AT THE END OF THE WORK DAY, REMOVE ALL TRAFFIC CONTROL DEVICES, COVER OR REMOVE ALL ADVANCED TRAFFIC CONTROL SIGNS FOR THE LANE CLOSURE OPERATION, AND RETURN TRAFFIC TO ITS EXISTING PATTERN.

STAGE I:

STEP 1: USING THIS SHEET AND RSD 1101.02, SHEET 1 OF 15, COMPLETE BRIDGE WORK ON THE FIRST HALF OF THE BRIDGE.

STAGE II:

STEP 1: USING THIS SHEET AND RSD 1101.02, SHEET 1 OF 15, COMPLETE BRIDGE WORK ON THE SECOND HALF OF THE BRIDGE.

STEP 2: USING RSD 1101.02, SHEET 1 OF 15, COMPLETE ROADWAY APPROACH WORK.

STEP 3: USING RSD 1101.02, SHEET 1 OR 11 OF 15, PLACE TEMPORARY MARKINGS, AND OPEN TO TRAFFIC.

STEP 4: USING RSD 1101.02, SHEET 1 OR 11 OF 15, PLACE FINAL MARKINGS AND MARKERS, AND OPEN TO TRAFFIC. REMOVE ALL REMAINING TRAFFIC CONTROL DEVICES.

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

GRANVILLE CO.
BRIDGE NO. 57
(SR1192 OVER I-85)
TYPICALS & STAGING

REVISIONS

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STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 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.

ENGLISH

JANUARY, 1990

STD. NO. SN

REV. 6-16-95 EEM @ RGW REV. 5-7-03 RWW @ JTE
REV. 8-16-99 RWW @ LES REV. 5-1-06 TLA @ GM

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