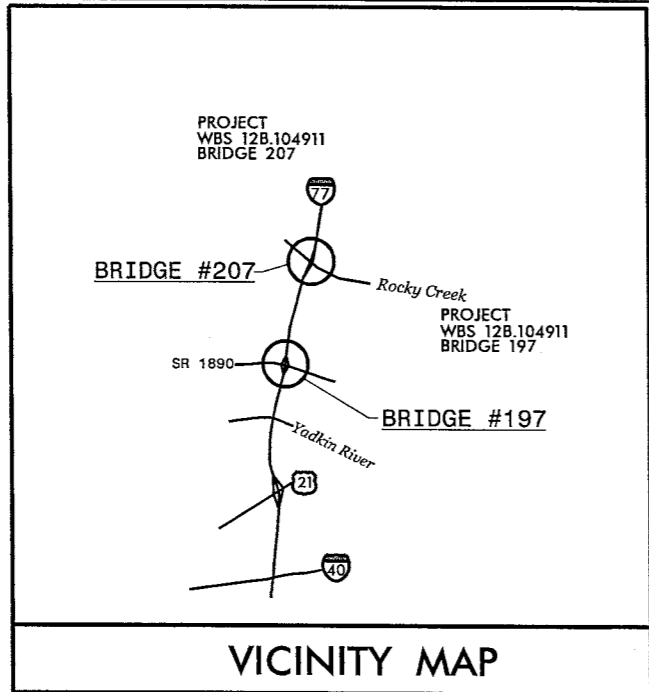


09/28/09

TIP PROJECT: WBS 12B.104911

CONTRACT:

6/29/2011
J:\structures\bridge group 2011\WBS 12B.104911\TSH\97207_Tsh_OVERALL.dgn
F. Cullen



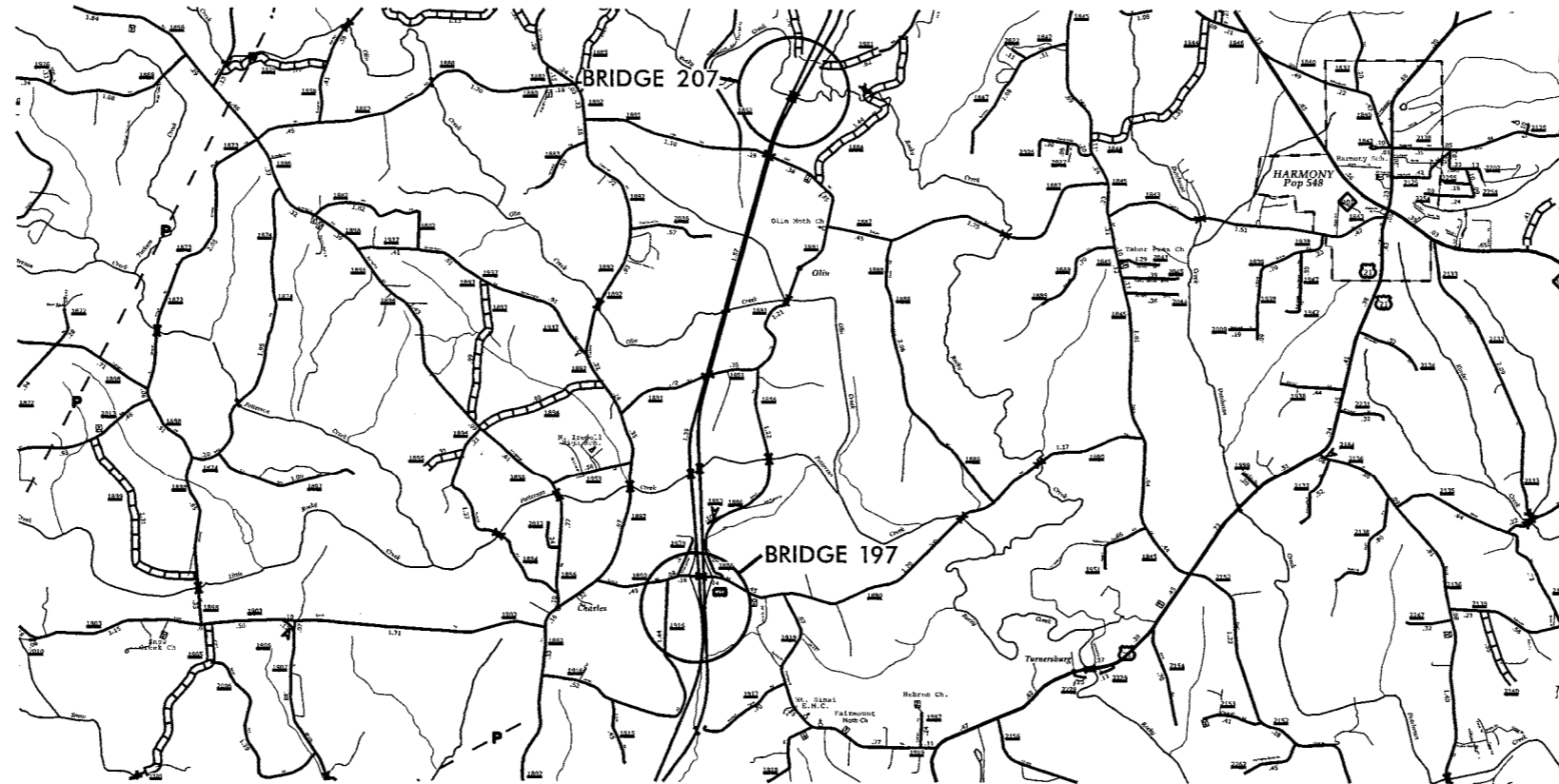
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

IREDELL COUNTY

LOCATION: BRIDGE 197 ON SR 1890 OVER I-77
BRIDGE 207 ON I-77 SBL OVER ROCKY CREEK

TYPE OF WORK: BRIDGE DECK PRESERVATION

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.		1	
WBS NO.	F.A. PROJ. NO.	DESCRIPTION	
12B 104.911		PE CONST.	



PROJECT LENGTH



PREPARED IN THE OFFICE OF:

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

FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:

N.A.

LETTING DATE:

JULY 28, 2011

JOE KELVINGTON, PE

PROJECT ENGINEER

NCDOT CONTACT:

MIKE SUMMERS

BRIDGE MANAGEMENT PROJECT MANAGER

RICK NELSON, PE

DESIGN ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA



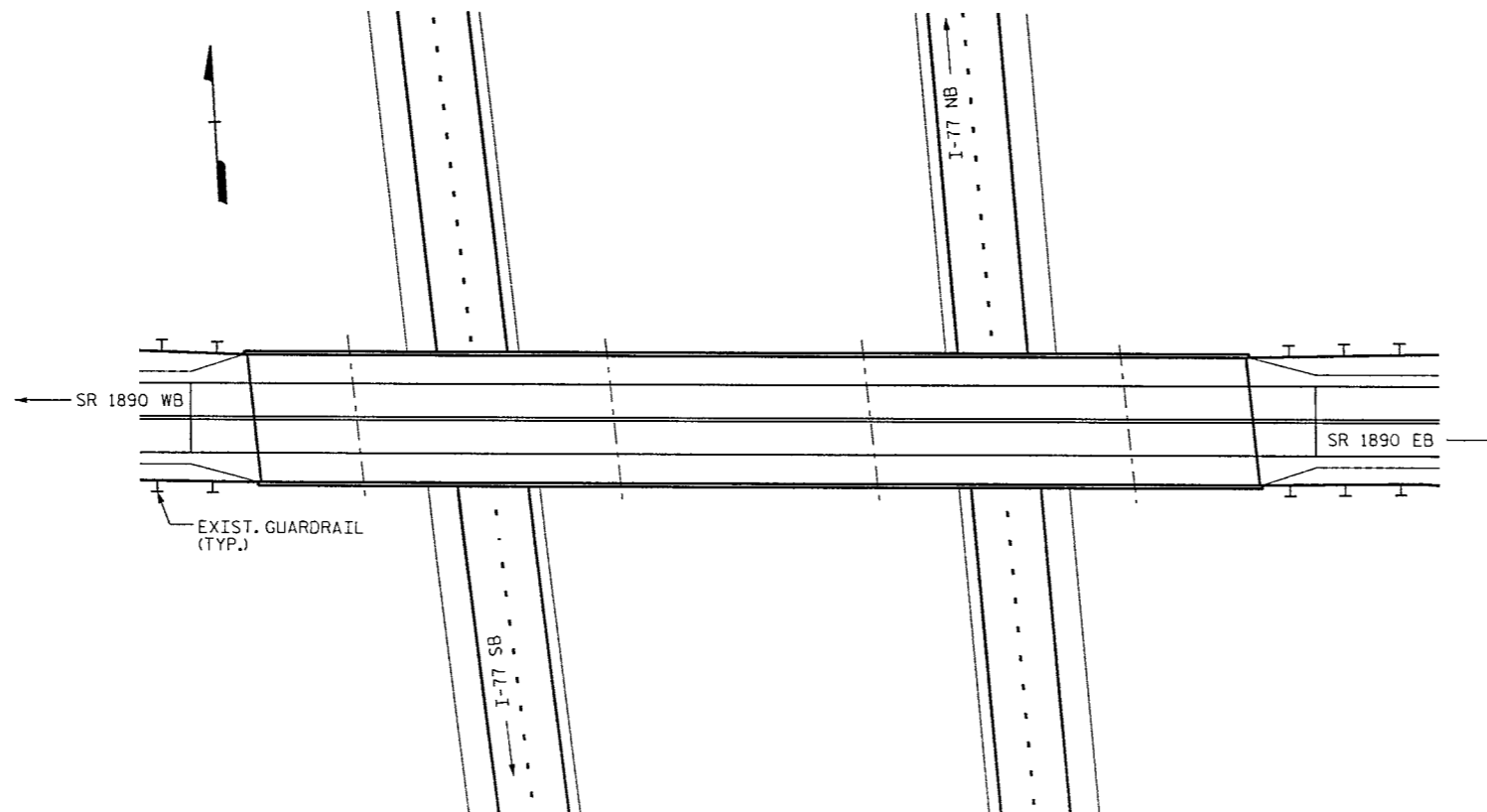


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S197-2	PLAN OF BRIDGE
S197-3	BRIDGE TYPICAL SECTION
S197-4	DECK REPAIR DETAILS
S197-5	DECK REPAIR DETAILS
S197-6	JOINT DETAILS
TMP-1 THRU 5	TRANSPORTATION MANAGEMENT PLAN

BRIDGE 197 ON SR 1890

LOCATION: BRIDGE 480197, SR 1890 OVER I-77 0.2 MILES EAST OF JUNCTION SR 1979

BRIDGE 197 ON SR 1890

TOTAL BILL OF MATERIAL

DECK ** SCARIFICATION	CLASS I * SURFACE PREPARATION	CLASS II * SURFACE PREPARATION	CLASS III * SURFACE PREPARATION	HYDRO-DEMOLITION	CLASS AA * CONCRETE	LATEX MODIFIED CONCRETE-VERY EARLY STRENGTH	PLACING & FINISHING OF LATEX MODIFIED CONCRETE-VERY EARLY STRENGTH	EVAZOTE JOINT SEAL	GROOVING BRIDGE FLOORS	ASHPHALT CONC. SURF. COURSE TYPE S9.5B
SO.YDS.	SQ.YDS.	SQ.YDS.	SQ.YDS.	SO.YDS.	CU.YDS.	CU.YDS.	SO.YDS.	LUMP SUM	SO.FT.	TON
1972	0	54	74	1652	7	105	1680	LUMP SUM	13836	142

* QUANTITIES ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY. IF ANY CLASS III LOCATIONS ARE ENCOUNTERED PRIOR TO OR DURING HYDRO-DEMOLITION, SEE "TYP. BLOW THRU" CONTAINMENT AND FORMWORK" DETAIL.

** INCLUDES MILLING OF ROADWAY PAVEMENT.

PROJECT NO. WBS 12B.104911

IREDELL COUNTY

STATION: _____

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

LOCATION SKETCH
AND TOTAL
BILL OF MATERIAL

DECK REHAB. FOR BRIDGE NO. 197

REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S197-1
2			4			TOTAL SHEETS 6

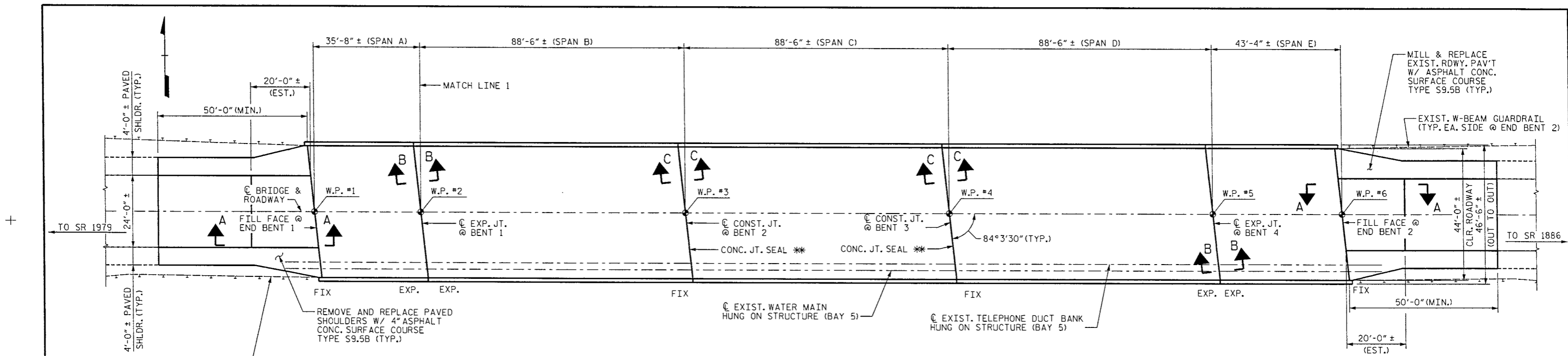
Joseph A. Kelvington
Professional Engineer
No. 13406
State of North Carolina
July 18, 2011



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DRAWN BY : J. L. HENNEKES DATE : 05-27-11
CHECKED BY : J. T. KELVINGTON DATE : 05-27-11

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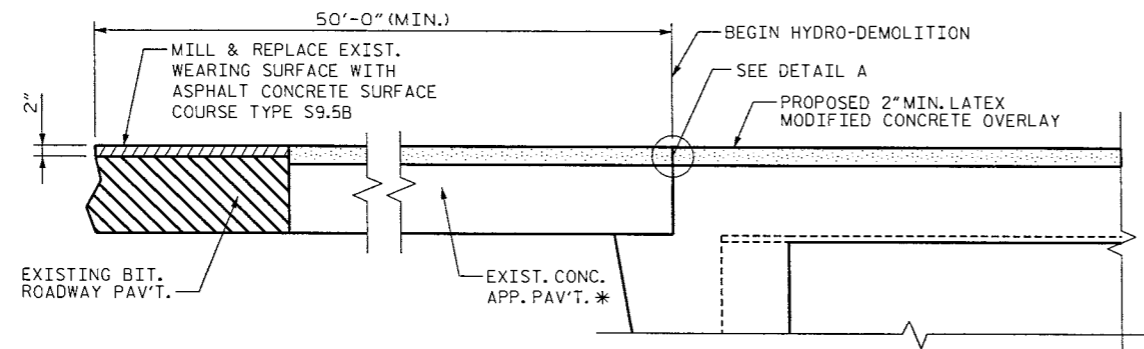


PLAN OF SPANS A-E

** CONSTRUCT CONC. JT. SEAL AFTER DECK HAS BEEN GROOVED

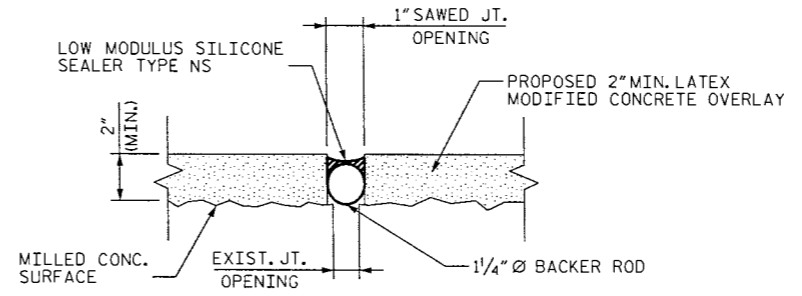
NOTES:

- EXISTING DECK DRAINS SHALL BE SEALED PRIOR TO BEGINNING REPAIR OF BRIDGE DECKS WITH LATEX MODIFIED CONCRETE. SEE SPECIAL PROVISIONS.
- FOR HYDRO-DEMOLITION, SEE SPECIAL PROVISIONS.
- THE CONTRACTOR MUST COLLECT, TREAT AND DISPOSE OF RUN-OFF WATER FROM THE HYDRO-DEMOLITION PROCESS. SEE SPECIAL PROVISIONS.
- THE BOUNDARIES OF AREAS IDENTIFIED FOR CLASS III SURFACE PREPARATION ARE APPROXIMATE. THE CONTRACTOR SHALL PROVIDE A METHOD OF HANDLING UNEXPECTED BLOW THROUGH OF THE DECK. SEE DETAIL, SHT. NO. S197-4.
- LATEX MODIFIED CONCRETE SHALL BE LATEX MODIFIED CONCRETE - VERY EARLY STRENGTH.
- FOR LATEX MODIFIED CONCRETE - VERY EARLY STRENGTH, SEE SPECIAL PROVISIONS.
- FOR EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS.
- FOR SECTION B-B, SEE SHT. NO. S197-6.
- 1/4" BACKER ROD SHALL BE CLOSED CELL EXPANDED POLYETHYLENE FOAM TYPE L. PLACE BACKER ROD TO WITHIN 1'-0" OF EXISTING CURB FACE. NO SEPARATE PAYMENT FOR LABOR, MATERIALS, AND EQUIPMENT NEEDED TO CONSTRUCT CONCRETE JOINT SEALS SHALL BE MADE. COSTS FOR THIS WORK SHALL BE INCLUDED IN THE SEVERAL PAY ITEMS.



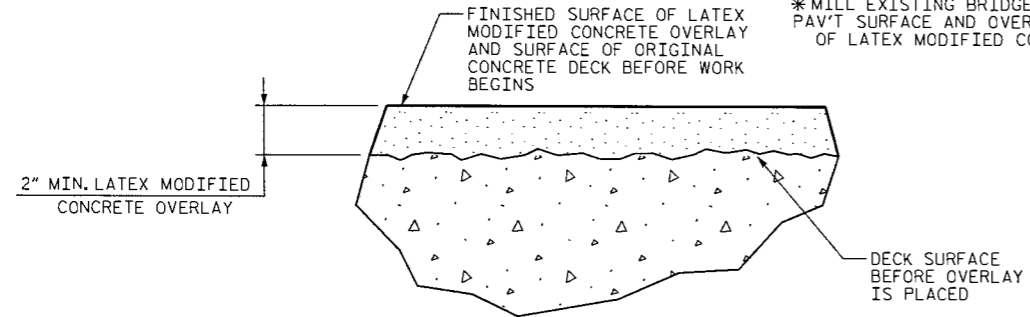
SECTION A-A

* MILL EXISTING BRIDGE APPROACH PAV'T SURFACE AND OVERLAY W/ 2" OF LATEX MODIFIED CONCRETE.

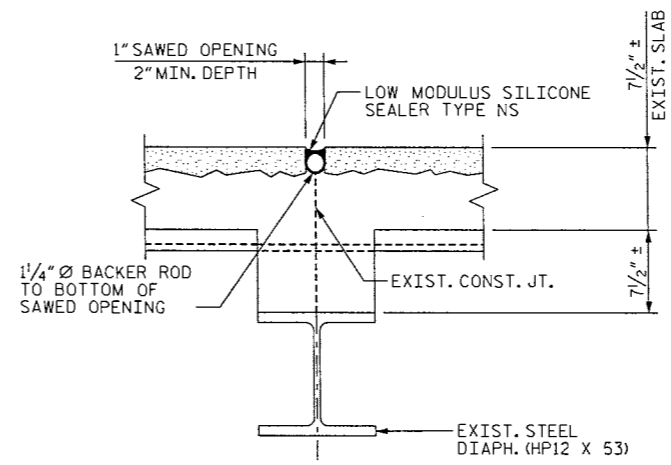


DETAIL A

CONCRETE JOINT SEAL



DETAIL FOR LATEX MODIFIED CONCRETE OVERLAY



SECTION C-C

CONCRETE JOINT SEAL

PROJECT NO. WBS 12B.104911
IREDELL COUNTY
 STATION: _____

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

PLAN OF BRIDGE

DECK REHAB. FOR BRIDGE NO. 197

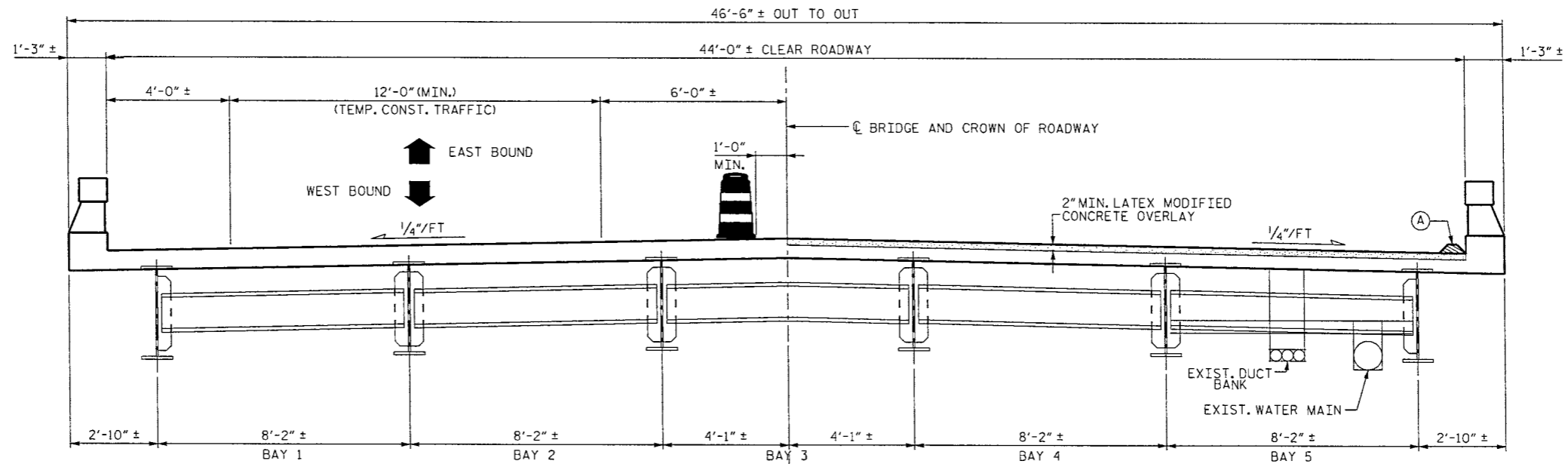
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS	
1			3			6	
2			4				

Joseph Kelvington
 05-27-11
 REGISTERED PROFESSIONAL ENGINEER
 NO. 11111
 STATE OF NORTH CAROLINA

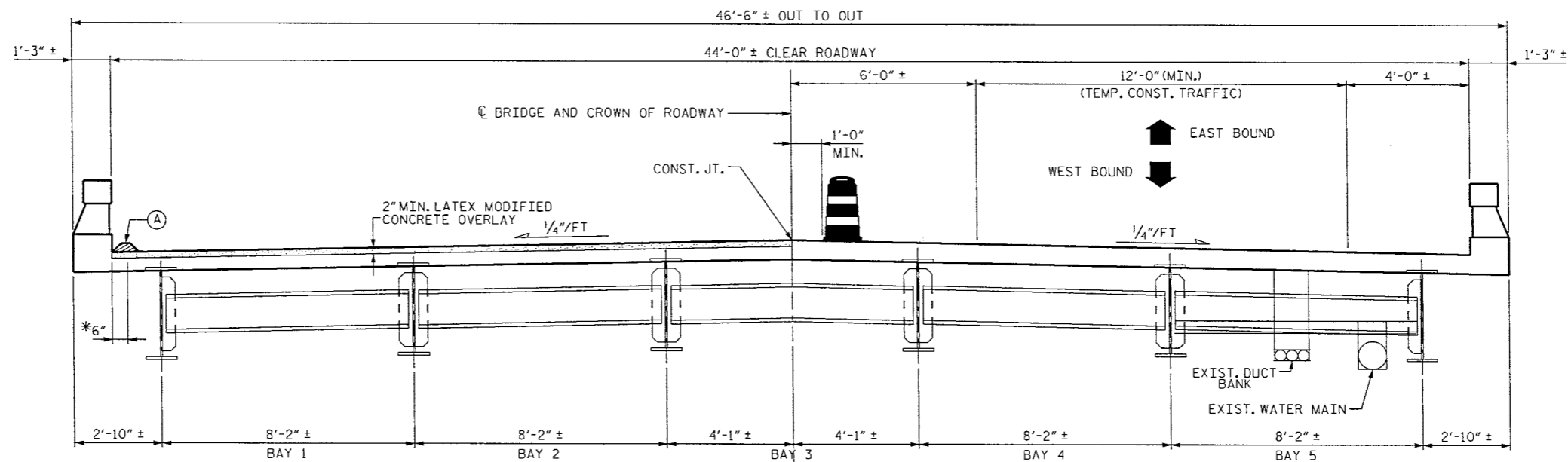
6/29/2011 14:418 PM sUSER\$ Structures\BFI\Bridg Group 2010\WBS 12B.104911\BFI\Bridg 197A\Drawing\BP180917_DeckPlan.dgn

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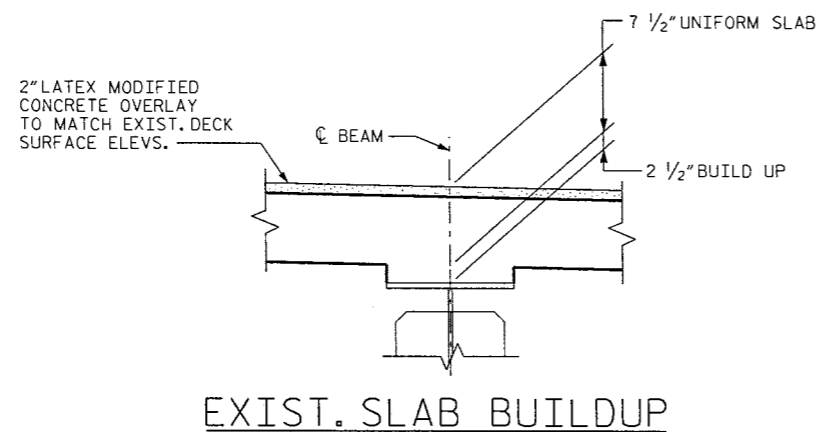
DRAWN BY: J. L. HENNEKES DATE: 05-27-11
 CHECKED BY: J. T. KELVINGTON DATE: 05-27-11



EBL AND WBL CONSTRUCTION
SPANS A THRU E



EBL AND WBL CONSTRUCTION
SPANS A AND E



EXIST. SLAB BUILDUP

NOTES:

SPANS B-D (CONTINUOUS STR. STEEL SPANS) SHOWN. SPANS A & E ARE IDENTICAL TO THOSE SHOWN W/THE EXCEPTION OF GIRDER SIZE AND DIAPHRAGMS.

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

FOR TRAFFIC CONTROL AND CONSTRUCTION PHASING, SEE TRANSPORTATION MANAGEMENT PLANS, TMP-4 THRU TMP-5.

(A) DAM AS REQ'D. NEAR EXISTING EXP. JTS. TO SEAL EXP. JTS.

PROJECT NO. WBS 12B.104911
IREDELL COUNTY
STATION: _____

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE TYPICAL SECTION

DECK REHAB. FOR BRIDGE NO. 197

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S197-3	
1			3			TOTAL SHEETS	
2			4			6	

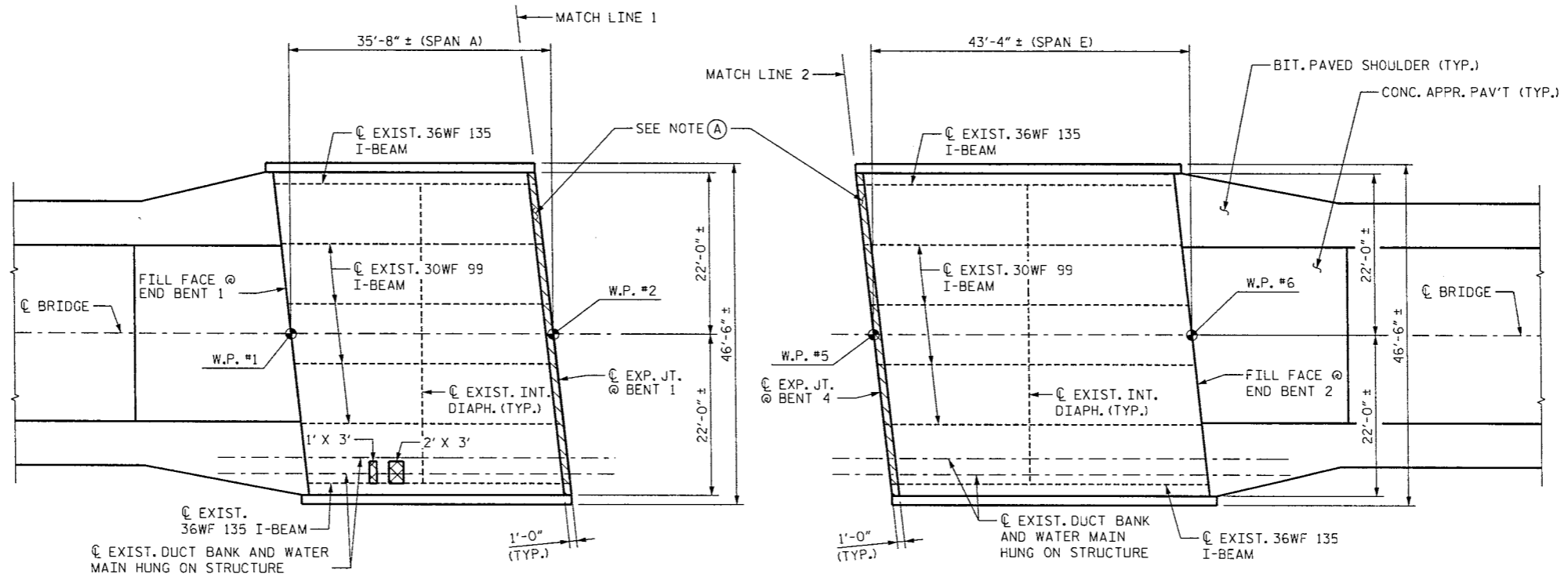
Joseph T. Kelvington
Professional Engineer
No. 13406
State of North Carolina



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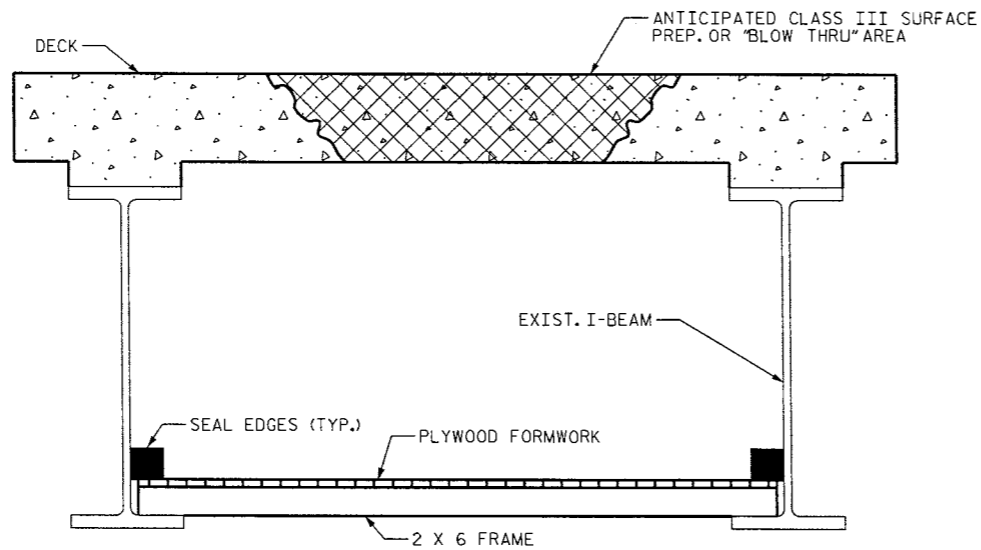
DRAWN BY: J. L. HENNEKES DATE: 05-27-11
CHECKED BY: J. T. KELVINGTON DATE: 05-27-11

\Structures\Bridges Group 2011\WBS 12B.104911\Bridges 197\Drawing\BR480097_TypSect.dgn 6/29/2011 5:32:23 PM \$USER\$



PLAN OF SPANS A & E - DECK REPAIRS

(A) MAXIMUM ESTIMATED SURFACE PREPARATION REQUIRED FOR JOINT SEAL INSTALLATION. DECK REPAIR WORK IS LIMITED TO REMOVAL OF ALL UNSOUND CONCRETE AND SURFACE PREPARATION FOR JOINT SEAL CONSTRUCTION.



TYP. "BLOW THRU" CONTAINMENT AND FORMWORK

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

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

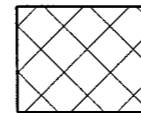
COSTS FOR INSTALLING AND REMOVING FORMWORK SHALL BE INCIDENTAL TO THE PRICE PER SQ. YARD OF HYDRO-DEMOLITION.

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

TO BE USED IN BAYS 1-4.



CLASS II SURFACE PREPARATION



CLASS III SURFACE PREPARATION

L' X W' = LENGTH OF AREA ALONG C BRIDGE X WIDTH OF AREA NORMAL TO C BRIDGE

PROJECT NO. WBS 12B.104911
IREDELL COUNTY
 STATION: _____

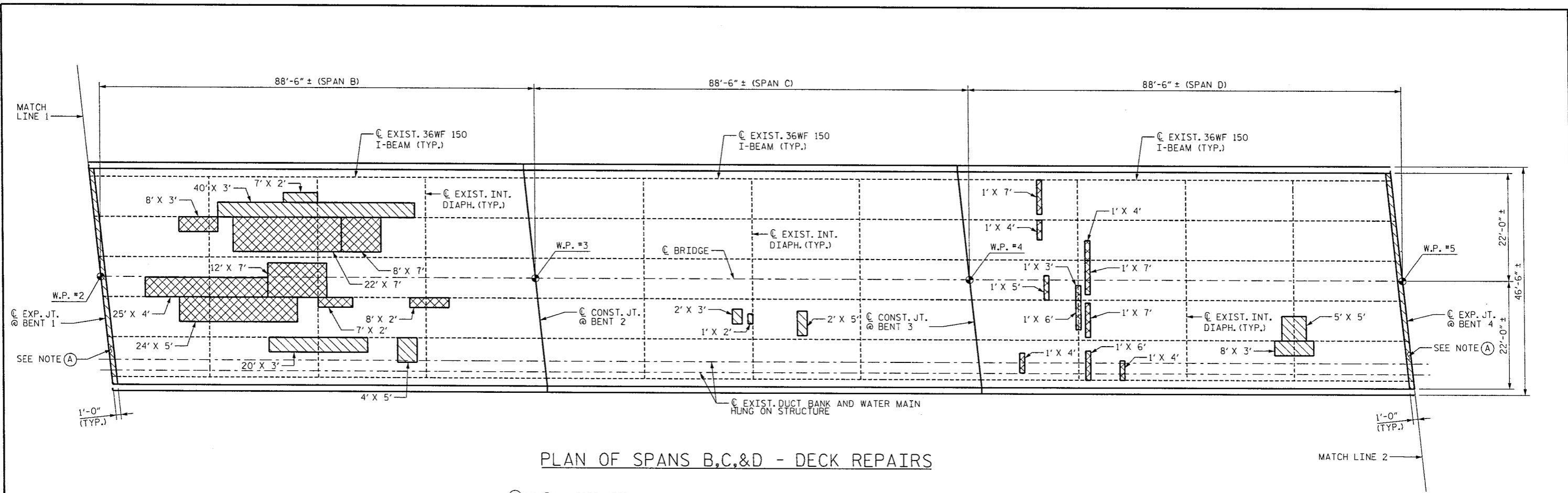
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
DECK REPAIR DETAILS SPANS A & E					
DECK REHAB. FOR BRIDGE NO. 197					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S197-4					TOTAL SHEETS 6

Joseph Kelvington
 13406
 ENGINEER
 J. KELVINGTON

I:\4420 PM \$USER# 6/29/2011 19:\Drawing\197\12B.104911\Bridg\197\Drawg\197\RepairPlan.dgn

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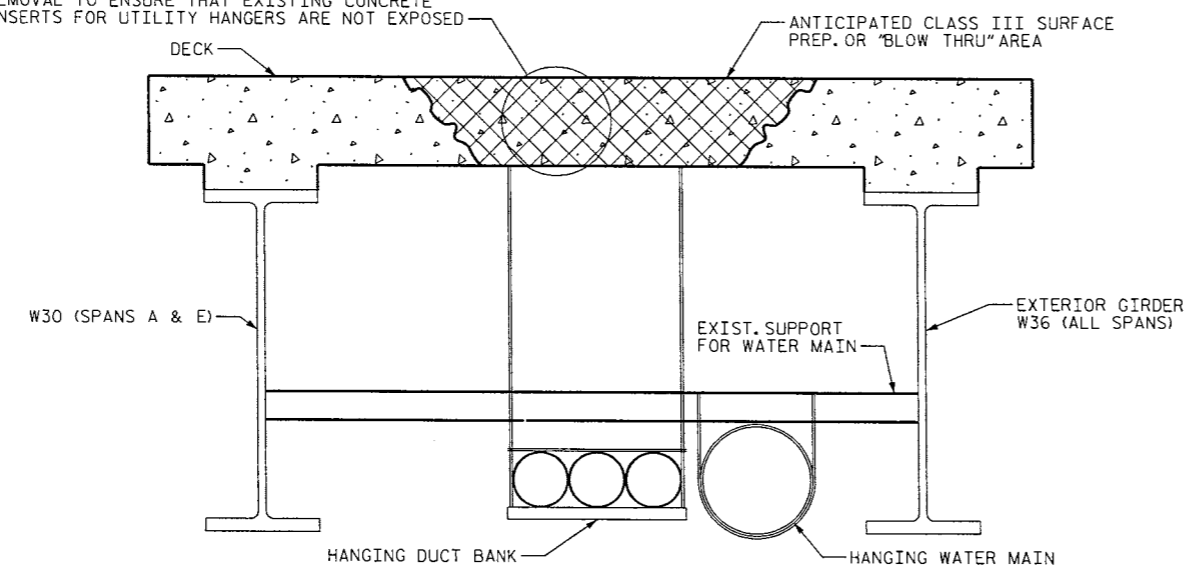
DRAWN BY: J. L. HENNEKES DATE: 05-27-11
 CHECKED BY: J. T. KELVINGTON DATE: 05-27-11



PLAN OF SPANS B,C,&D - DECK REPAIRS

(A) MAXIMUM ESTIMATED SURFACE PREPARATION REQUIRED FOR JOINT SEAL INSTALLATION. DECK REPAIR WORK IS LIMITED TO REMOVAL OF ALL UNSOUND CONCRETE AND SURFACE PREPARATION FOR JOINT SEAL CONSTRUCTION.

CONTRACTOR SHALL MONITOR DEPTH OF CONCRETE REMOVAL TO ENSURE THAT EXISTING CONCRETE INSERTS FOR UTILITY HANGERS ARE NOT EXPOSED



TYP. "BLOW THRU" CONTAINMENT AND FORMWORK WITH HANGING UTILITY

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

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

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

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

BAY 5 SHOWN. CONTRACTOR TO PROVIDE PLANS AND DETAILS FOR ACCOMMODATING EXISTING UTILITIES.

CLASS II SURFACE PREPARATION


CLASS III SURFACE PREPARATION

L' X W' = LENGTH OF AREA ALONG C BRIDGE X WIDTH OF AREA NORMAL TO C BRIDGE

PROJECT NO. WBS 12B.104911
IREDELL COUNTY
 STATION: _____

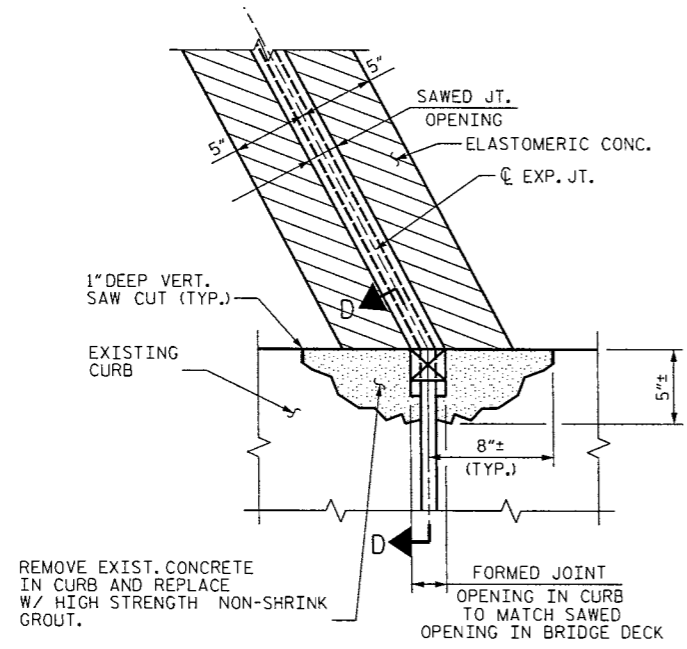
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
DECK REPAIR DETAILS SPANS B,C,&D					
DECK REHAB. FOR BRIDGE NO. 197					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S197-5
					TOTAL SHEETS 6

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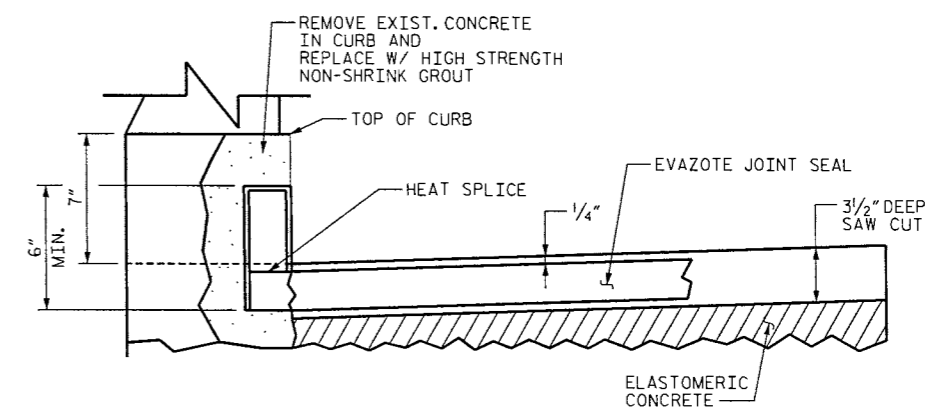

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DRAWN BY: J. L. HENNEKES DATE: 05-27-11
 CHECKED BY: J. T. KELVINGTON DATE: 05-27-11


 Joseph T. Kelvington

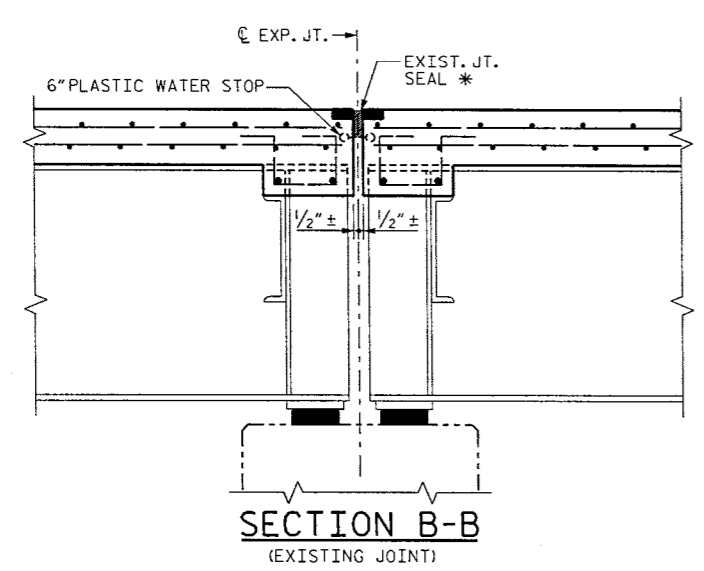


PARTIAL PLAN @ JOINT

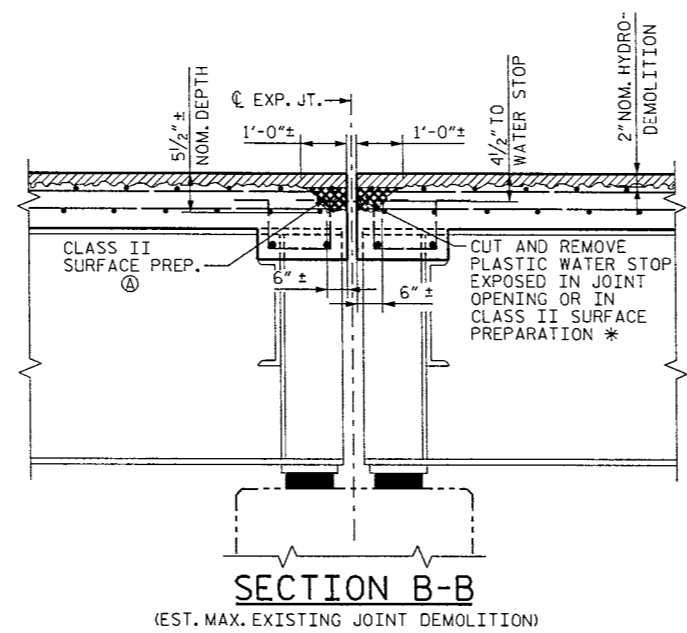


SECTION D-D

CONTRACTOR SHALL EXERCISE CARE TO AVOID CUTTING OR DAMAGING EXISTING REINF. STEEL.
 FOR HIGH STRENGTH GROUT, SEE SPECIAL PROVISIONS.
 HIGH STRENGTH GROUT SHALL BE APPROVED BY THE ENGINEER.

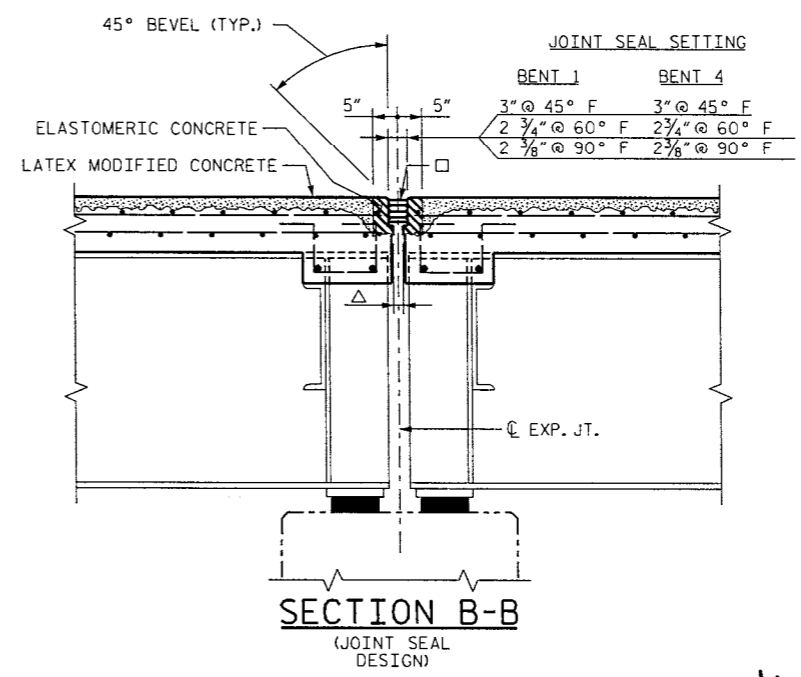


**SECTION B-B
(EXISTING JOINT)**



**SECTION B-B
(EST. MAX. EXISTING JOINT DEMOLITION)**

NOTE: RETAIN ALL EXIST. REINF. STEEL. CLEAN AND REPAIR AS REQ'D.
 * FROM BEST AVAILABLE INFORMATION.



**SECTION B-B
(JOINT SEAL DESIGN)**

□ USE 3.4375\" X 2.5\" UNCOMPRESSED EVAZOTE JT. SEAL MATERIAL
 △ 1\" FORMED OPENING

ELASTOMERIC CONCRETE	
LOCATION	QTY
BENT 1	13.5 C.F.
BENT 4	13.5 C.F.

TOTAL ELASTOMERIC CONC. = 27.0 C.F.
 TOTAL ELASTOMERIC CONC. = 1.0 C.Y.

PROJECT NO. WBS 12B.104911
IREDELL COUNTY
 STATION: _____

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
EXPANSION JOINT DETAILS					
DECK REHAB. FOR BRIDGE NO. 197					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S197-6
 TOTAL SHEETS 6

Joseph T. Kelvington
 REGISTERED PROFESSIONAL ENGINEER
 NO. 13406
 STATE OF NORTH CAROLINA

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DRAWN BY: J. L. HENNEKES DATE: 05-27-11
 CHECKED BY: J. T. KELVINGTON DATE: 05-27-11

Ⓐ CLASS II SURFACE PREPARATION REQUIRED TO REMOVE UNSOUND CONCRETE AND PREPARE SURFACE FOR ELASTOMERIC CONCRETE.

ALL EXISTING JOINT SEAL MATERIALS ARE TO BE COMPLETELY REMOVED.

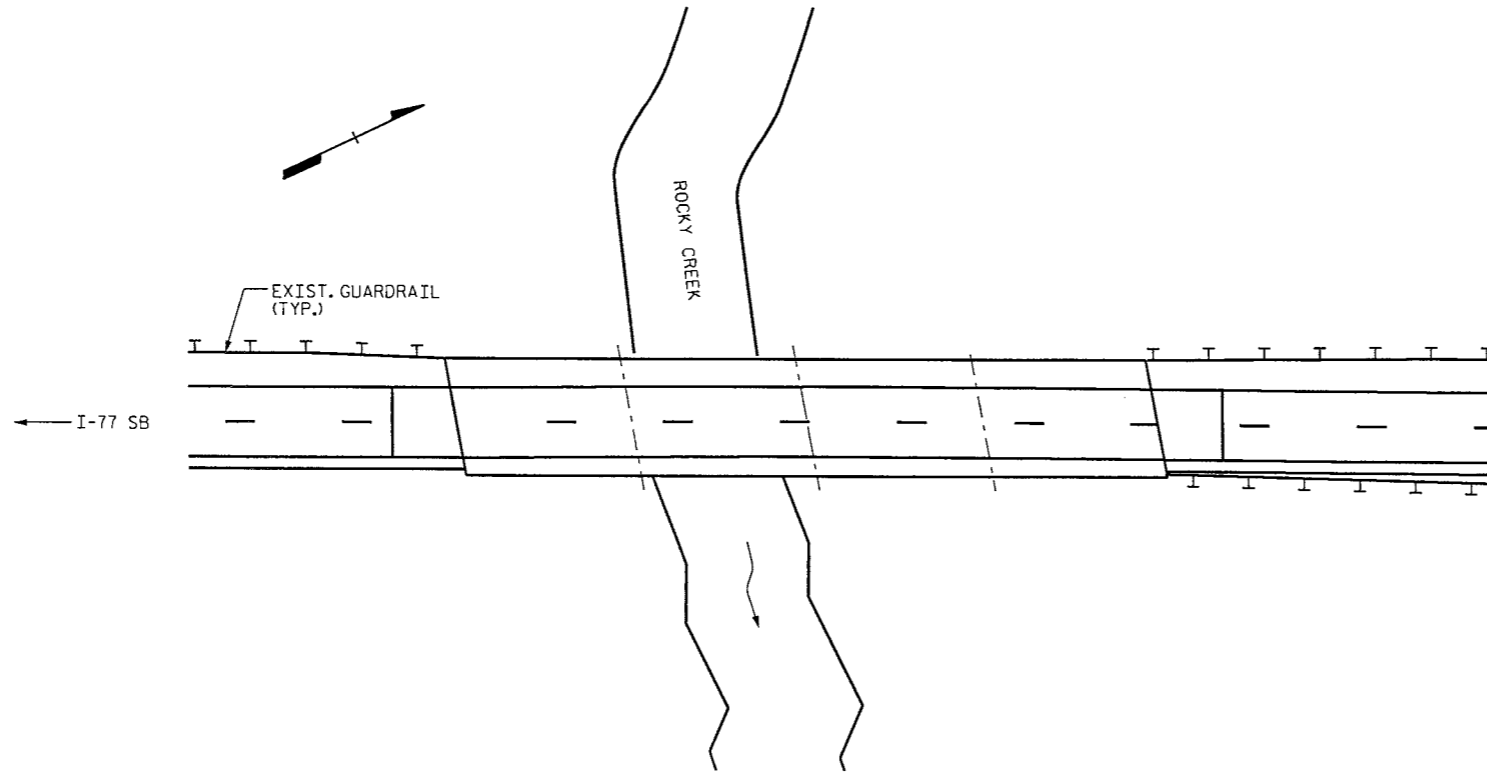


TABLE OF CONTENTS

DWG.	DESCRIPTION
S207-1	LOCATION SKETCH & TOTAL BILL OF MATERIAL
S207-2	PLAN OF BRIDGE
S207-3	BRIDGE TYPICAL SECTION
S207-4	DECK REPAIR DETAILS
S207-5	DECK REPAIR DETAILS
S207-6	JOINT DETAILS
TMP-1 THRU 5	TRANSPORTATION MANAGEMENT PLAN

BRIDGE 207 ON I-77 SOUTHBOUND

LOCATION: BRIDGE 480207, I-77 SBL OVER ROCKY CREEK 3.1 MILES SOUTH OF JUNCTION NC 901

BRIDGE 207 ON I-77 SOUTHBOUND

TOTAL BILL OF MATERIAL										
DECK ** SCARIFICATION	CLASS I * SURFACE PREPARATION	CLASS II * SURFACE PREPARATION	CLASS III * SURFACE PREPARATION	HYDRO- DEMOLITION	CLASS AA CONCRETE *	LATEX MODIFIED CONCRETE-VERY EARLY STRENGTH	PLACING & FINISHING OF LATEX MODIFIED CONCRETE- VERY EARLY STRENGTH	EVAZOTE JOINT SEAL	GROOVING BRIDGE FLOORS	ASHPHALT CONC. SURF. COURSE TYPE S9.5B
SO.YDS.	SO.YDS.	SO.YDS.	SO.YDS.	SO.YDS.	CU.YDS.	CU.YDS.	SQ.YDS.	LUMP SUM	SQ.FT.	TQN
1425	0	37	1	1065	1	67	1067	LUMP SUM	8580	38

* QUANTITIES ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY. IF ANY CLASS III LOCATIONS ARE ENCOUNTERED PRIOR TO OR DURING HYDRO-DEMOLITION, SEE "TYP. "BLOW THRU"CONTAINMENT AND FORMWORK"DETAIL.

** INCLUDES MILLING OF ROADWAY PAVEMENT.

PROJECT NO. WBS 12B.104911
IREDELL COUNTY
 STATION: _____

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 www.stantec.com
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DRAWN BY : J. L. HENNEKES DATE : 05-27-11
 CHECKED BY : J. T. KELVINGTON DATE : 05-27-11

Joseph Kelvington

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

LOCATION SKETCH
 AND TOTAL
 BILL OF MATERIAL

DECK REHAB. FOR BRIDGE NO. 207

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S207-1
1			3			TOTAL SHEETS
2			4			6

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EXIST. THRIE-BEAM WITH GUARDRAIL TRANSITION

TO SR 1891

50'-0" (MIN.)

20'-0" EST.

FILL FACE @ END BENT 1

EXP. JT. @ BENT 1

EXP. JT. @ BENT 2

EXP. JT. @ BENT 3

FILL FACE @ END BENT 2

MILL & REPLACE EXIST. RDWY. PAV'T W/ ASPHALT CONC. SURFACE COURSE TYPE S9.5B

EXIST. THRIE-BEAM W/ GUARDRAIL TRANSITION (TYP. EA. SIDE @ END BENT 2)

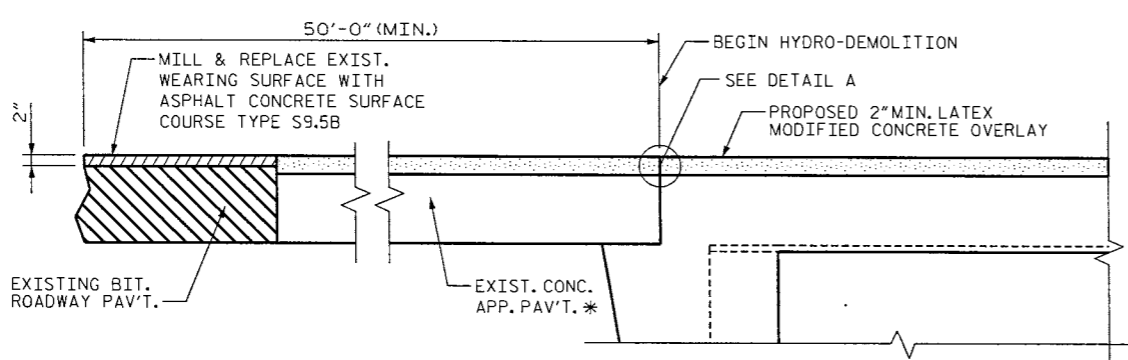
MILL & REPLACE EXIST. RDWY. PAV'T W/ ASPHALT CONC. SURFACE COURSE TYPE S9.5B

EXIST. CONC. RDWY PAV'T. TO RECEIVE CONC. OVERLAY

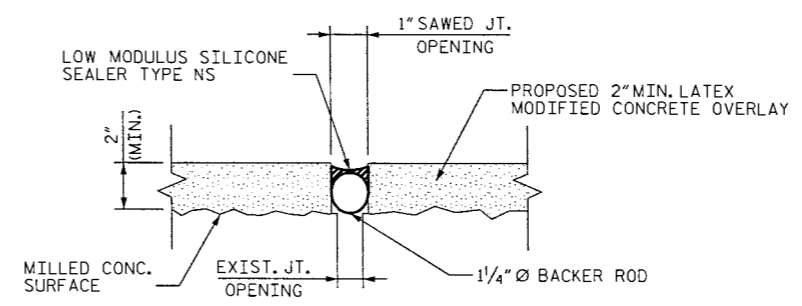
THRIE-BEAM GUARDRAIL TO BE REMOVED AND STOCKPILED DURING CONSTRUCTION, THEN REINSTALLED AFTER THE COMPLETION OF THE JOINT SEALS. (TYP. EA. SIDE)

**CLEAR BETWEEN CONCRETE RAILS

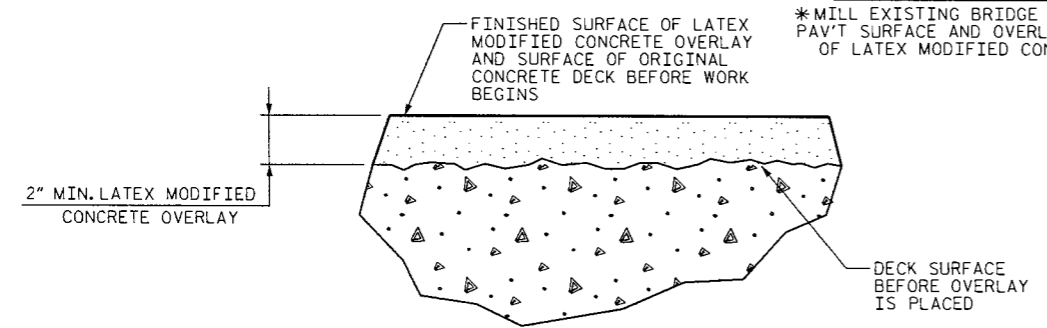
PLAN OF SPANS A-D



SECTION A-A



DETAIL A
CONCRETE JOINT SEAL



DETAIL FOR LATEX MODIFIED CONCRETE OVERLAY

NOTES:

EXISTING DECK DRAINS SHALL BE SEALED PRIOR TO BEGINNING REPAIR OF BRIDGE DECKS WITH LATEX MODIFIED CONCRETE. SEE SPECIAL PROVISIONS.

FOR HYDRO-DEMOLITION, SEE SPECIAL PROVISIONS.

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

THE BOUNDARIES OF AREAS IDENTIFIED FOR CLASS III SURFACE PREPARATION ARE APPROXIMATE. THE CONTRACTOR SHALL PROVIDE A METHOD OF HANDLING UNEXPECTED BLOW THROUGH OF THE DECK. SEE DETAIL, SHT. NO. S207-4.

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

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

FOR EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS.

FOR SECTION B-B, SEE SHT. NO. S207-6.

1/4" BACKER ROD SHALL BE CLOSED CELL EXPANDED POLYETHYLENE FOAM TYPE L. PLACE BACKER ROD TO 1'-0" BEYOND LIMITS OF EXIST. APPR. PAV'T. NO SEPARATE PAYMENT FOR LABOR, MATERIALS, AND EQUIPMENT NEEDED TO CONSTRUCT CONCRETE JOINT SEALS SHALL BE MADE. COSTS FOR THIS WORK SHALL BE INCLUDED IN THE SEVERAL PAY ITEMS.

PROJECT NO. WBS 12B.104911

IREDELL COUNTY

STATION: _____

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF BRIDGE
DECK REHAB. FOR BRIDGE NO. 207

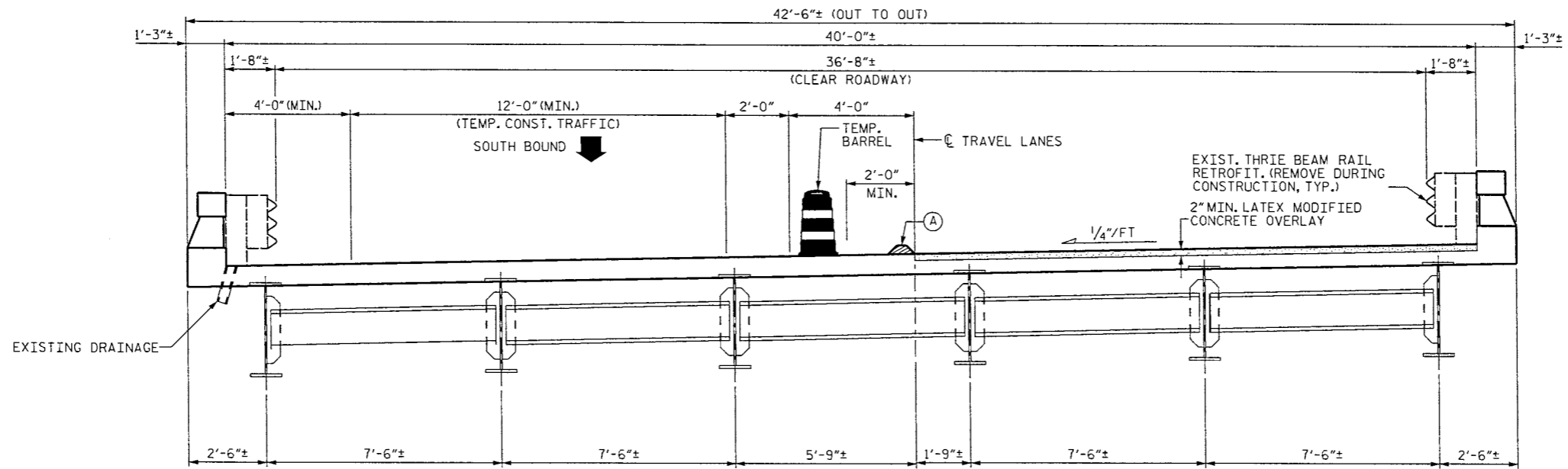
REVISIONS						SHEET NO. S207-2
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 6
2			4			

Joseph J. Kelvington
Professional Engineer
No. 10088
State of North Carolina

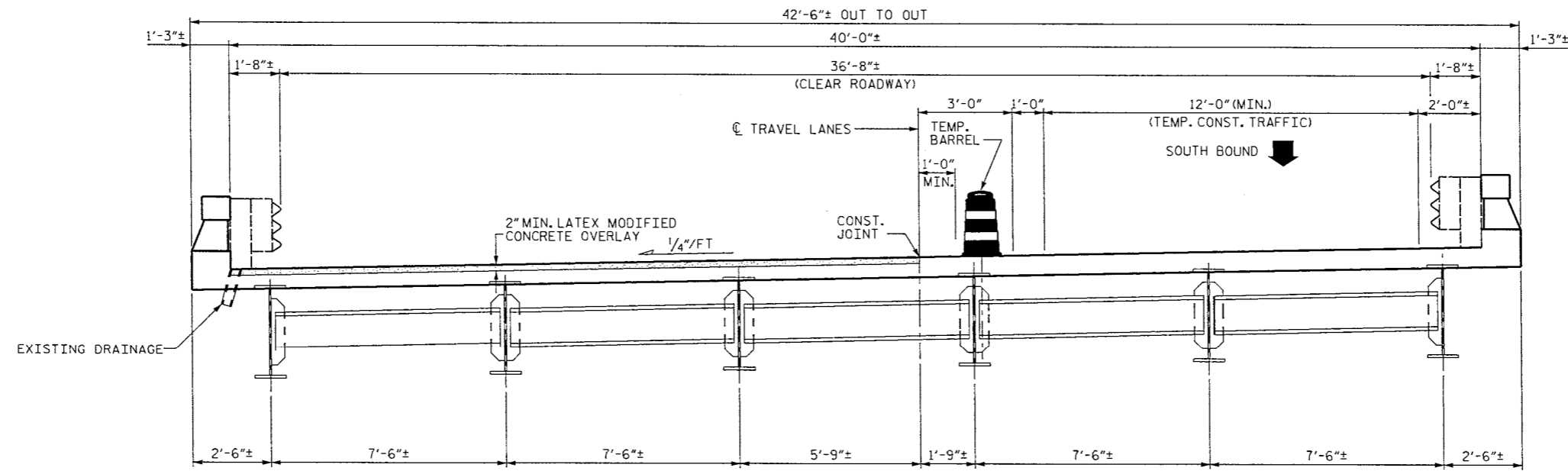
Stantec Consulting Services Inc.
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Fax (919) 851-7024
www.stantec.com
License No. F-0672

DRAWN BY : J. L. HENNEKES DATE : 05-27-11
CHECKED BY : J. T. KELVINGTON DATE : 05-27-11

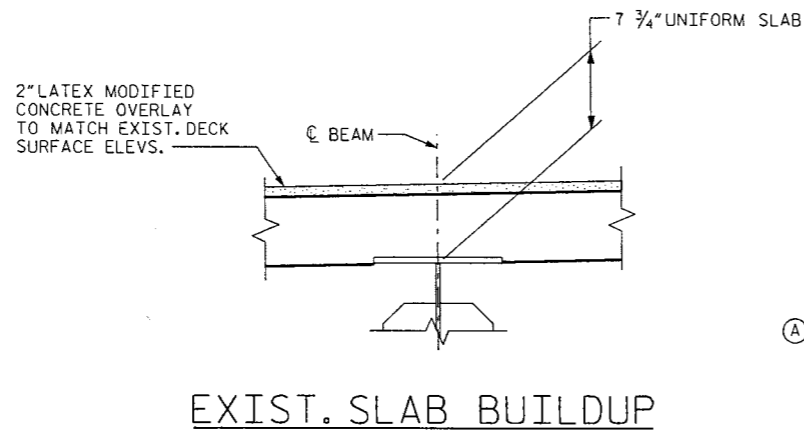
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SBL CONSTRUCTION LOOKING NORTH
SPANS A-D



SBL CONSTRUCTION LOOKING NORTH
SPANS A-D



NOTES:

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

FOR TRAFFIC CONTROL AND CONSTRUCTION PHASING, SEE TRANSPORTATION MANAGEMENT PLANS, TMP-2 THRU TMP-2B.

(A) DAM ALONG LENGTH OF BRIDGE, AND ROADWAY. SEAL EXP. JTS. AND EXISTING DECK DRAINS.

PROJECT NO. WBS 12B.104911
IREDELL COUNTY
STATION: _____

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE TYPICAL SECTION

DECK REHAB. FOR BRIDGE NO. 207

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S207-3	
1			3			TOTAL SHEETS	
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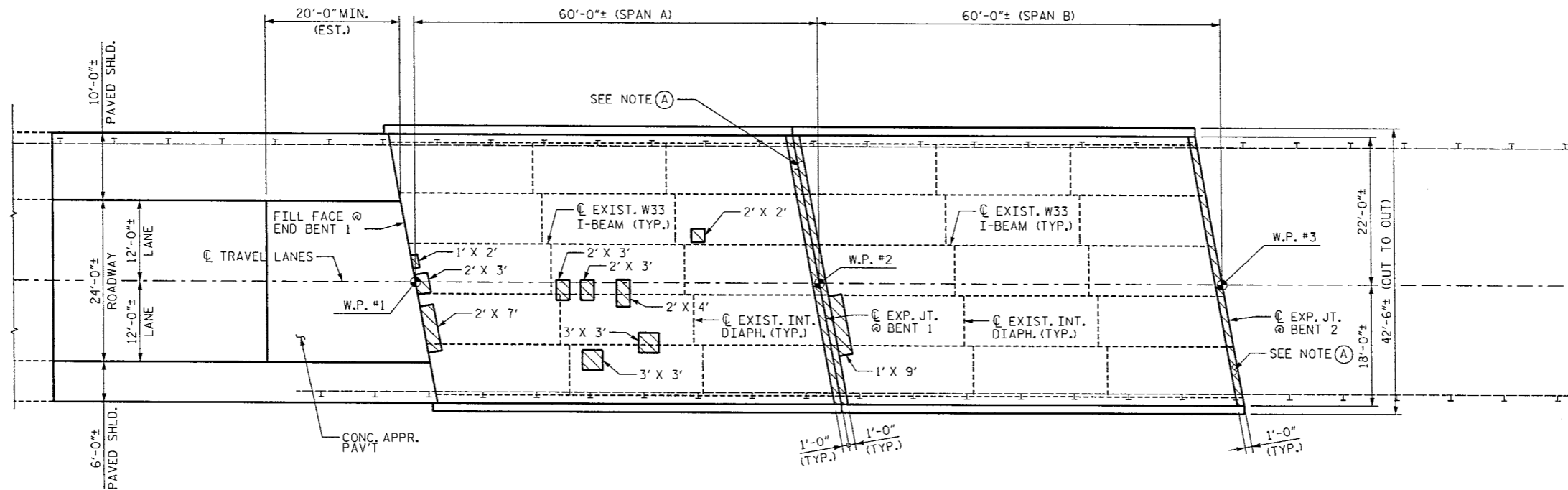
Joseph J. Kelvington
Professional Engineer
No. 3300
State of North Carolina



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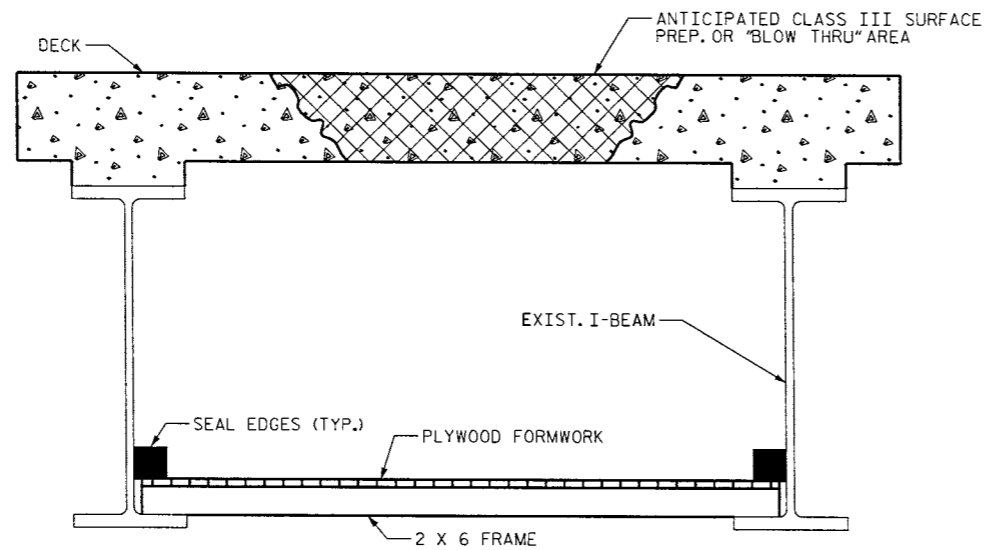
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CHECKED BY: J. T. KELVINGTON DATE: 05-27-11

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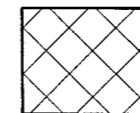


PLAN OF SPANS A & B - DECK REPAIRS

(A) MAXIMUM ESTIMATED SURFACE PREPARATION REQUIRED FOR JOINT SEAL INSTALLATION. DECK REPAIR WORK IS LIMITED TO REMOVAL OF ALL UNSOUND CONCRETE AND SURFACE PREPARATION FOR JOINT SEAL CONSTRUCTION.



CLASS II SURFACE PREPARATION



CLASS III SURFACE PREPARATION

L' X W' = LENGTH OF AREA ALONG C BRIDGE X WIDTH OF AREA NORMAL TO C BRIDGE

TYP. "BLOW THRU" CONTAINMENT AND FORMWORK

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

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

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

CONTRACTOR, AT HIS OPTION, MAY CHOOSE TO MONITOR HYDRO-DEMOLITION WORK AND CONTROL BLOW THRU MATERIALS IN ANOTHER MANNER THAN SHOWN IN THESE PLANS.

PROJECT NO. WBS 12B.104911
IREDELL COUNTY
 STATION: _____

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

DECK REPAIR DETAILS
 SPANS A & B

DECK REHAB. FOR BRIDGE NO. 207

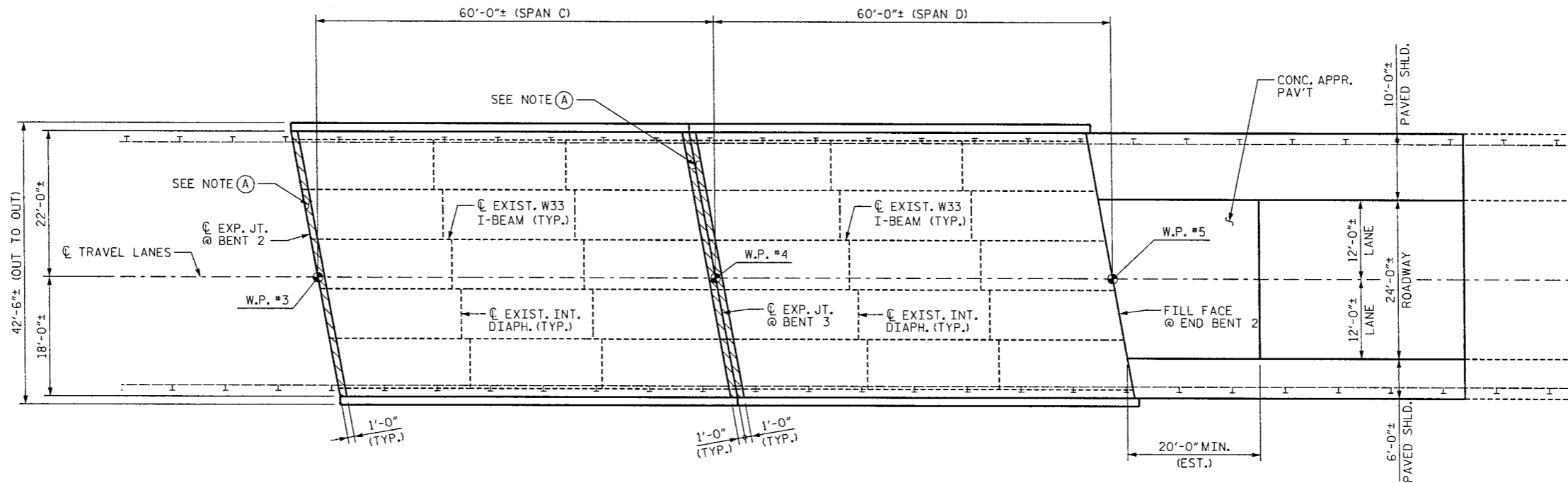
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NO.	BY:	DATE:	NO.	BY:	DATE:	S207-4	
1			3			TOTAL SHEETS	
2			4			6	

Joseph T. Kelvington
 PROJECT ENGINEER
 18406
 NORTH T. KELVINGTON



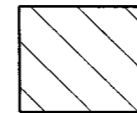
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 Fax. (919) 851-7024
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 CHECKED BY : J. T. KELVINGTON DATE : 05-27-11

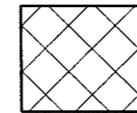


PLAN OF SPANS C & D - DECK REPAIRS

(A) MAXIMUM ESTIMATED SURFACE PREPARATION REQUIRED FOR JOINT SEAL INSTALLATION. DECK REPAIR WORK IS LIMITED TO REMOVAL OF ALL UNSOUND CONCRETE AND SURFACE PREPARATION FOR JOINT SEAL CONSTRUCTION.



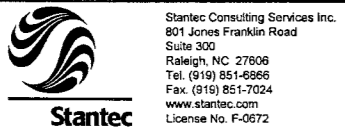
CLASS II SURFACE PREPARATION



CLASS III SURFACE PREPARATION

L' X W' = LENGTH OF AREA ALONG C BRIDGE X WIDTH OF AREA NORMAL TO C BRIDGE

PROJECT NO. WBS 12B.104911
IREDELL COUNTY
 STATION: _____



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 www.stantec.com
 License No. F-0672

DRAWN BY : J. L. HENNEKES DATE : 05-27-11
 CHECKED BY : J. T. KELVINGTON DATE : 05-27-11

Joseph T. Kelvington
 PROFESSIONAL ENGINEER
 STATE OF NORTH CAROLINA
 13488
 JOSEPH T. KELVINGTON

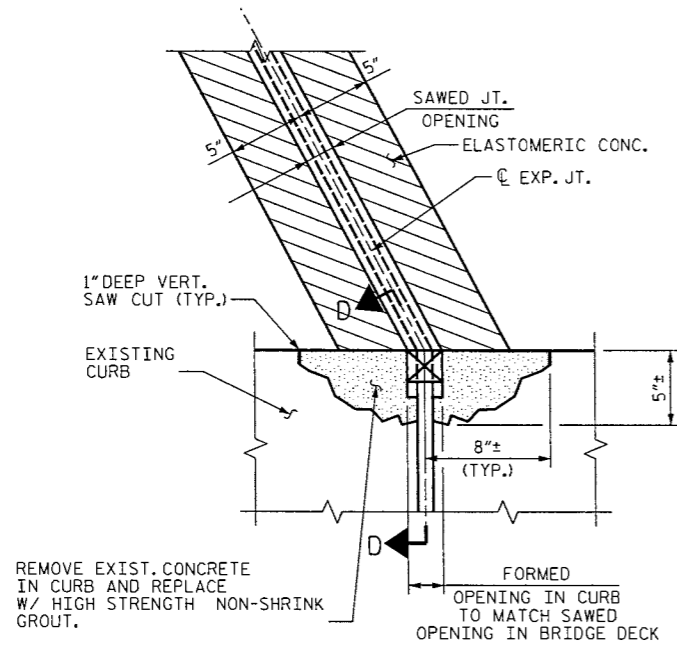
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

DECK REPAIR DETAILS
 SPANS C & D

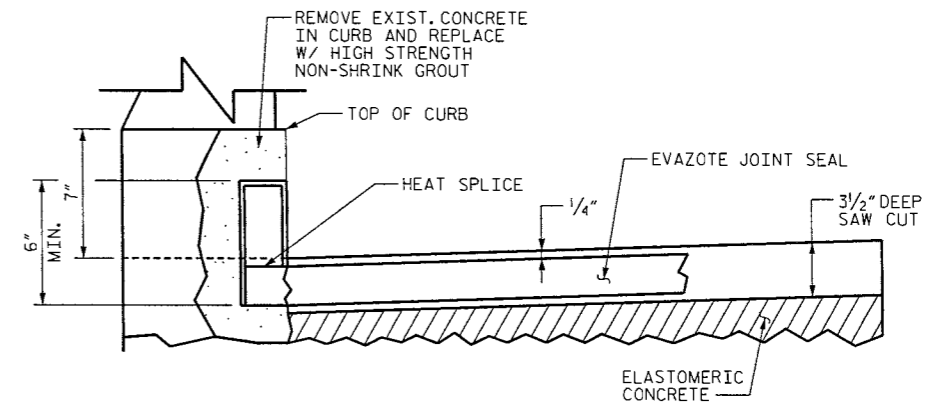
DECK REHAB. FOR BRIDGE NO. 207

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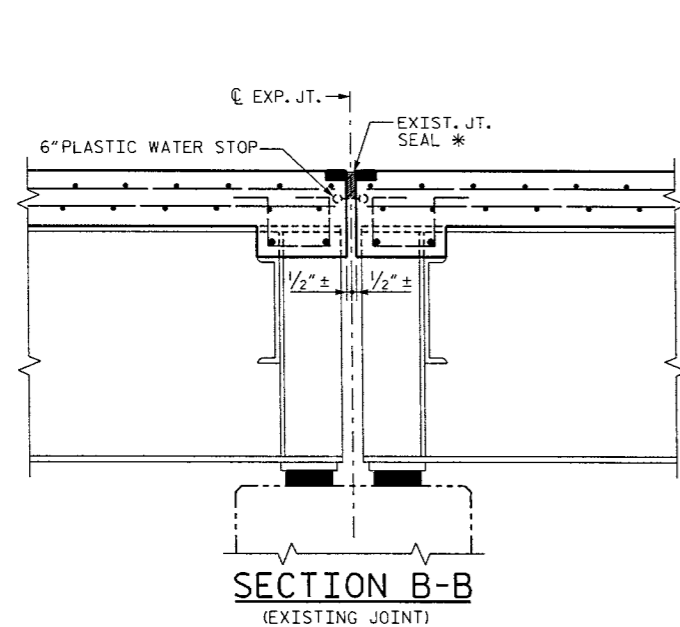


PARTIAL PLAN @ JOINT

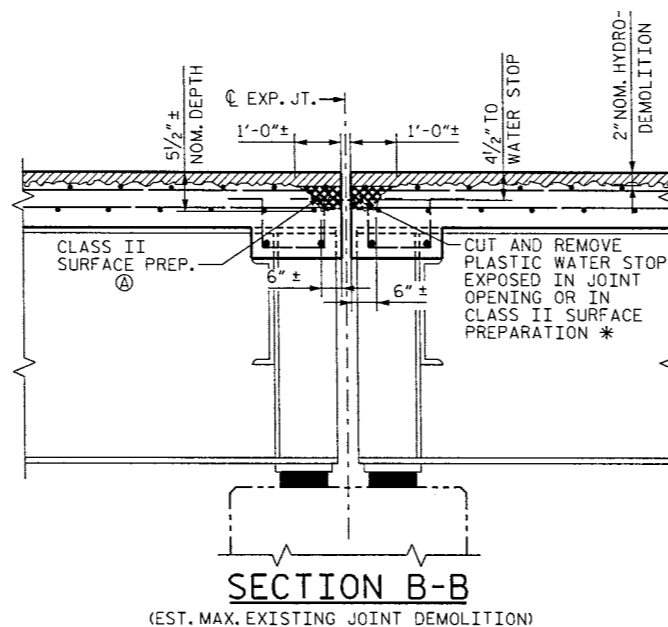


SECTION D-D

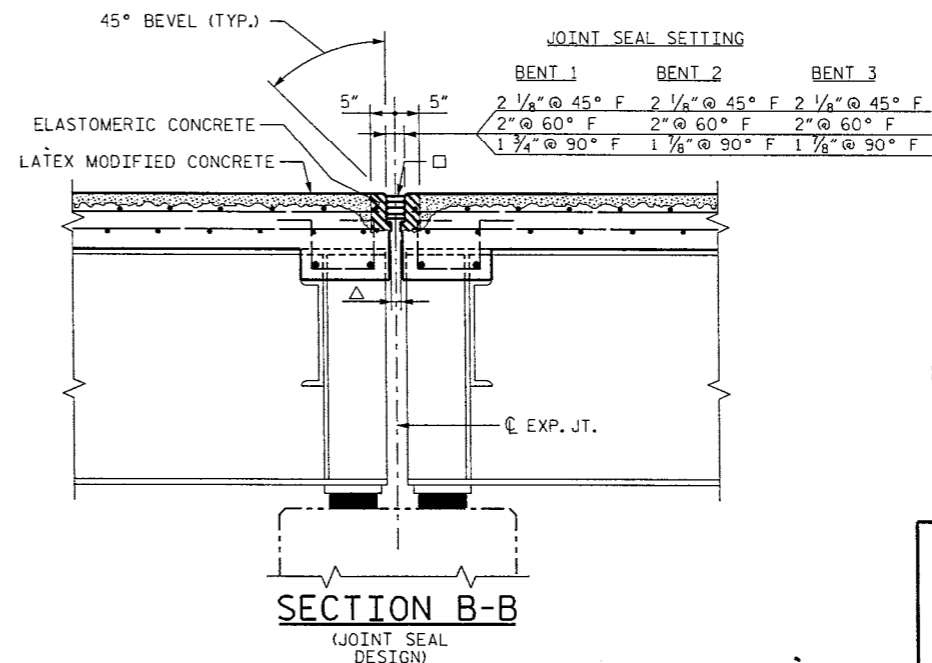
CONTRACTOR SHALL EXERCISE CARE TO AVOID CUTTING OR DAMAGING EXISTING REINF. STEEL.
 FOR HIGH STRENGTH GROUT, SEE SPECIAL PROVISIONS.
 HIGH STRENGTH GROUT SHALL BE APPROVED BY THE ENGINEER.



**SECTION B-B
(EXISTING JOINT)**



**SECTION B-B
(EST. MAX. EXISTING JOINT DEMOLITION)**



**SECTION B-B
(JOINT SEAL DESIGN)**

ELASTOMERIC CONCRETE	
LOCATION	QTY
BENT 1	13.6 C.F.
BENT 2	13.6 C.F.
BENT 3	13.6 C.F.

TOTAL ELASTOMERIC CONC. = 40.8 C.F.
 TOTAL ELASTOMERIC CONC. = 1.5 C.Y.

PROJECT NO. WBS 12B.104911
IREDELL COUNTY
 STATION: _____

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

EXPANSION JOINT DETAILS

DECK REHAB. FOR BRIDGE NO. 207

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

SHEET NO. S207-6
 TOTAL SHEETS 6

NOTE: RETAIN ALL EXIST. REINF. STEEL, CLEAN AND REPAIR AS REQ'D.
 * FROM BEST AVAILABLE INFORMATION.

Ⓐ CLASS II SURFACE PREPARATION REQUIRED TO REMOVE UNSOUND CONCRETE AND PREPARE SURFACE FOR ELASTOMERIC CONCRETE.

ALL EXISTING JOINT SEAL MATERIALS ARE TO BE COMPLETELY REMOVED.

□ USE 2.8125" X 2.50" COMPRESSED EVAZOTE J1 SEAL MATERIAL
 △ 1" FORMED OPENING

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 CHECKED BY: J. T. KELVINGTON DATE: 05-27-11

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STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

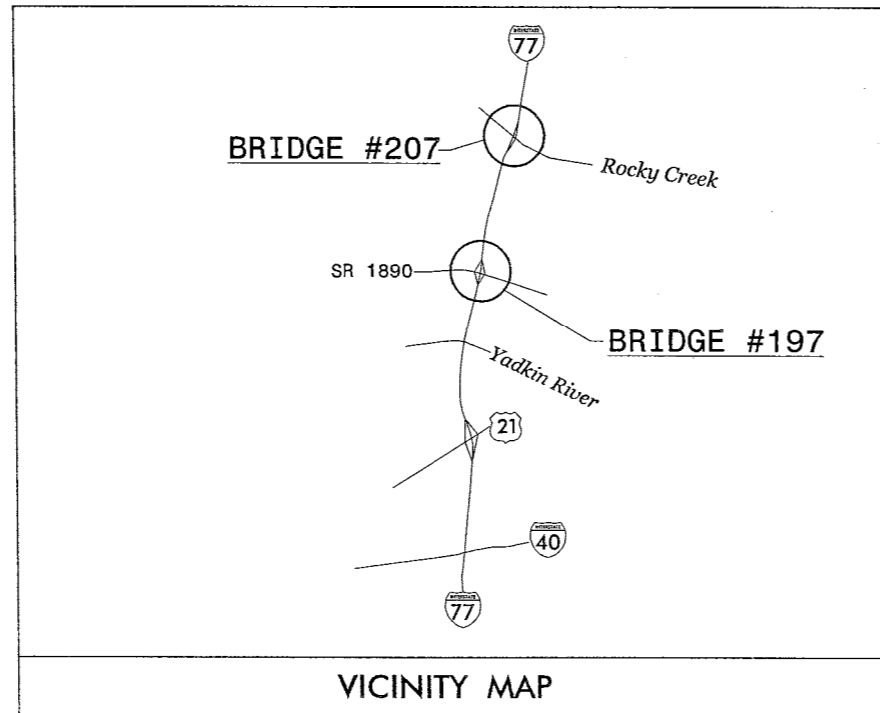
TRANSPORTATION MANAGEMENT PLAN

IREDELL COUNTY

DIVISION 12



BRIDGE #197 SR 1890 OVER I-77
BRIDGE #207 I-77 SBL OVER ROCKY CREEK



INDEX OF SHEETS

SHEET NO.	TITLE
TMP-1	TITLE SHEET, AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, AND LEGEND
TMP-1B	GENERAL NOTES
TMP-2	SINGLE LANE CLOSURES
TMP-2A	LEFT LANE CLOSURE WITH SHIFT
TMP-2B	DESIGN TABLES
TMP-2C	FLAGGER CONTROLLED LANE CLOSURE
TMP-3	TRAFFIC CONTROL PHASING
TMP-4	BRIDGE #197 TRAFFIC CONTROL FOR SR 1890 EASTBOUND LANE WORK AREA
TMP-5	BRIDGE #197 TRAFFIC CONTROL FOR SR 1890 WESTBOUND LANE WORK AREA

SHEET NO.
TMP-1

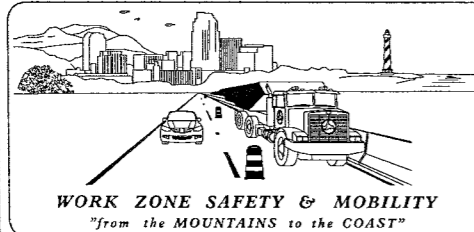
TRAFFIC MANAGEMENT STRATEGY

WORK ON BRIDGE #207 WILL BE PERFORMED BEHIND DRUMS USING TIME RESTRICTED LANE CLOSURES ON I-77 SBL.

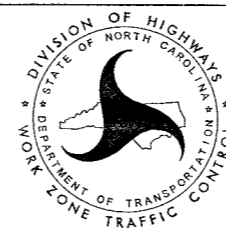
WORK ON BRIDGE #197 WILL BE PERFORMED USING FLAGGER CONTROLLED LANE CLOSURES ON SR 1890 WITH LANE CLOSURES ON I-77 DURING HYDRO-DEMOLITION OPERATIONS.

REFER TO SHEET TMP-3 FOR TRAFFIC CONTROL PHASING.

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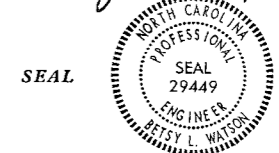
PLAN PREPARED FOR NCDOT BRIDGE MANAGEMENT UNIT
RALEIGH, NC



PLAN PREPARED BY:
Stantec Consulting Services Inc.
801 Jones Franklin Road-Suite 300
Raleigh, NC 27808
Tel. 919.851.6868
Fax. 919.851.7024
www.stantec.com

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

APPROVED: *Betsy Watson*
DATE: *June 29, 2011*



WBS 12B.104911

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JULY 2006 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1101.02	TEMPORARY LANE CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1115.01	FLASHING ARROW PANELS
1130.01	DRUMS
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1165.01	TRUCK MOUNTED IMPACT ATTENUATOR
1180.01	SKINNY DRUMS
1205.01	PAVEMENT MARKINGS - LINE TYPES & OFFSETS
1205.02	PAVEMENT MARKINGS - 2 LANE & MULTILANE ROADWAYS
1250.01	PAVEMENT MARKER SPACING
1253.01	SNOWPLOWABLE RAISED PAVEMENT MARKERS

LEGEND

GENERAL

- DIRECTION OF TRAFFIC FLOW
- DIRECTION OF PEDESTRIAN TRAFFIC FLOW
- WORK AREA
- PAVEMENT REMOVAL
- NORTH ARROW

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 (CMS)
- PORTABLE CONCRETE BARRIER (PCB)

TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

SIGNALS

- EXISTING
- PROPOSED
- TEMPORARY

PAVEMENT MARKINGS

- EXISTING PAVEMENT MARKING (GRAY)
- SKIP LINES
- MINI-SKIP LINES
- SOLID LINES

PAVEMENT MARKING SYMBOLS

- PAVEMENT MARKING SYMBOLS
- EXISTING PAVEMENT MARKING SYMBOLS (HOLLOW)
- ONLY** PAVEMENT MARKING ALPHANUMERIC CHARACTERS

PAVEMENT MARKERS

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

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<p>Stantec Consulting Services Inc. 801 Jones Franklin Road Suite 300 Raleigh, NC 27606 Tel. (919) 851-6306 Fax (919) 851-7324 www.stantec.com License No. F-0672</p>	APPROVED: _____ DATE: _____ 		ROADWAY STANDARD DRAWINGS & LEGEND

GENERAL NOTES

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

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

LANE CLOSURE TIME RESTRICTIONS

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

ROAD NAME	DAY AND TIME RESTRICTIONS
I-77	6:00 A.M.-9:00 A.M. MONDAY THRU FRIDAY 4:00 P.M.-7:00 P.M. MONDAY THRU FRIDAY

HOLIDAY & HOLIDAY WEEKEND LANE CLOSURE TIME RESTRICTIONS

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

ROAD NAME
ALL ROADS

- 1) FOR ANY UNEXPECTED OCCURRENCE THAT CREATES UNUSUALLY HIGH TRAFFIC VOLUMES, AS DIRECTED BY THE ENGINEER.
- 2) FOR NEW YEAR'S, BETWEEN THE HOURS OF 6:00 A.M. DECEMBER 31st TO 7:00 P.M. JANUARY 2nd. IF NEW YEAR'S DAY IS ON A FRIDAY, SATURDAY, SUNDAY, OR MONDAY THEN UNTIL 7:00 P.M. THE FOLLOWING TUESDAY.
- 3) FOR EASTER, BETWEEN THE HOURS OF 6:00 A.M. THURSDAY AND 7:00 P.M. MONDAY.
- 4) FOR MEMORIAL DAY, BETWEEN THE HOURS OF 6:00 A.M. FRIDAY TO 7:00 P.M. TUESDAY.
- 5) FOR INDEPENDENCE DAY, BETWEEN THE HOURS OF 6:00 A.M. THE DAY BEFORE INDEPENDENCE DAY AND 7:00 P.M. THE DAY AFTER INDEPENDENCE DAY. IF INDEPENDENCE DAY IS ON A FRIDAY, SATURDAY, SUNDAY OR MONDAY; THEN BETWEEN THE HOURS OF 6:00 A.M. THE THURSDAY BEFORE INDEPENDENCE DAY AND 7:00 P.M. THE TUESDAY AFTER INDEPENDENCE DAY.
- 6) FOR LABOR DAY, BETWEEN THE HOURS OF 6:00 A.M. FRIDAY AND 7:00 P.M. TUESDAY.
- 7) FOR THANKSGIVING DAY, BETWEEN THE HOURS OF 6:00 A.M. TUESDAY TO 7:00 P.M. MONDAY.
- 8) FOR CHRISTMAS, BETWEEN THE HOURS OF 6:00 A.M. THE FRIDAY BEFORE THE WEEK OF CHRISTMAS DAY AND 7:00 P.M. THE FOLLOWING TUESDAY AFTER THE WEEK OF CHRISTMAS.

LANE AND SHOULDER CLOSURE REQUIREMENTS

- C) LANE CLOSURES ARE REQUIRED WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN ANY PORTION OF A TRAVEL LANE. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.
- D) INSTALL ALL LANE CLOSURES ACCORDING TO THE PLANS, ROADWAY STANDARD DRAWINGS (1101.02), OR AS DIRECTED BY THE ENGINEER.
- E) 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.
- F) 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.
- G) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO AN UNDIVIDED FACILITY AND WITHIN 5 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.
- H) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO A DIVIDED FACILITY AND WITHIN 10 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

PAVEMENT MARKINGS AND MARKERS


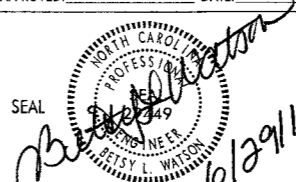
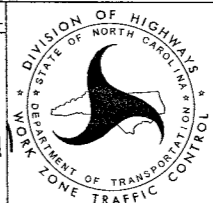
I) UPON COMPLETION OF ALL OTHER CONSTRUCTION OPERATIONS INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE AS FOLLOWS:

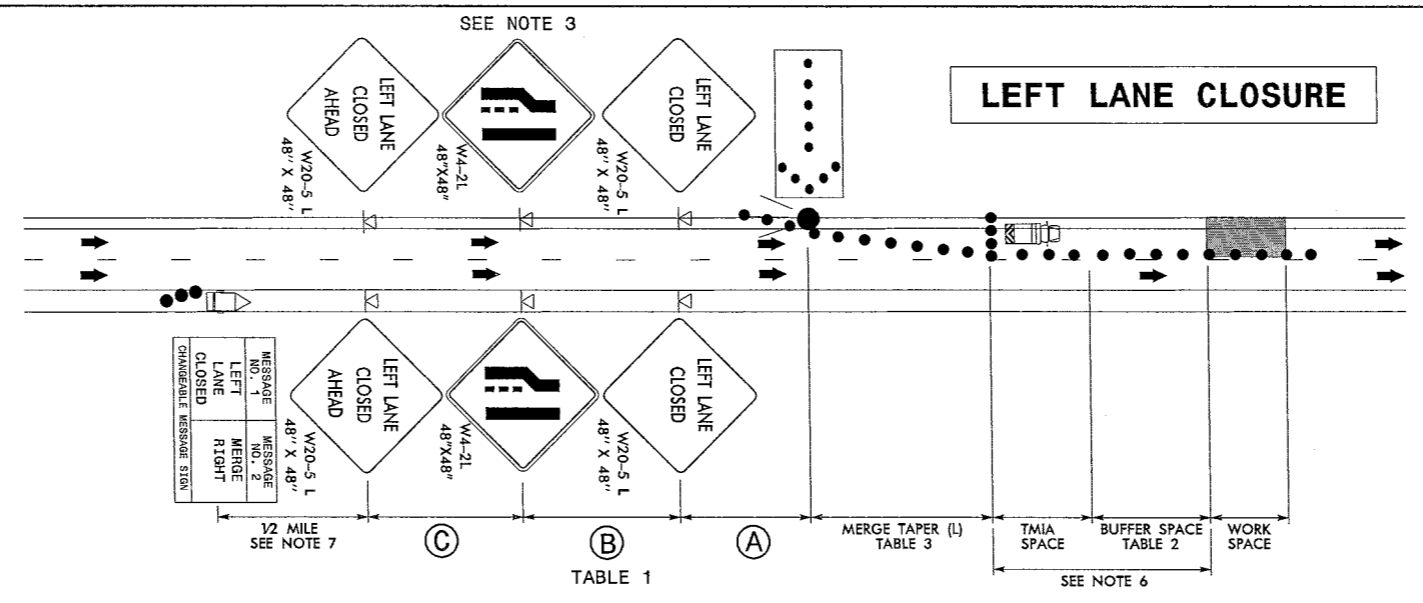
ROAD NAME	MARKING	PAVEMENT MARKER
I-77	POLYUREA	SNOWPLOWABLE
SR 1890	PAINT (2 APPS)	NONE

MISCELLANEOUS

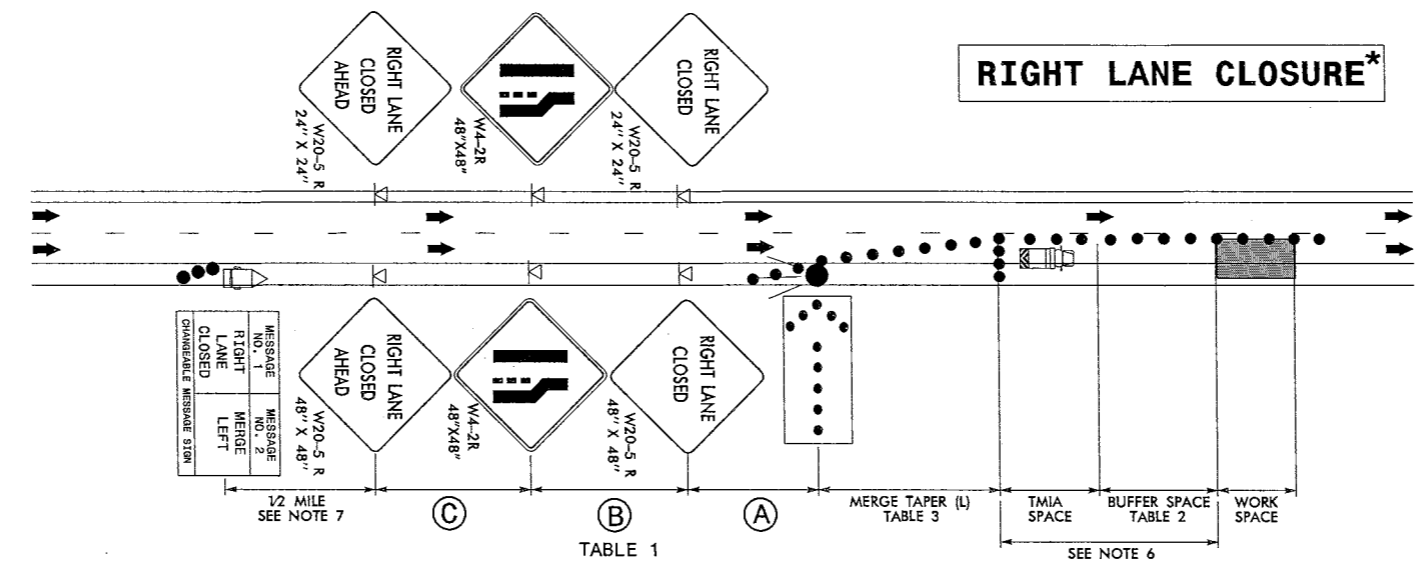
- J) LAW ENFORCEMENT MAY BE USED TO MAINTAIN TRAFFIC THROUGH THE WORK AREA AND/OR INTERSECTIONS AS DIRECTED BY THE ENGINEER. LOCATIONS SHOWN IN THE PLANS ARE APPROXIMATE AND MAY BE REVISED AS THE OFFICER OR THE ENGINEER DEEM NECESSARY.
- K) ALL DIMENSIONS AND STATIONS IN THE TRAFFIC MANAGEMENT PLAN AND PHASING ARE APPROXIMATE (+/-); FIELD ADJUST AS NECESSARY OR AS DIRECTED BY THE ENGINEER.
- L) ENSURE THE OVERSIZE/OVERWEIGHT PERMIT UNIT (919) 733-4740 HAS BEEN ADVISED OF THE ONGOING TRAFFIC OPERATIONS THROUGH THE DIVISION OFFICE.

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REFER TO SHEET TMP-2B FOR DESIGN TABLES



* NOTE: THIS DRAWING IS RECOMMENDED FOR BRIDGE 197 ONLY. FOR BRIDGE 207, USE LEFT LANE CLOSURE WITH SHIFT (SEE SHEET TMP-2A) SO THAT ENTRANCE RAMP FROM REST AREA CAN MERGE INTO RIGHT LANE TRAFFIC AS USUAL. IF THIS DRAWING IS USED FOR BRIDGE 207, REFER TO ROADWAY STD. DRAWING 1101.02 SHEET 6 OF 9 FOR RIGHT LANE CLOSURE THRU ENTRANCE RAMP.

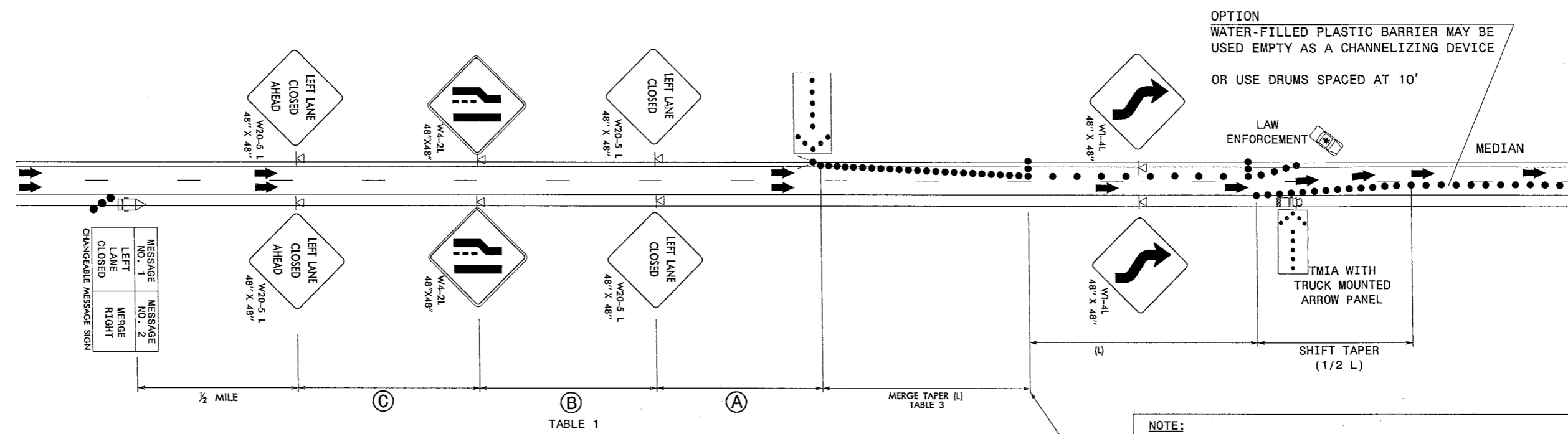
NOTES

1. INSTALL LANE CLOSURES WITH THE TRAFFIC FLOW, BEGINNING WITH DEVICES ON THE UPSTREAM SIDE OF TRAFFIC. REMOVE LANE CLOSURES AGAINST THE TRAFFIC FLOW, BEGINNING WITH DEVICES ON THE DOWNSTREAM SIDE OF TRAFFIC.
2. STATIONARY SIGNS SHOULD BE USED IF THE LANE CLOSURE WILL BE IN PLACE FOR LONGER THAN 3 CONSECUTIVE DAYS.
3. SIGNS ARE NOT REQUIRED ON THE LEFT SIDE OF THE ROADWAY WHEN THERE IS NOT ENOUGH ROOM FOR PLACEMENT. AT CONCRETE BARRIER LOCATIONS CLAMP ATTACHMENTS AND SMALLER SIGNS MAY BE USED.
4. PLACE ARROW PANELS ON THE SHOULDER. IF SHOULDERS DO NOT EXIST, PLACE ARROW PANELS WITHIN THE MERGE TAPER BEHIND THE CHANNELIZING DEVICES OF THE LANE CLOSURE. IF NEEDED, EXTEND LANE CLOSURES TO PROVIDE STOPPING SIGHT DISTANCE TO THE ARROW PANEL (TABLE 2).
5. PLACE LANE CLOSURE DRUMS IN TAPERS AT A MAXIMUM SPACING EQUAL IN FEET TO THE POSTED SPEED LIMIT (MPH). ALONG BUFFER SPACES AND WORK AREAS SPACE DRUMS AT A MAXIMUM SPACING EQUAL IN FEET TO TWICE THE POSTED SPEED LIMIT (MPH). IN ALL CASES, CHANNELIZING DEVICES ARE TO BE SPACED IN SUCH A MANNER AS TO POSITIVELY ACHIEVE THE INTENDED VISUAL CHANNELIZATION. CHANNELIZING DEVICES SHOULD BE LATERALLY OFFSET 3 FT INSIDE THE CLOSED LANE AS ROOM PERMITS.
6. TMIA'S ARE REQUIRED ONLY WHEN A BUFFER SPACE CANNOT BE ATTAINED, OR WHEN DIRECTED BY THE ENGINEER OR THE PLANS. POSITION THE TMIA TO MAINTAIN A ROLL-AHEAD DISTANCE AS RECOMMENDED BY THE MANUFACTURER. IF A TMIA IS USED IN CONJUNCTION WITH A BUFFER SPACE THEN ONLY THE AREA IN FRONT OF THE TMIA IS THE BUFFER SPACE.
7. PLACE CHANGEABLE MESSAGE SIGN (CMS) ON THE OUTSIDE OF THE TRAVELWAY OR AS DIRECTED BY THE ENGINEER. PLACE CMS APPROXIMATELY 1/2 MILE IN ADVANCE OF THE W20-5 SIGNS. IF TRAFFIC BACKS UP TO WHERE THE CMS IS INITIALLY PLACED, RELOCATE CMS 1/2 MILE FROM ANTICIPATED BACKUP. CONTINUE TO MONITOR TRAFFIC AND MOVE CMS APPROXIMATELY 1/2 MILE IN CONJUNCTION WITH ANTICIPATED BACKUP.
8. 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, REMOVE LANE CLOSURE DEVICES, COVER OR LAY DOWN SIGNS, AND TURN OFF ARROW PANEL AND MESSAGE BOARDS.

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LEFT LANE CLOSURE WITH SHIFT FOR RIGHT LANE WORK AREA



NOTES

1. THIS DRAWING SHOULD ONLY BE USED WHEN THERE IS ENOUGH DISTANCE BETWEEN THE BRIDGE AND RAMP GORE TO INCORPORATE A TRAFFIC SHIFT AND PROVIDE ENOUGH BUFFER SPACE TO EQUIPMENT. IT IS INTENDED FOR OPERATIONS THAT WILL REQUIRE BOTH LEFT AND RIGHT LANE WORK AREAS DURING THE SAME WORK PERIOD. A LEFT LANE CLOSURE IS ALWAYS USED. WHEN THE WORK AREA IS IN THE RIGHT LANE, USE PACE VEHICLE(S) TO STOP TRAFFIC FOR NO LONGER THAN 5 MINUTES AND INSTALL A SHIFT TAPER AND W1-4L SIGNS DIRECTING TRAFFIC TO THE LEFT LANE AS SHOWN.
2. INSTALL LANE CLOSURES WITH THE TRAFFIC FLOW, BEGINNING WITH DEVICES ON THE UPSTREAM SIDE OF TRAFFIC. REMOVE LANE CLOSURES AGAINST THE TRAFFIC FLOW, BEGINNING WITH DEVICES ON THE DOWNSTREAM SIDE OF TRAFFIC.
3. STATIONARY SIGNS SHOULD BE USED IF THE LANE CLOSURE WILL BE IN PLACE FOR LONGER THAN 3 CONSECUTIVE DAYS.
4. SIGNS ARE NOT REQUIRED ON THE LEFT SIDE OF THE ROADWAY WHEN THERE IS NOT ENOUGH ROOM FOR PLACEMENT. AT CONCRETE BARRIER LOCATIONS CLAMP ATTACHMENTS AND SMALLER SIGNS MAY BE USED.
5. PLACE ARROW PANELS ON THE SHOULDER. IF SHOULDERS DO NOT EXIST, PLACE ARROW PANELS WITHIN THE MERGE TAPER BEHIND THE CHANNELIZING DEVICES OF THE LANE CLOSURE. IF NEEDED, EXTEND LANE CLOSURES TO PROVIDE STOPPING SIGHT DISTANCE TO THE ARROW PANEL (TABLE 2).
6. PLACE LANE CLOSURE DRUMS IN TAPERS AT A MAXIMUM SPACING EQUAL IN FEET TO THE POSTED SPEED LIMIT (MPH). ALONG BUFFER SPACES AND WORK AREAS SPACE DRUMS AT A MAXIMUM SPACING EQUAL IN FEET TO TWICE THE POSTED SPEED LIMIT (MPH). IN ALL CASES, CHANNELIZING DEVICES ARE TO BE SPACED IN SUCH A MANNER AS TO POSITIVELY ACHIEVE THE INTENDED VISUAL CHANNELIZATION. CHANNELIZING DEVICES SHOULD BE LATERALLY OFFSET 3 FT INSIDE THE CLOSED LANE AS ROOM PERMITS.
7. TMIA'S ARE REQUIRED ONLY WHEN A BUFFER SPACE CANNOT BE ATTAINED, OR WHEN DIRECTED BY THE ENGINEER OR THE PLANS. POSITION THE TMIA TO MAINTAIN A ROLL-AHEAD DISTANCE AS RECOMMENDED BY THE MANUFACTURER. IF A TMIA IS USED IN CONJUNCTION WITH A BUFFER SPACE THEN ONLY THE AREA IN FRONT OF THE TMIA IS THE BUFFER SPACE.
8. PLACE CHANGEABLE MESSAGE SIGN (CMS) ON THE OUTSIDE OF THE TRAVELWAY AS DIRECTED BY THE ENGINEER. PLACE CMS APPROXIMATELY 1/2 MILE IN ADVANCE OF THE W20-5 SIGNS. IF TRAFFIC BACKS UP TO WHERE THE CMS IS INITIALLY PLACED, RELOCATE CMS 1/2 MILE FROM ANTICIPATED BACKUP. CONTINUE TO MONITOR TRAFFIC AND MOVE CMS APPROXIMATELY 1/2 MILE IN CONJUNCTION WITH ANTICIPATED BACKUP.
9. 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, REMOVE LANE CLOSURE DEVICES, COVER OR LAY DOWN SIGNS, AND TURN OFF ARROW PANEL AND MESSAGE BOARDS.

FOR BRIDGE 207, THIS POINT WILL BE THE BACK OF RAMP GORE FOR THE REST AREA ENTRANCE RAMP, OR FURTHER UPSTREAM AS APPROPRIATE.

NOTE:
THIS DRAWING IS INTENDED ESPECIALLY FOR BRIDGE 207 TO FACILITATE THE MERGING OF TRAFFIC ENTERING I-77 FROM THE REST AREA. THIS DRAWING MAY ALSO BE USED FOR LANE CLOSURES ON I-77 UNDER BRIDGE 197, TO FACILITATE SWITCHES BETWEEN LEFT AND RIGHT LANE CLOSURES.

NOTE:
FOR LEFT LANE WORK AREA REMOVE SHIFT TAPER, W1-4L SIGNS AND TMIA AND KEEP TRAFFIC IN RIGHT LANE (SEE SHEET TMP-2, TOP HALF)

REFER TO SHEET TMP-2B
FOR DESIGN TABLES

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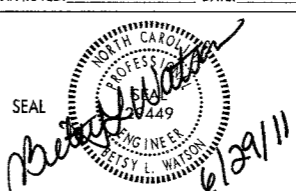

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TABLE 1
ADVANCE WARNING SIGN SPACING

ROAD TYPE & POSTED SPEED LIMIT (MPH)	DISTANCE BETWEEN SIGNS (FEET)		
	(A)	(B)	(C)
URBAN ≤ 35	100	100	100
RURAL ≤ 35	200	200	200
40-50	350	350	350
55	500	500	500
CONTROLLED ACCESS ROADS (≥ 55)	1000	1500	2700

SIGN SPACING DISTANCES ARE RECOMMENDED AND APPROXIMATE. THESE DISTANCES SHOULD BE ADJUSTED FOR FIELD CONDITIONS, BY INCREASING OR DECREASING THE RECOMMENDED DISTANCES.

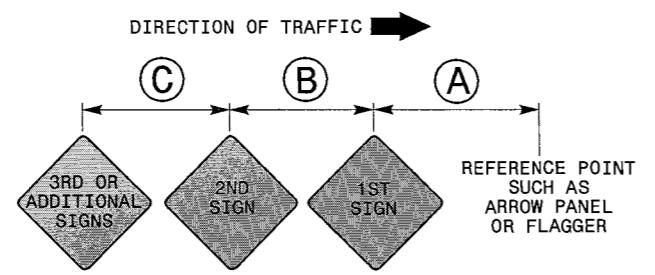


TABLE 2

POSTED SPEED LIMIT (MPH)	LONGITUDINAL BUFFER SPACE & STOPPING SIGHT DISTANCE (FEET)
20	115
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645
70	730

TAPER LENGTHS FOR CHANNELIZING DEVICES & PAVEMENT MARKINGS

TYPE OF TAPER	TAPER LENGTH
MERGE	L
SHIFT	1/2 L
SHOULDER	1/3 L
DOWNSTREAM (OPTIONAL)	100' PER LANE
ONE-LANE, TWO-WAY TRAFFIC	50'-100'

M.U.T.C.D. FORMULAS FOR TAPER LENGTH OF CHANNELIZING DEVICES AND PAVEMENT MARKINGS:

SPEED LIMIT (S) TAPER LENGTH (L) IN FEET

40 MPH OR LESS $L = W \times S$

45 MPH OR GREATER $L = \frac{W \times S^2}{60}$

L = TAPER LENGTH (FEET)

W = OFFSET WIDTH (FEET)

S = POSTED SPEED LIMIT, OFF-PEAK 85 PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED (MPH)

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

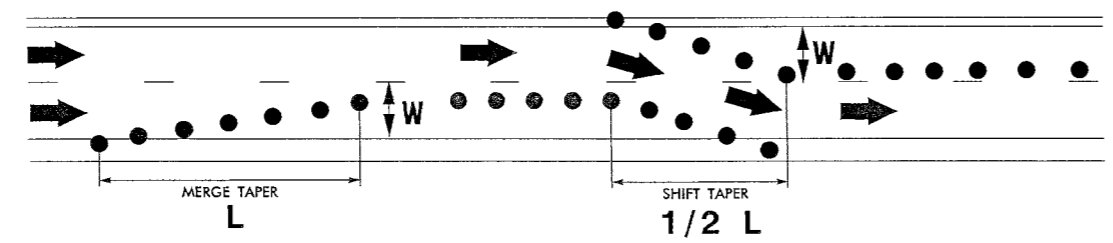


TABLE 3
TAPER (L)

OFFSET WIDTH (FEET) W	1	2	3	4	5	6	7	8	9	10	11	12
POSTED SPEED (MPH) S	MINIMUM TAPER (L) LENGTH (FEET)											
20	10	15	20	30	35	40	50	55	60	70	75	80
25	15	25	35	45	55	65	75	85	95	105	115	125
30	15	30	45	60	75	90	105	120	135	150	165	180
35	25	45	65	85	105	125	145	165	185	205	225	245
40	30	55	80	110	135	160	190	215	240	270	295	320
45	45	90	135	180	225	270	315	360	405	450	495	540
50	50	100	150	200	250	300	350	400	450	500	550	600
55	55	110	165	220	275	330	385	440	495	550	605	660
60	60	120	180	240	300	360	420	480	540	600	660	720
65	65	130	195	260	325	390	455	520	585	650	715	780
70	70	140	210	280	350	420	490	560	630	700	770	840

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NOTE:
 DURING PERIODS WHEN LANE CLOSURES ARE NOT IN EFFECT, THE CHANGEABLE MESSAGE SIGNS MAY BE USED TO INFORM THE PUBLIC OF UPCOMING TRAFFIC CONDITIONS. SOME EXAMPLE MESSAGES ARE SHOWN BELOW. ALL PUBLIC INFO USE, LOCATIONS AND MESSAGES ARE TO BE APPROVED BY THE ENGINEER.

MESSAGE NO. 1	MESSAGE NO. 2
LANE CLOSURES TUESDAY	PLAN FOR DELAYS
CHANGEABLE MESSAGE SIGN	

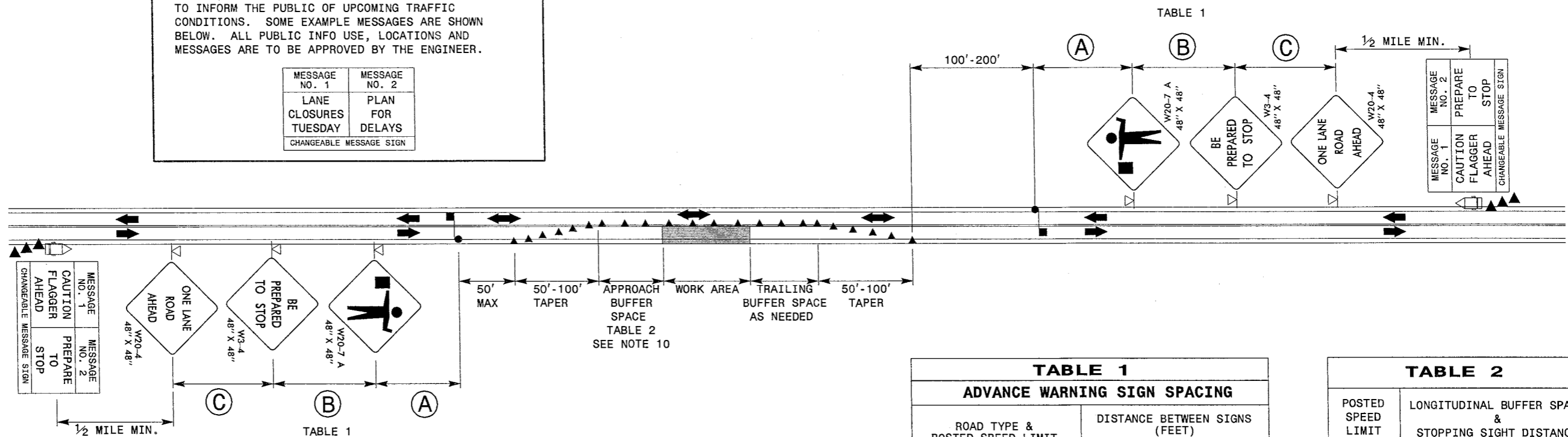


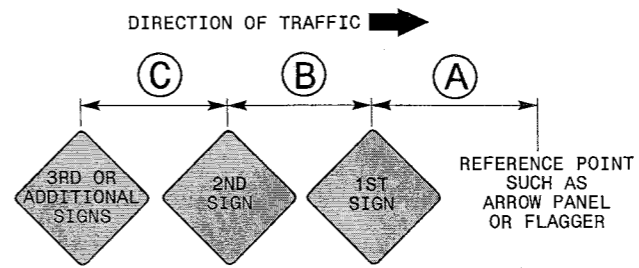
TABLE 1
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TABLE 2

POSTED SPEED LIMIT (MPH)	LONGITUDINAL BUFFER SPACE & STOPPING SIGHT DISTANCE (FEET)
20	115
25	155
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35	250
40	305
45	360
50	425
55	495
60	570
65	645
70	730

SIGN SPACING DISTANCES ARE RECOMMENDED AND APPROXIMATE. THESE DISTANCES SHOULD BE ADJUSTED FOR FIELD CONDITIONS, BY INCREASING OR DECREASING THE RECOMMENDED DISTANCES.



NOTES

- INSTALL LANE CLOSURES WITH THE TRAFFIC FLOW, BEGINNING WITH DEVICES ON THE UPSTREAM SIDE OF TRAFFIC. REMOVE LANE CLOSURES AGAINST THE TRAFFIC FLOW, BEGINNING WITH DEVICES ON THE DOWNSTREAM SIDE OF TRAFFIC.
- PLACE CHANNELIZING DEVICES THRU THE WORK AREA AT THE MAXIMUM SPACING EQUAL IN FEET TO 2 TIMES THE POSTED SPEED LIMIT.
- DRUMS OR SKINNY DRUM CHANNELIZING DEVICES MAY BE USED INSTEAD OF CONES.
- IF THE TRAVELWAY WIDTH IS 22' OR LESS, OR IF A PILOT CAR IS USED, CHANNELIZING DEVICES MAY NOT BE REQUIRED ALONG THE WORK AREA. CHANNELIZING DEVICES ARE ALWAYS REQUIRED IN THE TWO-WAY TRAFFIC TAPER AND DOWNSTREAM TAPER.
- DO NOT INSTALL MORE THAN ONE (1) MILE OF LANE CLOSURE, MEASURED FROM THE BEGINNING OF THE TWO-WAY TRAFFIC TAPER TO THE END OF THE LANE CLOSURE.
- EXTEND LANE CLOSURES SUCH THAT STOPPING SIGHT DISTANCE IS PROVIDED TO THE FLAGGER. (SEE TABLE 2)
- DO NOT STOP TRAFFIC IN ANY ONE DIRECTION FOR MORE THAN 5 MINUTES AT A TIME.
- USE FLAGGERS TO CONTROL TRAFFIC AT INTERSECTIONS AFFECTED BY THE LANE CLOSURE. SUPPLEMENT FLAGGERS LOCATED AT INTERSECTIONS WITH FLAGGER AHEAD SIGNS (W20-7a) PLACED APPROXIMATELY 250 FT. IN ADVANCE OF THE FLAGGER. WHERE INTERSECTIONS ARE SIGNALIZED PLACE SIGNALS IN THE FLASH MODE, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
- FLAGGERS SHALL NOT STAND IN A LANE USED BY MOVING TRAFFIC. FLAGGERS SHALL STAND ON THE SHOULDER, WITHIN A CLOSED LANE, OR IN A LANE ONLY ONCE TRAFFIC IS STOPPED. DO NOT LOCATE FLAGGER STATIONS ON A BRIDGE. EXTEND THE LANE CLOSURE AS NEEDED SUCH THAT THE FLAGGER STATIONS ARE LOCATED OFF A BRIDGE.
- REFER TO TABLE 2 FOR APPROACH BUFFER SPACE. IF THE APPROACH END BUFFER SPACE CANNOT BE ATTAINED USE A TMIA.
- USE THE PILOT CAR METHOD WHEN DIRECTED BY THE ENGINEER. MOUNT SIGN G20-4 "PILOT CAR FOLLOW ME" AT A VISIBLE LOCATION ON THE REAR OF THE PILOT VEHICLE.
- ADVISE RESIDENTS AND BUSINESSES WITHIN OR NEAR THE LANE CLOSURE LIMITS ABOUT METHODS OF SAFE EGRESS AND INGRESS FROM DRIVEWAYS DURING LANE CLOSURE OPERATIONS.
- CHANGEABLE MESSAGE SIGN MESSAGES SHOWN ARE EXAMPLES. OTHER MESSAGES MAY BE USED AS CONDITIONS WARRANT. ALL MESSAGES AND LOCATIONS MUST BE APPROVED BY THE ENGINEER PRIOR TO INCORPORATING. ADDITIONAL MESSAGES MAY BE REQUIRED SUCH AS FOR PUBLIC INFORMATION OR DURING SPECIAL EVENTS.

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SEAL

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

**FLAGGER CONTROLLED
 LANE CLOSURE
 2-LANE, 2-WAY ROADWAY**

TRAFFIC CONTROL PHASING

DO NOT INSTALL LANE CLOSURES ON I-77 AT BOTH BRIDGE LOCATIONS SIMULTANEOUSLY

BRIDGE #207 I-77 SOUTHBOUND OVER ROCKY CREEK


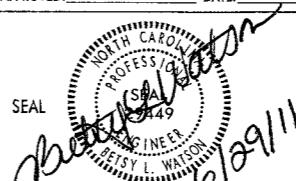
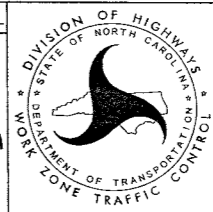
PERFORM BRIDGE WORK ON I-77 SB USING LANE CLOSURES AS SHOWN ON SHEETS TMP-2, 2A AND TMP-2B.

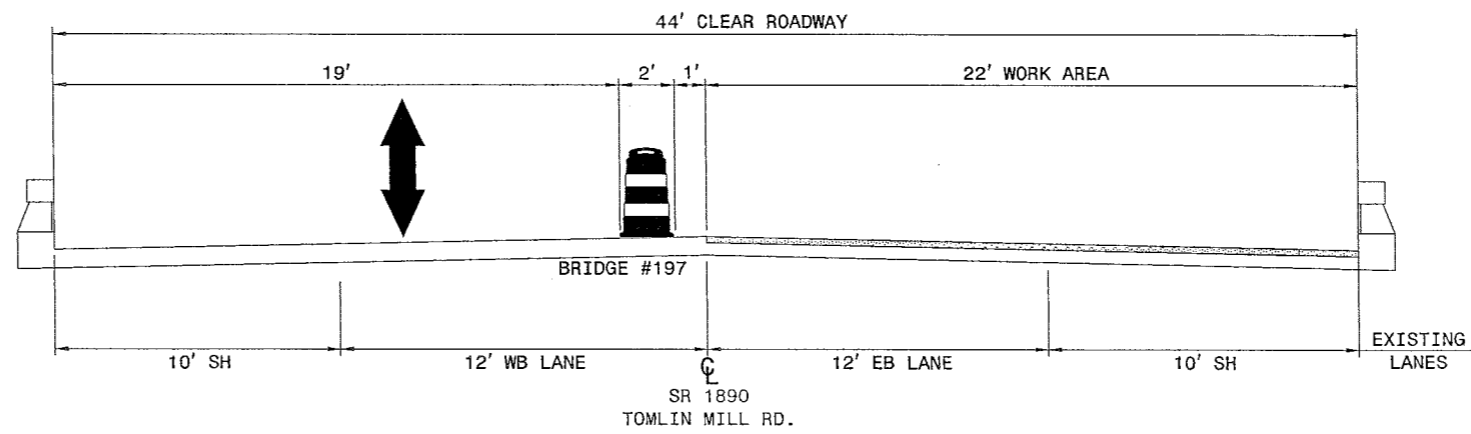
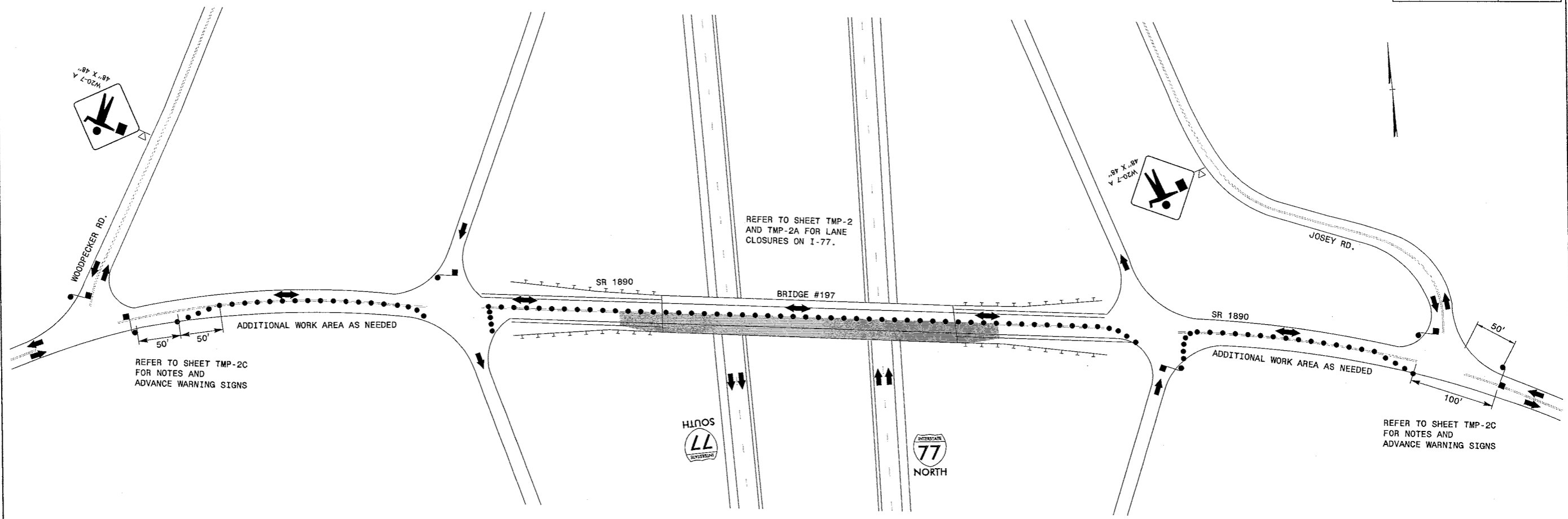
BRIDGE #197 SR 1890 OVER I-77

PERFORM BRIDGE WORK ON SR 1890 USING FLAGGER CONTROLLED LANE CLOSURES AS SHOWN ON SHEETS TMP-2C, TMP-4 AND 5.


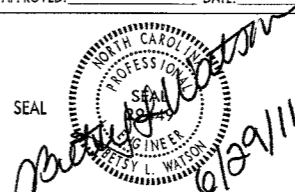

DURING HYDRO-DEMOLITION OPERATIONS, OR WHEN THERE MAY BE FALLING DEBRIS, USE LANE CLOSURES ON I-77 AS SHOWN ON SHEET TMP-2A.

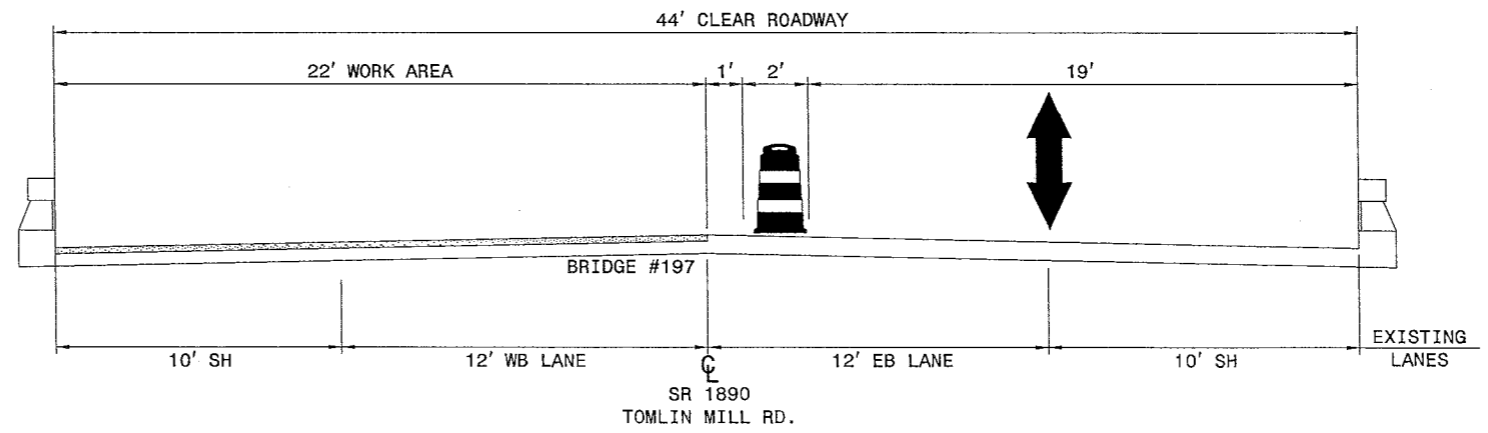
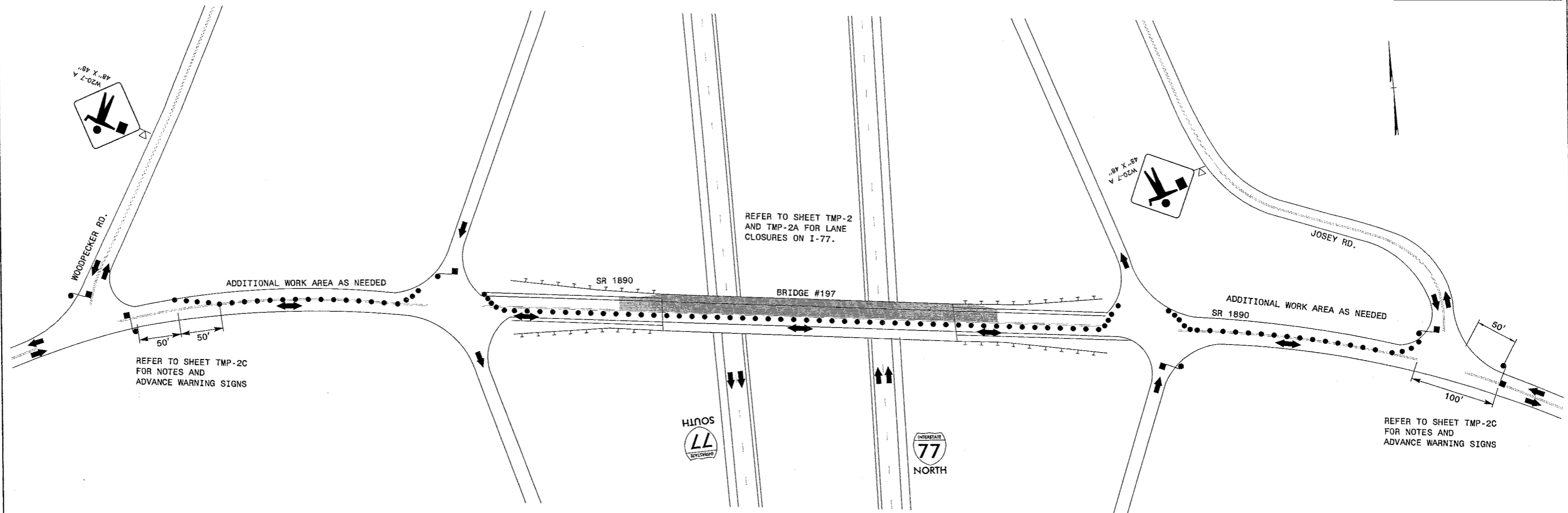
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	DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION WORK ZONE TRAFFIC CONTROL		



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