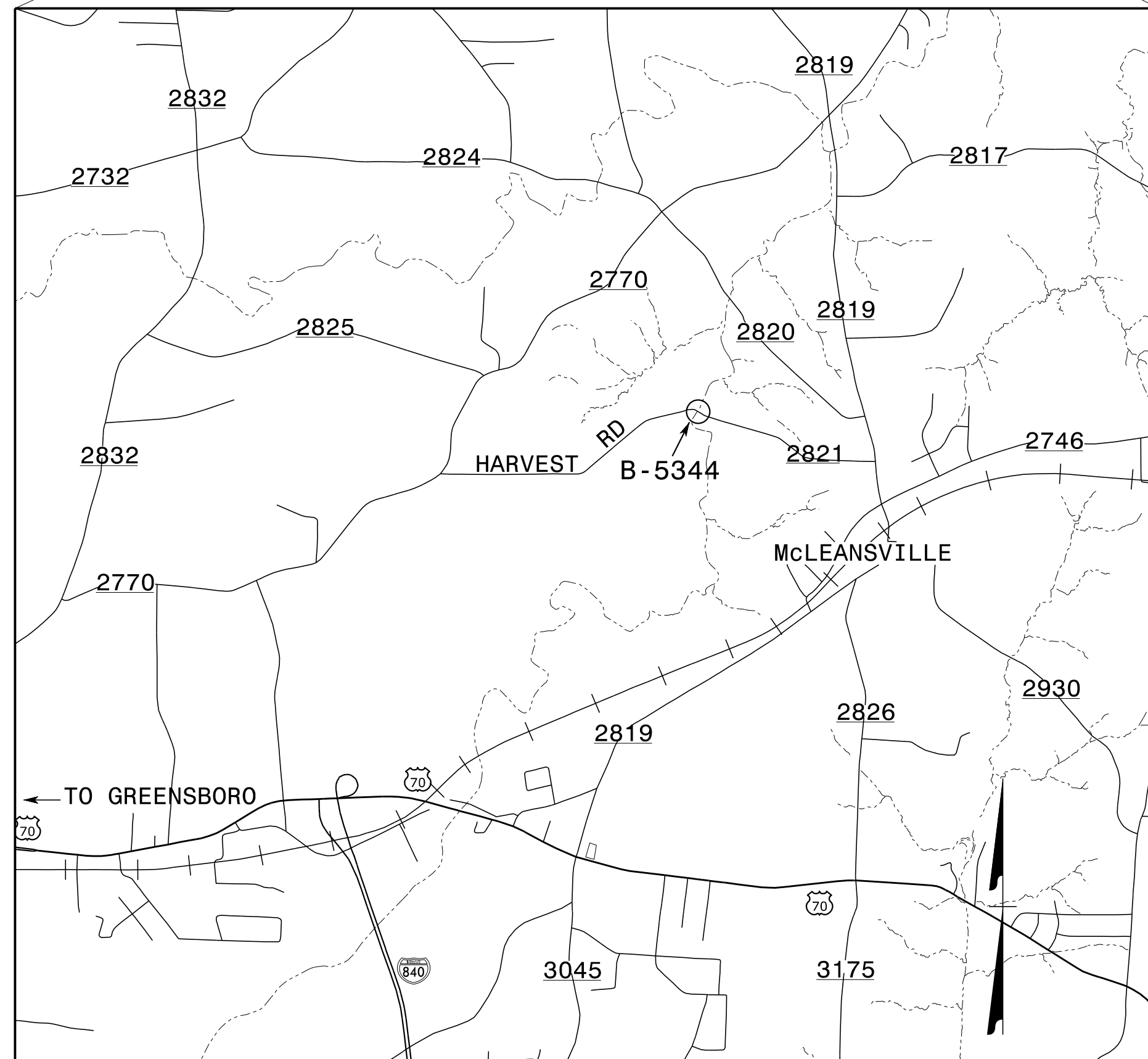
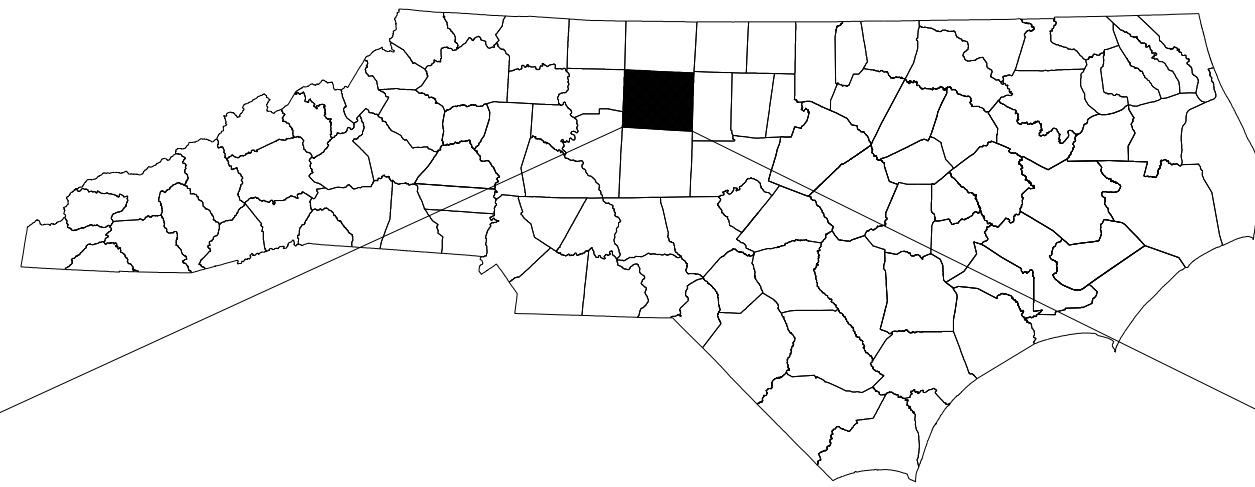


STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

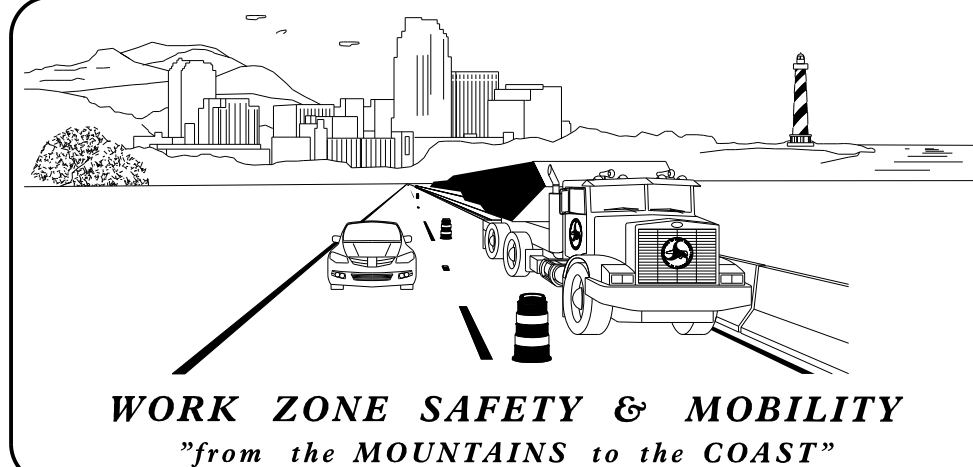
**TRANSPORTATION MANAGEMENT PLAN**

**GUILFORD COUNTY**



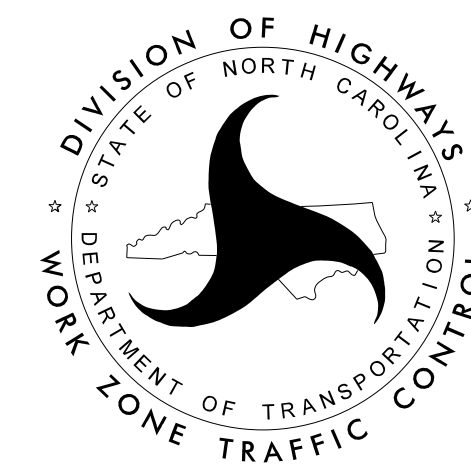
**VICINITY MAP**

LOCATION: BRIDGE NO. 161 OVER SOUTH BUFFALO CREEK ON SR 2821 (HARVEST ROAD)  
TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE



**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, PE STATE TRAFFIC MANAGEMENT ENGINEER  
DAVID BISSETTE, PE TRAFFIC CONTROL PROJECT ENGINEER  
HELEN SHYU, PE TRAFFIC CONTROL PROJECT DESIGN ENGINEER  
KARMEN DAIS TRAFFIC CONTROL DESIGN ENGINEER



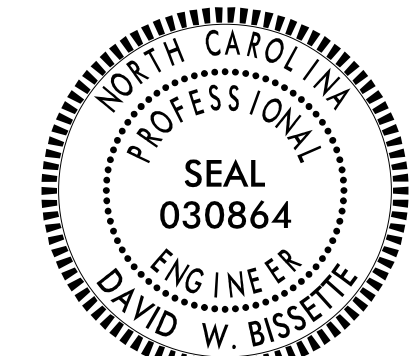
**INDEX OF SHEETS**

SHEET NO.	TITLE
TMP-1	TITLE SHEET, VICINITY MAP, AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS AND LEGEND
TMP-1B	TRANSPORTATION OPERATIONS PLAN: MANAGEMENT STRATEGIES AND GENERAL NOTES
TMP-2	PORTABLE CONCRETE BARRIER AT TEMPORARY SHORING LOCATIONS
TMP-2A	TEMPORARY SHORING DATA
TMP-2B	SPECIAL SIGN DESIGN
TMP-2C	ROAD CLOSURE AND OFFSITE DETOUR ROUTE
TMP-3	PHASING AND LOCAL NOTES
TMP-4	PHASE I
TMP-5	PHASE II (STEPS 1-3)
TMP-6	PHASE II (STEPS 4-8)

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APPROVED: David Bisette  
DATE: 2/13/2016

SEAL



SHEET NO.  
TMP-1

**B-5344**

**TIP PROJECT:**

# ROADWAY STANDARD DRAWINGS

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

STD. NO.	TITLE
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1115.01	FLASHING ARROW BOARDS
1130.01	DRUM
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1160.01	TEMPORARY CRASH CUSHION
1165.01	WORK VEHICLE LIGHTING SYSTEMS AND TMA DELINEATION
1170.01	POSITIVE PROTECTION
1180.01	SKINNY-DRUM
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTI-LANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - PERMANENT AND TEMPORARY
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION
1264.01	OBJECT MARKERS - TYPES
1264.02	OBJECT MARKERS - INSTALLATION

# LEGEND

## GENERAL

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

## SIGNALS

- EXISTING
- PROPOSED
- TEMPORARY

## PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

## TRAFFIC CONTROL DEVICES

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

## TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

## PAVEMENT MARKERS

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

## PAVEMENT MARKING SYMBOLS

- PAVEMENT MARKING SYMBOLS

## TEMPORARY PAVEMENT MARKING

### 4" PAINT

- PA WHITE EDGELINE
- PB YELLOW EDGELINE
- PI YELLOW DOUBLE CENTER LINE

### 24" PAINT

- P2 WHITE STOP BAR

### MARKERS

- MH YELLOW/YELLOW RAISED

APPROVED:   
DocuSigned by: David Bissette  
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DATE: 2/1/2016

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ROADWAY STANDARD  
DRAWINGS AND LEGEND

## MANAGEMENT STRATEGIES

RECOMMENDED MANAGEMENT STRATEGIES RELATIVE TO THIS TMP ARE AS FOLLOWS:

TWO LANE / TWO WAY TRAFFIC:

TRAFFIC WILL BE MAINTAINED ON EXISTING SR 2821 (HARVEST ROAD) DURING PHASE I.

ONE-LANE / TWO-WAY TRAFFIC (SHORT DURATION):

TRAFFIC WILL BE MAINTAINED BY LANE CLOSURES AND FLAGGERS TO COMPLETE TRAFFIC SHIFTS, PAVEMENT TIE-INS, FINAL LAYER OF SURFACE COURSE AND PAVEMENT MARKINGS

ONE-LANE / TWO-WAY TRAFFIC (LONGER THAN 24 HOURS):

TRAFFIC WILL BE MAINTAINED BY TWO TEMPORARY TRAFFIC SIGNALS.

FULL ROAD CLOSURE (WEEKEND DURATION):

TRAFFIC WILL BE MAINTAINED OFF-SITE ON THE FOLLOWING ROUTE: SR 2819-MCLEANSVILLE ROAD TO SR 2820-DICKS MILL ROAD TO SR 2770-HUFFINE MILL ROAD

## 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 UNDESIRABLE OVERLAPPING OF DEVICES. MODIFICATION 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 CONSTRUCTION PROJECT EXCEPT WHEN OTHERWISE NOTED IN THE PLAN OR DIRECTED BY THE ENGINEER.

LANE AND SHOULDER CLOSURE REQUIREMENTS

- A) 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.
- B) 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.
- C) 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.
- D) 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.
- E) DO NOT WORK SIMULTANEOUSLY WITHIN 15 FT ON BOTH SIDES OF AN OPEN TRAVELWAY, RAMP, OR LOOP WITHIN THE SAME LOCATION UNLESS PROTECTED WITH GUARDRAIL OR BARRIER.

PAVEMENT EDGE DROP OFF REQUIREMENTS

F) BACKFILL AT 6:1 SLOPE UP TO THE EDGE AND ELEVATION OF EXISTING PAVEMENT IN AREAS ADJACENT TO AN OPENED 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.

G) 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) 350 FT IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

TRAFFIC PATTERN ALTERATIONS

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

SIGNING

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

J) 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.

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

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

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

M) INSTALL BLACK ON ORANGE "DIP" SIGNS (W8-2) AND/OR "BUMP" SIGNS (W8-1) 350 FT IN ADVANCE OF THE UNEVEN AREA, OR AS DIRECTED BY THE ENGINEER.

TRAFFIC BARRIER

N) INSTALL TEMPORARY BARRIER ACCORDING TO THE TRANSPORTATION MANAGEMENT PLANS A MAXIMUM OF TWO (2) WEEKS PRIOR TO BEGINNING WORK IN ANY LOCATION. ONCE TEMPORARY BARRIER IS INSTALLED AT ANY LOCATION PROCEED IN A CONTINUOUS MANNER TO COMPLETE THE PROPOSED WORK IN THAT LOCATION UNLESS OTHERWISE STATED IN THE TRANSPORTATION MANAGEMENT PLANS OR AS DIRECTED BY THE ENGINEER.

DO NOT PLACE BARRIER DIRECTLY ON ANY SURFACE OTHER THAN ASPHALT OR CONCRETE.

ONCE TEMPORARY BARRIER IS INSTALLED AT ANY LOCATION AND NO WORK IS PERFORMED BEHIND THE TEMPORARY BARRIER FOR A PERIOD LONGER THAN TWO (2) MONTHS, REMOVE/RESET TEMPORARY BARRIER AT NO COST TO THE DEPARTMENT UNLESS OTHERWISE STATED IN THE TRANSPORTATION MANAGEMENT PLANS, TEMPORARY BARRIER IS PROTECTING A HAZARD, OR AS DIRECTED BY THE ENGINEER.

INSTALL TEMPORARY BARRIER WITH THE TRAFFIC FLOW BEGINNING WITH THE UPSTREAM SIDE OF TRAFFIC. REMOVE TEMPORARY BARRIER AGAINST THE TRAFFIC FLOW BEGINNING WITH THE DOWNSTREAM SIDE OF TRAFFIC.

INSTALL AND SPACE DRUMS NO GREATER THAN TWICE THE POSTED SPEED LIMIT (MPH) TO CLOSE OR KEEP THE SECTION OF THE ROADWAY CLOSED UNTIL THE TEMPORARY BARRIER CAN BE PLACED OR AFTER THE TEMPORARY BARRIER IS REMOVED.

O) PROTECT THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER AT ALL TIMES DURING THE INSTALLATION AND REMOVAL OF THE BARRIER BY EITHER A TRUCK MOUNTED ATTENUATOR (MAXIMUM 72 HOURS) OR A TEMPORARY CRASH CUSHION.

PROTECT THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER FROM ONCOMING TRAFFIC AT ALL TIMES BY A TEMPORARY CRASH CUSHION UNLESS THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER IS OFFSET FROM ONCOMING TRAFFIC AS FOLLOWS OR AS SHOWN ON THE PLANS: (SEE ALSO 1101.05)

POSTED SPEED LIMIT	MINIMUM OFFSET
40MPH OR LESS	15 FT
45-50	20 FT
55	25 FT
60MPH OR HIGHER	30 FT

TRAFFIC CONTROL DEVICES

P) 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.

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

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

PAVEMENT MARKINGS AND MARKERS

S) INSTALL TEMPORARY PAVEMENT MARKINGS AND TEMPORARY PAVEMENT MARKER ON INTERIM LAYERS OF PAVEMENT AS FOLLOWS:

ROAD NAME	MARKING	MARKER
-L- SR 2821 (HARVEST ROAD)	PAINT	TEMP RAISED


T) PLACE ONE APPLICATION OF PAINT FOR TEMPORARY TRAFFIC PATTERNS. PLACE A SECOND APPLICATION OF PAINT SIX (6) MONTHS AFTER THE INITIAL APPLICATION AND EVERY SIX MONTHS AS DIRECTED BY THE ENGINEER.

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

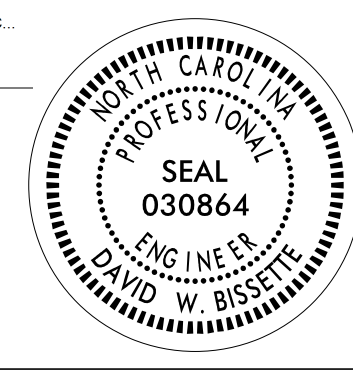
V) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.

MISCELLANEOUS

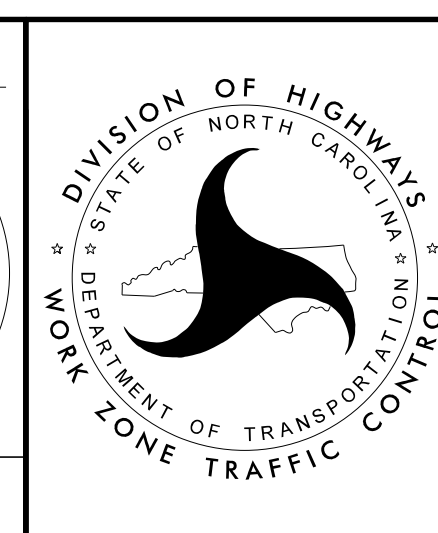
W) IN THE EVENT A TIE-IN CANNOT BE MADE IN ONE DAY'S TIME, BRING THE TIE IN AREA TO AN APPROPRIATE ROADWAY ELEVATION AS DETERMINED BY THE ENGINEER. PLACE BLACK ON ORANGE "LOOSE GRAVEL" SIGNS (W8-7) AND BLACK ON ORANGE "PAVEMENT ENDS" SIGNS (W8-3) AND RESPECTIVELY IN ADVANCE OF THE UNEVEN AREAS. USE DRUMS TO DELINEATE THE EDGE OF THE ROADWAY ALONG UNPAVED AREAS.

APPROVED:   
DocuSigned by:  
David Bisette  
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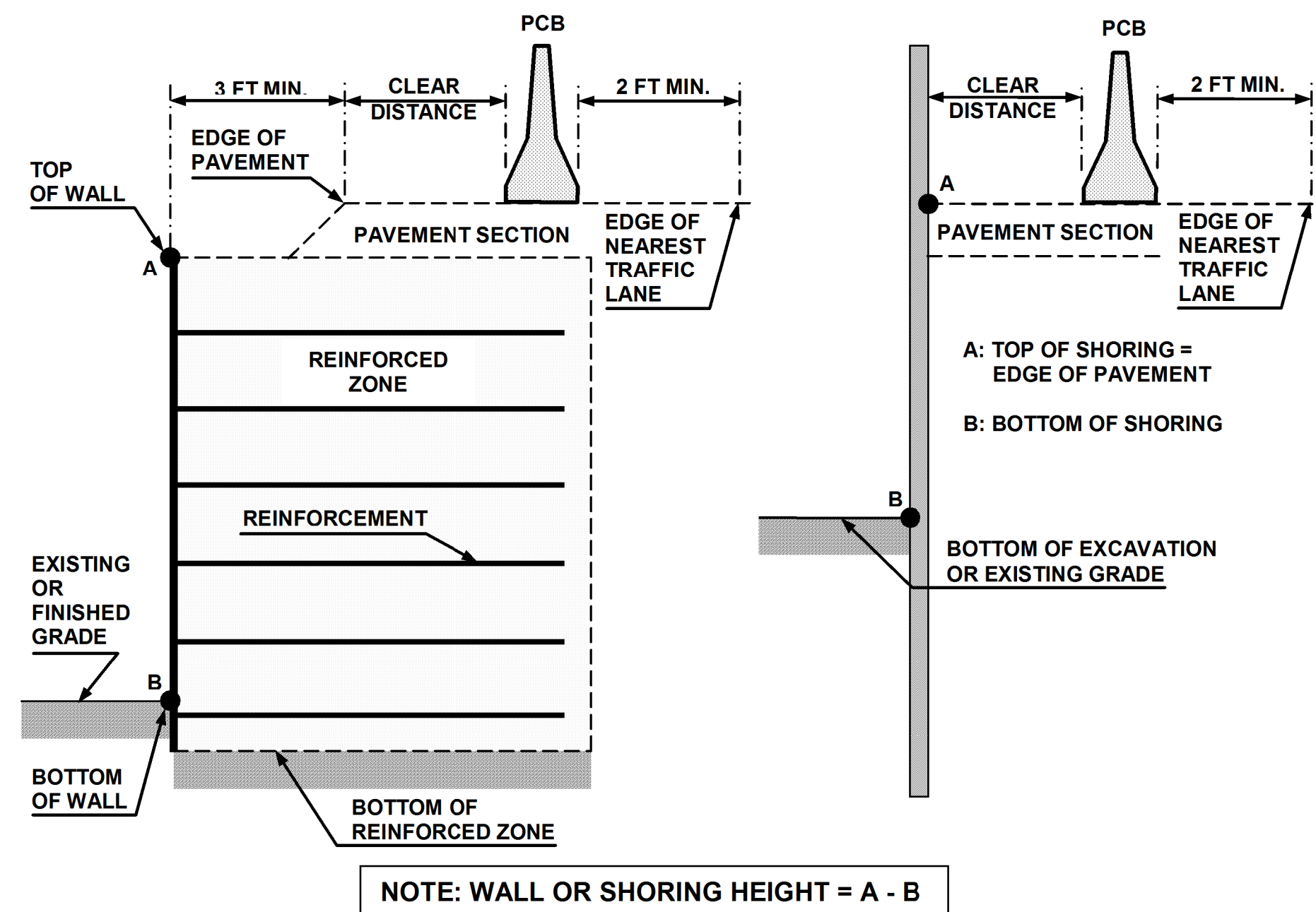
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**TRANSPORTATION  
OPERATIONS PLAN:  
MANAGEMENT STRATEGIES  
AND GENERAL NOTES**



## FIGURE A

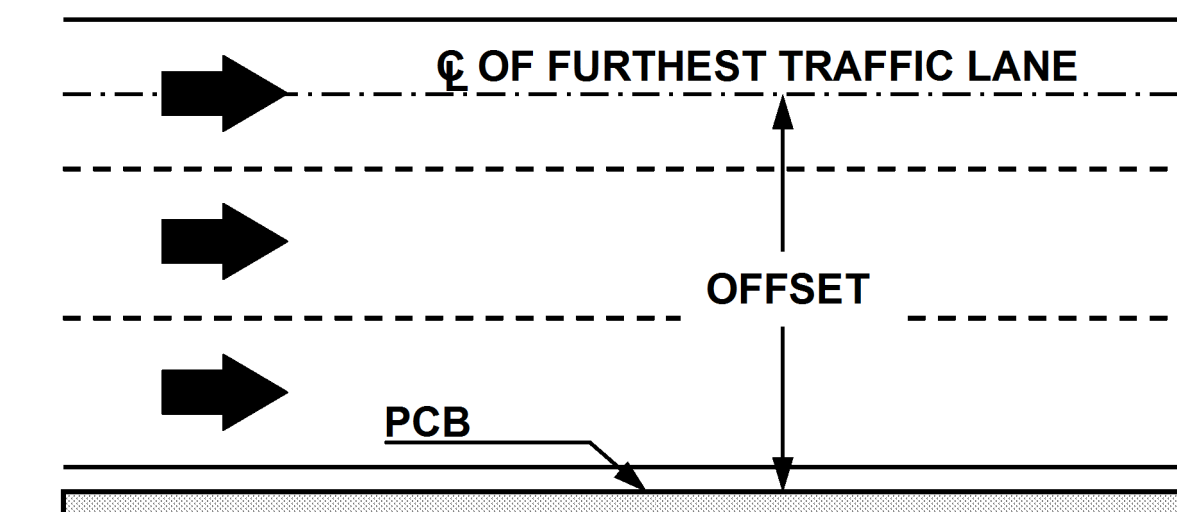
### NOTES

- REFER TO THE TRAFFIC CONTROL PLANS FOR TEMPORARY SHORING LOCATIONS AND NOTES.
- REFER TO THE "TEMPORARY SHORING" PROJECT SPECIAL PROVISION FOR INFORMATION ABOUT TEMPORARY SHORING AND PORTABLE CONCRETE BARRIER (PCB).
- PCB IS REQUIRED IF TEMPORARY SHORING IS LOCATED WITHIN THE CLEAR ZONE IN ACCORDANCE WITH THE AASHTO ROADSIDE DESIGN GUIDE. DO NOT PLACE BARRIER DIRECTLY ON ANY SURFACE OTHER THAN ASPHALT OR CONCRETE. (CONTACT NCDOT PAVEMENT MANAGEMENT UNIT FOR APPLICABLE PAVEMENT DESIGN).
- BASED ON THE CLEAR DISTANCE, OFFSET, DESIGN SPEED AND PAVEMENT TYPE, CHOOSE AN UNANCHORED OR ANCHORED PCB FROM THE TABLE SHOWN IN FIGURE B. CLEAR DISTANCE IS DEFINED AS SHOWN IN FIGURE A AND OFFSET IS DEFINED AS SHOWN IN FIGURE B.
- AT THE CONTRACTOR'S OPTION OR IF THE MINIMUM REQUIRED CLEAR DISTANCE IS NOT AVAILABLE, SET PCB NEXT TO AND UP AGAINST THE TRAFFIC SIDE OF THE TEMPORARY SHORING EXCEPT FOR BARRIER ABOVE TEMPORARY WALLS. PCB WITH THE MINIMUM REQUIRED CLEAR DISTANCE IS REQUIRED ABOVE TEMPORARY WALLS.
- USE NCDOT PORTABLE CONCRETE BARRIER (PCB) IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1170.01 AND SECTION 1170 OF THE STANDARD SPECIFICATIONS.
- PCB REQUIREMENTS FOR TEMPORARY WALLS APPLY TO TEMPORARY MECHANICALLY STABILIZED EARTH (MSE) WALLS AND TEMPORARY SOIL NAIL WALLS.
- SET PCB WITH A MINIMUM HORIZONTAL DISTANCE OF 2 FT BETWEEN THE FRONT FACE OF THE BARRIER AND THE EDGE OF THE NEAREST TRAFFIC LANE AS SHOWN IN FIGURE A UNLESS OTHERWISE SHOWN IN THE PLANS AND OR AS APPROVED BY THE ENGINEER.
- FOR PCB ABOVE AND BEHIND TEMPORARY WALLS, PROVIDE A MINIMUM DISTANCE OF 3 FT BETWEEN THE EDGE OF PAVEMENT AND THE WALL FACE AS SHOWN IN FIGURE A. IF THESE MINIMUM REQUIRED DISTANCES ARE NOT AVAILABLE, CONTACT THE ENGINEER.
- TABLE SHOWN IN FIGURE B IS BASED ON NCDOT RESEARCH PROJECT NO. 2005-010 WITH VEHICLE TYPE USED FOR NCHRP 350 CRASH TESTS. BARRIER DEFLECTIONS AND RESULTING MINIMUM REQUIRED CLEAR DISTANCES MIGHT VARY SIGNIFICANTLY FOR LARGER HEAVIER VEHICLES, RUNS OF BARRIER LESS THAN 200 FT IN LENGTH AND WET OR DRY PAVEMENT.

### MINIMUM REQUIRED CLEAR DISTANCE, inches

Barrier Type	Pavement Type	Offset * ft	Design Speed, mph					
			<30	31-40	41-50	51-60	61-70	71-80
Unanchored PCB	Asphalt	<8	24	26	29	32	36	40
		8-14	26	28	31	35	38	42
		14-20	27	29	34	36	39	43
		20-26	28	31	35	38	40	44
		26-32	29	32	36	39	42	45
		32-38	30	34	38	41	43	46
		38-44	31	34	41	43	45	48
		44-50	31	35	41	43	46	49
		50-56	32	36	42	44	47	50
	>56	32	36	42	45	47	51	
	Concrete	<8	17	18	21	22	25	26
		8-14	19	20	23	25	26	29
		14-20	22	22	24	26	28	31
		20-26	23	24	26	27	30	34
		26-32	24	25	27	28	32	35
		32-38	24	26	27	30	33	36
		38-44	25	26	28	30	34	37
		44-50	26	26	28	32	35	37
50-56		26	26	28	32	35	38	
>56	26	27	29	32	36	38		
Anchored PCB	Asphalt	All Offsets	24 for All Design Speeds					
Anchored PCB	Concrete (including bridge approach slabs)	All Offsets	12 for All Design Speeds					

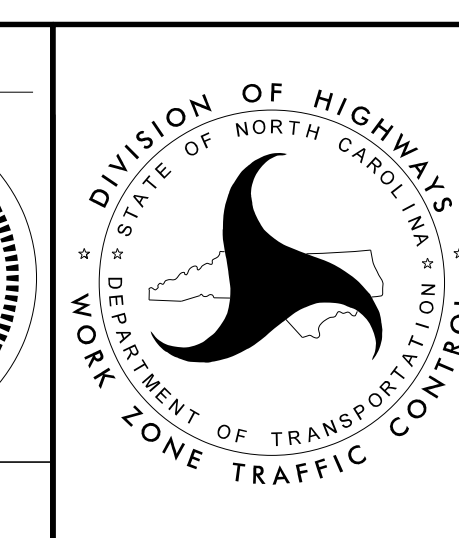
\* See Figure Below



## FIGURE B

APPROVED: *David Bisette*  
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 DATE: 2/1/2016

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PORTABLE CONCRETE  
 BARRIER AT  
 TEMPORARY SHORING  
 LOCATIONS

## TEMPORARY SHORING DATA

**TEMPORARY SHORING LOCATION NO. 1**

FOR TEMPORARY SHORING AND POSITIVE PROTECTION FOR TEMPORARY SHORING, SEE PLANS AND TEMPORARY SHORING PROVISION.

DESIGN TEMPORARY SHORING FROM STATION 17+74.5± -L- TO 17+90.0± -L-, 20.5 FT. TO 25.5 FT. LT OF -L- FOR THE FOLLOWING ASSUMED SOIL PARAMETERS:

UNIT WEIGHT OF SOIL ABOVE WATER TABLE,  $\gamma = 120$  PCF  
 UNIT WEIGHT OF SOIL BELOW WATER TABLE,  $\gamma' = 60$  PCF  
 FRICTION ANGLE,  $\phi = 30$   
 COHESION,  $c = 0$  PSF  
 GROUNDWATER ELEVATION = 668 FT.±

BEFORE BEGINNING TEMPORARY SHORING DESIGN OR CONSTRUCTION, SURVEY EXISTING GROUND ELEVATIONS IN THE VICINITY OF SHORING LOCATIONS TO DETERMINE ACTUAL SHORING HEIGHTS.

LIMITED SUBSURFACE INFORMATION IS AVAILABLE IN THE VICINITY OF THE TEMPORARY SHORING FROM STATION 17+74.5± -L- TO 17+90.0± -L-, 20.5 FT. TO 25.5 FT. LT OF -L- THE INFORMATION PROVIDED FOR DESIGN WAS ASSUMED AND MAY NOT BE APPLICABLE TO THE ACTUAL SITE CONDITIONS ENCOUNTERED DURING CONSTRUCTION.

AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING FOR TEMPORARY SHORING FROM STATION 17+74.5± -L- TO 17+90.0± -L-, 20.5 FT. TO 25.5 FT. LT OF -L-. SEE STANDARD DRAWING NO. 1801.01 FOR STANDARD TEMPORARY SHORING.

DRIVEN PILING FOR TEMPORARY SHORING FROM STATION 17+74.5± -L- TO 17+90.0± -L-, 20.5 FT. TO 25.5 FT. LT OF -L- MAY NOT PENETRATE BELOW ELEVATION 664 FT. DUE TO OBSTRUCTIONS, VERY DENSE OR HARD SOIL, BOULDERS, OR WEATHERED OR HARD ROCK.

**TEMPORARY SHORING DESIGN RECOMMENDATIONS**

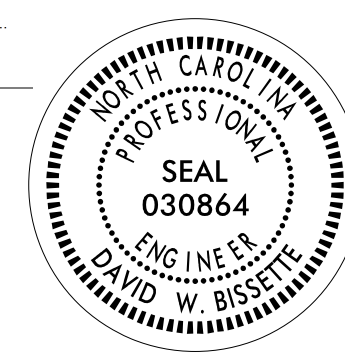
THE FOLLOWING ESTIMATED AVERAGE SHORING HEIGHTS MAY BE USED FOR QUANTITY CALCULATION PURPOSES.

SHORING ID NO.	ESTIMATED AVERAGE HEIGHT (FT.)
No. S1	4.0

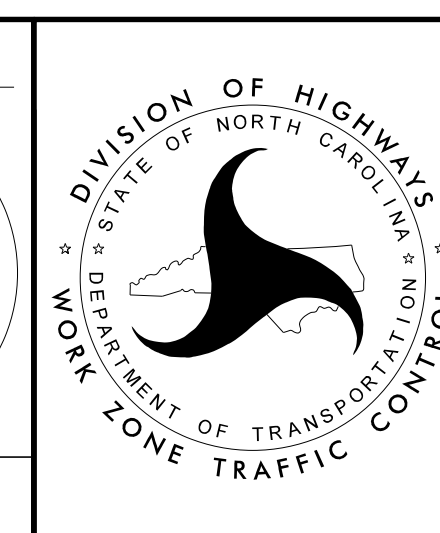
THE TEMPORARY SHORING DATA SHOWN ON THIS SHEET WERE PROVIDED THROUGH A SEALED DOCUMENT FROM THE GEOTECHNICAL ENGINEERING UNIT. THE DOCUMENT WAS SUBMITTED TO THE WZTC SECTION ON JUNE 22, 2015 AND SEALED BY A PROFESSIONAL ENGINEER, DAVID L. TEAGUE, P.E., LICENSE #027869.

APPROVED: *David Bisette*  
ECDC08C875348C...

DATE: 2/8/2016



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**TEMPORARY  
SHORING  
DATA**

2/8/2016  
 P:\TIP\Projects-B\B5344\TrafficControl\TCP\B5344\_TC\_TMP2A\_SHOR.dgn  
 User:rkeddis

<p><b>SIGN NUMBER:</b> WORKZONE <b>TYPE:</b> STATIONARY <b>QUANTITY:</b> SEE PLANS</p> <p><b>SIGN WIDTH:</b> 3'-6" <b>HEIGHT:</b> 1'-0" <b>TOTAL AREA:</b> 3.5 Sq.Ft.</p> <p><b>BORDER TYPE:</b> INSET <b>RECESS:</b> 0.38" <b>WIDTH:</b> 0.63" <b>RADII:</b> 1.5"</p> <p><b>NO. Z BARS:</b> <b>LENGTH:</b></p>	<p><b>BACKG COLOR:</b> Fluorescent Orange <b>COPY COLOR:</b> Black</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>SYMBOL</th> <th>X</th> <th>Y</th> <th>WID</th> <th>HT</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table> <p><b>MAT'L:</b> 0.080" (2.0 mm) ALUMINUM</p>	SYMBOL	X	Y	WID	HT																																																			<p><b>DESIGN BY:</b> S.JOHNS <b>PROJECT ID:</b> B-5344</p> <p><b>CHECKED BY:</b> R.ROACH <b>LOCATION:</b> SR 2821 - GUILFORD COUNTY</p> <p style="text-align: right;"><b>May 11, 2015</b> <b>DIV: 7</b></p>
SYMBOL	X	Y	WID	HT																																																					

**BORDER**  
R=1.5"  
TH=0.63"  
IN=0.38"

Spacing Factor is 1 unless specified otherwise

**LETTER POSITIONS**

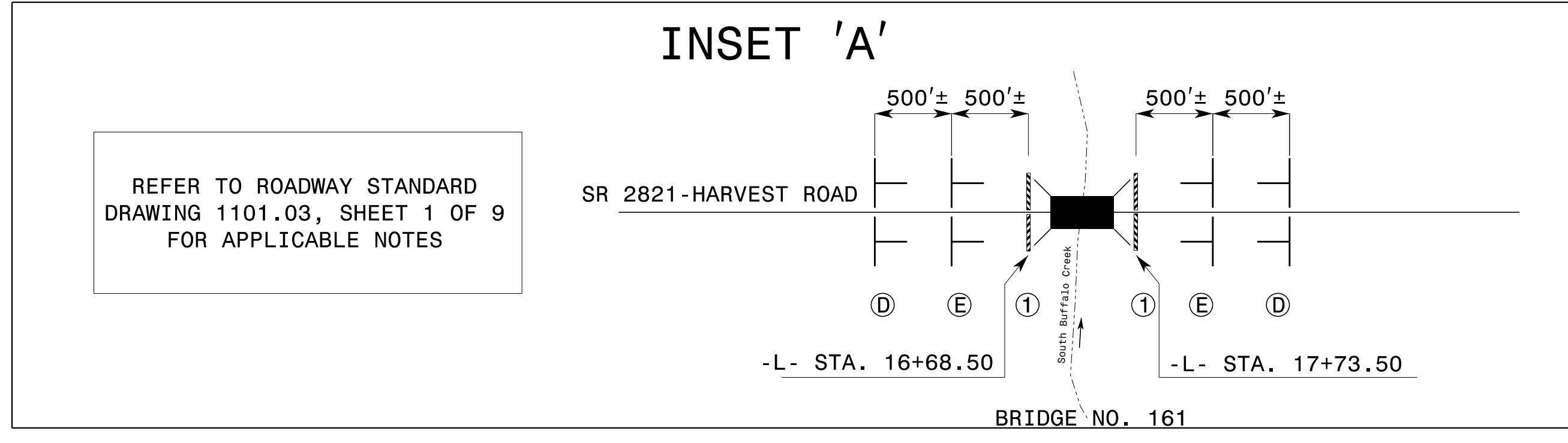
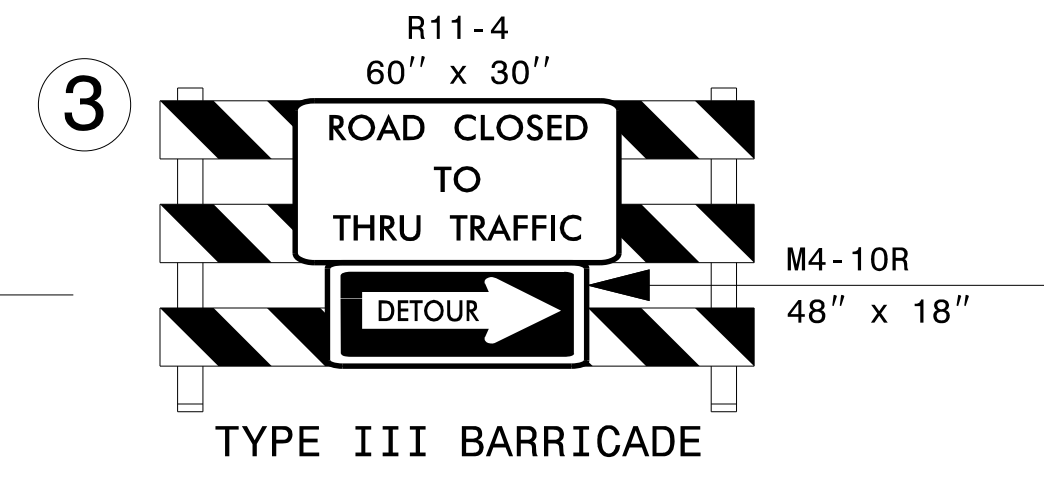
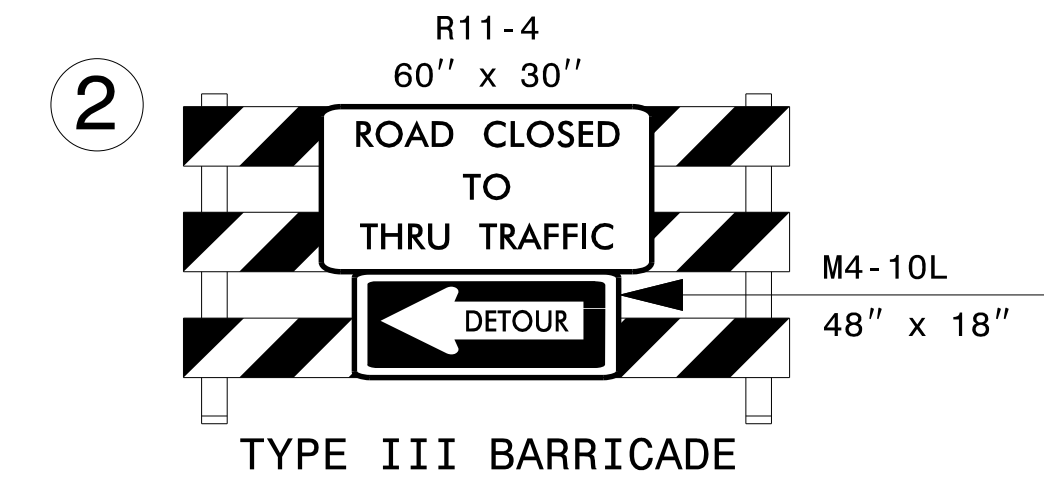
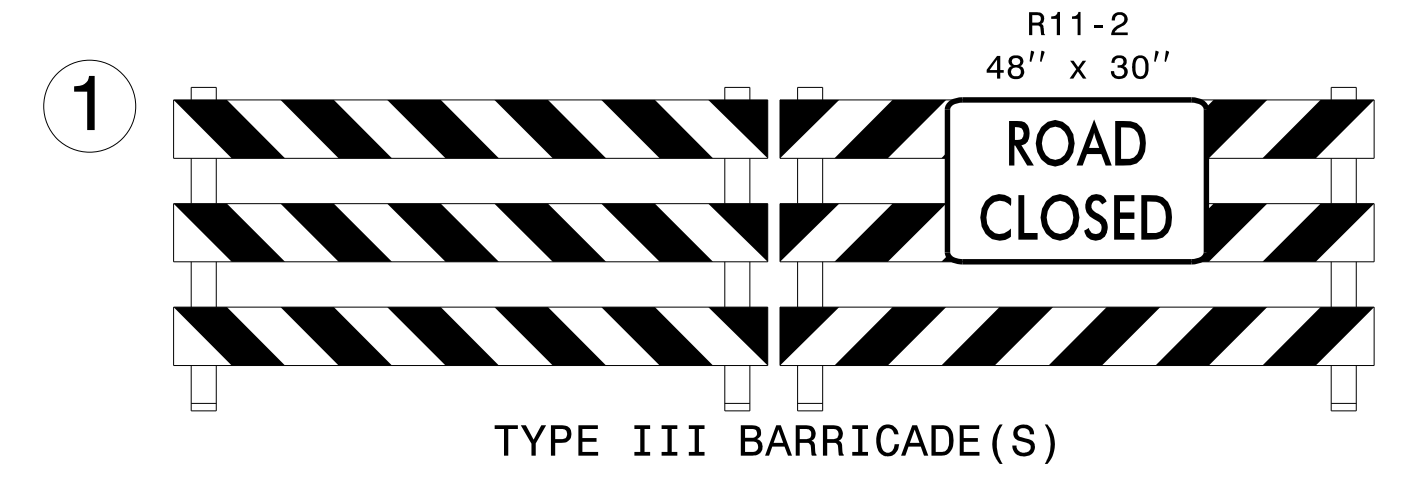
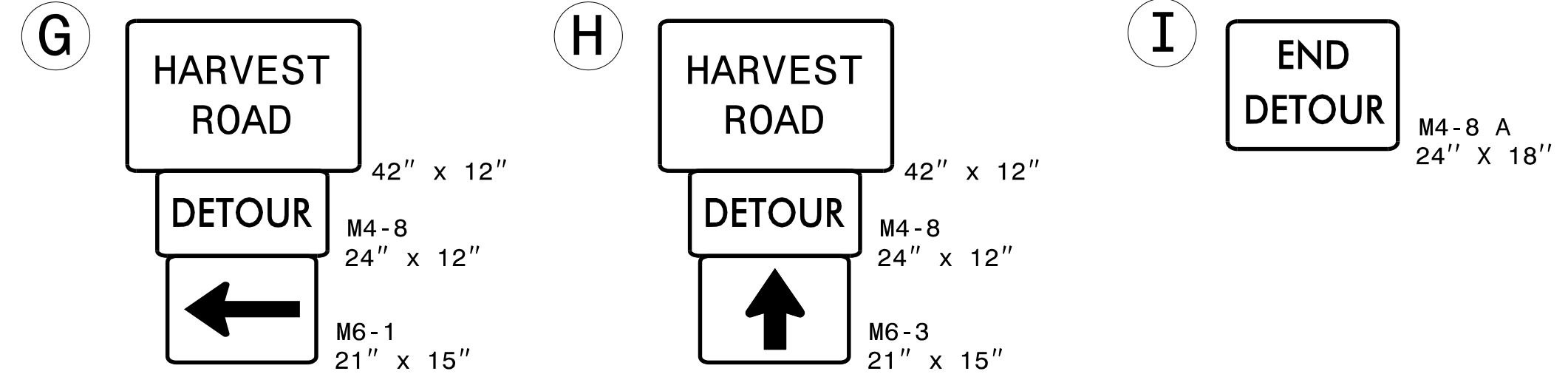
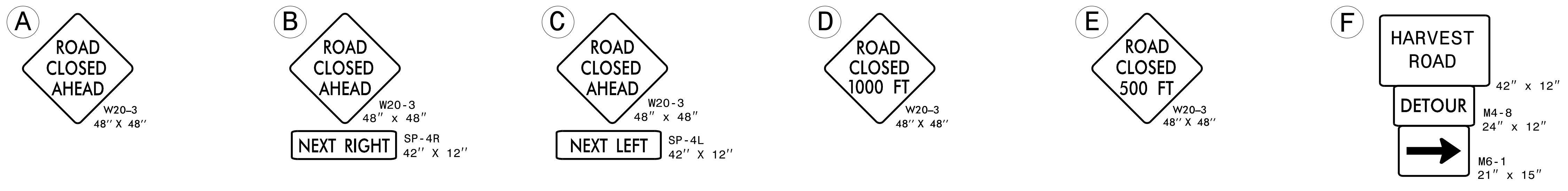
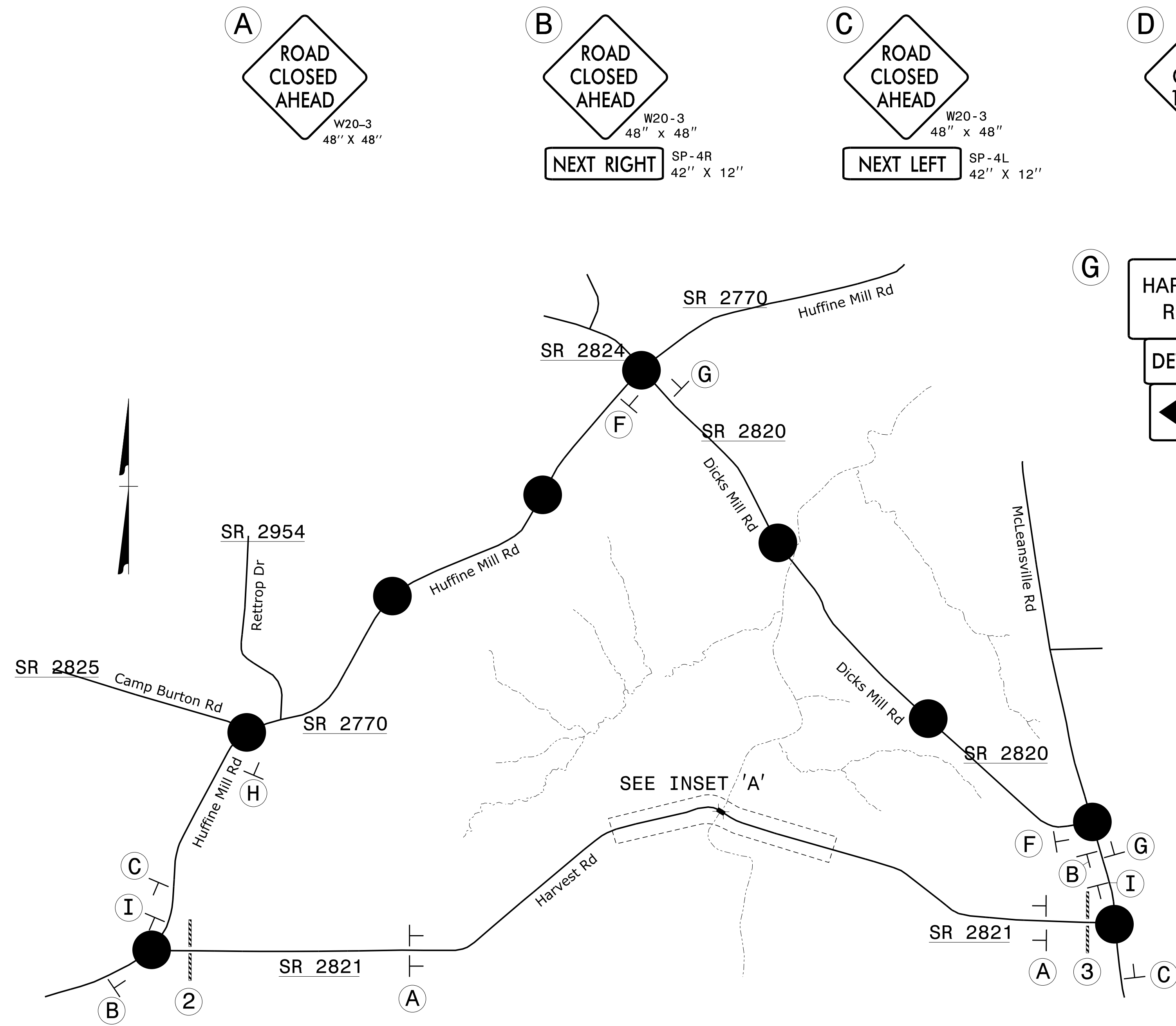
Letter spacings are to start of next letter

	H	A	R	V	E	S	T		R	D												Series/Size Text Length
	4.2	3.3	3.7	3.1	3.6	3	3.1	2.5	5	3.4	2.8	4.2										<b>C 2000</b>
																						<b>33.5</b>

FILENAME: B-5344\_WZSgn Design NORTH CAROLINA D.O.T. SIGN DETAIL

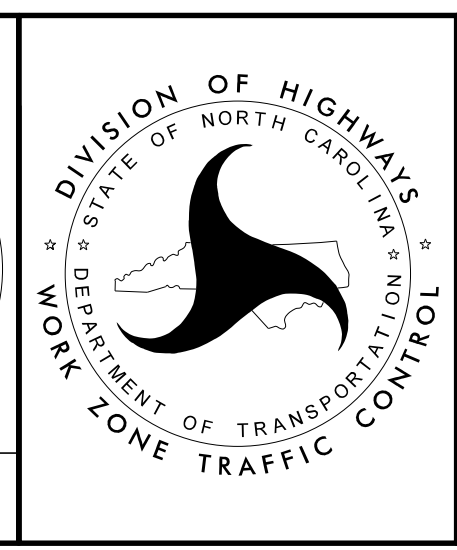
1/20/2016  
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 User:rkeddis

<p>APPROVED: </p> <p>DATE: 1/20/2016</p>			<p><b>SPECIAL SIGN DESIGN</b></p>
<p><b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b></p>			



REFER TO ROADWAY STANDARD DRAWING 1101.03, SHEET 1 OF 9 FOR APPLICABLE NOTES

APPROVED: *David Bisette*  
 DATE: 2/1/2016  
 SEAL 030864  
 ENGINEER  
 DAVID W. BISSETTE



ROAD CLOSURE AND OFFSITE DETOUR ROUTE

1/19/2016 P:\TIP\Projects-B\B5344\TrafficControl\TCP\B5344\_TC\_TMP2C\_DET.dgn User:keddis

## PHASING

### PHASE I

- STEP 1: USING ROADWAY STANDARD DRAWING 1101.01, SHEET 3 OF 3, INSTALL ADVANCE WARNING SIGNS ON SR 2821 (HARVEST ROAD).
- STEP 2: AWAY FROM TRAFFIC AND USING 1102.01, SHEET 1 OF 15, AS NECESSARY, BEGIN CONSTRUCTION OF THE FOLLOWING, UP TO THE EXISTING EDGE AND ELEVATION:
- L- STA. 12+75± TO STA. 16+68.5±
  - L- STA. 17+73.5± TO STA. 20+00±
  - PROPOSED STRUCTURE

THE CONTRACTOR SHALL COMPLETE THE WORK REQUIRED OF PHASE I, STEP 3 IN 59 CONSECUTIVE HOURS FROM 7:00 PM ON FRIDAY TO 6:00 AM THE FOLLOWING MONDAY. SEE INTERMEDIATE CONTRACT TIME AND LIQUIDATED DAMAGES.

- STEP 3: INSTALL DETOUR SIGNS PER TMP-2C AND RE-ROUTE TRAFFIC OFFSITE. INSTALL BRIDGE BEAMS PER STRUCTURE PLANS. OPEN SR 2821 (HARVEST ROAD) TO TRAFFIC IN THE EXISTING TWO-LANE, TWO-WAY PATTERN.

### PHASE II

- STEP 1: USING RSD 1101.02, SHEET 1 OF 15, AND TMP-5, INSTALL SIGNS, TEMPORARY PAVEMENT MARKINGS AND PORTABLE TEMPORARY SIGNALS AND SHIFT TRAFFIC TO ONE-LANE, TWO-WAY PATTERN.
- INSTALL PORTABLE CONCRETE BARRIER (PCB) AND TEMPORARY CRASH CUSHION PER TMP-5.
- STEP 2: BEHIND PCB, INSTALL TEMPORARY SHORING FOR WINGWALL CONSTRUCTION.
- STEP 3: COMPLETE CONSTRUCTION BEGAN IN PHASE I, UP TO THE EXISTING EDGE AND ELEVATION:
- L- STA. 12+75± TO -L- STA. 16+68.5±
  - L- STA. 17+73.5± TO -L- STA. 20+00±
  - PROPOSED STRUCTURE, INCLUDING WINGWALL (SEE LOCAL NOTE #2)

THE CONTRACTOR SHALL COMPLETE THE WORK REQUIRED OF PHASE II, STEPS 4 THRU 7, AS SHOWN ON TMP-6, IN 59 CONSECUTIVE HOURS FROM 7:00 PM ON FRIDAY TO 6:00 AM THE FOLLOWING MONDAY. SEE INTERMEDIATE CONTRACT TIME AND LIQUIDATED DAMAGES.

- STEP 4: INSTALL DETOUR SIGNS PER TMP-2C AND RE-ROUTE TRAFFIC OFFSITE.
- STEP 5: REMOVE TEMPORARY SHORING, PCB AND PORTABLE TEMPORARY SIGNALS.
- STEP 6: TIE-IN PROPOSED PAVEMENT TO EXISTING PAVEMENT AND COMPLETE PROPOSED GUARDRAIL INSTALLATION AT -L- 18+00± LT.
- STEP 7: PLACE TEMPORARY PAVEMENT MARKINGS AND MARKERS IN FINAL PATTERN FROM -L- STA. 10+00± TO STA. 20+25± (TMP-6). OPEN SR 2821 (HARVEST ROAD) TO TRAFFIC IN THE FINAL PATTERN.
- STEP 8: REMOVE EXISTING STRUCTURE AND ABANDONED PAVEMENTS.
- USING RSD 1101.02, SHEET 1 OF 15, AS NECESSARY, COMPLETE CONSTRUCTION OF PROPOSED ROADWAY -L- STA. 12+00± TO -L- STA. 20+25±, INCLUDING THE FINAL LAYER OF SURFACE COURSE. PLACE FINAL PAVEMENT MARKINGS AND MARKERS.
- STEP 9: REMOVE ALL TRAFFIC CONTROL SIGNS AND DEVICES.

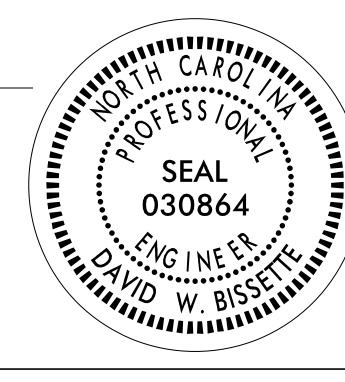
## LOCAL NOTES

1. WHILE ONE-LANE, TWO-WAY TRAFFIC PATTERN IS IN OPERATION, THE CLOSED LANE SHALL BE MAINTAINED USING DRUMS AND/OR PORTABLE CONCRETE BARRIER.
2. THE CONSTRUCTION OF THE PROPOSED WINGWALL LOCATED APPROXIMATELY -L- STA. 17+73±LT SHALL BE COMPLETED BEHIND PCB AND TEMPORARY SHORING. (SEE TMP-5)

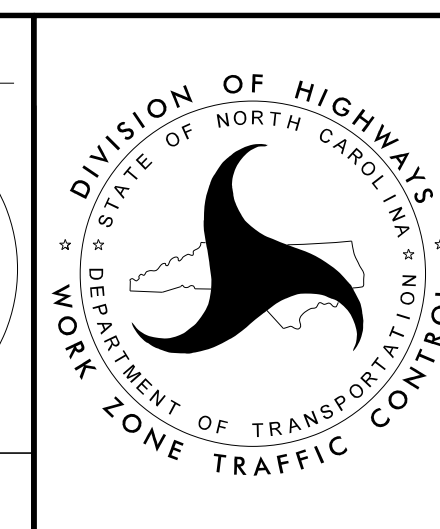
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 User:keddis

APPROVED: *David Bisette*  
DocuSigned by:  
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DATE: 2/26/2016

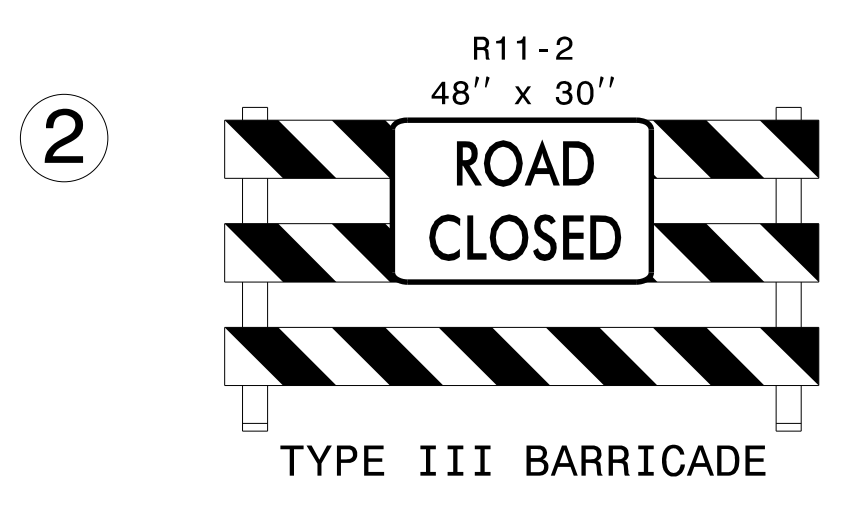
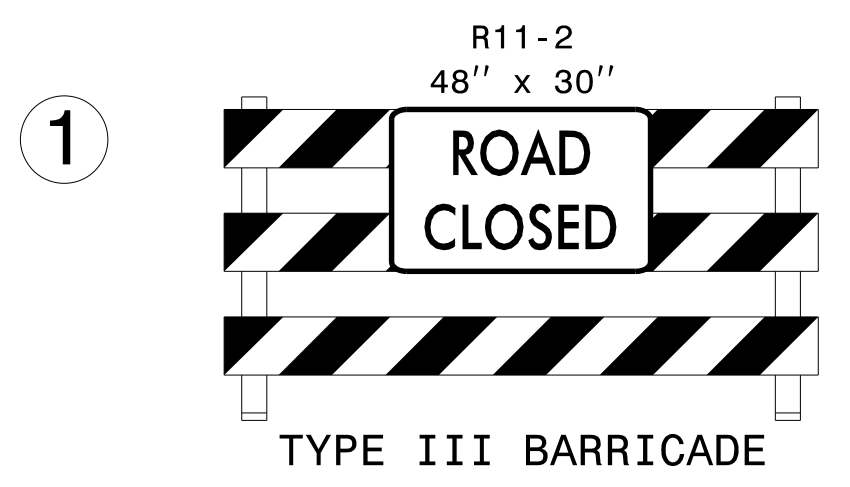
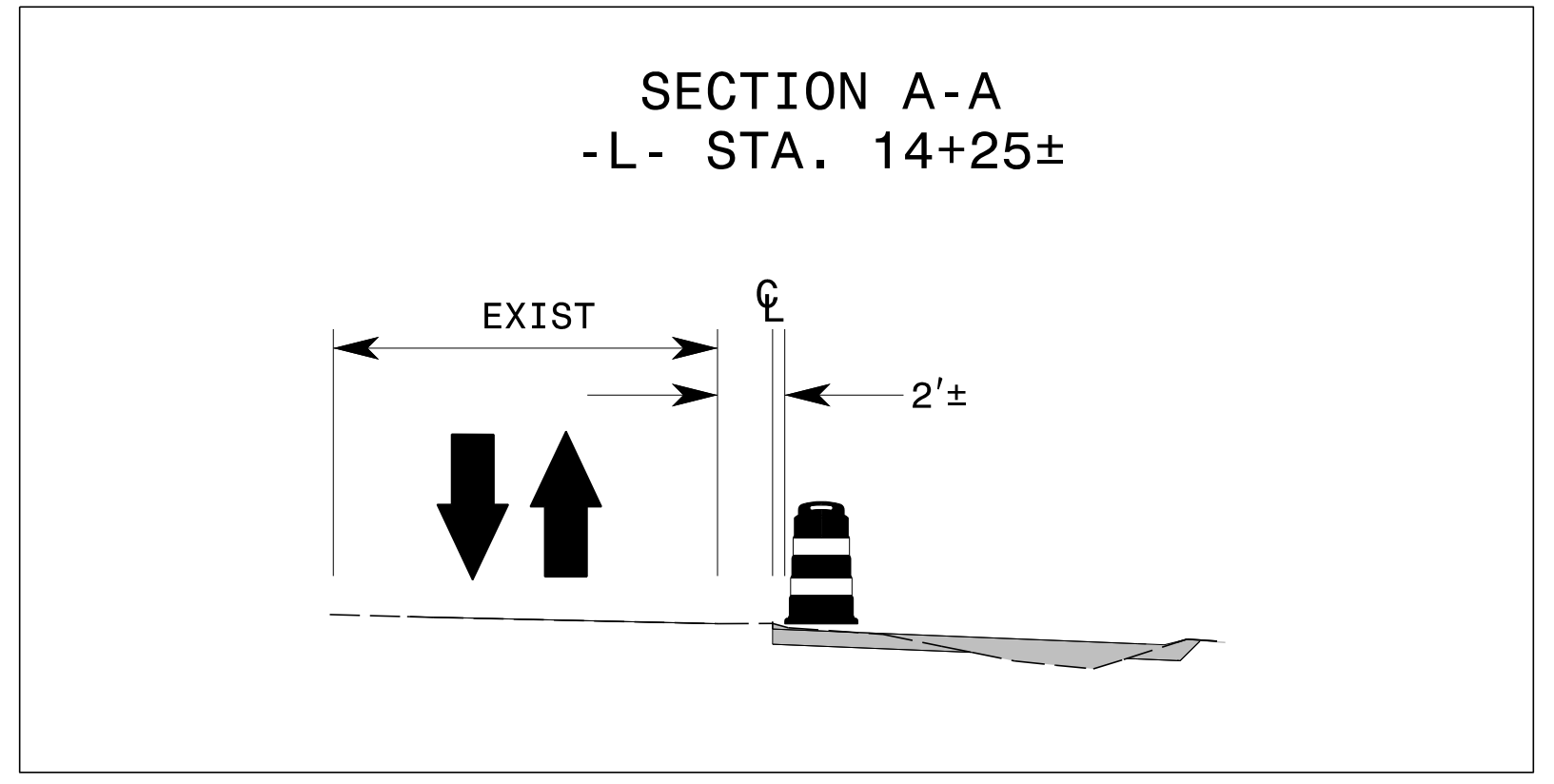
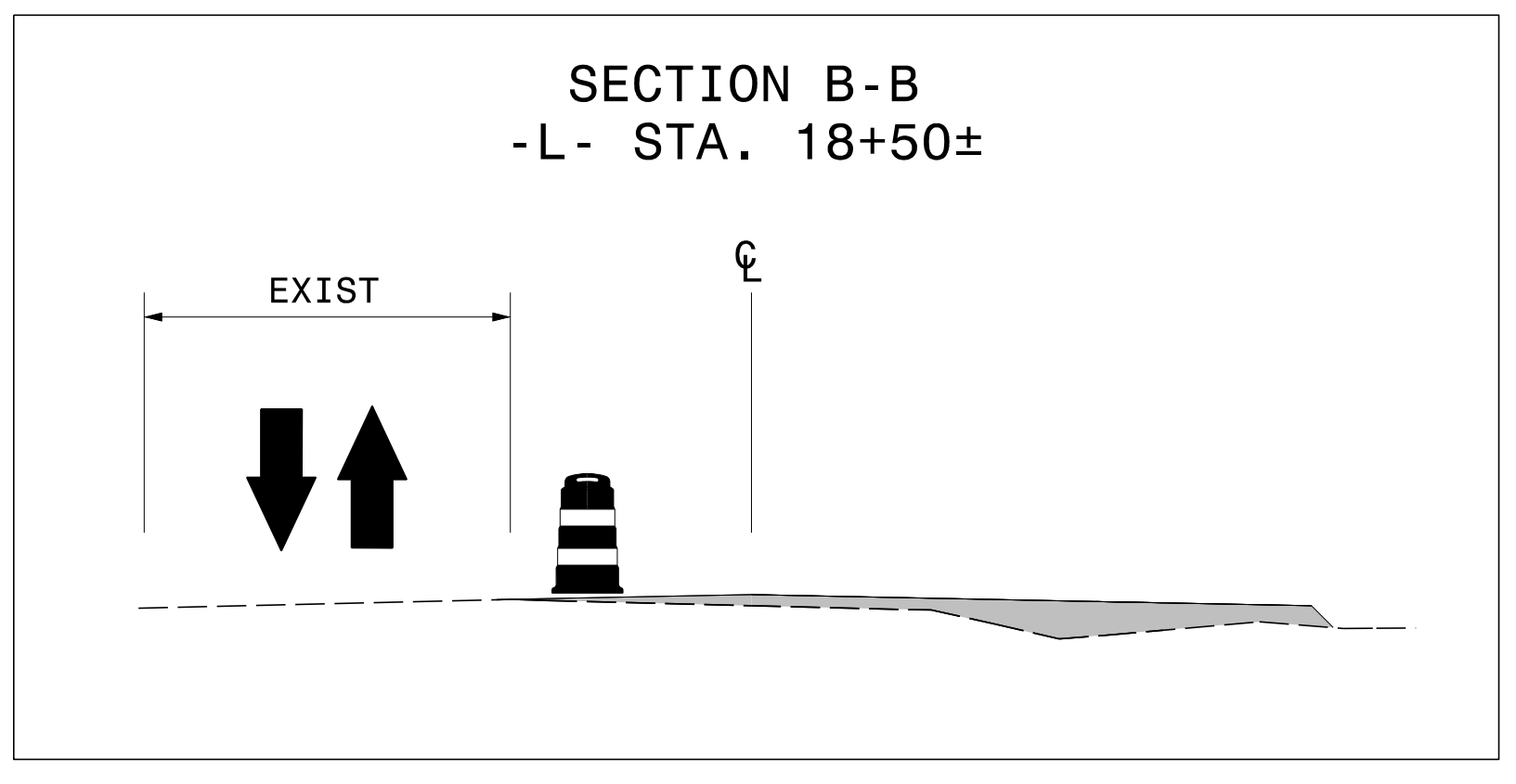
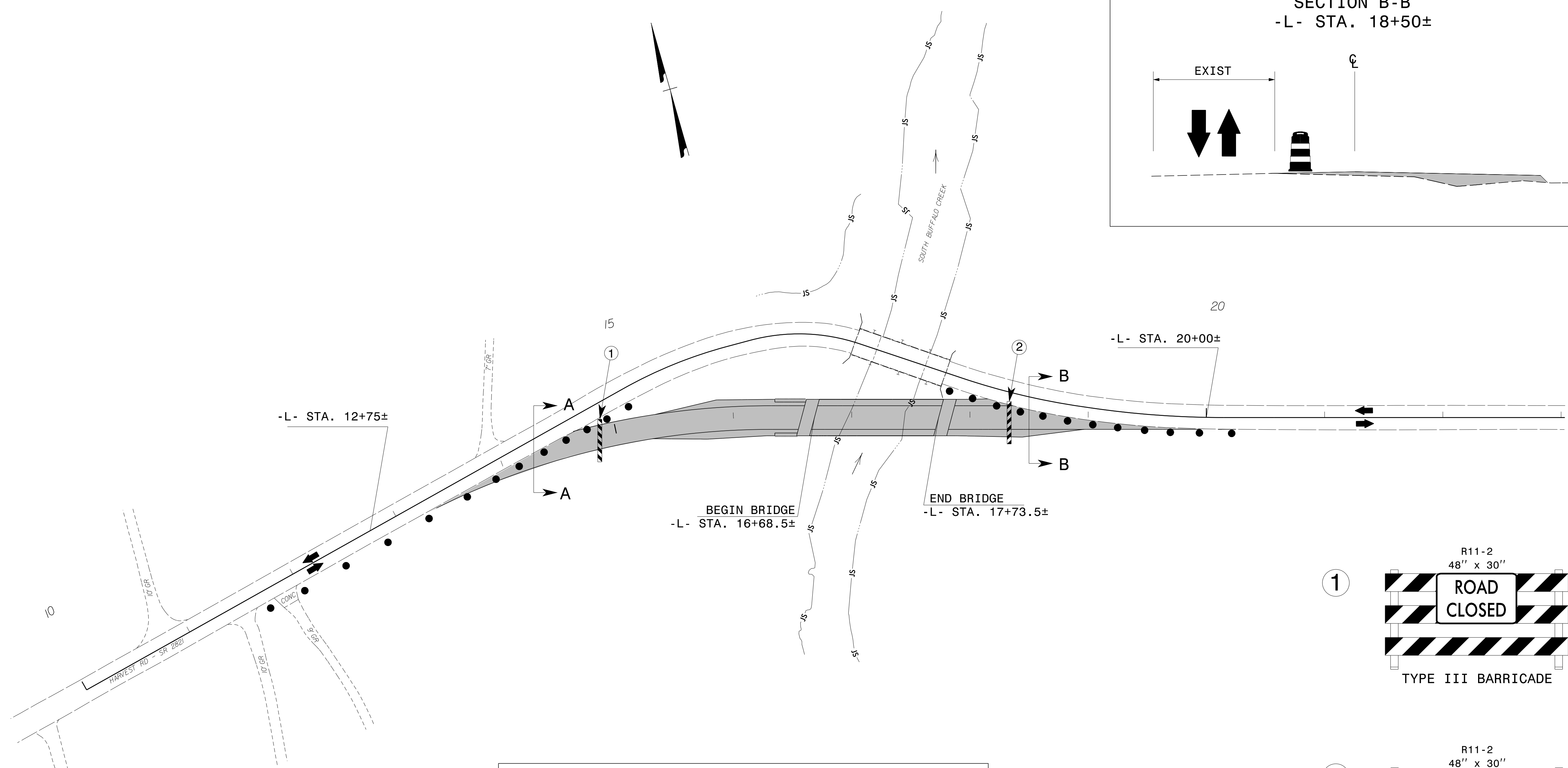


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PHASING AND  
 LOCAL NOTES



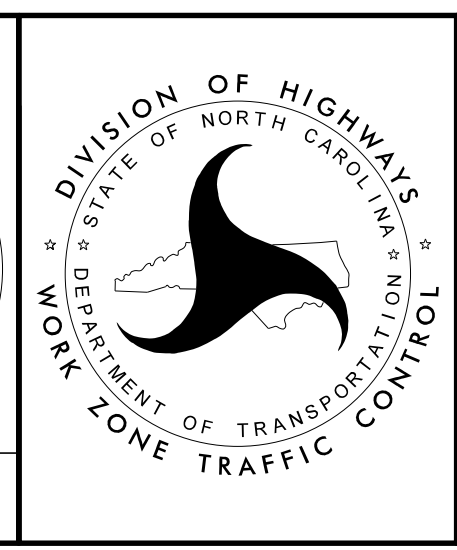


APPROVED: *David Bisette*  
ECCDC08C875348C

DATE: 2/1/2016

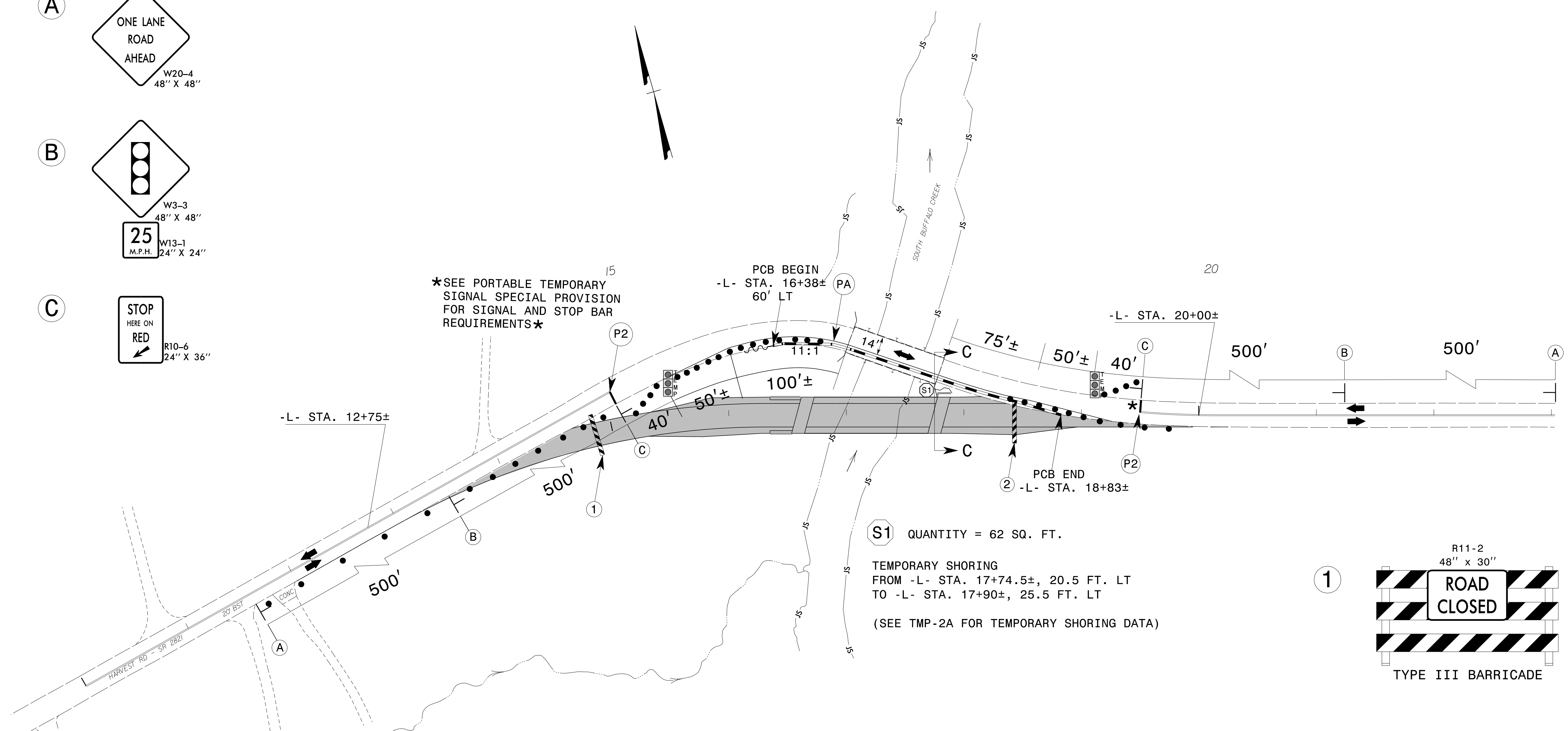
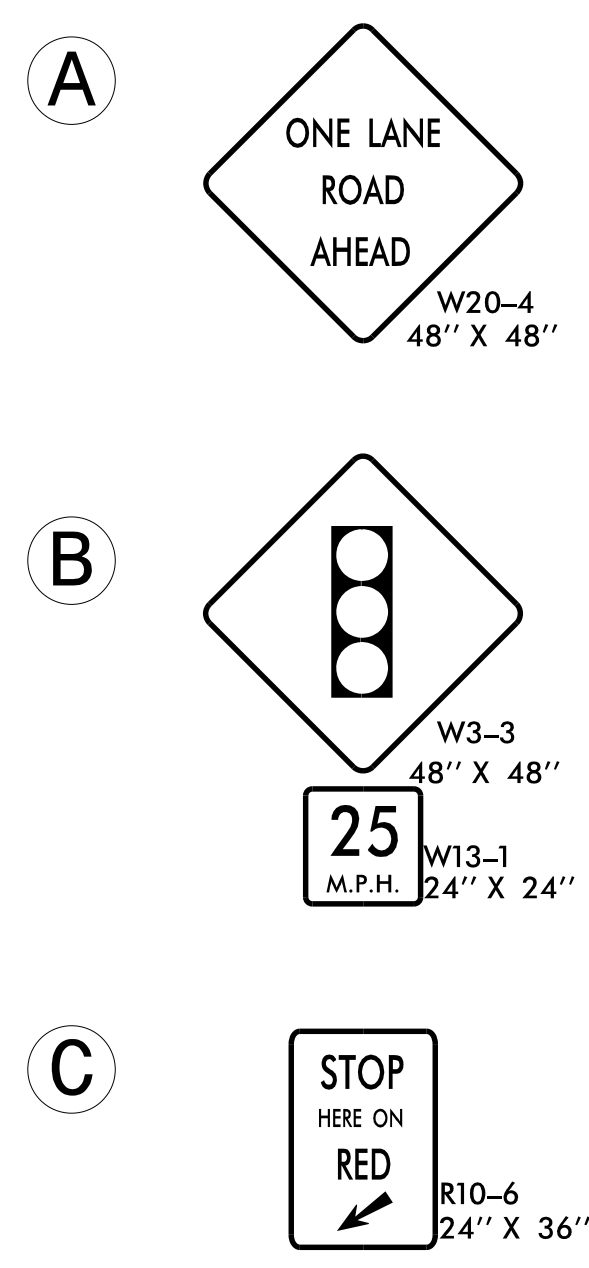
SEAL  
030864  
ENGINEER  
DAVID W. BISSETTE

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UNLESS ALL SIGNATURES COMPLETED**

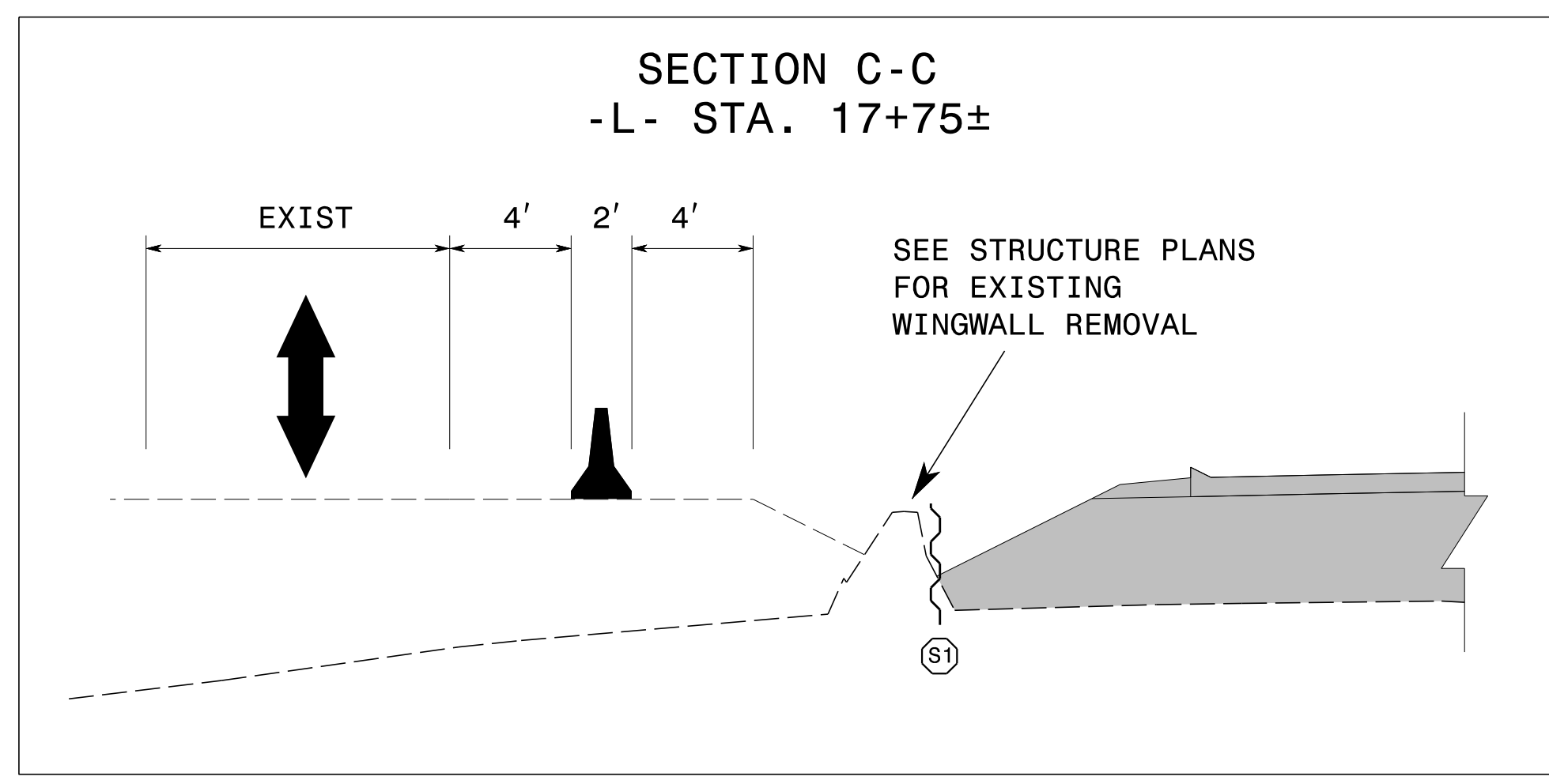
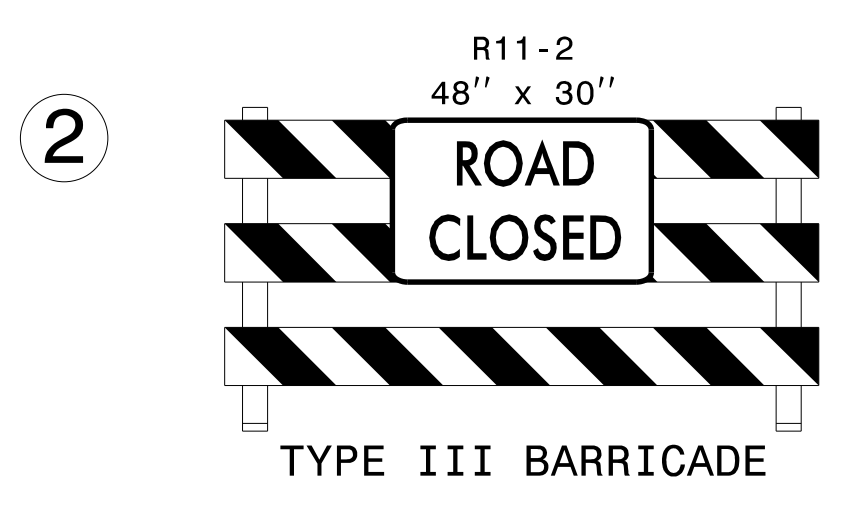
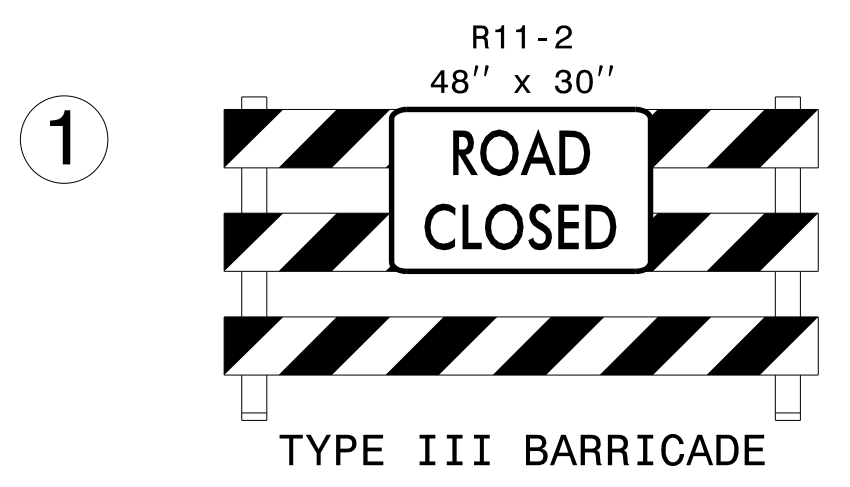


PHASE I

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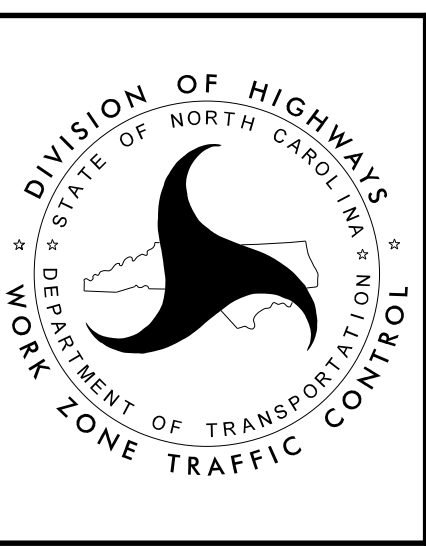


**S1** QUANTITY = 62 SQ. FT.  
 TEMPORARY SHORING  
 FROM -L- STA. 17+74.5±, 20.5 FT. LT  
 TO -L- STA. 17+90±, 25.5 FT. LT  
 (SEE TMP-2A FOR TEMPORARY SHORING DATA)



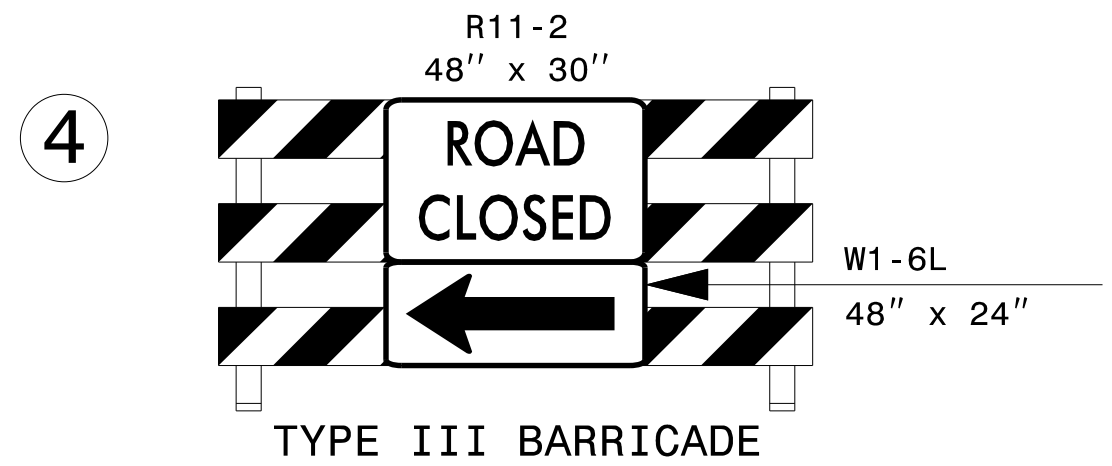
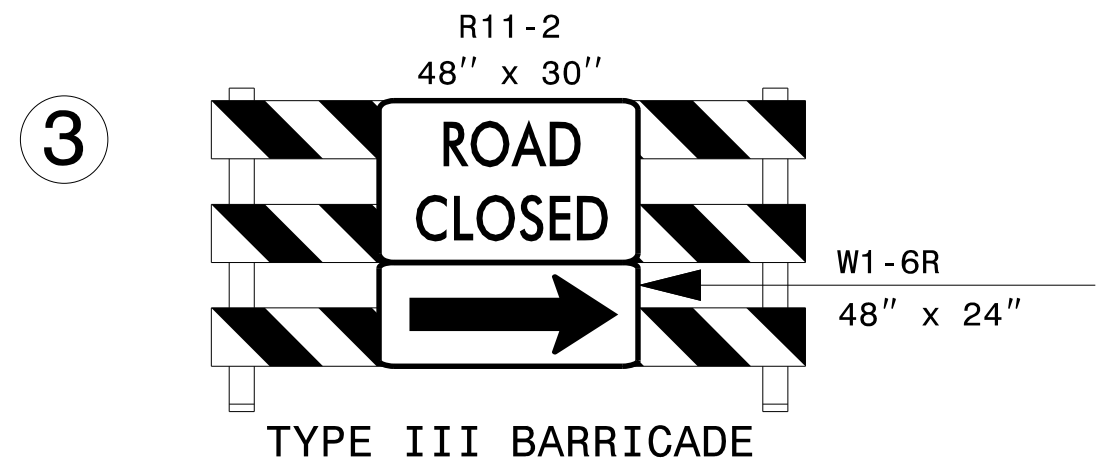
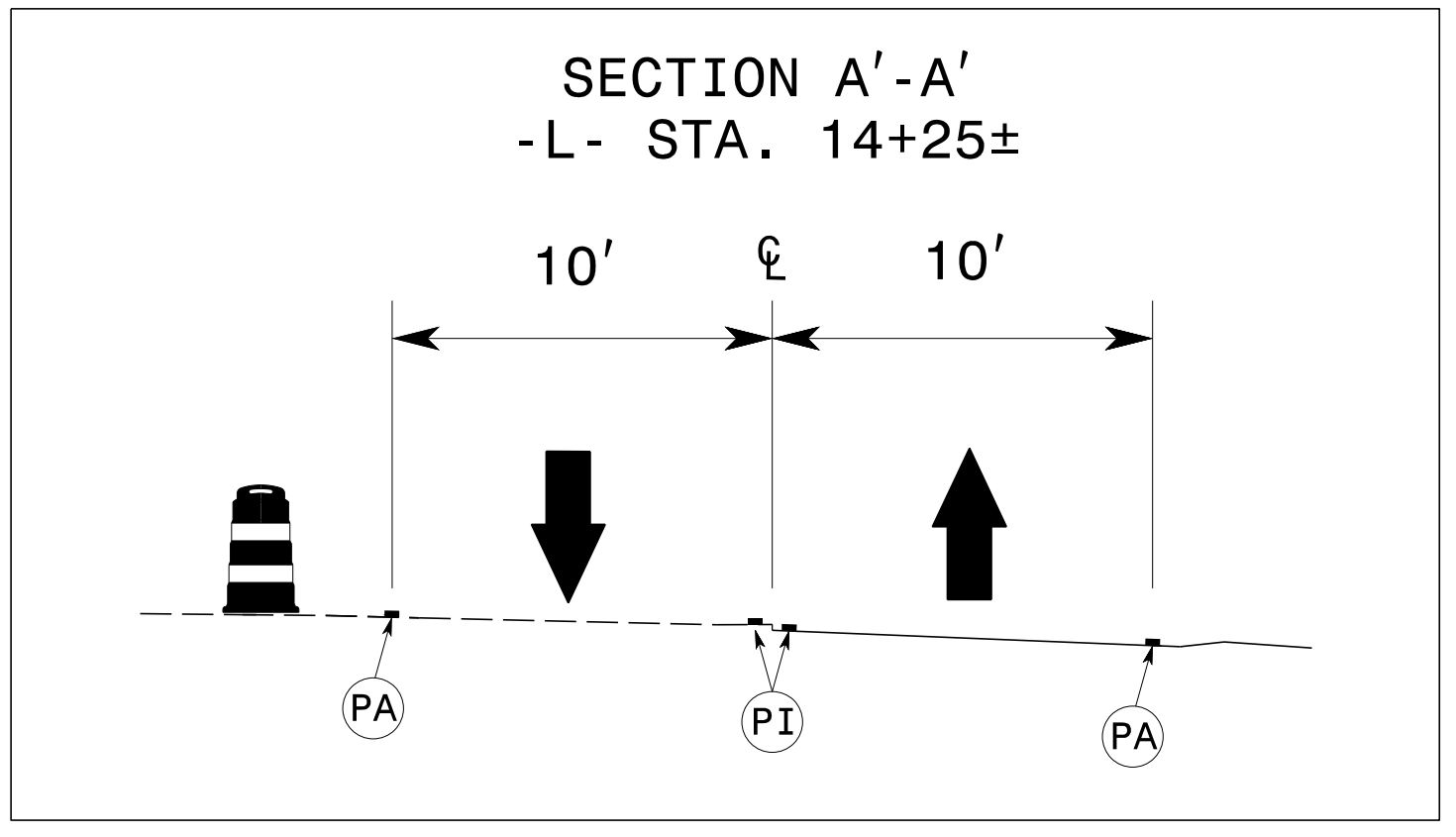
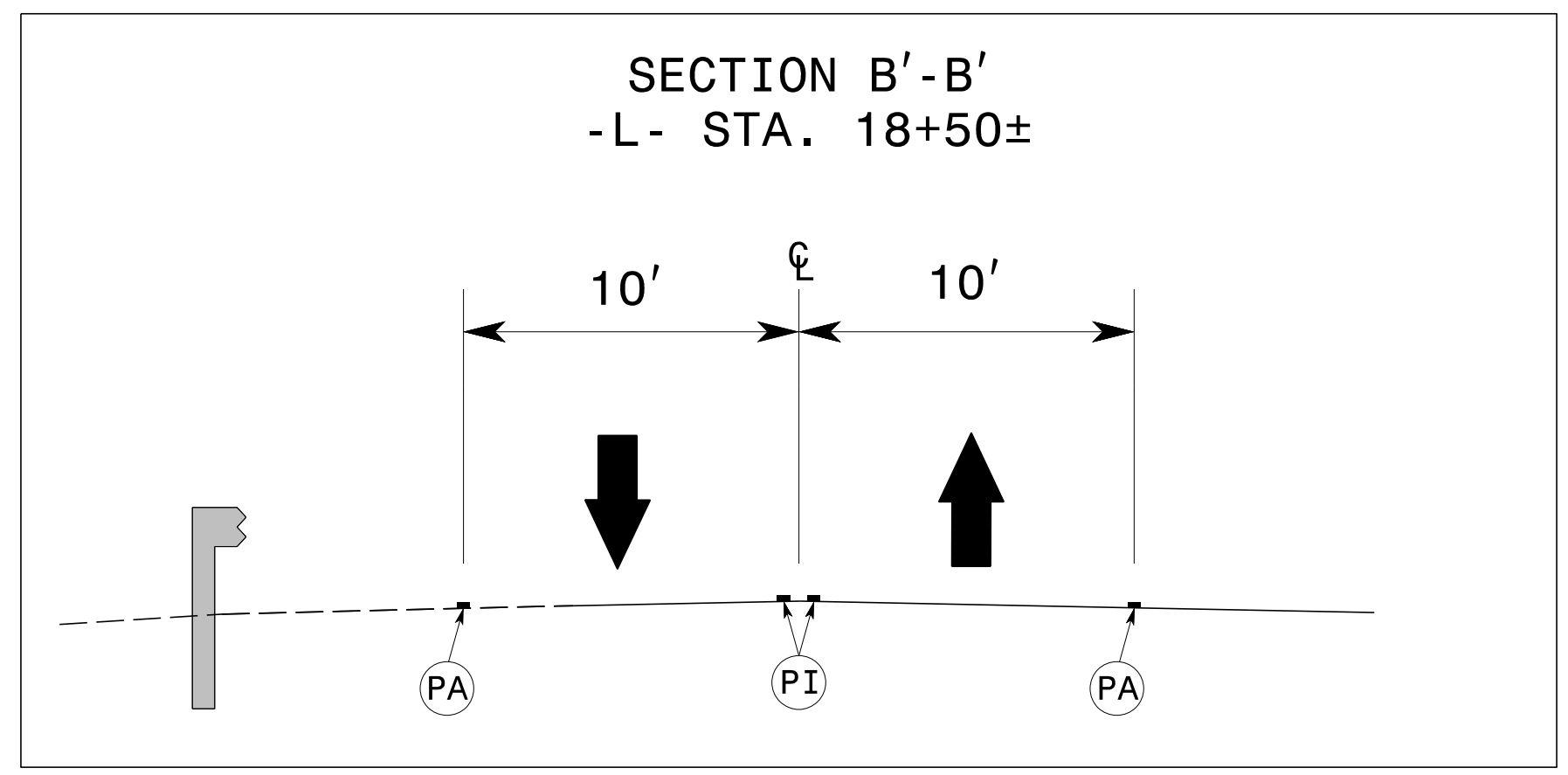
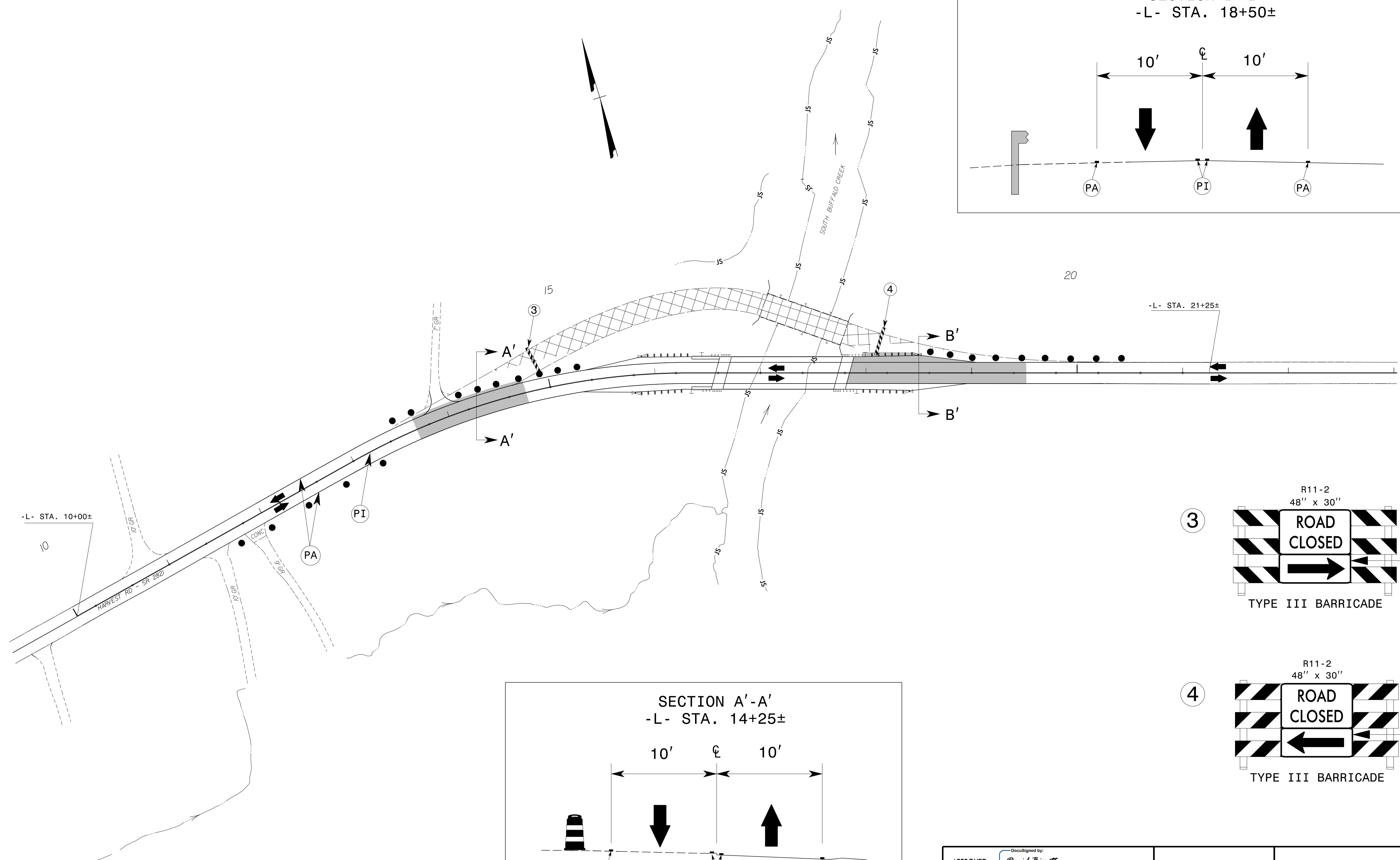
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**PHASE II**  
(STEPS 1-3)

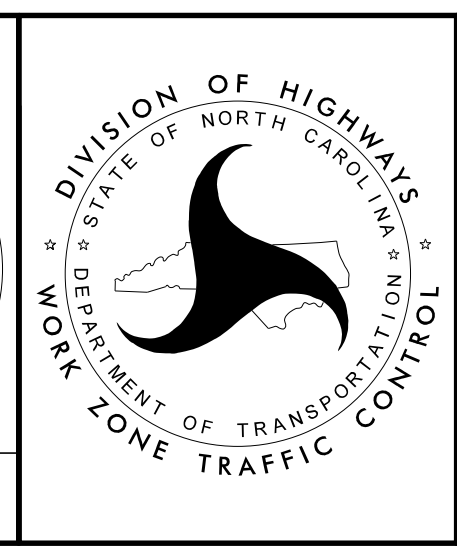
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1/28/2016  
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**PHASE II  
(STEPS 4-8)**