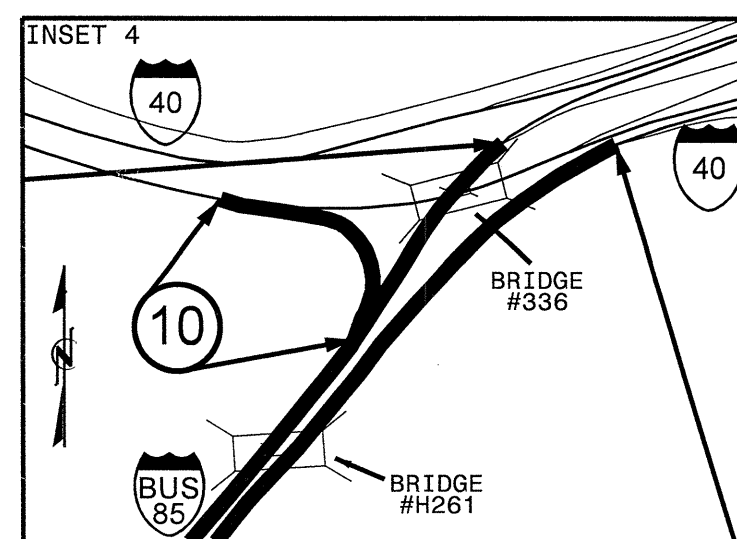
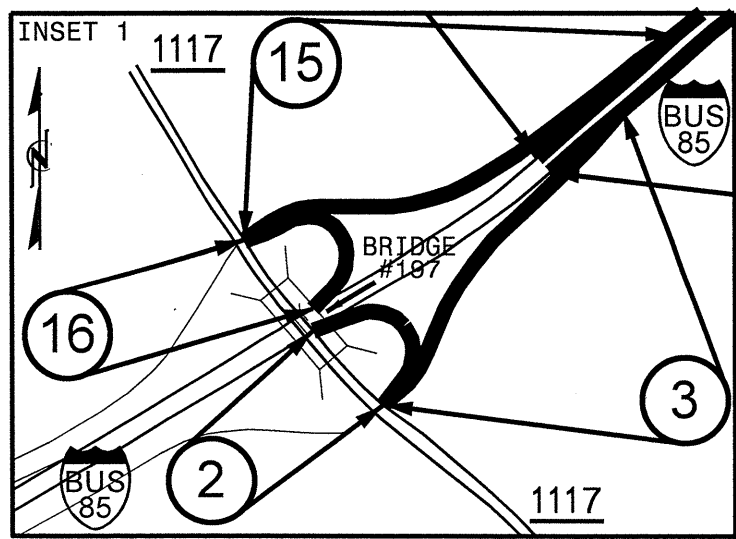
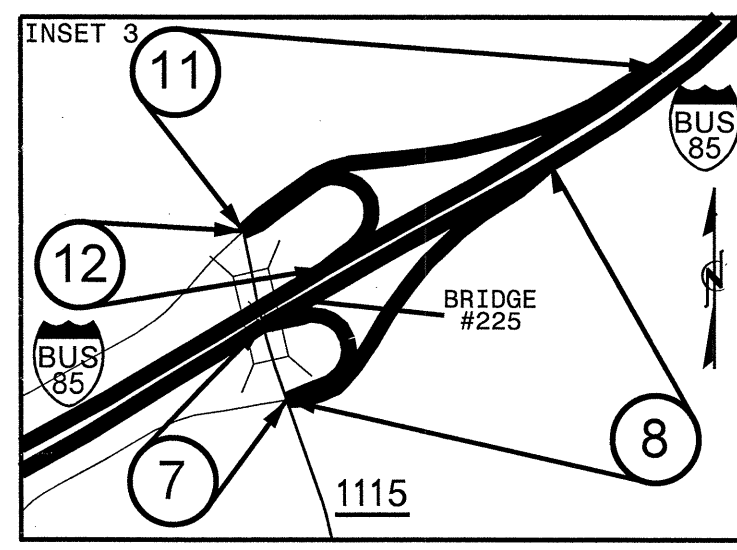
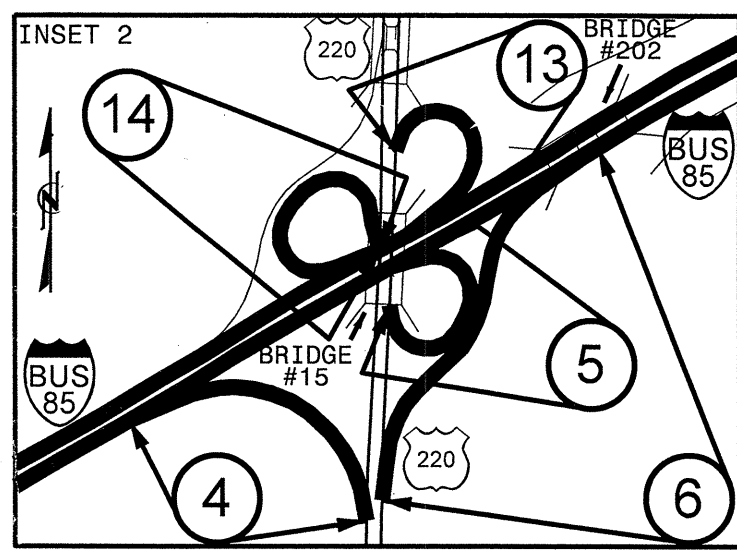
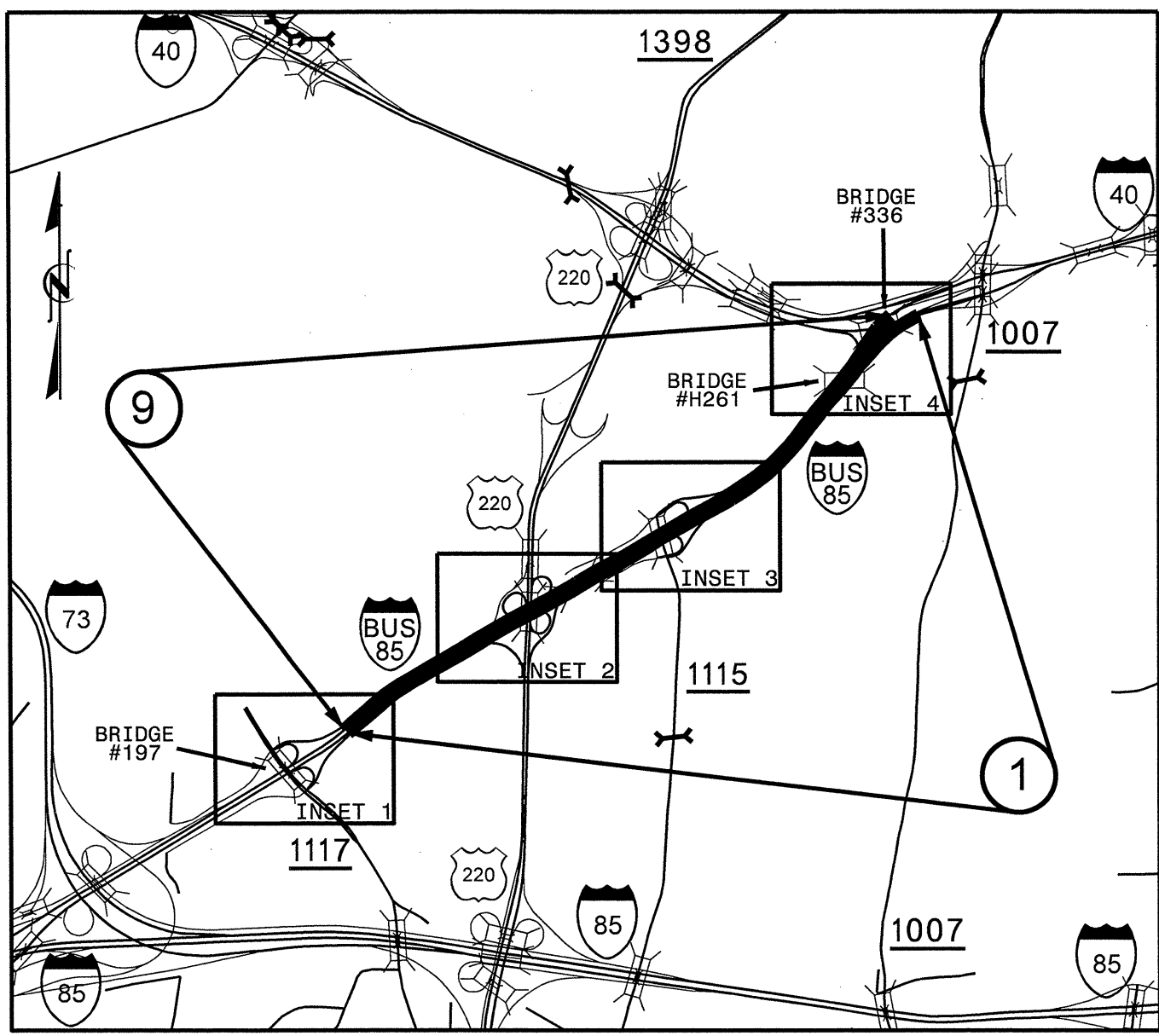


STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	7CR.10411.62	1	1
F.A. PROJ. NO.			

# 2014 GUILFORD COUNTY



\$\$\$\$SYTIME\$\$\$\$  
 \$\$\$>\$\$\$\$DGN\$\$\$\$  
 \$\$\$USERSNAME\$\$\$\$  
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PROJECT NO.	SHEET NO.	TOTAL NO.
7CR.10411.62	6	

**THERMOPLASTIC AND PAINT QUANTITIES**

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP	LANES	LANE TYPE	LENGTH	WIDTH	4400000000-E	4405000000-E	4410000000-E	4415000000-E	4420000000-N	4422000000-N	4430000000-N	4445000000-N	4480000000-N	4810000000-E	4815000000-E	4820000000-E	4825000000-E	4835000000-E			
										WORK ZONE SIGNS (STATIONARY)	PORTABLE WORK ZONE SIGNS	BARRICADE MOUNTED WORK ZONE SIGNS	FLASHING ARROW BOARD	PORTABLE CHANGEABLE MESSAGE SIGN	PORTABLE CHANGEABLE MESSAGE SIGN (SHORT TERM) DAY	DRUMS	BARRICADES (TYPE III)	TMA	4" PAINT	6" PAINT	8" PAINT	12" PAINT	24" PAINT			
										SF	SF	SF	EA	EA	EA	EA	EA	EA	LF	LF	LF	LF	LF	LF		
7CR.10411.62	Guilford	1	I-85 BUSINESS/US 29/US 70 NORTHBOUND	FROM JOINT 850' NORTH OF OVERHEAD BRIDGE #197 - 12.35 TO JOINT 1390' NORTH OF OVERHEAD BRIDGE #H261 - 14.62	1	2		2.272	56-95	600	550	140	3	7	40	350	80	3	28,038	66,000	130	6,890	70			
		TOTAL FOR MAP NO. 1							2.272		600	550	140	3	7	40	350	80	3	28,038	66,000	130	6,890	70		
		2	OFF RAMP	FROM I-85 BUSINESS NORTHBOUND TO SR 1117 (HOLDEN ROAD)	2	2			0.093	20-61	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
		TOTAL FOR MAP NO. 2							0.093																	
		3	ON RAMP	FROM SR 1117 (HOLDEN ROAD) TO I-85 BUSINESS NORTHBOUND	3	2			0.187	25-31	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
		TOTAL FOR MAP NO. 3							0.187																	
		4	OFF RAMP	FROM I-85 BUSINESS NORTHBOUND TO US 220 SOUTHBOUND	3	2			0.157	24	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
		TOTAL FOR MAP NO. 4							0.157																	
		5	OFF RAMP	FROM I-85 BUSINESS NORTHBOUND TO US 220 NORTHBOUND	2	2			0.142	20	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
		TOTAL FOR MAP NO. 5							0.142																	
		6	ON RAMP	FROM US 220 NORTHBOUND TO I-85 BUSINESS NORTHBOUND	3	2			0.197	24	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
		TOTAL FOR MAP NO. 6							0.197																	
		7	OFF RAMP	FROM I-85 BUSINESS NORTHBOUND TO SR 1115 (REHOBETH CHURCH ROAD)	2	2			0.105	20	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
		TOTAL FOR MAP NO. 7							0.105																	
		8	ON RAMP	FROM SR 1115 (REHOBETH CHURCH ROAD) TO I-85 BUSINESS NORTHBOUND	3	2			0.195	24	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
		TOTAL FOR MAP NO. 8							0.195																	
9	I-85 BUSINESS/US 29/US 70 SOUTHBOUND	FROM JOINT 140' NORTH OF OVERHEAD BRIDGE #336 - 7.75 TO JOINT 850' NORTH OF OVERHEAD BRIDGE #197 - 10.00	1,4	2			2.247	50-92	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
TOTAL FOR MAP NO. 9							2.247																			
10	ON RAMP	FROM I-40 EAST TO I-85 BUSINESS SOUTHBOUND	3,5	2			0.067	28	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
TOTAL FOR MAP NO. 10							0.067																			
11	OFF RAMP	FROM I-85 BUSINESS SOUTHBOUND TO SR 1115 (REHOBETH CHURCH ROAD)	2,3	2			0.254	25-156	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
TOTAL FOR MAP NO. 11							0.254																			
12	ON RAMP	FROM SR 1115 (REHOBETH CHURCH ROAD) TO I-85 BUSINESS SOUTHBOUND	3,6	2			0.14	20	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
TOTAL FOR MAP NO. 12							0.14																			
13	ON RAMP	FROM US 220 NORTHBOUND TO I-85 BUSINESS SOUTHBOUND	2	2			0.117	20	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
TOTAL FOR MAP NO. 13							0.117																			
14	OFF RAMP	FROM I-85 BUSINESS SOUTHBOUND TO US 220 SOUTHBOUND	2	2			0.142	20	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
TOTAL FOR MAP NO. 14							0.142																			
15	OFF RAMP	FROM I-85 BUSINESS SOUTHBOUND TO SR 1117 (HOLDEN ROAD)	3	2			0.254	25-35	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
TOTAL FOR MAP NO. 15							0.254																			
16	ON RAMP	FROM SR 1117 (HOLDEN ROAD) TO I-85 BUSINESS SOUTHBOUND	2	2			0.111	20	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
TOTAL FOR MAP NO. 16							0.111																			
TOTAL FOR PROJ NO. 7CR.10411.62							6.68			600	550	140	3	7	40	350	80	3	28,038	66,000	130	6,890	70			
GRAND TOTAL							6.68			600	550	140	3	7	40	350	80	3	28,038	66,000	130	6,890	70			

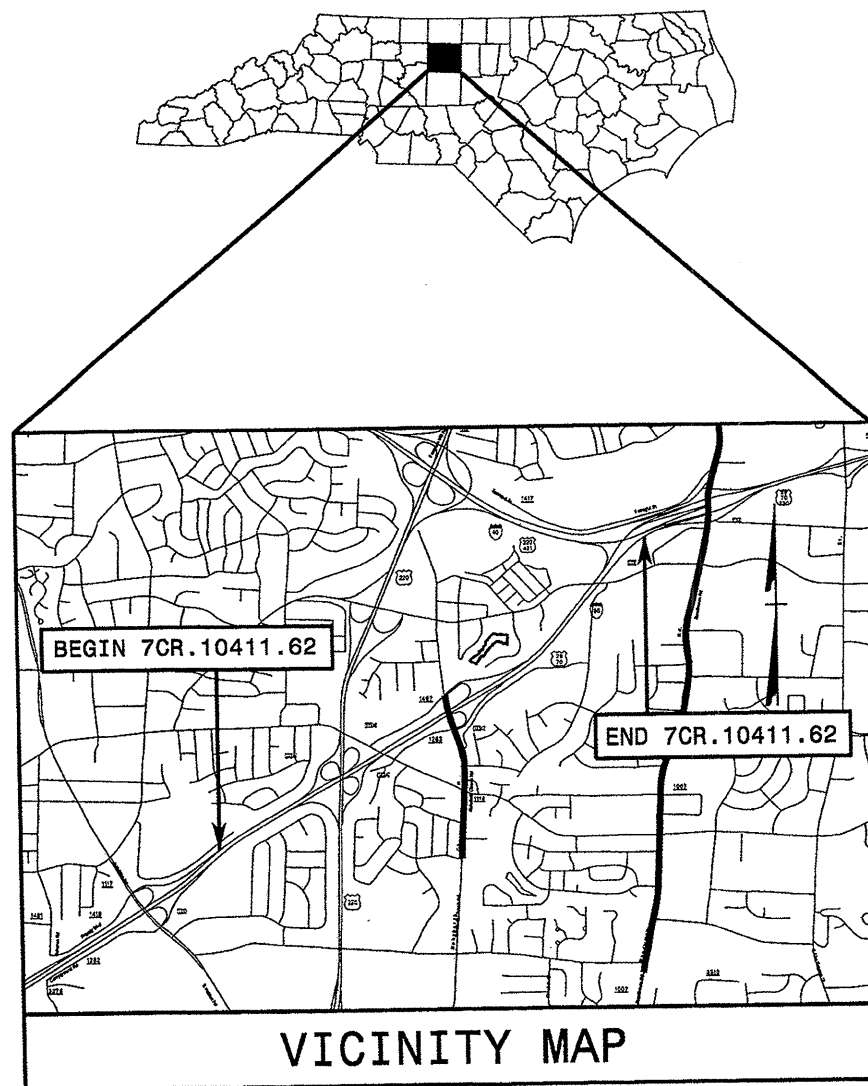


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STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**TRANSPORTATION MANAGEMENT PLAN**

**GUILFORD COUNTY**



**INDEX OF SHEETS**

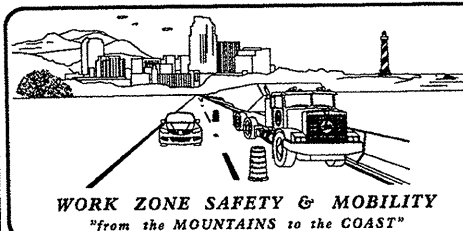
SHEET NO.	TITLE
TMP-1	TITLE SHEET, VICINITY MAP AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS AND LEGEND
TMP-2	TRANSPORTATION OPERATIONS PLAN: (MANAGEMENT STRATEGIES AND GENERAL NOTES)
TMP-3	PHASING
TMP-4	OFF-SITE DETOUR FOR MAPS #2 & #3
TMP-5	OFF-SITE DETOUR FOR MAPS #4, #5 & #6
TMP-6	OFF-SITE DETOUR FOR MAPS #7 & #8
TMP-7	OFF-SITE DETOUR FOR MAP #10
TMP-8	OFF-SITE DETOUR FOR MAPS #11 & #12
TMP-9	OFF-SITE DETOUR FOR RAMP R-4052 AND MAPS #13 & #14
TMP-10	OFF-SITE DETOUR FOR MAPS #15 & #16
TMP-11	TYPICAL FOR TEMPORARY RAMP CLOSURES
TMP-12	CROSS-SECTIONS FOR LANE CLOSURES
TMP-13	RESURFACING ADVANCE WARNING SIGNS FOR HIGH SPEED FACILITIES ≥ 60 MPH
SIG-1	TYPICAL LOOP LOCATIONS

SHEET NO.

TMP-1

**7CR.10411.62**

**PROJECT:**



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  
 JOSEPH ISHAK, P.E. TRAFFIC CONTROL PROJECT ENGINEER  
 MICHAEL STEELMAN TRAFFIC CONTROL PROJECT DESIGN ENGINEER  
 DURWOOD KENNEDY, P.E. TRAFFIC CONTROL DESIGN ENGINEER



APPROVED: \_\_\_\_\_  
DATE: \_\_\_\_\_

SEAL  
  
 11-1-2013





## MANAGEMENT STRATEGIES

THE OBJECTIVE OF THIS PROJECT IS MILLING AND RESURFACING OF THE EXISTING PAVEMENT ALONG I-85 BUSINESS AND ASSOCIATED RAMPS. I-85 BUSINESS RUNS NORTH/SOUTH IN GUILFORD COUNTY, FROM THE I-40/I-85 BUSINESS SPLIT TO EXIT #34 (HOLDEN ROAD).

THE EXISTING ROADWAY IS A 6-LANE DIVIDED FREEWAY WITH A GRASS MEDIAN THROUGHOUT THIS SECTION.

THE PROPOSED PAVEMENT REHABILITATION ON I-85 WILL BE CONSTRUCTED USING A COMBINATION OF LANE CLOSURES, RAMP CLOSURES AND FOLLOWING THE REQUIREMENTS OF PROJECT GENERAL NOTES AND PHASING.

## 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. 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.

### TIME RESTRICTIONS

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

ROAD NAME	DAY AND TIME RESTRICTIONS
I-85 BUSINESS	MONDAY THRU THURSDAY FROM 6:00 A.M. TO 8:00 P.M. AND FRIDAY 6:00 A.M. TO SUNDAY 8:00 P.M.

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

ROAD NAME
I-85 BUSINESS & ANY RAMPS

### HOLIDAY

- FOR ANY UNEXPECTED OCCURRENCE THAT CREATES UNUSUALLY HIGH TRAFFIC VOLUMES, AS DIRECTED BY THE ENGINEER.
- FOR NEW YEAR'S, BETWEEN THE HOURS OF 6:00 A.M. DECEMBER 31st TO 8:00 P.M. JANUARY 2ND. IF NEW YEAR'S DAY IS ON A FRIDAY, SATURDAY, SUNDAY, OR MONDAY THEN UNTIL 8:00 P.M. THE FOLLOWING TUESDAY.
- FOR EASTER, BETWEEN THE HOURS OF 6:00 A.M. THURSDAY AND 8:00 P.M. MONDAY.
- FOR MEMORIAL DAY, BETWEEN THE HOURS OF 6:00 A.M. FRIDAY AND 8:00 P.M. TUESDAY.
- FOR INDEPENDENCE DAY, BETWEEN THE HOURS OF 6:00 A.M. THE DAY BEFORE INDEPENDENCE DAY AND 8:00 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 8:00 P.M. THE TUESDAY AFTER INDEPENDENCE DAY.
- FOR LABOR DAY, BETWEEN THE HOURS OF 6:00 A.M. FRIDAY AND 8:00 P.M. TUESDAY.
- FOR THANKSGIVING DAY, BETWEEN THE HOURS OF 6:00 A.M. TUESDAY AND 8:00 P.M. MONDAY.
- FOR CHRISTMAS, BETWEEN THE HOURS OF 6:00 A.M. THE FRIDAY BEFORE THE WEEK OF CHRISTMAS DAY AND 8:00 P.M. THE FOLLOWING TUESDAY AFTER THE WEEK OF CHRISTMAS.
- NO WORK SHALL BE PERFORMED ON ANY MAPS DURING THE HIGH POINT FURNITURE MARKETS FROM APRIL 5TH THRU 11TH, 2014 AND FROM OCTOBER 18TH THRU 25TH, 2104.
- NO WORK SHALL BE PERFORMED ON ANY MAPS DURING THE WYNDHAM CHAMPIONSHIP GOLF TOURNAMENT FROM AUGUST 11TH THRU 17TH, 2014.

## GENERAL NOTES CONTINUE

- C) DO NOT CLOSE ROADS AS FOLLOWS:
- | ROAD NAME | DAY AND TIME RESTRICTIONS   |
|-----------|---|
| ANY RAMPS | MONDAY THRU THURSDAY<br>FROM 6:00 A.M. TO 10:00 P.M.<br>AND<br>FRIDAY 6:00 A.M. TO<br>SUNDAY 10:00 P.M. |

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

### LANE AND SHOULDER CLOSURE REQUIREMENTS

- 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 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.

- H) 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.
- I) 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.
- J) DO NOT INSTALL MORE THAN ONE LANE CLOSURE OR ROAD CLOSURE IN ANY ONE DIRECTION ON I-85.

### PAVEMENT EDGE DROP OFF REQUIREMENTS

- K) BACKFILL AT A 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.
- L) 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 (WB-11) 500 FEET IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

### TRAFFIC PATTERN ALTERATIONS

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

### SIGNING

- N) 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.
- O) PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRANSPORTATION MANAGEMENT PLANS.
- PROVIDE SIGNING REQUIRED FOR THE OFF-SITE DETOUR ROUTE(S) AS SHOWN IN THE TRANSPORTATION MANAGEMENT PLANS.

- P) 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.
- Q) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

### TRAFFIC CONTROL DEVICES

- R) 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.
- S) PLACE TYPE III BARRICADES, WITH "ROAD CLOSED" SIGN R11-2 ATTACHED, OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.
- T) PLACE ADDITIONAL SETS OF THREE CHANNELIZING DEVICES DRUMS PERPENDICULAR TO THE EDGE OF TRAVELWAY ON 500 FT CENTERS WHEN UNOPENED LANES ARE CLOSED TO TRAFFIC.

### PAVEMENT MARKINGS AND MARKERS

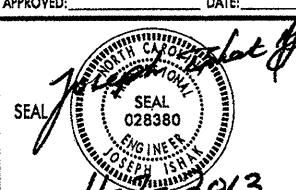

U) INSTALL TEMPORARY PAVEMENT MARKINGS AND TEMPORARY PAVEMENT MARKERS ON INTERIM LAYERS OF PAVEMENT AS FOLLOWS:

ROAD NAME	MARKING	MARKER
I-85 BUSINESS & ANY RAMPS	PAINT	N/A

- V) 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.
- W) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- X) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.

### MISCELLANEOUS

- Y) WORK IN A CONTINUOUS MANNER WHEN ROAD CLOSURES ARE IN PLACE. RESTORE SAFE CONDITIONS, REMOVE ALL CLOSURES, AND RESTORE TRAFFIC TO ORIGINAL PATTERNS AT THE END OF EACH WORK PERIOD.
- Z) FINISH THE WIDENING OF BOTH SIDES OF THE ENTIRE WIDTH OF EXISTING ROADWAY AND ALL PATCHING BEFORE PLACING THE SURFACE COURSES IN THE ORDER AS AGREED UPON WITH THE ENGINEER AT THE FIRST PRE-CONSTRUCTION MEETING.

APPROVED: _____ DATE: _____ 		<h1 style="margin: 0;">TRANSPORTATION OPERATON PLAN</h1>
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 dr kennedy AT 11/2/2014

## PHASING

**NOTES:**

- FOR EACH WORK PERIOD, INSTALL PORTABLE CHANGEABLE MESSAGE SIGNS (CMS) AT ALL REQUIRED LOCATIONS BEFORE NARROWING/CLOSING A TRAVEL LANE AND /OR RAMP (REFER TO RSD 1101.02, RSD 1101.03 & RSD 1101.04 AND SHEETS TMP-4 THRU TMP-13).
- REFER TO RSD 1101.02, SHEETS 9 & 10 OF 15, FOR RAMPS IMPACTED BY CONSTRUCTION AND/OR LANE CLOSURES.
- WORK IN A CONTINUOUS MANNER WHILE TRAVEL LANE AND/OR RAMP CLOSURES ARE IN PLACE.
- MILL AND PAVE BACK BY THE END OF EACH WORK PERIOD, OR AS DIRECTED BY THE ENGINEER.
- ALL PAVING OPERATIONS SHALL HAVE TEMPORARY PAVEMENT MARKINGS PLACED PRIOR TO REOPENING TO TRAFFIC.
- MILLING AND RESURFACING OPERATIONS WILL BE CONDUCTED UNDER LANE AND/OR RAMP CLOSURES.
- WORK WILL BE RESTRICTED TO ONE DIRECTION AT A TIME.
- WHEN RAMPS NEED TO BE CLOSED TO PERFORM RIGHT LANE OR RAMP WORK, ENSURE DETOUR ROUTES FOR AFFECTED RAMPS REMAIN OPEN.

**STEP 1:**

USING TMP-13, INSTALL REQUIRED ADVANCED WORK ZONE WARNING SIGNS.

USING RSD 1101.02, RSD 1101.03, RSD 1101.04, INSTALL AND COVER REQUIRED WARNING AND/OR DETOUR SIGNS WITHIN THE PROJECT LIMITS, AS DIRECTED BY THE ENGINEER.

**STEP #2 AND STEP #3 OPERATIONS MAY BE CONDUCTED/REPEATED IN ANY ORDER, BUT MAY NOT BE CONDUCTED SIMULTANEOUSLY. HOWEVER, OPERATIONS ALONG CENTER LANES MAY NOT BE PERFORMED UNTIL THE RUMBLE STRIPS ALONG THE RIGHT SHOULDER HAVE BEEN MILLED AND PAVED TO PROVIDE A SMOOTH SURFACE.**

**STEP 2 (FOR EACH SECTION OF RESURFACING ALONG LEFT OR CENTER LANES):**  
AWAY FROM TRAFFIC, PERFORM THE FOLLOWING:

- A) ACTIVATE CMSs, UNCOVER REQUIRED WARNING SIGNS, INSTALLED IN STEP 1.
- B) USING RSD 1101.02 AND SHEET TMP-12, PERFORM THE WORK REQUIRED UNDER LANE CLOSURE.
- C) KEEP, COVER OR REMOVE ALL WARNING SIGNS AND DEVICES, AND RESTORE TRAFFIC TO THE ORIGINAL PATTERN AT THE END OF EACH WORK PERIOD.

**STEP 3 (FOR EACH SECTION OF RESURFACING ALONG RIGHT LANES AND/OR RAMPS):**  
AWAY FROM TRAFFIC, PERFORM THE FOLLOWING:

- A) ACTIVATE CMSs, UNCOVER REQUIRED WARNING SIGNS, INSTALLED IN STEP 1.

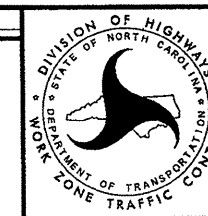
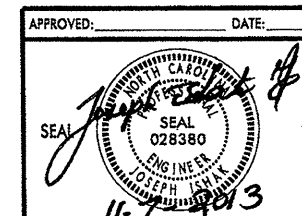
USING RSD 1101.02, RSD 1101.03 AND SHEETS TMP-4 THRU TMP-12 INSTALL REQUIRED WARNING AND DETOUR SIGNS WITHIN THE PROJECT LIMITS.

PLACE TYPE III BARRICADES TO CLOSE THE RAMPS ASSOCIATED WITH SECTION OF I-85 TO BE RESURFACED, AND DETOUR AFFECTED RAMP TRAFFIC (SEE TMP-4 THRU TMP-10).

- B) USING RSD 1101.02 AND SHEET TMP-12, PERFORM THE WORK REQUIRED UNDER LANE AND/OR RAMP CLOSURES. SEE SHEET SIG-1 (TYPICAL LOOP LOCATIONS).
- C) KEEP, COVER OR REMOVE ALL WARNING AND CLOSURE SIGNS AND DEVICES, AND RESTORE TRAFFIC TO THE ORIGINAL PATTERN AT THE END OF EACH WORK PERIOD.

**STEP 4:**

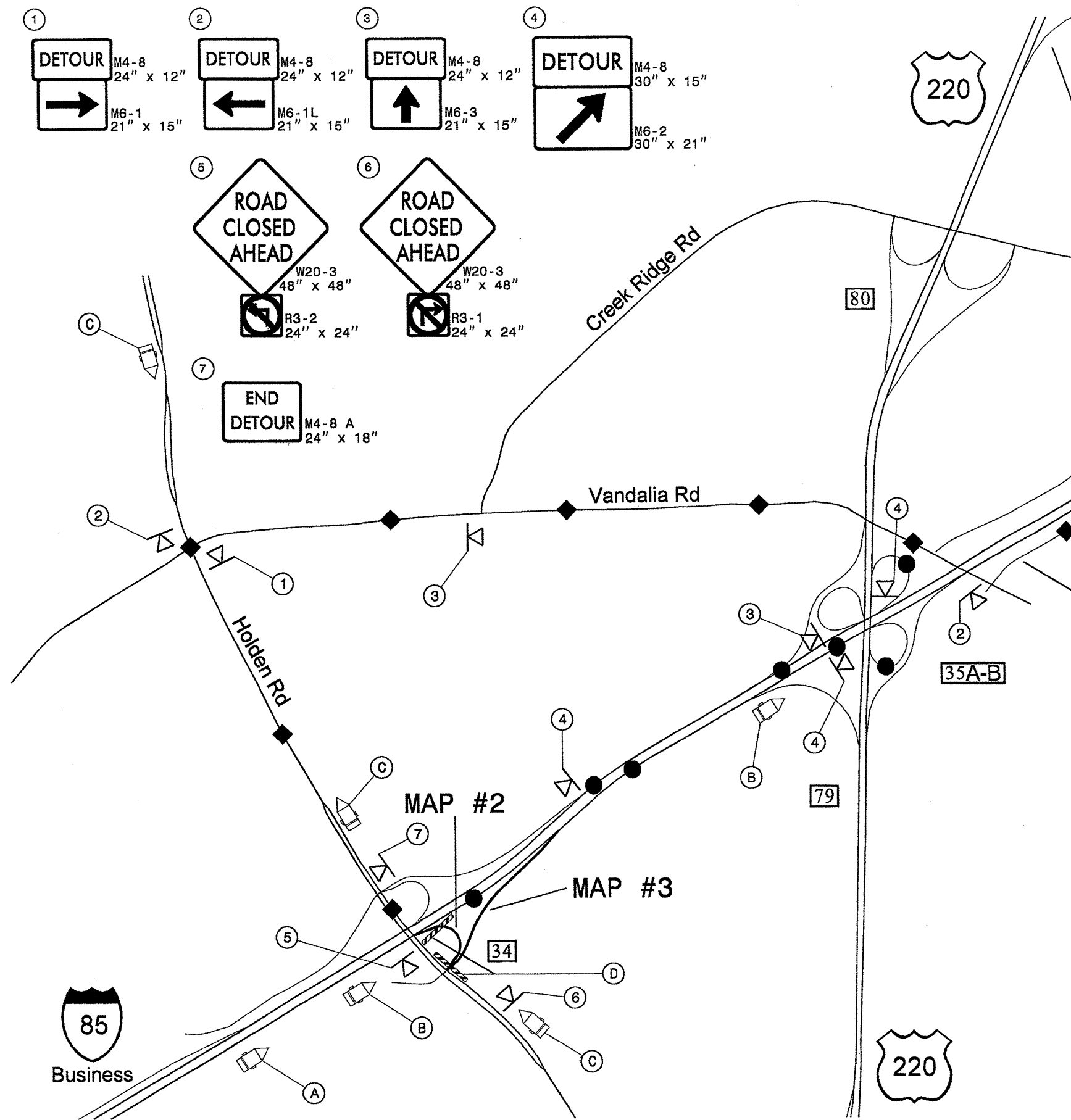
REMOVE ALL WORK ZONE TRAFFIC CONTROL DEVICES, ALL ROAD CLOSURE AND DETOUR SIGNS.



PHASING

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05-NOV-2013 09:19  
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 dkennedy AT TE26474



**A** SUGGESTED MESSAGES

MESSAGE NO. 1	MESSAGE NO. 2
EXIT 34 CLOSED	FOLLOW DETOUR SIGNS
CHANGEABLE MESSAGE SIGN	

**B** SUGGESTED MESSAGES

MESSAGE NO. 1	MESSAGE NO. 2
HOLDEN ROAD TRAFFIC	EXIT 35B US-220 NORTH
CHANGEABLE MESSAGE SIGN	

**C** SUGGESTED MESSAGES

MESSAGE NO. 1	MESSAGE NO. 2
I-85 BUS NORTH TRAFFIC	FOLLOW DETOUR SIGNS
CHANGEABLE MESSAGE SIGN	

**D**

TYPE III BARRICADE

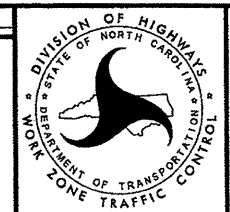
**OFF-SITE DETOUR ROUTE FOR MAP #2** = ● — ● — ●  
 I-85 BUS. NORTH TO US-220 NORTH TO I-85 BUS. SOUTH TO SR-1117 (HOLDEN ROAD)

**OFF-SITE DETOUR ROUTE FOR MAP #3** = ◆ — ◆ — ◆  
 SR-1117 (HOLDEN ROAD) TO VANDALIA ROAD TO PEPPERSTONE DRIVE TO I-85 BUS. NORTH

- NOTES:**
- 1) USING RSD 1101.02, SHEET 8 OF 15, AND SHEETS TMP-11 AND TMP-12, INSTALL SIGNS FOR RIGHT LANE CLOSURE OF I-85 BUSINESS NORTH, AS DIRECTED BY THE ENGINEER.
  - 2) LOCATE AND INSTALL ALL CMS UNITS TO BE LEVEL NEAR INTERCHANGES, AS DIRECTED BY THE ENGINEER.
  - 3) CMS UNITS AND DETOUR SIGNS ARE TO BE INSTALLED AS DIRECTED BY THE ENGINEER.
  - 4) USE DRUMS TO CLOSE MERGE AND ASSOCIATED TURN LANES FOR OFF-RAMPS, AS DIRECTED BY THE ENGINEER.

APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_

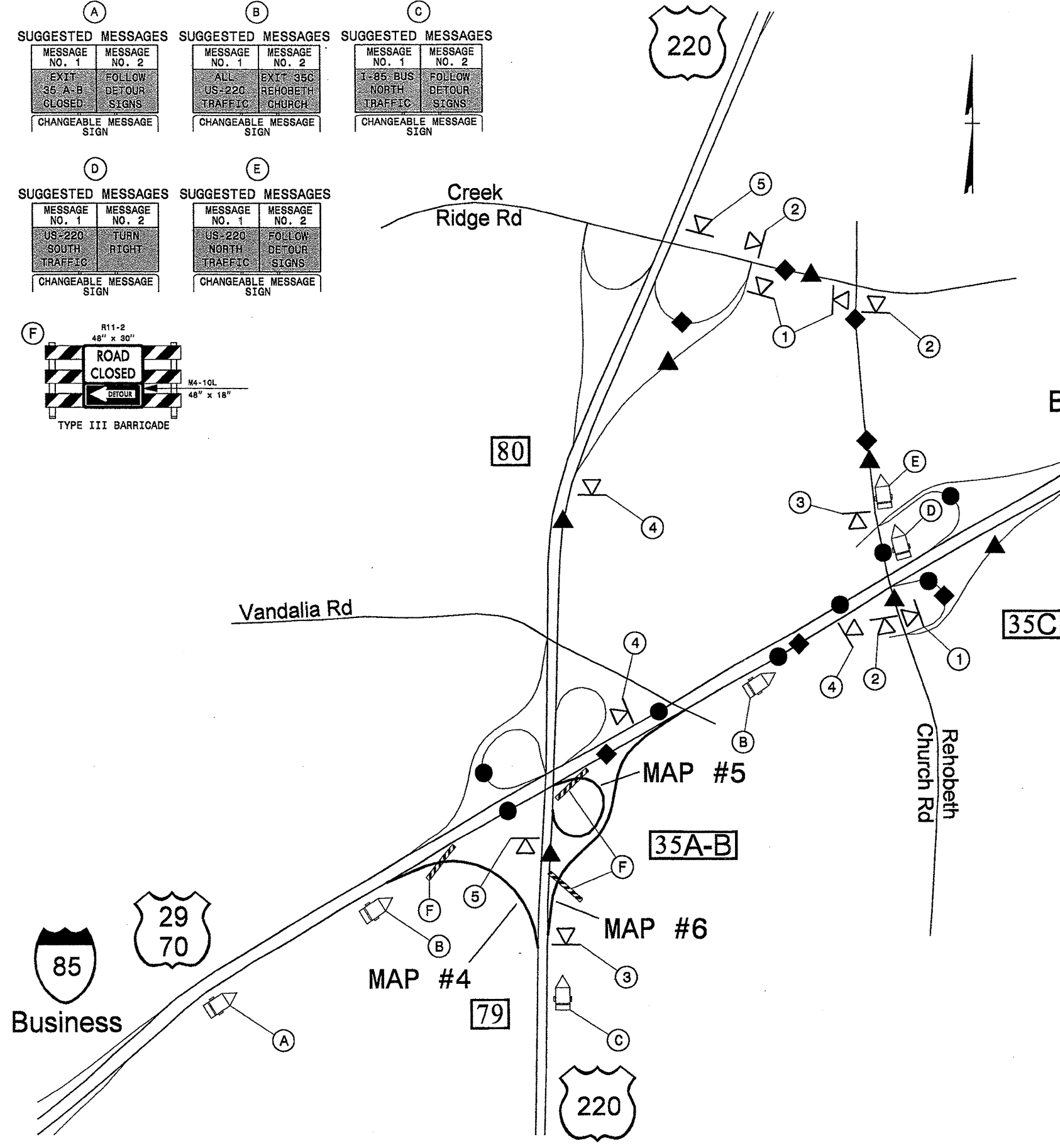
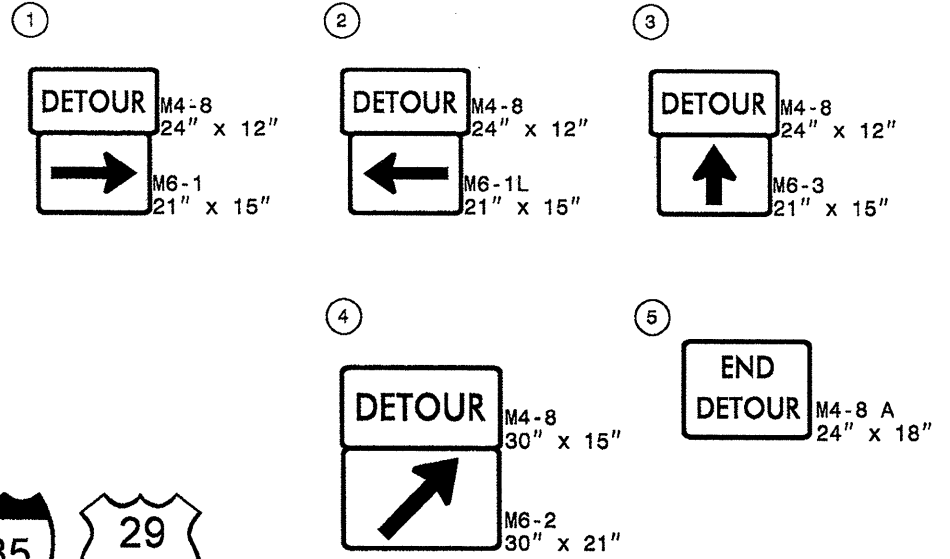
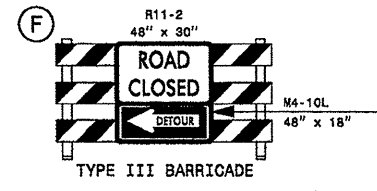
11-7-2013



**OFF-SITE DETOUR FOR MAPS #2 & #3**

A		B		C	
MESSAGE NO. 1	MESSAGE NO. 2	MESSAGE NO. 1	MESSAGE NO. 2	MESSAGE NO. 1	MESSAGE NO. 2
EXIT 35 A-B CLOSED	FOLLOW DETOUR SIGNS	ALL US-220 TRAFFIC	EXIT 35C REHOBETH CHURCH	I-85 BUS NORTH TRAFFIC	FOLLOW DETOUR SIGNS
CHANGEABLE MESSAGE SIGN		CHANGEABLE MESSAGE SIGN		CHANGEABLE MESSAGE SIGN	

D		E	
MESSAGE NO. 1	MESSAGE NO. 2	MESSAGE NO. 1	MESSAGE NO. 2
US-220 SOUTH TRAFFIC	TURN RIGHT	US-220 NORTH TRAFFIC	FOLLOW DETOUR SIGNS
CHANGEABLE MESSAGE SIGN		CHANGEABLE MESSAGE SIGN	



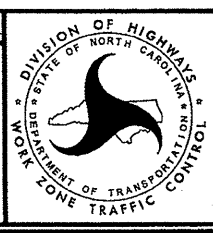
**OFF-SITE DETOUR ROUTE FOR MAP #4** = ●—●—●  
 I-85 BUS. NORTH TO SR-1115 (REHOBETH CHURCH ROAD) TO  
 TO I-85 BUS. SOUTH TO US-220 SOUTH

**OFF-SITE DETOUR ROUTE FOR MAP #5** = ◆—◆—◆  
 I-85 BUS. NORTH TO SR-1115 (REHOBETH CHURCH ROAD) TO  
 CREEK RIDGE ROAD TO US-220 NORTH

**OFF-SITE DETOUR ROUTE FOR MAP #6** = ▲—▲—▲  
 US-220 NORTH TO CREEK RIDGE ROAD TO SR-1115 (REHOBETH  
 CHURCH ROAD) TO I-85 BUS. NORTH

- NOTES:**
- 1) USING RSD 1101.02, SHEET 8 OF 15, AND SHEETS TMP-11 AND TMP-12, INSTALL SIGNS FOR RIGHT LANE CLOSURE OF I-85 BUSINESS NORTH, AS DIRECTED BY THE ENGINEER.
  - 2) LOCATE AND INSTALL ALL CMS UNITS TO BE LEVEL NEAR INTERCHANGES, AS DIRECTED BY THE ENGINEER.
  - 3) CMS UNITS AND DETOUR SIGNS ARE TO BE INSTALLED AS DIRECTED BY THE ENGINEER.
  - 4) USE DRUMS TO CLOSE MERGE AND ASSOCIATED TURN LANES FOR OFF-RAMPS, AS DIRECTED BY THE ENGINEER.

APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_



OFF-SITE DETOUR  
 FOR MAPS #4, #5 & #6

05-NOV-2013 09:42  
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 drKennedy AT TE26474



05-NV-2013 09:24  
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 dr Kennedy AT 11/26/14

A	
MESSAGE NO. 1	MESSAGE NO. 2
EXIT 219 CLOSED	FOLLOW DETOUR SIGNS
CHANGEABLE MESSAGE SIGN	

B	
MESSAGE NO. 1	MESSAGE NO. 2
I-85 BUS SOUTH TRAFFIC	EXIT 221 TO ELM-EUGENE
CHANGEABLE MESSAGE SIGN	

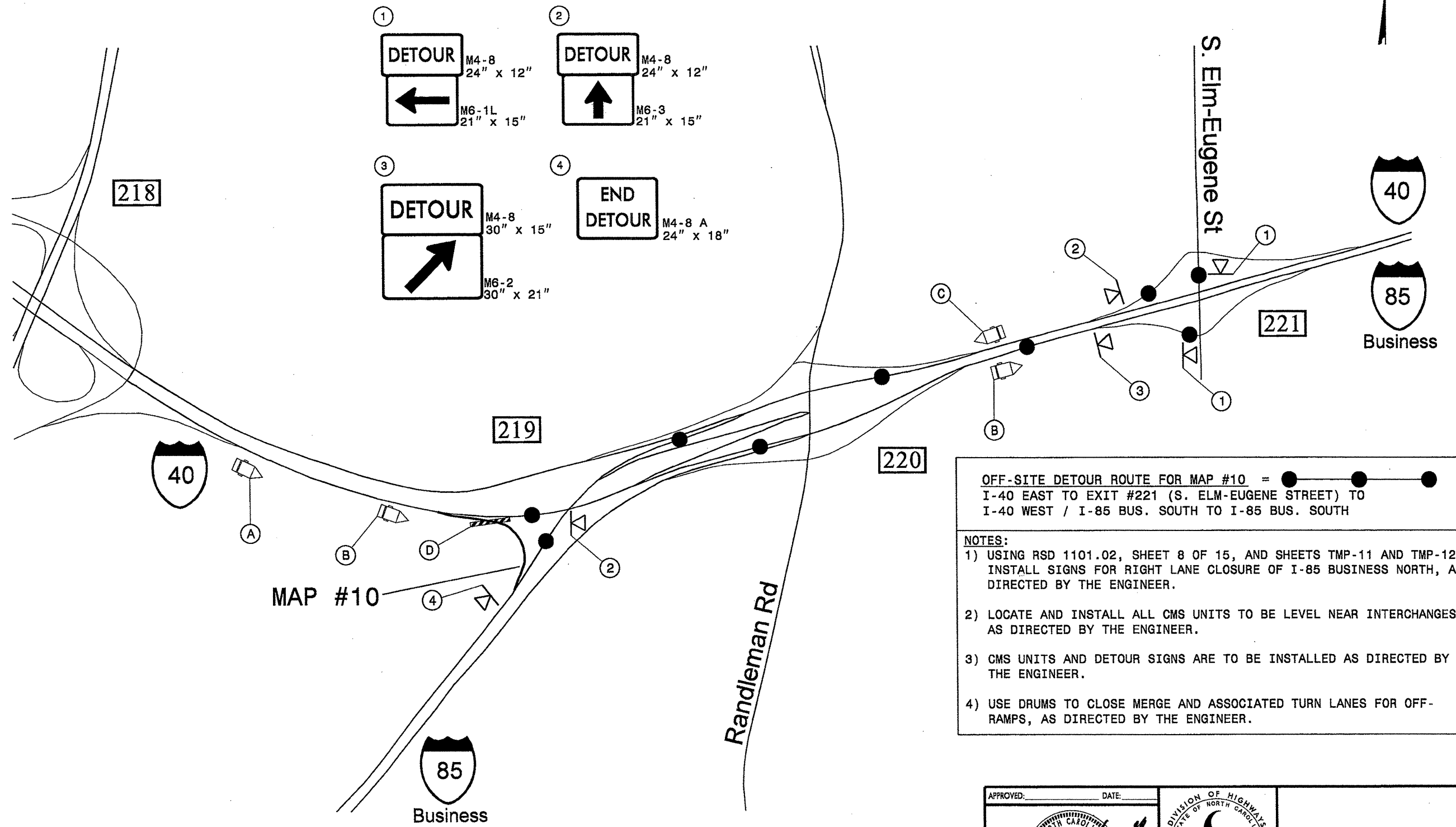
C	
MESSAGE NO. 1	MESSAGE NO. 2
I-85 BUS SOUTH TRAFFIC	EXIT 219 KEEP LEFT
CHANGEABLE MESSAGE SIGN	

D

R11-2  
48" x 30"

M4-10L  
48" x 18"

TYPE III BARRICADE



**OFF-SITE DETOUR ROUTE FOR MAP #10** = ●—●—●—●—●

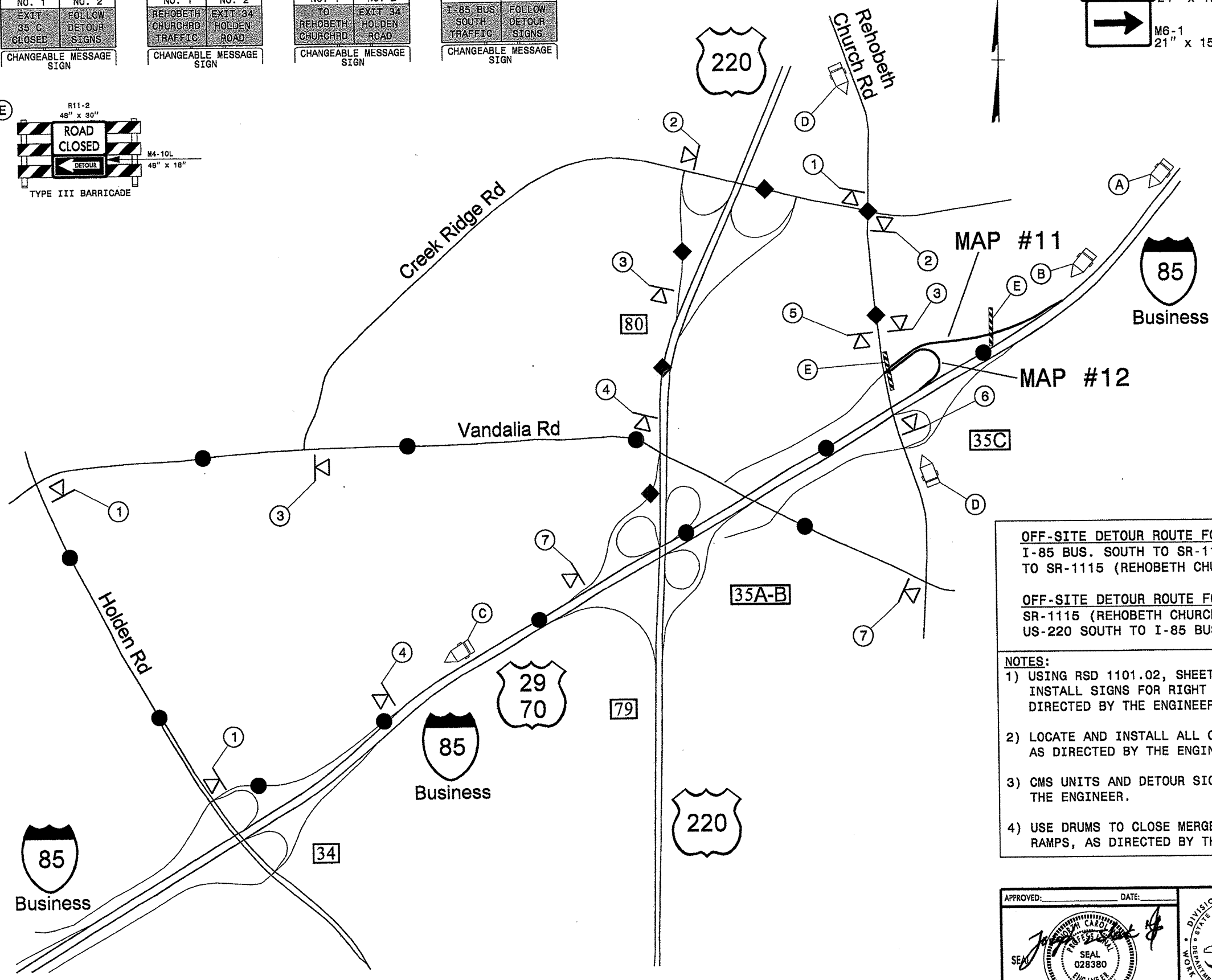
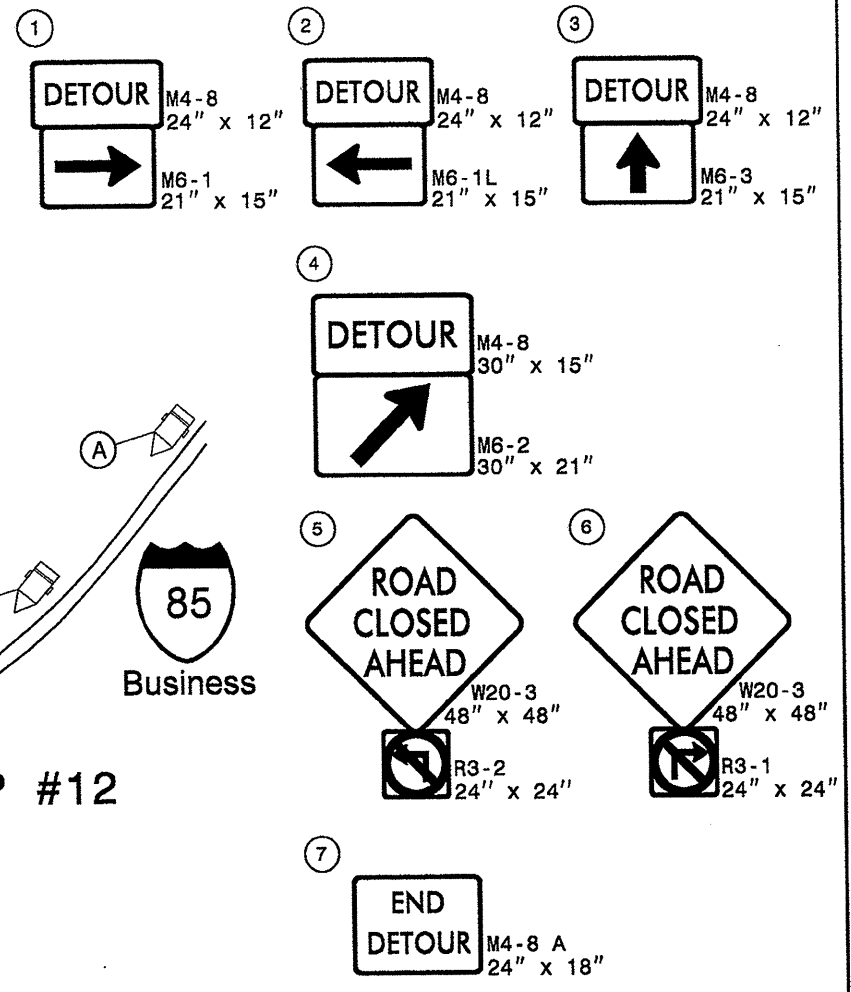
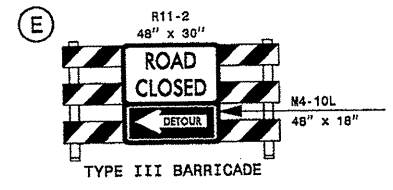
I-40 EAST TO EXIT #221 (S. ELM-EUGENE STREET) TO I-40 WEST / I-85 BUS. SOUTH TO I-85 BUS. SOUTH

**NOTES:**

- 1) USING RSD 1101.02, SHEET 8 OF 15, AND SHEETS TMP-11 AND TMP-12, INSTALL SIGNS FOR RIGHT LANE CLOSURE OF I-85 BUSINESS NORTH, AS DIRECTED BY THE ENGINEER.
- 2) LOCATE AND INSTALL ALL CMS UNITS TO BE LEVEL NEAR INTERCHANGES, AS DIRECTED BY THE ENGINEER.
- 3) CMS UNITS AND DETOUR SIGNS ARE TO BE INSTALLED AS DIRECTED BY THE ENGINEER.
- 4) USE DRUMS TO CLOSE MERGE AND ASSOCIATED TURN LANES FOR OFF-RAMPS, AS DIRECTED BY THE ENGINEER.

APPROVED:	DATE:	
	11-7-2013	
		<b>OFF-SITE DETOUR FOR MAP #10</b>

A		B		C		D	
MESSAGE NO. 1	MESSAGE NO. 2	MESSAGE NO. 1	MESSAGE NO. 2	MESSAGE NO. 1	MESSAGE NO. 2	MESSAGE NO. 1	MESSAGE NO. 2
EXIT 35 C CLOSED	FOLLOW DETOUR SIGNS	REHOBETH CHURCHRD TRAFFIC	EXIT 34 HOLDEN ROAD	TO REHOBETH CHURCHRD	EXIT 34 HOLDEN ROAD	I-85 BUS SOUTH TRAFFIC	FOLLOW DETOUR SIGNS
CHANGEABLE MESSAGE SIGN		CHANGEABLE MESSAGE SIGN		CHANGEABLE MESSAGE SIGN		CHANGEABLE MESSAGE SIGN	



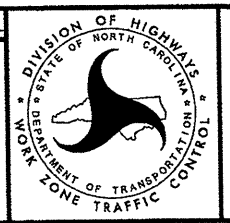
**OFF-SITE DETOUR ROUTE FOR MAP #11** = ●●●●●  
 I-85 BUS. SOUTH TO SR-1117 (HOLDEN ROAD) TO VANDALIA ROAD TO SR-1115 (REHOBETH CHURCH ROAD)

**OFF-SITE DETOUR ROUTE FOR MAP #12** = ◆◆◆◆◆  
 SR-1115 (REHOBETH CHURCH ROAD) TO CREEK RIDGE ROAD TO US-220 SOUTH TO I-85 BUS. SOUTH

- NOTES:**
- 1) USING RSD 1101.02, SHEET 8 OF 15, AND SHEETS TMP-11 AND TMP-12, INSTALL SIGNS FOR RIGHT LANE CLOSURE OF I-85 BUSINESS NORTH, AS DIRECTED BY THE ENGINEER.
  - 2) LOCATE AND INSTALL ALL CMS UNITS TO BE LEVEL NEAR INTERCHANGES, AS DIRECTED BY THE ENGINEER.
  - 3) CMS UNITS AND DETOUR SIGNS ARE TO BE INSTALLED AS DIRECTED BY THE ENGINEER.
  - 4) USE DRUMS TO CLOSE MERGE AND ASSOCIATED TURN LANES FOR OFF-RAMPS, AS DIRECTED BY THE ENGINEER.

APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_

11-7-2013



OFF-SITE DETOUR  
 FOR MAPS #11 & #12

06-NOV-2013 12:35  
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 drkennedy AT TE26474



**(A) SUGGESTED MESSAGES**      **(B) SUGGESTED MESSAGES**      **(C) SUGGESTED MESSAGES**

MESSAGE NO. 1	MESSAGE NO. 2
EXIT 79-B CLOSED	FOLLOW DETOUR SIGNS

CHANGEABLE MESSAGE SIGN

MESSAGE NO. 1	MESSAGE NO. 2
I-85 BUS SOUTH TRAFFIC	EXIT 80 CREEK RIDGE RD

CHANGEABLE MESSAGE SIGN

MESSAGE NO. 1	MESSAGE NO. 2
EXIT 79 CLOSED	FOLLOW DETOUR SIGNS

CHANGEABLE MESSAGE SIGN

**(D) SUGGESTED MESSAGES**

MESSAGE NO. 1	MESSAGE NO. 2
EXIT 95-A CLOSED	FOLLOW DETOUR SIGNS

CHANGEABLE MESSAGE SIGN

**(E) SUGGESTED MESSAGES**

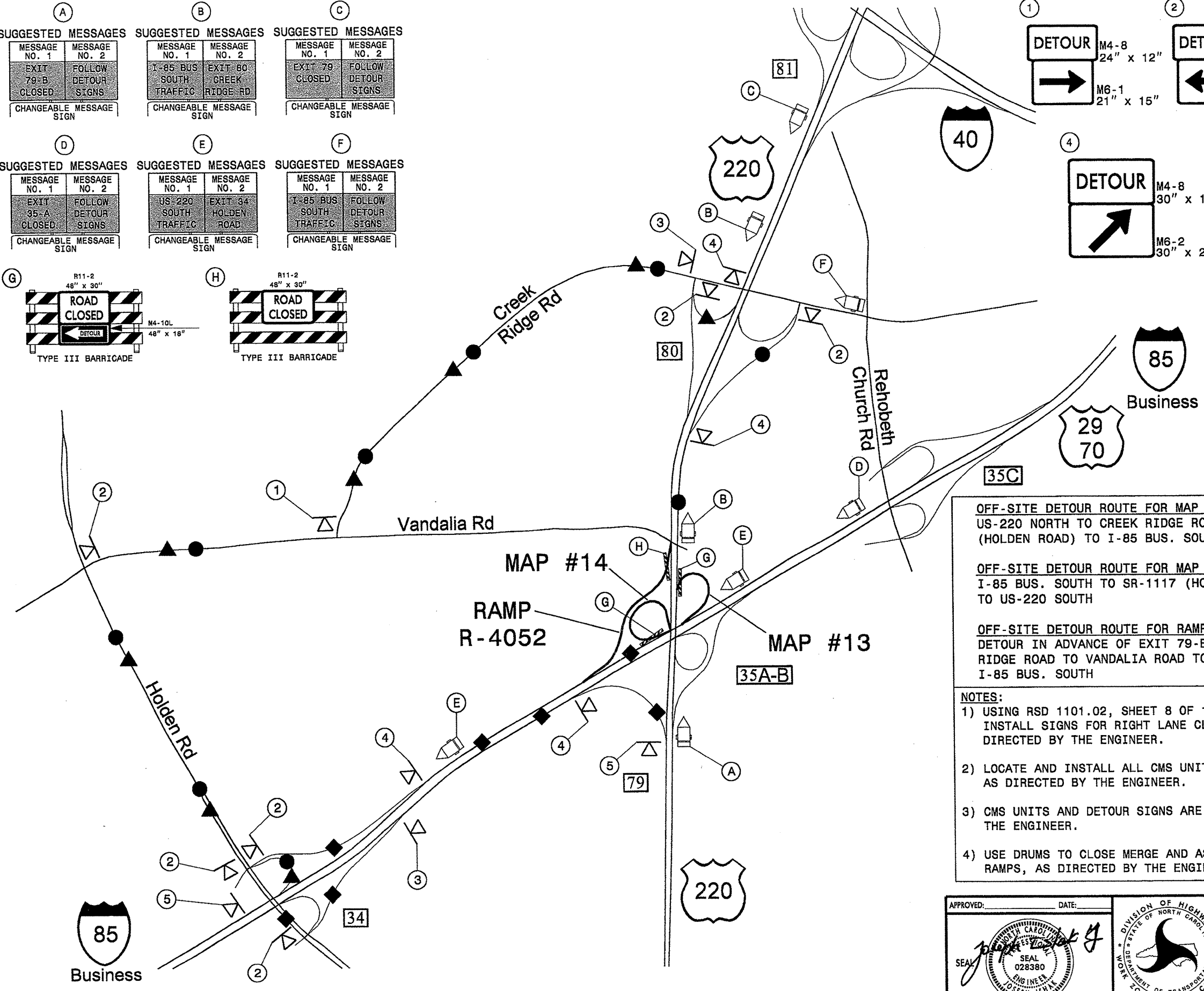
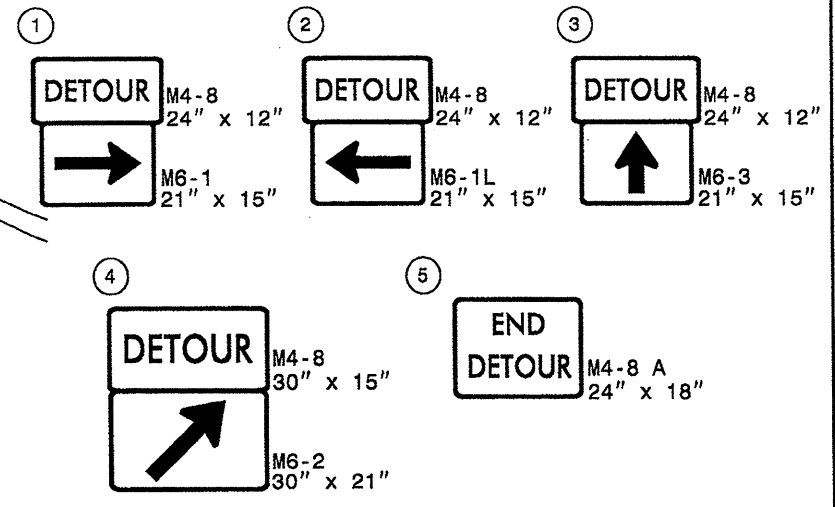
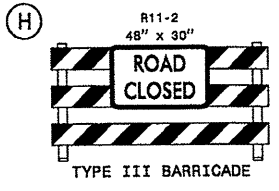
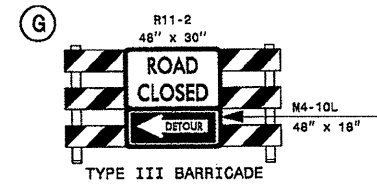
MESSAGE NO. 1	MESSAGE NO. 2
US-220 SOUTH TRAFFIC	EXIT 34 HOLDEN ROAD

CHANGEABLE MESSAGE SIGN

**(F) SUGGESTED MESSAGES**

MESSAGE NO. 1	MESSAGE NO. 2
I-85 BUS SOUTH TRAFFIC	FOLLOW DETOUR SIGNS

CHANGEABLE MESSAGE SIGN



**OFF-SITE DETOUR ROUTE FOR MAP #13** = ●—●—●—●  
US-220 NORTH TO CREEK RIDGE ROAD TO VANDALIA ROAD TO SR-1117 (HOLDEN ROAD) TO I-85 BUS. SOUTH

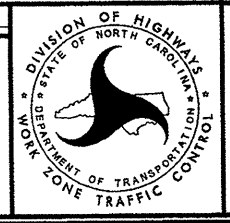
**OFF-SITE DETOUR ROUTE FOR MAP #14** = ◆—◆—◆—◆  
I-85 BUS. SOUTH TO SR-1117 (HOLDEN ROAD) TO I-85 BUS. NORTH TO US-220 SOUTH

**OFF-SITE DETOUR ROUTE FOR RAMP R-4052** = ▲—▲—▲—▲  
DETOUR IN ADVANCE OF EXIT 79-B ON CREEK RIDGE ROAD. CREEK RIDGE ROAD TO VANDALIA ROAD TO SR-1117 (HOLDEN ROAD) TO I-85 BUS. SOUTH

- NOTES:**
- 1) USING RSD 1101.02, SHEET 8 OF 15, AND SHEETS TMP-11 AND TMP-12, INSTALL SIGNS FOR RIGHT LANE CLOSURE OF I-85 BUSINESS NORTH, AS DIRECTED BY THE ENGINEER.
  - 2) LOCATE AND INSTALL ALL CMS UNITS TO BE LEVEL NEAR INTERCHANGES, AS DIRECTED BY THE ENGINEER.
  - 3) CMS UNITS AND DETOUR SIGNS ARE TO BE INSTALLED AS DIRECTED BY THE ENGINEER.
  - 4) USE DRUMS TO CLOSE MERGE AND ASSOCIATED TURN LANES FOR OFF-RAMPS, AS DIRECTED BY THE ENGINEER.

APPROVED:   
DATE: 11-7-2013

SEAL 028380  
ENGINEER  
JOSEPH J. ...

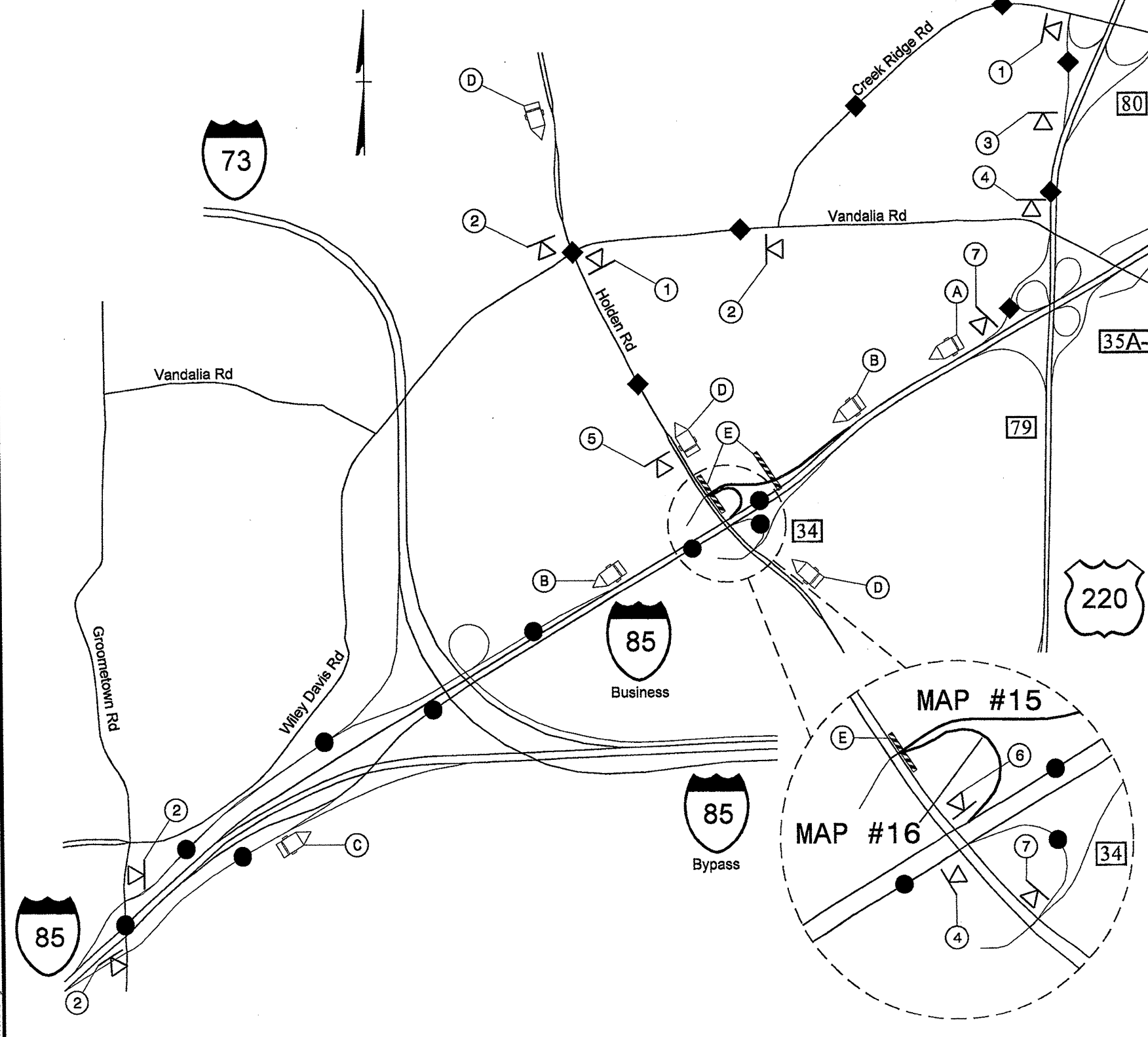
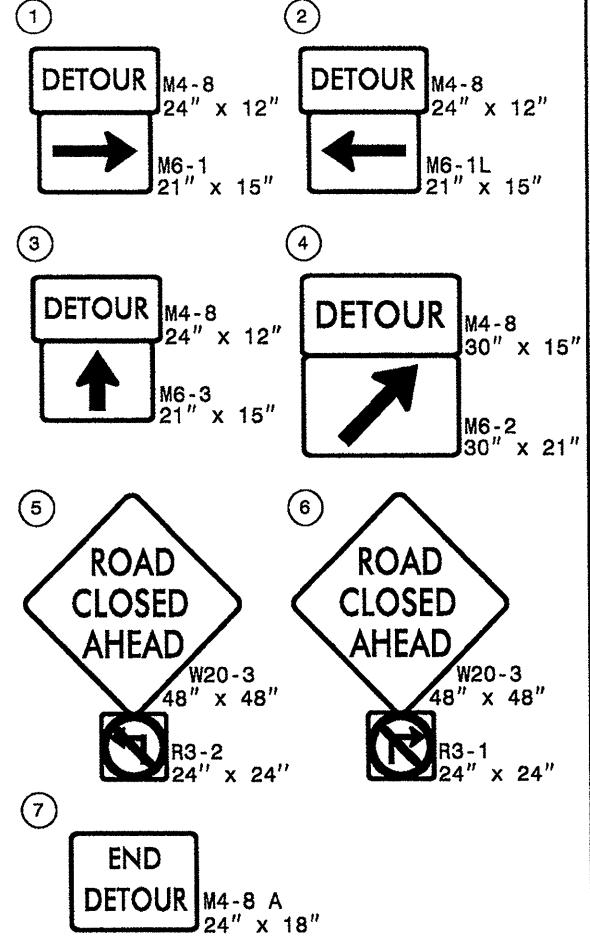
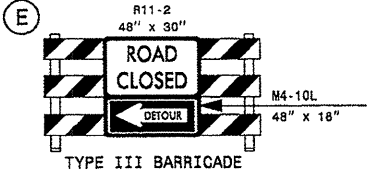


OFF-SITE DETOUR  
FOR RAMP R-4052 AND  
MAPS #13 & #14

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05 NOV 2013 09:42  
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 dkennedy AT 11/26/13

A		B		C		D	
MESSAGE NO. 1	MESSAGE NO. 2	MESSAGE NO. 1	MESSAGE NO. 2	MESSAGE NO. 1	MESSAGE NO. 2	MESSAGE NO. 1	MESSAGE NO. 2
EXIT 34 CLOSED	FOLLOW DETOUR SIGNS	EXIT 34 TRAFFIC	EXIT TO GROOMTOWN TOWN RD	HOLDEN ROAD TRAFFIC	KEEP LEFT	I-85 BUS SOUTH TRAFFIC	FOLLOW DETOUR SIGNS
CHANGEABLE MESSAGE SIGN		CHANGEABLE MESSAGE SIGN		CHANGEABLE MESSAGE SIGN		CHANGEABLE MESSAGE SIGN	



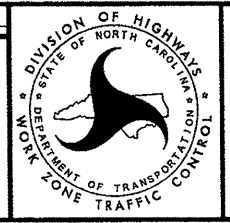
**OFF-SITE DETOUR ROUTE FOR MAP #15** = ●—●—●  
 I-85 BUS. SOUTH TO SR-1129 (GROOMTOWN ROAD) TO I-85 BUS. NORTH TO SR-1117 (HOLDEN ROAD)

**OFF-SITE DETOUR ROUTE FOR MAP #16** = ◆—◆—◆  
 SR-1117 (HOLDEN ROAD) TO VANDALIA ROAD TO CREEK RIDGE ROAD TO US-220 SOUTH TO I-85 BUS. SOUTH

- NOTES:**
- 1) USING RSD 1101.02, SHEET 8 OF 15, AND SHEETS TMP-11 AND TMP-12, INSTALL SIGNS FOR RIGHT LANE CLOSURE OF I-85 BUSINESS NORTH, AS DIRECTED BY THE ENGINEER.
  - 2) LOCATE AND INSTALL ALL CMS UNITS TO BE LEVEL NEAR INTERCHANGES, AS DIRECTED BY THE ENGINEER.
  - 3) CMS UNITS AND DETOUR SIGNS ARE TO BE INSTALLED AS DIRECTED BY THE ENGINEER.
  - 4) USE DRUMS TO CLOSE MERGE AND ASSOCIATED TURN LANES FOR OFF-RAMPS, AS DIRECTED BY THE ENGINEER.

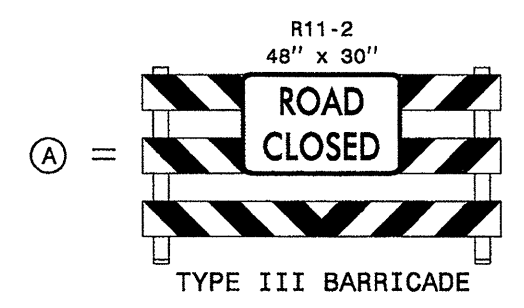
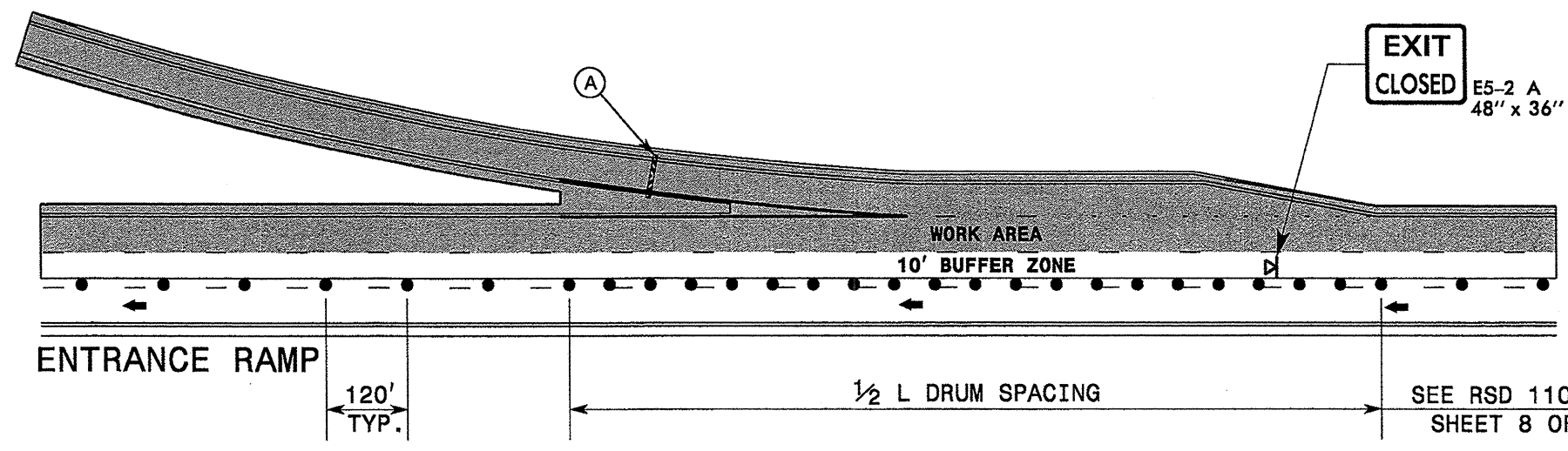
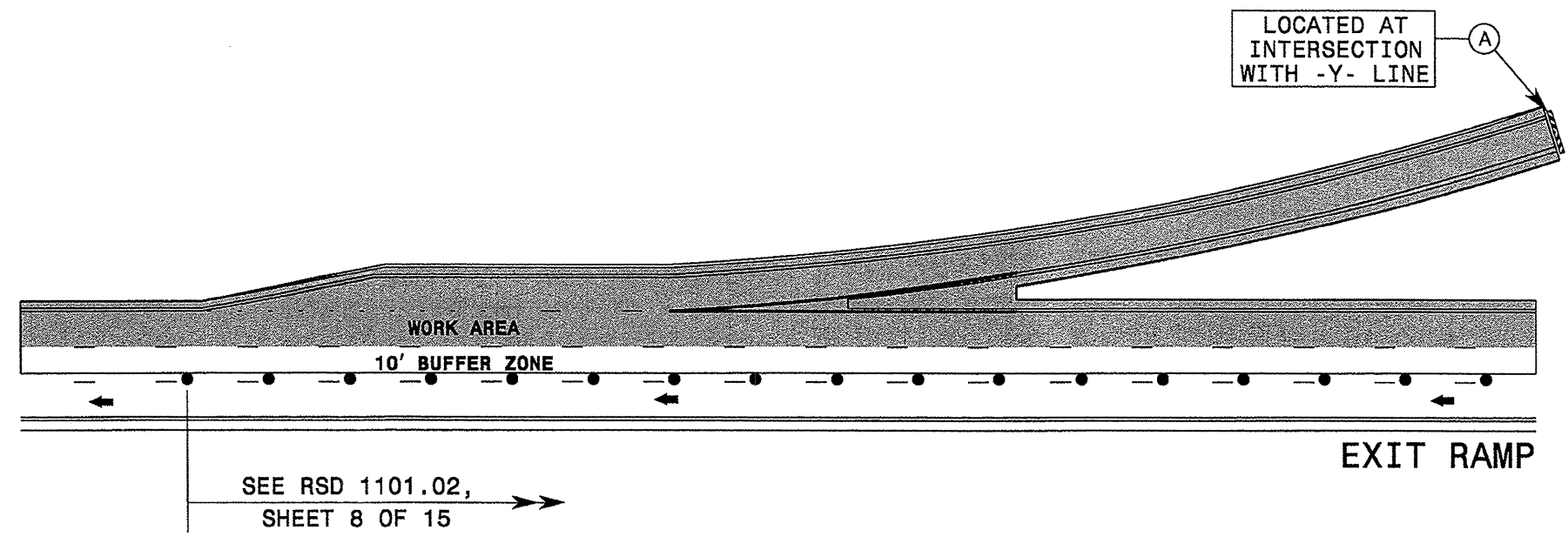
APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_

SEAL: 11-7-2013



OFF-SITE DETOUR  
 FOR MAPS #15 & #16

04-NOV-2013 15:14  
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 drKennedy AT 1E264741



**LEGEND**

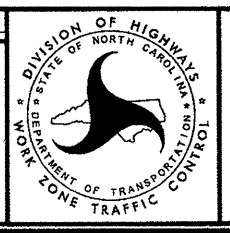
- DRUM
- ⊞ PORTABLE SIGN
- ← DIRECTION OF TRAFFIC FLOW

**GENERAL NOTES**

- 1- USE THE ABOVE DETAILS IN CONJUNCTION WITH A RIGHT LANE CLOSURE AS SHOWN ON RSD. 1101.02, SHEET 8 OF 15.
- 2- MOUNT EXIT CLOSED SIGNS A MINIMUM OF FIVE (5) FEET ABOVE THE PAVEMENT ELEVATION.

APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_

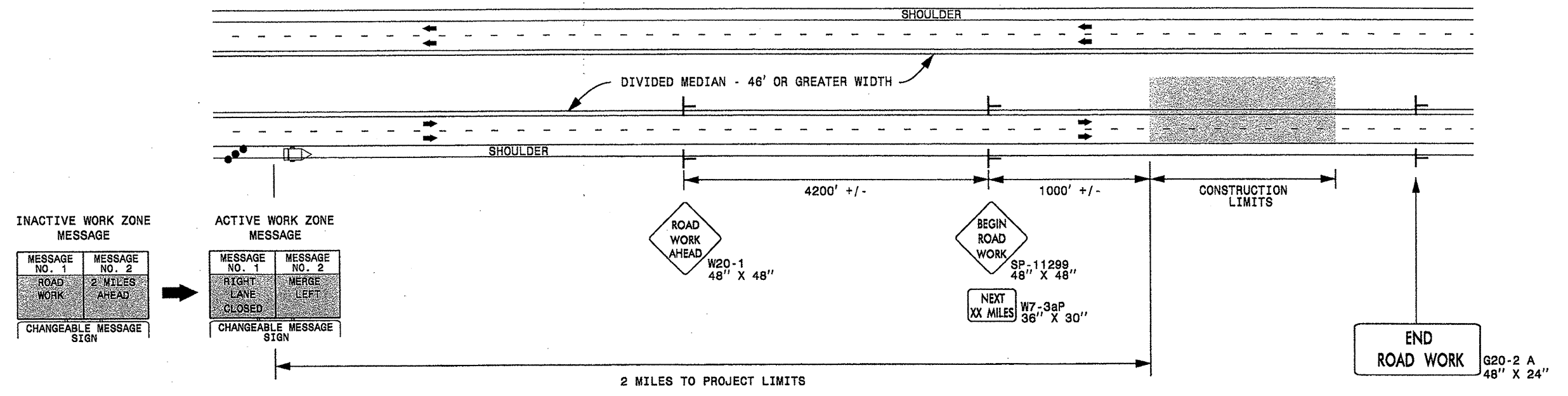
SEAL *Joseph E. ...* SEAL 028380  
 ENGINEER  
 JOSEPH E. ...  
 11-7-2013



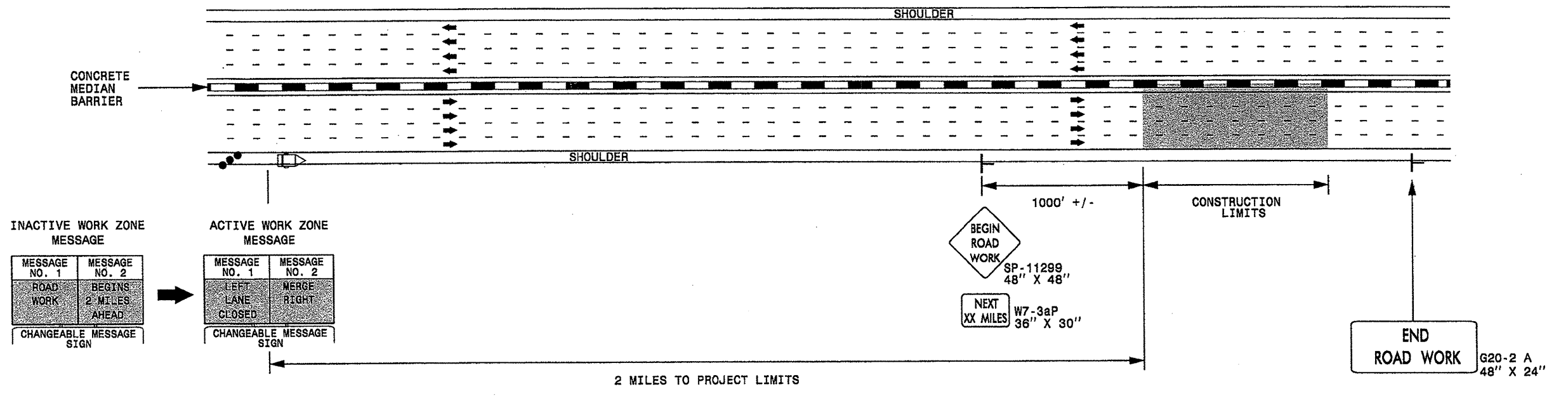
TYPICAL FOR  
 TEMPORARY RAMP  
 CLOSURES



## DIVIDED MEDIANS WITH WIDTHS 46' OR GREATER



## DIVIDED MEDIANS WITH WIDTHS LESS THAN 46' OR WITH PERMANENT MEDIAN BARRIER

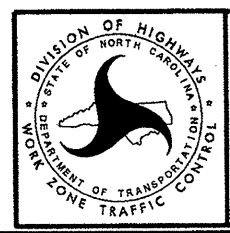


### NOTES:

- 1) LATERAL CLEARANCE AT ALL SIGN LOCATIONS SHALL BE 6' AS MEASURED FROM THE EDGE OF PAVEMENT.
- 2) MOUNT SIGNS THAT ARE LARGER THAN 10 SQUARE FEET IN AREA ON TWO OR MORE WOOD OR U-CHANNEL SUPPORTS. PERFORATED SQUARE TUBING SUPPORT SYSTEMS MAY SUPPORT LARGER AREAS ON A SINGLE SUPPORT. FOLLOW MANUFACTURER'S RECOMMENDATIONS. THESE SYSTEMS SHALL BE NCHRP 350 COMPLIANT AND NCDOT APPROVED.
- 3) FOR MEDIAN WIDTHS LESS THAN 46' (MEASURED EDGELINE TO EDGELINE) USE THE BOTTOM DRAWING.
- 4) IF STATIONARY GENERAL WARNING SIGNS ARE USED, THEY WILL BE PAID FOR PER SECTION 104 OF THE NCDOT STANDARD SPECIFICATIONS AS EXTRA WORK.
- 5) INSTALL "ROAD WORK AHEAD" (W20-1) ALONG ENTRANCE RAMP 500' PRIOR TO RAMP TERMINAL, AND "END ROAD WORK" (G20-2a) AT THE END OF EXIT RAMP WITHIN THE WORK ZONE.
- 6) IF MILLED AREAS ARE NOT PAVED BACK BY THE END OF THE WORK DAY, PORTABLE SIGNS SHALL BE USED TO WARN DRIVERS OF THE PRESENT CONDITIONS. THESE ARE TO INCLUDE, BUT NOT LIMITED TO "ROUGH ROAD" W8-8, "UNEVEN LANES" W8-11, "GROOVED PAVEMENT" W8-15 w/MOTORCYCLE PLAQUE MOUNTED BELOW. THESE ARE TO BE DOUBLE INDICATED ON MULTI-LANE ROADWAYS WITH SPEED LIMITS 45 MPH AND GREATER AND WITH DIVIDED MEDIANS OF 46' OR GREATER. THESE PORTABLE SIGNS ARE INCIDENTAL TO THE OTHER ITEMS OF WORK INCLUDED IN THE TEMPORARY TRAFFIC CONTROL (LUMP SUM) PAY ITEM.

### LEGEND

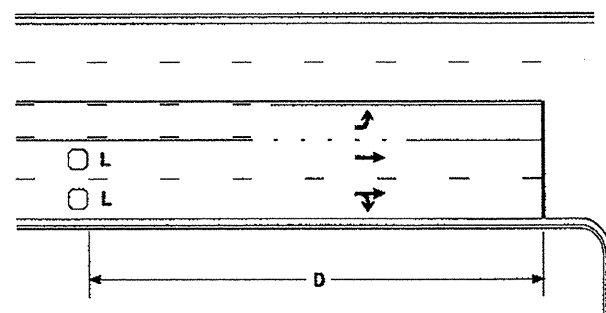
- CHANGEABLE MESSAGE SIGN (CMS)
- STATIONARY SIGN
- DIRECTION OF TRAFFIC FLOW
- TRAFFIC DRUM



**RESURFACING ADVANCE  
WARNING SIGNS FOR  
HIGH SPEED FACILITIES  
≥ 60 MPH**

31-OCT-2013 09:52 \\dot\dfsroot\groups-wz\cc\TMU\WZC\Resurfacing\2013centrd\2013.DIV07\203451-RW\_7CR10411.62\_GulfFor.dwg-85.DRK\Documents Out\TMPs\7CR10411.62-1c-TMP-TMP-13\_Resurfacing-AdvWorrrn\_HSpd.dgn drKennedy AT 12:47:41

### High Speed Detection [≥40 mph (64 km/hr)]

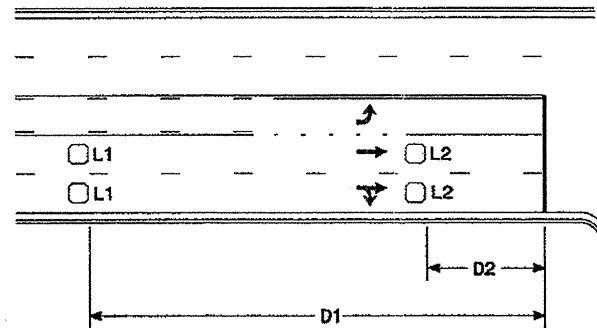


Speed Limit mph (km/hr)	D ft (m)
40 (64)	250 (75)
45 (72)	300 (90)
50 (80)	355 (110)
55 (88)	420 (130)

L = 6ft X 6ft (1.8m X 1.8m)  
Wired in series for TS1  
Controllers  
Wired separately for TS2,  
170, and 2070L Controllers

Volume Density Operation

OR

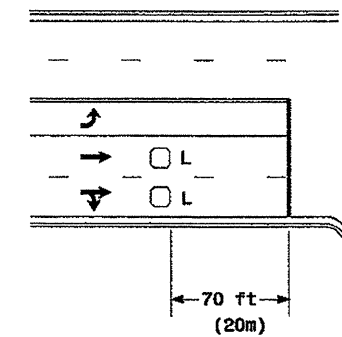


Speed Limit mph (km/hr)	D1 ft (m)	D2 ft (m)
40 (64)	250 (75)	80 (25)
45 (72)	300 (90)	90 (27)
50 (80)	355 (110)	100 (30)
55 (88)	420 (130)	110 (35)

L1 = 6ft X 6ft  
(1.8m X 1.8m)  
Wired in series  
L2 = 6ft X 6ft  
(1.8m X 1.8m)  
Wired in series

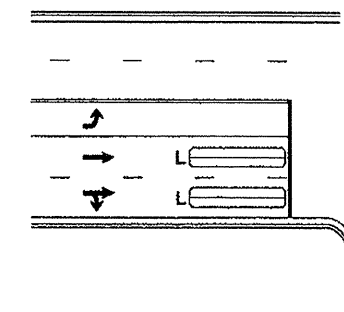
"Stretch" Operation

### Low Speed Detection [≤35 mph (56 km/hr)]



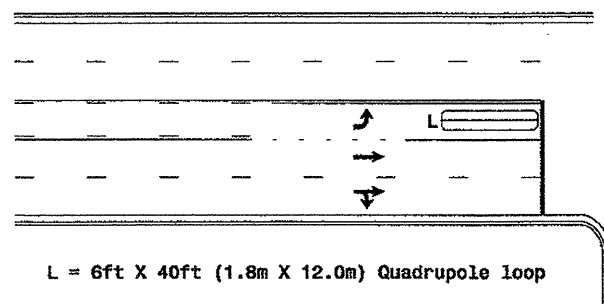
L = 6ft X 6ft (1.8m X 1.8m)  
Wired in series

OR



L = 6ft X 40ft (1.8m X 12.0m)  
Quadrupole loop, wired separately

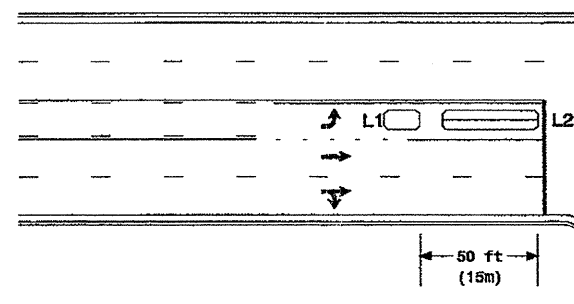
### Left Turn Lane Detection



L = 6ft X 40ft (1.8m X 12.0m) Quadrupole loop

Presence Loop Detection

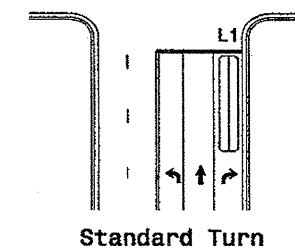
OR



L1 = 6ft X 15ft (1.8m X 4.6m) Queue detector  
L2 = 6ft X 40ft (1.8m X 12.0m) Quadrupole loop

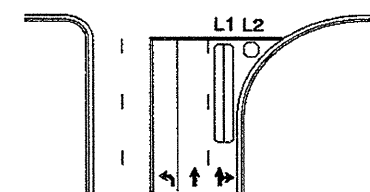
Queue Loop Detection

### Right Turn Lane Detection

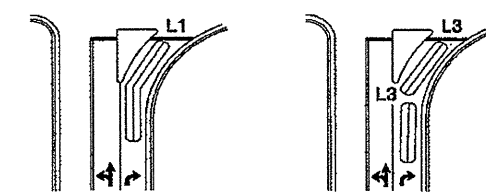


Standard Turn

L1 = 6ft X 40ft (1.8m X 12.0m) Quadrupole loop  
L2 = 6ft X 6ft (1.8m X 1.8m) [Minimum] Presence loop  
Wired separately  
L3 = 6ft X 20ft (1.8m X 6.0m) Quadrupole loop  
Wired in series

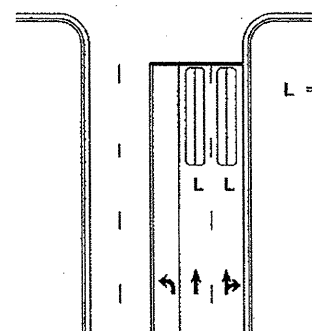


Wide Radius Turn



Channelized Turn

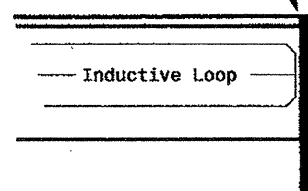
### Side Street Detection



L = 6ft X 40ft (1.8m X 12.0m)  
Quadrupole loop  
Wired to separate  
detectors/channels

### Presence Loop Placement at Stop Lines

Locate loop slightly  
behind leading  
edge of stop line



Note:  
Loop may be located in advance  
of stop line when stop line is  
greater than 15' (4.5m) from edge  
of intersecting roadway; or, when  
loop detects a permissive or  
protected/permissive left turn.


### Recommended Number of Turns

Single 6' X 6' (1.8m X 1.8m)  
loop (wired separately):

Length of Lead-in ft (m)	Number of Turns
< 250 (75)	3
250-375 (75-115)	4
375-525 (115-160)	5
> 525 (160)	6

Quadrupole loops: Use 2-4-2 turns

6' X 15' (1.8m X 4.6m) Loops:  
Lead-in < 150' (45 m), use 2 turns  
Lead-in > 150' (45 m), use 3 turns

Prepared in the Office of  
  
 PROFESSIONAL ENGINEER  
 SEAL 23488  
 STATE OF NORTH CAROLINA  
 PREPARED BY: P. L. Alexander  
 REVIEWED BY: [Signature]  
 SCALE: N/A  
 PLAN DATE: June 2006  
 REVISIONS: [Table with 3 columns: No., Description, Date]  
 DATE: [Date]  
 SIGNATURE: [Signature]  
 DATE: [Date]  
 SEAL INVENTORY NO.: