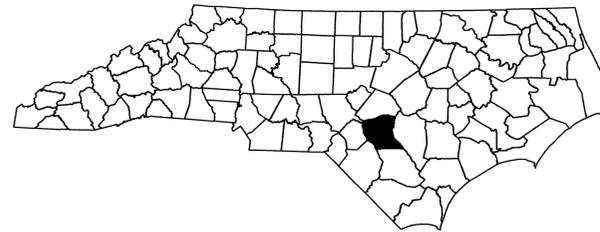


STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

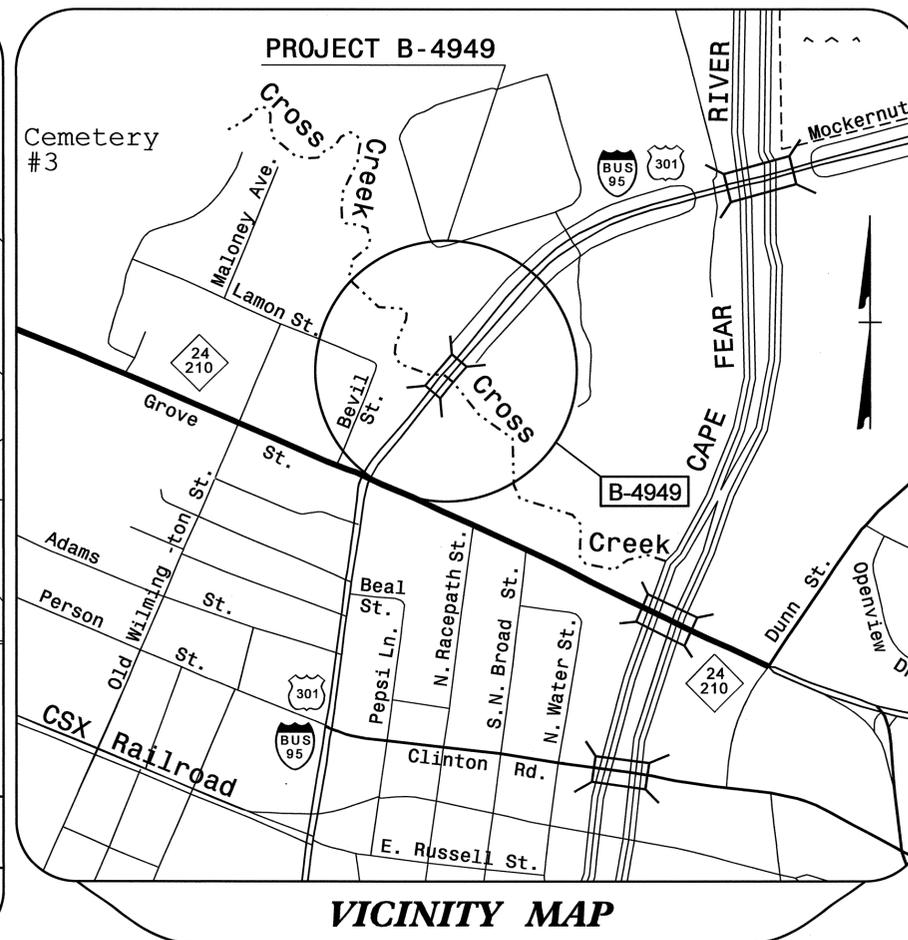
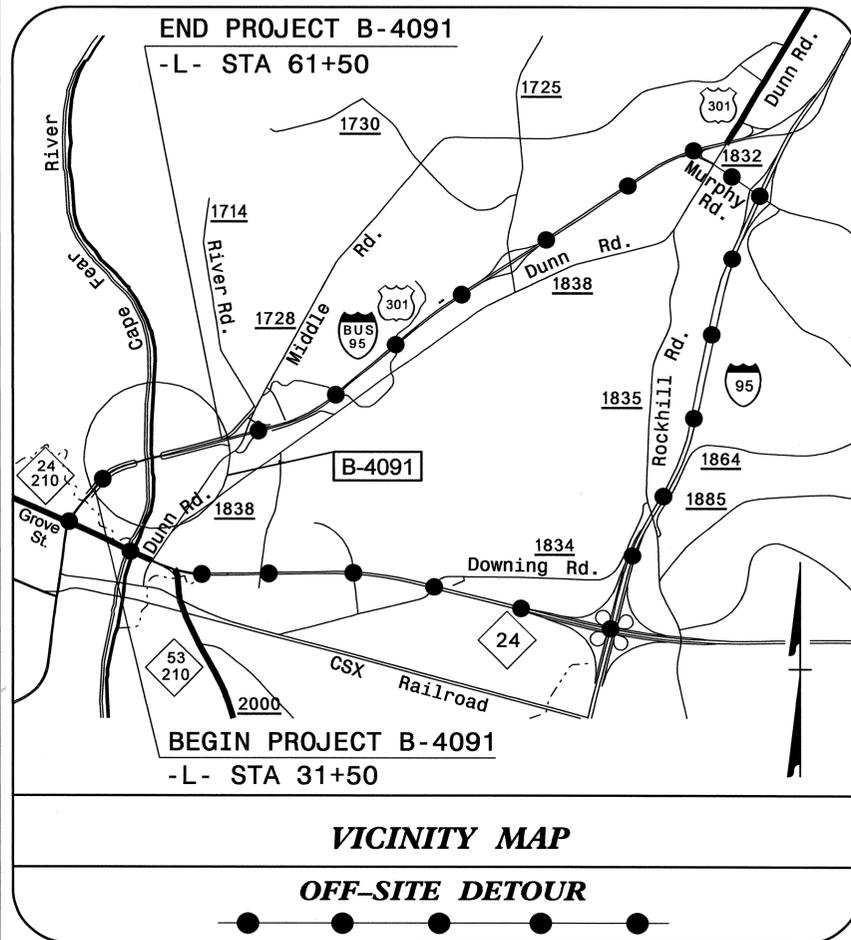
**TRANSPORTATION MANAGEMENT PLAN**

**CUMBERLAND COUNTY**



B-4091

B-4949



**INDEX OF SHEETS**

SHEET NO.	TITLE
TMP-1	TITLE SHEET, AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, LEGEND, AND TEMPORARY PAVEMENT MARKING
TMP-1B	TRANSPORTATION OPERATIONS PLAN: (GENERAL NOTES AND LOCAL NOTES)
TMP-2	PORTABLE CONCRETE BARRIER AT TEMPORARY SHORING LOCATIONS
TMP-2A	TEMPORARY SHORING DATA
TMP-3	TRAFFIC CONTROL PHASING
TMP-4	PHASE I, DETOUR ROUTE
TMP-5	DETOUR ROUTE DETAIL 'A'
TMP-6	DETOUR ROUTE DETAIL 'B'
TMP-7	DETOUR ROUTE DETAIL 'D'
TMP-8	DETOUR ROUTE DETAIL 'E'
TMP-9	DETOUR ROUTE DETAIL 'F'
TMP-10	DETOUR ROUTE DETAIL 'G'
TMP-11 & 12	PHASE I DETAIL (B-4949)
TMP-13 & 14	PHASE II DETAIL (B-4949)
SD-1	SIGN DESIGN

SHEET NO.  
TMP-1

**B-4091/B-4949**

**TIP PROJECT:**

09-MAY-2012 12:41 \\D01-510506\proj\TrafficControl\TrafficControl\TCP\B-4091 AND B-4949 COMBINED\B-4091B-4949.TC.TMP-1.dgn AKPATEL AT 12:41:48



**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  
STEVE KITE, P.E. TRAFFIC CONTROL PROJECT ENGINEER  
DON PARKER TRAFFIC CONTROL PROJECT DESIGN ENGINEER  
ASHVIN PATEL, P.E. TRAFFIC CONTROL DESIGN ENGINEER



APPROVED: *John S. Kite*  
DATE: *May 14, 2012*

SEAL



## GENERAL NOTES / LOCAL 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 UNDESIRE 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:

<u>ROAD NAME</u>	<u>DAY AND TIME RESTRICTIONS</u>
NC 24	MONDAY THROUGH SUNDAY FROM 6:00 A.M. TO 10:00 P.M.
US 301 (SOUTH OF NC 24)	

### LANE AND SHOULDER CLOSURE REQUIREMENTS

- B) 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.
- 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 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.

### TRAFFIC PATTERN ALTERATIONS

- G) NOTIFY THE ENGINEER THIRTY (30) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

### SIGNING

- H) 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.
- I) 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.
- J) 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.
- K) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

### TRAFFIC BARRIER

- L) 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.
- M) 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 IN THE PLANS: (SEE ALSO 1101.05)

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

### TRAFFIC CONTROL DEVICES

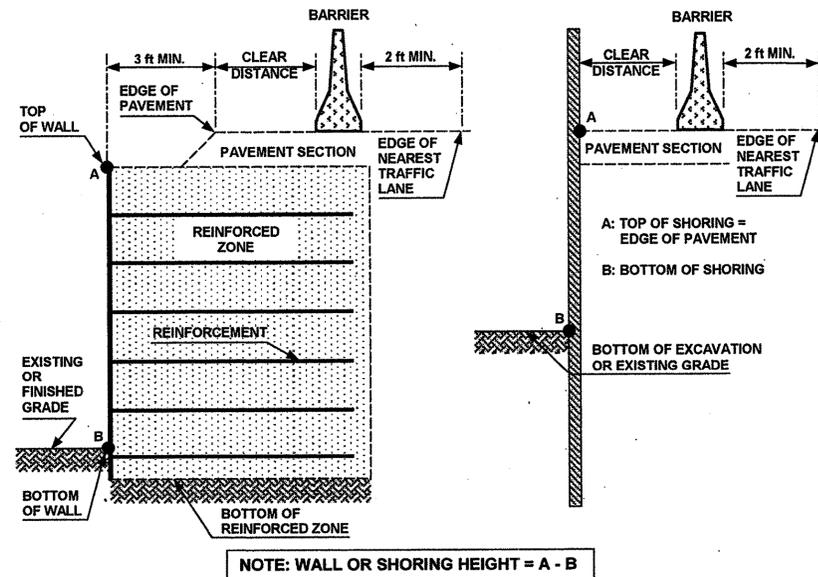
- N) WHEN LANE CLOSURES ARE NOT IN EFFECT SPACE CHANNELIZING DEVICES IN WORK AREAS NO GREATER IN FEET THAN TWICE THE POSTED SPEED LIMIT (MPH) EXCEPT, 10 FT ON-CENTER IN RADII, AND 3 FT OFF THE EDGE OF AN OPEN TRAVELWAY. REFER TO STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES SECTIONS 1130 (DRUMS), 1135 (CONES) AND 1180 (SKINNY DRUMS) FOR ADDITIONAL REQUIREMENTS.
- O) PLACE TYPE III BARRICADES, WITH "ROAD CLOSED" SIGN R11-2 ATTACHED, OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.
- P) 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

- Q) INSTALL TEMPORARY PAVEMENT MARKINGS AND TEMPORARY PAVEMENT MARKERS ON INTERIM LAYERS OF PAVEMENT AS FOLLOWS:
- | <u>ROAD NAME</u>             | <u>MARKING</u>          | <u>MARKER</u> |
|------------------------------|-------------------------|---------------|
| I-95BUS/US-301<br>ON BRIDGES | PAINT                   | TEMP. RAISED  |
| GROVE ST & EASTERN BLVD      | REMOVABLE TAPE (TYPE 4) | TEMP. RAISED  |
|                              | REMOVABLE TAPE (TYPE 4) | TEMP. RAISED  |
- R) 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.
- S) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- T) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.
- U) LAW ENFORCEMENT MAY BE USED TO MAINTAIN TRAFFIC THROUGH THE WORK AREA AND/OR INTERSECTIONS AS DIRECTED BY THE ENGINEER.

### MISCELLANEOUS

APPROVED:  DATE: 6/1/12 		<h1>TRANSPORTATION OPERATIONS PLAN</h1>
---	---	---



**FIGURE A**

**NOTES**

- REFER TO THE TRAFFIC CONTROL PLANS FOR SHORING LOCATIONS AND SOIL PARAMETERS.
- REFER TO THE "TEMPORARY SHORING" PROJECT SPECIAL PROVISION FOR MORE INFORMATION ABOUT TEMPORARY SHORING, MEASUREMENT AND PAYMENT.
- PROVIDE PORTABLE CONCRETE BARRIER TO PROTECT TEMPORARY SHORING IF SHORING IS LOCATED WITHIN THE CLEAR ZONE AS DEFINED IN 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 PCB, ANCHORED PCB OR AN OREGON BARRIER FROM THE TABLE SHOWN IN FIGURE B. FOR TRAFFIC LANES AND PORTABLE CONCRETE BARRIER LOCATED ABOVE AND BEHIND TEMPORARY SHORING, THE FOLLOWING ARE DEFINED AS:
 

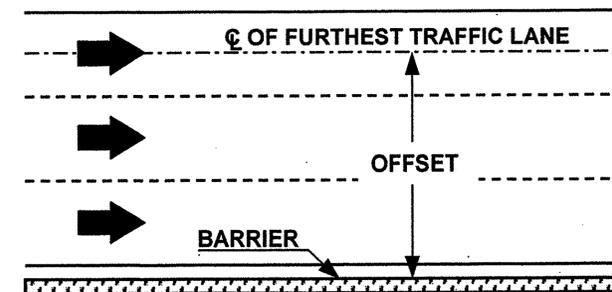
CLEAR DISTANCE - HORIZONTAL DISTANCE FROM THE BACK FACE OF THE BARRIER TO THE EDGE OF PAVEMENT FOR TEMPORARY MSE WALL OR TO THE FACE OF NON-ANCHORED TEMPORARY SHORING AS SHOWN IN FIGURE A.

OFFSET - HORIZONTAL DISTANCE FROM THE FRONT FACE OF THE BARRIER TO CENTERLINE OF THE FURTHEST TRAFFIC LANE AS SHOWN IN FIGURE B FOR 3 TRAFFIC LANES.
- AT THE CONTRACTOR'S OPTION OR IF THE MINIMUM REQUIRED CLEAR DISTANCE IS NOT AVAILABLE, SET AN UNANCHORED PCB AGAINST THE TRAFFIC SIDE OF THE SHORING AND DESIGN SHORING FOR TRAFFIC IMPACT OR USE THE "SURCHARGE CASE WITH TRAFFIC IMPACT" FOR THE STANDARD TEMPORARY SHORING. DO NOT PLACE BARRIER DIRECTLY ON ANY SURFACE OTHER THAN ASPHALT OR CONCRETE. (CONTACT NCDOT PAVEMENT MANAGEMENT UNIT FOR APPLICABLE PAVEMENT DESIGN).
- USE NCDOT PORTABLE CONCRETE BARRIER (PCB) IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1170.01 AND SECTION 1170 OF THE STANDARD SPECIFICATIONS.
- USE OREGON TALL F-SHAPE CONCRETE BARRIER IN ACCORDANCE WITH DETAIL DRAWING AND SPECIAL PROVISION OBTAINED FROM: WORK ZONE TRAFFIC CONTROL UNIT WEB PAGE.
- UNLESS NOTED OTHERWISE ON THE PLANS, SET PORTABLE CONCRETE BARRIER WITH A MINIMUM DISTANCE OF 2 FT BETWEEN THE FRONT FACE OF THE BARRIER AND THE EDGE OF THE NEAREST TRAFFIC LANE AS SHOWN IN FIGURE A.
- FOR PORTABLE CONCRETE BARRIER ABOVE AND BEHIND TEMPORARY MSE 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' IN LENGTH AND WET OR DRY PAVEMENT.

**MINIMUM REQUIRED CLEAR DISTANCE, inches**

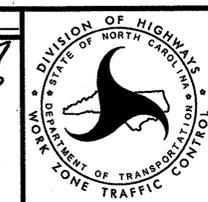
Barrier Type	Pavement Type	Offset * ft	Design Speed, mph						
			<30	31-40	41-50	51-60	61-70	71-80	
Unanchored PCB	Asphalt	<8	24	26	29	32	36	40	
		8-14	26	28	31	35	38	42	
		14-20	27	29	34	36	39	43	
		20-26	28	31	35	38	40	44	
		26-32	29	32	36	39	42	45	
		32-38	30	34	38	41	43	46	
		38-44	31	34	41	43	45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

\* See Figure Below



**FIGURE B**

APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_  
 SEAL: \_\_\_\_\_  
 SEAL 028380  
 Sept 10 2010



PORTABLE CONCRETE BARRIER  
 AT  
 TEMPORARY SHORING LOCATIONS

## TEMPORARY SHORING DATA

### SHORING LOCATION NO. 1

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

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

DESIGN TEMPORARY SHORING FROM STATION 23+60± -L-, 15 FT LEFT, TO STATION 24+30± -L-, 15 FT LEFT, FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

UNIT WEIGHT ( $\gamma$ ) = 120 LB/CF  
 FRICTION ANGLE ( $\phi$ ) = 30 DEGREES  
 COHESION (c) = 0 LB/SF  
 GROUNDWATER ELEVATION = 81 FT

DO NOT USE A TEMPORARY WALL FOR TEMPORARY SHORING FROM STATION 23+60± -L-, 15 FT LEFT, TO STATION 24+30± -L-, 15 FT LEFT.

AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING FOR TEMPORARY SHORING FROM STATION 23+60± -L-, 15 FT LEFT, TO STATION 24+30± -L-, 15 FT LEFT. SEE STANDARD DRAWING NO. 1801.01 FOR STANDARD TEMPORARY SHORING.

### SHORING LOCATION NO. 2

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

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

DESIGN TEMPORARY SHORING FROM STATION 26+90± -L-, 15 FT LEFT, TO STATION 27+50± -L-, 15 FT LEFT, FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

UNIT WEIGHT ( $\gamma$ ) = 120 LB/CF  
 FRICTION ANGLE ( $\phi$ ) = 30 DEGREES  
 COHESION (c) = 0 LB/SF  
 GROUNDWATER ELEVATION = 80 FT

DO NOT USE A TEMPORARY WALL FOR TEMPORARY SHORING FROM STATION 26+90± -L-, 15 FT LEFT, TO STATION 27+50± -L-, 15 FT LEFT.

AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING FOR TEMPORARY SHORING FROM STATION 26+90± -L-, 15 FT LEFT, TO STATION 27+50± -L-, 15 FT LEFT. SEE STANDARD DRAWING NO. 1801.01 FOR STANDARD TEMPORARY SHORING.

### SHORING LOCATION NO. 3

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

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

DESIGN TEMPORARY SHORING FROM STATION 23+60± -L-, 18 FT LEFT, TO STATION 23+90± -L-, 18 FT LEFT, FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUND WATER ELEVATION:

UNIT WEIGHT ( $\gamma$ ) = 120 LB/CF  
 FRICTION ANGLE ( $\phi$ ) = 30 DEGREES  
 COHESION (c) = 0 LB/SF  
 GROUND WATER ELEVATION = 81 FT ±

LIMITED SUBSURFACE INFORMATION IS AVAILABLE IN THE VICINITY OF TEMPORARY SHORING FROM STATION 23+60± -L-, 18 FT LEFT, TO STATION 23+90± -L-, 18 FT LEFT. THE INFORMATION PROVIDED FOR TEMPORARY SHORING DESIGN WAS ASSUMED AND MAY NOT BE APPLICABLE TO THE ACTUAL SITE CONDITIONS ENCOUNTERED DURING CONSTRUCTION.

DO NOT USE CANTILEVER, BRACED AND/OR ANCHORED SHORING FOR TEMPORARY SHORING FROM STATION 23+60± -L-, 18 FT LEFT, TO STATION 23+90± -L-, 18 FT LEFT.

AT THE CONTRACTOR'S OPTION, USE A STANDARD TEMPORARY WALL FOR TEMPORARY SHORING FROM STATION 23+60± -L-, 18 FT LEFT, TO STATION 23+90± -L-, 18 FT LEFT. SEE STANDARD DRAWING NO. 1802.02 FOR STANDARD TEMPORARY WALLS.

WHEN BACKFILL FOR BRIDGE APPROACH FILLS OVERLAPS WITH THE REINFORCED ZONE OF TEMPORARY WALLS, USE SHORING BACKFILL OR BACKFILL MATERIAL REQUIRED FOR BRIDGE APPROACH FILLS, WHICHEVER IS BETTER, IN THE REINFORCED ZONE OF TEMPORARY WALLS.

### SHORING LOCATION NO. 4

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

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

DESIGN TEMPORARY SHORING FROM STATION 27+20± -L-, 18 FT LEFT, TO STATION 27+50± -L-, 18 FT LEFT, FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUND WATER ELEVATION:

UNIT WEIGHT ( $\gamma$ ) = 120 LB/CF  
 FRICTION ANGLE ( $\phi$ ) = 30 DEGREES  
 COHESION (c) = 0 LB/SF  
 GROUND WATER ELEVATION = 80 FT ±

LIMITED SUBSURFACE INFORMATION IS AVAILABLE IN THE VICINITY OF TEMPORARY SHORING FROM STATION 27+20± -L-, 18 FT LEFT, TO STATION 27+50± -L-, 18 FT LEFT. THE INFORMATION PROVIDED FOR TEMPORARY SHORING DESIGN WAS ASSUMED AND MAY NOT BE APPLICABLE TO THE ACTUAL SITE CONDITIONS ENCOUNTERED DURING CONSTRUCTION.

DO NOT USE CANTILEVER, BRACED AND/OR ANCHORED SHORING FOR TEMPORARY SHORING FROM STATION 27+20± -L-, 18 FT LEFT, TO STATION 27+50± -L-, 18 FT LEFT.

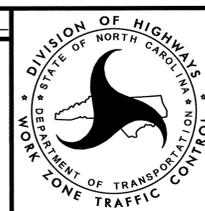
AT THE CONTRACTOR'S OPTION, USE A STANDARD TEMPORARY WALL FOR TEMPORARY SHORING FROM STATION 27+20± -L-, 18 FT LEFT, TO STATION 27+50± -L-, 18 FT LEFT. SEE STANDARD DRAWING NO. 1802.02 FOR STANDARD TEMPORARY WALLS.

WHEN BACKFILL FOR BRIDGE APPROACH FILLS OVERLAPS WITH THE REINFORCED ZONE OF TEMPORARY WALLS, USE SHORING BACKFILL OR BACKFILL MATERIAL REQUIRED FOR BRIDGE APPROACH FILLS, WHICHEVER IS BETTER, IN THE REINFORCED ZONE OF TEMPORARY WALLS.

O:\MAY-2012\15423\DOT-5TOR05\Projects\Proj\TIP\Projects-b\4091\TrafficControl\TCP\B-4091\AND B-4949 COMBINED\B-4091\B-4949.TC-TMP-2.dgn  
 kdp:tel AT TE24748

APPROVED: *[Signature]* DATE: 5/2/12

SEAL

## TEMPORARY SHORING DATA

## PHASING

### PHASE I

- STEP 1 -- INSTALL WORKZONE ADVANCE WARNING SIGNS FOR CONSTRUCTION OF -LOCALDET- (SEE RSD 1101.01).
- STEP 2 -- USING FLAGGERS, CONSTRUCT IMPROVEMENTS OF -Y3-(DUNN RD, SR 1838) AND -LOCALDET-(MIDDLE RD, SR 1738) INTERSECTION (SEE RSD 1101.02, SHEET 1 OF 15 AND ROADWAY PLANS).
- STEP 3 -- USING ROADWAY STANDARD DRAWING 1101.03, SHEET 7 OF 9, TMP-4 THRU 10, INSTALL ALL OFF-SITE DETOUR SIGNS; CLOSE I-95 BUS/US-301, -Y1- & -Y2- AND DETOUR TRAFFIC.
- STEP 4 -- BEGIN REMOVING EXISTING BRIDGE NO. 85 (B-4091) AND CONSTRUCTING PROPOSED BRIDGE AND APPROACHES, UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE FROM -L- STA. 39+30 TO END OF PROJECT.
- REMOVE MEDIAN GUARDRAIL/ISLAND AND PAVE AT THE FOLLOWING LOCATIONS WITH LANE CLOSURE (SEE TMP-5 & 11):
- L- STA. 19+00 TO -L- STA. 23+05 +/-
- L- STA. 38+30 TO -L- STA. 39+30 +/-
- INSTALL TEMP. PAVEMENT MARKINGS AND MARKERS AS SHOWN IN TMP-11 & 12 AND PLACE TRAFFIC IN 2L-2W IN EXISTING NORTHBOUND LANES AND USE X-OVER TO PUT SOUTHBOUND LANE TRAFFIC IN EXISTING SOUTHBOUND LANES AT BEGINNING OF PROJECT TIP B-4949.
- STEP 5 -- CONSTRUCT STAGE I (B-4949) BRIDGE AND LEFT SIDE APPROACHES (SEE TMP-11 & 12).

### PHASE II

- STEP 1 -- INSTALL PAVEMENT MARKINGS AND MARKERS AS SHOWN IN TMP-13 & 14.
- PLACE ANCHORED PCB FROM -L- STA. 22+50 TO -L- STA. 28+00 (SEE TMP-13).
- STEP 2 -- CONSTRUCT STAGE II BRIDGE (B-4949) AND RIGHT SIDE APPROACHES (SEE TMP-13 AND 14)
- COMPLETE B-4091.
- CONSTRUCT -Y1-, -DR1A- AND -Y2-.
- STEP 3 -- REMOVE TEMP. ANCHORED PCB.
- STEP 4 -- CONSTRUCT 5' MEDIAN CONCRETE ISLAND AND PLACE FINAL LAYER OF SURFACE COURSE AND PAVEMENT MARKINGS THROUGHOUT PROJECT LIMITS.
- STEP 5 -- REMOVE DETOUR SIGNING AND TRAFFIC CONTROL DEVICES AND RE-OPEN I-95 BUS/US-301, -Y1- & -Y2- TO TRAFFIC.

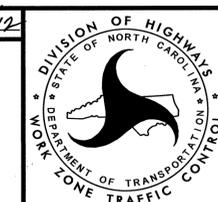
COMPLETE THE WORK OF PHASE II, STEP 6 BETWEEN THE HOURS OF 10:00 P.M. AND 6:00 A.M. SEE INTERMEDIATE CONTRACT TIME AND LIQUIDATED DAMAGES)

- STEP 6 -- USING CONSECUTIVE NIGHTLY LANE CLOSURES AND LAW ENFORCEMENT ASSISTANCE RESURFACE GROVE STREET & EASTERN BLVD. (SOUTH OF GROVE STREET) AND INSTALL FINAL PAVEMENT MARKINGS AND MARKERS. (SEE RSD 1101.02)

23-MAY-2012 16:42 \\DOT-STOR06\Projects\Proj\TIP\Projects-b\4091\TrafficControl\TCP\B-4091 AND B-4949 COMBINED\B-4091\B-4949\TC\_TMP-3.dgn

APPROVED:  DATE: 6/1/12

SEAL

**TRAFFIC CONTROL  
PHASING**

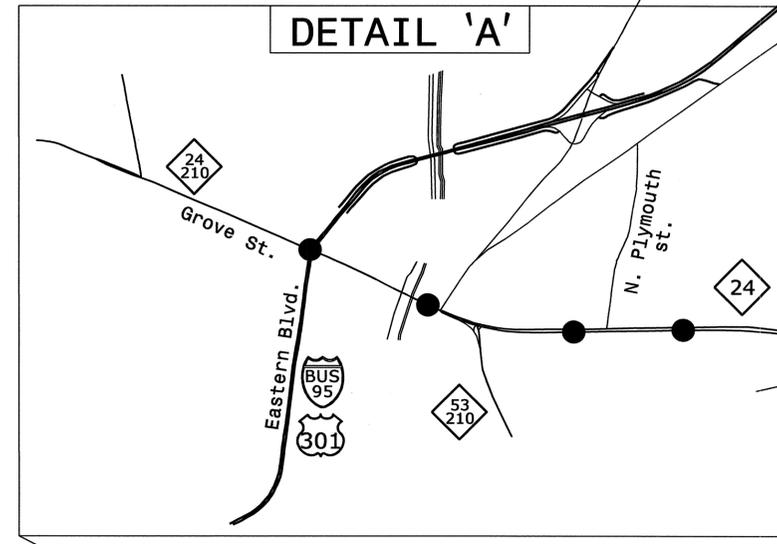
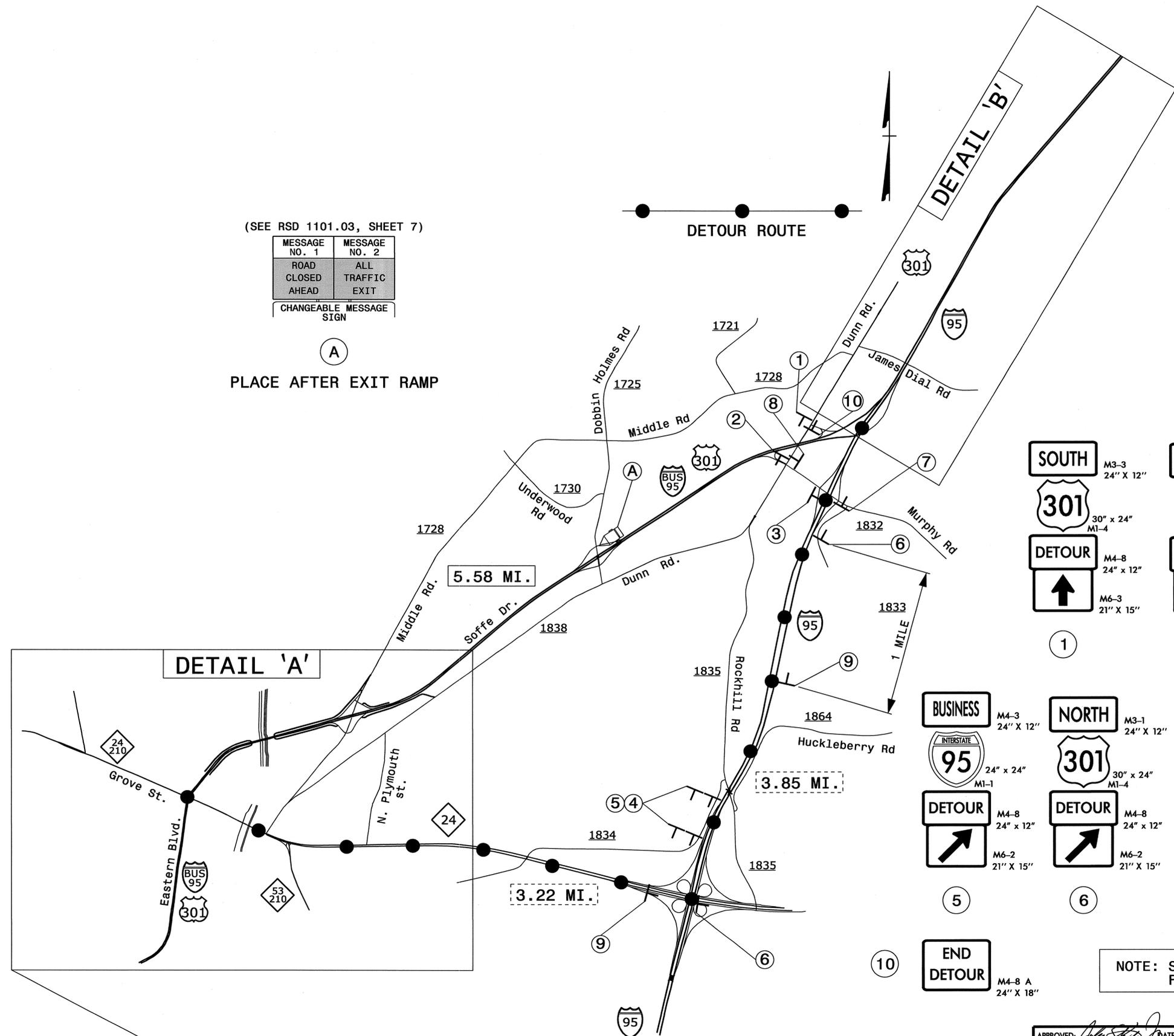
(SEE RSD 1101.03, SHEET 7)

MESSAGE NO. 1 ROAD CLOSED AHEAD CHANGEABLE MESSAGE SIGN	MESSAGE NO. 2 ALL TRAFFIC EXIT CHANGEABLE MESSAGE SIGN
---	--

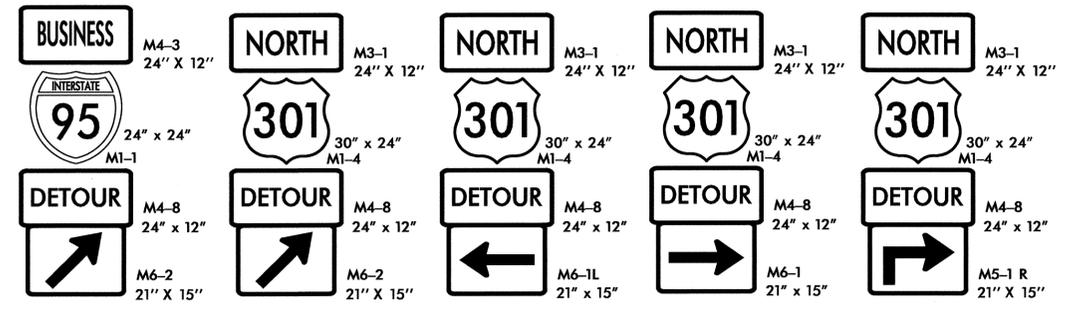
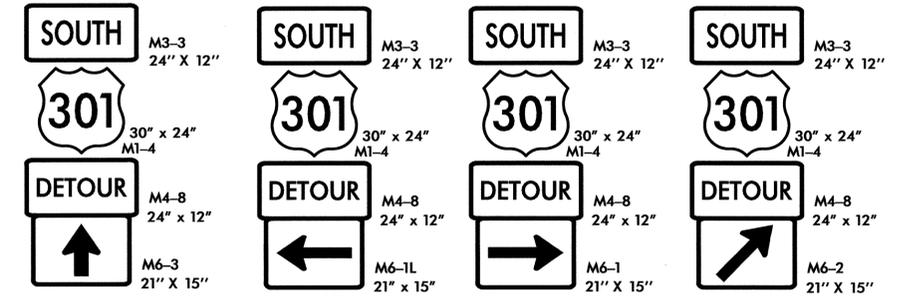
(A)  
PLACE AFTER EXIT RAMP

DETOUR ROUTE

SEE TMP-6 FOR DETAIL 'B'



SEE TMP-5 FOR DETAIL 'A'



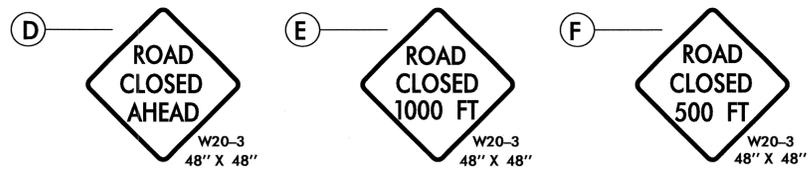
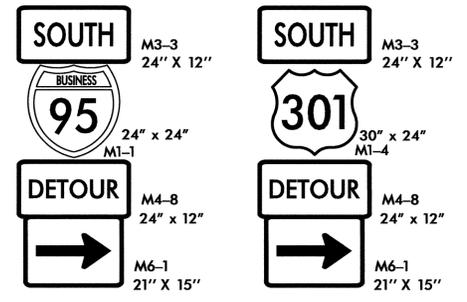
NOTE: SEE RSD 1101.03, SHEET 1 OF 9 FOR APPLICABLE NOTES.

09-MAY-2012 13:17 \\dot-stor06\projects\Pro\TIP\Projects-b\4091\TrafficControl\B-4091 AND B-4949 COMBINED\B-4091B-4949\_TC\_TMP-4.dgn AKPATEL AT TE244748

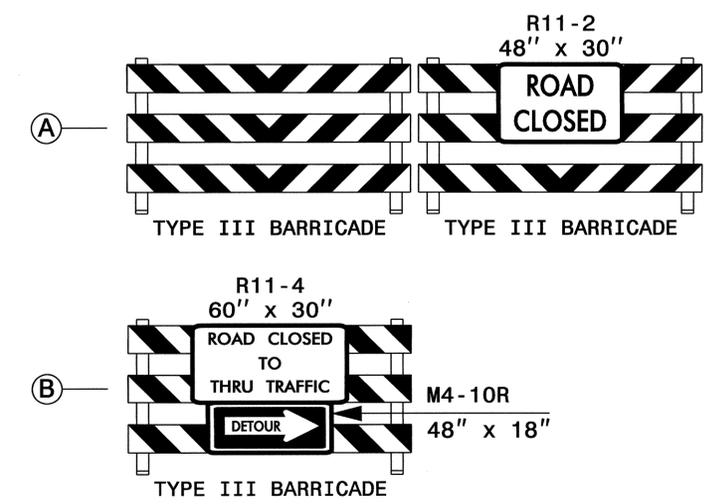
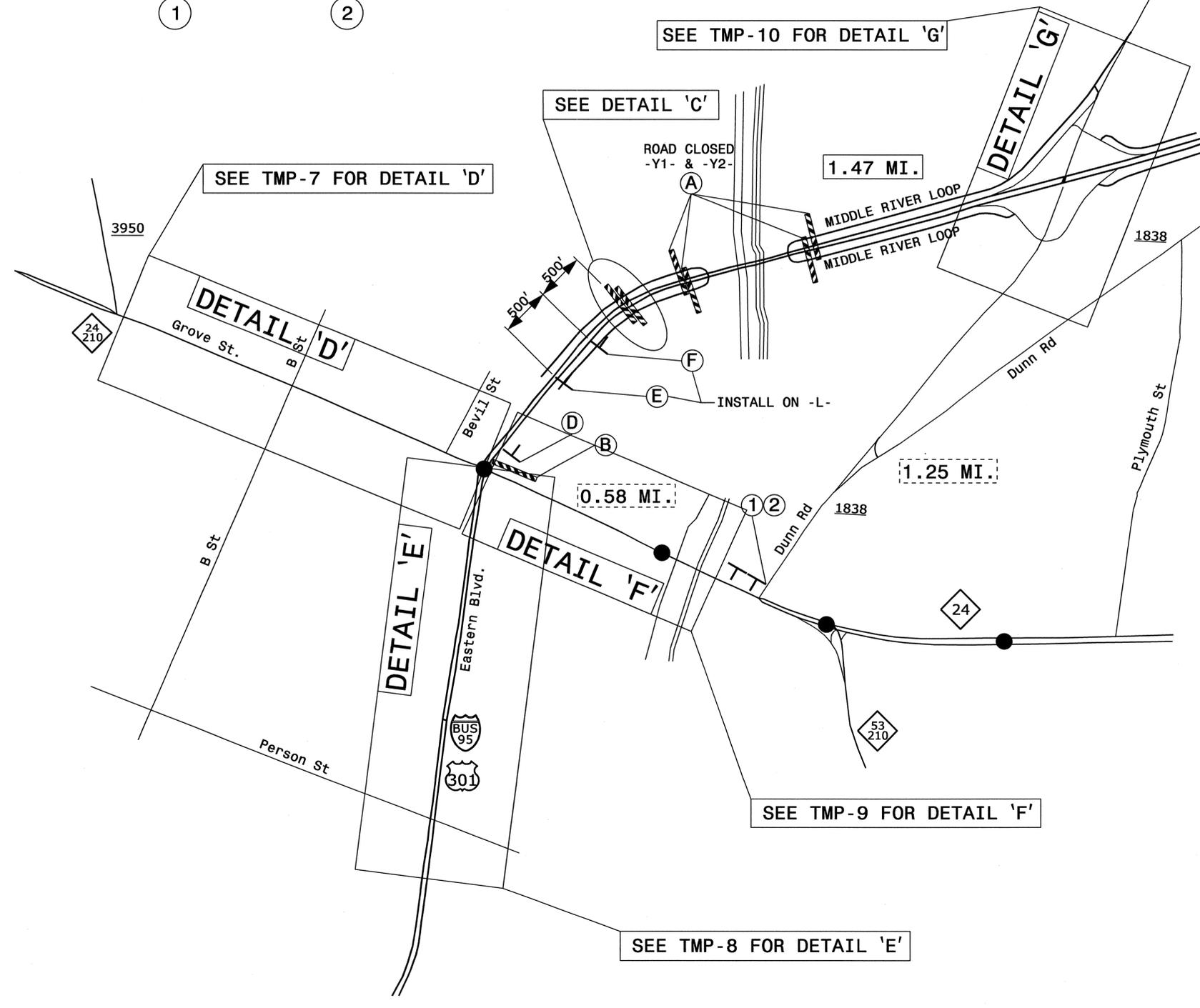
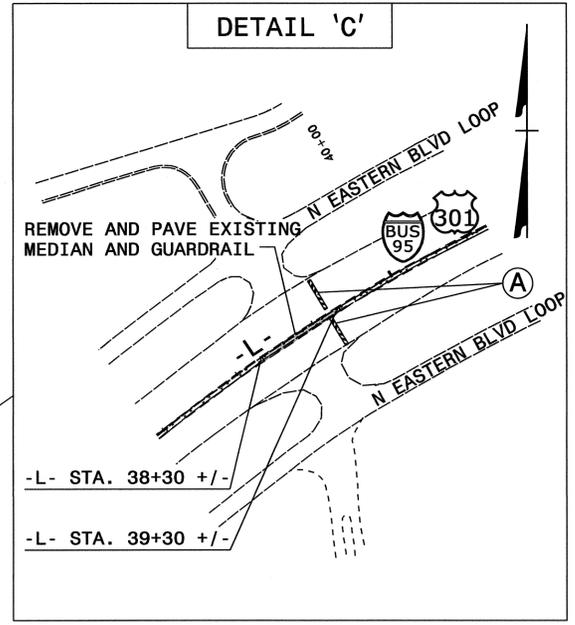
APPROVED: *[Signature]* DATE: 5/1/12



**PHASE I  
DETOUR ROUTE**



INSTALL 'F' ON N. EASTERN BLVD LOOP (-Y1-) & MIDDLE RIVER LOOP (-Y2-)



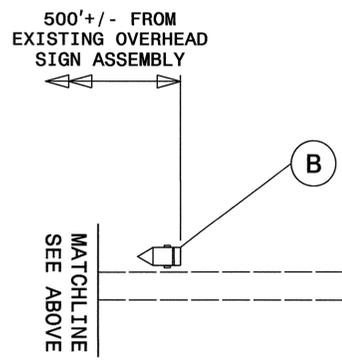
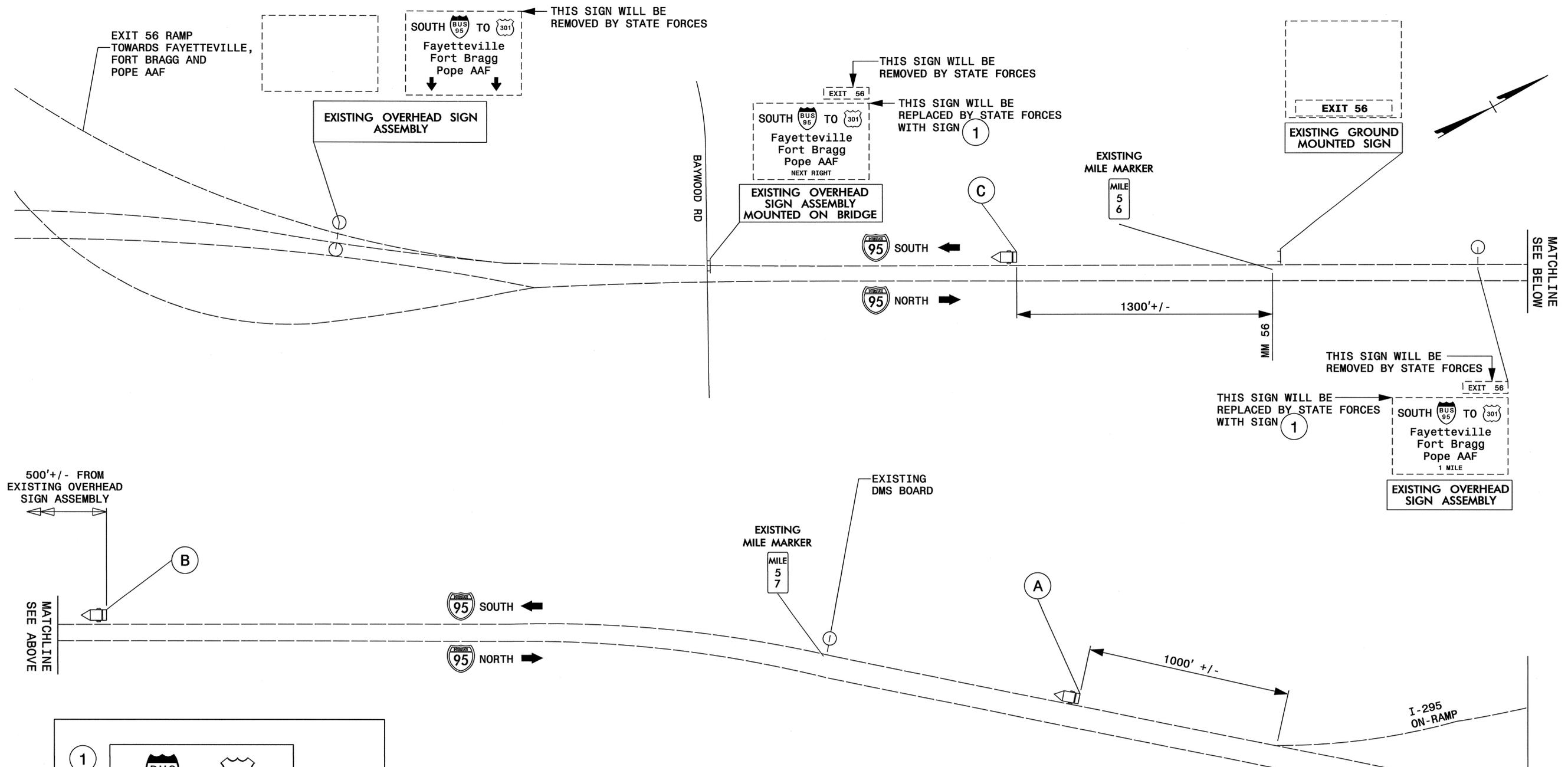
NOTE: SEE RSD 1101.03, SHEET 1 OF 9 FOR APPLICABLE NOTES.

09-MAY-2012 13:20  
 \\DDOT-STOR06\projects\proj\TIP\Projects\TrafficControl\B-4091\B-4949 COMBINED\B-4091\B-4949.TC\_TMP-5.dgn  
 AKPATEL AT TE24748

APPROVED: *John S. Kite* DATE: 5/14/12

SEAL

**DETOUR ROUTE  
DETAIL 'A'**



1

CAPE FEAR BRIDGE CLOSED	
Fayetteville Fort Bragg POPE AAF	
USE EXIT 52B	

OVERHEAD GUIDE/DETOUR SIGN  
17'-6" X 13'

THIS SIGN WILL BE INSTALLED OVERHEAD BY STATE FORCES.

NOTIFY THE ENGINEER THIRTY (30) CALENDER DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION

MESSAGE NO. 1	MESSAGE NO. 2
BUS 95 CLOSED 2 MILES	FOLLOW DETOUR SIGNS

CHANGEABLE MESSAGE SIGN

A

MESSAGE NO. 1	MESSAGE NO. 2
BUS 95 CLOSED 1 MILE	FOLLOW DETOUR SIGNS

CHANGEABLE MESSAGE SIGN

B

MESSAGE NO. 1	MESSAGE NO. 2
BUS 95 CLOSED 1/2 MILE	FOLLOW DETOUR SIGNS

CHANGEABLE MESSAGE SIGN

C

CHANGEABLE MESSAGE SIGNS (SHORT TERM)  
REMOVE 14 DAYS AFTER ROAD CLOSURE

APPROVED:

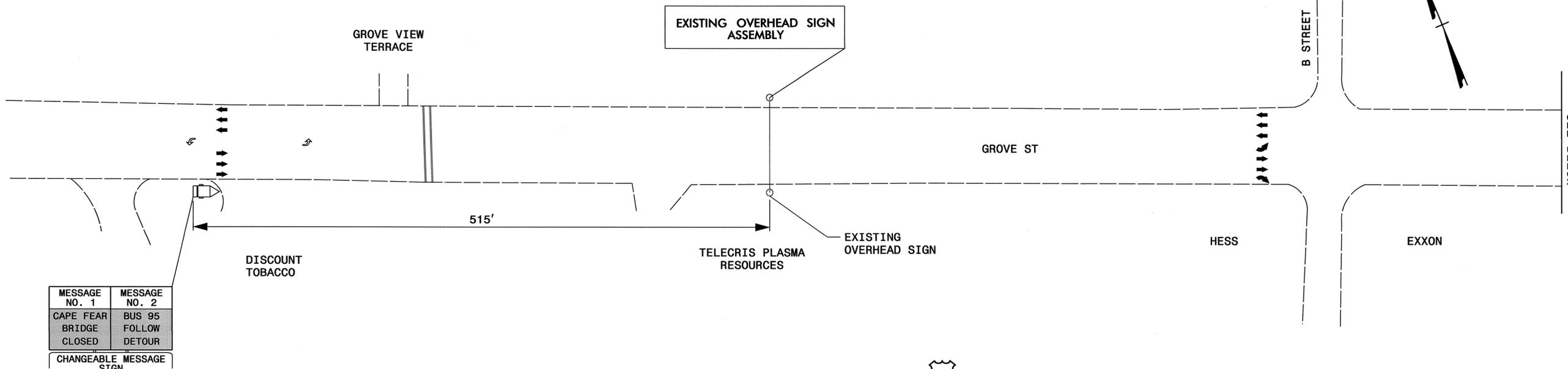
DATE: 5/14/12

SEAL

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

DETOUR ROUTE  
DETAIL 'B'

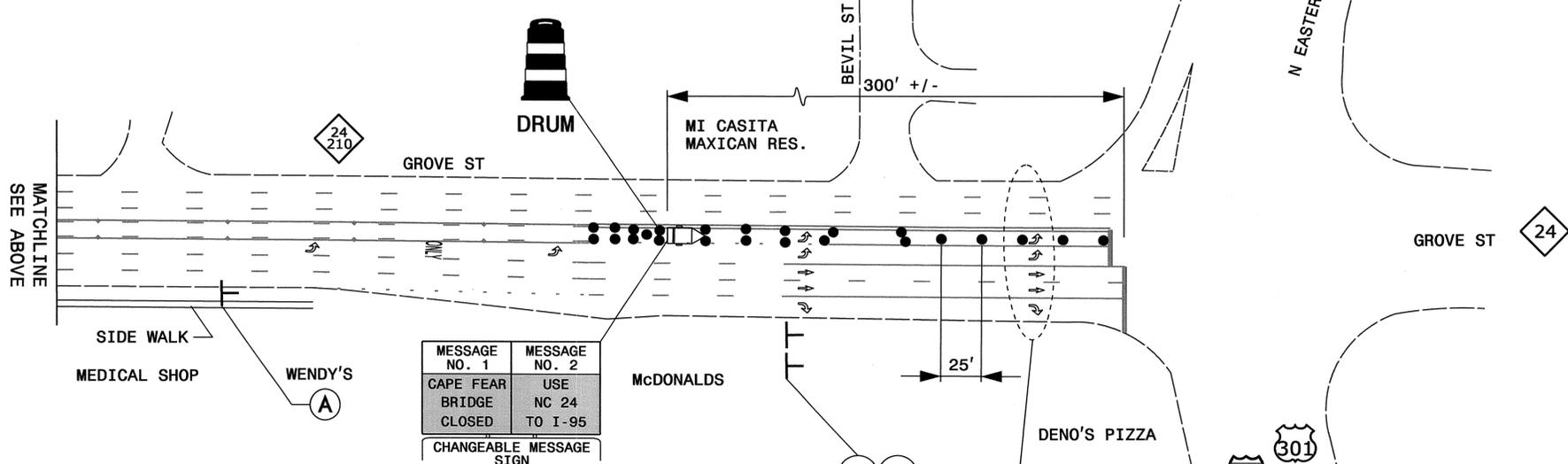
09-MAY-2012 13:21 \\DOT-510R06\p\Projects\B-4091\TrafficControl\B-4091 AND B-4949 COMBINED\B-4091 B-4949.TCP\B-4091 AND B-4949.TMP-6.dgn



MESSAGE NO. 1	MESSAGE NO. 2
CAPE FEAR BRIDGE CLOSED	BUS 95 FOLLOW DETOUR

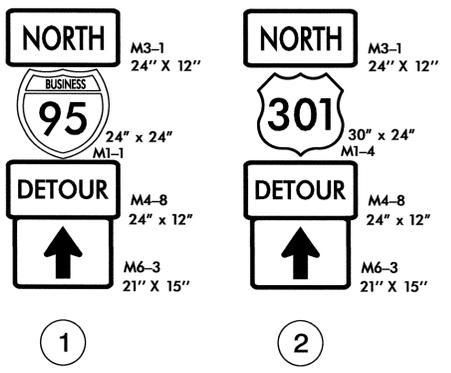
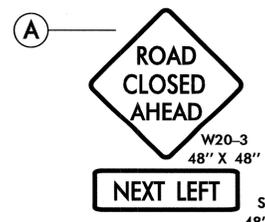
CHANGEABLE MESSAGE SIGN

CHANGEABLE MESSAGE SIGN (SHORT TERM)  
REMOVE 14 DAYS AFTER ROAD CLOSURE



MESSAGE NO. 1	MESSAGE NO. 2
CAPE FEAR BRIDGE CLOSED	USE NC 24 TO I-95

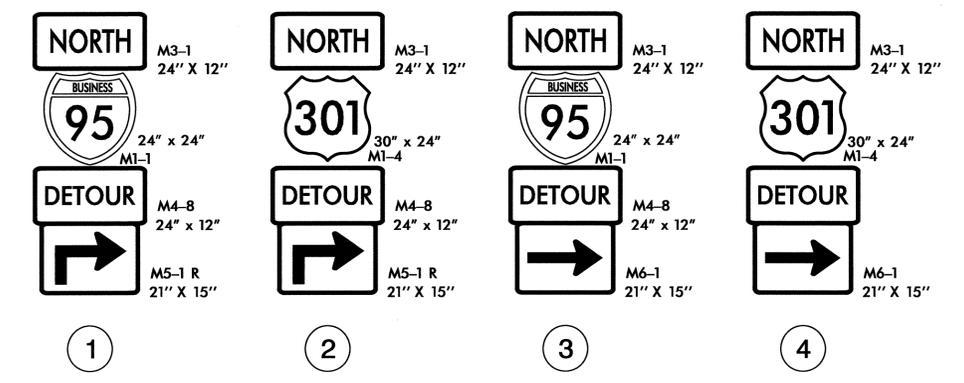
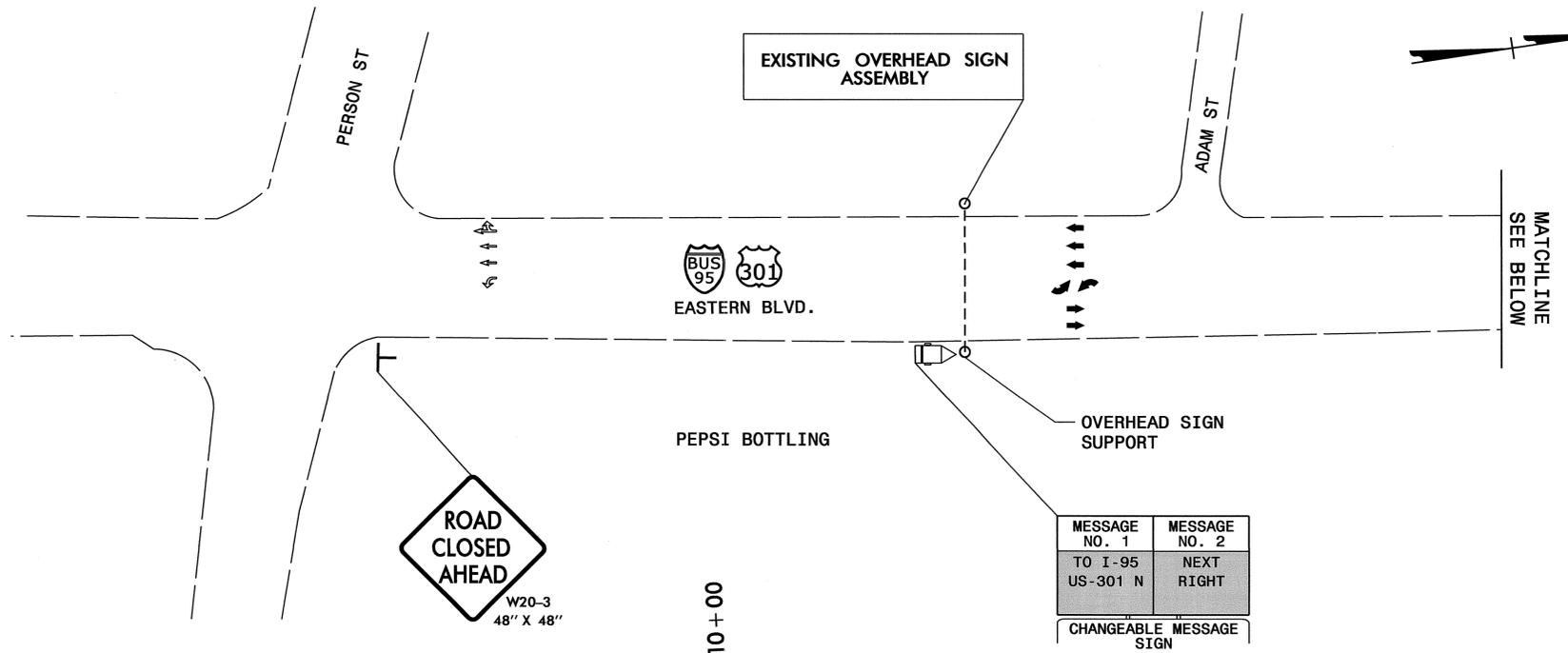
CHANGEABLE MESSAGE SIGN



APPROVED: *[Signature]* DATE: 5/14/12

**DETOUR ROUTE  
DETAIL 'D'**

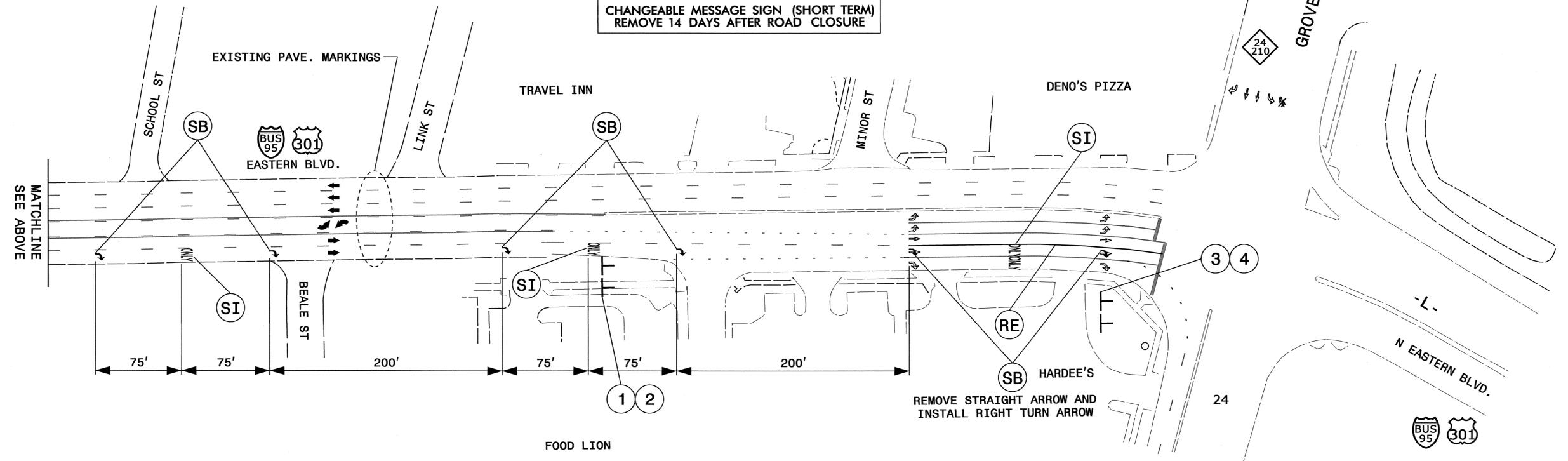
09-MAY-2012 13:22  
 \\DOT-S106001\Projects\Projects\TrafficControl\CP\B-4091\AND B-4949 COMBINED\B-4091\B-4949.TC\_TMP-7.dgn  
 ANPA TEL AT TEL244748



MESSAGE NO. 1	MESSAGE NO. 2
TO I-95	NEXT
US-301 N	RIGHT

CHANGEABLE MESSAGE SIGN

CHANGEABLE MESSAGE SIGN (SHORT TERM)  
REMOVE 14 DAYS AFTER ROAD CLOSURE



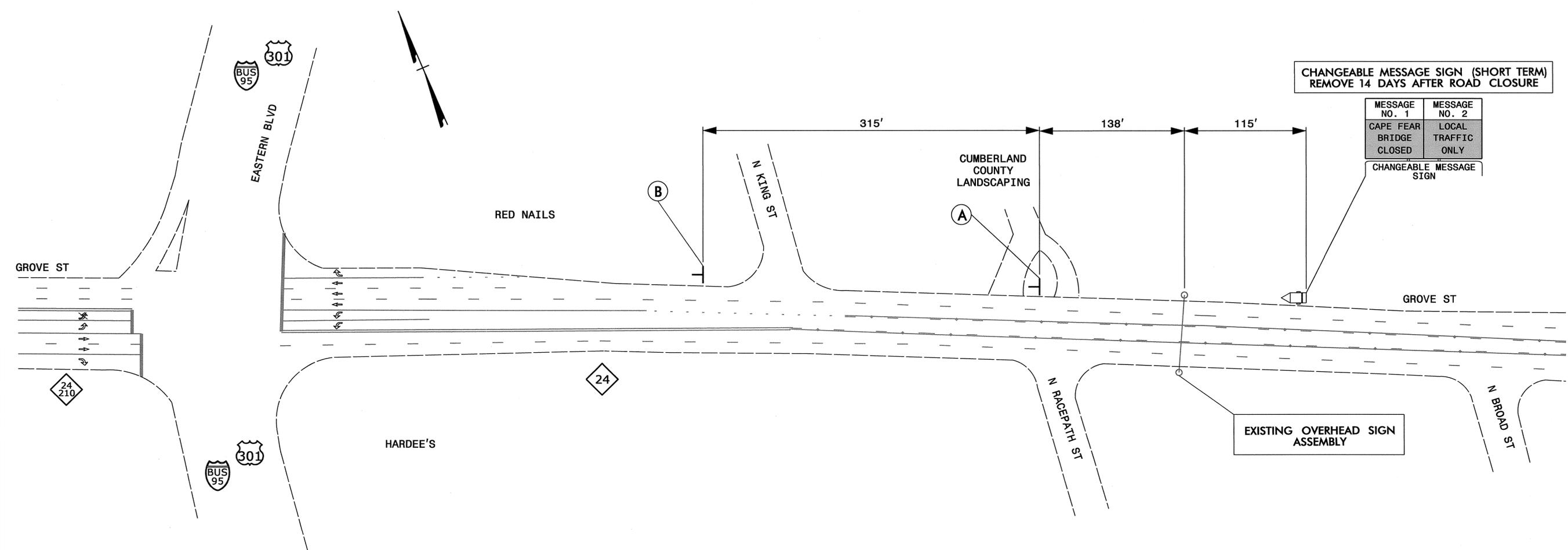
09-MAY-2012 13:29  
 A:\DOT\STOR05\p\0\proj\hls\Pro\TIPProjects\b4091\TrafficControl\TCP\B-4091\AND B-4949 COMBINED\B-4091\B-4949-TMP-8.dgn  
 AXPATEL AT 12:44:48

APPROVED: *[Signature]* DATE: 5/14/12

SEAL

DETOUR ROUTE  
DETAIL 'E'

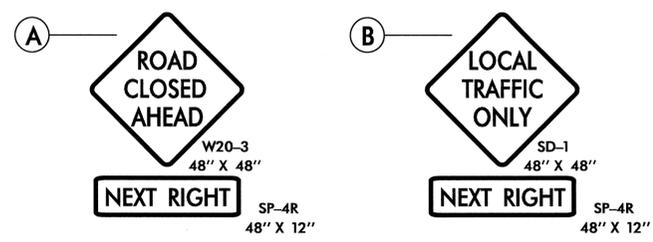
09-MAY-2012 13:30  
 \\DOT-STOR06\projects\Pro\TIP\Projects-b\4091\TrafficControl\TCP\B-4091 AND B-4949 COMBINED\B-4091 B-4949 TC\_TMP-9.dgn  
 ARPA TEL AT TE244748



CHANGEABLE MESSAGE SIGN (SHORT TERM)  
REMOVE 14 DAYS AFTER ROAD CLOSURE

MESSAGE NO. 1	MESSAGE NO. 2
CAPE FEAR BRIDGE CLOSED	LOCAL TRAFFIC ONLY

CHANGEABLE MESSAGE SIGN

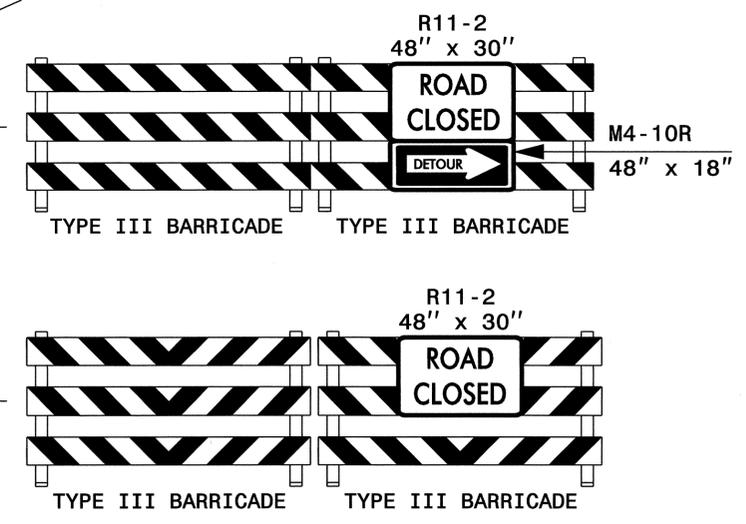
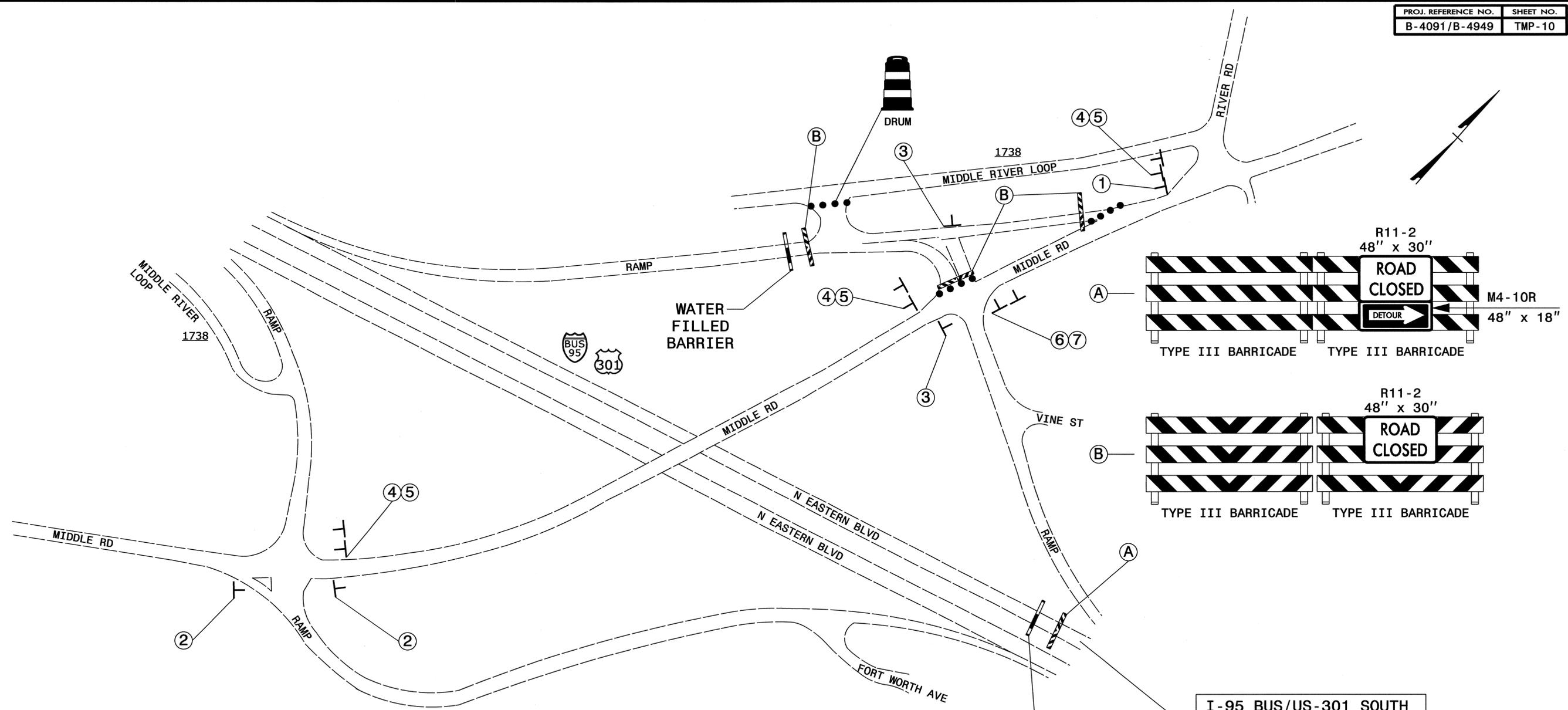


APPROVED: *[Signature]* DATE: 5/14/12

SEAL



DETOUR ROUTE  
DETAIL 'F'

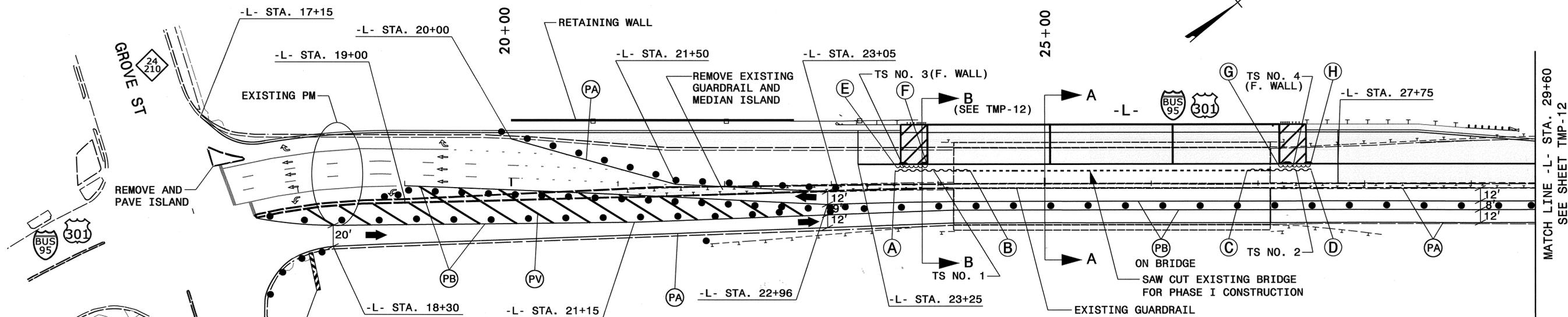


I-95 BUS/US-301 SOUTH  
CLOSED FOR ALL TRAFFIC  
USE RSD 1101.03  
SHEET 7 OF 9

- |  |  |  |   |   |   |   |
|--|--|--|---|---|---|---|
| <p>EXISTING TO BE COVERED SOUTH</p> <p>1</p> | <p>EXISTING TO BE COVERED SOUTH</p> <p>2</p> | <p>EXISTING TO BE COVERED SOUTH</p> <p>3</p> | <p>SOUTH M3-3 24" x 12"</p> <p>M1-1 24" x 24"</p> <p>DETOUR M4-8 24" x 12"</p> <p>M6-3 21" x 15"</p> <p>4</p> | <p>SOUTH M3-3 24" x 12"</p> <p>M1-4 30" x 24"</p> <p>DETOUR M4-8 24" x 12"</p> <p>M6-3 21" x 15"</p> <p>5</p> | <p>SOUTH M3-3 24" x 12"</p> <p>M1-1 24" x 24"</p> <p>DETOUR M4-8 24" x 12"</p> <p>M6-1 L 21" x 15"</p> <p>6</p> | <p>SOUTH M3-3 24" x 12"</p> <p>M1-4 30" x 24"</p> <p>DETOUR M4-8 24" x 12"</p> <p>M6-1 L 21" x 15"</p> <p>7</p> |
|--|--|--|---|---|---|---|

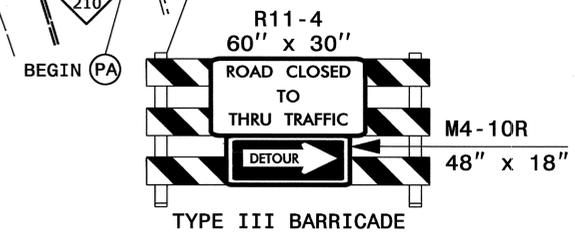
09-MAY-2012 13:31  
 \\DOT-STOR06\Projects\Projects\TrafficControl\TCP\B-4091 AND B-4949 COMBINED\B-4091 B-4949.TC.TMP-10.dgn  
 AKPATEL AT TE244748

APPROVED: DATE: 5/14/12 SEAL:		<p style="text-align: center;"><b>DETOUR ROUTE DETAIL 'G'</b></p>
-------------------------------------	--	---



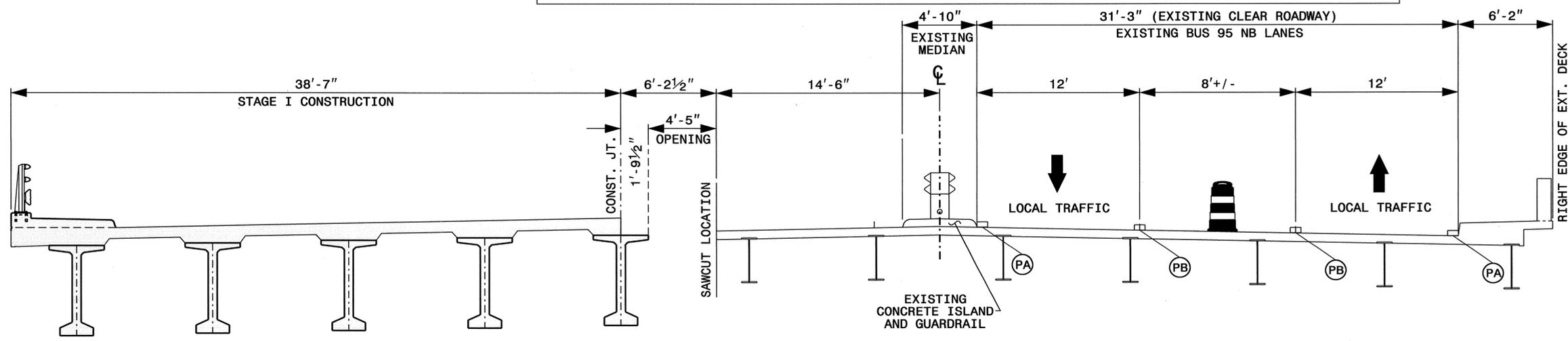
NOTE: INSTALL TEMPORARY RAISED PAVEMENT MARKERS MH ON 20' CENTERS ALONG TEMPORARY SINGLE YELLOW CENTER LINES  
ALL STATIONS AND DIMENSIONS SHOWN ARE +/-

SEE TEMPORARY SHORING NOTES ON TCP-2A



TEMPORARY SHORING NO. 1 & 2		TEMPORARY SHORING NO. 3 & 4	
(A) BEGIN TS NO. 1 -L- STA. 23+60 +/- 15' LT.	(C) BEGIN TS NO. 2 -L- STA. 26+90 +/- 15' LT.	(E) BEGIN TS NO. 3 -L- STA. 23+60 +/- 18' LT.	(G) BEGIN TS NO. 4 -L- STA. 27+20 +/- 18' LT.
(B) END TS NO. 1 -L- STA. 24+30 +/- 15' LT.	(D) END TS NO. 2 -L- STA. 27+50 +/- 15' LT.	(F) END TS NO. 3 -L- STA. 23+90 +/- 18' LT.	(H) END TS NO. 4 -L- STA. 27+50 +/- 18' LT.

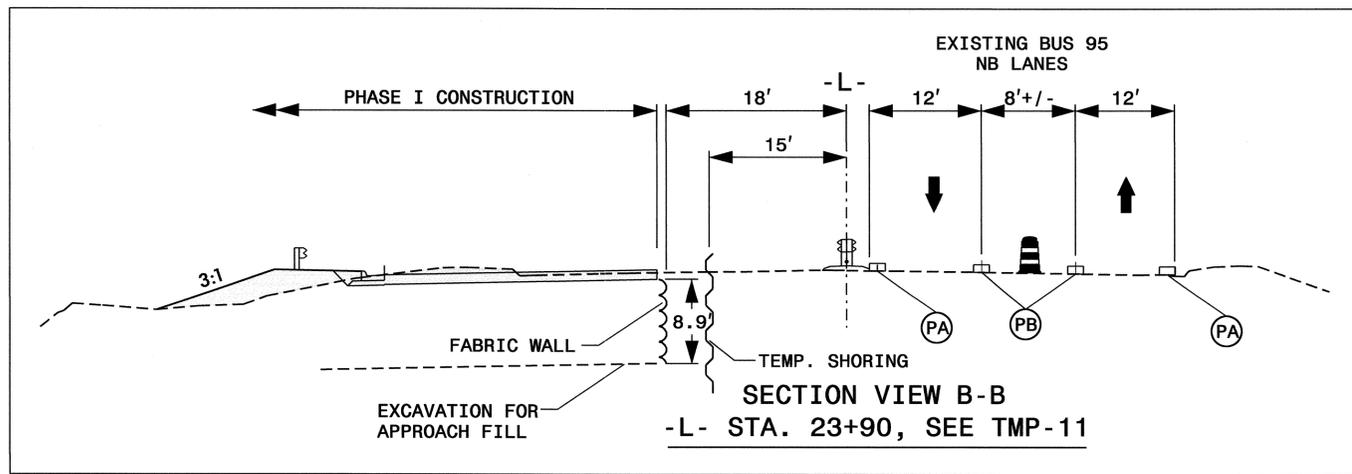
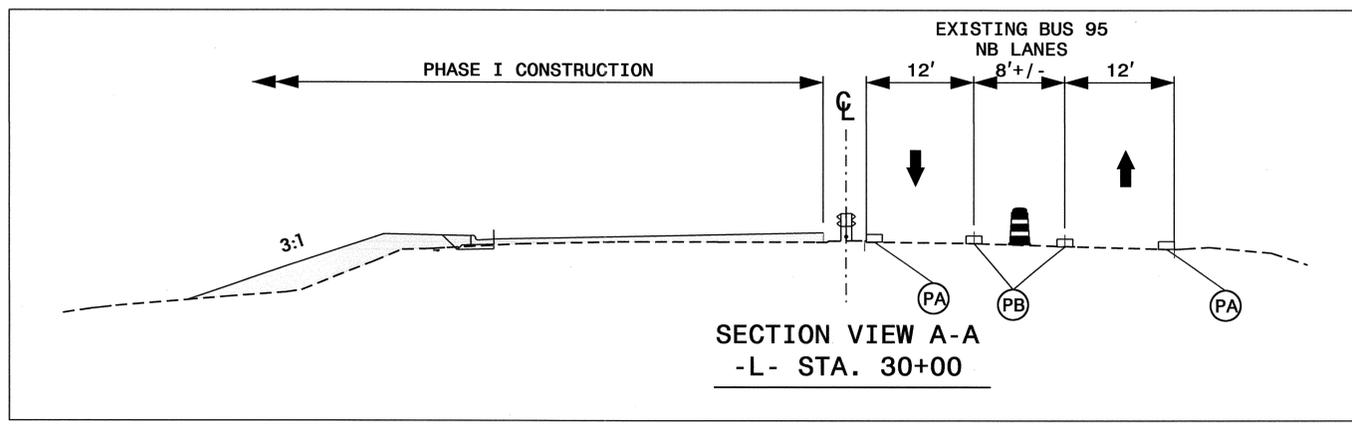
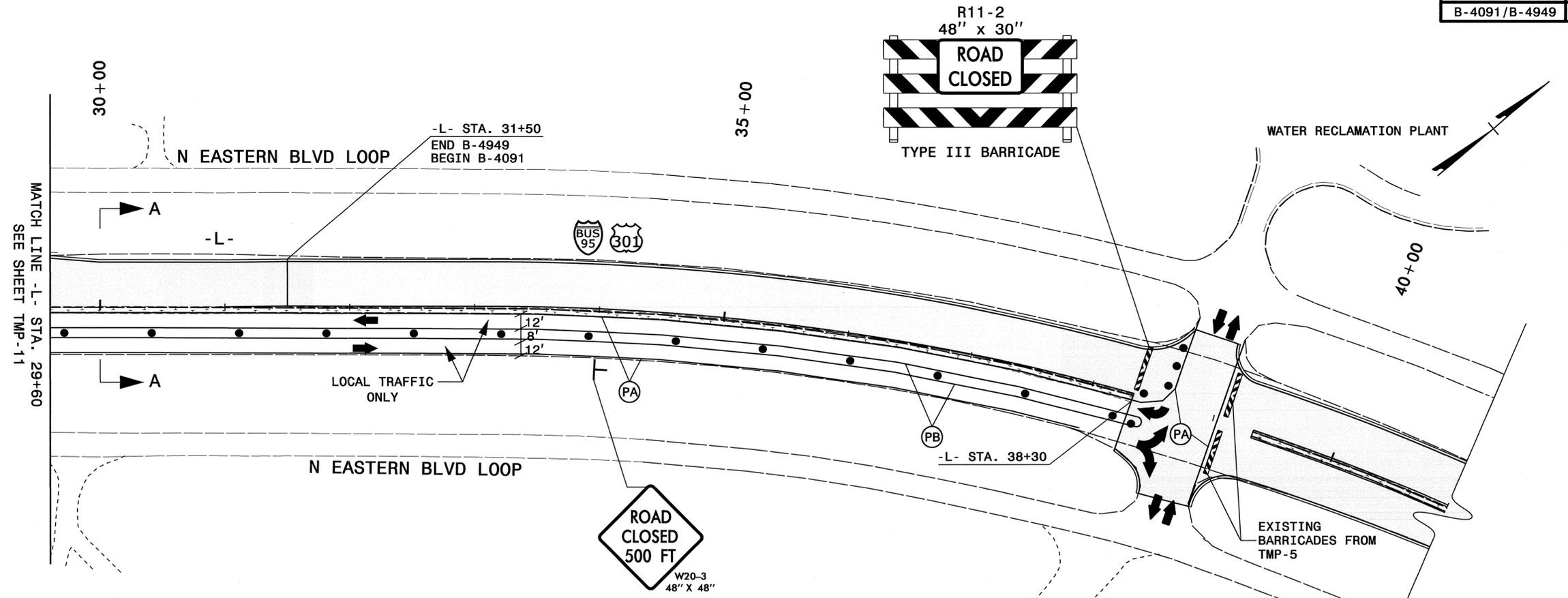
TS NO. 1 : 490 SQ. FT.    TS NO. 2 : 300 SQ. FT.    TS NO. 3 : 165 SQ. FT.    TS NO. 4 : 165 SQ. FT.  
TOTAL QTY. : 1120 SQ. FT.



SECTION A-A - STAGE I  
-L- STA. 25+00

APPROVED: <i>[Signature]</i> DATE: 4/12		<p>PHASE I B-4949</p>

23-MAY-2012 16:32 \\DOT-STOR05\Projects\Projects\TrafficControl\TCP\B-4091 AND B-4949 COMBINED\B-4091\TC\_TMP.il.dgn



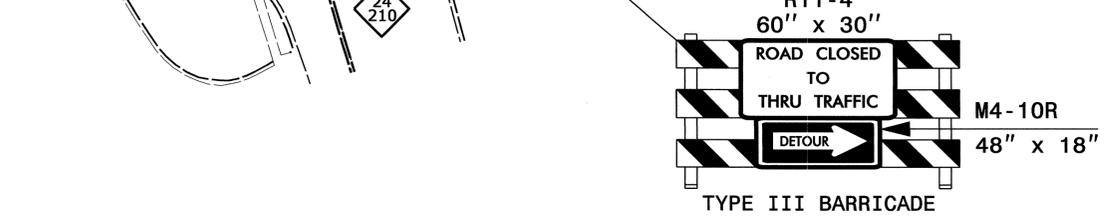
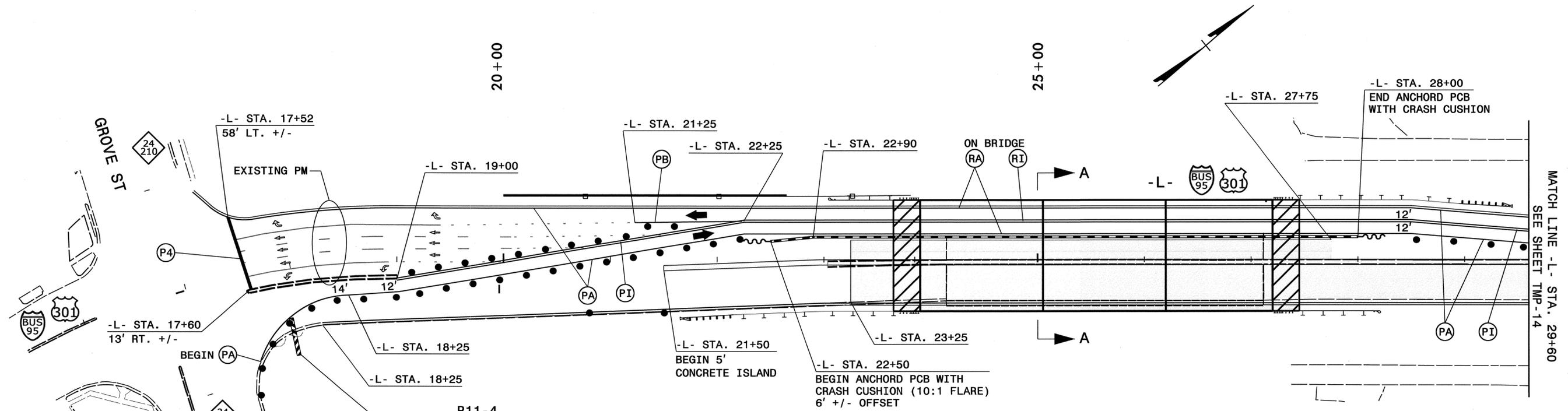
NOTE: INSTALL TEMPORARY RAISED PAVEMENT MARKERS MH ON 20' CENTERS ALONG TEMPORARY SINGLE YELLOW CENTER LINES

APPROVED: *[Signature]* DATE: 5/21/12

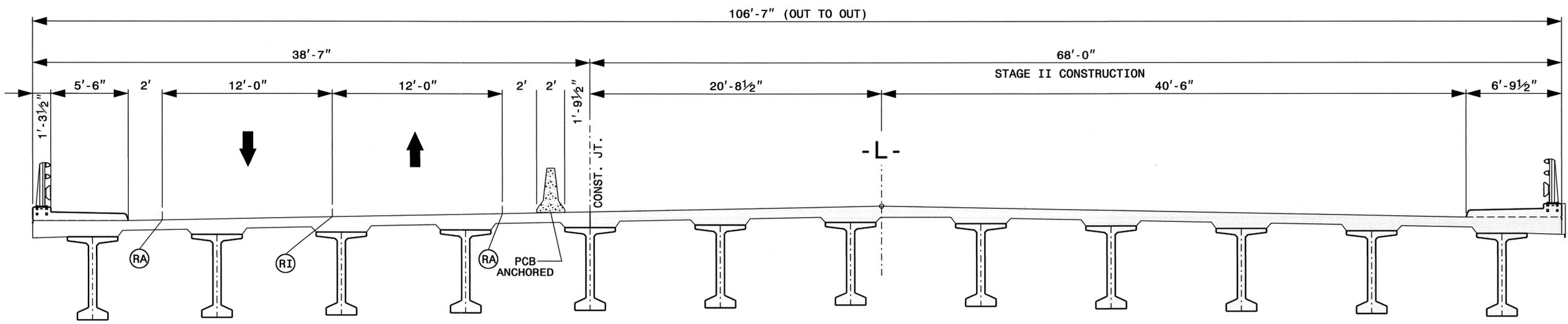
SEAL

**PHASE I**  
**B-4949**

09-MAY-2012 14:26 \\DOT-ST0606\p\Projects\B-4091\TrafficControl\TCP\B-4091\AND B-4949 COMBINED\B-4091\B-4949\_TC\_TMP-12.dgn AKPA TEL AT E244748



NOTE: INSTALL TEMPORARY RAISED PAVEMENT MARKERS MH ON 20' CENTERS ALONG TEMPORARY DOUBLE YELLOW CENTER LINE  
 ALL STATIONS AND DIMENSIONS SHOWN ARE +/-



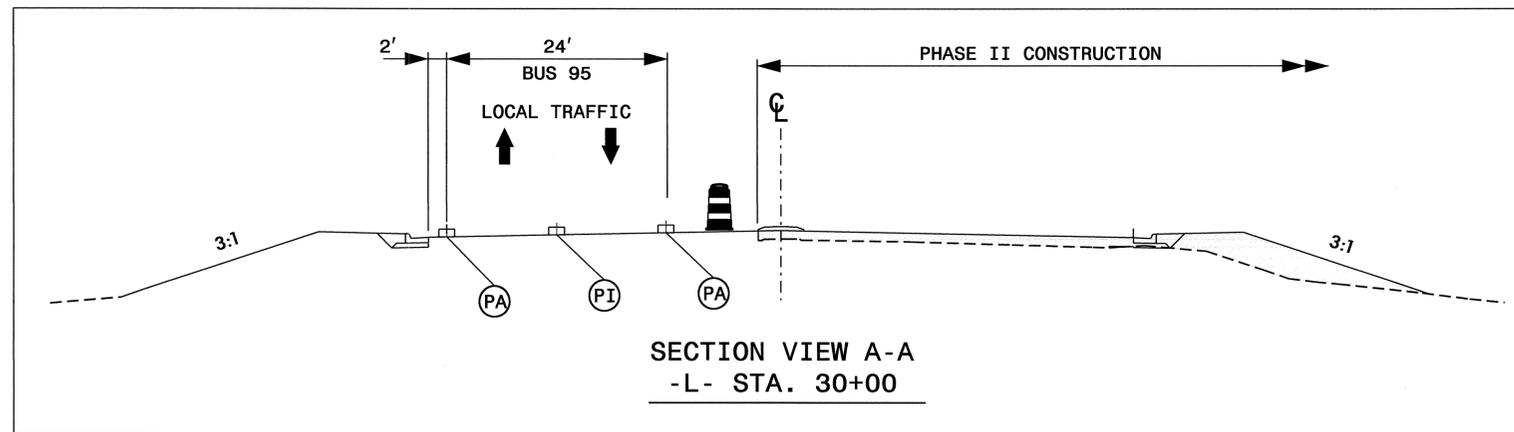
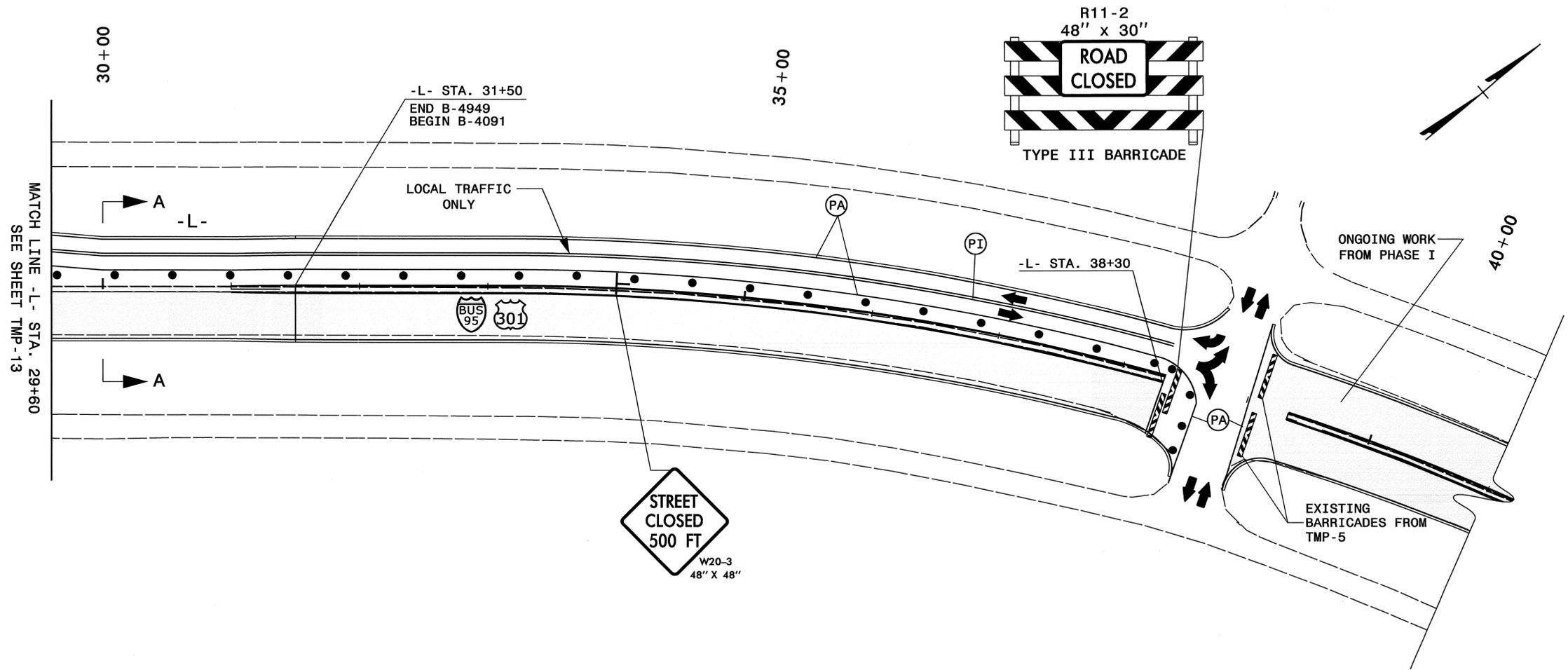
SECTION A-A - STAGE II  
 -L- STA. 25+00

APPROVED: [Signature] DATE: 5/14/12  
 SEAL  
 NORTH CAROLINA PROFESSIONAL SEAL 022104  
 ENGINEER JOHN S. KITTE JR.



PHASE II  
 B-4949

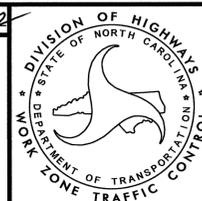
10-MAY-2012 13:46  
 \\DOT-STOR06\projects\proj\TIP\Projects-b\4091\TrafficControl\TCP\B-4091 AND B-4949 COMBINED\B-4091 B-4949 TC\_TMP-13.dgn  
 akpatel AT TE244748



NOTE: INSTALL TEMPORARY RAISED PAVEMENT MARKERS MH ON 20' CENTERS ALONG TEMPORARY DOUBLE YELLOW CENTER LINE  
ALL STATIONS AND DIMENSIONS SHOWN ARE +/-

10-MAY-2012 13:51 \\DOT-STOR06\proj\TIP\Projects-b\4091\TrafficControl\B-4091 AND B-4949 COMBINED\B-4091 B-4949 TC\_TMP\_14.dgn akpatel AT TE24748

APPROVED: *[Signature]* DATE: 5/14/12  
SEAL  
NORTH CAROLINA PROFESSIONAL ENGINEER  
SEAL 022104  
JOHN S. KITTE JR.



PHASE II  
B-4949