## TIP PROJECT: 17BP.13.P.1

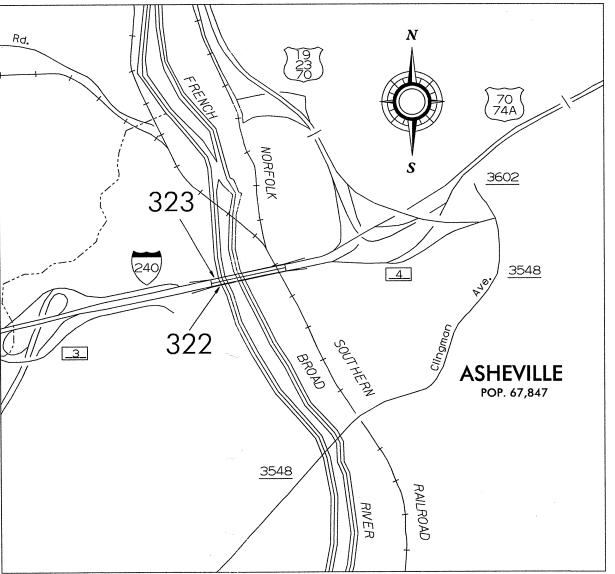
# CONTRACT NO: C202912



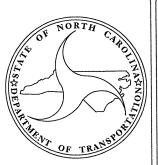
### BUNCOMBE COUNTY

LOCATION: BRIDGE #322 & #323 ON I-240 OVER FRENCH BROAD RIVER, NORFOLK SOUTHERN RAILROAD, HILTON INN DRIVE, EMMA ROAD AND RIVERSIDE DRIVE

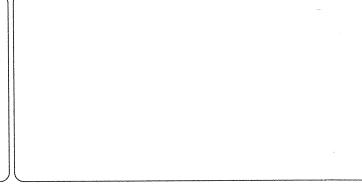
TYPE OF WORK: BRIDGE PRESERVATION-CLEANING & PAINTING OF EXISTING STRUCTURE

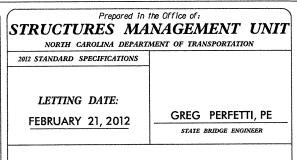


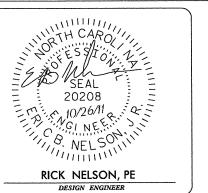
STATE	STATE	PROJECT	REFERENCE	NO.	SHEET NO.	TOTAL SHEETS
N.C.	17	BP.1	3.P.1		1	
STATE P	PROJECT NO.	F. A.	PROJ. NO.		DESCRIP1	TION
17BP.	13.P.1		N/A		PE	
17BP.13.P.1		N/A			CONSTR	
				L		
				7		











ROJECT REFERENCE NO. SHEET NO.

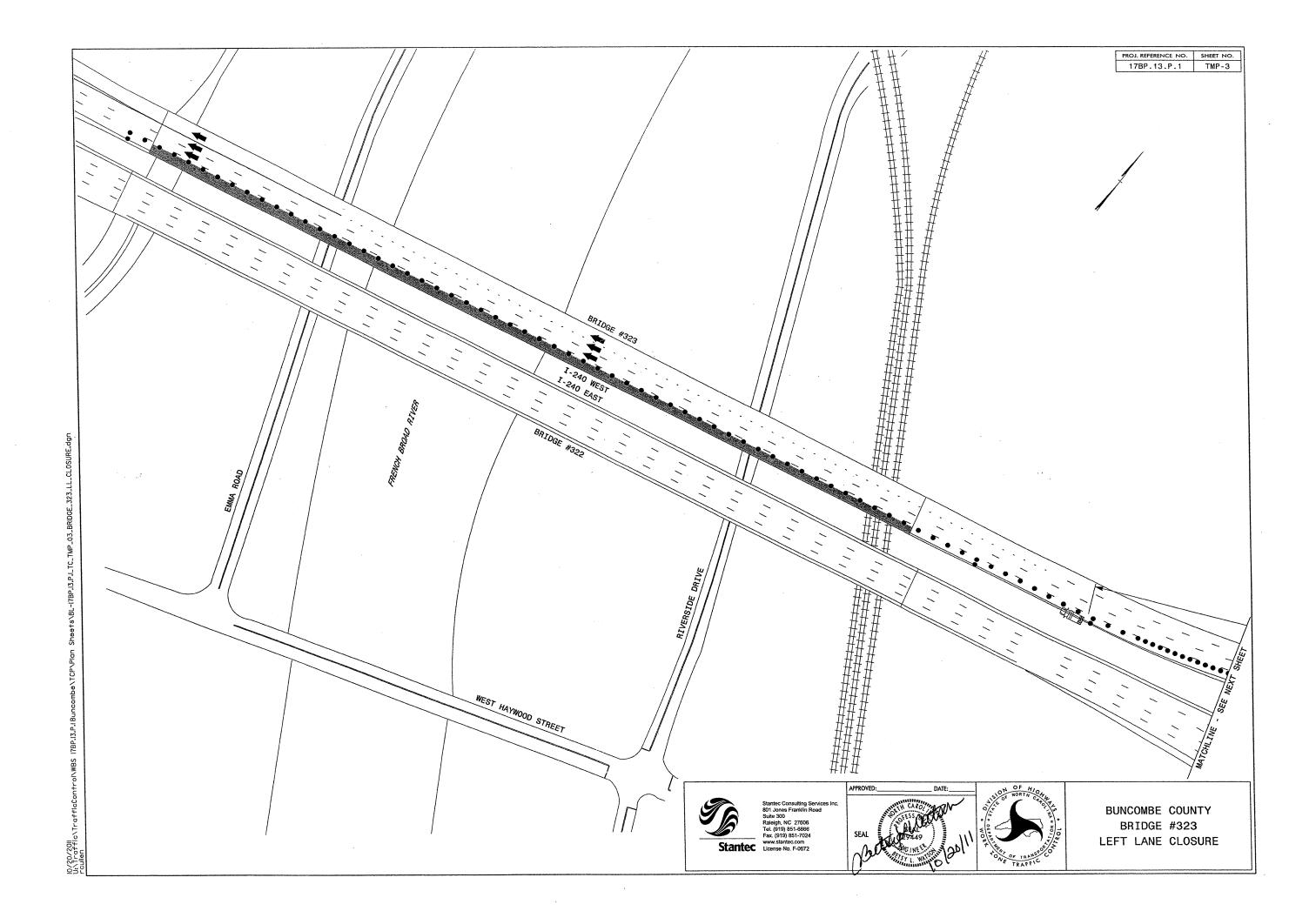
17BP.13.P.1 2

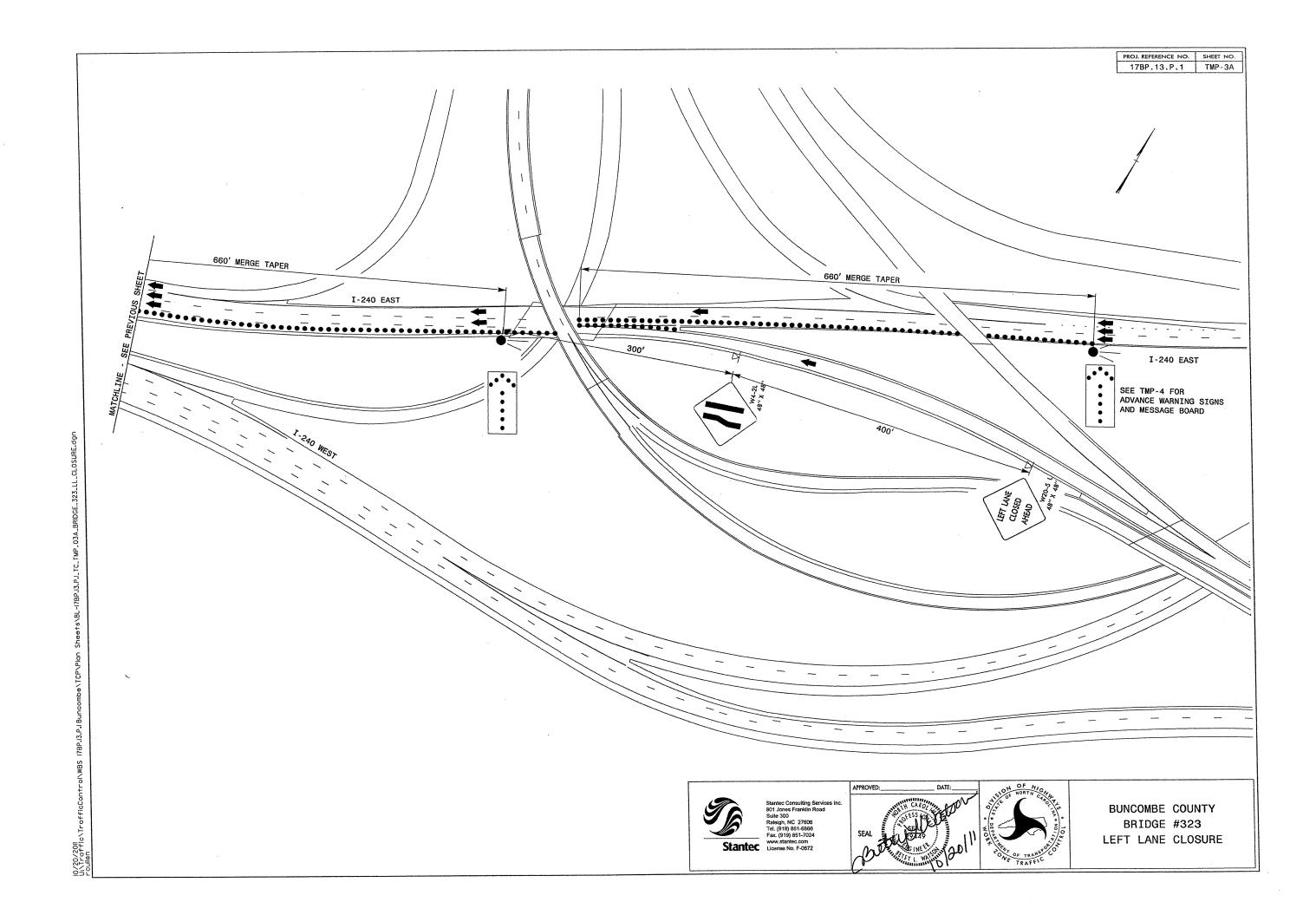
### STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

### SUMMARY OF QUANTITIES

### STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C202912

ItemNumber	Sec #	Quantity	Unit	Description	
0000100000-N	800	Lump Sum		MOBILIZATION	
4405000000-E	1110	224	SF	WORK ZONE SIGNS (PORTABLE)	
4415000000-N	1115	2	EA	FLASHING ARROW BOARD	
4420000000-N	1120	1	EA	PORTABLE CHANGEABLE MESSAGE SIGN	
4430000000-N	1130	225	EA	DRUMS	
4435000000-N	1135	40	EA	CONES	
4450000000-N	1150	480	HR	FLAGGER	
4480000000-N	1165	1	EA	TMA	
886000000-N	SP	Lump Sum		GENERIC STRUCTURE ITEM CLEANING AND REPAINTING OF BRIDGE #322	
886000000-N	SP	Lump Sum		GENERIC STRUCTURE ITEM CLEANING AND REPAINTING OF BRIDGE #323	
8860000000-N	SP	Lump Sum		GENERIC STRUCTURE ITEM POLLUTION CONTROL	
886000000-N	SP	Lump Sum		GENERIC STRUCTURE ITEM UNDER STRUCTURE WORK PLATFORM	





### 17BP.13. **PROJECT**

### C202912 NO: CONTRACT

### STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

### **BUNCOMBE** COUNTY

LOCATION: BRIDGE #322 & #323 ON I-240 OVER FRENCH BROAD RIVER, NORFOLK SOUTHERN RAILROAD, HILTON INN DRIVE, EMMA ROAD AND RIVERSIDE DRIVE

TYPE OF WORK: BRIDGE PRESERVATION-CLEANING & PAINTING OF EXISTING STRUCTURE

STATE	STATE	PROJECT	REFERENCE	NO.	SHEET NO.	TOTAL SHEETS
N.C.	17	BP.1	3.P.1		1	
STATE PR	OJECT NO.	F. A.	PROJ. NO.	T	DESCRIPT	rion
17BP.13	3.P.1	1	N/A	T	PE	
17BP.13.P.1		]	N/A	CONSTR		ΓR
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		i		1		

### INDEX OF SHEETS

SHT#

**DESCRIPTION** 

TITLE SHEET

1A

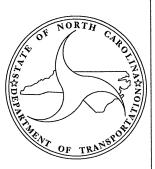
INDEX OF SHEETS

2

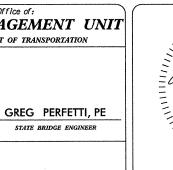
SUMMARY OF QUANTITIES

TMP-1 THRU TMP-4

TRAFFIC MANAGEMENT PLANS



Prepared in the Office of: STRUCTURES MANAGEMENT UNIT NORTH CAROLINA DEPARTMENT OF TRANSPORTATION 2012 STANDARD SPECIFICATIONS LETTING DATE: FEBRUARY 21, 2012



RICK NELSON, PE

### STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

### TRANSPORTATION MANAGEMENT PLAN

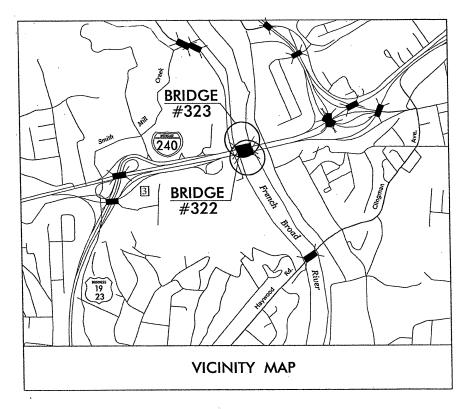
### BUNCOMBE COUNTY

**DIVISION** 13



### **BRIDGE PAINTING**

BRIDGE #322 - I-240 EBL OVER RAILROAD AND FRENCH BROAD RIVER BRIDGE #323 - I-240 WBL OVER RAILROAD AND FRENCH BROAD RIVER





PLAN PREPARED FOR NCDOT BRIDGE MANAGEMENT UNIT RALEIGH, NC



INDEX OF SHEETS

SHEET NO.

TITLE

TITLE SHEET, AND INDEX OF SHEETS

LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, AND LEGEND

GENERAL NOTES AND TRAFFIC CONTROL PHASING

TMP-3,3A BRIDGE #323 LEFT LANE CLOSURE

SINGLE LANE CLOSURES ON MULTI-LANE ROADWAYS

### TRAFFIC MANAGEMENT STRATEGY

PROPOSED PAINTING OPERATIONS WILL BE PERFORMED FROM BELOW THE BRIDGE. TIME RESTRICTED LANE CLOSURES WILL BE ALLOWED ABOVE AND BELOW THE BRIDGE. REFER TO SHEET TMP-2 FOR TRAFFIC CONTROL



BETSY L. WATSON, P.E.

TRANSPORTATION DESIGNER

TRAFFIC ENGINEER

APPROVED BELLEVILLED

SHEET NO. TMP-1

### **LEGEND**

### **GENERAL**

DIRECTION OF TRAFFIC FLOW

WORK AREA

NORTH ARROW

### TRAFFIC CONTROL DEVICES

BARRICADE (TYPE III)

TEMPORARY CRASH CUSHION FLASHING ARROW BOARD (TYPE C)

FLAGGER

LAW ENFORCEMENT

TRUCK MOUNTED ATTENUATOR (TMA)

CHANGEABLE MESSAGE SIGN (CMS)

PORTABLE CONCRETE BARRIER (PCB)

### TEMPORARY SIGNING

PORTABLE SIGN

- STATIONARY SIGN

STATIONARY OR PORTABLE SIGN

### **SIGNALS**



PROPOSED



### PAVEMENT MARKINGS

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

---- SOLID LINES

### PAVEMENT MARKING SYMBOLS

PAVEMENT MARKING SYMBOLS

ASSET EXISTING PAVEMENT MARKING SYMBOLS (HOLLOW)

MY PAVEMENT MARKING ALPHANUMERIC CHARACTERS

### PAVEMENT MARKERS

CRYSTAL/CRYSTAL

CRYSTAL/RED

♦ YELLOW/YELLOW

### PROJ. REFERENCE NO. SHEET NO. 17BP.13.P.1 TMP-1A

### ROADWAY STANDARD DRAWINGS

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

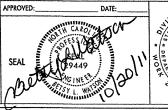
### STD. NO.

### TITLE

1101.02	TEMPORARY LANE CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.02	PORTABLE WORK ZONE SIGNS
1115.01	FLASHING ARROW BOARDS
1130.01	DRUMS
1135.01	CONE
1150.01	FLAGGING DEVICES
1165.01	WORK VEHICLE LIGHTING SYSTEMS AND TWA DELINEATION
1180.01	SKINNY - DRUM



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ROADWAY STANDARD DRAWINGS & LEGEND

### GENERAL NOTES

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

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

### LANE CLOSURE TIME RESTRICTIONS

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

ROAD NAME

DAY AND TIME RESTRICTIONS

I-240 6:00 A.M.-9:00 P.M. MONDAY THRU SUNDAY (EVERY DAY)

6:00 A.M.-9:00 A.M. MONDAY THRU FRIDAY 4:00 P.M.-7:00 P.M. MONDAY THRU FRIDAY RIVERSIDE DR. WESTGATE PARKWAY

### HOLIDAY & HOLIDAY WEEKEND LANE CLOSURE TIME RESTRICTIONS

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

### ROAD NAME ALL ROADS

- 1) FOR ANY UNEXPECTED OCCURRENCE THAT CREATES UNUSUALLY HIGH TRAFFIC VOLUMES, AS DIRECTED BY THE ENGINEER.
- 2) FOR NEW YEAR'S, BETWEEN THE HOURS OF 6:00 A.M. DECEMBER 31st TO 9:00 P.M. JANUARY 2nd. IF NEW YEAR'S DAY IS ON A FRIDAY, SATURDAY, SUNDAY, OR MONDAY THEN UNTIL 9:00 P.M. THE FOLLOWING TUESDAY,
- 3) FOR EASTER, BETWEEN THE HOURS OF 6:00 A.M. THURSDAY AND 9:00 P.M. MONDAY.
- 4) FOR MEMORIAL DAY, BETWEEN THE HOURS OF 6:00 A.M. FRIDAY TO 9:00 P.M. TUESDAY.
- 5) FOR INDEPENDENCE DAY, BETWEEN THE HOURS OF 6:00 A.M. THE DAY BEFORE INDEPENDENCE DAY AND 9:00 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 9:00 P.M. THE TUESDAY AFTER INDEPENDENCE DAY.
- 6) FOR LABOR DAY, BETWEEN THE HOURS OF 6:00 A.M. FRIDAY AND 9:00 P.M.
- 7) FOR THANKSGIVING DAY, BETWEEN THE HOURS OF 6:00 A.M. TUESDAY TO 9:00 P.M. MONDAY.
- 8) FOR CHRISTMAS, BETWEEN THE HOURS OF 6:00 A.M. THE FRIDAY BEFORE THE WEEK OF CHRISTMAS DAY AND 9:00 P.M. THE FOLLOWING TUESDAY AFTER THE WEEK OF CHRISTMAS.

### LANE AND SHOULDER CLOSURE REQUIREMENTS

- C). LANE CLOSURES ARE REQUIRED WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN ANY PORTION OF A TRAVEL LANE. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL I ANF.
- D) INSTALL ALL LANE CLOSURES ACCORDING TO THE PLANS, ROADWAY STANDARD DRAWINGS (1101.02), OR AS DIRECTED BY THE ENGINEER.
- E) REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED OR AS DIRECTED BY THE ENGINEER. COVER OR LAY DOWN SIGNS. AND TURN OFF ARROW BOARD AND MESSAGE BOARDS.
- F) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 15 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN SHOULDER USING ROADWAY STANDARD DRAWING NO. 1101.04 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL OR A LANE CLOSURE IS INSTALLED.
- G) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO AN UNDIVIDED FACILITY AND WITHIN 5 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.
- H) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO A DIVIDED FACILITY AND WITHIN 10 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

### MISCELLANEOUS

- I) MAINTAIN SIDEWALK ACCESS AT ALL TIMES.
- J) ALL DIMENSIONS AND STATIONS IN THE TRAFFIC MANAGEMENT PLAN AND PHASING ARE APPROXIMATE (+/-); FIELD ADJUST AS NECESSARY OR AS DIRECTED BY THE ENGINEER.
- K) MAINTAIN DRIVEWAY ACCESS AT ALL TIMES, UNLESS OTHERWISE DIRECTED BY ENGINEER.
- L) DO NOT PERFORM WORK FROM THE ROADWAY ON TOP OF ANY BRIDGE, UNLESS SPECIFICALLY ALLOWED IN THE PLAN OR BY THE ENGINEER.

### TRAFFIC CONTROL PHASING

FOR PAINTING OPERATIONS PERFORM ALL WORK FROM BELOW BRIDGE EXCEPT THAT LEFT LANE CLOSURES WILL BE ALLOWED ON THE BRIDGE FOR STAGING PURPOSES AS OUTLINED BELOW.

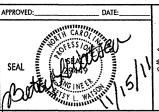
FOR LEFT LANE CLOSURES ON BRIDGE #322 SEE SHEET TMP-4.

FOR LEFT LANE CLOSURES ON BRIDGE #323 SEE SHEETS TMP-3,3A AND TMP-4.

RIGHT LANE CLOSURES WILL NOT BE ALLOWED ON I-240 UNLESS OTHERWISE APPROVED BY THE ENGINEER.

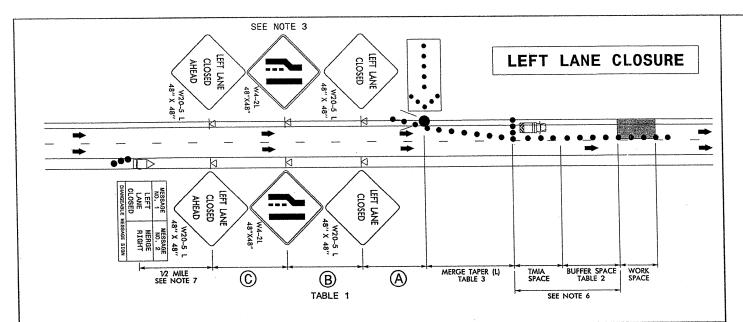
USE FLAGGING OPERATIONS AS NEEDED ON ROADWAYS BELOW BRIDGE PER ROADWAY STANDARD DRAWING 1101.02, SHEET 1 OF 9.

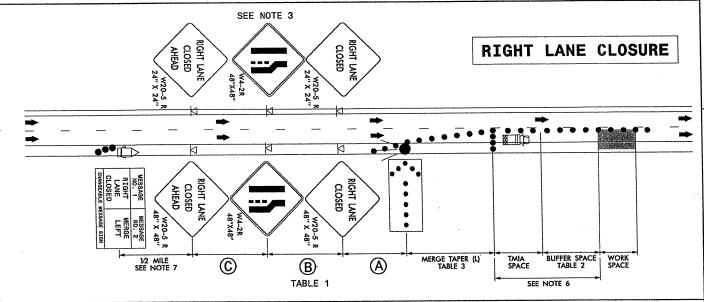
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**GENERAL NOTES** TRAFFIC CONTROL PHASING

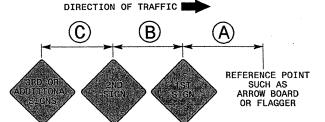




- 1. INSTALL LANE CLOSURES WITH THE TRAFFIC FLOW, BEGINNING WITH DEVICES ON THE UPSTREAM SIDE OF TRAFFIC. REMOVE LANE CLOSURES AGAINST THE TRAFFIC FLOW, BEGINNING WITH DEVICES ON THE DOWNSTREAM SIDE OF TRAFFIC.
- 2. STATIONARY SIGNS SHOULD BE USED IF THE LANE CLOSURE WILL BE IN PLACE FOR LONGER THAN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

TABLE 1					
ADVANCE WARNING SIGN SPACING					
ROAD TYPE & POSTED SPEED LIMIT	DISTANCE BETWEEN SIGNS (FEET)				
(MPH)	A	B	©		
URBAN ≤ 35	100	100	100		
RURAL ≤ 35	200	200	200		
40-50	350	350	350		
55	500	500	500		
CONTROLLED ACCESS ROADS ( ≥ 55 )	1000	1500	2700		

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



PROJ. REFERENCE NO.	SHEET NO.
17BP.13.P.1	TMP-4

	TABLE 2				
POSTED SPEED LIMIT (MPH)	LONGITUDINAL BUFFER SPACE & STOPPING SIGHT DISTANCE (FEET)				
20	115				
25	155				
30	200				
35	250				
40	305				
45	360				
50	425				
55	495				
60	570				
65	645				
70	730				

TABLE 3							
MERGE TAPER "L" TABLE							
	WIDTH OF LANE BEING CLOSED (FEET)						
w +	9	10	11	12			
POSTED SPEED (MPH)	MINIMUM MERGE TAPER (FEET)						
20	60	70	75	80			
25/11	05	105	-115	425			
30	135	150	165	180			
35	185	205	% 225 s,	245 4			
40	240	270	295	320			
45	405	450	495	540			
50	450	500	550	600			
. 55.29	495	550	605	660,			
60	540	600	660	720			
65	585	650	715	780			
70	630	700	770	840			

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

SPEED LIMIT (S)

(L) FORMULA

40 MPH OR LESS

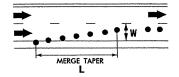
45 MPH OR GREATER

L = TAPER LENGTH (FEET)

W = WIDTH OF LANE BEING CLOSED (FEET)

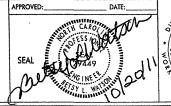
S = POSTED SPEED LIMIT, OFF-PEAK 85 PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED (MPH)

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





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SINGLE LANE CLOSURES ON MULTI-LANE ROADWAYS