

Date: 11-04-2004

Revised:

**TRAFFIC CONTROL:**

Maintain traffic in accordance with Divisions 11 and 12 of the North Carolina Department of Transportation January 2002 Standard Specifications for Roads and Structures, and the following provisions:

Use a lane closure (refer to North Carolina Department of Transportation January 2002 Highway Design Branch Roadway Standard Drawings Nos. 1101.02, 1101.11, 1110.02, Detail for 1130D01 and details for the Advance Work Zone signing in contract) or a slow-moving operation as shown in details of this contract. Use a moving operation only if the minimum speed maintained at all times is 3 mph with no stops that narrow or close a lane of travel. If the moving operation is progressing slower than 3 mph at any time, install a lane closure. Maintain the existing traffic pattern at all times, except in the immediate work zone where lane closures are allowed as determined by the Engineer.

Refer to Attached Detail(s) and North Carolina Department of Transportation January 2002 Highway Design Branch Roadway Standard Drawings Nos. 1101.02, 1101.03, 1101.04, 1101.05, 1101.07, 1101.11, 1110.01, 1110.02, 1115.01, 1135.01, 1145.01, 1150.01, 1165.01 and 1170.01 when closing a lane of travel in a stationary work zone such as pavement patching resurfacing, or pavement marking removal, etc. Properly ballasted cones may be used instead of drums for lane closures during daylight hours. The stationary work zone shall be a maximum of 3 miles in length at any given time unless otherwise directed by the Engineer. A "pilot vehicle" operation may be used in conjunction with flaggers and the appropriate pilot vehicle warning signing as directed by the Engineer. During periods of construction inactivity, return the traffic pattern to the existing alignment and remove or cover any work zone signs. When covering work zone signs, use an opaque material that prevents reading of the sign at night by a driver using high beam headlights. Use material, which does not damage the sign sheeting. Replace any obliterated markings as required by other sections of the Specifications and the Engineer.

When personnel and/or equipment are working on the shoulder adjacent to an undivided facility and within 5 feet 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 feet 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 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. Do not work simultaneously, on both sides of an open travel way, within the same location, on a two-lane, two-way road. Do not perform work involving heavy equipment within 15 feet of the edge of travel way when work is being performed behind a lane closure on the opposite side of the travel way.

The maximum acceptable drop-off between open lanes of travel is 2 inches. For drop-offs greater than 1.5 inches but less than or equal to 2 inches, place a 1:1 asphalt wedge between the lanes of travel. Install advance warning "UNEVEN LANES" signs (W8-11) 500 feet in advance and

once every half mile where the posted speed is less than 45 mph and once every mile where the posted speed is greater than or equal to 45 mph throughout the length of the drop-off area. The maximum acceptable edge of pavement drop-off is 2 inches. Backfill at a 6:1 slope up to the edge and elevation of existing pavement in areas adjacent to an open travel lane if the drop-off exceeds 2 inches at no expense to the Department.

When utilizing a slow-moving operation for such items as pavement marking placement, pavement marker installation and pesticide spraying, the slow moving operation caravan shall consist, as a minimum, of the vehicles and devices shown on the Moving Operation Caravan Detail(s) herein. Traffic cones may be used when necessary to provide additional protection of wet pavement markings. Ballast all traffic cones so they will not be blown over by traffic.

**Submit a sequence of operation for all maps to the Engineer at the first pre-construction meeting for approval by the Engineer. Approved sequence can not be altered without written permission of the Engineer.**

Notify the Engineer forty-eight (48) hours before milling or resurfacing will interfere with the existing Signal Loops. Loops may need to be placed in milled surface before resurfacing occurs. Coordinate all signal loop operations with the Engineer.

Notify the Engineer fifteen (15) consecutive calendar days before resurfacing a bridge or its approaches. Patch and make repairs to bridge surface and its approaches before resurfacing occurs. Coordinate all operations on the bridge and its approaches with the Engineer.

Notify the Engineer forty-eight (48) hours before resurfacing the areas of existing pavement that require patching. Patch these areas before resurfacing occurs. Coordinate the resurfacing operations of the patched areas with the Engineer

During a resurfacing only operation, bring all newly resurfaced lanes to the same elevation within 72 hours.

For partial or “wheel track” milling operations on two-way, two-lane facilities, mill and pave back by the end of each work day. For partial or “wheel track” milling operations on multi-lane facilities, the lane being milled may be left closed and paved back within 72 hours.

The following option is acceptable during Resurfacing/milling operations on two-way, two-lane facilities when the entire roadway or entire lane is to be milled:

**1) Mill and pave back as directed by the Engineer**

The following option is available during Resurfacing/milling operations on multi-lane facilities when all lanes or a single lane in one direction are to be milled:

**1) Mill and pave back as directed by the Engineer**

Slope the pavement at the beginning and ending of the daily milling operation as directed by the Engineer. Sweep and remove all milled material from the roadway as soon as the daily milling operation is completed. Maintain all accesses where milling is conducted using suitable backfill material approved by the Engineer. Continue milling operations until the particular section of roadway being milled is complete.

Operate equipment and conduct operations in the same direction as the flow of traffic. Do not cross medians with equipment, except at properly designated interchanges.

Review and record the existing pavement markings and markers prior to resurfacing. Use the record of existing pavement markings and markers in conjunction with North Carolina Department of Transportation January 2002 Highway Design Branch Roadway Standard Drawings to re-establish the proposed pavement markings and markers unless otherwise directed by the Engineer.

Provide appropriate lighting in accordance with Section 1413 of the North Carolina Department of Transportation Standard Specifications for Roads and Highways **when working at night. Portable Lighting will be paid for as described in Division 14 of the January 2002 Standard Specifications For Roads and Structures and any Special Provisions.**

Remove existing pavement markers in preparation for paving. Repair any pavement damage due to existing pavement marker removal **prior to the end of the work day.** Dispose of existing pavement markers as directed by the Engineer. **No direct payment will be made for this work.**

**Truck Mounted Impact Attenuators (TMIA), Flashing Arrow Panels Type C (FAP), Changeable Message Signs (CMS), Police, Drums and Stationary Advance Warning Work Zone Signs will be paid for as described in Division 11 of the January 2002 Standard Specifications For Roads and Structures and January 2002 Highway Design Branch Roadway Standard Drawings.** No direct payment shall be made for all other signing and traffic control items, as such work will be considered incidental to the various other bid items in the Contract.

**R-1Revised**

WBS#: 39548.3.1 (I-4756)

Mecklenburg County

Date: 10-29-2004

Revised:

## **WORK ZONE SIGNING:**

### **1- DESCRIPTION.**

Install and maintain signing in accordance with Divisions 11 and 12 of the North Carolina Department of Transportation January 2002 Standard Specifications for Roads and Structures, the North Carolina Department of Transportation January 2002 Highway Design Branch Roadway Standard Drawings and the following provisions:

Furnish, install, maintain, and remove advance warning work zone signs and any required lane closure signing.

Furnish, install, and maintain general work zone warning signs for resurfacing and/or milling such as "Rough Road" (W8-8 at 48" X 48") (for milling only), "Uneven Pavement" (W8-15 at 48" X 48"), "Low Shoulder" (W8-9 at 48" X 48"), "Low / Soft Shoulder" (W8-9B at 48" X 48"), "Unmarked Pavement Ahead" (W16-10 at 48" X 48"), and "Do Not Pass"(R4-1 at 24" X 30". When construction is completed in any given area of the project, relocate signs to the next work site, as directed by the Engineer. Remove these signs at the completion of the project.

**Advance Warning Work Zone Signs such as "Work Zone Ahead", "Begin Work Zone" and "End Work Zone" may be stationary. All other work zone signs may be portable.**

### **2- CONSTRUCTION METHODS.**

#### **(A) General:**

Install all warning work zone signs before beginning work on a particular map. If signs are installed three days prior to the beginning of work on a particular map, cover the signs until the work begins. Install each work zone warning sign separately and not on the same post(s) with any other sign except where an advisory speed plate or directional arrow is used.

#### **(B) Advance warning work zone signs:**

Install advance warning work zone signs (see attached Detail(s) and North Carolina Department of Transportation January 2002 Highway Design Branch Roadway Standard Drawings Nos. 1101.02 and 1110.01) prior to beginning of work and remove upon final completion of the project. If there is a period of construction inactivity longer than two weeks, remove or cover advance warning work zone signs. Uncover advance warning work zone signs no more than 3 days before work resumes. All other operations could be suspended upon failure to comply with the above requirements. Such suspended operations would not be resumed until the above requirements are fulfilled.

**(C) Lane closure work zone signs:**

Install any required lane closure signing needed during the life of the project (see North Carolina Department of Transportation January 2002 Highway Design Branch Roadway Standard Drawings Nos. 1101.02, 1101.11 and 1110.02).

**(D) General work zone warning signs:**

Install general work zone warning signs for resurfacing and/or milling such as "Rough Road" (W8-8 at 48" X 48") (for milling only), "Uneven Pavement" (W8-15 at 48" X 48"), "Low Shoulder" (W8-9 at 48" X 48") and "Low / Soft Shoulder" (W8-9B at 48" X 48") at 1 mile intervals starting at a minimum of 500 feet in advance of the condition for both directions of travel (undivided roadways only) and at any other points determined by the Engineer.

Install the "Low Shoulder" (W8-9 at 48" X 48") or "Low / Soft Shoulder" (W8-9B at 48" X 48") signs prior to any resurfacing in an area where shoulder construction will be performed. Install general work zone warning signs such as "Unmarked Pavement Ahead" (W16-10 at 48" X 48") and "Do Not Pass" (R4-1 at 24" X 30") alternately at 1/2 mile intervals starting at a minimum of 500 feet in advance of the condition for both directions of travel (undivided roadways only) and at any other points determined by the Engineer. Install signs prior to the obliteration of any pavement markings. Remove these signs at the completion of the project.

**3- BASIS OF PAYMENT.**

**Advanced Warning Signs will be paid for as described in Division 11 of the January 2002 Standard Specifications For Roads and Structures and January 2002 Highway Design Branch Roadway Standard Drawings.** No direct payment shall be made for all other Work Zone Signing, as such work will be considered incidental to the various other bid items in the Contract.

**R-3Revised**

WBS#: 39548.3.1 (I-4756)

Date: 10-29-2004

Revised:

Mecklenburg County

**TIME LIMITATION FOR PLACEMENT AND REPLACEMENT  
OF PAVEMENT MARKINGS AND MARKERS COMPLETED BY CONTRACTORS  
ON NEWLY RESURFACED AREAS**

**MARKING BY CONTRACTOR: DIVIDED AND MULTI-LANE FACILITIES**

For all Interstate highways and access ramps, place all markings including symbols and legends, by the end of each workday's operation.

For all divided and multi-lane facilities, place all center line and lane line markings and railroad and school symbols by the end of each workday's operation. Place all edge lines, gore lines, and other symbols within 3 calendar days after they have been obliterated by the resurfacing operation.

A Multi-lane facility is defined as any roadway having more than two lanes to include a two-lane/two-way with a center two-way left turn lane.

**MARKING BY CONTRACTOR: TWO-LANE, TWO-WAY FACILITIES**

For all two-lane, two-way facilities, place all center line markings, railroad and school symbols within 5 calendar days after they have been obliterated by the resurfacing operation. Place all edge lines and other symbols within 30 calendar days after they have been obliterated by the resurfacing operation.

**MARKING BY CONTRACTOR: ALL FACILITIES**

**Place Intermediate Paint in one application. If Intermediate Paint will remain in place over three (3) months, place two applications. The quantity of Intermediate Paint to be paid for shall be the actual number of linear feet (LF) or each (EA) which has been satisfactorily placed and accepted by the Engineer. Payment will be made as described in Article 1205-6 Basis of Payment in the January 2002 Standard Specifications For Roads and Structures.**

Place two applications of paint on newly resurfaced asphalt which will remain in place over three (3) months. Place the second application of paint upon ample drying time of the first, as determined by the Engineer.

**MARKERS BY CONTRACTOR: ALL FACILITIES**

Install permanent pavement markers within sixty (60) calendar days after completing the resurfacing on each map.

**R-4Revised**

WBS#: 39548.3.1 (I-4756)

Mecklenburg County

Date: 10-29-2004

Revised:

**USE IN CONJUNCTION WITH 2002 STANDARD SPECIFICATIONS**

THE FOLLOWING ROADWAY STANDARDS DRAWINGS AS THEY APPEAR IN THE "HIGHWAY DESIGN BRANCH ROADWAY STANDARD DRAWINGS" - ROADWAY DESIGN UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY, 2002 AND THE LATEST REVISIONS THERETO ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STANDARD PAVEMENT MARKINGS

ROADWAY STANDARD DRAWINGS: 1205.01, 1205.02, 1205.03, 1205.04, 1205.05,  
1205.06, 1205.07, 1205.08, 1205.09, 1205.10,  
1205.11, 1205.12

SNOWPLOWABLE PAVEMENT MARKERS

ROADWAY STANDARD DRAWINGS: 1250.01, 1253.01

R-5

Pavement Repairs

Roadway Standard Drawing: 654.01

Guardrail Placement

Roadway Standard Drawing: 862.01



WBS#: 39548.3.1 (I-4756)

Mecklenburg County

Date: 10-29-2004

Revised:

**POLICE**

**DESCRIPTION.**

Furnish Police Officers and marked Police Vehicles to direct traffic in accordance with the plans and specifications.

**CONSTRUCTION METHODS.**

Utilize Police Officers who are outfitted with police uniforms.

Utilize marked Police Vehicles, which are equipped with police lights mounted on top of the vehicle, and police vehicle emblems.

Utilize Police Officers and marked Police Vehicles to direct or control traffic as required by the plans or by the Engineer.

**METHOD OF MEASUREMENT.**

The quantity of Police Officers and marked Police Vehicles to be paid for will be the actual number of hours that each Police Officer/marked Police Vehicle is provided during the life of the project as approved by the Engineer.

There will be no direct payment for marked Police Vehicles as they are considered incidental to the pay item in this special provision.

**BASIS OF PAYMENT.**

The quantity of Police Officers and marked Police Vehicles measured as provided above, will be paid for at the contract unit price per hour for "Police".

Payment will be made under:

Police.....Hour

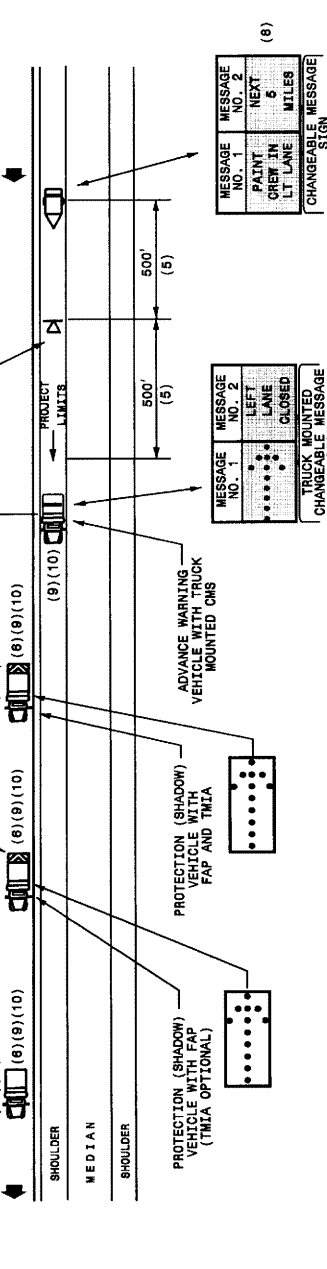
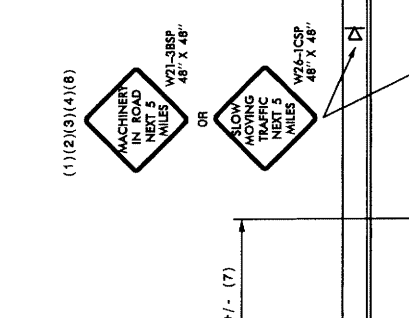
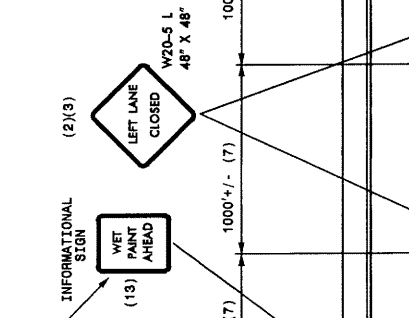
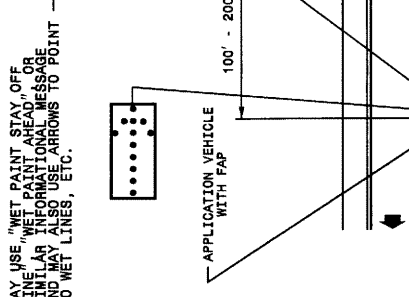
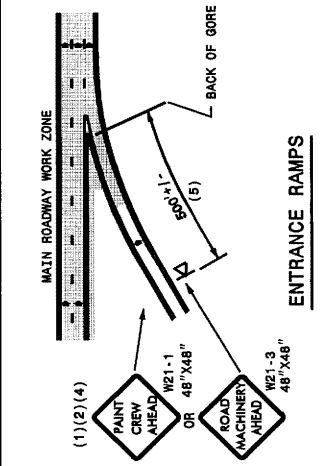
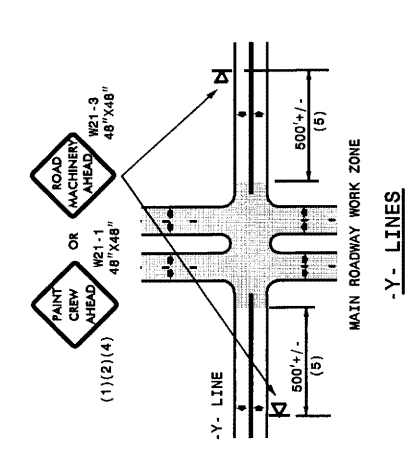


### GENERAL NOTES

- (1) THE FOLLOWING OPTIONS MAY BE USED FOR ADVANCE WARNING SIGNS:
  - A. TRUCK MOUNTED SIGNS
  - B. TRUCK MOUNTED CHANGEABLE MESSAGE SIGN (CMS)
  - C. GROUND MOUNTED ADVANCE WARNING SIGNS (MUST CIRCLE TO PICK UP SIGNS)
  - D. GROUND MOUNTED CHANGEABLE MESSAGE SIGN (CMS) (MUST USE CIRCLE TO PICK UP SIGNS)
- (2) ALL ADVANCE WARNING SIGNS MUST BE 48" X 48" WITH FLUORESCENT ORANGE-REFLECTIVE WHITE 48" X SHEETING. IF SPACE LIMITATIONS ON SHOULDER PROHIBIT 48" X 48" SIGN, A SMALLER SIGN CAN BE USED WITH APPROVAL FROM ENGINEER.
- (3) SIGNS ON VEHICLES SHOULD BE MOUNTED A MINIMUM OF ONE (1) FOOT FROM THE GROUND AND SHOULD NOT BLOCK THE MOTORIST'S SIGHT OF THE FLASHING ARROW PANEL AND/OR LIGHTBAR.
- (4) GROUND MOUNTED ADVANCED WARNING SIGNS SHOULD BE MOUNTED A MINIMUM OF FIVE (5) FEET FROM THE GROUND TO BOTTOM OF SIGN.
- (5) SIGN SPACING SHOULD BE ADJUSTED FOR HORIZONTAL AND VERTICAL CURVES, ETC. TO IMPROVE SIGHT DISTANCES.
- (6) ADDITIONAL VEHICLES SHOULD BE USED IN WORK CARAVAN TO FACILITATE DRYING OF PAVEMENT MARKING MATERIAL (TMIA'S ARE OPTIONAL ON THESE ADDITIONAL VEHICLES). HOWEVER, THE FIRST VEHICLE MOTORISTS SEE IN THE TRAVEL LANE SHALL HAVE A TMIA.
- (7) ADJUST DISTANCE AS NEEDED TO PREVENT MOTORISTS FROM ENTERING SPACE BETWEEN THE APPLICATION AND PROTECTION VEHICLE. DISTANCE CAN BE LENGTHENED TO ACCOMMODATE SIGHT DISTANCE NEEDS.
- (8) ROUND UP MILEAGE TO NEXT WHOLE MILE. WORK ZONE SHOULD NOT EXCEED FIVE (5) MILES IN LENGTH.
- (9) RADIO COMMUNICATION BETWEEN VEHICLES IS REQUIRED.
- (10) USE OF A LIGHT BAR ON ALL VEHICLES IS PREFERRED, BUT A ROTATING BEACON MAY BE USED INSTEAD.
- (11) IF WORK IS PERFORMED AT NIGHT, THE WORK AREA MUST BE ILLUMINATED WITH MACHINE AND/OR TOWER LIGHTS AS APPROVED BY THE ENGINEER.
- (12) ALL TRAFFIC CONTROL DEVICES WILL BE CONSIDERED INCIDENTAL TO THE PAVEMENT MARKING AND MARKERS.
- (13) INFORMATIONAL SIGNS SHOULD BE ACTIVITY SPECIFIC, I.E. 6" PAINTING CREW IN ROAD SIGNS MAY BE RECTANGULAR OR DIAMOND SHAPE. SIGN SIZE SHOULD BE BASED ON THE MOTORIST'S ABILITY TO RECOGNIZE SIGN WHEN TRAVELLING FIVE (5) MILES ABOVE POSTED SPEED LIMIT.

### LEGEND

- PORTABLE SIGN. SIGNS MUST BE NCHRP-350 AND NCDOT APPROVED.
- DIRECTION OF TRAFFIC FLOW
- APPLICATION VEHICLE WITH LIGHT BAR
- PROTECTION VEHICLE WITH TRUCK MOUNTED IMPACT ATTENUATOR (TMIA) AND LIGHT BAR (SEE ROADWAY SIGNING PLAN). TMIA MUST BE NCHRP-350 TEST LEVEL 3 (60+MPH) APPROVED.
- ADVANCE WARNING VEHICLE WITH TRUCK MOUNTED CHANGEABLE MESSAGE SIGN (CMS) AND LIGHT BAR. MESSAGE SIGN LETTER HEIGHT SHOULD BE A MINIMUM OF 10 INCHES.
- FLASHING ARROW PANEL TYPE "B" (60+MPH MIN.) APPROPRIATE DIRECTION INDICATED
- CHANGEABLE MESSAGE SIGN



# MOVING OPERATION CARAVAN

(OPERATIONS TRAVELING 3 MPH OR FASTER)  
PLACING PAVEMENT MARKING OR MARKERS ON INTERSTATE ROADWAYS