

**TRAFFIC CONTROL:**

(03-20-07)

RWZ-1Revised

Maintain traffic in accordance with Divisions 10, 11 and 12 of the *Standard Specifications*, the latest revisions thereto and the following provisions:

**Use ICT #1 for resurfacing the pavement with ultrathin wearing course and for installing pavement markings and markers, as directed by the Engineer.**

**Failure to comply with the following requirement will result in a suspension of all other operations:**

- 1.) The stationary work zone shall be a maximum of 5 miles in length at any given time unless otherwise directed by the Engineer**
- 2.) During periods of construction inactivity, return the traffic pattern to the existing alignment and remove or cover any work zone signs.**

**When performing lane closure activities on I-95, see the attached drawing for the required devices. This project will incorporate the use of “double flashing arrow panels” and a work zone “variable” speed limit reduction utilizing changeable message signs.**

**The work zone “variable” speed limit reduction shall only be used during allowable work hours according to ICT #1. A Work Zone “Variable” Speed Limit reduction is only in effect when lanes are closed and workers are present. Changeable Message Signs will be used to notify motorists of the speed reduction. The reduced speed shall be 55 MPH and the Contractor is to cover any existing speed limits signs located within the active work area that conflict with the Work Zone “variable” Speed Limit. When workers are not present, the speed shall be 65 MPH as posted. The speed limit messages are to be removed and the changeable message signs are to be turned off or other pertinent messaging may be displayed at the direction of the Engineer in coordination with the Work Zone Traffic Control Unit (919-250-4159). Refer to the attached Work Zone “Variable” Speed Limit Reduction drawing for additional information. At the completion of the work, the Regional Traffic Engineer shall be notified by the Resident Engineer to rescind the ordinance.**

Maintain the existing traffic pattern at all times, except in the immediate work zone when lane closures are allowed.

When utilizing a slow-moving operation for such items as pavement marking and pavement marker installation, 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.

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.

During periods of construction inactivity, return 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 *Standard Specifications* and the Engineer.

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 the attached detail.

When personnel and/or equipment are working within a lane of travel of an undivided or divided facility, close the lane according to the attached detail 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. Perform work only when weather and visibility conditions allow safe operations as directed by the Engineer.

Notify the Engineer 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 48 hours before resurfacing the areas of existing pavement that require patching. Patch these areas before resurfacing occurs. Allow full depth asphalt patching to cool to the point of supporting traffic without displacement or rutting before reopening closed lane. Coordinate the resurfacing operations of the patched areas with the Engineer.

For milling operations on a multi-lane facility, mill a single lane at a time in any direction or at any location and pave back by the end of each work day.

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. Continue milling operations until the particular section of roadway being milled is complete. Remove any existing pavement adjacent to the milled area, that has been damaged, and replace with patch material as directed by the Engineer.

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 the *Roadway Standard*

*Drawings* to re-establish the proposed pavement markings and markers unless otherwise directed by the Engineer.

Centerline markings (1 application of paint) are to be installed each night after paving operations.

**All existing thermoplastic pavement markings are to be removed prior to installation of the ultrathin overlay.**

During ultrathin paving operations, follow Section 1205-3 (D) for replacement of pavement markings.

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, as it will be incidental to the paving operation.

Provide appropriate lighting in accordance with Section 1413 of the *Standard Specifications when working at night*. **Portable Lighting for required night work will be paid for as described in Division 14 of the *Standard Specifications* and any Special Provisions. Portable lighting used when electing to perform paving at night will be at no expense to the Department.**

**Payment will be made for the stationary signs, flashing arrow panels (FAP), changeable message signs (CMS), drums, truck mounted impact attenuators (TMIA), and other traffic control items used as described in Division 11 of the *Standard Specifications* and the *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.**

**WORK ZONE SIGNING:**

(1-16-07)

RWZ-3Revised

**Description**

Install and maintain signing in accordance with Divisions 11 and 12 of the *Standard Specifications*, the *Roadway Standard Drawings* and the latest revisions thereto, and the following provisions:

Furnish, install, maintain, and remove any required lane closure signing.

Furnish, install, and maintain any necessary general work zone warning signs for resurfacing and/or milling operations. 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.

All work zone signs may be portable.

**Construction Methods**

**(C) Lane Closure Work Zone Signs**

Install any required lane closure signing needed during the life of the project in accordance with the attached detail and *Roadway Standard Drawings* Nos. 1101.02, 1101.11 and 1110.02.

**Measurement and Payment**

**Payment will be made for Work Zone Signing as shown elsewhere in the contract.**

**TIME LIMITATION FOR PAVEMENT MARKINGS AND MARKERS ON NEWLY RESURFACED AREAS:**

(9-19-06)

RWZ-4

**Markings: All Facilities follow Section 1205-3 (D) for time limitations on replacement of pavement markings.**

The pavement markings on a specific map are subject to a 180-day observation period that begins with the satisfactory completion of all pavement markings required on a specific map and shall meet all requirements as specified in Subarticle 1205-3(H) Observation Period of the *Standard Specifications*.

**Place intermediate paint in one application. The quantity of intermediate paint to be paid for shall be the actual number of linear feet or each that have been satisfactorily placed and accepted by the Engineer.**

**Markers: All Facilities**

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

**ROADWAY STANDARD DRAWINGS FOR PAVEMENT MARKINGS AND MARKERS:**

(7-18-06)

RWZ-5

Use the following in conjunction with the *Standard Specifications*:

**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:*

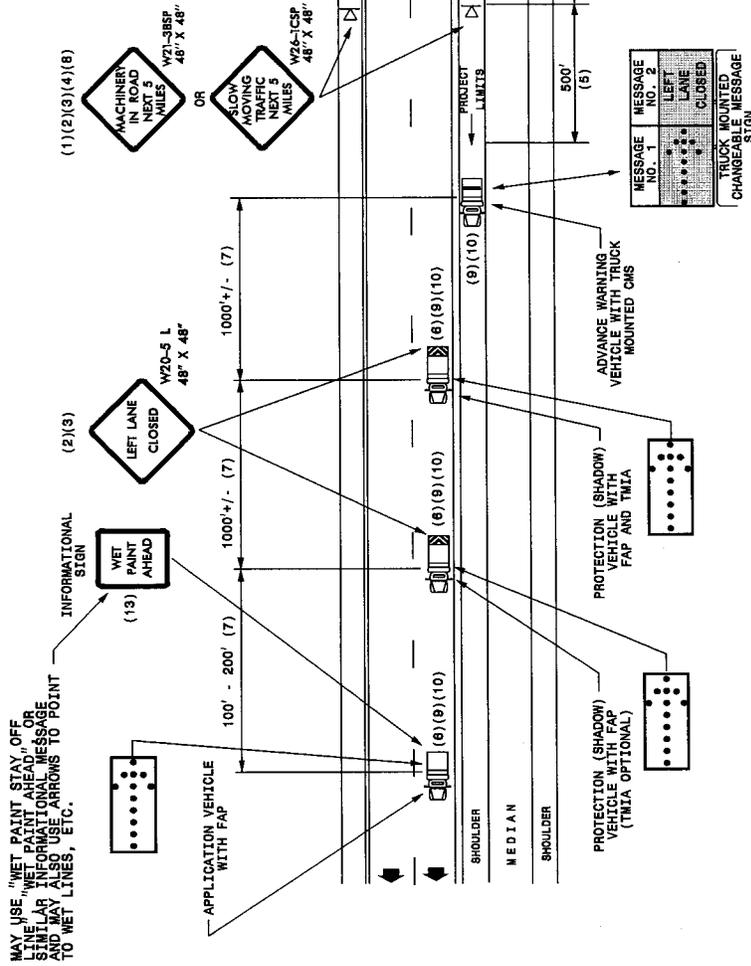
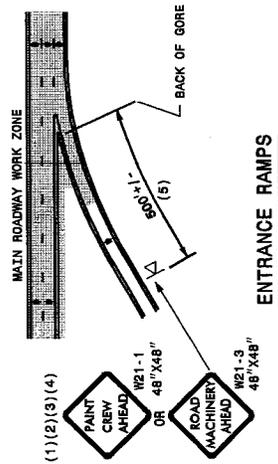
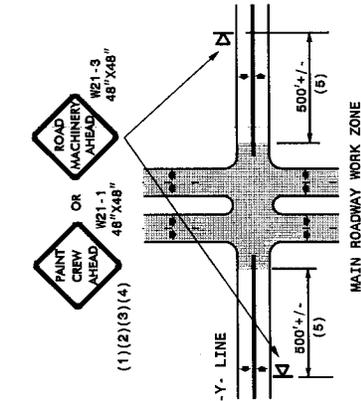
1250.01, 1253.01

### GENERAL NOTES

- (1) THE FOLLOWING OPTIONS MAY BE USED FOR ADVANCE WARNING SIGNS:
  - A. TRUCK MOUNTED CHANGEABLE MESSAGE SIGN (CMS)
  - B. TRUCK MOUNTED ADVANCE WARNING SIGN (TMA)
  - C. GROUND MOUNTED ADVANCE WARNING SIGN (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 TYPE "V" WITH OR "X" SHEETING. IF SPACE LIMITATIONS ON SHOULDER PROHIBIT A 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 ADVANCE 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 (TMA'S ARE OPTIONAL ON THESE ADDITIONAL VEHICLES). HOWEVER, THE FIRST VEHICLE MOTORISTS SEE IN THE TRAVEL LANE SHALL HAVE A TMA.
- (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, BUT A ROTATING BEACON MAY BE USED INSTEAD.
- (10) USE OF A LIGHT BAR ON ALL VEHICLES IS PREFERRED, IF WORK IS PERFORMED AT NIGHT, THE WORK AREA MUST BE ILLUMINATED WITH MACHINE AND/OR TOWER LIGHTS AS APPROVED BY THE ENGINEER.
- (11) ALL TRAFFIC CONTROL DEVICES WILL BE CONSIDERED INCIDENTAL TO THE PAY ITEMS FOR PAVEMENT MARKING AND MARKERS.
- (12) "PAINT CREW IN ROAD" SIGNS SHOULD BE ACTIVITY SPECIFIC. I.e. "PAINT CREW IN ROAD" SIGNS MAY BE RECTANGULAR OR DIAMOND SHAPE. SIGN SIZE SHOULD BE BASED ON THE MOTORIST ABILITY TO RECOGNIZE SIGN WHEN TRAVELING FIVE (5) MILES ABOVE POSTED SPEED LIMIT.
- (13) INFORMATIONAL SIGN

### LEGEND

- K PORTABLE SIGN. SIGNS MUST BE NCHRP-350 AND NCDOT APPROVED.
- ➔ DIRECTION OF TRAFFIC FLOW
- ☐ APPLICATION VEHICLE WITH LIGHT BAR
- ☐ PROTECTION VEHICLE WITH TRUCK MOUNTED ADVANCE WARNING SIGN (TMA) STANDARD NO. 1185.01 TMA MUST BE NCHRP-350 TEST LEVEL 3 (80-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" (80"x30" MIN.), APPROPRIATE DIRECTION INDICATED
- ☐ CHANGEABLE MESSAGE SIGN



MAY USE "WET PAINT STAY OFF OR SLIP" OR "WET PAINT AHEAD" SIGN INSTEAD OF MESSAGE SIGN. MAY ALSO USE ARROWS TO POINT TO WET LINES, ETC.

# MOVING OPERATION CARAVAN

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

**DRAWING NUMBER 8**  
IMPLEMENTATION DATE: 11/03/04  
REVISED: