NORTH CAROLINA DEPARTMENT OF TRANSPORTATION POLICY FOR THE USE OF DYNAMIC AND CHANGEABLE MESSAGE SIGNS

I. PURPOSE

The purpose of this policy is to ensure consistency in usage and message formats of all Dynamic Message Signs (DMS) and Changeable Message Signs (CMS) that are operated on North Carolina Department of Transportation's (NCDOT) right of way.

This policy governs NCDOT and non-NCDOT entities that operate DMS/CMS on NCDOT right of way.

DMS/CMS shall convey information to drivers that assists in their driving decisions, requires them to take a driving action, and improves the operations of NCDOT facilities. The only exceptions to this are messages displayed for Ozone and AMBER/SILVER alerts.

Incidents that can typically benefit from the use of a DMS/CMS include lane shifts, shoulder closures, lane closures, road closures, evacuations, emergencies, unexpected travel conditions, congestion, and special event traffic information.

II. APPLICATION

Roadway geometrics, speed, and the impact the use of the device has on a facility should be evaluated to ensure that the signs effectively convey a message that improves operations of the facility and provides valuable information to the motorists.

DMS/CMS messages must convey information to the following audience:

- Local Residents
- Commuters
- Through Travelers
- Tourists

III. DEVICES

Dynamic Message Signs (DMS) and Changeable Message Signs (CMS) that are governed by policy include but are not limited to:

- Permanent DMS
- Portable CMS
- Truck Mounted CMS (TMCMS)
- Permanently Mounted CMS
- DMS/CMS on NCDOT right of way operated and/or owned by entities other than NCDOT
- Permanent DMS installed but not yet accepted for operations and maintenance by NCDOT

IV. AUTHORITY

The NCDOT Division Engineers shall ensure that all DMS/CMS in their Division adhere to this policy.

The use of DMS/CMS within NCDOT rights of way by entities other than NCDOT is prohibited without the prior express written approval of the Division Engineer.

Non-NCDOT entities that submit requests to NCDOT to place DMS/CMS on NCDOT's right of ways, shall ensure they define:

> ➢ Location of **EACH** DMS/CMS to be placed on NCDOT rights of way
> ➢ Messages that will be displayed on **EACH** DMS/CMS
> ➢ Dates and times that the messages will be running for **EACH** DMS/CMS
> ➢ Dates that **EACH** DMS/CMS will be located on NCDOT rights of way

Any non-approved use of DMS/CMS on NCDOT right of ways by entities other than NCDOT shall be subject to immediate removal.

Non-NCDOT Entities must be able to show proof of approval from the appropriate Division Engineer for the Division and roadways that the non-NCDOT entity has permission to place DMS/CMS on NCDOT rights of way.

V. MESSAGES

DMS/CMS shall only display the types of messages that are allowed by this policy in accordance with the formats suggested in the attached guidelines.

DMS/CMS shall display pertinent traffic operational and guidance information only, not advertising messages, jingles, slogans, etc.

When a DMS is not being used to display a message that complies with this policy it shall be blank. When a CMS is not being used to display a message that complies with this policy it shall be blank and should be turned away from traffic.

VI. EXCEPTIONS

All requests for exceptions to this policy should come from the Division Engineer to the ITS Operations Unit. The ITS Operations Unit will forward the request with a recommendation for approval/disapproval to the Chief Engineer of Operations for final approval/disapproval.

Approved:_____ Date: _____
                NCDOT Chief Engineer – Operations

Attachments
A. Message Guidelines
B. Ozone Action Day Guidelines
C. AMBER & SILVER Alert Policy

NCDOT DMS/CMS Policy Message Guidelines

GENERAL
- Use DMS/CMS to advise of incidents ahead based on the impact and duration of the incident. This applies to work zones, maintenance operations, accidents, etc.

- Use DMS/CMS in advance of key decision points for alternate routes to avoid the incident. There is no limit to the distance from an incident that DMS/CMS messages may be displayed. Note: the "10 mile" designation in the priority list below is not a limit – simply a way to prioritize the most urgent messages.

     Example: An incident that is expected to completely close one direction of an Interstate for 4 hours should be displayed on all DMS on that route within 240 miles of the closure (4 hours x 60 mph = 240 miles traveled).

- Use DMS/CMS on approaches to the affected route.

- All messages shall be in compliance with the Manual on Uniform Traffic Control Devices (MUTCD).

MESSAGE FORMATS
- Use simple, brief, legible and clear messages.

- Do not use messages that adversely affect respect for the signs.
  (ex. - CAUTION!   CAUTION!   CAUTION!)

- If the message can be displayed in one page, the top line should present the problem, the center line should present the location or distance ahead, and the bottom line should present the recommended driver action.

- Use the following verbiage for DMS/CMS messages:
  - CLOSED - If one or more lanes of a facility are closed for any time period. (BLOCKED is **NOT** an acceptable term to be used to convey that a road/lane is closed.)

  - Milemarker, Exit or Distance and Nearest Cross Street should be used when displaying information on a DMS/CMS about the location of an incident <u>within a twenty (20) mile radius</u> of the DMS/CMS.

      ```
      I-40 CLOSED
      15 MILES AHEAD
      HANES MALL BLVD
      ```

  - Milemarker, Exit or Distance and Nearest Town or Major cross street (i.e.. – All interstates or Major US Routes) should be used when displaying information on a DMS/CMS about the location of an incident <u>outside a twenty (20) mile radius</u> of the DMS/CMS.

      ```
      US 64 CLOSED
      WEST OF
      GREENVILLE
      ```

- Abbreviations for directional guidance:
    North: N or N-BND
    East: E or E-BND
    South: S or S-BND
    West: W or W-BND

- Do not use the abbreviations NB, SB, EB, and WB.

- Use wording that minimizes confusion. For example, "LEFT LANE CLOSED, MERGE RIGHT" should just be "LEFT LANE CLOSED" or MERGE RIGHT", not both.

- Use day of week (ie MON, TUES, WED, etc,) when proposed work to be performed is within 7 days of message being displayed.

- Use date (ie 5/5/07) when proposed work to be performed is more than 7 days from date of message being displayed.

- If room is available on DMS/CMS, both date and day may be displayed if work is to be performed within 7 days of the messages being displayed.

- Do not use overly simplistic or vague messages (ie – Congestion Ahead) alone. These messages should be supplemented with additional information such as:
    - Condition of the Roadway (ie Road Closed, Lane Closed, etc.)
    - Location or distance to the congestion or incident
    - Impact to motorists (ie amount of delay that is expected)
    - Suggested driver action (ie detour or alternate route information)

- Add "CALL 511 FOR INFO" to any DMS/CMS message when relevant information is available on 511(ie in TIMS or on the 511 Floodgate Message), especially detour information, when space permits.

- Each page should convey a single thought.

- Use all capital letters.

- Display each page of the message for a minimum of **3** seconds, with no blank time in between pages.

- Use only **TWO** pages within any message. Do not exceed 2 pages per message.

- Ensure that each page of the entire message is readable at least twice by drivers traveling the posted speed limit.

- Do not use graphics, other than arrows or those approved in the MUTCD for lane closures, shields, or bridge opening symbols unless approved by the ITS Operations Unit.   Use standard symbols such as X, @, #, *, etc. as needed.

- Do not use fading, exploding, dissolving, moving messages, animation, flashing, scrolling messages, or other dynamic elements, except for flashing arrows that may be used on truck mounted CMS only.

- Do not display phone numbers greater than 4 digits, web sites, or mailing addresses on DMS/CMS.

- Do not reference "911" or "*HP" in a DMS/CMS message unless specifically requested by the law enforcement or dispatching agency answering the resulting calls.

- Do not display messages giving only the date and/or time.

General Congestion Messages
- Post congestion messages (such as "Heavy Traffic", "Congestion Ahead" or "Expect Delays") for recurring daily congestion and for unusual conditions. This includes an unusual location or time for congestion, congestion that is worse than usual, or for congestion that is occurring in the opposite direction of the incident due to on-looker delays.

- Display congestion messages on DMS within a 20-mile radius on all roads that approach and feed the congested area.

- Display congestion messages for incidents that have caused congestion, whether or not they are blocking a lane, until the congestion ends.

Travel Time Messages
- Travel Time messages should be displayed during normal daily peak conditions as well as during incidents.

Travel Time messages for traveling along a route:

TRAVEL TO	
XXXX	ZZ -ZZ MIN
YYYY	ZZ -ZZ MIN

EX.

TRAVEL TO	
I-77	8-10 MIN
SUGAR CRK	22-24 MIN

Travel Time message format for traveling to a route:

TRAVEL TO ## VIA	
XXXX	ZZ-ZZ MIN
YYYY	ZZ-ZZ MIN

EX.

TRAVEL TO 40 VIA	
CLYTN BYP	14-16 MIN
US 70	32-34 MIN

Accident Messages

During congestion caused by an accident display the following as space permits:

- Condition of the roadway (ie- Road Closed, Lane Closed, etc.)
- Location or distance to the congestion or incident
- Impact to motorists (ie- amount of delay that is expected)
- Suggested driver action (ie- detour or alternate route information)

| RT LANE CLOSED |
| EXPECT DELAYS |
| NEXT 10 MILES |

| EXPECT DELAYS |
| THRU |
| EXIT 344 |

Work Zone Messages

- Use DMS/CMS as a supplement to and not as a substitute for work zone signing.

- Do not post "general" work zone messages (such as "Project 20% Complete" or "Stay Alive, Drive 55"). Only post messages within or in advance of a work zone that requires the driver to take an action or improves traffic operations in the work zone.

Adverse Weather Messages

ANTICIPATED ADVERSE WEATHER

| ANTI-ICING |
| AHEAD |

| WATCH FOR |
| SLOW MOVING |
| EQUIPMENT |

ONSET OF ADVERSE WEATHER

Generic:

| ICE/SNOW ON |
| ROADS AND |
| BRIDGES |

| WATCH FOR |
| SLOW MOVING |
| EQUIPMENT |

Location Specific:

| ICE/SNOW |
| AT |
| XYZ* |

| WATCH FOR |
| SLOW MOVING |
| EQUIPMENT |

*Refer to "Message Format" Section for verbiage.

Special Event Messages
- Use DMS/CMS to relay traffic-related information in advance of future special events that will adversely affect travel and saturate the surrounding road network (ie concerts, auto races, festivals, etc.) or that require closing streets or highways (ie parades, bike races, marathons, etc.) to
     1. Direct motorists to the event,
     2. Warn non-event traffic of unusual traffic conditions caused by the event,
     3. Improve operations on NCDOT facilities,
     4. Improve safety

- Event coordinators shall contact NCDOT at least two weeks prior to the event and designate an event contact that is accessible to NCDOT throughout the entire event so that conflicting messages are not conveyed to the traveling public.

- Do not use DMS/CMS for advance notice more than six (6) days prior to an event.

- Use only generic terms such as "Basketball Traffic" or "Race Traffic" and not commercial names. Use names of events or venues only when there may be confusion over simultaneous events.

- NCDOT shall recover all costs (including labor, materials, and equipment) associated with providing CMS to non-NCDOT entities during Special Events.

Special Alert Messages
Messages approved as special alert messages are AMBER Alerts, SILVER Alerts, and Fugitive Alerts. Any request for an exception to a special alert message should come from the Division Engineer to the ITS Operations Unit. The ITS Operations Unit will coordinate with the Chief Engineer of Operations for final approval/disapproval of the message.

- AMBER & SILVER Alerts
     Please refer to the NCDOT AMBER & SILVER Alert policy for guidance on approved messages for these alerts.
- FUGITIVE Alerts
     Any request from a law enforcement agency to post messages to the DMS for **ANY** type of convict/fugitive alert should be forwarded to the ITS Operations Unit immediately. The decision to post these messages will be on a case by case basis and approved the Chief Engineer of Operations.

Move Over/Fender Bender Messages

- Use the following messages when a targeted enforcement or response effort is underway in the area and actively on the roadway. This could include, but not be limited to such activities that are targeting speed enforcement, seat beat use, alcohol checkpoints, etc.

For Signs with more than 12 Characters per line:

| MOVE OVER FOR EMERGENCY VEHICLES | SLOW DOWN FOR EMERGENCY VEHICLES |

For Signs with 12 Characters per line:

| MOVE OVER FOR EMRGENCY VEHICLES | SLOW DOWN FOR EMRGENCY VEHICLES |

For Signs with less than 12 Characters per line:

| MOVE FOR EMRGENCY VEHICLES | SLOW FOR EMRGENCY VEHICLES |

- Use the following message in areas where fender-benders can be expected, especially during periods of congestion
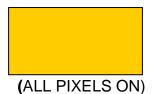
| MINOR WRECK MOVE VEHICLE FROM ROAD |

Test Messages

- Run these three (3) test messages continuously during sign tests

| NCDOT SIGN UNDER TEST | CALL 511 FOR NC TRAVEL INFO | (ALL PIXELS ON) |

All pixels on the third page can be illuminated by inverting the background of the page.

- Use DMS as needed for AMBER & SILVER Alerts, accident messages, etc. between installation and NCDOT acceptance for operation and maintenance.

DMS MESSAGES

- Use a maximum character size of 18 inches and no more than 20 characters per line.

- DMS Message Priorities
  1. Road closures on any major network facility within a 10-mile radius of the DMS
  2. Emergencies, such as evacuation information
  3. Congestion, lane closures, lane shifts or shoulder closures due to incidents within a 10-mile radius of the DMS
  4. Closures due to incidents that are greater than a 10-mile radius away
  5. AMBER & SILVER Alerts
  6. Hazardous or uncommon road conditions that require drivers to alter their driving (such as standing water, icy roads, etc.) within 10-mile radius of the DMS where information is available on road conditions
  7. Travel Times during road closures, congestion, or other unusual conditions
  8. Congestion or unusual conditions greater than a 10-mile radius away
  9. Special Event messages
  10. Advance notice of events likely to cause congestion, such as:
      - future road, lane or ramp closures or special events in the area.
      - closures or congestion on another primary route.
  11. Supplemental Signing for Work Zones
  12. Ozone Action Day Alerts
  13. Move Over/Fender Bender Messages
  14. Multi-modal Traveler Information such as direction of traffic to Ferries, Transit, Park & Rides, etc.

CMS MESSAGES

- Use a maximum character size of 8 inches, except for Truck Mounted CMS use a minimum character size of 10 inches.

- Use additional CMS if a message is longer than two pages.

- When CMS are used for route diversion place them far enough in advance of the diversion to allow road users ample opportunity to perform necessary lane changes, to adjust their speed, or to exit the affected highway.

- Ensure that CMS are visible from 0.5 miles away under both day and night conditions.

- Mobilize CMS to provide travel information incidents that are anticipated to last more than one (1) week.

- If more than one CMS is visible to road users, then only one sign shall display a sequential message.

- CMS Message Priorities:
    1. Signing for Work Zones (including Speed Limits)
    2. Road closures on any major network facility within a 10-mile radius of the CMS
    3. Emergencies, such as evacuation information
    4. Congestion, lane closures, lane shifts or shoulder closures due to incidents within a 10-mile radius of the CMS
    5. Closures due to incidents that are greater than a 10-mile radius away
    6. Advance notice of events likely to cause congestion, such as:
        - future road, lane or ramp closures or special events in the area.
        - closures or congestion on another primary route.
    7. Special Event messages
    8. Multi-modal Traveler Information such as direction of traffic to Ferries, Transit, Park & Rides, etc.
    9. Congestion or unusual conditions greater than a 10-mile radius away.
    10. Hazardous or uncommon road conditions that require drivers to alter their driving (such as standing water, icy roads, etc.), within 10-mile radius of the CMS where information is available on the road conditions.
    11. Move Over/Fender Bender Messages
    12. Travel Times during road closures, congestion or other unusual conditions.