SUBJECT	DATE
New Hampshire Department of Transportation Guidelines for the use of Dynamic Message Signs (DMS)	**January 1, 2016**

Summary: These procedural guidelines are being established as guidance for the use of Dynamic Message Signs.

1.0 STATEMENT

This document supplements NHDOT Policy 402.05. The Department of Transportation (NHDOT) has sole responsibility regarding the decision to display messages and the types of messages to be displayed on all highways maintained by the Department

2.0 RESPONSIBILITIES

The (NHDOT) Commissioner is responsible for approval of the "Policy for the Use of Dynamic Message Signs (DMS)."

The NHDOT Chief Engineer is responsible for the approval of the Department's Guidelines for Use of Dynamic Message Signs.

The Transportation Management Center (TMC) maintains the Dynamic Message Sign utilization documentation and maintains a library of approved messages for use on Dynamic Message Signs.

The following are responsible for the implementation of the Department's Guidelines:

Personnel	Responsibilities
District Maintenance Engineers	Within their jurisdictional areas
Turnpike Administrator	Within the jurisdictional area
Construction Bureau Administrator	Construction projects managed by the Bureau
NHDOT Municipal Engineer	Construction projects managed by the Department's municipal managed project program
Municipalities	a) Construction projects funded by the Department's municipal managed project program
	b) State Routes within urban areas
Private Contractor	Any project that utilizes any Department funding and any DMS located in the NHDOT right of way
State Agencies	Use of DMS within the limits of NHDOT right of way
Transportation Management Center	All requests submitted by authorized authorities.

3.0 MESSAGE CATEGORIES

Both portable and permanent DMS signs may be used to display a variety of messages to the motorist. The following indicates, by priority numbering, the message types to be used on all highways maintained by the Department.

	Message Type	Message Category
1	Incident Messages	Incidents
2	Current Weather Messages	Traveler Information
3	Construction Messages	Construction/Maintenance
4	Amber Alert Messages	Emergency
5	Weather Advisories	Traveler Information
6	Emergency Operations (Shelter, Red Cross, etc.)	Emergency
7	Congestion Messages	Traveler Information
8	Public Safety Messages	Public Safety

4.0 INCIDENTS

Depending on the duration of the incident and the impact to the affected and adjacent highway system, permanent and portable DMS may be used to advise motorists of the incident and provide guidance and direction.

Each incident needs to be evaluated in regard to traffic impact and expected duration compared to the time that would be required to display a DMS message to determine if a DMS message should be displayed.

Incidents that block lanes for substantial periods of time are ideal situations for using DMS to provide information to the traveling public.

Messages near the incident inform motorists of the problem and provide positive guidance such as directing vehicles into open lanes.

Signs further away from the incident should be used to inform motorist of the upcoming traffic conditions related to the incident and suggest alternate routes if appropriate.

Messages that provide motorists with specific information, such as the location of the incident ahead, generally help alleviate the anxiety of being stuck in traffic.

Traffic Incidents are defined as any unexpected situation or event that impacts traffic.

Incidents can include, but are not limited to:
- Vehicle crashes
- Vehicle breakdowns
- Debris in road
- Brush fires
- Hazmat Incidents
- Roadway Flooding

DMS that provide the uninformed traveler advanced warning of closure and detour directions must be kept up to date.

DMS should not replace standard Temporary Traffic Control signing or other devices needed at an incident scene or that may be needed as part of detour route guidance.

Depending on the severity, location, and duration of an incident, it may be advisable to display messages miles in advance or in adjacent states to provide alternate route opportunities to motorists. Such messages should only be managed through the TMC.

5.0 CONSTRUCTION and MAINTENANCE ACTIVITIES

Construction and Maintenance work zone activities where permanent and portable DMS messaging may be advisable include, but are not limited to:

- Lane and/or shoulder closures;
- Lane width restrictions;
- Roadway or ramp closures;
- Areas of significant queuing or delays;
- Changes in roadway alignment or surface conditions;
- Changes in traffic patterns;
- Detours/alternate routes; and(what is the "and" for?)
- Advance notice of road work with items similar to those listed above

Keep work zone advanced notice messages current.

Update them as soon as changes are known regarding the date and time the start of activities is anticipated.

Do not display notification messages of future road work more than two weeks in advance of the anticipated start date, one week advance notices is typically adequate.

Keep future road work notification wording brief. Notifications should use the date that the work is to start. For example, use statements like "PAVING TO START 6-15-16".

Notifications that are posted within a seven day period should use the day of the week. Use statements like: "STARTING SUNDAY NIGHT".

Avoid using terms like "Weekend" as beginning and end of a "Weekend" means different things to different people.

6.0 EMERGENCY MESSAGES

Emergency messages must be transportation related or convey specific emergency conditions that require motorist attention and response.
The display of emergency messages shall be coordinated through the NHDOT Transportation Systems Management and Operations (TSMO) Bureau.

The Department of Transportation will also coordinate priority and message text with other agencies involved with emergency messages.

Priority and message text will be displayed as deemed appropriate by the Department of Transportation relative to the level of emergency.

Amber Alert: Amber Alert messages will be coordinated with the Department of Safety in accordance with their CHILD ABDUCTION EMERGENCY ALERT PLAN of April 2004, with revisions as appropriate.

Homeland Security: Homeland Security messages will be the responsibility of the Department of Transportation working in conjunction with the appropriate Federal and State Emergency Management Agency.

7.0 TRAVELER INFORMATION

Traveler Information messages provide general and specific information to the motorist relative to road and weather conditions, travel times and special events.

Weather/Roadway Conditions: DMS may be used to advise motorist of adverse weather and roadway conditions that would impact the safety of the motorist or restrict traffic flow. In general, weather and roadway messages should be location specific, verified by personnel on the scene and approved at the Maintenance District or Traffic Management Center (TMC) level. Refer to the Appendix for Approved Winter Condition Messages.

Special Events: Messages displayed for Special Events must not be for advertising purposes. The message must use only generic terms that provides information regarding potential traffic impacts to motorists.

Special Event Messages that may be displayed include, but are not limited to:

- Notice of anticipated traffic delays and suggested alternate routes;
- Specific traffic information on event parking;
- Special travel requirements for the event;
- Time frames for the event that will impact traffic flow or cause congestion;
- Specific warnings to highway users caused by the event (pedestrians, motorcycles, etc.)

DMS provided and maintained by the event organizers must meet the following criteria:

- Approval of the use of a DMS for the event by the NHDOT TSMO Bureau
- Approval of the intended location of the DMS by NHDOT Maintenance Districts or the Turnpikes Bureau
- The event organizer shall only use messages approved by the NHDOT TSMO Bureau
- Approval of the time period that the DMS may be deployed on the highway;
- Insurance and/or bond may be required at the discretion of the Commissioner

Travel Time: This information may be displayed in the future in real time when it can be directly measured or calculated.

Congestion Message: Descriptors or messages may be displayed advising motorists of traffic delays and congestion. Specific time delay information relative to the level of congestion may be displayed.

Multi-Modal Facilities: The DMS may display messages indicating the availability of parking at transit options (Park and Ride Facilities, Bus Centers) adjacent to the highway.

Other State or Transportation Agencies: DMS may be used to display traffic related messages for adjacent states or transportation agencies when the information is deemed credible. The Department of Transportation shall have sole discretion regarding the priority for displaying messages relative to traffic conditions in adjacent states. The information shall be kept current and accurate.

8.0 PUBLIC SAFETY MESSAGES

Driver Safety Campaigns: DMS may be used to support National and State specific driver safety campaigns of limited duration such as Buckle Up or Work Zone Safety Week. Messaging shall be reviewed and approved by the NHDOT Dynamic Message Board Subcommittee.

Law Enforcement Activities: This information may be displayed when requested by the State Police for sobriety checkpoints, roadblocks or other law enforcement related activities.

9.0 LOCATION OF DMS RELATIVE TO THE ROADWAY

The Department shall attempt to locate DMS in areas that provide the best visibility to the motorist without creating a more hazardous travel situation.

Permanent DMS shall be located outside the clear zone or protected by appropriate barrier installation.

Temporary DMS should be located outside the clear zone when feasible. Temporary DMS that are placed on the shoulder or immediately adjacent thereto shall have properly delineated visibility and be leveled and stabilized for anticipated wind loads and other site-specific conditions. If located within the clear zone, temporary DMS shall be moved out of the clear zone when not in use for extended periods of time.

DMS should be made secure to ensure continuous operation as needed.

The placement is critical to its effectiveness. The placement must give the motorist adequate time to react to the message. When appropriate, the DMS should be located prior to major decision points, such as intersections or interchanges, where the driver may change their travel plans. On the Interstate, or other access- controlled freeways, placement 1 mile prior to the interchange is recommended. Also, it must be placed prior to the present and expected traffic backups. Placement requirements include:

- Adequate sight distance (per the following table),
- No sight obstructions (signs, poles, or other objects),
- On mostly level surface,
- Not within an intersection or interchange.
- No interference with other traffic control devices

Minimum Consideration for Sight Distance: It is assumed that a font size of 18-inches in height (as stated in the MUTCD) provides for a legible message at all speeds used to travel on New Hampshire Highways. However, this may not be true for some drivers and larger fonts may be advisable for longer messages on higher speed roadways. Larger font sizes are always appropriate regardless of the speed limit and generally provide great legibility.

Road Section Speed limit (MPH)	Minimum Font Height (Inches)	Minimum Sight Distance Two Phase Message (Feet)	Minimum Sight Distance One Phase Message (Feet)
Above 55	18	900	500
45-55	14	700	350
35-40	12	600	300
Below 35	10	500	250

Visibility: To improve legibility, the DMS panel should be turned slightly towards the driver's view, at approximately 5 to 10 degrees from perpendicular of the road's centerline. Reading the DMS becomes more difficult as the angle is increased from the normal field of vision. It is recommended to drive by the DMS after installation ensuring the message has maximum reading time.

Message Display: Messages shall use no more than two phases for posting a message and one of the phases may be blank.

The MUTCD states: "The text of messages shall not scroll or travel horizontally or vertically across the face of the sign." Similarly, messages should not flash. However, a one phased message may be displayed as a two phased message with a momentary blank screen in-between phases (the minimum 2-second message display time must still be used).

When information displayed to motorists is stated in unusual words or phrases, longer comprehension time is required. Common language is necessary. The appendix contains a list of common abbreviations for reference. These are valuable resources to help standardize messages and help motorists comprehend quickly. To further message comprehension, the following are suggestions taken from research conducted by the Texas Transportation Institute concerning messages drivers can comprehend the

quickest:

> Drivers have difficulty corresponding calendar days to days of the week.
> For example: "TUES - FRI" is preferred over "OCT 1 -OCT 4".

> Drivers find the phrase "FOR 1 WEEK" ambiguous.
> It is preferable to use "WED-TUES"

Most drivers felt the term "WEEKEND" meant the work would begin Saturday morning and be complete by Sunday evening. It is recommended times and days be used if the work begins on Friday and/or extends to Monday.

The highway or route numbers should be displayed with the route or interstate designation. The number alone can be confusing to both local drivers and drivers from other areas.

10.0 Appendix

Appendix A – Common Abbreviations

11.0 Document Control

Approved: _Bill Cass, P.E Date_ Assistant Commissioner 2/23/16	REV. NO.	2
	DATE	1-1-2016
	SUPERSEDES EDITION	2008 Version

APPENDIX A
COMMON ABBREVIATIONS

Abbreviations well understood by drivers	Words and word combinations well understood with a prompt word (prompt word examples in parentheses)	Abbreviations with multiple interpretations (shown in parentheses) or completely misunderstood AVOID USING THESE
BLVD CNTR CONST EMER ENT EX EXPWY FRWY, FWYHWY INFO LFT MAINT NORM PKING RD SERV SHLDR SLIP SPD TRAF TRVLRS WARN	ACCIDENT AHD ACCDT AT (LANE)BLKD ACCS (ROAD) ACCESRD (Bridge Name) BRDG CHEM (SPILL) COM (VEHICLES) CONST (AHEAD) (TO)DWNTN (NEXT) EX EXP (LANE) FWYBLKD HAZ (DRIVING) 1(25) us -(85) LFTLN LN CLSD MM (281) MAJ (ACCIDENT,ACCDT) MNR(ACCIDENT, ACCDT) (20) MI (20) MIN OVSZ (LOAD) PREP (TO STOP) (WET)PVMT (AIR) QLTY RDWK RGTLN (BEST) RT (ON) SHLDR (E-470) TRNPK (STALLED, EMER) VEH E, W, N, S (street name) UPR, LWR (LEVEL, LVL) WT(LIMIT)	ALTRT ACC (accident/access) DLY (delay, daily) EB, WB, NB, SB FEED RD FRNTGRD INCDT, INCID INTCH MAJCONG LT (left, light) STAD (stadium, standard) L (left, lane) PARK (parking, park) RED (red, reduce) POLL (pollution, poll) FDR (feeder, federal) LOC (local, location) TEMP (temporary/temperature) CLRS (clears, colors) WRNG (warning, wrong)