

# **GUIDELINES FOR USE OF VARIABLE MESSAGE SIGNS (VMS)**



*Department of Maintenance and Operations*

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*New York State Thruway Authority*

**Guidelines for Use of Variable Message Signs (VMS)**

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# INTRODUCTION

## *PURPOSE*

The *GUIDELINES FOR USE OF VARIABLE MESSAGE SIGNS* (“*Guidelines*”) outline the manner in which the New York State Thruway Authority (“*Authority*”) operates and manages Variable Message Sign (“*VMS*”) messaging. The Guidelines are a consolidation of the best information available on the design and display of effective VMS messages for incident, roadwork and special events.

VMS messaging promotes the management of traffic and timely delivery of traveler information. VMS is primarily used for controlling and diverting traffic, congestion management, identifying unusual incidents, providing notice of current and anticipated roadway conditions, and regulating access to specific lanes, sections of the roadway, or the entire roadway system.

The concepts used within the Guidelines have been based upon standards contained in the following publications:

- The Manual on Uniform Traffic Control Devices (“*MUTCD*”), 2009 Edition;
- The Federal Highway Administration (“*FHWA*”) Traffic Management Center (“*TMC*”) Pooled Fund Study, dated December 12, 2002 along with various FHWA Policy Memorandums;
- The Oregon Department of Transportation Guidelines for the Operation of Variable Message Signs on State Highways, dated July 2006; and
- The New York State Department Transportation Policy and Guidelines for Variable Message Signs (VMS) dated February 2009.

As part of its ongoing responsibility to operate and maintain a roadway system, the Authority has implemented a variety of Advanced Traffic Management Systems (“*ATMS*”). VMS is an important component of ATMS because it is the mechanism by which the Authority communicates information to motorists to suggest that they alter their driving in some manner.

The purpose of the Guidelines is to provide direction to assist Authority personnel, contractors, concessionaires, regional traffic management centers, and partner organizations who have responsibility for the operation of and/or message design for VMS. It provides for a consistent and orderly manner to communicate situations to motorists who are utilizing the Authority’s Thruway System (“*Thruway*”).

## ***TERMINOLOGY***

The phrase “VMS” is referred to exclusively throughout the contents of this document. However, other commonly used terms describing highway signs that can display different messages are found within National and New York State publication and policy documents. Examples of these terms are as follows:

- “**VMS**” (Variable Message Sign) shall mean a device to display a variety of text messages to motorists traveling the Thruway. It is a traffic control device that typically suggests motorists alter their driving in some manner and take appropriate actions. A VMS is not typically used as a regulatory sign as recognized within the MUTCD.
- “**CMS**” (Changeable Message Sign) shall mean a non-static sign that supports a limited number of fixed messages. An example would be the rotating drum sign used in E-ZPass operations. This term is currently contained in the 2003 edition of the Federal MUTCD.
- “**CEVMS**” (Changeable Electronic Variable Message Sign) shall mean a changeable message sign of a digital/LED-LCD display type that conforms to Federal and State statutes.
- “**DMS**” (Dynamic Message Sign) shall mean a changeable message sign as part of the NTCIP (National Transportation Communication for ITS Protocol).
- “**BOARDS**” shall mean changeable message signs as used in the Authority’s Traffic Safety Manual May 2010 edition.

## VMS TYPES

VMS can be a permanent VMS unit, portable VMS unit, truck-mounted VMS unit or a specific purpose VMS unit. Each type has advantages and limitations for use.

### ***PERMANENT VMS (ALSO KNOWN AS STATIONARY VMS)***

Permanent VMS are typically mounted on overhead structures either spanning the roadway, cantilevered out over a portion of the highway, or off the highway, and are used to influence motorists for traffic control purposes. Their messages can be manually, mechanically, or electromechanically changed to provide motorists with information about traffic congestion, traffic crashes, maintenance operations, adverse weather conditions, roadway conditions, organized events, or other highway features (e.g., toll booths, weigh stations, etc.). A benefit of permanent VMS is that they can support a longer, more detailed message and afford the greatest exposure time for motorists to comprehend messages before arriving at a decision point.

### ***PORTABLE VMS (“PVMS”)***

PVMS are typically trailer mounted; self powered, easily moved and placed near the decision point on the highway right-of-way. PVMS messages can be changed by either manual, mechanical or electromechanical means to provide motorists with information about traffic congestion, traffic crashes, maintenance operations, adverse weather conditions, roadway conditions, organized events, or other highway features (e.g., toll booths, weigh stations, etc.).

### ***TRUCK-MOUNTED VMS***

Truck-mounted VMS are generally small units mounted at or near the rear of a truck. They generally also have limited message space and font sizes. Their message limitations commonly result in the use of graphics such as arrows to improve motorist comprehension and support a narrower range of ATM activities.

### ***BOARDS (ALSO KNOWN AS ARROW BOARDS, ARROW PANELS, SPEED BOARDS, CHANGEABLE SPEED SIGNS, EXTINGUISHABLE MESSAGE SIGNS, RADAR BOARDS, AND E-ZPASS LANE SIGNS)***

A special type of VMS not addressed in the Guidelines, except when used for other than their customary applications, such as to advise motorists of information about traffic congestion, traffic crashes, maintenance operations, adverse weather conditions, roadway conditions, organized events, or other highway features. (e.g., arrow boards/panels used to display advisory text information verses a flashing graphic arrow).

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## ROLES AND RESPONSIBILITIES

Responsibility for the day-to-day operation of each VMS device resides in either the Thruway Statewide Operations Center (“TSOC”), a regional transportation operation group of which the Authority is a member, a contractor, a consultant or a concessionaire. Such entities post messages to VMS devices for the Authority pursuant to the specific terms outlined within Authority policies, procedures, executed partnership agreement(s), and/or contracts agreed to by the Authority.

VMS shall be monitored to ensure that messages are timely, concise and displayed appropriately; that there are no safety issues; and that messages are effective for traffic management purposes.

### *POLICY DEVELOPMENT*

The **Director of Maintenance and Operations or designee** is responsible for the use of VMS and resolution of issues within the Authority.

### *COMPOSITION AND DISPLAY OF MESSAGES*

**TSOC personnel** compose and display messages for VMS based on information gathered from various field personnel, program managers, duty officers and/or State Troopers. When questions of message creditability occur, TSOC personnel will request approval of specific messages from the appropriate Division Duty Officer/Traffic Supervisor/Traffic Duty Officer.

**Traffic Supervisors** are responsible for ensuring compliance with the Traffic Management Plan and these Guidelines on when, where and how to use and incorporate VMS, PVMS and truck-mounted VMS. The Division Traffic Supervisor will notify the TSOC in a timely manner of all approved contractor VMS messages not contained in Appendix One – Message Library of these Guidelines.

**Contractors/Consultants/Concessionaires** will obtain the approval to display/remove messages through the Division Traffic Office and remain in compliance with the directions provided herein and/or as amended by the Division Traffic Supervisor. Such approvals shall be communicated as follows:

- Communication to the contractor/consultant on compliance with the Traffic Management Plan and these Guidelines, and the approval of message requests by Division Traffic Office, will be through the Division Construction/Project Engineer as practicable. Such communication, however, may be initiated directly through the Division Traffic Office/Traffic Duty Officer when deemed operationally necessary.
- Communication to the concessionaire on compliance with Traffic Management Plan and these Guidelines, and the approval of message requests by Division Traffic Office, will be through the Traffic Supervisor.

**Regional Traffic Management Center personnel** will obtain through TSOC the approval to display/remove messages on Authority VMS. Traffic Supervisors are responsible for ensuring regional TMC compliance with these Guidelines.

**Maintenance Supervisors** will obtain the approval through Division Traffic to display/remove messages not contained in Appendix One - Message Library. TSOC, Division Traffic, and Maintenance personnel compose and display messages for PVMS and truck-mounted VMS. Ideally, the library of acceptable messages covers common situations.

**Law enforcement and outside agencies personnel** will obtain the approval of the Deputy Director of Maintenance and Operations or designee to display/remove messages on Authority VMS. VMS messages displayed on behalf of outside agencies must adhere to Authority VMS Policy and Guidelines.

### *QUALITY CONTROL*

**Authority personnel**, along with State Police Troop T, contractors and concessionaires should monitor VMS during the normal course of their duties and report any peculiarities or incorrect messages to the TSOC. PVMS should have the default message "Use Your Safety Belt", which only appears when the PVMS itself has malfunctioned. Seeing this message on a PVMS indicates that the unit is experiencing trouble and must be reported to the TSOC.

### *MAINTENANCE OF EQUIPMENT*

**Senior Radio Dispatchers** will ensure that all VMS trouble reports occurring during their tour of duty are entered into the JTRAC System. The TSOC must notify Intelligent Transportation System Maintenance ("ITSM") personnel for all VMS maintenance issues and permanent unit failures. After normal business hours, the TSOC shall make these notifications to the Division Duty Officer who will make a determination based upon the urgency of the situation.

**Division Highway, Section Maintenance, or ITSM personnel** will ensure that the "Day/Night electric eye" (i.e., bright during the day; dim at night) and generators/self-contained power systems work properly on VMS and PVMS, as applicable.

### *TRAINING*

The Authority's **Operations Center Manager** is responsible for ensuring the training of TSOC personnel and the appropriate **Division Traffic Office** is responsible for the coordination of training for Division employees, contractors and Regional Traffic Management Centers relating to these Guidelines.

# VMS USES

## GENERAL

VMS is used to communicate in real-time with motorists. VMS messages must address current conditions on the roadway by being dynamic, accurate, timely and understandable. When there are multiple requests to post VMS messages simultaneously, messages will be prioritized in the following order of importance:

1. Incident Management/Public Safety
2. Congestion Management/Motorist Guidance
3. Construction/Maintenance Activity
4. Special Events
5. Environmental
6. Law Enforcement Message
7. Public Service Campaign

## MESSAGE CATEGORIES

The following table defines message categories and examples of typical deployments:

<i>Message Categories</i>	<i>Typical Message Deployment Reasons</i>
<b>Incident Management/Public Safety</b> – Alerts motorists of traffic impacts caused by unpredictable incidents or alerts issued with regard to public safety.	<ul style="list-style-type: none"> <li>• Adverse Highway Condition (e.g., flooding)</li> <li>• Amber Alert</li> <li>• Collisions or Crashes</li> <li>• Debris and Roadway Hazards</li> <li>• Emergency Detour Routes</li> <li>• Vehicle Fires</li> </ul>
<b>Congestion Management/Motorist Guidance</b> – Alerts motorists of conditions where demand exceeds capacity for temporary periods. VMS can be deployed to inform motorists of recurring congestion only when they can be updated on a regular basis to provide real-time information.	<ul style="list-style-type: none"> <li>• Alternative Routes</li> <li>• Congestion</li> <li>• Expected Delays/Advance Notice</li> <li>• Lanes blocked</li> <li>• Stopped Traffic</li> <li>• Travel Restrictions (e.g., no over height vehicles)</li> <li>• Travel Times</li> </ul>
<b>Construction/Maintenance Activity</b> – Supplements construction traffic control plans and	<ul style="list-style-type: none"> <li>• Alternative Route</li> <li>• Change in Lane Pattern</li> </ul>

<i>Message Categories</i>	<i>Typical Message Deployment Reasons</i>
alerts motorists of specific roadway activities. Information on extended road or lane closures for construction or maintenance activities should be displayed prior to, but generally no later than, one week in advance of the closure.	<ul style="list-style-type: none"> <li>• Lane Closures</li> <li>• Utility Work</li> <li>• Work Zone Information</li> </ul>
<b>Special Events</b> – Alerts motorists of potential impacts due to special events.	<ul style="list-style-type: none"> <li>• Concerts</li> <li>• Festivals</li> <li>• Parades</li> <li>• Sporting Events</li> </ul>
<b>Environmental</b> – Alerts motorists of potential impacts due to extreme/adverse weather. For advance notification, messages should not project anticipated road conditions due to expected extreme weather more than 24 hours in advance.	<ul style="list-style-type: none"> <li>• Accumulation of Snow</li> <li>• High Winds</li> <li>• Ice and Snow</li> <li>• Limited Visibility</li> </ul>
<b>Law Enforcement Messages</b> – Alerts motorists to policing campaigns as directed by Authority management, particularly campaigns with New York State Police, New York State Department of Motor Vehicles, Department of Criminal Justice Services and other law enforcement agencies. The specific period of time that a message will be displayed depends upon the length of the campaign, but typically should not exceed four (4) days.	<ul style="list-style-type: none"> <li>• Active Policing Campaign (e.g., Click It or Ticket)</li> <li>• Fasten Seat Belts</li> <li>• Special Situations - Homeland Security, etc.</li> </ul>
<b>Public Service Campaigns</b> – Alerts motorists to public service campaigns as directed by Authority management. The specific period of time that a message will be displayed depends upon the length of the campaign, but typically should not exceed four (4) days.	<ul style="list-style-type: none"> <li>• No Fuel at Service Plaza</li> <li>• Safety Breaks (Free Coffee)</li> </ul>

## LIMITATIONS ON USE OF VMS

### *MUTCD LIMITATIONS ON USE*

- The display format on a VMS shall not be of a type that could be considered similar to advertising displays.
- The display format on a VMS shall not include animation, rapid flashing, or other dynamic elements that are characteristics of advertising displays.
- Techniques of message displays, such as fading, exploding, dissolving, or moving messages are not to be used.

### *INAPPROPRIATE VMS USAGE*

- A VMS should not be used to replace conventional traffic control devices and should maintain credibility of message to motorist without conflict.
- VMS should not provide information that is already obvious to the motorist.
- VMS should not provide information that is too general for a motorist to take an action.
- VMS will not be used for advertising.

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# MESSAGE STANDARDS

## *GENERAL STANDARDS*

Message text displayed on VMS will comply with the following general standards:

- If there is no message, the default display of all panels is blank.
- The test message is NEW YORK STATE THRUWAY.
- Must be clear and concise.
- Must convey a single thought per panel.
- Must convey specific information, such as LEFT LANE CLOSED, ONE MILE, or MERGE RIGHT, not vague/ambiguous statements like DRIVE SAFELY, USE CAUTION or BAD WEATHER.
- Must be timely, accurate and up-to-date.
- Must use upper case letters, numbers and characters amber in color, in the same font from beginning to end of the message.
- Must use letters, numbers and characters with a minimum height of 18 inches, or as otherwise approved by the Authority.
- On PVMS, may utilize a character height as short as 12 inches when used in low speed facilities (less than 45 mph) or as approved by the Authority provided the message is legible from at least 650 feet.
- On Truck-mounted VMS, may utilize a character height as short as 10 inches when used in low speed facilities (less than 45 mph) or as approved by the Authority provided the message is legible from at least 650 feet.
- Must be center justified.
- Must be readable forward and backward (panel 1 then 2, or 2 then 1).
- Must afford motorist time to completely read the message twice.
- Must have a display time of 1.5 to 2.5 seconds per panel.
- Must have no time gap (zero dwell) between panels.

- Must be of a continuous fashion, with no word or portion of the message repeating in the same place or flashing out of sequence.
- Must have no scrolling of images or text.
- Must have no sequential or cascading arrows.
- Must have no use of symbols unless pre-approved by the Authority.

**Note:** For specific examples of proper message composition, see sections entitled Composition and Appendix One – Message Library of the Guidelines.

### *CREDIBILITY*

As with other traffic control devices, **credibility of the message is critical**. Without credibility, even the best message will go unheeded. Care must be taken not to display a message that motorists will disregard or will discover to be incorrect.

- Each VMS message shall be displayed for a specific purpose.
- Avoid generic messages when more detailed/specific information becomes available.
- VMS messages requested for roadway conditions or restrictions should be removed immediately when those conditions cease to exist or the restrictions are withdrawn.
- Identical conditions should always be given the same VMS message irrespective of where the conditions occur.
- Messages must be consistent across the Thruway, independent of metropolitan area or Authority Divisions.

### *MESSAGES DESIGN CONSIDERATIONS*

In designing VMS messages, factors to consider include the following:

- Straightforwardness of words selected;
- Use of abbreviations;
- Length of message versus motorist's ability to react;
- Order of words; and
- Order of message panels.



## COMPOSITION

### Sequencing Guidance

Message text displayed on VMS will be composed using the following sequencing guidance:

1. The incident description displayed first.

Example: **RIGHT LANE CLOSED**  
AT EXIT 50  
KEEP LEFT

2. The incident location displayed second.

Example: RIGHT LANE CLOSED  
**AT EXIT 50**  
KEEP LEFT

3. The incident action statement displayed third.

Example: RIGHT LANE CLOSED  
AT EXIT 50  
**KEEP LEFT**

### Terminology Guidance

Message text displayed on VMS will be composed using the following terminology guidance:

- Messages for accidents and maintenance/construction work will state **LANE CLOSED** or **LANE BLOCKED** (be consistent with presentation of messages – bold, quotes, etc.).
- Messages describing location will use the terminology - **AT**, **BEFORE** or **BEYOND**.
- Messages describing lane closures for multiple lanes will use the plural of LANE - **RIGHT LANES CLOSED** and not a numeric description such as **RIGHT 2 LANES CLOSED**.

- Messages describing location will use street names, if available. State Route or County Route numbers will not be used unless denoting Expressways, Freeways and/or Interstate Routes.

Example:      **RAMP CLOSED  
AT COLVIN BLVD.  
USE ALTERNATE ROUTES**

Example:      **RAMP CLOSED TO  
ROUTE 400  
USE ALTERNATE ROUTES**

***DISPLAY TIMING***

Motorists’ exposure time to a VMS message must always be equal to or greater than the message display time. Depending upon the speed of the highway, adjust the message length to ensure the display time fits within the exposure time and affords motorists time to read the complete message twice.

The following table shows how many seconds it takes to travel 1,000 feet at various speeds:

Speed	Time to Travel 1,000 feet (seconds)
45	15.2
55	12.3
65	10.5

The minimum display time for a VMS panel is 1.5 seconds, with a customary time interval of 2.0 seconds or longer per panel. The MUTCD requires minimum legibility of VMS at 650 feet and 1,000 feet for higher speed facilities. Therefore, at highway speeds and a 1,000-foot readable distance, a one-panel message display is preferred. It will take a motorist approximately 4 seconds to read the single panel twice at a two-second display time.

The following table shows the maximum number of message panels to display at varied speed limits, a display time of 2.5 seconds and a 1,000-foot exposure distance:

Speed Limit (MPH)	Maximum Number of Message Panels
35	3*
55	2
65	2

\*Any 3-panel message must be approved in advance by the Division Traffic Supervisor.

## ***DOCUMENTATION***

TSOC personnel should record the following information when a VMS message is deployed. Many of the software packages or ATMS used to display messages automatically log most of this information:

- Location of device;
- Device ID;
- Messages displayed;
- Date of usage;
- Message time on and off;
- Name of requester and contact information; and
- Person approving display.

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## **INSTALLATION AND PLACEMENT CONSIDERATION**

The ITS Program Manager, Traffic Supervisor(s), Traffic Engineer, Design Engineer(s) and Division Director shall work closely to determine the proper location of each permanent VMS and PVMS to be deployed along the highway system.

Installing or placing VMS should always be in advance of a decision point, such as an interchange or travel plaza, where motorists will be afforded adequate time to read, comprehend and react to any message. VMS placed too near the decision point may exacerbate bottlenecks and reduce the opportunity for motorists to react. Conversely, VMS placed too far in advance of a decision point may reduce the effectiveness of the message. In general, VMS should be deployed at a minimum of one mile in advance of the decision point.

In areas where multiple VMS types are used it is important that no conflicting messages be displayed. This includes VMS types deployed by other jurisdictions and contractors in area that overlap the Authority's jurisdiction. When multiple PVMS are deployed, they should be spaced at least 1000 feet apart. This includes the spacing between Authority PVMS and Contractor PVMS.

### ***VISIBILITY CONSIDERATIONS***

Visibility is the distance at which a motorist can first detect VMS on the roadway. The components of visibility for VMS are:

- The ease at which VMS is more visible than other highway features. Can the sign be detected and how well it attracts the motorist's attention. The early recognition that VMS is present plays a key role in the motorist's ability to react to the message;
- Placement which ensures that structures, curves, roadside signs will not obscure visibility (Target Value);
- The message can be seen (Brightness);
- The message can be read (Legibility); and
- The message can be read from an angle (Cone of Visibility).

## ***MUTCD GUIDELINES ON VMS PLACEMENT***

MUTCD guidance shall be adhered to with any VMS activity along the Thruway. Current MUTCD guidelines recommend the following minimum distances for visibility and legibility, and are based on a character height of 18 inches:

- Visibility should be at least 2,640 feet.
- Legibility should be at least 650 feet.

Additional considerations for placement of PVMS:

- Is the PVMS plainly visible to motorists not expecting to encounter it?
- Is the PVMS placed so it will not impede the path of traffic or emergency vehicles?
- For maximum visibility, a PVMS shall be raised so the bottom of the sign is at a minimum height of seven feet above the roadway in urban areas and five feet in rural areas.
- Is the PVMS cellular equipped? If so, does the placement provide good cell phone coverage?

The proper placement of PVMS is critical to their effectiveness. PVMS are to be located as follows:

- On level surfaces.
- With at least 800 feet of sight distance.
- With the message being legible from a minimum distance of 650 feet from all lanes.
- Right of the roadway, off the shoulder, and behind guardrail.
- If placed on the shoulder, should be delineated with cones or drums.
- When used in mobile operations, PVMS shall be completely on the shoulder and shall have no portion protruding over the travel lane at any time.
- PVMS not in use should be removed from the roadside recovery area, shielded with a barrier system, or delineated with cones or drums.
- Slightly turned towards the motorist's view, at an approximate five (5) to ten (10) degree angle perpendicular from the road's centerline.

## **COORDINATION OF VMS AND OTHER ITS ELEMENTS**

VMS can convey only a limited amount of information; therefore, when there is a need to provide extensive information to motorists, VMS can be used in conjunction with other traveler information devices.

- Highway Advisory Radio (HAR) - used when there is a need to provide extensive information to motorists, such as AMBER Alert or adverse weather conditions.
- Extinguishable Message Sign (EMS) - used to display a fixed message such as TUNE RADIO TO 1610 AM. Another type of EMS is a roadside sign that displays messages with flashing beacons to draw attention to the activated sign.
- Flashing Arrow Sign (FAS) (also known as an arrow board) - used to supplement a VMS. The electronic FAS typically direct traffic away from a downstream lane closure. At times, a PVMS may be used to simulate an arrow panel display. These signs may be installed on H.E.L.P. vehicles, highway maintenance vehicles, or emergence responder vehicles.

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## **GLOSSARY**

**“ADVANCED TRAFFIC MANAGEMENT SYSTEMS” (ATMS)**

A system that integrates technology to improve the flow of vehicle traffic and improve safety. Real-time traffic data from Closed-Circuit Television (CCTV) cameras, traffic detectors, etc. flows into a Transportation Management Center (TMC) where it is integrated and processed (e.g., for incident detection), and may result in actions taken (Highway Advisory Radio (HAR), Variable Message Signs (VMS), and text messages) with the goal of improving traffic flow.

**"INCIDENT"**

An activity that occurs on or in proximity to the roadway or right-of-way, such as a vehicular accident, disabled vehicle, fire or similar situation that has or could have an impact on roadway safety or congestion.

**“AMBER ALERT”**

The America’s Missing Broadcast Emergency Response Alert is a plan through which emergency alerts are issued to notify the public about abductions of children.

**“BRIGHTNESS”**

The intensity of the light-source of the sign.

**“BOTTLENECK”**

A location where traffic demand wanting to use a section of roadway is greater than that section’s capacity.

**“CONE OF VISIBILITY”**

The area inside which a VMS sign is visible, which is narrow near the sign and gradually increases in width as the distance from the sign increases, effectively creating a “cone” shaped foot print on the pavement.

**“CONGESTION”**

A condition where a breakdown of traffic flow has occurred and a queue begins to form because the amount of traffic approaching a section of highway exceeds the amount of traffic passing through it.

**“CREDIBILITY”**

Believability (credit, belief or trust; confidence).

**“DECISION POINT”**

An interchange or intersection where a motorist must decide on a route.

**“DISPLAY TIME”**

The time it actually takes a motorist to read a message panel.

**“EXTENDED MESSAGE”**

Multi-panel message.

**“EXPOSURE TIME”**

The length of time a motorist is within a readable distance of the message.

**“INTELLIGENT TRANSPORTATION SYSTEM” (ITS)**

The application of advanced sensor, computer, electronics, and communications technologies and management strategies - in an integrated manner - to provide traveler information and to increase the safety and efficiency of the surface transportation system.

**“LED” (Light Emitting Diode)**

A type of technology used for VMS luminance.

**“LEGIBILITY”**

The ease in which a sign can be read or deciphered.

**“LUMINANCE”**

A measure of the brightness of a luminous surface.

**“MESSAGE”**

All the text or characters being displayed, including all panels in multiphase operation.

**“PANEL”**

The physical part of a sign, which displays the message; also used to reference a part of the message that is held by one panel, as in a multi phase message.

**“QUEUE”**

A waiting line (of vehicles); the area of congested traffic upstream of a bottleneck or incident scene.

**“SECONDARY CRASH”**

Crashes that occur in the queue of an initial crash or that occur in the opposite direction because of the initial crash.

**“SKEW”**

To turn aside, or to one side; slanting; oblique.

**“TAPER”**

A section of cones laid out to divert vehicles out of a lane, or away from an obstruction.

**“TARGET VALUE”** The resulting measurement from a process.

# APPENDIX ONE – MESSAGE LIBRARY

<i>PERMANENT VMS</i>			
	<b>Notification Message</b>	<b>Action Message</b>	<b>Alternate Action Message</b>
<b>Roadway Conditions/Closures</b>	THRUWAY CLOSED BEYOND EXIT XX TAPPAN ZEE BRIDGE CLOSED		TUNE RADIO TO xxxxAM TUNE RADIO TO xxxxAM
	TRAFFIC DELAYS BEYOND EXIT XX	BE PREPARED TO STOP	WATCH FOR SLOW OR STOPPED TRAFFIC
<b>Adverse Weather Conditions</b>	WINTER WEATHER ADVISORY	ICE & SNOW  TAKE IT SLOW	
	SNOW PLOWS TRAVEL UNDER 40MPH	BE ALERT	
	TAPPAN ZEE BRIDGE HIGH WIND WARNING	TRUCKS – BUSES MOTORCYCLES USE ALT ROUTE	TUNE RADIO TO xxxxAM
	WINTER WEATHER ADVISORY	WATCH FOR DRIFTING SNOW ON EXIT RAMPS	
<b>Traffic Collisions</b>	ACCIDENT BEYOND EXIT XX xxxx LANE BLOCKED	WATCH FOR SLOW OR STOPPED TRAFFIC	TUNE RADIO TO xxxxAM
	ACCIDENT XX MILES AHEAD xxxx LANE BLOCKED	WATCH FOR SLOW OR STOPPED TRAFFIC	TUNE RADIO TO xxxxAM
	ALL LANES BLOCKED BEYOND EXIT XX	SEEK ALTERNATE ROUTE	TUNE RADIO TO xxxxAM
<b>Maintenance</b>	ROADWORK NEXT XX MILES RIGHT LANE CLOSED		
	ROADWORK AT EXIT XX	EXPECT DELAYS MON – FRI 10AM – 2PM	TUNE RADIO TO xxxxAM
	PAVING TONIGHT EXITS XX TO XX	EXPECT DELAYS 7PM TO 6AM	TUNE RADIO TO xxxxAM
<b>Event-Related</b>	STADIUM TRAFFIC USE EXIT XX	EXPECT DELAYS SUNDAY 11AM – 1PM	TUNE RADIO TO xxxxAM
	CONCERT EVENT USE EXIT XX		
	STATE FAIR PARKING E-Z PASS PLUS	EXIT 39 TO I-690 EXIT 7	

*PERMANENT VMS*

	<b>Notification Message</b>	<b>Action Message</b>	<b>Alternate Action Message</b>
<b>Signs Intended for Specific Groups of Road Users</b>	nnnnnnn TRAVEL PLAZA NO FUEL AVAILABLE	NEXT FUEL ON THRUWAY XX MILES	
	EXIT XX NO OVERSIZE LOADS		
<b>Travel Time Information</b>	TRAVEL TIME TO DOWNTOWN/ X MILES XX-XX MINS		
<b>Test Messages</b>	NEW YORK STATE THRUWAY AUTHORITY nnnnnn DIVISION	nnnnnn DIVISION NEW YORK STATE THRUWAY AUTHORITY	
<b>Safety Campaigns</b>	BUCKLE UP NEW YORK	CLICK IT OR TICKET	IT'S THE LAW
	OPERATION SPRING BRAKE	SPEED ENFORCEMENT AHEAD	
	OPERATION HANG UP	EXPECT CELL PHONE ENFORCEMENT	

<i>PORTABLE VMS</i>			
	<b>NOTIFICATION MESSAGE</b>	<b>ACTION MESSAGE</b>	<b>ALTERNATE ACTION MESSAGE</b>
<b>Roadway Conditions/Closures</b>	THRUWAY CLOSED EX 39-40		TUNE RADIO TO xxxxAM
	T Z BRIDGE CLOSED		TUNE RADIO TO xxxxAM
	DELAYS BEYOND EXIT XX	BE PREPARED TO STOP	
<b>Adverse Weather Conditions</b>	WINTER WEATHER ADVISORY	ICE & SNOW TAKE IT SLOW	
	PLOWS TRAVEL UNDER 40MPH	BE ALERT	
	TZ BRIDGE HIGH WINDS	TRUCKS BUSES USE ALT RTE	TUNE RADIO TO xxxxAM
	WINTER WEATHER ADVISORY	DRIFTING SNOW ON RAMP	
<b>Traffic Collisions</b>	ACCIDENT AHEAD	BE PREPARED TO STOP	TUNE RADIO TO xxxxAM
	I-90 E ACCIDENT EX 40-39	EXPECT DELAYS	TUNE RADIO TO xxxxAM
	ALL LANES BLOCKED EXIT XX	SEEK ALT ROUTE	TUNE RADIO TO xxxxAM
<b>Maintenance</b>	ROADWORK NEXT XX MILES	RIGHT LANE CLOSED	
	ROADWORK AT EXIT XX	EXPECT DELAYS 10AM – 2PM	TUNE RADIO TO xxxxAM
	PAVING TONIGHT EXIT XX	EXPECT DELAYS 7PM - 6AM	TUNE RADIO TO xxxxAM
<b>Event-Related</b>	FAIR TRAFFIC		TUNE RADIO TO xxxxAM
	CONCERT USE EXIT XX		
	STATE FAIR PARKING	EXIT 39 TO I-690 EXIT 7	

<i>PORTABLE VMS</i>			
	<b>NOTIFICATION MESSAGE</b>	<b>ACTION MESSAGE</b>	<b>ALTERNATE ACTION MESSAGE</b>
<b>Signs Intended for Specific Groups of Road Users</b>	nnnnnnn PLAZA NO FUEL	NEXT FUEL THRUWAY XX MILES	
	NO OVERSIZE LOADS	EXIT XX	
<b>Travel Time Information</b>	TIME TO DOWNTOWN XX-XX MINS		
<b>Test Messages</b>	NYS THRUWAY	nnnnnnn DIVISION	
<b>Safety Campaigns</b>	BUCKLE UP NEW YORK	CLICK IT OR TICKET	IT'S THE LAW
	OPERATION SPRING BRAKE	REDUCE SPEED	
	OPERATION HANG UP	EXPECT CELLPHONE ENFORCMT	

## APPENDIX TWO – STANDARD ABBREVIATIONS

Word	Abbreviation	National MUTCD		Not in the National MUTCD		Prompt Word
		General Panel Use	PVMS Only	NYDOT VMS GUIDE	Authority VMS GUIDE	
ACCESS	ACCS		✓			ROAD**
AFTERNOON/ EVENING	PM	✓				
ALTERNATE	ALT	✓				
AM RADIO	AM	✓				
AVENUE	AVE	✓				
BLOCKED	BLKD		✓			LANE**
BOULEVARD	BLVD	✓				
BOUND	BND			✓		
BRIDGE	BRDG, BR		✓			(NAME OF BRIDGE)**
CANNOT	CANT		✓			
CENTER	CTR, CNTR	✓				
COMMERCIAL	COMM			✓		VEHICLE**
CONDITION	COND		✓			TRAFFIC**
CONGESTED	CONG		✓			AHEAD**
CONGESTION	CONG			✓		TRAFFIC/AHEAD**
CONSTRUCTION	CONST		✓			
CLOSED	CLSD			✓		
DO NOT	DON'T		✓			
DOWNTOWN	DWNTN		✓			TRAFFIC/EXIT**
EAST	E	✓				
EMERGENCY	EMER		✓			
ENTRANCE, ENTER*	ENT		✓			
EXIT	EX* or EXT		✓			NEXT/LANE**
EXPRESS	EXP		✓			LANE**
EXPRESSWAY	EXPWY	✓				
FM RADIO	FM	✓				
FREEWAY	FRWY			✓		
FRIDAY	FRI	✓				

<i>Word</i>	<i>Abbreviation</i>	<i>National MUTCD</i>		<i>Not in the National MUTCD</i>		<i>Prompt Word</i>
		<i>General Panel Use</i>	<i>PVMS Only</i>	<i>NYDOT VMS GUIDE</i>	<i>Authority VMS GUIDE</i>	
HAZARDOUS	HAZ		✓			DRIVING**
HAZARDOUS MATERIAL	HAZMAT	✓				
HIGHWAY	HWY	✓				
INFORMATION	INFO	✓				
INTERSTATE	I (FOLLOWED BY ROUTE NUMBER)	✓				
JUNCTION	JCT	✓				
LANE	LN		✓			(ROADWAY NAME)/ RIGHT/LEFT/CENTER **
LEFT	LFT		✓			
LOCAL	LCL		✓			TRAFFIC**
MAINTENANCE	MAINT		✓			
MAJOR	MAJ		✓			ACCIDENT/ CONGESTION/ DELAY**
MILES	MI	✓				
MILES PER HOUR	MPH	✓				
MINOR	MNR		✓			CONGESTION/ DELAY**
MONDAY	MON	✓				
MORNING/LATE NIGHT	AM	✓				
NEXT	NXT			✓		
NORMAL	NORM		✓			
NORTH	N	✓				
OVERSIZED	OVRSZ		✓			LOADS/TRUCKS**
PARKING	PKING		✓			
PAVEMENT	PVMT		✓			WET/ SNOW COVERED**
PREPARE	PREP		✓			TO STOP**
RIGHT	RT*, RHT		✓			KEEP/ NEXT/LANE**
ROAD	RD	✓				
ROUTE	RT, RTE		✓			(NAME OF ROUTE)/BEST**
SATURDAY	SAT	✓				



<i>Word</i>	<i>Abbreviation</i>	<i>National MUTCD</i>		<i>Not in the National MUTCD</i>		<i>Prompt Word</i>
		<i>General Panel Use</i>	<i>PVMS Only</i>	<i>NYDOT VMS GUIDE</i>	<i>Authority VMS GUIDE</i>	
SERVICE	SERV		✓			
SHOULDER	SHLDR		✓			
SLIPPERY	SLIP		✓			
SOUTH	S	✓				
SPEED	SPD		✓			
STREET	ST	✓				
SUNDAY	SUN	✓				
TAPPAN ZEE	TZ				✓	BRIDGE
TEMPORARY	TEMP	✓				
THRUWAY	THWY *	✓			TWY	
THURSDAY	THURS	✓				
TRAFFIC	TRAF			✓		
TRAVELERS	TRVLRS			✓		
TUESDAY	TUES	✓				
TURNPIKE	TRNPK, TPK	✓				
VEHICLE	VEH		✓			
WARNING	WARN		✓			
WEDNESDAY	WED	✓				
WEST	W	✓				

\* Standard abbreviation from the National MUTCD.

\*\* When prompt word(s) are used along with the standard abbreviation, the abbreviation may be used on traffic control devices other than portable variable message signs (PVMS).