

Use of Variable Message Signs





TRAFFIC MANAGEMENT Operational Instructions

Use of Variable Message Signs - 2.36

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CONTENTS

1. Scope	1
2. VMS and CMS Definition	1
2.1 VMS and CMS	1
2.2 Permanent VMS (Type B / C)	1
2.2.1 Small VMS (Type A)	1
2.2.2 RC3 VMS.....	2
2.3 Portable VMS.....	2
2.4 Vehicle Mounted VMS	3
2.5 Device Conspicuity	3
2.6 Device Luminance	3
2.7 Text Colour	3
3. Messages and Content on VMS	3
3.1 Messages and Symbols used on CMS	3
3.2 Message Types used on VMS	4
3.2.1 Accident/Incident Messages	4
3.2.2 Congestion Messages/Real-time Information	4
3.2.3 Roadworks Messages	5
3.2.4 Environmental Conditions Messages	5
3.2.5 Special Events Messages.....	5
3.2.6 Specific Road Safety Messages	5
3.3 Message Content and Format	6
3.3.1 Problem Statement.....	6
3.3.2 Location Statement.....	6
3.3.3 Effect Statement.....	6
3.3.4 Attention Statement	6
3.3.5 Action Statement	7
3.3.6 Time and Date Information	7
3.4 Pictorial Messages and Symbols	7
3.5 Non-Static Messages.....	8
3.6 Abbreviations.....	8
3.7 Message Length	8
3.7.1 Multiple Page Messages.....	8
3.8 Message Exposure Times	9
3.9 Compatibility of VMS with Existing Road Infrastructure.....	9
3.10 Message Credibility.....	9
3.11 Messages on Portable VMS.....	9
4. Placement/Location of VMS/CMS	10
4.1 Placement of Portable VMS	10
5. Authorisation	10
5.1 Accident/Incidents Messages	10
5.2 Congestion Messages	11
5.3 Road works Messages.....	11
5.4 Environmental Conditions Messages	11
5.5 Special Events Messages	11
5.6 Specific Road Safety Messages	11
5.7 Temporary Speed Feedback Signs.....	11

- Appendix A VMS Message Statements**
- Appendix B Generic Message Set**
- Appendix C VMS Symbols**
- Appendix D Abbreviations for use on VMS**
- Appendix E Standard Alphabet (5x7 Matrix)**

2.36

1. Scope

The aim of this Operational Instruction is to provide a uniform and consistent approach to the use of permanent and portable variable message signs (VMS) and of changeable message signs (CMS) on roads under the care, control and management of DPTI. Vehicle mounted VMS are covered in Operational Instruction 3.14.

2.36

2. VMS and CMS Definition

2.1 VMS and CMS

Variable Message Signs (VMS) are traffic control devices that can display any message or graphical symbol, but in practice is subject to the constraints detailed in this instruction. The VMS display is a full “dot” matrix display, where characters are formed by illuminating or exposing individual “dots” (which are called pixels). Current technology is mostly LED, but flip pixel has also been used.

Changeable Message Signs (CMS) are traffic control devices that are only capable of displaying pre-configured messages, with the number of messages capable of being displayed limited by the mechanical features of the sign. For example, the Tri-Vision sign (rotating triangular prisms) can display up to three screens, often used for two message displays and one blank display.

2.2 Permanent VMS (Type B / C)

Permanent large VMS are generally mounted on the side of the road or on overhead gantries. They are used to warn road users of approaching traffic hazards, incidents, lane closures, road works, route guidance, emergency information, real time congestion levels, variable speed limits, weather related traffic conditions and real time destination travel times.

Refer to AS 4851.1 table 3.1 for display dimension requirements.

2.2.1 Small VMS (Type A)

These signs are generally smaller and have a full colour matrix display. These will generally display real-time travel information for travel times but also can be used for other information such as accident management as part of the boarder application of traffic information services on the road network. Real-time traveller information informs motorists about current or future traffic conditions on the roads and allows drivers to choose the most efficient route to their destination.

The full matrix display shall have the capability to display three horizontal lines of text typically at 180mm high font minimum. A combination of upper case and lower case lettering is used to provide the required legibility and to maximise the display length of messages within the sign width. The sign and font sizes recognise the balance required between font size, sign size, installation cost, display impact relative to static signs and legibility for the likely approach speeds which are typically in the order up to 60 km/h,. These signs, however can be installed on roads with a speed limit between 70 km/h and 90 km/h, but in these cases shall be side mounted only.

Display Requirements:

- Minimum size of a small VMS sign shall be 1660 X 800.
- Font size equivalent to 180mm (minimum).
- Font type equivalent to Arial.
- 50 mm character spacing.
- 50 mm row spacing.
- 100mm word spacing.
- Minimum 10 characters per row.
- 3 Rows maximum.
- Sign face to angle down (in the vertical) at 5 – 10 degrees.
- Signs shall be side mounted when installed on roads with posted speed limits of 70, 80 or 90 km/h.

2.2.2 RC3 VMS

These signs are smaller than the type A VMS's and are also a full colour matrix display. These will general display real-time travel information for travel times but can also be used to display information such as accident management as part of the broader application of traffic information services on the road network. Real-time traveller information informs drivers about current or future traffic conditions on the roads and allows drivers to choose the most efficient route to their destination.

The full matrix display shall have the capability to display three horizontal lines of text typically at 120mm high font minimum. A combination of upper case and lower case lettering is used to provide the required legibility and to maximise the display length of messages within the sign width. The sign and font sizes recognise the balance required between font size, sign size, installation cost, display impact relative to static signs and legibility for the likely approach speeds which are typically up to 60 km/h.

These signs are only to be installed on roads of 60 km/h or less

Display Requirements:

- Minimum pixel size of a RC3 sign shall be 1660 X 600
- Font size equivalent to 120mm (minimum)
- Font type equivalent to Arial
- 50mm character spacing
- 50mm row spacing
- 100mm word spacing
- Minimum 10 characters per row
- 3 Rows maximum
- Sign face to angle down (in the vertical) at 5 – 10 degrees
- Preference to have signs sided mounted

2.3 Portable VMS

A portable VMS is a VMS that can be moved into a location as required. Generally portable VMS are mounted on trailers or another vehicle and are used at locations where there is no existing permanent VMS.

2.4 Vehicle Mounted VMS

Vehicle mounted VMS can be mounted on the front, back or roof of most vehicles and can be used at road works sites, for mobile road works, survey vehicles and by police and emergency services vehicles. See Operational Instruction 3.14 for specific direction in the use of vehicle mounted VMS.

2.5 Device Conspicuity

The main purpose of the conspicuity devices is to increase the conspicuity of the message of a mandatory, safety or warning nature.

There are 3 ways to display conspicuity:

- External Flashing yellow lights attached to the sides of the VMS.
- Have four flashing yellow LED's displayed in the corners on the VMS display (if there is room to do so).
- To have flashing text/messages.

2.6 Device Luminance

Refer to AS 4852.1 clause 3.1.12

2.7 Text Colour

When using a colour capable VMS sign the following colours shall only be used for:

- Critical messages shown in Red.
- Warning messages shown in Yellow
- All other messages shown in white

For road traffic condition message colours refer to section 3.2.2.1.

3. Messages and Content on VMS

Permanent and portable VMS shall only be used to inform road users of potentially hazardous conditions ahead, inform road users of coming events which may cause delay in travel time or create a hazard, real time traffic information or any message which aids in the safety and operational efficiency of the area of the road network in the vicinity of the sign. Messages must be concise, unambiguous and preferably designed to prevent confusion for all road users.

3.1 Messages and Symbols used on CMS

Any message or symbol to be used on a CMS must be approved by the Manager, Traffic Services, DPTI, prior to installation. In most cases the message, symbol or sign will need to be designed by the Traffic Solutions Unit.

3.2 Message Types used on VMS

Potentially there is a wide range of applications for VMS, including reporting of accidents/incidents, congestion, road works, environmental conditions and special events.

Other than approved police messages, general road safety messages and commercial or community advertising messages are considered as “filler” messages and **shall not** be used on VMS’s installed for traffic management purposes in South Australia (see **Section 3.10** regarding message credibility).

2.36

3.2.1 Accident/Incident Messages

Accident/incident messages are used to warn road users of an accident/incident which may have occurred on the roadway which may require the road user to take an alternate route or advise that delays are expected.

3.2.2 Congestion Messages/Real-time Information

Congestion messages are used to warn road users of unforeseen congestion problems.

They can also be used to inform road users of current congestion levels on major roads where traffic detection devices provide real-time information.

Travel time information has the most benefit when provided on major arterial roads with strategic intersecting routes. It is not practicable to provide travel time information for all destinations. The signing of strategic destinations focuses on:

- Significant destinations for high volumes movements which will benefit the larger volume of traffic.
- High capacity routes that facilitate choice for deviated traffic.
- Roads with good connectivity within the network.

SIGNING PRINCIPLES for destinations:

- Travel time destinations are consistent with focal point names that are displayed on other directional type signs to facilitate the understanding and navigation by the road user
- The first displayed destination is generally within 4-6 minutes of travel time for the VMS location
- VMS display one frame with a maximum of three destinations

3.2.2.1 Text Colours and Format for colour capable VMS signs

The default message should display travel time with a minimum of two downstream destinations and the traffic condition on the road. The information displayed is based on road speed data that is used to calculate the travel time and traffic flow conditions relative to nominal travel time.

The first line (header) is as follows:

- The Route Number (left aligned) on which the key destinations are located, as well as directional assistance, if applicable. The

colour will be green, yellow or red according to the colour of the road condition or event information.

- The word 'Min' coloured white and right aligned above the travel time numerals. For some displays it may be necessary to abbreviate the route / traffic condition information to provide space for the 'Min' heading. For some displays abbreviating the route information and freeway traffic condition may not be feasible so it may be necessary to omit the 'Min' heading. This latter layout is generally undesirable as it may cause confusion for some motorists.

2.36

In general, modifying the header is to provide additional directional assistance if the key destinations are not on the continuing route or in different directions on an intersecting route.

The general principles are as follows:

- When the key destinations are on two different routes, directional assistance is included.
- Where the key destinations being signed are not on the freeway being entered, the Route Number on which the destinations are located is shown in the header, i.e., not the road being entered. In these cases, subject to space limitations, the word 'via' is included in the header to provide directional assistance.
- The road traffic condition message is either 'Light' (green), 'Medium' (yellow) or 'Heavy' (red) as appropriate. Colour coded travel time information is shown to the chosen destinations. The travel time value includes road travel time to the destinations.
- Congestion management traffic condition messages can be shown by displaying either 'Major Delays' (flashing red) or 'Seek Alt Route' (flashing red) as appropriate.

3.2.3 Roadworks Messages

Roadworks messages are messages for use at roadwork sites.

3.2.4 Environmental Conditions Messages

Environmental condition messages are used to advise road users of hazardous conditions due to environmental factors. These types of messages include changed conditions due to fog, ice on the road, rock falls on the road and flooding.

3.2.5 Special Events Messages

Special events messages are messages relating to planned events that may impact on traffic movements through a specific area. These may include Christmas parades or sporting events that require some roads to be closed.

3.2.6 Specific Road Safety Messages

Specific road safety messages are messages directly relating to a specific issue on a section of road or part of a specific road safety campaign in a localised area.

Road Safety Messages that are not specific and/or directive to road users shall not be used.

3.3 Message Content and Format

All messages shall include a problem statement and should include an action statement. Messages may also include location, effect and attention statements as described below.

2.36

3.3.1 Problem Statement

Problem statements define the type of incident that will affect traffic conditions. Such incidents could include accidents, road works, traffic congestion, environmental conditions and hazards on the road.

A list of approved problem statements is provided in **Appendix A**.

3.3.2 Location Statement

A location statement describes the location of the incident requiring the VMS message; this may be described in terms of distance to incident, place names, road/street names, route numbers, exit numbers/names, road infrastructure and landmarks.

Sometimes it will be necessary to refine the location description by the use of location modifiers. Recommended location modifiers include AFTER, NEAR, AHEAD, AT, NEXT, LEFT, RIGHT and CENTRE. In many cases the word AHEAD is a statement of the obvious and may be omitted where it would add to the number of screens required for the message.

A list of approved location statements is provided in **Appendix A**.

3.3.3 Effect Statement

An effect statement describes the state of the road or the effect the incident (described in the problem statement) will have on traffic operations.

A delay statement is one specific type of effect statement. This can be displayed as "MAJOR DELAYS", "MINOR DELAYS", "number" mins DELAY" or "number" hrs "DELAY". The quantified option should only be used where reliable information is available and can be regularly updated. Delays of up to about 10 minutes are considered minor in urban environments and 15 minutes for rural environments.

A list of approved effect statements is provided in **Appendix A**.

3.3.4 Attention Statement

An attention statement is designed to gain the attention of a particular group of motorists rather than the normal case of a message targeting all motorists. The attention statement identifies the target audience to whom the action statement is directed, e.g. BUSES, TRUCKS etc.

A list of approved attention statements is provided in **Appendix A**.

3.3.5 Action Statement

The action statement is what the motorist must be able to do if the VMS message is to be effective. It is therefore an essential element if some action by motorists is required.

A list of approved action statements is provided in **Appendix A**.

It should be noted that some action statements are not explicit but require drivers to make decisions. Examples of these are “CONSIDER ALTERNATE ROUTE” and “FIND ALTERNATE ROUTE”. “ALTERNATE” is used instead of “ALTERNATIVE” as it is shorter and is able to fit on smaller displays.

2.36

3.3.6 Time and Date Information

Time and date information may be required for VMS messages providing advance notice of special events or road works affecting future traffic operations. One week is considered to be an appropriate advance notice period.

It may also provide information on when an event or incident is expected to end. This element will contain time duration, days of the week, day periods, time of day, time periods, dates and/or date periods. Time duration should be shown in five or ten minute time increments.

Dates and date periods are significantly less well absorbed by drivers than days of the week. They should therefore only be used for major occurrences and when the dates involved are at least a week in the future.

Time information should be displayed using a 12-hour clock format using the “AM” and “PM” designation.

A list of approved time and date information statements is provided in **Appendix A**.

3.4 Pictorial Messages and Symbols

Pictorial messages for VMS may be considered in two groups: pictograms of standard static signs and graphical representation of road network conditions.

To achieve adequate definition of pictorial messages it is recommended that there be a pixel matrix of 35 pixels square. As many of the existing VMS have only 28 pixels vertically or less, pictograms and network diagrams should not be used.

Symbols may be used but should be limited to arrows and lane status symbols to support the VMS messages. If there becomes a need for a symbol to be used then assistance should be sought from the Traffic Management Centre and the Traffic Engineering Standards Team to ensure that the symbol used is consistent with static sign symbols and those in [AS 1742 – Manual of Uniform Traffic Control Devices](#) parts 1-15, the [Australian Road Rules](#) and the [Manual of Legal Responsibilities and Technical Requirements for Traffic control Devices, Part 2 - Code of Technical Requirements](#). A sample of symbols is provided in **Appendix C**.

3.5 Non-Static Messages

Non-static messages, including scrolling and flashing messages shall not be used. Such displays can be distracting and are generally less understood and more prone to confusion. They can also hold the drivers attention away from the driving task.

Multiple page messages should only be used if unavoidable and shall be limited to 3 pages in length in urban areas or 2 pages in length in rural areas.

2.36

3.6 Abbreviations

Abbreviations may be used on VMS messages but where possible should be avoided. In some cases the abbreviated word is preferred (e.g. “km” instead of “KILOMETRE”).

There are a number of abbreviations that have been found to have a high recognition rate (at least 85%), independently of their content. There is also a number of abbreviations that are adequately understood when used with “prompt” words (e.g. PREP for prepare if it precedes TO STOP).

A list of approved abbreviations is provided in **Appendix D**. No abbreviations other than those in **Appendix D** shall be used, unless approved by Manager, Traffic Management Centre.

3.7 Message Length

In low speed zones (≤ 80 km/h) messages shall be limited to 2 pages with 3 lines of 18 characters (where spaces between words are counted as characters). No single word should be greater than 15 characters. In higher speed environments (> 80 km/h), messages should also be limited to 3 lines of 18 characters displayed in the following page formats:

- Single page message – full use of available sign
- Two page message - only 2 lines of text to be used on each page with no single word > 15 characters.

In terms of units of information there should be no more than 2 units of information per page. A unit of information may contain one to four words and is in the form of a problem, action, location, effect and attention statements.

Examples of a unit of information are DETOUR AHEAD, PREPARE TO STOP and LEFT LANE CLOSED.

3.7.1 Multiple Page Messages

Each page of a multiple page message should make sense to the road user on its own and a unit of information may not begin on one page and finish on the next page.

Each page should be able to be read as if it is the first page of the message. Care must be taken to prevent ambiguity if only one page is read or pages are interpreted in incorrect sequences.

3.8 Message Exposure Times

Message times should be displayed for a minimum of whichever of the following is greatest:

- 0.6 ± 0.1 seconds per word
- 1.5 seconds per unit of information

A blank display of 0.25 seconds duration is the maximum allowable time between each page but a shorter blank display time is preferred.

2.36

3.9 Compatibility of VMS with Existing Road Infrastructure

VMS messages must be fully compatible with static signs and use the same terminology and abbreviations. This is particularly relevant to direction signs. VMS should complement the existing static signage rather than simply duplicating it.

Care must be taken to check and rectify any potential conflict between any VMS and static signs in the road network.

VMS should, wherever possible, be supported by closed circuit television (CCTV) cameras and/or other incident detection systems.

3.10 Message Credibility

Signs are the primary channel of communication to road users so accurate, timely and relevant messages are vital to achieve high levels of driver compliance with VMS messages. CCTV and/or other incident detection systems should be used to identify and monitor incidents and to keep VMS messages up to date and relevant.

The quality and credibility of the VMS message influences how road users will perceive future VMS messages. Low credibility messages will affect the credibility of all VMS messages therefore by displaying only messages that are directly applicable to driving conditions and behaviour will increase the overall credibility of VMS messages.

Confusing word choices, long or ambiguous messages, or incorrect placement can render the VMS useless or cause road users to doubt the displayed information. It is better to display nothing on a VMS than to display a message that road users will discover to be incorrect or inaccurate. Road users will tend to ignore VMS if they have regularly encountered incorrect or inaccurate messages.

3.11 Messages on Portable VMS

Messages on portable VMS should only be used to provide drivers with advance warning of changed traffic conditions, which may be in terms of time or distance. The messages should be effective in warning and diverting traffic in advance of roadwork sites or emergency situations where traffic conditions are affected.

The message length per page shall be no more than four words or numbers and shall not be over two pages long.

Portable VMS shall not be used as a substitute for conventional signs and pavement markings.

Portable VMS in the road network shall not be used for displaying “filler” messages, advertising (including tourist information) or public service announcements (not to be used by private organisations). However safety messages directly relating to a specific section of road may be used in certain circumstances (i.e. approved police messages).

If a special event is likely to impact traffic operations, a portable VMS may be used to inform drivers about exit and parking information. The message shall avoid direct mention of specific events, sponsors and private establishments.

2.36

4. Placement/Location of VMS/CMS

VMS/CMS can either be placed in the verge of roads or overhead but the use of overhead VMS/CMS is preferred. VMS/CMS should be placed where they provide sufficient vertical and lateral clearances from the running lanes and will not create a hazard to road users. VMS/CMS shall not be permitted within an interchange area where merging, frequent braking or weaving movements are common. VMS/CMS shall be placed in locations that allow adequate reading time for all road users and adequate time and travel distance for the road user to act on the message and where this will not adversely affect the driving task. For specific supply requirements on VMS/CMS refer to [Part R66](#) “*The Supply of Variable and Changeable Message Signs*” of the DPTI Master Specification http://www.dpti.sa.gov.au/contractor_documents/specifications_division_2_roadworks.

4.1 Placement of Portable VMS

Portable VMS should not be placed in a position where it will distract drivers or become a hazard to pedestrians. No part of the VMS shall overhang the kerb of the road or in a position where it can create a hazard to road users.

When not in use, portable VMS should be removed as soon as possible.

Portable VMS should comply with the longitudinal placements of VMS set out in AS 1742.2 - 2009.

If the VMS is placed on the footpath and creates a hazard or blocks the path of pedestrians and other footpath users then an appropriate alternative safe path should be clearly defined. If the VMS is placed in a traffic lane then an appropriate traffic path shall be clearly delineated.

5. Authorisation

Note that standard messages/words contained in the Appendices A to D do not need pre approval for use, however any non-standard (not in the Appendices A to D) refer to the following:

5.1 Accident/Incidents Messages

Accident/incident messages must be approved by the road authority or Superintendent Traffic Support Branch, SA Police. Where DPTI is the road

authority, the message must be approved by the DPTI's Manager, Traffic Management Centre.

5.2 Congestion Messages

Congestion related messages must be approved by the DPTI's Manager, Traffic Management Centre.

5.3 Road works Messages

Road works messages must be approved by either Council or the DPTI's Manager, Traffic Management Centre.

2.36

5.4 Environmental Conditions Messages

Environmental condition messages must be approved by the road authority, either Council or the DPTI's Manager, Traffic Management Centre. In emergency situations SA Police may approve an environmental message.

5.5 Special Events Messages

Special events messages must be approved by the road authority, either Council or the DPTI's Manager, Traffic Management Centre.

5.6 Specific Road Safety Messages

If the specific road safety message is in accordance with this operational instruction then the Manager, Traffic Management Centre may approve the message otherwise approval must be obtained from the Manager, Traffic Operations. The Superintendent of the Traffic Support Branch, SA Police, may also approve a specific road safety message.

5.7 Temporary Speed Feedback Signs

If trailer mounted speed feedback signs are to be deployed on to a DPTI maintained road, then approval must be sort from the DPTI's Manager, Traffic Management Centre.

Appendix A VMS Message Statements

Approved VMS Problem Statements

2.36

ANIMALS ON ROAD
 BREAKDOWN
 BRIDGEWORK
 CHEMICAL SPILL
 CONGESTION
 COLLISION
 CRASH

DEBRIS ON ROAD
 DELAYS
 DANGER DO NOT ENTER
 DANGER TUNNEL CLOSED
 EXIT "number" CLOSED
 "name" EXIT CLOSED
 FIRE
 FOG HAZARD
 HAZARD

ICY ROAD
 INCIDENT
 LANE(S) CLOSED
 LOW LIGHT
 NIGHT WORKS

OIL ON ROAD
 POOR VISIBILITY
 ROAD CLOSED
 ROAD FLOODED
 ROAD NARROWS
 ROADWORK
 SLIPPERY ROAD
 TRAFFIC HAZARD
 TRAFFIC SIGNALS

"name" BRIDGE CLOSED*
 "name" EXIT CLOSED*
 TUNNEL CLOSED
 TWO WAY TRAFFIC

* Name is optional, only use when there could be confusion as to which bridge or exit is closed.

Approved VMS Location Statements**Location Definers**

BUS LANE
BUSWAY

CENTRE LANE

EXIT "number"
INTRSCT

"landmark"

LEFT LANE
LEFT LANES
LEFT SHOULDER
"location" EXIT

"name" BRIDGE
"name" DR (DRIVE)
"name" HWY (HIGHWAY)
"name" RD (ROAD)
"name" ST (STREET)
"number" km
"number" m

OVERPASS

RIGHT LANE
RIGHT LANES
RIGHT SHOULDER
ROAD

SERVICE ROAD
TUNNEL
UNDERPASS

"location" EXIT
"number" km AHEAD
"number" m AHEAD

Position Definers

AHEAD
AT
BEYOND
IN
NEAR
NEXT

2.36

Recommended VMS Effect Statements

“location” CLOSED

EXPECT DELAYS

MAJOR DELAYS

MINOR DELAYS

POLICE CONTROL

“number” min DELAY

“number” hrs DELAY

TRAFFIC CONTROL

2.36

Approved VMS Attention Statements

ALL TRAFFIC

BUSES

BICYCLES

CARS

EMERGENCY VEHICLES

HIGH VEHICLE (S)

LOCAL TRAFFIC

THROUGH TRAFFIC

“destination” TRAFFIC

TRUCKS

WIDE LOADS

2.36

Approved VMS Action Statements

DETOUR AHEAD
DO NOT OVERTAKE

FORM X LANE/S

MERGE LEFT (with arrows)
MERGE RIGHT (with arrows)
MUST STOP

2.36

NO ENTRY
NO EXIT

PREPARE TO STOP
PROCEED WITH CAUTION

REDUCE SPEED

UNLESS OVERTAKING

USE ALTERNATE ROUTE
USE EXIT "number"
USE "name" EXIT
USE "road" ROAD
USE "road" STREET

"attention statement" / KEEP RIGHT
"attention statement" / KEEP LEFT
"attention statement" / MERGE TO RIGHT LANE
"attention statement" / MERGE TO LEFT LANE

Recommended VMS Time and Date Statements

Time duration	“number” min “number” hrs “number” DAYS “number” WEEKS
Time of day*	“number” AM “number” PM
Time period*	“number” AM – “number” PM
Days of the week	SUN THU MON FRI TUE SAT WED
Day period	MON – FRI SAT – SUN WEEKEND
Months of year	JAN JUL FEB AUG MAR SEP APR OCT MAY NOV JUN DEC
Date	“number” JAN
Date period	“number” JAN – “number” FEB
Miscellaneous	EXPECTED POSSIBLE SOON

2.36

* the use of a 24 hour clock should avoided

Appendix B Generic Message Set

No. Screen 1			Screen 2			
	Line 1	Line 2	Line 3	Line 1	Line 2	Line 3
1.	ACCIDENT	EXPECT DELAYS				
2.	ACCIDENT			PROCEED	WITH CAUTION	
3.	ACCIDENT	DETOUR AHEAD				
4.	ACCIDENT	PREPARE TO STOP				
5.	ACCIDENT	MAJOR DELAYS		FIND	ALTERNATE ROUTE	
6.	ACCIDENT	MAJOR DELAYS		PROCEED	WITH CAUTION	
7.	ACCIDENT	MINOR DELAYS		PROCEED	WITH CAUTION	
8.	ANIMALS ON ROAD			PROCEED	WITH CAUTION	
9.	ANIMALS ON ROAD	PREPARE TO STOP				
10.	BREAKDOWN			PROCEED	WITH CAUTION	
11.	BREAKDOWN	AHEAD		MERGE LEFT		
12.	BREAKDOWN	AHEAD		MERGE RIGHT		
13.	CHANGED TRAFFIC	CONDITIONS		PROCEED	WITH CAUTION	
14.	CHEMICAL SPILL			PROCEED	WITH CAUTION	
15.	CHEMICAL SPILL			FIND	ALTERNATE ROUTE	
16.	CHEMICAL SPILL	DETOUR AHEAD				
17.	CONGESTION	AHEAD		EXPECT DELAYS		
18.	CONGESTION	AHEAD	MAJOR DELAYS	FIND	ALTERNATE ROUTE	
19.	CONGESTION	AHEAD	MAJOR DELAYS	PROCEED	WITH CAUTION	
20.	CONGESTION	AHEAD	MINOR DELAYS	PROCEED	WITH CAUTION	
21.	COLLISION AHEAD	MERGE LEFT /RIGHT				
22.	DANGER	PROCEED	WITH CAUTION			
23.	DEBRIS ON ROAD	MERGE LEFT /RIGHT				
24.	FLAGMAN	AHEAD		REDUCE SPEED	PREPARE TO STOP	
25.	FOG	BEYOND TUNNEL				
26.	FOG HAZARD			PROCEED	WITH CAUTION	
27.	HAZARD	AHEAD		EXPECT DELAYS		
28.	HAZARD			PROCEED	WITH CAUTION	
29.	HAZARD	AHEAD		DETOUR AHEAD		
30.	HAZARD	MAJOR DELAYS		FIND	ALTERNATE ROUTE	

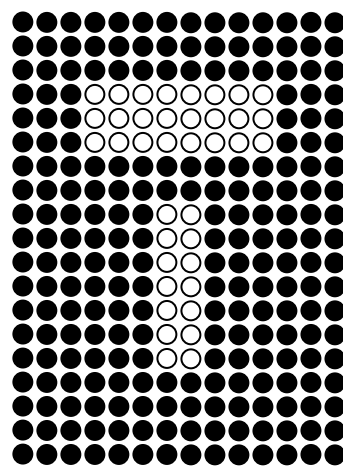
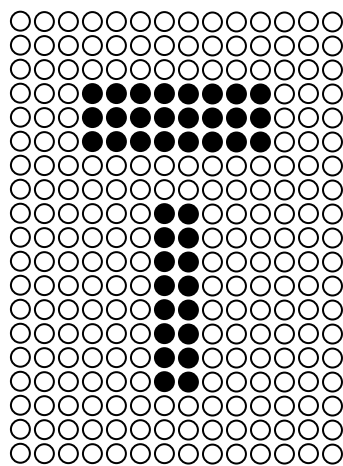
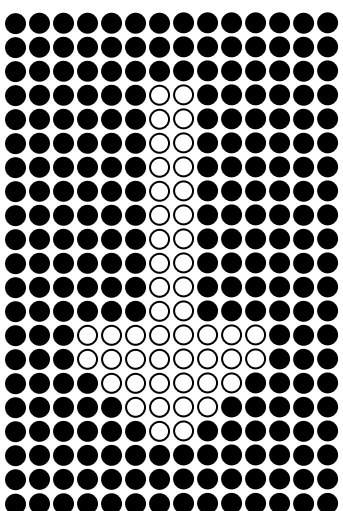
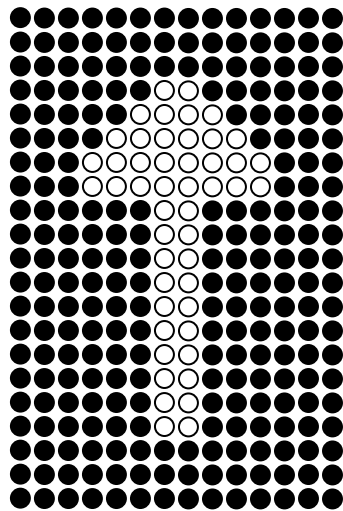
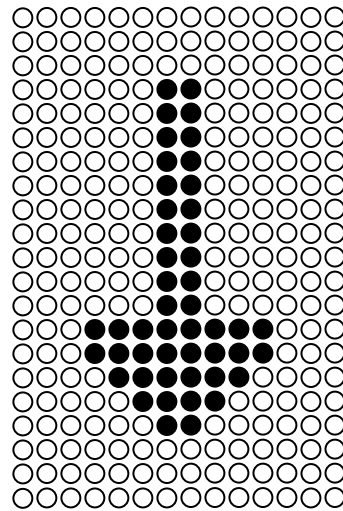
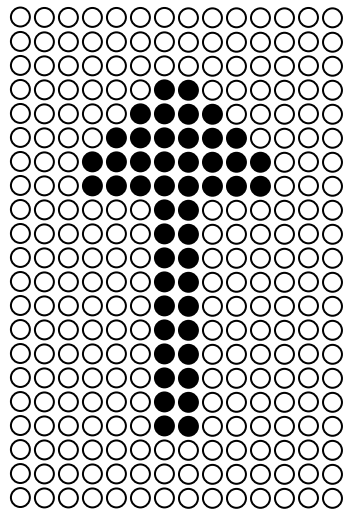
No. Screen 1			Screen 2			
No.	Line 1	Line 2	Line 3	Line 1	Line 2	Line 3
31.	HAZARD	MAJOR DELAYS		PROCEED	WITH CAUTION	
32.	HAZARD	MINOR DELAYS		PROCEED	WITH CAUTION	
33.	HIGH VEHICLE (S)	MUST STOP				
34.	LANE CLOSED	AHEAD		MERGE RIGHT		
35.	LANE CLOSED	AHEAD		MERGE LEFT		
36.	LANE (S) CLOSED	IN TUNNEL				
37.	LOW LIGHT	IN TUNNEL				
38.	NO ENTRY	TUNNEL CLOSED				
39.	OIL ON ROAD			PROCEED	WITH CAUTION	
40.	POLICE CONTROL	AHEAD				
41.	POOR VISIBILITY	AHEAD		PROCEED	WITH CAUTION	
42.	ROAD CLOSED	AHEAD		PREPARE TO STOP		
43.	ROAD CLOSED	AHEAD		FIND	ALTERNATE ROUTE	
44.	ROAD CLOSED	DETOUR AHEAD				
45.	ROAD FLOODED	AHEAD		FIND	ALTERNATE ROUTE	
46.	ROAD FLOODED	AHEAD		PROCEED	WITH CAUTION	
47.	ROAD FLOODED	DETOUR AHEAD				
48.	ROAD FLOODED	AHEAD		PREPARE TO STOP		
49.	ROADWORK	AHEAD		REDUCE SPEED		
50.	ROADWORK	AHEAD		EXPECT DELAYS		
51.	ROADWORK	DETOUR AHEAD				
52.	ROADWORK	AHEAD		PREPARE TO STOP		
53.	ROADWORK	AHEAD		MERGE LEFT		
54.	ROADWORK	AHEAD		MERGE RIGHT		
55.	SMOKE HAZARD	AHEAD		PROCEED	WITH CAUTION	
56.	TRAFFIC HAZARD	AHEAD				
57.	TRAFFIC HAZARD	IN TUNNEL				
58.	TRAFFIC SIGNALS	AHEAD		PREPARE TO STOP		
59.	TUNNEL CLOSED	MERGE RIGHT				
60.	TWO WAY	TRAFFIC				

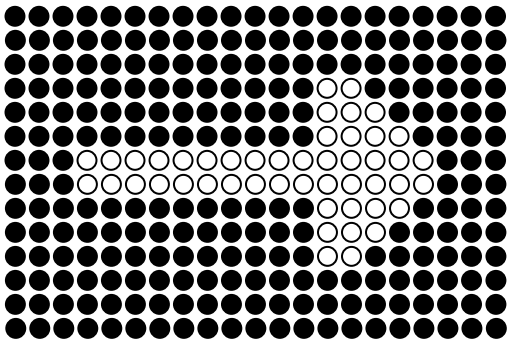
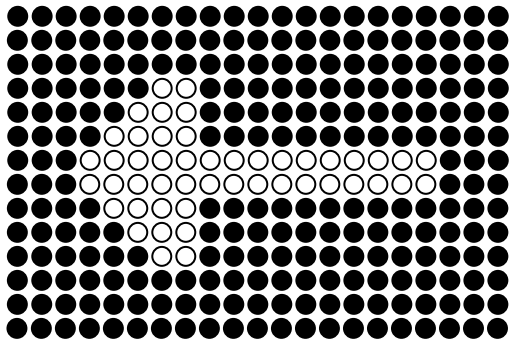
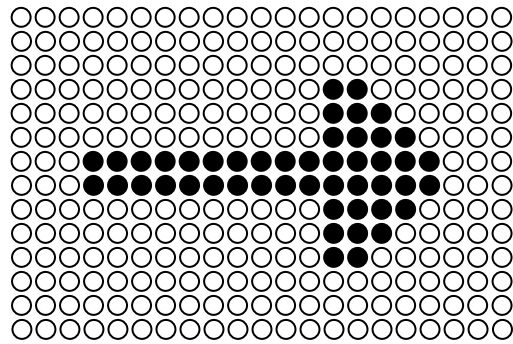
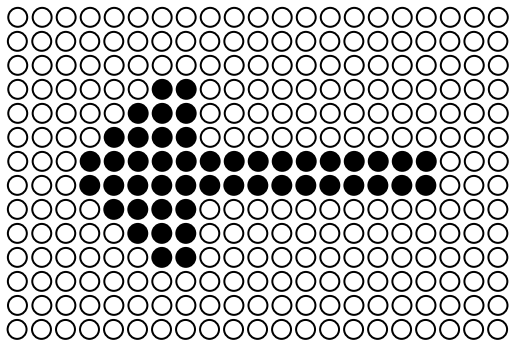
Action Statement	Circumstances for Use
EXPECT DELAYS	Use if no information is available on extent of delays. When such information is available, replace by the problem statements MAJOR DELAYS (over 15 minutes delay {urban} or 30 minutes delay {rural}) or MINOR DELAYS (below 15 minutes delay {urban} or 30 minutes delay {rural}) and add appropriate action message from list below.
PROCEED WITH CAUTION	Use where there is potential danger to drivers (e.g. where there is poor visibility prior to an incident or a danger such as animals on the road, a chemical spill, fog or a smoke hazard).
DETOUR AHEAD	Only use where a signed detour is provided.
PREPARE TO STOP	Use if vehicles may need to come to a full stop.
FIND ALTERNATE ROUTE	Use if vehicles are unable to use the most logical road because of the incident but no detour is signed. May also be used remotely from the incident where capacity past an incident is well below demand.
MERGE LEFT	Use where right hand lane is blocked.
MERGE RIGHT	Use where left hand lane is blocked.
REDUCE SPEED	Use where drivers or others (e.g. road workers, emergency services) are at risk if normal speed is maintained.

Appendix C VMS Symbols

Light Source On - ○

Light Source Off - ●





Appendix D Abbreviations for use on VMS

Approved Abbreviations to use with VMS

The following is a list of acceptable abbreviations for frequently used words. At least 85% of the driving public would understand these abbreviations, independent of specific content, if they appeared on a VMS.

Abbreviations may be used on VMS messages but where possible should be avoided.

Word	Abbreviation
ALTERNATE	ALT
ACCIDENT	ACDNT
AVENUE	AVE
BOULEVARD	BVD
CAN NOT	CAN'T
CENTRE	CNTR
DO NOT	DON'T
EMERGENCY	EMER
ENTRANCE	ENT
ENTER	ENT
EXPRESSWAY	EXPWY
FREEWAY	FWY
INFORMATION	INFO
INTERSECTION	INTRSCT
IT IS	IT'S

Word	Abbreviation
JUNCTION	JCT
LEFT	LFT
MAINTENANCE	MAINT
NORMAL	NORM
PARKING	PKING
ROAD	RD
SERVICE	SERV
SHOULDER	SHLDR
SLIPPERY	SLIP
SPEED	SPD
STREET	ST
TRAFFIC	TRAF
TRAVELLERS	TRVLRS
WILL NOT	WON'T

Standard VMS Abbreviations used in Conjunction with Other Words

The following abbreviations are easily understood whenever they appear in conjunction with a word commonly associated with it (prompt word).

The prompt word can appear before or after the abbreviated word depending on the meaning. For example, RT is alternatively recognised as either right or route based on the prompt word.

At least 85% of the driving population understands the abbreviations shown in normal type.

At least 75% of the driving population understands the abbreviations shown in **bold type**.

* indicates prompt word used before abbreviation.

Word	Abbreviation	Prompt Word
ACCESS	ACCS	ROAD
AHEAD	AHD	FOG*
BLOCKED	BLKD	LANE*
BRIDGE	BRDG	(NAME)*
CENTRE	CNTR	LANE
CHEMICAL	CHEM	SPILL
CONDITION	COND	TRAFFIC*
CONGESTED	CONG	TRAFFIC
CONSTRUCTION	CONST	AHEAD
EASTBOUND	E-BND	TRAFFIC
ENTRANCE	ENT	FREEWAY*
EXIT	EX, EXT	NEXT*
EXPRESS	EXP	LANE
FRONTAGE	FRNTG	ROAD
HAZARDOUS	HAZ	DRIVING
KILOMETRE	KM	(NUMBER)*
LOCAL	LOC	TRAFFIC
MAJOR	MAJ	ACCIDENT
MINOR	MNR	ACCIDENT
MINUTE(S)	MIN	(NUMBER)*
NORTHBOUND	N-BND	TRAFFIC
OVERSIZED	OVRSZ	LOAD
PREPARE	PREP	TO STOP
PAVEMENT	PVMT	WET*
QUALITY	QLTY	AIR*
RIGHT	RT	KEEP*
ROADWORK	RDWK	AHEAD (DISTANCE)
ROUTE	Rte	BEST*
SOUTHBOUND	S-BND	TRAFFIC
TEMPORARY	TEMP	ROUTE
VEHICLE	VEH	STALLED*
UPPER, LOWER	UPR, LWR	LEVEL
WESTBOUND	W-BND	TRAFFIC

VMS Abbreviations and Contradictions to Avoid

Certain abbreviations are confusing because another word is abbreviated or could be abbreviated in the same way.

Abbreviation	Intended Word	Misinterpretation
ACC	ACCIDENT	ACCESS (ROAD)
CLRS	CLEARs	COLOURS
DLY	DELAY	DAILY
FDR	FEEDER	FEDERAL
L	LEFT	LANE
LT	LIGHT (TRAFFIC)	LEFT
PARK	PARKING	PARK
POLL	POLLUTION	(INDEX) POLL
RED	REDUCE	RED
STAD	STADIUM	STANDARD
WRNG	WARNING	WRONG

Appendix E Standard Alphabet (5x7 Matrix)

