Operational Instruction

2.36

Use of Variable Message Signs

Use of Variable Message Signs - 2.36

AMENDMENT RECORD

Version	*Date*	*Section/Figure/Table*	*Amendment Description*
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5.1	01/02/06		DPTI titles updated
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10	06/02/23	Sections 2 & 5.7	Removed information on RC3. DIT titles updated, other minor updates to ensure conformity with AS4852.1:2019. Added information regarding operation of mobile feedback signs and VMS/TMS display dimensional requirements

This document has been prepared by the Traffic Engineering Section. It has been approved and authorised for use by Department for Infrastructure and Transport and its authorised agents by:

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CONTENTS

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) on roads under the care, control and management of DIT.

2. VMS Definition

Variable Message Signs (VMS) are traffic control devices that can display any message or graphical symbol, but in practice are 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.

2.1 Permanent VMS (Type A2 / A / B / C / SINGLE LINE)

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 4852.1 Variable message signs: Fixed signs* (2019) Section 5 for display and optical requirements.

2.1.1 Type A2

These signs are narrower than standard Type A 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 incident 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.

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 85th percentile approach speeds which are typically in the order up to 60 km/h.

Display Requirements:

- Minimum equivalent character height = 200mm, where each character pixel resolution (W x H) = 10 x 14
- Number of lines = 3
- Minimum pixel resolution (W x H) = 178 x 58 based on displaying 13 characters per line. Signs with increased pixel resolution which comply with other display dimensional requirements are considered acceptable.
- Minimum luminous intensity half-angle = 15 degrees
- Character proportions should comply with AS 4852.1:2019 Section 5.1.2.1
- Sign face shall be able to be adjusted to aim at a minimum sight distance of 140m

2.1.2 Type Single Line

The purpose of these signs is to ensure that drivers have appropriate information and time to make good decisions and operate safely within tunnels as well as on the approaches to a tunnel. The location of the signs and their design must be in accordance with Austroads *Guide to Road Tunnels Part 2: Planning, Design and Commissioning*. These will generally display critical messages to motorists advising of emergencies, on-road incidents, lane closures or other relevant tunnel related information.

Display Requirements:

- Minimum equivalent character (Pixel W x H = 10 x 14) height varies based on 85th percentile approach speed, refer to AS 4852.1:2019 for guidance. Smaller size may be accepted in the tunnel environment where size constraints prohibit the use of standard size
- Number of lines = 1
- Minimum pixel resolution (W x H) = 248 x 14 based on displaying 18 characters per line. Signs with increased pixel resolution which comply with other display dimensional requirements are considered acceptable.
- Minimum luminous intensity half-angle = 15 degrees
- Character proportions should comply with AS 4852.1:2019 Section 5.1.2.1
- Sign face shall be able to be adjusted to aim at a minimum sight distance in accordance with AS 4852.1:2019

2.2 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.

2.3 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. Refer to AS 1742.3 *Manual of Traffic Control Devices, Part 3: Traffic control for works on roads* (2019) Section 4.14. Vehicle Mounted VMSs shall only be used to supplement the requirements of AS 1742.3.

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

Flashing yellow LED display conspicuity devices are required for Type B or Type C VMS only.

2.5 Device Luminance

Refer to AS 4852.1 *Variable message signs: Fixed Signs* (2019) clause 5.1.1.2

2.6 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 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).

3.1.1 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.

3.1.2 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

3.1.2.1 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.

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.

3.1.3 Roadworks Messages

Roadworks messages are messages for use at roadwork sites.

3.1.4 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.

3.1.5 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.

3.1.6 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.

3.2 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.

3.2.1 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.**

3.2.2 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.**

3.2.3 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.**

3.2.4 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.**

3.2.5 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.

3.2.6 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.**

3.3 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.**

3.4 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.

3.5 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 that in **Appendix D** shall be used, unless approved by Manager, Traffic Management Centre.

3.6 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.

3.6.1 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.

3.7 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.

3.8 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.

3.9 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.

3.10 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.

3.11 Messages in Tunnels

Messages placed in tunnels shall meet the dimensional requirements as set out in DIT *Master Specification RD-ITS-S4 Supply of Electronic Signs*.

4. Placement/Location of VMS

VMS can either be placed in the verge of roads or overhead but the use of overhead VMS is preferred. VMS 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 shall not be permitted within an interchange area where merging, frequent braking or weaving movements are common. VMS 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 refer to DIT *Master Specification RD-ITS-S4 Supply of Electronic Signs*.

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 placement of signs set out in AS 1742.2 - 2022.

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 DIT is the road authority, the message must be approved by the DIT's Manager, Traffic Management Centre.

5.2 Congestion Messages

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

5.3 Road works Messages

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

5.4 Environmental Conditions Messages

Environmental condition messages must be approved by the road authority, either Council or the DIT'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 DIT's Manager, Traffic Management Centre.

5.6 Specific Road Safety Messages

Specific road safety messages must be approved by the DIT's Manager, Traffic Management Centre. The Superintendent of the Traffic Support Branch, SA Police, may also approve a specific road safety message.

5.7 Temporary Speed Feedback Signs

If mobile (on trailers) speed feedback signs are to be deployed on to a DIT maintained road, then approval must be sort from the DIT's Manager, Traffic Management Centre.

For operation of mobile speed feedback signs refer to DIT's *Operational Instruction 5.1: Road Safety Signs* Section 4.4.

Appendix A VMS Message Statements

Approved VMS Problem Statements

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		Position Definers
BUS LANE		AHEAD
BUSWAY	AT	
		BEYOND
CENTRE LANE		IN
		NEAR
EXIT “number”		NEXT
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		

Recommended VMS Effect Statements

“location” CLOSED

EXPECT DELAYS

MAJOR DELAYS
MINOR DELAYS

POLICE CONTROL

“number” min DELAY

“number” hrs DELAY

TRAFFIC CONTROL

Approved VMS Attention Statements

ALL TRAFFIC

BUSES

BICYCLES

CARS

EMERGENCY VEHICLES

HIGH VEHICLE (S)

LOCAL TRAFFIC

THROUGH TRAFFIC

“destination” TRAFFIC

TRUCKS

WIDE LOADS

Approved VMS Action Statements

DETOUR AHEAD
DO NOT OVERTAKE

FORM X LANE/S

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

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 MON TUE WED	THU FRI SAT
Day period	MON – FRI SAT – SUN WEEKEND	
Months of year	JAN FEB MAR APR MAY JUN	JUL AUG SEP OCT NOV DEC
Date	"number" JAN	
Date period	"number" JAN – "number" FEB	
Miscellaneous	EXPECTED POSSIBLE SOON	

* the use of a 24 hour clock should avoided

Appendix B Generic Message Set

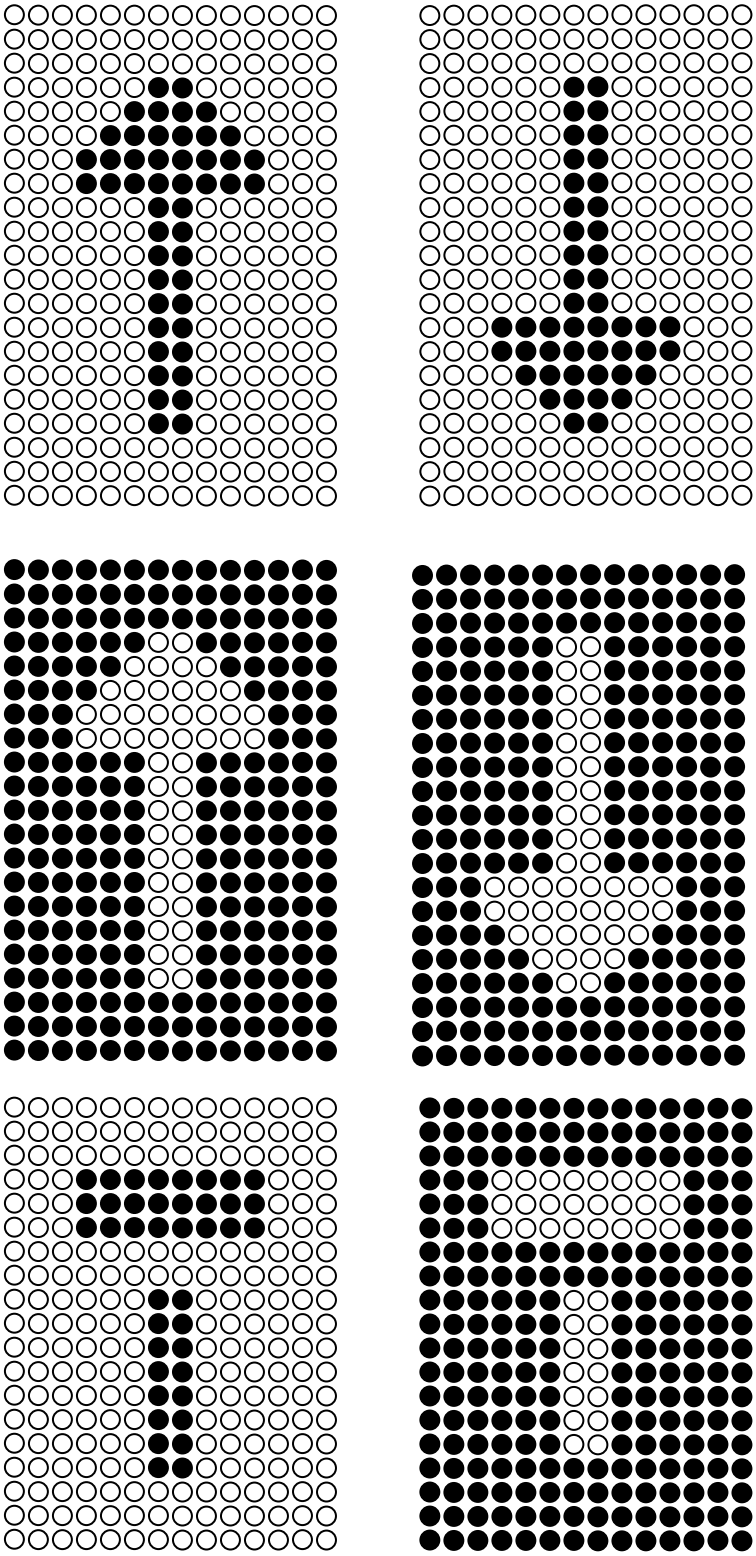
No.	Screen 1 Line 1	Screen 1 Line 2	Screen 1 Line 3	Screen 2 Line 1	Screen 2 Line 2	Screen 2 Line 3
1.	ACCIDENT	EXPECT DELAYS				
2.	ACCIDENT			PROCEED	WITH CAUTION	
3.	ACCIDENT	DETOUR AHEAD				
4.	ACCIDENT	PREPARE TO STOP				
5.	ACCIDENT	MAJOR DELAYS		FIND	ALTERNATE ROUTE	
6.	ACCIDENT	MAJOR DELAYS		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	

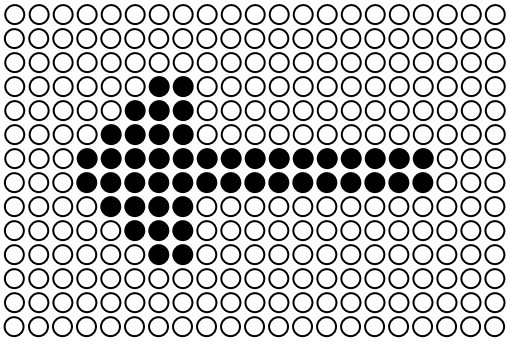
No.	Screen 1 Line 1	Screen 1 Line 2	Screen 1 Line 3	Screen 2 Line 1	Screen 2 Line 2	Screen 2 Line 3
31.	HAZARD	MAJOR DELAYS		PROCEED	WITH CAUTION	
32.	HAZARD	MINOR DELAYS		PROCEED	WITH CAUTION	
33.	HIGH VEHICLE (S)	MUST STOP				
34.	LANE CLOSED	AHEAD		MERGE RIGHT		
35.	LANE CLOSED	AHEAD		MERGE LEFT		
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				

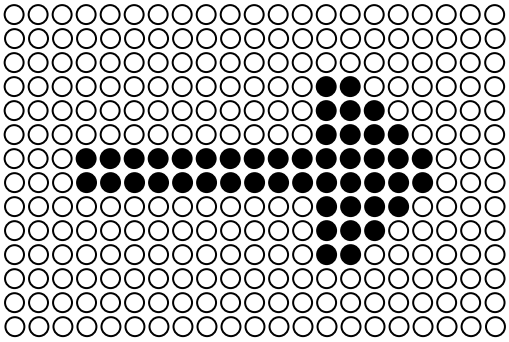
Action Statement	Circumstances for Use
EXPECT DELAYS	Use if no information is available on extent of delays. When such information is available, replace by the problem statements MAJOR DELAYS (over 15 minutes delay {urban} or 30 minutes delay {rural}) or MINOR DELAYS (below 15 minutes delay {urban} or 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.

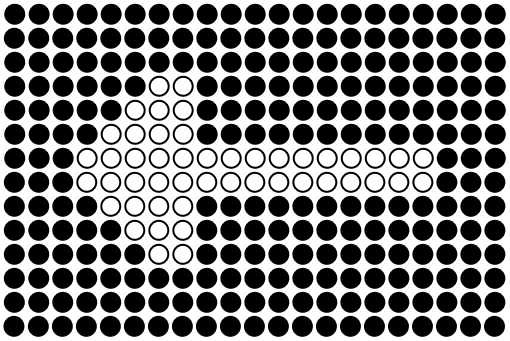
Appendix C VMS Symbols

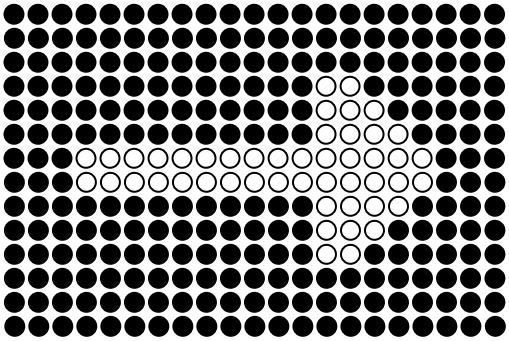
Light Source On - ○ Light Source Off - ●











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)