WAKA KOTAHI
NZ TRANSPORT AGENCY

MOBILE VARIABLE MESSAGE SIGNS

Intelligent transport systems (ITS) delivery specification

27 MAY 2024
0.3

DOCUMENT STATUS: DRAFT

New Zealand Government

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More information
If you have further queries, contact the Intelligent Transport Systems Standards and Specifications (ITS S&S) team via email: itsspec@nzta.govt.nz

More information about ITS is available on the NZTA website at https://www.nzta.govt.nz/its

This document is available on the NZTA website at https://www.nzta.govt.nz/itsspecs

Template version
2.0, 02/02/2024

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1 Overview and outcomes

This section defines the purpose of the equipment within the operational system.

1.1 Purpose

The purpose of this delivery specification is to specify the requirements for the procurement of Mobile variable message signs (MVMS) units.

Delivery assurance is managed through a series of delivery specifications which support procurement and systems integration. The key risks that specifications address is ensuring the correct equipment is being procured, that it will integrate with operational systems, and will deliver the correct functionality and performance requirements.

1.2 Overview

The purpose of this document is to specify the minimum requirements for the procurement of MVMS by NZ Transport Agency (Client). In addition, this delivery specification details system integration requirements (such as protocols, interfaces, data standards, etc.) to ensure compliance with the Client's operational and asset management systems.

This delivery specification shall be read in conjunction with, the latest version of ITS design standard: *Electronic Signs*.

1.2.1 Definition

A MVMS is an Electronic Traffic sign used temporarily on roadways to support the operation of roadworks, temporary traffic management (TTM), temporary speed limits and to encourage compliance. They warn of traffic congestion, special events, accidents, adverse weather conditions, and incidents. They shall also ask vehicles to take alternative routes, limit travel speed, warn of duration and location of incidents, or just inform of traffic conditions.

'Mobile' is defined, for the purpose of this specification, as trailer-mounted signage that shall be moved to different sites around the network as required.

'Temporary' is defined as the period the MVMS is deployed on site to ensure the proposed outcomes are met. The long-term use of MVMS for the use in normal Operations shall not be allowed. If it is necessary for long-term use, funding shall be sought to provide permanent solutions such as fixed VMS.

Terminology used in this document are defined in Section 6: *Terminology used in this document*.

1.2.2 NZTA ITS class

001 Signs. Equipment which provides visual messages or warnings to users of the transport network.
Class definitions

1.3 Scope

This delivery specification sets out the requirements for the procurement of MVMS.

This specification covers trailer-mounted MVMS that are designed to be mobile but are static in operation. This does not cover vehicle-mounted MVMS. The requirements for the display panel reference the fixed VMS specification where items like Display Uniformity are covered.

This document does not cover any other form of electronic roadside signage other than MVMS.

1.4 Outcomes

The MVMS must, but are not limited to following:

i. Be mobile and have to the ability to be deployed in the road environments as specified by the client.
ii. Be suitable for deployment in a range of environments and conditions.
iii. Be deployable for a period suitable for the required purposes it is employed for.
iv. Be deployable in a timely fashion.
v. Be secure.
vi. Be safe.
vii. Be durable and reliable.

The sign component of the MVMS must but are not limited to following:

viii. be able to display and maintain highly visible and legible messages to road users under all conditions.
ix. be positioned in locations that maximise visibility both optically (optimising height and viewing angles) and logically (preceding important journey decision points); these graphics are covered in the latest version of ITS design standard: Variable message signs – fixed ITS-01-001-202105-STD-VMS-FIXED.
x. not constrain the ability to deliver required messages (noting message configuration will change with operations requirements).
xi. provide operational status feedback to confirm that the VMS is displaying the required message.

2 FUNCTIONAL REQUIREMENTS

This section outlines what the equipment and systems need to do (functional), and how they need to do it (non-functional).

2.1 Display

Full-colour MVMS must be able to display text and graphics as defined in the section titled 'Display matrix pixel control' in ITS delivery specification: Variable message signs - fixed ITS-SPEC-VMS-FIXED-202402

2.1.1 Font visibility requirements

Font requirements to support visibility for messages displayed on MVMS shall be consistent with Table 1: NZTA MVMS dimensions

A minimum character height of 300mm provides a longer reading distance ensuring it is adequate for deployment in the high-speed environments usually applicable to the Client's network. The large sign size is also more conspicuous in congested urban situations especially when drivers first encounter a recent deployment.

Refer to ITS core requirements standard: Electronic message signage fonts ITS-01-001-202303-STD-FONT for font descriptions

Table 1: NZTA MVMS dimensions

Type	MVMS Sign (maximum size as per wind loadings of km/h)
Location	Mobile (all road types)
Minimum character height (mm)	300
Minimum border (mm)	75
Lines of text	3
Maximum external MVMS dimensions (mm)	3990
Maximum display area dimensions (w x h) (mm)	3840 x 1560
Minimum pixel quantities (w x h)	192 x 78
Maximum pixel pitch (mm)	20
Maximum power consumption (W)	1500
Maximum weight (kg)	500
Procurement documentation must require that structural supports and foundation are acceptable to accommodate both the dead weight and sail area of the MVMS and wind loadings affecting the MVMS.	

Note: Full matrix signs are now standard for all Client applications where the flexibility to support text heights greater than the standard line height, and/or graphics in the future is required.

2.1.2 Speed Detection and Speed Indicator Function – if specified by the Client

On some occasions, the Client shall wish to deploy the MVMS as a speed indicator device. If this function is specified by the Client, the following requirements must be met.

2.1.2.1 Speed detection

The speed detector shall be activated by an approaching vehicle only, and not one travelling in the opposite direction. It shall have a normal operating range of approximately 200m. Mounting of the detector must be secure to resist vandalism.

Note: Technical specifications of the detector and mounting arrangements are to be provided by the contractor to the Client.

2.1.2.2 Controller, Threshold Adjustments, and Messages

When the MVMS is used as a speed indicator device, the display controller shall incorporate an adjustable lower threshold which, when it is not exceeded, results in the sign remaining blanked. This threshold shall typically be set 20 km/h below the posted speed limit.

When the nominated lower threshold is not exceeded the message “CURRENT / SPEED LIMIT / IS XX KM/HR”

When the nominated lower threshold is exceeded the words “YOUR SPEED” shall be displayed, and the approaching vehicle’s speed shall be displayed as a figure in km/h below.

When the nominated upper threshold is exceeded the words “YOUR SPEED” and the speed figure shall be replaced by the message “SLOW DOWN”.

2.2 Display uniformity

2.2.1 Luminous intensity (brightness)

Full-colour MVMS must be able to demonstrate no visible variation in brightness across the display. Refer to section titled ‘Display matrix pixel control’ in ITS delivery specification: Variable message signs - fixed ITS-SPEC-VMS-FIXED-202402

2.3 Sign Controller

2.3.1 Communications

The MVMS shall be able to be operated in the following control modes:

i. local control mode (standalone)
ii. remote and local control mode using a Client approved operating system agnostic software installed on a computer. The Contractor will also supply a router capable of operating in all locations as specified by the Client, and a description of this shall be submitted for approval by the Client
iii. remote control mode as per the requirements stated in ITS design standard: Variable message signs (VMS) and lane and carriageway signs (LCS) system interface ITS-01-012-202303-STD-VLSI

Note: The MVMS shall be capable of operating in both local control mode (i.e. no external communications) and remote-control mode (communicating with an external control system). Any communication – local or remote, will be made through a sign controller installed within the MVMS. Remote control will be through a cellular router.

2.3.2 Sign Controller Requirements

Refer to the section titled ‘Sign Controller’ in ITS delivery specification: Variable message signs - fixed ITS-SPEC-VMS-FIXED-202402 for controller requirements specific to the sign board. Note that this controller must be able to satisfy all of the requirements stated in ITS design standard: Variable message signs (VMS) and lane and carriageway signs (LCS) system interface ITS-01-012-202303-STD-VLSI of particular note for MVMS is the ability to report sign location and orientation.

2.4 Trailers

The MVMS display shall be mounted on a trailer to allow it to be transported to and from deployment sites.

The display panel shall have two “modes”:

i. Transportation Mode: this mode will be used for both transportation, and storage when non-operational.
ii. Operation Mode: this mode will be used when MVMS are deployed, and a message is displayed.

It shall be possible for a single person to reconfigure the display to make it safe and secure for the asset to be transported and operated.

The following sub-sections provide further details of the modes.

2.4.1 Transportation Mode

The position of the display panel shall minimise wind resistance when being towed. This shall be achieved by ensuring that the narrowest part of the display panel faces the direction of travel or lies flat as part of trailer infrastructure.

In Transportation mode no part of the equipment (including the display panel, stabilisers, and ancillary items) shall extend beyond the main structure of the trailer.

2.4.2 Operational Mode

This mode shall only be used when the MVMS is stationary. Once in operation mode, the lower edge of the display panel enclosure shall be between 2.10m and 2.50m above local ground level measured to the parking area below the sign. In this mode, the rear of the trailer and the display panel shall face approaching traffic.

In operational mode the trailer must have a system to provide suitable stability on the surface that it is deployed. This can be provided by deployable legs and the mass of the MVMS to prevent wind from destabilising the MVMS.

2.4.3 Trailer Requirements

In Operation mode the MVMS shall be designed to withstand wind loadings of gusts of up to 180 kph.

Trailers shall be constructed to be road worthy and compliant with all the requirements of the New Zealand Road Code. The trailer should be reinforced to avoid breakage.

The trailer shall be fitted with a manufacturer's plate. This plate shall comply with the New Zealand Road Code and display as a minimum:

- Manufacturers name and address
- Chassis or serial number and model number
- Number of axles
- Maximum weight per axle
- Nose weight of coupling
- Maximum gross vehicle mass (GVM)
- Date of manufacture.

The chassis or serial number shall also be covertly marked upon the trailer and solar panels to facilitate identification following recovery if stolen.

The trailer shall be provided complete with all necessary lamps, reflectors, and devices as per the Land Transport Rule: Vehicle Lighting 2004. The lighting equipment shall be mounted securely to prevent unauthorised removal whilst still allowing routine maintenance. Protection shall be provided to limit accidental damage during transportation and manoeuvring.

The MVMS will be deployed into a number of different operating environments. The trailer must be capable of being safely operated in all these environments both transportation and operational modes. Client will specify the range of road environments the MVMS will be deployed to.

3 PERFORMANCE REQUIREMENTS

This section outlines the reliability and availability requirements of equipment, which may require independent certification and/or declarations of conformity.

Reliability and availability of electrical systems is important so MVMS systems can operate consistently.

3.1 Design life

The specified design life for the MVMS is 10 years. The asset is expected to operate effectively for this period in New Zealand climatic conditions.

The specific conditions for the which the MVMS must be capable of performing in for 24 hours per day, 7 days per week is stated in ITS delivery specification: Variable message signs - fixed ITS-SPEC-VMS-FIXED-202402 in section 3.1.

3.2 Power

All onboard electrical equipment of the Mobile VMS shall be capable of operating from mains power, and onboard batteries.

All Mobile VMS shall be able to operate without connection to mains electricity for 170 hours (1 continuous week). This may comprise a combination of onboard batteries plus onboard energy generation. The exact configuration shall be submitted by the supplier.

If batteries and onboard generation is used, the batteries must be able to run the display for at least 48 hours without recharging (starting from a fully charged state).

Note: The onboard equipment may operate from a number of electricity sources; however NZTA's preference is batteries recharged by solar. Specific approval must be obtained from NZTA before Mobile VMS with non-preferred power sources are supplied.

The Mobile VMS shall be provided with an automatic changeover system between each energy source.

The display panel and all ancillary equipment shall be designed to minimise power consumption.

3.3 Batteries

Batteries shall:

i. Provide sufficient storage to run the sign for at least 48 hours without recharging.
ii. Have a minimum design life of 24 months.

3.4 Display Matrix Finish

The finish of all MVMS surfaces shall be consistent with the section titled "Display matrix finish" in ITS delivery specification: Variable message signs - fixed ITS-SPEC-VMS-FIXED-202402.

3.5 Visual Performance

For details on LED colour palette, luminance and beam width, refer to the section titled ‘Visual Performance’ in ITS delivery specification: Variable message signs - fixed ITS-SPEC-VMS-FIXED-202402.

The LED elements for MVMS shall meet Class B6 for EN 12966; i.e. have a minimum of thirty (30) degrees total beam width.

3.6 Environmental Protection

3.6.1 Resistance to surface corrosion

The surface protection of MVMS enclosures against corrosion shall meet the requirements of Road vertical signs – Variable message traffic signs (EN 12966:2023) section titled “Resistance to corrosion of discontinuous VMS”.

3.6.2 Ingress protection against water and dust

MVMS enclosures shall be protected against water and dust ingress in accordance with the section titled ‘Ingress protection against water and dust (IP) provided by enclosure’ in EN 12966:2023. All MVMS enclosures must meet a minimum IP rating of IP56 (P3 as per EN 12966:2023).

3.6.3 Protection against external mechanical impacts

The sensitive electrical equipment inside the MVMS shall be given adequate protection against mechanical impacts such that the enclosure does not deform, delaminate, lose its structural integrity, or suffer a reduction in ingress protection if struck. The MVMS must meet a rating of the section titled ‘Ingress protection level classes’ in EN 12966.

3.7 Maintainability

The MVMS shall be designed:

i. so all the internal components can be easily and quickly replaced in the field
ii. to be installed and maintained by local technicians following Contractor’s supplied documentation WAKA KOTAHI NZ TRANSPORT AGENCY Once downloaded this document is not controlled and may not be the latest version.
iii. to have a standard access from the rear for easy cleaning
iv. to minimise onsite cyclic maintenance
v. so that no specialist tools are required outside of security requirements

3.8 Testing Requirements

Refer to latest version of ITS design standard: Variable message signs (VMS) and lane and carriageway signs (LCS) system interface ITS-01-012-202303-STD-VLSI for Testing Requirements.

3.9 Commissioning and Handover

For Handover and Commissioning, refer to latest version of ITS design standard: Commissioning and handover requirements ITS-01-000-202302-STD-CMH.

4 TECHNICAL REQUIREMENTS

This section outlines specific technical and physical constraints for the equipment.

4.1 Electrical safety

All ITS equipment must comply with and be installed in accordance with Electricity (Safety) Regulations 2010 (SR 2010/36).

4.1.1 Equipment declaration of conformity

The Contractor shall supply a declaration of conformity for the MVMS in accordance with Electricity (Safety) Regulations 2010 (SR 2010/36), in particular sections 80 (2), and 81.

4.1.2 Installation of electrical equipment

The installer is required to supply a certificate to confirm the equipment complies with the relevant NZ Electrical regulations and has been installed in accordance with these regulations.

The electrician/electrical engineer who installs the equipment must provide the required certification. This includes acceptance of the declaration of conformity.

4.2 Power Supply

4.2.1 General

All onboard electrical equipment of the MVMS shall be capable of operating from mains power, and onboard batteries.

There shall be an onboard energy management system capable of switching between energy sources as well as controlling incoming charging energy as well as maintaining battery condition and longevity.

Note: The onboard equipment shall operate from a number of electricity sources; however the Client's preference is batteries recharged by solar. Specific approval must be obtained from the Client before MVMS with non-preferred power sources are supplied.

The MVMS shall be provided with an automatic changeover system between each energy source.

The display panel and all ancillary equipment shall be designed to minimise power consumption.

4.2.2 Batteries

Batteries shall:

i. Be sealed and maintenance free.
ii. Incorporate control circuits to prevent deep-discharging of any batteries.
iii. Be easily maintained in a charged state from a mains supply, in readiness for deployment at short notice.

4.2.3 On Board Generation

The MVMS shall be provided with an onboard electricity generation source.

This source shall comprise of photo-voltaic solar cells, however other means including a fuel driven generator shall be considered, subject to agreement with the Client.

The onboard energy store and the onboard electricity generation source shall be housed in a secure, suitably weatherproof enclosure mounted upon the trailer.

If fuel is required for onboard electricity generation, the fuel and fuel store must comply with any relevant New Zealand legislation relating to dangerous goods.

Where applicable the fuel store shall be bunded such that a failure of the fuel store when at full capacity will not result in a spillage of fuel.

The maximum noise level from any form of generation shall comply with NZS 6803:1999 *Acoustics – Construction noise*. Any onboard means of electricity generation requiring a fuel store shall be provided with an emergency fuel isolation facility.

The handle to the valve shall be exposed for ready isolation, or where the valve is concealed, it shall be possible to isolate the fuel using a standard tool.

4.2.4 Mains Power

The MVMS shall be provided with a connection point to allow it to operate from an external mains electricity power supply, and to recharge the batteries.

The connection point shall be rated at a minimum of IP44.

This external power supply shall operate the display panel and any onboard equipment and recharge the onboard energy store whenever connected and “live”.

The Contractor shall supply the Client with a declaration of conformity if the M66 is to be connected to mains power. Due to the mobile nature of MVMS, it shall comply with the New Zealand Supply Authority Guidelines.

The MVMS shall be provided with a main electrical isolation switch. This switch shall be located behind a panel fitted with a hasp and staple, and padlock. The arrangement shall allow the padlock to be easily cut in an emergency. The panel shall be labelled to indicate ‘Emergency Isolation’.

The MVMS shall be provided with an external earth connection point to allow an external earth connection to be made.

It should be noted that for any installation of equipment the electrical supply, including the provision of power and earthing cables shall be designed and provided by the Contractor.

4.2.5 Resistance of electrical/electronic components to the effects of pollution

The manufacturer shall declare the degree of resistance in accordance with the section titled ‘Resistance of electrical/electronic components to the effects of pollution’ in EN 12966.

4.2.6 Charging

If required by the Client, the MVMS shall have the capability to charge the equipment during towing.

4.2.7 Testing On Board Generation

The onboard equipment shall be designed for unattended operation without a permanent connection to the mains electricity supply. This shall be demonstrated by undertaking the following test on all equipment, for the test duration:

- The onboard equipment shall operate continuously and be unattended for the test duration.
- The onboard equipment shall operate without a mains electricity supply or any replenishing of fuel supplies for the test duration.
- Onboard batteries shall be fully charged, and all fuel sources shall be full before testing commences.
- Any means of onboard electricity generation shall be operational.

To simulate field conditions, the output generated by any source which does not have onboard fuel supply (e.g. photo-voltaic solar cells or a wind-generator) shall be operated at a maximum of 50% efficiency.

4.3 Controller Requirements

Refer to the section titled ‘Sign Controller’ in Technical Requirements in ITS delivery specification: Variable message signs - fixed ITS-SPEC-VMS-FIXED-202402.

4.4 Sign Physical Characteristics

4.4.1 GPS

The sign must be capable of reporting location and orientation the sign controller. A suitable Global Positioning System must be included capable of reporting through the sign controller.

4.4.2 Display Matrix

For Display matrix, refer to section Display matrix in ITS delivery specification: Variable message signs - fixed ITS-SPEC-VMS-FIXED-202402 for physical information for display are of display matrix refer to section 2.1.1

4.4.3 Enclosure Design

The design shall ensure that the sign display and control elements are easily accessible and removable for maintenance purposes. Display elements shall be designed such that replacement requires only the loosening of accessible screw fixings via finger movement or other suitable fastening arrangement and disconnection of power or control connections only. Safety measures are required to be incorporated by the consultant, to ensure access to display cabinet is only controlled via maintenance team.

The Sign enclosure shall be ‘safety orange’ as per section 15.3 in M28 specification for colours for TCDs.

4.4.4 Colour

Refer to the section titled ‘LED colour palette’ in ITS delivery specification: Variable message signs - fixed ITS-SPEC-VMS-FIXED-202402.

4.4.5 Font Display

Refer to the section titled ‘Font visibility requirements’ in section 2.1.1

Refer to ITS core requirements standard: Electronic message signage fonts ITS-01-001-202303-STD-FONT for font descriptions

4.4.6 Ambient Light Sensor

Refer to the section titled ‘Contrast ratio’ in ITS delivery specification: Variable message signs - fixed ITS-SPEC-VMS-FIXED-202402.

4.4.7 Beam Width

The LED elements for MVMS shall meet Class B6 for EN 12966; i.e. have a minimum of twenty (20) degrees total beam width more information is available.

4.4.8 LEDs

Refer to the section titled ‘Display Matrix’ in ITS delivery specification: Variable message signs - fixed ITS-SPEC-VMS-FIXED-202402.

4.4.9 Sign Frame Surfaces enclosure

Frame surfaces (internal and external) must be powder-coated as per AS 4506-2005 Metal finishing – Thermoset powder coatings. The colour of the frame coating is to be as per BS4800:2011 colour chart (matt black 00 E 53). The coating must facilitate the removal of graffiti.

4.5 Support Trailer Physical Characteristics

4.5.1 Trailer dimensions and weight

The dimensions of the MVMS including trailer, shall comply with the following maximums when in Transportation mode:

Table 2: Trailer dimensions and weight requirements

Length (mm)	Width (mm)	Height* (mm)	Mass** (kg)
6000	2300	3500	2400

* Height shall not exceed 1.7 times main axle wheel-track
** “Wet weight” i.e. fully laden gross weight of the MVMS

4.5.2 Legal Requirements and Safety

The trailer shall be provided with a braking system that is compliant with the New Zealand Road Code. It shall incorporate a manually operated handbrake which will hold the dismounted trailer on a slope of 1 in 5.

The trailer shall come with a New Zealand registration plate, 12 months registration, and a current warrant of fitness.

The trailer attachment shall be fitted with a coupling, tow ball and eye hitch that is fit for purpose and in sound condition as per the Land Transport Rule: Light-Vehicle Brakes 2002 and subsequent amendments.

The trailer shall come with a compliant safety chain, or where the trailer weight category requires it, a double safety chain that can be crossed over when attached to a towing vehicle.

The trailer shall be provided with a connection as to client requirements to allow connection to the towing vehicle and to comply with road code requirements.

- The trailer shall be able to connect to both 12 volt and 24 volt electrical systems
- The mechanism for changing between electrical systems shall be clearly labelled
- A facility shall be provided to 'house' connection leads when not in use. This shall comprise a connector of opposite gender into which it can be inserted to prevent damage.

The trailer shall provide means by which ancillary items, can be securely locked to the unit such that they shall not be removed by unauthorised personal, but can utilised as required.

The trailer must comply with relevant requirements for a safe trailer on NZ roads. Trailer needs to meet the legal requirements independent of the MVMS specification.

All items provided as part of the trailer shall be suitably robust and attached in a suitable manner for the anticipated operation. It shall be anticipated that operators shall climb onto the trailer to gain access and items such as mud guards shall allow such loading.

4.5.3 Stability

The trailer shall be provided complete with telescopic stabilising legs. The legs shall be raised in Transportation mode and lowered in Operation mode. When lowered the legs shall support the mass of the entire MVMS. A sufficient number of legs shall be provided to ensure the MVMS is stable in Operation mode in all design wind speeds.

The trailer shall have lashing down points. One lashing down point shall be provided coincident with each stabiliser leg. The lashing down point shall allow the trailer to be secured to the parking area and ensure the unit is stable in Operation mode in all design wind speeds.

The trailer shall be provided with lashing down straps. A single strap shall be provided for each lashing down point. They shall be adjustable to allow the trailer to be securely lashed down in operation. They shall be designed for the maximum load exerted in all design wind speeds.

The MVMS shall be provided with at least one lifting eye. This facility will allow the entire unit to be raised up by a suitable lifting device and placed behind an existing safety barrier. The eye(s) shall be sited such that when lifted the MVMS is level and stable.

The MVMS shall include a number of enclosures with protection to IP44. All enclosures shall be securely constructed and provided with a locking mechanism to prevent unauthorised access.

Enclosures shall be provided for the following items:

- Local controller (see Sign Controller above)
- Power supply equipment (see above)
- Storage of miscellaneous items, to house the following and extra items as required:
  - wheel clamps
  - levelling pads
  - a complete set of lashing down straps
  - power cables
  - earth rods
  - all miscellaneous items supplied with the MVMS.

4.5.4 Trailer Colours

Frame surfaces (internal and external) must be powder-coated as per AS 4506-2005 Metal finishing – Thermoset powder coatings. The external colour of the frame coating is to be ‘safety orange’ as per section 15.3 in M28 specification of colours for TCD. The coating must facilitate the removal of graffiti.

Trailer structural steel surfaces such as chassis and sign enclosure steel support structures shall be galvanised.

The design life of the MVMS is ten years. All metallic items of the trailer and support mounts shall be provided with a suitable finish to ensure the unit meets the required design life without the need for repair or repainting.

The main body of the trailer, including all enclosures, and the structural supports of the display panel shall be painted safety orange as per section 15.3 in M28 specification for colours for TCDs. The finish shall be semi-gloss to reduce the effects of specular glare.

All finishes shall have a high quality aesthetic appearance for the design life of the unit.

Non-metallic items shall be manufactured from a suitable material that meets the design life requirement and will not deteriorate when stored in an outdoor environment for the duration of the design life. They shall not be damaged by the effects of ultraviolet light or rain.

The following information shall be painted (or applied with computer cut lettering) preferably on the front, or failing that on the right hand side of the trailer, in 50mm high black lettering:

4.5.5 Emergency Contact

“Emergency contact:” followed by the phone number of the relevant network Contractor, or a Client contact.

4.6 Documentation

Refer to the section titled ‘Certification and declarations of conformity’ in ITS delivery specification: Variable message signs - fixed ITS-SPEC-VMS-FIXED-202402 for required documentation.

Furthermore, Road Code – ownership documents, road registrations shall be provided so that the client is able to legally operate the MVS.

4.6.1 Software and licensing

Refer to the section titled ‘Software and licensing’ in ITS delivery specification: Variable message signs - fixed ITS-SPEC-VMS-FIXED-202402

4.7 General Requirements

Refer to the section titled ‘General requirements’ in ITS delivery specification: Variable message signs - fixed ITS-SPEC-VMS-FIXED-202402

4.8 Standard Warranty

The MVMS shall be supplied with a 5 year warranty for the trailer element of the asset. The sign component of the MVMS shall be supplied with a 2 year warranty.

5 References

This section lists all external and NZTA references included in this document.

5.1 Industry standards

Standard number/name	Source
Electricity (Safety) Regulations 2010 (SR 2010/36)	NZ Legislation website
NZS 6803:1999 Acoustics – Construction noise	Construction noise: Know the limits: Standards New Zealand
New Zealand Supply Authority Guidelines	Code and compliance | Electricity Authority
Road vertical signs - Variable message traffic signs (EN 12966:2023)	https://standards.iteh.ai/catalog/standards/sist/56e58b90-978b-4dca-be98-c61f6aaad424/osist-pren-12966-2023

5.2 NZTA standards, specifications and resources

5.2.1 Standards and specifications

See the NZTA website for the latest versions of the ITS S&S listed below.

Document name
ITS core requirements standard: Requirements for Intelligent Transport Systems ITS-01-000-202302-STD-RITS
ITS core requirements standard: Electronic message signage fonts ITS-01-001-202303-STD-FONT
ITS design standard: Variable message signs – fixed ITS-01-001-202105-STD-VMS-FIXED
ITS design standard: Variable message signs (VMS) and lane and carriageway signs (LCS) system interface ITS-01-012-202303-STD-VLSI
ITS delivery specification: Variable message signs - fixed ITS-SPEC-VMS-FIXED-202402
ITS design standard: Commissioning and handover requirements ITS-01-000-202302-STD-CMH

5.2.2 Resources

Document name/code	NZTA website link

5.3 Legislation

Name	Website link
New Zealand Road Code	https://www.nzta.govt.nz/roadcode/general-road-code/
Land Transport Rule: Vehicle Lighting 2004	https://www.nzta.govt.nz/resources/rules/vehicle-lighting-2004-index.html
Land Transport Rule: Light-Vehicle Brakes 2002	https://www.nzta.govt.nz/resources/rules/light-vehicle-brakes-2002-index.html

5.4 Other resources

Name	Website link
AS 4506-2005 Metal finishing	

5.5 ITS standard drawings

See the NZTA website for the latest versions of the ITS standard drawings listed below.

Drawing number

6 Terminology used in this document

Term	Definition
DRAFT	The document is being written and cannot be used outside of NZTA.
FINAL DRAFT (pending ratification)	The document has been finalised and is pending approval and ratification by NZTA. It can be used for procurement at this status.
RATIFIED	The document is an official NZTA document. NZTA projects and other road controlling authorities connected to NZTA back-end systems must include this document in the contracts. The obligation to follow the requirements in this document would come from the inclusion of the S&S document in the contract.
RETIRED	The document is obsolete, and/or superseded.
Approved font	A slightly compressed font approved by NZTA which must be used for NZTA MVMS
Barrier Protection	Generic term covering various roadside protective barrier systems including rails, fences, and crash cushions, which are designed to restrain vehicles which are out of control.
Bezel	The border area surrounding the VMS enclosure
Design Wind Speed	Ultimate wind speed at the site based on terrain and return period.
Enclosure	The enclosure housing the display and the electronics systems immediately associated with the display.
Ethernet Protocol	Industry standard network Broadcast technology.
GVM	Gross vehicle mass
ITS	Intelligent Transport System(s)
LED	Light Emitting Diode
Motorway	Roads designated as motorways, generally characterised by high volume multilane carriageways.
MOTSAM / TCD Manual	The NZTA Manual Of Traffic Signs And Markings, and its progressive replacement, the Traffic Control Devices Manual.
MVMS	Mobile Variable Messaging Sign
NZTA	NZ Transport Agency Waka Kotahi
Pixel	A single point in a graphic image. In the context of this document pixels must achieve the viewing angle, luminance, and other performance characteristics described in this Specification. The performance characteristics shall be achieved with a pixel consisting of a single LED, or closely grouped LEDs, that present a single point of light at a normal viewing distance.
Road Reserve	The area from the legal boundary on one side to the legal boundary on the other side.
RS-232/485	Is a standard for serial connections
S&S	Standards and specifications
TTM	Temporary Traffic Management.
VMS	Variable Message Sign.

Term	Definition
VSLI	ITS design standard: Variable message signs and lane and carriageway sign system interface standard.

7 Content to be redirected

This section records any circumstances where content from this document will be reclassified and moved into future documents. This table is then updated with a reference to the new location.

Section reference	Section name	Future document	Class

8 Document control

8.1 Document information

Document number	ITS-SPEC-MVMS-202405
Previous document number/s (if applicable)	ITS-06-04
Document status DRAFT | FINAL DRAFT | RATIFIED | RETIRED	DRAFT
[IF RETIRED] New document details	
Online ISBN	
Document availability	The controlled version of this document can be accessed from https://www.nzta.govt.nz/roads-and-rail/intelligent-transport-systems/standards-and-specifications/its-current-interim-and-legacy-standards-and-specificationshttps://www.nzta.govt.nz/resources/intelligent-transport-systems/its-standards-and-specifications/

8.2 Document owner

Role	Platform Lead, Digital Transformation
Organisation	NZTA

8.3 Document approvers

This table shows a record of the approvers for this document.

Approval date	Approver	Role	Organisation
DD/MM/YYYY			

8.4 Full version history

This table shows the full history of changes made to this document, both minor and major, in chronological order, since the document was first authored.

Minor versions are numbered 0.1, 0.2 etc until such point as the document is approved and published, then it becomes 1.0 (major version). Subsequent edited versions become 1.1, 1.2 etc, or if it's a major update 2.0, and so on.

Version	Date	Author	Role and organisation	Reason
0.1	DD/MM/YYYY	James Ellison Allan Arora Alyssa Greaney	Principal Transport Engineer Transport Engineer Transport Planner	Initial Draft
0.2	DD/MM/YYYY	James Ellison Allan Arora Alyssa Greaney	Principal Transport Engineer Transport Engineer Transport Planner	Second Draft for expert panel review
0.3	DD/MM/YYYY	James Ellison Allan Arora Alyssa Greaney	Principal Transport Engineer Transport Engineer Transport Planner	Third Draft for industry consultation