



# NZTA M28:2023

## Specification for colours for traffic control devices

14 June 2024

Version 2.0

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## **More information**

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## RECORD OF AMENDMENTS

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# 1 FOREWORD

The reason for the introduction of NZTA M28:2023 *Specification for colours for traffic control devices* is to provide a quick reference and an element of understanding and guidance for Manufacturers, Suppliers, Road Controlling Authority Engineers, Engineering Consultants and specifiers seeking to confirm detail as to the use of colour and or colours for signs, delineation devices, road markings and barricades.

The revision has been prepared and introduced by NZ Transport Agency Waka Kotahi<sup>1</sup> as a stand-alone guide to the use of colours and which product specifications further detail specific colour usage.

# 2 SCOPE

For the road user the colour of an individual device or marking or a colour used as part of a device has very real and important significance.

This specification is designed to define colours that are specified and used within the various categories of traffic signs, delineation devices and pavement markings to act as a quick reference and as a help to practitioners seeking to select an appropriate colour for potential additions to any current or new section.

In noting the colours specific to each sector this document will identify the colours used and which documents(s) refer to the actual specifications for each section.

# 3 RELATED DOCUMENTATION

- (a) NZTA M25 *Specification for retroreflective sheeting*  
<https://www.nzta.govt.nz/assets/resources/retroreflective-sheeting/NZTA-M25-2021-Specification-for-retroreflective-sheeting-and-notes.pdf>
- (b) NZTA P24 *Specification for permanent traffic signs*  
<https://www.nzta.govt.nz/assets/resources/traffic-signs-perf-based-specs/docs/traffic-signs-perf-based-specs.pdf>
- (c) Land Transport Rule, Traffic Control Devices 2004 Rule 54002 Schedule 1 Signs  
<https://www.nzta.govt.nz/resources/rules/traffic-control-devices-schedules#schedule1>
- (d) AS 1906.1 *Retroreflective materials and devices for road traffic control purposes Part 1 Retroreflective sheeting*
- (e) AS/NZS 1906.3 *Retroreflective materials and devices for road traffic control purposes Part 3 Raised pavement markers (retroreflective and non-retroreflective)*
- (f) New Zealand Guide for Temporary Traffic Management (NZGTTM) <https://www.nzta.govt.nz/roads-and-rail/new-zealand-guide-to-temporary-traffic-management/>
- (g) Traffic Control Devices Manual Part 1 *General requirements for traffic signs*  
<https://www.nzta.govt.nz/assets/resources/traffic-control-devices-manual/docs/part-1-general-requirements.pdf>
- (h) British Standard BS 381C Colour chart Aircraft Grey No. 693 (Pantone® Colour System PMS 431)  
<https://britishstandardcolour.com/>
- (i) AS 2700 Colour chart <https://www.e-paint.co.uk/pdfs/AS2700%202011%20colour%20chart.pdf>
- (j) Coloured surfacing principles, Best practice notes  
<https://www.nzta.govt.nz/assets/resources/coloured-surfacing-principles/Coloured-surfacing-principles-design-guidance-note.pdf>

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<sup>1</sup> Hereafter referred to as NZTA



- (k) NZTA P33 Specification for coloured surfacings  
<https://www.nzta.govt.nz/assets/resources/specification-for-coloured-surfacings-p33/NZTA-P33-Coloured-surfacings-May-2017.pdf>
- (l) NZTA M07 Specification for road marking materials  
<https://www.nzta.govt.nz/assets/resources/road-marking-materials/road-marking-materials-specification-NZTA-M07-2022.pdf>
- (m) NZTA M14 Specification for edge marker posts <https://www.nzta.govt.nz/assets/resources/edge-marker-posts/docs/NZTA-M14-2022-Specification-for-the-design-manufacture-installation-and-maintenance-of-edge-marker-posts.pdf>
- (n) NZGTTM Toolbox Clause 1.3 Equipment- Vertical delineators  
<https://www.nzta.govt.nz/assets/Roads-and-Rail/nzgttm/docs/nzgttm-toolbox-draft-for-consultation-20220307.pdf>
- (o) NZTA P43 Traffic signal specifications (Clause 2.4.3)  
<https://www.nzta.govt.nz/assets/consultation/specification-for-traffic-signals/specification-for-traffic-signals-draft-2015-08-03-for-consultation-archived.pdf>
- (p) NZTA M12 Specification for raised pavement markers RPMs  
<https://www.nzta.govt.nz/assets/resources/raised-pvmt-markers/nzta-m12-s-2022-specification-for-raised-pavement-markers.pdf>
- (q) NZTA M29 Specification for internally illuminated pavement markers IIPMs  
<https://www.nzta.govt.nz/assets/resources/internally-illuminated-pavement-markers/docs/M29-2023-specification-for-internally-illuminated-markers.pdf>
- (r) NZTA P43 Traffic signal specifications (Clause 2.4.3)  
<https://www.nzta.govt.nz/assets/resources/intelligent-transport-systems/specifications/ITS-01-01-general-requirements.pdf>
- (s) AS 2144 Traffic signal lanterns - Section 2 Signal colours and displays [AS 2144:2014 | Traffic Signal Lanterns | SAI Global](#)
- (t) NZTA M23:2022 Appendix C Temporary road safety hardware and devices  
<https://www.nzta.govt.nz/assets/resources/road-safety-barrier-systems/docs/m23-road-safety-barrier-systems-appendix-c.pdf>
- (u) ITS 01-001:2022 (Draft) Active warning and regulatory signs (Draft<sup>2</sup>)  
<https://www.nzta.govt.nz/assets/resources/intelligent-transport-systems/specifications/ITS-01-001-202302-STD-AWRS.pdf>
- (v) ITS 01-01:2013 General requirements specification  
<https://www.nzta.govt.nz/assets/resources/intelligent-transport-systems/specifications/ITS-01-01-general-requirements.pdf>

## 4 DEFINITIONS

### (a) Chromaticity:

A term referring to colour quality expressed numerically. What is referred to as chromaticity co-ordinates are used to plot an area onto a graph within which any specified colour (chromaticity) must fall. Each of typically four points that define a colour area are found via “x” and “y” coordinates on a graph that form what is frequently referred to as the colour box within which a conforming colour must fall. (Refer to Section 6)

### (b) Fluorescence:

A colour that absorbs light of short wavelength, such as ultraviolet light, that is unseen by the human eye, changing it to longer wavelength visible to the human eye when emitted

### (c) Luminance (L)

<sup>2</sup> This ITS document was in draft format at time of publishing NZTA M28



Luminance is a photometric measure of the luminous intensity per unit area of light travelling in a given direction. The SI (Système International) for luminance is candela per square meter ( $\text{cd}/\text{m}^2$ ). The measurement of luminance is taken from a specific distance that captures the net effect of the combined performance of all LEDs within an APM

**(d) Luminous intensity**

This is the quantity of visible light that is emitted in unit time per unit solid angle. It is typically thought of as brightness. The SI (Système International) unit for luminous intensity is candela (cd).

**(e) May:**

Term used to indicate something that is optional and may be considered for use

**(f) Must:**

Term used to indicate something that is mandatory or required by law

**(g) Retroreflective:**

Describes a material or device that reflects light back to the light source being distinct from simple mirror reflection that beams light away from a light source in an equal but opposite direction to its direction of input

**(h) Should:**

Term used to indicate a recommendation based on industry best practice

## 5 INTRODUCTION TO COLOUR

### 5.1 Importance of colour

Colour plays a significant role throughout the entirety of road controlling devices, for example the colour red indicating that a sign is a regulatory sign that must be complied with or that a red signal at a controlled intersection means stop or a yellow centre-line road marking that differentiates from white in situations where no overtaking is permitted.

More than just a random colour it is significant for traffic control devices that a colour is consistent and thereby recognised as being the colour intended. A motorist should not be left to interpret if a colour is official or just another roadside advertising sign or decorative promotional light. Added to this it is essential that each colour has a reasonably significant differentiation to ensure that when positioned in close proximity one colour does not merge into another or, with retroreflective signs, that a brighter colour does not overpower another making a sign difficult to read, especially at night.

Equally it is not sufficient for each device manufacturer to be responsible for deciding specifically what red is red, what green is green and so on risking a wide range of each colour such that immediate recognition of its significance by a driver is delayed or even overlooked. Hence each colour is specified scientifically in such a way that manufacturers can require that specific colour and in such a way that the outcome can be proved compliant by testing at material testing laboratories.

It is common therefore for most technical specifications, relating to colour, for a colour to be specified by referring to the chromaticity coordinates (colour coordinates) that are graphically plotted and luminance factor values that measure the specified brightness of that colour.

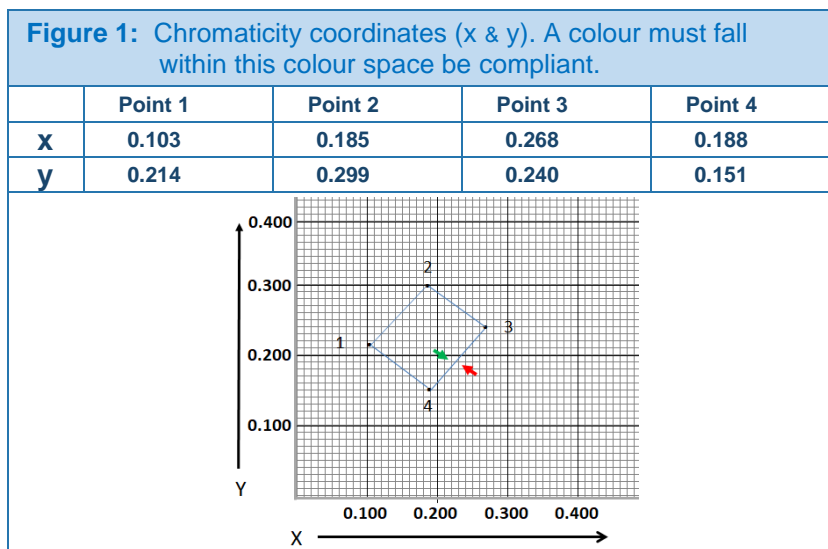
### 5.2 Chromaticity coordinates

The chromaticity or colour coordinates are specified for each colour space using x and y coordinates that are then graphically plotted, (Figure 1). Typically the result is a four-sided shape within which any individual colour must fall in order to be adjudged compliant. In Figure 1 (below) a colour test falling at  $x = 0.215$  and  $y = 0.195$  (green) would comply but a colour falling at  $x = 0.235$  and  $y = 0.185$  (red) would not comply. The difference between these two colours is small but all standards set constraints and deviation from these constraints no matter how minor means that the standard has not been met.

For retroreflective road signs each colour can be confirmed for both daytime and nighttime retroreflective colour first by specifying the CIE Chromaticity Coordinates of the colour space.

### 5.3 Luminance

A test is required to confirm how bright the colour is. This is called the luminance factor which is measured between 0 black and 1 white. For example the daytime luminance factor for yellow retroreflective sheeting has to fall between 0.15 and 0.45.

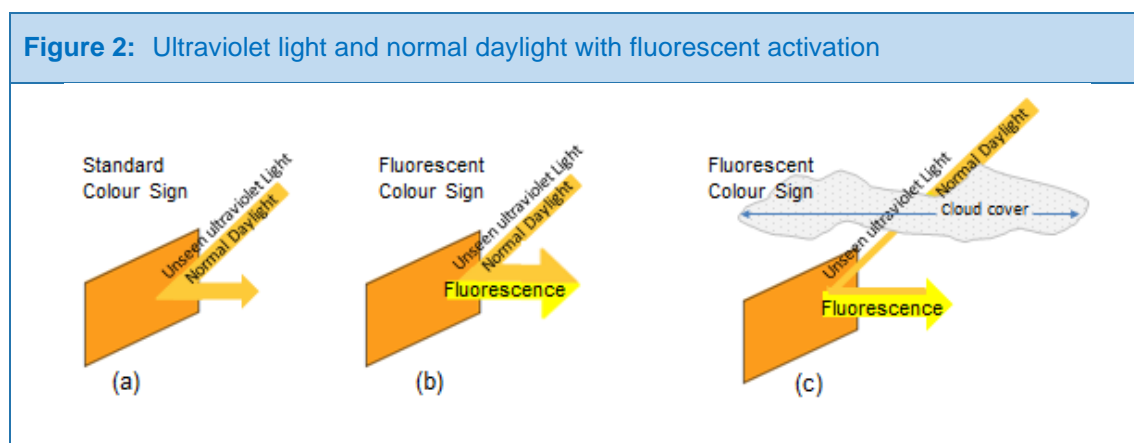


## 5.4 Luminance

A test is required to confirm how bright the colour is. This is called the luminance factor which is measured between 0 black and 1 white. For example the daytime luminance factor for yellow retroreflective sheeting has to fall between 0.15 and 0.45.

## 5.5 Fluorescence

Another colour variation is between a standard colour and a fluorescent colour influenced by the addition of fluorescing dyestuffs or pigments added into the signs standard colour. Fluorescence adds to colour brightness by, in short, absorbing light of short wavelength – that the human eye does not see – (such as ultraviolet (UV) light) – that is then converted to long wavelength light and re-emitted as visible light – that the eye can see<sup>3</sup>.



Referring to Figure 2, fluorescent colour creates added brightness to the eye compared to a standard colour in all conditions of daylight but on a bright sunny day this degree of difference seems only slight. When standard day light is reduced, such as at dusk and dawn when the ratio of short wavelength (fluorescent) light is greater, or on cloudy dismal days when cloud hides standard daylight, the effect of the fluorescent colour is more pronounced making a fluorescent colour considerably brighter to the human eye.

- (a) A standard colour sign in normal daylight: Only the standard colour is re-emitted from the sign because the short wavelength ultraviolet (fluorescent) light is not seen by the human eye before or after light strikes the sign.

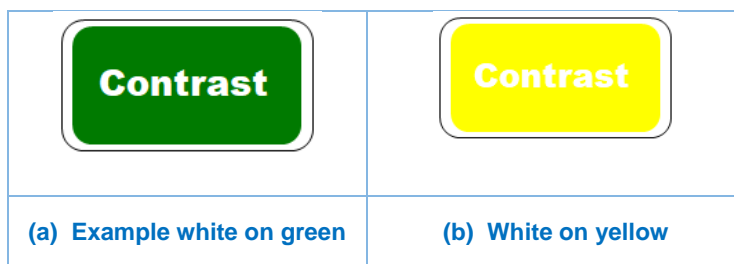
<sup>3</sup> The fluorescent light is re-emitted in the same colour as the sign.

- (b) A fluorescent colour sign in normal daylight: Short wavelength ultraviolet (fluorescent) light, not seen before it strikes the sign, is converted into long wavelength visible light thereby adding to sign brightness.
- (c) A fluorescent colour sign in low light conditions such as cloudy dismal days: The cloud blocks considerable normal daylight but does not screen short wavelength (fluorescent) light, hence the sign is considerably brightened by the fluorescent colour in low light conditions.

## 5.6 Contrast Ratio

For traffic control signs and devices the contrast ratio refers to the ratio of difference (or similarity) between two colours, such as Dark Green and White for guide signs and high visibility Orange and black for temporary devices versus for example the colour Yellow on White.

For signs it is essential that the legend of a sign is easily differentiated from the background colour. A good example of this is with guide signs where the White legend contrasts well against the background of Dark Green (example (a) below) and by permanent warning signs where the Yellow background contrasts strongly with the black of the legend.



A Yellow sign with White legend (example (b) above) would have little contrast or colour differentiation between colours making the legend difficult to determine from the background and therefore difficult to read.

In retroreflectivity it is also important to understand contrast ratio between retroreflective colours where it becomes critical to consider the retroreflective brightness of a light colour versus the brightness of a dark colour.

Referring to retroreflective guide signs, although Dark Green and White contrast well in daylight, at night a retroreflective White background would overpower a Dark Green legend. Therefore it is common for the background to be the darker colour ensuring the lighter words of the legend contrast well both by colour and brightness. The background adds impact, white provides readability. When non-retroreflective black legend is used on a retroreflective sign the font or symbol is made bolder for brighter retroreflective colours to maintain day and night readability.

Temporary traffic signs demonstrate another example of contrast ratio where a black legend contrasts significantly against fluorescent orange. At the same time fluorescent orange contrasts well with other signing and typical backgrounds drawing attention to the presence of the sign.

## 6 PERMANENT TRAFFIC SIGNS

It should be noted that all retroreflective sheeting used in the production of permanent traffic signs need to comply with NZTA M25 *Specification for retroreflective sheeting* confirming compliance based on the testing specified in the Australian Standard AS 1906.1 *Retroreflective materials and devices for traffic control purpose Part1 Retroreflective sheeting*

### 6.1 Sign face colours








Colour used in the manufacture of traffic signs can be created either by the use of a retroreflective sheeting colour where the colour is created at the time of sheeting manufacture – known as a factory sheeting colour – or by a sign manufacturer when colour is added to the sheeting as the sign is be manufactured..

Where the colour on a sign is created by the sign manufacturer this is achieved either by the application of:

- A translucent screen-printing ink onto white retroreflective factory sheeting
- A pressure sensitive adhesive, translucent coloured, overlay film that is applied to white retroreflective factory sheeting
- A digitally printed translucent coloured ink applied to white retroreflective factory sheeting – this is then overlaid by a clear pressure sensitive adhesive protective overlay film

#### 6.1.1 General usage by category

The colours used in the manufacture of permanent traffic signs must be as follows:

White retroreflective – Typically is a background colour – examples include			
			
R1-1	R2-2	R2-7	R3-2
<p>– Factory white sheeting forms the white background colour for signs such as the R1-1, R2-2, R2-7 &amp; R3-2.</p> <p>– The Black legend is typically added using a black ink printing system or by the application of a non-retroreflective vinyl film.</p> <p>– The Red colour, in this instance, is typically applied using an ink printing system</p> <p>NOTE: White forms the sign legend for many destination and guide signs when a background film or ink colour is applied – refer to green and blue below.</p>			
Yellow Retroreflective – typically forms a background colour – examples include			
			
W12-1.2	W14-1	W20-2	
<p>– Yellow factory sheeting is used to form the background colour for “standard” coloured permanent warning signs.</p> <p>– The black legend is typically added using a black ink printing system or by the application of a non-retroreflective vinyl film.</p>			

**Fluorescent Yellow Green retroreflective** – as for the “standard” yellow this typically creates the background colour of the sign for what is defined as vulnerable road user related signs



**W16-1**



**W16-2**



**W16-6**

- Fluorescent Yellow Green factory sheeting is used to form the specified background colour for vulnerable road user warning
- The Black legend is typically added using a black ink printing system or by the application of a non-retroreflective vinyl film.

**Red retroreflective** – Virtually always created by adding colour to white retroreflective sheeting as these examples show



**R2-1**



**R3-4**



**R3-7**



**R1-1**

- Red translucent adhesive transfer film or a screen-printing ink system is typically applied to White factory sheeting to form many regulatory signs as noted above.
- Black, when required, is typically added using a black ink printing system or by the application of a non-retroreflective vinyl film.

**Blue** – Guide signs, motorway motorist service and toll information signs, street name signs and some regulatory signs as examples show



**A14-1**



**R3-8**



**R1-5.1**

- Blue translucent adhesive transfer film or an ink printing system is typically applied to White factory sheeting to form the Blue background colour such as for the A14-1 street name sign, regulatory R3-8 Keep left sign or the R1-5.1 Threshold non-state highway destination guide signs, street name signs and motorway motorist services signs.

**Green** – Applied to white retroreflective sheeting it creates the background colour

**(a) Dark Green examples** – reserved for signs on the State Highway network



– **Restricted to State Highway network.**

- Green: Specifically Dark Green translucent adhesive transfer film or the use of an ink printing system is typically applied to white factory sheeting to form the background colour of destination guide signs.
- Where the dark green colour is not added it permits the white retroreflective sheeting to create the white legend.
- The Yellow section of the sign and the Black legend is typically added as a Yellow factory sheeting with non-retroreflective black vinyl but it can be achieved using a printing system

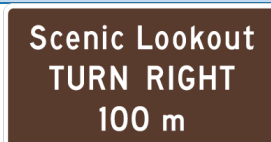
**(b) New Zealand (NZ) Green example** –NZ Green is used for some street name signs



**A14-1**




- Green: Specifically NZ Green is restricted to the manufacture of A14-1 city and district street name and road name blades.
- NZ Green or, most commonly blue, is typically created by the application of a translucent coloured adhesive transfer film or use of an ink printing system to white retroreflective sheeting to form the background NZ Green.
- The White retroreflective colour is created where the NZ Green colour has not been applied.

**Brown retroreflective – tourist information signs**



- Restricted for use for approved tourist names or destination signs.
- Brown translucent adhesive transfer film or an ink printing system is typically applied to White retroreflective factory sheeting to form the background brown colour for signs that name or guide tourists towards named (authorised) tourist destinations
- The White retroreflective colour is created where the Brown colour has not been applied.



Non-retroreflective black – Typically to form legend where appropriate		
		
W14-6	R2-7	W15-3
<p>– The colour Black is typically not specified because it is typically applied as a non-retroreflective Black vinyl film or by an ink printing system that forms that part of a legend of a sign when applied to the related retroreflective coloured factory sheeting; such as Yellow or White as these examples show.</p>		

### 6.1.1 Colour compliance requirement

The following documents require colour compliance as detailed below.

- Land Transport Rule, Traffic Control Devices 2004, Rule 54002 Schedule 1 *Signs*
- AS 1906.1 *Retroreflective materials and devices for road traffic control purposes Part 4 Retroreflective sheeting*
- Traffic Control Devices Manual (TCDM) Part 1 *General requirements for traffic signs* Section 4.1.4
- NZTA P24 *Specification for permanent traffic signs* Clause 6.3 Table 6.2.

### 6.1.2 Colour specification

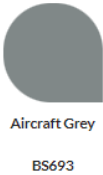
Retroreflective colours (AS 1906.1)		
White	Red	Blue
New Zealand (NZ) Green	Dark Green	
Yellow	Fluorescent Yellow Green	Brown
Non-retroreflective colour		
Black (Pantone® Black 3 C)		

## 6.2 Sign panel reverse colour:

A traffic sign may not display on the reverse side written material or a monogram, except another traffic sign or a non-reflective sticker, label or other device which may contain: (i) details of the ownership of the sign; or (ii) information that uniquely identifies the sign; or (iii) details of manufacture, installation or maintenance

### 6.2.1 General usage

Where left blank or predominantly so, the rear face of signs must be either Aircraft Grey or N14 White. The finish should be semi-gloss or matte to reduce specular glare. Regulatory signs where the shape of the sign assists with sign recognition should be semi-gloss white or matt white.

<b>Aircraft Grey BS693</b>		<b>AS 2700 N14 White or similar</b>
		
<b>Colour Range BS 381C Colour 693 CMYK – 5; 0; 2; 48;</b>		<b>Regulatory and Parking Signs</b>

### 6.2.2 Colour compliance requirement

The following documents require colour compliance as detailed below.

- Traffic Control Devices Manual Part 1 *General requirements for traffic signs* Section 5 Clause 5.1.2
- NZTA P24 *Specification for permanent traffic signs* Clause 6.6(c)




### 6.2.3 Colour specification

- (a) Grey: British Standard BS 381C Colour chart Aircraft Grey No. 693 (Pantone® Colour System PMS 431C)
- (b) White: AS 2700 N14 White (Pantone® Colour system PMS 000 – CMYK 0000)






## 6.3 Backing boards and rear of signs:

A backing board is a larger surrounding panel or “board” on which a standard traffic sign (or combination of traffic signs) is placed, creating a border around the sign to enhance conspicuity of the sign by increasing the signs target value (example (a) below).

This is not to be confused with a sign design such as the R1-5 town speed threshold sign (example (b) below) or a sign on the reverse panel of another sign (example (c) below).

<b>(a) W12-11 plus advisory speed on backboard</b>	<b>(b) R1-5 Threshold sign typically with town name</b>	<b>(c) rear of R1-5 Threshold sign</b>
		

### 6.3.1 General usage

White Backing Boards				Fluorescent yellow green retroreflective accent outline
				

### 6.3.2 Colour compliance requirement

The following documents require colour compliance as detailed below.

- Traffic Control Devices Manual Part 1 *General requirements for traffic signs* Section 4.1.8
- Traffic Control Devices Manual Part 4 Traffic control devices for general use – for intersections (Clause 5.6.4 Traffic signs)<sup>4</sup>
- AS 1906.1:2017 *Retroreflective sheeting*

### 6.3.3 Colour specification

Non-retroreflective colours	
White	Most frequently adopted for temporary traffic signs and to put a “quiet area” around a sign highlighting a special circumstance (6.3a above) AS 1906.1 Table 2.6
Grey	This circumstance will typically only occur when a smaller sign (e.g. speed sign) is mounted on the reverse of a threshold sign (6.3c above) Refer to 6.2.3 (a)

Retroreflective colours (AS 1906.1)	
White	When used the white should be a lesser retroreflective performance than the sign it is highlighting
Green	Specifically Dark Green for speed threshold sign on state highways – typically in a gateway layout
Blue	Speed threshold sign on district highways – typically in a gateway layout
Yellow	Not a true backboard this will typically be an advance warning sign where the ultimate regulatory signs viewing distance is quite short
Fluorescent yellow green	Not a true backing board this can be used as a border enhancement to add conspicuity when a regulatory sign (e.g. Stop or Give Way) is located in a cluttered or poor visibility area or where crash history may suggest an intervention is warranted

<sup>4</sup> At time of publication the Traffic Control Devices Manual Part 4 was in a final draft format  
NZ Transport Agency Waka Kotahi

## 6.4 Sign post supports:

### 6.4.1 General usage

<p><b>Unpainted metal</b></p>	
<p>- Traffic signal outreach arms (generally aluminium or galvanised steel) may be left unpainted</p>	
<p><b>White – non-retroreflective</b></p>	
<p>- Sign posts and poles for but not limited to regulatory and street name signs.</p>	
<p><b>Yellow – Non-retroreflective</b></p>	
<p>- Posts that support traffic signals and remote call buttons (excluding mast or outreach arms)</p>	
<p><b>Black and retroreflective white / silver</b></p>	
<p>- Pedestrian crossing poles and school patrol stop sign pole (refer also to 7.5)</p>	

### 6.4.2 Colour compliance requirement

The following documents require colour compliance as detailed below.

- Traffic Control Devices Manual Part 1 *General requirements for traffic signs* Section 7.2.1 specifies yellow for traffic signal posts. This is to be interpreted as a colour matching Pantone® 109 or 1235 or Colour Y14 from AS 2700.
- NZTA P24 Specification for permanent traffic signs Clause 4.7.1(a)



## 6.5 Pedestrian crossing beacon and disc

The two primary methods for the indication of the presence of a pedestrian crossing are:

- The internally lit flashing spherical Belisha beacon set atop the pedestrian crossing pole (refer also to 6.4 Sign support posts above). This alternative should be selected whenever a connection to a power supply is practicable.
- The 400 mm circumference retroreflective Belisha Disc

### 6.5.1 General usage

- Belisha beacon – Amber (approximate mid-point between yellow and orange)
- Belisha disc – Fluorescent orange wide observation angle retroreflective sheeting

Belisha Beacon	Belisha Disc
	
Amber	W16-3

### 6.5.2 Colour compliance requirement

- Traffic Control Devices Manual Part 1 *General requirements for traffic signs* Section 8.3.3

### 6.5.3 Colour specification

- Belisha disc – AS 1906.1 Retroreflective sheeting fluorescent orange Class 1100
- Belisha beacon – Amber, matching Pantone® 7548<sup>5</sup>

<sup>5</sup> Confirmation of colour match may be required by laboratory test.  
NZ Transport Agency Waka Kotahi









## 7 TEMPORARY TRAFFIC SIGNS

With the exception of regulatory signs used for temporary traffic management, temporary warning traffic signs that must be positioned within any temporary work zone site must have an orange background colour.

The only colour variation is between the use of fluorescent orange colour and standard orange colour. Typically fluorescent signs will be aimed at the public while information required by contractors such as site entry numbers may be standard orange.

### 7.1 Sign face colours

#### 7.1.1 General use by category

White Retroreflective – Typically a background colour		
		
W4-12	W4-5	W1-1B
<ul style="list-style-type: none"> <li>- White factory sheeting forms the white background colour for temporary signs as shown</li> <li>- The orange (fluorescent or standard orange) is typically a retroreflective sheeting especially for the fluorescent colouring</li> <li>- Black legend is typically either a black non-retroreflective vinyl or it is created using an ink printing system</li> </ul>		
Fluorescent Orange Retroreflective		
		
W1-1	W3-3	W2-1.11
<ul style="list-style-type: none"> <li>- Fluorescent orange factory sheeting is specified as the background colour where the sign is primarily focused on the public/driver of a vehicle versus signs that are there for worker information.</li> <li>- These signs are fluorescent orange factory sheeting</li> <li>- The legend is either a non-retroreflective black vinyl or it is applied by use of an ink printing system.</li> </ul>		
Non-Fluorescent Orange Retroreflective		
		
W3-8	W5-7.11	
<ul style="list-style-type: none"> <li>- Non-fluorescent orange factory sheeting may be used to form the background colour for temporary warning signs typically provided for the guidance of actual work zone related traffic</li> <li>- The black legend is typically created either by non-retroreflective black vinyl sheeting or an ink printing process</li> </ul>		

### 7.1.2 Colour compliance requirement

The following documents require colour compliance as detailed below.

- Land Transport Rule, Traffic Control Devices 2004, Rule 54002 Schedule 1 *Signs*
- NZTA P24 *Specification for permanent traffic signs* Clause 6.3 Table 6.2.
- New Zealand Guide to Temporary Traffic Management (NZGTTM)

### 7.1.3 Colour specification

Retroreflective (AS 1906.1)		
White	Fluorescent Orange	Non-Fluorescent Orange
Where regulatory signs must be used within a work site colours shall comply with Clause 7.1		
Non-retroreflective		
Black (Pantone® Black 3 C)		

## 8 PAVEMENT MARKINGS AND COLOURING

This section is applicable to all formats of pavement marking such as paint, thermo-plastic, cold applied plastic and adhesive backed markings.

### 8.1 Lane and line marking

#### 8.1.1 General usage



#### 8.1.2 Colour compliance requirement

Specification for the colour of painted line marking is found in

- (a) Land Transport Rule Traffic Control Devices 2004 Rule 54002/2004 Section 5
- (b) Traffic Control Devices Manual Part 5 *Devices for general use – between intersections*
- (c) Traffic Control Devices Manual Part 4 *Devices for general use – for intersections*
- (d) NZTA M07 Specification for road marking paints.



### 8.1.3 Colour specification

White (retroreflective and non-retroreflective) AS 2700 Y35 Off White		
		
Lane lines, edgelines, flush medians, raised median, zebra crossing bars, arrows and directions		
Yellow (retroreflective and non-retroreflective) AS 2700 Y13 Vivid Yellow, Y14 Golden Yellow and colours between Y13 and Y14		
		
No-passing lines, edgelines for divided highways, restricted parking markings, fire hydrant marking		

## 8.2 Coloured surfacing

Coloured surfacing is a feature surfacing for use alongside conventional road markings to accentuate a situation additional to formal lane lines. The purpose of the coloured addition is to highlight a special feature and draw attention to a traffic situation where lane lines on their own are not able to convey a unique message to a vehicle driver.

### 8.2.1 General usage

- Green, Blue, Red, Terracotta.

<b>Green</b>	Used to highlight special vehicle lanes and facilities dedicated for buses and cycling.	
		
<b>Blue</b>	Restricted permit holder only parking	
		
<b>Red</b>	A colour associated with warning of risk or/and a speed limit change.	
		
<b>Terracotta</b>	Historically a pavement treatment used in local areas for traffic management and traffic calming schemes to influence motorist recognition to a specific behaviour. It is more common as a coloured block paved surfacing or block paving patterned surfaces rather than a surfacing colour.	

### 8.2.2 Colour compliance requirement

- NZTA P33 Specification for coloured surfacings
- AS 2700 Colour standards colour chart
- Coloured surfacing's principles – Best practice guidance note

[www.nzta.govt.nz/assets/resources/coloured-surfacing-principles/Coloured-surfacing-principles-design-guidance-note.pdf](http://www.nzta.govt.nz/assets/resources/coloured-surfacing-principles/Coloured-surfacing-principles-design-guidance-note.pdf)

### 8.2.3 Colour specification

Colour	Preferred colour
<b>Red</b>	AS 2700 - R13 Signal red
<b>Green</b>	AS 2700 - G26 Apple green
<b>Blue</b>	AS 2700 - B24 Harbour blue
<b>Terracotta</b>	AS 2700 - R52 Terracotta

## 9 RAISED PAVEMENT MARKERS

Raised pavement markers (retroreflective and non-retroreflective) are installed on the road pavement, typically in conjunction with paint markings, to provide mid to long distance indication of the road alignment and lane lines at night and in wet road conditions.

### 9.1 General usage

<b>Marker Body White</b>	<b>Marker Body Yellow</b>	<b>Marker Body Yellow</b>
		
<b>Lens - White</b>	<b>Lens - Yellow</b>	<b>Lens – Yellow and White</b>
<b>Marker Body Blue</b>	<b>Marker Body Green</b>	<b>Marker Body Red</b>
		
<b>Lens - Blue</b>	<b>Lens - Green</b>	<b>Lens - Red</b>
<b>Marker Body White</b>		
		
<b>Lens White and Red</b>		

### 9.2 Colour compliance requirement

Specification for the colour of RPMs is found in:

- Land Transport Rule Traffic Control Devices 2004 Rule 54002/2004 Section 5, 5.4(6)
- Traffic Control Devices Manual Part 5 *Traffic control devices for general use – between intersections*
- NZTA M12 *Specification for the design, manufacture, installation and maintenance of raised pavement markers*. This specification is based on AS/NZS 1906.3 *Retroreflective materials and devices for road traffic control purposes, Part 3 Raised pavement markers (retroreflective and non-retroreflective)*.

## 9.3 Colour specification

Refer NZTA Specification M12 for further information

<b>White marker body, one-way and two-way white lens</b>
Lane lines, centrelines, flush medians, limit lines at intersections, kerb marking
<b>White marker body, two-way with white and red lens</b>
Lane lines on motorway and expressway divided highways where white indicates correct direction of flow and red indicates traffic travelling in the wrong direction
<b>Yellow marker body, one-way and two-way yellow lens</b>
No-passing lines, parking restriction lines, limit lines at intersections
<b>Yellow marker body, two-way with yellow and white lens</b>
At lead in and exit from no-passing lines where passing is restricted in one direction only
<b>Red marker body, one-way and two-way red lens</b>
Installed on the left-hand side of the roadway to mark the edge of the safe, useable portion of the roadway;
<b>Blue marker body, two-way blue lens (non-flashing)</b>
Installed on, or just to the left of, the centreline of the roadway to mark the presence of a fire hydrant or other water source used for firefighting
<b>Green marker body, two-way green lens</b>
Installed on, or just to the left of the centreline of the roadway used only to mark the presence of a culvert or other drain under the roadway.

## 10 INTERNALLY ILLUMINATED PAVEMENT MARKERS

The Internally Illuminated Pavement Markers (IIPMs), bonded directly to, or recessed into the road surface, are designed to emit light towards an approaching motor vehicle in order to warn, guide or inform road users of specific circumstances or situations ahead.

### 10.1 LED general usage

<b>White</b>
<i>When placed within lane lines, centrelines, edgelines, flush medians or when representing white lines.</i>
<b>Yellow</b>
<i>When placed within no-passing lines or representing no-passing lines, no stopping dashed lines and set as permitted at pedestrian crossings</i>
<b>Red</b>
Installed only on the left-hand side of the roadway to mark the edge of the safe, useable portion of the roadway;
<b>Blue flashing (constant blue is not permitted)</b>
A flashing, illuminated pavement marker used to indicate that the road may be slippery due to frost, ice, or snow

### 10.2 Marker body or visible surface colours

<i>White marker body</i>
<i>Surface installed marker body or white topped recessed marker if to be included within a white line. Remainder of recessed marker body black, grey or neutral.</i>
<i>Yellow marker body</i>
<i>Surface installed marker body or yellow topped recessed marker if being included within a yellow line or in conjunction with a zebra crossing. Remainder of recessed marker body black, grey or neutral.</i>
<i>Red marker body</i>
Surface installed marker body or the top of the marker when recessed only on the left-hand side of the roadway to mark the edge of the safe, useable portion of the roadway. Recessed portion of marker body can be neutral
<b>Blue marker body (constant blue LED is not permitted)</b>
<i>No approved surface marker use. Blue flashing ice warning markers (recessed) black, grey or neutral marker body or recessed canister holder.</i>
<i>Green marker body</i>
<i>No current use is approved for surface installed green IIPMs</i>
<i>Black, Grey, Neutral or Clear</i>
<i>Markers recessed into the surface of the road such that the marker body is not visible to a driver.</i>
<i>Markers that may be installed within a dynamic tidal flow installation where LED colour may change</i>

## 10.3 IIPM Colour compliance requirement

Specification for the colour of IIPMs is found in:

- Land Transport Rule Traffic Control Devices 2004 Rule 54002/2004 Section 5, 5.4(6)
- NZTA M29 *Specification for the design, manufacture, installation and maintenance of internally illuminated pavement markers*. This specification harmonises with AS 2177 *Traffic signal lanterns*

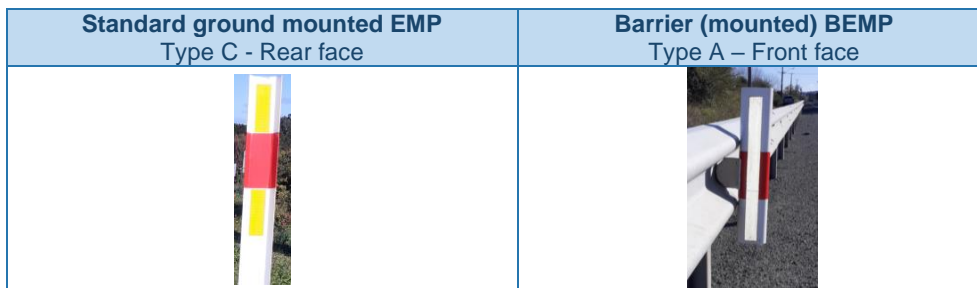
## 10.4 IIPM Colour specification

- Refer NZTA Specification M29 for further information

# 11 PERMANENT DELINEATION DEVICES

## 11.1 Edge marker posts

Edge marker posts (EMPs), either ground installed or attached to a road safety barrier (BEMP), used on rural roads to delineate the alignment of the road ahead will frequently feature retroreflective strips.



### 11.1.1 General usage

Post substrate	White
Retroreflective	Type A White and Type B Yellow
Non-retroreflective band	Red

### 11.1.2 Substrate colour compliance requirement

- The primary colour specification for EMPs can be found in NZTA M14 *Specification for the design, manufacture, installation and maintenance of edge marker posts*.
- The colour of the white post shall be a white that complies with the chromaticity coordinates for white as specified in Table 3.1, AS/NZS 1906.3 *Retroreflective materials and devices for road traffic control purposes, Part 3 Raised pavement markers (retroreflective and non-retroreflective)*.

### 8.1.1 Retroreflective colour compliance requirement

- Retroreflective colour white and yellow must be compliant with AS 1906.1 *Retroreflective materials and devices for road traffic control purposes, Part 1 Retroreflective sheeting*
- Retroreflective white is specified for posts installed to the left side of the road as seen by the driver of an approaching vehicle.
- Retroreflective yellow is specified for posts installed to the right side of the road as seen by the driver of an approaching vehicle.

### 8.1.2 Non-retroreflective red band compliance requirement

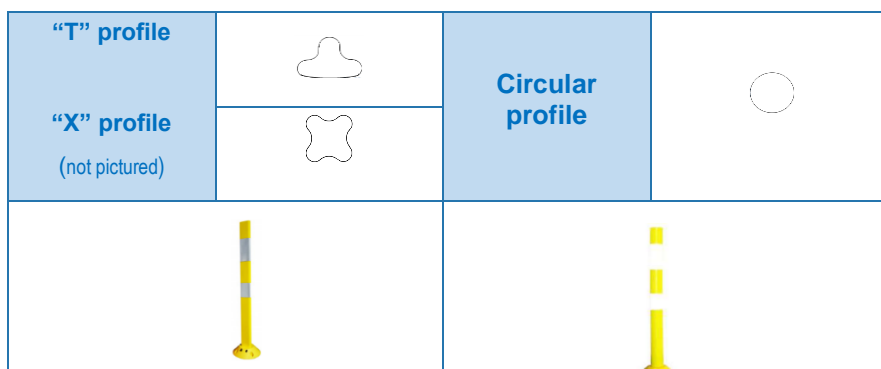
- The colour of the red band shall conform with the colour red specified in AS/NZS 1906.1 Table 2.6 CIE Chromaticity co-ordinates (x-y) of the colour spaces – daylight illumination.

- Acceptable shades for comparison are Pantone® Colour 711C6 frequently referred to as Tomato Red or from British Standard Colour Chart 381C, Signal Red (No. 537) and Bold Red (No. 564).

## 11.2 Permanent delineator posts

These devices<sup>7</sup> are typically vertical standing frangible devices used to delineate and or enhance trafficked lanes for vehicles travelling in the same or opposite directions when lane lines may not be present or where an edgeline or centreline is to be accentuated.

Typically the delineator post profile and footing will match the delineator post colour.



### 11.2.1 General usage

White	Posts themselves and the footing should match the road marking colour – white to white and yellow to yellow.
Yellow	
Retroreflective colour	White positioned to the left relative to traffic flow
	Yellow positioned on the right relative to traffic flow
	Yellow as seen from both directions of travel if positioned as a central delineator between opposing directions of travel

### 11.2.2 Colour compliance requirement

- Traffic Control Devices Manual (TCDM) Part 5 Traffic control devices for general use – between intersections (Clause 2.9.3)

### 11.2.3 Colour specification

- The Traffic Control Design Manual does not detail a specific colour that can be used for yellow permanent delineator posts. The yellow colour is to be interpreted as a colour that matches Pantone® 109 or 12358 or AS 2700 Y14 or Y15.
- The retroreflective white and yellow band colours must be compliant with AS 1906.1.

<sup>6</sup> CMYK: Cyan – 0, Magenta – 97, Yellow – 75, K Black - 0

<sup>7</sup> This section does not include edge marker posts.

<sup>8</sup> Graphic vinyl films sometimes refer to these as bright yellow, sunflower and golden yellow. Confirmation of colour may be required by laboratory test



## 11.3 Bridge, road safety barrier and hazard markers

Coming under a general heading of hazard markers is an assortment of treatments that are typically used to delineate some form of rigid or semi-rigid hazards that are highlighted below.

Flexible barrier Reflector	Bridge end markers	Hazard Marker
 A photograph showing a flexible barrier with several cylindrical reflectors attached to it. The reflectors are white with yellow tops.	 Two vertical markers: one with black and white diagonal stripes, and another with black and yellow diagonal stripes.	 Two hazard markers: one is a white cylindrical marker with two white circles, and the other is a black rectangular marker with two white circles.

### 11.3.1 General usage

Permanent delineation devices, as can be seen by the treatments shown in 12.3 above, including hazard markers are typically either white or yellow. White, as for the bridge end marker above, is to be positioned to the left relative to the traffic flow with yellow being positioned to the right.

### 11.3.2 Colour compliance requirements

- Traffic Control Devices Manual (TCDM) Part 5 Traffic control devices for general use – between intersections (Clause 2.4.6 and Clause 6.4.2)

### 11.3.3 Colour specification

- Retroreflective colours white and yellow must comply with AS 1906.1

## 12 TEMPORARY DELINEATION DEVICES

Temporary devices, like their permanent counterpart, include vertical standing frangible post like devices but also include cones, tubular delineators and barrels. The temporary devices are used to delineate traffic “*through*” lanes set out in temporary work sites or signal areas within work sites where traffic may not travel.

### 12.1 Traffic cones, tubular delineators and barrels

900 mm Cone	Tubular delineator	Safety barrel
		

#### 12.1.1 Device general usage

<b>External</b>	Fluorescent orange
<b>Internal</b>	Standard orange or white
<b>Base</b>	Fluorescent orange – (must not be black)
<b>Retroreflective</b>	White/silver. – (Class 300, typically Silver; Class 400 typically White) Fluorescent orange 1906.1 – for use as appropriate with barrels

NOTE: Colour dispensation allowed for the underside of a cone base that is manufactured using a minimum of 30% of recycled cone material. In such instances colour must comply with the specification in AS/NZS 1906.4 for orange red Clause 2.3 Table 2.1.

#### 12.1.2 Colour compliance requirements

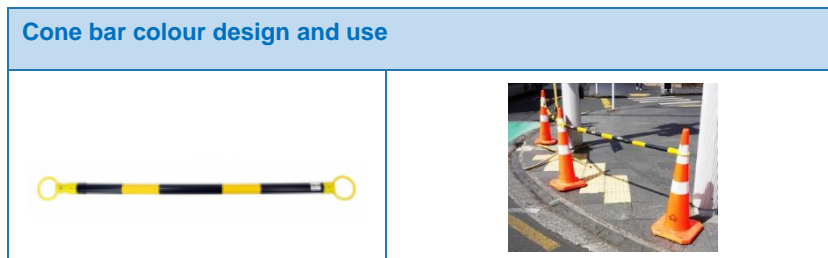
- NZTA M2302022 Appendix F
- NZGTTM Toolbox Clause 1.3 Equipment-vertical delineators

#### 12.1.3 Colour specification

- Fluorescent orange AS 1906.1 Table 2.6 with luminance factor value to Table 2.9
- Retroreflective white or silver compliant with AS 1906.1

## 12.2 Cone bars

Light weight, plastic poles attached to cones to provide pedestrian identification of non-entry to an area at worksites where workers are in attendance.



### 12.2.1 General usage

- Orange or Yellow non-fluorescent retroreflective bands alternating with black non-retroreflective bands

### 12.2.2 Colour compliance requirements

- NZGTTM – Toolbox Clause 1.3 Equipment - Vertical delineators

### 12.2.3 Colour specification

- Black (Pantone® Black 3 C) with approved retroreflective colour bands compliant with AS 1906.1

# 13 TEMPORARY ACCESS PREVENTION AND BARRIERS

## 13.1 Safety fencing

Safety fences prevent people from gaining access into a hazardous area which is particularly important when worksites are unattended.



### 13.1.1 General usage

- Primary substrate colour fluorescent orange PVC –or-
- The frame of the mesh variant can be natural metal

### 13.1.2 Colour compliance requirement

- NZTA M23:2022 Appendix F

### 13.1.3 Colour specification

- Fluorescent orange (AS 1906.1 Table 2.6 with luminance complying with Table 2.8)
- White or silver retroreflective conforming with AS 1906.1

## 13.2 Safety Barricades

A barricade is light weight frangible plastic device/structure designed to be positioned behind a coned off area. It is primarily a method of positioning a retroreflective sight board to reinforce presence of a hazard and it is positively attached to two end supports or has its own footing support.



### 13.2.1 General usage

- Typically the framework structure of the barricade will be orange.

### 13.2.2 Colour compliance requirements

- New Zealand Guide to Temporary Traffic Management (NZGTTM) Toolbox Clause 1.3
- The retroreflective element of the device to be compliant with NZTA M25 Specification for retroreflective sheeting and be listed in the New Zealand Gazette

### 13.2.3 Retroreflective colours permitted

- White and red or white (not silver) and orange compliant with AS 1906.1

### 13.3 Temporary road safety barriers

Barrier means a traffic control device that is intended to prevent or discourage a vehicle from moving out of the section of roadway on which it is travelling. A temporary road safety barrier positioned in order to prevent access to a worksite or provide separation between traffic and workers by physically separating the worksite from vehicles and other road users in live lanes. When used to guide traffic into lanes, hazard arrows should be mounted.

Water filled barriers		Neutral coloured concrete or steel barriers with Chevron arrowhead	
			

#### 13.3.1 General usage

- End treatments: yellow or neutral natural colour (steel components)
  - Barrier (line) units: orange or neutral natural colour (concrete or steel systems)
- NOTE: concrete and steel systems must include chevron arrowheads at specified spacings

#### 13.3.2 Colour compliance requirements

- NZTA M23 Specification Appendix C

#### 13.3.3 Colour specification

- Yellow colour to be interpreted as Pantone® 109 or 12359 or AS 2700 Y14
- Orange colour (for barrier units) to be interpreted as Pantone® 021C or 1505C10
- Retroreflective hazard chevron must be fluorescent orange on black according to AS 1906.1

<sup>9</sup> Graphic vinyl films sometimes refer to these as bright yellow and golden yellow. Colour confirmation may be required by laboratory test.

<sup>10</sup> Graphic vinyl films sometimes refer to this as bright orange. Colour confirmation may be required by laboratory test

## 14 TRAFFIC SIGNALS

Traffic signals are designed to guide traffic and in some instances pedestrians through simple and complex road, rail and pedestrian intersections such that each intersecting road is signalled when they are permitted to continue through the intersection, using a display of red, green and amber (yellow) signals.

### 14.1 Signal lantern LEDs

#### 14.1.1 General usage


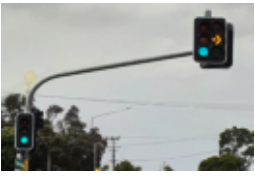


- Signal display - Red, Green, Yellow, White

Green	Green & Yellow	Green & Red	White
			
LED colours are specified recognising that incandescent lamps are rapidly being considered obsolescent.			Restricted to buses and Trams

#### 14.1.2 LED signal Colour compliance requirements

- NZTA P43 Traffic signal specifications (Clause 2.4.3)
- NZTA M29 Specification for the design, manufacture, installation and maintenance of IIPMs
- AS 2144:2014 Traffic signal lanterns - Section 2 Signal colours and displays.

#### 14.1.3 Target boards, mast arms and poles (posts)

Yellow ground mounted post	Metal mast arm colour	Combination example	Portable signal
			

- External surfaces: Target (backing) boards – Black (Pantone® Black 3 C) with white borders.
- Lantern body, visors and ancillary devices – Black (Pantone® Black 3 C)
- Poles: Yellow or golden yellow (Pantone® 109 or 1235)
- Mast arms: natural steel

Portable signal poles and battery box base: Yellow (Pantone® 109 or 1235)

Note: if signals are trailer-based the pole must be yellow as above. The trailer may be painted yellow or remain natural steel but unit must always be sited behind cones.

- Mobile temporary sign lanterns: Red, yellow and green LEDs

#### 14.1.4 Colour specification

- Yellow colour to be interpreted as Pantone® 109 or 1235<sup>11</sup> or AS 2700 Y14 (Golden yellow) or Y15 (Sunflower)

<sup>11</sup> Colour confirmation may be required by laboratory test.

# 15 VARIABLE MESSAGE SIGNS

A sign that is capable of providing a range of messages to the users of the transport network.

The variable message sign (VMS) is an electronic traffic sign used on roadways to give travellers information about special events, warn of traffic congestion, accidents, adverse weather conditions and incidents.

They may also suggest that vehicles take an alternative route, limit travel speed, warn of duration and location of incidents, or just inform of traffic conditions.

## 15.1 Sign led colours used

### 15.1.1 General usage

- Sign display white and yellow – typically LEDs
- Ramp metering signs typically white
- Variable illuminated speed signs – red and white

Yellow		
		
W19-2.1	W19-2.1	W19-2.1
White	White and Red	Red and Yellow
		
W19-1	R2-6.1	R1-2.1 (R1-1 option A)
Green, Yellow, Red	Yellow	Yellow
		
R4-4, R4-5 and R4-6		

### 15.1.2 LED colour compliance requirements

- AS 2144:2014 Traffic signal lanterns - Section 2 Signal colours and displays
- NZTA P43 Traffic signal specifications (Clause 2.4.3)
- NZTA ITS-01-001 ITS Design Standard - Active warning and regulatory signs



- NZTA ITS 01-01:2013 General requirements  
NOTE: The frequently quoted EN 12966 Standard colour green overlaps AS 2144 but includes a colour area not accepted by AS 2144. If conformance of green is to EN 12966 it must be within the area specified in AS 2144.
- LED signals must comply with the colour specifications in NZTA M29

## 15.2 Portable variable message signs and signals

Signs that are capable of providing a range of messages to the users of the transport network in the same manner as for section 15.1 except that the sign is mobile to be sited where appropriate for a temporary period of time

Such signs will be either vehicle or trailer mounted and frequently located outside of a formal work zone.

VMS Portable Signs	Attenuator vehicle
	
	<p style="text-align: center;">R3-13.3</p>

### 15.2.1 Colour compliance requirements

- As for permanent VMS equipment except for the main body of the sign trailer (orange)

### 15.2.2 Colour specification

- Main body of trailer – Orange Pantone® 021C or 1505C
- Retroreflective materials AS 1906.1 Retroreflective sheeting or NZTA M25 Specification for retroreflective sheetings