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# NZTA M14:2022

## Specification for the design, manufacture, installation and maintenance of edge marker posts

January 2022

Edition 2.0



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This Specification will be updated periodically to incorporate advances in technology and changes within the industry. The Waka Kotahi website should be checked to confirm the most recent edition of the specification.

## Document Information

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## Record of Amendments

<b>Edition Number</b>	<b>Subject of change</b>	<b>Effective Date</b>	<b>Updated by</b>
1	<b>Origination</b> M14:2011 Specification, M14:2018 Notes P16:2011 Installation and P16:2011 Notes	2018	
2	<b>Revision to become:</b> <i>M14:2022 Specification for the design, manufacture, installation and maintenance of edge marker posts</i> (incorporating; M14 Notes, P16 Installation and P16 Notes) <b>Withdrawn documents</b> M14:2018 Notes on edge marker posts P16:2011 Specification for the installation of EMPs P16:2011 Notes for the installation of EMPs	January 2022	Joe Southey

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# Foreword

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The objective of this revision, to become NZTA M14:2022, is to provide updated guidance for Manufacturers or Suppliers wishing to introduce edge marker posts into New Zealand. This M14 Specification, prepared by Waka Kotahi NZ Transport Agency subsequent to the release of the AS 1906.1:2017 Standard<sup>1</sup>, incorporates the previous M14:2018 *Notes*; P16:2011 *Specification for installation* and P16:2018 *Notes to Installation*. These three documents will be withdrawn upon the publication of NZTA M14:2022.

The main changes that are being incorporated into this specification include:

- Introduction of a new class numbering system for retroreflective sheeting (refer to AS 1906.1:2017 Clause 1.5)
- Introduction of a new photometric Class 400 (refer AS 1906.1:2017 Clause 2.2.2 Table 2.3)
- Additional requirement for sheeting identity marks (refer AS 1906.1:2017 Clause 2.11)
- The introduction of edge marker posts that attach to wire rope and semi-rigid roadside safety barriers plus the attachment brackets
- Introduction of M14:2022 *Certificate and Worksheet Templates for EMPs*; Application to Market, Record of Testing and Acceptance Certificate templates
- Introduction of M14:2022 *Acceptance Listings for EMPs*

## 1. SCOPE

This specification sets out requirements for Edge Marker Posts (EMP) and Barrier Edge Marker Posts (BEMPS)<sup>2</sup> to be used in the delineation of the national roading network in accordance with the Traffic Control Devices (TCD) Manual *Traffic Control devices for general use – Part 4 at intersections* and Part 5 *between intersections*.

This specification applies to EMPs that are capable of self-recovery immediately after impact by a vehicle. It further sets out the requirements for both the composite post and its components, i.e. the white flexible post, the red band, white and/or yellow reflective strips, and anchoring system.

Posts designed to have a detachable above-ground portion that connects to a specific buried anchor, and flexible posts with a modified anchoring system for attachment to an impenetrable surface, such as concrete or asphalt, are included in this specification as are such post alternatives that are designed to be attached to a road safety barrier system.

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<sup>1</sup> AS 1906.1:2017 Standard *Retroreflective materials and devices for road traffic control purposes: Part 1 Retroreflective sheeting* including Amendment 1:2020 replaces AS/NZS 1906.1:2007

<sup>2</sup> Edge Marker Posts (EMPs) and Barrier Edge Marker Posts (BEMPs) will frequently be referred to under a generic name of “edge marker posts” or “marker posts”

## 2. RELATED DOCUMENTS

Standards referred to require the reader to ensure that it is the most recent publication

AS 1906.1.....	Part 1 Retroreflective sheeting
AS/NZS 1906.3.....	Part 3 Raised pavement markers
TCD Manual.....	Part 4 Traffic control devices for general use – at intersections ( <a href="#">TCD Manual Part 4 Traffic control devices for general use - at intersections [in draft]</a> ).  Part 5 Traffic control devices for general use – between intersections <a href="#">traffic-control-devices-manual/docs/part-5-traffic-control-devices-for-use-between-intersections.pdf</a>
NZTA M14.....	<a href="#">Certificate and Worksheet Templates for EMPs – Appendix G</a>
NZTA M14.....	<a href="#">Acceptance Listings for EMPs – Appendix H</a>
NZTA M25.....	<a href="#">Specification for Retroreflective sheeting</a>
SM032 Network Outcomes Contract.....	Volume 1: Conditions of Contract, System Management V3.1 <a href="#">network outcomes contract 2019 (nzta.govt.nz)</a>
	Volume 3: Basis of Payment, System Management V3.1 <a href="#">SM032 Network outcomes contract 2019, Volume 3: Basis of payment, v3.1 – 3 March 2020 (nzta.govt.nz)</a>
	Volume 4: Maintenance Specifications, System Management V3.1. <a href="#">SM032 Network outcomes contract 2019, Volume 4: Maintenance specification, v3.1 – 3 March 2020 (nzta.govt.nz)</a>

## 3. DEFINITIONS

- **EMP**

Edge marker post; an edge marker post that is either ground installed or attached to a road safety barrier – barrier edge marker post (BEMP)

- **Provisional acceptance**

Awarded to a post manufacturer after an edge marker post has successfully passed the tests required in this specification (refer also to Type Acceptance)

- **May**

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

- **Must**

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

- **Post type code**

A new code to help identify various edge markers posts based on a post's installation location and/or type

- **Presentation position**

Used to describe a position to which an impacted edge marker posts recovery is considered suitable for purpose and presentation to an approaching motorist

- **Retroreflective**

Describes a material or device that retroreflects 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 angle of input

- **RCA**

Road controlling authority

- **Shall**

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

- **Should**

Term used to indicate a recommendation based on industry best practice

- **Specification**

In this set of documents the word "Specification" shall be interpreted as referring to the NZTA M14:2022 *Specification for edge marker posts*

- **Standard**

In this specification the word "Standard" shall be interpreted as a Waka Kotahi approved national or international document that has been published by a recognised Standards organisation being used to provide a means of compliance with this specification. Standards must be identified by their Standards organisation and number without reference to their year of publication; e.g. AS/NZS 1906.3. The reader must be certain to refer to the most recent edition

- **Suitable for purpose (Suitability)**

A statement of overall daytime appearance and night time retroreflective performance referred to as being *Suitable for Purpose* is not a finite measurement but recognises that the degree of day and night visibility is deemed to be sufficient for a driver to view an edge marker post and act in a safe manner, relative to the post's purpose



- **Supplier**

The entity, sometimes the actual Manufacturer that supplies the edge marker post to the installing contractor

- **System owner**

Referring to the “owner/supplier” of a road safety barrier system to which a Barrier EMP is to be installed; the entity that has the property rights to a road safety barrier system through their ownership or management of the intellectual property

- **Type acceptance**

Confirmed by Waka Kotahi after the subject post has successfully completed 12 months in-service installation without failures that could raise quality issues

## 4. GENERAL

Edge marker posts are used to delineate the alignment of the road ahead, especially horizontal and vertical curves. Each edge marker post is fitted with retroreflective sheeting strips which form a primary aid for night time driving.

All edge marker posts must comply with this specification that recognises current and best practice at the time of its publication. This should not limit the introduction of new designs and technologies. Waka Kotahi welcomes innovation but requires that any derivations from this specification must be presented to Waka Kotahi Lead Safety Advisor before being introduced in New Zealand.

This revision replaces M14:2011 *Specification for edge marker posts* and M14:2018 *Notes* which has historically listed all current edge marker posts confirming *Type Approval* (now *Type Acceptance*) that showed an expiry date of 31<sup>st</sup> January 2020. In order to provide manufacturers and marketers sufficient time to comply with the changes herein and to ensure a seamless transfer to this revision both M14:2011 *Specification* and M14:2018 *Notes* documents will remain valid concurrently until January 1<sup>st</sup> 2023.

Waka Kotahi extends the previous *Type Approval* (now *Type Acceptance*) expiry date until January 2023. Prior to this date all manufacturers and marketers of edge marker posts in current service will be required to reconfirm compliance to this revision in order to regain *Type Acceptance* (previously *Type Approval*) for up to five (5) years. Immediately prior to this date the Manufacturer or Supplier must initiate a meeting with Waka Kotahi, Senior Traffic and Safety Engineer, Programme and Standards in order to submit an application for renewal of EMP *Type Acceptance*. This renewal will require confirmation of compliance of retroreflective strips to Class 400, AS 1906.1:2017 plus confirmation of marker post compliance as detailed in Clause 11 *Re-Acceptance Process* here-in.

This above noted period of time will provide time to upgrade the retroreflective white and yellow strips to a minimum of Class 400 High Intensity Prismatic AS 1906.1:2017, although Waka Kotahi asks that manufacturers make this upgrade as soon as possible if this has not been actioned already.

While Waka Kotahi welcomes innovation and the inclusion of new technologies and materials no new edge marker post may be introduced for use on the New Zealand roading network without complying with this specification or immediately following the specific approval of Waka Kotahi.

## 5. EDGE MARKER POSTS (EMPS)

### 5.1 Physical requirements

This section details the specifications for ground mounted edge marker posts installed by ramming into penetrable ground or above-ground detachable units that connect to a buried anchor, or flexible posts using a modified anchoring system for attachment to an impenetrable surface.

#### 5.1.1 Materials

Components of the actual post include:

- (i) Post substrate
- (ii) Red non-retroreflective band
- (iii) Retroreflective strips – white and yellow

Each component must be made from materials designed to resist weathering deterioration including seasonal effects of the New Zealand climate, excluding wind conditions<sup>3</sup>, for a period of no less than 10 years.

#### 5.1.2 Post substrate material

The finished post must be white in colour and free of any sharp edges or burrs. It may be manufactured from a plastic or other flexible material which presents a minimum hazard if struck by a road user. Plastics must not include any lead content.

Timber is no longer permitted for use as a post substrate.

The colour of the white post shall comply with the chromaticity coordinates for white as specified in Table 3.1, AS/NZS 1906.3:2017 *Retroreflective materials and devices for road traffic control purposes*, Part 3 *Raised pavement markers (retroreflective and non-retroreflective)*.

#### 5.1.3 Red non-retroreflective band

The red band may be applied using any material that will resist fade and exhibit durability as noted in Clause 5.1.1

If a pressure sensitive vinyl is used the adhesive must be suitable for use with the post surface finish especially plastics and it must be applied according to the vinyl manufacturer's instructions. It must be well-adhered, durable, colour-fast and fade resistant.

The colour of the red band shall approximate the colour red specified in AS/NZS 1906.1:2017 *Retroreflective materials and devices for road traffic control purposes* Part 1 *Retroreflective sheeting*, Table 2.6 CIE Chromaticity co-ordinates (x,y) of the colour spaces – daylight illumination.

Acceptable shades for comparison are Pantone® Colour 711C<sup>4</sup> frequently referred to as Tomato Red or from British Standard Colour Chart 381C, Signal Red (No. 537) and Bold Red (No. 564).

<sup>3</sup> Weather conditions refer to climatic conditions of sun (including UV), rain and temperature.

<sup>4</sup> CMYK: Cyan – 0, Magenta – 97, Yellow – 75, K Black - 0

### 5.1.4 Retroreflective strips

The yellow and white retroreflective strips must be created using pressure sensitive (adhesive) retroreflective sheeting, which is applied to the post according to the manufacturer's instructions. The sheeting must:

- (i) Be certified compliant with the AS 1906.1:2017 Standard (including Amdt 1:2020)
- (ii) Exhibit a minimum performance specified for Class 400 High Intensity Prismatic retroreflective sheeting, Table 2.3, AS/NZS 1906.1:2017
- (iii) Be approved and listed in the New Zealand Gazette in accordance with the M25 *Specification for Retroreflective sheeting*

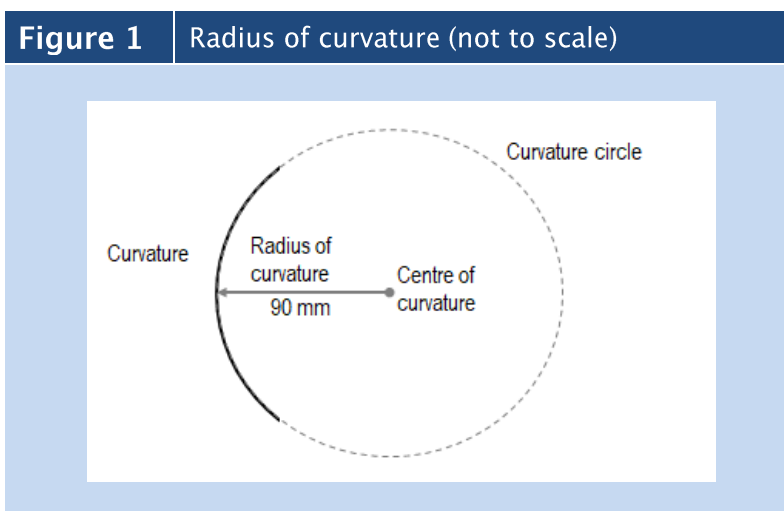
## 5.2 Dimensions and shape

### 5.2.1 Post design:

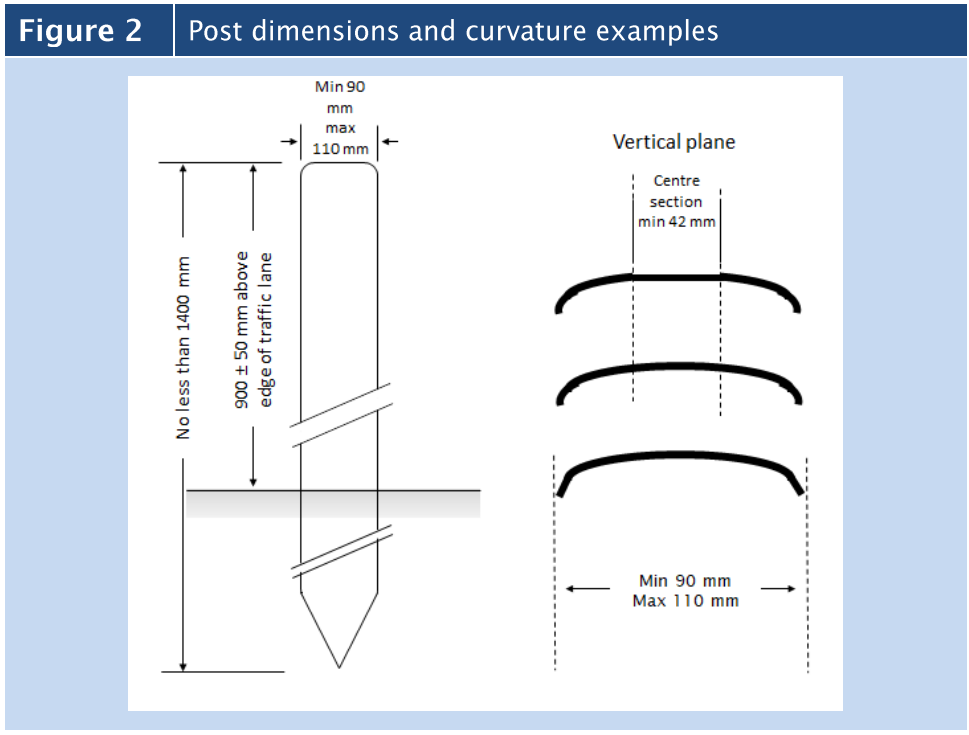
- (a) Width: The post as projected to a vertical plane shall be no less than 90 mm or greater than 110 mm.

The centre portion of the post must have a section that is a minimum of 42 mm in width which is either flat, or with a radius of curvature no less than 90 mm. (Refer to Figure 1)

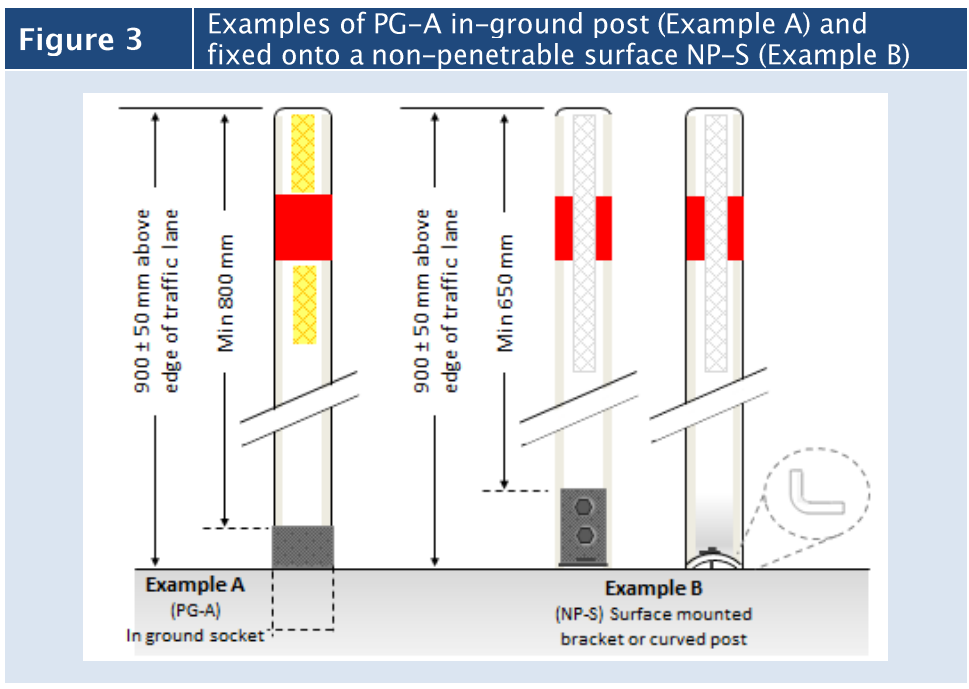
The edge portions of the post may be angled or curved, but the post is to present an apparent width between 90 mm and 110 mm, when viewed directly from the front or rear of the post (Refer to Figure 2).



- (b) Length: Posts intended to be inserted directly into penetrable ground shall be no less than 1400 mm long (Post ID Codes: PG-C, PG-15 and PG-SR Refer Section 5.3 Table 1)
- (c) Thickness of a plastic post must be suitable for purpose but no greater than 8.0 mm



- (d) Posts for use with a specific separate permanent anchor fixed into penetrable ground (Post ID Code: PG-A) shall have a minimum of 800 mm of white post clear of the top of the anchor (Figure 3 Example A).



The anchor shall be such that it secures the post and holds it:

- (i) In a vertically upright position
- (ii) The top is parallel to  $900 \pm 50$  mm above the edge of the traffic lane

- (e) Posts intended to be fixed to non-penetrable surfaces (Post ID Code: NP-S) shall be  $900 \pm 50$  mm in length including the fixing system, and the portion of white post not shielded by the attachment is to be a minimum of 650 mm. (Figure 3 Example B)

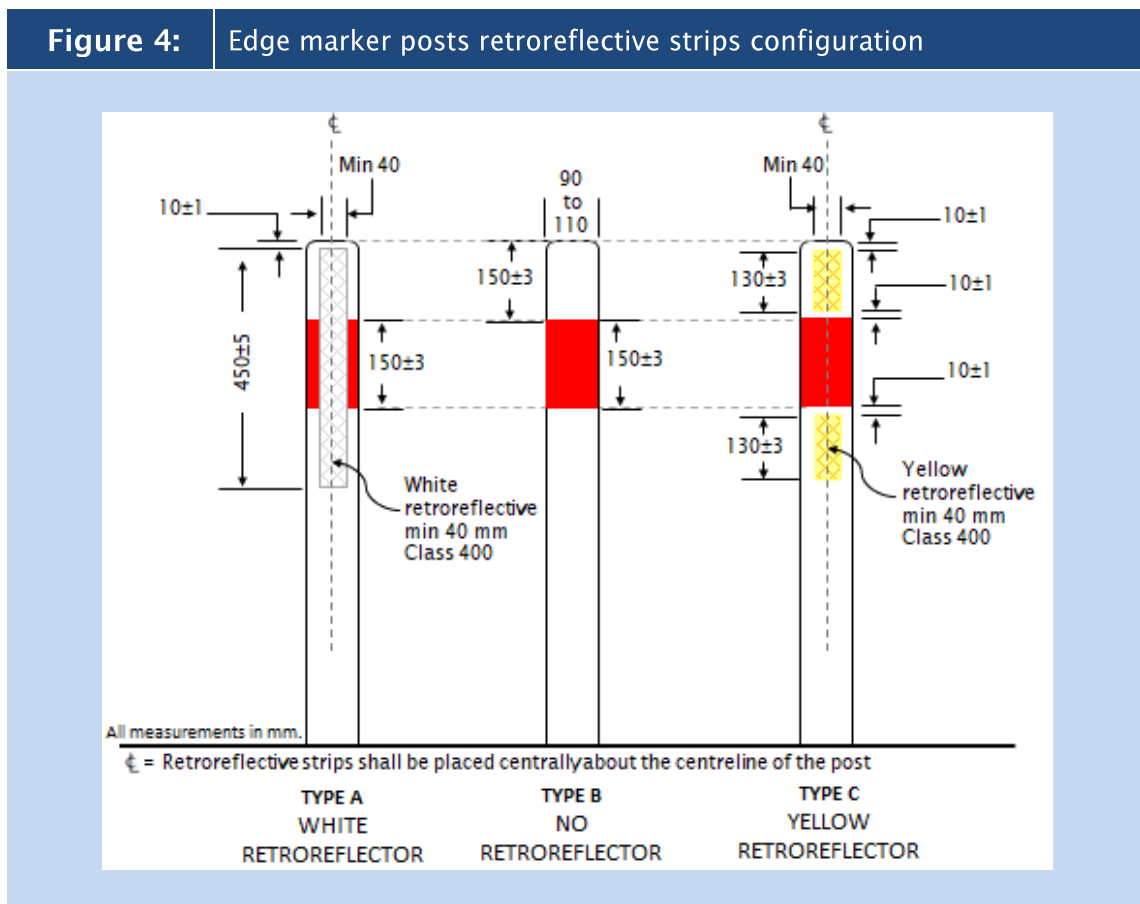
### 5.2.2 Red band dimensions

The red non-retroreflective band shall be: (Figure 4)

- (a)  $150 \pm 3$  mm in height on the post
- (b) Fully encircle the post, or
- (c) If applied as separate pieces to the front and rear of the post, finish at the edge of the post, matching the width of both the front and rear of the post to within 1 mm

The red material shall be applied to the post face so that the top of the red band is  $150 \pm 3$  mm below the top of the post. (Figure 4)

### 5.2.3 White and yellow retroreflective dimensions



- (a) Type A face – white retroreflective strip:  
One white retroreflective strip  $450 \pm 5$  mm in length and no less than 40 mm width shall be attached centred on the front face so that the top is located  $10 \pm 1$  mm below the top of the post. The retroreflective strip is to be attached over the red band. (Figure 4)

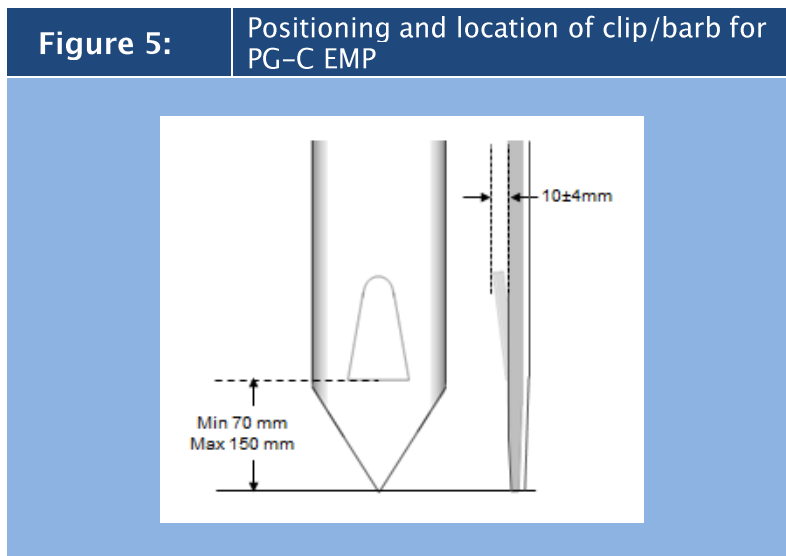
(b) Type C face – yellow retroreflective strips:

Two yellow retroreflective strips each  $130 \pm 3$  mm in length and no less than 40 mm width shall be attached centred on the rear face. The top of the first strip shall be located  $10 \pm 1$  mm below the top of the post, and the top of the second  $10 \pm 1$  mm below the bottom of the red band. (Figure 4)

### 5.3 Ground installed post anchoring

The edge marker post shall have an anchoring system to ensure that it will remain securely in the ground and not be lifted free when struck by a vehicle. The anchoring systems accepted shall be:

- (a) Posts intended for use in penetrable ground (ID Code: PG) shall adopt one of the following anchoring methods:
  - (i) If no clip or barb system is adopted the length of the post must be extended by an additional  $100 \pm 3$  mm to a nominal 1500 mm length (Post ID Code: PG-15), or
  - (ii) Include a hole located between 70 mm and 130 mm from the bottom end of the post with a suitable stabilising rod or clip to fit the hole so as to secure the post in the ground (Post ID Code: PG-SR), or
  - (iii) A clip or barb that protrudes  $10 \pm 4$  mm from the plane of the post, located between 70 mm and 150 mm from the bottom end of the post (Post ID Code: PG-C) the post shall be a minimum of 1400 mm (Figure 5)



- (iv) A separate permanent anchor which can be embedded in the ground to which the white post can be attached (ID Code: PG-A). (Figure 3)

(b) Posts intended for non-penetrable surfaces (NP-S):

Shall have a device, or a post design, that will hold the post upright, enabling the post to be bolted, riveted or similarly fastened securely to the impenetrable surface. (Figure 3)

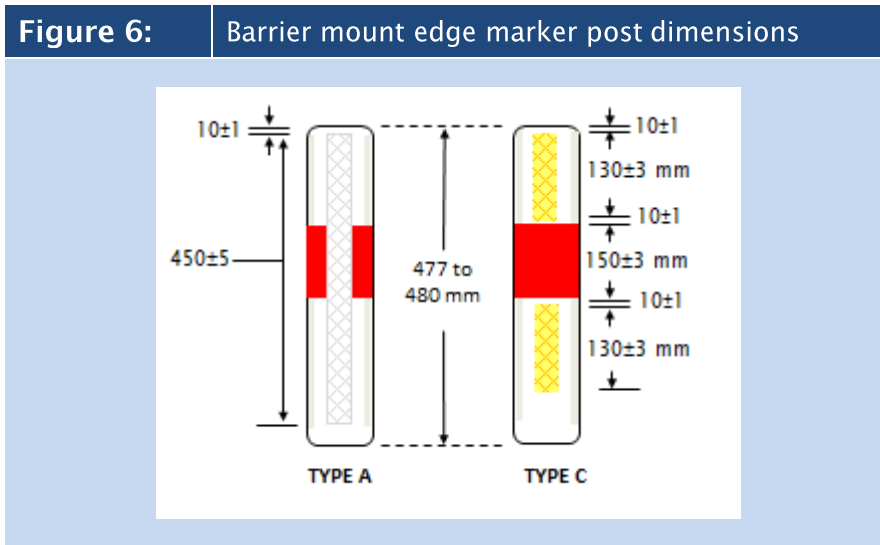
Table 1:		EMP ID Codes based on post anchoring or installation methodology			
Installation into penetrable ground with anchoring clip/barb	Installation into penetrable ground using added post length	Installation into penetrable ground w/ Stabilising rod	Installation into penetrable ground with anchor	Installation onto surface of non-penetrable ground	Barrier mounted with accepted bracket
PG-C	PG-15	PG-SR	PG-A	NP-S	BEMP

## 5.4 Barrier attached posts

Marker posts that are to be attached to either a semi-rigid safety barrier, that may include bridge sidings, or a wire rope safety barrier, (sometimes referred to as barrier edge marker posts – BEMPs) will typically require the edge marker post to be modified and an attachment method designed in order to be attached to the barrier.

Any post modification must not narrow the width of the post and, as a minimum, must include the area of the post that has the red non-retroreflective band and the white retroreflective strip (Type A face) plus no less than 10±1 mm of clear post above and below the retroreflective strip (Figure 6).

This configuration will result in there being a larger clear area below the lower yellow retroreflective strip (Type C face) if this is appropriate for the specific installation.



The decision to install edge marker posts onto wire rope safety barriers does not eliminate the option for retroreflective markers to be applied to the top of barrier posts, typical when a wire rope safety barrier is located as a central divided highway barrier. Neither should the potential use of semi-rigid barrier attached edge markers posts preclude the use of specialised retroreflectors designed for specific use with W-beam guardrail semi-rigid safety barriers.

### 5.4.1 Post substrate material

The post substrate will typically be, but is not limited to being, the same as used for an accepted ground installed marker post. Wood is not permitted.

Any substrate that differs from an accepted ground installed post must be individually tested, as a 1500 mm ground installed post, prior to being adapted for barrier post use.

#### 5.4.2 Post attachment system

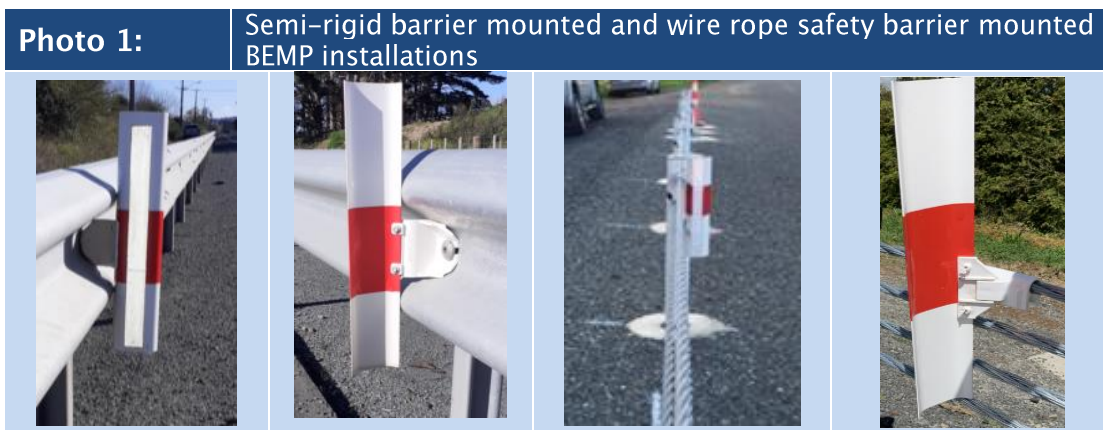
The attachment bracket must be made from materials designed to resist weathering deterioration including seasonal effects of the New Zealand climate for a period of no less than 10 years and it must be sufficiently robust to withstand potential air disturbance from passing heavy vehicles that may alter a post's vertical alignment or presentation to approaching traffic.

The BEMP attachment bracket must be specifically designed to anchor the post firmly to each specific barrier system using either an attachment bracket supplied by the barrier System Owner or a contractor's bracket that has been accepted in writing by the barrier System Owner and Waka Kotahi Lead Safety Advisor.

The barrier attachment bracket must not be designed to be attached to the support post of a semi-rigid barrier or wire rope safety barrier.

(a) Semi-rigid guard rail

The barrier marker post bracket must be designed to be attached to a semi-rigid guard rail barrier at the point where the barrier is attached to a post (Photo 1 herein) or in a manner that will not affect the operation of the barrier and as recommended by the barrier System Owner<sup>5</sup>



(b) Wire rope safety barrier

The wire rope safety BEMP bracket must be designed to be attached to the wire rope of this safety barrier using either the wire rope barrier System Owner's bracket or an installation contractor's bracket that has been accepted in writing by the barrier System Owner and Waka Kotahi Lead Safety Advisor.

The barrier attachment bracket must not be designed to be mechanically attached into or through the wire rope of the safety barrier or have any mechanical fixing that will in any way affect the integrity of the wire rope.

The bracket must also be specifically designed to successfully connect to the various wire set-out alternatives (Figure 8 Section 12 here-in) in such a way that it will not slide along the wire or allow the marker post to rotate out of a vertical position.

<sup>5</sup> Refer to Clause 3 Definitions 'System Owner'  
WAKA KOTAHİ NZ TRANSPORT AGENCY



### 5.4.3 Post colouring and markings

As with ground installed marker posts the attached post must be white as specified in Clause 5.1.2 and include the red non-retroreflective band and retroreflective strips as specified in Clauses 5.2.2 and 5.2.3.

## 5.5 Post identification

Individual EMPs including BEMPs shall be identified with:

- (a) Manufacturer's name, and model, either in code or in full. Note: where these are coded the full details must be provided separately for inclusion in the *Type Acceptance* list, and must be readily available to the purchaser (for example on packaging) and
- (b) Date of manufacture

Unless otherwise specified, posts shall be supplied fully finished, i.e. with red band and appropriate retroreflective strips attached.

## 6. PERFORMANCE REQUIREMENTS

Appendix A describes the number of samples, and documentation required for testing. New (i.e. unused) posts must comply with the following functional requirements.

The substrate of any modified marker post designed to be attached to a barrier system must comply with the following requirements when tested as a full length ground installed 1400 mm post.

If a Manufacturer of a BEMP does not manufacture a standard post to the specified 1400mm length, the manufacturer must supply the twelve (12) post lengths at 1500 mm, as required in Appendix A, made from the substrate to be used in the manufacture of the BEMP in order for the required testing to be undertaken.

### 6.1 Deflection requirement:

When tested in accordance with Appendix B of this specification, no ground installed 1400 mm (or if necessary 1500 mm) post shall deflect more than 134 mm.

### 6.2 Resistance to vehicle impact

This test requires three (3) new posts to be impacted ten (10) times in accordance with the full-face impact test described in Appendix C

When tested in this way each post shall yield on impact, and then return to an upright position immediately following each impact.

After the completion of the impact test for each post:

- (a) The maximum deviation shall be no more than 100 mm forwards or backwards from the vertical position. Sixty seconds shall be allowed after completion of the 10th impact for the post to "recover" before the deviation is measured
- (b) The post shall stay fixed in the ground and shall not have pulled up any more than 150 mm

- (c) The post shall remain substantially intact (no splitting, cracking or major chipping of material). Major chipping shall be defined by a portion of the post approximately 25 mm x 25 mm (roughly to the size of a NZ\$2.00 coin) being removed from the post
- (d) At least 80% of the delineator's red band and retroreflective strips shall remain intact and adhered to the post
- (e) The post shall be self-righting after impact
- (f) Throughout impact testing, the post shall not enter the compartment of a motor vehicle, or cause significant change in vehicle velocity or stability, nor damage a lightly padded test vehicle
- (g) The post shall not exhibit behaviour, which in the opinion of the Waka Kotahi Lead Safety Advisor, may present injury risk to road users comprising, vehicle occupants, pedestrians, cyclists and motor cyclists for example from:
  - (i) Post or post fragments becoming detached and acting as a spear
  - (ii) The intact post splitting, breaking, or losing protective capping so that the broken post could impale a road user
  - (iii) The post acting during impact in a manner that is likely to injure the road user comprising, vehicle occupants, cyclists and motorcyclists (through unusual processes of yielding and self-righting)
- (h) The posts shall not exhibit presence of any sharp edges or burs

### 6.3 Cold resistance test

When tested in accordance with Appendix D of this specification:

- a) The post shall be capable of straightening itself within 60 seconds when bent at the midpoint
- b) The post shall show no signs of fracturing, cracking or splitting when struck by a 1 kg steel object having a rounded end of approximately 25 mm radius, and dropped from a height of 1500 mm

## 7. CERTIFICATION OF DURABILITY

Suppliers of posts shall certify that the posts, red band, retroreflective strips and any ancillary components such as attachment brackets and systems, clips or rods and anchors, have been formulated from materials that are known to resist discolouration and embrittlement that would impair the performance of the post.

The materials must resist these changes for a minimum period of 10 years of weather and seasonal effects that are typical in New Zealand climatic conditions<sup>6</sup>.

If required by the Waka Kotahi Lead Safety Advisor, the Supplier shall substantiate this certification by, for example, reference to tests, to Suppliers' literature, or the norms of industry good practice.

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<sup>6</sup> Climatic conditions refer to sun, rain, UV, and temperature range encountered in the New Zealand outdoor environment.

## 8. MARKER POST APPROVAL

All edge marker posts used on the national roading network under M14 shall be required to have gained either *Provisional Acceptance* and/or *Type Acceptance* and be listed in *M14 Acceptance Listings for EMPs*.

### 8.1 Provisional acceptance

Applications for *Provisional Acceptance* shall be submitted to the Waka Kotahi Lead Safety Advisor and be supported by an *Application Form* and a signed *Record of Testing* that shows that the posts meet each of the requirements of this specification. (M14 *Certificate and Worksheet Templates for EMPs*)

The test report is to be prepared by an independent testing organisation having an appropriate level of competence for such testing using the *Record of Testing* template (Introduced in Appendix G) accompanied by an appropriately close up, full length photo, one each of the Type A face (front) and Type C face (rear) of the finished post.

The cost of gaining *Provisional Acceptance* and reporting shall be borne by the marker post Manufacturer or Supplier.

*Provisional Acceptance* is awarded in writing by Waka Kotahi and this will include a *Certificate of Acceptance* from Waka Kotahi after the tests required in this Specification have been completed. EMPs that qualify for *Provisional Acceptance* under this specification will then be listed in *M14 Acceptance Listings for EMPs*, permitting the posts to be installed on New Zealand roads. *Provisional Acceptance* will last for 12 months after the date of listing.

### 8.2 Type acceptance

After twelve (12) months of in-service use and experience, the post Manufacturer or Supplier must provide the Waka Kotahi Lead Safety Advisor with a brief report on the in-service performance of the EMPs from a minimum of three (3) named installations. This report will include date of installation, RCA involved including specific contact, date of twelve (12) month review and summary of findings including any loss due to post failure, retroreflective failure or colour fade.

Supporting comments from the Road Controlling Authorities involved should be included along with contact details for the referees. Following a satisfactory review of the report the post Manufacturer or Supplier will receive written confirmation of *Type Acceptance* from Waka Kotahi if the results so indicate. The post will be entered into *M14 Acceptance listing for EMPs*. Following this the post will remain valid for a period of five (5) years from the date that *Type Acceptance* was issued and listed.

*Type Acceptance* may be withdrawn at any stage if there is evidence of less than satisfactory in-service performance.

*Type Acceptance* may also be withdrawn if two samples of new (i.e. unused) posts, drawn by Waka Kotahi fail to meet the requirements of this specification after being tested by an independent recognised laboratory, especially those requirements set out in the above Clause 6: Performance Requirements. Suppliers are to be advised that such testing is taking place and are entitled to be present while such testing is carried out.

*Type Acceptance* may also be withdrawn, or withheld, if the Supplier cannot, when requested, substantiate the certification of durability. (Clause 7)

*Type Acceptance* is awarded to a post type as described in the *Test Reporting Template* and depicted in the accompanying photographs. If the post or any of its components are changed in any way, e.g. in formulation, thickness or shape, country of manufacture then this constitutes a new post type, and the Supplier is required to notify Waka Kotahi of these changes. Waka Kotahi will have the discretion whether these variants will need to undergo full or partial *Provisional* and /or *Type Acceptance* testing.

## 9. SUPPLY AND PACKAGING

Unless otherwise specified, posts shall be supplied fully finished, i.e. white with a red band and the relative retroreflectors attached.

Posts, and especially the retroreflective strips, shall be protected from damage during delivery and shall be free from any deleterious coatings.

## 10. RE-ACCEPTANCE PROCESS

Immediately before the expiry date for *Type Acceptance* the Manufacturer or Supplier must initiate a meeting with Waka Kotahi Lead Safety Advisor in order to gain an extension to the *Type Acceptance*.

Full retesting may not be required at this point but the post Manufacturer or Supplier must declare, in writing, that:

- no changes have been made in the manufacture of the post including the post substrate and the red banding
- the retroreflective strips are a minimum of Class 400 prismatic high intensity as specified in AS 1906.1 and listed in the New Zealand Gazette
- material sourcing and the country of manufacture remain the same as for the original compliance testing (Clause 11.1 below)

If Waka Kotahi considers the performance to be satisfactory after the five (5) year period *Type Acceptance* may be renewed for an additional period of up to five (5) years upon a request from the Manufacturer or Supplier.

However, if Waka Kotahi has any concerns regarding performance the *Type Acceptance* will expire, and the post will be required to be re-tested for compliance with this specification for *Type Acceptance* to be considered again.

The re-acceptance process for all M14 edge marker posts is based on:

- Quality documentation as outlined below in Clause 11.1
- In-service performance
- Confirmation of manufacturing continuity

## 10.1 Required documentation

### 10.1.1 Materials

Confirmation is required confirming that the retroreflective strips on the EMP or BEMP are compliant with the AS 1906.1:2017 Standard and approved by Waka Kotahi as evidenced by inclusion in the New Zealand Gazette to a minimum of Class 400 Prismatic High Intensity.

Evidence must reconfirm that the source material from which the EMP or BEMP is manufactured is ISO certified, or equivalent.

Confirmation in writing from the EMP certifying that:

- The material and formulation from which the EMP is manufactured from is the same as they were at the time of the original *M14 Acceptance*
- The country of manufacture remains as for the original *Type Acceptance*

### 10.1.2 Manufacturing

A statement describing the manufacturing quality assurance regime including:

- What manufacturing checks are undertaken (e.g. weighing of posts, measuring lengths)
- The methods that are used for manufacturing checks
- The percentage of EMPs that are checked after manufacturing, using the named methods
- The tolerance the EMPs must be within, when compared with the specifications in M14

### 10.1.3 Certification

Copies of any ISO certification or equivalent such as letters acknowledging completion of any audits, for the manufacturing plant are required.

### 10.1.4 Installation

A copy of the EMP installation instructions and recommended cleaning instructions, including cleaning of the retroreflective elements, to be supplied to customers is required. Refer to Section 12.

### 10.1.5 Other optional documentation:

Any other supporting documentation, e.g.:

- Statement of the manufacturing plant's maintenance regime, e.g. how often the machinery is stripped and cleaned, screens replaced, etc
- Certificate of durability
- Any other advertising material or testing reports to support the application (see also Clause 10.2.2 below)

## 10.2 In-service performance documentation

### 10.2.1 Non-compliance reporting

If there have been any reported non-compliant substandard EMPs or BEMPs on the New Zealand network, contact will be made to discuss the relevant issues.

Waka Kotahi will seek to know what changes to manufacturing and quality are to be made to remedy the quality issue to ensure no further substandard EMPs are supplied in the future.

It may be necessary to re-test some facets of performance to ensure that any such remedial actions have been effective.

### 10.2.2 Optional support documentation:

Any in-service performance data or laboratory testing data which has collected regarding an accepted EMP may be submitted in support of the application for M14 re-acceptance.

# 11. MARKER POST INSTALLATION

This section covers the installation of EMPs, either for newly constructed sections of road or upgraded sites.

EMP Installation Contractors should be familiar with the requirements of SM032 Network Outcomes Contract Volume 1 Conditions of Contract, System Management V3.1.

## 11.1 General

All posts will be installed and in place prior to the first day's trafficking for new construction sites.

For upgraded sites no gaps shall be allowed in the specified positions of the EMPs overnight.

### 11.1.1 Prior approval

Before commencing work the contractor shall submit a programme for approval by the client RCA Engineer or their appointed project Engineer.

### 11.1.2 Materials

Unless the contract involves the relocation of existing EMPs, all posts must be new posts with current compliance with M14. Posts with *Provisional* and *Type Acceptance* must appear in NZTA M14 *Acceptance Listings for EMPs*.

Where the contract involves relocation of existing posts any post used must be individually judged suitable for purpose, be washed and free of any physical damage easily visible to the passing motorist. The post must be refitted with new retroreflectors and the red non-retroreflective band must be in good condition.

## 11.2 Post Installation

### 11.2.1 Ground mounted EMPs

New or refurbished posts shall be installed in accordance with the guidelines given in the ([TCD Manual Part 4 Traffic control devices for general use - at intersections \[in draft\]](#)) and [Part 5 Traffic control devices for general use - between intersections](#).

Anchoring is extremely important for heavy posts and posts placed in areas where they are likely to be impacted or deflected regularly. Additional details may be supplied elsewhere in the contract documentation.

Each installed EMP shall be:

- (a) Within 5° of vertical
- (b) Within 100 mm from the transverse position specified by the client RCA Engineer or their appointed project engineer; and
- (c) Within two (2) metres from the specified longitudinal position except when obstructions such as drive ways, side roads etc are apparent. ([TCD Manual Part 4 Traffic control devices for general use - at intersections \[in draft\]](#)).
- (d) Shall not have greater than 10° twist from the specified direction

For EMPs to be installed into penetrable ground the post shall be firmly installed according to the Suppliers instructions. The post must be in a vertical position with the top 900±50 mm above the nearest white edge line or above the edge of the carriageway where no edge line is marked.

Posts fitted with type approved barb retaining anchorages shall be installed in a manner which ensures that the barb engages with the surrounding ground and functions to prevent the post from being pulled vertically by hand from the ground.

The minimum embedment length, unless otherwise specified by the client RCA Engineer or their appointed project engineer, shall be:

- 300 mm for PG-C posts with a *Type Accepted* retaining clip approved by the M14 specification
- 400 mm for PG-15 posts without approved retaining clip (i.e. a 1500 mm length post); and
- 300 mm for PG-A posts adopting a *Type Accepted* barb retaining anchorage system. This installation must not have less than 200 mm embedment from the top of the barb to the surface of the ground at the post position

Marker posts to be installed into an in-ground anchor must ensure that the anchoring system is designed for use with the post being installed. If to be attached to a surface mounted bracket or barrier attachment bracket the system must be in accordance with the Supplier's instructions.

The minimum marker post length is specified in Clause 5.3 here-in.

Contractors installing a BEMP onto any part of a semi-rigid safety guardrail or wire rope safety barrier system must be in possession of a letter of confirmation issued by the road safety barrier System

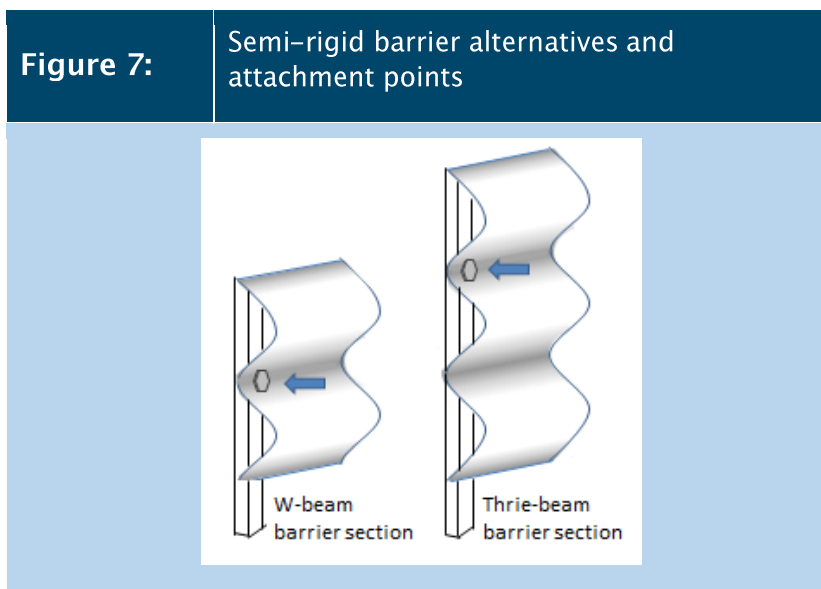
Owner that the proposed attachment and its method of attachment has been approved by Waka Kotahi. (Clause 5.4.2)

### 11.2.2 Semi-rigid barrier mounted EMPs

Barrier EMPs must be installed according to the barrier *System Owner's* specifications as specified in Clause 5.4.2.

The barrier System Owner's instruction sheet will include additional detail such as bolt and nut details (e.g. Class 8.8 bolt and nut set of M16x32 splice bolt and nut set) and any tightening tension to be applied. No modifications may be made to a semi-rigid barrier system for any purpose when attaching a BEMP.

The top of the EMP when installed must be level with a point  $900 \pm 50$  mm above the nearest white edge line or above the edge of the carriageway where no edge line is marked. The orientation of the bolt head at the attachment point must always remain unchanged from the barrier System Owner's accepted system.



In situations where the barrier is, or is to be installed in such a way that a post position can be excluded leaving an unused post attachment point the contractor must confirm with the barrier System Owner before attaching an EMP at this point. The marker posts shall not be installed at the splice join between sections of barrier beam.

### 11.2.3 Wire rope safety barrier mounted EMPs

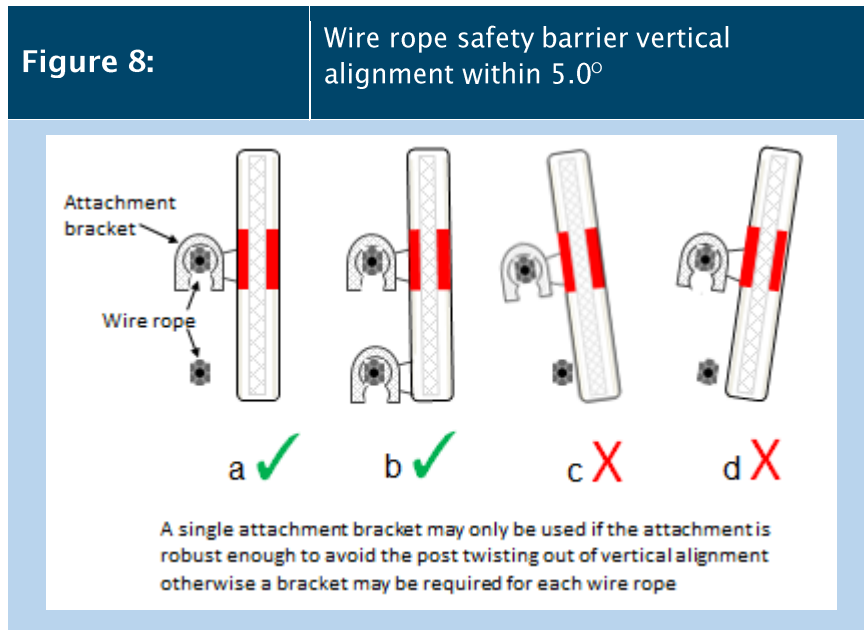
Waka Kotahi requires, and the barrier System Owner's instruction sheet must show, that the BEMP must be installed adjacent to the upstream side, in the direction of travel, of a wire rope support post and not spaced out between posts.

The BEMP attachment bracket must be appropriate for use with the wire configuration (Figure 8)

The BEMP is to be installed on the most appropriate wire that will position the top of the post  $900 \pm 50$  mm above the nearest white edge line or above the edge of the carriageway where no edge line is marked. No installation is permitted within the terminal ends.



When installed the post must be within 5.0° of vertical (Figure 8a). Care must be taken in situations where the safety wire ropes are not set out in a perpendicular alignment (Figure 8c). Where a single attachment bracket is used it must clamp sufficiently well to ensure it will not allow the marker post to twist out of alignment (Figure 8d).



### 11.3 Performance criteria

The performance of the contractor will be assessed by the following criteria:

- (a) All edge marker posts are installed in accordance with this specification and the programme specified
- (b) Posts remain within specified tolerances for twist, verticality and embedment length
- (c) Installed posts cannot be pulled vertically out of the ground by hand
- (d) Installed posts cannot be tilted or swivelled permanently about their axis by hand

### 11.4 Basis of payment

The basis of payment shall remain as has been specified in the now superseded NZTA P16 Specification; that the basis of payment shall be an all-inclusive rate for each post installed for:

- (a) The supply and installation of posts; or
- (b) Refurbishment and relocation of posts supplied by client

While this will typically remain as the basis of payment the Contractor and RCA should be knowledgeable of and aware of the basis of payment that is outlined in alternative more specific

contract specifications such as a Maintenance Alliance or SM032 Network Outcomes Contract (NOC)<sup>7</sup> in order to determine precisely which specification is appropriate:

## 12. INSPECTION AND MAINTENANCE

For the inspection and maintenance of EMPs Contractors must comply with the specifications within this section but should also be familiar with the requirements of SM032 Network Outcomes Contract (NOC) Volume 4 Maintenance Specifications, especially, but not limited to, Clause 6.7.1.5 Marker Posts and appreciate any additional requirements that may exist if the road network falls within a Maintenance Alliance.

Checking the performance of edge marker posts should be part of the inspection surveys that are scheduled by RCAs for roads and signs. The survey should note daytime definition of the post relative to cleanliness, vertical presentation, colour and overall presentation to ensure the posts remain suitable for purpose. Night surveys should take note of the retroreflective performance to ensure that this also remains suitable for purpose.

- (a) Is the post positioned in a relatively upright presentation with face forward towards an approaching vehicle? Posts that are 10° or greater off vertical shall be straightened.
- (b) Is the colour definition sufficient to be recognised as an edge marker post?
  - (i) Has the post maintained a satisfactory “suitable for purpose” degree of whiteness?
  - (ii) Does the red band remain recognisably red without extensive colour fade or signs of delamination or damage?
  - (iii) Is the white retroreflective strip (Type A face) at the front reasonably intact without signs of delamination, impact or lichen damage?
  - (iv) Are the two yellow retroreflective strips (Type C face) both intact and without delamination, impact or lichen damage?
  - (v) At night is there considered to be sufficient retroreflective performance to adjudge the post suitable for purpose such that the retroreflective delineator is visible from 80 m with dip beam lights and 160 m on high beam?
- (c) Missing posts identified by recognising that there is a gap in the post sequencing.
- (d) Any wooden EMPs must be replaced by current compliant posts.

The Supplier must provide instructions about cleaning agents and cleaning procedures that are recommended to contractors. The type of cleaning agent is at the discretion of the Supplier but should take into account toxicity under the Hazardous Substances and New Organisms Act<sup>8</sup> (HSNO Act).

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<sup>7</sup> SM032 Network Outcomes Contract (NOC) Volume 3 Basis of Payment Systems Management V3.1

<sup>8</sup> The Hazardous Substances and New Organisms Act (HSNO) is an Act of Parliament passed in New Zealand in 1996. The New Zealand Environmental Protection Authority (EPA) administers the Act.

Any cleaning methodology should also recognise any special requirements for cleaning of the retroreflective strips that may be recommended by the sheeting manufacturer e.g. avoidance of abrasive action or some cleansers. The process of cleaning marker posts must ensure that the retroreflective performance of this sheeting is not compromised.

## APPENDIX A:

### SIZE OF SAMPLE FOR TESTING

The EMP Supplier is required to provide twelve (12) posts for testing to this specification. The disposition of these posts after testing may be decided by the supplier. These will be used as follows:

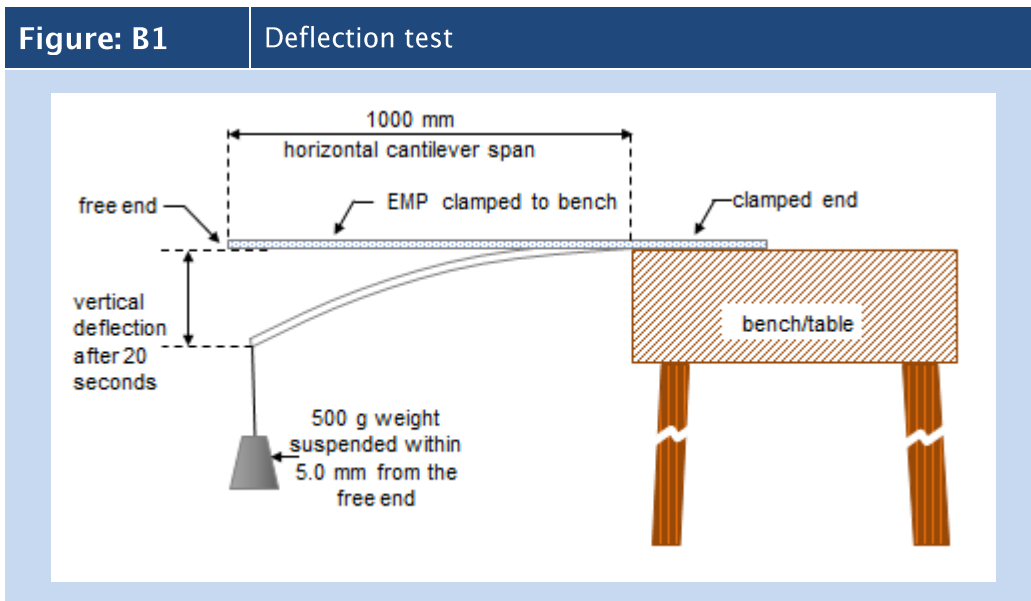
- All twelve posts will be inspected to assess that the posts are of consistent appearance and exhibit a high-quality finish
- Three posts will be used for the deflection test
- Three posts are required for the full-face vehicle impact test
- Three posts will be submitted for the cold bend test
- Two posts will be held as replacements should they be required to replace a post(s) that has been unreasonably damaged or for retesting purposes. If these are ultimately not required they may be returned to the Supplier
- One untested post is to be labelled with the test laboratory's name, the date of the test, and an identifier that can be used to track the EMPs passage through the testing laboratory's record system of tests undertaken. This post will be returned to the Supplier and must be retained for a minimum period of six years

If the substrate of a post, modified for attachment to a barrier system, is a newly formulated substrate not currently confirmed as being manufactured from a substrate tested and compliant as a 1400 mm ground mounted EMP, the newly formulated substrate must be supplied for testing at the 1500 mm EMP length.

## APPENDIX B: DEFLECTION TEST

### B1 NUMBER OF SAMPLES

Three EMPs shall be tested for deflection.



### B2 METHOD

The EMP (1400 mm or 1500 mm) shall be clamped lightly to a bench, with the white retroreflective strip up and 1000 mm of the post protruding horizontally into free air. (Figure B1)

A 500 g weight shall be placed within 5.0 mm from the free end of the post as shown in Figure B1

The deflection is measured from the horizontal plane of the clamped section 20 seconds after the 500 g weight is attached.

### B3 REQUIREMENT

No post shall deflect by more than 134 mm. Posts intended for ground mounting with a cantilever span less than 1000 mm shall comprise of a cross-sectional stiffness not less than that required to satisfy the 134 mm criterion at a 1000 mm cantilever span.

## APPENDIX C:

### VEHICLE IMPACT TEST

#### C1 NUMBER OF POSTS

Three posts shall be tested for vehicle impact.

#### C2 METHOD

Testing is to be carried out in a location that can exclude public traffic including people walking, cycling, unleashed dogs, etc. If all forms of vehicular or pedestrian traffic cannot be excluded appropriate traffic management must be included.

##### C2.1 Test site preparation and traffic and public safety

This test shall be video recorded. The test site must have sufficient visibility to ensure that the post, a video operator and vehicle driver will maintain a line of sight at all times. One pass of the resultant video must accompany the record of testing. The remainder must be retained by the marker post Supplier and made available to Waka Kotahi if requested.

In all cases the surface on (or in) which the EMP is installed shall be continuous with the rest of the test area used by the test vehicle in impact testing (i.e. no hard kerb).

##### C2.2 Installation

###### (a) Posts intended for use in penetrable ground:

The area of ground where the post is located shall be well-compacted gravel

The post shall be installed in accordance with the Supplier's written instructions

A minimum of 1.0 metre shall protrude above the ground

The post shall be installed so it is vertical and in accordance with required installation tolerances. There shall be no apparent gap between the gravel and the post. Care shall be taken that no uncharacteristically large stones are in line with the post's likely contact area with the ground

###### (b) Posts intended for use on impenetrable ground:

The area of ground where the post is located shall be concrete or asphaltic concrete

The post shall be attached to the concrete or asphaltic concrete in accordance with the Supplier's written instructions

The post shall be installed so it is vertical and in accordance with installation tolerances (Section 11: Marker Post Installation herein). Loose material shall be removed from the line of the post's likely contact area with the ground

### C2.3 Testing

The test vehicle shall be a utility vehicle or commercial van weighing approximately 2 tonnes. A pad of closed cell foam or similar protection may be fitted to the test vehicle at the point of impact to prevent damage to the vehicle.

Impact testing shall be carried out with the test vehicle travelling between 50 and 55km/h.

Testing shall be immediately discontinued if, at any stage during testing, the test personnel consider they or adjacent persons are at risk of injury from impacting the post, if vehicle instability is significant on impacting the post, or the test vehicle is at risk of any more than superficial damage.

If risk to personnel safety is a result of the EMP breaking, splintering or releasing from the ground the test will be reported as failing.

Each of the three (3) posts shall sustain ten (10) impacts with the plane of the face of the post at  $90\pm 5^\circ$  to the direction of vehicle travel, and the front and rear wheel of the test vehicle shall pass directly over the marker post.

### C2.4 Recording impact test results

Each set of impacts shall be recorded on video. The video shall be taken from the side of the vehicle closest to the impact, so that each "wheel over" (the EMP) is visible in the video.

Prior to the test commencing a closer view of both sides of the post shall be recorded. Then again after five (5) and ten (10) impacts:

A still photograph shall be taken of the front and rear of each post ensuring that the sample number and number of impacts are clearly labelled on the post and visible in each photograph before impact testing and then after five (5) and ten (10) impacts

Any signs of damage to the post will be recorded after each impact:

- (a) The post shall stay fixed in the ground, and the post shall not "pull out" of the ground by more than 150mm
- (b) The post shall remain substantially intact (no splitting, cracking or major chipping of material). Major chipping shall be defined by a portion of the post approximately 25mm x 25mm being removed from the post (this size equates roughly to the size of a NZ\$2.00 coin)
- (c) At least 80% of the retroreflective delineators and red band shall remain intact and adhered to the post

## C2.5 Safety

After each impact and at the conclusion of the tests, an assessment of the potential of the post to be a safety hazard to road users comprising, vehicle occupants, pedestrians, cyclists and motorcyclists shall be made.

This assessment will include factors such as:

- (a) The ability of the post to be self-righting after impact
- (b) Whether throughout the impact testing the post or parts of the post entered the compartment of a motor vehicle caused significant change in vehicle velocity or stability, or damage to the test vehicle
- (c) Exhibited behaviour which may present injury risk to road users comprising vehicle occupants, pedestrians, cyclists and motorcyclists including:
  - (i) Post or post fragments becoming detached and acting as a projectile or spear
  - (ii) The intact post splitting, breaking, or losing protective capping so that the broken post could impale a road user
  - (iii) The post acting during impact in a manner that is likely to injure the road user (through unusual processes of yielding and self-righting)
- (d) The post shall not exhibit any sharp edges or burs



## APPENDIX D:

### RESISTANCE TO COLD

#### D1 TEST SAMPLES

Three posts shall be tested for resistance to cold.

#### D2 METHOD

Each of the three posts shall be conditioned in a suitable refrigeration device at a temperature of between 0° C and 2.0°C for a period of no less than 2.0 hours. The following tests shall then be performed:

##### D2.1 Bend test

The conditioned posts shall be capable of straightening within 60 seconds when bent at 90 degrees at the midpoint. This test is to be performed eight (8) times in the direction of normal face on vehicle impact.

The post shall be returned to the refrigeration device after two (2) bends for a period of no less than five (5) minutes in order to maintain the set temperature.

##### D2.2 Laboratory impact test

After the bend tests the three posts shall be reconditioned in the refrigeration device for no less than thirty minutes.

The now reconditioned posts shall show no signs of fracturing or cracking or splitting when a 1 kg steel object with a rounded end of 25 mm radius is dropped from a height of 1500 mm through a frictionless guide to impact the surface of the post.

The post shall be flat in a horizontal position supported at both ends. The test shall be carried out five times and concentrated near the middle of the post.

#### D3 REQUIREMENT

- (a) Each post shall straighten after each bend test
- (b) Each post shall show no signs of cracking, fracturing or splitting after each impact

## APPENDIX E:

### REPORTING

Reporting shall be completed using the *Test Reporting Certificate* (introduced in Appendix F) and available in an editable computer usable format as M14 *Certificates Worksheets for EMPs* that include the records for the following tests:

#### E1 DEFLECTION

- (a) The deflection measured for each post
- (b) The average deflection of the 3 samples
- (c) Confirmation that the posts complied with the deflection requirement

#### E2 IMPACT

- (a) The location at which impact testing was conducted
- (b) The method of installation
- (c) Photos of all samples tested, for impact before commencement and after 5 and 10 impacts.
- (d) A copy of the video as described in Appendix D, Clause D2.4
- (e) Comments on minor damage or any other significant aspects of the test
- (f) Serviceability – an assessment that the post has passed or failed the serviceability test requirements
- (g) Safety – an assessment that the post has passed or failed the safety test requirements

#### E3 COLD RESISTANCE

- (a) Results of the bend test
- (b) Results of the laboratory impact test
- (c) An assessment of whether the posts complied with the cold resistance test

#### E4 ASSESSMENT

An assessment as to whether the post meets all the requirements of these tests.

## E5 DESCRIPTION

A description of the post, and of any unique aspect or markings, so that the post type tested can be uniquely identified. The description shall also include:

- a) Supplier's name
- b) Date of the test
- c) Statement that the test was performed in accordance with M14: 2022
- d) Name and organisation of the person who conducted the testing

## APPENDIX F:

### F1. Introduction to Certificate and Worksheet Templates

Electronically editable templates are provided as Appendix G for:

(a) **Application form; Template W1**

The Manufacturer or Supplier is required to complete this form which must be submitted with the *Record of Testing* form(s) noted in (b) below when making an application to market a new EMP to Waka Kotahi. EMP photo of front (Type A face) and rear (Type C face) must be cut and pasted as required.

**Figure F1** Application to market an Edge Marker Post

NZTA M14 Template W1		Application to Market an Edge Marker Post				
Manufacturer/Supplier	ABC Road Control Devices Ltd					
Address	123 Somewhere St, Bestville, Anytown					
	P.O. Box 321 Bestville					
Contact	A Smith	Phone No	12 345 6789	email		
Trade Name	ABC GP-1	Marker Post Type & Code	PG-C			
Substrate Material		PVC				
Plus primary post Trade Name code if BEMP						
Retroreflective sheeting		Britelite Series 2100 Class 400				
Brand Class and series ID						
Post Dimensions	Length	1400 mm	Width	100 mm	Thickness	4.5 mm
Installation Method	Penetrable ground only using ABC Supplied installation ram					
Supporting Notes & Added Standards Compliance	Includes fitted anchoring clip					

(b) **Record of testing Template W2**

This form includes all the tests and requirements that an EMP must comply with in order to gain *Provisional Acceptance*.

The EMP Manufacturer or Supplier should provide this form to any independent organisation or materials testing laboratory qualified to perform the testing outlined. This organisation must sign to confirm that the EMP named has complied with the tests undertaken. Any test not completed must show “Not Tested”.

Where required a description of the post, including model ID, either in code or in full plus any aspect or markings must be included so that the post tested can be uniquely identified.

Other details required such as in line 5 and line 10 must be included to be entered in the *Provisional Acceptance* Listing.

**(c) Certificate of acceptance Template C1**

This form found in M14 *Certificates Worksheets for EMPs* will be completed by Waka Kotahi Senior Traffic and Safety Engineer, Programme and Standards as part of the written confirmation of *Provisional Acceptance* and/or *Type Acceptance* from Waka Kotahi.

## **F2: Introduction to Acceptance Listings for EMPs**

Listings for EMPs are provided as Appendix H with:

**(a) Table H1 lists EMPs with *Provisional Acceptance*.**

It should be noted that after twelve (12) months of in-service use and experience the EMP Manufacturer or Supplier must provide Waka Kotahi Senior Traffic and Safety Engineer, Programme and Standards with a report on the in-service performance of the EMPs for a minimum of three (3) installations in order to gain *Type Acceptance*.

**(b) Table H2 lists EMPs with *Type Acceptance*.**

Five (5) years after receiving confirmation of *Type Acceptance* the EMP Manufacturer or Supplier must initiate a meeting with Waka Kotahi Senior Traffic and Safety Engineer, Programme and Standards in order to reconfirm *Type Acceptance*.

## APPENDIX G:

### Certificate and Worksheet Templates

Click [here to be taken to M14 Appendix G on the Waka Kotahi website](#)

## APPENDIX H:

### Acceptance Listings for EMPs

Click [here to be taken to M14 Appendix H on the Waka Kotahi website](#)