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## RECORD OF AMENDMENTS

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<th>Version</th>
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<tr>
<td>0.1</td>
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<tr>
<td>0.3</td>
<td>Added torsional and base moment values in Section 4.1.2, equivalent to the strength of the existing Traffic Signals Type 2 Post.</td>
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<td>0.4</td>
<td>Re-numbered document to remove most of the letter-style ordered lists and instead used the n.m.o convention, allowing for easier cross referencing. Added extra notation on the torsional and base moment loadings to denote that they apply to non-passive safety posts only. Removed references to “RMS” in preference to “Roads and Maritime” to comply with the RMS Editorial Style Guide.</td>
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<tr>
<td>0.5</td>
<td>Fixed broken cross-references, added extra item in Section 9 to note that suppliers should provide all relevant documentation as requested in TS201, reverted version number to conform with new process</td>
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<td>Manager, TSI</td>
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1 SCOPE

This Specification covers the requirements for accessible traffic signal posts for use in New South Wales for traffic control signals. These posts are intended to provide ground-level access to the traffic signals hardware mounted on them, eliminating the need for ladders or elevated work platforms.

This Specification shall be used only where accessible posts are specified as part of an intersection design, and does not supersede Roads and Maritime Specification TSI-SP-043 (Ref. [8]), which covers the static, non-accessible Type 1, Type 2 and Type 6 posts which will continue to be used by Roads and Maritime.

Where “passive safety” or “frangible” posts are also mandated, additional requirements as specified in Roads and Maritime Specification TSI-SP-042 Ref. [7]) also apply.

This Specification excludes mast arms, which are separately specified.

Policy, or policies, defining where application, usage, activity or location requires the use of accessible traffic signal posts is considered outside the scope of this Specification.

2 REFERENCES AND APPLICABLE DOCUMENTS

2.1 Australian Standards

[1] AS 1170.2-2011 – Structural design actions - Wind actions

2.2 Roads and Maritime Services Documents

[5] PB/6 – Pedestrian Push-Button Assemblies (Revision 1)
[6] TS201 – Approval of ITS Field Equipment

3 DEFINITIONS AND GLOSSARY OF TERMS

For the purposes of this Specification, the following definitions and abbreviations shall apply:

Accessible Post – A post designed with a lowering or collapse mechanism facilitating maintenance access to post-mounted equipment.

Roads and Maritime – Roads and Maritime Services; a New South Wales Government Agency
4 TECHNICAL REQUIREMENT

Traffic signal posts are used for the support of traffic signal hardware including lanterns providing signal indications to both vehicle and pedestrian traffic, and the mounting of pedestrian push-button switches as well as signs.

Consideration should be given to maintaining compatibility with standard traffic signal hardware in current use (e.g. finial caps, lanterns and pedestrian buttons). This may be achieved either through maintaining an identical external diameter to existing posts or through providing mounting brackets compatible with standard traffic signal hardware.

4.1 Dimensions

4.1.1 The length of the accessible post, measured with the post fully extended/raised, shall conform to one of the following allowable lengths above ground level:

(a) 3.2 m
(b) 4.1 m
(c) 4.6 m
(d) 5.2 m

4.1.2 The length of the post shall be measured exclusive of all additional hardware mounted on the post (e.g. the end terminal, finial cap or additional signage).

4.1.3 Where alternative brackets or traffic signals hardware are not provided, the outer diameter of the upper, collapsible/lowerable portion of the accessible post, upon which all traffic signals lanterns (including pedestrian signal lanterns), the post-top assembly and the finial cap will be attached, shall conform to the dimensions listed in Section 2.1 of AS2339 (Ref. [3]).

4.1.4 The top of the accessible post shall be open, allowing access to the interior of the post. A covering cap or plate shall be provided to secure and seal the post top when the access point is not in use.

4.2 Structural

4.2.1 The accessible post shall have a design life of not less than twenty five years.

4.2.2 The accessible post shall be capable of supporting the combination of the self-load of the structure and the following dead load applied vertically downwards at the centreline of the post:

(a) Two six-aspect traffic signal lantern assemblies, including lantern mounting brackets conforming to Section 3 of AS2339 (Ref. [3])
(b) Two two-aspect pedestrian signal lantern assemblies, including lantern mounting straps conforming to Section 4.1 of AS2339 (Ref. [3])
(c) One post-top assembly, conforming to Section 4.2 of AS2339 (Ref. [3])
(d) One finial cap, conforming to Section 4.3 of AS2339 (Ref. [3]).
(e) Traffic signals terminal box and audio-tactile driver unit

It is permissible for alternative designs to the items listed above to be offered, where they form part of a system compatible with the offered accessible post. Details of any required alternate item, including all variances from the standard approved items, shall be submitted to Roads and Maritime for approval.
Note: The maximum mass of the standard-approved traffic signal lantern assemblies, including target board, is contained in Section 4.2 of AS2144 (Ref. [2]).

4.2.3 The accessible post shall have sufficient strength to support the load defined in 4.2.2 above on its upper, collapsible portion without impairing the function of the collapse or lowering mechanism specified in Section 4.4.

4.2.4 Where passive safety is not mandated, the accessible post shall have sufficient strength to withstand a lateral force applied at the top of the post in any direction, resulting in a maximum base moment loading no less than 12.0kNm when locked in its fully raised position, equivalent to the strength of a Type 2 Traffic Signals Post.

Note: Where passive safety is mandated, the strength of the accessible post shall conform to the requirements specified in Roads and Maritime Specification TSI-SP-042 (Ref. [7]).

4.2.5 Where passive safety is not mandated, the accessible post shall have sufficient strength to withstand a maximum torsional force no less than 1.5kNm when locked in its fully raised position, equivalent to the torsional strength of a Type 2 Traffic Signals Post.

Note: Where passive safety is mandated, the strength of the accessible post shall conform to requirements specified in Roads and Maritime Specification TSI-SP-042 (Ref. [7]).

4.2.6 The accessible post shall be designed to satisfactorily withstand the design wind gust speed in AS1170.2 (Ref. [1]), assuming Region B and a terrain category of 2, while supporting the load defined in 4.2.2 above on its upper, collapsible portion.

4.2.7 The accessible post shall not deflect more than 4° from any vertical plane, relative to the position assumed by that plane in the unloaded (i.e. zero wind velocity) condition, when the wind gust speed in AS1170.2 (Ref. [1]) is applied to the post, assuming Region B and a terrain category of 2.

4.3 Mounting Points and Cable Penetrations

4.3.1 The post shall incorporate a cable entry point in its base, conforming to Section 2.3 of AS2339 (Ref. [3]). For baseplate-mounted posts, the size of the cable entry openings shall be capable of accommodating a conduit up to at least 80mm in diameter.

4.3.2 Posts which incorporate a secondary entry point for the installation of internally mounted equipment are permissible. Where provided, the opening of this entry point shall be sufficiently large to allow for internally mounted equipment to be installed or removed using standard tools.

A covering plate shall be provided to secure any secondary entry points when not in use.

4.3.3 If an alternate audio-tactile pedestrian push-button design is not provided with the submission, the post shall possess pre-fabricated mounting and cable entry points supporting an audio-tactile pedestrian push-button switch conforming with Roads and Maritime Specification PB/6 (Ref. [5]). These points shall be positioned such that when used, the lowest point of the audio-tactile button assembly is located 1 metre above ground level. A covering plate shall be provided to secure these points when not in use.

Where an alternate audio-tactile pedestrian push button design is offered, details of the alternate design, including all variances from the standard approved items, shall be submitted to Roads and Maritime for approval.
4.4   Accessibility

4.4.1 The post shall incorporate a collapse or lowering mechanism, which when engaged allows all equipment mounted on the post to be positioned no higher than 1.5 metres from a horizontal reference plane extending from the base of the post.

The collapse or lowering mechanism is not required to be permanently integrated within the design of the post. Designs using an external, removable lowering device such as a winch are also permissible.

4.4.2 Posts incorporating a removable collapse or lowering mechanism shall be designed in a manner such that the mechanism does not impede access to post mounted equipment once installed.

4.4.3 The post shall be designed in a manner that requires the operator to progressively lower or raise the post using the collapse or lowering mechanism. Designs which allow for the possibility of the post to self-lower or self-collapse in an uncontrolled manner without operator intervention once a locking pin is removed are not permitted.

4.4.4 The post shall be designed in a manner that prevents it severing or otherwise damaging cables installed within it, while in the process of being raised or lowered.

4.4.5 The collapse or lowering mechanism shall be designed in a manner that allows the post to be raised or lowered safely by a single operator.

4.4.6 The collapse or lowering mechanism shall be designed in a manner that allows the post to be either fully raised or fully lowered within 120 seconds.

4.4.7 The collapse or lowering mechanism shall be designed in a manner that allows the mechanism to be positively locked in its fully extended or raised configuration.

4.4.8 Permanently integrated collapse or lowering mechanisms shall be secure in a vandal-resistant manner that renders it inaccessible when not in use.

4.4.9 Removable collapse or lowering mechanisms shall be transportable safely by a single operator, including over uneven ground.

4.4.10 Removable collapse or lowering mechanisms shall have a setup/connection time no greater than 180 seconds.

4.4.11 The post shall be designed in a manner that permits a spherical ball 50% of the nominal internal diameter of the post to be drawn through, when the post is in its fully collapsed or lowered configuration.

4.4.12 The post shall be designed in a manner that does not impede maintenance access to post-mounted equipment or secondary access points when the post is in its fully collapsed or lowered configuration.

4.5   Finish

The fabricated items shall be free from welding scale, sharp corners and projections. After completion of all manufacturing operations, all steel fabricated components, where used, shall be hot-dip galvanised in accordance with AS4680 (Ref. [4]). The galvanised surface shall be free from sharp projections, dross and dags.
4.6 Manufacturer’s Identification.

Each post shall be clearly marked with the following information:

(a) the manufacturer’s identification;

(b) a traceability code

The marking shall be legibly and durably applied by etching, punching or engraving, or alternatively by permanently affixing a corrosion-resistant plate containing the above information to the post.

5 APPROVAL

5.1 Approval for Accessibility aspects

The supplier shall provide information to Roads and Maritime via the ITS HelpDesk (ITSHelpdesk@rms.nsw.gov.au) according to the process defined in TS201 (Ref. [6]) to demonstrate compliance to the accessibility requirements defined in this specification.

5.2 Overall Approval for a specific application

To gain overall approval of an accessible post design, the supplier shall follow the process defined in TS201 (Ref. [6]),

6 QUALITY ASSURANCE

6.1 General

The Supplier and the manufacturer shall operate a quality management system complying with ISO 9001.

6.2 Third Party Accreditation

The quality management system shall be certified by a quality management system certification body either accredited under the criteria laid down in the Joint Accreditation System of Australia and New Zealand (JAS-ANZ), or listed in the International Standards Organisation ISO Directory of ISO 9000 and ISO 14000 Accreditation and Certification Bodies.

6.3 Quality plan

The manufacturer shall document a quality plan appropriate to the item detailing the quality control tests and assessments the manufacturer will conduct during manufacture prior to release. This shall include sampling plans and test frequency, and a description of the records to be made, as relevant.

A copy of this quality plan shall be provided by the supplier to Roads and Maritime as part of the approval process. Acceptance of this quality plan by Roads and Maritime is a prerequisite to gaining overall approval of an accessible post design.
6.4 Quality Audits

Roads and Maritime reserves the right to examine the Manufacturer's quality records pertaining to order for posts. Roads and Maritime also reserves the right to arrange for an independent quality audit concerning traffic signal posts in contract.

7 TESTING AND INSPECTION

7.1 Routine Production Tests

Tests and assessments shall be carried out by the manufacturer before Pre-delivery Acceptance Test, as defined in the manufacturer’s quality plan.

8 WARRANTY

Purchase of any items under this Specification shall be subject to a warranty period, to be confirmed by the Tenderer, of not less than 24 months following the date of despatch from the Manufacturer's Works or Agent's Premises to the Roads and Maritime Store. Any post failed in service or found to be defective within 24 months of the date of despatch will be delivered to the Supplier, who shall then make good the defect, arrange to have the defect made good or replace the post with another, and subsequently return the good unit to Roads and Maritime at no charge to Roads and Maritime. Unless otherwise agreed, defective posts shall be processed and returned within 60 calendar days from the date the Supplier is notified by Roads and Maritime of the defect.

It is expressly understood that any post failed as a result of a traffic accident, abuse or act of vandalism after delivery to Roads and Maritime will not be covered by warranty provisions.

9 DOCUMENTATION TO BE SUPPLIED

The Supplier shall submit the following documentation, as a minimum, in support of a submission for approval for the accessible posts via email to the ITS HelpDesk (ITSHelpDesk@rms.nsw.gov.au) for Approval by the ITS Principal:

(a) A quality plan for the post containing details of all tests undertaken during the manufacturing process (Ref. Section 6.3).

(b) Installation manual containing all information required for the installation of the post footing, post, and the mounting of traffic signals equipment. This manual shall not depend on the presence of any other (separately bound) documentation or manual and shall present the information in a manner and sequence that is relevant to the installation procedure.

(c) Operations manual detailing the operation of the collapse or lowering mechanism and associated equipment.

(d) Maintenance manual including preventative (routine) maintenance procedures and recommended maintenance schedules, if any. Fault maintenance procedures covering the replacement of key components in the event of failure shall be provided.
(e) Reference mechanical drawings of all supplied equipment including the post footing, the post, any non-standard brackets and fittings and the collapse and lowering mechanism.

(f) Any other documentation requested under the process defined in TS201 (Ref. [6])

Failure to provide the full information called for in this section shall render the submission liable to rejection.