



GUIDE POSTS 15A

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INFRASTRUCTURE
TECHNICAL
SPECIFICATION
15 - ROAD SIDE FURNITURE

Transport Canberra and
City Services

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Endorsed By:	Karl Cloos	Director, Infrastructure Planning
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Approved By: Ken Marshall Executive Branch Manager, Roads ACT

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1 GUIDE POSTS

1.1 General

1.1.1 Responsibilities

1.1.1.1 General

Requirement: Provide guide posts including supply of materials, protective treatment, erection and attachment of delineators, as documented.

1.1.2 Cross references

1.1.2.1 Design Standards

General: The following Design Standards are related to this Specification:

MITS 00	Preliminaries
MITS 01	Traffic Management

1.1.3 Referenced documents

1.1.3.1 Standards

General: The following documents are incorporated into this Specification by reference:

Australian standards

AS 1604	Specification for preservative treatment
AS 1604.1	Sawn and round timber
AS 1742	Manual of uniform traffic control devices
AS 1742.2	Traffic control devices for general use
AS/NZS 1906	Retroreflective materials and devices for road traffic control purposes.
AS/NZS 1906.2	Retroreflective devices (non-pavement application)
AS 2082	Timber – Hardwood – Visually stress-graded for structural purposes.
AS 2311	Guide to the painting of buildings
AS 2700S	Colour Standards for general purposes – Swatches
AS 2858	Timber – Softwood – Visually stress – graded for structural purposes.
AS 3730	Guide to the properties of paints for buildings
AS 3730.10	Latex – Exterior – Gloss
AS 3730.17	Primer – Wood – Latex – Interior/exterior
AS 3730.18	Undercoat/sealer – Latex – Interior/exterior
AS 5604	Timber – Natural durability ratings

1.1.4 Standards

1.1.4.1 General

Standard: To AS 1742.2.

Proprietary products: To *TCCS Products previously considered for use list*

1.1.5 Interpretation

1.1.5.1 Definitions

General: General: For the purpose of this Specification, the definitions of terms used to define the components of the road reserve are in conformance with *AS 1348, Glossary of Austroads Terms* and *AGRD03*, the definitions given below also apply:

Delineator: The small retroreflectors or panels of retroreflective sheeting that are attached to guideposts to provide a coherent pattern of delineation of the edges of the carriageway as an aid to night driving.

Flexible guide post: A guide post that deflects when impacted by a vehicle and then returns to the vertical position, without maintenance intervention.

Guide post: Posts used to mark the edge of the road carriageway. They assist the road user by indicating the alignment of the road ahead, especially at horizontal and vertical curves and under some circumstances, by providing a gauge with which to assess available sight distance.

Rigid guide post: A guide post which either fails by fracturing or remains intact and straight, but not vertical, when impacted by a vehicle.

Semi-flexible guide post: A guide post which fails by bending when impacted by a vehicle and can be straightened with maintenance intervention.

1.1.6 Hold points and witness points

1.1.6.1 Notice

General: Give written notice to the Authorised person so that the documented inspection and submissions may be made to the **Hold point table** and the **Witness point table**.

Table 15A-1 Hold point table

Item	Clause title	Requirement	Notice for inspection	Release by
Materials				
15A.1	Proprietary posts (Non timber) – Proposed supplier	Performance guarantee statement.	Two weeks before manufacture	Authorised Person
Execution				
15A.2	Establishment – Existing underground services	Check for services	5 working days	Authorised Person
15A.3	Establishment – Location of guide posts	Guide post placement.	Two weeks before installation	Authorised Person
15A.4	Installation of guide posts – Guide posts on concrete pavements	Provide fixing details	5 working days	Authorised Person
15A.5	Installation of guide posts – Proprietary guideposts	Provide manufacturer’s anchorage instructions	5 working days	Authorised Person

Table 15A-2 Witness point table

Item	Clause title	Requirement	Notice for inspection
Materials			
15A.1	Timber posts - Finish	Timber paint treatment inspection	1 working day - progressive
Execution			
15A.2	Installation of guide posts - Backfilling	Firm embedment in ground	Progressive
15A.3	Delineators - Fixing	Arrangement of delineators relative to traffic direction	Progressive

1.2 Materials

1.2.1 Proprietary posts (non-timber)

1.2.1.1 Proposed supplier

Proposal: Provide the details of the proposed guide post including the following:

- > Type of material.
- > Manufacturer's recommended installation procedure.
- > Technical specifications.
- > Test certificates including post strength, flexibility, impact and heat and cold resistance and durability.
- > Performance guarantee statement endorsed with the warranty period and the expected service life.

This is a **HOLD POINT**.

1.2.1.2 Specification

Surface of posts: Durable gloss or semi-gloss opaque white. Whiter than Y35 Off White of *AS 2700S*.
Smooth and easily cleaned finish.

1.2.1.3 Dimensions

Minimum height above ground surface: 1000 ± 100 mm.

Minimum width of the above ground section of the guide post: One face of 100 ± 5 mm.

Thickness: 50 ± 5 mm.

1.2.1.4 Anchorage

Certification: Make sure the guide posts resist bending, twisting and displacement due to wind and/or impact forces.

Resistance: They must be effective in resistance to vertical removal by persons other than personnel using recommended removal tools.

1.2.1.5 Physical properties and performance

Durability: No deterioration in physical properties of the guide post material after a minimum of 720 hours under accelerated weatherometer conditions.

Heat resistance: Flexible guide posts must not deflect more than 50mm after being heated as in Heat resistance test.

Cold resistance: Semi-flexible and flexible guide posts must show no signs of fractures, cracks or splits when cooled as in Cold resistance test.

Rigidity: At 23°C ($\pm 2^{\circ}\text{C}$) the guide post must not be able to rotate in a clamp suited to the post profile.

1.2.1.6 Markings

Traceability: Each post must be legibly and indelibly marked with the following:

- > Name of the supplier.
- > Month and year of manufacture.

Letter Size: Must be between 5 and 10mm high.

Placement: Place the markings on at least one side of the guide post and 500mm from the top of the guide post.

Ground level for installation: Clearly mark guide posts 1000mm from the top to show the ground level for installation.

1.2.1.7 End treatment

Top cap: Guide posts manufactured from thin walled hollow sections or sheet material of less than 10 mm thickness must each be fitted with a cap on the top of the guide post.

Dimensions: Caps must cover the whole top of the guide post with minimum dimensions 100 mm by 25mm.

Type: The cap must be the same colour and durability as the guide post and be rounded with no sharp edges.

Attachment: Cap must be attached so that it cannot be dislodged from the guide post by a force of 500N pulling on the cap in a direction away from the post.

Plastic: The tops of guide posts manufactured from plastic must incorporate rounded edges and corners.

1.2.2 Timber posts

1.2.2.1 Description

General: Conform to the following:

- > All surfaces: Smooth and free from obvious saw marks.
- > Dimensions: 90 x 45mm finished size x 1400mm long.
- > Post top: Slope the 90mm face 10mm off- square.

1.2.2.2 Hardwood

Natural durability class of the species supplied: To *AS 5604*.

Preservation treatment: Hazard class H4 to *AS 1604.1 Table H4* to the following extent:

- > Natural durability class 1 or 2 with less than 20% sapwood cross section: No treatment.
- > Natural durability class 1 or 2 with more than 20% sapwood cross section: Full treatment.
- > Natural durability class 3 or 4: Full treatment.

Grade: Structural grade No.4 to *AS 2082*.

1.2.2.3 Softwood

Preservation treatment: Hazard class H4 to *AS 1604.1 Table H4*.

Grade: Structural grade No.5 to *AS 2858*.

1.2.2.4 Finish

Preparation: Stop holes, cracks and other imperfections with white putty after the primer coat.

Paint:

- > Primer:
 - Wood primer, latex, one coat: To *AS 3730.17*. If posts are preservative treated, apply a first coat of solvent-borne primer followed by the latex primer.
- > Undercoat:
 - Undercoat, latex exterior, one coat: To *AS 3730.18*.
- > Top coat:
 - Gloss latex exterior, one coat: To *AS 3730.10*.

This is a **WITNESS POINT**.

Application: To *AS 2311 Section 6*.

Colour: White.

1.2.3 Delineators

1.2.3.1 General

Standard: To *AS/NZS 1906.2*.

Type: Provide one of the following for each post:

- > Corner-cubed: 80-85 mm diameter.
- > Class 1A retroreflective sheeting: Minimum 0.01 m² (minimum width 50mm).

Delineator location: Centrally locate delineators between the edges of the guide posts and placed so that the top of each delineator is between 50 and 100 mm from the top of the guide post.

Fixings: Fix the delineators to the guide post so that they are weatherproof and vandal resistant and so that they can be replaced if necessary without damaging the guide post.

Impact damage: Corner cube delineators that can be damaged by vehicular impact must not be used on flexible or semi-flexible guide posts.

Consistency: Provide the same type of delineator on each post for a minimum distance of 2km. Do not change delineator type within this distance.

1.3 Execution

1.3.1 Provision for traffic

1.3.1.1 General

Requirement: Conform to MITS 01 Traffic Management.

1.3.2 Establishment

1.3.2.1 Survey

Requirement: Confirm site surface and benchmarks. Conform to *MITS 00 Preliminaries*.

1.3.2.2 Safety

Control of traffic: To MITS 01 Traffic Management.

1.3.2.3 Location of guide posts

Standard: To *AS 1742.2* and as shown on the drawings.

Placement: Place the guide posts at a uniform distance from the pavement edge and as follows:

- > If the shoulder is adjacent to an embankment or at the surrounding natural surface level, place the guide posts such that the inside edge is in line with the outside edge of the shoulder
- > If the shoulder is located in a cutting, place the guide posts on the road pavement side of the table drain in such a manner as not to impede the flow of water in the drain.

This is a **HOLD POINT**.

1.3.3 Non-timber post tests procedures

1.3.3.1 Heat resistance – Flexible guide posts

Heat: Condition guide posts at 60°C ($\pm 2^\circ\text{C}$) for 2 hours in an oven.

Test procedure: Conform to the following:

- > Remove the guide post from the oven.
- > Clamp the base so that the guide post is vertical with the top of the guide post protruding 1000mm.
- > Bend the conditioned post adjacent to the clamp in the direction of the adjacent traffic flow to form a 90° angle.
- > Subject the post to 3 cycles of bending through 180° all within 2 minutes of its removal from the oven.
- > Finish the bending in a right angle.
- > Release the post.
- > Record the horizontal deflection at the top of the post from a vertical line 30 seconds after release from the bent position.

Tolerance: Deflection must not exceed 50mm.

Physical condition: The post must show no signs of fractures, cracks or splits.

1.3.3.2 Cold resistance – Flexible not metallic guide posts

Cool: Condition the guide post at 0°C (± 2°C) for 2 hours in an ice bath.

Test procedure: Conform to the following:

- > Remove the guide post from the ice bath.
- > Clamp in a vertical position with the top of the post protruding 1000 mm.
- > Bend the conditioned post adjacent to the clamp in the direction of the adjacent traffic flow to form a 90° angle within 30 seconds of its removal from the ice bath.
- > Manually straighten a semi-flexible guide post.
- > Release the post from the clamp 60 seconds after removing it from the ice bath and place the guide post in the ice bath for an additional 60 seconds.
- > Repeat the bending and ice bath four times.
- > Release the post from the bent position and immediately record the horizontal deflection at the top of the guide post from a vertical line 60 seconds after release.

Tolerance: The deflection must not exceed 50mm.

Physical condition: The post must show no signs of fractures, cracks or splits.

1.3.4 Installation of guide posts

1.3.4.1 Positioning

General: Set guide posts vertically in the shoulder pavement as follows:

- > Embedded depth:
 - > Rigid and timber guide posts: 500mm.
 - > Flexible and semi-flexible guide posts: 350mm.
- > Shoulder irregularities: Vary this depth so as to give uniform display of guide posts to a height of approximately 1000mm above ground level, with the tops evenly graded.
- > Install each guide post with the 100mm axis at right angles to the centre line of the road.

1.3.4.2 Vertical alignment

Allowance: Make allowance in the height of guide posts above the ground for the effects of superelevation and other road geometry in order to keep the guide posts within the range of the beam of vehicle headlights.

1.3.4.3 Backfilling

General: Backfill guide posts firm in the ground as follows:

- > Compact in layers not more than 150mm for the full depth of the guide posts up to ground level.
- > Density of the compacted backfilling: Not less than that of the adjacent undisturbed ground.

This is a **WITNESS POINT**.

1.3.4.4 Guide posts on concrete pavements

Submission: If the guide posts are installed on concrete pavements, provide details of fixing the guide posts to the concrete.

This is a **HOLD POINT**.

1.3.4.5 Proprietary guideposts

Resistance to impact: Provide proprietary guideposts that, when installed in the ground conforming to the recommendations of the manufacturer, resist overturning, twisting and displacement from wind and impact forces. Provide manufacturer's instructions for anchorage.

This is a **HOLD POINT**.

1.3.5 Delineators

1.3.5.1 Standard

Quality: Provide delineators to *AS/NZS 1906.2*.

1.3.5.2 Fixing

Timber posts: Attach 'Corner Cubed' delineators to each guide post using one way, anti-theft screws.

Proprietary posts: Provide a delineator fastening system that is not dislodged or rendered inactive under vehicular impact.

Position: Mount the delineators so that the top of the reflector is 50-100mm below the top of the guide post.

Arrangement: Arrange the delineators so that drivers approaching from either direction will see only red delineators on their left side and white delineators on their right side.

This is a **WITNESS POINT**.

1.3.6 Removal and disposal of existing guide posts

1.3.6.1 General

Extent: As shown on the drawings or as directed.

Removal: Include extracting all posts and other in-ground components and materials.

Backfilling: Backfill all holes after removal of existing guide posts and compact to the relative compaction of the surrounding shoulder material in layers of maximum depth of 150mm. Provide imported backfill material with similar characteristics to the shoulder material.

Disposal: All existing guide posts that are removed must be removed from site or otherwise disposed of as directed. Recycle existing posts manufactured from recyclable materials.

1.4 Completion

1.4.1 Submissions

Work as Executed Records: To *MIT'S OOB Quality Requirements*.

2 MEASUREMENT AND PAYMENT

2.1 Measurement

2.1.1.1 General

Payments made to the Bill of Quantities: To *MITS 00A General requirements*, this Specification, the drawings and **Pay items**.

2.1.1.2 Methodology

The following methodology will be applied for measurement and payment:

- > Allow for all work, materials, testing and quality assurance requirements in each Pay Item.
- > Concrete footings for posts: Paid under this Specification and not *MITS 06B Paths, Driveways and Medians*.

2.2 Pay items

Table 15A-3 Pay items table

Item No	Pay items	Unit of measurement	Schedule of rates scope
15A.1	Guide posts	Number of guide posts	All activities associated with the supply and installation of guide posts including painting (if applicable), supply and fixing of corner-cubed delineators and concrete footing for posts.
15A.2	Removal of existing guide posts	Number of guide posts	All activities associated with the supply, placement and compaction of backfill material for the reinstatement of guide post hole and the collection and legal disposal of the existing guide posts and footings.



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