Muswellbrook Shire Council

CONSTRUCTION SPECIFICATION

AUS-SPEC (Cot 09)

1193 Guide Posts

Version 01

Amendment Record for this Specification Part

This Specification is Council's edition of the AUS-SPEC generic specification part and includes Council's primary amendments.

Details are provided below outlining the clauses amended from the Council edition of this AUS-SPEC Specification Part. The clause numbering and context of each clause are preserved. New clauses are added towards the rear of the specification part as special requirements clauses. Project specific additional script is shown in the specification as italic font.

The amendment code indicated below is 'A' for additional script 'M' for modification to script and 'O' for omission of script. An additional code 'P' is included when the amendment is project specific.

Amendment Sequence No.	Key Topic addressed in amendment	Clause No.	Amendment Code	Author Initials	Amendment Date
0	No amendment has been made	all	Nil		13 June 2012

Contents

1193 GUIDE POSTS

1 GENERAL

1.1 RESPONSIBILITIES

General

General: Provide guide posts including supply of materials, protective treatment, erection and attachment of delineaters.

Performance

Requirements: Conform to this worksection and standards as directed and approved.

Selections: As documented.

1.2 CROSS REFERENCES

General

Requirement: Conform to the following:

- *0152 Schedule of rates – supply projects.*
- *0161 Quality (Construction) or 0167 Integrated management.*
- *0179 General requirements (Construction).*
- *1101 Control of traffic.*

1.3 REFERENCED DOCUMENTS

The following documents are incorporated into this worksection by reference:

Standards

AS 1604	Specification for preservative treatment.
AS 1604.1-2005	Sawn and round timber.
AS 1742	Manual of uniform traffic control devices
AS 1742.2-2009	Traffic control devices for general use
AS/NZS 1906	Retroreflective materials and devices for road traffic control purposes.
AS/NZS 1906.2: 2007	Retroreflective devices (non-pavement application).
AS 2082: 2007	Timber—Hardwood—Visually stress-graded for structural purposes.
AS 2311: 2009	Guide to the painting of buildings.
AS 2858: 2008	Timber – Softwood – Visually stress – graded for structural purposes.
AS 3730	Guide to the properties of paints for buildings.
AS 3730.17: 2006	Primer – Wood – Latex – Interior/exterior.
AS 3730.18: 2006	Undercoat/sealer – Latex – Interior/exterior.
AS 5604: 2005	Timber – Natural durability ratings.

Other publications

Austroads	Glossary of Austroads Terms 2008

1.4 STANDARDS

General

Standard: To AS 1742.2.

1.5 INTERPRETATIONS

Definitions

General: For the purposes of this worksection the definitions given below 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.

1.6 SUBMISSIONS

Acceptance criteria

General: All submissions will be subject to the approval of the Superintendent.

Documents

Requirement: Submit the following for approval:

- Materials:
  - . Natural durability class and grade of timber posts.
  - . Technical specifications and certificates of proprietary non-timber posts.
- Drawings: Set out for post locations.
- Execution details: Refer to **WITNESS POINTS – On-site activities**.

1.7 INSPECTION

Notice

General: Give notice so that the inspection may be made of the following:

Summary of HOLD POINTS

Clause/subclause	Requirement	Notice for inspection	Release by
MATERIALS			
Proprietary posts (Non timber) – Proposed supplier	Proposal for supplier and manufacturer details	Two weeks before manufacture	Superintendent
EXECUTION			
Establishment – Existing underground services	Check for services	5 working days	Superintendent
Establishment – Location of guide posts	Locations shown on drawings or as specified	Two weeks before installation	Superintendent
Installation of guide posts – Guide posts on concrete pavements	Provide fixing details	5 working days	Superintendent
Installation of guide posts – Proprietary guideposts	Provide manufacturers anchorage instructions	5 working days	Superintendent

Summary of WITNESS POINTS – On-site activities

Clause/ subclause	Requirement	Notice for inspection
MATERIAL		
Timber posts - Finish	Timber treatment inspection	1 working day - progressive
EXECUTION		
Installation of guide posts - Backfilling	Firm embedment in ground	Progressive
Delineators - Fixing	Arrangement of delineators relative to traffic direction	Progressive

2 PRE-CONSTRUCTION PLANNING

2.1 SCHEDULING

Pre-planning

Schedule: Posts, treatment and locations.

Planning: Program the works to ensure adequate resources such as for the control of traffic and locating existing underground services.

3 MATERIALS

3.1 PROPRIETARY POSTS (NON-TIMBER)

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**.

Specification

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

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.

Anchorage

Certification: Ensure 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.

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 then 50 mm 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 (± 2°C) the guide post must not be able to rotate in a clamp suited to the post profile.

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 10 mm high.

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

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

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 25 mm.

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.

3.2 TIMBER POSTS

Description

General: Conform to the following:

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

for specific state requirements.**Hardwood**

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

Preservation treatment: Hazard class H4 to AS 1604.1 Table 1 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.

Softwood

Preservation treatment: Hazard class H4 to AS 1604.1 Table 1.

Grade: Structural grade No.5 to AS 2858.

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.

3.3 DELINEATORS

Type

Delineators: Conform to the following for each post:

- Description: Corner-cubed delineators to AS/NZS 1906.2.
- Size: Between 80 and 85 mm diameter.
- Class 1A retroflective sheeting.

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.

4 EXECUTION

4.1 ESTABLISHMENT

Safety

Control of traffic: To *Control of traffic*.

Precautions: Take all necessary steps to prevent people and stock from stepping into the post holes during the erection of the guide posts.

Existing underground services

Excavation: Do not excavate by machine within 1 m of existing underground services.

Location: DIAL 1100 BEFORE YOU DIG is a free service, from anywhere in Australia, for locating underground pipe and cables (possible within two working days). See www.dialbeforeyoudig.com.au. This is a **HOLD POINT**.

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:

- Where 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
- Where 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**.

4.2 NON TIMBER POST TESTS PROCEDURES

Heat resistance – Flexible guide posts

Heat: Condition guide posts at 60℃(± 2℃) for 2 hours in an oven.

Test procedure: Conform with 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 1000 mm.
- 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 50 mm.

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

Cold resistance – Flexible not metallic guide posts

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

Test procedure: Conform with 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 50 mm.

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

4.3 INSTALLATION OF GUIDE POSTS

Positioning

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

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

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.

Backfilling

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

- Compact in layers not more than 150 mm 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**.

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**.

Proprietary guideposts

Resistance to impact: Provide proprietary guideposts that, when installed in the ground conforming with the recommendations of the manufacturer, resist overturning, twisting and displacement from wind and impact forces. Provide manufacturers instructions for anchorage. This is a **HOLD POINT**.

4.4 DELINEATORS

Standard

Quality: Provide delineators to AS/NZS 1906.2.

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 mm 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**.

4.5 REMOVAL AND DISPOSAL OF EXISTING GUIDE POSTS

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.

5 MEASUREMENT AND PAYMENT

5.1 MEASUREMENT

General

Payments made to the Schedule of Rates: To *0152 Schedule of rates – supply projects*, this worksection, the drawings and Pay items **1193.1**.

Lump Sum prices: Not acceptable.

Unpriced items: If any item, for which a quantity of work is listed in the Schedule of Rates, has not been priced by the Contractor, it is to be understood that due allowance has been made in the prices of other items for the cost of the activity which has not been priced.

Methodology

The following methodology will be applied for measurement and payment:

Traffic control: To conform with *Control of traffic*.

5.2 PAY ITEMS

Pay items	Unit of measurement	Schedule rate scope
1193.1 Guide posts	'Each' guide post	All costs associated with the erection of each post, including supply of post, erection, painting (if applicable), and supply and fixing of corner-cubed delineators.
1193.2 Removal of existing guide posts	'Each' guide post	All cost associated with the supply, placement and compaction of backfill material for the reinstatement of guide post hole and the collection and disposal of the existing guide posts.