

TRANSPORT FOR NSW (TfNSW)

QA SPECIFICATION 3352

FLUORESCENT PLASTIC TRAFFIC CONES

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REVISION REGISTER

Ed/Rev Number	Clause Number	Description of Revision	Authorised By	Date
Ed 1		New specification.	GM, RNIC	30.09.99
Ed 2/Rev 0	“Notice” Spec Ref No Foreword Global 2.4 6	RTA PO Box and Fax numbers updated Revision No added Foreword, incorporating copyright clause, added. Text revised to direct imperative style. “shall” replaced by “must”. Reformatting and minor editing to clarify intent. Clauses rearranged and renumbered. Definitions of “you” and “your” added. Fig 1 moved to Clause 6.1 (where it is referenced) from Clause 6.6.	GM, IC	13.07.09
Ed 2/Rev 1	Global	References to “Roads and Maritime Services” or “RMS” changed to “Transport for NSW” or “TfNSW” respectively.	DCS	22.06.20



FLUORESCENT PLASTIC TRAFFIC CONES

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IC-QA-3352

VERSION FOR: DATE:

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FOREWORD

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REVISIONS TO PREVIOUS VERSION

This document has been revised from Specification TfNSW 3352 Edition 2 Revision 0.

All revisions to the previous version (other than minor editorial and project specific changes) are indicated by a vertical line in the margin as shown here, except when it is a new edition and the text has been extensively rewritten.

PROJECT SPECIFIC CHANGES

Any project specific changes are indicated in the following manner:

- (a) Text which is additional to the base document and which is included in the Specification is shown in bold italics e.g. ***Additional Text***.
- (b) Text which has been deleted from the base document and which is not included in the Specification is shown struck out e.g. ~~Deleted Text~~.

TfNSW QA SPECIFICATION 3352

FLUORESCENT PLASTIC TRAFFIC CONES

1 SCOPE

This specification covers the supply of fluorescent red/orange plastic traffic cones of 300 mm, 450 mm and 700 mm nominal height.

2 STRUCTURE OF THE SPECIFICATION

This Specification includes a series of annexures that detail additional requirements.

2.1 (NOT USED)

2.2 (NOT USED)

2.3 (NOT USED)

2.4 REFERENCED DOCUMENTS AND DEFINITIONS

Unless specified otherwise, the applicable issue of a referenced document, other than a TfNSW Specification, must be the issue current at the date one week before the closing date for tenders, or where no issue is current at that date, the most recent issue.

Standards, specifications and test methods are referred to in abbreviated form (e.g. AS 2350). For convenience, the full titles are given in Annexure 3352/M.

The term “the Supplier” means the supplier of the product covered by the scope of this Specification.

3 (NOT USED)

4 SUPPLIER’S QUALITY MANAGEMENT SYSTEM

The Supplier must establish and maintain a Quality Management System complying with AS/NZS ISO 9001 as a means of ensuring that the product conforms to this Specification.

Provide evidence verifying compliance with this Clause.

5 PRODUCT CERTIFICATION

Provide a certificate of compliance verifying that the fluorescent traffic cones complies with Clause 6 of this Specification, together with test results demonstrating compliance with Clause 6 of this Specification. The test results must be from a laboratory accredited by NATA to carry out such tests or from a laboratory approved by the Principal.

The certification must relate only to the product on which the tests were made and must remain valid for twelve months. New certification will be required whenever a change in material composition or manufacturing process is made.

6 REQUIREMENTS

6.1 DIMENSIONS

The traffic cones must be moulded from plastic material to the general dimensions shown in Figure 3352.1.

The base of the traffic cone must be composed of material compatible with the conical portion and may include a suitable addition to increase stability. Materials other than plastics, rubber or synthetic rubber will not be permitted.

The shape of the base is not restricted to that illustrated in Figure 3352.1.

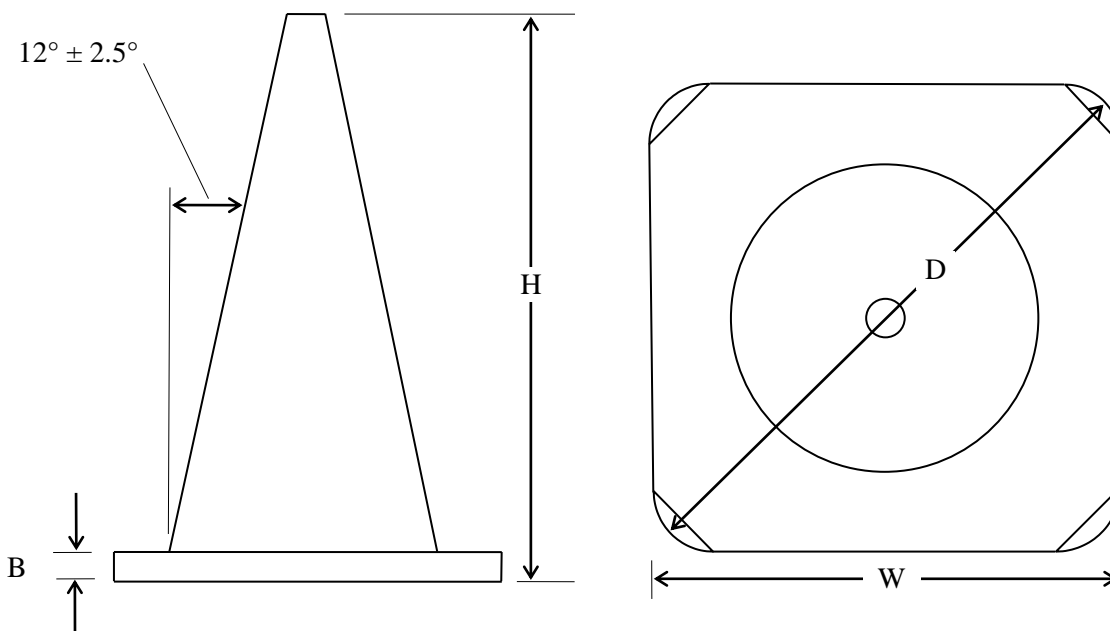


Figure 3352.1 – Fluorescent Traffic Cones

Dimensions of Cones (mm)			
Nominal Cone size	300	450	700
Overall height (H)	290 - 305	435 - 460	680 - 715
Maximum thickness of base including any feet (B)	40	60	80
Maximum dimension of base (D)	290	400	500
Minimum width of base (W)	200	260	320

6.2 MAXIMUM MASS

The mass of a single cone must not exceed the following:

Cone Size (mm)	Maximum Mass (kg)
300	1.5
450	3.0
700	5.0

6.3 STABILITY

The construction of the cone must be such that it will not overturn when a static load, as set out in the table below, is applied horizontally to the top of the upright cone:

Cone Size (mm)	Applied Load (kg)
300	0.2
450	0.3
700	0.5

6.4 COLOUR AND REFLECTIVITY

6.4.1 Colour and Reflectivity

The conical section of the traffic cone must be fluorescent red/orange, as specified in the table below.

Chromaticity Co-Ordinates Corner Points Determining the Permitted Colours Area					Initial Luminance Factor (Y)*
	1	2	3	4	
x	0.690	0.595	0.535	0.610	≥ 0.17
y	0.310	0.315	0.375	0.390	

Illuminant: Standard Illuminant D₆₅ at an angle of 45° with the normal to the surface and the observation made in the direction of the normal (45/0° geometry).

* **Luminance Factor** is defined as the ratio of luminance to that of a perfect reflecting diffuser identically illuminated.

6.4.2 Colour Durability

When subjected to 28 days exposure to the sun facing north and inclined at 45° to the vertical, a sample of the external cone surface must conform to the requirements of Clause 6.4.1.

6.4.3 Retroreflective Cones

Retroreflective cones for night-time use must have a band of retroreflective material uniformly and firmly affixed to its outer surface, without affecting the cone's flexibility or its stacking ability as stated in Clause 6.6.

The size and location of the band must be as follows:

Cone Size	Band Width	Distance from Top of Cone to Band
300 mm	100 mm	70 ± 5 mm
450, 700 mm	150 mm	130 ± 5 mm

The photometric performance of the reflector must be at least as good as that of an equivalent area of Class 1 silver-white material as defined in AS 1906 Part 1.

6.5 PHYSICAL TESTS

6.5.1 Resistance to Folding

The cone must return to its original shape within 20 seconds and show no visible signs of damage, when subjected to the following test at a temperature of 23 ± 3°C:

Place the cone on its side on a concrete surface immediately in front of the front wheel of a medium weight car (900 kg to 1300 kg tare weight) such that the apex is between the wheel and the concrete and the axis is aligned with the direction of the tyre. Drive the wheel smoothly over the cone, taking no longer than 5 seconds. Remove the cone from under the vehicle.

Repeat the test three times allowing the cone to recover for 20 seconds and then rotating it 90° about its axis prior to each test.

6.5.2 Resistance to Heat

The cone must exhibit no slump or sag when heat treated in the following manner:

Suspend a 0.5 kg weight inside the conical section of the traffic cone by means of a wire attached to a flat metal disc spanning and resting on the top of the cone. Place the cone in a preheated air-circulating oven at 70°C ± 2°C for six hours.

6.5.3 Resistance to Solvents

The red/orange surface of the cone must be resistant and show no evidence of dissolving, softening or colour change when wiped with a rag saturated with any of the following solvents:

- (a) petrol;
- (b) kerosene;

- (c) methylated spirit;
- (d) diesel fuel.

6.6 STACKING

The traffic cones must be stacked neatly and separated easily such that five cones can be stacked without exceeding the following maximum heights:

Cone Size (mm)	Maximum Stacked Height (mm)
300	480
450	760
700	1040

ANNEXURES 3352/A TO 3352/L – (NOT USED)

ANNEXURE 3352/M – REFERENCED DOCUMENTS

Refer to Clause 2.4.

Australian Standards

AS 1906.1	Retroreflective materials and devices for road traffic control purposes – Retroreflective sheeting
AS/NZS ISO 9001	Quality management systems – Requirements