TRANSPORT FOR NSW (TfNSW)

SPECIFICATION D&C 3385

BARRIER BOARDS

REVISION REGISTER

Ed/Rev Number	Clause Number	Description of Revision	Authorised By	Date
Ed 1/Rev 0		First issue	GM, IC W Stalder	01.07.11
Ed 1/Rev 1	Global	References to "Roads and Maritime Services" or "RMS" changed to "Transport for NSW" or "TfNSW" respectively. References to "RMS Representative" changed to "Principal".	DCS	22.06.20

Transport for NSW

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IC-DC-3385

VERSION FOR:
DATE:

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FOREWORD

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BASE SPECIFICATION

This document is based on Specification TfNSW 3385 Edition 3 Revision 1.

TfNSW SPECIFICATION D&C 3385

BARRIER BOARDS

1 SCOPE

This Specification sets out the requirements for the supply and delivery of Barrier Boards constructed from seasoned timber or from plastic material and suitable for mounting on trestles or fixed posts at about 1 m above the road surface.

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

Standards, specifications and test methods are referred to in abbreviated form (e.g. AS 1234). For convenience, the full titles are given in Annexure 3385/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

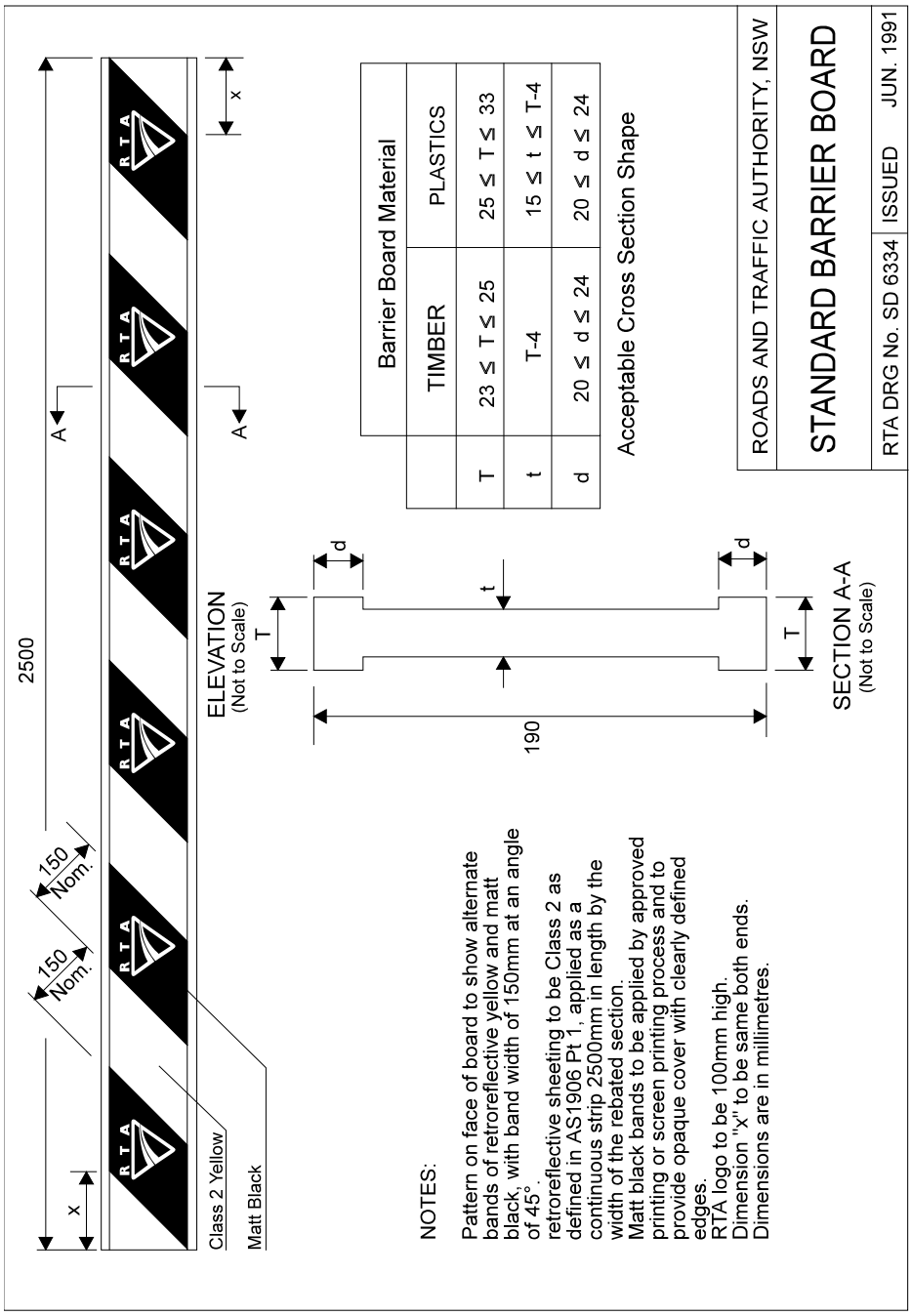
The Supplier must establish and maintain a Quality Management System complying with AS/NZS ISO 9001 as a means of ensuring that the product conforms to this Specification.

Provide evidence verifying compliance with this Clause.

5 DIMENSIONS AND SHAPE

Barrier boards must comply with Drawing No SD 6334 as shown in Figure 3385.1 with regard to dimensions and cross-section shape.

Figure 3385.1 – Standard Barrier Board Dimensions and Shape



6 TIMBER BARRIER BOARDS

Timber barrier boards must be of solid construction, dressed and manufactured from one of the following two timbers:

(i) Seasoned Structural Grade 1 Douglas Fir (Oregon) as defined in AS 2858;

(ii) Finger Jointed Preservative Treated Radiata Pine as defined in AS 1496.

Timber barrier boards must have three coats of paint applied to all surfaces, viz primer coat, undercoat and top coat. All coats of paint must be from the same manufacturer and each coat must be compatible with the other coats. The primer coat and undercoat must be tinted to be distinguishable from each other and from the top coat.

The barrier board must be sanded smooth prior to the primer coat and again prior to the top coat. Any gaps around knots must be filled and spot sanded after priming and before application of the undercoat.

The top coat must be a full gloss alkyd enamel and must be yellow equivalent to colour Y13 (Vivid Yellow) or Y14 (Golden Yellow) as described in AS 2700.

The finish must be suitable to accept self adhesive retroreflective sheeting and be capable of sustaining a good bond for the life of the product. The painted surface must be capable of passing the adhesion test described in Clause 7.2.

7 PLASTICS BARRIER BOARDS

7.1 GENERAL

Barrier boards manufactured from plastics materials may be of open cell construction provided that the walls of the web section have internal cross bracing at the junction of the web and flanges and at not less than three equally spaced points between the two flanges.

They must be completely composed of plastic, without any other material such as timber inserts.

They must be manufactured from a material which is resistant to mould growth, insect and rodent attack and to hydrocarbon solvents which may be used for cleaning purposes.

7.2 MASS

For boards manufactured from PVC plastic the mass of plastic in any 2.5 m long board must be not less than 3.75 kilograms.

For boards manufactured from any other type of plastic the mass of a 2.5 m board must be not less than 3.75 kilograms adjusted by the ratio of the density of the plastic to that of PVC.

7.3 RESISTANCE TO BENDING

When tested in accordance with Test Method TfNSW T1553, the deflection of the barrier board caused by the load must not exceed 100 mm. The difference in the unloaded deflections before and after the loading test must not exceed 5 mm.

The board must also meet the deflection requirements when rotated through 180° in the vertical plane.

7.4 RESISTANCE TO WEATHERING

Following exposure to artificial weathering for a period of 1500 hours in an Atlas Twin Carbon Arc Weatherometer (Test Method TfNSW T1401), the surface of the board must be free from crazing or blistering. The degree of chalking and discolouration must not fall below a rating of six when evaluated in accordance with AS 1580 Method 481.1.

7.5 RESISTANCE TO HEAT

When a section of barrier board 600 mm in length is tested in accordance with Test Method TfNSW T1552, the maximum deflection measured at the mid point of the board must not exceed 2 mm. There must be no permanent deformation when the load is removed and the board allowed to cool.

7.6 RESISTANCE TO IMPACT AFTER ACCELERATED AGEING

When a section of barrier board 600 mm in length is kept at 50° ± 1° for a period of 28 days (Test Method TfNSW T1550) then subjected to low temperature impact at 0°C according to Test Method TfNSW T1551, the board must show no sign of fracture, cracking or splitting.

7.7 VEHICLE LOADING

When a 200 mm ± 10 mm section of barrier board is placed on a flat concrete surface and run over by one wheel of a vehicle, such that the load applied by the wheel is 1200 ± 100 kg, after 15 minutes recovery time, the board must show no significant deformation.

7.8 FINISH AND COLOUR

The surface of the barrier boards must be a smooth gloss or semi-gloss finish and must be yellow, equivalent to colour Y13 (Vivid Yellow) or Y14 (Golden Yellow) as described in AS 2700.

7.9 CERTIFICATION

Provide a certificate of compliance verifying that the plastic barrier board complies with the requirements of the Specification, together with test results reported on NATA endorsed test documents.

The certification must relate only to the formulation and material sources on which the tests are carried out. New certification will be required every 5 years or whenever or a change in formulation and/or material sources is made.

A copy of the certificate of compliance must accompany each delivery.

8 STRIPING AND REFLECTORISATION

8.1 GENERAL

Retroreflective Sheeting must be yellow Class 2 in accordance with AS/NZS 1906.1.

A pattern on both faces of the barrier board must be derived from a continuous strip of yellow retroreflective sheeting applied to the web or rebated section of the board, printed or screen printed with an opaque matt black covering to form alternate yellow and black diagonal stripes, in accordance with Drawing No SD 6334. The width of the strip of retroreflective sheeting must be equal to the width of the rebated section and not less than 140 mm. The width of the yellow and black stripes must be 150 mm measured at an angle of 45° ± 5° to the edge of the barrier board.

8.2 ADHESION OF RETROREFLECTIVE SHEETING

When a plastics barrier board or a painted timber board is subject to an adhesion test using the method described for dry adhesion in AS/NZS 1906.1, the retroreflective test piece must remain attached under a load of 0.6 kg.

8.3 PRINTING

The black ink or paint used must be compatible with, and have an equivalent life to, the brand of retroreflective sheeting used.

The black ink or paint must not be visibly damaged when scratched with the edge of a coin using moderate pressure.

9 IDENTIFICATION

Barrier boards may be identified with the brand name and/or the name of the manufacturer or distributor in letters not greater than 10 mm high moulded, stamped or indelibly printed onto the top or bottom edge of the board.

10 WORKMANSHIP

Barrier boards must be free from burns, discolouration and other objectionable marks or defects which may affect appearance or serviceability.

11 SAMPLING AND TESTING

11.1 SAMPLING

Sample the barrier boards prior to delivery of each batch, in accordance with Table 3385.1.

Table 3385.1 - Sampling for Barrier Boards

Batch Size	Sample	Sample Size	Cumulative Sample Size	Acceptance Number	Rejection Number
Up to 500	First	8	8	0	2
	Second	8	16	1	2
Up to 3200	First	13	13	0	3
	Second	13	26	3	4
More than 3200	First	20	20	1	4
	Second	20	40	4	5

If the number of failures in the first sample is equal to or less than the first acceptance number, the batch will be considered acceptable. If the number of failures in the first sample is equal to or greater than the first rejection number, the batch will be rejected. If the number of failures in the first sample is between the first acceptance and rejection numbers, a second sample of the size given in Table 3385.1 must be tested.

The number of failures in the first and second samples must be accumulated. If the cumulative number of failures is equal to or less than the second acceptance number, the batch must be considered acceptable. If the number of failures is equal to or greater than the second rejection number, the batch must be rejected.

Do not deliver rejected batches.

11.2 TEST CONDITIONS

Unless stated otherwise, carry out all tests at a temperature of 23° ± 2°C and a relative humidity of 45 to 75 percent.

11.3 TIMBER BARRIER BOARDS

Timber boards must be inspected for dimensions and shape (Clause 5), finish and colour (clause 6) and workmanship (clause 10).

Test timber boards for adhesion of retroreflective sheeting (Clause 8.2).

11.4 PLASTICS BARRIER BOARDS

Boards manufactured from plastics material must be inspected for dimensions and shape (Clause 5), finish and colour (Clause 7.8) and workmanship (Clause 10).

Test them for adhesion of retroreflective sheeting (Clause 8).

ANNEXURES 3385/A TO 3385/L – (NOT USED)

ANNEXURE 3385/M – REFERENCED DOCUMENTS

Refer to Clause 2.4.

TfNSW Test Methods

TfNSW T1401	Artificial Weathering Test of Paint
TfNSW T1550	Heat Ageing Test for Plastic Materials
TfNSW T1551	Low Temperature Impact Test for Plastic Materials
TfNSW T1552	Resistance to Heat of Plastic Barrier Boards
TfNSW T1553	Resistance to Bending of Barrier Boards

Australian Standards

AS 1496	Preservative treated radiata pine fascia boards and barge boards
AS 1580	Methods of test for paints and related materials
AS 1742.3	Manual of uniform traffic control devices – Traffic control for works on roads
AS/NZS 1906.1	Retroreflective materials and devices for road traffic control purposes – Retroreflective sheeting
AS 2700	Colour standards for general purposes
AS 2858	Timber – Softwood – Visually stress-graded for structural purposes
AS/NZS ISO 9001	Quality management systems – Requirements