

Main Roads Technical Standard

MRTS26

Manufacture of Fibre Reinforced Concrete Drainage Pipes

June 09

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FEEDBACK

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Manufacture of Fibre Reinforced Concrete Drainage Pipes

1 INTRODUCTION

This Technical Standard applies to the manufacture of fibre reinforced concrete drainage pipes used for the conveyance of stormwater which does not place the pipe under internal pressure.

This Technical Standard shall be read in conjunction with MRTS01 *Introduction to Technical Standards*, MRTS50 *Specific Quality System Requirements* and other Technical Standards as appropriate.

This Technical Standard forms part of the Main Roads' Specifications and Technical Standards Manual.

2 ADMINISTRATION REQUIREMENTS

Fibre reinforced concrete drainage pipes shall be manufactured only by a manufacturer that is registered by Transport and Main Roads.

For the requirements for registration and information regarding registered manufacturers refer to –

Queensland Department of Transport and Main Roads
 Concrete Technology
 GPO Box 1412
 Brisbane Qld 4001

3 MATERIAL

Material used in the manufacture of fibre reinforced concrete drainage pipes shall comply with AS 4139.

4 DESIGN, MANUFACTURE AND SUPPLY

The design life of fibre reinforced concrete drainage pipes shall be 100 years. The design life means that 95% of the production shall remain in a serviceable condition with negligible maintenance for 100 years.

The design loads for fibre reinforced concrete drainage pipes shall be based on AS 3725 amended as follows –

- a) Clause 6.5.2 of AS 3725 shall be deleted and replaced by –
 - Loads shall be calculated in accordance with the methods in AS 5100;
 - Design loads for pipes are W80, A160, SM1600 and HLP400; and
 - Distribution of live loads shall be in accordance with AS 5100,
- b) Figures 10 to 12 of AS 3725 are deleted; and
- c) Live load pressures shall be as detailed in Table 4-A.

Table 4-A – Live Load Pressure for AS 5100 Highway Loads

Depth (m)	Wheel Load Pressure (kPa)	Depth (m)	Wheel Load Pressure (kPa)
0.40	246	2.80	19
0.60	129	3.00	18
0.80	78	3.20	17
1.00	52	3.40	17
1.20	39	3.60	16
1.40	30	3.80	16
1.60	24	4.00	15

Depth (m)	Wheel Load Pressure (kPa)	Depth (m)	Wheel Load Pressure (kPa)
1.80	23	4.20	15
2.00	22	4.40	14
2.20	21	4.60	14
2.40	20	4.80	13
2.60	19	5.00	13

Fibre reinforced concrete drainage pipes shall be manufactured in accordance with AS 4139 except that Table 1 in AS 4139 shall be supplemented by Table 4-B below.

Table 4-B – Supplement for Table 1 of AS 4139

Long-term Design Loads for Pipe (Classes 5 to 7)			
Nominal Size DN	Long-term design load Tc kN/m		
	Class 5	Class 6	Class 7
375	36	54	72
450	41	62	82
525	46	69	92
600	51	77	102
675	55	83	110
750	60	90	120
825	63	95	126
900	67	101	134
1050	76	114	152
1200	86	129	172

5 INFORMATION TO BE SUPPLIED BY MANUFACTURER

5.1 General

The Contractor shall provide to the Administrator the information specified in Clauses 5.2 and 5.3, obtained from the fibre reinforced concrete pipe manufacturer and included in the quality records, in accordance with the times specified.

5.2 Prior to Delivery of Pipes to the Site

The following information shall be provided if requested by the Administrator, before any pipes are delivered to the Site –

- a) the type of fibre used in the pipe;
- b) the test methods and values used to control the properties of the fibre;
- c) drawings showing critical dimensions of the pipes and joints including wall thickness for different classes of pipe;
- d) the methods of manufacture and testing;
- e) the type of cement used;
- f) the water absorption value;

- g) the values of C and R, as defined by AS 4139 and amended loads, with test data establishing these values and the results of any screening evaluation performed; and
- h) a sampling and acceptance plan demonstrating compliance with AS 4139.

5.3 With the Delivery of Each Batch of Pipes

With each batch of pipes delivered to the site the Contractor shall provide a conformance report, issued by the fibre reinforced concrete pipe manufacturer, confirming that the pipes supplied comply with the requirements of AS 4139 and this standard.

6 PRODUCT MARKING

In addition to the requirements in AS 4058, all pipes manufactured in accordance with this standard will be marked "MRTS26 (06/09)".