

TECHNICAL NOTE

TECHNICAL INFORMATION FROM THE CONCRETE PIPE ASSOCIATION OF AUSTRALASIA

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QUALITY MANAGEMENT SYSTEMS FOR CONCRETE PIPE

In 2007, the Australian and New Zealand Standards committee for concrete pipe signed off on what is considered to be the most robust standard worldwide for the production of quality concrete pipe - **AS/NZS 4058 – 2007 “Precast concrete pipe (pressure and non-pressure)”**. The main purpose of AS/NZS 4058 is to provide manufacturers with a series of guidelines that need to be followed for the concrete pipe to be manufactured in an appropriate size to a required strength class that will allow them to last for over 100 years

The Standard is recognised as being performance based. This means that concrete pipe manufactured to this Standard must meet specific performance criterion that is applicable to the environment and service conditions the material is expected to work in throughout its design life.

To meet the exacting standards outlined in AS/NZS 4058 precast concrete pipe has to be manufactured under controlled conditions. To achieve this, manufacturers need to:

- ensure careful selection and testing of raw materials to Australian and/or New Zealand Standards
- develop appropriate mix designs and reinforcement configurations to meet strict performance requirements
- use highly developed machinery that is specific to the production of precast concrete pipe
- use appropriate curing and stripping procedures to promote efficiency along with high quality concrete
- follow a sampling and testing plan in accordance to AS/NZS 4058 to ensure that the material is acceptable for use in the field.

To ensure that these procedures are followed, AS/NZS 4058 requires pipe manufacturers to have an auditable **ISO 9001 Quality Management System** that monitors and demonstrates compliance of:

- a) all raw materials
- b) the manufacturing processes
- c) the performance of the finished product

This can be done by sampling and testing concrete pipe to the acceptance tests required in accordance to AS/NZS 4058. It also notes that if the manufacturer can demonstrate adequate systems of process control in accordance to selection and testing of raw materials, as well as manufacturing, handling and storing concrete pipe, the frequency of sampling and testing nominated in the manufacturers quality plan takes precedence.

Section 5 “Compliance with Performance Requirements” of AS/NZS 4058 has been included as a “normative” part of the Standard. This means it must be followed, which differs to informative and less compulsory Appendix of other Standards. Its purpose is to ensure that manufacturers have the necessary quality systems in place so that documented evidence can be provided to demonstrate that the performance requirements, outlined in Section 4 of the Standard, are being achieved.



Concrete Pipe Association
of Australasia

admin@cpaa.asn.au www.cpaa.asn.au

Accordingly, manufacturers are able to demonstrate compliance with the Standards by operating under a third party accredited ISO 9001 compliant Quality Management System (QMS) and Inspection and Test Plan. The approach to demonstrating compliance with the various requirements of the Australian Standard is by undertaking sampling and testing under the auspices of the QMS.

It is important to note that in addition to the requirements of AS/NZS 4058 Section 5, Sections 2 and 3 of the Standard require the manufacturer to demonstrate adequate systems of process control. Specifically it requires pipe manufacturers to have an auditable system that monitors and demonstrates compliance of:

- a) all raw materials (Clause 2.1)
- b) the manufacturing processes (Clause 3.1)
- c) the performance of the finished product (Clause 5.1)

Concrete pipe has a proven history of durability for over 100 years in the region. This combined with the experience of manufacturers and the rigorous processes required of them to produce pipe today means that at the end the product is one that you can trust, and will give you the design and service life you need with confidence to set the standard for the next 100 years.

NOTE: Did you know that CPAA members, as a condition of their CPAA membership, must operate a third party accredited ISO9001 compliant Quality Management System.

