



# TECH TALK:

## A LOOK AT PRECAST PIPES AND THEIR COMPLIANCE WITH AS/NZS 4058

At National Precast, we strive to educate and provide assistance to professionals within the construction industry. Our *Tech Talk* series has been developed to address some of the common queries within the precast concrete space. In this issue, we look at the importance of ensuring concrete pipes are manufactured and tested to AS/NZS 4058.

Australian Standards are in place to ensure that all suppliers are manufacturing and testing their products in accordance to strict guidelines, and in the construction industry, compliance with relevant Standards is paramount. It is vital that all asset owners, both in the private and public realm, have confidence that the products they are buying and installing meet the requirements of the relevant Australian Standard. When it comes to precast concrete pipes, that Standard is AS/NZS 4058:2007 *Precast concrete pipes (pressure and non-pressure)*, or more commonly referred to as AS/NZS 4058. The required testing for a concrete pipe is outlined in AS/NZS 4058 Section 4, whereby the verification of Finished

Product Compliance includes Proof Load Test and Ultimate Load Test.

**Proof Load Test:** pipes shall sustain a proof load without developing a crack of width greater than the relevant test crack and certificates supplied should show testing results for the batch of pipe supplied.

**Ultimate Load Test:** the maximum load sustained by the pipe before loss of load shall not be less than the test ultimate load (only if specified).

### AS/NZS 4058 - A JOINT STANDARD

The main purpose of AS/NZS 4058 is to provide manufacturers with a series of guidelines that allows them to manufacture an appropriate size concrete pipe to the required strength class that will comply with the serviceability requirements outlined in the Standard. One of the key requirements within this Standard is to ensure all pipes supplied will deliver a 100-year in-service design life.

AS/NZS 4058 was prepared and published in 2007 by the joint Standards Australia/Standards

New Zealand Committee, WS-006, to supersede two respective Australian and New Zealand Standards. Those two Standards were AS 4058:1992 *Precast concrete pipes (pressure and non-pressure)* and NZS 3107:1978 *Specification for precast concrete drainage and pressure pipes*.

### 100-YEAR LIFE TO MINIMISE RISK

A 100-year design life can be expected when pipes are manufactured in accordance with AS/NZS 4058 and installed in a 'normal' or 'marine' environment. 'Other' environments that are more aggressive should be assessed for suitability using appropriate engineering judgement. There are risks associated with pipes that do not meet these requirements. They may be of a lesser quality and could lead to line failures on site.

### MARKINGS TO VERIFY COMPLIANCE

To confirm that compliant pipes are being supplied, the initial step to take is to ensure they are visibly marked with the information required by AS/NZS 4058.



Example of marked pipe. Note: the date and precaster name has been removed.

As outlined in Section 1.5 Marking of the Standard, the information to be marked includes:

- the manufacturer's name or registered trademark and the location of manufacture
- the date on which the pipe was cast
- the nominal diameter and load class e.g. DN750/3
- where an elliptical reinforcement cage has been incorporated in the pipe, the word 'TOP' indicating the correct laying position of the pipe with respect to the direction of the vertical loading and the orientation of the

reinforcement

- the maximum mass in kilograms of pipe for the particular pipe class
- the number of the Australian Standard the pipes are manufactured to, i.e. AS/NZS 4058.

The above information should be clearly and indelibly marked in a visible location on each pipe. Not only is this a requirement, but it also allows the supplier to have traceability of their product from manufacture through in-service.

If pipes are being used that are not marked with the above information, it could be that the pipes are not made and tested in line with the Australian Standard. In this case, you can ask the pipe supplier for proof of the required testing in line with the standard for the batch of pipes supplied. The test results should be dated to reflect the batch of pipes supplied.

**RISKS ASSOCIATED WITH NON-COMPLIANT PIPES**

Using non-compliant precast products may unnecessarily increase the risk of serious safety,

health, economic, legal and social events. The installation of pipes that do not comply with AS/NZS 4058 are no exception. Failure to comply can lead to a reduction in life span (reduced durability), resulting in additional works to replace defected pipes. Additionally, pipes that are not load tested in accordance with the Standard may fail under normal operational loads. The financial repercussions of replacing non-compliant pipes can be extreme and cost momentarily more than it would have to ensure the product was manufactured correctly to begin with. If you are in any doubt as to whether your pipes are compliant, request a manufacturer's certificate of compliance, to guarantee compliance with AS/NZS 4058.

**HOW TO FIND OUT MORE**

For more information on concrete pipes and their compliance to AS/NZS 4058, or for advanced knowledge of design, manufacture and the use of precast concrete, contact National Precast on (08) 8294 0833 or at [www.nationalprecast.com.au](http://www.nationalprecast.com.au)

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