

Deflection

Testing of

Flexible Pipe



Concrete Pipe Association
of Australasia

Introduction

For all flexible non-pressure pipelines, and where structural verification for pressure pipelines are required, the final pipe inspection should be conducted in accordance with AS2566.2 "Buried Flexible Pipelines" and this specification Testing should be conducted at project practical completion, and just prior to the expiry of any defects liability period. Deflection shall comply with Table 5.6 and Table 6.2 of AS2566.2, whilst the inspection procedure should be as follows.

Scope

PROCEDURE 1: LASER PROFILING

The specifier should prepare a schedule nominating the pipelines to be CCTV tested and the reports to be completed and submitted to the specifying department for review.

The installed pipe should be dewatered before testing to provide the engineer, or testing authority, an unrestricted thoroughfare.

For pipe 1200mm diameter or less, low barrel distortion video equipment with laser profile technology, non-contact video micrometer and associated software should be used to provide:

1. Actual recorded length and width measurements of all cracks within the pipe.
2. Actual recorded separation measurement of all pipe joints.
3. Pipe ovality report.
4. Deflection measurements and graphical diameter analysis report in terms of x and y axis.
5. Flat analysis report.
6. Representative diameter of the pipe.
7. Pipe deformation measurements, leaks, debris, or other damage or defects.
8. Deviation in pipeline and grade, joint gaps, and joint misalignment.

Laser profiling and the associated measurement technology must be certified by the company performing the work to be in compliance with the calibration criteria. Reports may be submitted in electronic format if approved by the Engineer. For video recorded laser profiled pipe indicating deflection that appears to be in excess of that allowed by AS2566.2, the specifier may require further testing of the pipe.

Removal, replacement and retesting of pipe failing to meet the specific deflection requirements for the type of pipe installed, shall be at no cost to the Local Government

Authority. Should the additional deflection test prove that the pipe met Specifications, the Local Government Authority will bear the cost of this deflection testing only. The specifier may waive this requirement for side drains and cross drains, which are short enough to inspect from each end of the pipe.

The video report shall be provided as a high quality DVD in a suitable format with a standard resolution. Use a camera with lighting suitable to allow a clear picture of the entire periphery of the pipe. Centre the camera in the pipe both vertically and horizontally and be able to pan and tilt to a 90 degree angle with the axis of the pipe and rotating 360 degrees. Use equipment to move the camera through the pipe that will not obstruct the camera's view or interfere with proper documentation of the pipe's condition. The video image shall be clear, focused, and relatively free from roll, static, or other image distortion qualities that would prevent the reviewer from evaluating the condition of the pipe. The video will include identification before each section of pipe filmed.

The identification will include the project number, the structure number corresponding to the structure number on the set of plans for the project, size of pipe, the date and time of the inspection, and indicate which pipe is being filmed if multiple pipes are connected to the structure. Notes should be taken during the video recording process. Provide the Engineer with copies of these notes along with the video.

Move the camera through the pipe at a speed not greater than 10 meters per minute. Mark the video with the distance down the pipe. The distance shall have an accuracy of 100 mm in 100 meters. Stop the camera and pan when necessary to document defects. Film the entire circumference at each joint.

PROCEDURE 2: MANDRELS

Use mandrels, which are rigid, nonadjustable, odd-numbered, legged having a length not less than its nominal diameter. The diameter at any point shall not be less than the allowed percent deflection of the certified actual mean diameter of the pipe being tested. The mandrel shall be fabricated of metal, fitted with pulling rings at each end, stamped or engraved on some segment other than a runner with the nominal pipe size and mandrel outside diameter.

The procedure for using mandrels is outlined in AS2566.2, Appendix O, and is only recommended when the specifier requires further testing in addition to laser profiling.

Marine environment classification shall be used for tidal or saltwater applications. The cover for spigots and sockets for normal environments shall be 10mm and 15 mm for marine environments. Appropriate covers are detailed in Table 1 and 2.

DISCLAIMER

The Concrete Pipe Association of Australasia believes the information given within this brochure is the most up-to-date and correct on the subject. Beyond this statement, no guarantee is given nor is any responsibility assumed by the Association and its members.

