AS/NZS 4999:2006

Australian/New Zealand Standard™

PVC-U maintenance shafts

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee PL-021, PVC, ABS and Polyamide Pipe Systems. It was approved on behalf of the Council of Standards Australia on 14 February 2006 and on behalf of the Council of Standards New Zealand on 24 February 2006.
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The following are represented on Committee PL-021:

Australian Chamber of Commerce and Industry
CSIRO Manufacturing & Infrastructure Technology
Energy Networks Association
Engineers Australia
Local Government New Zealand
Master Plumbers, Gasfitters and Drainlayers New Zealand
New Zealand Water & Waste Association
Plastics Industry Pipe Association of Australia
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Australian/New Zealand Standard™

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee PL-021 on PVC, ABS and Polyamide Pipe Systems, to replace the interim edition AS/NZS 4999(Int):2003 without technical changes but incorporating some minor editorial adjustments.

This Standard has been developed from a water industry Standard WSA 100: *PVC maintenance shafts*, published by the Water Services Association of Australia.

The objective of this Standard is to provide performance requirements for manufacturers and purchasers of moulded PVC maintenance shafts (MSs) for sewerage systems.

In-service performance of a MS is strongly dependent on a supportive embedment. It should be recognized that it is extremely difficult to anticipate soil types, soil loadings and future soil movement in all possible locations and conditions. Specific types of embedment and backfill materials and compaction standards for various depths and soil types should be adopted in order to minimize the risk of long-term failure. Thus, even with compliance with these performance requirements, installation conditions will have a significant influence on the long-term performance of maintenance shafts.

The design criteria of AS/NZS 2566.1, *Buried flexible pipelines*, Part 1: *Structural design*, provide guidance. Installation should be in accordance with design drawings and the Sewerage Code of Australia—WSA 02, Part 3.

The test criteria specified apply to a maintenance shaft at the time of manufacture, and should not be used to assess the results from tests of maintenance shafts that have been in service.

The terms ‘normative’ and ‘informative’ have been used in this Standard to define the application of the appendix to which they apply. A ‘normative’ appendix is an integral part of a Standard, whereas an ‘informative’ appendix is only for information and guidance.

Statements expressed in mandatory terms in notes to tables and figures are deemed to be requirements of this Standard. Other notes are for information and guidance only.

Australian and New Zealand Standards generally do not—

(a) restate the duties of employers, employees, designers and installers;

(b) determine the applicability of regulatory limitations; and

(c) determine appropriate health and safety practices.

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S E C T I O N 1 S C O P E A N D G E N E R A L

1.1 SCOPE

This Standard specifies design and manufacture requirements for a PVC-U maintenance shaft (MS) comprising a fabricated or injection-moulded, or both, chamber jointed to an extruded PVC riser.

MSs are intended for installation in sewerage systems (up to DN 300) for transportation of sewage at atmospheric pressure and average service temperatures up to 25°C. They are intended for buried vertical installation at depths up to 6 m, without buckling or collapse and without exceeding specified long-term diametral distortion and stress limits. Long-term design criteria limits are 50-year extrapolated or predicted values. Provided installation and operating conditions conform to the guidelines in this Standard, life expectancy may exceed 50 years.

1.2 APPLICATION

Methods for demonstrating compliance with this Standard shall be in accordance with Appendix A.

1.3 LIMITATIONS

This Standard does not cover maintenance shafts intended for use at pressures other than atmospheric pressure. Special design considerations not covered in this Standard should be given to maintenance shafts subjected to superimposed mechanical forces, such as seismic forces and to average service temperatures in excess of 25°C.

It should be recognized that it is extremely difficult to anticipate soil types, soil loadings and future soil movement in all possible locations and conditions. Specific types of embedment and backfill materials and compaction standards for various depths and soil types should be adopted in order to minimize the risk of long-term failure.

In-service performance of a maintenance shaft is strongly dependent on a supportive embedment. The design criteria of AS/NZS 2566.1 provide guidance. Installation should be in accordance with WSA 02, Part 3.

1.4 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS

1199 Sampling procedures for inspection by attributes

1199.1 Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection

1646 Elastomeric seals for waterworks purposes

1646.1 Part 1: General requirements

1646.2 Part 2: Material requirements for pipe joint seals used in water and wastewater applications—Specified by prescriptive formulation