AS/NZS 2041.4:2010

Australian/New Zealand Standard™

Buried corrugated metal structures

Part 4: Helically formed sinusoidal pipes

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee CE-025, Corrugated Metal Drainage Pipes and Arches. It was approved on behalf of the Council of Standards Australia on 23 June 2010 and on behalf of the Council of Standards New Zealand on 28 June 2010.
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The following are represented on Committee CE-025:

AUSTROADS
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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee CE-025, Corrugated Metal Pipes and Arches, to supersede AS 1761—1985, adopted by Standards New Zealand as NZS 4405 in 1986.

The objective of this Standard is to provide designers, manufacturers and installers of buried helical lock-seamed sinusoidal metal pipes with requirements for the manufacture of such pipe for use in earthworks, primarily as culverts or accessways.

This Standard is Part 4 of the AS/NZS 2041 series, *Buried corrugated metal structures*, which comprises the following parts:

AS/NZS
2041 Buried corrugated metal structures
2041.1 Part 1: Design methods
2041.2 Part 2: Installation
2041.4 Part 4: Helically formed sinusoidal pipes (this Standard)
2041.6 Part 6: Bolted plate structures

Other parts of the series currently being drafted include the following:

Part 3: Assessment of existing structures
Part 5: Helically formed ribbed pipes
Part 7 Bolted plate structures with transverse stiffeners
Part 8: Metal box structures

This Edition includes the following changes:

(a) Design requirements have been moved to AS/NZS 2041.1 *Buried corrugated metal structures* Part 1: *Design methods*, which includes new limit states methods.

(b) Installation requirements are now referred to AS/NZS 2041.2 *Buried corrugated metal structures*, Part 2: *Installation*.

(c) Notation is based on ISO 3898, *Bases for design of structures—Notations—General symbols*.

(d) Materials and fabrication requirements have been updated.

(e) Materials covered now include galvanized steel, polymer-coated steel, steel with aluminized coating and aluminium strip.

(f) Reference tables for cover limits have not been included.

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.

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SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard specifies minimum requirements for the materials and manufacture of buried metal pipe formed using sinusoidal profile strip. The pipe is full circular shape formed by a continuous helical lock-seam that runs helically to the longitudinal axis of the pipe.

Pipe diameters up to and including 3600 mm are covered.

Sinusoidal profiles covered include the following:

(a) S38 (pitch 38 mm).

(b) S68 (pitch 68 mm).

(c) S75 (pitch 75 mm).

(d) S125 (pitch 125 mm).

Helically formed sinusoidal pipe structures are primarily intended for use as culverts in stormwater drainage, detention/retention systems, stockpile and access tunnels. The structures are intended to support roadway and railway and other loadings. They are buried in an embankment or in a trench situation and correct installation in a soil envelope is essential to the performance of the structure.

This Standard does not consider the additional design requirements for internally pressurized applications.

NOTES:

1 For helically formed pipes greater than 3600 mm diameter, the design methods in AS/NZS 2041.1 may not apply.

2 Guidelines on requirements that may need to be specified at the time of calling for tenders or quotations and information to be supplied by the manufacturer are detailed in Appendix A.

3 Information on means of demonstrating compliance with this Standard is given in Appendix B.

4 When intended for use in internally pressurized applications, specialist advice should be obtained.

1.2 DESIGN AND INSTALLATION

Design shall be carried out in accordance with AS/NZS 2041.1 using the section properties given in Section 3 of this Standard. Installation shall be carried out in accordance with AS/NZS 2041.2.

NOTE: This Standard includes the product requirements and design properties. AS/NZS 2041.1 gives information on design issues and requirements for structural design of the metal structure. Performance of the structure depends on correct installation (particularly adequate compaction of appropriate fill material around the metal structure) for which AS/NZS 2041.2 gives the requirements.