

Australian/New Zealand Standard™

Scaffolding

Part 1: General requirements



AS/NZS 1576.1:2019

This Joint Australian/New Zealand Standard™ was prepared by Joint Technical Committee BD-036, Scaffolding. It was approved on behalf of the Council of Standards Australia on 8 February 2019 and by the New Zealand Standards Approval Board on 30 January 2019.

This Standard was published on 4 March 2019.

The following are represented on Committee BD-036:

- Australian Aluminium Council
- Australian Chamber of Commerce and Industry
- Australian Council of Trade Unions
- Australian Industry Group
- Australian Steel Institute
- Business New Zealand
- Engineered Wood Products Association of Australasia
- Engineers Australia
- Hire and Rental Industry Association of Australia
- Housing Industry Association
- Master Builders Australia
- National Scaffolding Association of Australia
- SafeWork NSW
- Scaffolding, Access and Rigging New Zealand
- Scaffolding, Rigging and Industrial Rope Access Industries Training
- WorkCover Queensland
- WorkSafe Victoria

This Standard was issued in draft form for comment as DR AS/NZS 1576.1:2017.

Keeping Standards up-to-date

Ensure you have the latest versions of our publications and keep up-to-date about Amendments, Rulings, Withdrawals, and new projects by visiting:

www.standards.org.au

www.standards.govt.nz

www.saiglobal.com (sales and distribution)

ISBN 978 1 76072 387 3

Australian/New Zealand Standard™

Scaffolding

Part 1: General requirements

Originally published as AS 1576—1974.
Revised and redesignated in part as AS 1576.1—1991.
Jointly revised and designated as AS/NZS 1576.1:1995.
Second edition 2010.
Third edition 2019.

COPYRIGHT

© Standards Australia Limited/the Crown in right of New Zealand, administered by the New Zealand Standards Executive 2019

All rights are reserved. No part of this work may be reproduced or copied in any form or by any means, electronic or mechanical, including photocopying, without the written permission of the publisher, unless otherwise permitted under the Copyright Act 1968 (Cth) or the Copyright Act 1994 (New Zealand).

Preface

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee BD-036, Scaffolding, to supersede AS/NZS 1576.1:2010.

The scaffolding series of Standards comprises the following:

AS/NZS 1576.1, *Scaffolding, Part 1: General requirements* (this Standard)

AS/NZS 1576.2, *Scaffolding, Part 2: Couplers and accessories*

AS 1576.3, *Scaffolding, Part 3: Prefabricated and tube-and-coupler scaffolding*

AS/NZS 1576.4, *Scaffolding, Part 4: Suspended scaffolding*

AS/NZS 1576.5, *Scaffolding, Part 5: Prefabricated splitheads and trestles*

AS/NZS 1576.6, *Scaffolding, Part 6: Metal tube-and-coupler scaffolding—Deemed to comply with AS/NZS 1576.3*

The objective of this Standard is to provide users, manufacturers and designers of scaffolding systems with unified rules for the design and detailing of scaffolding systems using principles of engineering design as detailed in this Standard.

Scaffolding required to also act as roof edge protection is now linked to AS/NZS 4994.1, *Temporary edge protection, Part 1: General requirements* and AS/NZS 4994.2, *Temporary edge protection, Part 2: Roof edge protection—Installation and dismantling*.

The major changes in this edition are as follows:

- (a) New definitions added for various types of anchors post-installed into concrete and masonry, erection platforms and special work zones.
- (b) System combinations substantially revised.
- (c) Duty actions expanded to include actions for special work zones, partial area loads for loading platforms and the duty load for a closed platform. Duty rating for a ladder hatch within a working platform has been specified.
- (d) Prefabricated platform units are now required to conform to the performance requirements of AS/NZS 1577.
- (e) Connection stiffness deleted.
- (f) Drilled-in anchors now referred to as concrete anchors. Concrete anchors substantially revised.
- (g) Bay and platform dimensions generally revised.
- (h) Stairways and landings revised to clarify the requirement for toeboards and kickplates.
- (i) Climbing of end frames now allowed with specified limitations.
- (j) Additional requirements added for minor scaffolds.
- (k) Surface finish of cast iron and steel components substantially revised.
- (l) [Appendix E](#) (informative) added, listing assumptions for the design and installation of anchors.

The terms “normative” and “informative” are used in Standards 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.

This Standard incorporates a Commentary on some clauses. The Commentary directly follows the relevant clause, is designated by "C" preceding the clause number and is printed in italics in a panel. The Commentary is intended to help readers understand the background to the clause but does not form part of the clause.

Contents

Preface	ii
Section 1 Scope and general	1
1.1 Scope	1
1.2 Normative references	1
1.3 Terms and definitions	3
1.4 Types of scaffold	10
1.5 Marking requirements for scaffolding equipment	11
1.5.1 General scaffolding equipment	11
1.5.2 Minor scaffolds	11
1.6 Product information	11
1.6.1 Documented information	11
1.6.2 Labelled information	12
1.6.3 Labels	12
1.7 Alternative design methods and materials	13
Section 2 Design requirements	14
2.1 Scope of section	14
2.2 System design methods	14
2.2.1 General	14
2.2.2 Theoretical analysis	14
2.2.3 Testing	15
2.3 Material and tube combinations	15
2.4 System combinations	15
2.5 Actions	15
2.5.1 General	15
2.5.2 Permanent actions	15
2.5.3 Imposed actions	16
2.5.4 Environmental actions	24
2.6 Installation design	25
2.6.1 General	25
2.6.2 Combining platform loadings for a scaffold bay	25
2.6.3 Provision of information	26
2.7 Combinations of actions	26
2.7.1 General	26
2.7.2 Strength	26
2.7.3 Stability	27
2.7.4 Serviceability	29
2.8 Design considerations	29
2.8.1 Materials	29
2.8.2 Structural analysis	30
2.8.3 Eccentricity	30
2.8.4 Anchorage and tie assemblies	31
2.8.5 Ropes and chains	32
2.9 Supporting structure	33
2.10 Check couplers	33
Section 3 Operational requirements	34
3.1 Scope of section	34
3.2 Erection tolerance	34
3.3 Soleplates	34
3.4 Platforms	34
3.5 Working platform	35
3.6 Bay extension platform	35
3.6.1 General	35
3.6.2 Location requirements of bay extension platforms	36
3.7 Bay and platform dimensions	38

3.7.1	General bay dimensions for working platforms	38
3.7.2	Bay dimensions for duty-rated working platforms	38
3.7.3	Dimensions for access platform	39
3.7.4	Headroom	39
3.7.5	Loading platform	39
3.8	Slope of platforms	39
3.8.1	Working and closed platforms	39
3.8.2	Access platform	39
3.9	Catch platforms	40
3.10	Edge protection	40
3.10.1	General	40
3.10.2	Forms of edge protection	40
3.10.3	Openings in edge protection	41
3.10.4	Omission of edge protection	42
3.10.5	Additional protection	45
3.11	Access	45
3.11.1	General	45
3.11.2	Access by climbing end frames	46
3.11.3	Temporary stairways	46
3.11.4	Handrails	48
3.11.5	Portable ladders	48
3.12	Additional requirements for mobile scaffolds	49
3.12.1	Castors	49
3.12.2	Other wheels	49
3.12.3	Supporting structure	49
3.12.4	Additional bracing	49
3.12.5	Movement of mobile scaffolds	49
3.13	Additional requirements for minor scaffolds	49
3.13.1	General	49
3.13.2	Minor scaffold access	49
3.14	Minor scaffold supports	50
3.14.1	General	50
3.14.2	Footplate on a minor scaffold	50
3.15	Stability and rigidity of a minor scaffold	51
3.15.1	Platform proportions	51
3.15.2	Resistance to collapse	51
3.16	Wheeled movement of unloaded minor scaffolds	51
3.16.1	General	51
3.16.2	Wheels to ease the transport of a disassembled minor scaffold	51
3.16.3	Wheels to relocate an assembled minor scaffold	51
3.17	Component modification	51
3.18	Tube extension	52
Appendix A (normative) Materials and design considerations — General scaffolds		53
Appendix B (normative) Materials, design considerations and manufacture — Minor scaffolds		57
Appendix C (informative) Flowchart for design of new individual components or a group of new components		59
Appendix D (informative) Flowchart for structural design check of a scaffold		60
Appendix E (informative) Assumptions for the design and installation of anchors		62
Bibliography		64

Australian/New Zealand Standard

Scaffolding

Part 1: General requirements

Section 1 Scope and general

1.1 Scope

This Standard sets out design and operational requirements for scaffolding systems, scaffolding equipment and scaffolds. It includes specifications for catch platforms erected on scaffolds and covers temporary stairways for use on a general construction site.

Where specified, particular requirements of other parts of this series of Standards will take precedence over specific requirements of this Part.

NOTE 1 When importing scaffolding equipment and/or components, the use of Standards from another country may not result in conformance with this series. Design, performance and/or test criteria may be of a lesser level in other Standards. It is imperative to ensure that a Standard from another country is equivalent to this series before assuming scaffolding equipment to be in conformance with this Standard.

NOTE 2 For the purposes of this Standard some types of equipment that incorporate temporary working platforms may not be considered to be a scaffold. These types of equipment may include the following:

- (a) Equipment covered in other Standards, for example —
 - (i) elevating work platforms, AS/NZS 1418.10;
 - (ii) mast climbing work platforms, AS 1418.16;
 - (iii) portable ladders, AS/NZS 1892 series; and
 - (iv) falsework constructed primarily to support concrete, AS 3610 (all parts).
- (b) Stools under 1 m in height which may allow for height adjustment but do not require assembly prior to use.

NOTE 3 Trestle ladders are covered in the AS/NZS 1892 series. It is intended that trestle ladder scaffolds will be incorporated into AS/NZS 1576.5.

1.2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document:

NOTE Documents referenced for informative purposes are listed in the Bibliography.

AS 1170.4, *Structural design actions, Part 4: Earthquake actions in Australia*

AS 1391, *Metallic materials—Tensile testing at ambient temperature*

AS 1444, *Wrought alloy steels—Standard, hardenability (H) series and hardened and tempered to designated mechanical properties*

AS 1576.3, *Scaffolding, Part 3: Prefabricated and tube-and-coupler scaffolding*

AS 1831, *Ductile cast iron*

AS 1832, *Malleable cast iron*

AS 2321, *Short-link chain for lifting purposes*

AS 2423, *Coated steel wire fencing products for terrestrial, aquatic and general use*



Documents

Document Sharing Hub

© Standards Australia Limited/Standards New Zealand 2019

AS 2759, *Steel wire rope—Use, operation and maintenance*

AS 3569, *Steel wire ropes—Product specification*

AS 3850.1, *Prefabricated concrete elements, Part 1: General requirements*

AS 4100, *Steel structures*

AS 4142.2, *Fibre ropes, Part 2: Three-strand hawser-laid and eight-strand plaited*

AS 4750, *Electrogalvanized (zinc) coatings on ferrous hollow and open sections*

AS 5216, *Design of post-installed and cast-in fastenings in concrete*

AS/NZS 1163, *Cold-formed structural steel hollow sections*

AS/NZS 1170.0, *Structural design actions, Part 0: General principles*

AS/NZS 1170.2, *Structural design actions, Part 2: Wind actions*

AS/NZS 1170.3, *Structural design actions, Part 3: Snow and ice actions*

AS/NZS 1554.1, *Structural steel welding, Part 1: Welding of steel structures*

AS/NZS 1576.2, *Scaffolding, Part 2: Couplers and accessories*

AS/NZS 1576.4, *Scaffolding, Part 4: Suspended scaffolding*

AS/NZS 1577, *Scaffold decking components*

AS/NZS 1594, *Hot-rolled steel flat products*

AS/NZS 1664.1, *Aluminium structures, Part 1: Limit state design*

AS/NZS 1664.2, *Aluminium structures, Part 2: Allowable stress design*

AS/NZS 1665, *Welding of aluminium structures*

AS/NZS 1734, *Aluminium and aluminium alloys—Flat sheet, coiled sheet and plate*

AS/NZS 1866, *Aluminium and aluminium alloys—Extruded rod, bar, solid and hollow shapes*

AS/NZS 1892.1, *Portable ladders, Part 1: Metal*

AS/NZS 2269, *Plywood—Structural (all parts)*

AS/NZS 3678, *Structural steel—Hot-rolled plates, floorplates and slabs*

AS/NZS 3679.1, *Structural steel, Part 1: Hot-rolled bars and sections*

AS/NZS 4357.0, *Structural laminated veneer lumber, Part 0: Specifications*

AS/NZS 4600, *Cold-formed steel structures*

AS/NZS 4680, *Hot-dip galvanized (zinc) coatings on fabricated ferrous articles*

AS/NZS 4792, *Hot-dip galvanized (zinc) coatings on ferrous hollow sections, applied by a continuous or a specialized process*

NZS 1170.5, *Structural design actions, Part 5: Earthquake actions—New Zealand*

ISO 1835, *Short link chain for lifting purposes — Grade M (4), non-calibrated, for chain slings etc*

ISO 3076, *Round steel short link chains for general lifting purposes — Medium tolerance sling chains for chain slings — Grade 8*

ISO 3077, *Short-link chain for lifting purposes — Grade T, (types T, DAT and DT), fine-tolerance hoist chain*

1.3 Terms and definitions

For the purpose of this Standard, the definitions below apply.

1.3.1

access platform

access way

platform that is used, or primarily intended to be used, to provide access for persons, or for persons and materials, going to and from places of work, but does not include a working platform

1.3.2

anchors

1.3.2.1

chemical anchor

post-installed anchor that includes a steel element (threaded rod) and a bonding compound that retransmit loads from the embedded steel element into the base material

1.3.2.2

coil expansion anchor

removable rotation setting expansion anchor involving a sacrificial coil insert that locks into the sides of a predrilled hole

1.3.2.3

screw anchor

post-installed threaded fastener installed into a predrilled hole to engage with the concrete via mechanical interlock

1.3.2.4

torque-controlled expansion anchor

post-installed anchor installed into a predrilled hole that develops its tensile strength via friction generated by its sleeves that expand laterally against the hole wall due to a wedge being drawn up inside the sleeves

1.3.3

backing rails

rails whose function is to transfer loads from infill panels to supporting posts

1.3.4

baseplate

plate to distribute the load from a vertical loadbearing member to the supporting structure

1.3.5

bays

1.3.5.1

bay lengths

1.3.5.1.1

independent or mobile scaffold

horizontal distance between the centres of any two longitudinally adjacent standards or members, serving the purpose of standards, including spurs or cantilevered beams

1.3.5.1.2

suspended or hung scaffold

horizontal distance between the centres of any two longitudinally adjacent support points

Note 1 to entry: Example of support points are anchorages for scaffolding hoists or connection points for hung standards.

1.3.5.2**bay widths****1.3.5.2.1****independent or mobile scaffold**

horizontal distance between the centres of any two transversely adjacent standards or members serving the purpose of standards, including spurs or cantilevered beams, but does not include bay extension formed by platform brackets

1.3.5.2.2**suspended or hung scaffolding**

usable width of a working platform

1.3.6**bay extension platform**

portion of a working platform that protrudes beyond the face of a scaffold, adjacent to a bay of an independent scaffold, forming an extension of that bay

1.3.7**brace**

member fixed to two or more members of a scaffold to increase the rigidity of the scaffold

Note 1 to entry: Braces are generally fixed diagonally.

1.3.8**cantilever platform bay**

bay of scaffold that protrudes beyond the face of an independent scaffold or structure, forming a discrete bay in addition to any bays in the independent scaffold

1.3.9**castor assembly**

wheel rotating on an axle fixed into a housing capable of being connected to the lower end of a standard for the purpose of supporting and moving a scaffold

Note 1 to entry: The housing may be fixed or may be capable of swivelling to allow the scaffold to be moved horizontally in any direction.

1.3.10**catch platform**

platform attached to a scaffold to contain debris falling from a working platform

Note 1 to entry: A cantilevered portion of a catch platform is also called a fan.

1.3.11**check coupler**

right angle, swivel or parallel coupler that is fixed hard against a loadbearing coupler to increase the slip resistance along the tube

1.3.12**closed platform**

platform that is capable of being a working platform but is temporarily closed to any loading or access by persons, in accordance with the installation design

1.3.13**containment sheeting**

sheeting that encloses the outer facade of the scaffold to retain objects or particles within the scaffold

1.3.14**competent person**

person who has acquired through training, qualifications or experience, or a combination of these, the knowledge and skills enabling that person to perform a specified task

1.3.15**cradle**

that portion of a suspended scaffold that incorporates a suspended platform

1.3.16**edge protections****1.3.16.1****guardrail**

highest rail in guardrailing fixed parallel to the platform

1.3.16.2**guardrailing**

system of rails or panels, or both, that provides edge protection at an exposed edge of a platform

1.3.16.3**guardrailing panel**

panel that replaces a guardrail and midrail and may replace a toeboard

Note 1 to entry: The panel transfers the design loads to the support, standards or posts and typically incorporates mesh and a kick plate.

1.3.16.4**handrail**

rail to provide a handhold on a platform, or stairway

Note 1 to entry: The handrail may form part of a guardrail.

1.3.16.5**handrail panel**

panel that provides a handhold on a platform or stairway and replaces a handrail and midrail, the centre of which comprises vertical balusters between the handrail and the bottom rail

1.3.16.6**infill panel**

panel that requires backing rails to transfer design loads to supporting posts

Note 1 to entry: An infill panel typically incorporates mesh as the infill and a kick plate. The panel spans between the backing rails and the supporting posts and may replace a midrail, toeboard or both.

1.3.16.7**kick plate**

plate (usually of metal), forming an integral part of a guardrailing panel or infill panel, that prevents material from falling from the working platform

1.3.16.8**midrail**

rail or series of rails fitted approximately equidistant between a guardrail or handrail and toeboard or platform

1.3.16.9**toeboard**

scaffold plank or a purpose-designed component fixed on the edge of the plank, at the edge of a platform, to prevent material from falling from the platform

1.3.17**erection platform**

platform that is placed on the scaffold or constructed as part of the scaffold to assist with the installation or dismantling of the scaffold, to be accessed only by scaffolders

1.3.18**frame**

prefabricated assembly, of defined width and height, that consists of vertical members separated by horizontal members

Note 1 to entry: A frame may be constructed to enable a person to walk through.

1.3.19**frame scaffold**

scaffold assembled from prefabricated frames, braces and accessories

1.3.20**general construction site**

construction site where scaffolding and other temporary equipment is used to facilitate work and the movement of persons between work locations

1.3.21**going**

horizontal distance between the nosing of one stair tread to the nosing of the next stair tread above or below

1.3.22**integrated access**

non-removable ladder or step arrangement being part of a minor scaffold to enable persons to access the working platform from the supporting structure

Note 1 to entry: Transoms of a prefabricated scaffold having vertical spacing not exceeding 500 mm and which are used to access platforms that are not more than 2 m above the supporting surface are another means of integrated access.

1.3.23**ladder hatch**

opening hatch that may be fitted within a working platform to enable a person to ascend a ladder from below and provide a working surface when closed

1.3.24**landing**

level area used to provide access to a stairway or ladder, or located at an intermediate level in a system of stairways or ladders

1.3.25**ledger**

horizontal structural member of a scaffold, connecting adjacent standards, normally in the direction of the larger dimension of a bay

1.3.26**lift**

level at which a platform can be constructed

Note 1 to entry: The lift height is the vertical distance between adjacent lifts incorporating ledgers and transoms.

Note 2 to entry: The base lift height is the vertical distance between the supporting surface and the lowest lift.

1.3.27**loading platform**

working platform on a scaffold that is primarily intended for the loading, unloading or storage of materials and equipment

1.3.28**may**

indicates the existence of an option

1.3.29**minor scaffold**

scaffold of one bay that is of a light and portable nature and restricted to having a working platform at a height that is not greater than 2 m above the supporting surface

1.3.30**mobile scaffold**

scaffold able to support the live loads for which it was designed whilst being supported on wheels and/or castors that have the capability of being locked against rotation

1.3.31**modular scaffold**

scaffold assembled from prefabricated individual components of which transoms and standards are separate components

1.3.32**nosing**

leading edge of a stair tread

1.3.33**outrigger**

component (or components) that increases the effective base dimensions of a scaffold to increase its stability

1.3.34**platform**

surface on a scaffold to support persons, materials or both

1.3.35**platform bracket**

type of bracket attached to the scaffold to support a bay extension platform adjacent to a bay of an independent scaffold

Note 1 to entry: A platform bracket is also known as a hop-up or console bracket.

1.3.36**platform support**

integrated assembly not comprising standards that support a platform

1.3.37**prefabricated platform**

framed assembly of one bay length incorporating a working surface that is capable of connecting to its support structure in such a way as to not be inadvertently dislodged

Note 1 to entry: One or more platforms may be required to suit the bay width.

1.3.38**prefabricated scaffold**

scaffold assembled from prefabricated components manufactured in such a way that the geometry of the scaffolding is predetermined

1.3.39**protective device**

device that will arrest the descent of and support a cradle or boatswain's chair in the event of failure of the suspension rope or the scaffolding hoist

Note 1 to entry: A protective device may also prevent an overspeed descent.

1.3.40**putlog**

horizontal structural member spanning between adjacent ledgers, or between a ledger or standard and an adjacent wall, which can be used to support a platform

1.3.41**raker**

inclined tube fixed between a scaffold and the supporting structure to keep the scaffold stable

1.3.42**rigid scaffold**

scaffold that, apart from the folding or sliding of captive components into place, is not required to be assembled prior to use, and which is either rigid, where the complete in-service shape is fixed, or parts of the scaffold fold out or slide out to form the complete in-service shape

1.3.43**rise**

vertical distance between the top of one stair tread and the next stair tread above or below

1.3.44**scaffold**

temporary structure for supporting access platforms, working platforms, catch platforms and loading platforms; also referred to as scaffolding

1.3.45**scaffold plank**

decking component, other than a prefabricated platform, that is used or intended to be used to form a platform

1.3.46**scaffolding equipment**

any component, assembly or machine used or intended to be used as part of a scaffold

1.3.47**scaffolding system**

designed combination of components that can form a scaffold

1.3.48**secondary rope**

rope not normally carrying the weight of a cradle and the imposed load, but rigged for use with a protective device

1.3.49**shall**

indicates that a statement is mandatory

1.3.50**should**

indicates a recommendation

1.3.51**soleplate**

item, other than a baseplate, used to distribute the point load of a loadbearing member to the ground or other supporting structure

1.3.52**special work zone**

bay or a series of bays or other area defined between identifiable elements of the installed scaffold or the adjacent permanent structure

1.3.53**spur**

inclined loadbearing member that transmits a load to another structural member of the scaffold or to the supporting structure

1.3.54**stairway flight**

single continuous set of rises and goings

1.3.55**standard**

vertical structural member of a scaffold that transmits a load to the supporting structure

1.3.56**supporting structure**

any structure, structural member, foundation or surface that supports a scaffold

1.3.57**suspension rig**

that portion of the structure in a suspended scaffold (including the trolley track) mounted at a level higher than the cradle, to support and position the cradle

1.3.58**tie**

member or assembly of members used to stabilize a scaffold from a supporting structure

1.3.59**toeboard**

scaffold plank or purpose-designed component fixed on edge at the edge of a platform to prevent material from falling from the platform

1.3.60**transom**

horizontal structural member of a scaffold that is used to connect adjacent standards, normally in the direction of the smaller dimension of a bay

1.3.61**tread**

horizontal surface of a stairway component that supports a person's foot

1.3.62**working face**

face of a building or structure at which a scaffold has been erected to enable work to be carried out at some stage during the project

1.3.63**working load limit****WLL**

maximum unfactored load, including permanent and imposed actions, that the components or system has been designed to support

1.3.64**working platform**

platform on a scaffold positioned at a work location for supporting personnel, equipment and materials and used to provide a working area

1.4 Types of scaffold

Common types of scaffold include the following:

- (a) *Bracket scaffolds* — Scaffolds that consist of nominally triangular brackets fixed to the supporting structure to support a platform. Forms of bracket scaffolds include the following:
 - (i) *Ladder bracket scaffold* — A scaffold formed by brackets supported from the rungs of a single or extension ladder resting against the supporting structure.
 - (ii) *Stud bracket scaffold* — A scaffold fixed to the wall studs of house wall frames or structures of similar construction.
 - (iii) *Tank bracket scaffold* — A scaffold fixed to the sides of tanks, silos, structural steel members or similar structures.
 - (iv) *Top plate hung bracket scaffold* — A scaffold supported from the top plate of house wall frames or structures of similar construction.
- (b) *Cantilever scaffolds* — Scaffolds or portions of scaffolds supported by nominally horizontal loadbearing cantilevered members, which may be purpose designed brackets.
- (c) *Independent scaffolds* — Scaffolds that consist of two or more longitudinal rows of standards connected longitudinally and transversely. Independent scaffolds, typically but not necessarily, are constructed from prefabricated components, prefabricated frames, tubes and couplers, or timber components with bolted connections. Forms of independent scaffolds include the following:
 - (i) *Birdcage scaffold* — An independent scaffold that consists of three or more longitudinal rows of standards and, therefore, two or more bays in width.
 - (ii) *Mobile scaffold* — A freestanding independent scaffold that is mounted on castors.
 - (iii) *Hung scaffold* — An independent scaffold that hangs statically from another structure. The scaffold may be hung by means of scaffold tubes, prefabricated components, timbers, ropes or chains, and may incorporate traversing features enabling it to be moved laterally when in use, but is not capable of being raised or lowered when in use.
 - (iv) *Tower scaffold* — An independent scaffold that consists of four standards, connected longitudinally and transversely, or two frames in plan connected transversely, to create a scaffold of one bay.
- (d) *Minor scaffolds* — Forms of minor scaffolds include the following:
 - (i) *Mobile scaffold*.
 - (ii) *Modular scaffold*.
 - (iii) *Rigid scaffold*.
- (e) *Single pole scaffolds* — Scaffolds that consist of a single row of standards connected longitudinally. The standards may be supported from below or from above or a combination of both. Single pole scaffolds incorporate putlogs or transoms, either built into the adjacent supporting structure or cantilevered from the supporting components, or a combination of both. Single pole scaffolds typically, but not necessarily, are constructed from prefabricated components, scaffold tubes and couplers, or timber components with bolted connections.
- (f) *Spur scaffolds* — Scaffolds or portions of scaffolds, supported by inclined loadbearing members connected directly or indirectly to supporting standards.
- (g) *Suspended scaffolds* — Scaffolds that incorporate platforms suspended by one (or more) flexible steel wire rope, and which are capable of being raised or lowered when in use by means of powered or manually operated scaffolding hoists. Suspended scaffolds may incorporate single

cradles, articulated cradles or multi-deck cradles. Suspended scaffolds do not include industrial rope access equipment. Forms of suspended scaffold include the following:

- (i) *Boatswain's chair* — A suspended scaffold that consists of a chair or similar platform designed for a person to sit in, and supported by a single suspension rope.
 - (ii) *Double rope scaffold* — A suspended scaffold that consists of one or more cradles supported by two longitudinal rows of suspension ropes.
 - (iii) *Swing stage scaffold* — A suspended scaffold that incorporates one or more cradles supported by a single longitudinal row of suspension ropes.
 - (iv) *Work cage scaffold* — A suspended scaffold that consists of a cradle supported by a single suspension rope.
- (h) *Trestle scaffolds and trestle ladder scaffolds* — Scaffolds that consist of prefabricated trestles supporting a platform. Forms of trestle scaffolds include the following:
- (i) *Frame trestle scaffold* — A scaffold consisting of a freestanding frame.
 - (ii) *Putlog trestle scaffold* — A scaffold consisting of trestles incorporating putlogs that are supported on the inside of the scaffold by the supporting structure.
 - (iii) *Splithead trestle scaffold* — A scaffold consisting of self-supporting stands that support horizontal beams, such as scaffold planks resting on their edge, as putlogs.
 - (iv) *Trestle ladder scaffold* — A scaffold consisting of trestle ladders, which support a working platform and which may or may not incorporate stabilizing arms.
- (i) *Void scaffolds* — Scaffolds that consist of a working platform supported on horizontal members that are in turn supported directly by the surrounding permanent structure and typically are used to fill a void or in a shaft.

1.5 Marking requirements for scaffolding equipment

1.5.1 General scaffolding equipment

All scaffold components except for baseplates, soleplates, timber of known grade and plain tube that are not part of a prefabricated component, shall be marked with a symbol or letters to identify the scaffold manufacturer or supplier and, where applicable, the system type. Equipment manufactured after the publication date of this Standard shall be marked with a traceable code to enable positive identification of the year of manufacture.

The marking shall be readily visible and of a size that will be clearly legible for the expected life of the component.

The size of the lettering may be in accordance with the size of the component.

1.5.2 Minor scaffolds

All minor scaffolds shall be in accordance with the marking requirements of [Clause 1.5.1](#), except that the marking shall identify the manufacturer or supplier. The marking may take the form of a label, provided the label is in accordance with [Clause 1.6.3](#).

1.6 Product information

1.6.1 Documented information

Documented information, in plain English and SI units, shall be provided for the scaffolding system or scaffolding equipment. The information shall identify the supplier and the means of product

identification. Except where specified otherwise by this Standard, the information shall include at least the following:

- (a) A list of all components with descriptions from which each can be identified.
- (b) Instructions for erection, dismantling, movement of mobile scaffolds, use, transportation and storage.
- (c) Details of standard system design configurations including —
 - (i) bay sizes;
 - (ii) lift heights;
 - (iii) bracing requirements; and
 - (iv) tie requirements.
- (d) Guidance for the servicing and inspection of the equipment and the rejection of damaged components.
- (e) The nominal weight of each component, in kilograms.
- (f) Details giving sufficient information to determine —
 - (i) duty loadings;
 - (ii) maximum heights; and
 - (iii) maximum number of working platforms.
- (g) Details of any limitations to the application of the system or equipment.

1.6.2 Labelled information

For freestanding, single bay tower scaffolds, where the top working platform is not more than 6 m above the supporting surface, and minor scaffolds, conformance to [Clause 1.6.1](#) is achieved if the following information is displayed in a prominent position on the scaffold, or an essential component of the scaffold:

- (a) Instructions for erection, dismantling, use, transportation and storage, including —
 - (i) advice on safe means of access (e.g. warning against descending in a forward direction) from minor scaffolds provided with rung or step access; and
 - (ii) where the scaffold is not of an insulated type the words “DO NOT USE WHERE ELECTRICAL HAZARD EXISTS” in the largest lettering practicable.
- (b) The working load limit (WLL), in kilograms and, where applicable —
 - (i) maximum height of working platform;
 - (ii) maximum number of working platforms; and
 - (iii) any other limitations specific to the application.

1.6.3 Labels

Where documented information conforming to [Clause 1.6.1](#) is not supplied with the scaffold, the information required by [Clause 1.6.2](#) shall be in the form of labels that —

- (a) conform to the test requirements for labels specified in AS/NZS 1892.1;

- (b) are located or protected to guard against wear, abrasion and disfiguring, or both; and
- (c) are attached by a method that does not adversely affect the strength of the label, or the component to which it is attached.

1.7 Alternative design methods and materials

Alternative design methods and materials, which are not mentioned in this Standard, may be used, provided it can be demonstrated that the resulting scaffolding equipment satisfies the strength, stability, serviceability and operational requirements specified in this Standard.

Service life durability shall be included in any assessment of new materials.

Section 2 Design requirements

2.1 Scope of section

This Section specifies the parameters that need to be applied to produce a safe scaffold that is fit for its intended purpose. Two types of design are required:

- (a) *System design* — The design of the scaffolding system including its constituent components, which have been designed, manufactured and verified to be mated into contiguous structural arrangements.
- (b) *Installation design* — The design of a scaffold for a particular installation, based on all the anticipated loads and its intended usage. See [Clause 2.6](#).

2.2 System design methods

2.2.1 General

The design of the scaffolding systems, scaffolding equipment and scaffolds shall take into account the following:

- (a) The strength, stability and stiffness of the supporting structure.
- (b) The provision of edge protection on platforms.
- (c) The handling and repeated use of components normally associated with scaffolding.
- (d) The safety of persons engaged in the erection, alteration and dismantling of the scaffold.
- (e) The safety of persons accessing and moving along and around the scaffold.
- (f) The safety of persons using the scaffold.
- (g) The safety of persons in the vicinity of the scaffold.
- (h) The environment in which the scaffold is used (see [Commentary C2.2.1](#)).
- (i) The duration the scaffold is expected to remain in use.

Scaffolding systems and equipment shall be analysed and designed by theoretical analysis in accordance with [Clause 2.2.2](#) or by testing in accordance with [Clause 2.2.3](#).

Where a scaffold is outside the configuration specified by the supplier's information but using components that have been previously tested, such configuration shall be confirmed by theoretical analysis or testing.

C2.2.1 Item (h) — *Environmental conditions may have adverse effects on scaffolding systems. Conditions such as corrosive atmospheres and marine environments may corrode components. Weather conditions, such as wind or extreme temperatures, will impose additional loads.*

2.2.2 Theoretical analysis

Where designed by theoretical analysis, the scaffold structure and its component members and connections shall be analysed and designed by limit state or permissible stress procedures in accordance with the applicable material Standards, and as modified by the requirements of this Standard. Alternative Standards may be used as set out in [Clause 1.7](#).

When using the permissible stress procedures, it shall provide at least an equivalent design performance level achieved by the limit state method.

NOTE 1 For the design of new components or a group of components, see flowchart in [Appendix C](#).

NOTE 2 For structural design of a scaffold, see flowchart in [Appendix D](#).

2.2.3 Testing

Where designed by testing, the structural capacities of scaffolding equipment and systems shall be determined in accordance with AS 1576.3 using the actions specified in [Clause 2.5](#) of this Standard.

2.3 Material and tube combinations

For a scaffold incorporating plain tube, the analysis and design shall take into account the most adverse combination of tubes by wall thickness, strength of the tube material, or both.

The materials and design considerations for general scaffolds shall be in accordance with [Appendix A](#).

The materials, design considerations and manufacture of minor scaffolds shall be in accordance with [Appendix B](#).

C2.3 48.3 mm outside diameter plain steel tube that is used in tube-and-coupler scaffolds can have a wall thickness of 3.2 mm or 4 mm. These tubes have differing mass per linear metre. It is not possible from an external inspection to readily determine the wall thickness of all tubes in an erected scaffold and hence to determine whether a scaffold has been erected with tubes of the wall thickness specified in the design. Accordingly, this Clause requires the designer to assume the worst case for all tubes delivered to the site, that is the self-weight is calculated on the basis that all tubes have a wall thickness of 4 mm; all loadbearing tubes are assumed to have a wall thickness of 4 mm in Australia and 3.2 mm galvanized tube in New Zealand, unless it can be clearly demonstrated that 3.2 mm wall thickness tube will not be supplied, in which case the strength of loadbearing members should be calculated on the basis that all tubes have a wall thickness of 4 mm.

2.4 System combinations

It shall not be assumed that mixing scaffolding systems that conform with this Standard will result in a structure that conforms to this Standard.

If components from different systems are mixed, this shall be treated as a new system within the scope of this Standard.

This Clause does not apply to accessories or components which are not system specific.

NOTE Non-specific accessories or components include items such as ladder beams.

2.5 Actions

2.5.1 General

This Clause sets out requirements for actions to be addressed, comprising permanent actions, imposed actions and environmental actions.

2.5.2 Permanent actions

The permanent actions shall include the self-weight of the scaffold structure and components, including working platforms, closed platforms, catch platforms, access platform's stairways, ladders, screens, containment sheeting, platform brackets, suspension ropes, secondary ropes, traversing ropes, tie assemblies, scaffolding hoists, electrical cables and any other attachment.