

Australian/New Zealand Standard™

Scaffold decking components



AS/NZS 1577:2018

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Scaffold decking components

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Previous and first New Zealand edition AS/NZS 1577:2013.
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PREFACE

This Standard was prepared by the Standards Australia Committee BD-036, Scaffolding, to supersede AS/NZS 1577:2013, *Scaffold decking components*.

The objective of this Standard is to provide manufacturers, installers and designers with the requirements for the design, manufacture and performance of scaffold decking components.

The objective of this revision is to update and clarify clauses in the 2013 edition.

This edition incorporates the following major changes to the previous edition:

- (a) The component previously termed 'filler unit' is now described as 'deck infill'.
- (b) The term 'product information' replaces the previous 'information from supplier'.
- (c) There is now a provision for labelling of components.
- (d) The scope has been amended to allow for the working load limit (WLL) of all decking components to be designed by theoretical analysis as an alternative to design by testing.
- (e) A duty action is specified for deck infills.
- (f) The strength test details in Clause 2.2.3.
- (g) The storage during service life requirements for vertically laminated planks and LVL planks are now aligned with those for solid timber planks.
- (h) The design clause for decking components other than timber scaffold planks has been revised.
- (i) The addition of the new requirement of coupon testing as part of design of steel planks by prototype test.
- (j) Appendix A, *Stiffness test*, specifies a minimum number of samples and the hardness of the rubber pad has been changed.
- (k) Appendix B, *Strength test*, now specifies a minimum number of samples and includes specific requirements for filler plates.
- (l) Appendix C, *Sliding test for non-modular planks*, specifies a minimum number of samples.
- (m) Appendix D, *Coefficient of friction test*, has a change in the hardness of the rubber pad and the mass of the test weight has been clarified. The *report requirements* have been changed.
- (o) Appendix H was added to provide guidance on the development of prototypes.

The revised marking requirements are not intended to be retrospectively applied to existing products in service.

The terms 'normative' and 'informative' have been used in this Standard to define the application of the appendices 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 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 text box. The Commentary is intended to help readers understand the background to the clause but does not form part of the clause.

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Australian/New Zealand Standard

Scaffold decking components

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard specifies requirements for the design and manufacture of scaffold decking components, and their performance requirements when used to form working platforms for scaffolds. Decking components comprise scaffold planks, deck infills, lap plates and prefabricated platforms.

NOTES:

- 1 Guidance on means for demonstrating conformance with this Standard is given in Appendix F.
- 2 Information on timber species suitable for timber scaffold planks is given in Appendix G.

1.2 APPLICATION

The performance of scaffold planks shall conform to Section 2, and their manufacture shall be in accordance with the relevant Section 3, 4, 5 or 6, as follows:

- (a) Solid timber planks Section 3.
- (b) Vertically laminated timber planks Section 4.
- (c) Laminated veneer lumber (LVL) planks Section 5.
- (d) Decking components other than timber scaffold planks Section 6.

1.3 NORMATIVE REFERENCES

The following are the normative documents referenced in this Standard:

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

AS

- | | |
|--------|--|
| 1391 | Metallic materials—Tensile testing at ambient temperature |
| 1397 | Continuous hot-dip metallic coated steel sheet and strip—Coatings of zinc and zinc alloyed with aluminium and magnesium |
| 1444 | Wrought alloy steels—Standard and hardenability (H) series and hardened and tempered to designated mechanical properties |
| 1604 | Specification for preservative treatment |
| 1604.1 | Part 1: Sawn and round timber |
| 1720 | Timber structures (all parts) |
| 1874 | Aluminium and aluminium alloys—Ingots and castings |
| 4100 | Steel structures |

AS/NZS

- | | |
|--------|--|
| 1080 | Timber—Methods of test |
| 1080.1 | Part 1: Moisture content |
| 1328 | Glue-laminated structural timber (all parts) |

AS/NZS

1554	Structural steel welding (all parts)
1576	Scaffolding
1576.1	Part 1: General requirements
1594	Hot-rolled steel flat products
1664	Aluminium structures
1664.1	Part 1: Limit state design
1664.2	Part 2: Allowable stress design
1665	Welding of aluminium structures
1734	Aluminium and aluminium alloys—Flat sheet, coiled sheet and plate
1748	Timber—Solid—Stress-graded for structural purposes (all parts)
1866	Aluminium and aluminium alloys—Extruded rod, bar, solid and hollow shapes
1892	Portable ladders
1892.1	Part 1: Metal
2098	Methods of test for veneer and plywood
2098.1	Part 1: Moisture content of veneer and plywood
2878	Timber—Classification into strength groups
3678	Structural steel—Hot-rolled plates, floorplates and slabs
3679	Structural steel
3679.1	Part 1: Hot-rolled bars and sections
4357	Structural laminated veneer lumber
4357.0	Part 0: Specifications
4490	Timber—Solid—Stress-graded for structural purposes—Verification of properties
4491	Timber—Glossary of terms in timber-related Standards
4600	Cold-formed steel structures
4680	Hot-dip galvanized (zinc) coatings on fabricated ferrous articles

1.4 DEFINITIONS

For the purposes of this Standard, the definitions given in AS/NZS 4491 and those below apply.

1.4.1 Bow

A curvature from the plane of the wide face in the direction of length of a plank. See Figure 1.1(a).

1.4.2 Coefficient of friction (COF)

The ratio of the tangential force required to move a body across a horizontal surface to the perpendicular load imposed on the surface by the body.

1.4.3 Cup

A concave warping in the width direction of a timber, vertically laminated or LVL plank. See Figure 1.1(b).

1.4.4 Deck infill

A plank or prefabricated platform less than 220 mm wide used to complete a platform when planks or prefabricated platforms do not modulate to suit the width of a scaffold bay.

1.4.5 Decking component

A discrete component intended to be used to form a platform within a scaffold.

NOTE: Types of decking components include scaffold planks (either modular, or non-modular), lap plates, prefabricated platforms, filler plates or deck infills.

1.4.6 End joint

A glued joint between the ends of lamination segments or veneers.

1.4.7 Filler plate

A decking component that spans and covers a longitudinal gap between adjacent planks or prefabricated platforms and that is supported by these components.

1.4.8 Laminated veneer lumber (LVL)

An assembly of veneers laminated with adhesive, in which the grain direction of the outer veneers is in the longitudinal direction.

1.4.9 Lap plate

A decking component that spans and covers a gap between adjoining bays of a scaffold platform.

1.4.10 Modular plank

A scaffold plank of a predetermined length to suit a prefabricated modular or frame scaffold system, which is intended to be supported in such a way as to preclude both uplift and sliding longitudinally, and which may also incorporate additional secondary elements including end caps, hooks, flange straps, web stiffeners, etc.

1.4.11 Non-modular plank

A scaffold plank, other than a modular plank, intended to be simply supported and to overhang its end supports.

1.4.12 Prefabricated platform

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

NOTE: One or more platforms may be used to suit the bay width.

1.4.13 Scaffold plank

A decking component, other than a prefabricated platform, deck infill or lap plate, that is used or intended to be used to form a platform.

NOTE: Materials for scaffold planks include solid timber, laminated timber (including laminated veneer lumber), formed steel section, extruded aluminium section, etc.

1.4.14 Sliding

The longitudinal movement of a scaffold plank relative to its supports.

1.4.15 Slip resistance

The effective coefficient of friction of the walking surface of a decking component such that a person is not at an unreasonable risk of slipping.

1.4.16 Spring

A longitudinal curvature of the edge of a timber scaffold plank not affecting the face. See Figure 1.1(c).

1.4.17 Twist

A spiral distortion along the length of a piece of a timber scaffold plank. See Figure 1.1(d).

1.4.18 Uplift

The lifting of one end of a non-modular plank, when a downward force is applied to the other end of the plank, due to a person standing on the overhanging end of the plank. See Figure 1.2.

1.4.19 Wane

The presence of the original underbark surface with or without bark, on any face or edge of a piece of timber.

1.4.20 Want

The absence of wood, other than wane, from the corner or surface of a piece of timber.

1.4.21 Wind dislodgement

Dislodgement of a plank from its supports due to wind action.

1.4.22 Working load limit

The maximum allowable working load on the decking unit during use.

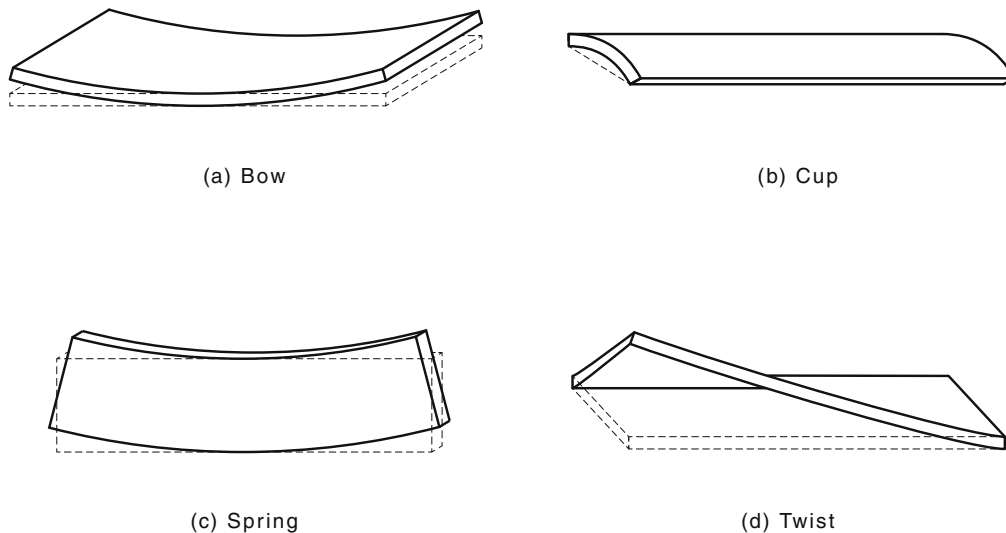
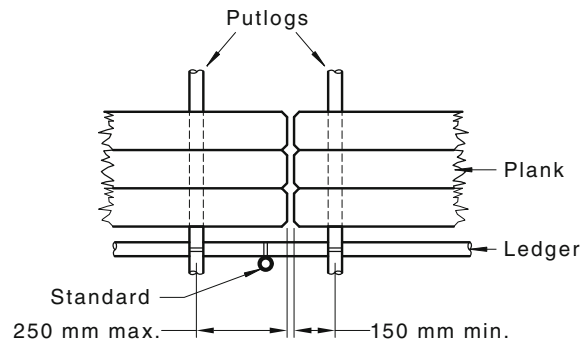
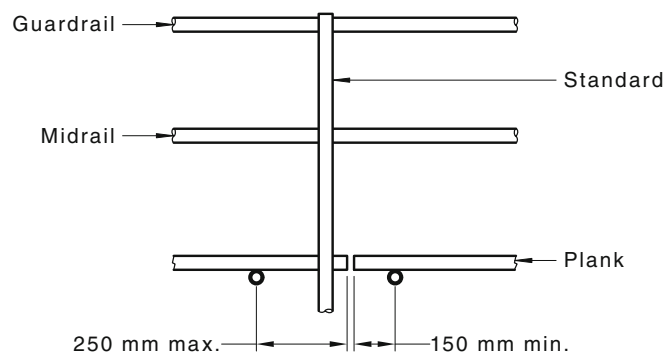


FIGURE 1.1 BOW, CUP, SPRING AND TWIST



(a) Plan view



(b) Elevation

FIGURE 1.2 EXAMPLES OF BUTTED PLANKS WITH OVERHANG LIMITATIONS

1.5 DIMENSIONS—SCAFFOLD DECKING COMPONENTS

The minimum width of a scaffold plank, lap plate or prefabricated platform unit shall be 220 mm.

A deck infill shall have a width of not less than 50 mm. It shall remain serviceable during the life of its proposed usage.

A filler plate shall not span a gap greater than 130 mm between adjacent planks or platform units.

A filler plate shall have a minimum overlap of 25 mm on each of its supporting components.

1.6 MANUFACTURING TOLERANCES OF TIMBER SCAFFOLD PLANKS

The tolerance on the width of a scaffold plank shall be +5, -0 mm.

The tolerance on the thickness shall be +4, -0 mm.

For timber planks, the minimum width and thickness shall be at a moisture content not exceeding 15%.

1.7 PRINCIPLES OF DESIGN

The design of a scaffold decking component shall be based on the following principles:

- (a) Conformance to performance requirements of Section 2.
- (b) Suitability for the range of environmental conditions and applications in which the scaffold decking component is designed to be used.
- (c) Enabling handling normally associated with scaffolding.
- (d) Prevention of inadvertent dislodgement from supporting components.
- (e) Ensuring the safety of persons engaged in the erection, alteration and dismantling of the range of scaffolds for which the scaffold decking component is designed to be used.
- (f) Ensuring the safety of persons using the range of scaffolds for which the scaffold decking component is designed.
- (g) Ensuring the safety of persons in the vicinity of the range of scaffolds for which the scaffold decking component is designed.

1.8 INFORMATION TO BE SUPPLIED

The following documented information shall be supplied with scaffold decking components:

- (a) The number and year of this Standard, i.e. AS/NZS 1577:2018.
- (b) Description of the decking component from which it can be identified (e.g. a drawing).
- (c) The maximum duty category as specified in AS/NZS 1576.1. For non-modular planks, the maximum duty category depending on the span and specification of the respective unsupported overhang.
- (d) Information on the range of scaffolds for which the scaffold decking component is suitable.
- (e) Information on platform configurations using the respective decking components, if appropriate.
- (f) The nominal weight of the decking component.
- (g) The recommended method of securing the decking component against dislodgment, sliding or uplift, if applicable.
- (h) Instruction for transportation, storage, inspection, maintenance and repair.
- (i) Criteria for rejection or reworking with respect to type of repair required.
- (j) A warning that obviously damaged decking components are not to be used.
- (k) Instructions for the erection and dismantling of the decking component and the way to handle it, if appropriate.
- (l) In-service testing, if applicable.

1.9 MARKING

Each scaffold decking component shall be marked with—

- (a) the symbol or letters to identify the component manufacturer or supplier; and
- (b) traceable code to enable positive identification of the product and year of manufacture.

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

The size of the lettering shall take into account the size of the component.

For solid timber, vertically laminated timber and LVL planks, the lettering used for marking shall be not less than 25 mm high and the brands shall be at least 2 mm deep and spaced not more than 1.8 m apart.

NOTE: The marking requirements are not intended to be retrospectively applied to existing products in service.

1.10 PRODUCT INFORMATION

1.10.1 General

The product information differs depending on the component. Product information shall be provided, as follows:

- (a) *Modular planks and prefabricated platforms*—The working load limit (WLL), in kilograms per component with ‘UDL’ suffix.

NOTE: The information required by Item (a) may be provided in the supplier’s documented information in lieu of a product marking, provided the product is marked with adequate product identification and/or traceable code to enable positive identification of the product.

- (b) *Non-modular planks*—

- (i) The working load limit (WLL), in kilograms per component, with ‘UDL’ suffix.
- (ii) The nominated maximum design span, in metres.
- (iii) The number and year of this Standard, i.e. AS/NZS 1577:2018.

Example:

[Manufacturer’s name or ID]—AS/NZS 1577:2018—250 kg UDL—Max. span 1.8 m

- (c) *Lap plates*—

- (i) Light duty, medium duty or heavy duty.
- (ii) The maximum span, in metres.

NOTE: The information required by Item (c) may be provided in the supplier’s documented information in lieu of a product marking, provided the product is marked with adequate product identification and/or traceable code to enable positive identification of the product.

- (d) *Filler plates or deck infills*—The maximum span, in metres.

NOTE: The information required by Item (d) may be provided in the supplier’s documented information in lieu of a product marking, provided the product is marked with adequate product identification and/or traceable code to enable positive identification of the product.

1.10.2 Label requirement

Where the information required in Clause 1.10.1 is not permanently embossed, etched or otherwise marked on the component or provided in the supplier’s documentation, the information shall be in the form of labels that—

- (a) conform to the test requirements for specified labels in AS/NZS 1892.1;
- (b) are appropriately located and/or protected to guard against wear, abrasion and disfiguring; 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.

NOTE: Manufacturers making a statement of conformity with this Australian/New Zealand Standard on a product, packaging, or promotional material related to that product are advised to ensure that such conformity is capable of being verified.

1.11 ALTERNATIVE DESIGN METHODS AND MATERIALS

Alternative design methods, surface treatment and materials such as recycled polypropylene polymer, which are not specified in this Standard, equivalent European or other relevant Standard, may be used, provided such methods, surface treatment or materials can be proven by appropriate performance testing to be equal to or better than those specified herein.

Service life durability, stiffness, strength and slip resistance over the estimated life of the scaffold decking component shall be a consideration in any assessment of new materials or new surface treatment.

SECTION 2 PERFORMANCE REQUIREMENTS

2.1 SCOPE OF SECTION

This Section specifies performance requirements for scaffold decking components and the tests performed for their verification.

Working load limit (WLL) for all decking components shall be established by testing using the loading conditions specified in Appendices A and B or theoretical analysis taking into consideration the loading arrangements and deflection criteria outlined in Appendices A and B. For strength analysis, the load factors in AS/NZS 1576.1 shall be used, taking into account the appropriate material design standards.

***C2.1** Tests specified in normative Appendices of this Standard focus on verification of properties for an 'in grade' or 'in controlled production' sample where material properties and thicknesses are representative of the controlled manufacturing process.*

Testing can also be used to determine the duty category for a proposed design. This would be achieved by an incremental approach to loading and adjustment of results for actual material thickness and material properties according to Clause B6, Item (b).

The coefficient of friction of decking components and the resistance to sliding of non-modular planks shall be verified by testing.

This Section does not include a method to test the resistance to forces due to the action of the wind on a scaffold decking component. Wind actions shall be considered to be part of installation design in accordance with AS/NZS 1576.1.

Where a previously verified scaffold decking component is subsequently varied in a way that could adversely affect its performance, the varied component shall also be verified by testing.

2.2 TESTING OF SCAFFOLD DECKING COMPONENTS

2.2.1 General

Non-modular planks and deck infills shall be tested to not less than the heavy duty category. In addition, the supplier may specify spans at which the plank meets the performance requirements of light and medium duty categories, as specified in AS/NZS 1576.1.

2.2.2 Stiffness test

When tested in accordance with Appendix A, the decking component shall not dislodge from the points of support and the deflection of the decking component shall not exceed the lesser of—

- (a) span/100;
- (b) edge thickness (measured at 5 mm from the edge) plus 10 mm; and
NOTE: The edge thickness is relevant where the decking material overhangs the supporting frame in a prefabricated platform.
- (c) 30 mm.

2.2.3 Strength test

When tested in accordance with Appendix B, the decking component shall conform to the following requirements:

- (a) The decking component shall not dislodge from the points of support.

- (b) When tested to Clause B5, Steps (a) to (e), Appendix B, the decking component shall conform to the following:
 - (i) It shall not show visual signs of distress, buckling or permanent deformation exceeding span/500 for wood-based or non-ductile structural members. In addition, there shall be no audible signs of distress from wood-based material and solid timber scaffold planks.
 - (ii) It shall not show visual signs of distress, buckling or permanent deformation exceeding span/300 for ductile structural members.
- (c) When tested to Clause B5, Steps (f) and (g), Appendix B, the failure load shall be—
 - (i) not less than $2.2 \times \text{WLL}$, where the mode of failure is progressive; and
 - (ii) not less than $3 \times \text{WLL}$, where the mode of failure is not progressive.

C2.2.3(c) *It is normal for timber scaffold planks to exhibit creaking as load is applied. This is not considered audible stress. In the context of timber scaffold planks, audible stress is sharp cracks associated with failing and rupturing wood fibres, typically at high loads. In such cases, audible stress is associated with an immediate reduction in measured load as stress is relieved.*

Progressive failure occurs when the plank continues to deflect under load until it can no longer support the load but does not break into pieces and does support a residual load less than the peak/failure load. Failure that is not progressive occurs when the plank suddenly is no longer capable of supporting a test load and its residual load capacity drops to near zero. At this point it may or may not break into separate pieces.

2.2.4 Sliding test for non-modular planks

When tested in accordance with Appendix C, the force required to produce sliding shall be not less than 250 N.

2.2.5 Coefficient of friction test

A decking component shall have a surface extending to within 45 mm of each longitudinal edge which, when tested in accordance with Appendix D, results in an average static coefficient of friction of not less than 0.7, with no single test resulting in a static coefficient of friction less than 0.6.

2.3 WORKING LOAD LIMIT (WLL) FOR DECKING COMPONENTS

Deck infills shall have a minimum capacity rating equivalent to the platform duty rating where they are used. A number of deck infills may be used adjacent to each other or within the same platform provided they conform to the duty rating of that platform.

Scaffold planks and prefabricated platforms shall be designed to support their marked rated loads, which shall be compatible with the duty ratings applicable to the working platforms they will be used to form, as specified in AS/NZS 1576.1.

Duty categories of scaffold planks, deck infills or prefabricated platforms shall be one of the following categories:

- (a) *Light duty* A total load of 2.2 kN (225 kg) per bay, which includes a single concentrated load of 1.2 kN.
- (b) *Medium duty* A total load of 4.4 kN (450 kg) per bay, which includes a single concentrated load of 1.5 kN.
- (c) *Heavy duty* A total load of 6.6 kN (675 kg) per bay, which includes a single concentrated load of 2 kN.