

## Standards and Handbooks List – structural steel fabrication

The following Standards and Handbooks are commonly used for fabrication of structural steelwork.

### Core List

Designation	Title	Overview
AS/NZS 5131:2016	Structural steelwork - Fabrication and erection	Sets out minimum requirements for the construction of structural steelwork involving fabrication, preparation of steel surfaces for corrosion protection, corrosion protection comprising painting and galvanizing, erection and modification of steelwork. Steel fabrication standard.
AS/NZS 1163:2016	Cold-formed structural steel hollow sections	Specifies the requirements for the production and supply of cold- formed, electric resistance-welded, steel hollow sections used for structural purposes. It considers three strength grades, with or without impact properties, that are suitable for welding.
AS/NZS 3678:2016	Structural steel - Hot-rolled plates, floorplates and slabs	Specifies requirements for hot-rolled plates, floorplates and slabs for general structural and engineering applications.
AS/NZS 3679.1:2016	Structural steel, Part 1: Hot- rolled bars and sections	Specifies the requirements for the production and supply of hot-rolled structural steel bars and sections.
AS/NZS 3679.2:2016	Structural steel, Part 2: Welded I sections	Specifies requirements for the production and supply of welded I sections for general structural and engineering purposes.
AS 3597:2008	Structural and pressure vessel steel - Quenched and tempered plate	Sets out technical requirements for the production and supply of intermediate and high-strength quenched and tempered low-alloy steel plates.
AS/NZS 1252.1:2016	High-strength steel fastener assemblies for structural engineering - Bolts, nuts and washers, Part 1: Technical requirements	Specifies the dimensional, material and marking requirements for steel bolt assemblies comprising steel bolts of property class 8.8, steel nuts of property class 8 with ISO metric coarse pitch series threads, in diameters from 12 mm to 36 mm, and associated hardened and

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		tempered steel washers intended for use in steel structures.
AS/NZS 1252.2:2016	High-strength steel fastener assemblies for structural engineering — Bolts, nuts and washers, Part 2: Verification testing for bolt assemblies	Gives provisions for verification testing of high-strength steel fastener assemblies for structural engineering, which is the testing undertaken by the supplier who first puts the product into the market in Australia or New Zealand.
AS/NZS 1554.1:2014	Structural steel welding, Part 1: Welding of steel structures	Specifies requirements for the welding of steel structures made up of combinations of steel plate, sheet or sections, including hollow sections and built-up sections, or castings and forgings. Also known as AS1554 Structural steel welding.
AS/NZS 1554.4:2014	Structural steel welding, Part 4: Welding of high strength quenched and tempered steels	Specifies requirements for the welding of steel structures made up of combinations of steel plate, sheet or sections, including hollow sections and built up sections, or castings and forgings.
AS/NZS 1554.5:2014	Structural steel welding, Part 5: Welding of steel structures subject to high levels of fatigue loading	Specifies requirements for the welding of steel structures made up of combinations of steel plate, sheet or sections, including hollow sections and built-up sections, or castings and forgings.
AS/NZS 1554.6:2012	Structural steel welding, Part 6: Welding stainless steels for structural purposes	The objective of this Standard is to provide rules for the welding of a wide range of stainless steel fabrications (other than pressure vessels and pressure piping), and it applies to statically and dynamically loaded welds.
AS/NZS ISO 3834.1:2023	Quality requirements for fusion welding of metallic materials, Part 1: Criteria for the selection of the appropriate level of quality requirements	Identically adopts ISO 3834-1:2021 which provides a general outline of the ISO 3834 series and specifies criteria for the selection of the appropriate level of quality requirements for fusion welding of metallic materials among the three levels specified. It is applicable to manufacturing, both in workshops and at field installation sites.
AS/NZS ISO 3834.2:2023	Quality requirements for fusion welding of metallic materials, Part 2: Comprehensive quality requirements	AS/NZS ISO 3834.2 identically adopts ISO 3834 2:2021 which defines comprehensive quality requirements for fusion welding of



		metallic materials both in workshops
		and at field installation sites.
AS/NZS ISO	Quality requirements for fusion	AS/NZS ISO 3834.3 identically
3834.3:2023	welding of metallic materials,	adopts ISO 3834 3:2021 which
	Part 3: Standard quality	defines standard quality
	requirements	requirements for fusion welding of
		metallic materials both in workshops
		and at field installation sites.
AS/NZS ISO	Quality requirements for fusion	AS/NZS ISO 3834.4 identically
3834.4:2023	welding of metallic materials,	adopts ISO 3834 4:2021 which
	Part 4: Elementary quality	defines elementary quality
	requirements	requirements for fusion welding of
		metallic materials, both in workshops
		and at field installation sites.



# **Specialised Construction**

• Bridges

Designation	Title	Overview
AS/NZS 5100.6:2017	Bridge design, Part 6: Steel and composite construction	Sets out minimum requirements for the design of the structural steelwork in bridges in limit states format, including wrought and cast iron structures.

### • Cranes

Designation	Title	Overview
AS 1418 series	Cranes, hoists and winches	Multiple parts covering various aspects of cranes, hoists, winches, and their components, and appliances intended to carry out similar functions, as defined in AS 2549 and ISO 4306 (series)

# • Pressure Vessels

Designation	Title	Overview
AS 3990:1993	Mechanical equipment — Steelwork	Applies to the design, fabrication, erection, repair and alteration of steelwork associated with boilers, pressure vessels, lifts, cranes, mining equipment, gas and liquid petroleum piping systems, bulk handling equipment, and the like in accordance with the working stress design method, but does not apply to road and rail bridges, material less than 3 mm thick, steel for which the design yield stress exceed 450 MPa, and cold-formed members other than those complying with AS 1163.



## • Corrosion protection

Designation	Title	Overview
AS/NZS 4680:2006	Hot-dip galvanized (zinc) coatings on fabricated ferrous articles	Specifies requirements and tests for hot-dip zinc coatings on fabrications, assembled steel products, tubular fabrications, fabricated wire work, steel forgings, steel stampings, ferrous castings, nails and small components.
AS 2312.1:2014	Guide to the protection of structural steel against atmospheric corrosion by the use of protective coatings, Part 1: Paint coatings	Provides guidelines for the selection and specification of paint coating systems for the protection of structural steel work against atmospheric corrosion.

# • Unique structural design considerations

Designation	Title	Overview
AS/NZS 1170 series		
AS/NZS 1170.0:2002	Structural design actions, Part 0: General principles	Provides the procedure for structural design. It includes design procedures, reference to design actions (other parts of the series), combinations of actions, detailing for robustness, methods of analysis and methods for confirmation of a limit states design. It also covers the use of special studies and experimental testing and, for New Zealand, criteria for selection of annual probability of exceedance. Information is given in appendices on selection of serviceability criteria.
AS/NZS 1170.1:2002	Structural design actions, Part 1: Permanent, imposed and other actions	Provides design values of permanent, imposed and other actions to be used in the limit state design of structures and members. It is intended to be used in conjunction with AS/NZS 1170.0. Other actions covered include liquid pressure, ground water, rain water ponding and earth pressure.
AS/NZS 1170.2:2021	Structural design actions, Part 2: Wind actions	Sets out procedures for determining wind speeds and resulting wind actions to be used in the structural design of structures subjected to



		wind actions other than those caused by tornadoes.
AS/NZS 1170.3:2003	Structural design actions, Part 3: Snow and ice actions	Provides design values of snow and ice actions for use in structural design. It is intended to be used in conjunction with AS/NZS 1170.0, which gives the procedure for structural design. Snow regions are defined and ground snow loads are provided for a range of annual probabilities of exceedance. Other factors cover the environment around the structure, the geometry of the structure and the effect of winds on snow distribution.
AS 1170.4:2024	Structural design actions, Part 4: Earthquake actions in Australia	AS 1170.4:2024 provides designers of structures with earthquake actions and general detailing requirements for use in the design of structures subject to earthquakes with a primary focus on life safety.

# Composite construction

Designation	Title	Overview
AS/NZS 2327:2017	Composite structures - Composite steel-concrete construction in buildings	Sets out minimum requirements for the design, detailing and construction of simply supported composite beams composed of a steel beam interconnected to a concrete slab by shear connectors, including applications in which the slab incorporates profiled steel sheeting. Covers strength and serviceability design for flexure, transverse and longitudinal shear and their interdependence as well as design for fire-resistance. Permits the use of partial shear connection and a wider variety of steel beam sections and shear connector types than previously allowed. Includes detail requirements for construction loads, slab reinforcement and sheer connector positioning, along and transverse to the beam length.



# • Fasteners (General)

United Fasteners commercial technical publication <u>https://www.unitedfasteners.com.au/media/1415/Australian-Standards-(Technical-Information---United-Fasteners).pdf</u>

• Commonwealth, State and Territory Transport Authority Requirements

## Commonwealth

 Austroads - ATS 5410 Structural Steelwork – Fabrication and Erection <u>https://austroads.gov.au/\_\_\_data/assets/pdf\_\_file/0025/611890/ATS-5410-</u>
<u>22 Structural Steelwork Fabrication and Erection.pdf</u>

## **New South Wales**

- Transport for NSW (TfNSW) / RMS - TS 01744 Steel Fabrication ATS 5410 https://www.transport.nsw.gov.au/system/files/media/documents/2024/ts-01744 1.00-steel-fabrication-ats-5410-ed2-mod-comparison.pdf

## Queensland

- Transport and Main Roads (TMR) - MRTS78 Fabrication of Structural Steelwork <u>https://www.tmr.qld.gov.au/business-industry/technical-standards-</u> <u>publications/specifications/specifications-index</u>

### South Australia

- Dept for Infrastructure & Transport (DIT) - Master Specification Part ST-SS-S1 for the Fabrication of Structural Steelwork

https://dit.sa.gov.au/ data/assets/pdf\_file/0007/1423789/ST-SS-S1-FABRICATION-OF-STRUCTURAL-STEELWORK.pdf

### Victoria

 VicRoads / Department of Transport & Planning (DTP) – Section 630 Fabrication of Steelwork

https://webapps.vicroads.vic.gov.au/VRNE/csdspeci.nsf/webscdocs/19A51B7422A1 7430CA257BF80080297A/\$File/Sec%20630.docx

### Western Australia

- Main Roads Western Australia – Specification 830 Structural Steelwork https://www.mainroads.wa.gov.au/492891/globalassets/technicalcommercial/technical-library/specifications/800-series-bridge-majorstructures/specification-830-structural-steelwork.docx