The new AS/NZS 5131

Structural Steelwork – Fabrication and Erection

AUSTRALIAN STEEL INSTITUTE

The new Australian Standard AS/NZS 5131 defines **good practice** for fabrication and erection of structural steelwork for projects in Australia, and is the basis for the new National Structural Steelwork Compliance Scheme (NSSCS). AS/NZS 5131 addresses:

- Requirements for **documentation and specification**
- **Materials**, including steel, welding consumables, fasteners and grout
- **Preparation and assembly**, including cutting, shaping and holing
- **Welding**, including welding processes and qualification of welding procedures and personnel
- **Surface treatment and corrosion protection**
- **Mechanical fastening** (bolting, tensioning of bolts, special fasteners, post-fixed anchors)
- **Architecturally exposed structural steelwork**
- **Erection**
- **Geometrical tolerances**
- **Inspection, testing and correction**
- **Site modifications and repair of existing structures**

AS/NZS 5131 utilises a **risk-based fit-for-purpose approach** implemented through the classification of the **'Construction Categories'** for the whole or parts of the structure. This establishes a **Quality Benchmark** responsive to the needs of your project and client.

Why was it created?

Prior to the publication of AS/NZS 5131, Australia was the only country in the developed world without a dedicated stand-alone Standard for fabrication and erection of structural steelwork. In today's increasingly 'open borders' procurement environment, where structural steelwork for Australian projects is being supplied by both local and overseas based fabricators, a rigorous and transparent definition of good quality is more necessary than ever. AS/NZS 5131 sets the quality benchmark Australia expects to ensure safe structures.

AS/NZS 5131 in the project process

Fitting AS/NZS 5131 into your project process is easy:

DESIGN:

- Engineer designs structure and creates specification
- Specification calls up AS/NZS 5131, construction category and project-specific selections

→

FABRICATION AND ERECTION:

- Client/builder selects fabricator, who works to requirements in AS/NZS 5131
- Best outcomes with a fabricator independently certified under the NSSCS

Fabricator certification and the National Structural Steelwork Compliance Scheme

The Australian Steel Institute (ASI) has developed the **National Structural Steelwork Compliance Scheme** (NSSCS), comprising four supporting pillars:

- AS/NZS 5131 as the technical foundation
- Risk assessment and engineer selection of the **'Construction Category'**
- **Conformity assessment** to the requirements of AS/NZS 5131
- Auditing and certification of fabricators through Steelwork Compliance Australia (SCA)

Industry association led compliance schemes are commonplace in the UK, US, Canada and New Zealand and in Europe (and the UK) compliance is legislated as a mandatory safety requirement for all structural steelwork. New Zealand has joined Australia in developing an industry-led compliance scheme based on AS/NZS 5131.

Benefits of the NSSCS and certification:

- Provides a **high level of assurance** that the fabricated steel for your project is from a qualified competent fabricator
- Is an **open scheme** and any fabricator based in Australia or overseas who can demonstrate capability to meet the requirements of the new Standard can be certified
- **Saves significant project resources and time** in checking of product compliance
- Is effectively a **National Steelwork Technical Prequalification Scheme**, which in time will save the Australian community significant costs in making the project tendering process more efficient

SCA
STEELWORK COMPLIANCE AUSTRALIA

Go to **http://steel.org.au/key-issues/compliance** to learn more!

ENGINEERS

The process to achieve the quality benchmark for engineers is:

- Nominate the **Construction Category** for the particular structure or component
- Utilise the new **National Structural Steelwork Specification** to ensure that, for the scope of work for which you are contracted, the construction specification has suitable wording to reference the Standard and the necessary project-specific detail selections
- Check the submittals for materials and fabrication to confirm conformity. When using certified fabricators, much of this is already configured
- Provide your project-specific certification as is currently required

The structure of AS/NZS 5131

In essence, AS/NZS defines two 'layers' on top of the base layer that represents international good practice:

Risk-based approach:
- The engineer defines the Construction Category (CC) for the project or assembly. CC1 to CC4 from least to most risk

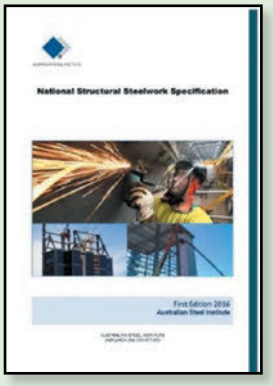
Project-specific selections:
- The engineer or specifier chooses certain parameters to suit the particular project circumstances (see NSSS below)

Good practice:
- The vast majority of AS/NZS 5131 is simply good practice, as defined by Australian practice and input from international standards

The new National Structural Steelwork Specification (NSSS)

ASI has created the new 'National Structural Steelwork Specification' (NSSS) as a convenient implementation tool for industry to ingrain the AS/NZS 5131 requirements. The NSSS presents:

- A standardised template for creating project-specific and/or company-specific specifications for structural steelwork
- Relies on AS/NZS 5131 for the definition of **good practice**
- Editable AS/NZS 5131 **project-specific selections** for you to configure the specification for your particular project or company
- The structure to define the **Construction Category** for your project or component
- A consistent set of 'Standard Drawing Notes' (separate document)



Download your freely editable copy at **http://steel.org.au/key-issues/compliance**

Assessing the Construction Category

The assessment of the Construction Category for the project or components of the project utilises a very simple risk matrix with three input factors, including the structure importance level from the National Construction Code (NCC). The ASI has prepared Tech Note TN011 to assist engineers, freely downloadable from **http://steel.org.au/elibrary/asi-technical-notes/**

Importance Level		1		2		3		4	
Service Category		SC1	SC2	SC1	SC2	SC1	SC2	SC1	SC2
Fabrication Category	FC1	CC1	CC2	CC2	CC3	CC3	CC3	CC3	CC3
	FC2	CC2	CC2	CC2	CC3	CC3	CC3	CC3	CC4

The benefits for you

The benefits to engineers of AS/NZS 5131 and the NSSCS include:

- Provides the means to make a clear quantitative risk-based categorisation of projects
- Provides a practical tool that in time becomes 'accepted industry practice'
- Helps to manage your risk and your duty of care under the Workplace Health and Safety Act (Safe design of structures)

CLIENTS AND GOVERNMENT

The process to achieve the quality benchmark for clients and Government is:

- Configure your procurement specifications to reference AS/NZS 5131
- Nominate third party certification of steelwork under the NSSCS
- Implement surveillance to ensure the intent of your procurement specifications has been actioned

The benefits for you

The benefits to clients and Government of the NSSCS include:

- Assurance that the steelwork contractor is competent as assessed by an expert process
- Assurance that the tender offer is based on a like-for-like quality comparison and not compromised on quality, therefore minimising likely costly rework and remediation
- Management of risk and your duty of care under the Workplace Health and Safety Act (Safe design of structures)
- Utilising a steelwork fabricator who has invested in training, apprenticeships, systems and capability over those who quote on price alone
- Support development of a world class steelwork fabrication industry in Australia

Various state Governments either use or are about to use third party steel and steelwork certification as a mechanism to meet the expected benchmark following a plethora of steel material and fabrication failures on recent projects supplied from overseas.

See updates at **http://steel.org.au/key-issues/compliance**

BUILDERS

The process to achieve the quality benchmark for builders is:

- Ensure processes and documentation are consistent with the Construction Category for the project or component being undertaken. AS/NZS 5131 defines the requirements. The NSSS actions these requirements
- Provide necessary project-specific documentation as and when needed
- Provide the Declaration of Compliance (DoC) for the products covered

The benefits for you

The benefits to builders of the NSSCS include:

- Avoids the cost of setting up an in-house fabricator quality capability assessment team
- Provides an assessor with intimate knowledge of steelwork fabrication
- Provides the ability to nominate a fabricator for which the builder can request assessment
- Is fit-for-purpose based on risk assessment, therefore cost effective
- Provides a mechanism to feedback project outcomes and request special fabricator assessment
- Reduces costs of rectification and rework, utilising fabricators proven to meet the minimum requirements of Australian Standards
- Frees up your valuable personnel to focus on the project issues they are actually trained for

The new Australian Standard AS/NZS 5131 defines good practice for fabrication and erection of structural steelwork for projects in Australia, and is the basis for the new National Structural Steelwork Compliance Scheme (NSSCS).

FABRICATORS

The process to achieve the quality benchmark for fabricators is:

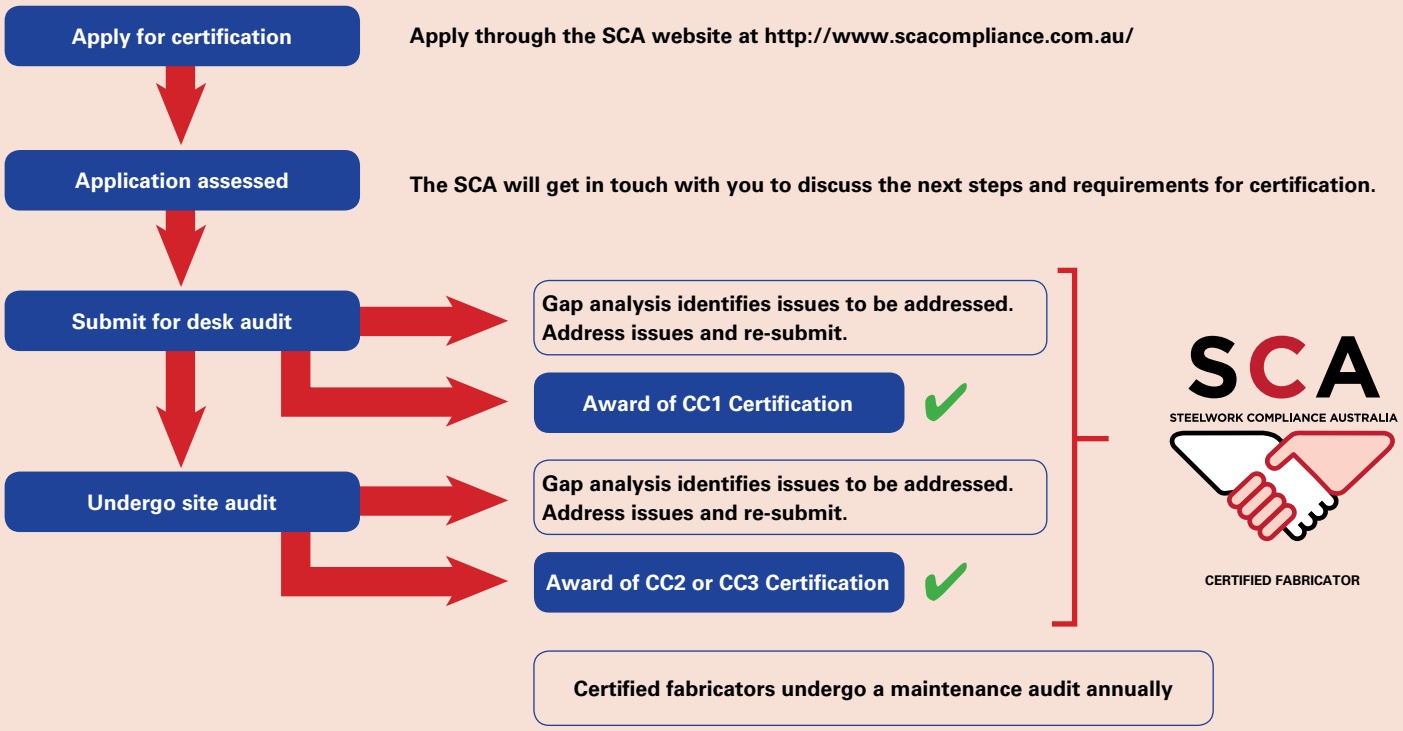
- Ensure processes and documentation are consistent with the Construction Category for the project or component being undertaken. AS/NZS 5131 defines the requirements
- Provide necessary project-specific documentation as and when needed
- Provide the Declaration of Compliance (DoC) for the products covered

You are guided through this process and it is greatly simplified for you if you choose to apply for certification to the NSSCS.

Certification to the NSSCS

Certification to the NSSCS is configured in simple staged steps to provide practical benefits early on whilst managing a journey towards final certification to your chosen Construction Category.

The stages and process are:



The benefits for you

The benefits to fabricators of certification under the NSSCS are significant, including:

- A proven commitment to capability based on the chosen certification level will help distinguish you in the eyes of clients
- A de-facto 'National Technical Prequalification Scheme' that in time will become common across the industry, increasing productivity and saving you significant time and cost in tender submissions and multiple certifications
- The site audit and ensuing gap analysis can prompt demonstrable improvements in internal process efficiencies
- A uniform transparent quality bar to support fair competition with your peers

AUSTRALIAN STEEL INSTITUTE

Australian Steel Institute
Suite 5, Level 3, Building 3
20 Bridge St, Pymble, NSW, 2073
P: +61 2 8748 0180
E: compliance@steel.org.au
W: steel.org.au

Proudly supporting compliance: