AUSTRALIAN STEEL INSTITUTE

SCA
STEELWORK COMPLIANCE AUSTRALIA

ASI
National Structural Steelwork Compliance Scheme

A Guide for Clients, Builders and Prime Contractors

Version 2, 2017

USE OF THIS GUIDE

This document is intended to be used by bodies responsible for or involved with, ensuring successful outcomes in the process of procuring constructions in structural steel. These bodies may include entities such as **Clients, Builders and Prime Contractors** who are involved in the contracting of the design process and subcontracting of the fabricator and ancillary trades.

The Australian Steel Institute has produced this document as Guidance to the understanding and use of the **National Structural Steelwork Compliance Scheme** (NSSCS). This scheme is based on the principles of the mandated CE Marking scheme in use throughout Europe, where structural steelwork is deemed a safety component and hence the compliance scheme has been legislated i.e. it is EU law .

In Australia the NSSCS is a voluntary and open scheme but has links to the WH&S Act through the Safe Design of Structures Code of Practice, where the stakeholder needs to demonstrate duty of care to ensure that their structure is safe, which logically includes ensuring the use of product compliant with the design specification and performance requirements of our national Standards.

The purpose of the NSSCS is to help ensure that the stakeholders for a constructed steel structure obtain the quality that is fit for the purpose for which it has been designed and for which they have paid.

The Australian design Standards are supported by and closely interlinked with material and workmanship Standards that are often poorly understood by many stakeholders in the supply chain. Because these Standards are tightly interrelated, a failure or substitution in one area can significantly compromise another, with serious consequences. It is therefore considered that a holistic approach to product compliance, encompassing the whole supply chain, is required and ASI, who along with its members is represented on many of the relevant Standards committees, has taken on the challenge of implementing the new national compliance scheme in a similar fashion to what has been the case overseas.

The NSSCS has been set up in parallel with New Zealand through HERA and SCNZ, whose organisations are implementing a similar scheme.

ASI NATIONAL STRUCTURAL STEELWORK COMPLIANCE SCHEME

A GUIDE FOR CLIENTS, BUILDERS AND PRIME CONTRACTORS

Benefits

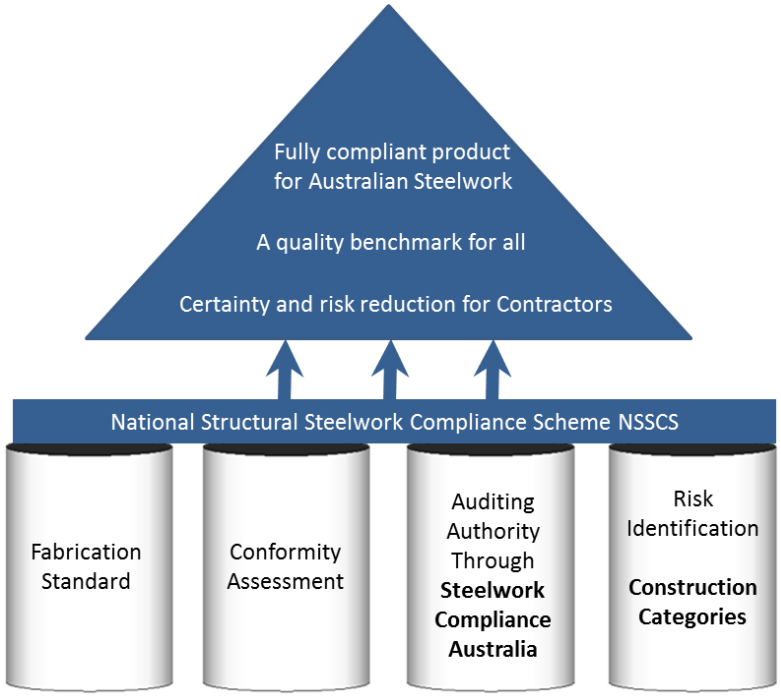
- Provides a comprehensive technical prequalification of potential suppliers by steel industry experts.
- Reduces the level of risk for the asset owner and the constructor for the completed structure, knowing that the fabricator has been able to demonstrate competence for the particular Construction Category.
- A fair and open scheme based solely on demonstrated compliance capability to the performance requirements of Australian standards.
- Will provide cost and time benefits back to the builder as individual quality prequalification assessments will not be required.
- Frees up your valuable personnel to focus on the project issues they are actually trained for.
- Will in time improve the skill level of the whole industry.

The Scheme

The NSSCS is intended to cover the majority of structural steel fabrication for Australia and is intended for use with steelwork designed to AS 4100 Steel structures and AS 5100 Bridges.

The scheme is based on four supporting initiatives, as indicated in the following figure, comprising:

1. **Fabrication Standard**: the recently published **AS/NZS 5131 'Structural steelwork - Fabrication and erection'** is the first structural steelwork fabrication and erection Standard for Australia and New Zealand and forms the technical basis for the NSSCS.
2. **Conformity Assessment**: the framework and rules that define conformity assessment to AS/NZS 5131. This framework is used by Steelwork Compliance Australia to assess conformity of fabricators.
3. **Steelwork Compliance Australia (SCA):** SCA has been set up by ASI as an independent certifying authority, with the aim of certifying fabricators to the risk-based 'Construction Category' classification embodied in AS/NZS 5131.
4. **Risk Identification**: AS/NZS 5131 requires the engineer to classify the structure or part thereof into one of four '**Construction Categories**' based on risk to human life of failure, type of loading and complexity of fabrication.



How it works

The builder:

- Establishes clear responsibilities in contracts for meeting the requirements of the Construction Category nominated by the engineer and the responsibilities defined in AS/NZS 5131 (see later).
- Employs certified fabricators that have the demonstrated capability of producing to the required construction category. Fabricator certification status is easily checked from the SCA website.
- Directs that the requisite project-specific compliance documentation is to be assembled, packaged and submitted to regulatory authorities (usually building certifier).
- Manages compliance to WHS Act, in particular as regards the duty of care for product compliance.

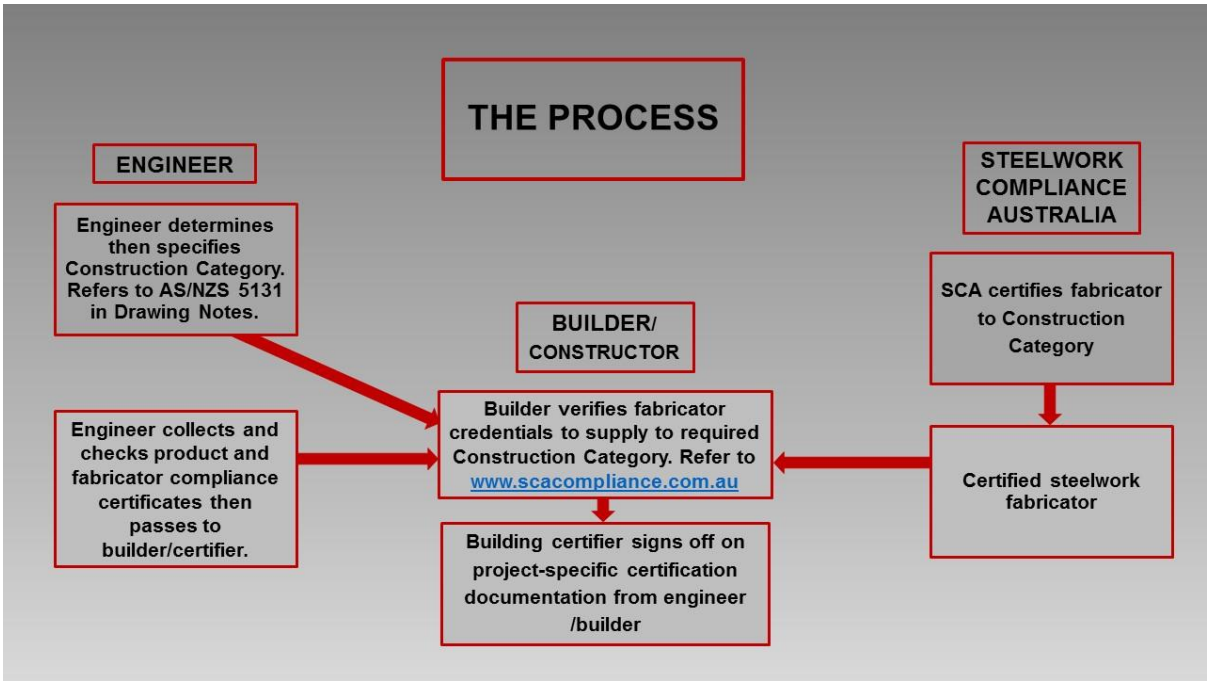
The engineer:

- Nominates the Construction Category for a particular structure or component thereof. In most instances this will be obvious and already established through industry best practice and guidance from the ASI and/or other professional bodies. ASI Tech Note TN011 provides guidance.
- Utilises the new National Structural Steelwork Specification to ensure that, for the scope of work contracted, the construction specification has suitable wording to reference AS/NZS 5131 and the necessary project-specific detail selections.
- Checks the submittals for materials and fabrication to confirm conformity. When using certified fabricators, much of this is already configured, and checking should be straightforward.
- Provides project-specific certification as is currently required.

The fabricator:

- Is audited by an accredited Steelwork Compliance Australia (SCA) certifier to obtain certification to the nominated Construction Category.
- Maintains the certification with annual maintenance audits.
- For the specific project, ensures that the processes and documentation are consistent with the requirements of AS/NZS 5131 for the particular Construction Category.

FLOWCHART OF THE PROCESS



The client:

- Configures the procurement specification to reference AS/NZS 5131
- Nominates third party certification of steelwork under the NSSCS
- Implements surveillance to ensure the intent of the procurement specifications has been actioned

The Construction Category

The selection of a 'Construction Category' is a risk-based approach intended to provide consistency with the fundamental load assessment (AS 1170 series) and structural design (AS 4100). Its basis has been derived from the CE Marking framework used in Europe and the UK and the included 'Execution Class' concept.

The Construction Category classification provides a fit-for-purpose level of quality assurance to reduce risks associated with fabrication and erection. It references the 'Importance Level' (NCC and AS/NZS 1170.0) for the building or structure as the primary indicator of the relative risk to life (consequences of failure), which in turn is based on the philosophy and principles set out in ISO 2394. For Australia, the importance level is defined in the National Construction Code (NCC) or AS 1170.0 for structures not covered under the NCC. For New Zealand, AS 1170.0 is utilised.

The Importance Level is one component of the risk assessment that provides the basis for the calculation of the Construction Category. Other components reflect the type of loading the structure is subjected to and the complexity of the fabrication.

A complete steel structure, or parts thereof, will be assigned a Construction Category (CC) by the engineer from CC1 to CC4, where CC1 represents the least risk to human life of failure and least fabrication and erection complexity, through to CC4, representing extreme risk to human life of failure and/or significant national or post-disaster importance. Most structures in Australia would be classified as CC2, or if the design is influenced by fatigue considerations, CC3.

Assessment of the Construction Category

The determination of the Construction Category is undertaken by the engineer in the design phase, based on the known loading for the building, the intended function, what maintenance and inspection measures will be in place, the elements that comprise the structure and the expected complexity of fabrication or erection for the structure.

The engineer will assess and assign the requisite Construction Category to the structure or parts thereof and that information will be provided on the drawings and in any specifications prepared by the engineer.

Refer to ASI Technical Note TN011 'Structural steelwork fabrication and erection code of practice – Implementation guide for engineers', http://steel.org.au/elibrary/asi-technical-notes/ for a detailed background and description of the Construction Category assessment.

Whilst the assessment of the Construction Category is project-specific, many structure types will naturally fall into typical classifications. The following table illustrates typical expected classifications of structure types.

TYPICAL EXPECTED CLASSIFICATION OF STRUCTURE TYPES

Construction Category	Typical structures
1	• Gates, handrails, agricultural buildings (no people congregating), greenhouses
2	• Commercial, residential, educational buildings, not exceeding 15 storeys • Hospitals • Warehouses • Industrial buildings
3	• Bridges • Structures or sub-structures designed for fatigue actions • As specifically required in authority construction specifications
4	• Structures with extreme consequences of structural failure • As required by national or project-specific provisions • Special structures (long span bridges, power stations etc.)

Responsibilities

On many projects, the responsibilities for actioning compliance are not well defined. AS/NZS 5131 provides a checklist of responsibilities and it is recommended that these be assigned on a project

specific basis, within the contractual documentation. The list below is not complete and does not represent the only areas of responsibility that need to be addressed.

The builder or the prime contractor, as the usual primary manager of the project and stakeholder interactions, is in the best position to ensure that contract responsibilities are appropriately assigned - preferably in the contract documentation.

LIST OF RESPONSIBILITIES TO BE ASSIGNED

Clause	Responsibility to be assigned
4 Specifications and documentation	
4.1 Construction specification	
4.1.1	Preparation of the Construction Specification
4.3 Use of Building Information Modelling	
	Where required, preparation of the 'Project BIM Brief' or 'BIM Management Plan'
4.4 Shop detailing documentation	
4.4.1	Preparation of the shop detailing documentation
4.4.4	Approval of shop detailer documentation
4.5 Documentation required	
4.5.1	Preparation of quality documentation
4.5.2	Preparation of quality plan
4.5.4	Preparation of as-built documentation
4.6 Purchasing – components and subcontracted services	
4.6.1	Preparation of purchasing procedure Responsibility for operating the purchasing procedure
5 Materials	
5.1 General	
5.1.2	Responsibility for operation of quality management system
6 Preparation, assembly and fabrication	
6.1 General	
6.1.2	Responsibility for operation of quality management system
6.1.3	Preparation of work method statements
6.12 Supervision	
	Responsibility for supervision
7 Welding	
7.1 General	
7.1.1	Responsibility for operation of quality management system
7.2.1	Preparation of welding plan
7.4.3	Responsibility for welding coordination
8 Mechanical fastening	
8.1 General	
8.1.2	Responsibility for operation of quality management system
8.1.3	Preparation of work method statements
8.9	Responsibility for supervision

9 Surface treatment and corrosion protection	
9.2 Planning	
9.2.3	Preparation of work method statements
9.9 Application of paint coatings	
9.9.20	Responsibility for supervision
9.10 Application of galvanized coatings	
9.10.11	Responsibility for supervision
11 Erection	
11.2 Site planning	
11.2.1	Preparation of safety plan
11.2.2	Responsibility for operation of quality management system
11.2.3	Preparation of work method statements
10.2.4	Preparation of risk assessment
11.5 Erection process	
	Preparation of Erection Sequence Methodology (ESM) Review of ESM
11.7 Erection drawings	
	Preparation of erection drawings
11.9 Supervision	
	Responsibility for supervision
13 Inspection, testing and correction	
13.2 Inspection	
	Responsibility for inspection and testing at each stage of the project
14 Site modification during erection and modification and repair of existing structures	
14.2	Site modification of fabricated steelwork
	Preparation of detailed written procedure

Notes:

1. *The clause numbers reference AS/NZS 5131*
2. *This table represents a summary of the relevant responsibilities from the body of AS/NZS 5131. Users should reference AS/NZS 5131 for the current requirements.*